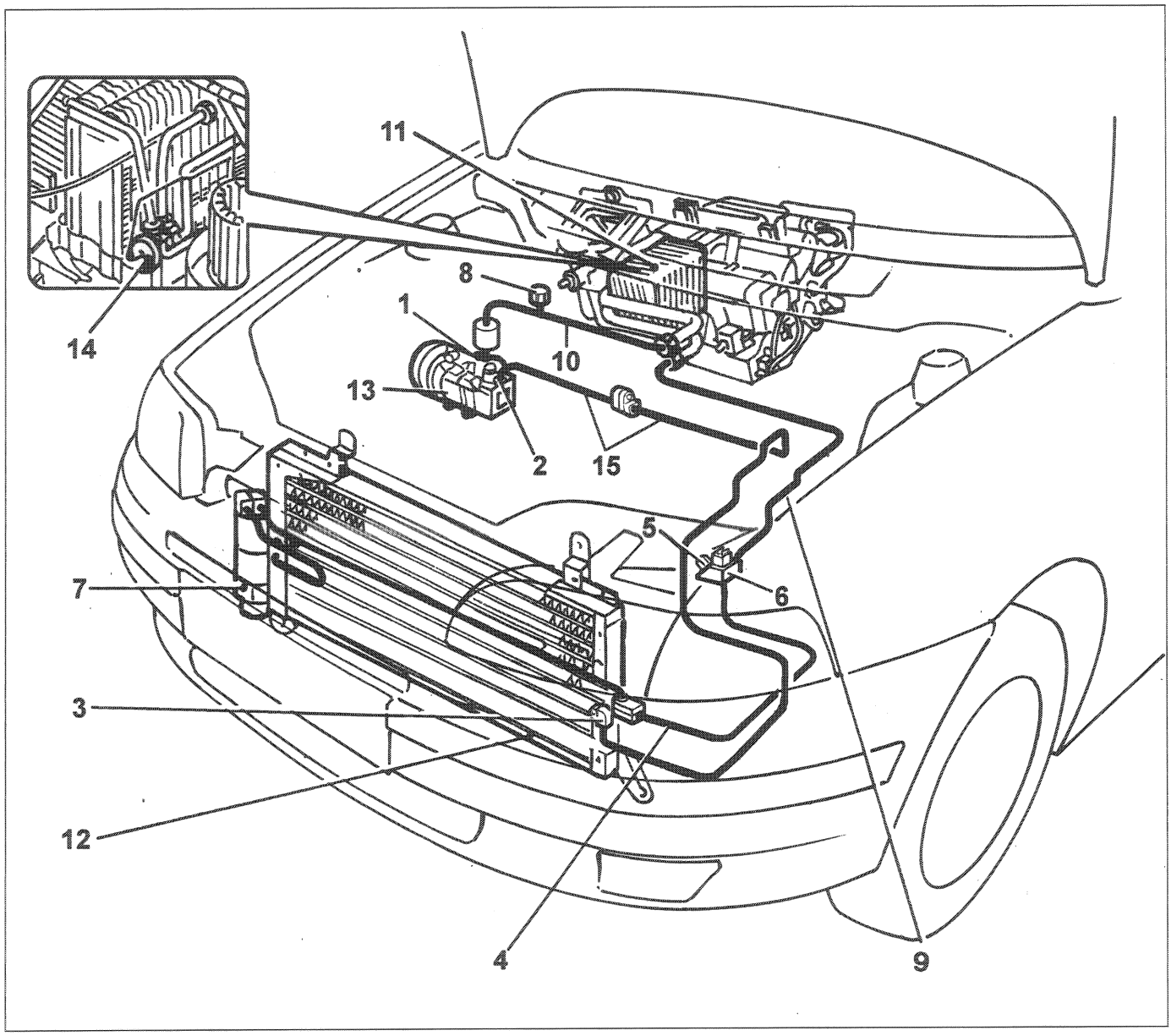
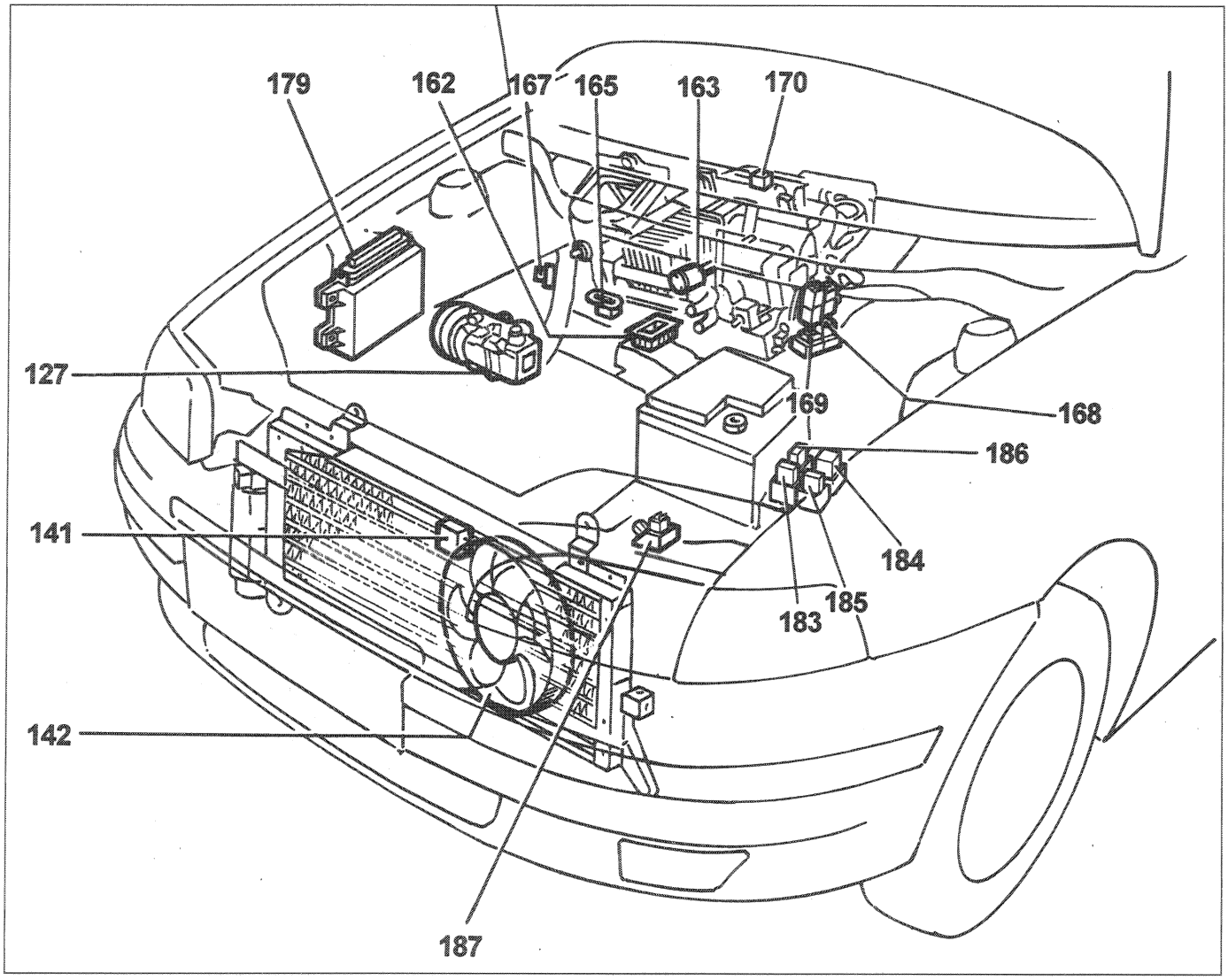
DIAGRAM SHOWING LAYOUT OF AIR CONDITIONING SYSTEM COMPONENTS ON VEHICLE



P3M01BH01

1. Inlet connector for coolant fluid at the compressor
2. Coolant supply connector at compressor
3. Condenser inlet connector
4. Filter/four stage pressure switch connecting pipe
5. Rapid attachment connector (high pressure) for connecting system draining/re-pressurizing equipment
6. Four stage pressure switch
7. Drier filter
8. Rapid attachment connector (low pressure) for connecting system re-pressurizing/draining equipment
9. Four stage pressure switch/evaporator connecting pipe
10. Evaporator/compressor connecting pipe
11. Evaporator
12. Condenser
13. Compressor
14. Expansion valve
15. Compressor/condenser connecting pipe

LOCATION OF AIR CONDITIONING ELECTRICAL COMPONENTS



P3M02BH01

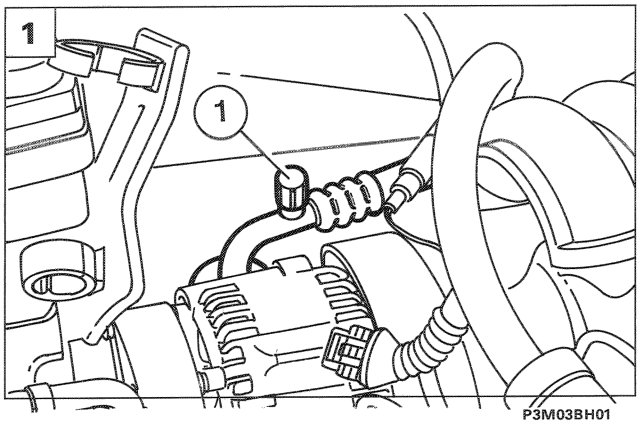
127. Air conditioning compressor
141. Resistor for first electric fan speed
142. Radiator/condenser cooling fan
162. Compressor control unit
163. Evaporator temperature sensor (N.T.C.)
165. Resistor divider for adjusting climate control fan speed
167. Climate control fan
168. Climate control electric fan circuit relay feed
169. Relay for engaging first fan speed with air conditioning on
170. Air conditioning on switch
179. Engine control unit
183. Relay for engaging 1st electric fan speed
184. Relay for engaging 2nd electric fan speed
185. Relay for engaging compressor
186. 7.5 A protective fuse for compressor
187. Four stage pressure switch

MAINTENANCE AND SERVICE OPERATIONS

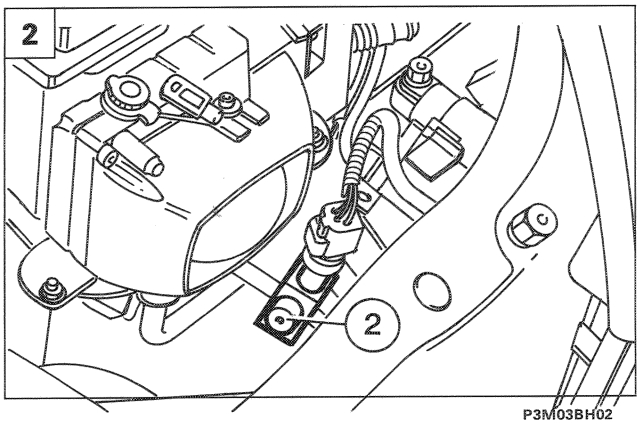
The air conditioning system must be drained before carrying out any operations which may result in coolant fluid escaping. Gloves and goggles must be worn as protection against any jets of fluid.
The engine and the system must have been running for at least 10 - 15 minutes in order to facilitate the draining operation.

NOTE *If the O-rings are being replaced, only use green seals which are resistant to R 134 A coolant fluid. Do not, under any circumstances, use black coloured seals because they are permeable to the coolant fluid.*

NOTE *If the system pipes are being removed, it is advisable to seal the disconnected ends of the pipes with suitable plugs if they are not being refitted immediately to prevent the intake of humidity and foreign bodies.*



P3M03BH01



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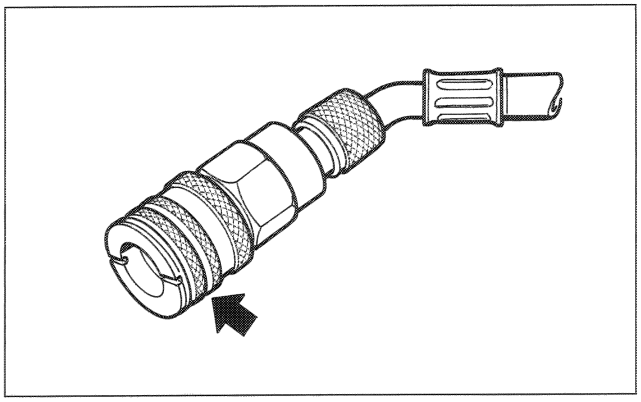

P3M03BH03

Connection of equipment to vehicle air conditioning system

Carry out the following operations in the order given:

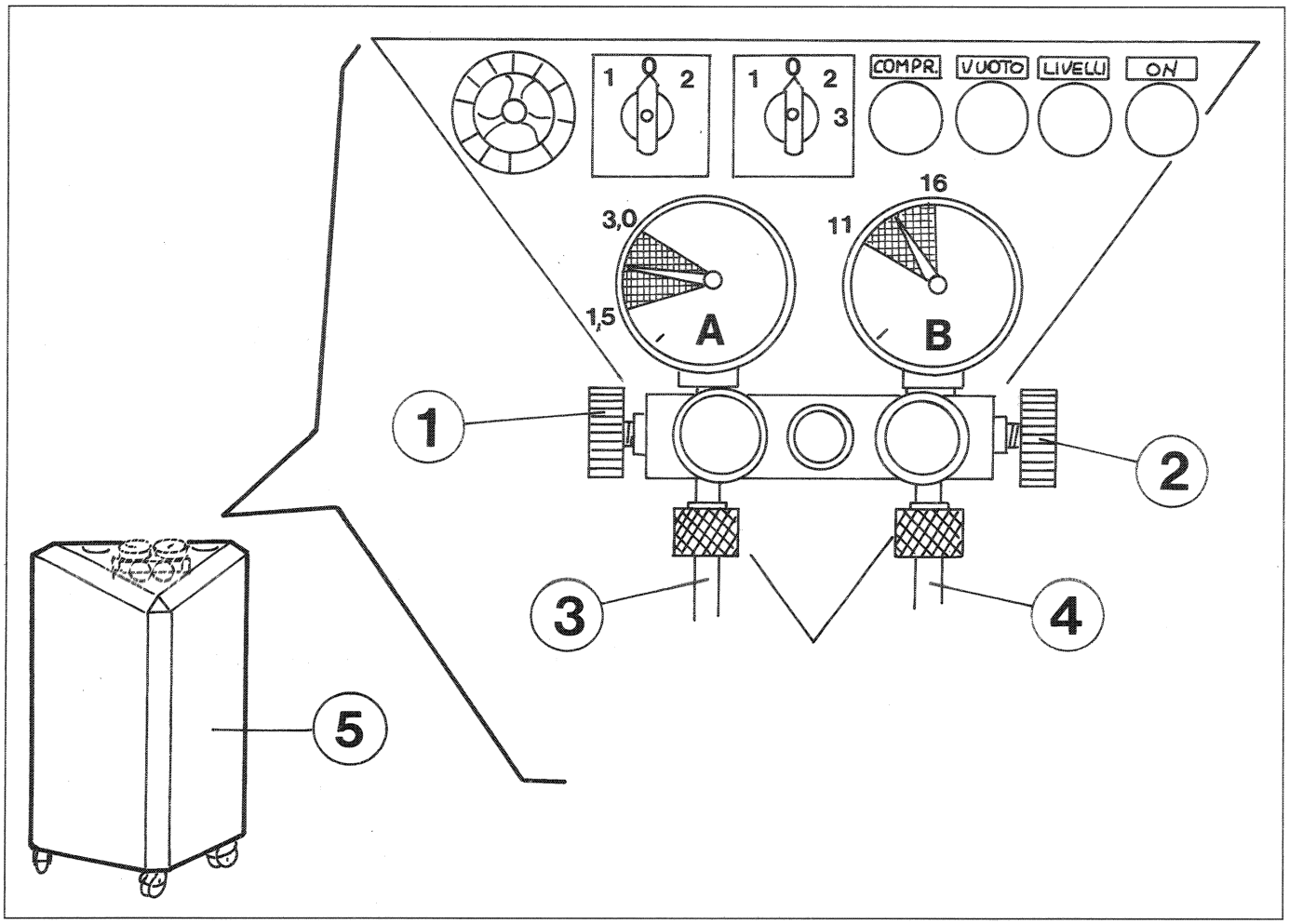
1. Check that the equipment taps are closed and the electric control knobs are in position 0 (switched off), then connect the connector for the light blue flexible pipe to the needle valve (1) secured to the section of pipe which connects the evaporator to the compressor.

2. Attach the connector for the red flexible pipe to the needle valve (2) secured to the connector for the four stage pressure switch.

NOTE *Move the ring nut shown by the arrow upwards before inserting the connector in the needle valve.*

50.

Checking air conditioning system pressure



P3M04BH01

(A) low pressure circuit pressure gauge
(B) high pressure circuit pressure gauge

1. Low pressure tap (LOW)
2. High pressure tap (HIGH)
3. Light blue low pressure pipe
4. Red high pressure pipe
5. Cleaner 134 equipment

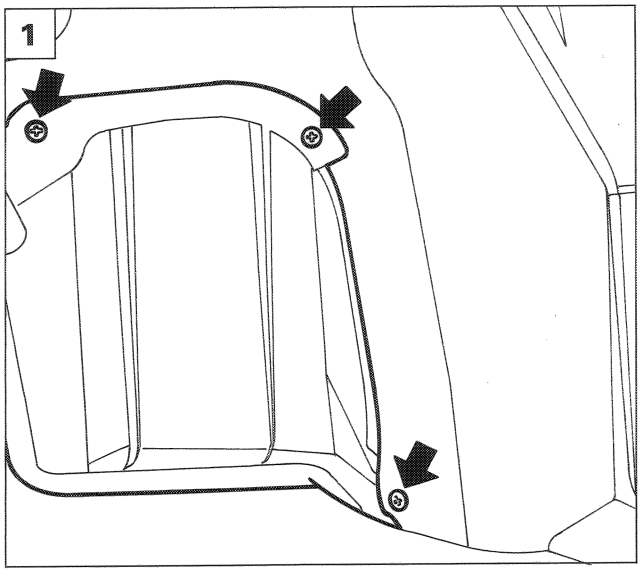
The pressure is checked using the Cleaner 134 equipment with the engine running (speed of around 1500 rpm) at an outside temperature of 20 - 28 °C, after having connected the pipes as shown on the previous page; in these conditions, the pointers on the pressure gauges should show:

low pressure circuit (pressure gauge A): 1.5 - 3.0 bar

high pressure circuit (pressure gauge B): 11 - 16 bar

NOTE *The radiator/condenser cooling fan comes on at a high pressure circuit pressure value of 15 - 16 bar.*

Quantity of R 134 A coolant fluid in the system: 650 - 700 grams



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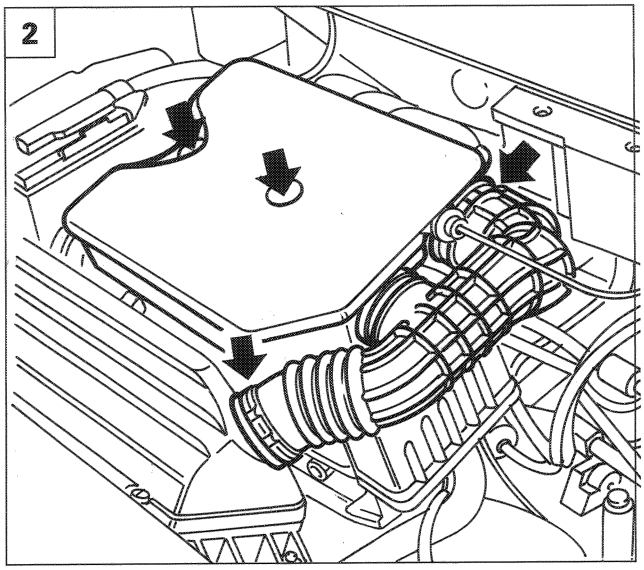

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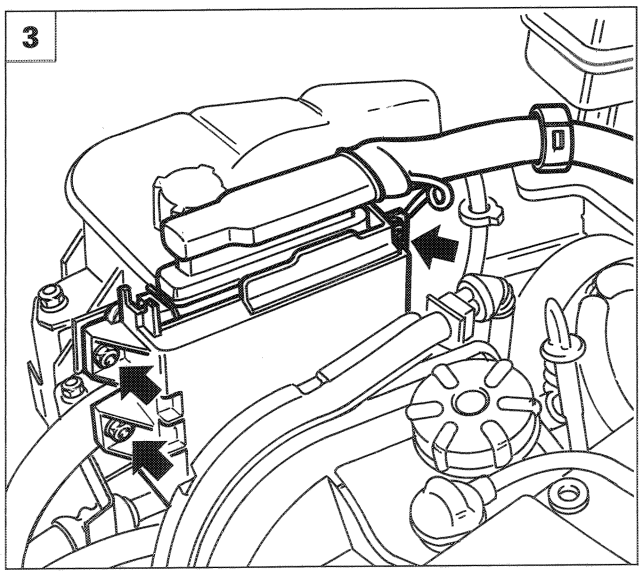

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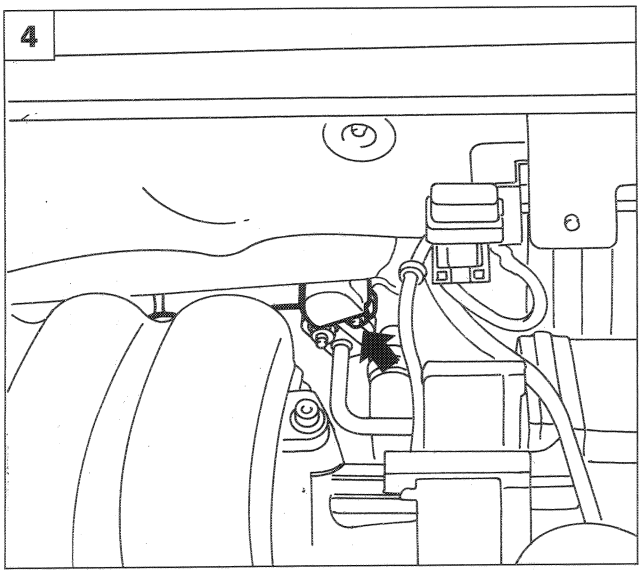


P3M05BH04

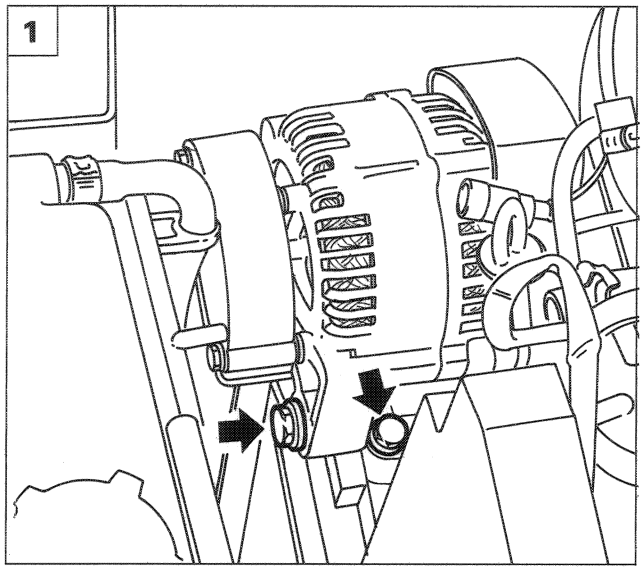
COMPRESSOR

Removing-refitting

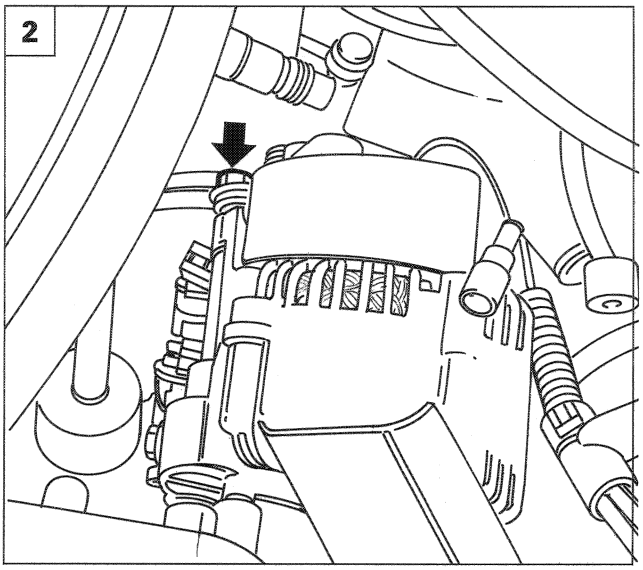
Drain the air conditioning system by connecting the Cleaner 134 equipment pipes as described on the previous pages.

1. Position the vehicle on a lift, disconnect the negative battery lead, remove the right front wheel, then remove the wheel arch liner shown in the diagram, acting on the relevant fixings.
2. Remove the resonator complete with air inlet hose disconnecting the band shown from the butterfly casing and undoing the fixing bolts. Also disconnect the oil vapour recovery pipe from the lower part of the resonator.
3. Disconnect the connector from the injection control unit, release the wiring from the retaining bands, then remove the control unit from the mounting bracket.
4. Disconnect the evaporator/compressor connecting pipe from the connector at the evaporator.

50.



