

80 - HEATING AND VENTILATION

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SPECIFICATIONS, TORQUE

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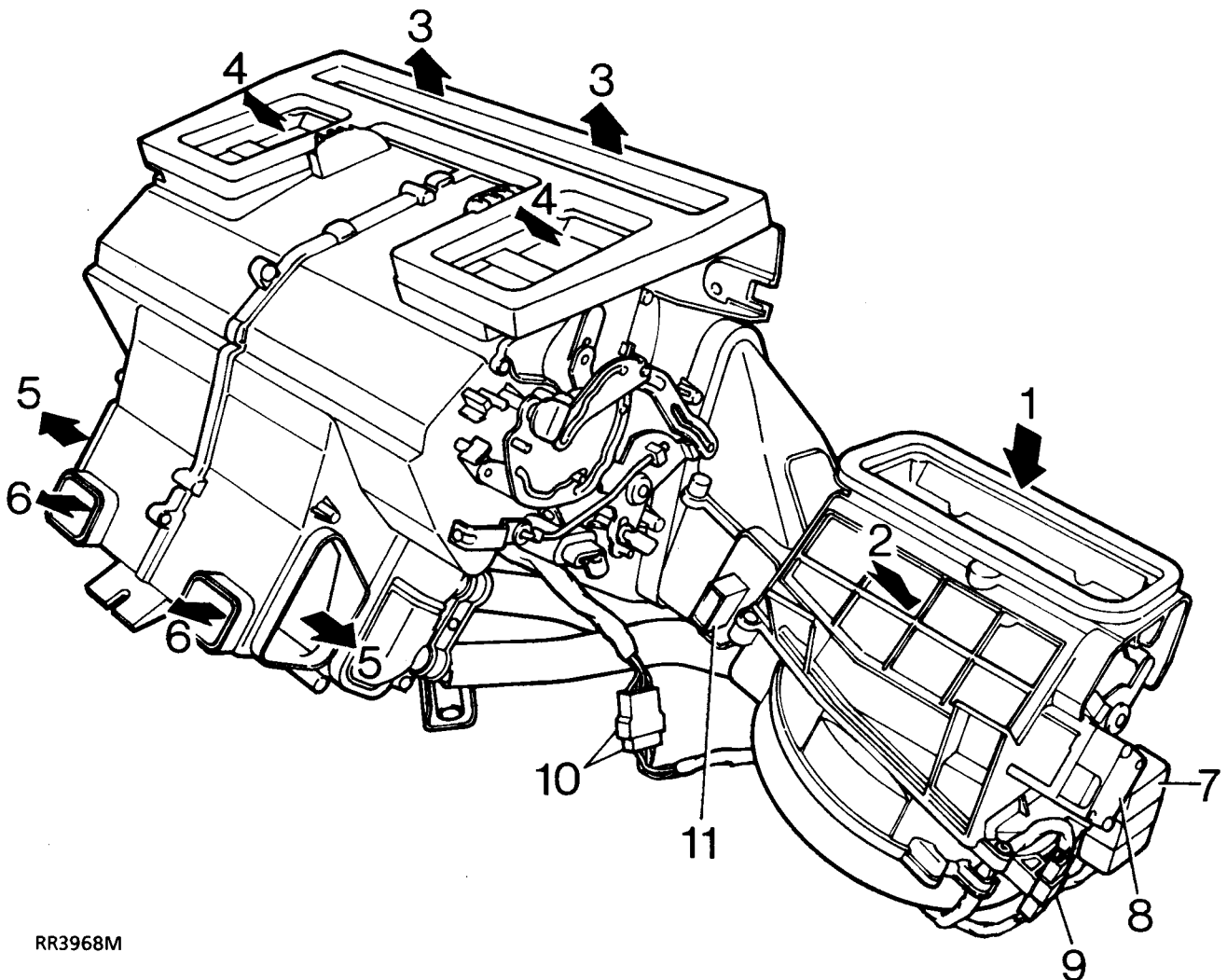




HEATING AND VENTILATION UNIT

The heating and ventilation and blower units are standard on all models. Air conditioning system is an optional module, which when fitted provides fully integrated climate control for the vehicle interior.

The heating and ventilation unit controls the air distribution and heating to the vehicle interior. The blower unit controls the volume of air supplied, while the air conditioning module (when fitted) provides refrigerated and dehumidified air.



