THE "DAVID" MECHANICAL PUMP.

To Dismantle the Pump.

(i) Prior to dismantling, mark with a pencil the circular body and the flanged end casting, so as to facilitate re-assembly in the same angular position.

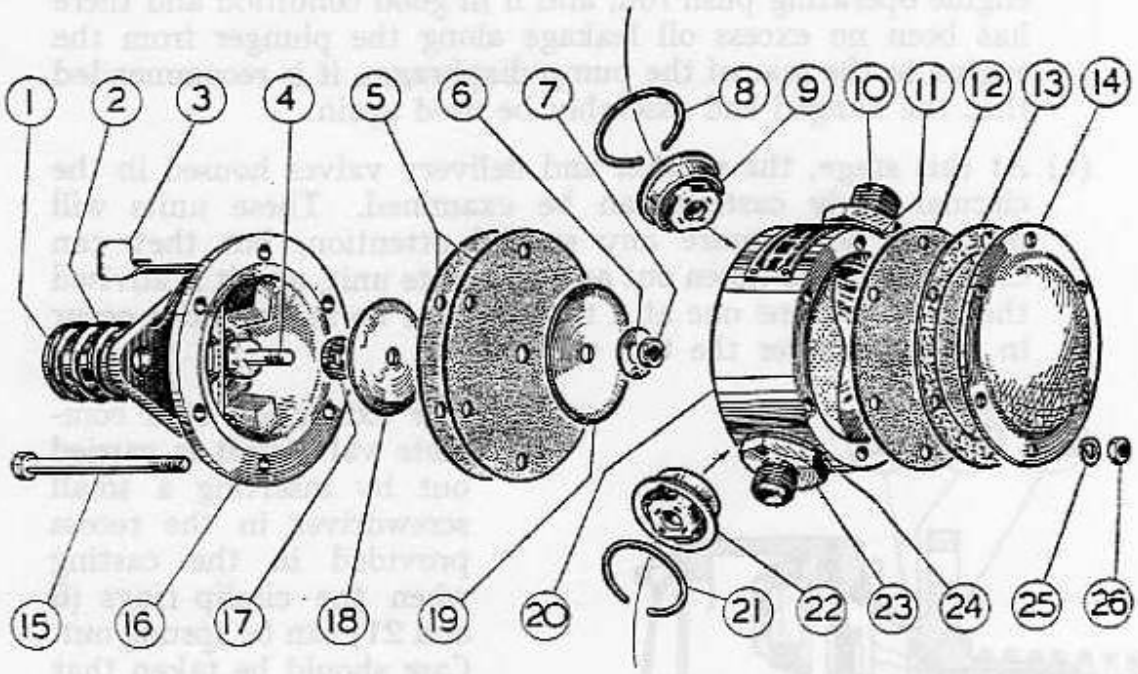

Fig. C.33.—EXPLODED VIEW OF "DAVID" FUEL PUMP.

1. Plunger.
2. Outer spring.
3. Hand priming lever.
4. Diaphragm bolt.
5. Diaphragms—main.
6. Washer—diaphragm bolt.
7. Nut—diaphragm bolt.
8. Circlip—outlet valve retaining.
9. Outlet valve.
10. Outlet union.
11. Aluminium washer.
12. Pulsometer diaphragm.
13. Gaskoid jointing.
14. Domed end cover.
15. Bolt.
16. Flanged casting.
17. Fibre washer.
18. Inner diaphragm plate.
19. Outer diaphragm plate.
20. Circular (main) body.
21. Circlip—inlet valve retaining.
22. Inlet valve.
23. Inlet union.
24. Aluminium washer.
25. Spring washer.
26. Nut.

(ii) The six nuts (26) round the circular body are first removed, together with the spring washers (25), then remove the bolts (15) but when doing so do not drag the threaded parts through the diaphragm, screw them out, thus leaving the holes in the diaphragm undamaged. The various parts of the unit can now be separated.

(iii) To remove the pump diaphragm, take off the nut (7) and washer (6) and outer diaphragm plate (19), after which the diaphragm can be lifted off the diaphragm bolt (4). The inside diaphragm plate (18) should then be lifted clear, the fibre washer (17) underneath it examined and renewed if deteriorated.

(iv) The diaphragm plunger bolt is then exposed, held in position in the flanged end by the loop of the priming lever. Since the flanged end assembly complete with plunger and priming device is obtainable as a complete spare, it is not recommended that the operating plunger and outer spring (2) should be disturbed. The flanged end assembly should be examined for wear on the hardened mushroom end (1) in contact with the engine operating push rod, and if in good condition and there has been no excess oil leakage along the plunger from the engine to the rear of the pump diaphragm, it is recommended that the flanged end assembly be used again.

