

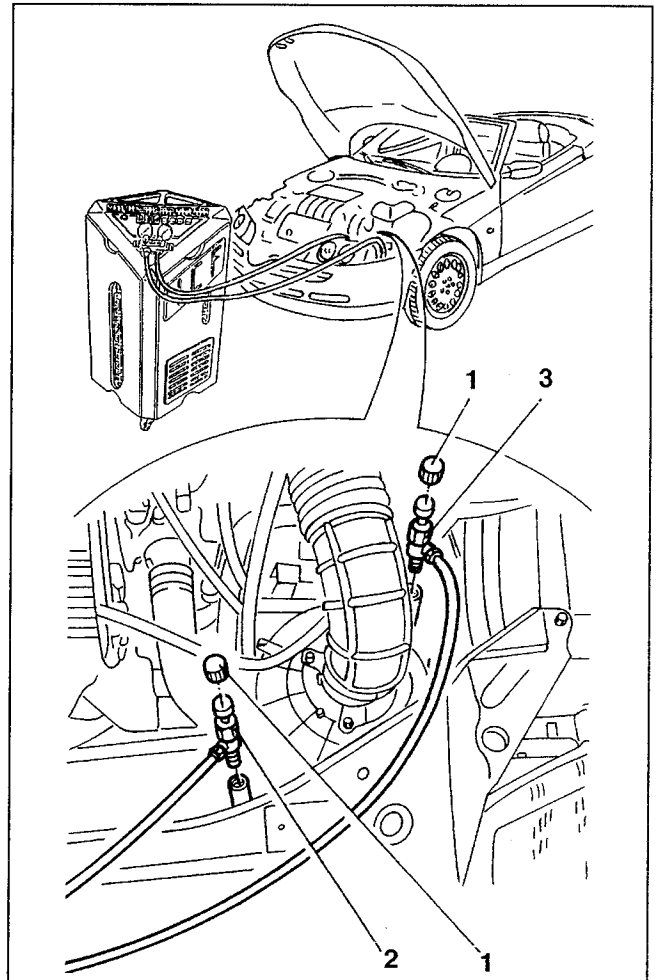
## EMPTYING THE SYSTEM AND RECOVERING THE COOLANT FLUID

For these operations follow the safety precautions described. In particular, the following should be borne in mind:



- Any R134a fluid spilt accidentally from the climate control system or from the emptying/recovery/recharging system can become toxic if near to naked flames or in the presence of certain metals (eg. magnesium or aluminium) in the form of fine or dust particles. It is therefore advisable to work away from naked flames and in ventilated places with the suction system operating.
- Avoid prolonged contact with the skin of fluid R134a when it is evaporating as the low temperature (-26.5°C) reached at the end of expansion can cause cold "burns". It is therefore advisable to use leather or thick fabric gloves.
- The eyes must be protected from contact with the refrigerant fluid as the excessive, instantaneous low temperature can cause serious harm.
- Discharging the fluid into the air is a hazard for the environment. When emptying R134a from the system only the special equipment described must be used.

1. Slacken the caps of the recharging valves.
  2. Connect the pipe with the red cock to the high pressure
  3. Connect the pipe with the blue cock to the low pressure.
- Drain the fluid from the system completely, following the directions in the instructions for use of the equipment.



**RECHARGING THE COOLANT FLUID**

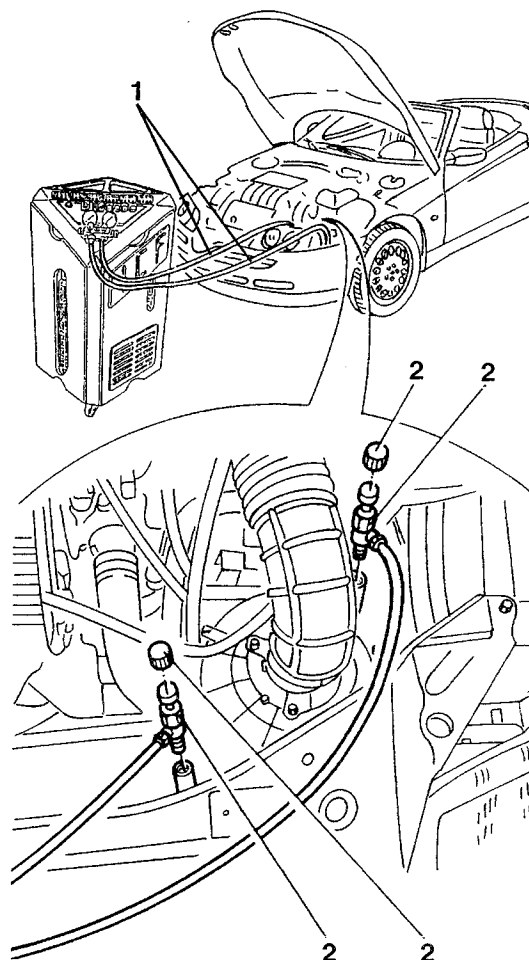
- When used with the suitable precautions, R134a is a fluid that is harmless for both persons and cars; however, as it is kept under pressure, it is subject to physical changes which can be dangerous unless they are perfectly controlled, it is therefore necessary to adhere closely to the following instructions.
- The refrigerant is normally kept in metal cylinders: never expose them to sunlight for prolonged lengths of time, the increase in temperature highers the pressure which might exceed safety limits.
- During cold weather, difficulty may occur in transferring the metal cylinder to the charging station owing to the low pressure in the cylinder; in this case, before transferring, place the cylinder in a heated place at a temperature not exceeding 35°C for appr. twenty minutes, never using a naked flame to heat the cylinder. Never leave the cylinder of the charging station completely full for prolonged lengths of time.
- Before recharging the system, top up the compressor with the amount of oil removed during the emptying procedure (see following paragraph): only use oil of the type and quantity given in the "SPECIFICATIONS".
- When recharging the R134a refrigerant fluid only use the special equipment specified.

1. Connect the coupling pipes to the refrigerant fluid drainage- recharging station.



**WARNING:**  
For the quantity of R134a to be used for recharging closely follow the instructions given in the "SPECIFICATIONS".

2. Connect the high and low pressure coupling pipes to the corresponding quick-coupling valves and begin the emptying procedure, then the R134a recharging procedure following the directions given in the instructions for use of the equipment.

**Locating leaks in the system**

Check that all the unions are firmly tightened. If the leaks persist, check for the presence of the O-rings on the unions, then admit a certain amount of R134a into the system (appr. 200 gr.) and find the point of leakage using a leak detector. Then drain off the fluid and eliminate the leak.

## TOPPING UP THE COMPRESSOR OIL LEVEL



- The compressor oil level should only be topped up if it is presumed that a considerable amount of oil has leaked due to damage or the disconnection of components of the climate control system and during emptying/recharging operations.
- The oil is highly water-absorbent: do not leave oil cans open. Do not leave the compressor or any other part disconnected from the system for any longer than necessary.
- In the event of servicing operations in the engine compartment involving leaving the pipes of the system exposed to the air for over six hours, it is not enough to top up the level and it is necessary to change the compressor lubricating oil completely, as described in point C.
- To top up the oil level only use new oil of the type described in the "SPECIFICATIONS".

**N.B.** Different cases call for different types of procedures.

Five of them are described below (A, B, C, D, E):

### A) "Slow" emptying of the system - in the case of routine maintenance (emptying and recharging)

When the system is emptied with the equipment described previously, the compressor oil removed is collected in a special graduated container on the station itself.

Before recharging the refrigerant fluid fill the system with the quantity indicated in the container plus a **further 15 cc.** If the compressor plug and the pipe unions are not accessible, use a syringe introducing the oil through one of the recharging valves (this valve may be removed using a suitable tool comprising a hollow tube with groove).

### B) "Quick" emptying of the system (in less than 15 minutes) - in the event of accidental failures.

Under this circumstance it is not possible to determine the exact amount of oil that has been lost. Proceed as described above, but in this case with 50 cc. of oil.

**N.B.:** if, for any reason, the compressor is removed and refitted, proceed as described in point C.

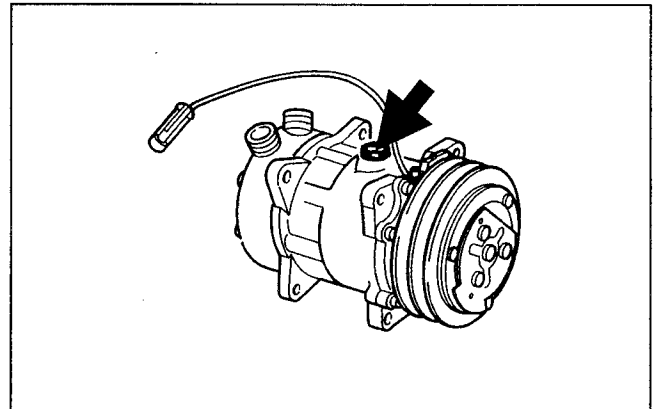
### C) Complete overhauling of the system - in the case of washing or "important" operations on the system

Drain the R134a from the air conditioning system and wash the system.

Remove the compressor (see specific paragraph).

#### 3.0 V6 Engine

Remove the oil drain-filler hole plug and drain off all the oil contained in the compressor (N.B. the compressor should be turned a few times by hand to make all the oil come out).

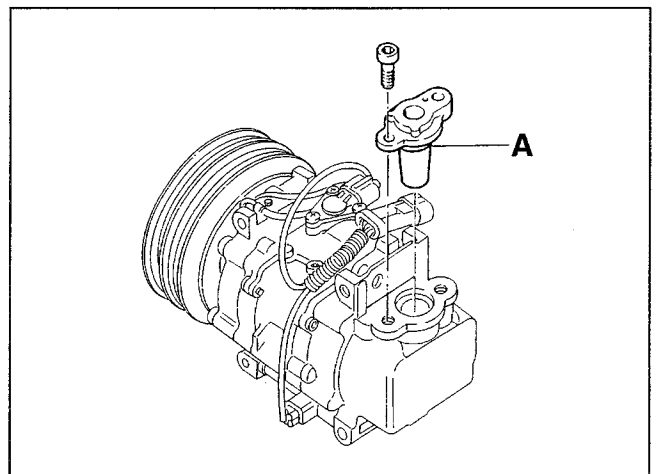


#### 2.0 T.S. 16v Engine

Remove the oil separator device (A) fastened near the compressor outlet union and drain all the oil contained in the compressor.

Refill with new oil of the type and quantity given in the "SPECIFICATIONS".

Refit the compressor on the car and carry out the system recharging operations.



**D) Changing the compressor only**

Drain the R134a fluid from the air conditioning system.  
Remove the compressor (see specific paragraph).

Drain the oil from the compressor just removed, retrieving it in a suitable recipient.

Carry out the same operation for the new compressor.

Fill the new compressor with the amount of oil removed from the old one.

Refit the compressor on the car.

Proceed with the system recharging operations, topping up the system with an additional 15 cc.

**E) Changing the filter only - engine 2.0 T.S. 16v only**

In production the drier filter (and also the spare) is provided with a certain amount of oil.

**NOTA:** this filter is easily distinguishable by a label with the wording "CONTAINS 130 C.C. OF NIPPOND-ENSO N.D.9 OIL".

Drain the R134a fluid from the air conditioning system.

Remove the filter (see specific paragraph).

Drain the oil from the filter just removed retrieving it in a special recipient.

Carry out the same operation for the new filter.

Fill the new filter with the amount of oil removed from the old one eliminate or add according to the case).

Refit the filter on the car.

Proceed with the recharging operations, topping up the system with an additional 15 cc

**WASHING THE SYSTEM**



- In the event of damage or breakage to the compressor or other components of the system, the system must be accurately washed.
- In the case of operations in the engine compartment in which the pipes remain exposed to the air for over six hours, washing should be carried out to eliminate the humidity.

**Proceed as follows:**

- If the compressor has suffered damage that may have caused the presence of metal parts in the pipes, the pipes connecting the compressor (unions) should be blown with compressed air.
- Connect the system with the special emptying/recharging equipment mentioned previously.
- Admit 1.5 ÷ 2 kg of R134a on the high pressure side - red cock.
- Recover from the low pressure side.
- Admit 1.5 ÷ 2 kg of R134a a second time (use the same fluid).
- After washing, change the drier filter and change the filter (net) of the expansion valve.
- Proceed with the system emptying and recharging operations described previously.

## **AUTOMATIC TEMPERATURE CLIMATE CONTROL**

### **PRESENTATION**

The climate control system used automatically controls temperature and ventilation re-circulating and directing flows. Therefore, the user can select the temperature required and the flow of air considered most comfortable. A specific ECU handles the operation of the system by controlling:

- air temperature at vents;
- fan speed;
- compressor activation (air cooling circuit)
- air re-circulation activation;
- "rapid defrosting" function.

The ECU sets the above mentioned parameters to bring the temperature of the passenger compartment to that required. The system controls are located outside the container housing the ECU.

The ECU receives information on internal and external temperature by means of:

- External air temperature sensors
  - Upper mixed air temperature sensor
  - Lower mixed air temperature sensor
  - Passenger compartment air temperature sensor
- According to the calculations made, the ECU sets the entry speed of the air in the compartment by means of:

- Electronic fan motor variator
- Fan motor

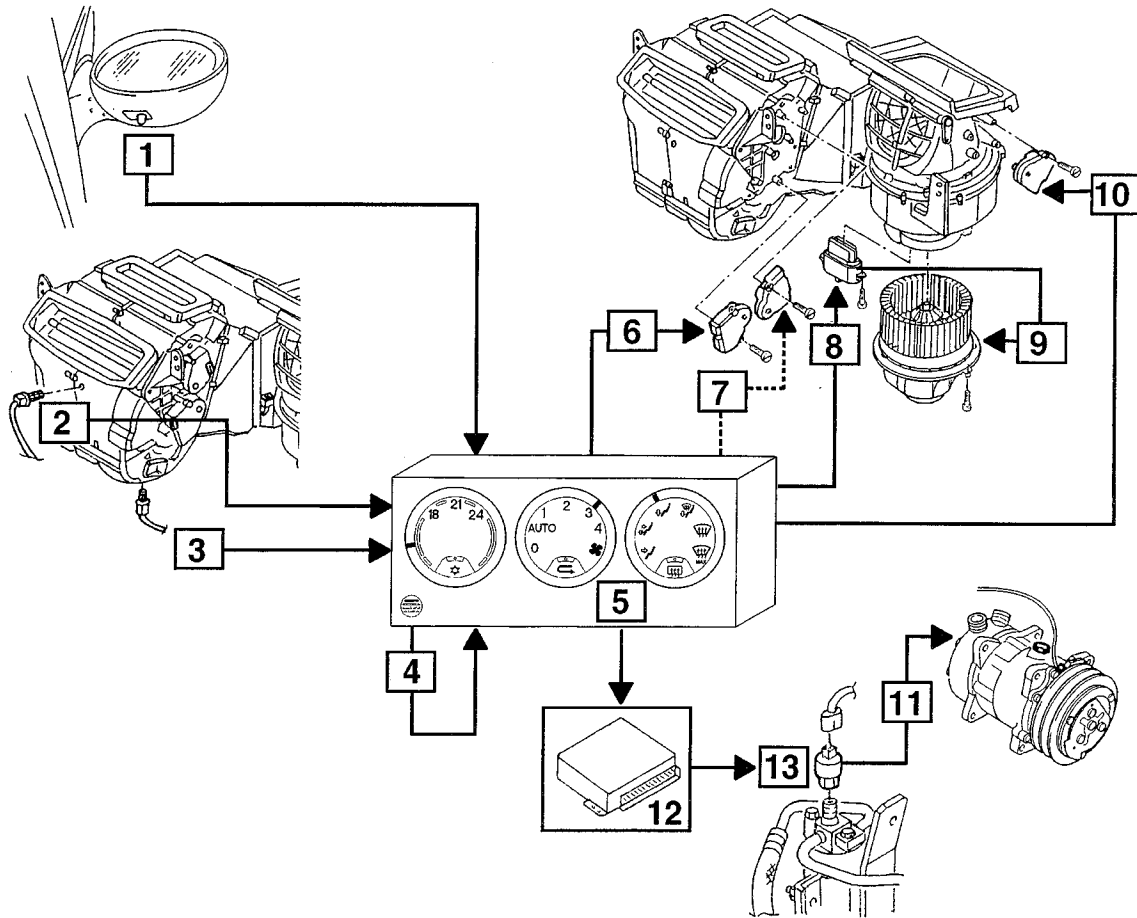
and the temperature of air entering the passenger compartment by means of:

- Mixing actuator
- Re-circulation flap actuator

Finally the ECU adjusts the flow of air to the vents according to user's settings by means of the distribution actuator. If the conditions so require, the ECU also enables the air cooling and drying circuit by activating the air-conditioner compressor.

**Spider Only:** The ECU disables the cooling circuit if the top is open: this is signalled by a specific switch located on one of the side lock straps.

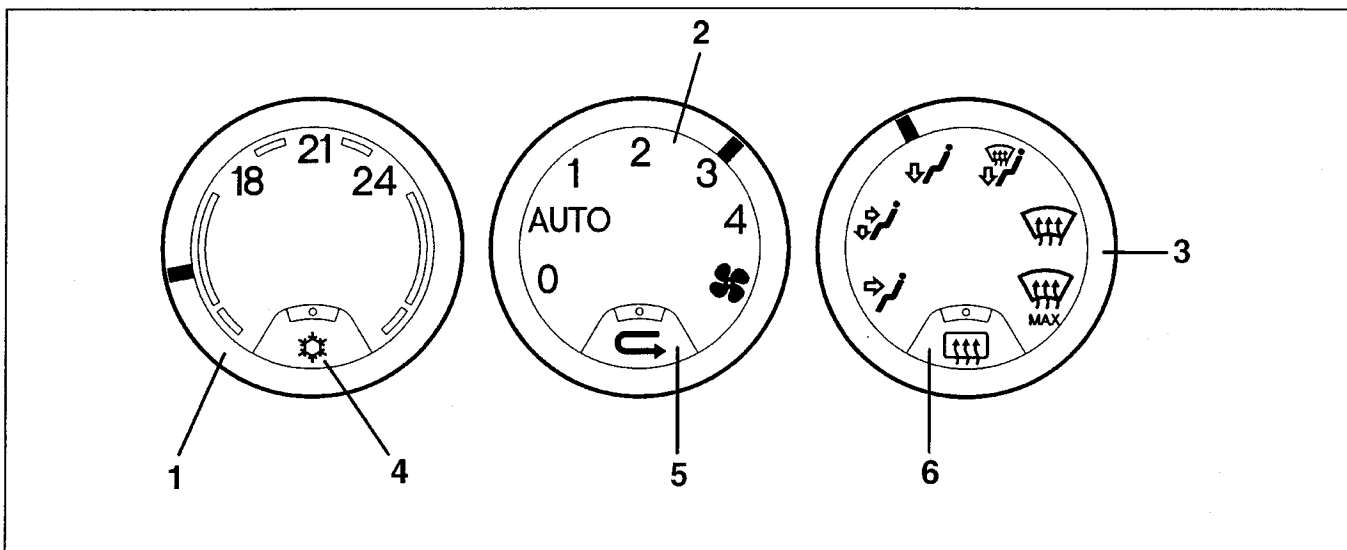
The various components interacting with the ECU are illustrated in the figure:



- |  |                                 |
|--|---------------------------------|
| 1 External air temperature sensor              | 9 Fan motor                     |
| 2 Upper mixed air temperature sensor           | 10 Re-circulation flap actuator |
| 3 Lower mixed air temperature sensor           | 11 Air-conditioner compressor   |
| 4 Passenger compartment air temperature sensor | 12 E.I. ECU                     |
| 5 ECU  | 13 Four-level pressure switch   |
| 6 Mixing actuator                              | 14 Top opening switch           |
| 7 Distribution actuator                        |                                 |
| 8 Electronic fan motor speed variator          |                                 |

### Climate control system controls

The climate control ECU is located in the centre of the dashboard. The controls are located on the exterior part of the box.



- 1 required temperature selection lever
- 2 air ventilation selection lever
- 3 flow distribution selection lever

- 4 climate control on button
- 5 re-circulation on button
- 6 heated rear window on button (*Gtv only*)

### Temperature

The internal temperature required by the user can be selected using the left hand lever offering 15 different positions. The two extreme positions correspond respectively to maximum cold and maximum hot and these are also connected to the maximum ventilation (with central lever set to "AUTO").

### Ventilation

The central lever adjusts the air ventilation according to four pre-set air flows settings (1, 2, 3 and 4), or automatically in the position "AUTO": in this mode it is the system automatically sets the most suitable flow for reaching or maintaining the required temperature. At "0", ventilation is excluded, except for when which the cooling circuit is activated (specific button LED on) requiring ventilation at first speed.

### Direction of flows

The right hand lever selects the direction of air flows towards the passenger compartment in different ways. The positions indicated by the white ideogram correspond (read clockwise) - to:

- flow to front vents only,
- flow to front and lower vents,
- flow to lower vents only,
- flow to lower vents and to the windscreen,
- flow to windscreen only.

In this case, flows adjustment is completely manual without any logic intervention from the ECU.

The last position shown (yellow) corresponds to the "rapid demisting" function that automatically sets the best conditions for optimal windscreen demisting, i.e.:

- complete flow to windscreen;
- maximum air capacity;
- mixing with maximum heat available;
- air taken in from outside (whatever the position of the re-circulation button);
- cooling circuit activated (whatever the position of the specific button);
- activation of the heated rear window (*Gtv only*)

### Cooling circuit enabling

The operation of the air cooling circuit is activated by means of the left hand button. When the button is pressed, the respective LED lights up.

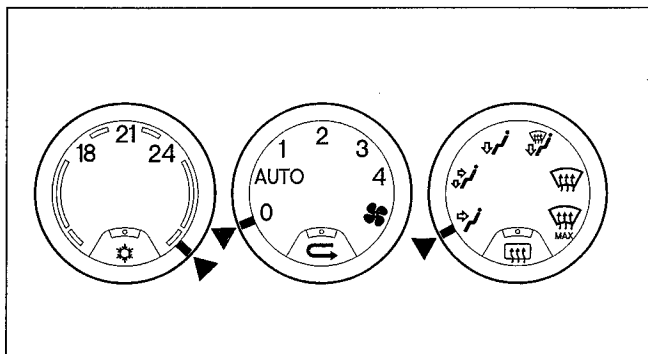
**NOTE** The "activation" of the circuit operation does not always involve insertion of the compressor which is governed by the climate control logic and by the engine ECU (see engine-specific ignition/injection ECU's).

The air cooling circuit is activated automatically (without pressing the button) when the key is turned to MAR or when the required temperature is modified, if the air temperature at the vents is lower than that of the external air.

**NOTE:** It is possible to switch from the automatic compressor activation to the more traditional manual mode (compressor activation by pressing the button only).

With key on STOP proceed as follows:

1. position lever as in figure:



- temperature selection lever on "maximum heat"
  - ventilation selection lever on "0"
  - flow distribution lever on "frontal flow"
2. rotate the key to MAR.
  3. within 10 seconds activate the ventilation selection lever setting it to "AUTO", therefore to "0", then again to "AUTO", and finally on "0".
  4. turn the key to STOP

At this point, the ECU is configured for manual operation. The compressor can be activated by pressing the specific key. This configuration remains for all the following start-ups. Compressor activation is, however, automatic even in this configuration for the "re-circulation" and "rapid demisting" functions.

To return to automatic mode, reverse the sequence indicated in points 1-4.

### Re-circulation

The central button operates the air re-circulation function. When the button is pressed, the respective LED lights up. If the key is released "air flows" dynamically from the outside.

**The re-circulation function also automatically activates the air cooling circuit function which can be excluded by pressing the respective button.**

### Filtering device

The air drawn into the compartment from outside crosses a double layer filter:

- the first "particulate" level stops the of small dust particles and pollen
- the second "active carbons" level blocks any polluting agents present in the atmosphere.

### Heated rear window (*Gtv only*)

The right hand side button turned on the heated rear window. When heated rear window is on the respective LED lights up (for further details refer to Electric system diagnosis)

## ECU OPERATING LOGIC CLIMATE CONTROL SYSTEM

### Calculation of air capacity and temperature:

The ECU adapts the temperature in the passenger compartment as required as quickly as possible, considering the settings and the temperature conditions. The ECU calculates the best operating parameters (capacity and temperature of the air in the passenger compartment) by means of certain thermal balance equations considering the heat introduced into the passenger compartment, the wasted heat and numerous thermal factors and coefficients. According to the identified values, the position of the mixing flap and the speed of the electric fans are automatically controlled. The calculation program is repeated every 15 seconds or when a parameter is modified manually.

### Enabling air cooling:

The respective button activates the air cooling circuit. The actual activation of the compressor, however, is excluded in the following cases:

- external temperature lower than 0° – 2° C (if re-circulation is not on)
- passenger compartment temperature lower than 0° – 2°C (if re-circulation is on)

The compressor can be deactivated by the circuit control pressure switch or the engine ECU according to the different types of ECU's (see engine-specific ignition/injection ECU's).

Finally (for Spider only) the compressor is disabled by the "top open" signal from the respective switch.

### External temperature control signal:

The signal from the external temperature sensor located in the right hand door mirror is "filtered" in a suitable way by the ECU, not considering the values read at low vehicle speed so that values that are distorted, for example, while standing in a queue with the engine running.



**ECU PIN-OUT**

**connector A**

Pin	Signal
A1	External temperature signal(for instrument)
A2	Actuator power supply (5V)
A3	Re-circulation flap actuator feedback
A4	Temperature signal from fan motor
A5	Top open switch
A6	Heated window ON led
A7	Compressor activation (12V)
A8	"Rapid demisting" function ON command -
A9	Passenger compartment air temperature sensor
A10	External air temperature sensor
A11	Lower mixed air temperature sensor
A12	Upper mixed air temperature sensor
A13	Ground sensors
A14	Ground
A15	Spare
A16	Distribution actuator command

**connector B**

Pin	Signal
B1	Rear window ON command ( <i>Gtv only</i> )
B2	Lighting power supply (with side lights on)
B3	Fan motor command
B4	Spare
B5	Ignition switch power
B6	Mixing actuator command
B7	Vehicle speed signal
B8	Diagnostic K line
B9	Distribution actuator feedback
B10	Direct power supply
B11	Re-circulation flap actuator command
B12	Mixing actuator feedback

**Self-test**

By means of a specific sensor control logic and actuator self-adjustment, the ECU memorises and stores the failures and faults occurring in the system.

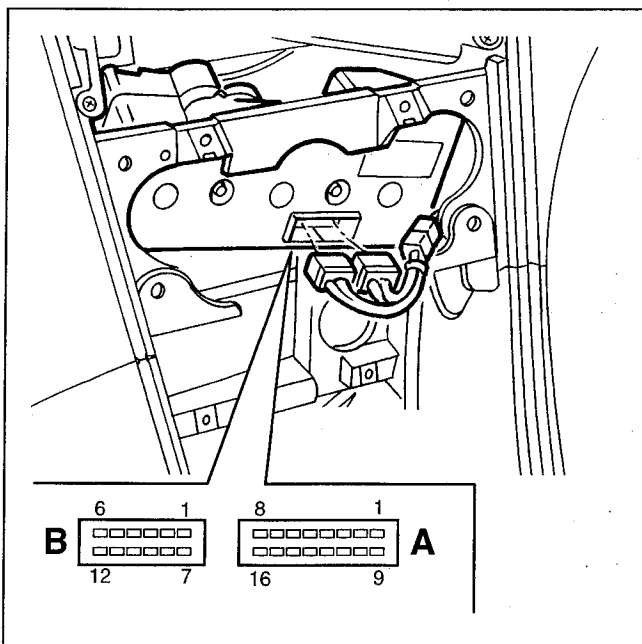
**When the key is turned to MAR, if the ECU has recorded errors, the climate control ON LED flashes.**

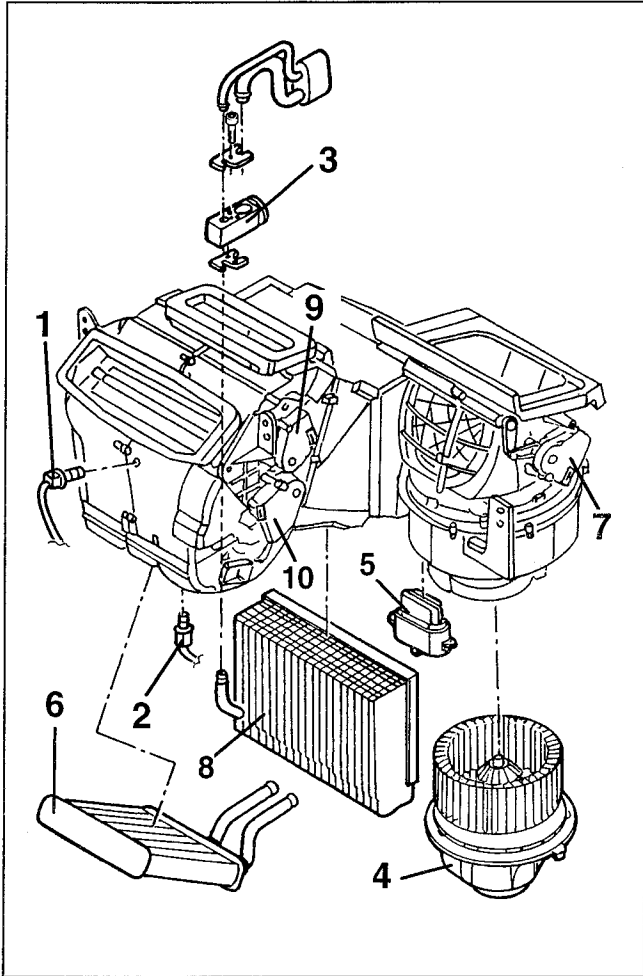
The memorised errors can be accessed by means of the Examiner or other diagnostic tool. If the error refers to one of the sensors, the ECU continues to operate ensuring "manual" system operation (for example, by moving the mixing flap by one step for each notch of the command lever). Each time the key is turned to MAR, the ECU moves the mixing actuator and the distribution actuator to read the extreme positions: if this operation is not successful, an error signal is issued. The re-circulation flap actuator is not, however, equipped with a feedback potentiometer and, therefore, an error is issued if a block or obstacle occurs during the movement causing faulty current absorption.

**SYSTEM COMPONENTS**  
**CONVEYOR UNIT/DISTRIBUTOR**

The electric fan conveys the external air flow towards the inside of the vehicle. If the re-circulation function is activated, the relative slot however conveys the air flow from the inside of the compartment. Initially the air reaches the evaporator, then - partially or totally - the heating radiator, according to the position of the mixing slot. Finally the air is sent to the various vents, according to the position of the upper, central and lower distribution flaps.

All the flaps are operated by electric motors driven by the ECU.

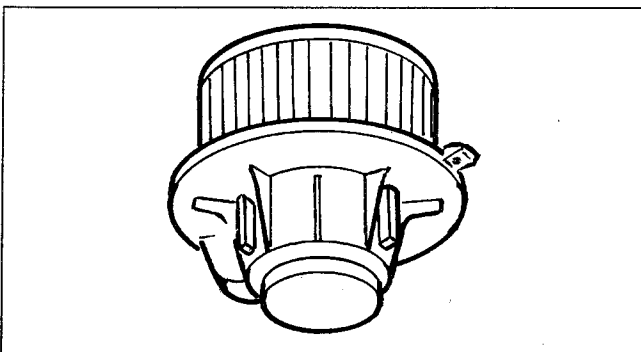




- 1 Upper mixed air temperature sensor
- 2 Lower mixed air temperature sensor
- 3 Expansion valve
- 4 Fan motor
- 5 Fan motor electronic variator
- 6 Heater radiator
- 7 Re-circulation flap actuator
- 8 Climate control evaporator unit
- 9 Distribution actuator
- 10 Mixing actuator

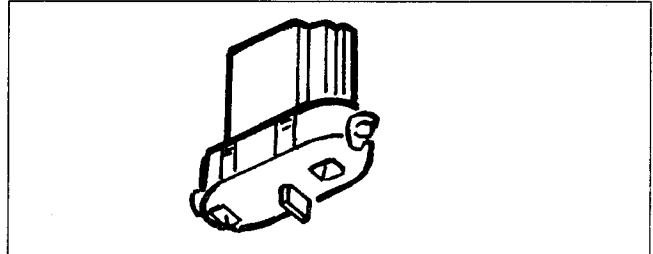
**Fan motor**

The electric fan directs the external or re-circulated air towards the conveyor-distributor and is powered at 12 V. It is driven at different speeds by an electronic regulator located near the unit.



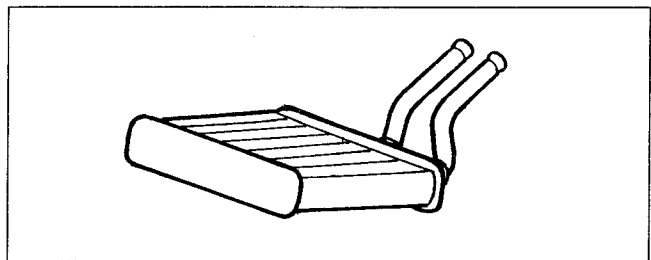
**Fan motor electronic variator**

An electronic regulator activates the electronic fan at different speeds. The electronic device inputs a control signal from the ECU and transforms it in to a variable voltage signal to drive the fan. This control voltage is stabilised so that it not dependent on battery voltage variations.



**Heating radiator**

The radiator is connected to the cooling water circuit of the engine via hoses that take the hot coolant from the engine to heat the air conveyed to into the passenger compartment.



**Re-circulation flap actuator**

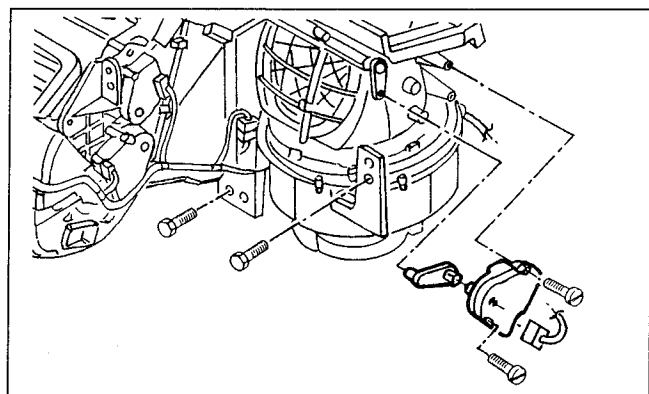
The rotation of the external intake flap is suitably controlled by the ECU by means of the re-circulation actuator. This activates the shutter between two limit positions - "dynamic" and "re-circulation" - without intermediate positions.

A voltage powered motor drives the rotary movement of a drive pin that acts directly on the flap:

0V = clockwise rotation

5V = anti-clockwise rotation

The actuator is not equipped with a feedback potentiometer and therefore it is controlled by the control panel via the verification of the current absorption.



**Distribution actuator**

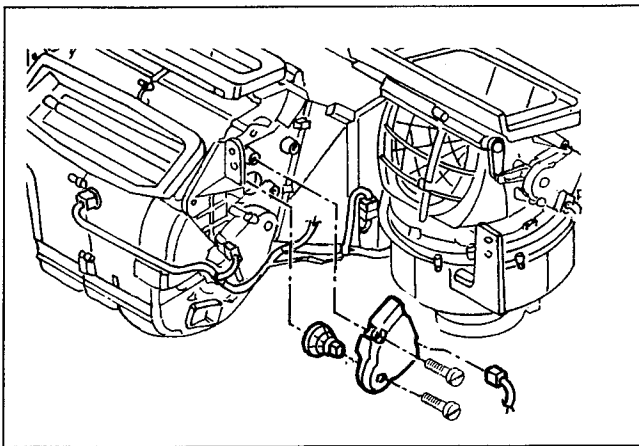
The direction of the air flow is suitably controlled by the ECU by means of the distribution actuator. This activates three shutters that send the air flow either to the lower vents, front vents or towards the windscreen. A voltage powered motor controls the rotary movement of a drive pin that acts directly on the distribution shutter:

0V = clockwise rotation

2.5 V = stop motor

5V = anti-clockwise rotation

A potentiometer (10 kOhm) reads the actual position and acts as "feedback" towards the ECU, checking the complete run between the extreme positions (maximum run 120°).