RR3968M

- | | |
|----------------------------------|--|
| 1. Fresh air inlet | 7. Fresh/recirculation air flap servo |
| 2. Recirculation air inlet | 8. Blower motor relay |
| 3. Air outlets screen de-mist | 9. Multiplug connector to main harness |
| 4. Air outlet face level vents | 10. Multiplug connector, blower to heater unit |
| 5. Air outlets front footwells | 11. Resistor unit - blower speed. |
| 6. Air outlets to rear footwells | |

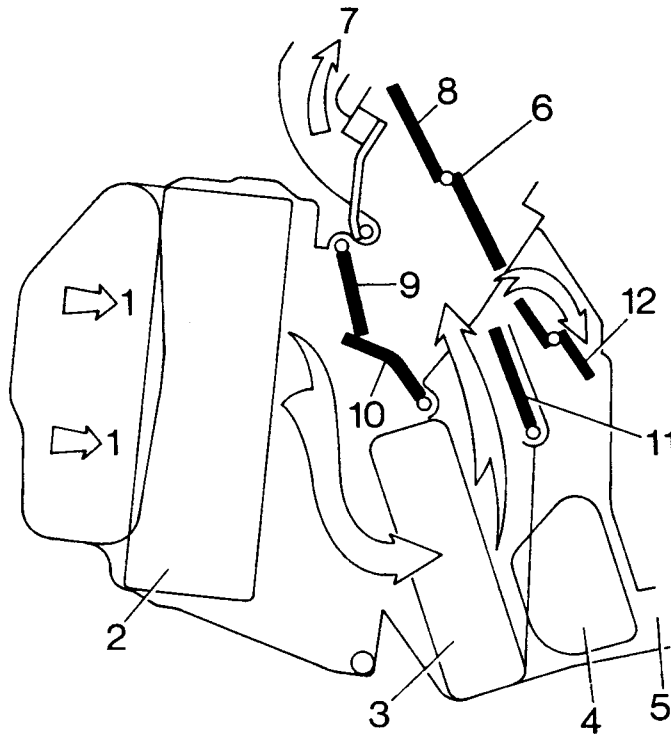
Through-flow ventilation

Through-flow ventilation is achieved by means of one-way air extraction vents incorporated in both rear quarter body panels. The vents open and close automatically dependent upon the heating and ventilation unit control settings and the volume of air entering the vehicle.

Heating and ventilation unit, controls

The Heating and Ventilation Unit is centrally located and concealed by the dash assembly. When air conditioning is fitted, an evaporator is mounted in the heater unit forward of the heater matrix.

The dash mounted central controls are used to operate both systems. A single switch controls the air conditioning unit when fitted.

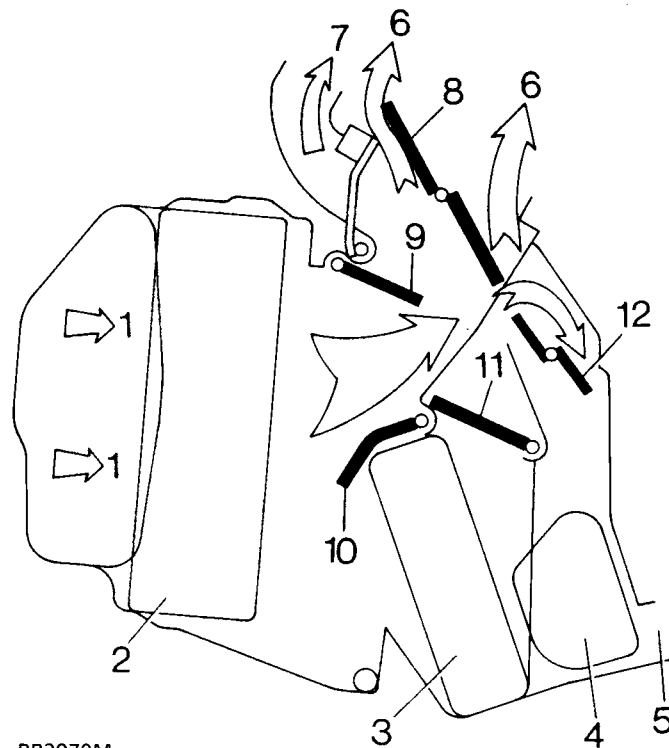


J5969

Controls set for maximum heat to footwells and face level vents

Heating and ventilation flaps and air flow key

- | | |
|---|------------------------------------|
| 1. Fresh or recirculated air from blower unit | 7. Air outlets screen de-mist |
| 2. Evaporator matrix - air conditioning (when fitted) | 8. Control flap - face level vents |
| 3. Heater matrix | 9. Control flap - demist vents |
| 4. Air outlet front footwells | 10. Control flap - air direction |
| 5. Air outlet to rear footwells | 11. Control flap - air temperature |
| 6. Air outlet face level vents | 12. Control flap - air direction |



