

**WEBRA PICCOLO****Specification**

Displacement: .78 c.c. (.047 cu. in.)
 Bore: .415 in. (10.5 mm.)
 Stroke: .354 in. (9 mm.)
 Bore/stroke ratio: 1.17
 Weight: 1.6 ounces
 Max. B.H.P.: .062 at 13,500
 Max. torque: 5.2 ounce-inches at 9,000 r.p.m.
 Power rating: .08 B.H.P. per c.c.
 Power-weight ratio: .039 B.H.P. per ounce
Material specification
 Crankcase unit: light alloy pressure die casting

Cylinder—hardened steel
 Cylinder jacket: anodised dural
 Crankshaft: hardened steel
 Piston: cast iron
 Contra piston: cast iron
 Connecting rod: dural
 Crankcase end cover: turned dural
 Propeller driver: turned dural
 Spraybar assembly: nickel plated brass
 Crankcase bearing: plain

British Agents
 Model Aircraft (Bournemouth) Ltd.
 Price:
 £3 8s. 6d. (including Purchase Tax).

Double ENGINE ANALYSIS Nos. 113 & 114

WEIGHING JUST A fraction over $1\frac{1}{2}$ ounces, the 'Piccolo' is an extremely compact diesel of squat form, made possible by the very short stroke. Since it first appeared circa 1954 the design has undergone some detail changes. Externally these changes are seen in the new crankcase casting, now with lugs for beam mounting rather than radial mounting as standard on the original, and a longer intake tube. The single bent compression screw has given way to a tommy bar and the screw is also fitted with a locking lever. A spring starter is fitted as standard and the needle valve is now extended and angled back, the end of the wire being fitted with a plastic knob as a finger grip.

Internally the changes are mainly detail improvements and simplification from the production point of view. Construction is orthodox, with a hardened steel cylinder screwing into the crankcase unit, surmounted by a screwed on finned dural jacket. Exhaust ports are cut through the cylinder flange whilst three arc shaped transfer passages are milled up the inside cylinder walls, spaced 120 degrees apart. Tops of the transfer passages are angled and tapered and overlap the exhaust opening slightly.

The piston is of cast iron, quite shallow in depth and perfectly plain (cylindrical) in form. The hardened steel crankshaft has a plain (unbalanced) web. The connecting rod is a light alloy die-casting or forging. Crankcase volume is reduced to a minimum by the back cover which screws in virtually up to the end of the crankpin position. The dural propeller driver is pressed onto a knurled section of the shaft, the shaft terminating just in front of the driver. The propeller shaft is a .118 in. diameter (3 mm.) screw.

The needle valve assembly is comparatively massive and is angled back some 20 degrees. All components, with the exception of the steel needle, are of nickel plated brass. The fuel pipe fitting is large for an engine

of only .8 c.c. and requires the use of fairly large bore fuel line. The shape of this fitting is more consistent with the use of neoprene or soft fuel tubing than the usual British standard.

We found the 'Piccolo' definitely fussy as regards starting, although relatively easy to adjust once running. It appears to need a higher-than-average ether content in the fuel for easy starting and is much better to handle when the ether content is 45 per cent., although this fuel ratio produces some loss of power and a tendency to slight inconsistency when running at high speeds. A minimum ether content of 33 per cent. appears to give best power performance, with the addition of a little amyl nitrate to smooth the running. With less ether the 'Piccolo' is distinctly reluctant to start at all. For use as a sports engine, therefore, we would definitely recommend the higher ether content (45 per cent.). With less ether the 'Piccolo' is very prone to flooding before it fires, when starting is impossible before the engine has been cleared. The engine will also flood readily if the needle valve is opened too far for starting—e.g. more than three turns.

The 'Piccolo' is a well made sports engine which, once familiar with its handling characteristics, is easy enough to handle. It is definitely an engine for running on small propellers—nothing bigger than a 6 x 4, which should be about the ideal for almost any matching size of model. Vibration level is fairly high, so the compression locking bar is useful, although not essential on the engine we tried where the contra piston fit was very good. Both compression and needle controls are easy to handle and conveniently placed. The spring starter is as much a 'gimmick' as anything, although it is sensibly designed and works quite well provided the engine is correctly primed. For general handling we found it easier, if anything, to flick start since this is not an engine characterised by 'first time' starting.

