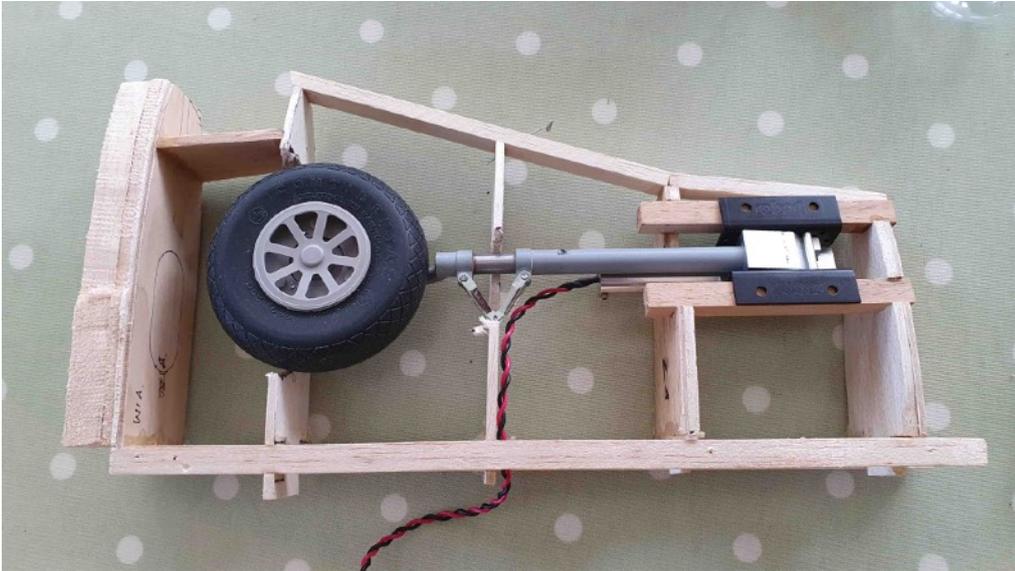


Mustang Build 2 – Peter Jenkins

Having got my test rig built, I lost no time in testing out the fit of my Robart retracts. These are the electric servoless retracts.



This shows the retracts sitting in the wing after I had hacked out the clearances required in the ribs.

Now, this threw up the first problem which you can see in the next photo. You will see that the retracts are

tilted forward in order to mimic the full size installation. This also gets the wheels further forward as regards the CG position. But, take a look at the wheel position and you'll see that it's sticking above the wing skin position! Not good.





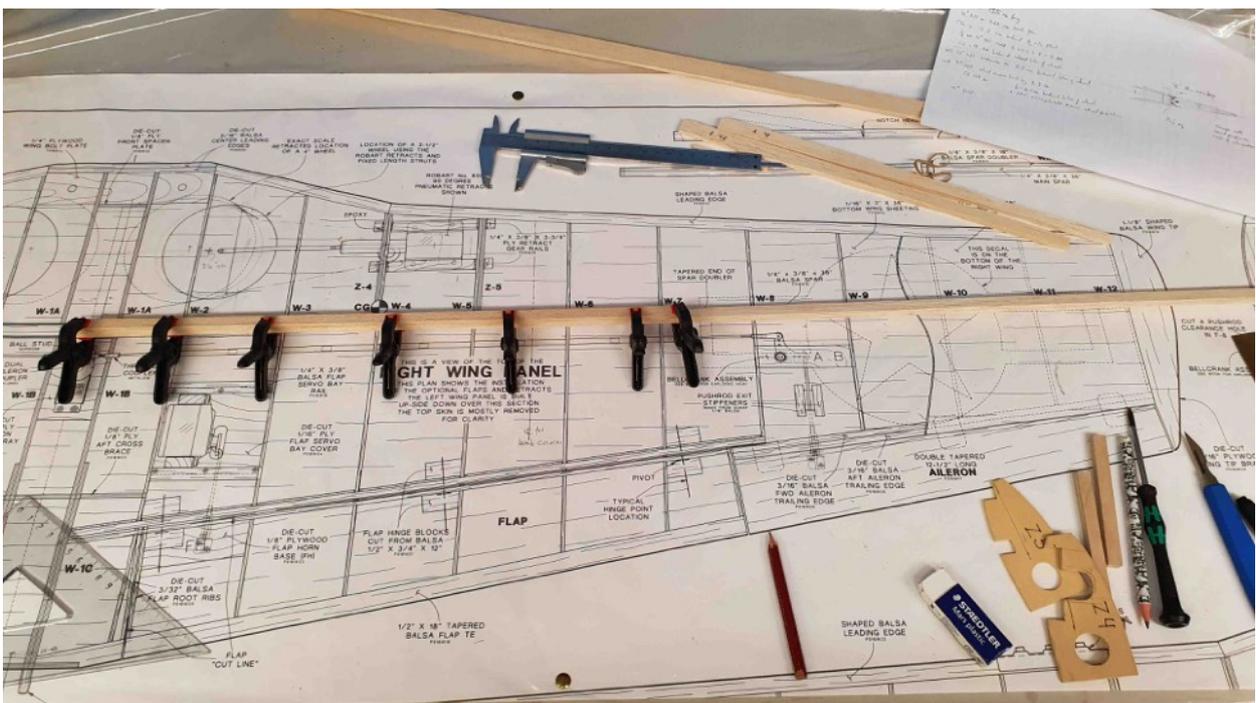
My initial thoughts on how to fix this were to twist the wheel strut so that the wheel now rested level. That worked except that when I extended the u/c the wheel now had a large toe in. So, the next thought was to drop the rear of the retract mount down so that the wheel rested level but would still point straight ahead. What that did mean though was that the forward tilt of the u/c was removed and brought the wheels closer to the CG.



