






Chapter 3

Cooling, heating and air conditioning systems

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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 
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Specifications

Cooling system

Type	Pressurised with pump driven by timing or V-belt. Front mounted radiator with internal or external expansion tank. Electric cooling fan
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Radiator/expansion tank

Cap operating pressure	1.2 to 1.5 bar
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Thermostat

Minimum stroke	7.0 mm
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Opening temperature:

1.05 and 1.3 litre engines:

Rocker finger tappet type	92°C
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Hydraulic tappet type	87°C
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1.6 and 1.8 litre engines

	85°C
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Fully open temperature:

1.05 and 1.3 litre engines:

Rocker finger tappet type	108°C
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Hydraulic tappet type	102°C
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1.6 and 1.8 litre engines

	105°C
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Cooling fan thermo-switch

Carburettor engines:

Switch-on temperature	93° to 98°C
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Switch-off temperature	88° to 93°C
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Fuel injection engines (except 16 valve):

Switch-on temperature:

Single speed and 1st stage of twin speed	92° to 97°C
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2nd stage of twin speed	99° to 105°C
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Switch-off temperature:

Single speed and 1st stage of twin speed	84° to 91°C
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2nd stage of twin speed	91° to 98°C
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Injector cooling:

Switch-on temperature	110°C
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Switch-off temperature	103°C
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3•2 Cooling, heating and air conditioning systems

Torque wrench settings

	Nm	lbf ft
All models		
Temperature sender unit	10	7
Cooling fan thermo-switch	25	18
Radiator	10	7
1.05 and 1.3 litre		
Thermostat housing through-bolts	20	14
Thermostat housing-to-pipe bolts	10	7
Coolant pump unit	10	7
1.6 and 1.8 litre		
Coolant pump housing	20	14
Coolant pump cover	10	7
Coolant pump pulley bolts	20	14
Thermostat housing to coolant pump	10	7
Thermo-switch (inlet manifold preheater):		
1.6 and 1.8 litre carburettor	10	7
1.8 litre fuel injection	30	22

1 General information and precautions

General information

Cooling and heating systems

The cooling system is of pressurised type and includes a front mounted radiator, coolant pump, expansion tank and thermostatically operated electric cooling fan (see illustrations).

Coolant circulation through the radiator is controlled by a thermostat, the location of which differs according to engine type. On 1.05 and 1.3 litre engines, it is located in a

housing on the rear end of the cylinder head (left side of vehicle) below the distributor. On 1.6 and 1.8 litre engines, the thermostat is located in the base of the coolant pump housing which is mounted low down on the front of the engine (timing case end).

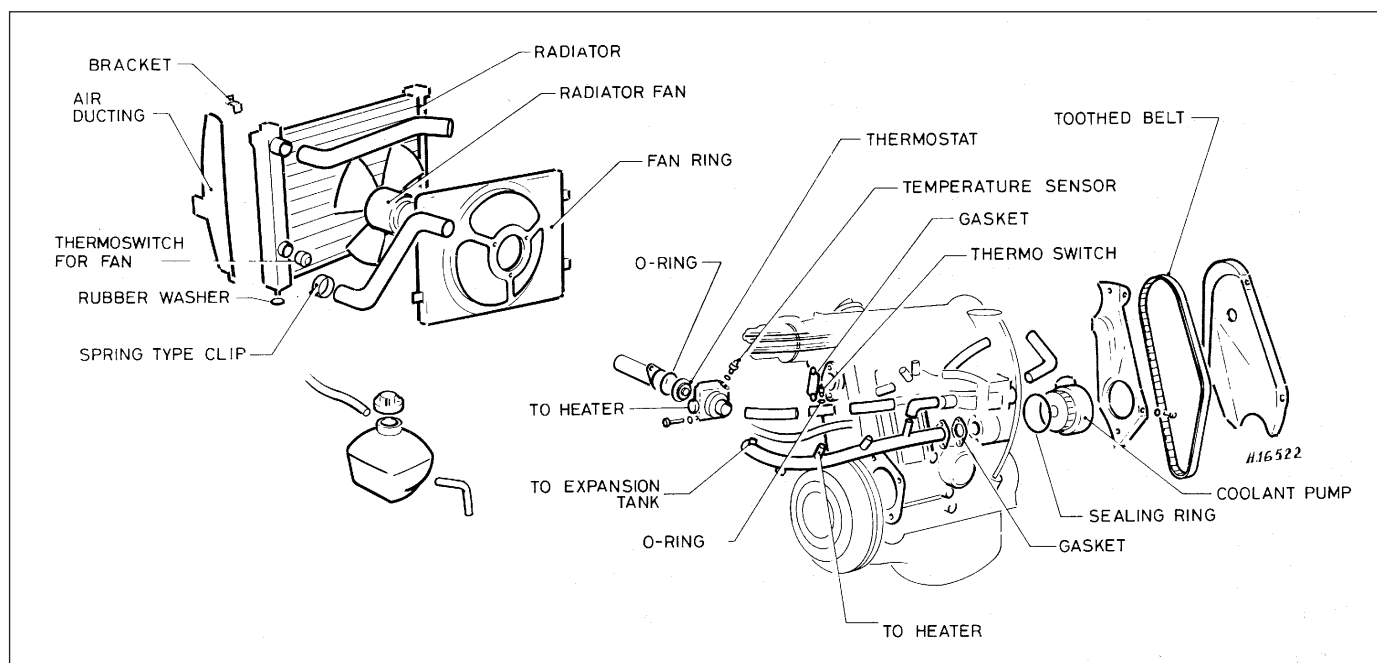
Fuel-injected engines incorporate an oil cooler unit which is located between the oil filter and its mounting bracket.

