SECTION D

THE COOLING SYSTEM

GENERAL DESCRIPTION

The cooling system is of the thermo-siphon, impeller-assisted type, with thermostatic control. The water is circulated from the base of the radiator by the pump, and after passing round the cylinders and cylinder head it reaches the header tank via the thermostat and top water hose. From the header tank it passes downwards through the cooling ducts to the radiator base tank.

Air is drawn through the radiator by a fan which is mounted on the water pump spindle, and both are driven by a belt from the crankshaft, which also drives the dynamo. Later models are fitted with a combined water temperature and oil pressure gauge.

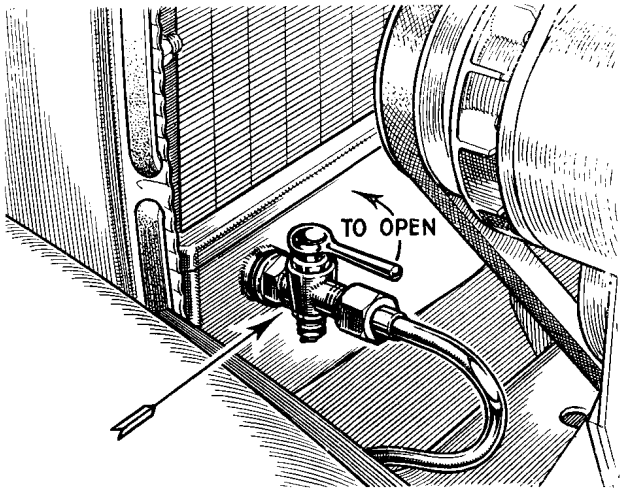


Fig. D.1.
The radiator drain tap. It is fitted with an extension pipe to facilitate delivery of the water into a receptacle.

Section D.1

DRAINING AND FILLING THE COOLING SYSTEM

Remove the header tank filler cap.

Drain the water from the cooling system by means of the drain tap on the left-hand side of the radiator bottom tank and the tap on the right of the engine at the front of the cylinder block. The system cannot be fully drained from the radiator tap alone owing to the location of the water impeller in the circulating system.

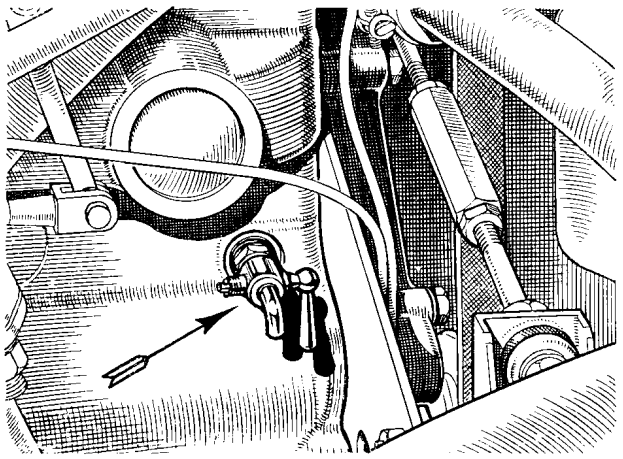


Fig. D.2.
A drain tap which must be opened to drain the cylinder water jacket completely is fitted to the right-hand side of the cylinder block

If " Bluecol " or any other anti-freeze mixture is in use the water should be drained into a suitable clean container and kept for future use.

To fill the system, close both the drain taps and fill through the header tank filler orifice until the water is approximately 2 in. (5 cm.) from the top of the filler neck. The capacity of the cooling system is 12 pints (6·8 litres). When possible, rain-water should be used for filling the system.

Avoid over-filling when anti-freeze is in use, to prevent unnecessary loss on expansion.

Screw the filler cap firmly into position.

Section D.2

TO REMOVE THE RADIATOR

Take off the bonnet by undoing the rear hinge bracket and withdrawing the bonnet rearwards from the front hinge.

Detach the forward ends of the radiator stays.