Controls set for unheated air to footwells and face level vents

Heater and ventilation operation

The heating and ventilation system contains a heater matrix, which is connected to the engine cooling system, and a 4 speed fan for air distribution. Engine coolant is circulated through the heater matrix continuously, except when the temperature controls are set to COLD.

Recirculated air

When the recirculation switch is pressed, an electrical servo operates and fully closes the fresh air intake flap.

Fresh air

When the recirculation switch is returned to the OFF position, the electrical servo returns and fully opens the fresh air intake flap.

Heated air

Temperature output is controlled by the temperature controls which move the air direction and temperature flaps independently to increase or decrease the volume of air flow through the heater matrix.

V8 Engine: When both controls are in the cold position, the coolant valve is turned off.

Face level vent flap

Control at face level, flap fully open. All other vents closed.

Control at face and foot level, flaps half open.

Unless an air conditioning unit is fitted, only fresh or re-circulated air is available from the face level vents.

Demist vent flap

Control at demist, flap fully open. All other vents closed.

Control at demist and foot level, flaps half open.

Air direction flap

Flap moves across mixing chamber to direct the air flow away from the heater matrix.

Air temperature flap

Control at HOT, flaps fully closed. All air flow passes through heater matrix. As control is moved towards COLD the flaps progressively open directing air flow away from the heater matrix.

Control at COLD, flaps fully open.

V8 Engine: When both controls are at COLD, 2 micro-switches are closed and operate a vacuum valve which closes the coolant valve.

Air conditioning

When an air conditioning unit is fitted, the mechanical operation of the heater controls remains unaltered. However the air conditioning evaporator is positioned in front of the mixing chamber through which all air flow passes.



HEATER OUTPUT

Symptom:-**Heater emits cold air.**

1. **Engine running:** Check coolant valve opens as a temperature control is moved from COLD.
2. Check for engine running cold. **See COOLING SYSTEM, Fault diagnosis, Engine Runs Cold**
3. Check heater pipes and hoses for blockage or restriction.
4. Check heater matrix for blockage or restriction, flush system.

Heater emits warm air.

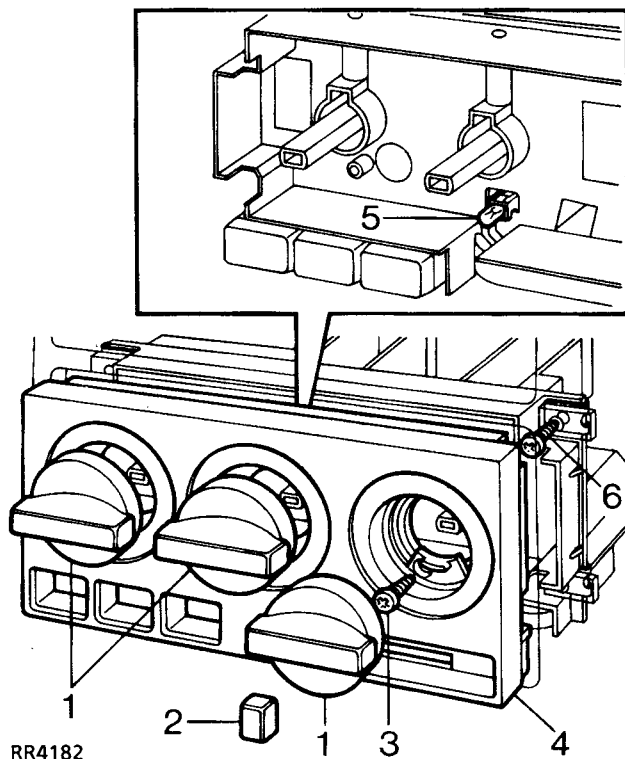
5. **Engine running:** Check coolant valve closes when both temperature controls are moved to COLD.



