

# PUNTO eMANUAL

Auxiliary Units

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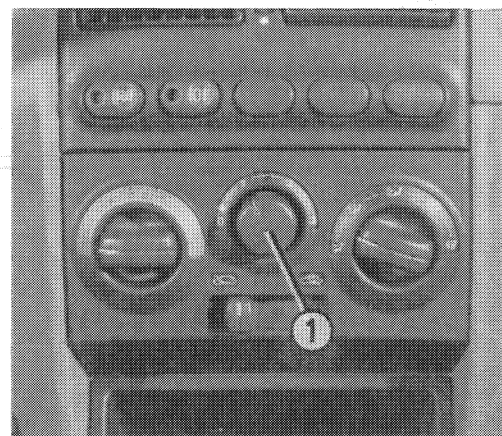
The following passenger compartment heater system components may be subject to replacement, adjustment or repair:

- central knob (1) for selecting passenger compartment ventilation fan speeds;
- front support (5) of control mount;
- passenger compartment ventilation fan;
- resistor for passenger compartment ventilation fan speeds
- control mount with knobs;
- passenger compartment ventilation fan speed selector switch;
- air intake control cable;
- mixer flap control cable;
- distribution flap control cable;
- heater - distributor assembly;
- heater radiator.

To service the parts listed above (except the first four and cable adjustment) carry out the various operations described below and on the following pages in order to remove the instrument facia.



P3M037H01

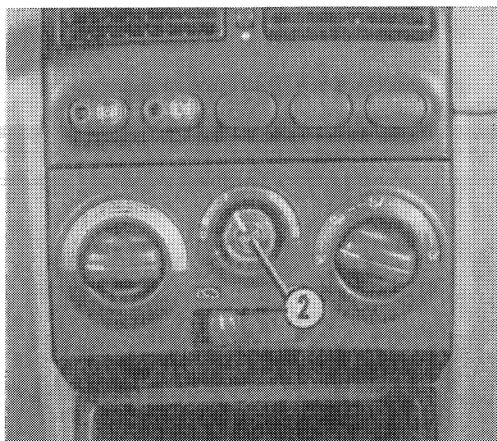


P3M037H02

#### Detail of instrument facia

#### Detail of central console

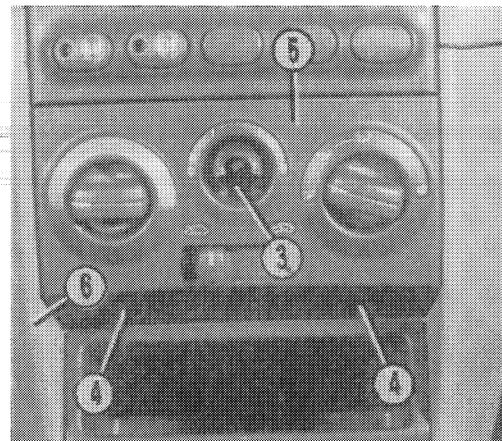
- pull out central knob (1) from passenger compartment ventilation fan shaft;
- if only the outer part of the knob comes out, repeat the previous operation also for the clear inner barrel (2);
- unscrew bolts (3 and 4) that retain middle and bottom of front panel (5) to the trim of central console (6) that is an integral part of the instrument facia;



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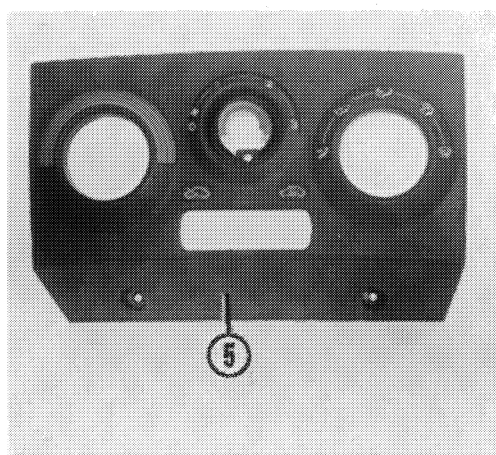


For the first two items on the list above, simply proceed as described on this page.



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### 50.

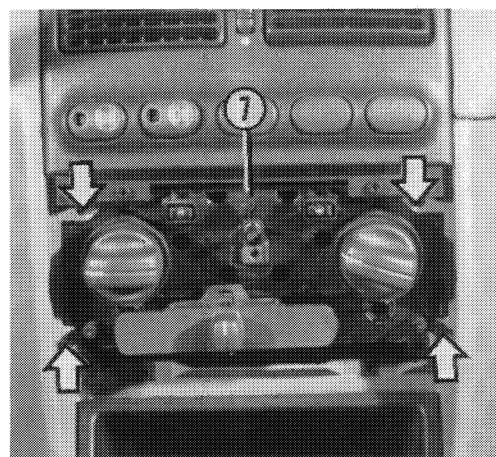


P3M038H01

Detail of control assembly front panel

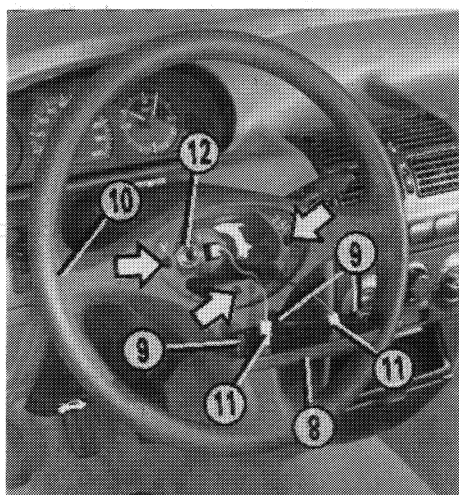


- unscrew arrowed screws that retain front of control mount (7) to the trim of central console, which is an integral part of the instrument facia;

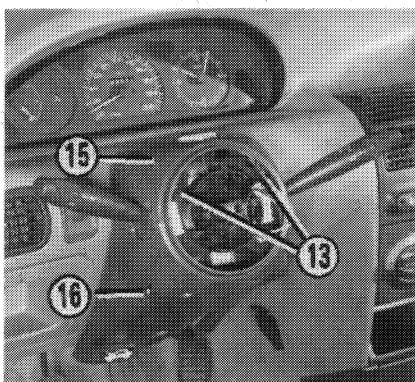


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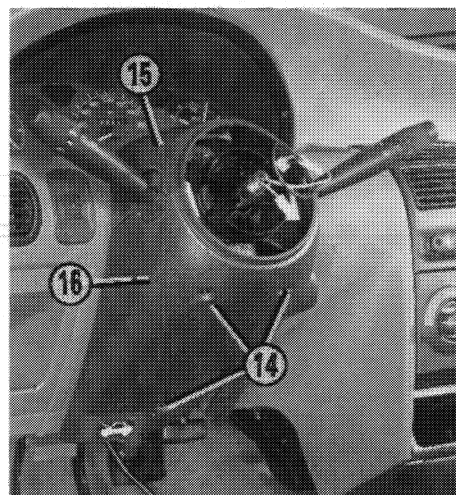
Detail of central console without front panel



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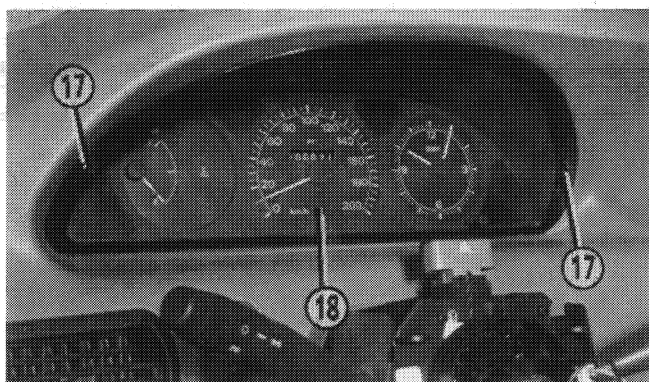


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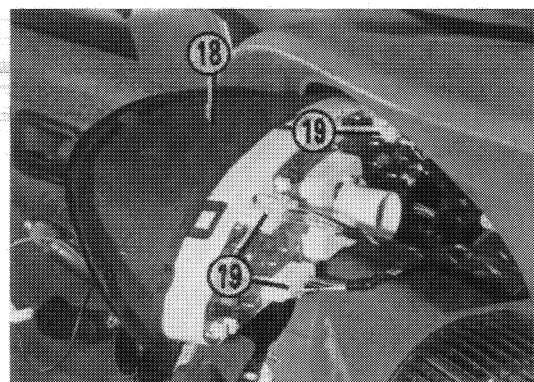


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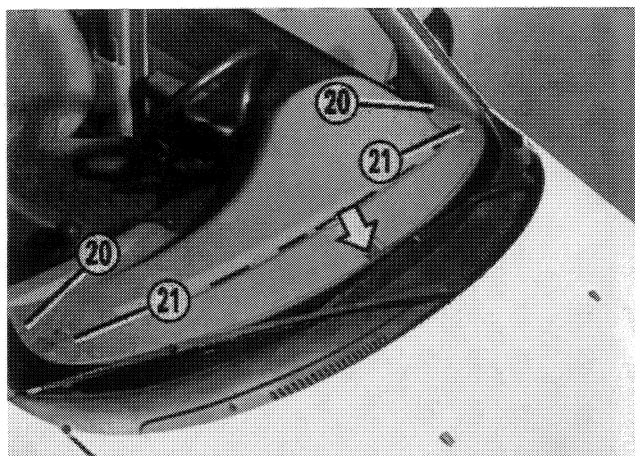
- remove the horn button cover (8) from its housing by undoing round the edge in order to release the three strips (9) with double paired tooth profile from their seats (arrowed) on steering wheel (10). Then disconnect the two connectors (11) from underneath;
- position the front wheels in a straight line and then, after unscrewing nut (12) pull steering wheel (10) off the splined end of the top steering control shaft;
- unscrew bolts (13 and 14) that fasten the top guard (15) and bottom guard (16) together and to the top steering control shaft assembly;
- unscrew screws (17) that retain control panel (18) to the instrument facia after removing panel from its seat and disconnecting the various connectors (19) from behind.;



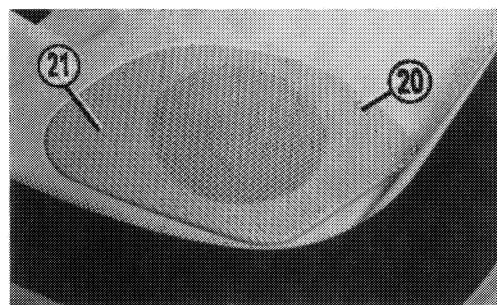
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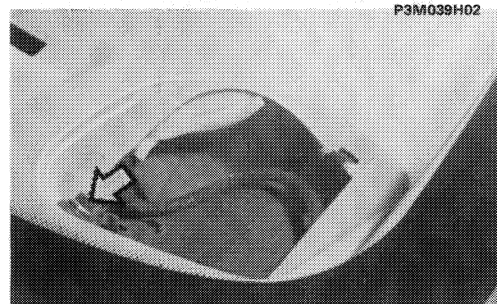
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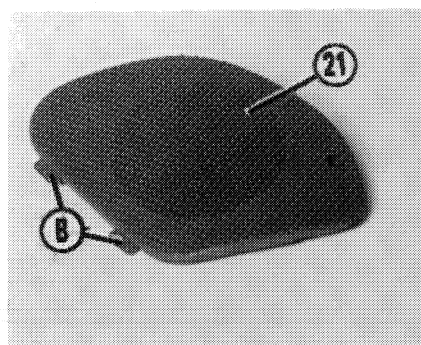
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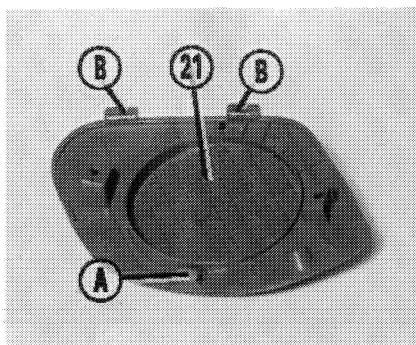
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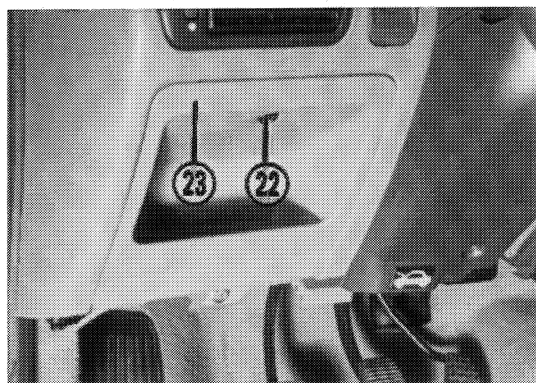


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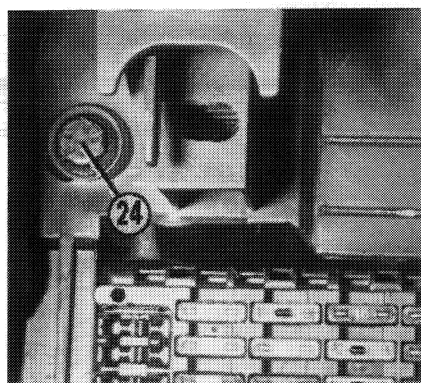
P3M039H05

- unscrew screws (20) that fasten grilles (21) covering radio speaker seats to top sides of facia panels;
- remove each of the two grilles (21) from its seat where it is restrained by tab with toothed profile (A) and held in position by tabs (B) (inserted in slots);
- remove the small rectangular moulding located in the middle of the top front part of the instrument facia;

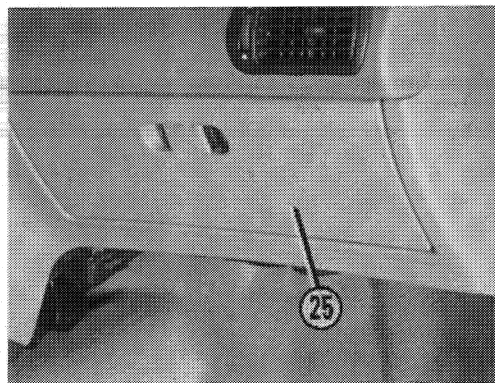


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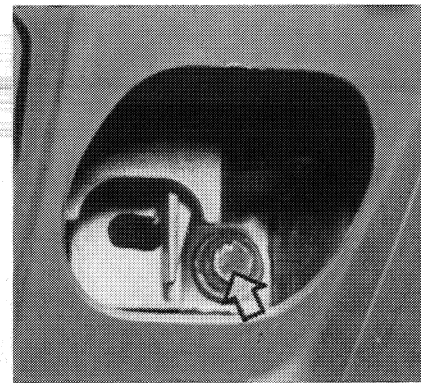
- unscrew the three hexagonal headed socket screws (arrowed in the top figure) located under the moulding and the above grilles that fasten top of facia to body;
- unscrew screw (22) and after opening flap (23) giving access to the junction box, unscrew screw (24) that fastens sides of the middle part of the left hand end of the facia to the body;
- open cover (25) of glove compartment and unscrew screw (arrowed in the right hand figure) that fastens side of the middle part of the right hand end of the facia to the body;



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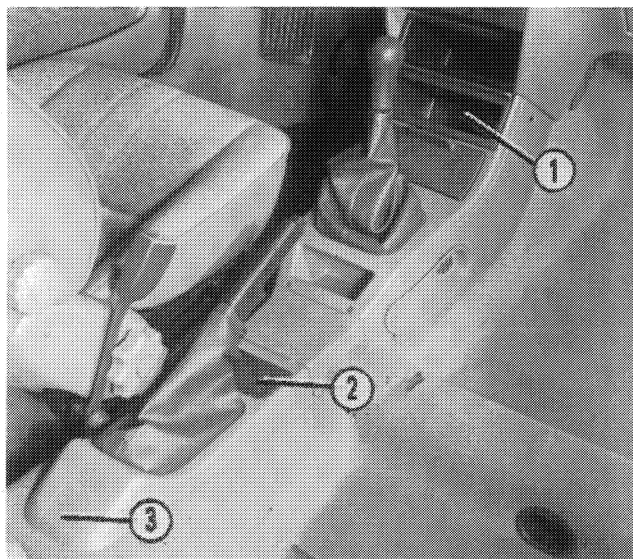


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### 50.



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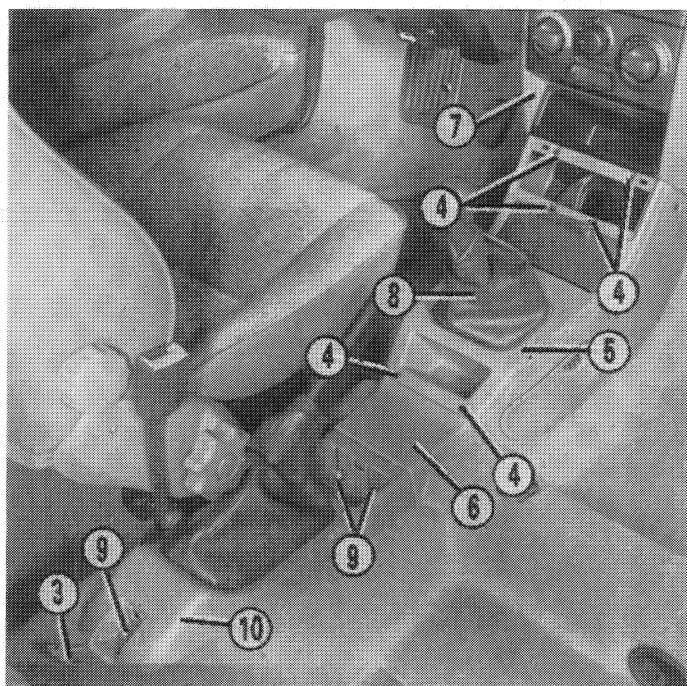


**NOTE** The operations described and illustrated on this page are reserved solely for vehicles with top tunnel trim.

- remove box cover (1) of radio compartment, followed by plate (2) and plug (3) (noting that the latter is hinged at the rear) that are located on the rear part of the tunnel trim;

- unscrew screws (4) that fasten top part (5) of tunnel trim to underlying bottom part (6) and trim of central console (7);

- release top trim (5) from bottom trim (6), noting that side ridges of central part of first part are inserted in arrowed seats;



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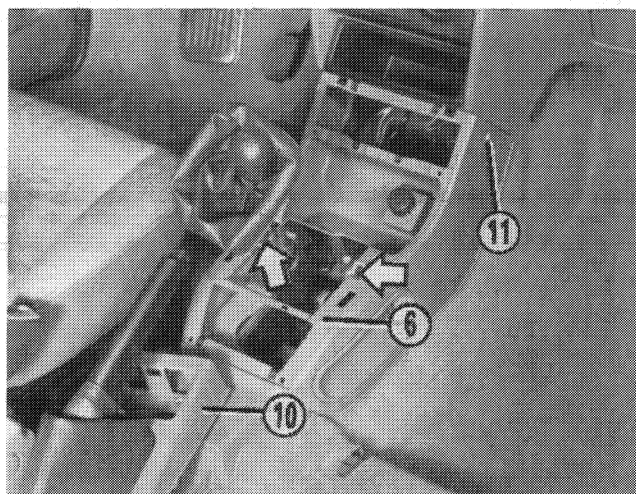


- working from underneath the top trim (5) undo tabs of frame retaining bottom of cone trim (8) protecting gear lever in order to release;

- unscrew nuts (9) retaining tunnel rear trim (10) and rear part of front lower trim (6) to the vehicle floor pan;

- unscrew bolts (11) that fasten tunnel bottom front trim (6) to trim of central console (8);

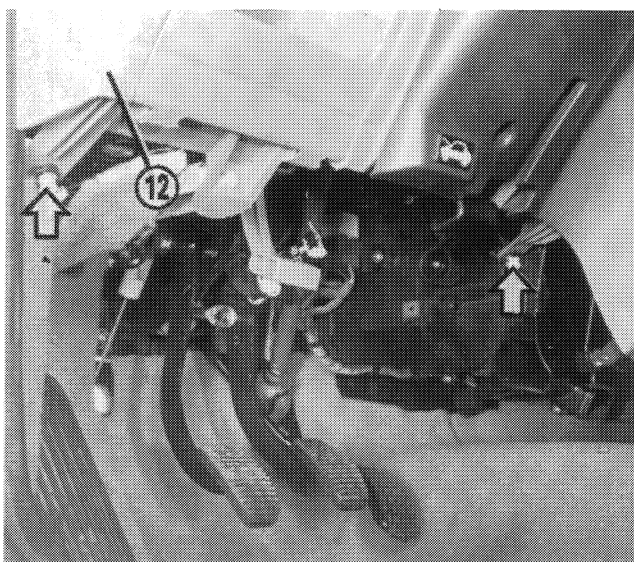
- lift rear trim (10) and remove lower front trim (6);



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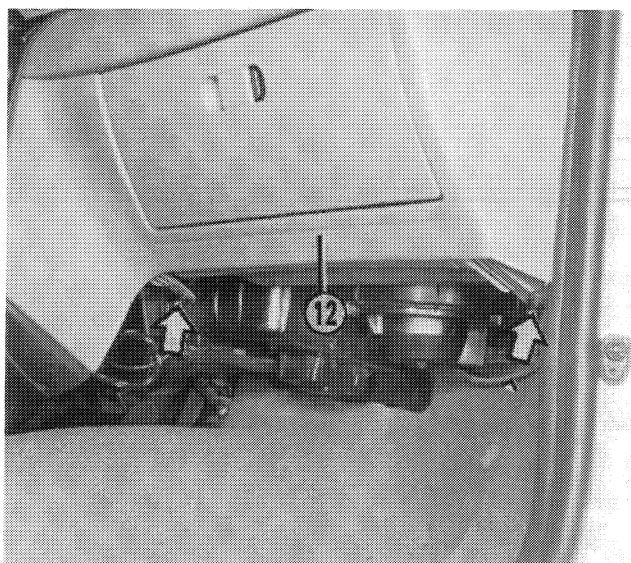
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P3M041H01



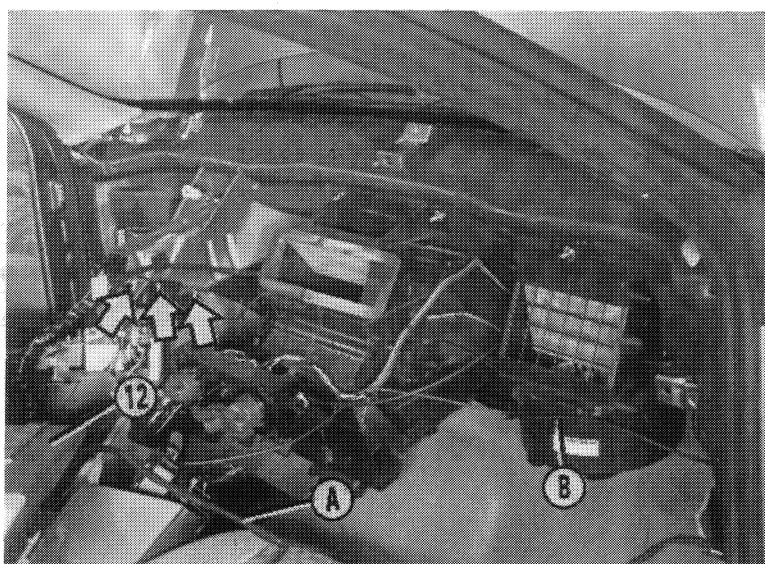
- unscrew nuts that fasten steering top shaft assembly to body mount that are tightened onto stud screws arrowed in the bottom figure;
- position above assembly on vehicle floor after releasing the various electric cable connectors;



P3M041H02



- unscrew the hexagonal headed socket screws arrowed in the two figures alongside that fasten lower, central and side brackets of instrument panel (12) to heater distributor assembly and body brackets respectively;

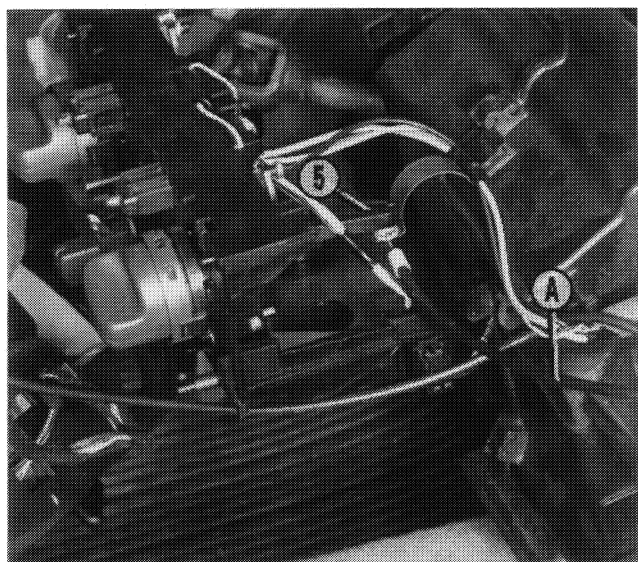


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- remove instrument facia (12) from its seat and position on front seat cushions (as shown in figure alongside);
- lastly, in order to facilitate access to the heater distributor assembly, remove the clips that fasten wiring (A) of the electric leads that fasten the aerial to the body from the right hand end of the facia and release lead (B) of the aerial.

## 50.



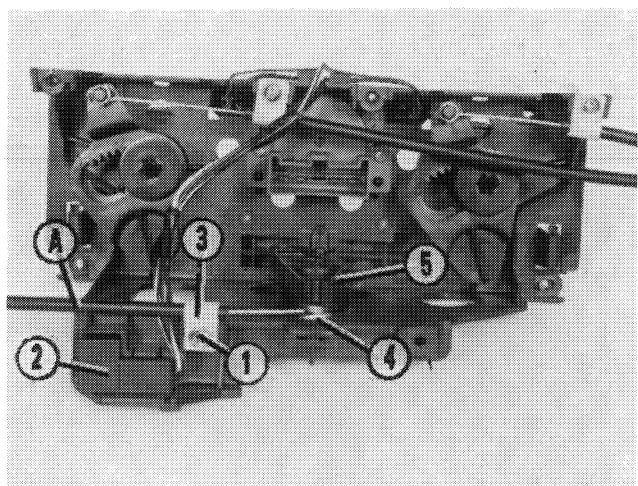
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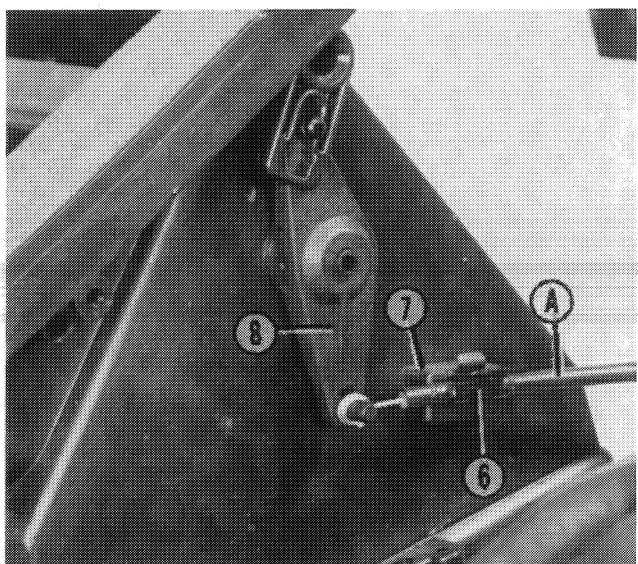
### AIR INTAKE FLAP CONTROL CABLE

To replace the air intake flap control cable (A), proceed as follows:

- unscrew screw (1) that fastens terminal (3) of sheath of cable (A) to control support;
- remove retaining washer (4) and withdraw spiral at the end of cable (A) from cylindrical ridge on lever (5);



- release (by pulling upward) the other end of the sheath of cable (A) from metal clip (6) inserted in block (7) press-fitted to left side surface of heater-distributor assembly fan assembly;
- withdraw spiral from the other end of the cable from the cylindrical ridge on air intake flap idler lever (8).

