



6 Heating and ventilation

61 HEATING

62 AIR CONDITIONING

CB1A

AUGUST 2001

EDITION ANGLAISE

"The repair methods given by the manufacturer in this document are based on the technical specifications current when it was prepared.

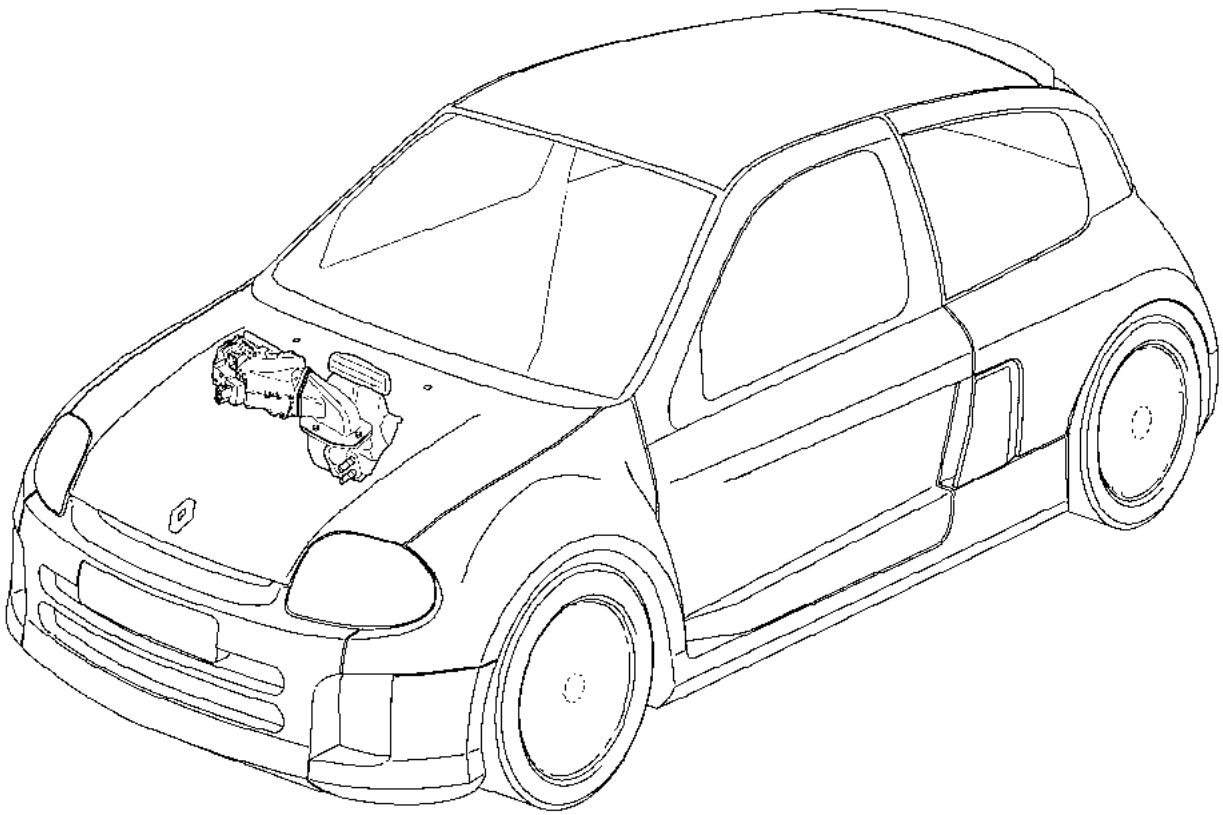
The methods may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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GENERAL OVERVIEW



17236

Heating and ventilation

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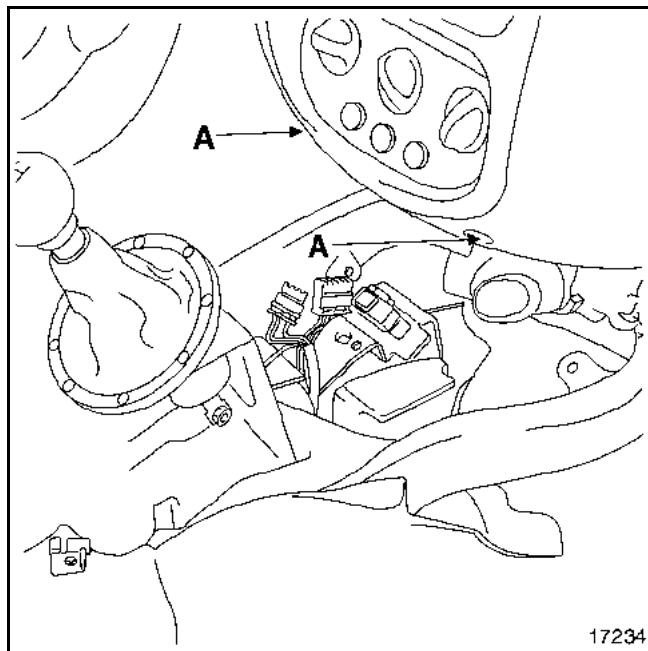
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REMOVAL

Disconnect the battery.

Remove:

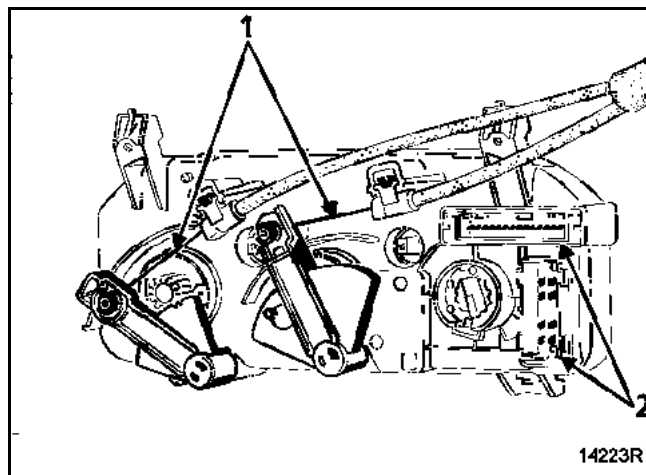
- the ashtray,
- the central console,



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

Disconnect:

- the control panel cables (1),
- the control panel connectors (2),



REFITTING

To refit, proceed in the reverse order of removal.

Check that the control panel is positioned correctly on its centring pins.

Check the settings of the air distribution and air mixing controls (see the information on **control cables** in section 61).

REMOVAL

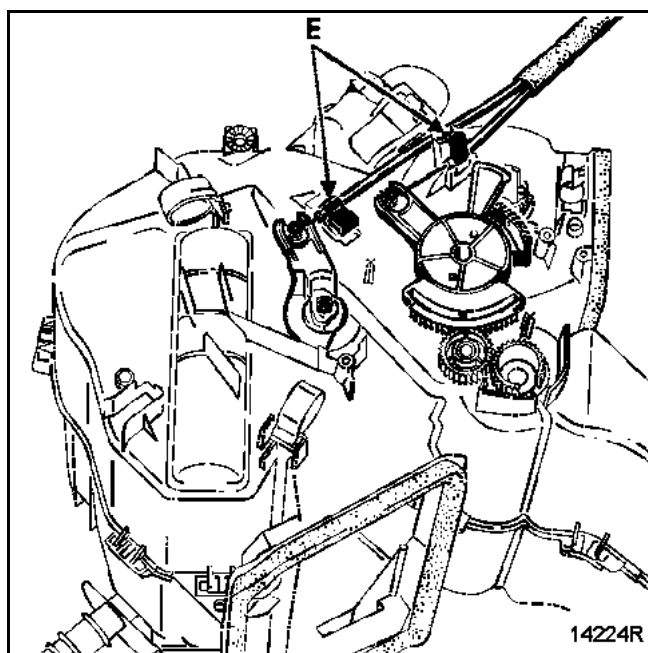
The control cables can be removed without removing the dashboard.

Remove:

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

Lower right-hand side of the passenger compartment

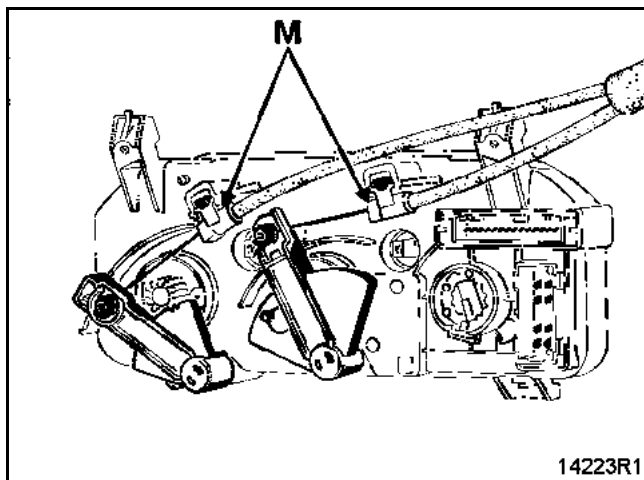
Remove the retaining clips (E).