HEATER BLOWER SWITCH AND ILLUMINATION BULB

Service repair no - 80.10.22 - Switch
Service repair no - 86.48.73 - Bulb

Remove



RR4182

1. Pull 3 knobs from rotary controls.
2. Pull knob from blower switch.
3. Remove 2 screws retaining graphics panel.
4. Remove graphics plate.
5. Remove capless bulb.
6. Remove 4 screws retaining switch.
7. Remove switch panel. Use plastic tube to assist removal.

Blower switch

8. Pull blower switch from rear of panel.
9. Disconnect multiplug and remove blower switch.

Refit

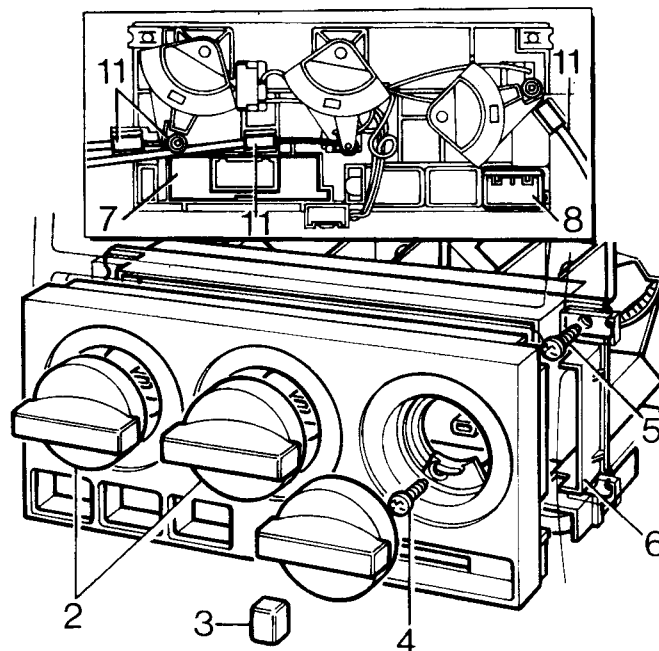
10. Reverse removal procedure.

HEATER CONTROL UNIT

Service repair no - 80.10.42.

Remove

1. Disconnect battery negative lead.



RR3971M

2. Pull 3 knobs from rotary controls.
3. Pull knob from blower switch.
4. Remove 2 retaining screws and remove graphics panel.
5. Remove 4 screws retaining switch.
6. Remove switch panel.
7. Release fascia centre louvre vent panel from its fitted position to gain access to rear of panel.
See CHASSIS AND BODY, Repair, Dash Panel Central Louvre Panel

8. Disconnect 4 multiplugs and position harness aside.

**NOTE:**

Do not carry out further dismantling if component is removed for access only.

9. **Fan speed switch:** remove fan speed switch slide and push out fan speed switch.
 10. Pull out light bulb disconnect terminals and remove fan speed light strip.
 11. Unclip 3 heater control cables from control unit.
 12. **Microswitch:** Unclip 3 micro switches.
 13. Cut cable tie and release wiring harness from control unit.
 14. Remove heater control unit.

Refit

15. Reverse removal procedure. Check the satisfactory function of the controls before fitting louvre vent panel.

CONTROL CABLES

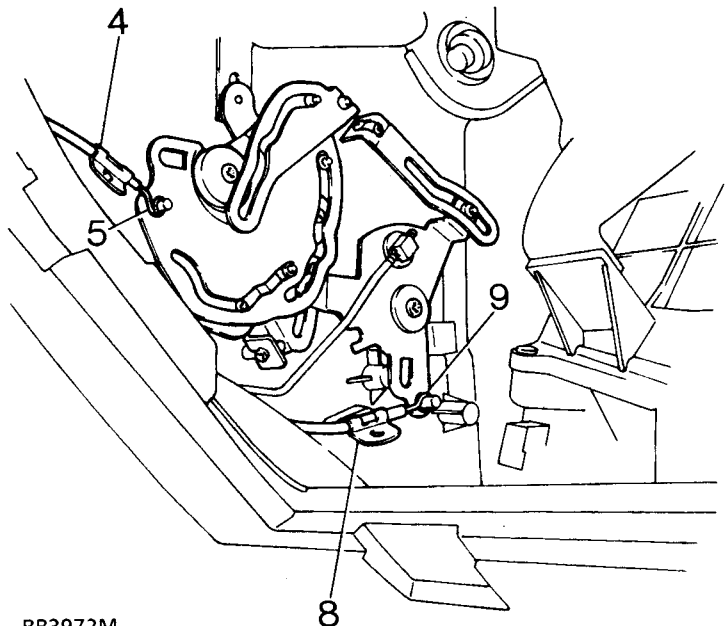
Service repair no - 80.10.06 - Air flow

Service repair no - 80.10.25 - Temperature control RH

Service repair no - 80.10.26 - Temperature control LH

Remove

1. Release fascia centre louvre vent panel from its fitted position to gain access to rear of panel.
See CHASSIS AND BODY, Repair, Dash Panel Central Louvre Panel
2. Open glove box, manoeuvre side springs through cut-outs and lower lid.

