

Photograph shown is the real aircraft.



# **Victor History**

The Handley Page Victor was a British jet-powered strategic bomber developed and produced by Handley Page during the Cold War. It was the third and final V bomber to be operated by the Royal Air Force (RAF), the other two being the Avro Vulcan and the Vickers Valiant. The Victor had been developed as part of the United Kingdom's airborne nuclear deterrent. It was retired from the nuclear mission in 1968, following the discovery of fatigue cracks which had been exacerbated by the RAF's adoption of a low-altitude flight profile to avoid interception.

A number of Victors were modified for strategic reconnaissance, using a combination of radar, cameras, and other sensors. As the nuclear deterrence mission was given to the Royal Navy's submarine-launched Polaris missiles in 1969, a large V-bomber fleet could not be justified. Consequently, many of the surviving Victors were converted into aerial refuelling tankers. During the Falklands War, Victor tankers were used to refuel Vulcan bombers on their way to and from the Black Buck raids.

The Victor was the last of the V-bombers to be retired, the final aircraft being removed from service on 15 October 1993.

Available as a twin 64 EDF, or pusher prop with or without retracts.

I discovered when I specified a particular retract for my previous Vulcan design, it later became discontinued. In the case of the Victor I will outline the sizes required for the retracts, so you can find in the future after from creating this design.

# **Designers Notes**

This is a more involved build and I wouldn't recommend if you haven't built a Jetworks design before.

There are lots of complex shapes on the victor, so in order to make it easier I have created lots of 3d printable parts if you have access to a 3D printer.

If you have a 3D printer I recommend you consider LWPLA to reduce weight easily.

It can be built with or without 3D printed parts.







# 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-baloons 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.

### **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!)

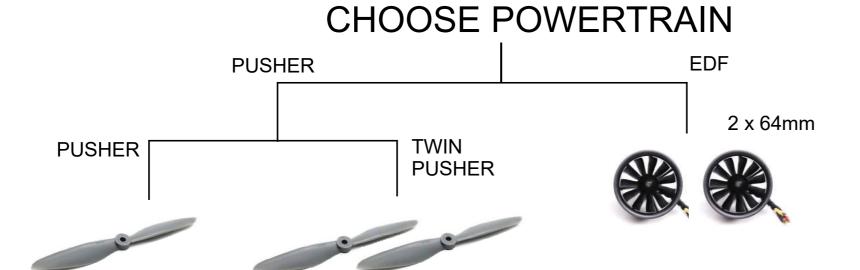
IMPORTANT Wherever the plans call for marking guidelines onto the depron, please ensure that you do otherwise it can cause problems later on. I suggest you use a Sharpie Fineliner to transfer the lines.

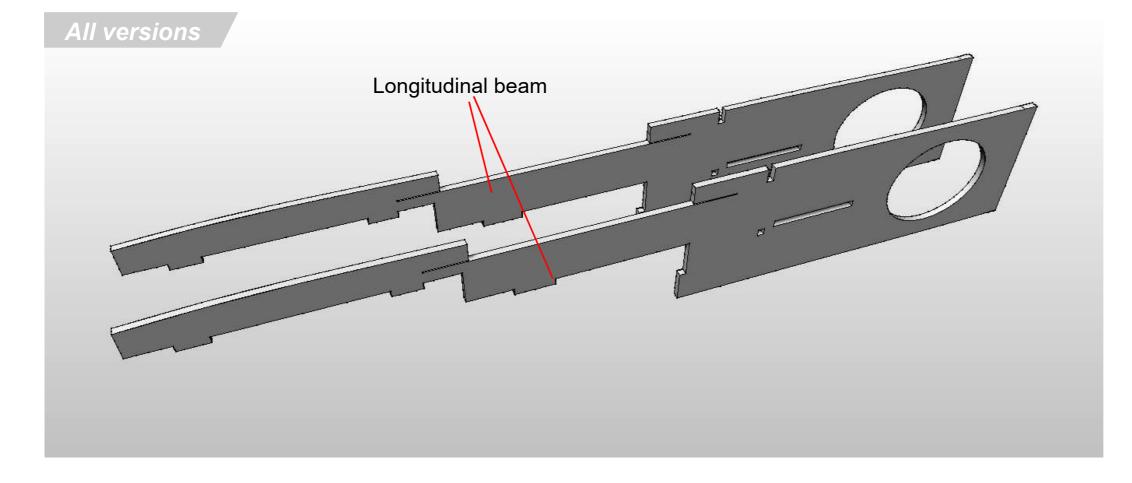
## Glueing parts together.