Cold coolant from the bottom of the radiator circulates through the bottom hose to the coolant pump, where the pump impeller forces it around the cylinder block and head passages. After cooling the cylinder bores, combustion surfaces and valve seats, the coolant reaches the cylinder head outlet and is returned to the pump via the bypass hoses when the thermostat is closed. A further

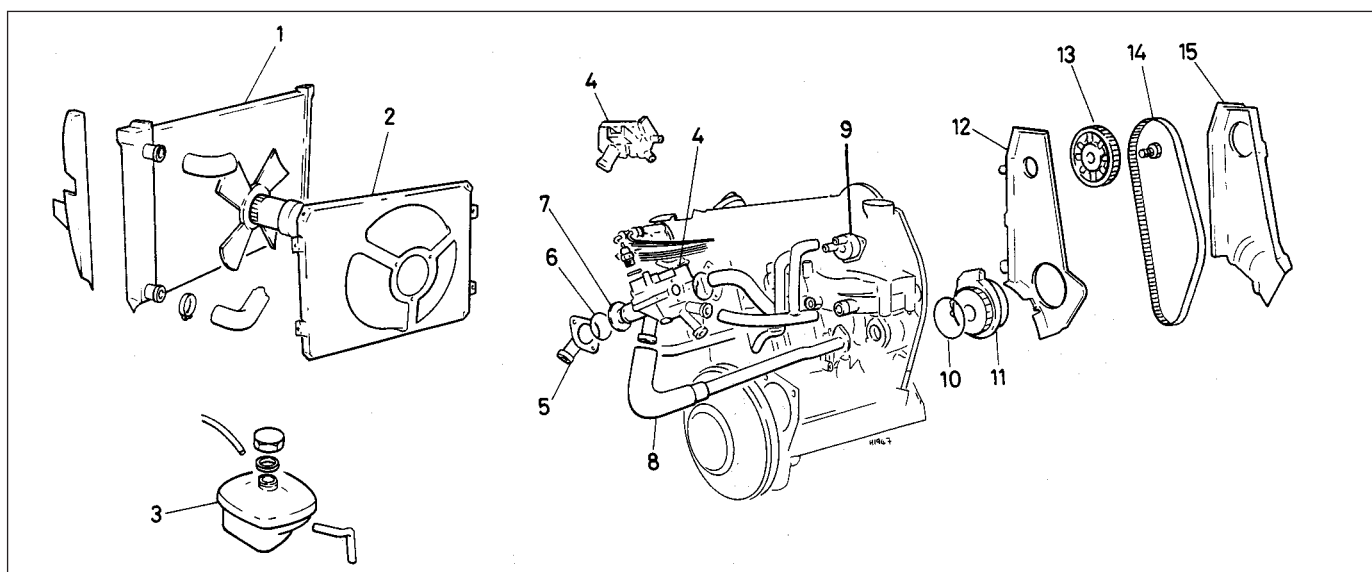
cylinder head outlet allows coolant to circulate through the inlet manifold and heater matrix (with heater control on) and it is then returned to the pump.

When the coolant reaches a predetermined temperature, the thermostat opens and the coolant then circulates through the top hose to the top of the radiator. As the coolant circulates down through the radiator, it is cooled by the inrush of air when the vehicle is in forward motion, supplemented by the action of the electric cooling fan when necessary. Having reached the bottom of the radiator, the coolant is now cooled and the cycle is repeated.

The electric cooling fan is controlled by a thermo-switch located in the left-hand side of the radiator.



1.0a Cooling system components – 1.05 and 1.3 litre, pre August 1985



1.0b Cooling system components - 1.05 and 1.3 litre, post August 1985

- | | | | |
|----------------------|--------------|-----------------------|-----------------------|
| 1 Radiator | 5 Cover | 9 Automatic choke | 13 Camshaft sprocket |
| 2 Fan ring | 6 O-ring | 10 O-ring | 14 Timing belt |
| 3 Expansion tank | 7 Thermostat | 11 Coolant pump | 15 Outer timing cover |
| 4 Thermostat housing | 8 Hose | 12 Inner timing cover | |

Air conditioning system

The air conditioning unit works on exactly the same principle as a domestic refrigerator, having a compressor, a condenser and an evaporator. The condenser is attached to the vehicle radiator system. The compressor, belt-driven from the crankshaft pulley, is installed on a bracket on the engine. The evaporator is installed in a housing under the dashboard which takes the place of the

normal fresh air housing. The housing also contains a normal heat exchanger unit for warming the inlet air. The evaporator has a blower motor to circulate cold air as required.

The system is controlled by a unit on the dashboard similar to the normal heater control in appearance.

The refrigerant used is a dangerous substance in unskilled hands. As a liquid it is very cold and if allowed to touch the skin will cause cold burns. As a gas it is colourless and

has no odour. Heavier than air, it displaces oxygen and can cause asphyxiation if pockets of it collect in pits or similar workplaces. It does not burn but even a lighted cigarette causes it to break down into constituent gases, some of which are poisonous to the extent of being fatal.

