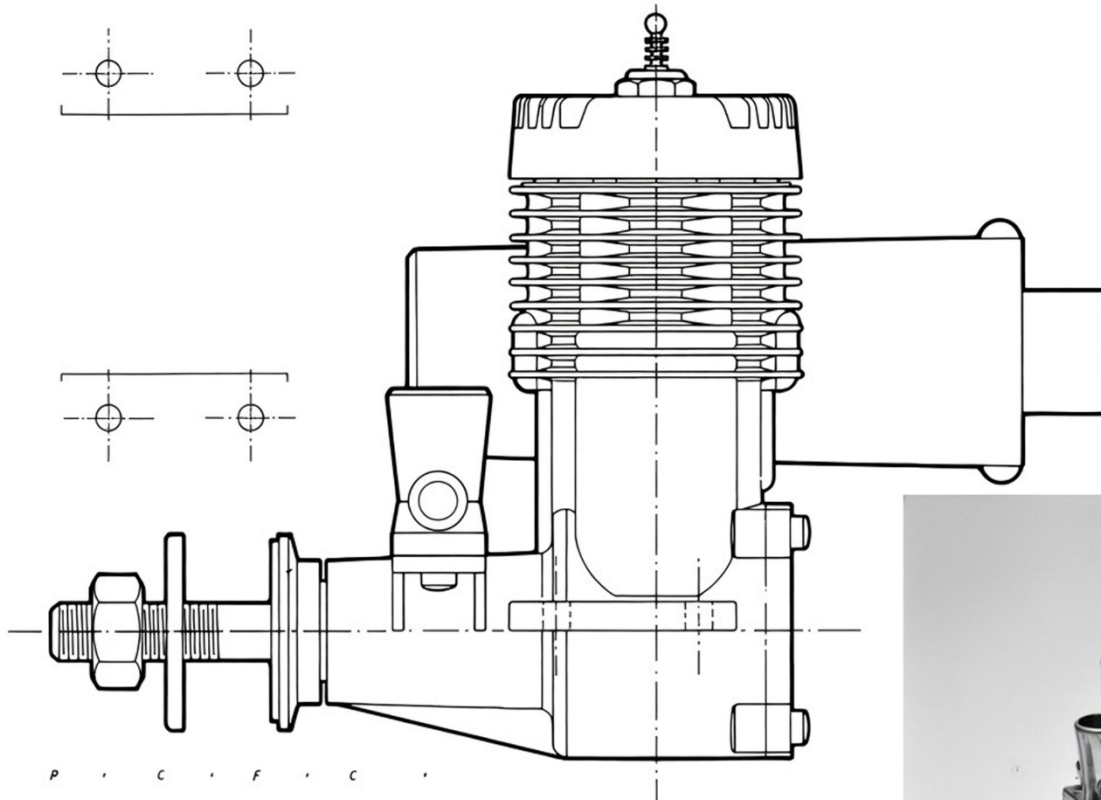


Fox 25



Peter Chinn's ENGINE TEST: FOX 25

WITH THE RECENT establishment, by the American Fox Manufacturing Company, of their own sales and service headquarters in the U.K. (actual distribution remaining in the hands of **Irvine Engines**, plus **Model Aircraft (Bournemouth) Ltd.**), some substantial reductions in the prices of Fox engines have been made possible. However, one engine that has been very competitively priced ever since its introduction early this year, is the Fox 25.

This motor is interesting in that its overall size and weight are comparable with those of the average '19' class engine, yet it enjoys the advantage of a 25 per cent larger swept volume. Moreover, the advantage is fully exploited, as the Fox 25, if our test sample is representative, is a good 25 per cent more powerful than the average standard 19 engine on the same fuel.

Unlike most American engines, the latest Fox models have provision for the fitting of silencers especially made for them by the manufacturer. On the 25, as on certain other new Fox engines, this takes the form of tapped lugs above and below the exhaust duct to which the silencer is attached with a pair of Allen screws. There is a choice of two types of silencers. Both have a pressure die-cast body with integral duct and in both types gases escape via radial slots in a full length inner machined tube, the only difference being that whereas with the open type, the tube is open at both ends to obtain an extractor effect, the alternative pattern has a closed front end to lower noise level.

