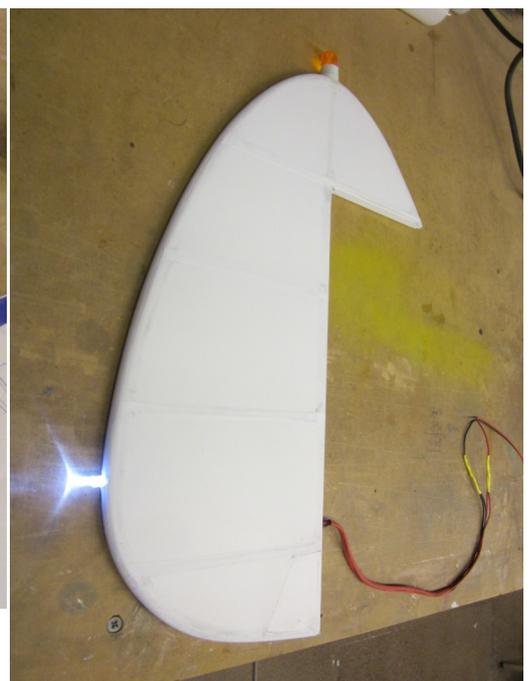
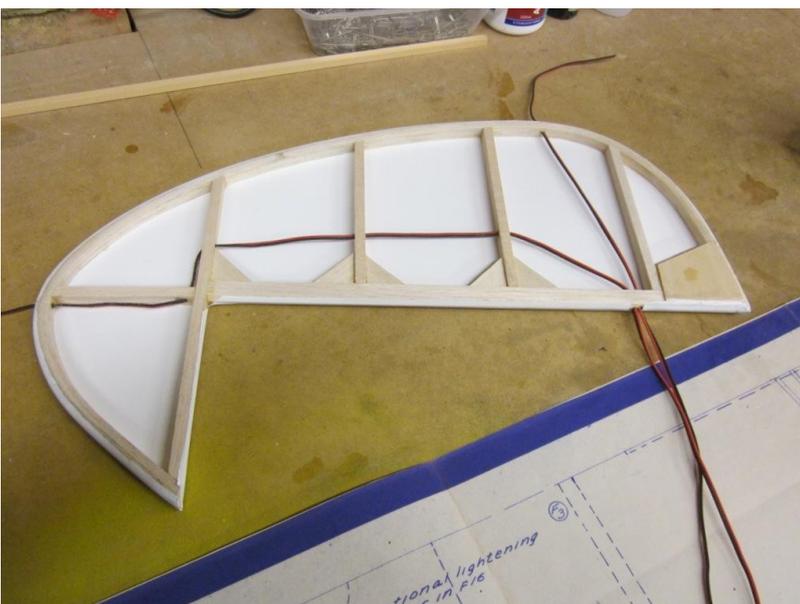