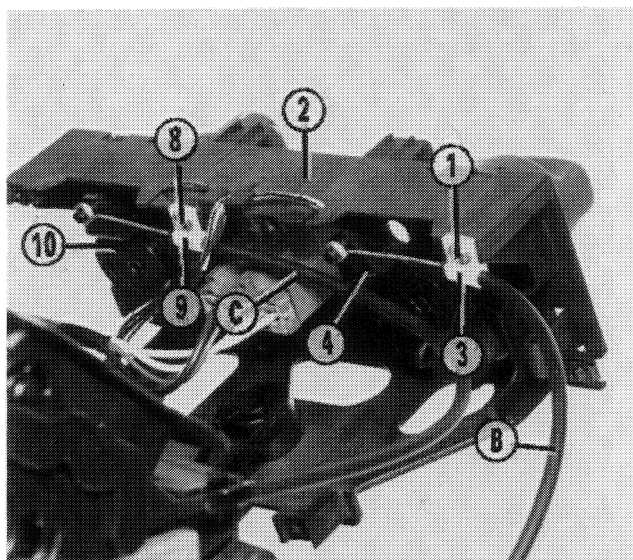


P3M042H03



To refit the new cable, carry out removal operations in reverse order, noting that the end of the sheath without the terminal must be inserted in metal clip (6) so that the air intake flap can move through its entire travel.

**NOTE** To correct position of cable sheath, which is necessary when air intake flap opening or closure is defective, the instrument facia need not be removed because the repair can be carried by working from the bottom right in the middle.



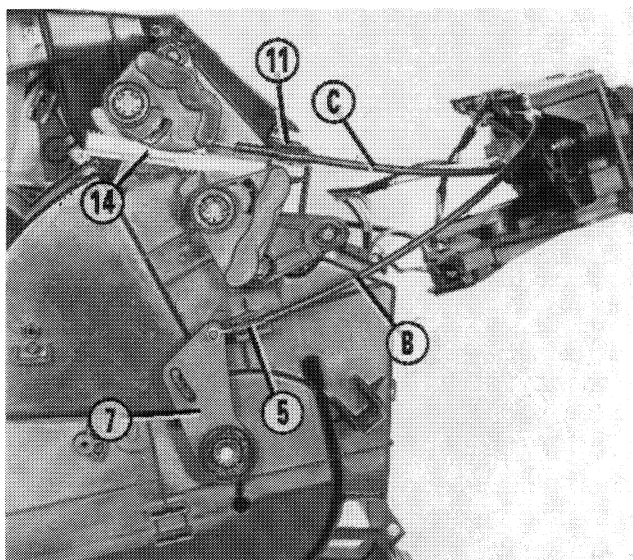
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### MIXER FLAP CONTROL CABLE

#### Removing

- unscrew screw (1) that fastens terminal (3) of sheath of cable (B) to control support (2) and withdraw spiral at the end of cable from lever (4)
- release (by pulling upward) the other end of the sheath of cable (B) from metal clip (5) inserted in block (6) press-fitted to left side surface of heater-distributor assembly fan assembly;
- withdraw spiral from the other end of the cable from the cylindrical ridge on air mixer flap lever (7).



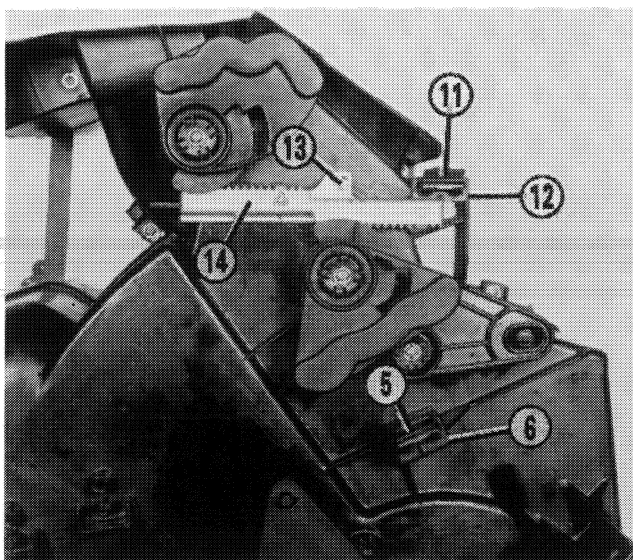
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### DISTRIBUTION FLAP CONTROL CABLE

#### Removing

- unscrew screw (8) that fastens terminal (9) of sheath of cable (C) to control support and withdraw spiral at the end of cable from lever (10);
- release (by pulling upward) the other end of the sheath of cable (C) from metal clip (11) inserted in block (12) press-fitted to left side surface of heater-distributor assembly fan assembly;
- withdraw spiral from the other end of the cable (C) from the cylindrical ridge (13) on rack operating distribution flaps.



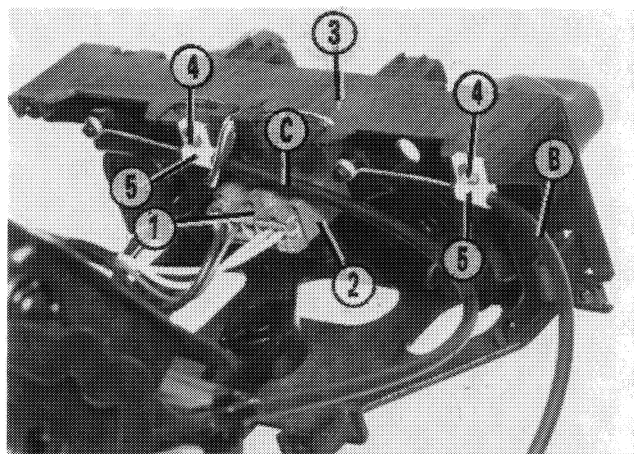
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To refit the new cables (B and C) carry out removal operations in reverse order, noting that the end of the sheath without the terminal must be inserted in metal clips (5 and 11 respectively) so that the mixer and distribution flaps can move through their entire travel.

**NOTE** To correct position of sheaths of cables (B and C) the instrument facia need not be removed because the repair can be carried by working from the bottom right in the middle.

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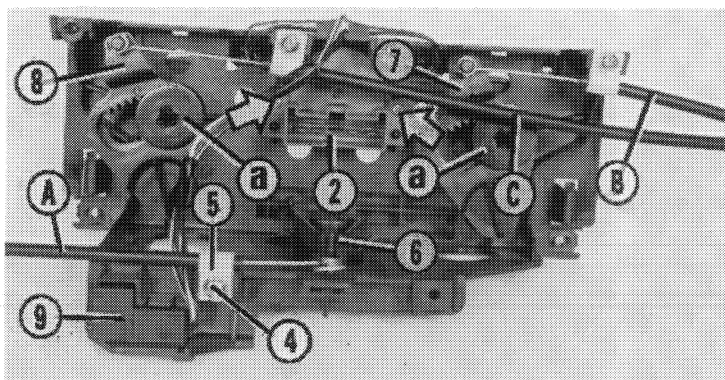


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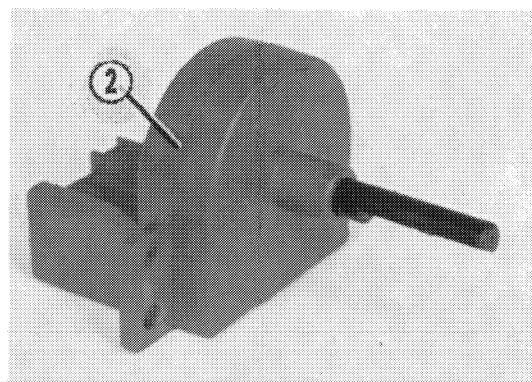


### PASSENGER COMPARTMENT VENTILATION FAN SPEED SELECTOR

After disconnecting the facia, disconnect connector (1) of supply leads from switch (2) and disconnect switch from rear of control support (3) after unscrewing the arrowed screws that retain it to the support.

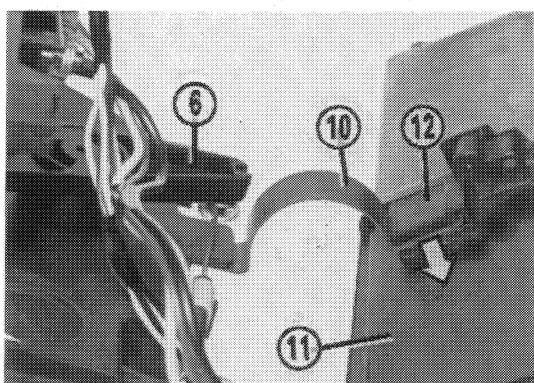


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P3M044H03

### HEATER CONTROL SUPPORT ASSEMBLY

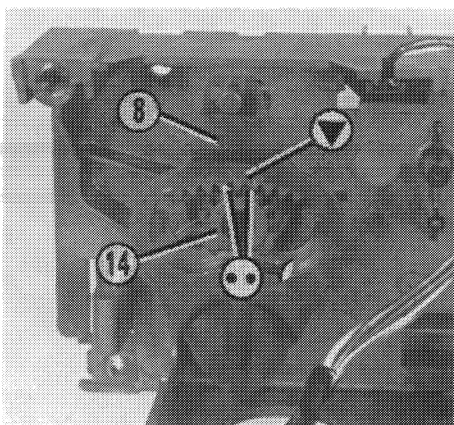


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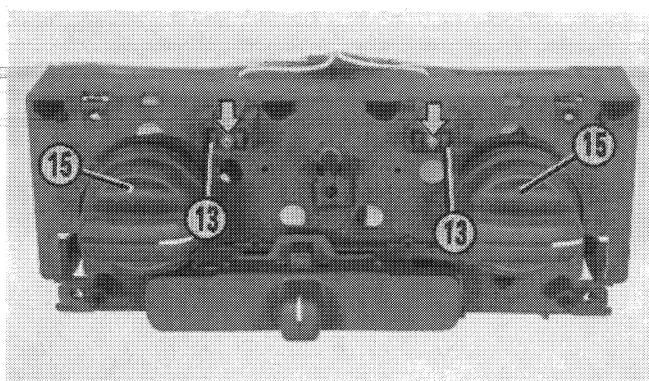


### Removing

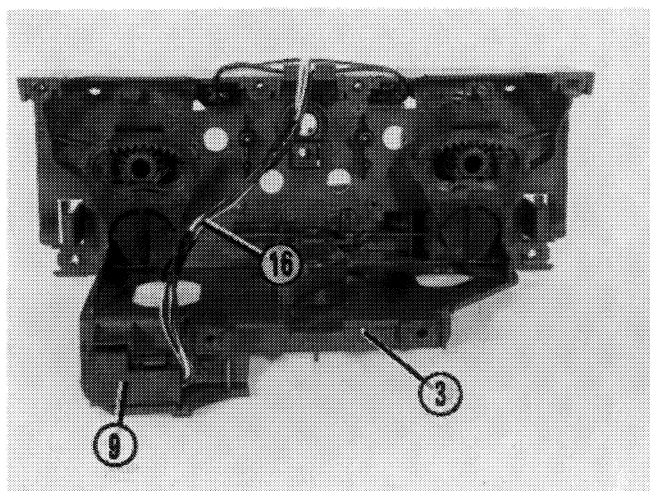
- unscrew screws (4) that retain terminals (5) of the sheaths of the three cables (A - B - C) to control support (3) and withdraw spirals at cable ends from levers (6 - 7 - 8);
- disconnect the above connector (1) from switch (2) and connector from corresponding connector (9) of heater control symbol light bulbs;
- undo clip (10) fastening control support (3) to distributor heater assembly (11) in arrowed direction in order to remove from seat (12).



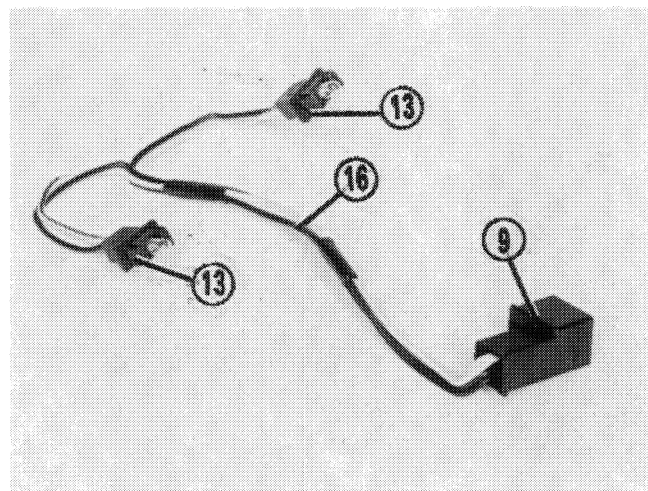
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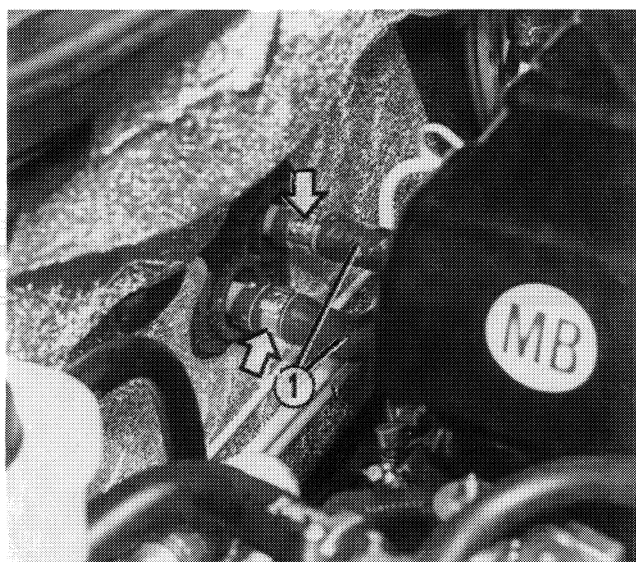
### Dismantling and rebuilding

- undo the two screws indicated by arrows in the second figure on the left on the previous page that fasten passenger compartment ventilation fan speed selector (2) to control assembly;
- disconnect connector (9) from control support (3) and release wiring (16) for symbol light bulbs after pushing the two bulb holders (13) inside.

Levers (7 and 8 in figure on previous page) are fitted to toothed shanks (14) of knobs (15) so that the triangle on parts (7 and 8) is located between the two teeth of the shank marked by two raised dots (see detail at bottom left of previous page).

To check the correct position of the two parts above, remove the two discs (indicated by letter **a** in the second figure on the left on the previous page) retaining levers (7 and 8) in position on toothed shanks (14) of knobs (15).

**NOTE** To replace the glass bulbs (indicated by small arrows in the bottom right hand figure on the previous page), neither the facia or the control support need be removed. Simply remove the front panel from the support and then remove the bulb or bulbs to be changed.



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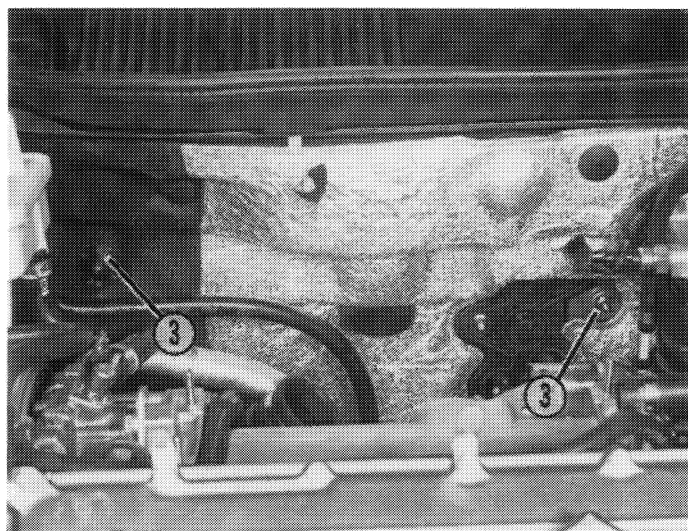
### DISTRIBUTOR HEATER ASSEMBLY

#### Removing

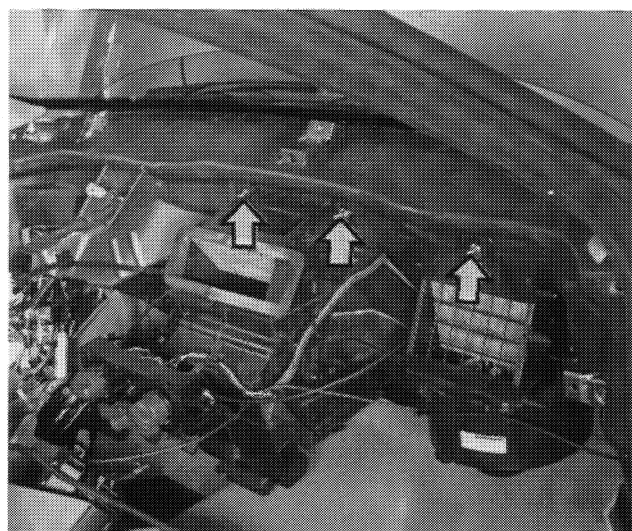
After removing the instrument facia as described on the previous pages, proceed as follows:

- drain engine cooling system, then loosen clips (arrowed) and disconnect the two pipes (1) from heater radiator input and output ducts (2 in figure at bottom of previous page) that protrude through the dashboard (bulkhead between passenger compartment and engine bay) into the rear of the engine bay;

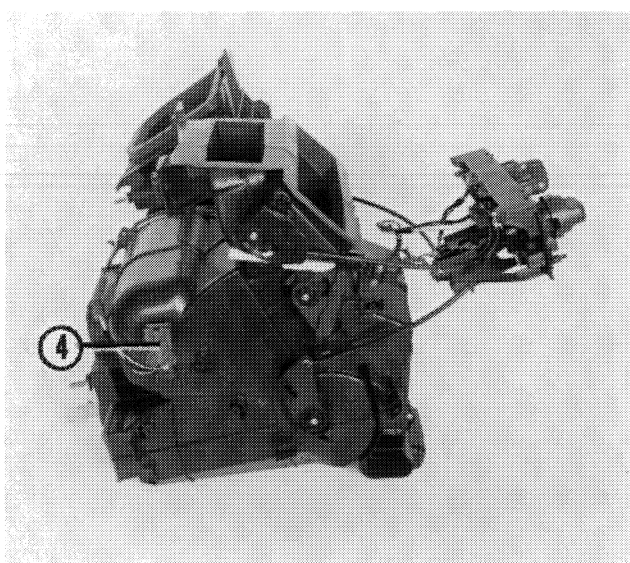
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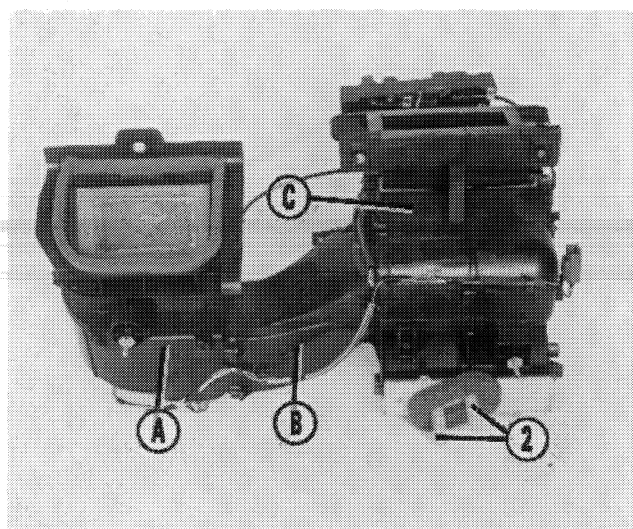


P3M046H03

- working from the rear of the engine bay, unscrew plastic discs (3) and underlying nuts that fasten distributor heater inside passenger compartment to dashboard;
- working from inside the passenger compartment, disconnect electrical lead connectors from terminal (4) of distributor heater assembly wiring;
- for vehicles with top tunnel trim only, unscrew screw retaining middle of bracket joining the two pipes carrying air to the front side outlets on the above trim to the vehicle floorpan;

### Detail of left side part of distributor heater assembly

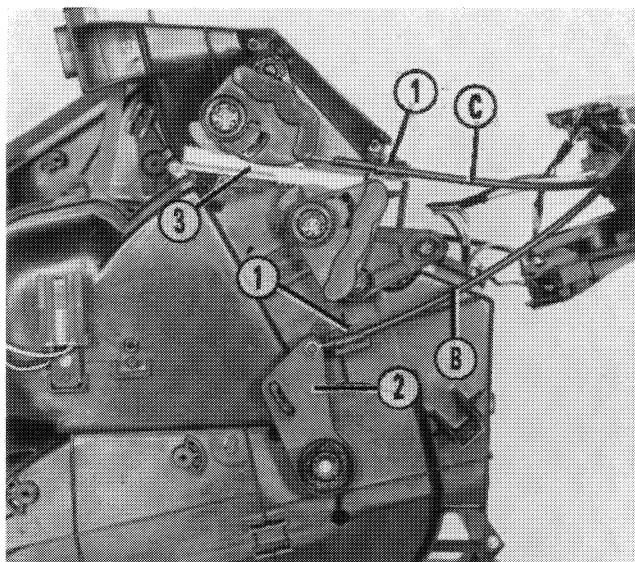
- release the two pipes above from the bottom of the distributor heater unit;
- unscrew the nuts arrowed in the top right figure that retain the top of the above assembly to the body;
- remove the distributor heater assembly from the passenger compartment.



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The distributor heater assembly consists in essence of fan unit (A) to which distributor heater unit (C) is connected via duct (B).

### Detail of rear of distributor heater assembly

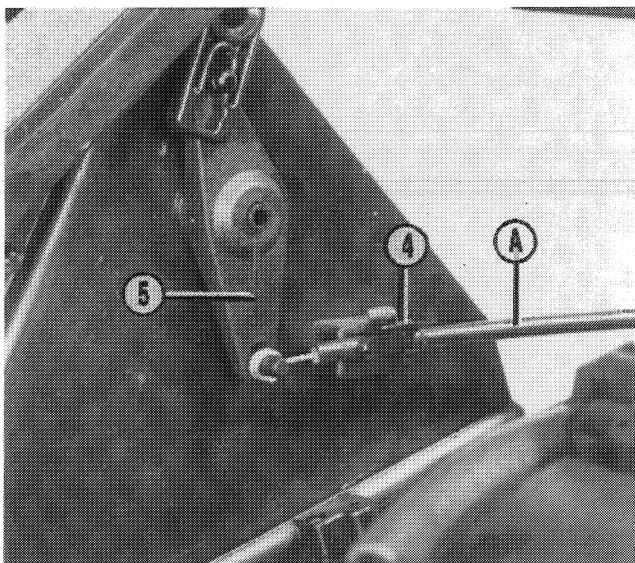


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### Disassembly

- working on left side surface of distributor heater unit, undo sheaths of cables (B and C) from clips (1) and withdraw cable end spirals from cylindrical ridge of lever (2) and rack (3) that control mixer flap and distribution flap respectively;



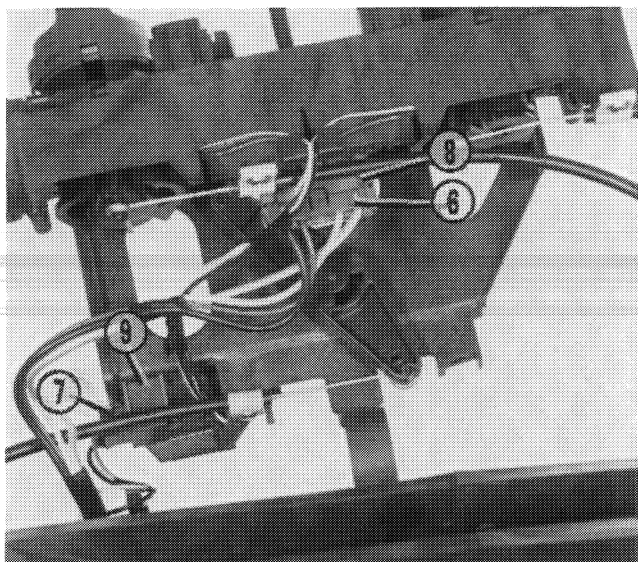
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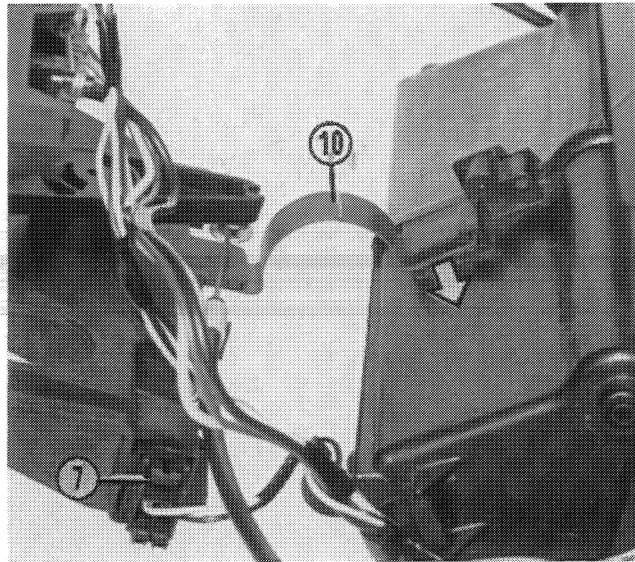
- working on left side surface of air intake duct, undo sheath of cable (A) from clip (4) and withdraw cable end spiral from cylindrical ridge of air intake flap control lever (5);

- disconnect connectors (6 and 7) respectively from passenger compartment ventilation fan speed selector (8) and control support assembly front panel symbol light bulb connector (9);

- move spring (10) sideways (in arrowed direction) in control support in order to remove from its seat on the distributor heater unit;

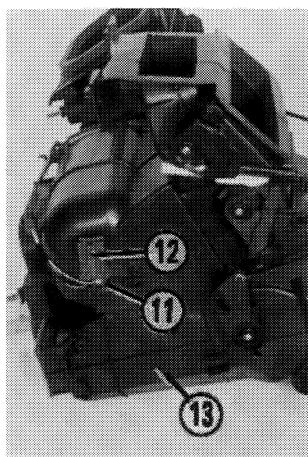


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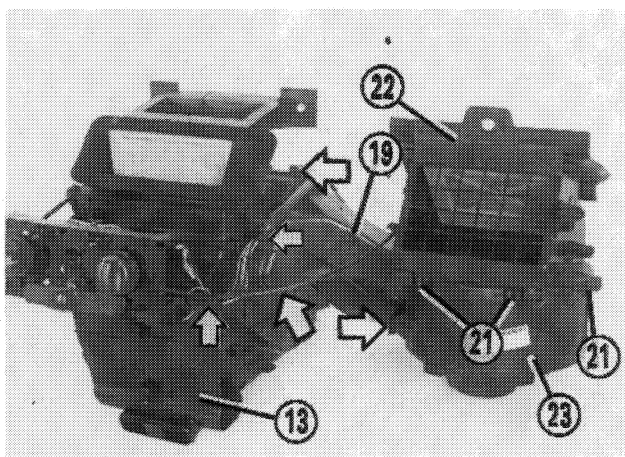


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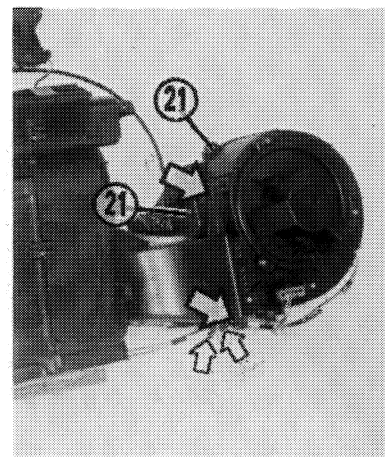
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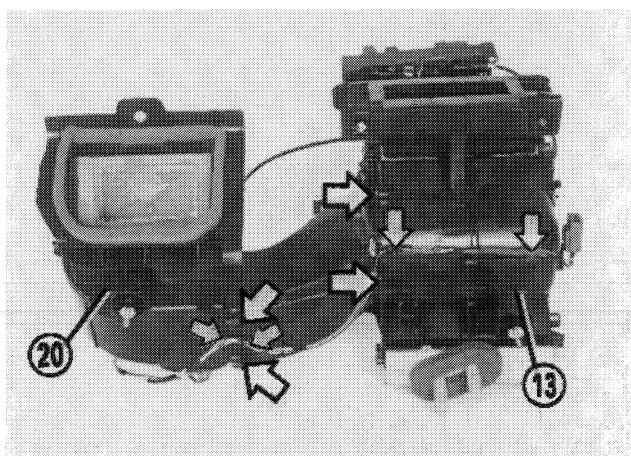
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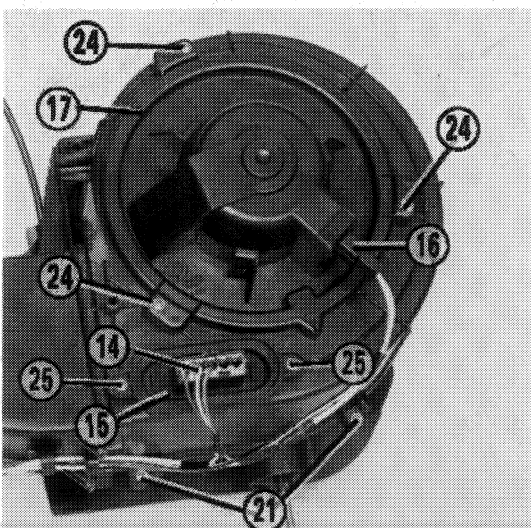
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P3M048H04



- unscrew screw (11) that fastens connector (12) to left side support of distributor heater unit (13);
- disconnect connector (14) from resistor (15) and connector (16) from support (17) of fan (18);
- release electrical wiring cables from clips indicated by small arrows that retain them to the assembly;
- unscrew the screws indicated by large arrows in the various figures that fasten duct (19) to fan (20) and distributor heater unit (13).

