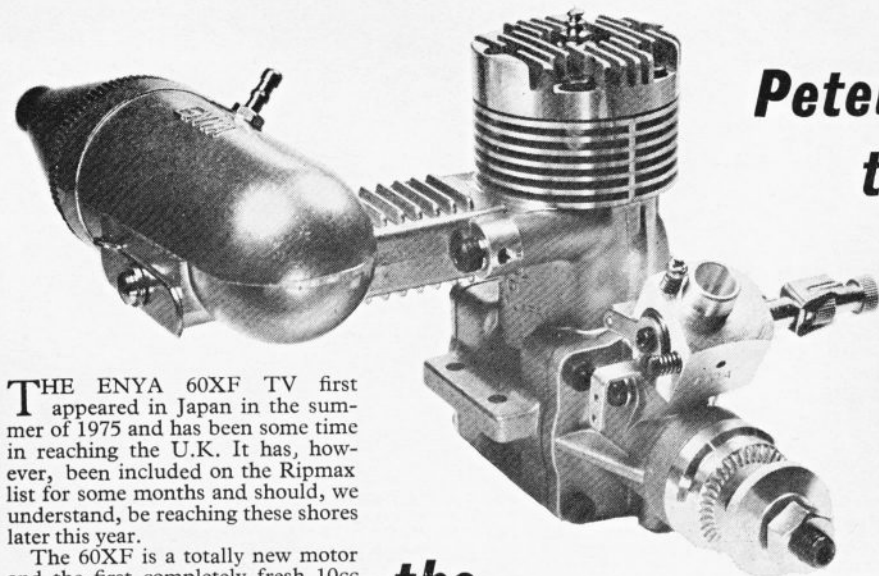


Peter Chinn tests...



THE ENYA 60XF TV first appeared in Japan in the summer of 1975 and has been some time in reaching the U.K. It has, however, been included on the Ripmax list for some months and should, we understand, be reaching these shores later this year.

The 60XF is a totally new motor and the first completely fresh 10cc design from the Enya brothers since the Enya 60 Series II was launched in 1965, subsequently developed into the 60-III and 60-IIIB models. It is, incidentally, supplementary to the 60-IIIB, the latter remaining in production for the benefit of those who require a more moderately priced 10cc R/C engine.

The 60XF belongs to the new generation of high performance 10cc R/C motors and, as one might expect, features Schnuerle scavenging. It does, however, have one rather unusual feature. Like the Super-Tigre G.60FI-ABC engine dealt with some months ago in this series,

the

ENYA G60 xF

it uses a ringless aluminium piston running in a chromed cylinder bore. Instead of the ABC engine's brass liner, however, the Enya uses an aluminium sleeve. The alloy sleeve expands slightly more than a brass one but, like the latter, offers better heat transference to the surrounding

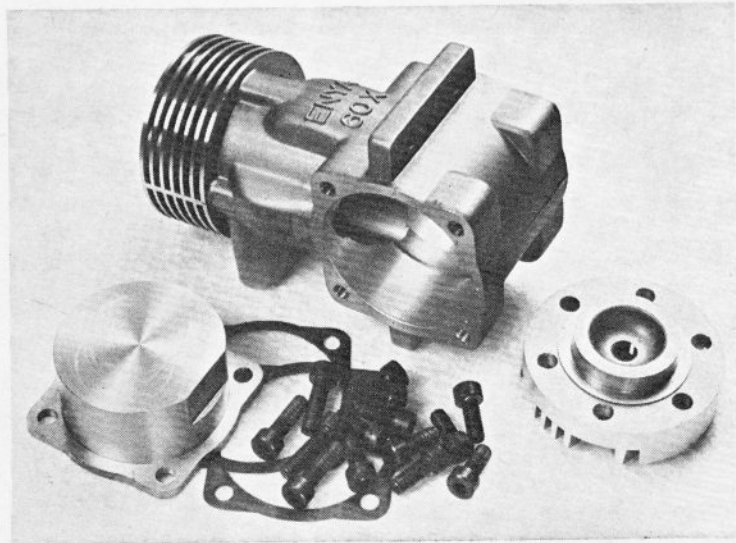
casting than does a ferrous liner. This is not the first time that a chromed aluminium sleeve has been used but it is, so far as we recollect, the first time that a chromed aluminium bore has been employed in conjunction with a ringless piston.

