



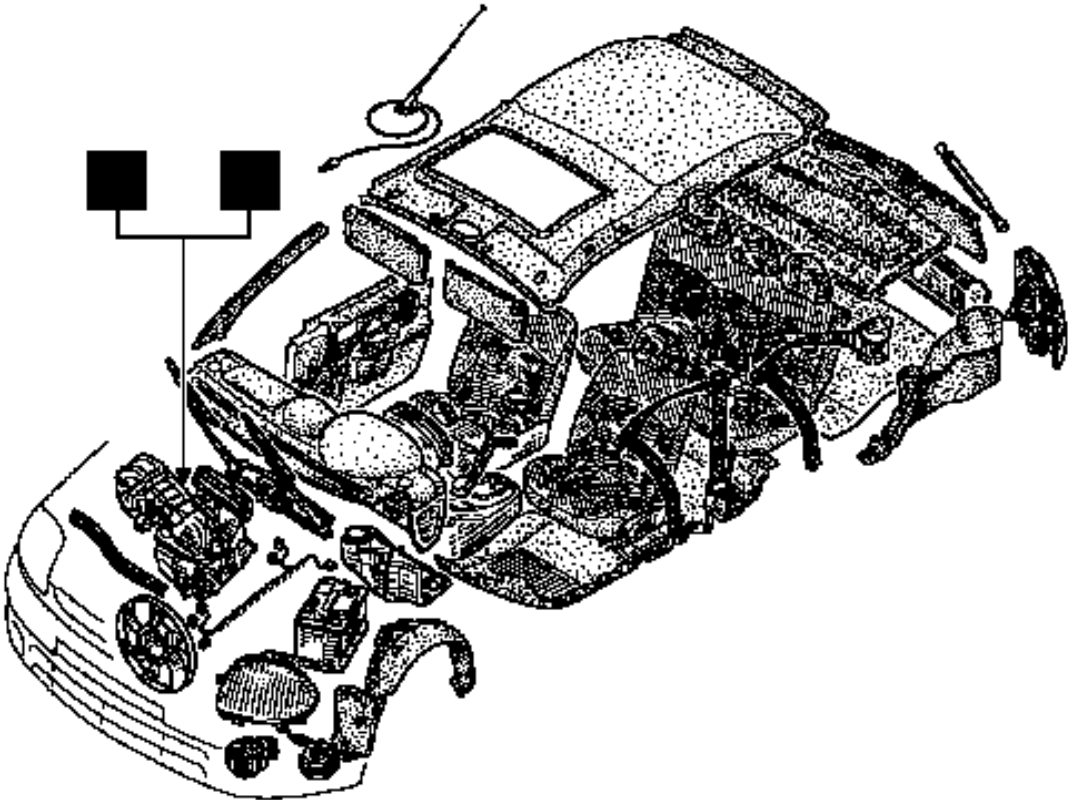
6 Heating and ventilation

61 HEATING

62 AIR CONDITIONING



EXPLODED VIEW



Heating and ventilation

Contents

Page

61 HEATING

Control panel	61-1
Control cables	61-2
Particle filter	61-3
Fan assembly	61-4
Distributor unit	61-5
Radiator	61-8

62 AIR CONDITIONING

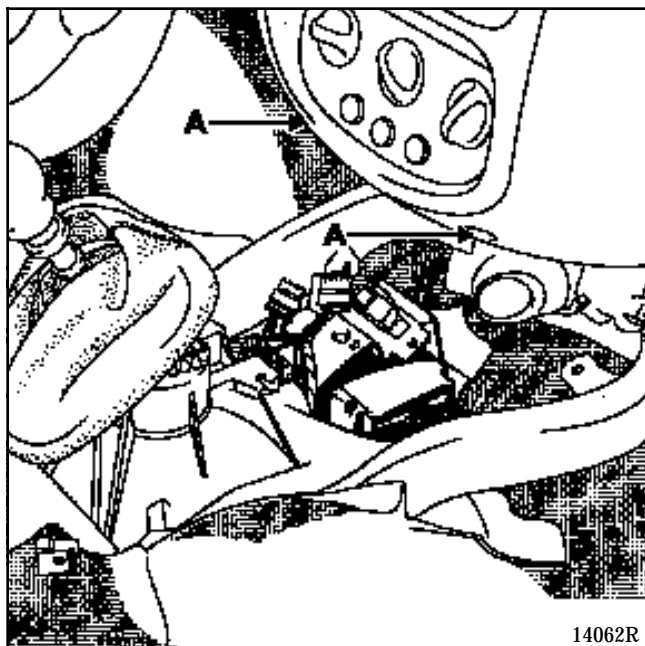
General	62-1
Wiring diagram	62-3
Evaporator	62-7
Fan	62-9
Compressor	62-10
Condenser	62-13
Pressure relief valve	62-14
Dehydration canister	62-15
Connecting pipes	62-16
Electric control	62-19
Computer	62-21

REMOVAL

Disconnect the battery.

Remove:

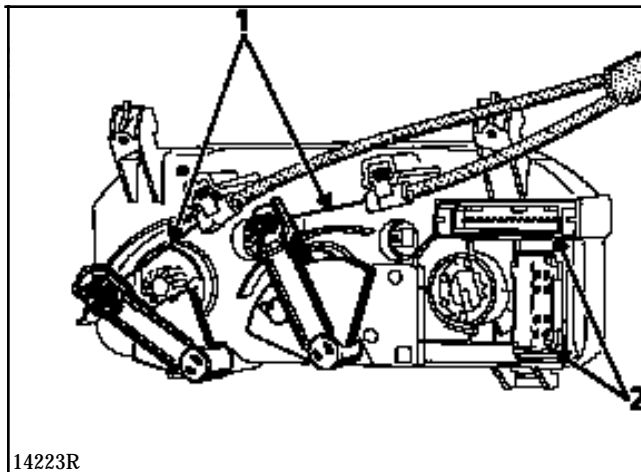
- the ashtray ,
- the centre console,



- the two mounting bolts (A) from the control panel on the dashboard.

Disconnect:

- the cables (1) on the control panel ,
- the control panel connectors (2) ,
- the control cables of the rotary arms on the heating unit.



REFITTING

Refitting is the reverse of removal.

Check the correct positioning of the control panel on its centring pins.

Check the setting of the air distribution and mixing controls (see section 61 "**Control cables**").

REMOVAL

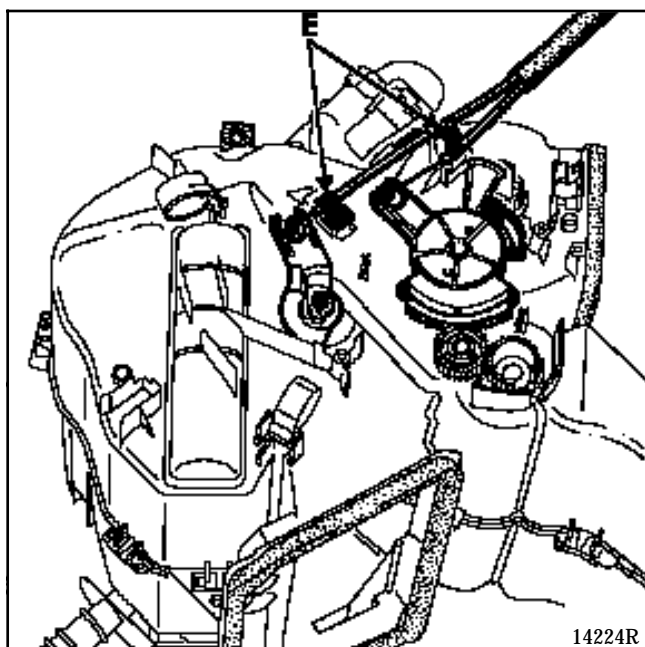
The removal of the control cables may be carried out without removing the dashboard.

Remove:

- the ashtray ,
- the centre console,
- the control panel and the cable concerned.

On the lower right hand side of the passenger compartment :

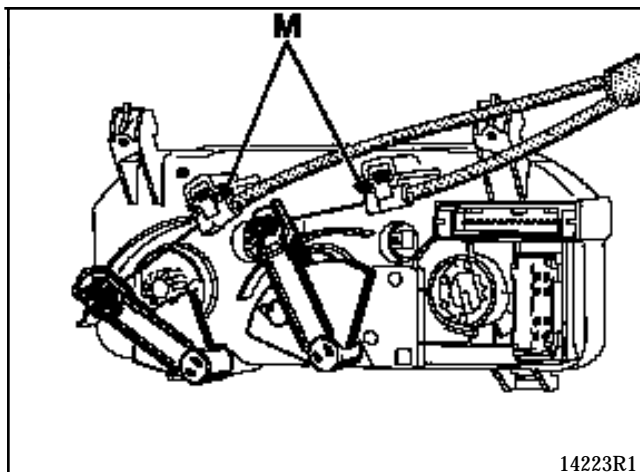
Remove the retaining clips (E).



REFITTING

Fit the cables on the control panel .

Fit the cable sleeve stops (M).



ADJUSTMENTS

Set the control panel knob and its associated flap against the stop.

Connect the cable to the flap on the distributor unit.

Replace the retaining clips (E).

Check the operation of the controls.

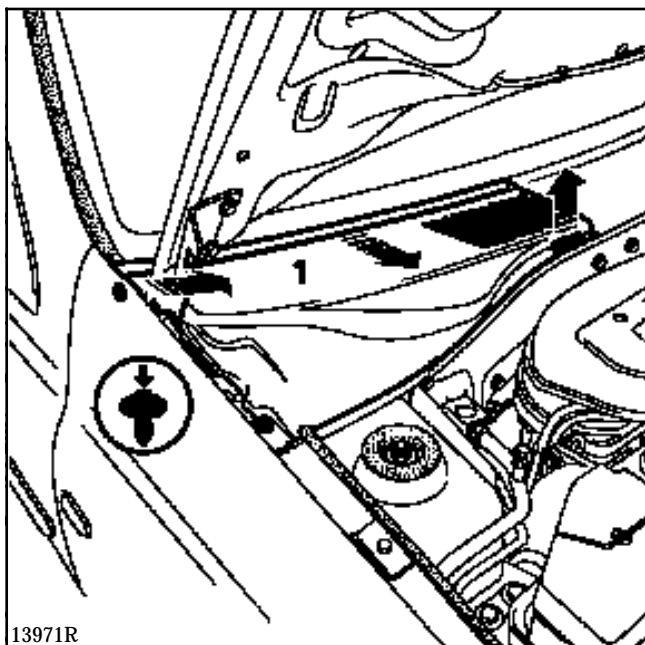
Refit the control panel to the dashboard.

Replace the centre console.

