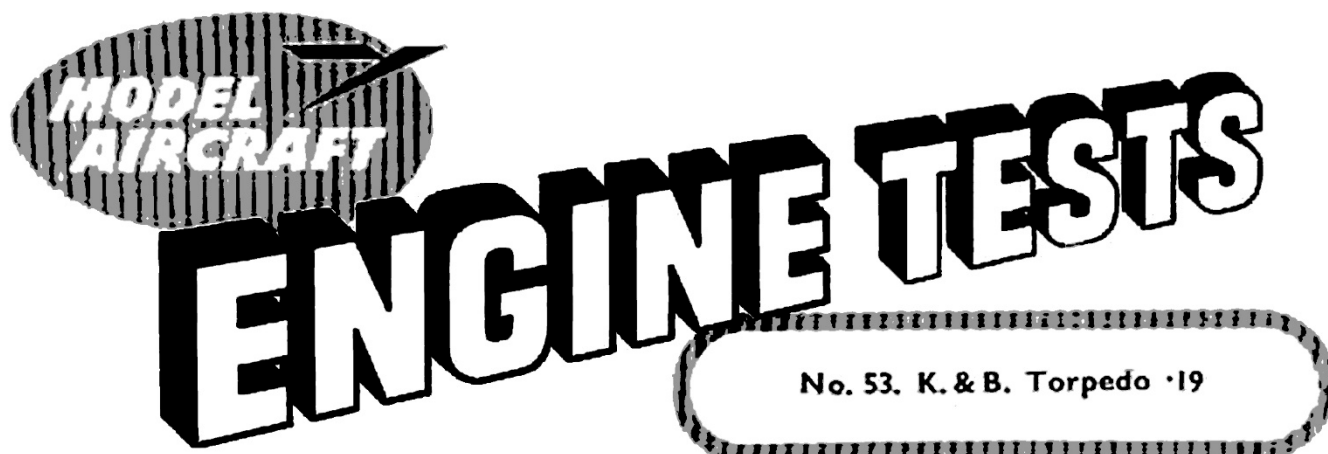


## K&B Torpedo 19



For this month's report we are going to reverse a usual practice. We would like summary, at the beginning instead of the end, our findings on the K & B Torpedo .19 engine, and to do this by quoting a brief extract from our test notebook, which reads as follows: "Starting: excellent. Running qualities: first-class. Vibration: negligible. Needle-valve response: perfect. General: superb performance, fine engine..."

The experienced model engine tester seldom has use for superlatives, but we will say without further ado that of the large number of model, aircraft engines (rated by the writer (over 50 of which have been featured in this series) the K & B. .19 would definitely find a place on any list comprising the most outstanding live or six engines yet handled.

The Torpedo .19 is the son of engine with which (without prior knowledge of its excellent contest record) one gets more than one bar gains for in the way of performance, for it is, to all outward appearances at least a very "normal" looking medium capacity glow plug engine and one would not expect to find a performance which is superior to that of any "raring type" .19 cu. in. unit and equal to that of many engines of 50 per cent greater capacity.

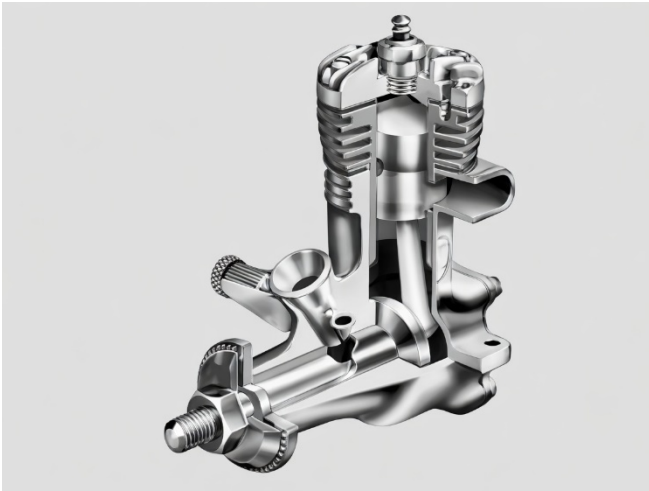
The K. & B. Torpedo. 19 is an outstanding example of "development" for, although this model is a relatively recent K. & B. product, the basic design goes back through many years of Torpedo engines of larger size. During this period, most other manufactures of high performance model engines have resorted to disc valve induction, alloy, ringed pistons and ball-bearings, in search of high outputs.

Just how well the K. & B. Manufacturing Company's policy has been Justified is shown by the impressive list of successes gained by the 3 1/4 c.c. Torpedo .19 during the past two seasons, which even includes a 5 c.c. class speed record.

The general construction of the K. & B. .19 is conventional but with special emphasis on mechanical rigidity, good "breathing" and the reduction of friction. The crankshaft journal is of unusually large diameter (1/4 in.) for an under 5 c.c. class engine and therefore has great structural stiffness and, incidentally, allows the shaft type rotary valve, which has a rectangular intake port, to be of large volume. The shaft is finely finished, accurately balanced and runs in an excellent bronze bearing.

The main casting, comprising crankcase and lower cylinder barrel is adequately webbed, while the cylinder itself has integral turned fins which, as previous test reports and investigations have shown, is one of the best types of construction yet devised for the elimination of high temperature distortion.

# K&B Torpedo 19



The lapped Meehanite iron piston in the K. & B .19 is specially designed for minimum weight and reduced drag, the skirt being relieved below the gudgeon-pin centre so that the reduced area of contact, combined with the lack of radial pressure normally exerted when piston-rings are used, must reside in little more drag than with a ring type piston.

