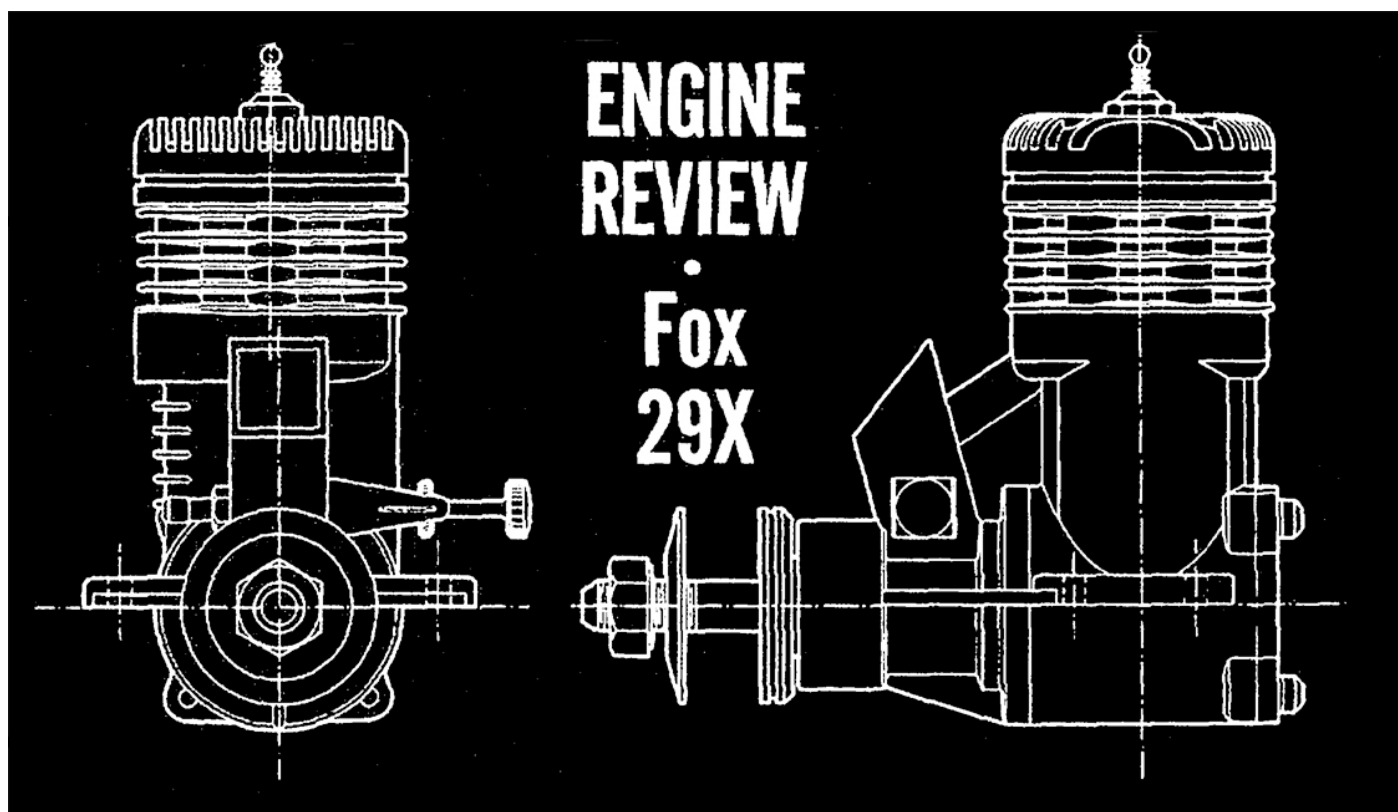


Fox 29X STD - 1968



By PETER G. F. CHINN . . . Contrary to what we hear regarding the American engine manufacturers deserting the field, 't isn't so as can be seen from this latest Fox entry in the engine Sweepstakes. Fox's 29X confirms that American engines still better most rivals for performance and value.

► Whether we like it or not, it has to be admitted that most of the new engines that have come on the market during the last year or two have been of foreign manufacture. In a way it is fortunate that, with many domestic motor manufacturers busy with other work, satisfactory imported engines are available to fill the gaps. Nevertheless, it is good to see that 1968 is not proving to be completely devoid of new and competitive American products.

In particular, we are thinking of the new Fox 29X.

This is a motor that is built to a familiar and proven Fox formula. It is basically a mixture of parts common to certain other models in the Fox range, cleverly blended to produce a powerful, yet easy to operate motor that is as good as, if not better than, any other .29 at anywhere near its modest price of \$14.95.

Our test 29X equal the performance of our test sample following careful break-in, on similar fuel. As we shall point out later, even more power can be obtained from the 29X if the user needs it.

