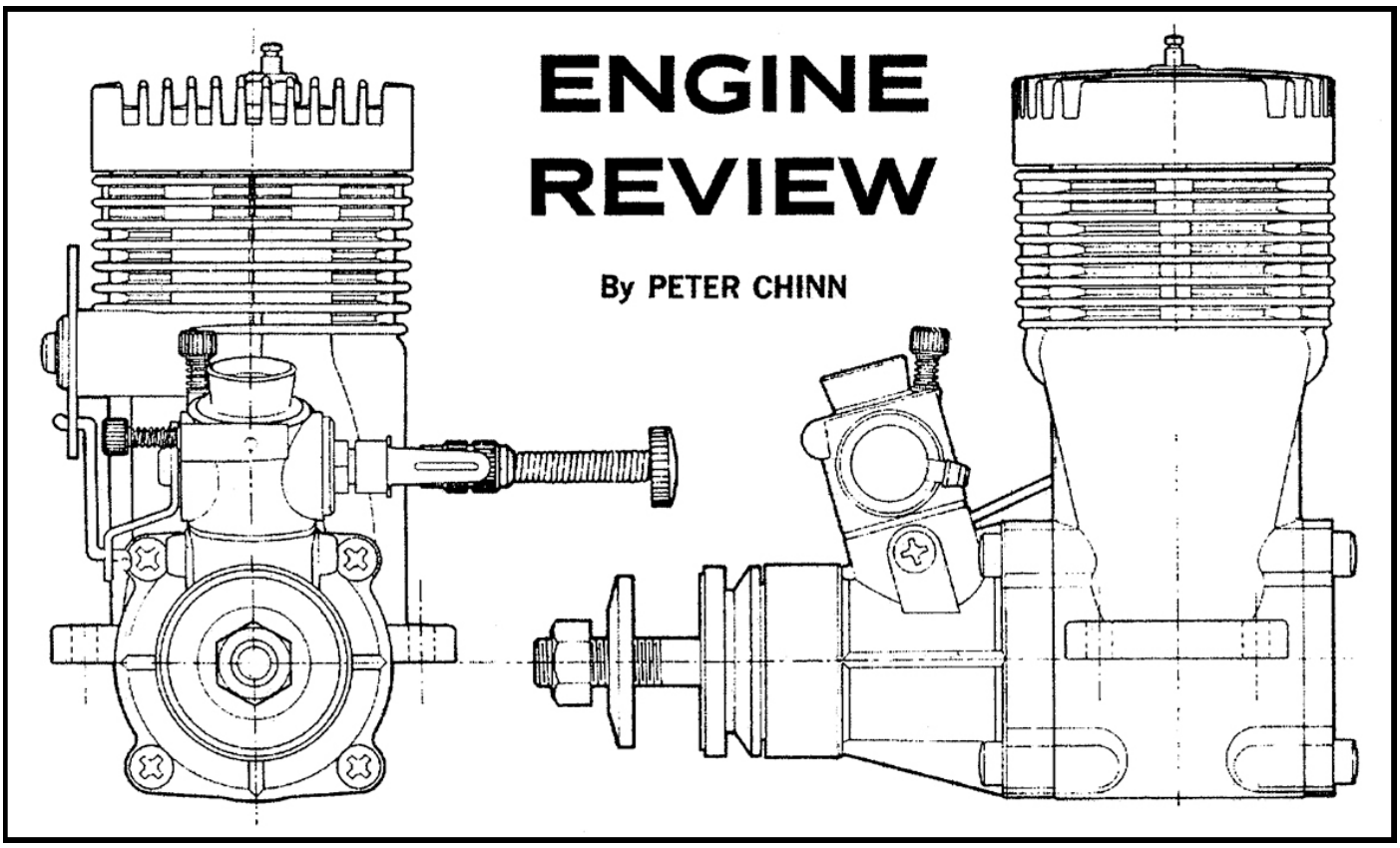
O.S Max-H 60F-R/C



► The O.S. Max-H 60F R/C is basically a front intake, shaft-valve version of the rear-induction drum-valve Max-H 60 R/C model, dealt with in this series a few months ago. It is generally supposed to be less powerful than the rear intake model and, taking an average of a number of production examples of each type, this could very well be the case. However, as our graphs show, we found very little difference in the performance of the examples used in our two tests. We formed the opinion that, in making a choice between these two engines, the prospective buyer would do better to adopt the version best suited to the installation details of the type or types of model for which he intends to use it. Both engines are, after all, well up to expected levels of power output in the R/C 60 class.

As we remarked in our report on the H.60 R/C the advantages of its rear induction layout are primarily connected with its installation and are most apparent when an inverted motor installation is called for as in a scale model where it may be desirable to completely enclose the motor within a scale cowling. Here, the entire carburetor assembly can be turned through 180 degrees to bring the air intake upright and to locate it and the various controls conveniently and safely in the upper rear section of the engine bay. The convenience of this arrangement seems, in fact, to have been appreciated by a number of scale model builders and in this year's British Nationals scale multi contest, for example, no less than five of the first six place winners used rear-intake Max-H 60's. Hitherto, O.S. engines, have been overwhelmingly outnumbered by other makes (notably Merco) in this event.