P3M06BH01



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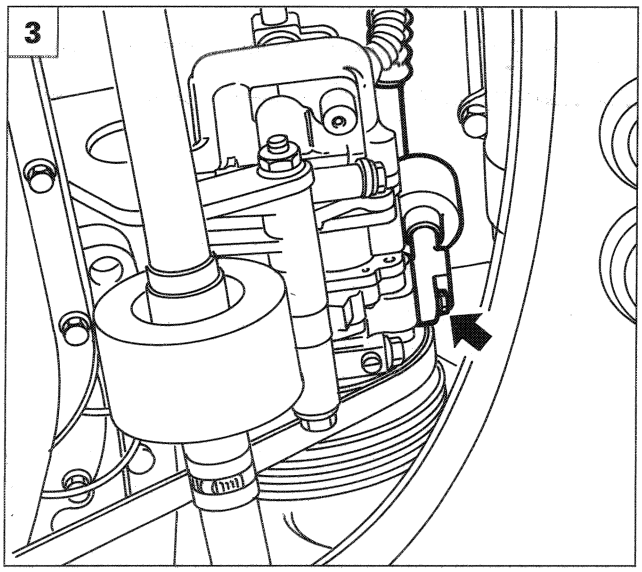
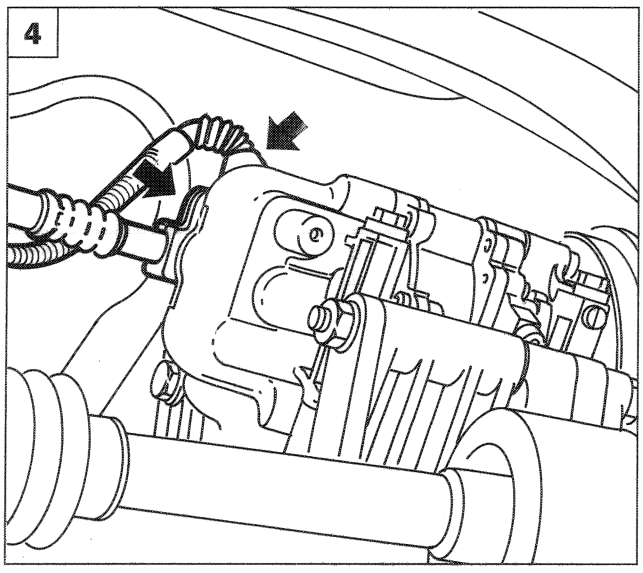


P3M06BH03

1. Loosen the front alternator fixing bolt and the micro-metric tensioning screw for the timing drive belt.
2. Loosen the rear alternator fixing bolt. Move the alternator aside and remove the timing drive belt from the air conditioning compressor pulley.
3. Disconnect the connector for the evaporator/compressor connecting pipe from the compressor. Then remove the actual pipe (the evaporator connector was disconnected previously).
4. Disconnect the connector for the compressor/condenser connecting pipe from the compressor. Also disconnect the compressor supply connector.
5. Loosen the power assisted steering pump drive belt tension acting on the bolts shown in the diagram; then remove the belt from the damper flywheel.



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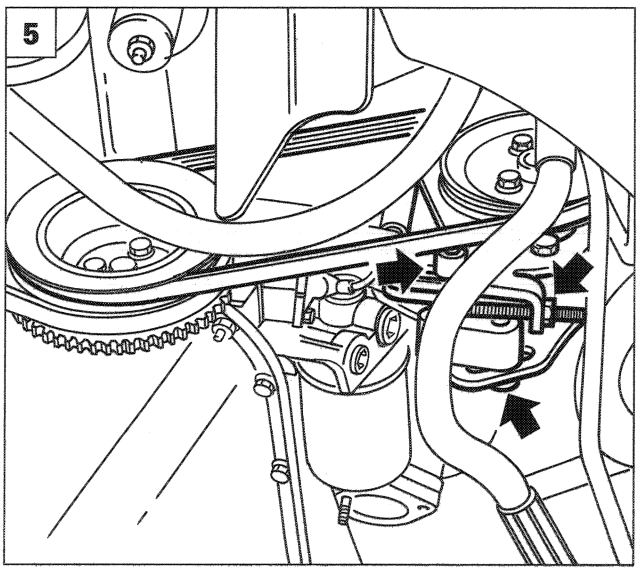

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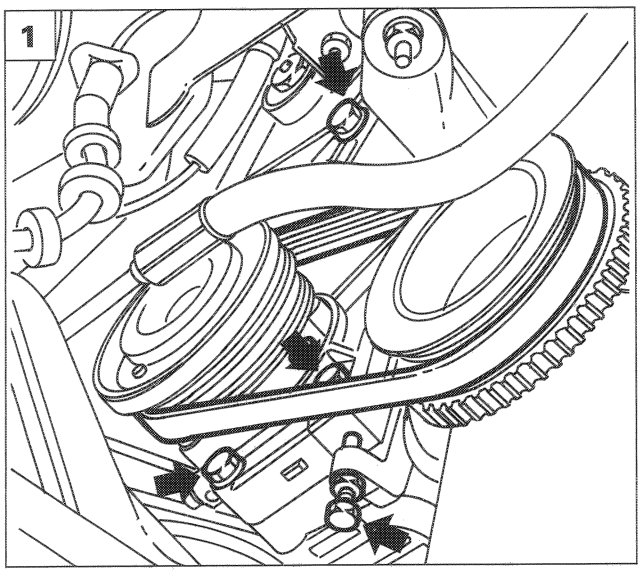
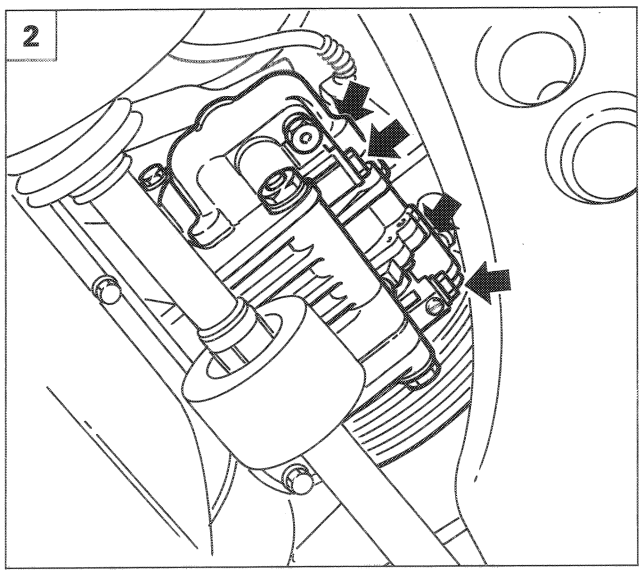


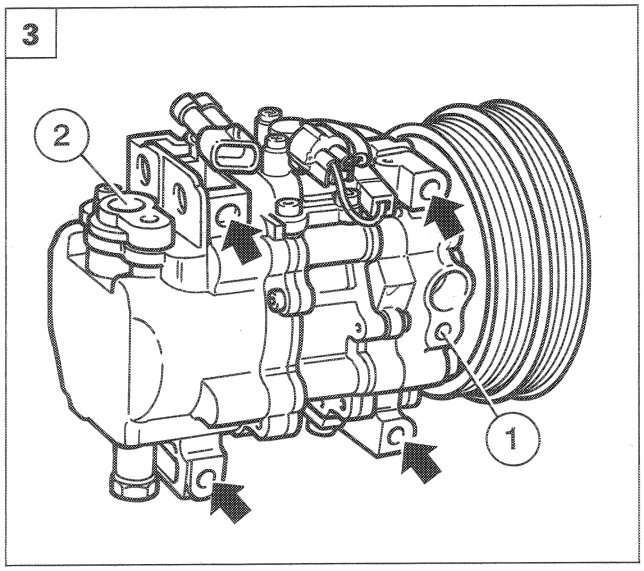
P3M07BH01

1. Loosen the air conditioning compressor drive belt tension acting on the bolts shown in the diagram. Then remove the drive belt from the compressor pülley.



P3M07BH02

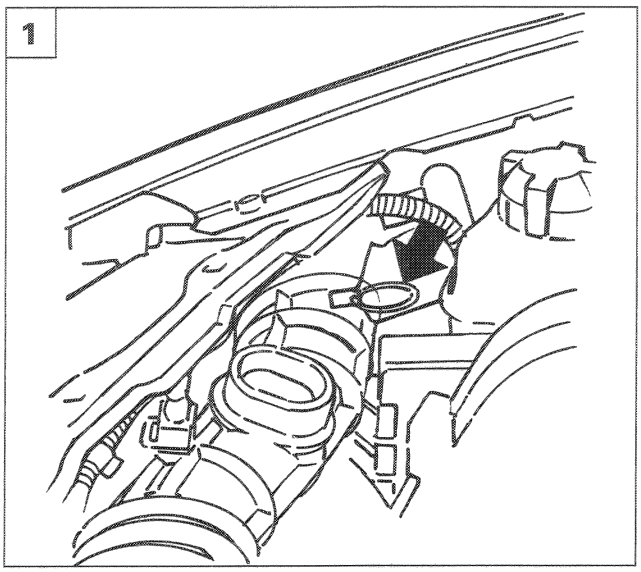
2. Undo the four bolts fixing the compressor to the mounting bracket, then remove the compressor from the vehicle.



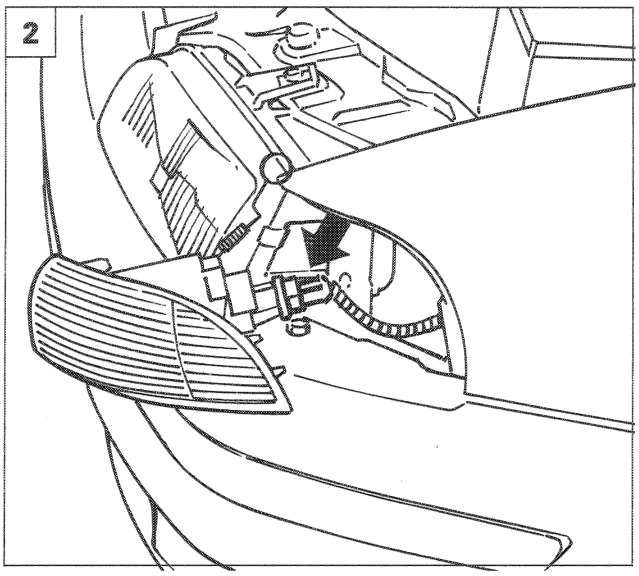
P3M07BH03

3. Air conditioning compressor.
   1. Compressor/evaporator connecting pipe connector
   2. Compressor/condenser connecting pipe connector

   The arrows indicate the points where the compressor is fixed to the mounting bracket.



P3M08BH01



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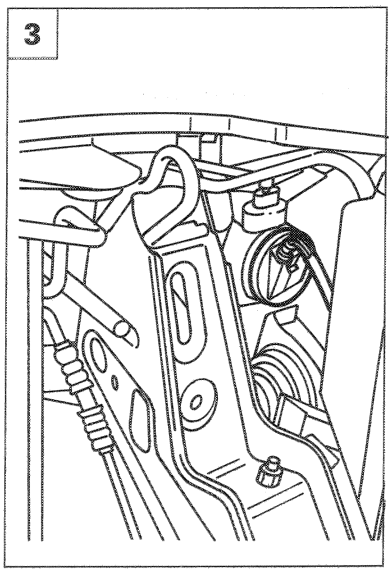

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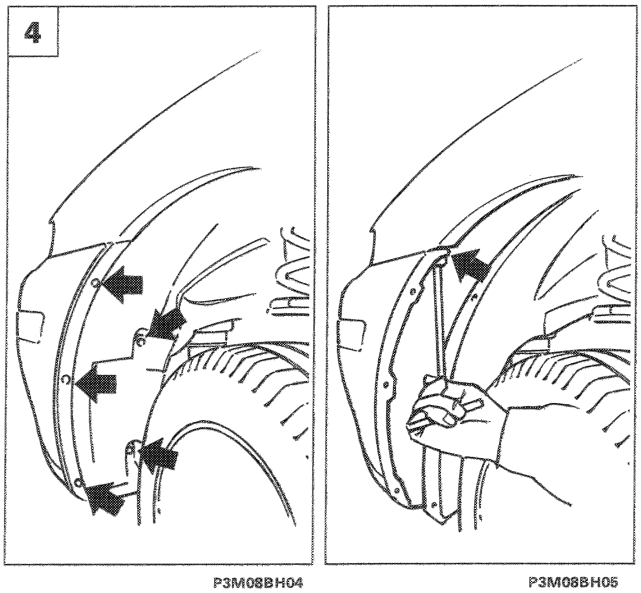


P3M08BH04

P3M08BH05

COMPRESSOR-CONDENSER CONNECTING PIPE

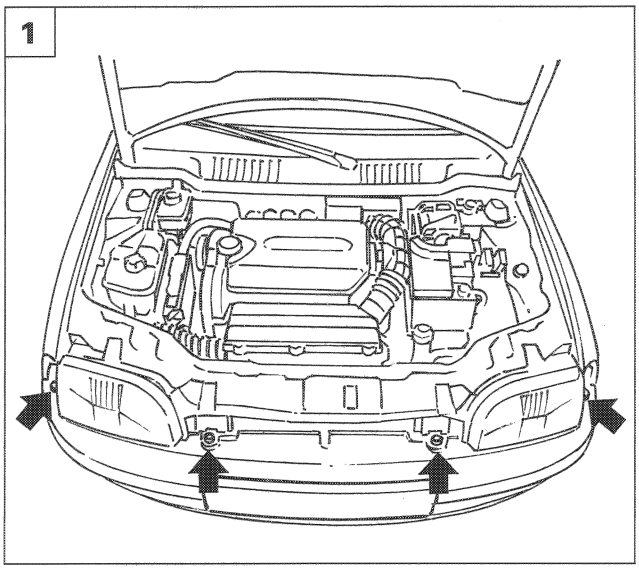
Removing-refitting

Drain the air conditioning system by connecting the Cleaner 134 equipment pipes as described on the previous pages.

Position the vehicle on a lift, disconnect the negative battery lead, then proceed with removing the bumper to gain access to the connector fixing the pipe to the condenser in the following way:

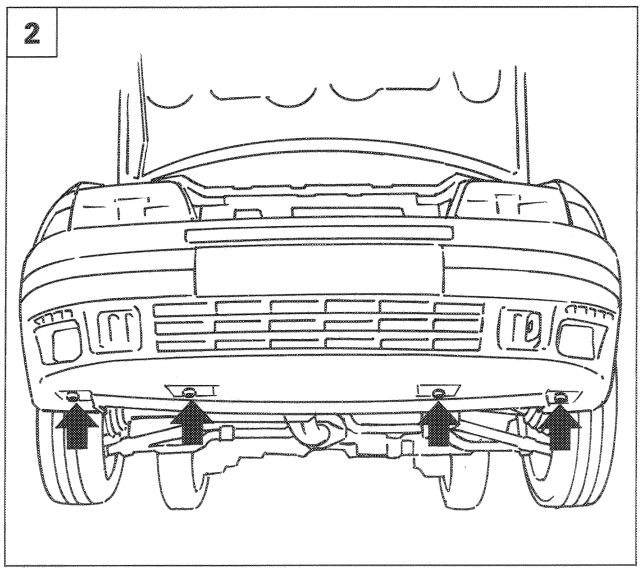
1. release the retaining spring for the front direction indicator;
2. remove the connector shown and remove the direction indicator;
3. Disconnect the supply connectors for the fog lights.
4. Undo the bolts fixing the wheel arch liner, to gain access to the fixing points underneath the bumper (left inset);
   - move the wheel arch liner aside;
   - undo the bolt fixing the bumper to the wing (right inset);

1



P3M09BH01

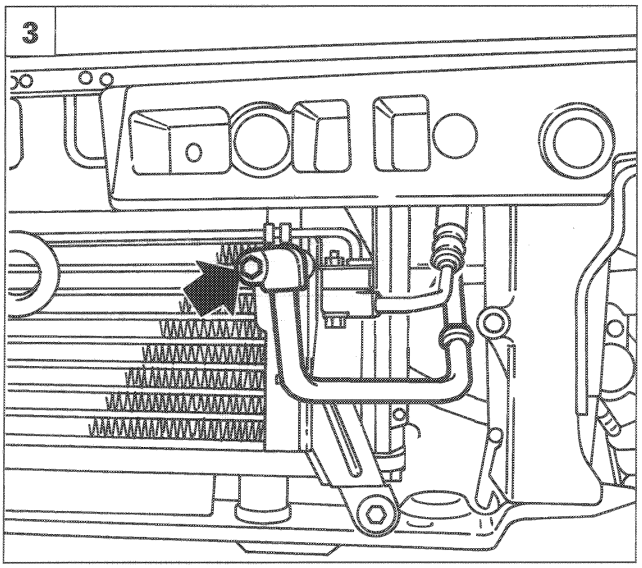
2



P3M09BH02

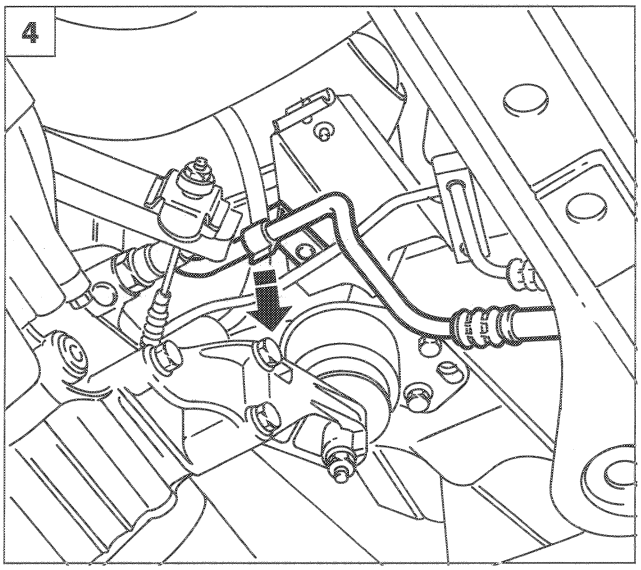
1. Undo the upper bolts fixing the front bumper.
2. Remove the front bumper from the bodyshell, undoing the lower fixing bolts shown in the diagram.
3. Undo the bolt fixing the condenser fluid inlet connector.
4. Release the compressor/condenser connecting pipe from the mounting bracket.

3



P3M09BH03

4



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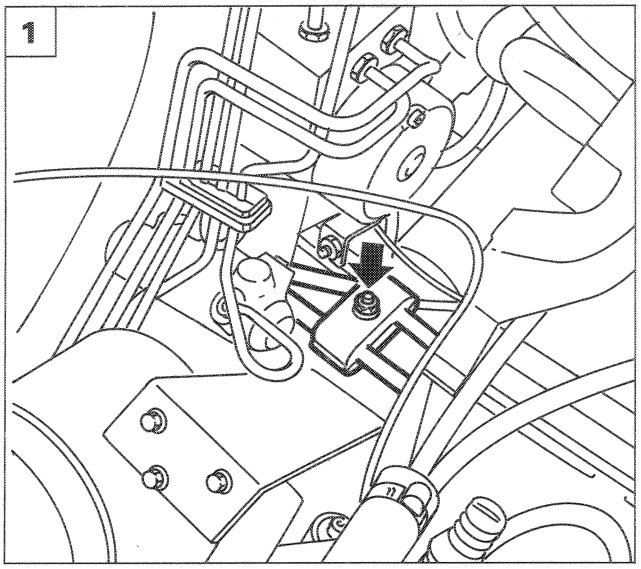
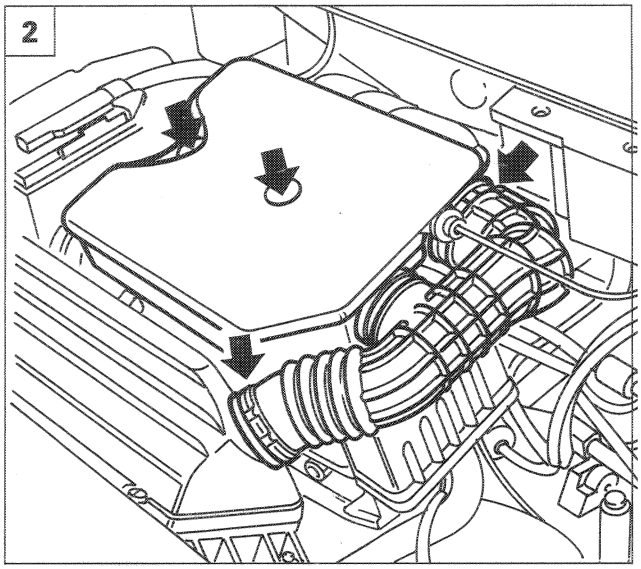


P3M10BH01



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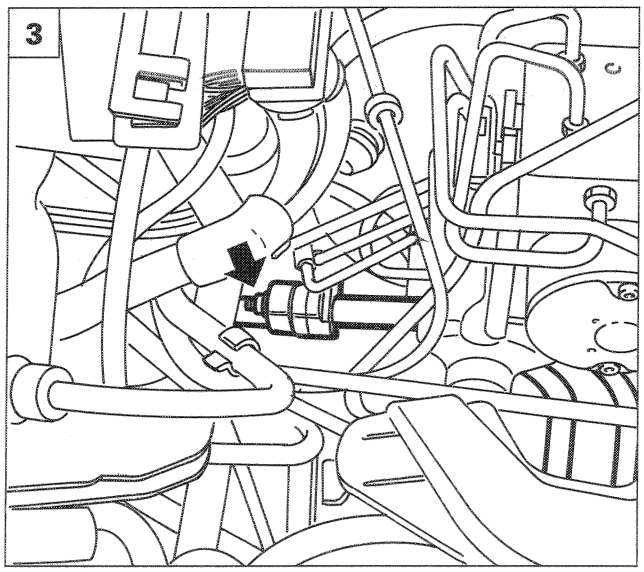

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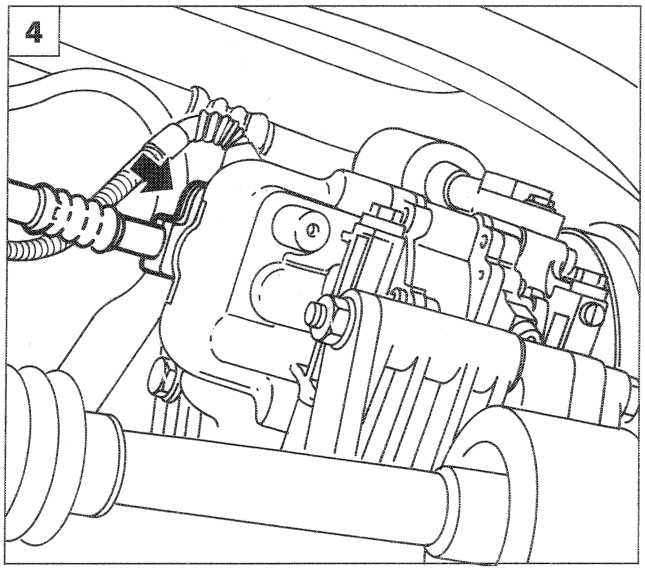
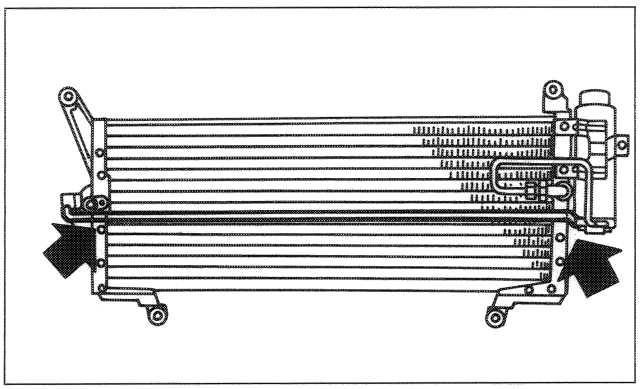


P3M10BH03

1. Undo the nut fixing the bracket joining the two air conditioning system pipes (compressor/condenser - evaporator/pressure switch).
2. Remove the resonator complete with inlet hose acting on the fixings shown in the diagram. Also disconnect the oil vapour recovery pipe from the lower part of the resonator.
3. Undo the connector between the first and second sections of the compressor/condenser connecting pipe by the brake servo. Then remove the section of the pipe which goes from the connector to the condenser.
4. Disconnect the connector for the second section of the compressor/condenser connecting pipe, then remove it from the vehicle.



P3M11BH01

DRIER FILTER-EVAPORATOR CONNECTING PIPE

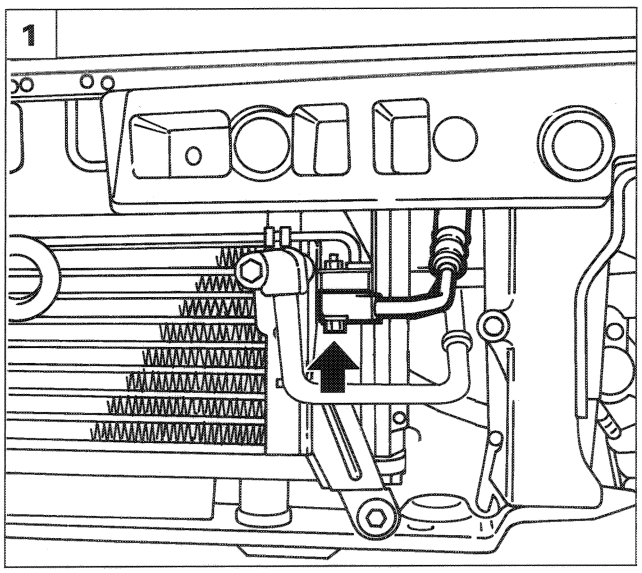
Drain the air conditioning system by connecting the Cleaner 134 equipment pipes as described on the previous pages.

Removing-refitting

The pipe comprises two sections.

1st section

The first section of the drier filter-evaporator connecting pipe is fixed to the condenser. It is only supplied together with the actual condenser.

