

*Avro*  
**Vulcan**  
*Large Parkjet*

MK.3



**BETA Construction Guide**

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By Craig Clarkstone





## Before you start.



### Adhesives

- > For the majority of construction :
  - UHU Creativ for Styrofoam (also called UHU POR)
  - 3M 77 Spray adhesive.
- > For wing spars and motor mounts :
  - Epoxy. (5 and 15mins cure times are the most convenient)
  - micro-balloons can be added to reduce weight.
- > For servo's / and quick grab :
  - Hot melt glue gun - Caution if the glue gets too hot it will melt foam - test first!

### Tapes

- > For holding parts tightly together whilst glue sets
  - Low tack masking tapes
- > For leading edges, hinges, general strengthening
  - 3M Gift tape (Purple - not green one!) - I prefer lightweight plastic hinges.
- > For decals
  - Coloured parcel tapes (strips taped to waxed paper & cut out)

### Cutting parts

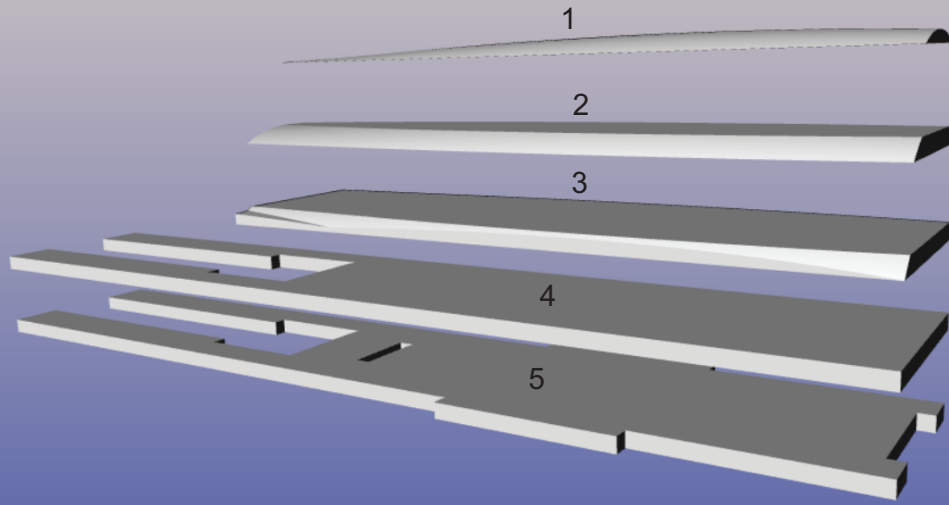
1. Print the plans,
2. Cut around each part using scissors - allow a border of approx (1/4") 6mm
3. Use either 3M spray mount or a very light coat of 3M 77 to the back of the parts and stick in an economical layout on the Depron foam.
4. Using a safety rule and craft knife over a cutting mat - important! use a fresh blade otherwise it will drag and spoil the foam. (I find the stanley knife perfect) make the straight edge cuts, then the curved parts freehand.
5. Once the parts are cut-out, keep the template stuck to the part until just before needed to help identify the parts.
6. After use, I find it helpful to keep all the used tempates in case replacement parts need making. (the glue eventually dries and they don't stick together!)

**IMPORTANT** Wherever the plans call for marking guidelines onto the depron, please ensure that you do otherwise it can cause problems later on. I suggest you use a Sharpie Fineliner to transfer the lines.

### Glueing parts together.

1. Ensure a really good fit - this will reduce the amount of adhesive used. The Bar Sander is a great tool for this.
2. Follow the adhesive instructions closely.
3. Use ordinary steel head pins to help keep the parts located whilst epoxy sets.
4. Use objects as weights such as paperweights to apply pressure whilst adhesive sets.
5. Use masking tape to apply pressure whilst adhesive sets. Also use masking tape to along the slots for the wing spars whilst gluing the carbon rod spars into the wings. This prevents the glue protruding and gives a nice finish.

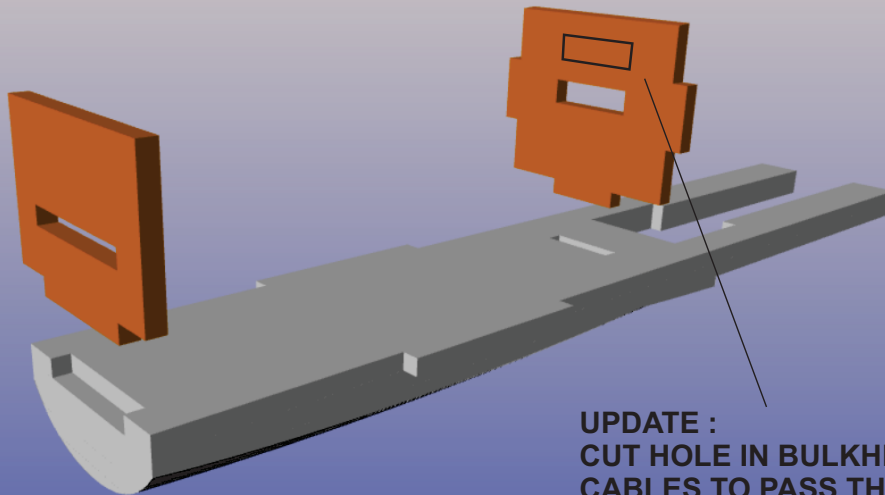
Forward fuselage belly



Laminate the forward fuselage belly pieces together using either 3M 77 or UHU Por.



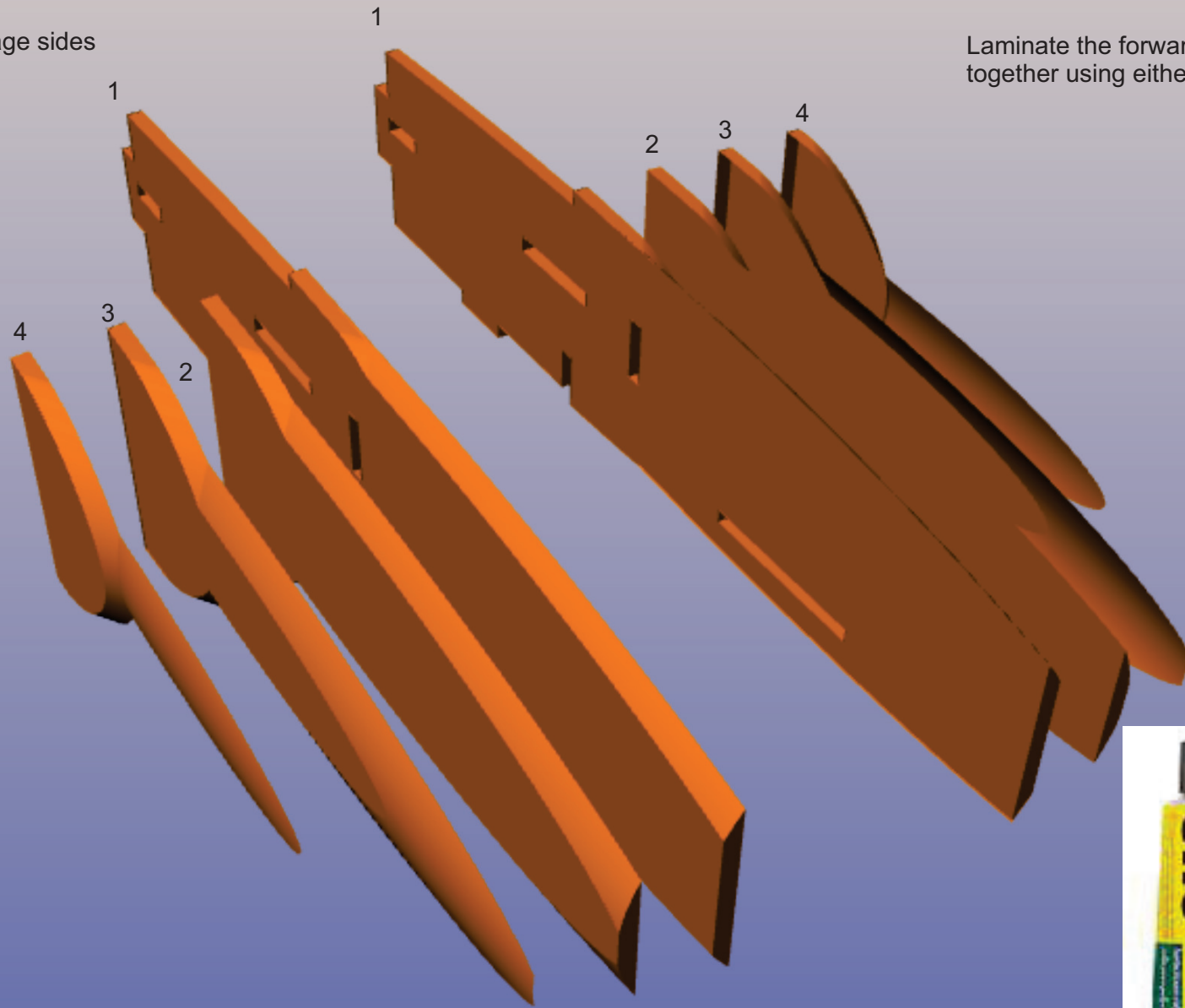
Stick bulkhead 2 and 3 onto the fuselage belly assembly using UHU por.