- 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.



Choose your prefered variant and its powertrain.



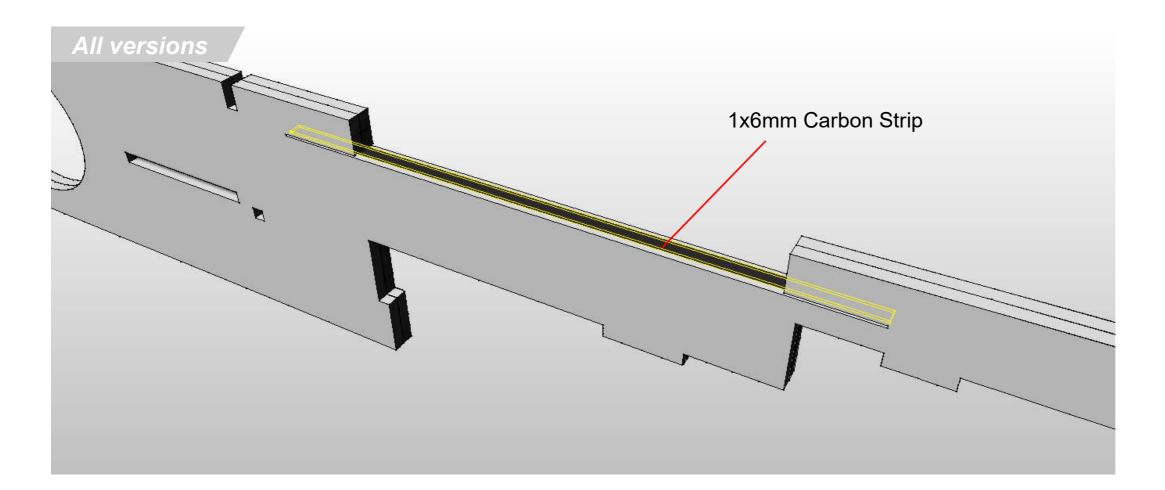


Glue the two **Longitudinal Beam** pieces together.



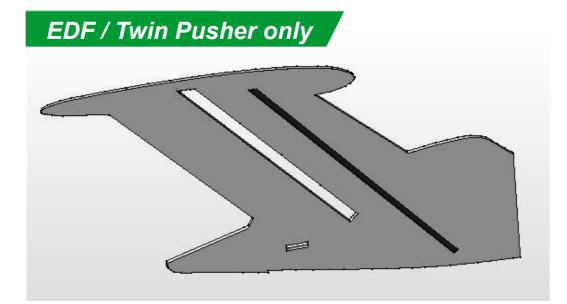


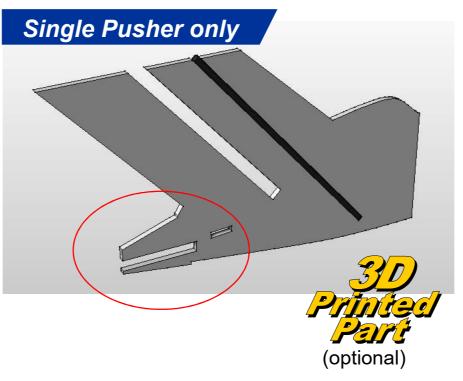




Glue a 1mm x 6mm carbon strip on the centreline into the slot and along the top as shown using epoxy.