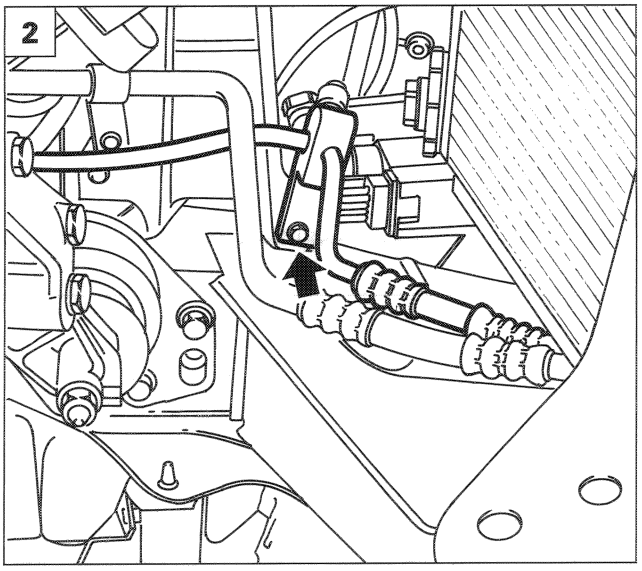


P3M11BH02

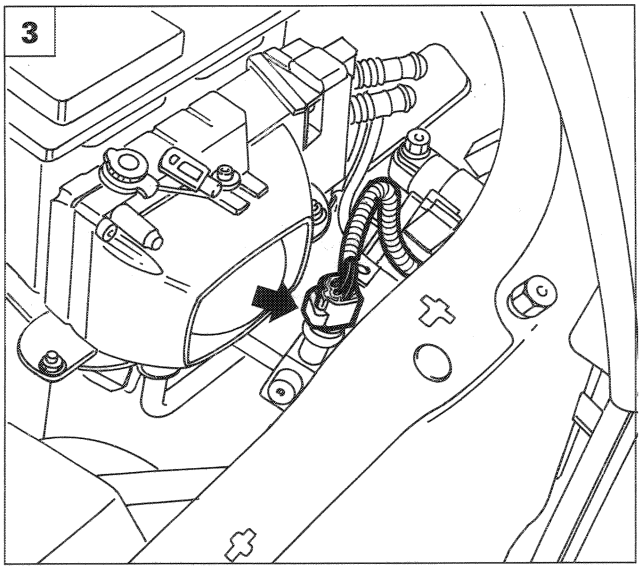
2nd section

Remove the bumper as described in the previous paragraph, then proceed as described below:

1. Disconnect theconnector for the second section of the direr filter-evaporator connecting pipe from the coupling on the condenser.
2. Undo the bolt fixing the four stage pressure switch to the bodyshell.
3. Disconnect the supply connector from the four stage pressure switch.



P3M11BH03



P3M11BH04

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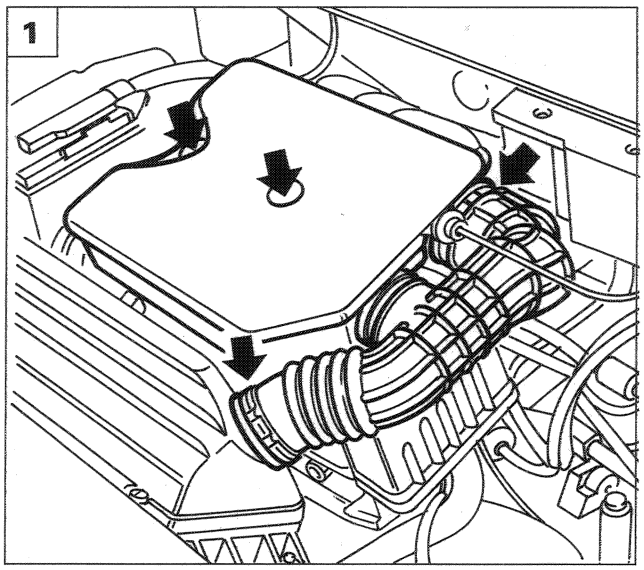
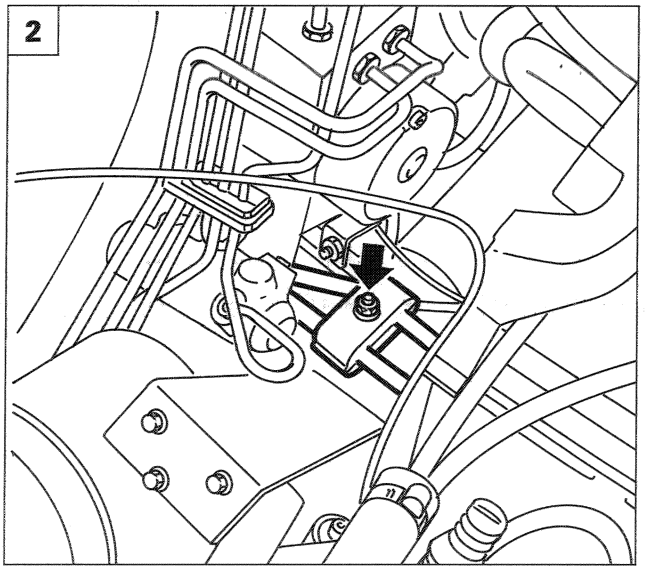


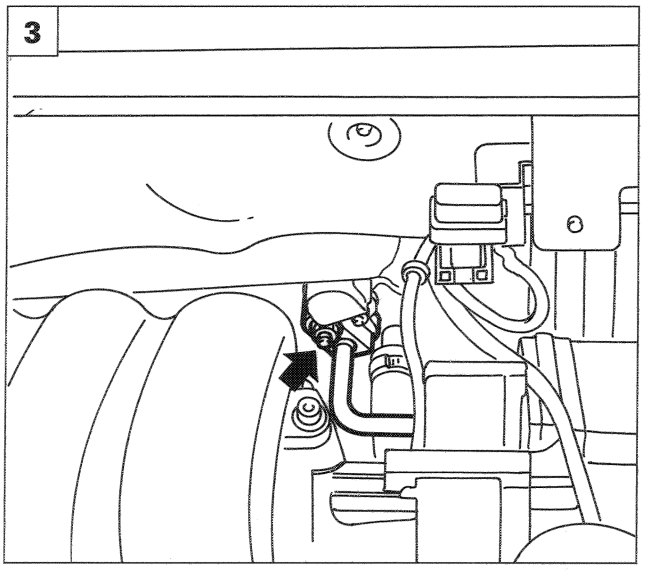
P3M05BH02

1. Remove the resonator complete with inlet hose acting on the fixings shown in the diagram. Also disconnect the oil vapour recovery pipe from the lower part of the resonator.



P3M10BH01

2. Undo the nut fixing the bracket joining the two air conditioning system pipes (compressor/condenser - evaporator/drier filter).

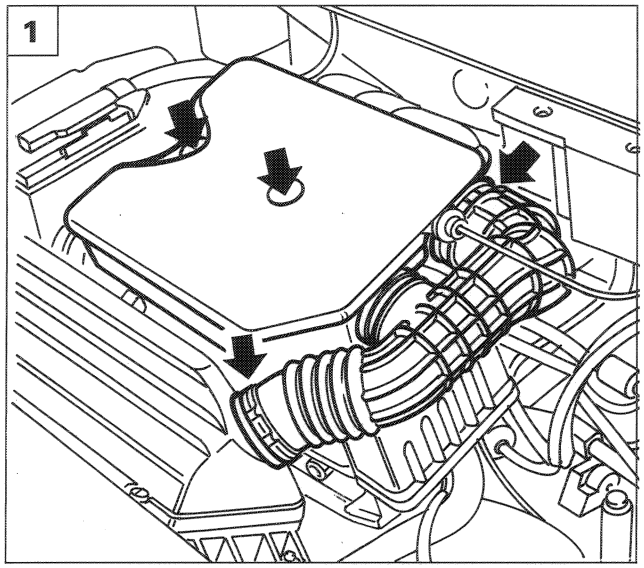


P3M12BH01

3. Disconnect the connector for the pipe connected to the drier filter from the evaporator.

The following items must be removed to allow the pipe to be extracted:

- the anti-theft alarm;
- the battery and drip tray;
- the earth cable on the gearbox;
- the brake servo vacuum pipe.



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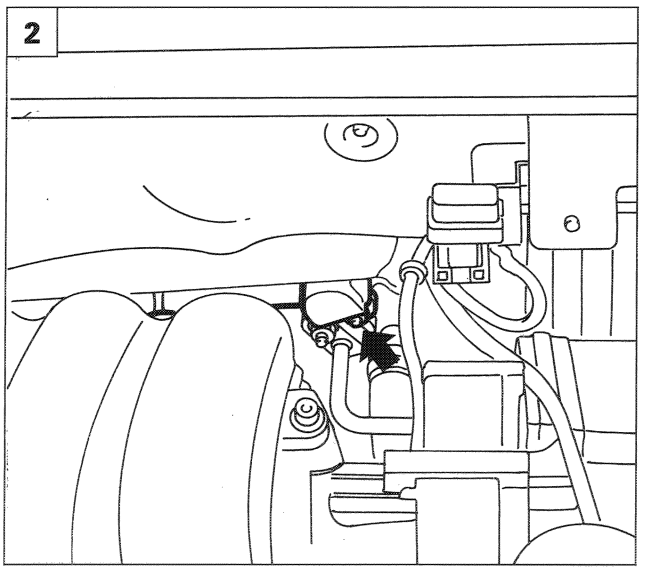

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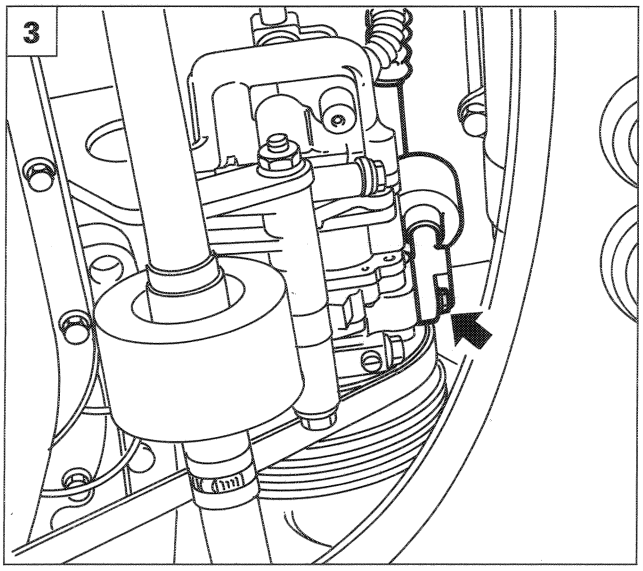


P3M13BH01

EVAPORAATOR-COMPRESSOR CONNECTING PIPE

Removing-refitting

Drain the air conditioning system by connecting the Cleaner 134 equipment pipes as described at the beginning of the section.

Position the vehicle on a lift, disconnect the negative battery lead, then proceed as follows:

1. Remove the resonator complete with inlet hose acting on the fixings shown in the diagram. Also disconnect the oil vapour recovery pipe from the lower part of the resonator.

2. Disconnect the connector for the pipe connected to the compressor from the evaporator.

3. Disconnect the connector for the connection pipe to the evaporator from the compressor. Then remove the pipe.

FOUR STAGE PRESSURE SWITCH

The four stage pressure switch carries out the following functions:

- dis-engaging the compressor electro-magnet coupling if the pressure of the fluid is below around 2.45 bar (stage 1) or above around 28 bar (stage 4);
- switching on the radiator/condenser cooling fan first speed if the pressure of the fluid is above 15 bar (stage 2);
- switching on the above fan second speed if the pressure of the fluid is above 20 bar (stage 3).

The pressure calibration values (stages) are summarized in the table below:

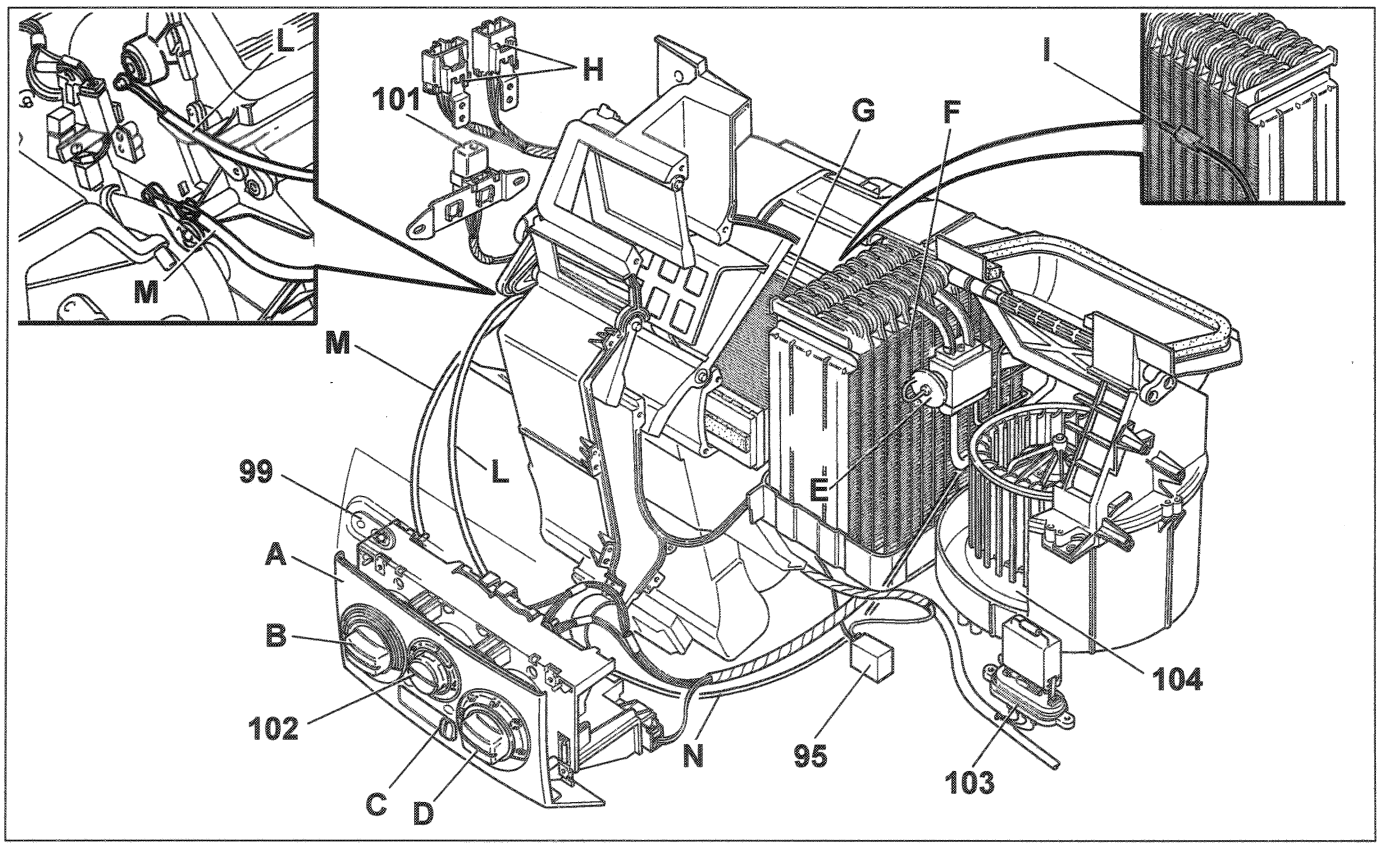
CALIBRATION VALUES (bar)			
STAGE	**OPENS**	**CLOSES**	**DIFFERENTIAL**
I	2,45 ± 0,35	3,5 MAX	-
II	-	15 ± 1	4 ± 1
III	-	20 ± 1,2	4 ± 1
IV	28 ± 2	-	6 ± 2

MANUAL HEATER/AIR CONDITIONER

The heater/evaporator/distributor unit for the manually-controlled air conditioner is shown in the figure. Air blending and distribution functions are controlled by ordinary knobs on the central facia (A), as follows:

B: air mixer knob.
102: fan speed switch control knob.
D: air distribution knob.

The knobs act directly on the mixer flap and distribution flaps via cables (L) and (M), while switch (102) adjusts fan speed by means of resistance divider (103) in the air shroud.
Cursor (C) for activating the recirculation function and button (99) for activating the air conditioner are also present on the facia.
As with the heated version, the recirculation flap is controlled by flexible cable (N).
A compartment in the air shroud between the fan and unit case houses evaporator (F). Self-regulating expansion valve (F) is located on the evaporator inlet pipe.



P3M01AH01

A Control panel
B Air mixer knob
C Recirculation activation cursor
D Air distribution selection knob
E Expansion valve
F Evaporator
G Heater radiator
H Connectors
I Air temperature sensor on evaporator
L Mixer flap control cable
M Distribution flap control cable
N Air intake flap control cable
95 Compressor control unit
99 Air conditioner activation button
101 Relay for fan first speed activation upon air conditioner activation
102 Fan speed selection switch (104)
103 Resistance divider for fan speed regulation (104)
104 Electric fan

The system is equipped with a DENSO fixed displacement scroll compressor. The compressor is activated/deactivated by an electronic control unit, which records the temperature of evaporator (F) by means of an N.T.C. temperature sensor (I).

Two connectors fastened to a bracket on the left hand wall of the heater unit are used to connect the unit electrical system to the other air conditioner devices, located in the engine bay, and to the vehicle electrical system.

Relay (101) located on the left hand side of the unit activates the first fan speed when the air conditioner is turned on by means of button (99).

R134a gas for air conditioning system

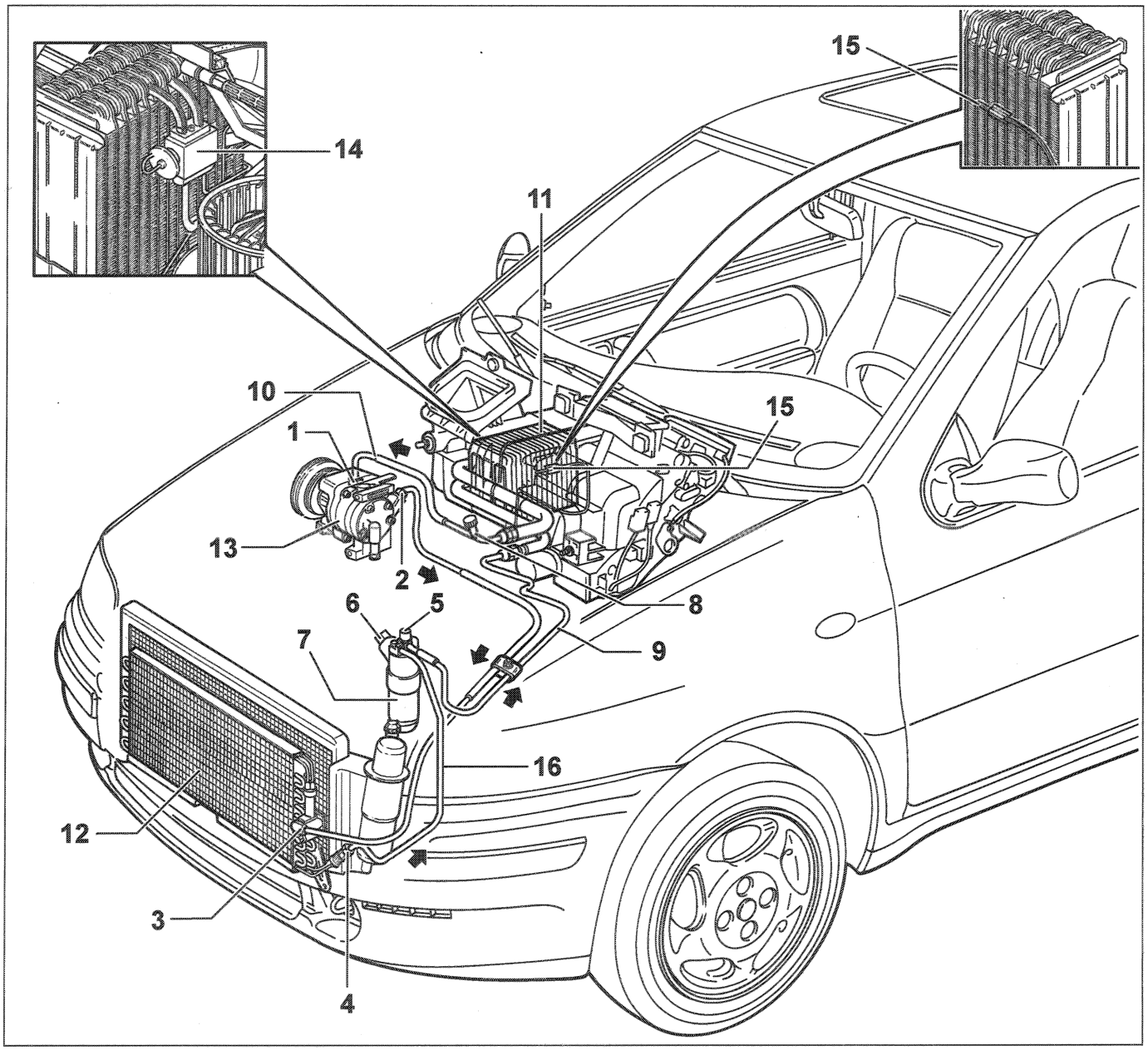
The gas used in this system is R134a (tetrafluoroethane), approved for use by EC ennvironmental legislation.

The R134a gas is not used in systems designed for Freon, because their different molecular compositions make certain parts permeable (e.g. seals, hoses etc.). For this reason, parts of systems designed to run on the new gas ARE NOT INTERCHANGEABLE WITH parts designed to run on Freon UNDER ANY CIRCUMSTANCES.

The system must therefore be charged/ discharged using only approved equipment (Cleaner 134 produced by ICF) and following the procedure in Section 50 of the basic Punto manual.

The amount of R134a gas required for this system is: 650 ± 25 cc.

DIAGRAM SHOWING AIR CONDITIONING SYSTEM COMPONENTS



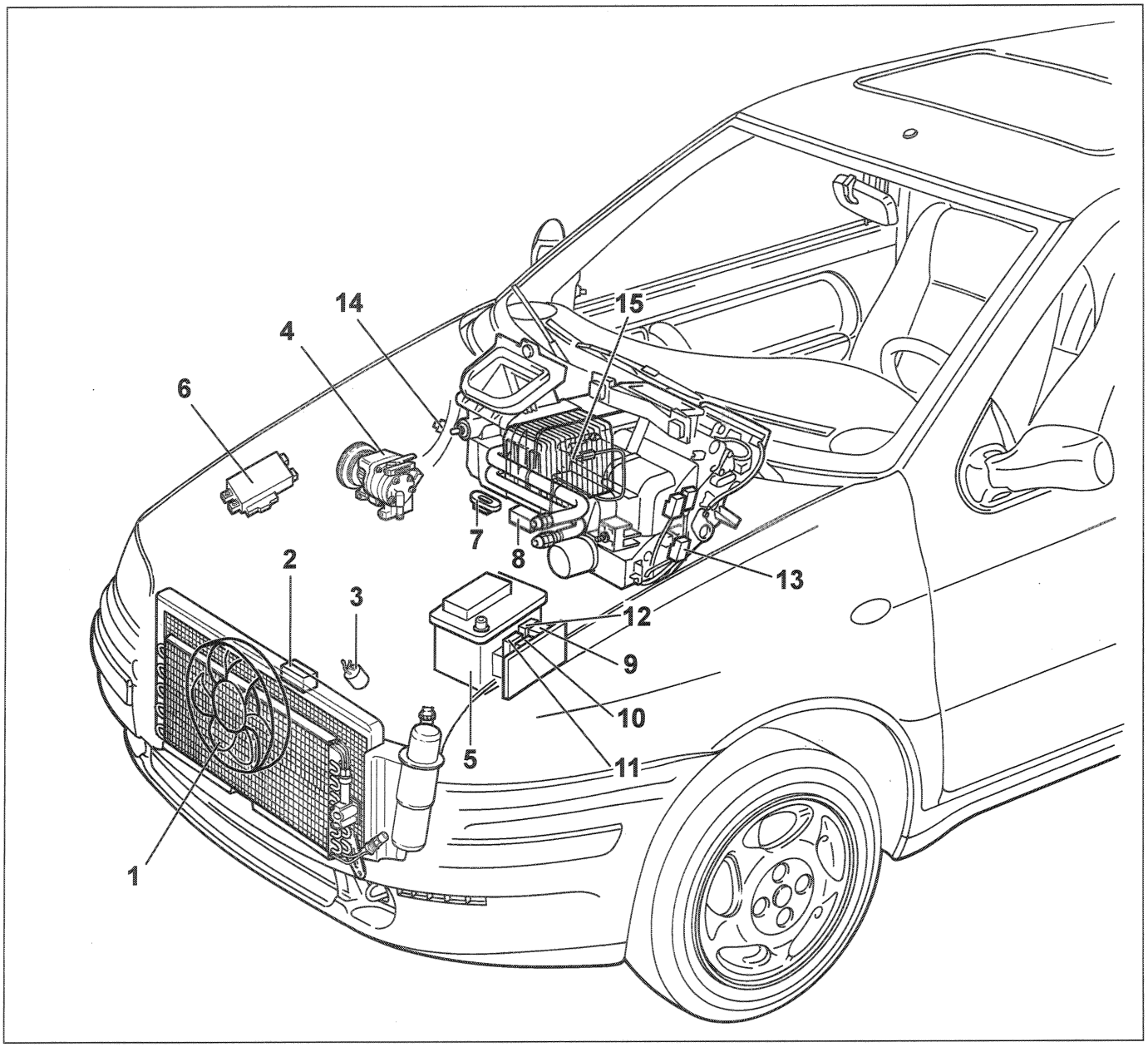
P3M03AH01

1. Gas INLET fitting (low pressure)
2. Gas OUTLET fitting (high pressure)
3. Condenser inlet fitting
4. Condenser outlet fitting
5. HIGH PRESSURE fitting for connecting recharging equipment
6. Four-level pressure switch
7. Dehydrating filter
8. LOW PRESSURE fitting for connecting recharging equipment
9. High pressure pipe
10. Low pressure pipe
11. Evaporator
12. Condenser
13. Compressor (Denso)
14. Expansion valve
15. Temperature sensor
16. Condenser inlet pipe

Expansion valve (14) is fitted directly into the evaporator inlet fitting. The heater unit must be removed from the vehicle to replace.
N.T.C. temperature sensor (15) is fitted downstream of the evaporator directly onto the evaporator tabs by means of a retaining clip.

50.