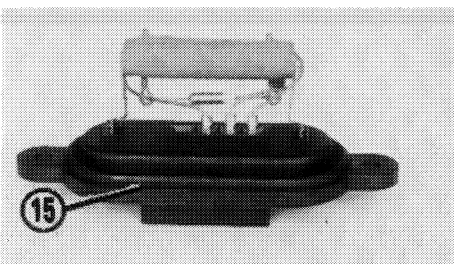


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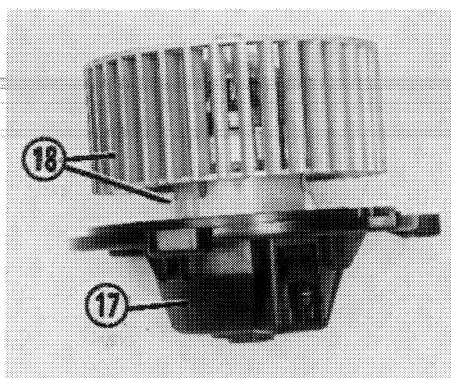


### DISMANTLING FAN UNIT

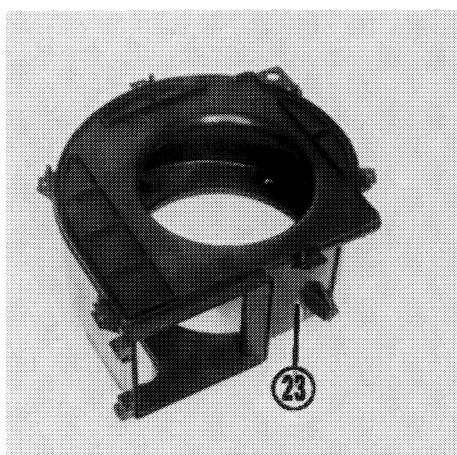
- unscrew screws (21) that fasten the two case halves (22 and 23) together to make up the fan unit;
- unscrew screws (24 and 25) that fasten support (17) of fan (18) and resistor (15) to bottom case half (23);



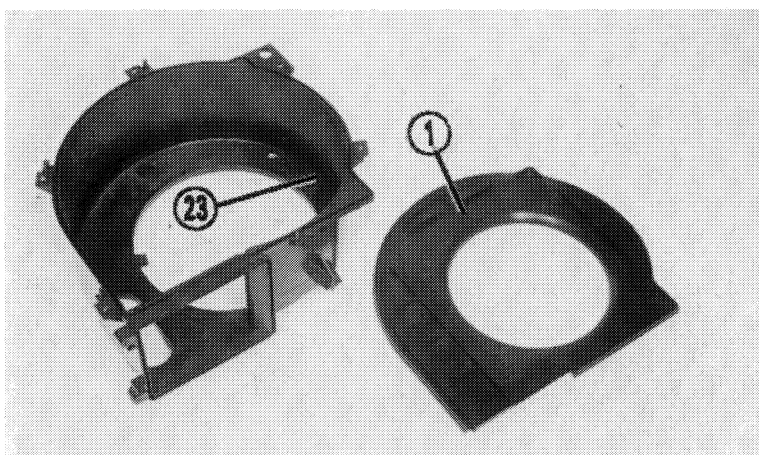
P3M048H07



P3M048H06



P3M049H01

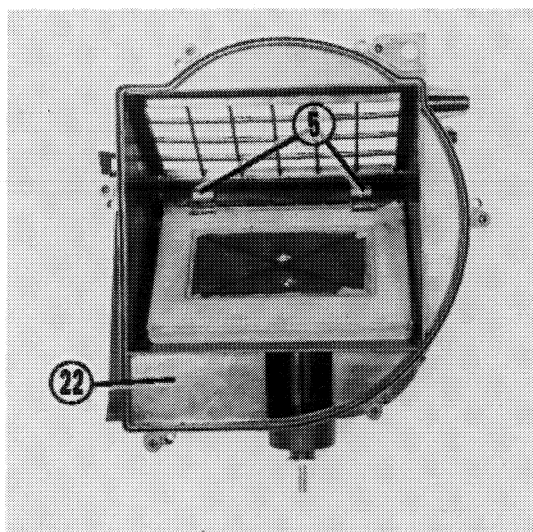


P3M049H02

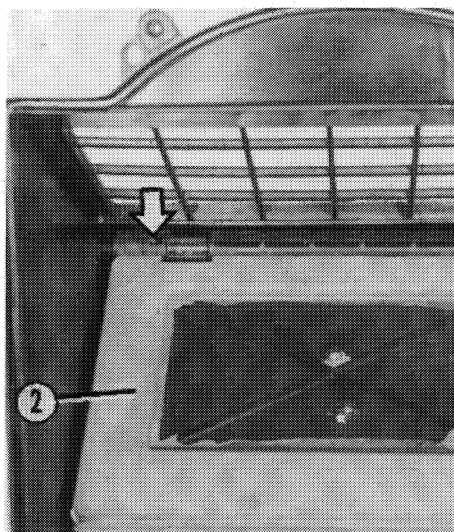
### Details of bottom fan unit case half

23. Bottom case half

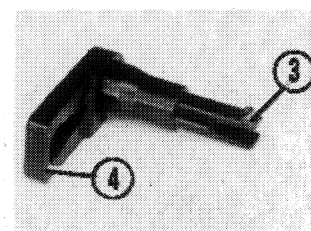
1. Diaphragm carrying air to fan



P3M049H03



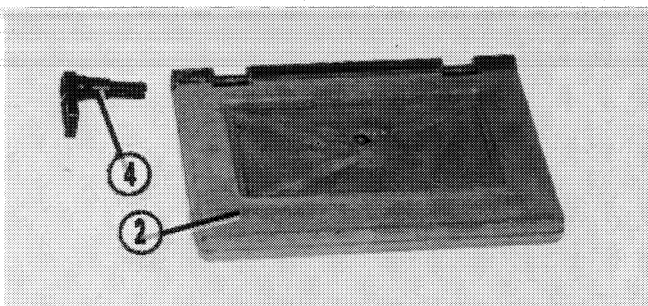
P3M049H04



P3M049H05

### Detail of top fan unit case half

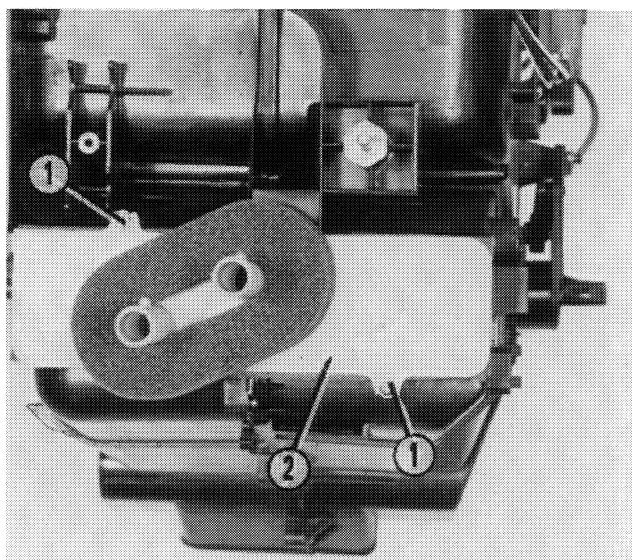
- undo tab (3) with toothed profile of lever (4) through arrowed slot on air intake flap (2) in order to remove from flap (2) or top case half (22);
- position air intake flap (2) to release pivot pin from profiled ridges (5) press-fitted to top case half (22).



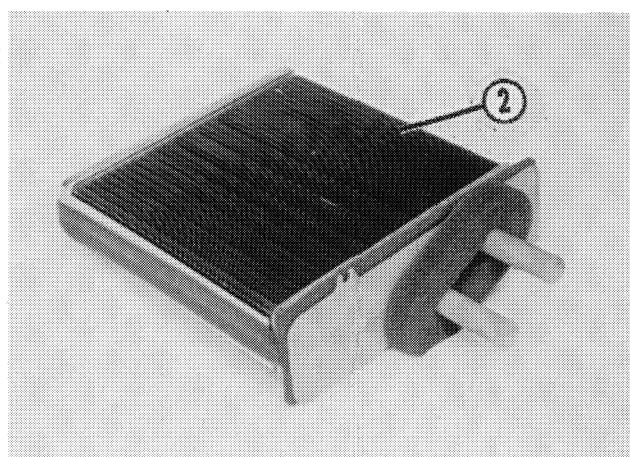
P3M049H06

### Detail of air intake flap and operating lever

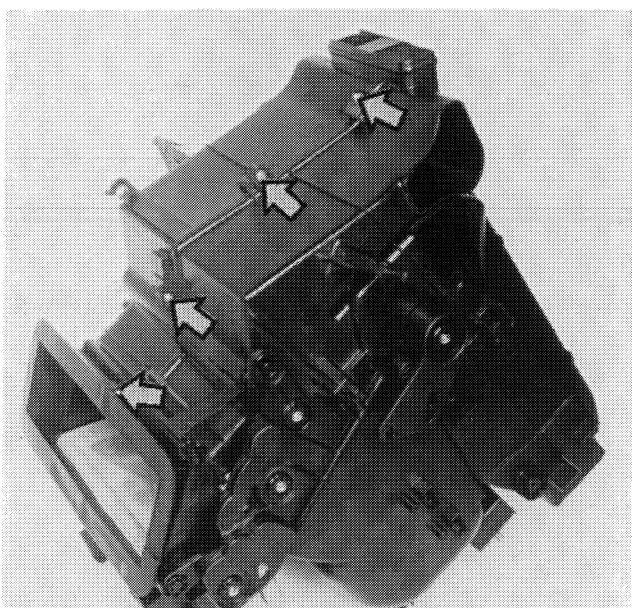
50.



P3M050H01



P3M050H02

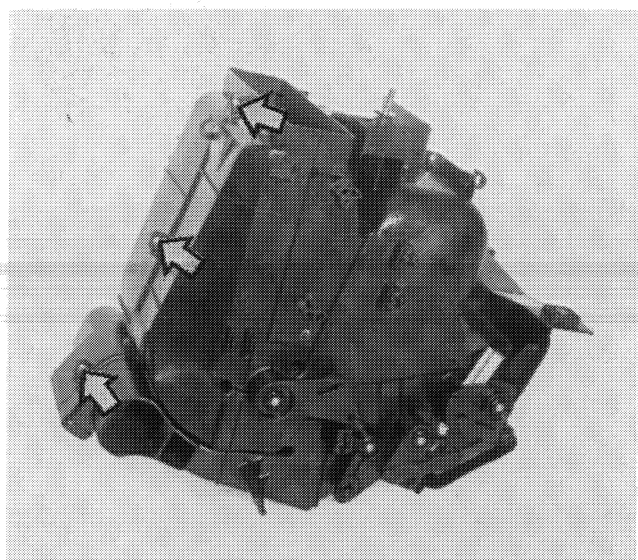


P3M050H03

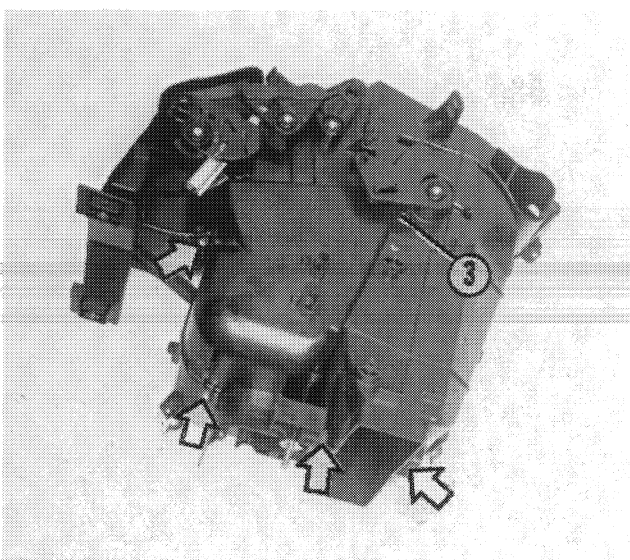


### DISASSEMBLING DISTRIBUTOR HEATER UNIT

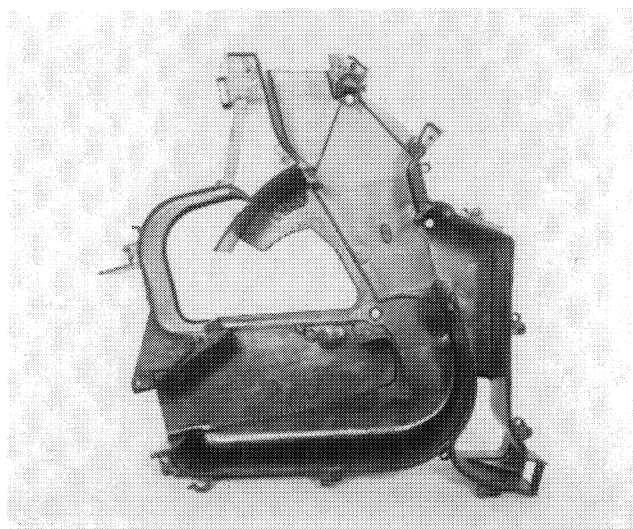
- unscrew screws (1) that secure the front part of the heater radiator (2) to lower rear surface of distributor heater unit;
- extract radiator (2) front seat on above unit;
- unscrew screws indicated by arrows and screw at bottom of hole (3) that join the two case halves making up the distributor heater unit;



P3M050H04

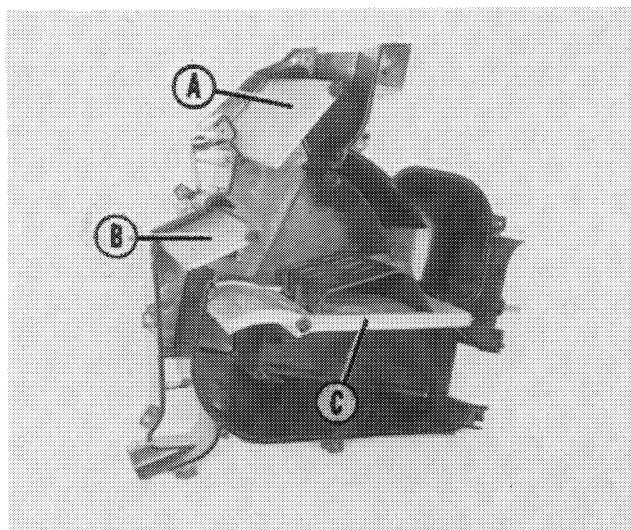


P3M050H05



P3M051H01

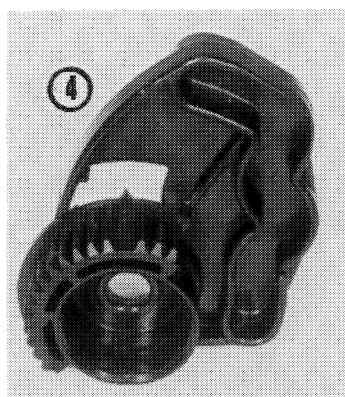
Detail of right hand case half



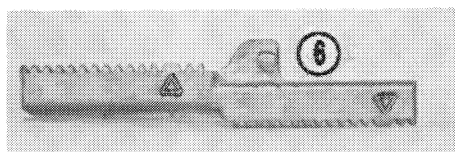
P3M051H02

Detail of left hand case half

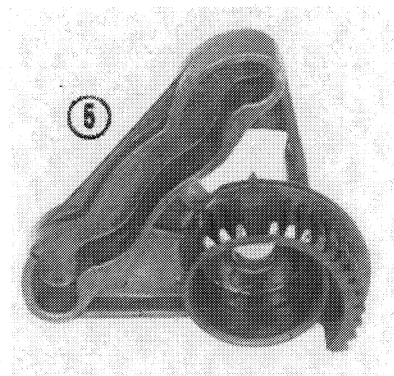
- unscrew screws indicated by arrows in the bottom middle figure that fasten square levers with toothed sectors (4 and 5) that operate the two distribution flaps, top (A) and bottom (B), to the left side surface of the right hand case half;
- unscrew the two levers with toothed sectors (4 and 5) from the cylindrical ridges on the above surfaces and then remove rack (6);
- unscrew screw (7) and withdraw intermediate idler lever (8) operating lower distribution flap (B) from cylindrical ridge on the above surfaces;
- unscrew screw (9) and withdraw square lever (10) that operates mixer flap (C) from cylindrical ridge on above surface;



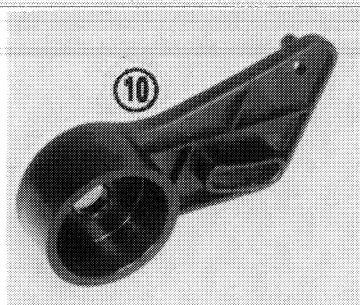
P3M051H03



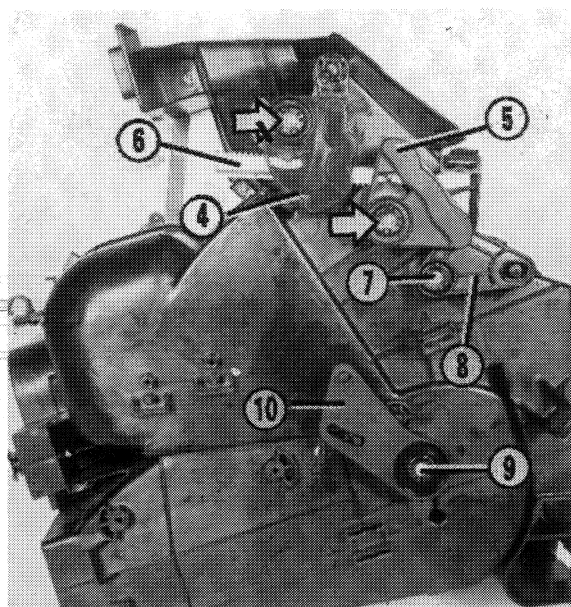
P3M051H04



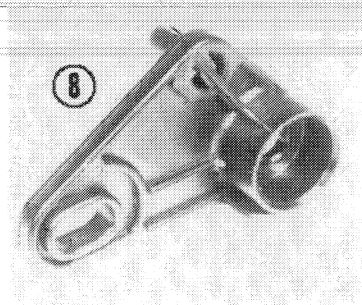
P3M051H05



P3M051H06

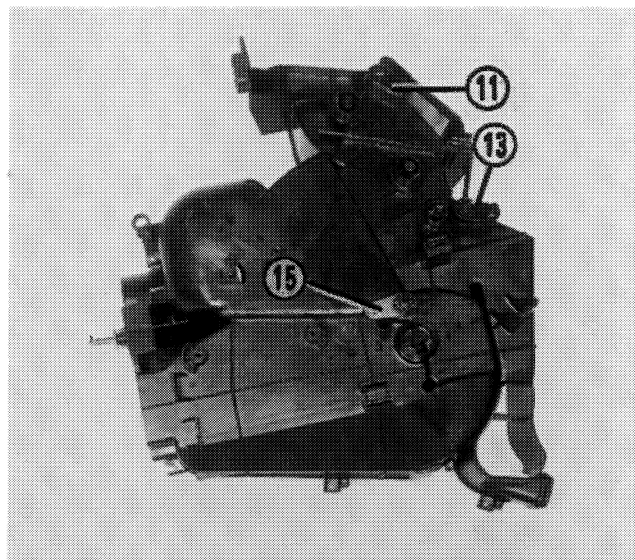


P3M051H07



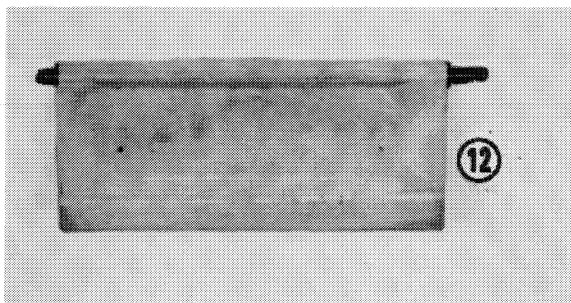
P3M051H08

### 50.

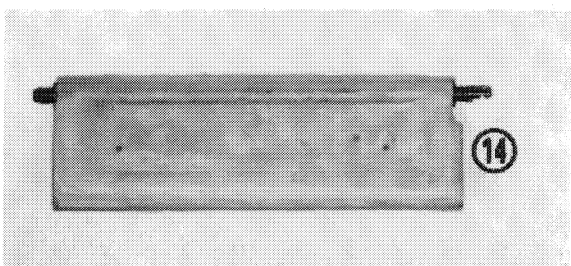


P3M052H01

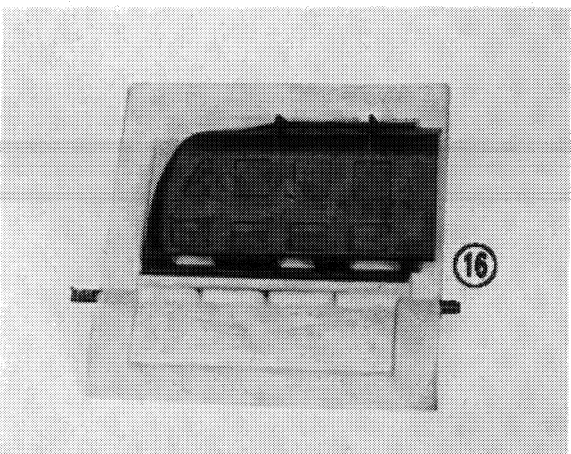
View of left hand case half without square levers controlling flaps



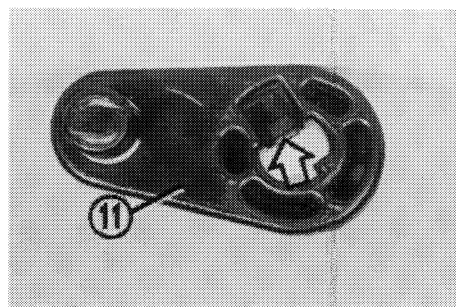
P3M052H04



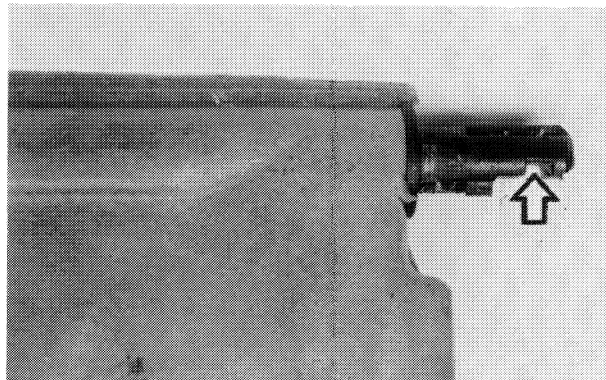
P3M052H05



P3M052H06



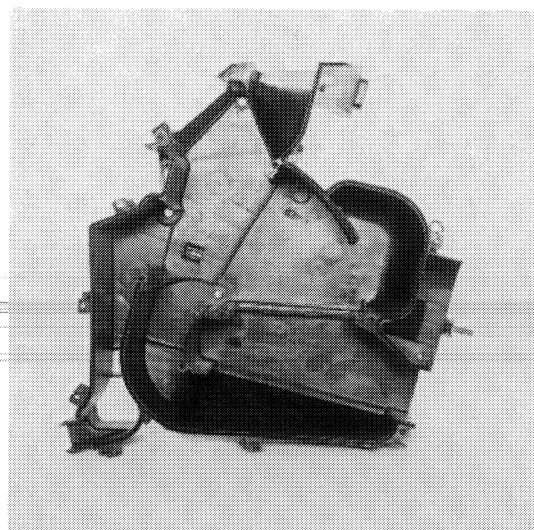
P3M052H02



P3M052H03

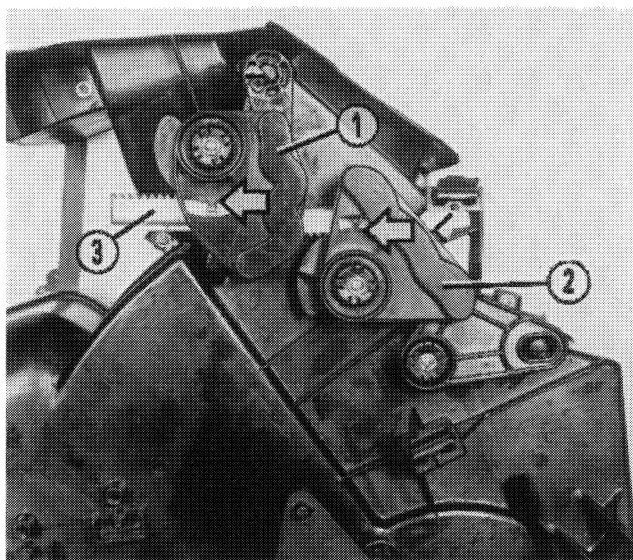
- undo tooth (arrowed in top right figure) of lever (11) to remove it from notch (indicated by arrow in second figure on right) on pivot shaft of top distribution flap (12) and withdraw from left hand case half;

- repeat the last operation for lever (13) and lower distribution flap (14) and then lever (15) and mixer flap (16).