UPDATE :  
CUT HOLE IN BULKHEAD 3 FOR  
CABLES TO PASS THROUGH

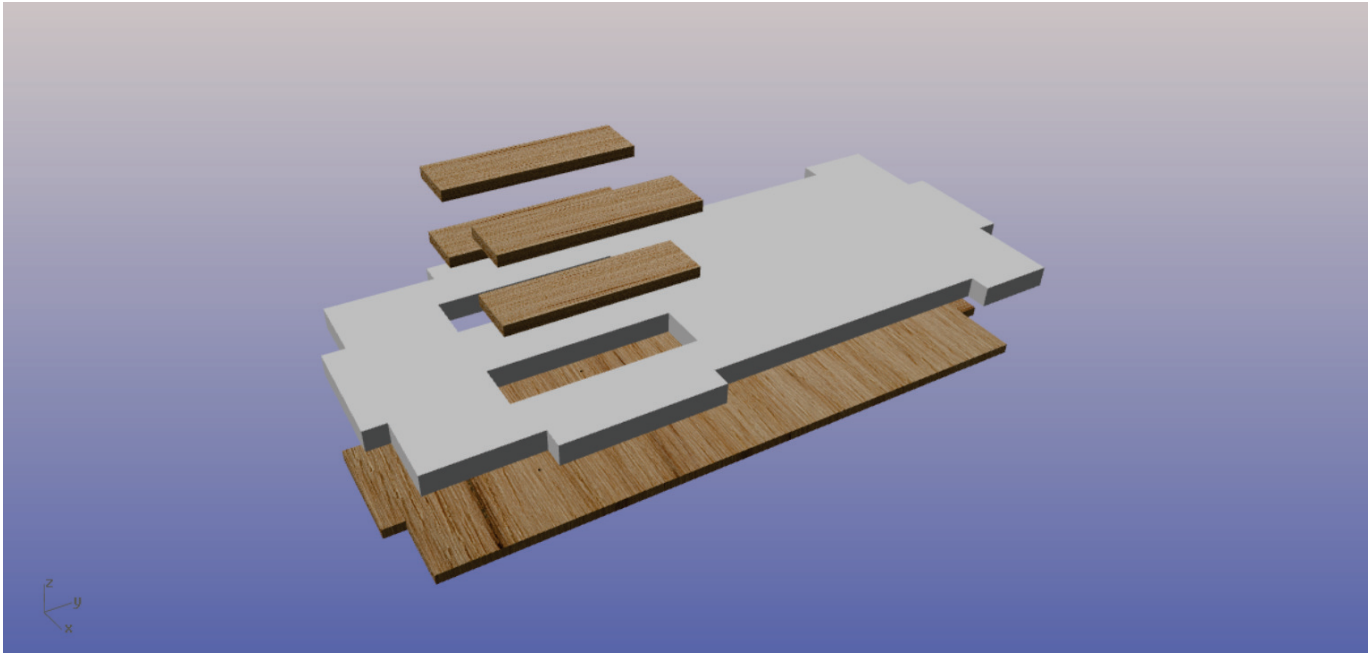


Forward fuselage sides

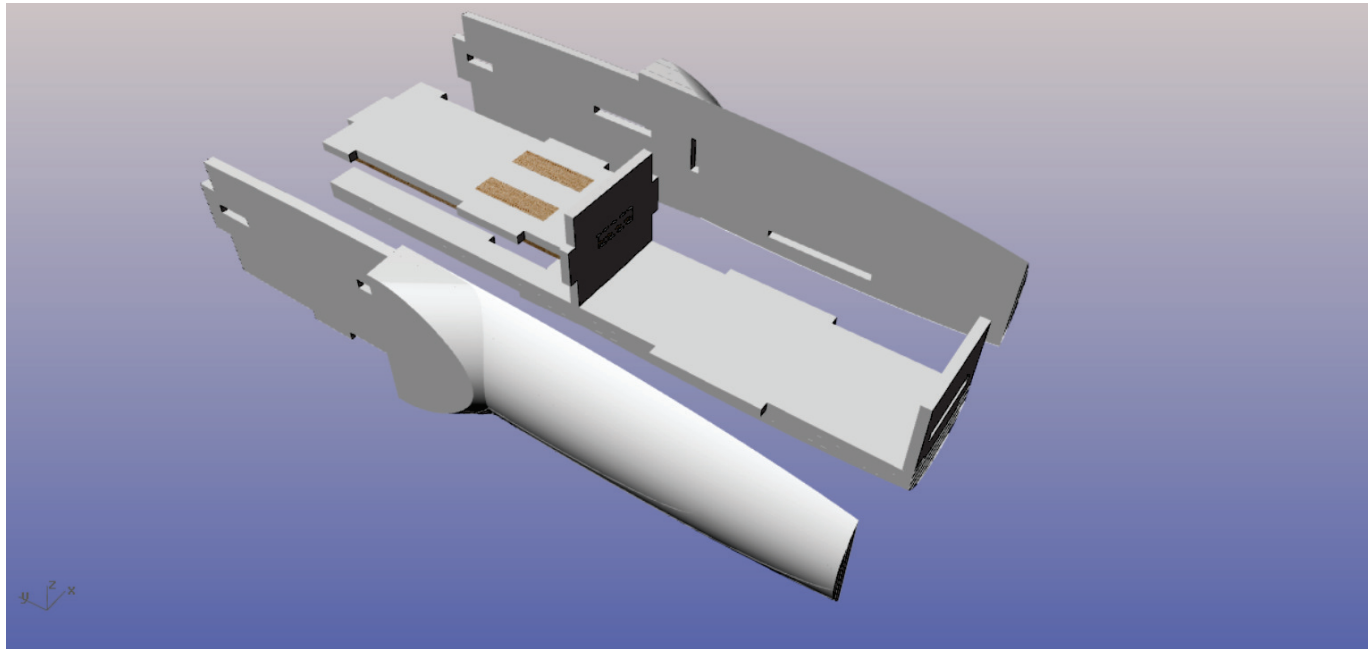


Laminate the forward fuselage side pieces together using either 3M 77 or UHU Por.



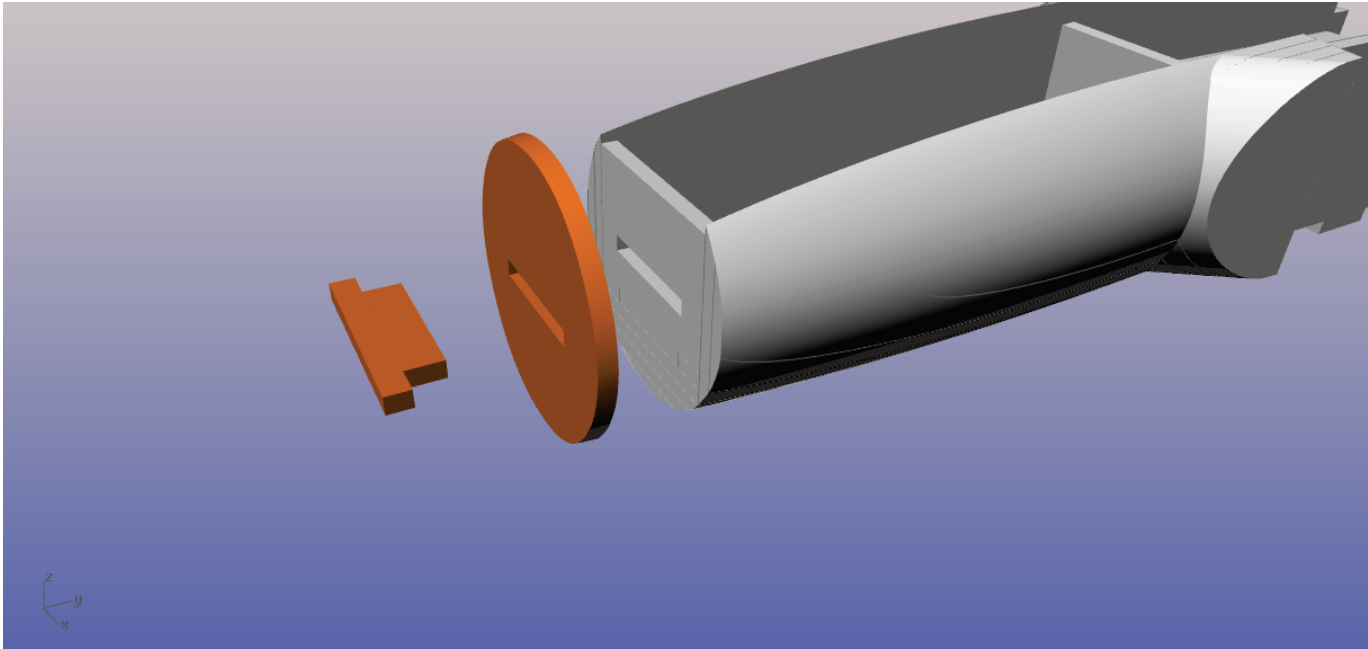


Assemble the forward retract base, using 3mm lite ply glued to depron using UHU Por.

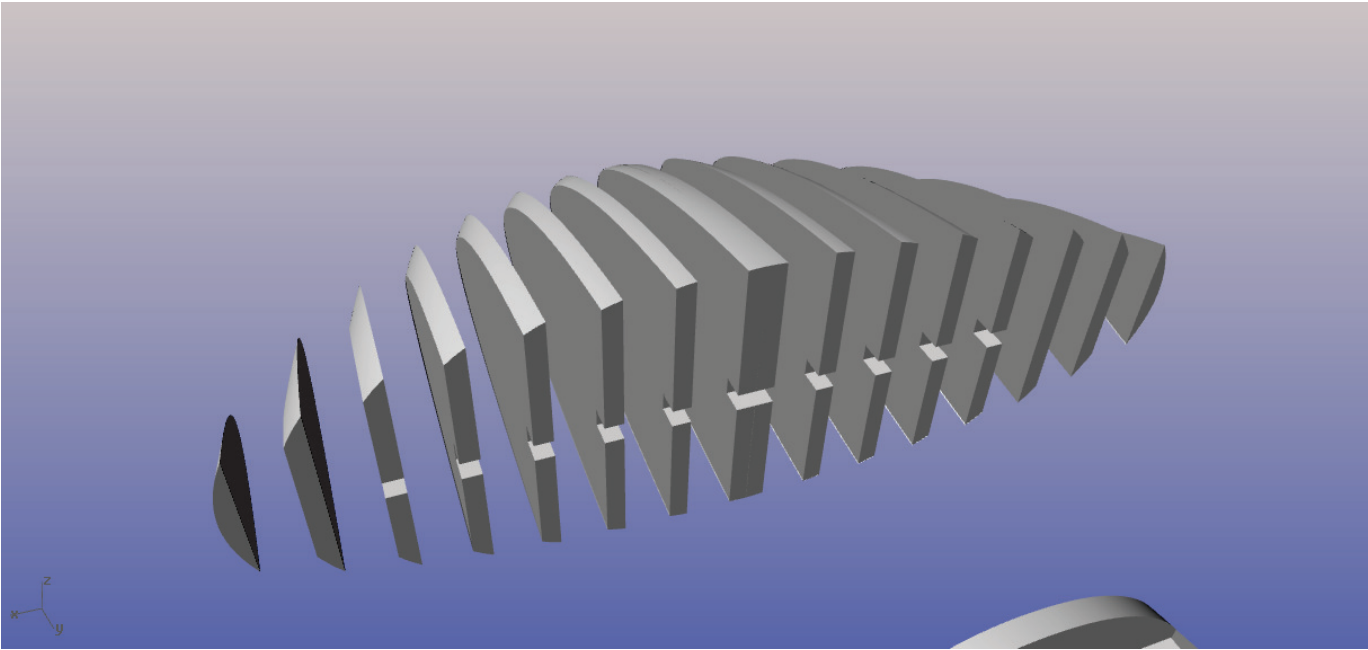


Glue together the 4 sub assemblies to make the forward fuselage assembly using UHU por.





