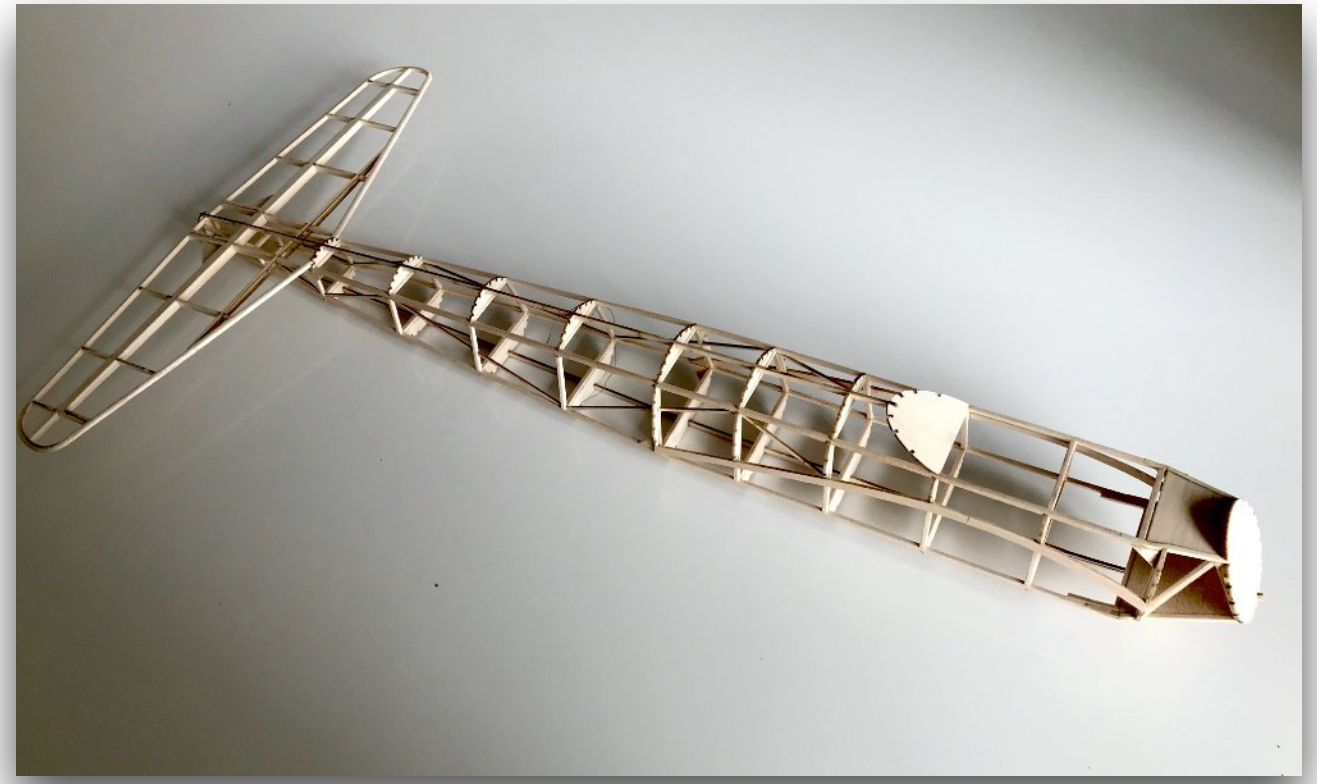
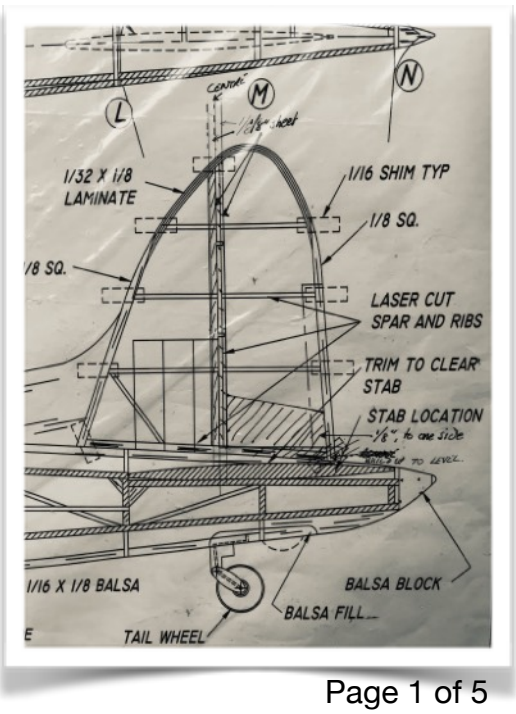
De Havilland Hornet build, part 5

This is where I had got to. Tailplane with elevator prepared and the fuselage awaiting fitting out followed by stringers.