**Mixing actuator**

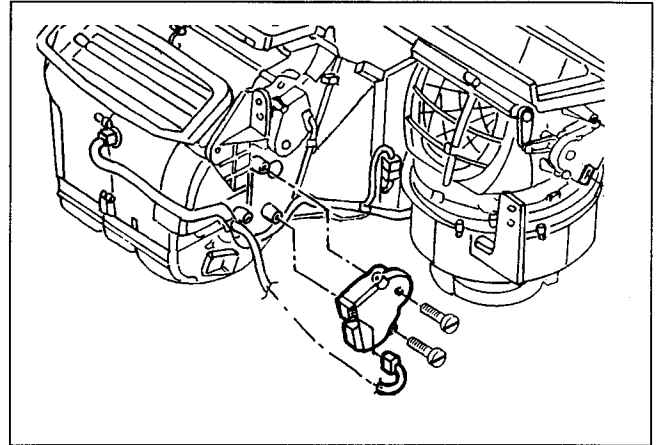
The air temperature is suitably controlled by the ECU by means of a hot and cold air mixing actuator. This activates the shutter that conveys or stops the air flow to the heating radiator. A voltage powered motor controls the rotary movement of a drive pin that acts directly on the mixing shutter:

0V = clockwise rotation

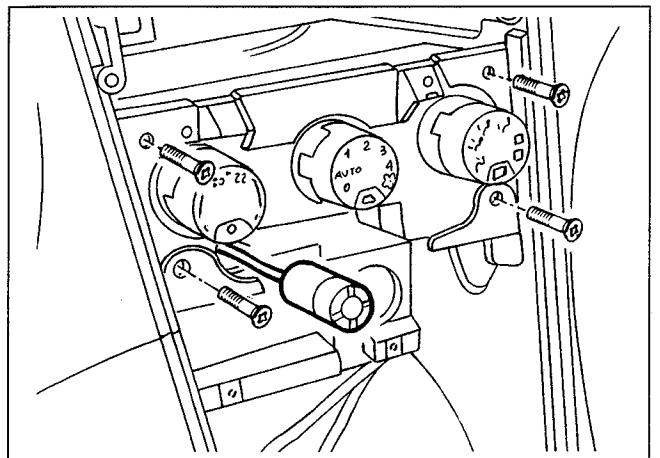
2.5 V = stop motor

5V = anti-clockwise rotation

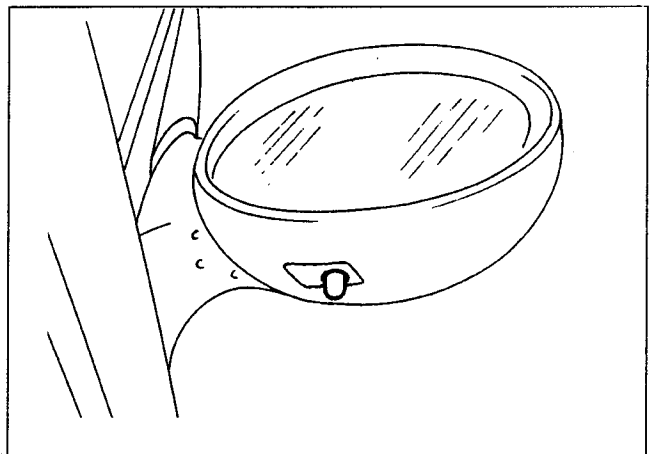
A potentiometer (10 kOhm) reads the actual position and acts as "feedback" towards the ECU, checking the complete run between the extreme positions (maximum run 120°).

**Passenger compartment air temperature sensor**

This is a NTC sensor ( $R = 10 \text{ kOhm}$  a  $25^\circ\text{C}$ ) The sensor is "ventilated", i.e. it includes a small, constantly powered fan (activated by a brushless motor) to ensure the temperature reading is not effected by stagnant - therefore hotter - air inside the dashboard.

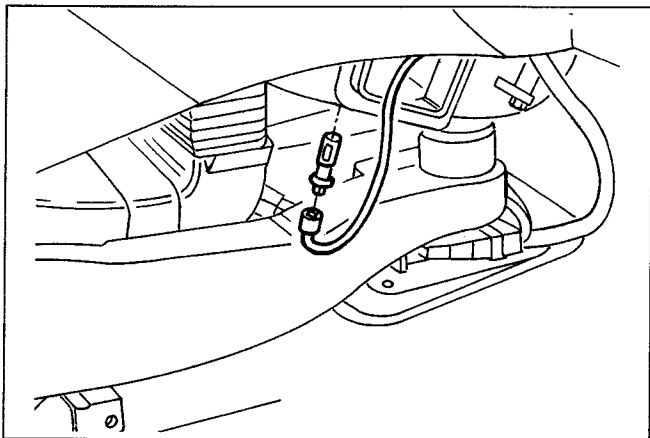
**External air temperature sensor**

This is a NTC sensor ( $R = 10 \text{ kOhm}$  a  $25^\circ\text{C}$ ).



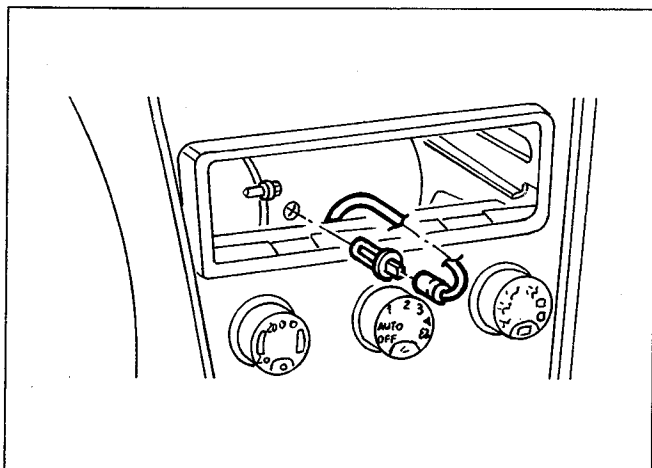
**Lower mixed air temperature sensor**

This is a NTC sensor ( $R = 10 \text{ k}\Omega$  a  $25^\circ\text{C}$ ).

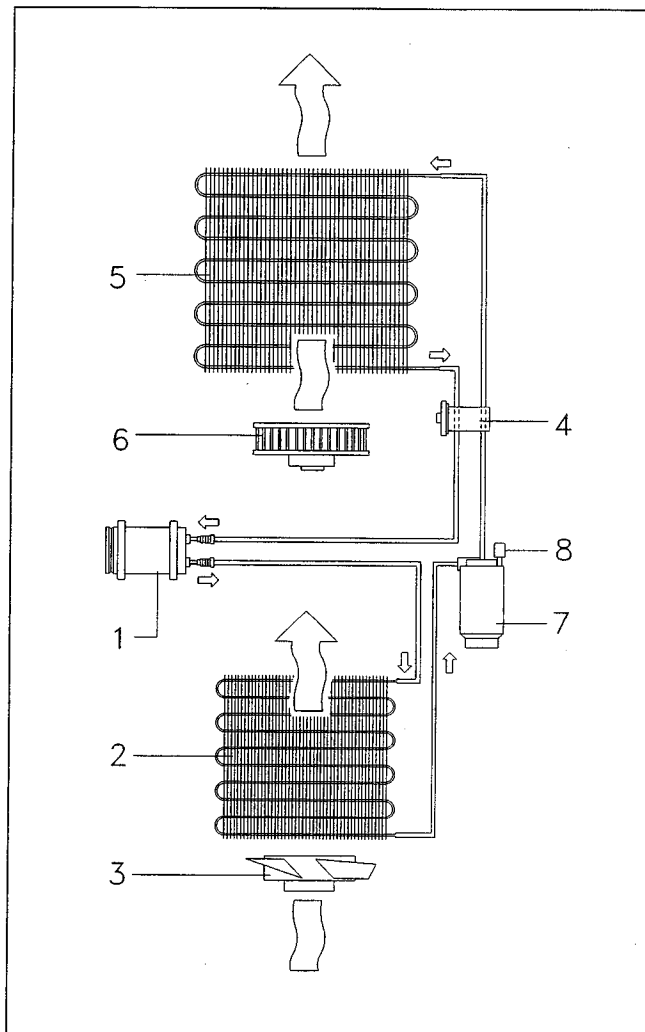


**Upper mixed air temperature sensor**

This is a NTC sensor ( $R = 10 \text{ k}\Omega$  a  $25^\circ\text{C}$ ).



is conveyed into the passenger compartment colder and less humid. Finally, the fluid enters the compressor again and the cycle restarts.



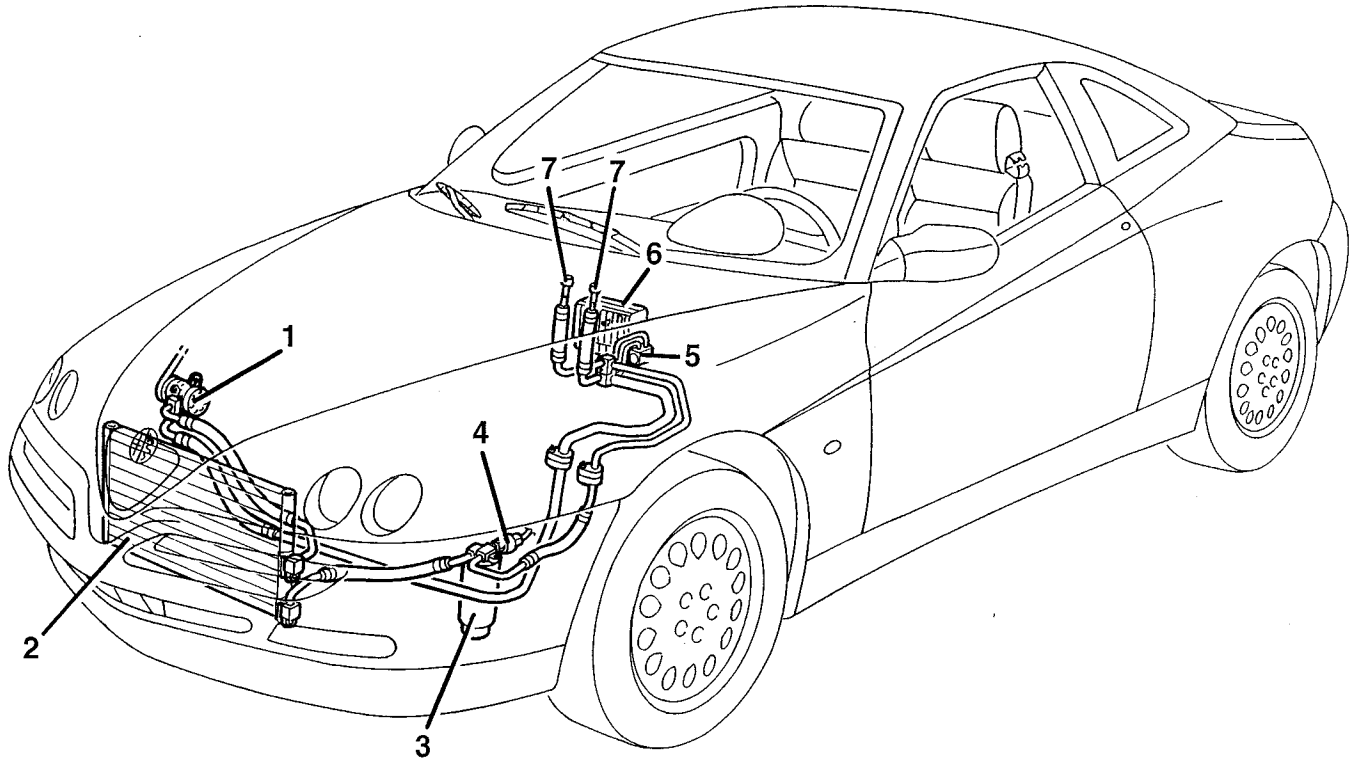
**CLIMATE CONTROL COOLING CIRCUIT**

The climate control system cools and dries the air let into the passenger compartment. The circuit operates according to a common refrigerating cycle with FREON R134a fluid in which changes in fluid status (from liquid to gas and vice versa) are used to absorb and produce heat.

The system works at two pressure levels: the high pressure is maintained by the compressor, the low pressure by the expansion valve. The refrigerating fluid exits from the compressor as high pressure gas at a high temperature. Therefore, it enters the condenser, cools and exits in liquid form. The fluid then crosses a dehydrator filter that absorbs any particles of water since the water present in the pipes could freeze and block the expansion valve, reducing the effectiveness of the cycle. In the next expansion valve, in fact, the pressure of the fluid is lowered consequently lowering its temperature. The liquid fluid enters the evaporator. By vaporising it removes heat from the air that is conveyed into the compartment. Furthermore, in contact with the cold walls of the evaporator, the air loses a high percentage of humidity, and therefore

- 1 Compressor
- 2 Condenser
- 3 Engine fan
- 4 Expansion valve
- 5 Evaporator unit
- 6 Passenger compartment fan
- 7 Dehydrator filter
- 8 Four-level pressure switch

**SYSTEM COMPONENT LOCATION**



- 1. *Conditioner compressor*
- 2. *Conditioner compressor*
- 3. *Drier filter*
- 4. *Four level pressure switch*

- 5. *Expansion valve*
- 6. *Evaporator assembly*
- 7. *System recharge valve fittings*

**OPERATING PROCEDURES**



**GENERAL PRECAUTIONS FOR WORK ON THE CLIMATE CONTROL UNIT**

- Before carrying out any maintenance and repair work it is advisable to disconnect the battery negative terminal.
- Before dismantling the system it must be drained recovering the coolant fluid.
- During the operations, when the system components are disconnected, suitable plug the disconnected fittings to prevent moisture and purities from getting into the system.
- When re-installing the pipe fittings change the O-rings on them.
- Lubricate the pipe fitting threads with the specified antifreeze oil and tighten the fittings to the specified torque.

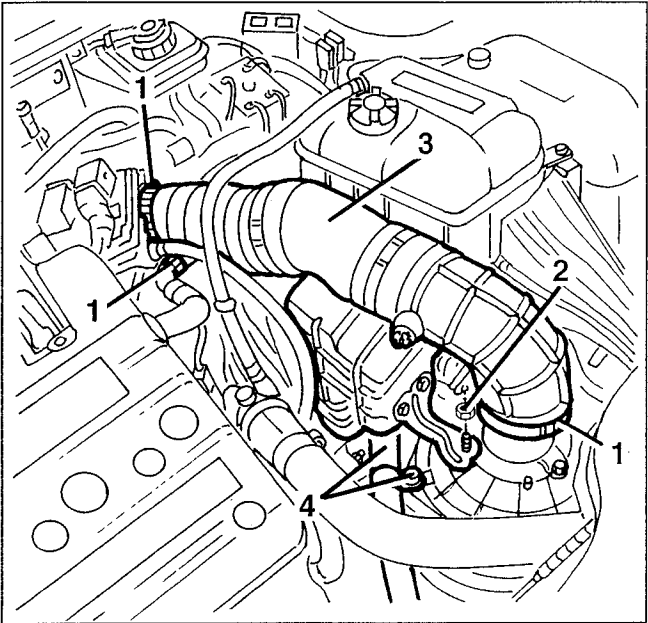
**AIR CONDITIONER UNIT**

**REMOVAL/REFITTING**

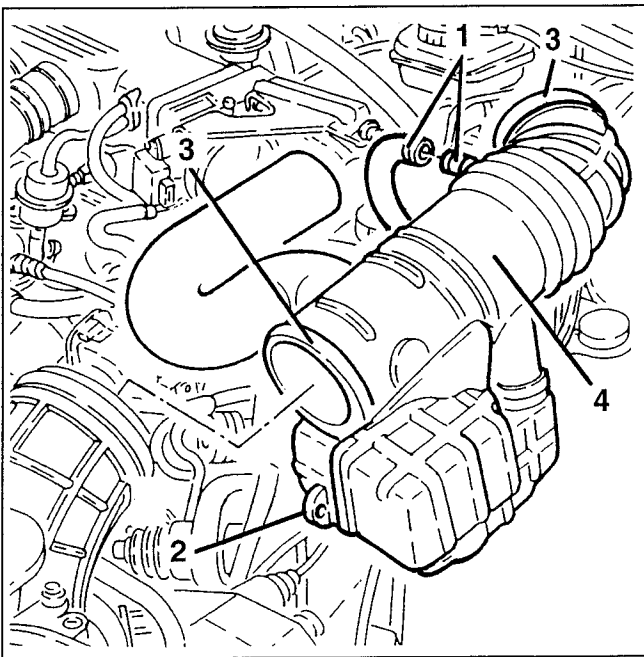
- Remove the dashboard (see Assembly 70)
- Drain the coolant (see specific paragraph)

**For 6 cylinder versions**

1. Disconnect the oil vapour recovery pipe.
2. Remove the lower resonator fastening button.
3. Loosen the two fastening clips.
4. Remove the corrugated sleeve and resonators.

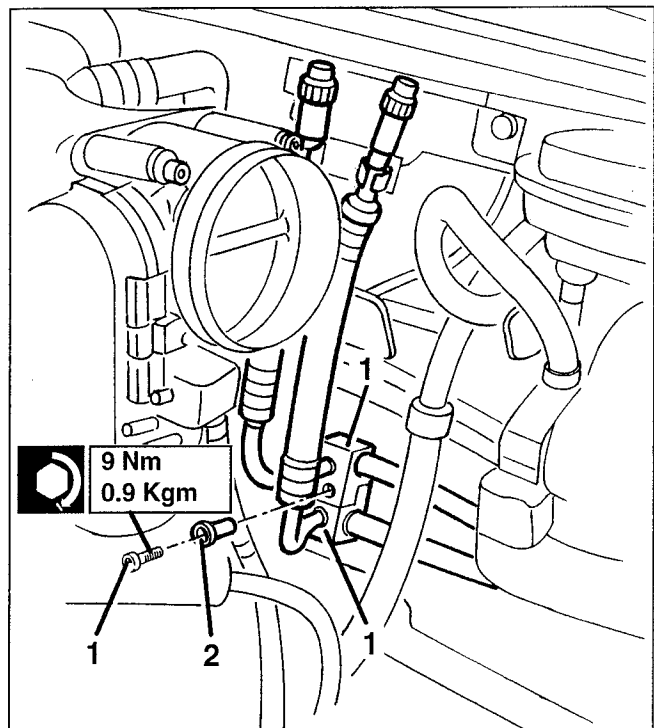


1. Loosen the fastening screw and disconnect the pipes from the evaporator fitting.
  2. Take the bushing.
- When refitting, check integrity of the bushing and replace it, if required.*



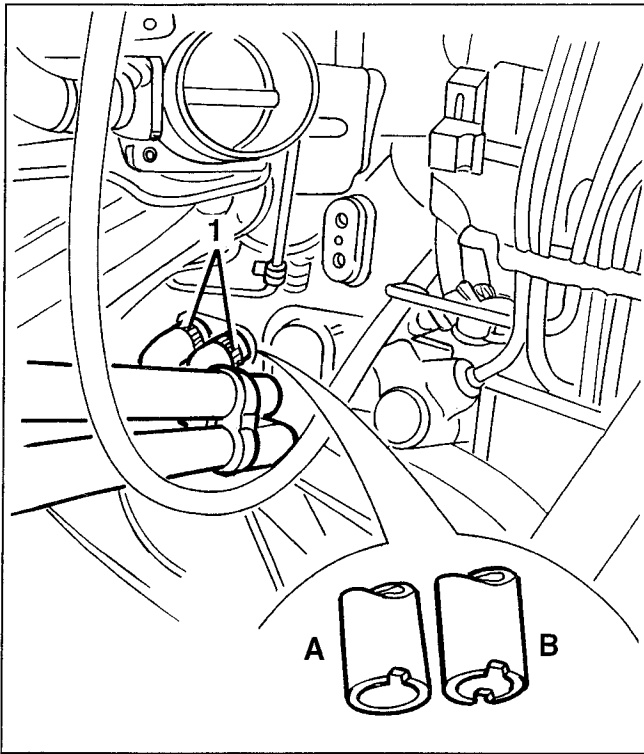
**For 4 cylinder versions**

1. Loosen the clips.
2. Loosen the bracket fastening nut.
3. Remove the corrugated sleeve and resonator.
4. Loosen the clip fastening screw and move the pipe aside.



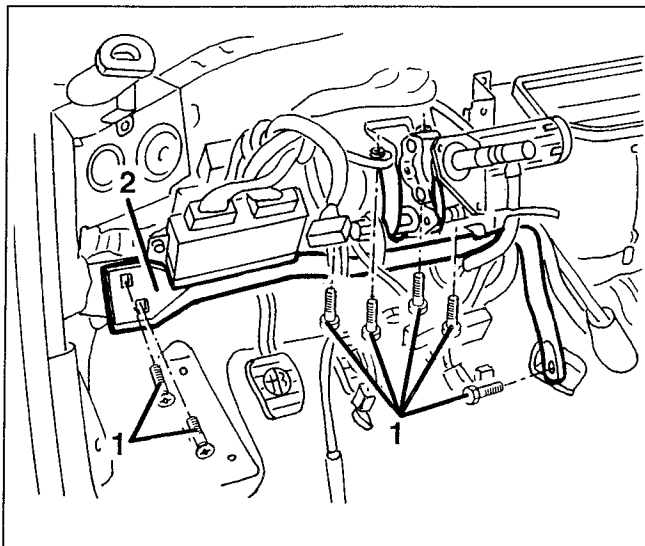
1. Loosen the heater coolant inlet and outlet pipe clips and disconnect the pipe. Collect the fluid.

**NOTE:** The two pipes present one recess (A) or two recesses (B) as to avoid possible inversion.

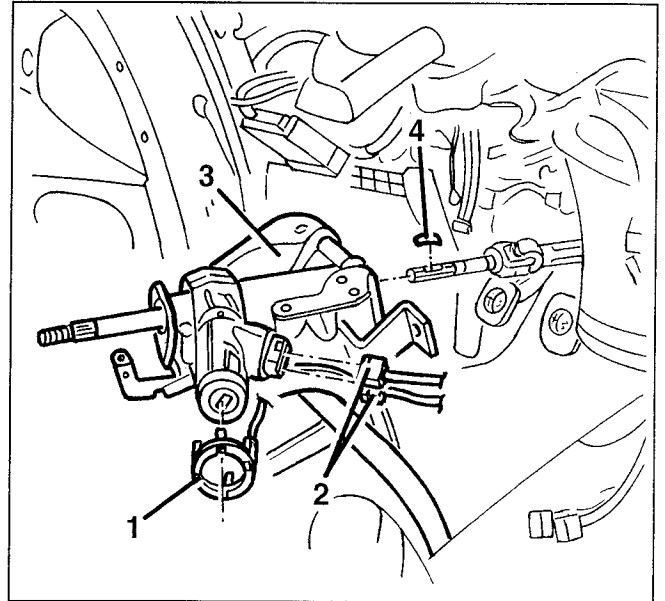


1. Loosen the steering column crossmember fastening screws and nuts.

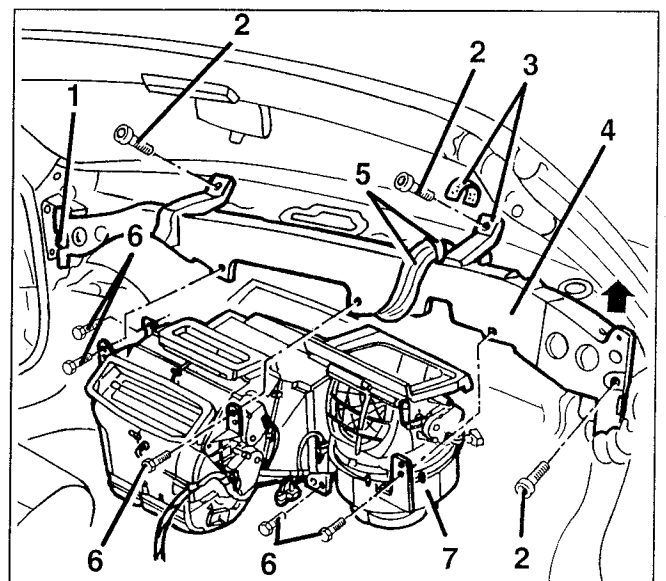
2. Move the crossmember.



1. Release the Alfa CODE aerial from the retainers.
2. Disconnect the two electrical connections.
3. Remove the steering column assembly.
4. Take the tab.



1. Loosen the left-hand crossmember fastening screw.
2. Loosen the other crossmember screws.
3. Apply a protection to the right-hand crossmember as not to damage the windscreen.
4. Lift the right-hand crossmember and provisionally fasten it.
5. Lift the wiring and provisionally fasten them.
6. Remove the conditioner unit fastening screws.
7. Remove the conditioner unit and wiring.



Refit the conditioner unit by reversing the removal sequence.

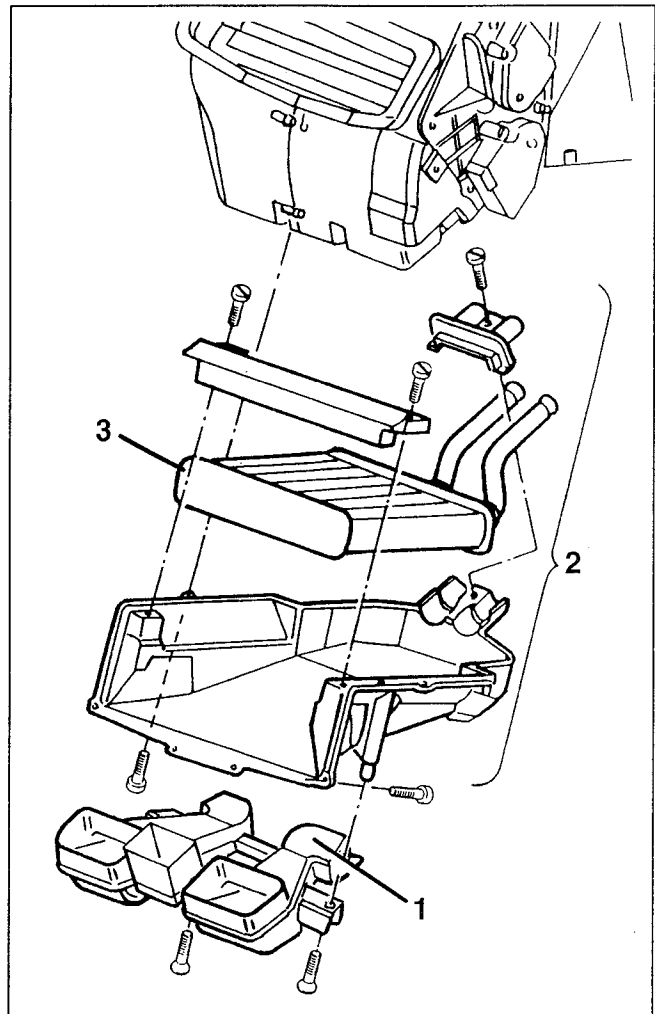
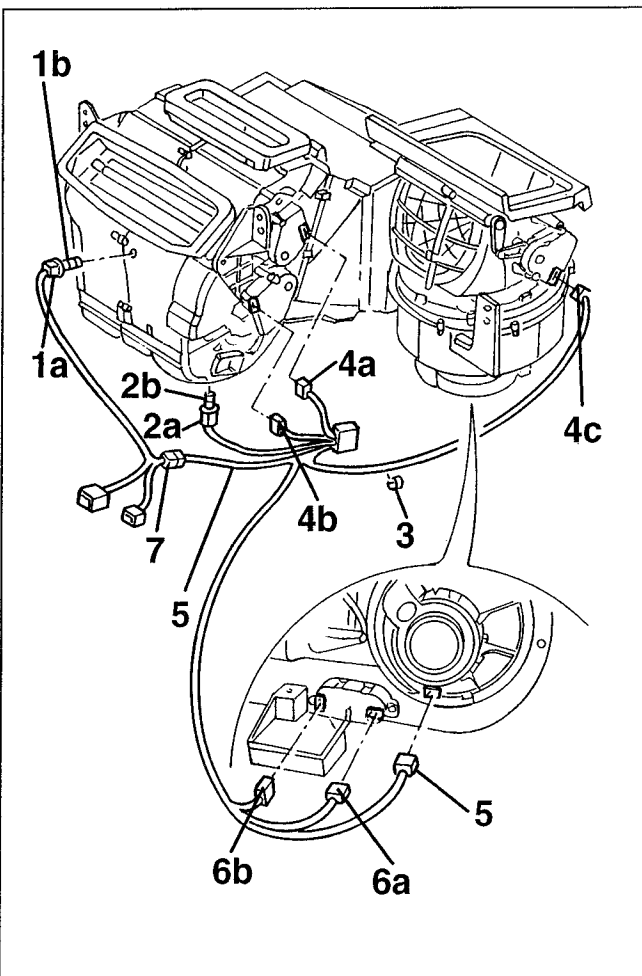
**NOTE:** Replace the fitting O-rings.  
Only use green rings resistant to R134A coolant. Lubricate the fittings with anti-freeze oil.

**DISASSEMBLY**

**NOTE:** The following procedure illustrates how to disassemble the unit to replace single components. However, some components may be replaced without removing the assembly, as shown in the following paragraphs.

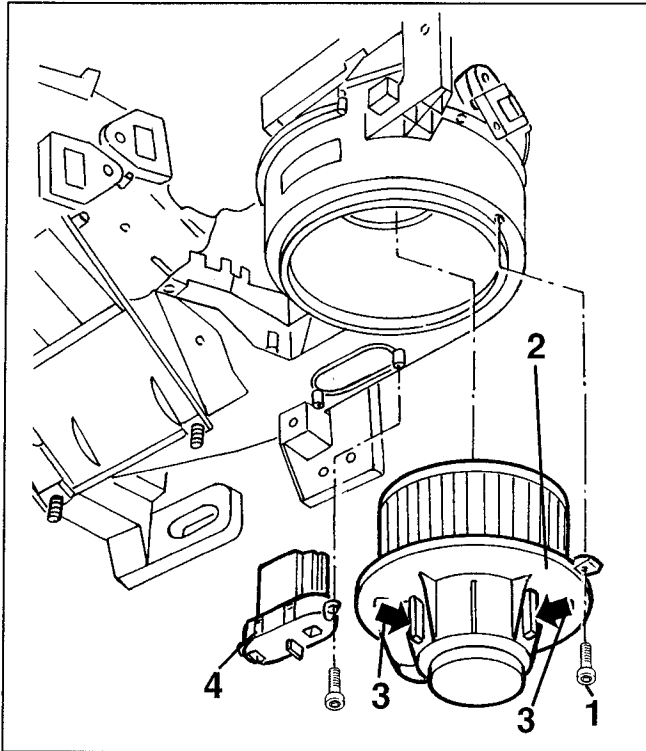
1. Disconnect the electrical connection (1a) from the upper mixed air sensor, turn the sensor (1b) anti-clockwise and remove it.
2. Disconnect the electrical connection (2a) from the lower mixed air sensor, turn the sensor (2b) anti-clockwise and remove it.
3. Remove the fastening clips.
4. Disconnect the three motor electrical connections (4a, 4b, 4c).
5. Disconnect the fan electrical connection.
6. Disconnect the electronic variator electrical connections (6a, 6b).
7. Remove the complete wiring harness.

1. Remove the manifold cover.
2. Remove the heater radiator and bracket.
3. Disassemble the radiator from the bracket.

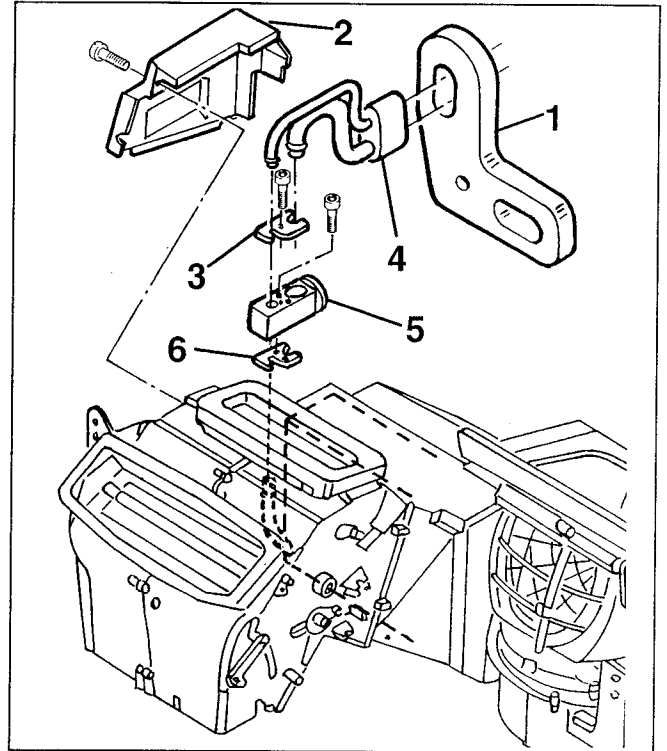


1. Remove the retainer screw.
2. Turn the fan assembly anti-clockwise and remove it.
3. Press the damper pads and separate the fan motor from the bracket.
4. Remove the electronic variator.

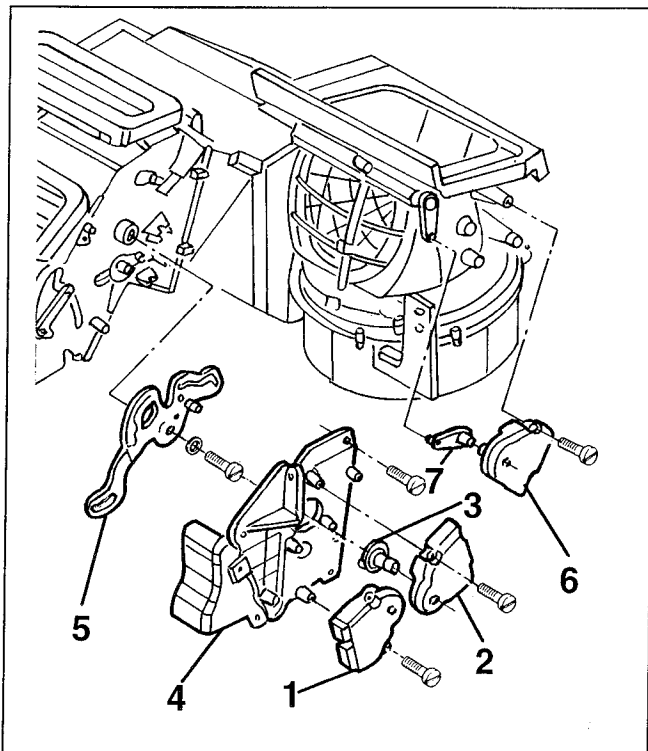




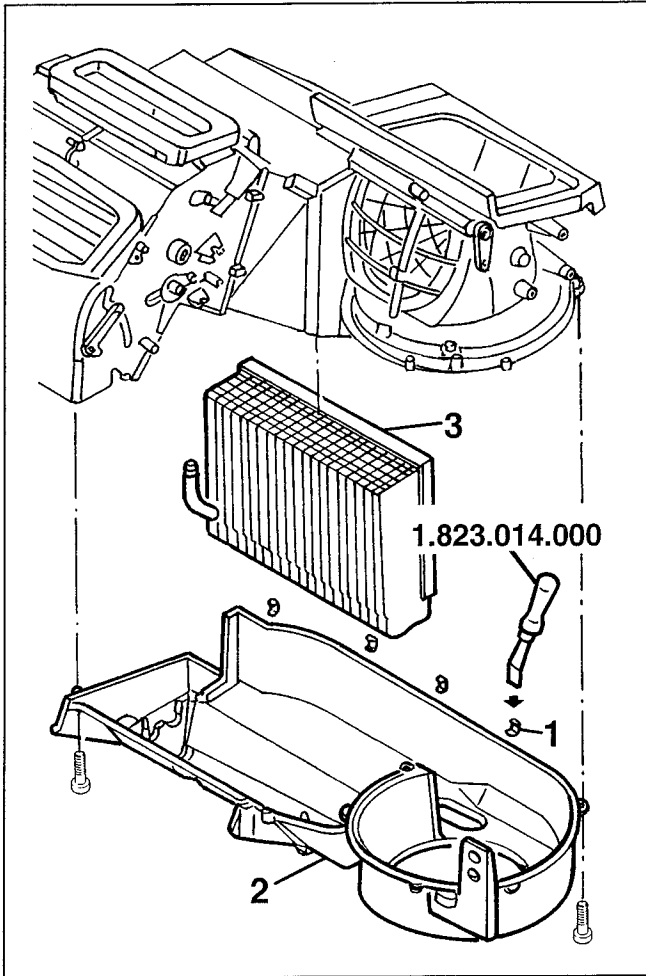
1. Remove the rubber protection.
2. Remove the expansion valve cover.
3. Remove the upper plate.
4. Remove the coolant pipe fittings.
5. Remove the expansion valve.
6. Take the lower plate.



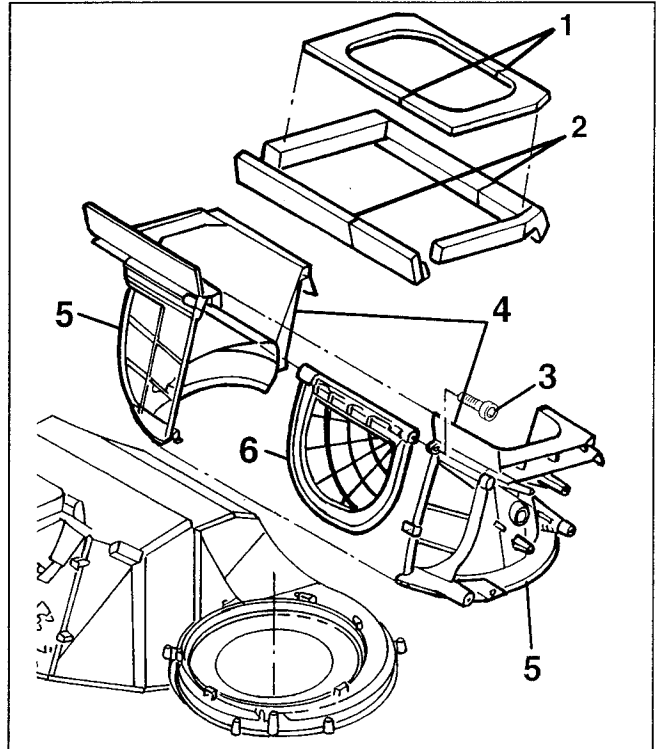
1. Remove the air mixing motor.
2. Remove the air distribution motor.
3. Take the motor shaft.
4. Remove the control linkage cover.
5. Remove the linkage assembly .
6. Remove the air intake motor.
7. Take the control lever.



