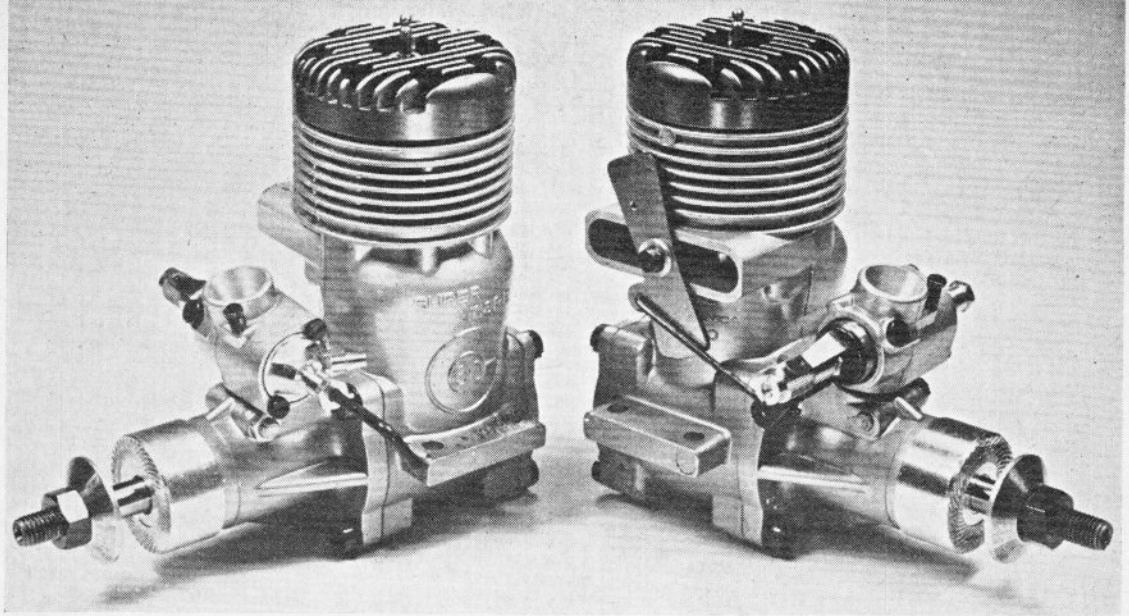


Peter Chinn tests the

SUPER-TIGRE G.60 R/C

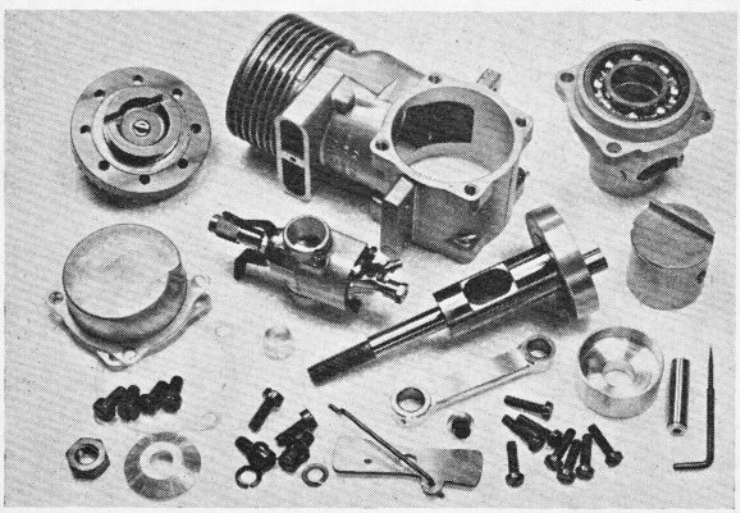
"BLUE-HEAD"

THE Super-Tigre G.60 front-induction "Blue-Head" R/C engine is the successor to the twin-plug G.60-FI model featured in this series last spring.

Outwardly, the only points which distinguish the Blue-Head from the previous version are its blue-anodised cylinder head with single central glowplug and somewhat shallower cooling fins, and its slightly revised Super-Tigre "Mag" type carburettor—now a "Mag-III" type with easier-to-adjust low-speed mixture control.