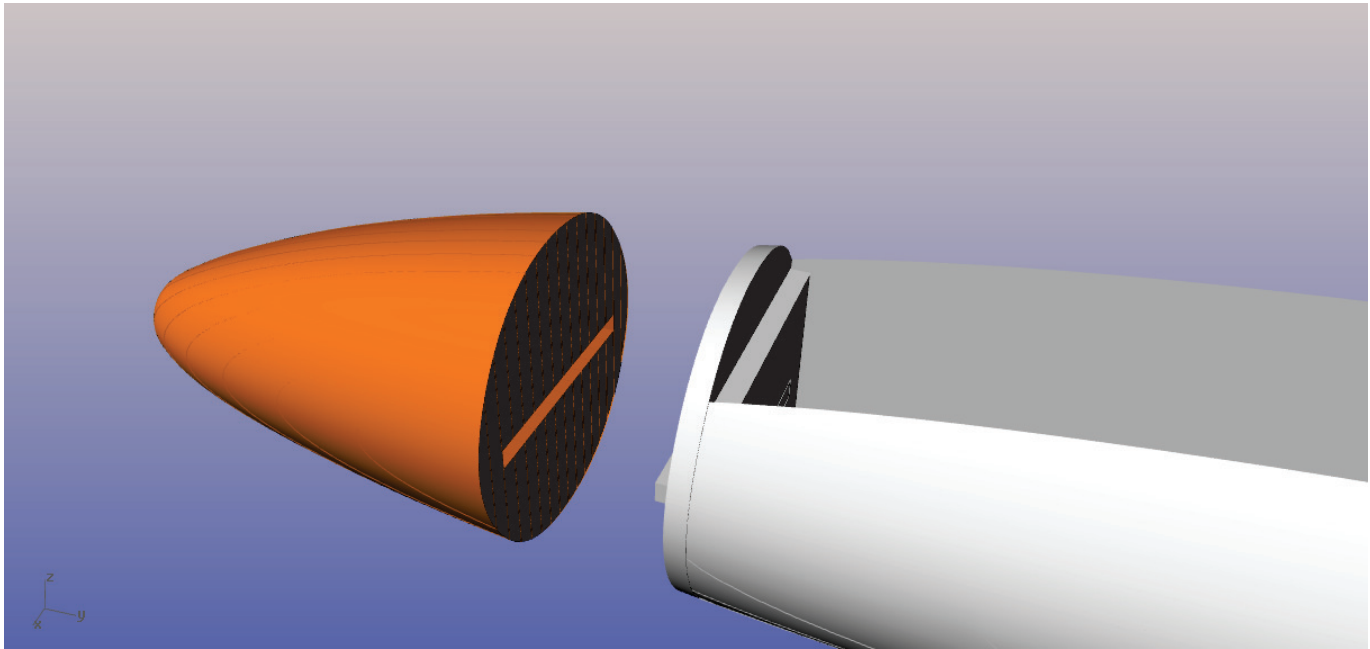
Glue bulkhead1 in place using the nose cone alignment piece.



Assemble nosecone, by laminating the 16 pieces together as shown, starting in the middle.



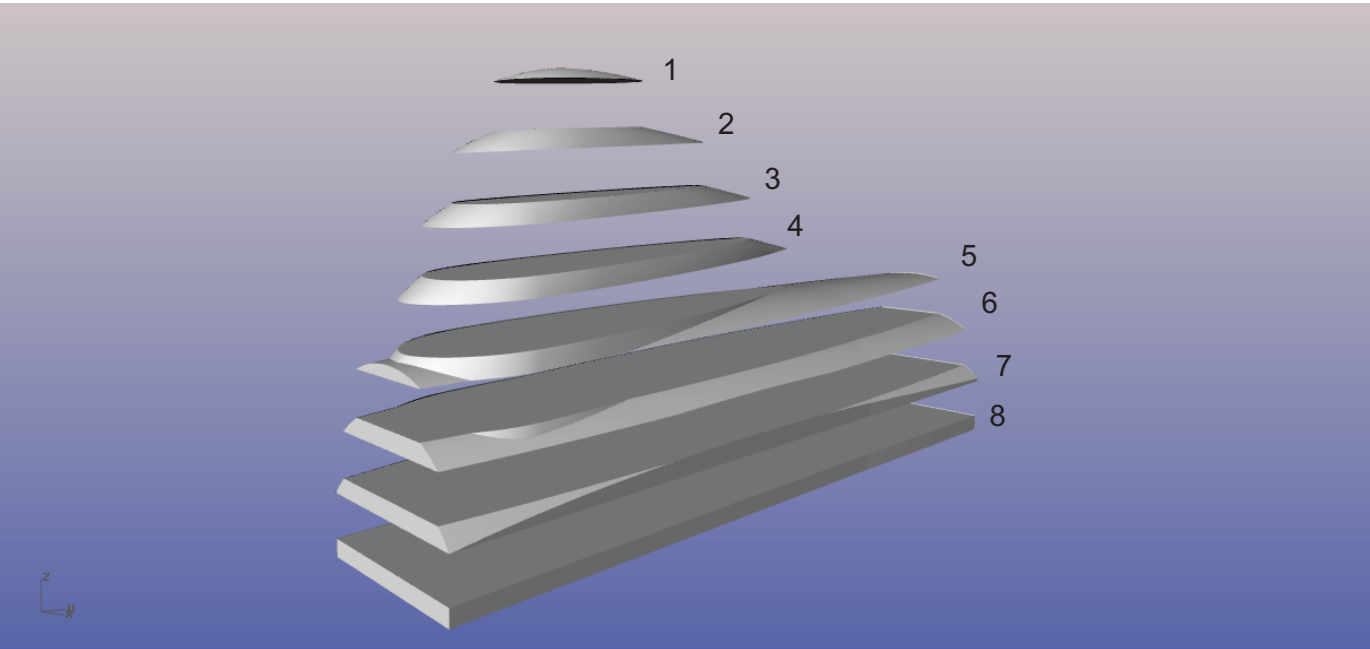




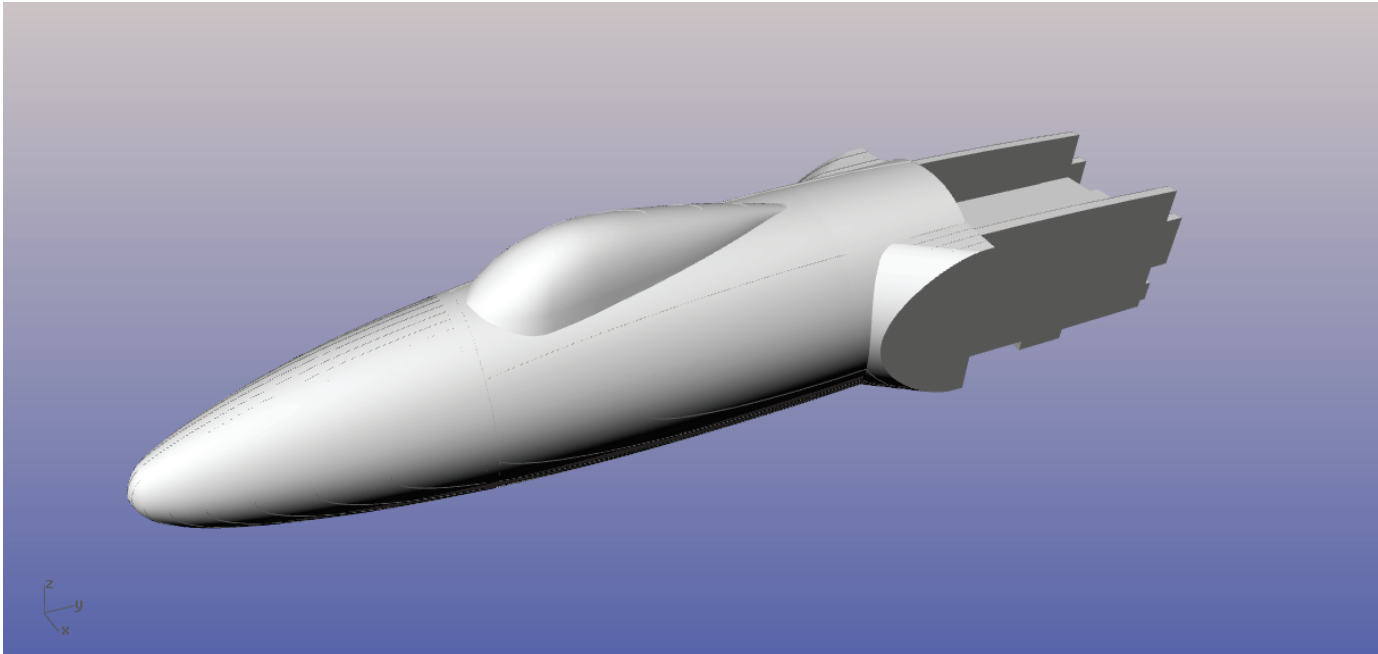
Glue the nosecone in place.



Assemble canopy, by laminating the 8 pieces together as shown, starting in the middle.





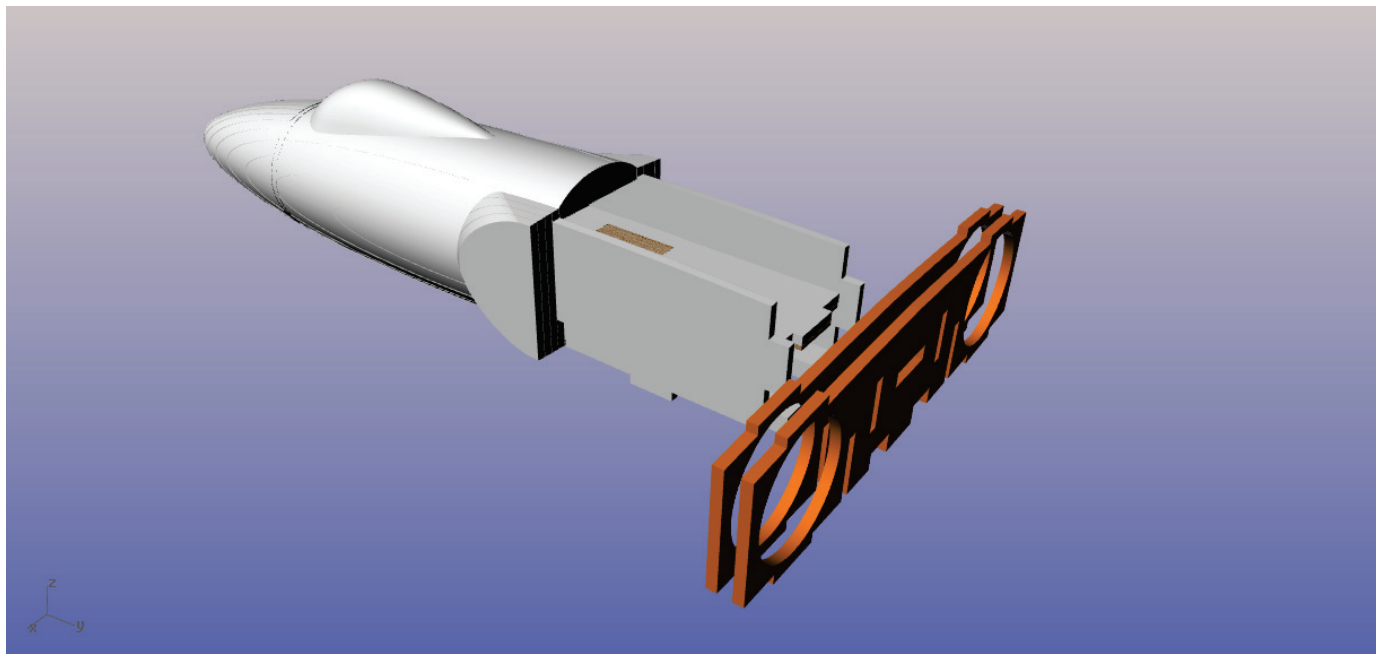


Sand the contoured depron to shape. The canopy piece is not glued to the assembly, so it can be removed to access electronics etc