# Building a 33% Scale Piper PA-22 Tri Pacer from the Wendell Hostetler Plans

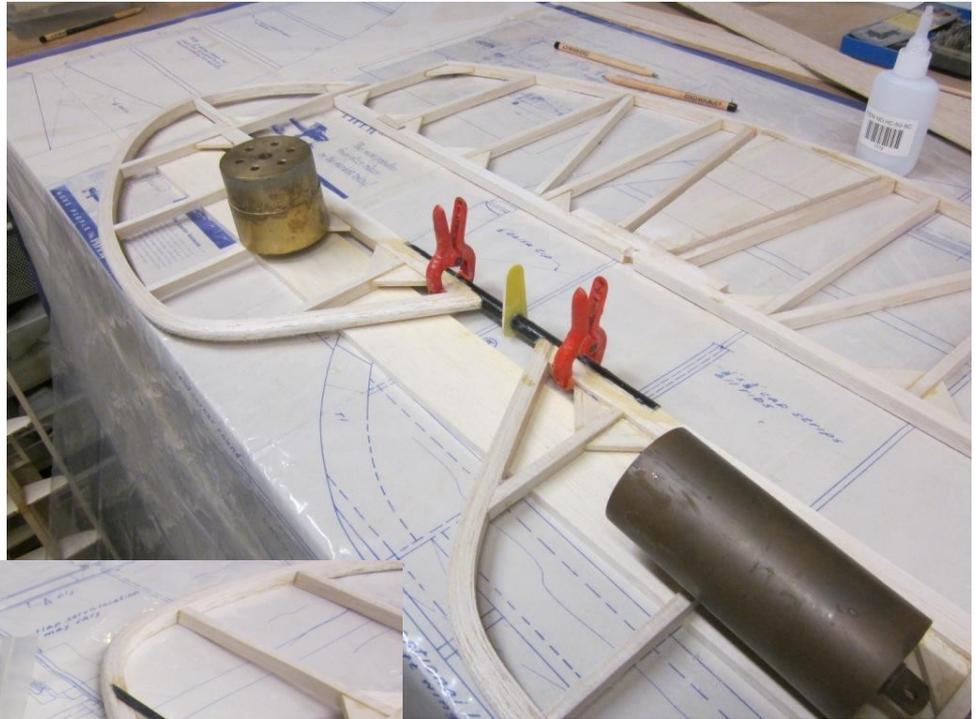


Before I can trial fit all the bits to give me a feel about the balance point I have to finish the tail feathers and wings, no big deal but a bit fiddly as I have to fit the nav and anti collision lights before I can get stuck into covering.

The rudder has a bright white tail light and a rotating orange anti collision light fitted, all sourced from the RC car fraternity section of Ebay.



The elevators had to be joined with a carbon tube reinforced with carbon tow.



The flying wires, or in this case Dubro 4-40 steel rods are going to be functional in supporting the horizontal stabiliser. The full size has a gap between the side of the fuselage and the inside end of the stabiliser that I have copied but unfortunately that leaves the LE and TE as the only strength in the balsa framing.



This is going to get a bit tricky when I come to covering the fuselage as I'm going to have to poke the covering down the slots and use it to finish the under stab part of the fuselage.



All the wing wiring is now complete and the port wing has landing lights fitted as per full size, once again courtesy of the RC car mob. The landing lights are a pair of bull bar lights that are very bright and cost about \$3 post included.

I have used a spot of silicone glue to stop the wiring flapping about with engine vibration.



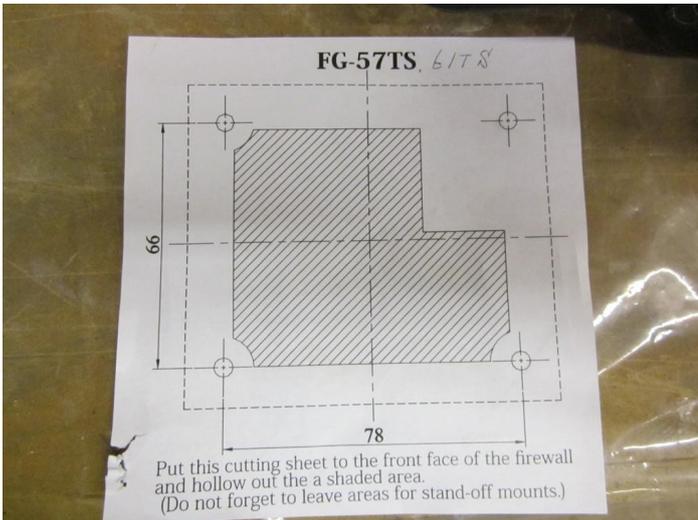
I have an artistic friend that has kindly painted all my warbird pilots in the past and as I'm meeting her over the long weekend I thought I had better put the 1/3rd scale, two foot high human together as he comes in four parts when you buy him.

He looks totally unimpressed to be involved in this project. I hope Sue can make him look a bit happier with a bit of her magic.



Time to fit the engine.. The first step is to fit the cowl in position and measure the dimension from the front of the cowl to the firewall and add 4mm for clearance. This then becomes your required engine length from firewall to drive washer face.

