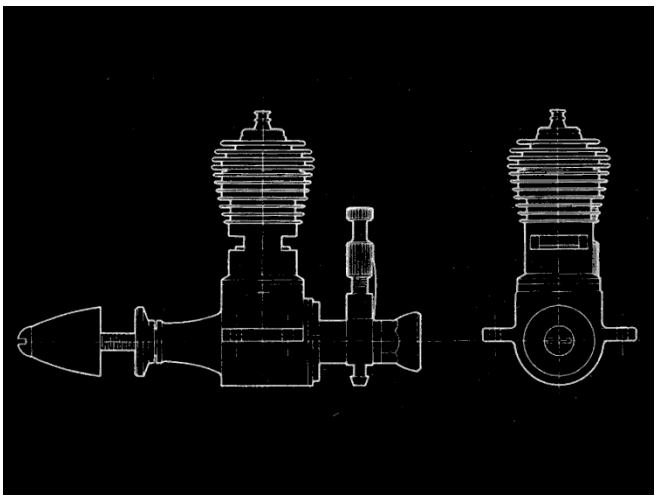
Cox Space Hopper .049



engine review

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Cox

Space-Hopper

.049

by P. G. F. CHINN

Continuing Cox's line of out-standing .049 power plants the Space Hopper features beam rather than the usual radial method of mounting.

► When, some eight years ago, the L. M. Cox Manufacturing Company Inc., introduced the Space-Bug motor, followed, a short time afterwards, by the Thermal Hopper, they established a new standard of performance in the Half A engine class. Ingenious and original design, expertly translated, by new advanced production techniques, into engines of top class construction and finish, the Space Bug and Thermal Hopper soon became the number one choice for Half A contest work and built up an impressive list of important national wins and records.

The Space Hopper model, which is the subject of this month's Engine Review, is, as its name suggests, the successor to the Space Bug and Thermal Hopper and, to quote the manufacturer, reflects all the benefits of several years' production" of these two famous models. Externally, the Space Hopper looks more like a scaled down Olympic or Sportsman .15 and, like its bigger brothers, uses beam mounting instead of the familiar radial mount. Those who prefer firewall mounting, however, can use the special nylon brackets available for this model. A pair of these brackets are supplied with every Space-Hopper, along with a set of mounting screws and a combination wrench. One advantage of these special brackets, over the old 3 point circular Thermal Hopper mount, is that they provide four points for accurate down thrust and side thrust adjustment with tree flight models. They require, a minimum firewall sire of 1 ¼ in. x 1 1/8 in. For speed installations, the Space Hopper offers an advantage over the Thermal Hopper with its rather deep reed valve housing and low positioned intake, in that a smaller fuselage cross section is required to accommodate the crankcase.

The Space Hopper is clearly related to the earlier 'Hopper in many basic essentials. It is still a rood intake motor with twin opposed exhaust ports and twin internal bypass flutes. It has the same type triple periphery jet system with separate needle-valve It has the built-in glow filament pioneered with the Space Bug and a similar counterbalanced shaft with relieved mid-section. Yet, such is progress, that scarcely any of the older engines' parts are interchangeable with those of the latest version.

To take the most obvious first, the original die-cast crankcase with its deep housing for the large back-plate reed valve unit and bronze-bushed main bearing, is replaced by a much more compact case machined, as with all current Cox motors, from extruded bar stock. The material used is a special alloy having excellent properties as a bearing metal and no bushing is therefore employed. A shallow oil-groove runs lengthwise in the bearing, to within 1/8 in. of the forward end, to aid lubrication of the front crankshaft journal.

Cox Space Hopper .049

Greeter consistency in production engine performance is Cox's claim for the Space Hopper. Latest unit combines ail the features of previous .049's plus their usual fine machining and finish.

The crankshaft is relieved at the centre to provide separate front and rear journals, as before, but is shorter and stronger with journal diameter increased from 3/16-in. to 7/32-in. The splined section, for the pressed-on alloy prop driver, is also of larger diameter and the extended, threaded, prop-shaft portion is omitted in favor of an internal thread for a replaceable screw for prop attachment. The crankpin remains at 7/64-in. dia.

The cylinder is similar to that of post 1955 Thermal Hoppers and takes the later type glow head in which the gas joint is tor venturi. The needle valve body can be rotated through a full 360 degrees for any convenient control position.

Bore and stroke of the Space-Hopper remain unaltered at .406 in. x .386 in. As one has come to expect of Cox products, the construction throughout is first class.

Our tests of the Space Hopper followed a break-in of 45 minutes. Starting was beyond criticism and as easy as with the easiest-starting beginners' motors. Improved crankcase compression, along with fine fuel atomization and excellent piston seal, probably have much to do with this. Running was very even and needle response was good. The normal running setting for peak power was 3 ¾ turns open on our test sample.

Space Hopper parts, all nearly new in design, but note, that once again the Cox ingenuity. First demonstrated with the Space Bug engine designed in 1952 is clearly shown in now parts.

Torque and rpm readings established maximum torque as being developed at 14.000 rpm. Torque was much above average even at quite moderate speeds for what is essentially a high speed Half-A motor and was reflected in the Space-Hopper's ability to turn a 7 x 4 prop at nearly 11.000 rpm. On various makes of 6 x 4 and 6x3 wood and nylon props, we obtained speeds of 14.700, 15.800, 16.300, 17.200, 17.500 and 17.800.

Peak power was established at 18.000 rpm, the course of the horsepower curve being as follows:

At rpm	bhp.
10.000	.055
11.000	.064
12.000	.072
13.000	.080
14.000	.086
15.000	.091
16.000	.094
17.000	.096
18.000	.096
19.000	.095
20.000	.092

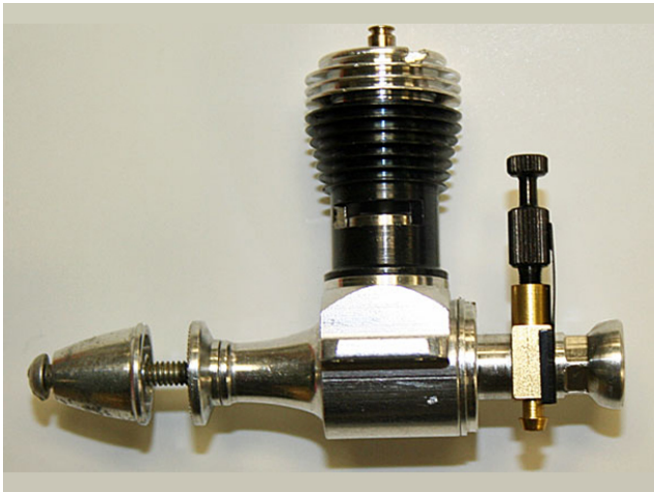
Needless to say, this performance, obtained with a stock off-the-shelf motor, using a 30 percent nitromethane fuel is outstanding.

Model Airplane News Magazine January 1961 by Hlsat

Cox Space Hopper .049

Summary of Data

Type: Two port, reverse flow scavenged two cycle with twin exhaust and twin bypass ports. Reed valve induction.
Weight: 1.3 oz.
Displacement: 0.0499 cu. in. or 0.817 c.c.
Bore: 0.406 in.
Stroke: 0.386 in.
Stroke/Bore Ratio: 0.951:1
Specific Output: 1.92 bhp/cu. in.
Power/Weight Ratio: 1.18 bhp/lb.
Price: $6.98 including firewall mounting brackets and special wrench.
Manufacturer: L. M. Cox Manufacturing Company, Inc., 730 Poinsettia Street, Santa Ana, California.



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