REFITTING

Fit the cables on the control panel.

Fit the sleeve stops (M).



ADJUSTMENT

Position the control panel rotary control and its flap to the stop.

Engage the cable in the distribution unit flap.

Replace the retaining clips (E).

Check that the controls are operating correctly.

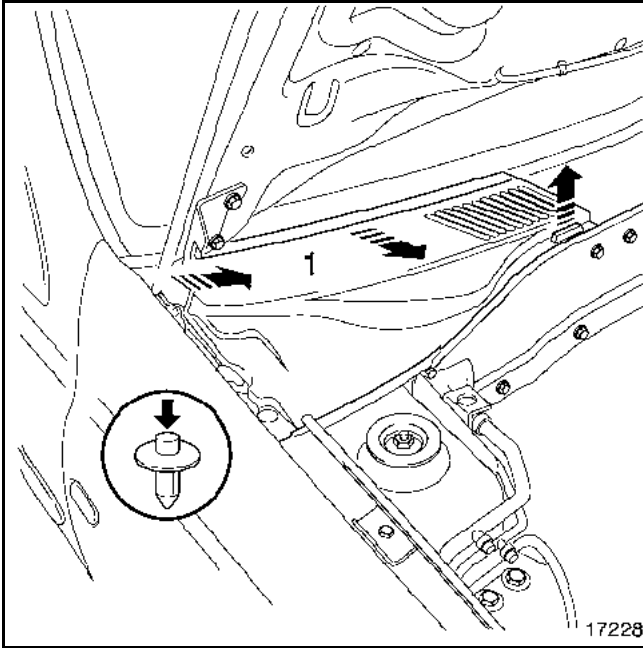
Refit the control panel on the dashboard.

Replace the central console.

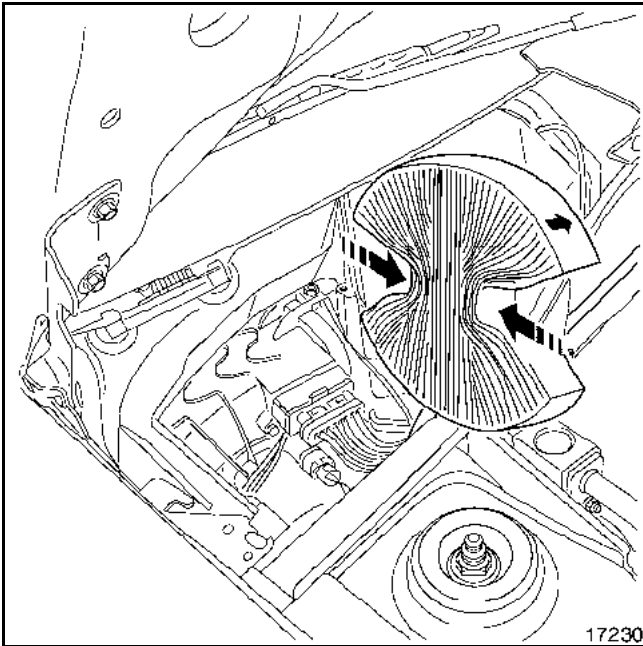
REMOVAL

Remove:

- the right scuttle half-grille (1),
- the particle filter protective cover.



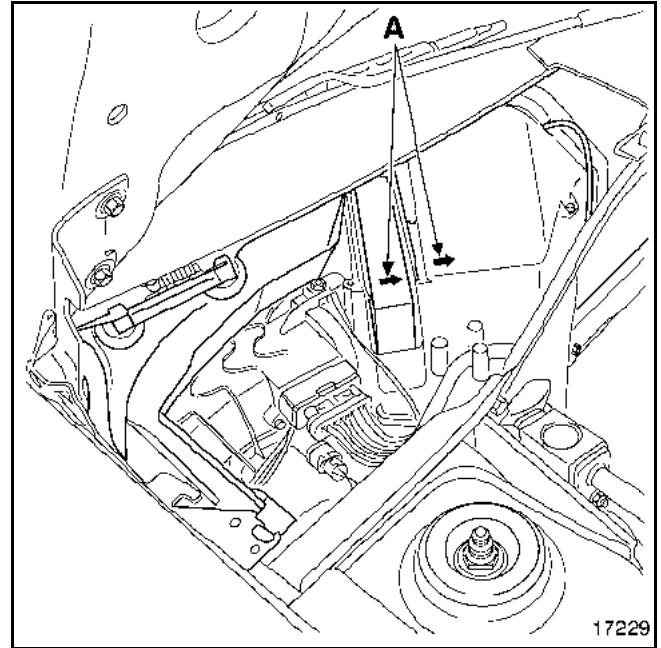
Carefully bend the particle filter to remove it.



REFITTING

Refit the particle filter reversing the procedure used for removal.

NOTE: ensure that the particle filter is fitted the right way round (the two arrows (A) must be pointing in the same direction).



ASSEMBLY WITH PARTICLE FILTER

REMOVAL

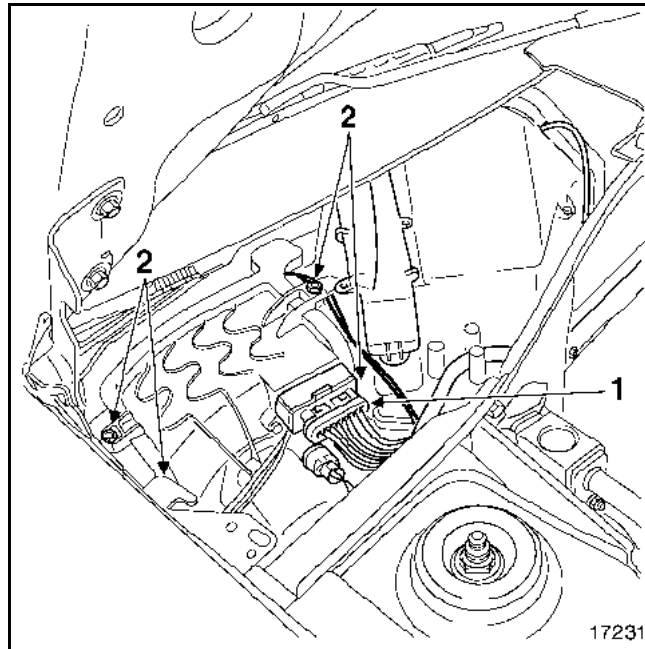
Remove the tray under the bonnet.

Disconnect the battery.

Remove:

- the right scuttle half-grille,
- the drainpipe,
- the connector (1),
- the four retaining bolts (2).

Remove the fan assembly.



REFITTING

Refit in the reverse order to removal.

REMOVAL

Remove the tray under the bonnet.

Disconnect the battery.

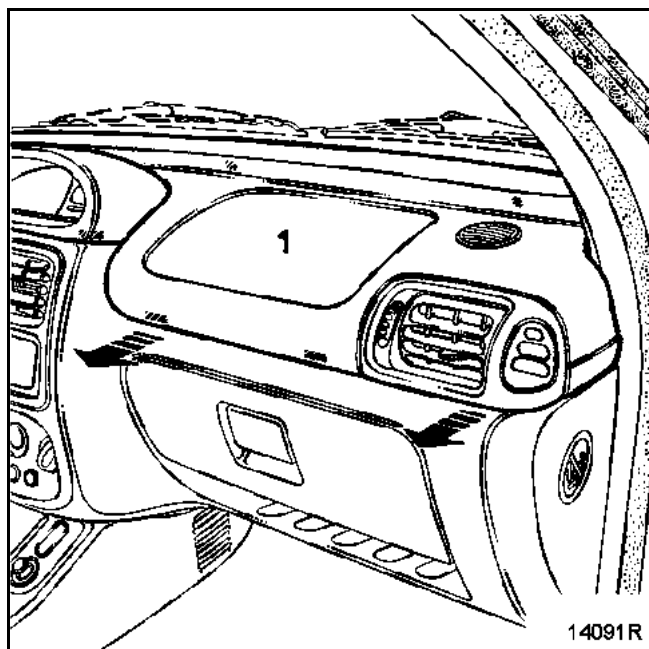
Remove:

- the steering wheel bolt,
- straighten the wheels and then remove the steering wheel.

IMPORTANT: Follow the instructions in section 88 for operations on the AIR BAGS.