LOCATION OF AIR CONDITIONING SYSTEM ELECTRICAL COMPONENTS



P3M04AH01

1. Radiator/condenser cooling fan
2. Resistor for first fan speed
3. Four-level pressure switch
4. Air conditioner compressor
5. Battery
6. Injection ECU
7. Resistance divider for air conditioner fan speed regulation
8. Compressor control unit
9. Engine cooling fan second speed relay
10. Compressor coupling activation relay
11. Engine cooling fan first speed relay
12. 7.5A fuse for compressor coupling
13. Relay for fan first speed activation upon air conditioner activation
14. Air conditioner fan coupling
15. Air temperature sensor on evaporator

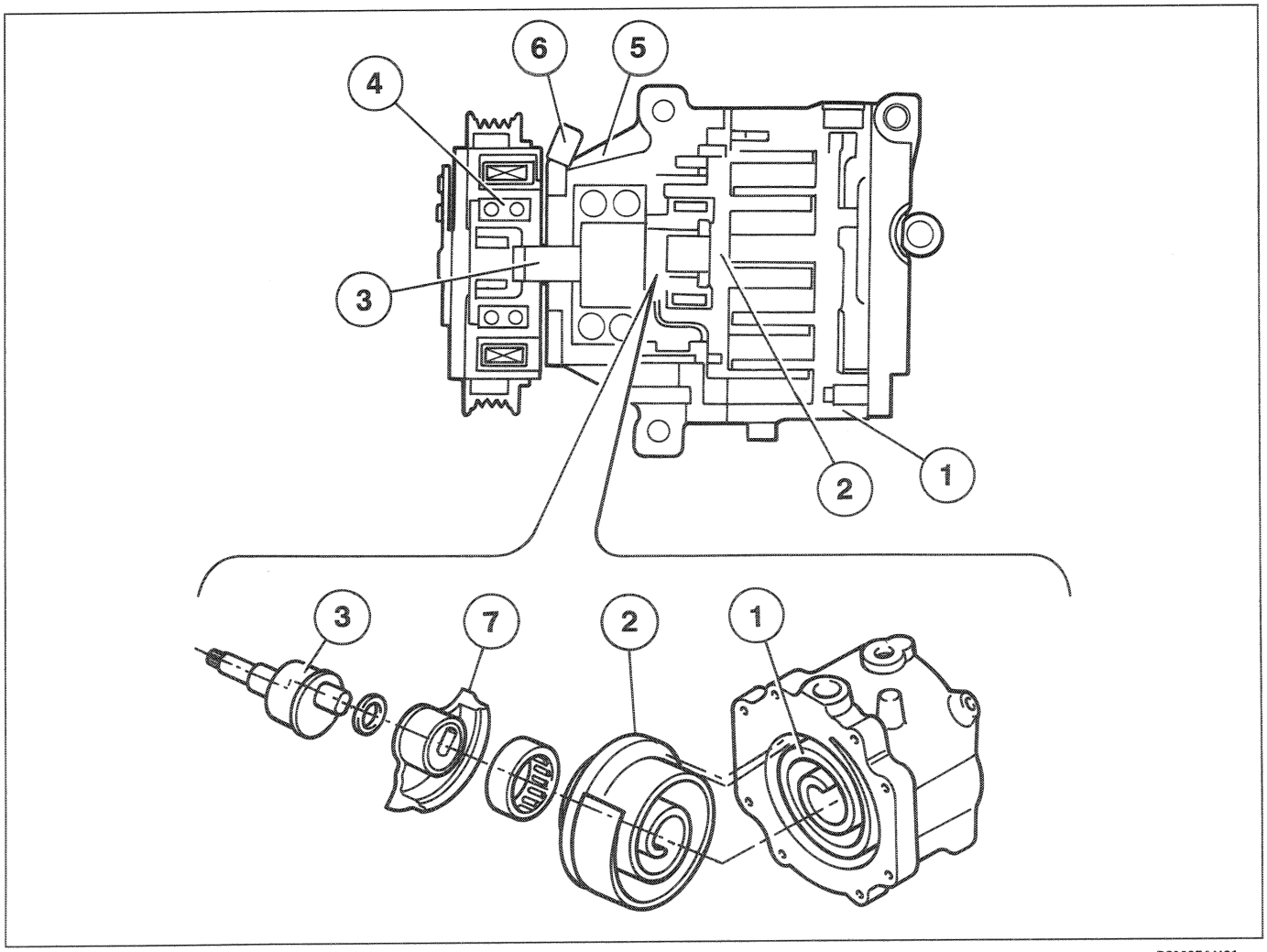
SCROLL COMPRESSOR SC08

The compressor fitted to this system is SCROLL type and equipped with a system for deactivation when the evaporator cools to levels when freezing could occur.

It consists of a fixed screw (1) (case) and an orbiting screw (2). The reciprocal movements of both screws, achieved by means of cam (3) connected to the pulley, creates a chamber whose volume falls during rotation to bring about compression.

Because this compressor contains only two moving parts, it offers the following advantages:

- no seals are required;
- absence of radial and axial leaks;
- low charge loss due to lack of internal valves and pipes;
- scroll wear improves the seal between scrolls and sides;
- noise levels are lower due to the lack of valves, banging and pulsing.



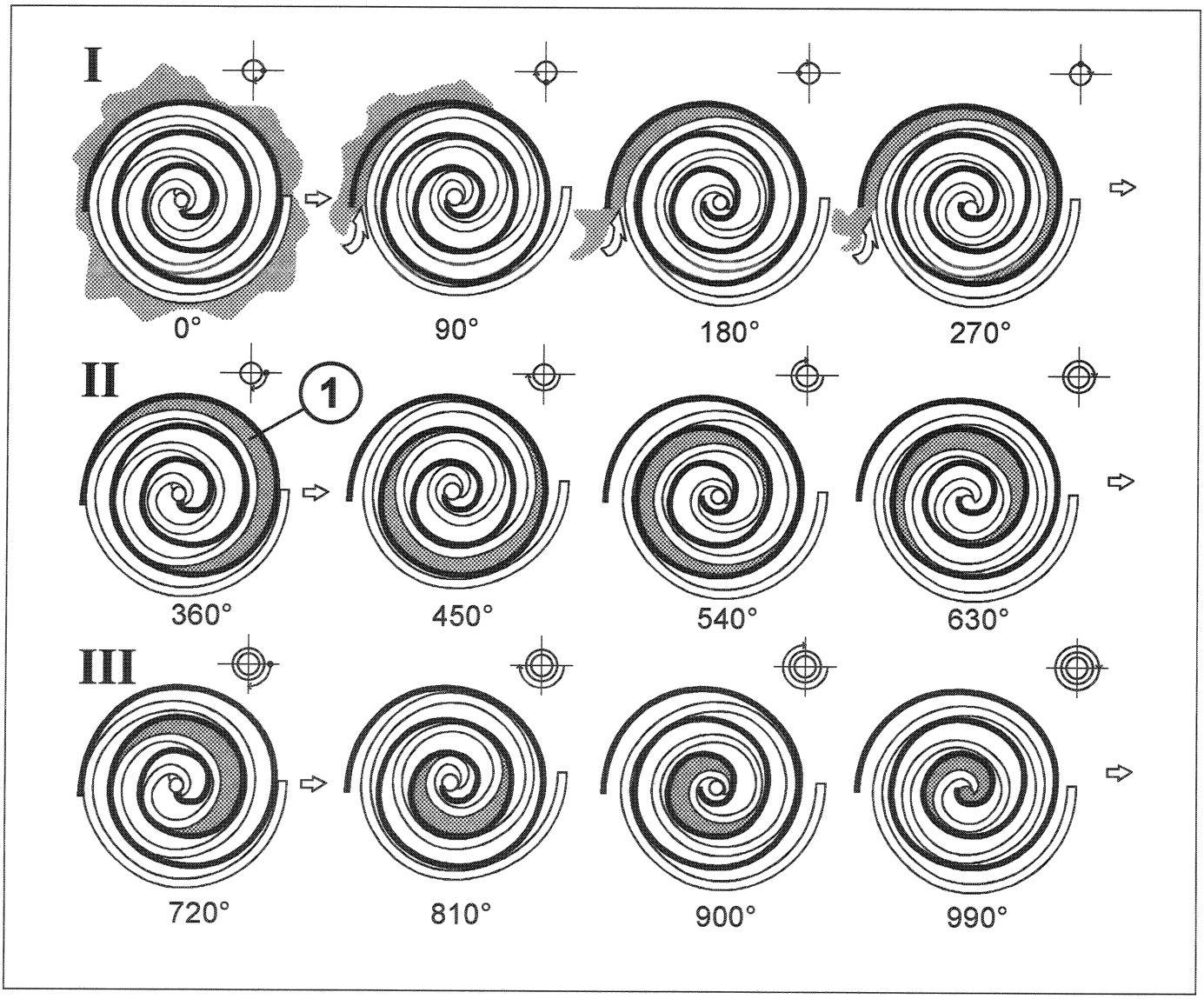
P3M05AH01

1. Fixed screw (case)
2. Orbiting screw
3. Shaft
4. Shaft sealing ring
5. Guard
6. Compressor supply electrical connector
7. Balance mass

50.

Compression mechanism

Contact between the compressor fixed screw and the orbiting screw causes the creation of chamber (1), which contains trapped gas. Gas volume tends to drop as the orbiting screw completes its rotation. As the diagram shows, the compression chamber alternately opens to be supplied with gas, closes for gas transport and then opens again (the outlet fitting) to release gas under pressure. The volume enclosed by both screws decreases to bring about compression of the trapped gas. Pressure increases steadily until the gas reaches the central area where it is at operating pressure. The gas is now released through the outlet fitting to the condenser.



P3M06AH01

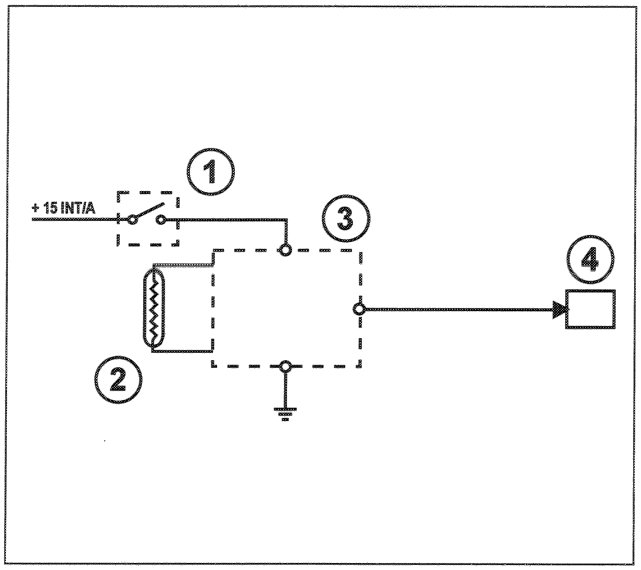
The sequence shows the various stages of gas compression; compression takes place once the orbiting screw has turned through three complete revolutions. Because the cycle is continual, as one compression cycle ends, another gas intake cycle begins and the previous stage ends with the emergence of gas under pressure.

OPERATION OF COMPRESSOR ELECTRONIC CONTROL UNIT

The compressor activation/deactivation control system is controlled by an electronic control unit (electronic thermostat) (3), which acts on the compressor clutch according to evaporator temperature, recorded by N.T.C. sensor (2).

If the evaporator temperature reaches levels below 3.5 °C, the electronic unit disconnects the compressor coupling relay and thus the compressor coupling.

The compressor coupling is disconnected in the case of sudden acceleration and when the engine temperature reaches 107 °C, to avoid overheating. These operations are carried out by the electronic injection control unit.



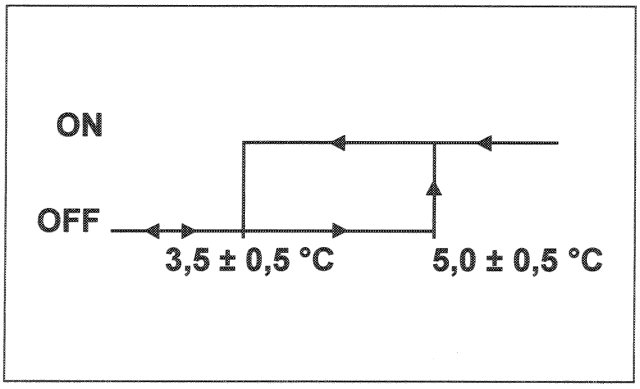
P3M07AH01

1. Air conditioner activation switch
2. Air temperature sensor on evaporator
3. Compressor ECU (electronic thermostat)
4. Four-level pressure switch

Air temperature sensor on evaporator

The temperature sensor is an N.T.C. resistor held in place by a retaining clip on the the evaporator tabs, on the side downstream from the air flow, and is not accessible from outside.

The control unit deactivates the compressor according to air temperature recorded at the evaporator outlet. Its setting is as follows:



P3M07AH02

The control unit activates the coupling when the air temperature exceeds 5.0 ± 0.5 °C and deactivates it when the temperature drops below 3.5 ± 0.5 °C.

MAINTENANCE AND SERVICE OPERATIONS

Lubricant oil

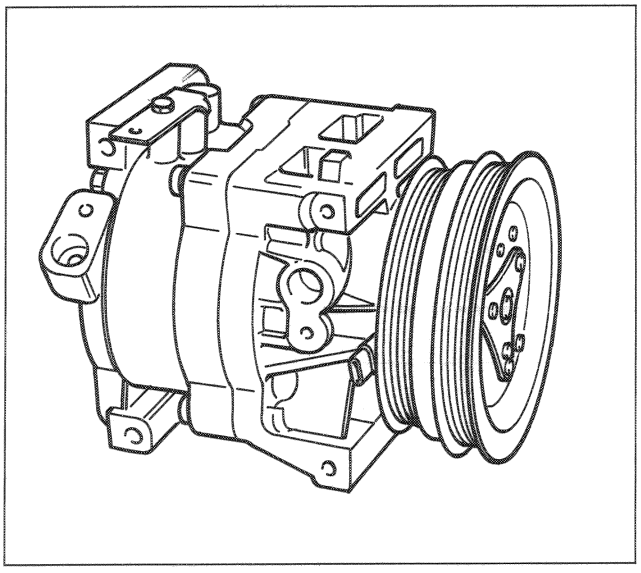
The compressor is lubricated with about 80 ± 20 cc of ND8 fluid. Use only ND8 fluid when topping up or changing the fluid.

In the case of service operations which require changing of certain system components such as the condenser or evaporator, add 40 cc of fluid for each part replaced. When the compressor is changed, the new compressor is supplied with the required quantity of fluid. For this reason, remove the same amount of fluid as is left in the system before fitting to the vehicle. Proceed as follows to do this:

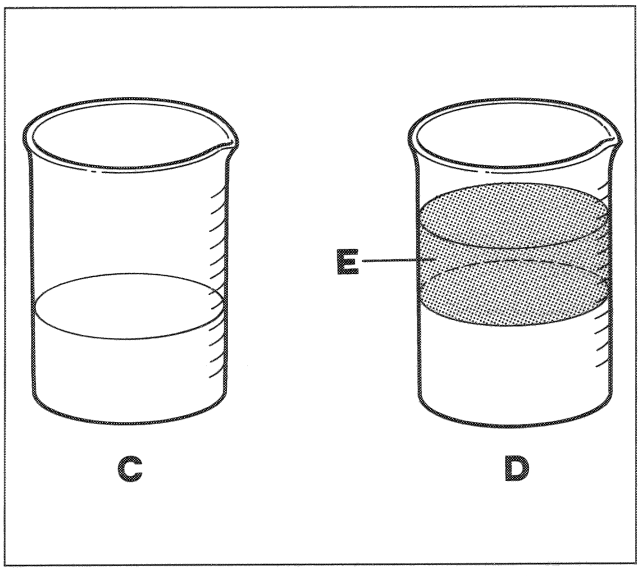
New compressors are supplied pressurised with nitrogen to prevent the entrance of moisture and impurities. When fitting, it is therefore necessary to remove the inlet and outlet fitting plugs slowly, with the compressor positioned as shown in the figure below (with the cover turned upward).

1. Pour the amount of fluid present in the compressor to be replaced into a graduated burette (C). Take care to drain out all the contents.
2. Pour the amount of fluid present in the new compressor into a graduated burette (D). Take care to drain out all the contents.
3. Remove the excess fluid (E) corresponding to the difference between the amount of fluid in burette (C) and burette (D) (E = D - C).

The fluid is strongly hygroscopic: avoid leaving cans open.
Avoid leaving the compressor or any other part disconnected from the system for longer than necessary.
Do not overturn or tilt the compressor.



P3M08AH01

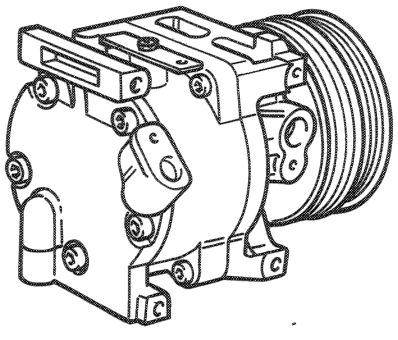


P3M08AH02

Calculating the amount of lubricant fluid to be added to the compressor

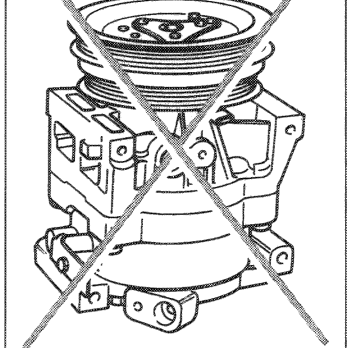
Whenever the compressor is removed or moved, it should be ositioned with the cover turned up as shown in fig. 1 to prevent the oil leaking out and contaminating the compressor.

1



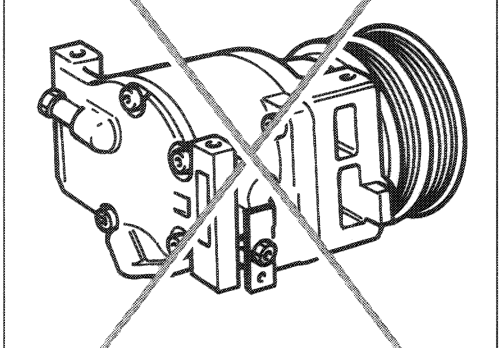
P3M09AH01

2



P3M09AH02

3



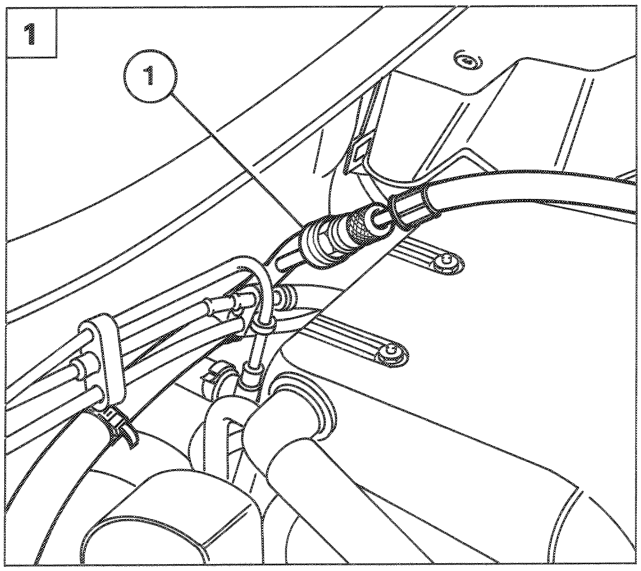
P3M09AH03

Before carrying out operations that could lead to loss of cooling, the air conditioning system should be drained. During this operation, use gloves and goggles to protect against fluid jets. The system is easier to drain if the engine and the system have been running for at least 10 - 15 minutes.

NOTE *Use green or black o-rings when refitting. Ensure they are the new type, i.e. resistant to R134A coolant. Never use old black o-rings because they are permeable to the coolant.*

NOTE *When removing system lines, it is advisable to seal disconnected pipe ends unless refitted immediately to prevent the entry of moisture and foreign bodies.*

1



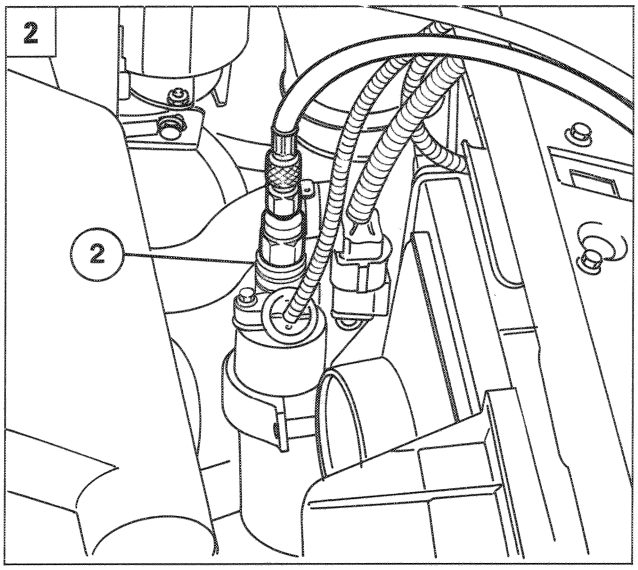
P3M09AH04

Connecting equipment to vehicle air conditioning system

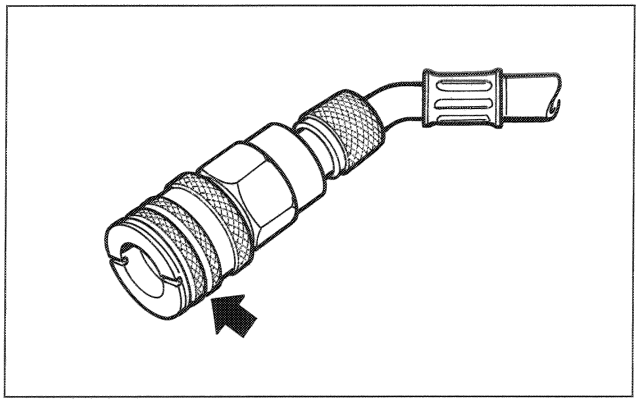
Carry out the following operations in order:

1. Check that the equipment cocks are closed and the electrical controls are set to 0 (off), then fit the blue hose fitting to needle valve (1) welded to the section of pipe connecting the evaporator to the compressor.

50.



P3M10AH01

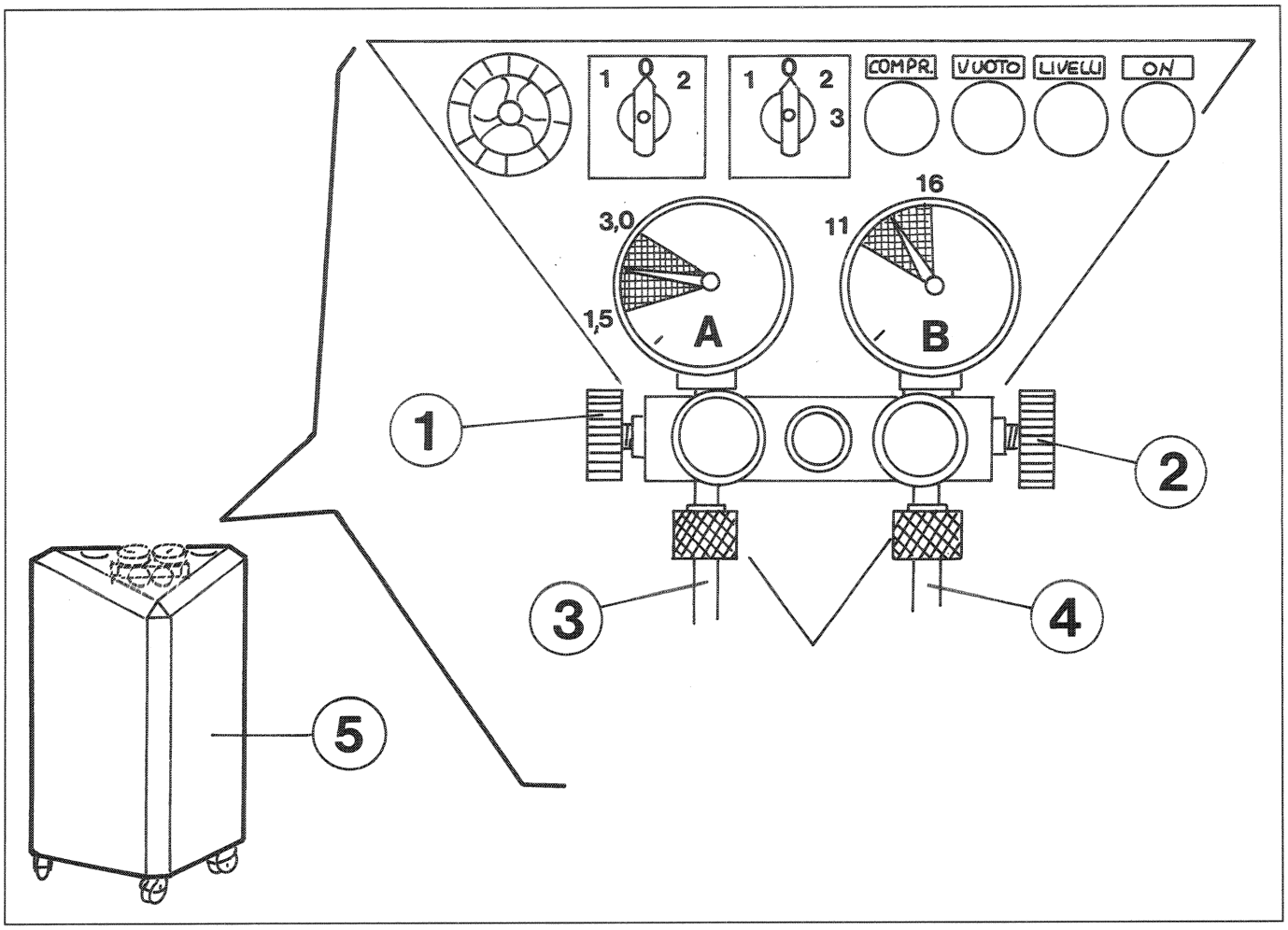


P3M10AH02

2. Fit the red hose fitting to needle valve (2) welded to the four-level pressure switch fitting.

NOTE *Move the arrowed ring-nut fully upward before inserting the fitting in the needle valve.*

Checking air conditioning system pressure



P3M11AH01

(A) low pressure circuit pressure gauge
(B) high pressure circuit pressure gauge

1. Low pressure cock (LOW)
2. High pressure cock (HIGH)
3. Blue low pressure pipe
4. Red high pressure pipe
5. Cleaner 134

Check pressures using a Cleaner 134 device with the engine running (speed about 1500 rpm) and with outdoor temperature of 20 - 28 °C, after connecting the lines as shown on the previous page. Under these conditions, the pressure gauge indicators should show the following readings:

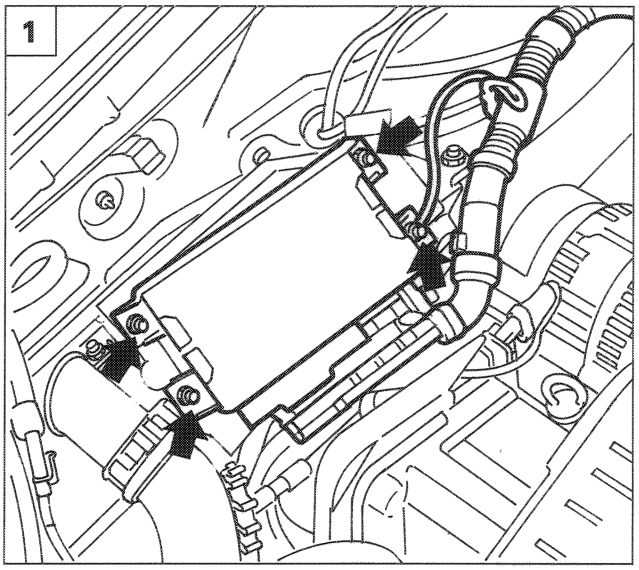
low pressure circuit (pressure gauge A): 1.5 - 3.0 bar

high pressure circuit (pressure gauge B): 11 - 16 bar

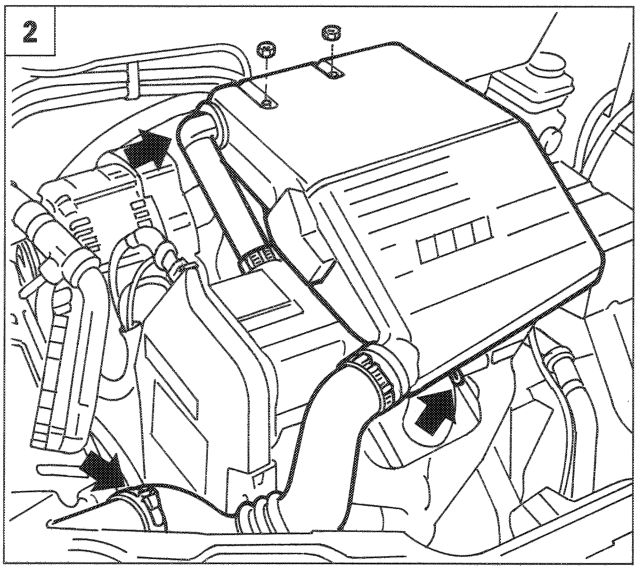
NOTE *The radiator/condenser cooling fan comes on at a high pressure circuit pressure level of 15 - 16 bar.*

Amount of coolant R 134 A contained in the system: 650 ± 25 cc.

