Building a Mick Reeves 1/4.5 scale Hurricane— Instalment 4

Wings and Retracts

The wings on the full size Hurricane are made in three pieces, the centre piece is fitted with the undercarriage and fuel tanks. The left and right outer wings carry all the guns. The dihedral break is at the join of the outer wings to the centre.

Mick's model is built the same way as the full size but with the outer wings joined to the centre by using tube joiners.

I started with the centre section and as all plywood parts are supplied made from 1/8" sheet I had to laminate two outer ribs, the front spar and the centre spar by two layers to end up with parts 1/4" thick. Undercarriage mounts were laminated with three thicknesses to end up at 3/8" thick.

All were glued with a good quality PVA.

After removing all the clamps I assembled the ribs onto the front spar but could not fit the centre rear spar as it was about 3/8” short. Note the position of the mounting saddle in the shot below

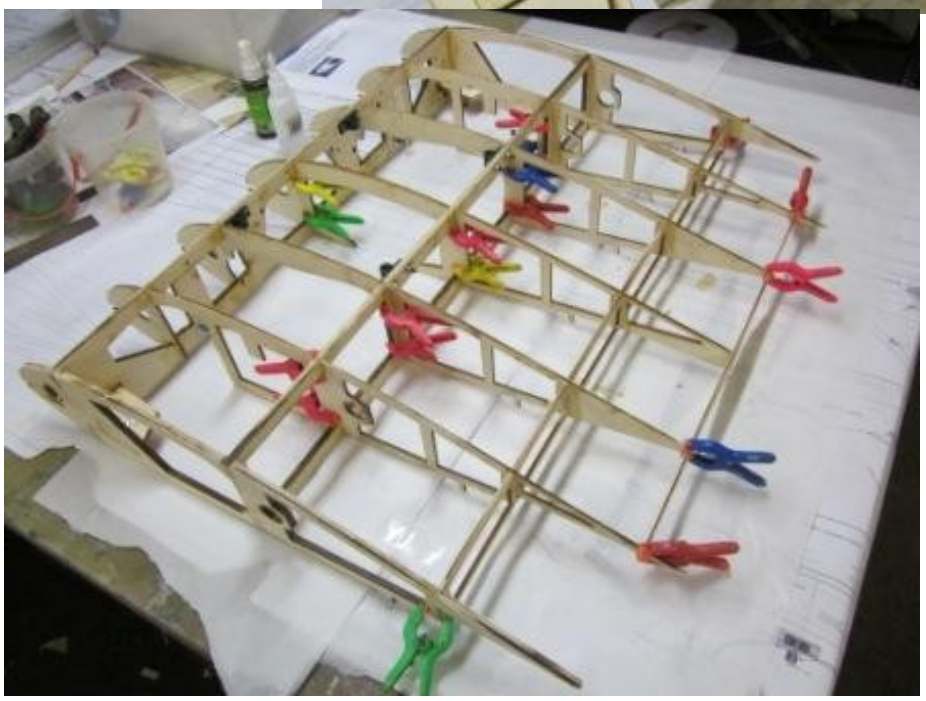
I emailed Mick with pictures attached and to his credit he replied immediately that he would make a new set and send them out to me the next day. So, back to the fuselage until the parts arrive.

The new centre spar arrived promptly so I laminated the two 1/8” ply pieces together to make up to 1/4” thick spar I need.

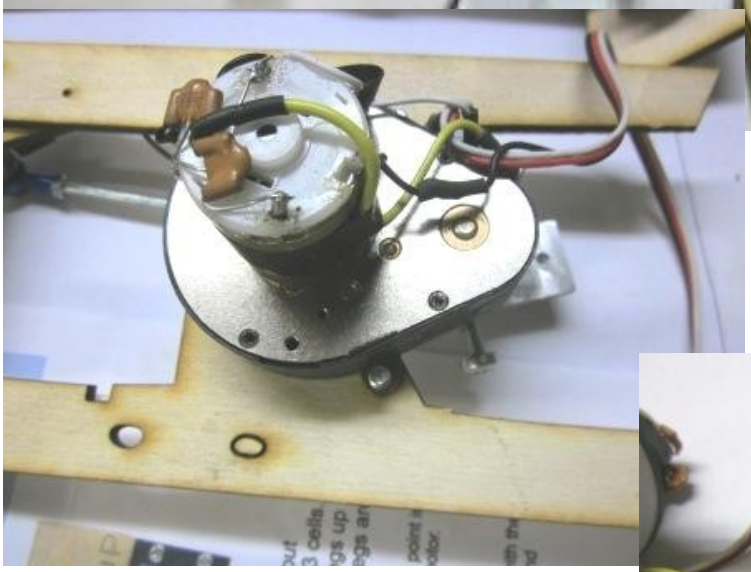
The wing centre section demands accuracy as the alignment of the outer wings and under-carriage must be sym-metrical and a good join at the dihedral break is a must.