Many more modifications have, however, been made to the internal parts of the engine, particularly to those affecting its breathing system. For example, efforts have been made to increase primary compression by reducing the effective volume of the crankcase. To this end, a full circle internally counterbalanced crankdisc has been substituted (as on the C/L racing model G.60's) and the deep wide step in the crankcase backplate has been eliminated in favour of a short chamfered edge where this would otherwise partially obstruct the entrance to the transfer passage. Cylinder porting has been modified, with a slight reduction in transfer port area but a substantial increase in exhaust port area. On the induction side, the carburettor effective choke area remains quite small at only 20 sq. mm. and the intake period has been reduced by more than 20 degrees. The cylinder-head, in addition to reverting to a single ignition plug, uses a shallower but wider combustion chamber with reduced squish area.

The combined effect of these changes has been to increase the engine's power output without causing any deterioration in its pleasant handling characteristics.

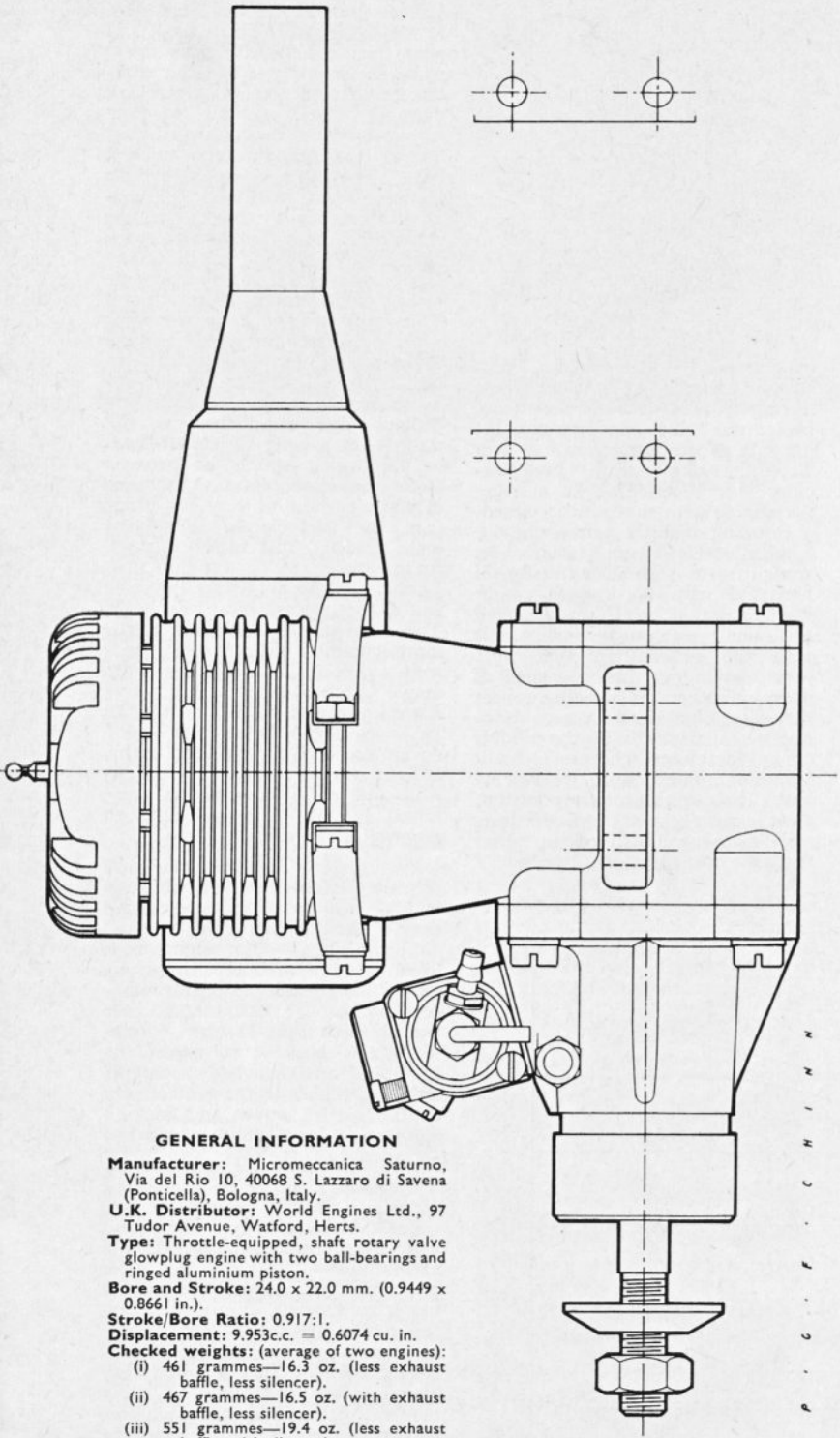


Design and construction summary

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. Finned cylinder casing integral with crankcase and fitted with chromed steel liner. Five exhaust ports timed to open and close 70 deg. each side of BDC. Four transfer ports timed to open and close 60 deg. each side of BDC.

