

K&B 20 R/C Sportster

Engine Review Round-Up

By Peter Chinn

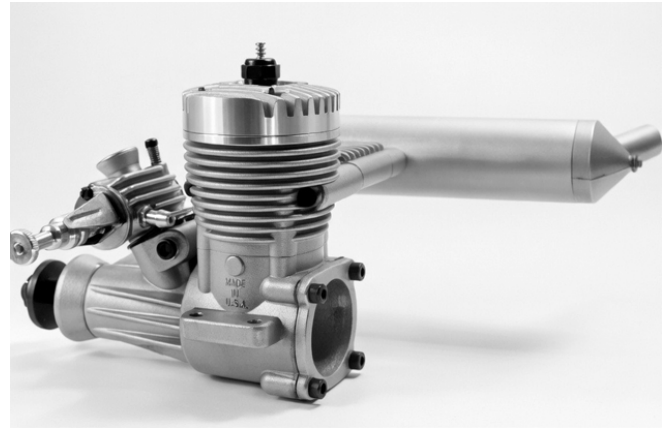
K&B 20 SPORTSTER

This Year, 1986, is a rather special one for two of the world's leading model engine manufacturers. It is exactly fifty years since Shigeo Ogawa produced the first O.S. engine, the O.S. Type-1, in Japan and it was exactly forty years ago that Lud Kading and John Brodbeck began manufacture of the first K&B engine, the Torpedo 29.

Actually, K&B first opened its doors in July 1944. Beginning as a modest machine shop operation engaged in turning out replacement aircraft parts (for wartime Lockheed P-38s and Republic P47s), K&B was later commissioned to make parts for the highly secret Manhattan Project, although it was only after the event that K&B learned of the momentous implications (i.e., the development of the first A-bomb) of this association. After the war, in complete contrast, K&B's first in-house product, later patented, was a lawn sprinkler. It was the success of the sprinkler that generated the funds for tooling up the first K&B engine. The Torpedo 29 had been designed and originally built by Bill Atwood, one of the pioneers of commercial model engine production. The K&B version was released to the market in December 1946 and was an instant success.

Since that time, K&B has produced large numbers of engines for both beginners and experts but, during recent years, most of the company's new motors have been of the high-performance or racing type many of them for ducted fan use and for power boats where they have enjoyed a great deal of competition success. Now, company president John E. Brodbeck tells us, K&B has embarked on the development of a range of modern sport/economy engines. The first of these is the new K&B 20 "Sportster" engine, illustrated here.

Like so many K&B sport type engines of the past,



After concentrating its R&D for some years on racing engines, K&B has re-entered the economy field with the new 20 Sportster model.

dating right back to the original Torpedo 29, the 20 Sportster is a front rotary valve, plain bearing, side exhaust engine. But here the similarity ends. The new engine has a unique six port cylinder, no liner, no piston ring and no bushing for its plain main bearing.

The secret is in K&B's adoption of one of the new breed of aluminum alloys combining a low coefficient of friction with exceptional hard-wearing qualities. Presumably, this alloy is related to the special alloys recently developed for automotive use and, if anyone has doubts about the feasibility, for a high quality engine, of running a suitable piston directly in an aluminum cylinder bore, we would just mention that both Mercedes-Benz and Porsche (who are not exactly noted for turning out lemons) are doing just that in some of their latest high performance automobile engines.

The K&B 20 Sportster is built around two very solidly proportioned castings in this new alloy: the cylinder and the crankcase complete with front housing.

The former is spigoted into the latter and the two components are tied together by four long 4-40 socket head cap screws that pass from the separate cylinder head through the cylinder and into the crankcase. The head has a bowl and squish band combustion chamber, and a recessed high-temperature O ring, rather than the usual copper or aluminum gasket, is used to make the head joint.

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K&B 20 includes a new automatic mixture control carburetor and combines highly competitive performance with moderate price.

The Schnuerle scavenged cylinder has a single unbridged exhaust port, flanked, each side, by twin flute type bypass ports and with a wide "third" or "boost" transfer flute diametrically opposite. Port timing is conservative with, according to measurement of our test engine, a 140 degree exhaust period, a 118 degree Schnuerle port period and a 120 degree third port period. To provide a suitably hard surface for use with the aluminum cylinder bore, the ringless aluminum piston is chrome plated. A tubular 5/32 in. o.d. wristpin couples the piston to the unbushed connecting rod. The hardened steel crankshaft has a 12 mm main journal, a 3/16 in. dia. crankpin and a detachable 1/4 - 28 prop stud. It has a parallel sided valve port that is timed to open at 43 degrees ABDC and close at 46 degrees ATDC (our measurements).

The 20 Sportster is equipped with a new K&B automatic mixture control carburetor. This is of the type in which fuel is metered by the rotation of a tube surrounding the jet tube. The jet tube has a tapered slit type jet and the concentric outer tube, which moves with the throttle barrel, has a radial hole that uncovers more of the slit as the throttle is opened. The jet tube incorporates an outer disc which can be rotated a few degrees either way, by means of an eccentric screw, to precisely adjust the degree of mixture compensation at part throttle settings.



K&B 20 has many unusual structural features, including use of new alloys specifically developed for internal combustion engines.

Two very useful accessories are included with each 20 Sportster engine. The first is a special back plate spider mount that can be used in place of the regular beam mounting lugs to enable the engine to be radially mounted to the firewall. This also has a pair of lugs for mounting a 5/32 in. diameter steerable nose gear leg.

The second item is an effective muffler. This is not the usual plain unrestricted expansion box. Instead, it contains three baffle plates and a perforated tube through which gases are passed from one chamber to the next, before being released through the outlet stub. The latter emerges at a 45 degree angle from the tailcone, enabling the outlet to be rotated to the most convenient position. Not unexpectedly, the muffler knocks a bit off the engine's performance but this can be partially restored by inserting a tailpipe of 6.5 mm o.d. Teflon tube into the outlet stub to aid exhaust gas extraction.

K&B suggests a 9x4 prop as the starting point with the 20 Sportster. With such a prop and using K&B 500 fuel, the factory quotes typical rpm figures of 13.200 at full throttle and 2.300 at idle on the K&B standard long-reach plug supplied, or 13.000/2.100 rpm with a K&B idlebar long reach plug. Watch M.A.N. for a full test report on the 20 Sportster at a later date.

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Included with 20 Sportster are an effective exhaust muffler and an optional back plate radial mount with integral nose-leg brackets.

SPECIFICATIONS

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

Bore: 0.650 in. (16.51 mm)

Stroke: 0.640 in. (16.26 mm)

Displacement: 0.2124 cu in. (3.480cc)

Nominal Compression Ratio (full stroke): 9:1

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

Checked Weights: 223 grams (7.9 oz) less muffler, 278 grams (9.8 oz) with muffler, and 289 grams (10.2 oz) with muffler and radial mount

Mounting Dimensions:

Crankcase width: 1.185 in.

Length from prop driver face: 2.95 in.

Height above CL: 2.27 in.

Bolt hole spacing: 1.50x0.59 in.

Manufacturer's Claimed Power Output: Not stated

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



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