Remove:

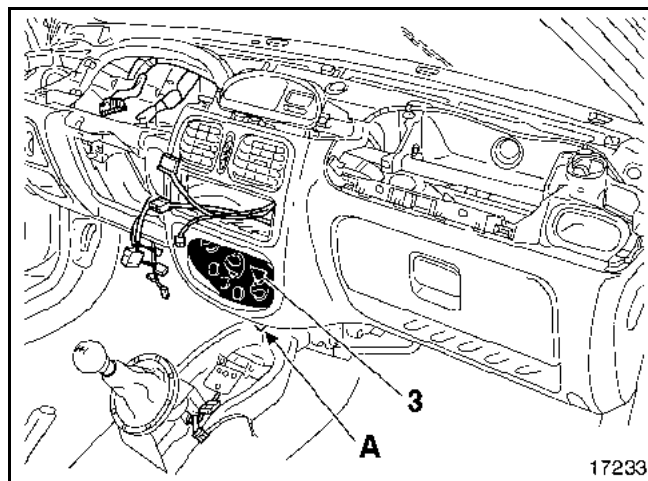
- the steering column half-shells,
- the two windscreen pillar trims,
- the dashboard cover (1),



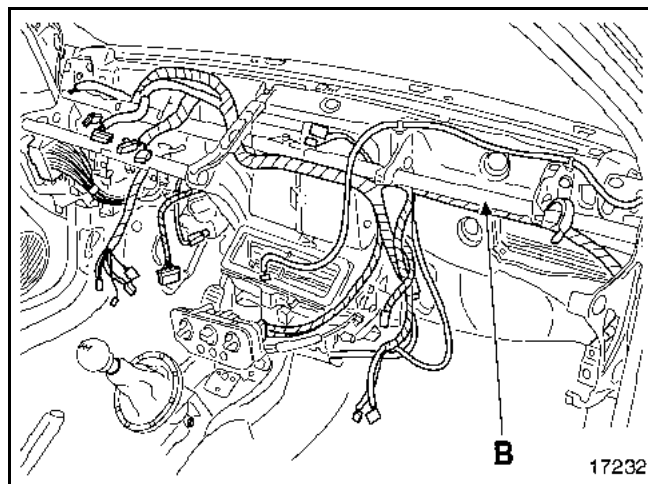
- the instrument panel,
- the windscreen wiper and lighting switch stalk block,
- the central console,

- the two heater control panel mounting bolts (3),
- the radio (if fitted),
- the passenger air bag (according to equipment),
- the steering column,
- the seven dashboard fixing bolts,
- the distribution unit bolt (A) located under the dashboard.

Remove the dashboard.

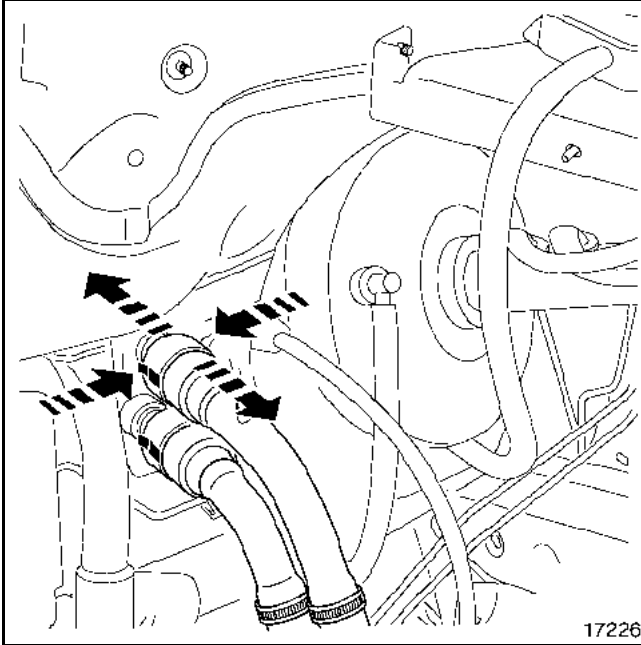


Remove the casing retaining bolts (B) and withdraw the casing.

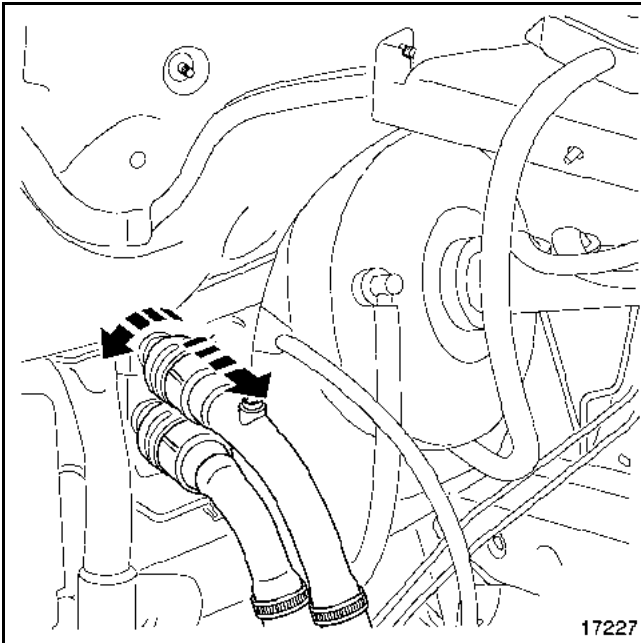


Engine compartment end

Fit a hose clamp and disconnect the quick-release clamps on the heater hoses.



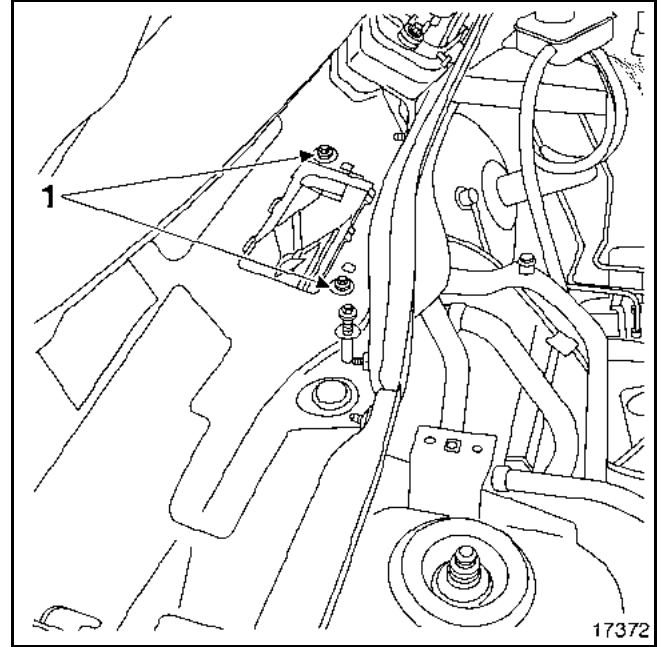
Other type of quick-release hose clamps.



Fit a deflector and blow out the remaining liquid using compressed air.

Remove:

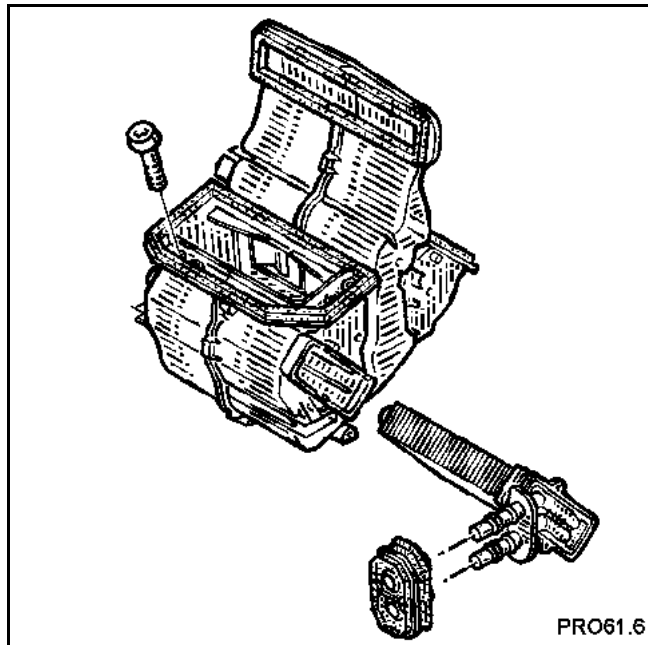
- the windscreen wiper arms with tool **Elé. 1294-01**,
- the plenum chamber upper seal and the external air intake grille,
- the air blower unit,
- the distribution unit mounting bolts (1).



In the passenger compartment

Remove:

- the air distribution unit,
- the heater radiator.



REFITTING

Check:

- that the cables pass correctly behind the dashboard,
- that the air ducts are correctly connected to prevent noise.

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

IMPORTANT: follow the procedure for checking the correct operation of the system before reconnecting the AIR BAG:

- Check that the air bag warning light on the dashboard lights up when the ignition is switched on.
- Connect a dummy igniter to the air bag connector and check that the warning light goes out.
- Switch off the ignition, connect the air bag in place of the dummy igniter and fix the air bag to the steering wheel.
- Switch on the ignition and check that the warning light comes on for 3 seconds and then goes out permanently.

