SECTION C

THE COOLING SYSTEM

GENERAL DESCRIPTION

The cooling system, is sealed, and the water circulation is assisted by a pump attached to the front of the engine and driven by a belt from the crankshaft. The water circulates from the base of the radiator and passes around the cylinders and cylinder head, reaching the header tank of the radiator core via the thermostat and the top water hose. From the header tank it passes down the radiator core to the base tank of the radiator. Air is blown through the radiator by a fan attached to the water pump pulley.

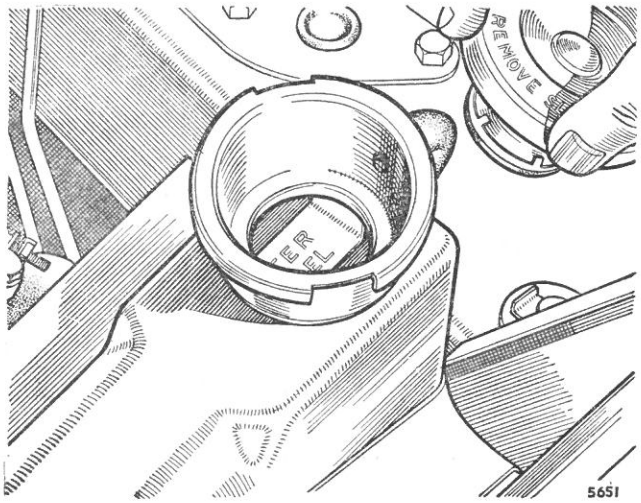

Fig. C.1

The filler cap of the sealed cooling system removed, showing the water level indicator

Section C.1

RADIATOR FILLER CAP

The cooling system is under appreciable pressure while the engine is hot after a run, and the radiator filler cap must be removed very carefully or left in position until the water has cooled.

If it is necessary to remove the filler cap when the engine is hot it is absolutely essential to remove it gradually, and the filler spout is provided with a specially shaped cam to enable this to be done easily.

Unscrew the cap slowly till the retaining tongues are felt to engage the small lobes on the end of the filler spout cam, and wait until the pressure in the radiator is fully released before finally removing the cap.

It is advisable to protect the hand against escaping steam when removing the cap while the system is warm.

Section C.2

DRAINING AND FLUSHING THE SYSTEM

Draining

Remove the radiator header tank filler cap.

Drain the system, using the taps (or plugs if fitted) at the base of the radiator and at the rear of the cylinder block.

NOTE.—If Bluecol or other anti-freeze mixture is being used it should be drained into a suitable container and carefully preserved for replacement.

Flushing

To ensure sufficient circulation of the coolant and to reduce the formation of scale and sediment in the radiator the system should be periodically flushed with clean running water, preferably before putting in anti-freeze in the autumn and again when taking it out in the spring. The water should be allowed to run through until it comes out clear from the drain tap.

Where furring is excessive the radiator should be removed as in Section C.3 and flushed through in the reverse way to the flow, i.e. turn the radiator upside-down and let the water flow in through the bottom hose connection and out through the top. The use of radiator reverse-flush adaptor 18G187 is recommended for this purpose, used with 1 in. (25·4 mm.) diameter water hose.

Refilling

Close the drain tap(s) or refit the drain plug(s).

Ensure that the water hose clips are tightened.

Fill up the system through the filler in the radiator header tank until the water is up to the level indicator strip.

When possible, rain-water should be used for filling the system.

Avoid overfilling when anti-freeze is in use to prevent unnecessary loss on expansion.

Screw the filler cap firmly into position.

Anti-freeze mixtures having an alcohol base are unsuitable for use with the cooling system owing to the high temperatures attained in the top tank. Only anti-freeze mixtures of the ethylene glycol or glycerine type should be employed.

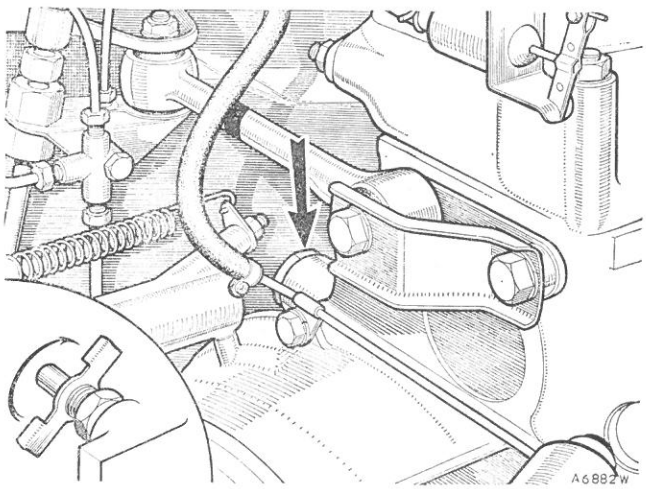

Fig. C.2

The cylinder block drain plug or tap

Section C.3

RADIATOR

Removing

Remove the bonnet.

