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Martin Roper

Martin Roper evaluates Top Flite's Warhawk!

Having always fancied a flying scale Curtiss P-40 but never having quite got round to building one, I was pleased to get the opportunity to build the Gold Edition P-40E Warhawk. Although this is not a new kit, it wasn't going to stop me from giving it the 'full monty'. Top Flite are well known for producing aircraft kits that are well fabricated from good quality materials and the Gold Edition Warhawk is no exception. The P-40 features fully built-up construction with scale outlines and has a wingspan of 64". It is intended for 4-7 channel radio with recommended engines sizes .60-.90 2 strokes .90-1.20 4 strokes.

The finished model looks so realistic from any angle.

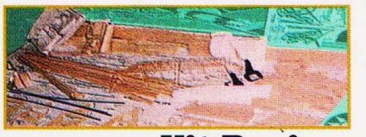
First impressions

Upon opening the box there is plenty to feast your eyes on and the standard of the two large drawings immediately attract, so too does the very comprehensive instruction book. You are advised to read the book before starting as it guides you through warnings, part identification, and decisions to be made regarding the options you wish to include such as whether to fit retracts, drop tank, flaps etc. as all these will affect the construction sequence.

The materials contained within the box were quite superb and the quantities generous, particularly the 1/16" balsa sheet provided for wing skinning. This would have been good enough for the building of indoor models! The standard of the die-cutting is also stunning and the components almost fall from the sheet. What is more they fit exactly! All this helps to make construction an enjoyable experience, which is why we build 'em isn't it? Also included is a large bag of hardware containing just about everything you're going to need including screws, control horns, clevises, engine mount, wire control pushrods and tubes, decals and superb vacuum formed canopy, ABS cowlings and fairings. The only part I wasn't happy with were the dummy exhausts which I felt left a lot to be desired and these were to be one of my choices for improvement.

Get it together

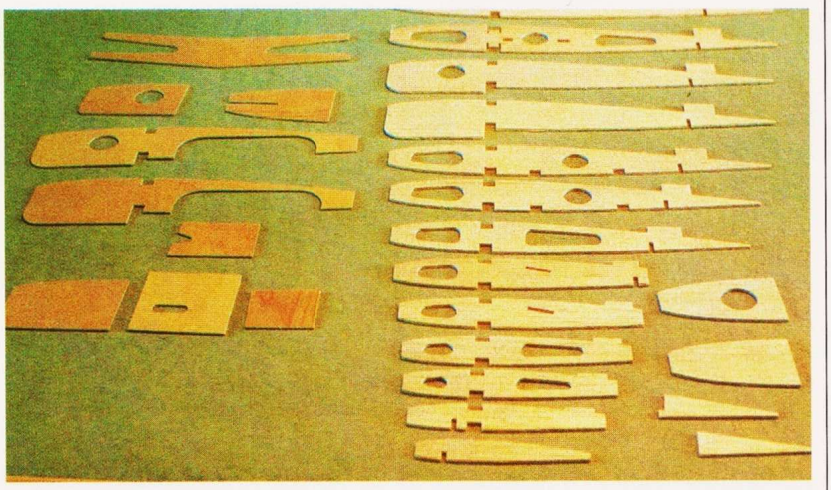
The instruction book takes you through the construction stage by stage with a picture for almost each step, it even tells you what type of glue to use and where! Building begins with the fin, followed by the tailplane and the ribs, for these parts have a jig tab attached so that they can be pinned to the building board over their locations on the plan. With the leading and trailing edges applied the unit is removed from the board for skinning on one side, then the jig tabs removed from the ribs for the skinning of the second side.



first, but a trial assembly before gluing will clarify things as all the die cut parts are exactly right, the slip-up is on the drawing.