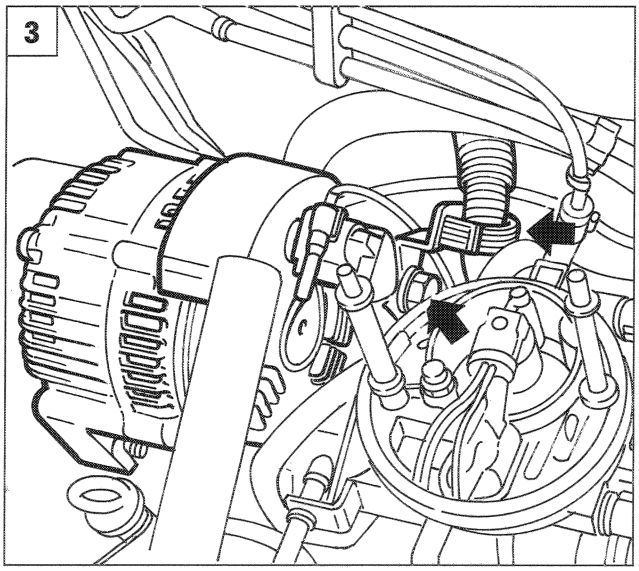
50.



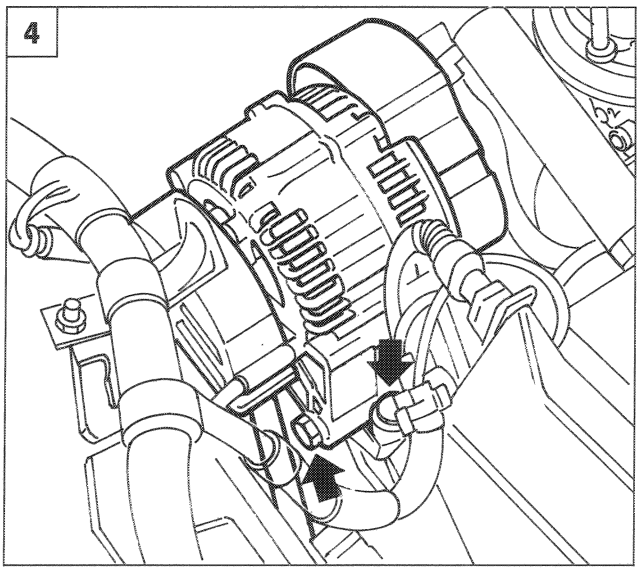
P3M12AH01



P3M12AH02



P3M12AH03



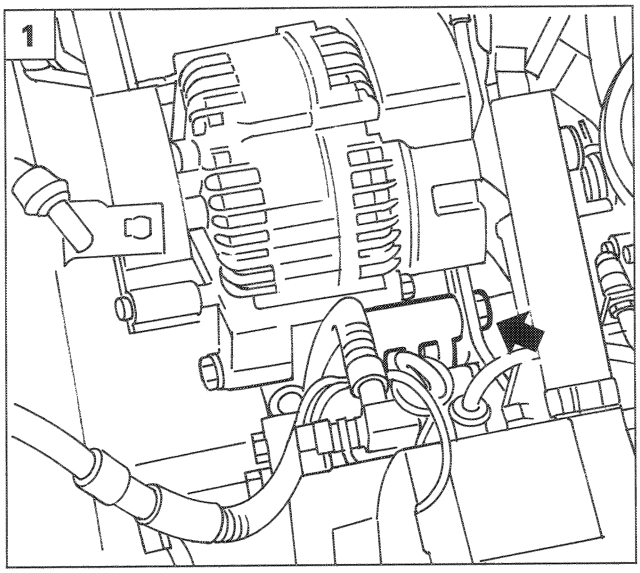
P3M12AH04

COMPRESSOR

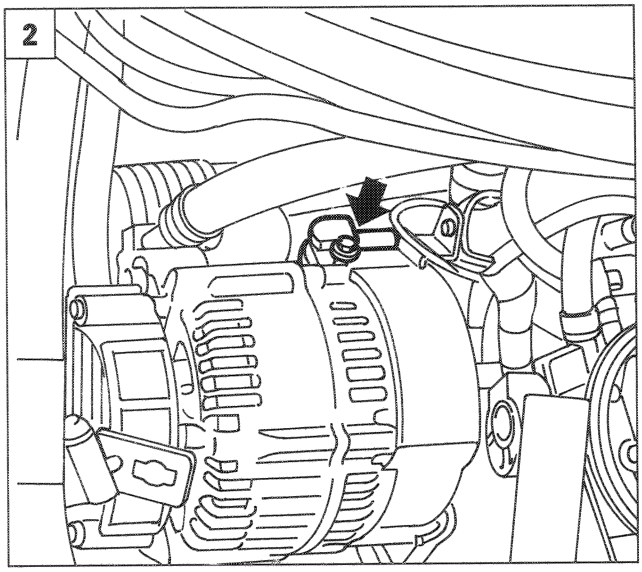
Removing-refitting

Drain the air conditioning system by connecting the hoses of a Cleaner 134 device, as described previously.

1. Position the vehicle on a lift, disconnect the battery negative terminal, then disconnect the injection control unit connector. Release the wiring from the retaining clip, then remove the control unit from its bracket by undoing the retaining nuts shown in the figure.
2. Remove the air cleaner complete with intake line by undoing the fasteners shown in the figure.
3. Release the leads shown from the retaining clip, then loosen the rear alternator retaining bolt.
4. Loosen the front alternator retaining bolt and the micrometer screw shown in the figure. Move the alternator aside and prise the drive belt from the air conditioner pulley.



P3M13AH01



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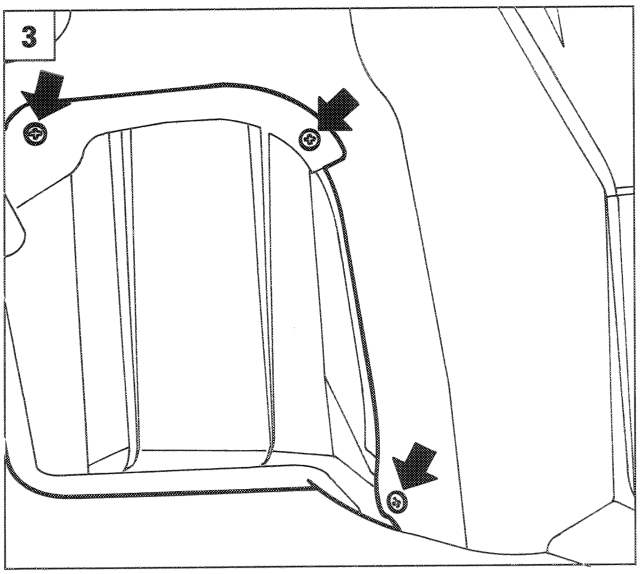

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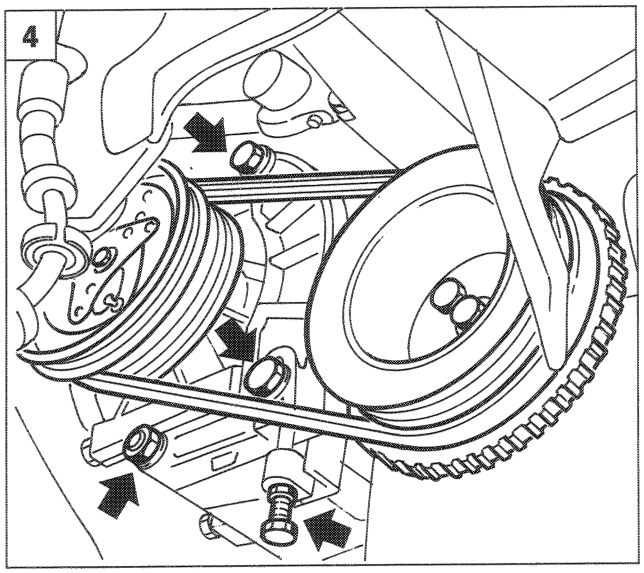
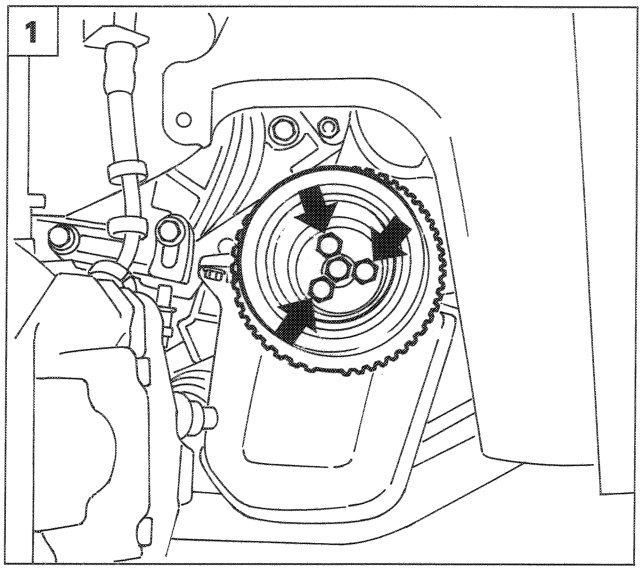


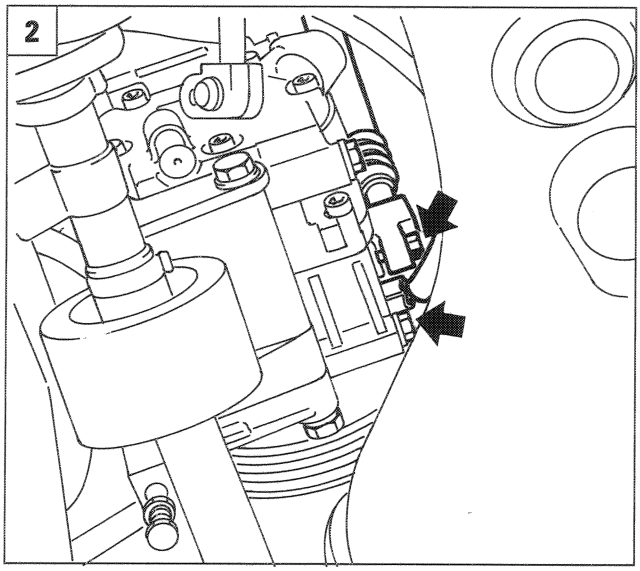
P3M13AH04

1. Turn the alternator fully backward to gain access to the bolt securing the air conditioner compressor bracket shown in the figure. Loosen the bolt in order to allow removal of the compressor drive belt.
2. Disconnect the fitting of the compressor/-condenser pipe from the compressor.
3. Remove the right front wheel, then unscrew the bolts retaining the right wheel arch compartment trim and remove.
4. Looen the bolts retaining the damping flywheel, then unscrew the bolts retaining the compressor mount in order to slacken tension in the drive belt and prise off the compressor pulleys and damping flywheel.

50.



P3M14AH01



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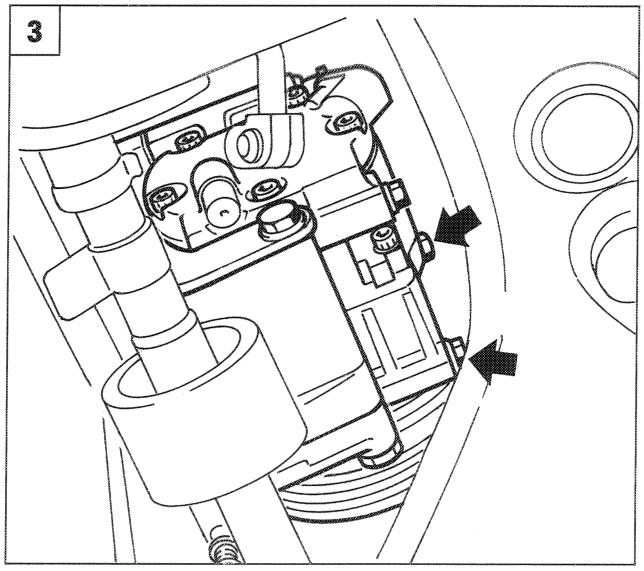

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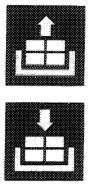
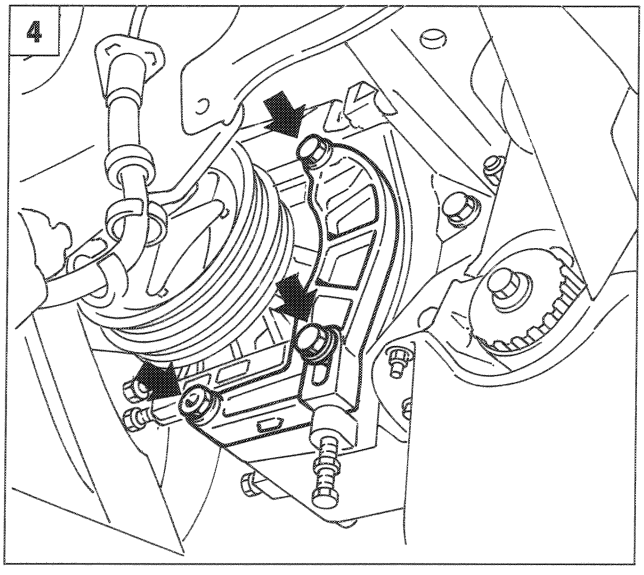
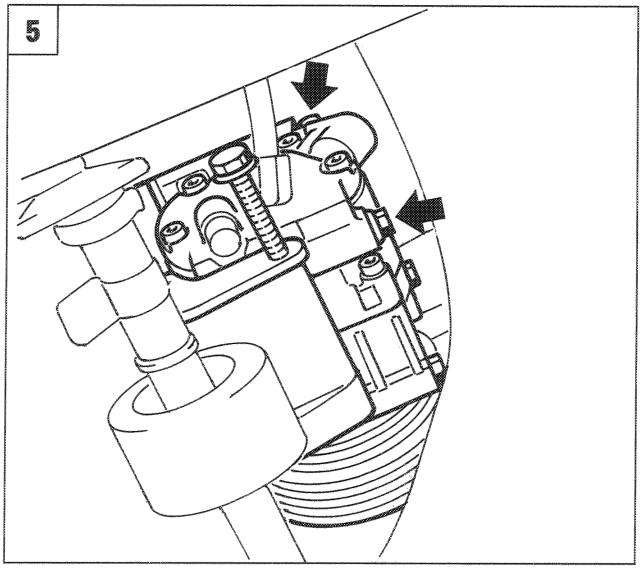


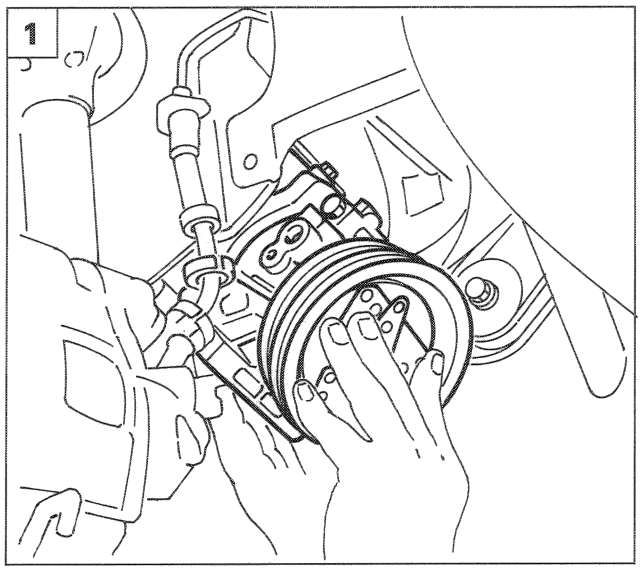
1. Remove the damping flywheel by unscrewing the retaining bolts to allow removal of the air conditioner compressor.
2. Disconnect the electrical supply connector and compressor/evaporator connection line from the compressor.
3. Unscrew the two bolts shown fastening the compressor to its mount, so that the bracket can be released and removed.
4. Remove the compressor bracket by unscrewing the fasteners shown in the figure in order to allow the compressor to be removed.
5. Unscrew both remaining bolts retaining the compressor to its mount (the other two were loosened previously).



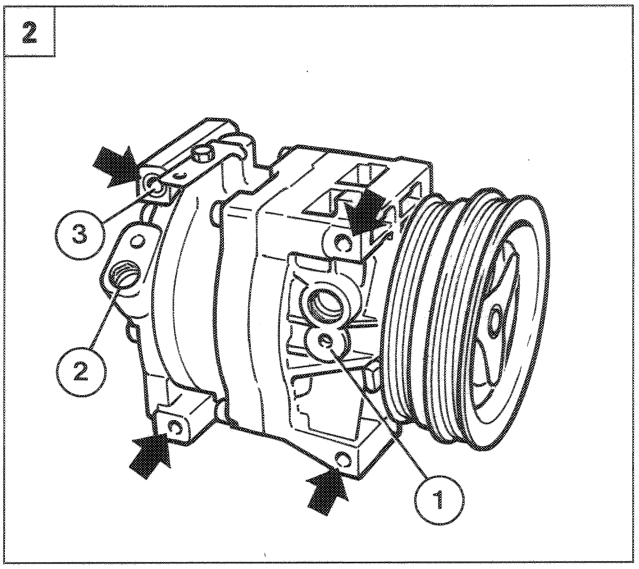
P3M14AH04



P3M14AH05



P3M15AH01



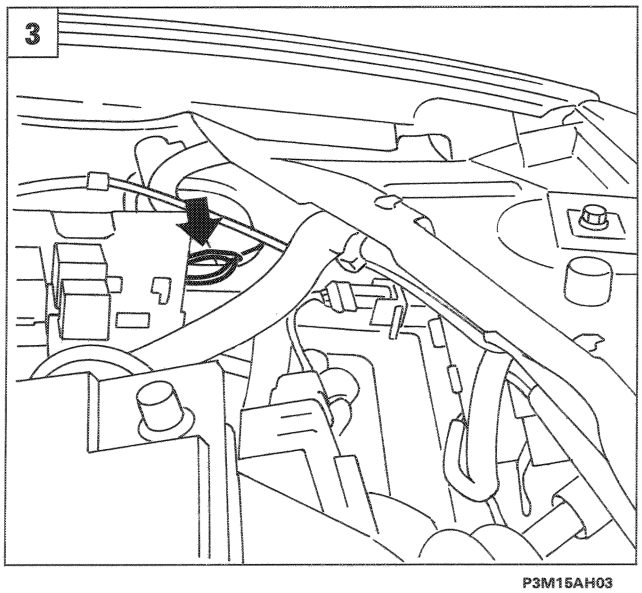
P3M15AH02

1. Remove the compressor through the right wheel arch compartment.

2. Air conditioner compressor
   1. Fitting on pipe connecting compressor/evaporator
   2. Fitting on pipe connecting compressor/condenser

   The arrows indicate points at which the compressor is fastened to its bracket.

NOTE *Reverse removal instructions to refit. Remember to fit the shortest compressor retaining bolt into hole (3).*



P3M15AH03

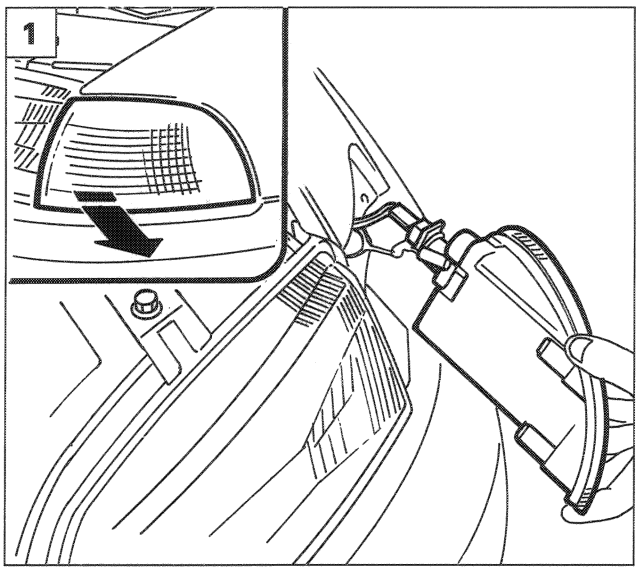
REMOVING-REFITTING CONDENSER

Drain the air conditioning system by connecting the pipes of a Cleaner 134, as described previously.

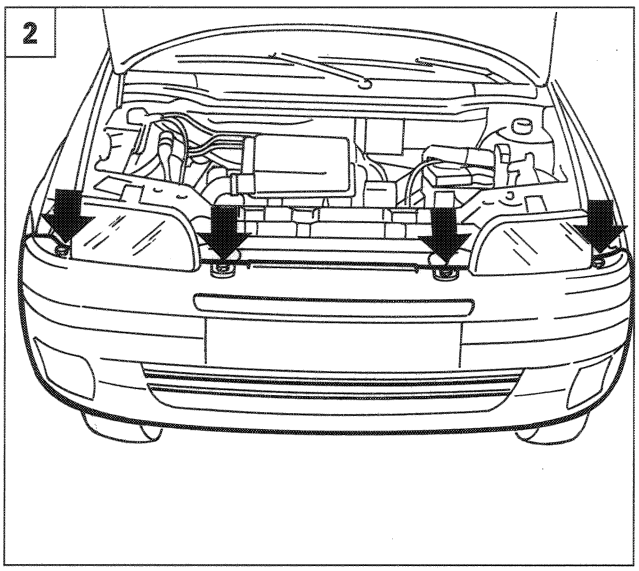
Place the car on an axle stand, disconnect the battery negative terminal, then remove the front bumpers as follows:

3. Work from the front side of the engine bay to release the turn signal retaining clips.

50.