Precautions

Cooling system maintenance

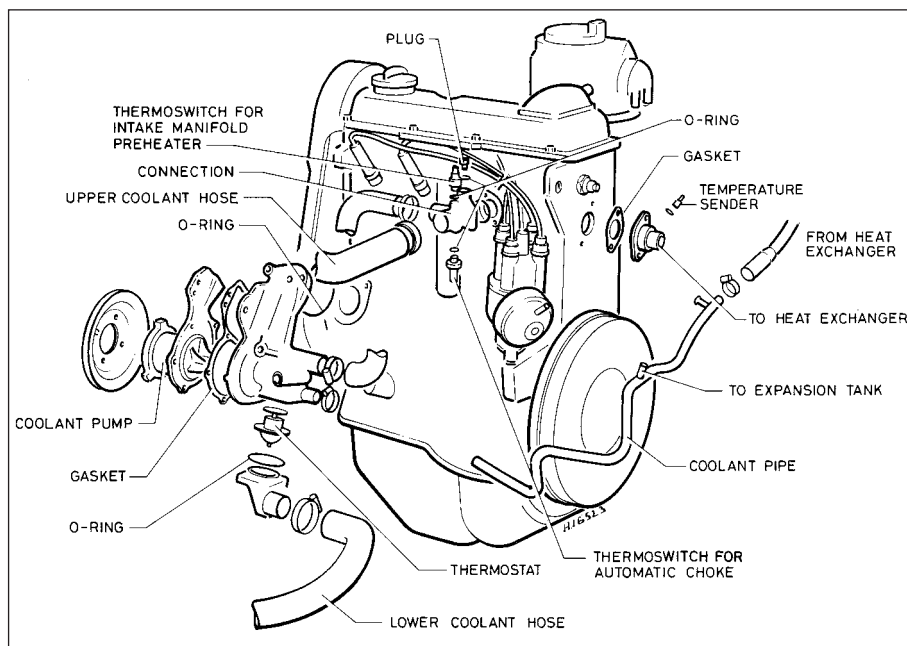
Do not remove the expansion tank filler cap or disturb any part of the cooling system whilst it is hot, as there is a very great risk of scalding. If the filler cap must be removed before the system is cool, then the pressure in the system must first be released. Cover the cap with a thick layer of cloth, to avoid scalding, and slowly unscrew the cap until a hissing sound can be heard. When the hissing has stopped, then system pressure is released. Slowly unscrew the cap until it can be removed. If more hissing sounds are heard, wait until they have stopped before unscrewing the cap completely. At all times keep well away from the filler opening.

If the engine is hot, the electric cooling fan may start rotating even if the engine is not running. Be careful to keep hands, hair and loose clothing well clear of the fan when working in the engine compartment.

Antifreeze mixture

Antifreeze mixture is poisonous. Keep it out of reach of children and pets. Never leave antifreeze lying around, it is fatal if ingested.

Do not allow antifreeze to come in contact with your skin or the painted surfaces of the vehicle. Rinse off spills immediately with plenty of water.



1.0c Cooling system components - 1.6 and 1.8 litre, carburettor

3•4 Cooling, heating and air conditioning systems

Air conditioning refrigerant

Although the refrigerant is not itself toxic, in the presence of a naked flame (or a lighted cigarette) it forms a highly toxic gas. Liquid refrigerant spilled on the skin will cause frostbite. If refrigerant enters the eyes, rinse them with a dilute solution of boric acid and seek medical advice immediately.

In view of the above points, and of the need for specialised equipment for evacuating and recharging the system, any work which requires the disconnection of a refrigerant line must be left to a specialist.

Do not allow refrigerant lines to be exposed to temperatures above 230°F (110°C) - eg. during welding or paint drying operations. Do not operate the air conditioning system if it is known to be short of refrigerant, or further damage may result.

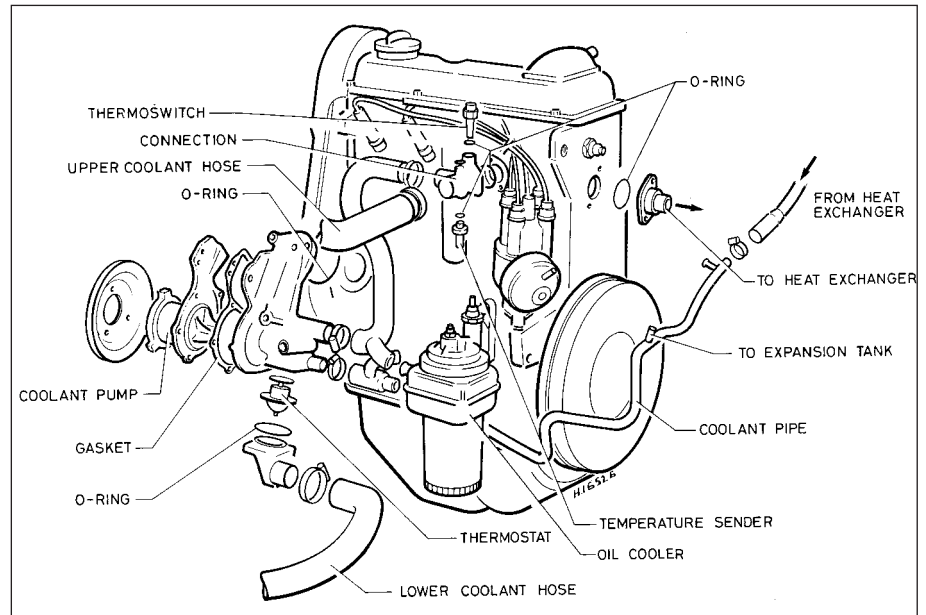
2 Cooling system - draining, flushing and filling



Warning: Never work on the cooling system when it is hot. Take care to avoid any possibility of scalding

Draining

1 It is preferable to drain the cooling system when the engine has cooled. If this is not possible, place a cloth over the expansion tank filler cap and turn it slowly in an anti-clockwise direction until pressure starts to escape.



1.0d Cooling system components – 1.8 litre, fuel injection

2 When all pressure has escaped, remove the filler cap (see illustration).

3 Set the heater controls to maximum heat, then place a suitable container beneath the left-hand side of the radiator.

4 Loosen the clip and ease the bottom hose away from the radiator outlet. Drain the coolant into the container (see illustrations).

