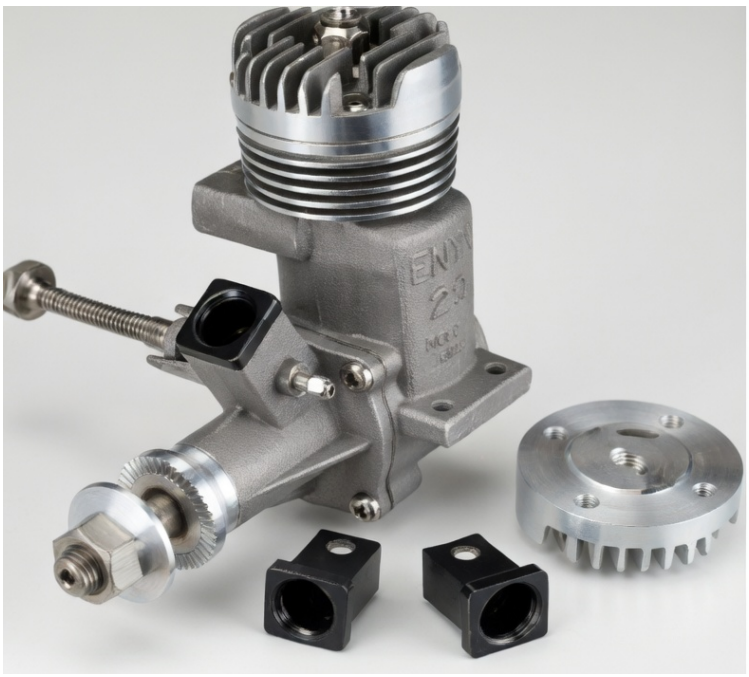
# Enya .29-3B



**ENGINE ANALYSIS No. 64**
**By R. H. Warring**

**ENYA 29-3B**

The new ENYA 5 c.c. glow motor designated Model No. 5103 or “Super Typhoon" is a superb power plant in all respects. Extremely well engineered, it is presented in a manner to give six variants by simple change of head and/or venturi inserts to alter the characteristics to suit a wide range of duties, each variant exhibiting a most consistent running performance. In the “ultra high speed" set-up (to (quote the manufacturer’s literature), power output is up to "racing" standards, although this is only a plain bearing engine.

The manufacturers specify the high compression head for high speed running, giving a compression ratio of 9:1. The majority of the tests were conducted with this head and the largest (Speed) venturi insert in conjunction with a 40:40:20 methanol: castor: nitromethane fuel. There was an appreciable amount of “kick-back" when hand starting and the suction was very poor with the large venturi, but the engine was still easy to hand start after a generous prime, except with 7 inch diameter propellers. Here the propeller had to be just in the right position to be able to flick over against compression.

Using the low compression head, starting was considerably easier and the compression ratio (7.5:1) still high enough to give consistent running on straight glow fuel. Time did not permit trying out all the possible combinations, but the use of the low compression head with a heavily nitrated fuel and “speed” venturi might have improved on performance. There was little appreciable difference between handling and performance on straight fuel with the two heads, but in the “extreme” conditions, a loss of r.p.in. of the order of 800-1,000 was experienced, typical figures being:

| | straight fuel low compression head | 20% nitromethane high compression head |
|---|---|---|
| for same loads | 11,000 | 11,900 |
| | 12,000 | 12,800 |
| | 13,000 | 13,800 |

Running was particularly consistent and smooth, although there was a fair degree of vibration pro¬duced at all load-speeds. The needle valve control is non-critical, but for easy handling needs to be located on the port side (i.c. opposite to the exhaust). A considerable amount of extremely hot oil waste is ejected through the exhaust which is painful to the hand even held a foot or so “downstream”.

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The performance figures obtained on test are probably not the best that could be realised with the Enya. Test figures show a peak B.H.P. of .59 at 14.000 r.p.m. and it is possible that the curve could be extended, and the peak figure correspondingly advanced with a more heavily nitrated fuel, or even a longer running-in period. The engine is set up with relatively close tolerances, although all the running fits arc excellent, and would appear to require some 2 hours minimum running in. At no time, however, did the bearing show any signs of overheating and whilst retaining excellent compression, the piston-cylinder fit was never “light”.

