



## O.S. 60F UPRATED

**O**BTAINABLE from Keilkraft dealers since the end of last season has been a redesigned version of the O.S. Max-H 60F "GP" series engine. Known as the "GR" model and identified by a black anodised head in place of the previous gold finished one, this new motor has the same mounting dimensions as the 60F-GP but features a number of refinements aimed at increasing performance and durability.

On test, the new GR model recorded a gross power output (*i.e.* less silencer) on 5 per cent. nitro fuel of 1.35 b.h.p. at 15,000 r.p.m. compared with 1.27 b.h.p. at 15,500 r.p.m. for the GP model tested in the August 1971 RADIO MODELLER. This is an improvement of only a little over 6 per cent. in peak output, but the significant point is that it is reached at more "usable" revolutions. In other words, the GR gets its extra power from improved torque, rather than a mere ability to rev freely under light loads and this was reflected in improvements of up to 400 r.p.m. on the props most commonly used. Typical figures recorded included 9,150 on a 14 x 6 Top Flite maple, 10,750 on a 13 x 5½ Top Flite standard, 11,400 on a 12 x 6 Top Flite maple, 12,500 on an 11 x 7½ Power Prop maple, 13,200 on an 11 x 6 Top Flite maple and 13,800 on an 11 x 6 Power Prop maple.

The manufacturer's standard silencer for this engine continues to be the OS-704 expansion chamber type which, with its small (8 mm. dia.-50 sq. mm. area) outlet, knocks quite a bit off the peak output but does at least provide reasonable noise suppression and is certainly one of the most effective of '60' size silencers offered by engine manufacturers at the present time.

Although the 60F-GR looks much the same as the 60F-GP externally, there are a lot of internal changes. The cylinder, for example, now has six, instead of four, exhaust ports. Actual individual ports are slightly

# MOTOR MISCELLANY

## PETER CHINN reports the latest engine developments —and answers some more readers' questions

smaller, however, and although total exhaust port area is up by about 33 per cent, transfer port area is reduced by about 11 per cent. The cylinder liner, instead of being case-hardened, has a chromed bore and the aluminium alloy case has the interior of the exhaust duct widened to aid the discharge of the exhaust gases. A new piston and connecting-rod assembly is used, with the gudgeon-pin retained by circlips instead of pads.

The crankshaft is heavier, has been rebalanced and has a revised rotary-valve port timed to give rather more conservative timing (35 deg. ABDC to 50 deg. ATDC) than the 40-60 timing of the previous model.

The carburettor fitted to the GR is the latest O.S. Model 74 AFM type with fully adjustable automatic fuel metering valve. It also has provision for altering choke area to suit either pressure feed from a silencer tapping (as supplied) or suction feed. To convert to the latter, a thin walled sleeve is fitted into the throttle barrel to reduce choke area from approximately 38 sq. mm. to approximately 29 sq. mm. Adjustment of the idle mix is very easy and can be carried out while the engine is idling. Another small but worthwhile refinement is the throttle stop: in place of an ordinary screw threaded into the carb body and snubbed with a coil spring, this is carried in adjustable plated-brass gland to obviate any risk of its becoming loose or lost.

On test the Type 74 carburettor worked extremely well, providing safe idling down to 2,200 r.p.m. on 11 and 12in. props and to below 2,000 on 14in. diameters.

Handling characteristics were excellent, with easy hand starting and a complete lack of viciousness. Running qualities were equally good. The engine indicated a low level of vibration and was also somewhat cooler running than previous Max-H.60 models tested.

The bore and stroke of the 60F-GR are unaltered at 24 x 22 mm., giving a swept volume of 9.953c.c. or 0.6073 cu. in., and the engine's weight is only very slightly increased at 14.7oz. with OS-704 silencer. The list price is considerably higher at over £40, compared with only about £28 for the 60F-GP, although this

Heading: black cylinder-head and new Type 74 carburettor distinguish O.S. Max H.60F-GR engine from previous gold-head 60F-GP model. Numerous internal refinements. A finely made engine of excellent all-round performance.

increase is in part due to the fact that Keilcraft had been holding the price of the 60F-GP at the same figure for more than two years despite at least two factory price increases and a deteriorating exchange rate. As with other O.S. engines, the price does, however, include the silencer and the engine also comes complete with Allan keys for the cylinder head, front housing, backplate and throttle arm.

