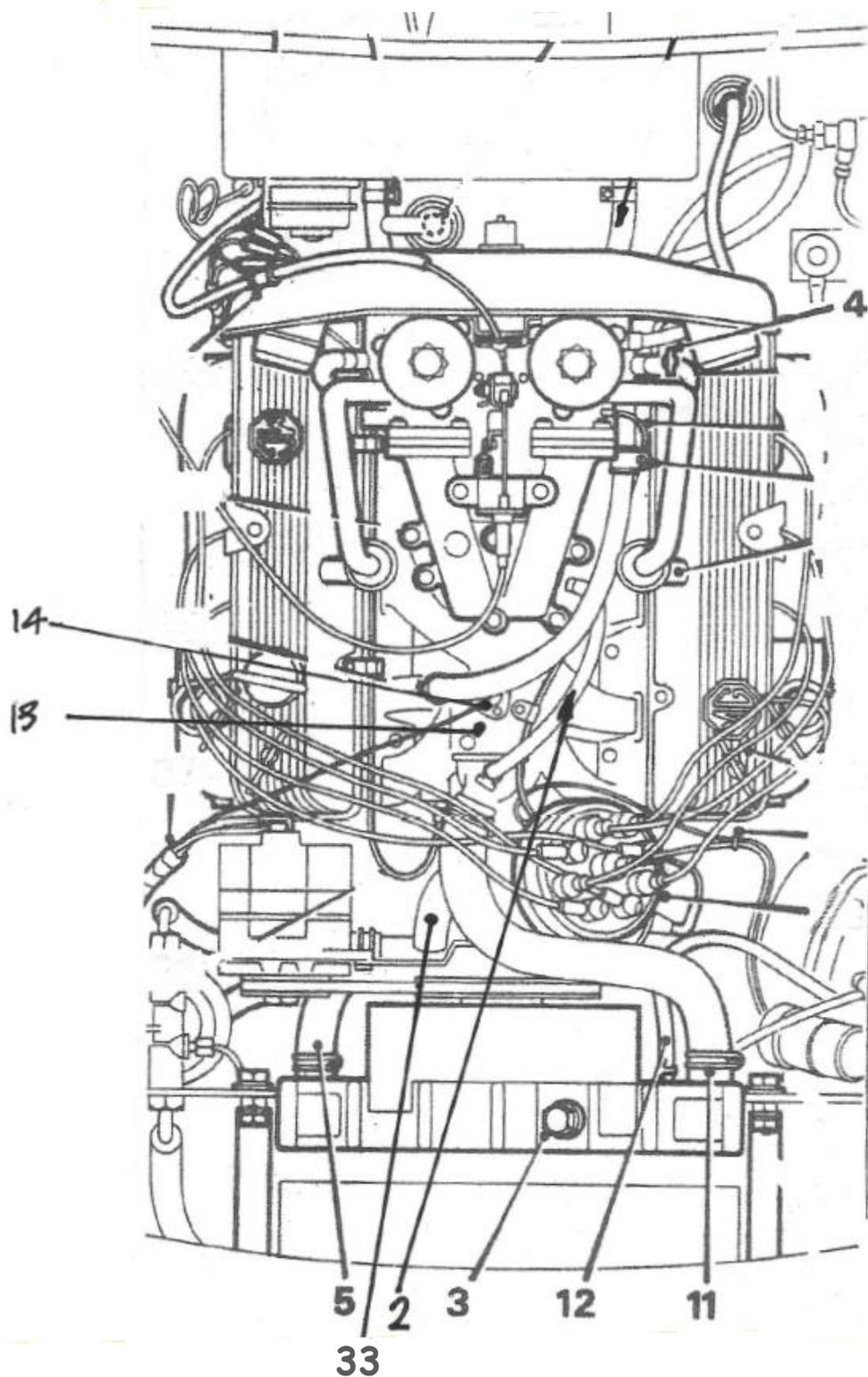
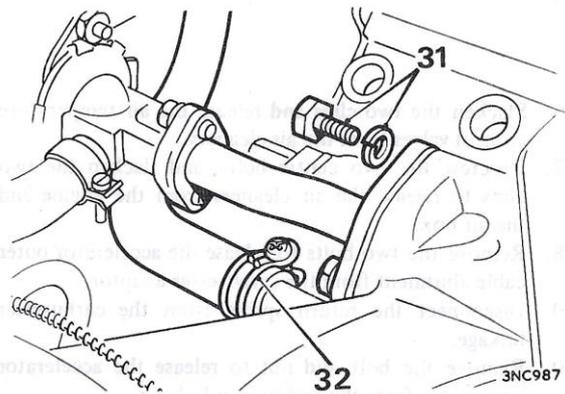