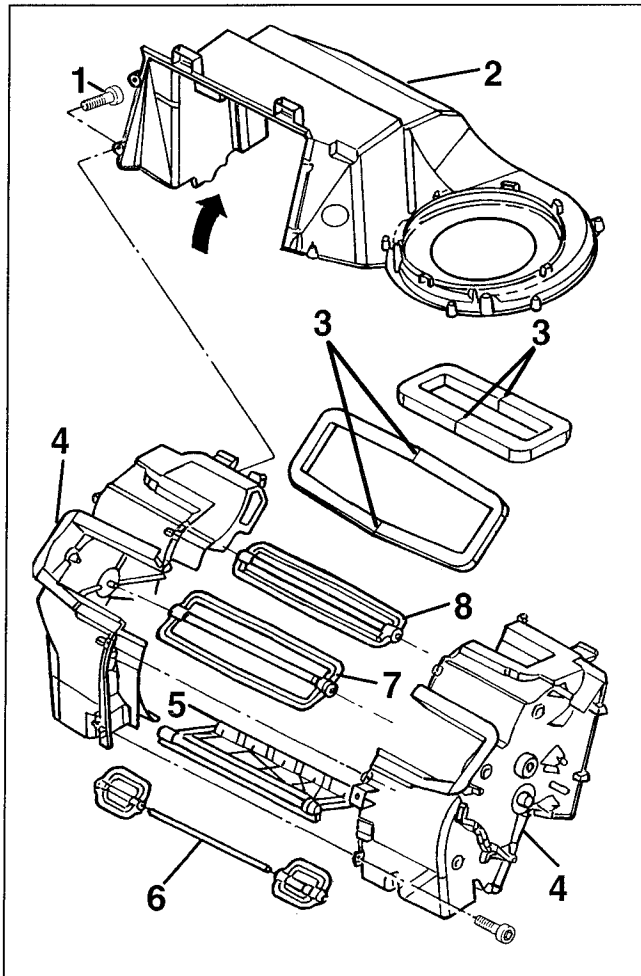
1. Use tool 1.823.014.000 to remove the half unit fastening pegs.
2. Remove the lower half unit.
3. Remove the evaporator.



1. Cut the rubber guard.
2. Cut the seal.  
*Work with care to refit guard and seal by closing the two edges of the cut.*
3. Loosen the fastening screw.
4. Remove the air manifold.
5. Separate the two air manifold half casings.
6. Remove the recirculation flap from the respective pin.



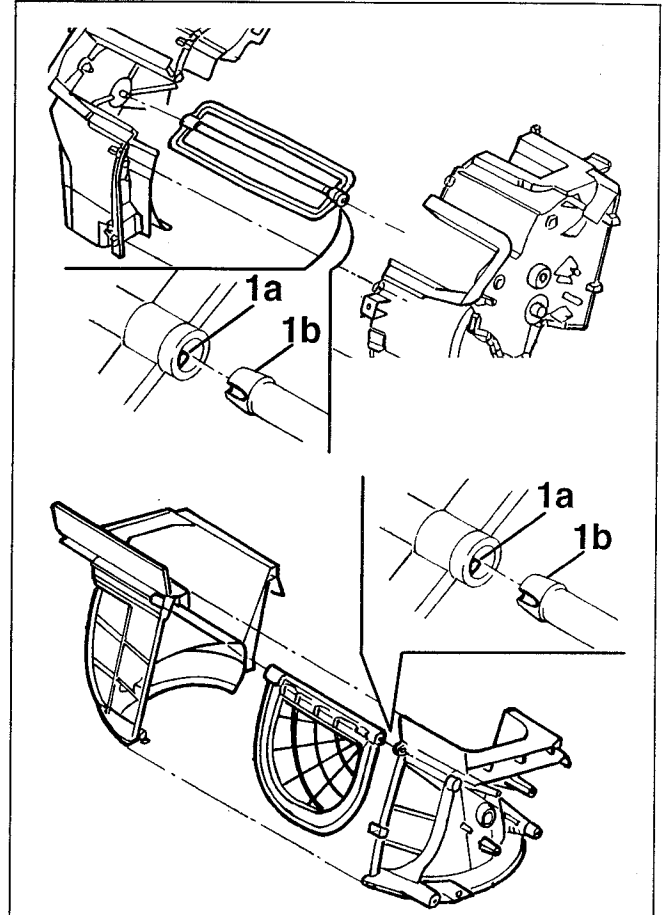
1. Loosen the upper half casing fastening screw.
2. Turn the upper half casing upwards and remove it.
3. Cut the seals.  
*Work with care to refit the seal by closing the two edges of the cut.*
4. Separate the two half casings .
5. Remove the mixing flap from its pin.
6. Remove lower distribution flap from its pin.
7. Remove the front distribution flap from its pin.
8. Remove the upper distribution flap from its pin.



**RE-ASSEMBLY**

– Re-assembly the conditioner unit by reversing the disassembly sequence.

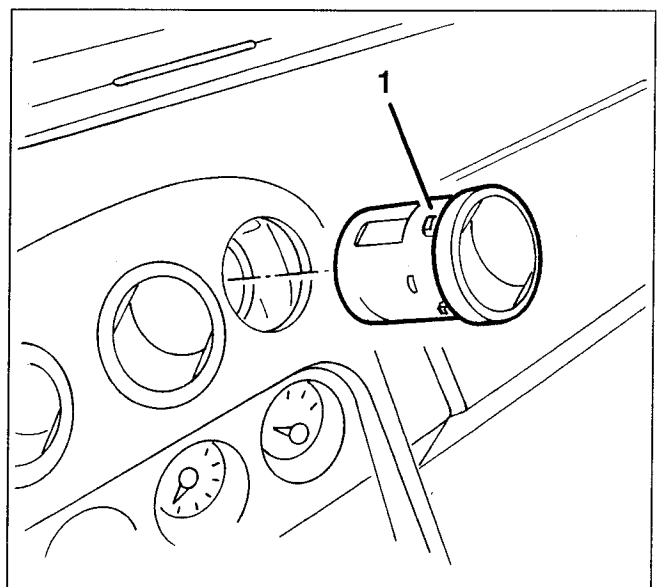
**NOTE:** When refitting the flaps in their pins, couple the retainers (1a) correctly in their seats (1b) on the pin.



**ADJUSTABLE AIR VENT ON DASHBOARD**

**REMOVAL - REFITTING**

1. Remove the vent by pulling it.

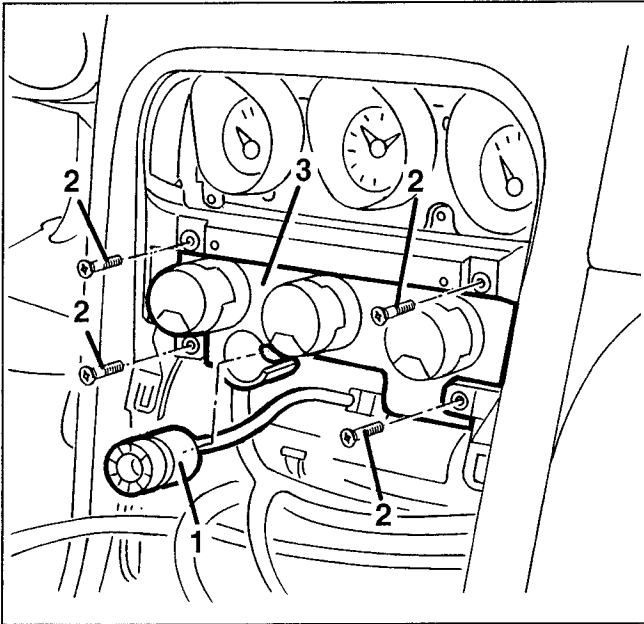


Refit the vent by reversing the removal sequence.

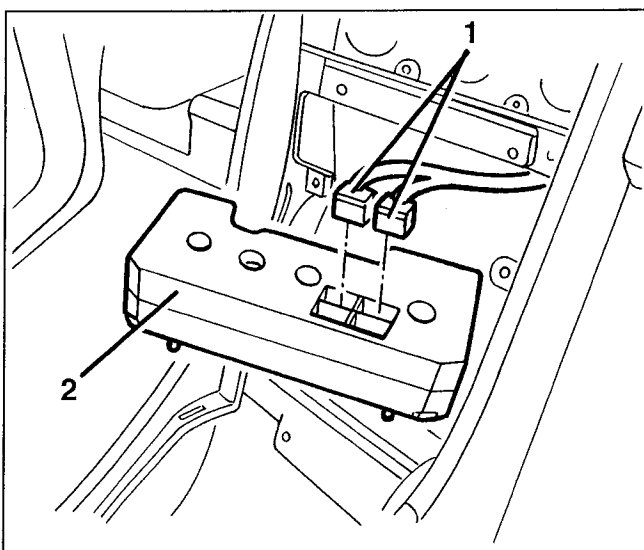
## CLIMATE CONTROL SYSTEM CONTROL ASSEMBLY


### REMOVAL - REFITTING

- Remove the central unit (see specific paragraph).
- 1. Remove the internal temperature sensor from its seat.
- 2. Loosen the screws.
- 3. Extract the climate control system control assembly slightly.



- 1. Disconnect the electrical connections.
- 2. Take the climate control system control assemblies.

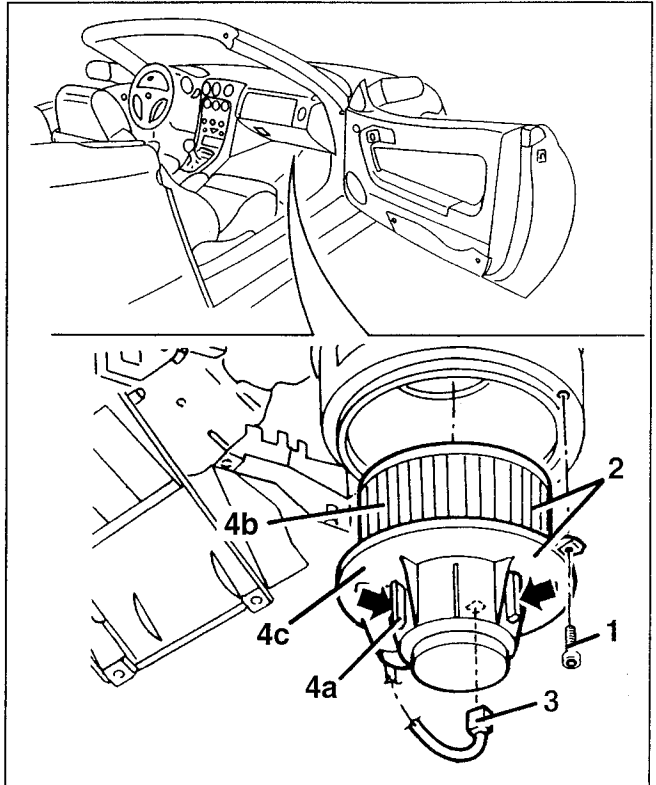



 Refit the climate control system control assembly by reversing the removal sequence.

## FAN

### REMOVAL/REFITTING

- Remove the glove compartment (see Assembly 70).
- 1. Loosen the fan fastening screws.
- 2. Turn the fan anti-clockwise and extract it slightly.
- 3. Disconnect the electrical connection.
- 4. If required, press the damper pads (4a) and separate the fan (4b) from the bracket (4c).

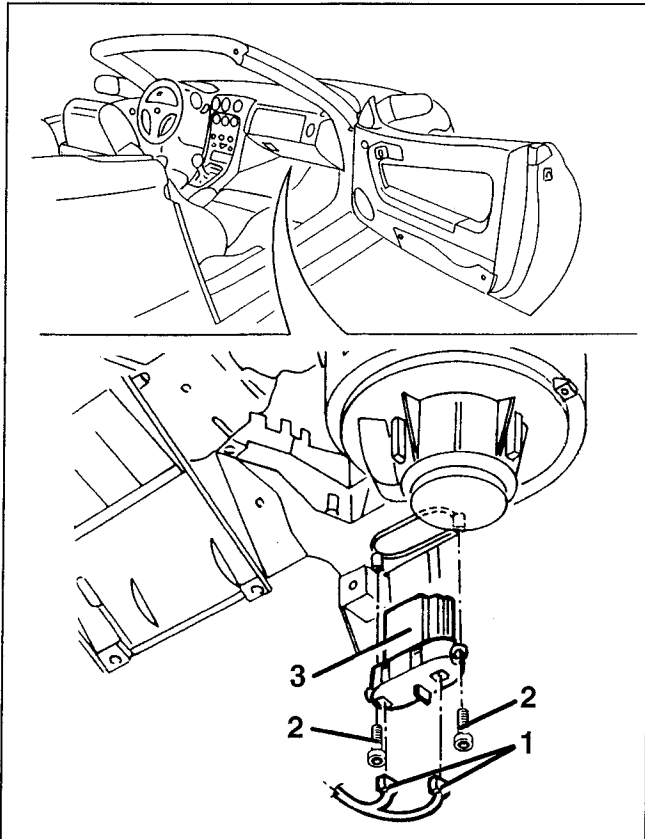


 Refit the fan by reversing the removal sequence.

**FAN ELECTRONIC VARIATOR**

**REMOVAL/REFITTING**

- Remove the glove compartment (see Assembly 70).
- 1. Disconnect the electronic variator electrical connections.
- 2. Loosen the electronic variator fastening screws.
- 3. Remove the electronic variator.

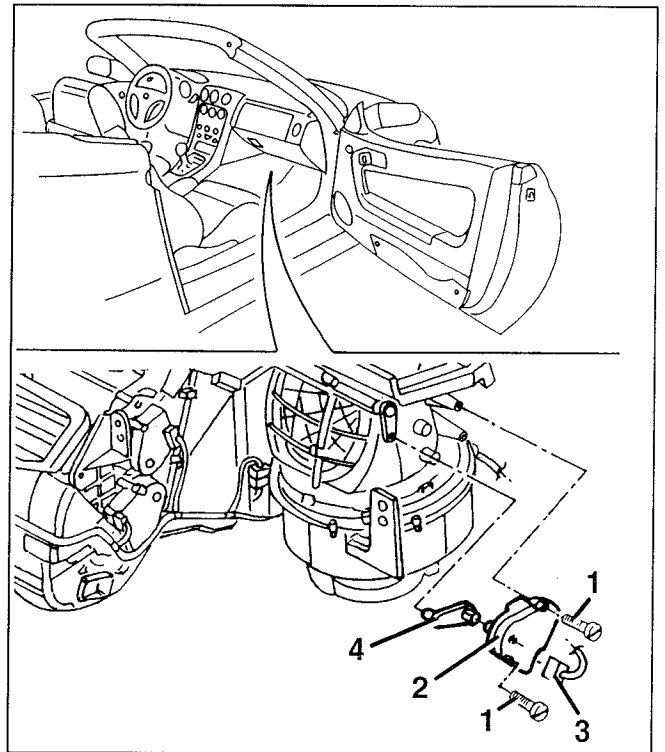


Refit the electronic variator by reversing the removal sequence.

**RECIRCULATION FLAP MOTOR**

**REMOVAL/ REFITTING**

- Remove the glove compartment (see Assembly 70).
- 1. Loosen the motor fastening screws. If required, cut the sound-proofing partition under the dashboard to reach the front screw. When refitting, restore the removed sound-proofing.
- 2. Remove the motor slightly.
- 3. Disconnect the electrical connection and remove the motor.
- 4. Take the flap lever.



Refit the motor by reversing the removal sequence.

**AIR DISTRIBUTION FLAP MOTOR**

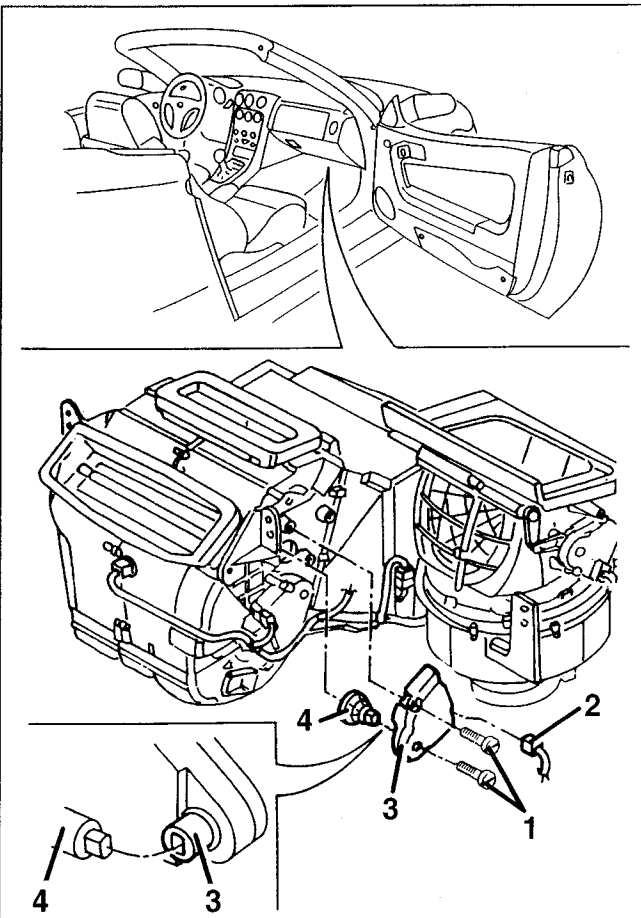
**REMOVAL/REFITTING**

– Remove the glove compartment (see Assembly 70).

1. Loosen the motor fastening screws.
2. Disconnect the electrical connection.
3. Remove the motor by disconnecting the motor shaft.

(To facilitate the refitting procedure, reconnect the electrical connection and turn the motor by means of the dashboard control to align with the shaft).

4. If required, remove the motor shaft.



Refit the motor by reversing the removal sequence.

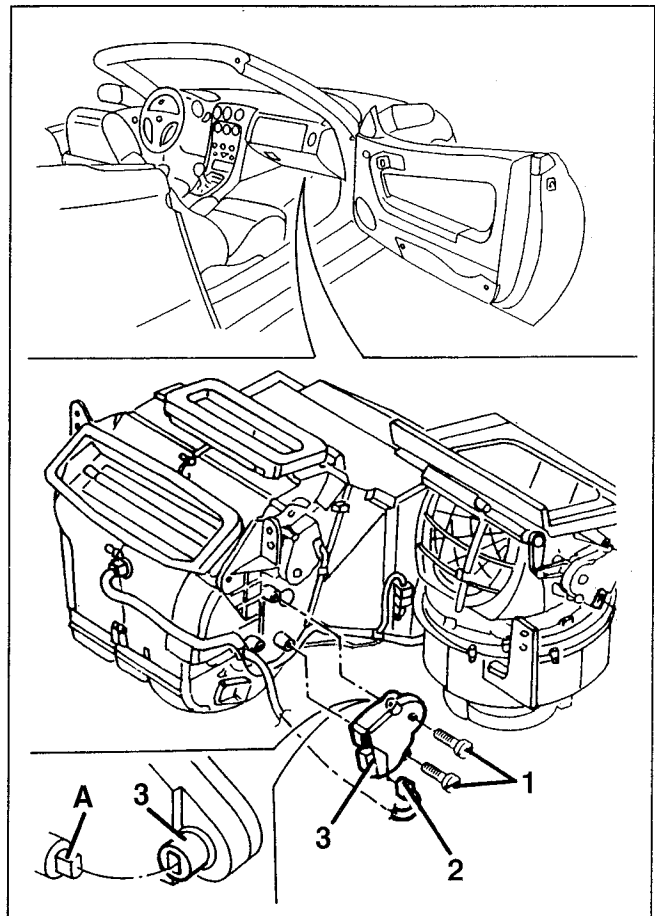
**AIR MIXING FLAP MOTOR**

**REMOVAL/ REFITTING**

– Remove the glove compartment (see Assembly 70).

1. Loosen the motor fastening screws.
2. Disconnect the electrical connection.
3. Remove the motor by disconnecting the flap pin (A).

(To facilitate flap pin (A) coupling with the motor while refitting, reconnect the electrical connection and turn the by means of the dashboard control to align with the pin (A)).



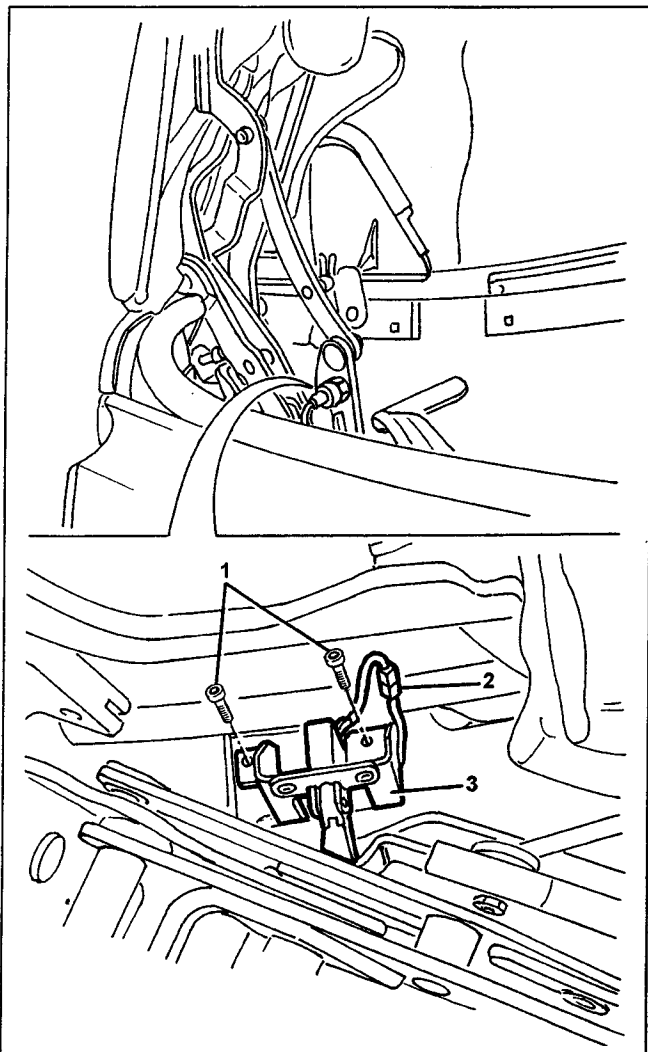
Refit the motor by reversing the removal sequence.

## MICROSWITCH FOR INHIBITING AIR CONDITIONING WITH HOOD OPE (SPIDER)

### REMOVING-REFITTING

– Open the hood to the position with the 5th arch raised and the hood cover raised.

1. Working on the left hand side of the hood compartment, undo the bolts fixing the microswitch support.
2. Disconnect the electrical connection.
3. Remove the support and the microswitch.



Proceed with refitting the microswitch, reversing the order of the operations carried out for the removal.

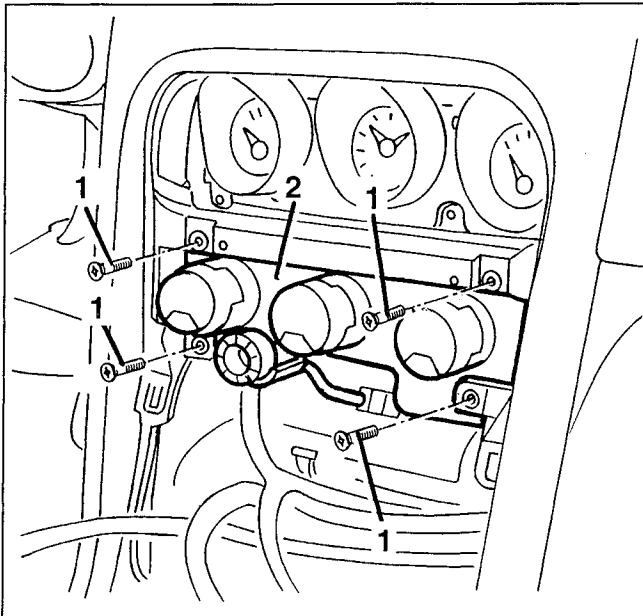




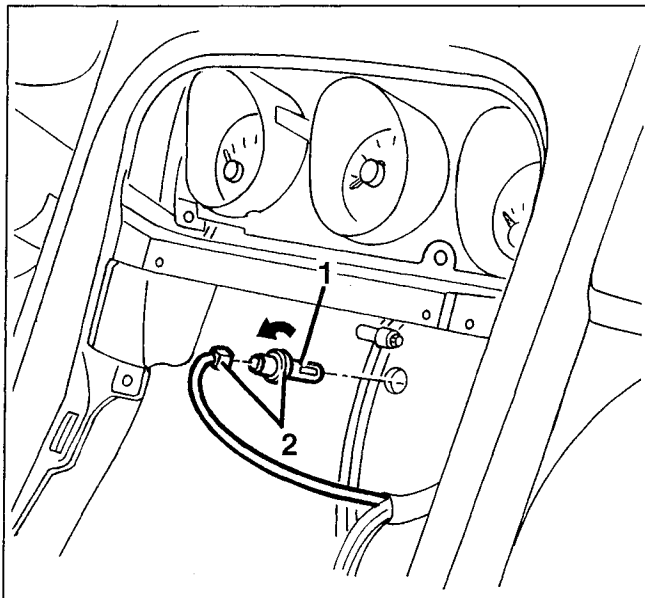
## UPPER MIXED AIR SENSOR

### REMOVAL - REFITTING

- Remove the central unit (see specific paragraph).
- 1. Loosen the screws.
- 2. Move the climate control system control assembly downwards.



1. Turn the sensor anti-clockwise and extract it.
2. Disconnect the electrical connection and take the sensor.



Refit the mixed air upper sensor by reversing the removal sequence.

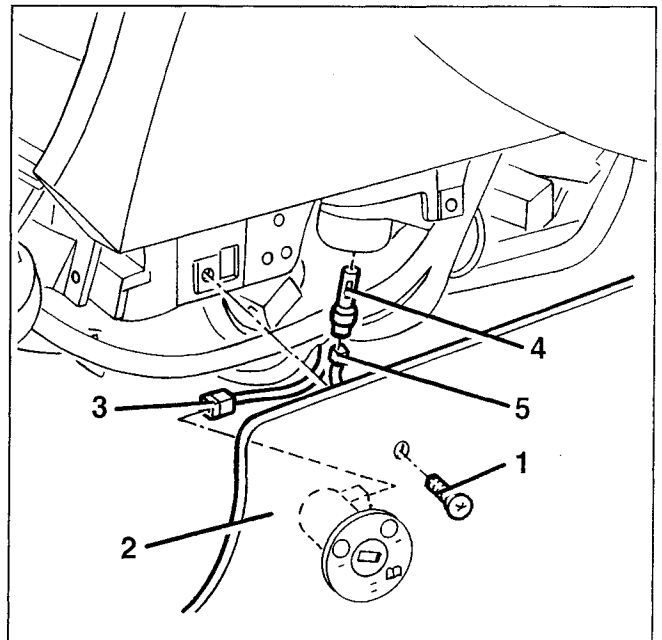
## LOWER MIXED AIR SENSOR

### REMOVAL - REFITTING



Before removing and refitting, perform the following preliminary operations:

- turn the ignition key to "STOP" and extract it;
  - Disconnect the battery.
- Disconnect the battery.
  - 1. Loosen the unit side cover fastening screws.
  - 2. Move the unit side cover slightly to the side.
  - 3. Disconnect the passenger side airbag disable switch electrical connection and take the unit side cover.
  - 4. Turn the sensor anti-clockwise and extract it.
  - 5. Disconnect the electrical connection and take the sensor.

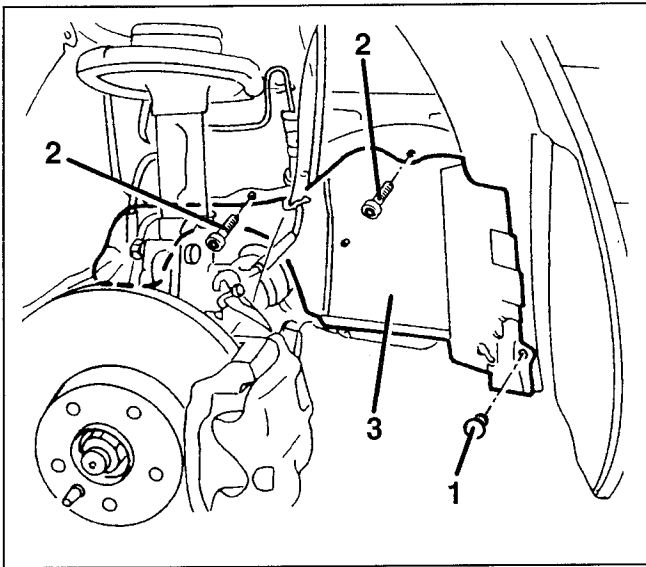


Refit the mixed air sensor by reversing the removal sequence.

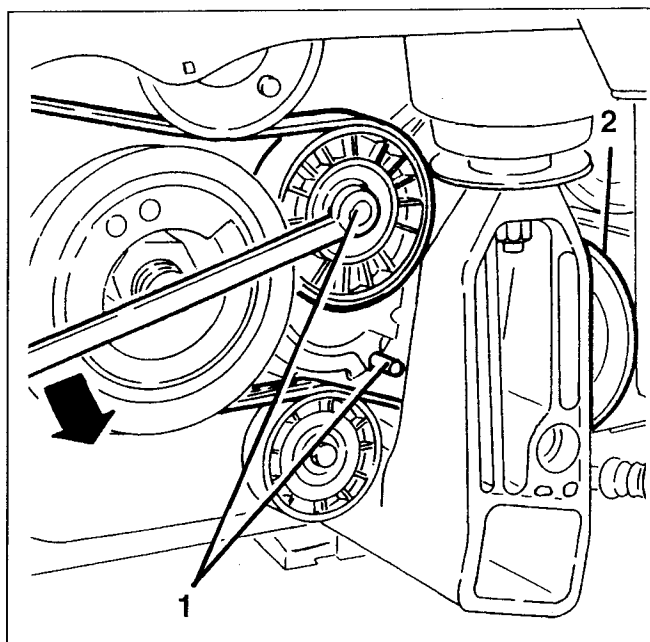
**COMPRESSOR (6 cylinder versions)**

**REMOVAL/REFITTING**

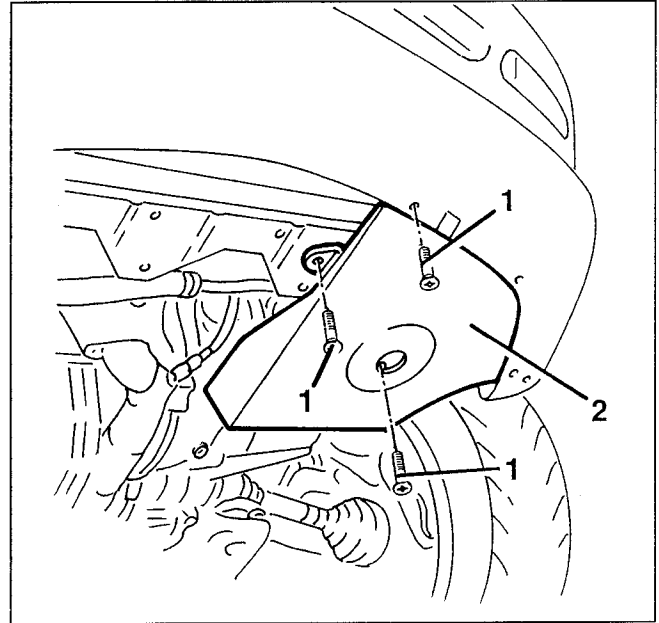
- Position the vehicle on a shop jack.
- Disconnect the negative battery terminal.
- Drain the coolant.
- Remove the right-hand front wheel.
- 1. Release the engine compartment wall retainer button.
- 2. Loosen the wall fastening screws.
- 3. Remove the wall.



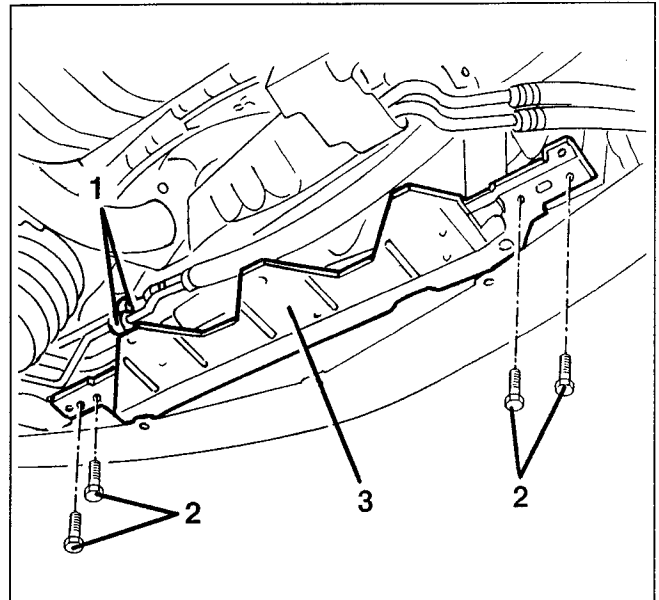
- 1. Use a wrench on the belt take-up pulley fastening screw to contrast the force of the automatic belt take-up device. Lock it in this position (belt loose) by inserting the specific pin, as shown in the figure.
- 2. Remove the auxiliary unit drive belt from the compressor pulley.



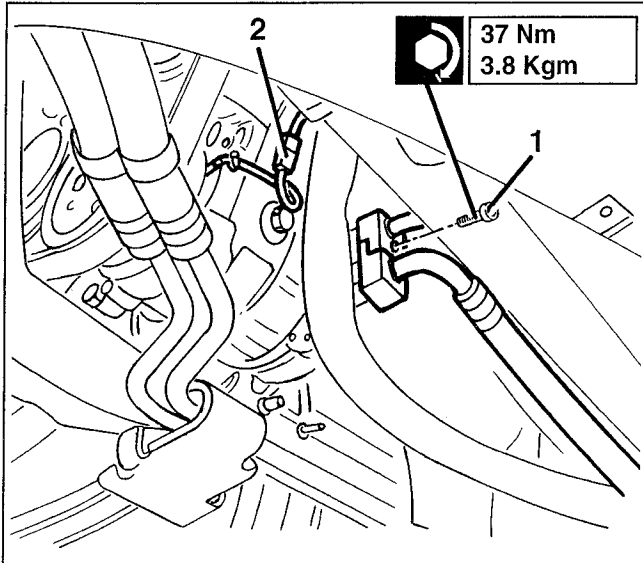
- Lift the vehicle.
- 1. Loosen the screws and nut fastening the guard under the air cleaner.
- 2. Remove the guard.



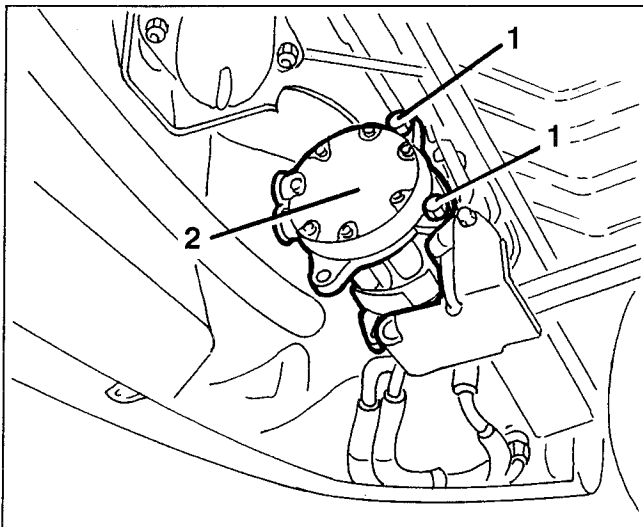
- 1. Loosen the clips and disconnect the three pipes.
- 2. Loosen the crossmember fastening screws under the radiator.
- 3. Remove the crossmember.



1. Loosen the screw and disconnect the two compressor intake and delivery pipes.
2. Disconnect the compressor electrical connection.



1. Loosen and remove the compressor fastening screws and nut.
2. Take the compressor.



Refit the compressor by reversing the removal sequence.

**NOTE:** Replace the fitting O-rings. Only use green rings resistant to R134A coolant. Lubricate the fittings with anti-freeze oil.

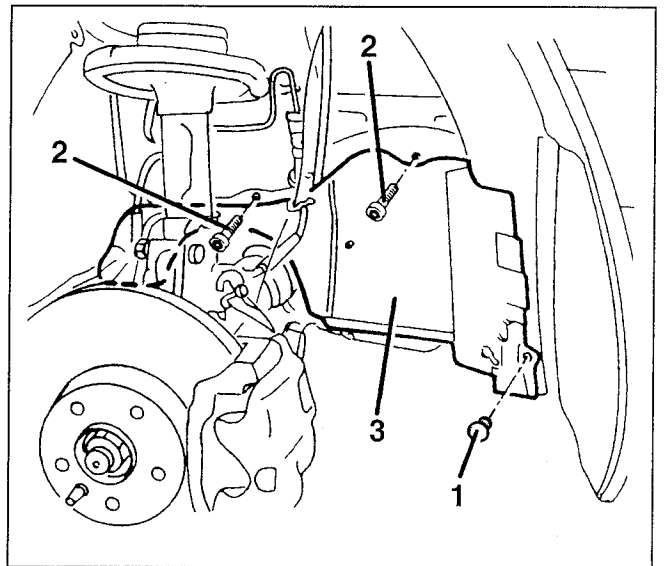
- Torque as prescribed.