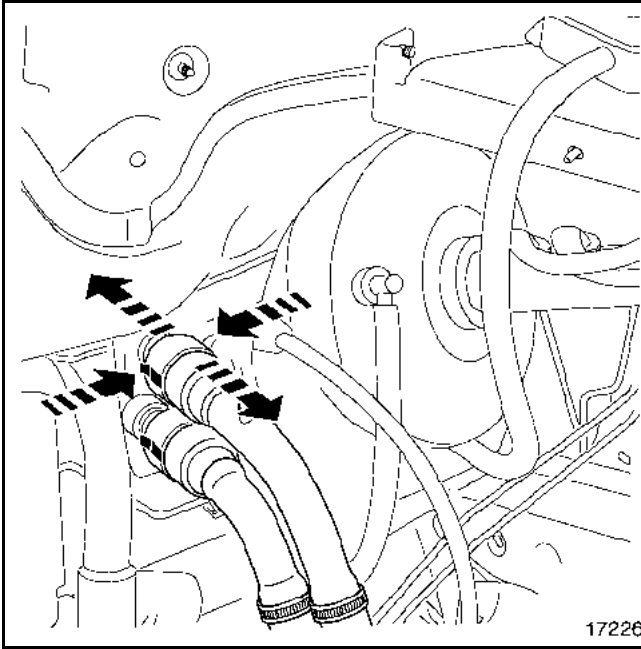
Consult **section 88** if the light fails to operate in this way.

REMOVAL

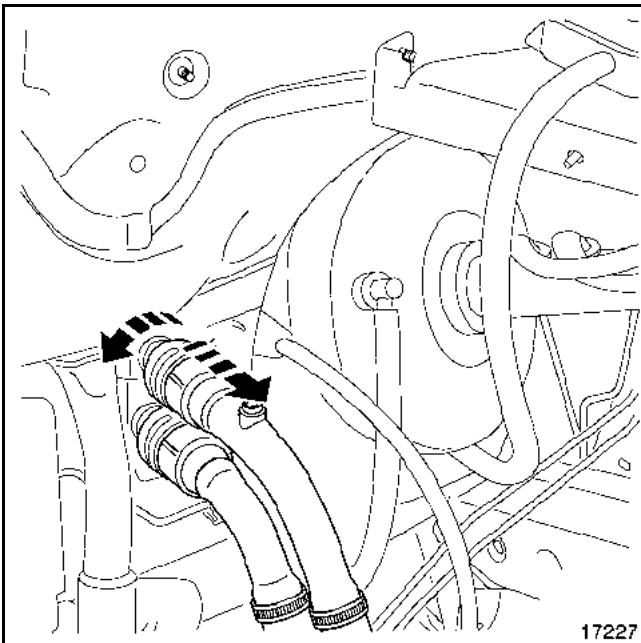
The heater radiator is removed after the removal of the air blower unit, the dashboard and the air distribution unit.

Engine compartment end

Fit a hose clamp and disconnect the quick-release clamps on the heater hoses.



Other type of quick-release hose clamps.

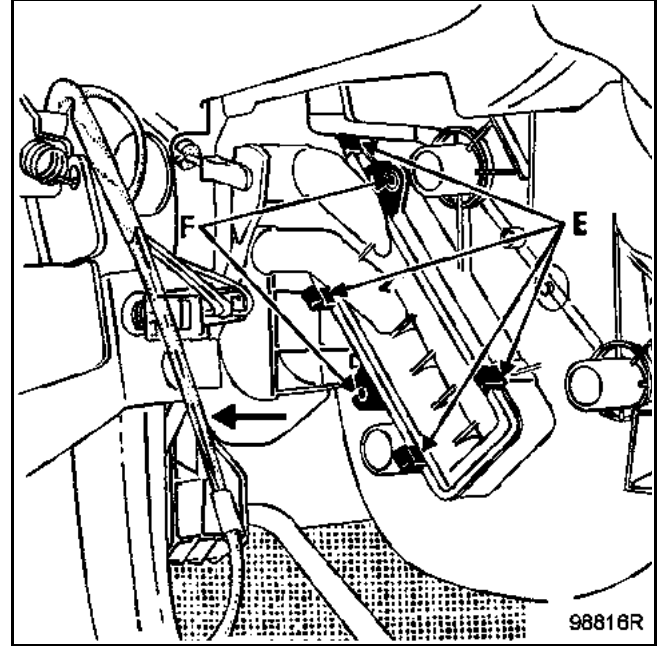


Fit a deflector and blow out the remaining liquid using compressed air.

Remove the heater pipe flange bolt on the bulkhead.

Passenger compartment end

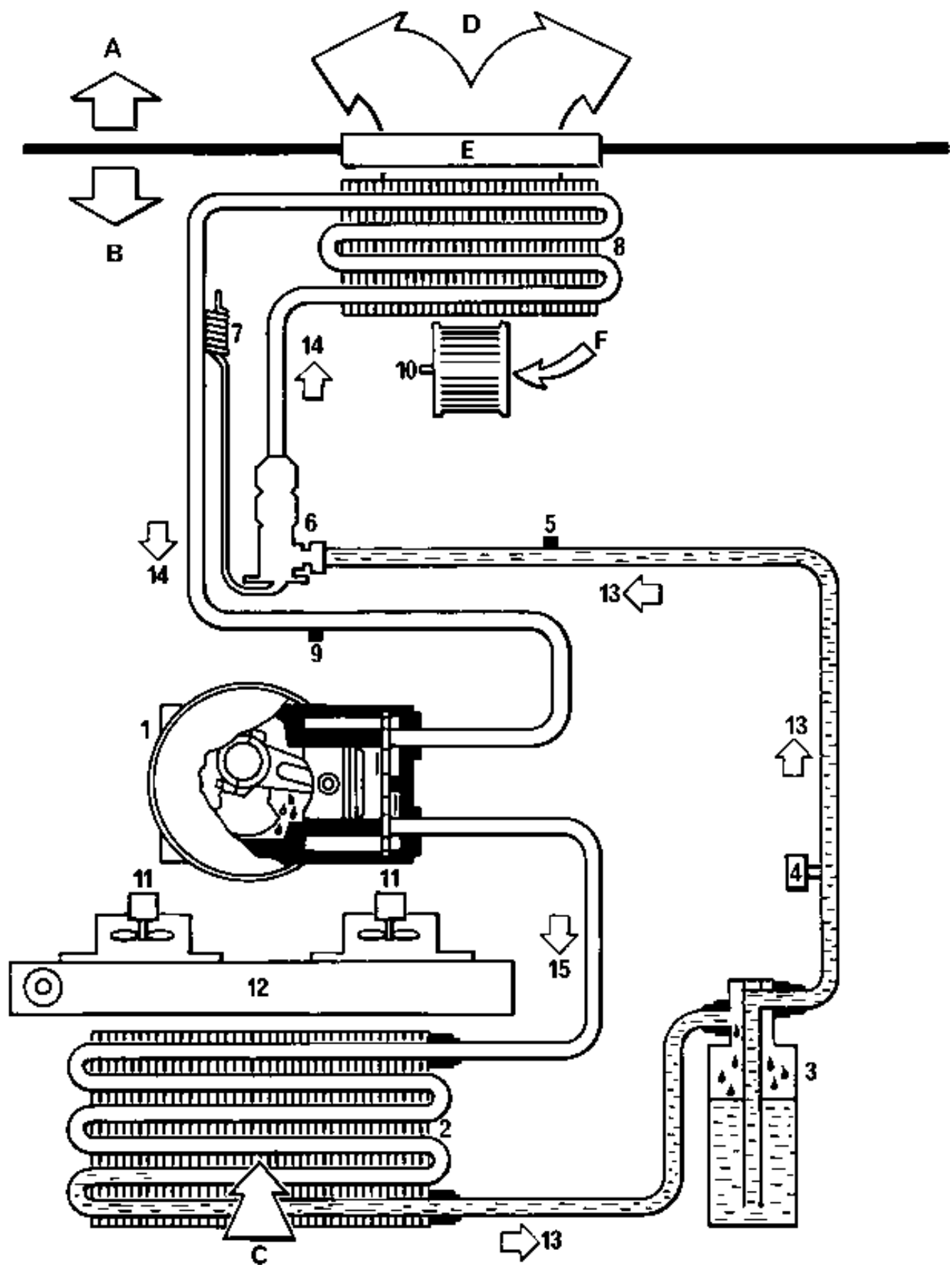
Take out the four retaining clips (E) and remove the radiator.



REFITTING

Refitting is the reverse of removal.

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




- A Passenger compartment
 - B Engine compartment
 - C Exterior air
 - D To air mixing unit
 - E Scuttle panel grille
 - F Exterior or recirculated air
-
- 1. Compressor
 - 2. Condenser
 - 3. Dehydration canister
 - 4. Tri-function pressure switch
 - 5. High pressure bleed
 - 6. Pressure relief valve
 - 7. Pressure relief valve thermostatic regulation
 - 8. Evaporator
 - 9. Low pressure bleed
 - 10. Blower fan
 - 11. Engine cooling fan
 - 12. Engine radiator
 - 13. High pressure fluid
 - 14. Low pressure vapour
 - 15. High pressure vapour

Consumables:

- Compressor oil
SANDEN SP 10 (P.A.G.): **135 cm³**
- Refrigerant:
R134a: **750 g ± 35 g**
- Compressor
SANDEN SD 7V



120	Injection computer
171	Air conditioning clutch
234	Fan assembly relay
262	Cooling fan assembly and air conditioning
419	Air conditioning unit
584	Air conditioning clutch compressor relay
597	Engine fuses and relay
777	Power feed fuse rack
1010	Engine compartment cooling fans
1202	Freon pressure
R20	Engine/ignition
R107	Dashboard/front engine
R115	Engine/engine wiring

TIGHTENING TORQUES (in daNm)	
Evaporator pressure relief screw	0.6
Pressure relief valve connecting pipes retaining nut	0.8
Pressure relief valve connecting hose mounting bolt on the dehydrating canister	0.8
Condenser connecting hose mounting bolt on the dehydrating canister	1.2
Compressor to condenser connecting pipe retaining bolt	0.8
Compressor connecting pipes retaining bolt	2.1
Compressor retaining bolt	2.1
Circuit pressure sensor	0.8

REMOVAL

Remove the tray under the bonnet.

