

KIT REVIEW No. 157

KALT 50 BARON

By Bill Burkinshaw



Left: Baron 50 in hovering flight, aerobatic potential doesn't detract from stable hovering ability. Right: John Griffiths starts the OS 50 for first circuit flights.



THE NAME KALT first came to my attention as manufacturers of 4 Stroke model engines, and it is only a small step sideways to utilise the sort of manufacturing expertise required for model engines, to produce the precision metal parts required for a helicopter. Design is, of course, another matter entirely, a helicopter be it model or full-size, is a maze of complex linkages and levers designed to enable the potentially violent and rapid reactions of the whirling rotor blades to be controlled by the human pilot. Add R/C to the system, and obtaining the additional stability necessary, whilst still retaining adequate controllability, is a demanding task. It did not require a great deal of engineering knowledge to appreciate the very high quality of the KALT 'Baron' components, just how the system performed in the hands of an R/C pilot remained to be seen.

The Kit

Presentation of the kit is excellent, all parts are laid out in a vacuum formed tray sealed with a transparent cover. Parts for each sub-assembly are packed in numbered packages which tie up with the instructions. An 'exploded' pictorial drawing clearly indicates where each and every nut bolt and washer in the machines is intended to fit. It says much for the quality of this drawing, and the clarity of the Japanese instruction book that I was able to completely build the model before obtaining the English language translation of the instructions.

The 'Baron 50' is designed for 0.50cu in. motors and 4 function R/C using either 4 or 5 servos (more on this later). Potentially aerobatic, in the hands of the right pilot, the 'Baron' also has auto-rotation facilities built in. The only additional items a prospective builder will need to purchase are fuel tube and a filter, plus some heat shrink film to cover the fin and stabiliser.

Construction

From start to finish construction took about 12 hours. Considering the complexity of the model, this short time is a tribute to the accuracy of the parts more than the skill of the reviewer! In only one tiny area was there any necessity for re-aligning holes, or any other form of fitting.

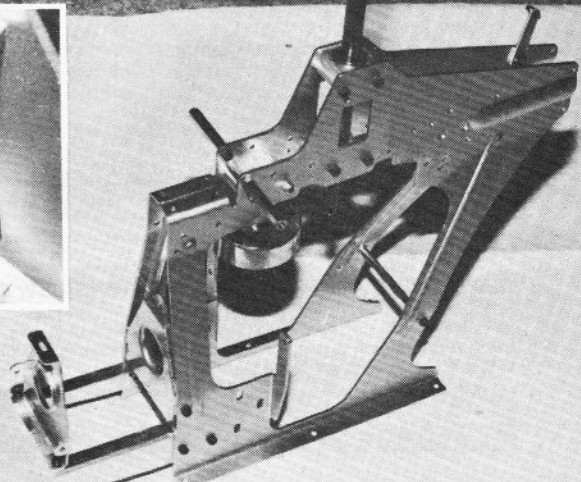
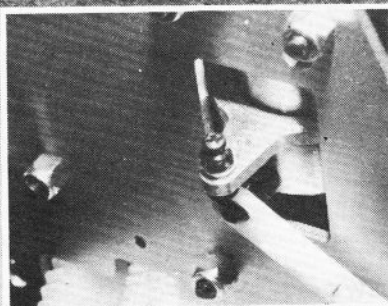
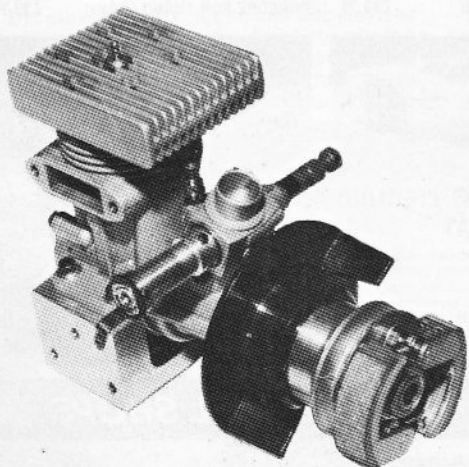
The model is built around a series of pressed alloy plates, the major side plates carrying the mechanics, whilst forward projections bolt on to carry the fuel tank and R/C equipment. This basic sub-frame assembly was completed in very short order, much helped by the rule printed on each page of the book to enable rapid choice of the correct screw to be made. Two engines are catered for, the Enya 45X or OS 50 FSR. Necessary adaptors for clutch mounting etc. enable the chosen engine to be rapidly fitted with the clutch, and slipped into place. I chose to fit an OS50 which is supplied with a special heat sink head for helicopter power. Many of the more complex parts of the model are supplied

