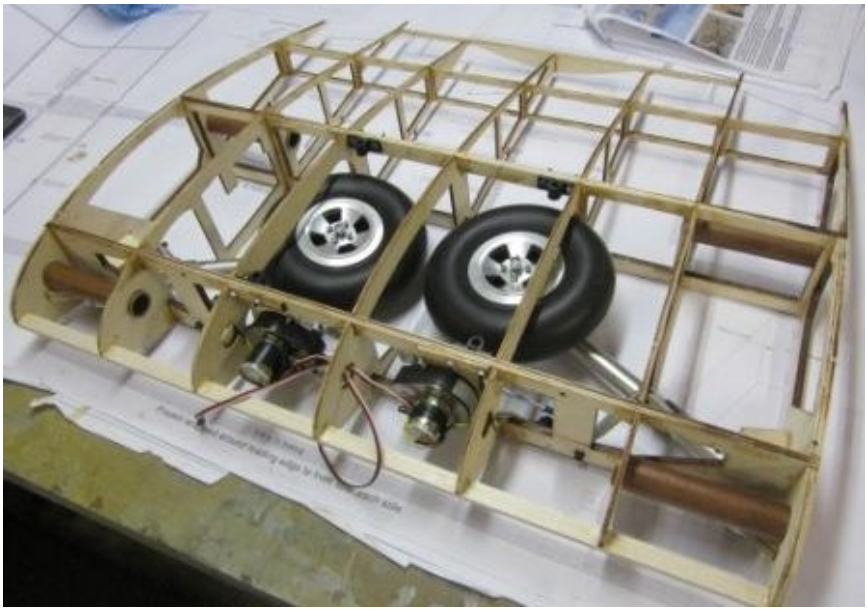
Building a Mick Reeves 1/4.5 Scale Hawker Hurricane....Instalment 9
Retracts, Door Covers, Radiator and Wing Centre Section

Finishing the Wing Set: Now that I've got the tedious wing skinning behind me I look forward to getting on with all the detail to finish the wing set. I'll start with the retracts, fit gear doors, make retract strut trailing arms and then I can finish the centre section covering. I'll finish up with fitting the radiator moulding and create an engine air cooling path.

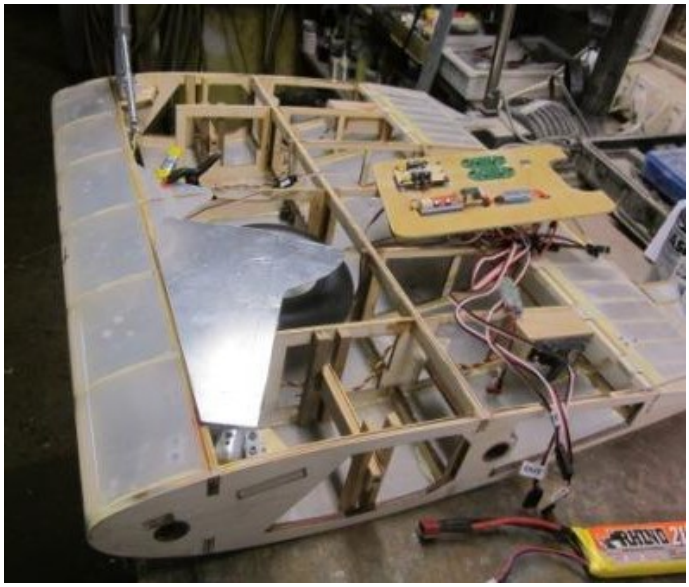
Retracts: The retracts are already bolted into position but now I want to set up the alignment and Loctite all the grub screws. I will "pot" all the wires that are terminated on switches and retract drive motors with dabs of hot melt, hopefully this will ensure the engine vibration will not cause an open circuit in the landing gear circuitry.

Murphy's Bloody Law...If something is going to go wrong it will be the most inconvenient and difficult to fix...

