Section E1

Introduction

The power unit is an over square, eight cylinder four stroke, designed in a 90° 'Vee' formation. The two banks, each of four cylinders are designated 'A' bank and 'B' bank; 'A' bank of cylinders is 25,40 mm. (1.0 in.) further forward than the cylinders of 'B' bank and is situated on the right-hand side when viewed from the driver's seat.

The engine has a bore of 10,4 cm. (4.1 in.) and a stroke of 9,9 cm. (3.9 in.), giving a total capacity of 6750 cc. (412 cu.in.). The compression ratio is 9:1, 8:1 or 7.3:1 depending upon the specification of the engine.

The crankcase is manufactured from cast aluminium alloy. It is fitted with detachable, full length, wet cylinder liners of centrifugally spun cast iron. Rubber 'O' rings are used at the top and bottom of each liner to 'seal in' engine coolant which is allowed to circulate directly onto and around the centre portion of the liners.

The crankshaft is forged from chrome molybdenum steel which is subsequently nitride hardened.

Five main bearings support the crankshaft. The bearings are split; steel backed shells, lined with an aluminium-tin material; they are retained in position by forged aluminium bearing caps. Crankshaft 'end float' is controlled by thrust washers fitted on each side of the centre main bearing.

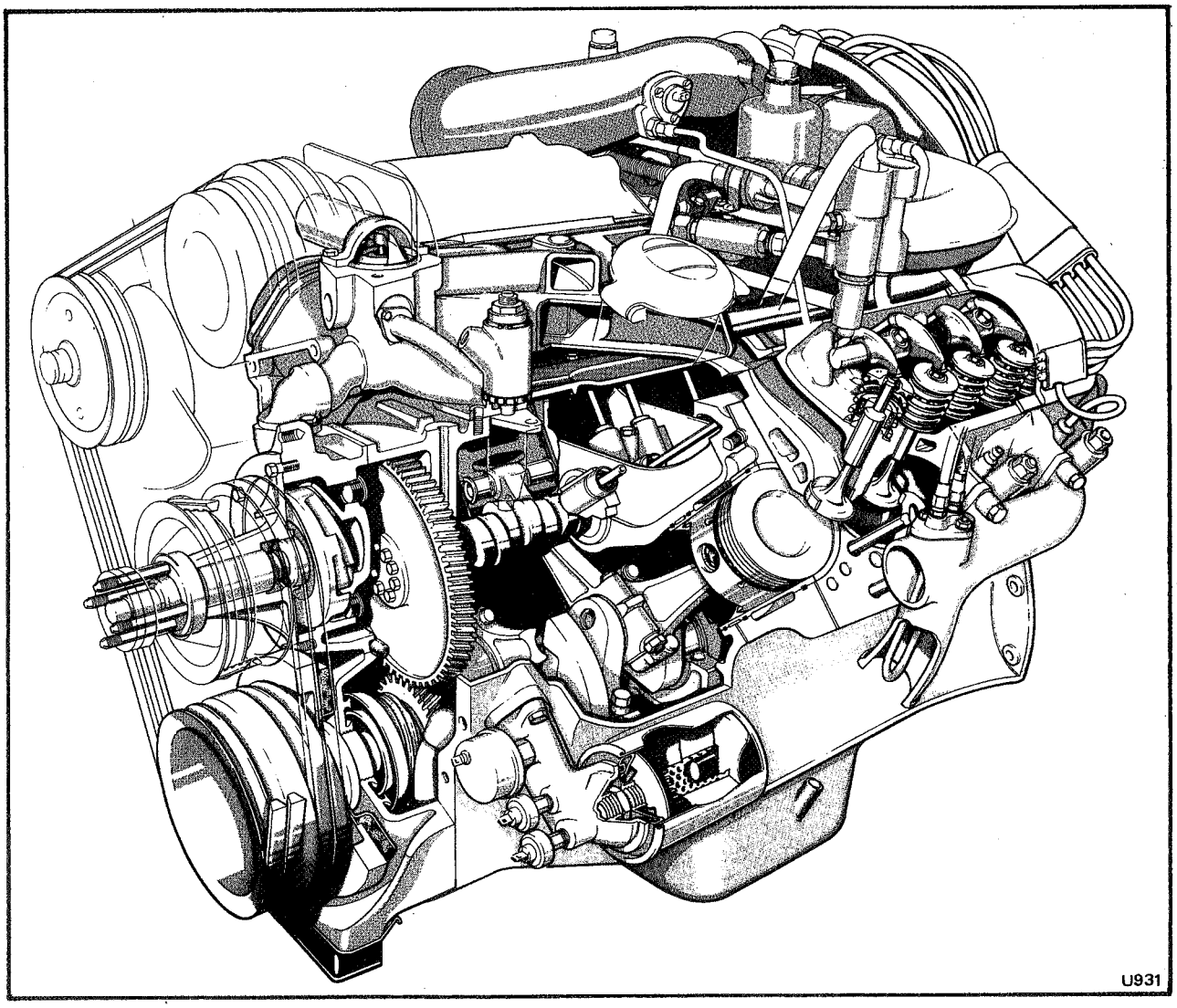

Fig. E1 Cut-away view of engine

The 'H' section connecting rods and caps are forged from either chrome molybdenum or nickel chrome molybdenum steel. The small end bushes are lead-bronze with a steel backing, the bushes are pressed into the connecting rods. The big-end bearings are split, steel backed shells with an aluminium-tin lining.

The pistons are manufactured from aluminium alloy and are tin plated. They are carried on fully floating, hardened steel gudgeon pins which are slightly off-set from the centre line of the piston towards the thrust face.

Each piston has three rings, two compression rings and an oil control ring.

The two aluminium alloy cylinder heads each have four seperate inlet and exhaust ports. The cylinder heads are fitted with phosphor bronze exhaust valve guides, cast iron inlet valve guides and austenitic steel valve seat inserts.

The exhaust valves are austenitic steel with a stellite tip and valve seat face. The inlet valves are alloy steel with induction hardened tips.

