ZIROLI P40 KITTYHAWK

“Insanity is doing the same thing over and over again and expecting a different result”

I have built four Ziroli Kittyhawks over the past umpteen years and this is a picture of the fourth after the 2014 May scale day..How the hell ?!!

Bad decisions and lousy flying, . I had a flight in the morning with a gentle westerly blowing and took off down wind, down the hill and because I was taking off down wind I gunned the engine from the start which caused a substantial swing to the left which is a pretty normal reaction to the torque of the engine. I normally wait until the tail is up before going to full power as this is easier to counter the swing with the rudder, but anyway it wasn't pretty but I got away with it and completed my flight.

Came time in the afternoon to fly again and the westerly had increased to the point that we all had to take off up the hill into the breeze.

My pet hate..With big heavy models it's hard to get sufficient speed to give you a margin of safety to make the downwind turn before you hit the turbulence over the Western ridge.

With the mornings swing to the left in mind I thought that I would keep the tail wheel down as long as I could so I could steer it straight, big mistake, the plane took off prematurely on the verge of a stall and swinging to the wattle on the left of the field. All I could do was hang on the prop as much as I dared and try to pick up speed. It didn't happen, I had to turn or hit the trees on the ridge and the moment I started the turn she stalled, dropped the left wing and headed for the scrub. She hit the ground at about a 60 degree angle after bashing through the trees. The starboard wing was broken off at the aileron and shattered lengthwise down to the 2oz fibreglass cloth over the retract area, the port tip L.E. was crushed, the rudder was torn out of the fin post and the engine ended up under the instrument panel after taking out all the front frames. My last 3 blade carbon Bolly prop was busted, The cowl along with the scale exhaust stubs were torn to several pieces and the big spinner was completely crushed.

I was bloody cranky with myself and stomped off to collect the wreckage but a couple of younger, fitter blokes arrived at the site well before me and bought the bits back to the sheds, thanks guys..

I dumped the mess in my garage for a couple of weeks and went to Canowindra with Mike Minty to fly planes that are totally opposite to the P40. We flew RC converted old free flight designs from the 1960's powered by little diesel engines from the era ranging from 0.75cc to 2.5cc, great fun.

Now, with attitude adjusted it was time to strip out the airframe and see what had to be done. The cowl was totally stuffed, the engine a bit suss as it had taken a helluva whack on the front of the crankshaft and the fuselage was more damaged than the pictures show as was to be expected, the wing mounts had torn away from the main structure, breaking most of the main frames and shattering the skin around the wing fillets and there wasn't much left of any framing front of the instrument panel, the main spars on the inner part of the wing were ok though and after stripping off the torn sheeting would be easy enough to splice new spars to, all a bit of a job but it all looked easier to repair than to make a new one.

