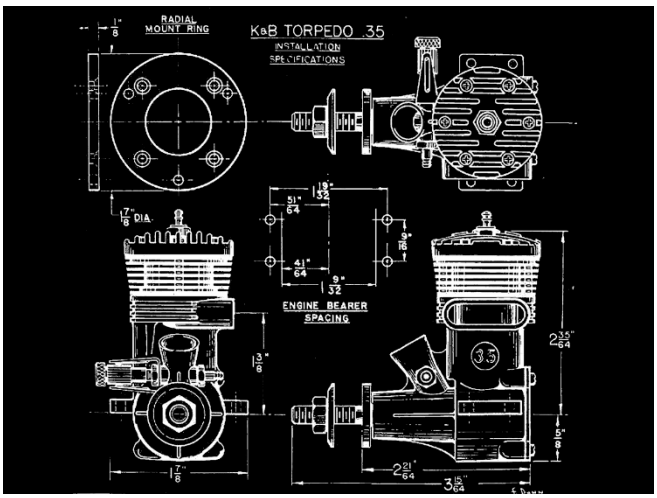
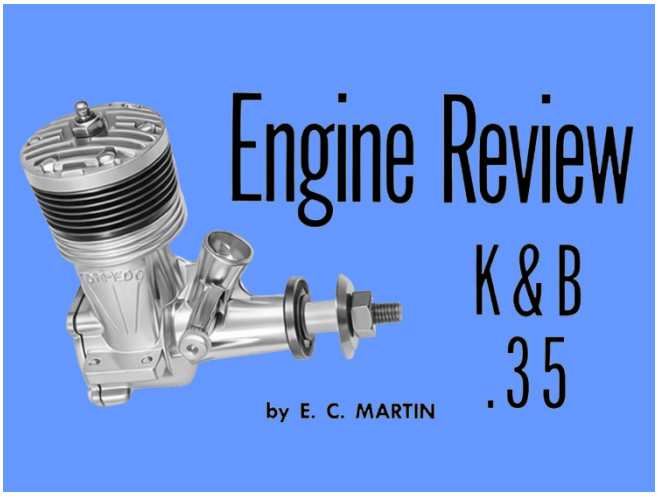
K&B 35 Torpedo





► When the record breaking .19 made its appearance three years ago, it was apparent that the stage was set for a whole range of engines to the same outstanding formula. However, had the firm follower such a program to the letter, these tests might have become simply a matter of multiplication. Developments in the engine business move fast and a three-year-old design is definitely aging when you consider the developments we have seen in that time.

As in the case of the .15 there is no magic revolutionary principle embodied in the new .35 with which to explain its performance. There is, in fact, not one single feature one can say is "it." Like any outstanding modern engine, the machine itself is "it"; in short, a balanced design, refined to the last detail, around the same old piston and cylinder. Let us look at the latest crop of little "its" in this new "Torp," and see what apparently insignificant factors contribute to horsepower.

Basic construction is identical with the smaller Torps, and similarly in the case of materials, except that, unlike certain models, the .35 uses a drop forged conrod.

The crankshaft, machined from bar stock, has a7/16 in. main diameter with tapered drive, crescent type counterweight, and a 5/16 in. dia. gas passage. The rectangular valve port is produced by milling across the shaft, and followed up with what appears to be a broaching operation to remove the sharp internal edges and take full advantage of the opening area. A few dozen revs are attributable there, while two or

Not a scaled up .19, or even a .29, this .35 is a brand new design that makes its own contribution to engine progress.

three more arise from a minute lubrication groove which encircles the shaft at the forward edge of the valve port. This oilway is too small to cause any material crankcase leakage, but is large enough to convey a trace of oil under crankcase pressure. Its location is at a point where shaft stress is not critical, and does not therefore affect strength.

A standard 1/4 threaded portion mounts sturdy steel drive washers, while a 7/32 in. dia. hollow crankpin maintains control at the other end. With the exception of the bearing surfaces the shaft is blued all over against corrosion, and is therefore immune from the liveliest fuels.

The crankcase follows the series design except for a bypass passage enormous even by Torpedo standards, and the addition of the bearing oilways which work in conjunction with the shaft groove. These take the form of two broached channels running along the bushing to within 3/8 in. of the outer end, and radially located on either side just below the center line, and of such size chat a fair amount of oil will be in constant movement as crankcase pressure fluctuates, with the shaft groove forming the pressure relief.

It has long been the custom on many engines to provide a step in the rear cover for piston clearance at bottom dead center, and the similar step in several of the new Torpedo series, including the .35, has

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boobytrapped many a less observant owner into trying incorrectly to reassemble his engine, and cursing its creators cause he couldn't. The bolt holes will not line up unless the step is on the side, where it serves to lead and increase the opening into the bypass passage. Apparently K & B have discovered the tenacity of convention, and on the .35 the word "TOP" is cast in the appropriate place.