P3M16AH01



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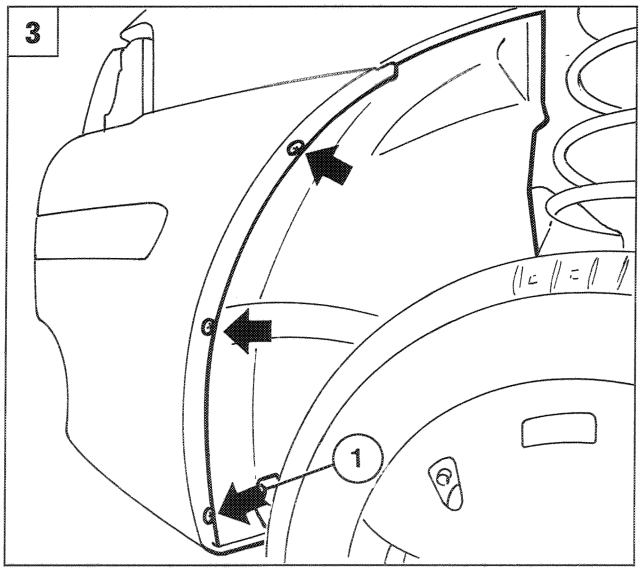

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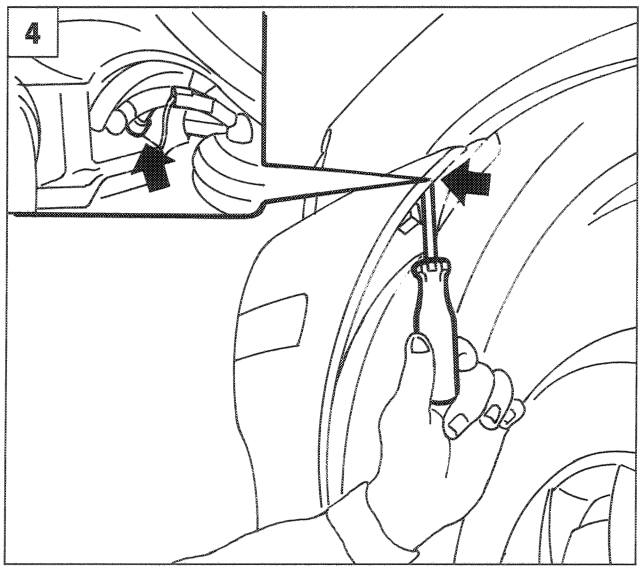
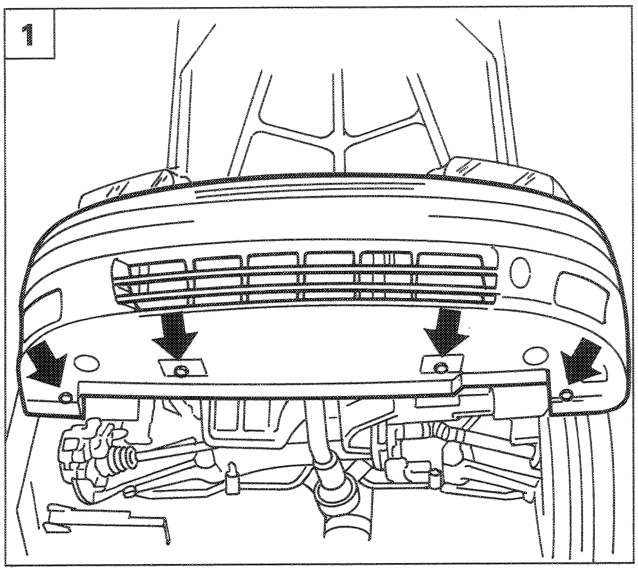
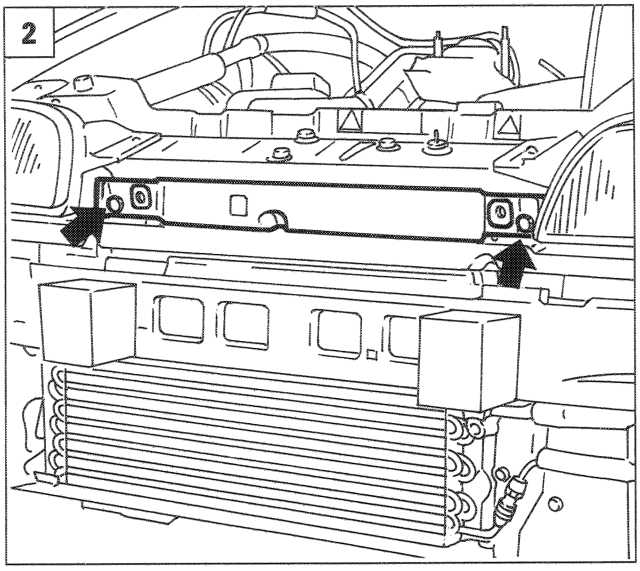


P3M16AH04

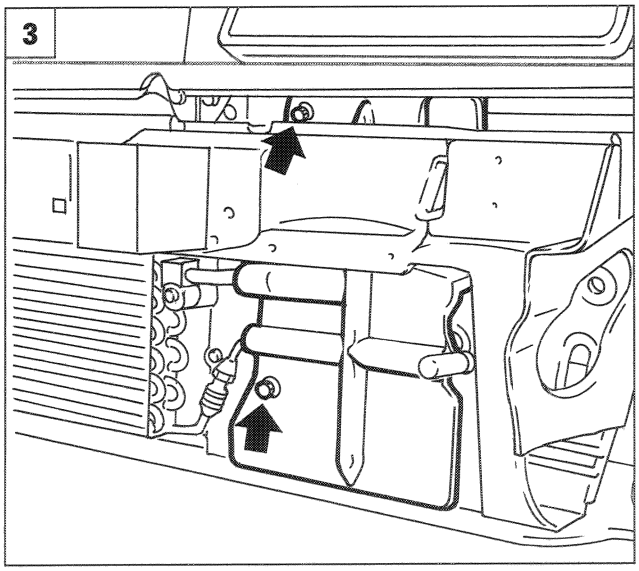
1. Remove the front turn signals, disconnect their supply leads and remove the light cluster in order to gain access to the upper bumper retaining bolts.
2. Remove the upper bumper retaining bolts shown in the figure.
3. Unscrew bolts retaining the right and left wheel arch guard and bolt (1) retaining the guard itself in order to gain access to the side bumper retaining bolts.
4. Working from inside the wheel arch compartment (after moving the protection), unscrew the side bumper retaining bolts on both sides.



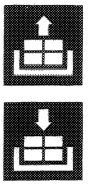
P3M17AH01



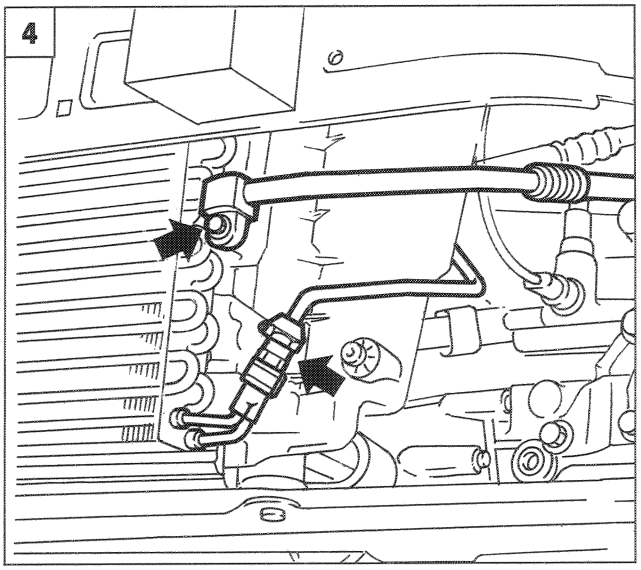
P3M17AH02



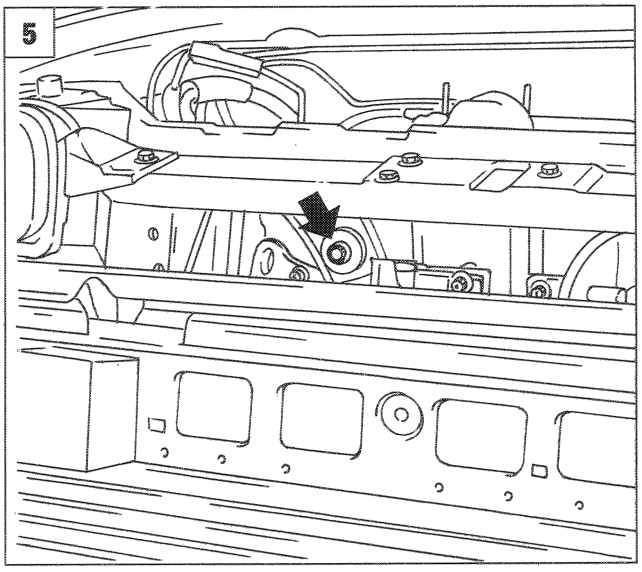
P3M17AH03



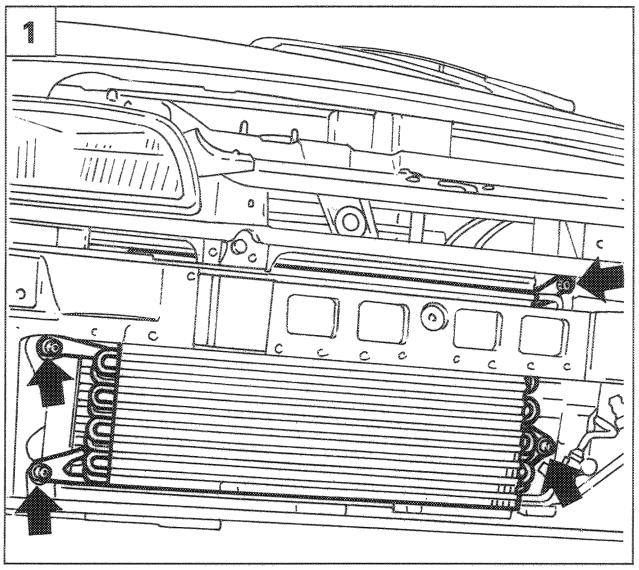
1. Unscrew lower bumper retaining bolts and remove from the vehicle.
2. Unscrew the bolts retaining the condenser upper air duct.
3. Unscrew the bolts securing the condenser side air duct, in order to disconnect the pipe fittings from the condenser more easily.
4. Disconnect the fittings of the condenser/-compressor connection pipe and the condenser/dehydrating filter connection pipe shown in the figure.
5. Unscrew the upper bolt retaining the fan; move the fan-radiator assembly slightly in order to gain access to an upper condenser retaining bolt.



P3M17AH04

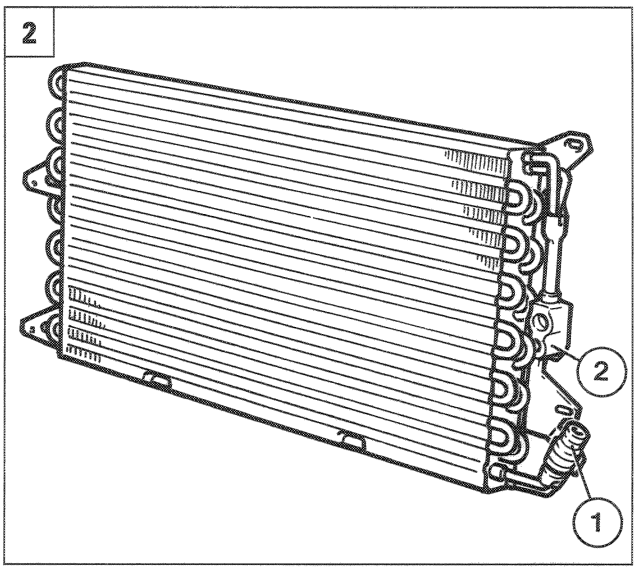


P3M17AH05



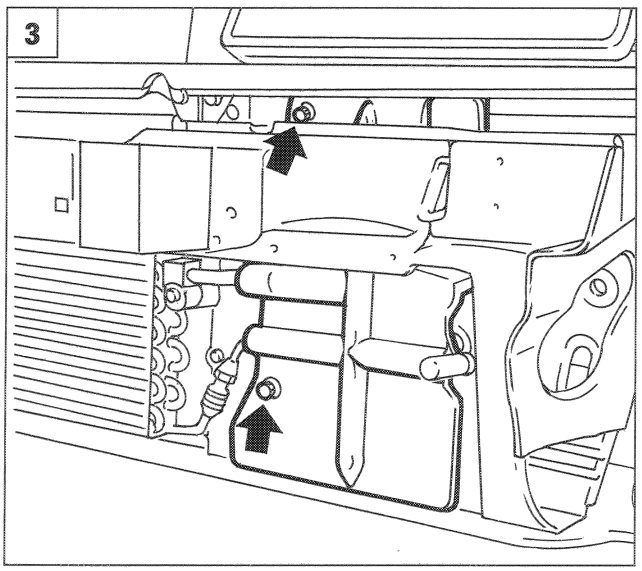
P3M18AH01

1. Unscrew bolts retaining the condenser to the radiator, then remove from the vehicle.



P3M18AH02

2. Condenser
   1. Fitting on dehydrating filter connection pipe.
   2. Fitting on compressor connection pipe.



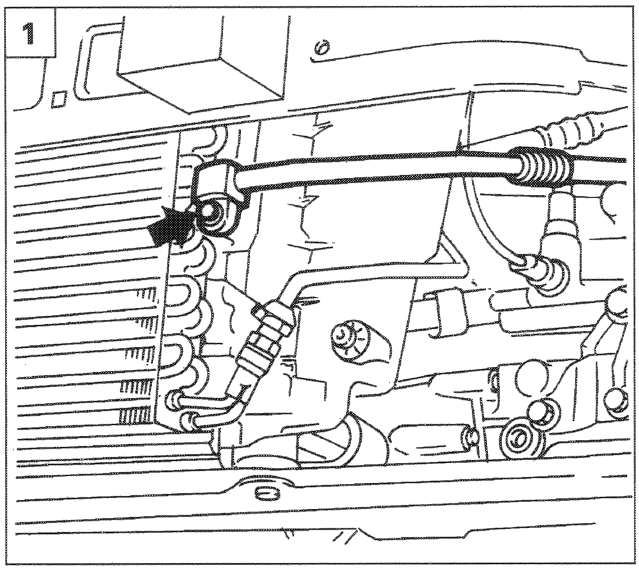
P3M17AH03

PIPE CONNECTING COMPRESSOR TO CONDENESR

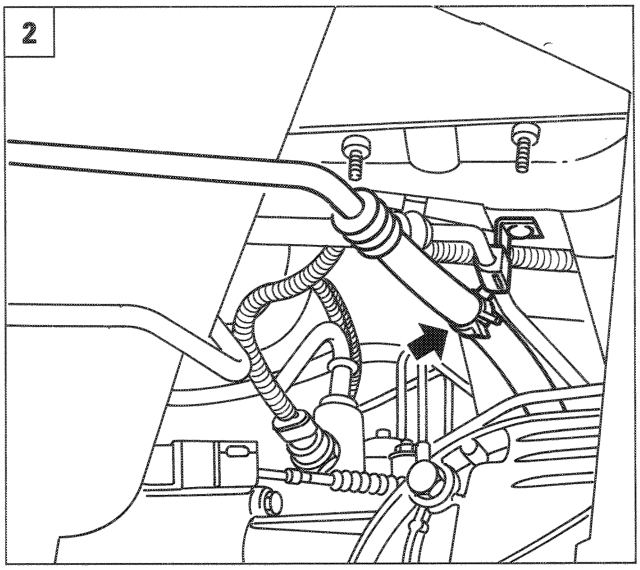
Removing-refitting

Drain the air conditioning system by connecting the Cleaner 134 pipes as described previously. Also, reomve the bumpers as described for condenser removal-refitting.

3. Remove the condenser side air duct.



P3M19AH01



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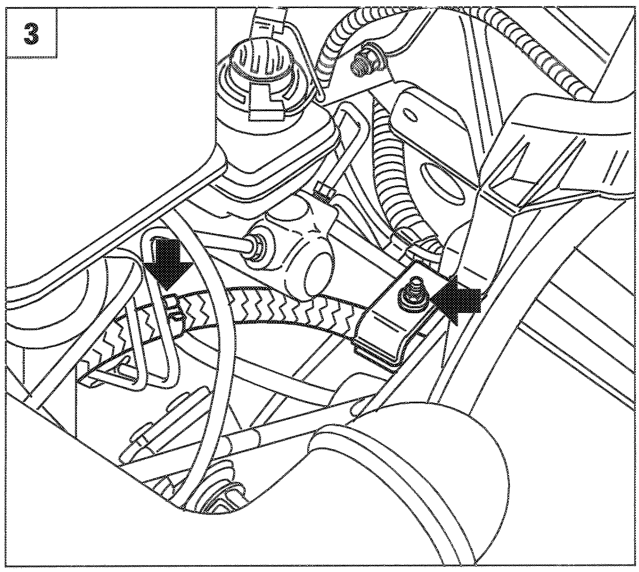
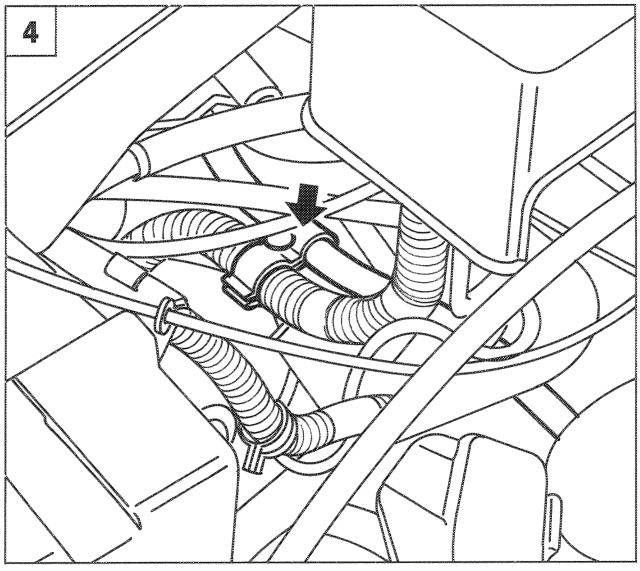
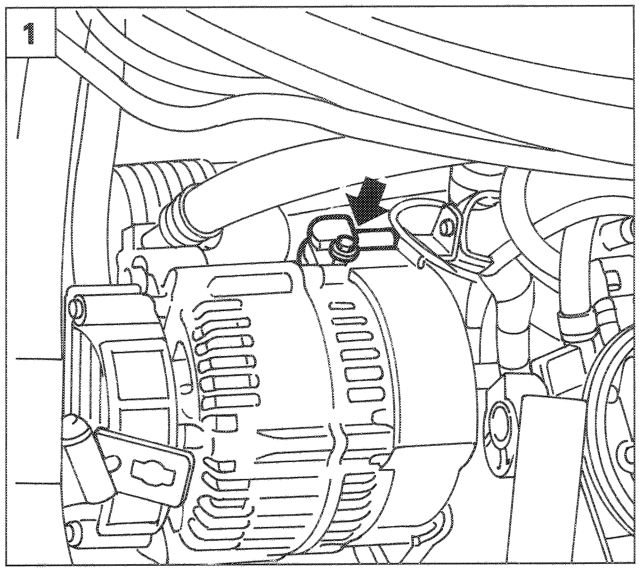


P3M19AH03

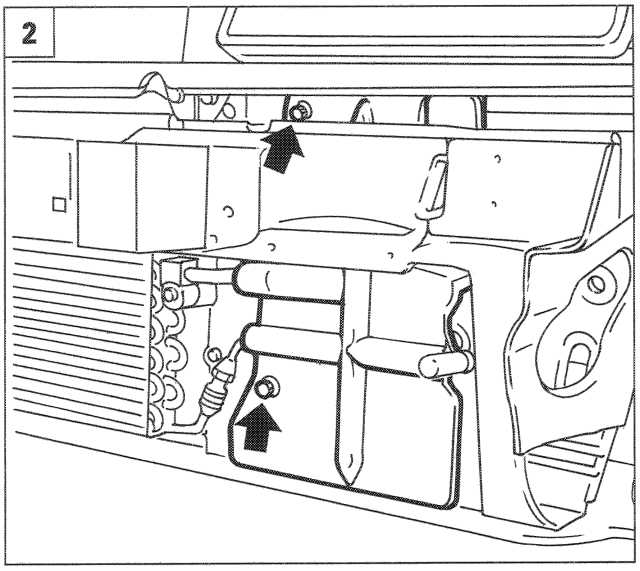


P3M19AH04

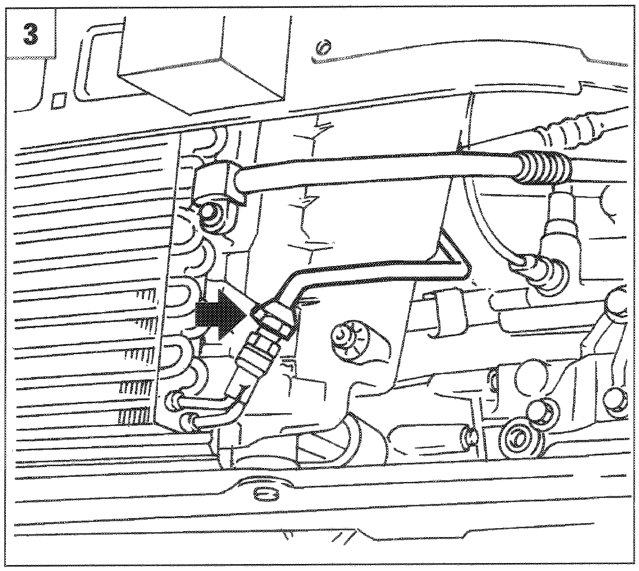
1. Remove the compressor/condenser connection pipe fitting from the condenser.
2. Release the line connecting compressor/-condenser from the bracket below the battery cradle.
3. Unscrew the nut retaining the bracket joining the line connecting dehydrating filter/evaporator and the line connecting compressor/condenser; release the latter line from the retaining clip on the brake servo.
4. Release the line connecting compressor/-condenser from the retaining clip situated below the air cleaner filter.



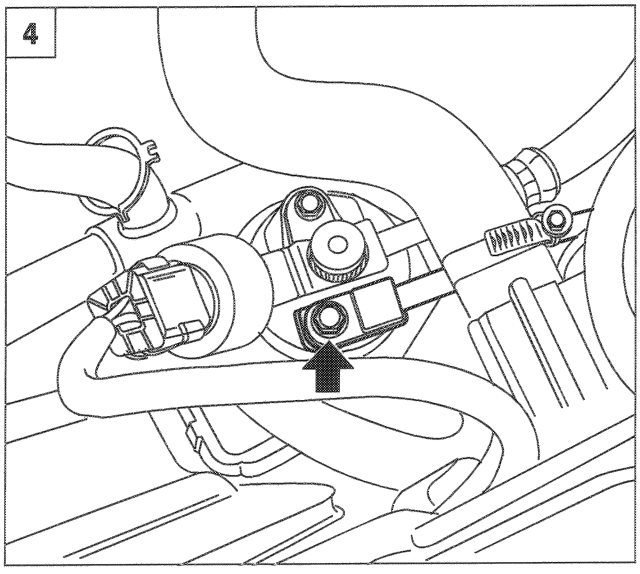
P3M13AH02



P3M17AH03



P3M20AH03



P3M20AH04

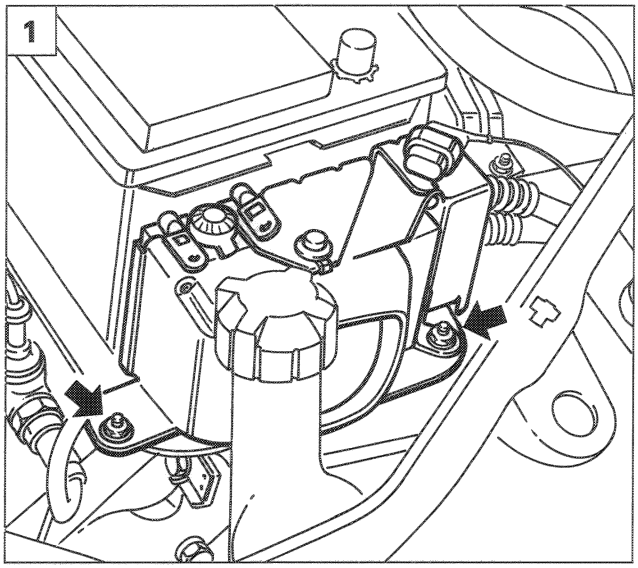
1. Unscrew the fitting of the line connecting compressor/condenser from the compressor and then remove the pipe from the car.

LINE CONNECTING DEHYDRATING FILTER/CONDENSER

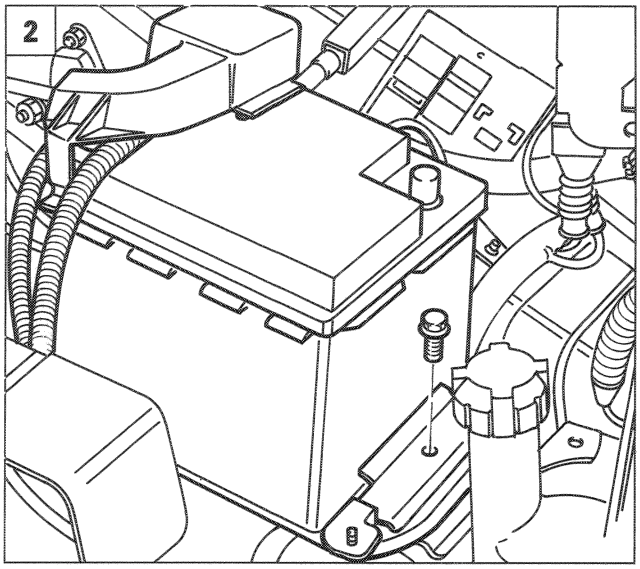
Removing-refitting

Drain the air conditioning system by connecting the Cleaner 134 lines as described previously. Then remove the bumpers as described for condenser removal-refitting.

2. Remove the condenser side air duct.
3. Disconnect the fitting of the line connecting dehydrating filter/condenser from the condenser.
4. Disconnect the fitting of the line connecting dehydrating filter/condenser from the dehydrating filter and then remove the line itself.