In general, the Fox 25 is of conventional design and construction. It is of the popular front rotary valve type with crossflow scavenging and a lapped cast-iron piston running in a drop-in steel cylinder liner. The main casting embraces the crankcase, cylinder casing and a bronze-bushed main bearing in a single unit. The only unorthodox feature of the 25 is its carburetor.

Fox 25



This, following the style first used on the large Fox 60/74/78 series motors, has a vertical intake and is attached to the engine by means of a base flange. This is mounted on a rectangular saddle cast on to the crankcase nose and is secured from below by two screws.

The carburettor has a 9/32 in. dia. choke which, after allowing for the spray-bar diameter, gives an effective choke area of approximately 12.5 sq. mm. The rotary-valve is open for approximately 175 degrees of crank angle, closing at 50 deg. A.T.D.C.

The transfer ports open and close at 60 deg. each side of B.D.C. and the exhaust 67 deg. each side of B.D.C. These ports are of orthodox rectangular shape, unbridged and the cylinder liner is located in the usual manner by a flange at the top where it is locked in position by the cylinder head. The head forms a wedge-shaped combustion chamber on the exhaust side of the piston baffle.

Fox engines in general are simple to dismantle, enabling the user to easily replace worn or damaged parts. No special tools are required for the 25. After removal of the prop driver, cylinder-head and back-plate, the cylinder liner can be withdrawn, enabling the conrod to be lifted off the crankpin and the piston/rod assembly and the crankshaft to be taken out. Just one point needs to be noted regarding the removal of the piston from the connecting-rod. The solid gudgeon-pin is free to float in the front piston hole, but the rear hole is tapered for a light press fit. The gudgeon-pin must, therefore, always be with-drawn



forward i.e. carefully pressed out or lightly tapped out from the rear.

Performance

Two examples of the Fox 25 were submitted by the Fox factory for our examination and test. Both were quite free-running from new, neither showing any tendency to overheat or lose power but were, nevertheless, given our standard running-in treatment, using a straight methanol and castor-oil mixture for the first 30 minutes running.

It was quickly established, however, that a straight fuel is not suitable for the Fox 25. Both engines lost up to 600 r.p.m. on straight fuel when the plug lead was disconnected. A change to a mildly doped fuel (our standard 5 per cent pure nitromethane test mixture) corrected this completely and also gave a useful boost to power output.

Some prop r.p.m. figures recorded at this point included 8.200 r.p.m. on an 11 x 6 Power Prop, 8.800 on an 11 x 5 Power- Prop, 9.200 on a 10 x 6 Top Flite maple, 9,600 on a 10 x 5 Punctilio, 9,800 on a 10 x 4 Punctilio, 10,500 on a 9 x 6 Top Flite maple, 12.000 on a 9 x 5 Top Flite wood, 12.200 on a 9 x 4 Punctilio, 12.600 on a 9 x 4 Keil-Kraft nylon and 13.700 r.p.m. on an 8 x 6 Power Prop. The two engines were quite evenly matched as regards performance but one appeared to have a slightly better needle valve response and this example was therefore set aside for the remainder of the tests.

Fox 25

The Fox silencer supplied with the two engines was of the open front type. This has an 11.1 mm i.d. extractor tube, open at both ends for a total area of 194 sq. mm and into which gases are drawn through seven slots totalling 100 sq. mm. Since these areas are larger than for many '60' size silencers, it is not surprising to find that the silencer does not 'silence very much. On the other hand it does not have much effect on power either in fact, our tests indicated virtually no measurable power loss at all.

Torque tests on the engine showed a maximum torque of 32 oz. in. at around 9.000 r.p.m. The torque curve was remarkably flat and, as a result, a peak output of just on 0.40 b.h.p. was determined at a little short of 15.000 r.p.m., which is very good for an engine of this type.

Handling qualities in general were satisfactory. On mild fuels, such as the 5 per cent nitro test mixture, we found that, for starting, the 25 liked to have the needle-valve opened up slightly from the running setting.

As was indicated at the beginning of this report, the appeal of the Fox 25 lies in the performance it offers in relation to both price and overall size and weight. Incidentally, a throttle equipped version of the engine for R/C is now also marketed.

Power Weight Ratio (as tested with Fox open front silencer): 0.91 b.h.p./lb.

Specific Output (as tested): 99 b.h.p./litre.

SPECIFICATION

Type: Single cylinder, air-cooled glow-plug ignition two-stroke with crankshaft rotary-valve and bushed main bearing.

Bore: 0.680 in.

