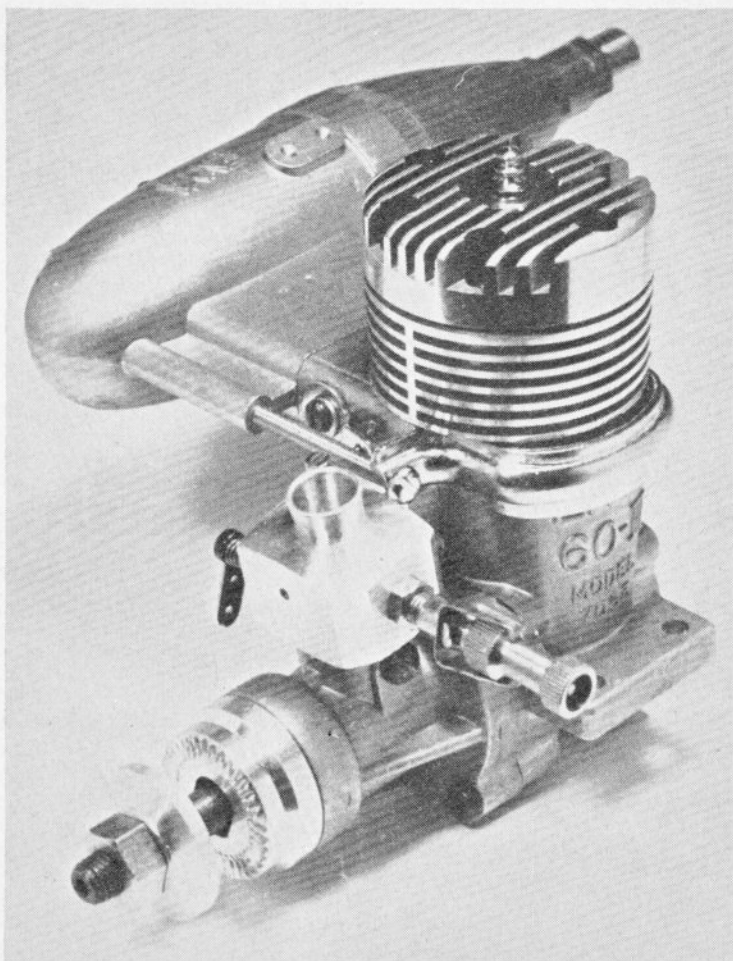


Peter Chinn
tests the
ENYA
60-III TV

“... Up-rated to the order of 25-30 per cent more bhp by comparison with their predecessors.”

ENYA engines are once again being imported into the U.K. Very shortly, Ripmax will begin distributing several models in the extensive Enya glow motor range and one of these will be the 10 c.c. Enya 60-III TV (Model 7033) radio-control motor that was first put on the market in Japan last October.

Immense strides have been made during the last couple of years in raising the power output of existing well-known R/C 60 engines. The “Series III” Merco 61, the “GP” Series O.S.60 and the “Blackhead” version of the Webra 61 have all been up-rated to the order of 25-30 per cent more bhp by comparison with their predecessors. Now, in the 60-III TV (Model 7033) version, the Enya



Company has achieved a similar advance on the performance of their 60-II TV (Model 7032) first marketed in 1965.

Design & construction summary

Main Casting.—This comprises the crankcase (with integral backplate) and full length cylinder casing in pressure diecast aluminium alloy. It includes wide beam mounting lugs and is stronger and heavier than that of the Model 7032 casting.