#### O.S. Max 60F-SR and 40F-SR

Of the many conventional crossflow scavenged 10c.c. R/C engines still on the market, the Max H.60F-GR just described and the Rossi 60 are the two most powerful we have tested, but for those who demand the very highest performance levels, there is no doubt that a Schnuerle scavenged engine can offer a still higher output—albeit at some increase in cost, fuel consumption and, usually, weight.

In 1973, the O.S. Experimental Department designed and built an entirely new 60 R/C prototype, the Max 60-SR and the production version of this, to be known as the Max 60F-SR is expected to be available in the U.K. very shortly. We were shown a pre-production version by Joe Ogawa, when he was in the U.K. last October, and very impressive it looked, too. The porting layout and general appearance is very similar to that of the Max 40-SR pylon-racing engine, except that the 60F-SR uses a normal shaft-valve layout and Type 74 carb, rather than the 40-SR's rear drum valve and racing carburettor.

It is not intended that the 60F-SR should replace the 60F-GR. The latter will continue in production, as will the existing 60-GP rear rotary valve model.

O.S. also plan to supplement the popular Max-40 R/C with a Schnuerle scavenged front induction throttle-equipped model to be known as the Max 40F-SR. This will be based on the 40-SR cylinder

assembly but with new front and rear ends converting it to shaft rotary-valve induction. However, the release of this model is not expected for several months.

#### READERS' QUERIES

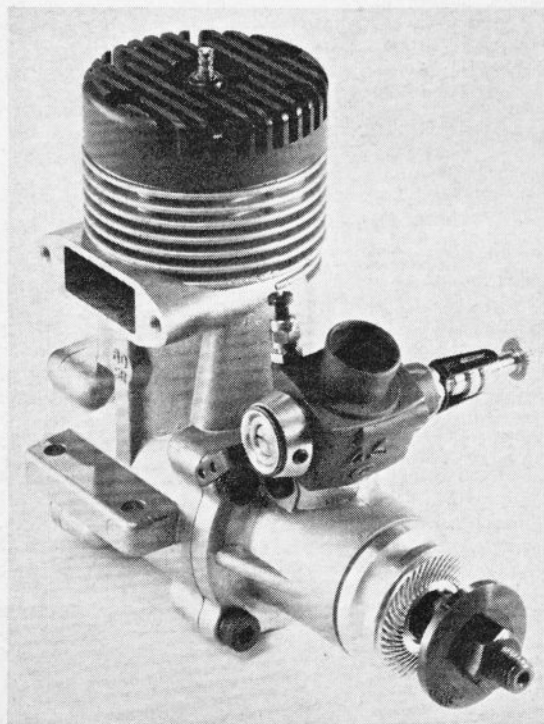
**QUESTION:** "I recently acquired a secondhand Webra Blackhead 61 which seemed to be in good order but was very dirty. I began by removing the cylinder-head, the rear cover, the propeller hub and the carburettor and immersing it in petrol, but it sounded as though there might be some grit in the bearings, so I decided to take the rest of the engine to pieces. Unfortunately, when I removed the gudgeon-pin, the needle-bearing fell to pieces. I am not sure whether this is due to wear or whether the needle-rollers are not retained in any way. As you must know, the bearing is very small and I have found it very tricky to reassemble. I might have even lost some small part. Can you suggest any way in which I can check this please?"

A.C., Ayrshire.

**ANSWER:** Two types of Durkopp needle-roller have been used by the Webra Blackhead 61. Earlier models (including the pre-Blackhead Webra 61) used a caged type of the needle bush pattern. However, it is evident that your engine is of the later type having the Durkopp DHK-0509 bearing, containing thirteen loose needles, which form a complete circle in the outer shell, without a cage. They are held in place by the finely ground gudgeon-pin when the piston and con-rod are assembled.

You can put the bearing together again quite simply by smearing a liberal coating of Vaseline around the track of the bearing shell and then "sticking" the needles in place with a pair of tweezers. The Vaseline will hold the needles in place while you line up the con-rod and piston and insert the gudgeon-pin.

**QUESTION:** "The crankshaft of my Super-Tigre G.60 has balancing slots in the crank disc each side of the



In addition to "Max-H" series 60-GP gold-head rear induction engine 60F-GR black-head front induction model, O.S. are now manufacturing a powerful new Schnuerle scavenged shaft-valve motor, to be known as the Max 60F-SR. Shown here are (below) original sandcast prototype built 15 months ago and (left) 1974 pre-production test model. First U.K. delivery of production engines is expected soon.

