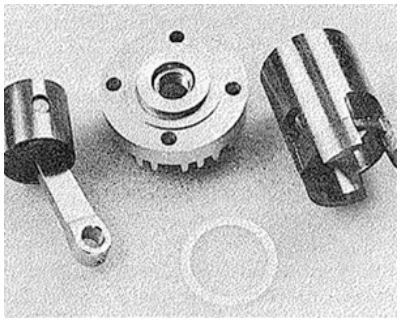
O.S Max .10FSR - STD & R/C

Engine Review Round Up

BY PETER G. F. CHINN

O.S.

OS MAX 10 FSR S & R/C



Unique Max 10FSR feature is its spec, cast cylinder. Piston/rod assy., cylinder head shown.

• O.S. MAX 10FSR. The Max 10FSR engine has the distinction of being the one hundredth model to be produced by the O.S. Company in its 40 year history. Put into production at the close of last year, it replaced the twelve-year-old Max-10 crossflow design and, with the withdrawal also of the low priced O.S. Pet 099 beginner's engine, it is now the smallest of the 27 engines in the 1977 O.S. range. Like the Max 10, the 10FSR is available in both throttle equipped and standard sport or stunt (10FSRS) versions. It has the same bore and stroke as the earlier engine but is a more refined and up to date design offering a higher level of performance.

The most significant feature of the Max 10FSR is its special Schnuerle ported cylinder. Schnuerle scavenging is, of course, also to be found on other "SR" series O.S. motors but the 10FSR is unique in that its cylinder liner is produced from a thick walled casting (see photo) with its four ports cast in instead of being machined. Moreover, the 2.3 mm wall thickness has allowed all three bypass channels to be cast into the outer wall of the liner. These take the place of the passages normally found in the inner wall of the surrounding aluminum cylinder jacket.

Another unusual feature concerns the actual location of the liner within the cylinder jacket. As with the O.S. Max 25FSR described last month, the exhaust discharges slightly to the rear of the right side and the other ports are positioned accordingly, i.e., the two main bypass ports are located front right and rear left, while the upwardly inclined third port is left front.

The liner is rotated in the case approximately 30° to achieve these locations. The liner does not have the usual top flange. Instead, it is vertically located at the bottom by a narrow seat in the main casting and, unlike the 25FSR, is not pinned against rotation. This needs to be borne in mind whenever the engine is disassembled. The correct location of the liner can be easily checked by noting the position of the forward edge of the exhaust port relative to the casting (about 0.5 mm) before loosening the cylinder head. This will ensure that the three slots in the case seat are correctly lined up with the three bypass entries when the engine is reassembled.

The rest of the 10FSR is modern but fairly conventional in design and construction. The well-produced body casting, comprising crankcase, cylinder-jacket and front housing, has a cast-in phosphor-bronze main bearing supporting the counter-balanced hardened one-piece crankshaft. This latter has a 9 mm o.d. journal, a 6.7 mm induction passage and a 4 mm crankpin.

The flat head lapped piston is fitted with a full floating 3.5 mm o.d. tubular wristpin having pads of Teflon type material. The conrod is of machined high duty alloy with plain eyes. The cylinder head is machine finished from an aluminum pressure casting, is fitted with a 0.2 mm (8 thou.) soft aluminum gasket and is secured with four Phillips 2.5 mm screws.

The Max 10FSR is equipped with a conventional barrel throttle carburetor similar to that fitted to the Max 15 R/C but without an adjustable air bleed and with a