For the orthodox precision aerobatic multi model, however, many modelers still prefer the conventional front intake engine and. of course, the majority of regular multi models have been designed around shaft-valve engines, installed upright. Both O.S. 60's fit comfortably within a 1½ inch bearer spacing and, measuring less than 3½ in. from prop driver face to back plate screws, the 60F needs no more space than most other R/C 60's and considerably less than some. It has the slight advantage, over the drum valve H.60 R/C of being about ½ oz. lighter.
Although, as we stated at the beginning of this report, the H.60F is a development of the H.60, only a few parts remain unchanged.

O.S Max-H 60F-R/C

Powerful, yet docile and with good throttle is verdict on test engine.

Ports ore well made, good machining. Neat castings have all external surfaces shot blasted.

These comprise the two-ring aluminum piston, the machined dural, bronze-bushed connecting-rod, the hardened steel cylinder sleeve and the pressure cast cylinder head. A recent improvement to the piston has been to re-locate the circlips or snap rings which retain the 6.7 mm. hardened wristpin. Some instances of these clips breaking loose and ruining the piston were reported on early production models.

The same basic body casting is used but this is machined differently mainly to eliminate the integral rear rotary-valve housing and to provide for a normal back plate with four screw fixing.

Inevitably, the H.60F invites comparison, not only with other current shaft valve R/C 60's but with the O.S. Max 58 R/C (only 5 percent smaller in displacement) as well. To set the record straight, therefore, we should point out that the 58, despite having the same cylinder bore (24 min.), is a development of the Max 50 and is of quite different design. It is a lighter engine, of lower stroke/bore ratio and rather different construction. On the 58, the front housing is integral with the crankcase and the cylinder cooling fins are a separate component. The 60F, designed at the outset for a 10 c.c. (.607 cu. in.) displacement, has a longer connecting-rod, longer skirt piston, larger diameter crankshaft and many minor refinements and is rather more solidly constructed throughout.

In most respects, in fact, the 60F lines up with the currently accepted formula for a good 60 class shaft-valve R/C engine. The massive, hardened and finely ground crankshaft, better finished than most, has a 15 mm. dia. main journal and 11 mm. bore gas passage, while the hollow crankpin is a very generous 7.3 mm. dia. The shaft runs in a 15 x 32 mm. 9-ball high quality ball journal bearing at the rear and an 8 x 22 mm. 7-ball bearing at the front. These are installed in a substantial pressure die-cast housing which is attached to the crankcase with four 3.5 mm. Phillips head screws, the outer ring of the rear ball bearing being employed to accurately align the two components. A machined metal-to-metal joint is used. Immediately in front of the outer bearing, a machined dural prop driver is mounted on the shaft by means of a split taper collet, beyond which the shaft steps down to a standard 'A in. threaded length for the prop.

The, carburetor is of typical O.S. design, having the complete needle-valve assembly mounted on the left side with the jet feeding into the center of a ground brass throttle barrel. The usual air bleed and idling screws are provided. The complete carburetor plugs into a boss in the front housing with a rubber gasket to seal it against air leakage and is secured with two screws. Mixture from the carburetor is drawn into the engine via a parallel sided aperture in the bearing length and a rectangular valve port in the crankshaft provides

an intake timing of 45 deg. ABDC to 50 deg. ATDC.

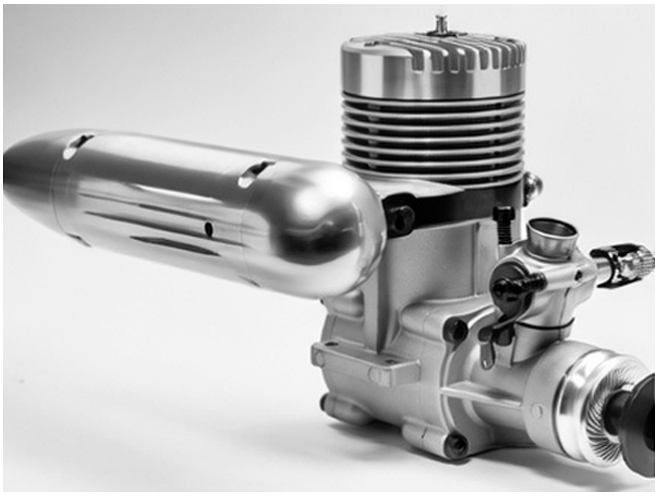
As normally supplied, the engine is equipped with a simple pivoted plate type exhaust restrictor, linked to the throttle arm. Alternatively, this can be removed and replaced by the large type O.S. muffler that is specially made for the two 60 size engines.