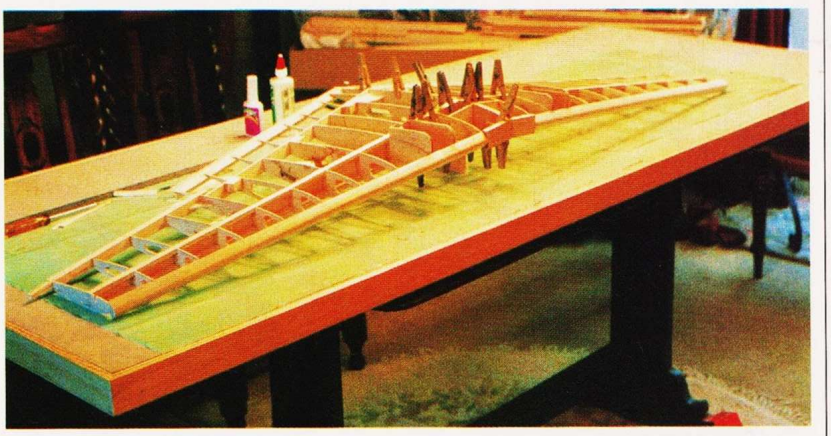
Proceeding with the construction, just the spar is pinned down to the board initially and each rib is added keeping its jigging tab at the trailing edge in contact with the building board. The jigging tabs here are to create the correct amount of washout towards the wing tips by setting each rib at its correct incidence and adding the washout in a controlled manner along the whole wing panel. This method also ensures symmetry between both wing panels. With the upper spars added (actually the lower spars as the wing is upside down) and then the leading edge and rear spars, the aileron control bellcrank assemblies are fitted, then the pushrods and tubes which are fed through their pre-drilled holes in the ribs. Whilst on the subject of controls, the

The pre-cut balsa and ply ribs and braces with jigging tabs in place.



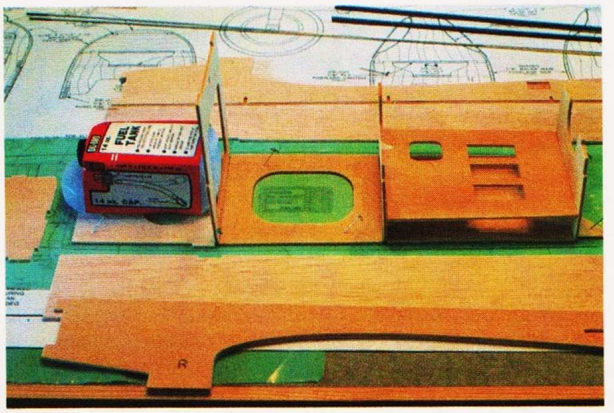
The box contents with all that lovely wood. Superb plan, full instructions and pre-formed parts to help you with the tricky shapes.

The wing too is built in a similar manner, over the plan upside down. But beware! There are a couple of mistakes on the wing plan and I mention one of them now. As some of the ribs are built up of several laminations W3, the inboard undercarriage bay rib has a ply doubler and balsa and ply treblers for the leading edge region. The plan clearly shows W3c butted against the main spars, which in practise leave it 1/16" short at the leading edge. It would then become necessary to shorten the ply dihedral braces by a 1/16". A little confusing at

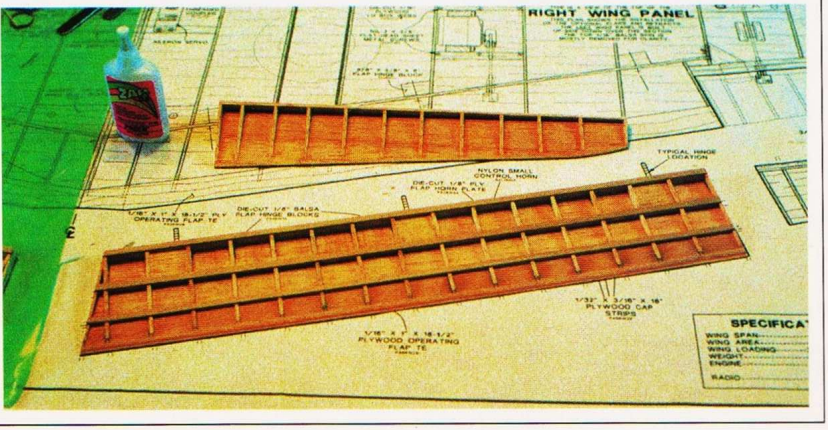


The completed wing halves joined and left to dry using the supplied dihedral block.