The 60XF is bigger and heavier than the 60-IIIB but, as we shall see, it fully makes up for this in added performance.

Design and construction

Main casting. This comprises the crankcase barrel and full-length finned cylinder casing in pressure die cast aluminium alloy. It incorporates cored transfer channels, an exhaust duct on the right side, drilled and tapped for silencer attachment, and the usual beam mounting lugs.

Cylinder liner. The drop-in cylinder liner is machined from low expansion aluminium alloy and has a slightly tapered chromium plated bore. It has a wall thickness of 2.25 mm and is located by the usual top flange. Single unbridged exhaust port timed to open and close at 68 deg. each side of BDC. Two main transfer ports, located fore and aft, angled to direct gas flow to the left side of cylinder and slightly upward and timed to open and close at 58 deg. each side of BDC. Third port





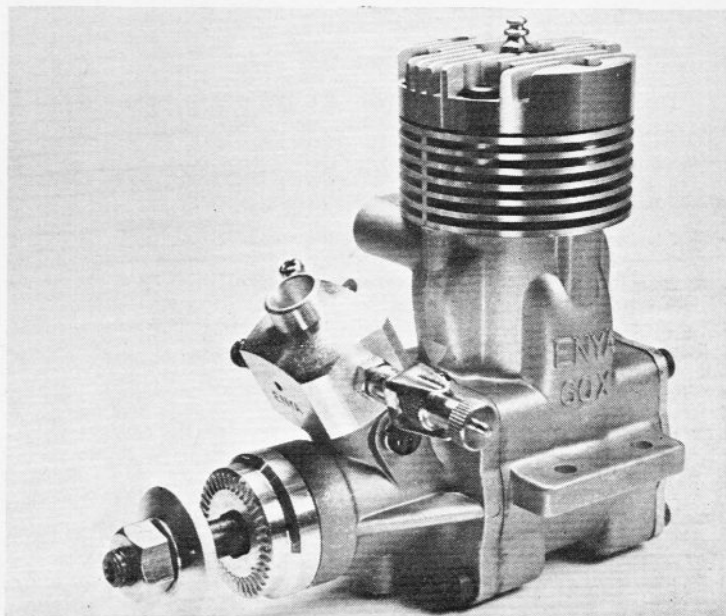
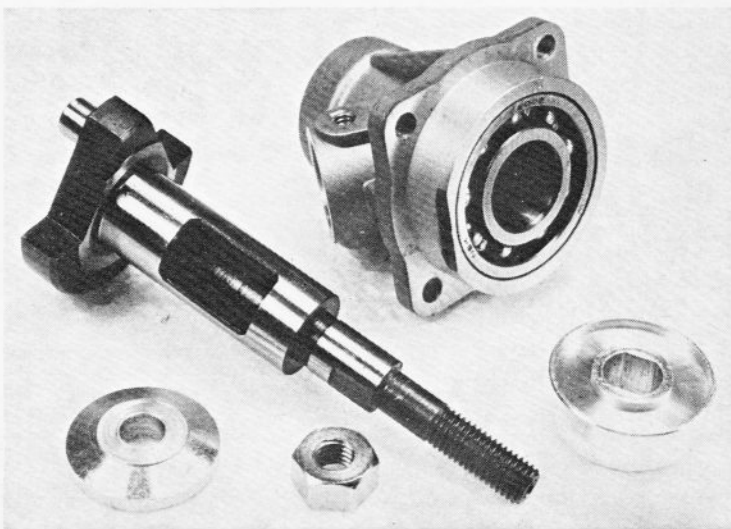
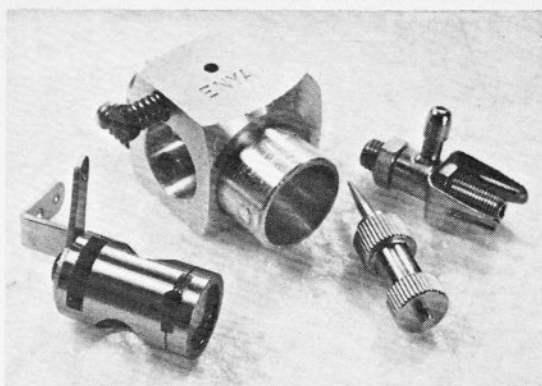
diametrically opposite exhaust port, angled to direct gas upward and timed to open and close at 57 deg. each side of BDC.

