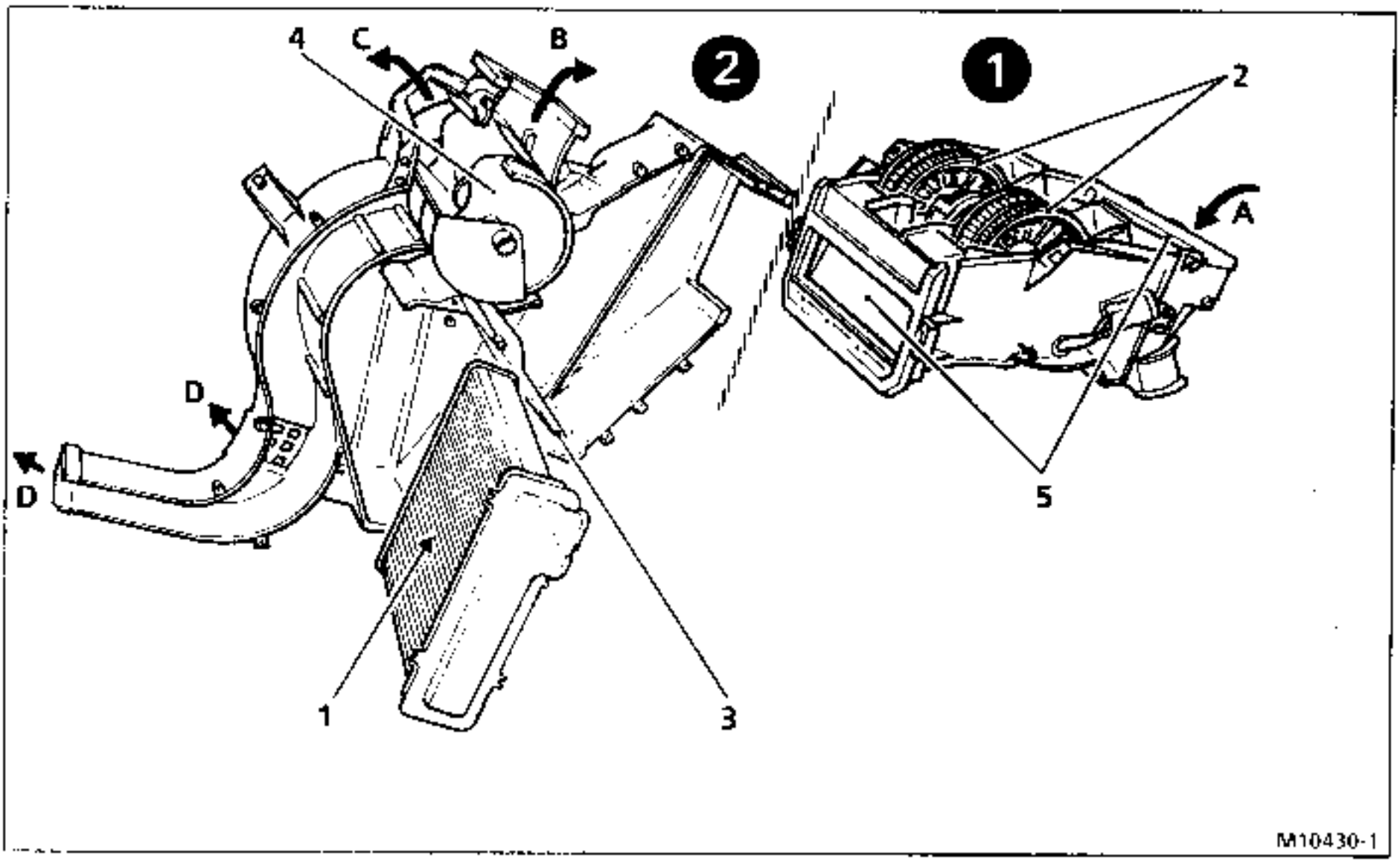
EXPLODED VIEW OF AIR DISTRIBUTION AND BLOWER DEVICE



M10430-1

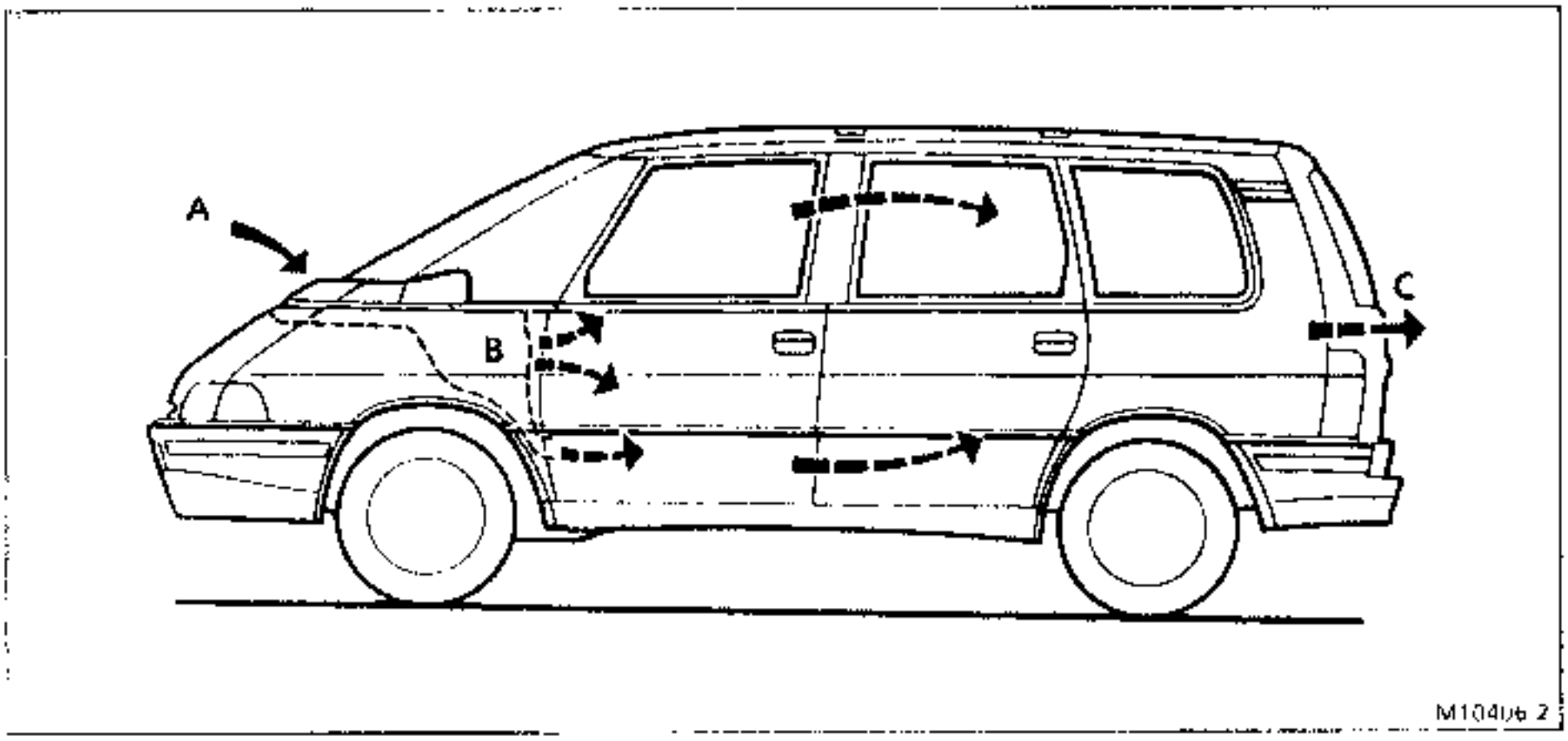
1 ENGINE COMPARTMENT

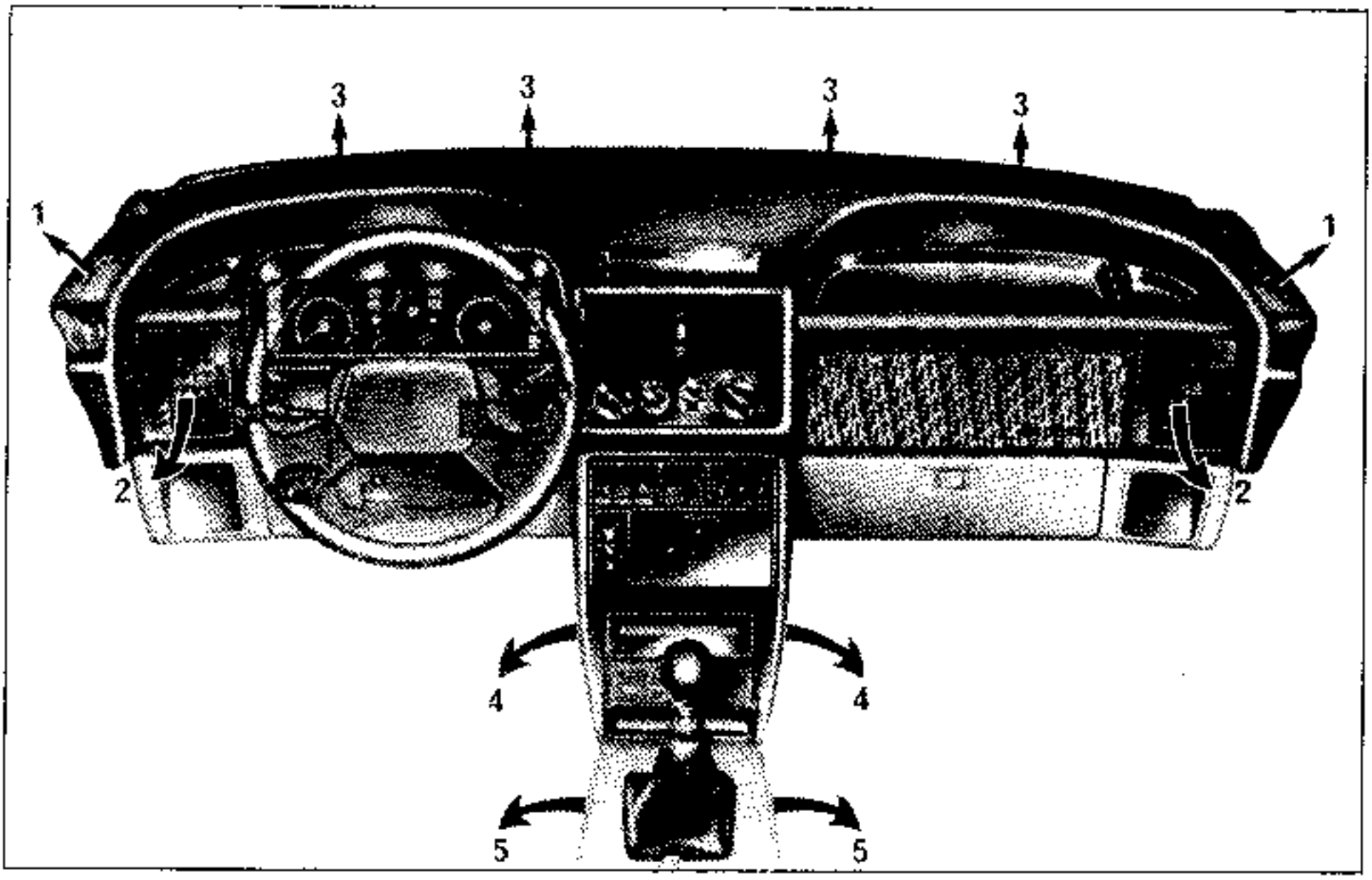
2 PASSENGER COMPARTMENT

1 Heater radiator
2 Heater fan
3 Hot air/Cold air flap
4 Air distribution drum
5 Recirculating flaps

A Air inlet
B Windscreen ventilator outlet
C Dashboard ventilator outlet
D Front seat-rear seat outlets

Air circulation and distribution





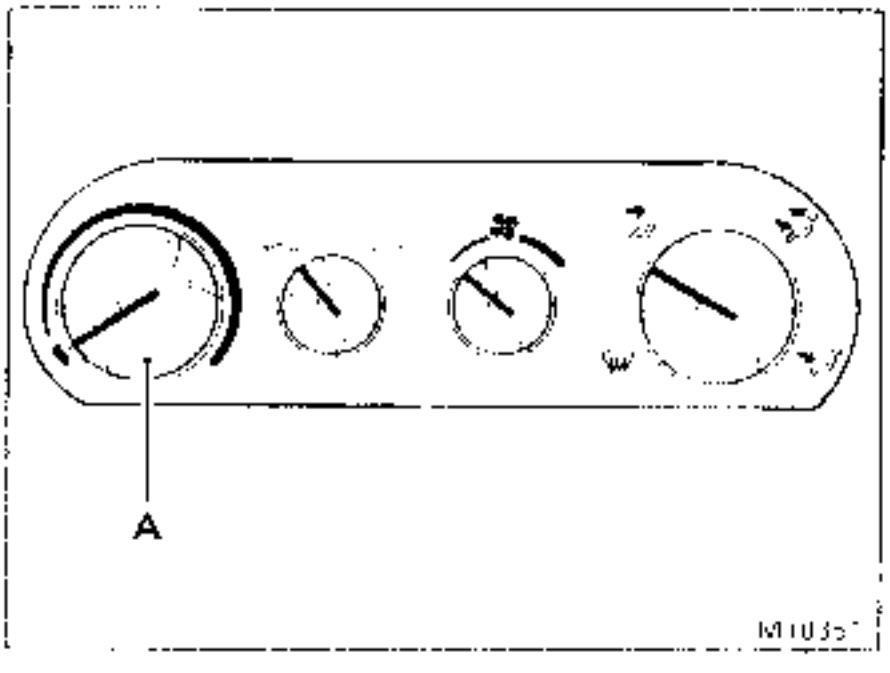
A External air inlet
B Air distribution
C Extraction in tailgate

1 Windscreen demisting outlet
2 Side ventilator outlet
3 Centre ventilator outlet
4 Front seat ventilator outlet
5 Rear seat ventilator outlet

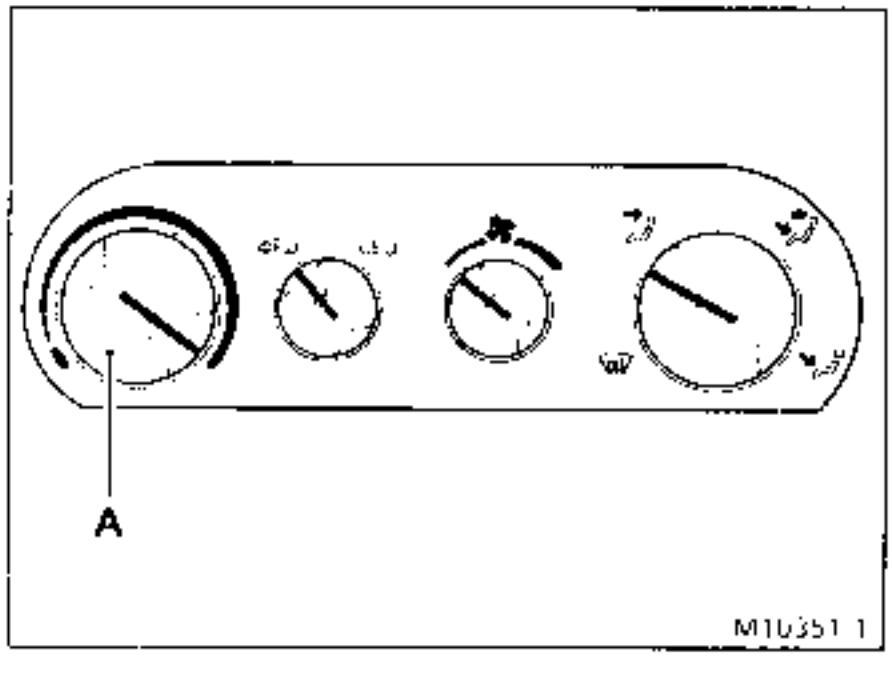
TEMPERATURE CONTROL KNOB (A)

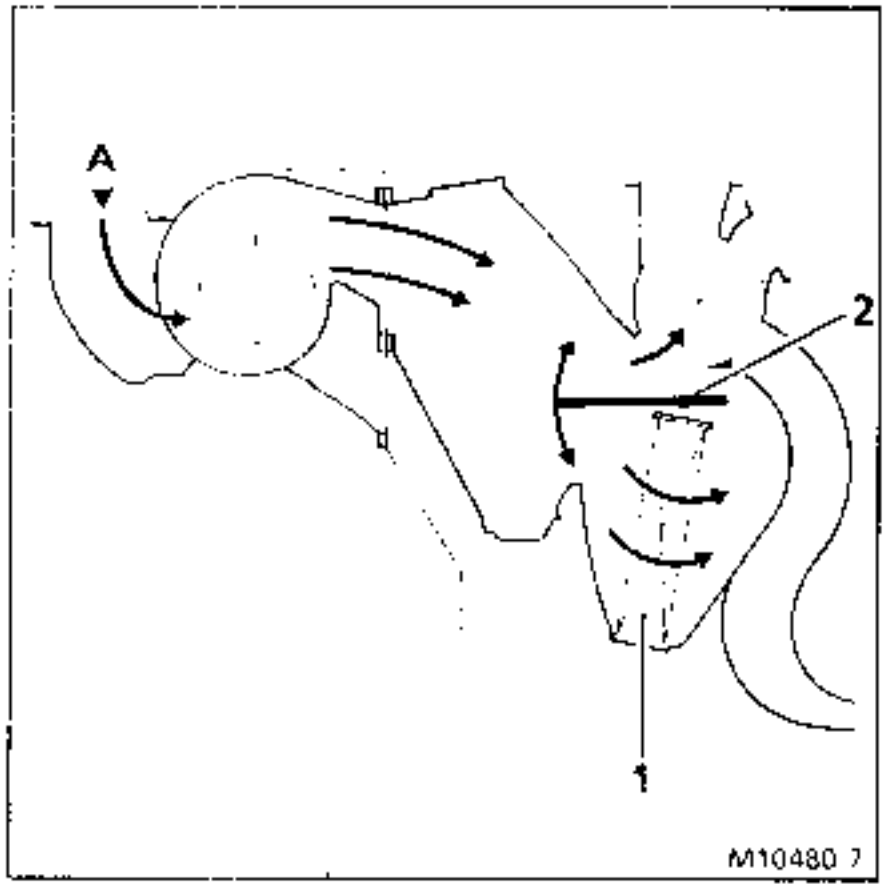
Controls hot air/cold air flap (2).

COLD AIR



HOT AIR



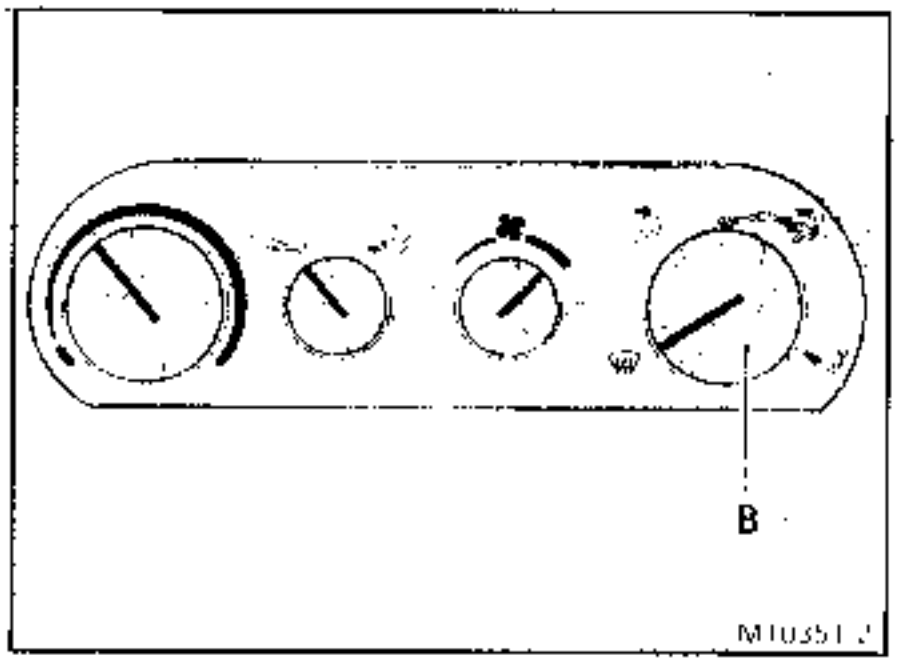


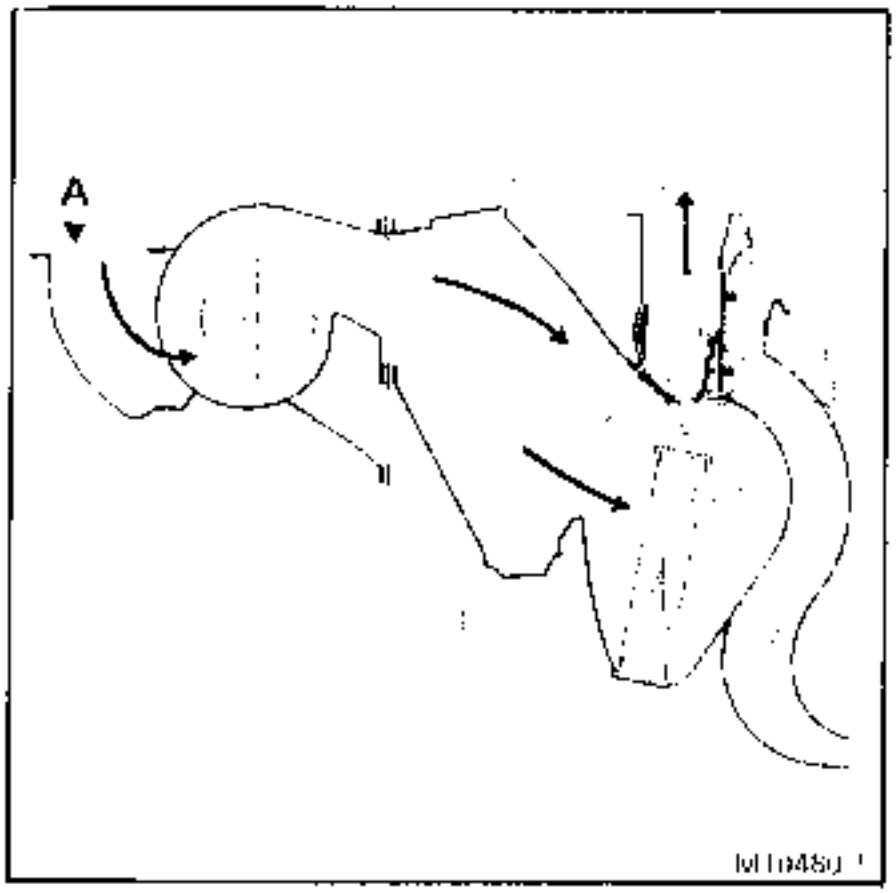
A External air
1 Heater radiator
2 Hot air/cold air flap

AIR DISTRIBUTION KNOB (B)

Controls air distribution drum (1).

WINDSCREEN DEMISTING

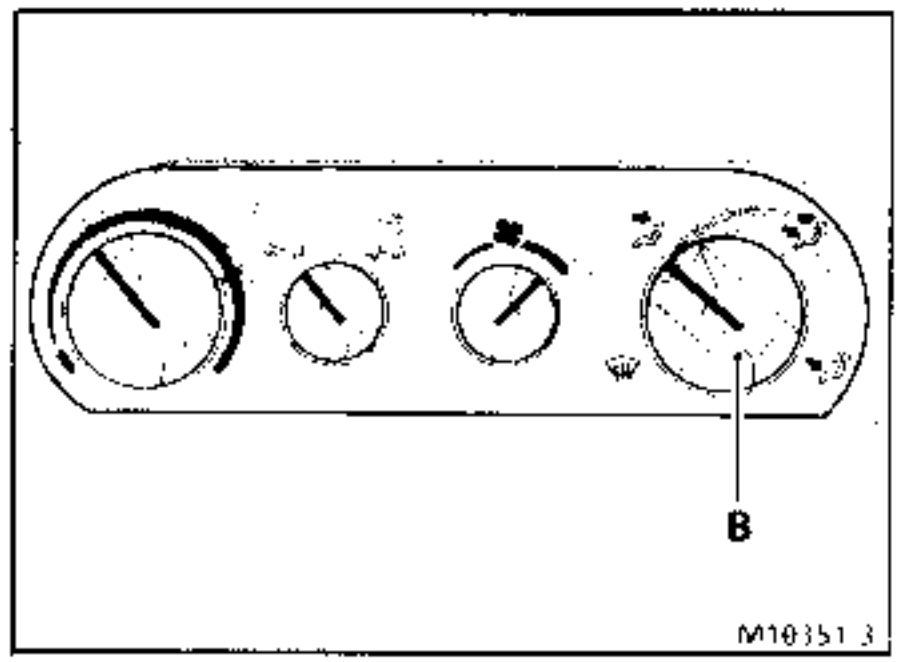


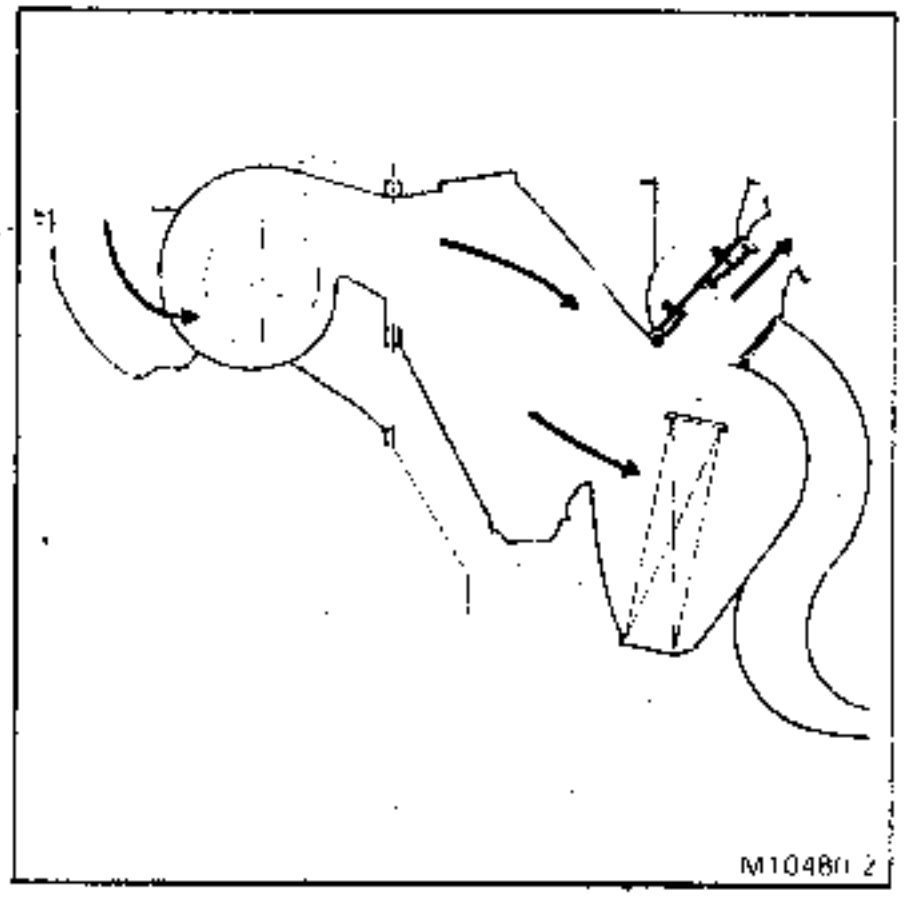


A External air.

The air flow is directed towards the windscreen demisting outlets and front deflectors.

