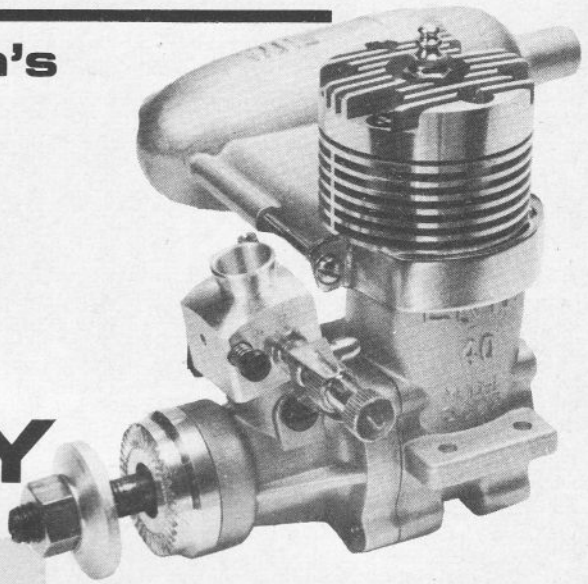
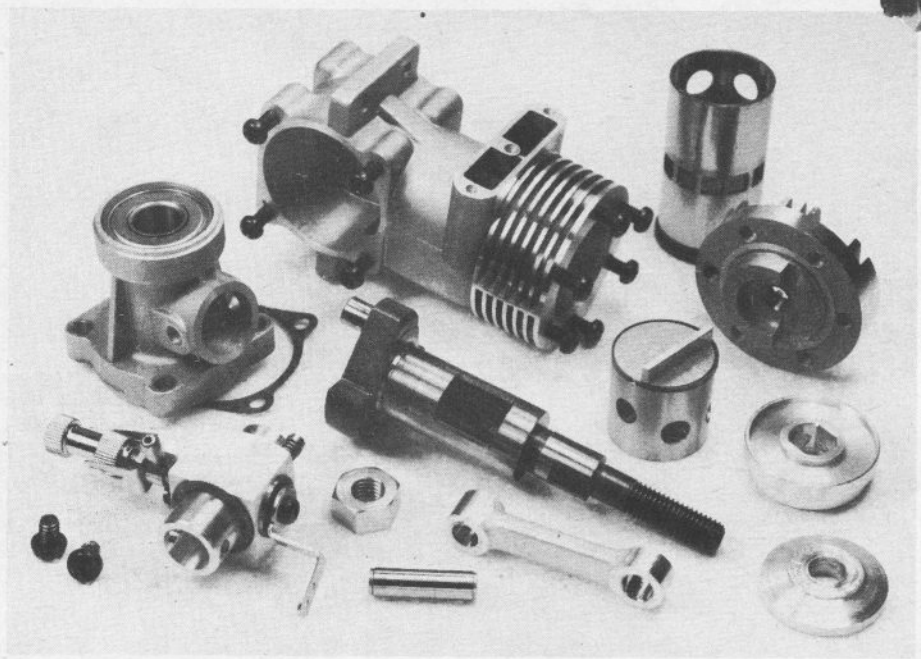
RADIO MOTOR COMMENTARY

Peter Chinn's



Above: the new Enya 40 TV, here fitted with the Enya M-200 silencer. Tests indicate that its performance is comparable with the best in the front induction R/C 40 class.



Left: parts of the Enya 40 TV. Note massive crankshaft journal; the largest yet seen on a 40.

Enya 40-TV Tested

This new motor from the Enya Metal Products Company factory in Tokyo was put into production towards the end of last summer. It appeared, initially, on the Japanese home market, but is now beginning to reach Enya's overseas distributors. It is already on sale in the U.S.A. and should be available in the U.K. and Europe shortly.

The Enya 40 is the Enya brothers' first attempt at a .40 cu. in. class motor. The extensive Enya range has included a 45 for nearly fourteen years and a 35 for even longer, but the 40 is a completely new model and is neither an enlarged 35 nor a reduced displacement 45. It is, however, being used as the basis for a new 45, to be known as the 45-II, that will replace the present Enya 45BB.