Crankshaft and Prop Drive Assembly. Counterbalanced, hardened steel crankshaft with 15 mm. dia. main journal and 7 mm. dia. front journal. 7 mm. dia. integral crankpin in full circle crankdisc internally counterbalanced by peripheral slots sealed off by aluminium rim. Rectangular valve port timed to open 45 deg. after BDC and close at 45 deg. after TDC and admitting gas to 11 mm. bore gas passage through main journal. Machined



GENERAL INFORMATION

Manufacturer: Micromeccanica Saturno, Via del Rio 10, 40068 S. Lazzaro di Savena (Ponticella), Bologna, Italy.
U.K. Distributor: World Engines Ltd., 97 Tudor Avenue, Watford, Herts.
Type: Throttle-equipped, shaft rotary valve glowplug engine with two ball-bearings and ringed aluminium piston.
Bore and Stroke: 24.0 x 22.0 mm. (0.9449 x 0.8661 in.).
Stroke/Bore Ratio: 0.917:1.
Displacement: 9.953c.c. = 0.6074 cu. in.
Checked weights: (average of two engines):
(i) 461 grammes—16.3 oz. (less exhaust baffle, less silencer).
(ii) 467 grammes—16.5 oz. (with exhaust baffle, less silencer).
(iii) 551 grammes—19.4 oz. (less exhaust baffle, with silencer).
Optional Extras: Super-Tigre S-71 Extractor type silencer, weight 89 grammes (3.14 oz.).

aluminium alloy prop driver fitted to aluminium alloy split taper collet on shaft.

Front Housing and Backplate. Pressure diecast aluminium alloy bearing housing containing one 15 × 32 mm. 8-ball brass-caged ball journal bearing at rear and one 7 × 19 mm. 7-ball brass caged bearing at front and attached to crankcase with four 4 mm. screws. Pressure diecast aluminium alloy backplate attached with four 4 mm. screws. Paper gaskets.

Piston and Connecting-rod Assembly. Gravity-cast aluminium alloy piston with flat crown, straight baffle and single compression-ring. Machined aluminium alloy connecting-rod, bronze bushed at both ends with two oil holes at big end and one oil hole at small end. Fully floating 6 mm. dia. tubular gudgeon-pin with aluminium end pads.

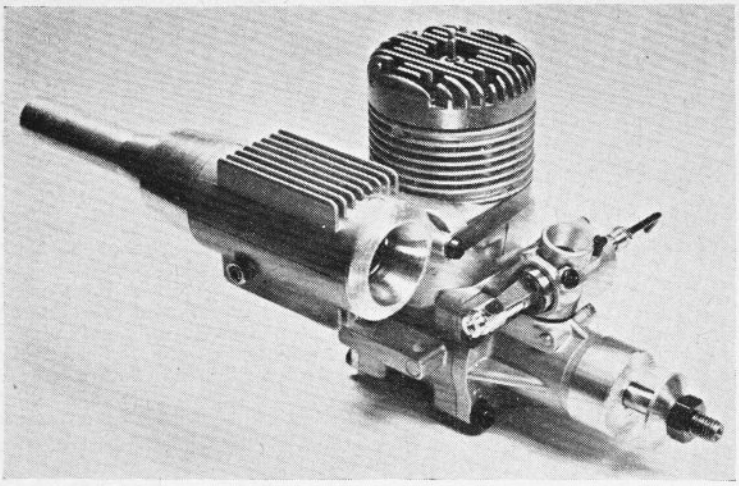
Cylinder-Head. Machined aluminium alloy, finned, with 3.6 mm. wide squish-band, slotted for piston baffle clearance. Bowl-shaped combustion chamber with central long-reach bar-type glowplug. One 0.20 mm. copper gasket. Head secured to main casting with eight 3 mm. screws.

Carburettor. Super-Tigre Mag-III barrel throttle type with automatic fuel metering. Pressure diecast aluminium alloy body. Steel throttle barrel having 8 mm. choke. Fixed 4 mm. dia. brass spraybar. Effective choke area 20 sq. mm. Low-speed mixture needle mounted in outer end of throttle barrel with tip located in spraybar to control exposed length of slit type jet. Barrel moves inwards as it rotates to closed position, reducing fuel flow through jet.