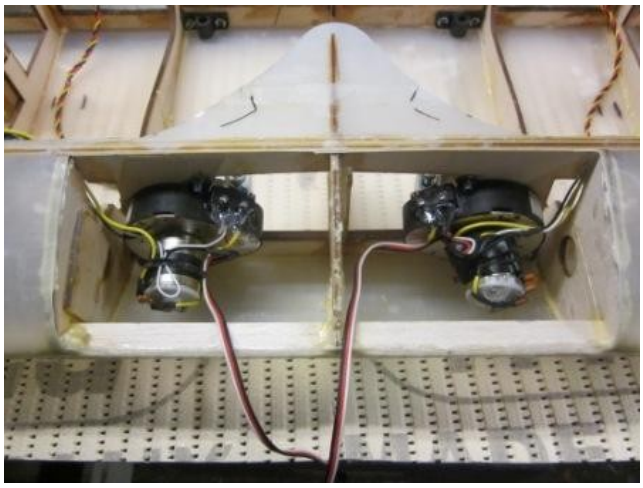


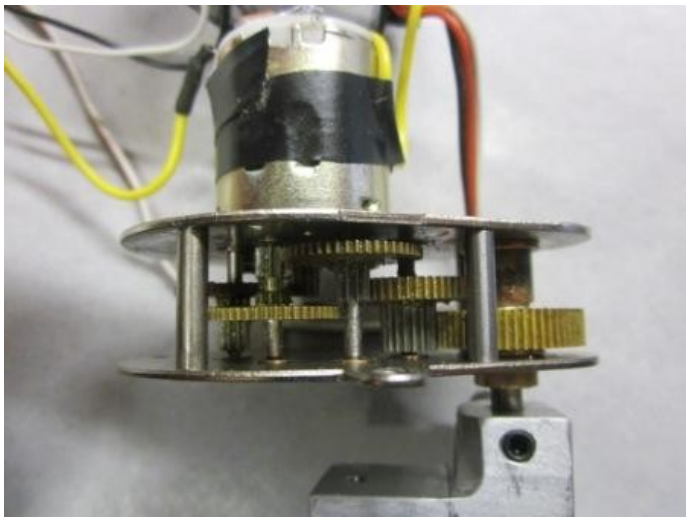
I had just cut out the U/C doors and had fitted them to the main legs and was adjusting the limit switches to close off when the doors were flush with the wing surface when I noticed the starboard leg slowing down on the extension. There was no stripped gear noises, just a slipping clutch type of feeling.

Of course the U/C motors and gearboxes where totally enclosed with Proskin so they had to be cut out to investigate, great stuff!!

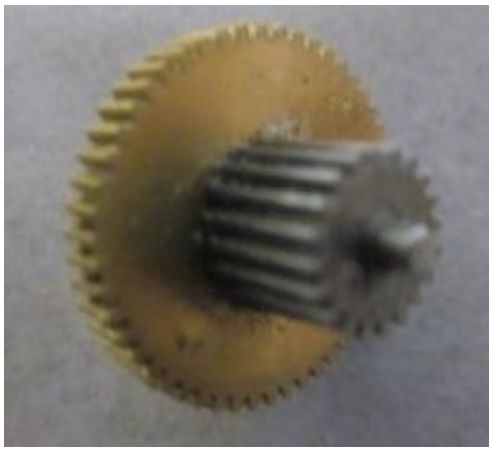


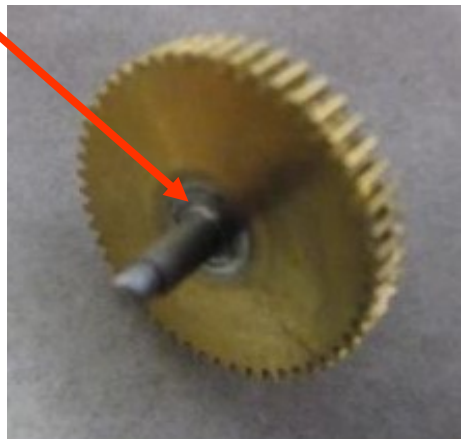
The bottom Proskin was cut away to remove the drive units.



