

A. General

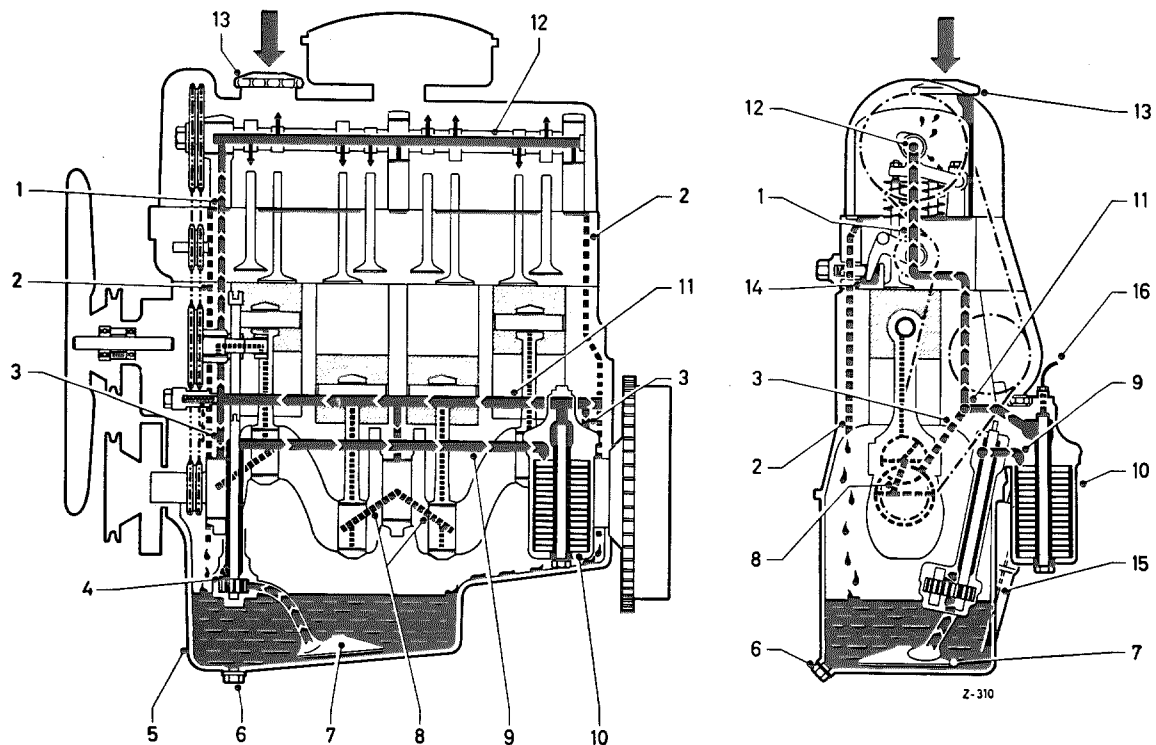


Fig. 18 — 5/1

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|-------------------------------------|---|
| 1 Oil passage to camshaft | 9 Main oil passage to oil filter |
| 2 Oil return | 10 Oil filter |
| 3 Oil passage to crankshaft bearing | 11 Main oil passage to lubrication points |
| 4 Oil pump | 12 Oil passage in camshaft |
| 5 Oil pan | 13 Screw cap for oil filling hole |
| 6 Screw plug | 14 Oil case for chain tensioner |
| 7 Suction strainer | 15 Oil dip-stick |
| 8 Oil bores in crankshaft | 16 Oil pressure gage line |

The engine lubrication is of the pressure-circulating type. From the oil pan (5) and via the suction strainer (7) the oil is pumped by the oil pump (4) through the main oil passage (9) to the oil filter (10) and from there passes in purified form to the main oil passage (11).

From the main oil passage (11) the oil passes through the bores (3) to the crankshaft bearings and from there through the bores (8) in the crankshaft to the connecting-rod bearings. For the lubrication of the connecting-rod bushings, the connecting rods are provided with a longitudinal bore.

As the oil flows through the oil passages (9) and (11), the heat from the oil is transferred to the cooling water which is maintained at a fixed temperature by means of a thermostat. As a result, both water and oil are always kept at the same temperature. On the other hand, when the engine is started from cold, the cold oil is heated by the cooling water which heats up more quickly and the optimum oil temperature is thus reached sooner.

The oil for the idling gear shaft is supplied via the vertical passage (1) in the front part of the crankcase. The vertical passage (1) in the front part of the crankcase has a hole drilled in the side for lubrication of the vertical distributor drive shaft.

The vertical passage (1) continues through the cylinder head into the first camshaft bearing block. The oil passes through a radial bore in the front bearing journal of the camshaft (which is drilled hollow) into the camshaft and from there to the bearing surfaces.

When the oil filter elements are very dirty, the oil relief valves open and the oil filter is by-passed. In the same way the oil relief valves in the oil filter housing open if the resistance of the oil filter element is too high, e. g. when during starting the oil is still cold and viscous.

The opening pressure of the oil relief valve for the metal filter element is 2 atmospheres, that of the oil relief valve for the fine filter element, 1.2 atmospheres. The oil relief valve in the upper main passage in the crankcase is provided to ensure that a specified maximum oil pressure (6 atmospheres) is not exceeded.

The minimum oil pressure must not fall below 0.3 atmospheres with the engine warm and idling.

There may be various causes for any oil pressure difficulties, viz.:

- a) The oil relief valve in the oil passage (11) must close properly.
- b) There must be no leakage at the three plugs or at the oil relief valve in the oil passages (9) and (11).
- c) All oil passages must be free from obstructions.
- d) The oil pump must of course be in proper working order and there must be sufficient oil in the oil pan.
- e) The suction tube of the oil pump must not be broken.
- f) The crankshaft journals and the crankpins must not have too much radial play.
- g) The camshaft bearing journals must not have too much radial play.
- h) The oil passage in the camshaft must be closed at the rear side by a cover.
- i) The first bearing block for the camshaft must make a perfect seal with the cylinder head surface at the contact surface.
- k) The oil outlet hole at the separating surface in the crankcase and in the cylinder head must not be blocked by the cylinder head gasket.
- l) The cylinder head gasket must not be fractured at the oil slot (connecting passage from the oil outlet hole in the crankcase to the oil passage in the cylinder head).
- m) The fixing screw for the lower part of the oil filter housing must not be too long (see Section D, Para. 8, Note).