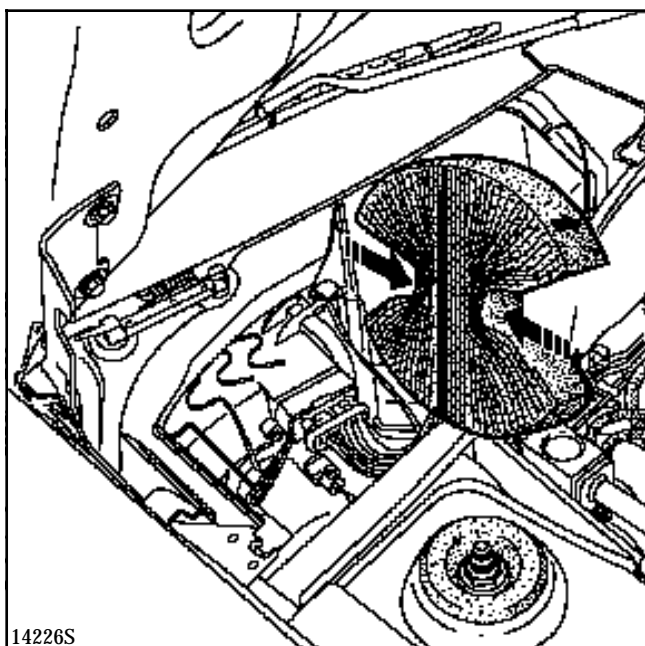
REMOVAL

Remove:

- the half scuttle panel grille on the right hand side (1),
- the protective covering of the particle filter.



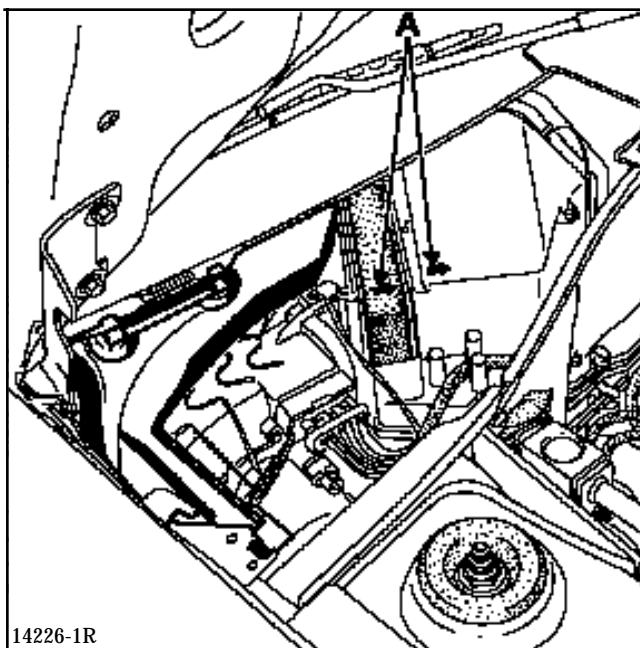
Remove the particle filter by folding it gently.



REFITTING

Replace the particle filter in the same way as for removal.

NOTE : ensure that the particle filter is fitted in the correct way (the two arrows (A) should be aligned).



FITTING WITHOUT PARTICLE FILTER

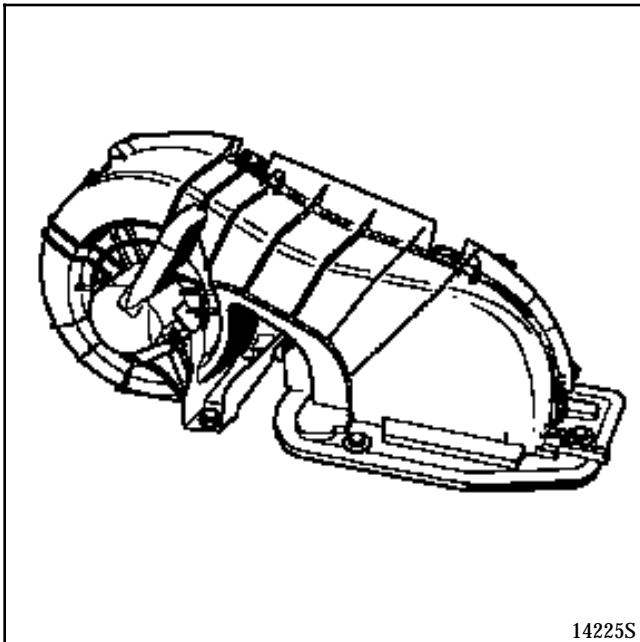
REMOVAL

Disconnect the battery.

Remove:

- the windscreen wiper arms,
- the complete scuttle panel grille ,
- the fan assembly connector,
- the three fan assembly mountings.

Remove it.



REFITTING

Refitting is the reverse of removal.

FITTING WITH PARTICLE FILTER

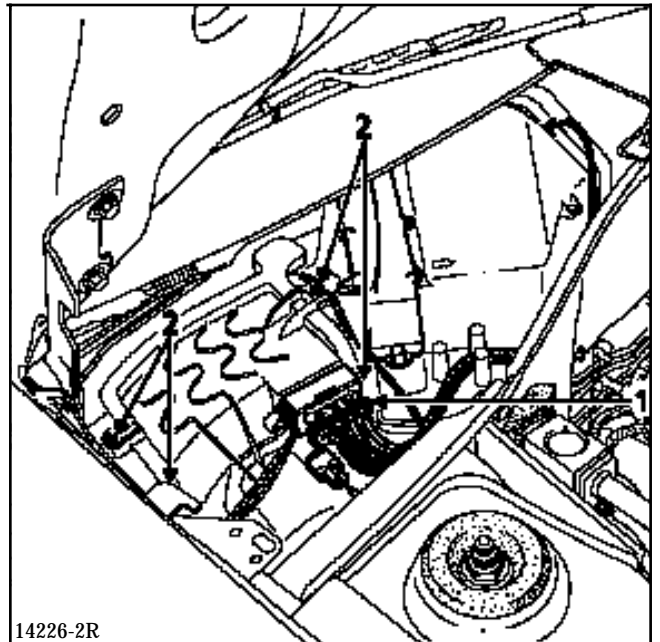
REMOVAL

Disconnect the battery.

Remove:

- the right hand scuttle panel half grille,
- the rain channel,
- the connector (1),
- the four mounting bolts (2).

Remove the fan assembly.



REFITTING

Refitting is the reverse of removal.

REMOVAL

Disconnect the battery.

Remove:

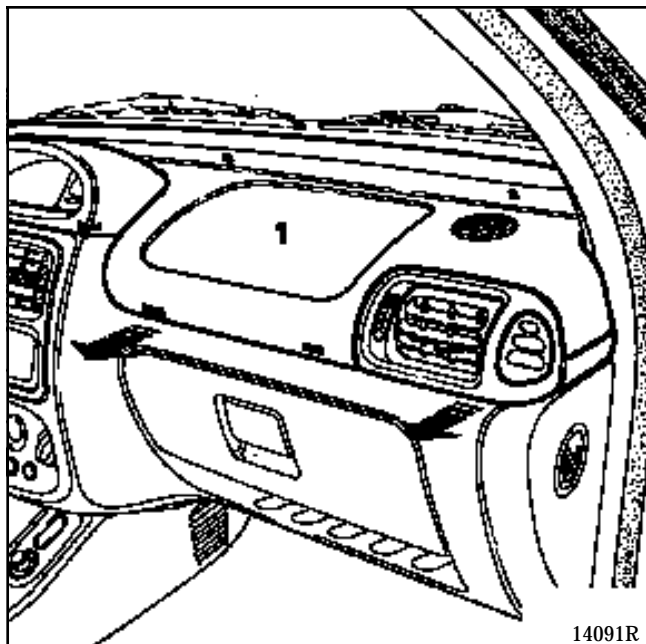
- the steering wheel bolt,
- the steering wheel after straightening the wheels.

IMPORTANT:

Follow the recommendations in section 88 for handling the AIRBAGs.

Remove:

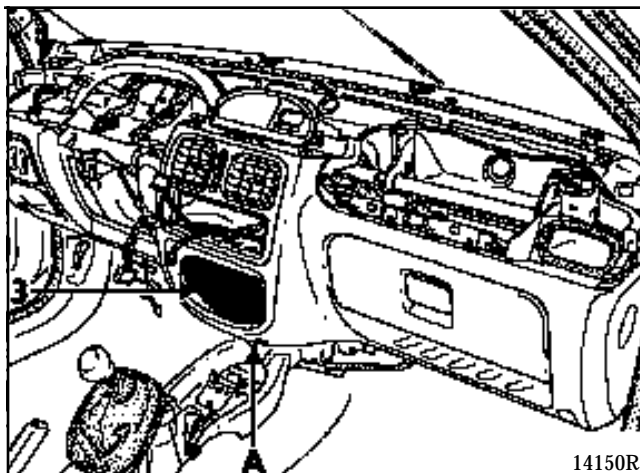
- the half cowlings of the steering column,
- the windscreen pillar trim (2 sections),
- the dashboard cover (1),



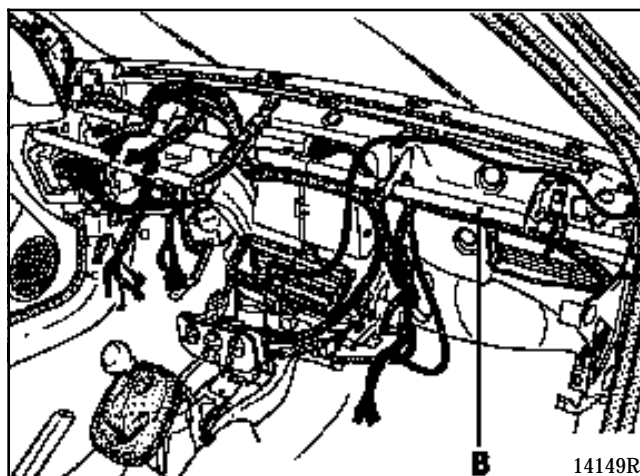
- the instrument panel,
- the control stalks for the windscreen wipers and the lights,
- the centre console,

- the two mounting bolts of the heating control panel (3),
- the car radio (if fitted),
- the passenger's airbag (if fitted),
- the steering column,
- the seven dashboard mounting bolts,
- the bolt (A) on the distributor unit located below the dashboard.

Remove the dashboard.

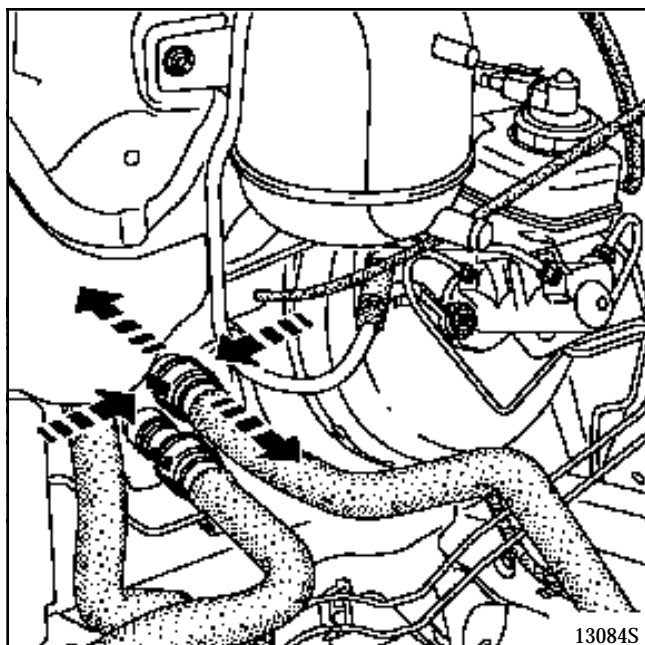


Remove the dashboard beam (B) mounting bolts and move it to one side.

