

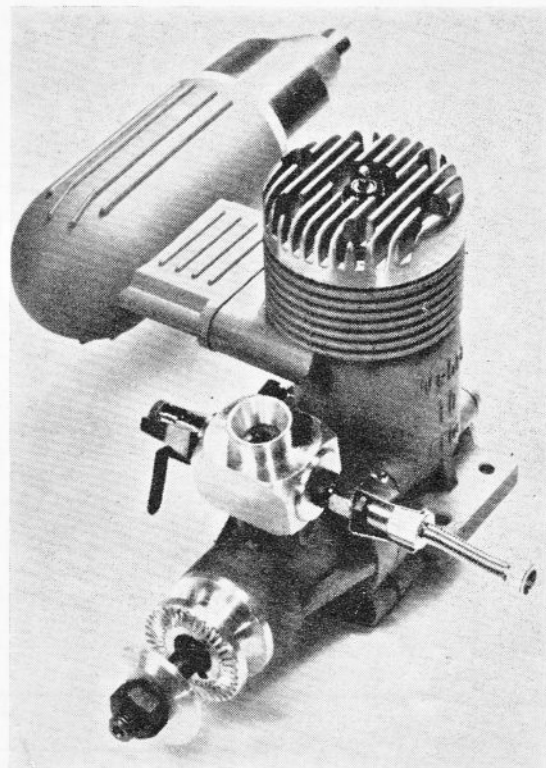
Peter Chinn's
FULL TEST REPORT on the

WEBRA 61 R/C

**"Powerful, well-made and
with excellent throttle
control"**

THE Webra 61 R/C was first shown to the modelling public at the Nuremberg Fair just a year ago and deliveries of production models began last summer. Although the basic design of the Webra is much the same as that of a number of other current 10 c.c. R/C motors, it is set apart by some interesting different features. These are not mere gimmicks: for the most part they account for a definite contribution to the performance or durability of the engine.

At the present time, the Webra 61 R/C is enjoying an encouraging acceptance in the United States, where it is distributed by the Model Rectifier Corporation. M.R.C. are, of course, well known as importers of the Japanese Enya engine range, with which they have had considerable success. The U.S. very much reflects the acceptance rating of engines in the highly competitive .60 cu. in. R/C class. Just about every foreign, as well as domestic, product is available in the U.S.A. and any new model making its debut there, is therefore exposed immediately to an experienced and critical audience. The fact that the Webra appears to have been well received in



America, would seem to confirm our own favourable test findings on this engine.