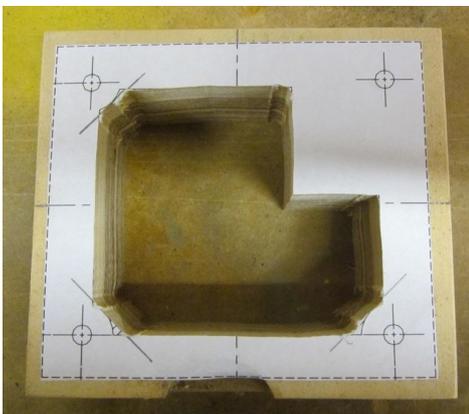
In my case 202mm. The engine is 134mm long and it is mounted on 35mm stand offs so I still need a 33mm thick mounting block to epoxy to the firewall.



Saito supply a template that they suggest you use to cut out your firewall so the carbie pokes through and takes air from the static air inside the plane.

This is great for ensuring the intake is not subjected to variations of pressure with airplane speed but a bit of a pain in that dust and crud will find its way into the cabin.

My block was made up with laminated ply and cut and drilled as per template. I will be able to position it exactly when my spinner arrives.



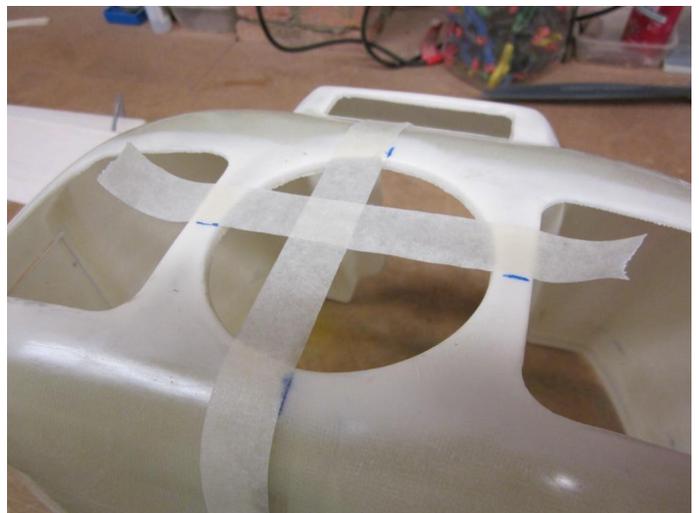
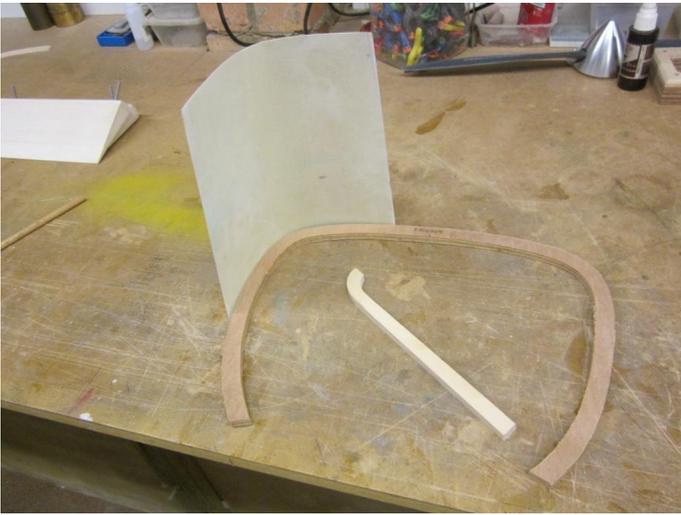


I have to fit the cowl before I can fit the engine and this is a bit of a challenge as the alignment of the cowl and engine must be on the thrust line.

The cowl as supplied is one piece but I intend to cut it into three pieces so it will look like the full size above. The nose and bottom half of the cowl will be one piece and the two lift up hoods will be hinged on a centre plank with scale piano hinges. The cowl will be screwed to the firewall at the top centre and the base. I'll need some internal frames to keep its shape and later some functional scale cowl latches for the hoods.



