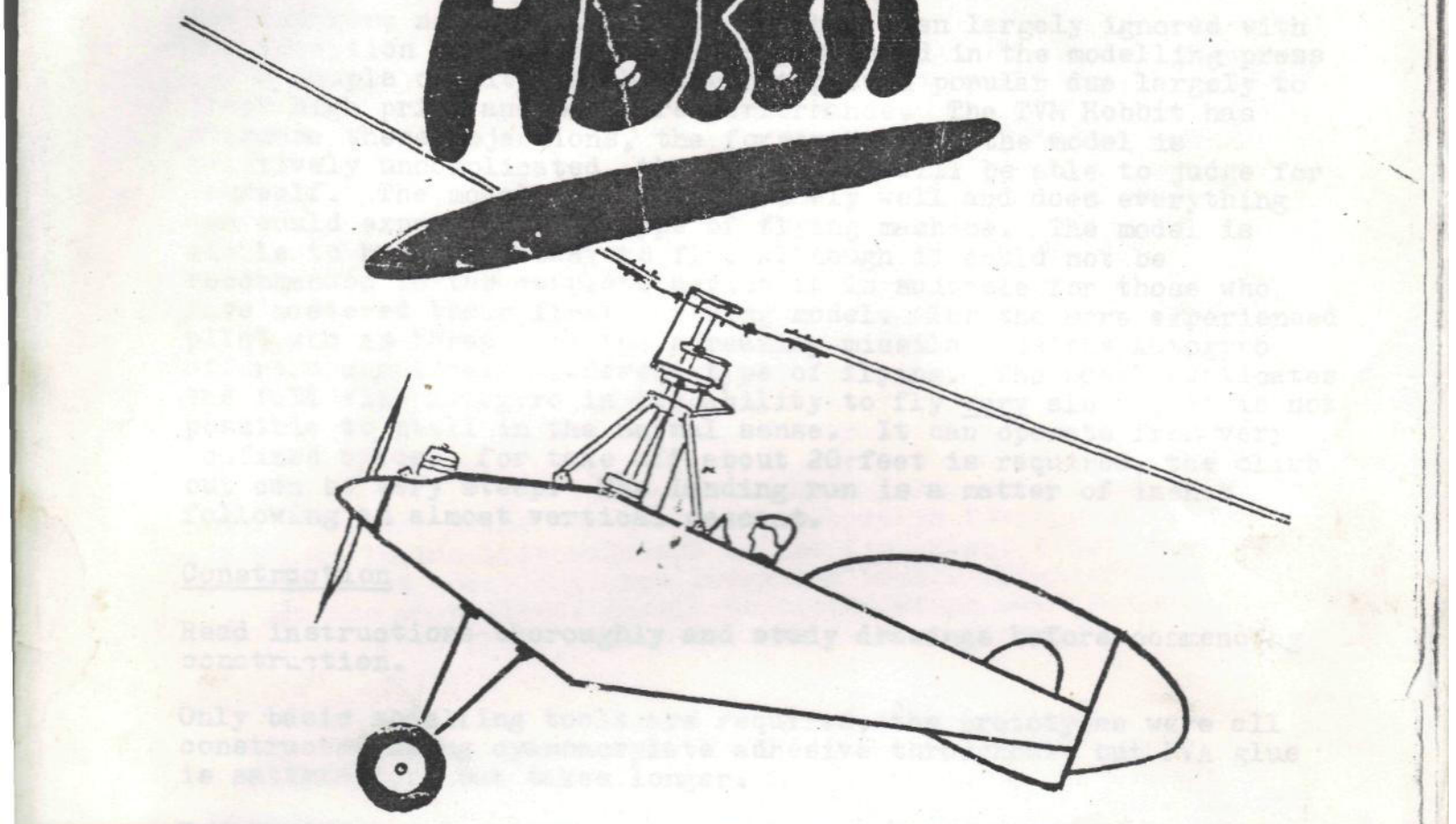
THE HOBBIT



A really practical model autogyro which is easy to fly and duplicates th$ full size aircraft in it's ability to fly very slowly and operate from confined spaces

Specification : -|f*

Rotor die :

53 Length : 38

Weight : 6 - 7 lbs

4

Channel 40

Designed & Manufactured by

THAMES VALLEY MODELS ''v.