Drain the water from the system as in Section C.2.

Remove the cowling upper support bracket.

Withdraw the two bolts securing the bottom support bracket to the engine mounting.

Release the clips and pull the top hose from its connection on the radiator and the bottom hose from the water pump.

Extract the six screws securing the radiator to the cowling and remove the top half of the cowling.

Manœuvre the bottom hose to the outside of the bottom half of the cowling and lift the radiator from the vehicle.

Refitting

Installation is a reversal of the removal procedure. Refer to Section C.2 before refilling.

Section C.4

FAN BELT

Adjustment

The adjustment of the dynamo and fan belt tension is effected by slackening the two dynamo pivot bolts, releasing the bolt on the slotted adjusting link, and raising the dynamo bodily until the belt tension is correct. Tighten up the bolts with the dynamo held in this position. A gentle hand-pull only must be exerted on the dynamo, otherwise the tension will be excessive and undue strain will be thrown on the dynamo bearings.

The belt should be sufficiently tight to prevent slip, yet it must be possible to move it laterally about 1 in. (2·5 cm.).

Removing

Slacken the dynamo pivot and adjusting link bolts. Lift the dynamo, release the belt from the crankshaft pulley, and remove the belt by manœuvring it between

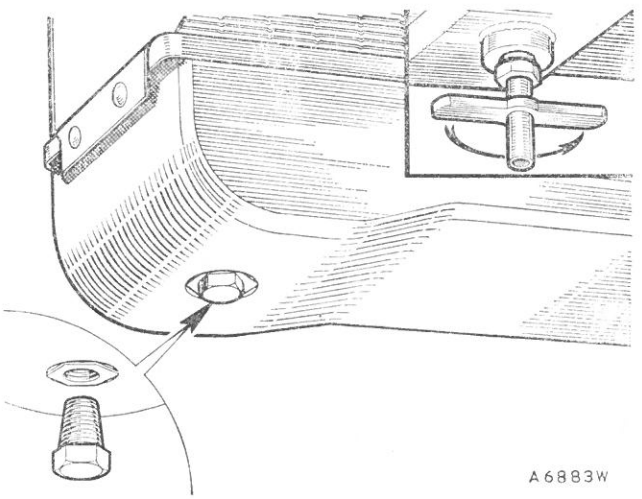

Fig. C.3

The radiator drain plug or tap

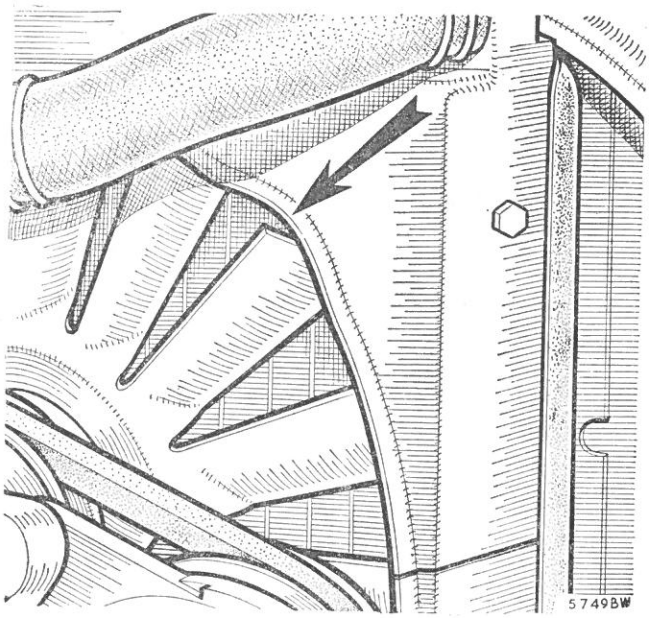

Fig. C.4

Turn the fan blades to the position indicated where the fan belt can be extracted through the recess provided in the radiator cowling

the fan blades and the radiator. Sufficient clearance has been provided to allow the belt to pass between the fan blades and the right-hand top of the cowling flange.

It is necessary to feed the belt between each individual blade tip and the cut-out in the cowling flange until the belt can be withdrawn.