Cutting up the cowl is easily done with a Dremel and a hot wheel but now the cowl is so floppy that it was a battle to position it on the thrust line so I had to tape it back together and make some frames out of 6mm ply. The frames were glued with Hysol.



The frustration of trying to get an accurate alignment of the cowl to glue on the frames led me to a drastic solution of tack gluing a set square to the firewall on the centre lines and then at last I could get an accurate position when I lined it up with the two tapes on centre lines at the front.



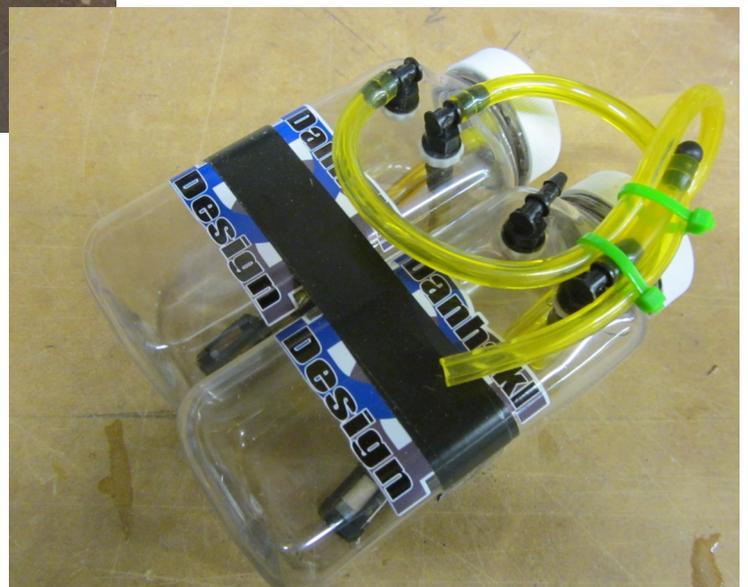
There's a fair bit of work to get this cowl right with some internal ply frames around the edges for the two hoods to close on and something for the cowl latches to be screwed to.

The 1/2" hood piano hinges were cut to size and glued with a fine bead of Zapgoo and then screwed with c/sunk 0-80 1/4" screws.



To my great relief the cowl aligns with the engine.

The distance between the instrument panel and the firewall is fairly short so the fuel tanks are going to have to be short as well or they will be seen in the cockpit. I'm using a couple of 280cc Fourtitude tanks connected up in series.

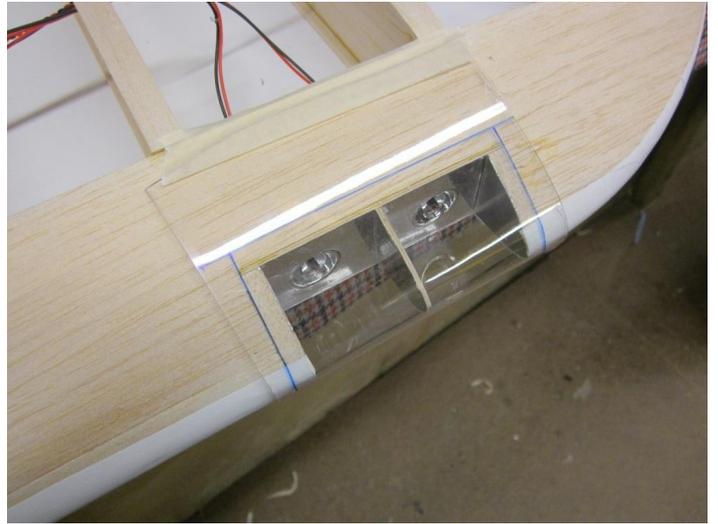




I need a throttle servo and a nose wheel steering servo in about the same space so to hide all the plumbing and wiring I've fitted a false floor as the receiver, batteries and switches will all be in the back.