The first part of the liteply fuselage crutch assembly.



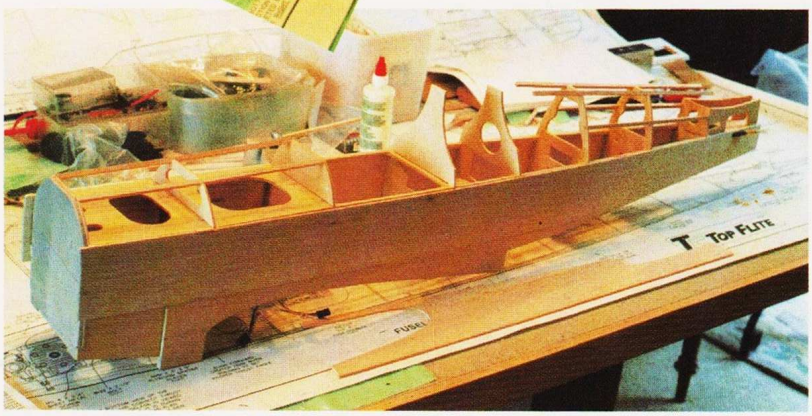
A completed flap and aileron.



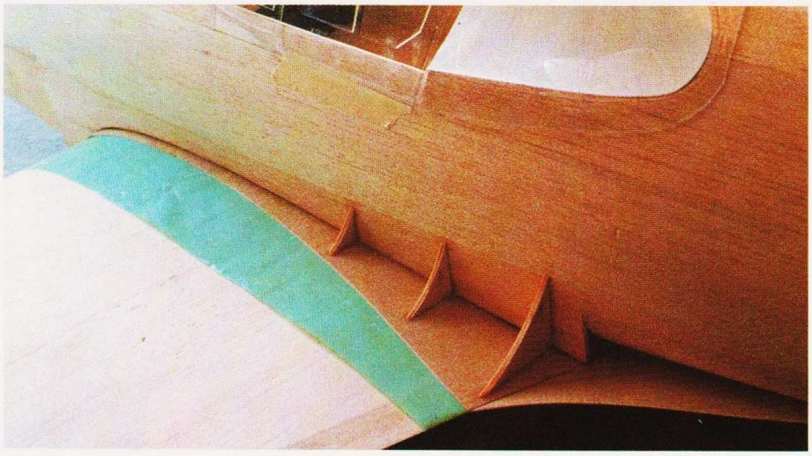
The lower fuselage is built first then removed from the building board for the addition of the top decking.

plan tells you to use 3/8" x 1/4" balsa left over from the main spars for mounting the aileron/drop tank servos. Definitely not recommended! At this point the panels are removed from the board to enable the trailing edge to be fitted. This comprises of a 1/16" ply strip with its lower edge feathered down to engage with the flap and allow the completed trailing edge to be 3/32" or a bit less when the flaps are raised. To this T.E. strip is glued a jigging strip, (so you now have a 'T' section) and this keeps the trailing edge straight whilst the wings are completed.

