K&B Torpedo 45 R/C

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7.5 c.c. Glow plug motor.

For the past two seasons, one of the most widely used engines among American experts in multi-channel radio control flying, has been the K & B Torpedo 45R/C engine.

The Torpedo 45R/C was quickly put into production, at the beginning of 1959, in response to a demand, in the U.S., for a throttle equipped engine of larger size than the 0.35 cu. in. motors then being used.

The advancing technique of R/C flying following the adoption of new 10 channel equipment and the swing towards the lively “control it all the time” type of fully aerobatic model, required a power unit that would provide more thrust. To get the power required from then available American 35’s, a prop of no larger than 11 in. dia. was necessary, whereas to haul a model through a vertical roll, a 12 in. or better still, 13 in. prop seemed to be the answer. Under these circumstances, there is no substitute for cubic inches or c.c.’s hence the Torpedo 45R/C with swept volume increased by 28.6 per cent, over that of the Torpedo 35R/C.

In some respects the 45R/C might have been considered as a stop gap development. Based on the 35 and externally no bigger, very light for its size with a modest 7/16 in. shaft, the peak power of the 45 was not raised to a specific figure comparable with the 0.35, but the necessary improvement on a 12-13 in. dia. prop was there. Within a few months the 45R/C had far outstripped the Torpedo 35R/C in popularity among leading U.S. multi-channel flyers.

Despite the fact that most of them agreed that it had one or two shortcomings notably a tendency, under hard use and months of regular contest and practice flying, to bear up with a little less fortitude than would have been considered ideal, it has now become almost standard equipment for the most advanced types of U.S. radio controlled models and powered the winning American model at the recent World R/C Championships in Switzerland.

One of the problems associated with a large displacement engine, especially where it is as light as the 45R/C (9.1 oz. for 7.45 c.c.) is increased vibration, which may, of course, upset the operation of the receiving equipment. To deal with this, the K. & B. company, adopted an unusual approach, a “rear counter balancing flywheel” as a means of providing extra balancing of reciprocating weight. This consists of a nylon rotor into which is moulded a die-cast zinc alloy segment. The rotor rotates on a pin pressed into the back-plate and is driven by an alloy spigot, pressed into the hollow crankpin, which engages a slot in the rotor opposite the zinc counterweight, in the manner of a rear disc type induction valve. Unlike a disc valve, however, it offers negligible drag because there is a 0.010 in. clearance between rotor and back-plate.

The rest of the engine is traditional Torpedo design with minor modifications. The crankcase/main bearing unit is almost identical with that of the 35 and has the same sized bronze-bushed bearing. It is, however, strengthened, particularly where the lower cylinder portion joins the main bearing housing and is bored deeper and wider to accept the enlarged cylinder skirt section. The crankshaft is of a newly adopted alloy steel (also used in the Torpedo 35C “combat” engine) and a normal rectangular valve-port gives a conventional 45 degrees after dead centres, 180 degree induction period.

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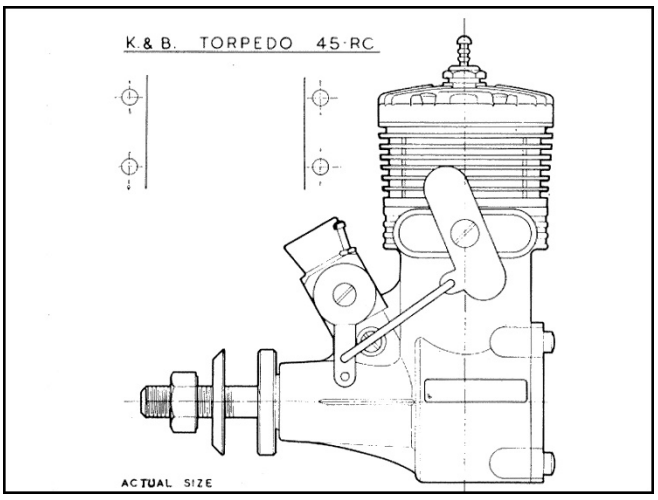


The engine is fitted with a K. & B. Multispeed barrel type carburettor throttle unit with idling adjustment, supplemented by a coupled exhaust baffle.