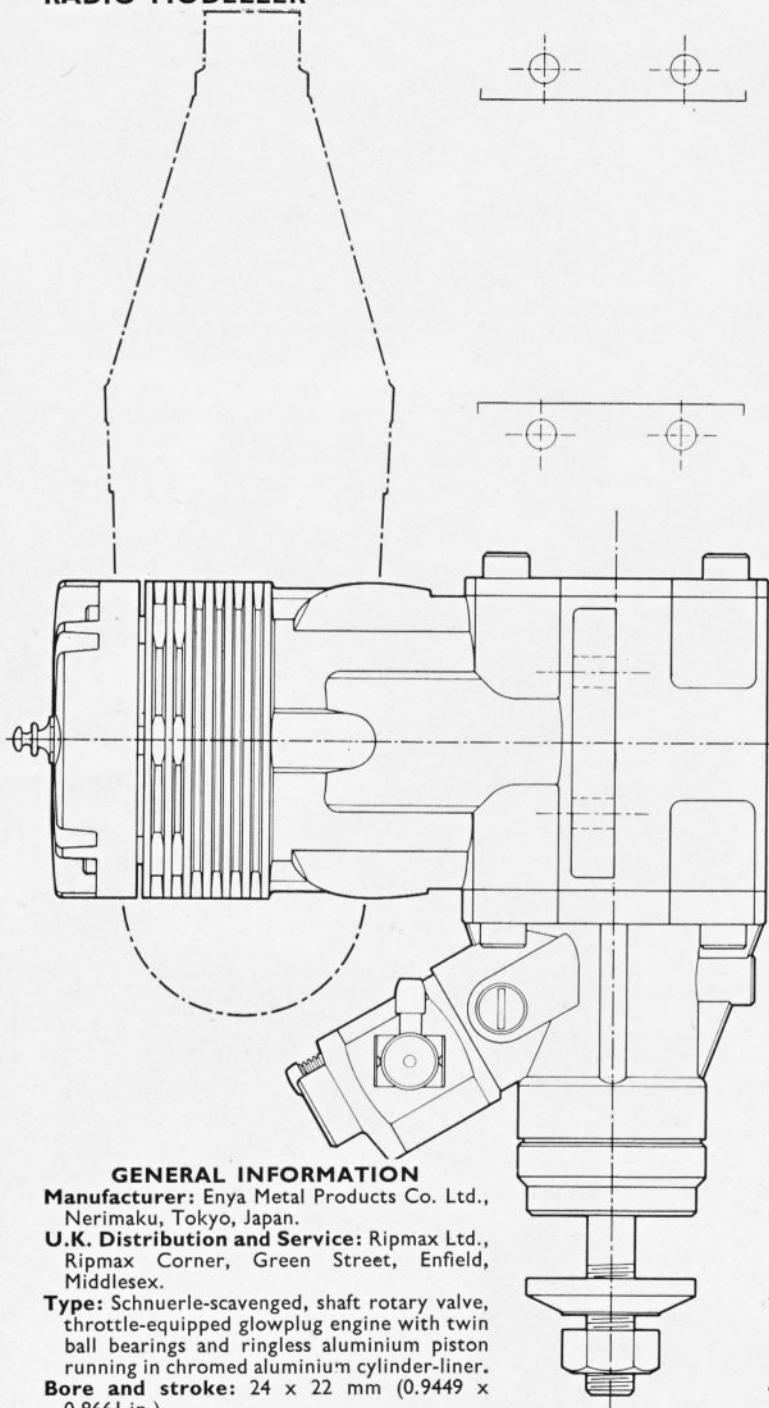
Crankshaft and front end assembly. Counterbalanced, hardened steel crankshaft with 15mm o.d. main journal and $\frac{3}{16}$ in dia. front journal. Integral 7mm dia. solid crankpin. Rectangular valve port, 18.2mm long, timed to open at 35 deg. ABDC and close at 55 deg. ATDC and admitting gas to 11.1mm i.d. gas passage. Shaft supported in one 15x32mm 9-ball steel-caged ball journal bearing at the rear and one $\frac{3}{8}$ x $\frac{1}{2}$ in. 7-ball steel-caged shielded ball journal bearing at front. Pressure die cast aluminium alloy bearing housing with 15mm i.d. intake boss and secured to crankcase barrel with four Allen cap screws. Paper gasket. Machined aluminium alloy prop driver keyed to shaft by two flats on front end of outer journal.