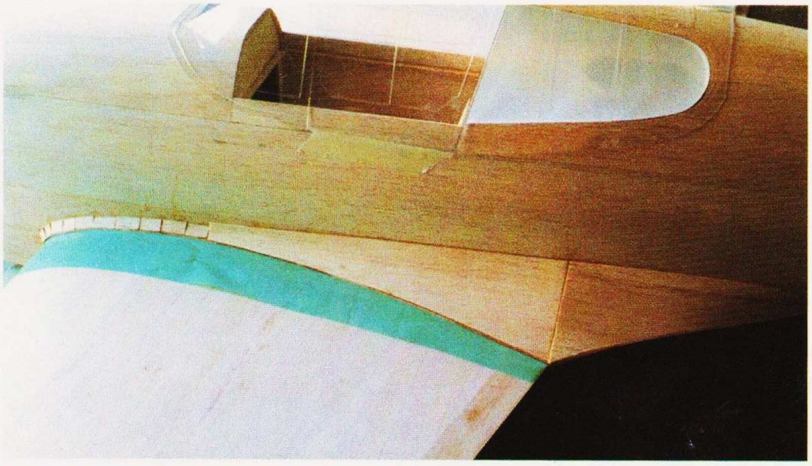
The wings are returned to the building board for joining at the root with ply dihedral braces where more ply jigs and a block come into play, so that the wing panels are held at the correct dihedral angle during gluing. With all these angles engineered into the airframe a perfectly aligned model should result. Another word of caution here too, there is no mention in the construction manual of the centre section trailing edge block that fits between the flaps so it's quite easy to miss this out - I did!



The top decking under construction.



Wing fillet construction.



Movers and shakers

My review model is fitted with retracts and the excellent Robart 615 rotating units were obtained as the model is designed around them. They are required during wing construction to stay within the operation sequence of the instruction book and the initial fitting of them is carried out whilst the wings are upside down on the board. There is quite a bit of room in this area so it may well be possible to fit other makes of retract unit of the rotating type, but do not be tempted to leave out this stage and do it later - you will have trouble. The bottom wing skins are also added while the wings are on the board, only turning them to add the upper skins whereupon you will find even more jigs. These hold the wings at their root and tips for easy fitting of the upper skins after the removal of the jigging tabs from the ribs. Wow!

Get it together again

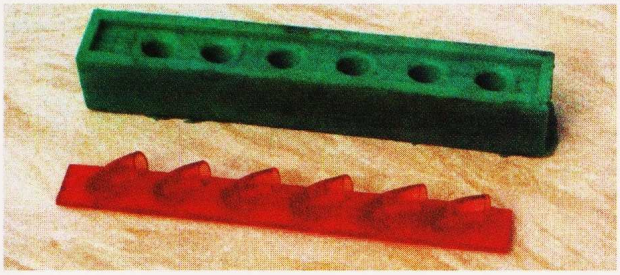
The wings tips are completed off the board and are quite straightforward, so too are the control surfaces which are all (except for the flaps) built-up on a central core. At this stage the wings, tail surfaces, and controls were rough sanded and put aside until required.

The fuselage is built from numerous pre-cut parts. The sides have notches to ensure correct alignment as they are made from several pieces, and to these are added liteply doublers. These are then married to a liteply crutch and former assembly which is built upside down over the plan ensuring perfect alignment. The parts all fit very snugly indeed, although I made two alterations here.

1. The front bulkhead comprises of two formers (F1a & F1b) and is offset too by the crutch to incorporate the side thrust, but it is made from two laminations of 1/8" liteply and in my opinion is totally inadequate for the job, especially if you want to make the aircraft go ballistic by fitting the O.S. 120 Surpass shown on the plan! This was substituted with two laminations of 1/8" birch ply, and the result is a very secure assembly to carry the engine mount.

2. I wanted to fit a slightly more elaborate cockpit instead of just a head and shoulders pilot, so it was necessary to move the servo tray forward to the next bay and an aperture was cut out of the crutch in the cockpit area leaving a frame 3/16" wide to permit this. I also fitted the instrument panel at a more realistic angle to that shown on the plan. Although the cut-out is just over 5" long there does not seem to be any strength penalties for doing this. The fuselage is joined at the tail end by another smaller crutch assembly. This also forms the saddle for the tailplane and mounts the tailwheel. I chose to fit a retracting tailwheel as there is plenty of room here and I designed and manufactured a custom unit for the job with positive lock-down and steering tailwheel. Once all the formers have been added, the fuselage is removed to build the top decking. Now it really

The exhaust stack plug made from aluminium and ply.



The finished mould and the rubber mould.

begins to take shape and all the curves become much more apparent.

