

Peter Chinn
tests the

FOX EAGLE 60

“... very good all-around performance with better than average pulling power ...”

THE Fox Eagle 60, introduced early last year, was an entirely new model aimed at recapturing some of the U.S. sales of .60 cu.in. size motors that had been lost to foreign manufacturers, particularly Japanese and German ones.

Four years earlier the Fox company had offered its first “Fox 60” but this, basically a sleeved down version of the big Fox 74, was excessively heavy (19½ oz., less

silencer) and was not too popular. The Eagle is a far better motor: more powerful, more compact and nearly 5½ oz. lighter.

Design and Construction Summary

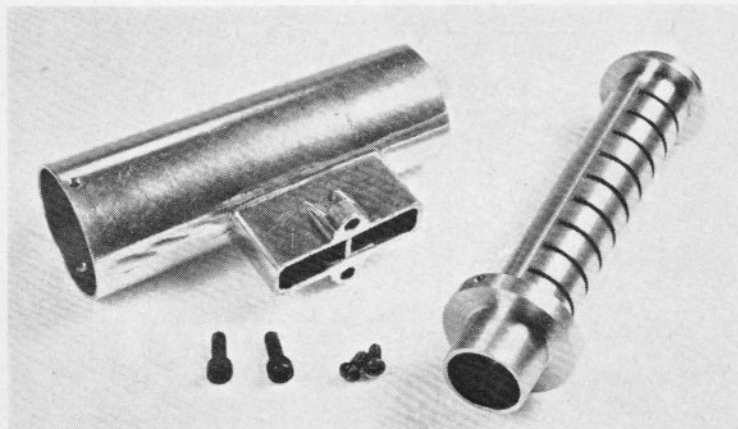
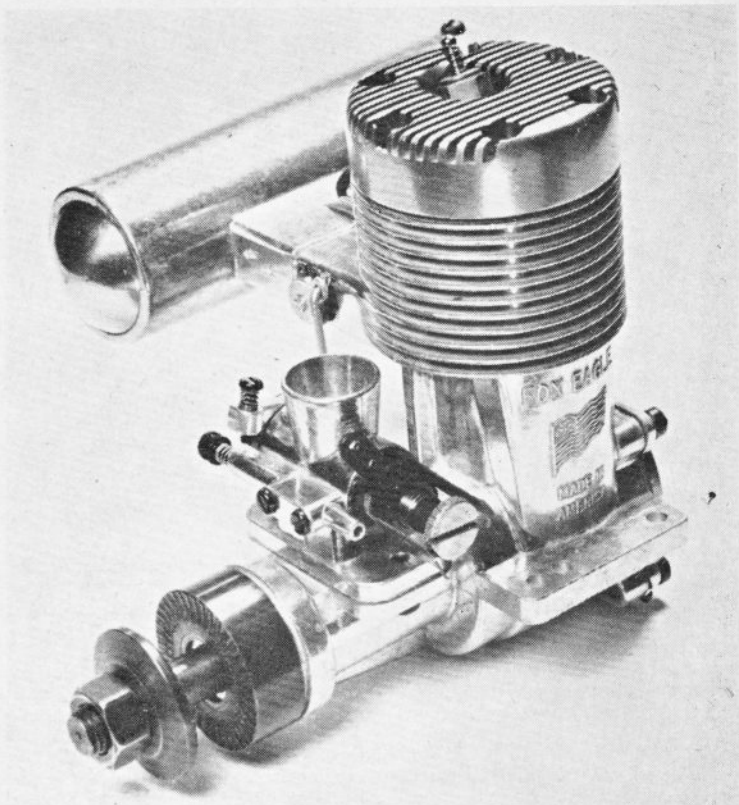
Main Casting. This comprises the crankcase, front housing and full length finned cylinder casing in pressure diecast aluminium alloy. It includes long beam mounting

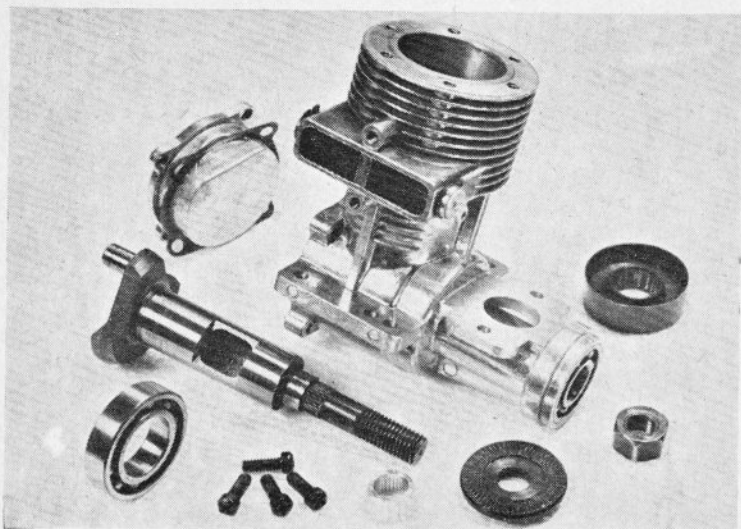
lugs, an exhaust duct on the right side and a saddle to which the flange-fitting carburettor is attached.