This is a picture of my starting point with the outer ribs epoxied to the front and centre spars. All the cramp-ing used aluminium extrusions to ensure the outer ribs are square to the spars and straight.

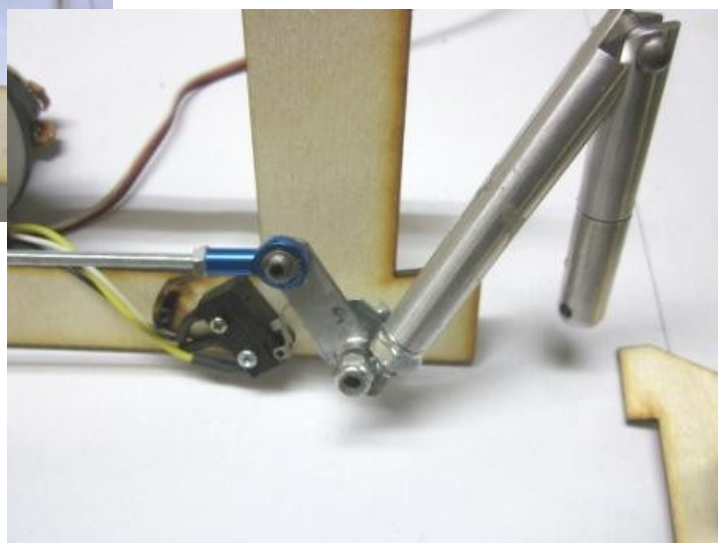
After the epoxy cured I checked for squareness again and all was well to proceed to fitting all the other ribs and spars.

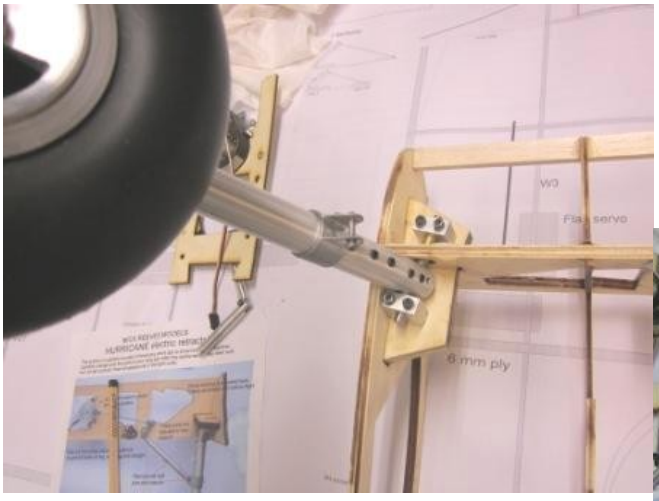


Mick's Chinese puzzle is now complete. It took a bit of practice to put all this together as the ribs had to be positioned in the spars then twisted to fit into the notches then squared up and glued., sounds easy but believe me it wasn't!