After the deckings have been added the wings are mounted to the fuselage. When satisfactory alignment is achieved the mounting hole centres are established by spotting through the wing mounting bolt plate into the mount blocks in the fuselage with a 13/64" drill. Then the wing is removed and the holes in the mount blocks can be drilled right through ready for tapping with a 1/4" x 20 (U.N.C.) tap to accept the nylon bolts supplied.

Next the fin and tailplane are fitted to the fuselage with 30 minute epoxy. Following this the fuselage bottom and top cowl are built up from various blocks and planed to shape which more or less concludes the basic construction. The wing root fillets however do require some real care. They are built-up from die-cut 1/32" plywood bases which are sandwiched between the fuse and the wing with liteply formers added to give rigidity and form the upper fillet profile. The fillet sheets were then cut out using the patterns shown on the plan and applied with cyano. I had to alter the aft top fillet quite considerably in order to get a realistic shape, even when taking into account that a micro-balloons type filler would have to be used for the final blend into the fuselage sides.

Don't be a dummy

As I mentioned earlier I felt a need to make an improvement on the vac-formed dummy exhausts. According to all of my available photographs the P-40Es were fitted with a plain tubular style exhaust stack. I went about modelling these in two banks of six, made from pieces of bent aluminium tube epoxied to a liteply base. This was to become the plug and after a simple shuttering was erected around this, a thermo-setting moulding rubber was cast in. When cool, the shuttering and the plug were removed from the rubber leaving a mould and it is this that was used to cast two identical exhaust banks from polyester fibreglass resin. Two 1mm ply strips were cut from scrap with windows representing the cowling apertures so the exhaust stacks could fit through. When the exhausts and ply windows were let into the fuselage sides and the aircraft completed the impression was greatly enhanced avoiding 'that stuck-on-the-side' look of the vac-formed exhausts.

Extra detailing

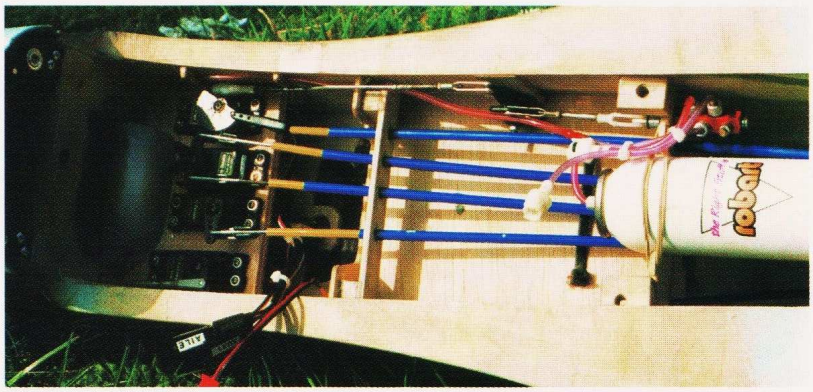
The finishing method of painted Monokote explained in the manual did not appeal as I always favour more traditional methods, so instead I chose glasscloth and epoxy for this model. System 2000 materials were used for the job as I have always had reliable results with them but other similar types should do fine. After the final rubbing down with 1000 grit wet and dry used wet, it was time to model the most prominent details in the cockpit prior to fixing the canopy. I won't go into

all the details about making instruments here other than to say the panel was made up from layers of plasticard and thin acetate with photocopied instrument faces behind. A really great 1:7 scale WW11 U.S. Pacific pilot was purchased from "Petes Pilots" and when he was comfortably strapped in, the canopy was bonded on and masked up ready for painting. The whole aircraft was given a light coat of cellulose primer surfacer to reveal any imperfections and rubbed down again. The paints used were Humbrol enamels sprayed, starting with matt aluminium where chipping and wear of top colour coats were required for high wear areas such as wing walks, then undersides and camouflage, then finally insignia and nose art. The final fuel-proof top coats were sprayed matt Tufcote which seems to give a lovely eggshell finish rather than a dead flat.