## COMPRESSOR (4 cylinder versions)

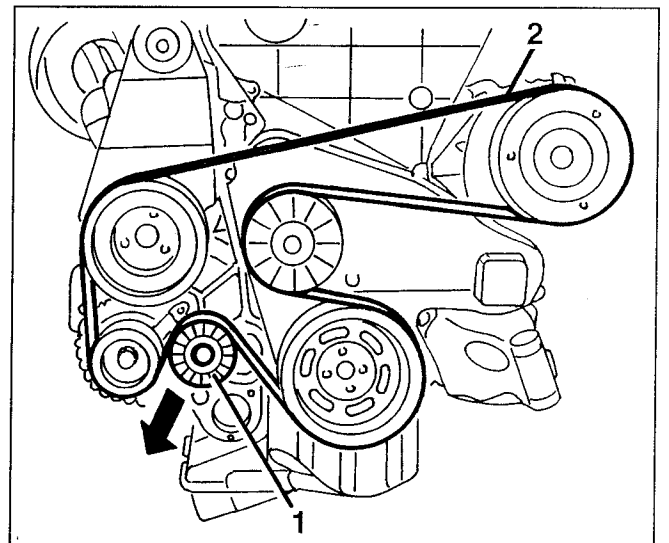
### REMOVAL/REFITTING

- Position the vehicle on a shop jack.
- Disconnect the negative battery terminal.
- Drain the coolant.
- Remove the right-hand front wheel.

1. Release the engine compartment wall retainer button.
2. Loosen the wall fastening screws.
3. Remove the wall.

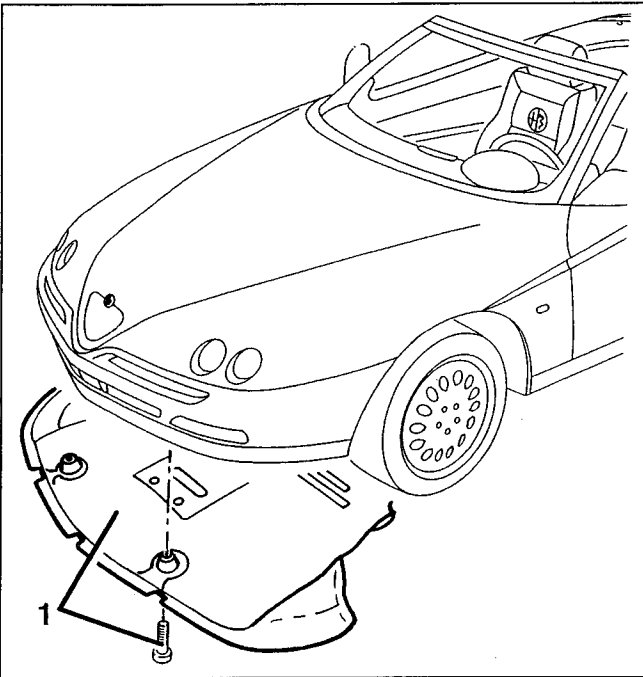


1. Lower the belt take-up runner by loosening it slightly.
2. Remove the belt.

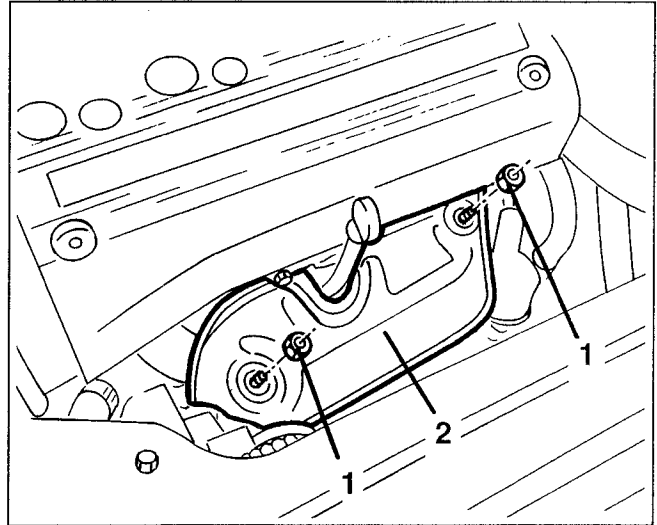


– Lift the vehicle.

1. Loosen the screws and remove the guard under the engine.



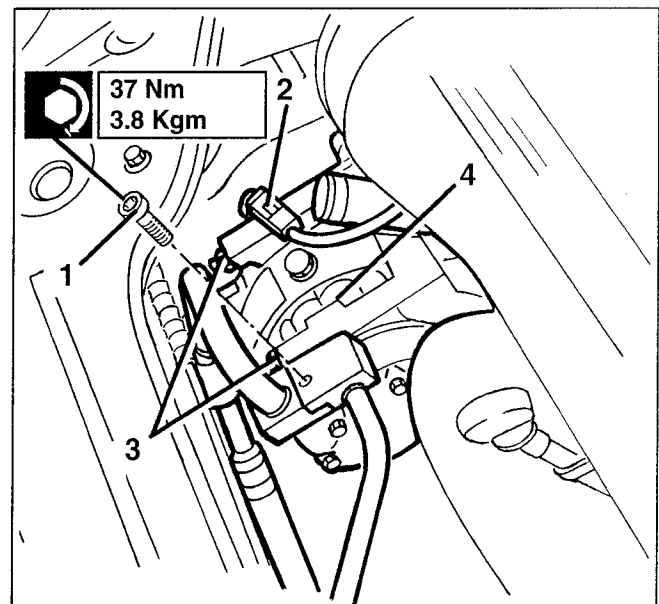
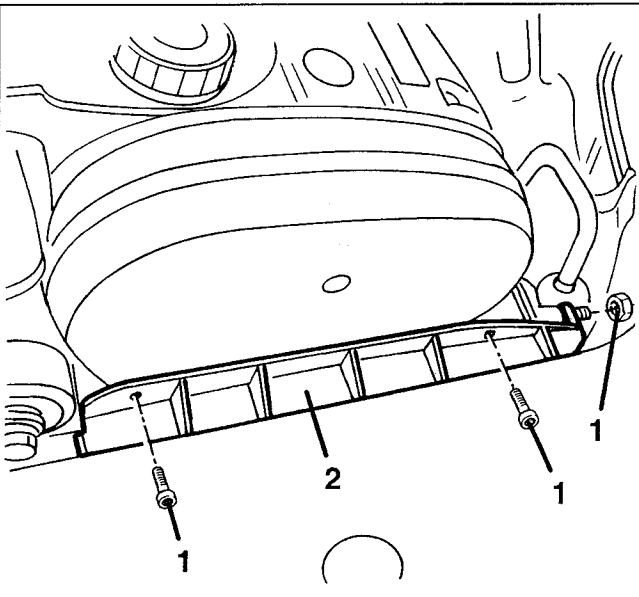
1. Loosen the exhaust manifold wall fastening nuts.
2. Remove the wall.



1. Loosen the screw and disconnect the two compressor intake and delivery pipes.
2. Disconnect the compressor electrical connection.
3. Loosen the compressor fastening screws.
4. Take the compressor.

– Lower the vehicle.

1. Loosen the belt guard fastening screws and nut.
2. Remove the guard.



Refit the compressor by reversing the removal sequence.  
Tension the belt (see Assembly 00).

**NOTE:** Replace the fitting O-rings.  
Only use green rings resistant to R134A coolant. Lubricate the fittings with anti-freeze oil.

- Torque as prescribed.

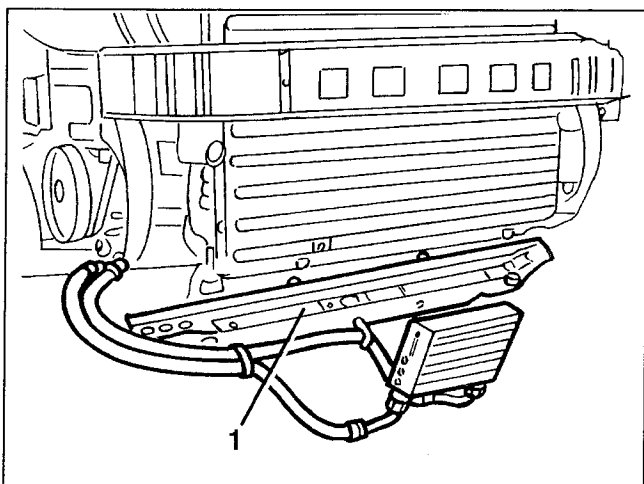
## CONDENSER

### REMOVAL

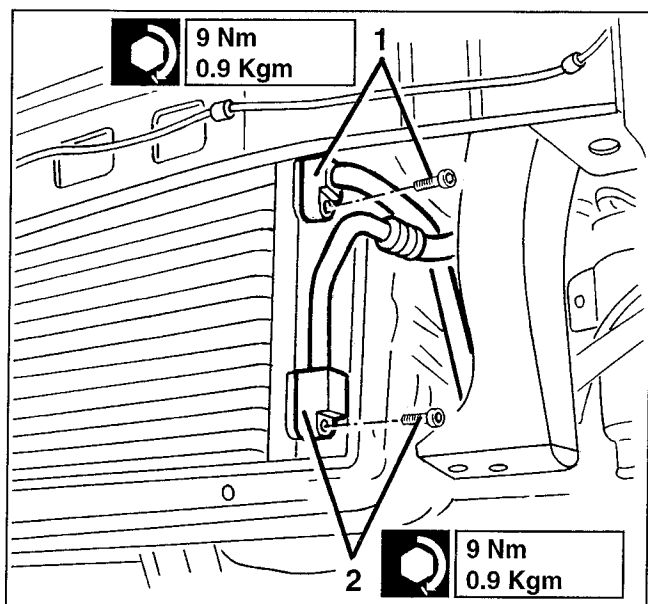
- Drain the coolant;
- Position the vehicle on a shop jack.
- Remove the front bumper (see ASSEMBLY 70).

#### For 3.0 V6 engines only

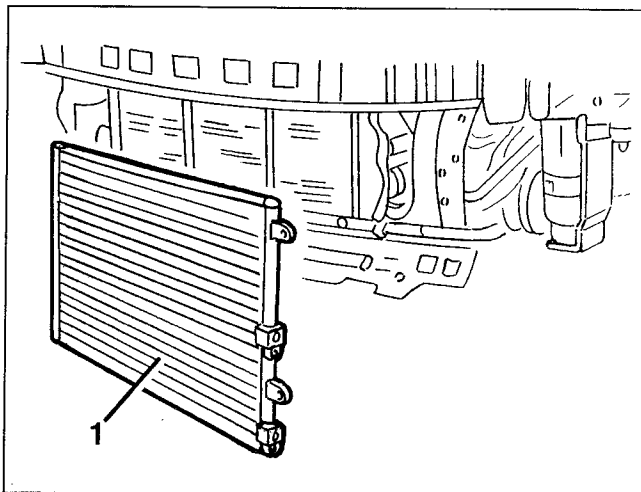
1. Remove the oil exchanger bracket fastening screws and lower the exchanger without disconnecting the pipes.



1. Disconnect the coolant pipe to the compressor .
2. Disconnect the pipe to the evaporator.



1. Loosen the fastening screws and remove the condenser from below.



### REFITTING



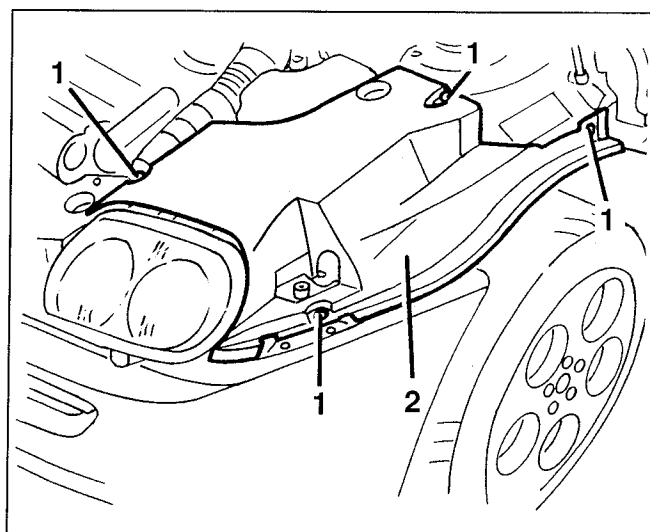
- Be careful not to damage the condenser heat exchanger fins.
- Lubricate the fittings with the prescribed oil and torque as prescribed.

## DRIER FILTER (6 cylinder versions)

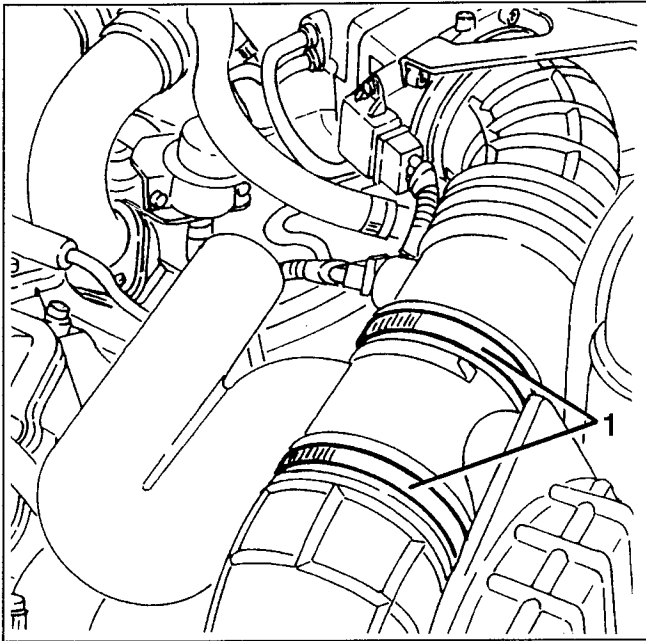
### REMOVAL/REFITTING

- Position the vehicle on a shop jack.
- Disconnect the negative battery terminal.
- Drain the coolant.

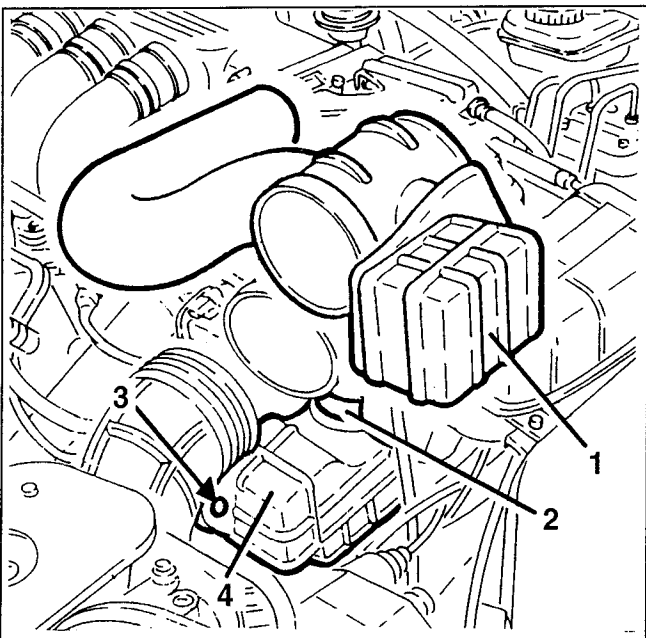
1. Loosen the engine compartment left-hand guard fastening screws.
2. Remove the guard.



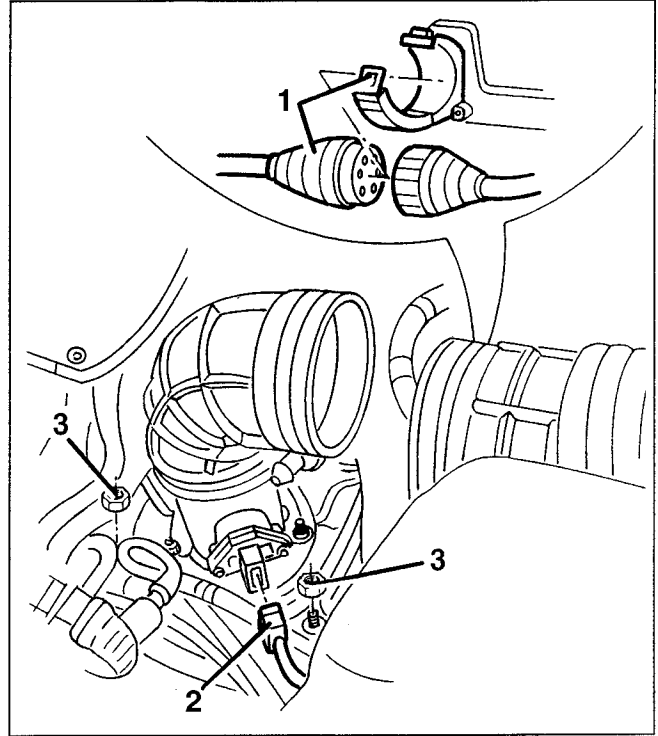
1. Loosen the two clips fastening the upper resonator to the corrugated sleeve.



1. Remove the upper resonator.
2. Loosen the lower resonator fastening clip.
3. Remove the lower resonator retainer.
4. Remove the lower resonator.

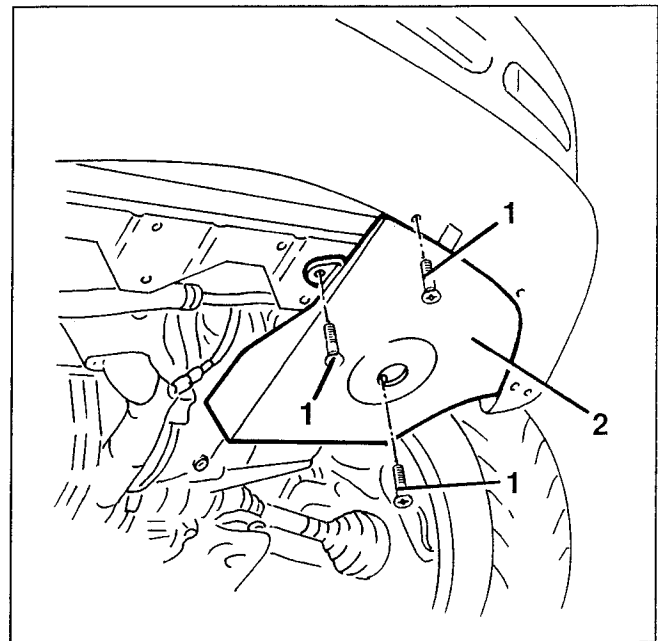


1. Release the bracket and disconnect the engine wiring electrical connection.
2. Disconnect the flow meter electrical connection.
3. Loosen the two nuts fastening the air cleaner to the bracket.

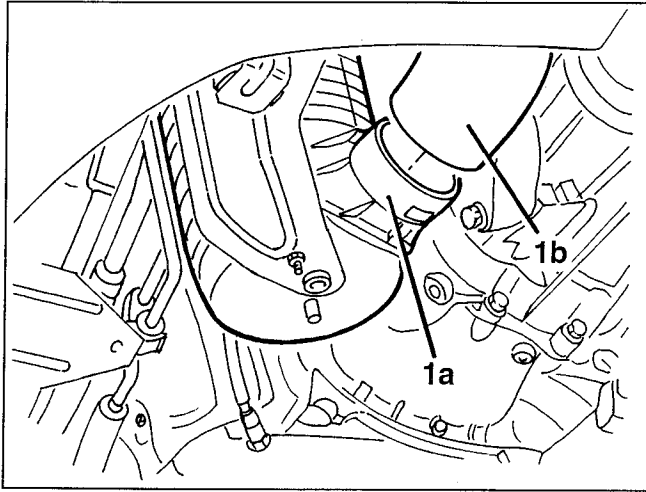


– Lift the vehicle.

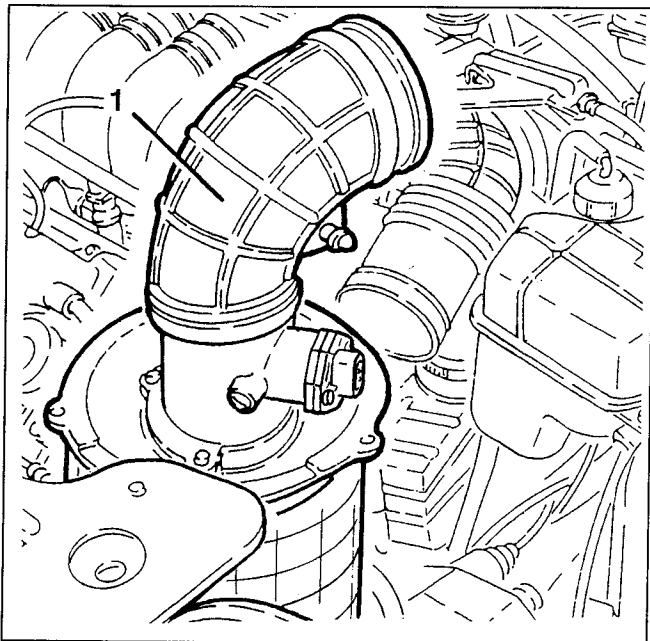
1. Loosen the screws and nut fastening the guard under the air cleaner.
2. Remove the guard.



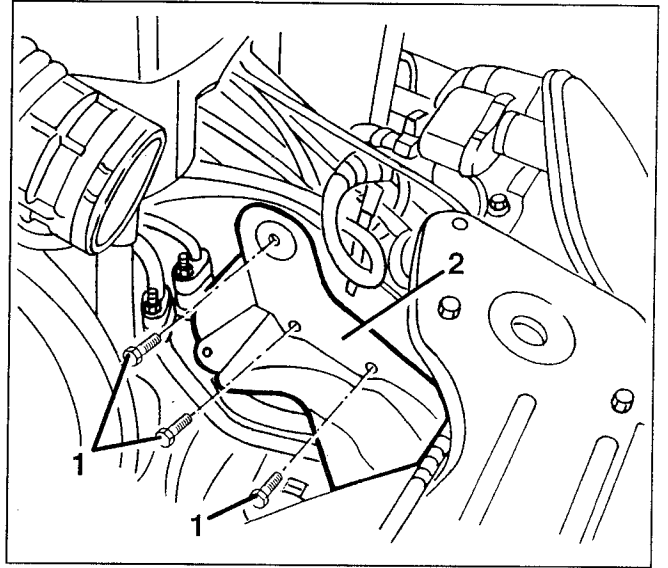
1. Remove the air cleaner (1a) from the resonator under the bumper (1b).



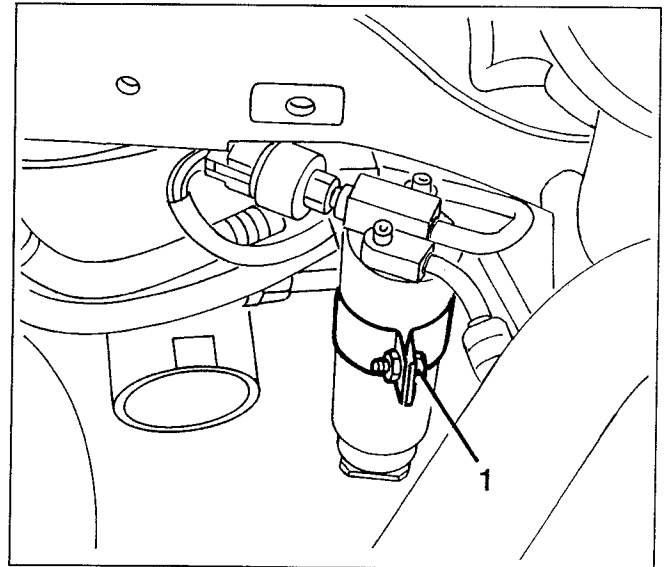
- Lower the vehicle.
1. Remove the air cleaner.



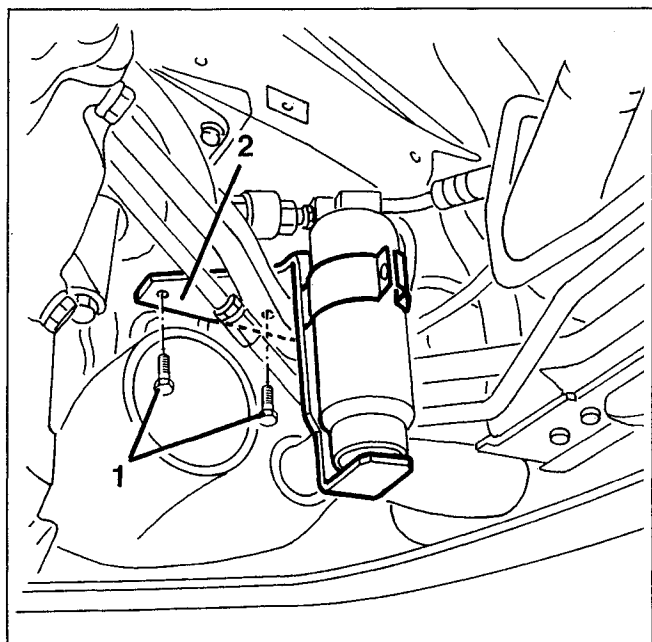
1. Loosen the air cleaner bracket fastening screws.
2. Remove the bracket.



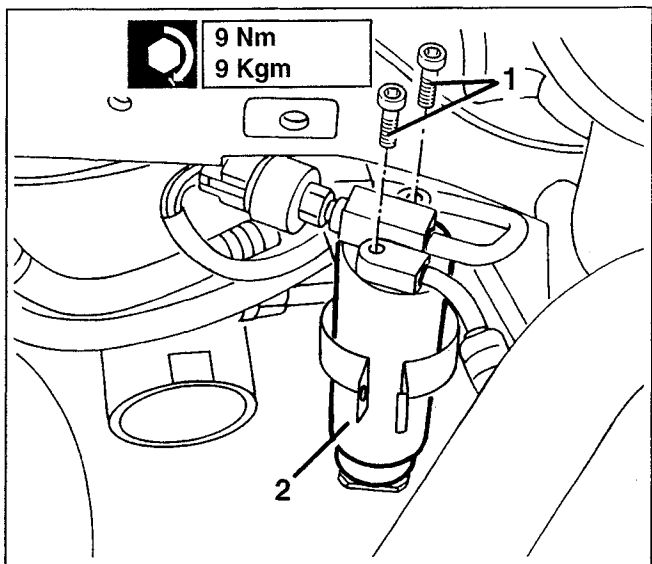
1. Loosen the drier filter retainer clip screw.



- Lift the vehicle.
- 1. Loosen the drier filter bracket fastening nuts.
- 2. Remove the drier filter bracket.



- Lower the vehicle.
- 1. Loosen the screws and disconnect the pipes.
- 2. Take the drier filter.



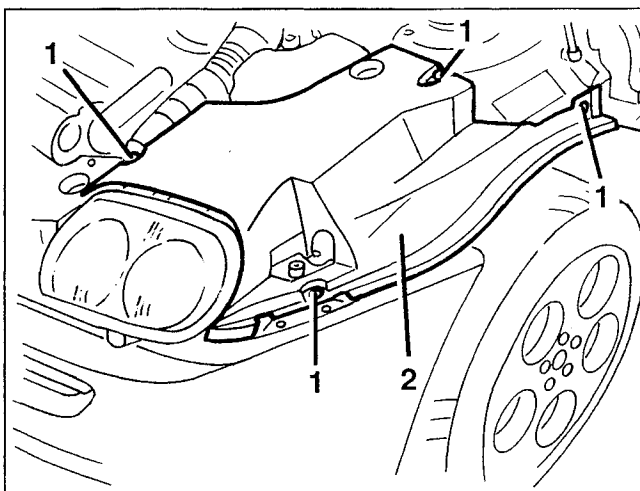
Refit the drier filter by reversing the removal sequence.

**NOTE:** Replace the fitting O-rings. Only use green rings resistant to R134A coolant. Lubricate the fittings with anti-freeze oil.

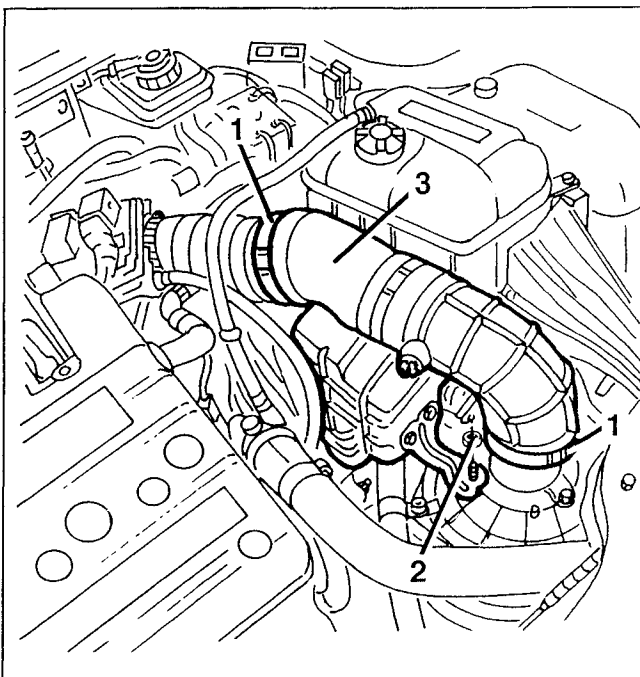
## DRIER FILTER (4 cylinder versions)

### REMOVAL/REFITTING

- Position the vehicle on a shop jack.
- Disconnect the negative battery terminal.
- Drain the coolant.
- 1. Loosen the engine compartment left-hand guard fastening screws.
- 2. Remove the guard.

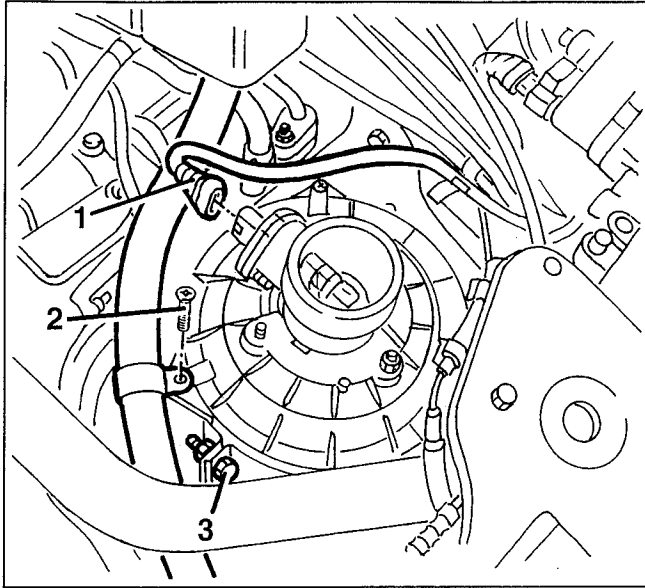


- 1. Loosen the two clips fastening the upper resonator to the corrugated sleeve.
- 2. Loosen the bracket fastening nut.
- 3. Remove the upper resonator and sleeve.

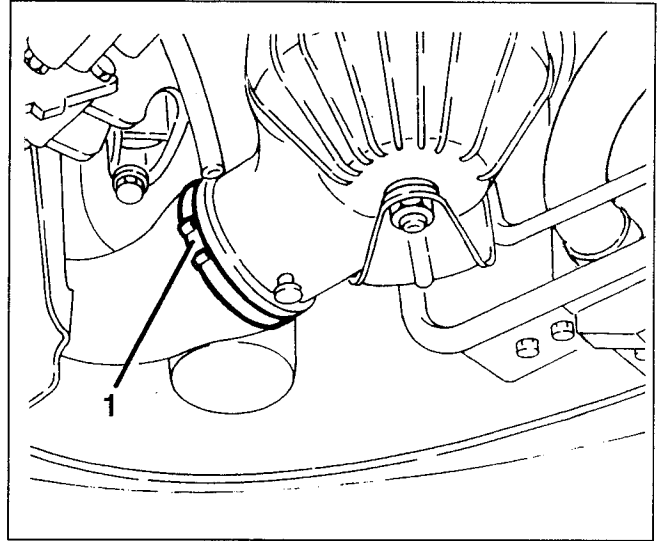




1. Disconnect the flow meter electrical connection.
2. Loosen the bracket fastening screw and move the pipe aside.
3. Loosen the air cleaner collar fastening screw.

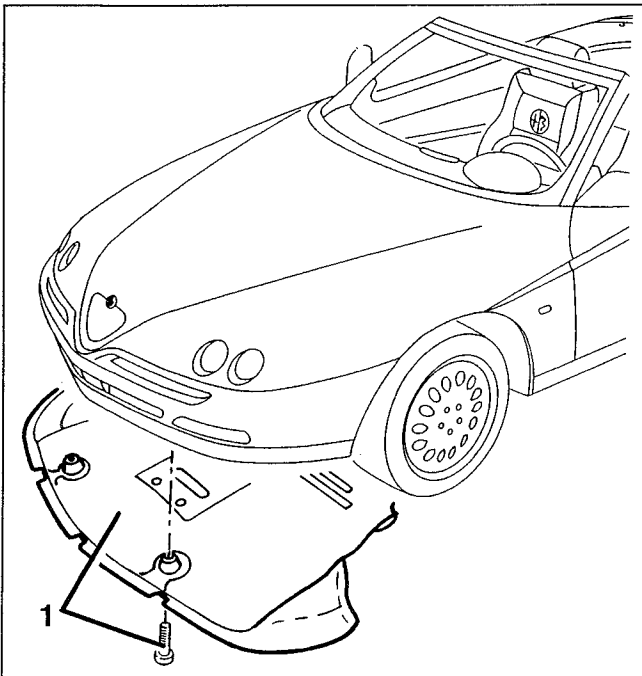


1. Loosen the clip fastening the resonator sleeve to the air cleaner and disconnect the casing.

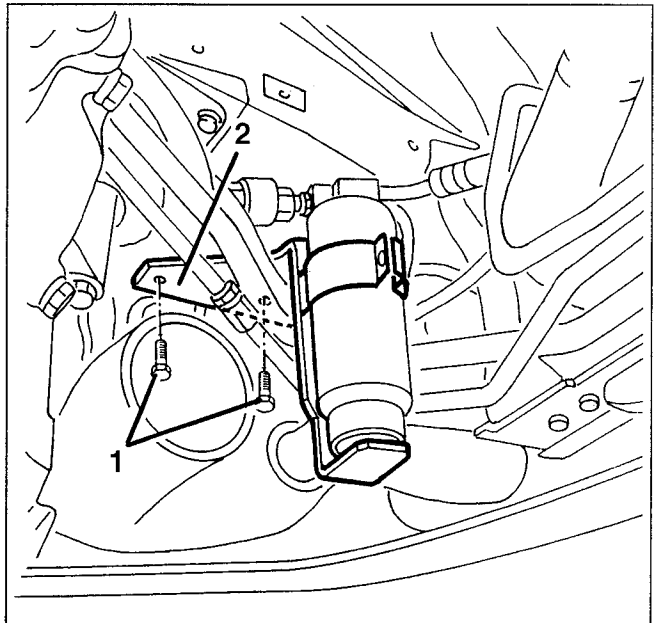


– Lift the vehicle.

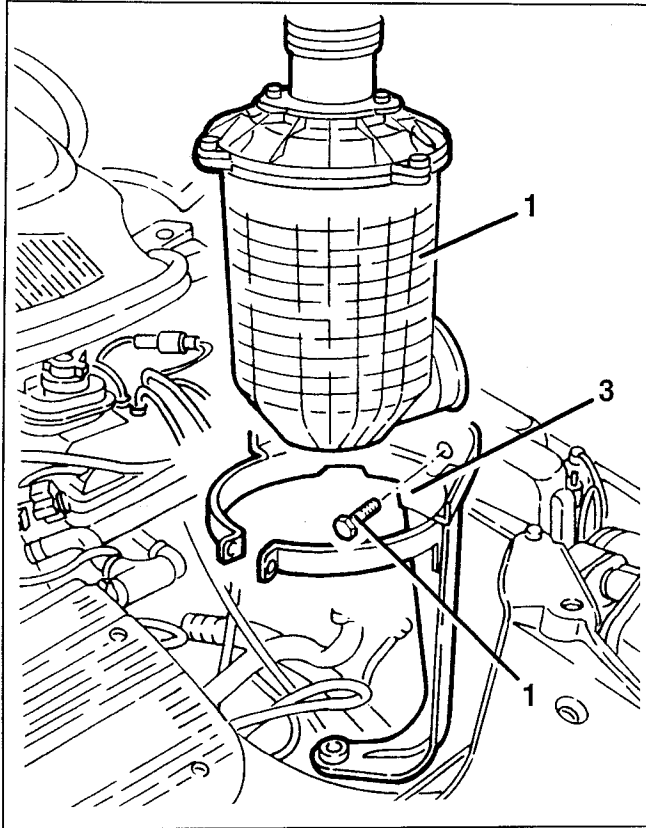
1. Loosen the screws and remove the guard under the engine.