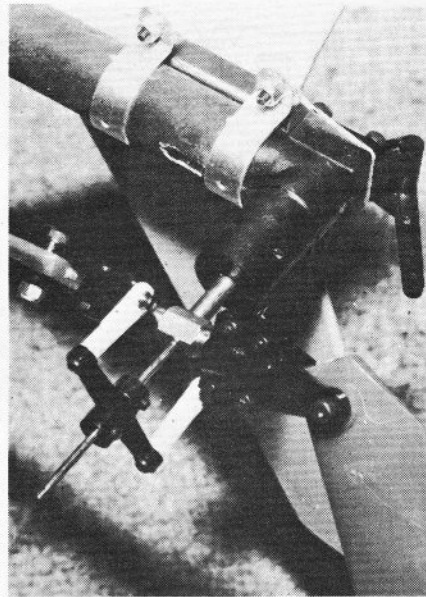
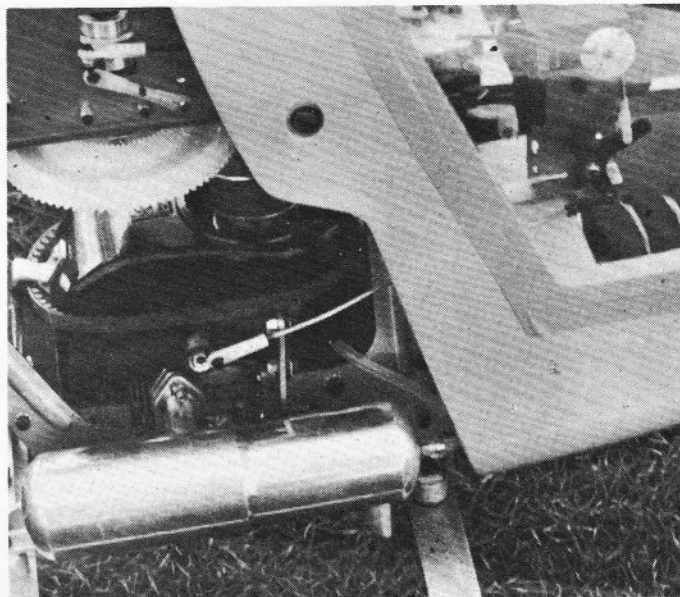
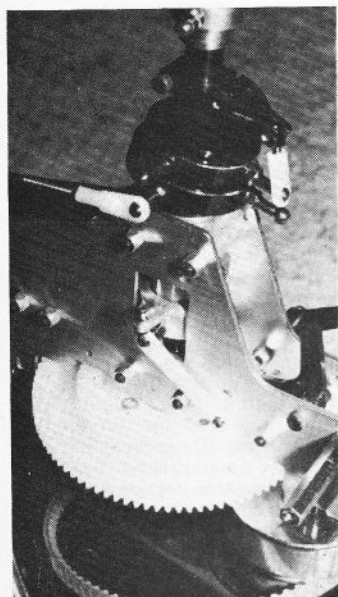
ready assembled, the main drive gear which incorporates a free-wheel hub for auto-rotation and the rotor head fall into this category.

All the swash-plate and collective pitch linkage parts followed, rapidly falling into place. The collective pitch linkage is ingenious. A collar, free to swivel on the rotor shaft is fitted with two radially swivelling links to the main frame. One of these angles forward, the other back. Pulling on the ball-link attached to the collar causes it to travel up the shaft as it rotates on the radial links. Motion is carried higher up the mast by a piano wire link running in a keyway, which allows it to pass through the swash plate and driver. This particular link was the only part of the model which required any 'adjustment'. The two right angled projections which lock into the sliders above and below the swash plate were not exactly in line. A quick tweak with two pairs of pliers cured this, allowing the collective mechanism to run freely.

The tail boom is an epoxy/carbon fibre tube; inside it, piano wire takes the drive from the main reduction gear to the tail rotor gear box. A supporting bearing is placed halfway down the tube which needs to be tapped into place. A length of metal rod dropped repeatedly down the tube enabled me to position this accurately so that it could double as a support for the tail boom strut.

