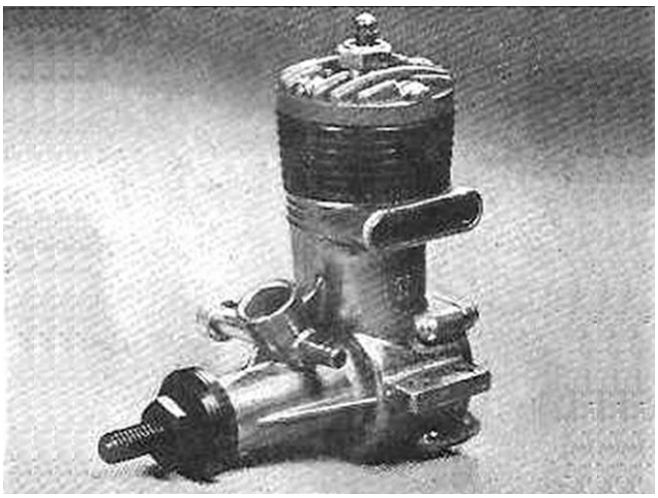
K&B Torpedo .15

Model Aircraft Engine Tests



When, five years ago the " Engine Tests " series was first started, it was intended to deal primarily with British made engines. The occasional inclusion of a foreign product was felt justified only if (a) it possessed performance or design features of particular note, or (b) its design von especially indicative of trends in the country of its origin.

Lately, however, an increasingly large proportion of our tests has bean of engines made overseas, due mainly, to the fact drat, with production more stabilised, die number of new British engines appearing each year is very limited and no neglect of home products is thus occasioned by the inclusion of more foreign engines even though these latter do not always conform with our original conditions as mentioned above. Thus, in the twenty-four tests published in the last two years, eleven have been of British engines, five American, three German, two Australian anti one each of Italian, Norwegian and Dutch manufacture.

While few of these non-British model motors can be readily obtained by British modellers and while such reports cannot, therefore, claim to be of any widespread value to would-be purchasers in this country, they do give us an insight into the progress and trends of model engine design outside Britain and, judging by reports reaching us from other countries, arc not entirely overlooked by MODEL AIRCRAFT'S overseas readership.

Of the American-built K- & B. engine with which we are dealing this month, however, it would probably be true to say that no other, at die present time, could be of wider interest. The K. &. B. Torpedo .15 created a tremendous interest following its highly successful first appearance at the World Power Championships at Cranfield last year and this attention was, of course, truly international.

Normally, test reports on engines built outside Great Britain have to be based on our experiences with a single example. In view, therefore, of the importance of conveying an accurate report to a large and potentially critical readership in this particular case, we were particularly glad to have the opportunity of trying a second engine, against which to test our findings on the first.

Some comments on the Torpedo .15 S performance as applied to actual model performance were given in " Accent on Power " last month and our remarks here will, therefore, be confined to the design and bench performance of die engine.

In common with the .19 model (Engine Test No. 53) the basic layout of the .15 is conventional. The ports, however particularly die transfer port, which is deeper than die exhaust port are of quite exceptional area. The cylinder has integral fins and is held down by two long machine screws only, passing through the head and into the main casting.

Specification.

Type: Single cylinder, air-cooled, two-stroke cycle, glowplug ignition. No supplementary air induction. Lapped piston with baffle.

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Swept Volume: 2.43cc (0.148 cu. in.).

Bore: 0.595 in. Stroke: 0.535 in.

Stroke/Bore Ratio: 0.899 : 1.

Weight: 3.7 oz.

General Structural Data: Pressure diecast alluminium alloy crankcase, rear rover and cylinder head. Rear cover secured co crankcase with four machine screws. Machined steel Cylinder with turned cooling fins. Cylinder and head secured with four machine-screws, two of which pass through into main casting. Lightweight lapped piston with relieved skirt. Diecast alloy connecting-rod. Solid full-floating gudgeon-pin. Counterbalanced crankshaft machined in one piece and running in plain bearing. Steel drive plate on crankshaft taper. Spray-bar type carburettor. Beam type mounting lugs.

Test Engine Data.