**Construction guide update :-**

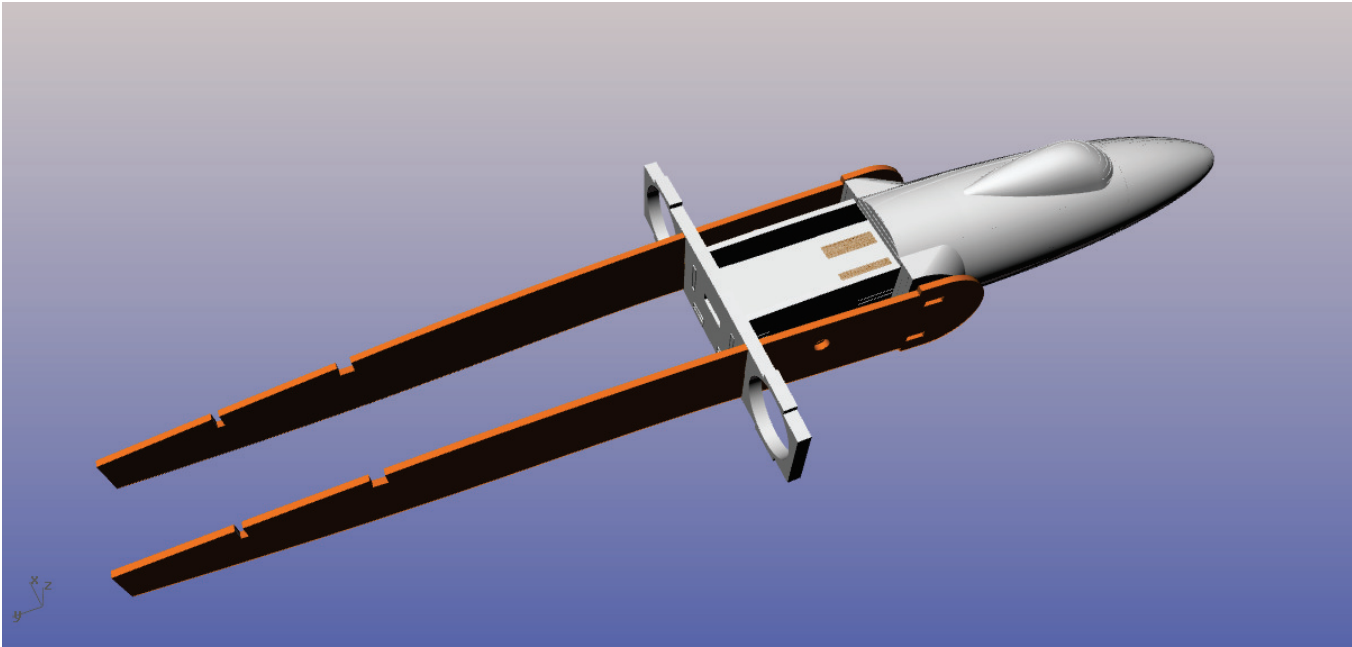
**Please mount the forward retract at this stage (see later on in the manual) and fit the steering servo into the forward fuselage sides before the aircraft is built around this area (making it difficult to mount the steering servo)**

**Test for full operation before proceeding to next stage.**

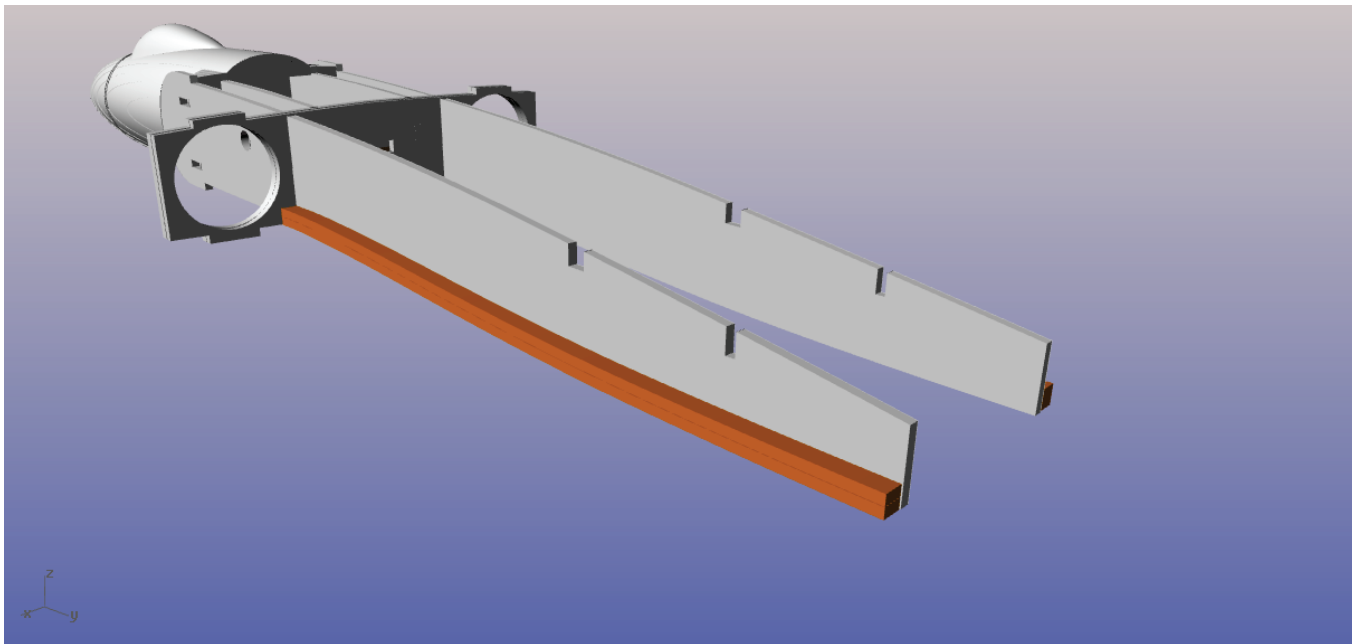


Glue together the two pieces of bulkhead 4, and then glue to the front fuselage assembly as shown.



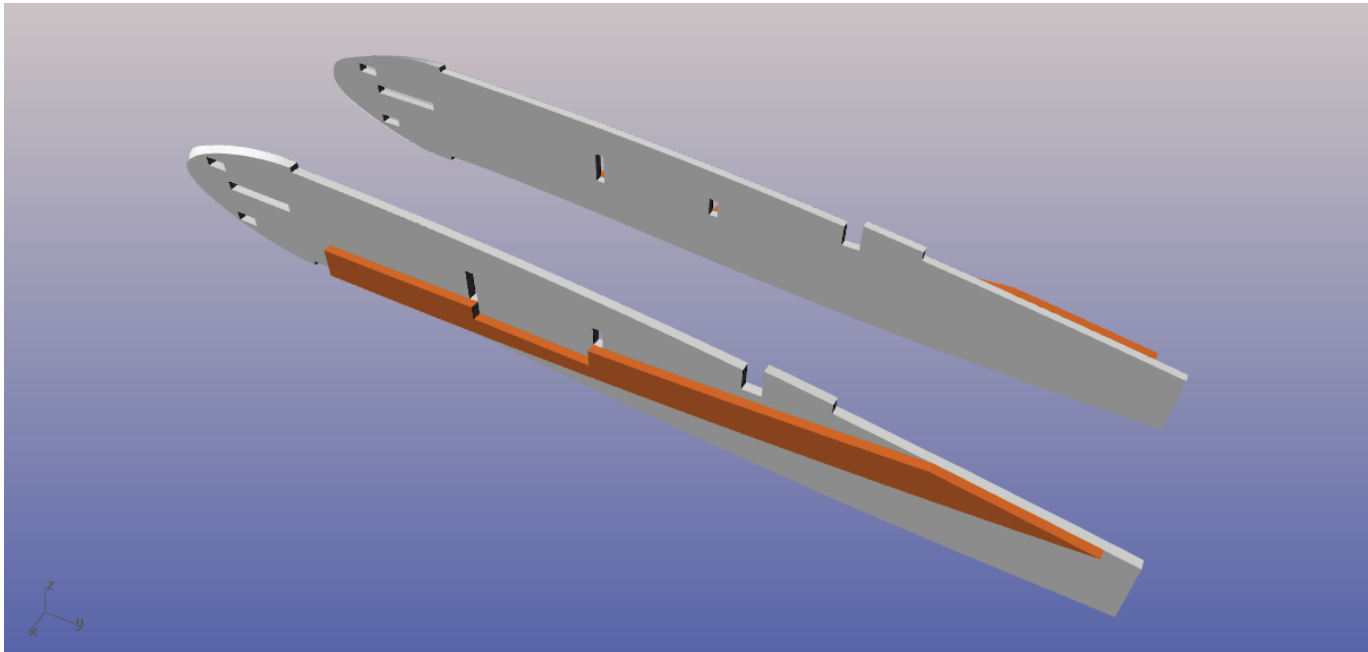


Glue the two longitudinal 1 pieces to the assembly, flex the pieces to ensure the contact adhesive works. Use a light coating of epoxy in the slots.



Glue together the 12mm wide corner reinforcement strips and then glue to longitudinal 1 pieces as shown.

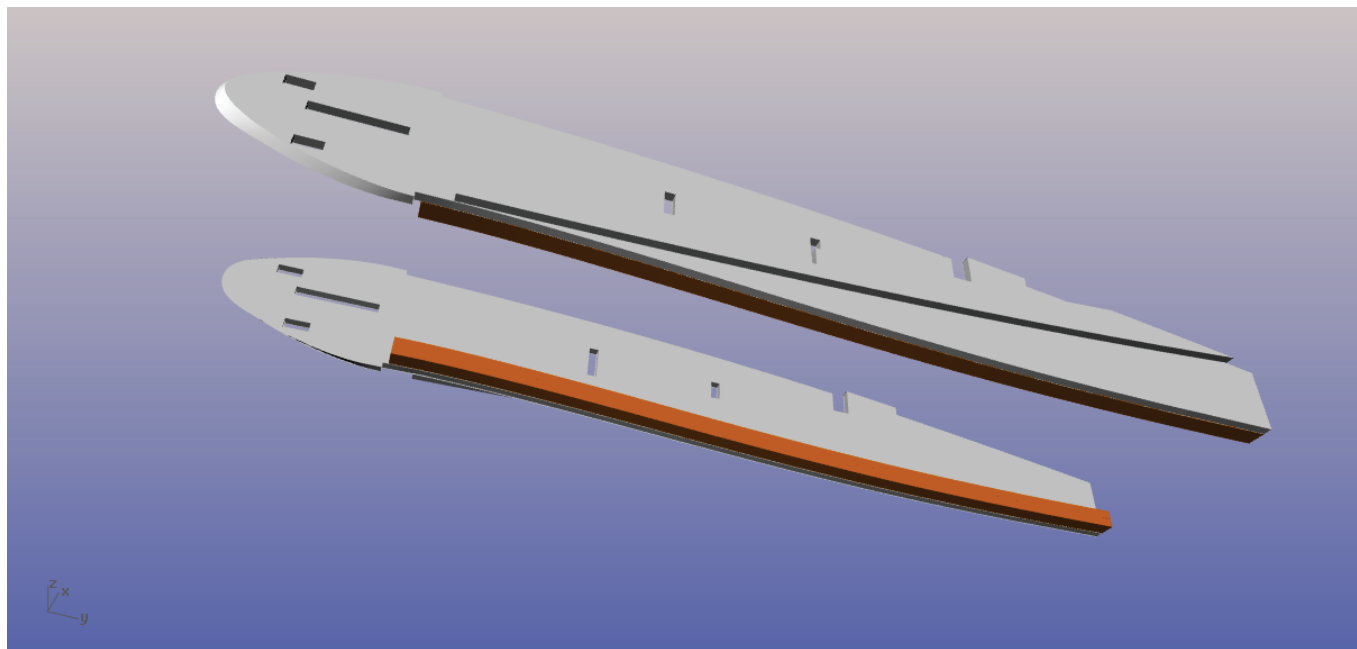




Glue the Corner braces for both Longitudinal 1 pieces in place carefully aligning vertically to the top face and bottom face in the images left and below.