The Enya 40-TV ('TV' for 'Throttle Valve') is a shaft rotary-valve, crossflow scavenged glowplug motor with twin ball-bearings and is intended primarily for high-performance aerobatic R/C models. In this respect it is similar to the K&B Torpedo 40F R/C, the O.S. Max 40-R/C, the Super-Tigre G.21/40-R/C and Webra Blackhead 40-R/C and the manufacturer obviously intends that it should be fully competitive with these motors on a performance basis.

We found the performance well up to expected levels. Using our standard R/C test fuel (5 per cent nitromethane), Enya platinum-rhodium glowplugs and the Enya M-200 silencer, the following prop r.p.m. were recorded after running-in:

10,350 r.p.m. on a 12 × 4 Power-Prop standard
10,600 r.p.m. on an 11 × 6 Top-Flite maple
11,200 r.p.m. on an 11× 6 Power-Prop maple
12,000 r.p.m. on an 11 × 5 Power-Prop standard
12,600 r.p.m. on an 11 × 4 Top-Flite standard
12,250 r.p.m. on a 10 × 6 Top-Flite maple
12,700 r.p.m. on a 10 × 5 Super Nylon-glassfibre
13,500 r.p.m. on a 9 × 6 Top Flite maple

Power loss caused by the Enya M-200 silencer ranged from 200 to 700 r.p.m. on these props. The silencer, which is a plain non-baffled expansion box, has an 8.5 mm. i.d. outlet, i.e. an area of just under 57 sq. mm., giving a tolerable balance, so far as current standards are concerned, between the conflicting demands of effective noise reduction and minimum power loss. It is not as quiet as, for example, the OS-703 silencer when this is used with its very restricted 6 mm. i.d. standard outlet (28 sq. mm.) on the O.S. Max-40, but is not as noisy as the open-front HP 40 unit.

Handling and running characteristics were quite normal. The Enya started readily when cold. It was, as is usual, less quick to restart, hot, when new, but was better after it had had a couple of hours running to bed in the piston ring.

Throttle response was good. The carburettor fitted to the Enya 40 TV is a conventional barrel throttle type with simply an airbleed screw for adjusting the idling mixture. We had no difficulty in obtaining a safe 2,500 r.p.m. idling speed on a 10 × 6 prop with reliable and progressive mid-range control.

The basic design and construction of the engine is typically Enya and therefore fairly orthodox. There are, however, a couple of features which set it apart. Firstly it has a Dykes type piston-ring which is not so very unusual (it is, or has been, used by K & B, Merco, O.S., and Ross, for instance) but this is the first time that a Dykes ring has been fitted to a production Enya motor.

Secondly, the 40-TV has the largest diameter crankshaft journal of any .40 cu. in. engine manufactured to date. The shaft o.d. is 15 mm. which is the same size as is used by most modern shaft-valve .60 cu. in. engines. This has enabled the shaft to accommodate an extremely large gas passage – no less than 11.5 mm. i.d. or a cross-sectional area of 103.9 sq. mm. This compares with an area of 75.4 sq. mm. for the next largest size used by a current shaft-valve 40 (the O.S. 40 R/C). Gas is fed into the shaft via rectangular rotary-valve port that is timed (according to measurement of the test engine) 36 deg. ABDC to 50 deg. ATDC.

The shaft, of course, runs in two ball races mounted, in the usual Enya manner, in a strong detachable front housing. The crankcase is in

unit with the finned cylinder casing and has an integral backplate. The cylinder-liner has five exhaust and four transfer ports and there are skirt ports in the piston and liner to aid gas flow and piston cooling. The cylinder-head features a squish-band surrounding a bowl-shaped combustion-chamber.

This new Enya has a bore and stroke of 20.9 × 19.0 mm., giving a swept volume of 6.518 c.c. or 0.3978 cu. in. Bare weight of our test sample checked out at 302 grammes or 10.65 oz. The silencer added a further 63 grammes making a total of 365 grammes or just under 12.9 oz.

Fox Hawk 60

One of the most reasonably priced 10 c.c. engines on the U.K. market is the American Fox "Eagle" 60. Now, to compete in the more expensive end of the market, the Fox Manufacturing Company has introduced the "Hawk" 60.