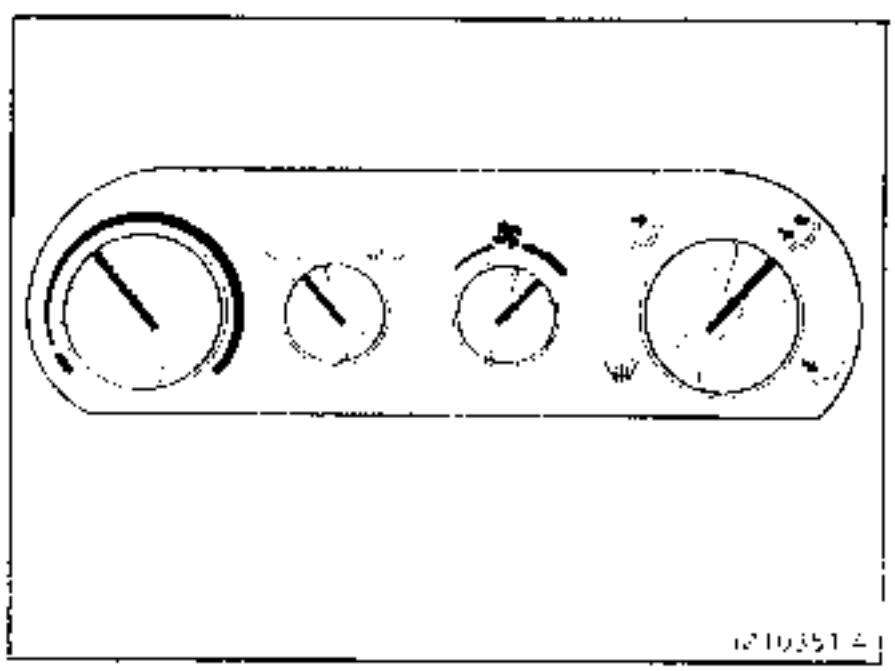
UPPER VENTILATOR VENTILATION





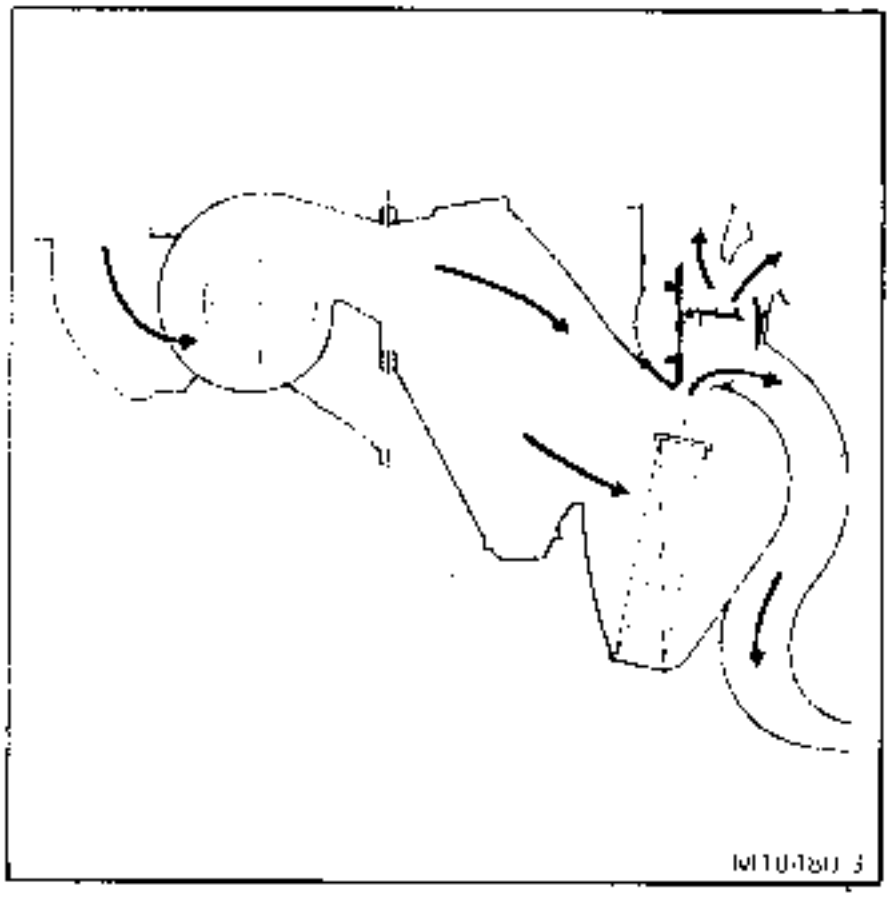
The air flow is directed solely to the dashboard ventilators.

LOWER VENTILATORS
DEMISTING DEFROSTING VENTILATION



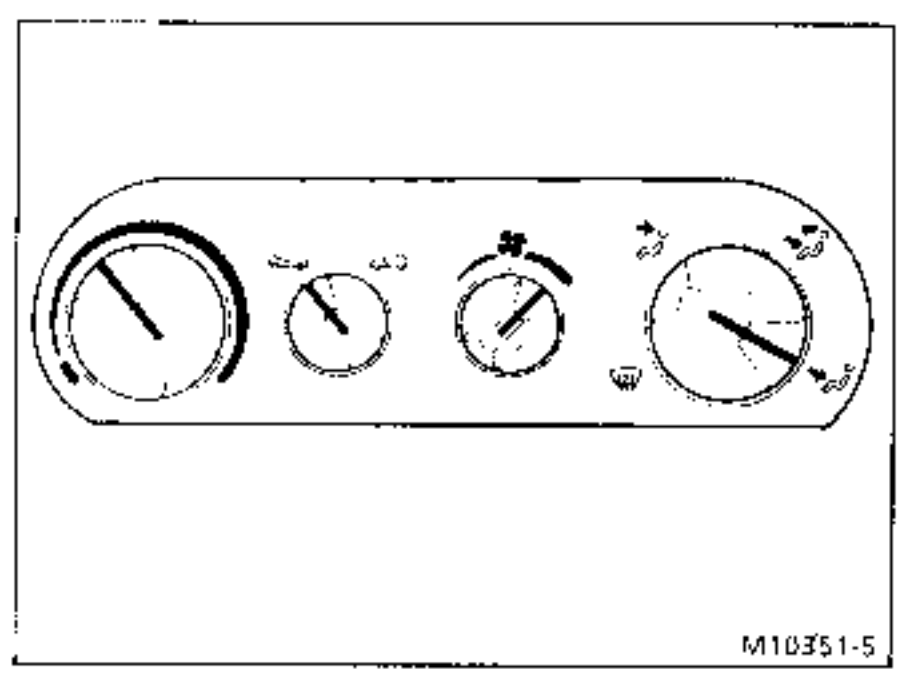
M10351-4

The air flow is distributed between the demisting outlets, dashboard ventilators and feet of the front and rear seat passengers.



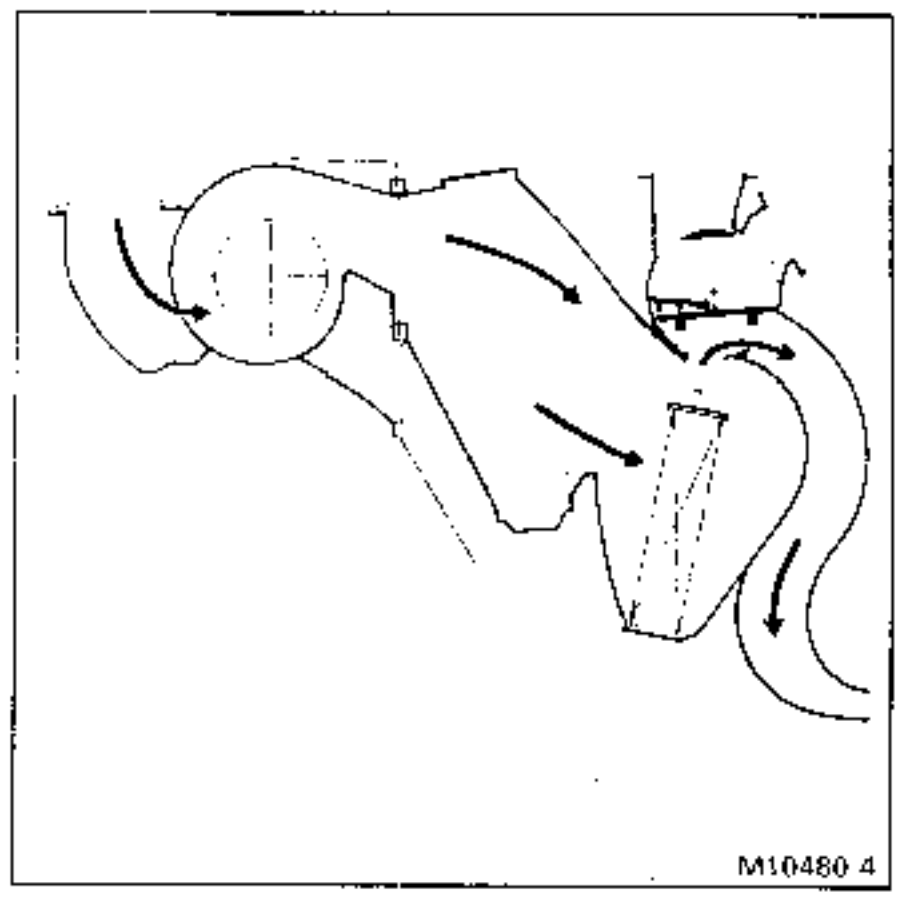
M10480-3

LOWER VENTILATORS VENTILATION



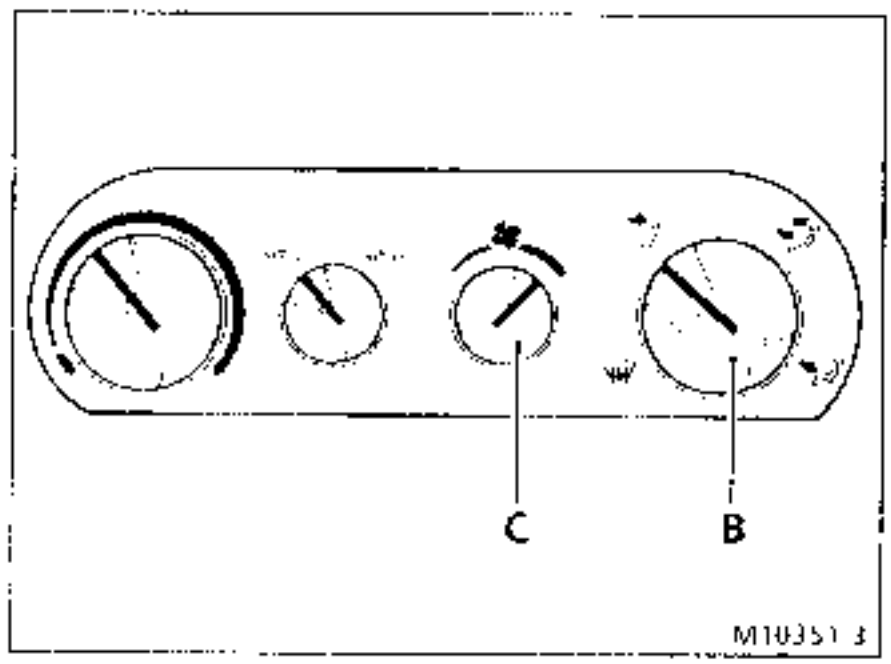
M10351-5

The air flow is directed solely towards the feet of the front and rear seat passengers.



M10480-4

FAN MOTOR CONTROL KNOB (C)



Ventilation is by means of "blown" air, the flow of air circulating in the passenger compartment being determined by the settings of knob (C).

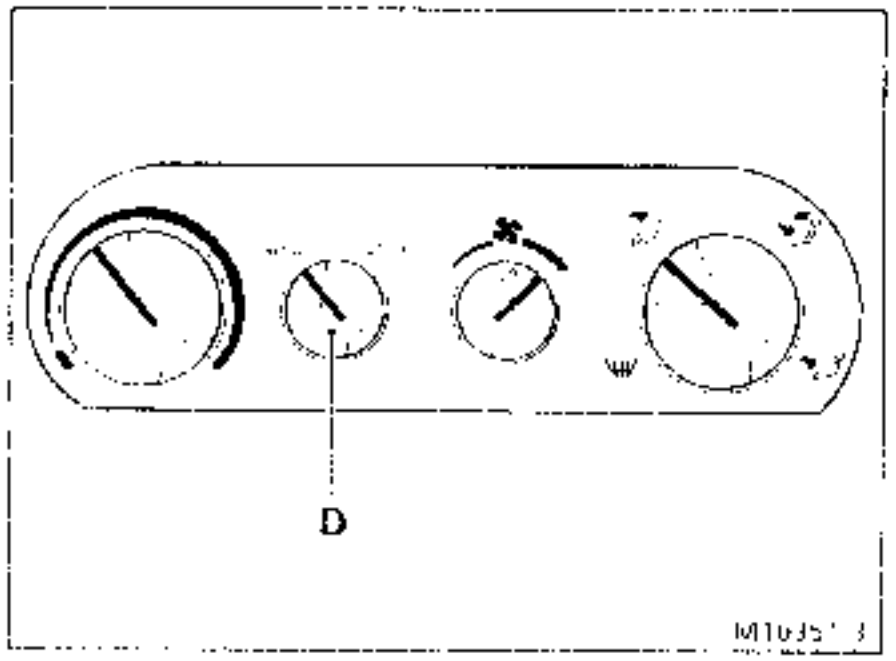
Five settings regulate the air flow.

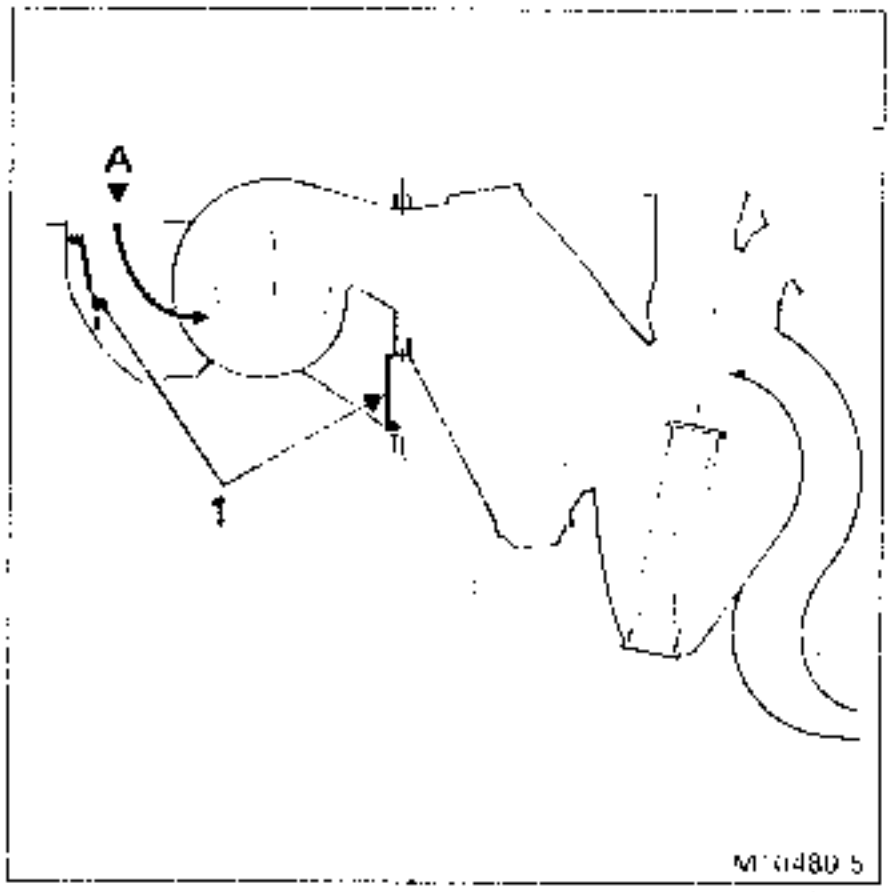
On the third and fourth air flow settings, the air flow temporarily and automatically switches to the second speed when air distribution control (B) is in use.

AIR RECIRCULATING CONTROL KNOB (D)

This knob opens and closes recirculating flaps (1).

EXTERNAL AIR

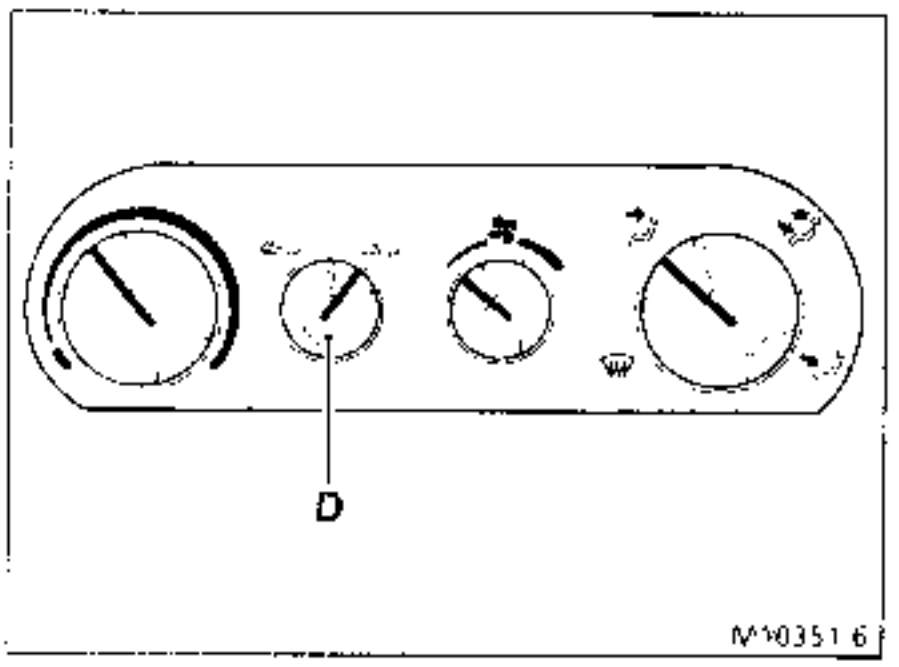


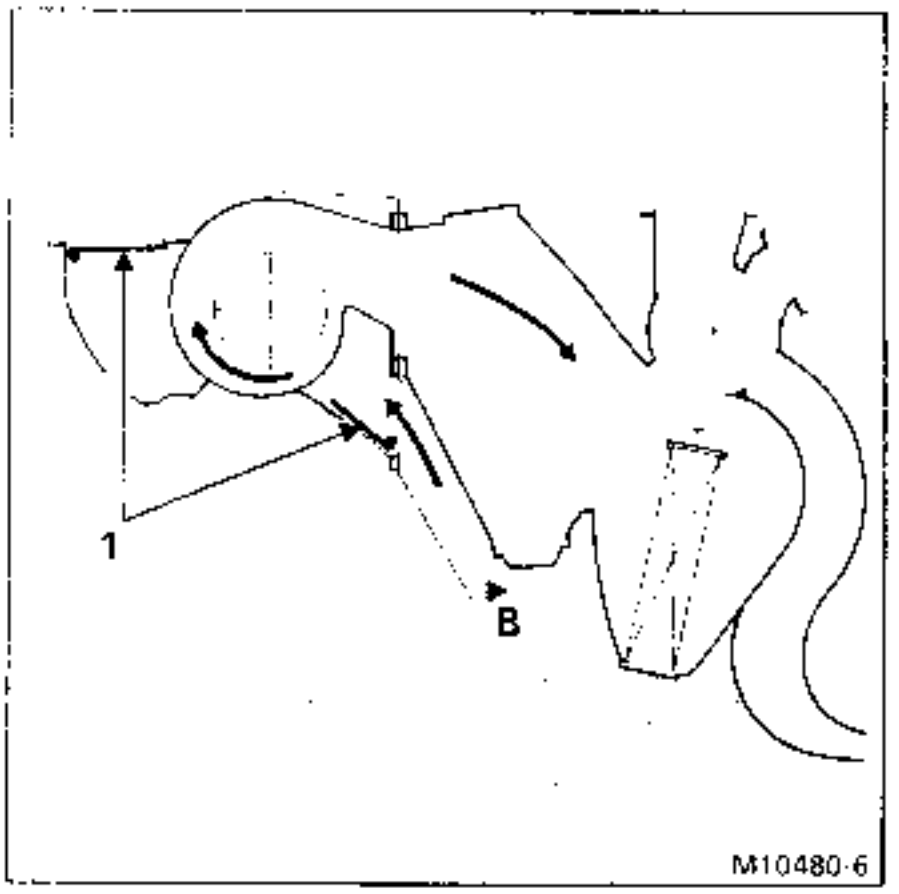


A External air.

Recirculating flaps (1), controlled via a cable by means of knob (D), enable all the air to be admitted from the exterior on this setting.

PASSENGER COMPARTMENT AIR

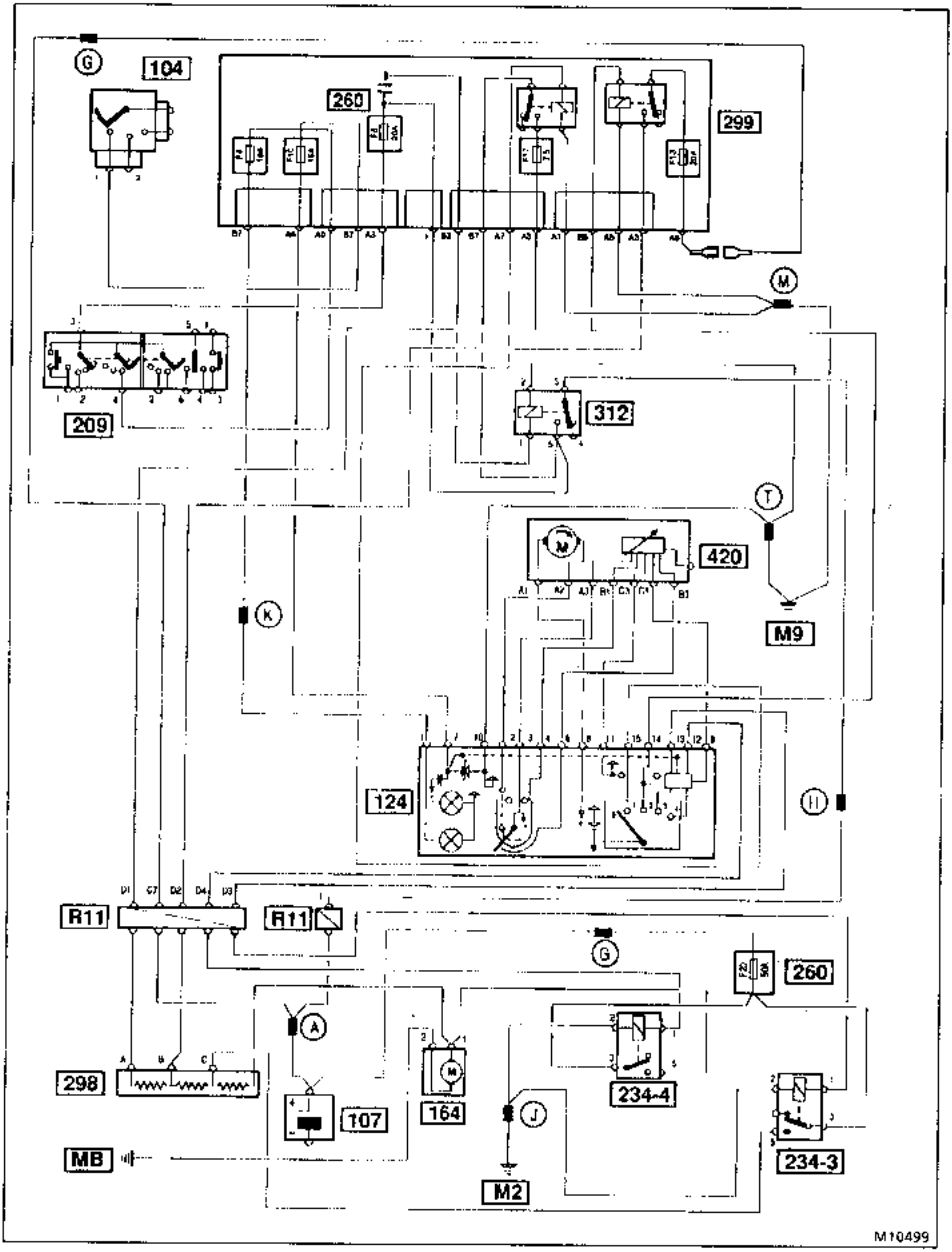




B Recirculated air.

On this setting, flaps (1) enable the air in the passenger compartment to be recirculated and the compartment to be insulated from the external atmosphere irrespective of the settings of the other controls.

Recirculation of hot air enables the increase in temperature of the air in the passenger compartment to be accelerated.

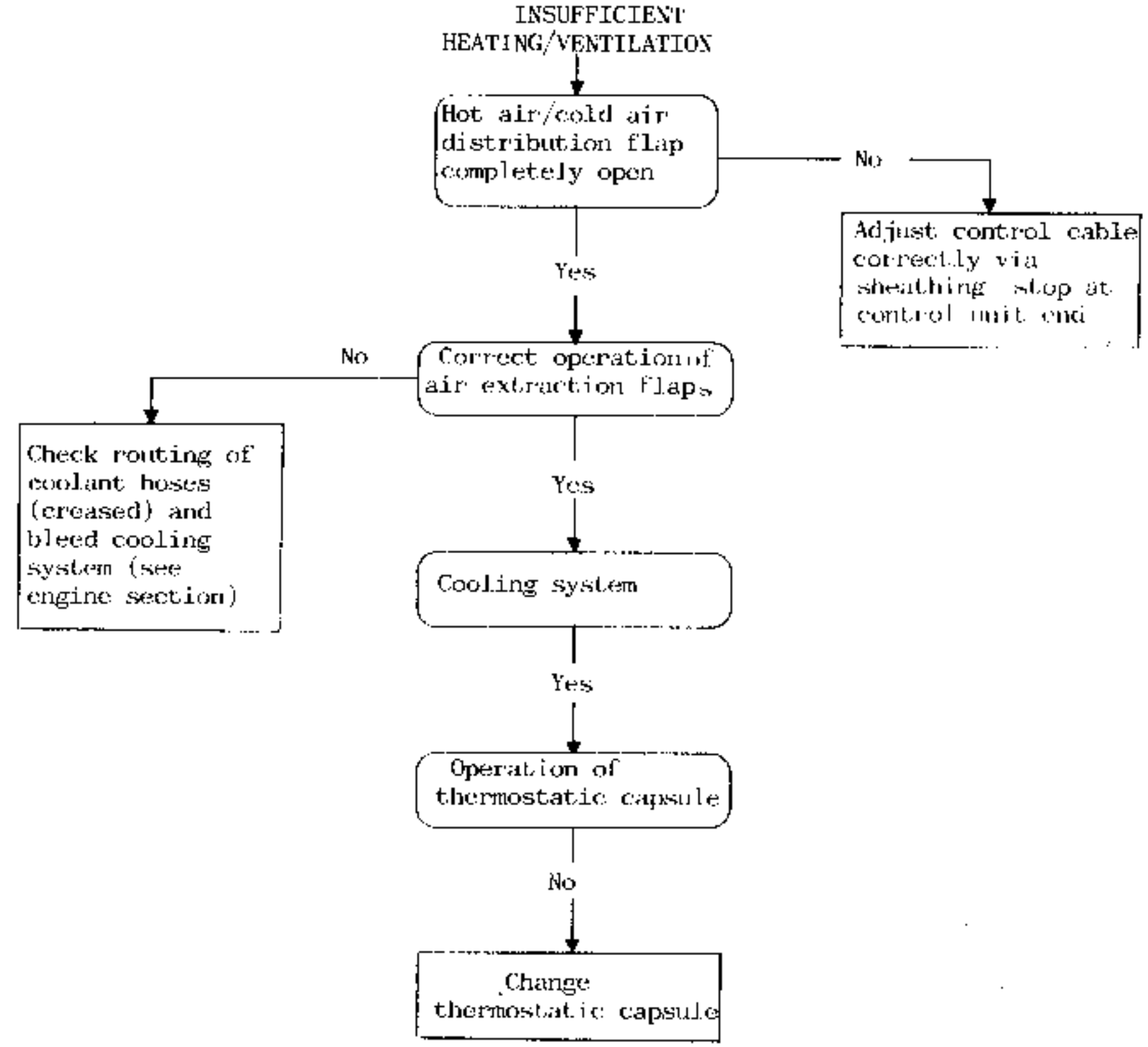


NOTE: This diagram is valid for all X63 vehicles but may be modified depending on new developments made to the vehicle.