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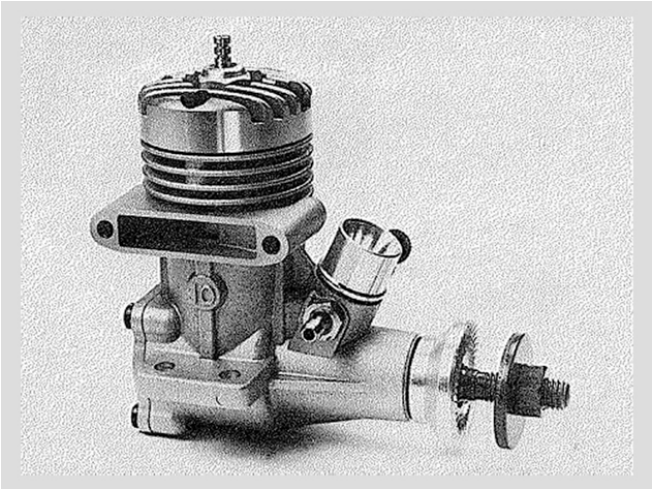
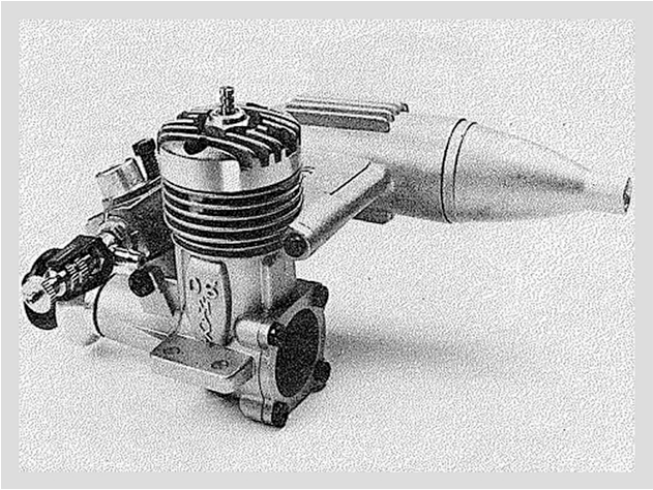


O S. Max 1OFSR has Schnuerle scavenging and replaces the old Max 10 model. New OS 761 muffler also included R/C version show at right.



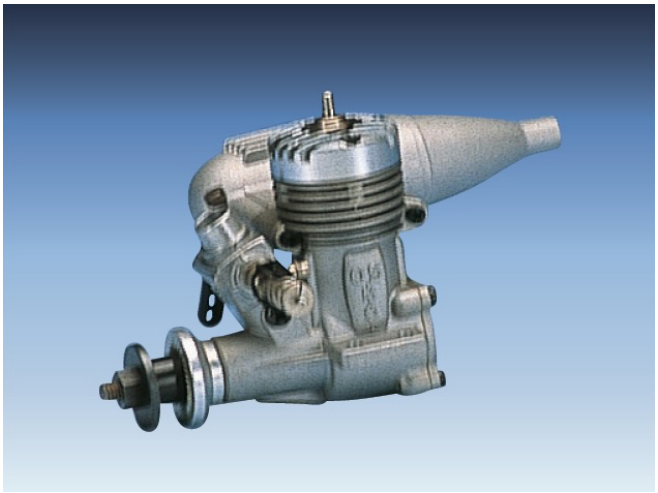
The "S" version of the new O.S. Max 10FSR has a standard venturi and needle valve assembly for Control Line and Free Flight use.

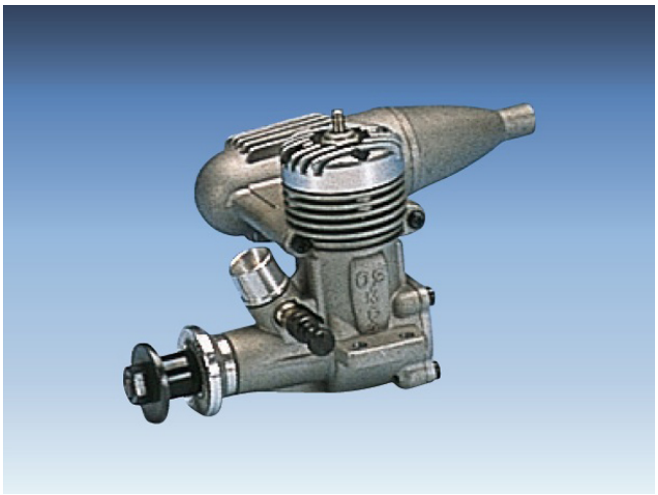
smaller choke. Effective choke area is approximately 10 sq.mm. The Max 10F-SRS has a machined aluminum 6 mm choke venturi and a 3.4 mm spraybar, giving an effective choke area of approximately 9 sq.mm.

Like all O.S. motors (with the exception of the racing units) the 10F-SR comes complete with a silencer designed for it. The unit supplied is a new one, the OS 761. It is a neat expansion chamber of adequate volume with a 4.8 mm i.d. outlet (area 18 sq.mm.) and is secured directly to the engine's exhaust duct with two long screws.

