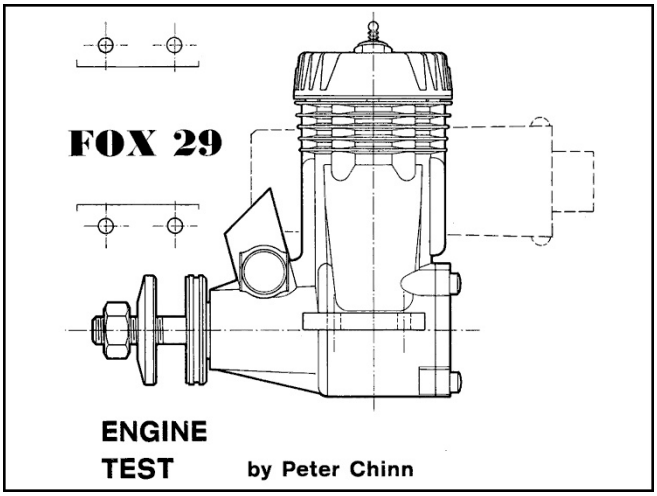
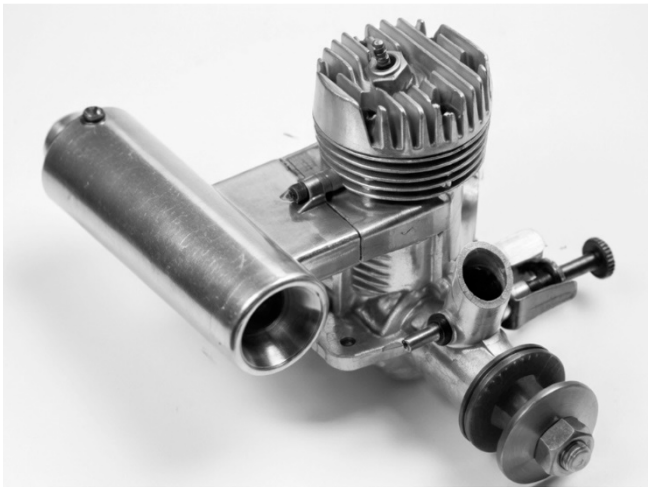
Fox 29 STD





More than twenty years' experience in producing medium-size glow-plug motors of simple construction that are easy to service yet of good performance, is at the back of this recently introduced American motor.

The current Fox 29 has the distinction of being by far the lowest priced 5 c.c. engine on the U.K. market at the present time. In fact, it costs less than some 1 ½ – 2 ½ c.c. motors. Intended, primarily, for control-line work specifically stunt or general purpose 'sport' use - it will undoubtedly appeal to those who have a limited budget but who nevertheless favour larger models that cannot be adequately powered by smaller engines of similar price.

The design and construction of the 29 are typically Fox. It is built around a one-piece body casting comprising crankcase and cylinder casing, has conventional open-loop or crossflow scavenging, a lapped piston and a plain (bushed) main bearing. The piston is of Meehanite cast-iron with straight baffle and runs in an unhardened steel cylinder-liner with a large centrally-divided exhaust port timed to remain open for some 142 degrees of crank angle. The transfer port period as measured on our test sample is also quite long at 134 degrees.

The hardened crankshaft is counterbalanced by means of cutaways each side of the crankpin and is coupled to the piston by an unbushed conrod of machined aluminum alloy. The shaft has a rectangular valve port and is fed from a circular port in the bearing to give a timing of 40 degrees ABDC to 45 deg. ATDC.

The cylinder head features the usual Fox wedge-shaped combustion chamber but is of a new external shape with very deep tapered fins and has an inclined glow-plug. The plug fitted to the test motor was the standard U.S. fitting; namely a Fox long-reach type intended for use with not more than 1.5 volts. Purchasers are warned not to use a 2 volt lead-acid cell unless a suitable resistance or adequate dropping leads are employed, in which case, the owner should first remove the plug and check that the 'glow' is not excessive i.e. bright red, not orange-yellow. The alternative would be to fit the engine with one of the new Fox 2 volt plugs. These can be identified, externally, by their black body finish.

Available for use with the 29 is the Fox 'B' size silencer. This, which also fits the current Fox 25 and 36 engines (i.e. those equipped with silencer attachment lugs) consists of an outer die-cast aluminum shell and inlet duct, and an inner perforated tube through which the exhaust gases are discharged. Both the area of the perforations (which are in the form of a series of radial slits) and the area of the tailpipe outlet are very large indeed and, while offering somewhat limited 'silencing', cause virtually no power loss. There is a choice of two types of silencer: one with closed front (as used for our tests) and one with an open front to promote a scavenging flow of air through the inner tube of the silencer. On test we found no more than 100 r.p.m. difference under load between the two although there might possibly be a very slightly greater difference in the air with

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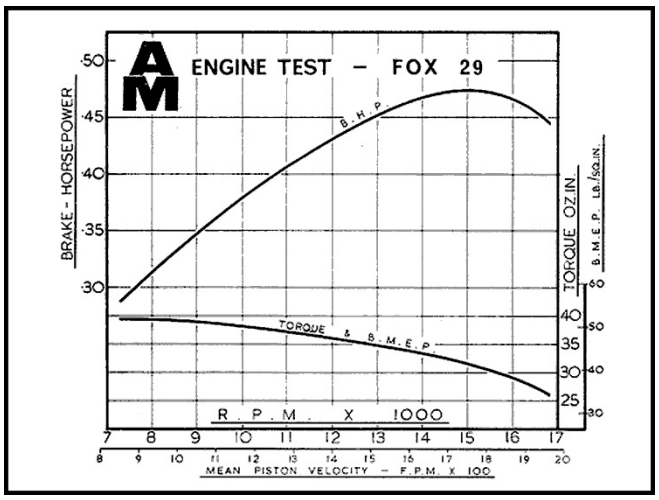

forward movement giving a faster airflow through the open front type.

