

New Schnuerle scavenged Enya 60XF (left) with current Enya 60-II 1B model for comparison. New engine is bigger and heavier but appreciably more powerful.

### Enya 60XF tested

This new motor has recently been included in Ripmax advertisements, supplementing the well established Enya 60-IIIB and 60-IIIB-G8 models. At the time of writing (mid-February) it has not actually reached the shops and the price has yet to be fixed. However, deliveries should be starting soon after these words appear in print. The retail price, we understand, is likely to be about £82, plus silencer, reflecting the very much higher prices that now have to be paid for the better grade imported R/C motors.

The 60XF was actually introduced to the Japanese home market in the summer of 1975, reaching the United States in 1976 and was the Enya brothers' first Schnuerle scavenged motor. It has since been followed by smaller Schnuerle type motors, the 40X and 19X (neither of which is yet available here) and by a rear induction version of the 60XF, the 60XR.V.

Our test motor was one of two 60XFs received direct from Saburo Enya of the Enya Metal Products Company Ltd. Unmistakably an Enya in appearance, the 60XF nevertheless has one or two features that set it apart from the company's previous offerings. The Schnuerle scavenging system has already been mentioned. Also of major interest is the cylinder design.

The current 60-IIIB model, like most other 10 cc R/C engines, has a ringed aluminium piston running in a steel cylinder liner, but the 60XF has a ringless aluminium piston and a chromed non-ferrous liner – not, however, a chromed brass liner as in an ABC set-up, but a chromed aluminium one. This, of course, works in the same way as a brass liner insofar as it expands more than a steel cylinder sleeve, maintaining a more intimate contact with the cylinder casting, enabling the piston to be closely fitted to the bore and eliminating the need for a piston ring.

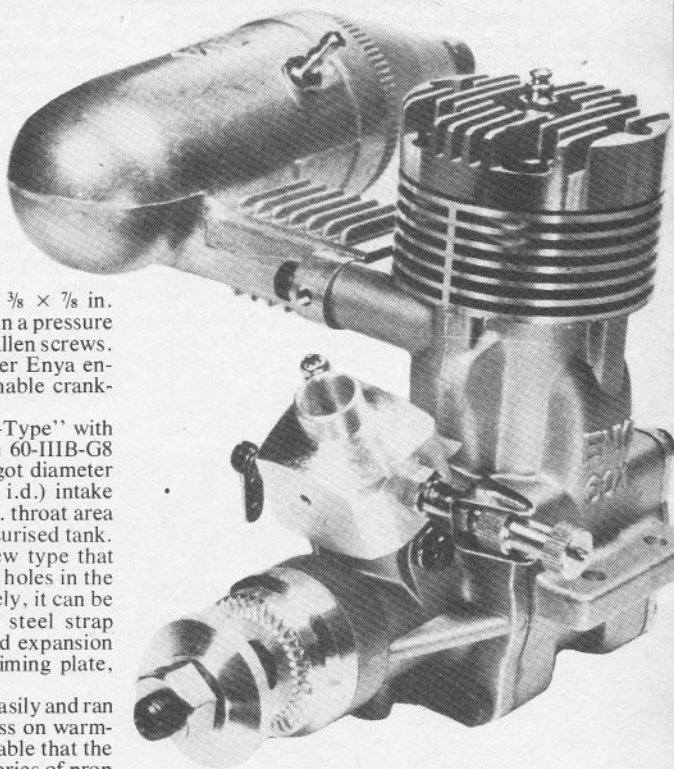
A feature of the aluminium liner is that, being considerably lighter than brass, it can have a thicker wall and this can be helpful with a Schnuerle scavenged engine since the angled ports through the wall can then be more effective in directing gas flow. The XF's cylinder wall thickness is 2.25 mm. Incidentally, the main transfer ports flanking, and angled away from, the exhaust, are, unlike most Schnuerle ports, inclined slightly upwards as well. The piston has a flat crown and the cylinder head has a conventional combustion chamber shape consisting of a bowl type combustion chamber surrounded by a flat squish band.

The rest of the engine is fairly orthodox. The crankshaft has the usual 15mm o.d. main journal. It has an 11.1 mm i.d. induction hole and a large rectangular valve port. The solid integral crankpin is 7 mm diameter and very short and counterbalancing is by cutaway web flanks only. The shaft runs in NSK steel-caged bear-

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# RADIO MOTOR COMMENTARY

Enya 60XF with Enya 60X silencer. Engine is expensive but well made.



ings, a 15 × 32 mm main and a 3/8 × 7/8 in. shielded type at the front, housed in a pressure cast front end attached with four Allen screws. Unlike the 60-IIIB (and most other Enya engines) the 60XF also has a detachable crankcase backplate.