Disconnect the battery.

Use the filling equipment to drain the refrigerant R134a from the circuit (see the method described in the **air conditioning** manual).

Engine compartment end

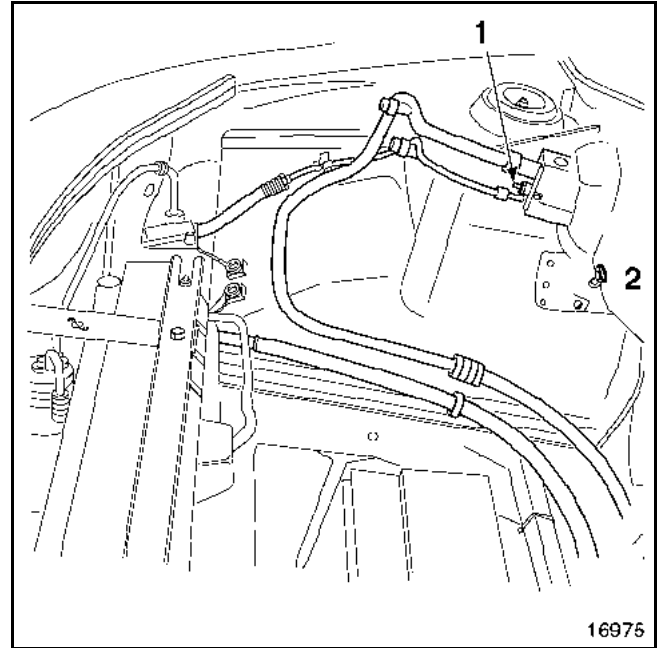
Disconnect the R134a connecting pipes (bolt 1) to the pressure relief valve.

Fit the caps on the pipes and on the pressure relief valve.

Remove:

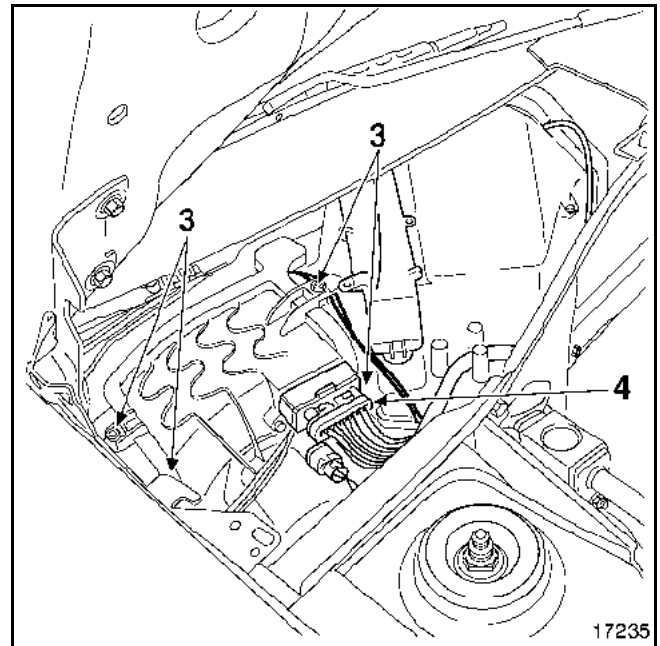
- the windscreen wiper arms,
- the air inlet grille,
- the two expansion bottle retaining bolts,
- the PAS oil tank.

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



Disconnect the electrical connectors (4).

Remove the evaporator housing retaining bolts (3).

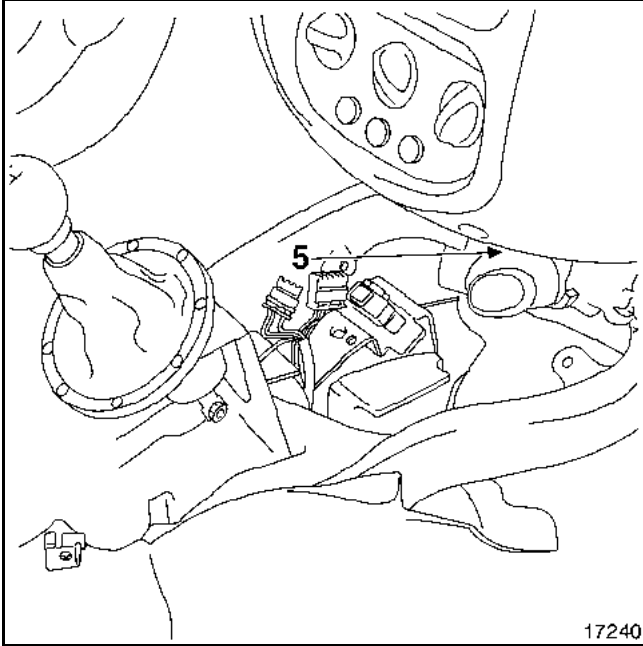


Passenger compartment end

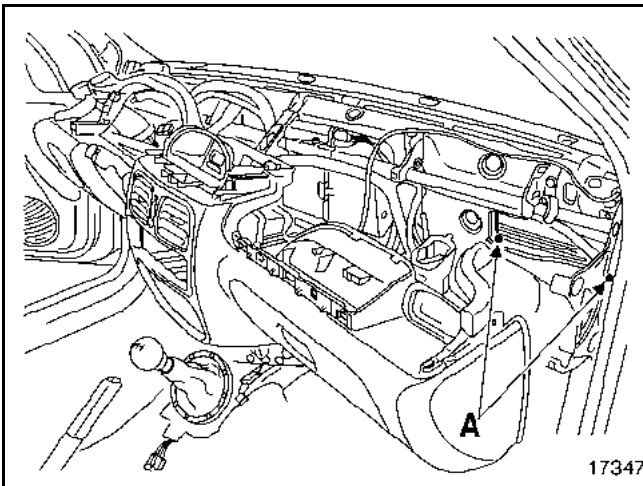
Remove the dashboard by removing:

- the cover,
- the central console,
- the seven dashboard fixing bolts,
- the bolt (5) (on the heating unit).

NOTE: use cloths to protect the sections of the dashboard which are susceptible to damage.



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



Remove the cable.

Carefully remove the evaporator from its housing.

REFITTING

Check that the harness conduits are not in contact (risk of noise).

Proceed in the reverse order to removal.

Tighten the retaining nut on the pressure relief valve connecting pipe to **0.6 daNm** (check that the seals are in good condition).

NOTE:

When refitting the dashboard, check:

- that the electrical wiring is positioned correctly,
- that the air flow ducts are fitted correctly.

Create a vacuum and then use the filling equipment to refill the circuit with refrigerant R134a (see the method described 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 for refitting the seals taking care to position them correctly.

REMOVAL

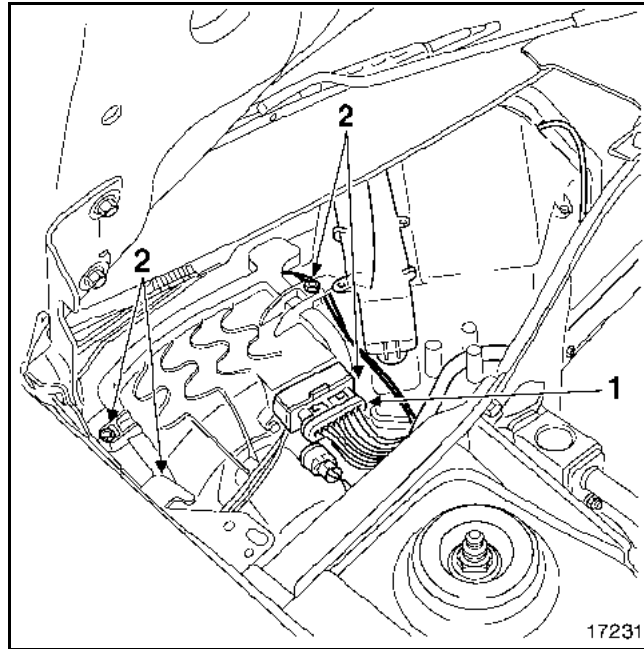
Remove the tray under the bonnet.

Disconnect the battery.

Remove:

- the right scuttle half-grille,
- the drainpipe,
- the connector (1),
- the four retaining bolts (2).

Remove the fan assembly.



REFITTING

Refit in the reverse order to removal.