P3M052H07

Detail of left hand case half (without flaps)



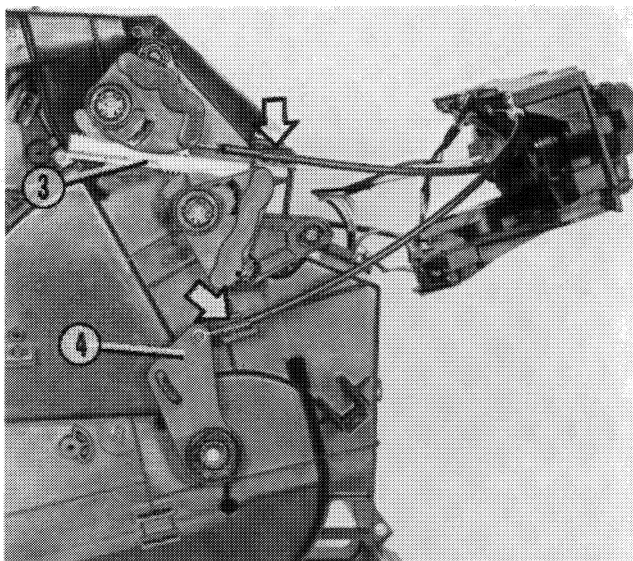
P3M053H01



### Reassembly

Reverse operations described and illustrated for disassembly, noting that inner sliding surfaces of square levers with toothed sectors (1 and 2) must be lubricated with vaseline before being fastened to the left side surfaces of distributor heater so that indicators (arrowed) are aligned with triangles printed on rack (3).

After fastening control cable spirals to cylindrical ridges on rack (3) and levers (4 and 5), connect sheath to clips arrowed in second and third figures on the left so that the distribution and mixer flaps move through their entire travel.

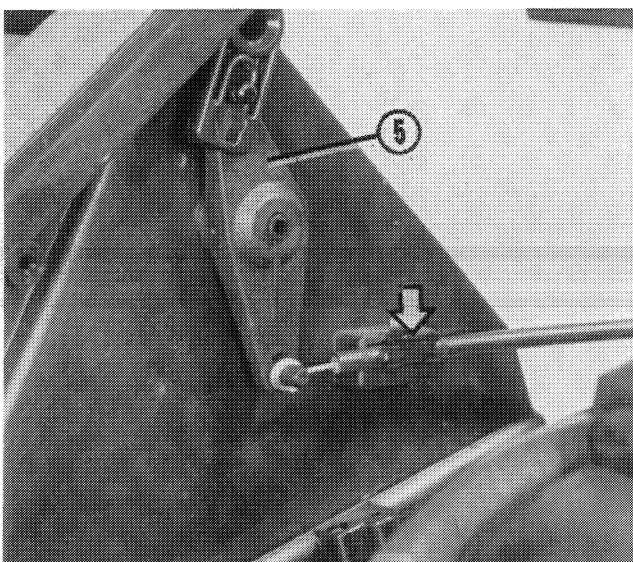


P3M053H02

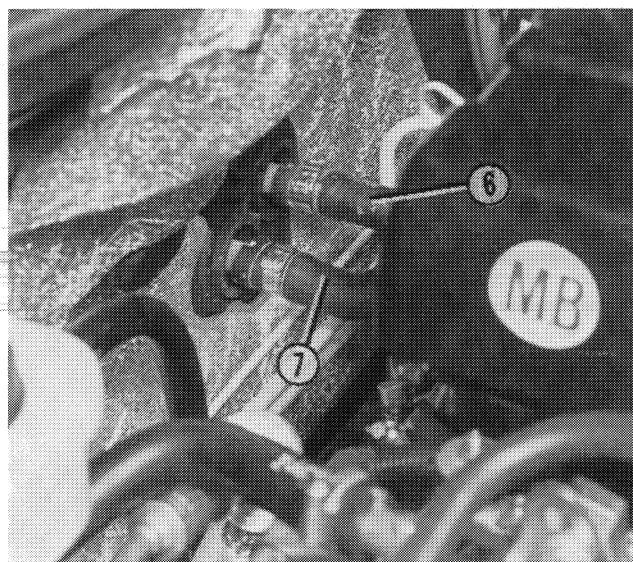


### Refitting

To refit the distributor heater assembly, reverse operations described for removal, noting that pipe (6) marked by a green strip must be connected to the left hand duct of the heater radiator marked with a green raised dot whereas pipe (7) marked by a white stripe must be connected to duct of heater radiator marked by a white raised dot.

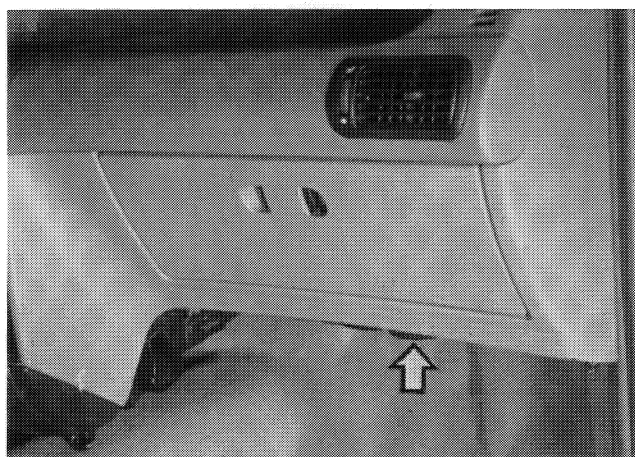


P3M053H03

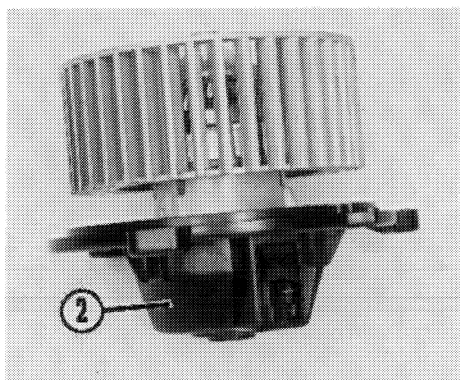


P3M053H04

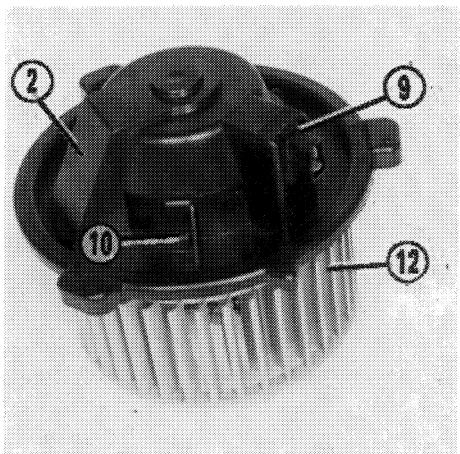
50.



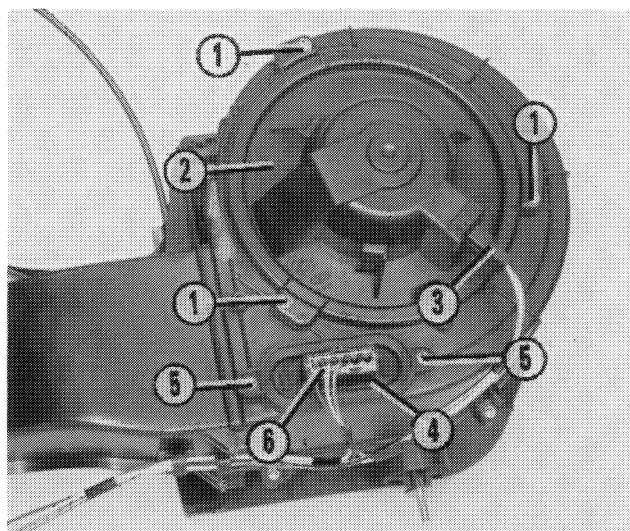
P3M054H01



P3M054H03



P3M054H04



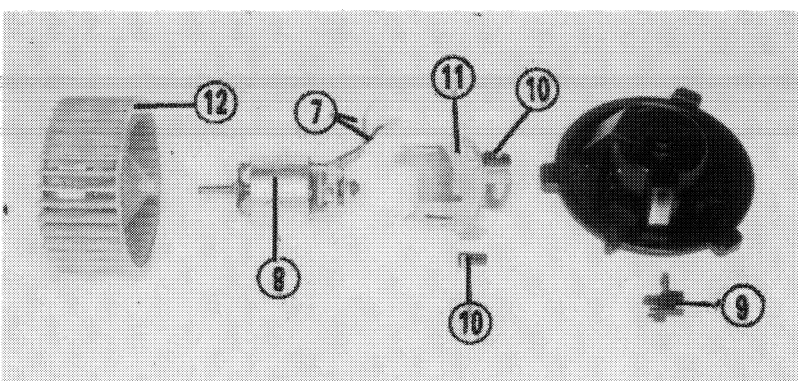
P3M054H02

### PASSENGER COMPARTMENT VENTILATION FAN

To remove the passenger compartment ventilation fan, simply undo bottom part of instrument facia (indicated by arrow in top figure) and unscrew screws (1) that fasten base (2) to the bottom part of distributor heater assembly. Then withdraw connector (3) and disconnect from supply leads.

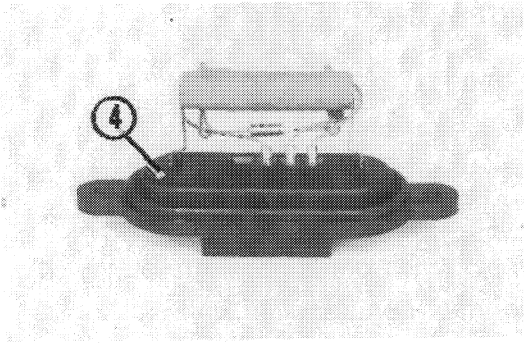
### Disassembly

- disconnect the two terminals of leads (7) supplying motor (8) from connector (9) press-fitted to base (2);
- undo profiled flexible blocks (10) fitted to adaptor ring (11) in order to release from base (2);
- unscrew motor (8) with impeller (12) and adaptor ring (11) from base (2);
- use a drift to withdraw impeller (12) from shaft of motor (8) to which it is press-fitted;



P3M054H05

- expand tabs with toothed profile of adaptor ring (11) outward in order to withdraw from motor (8).

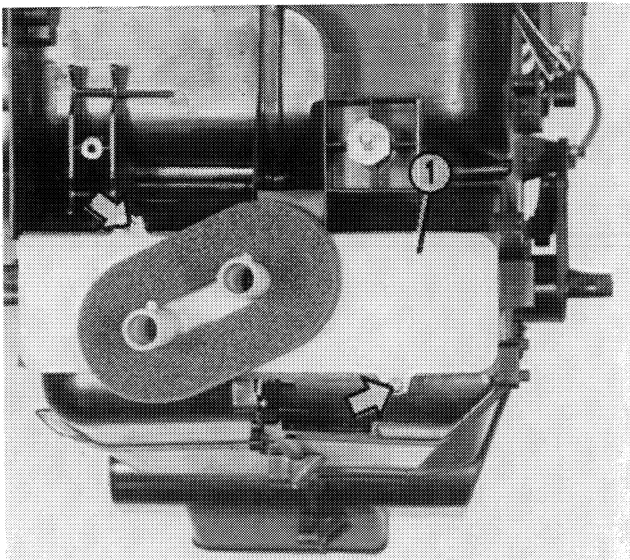


P3M055H01



### **PASSENGER COMPARTMENT VENTILATION FAN SPEED RESISTOR**

To remove resistor (4) (see top right hand figure on previous page), simply work on bottom right hand part of instrument facia to withdraw screws (5) that retain it to the bottom part of the distributor heater assembly. After withdrawing from assembly, disconnect connector (6) of supply leads.



P3M055H02

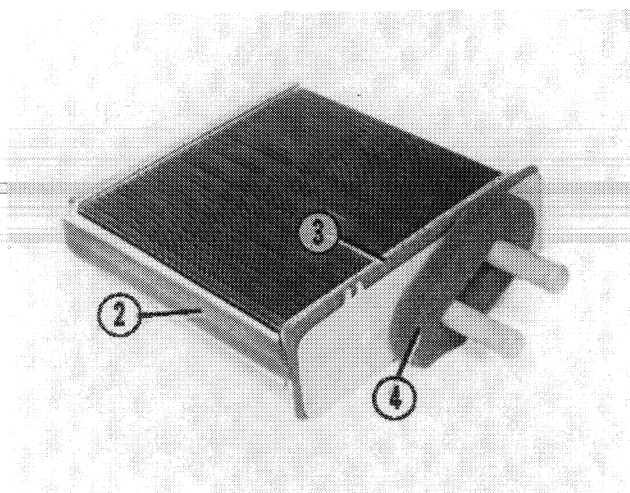


### **HEATER RADIATOR**

#### **Removing**

- drain engine cooling system
- remove the instrument facia and place on front seats (see instructions given on page 37 and following);
- remove distributor heater assembly as described on page 45 and following pages;
- after removing the distributor heater assembly from the vehicle, withdraw the arrowed screws that fasten front part of heater radiator to vehicle.

A strip of adhesive foam rubber (2) is applied round the heater radiator and a second seal (3) of the same material is applied behind the front part to which are applied the two input and outlet ducts. Lastly, a thoroid seal (4) of the same material is applied round the base of these ducts.



P3M055H03

#### **Refitting**

To refit, reverse removal instructions, noting the remarks given at the foot of page 53 with regard to pipe connection to heater radiator ducts.

## 50.



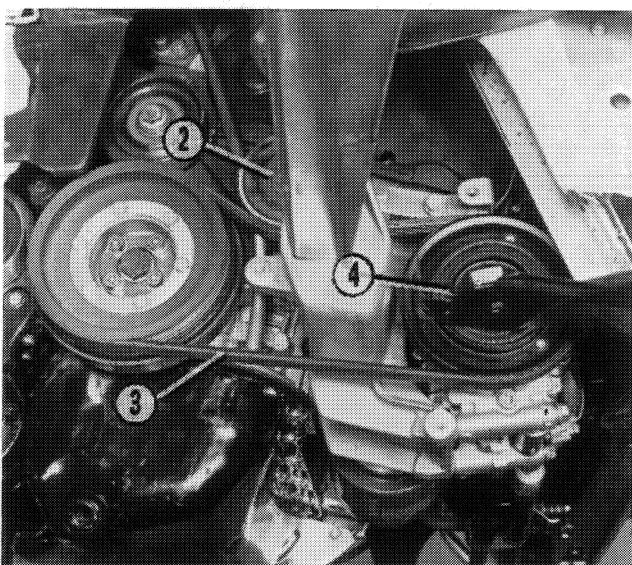
P3M056H01



### COMPRESSOR

#### Removing

- drain air conditioning system;
- unscrew arrowed screws that fasten belt guard (1) to the engine;
- loosen support of belt tensioner (2) and prise belt (3) from compressor pulley (4);
- disconnect connector of compressor supply leads from connector (5) fastened to the top;
- unscrew screws fastening pipe fittings to inlet duct (A) and outlet duct (B) of compressor (for diesel versions, first disconnect engine oil lines from filter mount);



P3M056H02

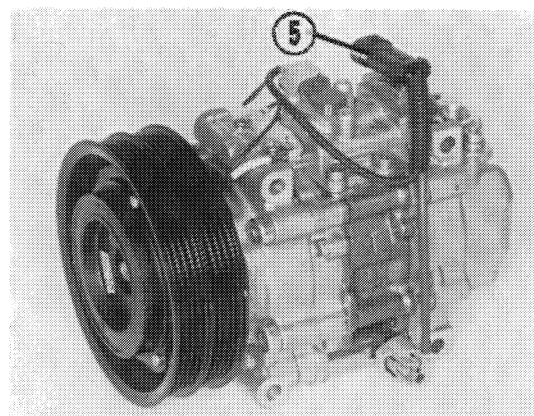


- after releasing pipe fittings from compressor, unscrew screws (6) that retain compressor to engine mount.

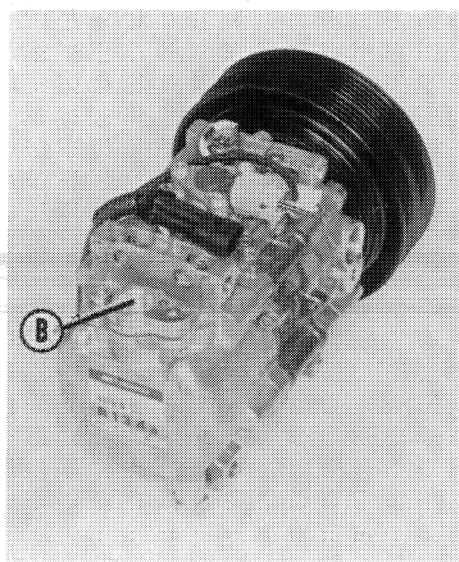


#### Refitting

Reverse operations described for removal, noting that belt must be tensioned at the end by adjusting belt tensioner.

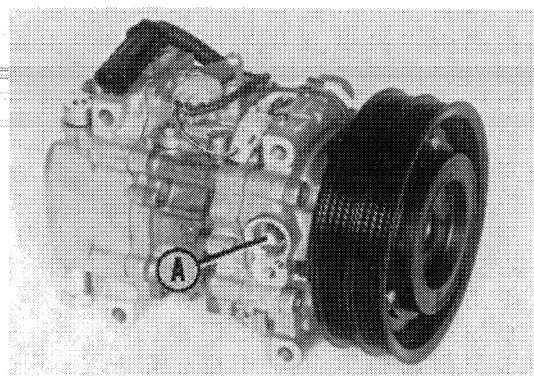


P3M056H04

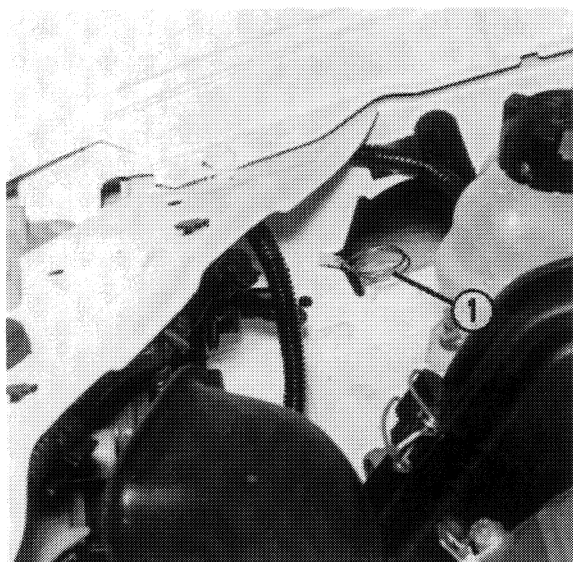


P3M056H03

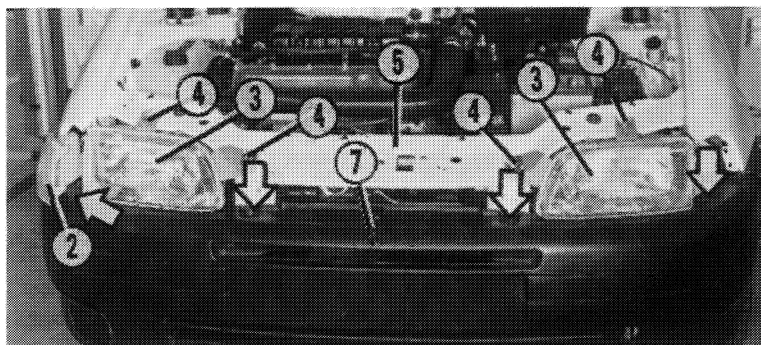
Compressor inlet duct (A) is located on the left front side for petrol versions and on the right front side (opposite) for diesels.



P3M056H05



P3M057H01



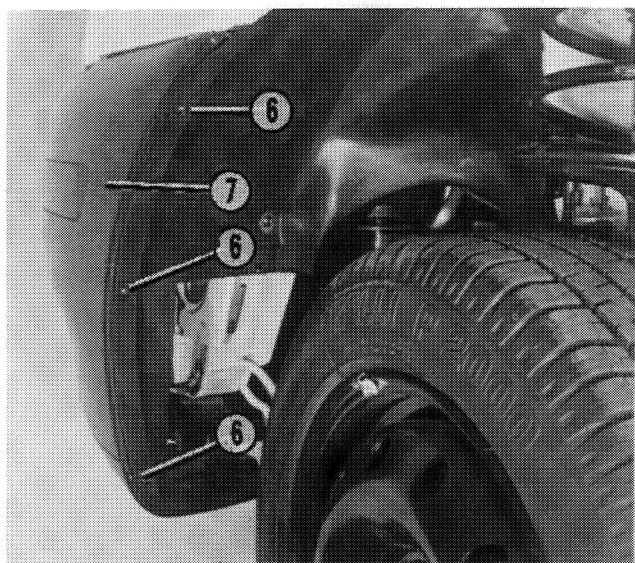
P3M057H02



## CONDENSER

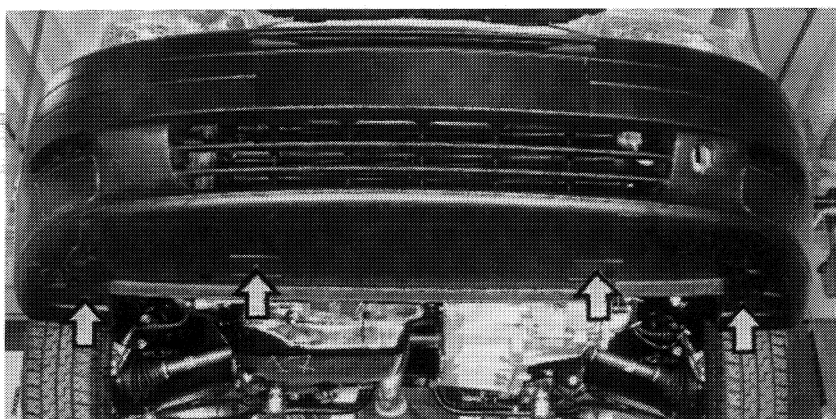
### Removing

- working on the front side part of the engine bay, undo spring links (1) that retain front side turn signals (2) in place
- working from the outside, withdraw tabs of side indicators (2) from the guides on the sides of front headlamps (3). Disconnect supply lead connectors from the rear part of the indicators;
- unscrew screws (4) that retain front headlamps (3) in a certain position on the top front beam (5);
- remove the above headlamps (3) from seats and disconnect supply lead connectors from the rear;
- unscrew the screws arrowed in the second figure at the top that fasten top of front bumper to body;



P3M057H03

- unscrew screws (6) that fasten front wheel arch linings to front bumper (7) and move linings slightly to unscrew the screws that fasten the top side end parts of the bumpers to the body;
- working on the side inner parts of the front bumpers, disconnect fog lamp supply leads;

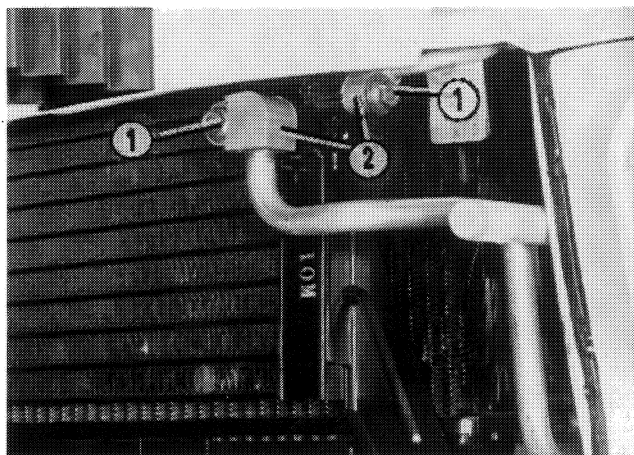


P3M057H04



- lift vehicle and unscrew screws indicated by arrows in bottom figure that fasten front bumpers to body at the bottom;
- remove front bumper from its housing;

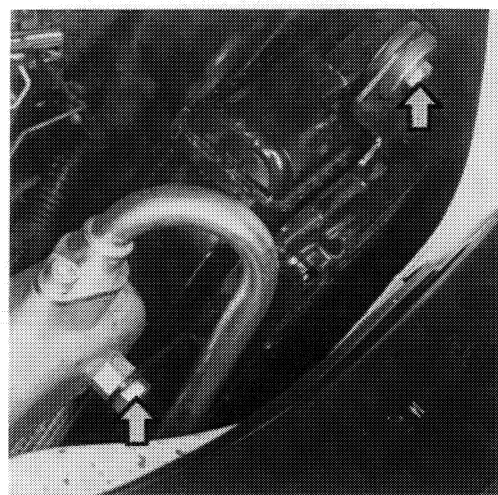
### 50.