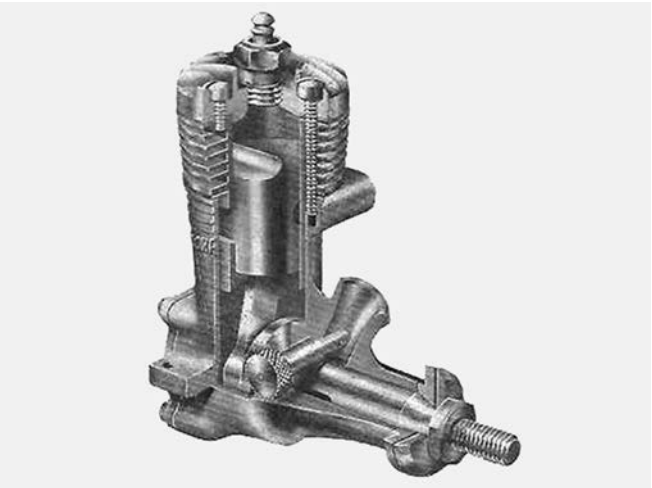
Running lime logged: Approximately 1 hour.

Fuel used: 45 per cent, blending methanol, 30 per cent. B.D.H. nitromethane, 25 per cent. Castrol " M."

Ignition equipment used: K. & B. standard glow-plug ; 1.6 volts to start.

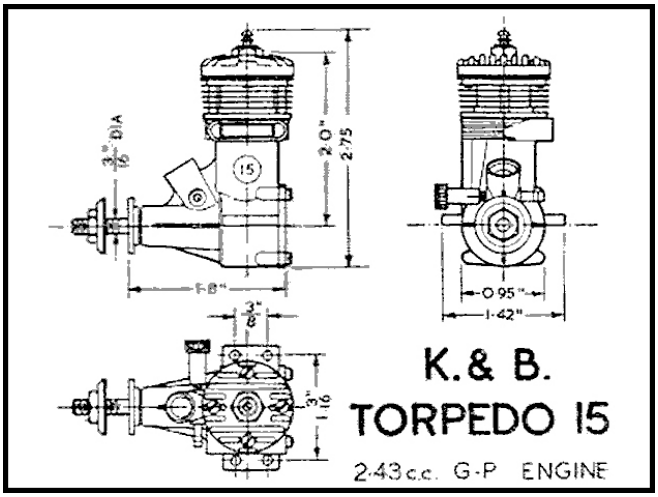
Performance.

It used to be characteristic of most engines designed for high speed performance that they were rather difficult to start.



This is a criticism that certainly cannot be levelled against the Torpedo .15. It is an engine which, unlike some modern glow-plug types, does not like to be too wet for starting, but, if this tendency is remembered, will always start positively and with a minimum of delay. For starting from cold, we found that priming through the exhaust port was not essential. Inverting the engine after choking, so that some fuel was introduced into the combustion chamber, was found to provide sure starting within two or three flicks of the prop. A restart was obtained after one, or at the most, two, choked flicks. Needle valve settings on the two engines tested varied somewhat, running settings being a turns open on one engine and 4 1/2 on the other.

The running qualities of the Torpedo .15 compared with an equivalent capacity diesel arc much more pleasing. The engine runs smoothly and, seemingly, effortlessly. It appears particularly happy above 12.000 r.p.m. Needle-valve response was also much better at the higher speeds. It should be noted, incidentally, that 45 to 60 minutes rich- mixture running-in time has been recommended for the Torpedo .15 by the makers who state that, should this precaution be neglected, there is a danger of the piston and cylinder seizing due to the close initial fitting of thecie component. We experienced no such tendency but it Should be noted that, after 1 1/2 hours total running time, there was still a slight power loss with warming up, particularly under heavy loads and continious full power delivery may not, therefore, be expected until possibly, some three or four hour



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running have been logged.
The performance of the Torpedo .15 on the test rig can be judged from the accompanying performance curvet and calk for little further comment. It was anticipated that the peak horsepower of the .15 would be realised at high r.p.m. but less expected was the useful performance available from 9.000 r.p.m. upwards. which is due to the very good b.m.e.p. developed (55 lb. sq. in.). This means that, even when loaded down with a typical " diesel " prop., die Torpedo .15 can still hold its own.

Power Weight Ratio: (as tested) 1.19 b.h.p./lb.

Specific Output: (as tested) 113 b.h.p./litre.