While these silencers are not particularly cheap compared with the low price of the engine itself, they are quite compact and only add 11 oz. to the weight of the engine.

Performance

Experience with the Fox 29 indicated that this motor is not suitable for operation on 'straight' fuel i.e. one containing only methanol and lubricant. Our test motor needed a minimum of 5 per cent pure nitromethane (or 7-8 per cent commercial denatured nitromethane). One must remember that most American engines are operated on fuels containing nitro- methane, and compression ratios are normally selected to suit such fuels.

The maker's recommended fuel for the Fox 29 is Fox 'Missile Mist' which is stated to contain 25 per cent nitromethane and it is obvious that the engine has been set up to run best on such a mixture.

On test, we found that, compared with the performance on Fox 'Missile Mist', the attempted use of straight methanol/castor-oil fuel caused the loss of 1.200 r.p.m. on a 9x6 prop. This was not due solely to the higher power output resulting from the use of nitromethane. It was also due to the fact that use of a 'cold' fuel in an engine set up for a 'hotter' mixture was causing ignition to be retarded. This was evident from the fact that some power could be regained by reconnecting the battery lead to the glow-plug while the engine was running.

In due course, Missile Mist will, we understand, become available in the U.K. Meanwhile, one could use another U.S. imported fuel, such as K&B 'Super-sonic-500' or 'Supersonic-1000' (both available through Irvine Engines) or a home-brew containing, say, 10-20 per cent nitromethane. As already stated, our test motor needed a minimum of 5 per cent nitro. On test, this, with a 9 x 6 prop, was about 700 up on straight fuel. Under lighter loads however (e.g. on props intended to allow the engine to get near to its b.h.p. peak in the air), 5 per cent nitro was not enough to avoid a falling off in power as the battery lead was disconnected. Our performance tests were therefore carried out on Missile Mist.

The general handling qualities of the Fox 29 were entirely satisfactory. Starting was good, using the orthodox procedure of priming the cylinder when the engine was cold and simply choking the intake when restarting it warm. The needle-valve, with its new larger control-knob, was much more convenient to adjust than the old type and held settings precisely.

Typical prop r.p.m. recorded on test included 9.900 on a 10x6 Top Flite maple, 10.300 on a 16x5 Punctilio, 10.600 on a 10x5 Super glass-nylon, 11.200 on a 9x6 Top Flite maple, 12.600 on a 9 x 5 Top Flite standard wood and 13.000 on a 9 x 4 Tornado nylon. The 29 is not critical as regards prop size and, thanks to its useful low-speed torque, has good pulling power over a quite wide range of load speeds. Maximum torque

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was nearly 40 oz. in. at about 7.500 r.p.m., while the peak output, just short of 0.48 b.h.p., was reached at some 15.000 r.p.m.

Unquestionably, this new Fox 29 is very good value. Admittedly, the attraction of its remarkably low initial cost, is slightly reduced by its need for more expensive fuel. This could, one feels, be overcome if the manufacturer were to offer it on the U.K. market with a slightly higher compression ratio.

Power/Weight Ratio (as tested on Fox Missile Mist fuel with silencer): 0.84 b.h.p./lb.

Specific Output (as tested on Fox Missile Mist fuel with silencer): 96 b.h.p./litre.

SPECIFICATION

Type: Single cylinder, air-cooled, glow-plug ignition two stroke with crankshaft rotary valve and bushed main bearing.
Bore: 0.738 in.
Stroke: 0.700 in.
Swept Volume: 0.2994 cu. in. or 4.907 c.c.
Stroke/Bore Ratio: 0.9485:1.
Checked Weights:
214 grammes 7.55 oz. (less silencer)
255 grammes 9.00 oz. (with Type B extractor silencer)
257 grammes 9.07 oz. (with Type B closed 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. Hardened steel counterbalanced crankshaft with 0.500 in. dia. journal, 0.345 in. bore gas passage and integral 0.218 in. dia. solid crankpin. Lapped cast-iron piston with straight baffle, annular stiffening rib above bosses and 0.156 in. dia. solid gudgeon-pin retained by wire circlips. Machined aluminum alloy connecting rod with plain eyes. Deeply finned pressure die-cast aluminum alloy cylinder head with .010 in. aluminum gasket and secured to cylinder casting with six screws. Blued steel prop drive washer, retaining washer and hexagon nut. Steel 7.26 mm. i d. choke insert retained by 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, ½ in. P/N 90401
(iv) Steel prop shaft extension, ½ in. P/N 90402
(v) Aluminum prop shaft extension, ¾ in. P/N 90403
(vi) Steel prop shaft extension, ¾ in, P/N 90404

TEST CONDITIONS

Running time prior to test: Approx. 1 hour
Fuel used: (i) 75 percent methanol, 25 per cent Duck hams Racing Castor-oil (Running-in).
(ii) Fox 'Missile Mist' (Tests).
Glow-plugs used: Fox standard 1.5 volt platinum rhodium filament long reach.
Air Temperature: 13 deg. C. (56 deg. F).
Barometric Pressure: 29.70 in. Hg. Silencer: Fox 'B' closed front type.

More: https://flyinghlsat.com/search.php?search_keywords=Fox-Engines