REMOVAL

Remove the tray under the bonnet.

Drain the refrigerant R134a from the circuit (see the method described in the **air conditioning** manual).

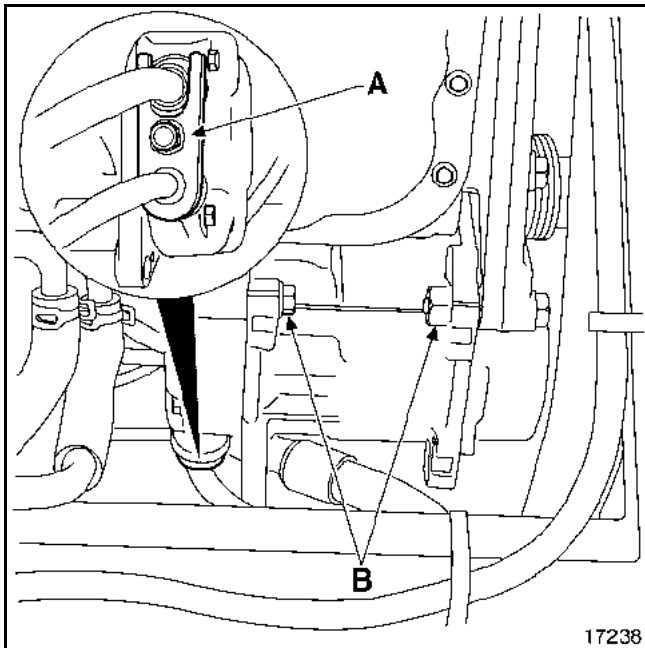
Disconnect the battery.

Remove:

- the compressor drive belt,
- the two connecting pipes (A),
- two compressor studs at point (B) and a third on the compressor support upper mounting at the end of the drive belt.

Remove the compressor.

NOTE: the pipes and the compressor **MUST** be blocked to prevent moisture getting in the circuit.



REFITTING

If replaced, the new compressor is delivered filled with oil.

Fit the compressor in the correct orientation (filler cap on the bottom).

Tighten the three compressor mounting studs (tightening torque: **2.1 daNm**).

Reconnect the two refrigerant R134a pipes (A) to the compressor (tightening torque: **2.1 daNm**).

Fit the drive belt and check it is at the correct tension.

Create a vacuum and then use the filling equipment to refill the circuit with refrigerant R134a (see the method described in the **air conditioning** manual).

NOTE: when reconnecting the pipes to the compressor, all the studs **MUST** be refitted and tightened manually before being tightened to the recommended torque. This is to ensure that the pipes are positioned correctly.

Check that the seals are in good condition and grease them with **P.A.G. SP 10** oil.

IMPORTANT: The oil level must be correct when the compressor is replaced.

REMOVAL

It is not necessary to use a lift.

Remove the tray under the bonnet.

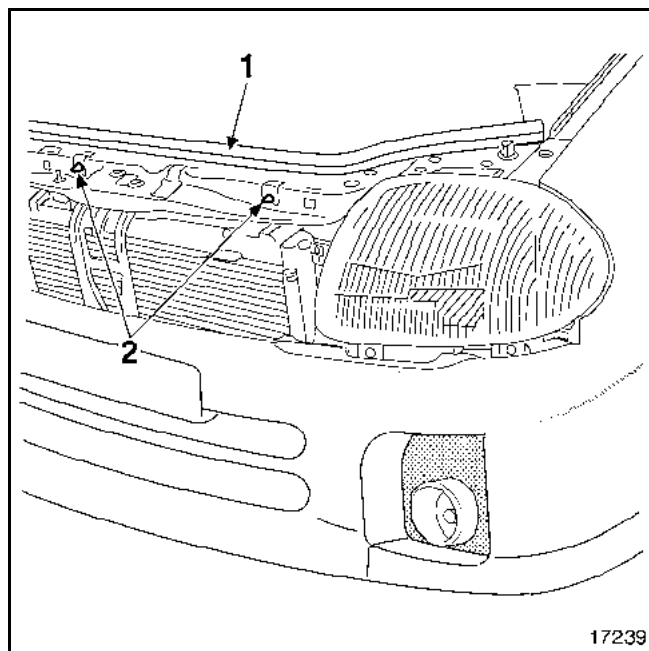
Drain the R134a refrigerant from the circuit (see the method described in the **air conditioning** manual).

Drain the engine cooling system.

Disconnect the battery.

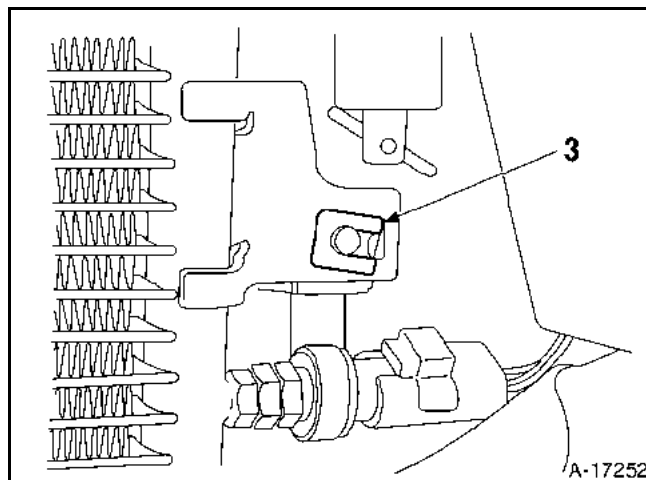
Remove:

- the radiator grille,
- the upper cross member (1),
- the windscreen washer and the clip on the lower radiator studs,
- the two R134a refrigerant pipes (blocked to prevent moisture getting into the circuit),
- the wiring harness connector of the tri-function sensor,
- the two radiator support nuts (2). During this procedure, support the cooling system so as not to damage the radiator's lower mounting studs.



Remove the two clips (3) and lift the condensor off the radiator.

This procedure can be performed on the vehicle.



REFITTING

Continue the refitting procedure in the reverse order to removal.

Check the condition of the seals.

Create a vacuum in the circuit and then 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 studs (2): **1.2 daNm**.

NOTE: tightening torque for refrigerant pipes: **1.8 daNm**.

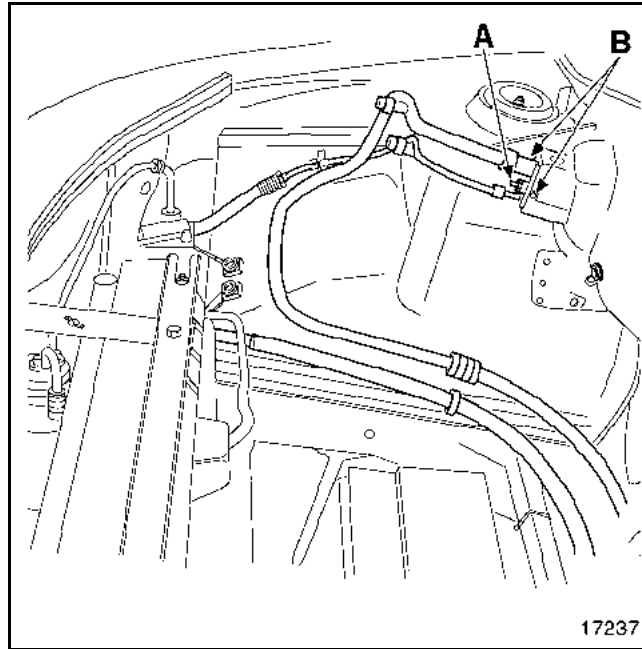
REPLACEMENT

Remove the tray under the bonnet.

Use the filling equipment to drain the R134a refrigerant from the circuit (see the method described in the **air conditioning** manual).

Remove:

- the connecting pipes retaining nut (A),
- the two pressure relief valve retaining bolts (B) on the evaporator.



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

Bolt tightening torques:

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

Create a vacuum and then use the filling equipment to refill the circuit with R134a refrigerant (see the method described in the **air conditioning** manual).

REMOVAL

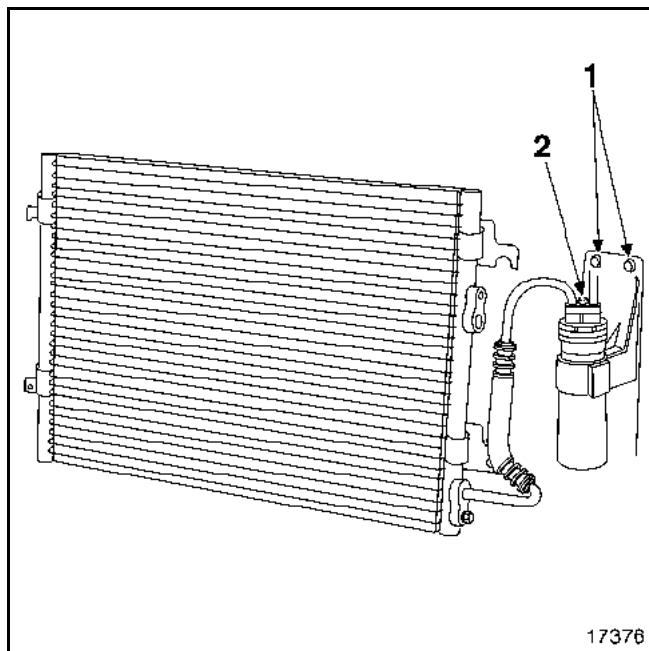
Remove the tray under the bonnet.