(v) At this stage, the suction and delivery valves housed in the circular body casting can be examined. These units will probably not require any special attention, but they can conveniently be taken out as a complete unit, and it is advised that this be done one at a time so that no mistake can occur in reversing over the two valves.

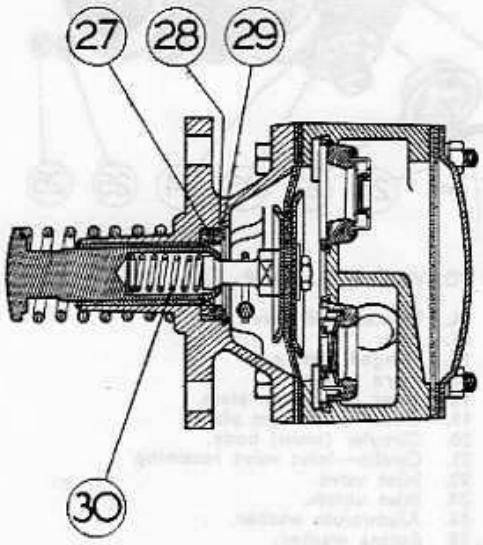

Fig. C.34.—SECTION THROUGH "DAVID" FUEL PUMP.

27. Oil seal.
28. Distance piece—oil seal.
29. Circlip—oil seal retaining.
30. Spring—diaphragm operating.

(vi) The extraction of a complete valve unit is carried out by inserting a small screwdriver in the recess provided in the casting when the circlip rings (8 and 21) can be sprung out. Care should be taken that the tool is prevented from slipping, otherwise the parts of the valve unit may be damaged.

(vii) After removal in this way the valve units should be individually examined and if the valve seating is not unduly flattened, nor the valve disc deeply grooved, and the spring is intact and not displaced, the valve unit can be replaced. It is to be noted that the suction valve unit can be examined in this way without removing from the chamber.

In the case of renewal of the valve units, these can be replaced as complete assemblies ready for insertion in the valve chamber casting. When replacing the units in the body, special care should be taken when springing the circlip rings back into place that the tool used does not slip and cause any damage.

To Rebuild the Pump.

(i) Before rebuilding, the diaphragm bolt should be pressed back by hand against the internal spring and a few drops of oil introduced into the plunger which will ensure free movement of the spring in operation. In replacing the fibre washer on the diaphragm plunger bolt, it is advisable to use a small amount of jointing material, such as Seccotine, on the surface bearing against the end face of the bolt, as this makes an air-tight seal. The inside diaphragm plate can then be replaced and two new diaphragms placed on the bolt, after which the outer diaphragm plate is put in position (care being taken that the dished edge points outwards giving a flat bearing of the inside surface against the diaphragm), and finally the small washer and nut. Before tightening up the nut, the six body bolts should be placed through the holes in the diaphragm locating into the corresponding holes in the flanged casting. This then ensures when screwing up the nut that the layers of the diaphragm maintain their correct position. After the nut has been tightened up, the end of the bolt should be "centre popped" in two places to lock. The six bolts can then be removed.

(ii) The inlet (**23**) and outlet (**10**) connecting unions should be examined, and new aluminium jointing washers (**24** and **11**) fitted where necessary.

(iii) The pulsometer diaphragm beneath the cover plate and its jointing washer (**13**) should next be examined, and if the pulsometer has become bagged in operation a replacement should be fitted together with the Gaskoid cover plate jointing.

(iv) The remainder of the pump can now be re-assembled, the procedure recommended being as follows:—

The six bolts are introduced through the holes in the flanged casting and carefully screwed through the diaphragms. Next replace the circular main body in its correct angular position as indicated by the pencil mark made across the joint, and carefully place the pulsometer diaphragm, the joint washer, and the domed end cover in position. By screwing the bolts through the diaphragms as described above, no dragging of the holes in the diaphragms can occur. Finally, the spring washers and nuts are put on and tightened up, first one and then the opposite one, and so on. During the tightening up, the operating plunger in the flanged end should be moved backwards and forwards to ensure that the diaphragm has complete freedom of movement. The pump is now ready for refitting on the engine.

To Refit the Pump to the Engine.

(i) Replace the joint washer over the studs of the pump mounting bracket, fitting a new joint washer if necessary.

(ii) Replace the pump (with the hand priming lever at the top) and secure with the two spring washers and nuts.

(iii) Re-connect the petrol inlet and outlet pipes.