104	Ignition switch
107	Battery
124	Heater control panel
164	Heater fan motor assembly
209	Combined switch
234-1	Ventilation 1st speed relay
234-2	Ventilation 2nd speed relay
234-3	Ventilation 3rd speed relay
234-4	Ventilation 4th speed relay
260	Fuse box
298	Heater device resistor
299	Accessories plate
312	Circuit breaker relay
420	Distribution drum
R11	Junction: dashboard harness/ engine compartment harness
M1	Front righthand earth
M9	Front righthand pillar earth
M8	Front lefthand earth

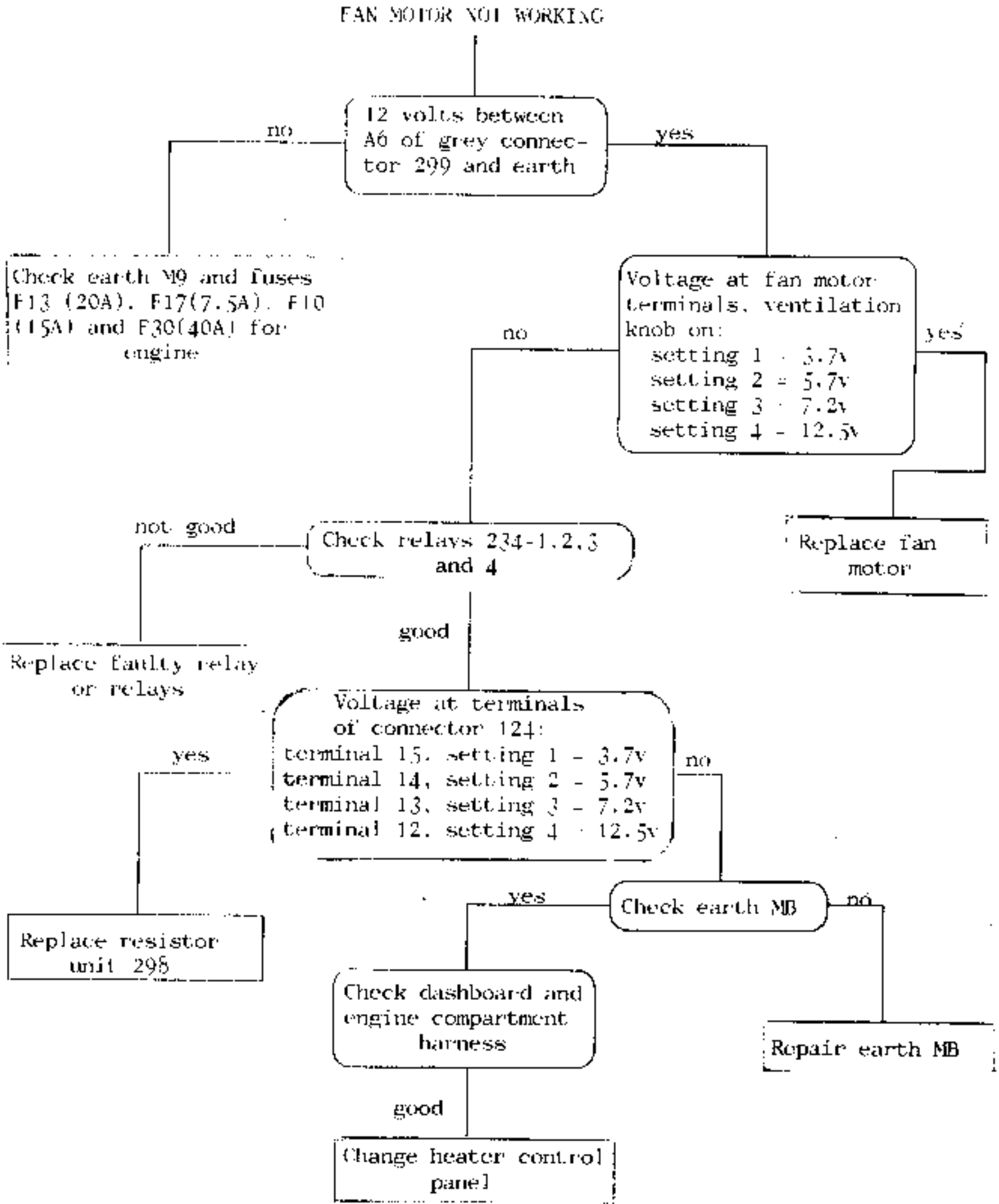
Checks:

Operations to be performed:



Checks:

Operations to be performed:



ESSENTIAL SPECIAL TOOLING	
Mot. 453-01	Hose clamps
M.S. 583	Hose clamps

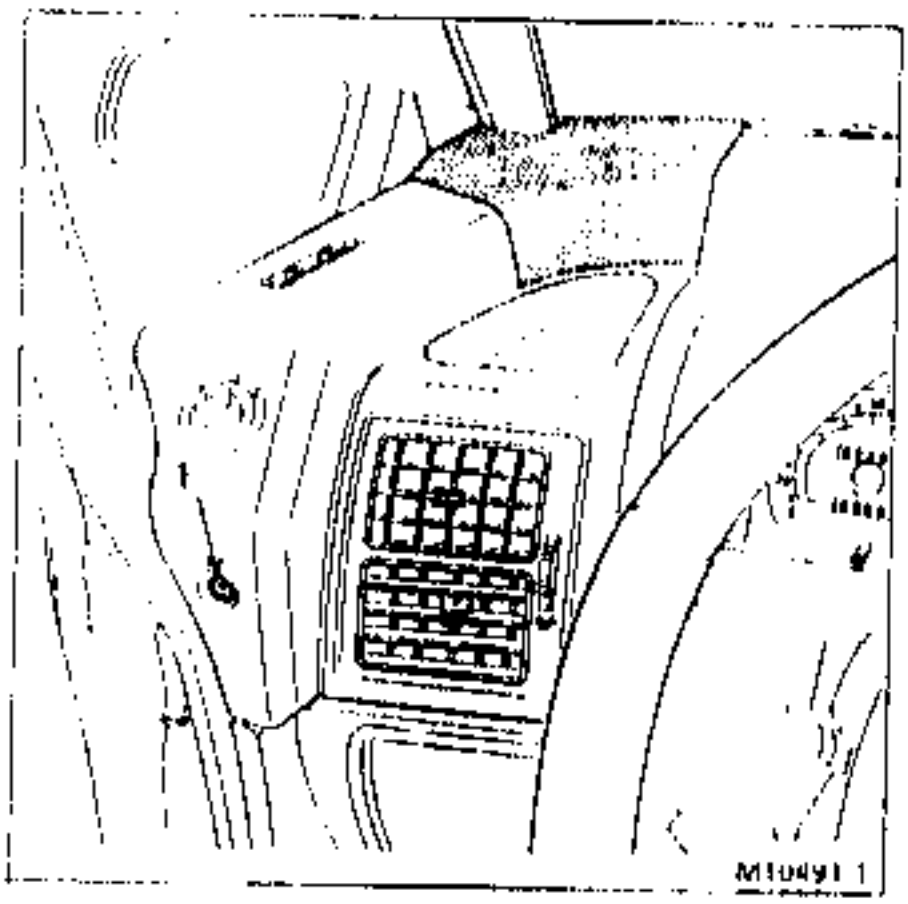
REMOVAL

The dashboard must be removed in order to take out the distributor unit.

Disconnect the battery.

Remove:

- steering wheel;
- the dashboard crossheads: unscrew screw (1) on each side then pull the dashboard horizontally towards the rear of the vehicle, unclip the side ventilator end pieces, disconnect the connector from the electric rear view mirror control or unscrew the manual rear view mirror control (under the gaiter).

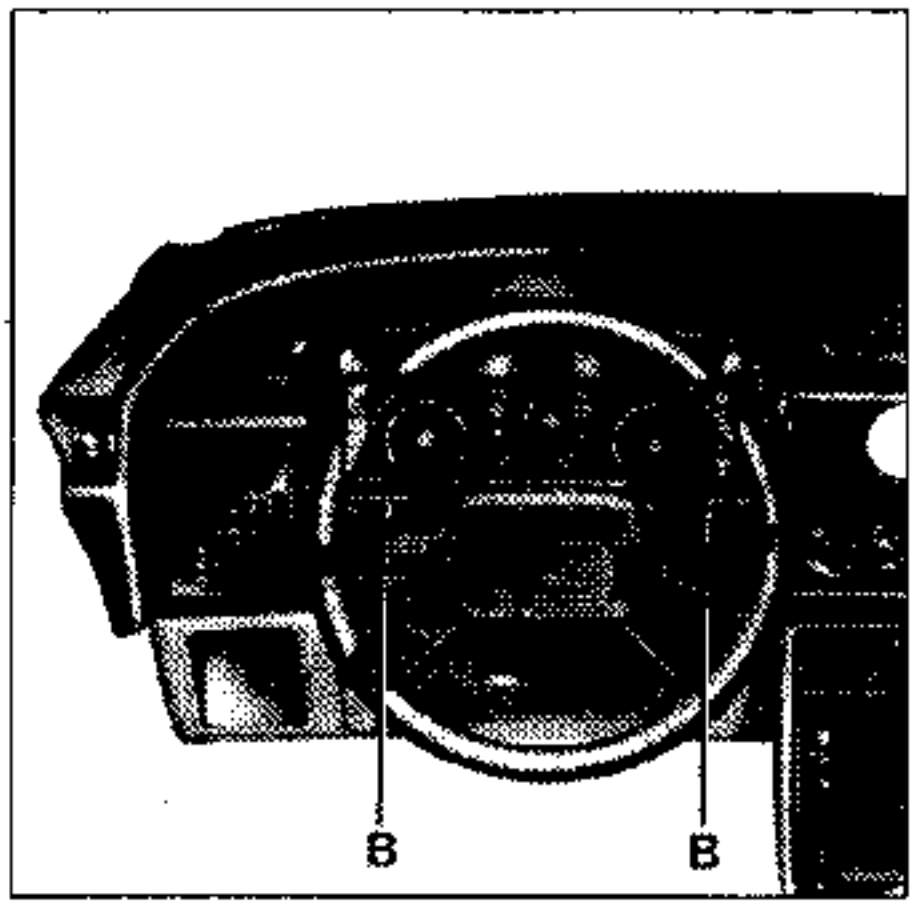


Unclip the front speaker grilles.

Remove:

- the speakers (if fitted);

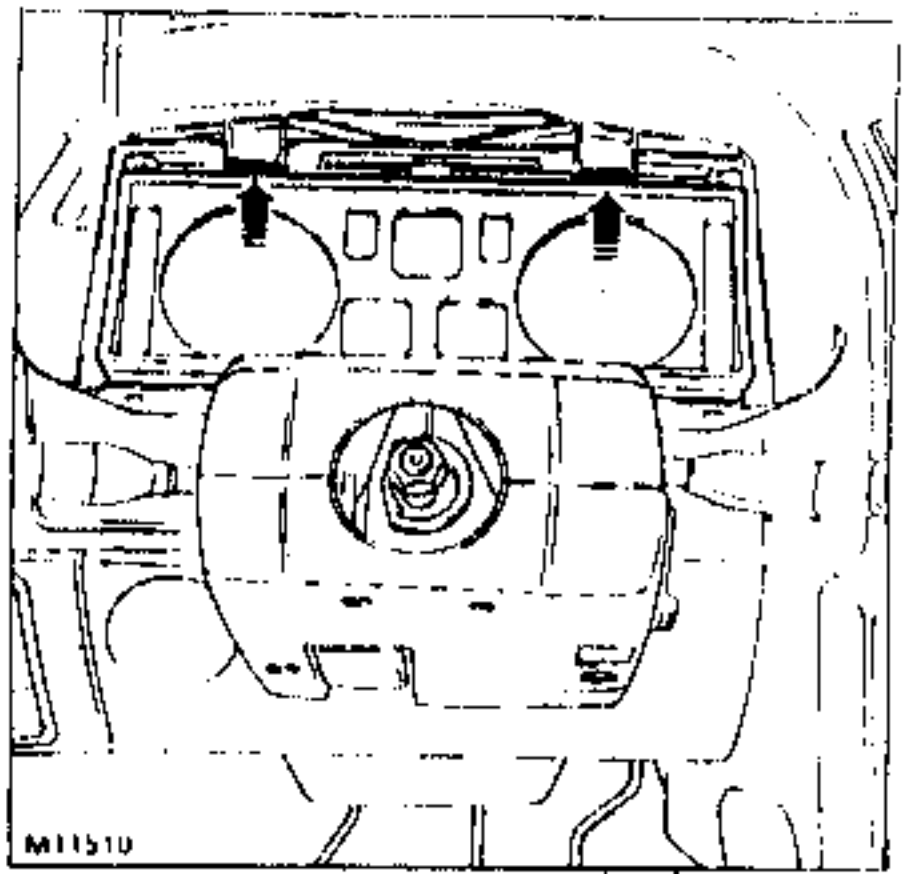
the casing from the instrument panel assembly: unscrew the two screws (B);



Disconnect:

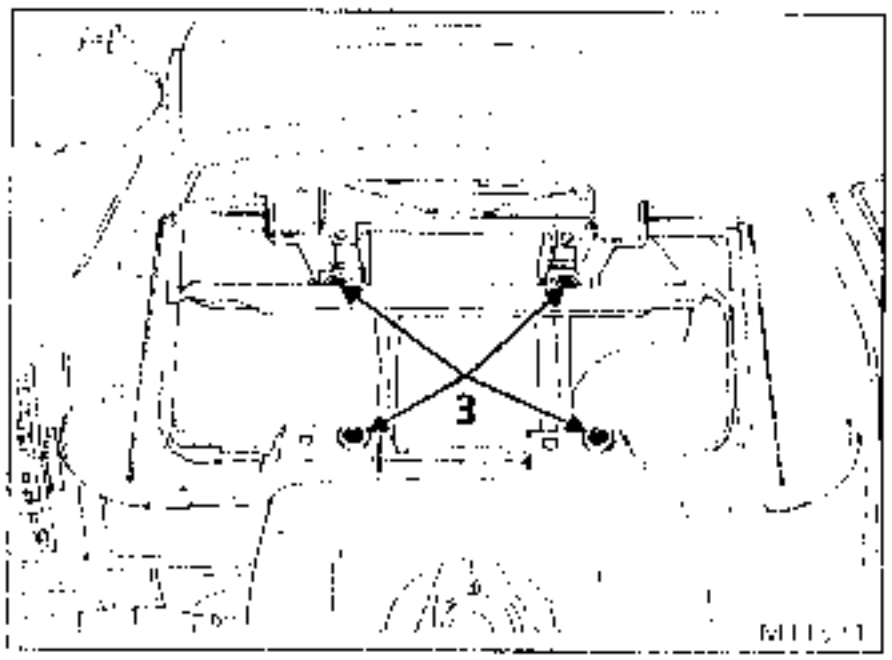
- the speedometer cable;
- the connectors from the assembly;
- the turbo pressure hose (depending on version).

Raise the assembly to disengage the three clips, then pull it towards the inside of the vehicle.

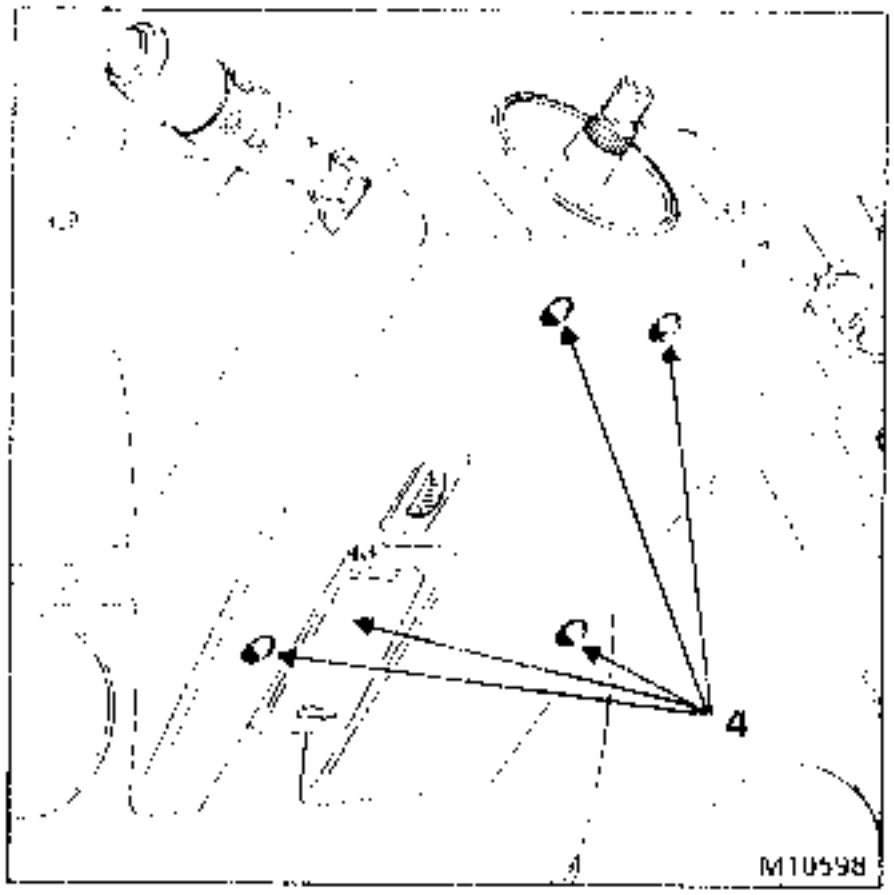


Remove:

the assembly mounting: unscrew the four bolts (3);



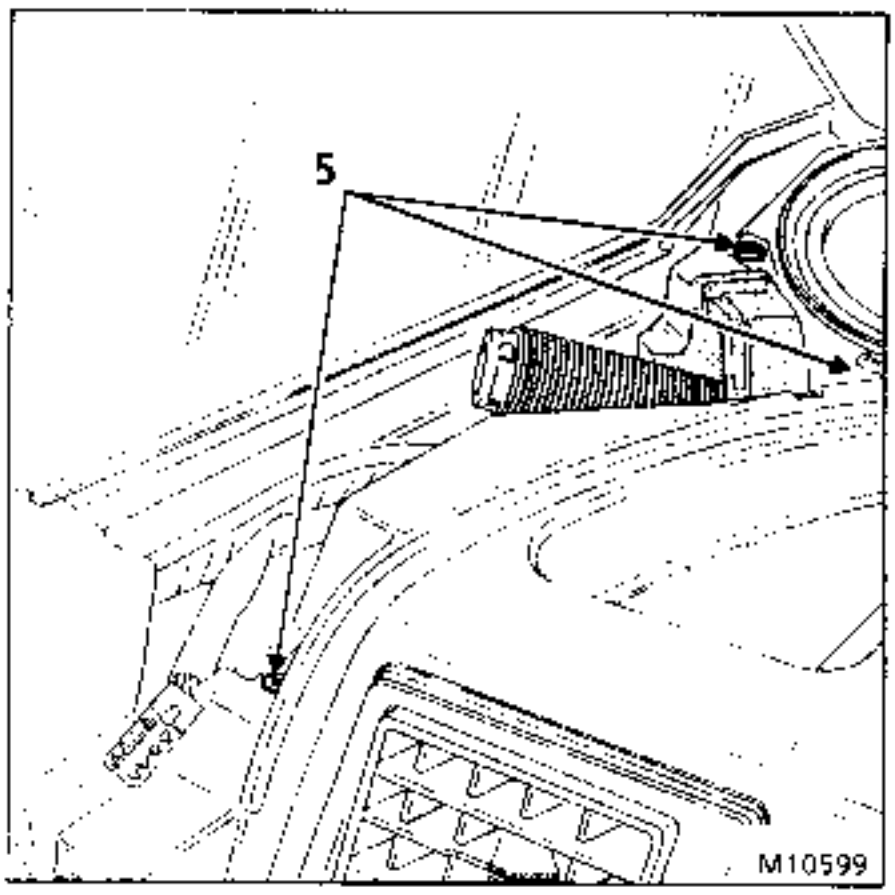
- the half-shell under the steering wheel: unscrew the five bolts (4).



Slightly slacken the bolt mounting the radio satellite (depending on version).

Remove:

- the half-shell on the steering wheel;
- the upper part of the dashboard: unscrew the three bolts (5) on each side.



Raise the upper part of the dashboard, unclip the heater control panel by pushing on its front face then pull the upper part towards the inside of the vehicle.

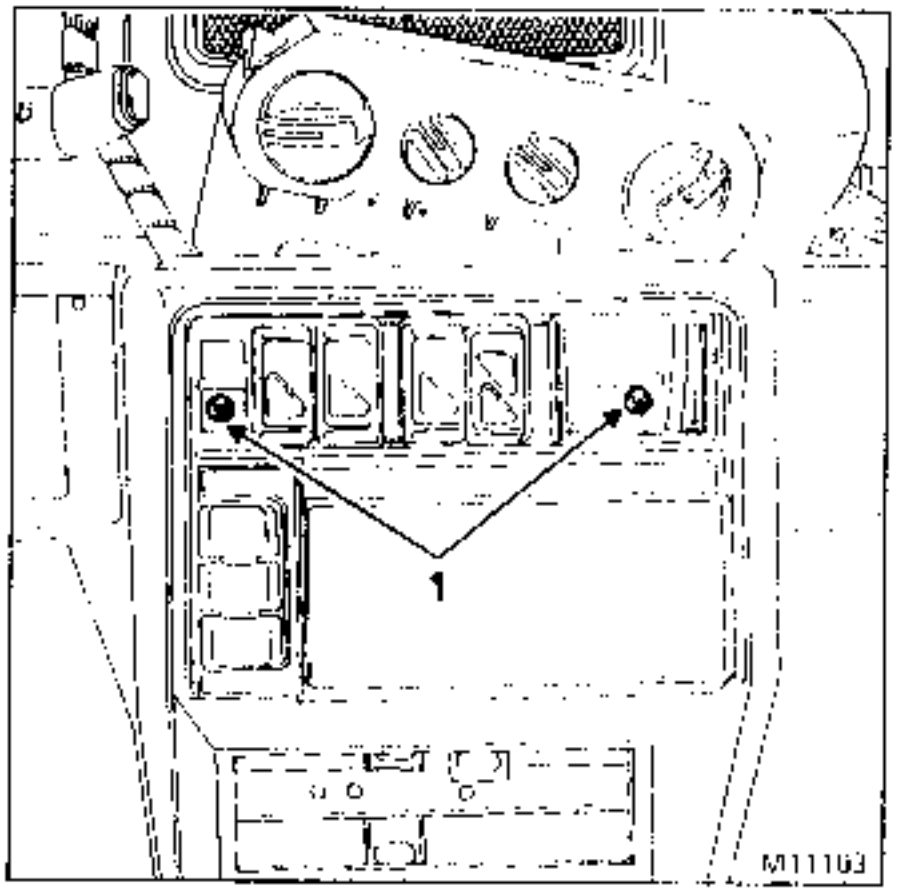
Remove:

- the lower part of the dashboard (when the upper part has been removed);
- the radio, if fitted.

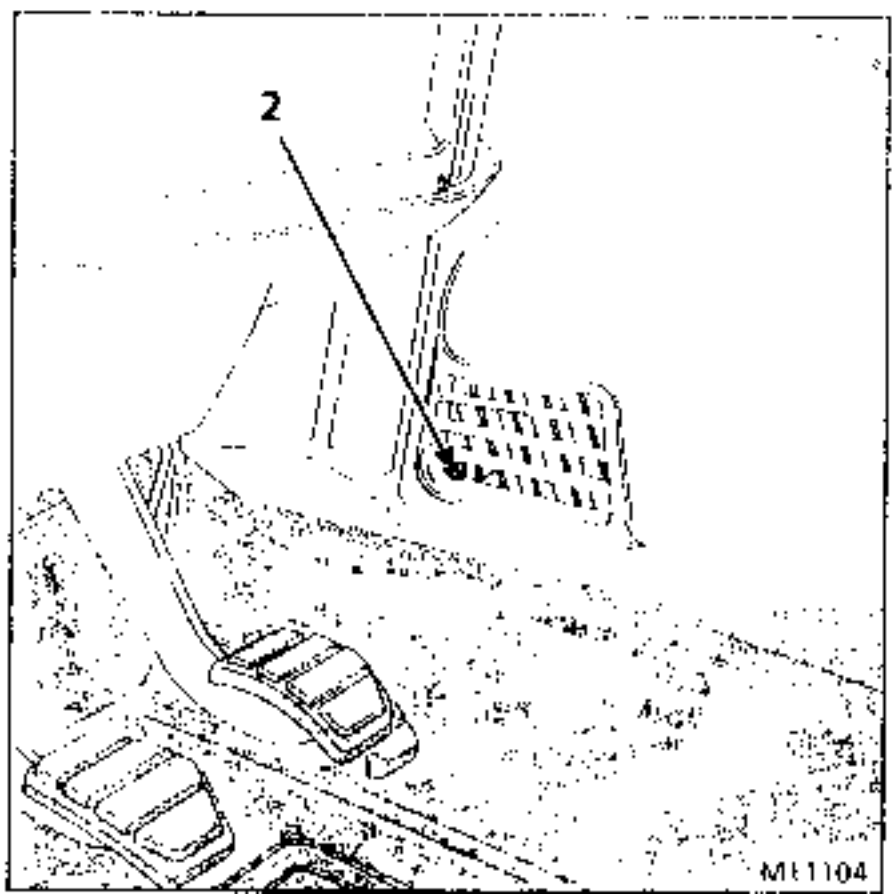
Disconnect the connectors from:

- the console switches;
- the longitudinal sensor (ABS 4x4)
- the handbrake lead;
- the glove compartment switch and light.

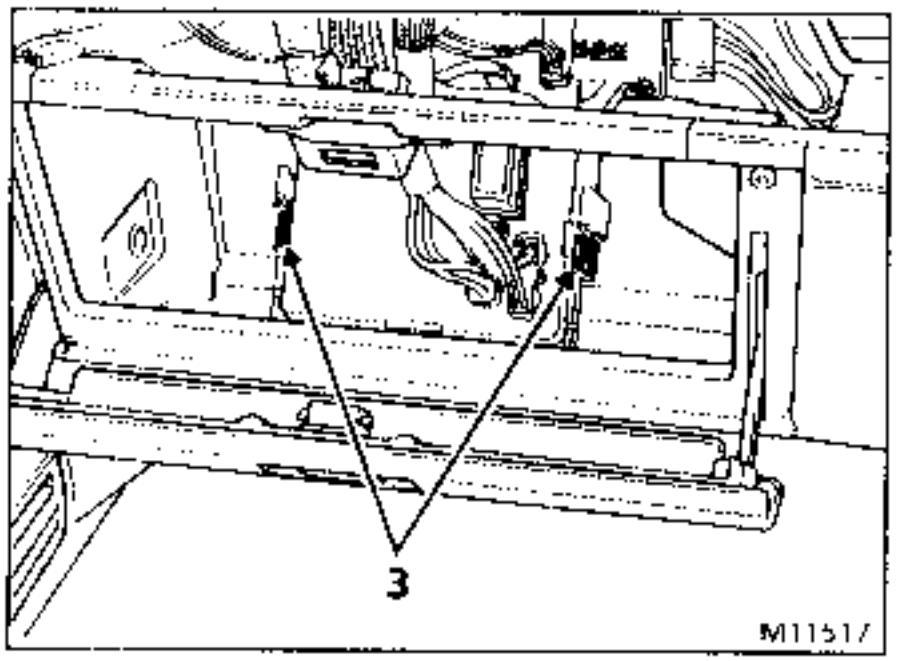
Unscrew the two bolts (1) securing the rear of the console.



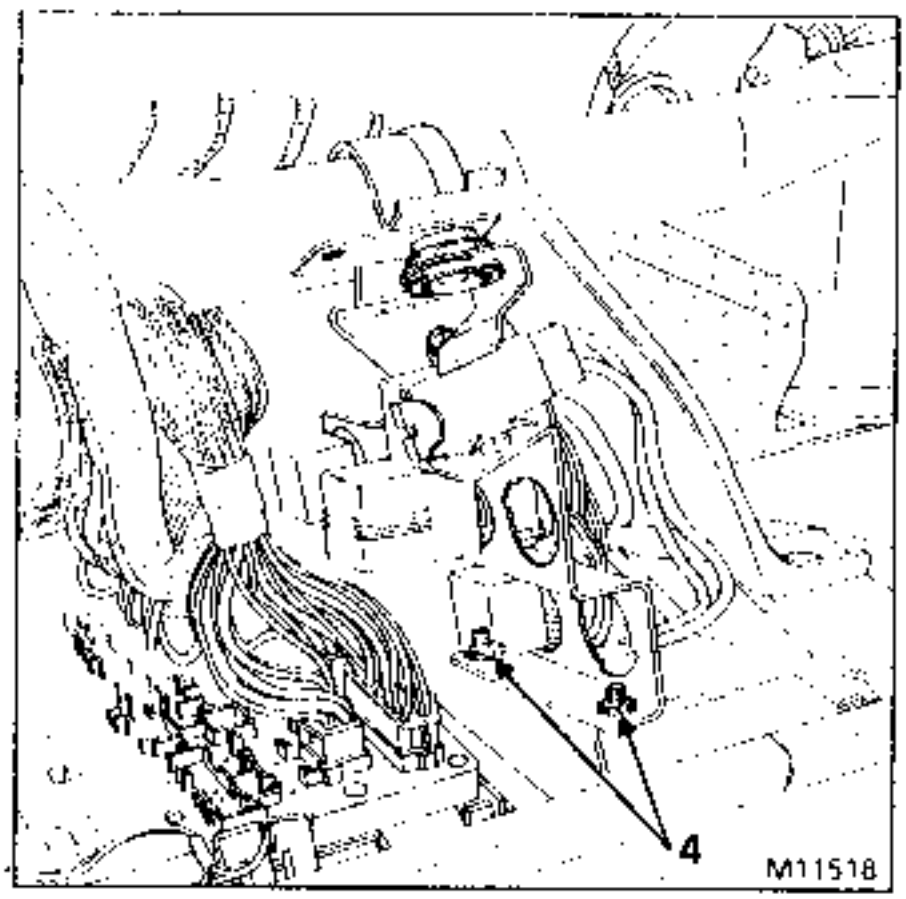
On each side unscrew bolt (2) securing the console at the side.