Piston and connecting-rod assembly. Ringless, flat crown, gravity-cast piston of high silicon content, ultra low expansion aluminium alloy. Rectangular skirt cutaways fore and aft. Machined aluminium alloy connecting-rod, 41mm between centres with bronze bushes and oil holes at both ends. Tubular 6.35mm ($\frac{1}{4}$ in.) o.d. gudgeon-pin retained by wire circlips.

Cylinder head and backplate. Finned, pressure die cast aluminium cylinder-head with cast-in brass thread insert for glowplug. Bowl shaped combustion chamber with 4mm wide flat squishband. Head secured with six 4mm Allen cap screws. No gasket. Deeply recessed pressure die cast aluminium alloy backplate with paper gasket and secured to crankcase with four 4mm Allen cap screws.

Carburettor. Enya "G" Series with 15mm spigot diameter. Carburettor body machined from aluminium alloy bar stock. Ground steel throttle barrel. Needle-valve and fuel inlet tee fitted on left side and feeding into shallow chamber adjacent to





GENERAL INFORMATION

Manufacturer: Enya Metal Products Co. Ltd., Nerimaku, Tokyo, Japan.

U.K. Distribution and Service: Ripmax Ltd., Ripmax Corner, Green Street, Enfield, Middlesex.

Type: Schnuerle-scavenged, shaft rotary valve, throttle-equipped glowplug engine with twin ball bearings and ringless aluminium piston running in chromed aluminium cylinder-liner.

Bore and stroke: 24 x 22 mm (0.9449 x 0.8661 in.)

Stroke/bore Ratio: 0.917:1

Measured Nominal Compression Ratio: 10:1

Displacement: 9.953cc—0.6073cu.in.

Checked weights:

- (i) 486 grammes—17.1oz. (less silencer).
- (ii) 585 grammes—20.6 oz. (with 60X silencer)

end of throttle barrel. Fuel conveyed to jet tube in throttle barrel via bypass channel in carb body and tapered grooves in surface of throttle barrel which meter more fuel as throttle is opened. Fine control of idle mixture by means of manually adjustable airbleed.

The carburettor has an 8mm i.d. choke and, after allowing for the jet tube, an effective choke area of 44 sq.mm.

Silencer. Designed for the Enya 60X engine, the silencer is a conventional expansion chamber type and bolts directly to the engine's exhaust duct with two 4mm Allen screws. Alternatively, it can be clamped to the cylinder with a U-shaped steel strap supplied. The silencer has the familiar Enya swivelling plate for priming and a pressure take-off nipple for the fuel pressurisation system. The silencer has an outlet i.d. of 10mm, giving an outlet area of 78.5 sq.mm.

Test performance

Two examples of the Enya 60XF were submitted for test. They were found to be extremely closely matched both as regards performance and general handling qualities, despite the fact that neither had been run prior to despatch.