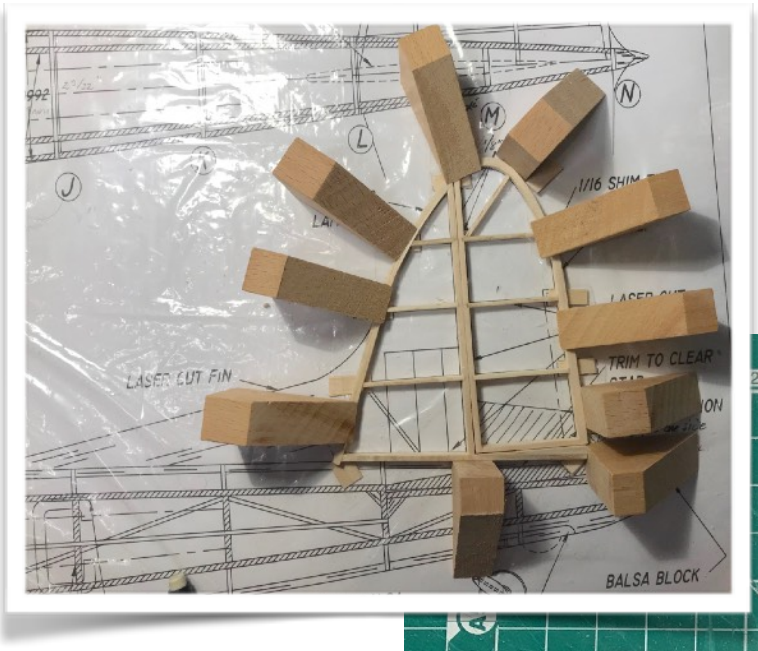
The tailplane is a slide fit beneath the central stringer and glued ‘at the front only’ to allow for adjustment. All well and good for free flight, maybe. I have heavily sanded the underside of the central fuselage upper stringer and sanded the tailplane to ‘fit’ in this picture. Curiously the plan and accompanying photo include a pointed protuberance behind the tailplane. It’s a key feature of the real plane, but no way can it be fitted as shown. A puzzle for a later stage.

