Chapter 3
Cooling, heating and ventilation systems

Contents

Degrees of difficulty

Easy, suitable for novice with little experience 

Fairly easy, suitable for beginner with some experience 

Fairly difficult, suitable for competent DIY mechanic 

Difficult, suitable for experienced DIY mechanic 

Very difficult, suitable for expert DIY or professional 

Specifications

System type	Pressurised, with remote expansion tank. Coolant pump driven by timing belt

Coolant

Type/specification (all models)	See *Lubricants and fluids* in "*Weekly checks*"
Capacity	See Chapter 1 Specifications

Thermostat

Starts to open at (all models)	92°C
Fully open at (all models)	107°C
Operating temperature (approx.)	80°C

Expansion tank cap

Opening pressure (all models)	1.20 to 1.35 bar
Boiling point	125°C

Cooling fan switch

Switches on at (all models)	100°C
Switches off at (all models)	95°C

Torque wrench settings	**Nm**	**lbf ft**
Coolant pump bolts:		
1.4 and 1.6 litre models (except C16 NZ2), (M6)	8	6
C16 NZ2, 1.8 and 2.0 litre models (M8)	25	18
Oil pipes to radiator	22	16
Outlet to thermostat housing, C16 NZ2, 1.8 and 2.0 litre models	8	6
Temperature sender	10	7
Temperature sensor	11	8
Thermostat housing to cylinder head:		
1.4 and 1.6 litre models (except C16 NZ2)	10	7
C16 NZ2, 1.8 and 2.0 litre models	15	11

1 General description

HAYNES HiNT ***When renewing any hoses, use a little soapy water as a lubricant, or soften the hose in hot water. Do not use oil or grease, as this may attack the rubber.***

Engine cooling is achieved by a conventional pump-assisted system, in which the coolant is pressurised. The system consists of a radiator, a coolant pump driven by the engine timing belt, an electric cooling fan, a thermostat, an expansion tank, and connecting hoses. Hoses also carry coolant to and from the heater matrix, which provides heat for the ventilation and heating system.

The system works in the following way. Cold coolant from one side of the radiator, which is mounted at the front of the engine compartment, passes to the coolant pump, which forces the coolant through the coolant passages in the cylinder block and cylinder head. The coolant absorbs heat from the engine, and then returns to the radiator through the heater matrix. As the coolant flows across the radiator it is cooled, and the cycle is repeated.

Air flows through the radiator, to cool the coolant as a result of the vehicle's forward motion. However, if the coolant temperature exceeds a given figure, a temperature-sensitive switch in the radiator switches on the electric fan, to increase the airflow through the radiator. The fan only operates when necessary, with a consequent reduction in noise and energy consumption.

To reduce the time taken for the engine to warm up when starting from cold, the thermostat, located in the cylinder head outlet, prevents coolant flowing to the radiator until the temperature has risen sufficiently. Instead, the outflow from the cylinder head bypasses the radiator, and is redirected around the engine. When the temperature reaches a given figure, the thermostat opens, to allow coolant to flow to the radiator. The thermostat is operated by the expansion of a temperature sensitive wax capsule.

An expansion tank is incorporated in the system, to allow for coolant expansion. The system is topped up through a filler cap on the expansion tank.

Note that later models may be fitted with self-tensioning spring clamps to secure the cooling system (including heater) hoses. These clamps can be released by squeezing together their free ends using a large pair of self-grip pliers or similar so that the clamp can be moved up the hose, clear of the union. Check that the clamp is securely seated, and check for leaks on reassembly.

2 Cooling system - draining

1 With the vehicle parked on level ground, remove the expansion tank filler cap. If the engine is warm, cover the filler cap with a thick cloth, and unscrew the cap slowly, to gradually relieve the system pressure. Take care to avoid scalding by steam or coolant escaping from the pressurised system.

2 On DOHC models, remove the engine undershield, with reference to Chapter 11.

3 Position a container beneath the radiator bottom hose connection, then slacken the hose clip and ease the hose from the radiator stub. If the hose joint has not been disturbed for some time, it will be necessary to manipulate the hose to break the joint. Allow the coolant to drain into the container.

4 As no cylinder block drain plug is fitted, and the radiator bottom hose may be situated halfway up the radiator, the system cannot be drained completely. Care should therefore be taken when refilling the system to maintain antifreeze strength.