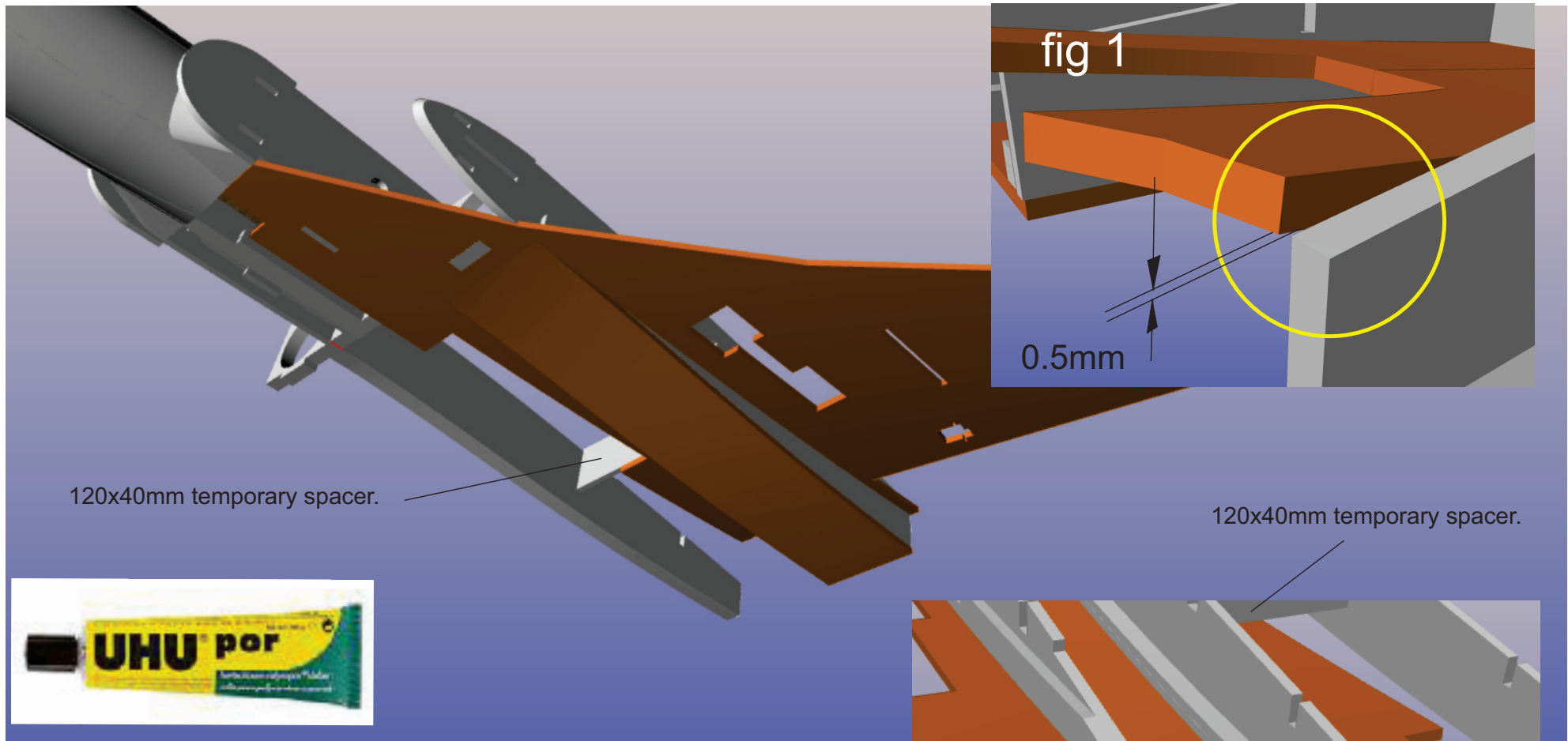
Align the cut out section horizontally with the two holes in Longitudinal 1 as shown.

Do this mirrored to both port and starboard



On each of the inside faces of the Longitudinal 1 pieces, glue 2 x 12mm corner strips as shown.

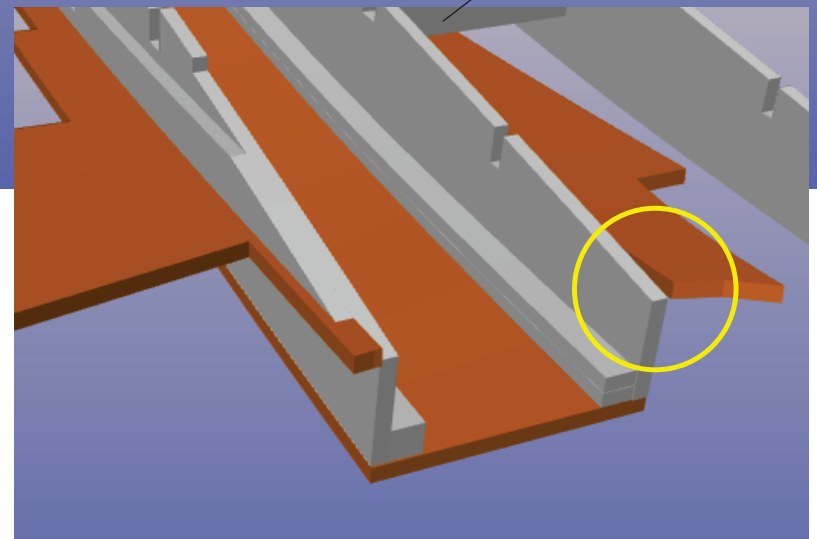




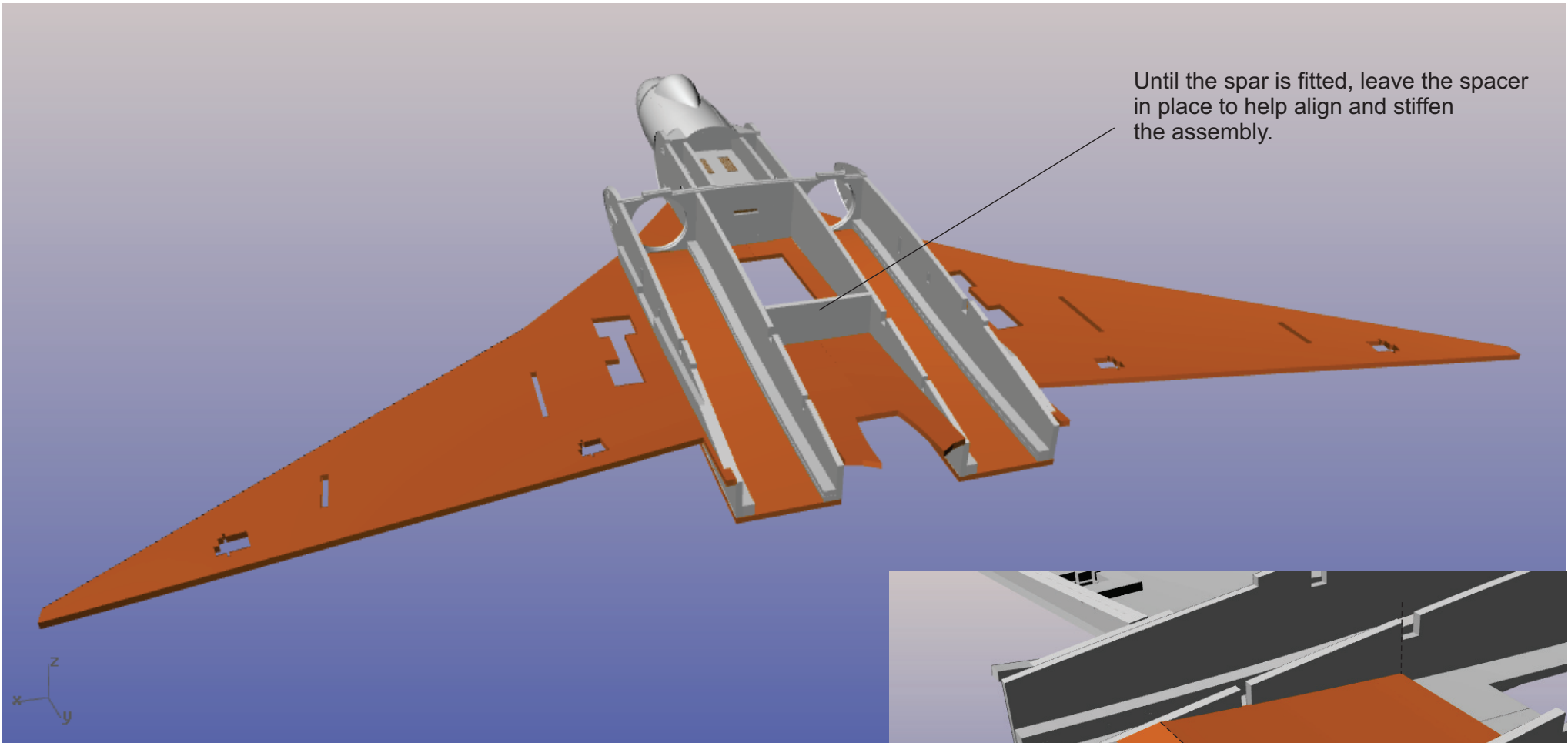
Taking great care not to break the lower wing pieces, carefully assemble the components as shown here.

Using masking tape to hold in position use a 120mm x 40mm scrap bit of depron (or the spar) to act as a spacer aligned with the spar location to act as a guide for bending the area between the engine nacelle area.