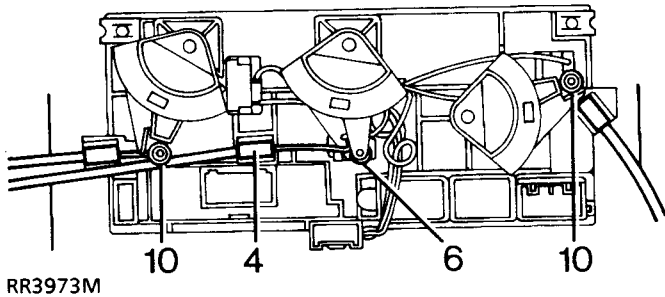


RR3972M



Air direction

3. Set control fully clockwise
4. Release outer cable from 2 clips on unit.
5. Release cable from stud on flap lever.
6. Remove control cable from control lever.



RR3973M

Temperature

7. Set RH control fully clockwise, LH control fully anti-clockwise
8. Release outer cable from 2 clips on unit.
9. Release cable from stud on flap lever.
10. Remove control cable from control lever.

Refit

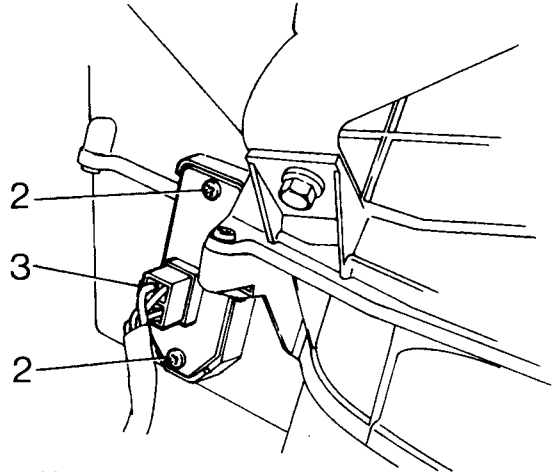
11. Reverse removal procedure. Check the satisfactory function of the controls before fitting louvre vent panel.

RESISTOR UNIT

Service repair no - 80.20.17

Remove

1. Open glove box, manoeuvre side springs through cut-outs and lower lid.



RR3974M

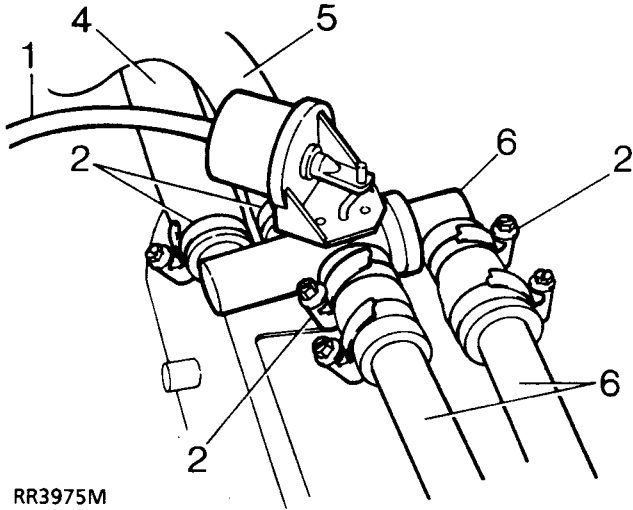
2. Remove 2 screws securing resistor unit to trunking.
3. Disconnect multiplug and remove resistor unit.

Refit

4. Reverse removal procedure.

WATER VALVE

Service repair no - 80.10.16

Remove

RR3975M

1. Disconnect vacuum pipe from water valve.
2. Slacken 4 clips securing hoses to water valve.
3. Use a thin blade to break seal between hoses and nozzles
4. Disconnect heater inlet hose from valve.



NOTE: A quantity of coolant will be released.