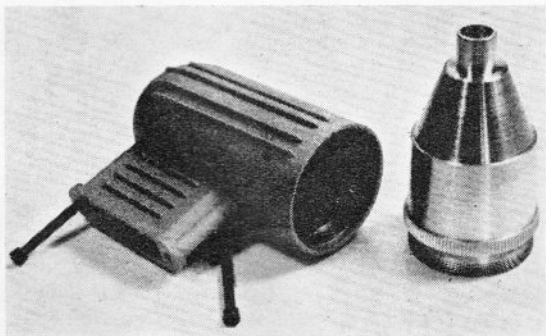
Design & Construction Summary

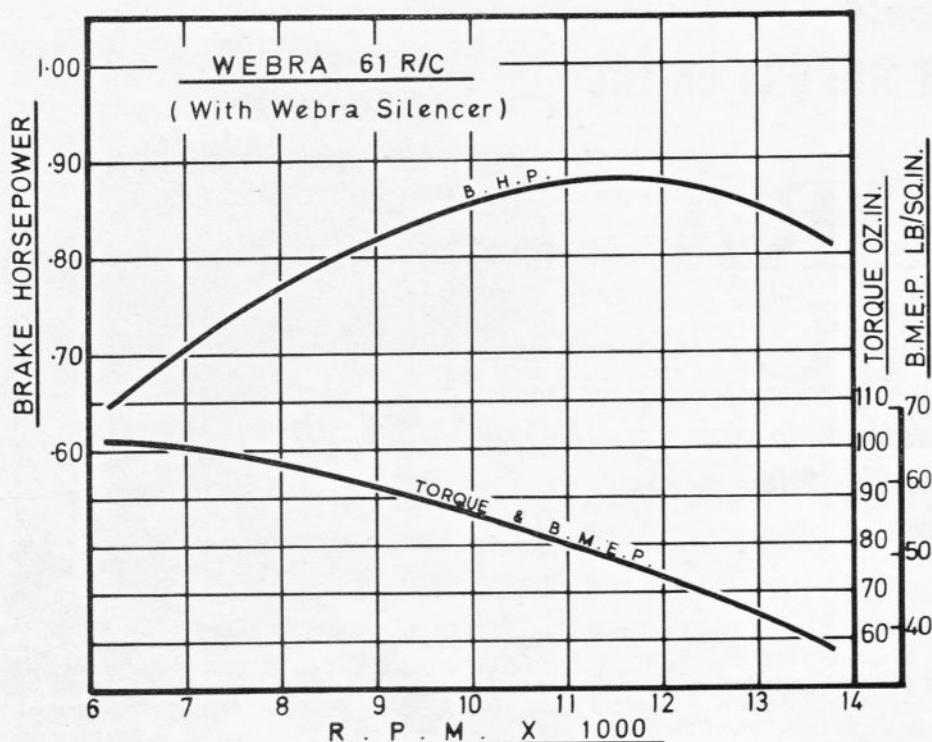
Main Casting This comprises the crankcase and full length finned cylinder casing and is, as usual, of pressure die cast aluminium alloy. It includes substantial beam mounting lugs and a strong exhaust duct, the ends of which are drilled and counterbored for the silencer fixing screws.

Cylinder Liner Steel, hardened and honed and closely fitted to the main casting. Four exhaust ports, timed to open and close at 63 degrees each side of B.D.C. Four transfer ports, timed to open and close 52 degrees each side of B.D.C. Two 6.8 mm. dia skirt transfer ports.

Crankshaft & Prop Drive Assembly Counterbalanced, hardened steel crankshaft having 15 mm. dia. main journal, 9.5 mm. dia. front journal and 6 mm. dia. pressed-in crankpin. Rectangular valve port timed to open at 35 deg. after B.D.C. and to close at 50 deg. after T.D.C. and admitting gas to 11 mm. bore gas passage through main journal. Machined aluminium prop driver on parallel 95 mm. dia. shaft length and fixed by 2.5 mm. square sunk key.

Front Housing and Backplate Pressure die cast aluminium bearing housing containing one SKF 15 x 32 mm (rear) and one SKF 9.5 x 22 mm. (front) ball journal bearings. Housing attached to main cast-





GENERAL INFORMATION

Manufacturer: Fein und Modell T

Oranienstrasse 6, German Feder

U.K. Distribution: Model Aircraft

Norwood Place, Bournemouth, H

Type: Throttle equipped, shaft rotary

with twin ball bearings and rin

Bore and Stroke: 25 x 22 mm. (0.9

Stroke/Bore Ratio: 0.917:1.

Displacement: 9.953 c.c. (0.6074 cu

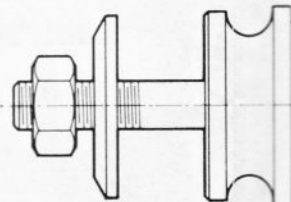
Optional Extras: Expansion

chamber type silencer, 1/2 light

2.8 oz.

Also Available: Water-cooled

marine model with flywheel.



ing with four Allen screws. Pressure die cast aluminium backplate attached with four hexagon head screws.

Piston and Connecting-Rod Assembly Machined low-expansion aluminium piston with flat crown, straight baffle and two 6.8 mm. dia. skirt transfer ports. Special single Goetze piston ring. Machined aluminium alloy connecting rod with unbushed big-end honed to close fit on crankpin and with 5 mm. i.d. caged needle-roller bearing small-end. Hardened and ground gudgeon-pin, push fit in piston bosses and retained by circlips.