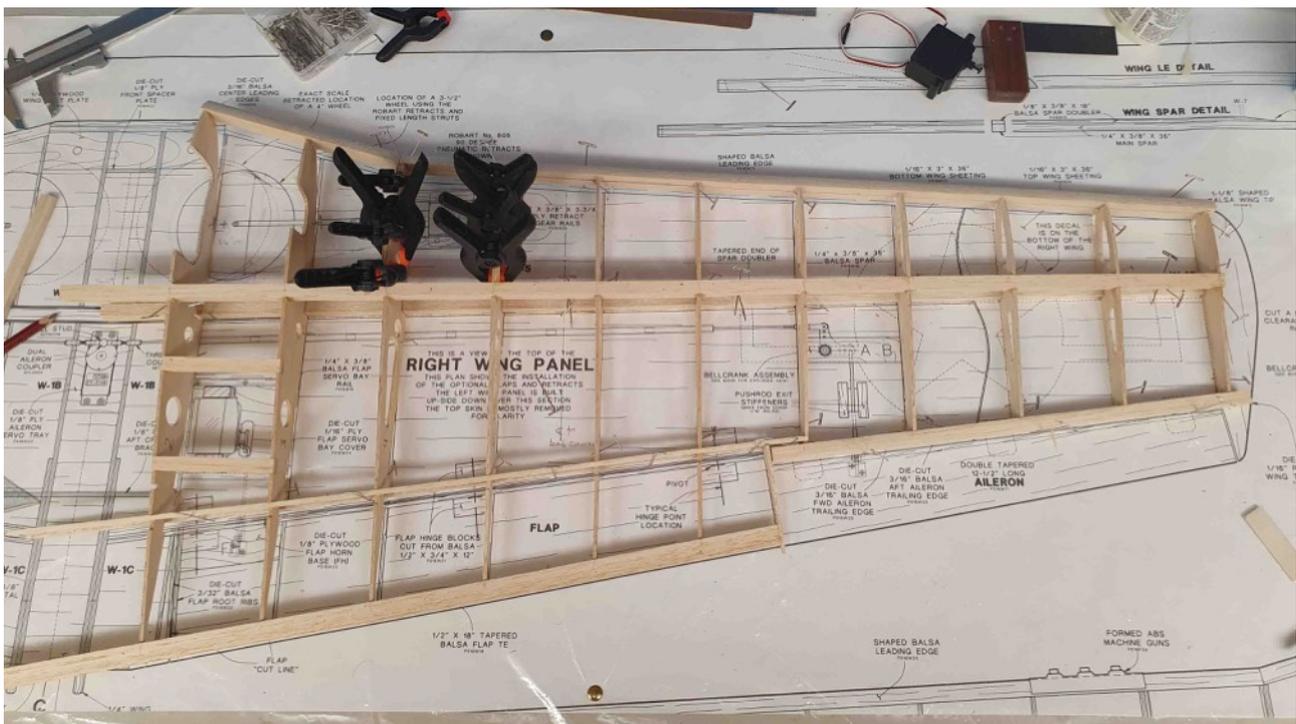


I calculated that the proper location of the wheel when it was on the ground was 13.5 cm in front of the CG but with my mod it lost some 3.5 cm so the wheel ended up being only 10 cm in front of the CG. I thought that would be OK and pressed on with building the wing.

The wing construction is pretty straightforward. There are a few parts that need to be glued together before construction begins, these being the main spars and the wing trailing edge in front of the ailerons. So, here's the first main spar being glued together. The square section spar has a doubler glued to it that is tapered to an end just past rib W7. In the picture, you can also see the two reinforcing ply parts that hold the retract rails.