Specification

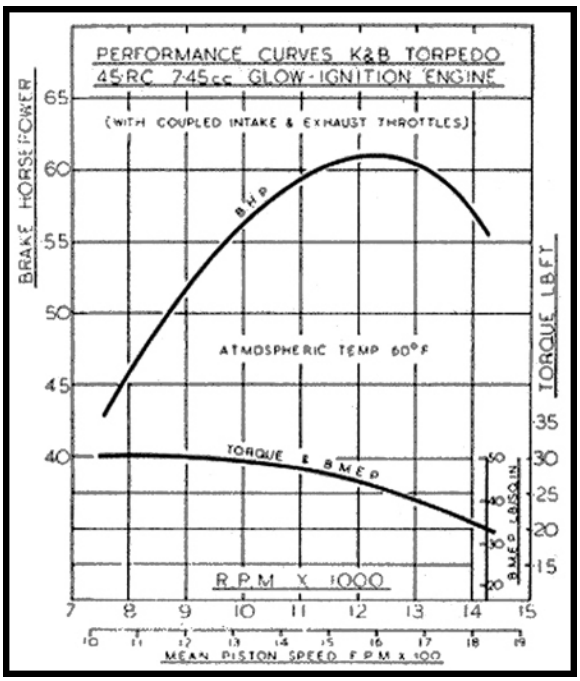
Type: Single cylinder, air cooled, loop scavenged two cycle, glow-plug ignition. Shaft type rotary valve induction.
Bore: 0.840 in.
Stroke: 0.820 in.
Swept Volume: 0.454 cu. in. = 7.446 c.c.
Stroke/Bore Ratio: 0.976 : 1.
Weight: 9.1 oz.

General Structural Data

Pressure cast crankcase, cylinder head and back-plate of high strength aluminum die-casting alloy. Counter balanced crankshaft of special alloy steel with 7/16 in. journal and 7/32 in. dia. crankpin and running in bronze bush. One piece cylinder with integral fins machined from bar stock steel, secured to crankcase with two screw's passing through fins fore and aft. Meehanite piston with relieved skirt and having five fine annular oil grooves in lapped section. Fully floating tubular aircraft alloy steel gudgeon pin. Connecting rod of cold forged aluminum alloy, unbushed. Barrel type variable speed carburettor throttle and coupled flat plate type exhaust baffle. Beam mounting lugs.

Test Engine Data

Running time prior to test: 4 ½ hours.
Fuel used: KK Record Methanex.



Ignition plug used: K & B bar type long reach 1.5 volt as fitted.

Performance

A fairly long rich-mixture running-in period was necessary with our 45RC before tests could be safely undertaken even on a relatively mild fuel. Starting was at all times good, however. The throttle unit was very effective and progressive in operation. With the engine warmed up and the needle valve and idling adjustment carefully set, r.p.m. could be reduced to a little over 2.000 on a 13 in. prop without losing full throttle power or running the risk of stalling the engine on opening the throttle after a lengthy spell of slow running. As the performance curves indicate, maximum output recorded in our tests was 0.61 b.h.p. at approximately 12.300 r.p.m., but more important is the power available in the 9-10.000 r.p.m. bracket corresponding to the use of favoured R/C prop sizes.

Running qualities were good, with a definite improvement in smoothness in comparison with what one would expect of an engine of this size doubtless attributable to the back-plate counter balance unit. (Incidentally, a little extra attention to keeping the back-plate screws tight is not amiss here.)

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The K. & B. Torpedo 45R/C is currently available in the U.K. from Henry J. Nichols Ltd., at £11 10s, tax and duty paid, a figure which seems very reasonable when compared with the U.S. retail price of $27.95 (approximately £10).

Power/Weight Ratio (as tested): 1.07 b.h.p./lb.
Specific Output (as tested): 82 b.h.p./ litre.

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