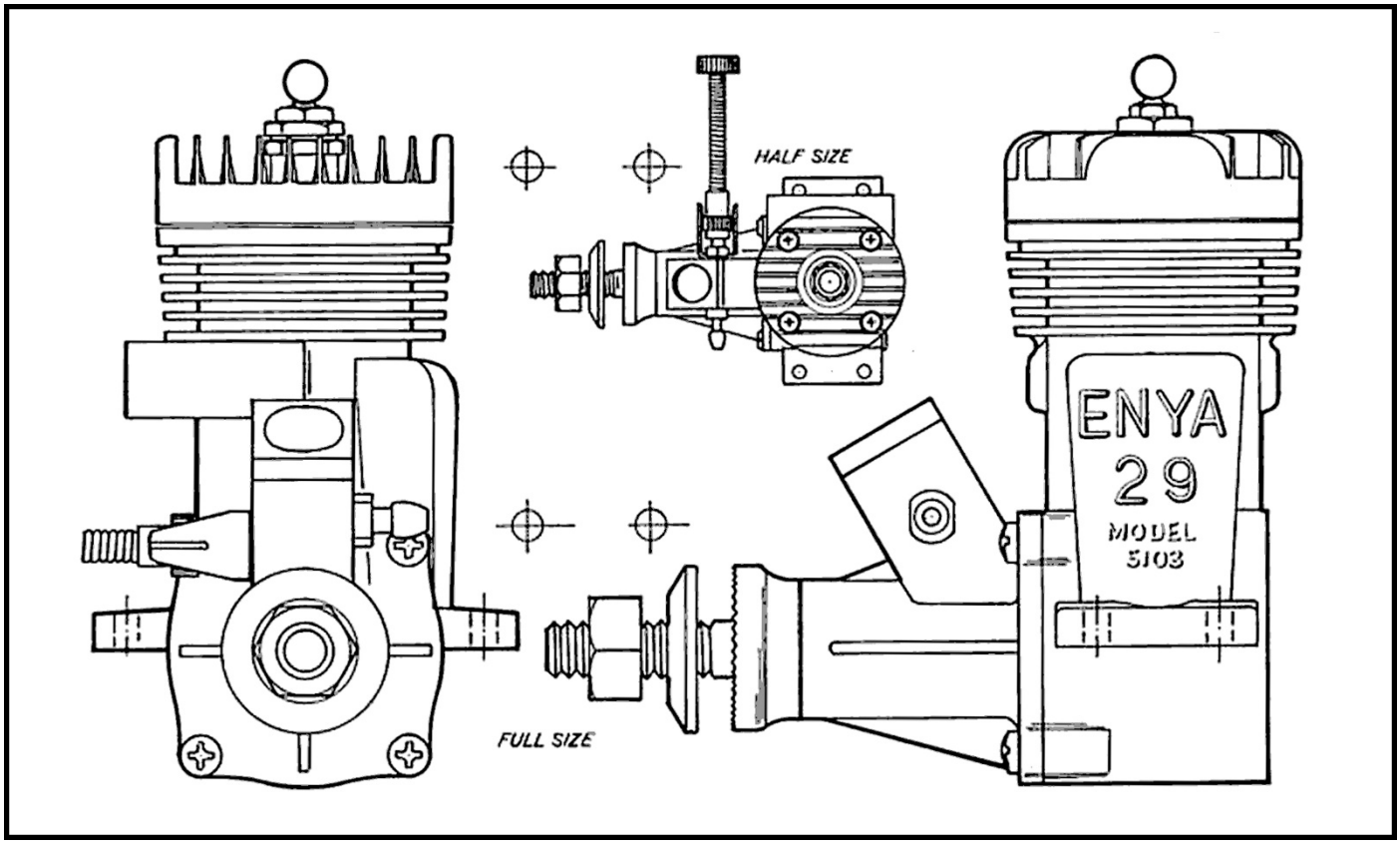
The main crankcase casting incorporates the transfer passage and diametrically opposed exhaust port and stack, there being something of the order of 80 per cent, overlap. The cylinder is cast iron, machined to a wall thickness of approximately 3/64 in. and with rectangular ports cut in the walls. The bore appears to be reamed and honed (not ground) and sharp edges on the outside of the ports have been removed with a file. The cylinder is a good sliding fit in the crankcase unit and locates vertically on a narrow flange seating in a recess cast in the top of the jacket. The head then simply bolts on with four Phillips head screws. The head itself is a pressure die casting, with quite thin, tall fins.

The piston is very light and again machined from cast iron. The top of the piston is flat, with a rectangular deflector. The .196 in. diameter gudgeon pin is hollow and fitted with brass end pads. It is an easy “floating” fit in the piston.

Tile connecting rod is a die casting in light alloy, basically of flat section but generous flared out to support the full length of the big and little end bearings. The little end hearing is plain but the big end is fitted with a bronze bush.

The crankshaft is a relatively heavy unit, .453 in. diameter stepping down to a .270 in. (7mm.) threaded length. The crank web is nearly ¼ in. thick and machined away for counter - balance. Crankpin diameter is ¼ in.

The intake port is rectangular and quite large (1/2 in. x 5/16 in.) and the 5/16 in. diameter hole through the shaft is taken up well past the port, for lightening purposes. Nevertheless the crankshaft still weighs 1 ½ ounces.

