KALT

KIT REVIEW No. 166
BY DAVE DAY
20 BARON

THE TREND IN HELICOPTERS these days seems to be to go bigger and better, with retracts, multi-blade heads, etc. Fortunately for those of us who are not millionaires, there now seems to be a counter trend, with a number of smaller models becoming available.

Of these, the *Kalt* '20 Baron' (or 'Baronette') seemed to be an ideal alternative for the 'Lark' which I have been using as a sort of shovel for the last three years. This is not meant to imply that the 'Baronette' would make a better shovel, but that by having collective pitch it might be possible for even someone like me to fly it successfully. It also have the virtue of being equipped with a very effective cooling system ie. a fan and shroud, rather than the more usual heat-sink.

The Kit

Packaging is, as we have come to expect from kits of Japanese origin, of a high standard. Compartments in the box house the various sub-assemblies in numbered bags which match numbered sections in the instruction manual. Main rotor blades are supplied in finished form apart from the bolting on of metal re-inforcing pieces. The cabin consists of two plastic mouldings which have to be joined using the special solvent provided and a clear canopy moulding.

A large double sided plan is included which shows a scale side view of the complete helicopter, a very useful perspective drawing of the mainframe, engine and R/C gear assembly, plus exploded views of the entire model (including the rotor head). It also has a complete parts list and a screw and bolt list.

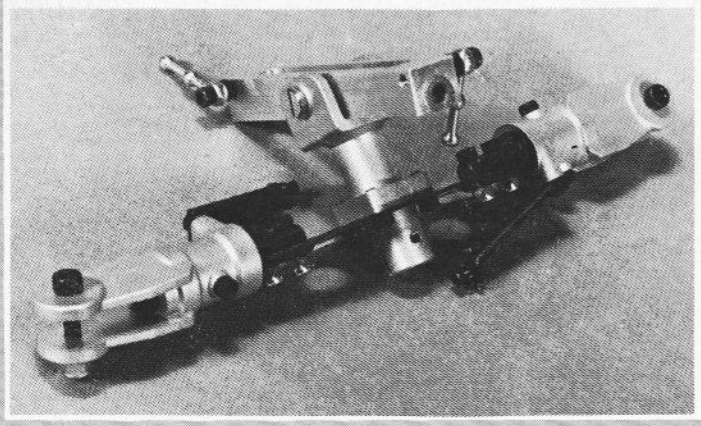
Assembly

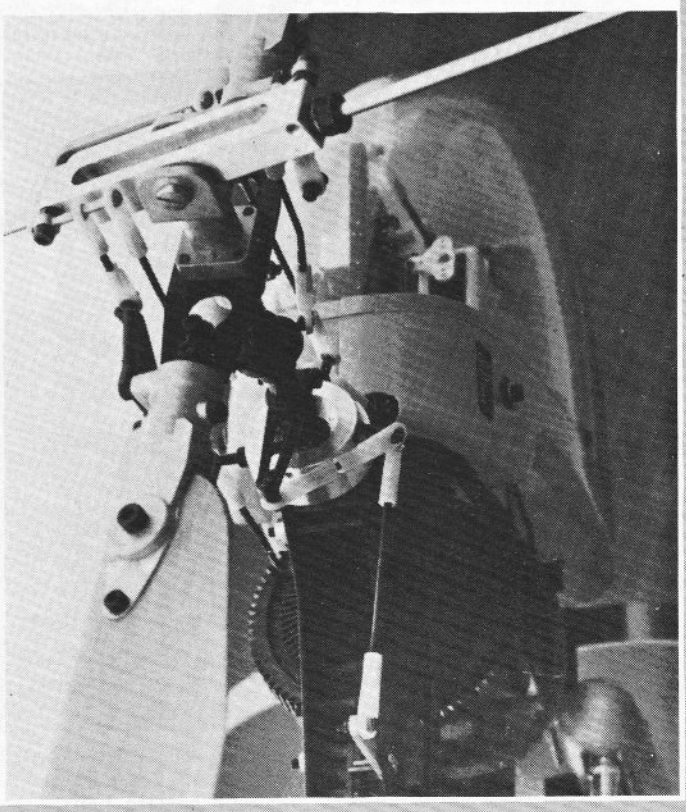
This section was going to be entitled 'construction' until it was realised just how little actual construction was involved. Two pieces of ply and a piece of hardwood (all pre-shaped) have to be glued together to form the servo mount, small ply re-inforcements have to be added to the roots of the tail rotor blades, two holes are drilled in the servo mount, two more in the main rotor blades and a slot cut in the carbon fibre tail boom. After joining the two halves of the cabin, as previously mentioned, the rest is pure assembly.