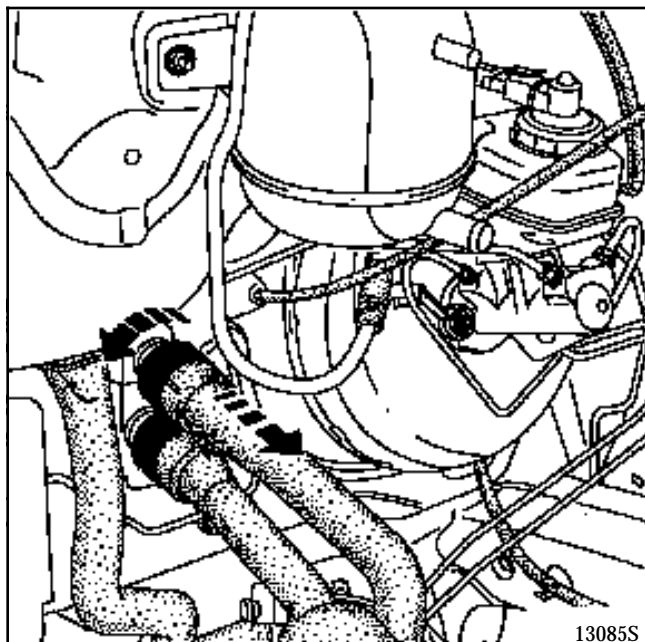


Engine compartment side

Fit a hose clamp and then disconnect the quick release clips from the heater hoses .



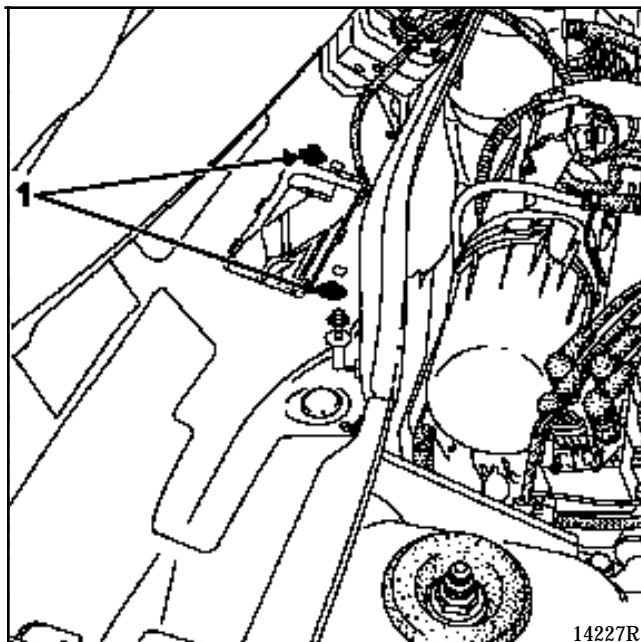
Another type of quick release clips.



Fit a shield and blow out the rest of the fluid using compressed air.

Remove:

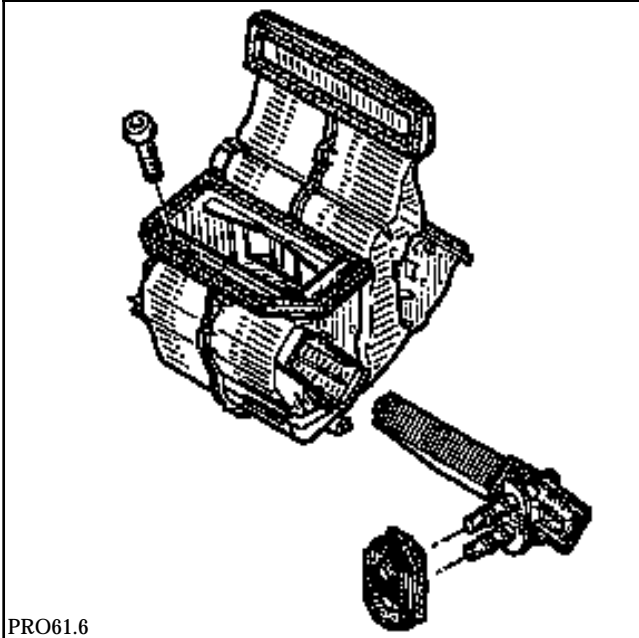
- the wiper arms using the tool **Elé. 1294-01**,
- the upper seal of the plenum chamber and the external air inlet grille,
- the fan assembly,
- the distributor unit mounting bolts(1) .



In the passenger compartment

Remove:

- the distributor unit,
- the heater radiator .



REFITTING

Check:

- correct fitting of the cables behind the dash-board,
- correct coupling of the air ducts to avoid noise.

Replace the steering wheel bolt (pre-bonded bolt, tightening torque : **4.5 daN.m**).

IMPORTANT : before reconnecting the AIRBAG cushion, the system operation checking procedure must be carried out :

- Check that the AIRBAG warning light on the instrument panel is illuminated when the ignition is switched on.
- Connect a dummy ignition module to the AIRBAG cushion connector and check that the warning light extinguishes .
- Switch off the ignition, connect the AIRBAG cushion in place of the dummy ignition module and secure the cushion to the steering wheel.
- Switch on the ignition, check that the warning light illuminates for three seconds when the ignition is switched on, then extinguishes and remains extinguished.

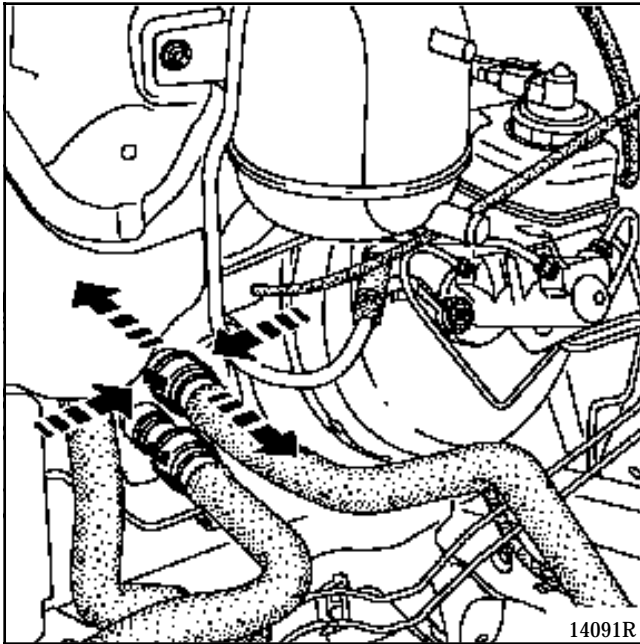
If the warning light does not operate as described above, consult **section 88**.

REMOVAL

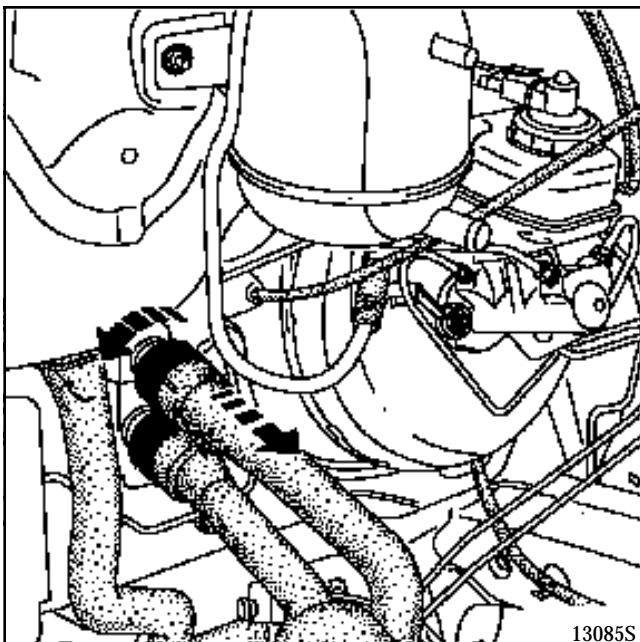
The removal of the radiator is carried out after the removal of the fan assembly, the dashboard and the air distributor unit.

Engine compartment side

Fit a hose clamp and then disconnect the quick release clips from the heater hoses .



Another type of quick release clip.

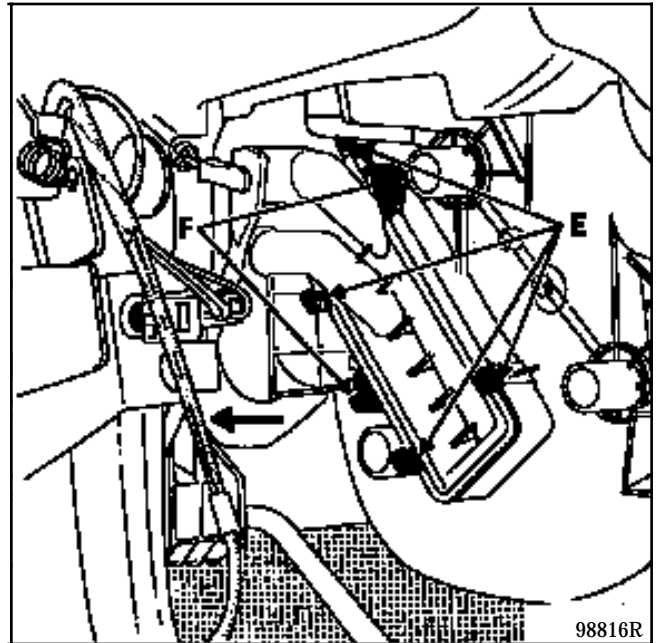


Fit a shield and blow out the rest of the fluid using compressed air.

Remove the heater hose flange bolt on the bulkhead.