Cylinder. Integral with main casting with drop-in steel liner. Six exhaust ports timed to open and close at 70 degrees each side of BDC. Three transfer ports timed to open and close at 55 degrees each side of BDC.

Crankshaft and Prop Drive Assembly. Counterbalanced hardened steel crankshaft having 15 mm. dia. main journal and ⅜ in. dia. front journal. Integral ¼ in. dia. solid crankpin. Rectangular valve port timed to open at 42.5 deg. ABDC and to close at 45 deg. ATDC and admitting gas through 10.7 mm. i.d. gas passage. Shaft supported in one 15 × 28 × 7 mm. and one ⅜ × 7/32 in. ball journal bearings. Steel prop driver on aluminium alloy split taper collect. Steel prop retaining washer and hexagon nut on 5/16 in. UNF thread.

“Standard” silencer for the Eagle 60 is the Fox “C” type, shown here disassembled.





The Eagle 60 disassembled showing crankshaft, races, etc.

Piston and Connecting-rod Assembly. Piston machined from aluminium alloy casting, with flat crown and straight baffle. Two compression rings. Machined aluminium alloy unbrushed connecting rod with oil slit at lower end. Lightweight $\frac{1}{8}$ in. o.d. tubular gudgeon-pin retained by circlips in piston.

Cylinder-head. Machined pressure diecast aluminium alloy with modified wedge combustion chamber shape and inclined plug hole. Recessed soft aluminium .015in. gasket. Head retained by six Phillips screws.

Backplate. Pressure diecast aluminium alloy, stepped to clear piston skirt and secured to crankcase with four screws.

Carburettor. Special Fox design incorporating separate idling and main jets, each with its own needle-valve adjustment. Part-throttle mixture controlled automatically by movement of throttle valve. Carburettor body of pressure diecast aluminium alloy with rectangular base flange secured to engine casting with two screws. Steel throttle valve, taper ground for close fit within carb body. Main needle-

valve installed in L.H. side of throttle barrel. Idle needle-valve located forward on R.H. side of carb body. Throttle barrel linked on R.H. side to semi-rotary exhaust valve. Throttle actuating arms on both sides of carburettor.

Silencer. The standard silencer for this engine is the Fox "C" type. This attaches with two Allen cap screws to lugs above and below the exhaust duct. It consists of a diecast outer casing and a large diameter machined aluminium inner tube having nine entry slits on the side opposite the entry duct. The slits have a total area of approximately 168 sq.mm. or slightly larger than the exhaust port area (162 sq.mm.). Nor does the tailpipe outlet in any way restrict gas flow. This has an i.d. of some $\frac{3}{8}$ in. and a cross-sectional area of 198 sq.mm.

This silencer is also available in an open front version.

Test Performance

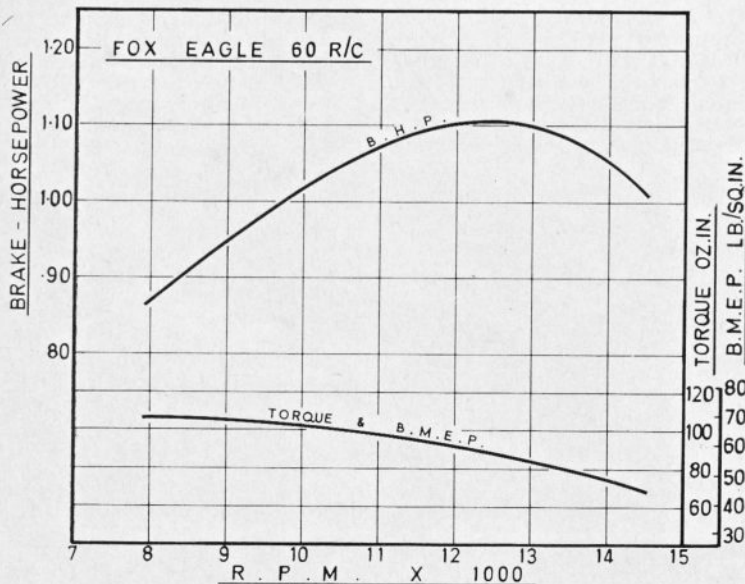
Our test unit came direct from the Fox factory in the United States where it had been briefly checked out to ensure that its performance was up to scratch. Prior to testing, it was run-in on a 75/25 methanol/castor-oil mixture in the usual way.