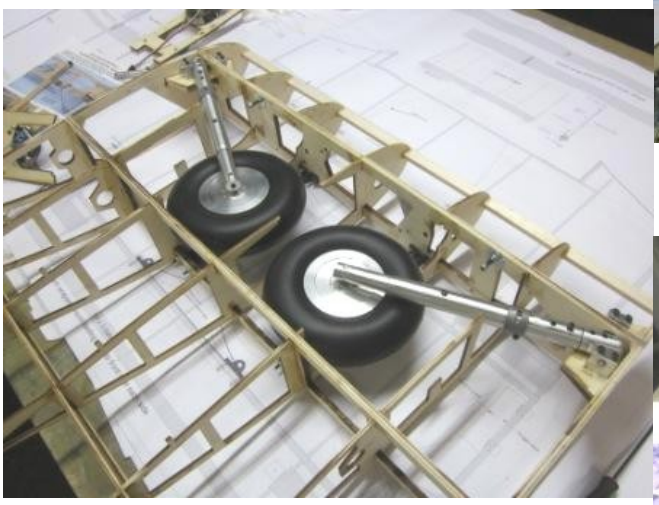


The electric retracts arrived with the replacement spar and they are the best value. Beautifully machined and all the parts are mounted on dummy formers to make it easy to transfer to the actual spars. The legs are driven by geared electric motors attached to the folding scale inner strut. Adjustable limit switches are used to position the legs in the extended and retracted position.



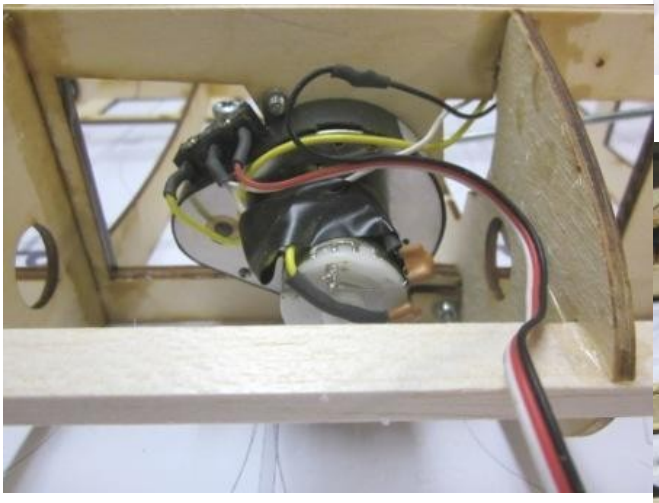


I was relieved that I had got the leg mounting blocks at the right angle so the wheels



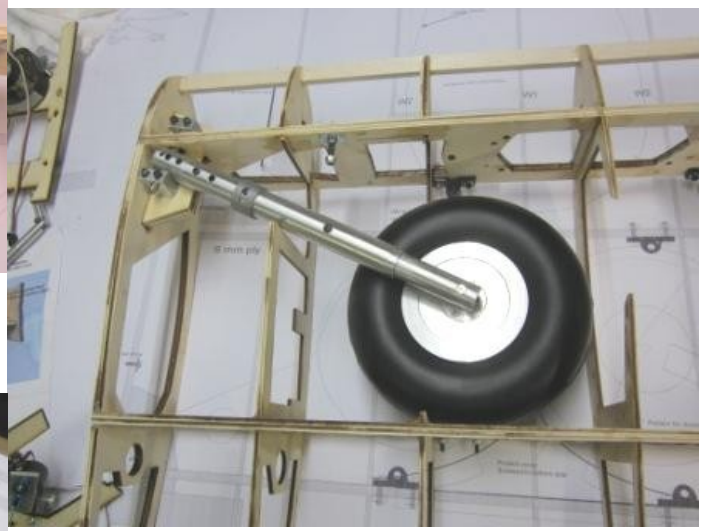
The motors and gearboxes are fitted to the front face of the front spar.

All went together like a dream, one little

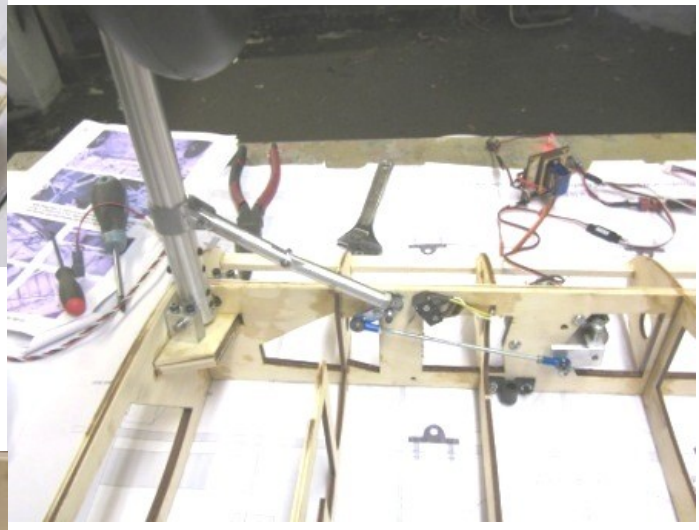


leg mounting blocks stick up higher than the skin so I will counter-bore the holes in the aluminium blocks and that will fix that.