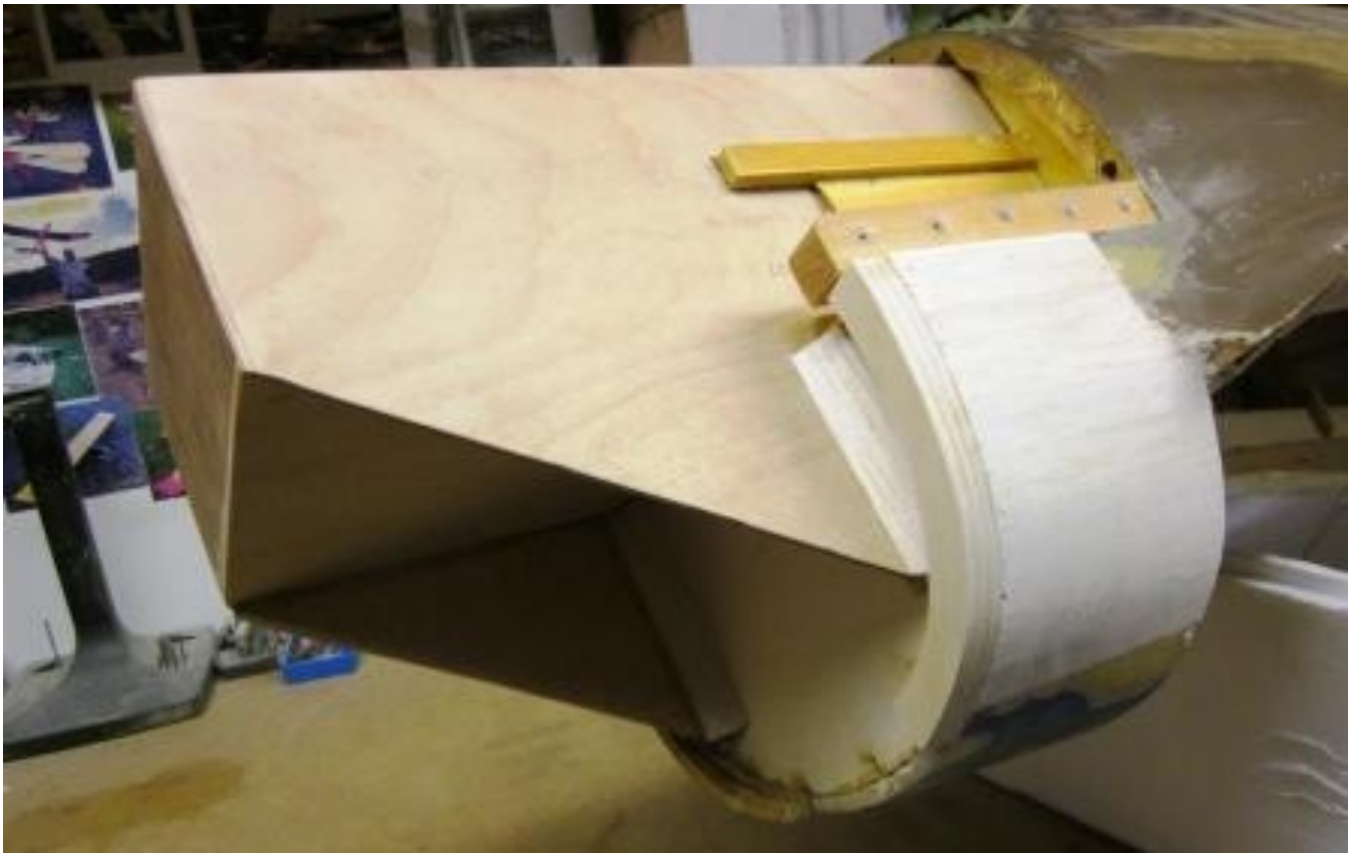
So, to ordering. I ordered spruce spars from RC Headquarters, Werribee, cowl and spinner from Ziroli in the US and some laser cut frames and ribs from Browny.

I'm also going to replace the DLA55 with an EME60 for a bit more grunt.
I've had a good run with an EME55 in my CAP232 and they seem to get a good write up if you can believe half the BS that gets published in some of these RC reviews. We'll see.

I like to use a three blade prop for the scale look which usually means the engine is operating in the 6000 to 6500rpm band. The DLE was swinging a 21 x 12 Bolly right on the max of the torque curve at 6000rpm but probably was doing less than 6000 taking off up the hill which hurt.

The engine mount was made from 1/8” aircraft quality five ply and was grafted and glued with epoxy to the remains of the old frames and the strong longitudinal spruce crutch.

The wing mounting blocks were re-positioned and strengthened with new 5 ply and solid hoop pine knees. All the split planking was opened up and glued with CA, later to be glassed.



Half the planking on the port side had been ripped off with the cowl so new 6mm planking was grafted into the old and a new ply former laminated up and glued to the edge of the new firewall.

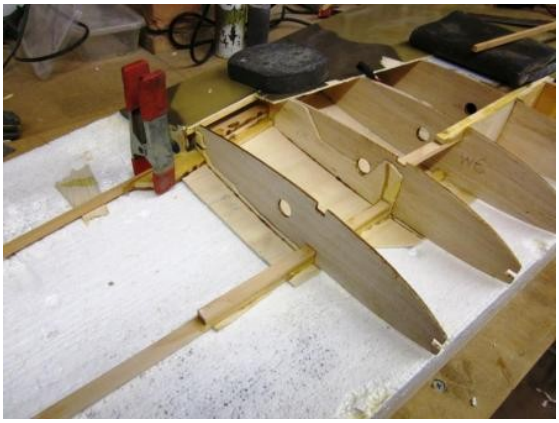
Next job on the fuselage is to fit the cowl and mount the engine with all its bits and pieces.

All the preceding is a waste of time unless I can fix the wings. The starboard wing is missing outside the flaps and the skin is shattered down to the retract area, the port wing is missing a chunk of L.E. and skin and has two large cracks down its length.

First step was to set the wing up in a sort of jig which I made from a couple of sheets of MDF and an old Model Design P40 foam wing set.

