

K&B 45 R/C Sportster

K&B 45 R/C SPORTSTER

Engine Review by Peter Chinn.

The Second of K&B'S Offerings for the Sportmodeler aimed directly at the most popular size market.

Engine Buffs will have no difficulty recognizing this recently introduced K&B motor as a scaled-up version of the K&B 20 Sportster that we dealt with in the December '86 issue of MAN. At that time, K&B had just completed forty years as a model engine manufacturer and, as an introduction to the 20 Sportster, I commented very briefly on the company's beginnings.

The new 45 brings to mind another milestone in K&B's history: their very first .45 size engine, the Torpedo 45, which was introduced in early 1959. This was the largest engine that K&B had produced up to that time. Thirty years ago, reliable multi-channel radio-control equipment had just become available commercially. It enabled R/C models to follow full-size practice by using rudder, elevators, ailerons and fully variable engine speed to control the flight. Before this, most radio control sets only provided rudder-only control, although sometimes with the option of a limited control of engine speed. In the middle and late '50s, the new horizons opened up by multi-channel control (as demonstrated by people like Hal deBolt and Howard Bonner) led to the development of more powerful models. Engine sizes went up from the .19 cubic inch displacement previously used, to around .35 cubic inch. For example, Bob Dunham used a Fox 35 in Bonner's famous Smog Hog to win the 1957 U.S. Nationals R/C Multi event, and he was just half a point ahead of deBolt's K&B Torpedo 35 powered Live Wire biplane in 1958, it was Dunham again, now with a modified version of Fred Dunn's pioneer low wing Astro Hog, equipped with a K&B 35. However, top multi-channel flyers were looking for even more power, and the Torpedo 45 that followed a few months later was K&B's timely response to this demand.



K&B's sturdy, good looking 45 Sportster offers remarkably good value.

I have both a Torpedo 35 and a 45 the latter being the actual engine that was featured in the MAN "Engine Review" test article for September 1959! These Torpedo models are almost identical in appearance and overall dimensions; the 45 was basically a stretched version of the 35. Cylinder bore was increased from 0.790 inch to 0.840 inch, and piston stroke was lengthened from 0.720 inch to 0.820 inch, thus enlarging the engine from 0.3529 cubic inch to 0.4544 cubic inch. Naturally, an increase in displacement of nearly 29 percent within approximately the same mass could be expected to increase vibration levels and, with the object of dealing with this, the 45 was equipped with a device which K&B called a rear counterbalancing flywheel or RCF. This was a molded nylon rotor to which was keyed a die-cast bob weight of zinc alloy. The whole thing was mounted on a steel pin pressed into a boss in the crankcase back plate and was driven by the crankpin.

Typical of the K&B Torpedo range at that time, the 45 was a plain (bushed) bearing engine with shaft rotary valve, crossflow scavenging and a ringless, cast iron (Meehanite) piston running in a steel cylinder and having integral cooling fins. The carburetor was a simple barrel throttle type with no provision for adjusting the idle-mixture strength. Instead, the upper opening of the throttle barrel had a small notch that prevented excess suction being created at the jet and the mixture becoming excessively rich when the throttle was closed.

K&B 45 R/C Sportster



Parts of the 45 Sportster. Note unique one piece cylinder and chromed, ringless, aluminum piston.

The Torpedo 45 weighed fractionally over 9 ounces and, on testing, our example produced just over 0.60 brake-horse power at 12,000rpm.

On paper, the new K&B 45 Sportster seems to have some features in common with its ancestor as it, too, is a plain, bearing motor with a crankshaft induction and a ringless piston. However, side-by-side comparison of the engines provides a startling illustration of just how far K&B development has progressed.

First, the new engine is substantially larger and more solid. The Sportster is taller, wider and about an inch longer, and it's no surprise that it's 43 per cent heavier than the 1959 engine. Hefty external appearance is matched by equally sturdy internal proportions. For example, whereas the Torpedo had a 7/16 inch (11.1 mm) diameter crankshaft journal, the Sportster has a 19/32 inch (15.0mm) journal

Such increases in bulk and weight might be less acceptable if they weren't accompanied by increased performance. In fact, being a much more modern design, the Sportster is capable of developing almost twice the power of the Torpedo 45.

As already mentioned, in design and construction the 45 Sportster is closely modeled on the 20 Sportster. The engine is, of course, of the Schneurle scavenged type, and this is combined with a form of construction that eliminates the need for a separate cylinder liner. The cylinder is cast in one of the special high duty aluminum



Also supplied, at no extra cost, is a back plate spider mount that incorporates lugs for a steerable nosewheel

alloys, which have been developed recently for full-size internal combustion engines and combine a low coefficient of friction with exceptional durability.