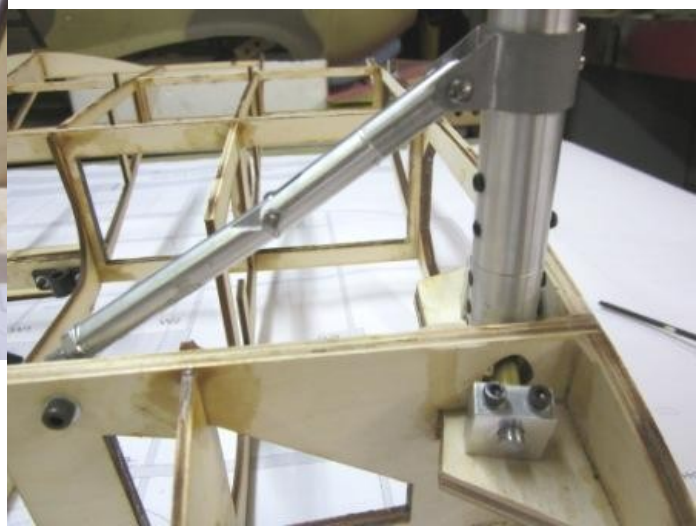
Following Mick's instructions I now had to fit the retracts before skinning the centre wing so I transferred the parts from the dummy delivery formers onto the spars



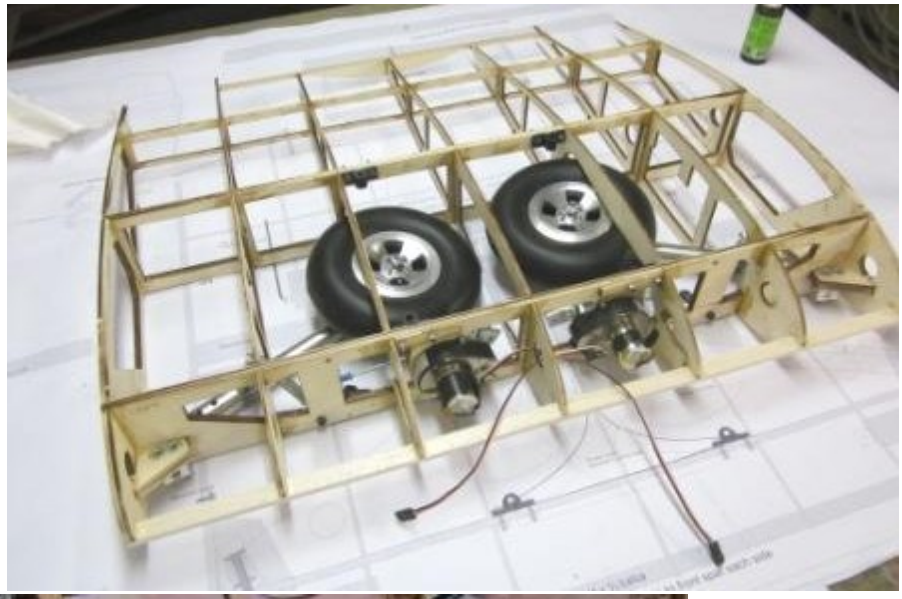
would fit between the front and centre spars.