381 Oxford Rd.
Reading , Berkshire
:. (0734) 580030

trr.to

Thank you for choosing the TVi-, H083IT, vre are sure you will find building and flving enjcyacle and interesting, if so please tell others, if not please tell us.

The Autogyro as a modelling subject has been largely ignored with the exception of one or two plans published in the modelling press and a couple of kits which have not proved popular due largely to their high price ar.c inediocre perfornance. The TVT-i Hobbit has overcome these objections, the former because the model is relatively unconrli^ated, the latter you will be able to judge for yourself. The KOdel performs extremely well and does everything one could expect of this type of flying machine. The model is simple to build and easy to fly, although it could not be recommended to the complete novice it is suitable for those who have mastered their first low wing model. For the more experienced pilot who is bored with the screaming missile type the Autogyro offers a completely different type of flying. The model duplicates the full size Autogyro in its ability to fly very slowly, it is not possible tc stall in the normal sense. It can operate fron very confined spaces, for take off aoout 20 feet is required, the climb out can oe very steep. The landing run is a matter of inches following an almost vertical descent.

Const ructior.

Read instructions thoroughly and study drawings before conr.encing

Only basic modelling tools are required, the prototypes were all constructed using cyanoacrylate adhesive throughout, but PVA glue is satisfactory but takes longer.

Fuselage

G-lue formers ?2 and F3 in positions marked on one fuselage side and add other side when dry.

When set fix firewall Fl and loin the tail (steaming sides will help), ensure fuselage is "true" i.e. not banana shaped. G-lue pieces of 4- x - balsa to fuselage side to rear of F2 a.nd flush with the top of fuselage side. Glue plywood undercarriage plate in position and add the triangular fillets to rear of Fl and l'/3 plate

Glue 3/16 fuselage bottom sheet in place and tack bottom hatch in place. Add y" top deck, F4 first followed by F5 and F6, also tack tank hatch in place temporarily. Kow carve and sand top to shape alsc sand the bottom sheet and round off the corners, remove both :r.es.

.-.3-ei/ale bottom bearing support from •? x •§• hardwood, also servo tray slot froc -q- ply and ? sq. balsa. Fix whole asr-embly in pcsiticr. re^-r of F2 (shaft should be at 90 to rear top deck).

Bolt the rear struts (shorter) to the top bearing and using shaft for alignment ta:i the struts in place with cyano, repeat for front struts, nher. satisfied the shaft is true and vertical fix

permanently with resin and matt. When set renove the top bearing and protect the bottom bearing from dust etc. with tape. Note: The bearing blocks have a shoulder on one side, this shoulder should be uppermost on the bottom bearing and underneath on the top bearing.

At this point it helps to fix the undercarriage in place. Clamp the legs in position (85*3- leg to rear) and bind and solder the legs together using fusewire or similar.

Mount the engine using fibreglass or aluminium mount and drill holes in Fl and -fc'2 for throttle linkage anc fuel tubes. Make cowl from *i* block and plywood nose ring, -er.ove engine and carve and sand cowl to shape.

