Description of the 1600 S-90 Engine

General

The 1600 S-90 engine (intern 616/7) is a further development of the 1600 S engine. The following description is principally concerned with the new developments.

Crankcase

The crankcase is a light alloy three piece casting consisting of two crankcase halves and a timing case cover. The three sections are machined as a unit and must be replaced as such. It is possible to replace the timing case cover separately.

In order to prevent the split steel shell bearing inserts from turning in the crankcase, index grooves have been cut into the bearing bores (dowel pins in the 1600 S engine).

Two dowel sleeves have been installed in the crankcase at main bearing No. 2 in order to secure the two crankcase sections.

Crankshaft and Connecting Rods

The four connecting rods run on steel shell split insert bearings on the crankshaft.

The connecting rods have bronze piston pin bushings.

The crankshaft, which is supported on three steel shell split insert bearings and one sleeve type light alloy bearing, is mild-nitrated on all bearing surfaces (1600 S engine has 4 light alloy main bearings). Main bearing No. 4 may be replaced by removing the timing case cover and therefore does not require that the crankcase be disassembled. Main bearing No. 1 acts as crankshaft thrust bearing. The flywheel (1600 S-90 engine 6.5 kg = 14.4 lb.; 1600 S engine 8.7 kg = 19.2 lb.) with integral starter ring gear is fastened to the crankshaft by a central gland nut and eight dowel pins. Crankshaft main bearing journals 1, 2 and 3 are 55 mm in diameter (1600 S engine 50 mm). The timing and distributor pinions are secured to the crankshaft by a woodruff key. The V-belt pulley is also secured by a woodruff key and is bolted to the end of the crankshaft. The crankshaft is sealed by an oil seal at the flywheel end and at the pulley end by an oil seal and oil slinger ring.

Pistons

The light alloy pistons of the 1600 S-90 engine have 4 rings; the bottom ring being an oil control ring (1600 S engine, 3 rings). The piston pins are fully floating and are secured by lock rings in the pistons.