The wing self locates onto the tabs on the fuselage assembly, with the area between the engine nacelle area, located by lifting upward (naturally curving the depron) until the end is 0.5mm above longitudinal 1. (see fig 1)



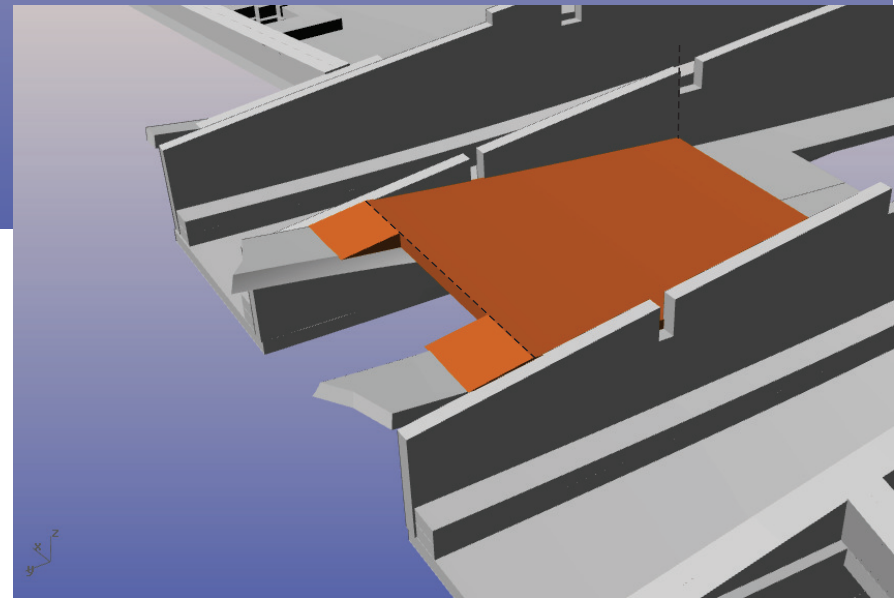


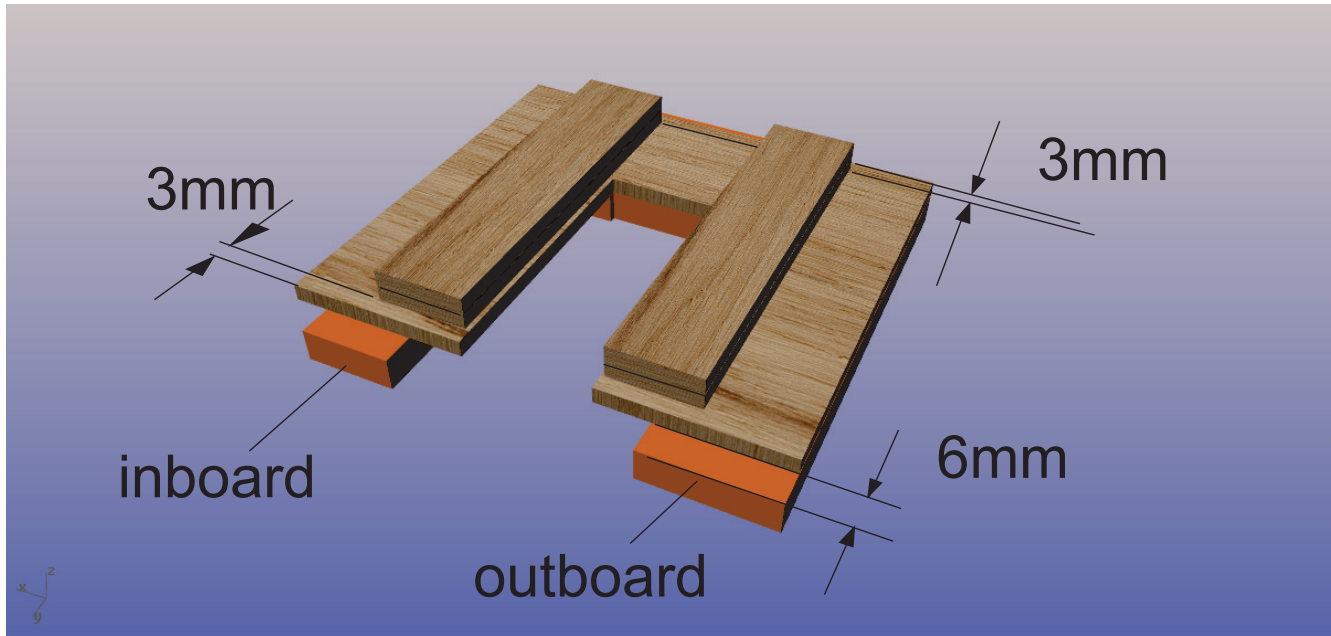


Until the spar is fitted, leave the spacer in place to help align and stiffen the assembly.

Repeat the previous step for the opposite wing.

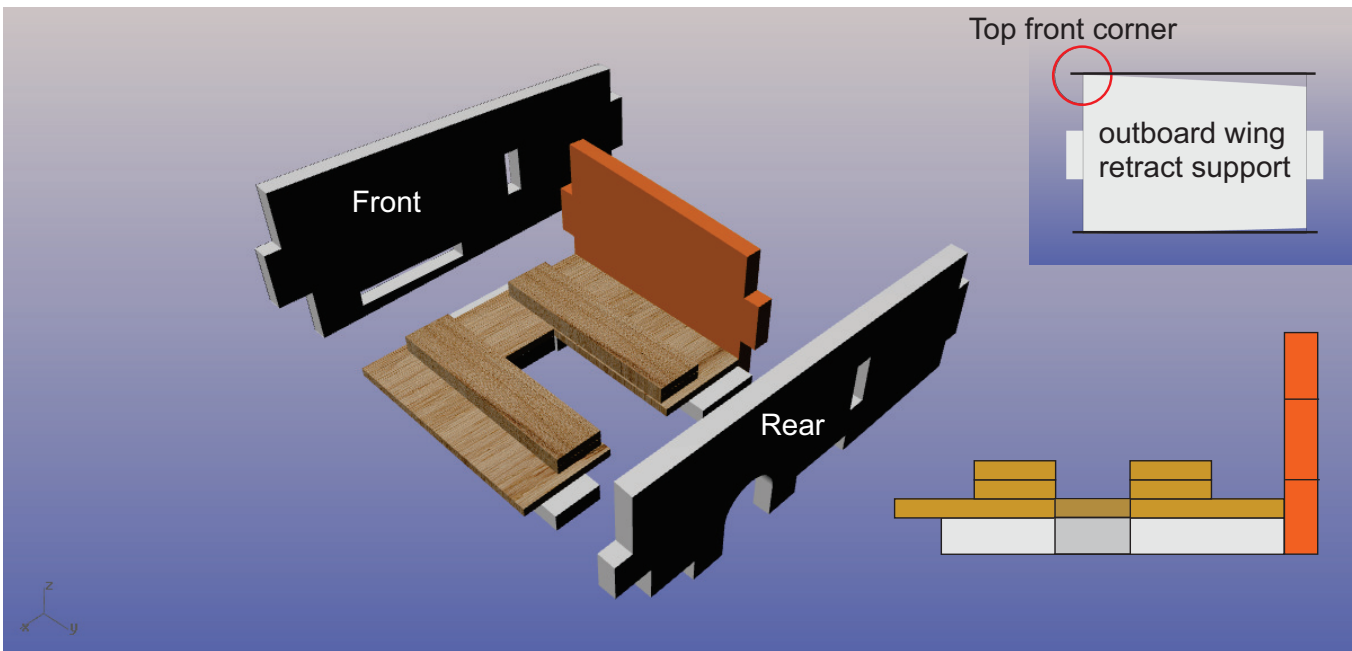
Shape the lower wing reinforcer, tapering the edge as shown here, and glue to the lower wings, ensuring that the forward edge aligns with the spar slot, and the rear edge being flush with the top edge of longitudinal 1.





Glue together the 3mm lite ply pieces as shown here, and then onto the lower wing retract support depron pieces.

Make both mirrored assemblies.

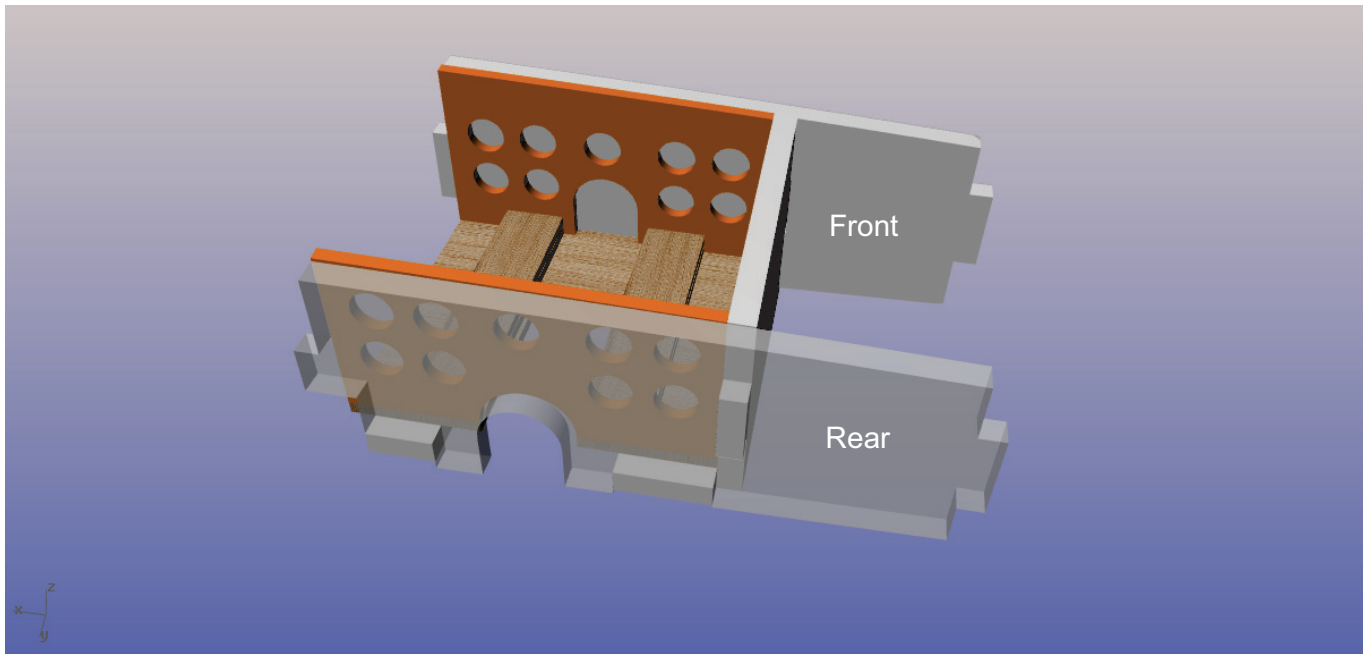


Onto the outboard edge of the lower wing retract support piece, glue the outboard wing retract support noting the correct orientation

Then glue the wing undercarriage front and rear latitudinals onto the assembly.

make both mirrored assemblies.