Flushing

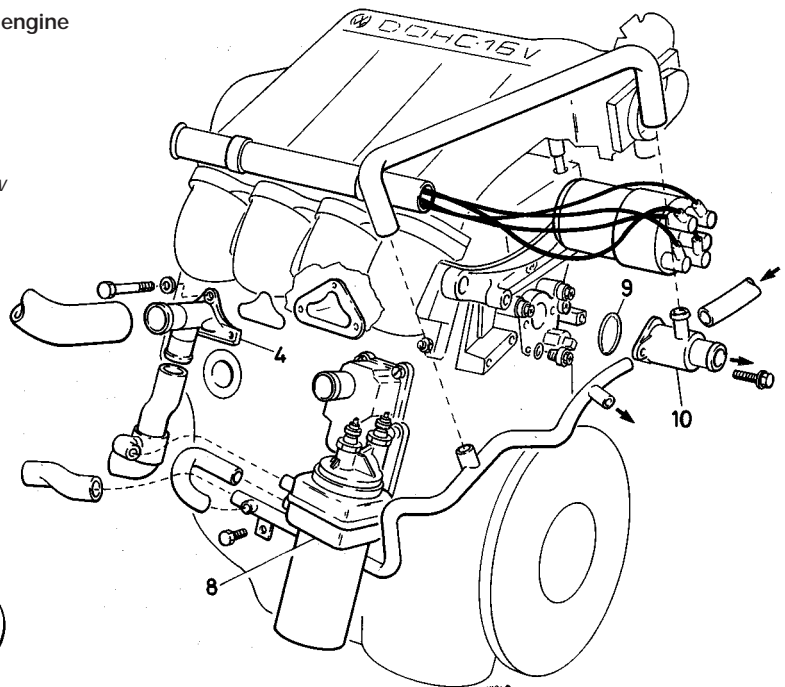
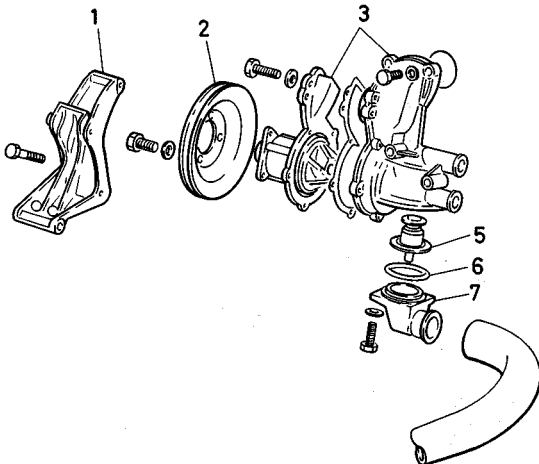
5 After some time, the radiator and engine

waterways may become restricted or even blocked with scale or sediment which can reduce the efficiency of the cooling system. When this occurs, the coolant will appear rusty and dark in colour and the system should then be flushed. In severe cases reverse flushing may be required, although if the correct antifreeze has been in constant use, this is unlikely.

6 With the coolant drained, disconnect the top hose from the radiator. Insert a garden

1.0e Cooling system components - 16 valve engine

- | | |
|-------------------------|-----------------|
| 1 Alternator bracket | 6 O-ring |
| 2 Pulley | 7 Cover |
| 3 Coolant pump assembly | 8 Oil cooler |
| 4 Outlet elbow | 9 O-ring |
| 5 Thermostat | 10 Outlet elbow |





2.2 Removing expansion tank cap

hose and allow the water to circulate through the radiator until it runs clear from the bottom outlet. If, after a reasonable period the water still does not run clear, the radiator can be flushed with a good proprietary cleaning agent.

7 Disconnect the heater hose from the cylinder head outlet and insert a garden hose in the heater hose. With the heater controls set at maximum heat, allow water to circulate through the heater and out through the bottom hose until it runs clear.

8 In severe cases of contamination the system should be reverse flushed. To do this, remove the radiator, invert it and insert a garden hose in the outlet. Continue flushing until clear water runs from the inlet.

9 The engine should also be reverse flushed. To do this, disconnect the heater hose from the cylinder head outlet and insert a garden



2.4a Radiator bottom hose connection - 1.3 litre



2.4b Radiator bottom hose connection - 1.8 litre

hose in the outlet. Continue flushing until clear water runs from the bottom hose.

Filling

10 Reconnect all disturbed hoses and check that the heater controls are set to maximum heat.

11 Pour the recommended coolant mixture into the expansion tank until it reaches the MAX level mark.

12 Refit and tighten the filler cap then run the engine at a fast idling speed for a few minutes whilst keeping an eye on the coolant level.

13 Stop the engine and top-up the coolant level, as necessary, to the MAX mark (see illustration). Refit the filler cap.

14 After running the engine up to its normal operating temperature (electric cooling fan cuts into operation), the coolant level should be rechecked. When the engine is warm, the level of the coolant in the reservoir should be at the MAX level mark. When cool, the coolant level should be between the MIN and MAX level marks.



2.13 Topping-up engine coolant

3 Disconnect the wiring from the thermo-switch and cooling fan motor (see illustrations).

4 Disconnect the top hose and expansion tank hose from the radiator (see illustration).

5 Undo the two retaining bolts (see illustration) and remove the insulators and L brackets from the top of the radiator. Note that the longer bracket is the centre one.

6 Remove the front grille.

7 Remove the two bolts each side at the front and remove the left and right-hand air ducts.

8 The radiator can now be lifted from the engine compartment whilst taking care not to damage the matrix (see illustration).

Inspection

9 Remove the screws and withdraw the cowl and fan from the radiator.



3.3a Radiator thermo-switch - 1.8 litre

3 Radiator - removal, inspection and refitting

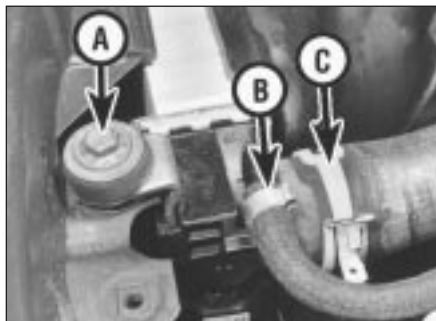
Removal

1 Disconnect the battery negative lead.

2 Drain the cooling system.



3.3b Detach cooling fan lead connector



3.4 Radiator securing bolt (A) expansion tank hose connection (B) and top hose connection (C)



3.5 Radiator central retaining bolt and bracket



3.8 Lifting out radiator and cooling fan assembly



3.13 Radiator lower mounting rubber



3.15 Secure fan lead with plastic clip (arrowed)

10 Clean the radiator matrix of flies and small leaves with a soft brush or by hosing. At the same time check for signs of damage and coolant leakage.

