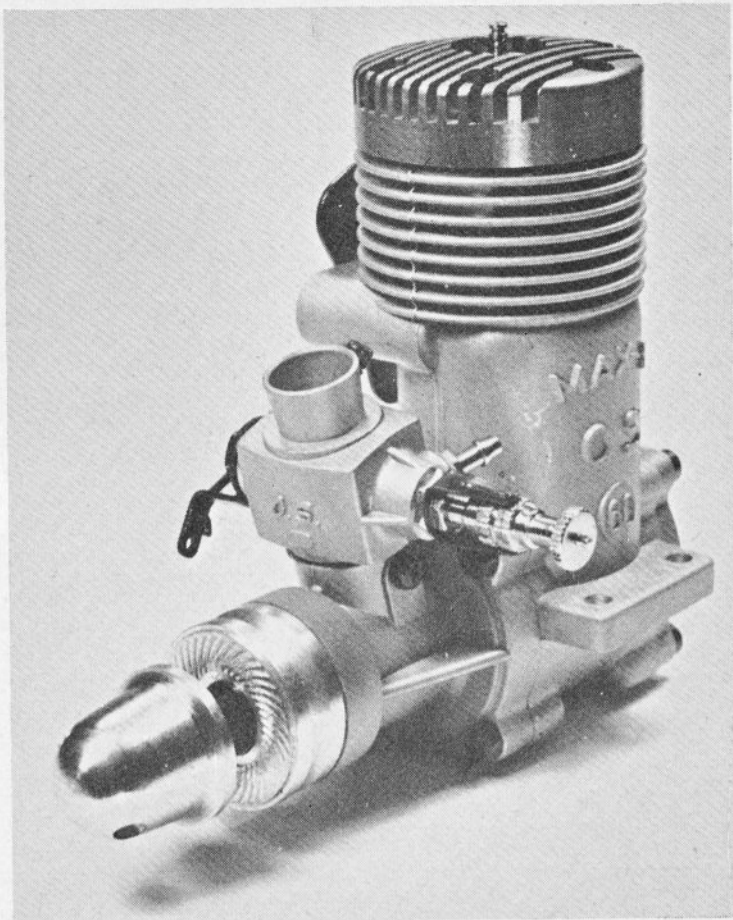


Peter Chinn tests the O.S. MAX-H.60 Gold Head



THE "GP" series or "Gold Head" O.S. Max-H.60 engines, both front induction and rear induction, have now been on the market for more than two years. The rear induction model was dealt with in the August 1969 issue of RADIO MODELLER. Since that time both engines have been given larger beam mounting lugs with transverse bolt hole spacing increased from 45 mm. to 49 mm.

Our present report covers the latest front induction model with new O.S. Model 71 carburettor having automatic mixture control. This carb can also be fitted to the older shaft-valve models.

Another new item is the Type 704 silencer which offers very good silencing, cleaner operation through better sealing, and provision for fuel-tank pressurisation.

Design & Construction Summary

Main Casting. This comprises the crankcase barrel and full length

cylinder casing in pressure diecast aluminium alloy. It includes beam mounting lugs and a short exhaust duct on the right side.

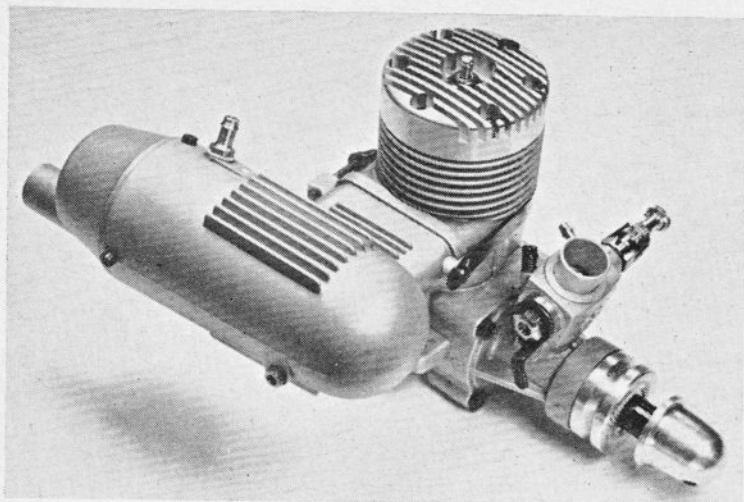
Cylinder. Integral with main casting with closely fitted hardened steel liner. Four exhaust ports timed to open and close 68 deg. each side of BDC. Four transfer ports timed to open and close 56 deg. each side of BDC. Two 7 mm. dia. skirt ports.