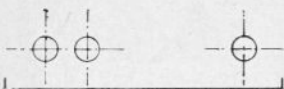
The fuel suggested by the manufacturer for use with the Eagle is Fox "Missile Mist." This fuel is stated to contain 25 per cent nitromethane and as such mixtures (due either to expense or non-availability) are rarely used outside North America by R/C flyers, except in a few permitted instances for racing purposes, the test characteristics given here relate to the Eagle's performance on our standard R/C engine test fuel containing 5 per cent pure nitromethane.

Atmospheric temperature at the time of testing was 18deg.C (65 deg.F) and barometric pressure was 1,024mb. (30.24in. Hg). The glow-plug used was the Fox idle-bar long-reach type as supplied and the silencer used was the appropriate Fox "C" type with closed front.

Starting and running. Piston seal was quite good, even when the engine was new, and, once the Eagle was run-in, provided satisfactory compression for hand starting, hot or cold, with the throttle closed. The response to electric starting was even better.

Running qualities were generally good. The Eagle was not, perhaps, quite so smooth as the most docile



**GENERAL INFORMATION**

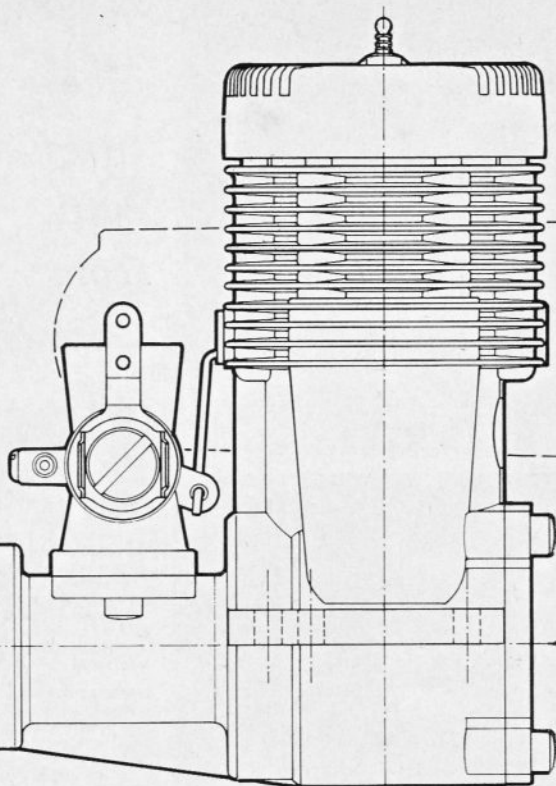
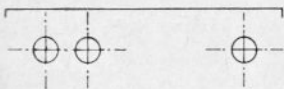
Manufacturer: Fox Manufacturing Company, Forth Smit, Arkansas 72901, U.S.A.

U.K. Importer: John D. Haytree, 40 Buckeridge Avenue, Teignmouth, Devon.

U.K. Distributors:

(i) Irvine Engines, 31 The Fairway, New Barnet, Herts.

(ii) Model Aircraft (Bournemouth) Ltd., Norwood Place, Bournemouth, Hants.

**General Information (cont.)**

Type: Throttle-equipped, shaft rotary valve glowplug engine with two ball-bearings and ringed aluminium piston.

Bore and Stroke: 0.906 in. x 0.937 in.

Stroke/Bore Ratio: 1.034 : 1.

Displacement: 0.6041 cu. in. or 9.899 c.c.

Checked Weights:

(i) 406 grammes—14.3 oz. (less silencer).

(ii) 478 grammes—16.9 oz. (with Fox silencer).

P · C · F · C · H · I · N · N

60 we have handled but it held steady speeds under various loads irrespective of fuel used—i.e., unlike some engines intended for hotter fuels, it did not, when operated on straight fuel, lose power when the starting battery was disconnected.

Power. Two things stood out in regard to the performance levels reached by the Eagle.

The first was the negligible power loss caused by the *closed-front* Fox silencer. This was considerably less than Fox's advertised claims, amounting to a barely measurable 100 r.p.m. on a prop matched to the engine's peak output and no loss at all at the lower levels. As we have already noted, the gas outlet areas of this silencer are larger than the Eagle's exhaust port area so this negligible power loss is not really so surprising.

The second was the engine's very high maximum torque: one of the best we have recorded for a 10 c.c. R/C engine on 5 per cent nitromethane fuel. This resulted in uncommonly good pulling power on the larger prop sizes: for example, 8,000 r.p.m. on a 15 × 4 Punctilio,

8,900 on a 14 × 6 Top-Flite maple and 11,100 on a 14 × 4 Top-Flite standard. A popular 60 stunt model prop, the 11 × 8 Top-Flite maple was turned at 11,000 r.p.m. and the 11 × 7 Top Flite maple at 11,800. There would be little point

The piston/cylinder assembly with cylinder head and connecting rod, note gudgeon pin retaining circlip.

in using anything smaller than this latter size as, on this, the engine should, in the air, reach its peak b.h.p. which, according to our tests, occurs at around 12,500 r.p.m.

Throttling. Adjusting the Fox carburettor calls for a technique different from that to which most

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