Use the filling equipment to drain the R134a refrigerant from the circuit (see the method described in the **air conditioning** manual).

Remove the two mounting bolts from the pipes on the dehydration canister (2).

Block all the openings to prevent moisture entering the circuit.

Remove the two bolts (1) fixing the dehydration canister support to the body.



Remove the dehydration canister from the support.

REFITTING

Continue the refitting procedure in the reverse order to removal.

Check that the seals are in good condition and grease them with **P.A.G. SP 10** oil.

Create a vacuum and then use the filling equipment to refill the circuit with R134a refrigerant (see the method described in the **air conditioning** manual).

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

NOTE: tightening torque for bolts (2): **1.2 daNm**.

NOTE: tightening torque for bolts (1): **3 daNm**.

SPECIAL TOOLING REQUIRED

Mot. 1410 **Set of air conditioning pipe union tools**

Remove the tray under the bonnet.

Disconnect the battery.

Use the filling equipment to drain the R134a refrigerant from the circuit (see the method described in the **air conditioning** manual).

FRONT LOW PRESSURE PIPE

REMOVAL

Remove the mounting nut on the pressure relief valve.

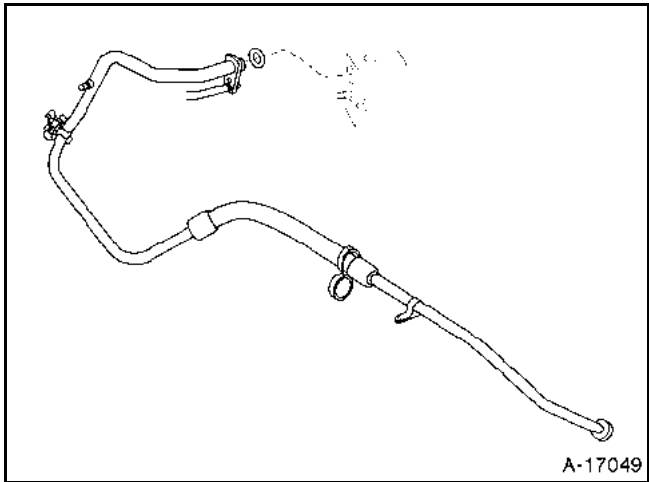
Plug the pressure relief valve and the pipe.

Separate the front pipe from the pipe under the floor using tool **Mot.1410**.

Plug both ends of the pipe.

Detach the pipe from the clips and the support.

Remove the front low pressure pipe.



REFITTING

Continue the refitting procedure in the reverse order to removal.

The two pipe unions can be interlocked (rapid connector).

Check that the seals are in good condition and grease them with **P.A.G. SP 10** oil.

Tighten all the bolts by hand and check that the seal is in the correct position before tightening the bolts to the recommended torque.

When replacing a pipe, add **10 ml** of **SP 10** oil. Add **100 ml** if a pipe bursts (fast leak).

NOTE:

– Mounting nut on the pressure relief valve **0.8 daNm**.

SPECIAL TOOLING REQUIRED	
Mot. 1410	Set of air conditioning pipe union tools

Remove the tray under the bonnet.

Disconnect the battery.

Use the filling equipment to drain the R134a refrigerant from the circuit (see the method described in the **air conditioning** manual).

REAR LOW PRESSURE PIPE

REMOVAL

Remove the mounting bolt on the compressor.

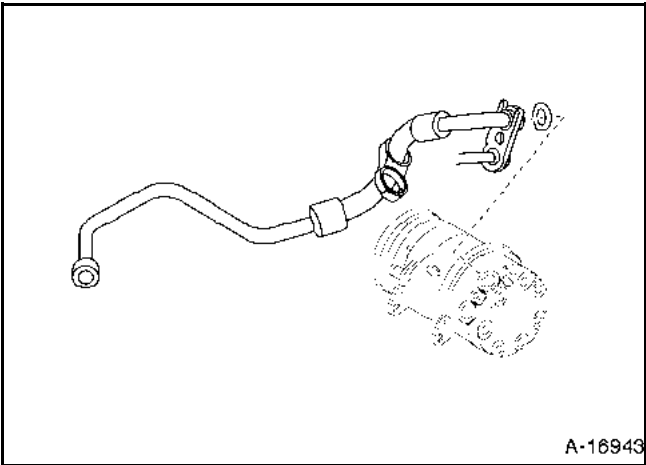
Plug the compressor and the pipe.

Separate the front pipe from the pipe under the floor using tool **Mot.1410**.

Plug both ends of the pipe.

Detach the pipe from the clips and the support.

Remove the rear low pressure pipe.



REFITTING

Continue the refitting procedure in the reverse order to removal.

The two pipe unions can be interlocked (rapid connector).

Check that the seals are in good condition and grease them with **P.A.G. SP 10** oil.

Tighten all the bolts by hand and check that the seal is in the correct position before tightening the bolts to the recommended torque.

When replacing a pipe, add **10 ml** of **SP 10** oil. Add **100 ml** if a pipe bursts (fast leak).

NOTE:

- pipe mounting bolt on the compressor

2.1 daNm.

SPECIAL TOOLING REQUIRED	
Mot. 1410	Set of air conditioning pipe union tools

Remove the tray under the bonnet.

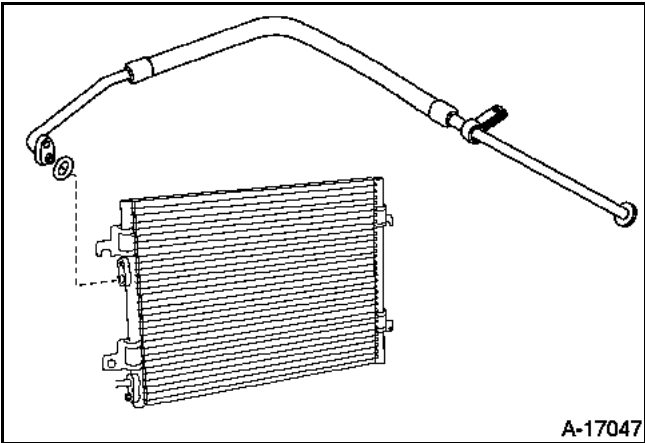
Disconnect the battery.

Use the filling equipment to drain the R134a refrigerant from the circuit (see the method described in the **air conditioning** manual).

COMPRESSOR - CONDENSER FRONT HIGH PRESSURE PIPE

REMOVAL

- Remove the mounting bolt on the condenser.
- Block up the condenser and the pipe.
- Separate the front pipe from the pipe under the floor using tool **Mot.1410**.
- Block up both ends of the pipe.
- Detach the pipe from the clips and the support.
- Remove the front high pressure pipe.



REFITTING

- Continue the refitting procedure in the reverse order to removal.
 - The two pipe unions can be interlocked (rapid connector).
 - Check that the seals are in good condition and grease them with **P.A.G. SP 10** oil.
 - Tighten all the bolts by hand and check that the seal is in the correct position before tightening the bolts to the recommended torque.
 - When replacing a pipe, add **10 ml** of **SP 10** oil. Add **100 ml** if a pipe bursts (fast leak).
- NOTE:**
- pipe mounting bolt on the condenser **0.8 daNm**.

SPECIAL TOOLING REQUIRED	
Mot. 1410	Set of air conditioning pipe union tools

Remove the tray under the bonnet.

Disconnect the battery.

Use the filling equipment to drain the R134a refrigerant from the circuit (see the method described in the **air conditioning** manual).

REAR CONDENSER - COMPRESSOR FRONT HIGH PRESSURE PIPE

REMOVAL

Remove the mounting bolt on the compressor.

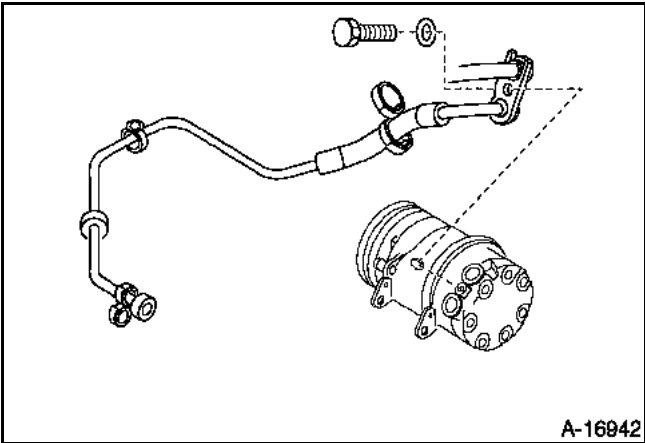
Plug the compressor and the pipe.

Separate the front pipe from the pipe under the floor using tool **Mot.1410**.