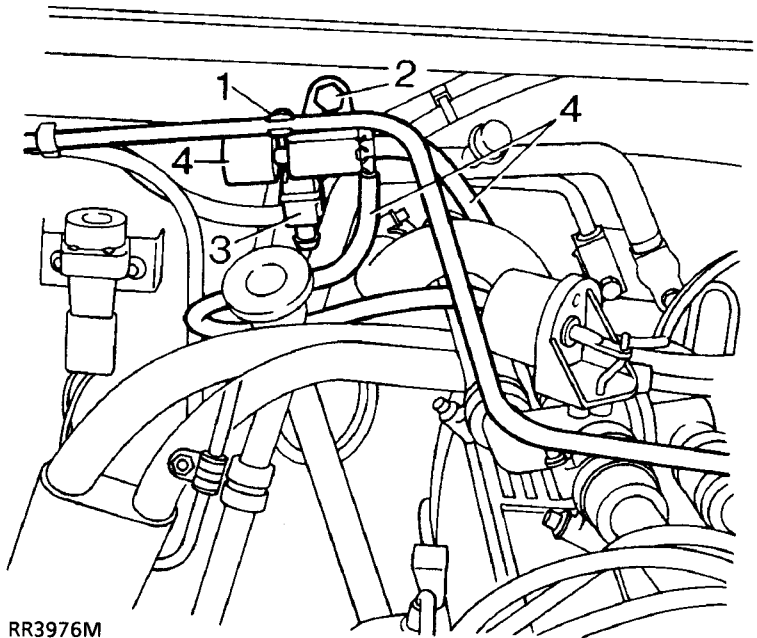
5. Disconnect heater outlet hose from valve.
6. Lever valve from coolant pipe hoses.

Refit

7. Reverse removal procedure. Lightly lubricate water valve nozzles with petroleum jelly.
8. Reverse removal procedure. Top-up engine coolant

VACUUM SWITCH - WATER VALVE

Service repair no - 80.10.36

Remove

RR3976M

1. Release emission pipe from retaining clip.
2. Remove bolt securing switch to bulkhead.
3. Disconnect multiplug from switch.
4. Disconnect 2 vacuum pipes and remove vacuum switch.

Refit

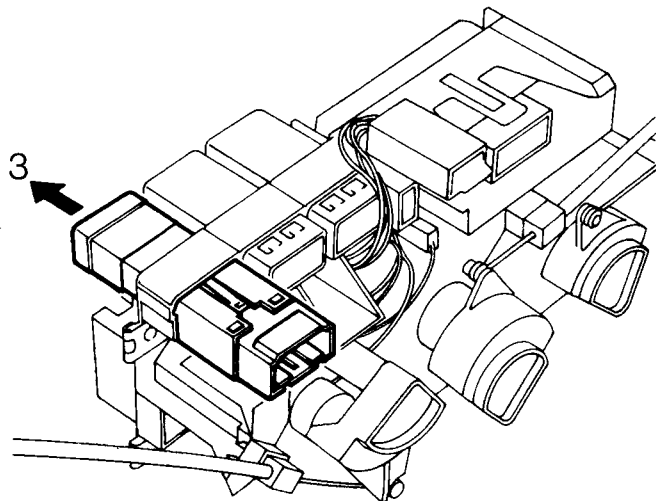
5. Reverse removal procedure.



RECIRCULATION SWITCH

Service repair no - 80.10.27

Remove



RR3977M

1. Release fascia centre louvre vent panel from its fitted position to gain access to rear of panel.
See CHASSIS AND BODY, Repair, Dash Panel Central Louvre Panel
2. Disconnect multiplug from switch
3. From the rear, push switch out of panel.

Refit

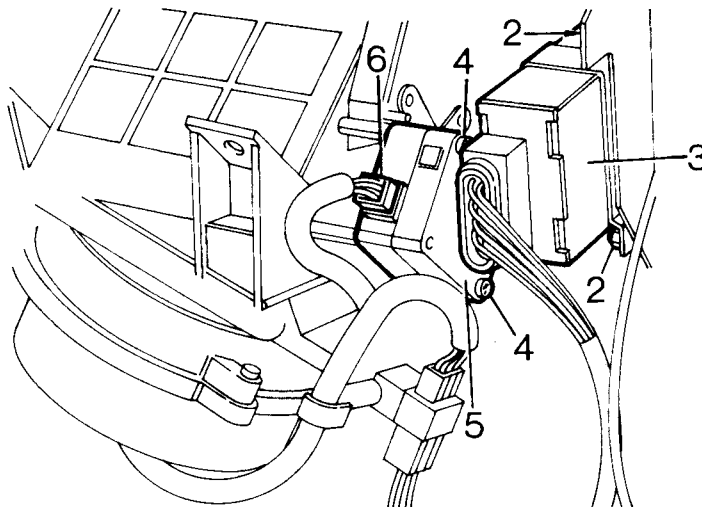
4. Reverse removal procedure.