5 If the coolant has been drained for a reason other than renewal, then provided it is clean and less than two years old, it can be re-used.

6 If the coolant has been drained for renewal, and is badly contaminated, the coolant system should be flushed as described in Section 4. As the system cannot be drained completely, it is advisable to flush the system whenever the coolant is renewed, to minimise the impurities remaining in the system.

3 Cooling system - flushing

1 If coolant renewal has been neglected, or if the antifreeze mixture has become diluted, then in time the cooling system will gradually lose efficiency, as the coolant passages become restricted due to rust, scale deposits and other sediment. To restore coolant system efficiency, it is necessary to flush the system clean.

2 The radiator should be flushed independently of the engine, to avoid unnecessary contamination.

3 To flush the radiator, disconnect the top hose at the radiator, then insert a garden hose into the radiator top inlet. Direct a flow of clean water through the radiator, and continue flushing until clean water emerges from the radiator bottom outlet (the bottom hose should have been disconnected to drain the system). If after a reasonable period, the water still does not run clear, the radiator can be flushed with a good proprietary cleaning agent. It is important that the manufacturer's instructions are followed carefully. If the contamination is particularly bad, insert the hose in the radiator bottom outlet, and flush the radiator in reverse.

4 To flush the engine, continue as follows.

1.4 and 1.6 litre models (except C16 NZ2)

5 Remove the thermostat as described in Section 9, then temporarily refit the thermostat cover.

6 With the radiator top and bottom hoses disconnected from the radiator, insert a garden hose into the radiator bottom hose. Direct a flow of clean water through the engine, and continue flushing until clean water emerges from the radiator top hose.

7 On completion of flushing, refit the thermostat, and reconnect the hoses.

C16 NZ2, 1.8 and 2.0 litre models

8 Remove the thermostat and cover assembly, as described in Section 9.

9 With the radiator bottom hose disconnected from the radiator, insert a garden hose into the radiator bottom hose. Direct a flow of clean water through the engine, and continue flushing until clean water emerges from the thermostat housing. It is advisable to place a sheet of plastic under the thermostat housing to deflect water away from the engine and surrounding components during the flushing process.

10 On completion of flushing, refit the thermostat and cover assembly, reconnect the hoses and remove the sheet of plastic.

4 Cooling system - filling

1 Before attempting to fill the cooling system, make sure that all hoses and clips are in good condition, and that the clips are tight. Note that an antifreeze mixture must be used all year round, to prevent corrosion of the alloy engine components - refer to Section 5.

2 On 1.4 and 1.6 litre models (except C16 NZ2), disconnect the wire and unscrew the coolant temperature sender from the inlet manifold.

3 Remove the expansion tank cap, and fill the system by slowly pouring the coolant into the expansion tank to prevent air locks from forming.

4 If the coolant is being renewed, begin by pouring in a couple of pints of water, followed by the correct quantity of antifreeze (see Section 5), then top-up with more water.

5 On 1.4 and 1.6 litre models (except C16 NZ2), refit the coolant temperature sender when coolant free of air bubbles emerges from the orifice in the inlet manifold.

6 Top-up the coolant level to the "COLD" (or "KALT") mark on the expansion tank, then refit the expansion tank cap.

7 Start the engine and run it until it reaches normal operating temperature, then stop the engine and allow it to cool.

8 Check for leaks, particularly around disturbed components. Check the coolant

level in the expansion tank, and top-up if necessary. Note that the system must be cold before an accurate level is indicated in the expansion tank. If the expansion tank cap is removed while the engine is still warm, cover the cap with a thick cloth and unscrew the cap slowly, to gradually relieve the system pressure. Take care to avoid scalding by steam or coolant escaping from the pressurised system.

9 On DOHC models, refit the engine undershield on completion.

5 Coolant mixture - general

1 It is important to use an antifreeze mixture in the cooling system all year round, to prevent corrosion of the alloy engine components. The coolant mixture should be made up from clean, preferably soft, tap water, and a good quality antifreeze containing corrosion inhibitor. Ensure that the antifreeze is ethylene glycol based, as the cheaper methanol based types evaporate over a period of time.

