

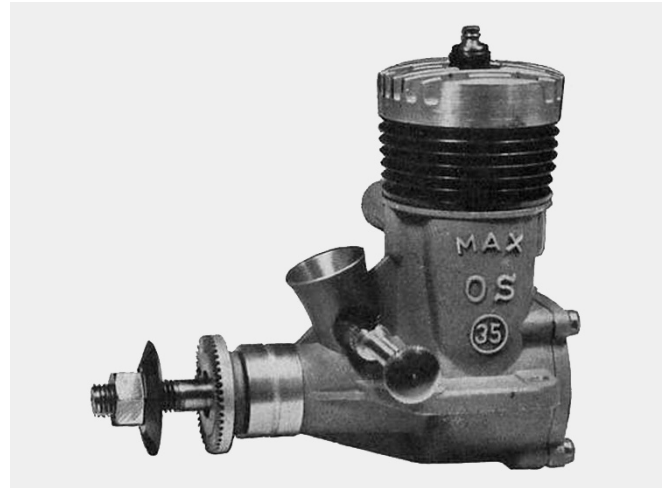
O.S Max-II - 35



The O.S. MAX 35

5.8 c.c. Glowplug Motor

“ . . . compares more than favourably with American equivalents.”



Although the O.S. engines are not available through normal retail channels in Britain, MODEL AIRCRAFT readers will be familiar with this notable Japanese range, which has earned high praise from many expert modellers.

The O.S. “Max” glow-plug motors at present comprise three models, the “15” (2.5 c.c.) the “29” (4.8 c.c.) and the “35” (5.8 c.c.), and are exported to many countries, including the United States, West Germany and Australia. They have been particularly well received in the latter country, where, over the past three seasons, they have achieved steadily increasing contest success.

During 1957, for example, Max engines won no less than 46 first places in important Australian contests.

The Max “35” and its companion model, the “29” first appeared late in 1954. Since that time they have undergone a number of small changes. Two years ago a new crankcase casting was adopted having heavier mounting lugs. The crank-shaft was also redesigned, the diameter of the induction passage through the shaft being reduced by 0.5 mm. to approximately 5/16 in. dia. and the admission port improved. In addition, a U.S. thread was, at the same time, adopted for the shaft end.

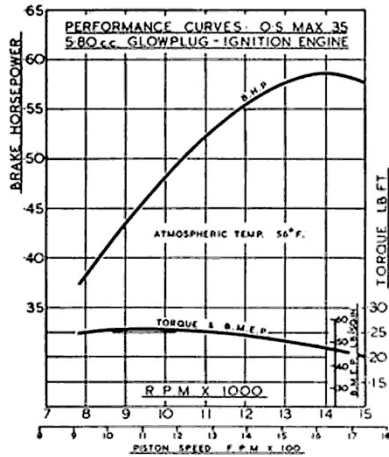
The latest 1958 model Max, which is the subject of this month's test, has the same crankshaft design except for the valve port, which has been lengthened, by approximately 3/32 in., to 1/2 in. Externally, the model is distinguished by the further revised design of

the crankcase which has a massive carburettor intake and the mounting lugs still further strengthened. A new needle-valve assembly is now featured. This has a threaded thimble, with double spring ratchet device, similar to that seen on most American engines of this class. The flexible extension, somewhat shortened, is retained, but the angled nipple for fuel line connection is now omitted.

The Max 35 is, of course, mainly of interest to the C/L enthusiast. However, other applications in which it has acquitted itself with distinction include large F/F models and multichannel R/C. In connection with this latter (and also for C/L events where a third line can be used) provision is made, in the new Max 35, for the installation of a special coupled speed control unit which is expected to become available from the O.S. factory in the near future. This unit will consist of a semi-rotary exhaust restrictor contained in a special housing clamped on to the exhaust duct and linked to a butterfly throttle unit inserted in the carburettor intake. To enable the unit to be securely and neatly fitted to the engine, therefore, two cast-in lugs are concealed in the exhaust duct.