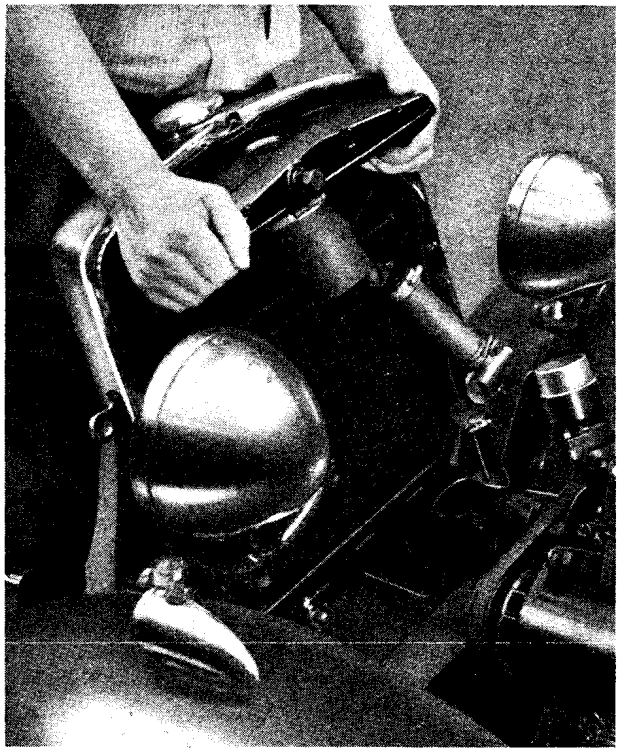


Fig. D.3.
Removing the radiator.

Disconnect the by-pass hose at the thermostat, the hose on the elbow at the pump and the main hose at the top of the thermostat.

Take out the two large, shouldered bolts holding the radiator to the headlamp brackets.

Remove the fixing nuts and locknuts from the mounting brackets. Note the position of the rubber buffers, retaining rings and washers.

The shell and radiator block will then come away together.

Section D.3

FAN BELT ADJUSTMENT

The adjustment of the dynamo, fan and water pump belt tension is effected by slightly slackening the two bolts on which the dynamo pivots, releasing the set screw (at the top front end of the dynamo) securing it to the slotted link and pulling the dynamo bodily

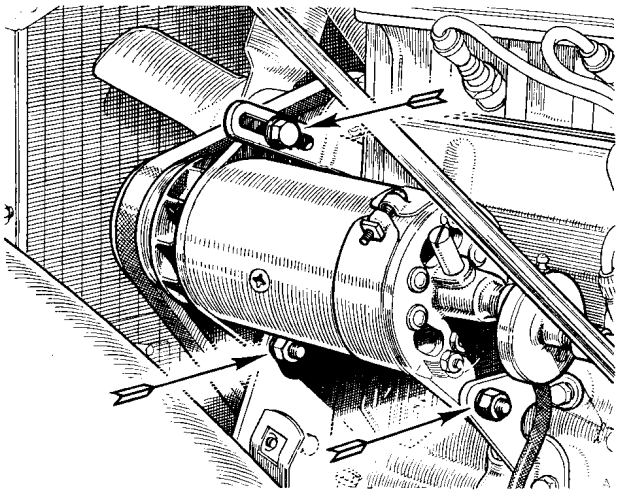


Fig. D.4
The two pivot bolts and the adjusting bolt for the dynamo mounting which provide adjustment for the fan belt tension are clearly shown by the arrows.

outwards until the belt tension is correct. Tighten up the set screws with the dynamo in this position.

Note.—*Only gentle hand pressure must be exerted on the dynamo, or the belt tension will be excessive and cause rapid wear.*

Section D.4

THE WATER PUMP—TO DISMANTLE AND REASSEMBLE

The water pump is fitted to the front face of the cylinder block, and is driven by a belt from the crankshaft. This belt also drives the dynamo. The pump is fitted with a special carbon gland ring which provides an efficient water seal and needs no lubrication or adjustment. In the early life of the car a slight leak may occur, but this will automatically cease as the carbon ring beds itself down. Should it be necessary to dismantle the unit for any reason, remove the radiator and proceed as follows :—

Remove the fan blades by withdrawing the four set screws securing them to the fan centre, and remove the fan belt.

Take out the set bolts and remove the pump unit by breaking the joint between the impeller housing flange and the cylinder block, moving the inner control link bracket outwards to clear.

Dismantle the pump by removing the impeller from the shaft, tapping out the taper pin attaching it to the shaft and taking care to see that it is knocked out in the right direction. Withdraw the pressure spring and washer, which gives access to the carbon seal and gland washer assembly. Care should be taken not to damage the carbon ring, which is relatively brittle, the working face of the rubber seal, and not to lose the driving pin for the carbon gland, which is a loose fit in the shaft.