Passenger compartment side

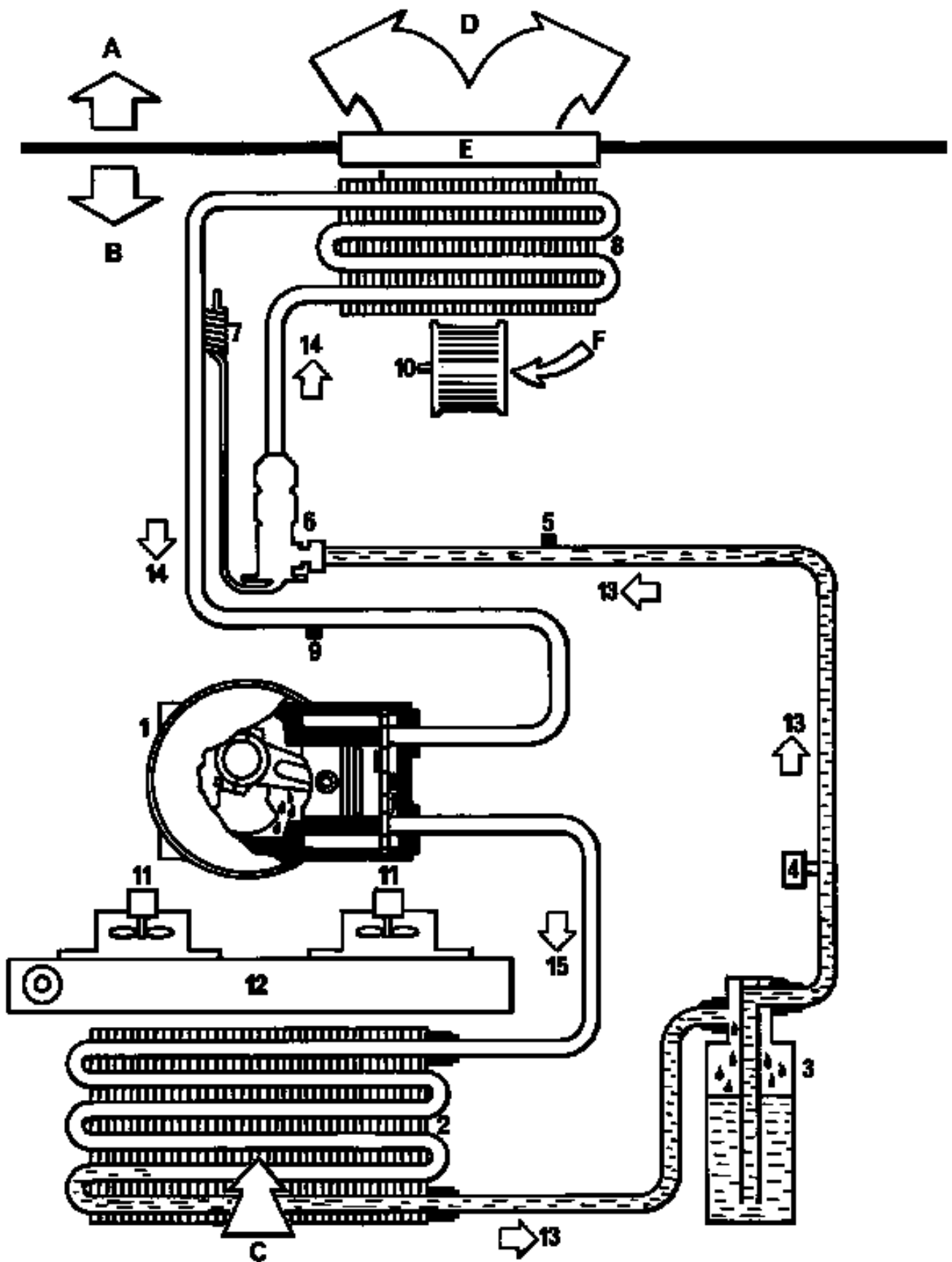
Spread the four clips (E), and remove the radiator.



REFITTING

Refitting is the reverse of removal.

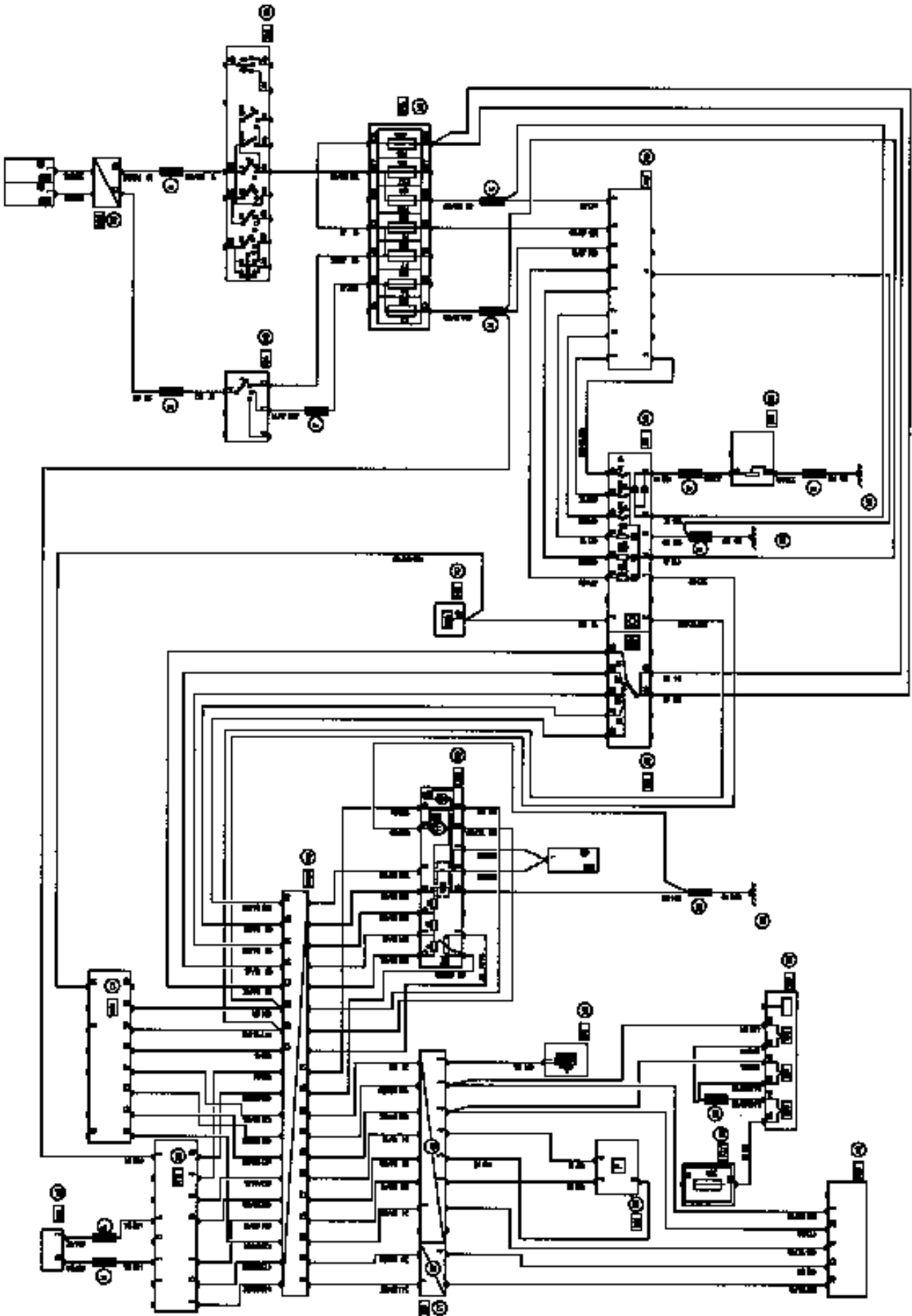
Fit two mounting bolts (F) on the unit body if any of the clips have broken.