Section C.5

WATER PUMP

The water pump is of the centrifugal impeller type mounted on a common spindle with the fan, and operating in a cast housing mounted on the front of the cylinder block. Water-sealing is effected by a spring-loaded carbon

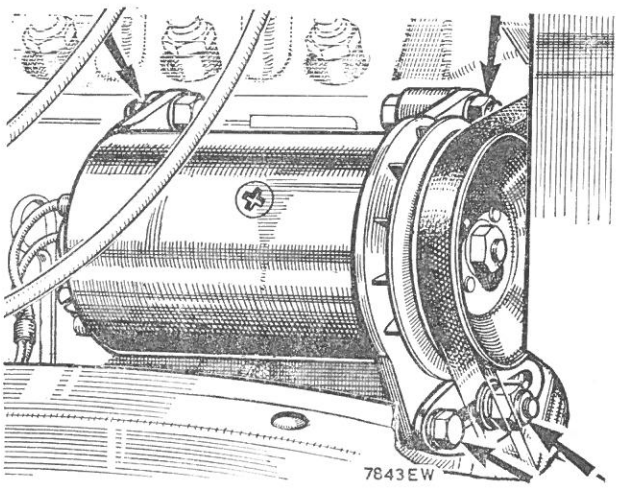

Fig. C.5

The four dynamo attachment points to be slackened for fan belt adjustment. The coil is removed from the dynamo for clarity

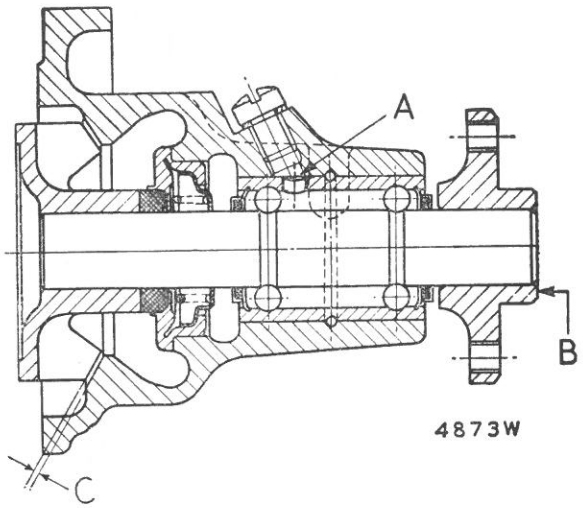

Fig. C.6

A section through the water pump showing the location of the components. When assembled, the hole (A) *in the bearing must coincide with the lubricating hole in the water pump and the face of the hub* (B) *must be flush with the end of the spindle. The clearance at* (C) *must be* ·020 *to* ·030 *in.* (·508 *to* ·762 *mm.*)

washer bearing upon a seating in the impeller housing. It is necessary to dismantle the pump and fan assembly to obtain access to the sealing gland. Removing, dismantling, and refitting instructions are given in the following paragraphs.

Removing

Drain the water from the cooling system and remove the radiator as in Section C.3.

Remove the hose from the water pump inlet connection and slacken the top clip of the thermostat by-pass hose, the dynamo mounting bolts, and the adjusting screw. Withdraw the four set screws securing the fan blades to the water pump hub and remove the blades, belt, and pulley.

Unscrew the four set screws securing the pump to the cylinder block and remove the pump complete with the by-pass hose.

Dismantling

Pull out the bearing locating wire through the hole in the top of the pump body.

Gently tap the spindle rearwards to release the combined spindle and bearing assembly, together with the seat and vane.

Withdraw the vane from the spindle with a suitable extractor and remove the pump seal assembly.

Should the bearing show signs of wear or damage, it must be replaced by a new bearing and spindle assembly; bearings alone are not serviced. The seal assembly should also be replaced with a new seal if wear or damage is apparent or if the pump is leaking.

Reassembling

Reassembly is a reversal of the dismantling procedure. Make certain that the hole in the bearing is lined up with the lubricating hole in the pump body before pressing the bearing and spindle into position.

Should the interference fit of the fan hub have been impaired when the hub was withdrawn from the spindle, a new hub **must** be fitted.

Lubrication

The pump must be lubricated very sparingly with the recommended grease at the intervals as stated in the Passport to Service.

Section C.6

THERMOSTAT

Removing

(1) Drain the cooling system (Section C.2.)

(2) Disconnect the top hose and remove the cowling upper support bracket.

(3) Remove the securing nuts and spring washers from the thermostat cover and the cover from its studs.

(4) Remove the paper joint washer and lift out the thermostat.

Testing

(5) Test the thermostat opening temperature by immersing it in water and raising the temperature of the water to the thermostat opening temperature as given under **'GENERAL DATA'.** If the thermostat valve fails to open or sticks in the fully open position, renew the thermostat; do not attempt to repair it.

Refitting

(6) Installation of the thermostat assembly is the reverse of the removal procedure. Fit a new joint washer if the existing one is damaged.

(7) A wax-element-type thermostat together with a modified thermostat water outlet cover is fitted to later vehicles.

(8) When refitting this type of thermostat it is essential that the threaded stem faces upwards.