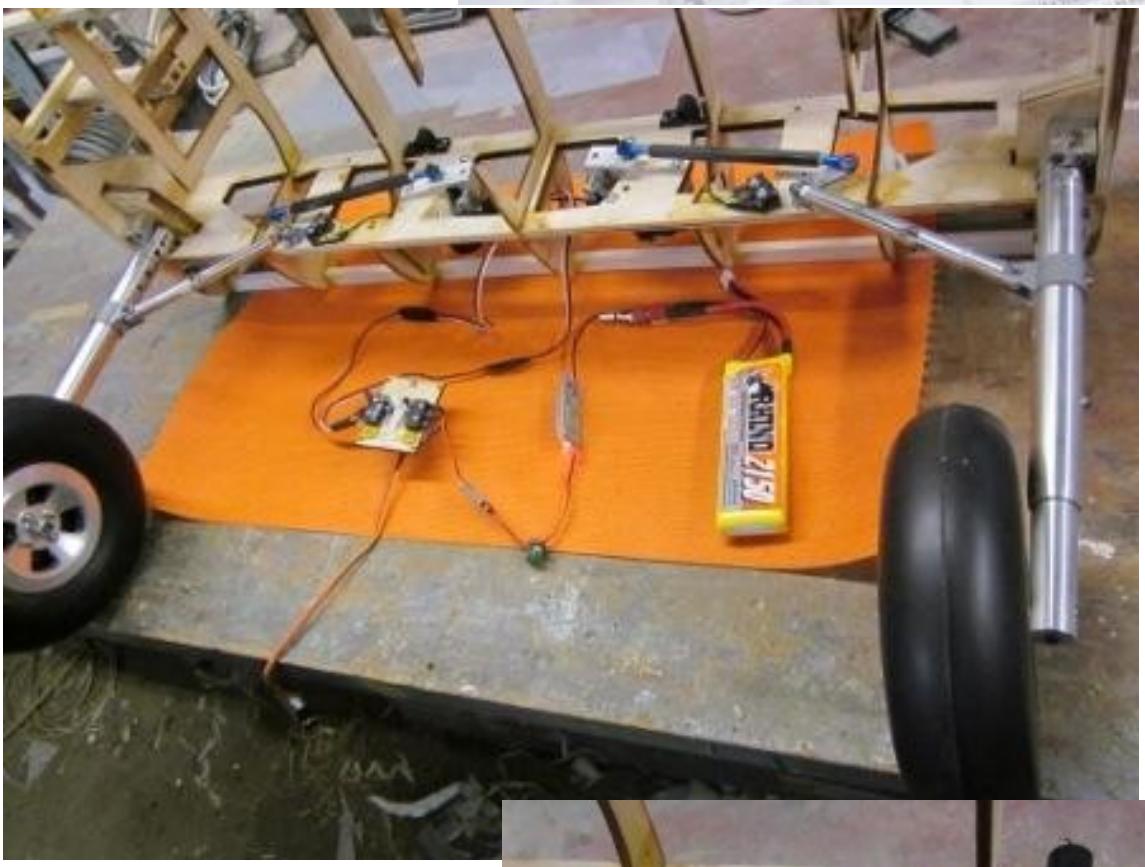


glitch was that the cap screw heads on the rear



This picture shows a view from the top front of the wing showing the position of the motor / gearboxes on the front spar.