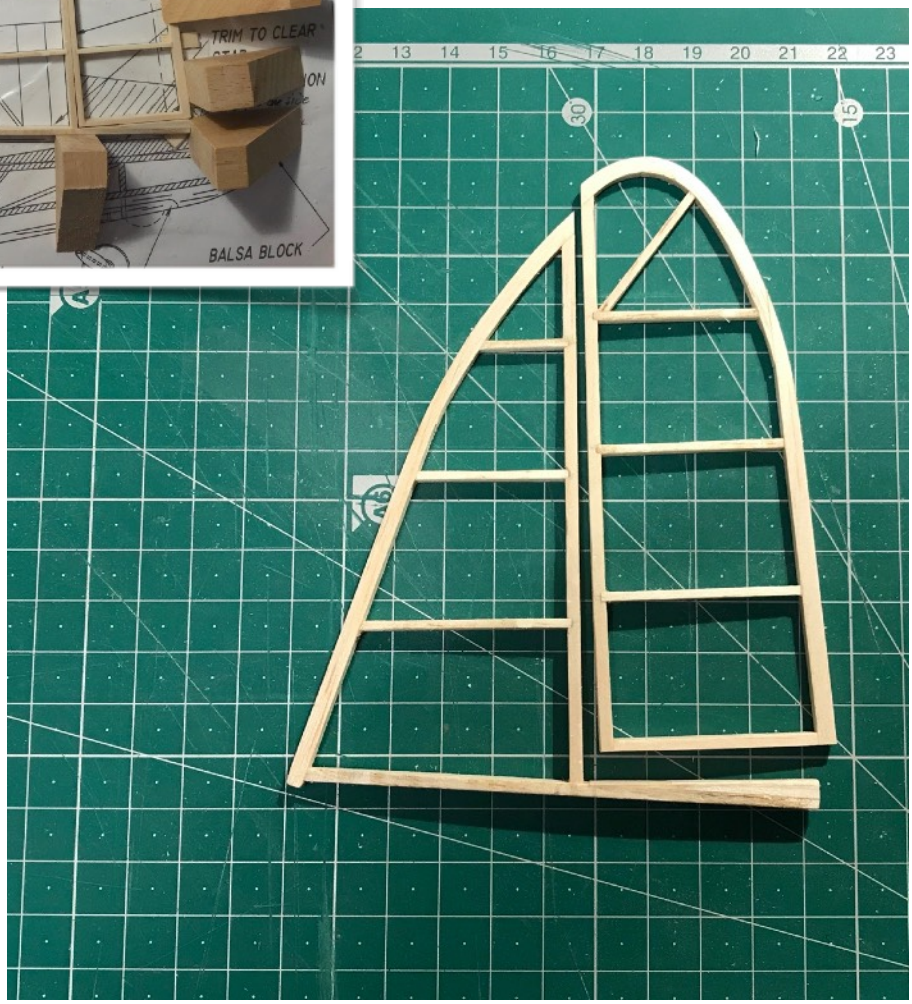


I will have to develop a much more reliable approach to fitting both this and the fin for powered flight, but at least the incidence is set.

Having discovered the value of working out adaptations on the plan before joining sticks together, that’s how I started the fin and rudder.

But there are still lessons. I used 3/32 trailing and leading edges in error, and had overlooked the rudder counterbalance. Still, I’m learning.

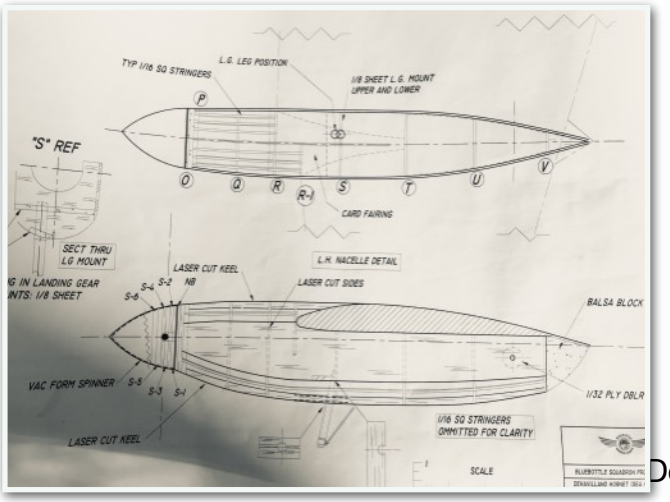




I shall correct for the counterbalance later.

And so to the wings.

Now this design may be a masterclass in free flight weight restraint, but I am intending to add 60g motors in each nacelle, plus landing gear to save on props. I know next to nothing about strong, light and practical wing design, despite having made a twin engined biplane previously. Here I am well beyond my experience, and despite ardent reading of ‘how to’s’ I was none the wiser.