Colour scheme

For the paint scheme I chose " Texas Longhorn". Lt. John D. Landers joined the 49th fighter group when he delivered the P-40E new to Darwin on April 3rd 1942, so not much weathering and a nearly new appearance was appropriate. All this information and lots more is available in the recommended reading list in the kit's manual - 'Curtiss P40 in Action' and '49th Fighter Group', both published by Squadron/Signal Publications. I found them difficult to buy but a trawl of the second hand aviation bookshops paid off. Well worth finding for the colour plates, photographs and an excellent read.

Looking into the wing cut out we can see the change made by moving the servos forward and having a lower cockpit floor for a more detailed 'office'.



The author looking pleased with the P-40.

Flying the P-40E

The aircraft had been set-up almost exactly as per the instructions in the kit (control throws etc.), but the centre of gravity was just a shade further forward than specified with an empty tank and the undercarriage extended. I was pleased with this as no ballasting was necessary and the C of G had been achieved by careful positioning of the on board equipment. After an engine test and rough tune-up at home it was at last time to go and test fly. The test was conducted on a lovely smooth grass field with a light to moderate breeze. I did have some reservations about the available power as I had fitted a smaller engine than specified, an O.S. 70 Surpass, but these were to be completely unfounded. With the necessary pre-take-off checks complete, the aircraft was released with the engine running at a fast idle. Once straight tracking was established the throttle was opened slowly and smoothly and I kept some back pressure on the stick to stop the tail from rising too quickly. The model showing no tendency whatsoever to swing. When plenty of speed built-up further back-pressure unstuck the aircraft into a smooth realistic climb, wings level all the time. Once a safe height was reached the gear was retracted with little noticeable trim change and I was able to conduct most of the flight at about 2/3 throttle! All that jigging pays off!

The handling of the P-40 was very smooth and positive and a clean power-off stall at a safe height revealed the inevitable wing-drop but no more. It is however fast, potentially very fast and it's easy to run out of field if you fly with the throttle fully open and I cannot imagine what it must be like with the O.S. 120 Surpass shown on the plan- the 70 is perfectly adequate! Even aerobatics are nice and perfectly axial rolls are easy with this one, and it has a very believable appearance in flight too.

For landing, a fast approach is probably safest. Mine went O.K. until it caught a gust of wind at the start of the flare out and I found myself needing more elevator authority with the power off, so I'll leave a bit of power on next time. The arrival was less than good and unfortunately the port undercarriage mountings failed, the retract unit coming away complete with the landing gear rails from between R3 and R4, causing minor damage to the underside of the wing. I feel another modification here will rectify this problem by greatly increasing the size and therefore the bonding area of the gear rails.

To conclude, I must say I have really enjoyed the P-40E. There are several months quality modelling with this one and anyone wishing to go to the trouble of adding some extras of their own will be well rewarded, it has a very realistic appearance. Very highly recommended! Thank you Mr. Top-Flite. How about a nice P-38 Lightning in the same scale then?

Available from all good hobby shops. Check out Great Planes' website at:www.towerhobbies.com

A fly-by for the camera before heading off into the murky grey sky for a shake-down flight.

Specifications

Name:	*Top-Flite Gold Edition P-40E Warhawk*
Manufacturer:	*Great Planes/Top Flite*
Construction:	*All built-up balsa and ply.*
Wingspan:	*64"*
Length:	*11ft 3in*
Weight:	*10 lbs.*
Retacts:	*Robart 615 rotating leg units,*
Engine:	*O.S. 70 Surpass four stroke*
Prop:	*Graupner 14" x 7"*
Static Prop:	*Scale three blader from Top-Flite*
Radio:	*Futaba FP 7 FGK (7 channel)*
Finish:	*Westbury Products System 2000 glass epoxy*
Paint:	*Humbrol enamels, sprayed and airbrushed*
Fuel proofer:	*Matt Tufcote, thinned slightly and sprayed*
Wheels:	*Robart scale*
Spinner:	*Spun aluminium, home-made*
Pilot:	*Pete's Pilots W.W. II U.S. Pacific*

The P-40 climbs out with a touch of flap on the first sortie.