Crankshaft and Prop Drive Assembly. Counterbalanced hardened steel crankshaft with blued anticorrosive finish on non-working surfaces. Crankshaft has 15 mm. dia. main journal, 8 mm. dia. front journal and 7.3 mm. dia. tubular crankpin. Rectangular valve port timed to open at 40 deg. ABDC and to close at 60 deg. ATDC and admitting gas to 11 mm. bore gas passage. Machined aluminium alloy prop driver fitted to aluminium alloy split taper collet on front journal. Blued steel prop retaining washer and prop

nut, interchangeable with machined solid aluminium alloy safety pattern spinner-nut.

Front Housing and Backplate. Pressure diecast aluminium alloy bearing housing containing one 15 × 32 mm. NTN 9-ball steel-caged ball journal bearing at rear and one 8 × 22 mm. NTN shielded 7-ball steel-caged ball journal bearing at front and secured to crankcase with four 3.5 mm. Phillips screws. Pressure diecast aluminium alloy backplate attached to crankcase with four 3.5 mm. Phillips screws.

Piston and Connecting-rod Assembly. Piston machined from aluminium alloy bar with flat crown, straight baffle and two 7 mm. dia. skirt ports. Piston has bronze bushed bosses for reduced wear and is fitted with a single compression ring. Machined aluminium alloy connecting-rod with bronze bushes and oil holes at both ends. Fully floating 6 mm. dia. tubular gudgeon-pin with aluminium end-pads.



able rear section with offset outlet, so that the outlet may be located in any one of three different positions. It is also equipped for fuel tank pressurisation via a screw-in brass nipple supplied. Attachment is with a single steel strap and screw and provision for exhaust priming is included through a screw-in machined brass priming nozzle.

Test Performance

Our test unit was a standard 1970 series motor that was actually received from the manufacturer last year and was originally fitted with the standard airbled type O.S. carburettor. Tests were delayed until the Spring of this year when the Model 71 carburettor became available, enabling the engine to be converted to the latest specification.

The 60F was run-in, in the usual way, in a series of short runs, starting off rich and totalling approximately one hour, on a straight 3 to 1 mixture of methanol and castor-oil. For actual performance tests, our standard R/C fuel containing 5 percent (pure) nitromethane was substituted. Compression-ratio appears to be well matched to this mixture. We briefly checked the engine on a hotter fuel (12 percent nitro), such as is often used by U.S. contest fliers, but this made very little difference to power output. The glowplug used was the O.S. No. 7 bar type as supplied with the engine and this survived the complete series of tests. Atmospheric temperature at the time of testing was 48 deg.F. (9 deg.C) and barometric pressure was 30.20 in. mercury

Starting and Running. Starting and handling characteristics were excellent. Even when brand new the engine had quite good piston seal and, as a result, hand-started easily from cold. Warm restarts were not quite so rapid but, as the piston ring became bedded-in, hot compression steadily improved and, after an hour or so of running, starting was virtually first-flick, hot or cold. The engine was also very docile and could be hand started without risk to one's fingers even on props of 9 in. diameter—i.e. much smaller than one would actually use on a model.

