Engine Specification

1. Engine

The engine is an even-firing vertical twin-cylinder, having separate cylinders and heads and fully enclosed overhead valve gear. The oil is carried in a sump at the bottom of the crankcase and is pressure fed to big ends and valve rockers. A massive one-piece high-strength spheroidal graphite cast iron crankshaft is used.

2. Cylinder Heads

The cylinder heads are die-cast from light aluminium alloy with ample finning to ensure adequate cooling. The exhaust pipe inserts are cast-in and the valve inserts are of austenitic iron and are shrunk in so that they are replaceable. The large capacity induction ports are streamlined and blended to the valve seatings.

3. Cylinders

The separate cast-iron cylinders have a nominal bore of 71 mm, the stroke being 93 mm. The cubic capacity of the engine is 736 c.c. The cylinder heads are located on the cylinders by hollow dowels and the joint between head and barrel is made by a split, triangular section steel ring which seats on a chamfer at the top end of the cylinder barrel and stands about .005 in. proud of the joint face. The push rod tunnels are sealed by washers of special heat and oil resistant rubber bonded to metal and fitting in recesses in the cylinder head.

4. Pistons

The pistons are made of low expansion aluminium alloy, heat treated and form ground taper and oval. Each piston carries two taper faced compression rings and a special dual oil control ring.

One compression plate, .022 in. thick, is fitted below each cylinder barrel when the compression ratio is 8.5 to 1. With the plates removed the ratio is raised to 9 to 1.

5. Connecting Rods

The connecting rods are produced from stampings of Hiduminium RR56 light alloy. The little end bearings are of alloy direct on to the gudgeon pin. In case of wear after long service the little end can be bored out and fitted with a bush, but this is rarely necessary.

The big end bearings consist of white-metalled steel liners which are renewable. The detachable bearing caps are bolted to the connecting rods by means of high tensile socket screws, the heads of which are drilled for wiring.

6. Crankcase

The combined crankcase and oil tank is die-cast from light alloy in two halves, being split vertically.

7. Crankshaft and Flywheel

The crankshaft is cast in one piece, integral with the massive central flywheel, from high quality spheroidal graphitic cast iron. The total weight is approximately 24 lbs., and all crankshafts are dynamically balanced.

The main journals are ground, and the big end journals are ground and hand lapped.

8. Main Bearings

Heavy duty bearings are provided for the crankshaft, the driving side being ball and the timing side roller.

9. Camshafts

The camshafts are machined from drop forged steel stampings with the cams and bearings hardened and ground.

The camshafts are located in the crankcase and run in bronze bushes in the left hand case and in detachable aluminium housings which are bolted to the timing side crankcase. This enables the camshafts to be changed, if so desired for tuning purposes, without the necessity of dismantling the crankcase.

10. Valves

The inlet valves are machined from stampings of special Silicon-Chrome Valve Steel and the exhaust valves are of High-Nickel-Chromium-Tungsten Valve Steel with the stems Stellite-tipped.

11. Valve Gear

The valves are operated from the camshaft by means of large, flat-based, guided tappets, tubular alloy push rods with induction hardened steel ends and overhead rockers. Two compression springs are fitted to each valve secured by Bullock Type split collets locking in high strength aluminium collars. The springs are specially designed to give a variable rate on compression.

12. Timing Drive

The camshafts are driven by an endless chain from the timing sprocket on the crankshaft and the tightness of the chain can be adjusted by means of the chain tensioner in the timing chest.

An extension of the front camshaft drives the contact breaker housed in the timing cover.

A tachometer gearbox is mounted on the left hand crankcase and is driven by the front camshaft.