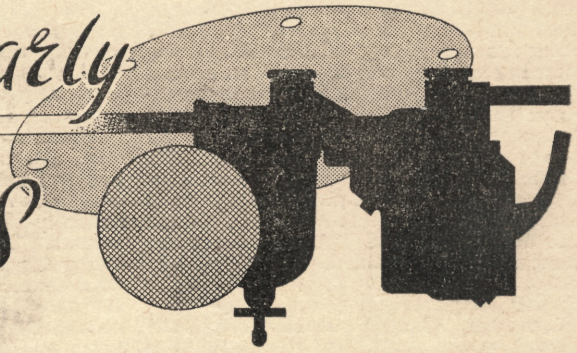
Reconditioning early A.C. Petrol Pumps



This Article has been Specially Written for Owners of Pre-war Cars who are not Fully Conversant with the Correct Procedure for Servicing these Pumps

By E. S. BROWN

MOST pre-war cars were fitted with mechanical pumps that differed considerably in design from their more modern counterparts. Due to this obsolescence in design, there is very little information now available for their repair, and in consequence many owners of pre-war vehicles are not fully conversant with the correct procedure. The early A.C. petrol pumps work on exactly the same basic principles as the modern adaptation, but there has been considerable changes in the design of the diaphragm assembly and linkages. There were three types of linkage used, but the method of disassembly and overhaul is very similar to the design which will be quoted in this article.

Fuel Trouble

A few preliminary notes on probable fuel trouble in connection with the early pump is desirable as the fault may not exist within the pump and will avoid any unnecessary stripping down. In the event of petrol feed trouble it is always a wise precaution to check for a blocked filter, air leaks in the filter assembly and also in the petrol feed pipe. A possibility that must not be ruled out in older cars is the partial or complete blockage of the petrol pipe with particles of rust or sediment that can occur when the interior of the petrol tank is showing signs of rusting through the wearing of the protective coat of tinning. In these circumstances a temporary relief can be obtained by detaching the feed pipe from the pump union and giving this a few strokes with the tyre inflator. The only satisfactory method is, however, to detach the petrol tank, and to clean out the rust as previously described. A little upper-cylinder lubricant or engine oil should thereafter be added to the petrol to prevent any future formation of rust deposits.

Blocked Filter

The most likely trouble to occur, however, especially if the pump has not received recent attention, is a blocked filter. To clean the filter it is necessary to release the metal strap by unscrewing the bolt beneath it, swinging the strap aside, then removing the glass filter bowl (Fig. 1). All petrol and sediment should be shaken from the bowl which should be very thoroughly cleaned out with a non-fluffy cloth. The cork gasket and the filter gauze which is situated above the filter bowl

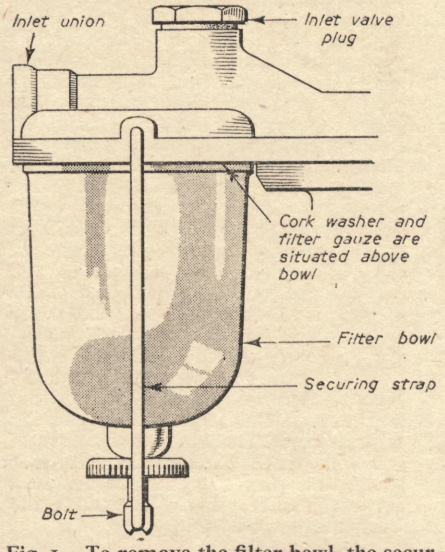


Fig. 1.—To remove the filter bowl, the securing strap is released by slackening the securing bolt.

is then removed and the gauze swilled around in petrol to remove any foreign matter that may be adhering within its meshes. It is not advisable to use a brush for this purpose as damage may be caused to the rather fragile mesh of the filter. Should the filter be in a damaged condition it must be replaced with a new one.

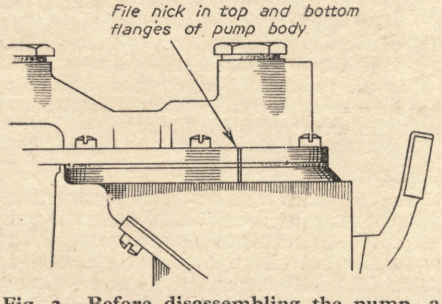


Fig. 2.—Before disassembling the pump, a file nick should be made across the upper and lower flanges to ensure correct location upon reassembly.

The filter unit is reassembled in the reverse order of disassembly, and a new cork gasket should always be reinstalled to prevent an air-leakage at this point. Before replacing the bowl make sure that the upper edge of same is perfectly clean to ensure that it beds down perfectly on to the gasket. Do not overtighten the metal strap—just sufficient pressure should be placed upon the bolt to ensure an air-tight joint between the bowl and gasket.

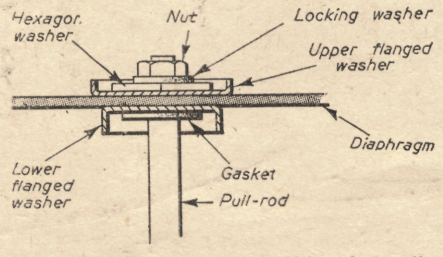


Fig. 3.—The order of assembly of the diaphragm and components upon the pull-rod.