The pump spindle is carried on two ball races, which should give no trouble unless they have been neglected. Access to the races is obtained by releasing the impeller and gland as described above, removing the drive pin for the gland, removing the attachment nut in the centre of the drive pulley, withdrawing the pulley, pulley key, felt sealing ring and retainer. Remove the outer bearing circlip by engaging the end lugs with a pair of long-nosed pliers.

Pour a little paraffin (kerosene) into the impeller body around the outer bearing and tap the inner end of the spindle on a piece of wood until the outer bearing can be withdrawn. This will release the distance-piece between the bearings, which can be withdrawn, giving access to the inner race.

Remove the inner circlip by contracting the ring and inserting a screwdriver behind it to ease it out of its groove. After removal of the circlip the retaining bearing and the impeller spindle can be withdrawn.

If the felt oil sealing rings are badly worn or the bearings unduly slack, they should be renewed. Carefully examine the carbon sealing ring for cracks or undue wear and renew if necessary. The face of the brass sealing washer should be examined for flatness and all edges should be freed from burrs as this may damage the synthetic rubber seal. Fit a new seal if damaged.

Reassembly is carried out in the reverse manner to that detailed for removal, taking care that the flange jointing washer is in good condition.

The space between the two races should be partially filled with grease (for the correct grade, see Section P, page 2) and the felt washers liberally soaked in engine oil or grease before replacement. The slotted nut retaining the pulley should not be over-tightened ; as long as it is just firm it will be satisfactory.

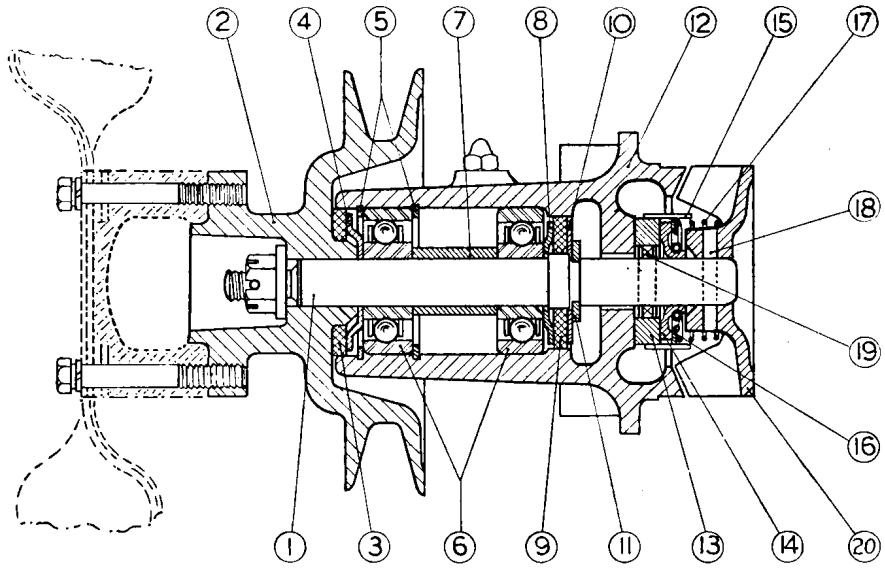
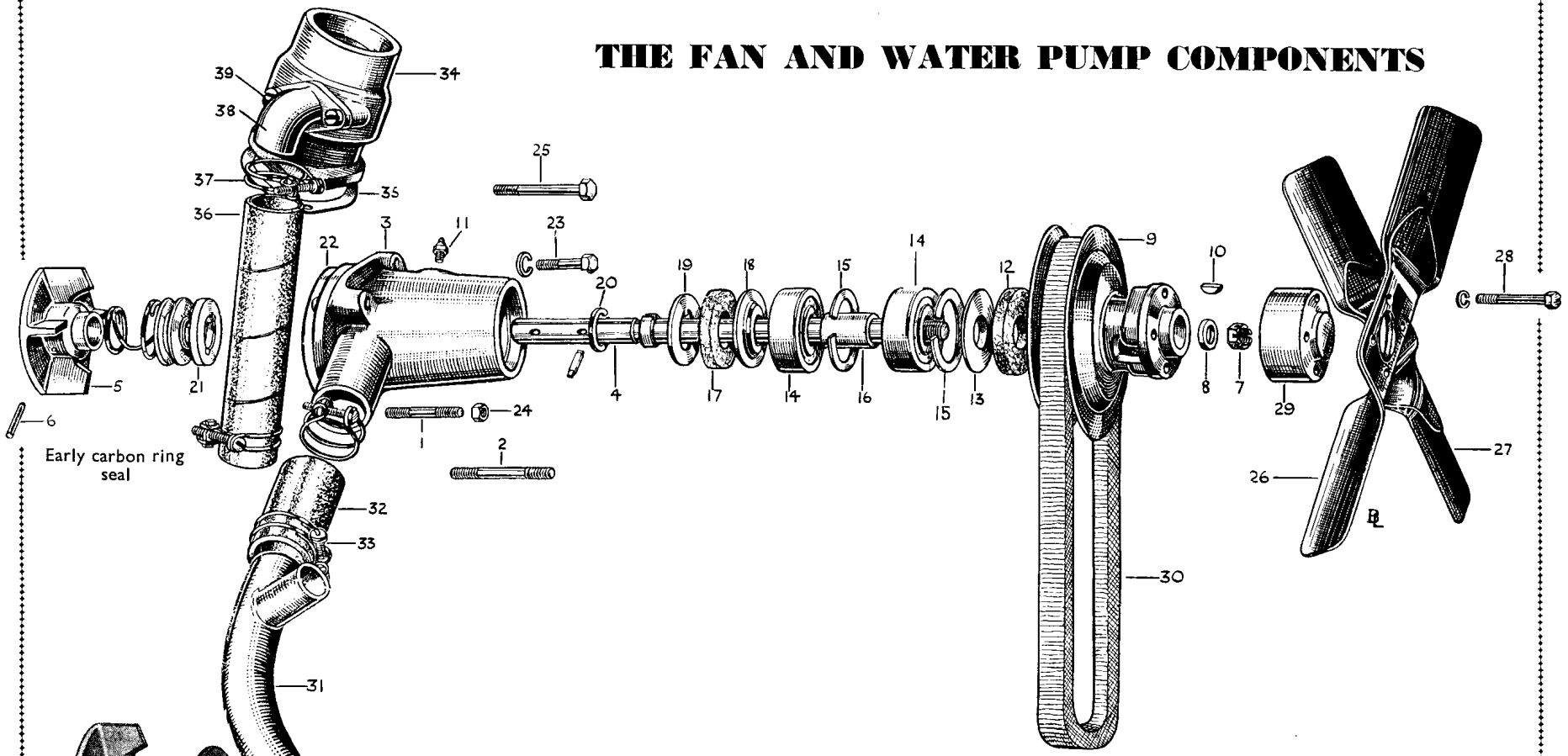