A venturi reducer is fitted in the intake and located by the spray-bar to give a choice of 1/4 or 3/8 intake diameter, according to whether bhp or flexibility is most desirable.

The feature which will perhaps astound most people is the use of only two hold-down screws for the cylinder, plus the fact that they are the same thread size as used on the .15. When these two screws are laid beside the conrod, which takes its stress in compression, one cannot help sympathizing with the screws. Obviously, K&B have good grounds for being happy with the arrangement, and will smile tolerantly at our astonishment. However, go easy with those threads and do not tighten them more than absolutely necessary. Operating tension is added to initial screwdriver tension.

A 3/16 in. dia. tubular wrist pin with aluminum end pads connects the rugged forged aluminum rod to the piston via a very wide rod bearing. The piston, machined from Meehanite stock, is bored and milled out inside to reduce weight to the minimum, leaving a skirt thickness of .025 in. Wrist pin center is 1/16 in. above the mid-point and skirt length slightly exceeds the stroke at 3/4 in., the lower 7/16 in. being relieved. A filleted straight baffle is used of similar shape to the smaller sizes, and the fitted portion is an excellent fit in the upper part of the bore, as it is in the .15, and tor the same reason.

The cylinder follows the same general design, having extremely large ports with radiused ends, and a parallel bore down to a point just below the ports, where it opens out in a slight taper. The flange which sirs on the crankcase is fairly thick to preserve flatness since there are but the two hold-down bolts, and a neoprene, or similar, impregnated gasket is used top and bottom. The top gasket differs from the other models in that, instead of covering the entire joint area, it takes the form of a washer having an inside diameter equal to the bore and an OD just inside the bolt circle.

The head is typical with six screws, center plug and green enamel finish. A K & B standard short reach plug is fitted, although sufficient thread is available for long reach.

A good comparison for pointing up the improvements in this engine is afforded by the fairly recent and slightly smaller .23, In brief, these amount to a ground instead of tool finished crankpin, improved provision for shaft lubrication, improved low friction shaft bushing material instead of bronze, broached rotary valve port, large radiused cylinder ports instead of square ended, and two, instead of four, hold-down bolts. The back-plate position is now clearly marked and the combustion chamber is contoured on both intake and exhaust sides instead of on exhaust only, and tapered, instead of flatted, shaft drive is used.

The manufacturers claim the .35 to be their best yet, and these extra features and performance confirm their belief.

With the standard K & B double ratchet needle assembly, there is nothing to be desired in the mixture control department. Adjustment is progressive, positive, and stays put. As when choking most high speed engines with fairly advanced rotary valve timing, it is good policy to remove the finger from the intake as maximum compression is reached co prevent fuel from returning to the tank under the influence of crankcase compression.

Apart from this, running and handling are normal with no vices. The new Torp is very smooth in vibration intensity at all speeds, attributable, no doubt, to the piston design and careful balancing. Cold starting is easiest with a fairly generous port prime and a wet crank case, but when hot, and using the venturi reducer, a single choked flip is usually sufficient. Without the reducer, a small exhaust prime is advisable.

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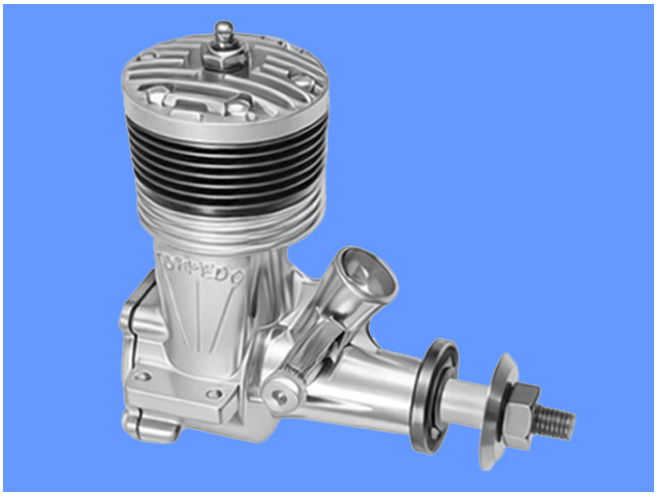
TEST: K & B Torpedo .35

Plug: K & B Std. short reach, as supplied. 1-1/2 volts to start;
Fuel: Supersonic 1000;
Running Time prior to Test: 1-1/2 hours
Bore: .790;
Stroke: .713;
Weight: 8 oz.

Power Prop	**RPM**
10x8	12,000
10x6	12,800
9x8	13,200
9x6	14,250
8x8	14,600
8x6	15,400
7 x 10-1/2	14,600
7x9	15,300
7x8	15,800

Top Flite	**RPM**
10 x 8	11,100
10 x 6	12,000
9x8	12,350
9x6	13,250
8x8	13,800
8x6	14,550

END



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