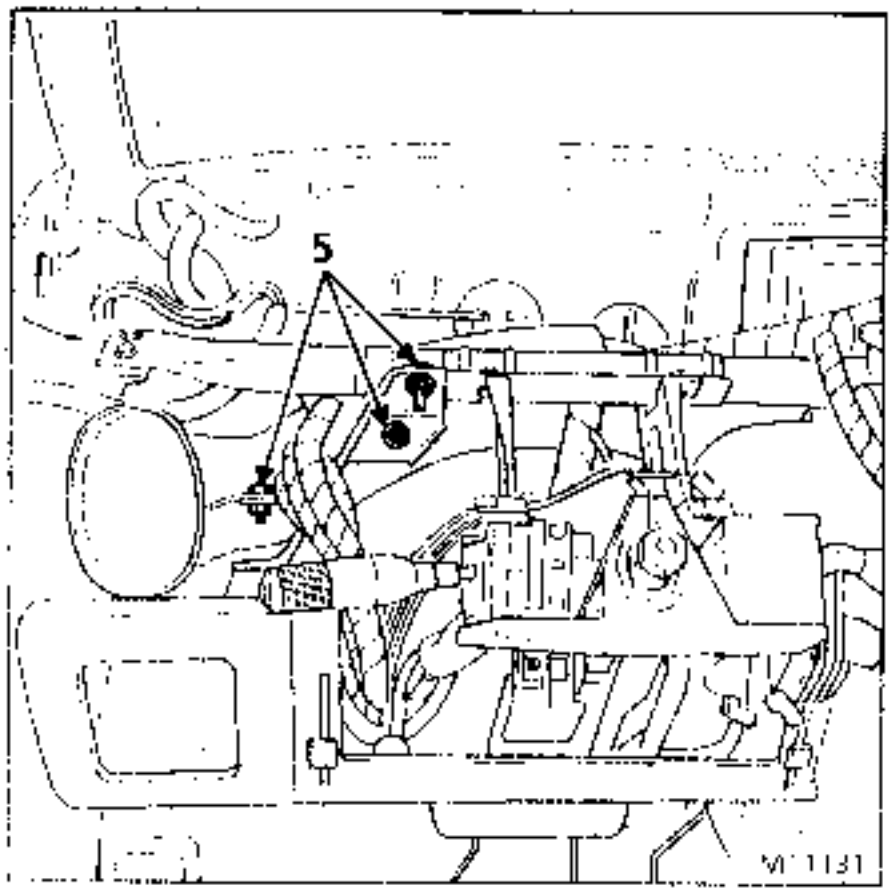
Remove the accessories plate by pressing on tabs (3).



Separate the relay mounting plate from the lower part of the dashboard by unscrewing the two bolts (4).

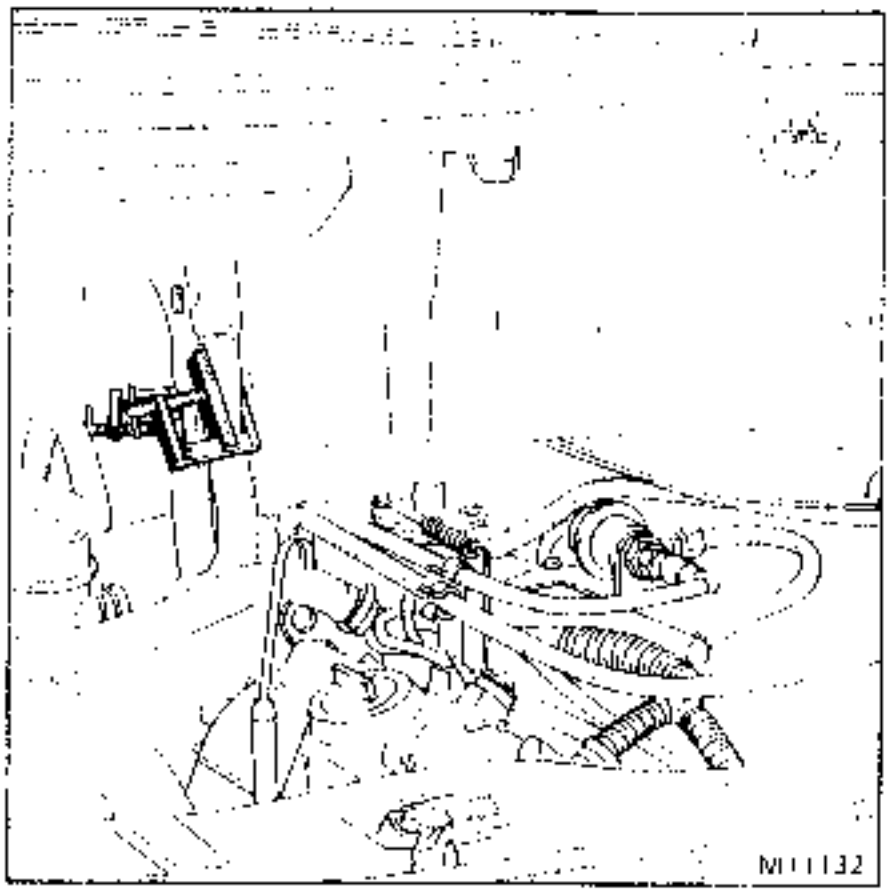


On each side, unscrew the three bolts (5) securing the dashboard to the cross member.



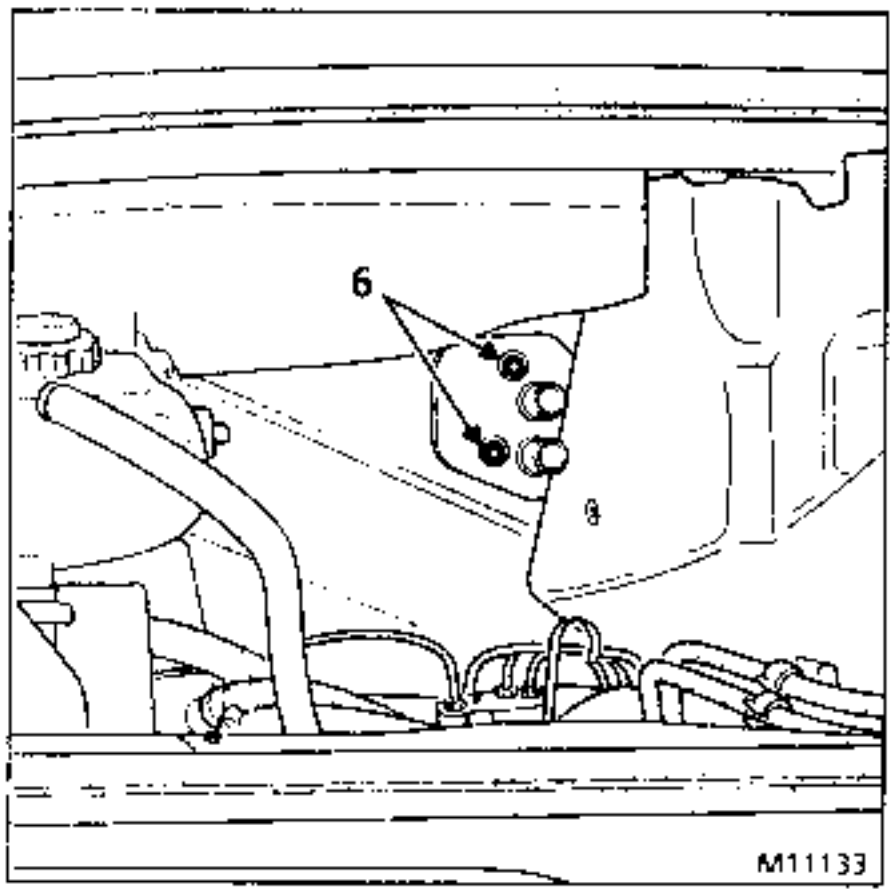
Gently pull the lower part of the dashboard towards the inside of the vehicle.

Fit in place hose clamps Mot.453 01 or M.S.563.

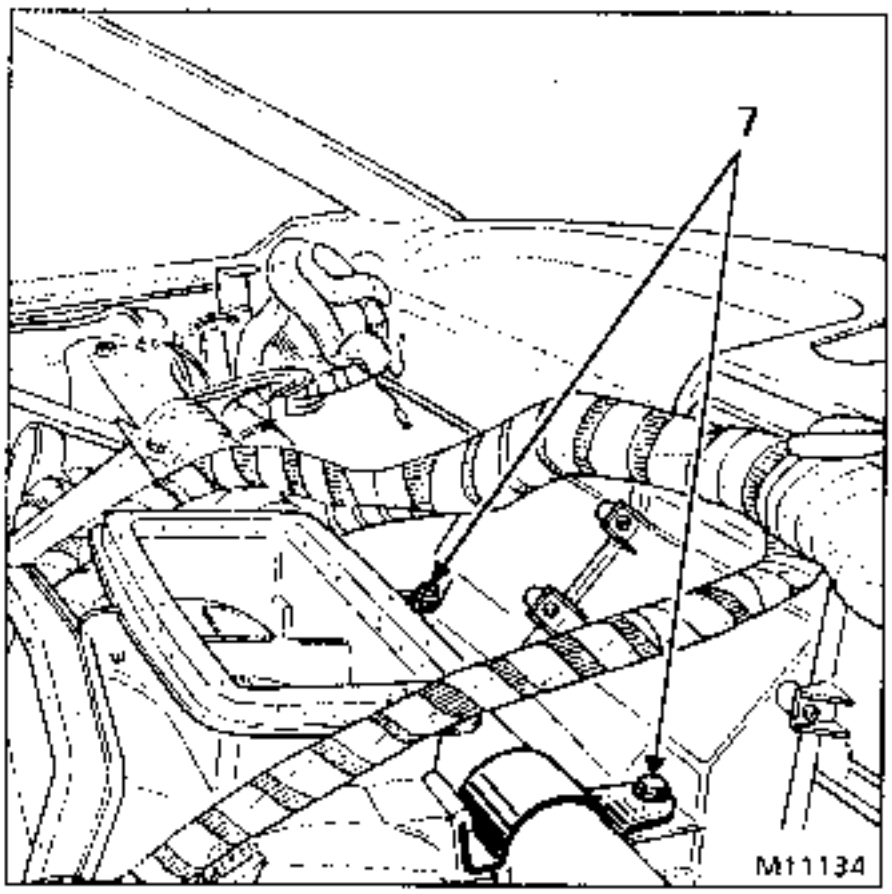


Remove the two feed hoses from the radiator after slackening their respective clips.

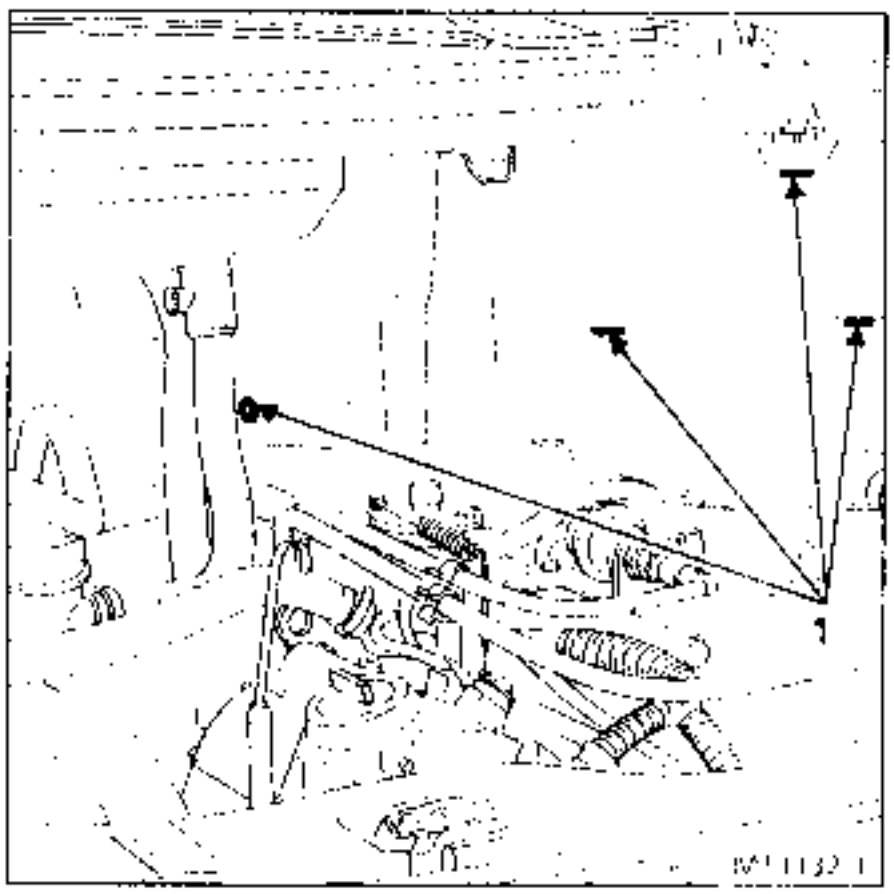
Slacken the two nuts (6) then remove the plate holding the hoses to the engine compartment upper panel.



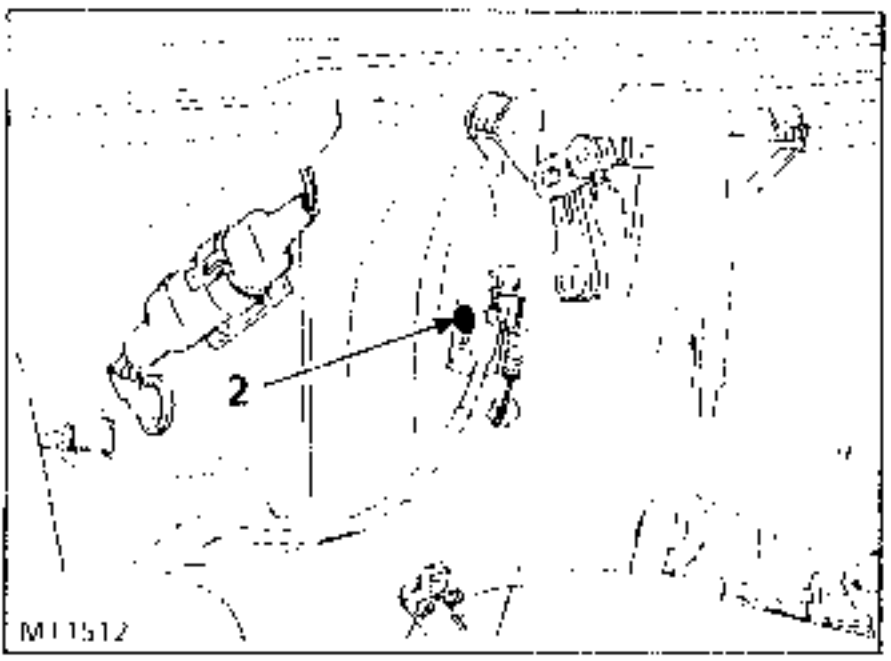
Remove the two carriers securing the cross member to the distributor unit by unscrewing the two bolts (7).



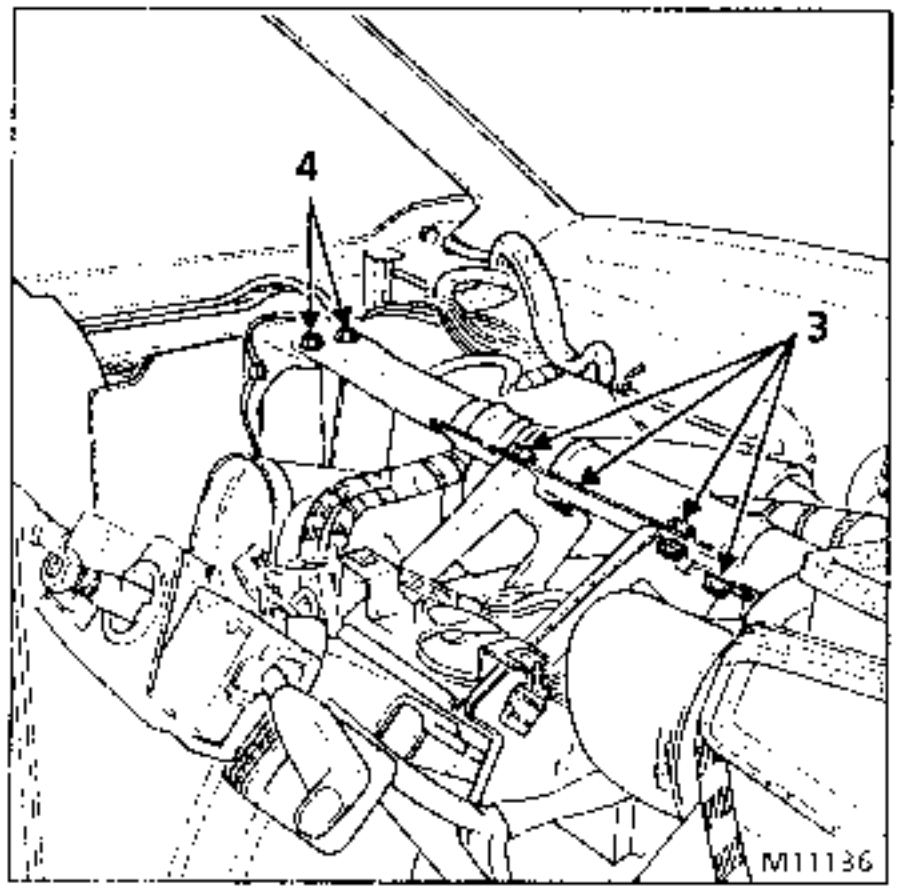
Remove the fan soundproofing by unscrewing the five nuts (1).



Separate the recirculating flap control cable then unscrew cable clamp (2).

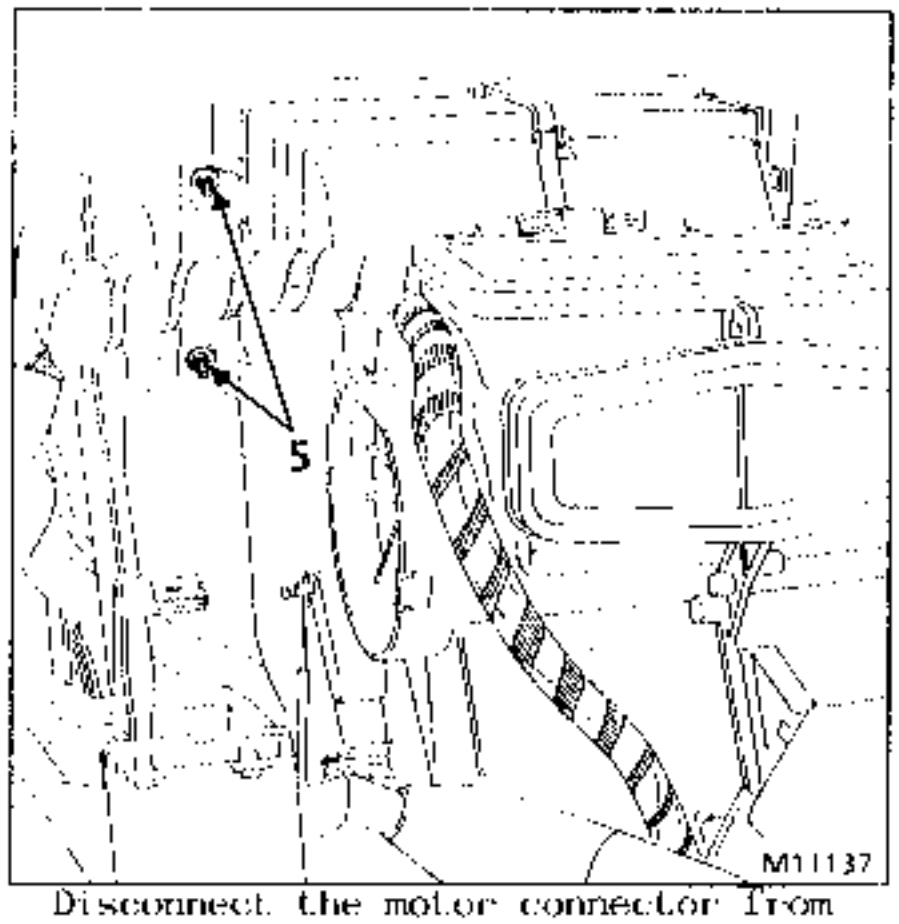


Unscrew the four bolts (3) securing the pedal assembly mounting and the two bolts (4) for the cross member on each side.



Remove the cross member then the two ventilations ducts.

Unscrew the four nuts (5) securing the distributor unit to the bulk head.



Disconnect the motor connector from the air distributor drum then separate the distributor unit from the bulk head studs.

Remove the distributor unit and re-circulating flap control cable by separating it from the air duct to the ground.

REFITTING

Ensure that the radiator feed hose retaining plate seal is correctly fitted to the bulk head.

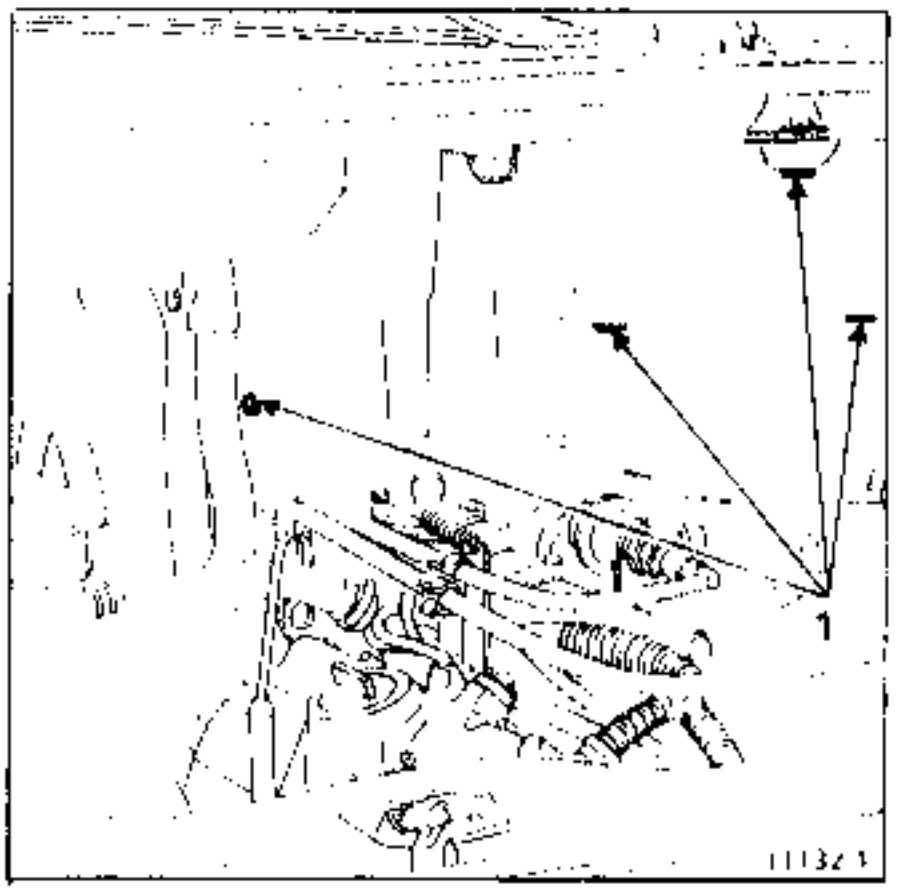
Top-up and bleed the engine cooling system (see section 19).

Adjust the recirculating flap control cable (see relevant section) before refitting the heating fan motor assembly soundproofing.

REMOVAL

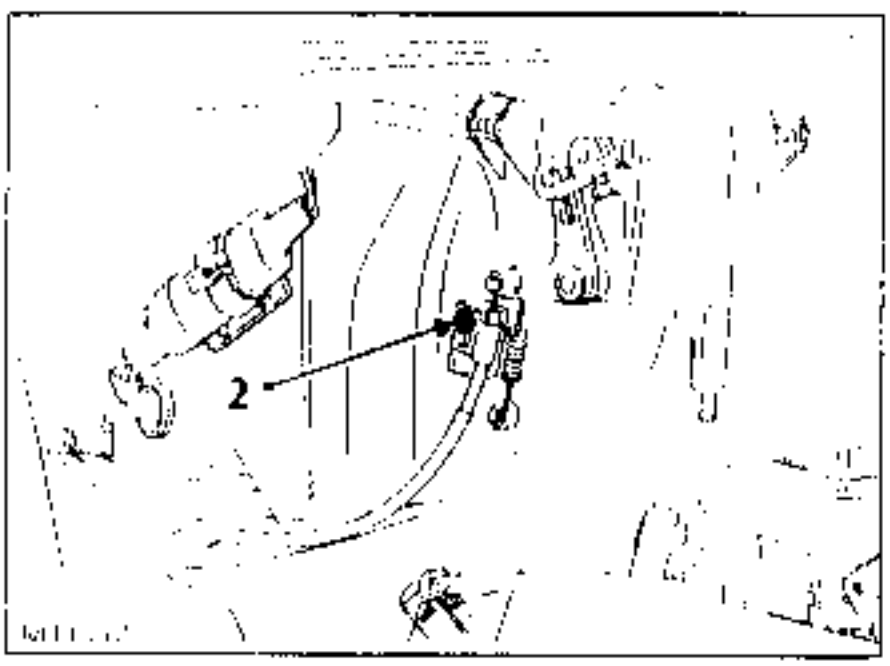
Disconnect the battery.

Remove the soundproofing by unscrewing the five nuts (1).

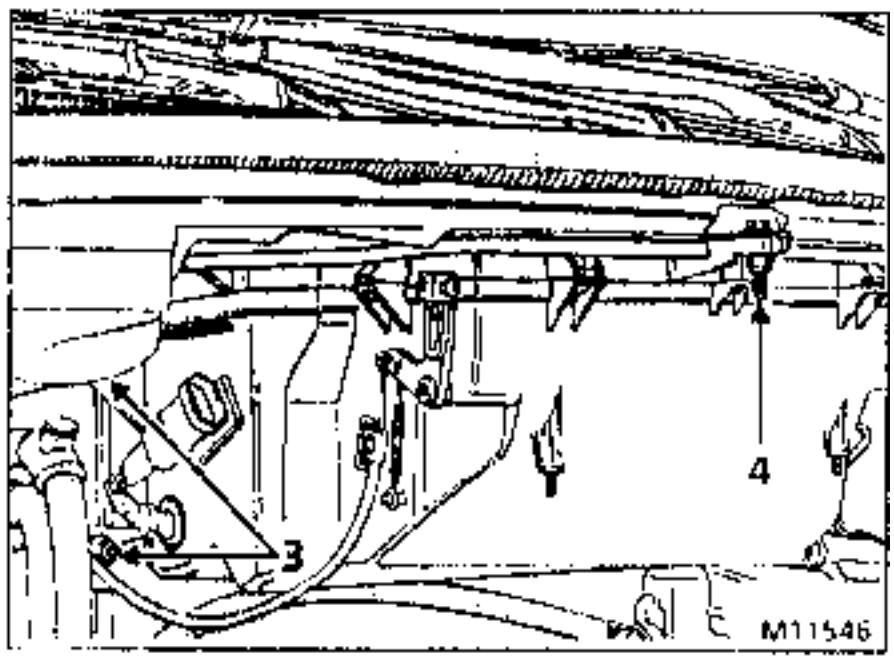


From the ventilation unit, disconnect the ventilation motor and resistor connectors.

