

Fig. 3. Methods of using drag T.P.11078 to remove crankshaft (left) and camshaft chain wheels.

and one row of studs screwed into the right-hand block and coming through into the tappet chamber of the left-hand block. Remove the bolts; remove the nuts from the studs, and, with the aid of a hoist, lift the left-hand cylinder block just high enough—and *only* just high enough—to insert four 3 in. packings, one at each corner, and in between the two cylinder blocks. *If the block is lifted more than three inches, some of the piston rings will come out, and as the pistons have to pass out through the combustion chamber end of the bores, considerable difficulty will be experienced in entering them into the bores inside the crankcase.*

When the packing pieces (No. T.P.13126) have been inserted, as shown in Fig. 11, lower the left-hand cylinder block until it rests on them.

Four cork tubular dowels connect the camshaft bearing oil galleries between both blocks. Remove these dowels, and remove the six upper connecting rods from the crankshaft. The rods are numbered—odd numbers in the left-hand block with number one at the front; even numbers in the right-hand block with number two at the front. Note carefully which side the rods are stamped to ensure correct assembly when they are replaced.

Knock back the locking plate tabs and unscrew the nuts (with swivel handle No. T.P.16116—illustrated in Fig. 11—and the appropriate size socket spanner). Remove the caps and bearings, keeping the respective parts together for correct assembly to the rods when they are removed. The pistons and rods should be left in the bores.

Lift the left-hand block on to a bench, remove the rods and pistons and attach the bearings and caps.

Then remove the nuts, locking plates, caps and bearings from the remaining rods in the right-hand block. Remove the crankshaft by knocking back the locking plate tabs on the seven main bearings; unscrew the bolts and lift off the caps and bearings.

On each side of the centre bearing a recess is machined to carry the side thrust bearings, which are white metal, steel-backed. To prevent rotation of the bearings, the tab on each bearing fits in a slot cut in each side of the cap.

The caps are dowelled for correct assembly to the crankcase. The front, centre

PETROL NON-RETURN VALVE

The non-return valve—fitted only to vehicles equipped with A.C. petrol pumps—is bolted to the front (and near to the bottom) of the rear bulkhead, and can be reached through the rectangular inspection cover when the engine is in position.

Disconnect the inlet and outlet pipes from the pump, undo the bolts and remove the valve assembly from the bulkhead. Remove the cap by unscrewing the four bolts. Unscrew the brass ring nut, by inserting a suitable flat piece of metal into the grooves, and remove the flap valve.

Examine for wear, and if necessary fit a new valve.

Reverse these operations to re-assemble the unit, and, when bolting the assembly into position, make sure that the valve hinge is uppermost. The top of the valve body is marked "TOP."

"AMAL" PETROL PUMP

The "Amal" petrol pump is of the Duplex type, and consists of two diaphragm type pumps, each operated through a rocker arm from a single eccentric mounted on a shaft. The shaft is carried on ball bearings and is driven from the engine scavenger oil pump by spiral gear, or, on earlier models, by a flexible drive.

Each pump is provided with its own inlet and outlet valves. The two inlet valves are alike, each being a non-metallic flat disc. The outlet valves, also identical with one another, are of the ball type. No springs are used on any of the valves.

A single connection serves both inlet valves, but a separate delivery pipe is connected to each outlet valve body. The two delivery pipes are joined to form the main petrol supply pipe to the carburettors.

The eccentric only *lifts* the diaphragms, the downward stroke being imparted by springs, which are of a pre-determined strength. Therefore, when the float chambers are full and the needle valves close, the resultant back pressure on the diaphragms of the pumps holds them up against the spring pressure, so that pumping ceases until the float chamber needle valves open again. A light spring above each rocker is provided to ensure that the rocker is kept in contact with the eccentric at all times, but these light springs have no influence on the working of the pump.

Each pump is provided with a lever to operate the diaphragm manually. The levers are connected to a control located in the right-hand corner of the fighting compartment rear bulkhead. A light spring retains each lever in the "off" position when it is not being operated.

