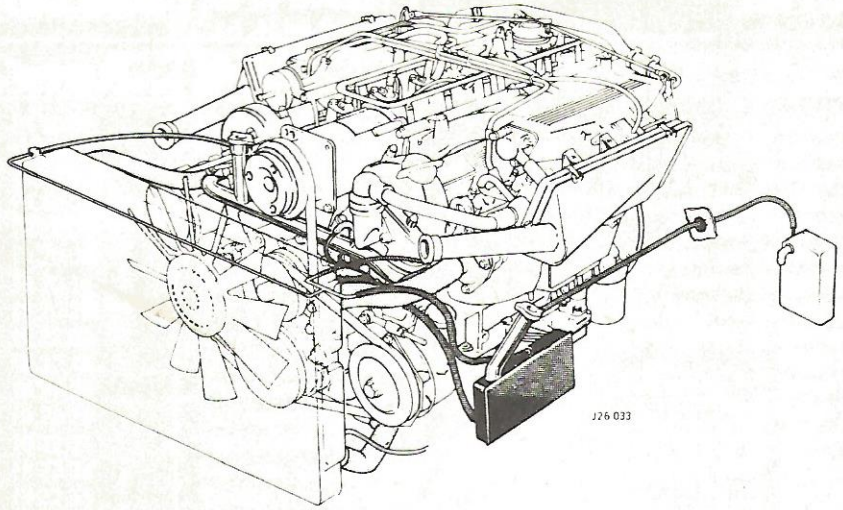


Fig. 1

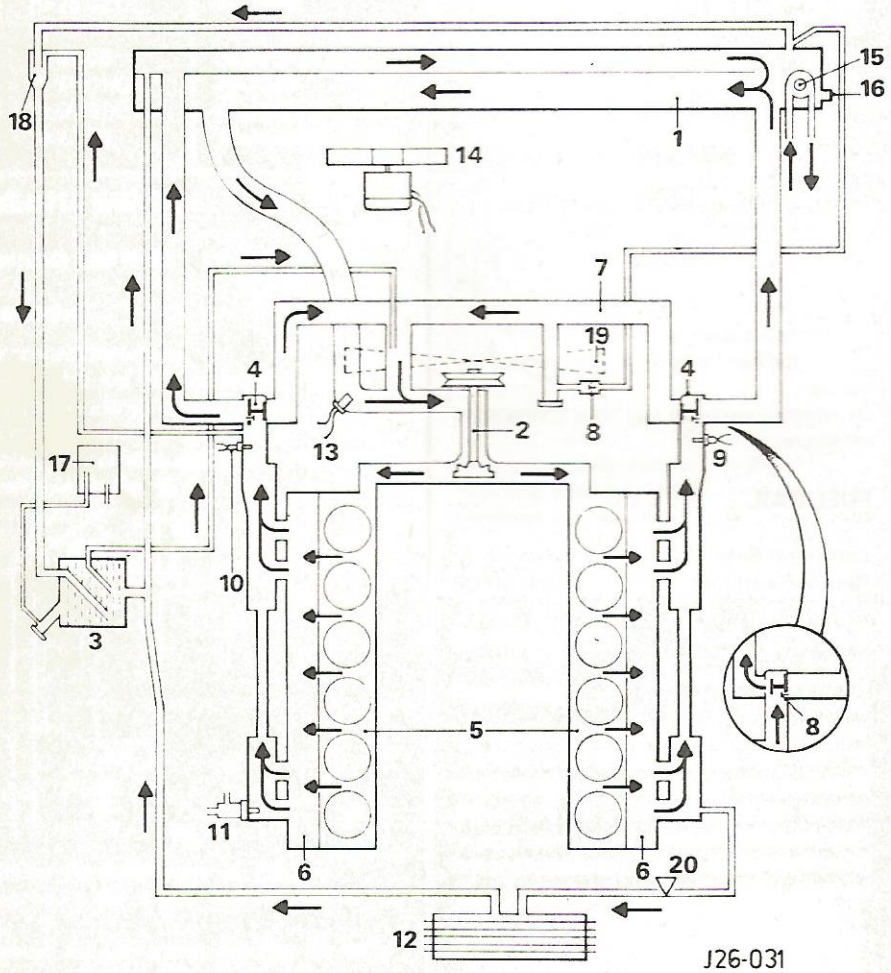


Fig. 2

**Key to 12 Cylinder HE cooling system**

1 Radiator matrix
2 Water pump
3 Remote header tank
4 Thermostat
5 Cylinder block
6 Cylinder head
7 Engine crosspipe
8 Jiggle pins
9 Thermotime switch
10 Coolant temperature sensor
11 Auxiliary air valve
12 Heater matrix
13 Thermostatic fan switch
14 Radiator electric cooling fan
15 Automatic transmission fluid cooling tube coil
16 Radiator drain tap
17 Atmospheric catch tank
18 Venting jet
19 Engine driven fan
20 Heater water control valve

## COOLING SYSTEM (Fig. 2)

The cooling system consists of a radiator matrix (1), a water pump (2), belt driven by the engine crankshaft, and a remote header tank (3). Two thermostatic valves (4) are fitted, one to each cylinder tank, to ensure rapid warm up from cold.

Under start conditions coolant is forced by the water pump equally through each cylinder block and cylinder head (5 and 6) to the thermostatic valve housings. The valves are closed and coolant is therefore returned via the engine cross-pipe (7) to the water pump inlet. During this period the radiator is under pump suction and air is bled by jiggle pins (8) in each thermostatic valve.

**Note.** When fitting a replacement thermostat the thermostat MUST be fitted with the jiggle pin at the top of the housing.

The engine contains air pockets which have to be purged before effective cooling is possible. The air entrained by the coolant rises to the highest point on each side of the engine, the thermostat housings, then through the jiggle pins to the top of the radiator.

During this phase the thermotime switch (9), the coolant temperature sensor (10) and the auxiliary air valve (11) function as an automatic choke and warm up the system. Full pump suction draws coolant from the base of the radiator and starts the full cooling circuit.

At this time pump suction also appears at the heater matrix (12), and the remote header tanks carry out an air separation function in addition to providing a reservoir of coolant.

When coolant temperature rises to a pre-determined level the thermostatic valves open and allow coolant to flow into the top of the radiator.

A thermostatic fan switch (13) is fitted in the water pump suction elbow. The switch starts the radiator electric cooling fan (14) should the temperature of the coolant leaving the radiator rise above a pre-determined level.

A cooling tube coil (15) is included in the fabrication of the right-hand end tank of the radiator, and is connected in series with the automatic transmission hydraulic fluid circulation.

A drain tap (16) is located in the base of the right-hand end tank.