Fig. D.5. The water pump assembly on early models. Later models have a modified sealing gland (see Fig. D.6).

1. Spindle.
2. Fan pulley.
3. Felt washer (front).
4. Retaining cover (front).
5. Bearing circlips.
6. Bearings.
7. Distance tube.
8. Retaining cover (rear).
9. Felt washer (rear).
10. Retaining washer (rear).
11. Spindle circlip.
12. Pump body.
13. Seal washer.
14. Spindle seal.
15. Gland ring.
16. Seal washer.
17. Seal ring.
18. Taper pin.
19. Gland peg.
20. Impeller vane.

THE FAN AND WATER PUMP COMPONENTS



No.	Description
1.	Stud—water pump—short.
2.	Stud—water pump—long.
3.	Water pump body.
4.	Spindle—water pump.
5.	Rotor—water pump.
6.	Taper pin—rotor.
7.	Nut—spindle.
8.	Washer—spindle.
9.	Fan pulley.
10.	Key—pulley.
11.	Grease nipple.
12.	Dust excluder—front.
13.	Cover—front dust excluder.
14.	Bearing—spindle.
15.	Circlip—bearing.
16.	Distance tube—bearing.
17.	Dust excluder—rear—felt.
18.	Cover—dust excluder—centre.
19.	Cover—dust excluder—rear.
20.	Circlip—spindle.
21.	Seal—water pump.
22.	Joint—pump body to block.
23.	Bolt—pump—short.
24.	Nut—water pump stud.
25.	Bolt—pump—long.
26.	Fan blade.
27.	Fan blade (offset).
28.	Bolt—fan blade.
29.	Distance-piece.
30.	Drive belt—for fan and dynamo.
31.	Connecting pipe—pump.
32.	Hose—connecting pipe.
33.	Clip (1½ in. dia.)—connecting pipe.
34.	Thermostat.
35.	Joint—thermostat.
36.	Hose—by-pass pipe.
37.	Clip (1¼ in. dia.)—by-pass hose.
38.	Elbow—thermostat.
39.	Screw—elbow.