The engine is fitted with a choke insert which provides smooth operation and powerful running over a wide range of speeds. For operation at high r.p.m, only as for speed model installations this choke insert can be removed, when it should be possible to raise the peak r.p.m and b.h.p. Our tests were carried out with the choke installed and the engine used was standard in every respect.

## Specification

**Type:** Single-cylinder, air-cooled, two-stroke cycle, glow-plug ignition. Shaft type rotary valve. No supplementary air induction. Flat crown pinion with straight baffle.

**Swept Volume:** 0.1994 cu. in. (3.27 c.c.)

**Bore:** 0.640 in.

**Stroke:** 0.620 in.

**Stroke/Bore Ratio:** 0.969 : 1.

**Weight:** 6 oz.

**General Structural Data:** Pressure die-cast aluminium alloy crankcase rear cover and cylinder head.

Rear cover secured to crankcase with four machine screws. Machined steel cylinder with integral turned cooling fins. Cylinder and head secured with six

machine screws, four of which pass through into crankcase casting.

Light weight Meehanite piston. Drop-forged duralumin connecting-rod. Tubular steel gudgeon pin with aluminium end-pads. Counterbalanced crankshaft machined in one piece and running in bronze main bearing. Steel drive plate and prop washer. Beam type mounting lugs. Spray-bar type needle-valve with removable choke insert.

## Test Engine Data

**Total running time Toggled:** Approx. 1 hour.

**Fuel used:** 45 per cent, blending methanol, 30 per cent. B.D.H. Nitro-methane. 25 per cent Castrol "M."

**Ignition equipment used:** Herkimer-O.K. glow-plug. 1.6 volts to start.

## Performance

On receipt of the K. & B. Torpedo .19 engine from the U.S.A. it was found that the K. & H. glow-plug, with which these engine, are supplied was defective and unfortunately, we had no spare K & B plug on hand. Other American plugs were, however, available, including Arden, Ohlsson, Champion and Herkimer-O.K. and one of the latter, which has a similar heat rating, was, therefore, chosen for testing the engine. The plug gave smooth running at all speeds and it is unlikely that the performance realised would differ greatly from that obtainable on the standard K & B fitting.



## K&B Torpedo 19

The start the engine for the first time, we opened the needle-valve four turns and primed the cylinder in accordance with the makers recommendations. Within a few seconds we had the engine running smoothly and at an appreciably higher speed than we had considered possible on the prop fitted. When the engine had warmed up, a restart was obtained within two or three flicks after giving one or two preliminary choked turns of the prop. This restart was always instantaneous and unaflected by load. That is to say, the poor "flywheel effect" of a small propeller intended to allow the engine to run at speeds of 15,000 r.p.m. , did not influence starting to any noticeable effect and, on such a prop, the engine could be relied upon to restart just as easily as on an airscrew holding r.p.m. to half this speed.

On the reaction dynamometer, the best torque was found to lie at approximately 11-12,000 r.p.m. At this point the relative b.m.e.p. was slightly in excess of 60 lb./sq. in which is outstandingly good and especially so for a relatively small capacity glow-plug type engine. The decline of the torque curve is gradual and results in the peak b.h.p. occurring at around 15,000 r.p.m. At this speed the output was approximately 0.41 b.h.p. This figure is, of course, substantially in excess of that achieved with any other engine of similar capacity and is more than 20 per cent up on the best figure recorded for a 4.5 c.c. diesel.

Due to the high b.m.e.p the power available at more modest revolutions is also exceptionally good. Approx. 1/8 rd h.p. is for example, available at 11,000 r.p.m. and ¼ h.p. at 8,600 r.p.m.

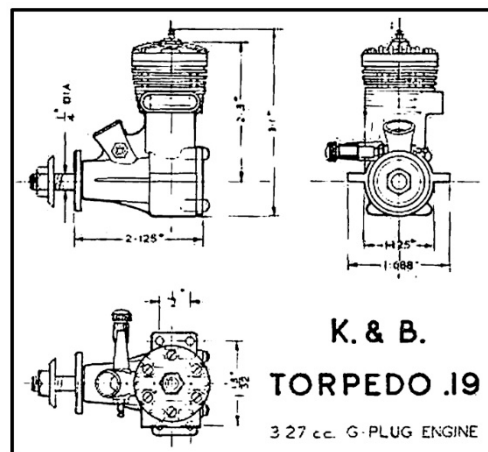
The running qualities of the engine were at all times cleaserving of the highest praisefiring was smooth and even and no lost of power as running temperature increased, could be detected even on the very sensitive torque indicator. Such vibration as existed was appreciably less than with any European diesel of half the Torpedo's capacity.

A two speed model of the K. & B. .19 is now available for radio control use. This model is equipped with dual needle-valves for high and low speed running. In view of the super performance of our 19 on test, we also

await, with interest, the opportunity of testing the new K. & B. Torpedo 19. Internasional class unit which it now coming on to the American market particularly so, as this new model will enable direct comparisons to be made with leading European engines of this popular capacity size.

**Power/Weight Ratio:** (as tested) i.t b.l.p./lb.

**Specific Output:** (as tested) 125 b.h.p./litre.



**More:** [https://flyinghlsat.com/search.php?search\\_key=words=KB-Engines](https://flyinghlsat.com/search.php?search_key=words=KB-Engines)