The overhead valve mechanism is operated by push rods, rocker arms and self adjusting hydraulic tappets from a centrally positioned camshaft which is carried directly in bores machined in the crank-case. The hydraulic tappets are carried in det-achable blocks located in the crankcase.

Two eccentrics on the camshaft drive the hydraulic pumps mounted on the tappet cover. These pumps provide the hydraulic pressure for the braking and height control systems.

Engine lubrication is provided by a pressurised system. First stage filteration is accomplished through a fine mesh strainer and pick-up located in the engine oil sump. Oil from the sump strainer passes into a gear type of pump situated at the front of the crankcase. The pump is driven by skew gears from the crankshaft. A relief valve in the oil pump regulates the oil pressure at approximately 2,8 kgf/ sq.cm. (40 lbf/sq.in.). Final filteration of the oil is through a disposible 'full flow' filter, prior to its circulation around the engine.

High pressure oil is delivered to the crankshaft, connecting rods, camshaft bearing surfaces, timing gears, tappets, push rods and rocker ball end seatings.

Low pressure oil is fed through the front cam-shaft bearing to the rocker shaft, rocker arms and valve tips. The connecting rod small ends, gudgeon pins and cylinder walls are splash fed with oil from the crankcase.

The engine is cooled by a mixture of anti-freeze and water circulating around the coolant passages. A coolant pump which is mounted at the front of the power unit and belt driven from the crankshaft, circulates the warm coolant around the engine, through the thermostat and then to the radiator where it is cooled.

Modifications were introduced onto the engine in the late part of 1979. Engines incorporating this package have the suffix letter B stamped on the crankcase immediately after the engine number (e.g. SYL 26907B) and are referred to as late engines in this Chapter.

Engine build code number

The engine build code number is stamped on a crankcase boss beneath the rear of the refrigeration compressor. The letters refer to the engine code and the number refers to the engine build sequence. **This is not the engine serial number.**