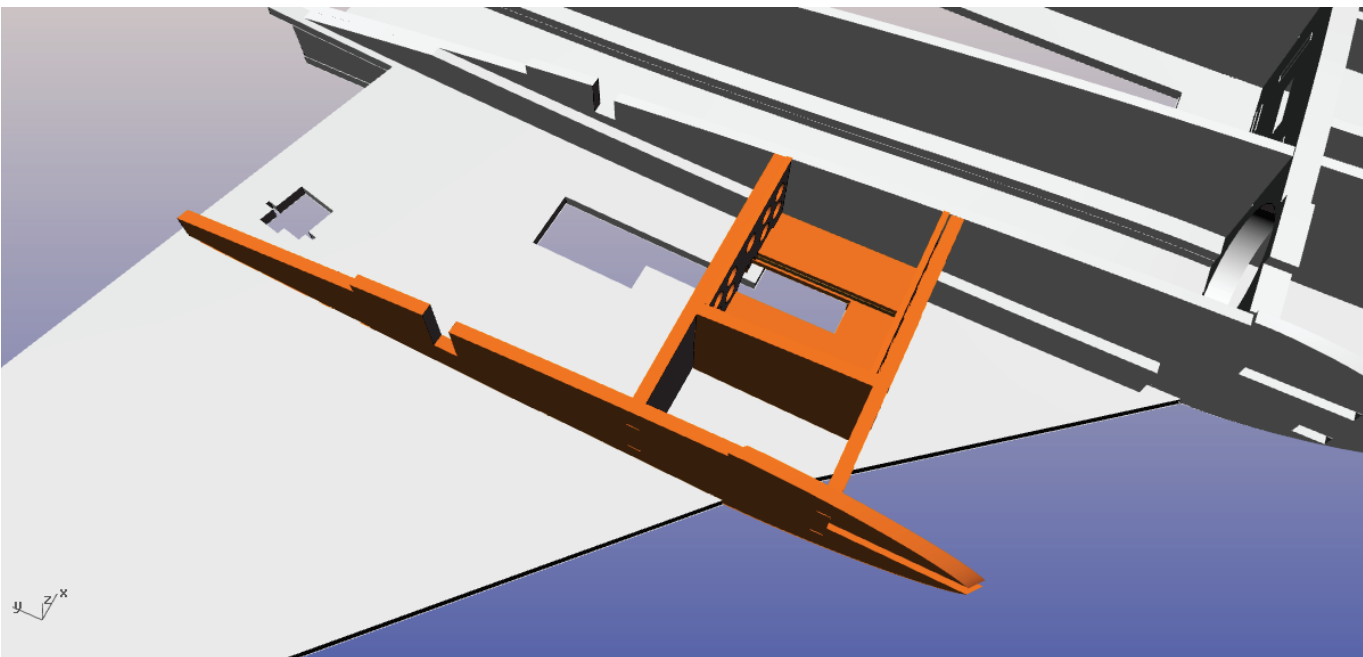
Drill out to save weight, then glue the front and rear plywood load spreaders in place as shown. They should sit on top of the horizontal ply pieces, glued to the front and rear undercarriage latitudinals.

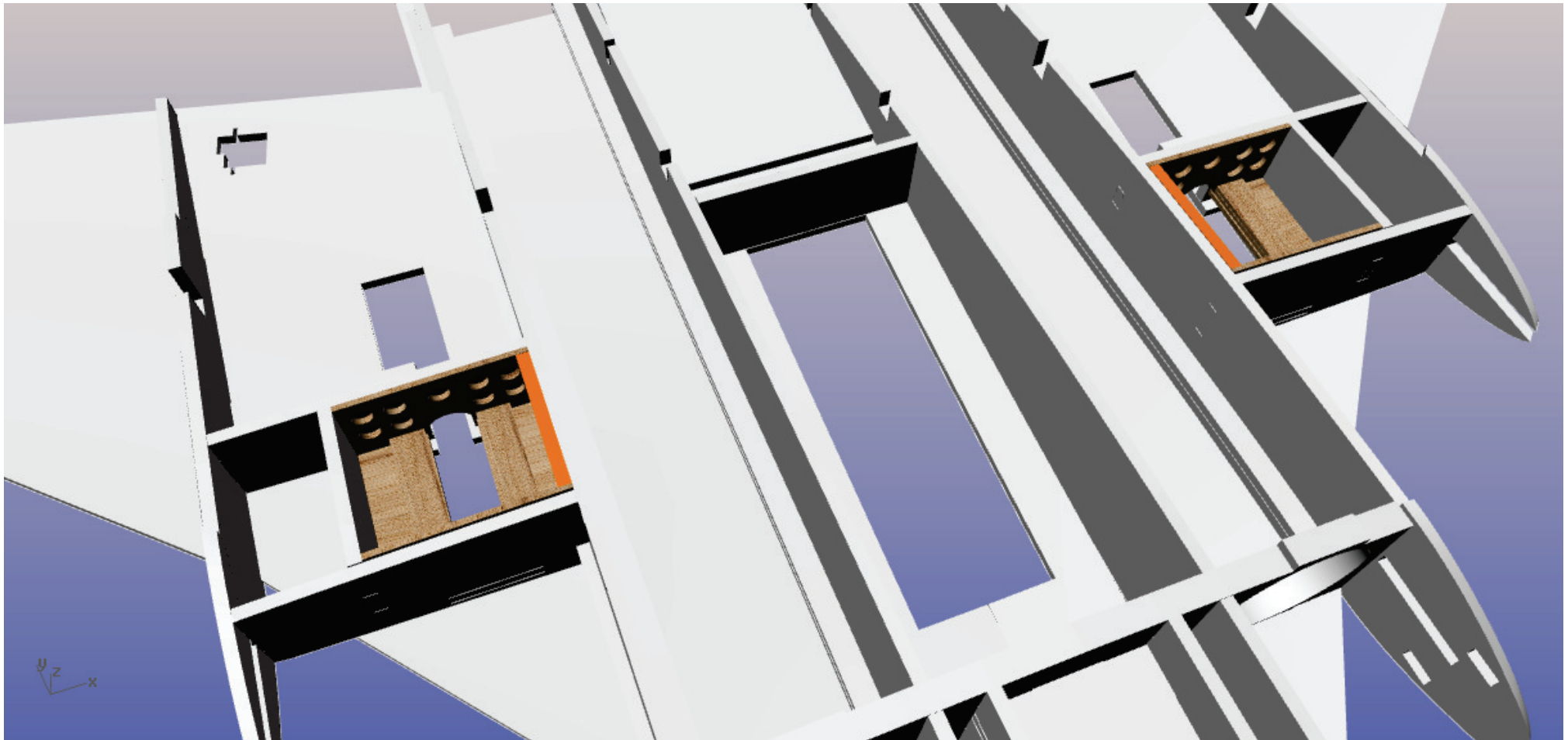
Repeat on the mirrored version.



Glue the longitudinal 3 piece to the assembly, then locate the tabs in the slots in the wing and longitudinal 2 pieces.

Repeat on the other wing.

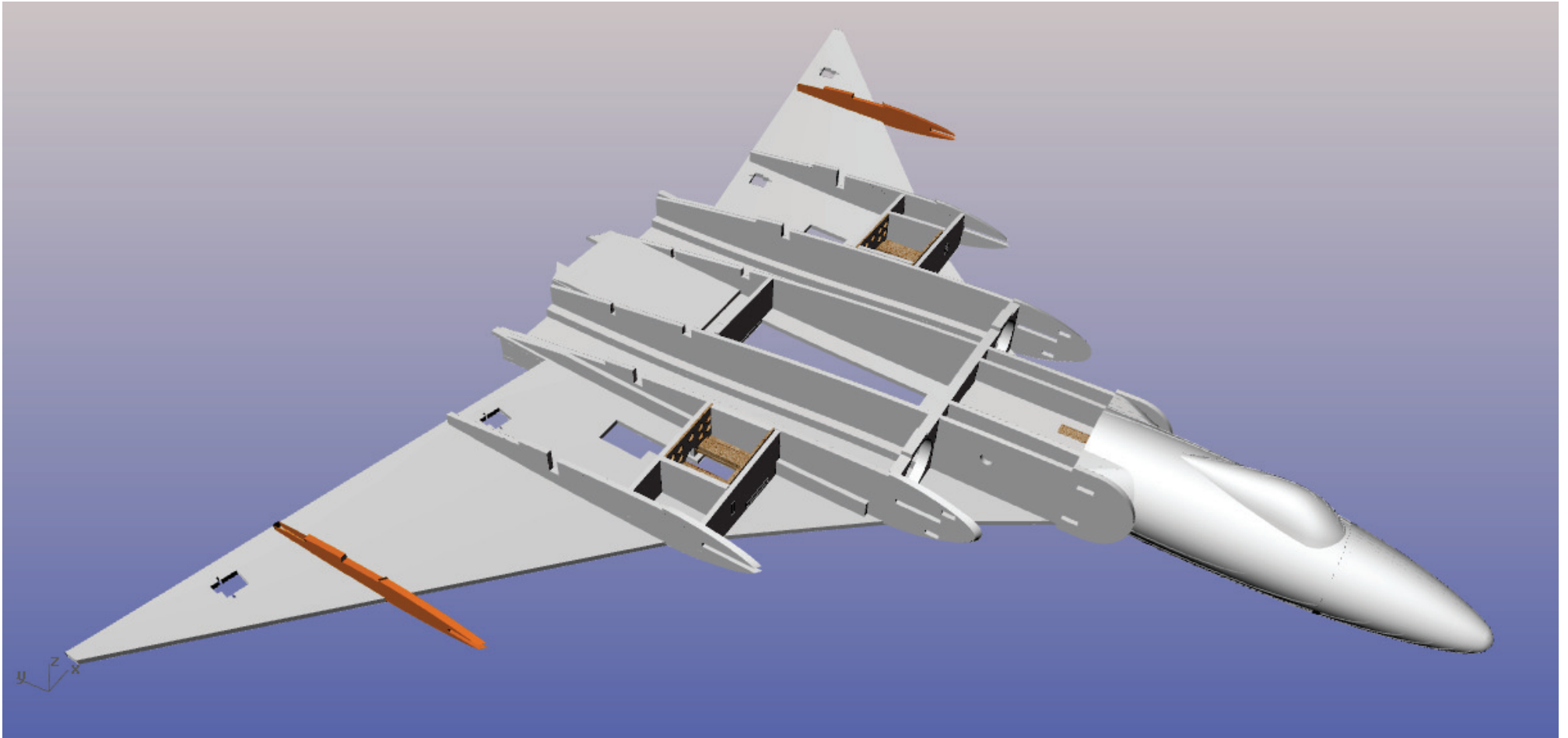




Glue the inboard vertical retract support pieces in place as shown here.