The carburettor is an Enya "G-Type" with 8mm choke like that fitted to the 60-IIIB-G8 except that it has an enlarged spigot diameter to fit the 60XF's bigger (15 mm i.d.) intake boss. It has a generous 44 sq. mm. throat area and is for use with a silencer pressurised tank.

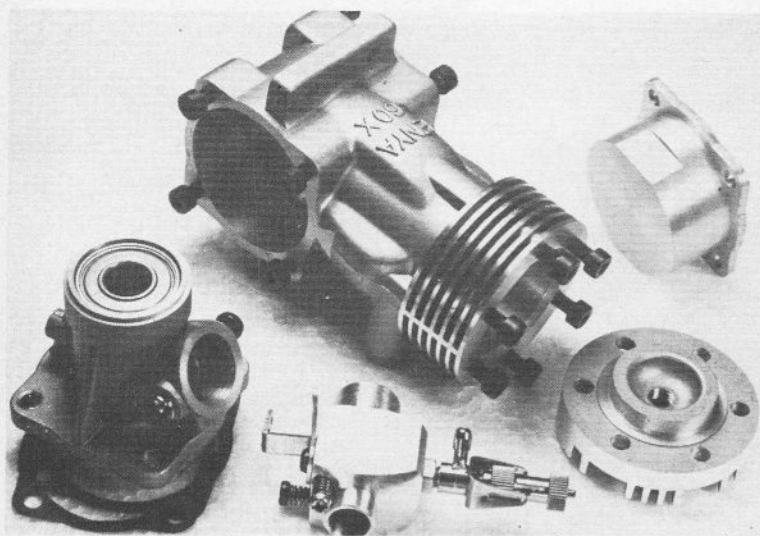
The Enya 60X silencer is a new type that fixes directly to two 4 mm tapped holes in the engine's exhaust duct. Alternatively, it can be clamped to the cylinder with a steel strap supplied. It is a simple non-baffled expansion chamber with the usual Enya priming plate, and has a 10 mm i.d. tailpipe.

On test, this new Enya started easily and ran smoothly. There was no power loss on warming up from cold and it was noticeable that the front end remained very cool. A series of prop rpm checks were made and the following are some typical figures on 5% nitro fuel, less silencer.

14×6	Top Flite maple	9,550 rpm
12×6	Top Flite maple	12,000 rpm
11×7 1/4	Power-Prop maple	12,000 rpm
11×7 1/2	Power-Prop maple	13,100 rpm
11×8	Robbe glassfibre-nylon	13,600 rpm
11×7	Top Flite maple	12,500 rpm
11×6	Top Flite maple	13,900 rpm
11×6	Power-Prop maple	14,600 rpm

Adding the silencer reduced these levels by between 400 and 700 rpm.

These are very good figures, suggesting that the Enya 60XF is comparable with the current top performers in the Schnuerle scavenged 60 R/C class such as the O.S. 60F-SR and Webra Speed 61. This was confirmed by our torque tests on the engine which disclosed a torque in excess of 120 oz.in. at 10,000 rpm and a gross output approaching 1.6bhp at 16,000 rpm. The previous highest output we obtained with an



Enya 60 was with the 60-III-B-G8 which indicated 1.32 bhp at 14,500 rpm, less silencer.

The 60XF is larger externally and, with silencer, almost 3 oz heavier than the crossflow 60-III-B but fully makes up for this with its extra performance. Checked weights of our test samples were: 486 grammes (17.1 oz), plus 99 g. for the silencer, making a total of 585 g. or 20.6 oz. The engine has the usual metric 60 bore and stroke of 24 x 22 mm, giving a swept volume of 9.953 cc or 0.6073 cu.in.

### HB 61-PDP

Compared with the standard Bernhardt HB 61 that has been in production for some years, the more recently introduced HB 61-PDP model is heavier and looks rather different. In fact, very few parts are not interchangeable and, since the same part numbers have been allocated to some of the new components, it seems highly probable that future production standard engines may be practically indistinguishable, externally, from the PDP version.

The outwardly visible differences are in the cylinder-head and main casting only. The head is now machine-finished from a pressure die-casting and has tapered cooling fins, instead of being entirely machined from bar stock with parallel section fins as on the original HB 61 models. Its outside diameter has been increased from 43.0 mm to 45.5 mm to match the larger fin diameter of the new main casting, but its internal dimensions and combustion chamber shape are unchanged, as are bolt hole spacings, and it can be used as a replacement for the older type head.