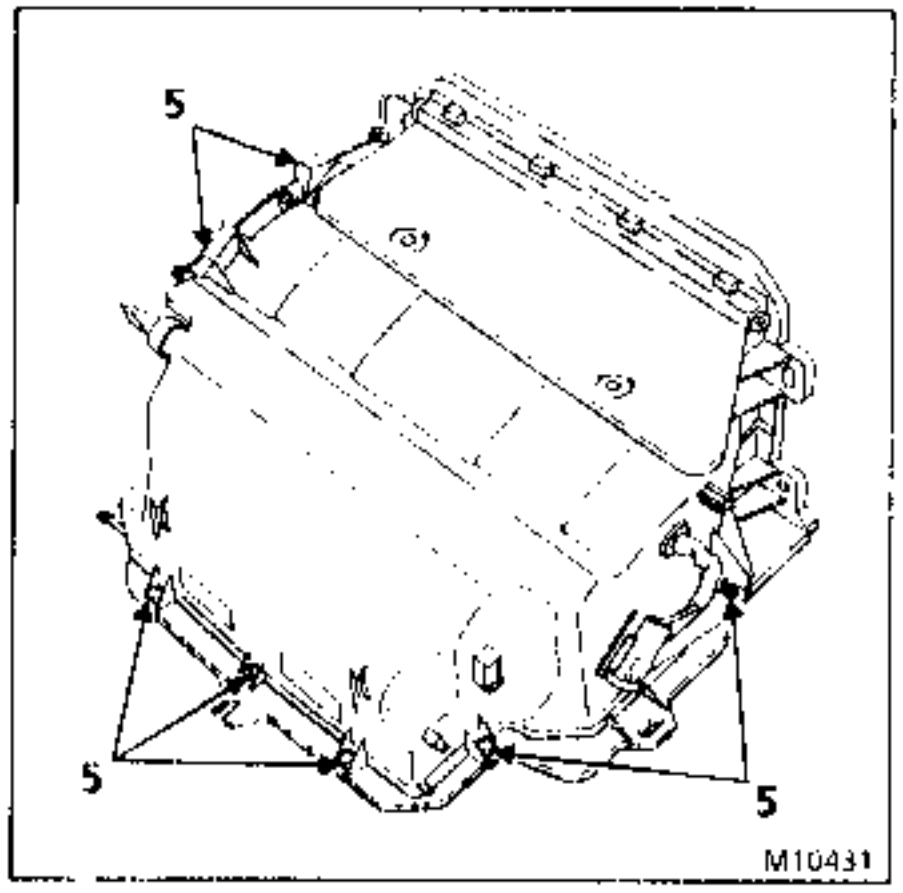
Separate the recirculating flap control cable then unscrew cable clamp (2).



Slacken the four nuts (3) and bolt (4) then take out the fan motor.

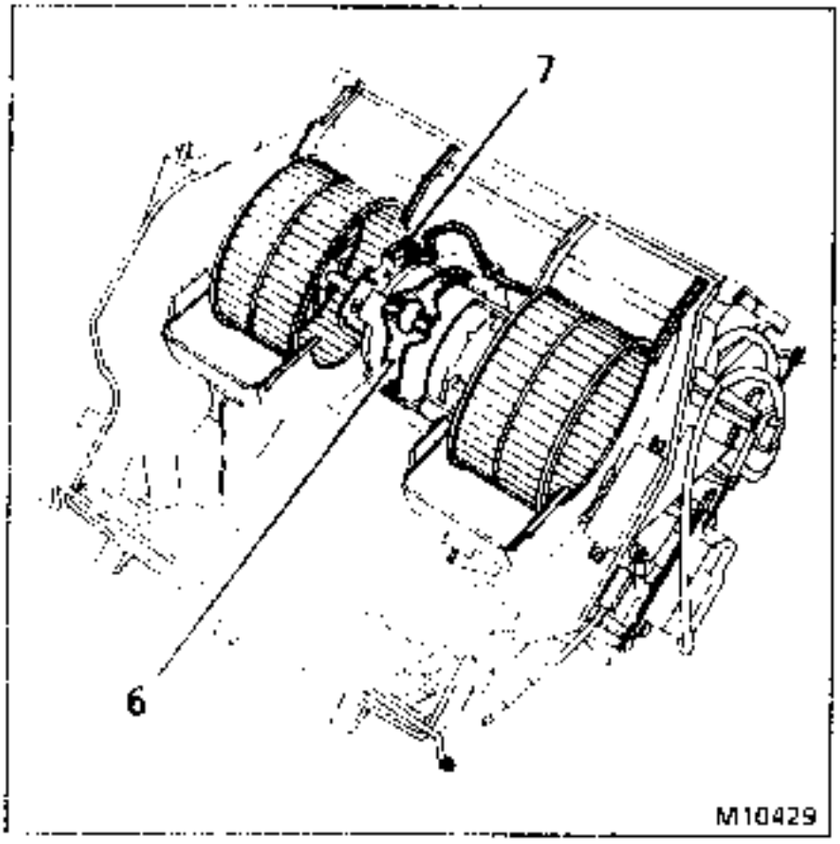


Open the two half-shells, after first unscrewing the seven bolts (5) around the casing.



To take out the motor, unclip clip (6).

Disconnect the two motor feed terminals (7).



REFITTING

Position the motor correctly in its housing so that its feed terminal (7) can be secured without stress.

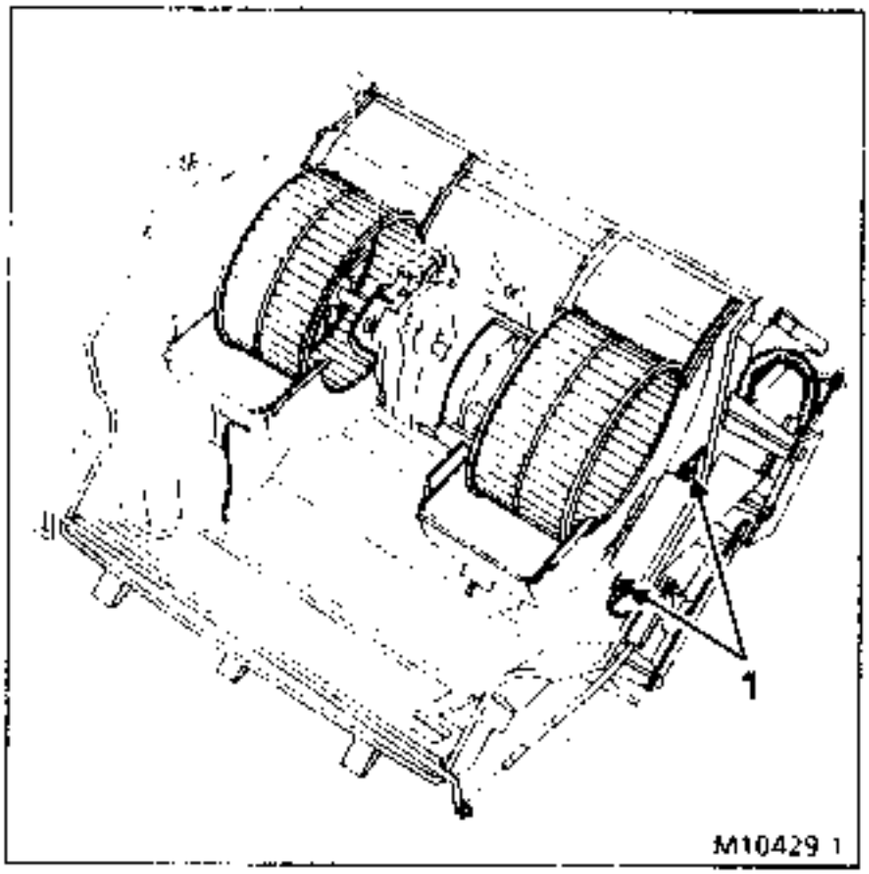
Adjust the recirculating flap control cable before refitting the fan motor assembly soundproofing.

The fan motor assembly is refitted in the reverse order to removal.

REPLACING

For this operation, remove the air blower device as described above.

Disconnect the resistor feed terminals then unscrew the two screws (1) located under the terminals.



If the resistor is being removed as a result of its destruction, it is essential to check that the fan motor rotates freely; if it does not, replace it.

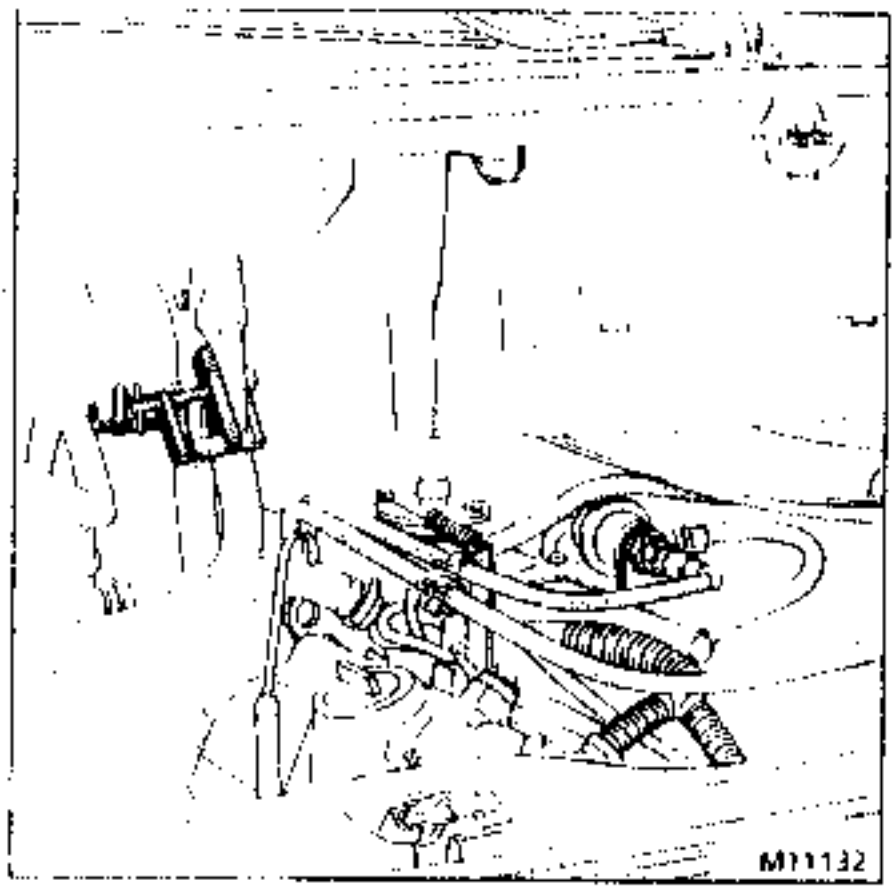
The fan motor assembly is refitted as described above.

REPLACING

The radiator is removed with the distributor unit in situ.

However, the dashboard must be removed as described at the beginning of this section.

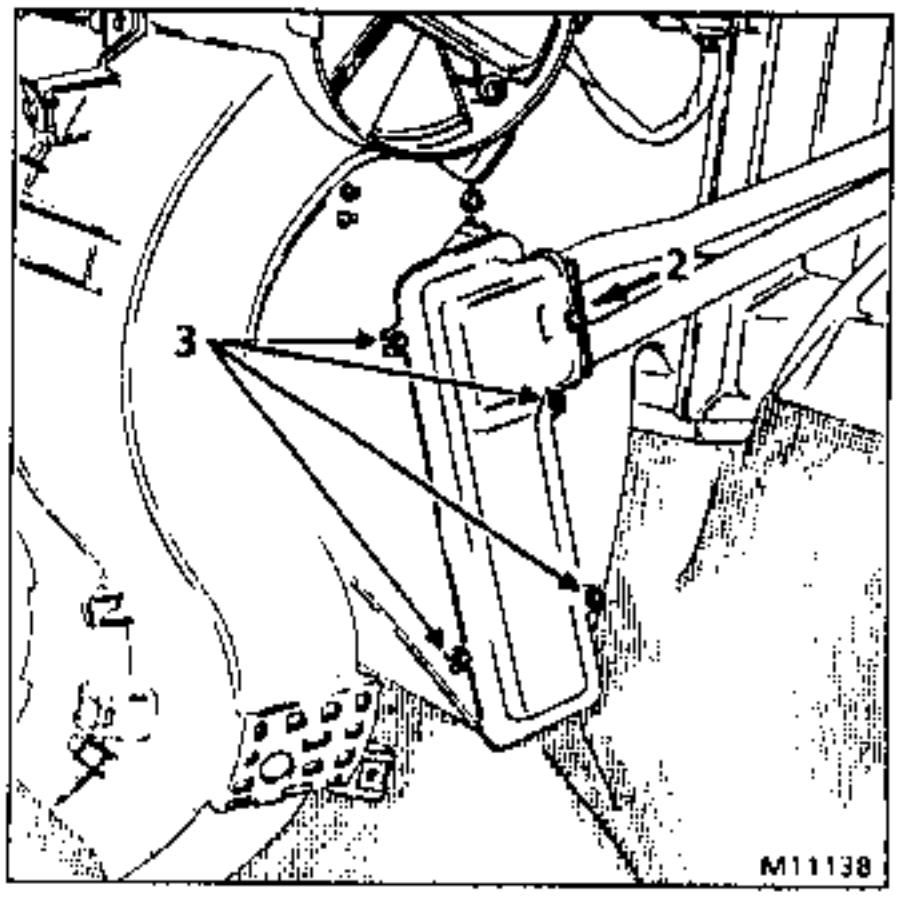
Fit in place hose clamps Mot. 453 01 or M.S. 583.



Place a container under the radiator.

Remove nut (2) from the radiator inlet flange then separate the two rigid hoses from it.

Unscrew the four screws (3) then take out the radiator in the direction indicated.



NOTE: Take care not to damage the side flaps on the radiator.

On refitting, ensure that the O rings are fitted to the ends of the two rigid radiator inlet hoses then proceed in the reverse order to removal.

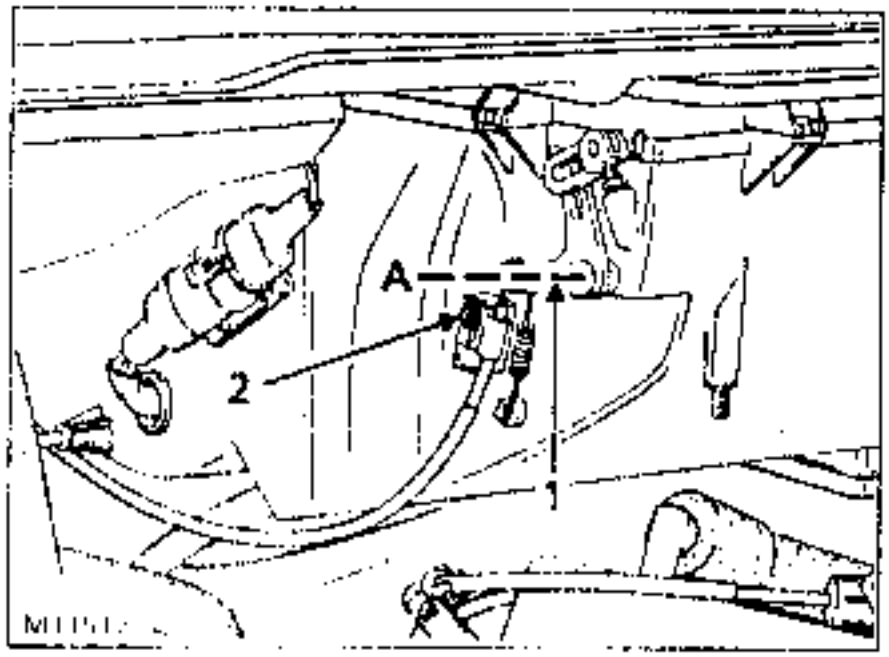
REPLACING

For this operation, the upper part of the dashboard must be removed as described at the beginning of this section.

When refitting the upper part of the dashboard, clip the control panel in place using a screwdriver.

Control Cables

Recirculating flaps



Adjust the flaps after replacing the cable or removing the heating fan motor assembly:

- place the control panel knob on the recirculation setting;
- move lever (1) to setting A;
- secure the cable ring to the lever then the sheathing in its housing: tighten screw (2).

Hot air/cold air mixer flap

There are no special points concerning the replacement of the control cable.

The control cable is replaced when the upper part of the dashboard has been removed.

DISTRIBUTION DRUM MOTOR (420)

The air distribution drum is assisted by an electric motor.

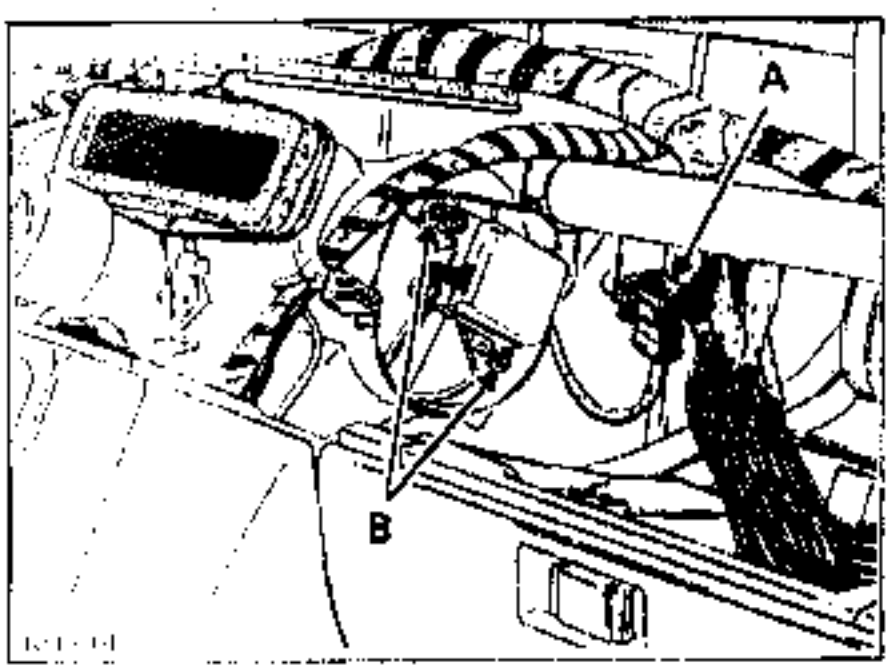
The motor can be reached when the upper part of the dashboard has been removed.

In the event of replacement, the motor is supplied fitted on its mounting and with its connector.

REPLACING

Remove the upper part of the dashboard as described at the beginning of section 61.

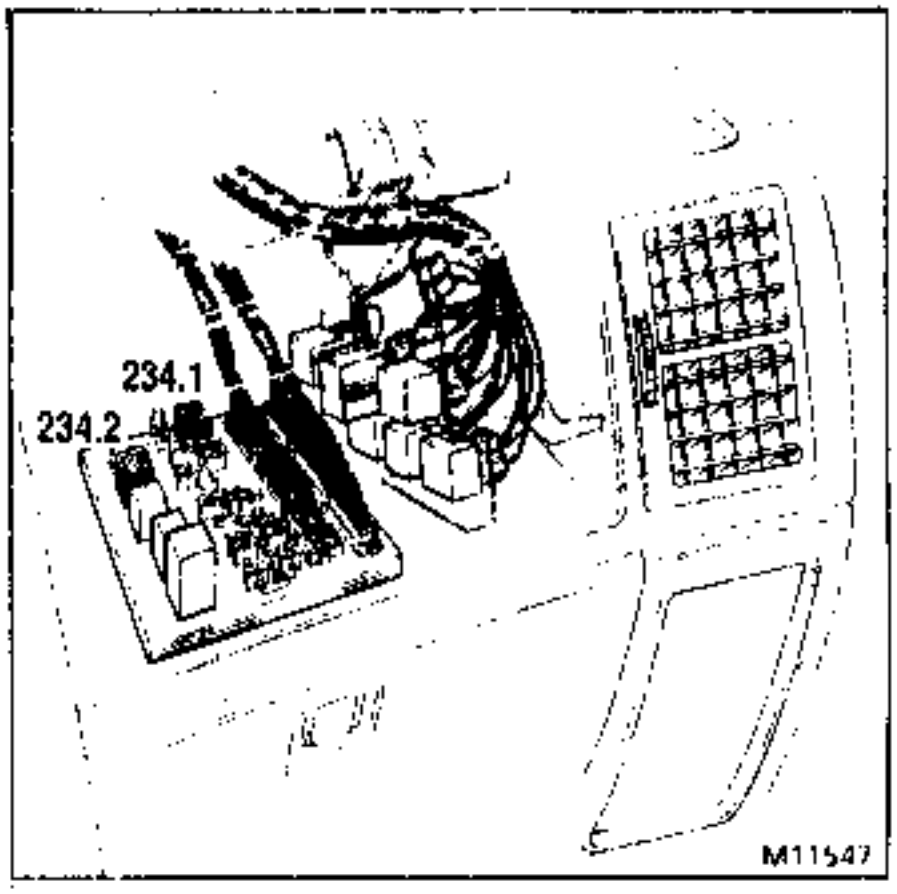
Disconnect the connector (A).



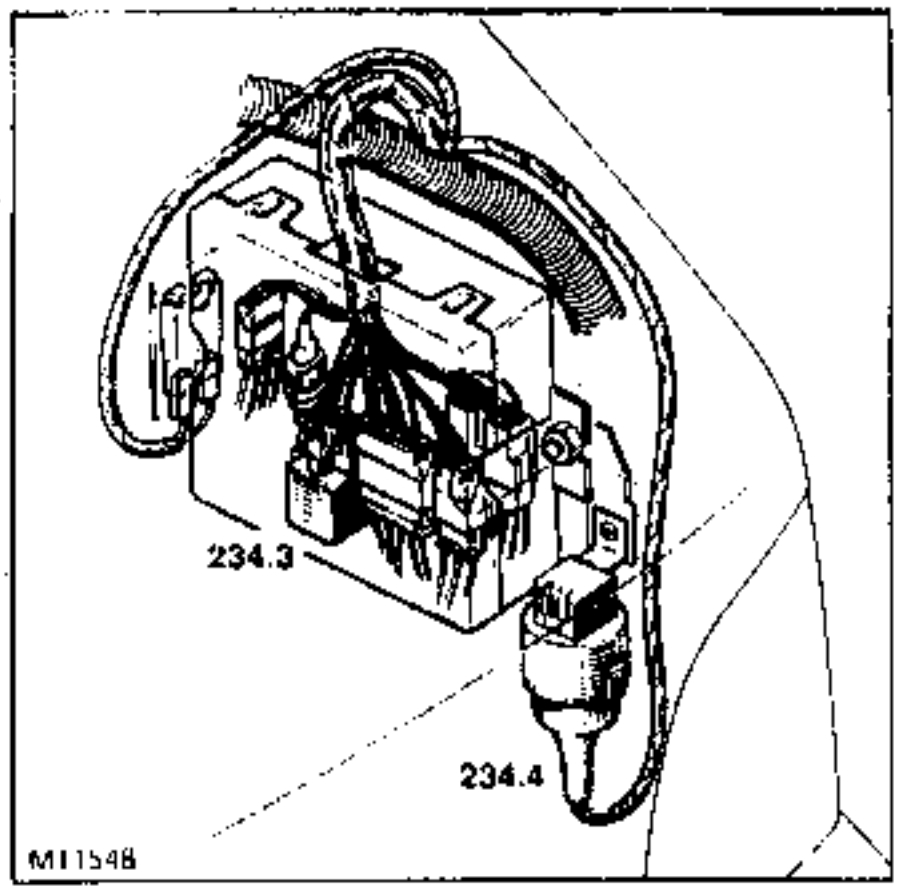
Unscrew the two screws (B), then remove the motor.

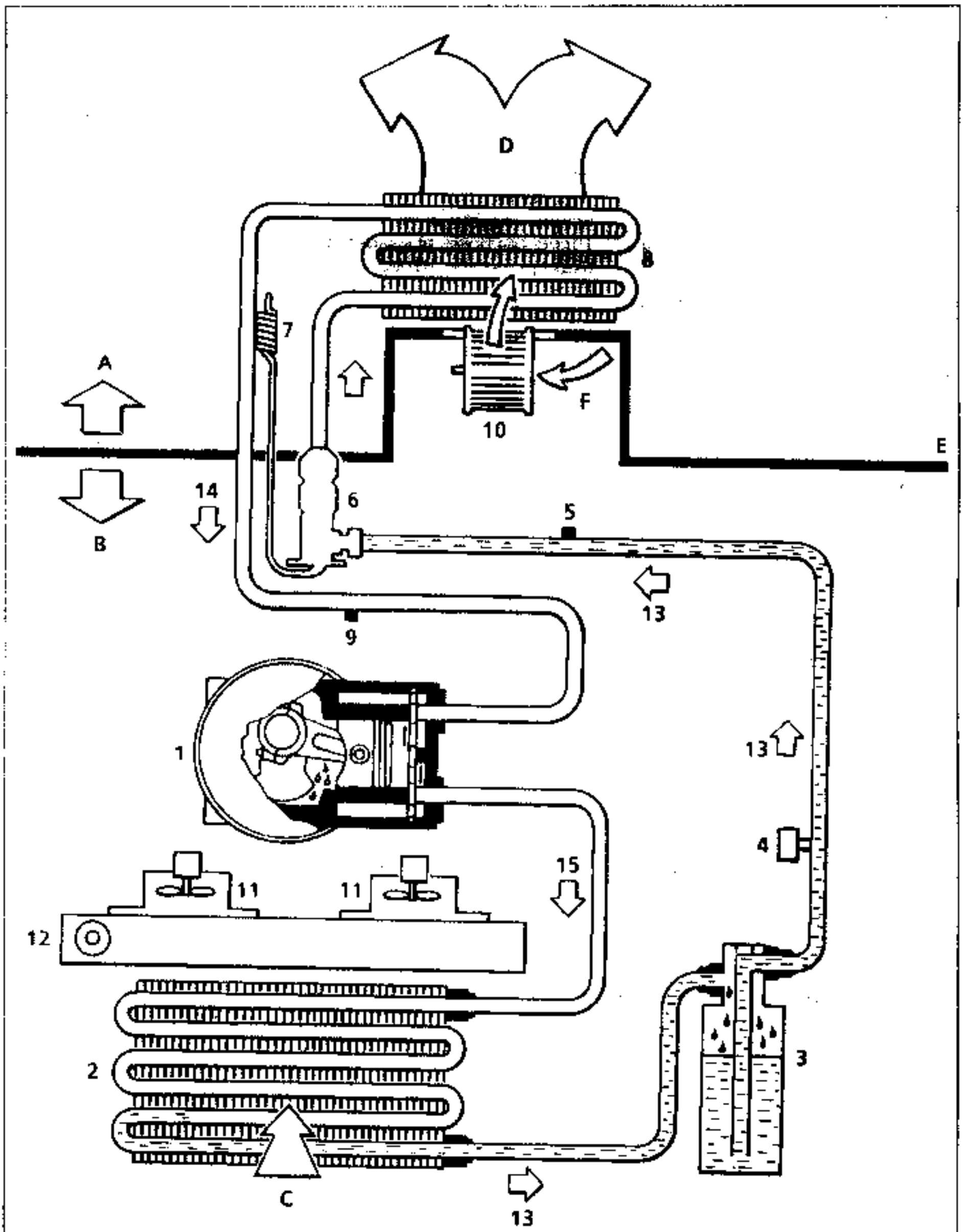
RELAYS (234)

Relays 234-1 and 234-2 respectively for the 1st and 2nd fan speeds are located on the accessories plate.



Relays 234-3 and 234-4 for the 3rd and 4th ventilation speeds respectively are located on the lefthand inner wing flange panel inside the engine compartment.




