Enya .19-IV TV

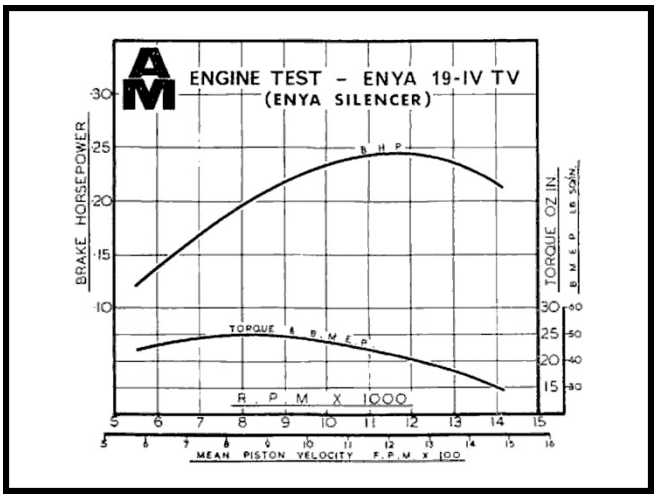
ENGINE TEST

by Peter Chinn

ENYA 19-IV TV

The ENYA Metal Products Company Ltd of Tokyo now have a bigger model engine range than any other manufacturer. Including marine and R/C variations, plus several small glow and diesel units sold mainly on the Japanese home market, Enya list nearly fifty models. That we have dealt with only two of these in the A.M. Engine Test series in the past three years, is mainly due to the fact that the U.K. importers, Keil Kraft, have been unable to obtain adequate deliveries. At the present time, almost the entire production of Enya motors is being absorbed by the American and Japanese markets but it is hoped that, in the not too distant future, Enya's steadily expanding production will meet the considerable demand that exists for these engines and enable regular deliveries to be resumed to the U.K. and Europe.

The 19-IV TV (.19 cu. in., fourth series, throttle-valve equipped) model, which is the subject of our report this month, actually went into production sometime before the present shortage and a fair number of these, plus the similar, earlier series models, are in use in the U.K. Our test unit came direct from the Enya factory, by courtesy of Saburo Enya, one of the four model enthusiast brothers who, this year, will complete 20 years in the model engine manufacturing business.



It was with a .19 engine, in fact, that the Enya factory began quantity production of model engines and, as a result of Enya's policy of steadily developing a successful design, the basic layout of the original 19 is still evident in the present model. None of the parts of the early models are to be found in the current engine but it remains a shaft induction motor of 16 x 16 mm. bore and stroke, with one piece crankcase cylinder casting and detachable front end carrying a plain bronze-bushed main bearing.

The throttle type carburettor used by the current 19-IV TV is an improvement on the simpler type used on the 19-III TV model. It is of an orthodox barrel throttle pattern with adjustable air bleed and idling stop screws. The throttle arm position on the barrel can also be altered, which can be helpful when making adjustments to the servo linkage. No coupled exhaust restrictor is fitted but this is no disadvantage to the average U.K. user since it would normally be discarded in favour of a silencer, anyway.

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The standard Enya small (15/19 size) silencer fits this engine. It can be attached either by clamping it to the cylinder with the steel strap and two screws provided or, for a neater installation (see heading photo), the ends of the engine exhaust duct (which are center popped for the purpose) can be drilled and tapped for two internal attachment screws. Screwdriver access for fitting these screws is via a swivelling plate on the side of the silencer which uncovers two holes opposite the internal attachment screw heads.

Performance.

Most, if not all, of the numerous Enya engines (including an earlier type 19) that we have handled during the past few years have been very good starters. It was, therefore, surprising to find that, in this respect, the 19-IV was not quite up to usual Enya standards. When new, the piston of our test model

was rather tight at the top of the stroke, which did not help matters. As the engine freed oft', cold starting became much easier but hot restarting was a trifle indefinite, particularly when using the silencer. In general, we found it best to close the throttle and/or open up the needle-valve and not to suck-in to obtain a warm restart. When quite cold, however, the 19 responded best to the usual preliminary of an exhaust prime. This is greatly aided, when the engine is fitted with the silencer, by the latter's swivelling side plate.