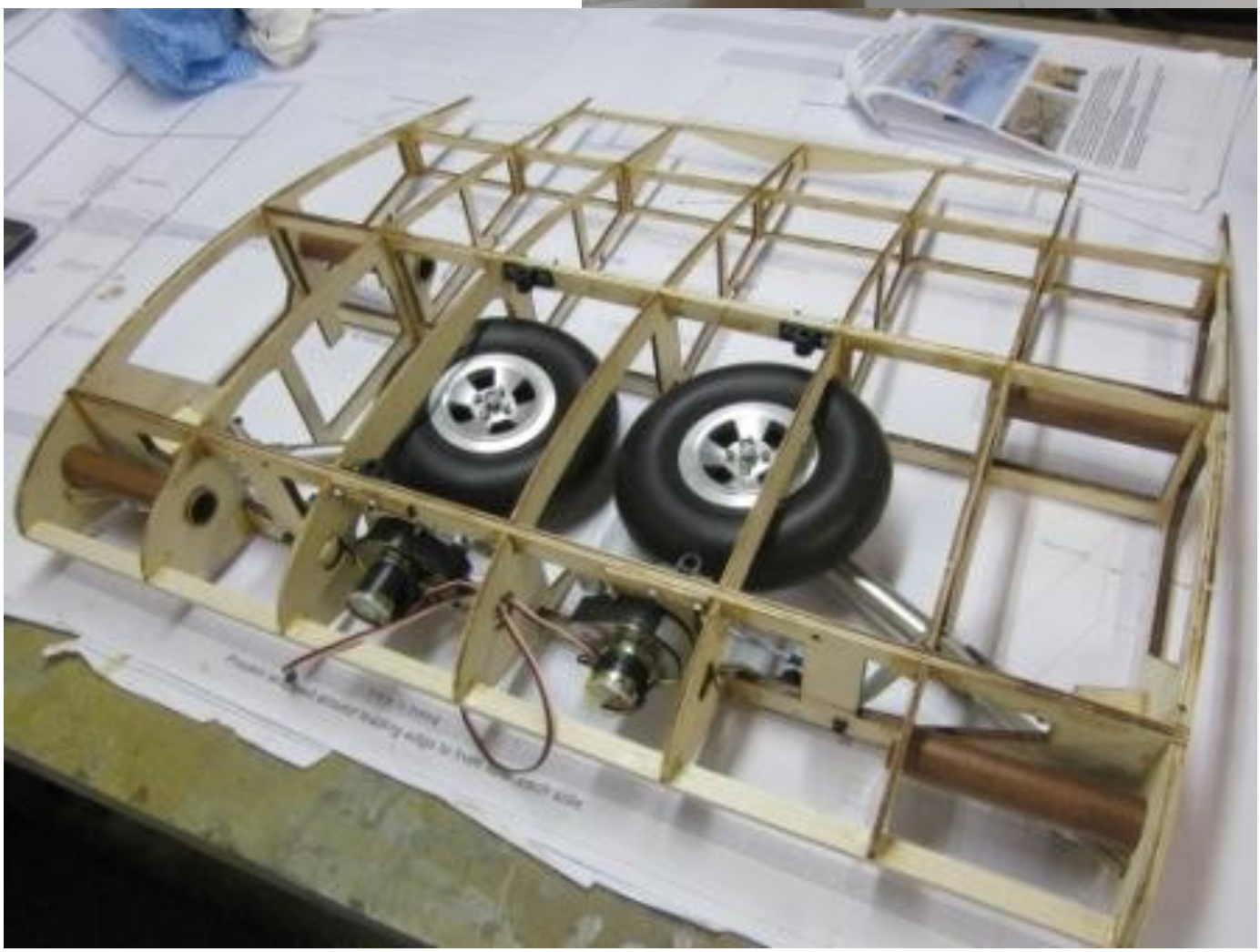




These are pictures of the underside of the wing with U/C extended. I thought it was important to stiffen the adjustable threaded drive rod with carbon box tubing. I have adjusted the micro switches to turn the drive motors off when the gearbox arm is in line with the drive rod. All works like a dream but may require some fiddling with throws after fitting gear doors.

Now that the retracts were fitted the last job before skinning is to fit the outer wing joining tubes and I immediately hit a snag, the holes in the ribs were too small for the diameter of the tubes by about 3mm.
If Mick ever reads this it would be good to fix as it was a bugger of a job to accurately open up the holes to the required diameter.

I now can't epoxy the tubes in place until I make the outer wings as I want to make sure that the outer wings can be aligned with the centre piece and with the correct dihedral. I'll set the complete wing up and then glue all the joining tubes in place.



So we start on the outer wings.

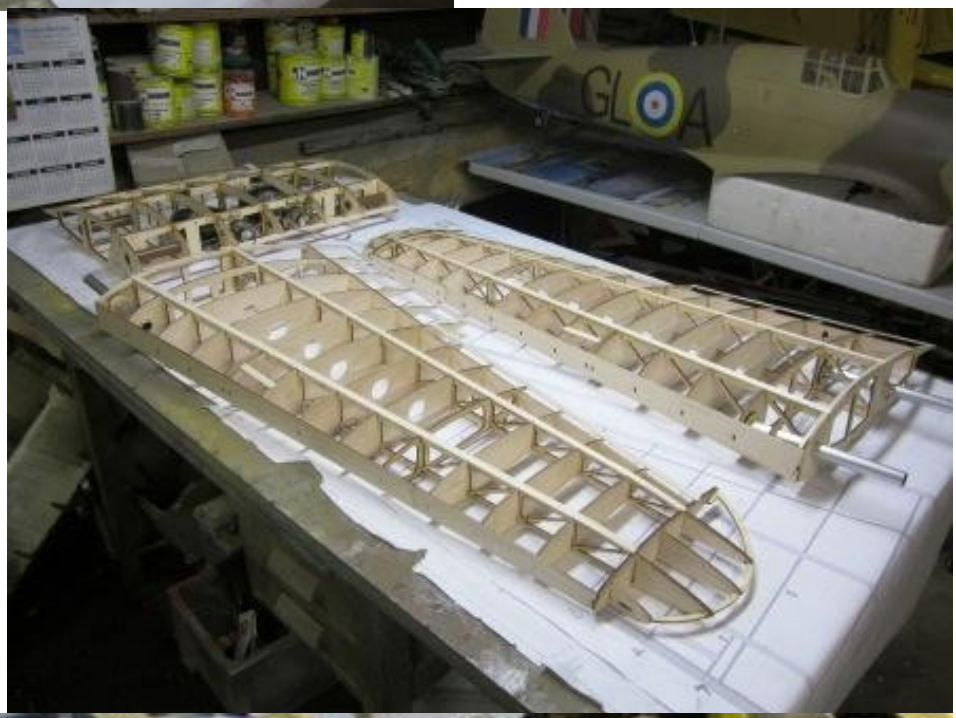
I think Mick must have been an Octopus in a former life as you need at least eight arms to twist all the ribs into place between the spars and to hold them still to glue them in place with out losing the spar alignment with the plans.