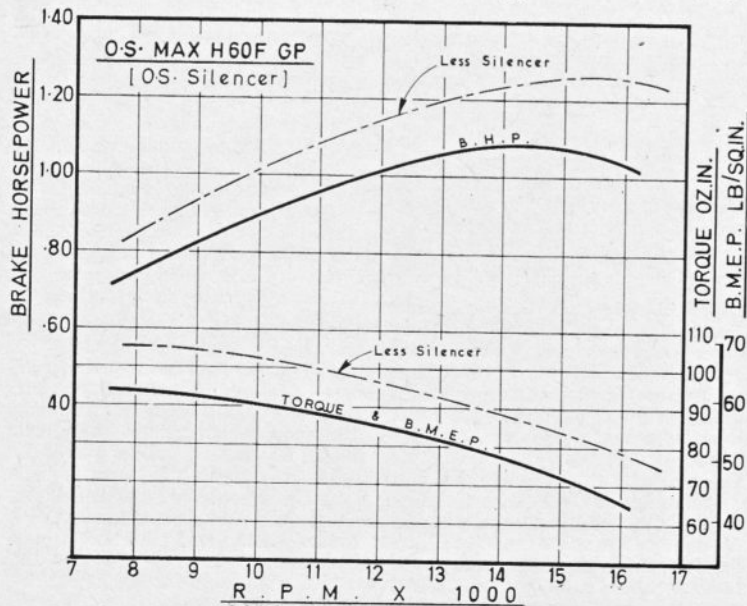
Running qualities were also very good. There was no loss of power as the engine warmed up and it held rpm steadily at full throttle. The main bearing housing remained cool. Vibration was below average: the 60F was, we would say, among the best two R/C 60's in this respect that we have tested in this series to date.

Cylinder-Head. Machined aluminium alloy, finned, with centrally-located glowplug. Hemispherical combustion-chamber with 4.5 mm. wide squishband interrupted by narrow parallel slot for piston baffle clearance. Soft aluminium gasket.

Carburettor. O.S. Model 71 with automatic fuel metering via helical movement of throttle barrel. Pressure diecast aluminium alloy body with pressed-in jet tube. Ground brass throttle barrel having 7.5 mm. choke and lightly spring-loaded to eliminate end-float. Sleeve type mixture control screw mounted in outer end of throttle barrel and adjustable while engine is running.

Separate easily replaceable needle-valve assembly. Separate fuel inlet nipple screwed into rear of carburettor body. Effective choke area: 24 sq.mm. approx.

Silencer. As supplied, the H.60F-GP was fitted with a centrally pivoted plate type exhaust restrictor coupled to the throttle-arm. This, of course, is discarded when a silencer is used. The engine can be fitted with the standard O.S. Jetstream 60/80 silencer having four staggered half-baffles and a 78 sq. mm. i.d. outlet nozzle, or with the latest Model 704 O.S. silencer which is a large volume un baffled expansion chamber with 50 sq.mm. outlet. This new type silencer has a remov-



Power. The maximum torque indicated on test by the H.60F-GP was not quite so high as the best previously recorded in this series for a 10c.c. R/C engine (this distinction belongs to the Webra Blackhead 61 followed by the HP 61F) and, as a consequence, the O.S. would not turn a really big prop (e.g. 14 × 6) quite so fast as either of these. The decline of the H.60F-GP's torque curve as load was reduced was, however, very gradual, resulting in an extremely good top-end and a peak b.h.p. that firmly places it in the very front rank for sheer power.

Just how much of an engine's full potential is actually used in a model depends, of course, on the silencer employed. The Webra silencer, for example, is a good one as regards silencing but absorbs quite a bit of

GENERAL INFORMATION

Manufacturer: Ogawa Model Manufacturing Company Ltd., Hirano-baba, Higashiumiyoshi, Osaka, Japan.

U.K. Distribution: E. Keil & Co. Ltd. Russell Gardens Wick Lane Wickford, Essex.

Type: Throttle equipped shaft rotary-valve glowplug engine with two ball-bearings and ringed aluminium piston.

Bore and Stroke: 24 x 22mm. (0.944 x 0.866in.)

