

Pressure aids for motorists

BY GEOMETER

SIMPLE dodges with pressure can provide information or facilitate work which would otherwise prove awkward without proper or elaborate equipment. Checking compression pressures in an i.c. engine, for example, can be done with a gauge reading to about 150 lb. connected by a short pipe and non-return ball valve to the adapted body of a sparking plug.

With the engine warmed up, all sparking plugs are removed, and the adapted one fitted into each hole in turn for the engine to be rotated rapidly on the starter—the throttle held fully open. In the case of a low reading on one cylinder, a second test with oil squirted on top of the piston reveals if the reduced pressure is due to leaking valves, as the oil temporarily seals the piston rings.

Sometimes oil can be used in a combustion chamber to break the adhesion of a sticking cylinder head. An end piston should be brought near to top dead-centre with both valves closed; then the combustion chamber is filled with engine oil, and the sparking plug refitted. A careful pull on the starting handle (or on a spanner on the crankshaft pulley nut or setscrew) frees the cylinder head hydraulically; and once free, it can be prised and lifted. For this dodge, an end cylinder is preferable to one near the centre, as less pressure is required. Of course, as soon as the head lifts, the oil escapes, so there can be no second attempt or repeat on another cylinder.

Oil pressure check

Where an oil pressure relief valve is contained on the pump in the sump, a check of operating pressure can be made on a simple rig, and the valve adjusted before the pump is fitted to the engine. This eliminates all doubt about the setting, or the need to remove the sump again to make adjustment.

As at **A**, the pump is bolted to the underside of a piece of board and suspended in engine oil in a can (cut-down oil drum). A pressure gauge

is connected to the delivery union, and a hand-brace or medium-speed electric drill attached to the driving spindle. With an assistant holding the board, the pump can be run, and the spring-loaded valve will relieve at a pressure according to its setting.

A soft joint should be used between the pump and the board to prevent leakage at other outlets. If the gauge has to be attached here, a thin sheet metal flange can be soldered to the pipe, a joint fitted between it and the pump, and all held between the pump and the board.

Substitute gauge

When oil pressure reads low or a warning light behaves erratically, there may be doubt about the pressure gauge or switch. The obvious answer is to substitute another. However, that may be an unnecessary expense for a private owner, whereas he probably already has a tyre gauge to hand.

As at **B**, a valve cap is soldered to the cut-off end of a valve stem from an old tube, and the threaded part of a union is soldered to the side. Holes are drilled through and the cap is provided with a washer. It is screwed on a tyre valve (centre removed), and the gauge attached at the side. If the gauge is working, pressure shows as the tyre is inflated, and the pressure can also be taken with a tyre gauge. With a bulb and battery in circuit, a pressure switch can be checked in the same way, but the tyre gauge must read down to about 8 lb.

Finding t.d.c. when there are no markings and freeing stuck tubeless tyres, are aided by pressure from the engine. As at **C**, an adapted sparking plug is connected by rubber pipe to a glass tube in a jar of water. Fitting the device on the compression stroke and turning the engine, bubbles appear to t.d.c.; but immediately on the down-stroke water rises in the tube. As at **D**, the tubeless tyre is freed by a connection to the induction manifold (screenwasher fitting), a 3/16 in. bore metal pipe, tap, and rubber connections. The engine is revved, the throttle shut, and the tap opened for the vacuum to do the work. □