Plug both ends of the pipe.

Detach the pipe from the clips and the support.

Remove the rear high pressure pipe.



REFITTING

Continue the refitting procedure in the reverse order to removal.

The two pipe unions can be interlocked (rapid connector).

Check that the seals are in good condition and grease them with **P.A.G. SP 10** oil.

Tighten all the bolts by hand and check that the seal is in the correct position before tightening the bolts to the recommended torque.

When replacing a pipe, add **10 ml** of **SP 10** oil. Add **100 ml** if a pipe bursts (fast leak).

NOTE:

- Pipe mounting bolt on the compressor

2.1 daNm.

SPECIAL TOOLING REQUIRED	
Mot. 1410	Set of air conditioning pipe union tools

Remove the tray under the bonnet.

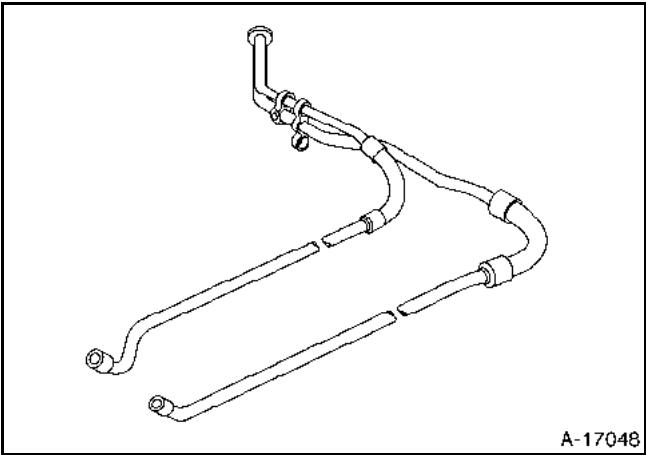
Disconnect the battery.

Use the filling equipment to drain the R134a refrigerant from the circuit (see the method described in the **air conditioning** manual).

HIGH AND LOW PRESSURE PIPE UNDER THE FRONT AND REAR FLOOR

REMOVAL

Detach the supports at both ends of the central pipe.



Separate it from the pipe under the floor using tool **Mot. 1410**.

Plug both ends of the pipe.

Separate it from the pipe under the floor using tool **Mot. 1410**.

Plug both ends of the pipe.

Remove one or both pipes from the support insulator.

REFITTING

Continue the refitting procedure in the reverse order to removal.

The two pipe unions can be interlocked (rapid connector).

Check that the seals are in good condition and grease them with **P.A.G. SP 10** oil.

When replacing a pipe, add **10 ml** of **SP 10** oil. Add **100 ml** if a pipe bursts (fast leak).

SPECIAL TOOLING REQUIRED

Mot. 1410 **Set of air conditioning pipe union tools**

Remove the tray under the bonnet.

Disconnect the battery.

Use the filling equipment to drain the R134a refrigerant from the circuit (see the method described in the **air conditioning** manual).

DEHYDRATION CANISTER - PRESSURE RELIEF VALVE HIGH PRESSURE CONNECTING PIPE

REMOVAL

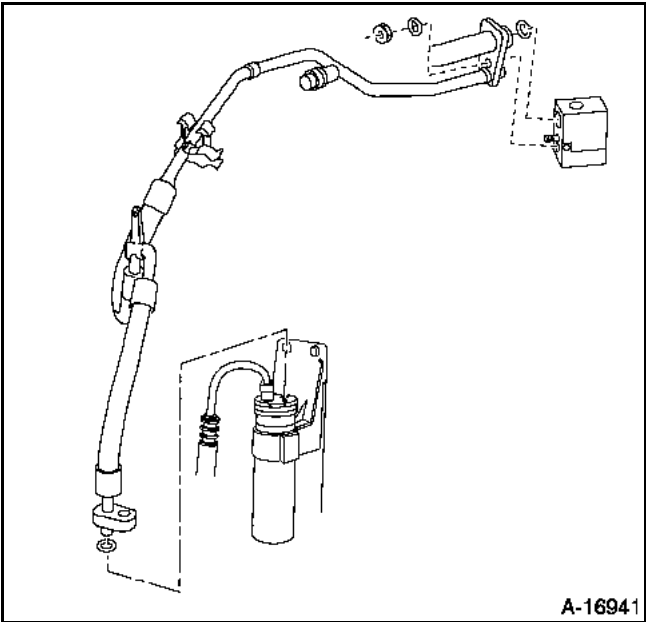
Detach the pipe from its mountings.

Remove the mounting nut on the pressure relief valve.

Plug the pressure relief valve and the pipe.

Remove the dehydration canister mounting bolt and then plug both ends.

Remove the pipe.



REFITTING

Continue the refitting procedure in the reverse order to removal.

Check that the seals are in good condition and grease them with **P.A.G. SP 10** oil.

When replacing a pipe, add **10 ml** of **SP 10** oil. Add **100 ml** if a pipe bursts (fast leak).

NOTE:

- Pipe mounting bolt on the dehydration canister
0.8 daNm.
- Pipe mounting bolt on the pressure relief valve
0.8 daNm.
- Pipe mounting bolt
0,8 daNm

● EVAPORATOR SENSOR

REMOVAL

Remove the tray under the bonnet.

Disconnect the battery.

Remove:

- the right scuttle panel half-grille,
- the evaporator protector in the air unit

Disconnect the connector from the sensor.

Remove the evaporator sensor.

REFITTING

Continue the refitting procedure in the reverse order to removal.

Check that the sensor is in the correct position on the evaporator.

● PRESSURE SENSOR

REMOVAL

Remove the tray under the bonnet.

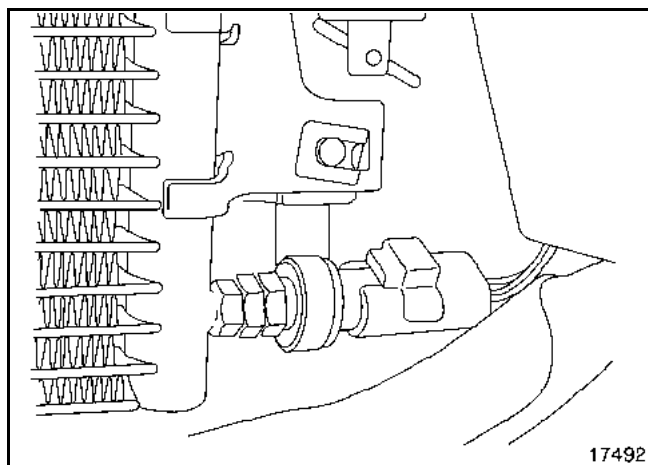
Disconnect the battery.

Remove the radiator grille.

The pressure sensor is located in the bottom right-hand corner of the condenser.

The tray under the bonnet must be removed.

The refrigerant circuit does not need to be drained when removing the sensor. The sensor is fixed on the SKRADER valve.



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Tightening torque: **0.8 daNm**.

This pressure sensor is fitted with a seal. When refitting, check it is in good condition and grease it with **P.A.G SP 10** oil.

● PASSENGER COMPARTMENT FAN ASSEMBLY SPEED RESISTANCE UNIT

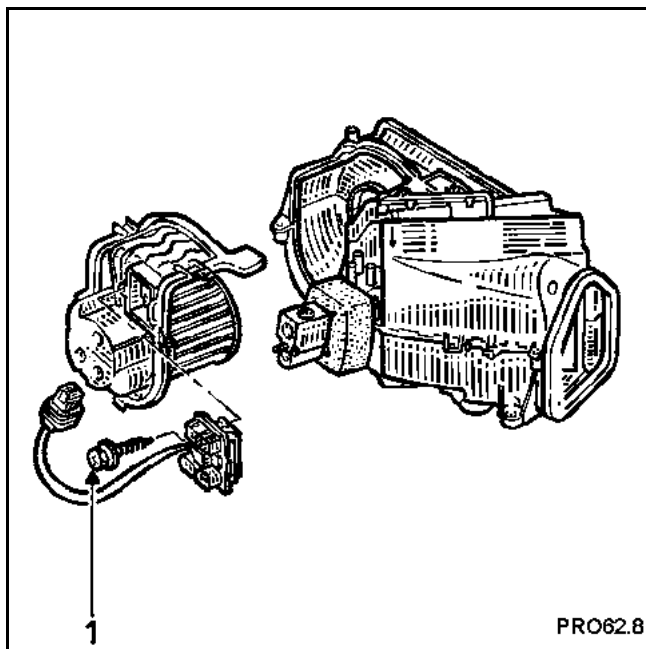
REMOVAL

Remove the right scuttle panel half-grille.

Disconnect the electrical connectors.

Remove the bolt (1).

Remove the resistance unit.



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REFITTING

Refit in the reverse order to removal.

COMPUTER CONFIGURATION:

- Logic input type > → impulse
- Recycling motor control > → timed
- Recycling flap self-setting > → with
- Version with evaporator sensor > → without
- Version with refrigerant pressure sensor > → without
- Computer type > → SANDEN