2 The proportions of water and antifreeze used will depend on the degree of protection required. A coolant mixture containing 25% antifreeze should be regarded as the minimum strength required to maintain good anti-corrosion properties. Details of the degree of protection provided against freezing will be supplied with the antifreeze by the manufacturers. For absolute protection, use a 50% antifreeze mixture.

3 The coolant mixture should be renewed every two years, as the corrosion inhibitors will deteriorate with time.

4 Before filling the system with fresh coolant, drain and flush the system, as described in Sections 2 and 3, and check that all hoses are secure and that the clips are tight. Antifreeze has a searching action, and will leak more rapidly than plain water.

5 Refill the system as described in Section 4. All future topping-up should be carried out using a coolant mixture of the same proportions as that used to initially fill the system.

6 Do not use antifreeze in the windscreen wash system, as it will attack the vehicle paintwork. Note that antifreeze is poisonous, and must be handled with due care.

6.6 Compressing a radiator securing clip - 2.0 litre SOHC model

6 Radiator (manual transmission) - removal and refitting

Removal

1 The radiator can be removed complete with the coolant fan and shroud if there is no need to disturb the fan. If desired, the fan and its shroud can be removed from the radiator, with reference to Section 12.

2 Drain the cooling system, as described in Section 2.

3 Disconnect the radiator top hose and the expansion tank at the radiator.

4 Disconnect the battery negative lead, then disconnect the wiring from the cooling fan switch, located at the bottom right-hand side of the radiator.

5 Disconnect the cooling fan wiring connector, noting its location for use when refitting.

6 Compress and remove the two radiator securing clips, located at the top corners of the radiator **(see illustration)**.

7 Pull the top of the radiator back towards the engine to free it from the top mountings, then lift the radiator to disengage the lower securing lugs. Move the radiator clear of the vehicle, taking care not to damage the cooling fins **(see illustrations)**.

Refitting

8 The radiator can be inspected and cleaned as described in Section 8.

9 Refitting is a reversal of removal, bearing in mind the following points.

10 Ensure that the radiator rubber mountings are in good condition and renew if necessary, and ensure that the lower securing lugs engage correctly as the radiator is refitted.

11 Refill the cooling system, (Section 4).

7 Radiator (automatic transmission) - removal and refitting

Removal

1 On models with automatic transmission, the radiator left-hand side tank incorporates a heat exchanger to cool the transmission fluid. It is connected to the transmission by a pair of flexible hoses, with a metal pipe at each end.

2 When removing the radiator, either clamp the transmission fluid cooler flexible hoses, or slacken their clamps, work them off their unions and swiftly plug or cap each hose end and union to minimise the loss of fluid and to prevent the entry of dirt.

Refitting

3 On refitting, reverse the removal procedure and do not forget to check the transmission fluid level, topping-up as necessary to replace the lost fluid, as described in Chapter 7B.

6.7A Radiator freed from top right-hand mounting - 1.6 litre model

6.7B Withdrawing the radiator - 2.0 litre SOHC model

9.6 Remove the thermostat housing . . .

9.7 . . .and withdraw the thermostat - 1.6 litre model

9.15A Withdraw the thermostat cover complete with thermostat . . .

8 Radiator - inspection and cleaning

1 If the radiator has been removed due to suspected blockage, reverse-flush it as described in Section 3.
2 Clean dirt and debris from the radiator fins, using an air jet or a soft brush. Take care, as the fins are easily damaged and are sharp.
3 If necessary, a radiator specialist can perform a "flow test" on the radiator, to establish whether an internal blockage exists.
4 A leaking radiator must be referred to a specialist for permanent repair. Do not attempt to weld or solder a leaking radiator, as damage to the plastic components may result.
5 In an emergency, minor leaks from the radiator can be cured by using a radiator sealant.

9 Thermostat - removal and refitting

Note: *A new O-ring should be used when refitting the thermostat*

1.4 and 1.6 litre models (except C16 NZ2)

Removal

1 Partially drain the cooling system, as described in Section 2.
2 Remove the timing belt and the camshaft sprocket, as described in Chapters 2A or 2B, (as applicable).
3 Unscrew and remove the two upper bolts securing the rear timing belt cover to the cylinder head, and the lower right-hand bolt securing the cover to the cylinder block.
4 Disconnect the coolant hose from the thermostat housing.
5 Pull the rear timing belt cover forwards, away from the cylinder head, for access to the two thermostat housing securing bolts.
6 Unscrew and remove the two thermostat housing securing bolts, and lift off the thermostat housing **(see illustration)**.
7 Withdraw the thermostat from the cylinder head, noting that coolant may be released from the radiator bottom outlet as the thermostat is withdrawn, even though the cooling system has been partially drained **(see illustration)**.
8 Remove the sealing ring from the edge of the thermostat.
9 If desired, the thermostat can be tested, as described in Section 10.