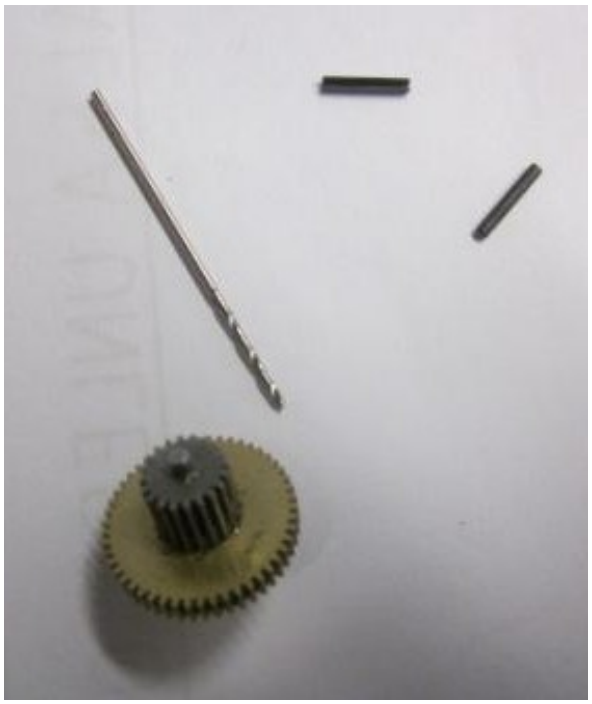


I took the gearbox cover off the starboard unit and couldn't see any stripped gears or anything wrong with it, all a bit of a mystery. I cycled it through several operations and it behaved as it should until I put a serious load on the output arm and at last could see that the second last gear in the train was slipping on its pinion.. This gear is a steel gear staked to a brass drive gear and the staking wasn't secure.





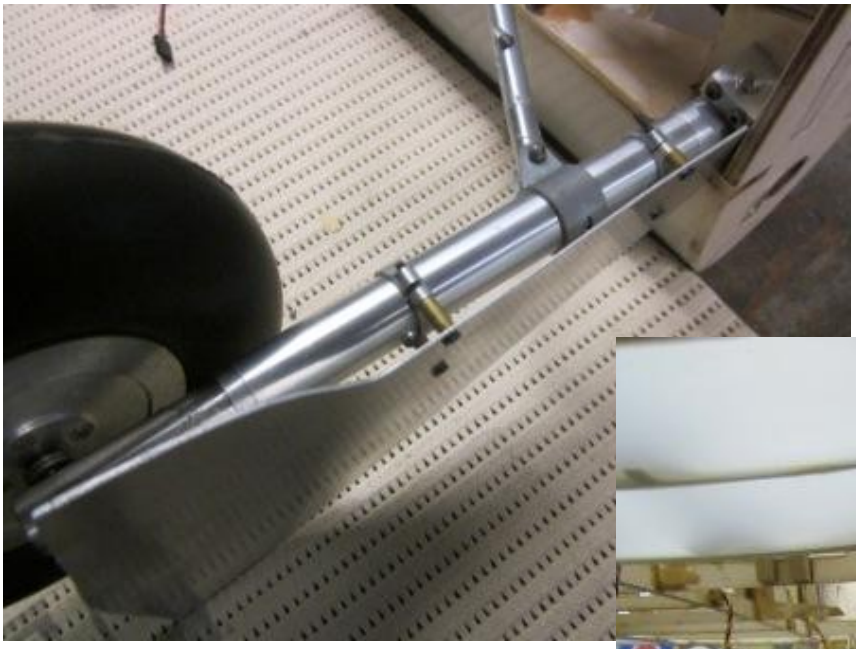
I didn't think it worth the while talking to Mick Reeves half a world away to get a replacement because if I was in his position I would have said that the silly bugger of a customer had run the retract into a mechanical stop before actuating the electrical stop and had bought the problem onto himself, just too hard, so I've got to fix this gear.