P3M21AH01



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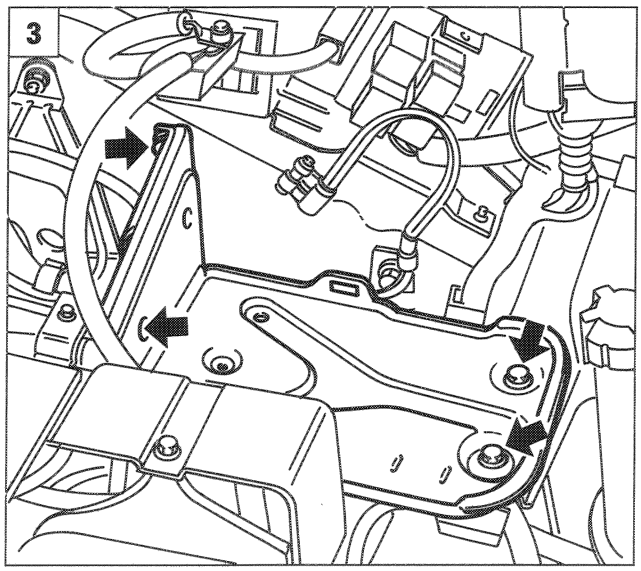

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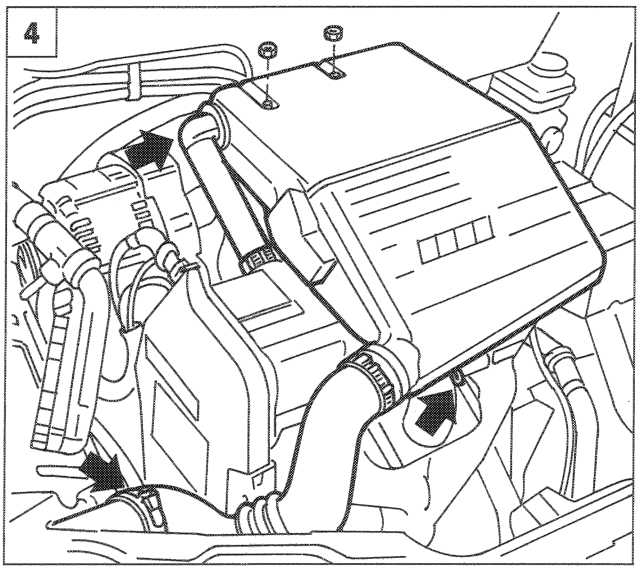


P3M12AH02

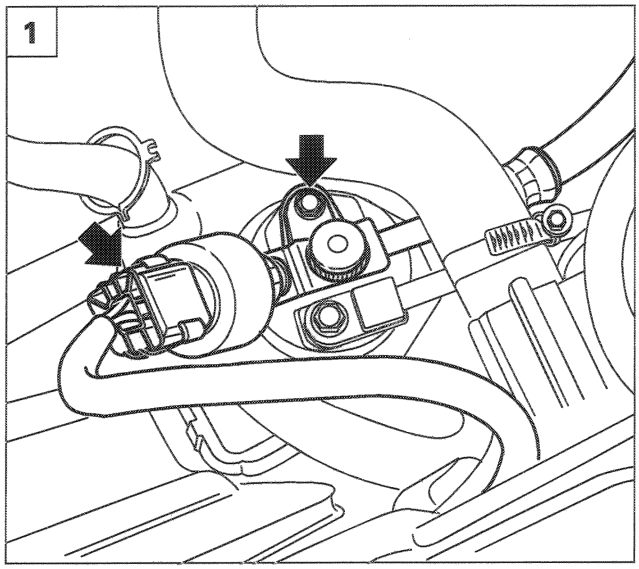
PIPE CONNECTING DEHYDRATING FILTER - EVAPORATOR

Removing-refitting

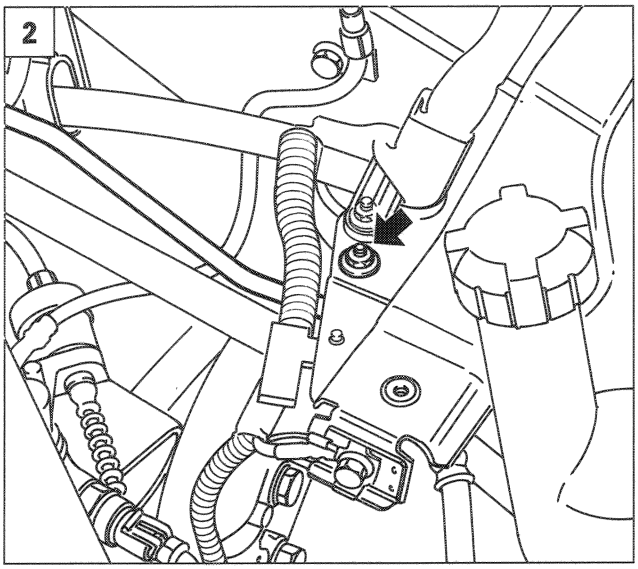
Drain the air conditioning system by connecting the Cleaner 134 lines as described previously.

1. Unscrew both nuts retaining the car alarm siren and place to one side.
2. Disconnect the postive and negative terminal leads from the battery, then remove the battery by unscrewing the bracket retaining nut.
3. Unscrew the retaining bolts and remove the battery cradle.
4. Remove the air cleaner case with intake manifold.

50.



P3M22AH01



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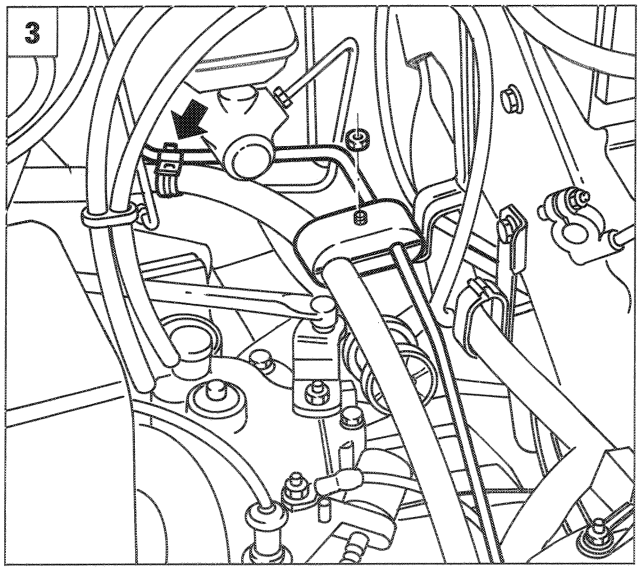
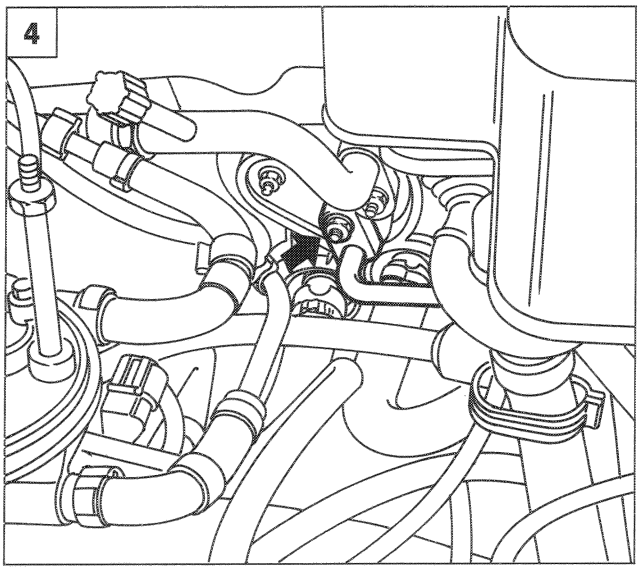


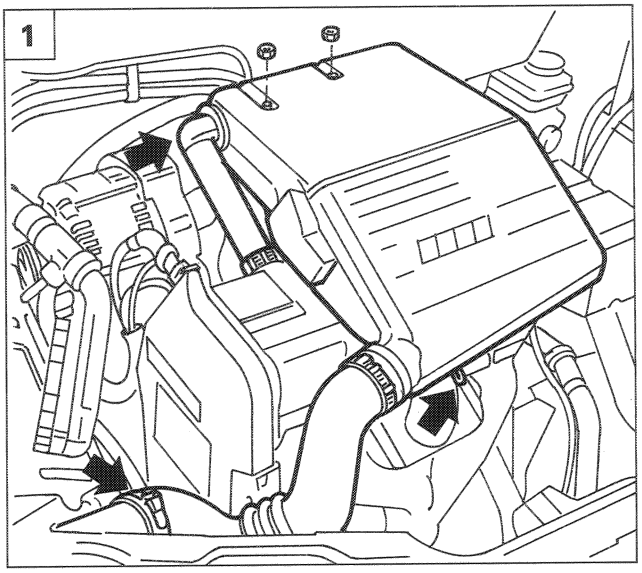
P3M22AH03



P3M22AH04

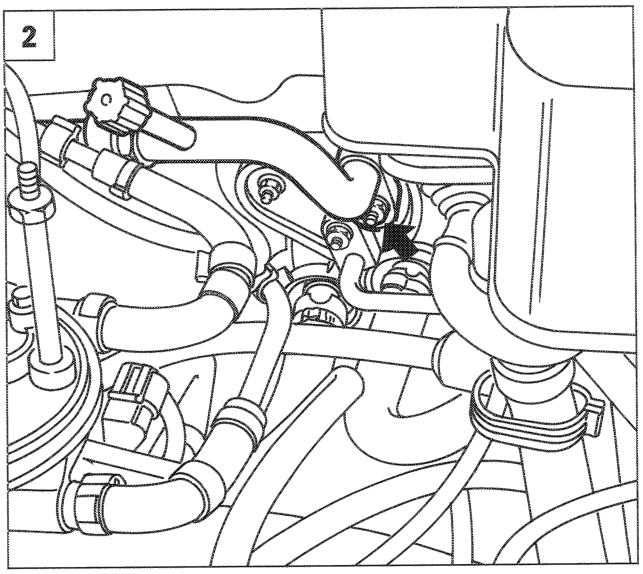
1. Disconnect the supply connector from the pressure switch, then unscrew the fitting of the evaporator connection line from the dehydrating filter.
2. Unscrew the nut retaining the dehydrating filter/evaporator connection line bracket.
3. Unscrew the nut retaining the bracket joining the line connecting compressor/-condenser and the line connecting dehydrating filter/evaporator, then remove the latter line from the retaining clip on the brake servo.
4. Disconnect the fitting of the dehydrating filter connection line from the evaporator, then remove the line.

1



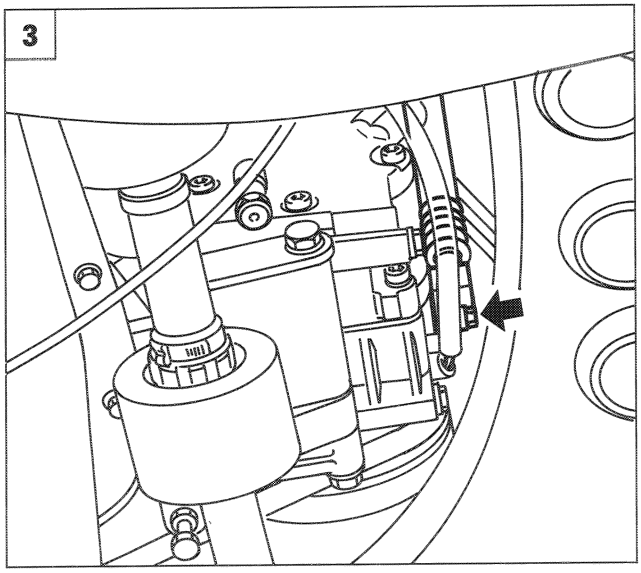
P3M12AH02

2



P3M23AH01

3



P3M23AH02

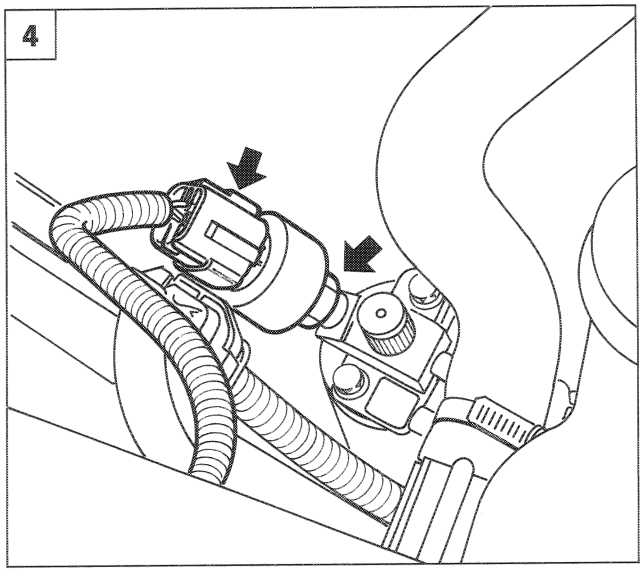
LINE CONNECTING COMPRESSOR - EVAPORATOR

Removing-refitting

Drain the air conditioning system by connecting the Cleaner 134 lines as described previously.

1. Remove the air cleaner case with intake sleeve.
2. Disconnect the fitting of the compressor connection line from the evaporator.
3. Disconnect the fitting of the evaporator connection line from the compressor, then remove the line.

4

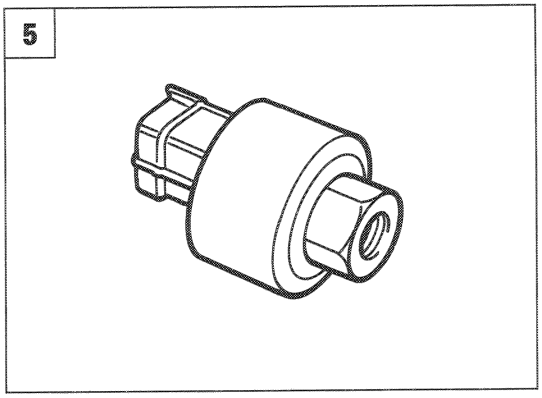


P3M23AH03

FOUR-LEVEL PRESSURE SWITCH

4-5. Disconnect the supply connector for the four-level pressure switch, then unscrew its retaining nut and remove.

5



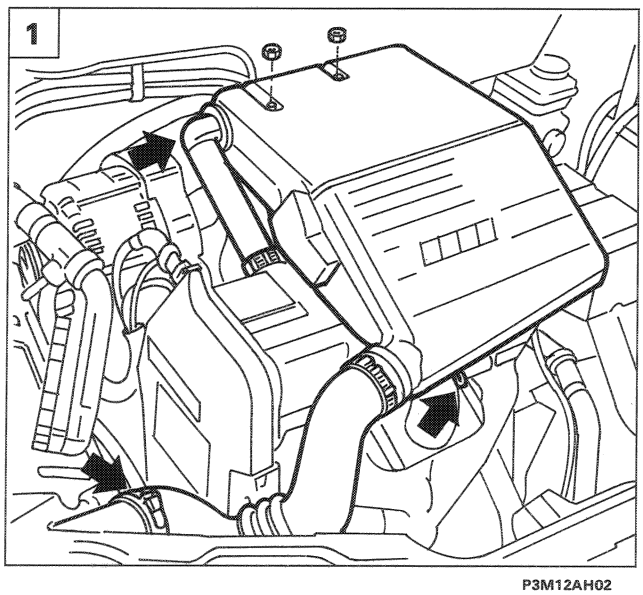
P3M23AH04

The four-level pressure switch performs the following functions:

- deactivates the compressor electromagnetic coupling if fluid pressure drops below 2.45 bar (level 1) or exceeds 28 bars (level 4);
- turns on the radiator/condenser cooling fan at its first speed if fluid pressure exceeds 15 bars (level 2);
- turns on the fan at its second speed if fluid pressure exceeds 20 bars (level 3).

The setting pressure values (levels) are summarised in the following table:

SETTING LEVELS (bar)			
LEVEL	**OPENS**	**CLOSES**	**DIFFERENTIAL**
I	2.45 ± 0.35	3.5 MAX	-
II	-	15 ± 1	4 ± 1
III	-	20 ± 1.2	4 ± 1
IV	28 ± 2	-	6 ± 2

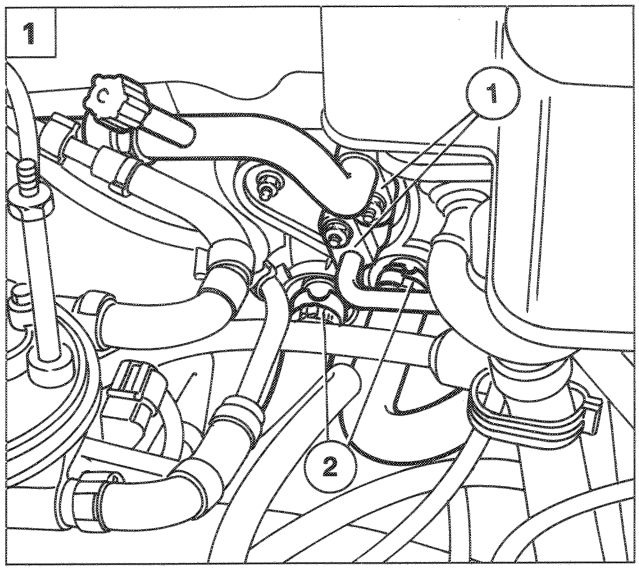


P3M12AH02

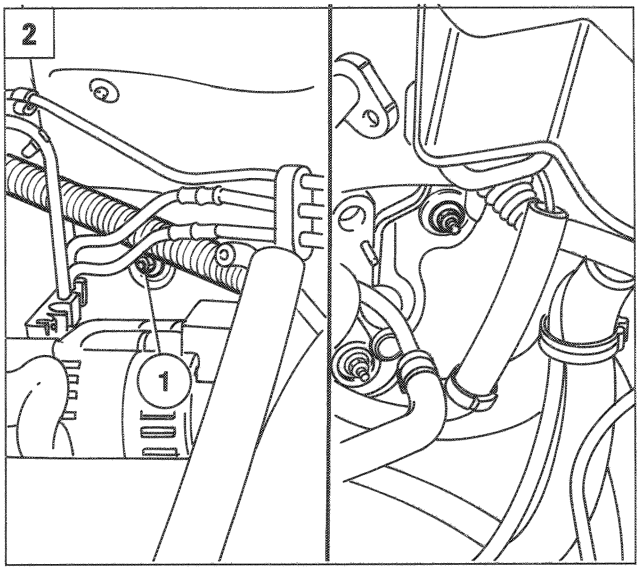
EVAPORATOR/HEATER/DISTRIBUTOR ASSEMBLY
Removing-refitting

Before removing the assembly, drain the air conditioning system and engine cooling system. Then remove the instrument facia as described in Section 70 of the Punto manual.

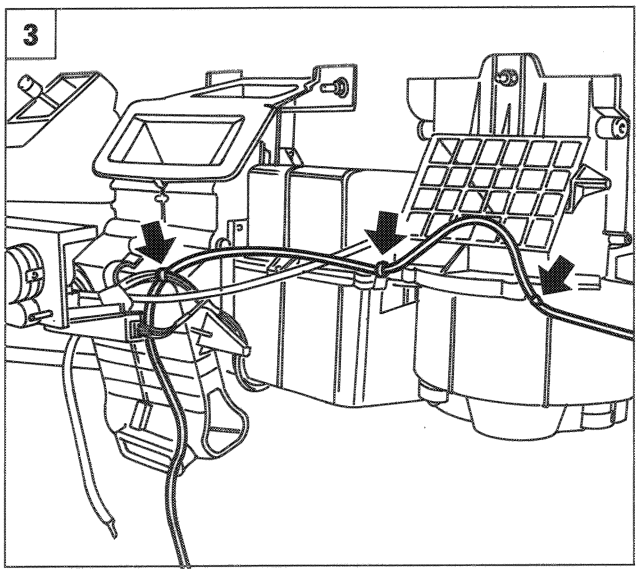
1. Working from the engine bay, remove the filter case assembly by undoing the fastenings shown in the figure.



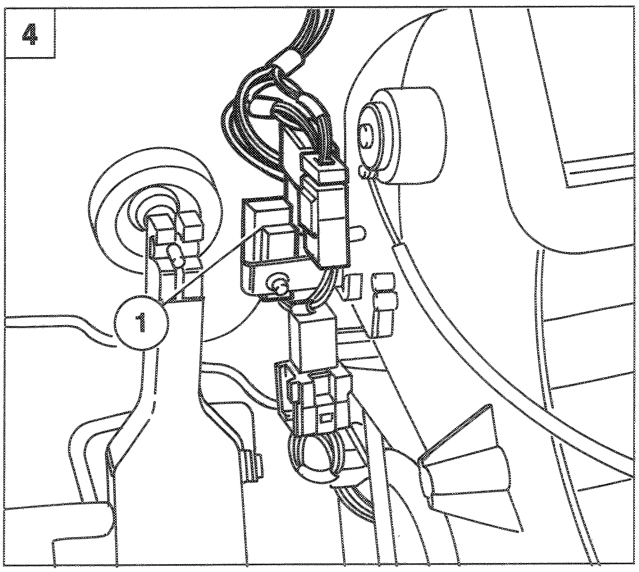
P3M25AH01



P3M25AH02



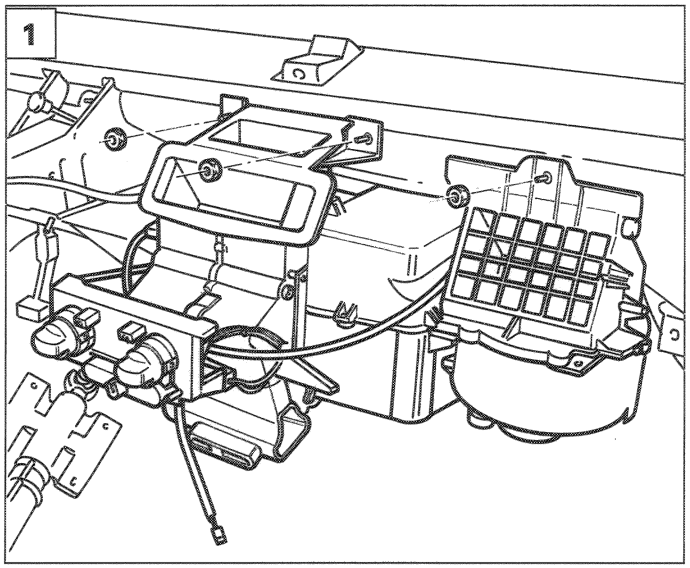
P3M25AH03



P3M25AH04

1. Working from the engine bay, unscrew the fittings of the air conditioning system lines (1) connected to the lines on the expansion valve. Seal with free pipe ends with plugs so that the dehydrating filter and compressor do not absorb moisture.
   Loosen the clips and release both pipes (2) from the heater radiator ducts in the distributor heater evaporator assembly.
2. Unscrew the nuts shown in the figure retaining the evaporator heater distributor assembly to the body (bulkhead between cabin and enging bay). Nut (1) secures the injection wiring bundle. Remove in order to gain access to the underlying unit retaining nut.
3. Release the radio antenna from its retaining clip.
4. Disconnect electrical connectors shown in the figure and release connector (1) from the bracket.

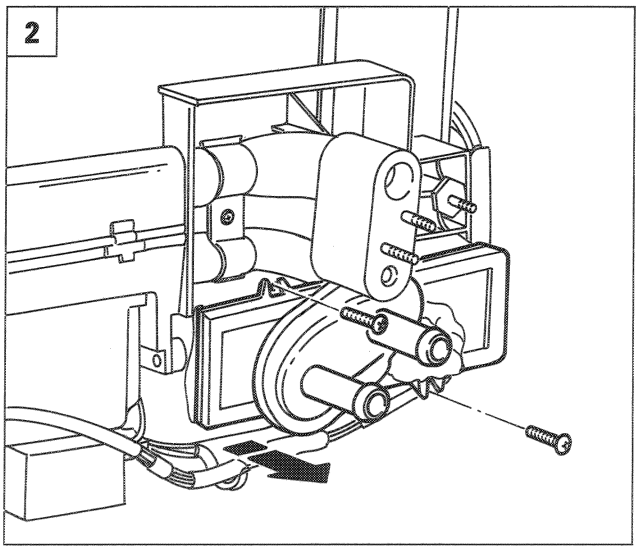
50.



P3M26AH01

1. Unscrew bolts shown in figure and remove the distributor heater evaporator assembly from the car.

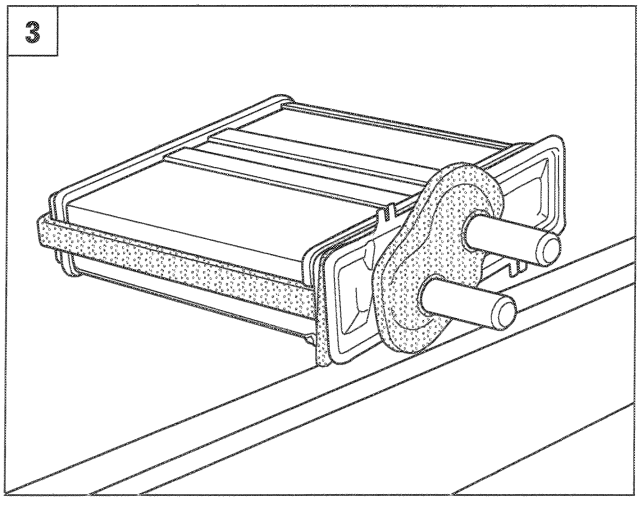
OPERATIONS TO BE CARRIED OUT WITH EVAPORATOR-HEATER-DISTRIBUTOR UNIT ON BENCH



P3M26AH02

REMOVING-REFITTING HEATER RADIATOR

2-3. Unscrew bolts retaining the heater radiator to the lower rear surface of the heater distributor unit, then remove the radiator from its housing.