P3M058H01

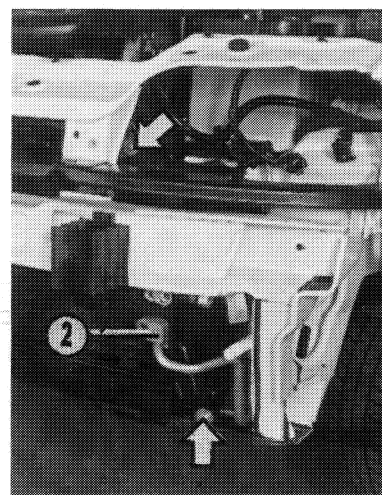


- unscrew screws (1) that fasten the two pipe fittings (2) to the condenser input and output ducts;
- unscrew the screws indicated by the arrows in the central figures that fasten top, sides and bottom of condenser to front lower beam, coolant radiator and engine oil cooling radiator (present on turbodiesel versions);
- remove condenser from its seat;



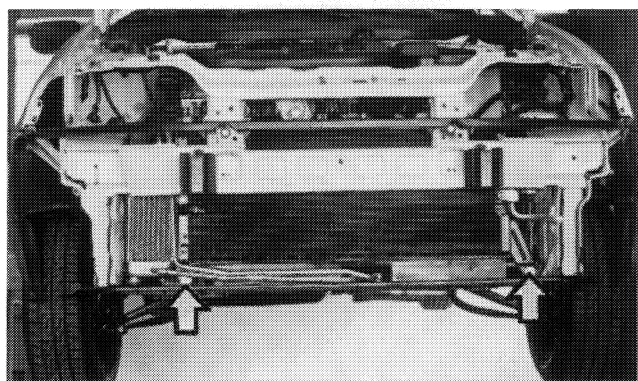
P3M058H02

**Detail showing fastening of top right and side of condenser to coolant and engine oil radiators**



P3M058H03

**Detail of fastening of left hand side of condenser to coolant radiator and lower cross-beam**

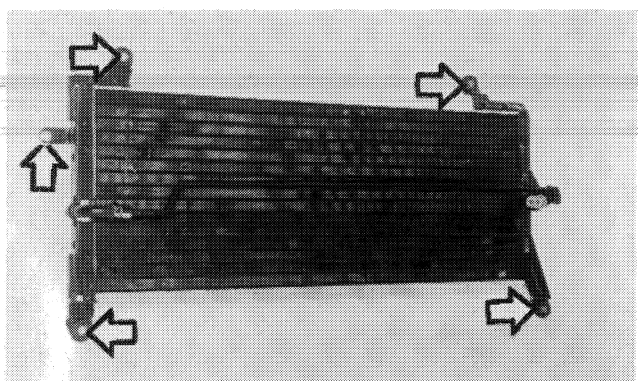


P3M058H04



**NOTE** *In order to prevent the dehydrating filter from absorbing moisture, which would impair its efficiency, seal fitting of filter hose that has been disconnected from condenser with a watertight plug.*

**Detail of fastening of lower part of condenser**



P3M058H05

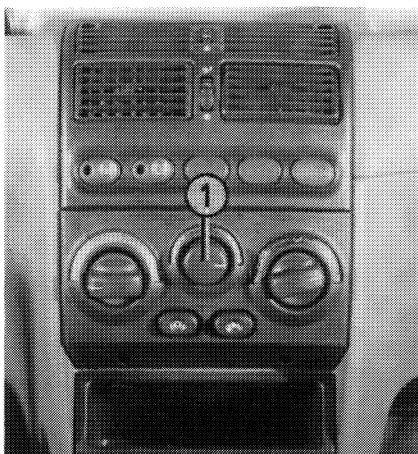


#### Refitting

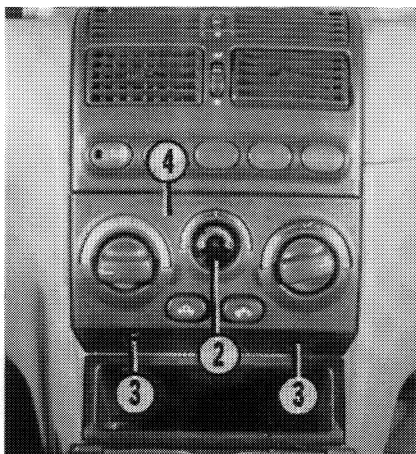
To refit the condenser, reverse removal instructions, noting that tabs must not be blocked or deformed because this would reduce heat exchange area drastically and hence system efficiency.

#### Detail of condenser

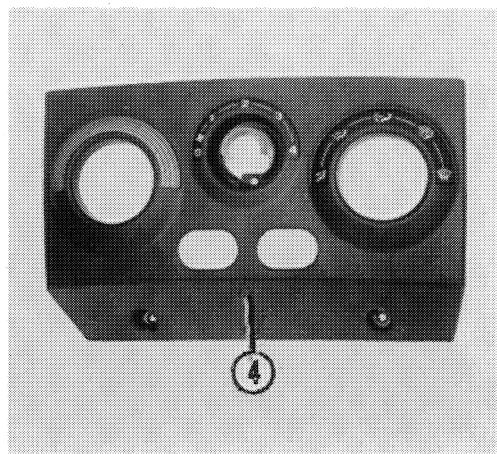
The arrows indicate the condenser fastening points



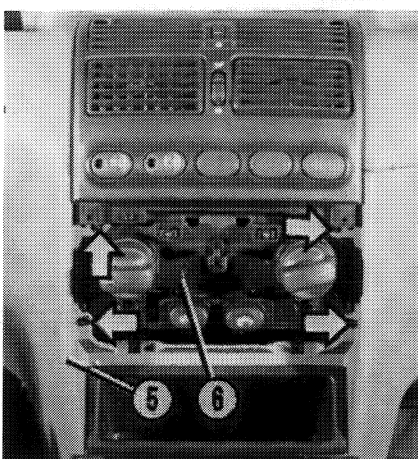
P3M059H01



P3M059H02



P3M059H03



P3M059H04

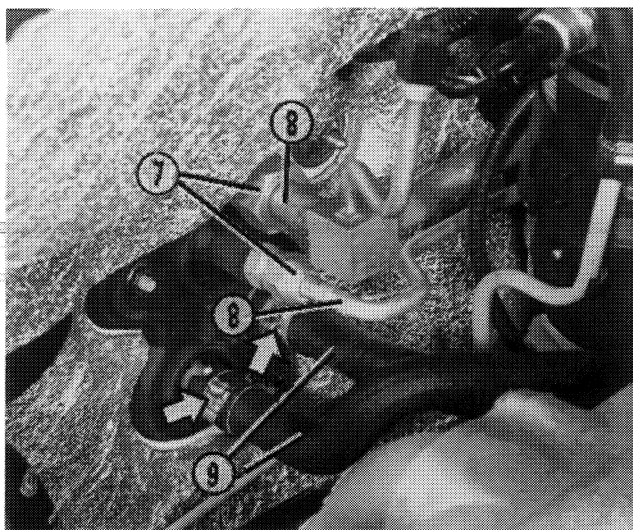


## DISTRIBUTOR HEATER EVAPORATOR ASSEMBLY

### Removing

- pull out central knob (1) from spindle of passenger compartment ventilation fan speed selector switch;
- if only the outer part of the knob comes off, repeat previous operation for clear inner barrel;
- unscrew screws (2 and 3) that fasten middle and centre of front panel (4) to the trim of central console (5) that forms an integral part of the instrument facia;

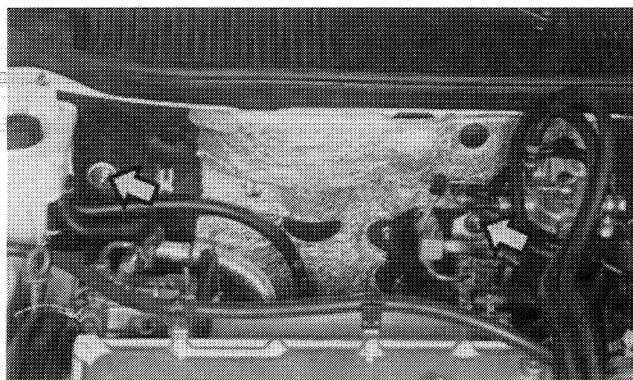
- unscrew arrowed screws that fasten front of control support (6) to trim of central console (5);
- carry out operations to remove instrument facia described on page 38 and following;
- place the instrument facia on the front seat cushions;
- drain engine cooling system and air conditioning system;
- unscrew fittings (7) of pipes (8) joined to other fittings on expansion valve and evaporator that protrude from rear of engine bay;



P3M059H05

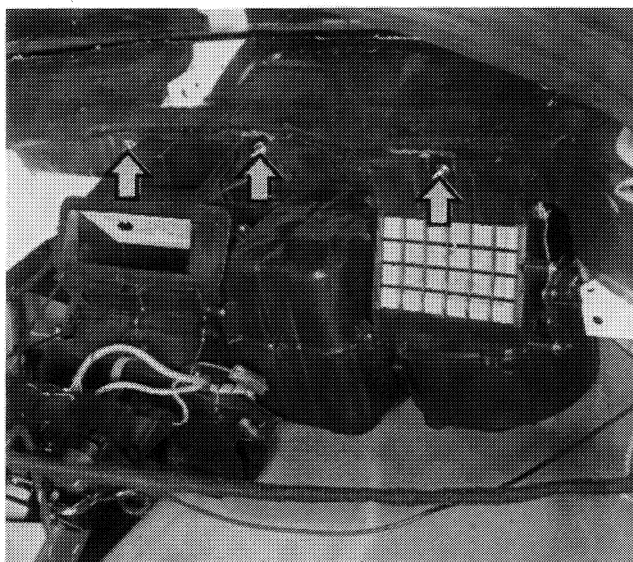


- **seal free pipe ends (8) with water-tight plugs** to prevent the dehydrating filter and compressor from absorbing moisture

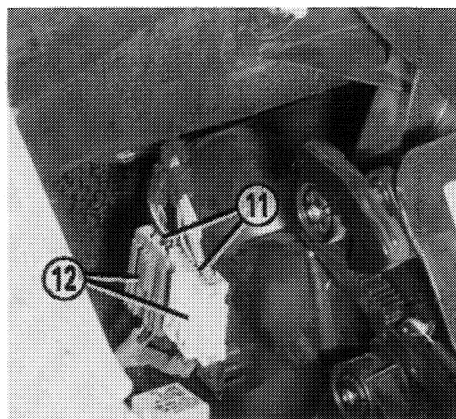


P3M059H06

50.



P3M060H01



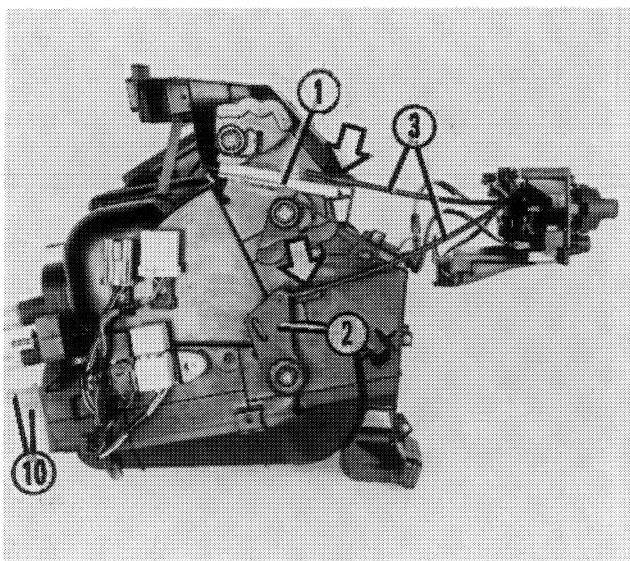
P3M060H02



- loosen clips indicated by arrows in the bottom left hand figure on the previous page and disconnect the two pipes (9) from ducts (10) of heater radiator fitted to distributor heater evaporator assembly;



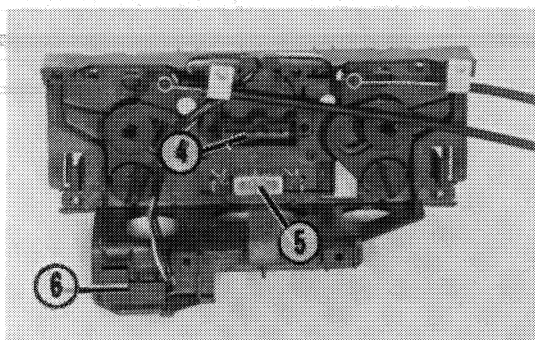
- unscrew the two plastic discs arrowed in the bottom right hand figure on the previous page, followed by the underlying nuts that fasten the above assembly to the dashboard (bulkhead between passenger compartment and engine bay);
- disconnect the two connectors (11) from associated connectors (12) fastened to left hand side of above assembly;
- unscrew the nuts indicated by arrows in the first figure at the top that fasten above assembly to the body and remove assembly from passenger compartment.



P3M060H03

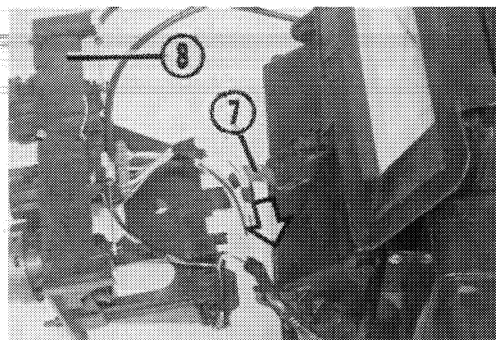
### Disassembly

- withdraw the end spirals of the two cables (3) from the cylindrical ridges on rack (1) and lever (2) and release the ends of the cable sheaths from the clips arrowed in the central figure;
- disconnect the supply cable connectors of passenger compartment ventilation fan speed selector (4), from socket (5) on printed circuit of compressor activation switches and passenger compartment air intake selection and lastly from switch (6) connected to control symbol light bulbs;

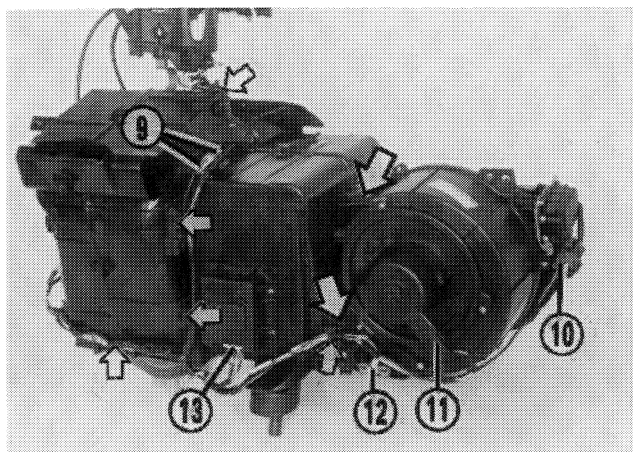


P3M060H04

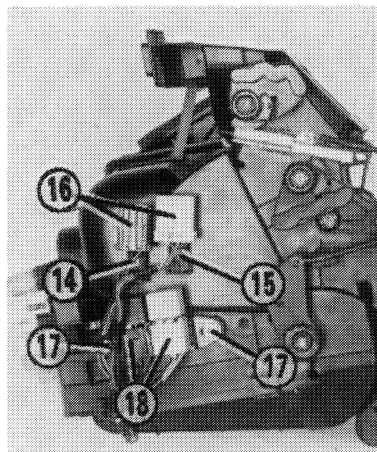
- move clip (7) of control support (8) in arrowed direction so that it emerges from its seat on the distributor heater evaporator assembly;



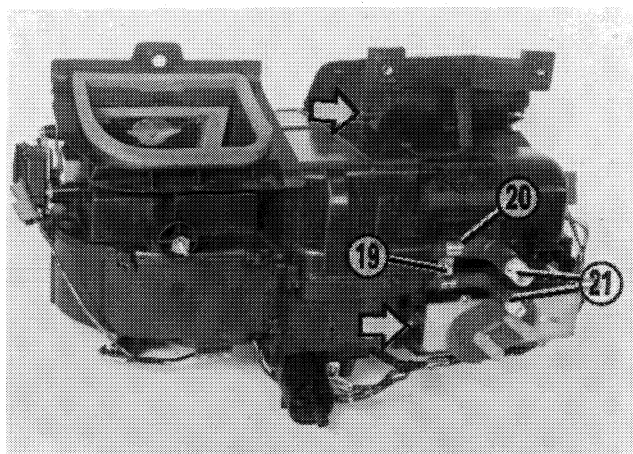
P3M060H05



P3M061H01



P3M061H02

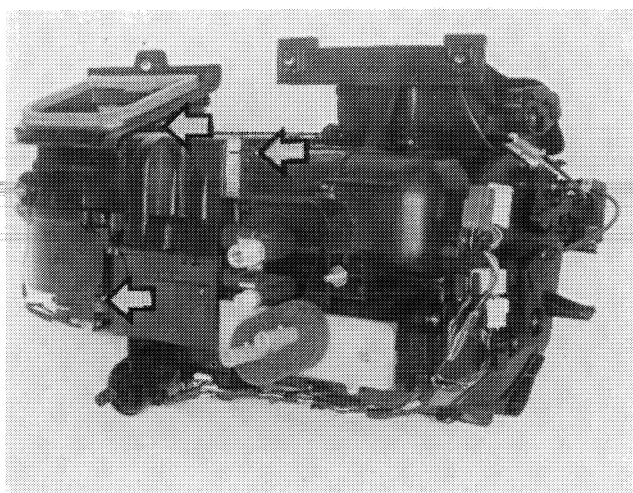


P3M061H03

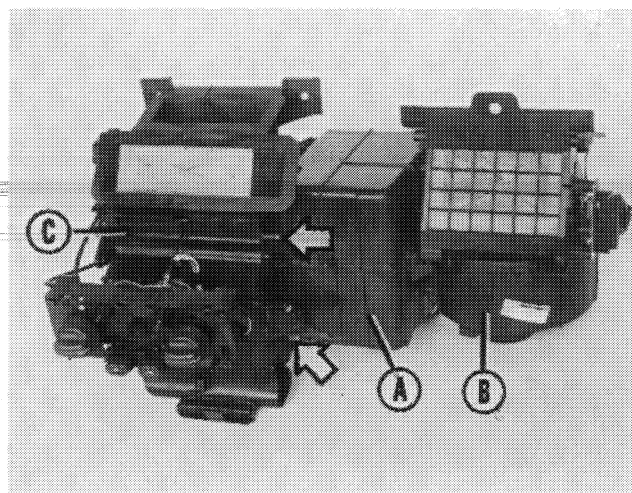


- disconnect the two connectors (9);
- disconnect connector (10) from connector of terminal leads of electric actuator (motor) responsible for operating air intake flap;
- disconnect connectors (11 - 12 and 13) from fan base, resistor and compressor ECU respectively;
- unscrew screws (14 - 15 and 17) that fasten the two connectors (16) and bracket with blocks to which the two relays (18) are connected to the left side surface of the assembly;

- release electrical wiring from hook clips (indicated by small arrows) applied to the above assembly;
- unscrew screw (19) that fastens bracket (20) retaining the two pipes (21) connected to the expansion valve and evaporator outlet duct to rear assembly surface;
- unscrew screws indicated by large arrows in the various figures on this page that fasten the central evaporator unit (A) to fan (B) and distributor heater (C).

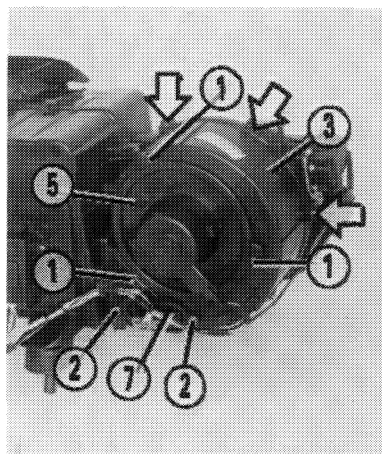


P3M061H04

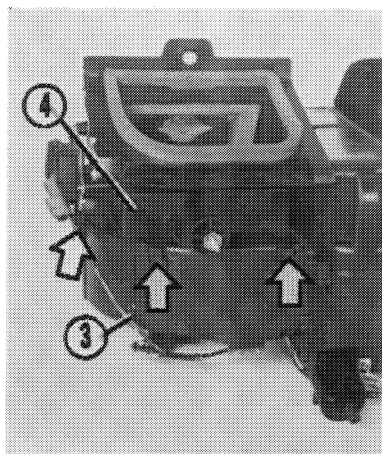


P3M061H05

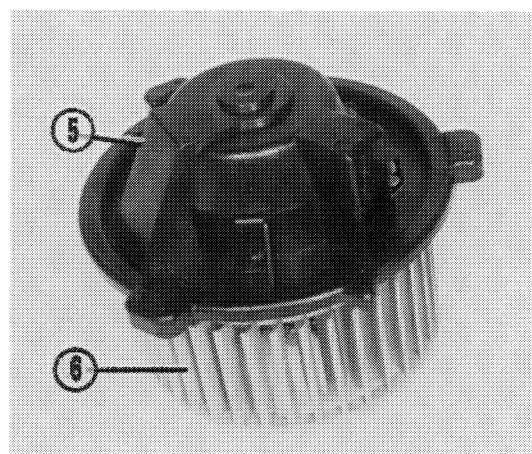
### 50.



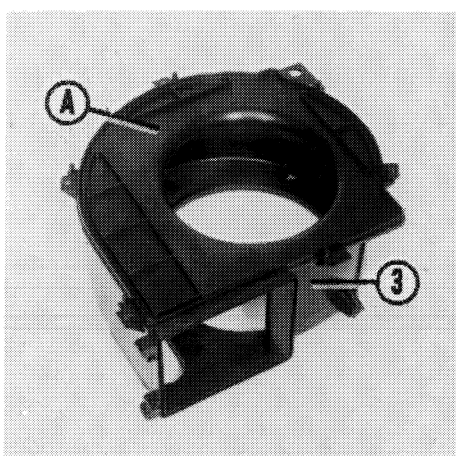
P3M062H01



P3M062H02



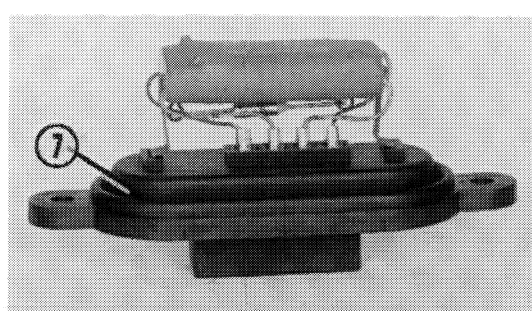
P3M062H03



P3M062H05

#### Detail of lower case half

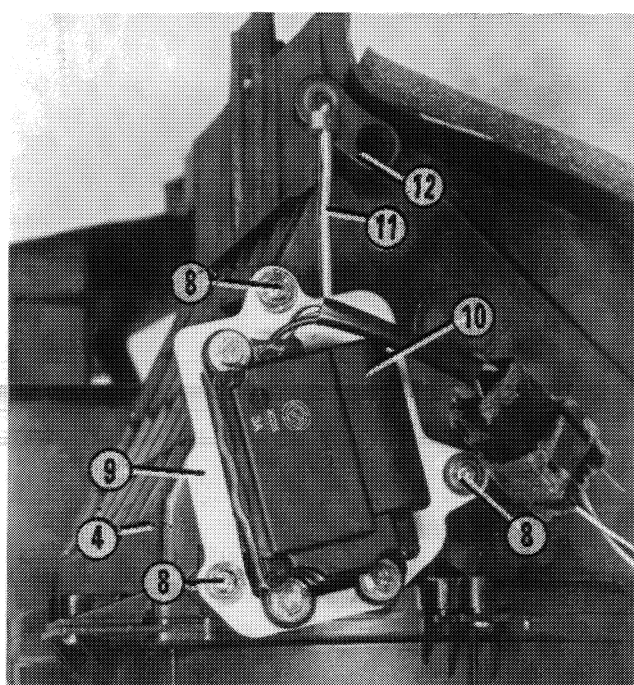
A. Diaphragm carrying air to fan



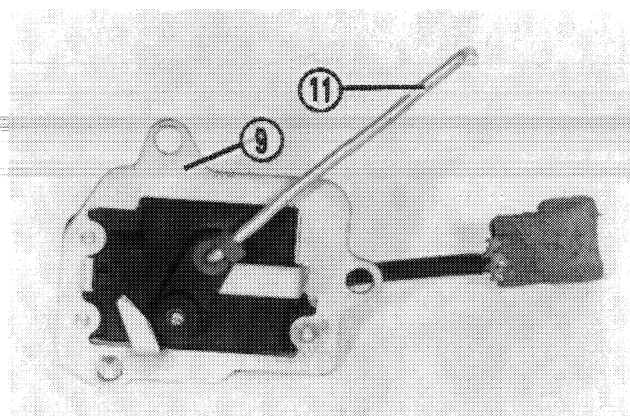
P3M062H04

#### DISMANTLING FAN UNIT

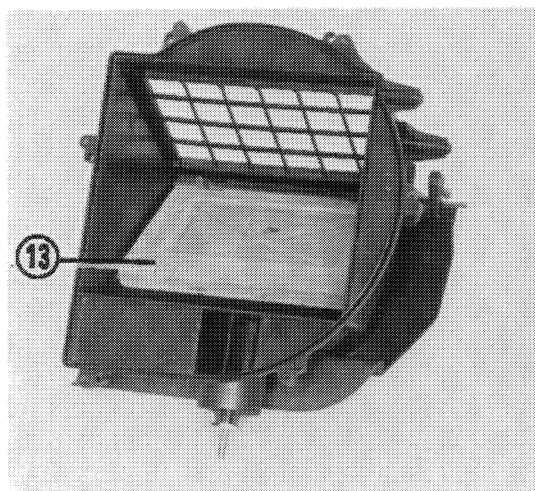
- unscrew screws (1 and 2) that fasten support (5) of fan (6) and resistor (7) to lower case half (3);
- unscrew arrowed screws that fasten lower (3) and upper (4) fan unit case halves together;
- unscrew screws (8) that fasten bracket (9) with electric actuator (10) to top case half (4);
- release link (11) connected to actuator (10) from lever (12) operating air intake flap;



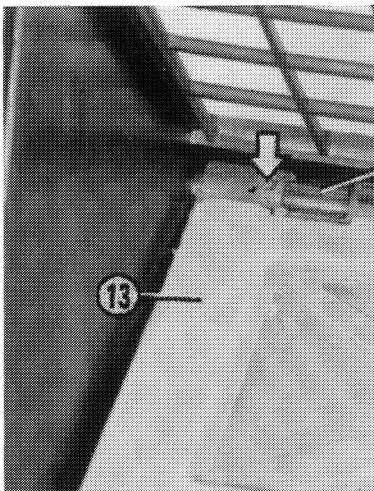
P3M062H06



P3M062H07



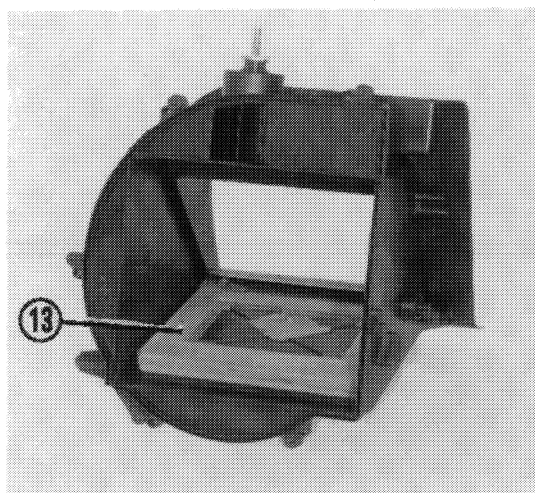
P3M063H01



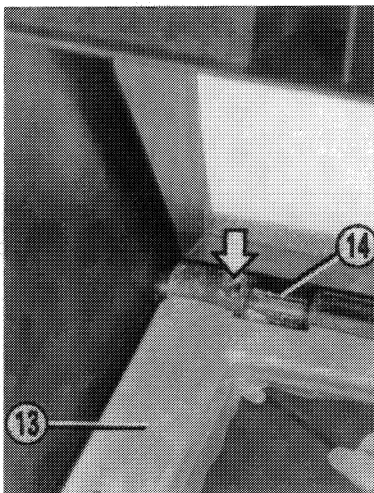
P3M063H02



- working through the slots arrowed in the two details, undo tabs with toothed profile on shank of lever (12) and shaft that are fitted to the end of pivot pin of air intake flap (13) so that they can be withdrawn from the flap and from the top case half;