My first thought was to try and braze the pinion to the gear but there is little clearance and I would have buggered the temper of the steel so I opted to drill and insert a 1mm dia. hardened steel roll pin through both gears. I sourced the 1mm x 8mm roll pins from Small Parts in Qld. I then drilled down through both of the gears with a 1mm dia. drill and tapped the roll pin into the 1mm hole through both gears, all went as it should and now the gears are firmly joined. A bit fiddley and a waste of time as I shouldn't have had to do this with a kit of this quality but Murphy is alive and well.

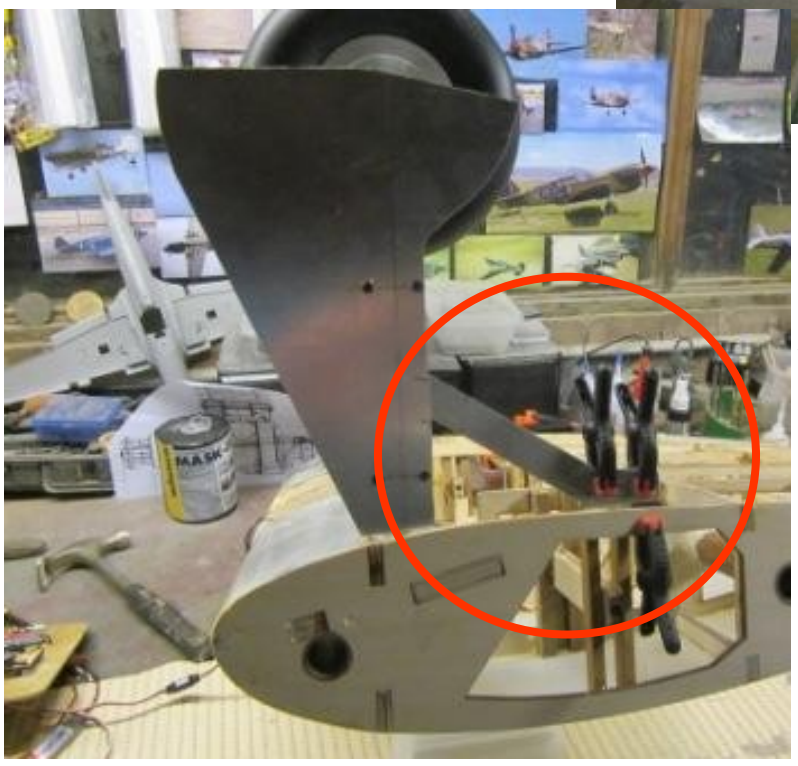
The gearboxes were replaced in the wing and now I could get on with the job of making and fitting the gear doors and radius arm covers.

The doors are cut from aluminium sheet and attached to the legs with countersunk screws through spacers into leg clamps



This is an example of some of the problems of making this kit without any detailed instructions or explanations. The plans show profiles for the gear covers so I made a pair as per, fitted them to the legs and found out that they don't overhang the back of the wheels so I would have a gap between the wing skin and the door....bugger !!! I can only presume that they were designed to fit flush with the skin whereas I want to overlap the skin.

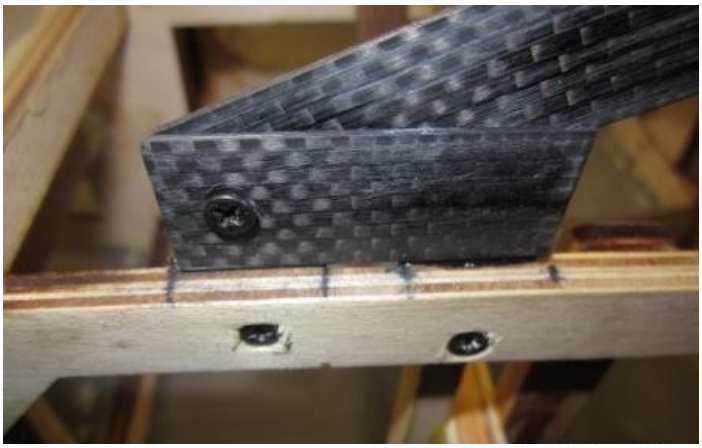
So up to Jaycar to buy some more aluminium sheet and make another larger pair.



