

## O.S Max-III - 35



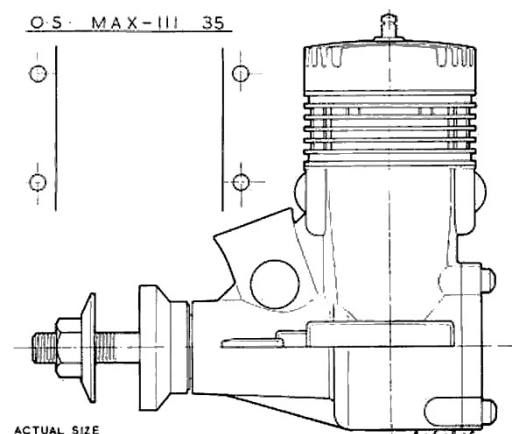
The O.S. company, namely, the Ogawn Model Manufacturing Co. Ltd., of Osaka, are one of the world's oldest established model engine manufacturers, having marketed their first engine in 1937. Today, O.S. are also one of the largest, if not the largest, model engine firms outside the United States, with a staff of over 100 and a sizeable, well-equipped modern factory. A good deal of experimental work is continually in progress, as a result of which, design changes are made quite frequently: the present Max-III model is, in fact, the fourth development of the Original Max-I which appeared in 1954. This policy, though sometimes unpopular with wholesalers and retailers, many of whom dislike recurrent changes, has resulted in the Max 35 being brought to an above-average stage of development.

Compared, for instance, with the average American "35" (the 35 class engine being, of course, American in origin), the Max-III is, in general, more powerful, better finished, more durable and has equal or superior handling characteristics. Not surprisingly, some of the improvements incorporated in the Max series, such as the large-journal big-port crankshaft, for example, are now beginning to find their way into other 35's.

Although the basic layout of the Max-III is essentially the same as that of the previous Max-I and Max-II models, the engine is, in fact, new throughout, including a new main casting, cylinder, cylinder-head, crankshaft, piston and connecting rod. The crankcase and main bearing unit, a beautifully produced pressure casting having an attractive and serviceable

"satin" tumbled finish, incorporates heavier mounting lugs and a larger carburetor, transfer passage and exhaust duct. The massive crankshaft with its over 1/2 in. dia. journal, 9 mm. (0.354 in.) bore gas passage and 17/64 in. dia. crankpin, has extra counter balancing (web flanks cut away, plus a machined-in crescent counter - weight). The induction period has, compared with earlier models, been reduced approximately 30 deg. to a more orthodox 180 deg. period (timed 45 deg. ABDC to 45 deg. ATDC), this being compensated by enlarging and squaring the induction aperture in the bearing. The cylinder and head have greater cooling fin area and the joint between them is made by an aluminium gasket which oilers better heat transference and is not prone to "blowing" or to damage from dismantling. The ignition plug is now offset to the transfer side.

At 8.3 oz. the Max-III is 24 per cent heavier than the original Max-I of five years ago, but this is more than compensated by its extra high power output and greater durability. As with previous models, the Max-III is supplied with a rubber dust-plug for the exhaust and two interchangeable venturi inserts. A pressure nipple is available as an extra to enable a crankcase pressurised fuel system to be employed if desired, in which case the venturi insert can be removed entirely for increased power at high r.p.m. The engine can also be easily converted to the Multispeed R/C version by fitting the special O.S. coupled throttle parts, mounting points being ready drilled and tapped for this purpose. A special cylinder-head is also made for this version.



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## Specification.

**Type:** Single-cylinder, air-cooled, loop-scavenged two-stroke cycle, glow-plug ignition. Crankshaft rotary-valve induction. Baffle piston. Offset ignition plug.

**Bore:** 0.810 in. Stroke: 0.688 in.

**Swept Volume:** 0.3545 cu. in. = 3.809 c.c.

**Stroke/Bore Ratio:** 0.849 : 1

**Compression Ratio:** 8 : 1.

**Weight:** 8.3 oz.

## General Structural Data.

Pressure diecast aluminium alloy crankcase and main bearing unit with cast-in bronze main bearing bush. Hardened alloy steel crankshaft, fully counterbalanced with 13 mm, (0.512 in.) dia. journal and 6.7 mm. (0.264 in.) dia. hollow crankpin. Heavy diecast alloy prop driver, keyed to flat on shaft. One-piece steel cylinder with integral fins and blued anti-corrosion external finish. Diecast and machined alloy finned cylinder head with bronze insert for glow-plug. Six Phillips type head screws, two extra-long and securing complete cylinder assembly to crankcase. Lightweight Meehanite piston with two skirt ports, filleted baffle and 5 mm. (0.197 in.) dia. tubular gudgeon-pin having brass end-pads. Heavy-duty diecast aluminium alloy connecting-rod with bronze big-end bush. Plated brass needle valve assembly with flexible control extension and reversible for left- or right-handed control. Interchangeable machined aluminium venturi inserts. Beam mounting lugs.

## Test Engine Data.

**Running time prior to test:** four hours.

**Fuel used:** KK Record Methanex (3 per cent, nitromethane).

**Ignition plus used:** O.S. No. 3 (medium heat rating platinum filament, 1.5 volt).

Standard venturi insert retained for all tests.

## Performance.

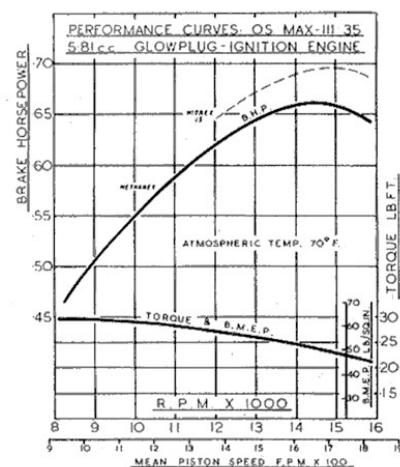
To the modeller with limited funds but who likes to fly a lot, the snag to operating a big contest-type glow-plug engine is the extra cost of fuel. This is where the Max-III scores to some extent as it delivers a high power output on the least expensive types of glow

fuel, such as KK Methanex used for our test.

The performance on this was in fact, higher than for any other 35 tested in this series, even though most of these latter have been tested on more expensive fuels of higher nitromethane content. Immediately prior to testing the Max-III, we checked one of the more moderately priced American 35's on the same fuel and it was revealing to find that the peak output of the Max bettered this engine by no less than 40 per cent. Briefly checked on Nitrex-15 fuel, the Max-III's output rose to just on 0.70 b.h.p. at 15,000 r.p.m.

This performance has not been achieved at the expense of handling qualities: we found starting to be easy and trouble-free. A cola start was achieved quickly following port priming, while hot re-starts were virtually instantaneous after giving one preliminary choked flick of the prop. The needle valve is one of the best we have encountered, having a ratchet which is just right for easy yet positive adjustment, plus a flexible stem that enables one to keep one's fingers safely back from the prop.

Power available to drive large props (e.g. 8,200-10,500 on 12 x 6-12 X 4) is surprisingly good, thanks to exceptionally high maximum torque. At around 8-9,000 r.p.m. this reached nearly 0.30 lb. ft. about 15 per cent, above average for the 35 class and equivalent to a b.m.e.p. of approximately 64 lb./sq. in. Up to 13,000 r.p.m. can be expected on the popular 10 X 6 (stunt size) props.



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There would seem to be little doubt that the Max-III must be rated as one of the world's best 35's at the present time.

**Power/Weight Ratio (as tested):** 1.27 b.h.p./lb.

**Specific Output (as tested):** 117 b.h.p./litre.