The outer wing is a clever, lightweight structure that will be extremely strong when sheeted with the 0.3mm fibreglass Proskin sheeting

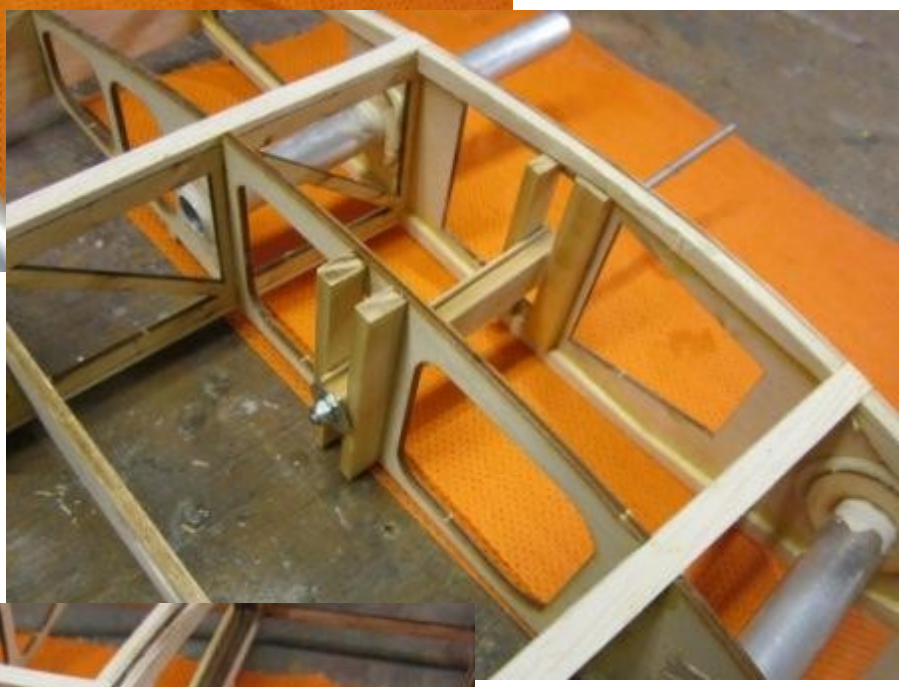
First outer wing ready for fitting flaps, ailerons and wiring for nav and landing lights.

The picture on the right is of the finished three pieces that make up the Hurricane wing.

The picture below is of the assembled 109” span wing.
I have checked the dihedral and alignment and glued the phenolic and aluminium tube joiners into their final position with Hysol. At this stage it weighs 3.2kg with undercarriage and wheels fitted.



Wing Retainers: To ensure the outer wings don't part from the centre wing section in flight I have made up a plywood box with a threaded rod epoxied inside and glued it to the two inner ribs of the outer wings, the rod fits into an identical box glued across the two outer ribs of the centre section.



The wheel wells provide access to the end of the threaded rod and a nyloc nut is used to pull the wing sections together, a bit agricultural but it works well.

We're back on the fuselage next instalment as it's time to tackle the Solartex covering and trying to get the hang of using the Proskin fibreglass sheeting.

See you
Stan