Next job is to make the radius arm covers. This is going to be a bit tricky as the arms shorten when the leg retracts.

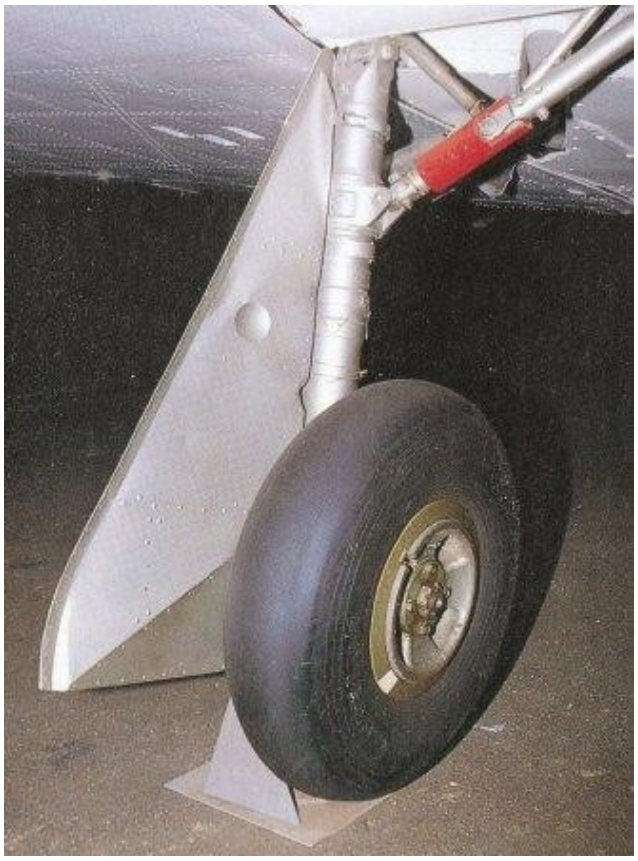
I'm going to make them from 1mm carbon sheet from Hobbyking

I started the radius arm covers by gluing a small rectangle of carbon sheet to a pair of hinges and then screwing the assembly to the bottom edge of the outer rib. The strut cover is then loosely bolted to the hinges.



The picture on the left is the strut cover. It's a bit of 1mm carbon sheet that is hinged at the rib end and with a slot on the door end. The slot slides on a screw through the door when retracting.

In the picture above you can see I have fitted a piece of dowel to the inner face of the cover to simulate the actual strut.

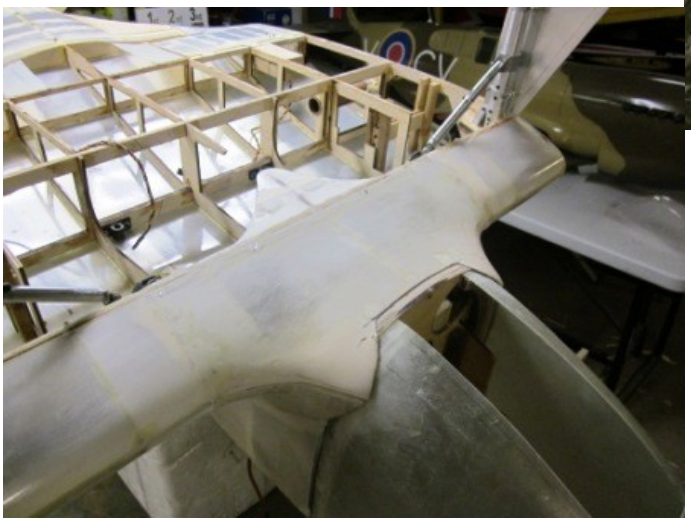


The inside of the full size gear doors have an aluminium structure that needs to be replicated on the model.
I'll make the infill from 1/2" balsa sheet and glue it to the inside of the door with Hysol. The infill will also help to stiffen the door and cover the sliding end of the strut cover. After I fit the dummy brake lines, rivets and paint the whole lot aluminium I hope it will all look all right. .

The picture above is of the area that the moulding will cover.

On the right is the moulding in place but un-fixed.