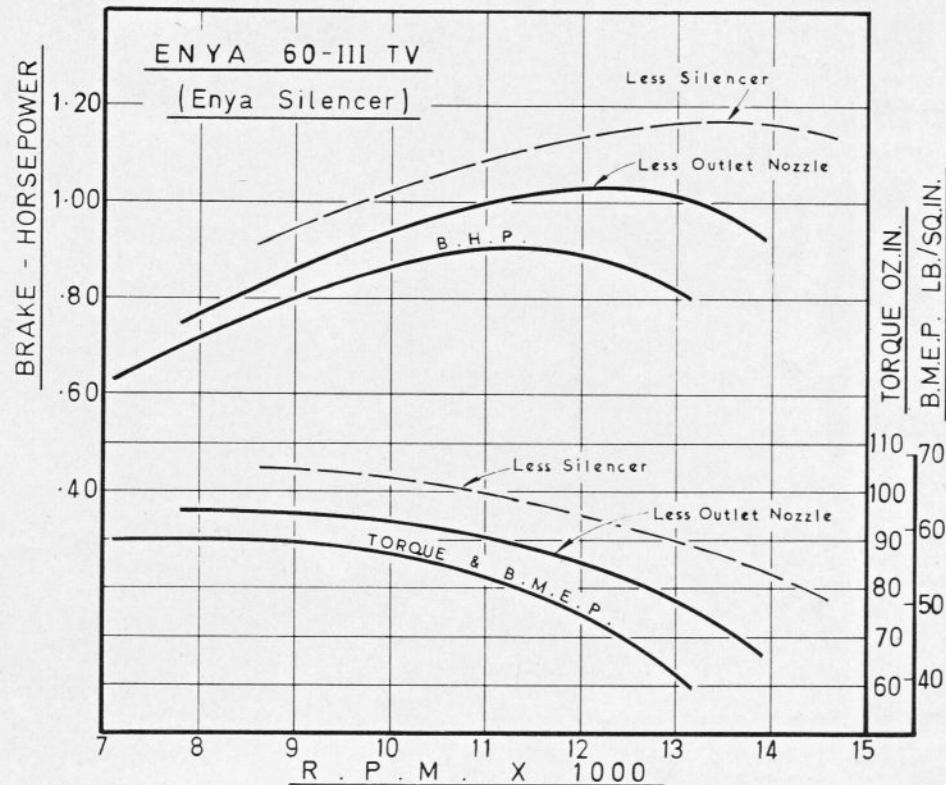
Cylinder Liner.—Close slip fit in main casting. Five exhaust ports, timed to open and close 66 deg. each side of BDC. Four transfer ports, timed to open and close 60 deg. each side of BDC. Two 8 mm. wide elongated skirt ports.

Crankshaft and Prop Drive Assembly.—Counterbalanced harden-

ed steel crankshaft having 15 mm. dia. main journal, 9.5 mm. dia. front journal and 7.0 mm. integral crankpin. Rectangular valve port, timed to open at 38 deg. ABDC and to close at 53 deg. ATDC and admitting gas to 11 mm. bore gas passage through main journal. Machined aluminium alloy prop driver located by parallel flats on shaft. Aluminium prop retaining washer and steel hexagon nut.

Front Housing and Bearings.—

Pressure diecast aluminium alloy main bearing housing with intake boss for carburettor and containing one 15 x 32 mm. 9-ball brass caged ball journal bearing at the rear and one 9.5 x 22 mm. 7-ball steel caged shielded ball journal bearing at the front. Housing aligned in crankcase by o.d. of rear ball-bearing and secured with four Phillips' head screws.



General Information

Manufacturer: Enya Metal Products Company Ltd., 1-21-10 Araicho, Nakanoku, Tokyo, Japan.
U.K. Distributor: Ripmax Ltd., 80 Highgate Road, Kentish Town, London, N.W.5.

Type: Throttle equipped, shaft rotary valve, glowplug engine with twin ball-bearings and ringed aluminium piston.

Bore and Stroke: 24.0 x 22.0mm. (0.9449 x 0.8661in.)

Stroke/Bore Ratio: 0.917:1

Displacement: 9.953cc = 0.6074 cu. in.

Checked Weights:
 (i) 427 grammes — 15.06oz. (with exhaust baffle, less silencer).
 (ii) 511 grammes — 18.02oz. (with exhaust baffle, with Enya 60-III silencer).

Optional extras: Enya 60-III expansion chamber type silencer with removable restrictor nozzle.

Also available: Water-cooled marine model.

Price: £23.10.0. Silencer £2.9.6

Piston and Connecting-rod Assembly.—Piston machined from aluminium alloy bar with flat crown, straight baffle and two 7.7 mm. dia. skirt ports. Piston has bronze bushed gudgeon-pin holes for reduced wear and is fitted with two compression rings. Forged aluminium alloy connecting-rod with bronze bushes at both ends. Fully floating 1/4 in. dia. tubular gudgeon-pin with brass end pads.

Cylinder-Head.—Pressure diecast aluminium alloy with deep cooling fins and brass bushed plug hole. Shallow hemispherical combustion chamber shape with narrow squish band and slot for piston baffle clearance. No gasket: machined joint face makes metal-to-metal joint with ground rim of cylinder liner. Head secured to cylinder casting with six Phillips screws.

Carburettor.—Barrel throttle type with automatic mixture control. Machined aluminium alloy carburettor body with ground steel throttle barrel. Needle valve and fuel inlet assembly fitted on left side of carburettor and feeding in-

to shallow chamber adjacent to end of throttle barrel. Jet fixed in throttle barrel. Fuel conveyed to jet via bypass channel in carburettor body and tapered groove in surface of throttle barrel which meters more fuel as throttle is opened. Fine control of idle mixture by means of orthodox adjustable airbleed. Conventional stop screw for setting idling speed.