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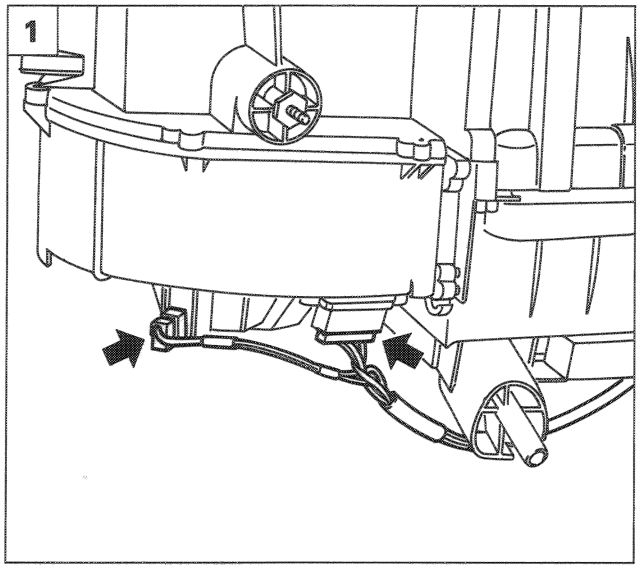
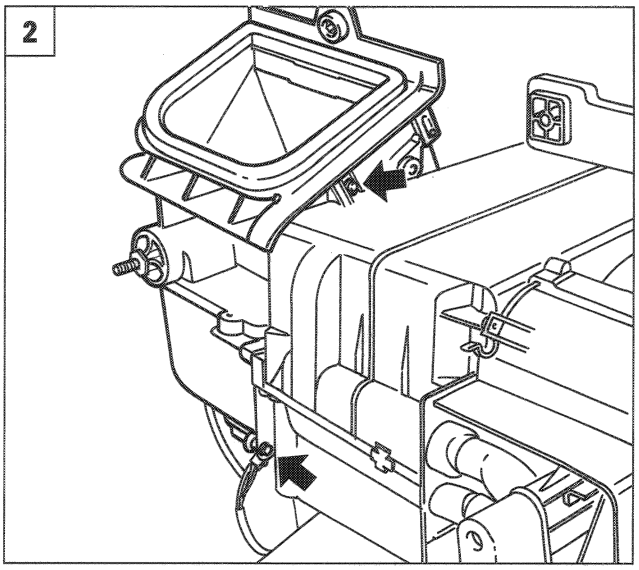


P3M27AH01



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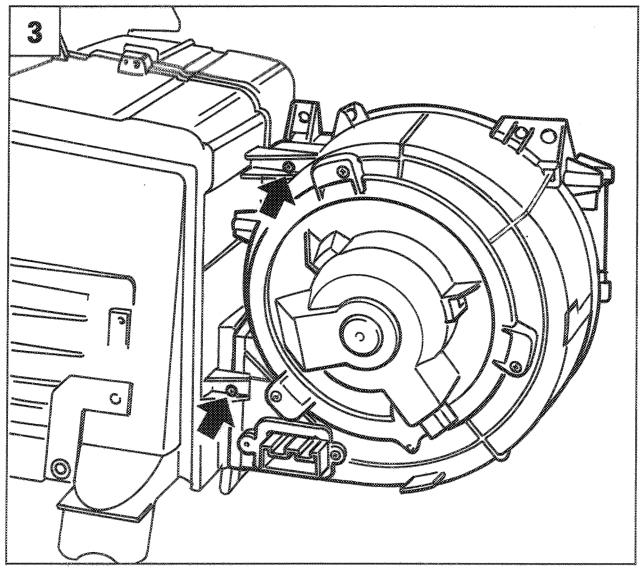
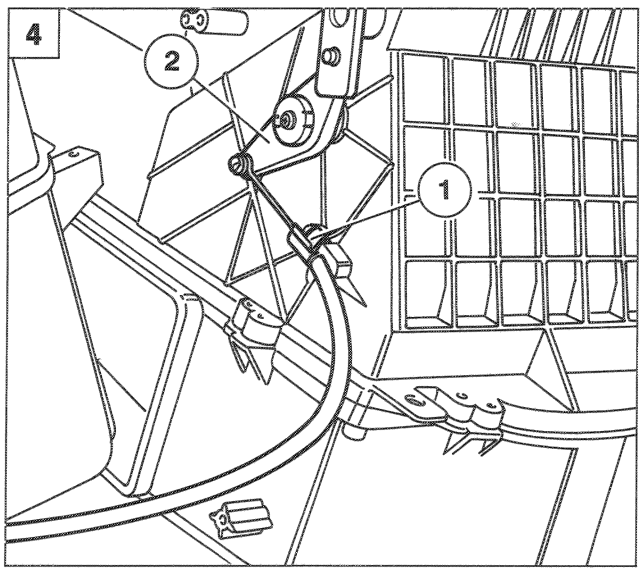


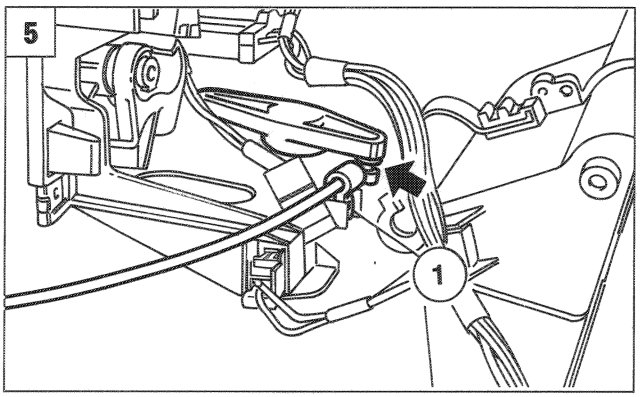
P3M27AH03



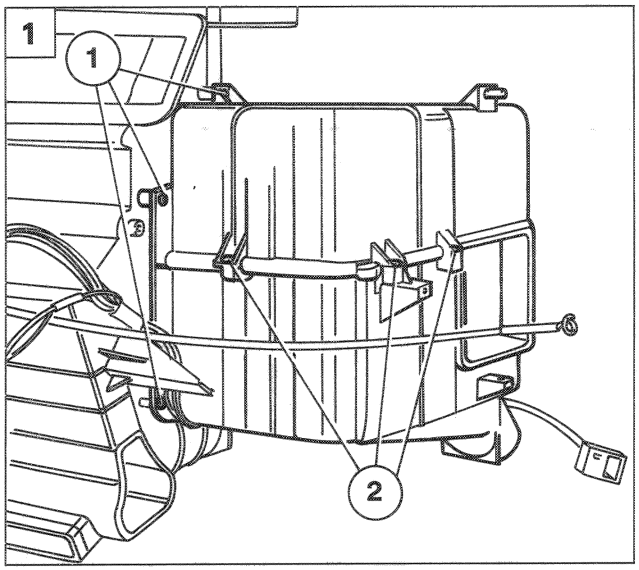
P3M27AH04

REMOVING-REFITTING AIR INTAKE FLAP CONTROL CABLE

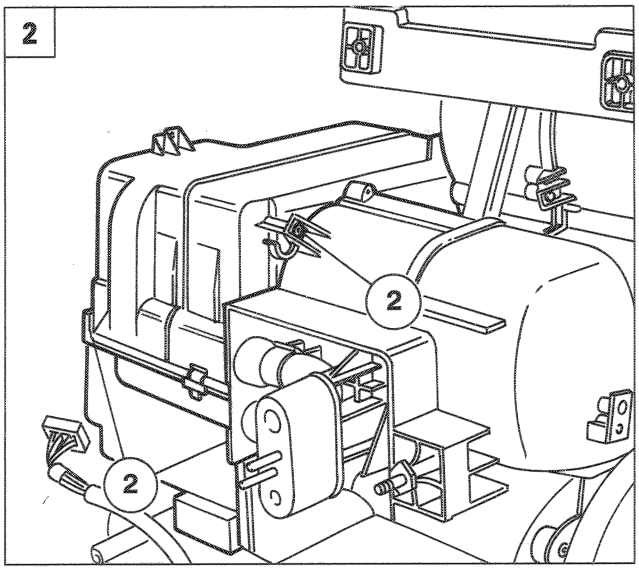
1. Disconnect the electrical connections shown in the figure from the fan unit and the resistance divider.
2-3. Unscrew bolts indicated in figure, which secure the fan unit to the evaporator unit.
4. Release one end of the cable sheath from the clip (1) in the block press-fitted to the left side surface of the fan unit. Then withdraw the coil at the end of the cable from the ridge on the air intake flap return lever (2).
5. Unscrew bolts (1) retaining the cable sheath terminal. Then release the other end of the cable from the ridge on the control lever and remove the cable.



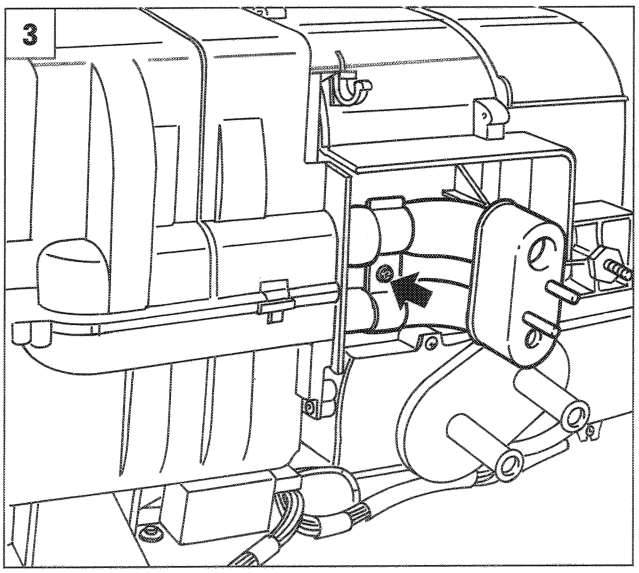
P3M27AH05



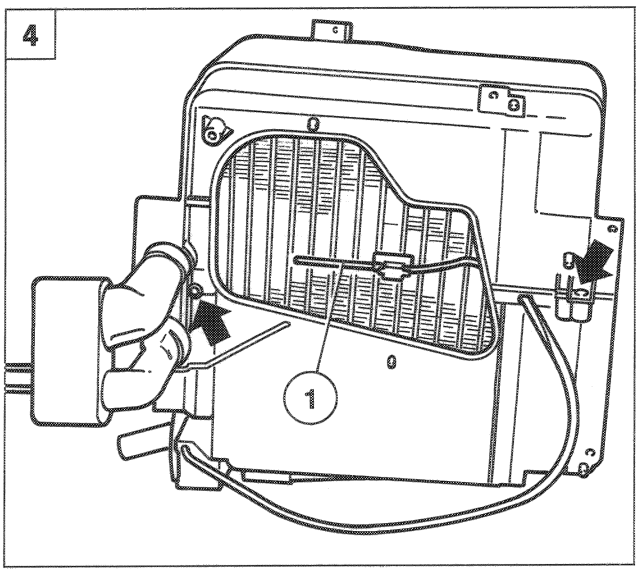
P3M28AH01



P3M28AH02



P3M28AH03



P3M28AH04

REMOVING-REFITTING EVAPORATOR UNIT

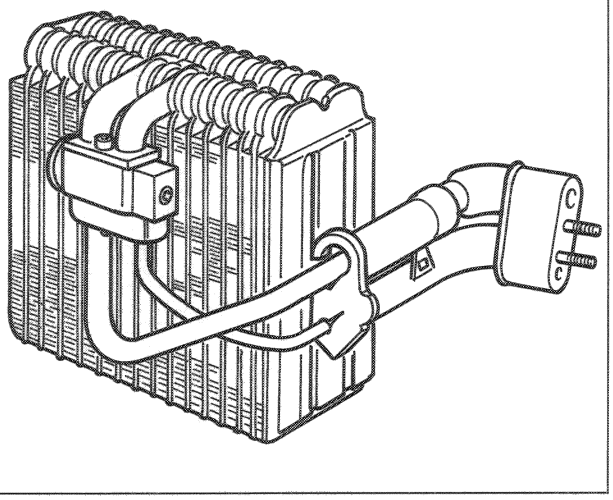
Separate the fan unit from the evaporator unit as described in the previous paragraph.

1-2. Unscrew bolts (1) retaining the evaporator unit to the heater distributor unit and bolts (2) retaining the upper evaporator case half to the lower case half.

3. Unscrew the bolt retaining the expansion valve connection line bracket.

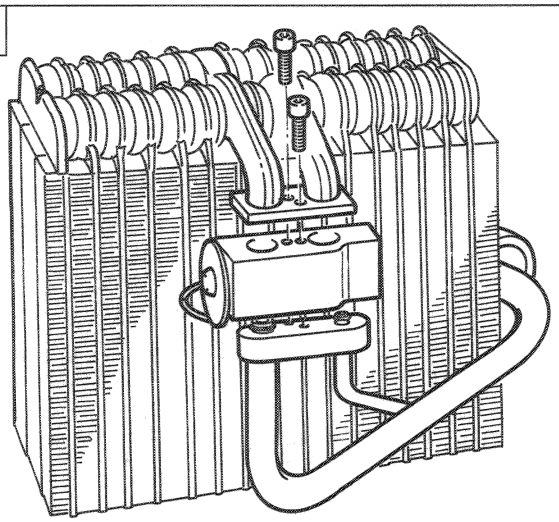
4. Remove the bolts shown in the figure, which retain the upper evaporator case half to the lower evaporator case half. Then withdraw the air temperature sensor from its retaining clip on the evaporator (1).

1



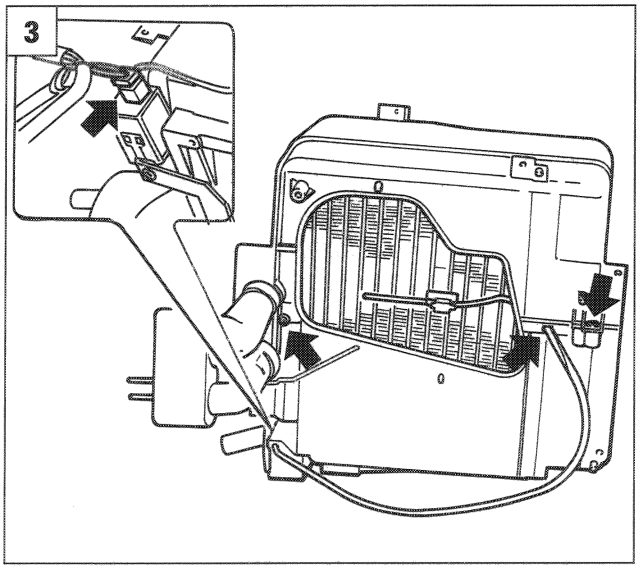
P3M29AH01

2



P3M29AH02

3



P3M29AH03

1. Separate both evaporator case halves and remove the evaporator.
2. To remove the expansion valve, unscrew both bolts shown in the figure and take out the valve.

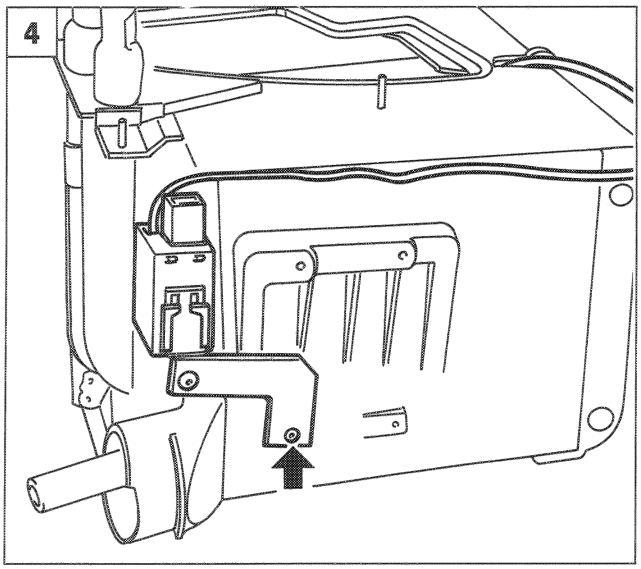
REMOVING-REFITTING COMPRESSOR ACTIVATION/DEACTIVATION CONTROL UNIT

Work with the evaporator unit separated from the heater distributor unit as described in the previous paragraph.

3. Disconnect the compressor control unit supply connector. Unscrew the bolts shown, which retain both evaporator case halves (the other retaining bolts need not be removed). Disconnect the temperature sensor from the retaining clip, slightly raise both case halves at the point indicated and pass the sensor and wiring through the hole created.

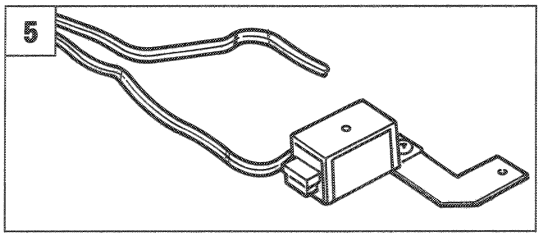
4-5. Unscrew the bolt retaining the air conditioner compressor activation/deactivation control unit, then remove the control unit complete with air temperature sensor.

4



P3M29AH04

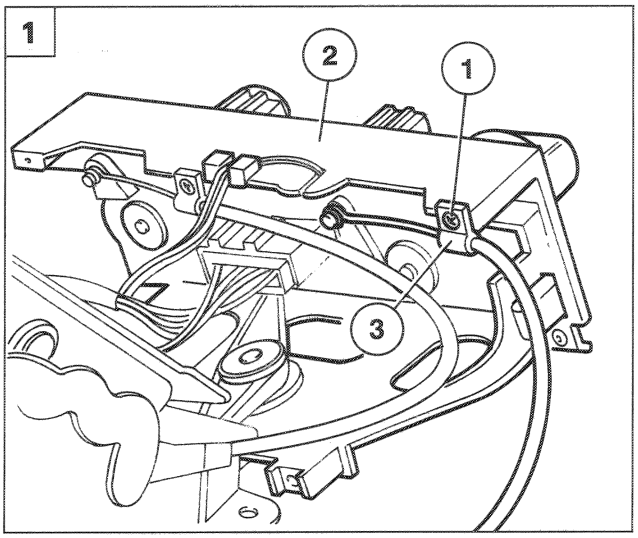
5



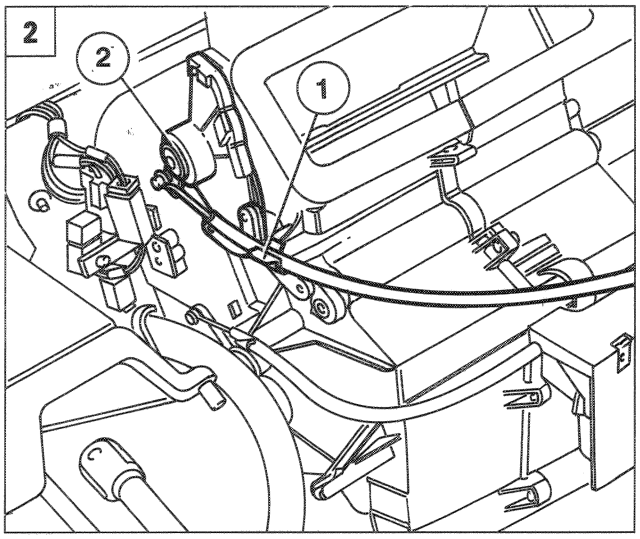
P3M29AH05

50.

OPERATIONS TO BE CARRIED OUT WITH EVAPORATOR-HEATER-DISTRIBUTOR UNIT ON THE CAR AND THE FACIA REMOVED



P3M30AH01



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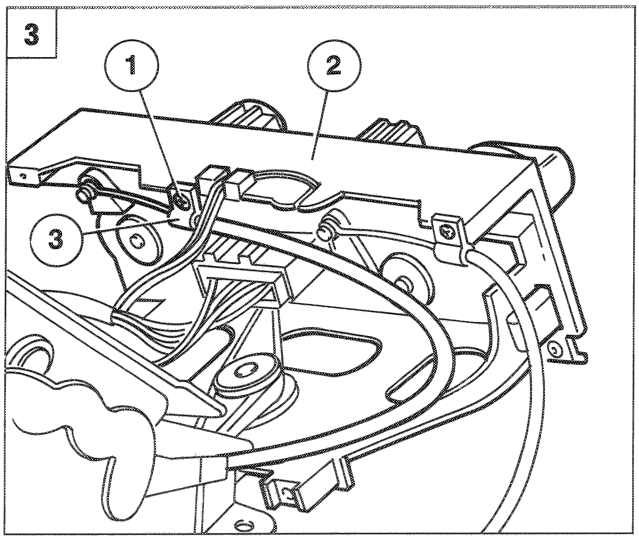

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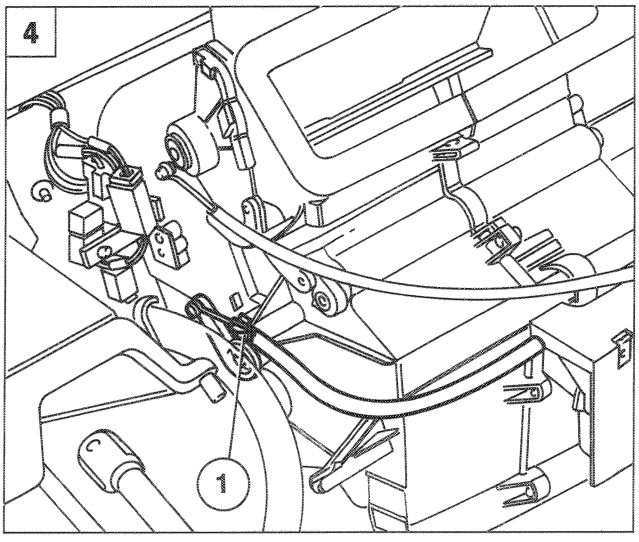


P3M30AH04

REMOVING-REFITTING MIXER FLAP CONTROL CABLE

1. With the facia removed, unscrew bolt (1) securing terminal (3) of the cable sheath to the control mount, and withdraw the coil at the end of the cable from the lever on the control mount.

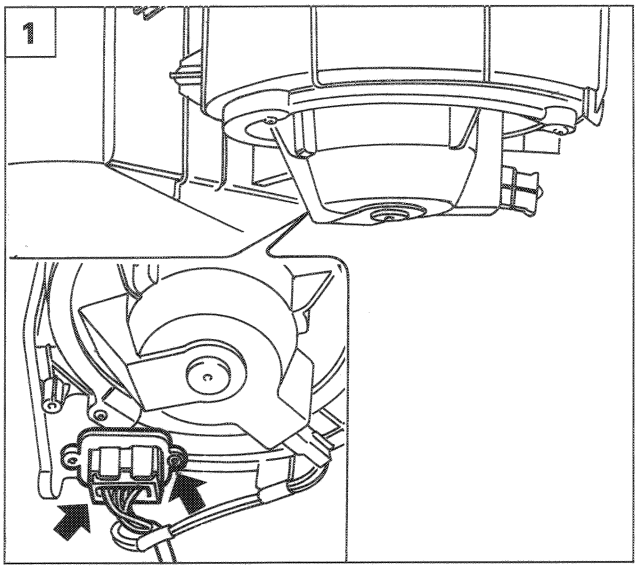
2. Release the other end ofthe cable sheath from retaining clip (1), then withdraw the cable coil from cydrical ridge on the mixer flap control lever (2).

REMOVING-REFITTING DISTRIBUTION FLAP CONTROL CABLE

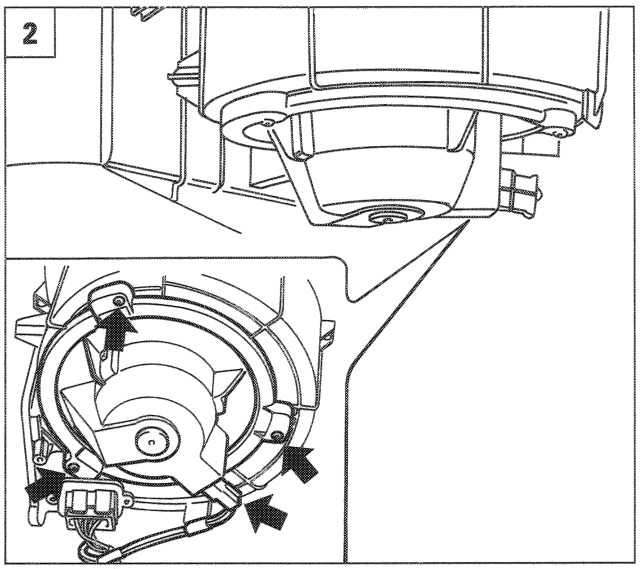
3. With the facia removed, unscrew bolt (1) retaining cable sheath terminal (3) to control mount (2) and withdraw the cable end coil from the control mount lever.

4. Release the other end ofthe cable sheath from retaining clip (1), then then withdraw the cable coil from the cylindrical ridge on the distribution flap operating rack.

When fitting the cables, position the sheaths into the retaining clips to ensure that the mixer and distribution flaps are able to complete their travels.



P3M31AH01



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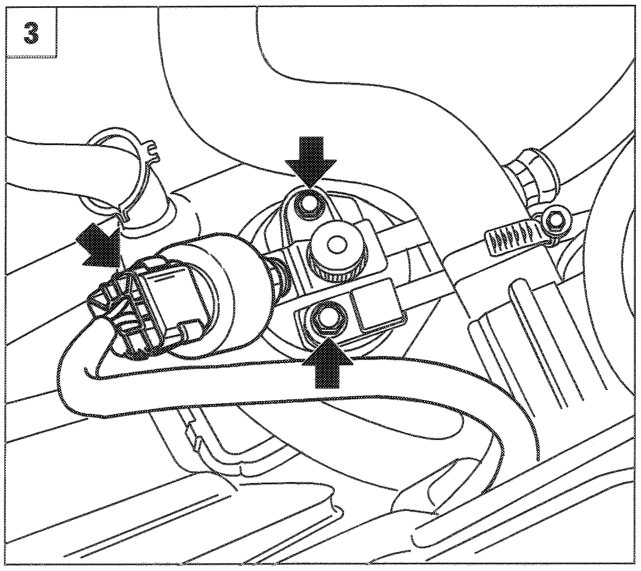

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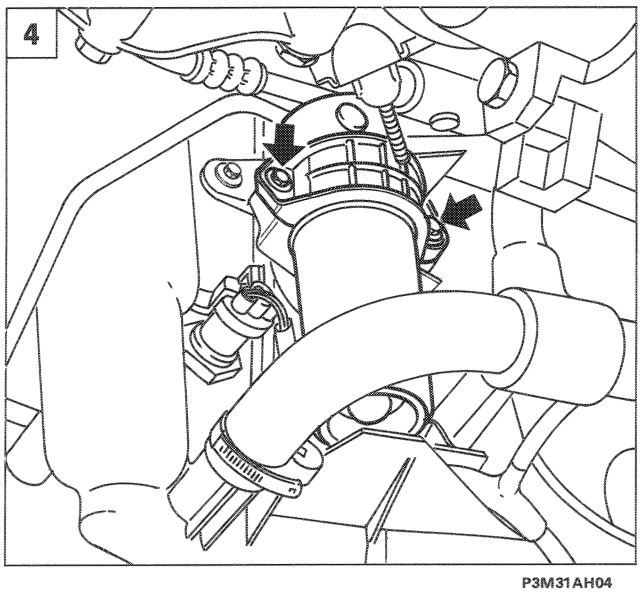

P3M31AH04

OPERATIONS TO BE CARRIED OUT WITH FACIA FITTED

REMOVING-REFITTING PASSENGER COMPARTMENT FAN SPEED RESISTOR

1. Disconnect the supply connector from the resistor, then unscrew the retaining bolt indicated and remove the resistor from the car.

REMOVING-REFITTING CABIN CLIMATE CONTROL FAN

2. Disconnect the fan connector, then unscrew the three retaining bolts shown and remove the fan from the vehicle.

REMOVING-REFITTING DEHYDRATING FILTER

Drain the air conditioning system by connecting the Cleaner 134 lines as described previously.

3. Disconnect the electrical connector from the four-level pressure switch, then disconnect the fittings of the condenser and evaporator connection lines from the dehydrating filter.
4. Unscrew both bolts indicated retaining the dehydrating filter bracket, then remove the filter from the car.