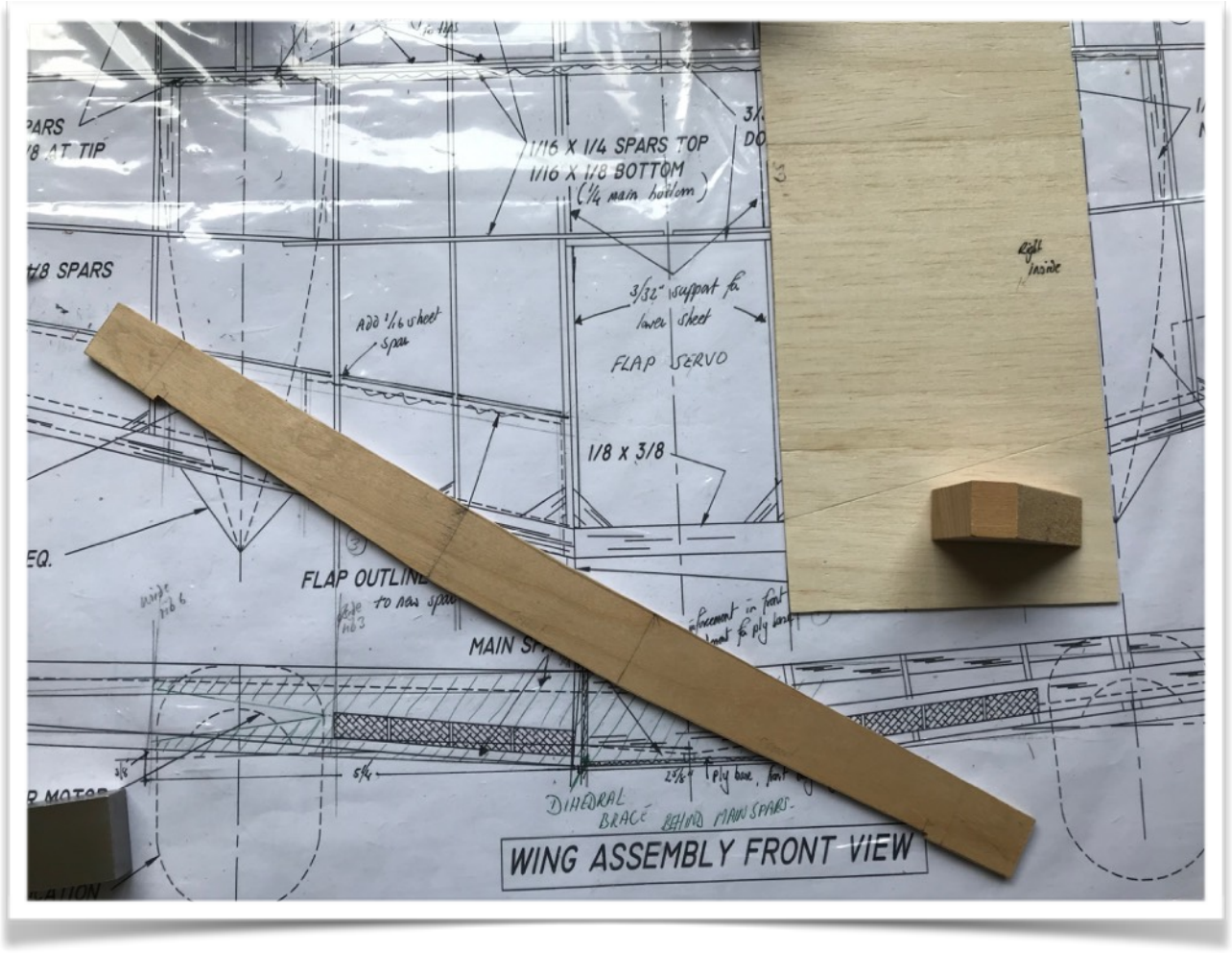
The nacelles hang by a thread beneath the wings, with the motors well in front. The landing gear sits beneath the forward spar when deployed.

Happily a good chum, Ron Gray, was able to pour over photographs of the plans and make some very useful suggestions from his wealth of practical experience. One of these changes the wing to fuselage fuselage attachment and will be addressed when I can test fit.

I settled on adding a 1/8” ply dihedral brace extending between the outer nacelle position (rib 6); combined with 1/16” webs to the front of the main spars; plus 1/16” sheeting top and bottom between the nacelles. The lower sheeting extends only to the centre of the nacelles, whilst the upper finishes at the outer edge of the nacelles, rib 6.