Silencer.—The Enya 60-III TV incorporates a semi-rotary type exhaust restrictor linked to the throttle arm. This is fitted in the exhaust duct and does not, therefore, have to be removed when the standard Enya silencer is added.

The 60-III type silencer is a simple expansion chamber without baffles and is of pressure diecast aluminium construction. It is longer than the earlier 60-II type silencer and has a screw-in 8 mm. i.d. outlet nozzle that can be removed to release greater power where conditions allow less effective silencing. The silencer is attached to the engine by means of a plated steel clamp and two screws and has a pivoted outer plate to give access to the exhaust port for priming. There is also provision for drilling and tapping the expansion chamber for a pressurised fuel system.

Test performance

Our test unit came direct from the Enya Metal Products Company Ltd. in Tokyo and had ap-

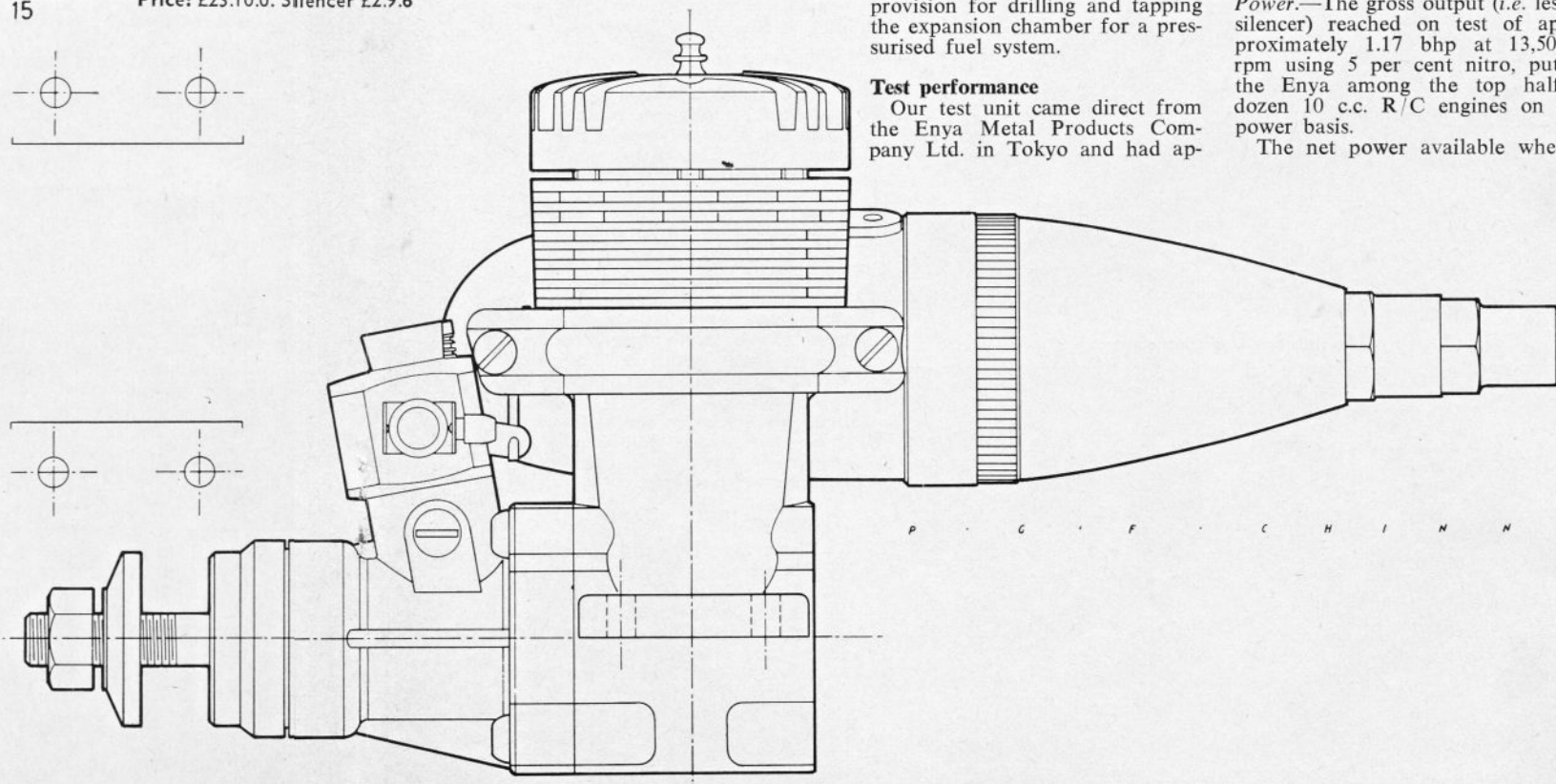
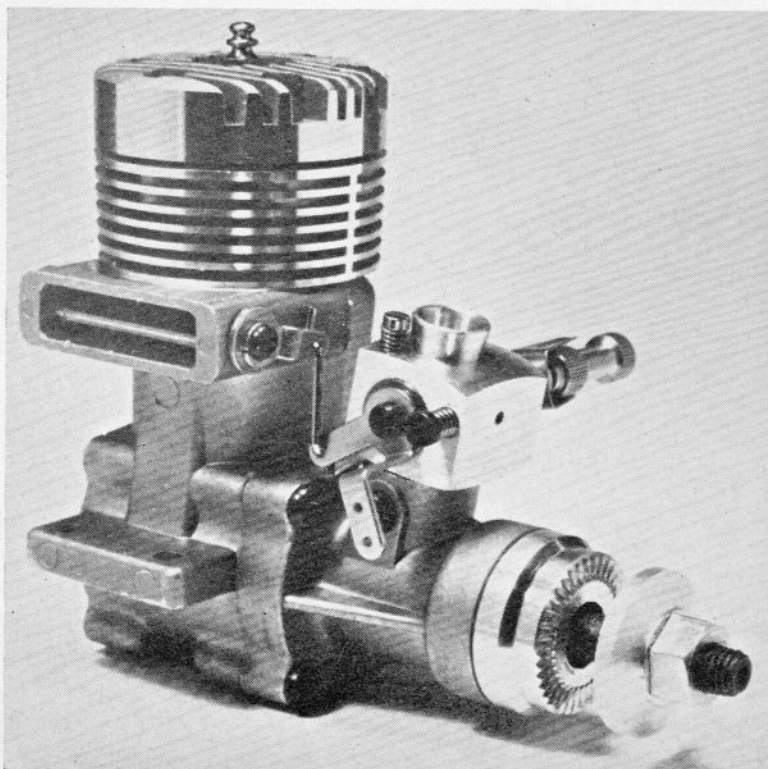
proximately 3 hours total running time before being subjected to our test procedures.

