REPAIRS TO PUMPS

Beginner's Workshop

GEOMETER describes repairs and replacements for the more common types of liquid, pump

IN THE various types of pumps described in the previous issue, many of the faults which arise can be corrected without difficulty.

The simple " lift " water pump, and others of similar design, may occasionally require a new bucket or cup leather fitting, to restore efficiency lost through wear of the old one. The new cup leather (obtainable in a size to suit the pump barrel) is a hard flanged disc, whose centre has to be cut out to fit the metal plunger-which work can be done either with or without a lathe.

When only a small lathe is available the cup leather being nearly as large as the chuck, the set-up can be as ***A.*** A piece of studding is obtained, or made, to hold in the chuck with support from the tailstock centre. On the studding, held between nuts and washers, is a piece of wood to be turned to fit into the cup leather, which is then drilled or punched, and clamped up.

Round the outside, a simple or worm-drive hose clip can be fitted if additional hold is desired. The turning tool should be a pointed type, bent if necessary. Care should .be observed to check the diameter with calipers and cut out the centre cleanly.

On a medium-sized lathe with a bigger chuck of independent type, the piece of wood for mounting can be gripped firmly and turned off to take the cup leather, which can be pushed up by the tailstock centre and held by a clip on the outside.

Centring cup leather

In the absence of a lathe, the cup leather should be centred--either with a surface gauge or as, ***B,*** using a sharp nail at approximate centre height through a wood block, the leather being turned for cross marks to be made. A small hole is drilled at the centre position, and the cup leather mounted on a roughly rounded wood block in the vice, for the centre to be cut out with a washer cutter, C. Any necessary trimming can be done with a sharp pocket knife.

When mounted on the plunger, the cup leather should be soaked in warm water fo soften it somewhat before fitting to the pump barrel. Only a smear of oil, if any, should be applied.

A flap valve for the base of a pump barrel can be cut with the washer cutter, leaving a neck for the flap and refitting the metalweight to hold it down.

Plunger and other types

On a small plunger force pump, as used for model boiler feed., or an oscillating type for lubrication purposes, a bore which passes right through the barrel facilitates reconditioning when wear occurs. When wear is slight, a soft barrel and gland can be reamed out slightly larger by placing a narrow strip of shimstock down the side of the reamer.

Only the few thou necessary for truing will be removed, then a new plunger can be made to fit. If the barrel is steel and hardened, the bore can be trued by lapping on a piece of well fitting brass rod, using valve grinding paste. Again; a new plunger can be made to suit.

Diaphragm pump

A diaphragm pump, as used for petrol, should be marked for realignment of the body flanges before dismantling. Usually, the diaphragm has to be pressed down and turned through 90 deg., when flats on the spindle permit removal.

The spring of such a pump should not be stretched, nor replaced with a stronger one, or flooding at the carburetter may follow from the higher pressure produced. Neither should the diaphragm be sealed with jointing compound; and when assembling it is important to tighten the screws partially, stretch the diaphragm, as ***D,*** by operating the lever, then tighten the screws fully. If this is neglected, the diaphragm may be damaged.

Efficiency of a gear pump is reduced by leakage between the gear teeth and the body, or past the endplate. Clearance at X at ***E*** should not be more than about 0.006 in., and end clearance at Y at ***F*** not more than about 0.003 in., both tests made with feeler gauges. In addition the'endplate may be grooved.

Rectification consists of rubbing down body and endplate on a flat surface on a sheet of fine abrasive cloth, then lapping on a flat. metal surface with grinding paste.