Like all the middle displacement Fox engines, the 29X uses a one piece main casting embracing the crankcase, front housing, and cylinder casing. The casting is, in fact, the same as that used by the 36X engine. Like the 36X, the case contains a single needle-bearing to support the ½ in. dia. crankshaft journal at the rear end. At the forward end, the shaft runs direct in the crankcase material.

The crankshaft is hardened and is similar to that of the 36X, except for a slightly shorter stroke (0.700 in. instead of 0.715 in.).

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Externally, 29X looks very much like 36X and is interchangeable for two class F/F contest work.

It has a 7/32 in. dia. solid crankpin and is fairly generously balanced by a crescent counterweight in addition to having the web flanks cut away either side of the crankpin. The gas passage through the shaft is large 3/8 in. bore and is fed from a rectangular valve port which registers with a rectangular aperture in the bearing. The intake period is lengthy: the valve opens at 33 degrees ABDC and closes at some 57 degrees ATDC (our measurements) for a total intake duration of 204 degrees of crank angle.

As on the 36X, the carburetor intake is rectangular in section. It has a 3/8 inch square restrictor, reducing the choke diameter to 9/32 in. and this is further restricted by a 9/64 in. dia. spray bar. Incidentally, if you have occasion to remove the spray bar (e.g. if it is desired to relocate the needle-valve on the opposite side) make sure that it is replaced with the two diametrically opposed jet holes facing fore and aft rather than vertical. Some engines are not fussy in this respect, but the 29X will tend to run lean with the jet holes vertical, so much so that the needle will have to be backed off to the point where it is hanging on only by a couple of threads.

The piston and cylinder assembly are the same as those of the expensive 29XBB model. Cylinder bore is 0.738 in. but the cylinder sleeve has the same o.d. as the 36X and therefore has a very much greater wall thickness (.068 in.). A very wide, centrally divided, exhaust port is used.



Parts disclose typically Fox design with simple but robust construction, the result of many years of development in the .29-.40 cubic inch tile engines.

This occupies more than half the cylinder circumference: 200 degrees to be precise. It remains open for 140 degrees of shaft rotation, timed approximately 72 deg. BBDC 68 deg. ABDC, or, more correctly, 72-68 degrees each side of the crank position when the piston is at the bottom of its stroke. (Like all the other Fox models to which it is related, the 29X is a desaxe engine. That is to say, its cylinder axis is offset sideways relative to the crankshaft, in the direction of rotation. Therefore, the uppermost and lowermost positions of the crankpin no longer coincide with the positions of the piston at the top and bottom of its stroke.) The exhaust opening leads the bypass by approximately 5 degrees, i.e. the bypass period is 130 degrees.

The lapped Meehanite piston is typically Fox, very light with a thin skirt and thin vertical baffle, higher at the center than at the sides.

The small diameter (5/32 in.) solid wrist-pin is also a Fox feature and is now restrained against contact with the cylinder walls by wire internal snap-rings within the piston bosses.

The conrod is of machined aluminum alloy, unbushed, and the complete piston and rod assembly weigh less than 1/2 ounce.

The cylinder sleeve has a flange at the top, by which means it is located, in the usual manner, in the cylinder casting but a soft aluminum 10 thou. gasket is used between the flange and the top of

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the casing. A gasket of similar material is used for the cylinder-head joint. The cylinder head is of dies cast and machined aluminum, identical with that of the 29XBB and uses a wedge type combustion chamber. The head is held down with six screws and has a centrally located Fox standard long reach glow plug.

A word about Fox plugs. For many years, Fox bought plugs from other makers. However, when most plug manufacturers started using ceramic insulators, Duke Fox undertook the development of his own plug. Duke told us that he was not all together happy with ceramic seals because all previous experience had shown that his engines ran faster on non-ceramic seal plugs. The answer was found in a material used primarily for jet tail-pipe joints and guaranteed to withstand a temperature of 1800 deg. F. This material, moreover, does not crack, as do the seals of some plugs, if overtightened in the head.

The next step was to find a better element material. After many hundreds of tests, an alloy of platinum, iridium and rhodium was selected in place of the platinum iridium alloy most commonly used. Another plug problem dealt with was the welding of the element. Here, the core piece is now gold plated and weld failure has been virtually eliminated. Incidentally, Fox R/C plugs now come with a machined on idle bar to eliminate any slight risk of the bar becoming detached and damaging the engine.

The overall dimensions of the Fox 29X are exactly the same as those of the 36X and it is about 0.3 oz. heavier (due to the thicker cylinder sleeve). The two engines are therefore virtually interchangeable for two class (B/C) free flight competition with the same model. The 29X has ample power on suitable prop sizes to make it competitive for free flight in a model mainly intended for a .36 cu.in. engine.