11 It is not possible to repair this type of radiator without special equipment.

12 Renew any hoses or clips that are damaged.

Refitting

13 Refitting is a reversal of removal. If necessary, renew the radiator lower mounting rubbers (see illustration).

14 Refill the cooling system.

15 When reconnecting the cooling fan motor wiring, secure the lead to the cowling web (see illustration).

4 Cooling fan and motor - removal and refitting



Removal

- 1 Disconnect the battery negative lead.
- 2 Disconnect the wiring from the cooling fan motor and cowling. Note that as from January 1986, the wiring on all new cooling fan motors obtained from VW incorporates a standardised connector. Where necessary, the old connector must be cut from the main harness and the standardised part fitted instead. The relevant parts are obtainable from a VW dealer.
- 3 Remove the retaining bolts and screws and lift the cowling, together with the cooling fan and motor, from the radiator.
- 4 Remove the retaining nuts and withdraw the cooling fan and motor from the cowling (see illustration).
- 5 If necessary, the fan can be separated from the motor by prising off the clamp washer. On AEG motors drive out the roll pin. On Bosch motors remove the shake-proof washer. Assemble the components in reverse order using a new clamp washer.

Refitting

- 6 Refitting is a reversal of removal.

5 Thermostat - removal, testing and refitting



1.05 and 1.3 litre engines

Removal

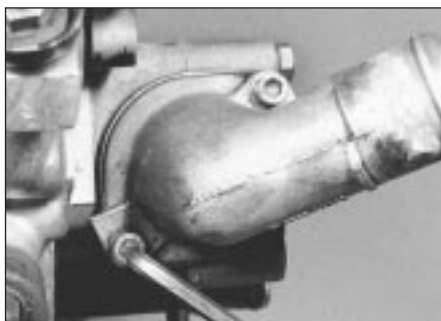
- 1 The thermostat is located in the outlet housing on the left-hand (rear) end of the cylinder head. To remove it, first drain the cooling system.
- 2 Unscrew the bolts and remove the thermostat cover (see illustrations). Place the cover with top hose still attached to one side.
- 3 Remove the sealing ring (see illustration).
- 4 Extract the thermostat from the outlet housing.

Testing

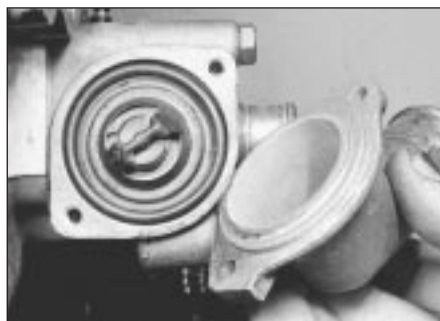
- 5 To test the thermostat, suspend it with a piece of string in a container of water. Gradually heat the water and note the temperature at which the thermostat starts to open. Continue heating the water to the specified fully open temperature then check that the thermostat has opened by at least the minimum specified amount. Remove the thermostat from the water and check that it is fully closed when cold.
- 6 Renew the thermostat if it fails to operate correctly.
- 7 Clean the thermostat seating and the mating faces of the outlet housing and cover.



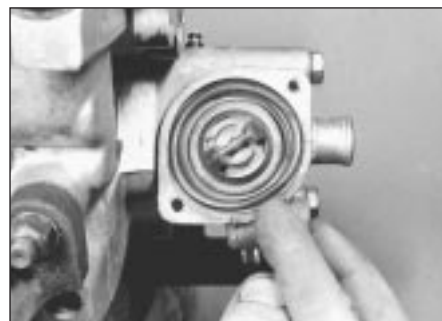
4.4 Cooling fan motor retaining nuts (arrowed)



5.2a Unscrew socket-head bolts . . .



5.2b . . . and remove thermostat cover



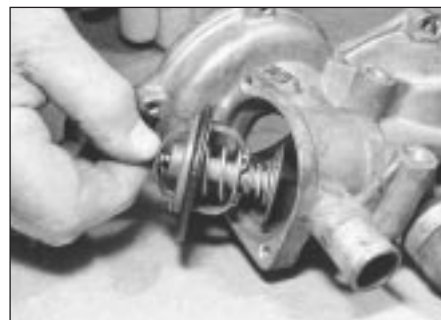
5.3 Removing thermostat sealing ring



5.11a Undo the retaining bolts . . .



5.11b . . . withdraw thermostat elbow . . .



5.11c . . . then extract thermostat and seal

Refitting

8 Refitting is a reversal of removal. Fit a new sealing ring and tighten the cover bolts to the specified torque. The breather hole in the thermostat should face upwards.

9 On completion, refill the cooling system.

1.6 and 1.8 litre engines

Removal

10 The thermostat is located in the bottom of the coolant pump behind the inlet elbow. To remove it, first drain the cooling system.

11 Unbolt the inlet elbow from the coolant pump and remove the seal and thermostat (see illustrations).

12 Clean the coolant pump and elbow of any scale or corrosion.

Testing

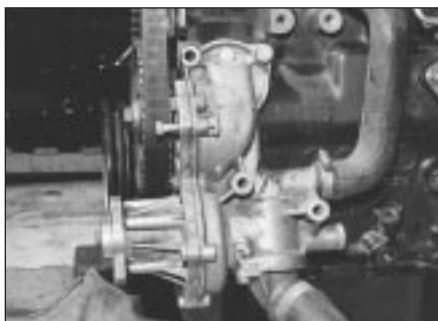
13 To test the thermostat, proceed as described in paragraphs 5, 6 and 7.



6.5 Disengage timing belt from coolant pump sprocket



6.6 Withdrawing coolant pump



6.16 Coolant pump location (engine removed from vehicle) - 1.6 and 1.8 litre



6.17 Two halves of coolant pump - 1.6 and 1.8 litre

Refitting

14 Refitting is a reversal of removal procedure. Always fit a new seal.

15 On completion, refill the cooling system.

6 Coolant pump - removal and refitting



1.05 and 1.3 litre engines

Removal

1 Drain the cooling system.

2 Remove the air cleaner and air ducting and disconnect the battery negative lead.

3 Unbolt and remove the timing belt cover. On some later 1.3 litre models, it is necessary to remove the crankshaft pulley to remove the lower timing belt cover.