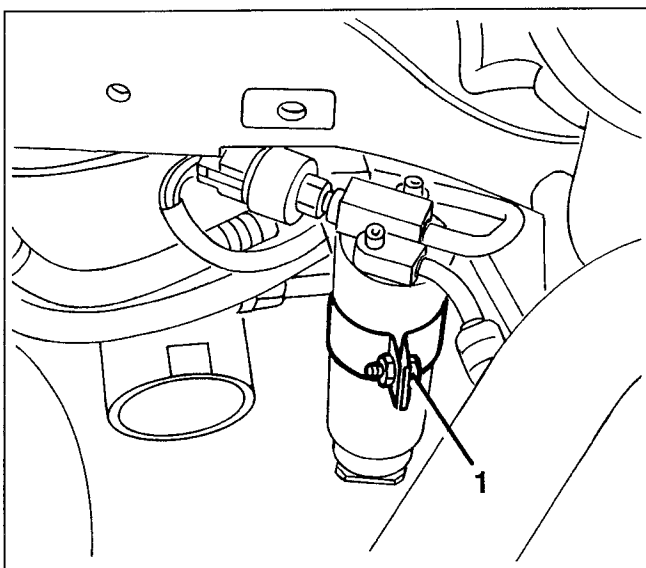
1. Loosen the drier filter bracket fastening nuts.



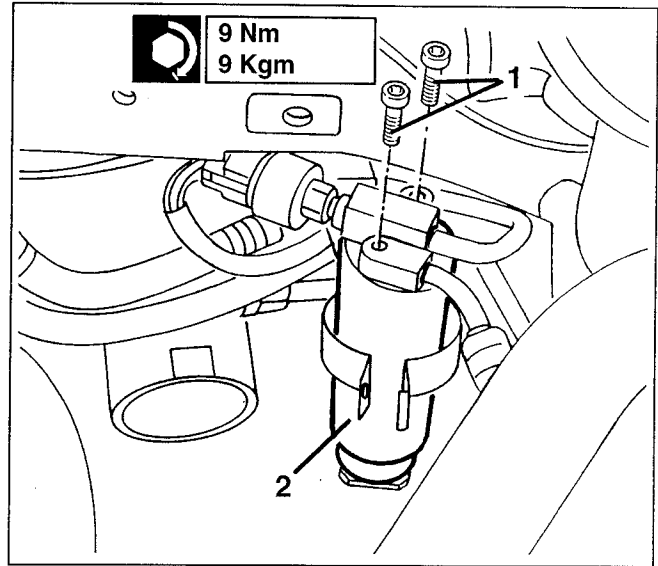
- Lower the vehicle.
- 1. Remove the air cleaner.
- 2. Loosen the air cleaner bracket fastening screws.
- 3. Remove the bracket.



- 1. Loosen the drier filter retainer clip screw.



- 1. Loosen the screws and disconnect the pipes.
- 2. Take the drier filter.



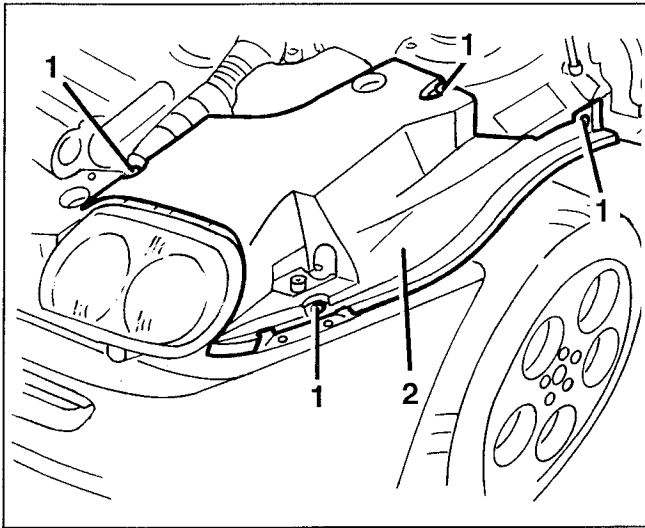
Refit the drier filter by reversing the removal sequence.

**NOTE:** Replace the fitting O-rings. Only use green rings resistant to R134A coolant. Lubricate the fittings with anti-freeze oil.

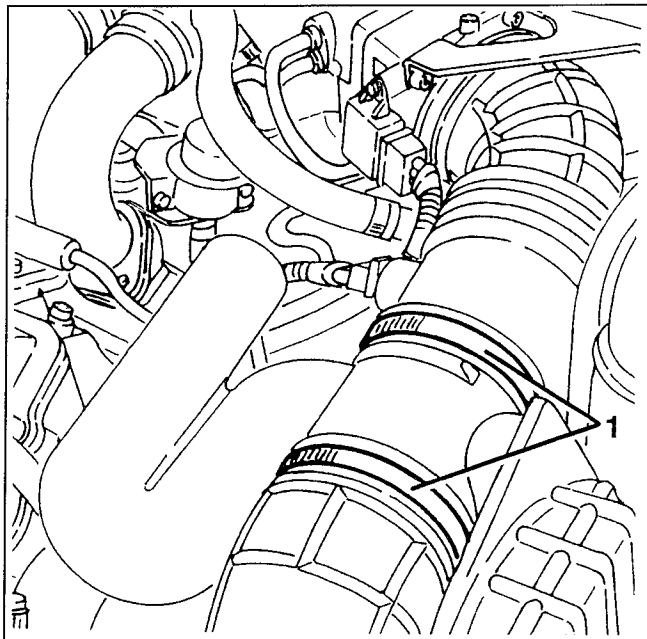
**CONDENSER-DRIER FILTER PIPE**  
**(6 cylinder versions)**

**REMOVAL/REFITTING**

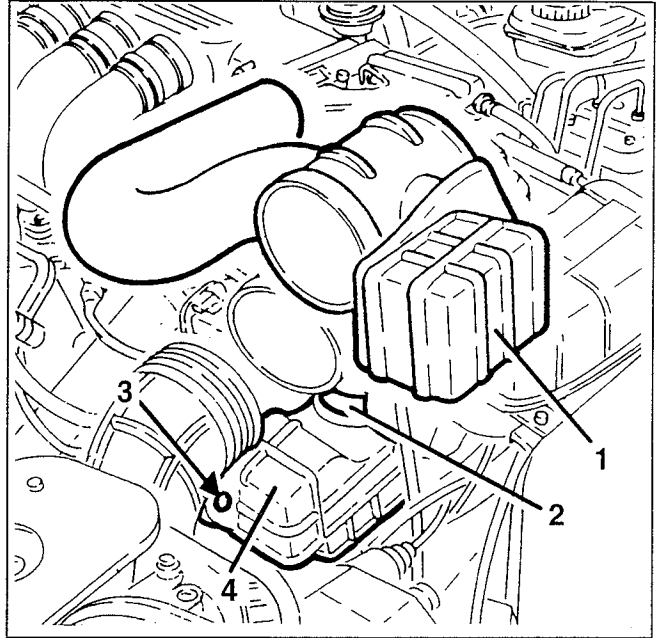
- Position the vehicle on a shop jack.
- Disconnect the negative battery terminal.
- Drain the coolant.
- Remove the front bumper (see Assembly 70).
- 1. Loosen the engine compartment left-hand guard fastening screws.
- 2. Remove the guard.



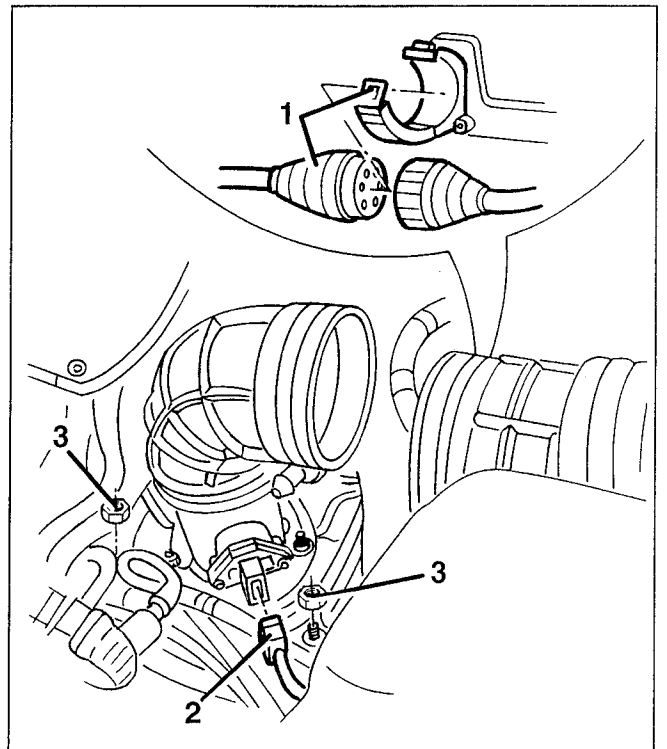
- 1. Loosen the two clips fastening the upper resonator to the corrugated sleeve.



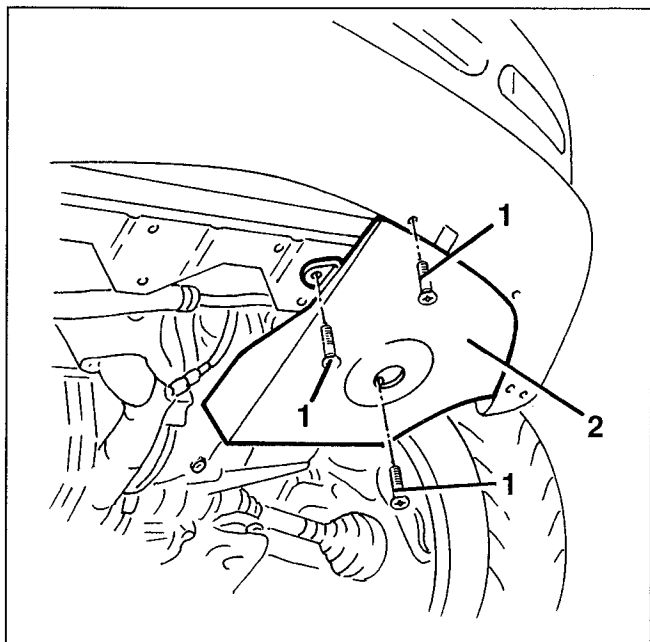
- 1. Remove the upper resonator.
- 2. Loosen the lower resonator fastening clip.
- 3. Remove the lower resonator retainer.
- 4. Remove the lower resonator.



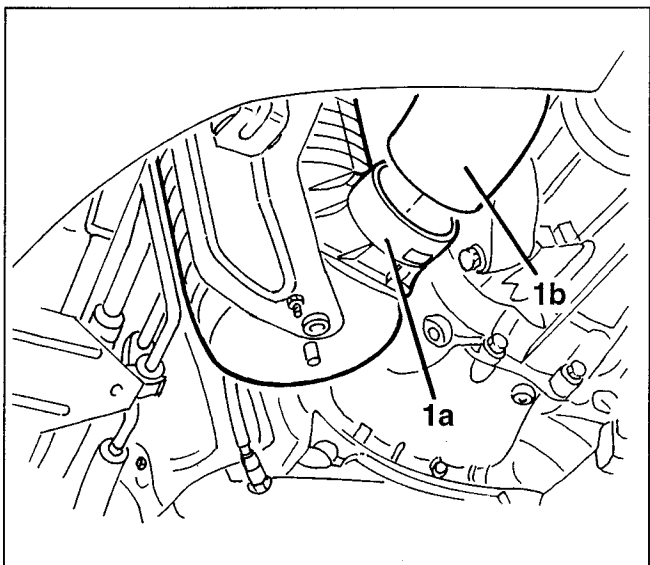
- 1. Release the bracket and disconnect the engine wiring electrical connection.
- 2. Disconnect the flow meter electrical connection.
- 3. Loosen the two nuts fastening the air cleaner to the bracket.



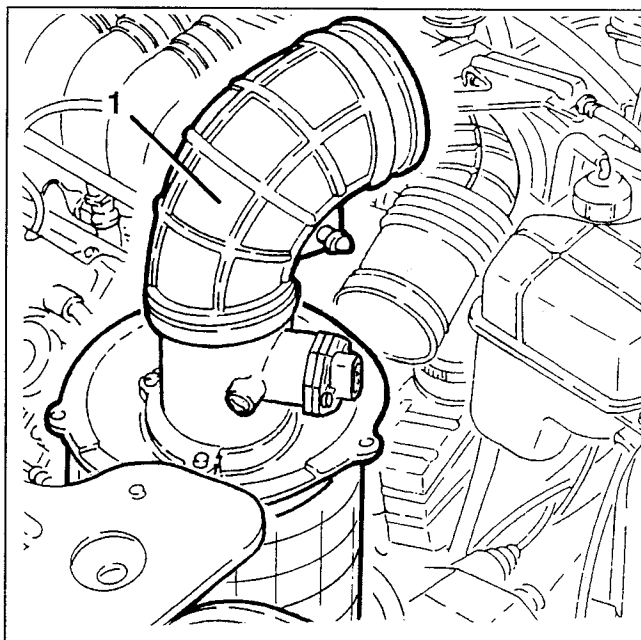
- Lift the vehicle.
- 1. Loosen the screws and nut fastening the guard under the air cleaner.
- 2. Remove the guard.



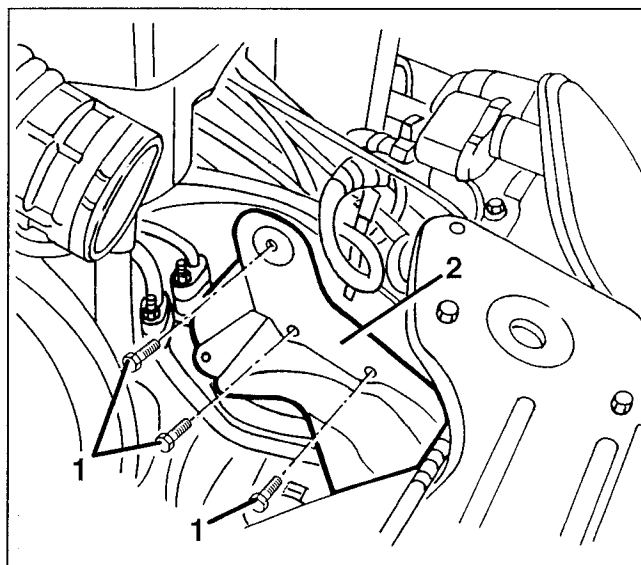
- 1. Remove the air cleaner (1a) from the resonator under the bumper (1b).



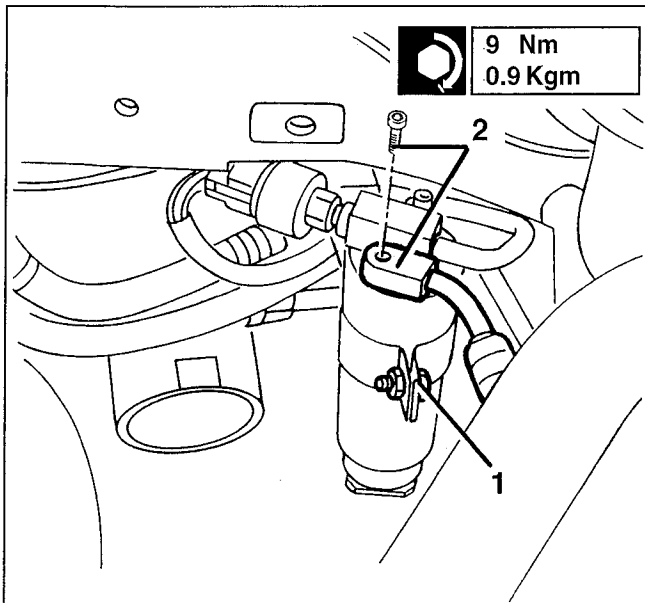
- Lower the vehicle.
- 1. Remove the air cleaner.



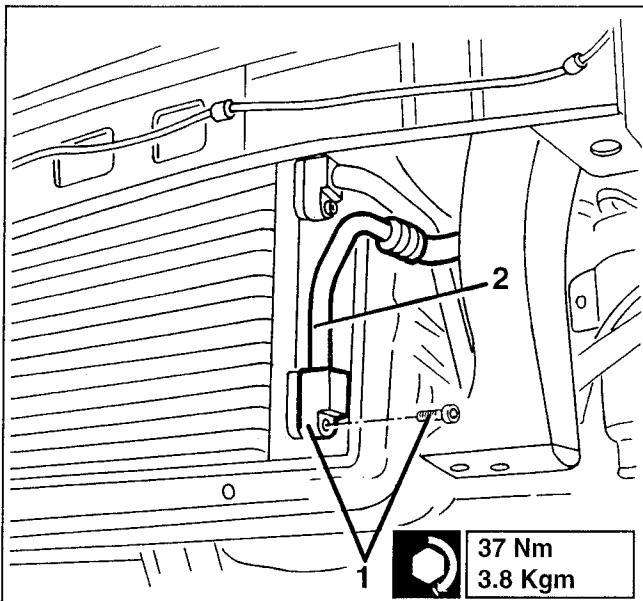
- 1. Loosen the air cleaner bracket fastening screws.
- 2. Remove the bracket.



1. Loosen the drier filter retainer clip screw.
2. Loosen the screw and disconnect the pipe from the drier filter.



1. Loosen the screw and disconnect the pipe from the condenser.
2. Take the pipe.



Refit the condenser-drier filter pipe by reversing the removal sequence.

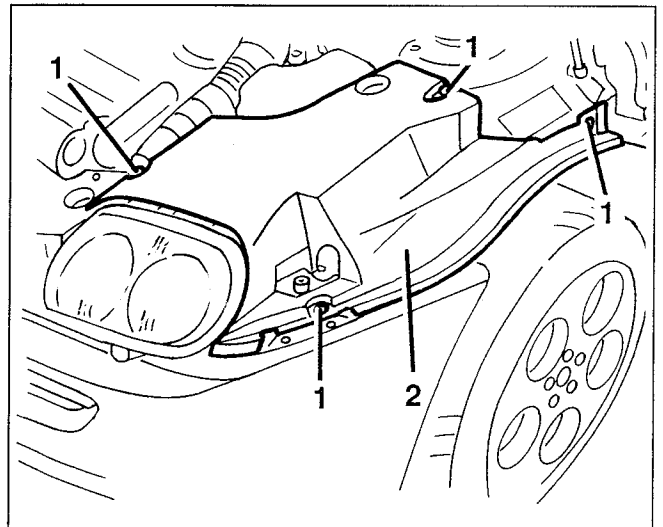
**NOTE:** Replace the fitting O-rings. Only use green rings resistant to R134A coolant. Lubricate the fittings with anti-freeze oil.

- Torque as prescribed.

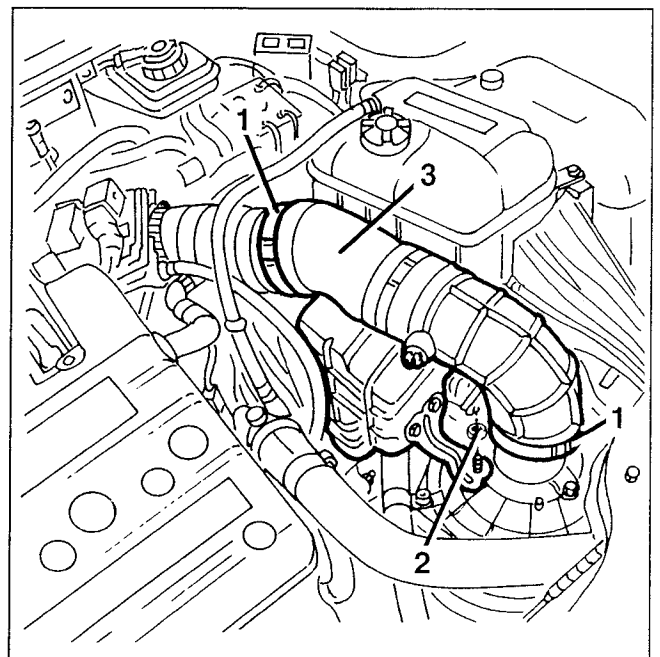
## CONDENSER-DRIER FILTER PIPE (4 cylinder versions)

### REMOVAL/REFITTING

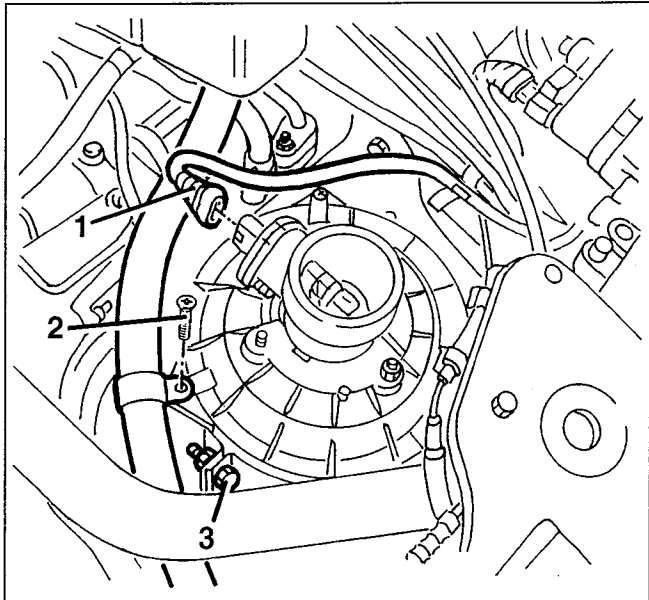
- Position the vehicle on a shop jack.
  - Disconnect the negative battery terminal.
  - Drain the coolant.
  - Remove the front bumper (see Assembly 70).
1. Loosen the engine compartment left-hand guard fastening screws.
  2. Remove the guard.



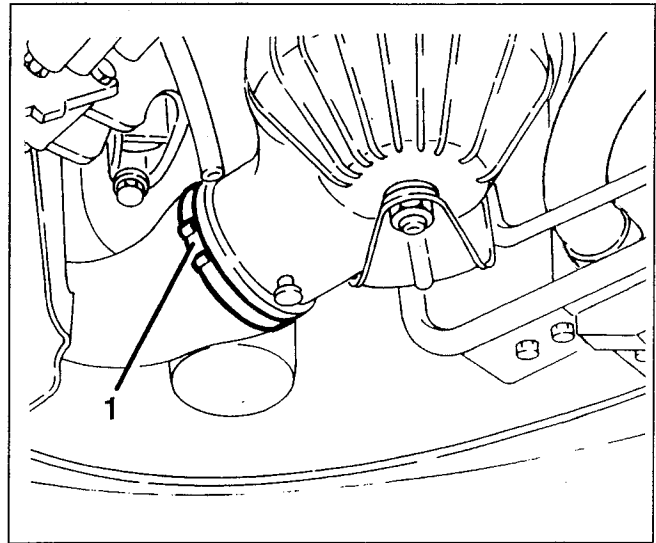
1. Loosen the two clips fastening the upper resonator to the corrugated sleeve.
2. Remove the bracket fastening nut.
3. Remove the upper resonator and sleeve.



1. Disconnect the flow meter electrical connection.
2. Loosen the bracket fastening screw and move the pipe aside.
3. Loosen the air cleaner collar fastening screw.

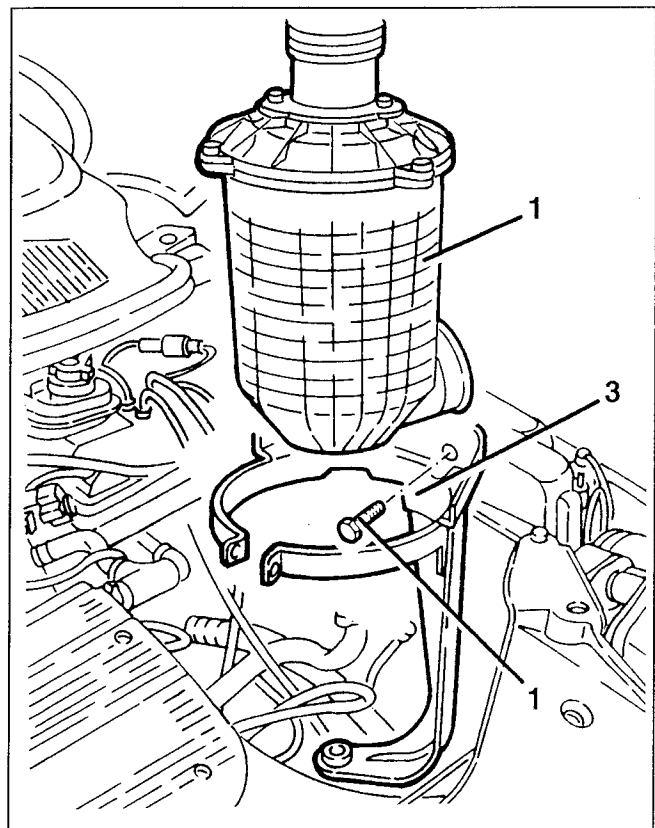
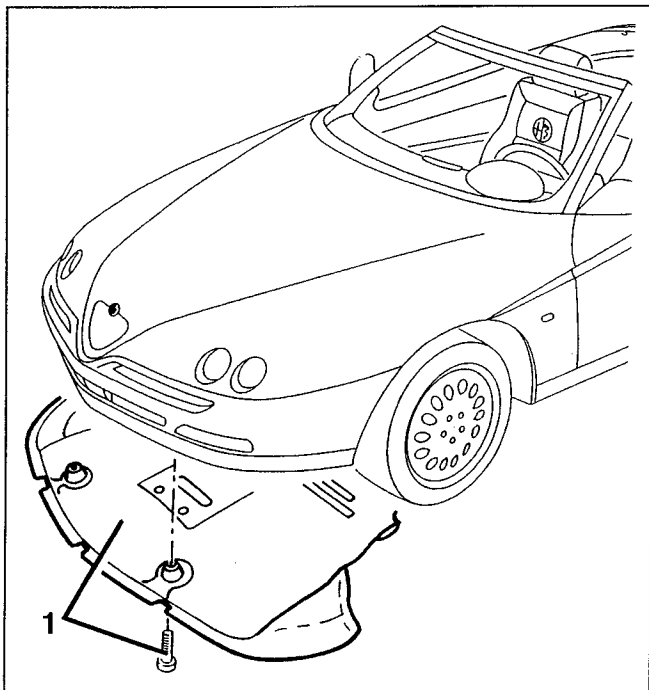


1. Loosen the clip fastening the resonator sleeve to the air cleaner and disconnect the casing.

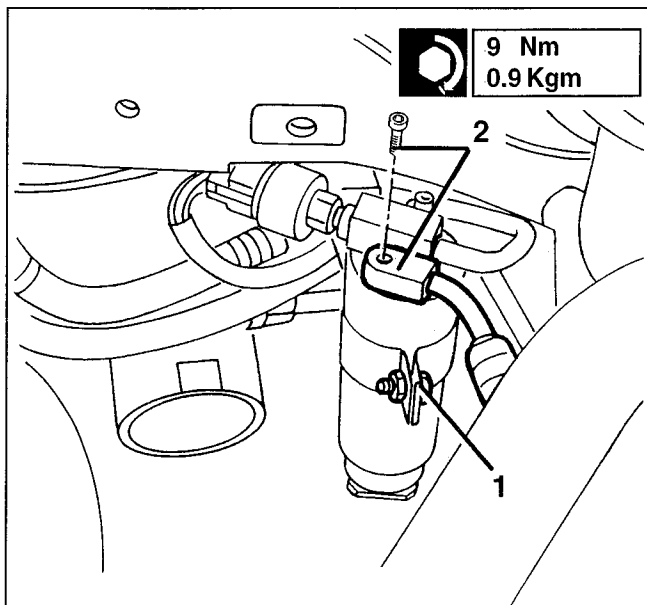


- Lower the vehicle.
1. Remove the air cleaner.
  2. Loosen the air cleaner bracket fastening screws.
  3. Remove the bracket.

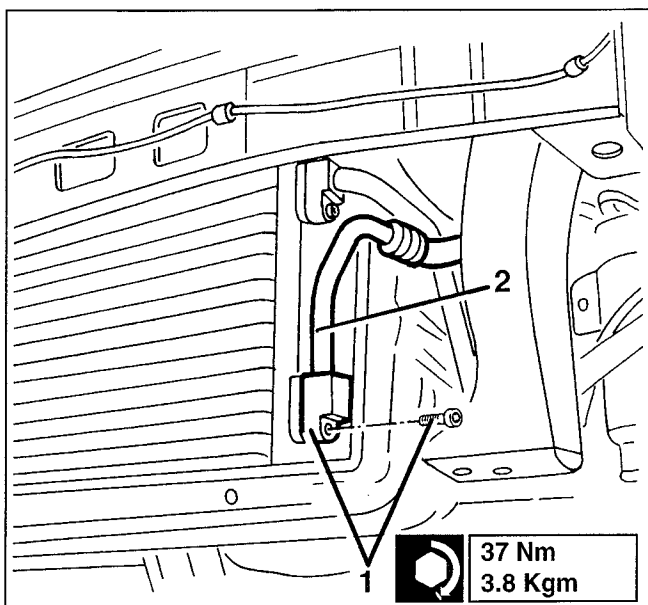
- Lift the vehicle.
1. Loosen the screws and remove the guard under the engine.



1. Loosen the drier filter retainer clip screw.
2. Loosen the screw and disconnect the pipe.



1. Loosen the screw and disconnect the pipe from the condenser.
2. Take the pipe.



Refit the condenser-drier filter pipe by reversing the removal sequence.

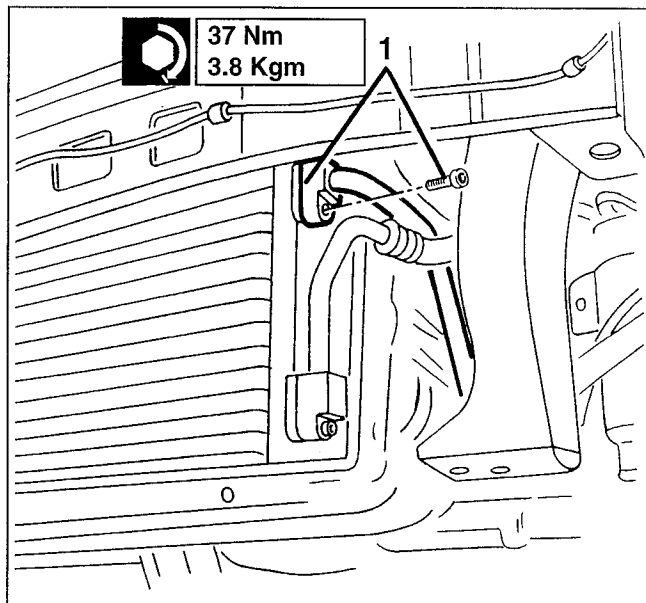
**NOTE:** Replace the fitting O-rings. Only use green rings resistant to R134A coolant. Lubricate the fittings with anti-freeze oil.

- Torque as prescribed.

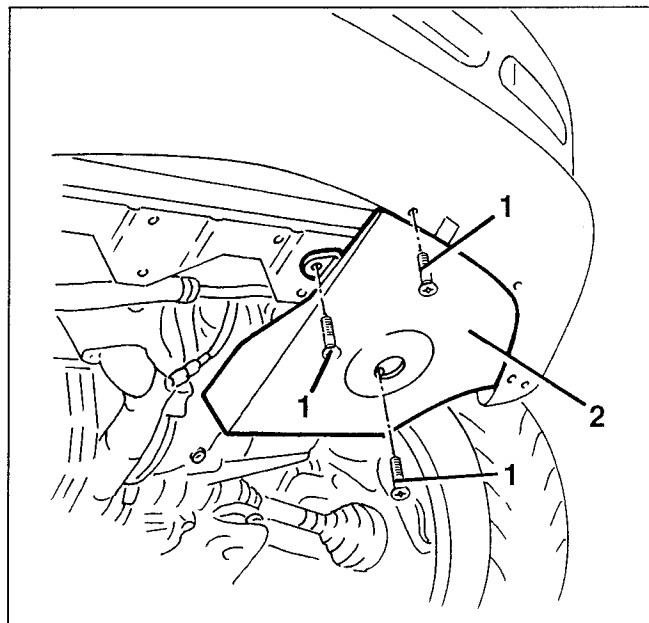
## COMPRESSOR-CONDENSER PIPE (6 cylinder versions)

### REMOVAL/ REFITTING

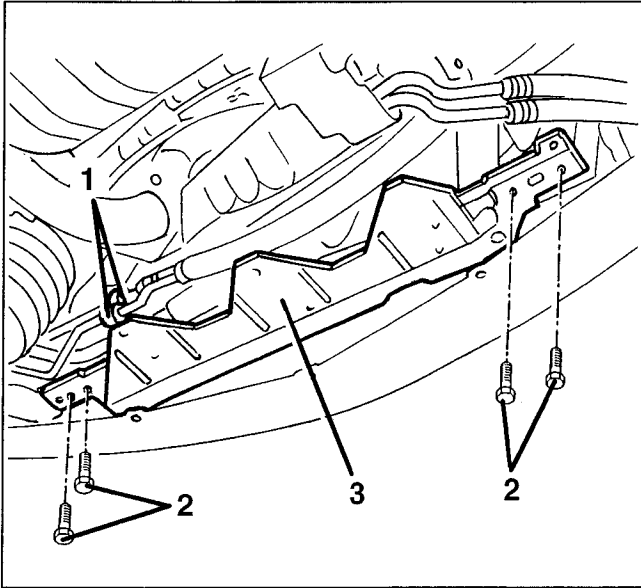
- Position the vehicle on a shop jack.
  - Disconnect the negative battery terminal.
  - Drain the coolant.
  - Remove the front bumper (see Assembly 70).
1. Loosen the screw and disconnect the pipe from the condenser.



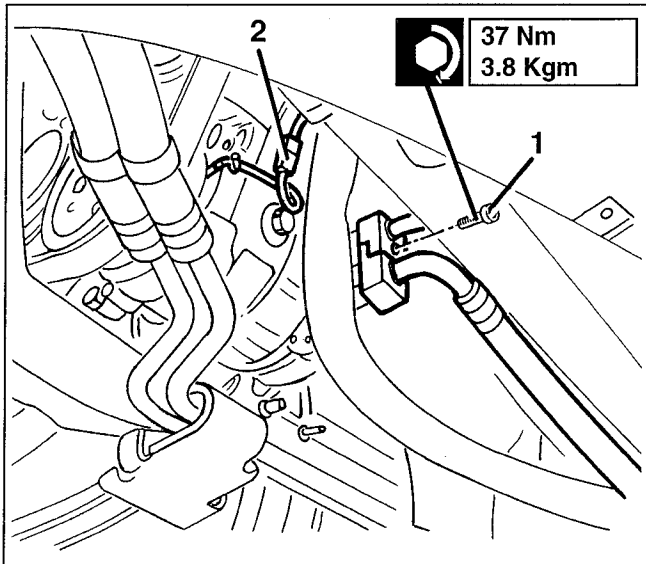
- Lift the vehicle.
1. Loosen the screws and nut fastening the guard under the air cleaner.
  2. Remove the guard.



1. Open the clips and disconnect the three pipes.
2. Loosen the crossmember fastening screws under the radiator.
3. Remove the crossmember.



1. Loosen the screw and disconnect the two compressor intake and delivery pipes.
2. Take the compressor-condenser pipe.



Refit the compressor-condenser pipe by reversing the removal sequence.

**NOTE:** Replace the fitting O-rings.  
Only use green rings resistant to R134A coolant. Lubricate the fittings with anti-freeze oil.

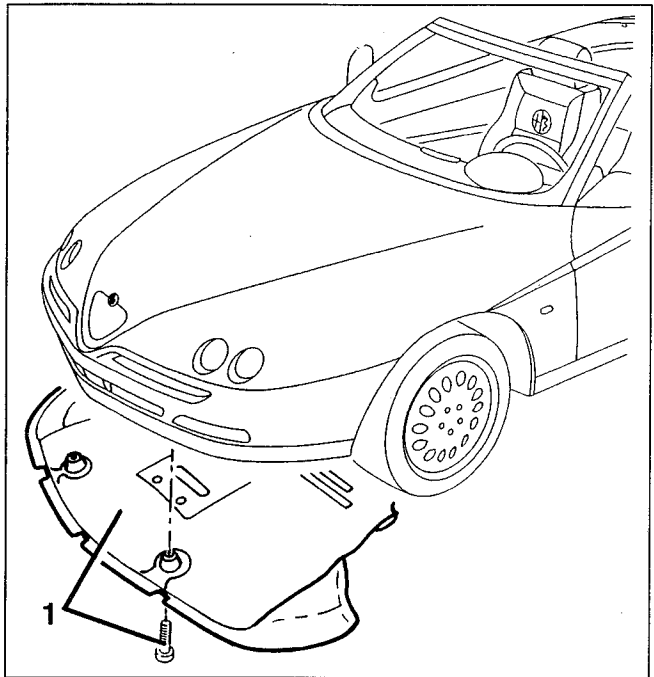
- Torque as prescribed.