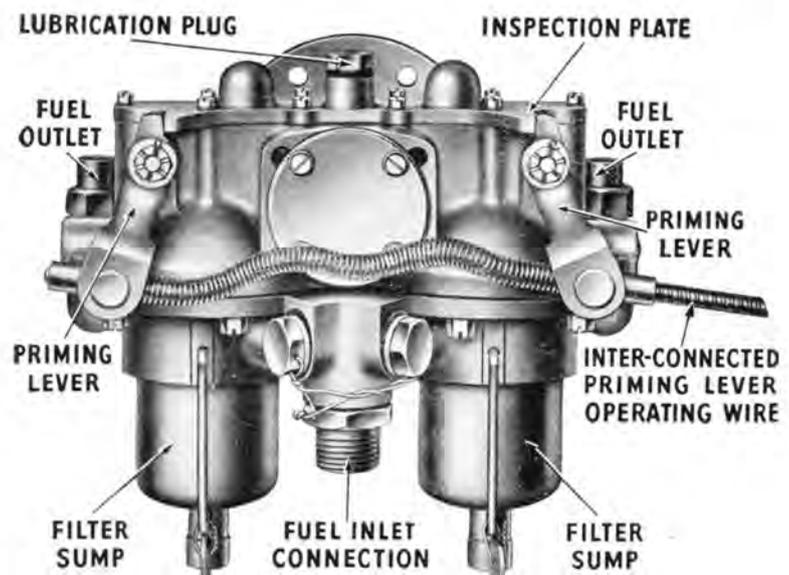


Fig. 22. General view of "Amal" petrol pump. (The lubrication plug fitted should *not* be used for lubrication.)

Details of Change	Identification Mark on Gearbox	Introduced at Gearbox No.	Remarks
6. Oil seals added at end of sun pinion shafts. See Fig. 3.	Diamond in Green Paint.	1100.	Incorporated by fitting new parts as under :— Oil seal TG/A1355 Oil seal TG/S1356 Retainer TG/A1352 Bolt TG/S1353 Lock plate TG/S1354 Dowel TG/S1357
7. Pinion shaft nut locked by grub screw. See Fig. 4.	No record.	1340.	Should be incorporated whenever possible.
8. Increased clearance for layrub coupling bolts. See Fig. 4.	No record.	1572 to 1600 inclusive, 1622 and all subsequent boxes.	Should be incorporated whenever possible.
9. Machine face of nut as shown in Fig. 4. See Fig. 4.		1792.	Should be incorporated whenever possible.