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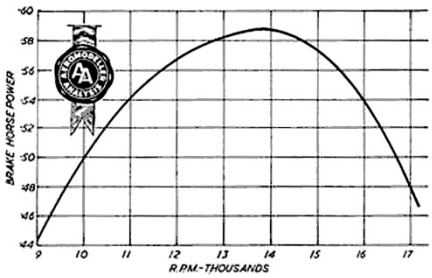
The front crankcase unit is another die casting, the bronze main bearing bush being cast in with it and finally reamed and honed to size. The crankshaft is hardened and ground to finish and the running fit is really good.

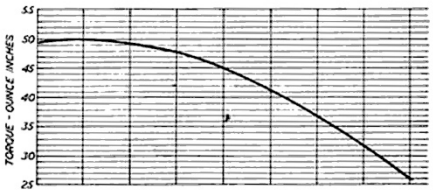
The forward raking intake tube is rectangular (near square) in section and opens out into a corres¬ponding square port. The venturi insert is a bakelite (or similar) moulding which simply slips into the choke tube and is locked in place by the spraybar. Venturi No. 1 (for stunt, free flight or team racing) has a ¼ in. diameter throat: venturi No. 2 (for similar application, but with improved performance) has the throat diameter enlarged by approximately 1/32 in.; whilst venturi No. 3 (for speed) has the throat section further opened out. The spraybar itself is of nickel plated brass. The needle assembly is also very well made and incorporates a strong and very effective flexible extension for ease of adjustment.

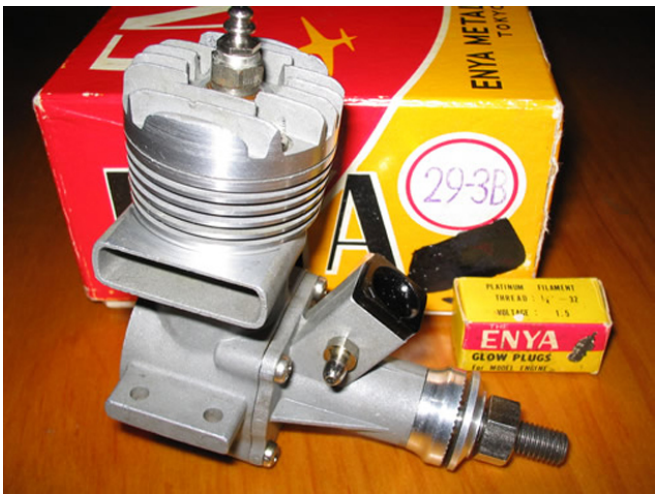
Another attraction is that besides having an excel-lent high speed performance and sounding very happy at such speeds, it can equally well handle really large propellers at lower speeds. Altogether, in fact, a thoroughly likeable, workmanlike and powerful 5 c.c. glow motor.

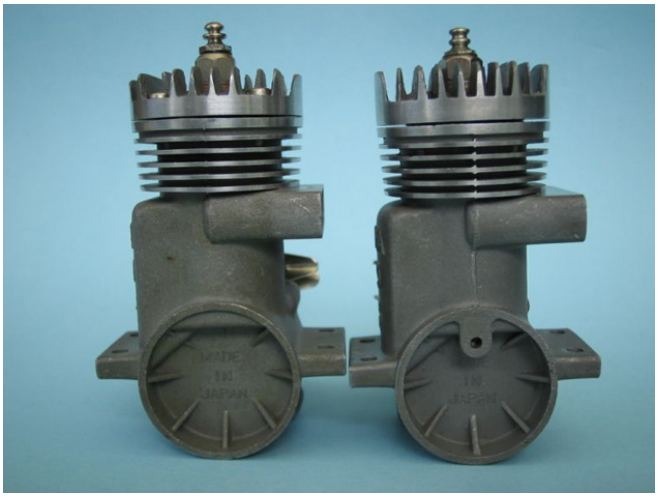
| PROPELLER—R.P.M. FIGURES | |
|---|---|
| *Propeller dia.× pitch* | *r.p.m.* |
| 10× 6 (Frog nylon) | 12,000 |
| 9× 6 (Frog nylon) | 14,000 |
| 12× 4 (Trucut) | 9,800 |
| 11× 4 (Trucut) | 11,000 |
| 10× 4 (Trucut) | 11,400 |
| 10× 6 (Trucut) | 10,600 |
| 9× 6 (Trucut) | 12,300 |
| 8× 4 (Trucut) | 16,500 |
| 7× 9 (Trucut) | 14,500 |

Fuel used: 40 per cent. methanol, 40 per cent. castor, 20 per cent. nitromethane
Glow plug: K.L.G. long reach
Standard glow plug supplied is Enya No. 5 (1·5 volts). Performance was found to be virtually identical
Recommended propeller sizes:
Free flight:
11×4, 11×3, 10×4
Control line stunt:
10×5, 9×6
Control line speed:
7×9, 7×10, 6½×10



**Enya 29-III and IIIB**

**More here:** https://flyinghlsat.com/search.php?search_keywords=Enya-Engines