In general the design and construction of the Max 35 is typically American and, by and large, it compares more than favourably with U.S. equivalents. It has to be admitted that, today, many model engines are being built down to a price and, in consequence, the greater attention to detail which is apparent in the O.S. becomes an added attraction.

O.S Max-II - 35



Basically, the Max 35 is a short-stroke, loop-scavenged, shaft-induction glow-plug motor of modern design. The crankcase is cleanly diecast in light alloy and incorporates the front bearing housing which is bronze bushed. It is adequately webbed for strength and has long mounting lugs with widely spaced bolt-holes for rigid mounting. The shaft has an 11 mm. dia. journal and a crescent counterweight which balances all rotary mass. From the circular section carburettor venturi (which is equipped with a removable insert) the intake is now squared to register with the large crankshaft port, giving a more rapid opening and closing of the valve than on the earlier models. A very generous induction period (approximately 210 deg. of shaft rotation) is retained but there is no significant sub piston period. The new Max also retains the ported skirt piston that has been a feature of the engine since the introduction of the original model.

Specification.

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

Swept volume: 0.3536 cu. in. (5-795 c-c)-

Bore: 0.80g in. Stroke: 0.688 in.

Stroke/bore Ratio: 0.85 : 1. Compression Ratio: 8 : t.

Weight: 7.1 oz.

General Structural Data.

Pressure diecast aluminium alloy crankcase unit with bronze bushed main bearing and sandblasted finish. Hardened steel counter-balanced crankshaft with 17/64 in. dia. tubular crankpin. Alloy drive washer keyed to flat on shaft. One-piece cylinder with blued non-corrosive external finish. Diecast, sandblasted and machined alloy cylinder head with bronze insert for glow-plug. Six cylinder-head screws, two extra-long and securing complete cylinder assembly to crankcase. Lightweight cast-iron piston with tubular .197 in. (5 mm.) dia. full-floating gudgeon pin with brass end-pads. Alloy connecting rod with bronze big-end bush. Plated brass spraybar type needle-valve assembly with removable venturi insert reducing choke diameter from .433 in. (11 mm.) to approximately .30 in. Beam mounting.

Test Engine Data.

Running time prior to test: 1 ½ hr.

Fuel used: 10 per cent. B.D.H. Nitromethane, 65 per cent. Methanol, 25 per cent. Castrol "M" castor base oil.

Ignition plug used: K.L.G. Mini glow short reach. 1.7 volts used to start.

Venturi choke retained for all tests.

Performance.

Some people are apt to regard with trepidation any engine capable of delivering over ½ h.p., but there is no need for anyone to worry about the behaviour of the Max. Provided that it is treated properly, it is quite docile and easy to start.

With a new engine it is advisable to start off by using a mild fuel consisting of 70 per cent, methanol and 30 per cent, castor oil, setting the mixture control rich to slow the engine and produce "four-stroke" firing for the first 15 or 20 min. running time. After this, the needle can be gradually closed down until the engine begins two-stroking in the normal way. Normally, an O.S. engine will hold an almost even run at this point, but, of course, any tendency to overheat and slow up or even stop would require the rich mixture time to be further extended. Only when the engine will hold

O.S Max-II - 35

an even speed on the 70/30 mixture, should nitromethane be added to the fuel.

One of the advantages of the Max 35 is its excellent performance on the less expensive low nitro content fuels. Our tests were carried out with 10 per cent, nitromethane under cool, dry conditions and, as the curves indicate, this provides all the power likely to be needed for the hottest stunt model.

Starting the Max from cold was accomplished in the usual way with a moderate exhaust prime and the needle setting opened up. Hot restarts were obtained quickly after a single choked preliminary flick and without readjusting the needle from running position. The engine was responsive, but not critical, to the needle control and ran evenly at all speeds tested.

Following torque reaction dynamo-meter tests, a maximum power of just under .59 b.h.p. at 14,000 r.p.m. was determined, which, needless to say, is excellent.

Power/Weight Ratio (as tested): 1.32 b.h.p./lb.

Specific output (as tested): 101 b.h.p./litre.