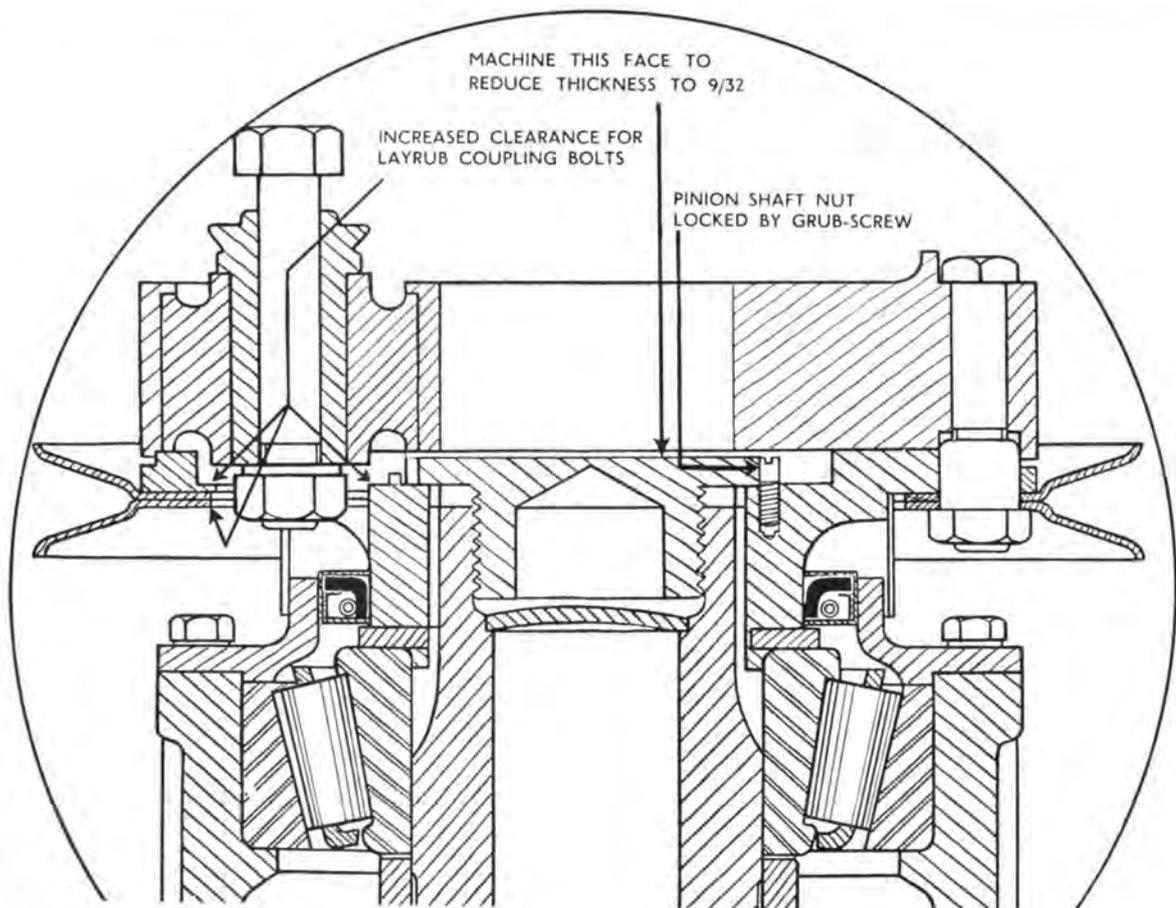


FIG. 4. Improved attachment of Layrub coupling.

FINAL DRIVE

SERVICE DATA (Contd.)

Bearings (Contd.)

Main Brake and Driving Flange Assembly—

Ball Bearing T.P.1675 105 mm. × 190 mm. × 36 mm.
(Chilwell No. M.T.7/6214)

Number 2 per unit

OIL SEALS—FINAL DRIVE UNIT

Side Cover T.P.1738 Perfect Oil seal No. D.75068

Size—Internal Diameter 6½ in.

External Diameter 7.506 in.—7.510 in.

Width927 in.—.942 in.

Number 2 per unit

Final Drive Unit Inner Support T.P.14656 Rubber ring

Size—Internal diameter 4 $\frac{33}{32}$ ins.

Width245 ins.—.255 ins.

Retainer T.P.14657 Pressed steel

Number 1 per unit

OIL SEALS—MAIN BRAKE HUB

Main Brake Drum Driving Flange T.P.3499 Perfect oil seal No. 7626

Size—Internal Diameter 6 ins.

External Diameter 7.631 ins.—7.635 ins.

Width $\frac{5}{8}$ ins.

Number 1 per unit

Main Brake Drum Hubs T.P.11985 Rubber ring

Size—Internal diameter 3 $\frac{1}{16}$ ins.

Width $\frac{3}{8}$ ins.

Final Drive Shaft Flange Retainer T.P.15860 Rubber ring

(For twin bolt attachment of retainer only)

Size—Internal Diameter 2 ins.

Width3 ins.

Number 1 per unit

OVERHAUL

(Special Tool Required : T.P.4791 Final Drive Ring Nut Spanner.)

To Dismantle

Remove the track tyre rim bolts, dismantle the tyres and rims, and tap the rubber tyres off the rims, where fitted.

Remove the track sprockets by unscrewing the bolts attaching them to the annulus and side covers.

Dismantle the oil seal housings and side covers, complete with the ball bearings, by removing the ring nuts and oil seal housing bolts. The bearings and oil seals can then be tapped out of their housings.

Slide the planet carrier and gears out of the annulus, and dismantle the gears by unscrewing the planet gear shaft bolts. Remove the retaining bars and withdraw the shafts. The roller bearings can then be dismantled by removing the bearing retaining rings in the planet gears.