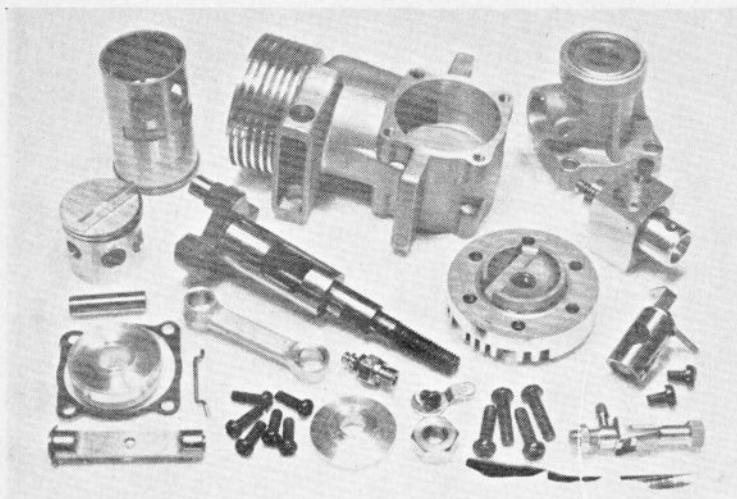
All subsequent running was carried out on our standard R/C test fuel containing 5 per cent pure nitromethane and using Enya No. 3 platinum rhodium filament glow-plugs. The atmospheric temperature at the time of testing ranged from 48 to 50 deg. F and barometric pressure was 29.70 in. Hg.

Starting and Running.—One of the less endearing characteristics of the earlier Enya 60-II model was its habit of occasionally back-firing when being started and throwing its prop loose or running backwards. In the 60-III these tendencies appear to have been reduced if not entirely eliminated. With our test motor, a slight tendency to kick back remained and we would not rate the engine as quite so smooth-running and docile as one or two other top ranking R/C 60's that we have handled recently but, in general, the engine's starting and running qualities were good. It held steady speeds on all practical prop sizes and there was no loss of power on warming up.