D
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2
3
C
13
M11533

A Passenger compartment
B Engine compartment
C External air
D Recirculating unit
E Scuttle bulk head
F External or recirculated air

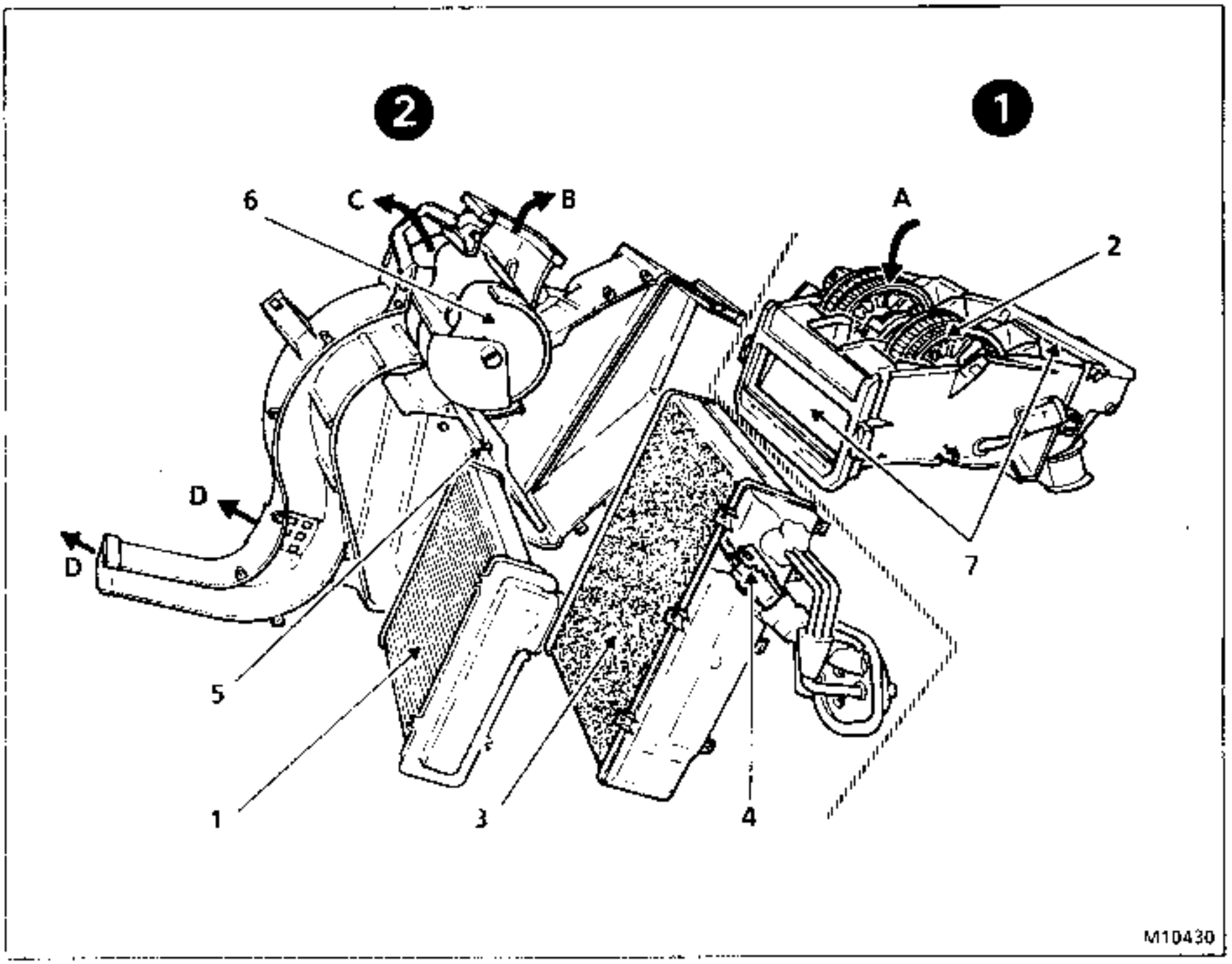
1 SANKYO SD 709 compressor
2 Condensor
3 Freon reservoir
4 Three-purpose pressostat
5 High pressure bleed screw
6 Pressure relief valve
7 Pressure relief valve thermostatic regulator
8 Evaporator
9 Low pressure bleed screw
10 Air conditioning fan motor
11 Cooling fan motor
12 Engine radiator
13 High pressure liquid
14 Low pressure vapour
15 High pressure vapour

Consumables:

- Oil for compressor SD709
  ELF RIMA 100: 135 cc ± 15

- Refrigerant
  FREON R12: 1.4 kg ± 100 g

EXPLODED VIEW OF AIR DISTRIBUTION AND BLOWER DEVICE



1 ENGINE COMPARTMENT

2 PASSENGER COMPARTMENT

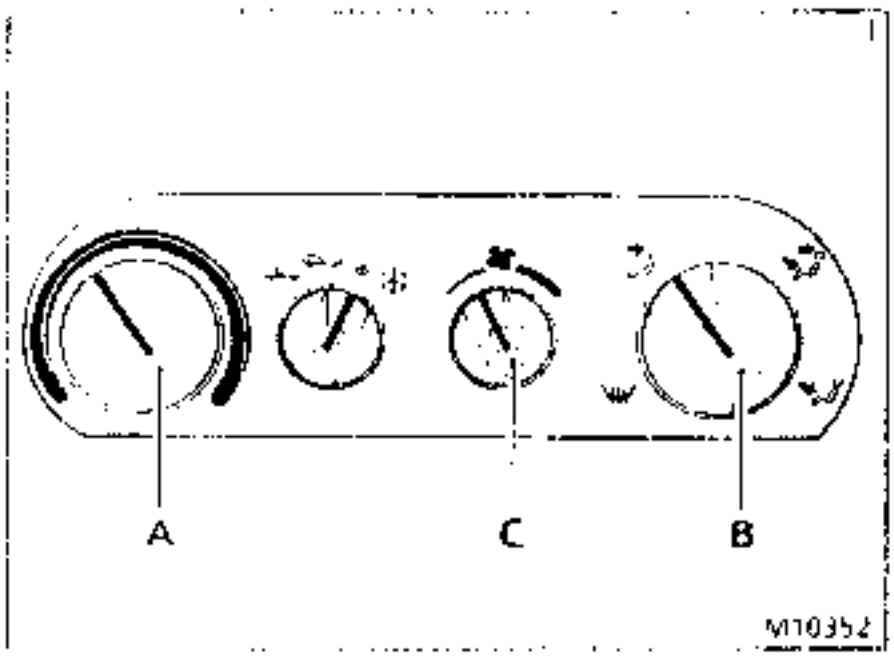
1 Heater radiator
2 Heater fan
3 Evaporator
4 Fixed thermostat
5 Hot air/cold air flap
6 Air distribution drum
7 Recirculating flaps

A Air inlet
B Windscreen demisting outlet
C Dashboard ventilator outlet
D Front seat-rear seat outlets

KNOBS:

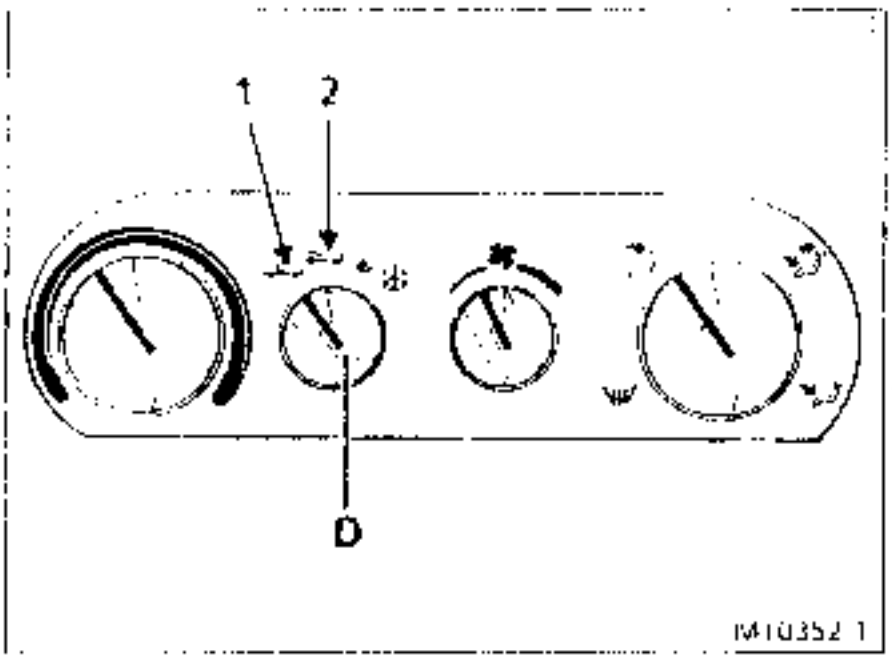
- FOR CONTROLLING THE TEMPERATURE (A)
- FOR AIR DISTRIBUTION (B)
- FOR CONTROLLING THE FAN MOTOR (C)

These controls have the same functions as those described in the heating ventilation section, if the air conditioning system is not in operation.



AIR CONDITIONING AND RECIRCULATION CONTROL KNOB (D)

On settings (1) and (2) it controls electrically the opening or closure of the recirculation flaps as described in the heating/ventilation section.

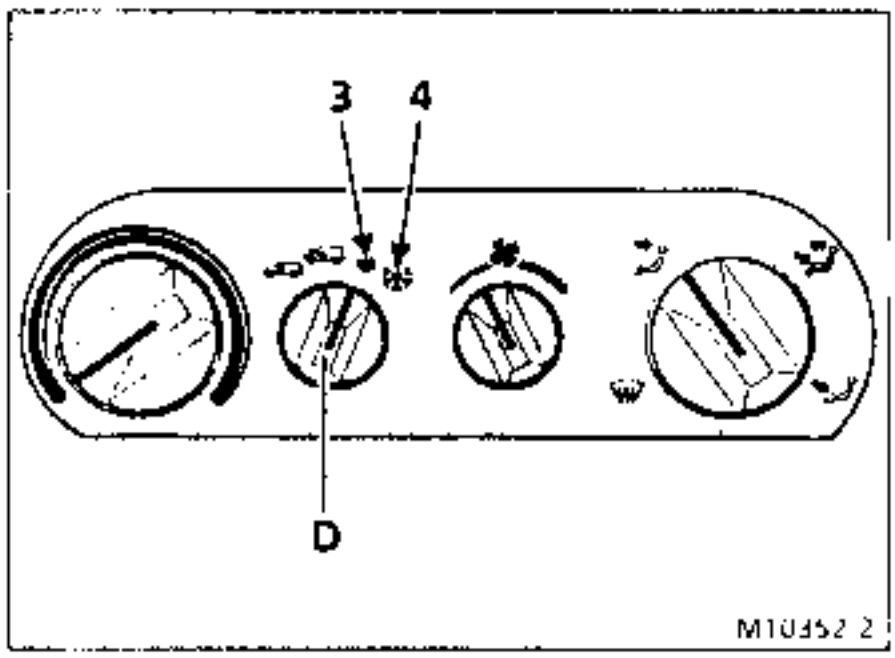


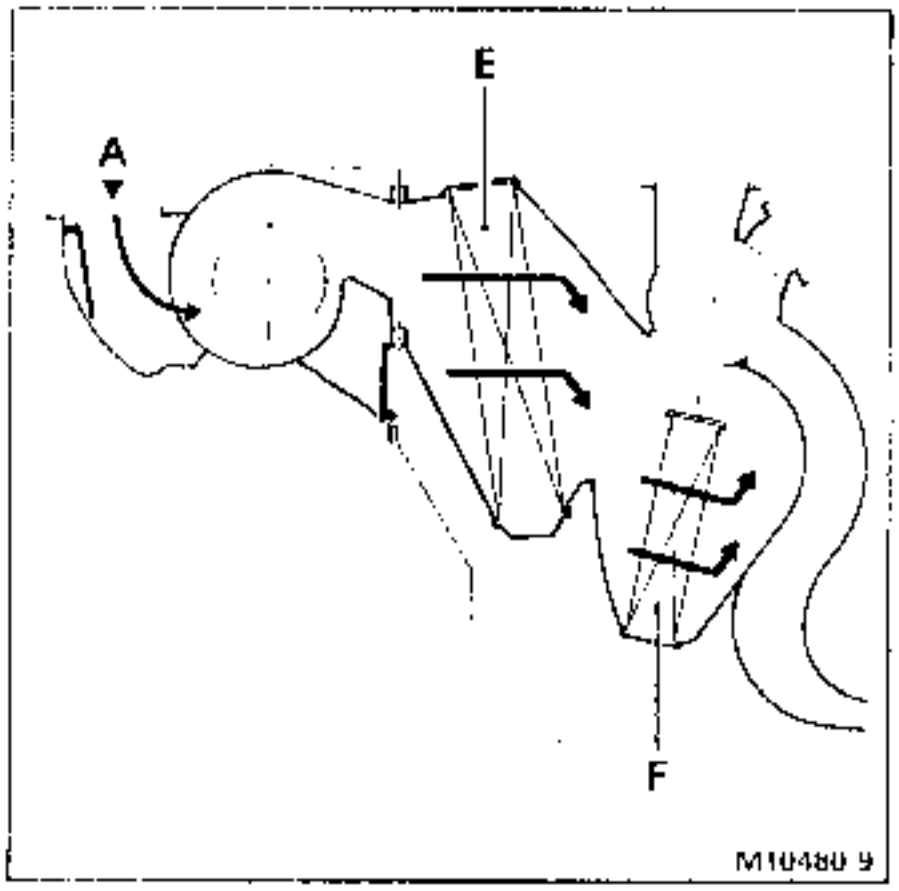
On settings (3) and (4), it operates the air conditioning system.

Its use enables:

- the air temperature in the passenger compartment to be lowered;
  the moisture content of the air blown into the passenger compartment to be reduced (assists demisting).

SETTING ❄ (3)

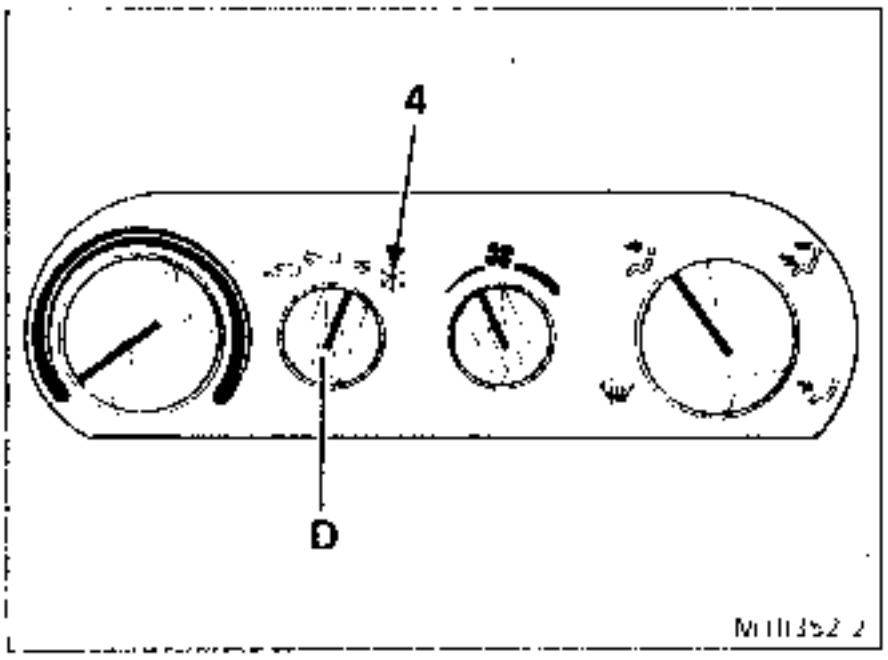


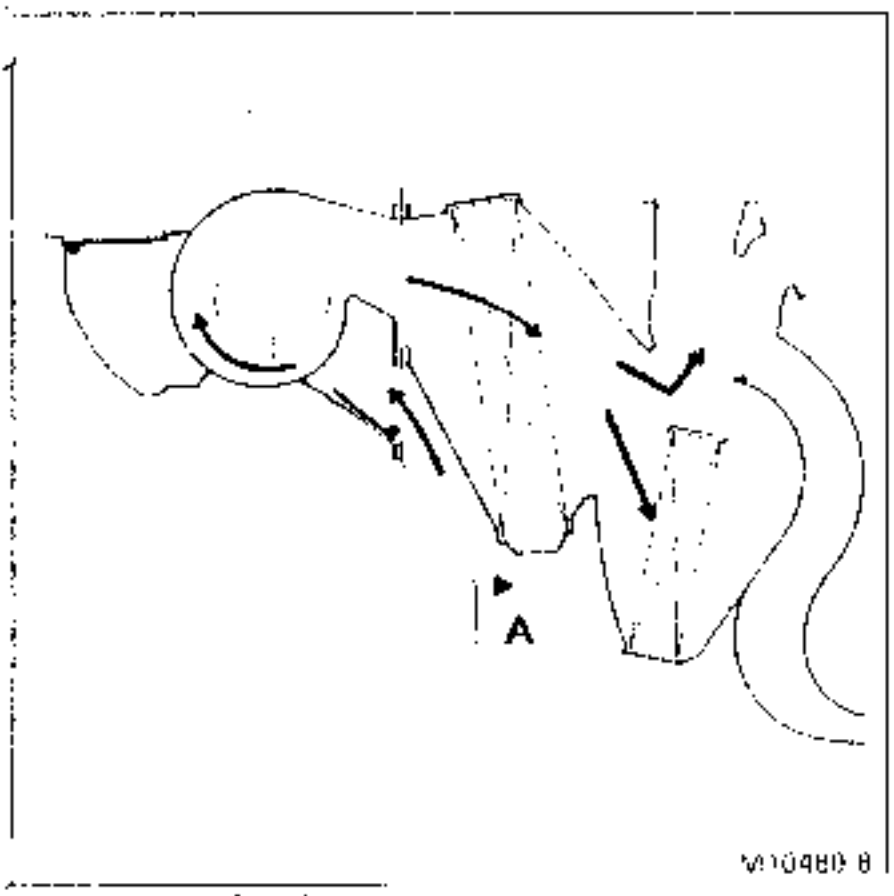


A External air
E Evaporater
F Radiator

The air conditioning system is operating normally. Air is taken from outside the vehicle and is constantly renewed.

SETTING ❄ (4)





A External air

The air conditioning system is operating at maximum output. Air is taken from inside the passenger compartment and is recycled without admitting external air.

This setting enables the temperature inside the passenger compartment to be lowered more quickly and the passenger compartment to be insulated from the outer atmosphere (when travelling in polluted areas for example).

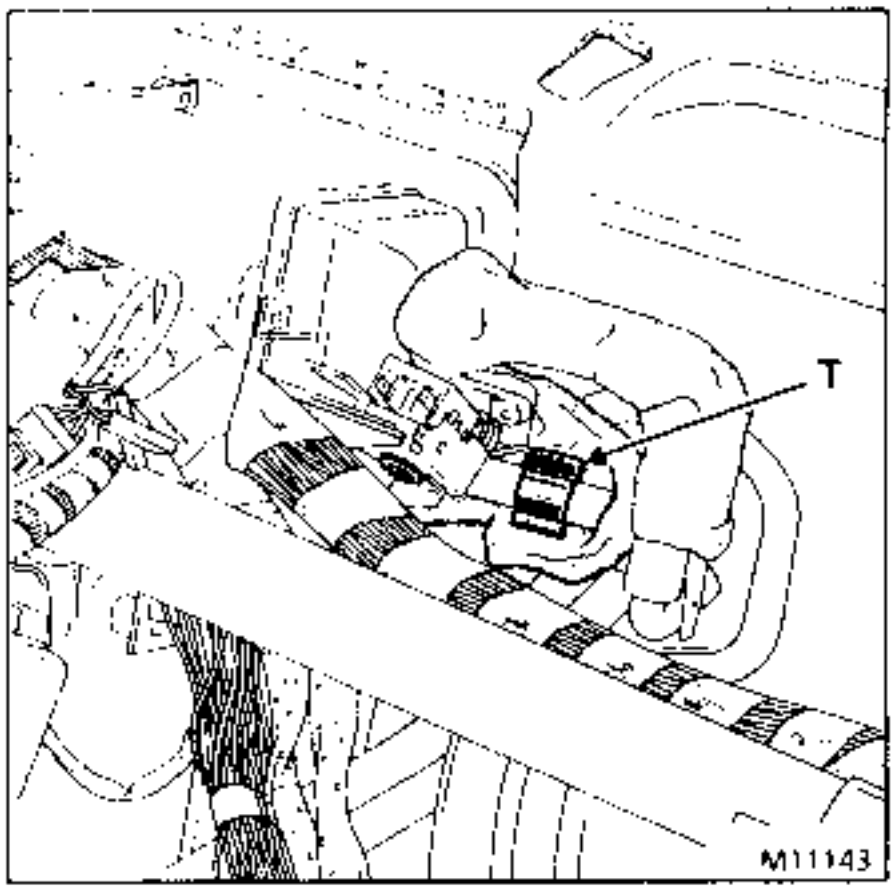
However, prolonged use on this setting may result in a slight misting of the windows or unpleasant smells owing to stale air (if cigarettes are being smoked for example).
It is thus advisable to return to the normal setting of the air conditioning system as soon as the desired temperature inside the passenger compartment has been reached or it is no longer necessary to insulate it from the external atmosphere.
Turn the knob to setting (3).

NOTE: As soon as the air conditioning is switched on (setting 3 or 4), the knob controls:
- the fan to obtain a so-called "maintenance" air speed;
- the normal speed of the engine cooling fan to accelerate the air flow over the condensor.

SPECIAL FEATURES OF THE SYSTEM

Air temperature when air conditioning system operating

The temperature of the air leaving the evaporator cannot be adjusted manually. It is regulated automatically by fixed thermostat (T).



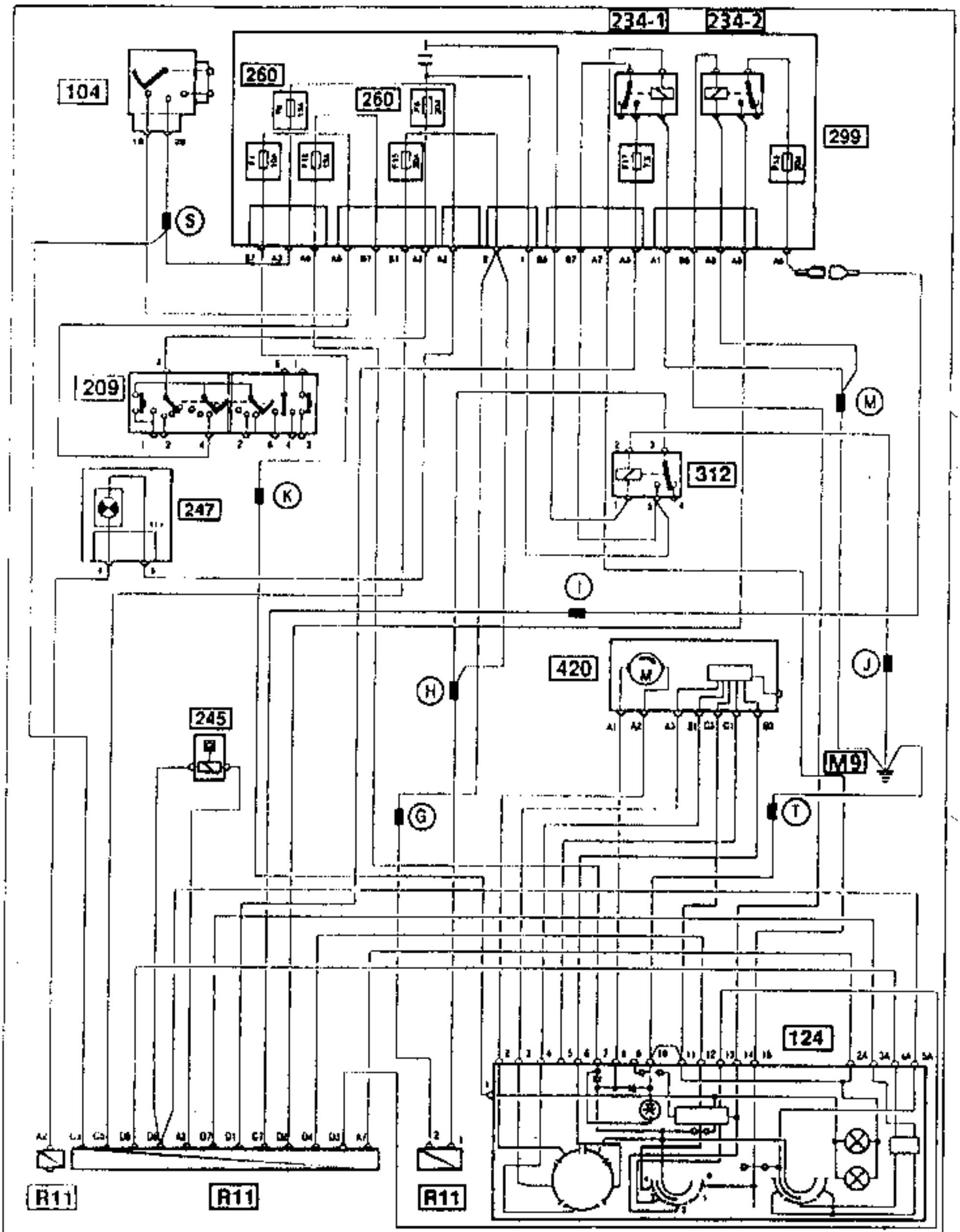
Alternators

As the air conditioning system increases the consumption of electricity, all vehicles with the air conditioning option are equipped with a 105 amp alternator.

Engine speed management

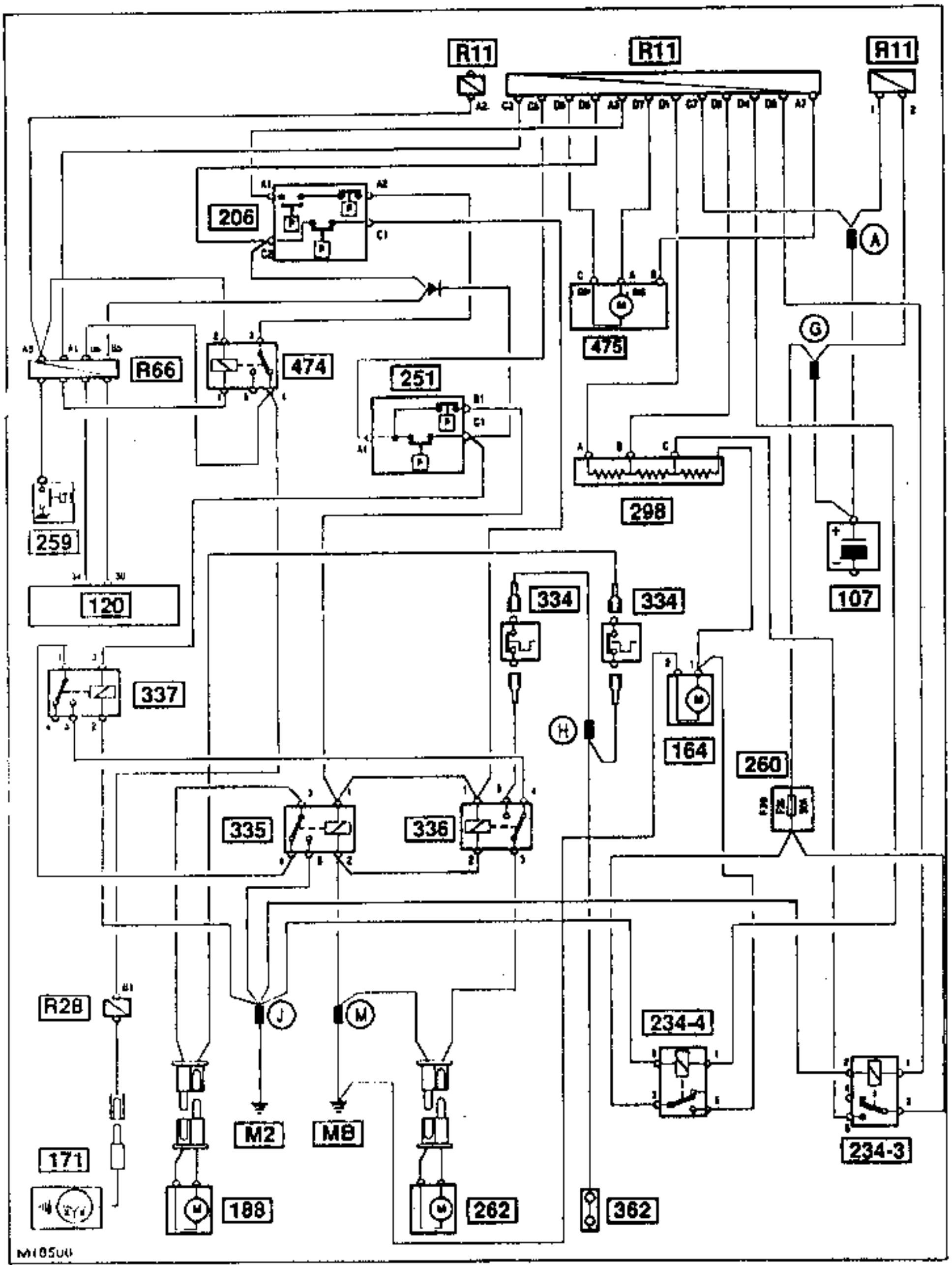
When the compressor is activated, the engine idling speed increases in order that the air conditioning system operates efficiently even when the vehicle is stopped and prevents the engine stalling.

