

Engine News.

By Peter Chinn

Fox 19 BB

Back in 1974, we featured a standard model Fox 19 in the Engine Test series in AeroModeller. It turned out to have an unusually good power output for a plain bearing, crossflow scavenged motor, recording nearly 0.40 bhp at 17,000rpm on ordinary five per cent nitro fuel, a level of performance which was subsequently confirmed by the engine's popularity and success in the early days of Club 20 pylon racing. An improved version of the crossflow Fox 19 is still in production, in both standard and throttle equipped types, as is its companion model, the Fox 25. (The latest version of the latter was, in fact, the subject of our Engine Test report in the January AeroModeller this year.) Now, however, the Fox company has introduced the new model illustrated here, the 19 BB.

The 19 BB is an entirely new design and, unlike the older model, features both Schnuerle scavenging and a twin ball bearing shaft. It is also rather unusual in that it gives the customer the option of side or rear exhaust not by his having to make a choice at the time of purchase, but by providing the engine with a detachable cylinder jacket that, complete with liner, can be rotated through 90 or 180 degrees. Four long screws tie the cylinder, complete with two component head, to the crankcase. According to our measurements, the combustion chamber volume is 0.34ml, giving a compression ratio of 10.6:1.

Cylinder porting follows the orthodox Schnuerle-plus-third port layout and is very conservative as regards timing with (according to our measurements) a 130 degree exhaust period, a 110 degree main transfer period and a 106 degree third port period. The engine is of the lapped type with a flat crown cast iron piston running in a steel liner.



Above left entirely new Fox 19 BB is first Fox engine of this size to feature Schnuerle scavenging and twin ball bearing shaft.

The machined conrod is bronze bushed at both ends.

The crankshaft and bearing setup is a little unusual in that the main journal runs in the same sized bearings (11 x 22 mm, 9 ball, steel caged) front and rear. The shaft has a 4.7mm (nominally 3/16 in.) dia. crankpin on a 7/32 in. thick crankweb, counterbalanced by cutaway web flanks. The valve port, 12mm long, is narrower than the intake aperture, which it uncovers at 40 deg. ABDC and closes at 52deg. ATDC. The intake boss is 7/16 in. (11.1 mm) bore and is fitted with a Fox two needle carburettor with adjustable automatic mixture control.



Above right feature of Fox 19 BB is a separate cylinder jacket and 90 transfer channel enabling exhaust to be rotated to rear or either side.

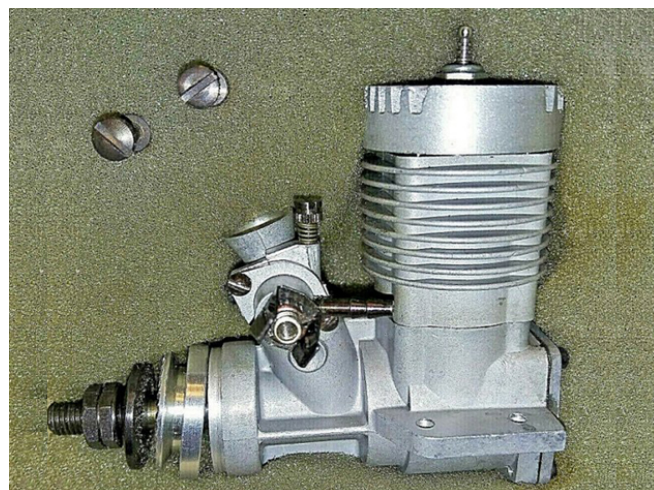
Fox 19 BB R/C



Fox 19 BB with cylinder assembly removed to show how cylinder jacket and liner can be located for side or rear exhaust Note also two part head with generous squish area.

In the past, when fuels containing generous quantities of nitromethane were still relatively cheap in the United States, most Fox motors were intended to be run on such mixtures. Now that nitro is expensive in the US, as well as elsewhere. Duke Fox's newer motors are being set up to run on much lower nitro contents or even, in the case of the larger engines, on straight methanol and oil mixtures. The new 19BB will still give its best performance on a fuel containing around 25 per cent nitromethane but, for most purposes, a 5 or 10 per cent nitro content is entirely adequate and, in warm weather, a no-nitro mixture can be used.

The Fox 19 BB has a bore and stroke of 0.650 x 0.600in., which gives a swept volume of 0.1991cu. in. or 3.263cc. It calls for a 30mm bearer spacing, is 57.5mm high (less plug) above the centre line and weighs 230g (8.1oz.). Not available at the time when our test model was received, but expected soon, will be a pair of Fox expansion chamber silencers offering a choice of high or low mounting positions.



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