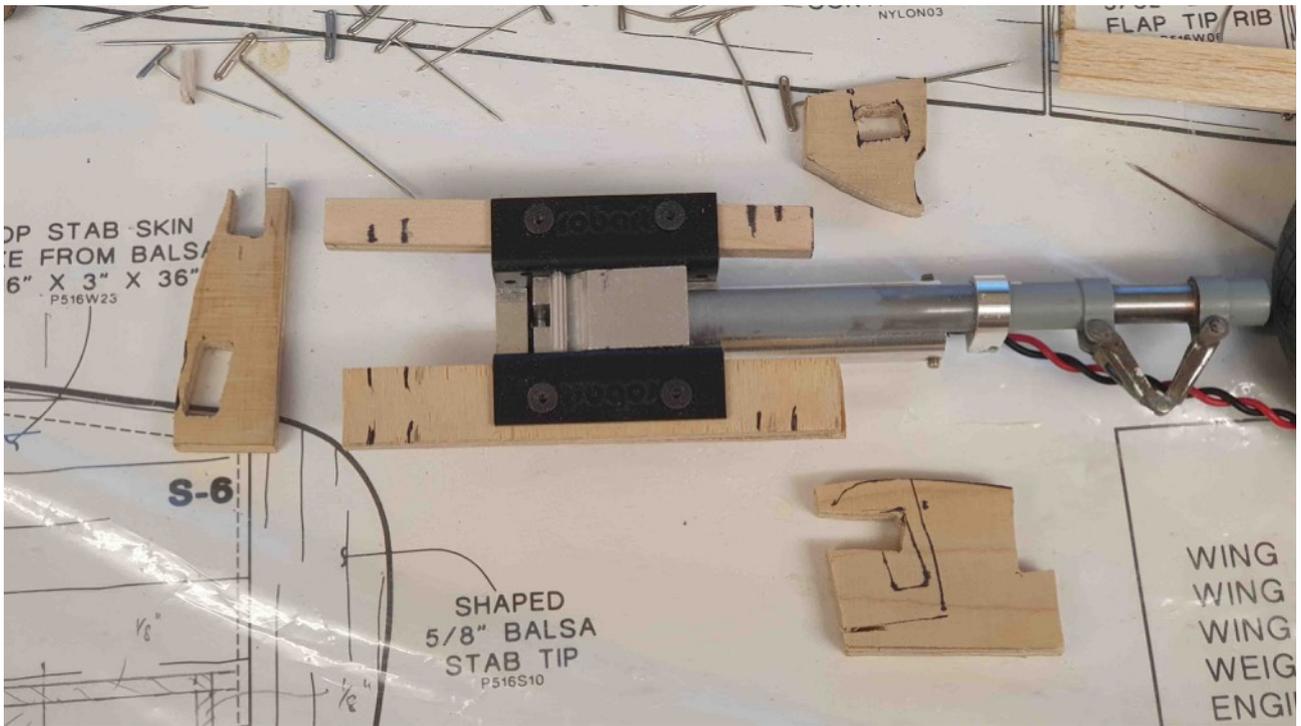
It was at this point that I became nervous about the reduction in the distance in front of the CG that my design change would cause. This prompted the thought of tilting the retract rails downwards into the wing. Some careful drawing and trigonometry indicated that increasing the slot depth in former Z4 by 2 mm would have the desired effect of bringing the wheel inside the wing skin line. This would have the effect of causing the retracts to be slightly canted inwards when the aircraft was sitting on its legs. At this point, I began to wonder why Robart recommend the 85 deg retract over the 90 deg retract. Still, I wasn't about to change retracts now so I would have to accept a very slight tilt inwards when the wheels are extended – at least the wheels are now in their designed position of 13.5 cm in front of the CG. Wing construction now proceeded at pace!



Then another issue raised its head. A very informative thread on the RCU forum on this very kit, showed that in a heavy arrival, the u/c can be ripped out of the model taking a big chunk of leading edge with it. There were two issues for me. The first was whether the ribs W4 and W5 were strong enough behind the main spar since the 1/8" ply doublers, Z4 and Z5 ended at the main spar, and how to try and resist the torque that would be exerted on the u/c rails and their supports that would tend to twist them downwards on landing. So, I came up with the idea of reinforcing the W4 and W5 ribs with 1/16" ply running to the TE and then applying carbon fibre cloth on top of the ply.



The other idea was to use 3/16" ply to make some supports on the other side of the rib from the Z4 and Z5 formers.



These would also get the carbon treatment in due course.