RECIRCULATION FLAP SOLENOID

Service repair no - 80.10.43

Remove

1. Open glove box, manoeuvre side springs through cut-outs and lower lid.



RR3978M

2. Remove 2 locknuts securing cruise control ECU to bracket.
3. Position cruise control ECU aside.
4. Remove 2 screws securing recirculation solenoid to casing.
5. Release solenoid from lever.
6. Disconnect multiplug and remove solenoid.

Refit

7. Reverse removal procedure.

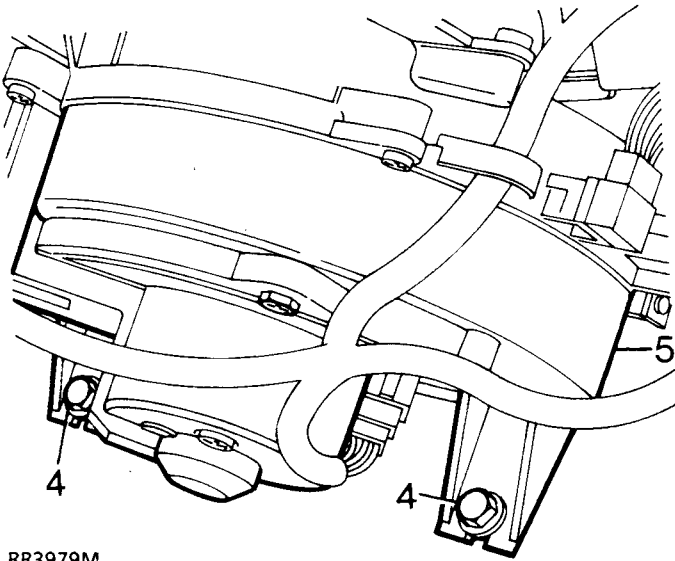
BLOWER MOTOR UNIT - HEATER AND AIR CONDITIONING

Service repair no - 80.20.17

Service repair no - 82.25.54.

Remove

1. Move seats to rear most position.
2. Disconnect battery negative lead.
3. Remove fascia panel assembly. *See CHASSIS AND BODY, Repair, Dash Panel Assembly*



RR3979M

4. Remove 2 nuts securing lower brackets to toeboard.
5. Manoeuvre blower unit from heater unit and remove.

Refit

6. Reverse removal procedure. Ensure seal between blower and heater unit is tight.

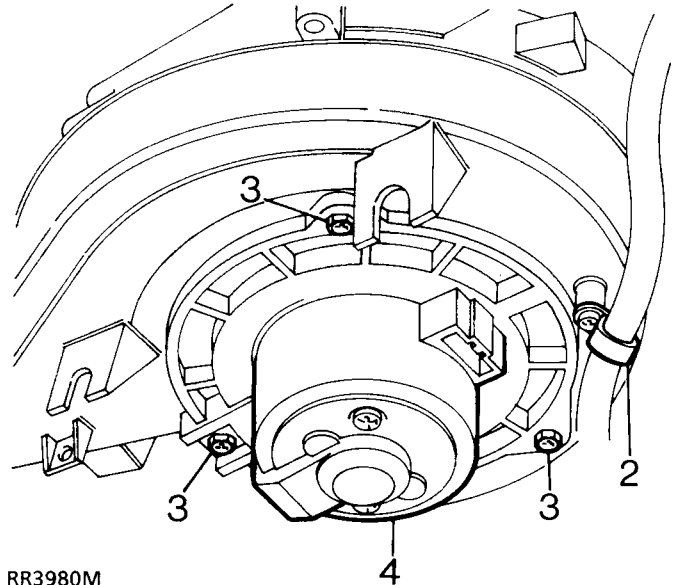
BLOWER MOTOR

Service repair no - 80.20.17

Service repair no - 82.25.33.