Refitting

10 Refitting is a reversal of removal, using a new sealing ring, and bearing in mind the following points.
11 Refit the camshaft sprocket and timing belt, and tension the timing belt, as described in Chapters 2A or 2B.
12 Refill the cooling system, (Section 4).

C16 NZ2, 1.8 and 2.0 litre models

Removal

13 Remove the engine undershield, if fitted. Partially drain the cooling system, as described in Section 2.
14 Disconnect the radiator top hose from the thermostat cover.
15 Unscrew and remove the thermostat cover securing bolts, and withdraw the cover complete with thermostat. Recover the O-ring **(see illustrations)**.
16 If desired, the thermostat can be tested, as described in Section 10.
17 Note that if it is necessary to renew the thermostat, the complete cover and thermostat must be renewed as an assembly, as the two cannot be separated.

10.2 View of thermostat showing opening temperature markings - 1.6 litre model

9.15B . . .and recover the O-ring - 2.0 litre SOHC model

Refitting

18 Refitting is a reversal of removal, but use a new O-ring, and on completion refill the cooling system, as described in Section 4.

10 Thermostat - testing

1 A rough test of the thermostat may be made by suspending it with a piece of string in a container full of water. Heat the water to bring it to the boil - the thermostat must open by the time the water boils. If not, renew it.
2 If a thermometer is available, the precise opening temperature of the thermostat may be determined, and compared with the figures given in the Specifications. The opening temperature is also marked on the thermostat **(see illustration)**.
3 A thermostat that fails to close as the water cools must also be renewed.

11 Coolant pump - removal and refitting

SOHC models

Removal

1 If the engine is in the vehicle, drain the cooling system, as described in Section 2.
2 On 1.4 and 1.6 litre models (except C16 NZ2), remove the rear timing belt cover. On

11.4 Coolant pump securing bolt (arrowed) - 2.0 litre SOHC model

C16 NZ2, 1.8 and 2.0 litre models, remove the timing belt. Details are as described in Chapter 2A.

3 Remove timing belt tension roller from oil pump, where applicable.

4 Unscrew and remove the coolant pump securing bolts **(see illustration)**.

5 Withdraw the coolant pump from the cylinder block, and recover the O-ring **(see illustrations)**. It may be necessary to tap the pump lightly with a plastic-faced hammer to free it from the cylinder block.

6 If desired, the rear timing belt cover can be removed from the pump by rotating the cover to release it from the flange on the pump.

7 No overhaul of the coolant pump is possible, and if faulty, the unit must be renewed.

Refitting

8 Refitting is a reversal of removal, bearing in mind the following points.

9 Use a new O-ring when refitting the pump. Before refitting the pump, smear the pump mounting face in the cylinder block and the O-ring with a silicone grease or petroleum jelly.

10 Do not fully tighten the pump securing bolts until the timing belt has been fitted and tensioned.

11 Refit and tension the timing belt, as described in Chapter 2A.

12 If the engine is in the vehicle, refill the cooling system, as described in Section 4.

DOHC models

Removal

13 Remove the engine undershield.

14 If the engine is in the vehicle, drain the cooling system, as described in Section 2.

15 Remove the timing belt, camshaft sprockets, crankshaft sprocket, timing belt tensioner and idler rollers, and the timing belt rear cover, as described in Chapter 2B.

16 Proceed as described in paragraphs 4 and 5.

17 No overhaul of the coolant pump is possible, and if faulty, the unit must be renewed.

Refitting

18 Refitting is a reversal of removal, bearing in mind the following points.

11.5A Withdraw the coolant pump . . .

11.5B . . .and recover the O-ring - 2.0 litre SOHC model

19 Always use a new O-ring. Before fitting the pump, smear the pump mating face in the cylinder block and the O-ring with a silicone grease or petroleum jelly.