Now glued in place with Sikabond.

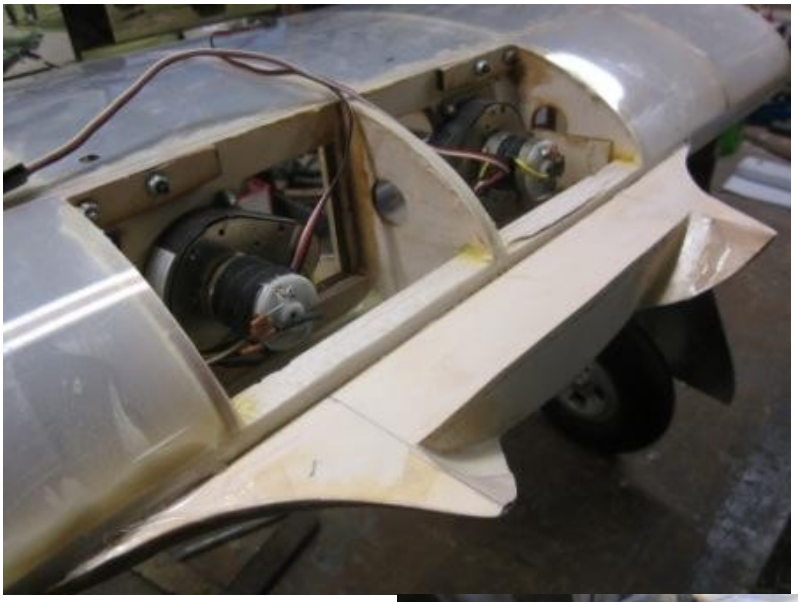


Underwing Fairing: A fibreglass moulding for the front of the underside of the centre section of the wing is supplied with the kit.

A framework has to be made to support the moulding and to conform with the upper wing fillets.

This is the lightweight plywood framework that will be glued to the front of the wing to support the moulding.

Finished view underside. The forward projections are faired to conform with the upper wing fillet and were made by packing the fibre-glass moulding with micro-balloons mixed with epoxy glue and then heavy sanding to shape.



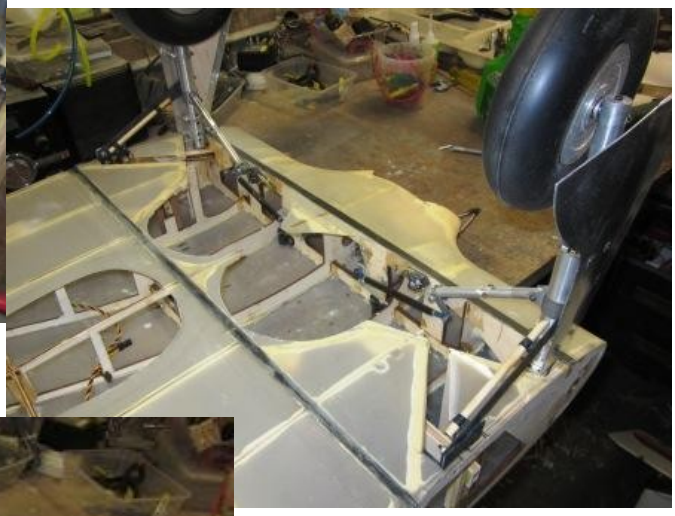
Finished front fairing from the topside of the centre wing section.

I've glassed the complete underside front of the centre wing section to strengthen it and to blend in the fairing. I have also added strips of carbon ribbon epoxied to the front and rear spars to stiffen the structure when in tension.

The final skinning is the bits and pieces behind the retracts.