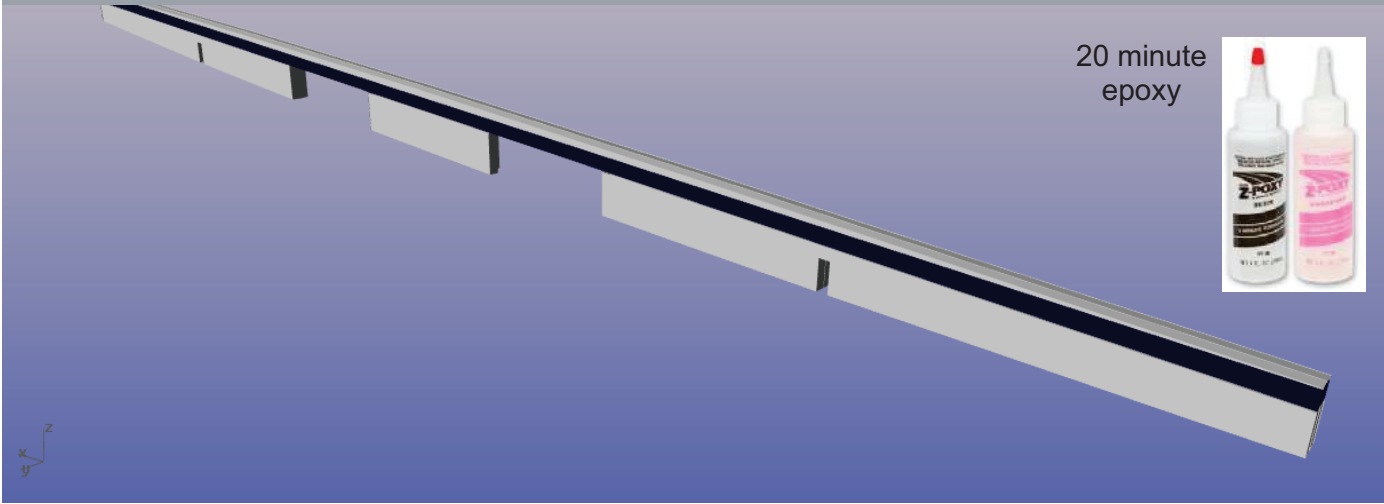
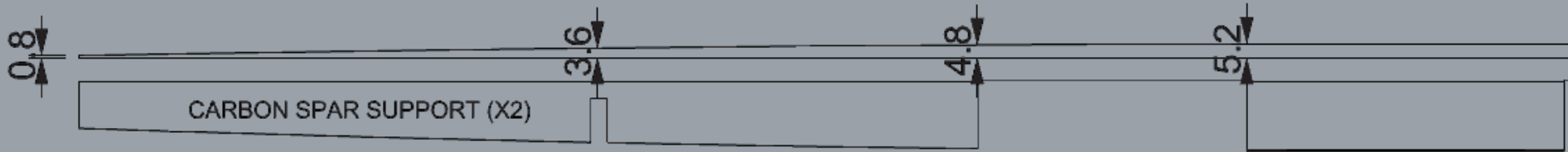




Glue the longitudinal 4 pieces onto the assembly as shown.



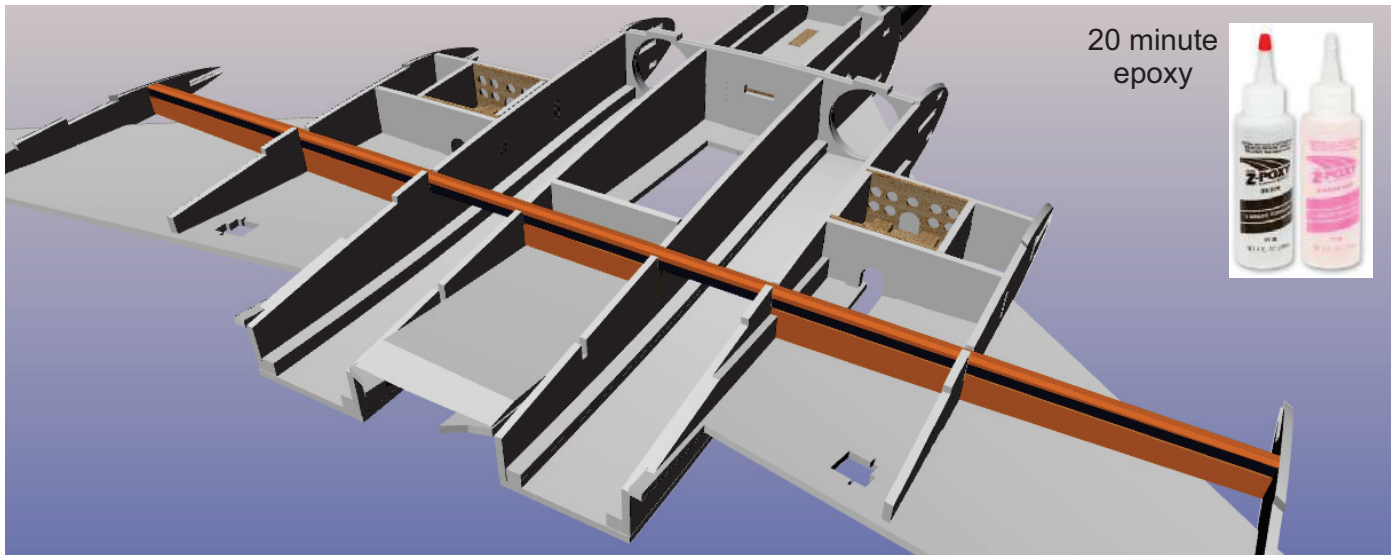
**VULCAN**



Using 20m epoxy, Create the Spar assembly, by glueing the depron pieces to the 10mm square sectioned carbon tube (1m).

I found it helpful to glue bigger strips of depron to the top of the spar and then sand down to size due to the very thin nature of it. I have included dimensions above.

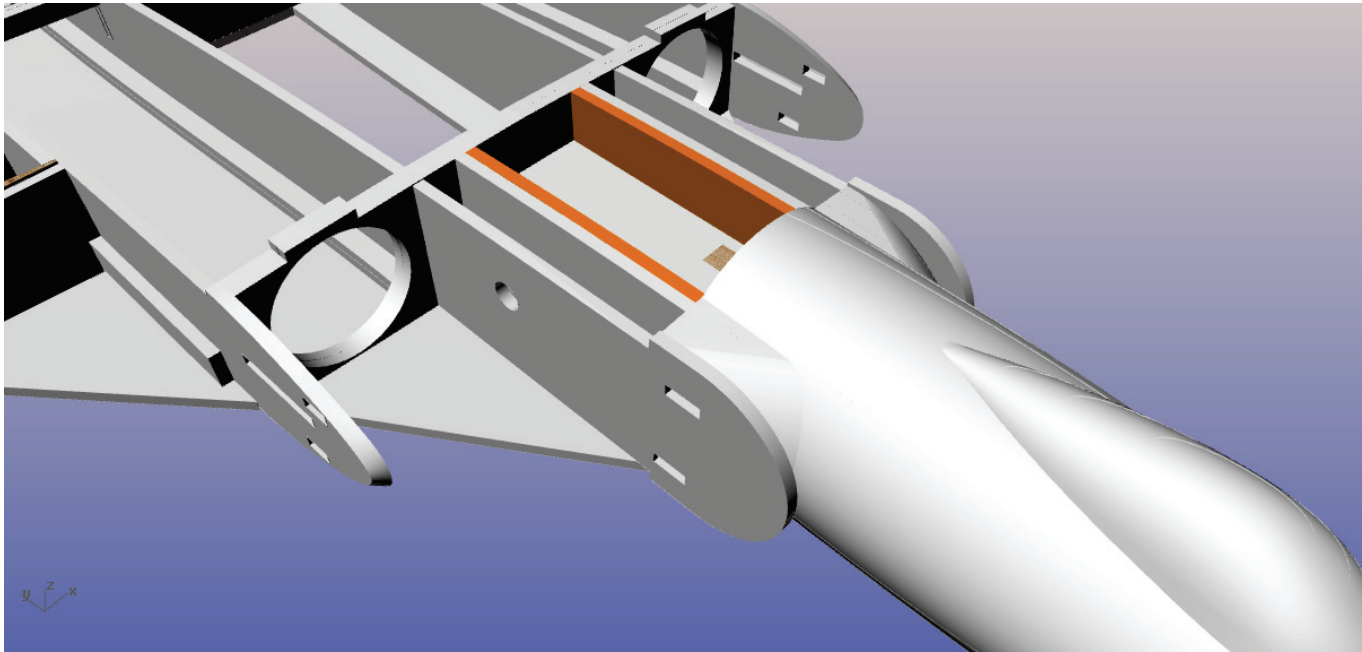
Ensure accurate location of parts to



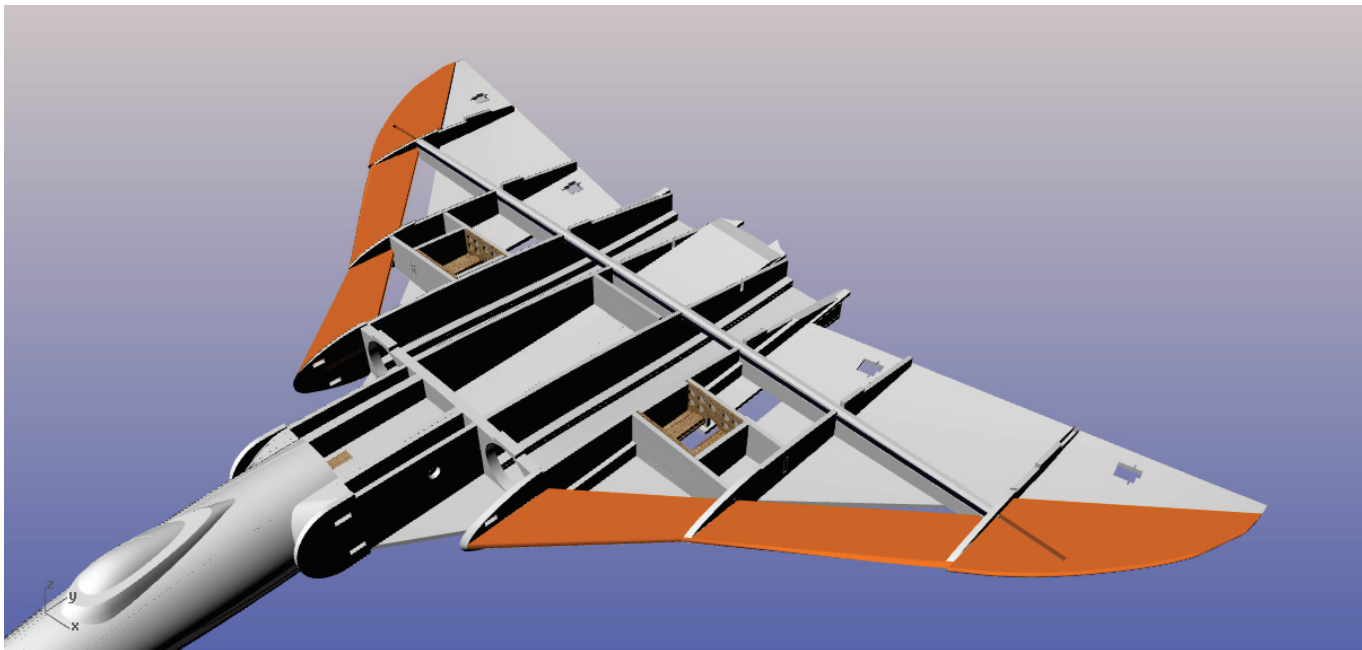
Dry fit the spar into the aircraft. the airframe will not be perfectly aligned, so prop up the wings etc to help prepare the model for accepting the spar. as part of this process, offer the upper wing pieces to help the alignment. The two parts should meet in the middle.

Using 20m epoxy (not 5m!) assemble. Dry fit the upper wing (careful not to get epoxy on it by using masking tape) and pull the upper wing together using masking tape.

When the glue has set, remove the upper wing.



Glue the front retract cheek supports in place using UHU por.



Slide the two leading edge pieces into place using epoxy (sparingly)