The new main casting, easily identified by its larger diameter cooling fins which, unlike the

older design, extend well down the casing to include five fins below the exhaust duct, now resembles the design used for the HB 40 and HB 50 engines. It has slightly more metal around the sides of the transfer passage at the top to allow for the milling of the channels which conduct part of the incoming charge to the PDP (Perry Directional Porting) slits. These are sited to direct a flow of gas across the piston crown in front of the baffle to aid scavenging. The main ports, consisting of four transfer and five exhaust ports all approximately 5.5 mm high x 5.0 mm wide, are unchanged, as is the port timing.

The piston, piston-ring, conrod and gudgeon-pin are all interchangeable with those of the standard 61 although the piston is considerably heavier (11.6 grammes compared with the old piston's weight of 8.7 grammes) due to a much thicker skirt. The Dykes type ring is retained, as is the fully floating 6 mm gudgeon-pin. The conrod is bronze bushed with oil slits at both ends.

The crankshaft (15 mm o.d. with 11 mm gas passage) and heavily counterbalanced with a crescent counterweight as well as a cutaway crank web, is the same; as are the bearings, bearing housing and prop drive assembly. A standard Perry carburettor is still the stock fitting although this now has the 8 mm i.d. choke in place of the 7 mm used with earlier engines.

When we tested the HB 40-PDP recently, the power output was improved approximately 10 percent compared with the standard HB 40. It is not unreasonable to suppose that the 61-PDP will be at least 10 per cent

better than the standard HB 61. We hope to check this in due course.

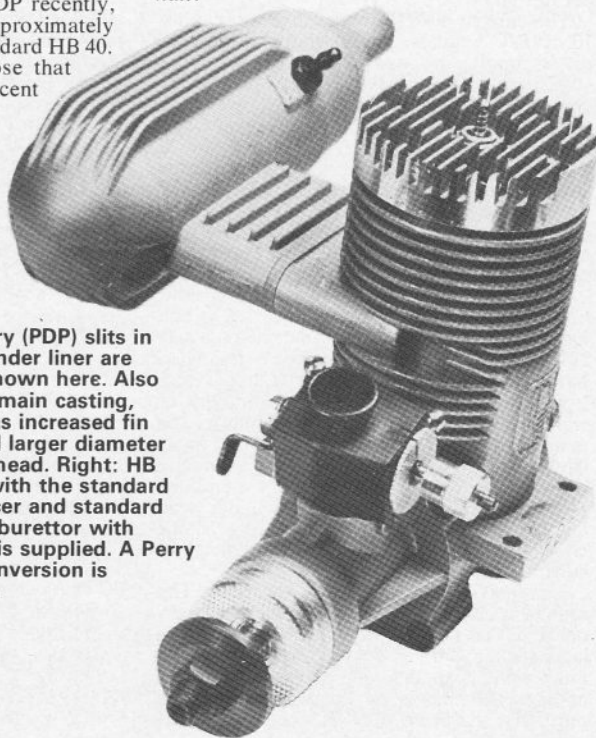
The checked weight of the HB 61-PDP examined for this article was 445 grammes (15.7 oz). This was increased to 560 grammes (19.75 oz) with the recommended silencer.

A very complete line of accessory items is available for use with the HB 61 engines including a Perry pump and pressure carb system, several alternative types of silencers, a heat-sink type cylinder head and a radial mounting backplate.

### Reeves-HP Twin

Scale expert and R/C kit manufacturer Mick Reeves has sent along some photos of his 20 cc flat twin, derived from a pair of HP 61F engines and built about three years ago by Bernie Foster. The engine used mainly standard and modified HP components, the only new parts being a pair of offset conrods, a radial mount and the central crank-joiner (not shown in the parts photo). Mick writes:

*"The two standard crank webs were cut down in thickness to give longer crankpins. These were joined to give opposite throws, simultaneous firing but the pressed-in fit proved not secure enough to take the load—the assembly would move out of line when the rear cylinder fired. Locking pins in the joints did not cure the problem and so the project came to a halt."*



Left: Perry (PDP) slits in HB's cylinder liner are clearly shown here. Also new are main casting, which has increased fin area, and larger diameter cylinder-head. Right: HB 61-PDP with the standard HB silencer and standard Perry carburettor with which it is supplied. A Perry pump conversion is available.