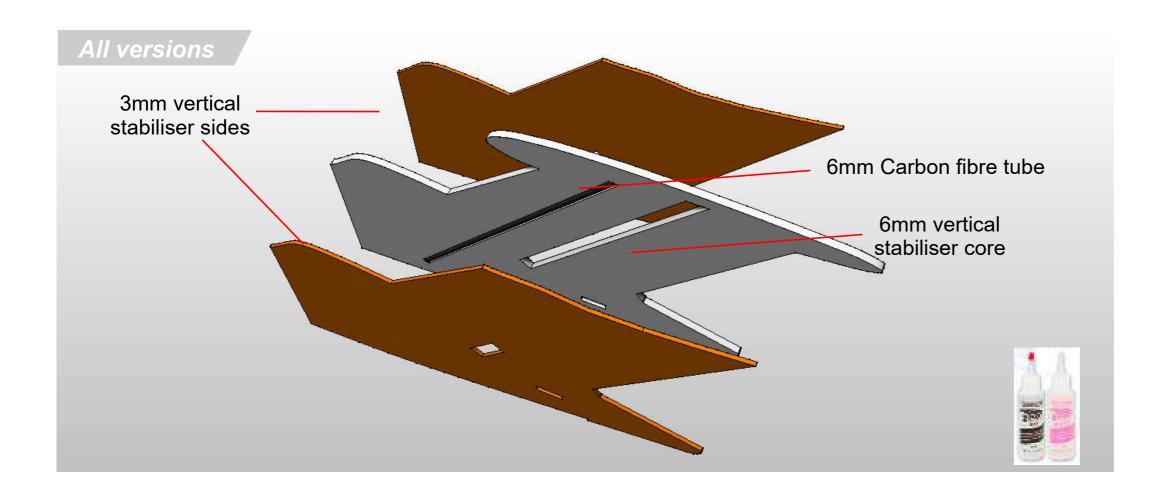




Pick your chosen tail arrangement - whether single pusher or EDF, 3D printed or Non 3d printed tail bullet. Glue the 6mm Carbon tube in place using epoxy and masking tape - tip: Try Washi Tape, its great!



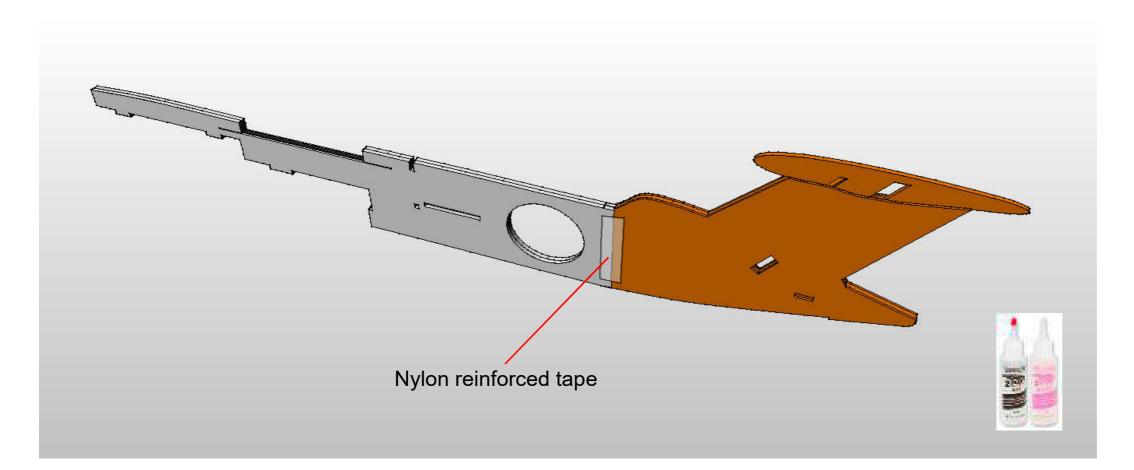




Glue the two **3mm Vertical Stabiliser sides** to the vertical stabiliser core.

Ensure no glue gets onto the inside faces of the slot otherwise it will make it hard to pass your servo cables down it.