20 Refit the pump, and ensure that the lugs on the pump and the cylinder block are aligned before tightening the pump securing bolts **(see illustration)**.

21 Refit the remaining components, and tension the timing belt, as described in Chapter 2B.

22 If the engine is in the vehicle, refill the cooling system, as described in Section 4. Replace the undershield.

12 Cooling fan - removal and refitting

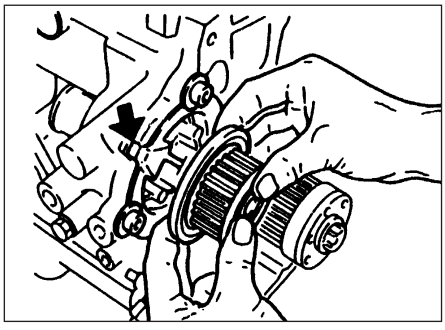
Removal

1 Disconnect the battery negative lead.

2 Disconnect the wiring from the cooling fan, noting the location of the wiring connector for use when refitting.

3 Unscrew the two upper fan shroud securing bolts from the top corners of the shroud, then tilt the assembly back slightly towards the engine, and withdraw it upwards away from the radiator **(see illustration)**.

4 To separate the fan motor from the shroud, unscrew the three securing nuts. If desired, the fan blades can be separated from the motor by removing the securing spring clip from the end of the motor shaft.



11.20 Lugs (arrowed) on coolant pump and cylinder block must be aligned - DOHC models

5 No spare parts are available for the motor, and if the unit is faulty, it must be renewed.

Refitting

6 Reassembly (where applicable), and refitting are reversals of the dismantling and removal procedures, but ensure that the lower end of the fan shroud locates correctly on the radiator.

7 On completion, start the engine and run it until it reaches normal operating temperature, then continue to run the engine and check that the cooling fan cuts in and functions correctly.

13 Expansion tank and coolant level sensor - removal and refitting

Expansion tank

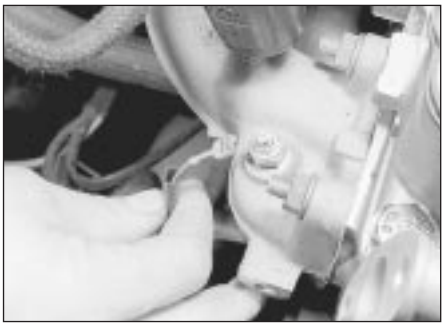
Removal

1 The expansion tank is secured by a single screw at its front edge. If the tank is to be moved for access purposes, it should be possible to move it sufficiently within the confines of the hoses once the securing screw has been removed. If the tank is to be removed completely, continue as follows.

2 Disconnect the two hoses from the top of the expansion tank, and suspend them above the height of the engine to prevent coolant loss.

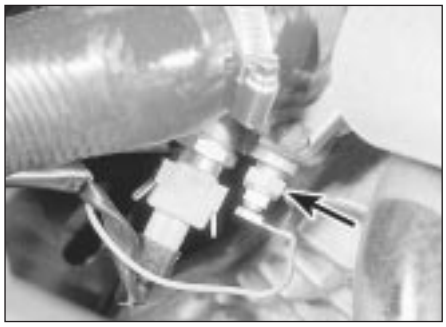
3 Remove the tank securing screw, then manipulate the tank from its location, holding it as high as possible above the engine.

12.3 Withdrawing the fan shroud assembly - 2.0 litre SOHC model



14.1A Disconnecting the wiring from the temperature gauge sender - 1.6 litre model

14.1B Temperature gauge sender location (arrowed) - 2.0 litre SOHC model



14.1C Temperature gauge sender location (arrowed) - 2.0 litre DOHC model

4 Position a container beneath the tank, then disconnect the bottom hose and allow the contents of the tank to drain into the container. Suspend the bottom hose as high as possible above the engine to prevent coolant loss.

Refitting

5 Refitting is a reversal of removal, but on completion check and if necessary top-up the coolant level, as described in Section 4. The coolant drained from the expansion tank during removal can be re-used, provided it has not been contaminated.

Coolant level sensor

6 The coolant level sensor, where fitted, is an integral part of the expansion tank cap. If the level sensor is faulty, the complete cap assembly must be renewed.