The Hawk has several of the features of the Eagle, including the same relatively long-stroke layout and the same flange-mount carburettor. However, it is by no means a modified Eagle but is a completely new model.

Firstly, in contrast to the Eagle's orthodox cross-flow scavenged cylinder, the Hawk has Duke Fox's modification of the Schnuerle scavenge system. This consists of two exhaust ports on the right side, with transfer ports fore and aft and angled, as usual, to direct the gas flow to the left side, where it is joined by the upward gas flow from the inclined third port. However, instead of the usual single short third port, there are two such ports, quite wide and very long. All four transfer ports open simultaneously.

The new main casting, unlike the Eagle casting, does not include a full length cylinder casing. Instead, the steel cylinder has integral cooling fins and is tied to the casting with six long screws which extend from the cylinder head. The head itself is machined from aluminium bar with a shallow conical combustion chamber and has a red anodised finish. The piston is of low-expansion aluminium alloy with a single compression ring, pinned to prevent rotation. (All previous Fox ringed engines have used two un-pinned rings.) The crankshaft has a 15 mm. o.d. main journal with a 10.8 mm. gas passage and a ¼ in. o.d. crankpin. The connecting-rod is bronze bushed at the lower end only.

The Fox silencer for the Hawk is similar to that of the Eagle but is extended to fit around the engine's exhaust duct and is attached with four screws, instead of two, to make a more rigid and crash-resistant assembly.

The Hawk, like the Eagle, is unusual among modern 10 c.c. engines in having a stroke/bore ratio above unity (1.033). Nominal bore and stroke are 0.907 in. by 0.937 in. for a capacity of 0.6054 cu. in. or 9.921 c.c. A little heavier than the Eagle, it weighs 429 grammes (15.1 oz.) bare, or 510 grammes (18.0 oz.) with silencer.

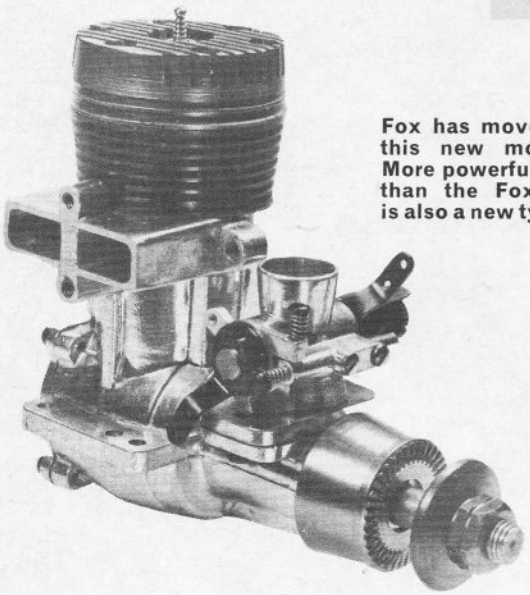
We hope to have some test results shortly.

New HP AFM Carb

As an option to the standard HP 61 carburettor, the Hirtenberger Patronenfabrik are offering a new carburettor, known as the AFMC-Super. Pre-production versions, known simply as the 'AFMC' actually appeared some eighteen months ago, but the 'Super' version incorporates many modifications and more parts.

The idea behind the new carburettor is to liberate more power while maintaining satisfactory throttle performance and without undue variation in mixture strength through manoeuvres, etc. Compared with the standard HP 61 R/C carburettor, the AFMC-Super has an effective choke area more than 50 per cent larger. Actual choke bore is only 7.5 mm. but is totally unrestricted, there being no spraybar or jet-tube. Instead, the jet is a small orifice in the throttle barrel itself, fuel being fed to it from a small hole in the otherwise blank end of the barrel. The end of the barrel bears against a machined brass disc and, in the face of this disc, offset to one side, is a machined depression in which fuel

Parts of the Fox Hawk 60. Cylinder porting is Fox modification of Schnuerle scavenged system.



Fox has moved "up-market" with this new model, the Hawk 60. More powerful and more expensive than the Fox Eagle 60. Silencer is also a new type.