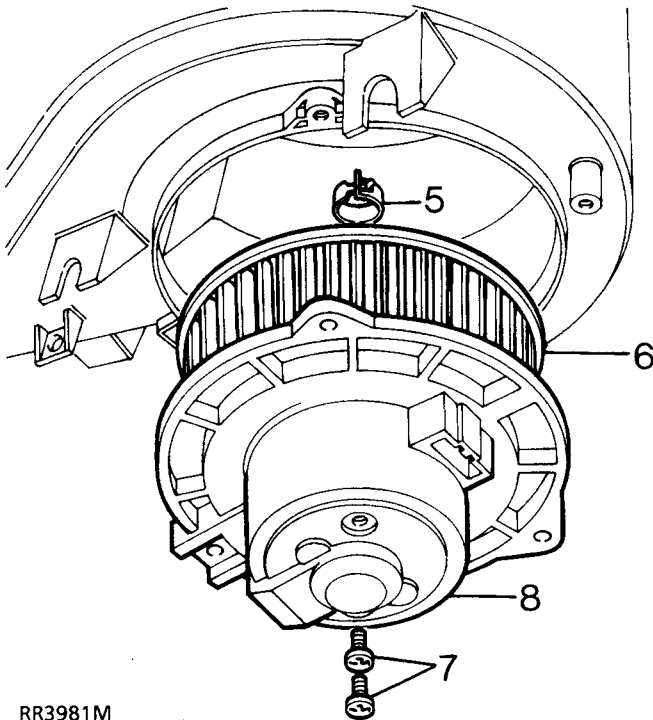
Remove

1. Remove blower motor unit. *See Blower Motor Unit - Heater and Air Conditioning*



RR3980M

2. Release wiring harness retaining clip.
3. Remove 3 screws securing casing.
4. Remove blower motor assembly.



RR3981M

5. Remove fan retaining clip.
6. Remove fan.
7. Remove 2 screws securing motor to casing.
8. Remove blower motor.

Refit

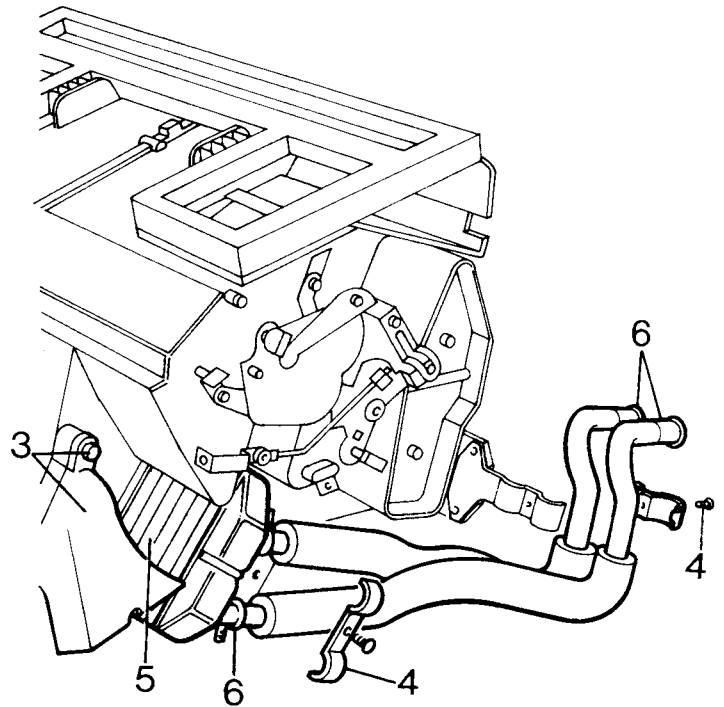
9. Reverse removal procedure.

HEATER MATRIX

Service repair no - 80.20.29

Remove

1. Remove heater unit. *See AIR CONDITIONING, Repair, Heater and Cooler Unit*
2. Remove evaporator. *See AIR CONDITIONING, Repair, Evaporator and Expansion Valve*



RR3982M

3. Remove 2 screws and remove RH side footwell outlet.
4. Remove heater pipe clips.
5. Slide heater matrix from casing.
6. Release 2 clips and remove 2 heater pipes from matrix.

Refit

7. Reverse removal procedure.



TORQUE VALUES



NOTE: Torque wrenches should be regularly checked for accuracy to ensure that all fixings are tightened to the correct torque.

	Nm
METRIC	
M5	6
M6	9
M8	25
M10	45
M12	90
M14	105
M16	180
 UNC / UNF	
1/4	9
5/16	24
3/8	39
7/16	78
1/2	90
5/8	136

Torque values above apply to all screws and bolts used unless otherwise specified.