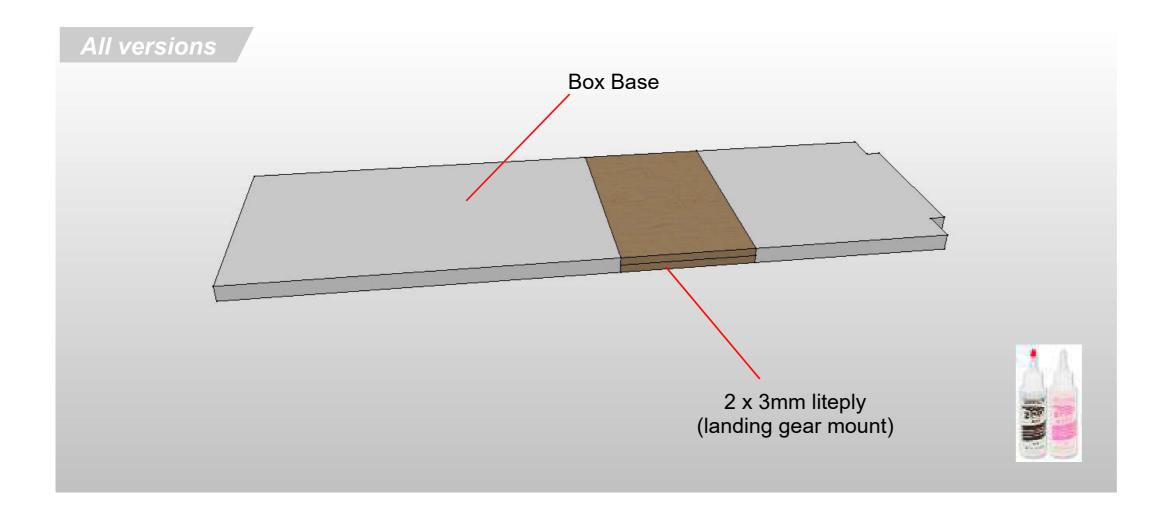
Glue the two parts together using epoxy - ensure a good gap-filling bond.

Lay straight while the glue sets.

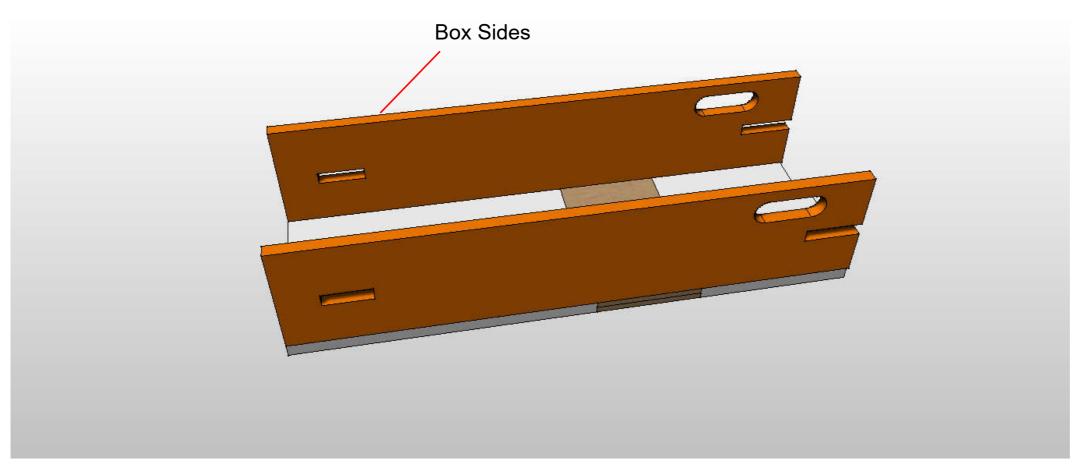
For additional support put a couple of strips of Nylon reinforced tape.







Glue the two 3mm lite-ply landing gear pieces together, then glue to the depron pieces of the **box base** 