Stroke: 0.682 in.

Swept Volume: 0.2478 cu. in. (4.051 c.c.)

Stroke/Bore Ratio: 1.00:1

Checked Weights: 157 grammes - 5.54 oz. (less silencer) 198 grammes - 6.99 oz. (with Fox Type B extractor silencer)

GENERAL STRUCTURAL DATA

Pressure die-cast aluminum alloy crankcase/cylinder casing/front-housing unit with bronze-bushed main bearing and drop-in steel cylinder-liner. Pressure die-cast aluminum alloy crankcase back-plate secured with four screws. Case hardened steel counter balanced crankshaft with 0.437 in. dia. journal, 0.315 in. bore gas passage and 0.156 in. dia. crankpin. Lapped Meehanite c.i. piston with straight baffle and 0.125 in. dia. solid gudgeon-pin pressed into rear piston hole only. Pressure die-cast aluminum alloy connecting-rod with plain eyes. Pressure die-cast aluminum alloy finned cylinder-head with .010 in. aluminum gasket and secured to cylinder casting with six screws. Pressure die-cast aluminum alloy prop driver. Pressure die-cast aluminum alloy flanged based carburettor body secured to crankcase nose with two screws and reversible for left or right hand needle control. Brass spray-bar. Beam mounting lugs.

OPTIONAL EXTRAS

(i) Size B open-front silencer, P/N 90211

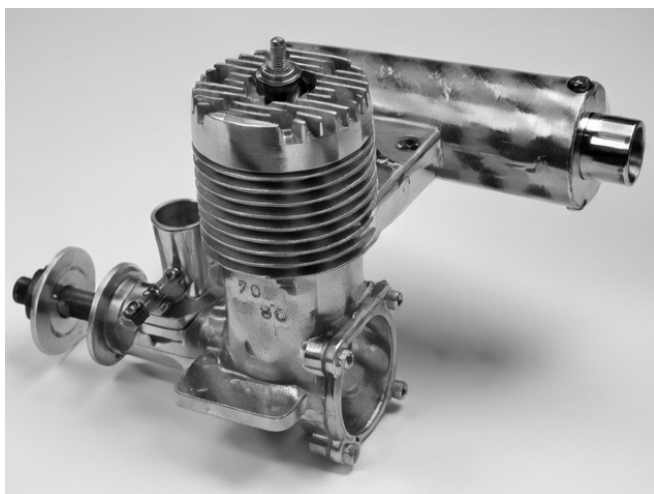
(ii) Size B closed-front silencer, P/N 90212

(iii) Aluminum prop-shaft extension 1 in., P/N 90401

(iv) Steel prop-shaft extension 1 in., P/N 90402

(v) Aluminum prop-shaft extension 1 in., P/N 90403

(vi) Steel prop shaft extension 1 in., P/N 90404



Fox 25

TEST CONDITIONS

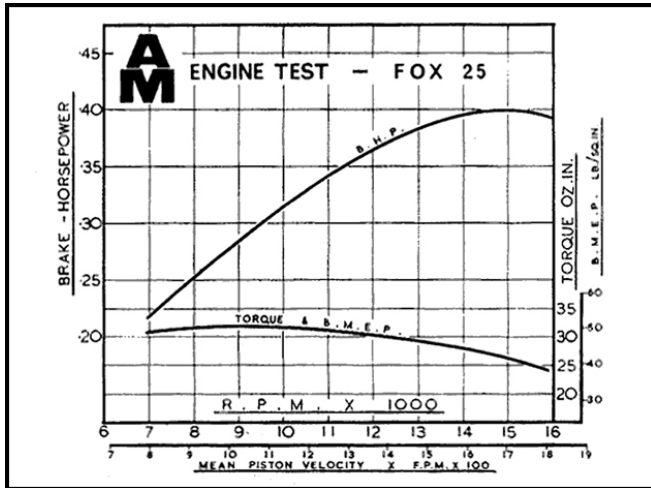
Running time prior to test: Approx. 1 hour

Fuel used: 5 per cent pure nitromethane, 25 per cent Duckhams Racing Castor-oil, 70 per cent methanol
Glow-plug used: Fox standard platinum-rhodium filament long-reach, as supplied

Air Temperature: 14 deg. C. (57 deg. F.)

Barometric Pressure: 29.65 in. Hg.

Silencer: Fox Size B open-front type.



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