On test back in 1966, the Max 10 R/C developed just over 0.14 bhp at nearly 14,000 rpm when fitted with an O.S. Jetstream muffler and running on 5% nitromethane fuel. Our guess is that the new model will better this output by at least 30% but the actual figures will have to await the results of a forthcoming "Engine Review" test report.

The Max 10FSR has a bore and stroke of 13.4 x 12.4 mm, giving a piston displacement of 1.749 cc or 0.1067 cu.in. The checked weights of our samples-were 120 grams (4.23 oz) for the 10FSR and 107 grams (3.77 oz) for the 10FSRS. Adding the muffler increased these figures to 147 gr. (5.18 oz) and 134 gr. (4.73 oz) respectively. The engine has the following overall dimensions: overall height (less glow plug) 2.28", length (from prop driver face) 2.24", crankcase width 0.90", width across mounting lugs 1.52".





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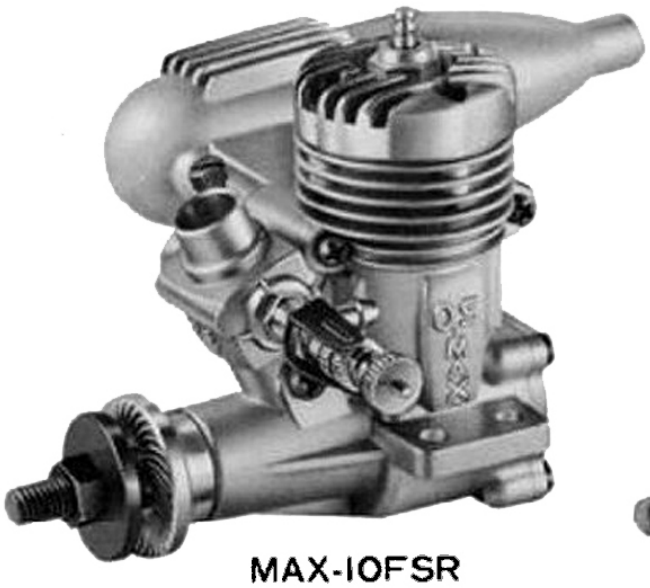
O.S. MAX-10FSR & 10FSR-S ENGINE



MAX-10FSR

MAX-10FSR-S

SPECIFICATIONS

	10FSR-S	10FSR	10FSR-M	10FSR-C
Displacement	1.76c.c. (0.107cu.in.)			
Bore	13.4m.m. (0.528in.)			
Stroke	12.4m.m. (0.488in.)			
Practical R.P.M.	8,000~20,000r.p.m.	2,500~17,000r.p.m.		
Weight (less silencer)	105gr. (3.75oz.)	118gr. (4.21oz.)	102gr. (3.60oz.)	148gr. (5.22oz.)

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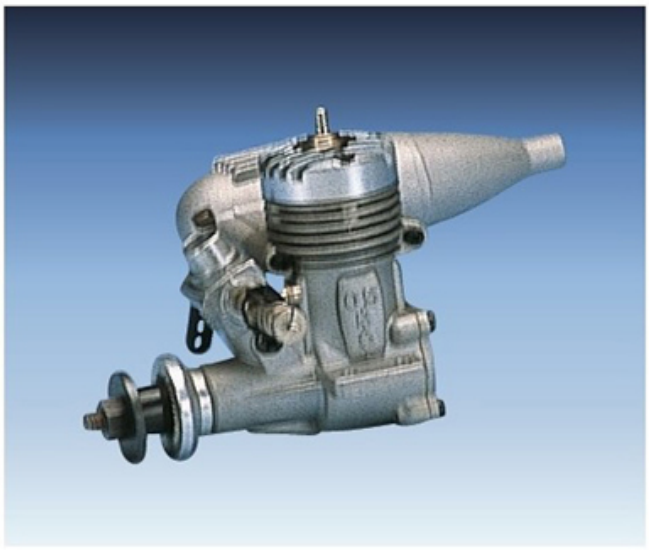

1976
MAX-10FSR
1.76c.c.

1976
MAX-10FSR-S
1.76c.c.

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