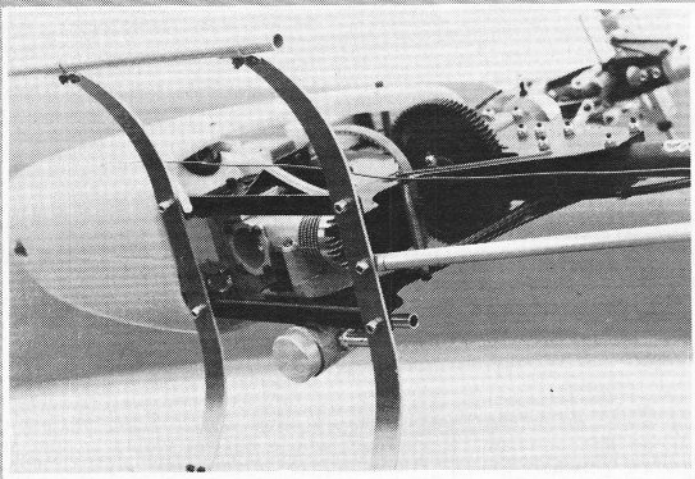
The engine mounting and transmission system is designed around the *OS.* 25 FSR, although an *Enya* 25 (a rare bird in this country) can also be fitted. Other motors could, no doubt, be fitted with a little modification but an initial attempt to fit my old faithful *HB* 25 from the 'Lark' soon convinced me that the *OS* was the only way to go. Working to the assembly order in the instructions, no problems were encountered. One thing which strikes you is that every bag you open seems to contain several ball races, there being 18 of these in all. Another noteworthy point is the way in which everything goes together *exactly.* There is no question of having to use bolts to pull things together or close gaps. The only problem encountered in the entire assembly was a slight binding in the clutch due to the holes for the screws holding the motor mounting block to the main frame being fractionally too high. Elongating the holes by about $\frac{1}{32}$in solved the problem! Full instructions are given for installing and setting up the R/C equipment, which may utilise 4 or 5 servos. In the 4 servo installation, one servo is used for both collective pitch and throttle. I chose to use 5 servos, mainly to reduce the load on the pitch servo.

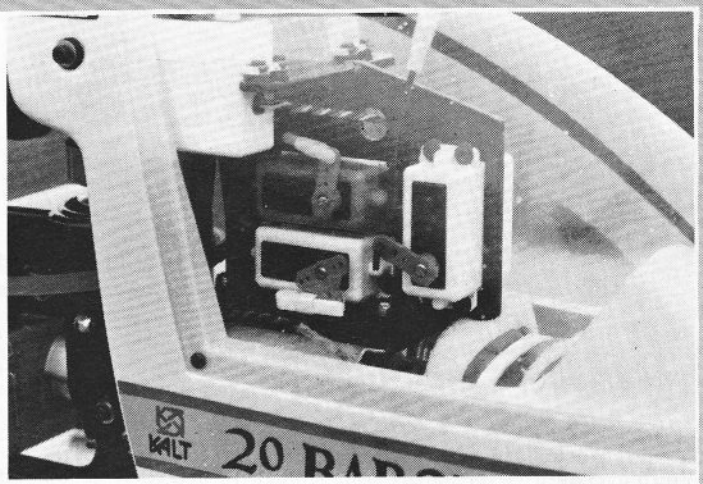
Final assembly involves fuelproofing the tail rotor blades, adding coloured trim to the blade tips, covering the vertical and horizontal stabilisers and painting the cabin to taste.