4 Turn the engine with a spanner on the crankshaft pulley until the timing cover plate upper retaining bolt is visible through the camshaft sprocket hole. Unscrew and remove the bolt.

5 Align the timing marks and release the timing belt from the coolant pump and camshaft sprocket (see illustration).

6 Remove the bolts and withdraw the timing cover plate followed by the coolant pump (see illustration). Remove the sealing ring.

7 It is not possible to repair the coolant pump and if faulty, it must be renewed. Clean the mating faces of the coolant pump and cylinder block.

Refitting

8 Refitting is a reversal of removal.

9 When fitting a pump which has been reconditioned by VW, check to see if the sealing ring groove has been reworked. If it has, a 'Y' will be stamped on the pump mounting flange indicating that a 5.0 mm diameter sealing ring should be fitted instead of the normal 4.0 mm diameter ring. Always fit a new sealing ring.

10 Correctly tension the timing belt.

11 On completion, refill the cooling system.

1.6 and 1.8 litre engines

Removal

12 Drain the cooling system.

13 Remove the alternator.

14 On models fitted with power steering, it will be necessary to remove the pump unit and mounting bracket for access to the coolant pump.

15 On models equipped with air conditioning, it will be necessary to move aside the compressor unit and its mounting. Do not detach the air conditioning system hoses.

16 Disconnect the three coolant hoses from the pump, then remove the four bolts holding the pump to the cylinder block (see illustration). The pump will probably be stuck to the block but will come off if tapped gently. Remove the O-ring with the pump.

17 Remove the pulley and then take out the eight bolts which secure the bearing housing and impeller to the coolant pump housing. The two halves may now be separated (see illustration). Do not drive a wedge in to break



7.3 Cooling fan thermo-switch

the joint. Clean off the old gasket.

18 Remove the thermostat.

19 The impeller housing and impeller complete with bearings are serviced as one part. If coolant is leaking through the bearing, or the impeller is damaged, the complete assembly must be renewed.

20 Fit a new gasket using jointing compound, then fit the two pump halves together and tighten the bolts evenly.

21 Fit the thermostat.

Refitting

22 Refitting is a reversal of removal. Always fit a new O-ring.

23 On completion, refill the cooling system.

24 Correctly tension the drivebelt(s).

7 Cooling system electrical switches - removal, testing and refitting



Cooling fan motor thermo-switch

1 Disconnect the battery negative lead.

2 Drain the cooling system.

3 Unscrew the thermo-switch from the left-hand side of the radiator and remove the sealing ring (see illustration). Note that from September 1985, on fuel injection engines (except 16V) the switch, located in the bottom of the radiator, is of a 3-pin type, replacing the previous 2-pin type. The new switch has two operation temperature ranges, the first range operating the coolant fan at normal speed and the second range operating the fan at boost speed.

4 To test the thermo-switch, suspend it with a piece of string so that its element is immersed in a container of water. Connect the thermo-switch in series with a 12 volt test lamp and battery. Gradually heat the water and note its temperature with a thermometer. The test lamp should light up at the specified switch-on temperature and go out at the specified switch-off temperature. If not, renew the thermo-switch.

5 Refitting is a reversal of removal. Fit a new sealing ring and tighten the thermo-switch to the specified torque.

6 On completion, refill the cooling system.



7.11 Temperature sender unit thermo-switch location - 1.05 and 1.3 litre

Cooling fan temperature sensor

7 From March 1986, the cooling fan is also controlled by a temperature sensor located between injectors 1 and 2. A time relay is also incorporated in the wiring circuit to keep the system functional for 10 to 12 minutes after switching off the ignition.

Temperature sender unit/thermo-switches

8 It is not necessary to drain the cooling system if some form of plug, such as an old sender unit or rubber plug, is available as a substitute for the removed switch.

9 Release any pressure in the system by unscrewing the pressure cap. If the system is still hot, observe the precautions at the start of this Chapter. With all pressure released, retighten the cap.

10 The location of the sender unit or thermo-switch is dependent on engine type. In general, they are as follows:

1.05 and 1.3 litre engines

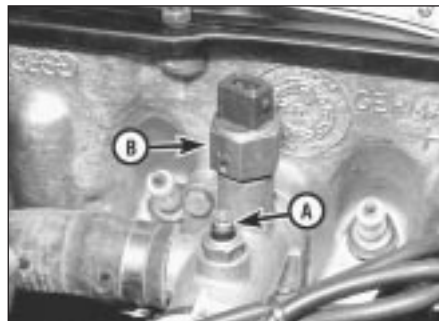
11 The thermo-switch is located in the intermediate piece in the hoses between the inlet manifold and thermostat housing (see illustration).

12 The temperature sensor is located in the thermostat housing (see illustration).

1.6 and 1.8 litre carburettor engines

13 The temperature sender unit is located in the heat exchanger hose connecting flange on the rear of the cylinder head.

14 The thermo-switch (inlet manifold preheater) is located on the top face of the hose connector



7.16 Temperature sender unit (A) and thermo-switch (B) - 1.8 litre, fuel injection



7.12 Temperature sensor (arrowed) - 1.05 and 1.3 litre

on the spark plug side of the cylinder head.

15 The thermo-switch (automatic choke) is located in the base of the hose connector on the spark plug side of the cylinder head.

1.8 litre fuel injection engine

16 The temperature sender unit is located in the hose connector on the spark plug side of the cylinder head (see illustration).

17 The thermo-switch is located on the top face of the hose connector on the spark plug side of the cylinder head.

1.8 litre 16V engine

18 The temperature sender is located on the flywheel end of the cylinder block below the outlet elbow and controls the temperature gauge.