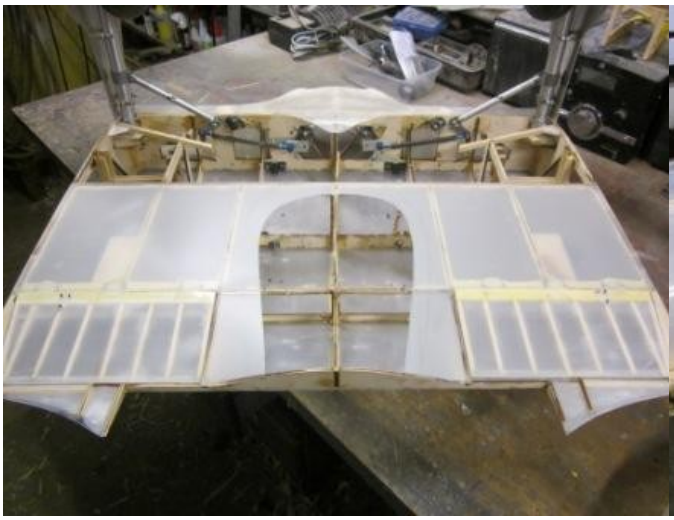
I've made up a framework to attach the skins behind the wheels and then Proskin is complete, hoo bloody ray!

The picture on the right is of making the paper templates for the last job with Proskin....

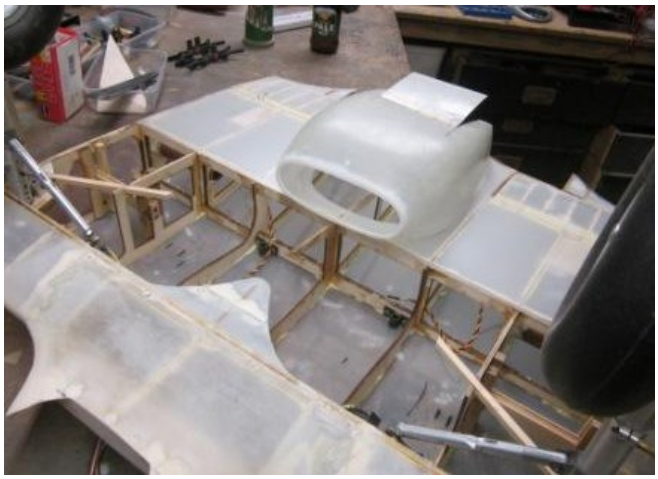


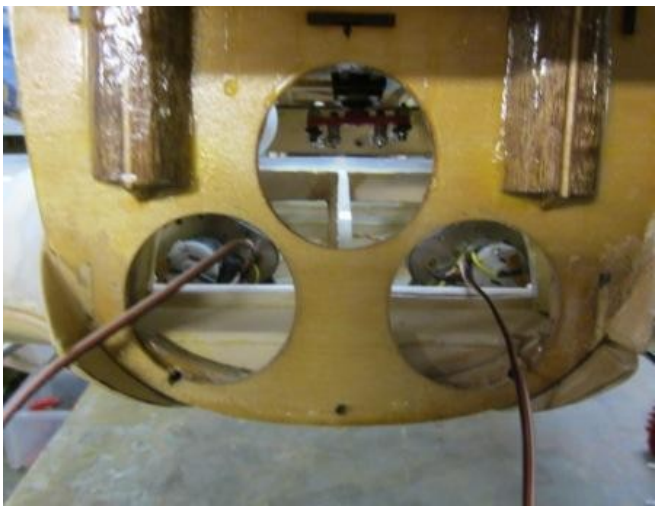
The Proskin pieces were clamped and glued with Sikabond and the skinning is finished at last...

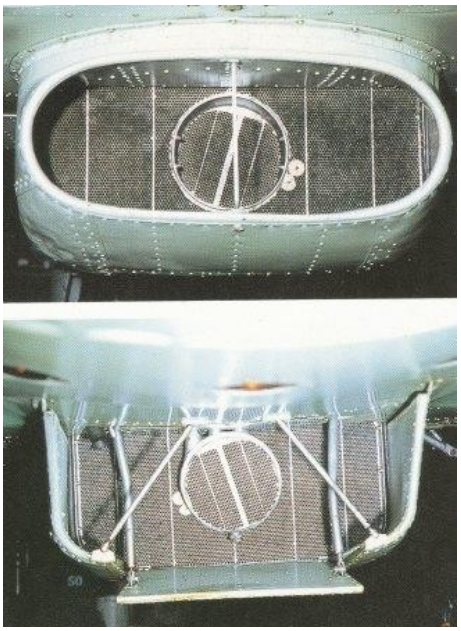
Radiator:
I am going to use the radiator to create a low pressure area to draw hot air out from the front of the plane. I have opened up the leading edge of the wing centre




section to allow the hot air from the engine to have a direct path overboard out through the radiator