Diagram seen from passenger compartment end - all types with injection



M16500 I

Diagram seen from engine end - all types with injection



104	Ignition switch
107	Battery
120	Injection computer
124	Air conditioning controls
164	Air blower device
171	Compressor
188	Cooling fan motor assembly
206	Three purpose pressostat
209	Combined switch
234-1	Ventilation 1st speed relay
234-2	Ventilation 2nd speed relay
234-3	Ventilation 3rd speed relay
234-4	Ventilation 4th speed relay
245	Temperature sensor
247	Instrument panel
251	Coolant dual purpose thermal switch
259	Thermal switch
260	Fuse box
262	Cooling fan motor assembly
298	Blower device resistors
299	Accessories plate
312	Circuit breaker relay
334	Thermal cut-out
335	Engine cooling fan motor relay
336	Engine cooling fan motor relay
337	Engine cooling fan motor relay
362	Battery + terminal plate
420	Distributor drum
474	Compressor control relay
475	Recirculating flaps

R11	Junction: dashboard harness/ engine compartment harness
R28	Junction: engine harness/ engine compartment harness
R66	Junction: injection harness/ engine compartment harness

M2	Earth under lefthand headlight
M9	Front righthand pillar earth
M8	Front lefthand earth

Checks:

Operations to be performed:

FAN MOTOR NOT OPERATING

12 volts between A6 of grey connector 299 and earth

no

Check earth M9 and fuses F13(20A), F17(7.5A), F10(15A) and F30(50A) of engine

yes

Voltage at terminals of fan motor, ventilation knob on:
setting 1 = 3.7v
setting 2 - 5.7v
setting 3 - 7.2v
setting 4 - 12.5v

no

yes

Replace fan motor

Check relays 234-1, 2, 3 and 4

not good

Replace faulty relay or relays

good

Voltage at terminals of connector 124:
terminal 15, setting 1 - 3.7v
terminal 14, setting 2 - 5.7v
terminal 13, setting 3 - 7.2v
terminal 12, setting 4 = 12.5v

yes

Replace resistor unit 298

no

Check earth MB

yes

Repair earth MB

Check dashboard and engine compartment harness

good

Change heater control panel

FREON CHARGE CORRECT, COMPRESSOR NOT OPERATING

Check relay 474 GOOD

no → Change relay 474

yes → Check compressor clutch resistor 3.4 ohms ± 0.2 GOOD

no → Change compressor coil

yes → With air conditioning operating, engine running, are there 12 volts between terminal A1 of pressostat and earth?

no → Check fixed thermostat 245 GOOD

yes → Check continuity of pressostat - control panel circuit

no → Replace fixed thermostat 245

yes → Check pressostat 206 GOOD

no → Replace pressostat 206

yes → Check continuity of pressostat - compressor circuit

The compressors fitted to RENAULT ESPACE vehicles are of the SANKYO SD709 make alternating axial type.

Please consult the air conditioning manual for all other information regarding the maintenance of compressors.

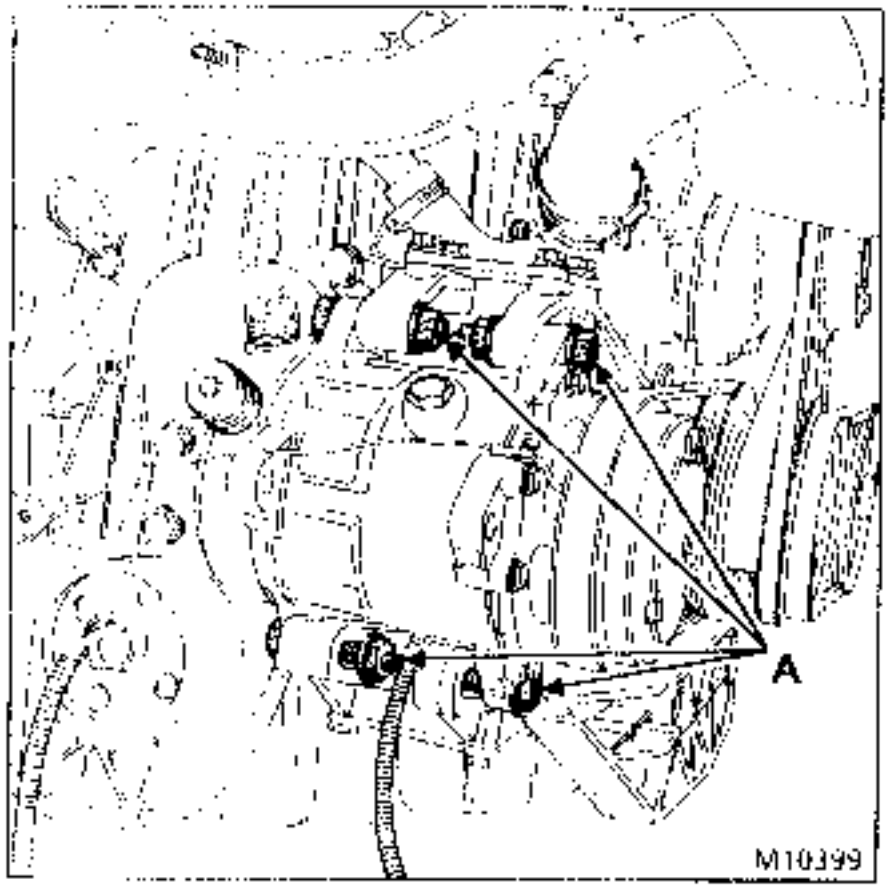
REMOVAL

Bleed the Freon circuit.

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

On diesel engine versions, remove the air inlet duct between the turbo charger and inlet pipe on the engine.

Unscrew the four bolts (A) securing the compressor and remove it.



REFITTING

Proceed in the reverse order to removal.

Grease the threaded unions with ELF RIMA 100 compressor oil.

Check the tension of the drive belt.

Fill the circuit with R12 Freon (see air conditioning manual).

REMOVAL

With the vehicle on a hydraulic lift:

Disconnect the battery.

Remove:

- the heat shield from the battery:
- the battery.

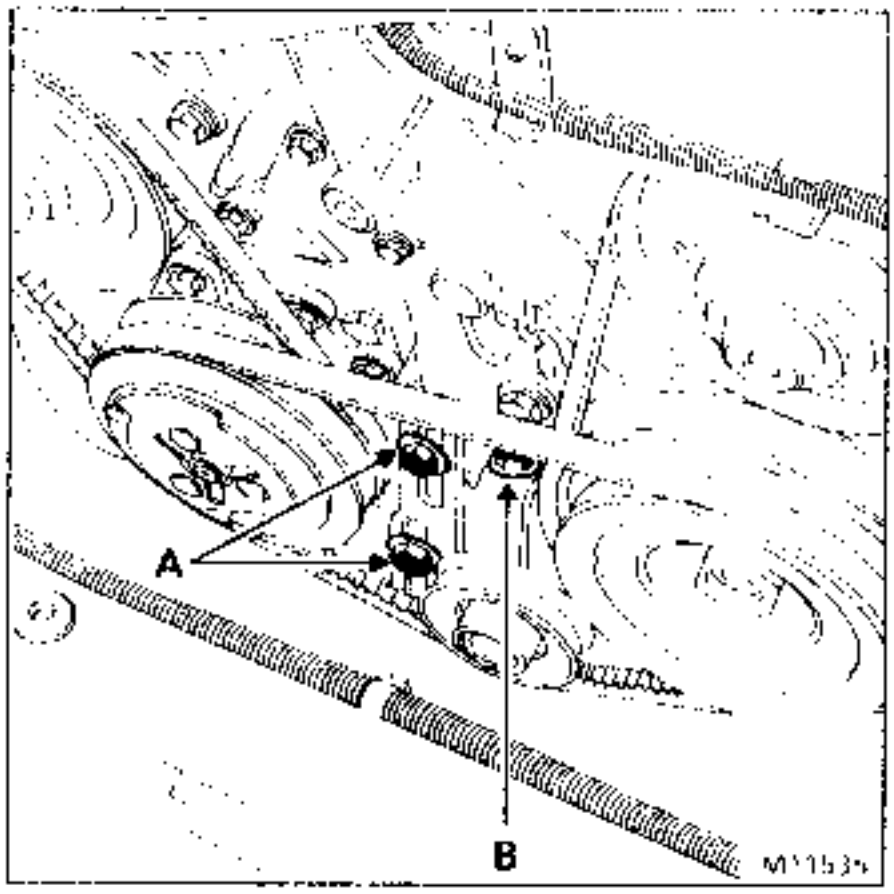
Drain the freon circuit.

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

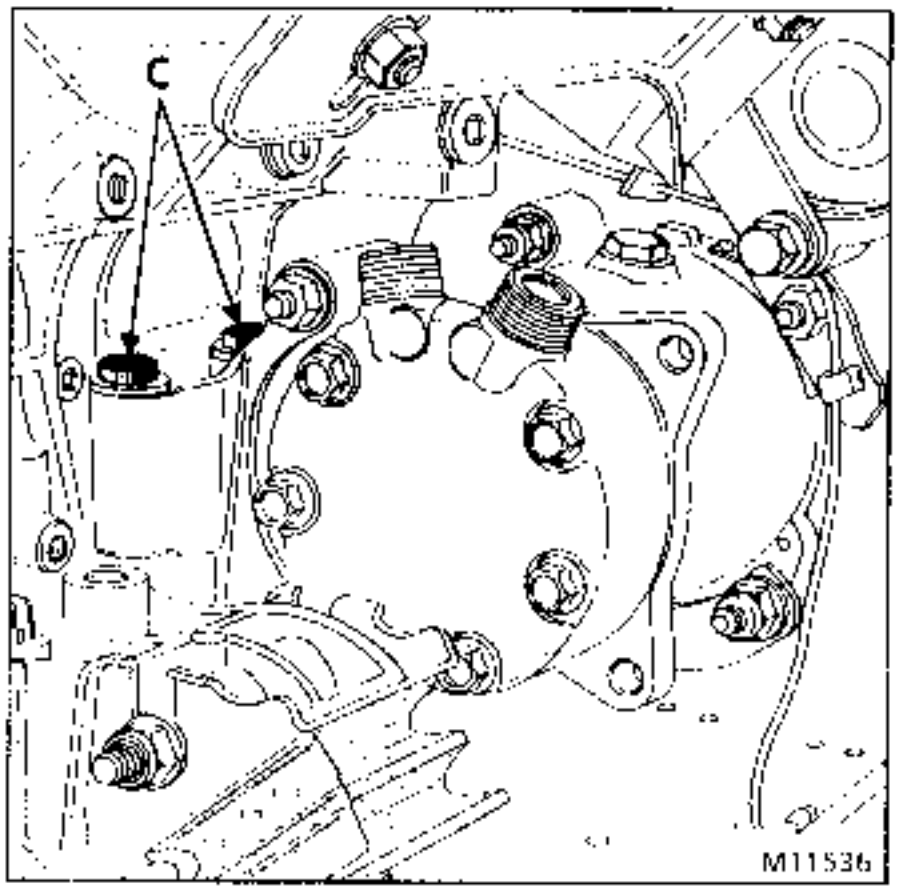
Disconnect the electrical supply from the compressor.

Remove the PAS pump as described in section 13.

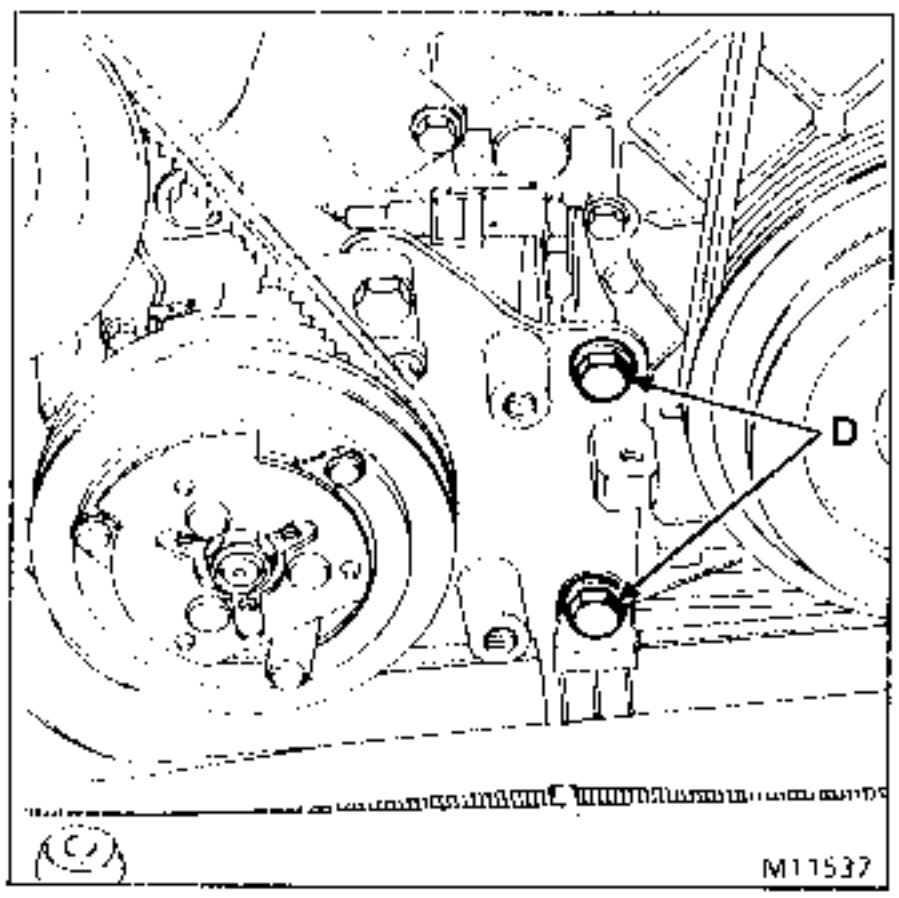
Unscrew the two bolts (A) and adjusting bolt (B) then remove the belt tensioner.



Slacken the two bolts (C) on the compressor rear mounting.



Unscrew the two bolts (D) from the compressor front mounting.



Remove the compressor and its mountings from underneath the vehicle.

REFITTING

There are no special points concerning refitting, however the following points must be adhered to:

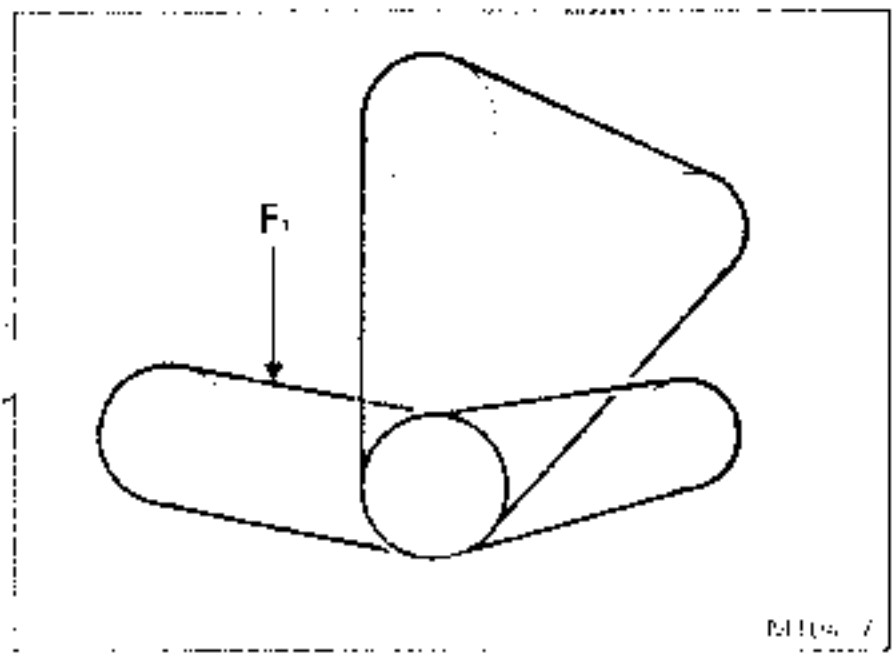
- check the belt tension;
- fill the freon circuit (see the air conditioning manual).

Fit the belt as shown in the drawings below.

Check the deflection after 5 minutes' operation using tool Elé. 346 04.

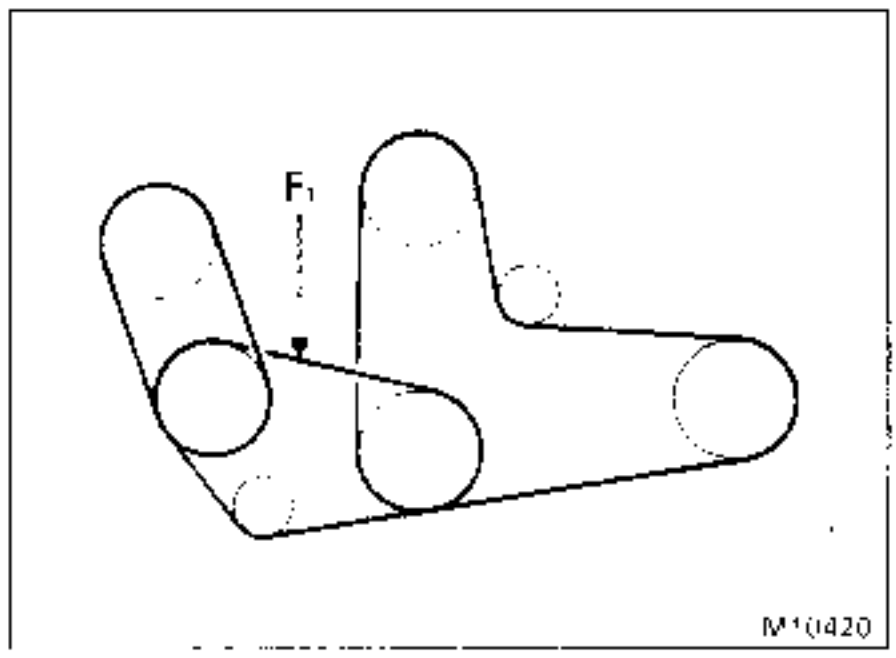
J7T-J7R ENGINES

F1 = 3,5-4,5 mm



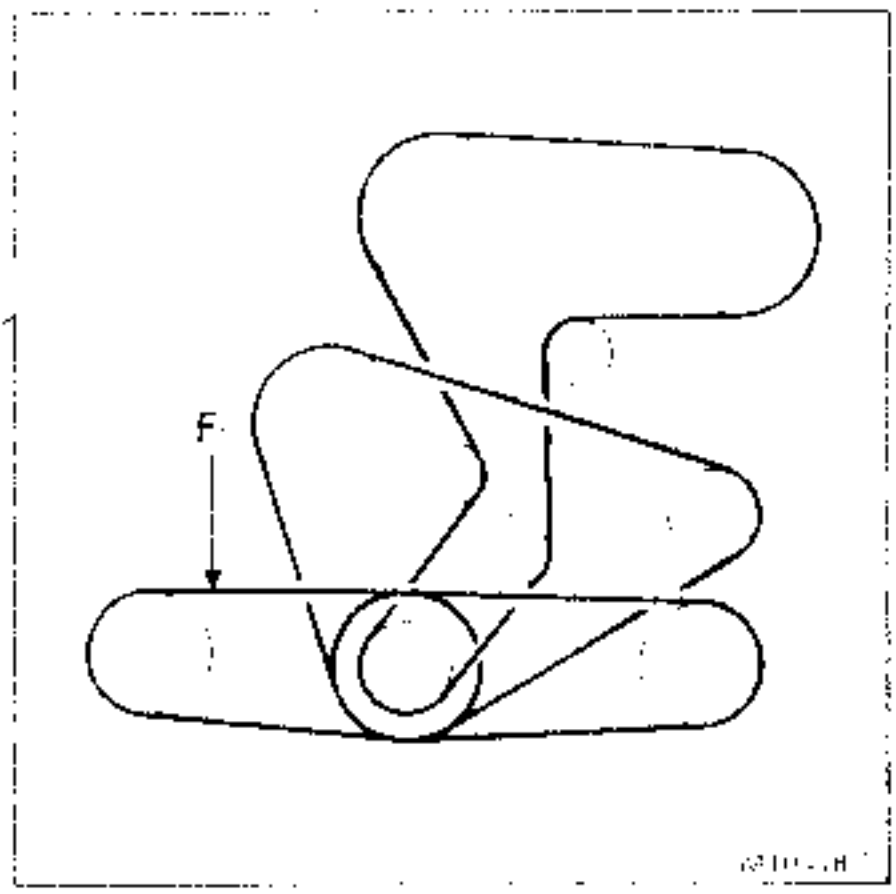
Z7W ENGINE

F1 = 3,5-4,5 mm



J8S ENGINE

F1 = 3,5-4,5 mm



REMOVAL

Remove the diffuser and upper cross member.

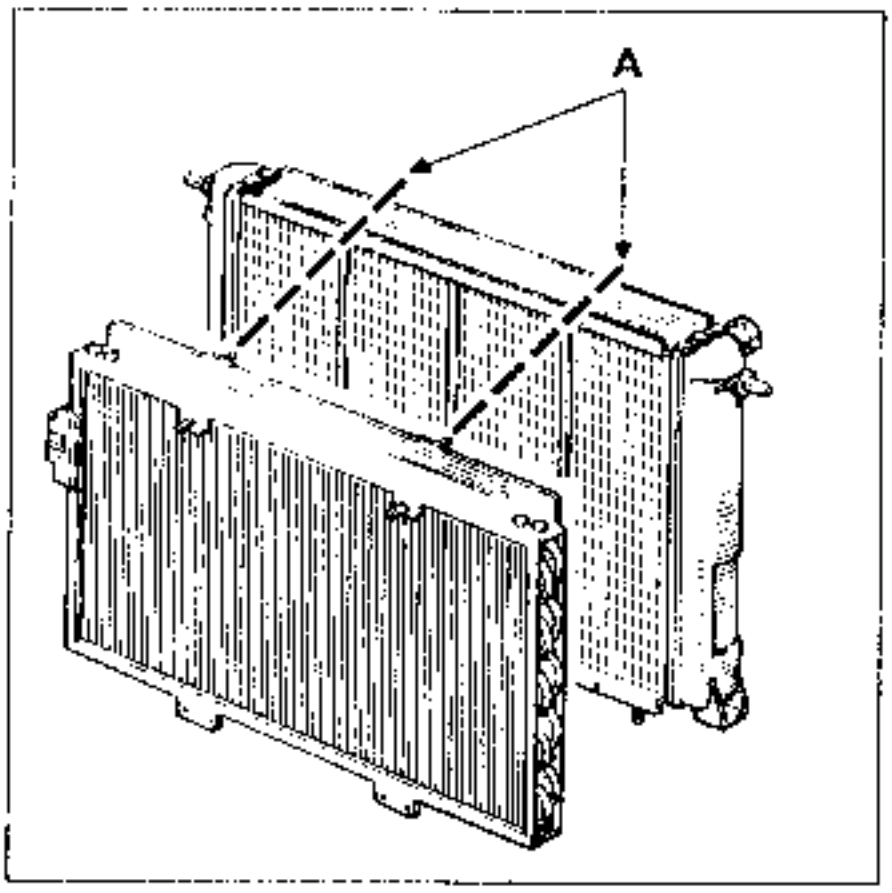
Drain the freon circuit.

Unscrew the unions on the condenser (hold them using an open-ended spanner taking care as the tubes are fragile).

Blank off the disconnected hoses and condenser end pieces.

Disconnect the electrical connection from the fan motors.

Disconnect the four nuts (A) holding the condensor on the radiator.



Remove the fan motor-condensor assembly.

REFITTING

There are no special points concerning refitting, however:

- grease the threaded unions with ELF RTMA 100 compressor oil;
- using an open ended spanner, hold the condensor end pieces when tightening the unions.

Fill the freon circuit (see air conditioning manual).

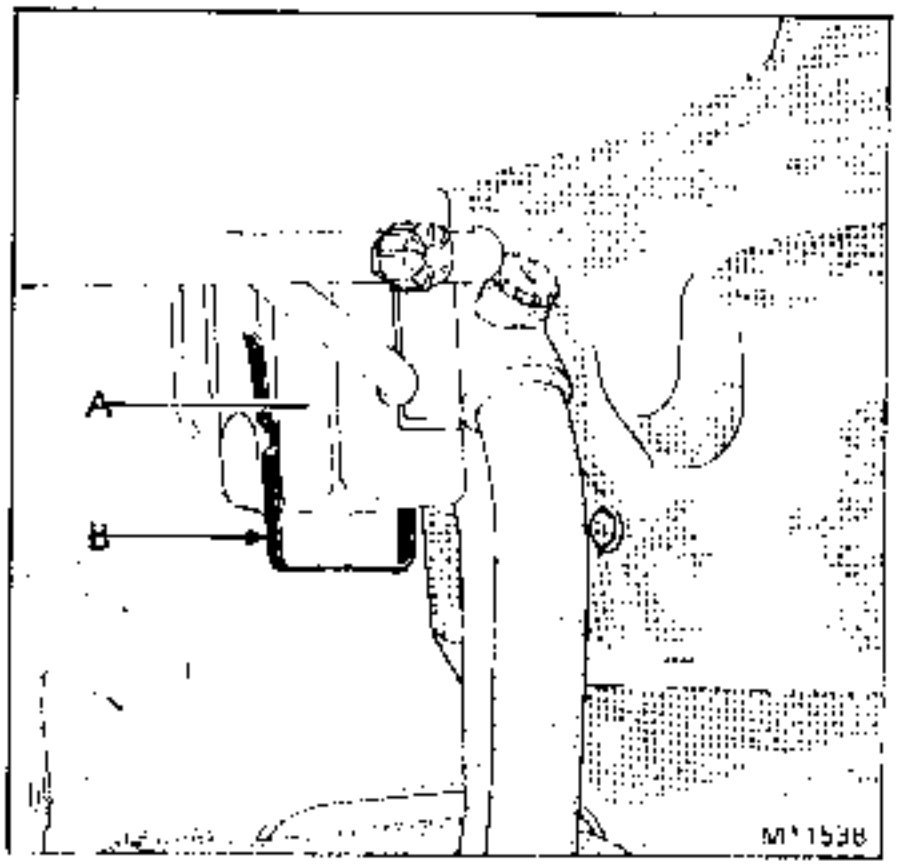
REMOVAL

The evaporator is located under the dashboard in the air distribution unit.

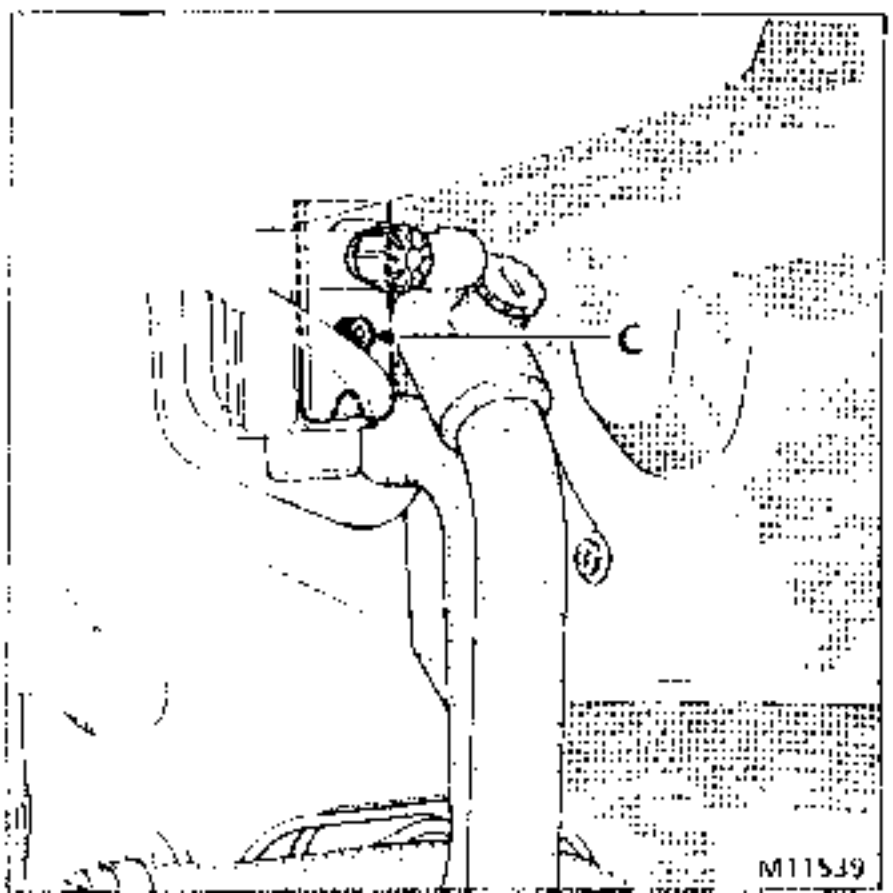
The evaporator can only be removed when the distribution unit has been removed, as described from page 66 12 onwards, and taking account of the following points:

Drain the freon circuit;

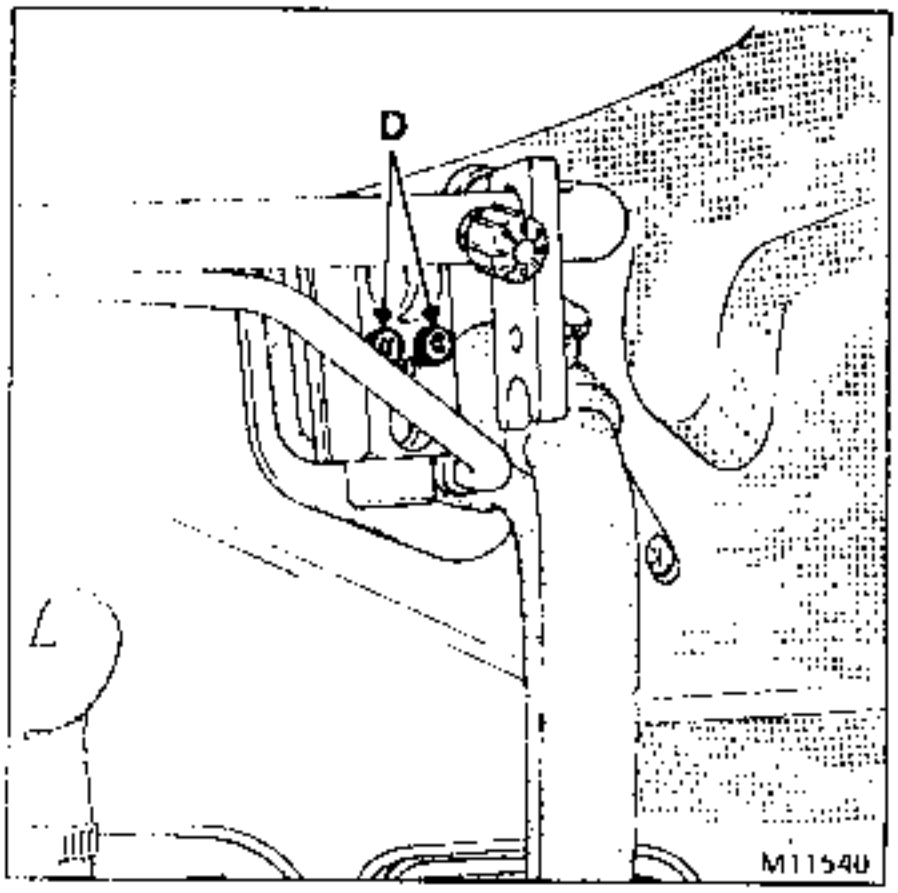
Remove union protection unit (A) by pulling clip (B) downwards.