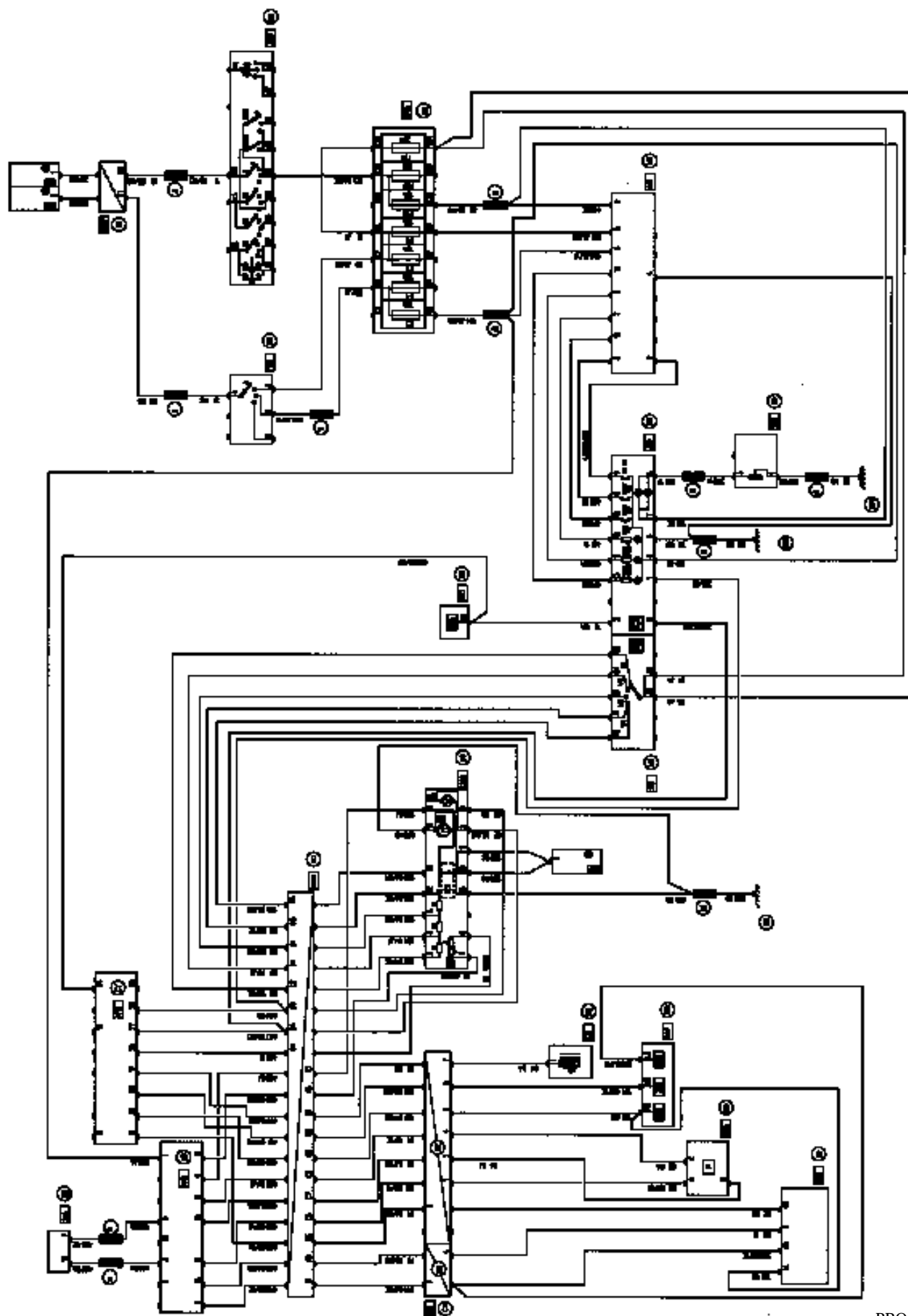


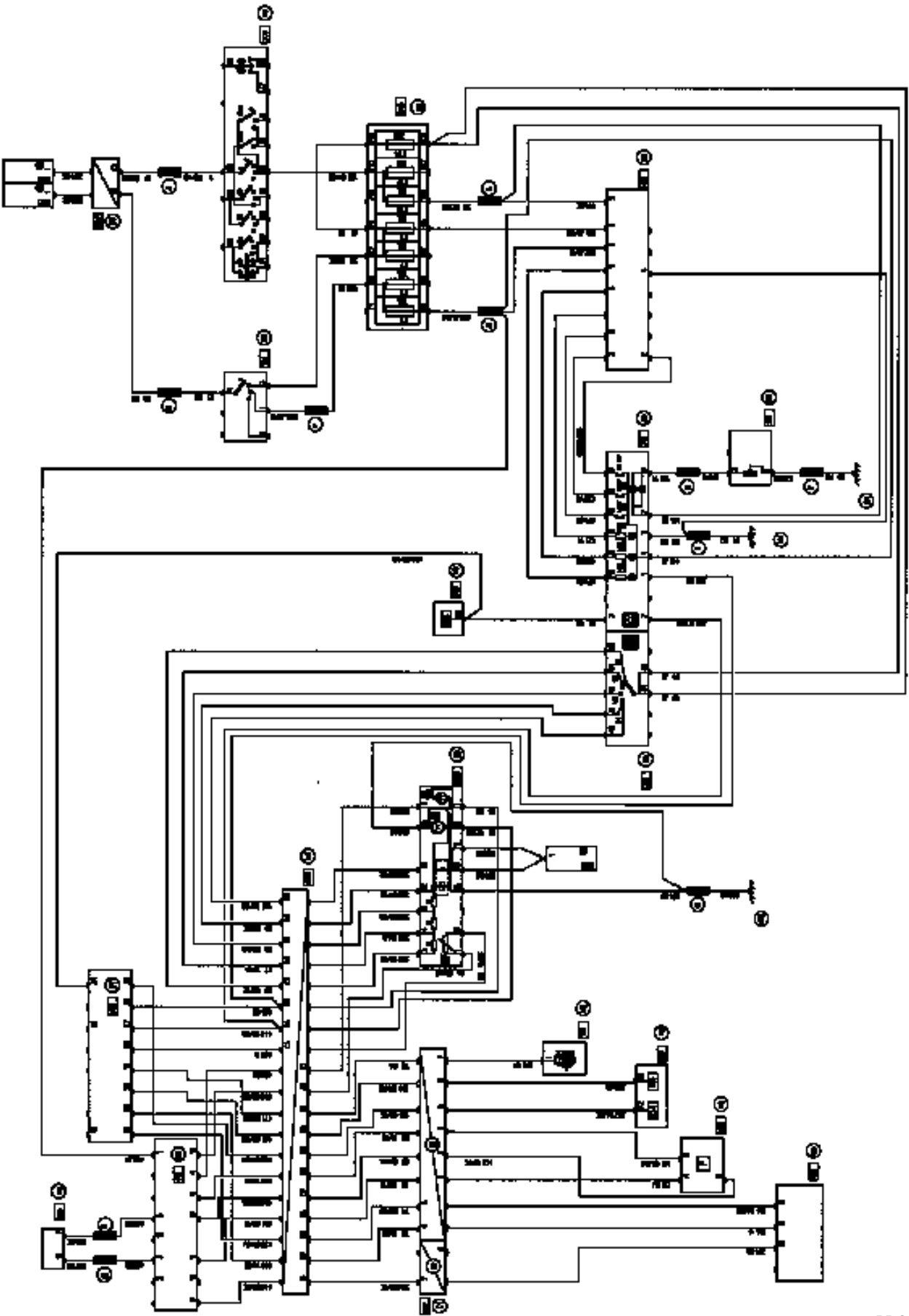
- A Passenger compartment
 - B Engine compartment
 - C Outside air
 - D Towards the air mixing unit
 - E Scuttle panel grille
 - F Outside or recycled air
-
- 1 Compressor
 - 2 Condenser
 - 3 Dehydration canister
 - 4 Tri-function pressostat
 - 5 High pressure bleed valve
 - 6 Pressure relief valve
 - 7 Pressure relief valve temperature regulation
 - 8 Evaporator
 - 9 Low pressure bleed valve
 - 10 Fan
 - 11 Cooling fan
 - 12 Engine radiator
 - 13 High pressure fluid
 - 14 Low pressure vapour
 - 15 High pressure vapour

Contents:

- Oil for the compressor
SANDEN SP 10 (P.A.G.) : 135 cm³
- Refrigerant
R134a : 650 ± 35 g
- Compressor
SANDEN SD 7V







104	Ignition switch
120	Injection computer
171	Air conditioning clutch
206	Air control pressure switch
209	Light switch
225	Diagnostic socket
241	Lighting rheostat
319	Air conditioning control panel
320	Basic fan assembly/Air conditioning
419	Air conditioning unit
597	Engine fuse box
645	Engine connection unit
777	Power supply fuse plate
R67	Front of engine / Engine
R107	Dashboard / front of engine

TIGHTENING TORQUES (in daN.m)



Pressure relief valve bolt on the evaporator	0.6
Connector pipe mounting nut on the pressure relief valve	0.8
Pressure relief valve connector pipe mounting bolt on the dehydration canister	0.8
Condenser connector pipe mounting bolt on the dehydration canister	1.2
Compressor connector pipe mounting bolt on the condenser	0.8
Connector pipe mounting bolt on the compressor	2.1
Compressor mounting bolt	2.1
Circuit pressure sensor	0.8

REMOVAL

Disconnect the battery.

Drain the R134a refrigerant from the circuit, using the filling station equipment (see the method described in the manual "Air conditioning").

Engine compartment side

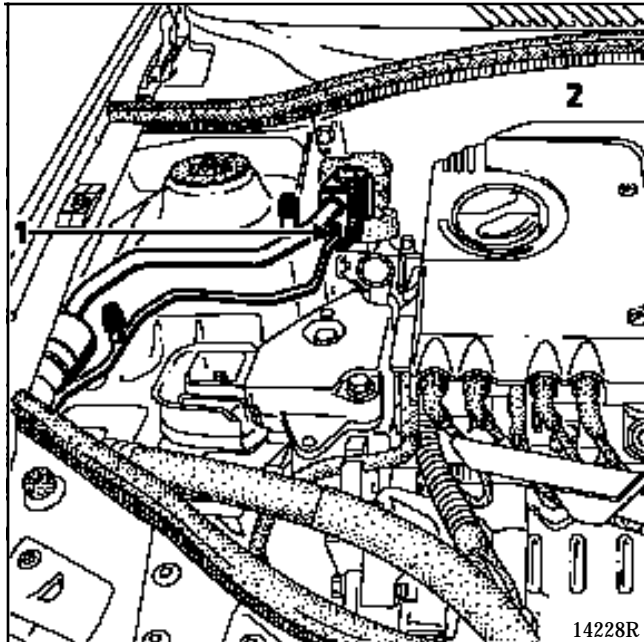
Disconnect the R134a connecting tubes (bolt 1) at the pressure relief valve .

Block the tubes and the pressure relief valve .

Remove:

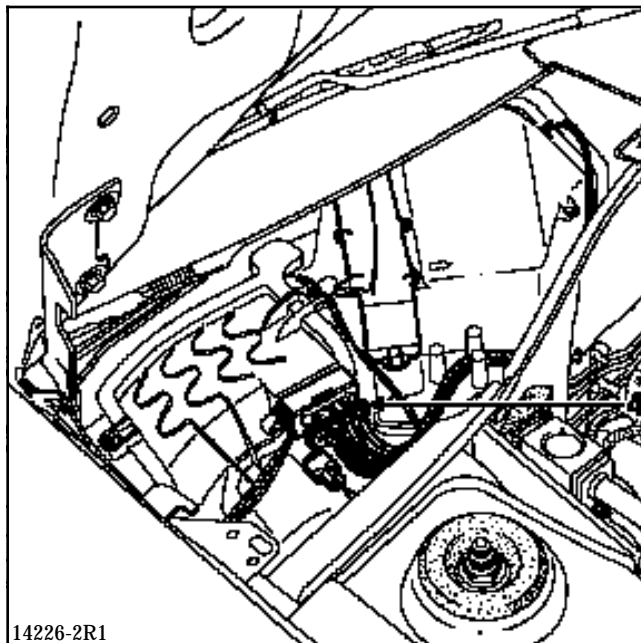
- the windscreen wiper arms,
- the air inlet grille,
- the two expansion bottle retaining bolts,
- the oil reservoir for the power assisted steering,

- the twelve plenum chamber closure panel bolts (2) and remove it,
- the evaporator protector in the plenum chamber.



Disconnect the electric connections (4).

Remove the evaporator unit bolts.



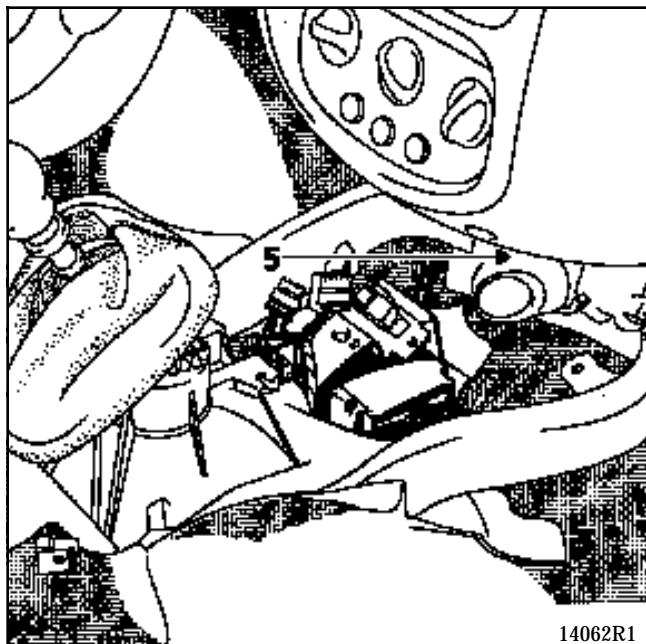
NOTE : the air filter unit must be removed for vehicles fitted with K7M, E7J and F8Q engines so the evaporator unit can be removed.

Passenger compartment side

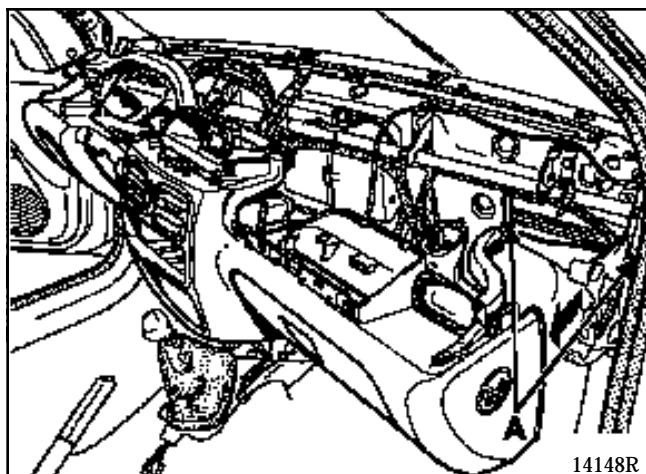
Remove the dashboard after removing :

- the cover,
- the centre console,
- the seven dashboard bolts,
- the bolt (5) (on the heater block).