P3M063H03



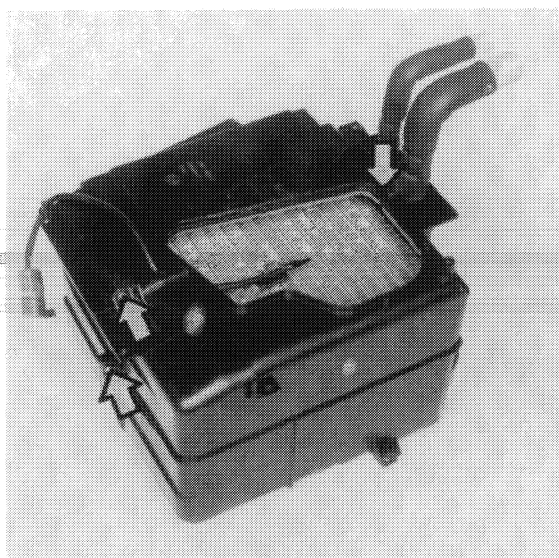
P3M063H04



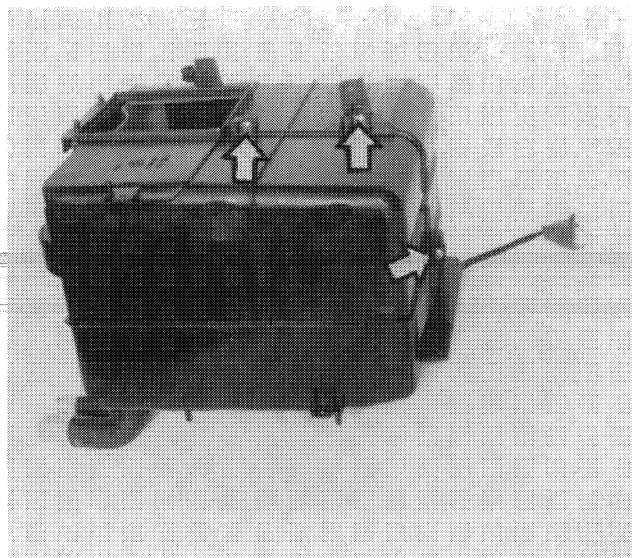
- position air intake flap (13) to release pivot pin from pro-filed ridges (14) press-fitted to top case half;

### DISMANTLING EVAPORATOR UNIT

- unscrew screws indicated by arrows in the figure below that fasten the two evaporator case halves together;

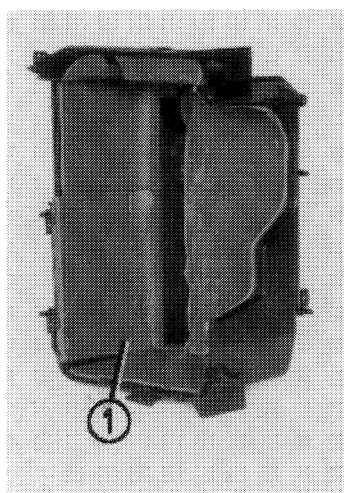


P3M063H05

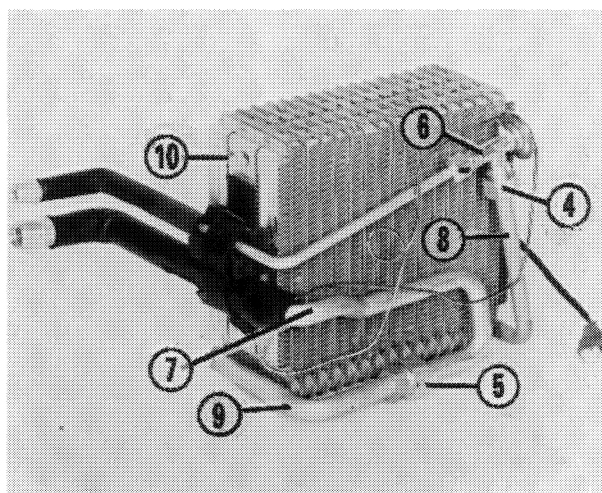


P3M063H06

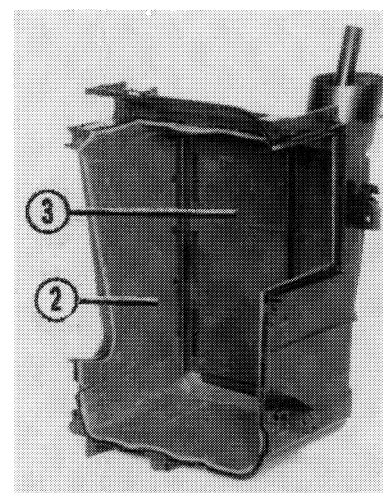
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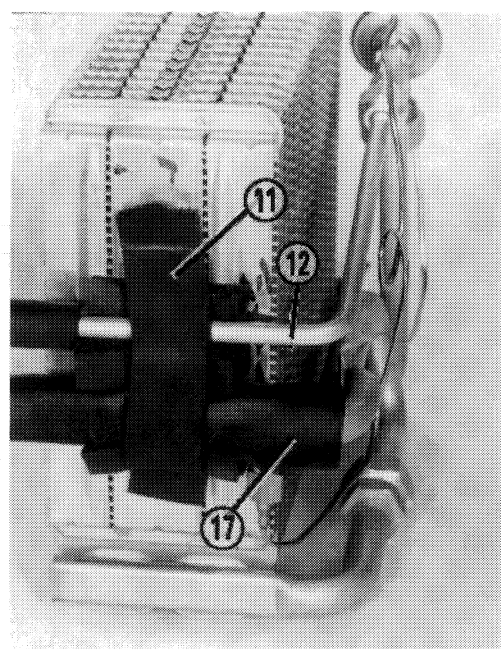
P3M064H01



P3M064H02

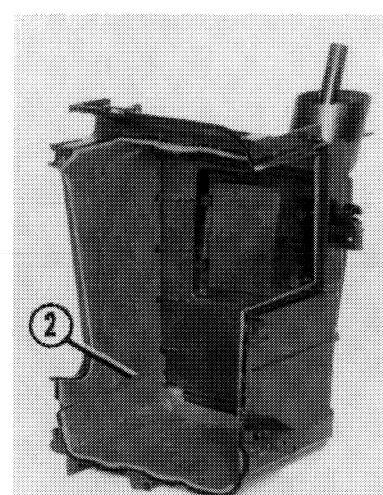


P3M064H03



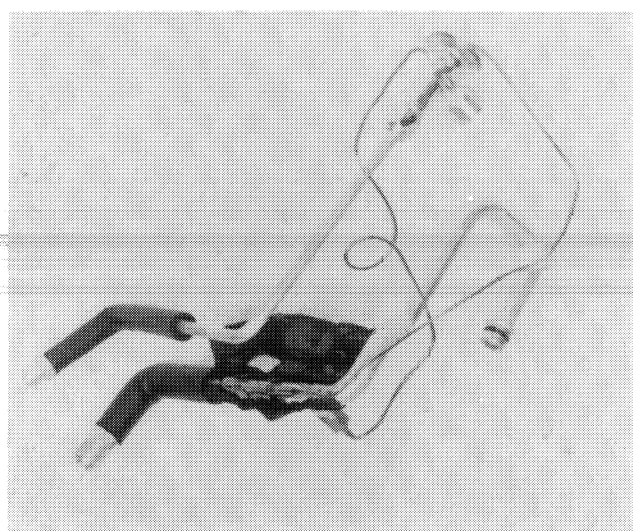
P3M064H04

- release the top case half (1) from bottom half (2) and remove evaporator assembly from the bottom half (shown in top middle figure);
- remove evaporator support plane (3) from bottom case half (2);
- unscrew the two fittings (4 and 5) that join expansion valve (6) and pipe (7) to input duct (8) and output duct (9) of evaporator (10);

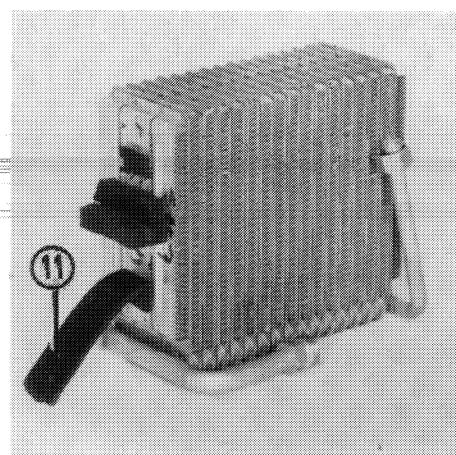


P3M064H05

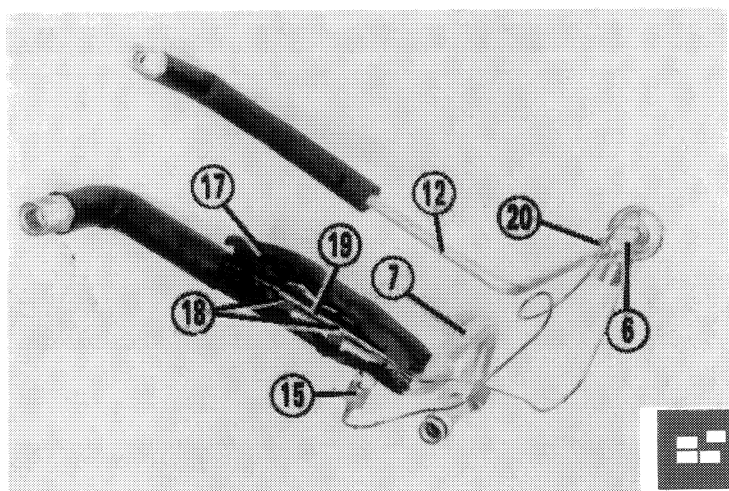
- partly detach adhesive foam rubber strip that fastens the two pipes (7 and 12) connected to outlet duct (9) and expansion valve (6) to the side of evaporator (10);



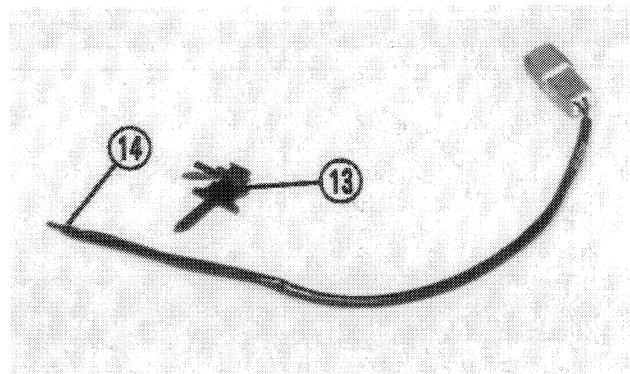
P3M064H06



P3M064H07

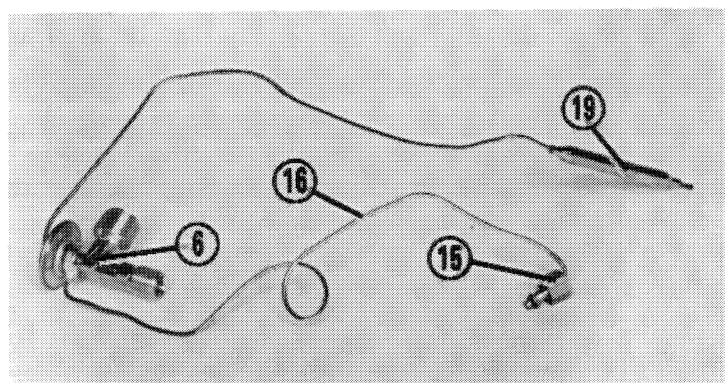


P3M065H01



P3M065H02

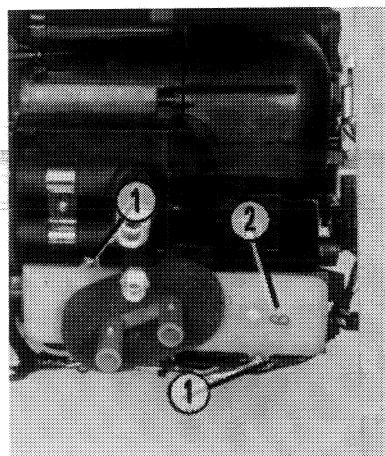
- withdraw clip (13) retaining sensor (14) from the evaporator surface opposite the surface facing ducts;
- unscrew fitting (15) of equalization pipe (16) of expansion valve (6) from pipe (7) previously connected to evaporator output duct;
- partly release adhesive foam rubber trim (17) from above pipe (7) and remove the two clips (18) that retain sensitive bulb (19) of expansion valve (6) in contact with pipe;
- unscrew fitting (20) of pipe (12) connected to expansion valve.



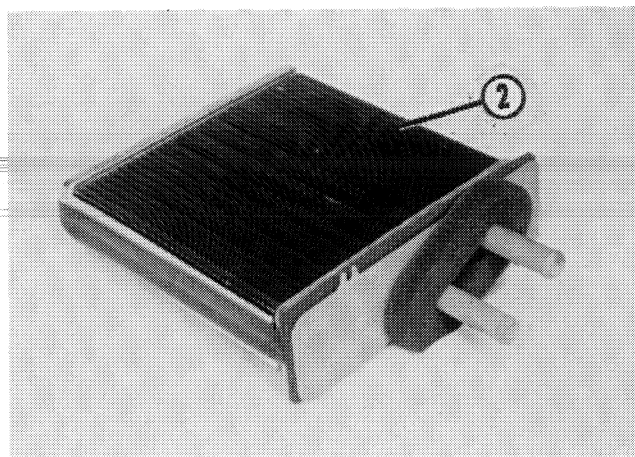
P3M065H03

#### DISMANTLING DISTRIBUTOR HEATER UNIT

- unscrew screws (1) that fasten front part of heater radiator (2) to bottom rear surface of distributor heater unit;
- remove radiator (2) from seat on the above unit;

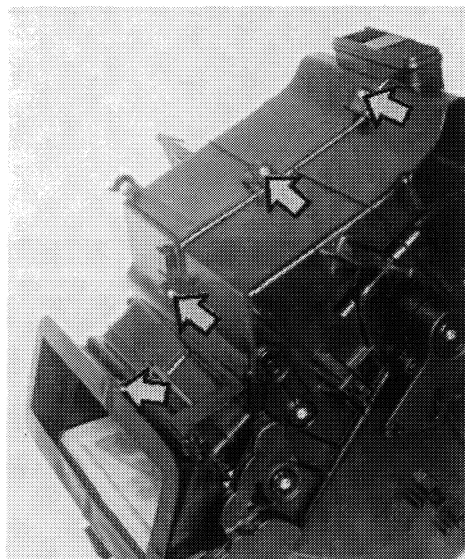


P3M065H04

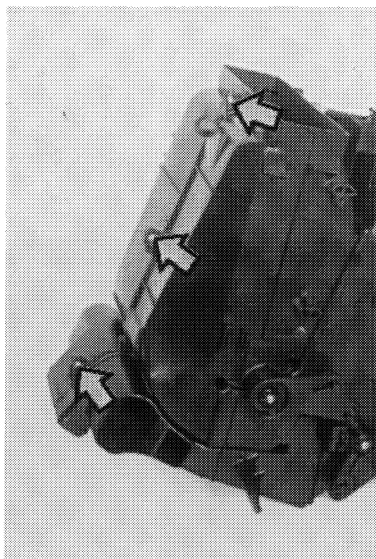


P3M065H05

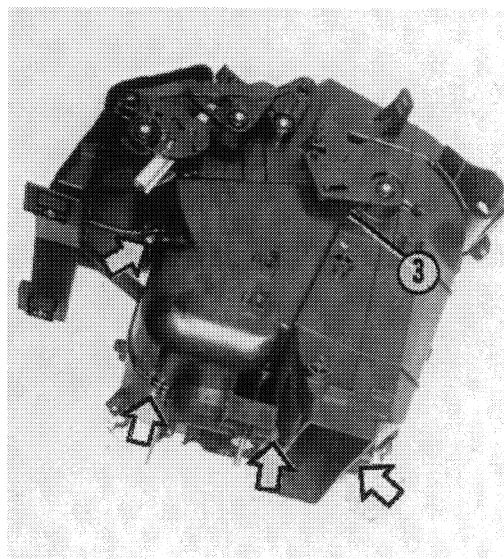
50.



P3M050H04



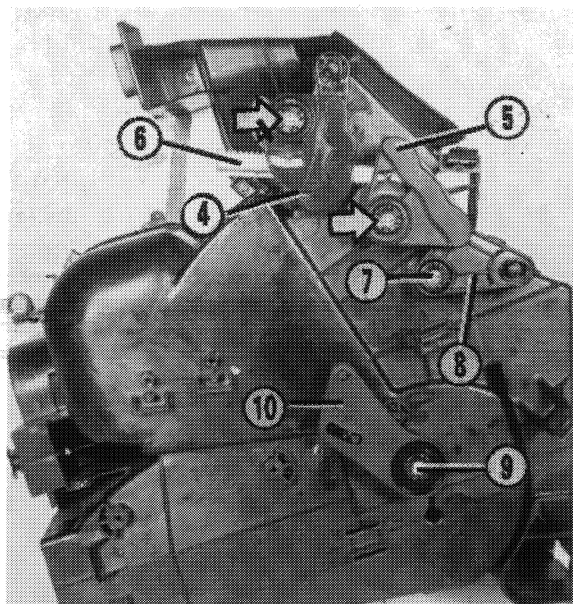
P3M050H05



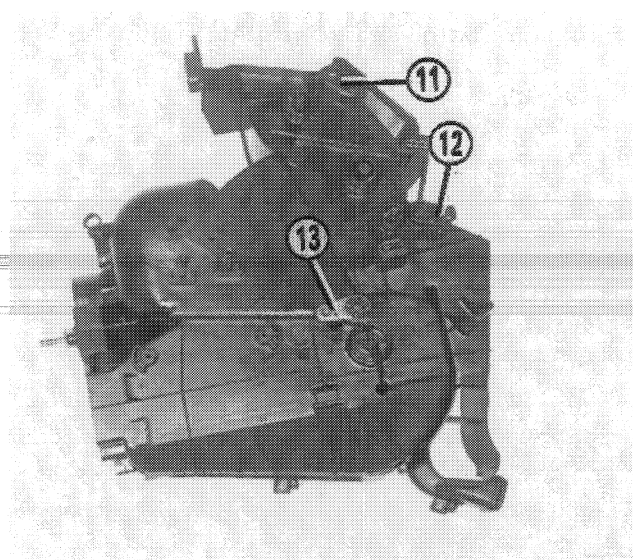
P3M051H02



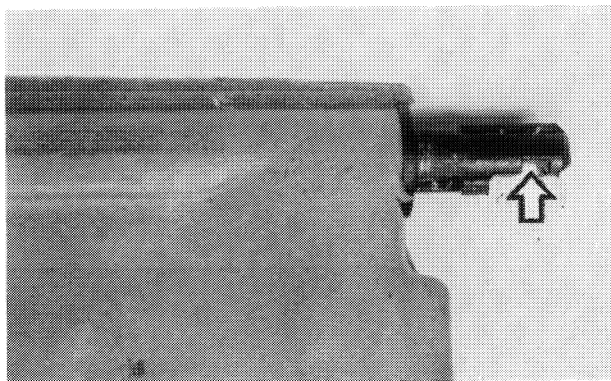
- unscrew screws indicated by arrows and screw at bottom of hole (3) that join the two distributor heater case halves;
- unscrew the screws indicated by arrows that fasten square levers with toothed sectors (4 and 5) operating top distribution flap (A) and bottom flap (B) to left side surface of left case half;
- firstly withdraw the two levers with toothed sector (4 and 5) from cylindrical ridges on the above surfaces and then remove rack (6);
- unscrew screw (7) and withdraw intermediate idler lever (8) operating lower distribution flap (B) from cylindrical ridge of the above surfaces;
- unscrew screw (9) and withdraw square lever (10) operating mixer flap (C) from cylindrical ridge of the above surface



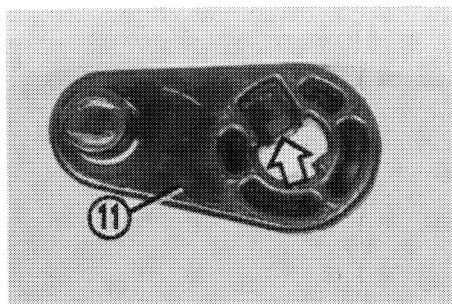
P3M051H07



P3M066H01



P3M052H03



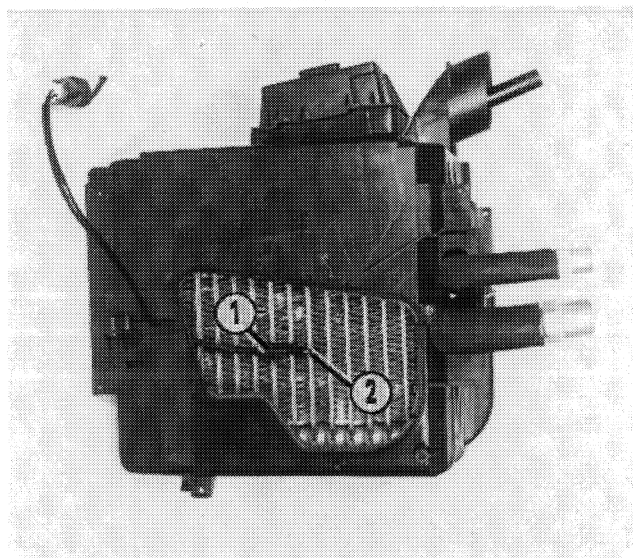
P3M052H02



- undo tooth (arrowed in right hand figure) of lever (11, figure at bottom right of previous page) so that it is released from notch (arrowed in left hand figure) on pivot shaft of top distribution flap (A) and withdraw flap from left case half;
- repeat last operation described for lever (12) and lower distribution flap (B), and then for lever (13) and mixer flap (C).

### Reassembly

Reverse instructions for disassembling the three units, noting the following::

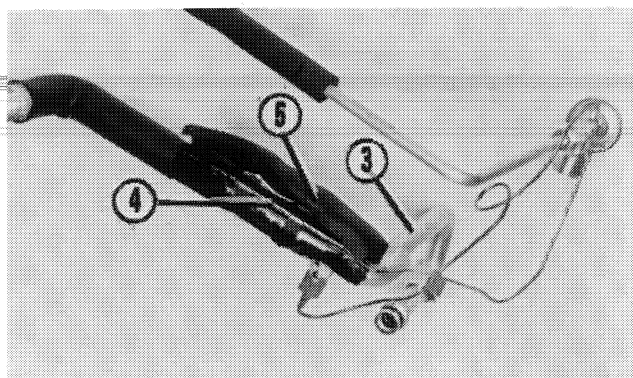


P3M067H01



- clip (1) must be arranged over nearby cable of sensor (2) then fitted to centre of evaporator surface which communicates with distributor heater unit, i.e. sensor must be in the middle of the visible evaporator surface when this is enclosed between the two case halves (as illustrated in figure alongside);

- contact surfaces of pipe (3) and sensitive bulb (4) of expansion valve must be absolutely clean and the two parts in contact must be insulated by trim (5);



P3M067H02

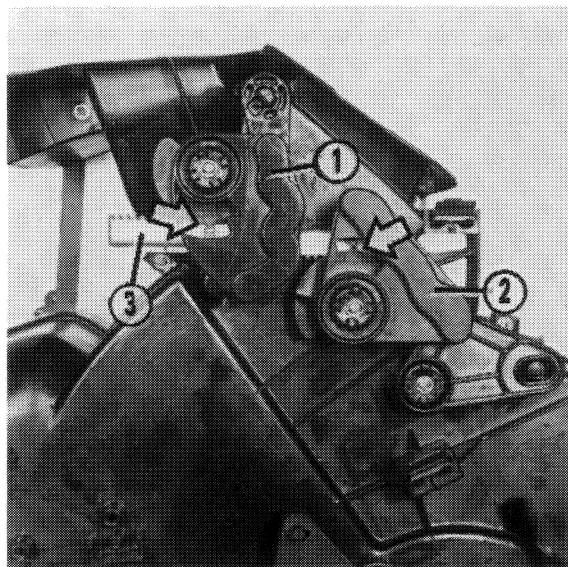


- if one or more o-rings require replacement, note that the new rings **must be green** because only these are resistant to the R 134 A coolant used in the system.

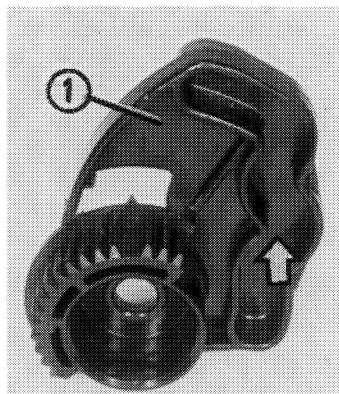
**Never use black o-rings** as these could prove a source of leaks because they are permeable to the above fluid;

- evaporator tabs must not be deformed because this would reduce system cooling efficiency;

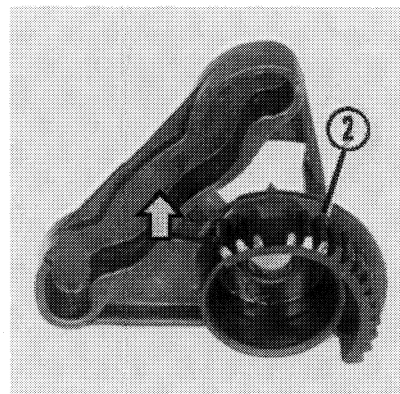
50.



P3M068H01

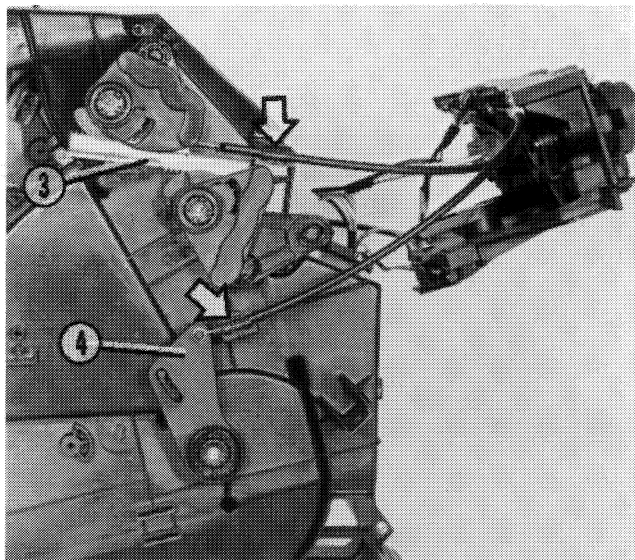


P3M068H02



P3M068H03

- inner sliding races (arrowed in top right figures), teeth and inner surfaces that mate with cylindrical ridges of side distributor heater surfaces of square levers with toothed sectors (1 and 2) must be lubricated with vaseline;



P3M053H02

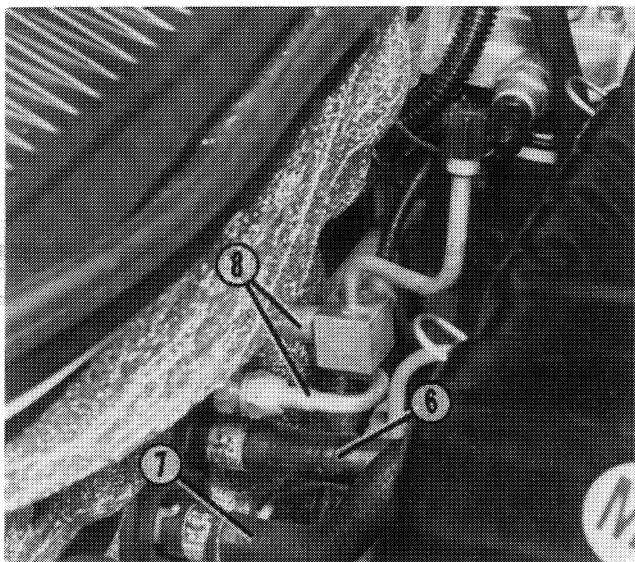
- square levers with toothed sectors (1 and 2) must be fastened to the left side surfaces of the distributor heater unit so that the indicators (arrowed in the top left figure) are aligned with the triangles printed on the rack (3).