Air-leaks

As a mechanical pump depends upon suction for its efficient action, any air-leaks in the petrol feed or inlet system will result in either partial or complete failure. Apart from a leaky filter gasket the most likely sources of trouble is an air-leak around the pump diaphragm or loose unions connecting the petrol feed pipe to the pump. These unions must at all times be kept tight. A leak around the diaphragm is indicated by a seepage of petrol at this point, and this can be usually cured by evenly and diagonally tightening the six screws which secure the upper and lower halves of the pump body and diaphragm.

Testing the Pump

In passing, it should be mentioned that a blocked petrol feed pipe is very difficult to distinguish from a complete pump breakdown, and the only method is to check up on the pump to ensure that it is functioning correctly. To do this it will necessary to remove the pump from the engine by unscrewing both inlet and outlet pipe unions and removing the two set-bolts securing the pump to the crank-case. Incidentally, when removing the pipes always use two spanners, one to unscrew the union nuts and the other to hold the unions, otherwise the pipes will become badly twisted. Having removed the pump complete, a working test can be made by quickly depressing and releasing the rocker arm, when a sucking noise should be heard at the inlet union and

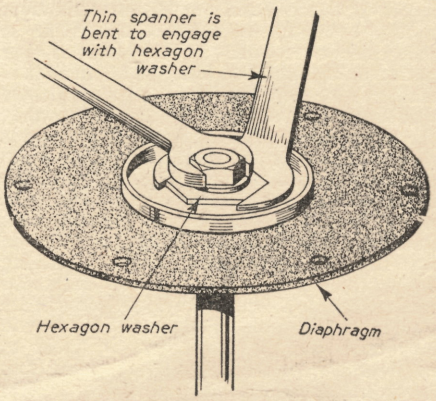


Fig. 4.—A special tool for securing the hexagon washer and diaphragm. Its application is shown in the above sketch.

small puffs of air can be felt at the outlet. A more positive test can be made by temporarily fitting a rubber pipe to the inlet union, placing same in a small quantity of petrol, then when the rocker arm is actuated, sharp spurts of petrol should emerge from the outlet. If the pump is weak in action or there are no results the fault is usually due to a faulty diaphragm which has become hardened or split, a weak or broken diaphragm spring or faulty valves. Lost motion in the linkage due to wear in the links and pins can also cause a weak pump action.

Faulty Diaphragm

The most common trouble is a faulty diaphragm and the method of renewal is as follows. When the pump is dismounted from the engine, the filter bowl assembly is removed from the pump as previously explained. (On some models the removal of the filter bowl is not necessary.) A small nick is then made with a file across the flanges of the upper and lower parts of the pump body to ensure correct location when reassembling (illustrated in Fig. 2). Remove the screws securing the two parts of the pump, being careful not to loose them or the spring washers, and lift the upper part of the pump away, which will then expose the diaphragm. Fig. 3 illustrates the pull-rod and diaphragm assembly. The old

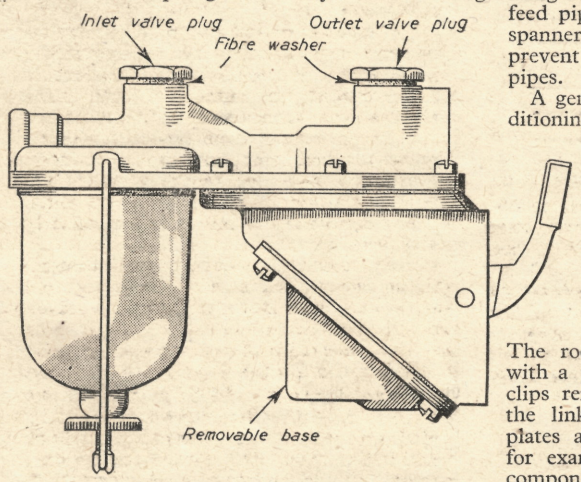


Fig. 5.—The two valve plugs have to be removed to gain access to the valve assemblies. Note also the position of the removable plate. On some models, however, this is on the base of the body.

diaphragm is removed by unscrewing the nut securing the diaphragm to the pull-rod, removing the washers and then pulling the old diaphragm away. Carefully observe the order in which the washers were removed for replacement.

The new diaphragm consists of four layers of material and the tab on each layer should be lined up with its neighbour so that all four are in line. The gasket is then placed on the pull-rod followed by the lower washer, observing that the flanged or dished side is positioned inwards, that is, towards the pump body. The complete diaphragm is then pushed over and down the pull-rod and the locating tabs correctly lined up with the small projection cast on the pump body. The upper flanged washer is then replaced with the flange away from the diaphragm, followed by the hexagon-shaped washer, locking washer and nut. The correct order for reassembly is shown in Fig. 3. Great care should be taken in tightening the pull-rod nut, otherwise the diaphragm is liable to misalignment and distortion. A useful tool for this purpose can be made from a thin, metal stamped spanner, the end of which is bent so that it enters the upper flanged washer and engages with the hexagon-shaped washer (Fig. 4).

