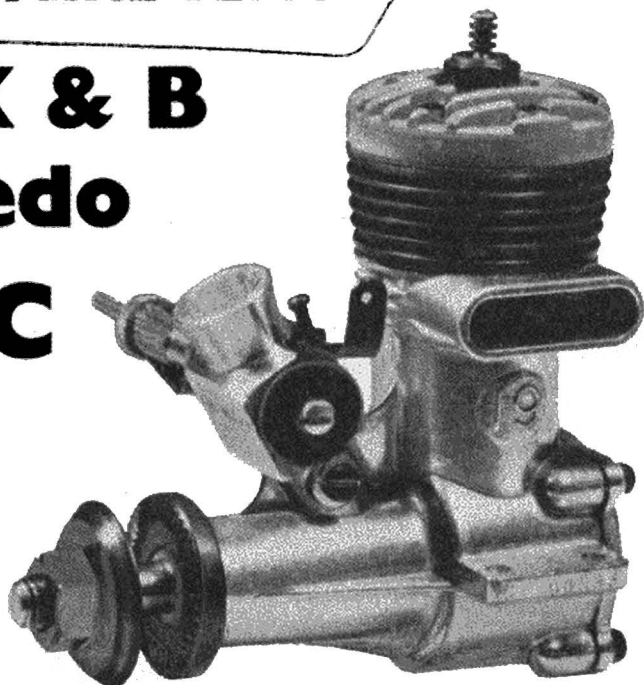




The K & B Torpedo 19-RC

3.27 c.c.
glowplug
motor



IN the course of 120 tests featured in this series, we have encountered, perhaps, 10 engines of such all-round merit as to place them in a class of their own, and, very near the top in this group, comes the American K & B Torpedo 19, tested in 1953.

The most powerful of all engines in the 0.19 cu. in. and 3.5 c.c. classes, the Torpedo 19's performances in American Class A speed contests, alone, have been quite outstanding, speeds in excess of 150 m.p.h. having been achieved with specially prepared examples.

The Torpedo 19RC model, which is the subject of this month's report, is a de-tuned, throttle-equipped version of the 19, especially intended for radio-controlled models. The main differences between the 19 and the 19RC are as follows:

Crankshaft. This has a smaller valve port of circular section (drilled at an angle) instead of the normal rectangular port. This reduces the ultimate performance somewhat, but has been found desirable in the interests of flexibility, even low-speed running and improved throttle response.

Crankcase. This has the intake cut off just above the normal spraybar installation. The "Multi-Speed" carburettor unit plugs into the shortened intake, the standard spraybar holes being tapped and utilised for two set-screws, which lock the new carburettor in position.

K & B Allyn Multi-speed carburettor. This is a smaller bore version of the original unit introduced for the Torpedo 35RC. It consists of a machined alloy body, containing a barrel type throttle, with a lever,

on the left-hand side of the engine, which operates quite independently of the needle-valve. The needle-valve assembly is a self-contained unit which screws into the right-hand side of the carburettor.

Glow-plug. This is a special type, fitted with "idle-bar" to The Torp 19 in pieces.

provide more positive ignition under slow-running conditions. It is similar to the Ohlsson FR ("Full Range") glowplug and is made under licence by arrangement with Irwin Ohlsson.

All other parts are identical and interchangeable with those of the standard 19 model.

In general layout and construction, the 19 and 19RC are similar to the other current Torpedo models. In contrast to the newer Torpedo designs of the past five or six years, however, it retains four cylinder holding down screws, instead of a fore and aft two-screw fitting. One or two slight changes are apparent on comparing the engine with the early 19s, such as radiused, instead of square-cut, exhaust and transfer ports and a green enamelled head.

Specification

Type: Single-cylinder, air-cooled, loop-scavenged two-stroke cycle, glow-plug ignition. Crankshaft type rotary-valve induction. No sub-piston supplementary air induction. Baffle piston. Central ignition plug.

Bore: 0.640 in. Stroke: 0.620 in. Swept Volume: 0.1994 cu. in. = 3.27 c.c.