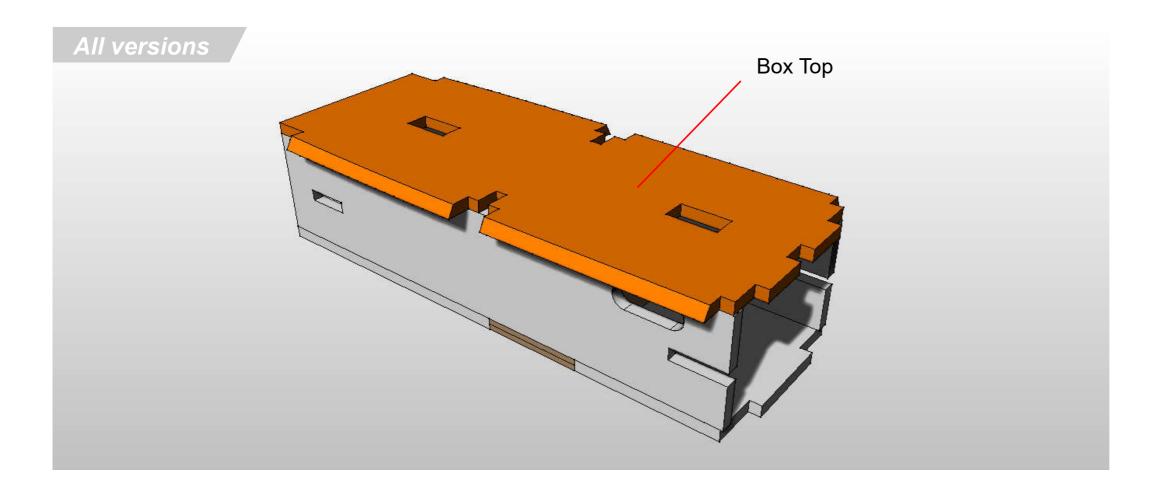


Glue the two **Box Side** pieces to the assembly as shown. make note of the correct orientation of the pieces.



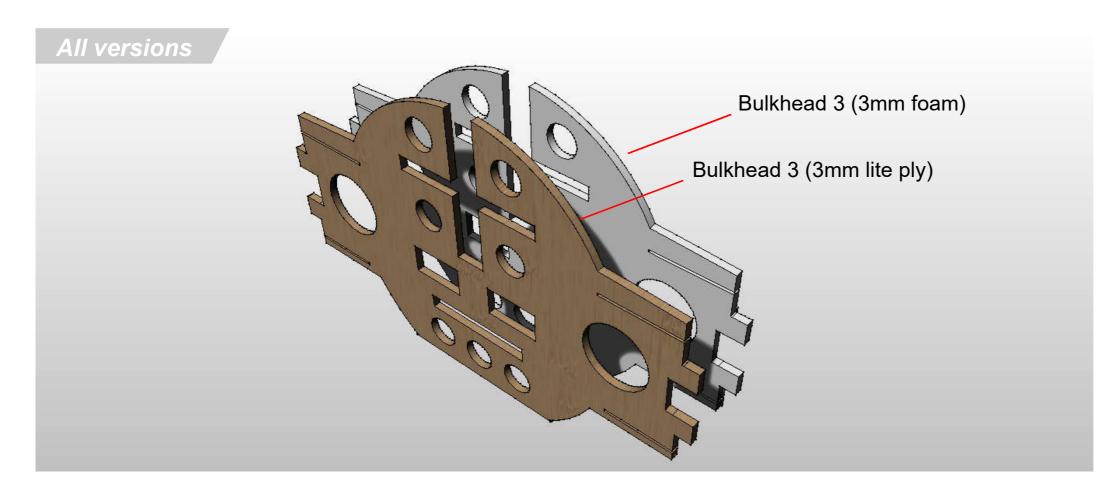






Glue the **Box Top** to the Box assembly. Pay attention to the correct orientation