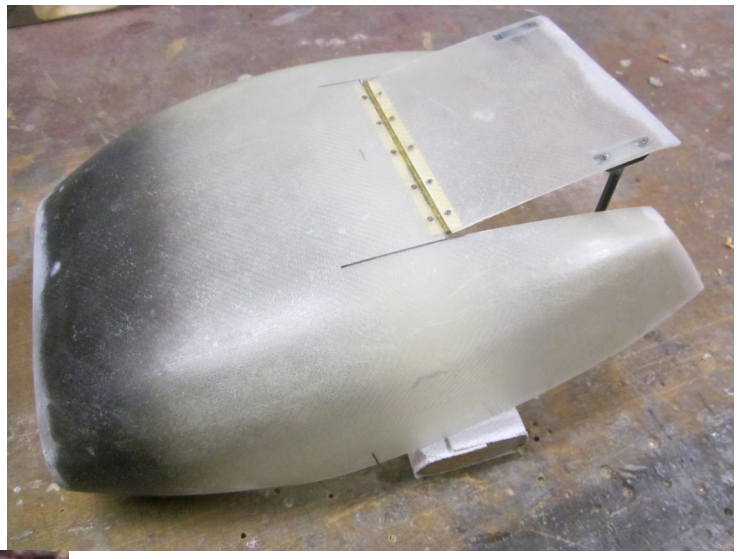




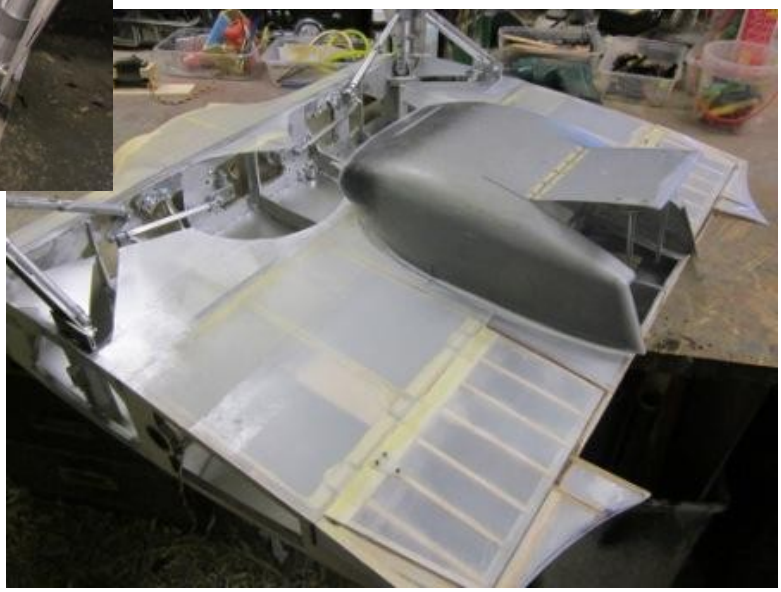
On the left is a picture of the full size radiator front and rear views. You can see from the rear view that the radiator had a large flap over it that was actuated by the two vertical struts which I'll replicate on the model.

I'll have to close off the front of the radiator so the air will be drawn out the back so will fit a bulkhead back from the front after decorating it to look something like the full size front.



The picture on the right is of the radiator fibreglass moulding with flap and flap struts ready to be taped onto a bed of Hysol on the centre rear of the wing section.

The Hysol is thick enough to hold its shape while it dries so it's an easy job to run your finger around the join before it cures to make a nice radius.



At last I have finished the most labour intensive part of the build. I can now get on with some fun bits like cockpit, lights, canons, canopy etc..
Hang in there if you can stand it..
Stan