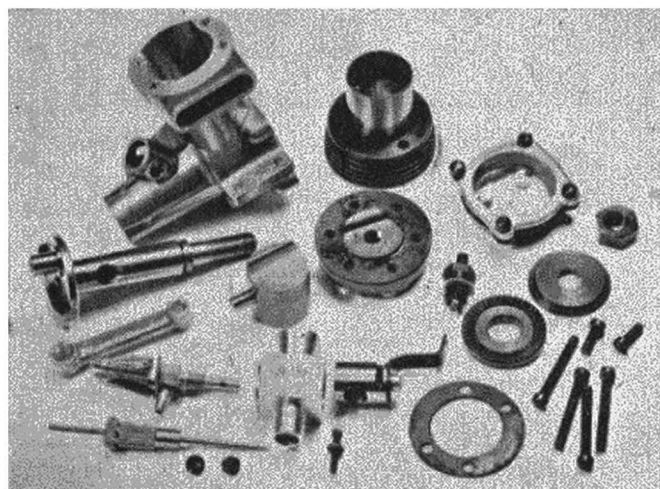
Stroke/Bore Ratio: 0.969 : 1. Weight: 6.5 oz.

General Structural Data

Pressure diecast aluminium alloy crankcase unit, tumble finished, with bronze main bearing. Non-hardened crankshaft with disc-web and crescent counterbalance, having $\frac{3}{8}$ in. dia. journal and $\frac{7}{32}$ in. dia. hollow crankpin. Blued-steel drive-washer, keyed to flat on shaft. One-piece cylinder with integral fins and blued corrosion resistant external finish. Pressure diecast aluminium-alloy cylinder head, enamelled green and secured with six screws, four of which pass through cylinder fins to tie complete cylinder assembly to crankcase. Mechanite piston, with filleted baffle and skirt relieved 0.001 in. below gudgeon-pin centres. Fully-floating $\frac{5}{32}$ in. dia. gudgeon pin with alloy end-pads. Forged aluminium-alloy connecting-rod with plain eyes and oil hole at lower end. Detachable crankcase back cover secured with four screws. Barrel-throttle type variable speed carburettor with aluminium alloy body and barrel and brass spraybar assembly.

Test Engine Data

Running time prior to test: 3 hr. Fuel used: (1) 70 per cent. Blending Methanol and 30 per cent.



Duckham's Racing Castor Oil, for running-in. (2) Shell Red Glow Plus for performance tests.

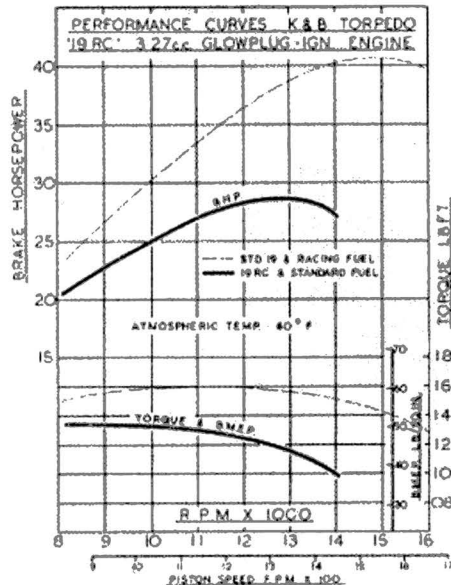
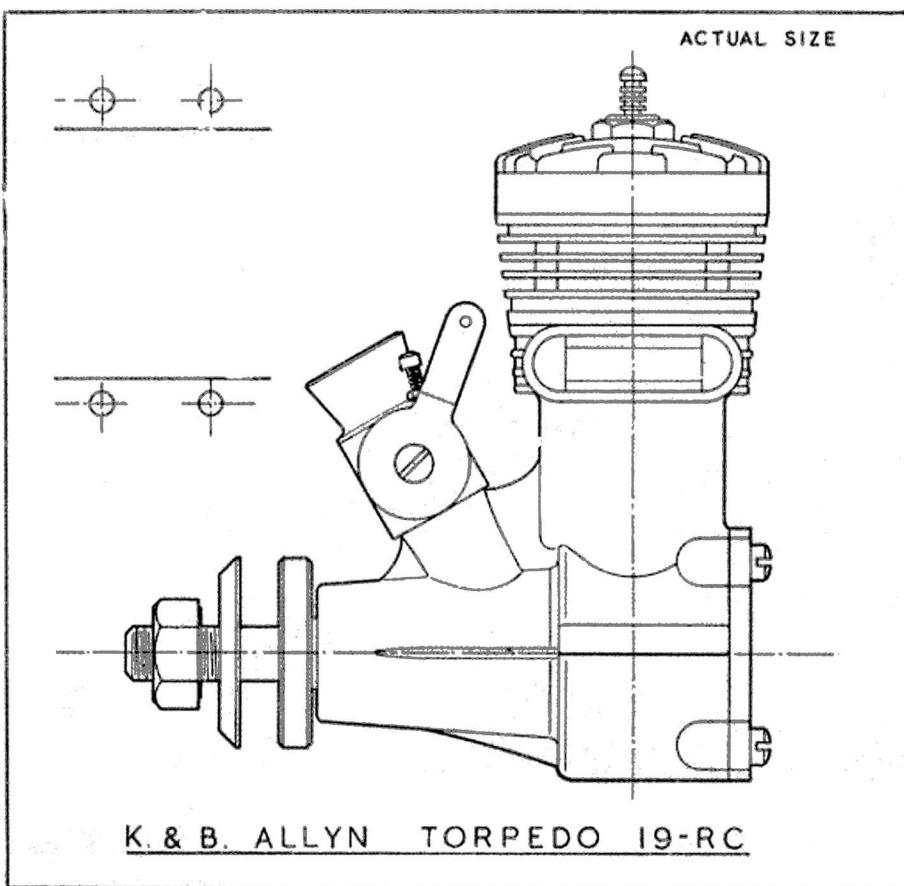
Ignition plug used: K & B Long-reach 1½-volt with "idle-bar" as fitted.