Stroke/Bore Ratio: 0.917 : 1

Checked Weights:

- (i) 414 grammes—14.60oz. (less exhaust baffle)
- (ii) 422 grammes—14.87oz. (with exhaust baffle)
- (iii) 497 grammes—16.90oz. (with Jetstream 60/80 silencer)
- (iv) 490 grammes—17.28oz. (with Type 704 silencer)

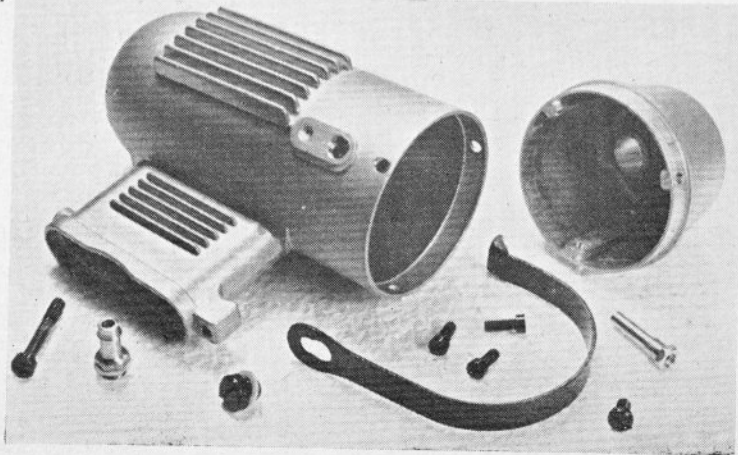
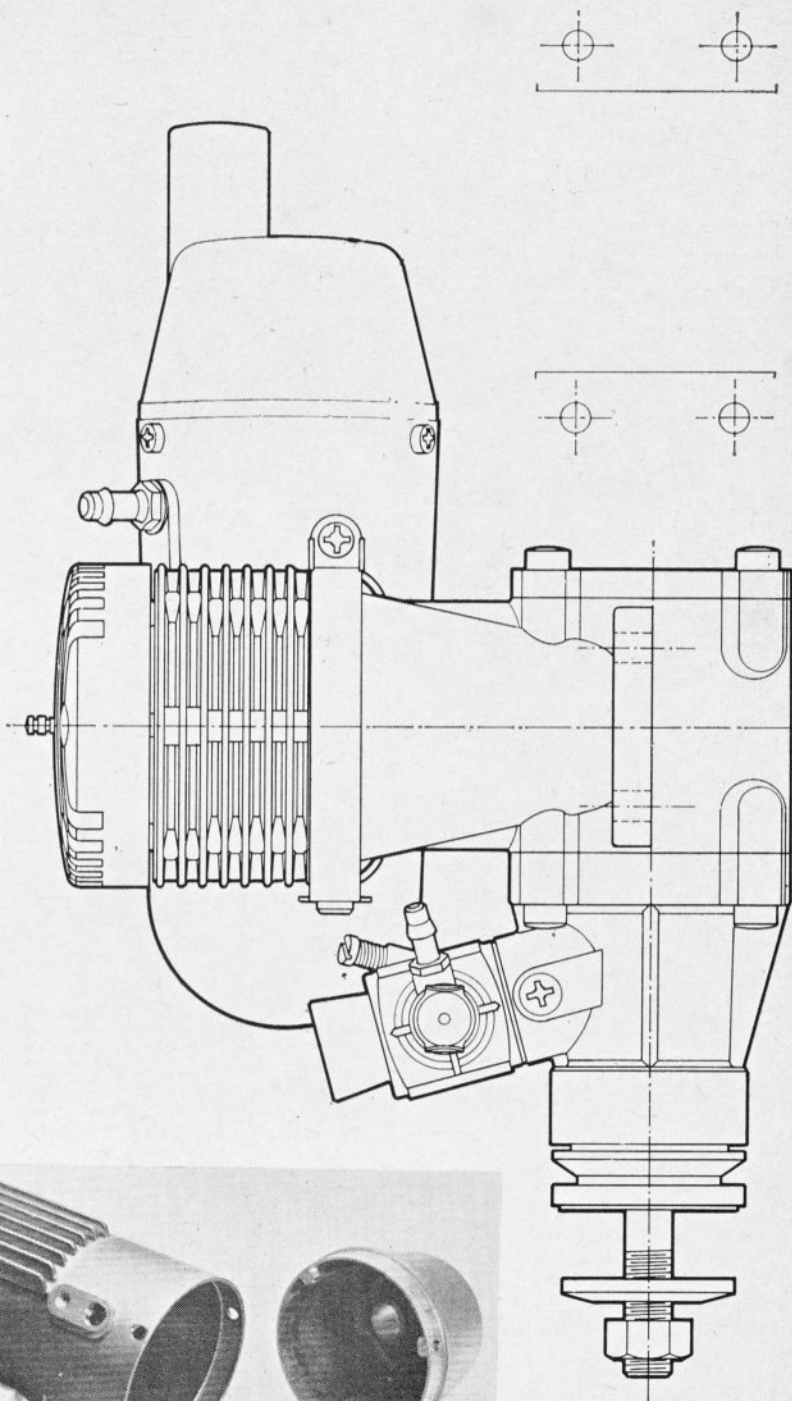
Recommended Retail Price: £25.29 including O.S. No. 7 glowplug, AMA safety pattern spinner-nut and tommy-bar.