- after connecting spirals at the end of the respective control cables on the cylindrical ridges of rack (3) and lever (4), connect sheaths on clips indicated by arrows in the central figure so that the distribution and mixer flaps move through their entire travel.

### Refitting

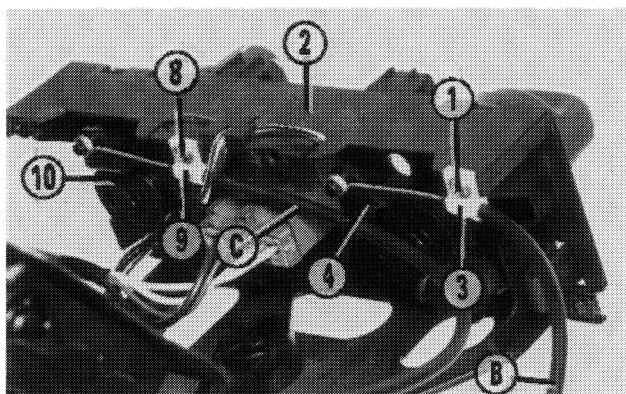


To refit the evaporator - heater - distributor assembly, reverse instructions for removal, noting that pipes (6 and 7) marked by green and white stripes respectively must be fitted on left and right hand ducts of heater radiator marked by a raised dot in the same colour.



P3M068H04

O rings of fittings connecting pipes (8) to pipes connected to expansion valve and evaporator must not be deformed; if they are replaced **use only green rings** which, unlike the black rings, are resistant to coolant R 134 A.



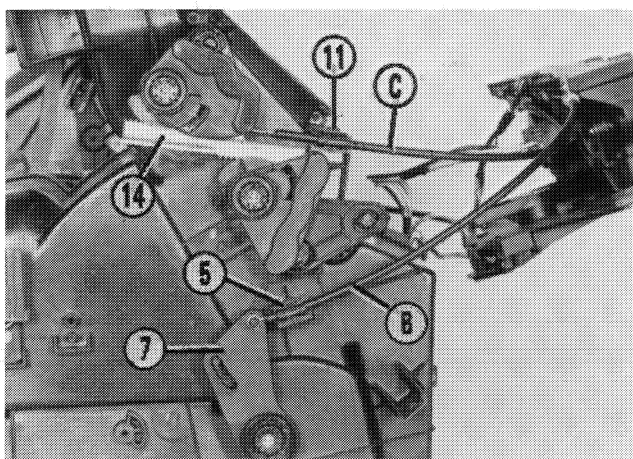
P3M043H01



### MIXER FLAP CONTROL CABLE

#### Removing

- remove instrument facia;
- unscrew screw (1) that fastens terminal (3) of sheath of cable (B) to control support and withdraw spiral from cable end from lever (4);
- pull out the other end of sheath of cable (B) from metal clip (5);
- withdraw spiral at the other end of cable from cylindrical ridge on mixer flap lever (7)



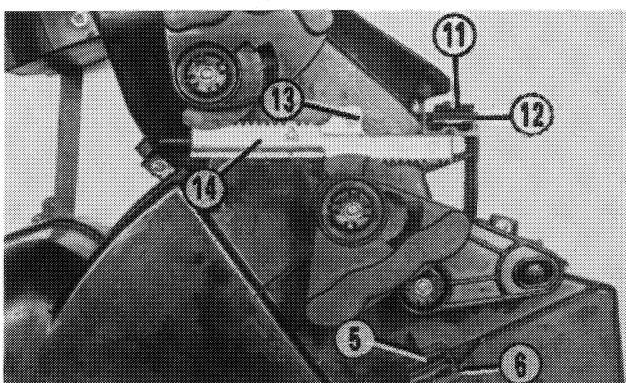
P3M069H01



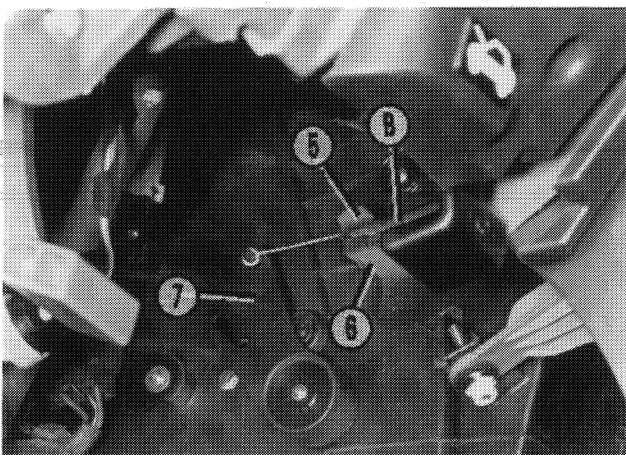
### DISTRIBUTION FLAP CONTROL CABLE

#### Removing

- after removing the instrument facia, unscrew screw (8) that fastens terminal (9) of sheath of cable (C) to control support (2) and withdraw cable end spiral from lever (10);
- release the other end of sheath of cable (C) from metal clip (11) fitted in block (12) press-fitted to left side surface of distributor heater unit;
- withdraw spiral at other end of cable (C) from cylindrical ridge (13) on distribution flap operating rack (14).



P3M069H02



P3M069H03



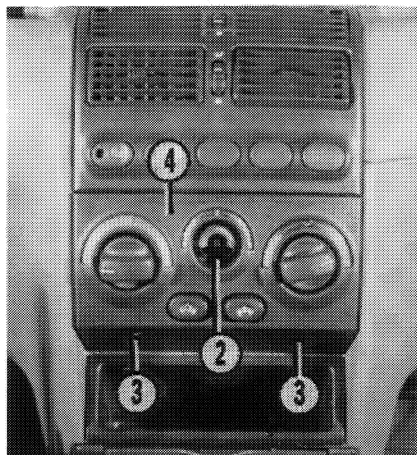
To refit new cables (B and C) reverse removal instructions, noting that the end of the sheath without the cable must be fitted in steel clips (5 and 11) so that mixer and distribution flaps move through their entire travel.

**NOTE** To correct position of sheaths of the two cables, do not remove the instrument facia but simply work from bottom centre (see figure alongside).

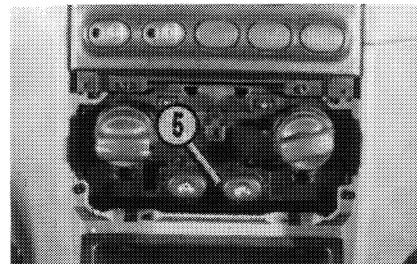
### 50.



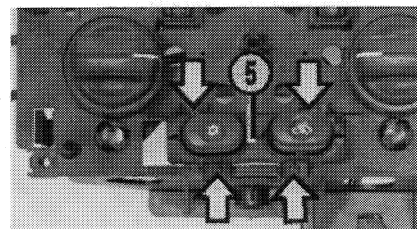
P3M059H01



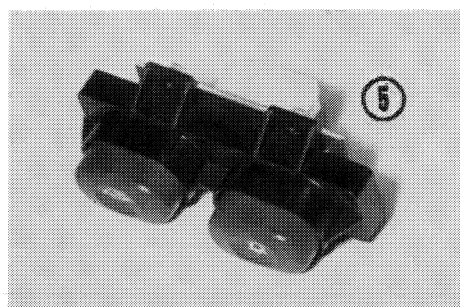
P3M059H02



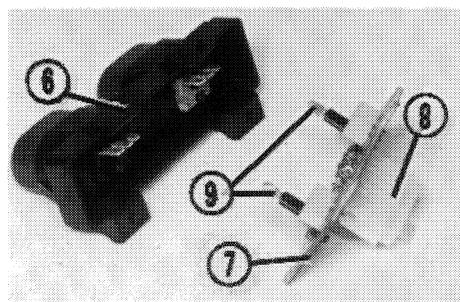
P3M070H01



P3M070H02



P3M070H03



P3M070H04



## COMPRESSOR AND AIR RECIRCULATION ACTIVATION SWITCHES

### Removing

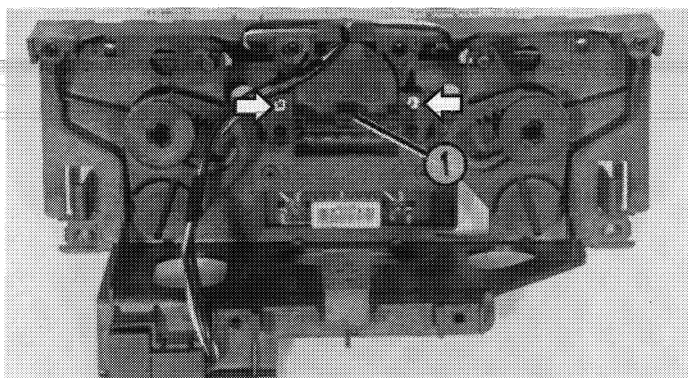
To remove switch assembly (5) proceed as follows:

- withdraw central knob (1);
- unscrew screws (2 and 3) that fasten panel (4) to central trim and control support (6);
- unscrew arrowed screws that fasten switch assembly (5) to control support and disconnect supply lead connector from back of support.

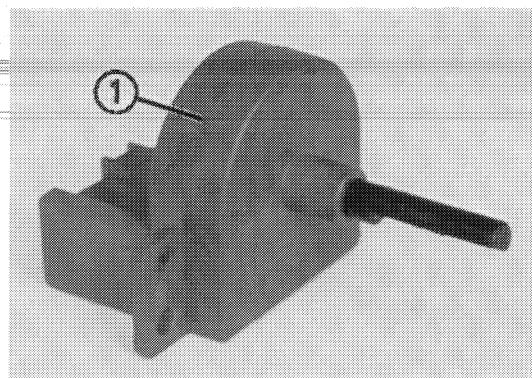
Switch support (5) consists of a support with keys (6) to which is fitted printed circuit (7) with socket (8) for the above connector and leds (9) for symbols and keys.

## PASSENGER COMPARTMENT VENTILATION FAN SPEED SELECTOR

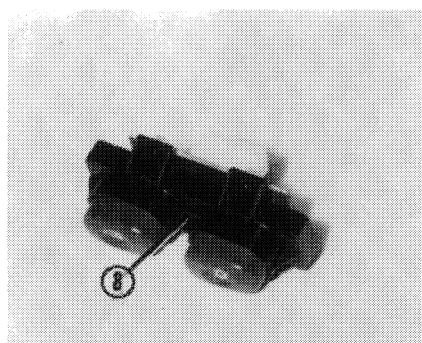
After disconnecting the instrument facia, disconnect supply lead connector from switch (1) and disconnect this from control support after unscrewing arrowed support retaining screws.



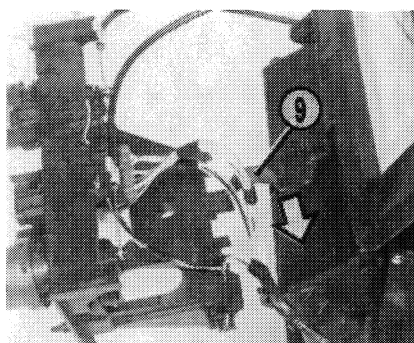
P3M070H05



P3M070H06



P3M071H04

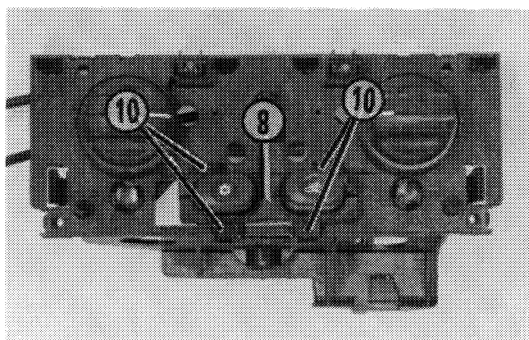


P3M071H02

## CONTROL SUPPORT ASSEMBLY

### Removing

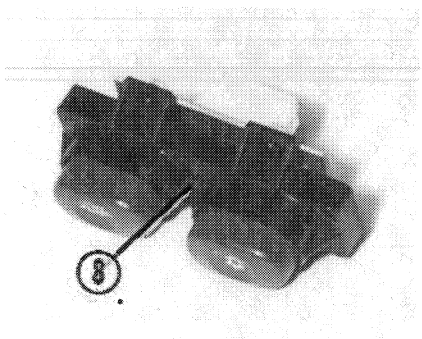
- after removing instrument facia, unscrew screws (1) that fasten the two terminals (3) of cables (4) from control support (2);



P3M071H03



- release spirals at end of the two cables (4) from cylindrical ridges of associated levers (5 and 6);
- working on rear of control support (2) disconnect connectors of electrical leads from passenger compartment ventilation fan speed selector switch (7), from compressor and air recirculation switch assembly (8) and from connector (12), which is connected to symbol and knob light bulb supply leads;



P3M071H01

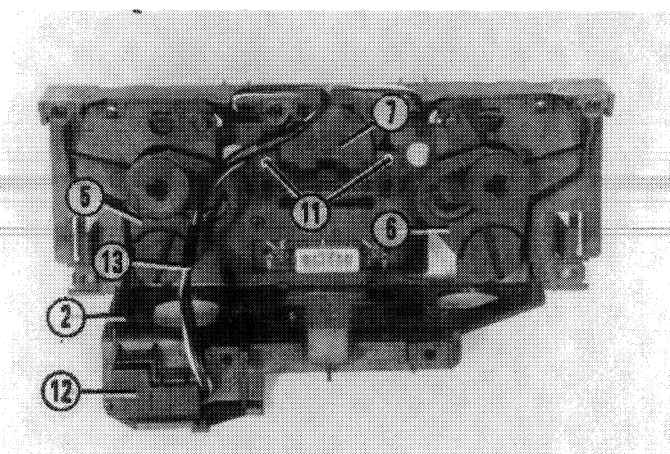


- move clip (9) of control support (2) in arrowed direction to remove distributor heater unit from its seat.

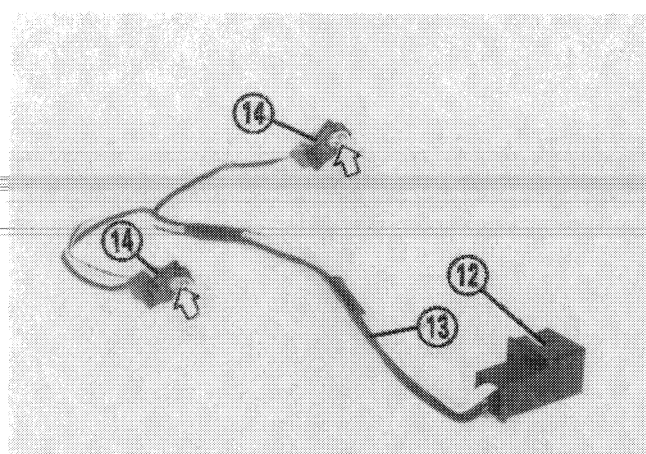
### Disassembly

- unscrew screws (10 and 11) that fasten switch assembly (8) and switch (7) to support (2);
- disconnect connector (12) from control support (2) and release wiring (13) for symbol light bulbs after pushing the two bulb holders (14) inside.

**NOTE** To replace the glass bulbs (indicated by arrows in the bottom right hand figure), neither the facia or the control support need be removed. Simply remove the front panel from the support and then remove the bulb or bulbs to be changed.

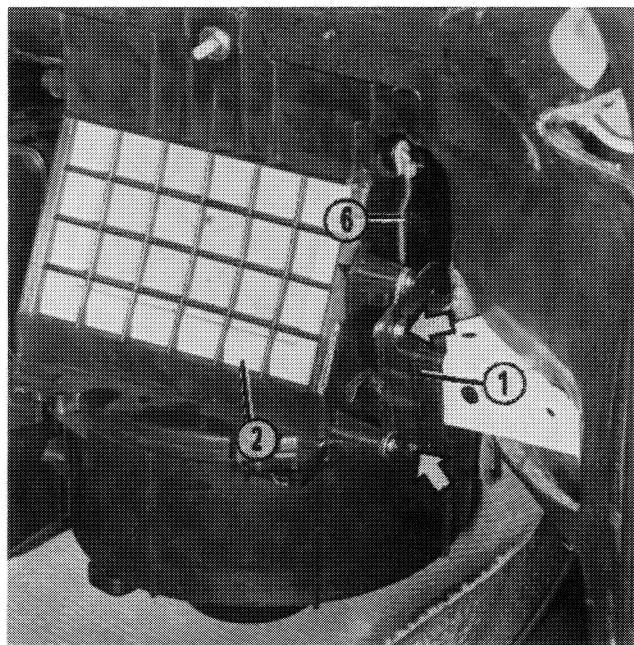


P3M071H05

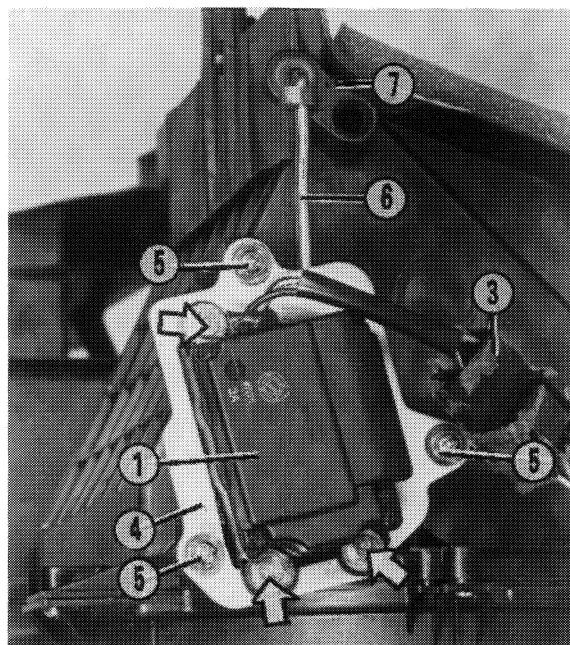


P3M071H06

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P3M072H01

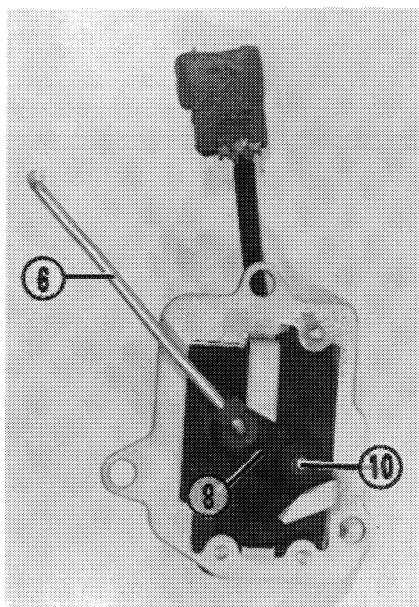


P3M072H02

### AIR INTAKE FLAP ELECTRIC CONTROL ACTUATOR

After disconnecting instrument facia, disconnect connector (3) of terminals of actuator (1) from connector of evaporator - heater - distributor assembly wiring, then unscrew arrowed screws that retain actuator to right side surface of the above assembly by means of screws (5) and release link (6) from lever (7) operating air intake flap (2).

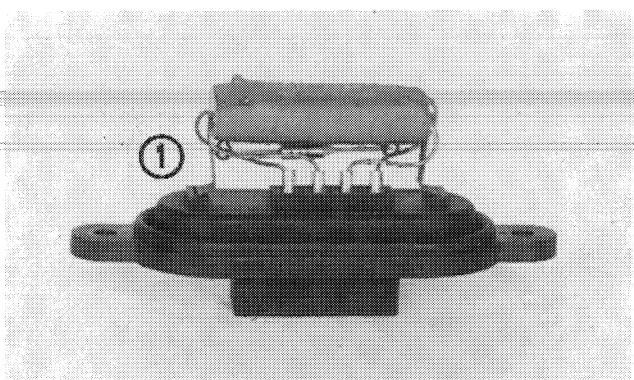
Lever (8) to which is fitted link (6) is fastened in fixed position on shaft (9) by means of screw (10).



P3M072H03



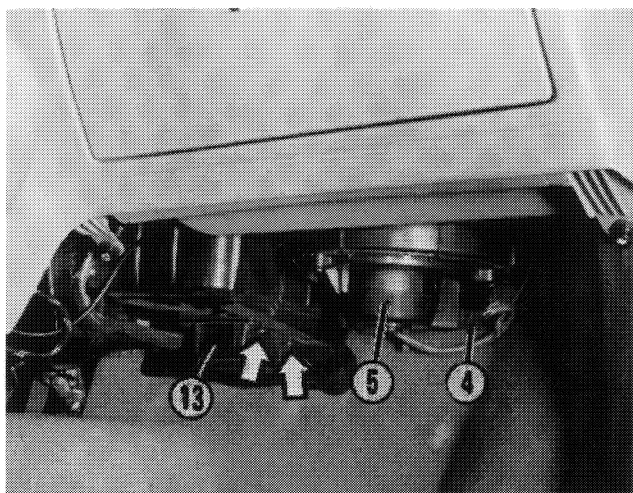
P3M072H04



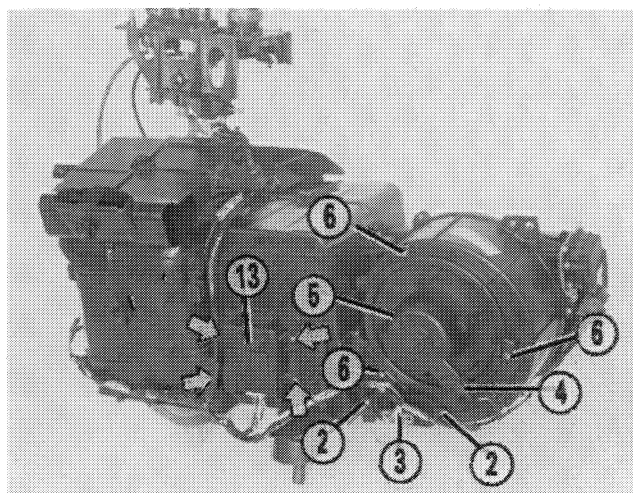
P3M072H05

### PASSENGER COMPARTMENT VENTILATION FAN SPEED RESISTOR

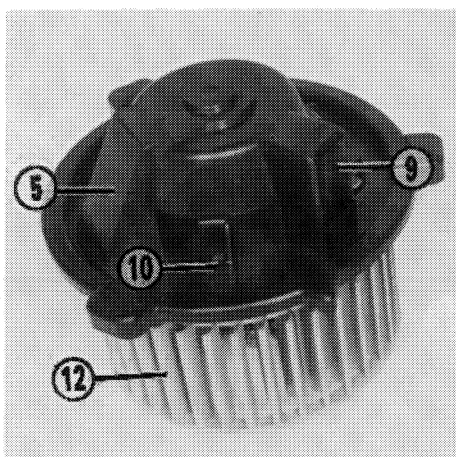
To remove resistor (1) work on bottom rear part of instrument facia and unscrew screws (2 second figure at top of next page) that retain it to the bottom part of the evaporator - heater - distributor assembly. After removing from assembly, release from supply leads by disconnecting connector (3).



P3M073H01



P3M073H02



P3M073H03

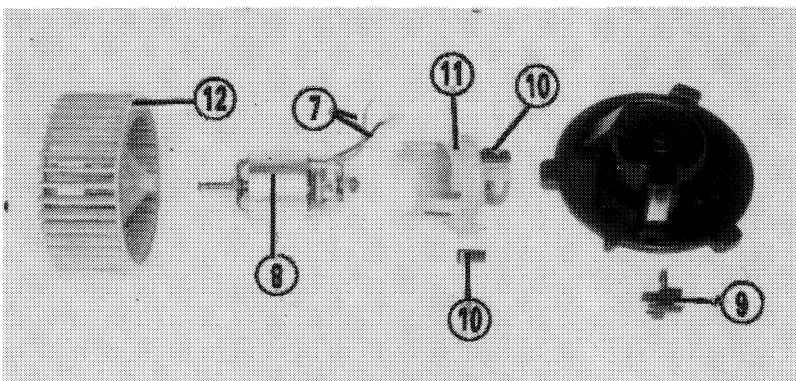


### PASSENGER COMPARTMENT VENTILATION FAN

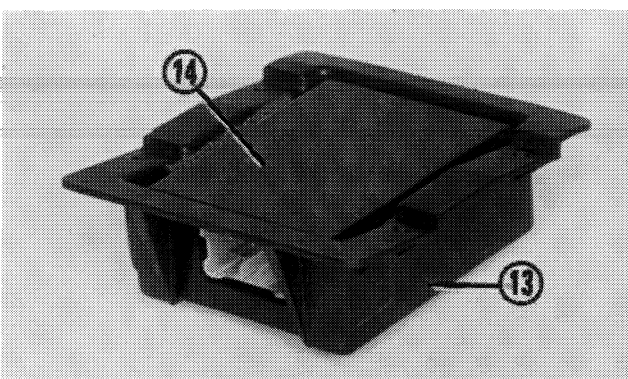
To remove, work on bottom rear part of instrument facia (see first figure at top) and disconnect connector (4) of supply leads from base (5) of fan and unscrew screws (6) retaining fan to bottom part of evaporator - heater - distributor assembly.

#### Disassembly

- disconnect the two terminals of leads (7) supplying motor (8) from connector (9) press-fitted to base (5);
- undo profiled flexible blocks (10) fitted to adaptor ring (11) in order to release from base (5);
- withdraw motor (8) with impeller (12) and adaptor ring (11) from base (5);
- use a drift to remove impeller (12) from shaft of motor (8) to which it is press-fitted;
- expand tabs with toothed profile of adaptor ring (11) outward in order to withdraw ring from motor (8).



P3M054H05

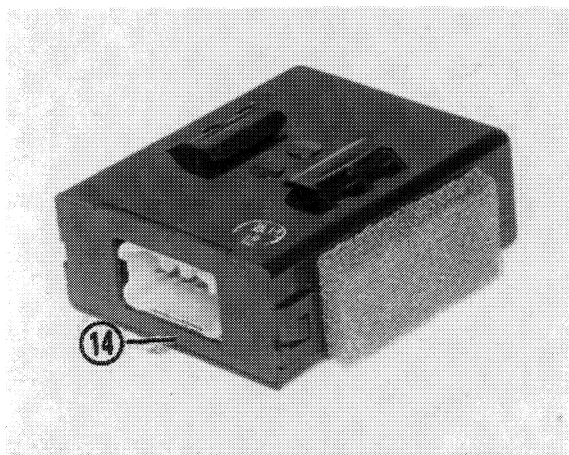


P3M073H04

### ELECTRONIC REGULATION UNIT COMPRESSOR OPERATION

To remove, work on the bottom part of the instrument facia (see first figure at top) and unscrew screws indicated by arrows in the two figures at the top that fasten container (13) to the bottom middle part of the evaporator - heater - distributor assembly.