14 Temperature gauge sender - removal and refitting

Removal

1 The sender is screwed into the inlet manifold on 1.4 and 1.6 litre models (except C16 NZ2), and into the thermostat housing on C16 NZ2, 1.8 and 2.0 litre models **(see illustrations)**.
2 Partially drain the cooling system, as described in Section 2, to minimise coolant spillage.
3 Disconnect the battery negative lead.
4 Disconnect the wiring from the switch, then unscrew the switch from its location.

Refitting

5 Refitting is a reversal of removal, remembering the following points.
6 Coat the sender threads with sealant before fitting.
7 Top-up the cooling system, as described in Section 4.
8 On completion, start the engine and check the operation of the temperature gauge. Also check for coolant leaks.

15 Cooling fan switch - removal and refitting

Note: *A new sealing ring should be used when refitting the switch*

Removal

1 The cooling fan switch is located at the bottom right-hand corner of the radiator **(see illustration)**.
2 If a faulty switch is suspected, the circuit to the fan motor can be tested by temporarily bridging the terminals in the switch wiring plug, and switching on the ignition. If the cooling fan now operates, the switch is faulty and should be renewed. To remove the switch, continue as follows.
3 Disconnect the battery negative lead, then disconnect the switch wiring plug if not already done.
4 Drain the cooling system, as described in Section 2.
5 Unscrew the switch from the radiator and recover the sealing ring.

Refitting

6 Refitting is a reversal of removal, but use a new sealing ring, and refill the cooling system as described in Section 4.
7 On completion, start the engine and run it until it reaches normal operating temperature, then continue to run the engine and check that the cooling fan cuts in and functions correctly.

16 Heater control panel - removal and refitting

Removal

1 Disconnect the battery negative lead.
2 Remove the passenger side footwell trim, the steering column shrouds, and the instrument panel lower and upper trim panels, as described in Chapter 11.
3 Remove the clock or trip computer, as applicable, from the facia, referring to Chapter 12 if necessary.
4 Remove the two heater control panel securing screws from the clock/trip computer aperture, and the remaining securing screw from the right-hand end of the panel (exposed by removing the instrument panel lower trim panel), **(see illustrations)**.

15.1 Cooling fan switch location - 2.0 litre SOHC model viewed from below

16.4A Remove the two heater control panel securing screws from the clock/trip computer aperture . . .

16.4B . . . and the remaining screw from the right-hand end of the panel

16.5 Heater control cables disconnected, showing cable end securing clips

5 Working through the passenger footwell, reach up behind the facia, and disconnect the bowden cables from the control levers at the rear of the heater control panel. Note that each cable is secured by a plastic clip, and in some cases, by an additional metal clip, which must be released before the cable end can be disconnected from the control lever **(see illustration)**. This is a tricky operation, and some patience will be required. Mark the cables to ensure that they are refitted in their original positions.
6 Withdraw the heater control panel from the facia, and disconnect the wiring plugs from the rear of the panel.

Refitting

7 Refitting is a reversal of removal, but on completion, move all the control levers through their full extent of travel, and check the heater mechanism for correct operation.

17 Heater matrix - removal and refitting

Removal

1 Drain the cooling system, (Section 2).
2 Working in the engine compartment, disconnect the coolant hoses from the heater matrix pipes at the bulkhead.
3 Working inside the vehicle, remove the front centre console section, (Chapter 11).
4 Extract the two front and two rear securing screws, and remove the plastic cover from under the heater matrix **(see illustration)**.

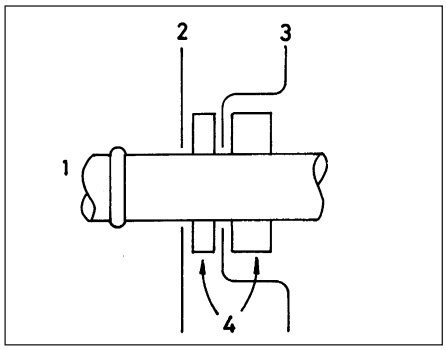
17.4 Removing the plastic cover from the heater matrix

5 Remove the two front retaining screws from the heater matrix securing straps, then lower the securing straps and withdraw the heater matrix from the facia **(see illustration)**. The pipes at the rear of the matrix must be fed through the bulkhead, and the grommets in the heater matrix housing may be displaced as the matrix is withdrawn. Where applicable, recover the grommets.