These properties are also exploited by the choice of similar material for the crankcase where it's been possible to dispense with a bronze main-bearing bush. The large diameter of the crankshaft journal means that the actual wall thickness of the bearing is surprisingly modest.

However, the crankcase nose is strongly braced by no less than three triangular webs on each side, plus the usual stiffening above and below, including a heftily proportioned intake boss of 13.5mm i.d. and 19mm o.d. The hardened-steel crankshaft has an integral, 5.5mm- diameter solid crankpin on a T type crankweb and features a separate screw in 1/4 - 28 prop stud.

To provide a suitably hard surface for use with the special aluminum cylinder bore, the ringless aluminum piston is chromium plated. It has a blind wristpin hole at the front so that the 0.204 inch o.d. wristpin requires an anti-scuff pad at the rear end only. The connecting rod is unbushed and is 1.375 inches (1.72 x stroke) between centers.

Cylinder porting consists of an unbridged exhaust port on the right, flanked on each side by twin, Schneurle flute-type inlet ports angled to direct gas flow away from the exhaust and toward the

K&B 45 R/C Sportster



Parts of the K&B automix carb. Mixture control valve (left, foreground) is adjusted by means of adjacent eccentric headed screw.

opposite side of the cylinder where it's directed upward by the flow from a wide third port. The cylinder casting and machining are finely executed and provide accurately aligned and smoothly contoured ports. Checked timing of the engine revealed an orthodox 142 degree exhaust period, but with the third port opening 4 degrees before the 120 degree period of the four main inlet flutes. The rotary valve checked out at a conservative 175 degree induction period, closing at 40 degrees ATDC.

As with the 20 Sportster, the pressure cast cylinder head is separated from the cylinder by a partially recessed heatproof O ring, rather than by a conventional metal or composition gasket. The head has a deep, partly spherical combustion chamber which is surrounded by a 4.3mm wide flat squish band. Four long 6-40 cap-head screws pass through the head and cylinder block to tie the complete assembly to the crankcase.

The carburetor is a larger version of K&B's efficient, adjustable automatic mixture-control-type used by the 20 Sportster. The details of this were included in our review of the 20 and so won't be repeated here.

As with the smaller engine, the 45 comes with an effective muffler. This contains three baffle plates and a perforated central tube through which the exhaust gases are passed from one chamber to the next. This enables them to expand and cool



Muffler parts. Perforated central tube with baffles provides better noise suppression than conventional expansion chamber.

before being released through the angled outlet stub at the rear.

Also continuing the fashion established with the 20 model, the 45 includes a special crankcase back plate that can be interchanged with the regular back plate. The optional back plate incorporates a spider type radial mount that enables the engine to be bolted to a firewall instead of to the usual horizontal mounting beams. It also incorporates a pair of drilled lugs for installing a steerable landing-gear nose-leg.

The K&B factory quotes typical rpm figures when using K&B 500 (12 per cent nitromethane) fuel and a 10 x 6 prop of 13.200rpm and an idling speed of 2.500. These figures, confirmed by independent checks, are a good indication of the 45's potential.

The one thing I haven't mentioned is the cost of the engine. Here, K&B has pulled the biggest surprise of all, as the 45 Sportster, complete with muffler, glow plug (not supplied with some imported engines) and optional radial mount, is now just about the lowest priced ,45 size R/C engine on the market. Moreover, this includes a guarantee covering engine failure caused by defective materials or workmanship "for the life of the engine."

The K&B 45 Sportster looks like a pretty good deal.

K&B 45 R/C Sportster

SPECIFICATIONS

Type: Air cooled, single cylinder, side exhaust, 2 stroke cycle with crankshaft rotary valve and Schneurle scavenging.

Bore: 0.850 inch (21.59mm)

Stroke: 0.800 inch (20.32mm)

Displacement: 0.4540 cubic inches (7.439cc)

Nominal Compression Ratio (full stroke):

11.0:1 Speed Control K&B barrel throttle carburetor with adjustable automatic mixture control.

Checked Weights: 13 ounces (369gm) bare;
15.9 ounces (450gm) with muffler, 16.2 ounces (459gm) with muffler and firewall mount.

Mounting Dimensions:

Crankcase Width: 1.42 inches

Height Above CL: 2.86 inches

Length From Prop Driver: 3.44 inches

As Above, Plus Firewall Mount: 3.82 inches

Bolt-hole Spacing (beam): 1.687 x 0.812 inches

Bolt-circle Radius (firewall): 1.25 inches

Manufacturer's Claimed Power Output: Not stated. See text.

Manufacturer: K&B Manufacturing Inc., 12152 South Woodruff Avenue, Downey, CA 90241.



More: https://flyinghlsat.com/search.php?search_keywords=KB-Engines