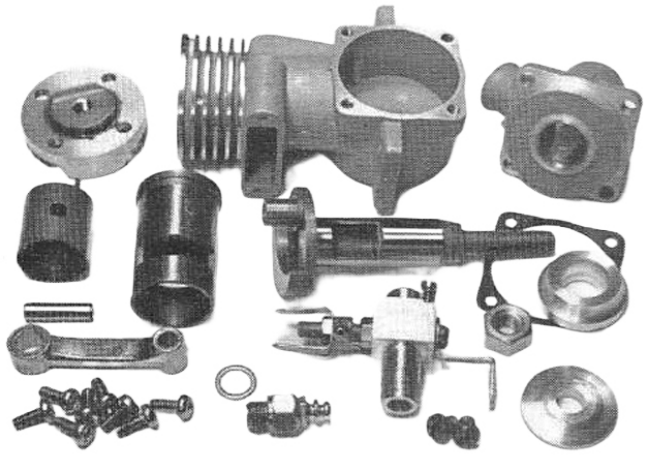
Typical prop r.p.m. obtained, with the silencer installed, after an accumulated running time of approximately 1 hour, included the following: 7,200 r.p.m. on 11x5 Top-Flite wood, 7,800 r.p.m. on 11 x 4 Power Prop wood, 8,000 on 10 x 6 Tornado nylon, 8,100 on 10 x 5 Top Flite wood, 9,400 on 10 x Top-Flite nylon, 8,550 on 9 x 6 Top-Flite wood, 10,100 on 9 x 5 Top Flite wood, 10,600 on 9x 6 Top Flite nylon and 11,00 r.p.m. on 8x6 Top Flite nylon.

The throttle worked well, especially after the engine had become adequately run in. Safe idling speeds of between 2,500 and 3,000 r.p.m., according to prop size, were then obtained. On the prop sizes best suited to the engine for R/C use (e.g. 10 x 5, 10 x 4, 9 x 6, 9 x 5, 9 x 4) idling speeds were in the 2,700-2,800 r.p.m. bracket.

A maximum power output of just over 0.24 b.h.p. at between 11,500 and 12,000 r.p.m. was recorded on test, using our standard 5 per cent nitromethane test fuel and with the silencer in place. Removal of the silencer resulted in the peak b.h.p. being raised by approximately 12 per cent at about 700 more revolutions per minute, but maximum torque (reached at approximately 8,000 r.p.m.) was not measurably increased. The power loss due to the silencer, in fact, only began to show when the engine was propped for speeds over 10,000 and was only really significant when load speeds exceeded 11,000 r.p.m.

Apart from the slightly slow warm restarting already mentioned, the general handling and running qualities of the Enya 19-IV TV were good. The engine showed no tendency towards viciousness when started on small props and running was free from excessive vibration.

To sum up, the Enya is hot the most powerful nor the smallest, lightest or easiest starting 19 R/C engine on the market but, having been in production in this and earlier versions since 1953, it is a thoroughly proven product. It is well made, is known to have better than average resistance to wear, has good throttle performance and a power output well up to expected levels for engines of this size and type.



Parts of the Enya .19 display the hallmark of quality for which this company is renowned. Note the large shaft bore. Photo opposite shows the Enya silencer fitted.

Enya .19-IV TV

SPECIFICATION

Type: Single cylinder, air-cooled glow-plug ignition two-stroke with crankshaft type rotary-valve and bushed main bearing.
Bore: 16.0 mm. (0.6299 in.).
Stroke: 16 mm. (0.5299 in.).
Swept Volume: 3.21 S cc. (0.1962 cu. in.).
Stroke Bore Ratio: 1.00 : 1.
Weight: 167.6 grammes 5 91 oz. (less silencer). 210.7 grammes-7.43 oz. (with silencer and external filling}.

General Structural Data

Pressure diecast aluminium alloy crankcase cylinder casing with drop-in cylinder-liner steel.
Pressure diecast aluminium alloy detachable front housing with cast-in phosphor-bronze main besting and secured to crankcase with <cur screws. Hardened, counterbalanced crankshaft with 11 mm. dia. journal, 8 nm. bore gas passage and 6 mm. ria. crankpin. Lapped cast-iron piston with fence type baffle and fully floating 4 mm, dia. hardened tubular gudgeon-pin with brass pads. Pressure diecast aluminium alloy connecting-rod with cast-in bronze big and bush. Pressure diecast aluminium alloy cylinder-head with machined joint face and cast-in brass thread insert for glow-plug and secured to cylinder casing with 'car screws. No cylinder head gasket. Machined aluminium alloy prop driver fitted to matching taper ran crankshaft. Machined aluminium alloy carburettor body. Ground steel throttle barrel Separate Idling and air- bleed adjustment screws. Plated brass jet assembly. Flexible needle valve extension. Beam mounting lugs.

TEST CONDITIONS

Running time prior to test: 2 hours.
Fuel used: 5 per cent pure nitromethane. 25 per cent Duckham's racing castor-oil, 70 per cent ICI methanol.
Glow-plug used: Enya No. 3. medium reach, platinum-rhodium filament.
Air temperature: 44 deg F.
Barometer: 29.45 in.Hg.
Silencer: Enya 15/19 size, expansion chamber type.
Power/Weight Ratio (with silencer): 0.52 b.h.p./lb.
Specific Output (with silencer as tested): 76 b.h.p./litre.