Fox .07 Stunt

Mill Inaugurates

“Compact” Class

■ “Larger than the small ones, smaller than the large ones.” Sounds like a Detroit sales pitch? Perhaps, but it is also the best way to describe the compact .07 cubic inch displacement stunt motor from the Fox manufacturing Co. of Fort Smith, Arkansas.

This glow plug newcomer is a brand new design, not simply a sleeved down version of the .09. In fact, it bears no resemblance at all to its bigger brother. It is exceptionally clean and both outward dimensions and weight have been held to an absolute minimum. Although designated as a compact stunt motor, we see no reason why it should not be suitable for free flight or radio control. It is hardly larger than the average A/2 (.049) mill yet is capable of delivering almost twice the thrust of most by virtue of its ability to swing a larger diameter propeller.

Part of the problem with some small motors in the past has been their inability to maintain a steady rpm and their tendency to cool off and quit when idled down a rich mixture. Through careful design the .07 has neither of these faults.

Bench and flight tests by the factory experts indicate to them that it will power a 10 to 12 ounce control line model having a wingspan of about 30 to 35 inches through a complete AMA pattern on 45 foot lines. A real miser on fuel, it reportedly accomplishes this on less than one ounce of Missile Mist. Their findings are that it has sufficient power to capably handle a radio control job of up to 2 pounds.

Fox’s .07 is a downdraft shaft rotary valve design. It runs in a counterclockwise direction only (viewed from front). The crankcase casting is of an aluminum alloy featuring beam mounts and a rather long, straight air intake tube, the top of which is beveled at a 45 degree angle producing a sort of ram effect. A brass needle valve body is push fitted through the intake tube. Angled rearward at approximately 30 degrees it allows one inch between the propeller and the needle valve (a safety feature we have advocated for many years). The steel needle valve with its sturdy spring tensioner quite long, extending well beyond the beam mounting lugs, should pose no problem even with a fully cowled motor.

The die-cast aluminum rear cover is exceptionally deep and could easily be utilized as a fuel tank for free flight models. A paper gasket and three screws hold it in place.

The steel cylinder barrel threads into the crankcase. It features two exhaust ports and a single internal bypass located in the forward exhaust bridge. The flat topped steel piston is hand-lapped to the cylinder.

A steel connecting rod, round in cross section, tapers toward the top end ball where it is permanently attached to the piston via ball and socket joint. The counter-balanced, hardened steel crank-shaft features a round rotary valve. It is of the two piece variety in that the propeller screw threads into the crank shaft. Your small Phillips head screw driver tightens this screw.

An extended aluminum drive washer is splined to the crankshaft. The front washer, machined from steel, is designed to center itself into the 3/16 inch shaft hole common to many propellers.

An aluminum glow head threads into the top of the cylinder barrel to seat against a soft aluminum gasket.

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Comprehensive manual with each motor includes many helpful hints on its care and handling. We did encounter one discrepancy as far as our test motor was concerned. Under the heading of “Procedure for starting” the manual states the needle valve should be opened 6 turns, but our motor during tests started more quickly with its needle valve set at 3 turns open. This same setting may or may not apply to every .07, but it is worth noting as part of this report.

Missile Mist fuel was used throughout the test. Starts were exceptionally fast whether the motor was cold or hot. Very little break in time is required to bring the motor up to its peak efficiency. The steadiest rpm appears to be about 12,000. A 7/4 or an 8/2.5 propeller gave best results at this speed. A 7/2 prop gave fairly steady readings of about 15,000 rpm. Higher rpm is possible, but above 15,000 the motor is not nearly as smooth. Variations between lows and peaks were as much as 700 rpm. Low speed characteristics are exceptionally good with the ability to settle into a steady 4-cycle at extremely rich needle valve settings.

The maximum safe operating speed of the .07 is 16,000 rpm. Since thrust is based on mass-times-velocity it follows that the use of a smaller diameter (mass), low pitch (velocity) propeller is to be avoided as its use would not only reduce thrust but would also shorten the life of the motor by allowing it to rev well above its rated speed.

If handled wisely and carefully there is no reason why this compact should not last well beyond its 10 hour running time guarantee period.

Specifications: Bore .460; Stroke .420; Displacement .070 cu. in; Bare weight 11/4 ounces.

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