Far left: OS 50 with clutch and flywheel assembly in place. Note the neat throttle barrel extension (supplied). Inset: clever radial link collective pitch motion transfer system works smoothly. Below: main frame assembled prior to engine installation. Accurately formed aluminium alloy plates are solidly bolted together with steel spacer tubes and extruded alloy bearing housings.





Above left: rotor mast with swash plate and driver in position. Tail rotor drive is via a bevel gear integral with the substantial moulded main gear. Centre: servo in top right operates collective pitch direct, and throttle via a bell-crank. Silencer is Kalt's own model. Above right: orthodox tail rotor bevel gearbox is pre-assembled and of all ball-race construction.

clamp. A pre-assembled tail rotor gear box sped up assembly of the tail end which follows orthodox R/C helicopter practice. Once the stabiliser and fin were covered and attached the 'Baron' really started to look like a 'chopper'.

Returning to the front end, the pre-assembled rotor head was quickly bolted into place and the necessary three push-rods made up, one for cyclic control and two for pitch. All the complex mixing linkage is pre-assembled and adjusted, all mixing is performed at the rotor head. One irksome task for many chopper lovers is making blades — not with Kalt machines, they are completely finished, even down to balancing. All you have to do is bolt them on! The fly bar and paddle assembly has to be balanced, but this is a simple task when compared to rotor blade balancing.

A vacuum formed cockpit and canopy are included, plus the necessary solvent adhesive to join the various parts together. All very straightforward and quickly completed.

R/C Installation

I would think that Kalt could quite safely claim that any R/C equipment would fit the 'Baron'. A novel system of slotted metal bearers allows any size servo to be easily catered for. I chose to use Futaba 'J' series

with four servos, with one servo for collective pitch and throttle. An extra bellcrank and push-rod is needed if this system is to be used, as a 5 servo installation is detailed.

All the necessary quicklinks, ball links etc. are provided and installation takes no more than a couple of hours. All controls worked smoothly and before making any attempts at flying the model myself it seemed well worthwhile to take advantage of the importers (Slough Radio Control) offer of a check-out.

Flying

After a full charge of the R/C equipment batteries Nigel Brackley of Slough R/C gave the 'Baron' a thorough check over and after fitting a piece of fluorescent tape to one rotor blade pronounced all systems go.

It now fell to the lot of John Griffiths to flight check the model. A brief engine run showed all to be as it should be and without further ado, John lifted the 'Baron' into the hover in the back yard of the shop!

A few minor adjustments to the trim, and we decided to drive over to the nearby Eton College playing fields for further flight tests. A number of local modellers join the Eton College students during the weekend, and several models were in the air as we arrived. Soon the OS was once more fired up and after a brief hovering check, John proceeded to fly the model round the field. The 'Baron' has a surprising turn of speed and covers the ground very quickly, looking very good in the air. At this first session I made no attempt to fly myself, just contenting myself with watching two other 'Baron 50s' being looped and auto-rotated by John Griffiths and Mick Harris.

Poor light prevented my own attempts with the 'Baron' for some days, but eventually a fine day came along and the inevitable could be put-off no longer. Not relishing crowds for my first attempts I chose to visit our club site at a time when there would be little other activity taking place. After all the preliminaries had been accomplished, I proceeded to run a fair amount of fuel through the engine, getting the feel of the controls.

Eventually it becomes impossible to resist the temptation to open the throttle just that little bit more and lift-off. To be fair, the 'Baron' is strong — it took the crash quite well! A pair of broken blades was the only damage; and damaged pride. The very fast response to the controls caught me totally by surprise when the model was clear of the ground. Once the blades were replaced caution took over and a reduction in cyclic control throw was made before further attempts were made.

Part II of this review to be published in the May issue of RCM&E will include more details of flying the 'Baron' plus information on helicopter aerobatics.

Prices

Kalt 'Baron 50,' price £185.00.

Kalt silencer, price £14.95.

Available from Slough Radio Control, 273 High Street, Slough, Berks.

Below left: servo installation system allows almost any servo to be easily installed. Fully adjustable with mounting bolts supplied. Hexagonal projections either side of the main frame are cockpit mounting outriggers. Below: cockpit bubble removes in one piece to allow easy access to all R/C equipment. Held in place with three screws.