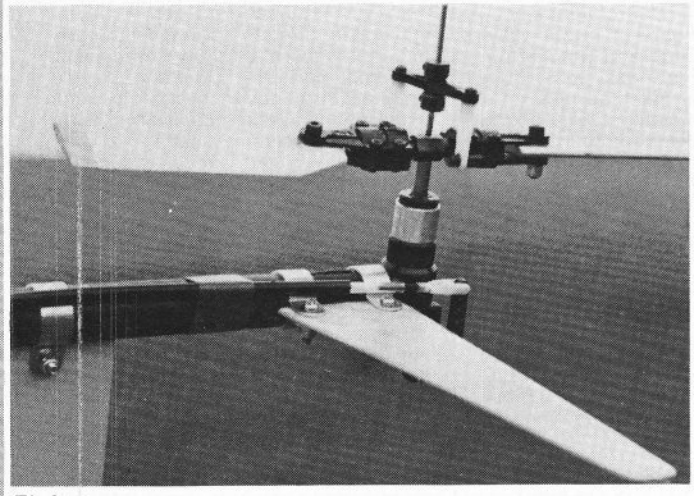
Below, left: main rotor head as it comes out of the box, ready assembled. Right: rotor head. Note mixer arms with inner ends operated by collective pitch slider on main shaft. Outer ends are connected to flybar 'rocker' to give cyclic pitch control. Centre of mixer arms connected to blade holders.











Above, left: engine is mounted on machined alloy block. Note 'slant front' tank mounted inside cabin moulding. Above, right: servo installation. Top two servos control fore/aft and left/right cyclic pitch, forward servo gives collective pitch via rocker arm and slider on main shaft. Lower servo operates throttle via 'Y' lead, while centre, darker coloured, servo controls tail rotor pitch. Left: tail rotor assembly. Each blade holder has two ball races. Vertical and horizontal stabilisers of 1/8in. ply are easily replaced in the event of damage.

Flying

The *OS* .25 was bench run on a 7 × 5 propeller for about 30 minutes before installation. This allowed the carburettor to be set up to give a reasonable idle, so that the motor was a known quantity. Some initial difficulty was experienced in starting the motor in the helicopter. It was found that the throttle needed to be opened somewhat from the idle position and the motor had to be kept turning by the starter for several seconds after it commenced to run. The starter belt supplied is rather on the short side and there is only *just* enough room to insert a *Sullivan* starter. If you adopt the normal procedure of relaxing the tension on the belt as soon as the motor fires, you will find that the belt will snatch with possible damage to the cabin moulding.

Due to the high starting speed, a firm grip on the rotor hub is essential to avoid being clobbered by the rotor blades, but once the motor is actually running, the speed may be reduced to the point where the clutch is fully disengaged.

After a few trial hops in the course of which I decided that the tail rotor response was much too twitchy for me, the model was taken to Slough R/C Models to take advantage of their free setting-up service. A pleasant afternoon was spent, during which Nigel Brackley pointed out several areas where my setting-up had been less than perfect, and agreed that the tail rotor control throw appeared to be rather excessive. The instructions specify a throw of 5 mm each way, it would appear that 5 mm *total* is the correct figure. Nigel then proceeded to fire up the *OS* and fly the model around the Car Park at the rear of the shop!

Thus encouraged, I managed several fairly long, hovering flights and one flight around the field during which the 'Baronette' was very stable. Unfortunately, I made a complete mess of the landing on this last flight and thumped it very heavily. Surprisingly, there was no damage!

On the next outing, when attempting to take pictures for this Review, the model was flown from very soft, slightly sloping ground. On this occasion, I made a common mistake of all inexperienced helicopter fliers, and flew the model into the ground at speed — backwards. There followed a great many grinding, grating and banging noises, and then an ominous silence. Examination revealed that the only real damage was a stripped main gear and slightly bent main shaft, a tribute to the practical design and durability of the 'Baronette'.

It is obvious that I am still having some difficulty in controlling the tail of the 'Baronette' and I intend to fit a tail rotor gyro in the hope of speeding up my own tail rotor response without consuming too many gears and shafts in the process. A report on this will follow at a later date.

Conclusions

The *Kalt* 'Baronette' is a compact, easy to assemble, scaled down edition of a typical R/C helicopter. Apart from being somewhat cheaper, it also has the virtue of being very rugged, and therefore forgiving, for the budding helicopter pilot.

Price £129.00 imported by Slough R/C Models.