Cylinder-Head Pressure die cast aluminium with deep cooling fins and attached with six Allen screws. Hemispherical combustion chamber with squish-band and slot for piston baffle clearance. No gasket: machined joint face makes metal-to-metal joint with ground rim of cylinder liner. Standard non-shielded type Webra glowplug of medium reach (5 mm.) located centrally in head.

Carburettor Basically a barrel throttle type with separate high-speed and low-speed needle-valves and an automatic mixture control. The machined aluminium carburettor body contains a ground steel throttle barrel, which moves laterally inward in the body as it rotates towards the closed position. Installed in the outer end of the barrel is the needle which controls the idling mixture and, as the barrel moves inward, the tip of this needle enters the main jet, thereby reducing fuel flow. By screwing the idling

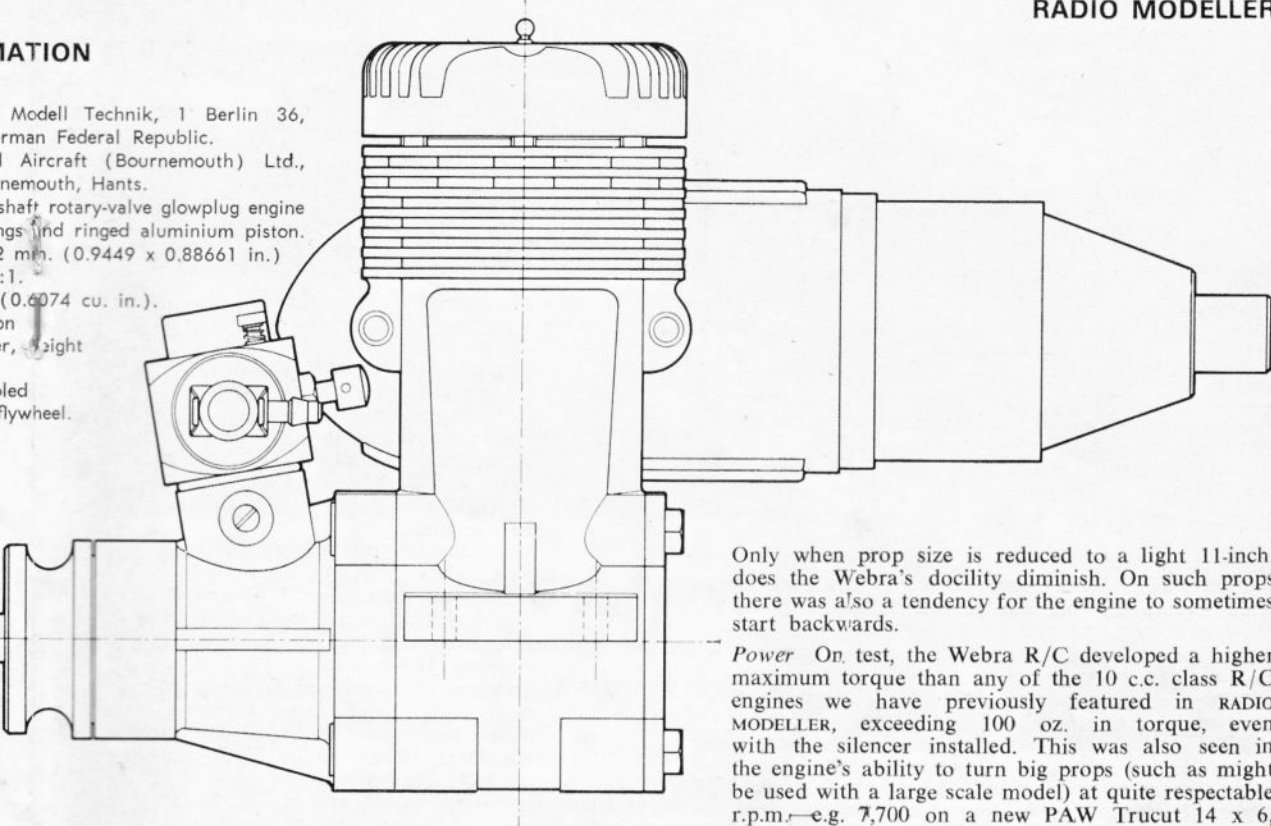
needle in or out, the strength of the idling mixture can be adjusted. The high speed mixture is, of course, controlled in the normal way by the main needle valve which is mounted in the opposite end of the carburettor body.