Silencer. As supplied, the G.60 Blue-head was fitted with a centrally pivoted plate type exhaust restrictor coupled to the throttle arm. For test purposes, this was replaced by a Super-Tigre S-71 air-scavenged type silencer having a total outlet area of 249 sq. mm.

Test performance

Two test motors were received direct from the factory in Italy and were first given a nominal running-in period of approximately thirty minutes intermittent running each on straight 75/25 methanol and castor-oil to enable them to be compared. They were, in fact,



virtually identical as regards performance and handling and at the end of this initial running-in period, prop r.p.m. checks established that no more than 100 r.p.m. separated them when loaded for full-throttle speeds in the 12,000-13,000 r.p.m. bracket. After accumulating a further hour of running time, the better of the two was put through our regular test procedure, using 5 per cent pure nitromethane fuel. Atmospheric temperature at the time of testing was 24 deg. C. (76 deg. F.) and barometric pressure was 30.10 in. of mercury.

Starting and Running. Both samples of the Blue-Head were very easy to start, hot or cold, and on all practical prop sizes after about one hour of running-in time. When the engines were brand new, hot starting was not so good as cold starting, due to reduced compression seal, but once the piston-ring had become properly bedded-in, hot restarts were equally good. Hand starting was used at all times during the prop tests and the engine passed our " bite test " by remaining safe to hand start on a 9 × 6 Top-Flite maple prop. No difficulty was experienced in starting the engine with the throttle closed.

Running qualities were also good. The Blue-Head ran steadily on straight 4-to-1 methanol/castor-oil fuel and with no loss of power when the plug lead was removed and, while one must qualify this with the observation that tests were carried out during a spell of warm weather, it would appear that the Blue-Head is set up to operate satisfactorily on the mildest (and, therefore, cheapest) fuels. Vibration levels were reasonably low. The engine's solid proportions and closely fitted cylinder-liner appear to have paid off in better than average heat dissipation.

Power. The manufacturer's claimed output for the Blue-Head is 1.10 b.h.p. (fuel unspecified) and our tests confirmed this figure when the motor was running without its silencer and on 5 per cent pure nitro fuel. Adding the S-71 extractor type silencer reduced peak b.h.p. by approximately 10 per cent. The power absorbed by this silencer, when used on the Blue-Head, was slightly more than we experienced with the 1970-71 twin-plug model G.60-FI, but the Blue-Head was still better than the earlier model under all conditions. This applied not only to peak b.h.p. figures but also to the engine's maximum torque.

The Blue-Head was notable for its willingness to run steadily and without sign of distress at full throttle on a wide variety of loads i.e. producing speeds of between 6,000 and 16,000 r.p.m. In terms of static speeds on very big props (e.g. for very large, slow-flying scale models), this included 7,400 r.p.m. on a 16 × 4 Punctilio, 7,700 r.p.m. on a 15 × 4 Punctilio and 8,500 r.p.m. on a 14 × 6 Top Flite maple. Turning to the more common prop sizes, speeds were 10,600 on a 12 × 6 Top-Flite maple, 10,200 on an 11 × 7¾ Bartels fibreglass, 11,300 on an 11 × 7 Top-Flite maple, 11,600 on an 11 × 7½ Power-Prop maple and 12,400 on an 11 × 6 Top-Flite maple. These figures were raised by up to 400 r.p.m. on removal of the silencer.

Throttling. The best all-round throttle performance was obtained with the low speed mixture control needle set to between 1¼ and 1½ turns open. Our engine then idled steadily at 2,400 r.p.m. on an 11 × 7 prop. The advantage of the Mag-III carburettor, over the previous Mag-II type, is that it is now possible to adjust the low-speed mixture while the engine is idling, thanks to the replacement of the earlier screw and locknut adjustment by a thimble and leaf spring device.

Comment. A finely engineered motor. Slightly above average weight but strongly made and with excellent ability to dissipate excess heat. Still not the most powerful R/C 60 on the market but a worthwhile improvement on the twin plug model and a very pleasant engine to operate. Excellent value in that it offers very high quality construction at a moderate price. The engine requires a slightly wider bearer spacing (42 mm.) than most other 10 c.c. motors.