## COMPRESSOR-CONDENSER PIPE (4 cylinder versions)

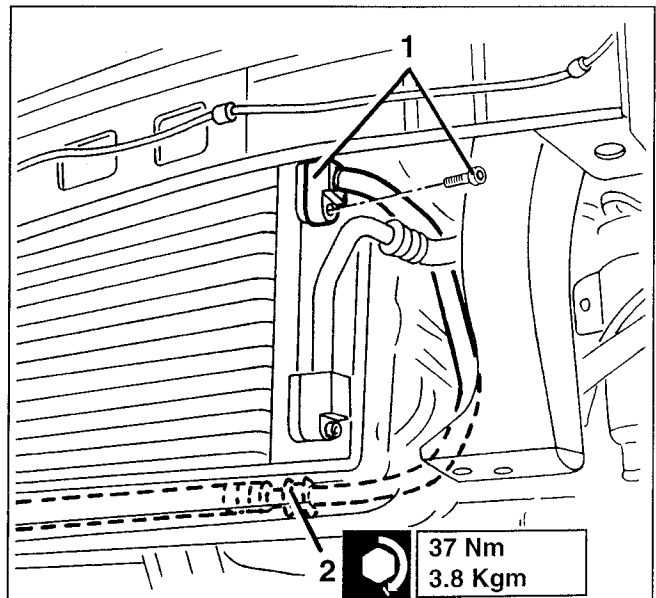
### REMOVAL/ REFITTING

- Position the vehicle on a shop jack.
- Disconnect the negative battery terminal.
- Drain the coolant.
- Remove the front bumper (see Assembly 70).
- Lift the vehicle.

1. Loosen the screws and remove the guard under the engine.

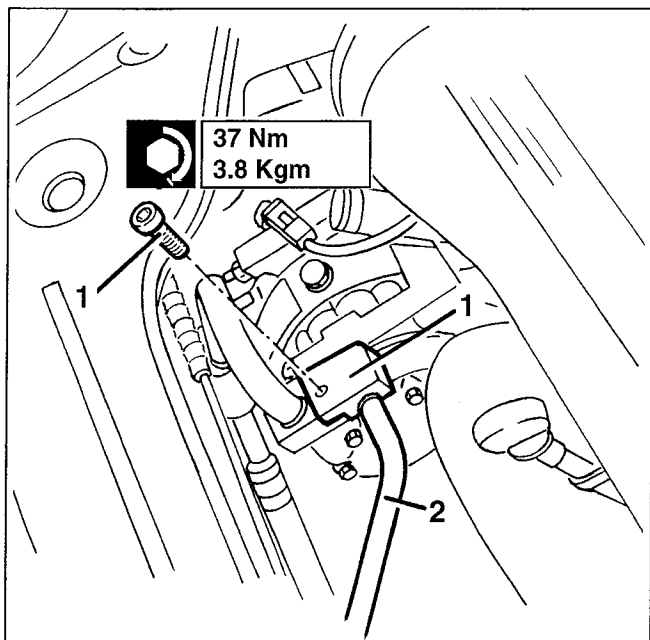


1. Loosen the screw and disconnect the pipe from the condenser.
2. Disconnect the pipe from the retainer clip.





- Lower the vehicle.
- 1. Loosen the screw and disconnect the compressor-condenser pipe.
- 2. Take the pipe.



Refit the compressor-condenser pipe by reversing the removal sequence.

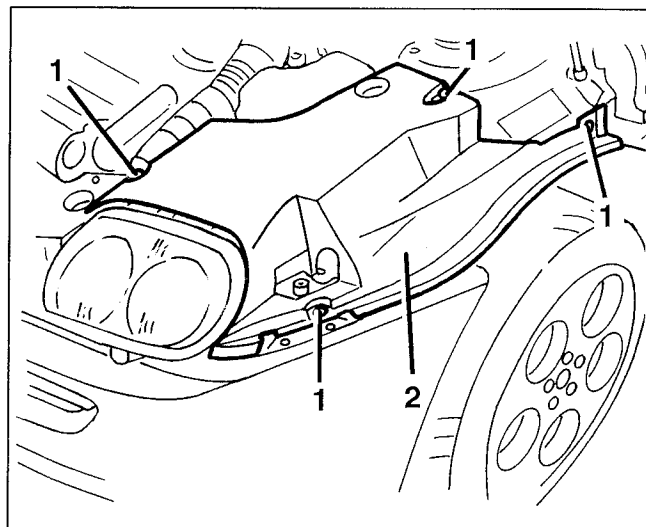
**NOTE:** Replace the fitting O-rings. Only use green rings resistant to R134A coolant. Lubricate the fittings with anti-freeze oil.

- Torque as prescribed.

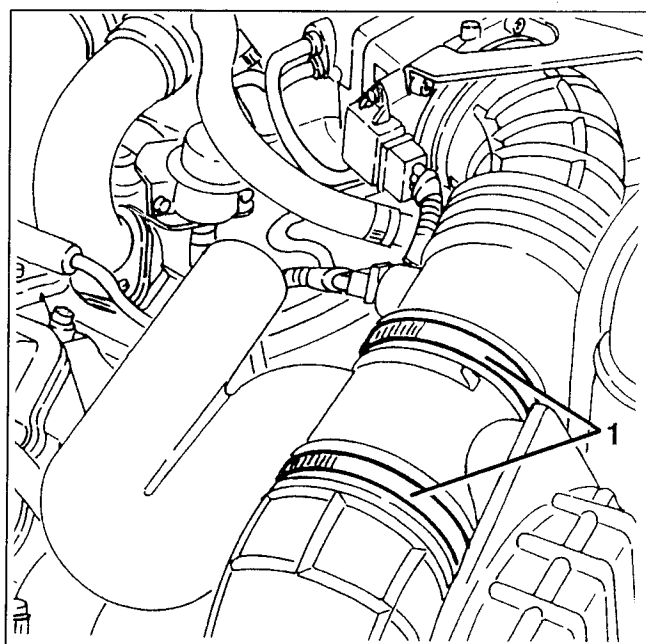
## COMPRESSOR INLET PIPE (6 cylinder versions)

### REMOVAL/REFITTING

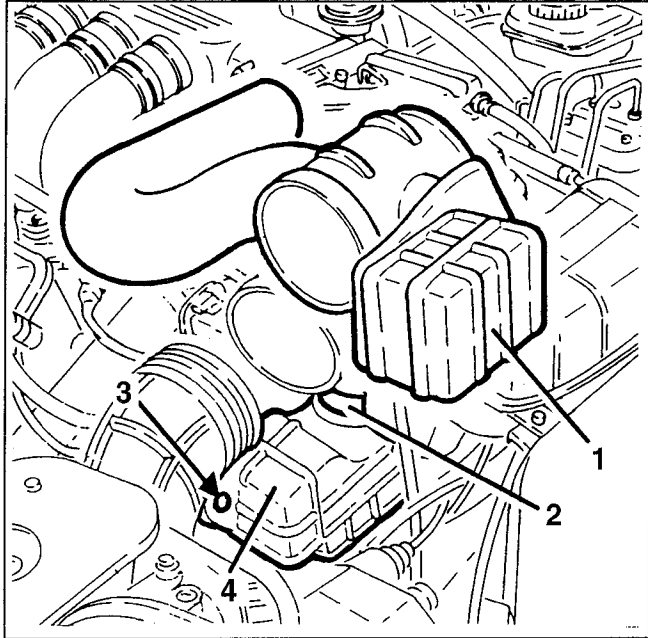
- Position the vehicle on a shop jack.
- Disconnect the negative battery terminal.
- Drain the coolant.
- 1. Loosen the engine compartment left-hand guard fastening screws.
- 2. Remove the guard.



- 1. Loosen the two clips fastening the upper resonator to the corrugated sleeve.

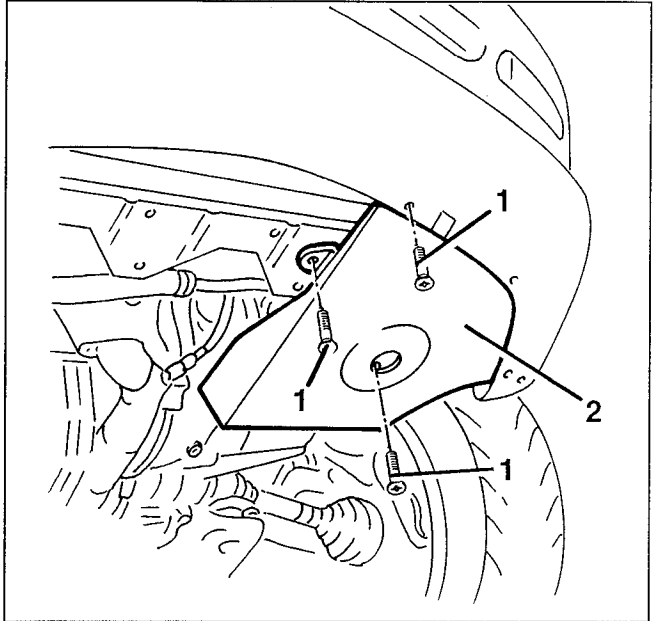


1. Remove the upper resonator.
2. Loosen the lower resonator fastening clip.
3. Remove the lower resonator retainer.
4. Remove the lower resonator.

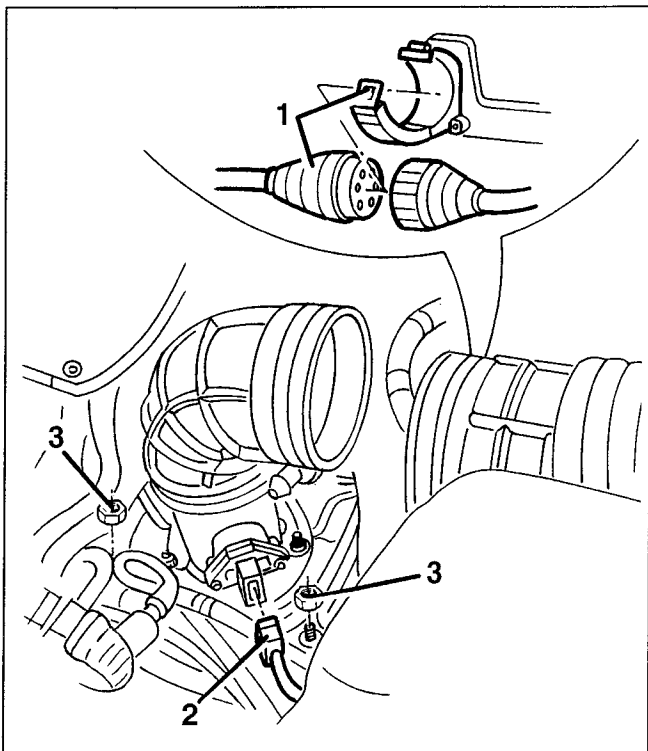


- Lift the vehicle.

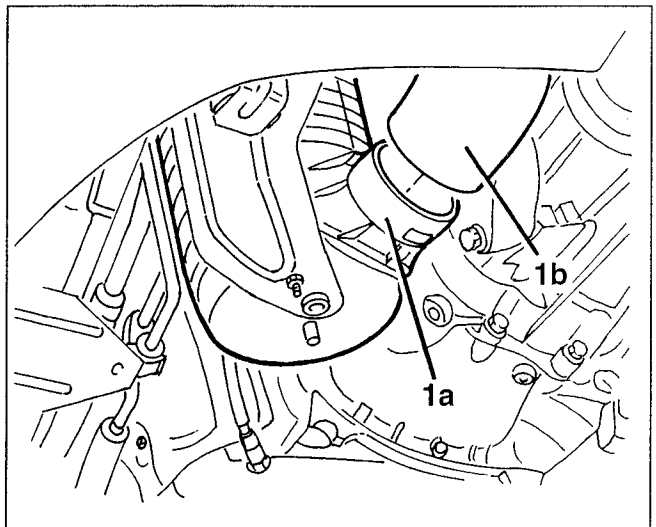
  1. Loosen the screws and nut fastening the guard under the air cleaner.
  2. Remove the guard.



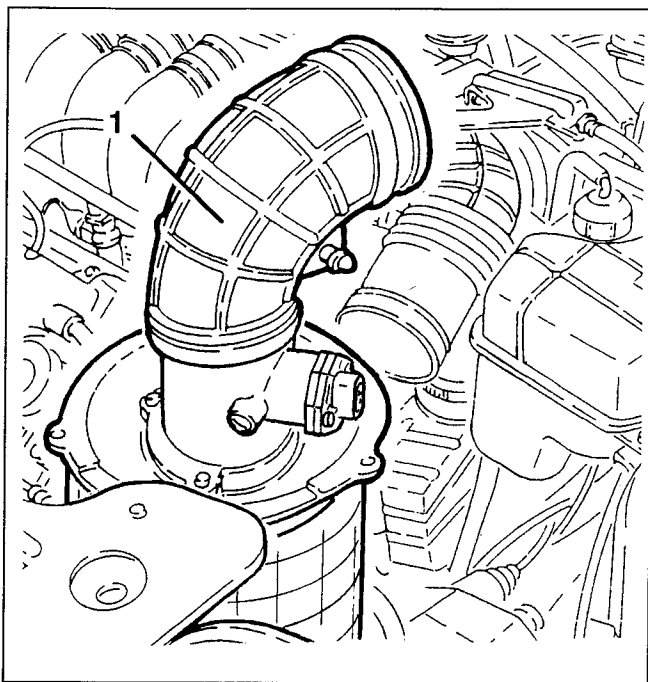
1. Release the bracket and disconnect the engine wiring electrical connection.
2. Disconnect the flow meter electrical connection.
3. Loosen the two nuts fastening the air cleaner to the bracket.



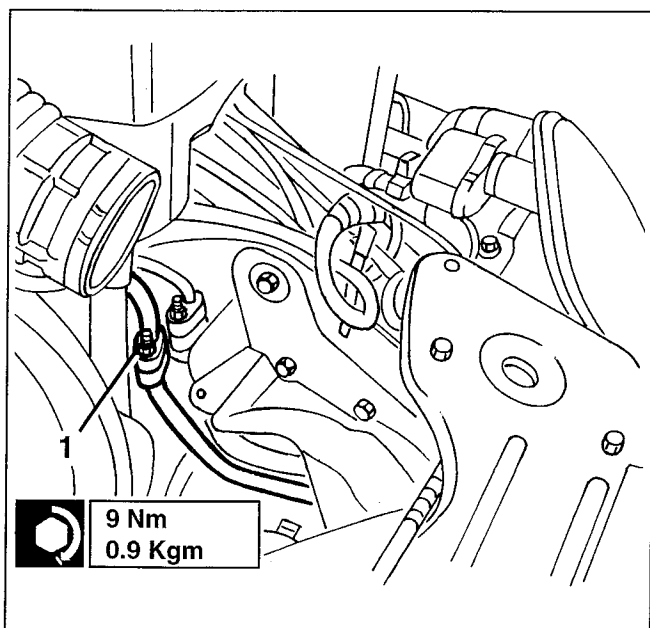
1. Remove the air cleaner (1a) from the resonator under the bumper (1b).



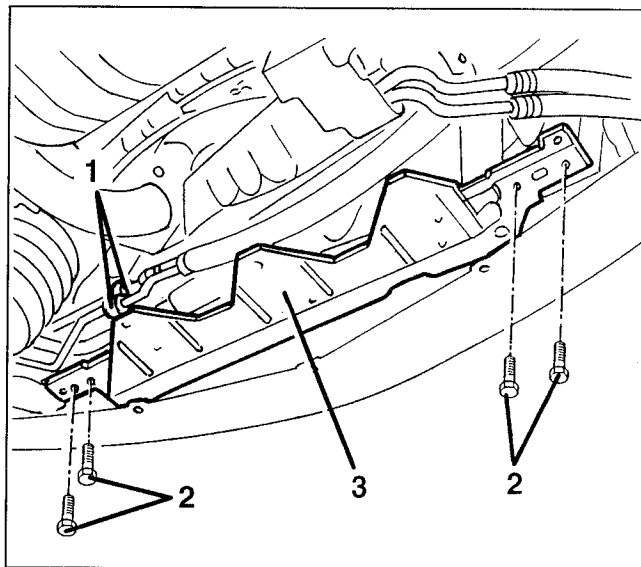
- Lower the vehicle.
- 1. Remove the air cleaner.



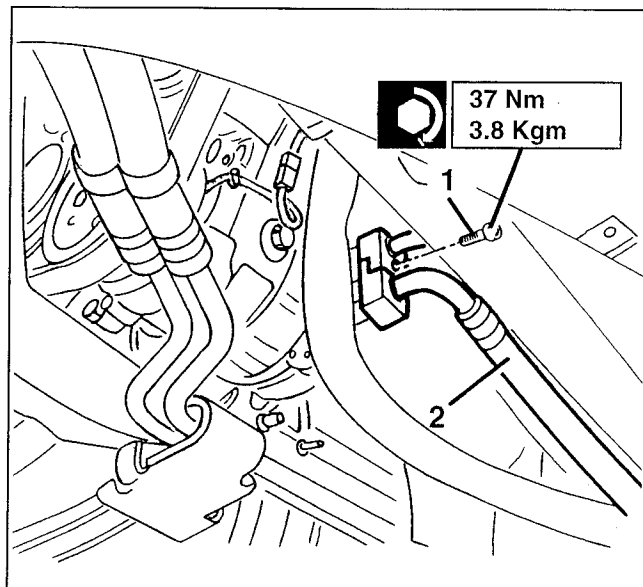
- 1. Loosen the nut and disconnect the fitting.



- Lift the vehicle.
- 1. Open the clips and disconnect the three pipes.
- 2. Loosen the crossmember fastening screws under the radiator.
- 3. Remove the crossmember.



- 1. Loosen the screw and disconnect the two compressor intake and delivery pipes.
- 2. Take the pipe after disconnecting it from the clip located behind the drier filter.



Refit the compressor intake pipe by reversing the removal sequence.

**NOTE:** Replace the fitting O-rings.  
Only use green rings resistant to R134A coolant. Lubricate the fittings with anti-freeze oil.

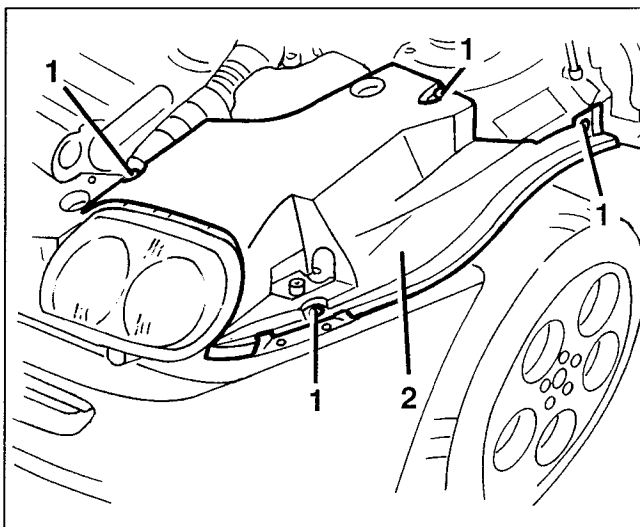
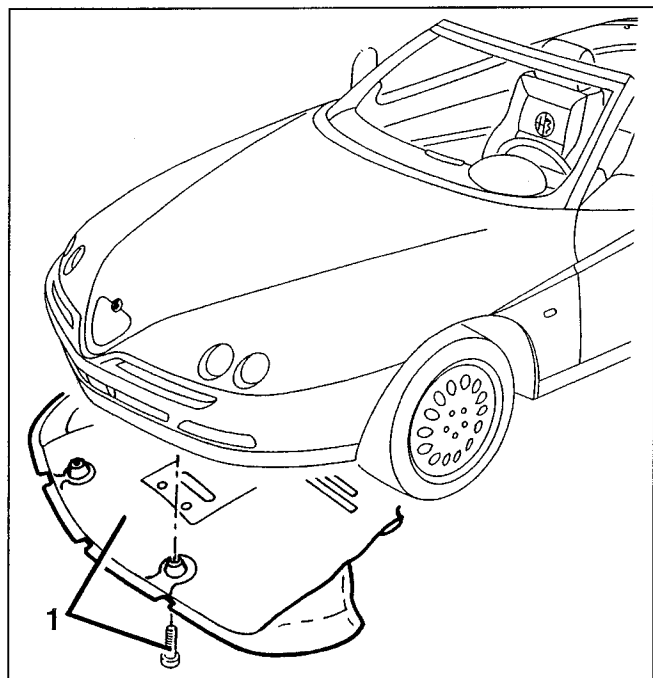
- Torque as prescribed.

**COMPRESSOR INLET PIPE (4 cylinder versions)**

**REMOVAL/REFITTING**

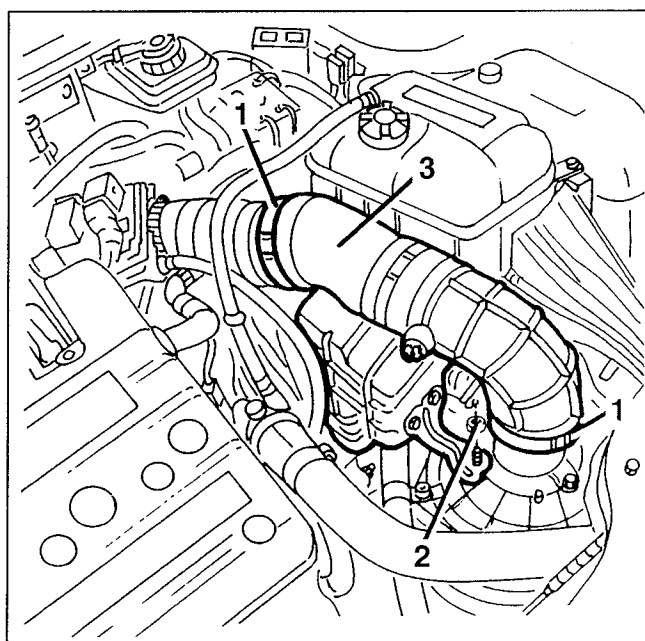
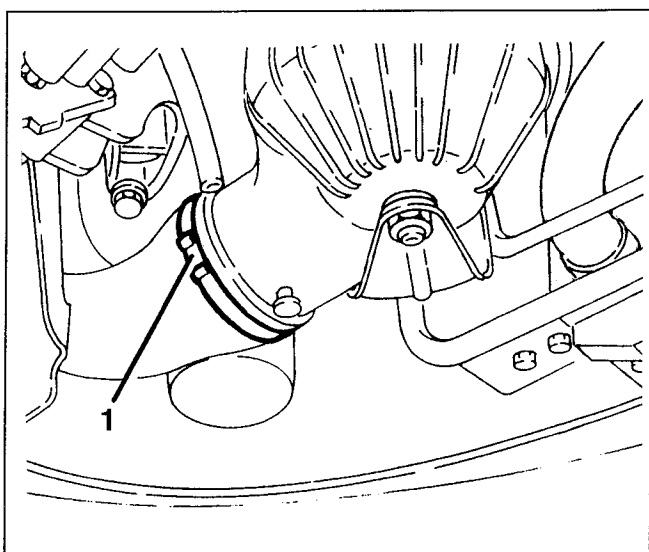
- Position the vehicle on a shop jack.
  - Disconnect the negative battery terminal.
  - Drain the coolant.
  - Lift the vehicle.
1. Loosen the screws and remove the guard under the engine.

- Lower the vehicle.
1. Loosen the engine compartment left-hand guard fastening screws.
  2. Remove the guard.

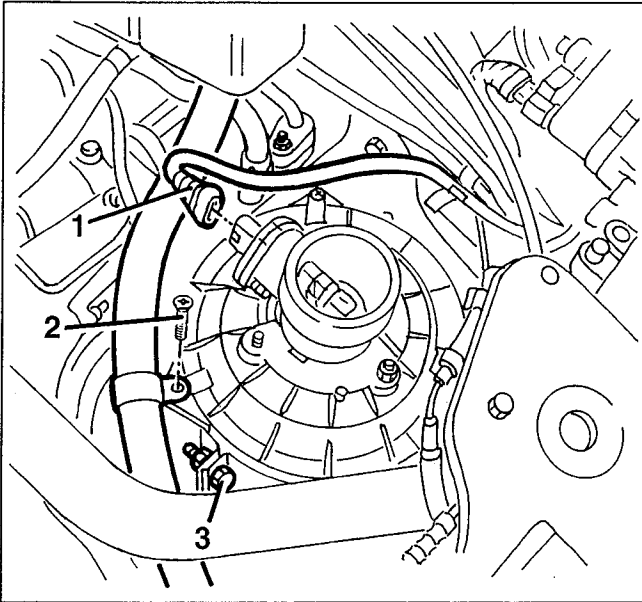


1. Loosen the clip fastening the resonator sleeve to the air cleaner and disconnect the casing.

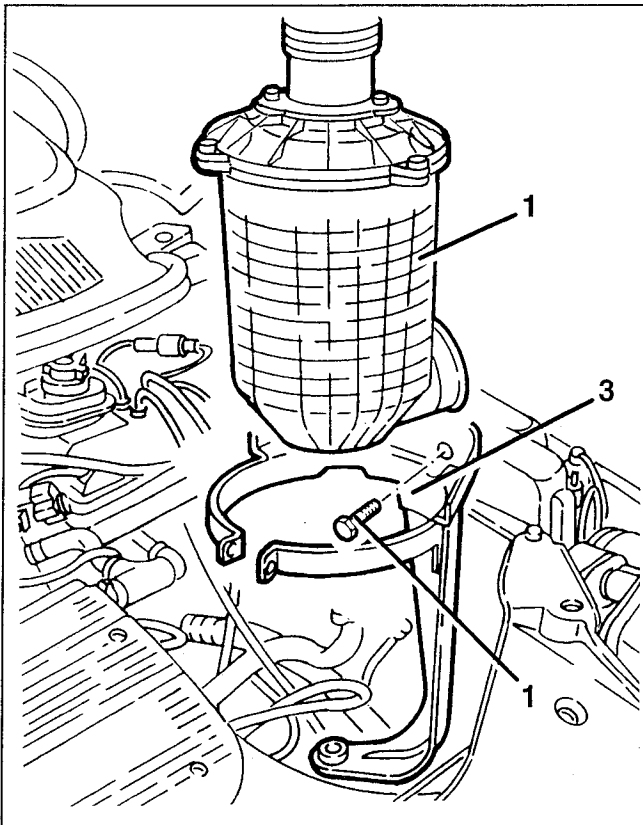
1. Loosen the two upper resonator and sleeve fastening clips.
2. Loosen the bracket fastening nut.
3. Remove the upper resonator and sleeve.



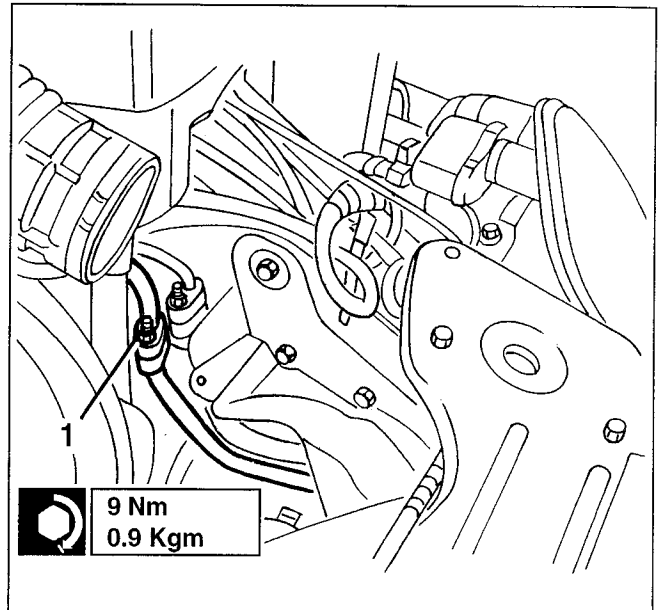
1. Disconnect the flow meter electrical connection.
2. Loosen the bracket fastening screw and move the pipe aside.
3. Loosen the air cleaner collar fastening screw.



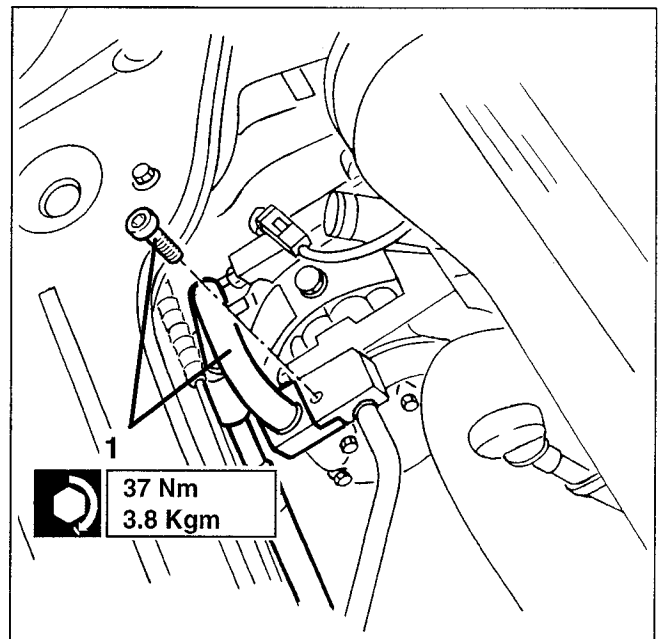
1. Remove the air cleaner.
2. Loosen the air cleaner bracket fastening screws.
3. Remove the bracket.



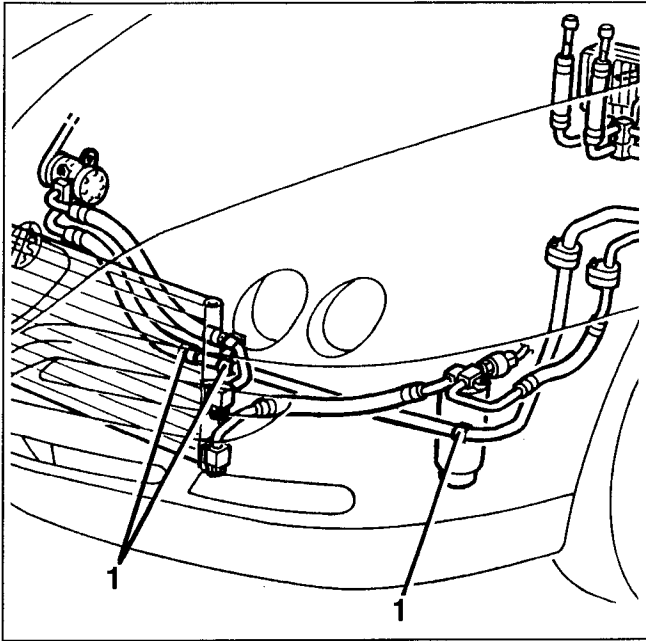
1. Loosen the nut and disconnect the joint.



1. Loosen the screw and disconnect the compressor inlet pipe.



- Lift the vehicle.
- 1. Take the pipe after disconnecting it from the clips.



Refit the compressor inlet pipe by reversing the removal sequence.

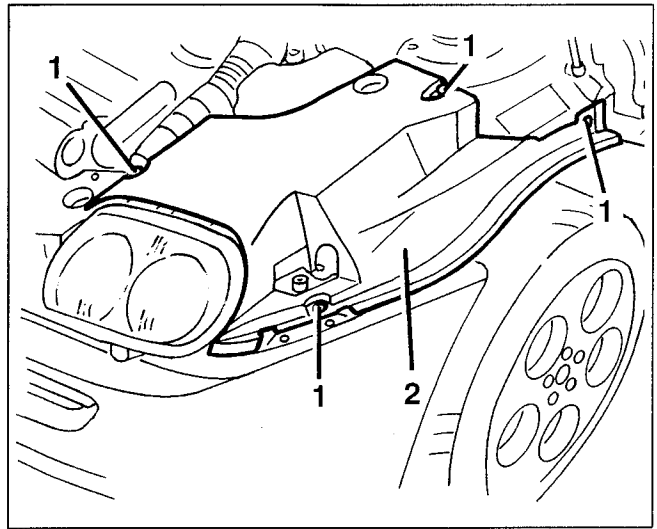
**NOTE:** Replace the fitting O-rings. Only use green rings resistant to R134A coolant. Lubricate the fittings with anti-freeze oil.

- Torque as prescribed.

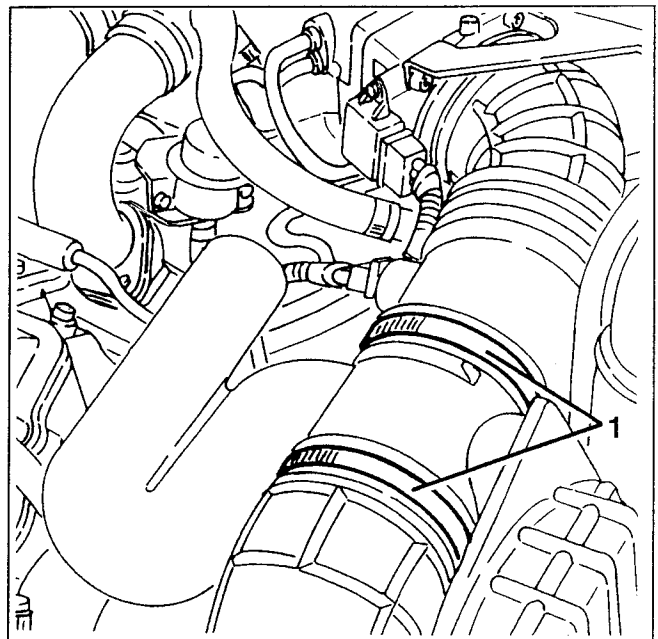
## DRIER FILTER PIPE-EVAPORATOR INLET PIPE (6 cylinder versions)

### REMOVAL/ REFITTING

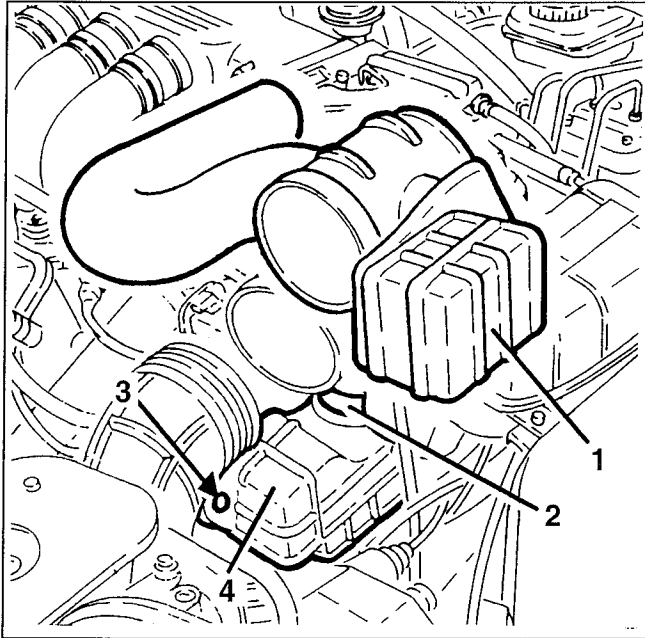
- Position the vehicle on a shop jack.
- Disconnect the negative battery terminal.
- Drain the coolant.
- 1. Loosen the engine compartment left-hand guard fastening screws.
- 2. Remove the guard.



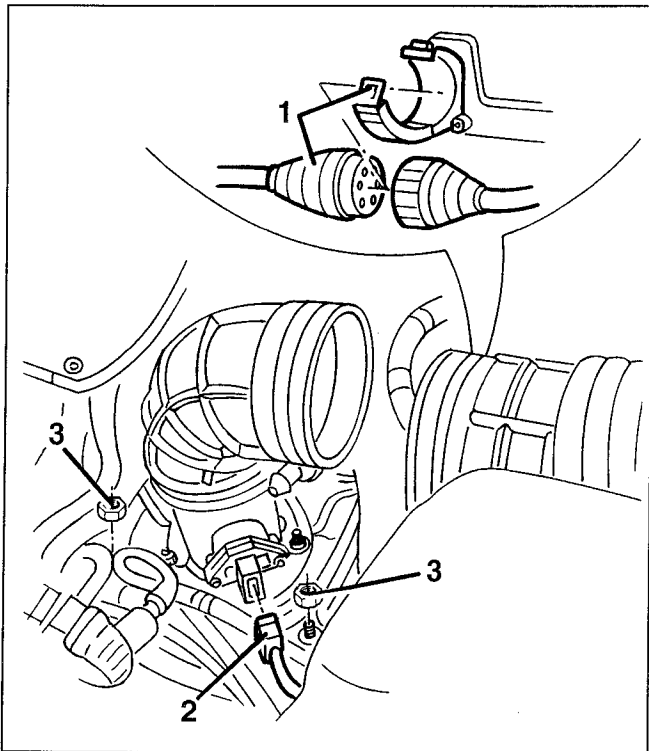
- 1. Loosen the two clips fastening the upper resonator to the corrugated sleeve.