All engines

19 Disconnect the wiring lead from the sender unit/switch concerned.

20 Unscrew and remove the sender unit/switch and plug the aperture.

21 Refitting is the reversal of the removal procedure. Tighten the sender unit/thermo-switch to the specified torque.

22 On completion, check and if necessary top-up the cooling system.

8 Heater controls - removal and refitting



Removal

1 Disconnect the battery earth lead.

2 The heater control unit is located in the centre of the dashboard. It is accessible after the radio has been removed or, on vehicles without a radio, the cubby hole.

3 Pull off the control knobs and unclip the trim panel (see illustrations).

4 Remove the three cross-head screws holding the control unit and ease it forward (see illustration).

5 The cables can now be unhooked from the control unit levers and their outer body unclipped from the control unit body.

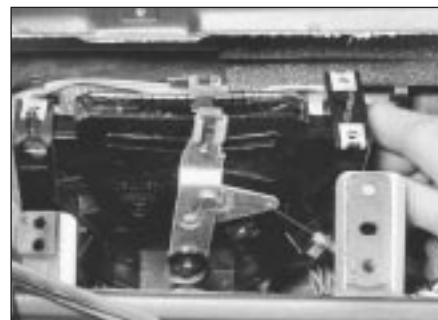
6 If a cable is to be renewed, unhook it from the control flap at the other end and withdraw it. For access to the flap control valves, it is



8.3a Pulling free heater/ventilation control knobs



8.3b Unclip and withdraw trim panel



8.4 Detaching control unit



8.6a Removing parcel shelf . . .



8.6b . . . and insulation sheet



8.6c Control cable connections to flap valves at heater distribution box unit (arrowed)

necessary to remove the lower parcel tray on the passenger side and also the insulation sheet (see illustrations).

7 It is best to renew the heater cables completely if the inner cable snaps. In this way the exact length required is obtained. It is

a good idea to fit new cable clamps also, as the old ones seem to distort when removed.

Refitting

8 Refitting is a reversal of removal. Ensure that the cables are correctly routed with no sharp bends.



9.3 Blower unit and wiring connection



9.4 Blower unit withdrawal from housing

9 Heater and fresh air blower unit - removal and refitting

Removal

- 1 Disconnect the battery earth lead.
- 2 Remove the parcel shelf and insulation sheet on the underside of the facia panel on the passenger side.
- 3 The blower unit is mounted in the left-hand corner. Disconnect the wiring multi-connector (see illustration).
- 4 Release the retaining tab (carefully) then twist the blower unit in a clockwise direction and withdraw it from the housing (see illustration).
- 5 The wiring connection plate on the blower can be levered free by inserting a screwdriver blade under the retaining tab at the top.
- 6 If an ohmmeter is available, the thermo cut-out can be checked as shown.
- 7 Check that the blower wheel runs freely and that the air ducts are not blocked.