Tail Assembly

G-lue 7 sq. spruce to trailing edge of tailplane and round off leading and trailing edge. The finlets are fixed at approximately *45* which is not critical but ensure they are the same, sand bevel on tailplane and finlets to suit. Fix tailplane in position ensuring it is "square" in front and plan view, add *i* inch fillet to rear of tailplane followed by T inch fairing above, it is easier to shape the latter before fixing. Glue the fin and sub fin in position, again ensuring they are square, also glue -4 sq. spruce sternpost in place. The wire guide for the spin up cord is fixed by drilling two SEB.11 holes in fuselage adjacent to the fin (right side) at the mid tailplane chord position. Now cover the model. Plastic film is okay, but the shape lends itself to tissue which was used on prototypes, Fuel proof engine bay and ta.:ik compartment^

Bolt top bearing and struts in place not forgetting the drag link bracket on right hand side, note spin up cord guide to inside of rear right hand strut (Drill *J>vm* hole). Slide the shaft through the top bearing, pulley, bottom bearing and collar. Fix bolt through bottom of shaft.

Slide the following over the shaft in order:- long spacer, swashplate, short spacer, swashplate driver, fr.r.gn-r-ijgr no or.rf-fi^Q-fr -jn the shaft 1 i_]itim lM 1 i ii 1 1 1 i 1 _1'' ' ' i**"^*^ * ^ Al is_in line ^?{-""with the hole through the top of the shaft^^CTso tighten the •gl'libscrew in the pulley leaving" a Ule^Snce of approximately •£•" above the fuselage. Fix the drag link and adjust to get swashplate "square".

Radio Installation

Assemble the servo tray from -5-" ply to suit your servos and glue the hardwood crossn:ember in p*lace in the fuselage. Fix the servos to the tray and screw the whole assembly in position. Lrill holes in top deck for pushrods and make up the linkages, the swashplate should be square to the shaft in both planes at neutral. The swashplate travel should be approximately 10 mm total measured at the ball joints. The swashplate tilts to the right for right "aileron" and tilts forward for down "elevator".

Fix the throttle and rudder servos in place using double sided tape and make up the linkages (rudder throw approximately 40 mm each way). Install receiver and "battery to rear of radio compartment.

Fit the switch on the opposite side to the exhaust, and drill a small hole for the aerial in the side of the fuselage, the aerial should not go to the top of the fin as there is a risk of it getting entangled with the rotor, rather along the side under the tailplane, any excess allowed to trail.

Rotor Head

Bolt the hub to the teeterplate (NOTE: the holes in the hub are not the same size, the hub should be fitted so that the steel pin is parallel to the long axis of the teeter plate), also bolt reinforcement strips to underside of plate.

bcrew ball joint to flybar ring and assemble flybar as shown, not forgetting the locknuts. The flyb^r must rotate freely and have a small amount of endfloat. Assemble the paddles as shown and sand to aerofoil section (note position of hole). Screw on the paddles holding flybar in a vice and ensure the paadles are equidistant from the ring.

Glue plyw od reinforcing strips to both sides of rotor blade at the root approx. 5 mm back from the leading edge. Place the steel blade holders on the underside of the blade with 30 mm projecting,
position of the rear edge.
now
Drill two 3 mm holes in the blade for the bolts and two 2 mm holes for the b/T screws in position shown (see drawing).

Important, the underside of the blade holder and the top of the teeter plate should be scored with coarse sandpaper, this helps prevent the blade moving relative to the plate but will still swing back if necessary, avoiding damage to the blades. Note the 4 mm bolts should be tight.

Fit the head to the shaft with the steel pin (note the rubber dampers) and tighten the 4 mm. bolt. (This bolt should be very tight, use Loctite).

betting Up

Adjust the flybar link so that the swashplate, ring and paddles are all parallel.

*

The pitch is set as follows:- fix the gauge to the underside of the blade at the tip with a small rubber band (thin end to leading edge) and sight along tne blaue. The underside of the gauge and the flybar should be parallel. Screw in the self tapping screws to ad-just the pitch (tightening the screws will reduce the pitch angle;. Ihe coning angle is set as follows:- stretch a thread between the blade tips, it should pass approximately 30 mm above the hub, adjust as necessary. Also ensure static tracking is correct by measuring the height of each blade above the fin. Bend the blade holders as necessary, '^he C G is not critical, approximately -5-" to liv forward of the shaft, suspend the model by the flybar and the shaft should lean slightly forward.