Power.—The gross output (*i.e.* less silencer) reached on test of approximately 1.17 bhp at 13,500 rpm using 5 per cent nitro, puts the Enya among the top half-dozen 10 c.c. R/C engines on a power basis.

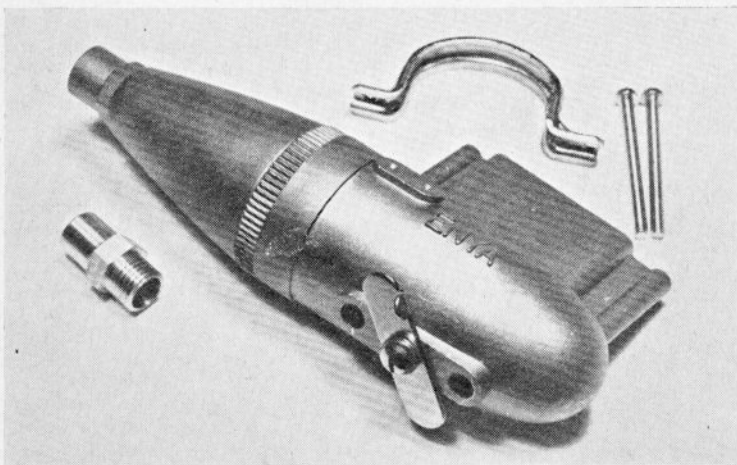
The net power available when



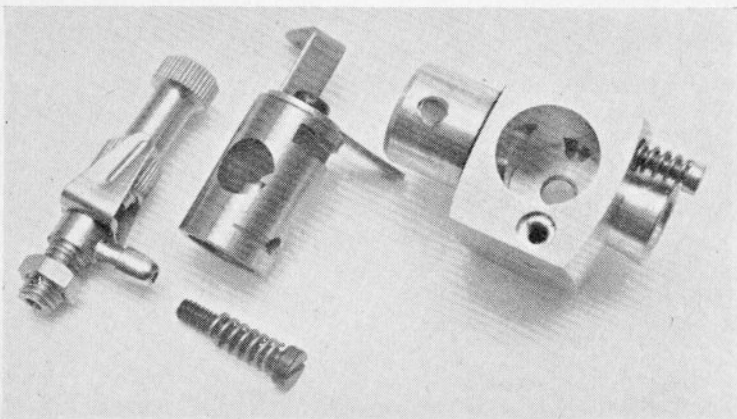


Above: the parts laid out for inspection.

Below: the silencer with screw-in nozzle removed.



Below: the new Enya throttle assembly.



the engine is installed in a model complete with silencer, is, however, reduced to about 0.90 bhp at between 11,000 and 11,500 rpm. This is with the silencer's 8 mm. i.d. outlet nozzle in place and the degree of exhaust muffling obtained is good.

Removal of the nozzle increases the silencer outlet area by some 50 per cent and power, on test, was then raised to over 1.0 bhp at 1,000 revs higher up the scale. The level of silencing obtained is of marginal acceptability but is no worse than that of some of the "venturi" type silencers at present on the market.

Typical prop rpm obtained on test with the silencer in standard trim (with nozzle) included 7,200 on a 14 x 6 PAW Trucut, 8,300 on a 14 x 6 Top-Flite Maple, 9,700 on a 13 x 5½ Top-Flite, 10,300 on a 12 x 6 Top-Flite Maple, 10,500 on an 11 x 7½ Rev-Up, 11,100 on an 11 x 7½ Power-Prop Maple, 11,000 on an 11 x 7 Top-Flite Maple and 11,700 on an 11 x 6 Top-Flite Maple. For aerobic contest work, the engine should be at its best on an 11 x 7 or "fast" 11 x 7½. Removal of the nozzle will raise static rpm on such a prop by about 400, rising to 500-600 in the air.

Throttling

The main needle-valve setting required on our test motor, with silencer, was between 2½ and 3 turns open. The engine would cut without warning if the needle was closed down too far, especially on the smaller prop sizes, but the carburettor was otherwise very easy to adjust. The degree of built-in mixture control appears to be just right, giving steady two-stroking from peak power down to just above idling speed, with a fairly linear response. The final idling adjustment on any given prop was obtained very positively with the airbled screw; the engine responding immediately as the screw was turned a quarter or half turn rich or lean.

Comment

Three years ago the Enya 60-II TV received a tremendous boost when it was used by Phil Kraft in winning both the U.S. Nationals and the World Championship R/C aerobatics events. The 60-III TV is more powerful and has a more advanced throttle design. It is heavier but also stronger. We feel that it is an all-round improvement on its famous predecessor.