The rocker arm is next pressed inwards until the diaphragm is level with the lower body flange, then the upper part of the pump is placed into position and the file marks previously made lined up to ensure that the assembly is correctly located. The screws and spring washers are then inserted in their respective holes and each screwed several turns until the spring washers are lightly gripped. The rocker arm is then released and held away from the pump to ensure that the diaphragm is fully flexed. The screws are then tightened up evenly and diagonally while still holding the rocker arm in the away position. The filter bowl is then reassembled and the pump reinstalled on the engine by thoroughly cleaning the crankcase and pump joining surfaces, renewing the gasket and tightening the two set-screws. The respective feed pipes are then fitted up, using two spanners on the nuts and unions to prevent any twisting and buckling of the pipes.

A general pump overhaul and reconditioning is made by dismantling the filter bowl assembly and diaphragm as described, the inlet and outlet valve plugs (these are located on the top cover, Fig. 5), together with the fibre disc valves and springs. The small plate which is secured beneath the pump with four screws is then removed, which will then release the diaphragm and rocker arm spring. The rocker arm pin is then removed with a punch and the spring retaining clips removed from the outer groove of the link pins. The rocker arm, link plates and pins can then be removed for examination. Fig. 6 illustrates the components of the pump.

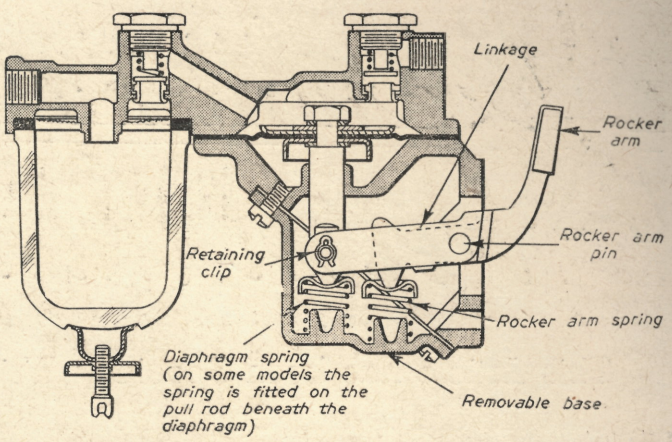


Fig. 6.—The mechanism of the pump. The set-out varies in some models but the general principle is closely followed.

Wear in the Linkage

This is manifest by the link pin holes becoming enlarged and also the diameter of the link pins being reduced. In these circumstances a complete replacement is necessary. The face of the rocker arm may show signs of wear after considerable mileage; this can be built up by the deposition of hard metal, but here again a replacement arm is to be preferred. Particular attention should be given to the diaphragm spring, which, if corroded or distorted, should be renewed. A spring of the correct type for the pump in question must be used. A spring that is too strong will give carburetter flooding, while on the other hand one that is weak will give rise to petrol starvation. The spring cups should also be carefully inspected for any deterioration. The linkage is reassembled in the order as for disassembly, noting that the link pin retaining clips are snugly into position and that the two springs are correctly located with their cups fitted into the bottom end of the pull-rod and the lower heel of the rocker arm. The two inner projections on the bottom plate are fitted into the lower spring cups before the plate is screwed back into position. The diaphragm and filter assembly is reinstalled as previously explained.

Device for Removing and Injecting Liquids

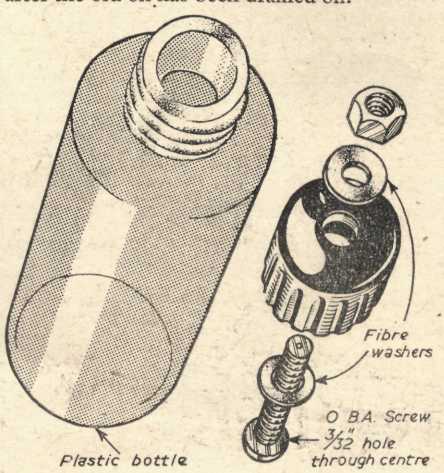
A Useful Fitment for Car Owners

By C. H. GILLARD

THIS easily and inexpensively made gadget will help practical motorists to solve the problem of injecting or removing liquids and can even be used as a puffer to clear dirt from holes, pipes, etc.

Construction

The only items required for its construction are a plastic bottle, one O BA brass screw and nut, and two ¼in. fibre washers. Drill a 3/32in. or smaller hole right through the screw—a lathe with a drill chuck will produce a number of such screws with little effort. All that remains to be done now is carefully to drill a ¼in. hole centrally in the bottle cap and its washer. Insert the screw, with a fibre washer under its head, into the hole, add the second washer, then the nut and tighten up. If a cap is required, a nut with one end closed up by soldering a disc on the face or a short length of screw into the thread, will be found effective. Incidentally, the small size plastic bottle without the cap is useful for topping-up the rear axle and other parts of the car mechanism having inaccessible filler holes. Fill the bottle with oil, insert the neck into the filler hole and sharply squeeze the bottle. A few squeezes will completely recharge a rear axle after the old oil has been drained off.



Details of the syringe.