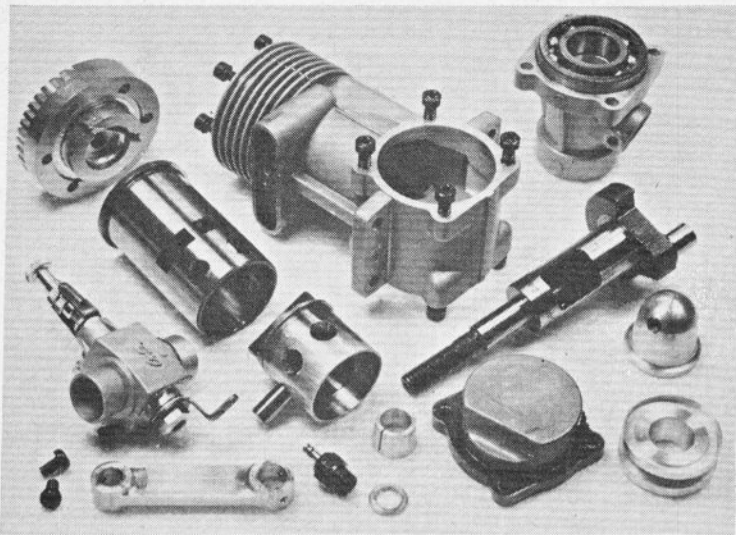
Optional Extras:

- (i) O.S. Jetstream Type 60/80 baffled silencer
- (ii) O.S. Type 704 expansion chamber silencer with optional fitting for fuel pressurisation system.
- (iii) O.S. 2-way socket spanner for prop nut and glowplug.

Also available:

Rear induction version (O.S. Max-H.60GP) with downdraught carburettor adjustable for upright or inverted installations.





power. The HP silencer has much less drastic effects. The two O.S. silencers fall between these two with the newer type causing slightly greater power loss (about 200 r.p.m. more on most props) than the old one but with exceptionally good silencing. Prop r.p.m. recorded with the H.60F-GP using the old silencer included 8,450 on a 14 x 6 Top Flite maple, 10,000 on a 13 x 5½ Top-Flite standard, 11,000 on a 12 x 6 Top-Flite maple, 11,400 on an 11 x 8 Power-Prop standard, 11,500 on an 11 x 7 Top-Flite maple, 12,500 on an 11 x 6 Top-Flite maple and 13,000 on an 11 x 6 Power-Prop maple.

Throttling. The new Model 71 carburetor worked extremely well, with a very low idle (2,000 r.p.m. on the bench), excellent recovery, steady intermediate speeds and a quite linear response to throttle movement. The automatic mixture control was particularly easy to adjust. It incorporates a recessed screwdriver slot enabling the optimum setting to be determined while the engine is actually running. There are no locknuts to fiddle with: the mixture control incorporates an internal O-ring and the idling screw setting is held by a coil spring.

Comment

We were recently shown an H.60F-GP (replaced under guarantee) that had somehow escaped from the factory with an excessively large big-end clearance so, obviously, even O.S., who have a high reputation for quality, slip up sometimes. So far as our own engine is concerned, however, it would be difficult to fault it. It is powerful, smooth, easy to start, docile and has an excellent throttle.