Commencing at Engine XPAG/TD/6482, a new water pump with an improved type of water seal has been fitted.

Except for the gland, the new pump is structurally similar, and the method of dismantling and reassembly is the same.

The seating for the new seal is against the boss of the impeller vane instead of the pump body.

The introduction of the new water seal has entailed the deletion of the following parts :—

Part No.	*Description*	*Quantity*
MG862/42	Water pump assembly	1
MG862/269	Water pump body	1
MG862/270	Spindle for water pump	1
MG862/271	Impeller vane	1
MG862/77	Water seal kit	1 set

which have been replaced by the following :—

SA2419/2	Water pump assembly	1
X24433	Water pump body	1
X24435	Spindle for water pump	1
X24434	Impeller vane	1
162600	Washer for water pump seal	1
162990	Water pump seal	1

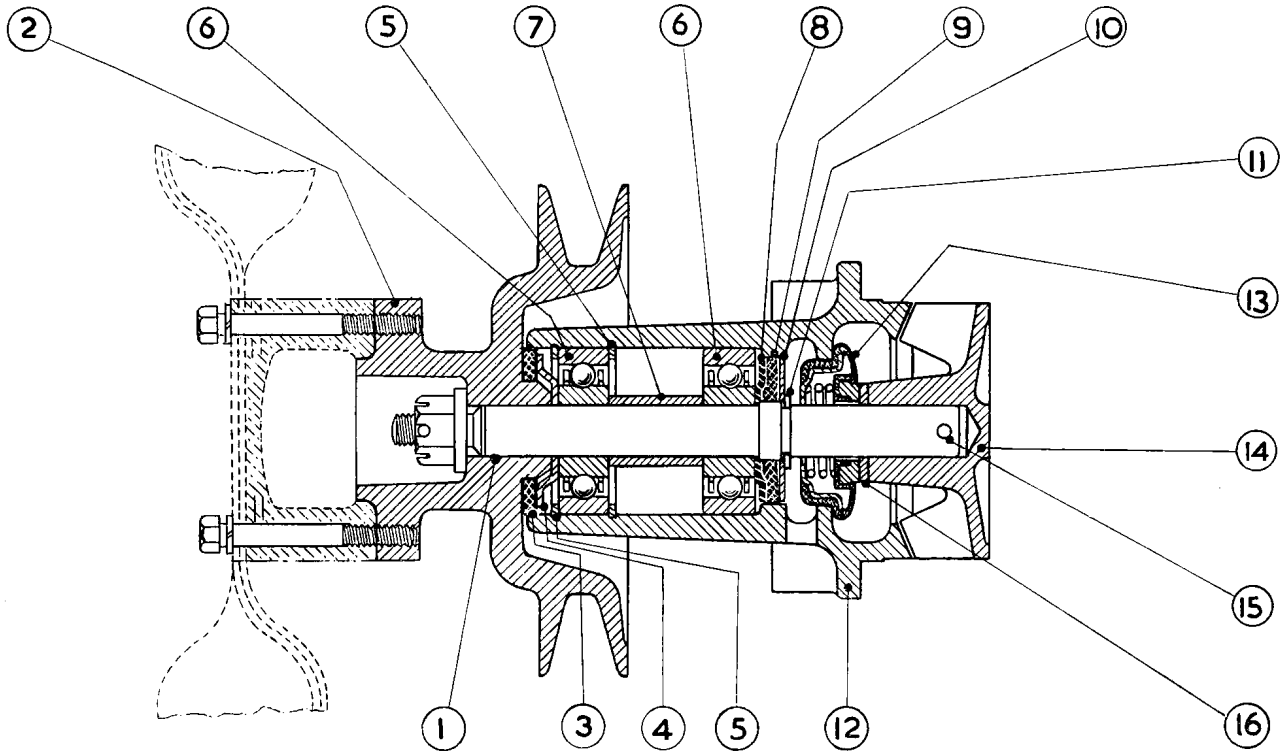


Fig. D.6.

The assembly of the later type water pump.

1. Spindle.
2. Fan pulley.
3. Felt washer (front).
4. Retaining cover (front).
5. Bearing circlips.
6. Bearings.
7. Distance tube.
8. Retaining cover (rear).
9. Felt washer (rear).
10. Retaining washer (rear).
11. Pump spindle circlip.
12. Pump body.
13. Seal.
14. Impeller vane.
15. Taper pin.
16. Gland seating washer.