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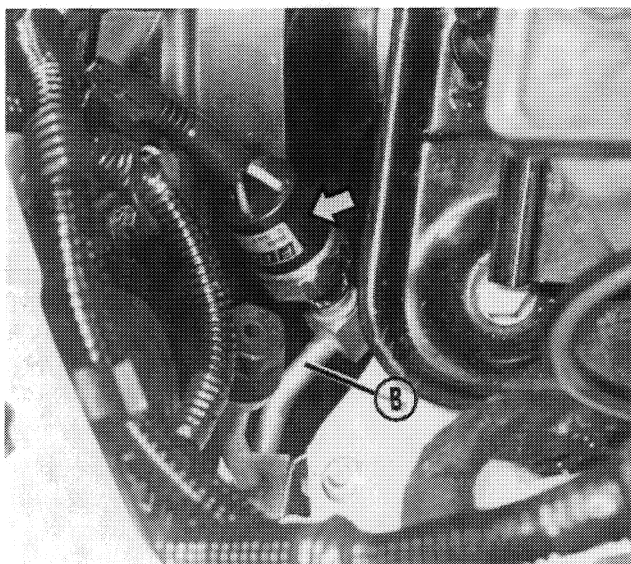


P3M074H01



Lastly, disconnect connector of electrical leads supplying ECU (14) after removing from guard (13).

The teeth of the top surface of container (13) of ECU (14) are specially shaped (see figure at bottom of previous page) so that it can be fastened only in one fixed position on the above assembly.

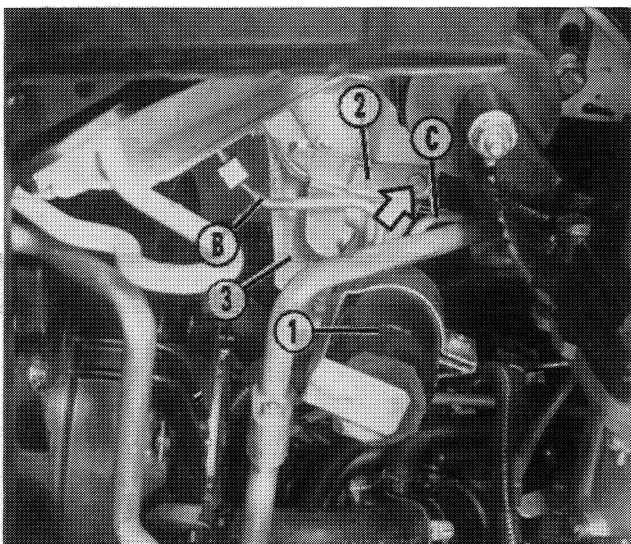


P3M074H02



### THREE STAGE PRESSURE SWITCH

To remove the three stage pressure switch (arrowed) the air conditioning system need not be drained, simply unscrew from underlying needle valve welded to pipe (B) that connects dehydrating filter to condenser after disconnecting supply lead connectors from the top.



P3M074H03

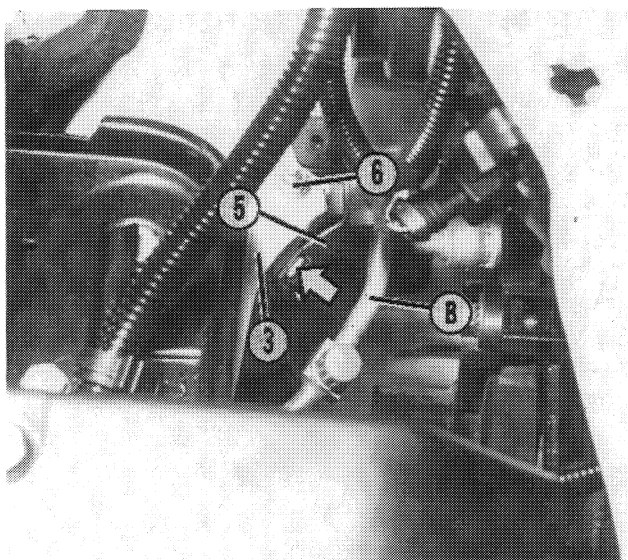


### DEHYDRATING FILTER

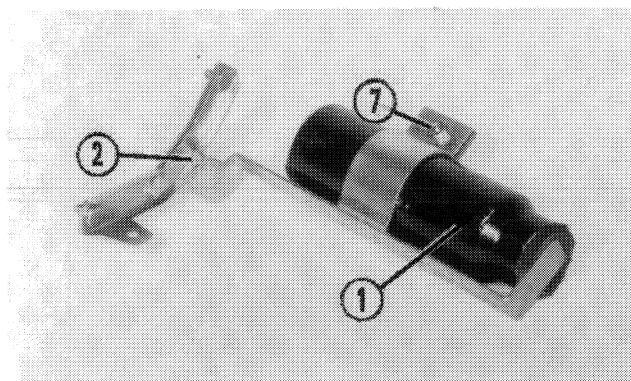
#### Removing

Carry out the following operations:

- drain air conditioning system;
- unscrew the two screws that fasten the two fittings of pipes (B and C) connecting it to the condenser and evaporator to the top of dehydrating filter (1);
- working above plate (3) unscrew nut (tightened onto stud indicated by arrow) that fastens support bracket (2) of dehydrating filter (1) to the stud;



P3M075H01



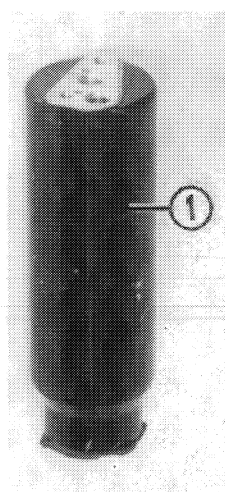
P3M075H02



- working in left front part of engine bay, i.e. in front of the battery support plate, unscrew inner nut that is screwed onto stud (arrowed) of bracket (5) of pipe (B) (connecting condenser to dehydrating filter) that fastens filter to support and filter retaining bracket (2);

- unscrew nut (6) that fastens bracket (2) supporting and retaining dehydrating filter (1) to body plate (3);

- remove dehydrating filter (1) with bracket (2) from seat and withdraw first part from second after loosening nut (7).

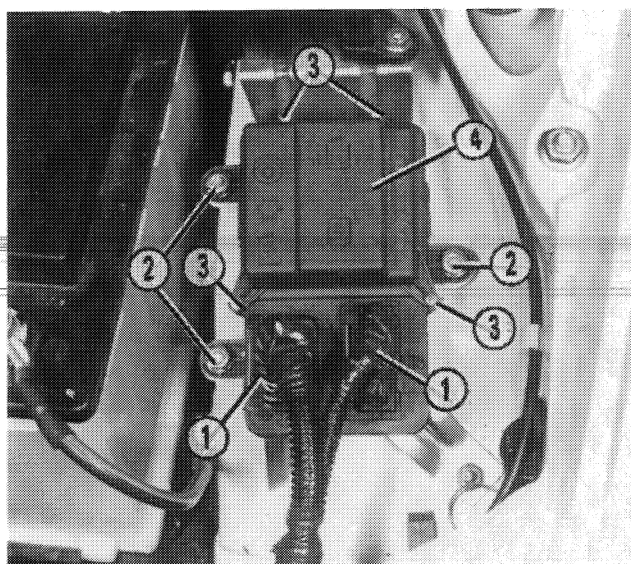


P3M075H03

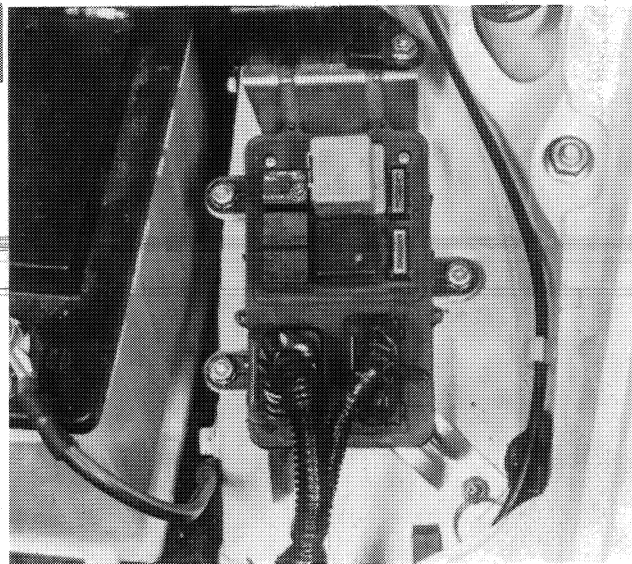
**NOTE** Seal fittings of pipes disconnected from dehydrating filter with watertight plugs to prevent the new filter absorbing moisture that could impair its efficiency.

## HEATING/VENTILATION CONTROL UNIT

To remove the control unit, after disconnecting the two connectors (1) simply unscrew nuts (2) that retain it to the underlying bracket secured to the body; to work on the relays and fuses, unscrew screws (3) and remove cover (4).

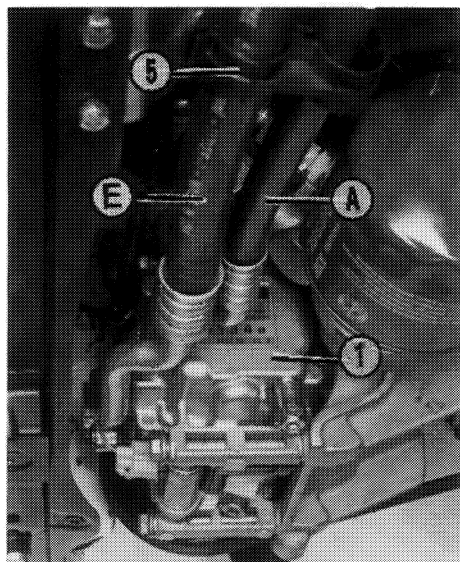


P3M075H04



P3M075H05

## 50.



### LINE CONNECTING AIR CONDITIONER TO CONDENSER

To replace line (A) that connects compressor (1) to condenser (4), after draining air conditioning system carry out the following operations:

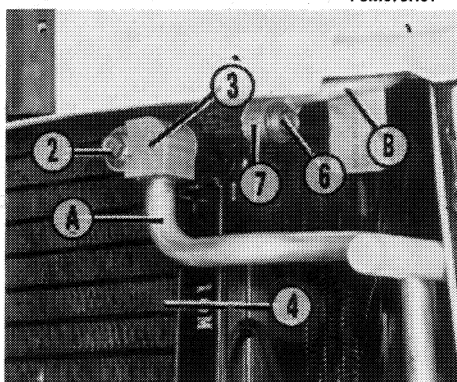
- unscrew the screw that holds the cylindrical shank of the fitting on one end of pipe (A) inside compressor output duct (located on top at rear).

Note that for versions with diesel engines, to gain access to the above screw first disconnect oil lines connected to coolant radiator from mount of engine with filter;

- unscrew screw (2) that fastens fitting (3) at the other end of pipe (A) to the front of condenser (4) (near inlet duct);



- remove pipe (A) from vehicle by releasing from support clips (5).



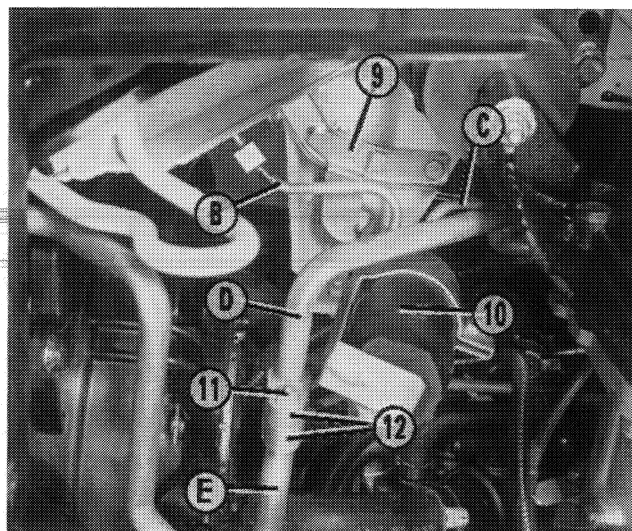
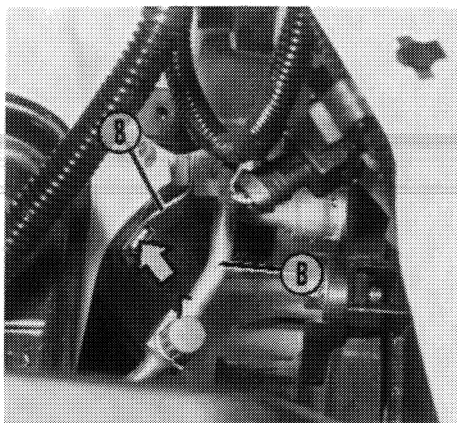
If the above two parts are not connected immediately with a new pipe **seal** condenser inlet and outlet ducts using watertight plugs in order to eliminate moisture.

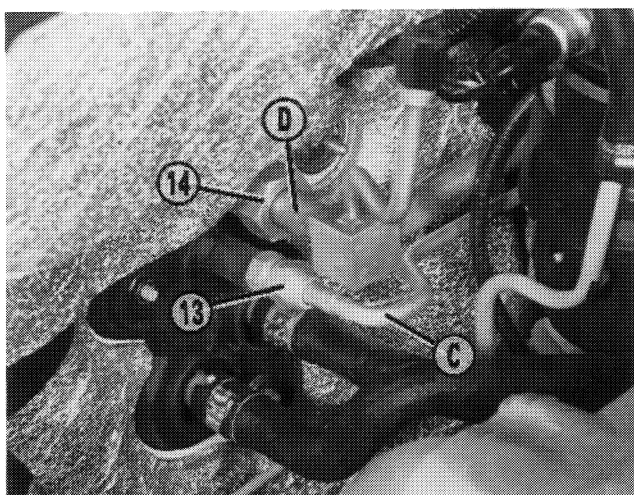
**NOTE** In case of (O - Ring) replacement **use only green rings** that are resistant to R134 A coolant

### LINE CONNECTING CONDENSER TO DEHYDRATING FILTER

To replace pipe (B) that connects dehydrating filter (10) to condenser (4) after draining air conditioning system, simply unscrew screws (6 for condenser) that fasten end fittings to the two parts above and then unscrew the nut screw to the stud (indicated by arrow) of bracket (8) that fastens it to bracket (9) supporting and retaining dehydrating filter (10).

If the two parts above are not reconnected with a new pipe **seal** free filter and condenser ducts using watertight plugs.





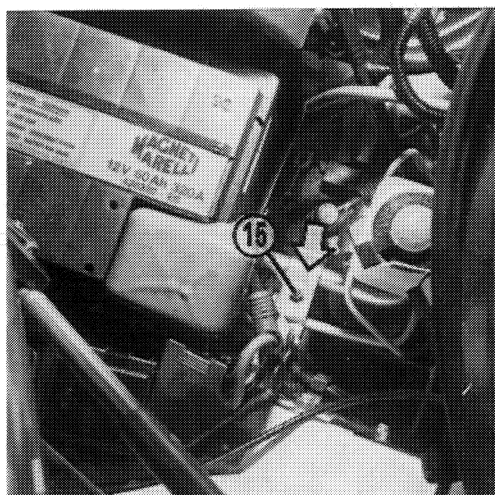
P3M077H01



**PIPE CONNECTING DEHYDRATING FILTER TO PIPE CONNECTED TO EXPANSION VALVE**

To replace the pipe (C) that connects dehydrating filter to pipe connected to expansion valve, proceed as follows after draining the air conditioning system:

- unscrew the screw that retains fitting at one end of pipe (C) to the top of dehydrating filter (10);
- unscrew fitting (13) on the other end of the pipe (C) that joins it to fitting connected to expansion valve;
- unscrew nut (15) located behind battery that joins the two plates (bottom and top indicated by arrow) retaining the two pipes (C and D);
- for versions with diesel engines, unscrew the two nuts (17) that fasten filter (10) to dashboard (bulkhead between engine bay and passenger compartment) and move filter to remove pipe (C).



P3M077H02

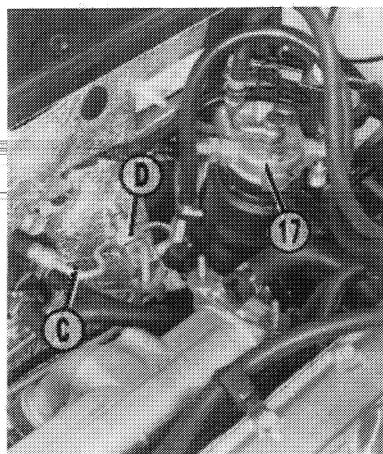


**LINE CONNECTING EVAPORATOR TO COMPRESSOR**

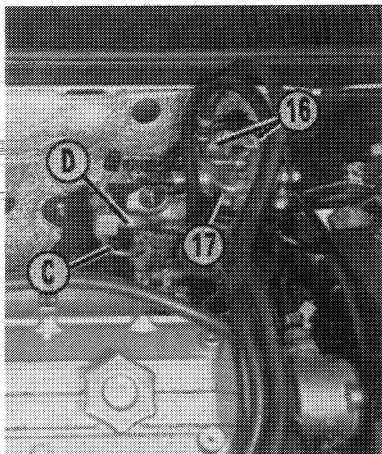
The pipe that connects pipe joined to evaporator output duct to compressor side inlet duct consists essentially of two pipes (D and E) that are joined by fittings (12) joined by nut (11).

To replace the first section of pipe (D), after draining the air conditioning system unscrew fitting (13) that joins it to evaporator outlet duct and then unscrew nut (11) and detach from pipe (E) and lastly remove from seat after unscrewing above nut (15) that joins the two plates retaining the two pipes (C and D)

To replace the second section of pipe (E), after detaching from first section (D) (after unscrewing nut 11) unscrew screw fastening fitting on the other end of the pipe to the side of the compressor.



P3M077H03

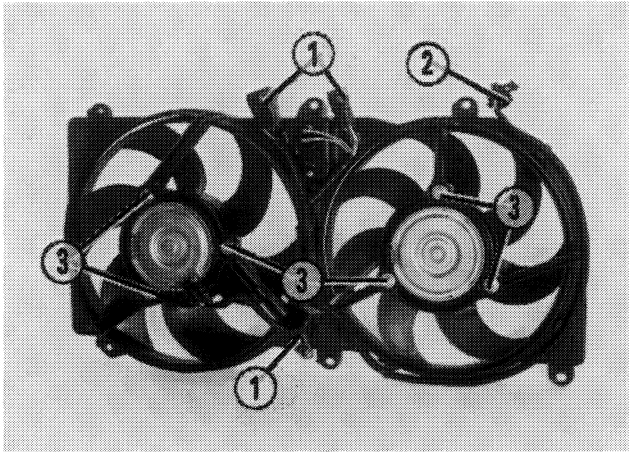


P3M077H04

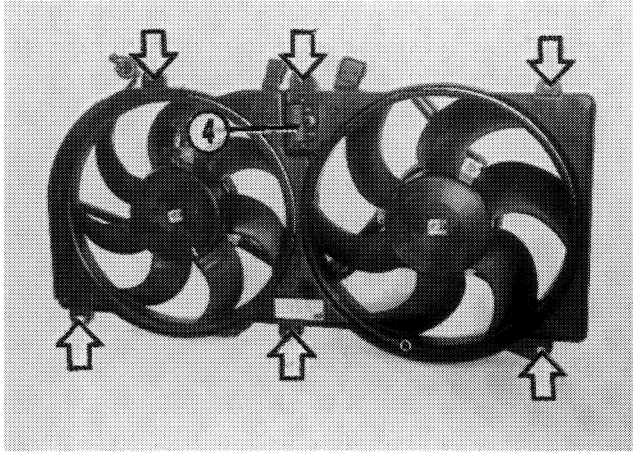


**NOTES** *Seal any disconnected pipe endings with watertight plugs and if O - Rings are changed use only green o-rings that are resistant to new coolant R 134 A.*

RADIATOR AND CONDENSER COOLING FANS



P3M078H01



P3M078H02

Arrows indicate points where fan assembly is fastened to radiator.

- 1. Fan supply cable connectors
- 2. Connector fitted to thermal switch screwed onto radiator
- 3. Nuts retaining fan motors to duct assembly
- 4. Additional resistor for fan low speed

COMPRESSOR SPECIFICATIONS

Make and type	NIPPONDENSO TY 14 EC
Theoretical output	127 cm <sup>3</sup> per revolution
	142 cm <sup>3</sup> per revolution
Amount of oil ND - OIL 9	140 - 180 cm <sup>3</sup> (160 ± 20 cm <sup>3</sup> )
	130 - 170 cm <sup>3</sup> (150 ± 20 cm <sup>3</sup> )
Electromagnetic coupling operating voltage	12V
Maximum current taken up by electromagnetic coupling	2.2A
Power taken up by electromagnetic coupling	40 W

Values on crosshatched base refer to compressor fitted to versions with diesel engine

Quantity of coolant R 134 A to charge system	0.700 kg (0.650 - 0.700 Kg)
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SETTING 2-LEVEL THERMAL SWITCHES CONTROLLING RADIATOR AND CONDENSER FANS

	VERSIONS WITH PETROL ENGINES	VERSIONS WITH DIESEL ENGINES
1st level contact closure	92 °C ± 2 °C (90°-94 °C)	88 °C ± 2 °C (86°-90 °C)
1st level contact opening	87 °C ± 2 °C (85°-89 °C)	83 °C ± 2 °C (81°-85 °C)
2nd level contact closure	97 °C ± 2 °C (95°-99 °C)	92 °C ± 2 °C (90°-94 °C)
2nd level contact opening	92 °C ± 2 °C (90°-94 °C)	87 °C ± 2 °C (85°-89 °C)

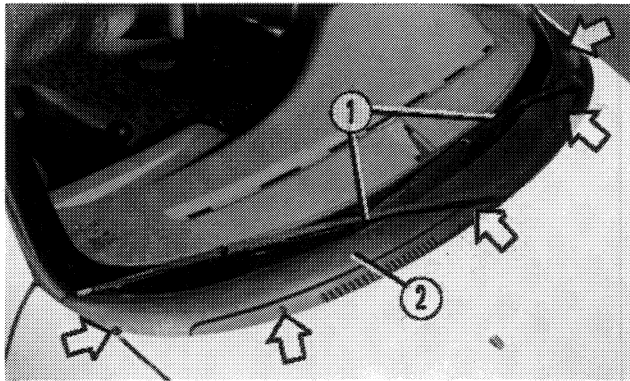
## SETTING PRESSURES FOR THREE-STAGE PRESSURE SWITCH

LEVEL	COLOUR LEADS	SETTING LEVELS (in bars)	CIRCUIT STATUS	FUNCTION
1st	Green Blue	$2.45 \pm 0.25$ (2.2 - 2.7)	Open	Interrupting compressor pulley electromagnetic coupling supply circuit
		$2.6 \pm 0.34$ (2.26 - 2.94)	Closed	Activating compressor pulley electromagnetic coupling supply circuit
2nd	White Black	$15.2 \pm 0.98$ (14.22 - 16.18)	Closed	Activating radiator and condenser cooling fan supply circuits
		$11.28 \pm 0.98$ (10.3 - 12.26) differential $3.92 \pm 0.98$	Open	Deactivating part of radiator and condenser cooling fan supply circuit
3rd	Green Blue	$28 - 3 / + 2$ (25 - 30)	Open	Interrupting compressor pulley electromagnetic coupling supply circuit
		$22 - 3 / + 2$ (19 - 24) differential $6 \pm 2$	Closed	Activating compressor pulley electromagnetic coupling supply circuit

## SPECIFICATIONS OF ADDITIONAL RESISTOR WITH THERMAL FUSE FOR RADIATOR AND CONDENSER COOLING FANS

CHARACTERISTICS	PETROL VERSIONS	DIESEL VERSIONS
Resistance value	$0.3 \pm 0.03 \Omega$ (0.27 - 0.33 $\Omega$ )	$0.3 \pm 0.02 \Omega$ (0.28 - 0.32 $\Omega$ )
Thermal fuse setting temperature	$184^\circ \pm 0/-4^\circ \text{C}$ (180° - 184° C)	$183^\circ \pm 2^\circ \text{C}$ (181° - 185° C)

# 50.



P3M080H01

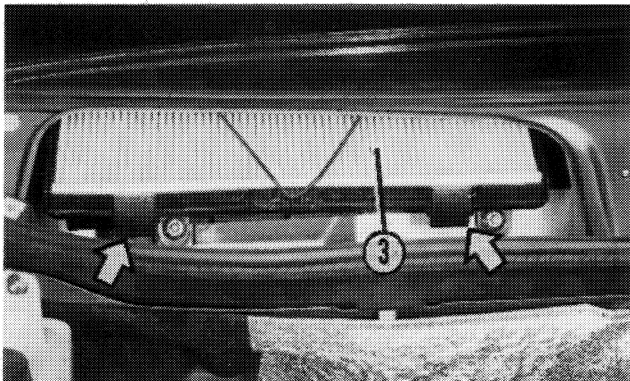


### ANTIPOLLEN FILTER

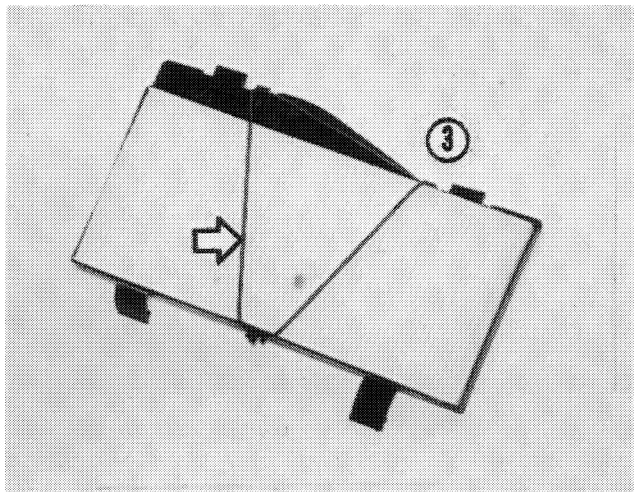
#### Removing

Carry out the following operations:

- remove windscreen wiper arms (1) after removing plugs and unscrewing nuts retaining them to operating shafts;
- unscrew screws (part indicated by arrows in top figure) that fasten transverse guard (2) of compartment under windscreen glass to body;
- remove guard (2) from seat and bend to release from engine bay cover hinges;
- working from right hand side of bay under windscreen glass, lift tabs (arrowed) of frame of antipollen filter assembly (3) in order to release from underlying support (5);
- pull antipollen filter assembly (3) out to remove from seat above support (5).



P3M080H02

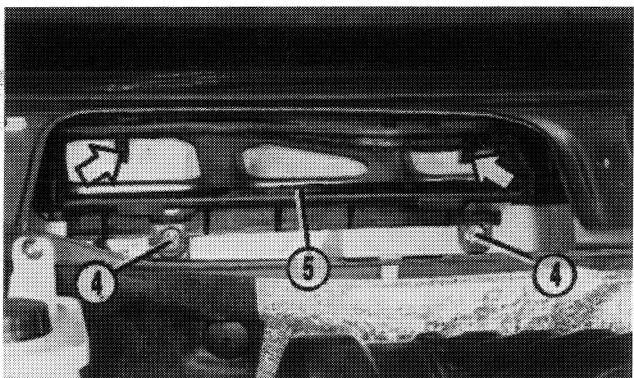


P3M080H03

The antipollen filter assembly (3) consists of a plastic frame to which is fitted filter element and filter element is connected to frame by a flexible clip (indicated by arrow).

The above frame is moulded to reflect the form of the opening (which communicates with fan inlet duct of evaporator - heater - distributor assembly) on dashboard (bulkhead between engine and passenger compartment).

The filter element is rectangular and consists of a special folded sheet.



P3M080H04

Plastic support (5) antipollen filter is held in position by two tabs indicated by arrows (that adhere to the outside) on the dashboard opening and is fastened to the dashboard by nuts (4).