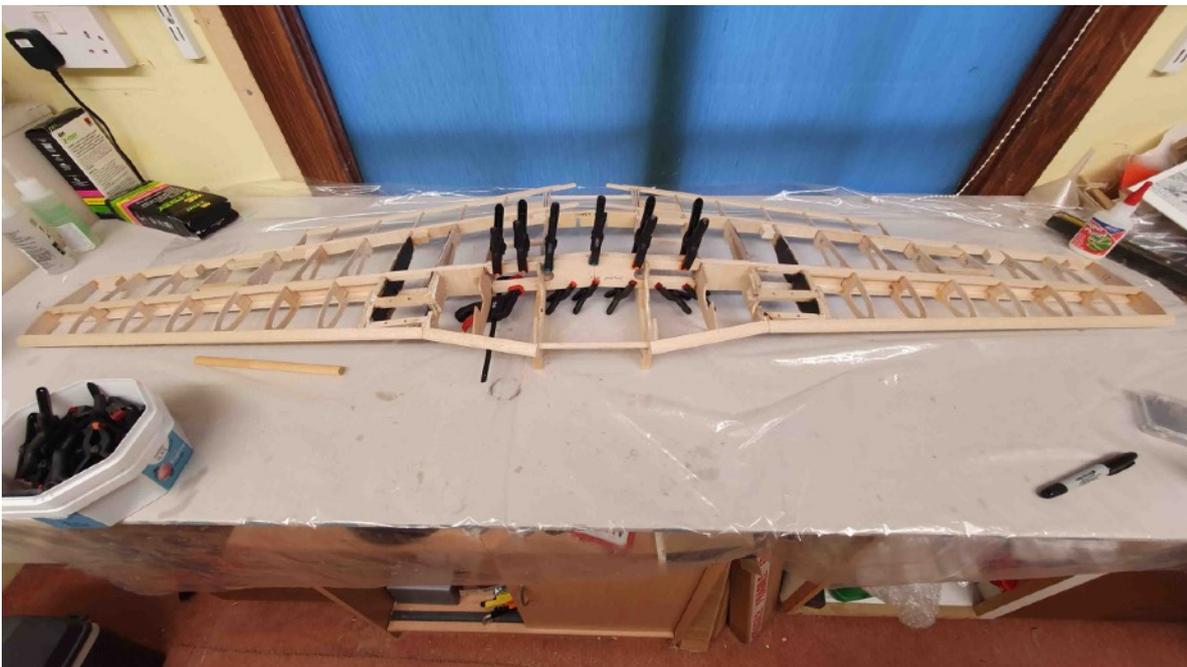
After this slight diversion, wing construction continued apace. This photo shows the port wing completed to the wing joining stage. You will also see that I have opted for one aileron servo per aileron rather than a single centre servo and 2 bell cranks. You can see the servo rails that I have installed between ribs W8 and W9. I have also decided not to use the mylar hinges but to replace those with Robart pin hinges. That will require small wood blocks to be fitted in the wing to which will be fitted the 3 aileron hinges.



I had now also become concerned about how much rib W2 had been cut away as a result of tilting the u/c geometry down a tad. However, in this case I felt that the ply centre section structure could adequately strengthen the wing so a part length 1/16" ply doubler would be adequate.



So, with both wing halves built, it was time to join them. This was an operation where I would have been glad of a second pair of hands! There are 2 x 1/16" ply dihedral braces that have to be slid up either side of the main spar through the gap left in rib W2 for this purpose. A moment's aberration had caused me to bring the reinforcing ply for W2 right up to the main spar! So, a little bit of surgery was required to clear a 1/16" slot for the dihedral brace. The wing is built upside down and joined in the same way. TopFlite provide two bits of balsa to sit under each rib W2 to get the correct dihedral angle. Of course the ply dihedral braces also provide a pretty big clue here! The rib tabs on rib W12 are the only tabs in contact with the building board and I planned to pin down the wing while the glue dried. I used 30 min epoxy and needed at least 10 mins to both coat all the relevant parts for gluing, insert the dihedral braces, check the alignment and pin everything down.



You can see the carbon reinforcement on the inboard faces of ribs W5 but you cannot see the outboard faces of W4 showing the carbon fibre in place.

This next photo shows the wing next morning when the glue had well and truly dried! You can see two cross pieces at the front and rear of Ribs W2 that the instructions call for to ensure that W2 ribs remain parallel until the rest of the centre section is built and glued in place.



The centre section is constructed from a load of 1/8" die cut ply. The die cutting was really accurate and crisply done. There is a front and a rear section that need to be glued together before carefully inserting into the centre section.



This shows the rear, and larger, section glued into place.



This shows the front section glued into place.



The wing now is ready for final sanding before it is skinned with 1/16" balsa sheet.