NOTE : use rags to protect the parts of the dashboard which may be susceptible to damage.



Remove the two evaporator unit mountings (A) located behind the dashboard on the passenger's side.



Remove it.

Carefully remove the evaporator from the unit.

REFITTING

Check that the wiring loom tubes are not in contact (risk of noise).

Refitting is the reverse of removal.

Tighten the connector pipe nut to the pressure relief valve to **0.6 daN.m** (check the condition of the seal).

NOTE :

When refitting the dashboard, check :

- the correct positioning of the wiring,
- the correct fitting of the air ducts.

Use suction to complete the draining of the circuit, then refill with R134a refrigerant using the filling station equipment (see the method in the "Air conditioning" manual).

IMPORTANT

When replacing the evaporator, add **30 ml** of P.A.G. SP 10 oil to the circuit.

Use the same oil when refitting the seals and ensure that they are correctly positioned.

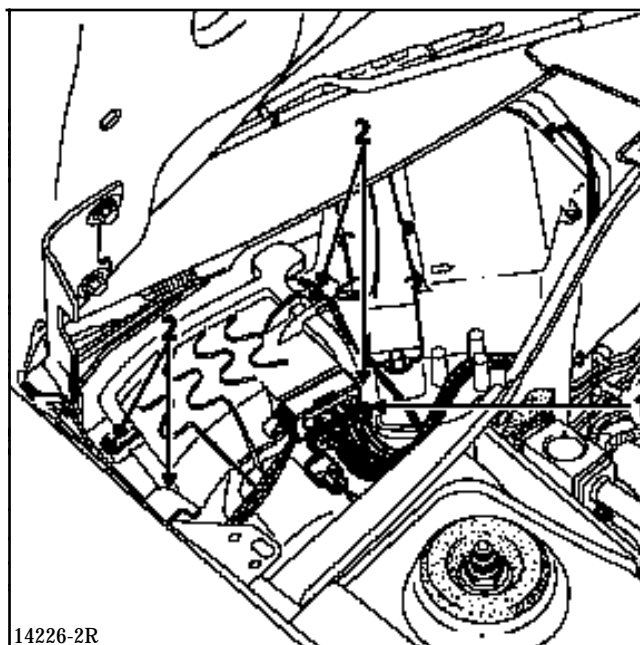
REMOVAL

Disconnect the battery.

Remove:

- the right hand scuttle panel half grille,
- the rain channel,
- the connector (1),
- the four bolts (2).

Remove the fan assembly.



REFITTING

Refitting is the reverse of removal.

REMOVAL

Drain the R134a refrigerant from the circuit (see the method described in the "Air conditioning" manual).

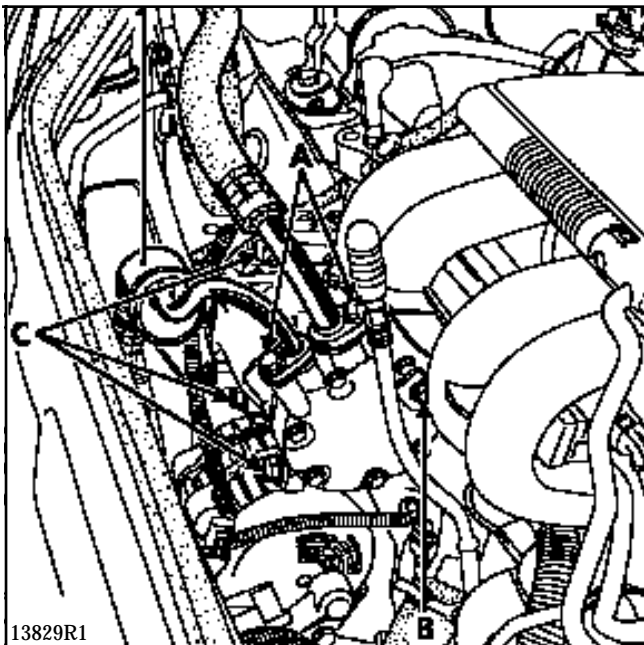
Disconnect the battery.

Remove:

- the compressor drive belt ,
- the two connecting pipes (A),
- the strut bolt(B),
- the three compressor bolts (C) .

Remove the compressor .

NOTE: the pipes and compressor **MUST** be plugged to prevent humidity entering the circuit.



13829R1

REFITTING

If replaced, the compressor is delivered full of oil.

Position the compressor in the correct direction (filler cap to the top).

Tighten the three bolts (C) (tightening torque : **2.1 daN.m**).

Fit the strut bolt (B) .

Refit the two R134a refrigerant pipes (A) on the compressor (Tightening torque : **2.1 daN.m**).

Fit the drive belt and check its tension.

Use suction to complete the draining of the circuit, then refill with R134a refrigerant using the filling station equipment (see the method in the "Air conditioning" manual).

NOTE: when refitting the connector pipes to the compressor, all bolts **MUST** be replaced, then hand tighten them before tightening to the recommended torque . The aim is to ensure the correct positioning of the pipe so that it is not damaged at the "damper" (1).

Check the condition of the seals and lubricate them with P.A.G. SP 10 oil.

IMPORTANT

When replacing the compressor , the oil level must be topped up correctly.

REMOVAL

Vehicle on a lift.

Drain the circuit of R134a refrigerant (see the method described in the "Air conditioning" manual).

Disconnect the battery.

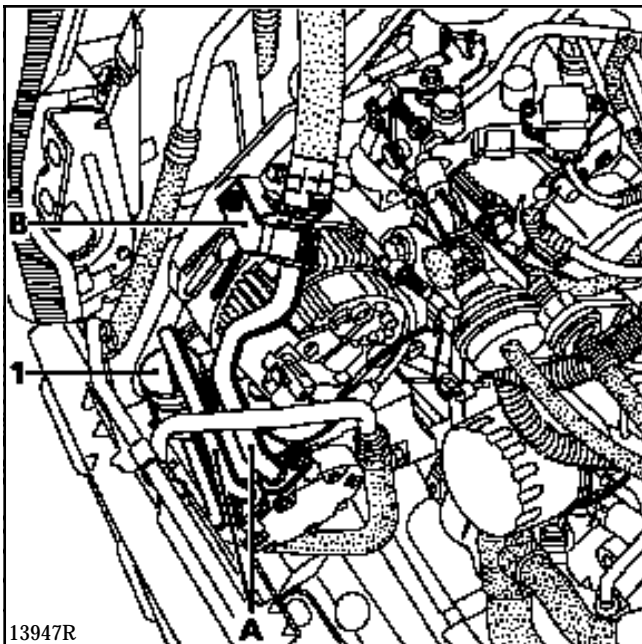
Remove the front bumper.

From above, remove :

- the compressor drive belt ,
- the two connector pipes (A),
- the connector pipe retaining bracket (B).

From beneath the vehicle, remove the three compressor bolts and remove it.

NOTE: the pipes and compressor **MUST** be plugged to prevent humidity entering the circuit.

**REFITTING**

If replaced, the compressor is delivered full of oil.

Position the compressor in the correct direction (filler cap to the top).

Tighten the three bolts (Tightening torque : **2.1 daN.m**).

Refit the two R134a refrigerant pipes (A) (Tightening torque : **2.1 daN.m**) on the compressor and the retaining bracket (B).

Fit the drive belt and check its tension.

Use suction to complete the draining of the circuit, then refill with R134a refrigerant using the filling station equipment (see the method in the "Air conditioning" manual).

NOTE: when refitting connector pipes on the compressor, all bolts **MUST** be replaced, then hand tighten them before tightening to the recommended torque . The aim is to ensure the correct positioning of the pipe so that it is not damaged at the "damper" (1).

Check the condition of the seals and lubricate them with P.A.G. SP 10 oil.

IMPORTANT

When replacing the compressor, the oil level must be topped up.

REMOVAL

Vehicle on a lift.

Drain the circuit of R134a refrigerant (see the method described in the "Air conditioning" manual).

Disconnect the battery.

Remove:

- the engine undertray,
- the bumper.

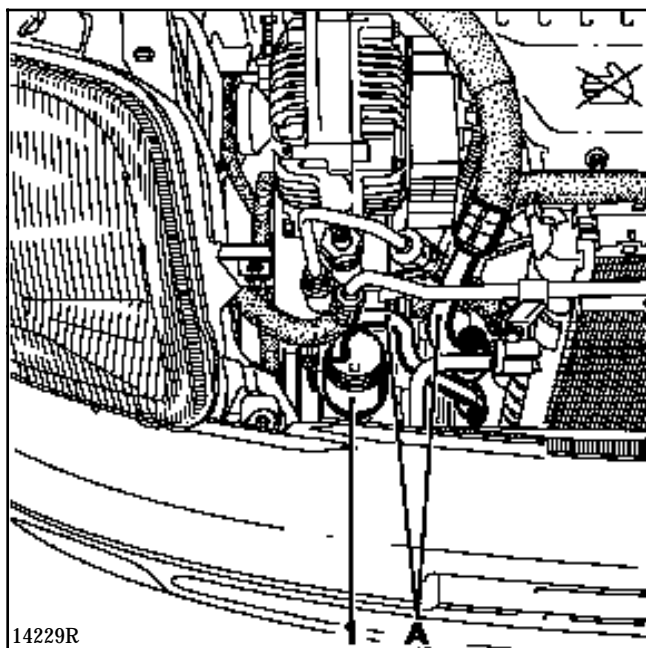
From above, remove:

- the accessory drive belt,
- the two R134a connector pipes (A).

From beneath the vehicle, remove:

- the compressor drive belt ,
- the compressor mounting bolts and remove the compressor.

NOTE: the pipes and compressor MUST be plugged to prevent humidity entering the circuit.



REFITTING

If replaced, the compressor is delivered full of oil.

Position the compressor in the correct direction (filler cap to the top).

Tighten the mounting bolts (Tightening torque : **2.1 daN.m**).

Refit the two R134a refrigerant pipes (A) (Tightening torque : **2.1 daN.m**) on the compressor .

Fit the drive belts and check their tension.

Use suction to complete the draining of the circuit, then refill with R134a refrigerant using the filling station equipment (see the method in the "Air conditioning" manual).

NOTE: when fitting the connector pipes on the compressor, all bolts MUST be replaced, then hand tighten them before tightening to the recommended torque . The aim is to ensure the correct positioning of the pipe so that it is not damaged at the "damper" (1).

Check the condition of the seals and lubricate them with P.A.G. SP 10 oil.

IMPORTANT

When replacing the compressor, the oil level must be topped up.