I had to cut all the broken wing sheeting and ribs back to a solid base and then set the wing up on the bottom foam piece of the wing set

I then had a base to splice the lower main wing spar and the lower trailing edge spar to the existing stubs and be reasonably comfortable that they would be straight extensions of the existing spars.



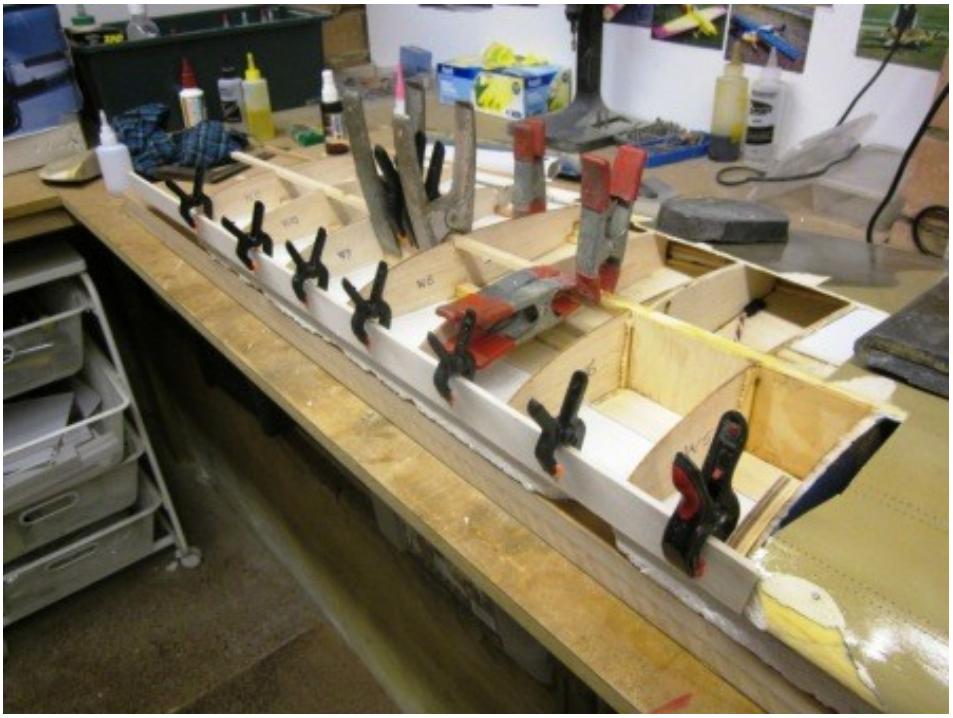
Browny's new ribs were cut down and glued to existing fragments of the original ribs and new complete ribs were glued to the new spars.

The 1/4" x 3/16" spruce leading edge was grafted to the ply W4 rib and the old spar and then all the ribs were nicely aligned with the approximate amount of required washout.

While the epoxy was drying I attacked the top surface of the port wing first by adding strip to the underside of the old skin edges and then fitting the front part of a new W12 rib to the old.



A piece of spruce leading edge was scarfed joined to the old with a balsa filler in front to be faired to match the surrounding LE, a piece of 3/32” sheeting was cut to size and glued in place. The leading edge was planed down and the sheet sanded ready for glassing after I repeat the process on the underside.



Back to the starboard wing, the top spar has been glued in place as well as a piece of 1/4” balsa sheet glued to the ribs and the LE spar. The 1/4” sheet will give me something to glue the front edge of the wing sheeting to, it will later be capped with 1/2” balsa and then planed and sanded to shape after sheeting is complete.

This picture is for the heavy model inspector and shows two pieces of 1/8” aircraft grade 5 ply acting as shear webs epoxied to the top and bottom spars over the joins .

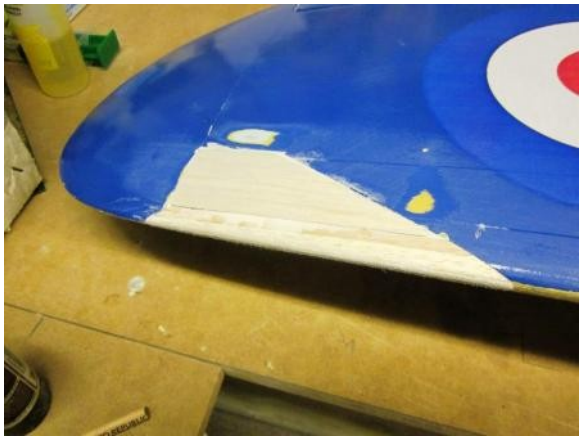
The top front sheeting is pinned and glued to the 1/4” balsa LE, the top of the ribs are covered with PVA glue and then the sheet is rolled down to the main spar where it is glued with CA using a straight edge and clamps

An aileron servo mounting plate was epoxied to the main spar and the original servo fitted and tested OK.