MGBGTV8 Cooling System

This note contributed by Tony Lake describes its design and functions with reference to the diagrams alongside taken from the workshop manual supplement.



MGBGTV8 Cooling System

This note describes its design and functions.

Fill procedure

Close the left bank block coolant drain tap, **4**. Turn the dashboard heater control to HOT. Add coolant steadily via radiator filler, **3**. The thermostat is closed; air in the block and heads is vented through a small diameter tube, **2**, from the top of the heated intake manifold to a short pipe attached to the thermostat housing outlet elbow. When the radiator is full, replace the filler plug, **2**, top up the expansion tank to the line, and fit the pressure cap. Start the engine and idle until the top hose, **11**, is hot, the thermostat is then fully open. Any entrained air will have purged. Let the engine cool to ambient temperature, remove the radiator filler plug, top up, and replace the plug. Top up to the line on the expansion tank, then replace the pressure cap.

Heater connections

Engine coolant enters the heater core via a control valve fed from a steel pipe, **31**, at the rear of the intake manifold. The heater outlet, **32**, connects to a steel pipe which runs under the intake manifold, finally entering the suction side of the water pump, adjacent to the thermostat bypass connection, **33**.

Thermostat bypass connection

Until the coolant reaches thermostat opening temperature a limited flow is provided via the thermostat bypass plumbing, **33**, this safeguards all the internal reciprocating and rotating components. Coolant exits the heated intake manifold at its high point and returns to the suction side of the water pump. This also provides for fast coolant warm up.

Coolant circulation route

As the engine reaches operating temperature, thermostat now opening, more coolant starts to pass from the top hose, **11**, to the radiator. It enters the water pump via the bottom hose, **5**. The pump distributes an equal volume of coolant to each bank that flows round the power cylinder coolant jackets. At the rear coolant from the block enters a port in the cylinder heads to flow forward where it exits via a port into the intake manifold. It heats the manifold before entering the thermostat housing, **13**. From there it passes via the top hose to the radiator.

Radiator

It is mounted in front of the engine. It is provided with top hose (coolant out) connection, a bottom hose (coolant in) and a small diameter tube connecting to the bottom of expansion tank.

Expansion tank and pressure cap

As coolant become hot it expands and progressively exceeds the volume of the radiator top tank above the core. It then flows down the expansion pipe, **12**, to the bottom of the expansion tank. The expansion pipe is always submerged. As coolant expands so the air pressure in the sealed system increases providing the means for the coolant boiling temperature to increase. The maximum pressure in the system is controlled the pressure cap, designed to relieve when its limit is exceeded. As the engine cools down and coolant volume shrinks the pressure in the system decays and the reverse occurs. Coolant flows back up the expansion pipe to the top tank of the radiator and is conserved. When the pressure is low enough that flow stops. The radiator core and top tank are then filled to their starting level.

Engine thermostat

This is provided to reduce warm up time by limiting coolant flow when the engine is cold. It is mounted in its own housing, **13**, connected to the front of the intake manifold where hot coolant leaves the engine. A small diameter air vent hole is provided in the valve to ensure coolant is always in contact with the wax operating element in the thermostat.



Coolant temperature measurement

The coolant temperature sender unit is mounted horizontally in a boss on the end of the intake manifold adjacent to the radiator top hose.

Otter switch. 14

This device is mounted upstream on the thermostat housing. It sends a signal to start the radiator cooling fans when coolant reaches its set temperature.

Cooling fans

Two electrically driven fans are mounted in front of the radiator triggered by the Otter switch to start and stop.

Oil cooler

This is mounted low down in front of the radiator and uses ram air as the cooling medium. Hot oil passes through it before entering the engine.