REMOVAL

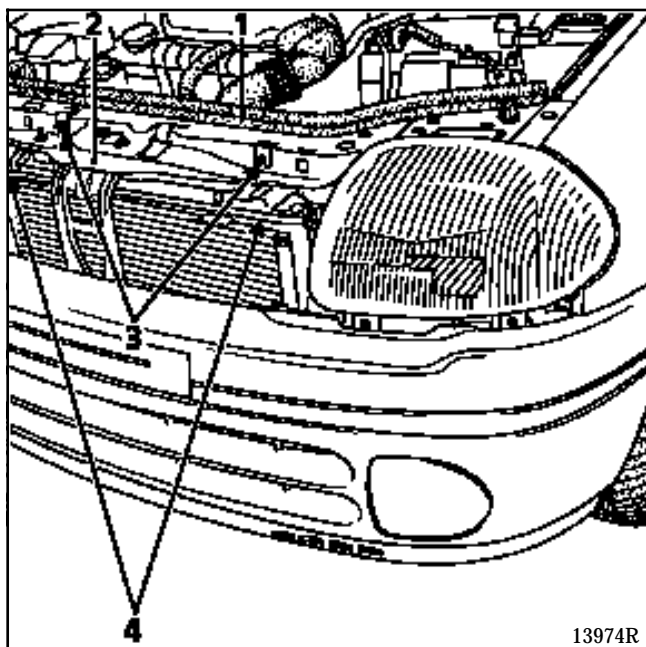
It is not necessary to use a lift.

Drain the circuit of R134a refrigerant (see the method described in the "Air conditioning" manual).

Disconnect the battery.

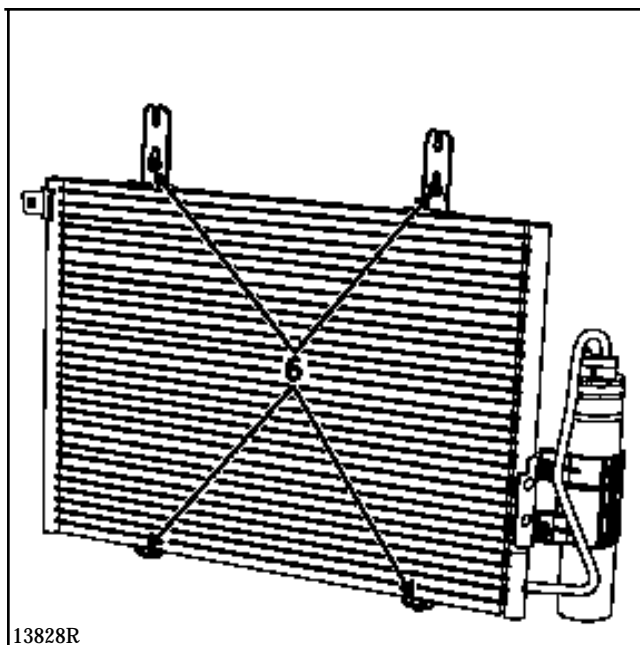
Remove:

- the radiator grille,
- the seal (1),
- the upper cross member (2),
- the two R134a refrigerant pipes (4) (plug to prevent humidity entering the system),
- the two radiator upper mounting bolts (3).



Remove the four condenser mounting bolts (6) on the radiator.

Remove the condenser carefully.



REFITTING

Refitting is the reverse of removal.

Check the condition of the seals.

Drain the circuit of R134a refrigerant, then , using suction, refill it (see the method described in the "Air conditioning" manual).

IMPORTANT

When replacing the condenser, add **30 ml** of P.A.G. SP 10 oil to the circuit.

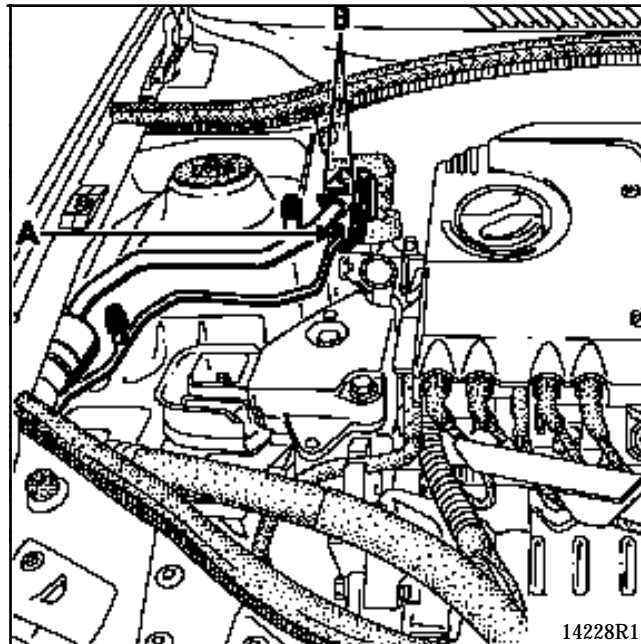
NOTE: tightening torque for the bolts (6) : **0.8 daN.m.**

REPLACEMENT

Drain the R134a refrigerant from the circuit using the filling station equipment (see the method described in the "Air conditioning" manual).

Remove:

- the connector piping mounting nut (A) ,
- the two pressure relief valve mounting bolts (B) on the evaporator.



When refitting, ensure that the pipe seals are in good condition.

Bolt tightening torques :

- bolt (A) : **0.8 daN.m**,
- bolt (B) : **0.6 daN.m**.

Drain the R134a refrigerant from the circuit using suction, then refill using the filling station equipment (see the method described in the "Air conditioning" manual).

REMOVAL

Vehicle on a lift.

Drain the R134a refrigerant from the circuit using the filling station equipment (see the method described in the "Air conditioning" manual).

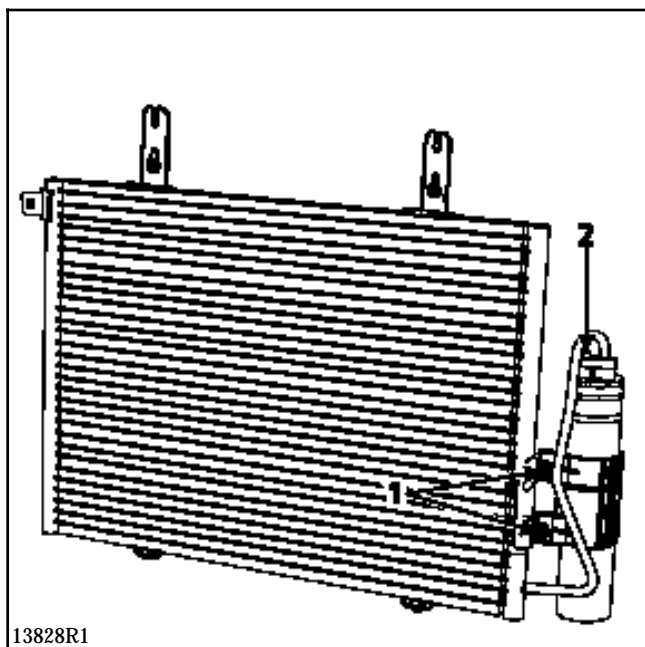
Remove:

- the radiator grille,
- the two radiator upper mounting bolts,
- the R134a union (2),
- the two pipe mounting bolts on the dehydration canister .

Gently push back the radiator - condenser assembly.

From beneath the vehicle

Remove the two dehydration canister mounting bolts (1) on the condenser .



Remove the dehydration canister .

Plug all openings to avoid humidity entering the assembly.

REFITTING

Refitting is the reverse of removal.

Check the condition of the seals and lubricate them with P.A.G. SP 10 oil.

Drain the R134a refrigerant from the circuit using suction, then refill using the filling station equipment (see the method described in the "Air conditioning" manual).

When replacing the dehydration canister, add **15 ml** of P.A.G. SP 10 oil to the circuit.

NOTE: bolt tightening torque (2) : **1.2 daN.m**

Disconnect the battery.

Drain the R134a refrigerant from the circuit using the filling station equipment (see the method described in the "Air conditioning" manual).

LOW PRESSURE PIPE

REMOVAL

Remove the mounting bolt on the pressure relief valve .

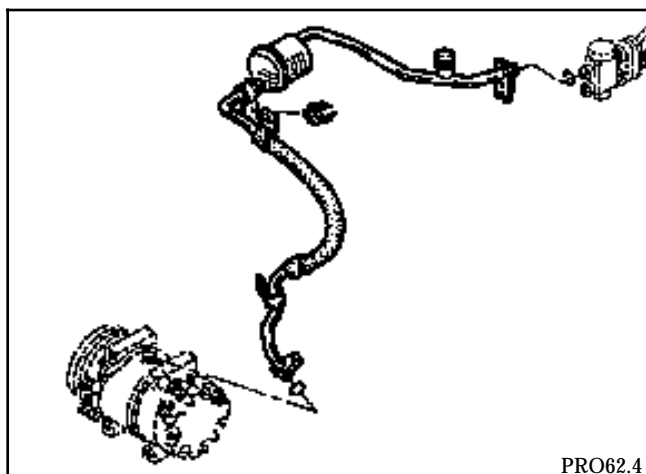
Plug the pressure relief valve and the pipe.

Remove the mounting bolt on the compressor .

Plug the compressor and the pipe.

Slacken the pipe retaining bracket.

Remove the low pressure pipe.



REFITTING

Refitting is the reverse of removal.

Check the condition of the seals and lubricate them with P.A.G. SP 10 oil.

When replacing a pipe, add **10 ml** of SP 10 oil or add **100 ml** when a pipe breaks (rapid leak).

NOTE:

- Pipe mounting bolt on the compressor : **2.1 daN.m**
- Pipe mounting nut on the pressure relief valve : **0.8 daN.m**
- Pipe mounting bolt on the condenser : **0.8 daN.m**

Disconnect the battery.

Drain the R134a refrigerant from the circuit using the filling station equipment (see the method described in the "Air conditioning" manual).

COMPRESSOR - CONDENSER HIGH PRESSURE PIPE

REMOVAL

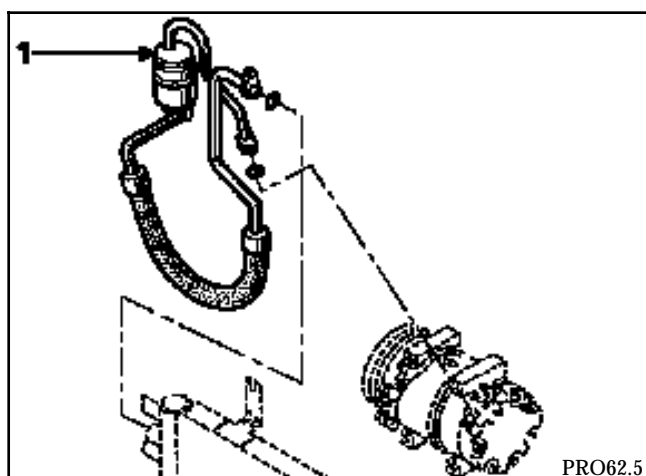
Remove the mounting bolt on the condenser .

Plug the compressor and the pipe.

Remove the condenser mounting bolt.

Remove the pipe.

Plug the condenser and the pipe.



REFITTING

Refitting is the reverse of removal.