Unscrew screw (C) from the hose retaining plate on the pressure relief valve.

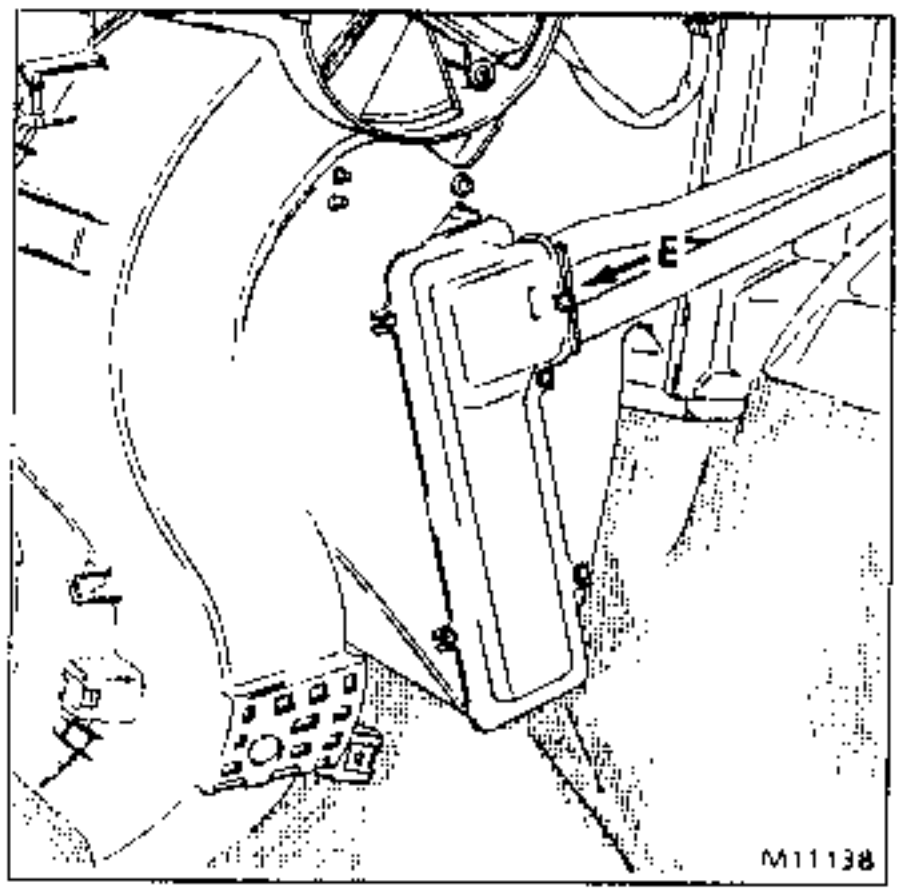


Unscrew the two screws (D) then remove the pressure relief valve.

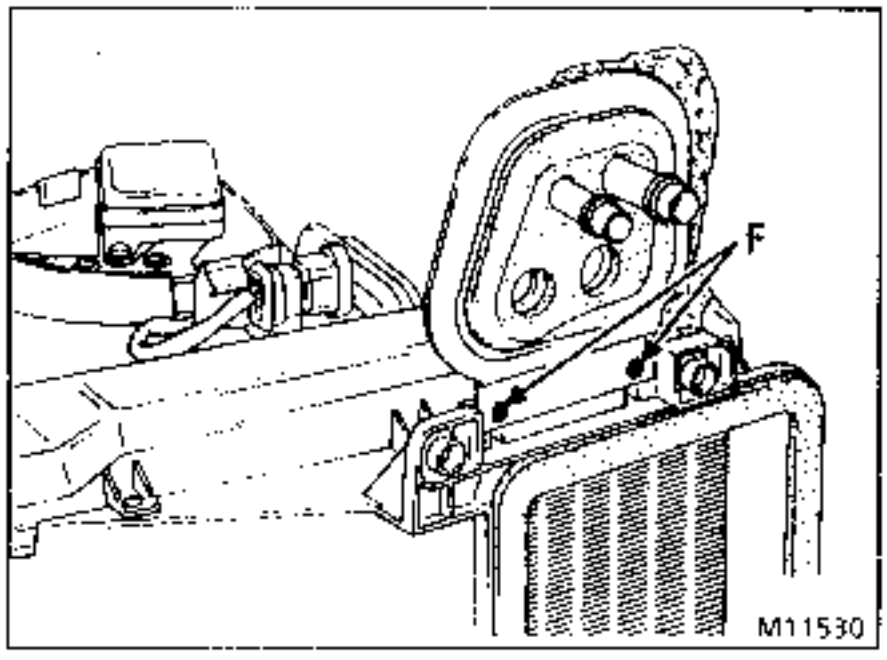


With the distribution unit removed:

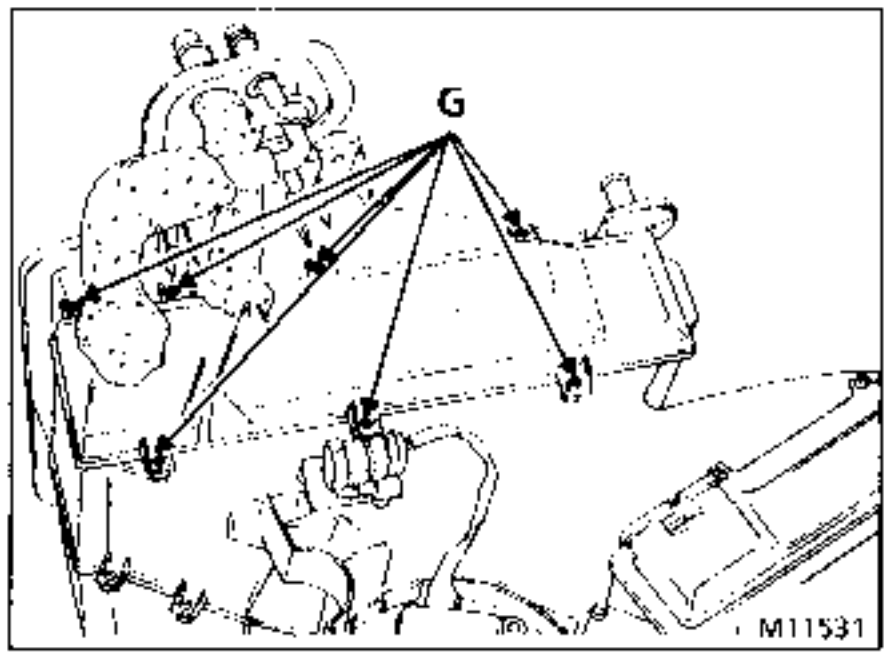
Unscrew nut (E) on the radiator inlet flange then separate the two rigid hoses from it.



Unscrew the two bolts (F) from the panel holding the hoses on the distributor unit.



Unscrew the seven screws (C) then take out the evaporator from the distributor unit.



REFITTING

Proceed in the reverse order to removal.

Ensure that the O rings are in perfect condition and that the evaporator on the distributor unit is completely leak-tight.

Grease the threaded unions with ELF RIMA 100 compressor oil.

Top-up the coolant in the system.

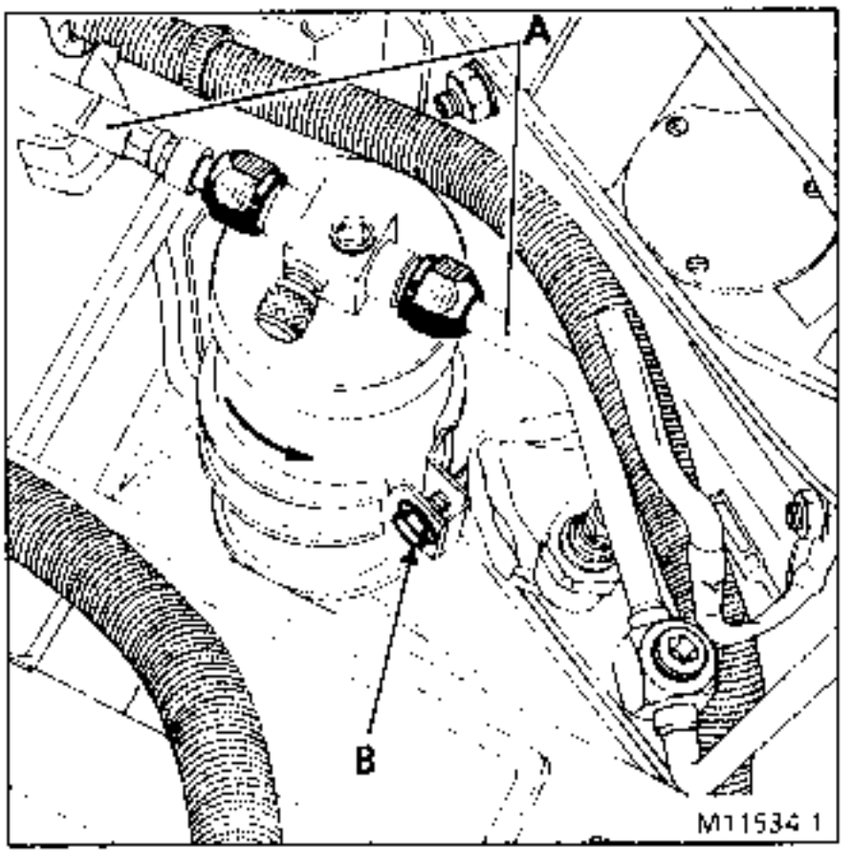
Fill the R12 freon system (see the air conditioning manual):

REPLACING

Drain the freon circuit.

Remove the front righthand light unit as described in section 80.

Disconnect connection hoses (A) and blank off the apertures.



Slacken bolt (B) then take out the chamber by moving it upwards.

REFITTING

Grease the threads with compressor oil and ensure that the seals are in good condition.

Place the dehydrating chamber in its original position, ie. with the arrow on the unit in the following direction:

condensor ---> evaporator

Fill the freon circuit (see the air conditioning manual).

DISTRIBUTION DRUM MOTOR (420)

The distribution drum rotates via an electric motor.

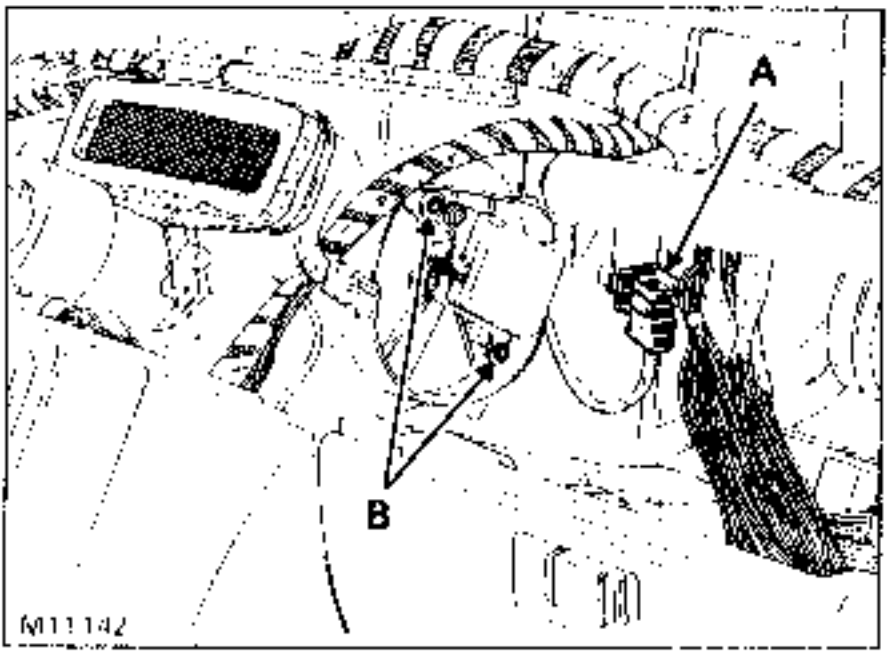
The motor can be reached when the upper part of the dashboard has been removed.

In the event of its being replaced, the new motor is supplied fitted on its mounting with its connection.

REPLACING

Remove the upper part of the dashboard as described at the beginning of section 01.

Disconnect connector (A).



Slacken the two bolts (B) then remove the motor.

RECIRCULATING MOTOR (475)

The recirculating flaps are controlled by means of an electric motor.

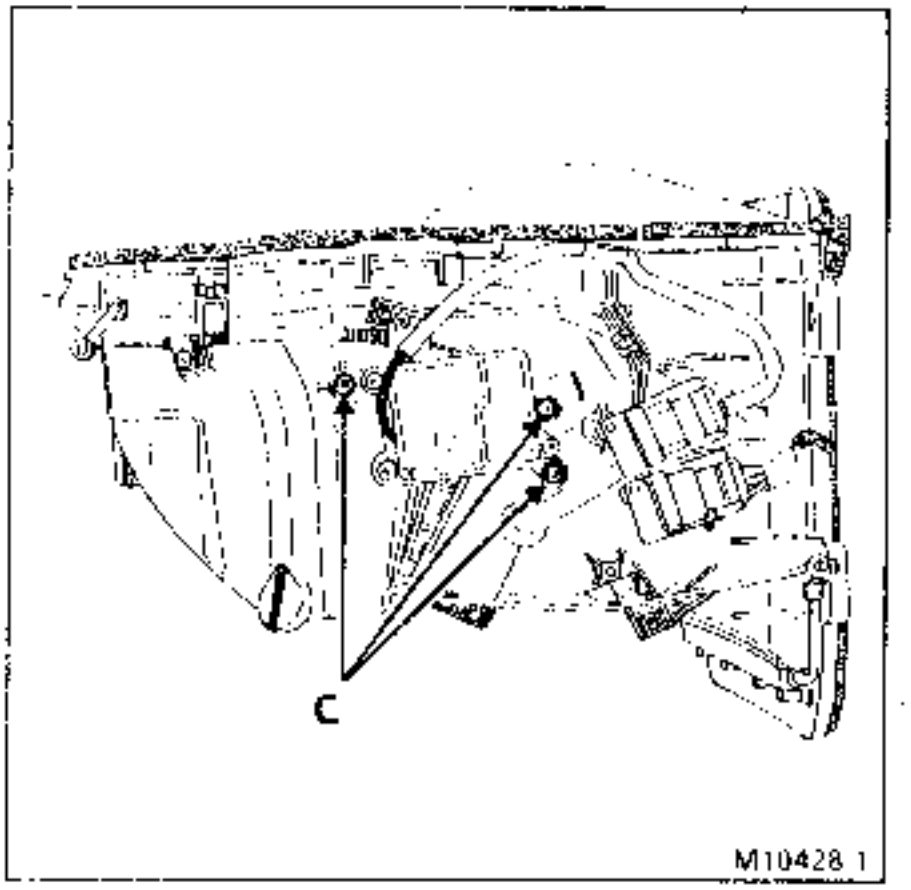
Access to the recirculating motor is only possible when the soundproofing-heat shield has been removed from the blower fan motor assembly.

In the event of its being replaced, the new motor is delivered fitted on its mounting, with its lever and connector.

REPLACING

Remove the soundproofing-heat shield (five nuts).

Slacken the three bolts (C) then remove the motor.



FIXED THERMOSTAT (245)

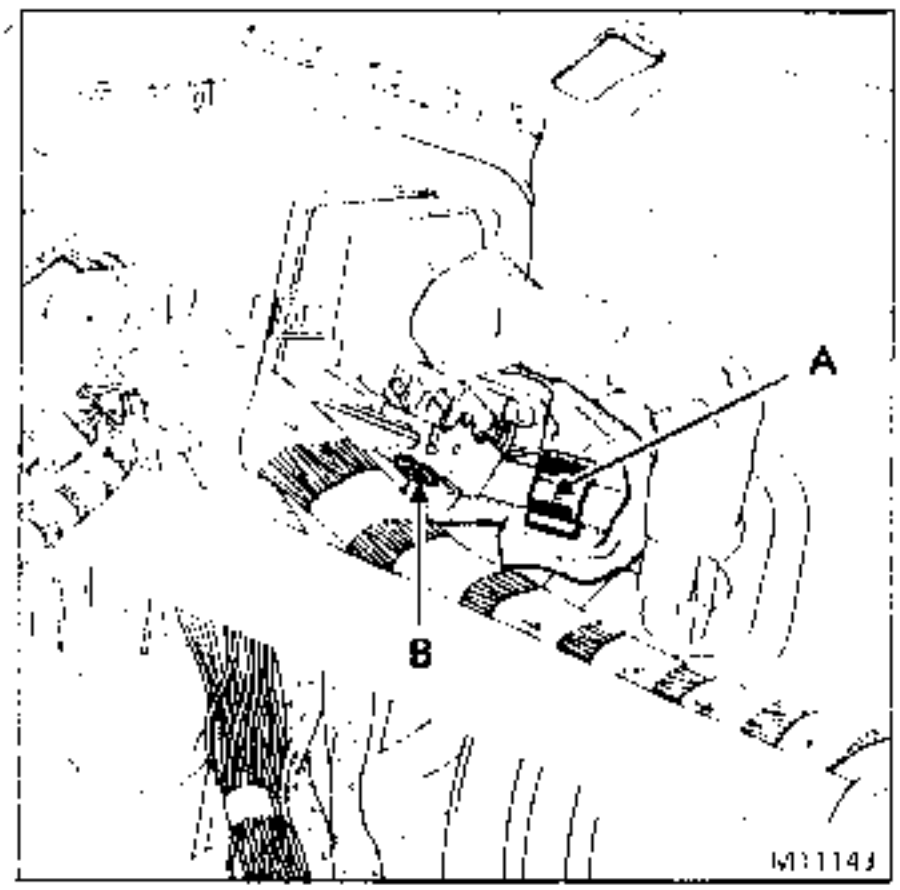
The fixed thermostat is located on the evaporator cover under the upper part of the dashboard.

REPLACING

Remove the upper part of the dashboard as described in section 01.

Disconnect the connectors from the thermostat.

Unclip clamp (A) after releasing the tar covered covering from the evaporator outlet tube.



Unscrew nut (B) then remove the thermostat.

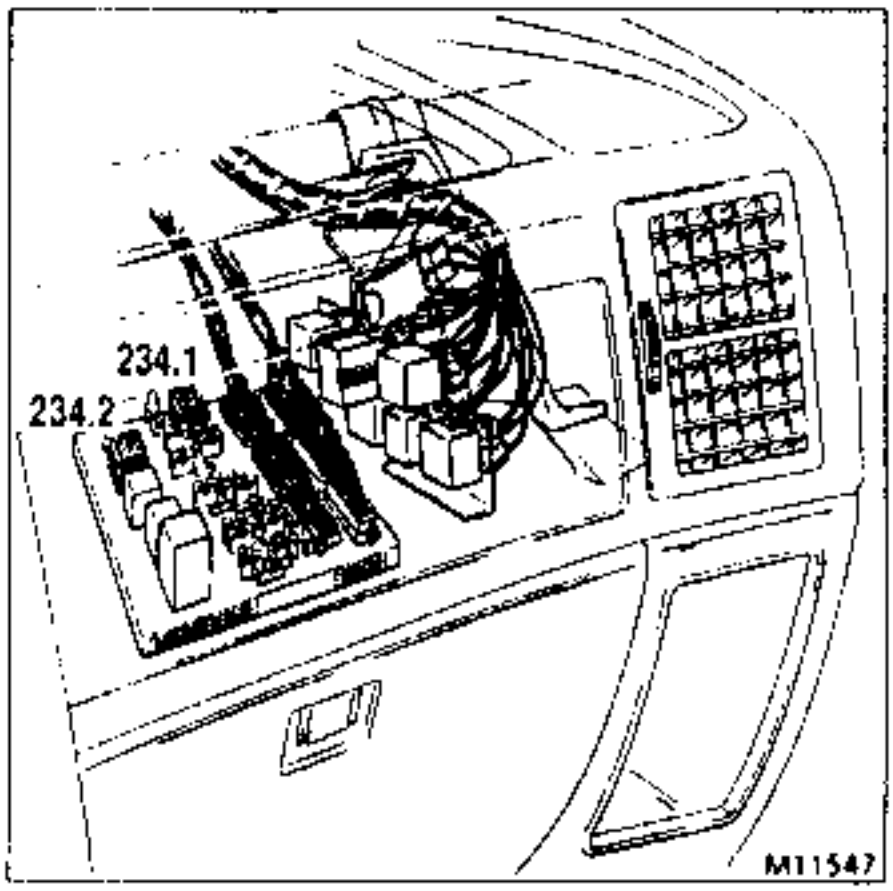
FAN MOTOR RESISTOR (298)
FAN MOTOR (164)

The resistor is located inside the blower fan motor assembly which is located in the engine compartment.

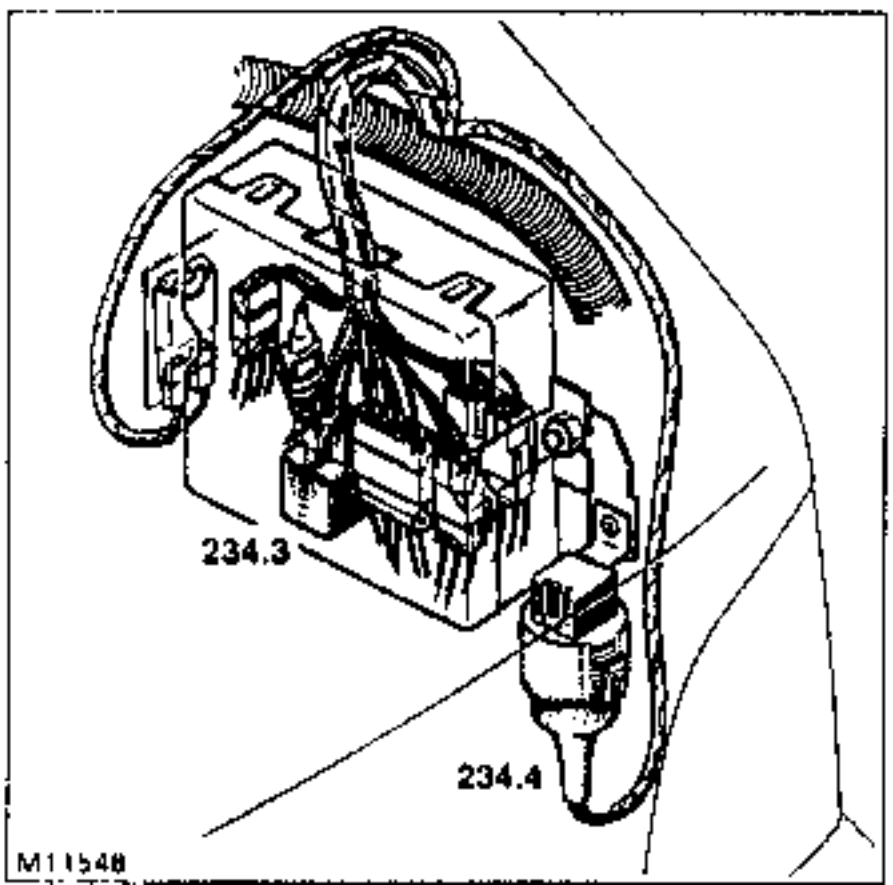
These units are removed and refitted according to the methods described on pages 61-18 and 61-20.

RELAYS (234)

Relays 234-1 and 234-2 for the 1st and 2nd ventilation speeds respectively are located on the accessories plate.



Relays 234-3 and 234-4 for the 3rd and 4th ventilation speeds respectively are located on the lefthand inner wing flange panel inside the engine compartment.



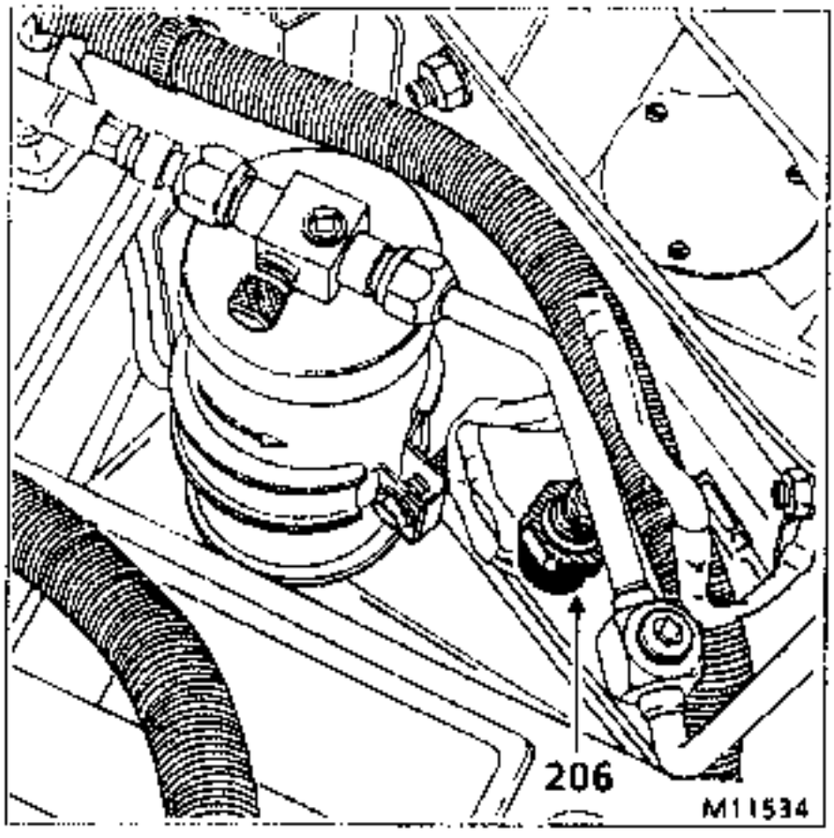
THREE PURPOSE PRESSOSTAT (206)

The three purpose pressostat protecting the refrigerant circuit has three roles:

- low pressure (2 bars);
- high pressure (27 bars);
- cooling fan motor (15 bars).

The high and low pressure devices are mounted in series between A1 and A2 on the connector.

The pressures for activating the cooling fan motor control a voltage between C1 and C2.



The pressostat may be worked on without draining the refrigerant circuit. It is secured on a SCHRADER valve.