The standards of finish and fils of the H.60F are high. Castings are crisply executed, accurately machined and have an attractive shot-blasted finish. Machined parts are of excellent quality throughout. The entire engine has an attractive and purposeful appearance.

Experience with two Max-H 60 R/C drum-valve engines had indicated that a lengthy break-in was not necessary and that, while piston seal would improve during the first hour and thereby make for easier starting, power output would not vary to a measurable degree even during the first ten hours. In other words, provided that the engine had sufficient break-in time to avoid over-heating and to bed the rings adequately for quick starting, no useful purpose would be served by prolonging the break-in.

With our test model H.60F (received direct from the manufacturer) piston seal was, in fact, quite good at the outset and the engine also appeared willing to be put to work almost immediately. Needless to say, we still proceeded with our regular break-in treatment consisting of a series of short runs, starting rich and gradually leaning out, but with no more than 60 minutes running time, it was obvious that there was little point in delaying the start of tests. At the end of this period, hot restarting had improved noticeably.

We began by checking idling speeds and soon found that, if anything, the H.60F (which has a slightly smaller choke area) had the edge on the rear induction engine. Steady continuous idling at 2.000 rpm on the bench was obtained on 12 x 6 props, rising to 2.400-2.600 on 11 x 8 and 11 x 7 props. This, incidentally, was with the throttle as factory set. A good intermediate range was also obtained and the engine refused to be upset by



Lightweight muffler is pressure cast in two halves, extra large chamber. Steel strap fixing.

deliberate attempts to make it cut by abruptly slamming the throttle wide open after long periods of idling.

Our impression was that, despite a healthy power output, this was one of the most docile RC 60's that we have had the pleasure of handling. It started easily, cold or warm, throttle open or closed, and never showed any tendency to "bite" or to kick its prop loose.

Prop rpm checks were first made with the O.S. silencer fitted and showed a very slightly better performance than the 1966 rear induction model when load was sufficient to hold speed below 12.000 rpm. Actual prop/rpm figures recorded included 8.250 on a 14 x 6 Top Flite wood: 9.750 on a 13 x 5½ Top Flite wood: 10.350 on a 12 x 6 Power Prop wood, and 10.750 on an 11 x 8 Power Prop wood. The slightly better low speed pulling power of the H.60F was subsequently confirmed on the torque cradle, which indicated 94 oz. in. torque at 8.000 rpm as compared with 90 oz. in. for the rear induction model at the same speed.

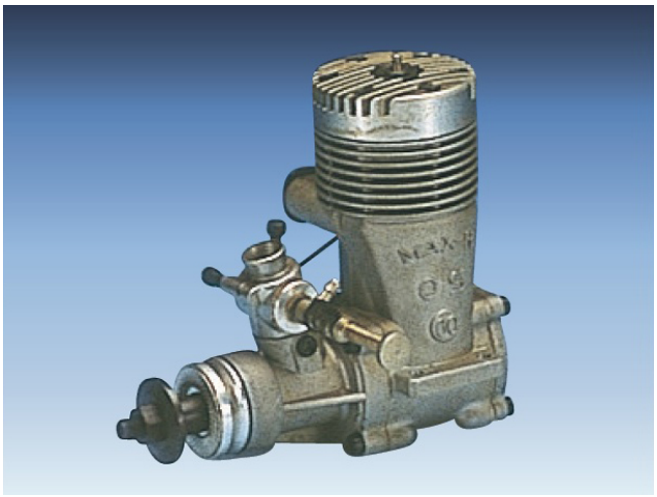
As with the drum valve engine, removal of the muffler really affected power output only at the higher speeds. The peak power (without muffler) of 0.95 bhp at between 12.500 and 13.000 rpm reached by the 60F on 5 percent nitro fuel was much the same as for the drum valve model and is one of the best figures recorded so far in this series for a 60 R/C motor.

O.S Max-H 60F-R/C

In all we found the Max-H 60 R/C a pleasing motor and we see no reason why the favorable results obtained on test should not be reflected in its performance in the air.

Summary of Data

Type: Loop scavenged two stroke with twin ball bearings and shaft type rotary valve induction. Throttle type carburetor and coupled exhaust restrictor. Muffler optional
Weight: 14.5 oz. (16.6 oz. with muffler)
Displacement: 9.953 cc. = 0.6074 cu. in.
Bore: 24 mm. (0.9449 in.)
Stroke: 22 mm. (0.8661 in.)
Stroke/Bore Ratio: 0.917 : 1
Specific Output (as tested):
1.57 bhp/cu. in. (less muffler)
1.46 bhp/cu. in. (with muffler)
Power/Weight Ratio (as tested):
1.05 bhp/Jb. (less muffler)
0.86 bhp/lb. (with muffler)
Price: $39.98
Manufacturer: Ogawa Model Manufacturing Co. Ltd. Osaka, Japan.
U.S. Distributor: World Engines Inc. 8960 Rossash Avenue, Cincinnati. Ohio 45236.



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