Performance

All engines of this type usually require at least one hour of rich-mixture running (i.e., "four-stroking") before the needle-valve may be turned down for maximum revolutions on any given load. The 19RC proved to be no exception to this rule. We ran the engine for an initial 1½ hr. on a 10/4 prop under these conditions, using the "cool" mixture noted above. At the end of this period, the engine would maintain an even "two-cycle," but appeared to be giving a little below the expected power output. A further 1½ hr. were, therefore, given before any test readings were taken...

While the possibility that our single test sample may have been a little below average cannot be dismissed, it does appear that the power of the 19RC is quite appreciably below that of the standard 19 model.

However, the performance curves achieved with our earlier 19 model, as indicated by the broken lines on the graph, are not directly relative, since they were achieved with a highly nitrated racing fuel, such as might be used for speed work, whereas the tests on the 19RC were conducted with a good standard commercial glow fuel. In any case, the performance of the 19 is so good that even quite a drastic cut in power is easily tolerated for the type of duty (i.e., R/C work) for which the engine is primarily intended and for



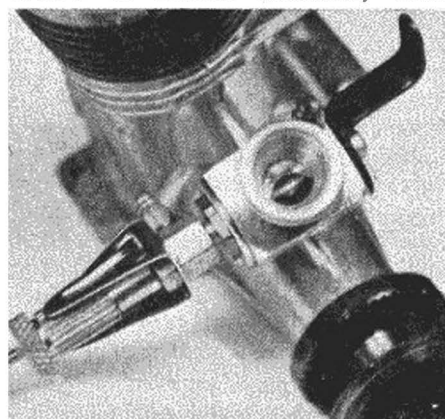
which, moreover, high output at ultra-high peaking speeds is seldom required.

General handling characteristics of the 19RC were all that could be desired. The engine ran with exceptional smoothness over the entire speed range and starting was excellent, irrespective of prop size. Response to the needle-valve was very satisfactory, the control having just the right degree of sensitivity without being critical.

The throttle control worked admirably and, in our experience, the K & B Multispeed carburettor is probably the best intake-only throttle system currently available on engines of this type. There is a screw adjustment for setting the "idling" speed. This prevents the barrel from rotating too far and cutting off air completely; normally the adjustment is set so that the barrel remains open a little over 1/16 in.—varying very slightly according to prop, fuel and condition. It gives, aided by the special plug, a true "idle"—not quite a "tick-over," perhaps—but enough to reduce actual power by something like 90 per cent. from the full-throttle position, with no risk of stopping the engine when opening or closing the throttle abruptly. It is, of course,

a true variable-speed unit, so that, in such advanced R/C installation as may demand it, the engine can be operated over a whole range of "cruising speeds" between the full throttle and idling positions.

Over the past few years Torpedo engines have achieved an enviable record of contest successes, with



Close up of the throttle unit.

more wins in U.S. Nationals events than any other make. The 19RC should have no difficulty in living up to the reputation of its forebears.

Power/Weight Ratio (as tested): 0.70 b.h.p./lb.

Specific Output (as tested): 87 b.h.p./litre.