Silencer As supplied, the Webra is fitted with a pivoted plate type exhaust restrictor linked to the throttle arm, but, for use in the U.K. and most European countries, this will, of course, normally



ATION

Modell Technik, 1 Berlin 36,
German Federal Republic.
Aircraft (Bournemouth) Ltd.,
Bournemouth, Hants.
shaft rotary-valve glowplug engine
rings and ringed aluminium piston.
2 mm. (0.9449 x 0.88661 in.)
: 1.
(0.6074 cu. in.).
on
er, sight
led
flywheel.



be replaced by a silencer. The manufacturer therefore offers a silencer designed for the 61. This is a large capacity expansion chamber, consisting of a pressure cast body and duct with screw-in rear section.

Test Performance

Tests were undertaken on a stock model supplied by the factory in Germany, using our standard R/C test fuel containing 5% pure nitromethane and with the maker's silencer fitted. Atmospheric temperature at the time of testing was 67 deg. F. and barometric pressure was 29.65 in. of mercury. The engine was given approximately 1½ hours of accumulated running time before performance tests were carried out.

Starting and Running Thanks to the excellent piston-ring, the Webra had notably good compression from new and this was immediately reflected in very good starting qualities. No cylinder priming was called for, the engine starting readily after intake choking only. Exhaust priming would, in any case, be difficult with the silencer fitted as no priming hole is provided. In cold weather, stickiness from residual oil might making a prime desirable for an initial start, in which case, priming through the plug hole would probably be best.

The Webra's compression ratio appears to strike a reasonable balance between a figure high enough to ensure a good power output and one low enough to avoid excessively vicious handling characteristics.

Only when prop size is reduced to a light 11-inch, does the Webra's docility diminish. On such props there was also a tendency for the engine to sometimes start backwards.

Power On test, the Webra R/C developed a higher maximum torque than any of the 10 c.c. class R/C engines we have previously featured in RADIO MODELLER, exceeding 100 oz. in torque, even with the silencer installed. This was also seen in the engine's ability to turn big props (such as might be used with a large scale model) at quite respectable r.p.m.—e.g. 7,700 on a new PAW Trucut 14 x 6, 8,300 on a Top-Flite 14 x 6 and 9,700 on a Top-Flite 13 x 5½. These figures, achieved with the silencer fitted, are better than most engines have recorded without silencers. (The Webra silencer, incidentally, reduced revolutions by 150-250 rpm on these prop sizes).

Turning to the more commonly used prop sizes, the Webra recorded 9,600 on a Trucut 12 x 6, 10,400 on a Power-Prop 12 x 6, 10,700 on a Power-Prop 11 x 8 and 11,000 on a Top-Flite 11 x 6. At 11,000 to 12,000 rpm—i.e. the speed around which peak output is delivered with the silencer added—the silencer accounts for a drop of about 500 rpm. This is not excessive by comparison with other engine/silencer combinations.

As the graph shows, maximum output reduced on test reached a highly respectable 0.88 bhp at between 11,000 and 12,000 rpm. Less silencer, the Webra achieved almost one horsepower at a speed approaching 12,500 rpm.

Throttling The Webra carburettor is one of the best we have encountered to date. It was easy to set up and gave reliable idling speeds of between 2,000 and 2,500 rpm, according to prop size. Recovery after long periods of idling was excellent, as was the response to intermediate throttle settings.

Comment

A soundly designed engine with some interesting and worthwhile features. Not cheap, but definitely among the best of currently available large R/C engines. Powerful, well made and with excellent throttle control.