NOTE: when refitting the connector pipe on the compressor; all bolts **MUST** be replaced, then hand tighten them before tightening to the recommended torque. The aim is to ensure the correct positioning of the pipe so that it is not damaged at the "damper" (1).

Check the condition of the seals and lubricate them with P.A.G. SP 10 oil.

When replacing a pipe, add **10 ml** of SP 10 oil or add **100 ml** when a pipe breaks (rapid leak).

Disconnect the battery.

Drain the R134a refrigerant from the circuit using the filling station equipment (see the method described in the "Air conditioning" manual).

HIGH PRESSURE CONNECTOR PIPE BETWEEN THE DEHYDRATION CANISTER AND THE PRESSURE RELIEF VALVE

REMOVAL

Disconnect the pipe from its mountings.

Disconnect the pressure sensor connector.

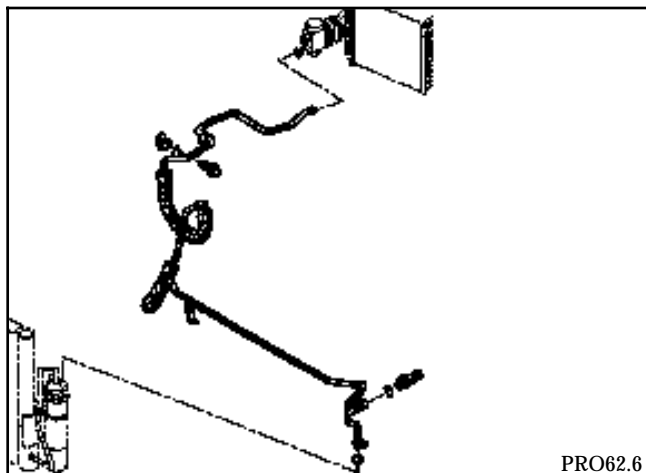
Remove the pressure relief valve mounting bolt.

Plug the pressure relief valve and the pipe.

Remove the dehydration canister mounting bolt .

Plug the dehydration canister and the pipe.

Remove the pipe.



REFITTING

Refitting is the reverse of removal.

Check the condition of the seals and lubricate them with P.A.G. SP 10 oil.

When replacing a pipe, add **10 ml** of **SP 10** oil or add **100 ml** when a pipe breaks (rapid leak).

NOTE:

- Pipe mounting bolt on the dehydration canister : **0.8 daN.m**
- Pipe mounting nut on the pressure relief valve : **0.8 daN.m**

- **EVAPORATOR SENSOR**

REMOVAL

Disconnect the battery.

Remove:

- the right hand scuttle panel half grille,
- the evaporator protector in the plenum chamber.

Disconnect the evaporator sensor connector .

Remove the evaporator sensor .

REFITTING

Refitting is the reverse of removal.

Ensure the sensor is correctly positioned in its place on the evaporator .

- **0.23 Ω RESISTANCE (2) FOR ENGINE COOLING FAN SPEED**

It is mounted on the engine cooling fan mounting.

- **RECYCLING MOTOR**

Access to the recycling motor is only possible after removal of the fan.

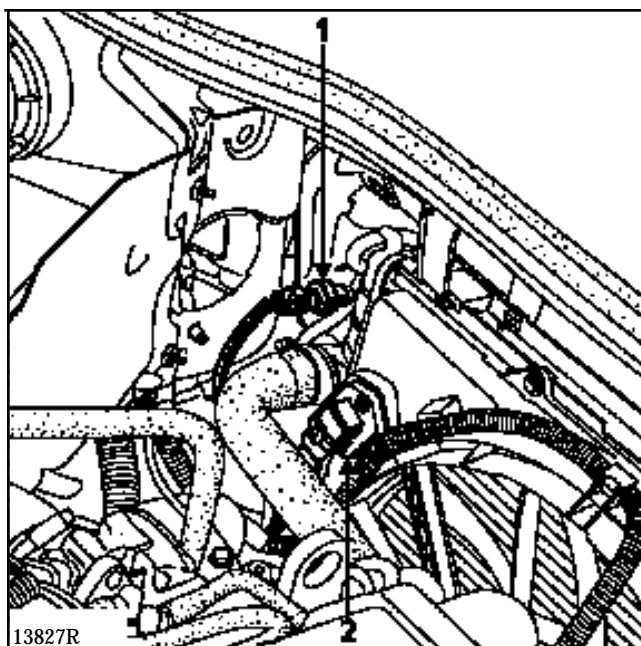
Remove the two mounting bolts on the recycling unit.

New motors are delivered with the flap set half open and refitting does not require any specific precautions.

Check correct operation.

- **PRESSURE SENSOR**

The pressure sensor (1) is located beside the condenser on the high pressure pipe between the pressure relief valve and the dehydration canister .



All operations can be carried out on the sensor without draining the refrigerant from the circuit; it is mounted on a "SCHRADER" valve.

Tightening torque : **0.8 daN.m.**

This pressure sensor is fitted with a seal so, when refitting, ensure that it is in good condition and lubricate it with P.A.G. SP 10 oil.

• PASSENGER COMPARTMENT FAN SPEED RESISTOR UNIT

CONVENTIONAL HEATING VERSION

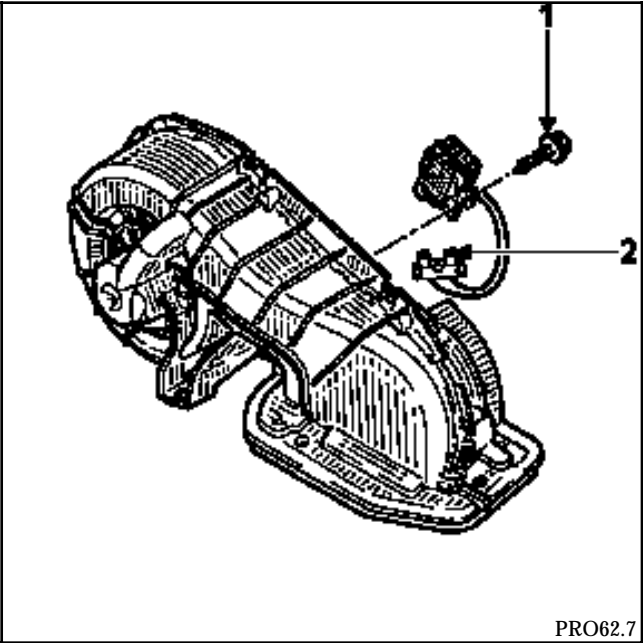
REMOVAL

Remove the right hand scuttle panel half grille.

From behind the engine cooling fan assembly block, remove the bolt (1).

Remove the resistor unit.

Disconnect the connector (2).



REFITTING

Refitting is the reverse of removal.

AIR CONDITIONING AND PARTICLE FILTER VERSION

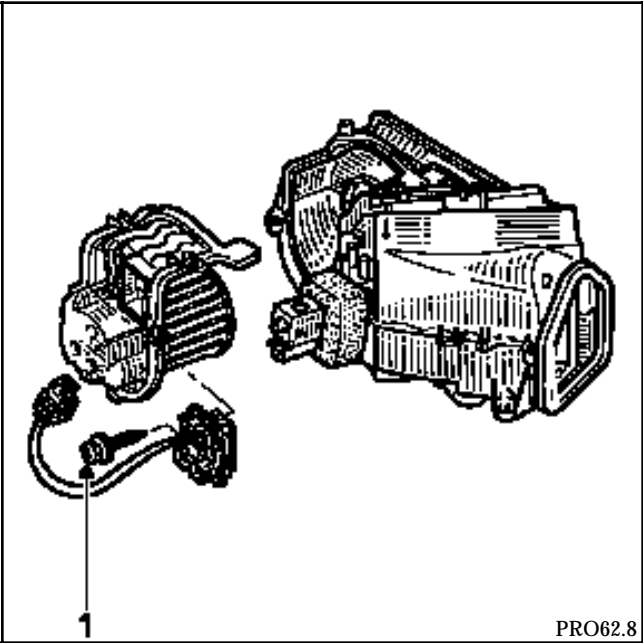
REMOVAL

Remove the right hand scuttle panel half grille.

Disconnect the electrical connections.

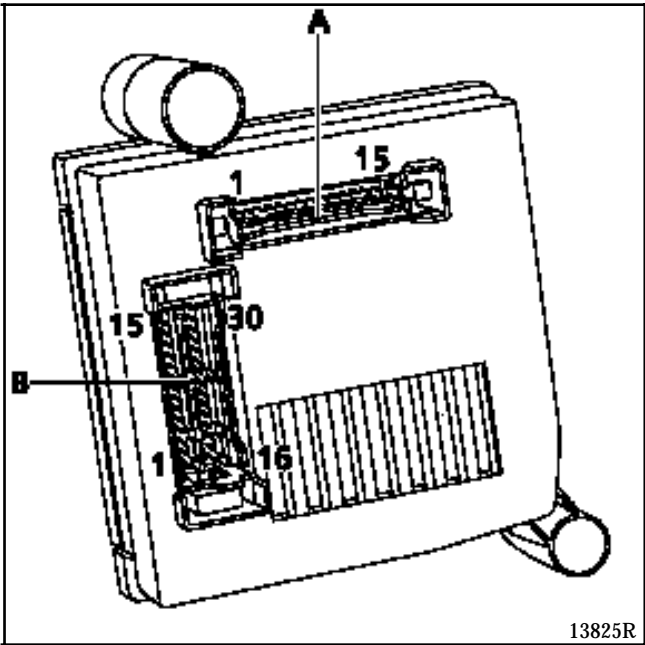
Remove the bolt (1).

Remove the resistor unit.



REFITTING

Refitting is the reverse of removal.



15 Track connector (A)

Track	Description
1	Not used
2	Air conditioning operation information
3	Recycling on/off
4	Air conditioning computer earth
5	+ 12 V accessories (engine cooling fan assembly fuse)
6	+ 12 V after ignition feed (stop fuse)
7	Air conditioning operation warning light
8	Recycling operation warning light
9	+ side lights
10	Heated rear screen control
11	Heated rear screen operation warning light
12	Not used
13	Not used
14	Not used
15	Not used

30 track connector (B)

Track	Description
1	+ 12 V after ignition feed (stop fuse)
2	Compressor control
3	Diagnostic information L
4	Engine cooling fan voltage information
5	Not used
6	Diagnostic information K
7	Not used
8	TDC information
9	Refrigerant pressure sensor
10	Refrigerant pressure sensor
11	Refrigerant pressure sensor signal
12	Evaporator sensor
13	Power absorbed information
14	Not used
15	Not used
16	+ 12 V after ignition feed (stop fuse)
17	Compressor control
18	Air conditioning cut-out information
19	Not used
20	Not used
21	Fast idle connection
22	Engine cooling fan assembly low speed control
23	Engine cooling fan assembly high speed control
24	Heated rear screen control
25	Not used
26	Air conditioning recycling motor
27	Air conditioning recycling motor
28	Not used
29	Evaporator sensor
30	Not used