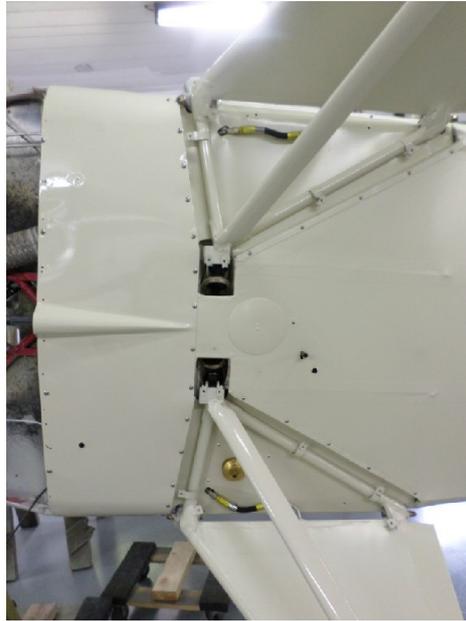
The above are pictures of the final planking. You can see I've made a large access hatch in the nose for any future trouble shooting.



I've made up a couple of nav light covers by heating and stretching some PET sheet over a shaped dowel and followed up with the landing light cover by stretching over the leading edge of the wing, all stuck on with canopy glue.

Next job on the wings is to simulate the petrol tanks on the top inner surfaces and to simulate rib tapes and stitching.

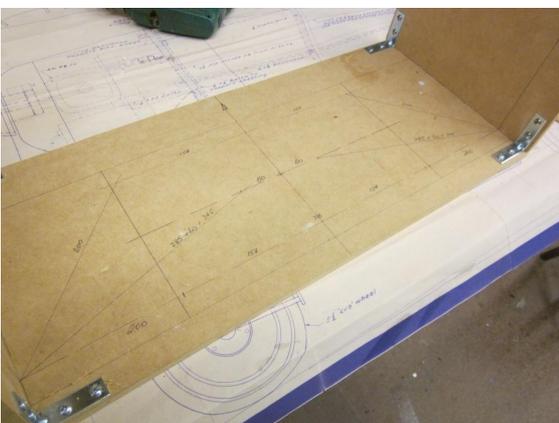
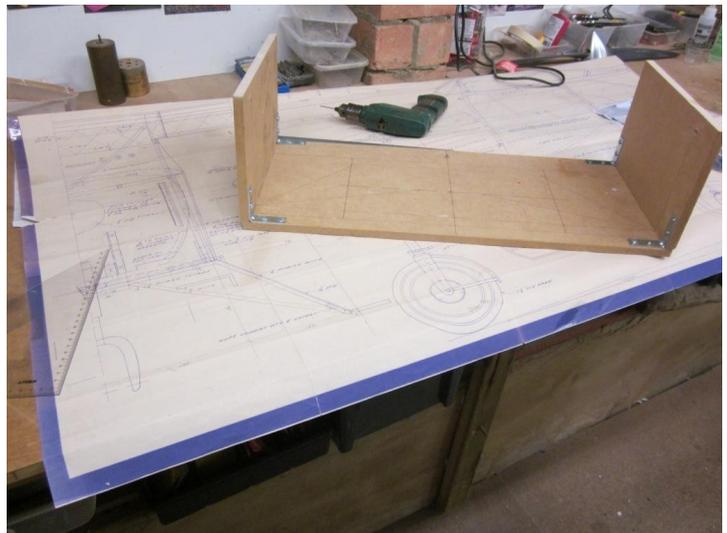
You need a few trades to make one of these things but I never thought I'd need blacksmith skills but to make the main undercarriage, it sure feels like these skills would come in handy.



These pictures are of the full size and clearly show the triangulation of the main legs.

The plans show that the front and the back of the leg are made from bent 1/4" diameter piano wire soldered together at the hub but no triangulation from the centre strut. I'm not too keen about soldering the load carrying pieces, I think soft solder isn't strong enough and silver solder will affect the temper so a bit of re-design is called for here to come up with a more scale look and a more effective load carrying U/C.