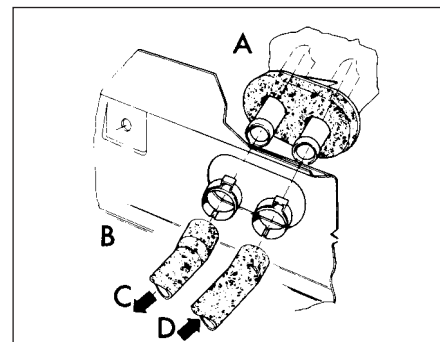
Refitting

8 Refitting is a reversal of removal.

10 Heat exchanger/fresh air box - removal and refitting

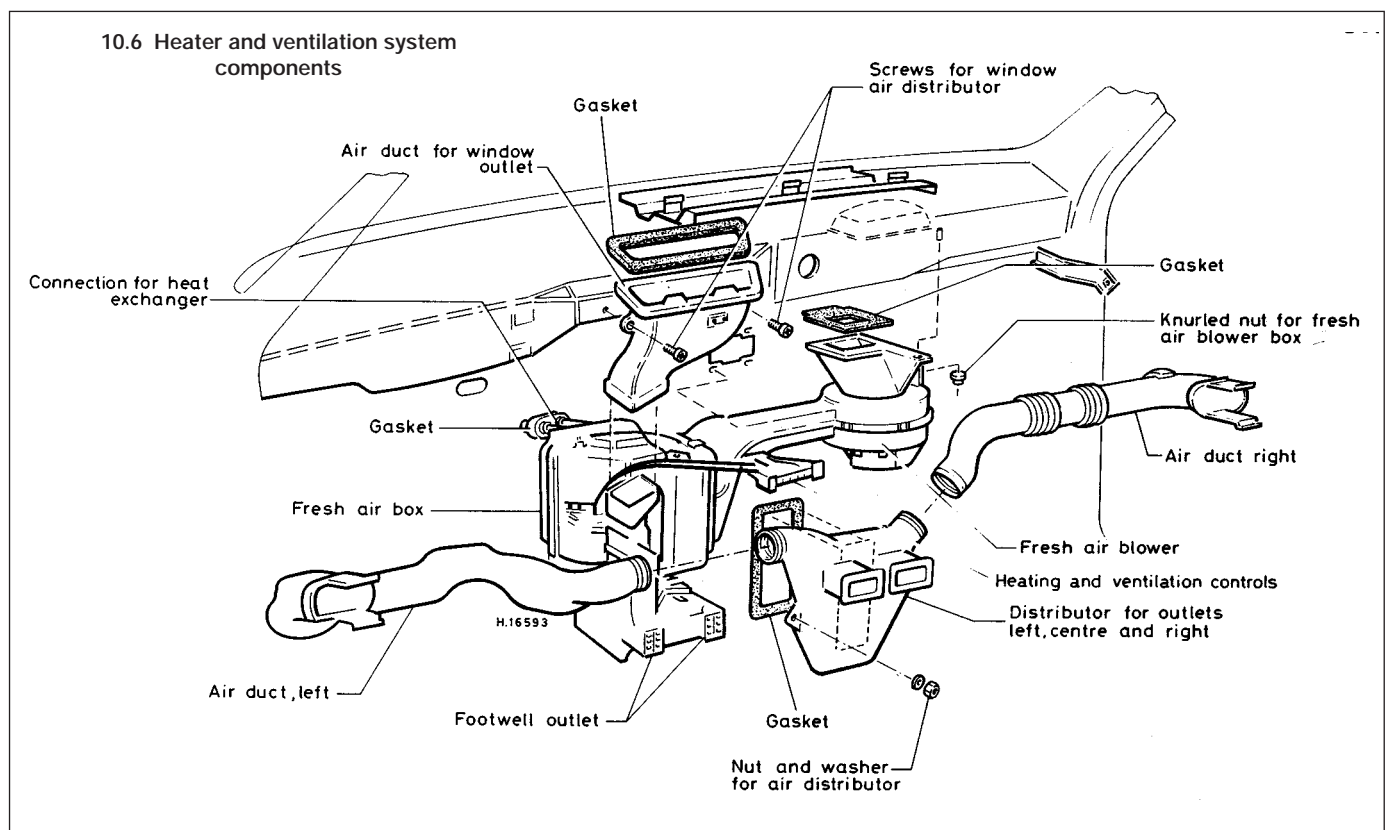
Removal

- 1 Disconnect the battery earth lead.
- 2 Remove the centre console.
- 3 Remove the parcel shelf and insulator panel on the passenger side.
- 4 Drain the engine coolant (heater in ON position).
- 5 Disconnect the heater coolant hoses at the bulkhead on the engine compartment side (see illustration).



10.5 Bulkhead coolant hose connections

- A Passenger compartment
- B Engine compartment
- C Return hose
- D Supply hose



6 Undo the retaining nuts and withdraw the outlet distributor from the air box, disconnecting the distributor from the left and right-hand air ducts as it is withdrawn. Remove the gasket (see illustration).

7 Disconnect the control cables at the air box end.

8 Loosen the dash securing screws enough to enable the air box to be withdrawn and removed.

9 Release the clips and withdraw the heat exchanger unit from the air box. Allow for

further coolant drainage from the inlet and outlet pipes.

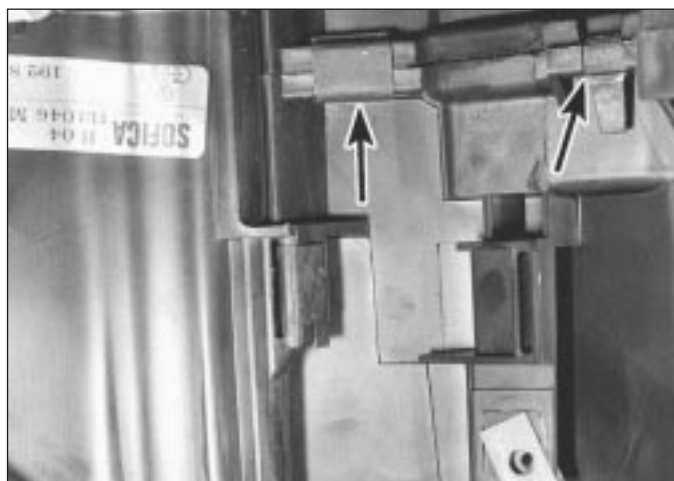
10 The housing upper and lower housing halves can be separated by releasing the securing clips (see illustration). Once separated, the flap valves can be removed. Take care not to split or crack the housings.

Refitting

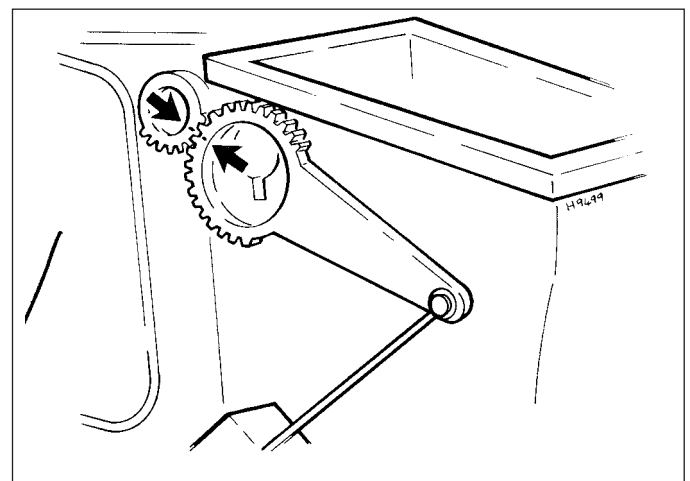
11 Refitting is a reversal of the removal procedure. When engaging the control cable levers, align the index markings on the outer

faces of the segments (see illustration). Renew the heat exchanger cover gasket and ensure that the hose connections are securely made.

12 Before refitting the parcel shelf, top-up the cooling system and run the engine up to its normal operating temperature. Operate the heater and check for any sign of leakage from the heat exchanger hose connections. Check that the controls operate in a satisfactory manner.



10.10 Upper-to-lower housing retaining clips (arrowed)



10.11 Align marks to set centre and side outlet flap positions

11 Air conditioning system compressor - removal and refitting



Warning: The air conditioning system must be depressurised and drained by a VW dealer or refrigeration specialist. Do not attempt this yourself.

1 Removal and refitting of the air conditioner compressor is straight-forward. However, under no circumstances should the refrigerant circuit be opened (see illustration).

2 Place the compressor on the side of the engine compartment when removing the engine and only move it to the point where the flexible refrigerant hoses are in no danger of being stretched.

3 When a situation arises which calls for the removal of one of the air conditioning system components, have the system discharged by your VW agent or a qualified refrigeration engineer. Similarly have the system recharged by him on completion.

4 Observe the precautions at the start of this Chapter.

12 Air conditioning system compressor - drivebelt adjustment



Refer to Chapter 1, Section 13.