Enya engines are sold without glowplugs and the U.K. agents do not import Enya plugs for them. After checks with Enya No. 3 and No. 4 plugs, we therefore ran our test on Fox long-reach bar type plugs which seemed to suit the 60XF very well. The fuels recommended by the manufacturer are either a straight methanol/castor-oil blend or a methanol/castor-oil/nitromethane mixture. After running in on a 75/25 methanol/castor-oil mix, we used our standard R/C test fuel containing 5% nitromethane. Atmospheric temperature at the time of testing was 10.5 deg.C (51 deg.F) and barometric pressure was 1010 mb (29.8 in.Hg.).

Having a relatively large (44 sq.mm) choke area, the 60XF needs a pressurised fuel supply to ensure even fuel delivery pressure through manoeuvres. The usual method of pressurising the fuel tank from a silencer nipple is recommended and is provided for.

Starting and running

The excellent compression seal provided by the accurately fitted ringless piston was reflected in very good starting qualities right from new. We had no difficulty in handling the 60XF, which hand-started easily with the throttle in the idling posi-

tion and remained docile almost irrespective of prop size.

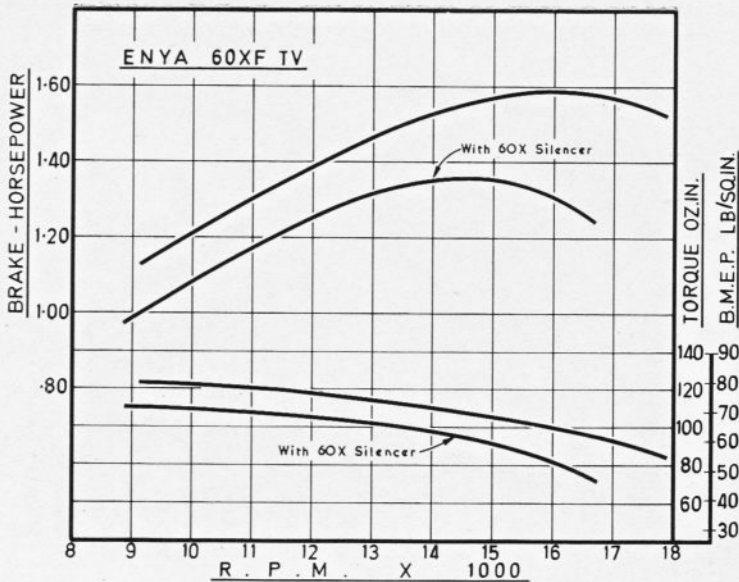
There was no loss of power as the 60XF warmed up from cold. On the contrary, when lightly loaded the 60XF took a while (during the coldish weather at the time of testing) to warm up to full power. This could take as long as 15-20 seconds when running on straight fuel, but was substantially reduced on nitro fuels.

Vibration levels were moderate.

Power—less silencer. A torque of 124 oz.in. was recorded at 9,000 rpm and torque was well maintained as load was reduced. From the torque and rpm readings obtained, a peak power output of over 1.58 bhp was indicated at 16,000 rpm. This is extremely good for a stock 10cc R/C engine running on 5% nitromethane fuel and puts the Enya on a par with the best of its many rivals previously dealt with in this series.

Among the prop speeds recorded were 9,550 rpm on a 14×6 Top Flite maple, 11,900 on a 14×4 Top Flite maple, 12,000 on a 12×6 Top Flite maple, 13,100 on an 11×7½ Top Flite maple, 13,600 on an 11×8 Robbe glassfibre-nylon, 13,900 on an 11×7 Top Flite maple and 14,600 on an 11×6 Top Flite maple.

Power—with silencer. Adding the Enya 60XF silencer reduced gross power output by approximately 14 per cent to 1.36 bhp at 14,500 rpm



on the same fuel. In terms of prop speeds, losses due to the addition of the silencer ranged from only 400 rpm on the 14×6 to some 700 rpm on the 11×7½.

Throttling. The G.8 carburettor worked well and, in conjunction with the silencer pressurised fuel system, provided a safe idle of 2,400 rpm on an 11×7½ prop, along with good recovery and a steady transition

through the intermediate throttle openings.

Comment

An easy to handle engine of excellent all-round performance. Plenty of low speed torque for larger props as well as high top end power for fast, aerobatic models. Good throttle. Expensive but robustly constructed and well finished.