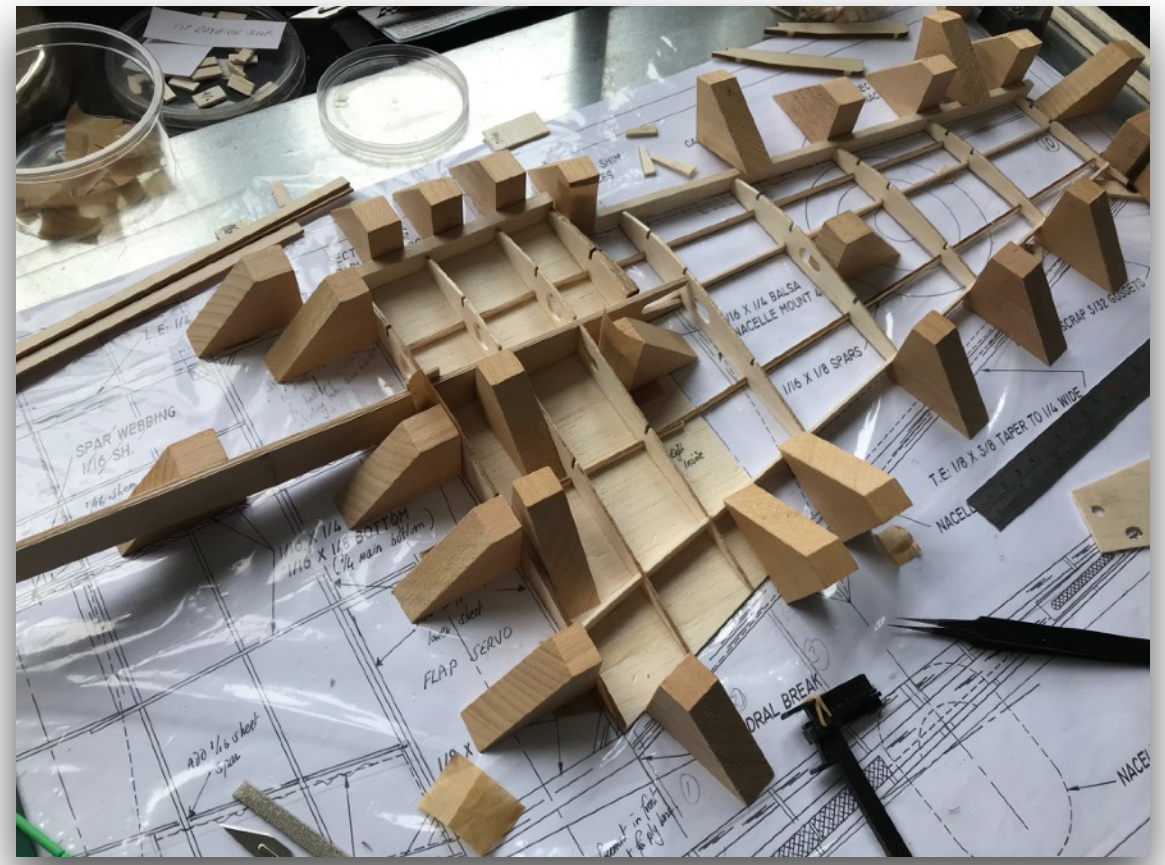
To provide for ailerons a false t/e, made up of 1/16” sheet, along the aileron line, has been added. This latter is supported by square 1/8” strips between the ribs providing an upper hinge line. The amount of dihedral also bothered me, so this has been reduced and reflected in the brace design.

I will probably retain the rear spar joiner - but make it full size.



Plan marked up, Dihedral brace laminated from 2 pieces of 1/16” birch ply and 1/16” bottom skin prepped:

Finally, I wasn’t happy with the recommended build process of only adding the lower spars after the rest of the wing is constructed and is free of the building board. Despite having a flat bottomed wing section. So, I built the wing conventionally, bottom up and outward from the root.


SPAR WEBBING
1/16 SH.
FLAP SERVO
T.E. 1/8 X 3/8 TAPER TO 1/4 WIDE


WING ASSEMBLY FRONT VIEW
FLAP OUTLINE

The right wing was glued in 3 groups. I set up the inner section above the lower sheeting, forward of the main spar position, ensured it was accurate, and then glued this small section before proceeding. I then set up the remaining parts, before gluing the pieces over the sheeting behind the main spar and then finally the familiar bit outward to rib 10.

My magnetic board and blocks helped this process a lot, allowing me to lift and replace some key parts accurately whilst gluing.

And correcting errors! In this case I had forgotten to allow for cable runs, but was able to remove the forward section for keyhole surgery.

I had intended to add split flaps in the scale position, but due to the complexity of the other changes, weight behind the CofG (servo) and concerns at the small size of scale ailerons these were dropped. That being so I have also kept to the, slightly wider chord, free flight wing plan.

All I need to do now is replicate this for the left wing, without introducing a twist. On the plus side I have discovered a number of my magnetic building blocks measure to true right angles. Seemed important to at least start well.

I also have the benefit of a build sequence. Noted down as I built the right wing, laboriously, pretty much one element at a time.

Building Notes

One kit issue worth noting is that ribs 1 & 2 appear to be cross labelled on the laser cutting guide.

I have made extensive adjustments to the wing structure to cater for a pair of brushless motors plus landing gear:

- Dihedral brace
- Sheer webbing root to tip on the main spar
- Ailerons - false t/e, less dihedral and extending inwards to spar 6
- Upper and lower mid section sheeting

Then I wasn’t convinced by the wing build process.