Our test 29X was first broken-in and then checked out on a 5 percent nitromethane fuel. The engine was fairly free from the start but was, nevertheless, given a nominal break-in of one hour consisting of a series of short runs, starting with one minute rich runs and ending with a full 4-

5 minutes at the optimum setting. At this time, it was established that the engine would turn a 10x6 Top Flite at 10.300 rpm and an 11x4 Top Flite at 11.200 rpm which is very good for a 29 running on such a mild fuel.

Starting was excellent at all times. For a dead cold start, the 29X was primed fairly generously through the exhaust port and, provided that the fuel line was full, the engine would start within 2-3 flips of the prop and keep going. Hot starts were readily obtained by first choking the intake for one or two preliminary turns, following which the 29X would usually go first or second flip. The only complaint we have about handling is the same one that we have voiced before namely, the uncomfortably close position of the needle valve to the prop.

Tests were then conducted on the recommended Fox Missile Mist fuel. This fuel added 400-500 rpm to the prop speeds quoted above. Other prop/rpm figures obtained included 10.100 rpm on an 11-5 Top Flite wood, 10.900 rpm on a 10x6 Tornado nylon, 12.400 on a 10x4 Tornado nylon, 13.000 on a 10x3 ½ Top Flite nylon, 13.800 on a 9x5 Top Flite wood and 14.500 on a 9x4 Top Flite nylon.

Maximum torque obtained on test, also on Missile Mist, was 51 oz.in. (which, equivalent to a bmep of 67 lb/sq.in.. is very good) at between 10.000 and 11.000 rpm. The torque curve was notably flat, the engine delivering an almost constant torque from 8.000 to 12.000 rpm, followed by a gentle decline and thereby resulting in a fairly flat power curve with the peak at around the 14.200 rpm mark and a very good bhp of 0.64.

It should be noted that these figures are for the engine in standard trim, as supplied, complete with carburetor venturi insert and running on suction feed. Fox docs not actually list a pressure fitting for the 29X but there can be no doubt that, for uses other than those (e.g. C/L stunt) requiring suction feed and maximum fuel lift and where the user wishes to extract the last ounce of power from the engine, it will be worthwhile to remove the insert and run on pressure feed. The engine can be fitted with a 36XBB back plate (part

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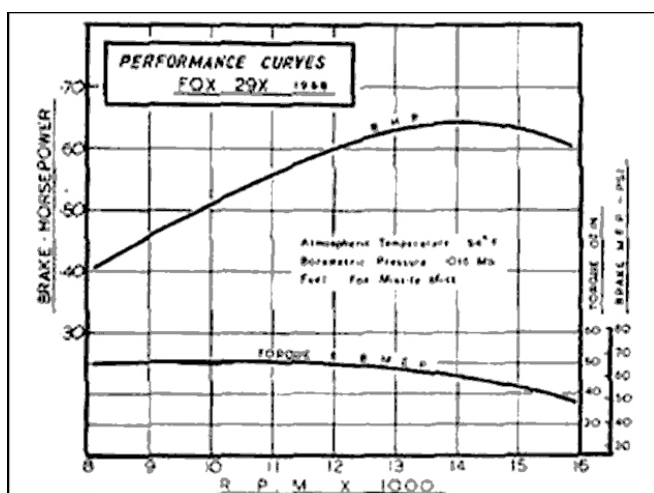
No.36BB-li. price \$3.00) and pressure nipple or alternatively, the existing back plate can be modified to take the pressure fitting (part No.3521, price 50 cents) by shortening, drilling, and tapping the central spigot.

In addition, of course, the engine can be run on a more potent fuel, such as Fox Blast. Combining the higher torque obtainable with Blast with the higher peaking speeds made possible with a less restricted intake, it is quite conceivable that outputs exceeding the 0.80 bhp mark may be realized.

The 29X owes its origin primarily to the Fox 35X engine that first appeared some five years ago and which set a new standard of performance in low priced engines. Unquestionably, the 29X is a most worthy descendent of that famous motor.



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



Summary of Data

Type: Single cylinder two stroke cycle with crankshaft rotary-valve and single needle bearing.

Weight: 8.1 oz.

Displacement: 0.2994 cu.in. (4.907 c.c.)

Bore: 0.738 in.

Stroke: 0.700 in.

Stroke/Bore Ratio: 0.949:1

Specific Output (as tested): 2.14 bhp/cu.in.

Power/Weight Ratio (as tested): 1.26bhp/lb

Price: \$14.95

Manufacturer: Fox Manufacturing Company.

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72901.