Refitting

6 Refitting is a reversal of removal, remembering the following points.
7 Ensure that the coolant pipe grommets are seated correctly in the heater matrix housing, as shown **(see illustration)**.
8 Ensure that the rubber mounting strips are correctly seated between the mounting straps and the matrix.
9 On completion, refill the cooling system, as described in Section 4.

17.5 Unscrewing a heater matrix securing strap screw



17.7 Heater matrix coolant pipe grommet location

1 Coolant pipe
2 Engine compartment bulkhead
3 Heater matrix housing
4 Grommet

18 Heater blower motor - removal and refitting

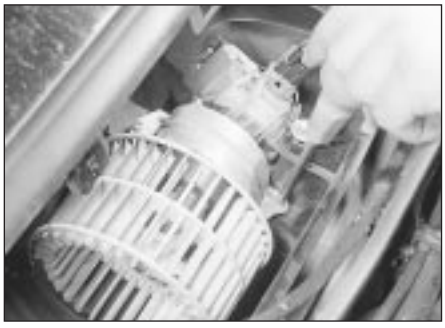
Removal

1 The heater blower motor is situated under the windscreen cowl panel.
2 Remove the windscreen cowl panel, as described in Chapter 11.
3 Remove the windscreen wiper motor and linkage, as described in Chapter 12.
4 Unclip the cover from the top of the motor **(see illustration)**.
5 Disconnect the motor wiring plug.
6 Remove the two clamp screws, then lift off the clamp and withdraw the motor assembly from its housing **(see illustration)**.
7 It is possible to renew the motor resistor by pressing the retaining clips together to release the resistor bracket. Fit the new resistor, ensuring that the retaining clips lock it into position **(see illustration)**.
8 No overhaul of the motor assembly is possible, and if faulty, the unit must be renewed.

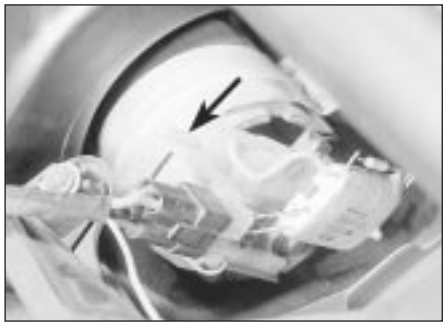
Refitting

9 Refitting is a reversal of removal, ensuring that the mounting rubber is correctly seated between the clamp and the motor.

18.4 Unclip the cover from the heater blower motor



18.6 Unscrewing a heater blower motor clamp screw



18.7 Heater blower motor resistor retaining clip (arrowed)

19.2A Using a screwdriver with protected blade . . .

19.2B . . . to release the centre facia ventilation nozzles

19 Facia ventilation nozzles - removal and refitting

Centre facia ventilation nozzles

Removal

1 Using a screwdriver, carefully prise the cap from the hazard warning flasher switch.
2 Carefully prise the nozzle assembly from the facia, using a screwdriver with a piece of card under the blade, to avoid damage to the facia trim **(see illustrations)**.
3 If desired, the nozzle housing can be removed as follows.
4 Move the knurled airflow adjuster wheel to the "O" position, then pull the actuating rod sideways from its carrier.
5 Release the two lower securing clips by levering with a screwdriver and pull the housing from the facia.

Refitting

6 Refitting is a reversal of removal, but note that if the housing has been removed, the airflow adjuster actuating rod must be pulled out to its stop, then pressed into its carrier with the adjuster wheel in the "O" position.

Passenger side facia ventilation nozzle

Removal

7 Carefully prise the nozzle from the facia, using a screwdriver with a piece of card under the blade, to avoid damage to the facia trim.
8 If desired, the nozzle housing can be removed as follows.
9 Move the knurled airflow adjuster wheel to the "O" position, then pull the actuating rod sideways from its carrier.
10 Extract the single screw securing the housing to the facia, then release the securing clips and pull the housing from the facia.

Refitting

11 Refitting is a reversal of removal, with reference to paragraph 6.

Driver's side facia ventilation nozzle

12 The procedure is as described for the passenger side nozzle, except that there is no screw securing the housing to the facia.

Side window demister nozzles

Removal

13 Simply prise the nozzle from the facia, taking care not to damage the facia trim.

Refitting

14 To refit, push the nozzle into position until it locks.