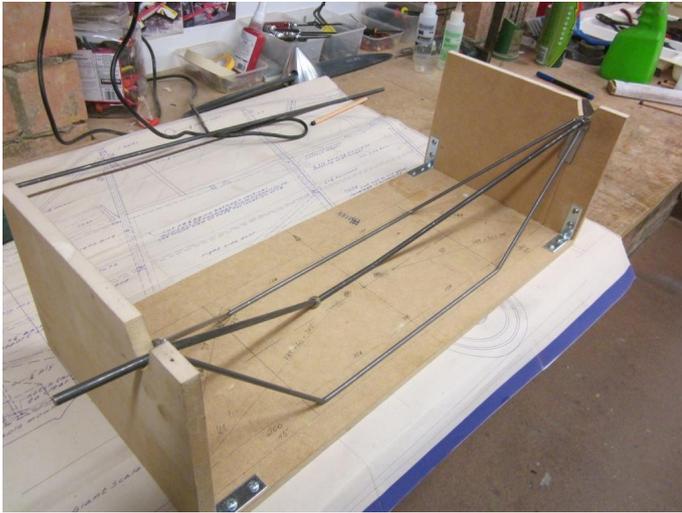
The first job is to transfer the axle position in relation to the main U/C plate in the fuselage to a jig so out with the drawing instruments, protractors and squares.



From the jig I can now measure the angles and lengths of the bends required.

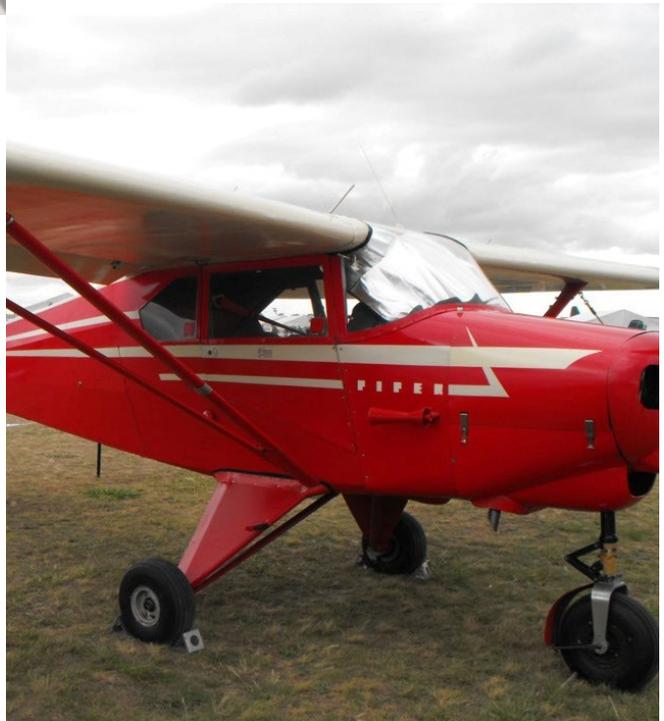
I'm going to need three pieces of 36" wire for this, the front and rear pieces will be

3/16" diameter and the load carrying and centre axle piece will be 1/4"



After a lot of huffing and puffing on the K&S heavy duty wire bender I've come up with this. The front and back wires will be silver soldered to the 10g steel plate at the apex. The 1/4" axle bit passes through the steel plate and will be held in position with a 1/4" collet on both the inside and outside of the plate. The collets will be positively positioned by small flats and a generous application of permanent Loctite.

I'll cover the front and rear wires with 1/16" ply front and rear to give us the look of the full size.





Piano wire wrangling is over I hope. I was having trouble getting enough heat into the end plates and the front and back wires to be totally sure my silver soldering isn't a dry joint, we'll find out in the distant future when I have a lousy landing.

I've been putting off decorating the cabin as it will need lining, scale seats, the pilot and seat belts and a prominent instrument panel all having to be done inside the structure but I've run out of proper jobs so that's next.

See you in a week or two or three

Cheers  
Stan