The 3/32” sheeting on the back of the wing is cut to size, glued and pinned to all the spars and ribs using PVA.

The top of both wings have now been re-skinned.

Time to attack the underside. I set the wing up in the top piece of the foam set over a couple of sheets of 18mm MDF sitting on boxes after checking all was straight and level.



The port tip repair was completed easily and quickly as I will need the port wing complete when setting up washout on the starboard.

This is where it all gets a bit critical. If I glue up the front bit of sheeting I will have completed the wing D spar making the wing rigid. If I don't have the washout right there wont be much I can do about it so I cant do that yet.
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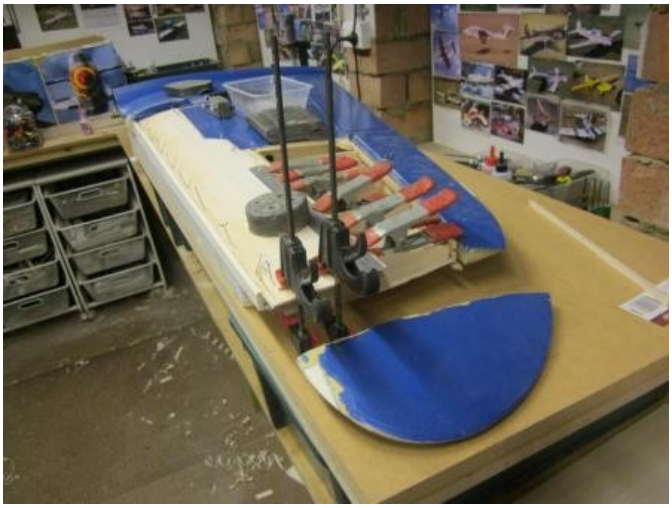
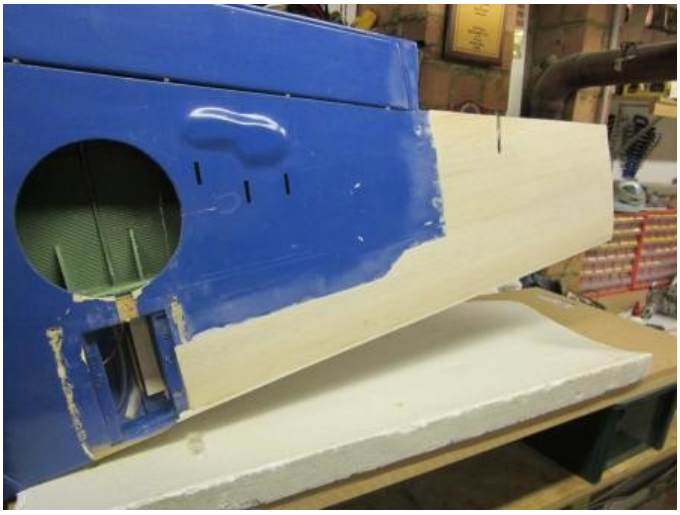
The plan is to set the wing upright and level on the bench, stick pins in to the centre of the leading edges at the tips and then measure from the pins to the bench and from the top of the trailing edge directly behind the pins to the bench. As long as I can get the difference from the front measurement to the back measurement equal on both sides I'm in business.



After all the measuring and levelling hoo haa had taken place the result was that at the tip I had built 3 to 5mm too much washout into the new wing. No big deal in a 2500mm wing but not ideal.

With the wing upside down I will now have to pack up the trailing edge to get equal washout before completing the sheeting.

The wing went back into the foam former and I inserted a tapered shim along the trailing edge 6mm thick at the tip end and then glued the front sheeting to LE, ribs and main spar.



The fiddley bit is over now, the wings are sheeted and all I have to do is fit the leading edge block, carve to shape, fit the aileron and the wing tip and the structural repairs are complete.

While I was waiting for glue to dry I replaced the broken ribs in the rudder, reinforced it in places and re-covered it with Chinese copy of Solartek, good stuff by the way..

Wing tip fitted and sanded to blend in with the sheeting and that's that. Wings finished and ready for glassing.

I've got to get stuck into the fuselage now as there is only a little over a month until the next Scale Day.