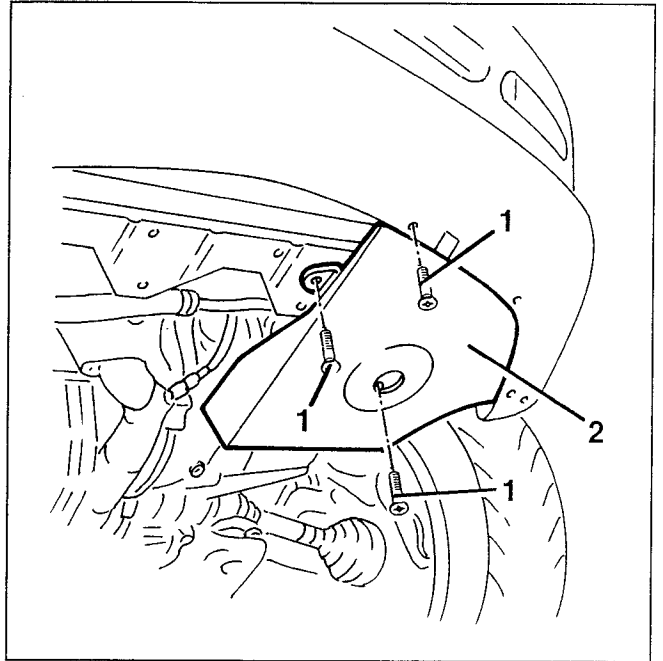
1. Remove the upper resonator.
2. Loosen the lower resonator fastening clip.
3. Remove the lower resonator retainer.
4. Remove the lower resonator.



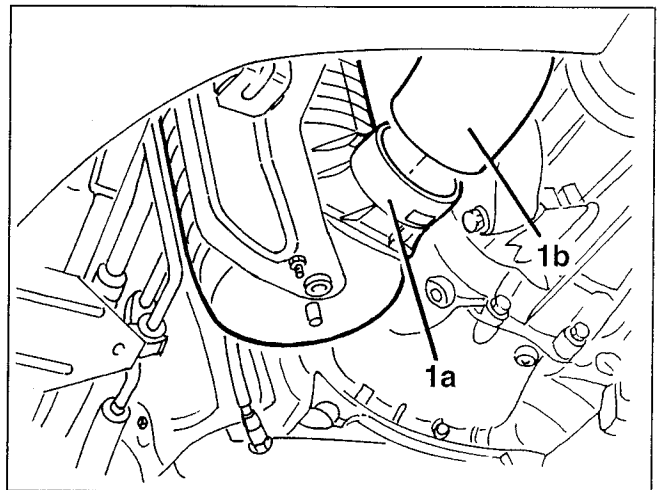
1. Release the bracket and disconnect the engine wiring electrical connection.
2. Disconnect the flow meter electrical connection.
3. Loosen the two nuts fastening the air cleaner to the bracket.



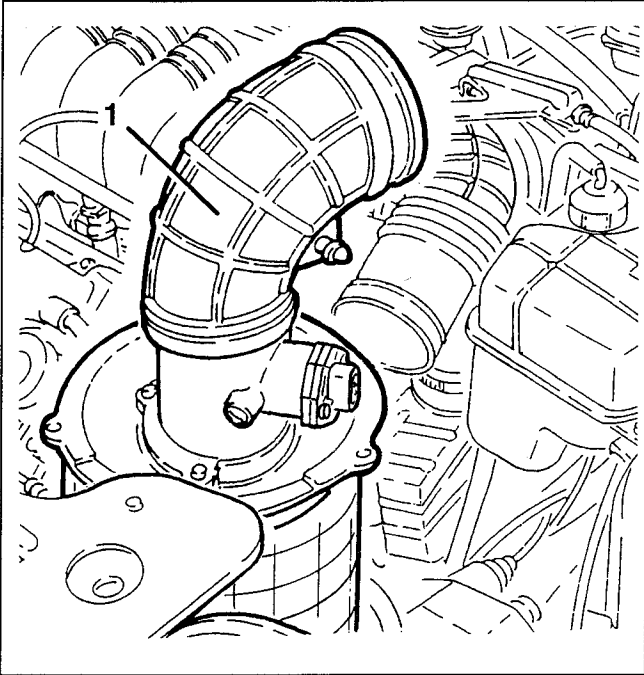
- Lift the vehicle.
1. Loosen the screws and nut fastening the guard under the air cleaner.
  2. Remove the guard.



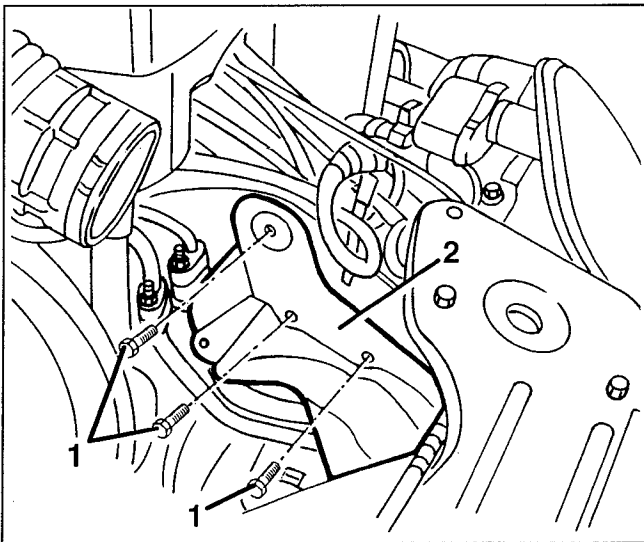
1. Remove the air cleaner (1a) from the resonator under the bumper (1b).



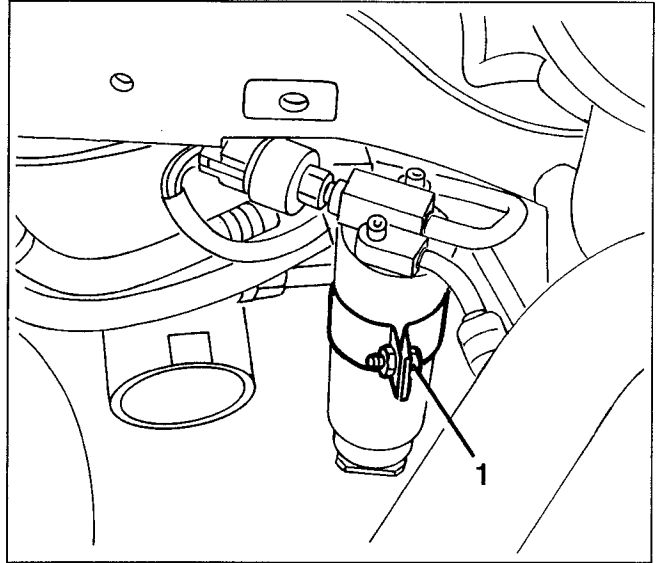
- Lower the vehicle.
- 1. Remove the air cleaner.



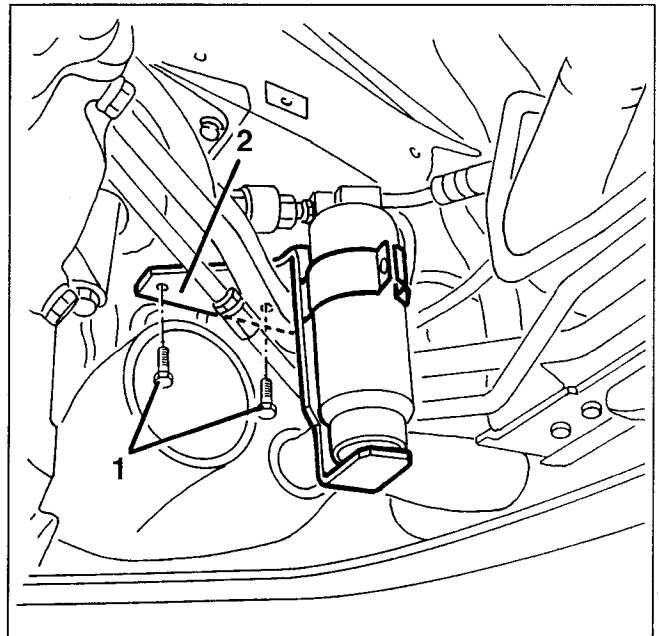
- 1. Loosen the air cleaner bracket fastening screws.
- 2. Remove the bracket.



- 1. Loosen the drier filter retainer clip screw.

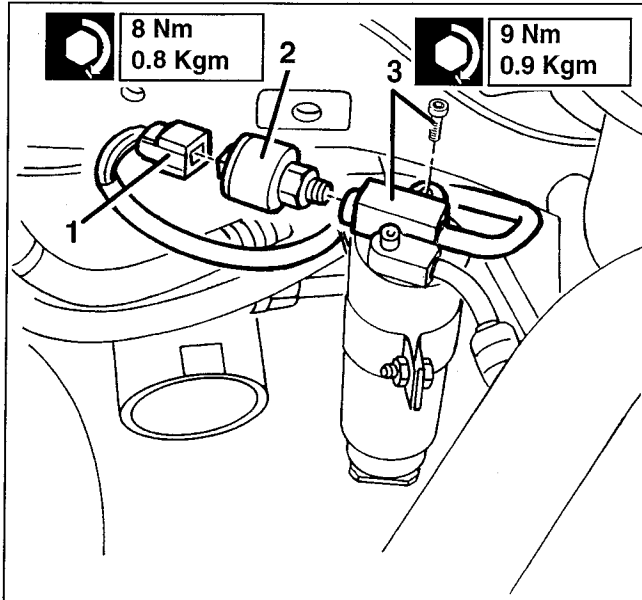


- Lift the vehicle.
- 1. Loosen the drier filter bracket fastening nuts.
- 2. Remove the drier filter bracket.

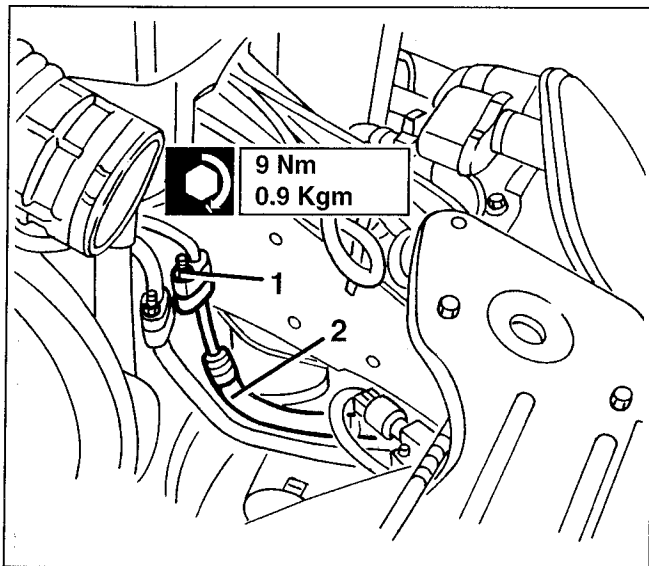




- Lower the vehicle.
- 1. Disconnect the multiple level pressure switch electrical connection.
- 2. Loosen the multiple level pressure switch.
- 3. Loosen the screw and disconnect the pipe.



1. Loosen the nut and disconnect the connection.
2. Take the drier filter pipe-evaporator inlet pipe.



Refit the drier filter pipe-evaporator inlet pipe by reversing the removal sequence.

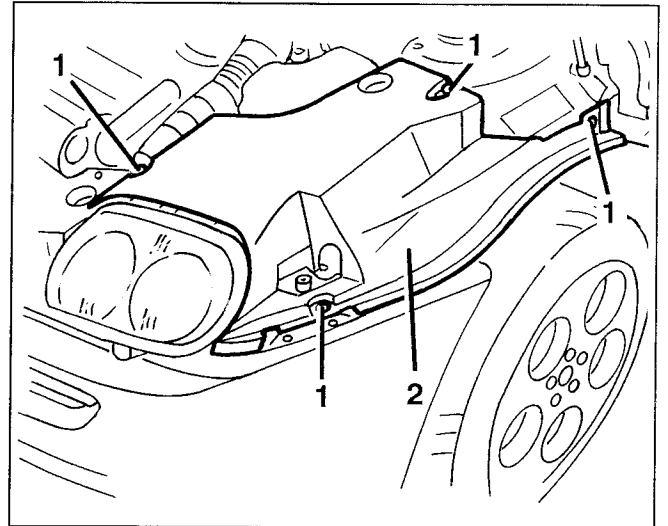
**NOTE:** Replace the fitting O-rings.  
Only use green rings resistant to R134A coolant. Lubricate the fittings with anti-freeze oil.

- Torque as prescribed.

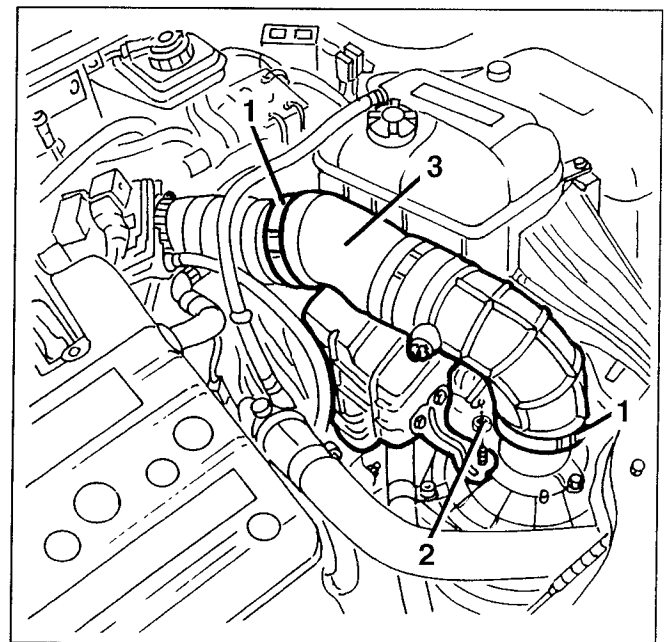
## DRIER FILTER PIPE-EVAPORATOR INLET PIPE (4 cylinder versions)

### REMOVAL/ REFITTING

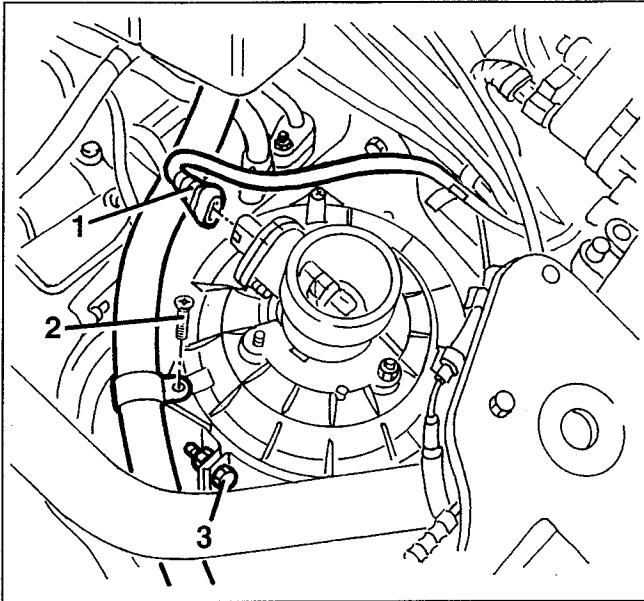
- Position the vehicle on a shop jack.
- Disconnect the negative battery terminal.
- Drain the coolant.
- 1. Loosen the engine compartment left-hand guard fastening screws.
- 2. Remove the guard.



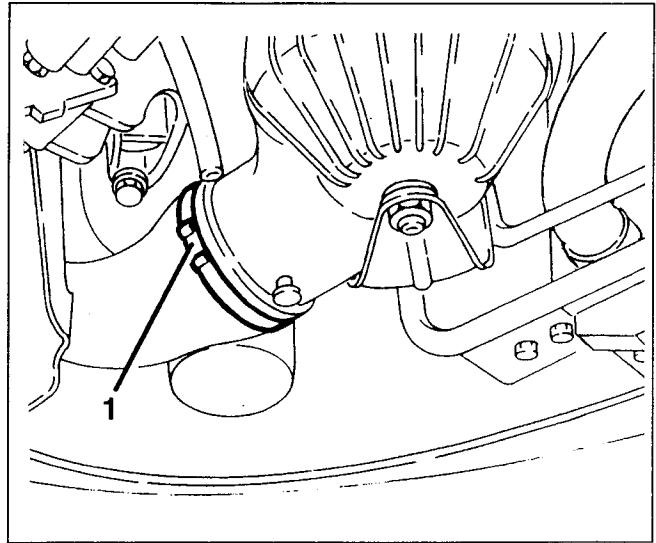
1. Loosen the two upper resonator and sleeve fastening clips.
2. Loosen the bracket fastening nut.
3. Remove the upper resonator and sleeve.



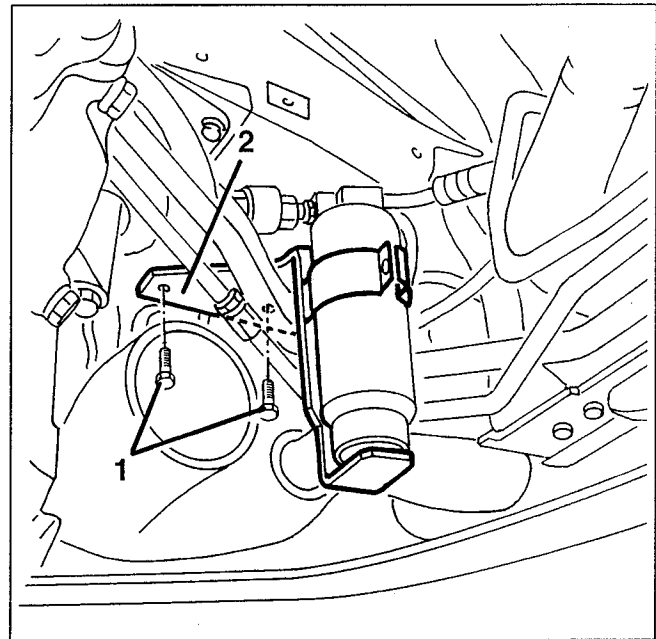
1. Disconnect the flow meter electrical connection.
2. Loosen the bracket fastening screw and move the pipe aside.
3. Loosen the air cleaner collar fastening screw.



1. Loosen the clip fastening the resonator sleeve to the air cleaner and disconnect the casing.

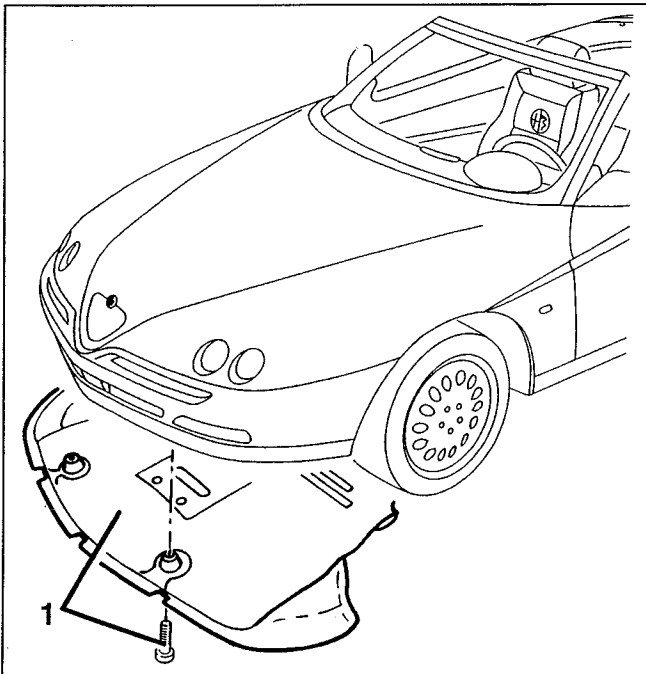


1. Loosen the drier filter bracket fastening nuts.

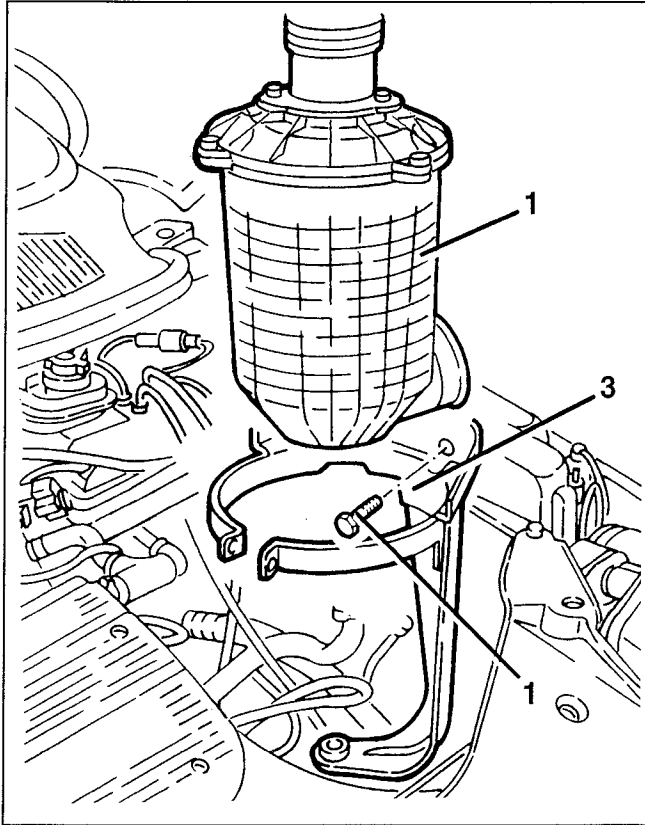


– Lift the vehicle.

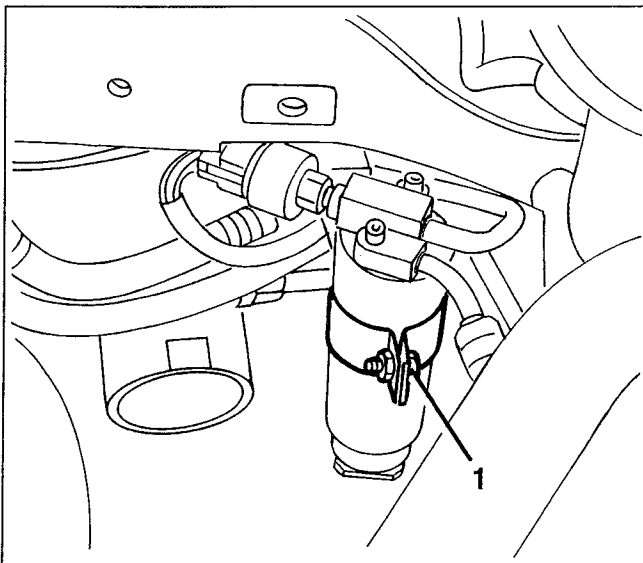
1. Loosen the screws and remove the guard under the engine.



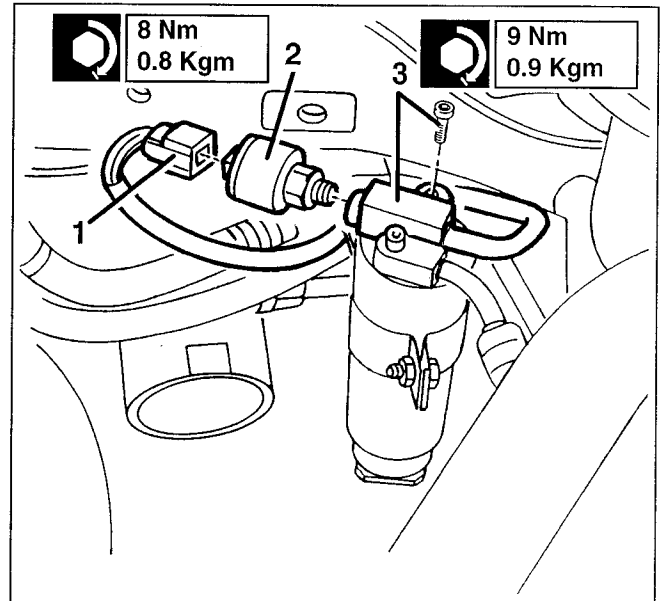
- Lower the vehicle.
- 1. Remove the air cleaner.
- 2. Loosen the air cleaner bracket fastening screws.
- 3. Remove the bracket.



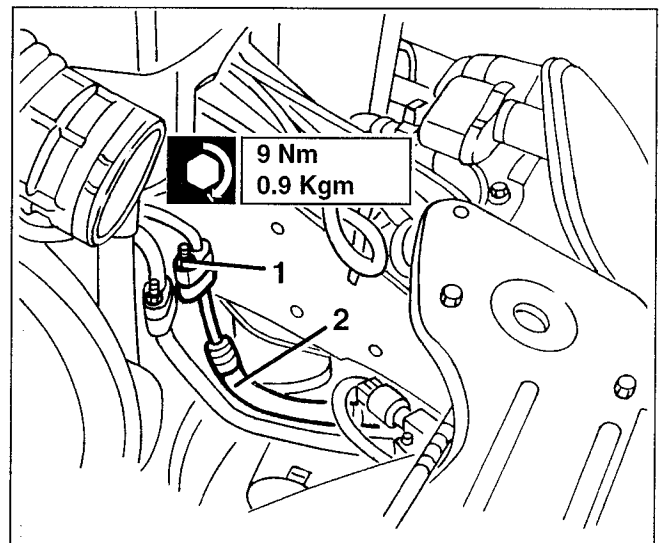
- 1. Loosen the drier filter retainer clip screw.



- 1. Disconnect the multiple level pressure switch electrical connection.
- 2. Loosen the multiple level pressure switch.
- 3. Loosen the screw and disconnect the pipe.



- 1. Loosen the nut and disconnect the connection.
- 2. Take the drier filter pipe-evaporator inlet pipe.



Refit the drier filter pipe-evaporator inlet pipe by reversing the removal sequence.

NOTE: Replace the fitting O-rings.  
Only use green rings resistant to R134A coolant. Lubricate the fittings with anti-freeze oil.

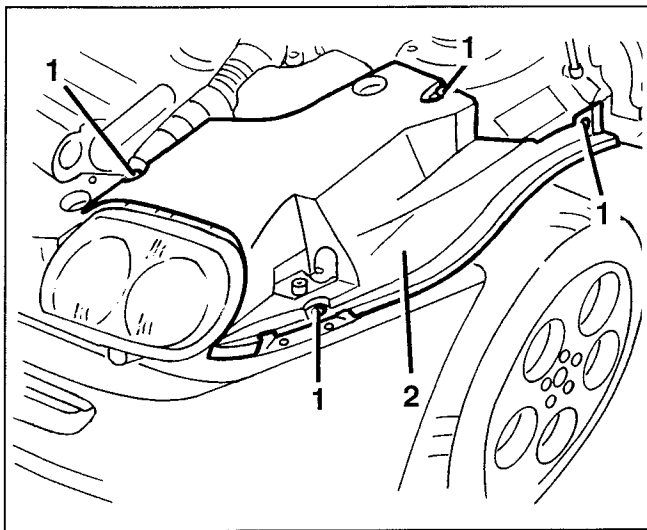
- Torque as prescribed.

**EVAPORATOR INLET PIPE,  
EVAPORATOR PIPE-COMPRESSOR  
INLET PIPE (6 cylinder versions)**

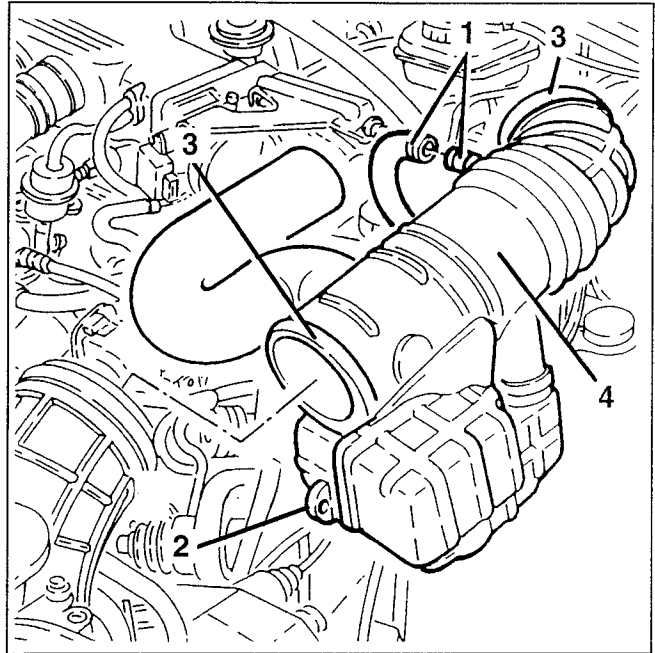
**REMOVAL/REFITTING**

NOTE: The removal procedure for both pipes mentioned above is described below; the procedure is identical.

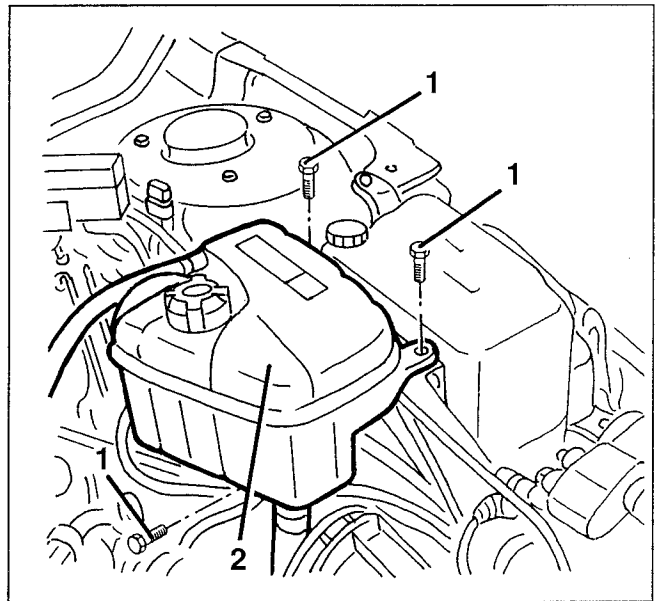
- Disconnect the negative battery terminal.
- Drain the coolant.
- 1. Loosen the engine compartment left-hand guard fastening screws.
- 2. Remove the guard.



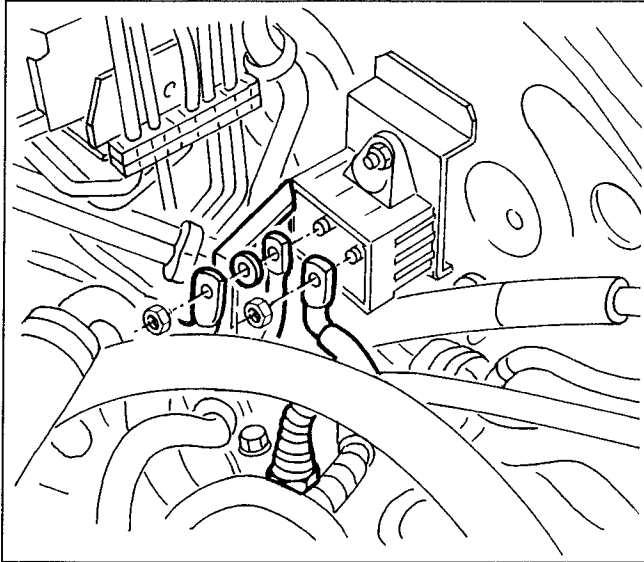
- 1. Disconnect the oil vapour recovery pipe.
- 2. Remove the lower resonator fastening button.
- 3. Loosen the two fastening clips.
- 4. Remove the corrugated sleeve and resonators.



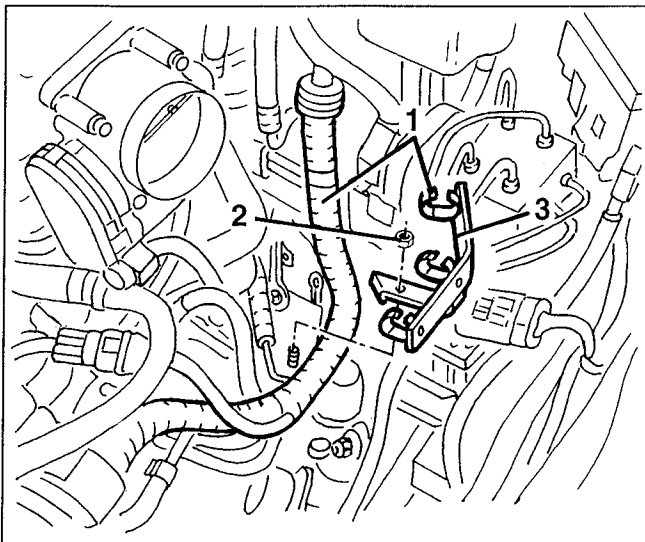
- 1. Loosen the coolant reservoir fastening screws.
- 2. Move the reservoir aside.



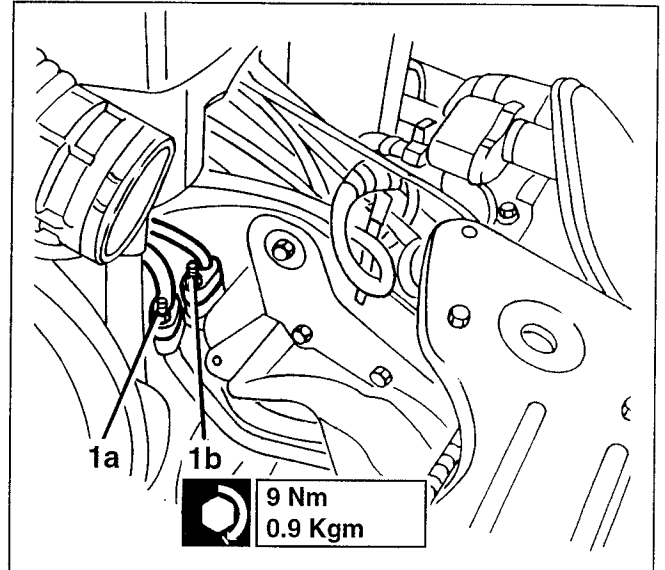
1. Open the junction box on the left-hand side of the engine compartment.
2. Disconnect the electrical connections.
3. Disconnect the reverse switch electrical connection.



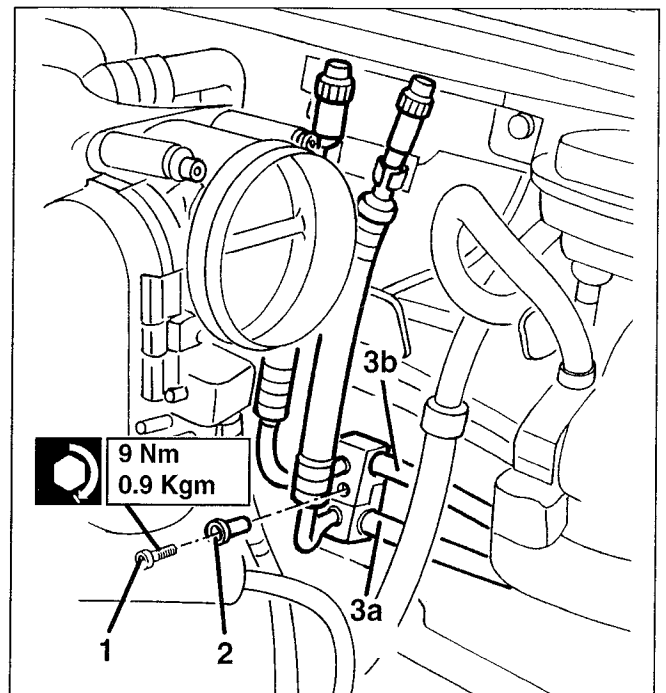
1. Disconnect the engine wiring from the bracket clips.
2. Loosen the bracket fastening nut.
3. Remove the bracket.



1. Loosen the evaporator pipe-compressor inlet pipe joint nut (1a) and/or the evaporator inlet pipe joint nut (1b).



1. Loosen the evaporator fitting pipe fastening screws.
2. Take the bushing.  
*When refitting, check integrity of the bushing and replace it, if required.*
3. Disconnect the evaporator-compressor inlet pipe (3a) from the clips and the retainers and/or the evaporator inlet pipe (3b). Take the pipe(s).



Refit the removed pipe(s) by reversing the removal sequence.

**NOTE:** Replace the fitting O-rings.  
Only use green rings resistant to R134A coolant. Lubricate the fittings with anti-freeze oil.

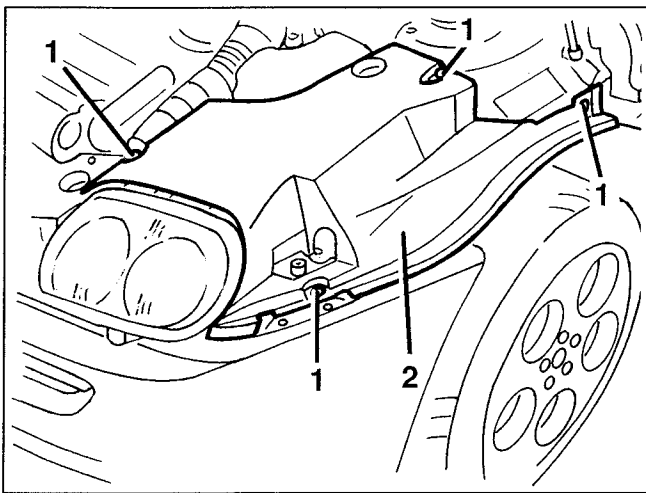
– Torque as prescribed

**EVAPORATOR INLET PIPE,  
EVAPORATOR PIPE-COMPRESSOR  
INLET PIPE (4 cylinder versions)**

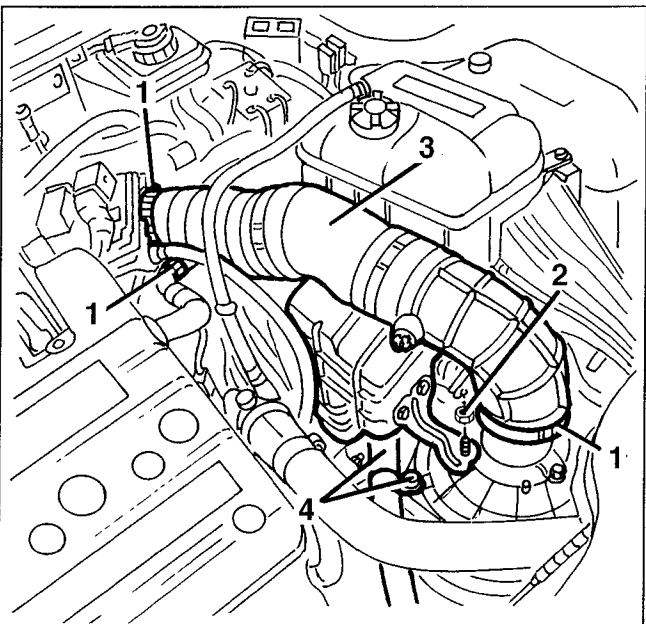
**REMOVAL/REFITTING**

NOTE: The removal procedure for both pipes mentioned above is described below; the procedure is identical.

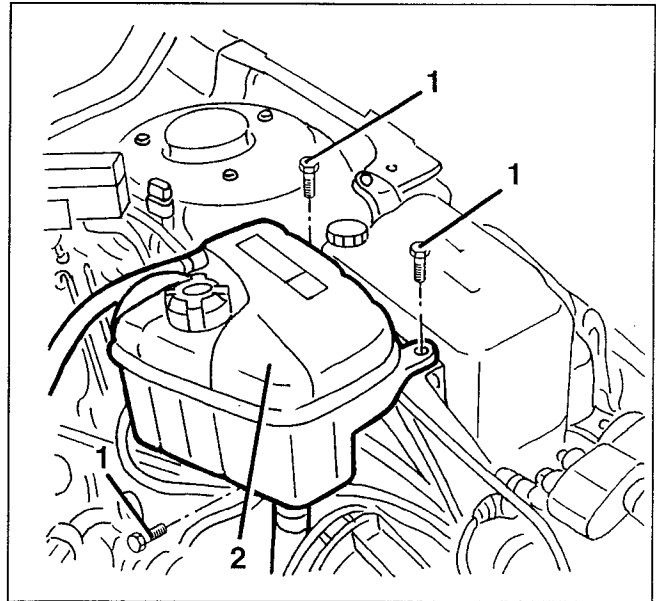
- Disconnect the negative battery terminal.
- Drain the coolant.
- 1. Loosen the engine compartment left-hand guard fastening screws.
- 2. Remove the guard.



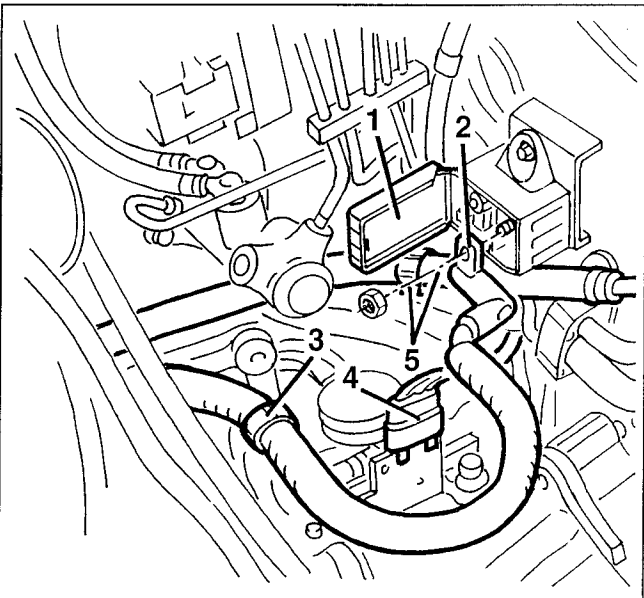
- 1. Loosen the clips.
- 2. Loosen the bracket fastening nut.
- 3. Remove the corrugated sleeve and resonator.
- 4. Loosen the clip fastening screw and move the pipe aside.



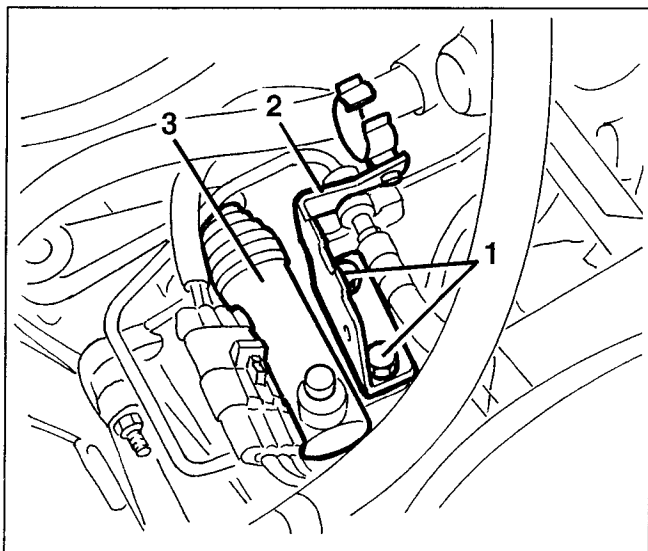
- 1. Loosen the coolant reservoir fastening screws.
- 2. Move the reservoir aside.



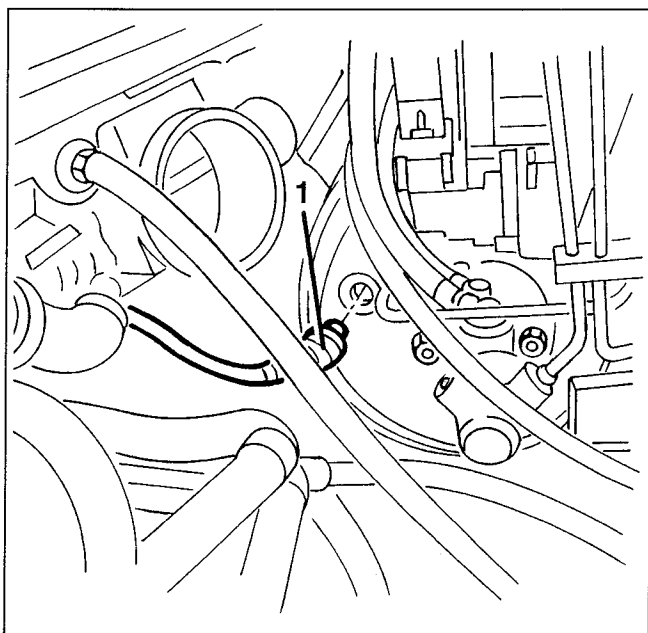
- 1. Open the junction box on the left-hand side of the engine compartment.
- 2. Disconnect the starter motor power wire.
- 3. Open the clip and move the wire aside.
- 4. Disconnect the electrical connection from the bracket.
- 5. Open the clip and move the power steering pipe aside.



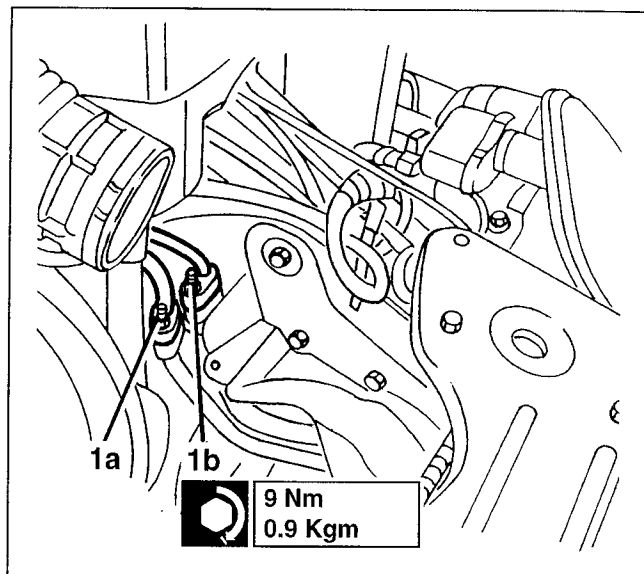
1. Loosen the clutch cylinder bracket fastening screws.
2. Remove the bracket.
3. Move the clutch cylinder aside.



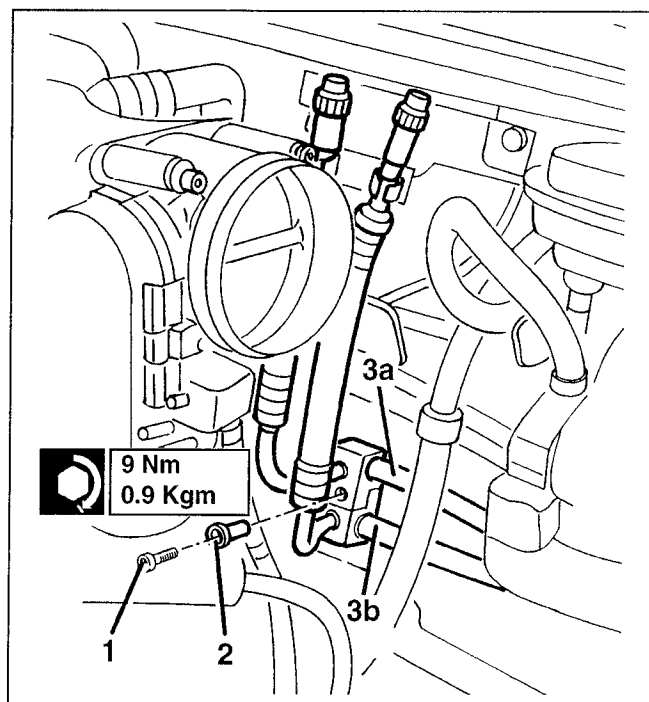
1. Disconnect the brake booster vacuum pipe.



1. Loosen the evaporator pipe-compressor inlet pipe joint nut (1a) and/or the evaporator inlet pipe joint nut (1b).



1. Loosen the evaporator fitting pipe fastening screws.
2. Take the bushing.  
*When refitting, check integrity of the bushing and replace it, if required.*
3. Disconnect the evaporator-compressor inlet pipe (3a) from the clips and the retainers and/or the evaporator inlet pipe (3b). Take the pipe(s).



**NOTE**

Refit the removed pipe(s) by reversing the removal sequence.

Replace the fitting O-rings.  
Only use green rings resistant to R134A coolant. Lubricate the fittings with anti-freeze oil.

– Torque as prescribed

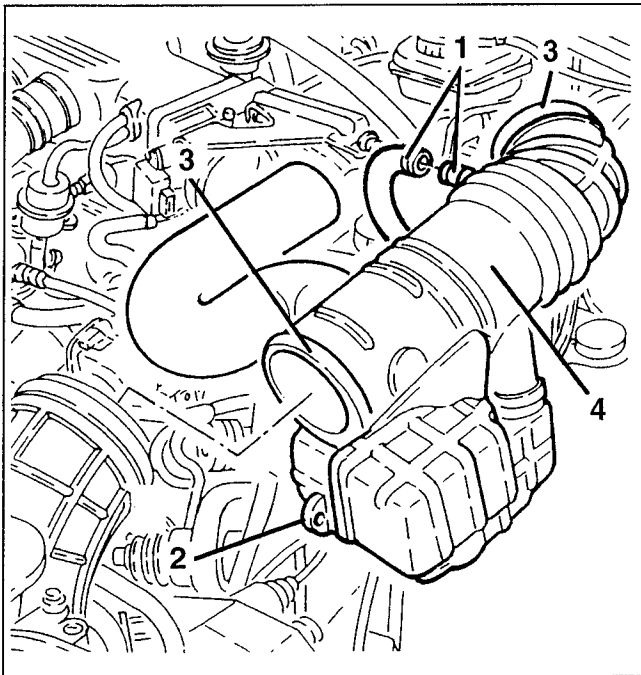
**EXPANSION VALVE-AIR  
CONDITIONER PIPE FITTING**

**REMOVAL/REFITTING**

- Remove the dashboard (see Assembly 70).
- Drain the coolant (see specific paragraph)

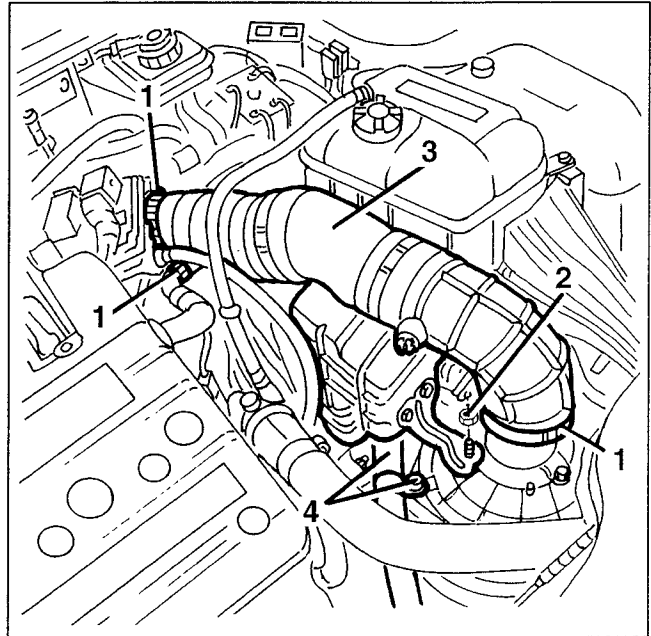
**For 6 cylinder versions**

1. Disconnect the oil vapour recovery pipe.
2. Remove the lower resonator fastening button.
3. Loosen the two fastening clips.
4. Remove the corrugated sleeve and resonators.



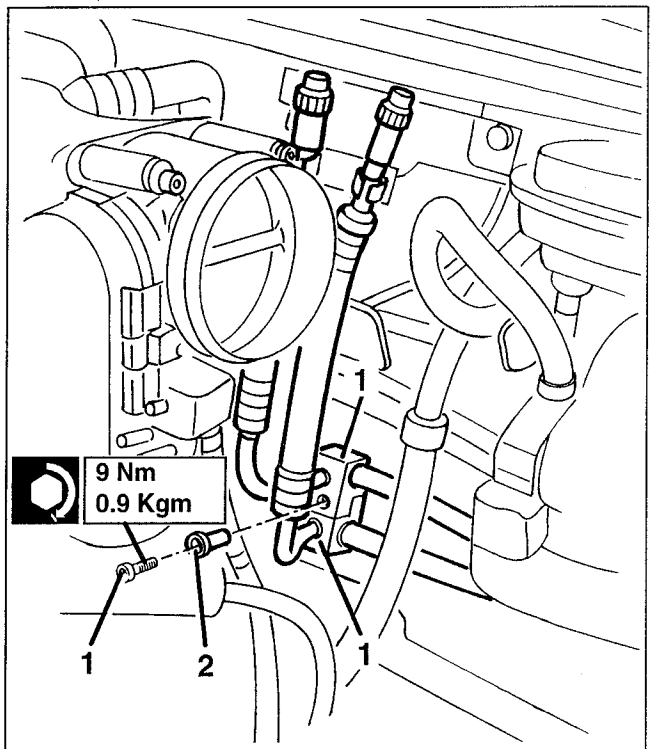
**For 4 cylinder versions**

1. Loosen the clips.
2. Loosen the fastening nut from the bracket.
3. Remove the corrugated sleeve and resonators.
4. Loosen the clip fastening screw and move the pipe aside.



1. Loosen the fastening screw and disconnect the evaporator pipes from the fitting.
2. Take the bushing.

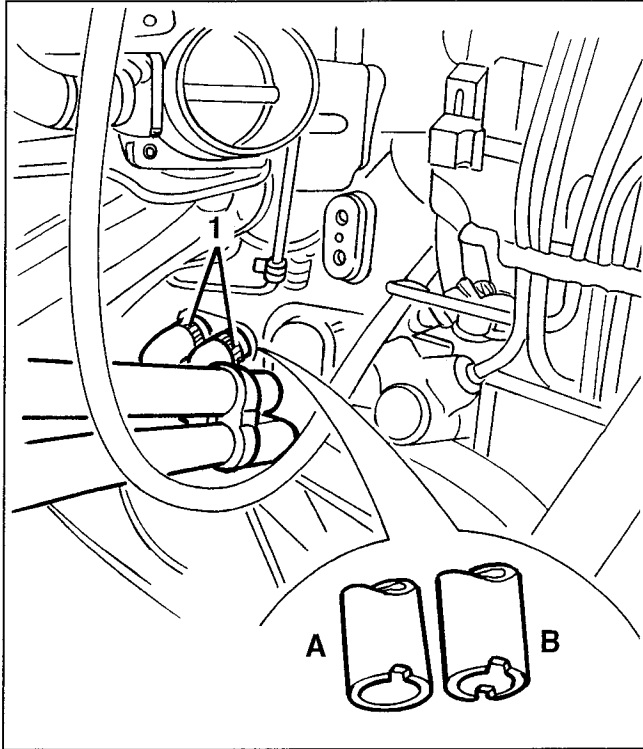
*When refitting, check integrity of the bushing and replace it, if required.*





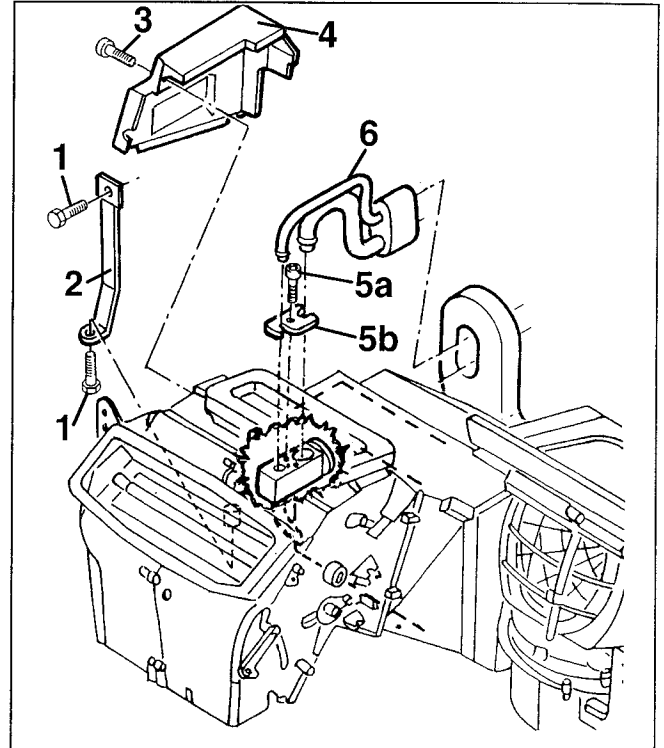
1. Loosen the heater coolant inlet and outlet pipe clips and disconnect the pipe. Collect the fluid.

**NOTE:** The two pipes present one recess (A) or two recesses (B) as to avoid possible inversion.



**IMPORTANT:** Cap the disconnected fittings to avoid moisture and impurity from getting into the system.

1. From under the dashboard, loosen the conditioner assembly tie-rod fastening screws.
2. Remove the tie-rod.
3. Loosen the expansion valve cover fastening screws.
4. Remove the cover.
5. Loosen the screw (5a) and take the plate (5b).
6. Remove the fitting.



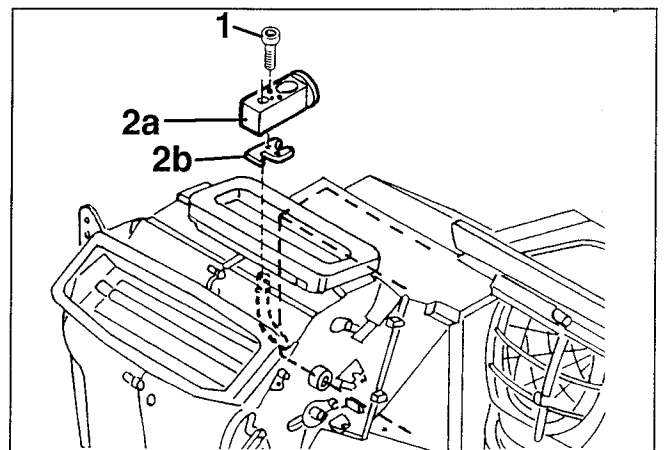
Refit the fitting by reversing the removal sequence.

**NOTE:** Replace the fitting O-rings. Only use green rings resistant to R134A coolant. Lubricate the fittings with anti-freeze oil.

## EXPANSION VALVE

### REMOVAL/REFITTING

- Remove the fitting between expansion valve and conditioner pipes (see specific paragraph).
1. Loosen the expansion valve fastening screw.
  2. Remove the expansion valve (2a) and take the plate (2b).



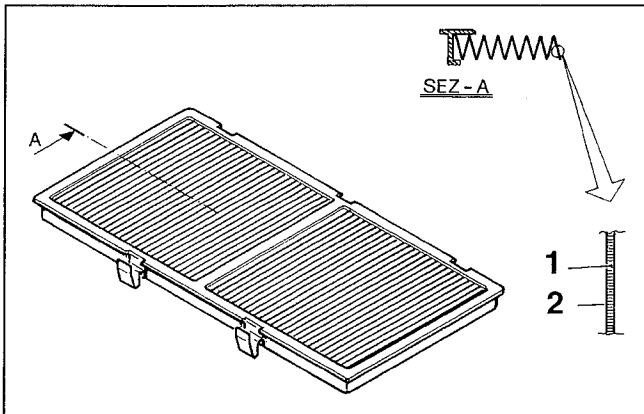


Refit the expansion valve by reversing the removal sequence.

## POLLEN FILTER

The climate control system can be fitted (upon request) with a special dust/pollen filter made from polyester on the outside and electrostatically charged polycarbonate fibres on the inside (see figure).

This filter has the specific capability of combining the mechanical air filtering with an electrostatic effect so that the outside air admitted to the passenger compartment is purified and free of contaminants such as dust, pollen, etc.



Filter cross section

1. Polycarbonate fibres
2. Polyester fibres (non woven fabric)

### N.B.:

The conditions of the filtering element should be checked once a year, preferably at the beginning of summer.

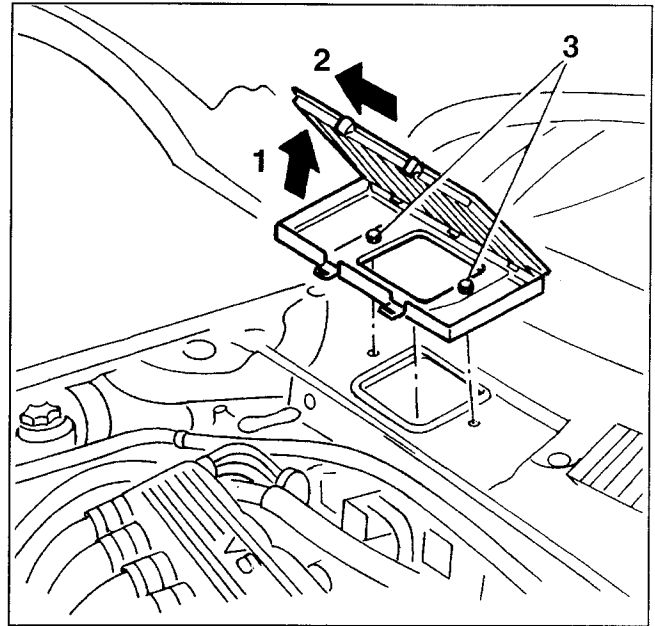
It should be checked more frequently if the car is habitually used in the city or dusty areas.

## REPLACEMENT



The failure to change the filter or its incorrect installation may considerably reduce the effectiveness of the climate control unit.

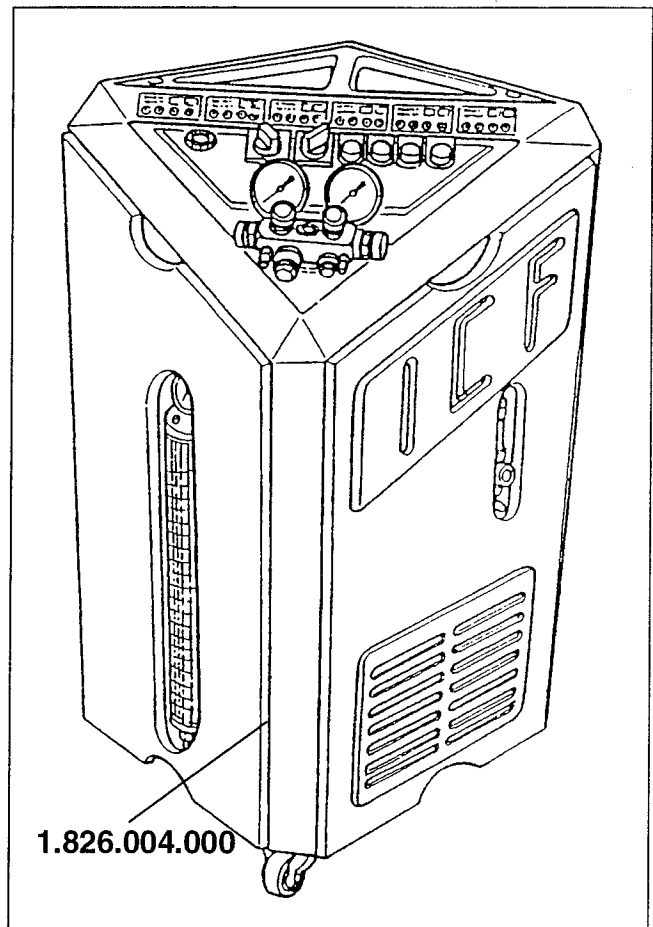
- Remove the air inlet grille (see GR.70).
- 1. Raise the filtering element which is held in place by two catches.
- 2. Remove the filtering element, complete with frame; remove the element from the frame and replace it with a new one.
- 3. If it is necessary to remove the filtering element housing, slacken the two screws fastening it to the panel below.



## EMPTYING AND RECHARGING THE SYSTEM

### N.B.

Only use the special station for emptying and recharging R134a fluid **1.826.004.000**.



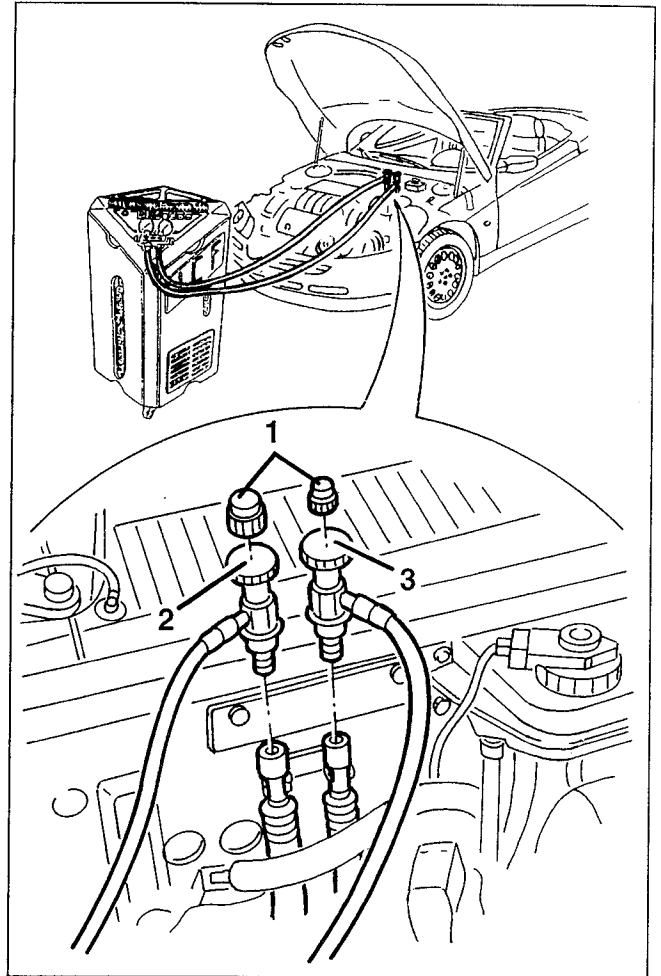
## EMPTYING THE SYSTEM AND RECOVERING THE COOLANT FLUID

For these operations follow the safety precautions described. In particular, the following should be borne in mind:



- Any R134a fluid spilt accidentally from the climate control system or from the emptying/recovery/recharging system can become toxic if near to naked flames or in the presence of certain metals (eg. magnesium or aluminium) in the form of fine or dust particles. It is therefore advisable to work away from naked flames and in ventilated places with the suction system operating.
- Avoid prolonged contact with the skin of fluid R134a when it is evaporating as the low temperature (-26.5°C) reached at the end of expansion can cause cold "burns". It is therefore advisable to use leather or thick fabric gloves.
- The eyes must be protected from contact with the refrigerant fluid as the excessive, instantaneous low temperature can cause serious harm.
- Discharging the fluid into the air is a hazard for the environment. When emptying R134a from the system only the special equipment described must be used.

1. Slacken the caps of the recharging valves.
  2. Connect the pipe with the red cock to the high pressure
  3. Connect the pipe with the blue cock to the low pressure.
- Drain the fluid from the system completely, following the directions in the instructions for use of the equipment.



## RECHARGING THE COOLANT FLUID



- When used with the suitable precautions, R134a is a fluid that is harmless for both persons and cars; however, as it is kept under pressure, it is subject to physical changes which can be dangerous unless they are perfectly controlled, it is therefore necessary to adhere closely to the following instructions.
- The refrigerant is normally kept in metal cylinders: never expose them to sunlight for prolonged lengths of time, the increase in temperature highers the pressure which might exceed safety limits.
- During cold weather, difficulty may occur in transferring the metal cylinder to the charging station owing to the low pressure in the cylinder; in this case, before transferring, place the cylinder in a heated place at a temperature not exceeding 35°C for appr. twenty minutes, never using a naked flame to heat the cylinder. Never leave the cylinder of the charging station completely full for prolonged lengths of time.

- Before recharging the system, top up the compressor with the amount of oil removed during the emptying procedure (see following paragraph): only use oil of the type and quantity given in the "SPECIFICATIONS".
- When recharging the R134a refrigerant fluid only use the special equipment specified.

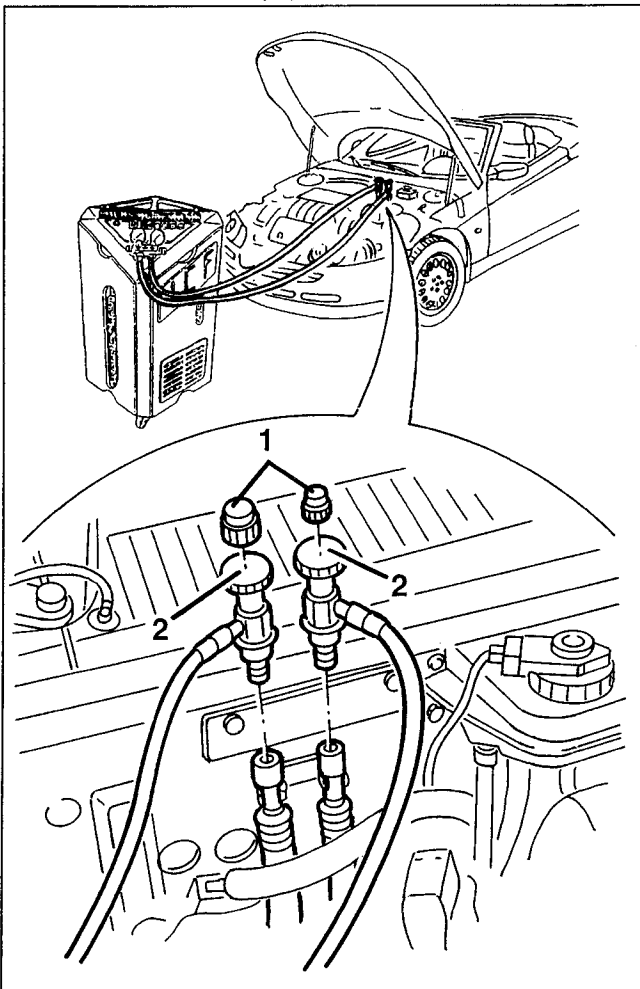
1. Connect the coupling pipes to the refrigerant fluid drainage- recharging station.



**WARNING:**

For the quantity of R134a to be used for recharging closely follow the instructions given in the "SPECIFICATIONS".

2. Connect the high and low pressure coupling pipes to the corresponding quick-coupling valves and begin the emptying procedure, then the R134a recharging procedure following the directions given in the instructions for use of the equipment.



### Locating leaks in the system

Check that all the unions are firmly tightened. If the leaks persist, check for the presence of the O-rings on the unions, then admit a certain amount of R134a into the system (appr. 200 gr.) and find the point of leakage using a leak detector. Then drain off the fluid and eliminate the leak.

### TOPPING UP THE COMPRESSOR OIL LEVEL



- The compressor oil level should only be topped up if it is presumed that a considerable amount of oil has leaked due to damage or the disconnection of components of the climate control system and during emptying/recharging operations.
- The oil is highly water-absorbent: do not leave oil cans open. Do not leave the compressor or any other part disconnected from the system for any longer than necessary.
- In the event of servicing operations in the engine compartment involving leaving the pipes of the system exposed to the air for over six hours, it is not enough to top up the level and it is necessary to change the compressor lubricating oil completely, as described in point C.
- To top up the oil level only use new oil of the type described in the "SPECIFICATIONS".

N.B. Different cases call for different types of procedures.

Five of them are described below (A, B, C, D, E):

#### A) "Slow" emptying of the system - in the case of routine maintenance (emptying and recharging)

When the system is emptied with the equipment described previously, the compressor oil removed is collected in a special graduated container on the station itself.

Before recharging the refrigerant fluid fill the system with the quantity indicated in the container plus a **further 15 cc**. If the compressor plug and the pipe unions are not accessible, use a syringe introducing the oil through one of the recharging valves (this valve may be removed using a suitable tool comprising a hollow tube with groove).

#### B) "Quick" emptying of the system (in less than 15 minutes) - in the event of accidental failures.

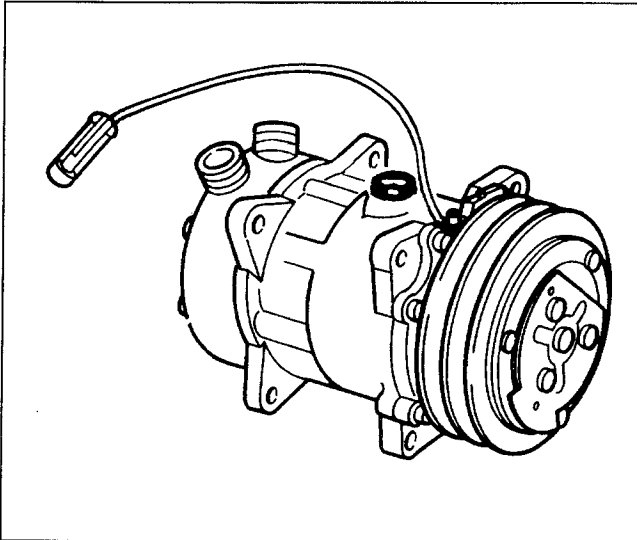
Under this circumstance it is not possible to determine the exact amount of oil that has been lost. Proceed as described above, but in this case with 50 cc. of oil.

N.B.: if, for any reason, the compressor is removed and refitted, proceed as described in point C.

**C) Complete overhauling of the system - in the case of washing or "important" operations on the system**

Drain the R134a from the air conditioning system and wash the system.

- Remove the compressor (see specific paragraph).
- Remove the oil drain-filler hole plug and drain off all the oil contained in the compressor (N.B. the compressor should be turned a few times by hand to make all the oil come out).

**D) Changing the compressor only**

- Drain the R134a fluid from the air conditioning system.
- Remove the compressor (see specific paragraph).
- Drain the oil from the compressor just removed, retrieving it in a suitable recipient.
- Carry out the same operation for the new compressor.
- Fill the new compressor with the amount of oil removed from the old one.
- Refit the compressor on the car.
- Proceed with the system recharging operations, topping up the system with an additional 15 cc.

**WASHING THE SYSTEM**

- In the event of damage or breakage to the compressor or other components of the system, the system must be accurately washed.
- In the case of operations in the engine compartment in which the pipes remain exposed to the air for over six hours, washing should be carried out to eliminate the humidity.

**Proceed as follows:**

- If the compressor has suffered damage that may have caused the presence of metal parts in the pipes, the pipes connecting the compressor (unions) should be blown with compressed air.
- Connect the system with the special emptying/recharging equipment mentioned previously.
- Admit 1.5 ÷ 2 kg of R134a on the high pressure side - red cock.
- Recover from the low pressure side.
- Admit 1.5 ÷ 2 kg of R134a a second time (use the same fluid).
- After washing, change the drier filter and change the filter (net) of the expansion valve.
- Proceed with the system emptying and recharging operations described previously.