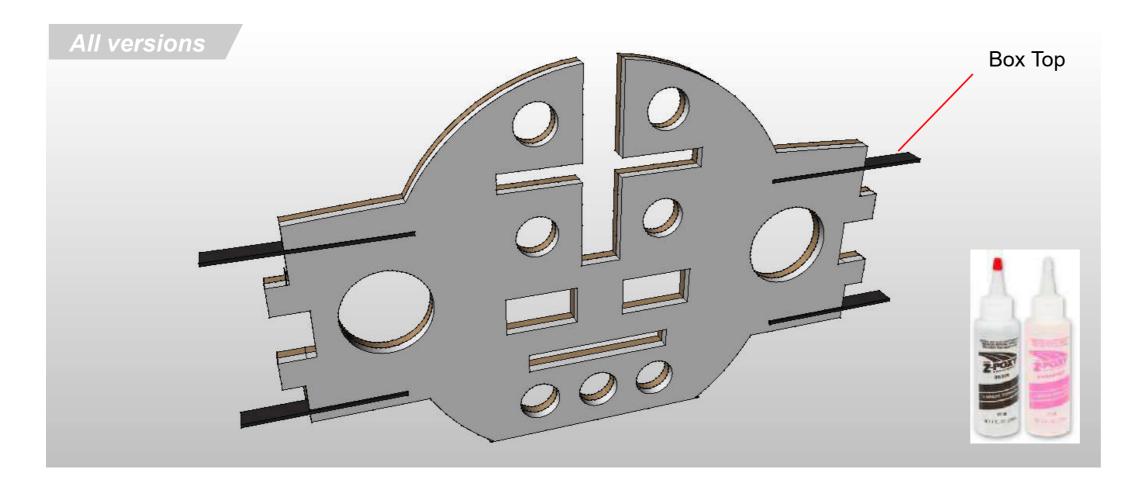


Glue the two parts of **Bulkhead 3** (3mm liteply+3mm foam) together

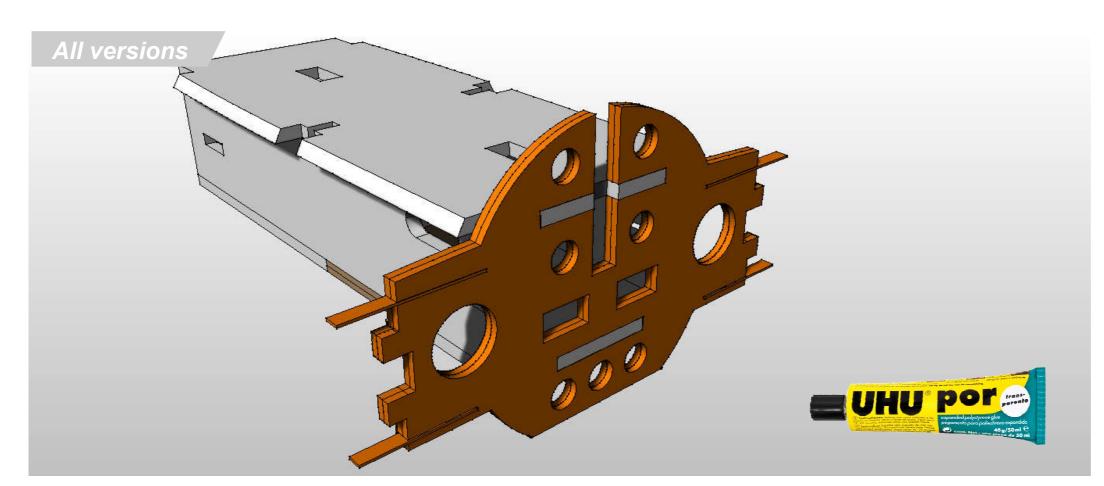








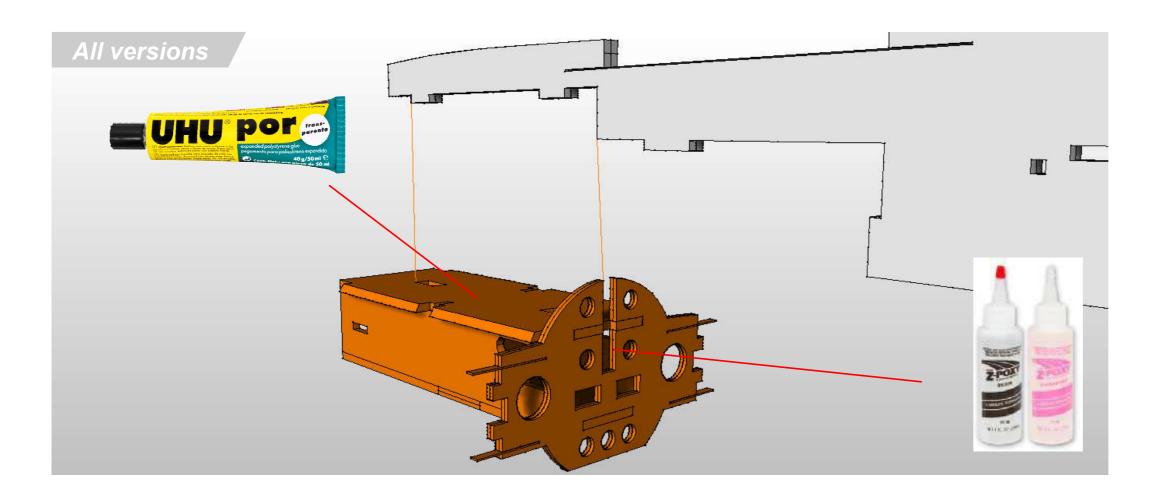
Glue the four pieces of carbon 1x6mm flat strip into the slots as shown - cut each one 47mm long



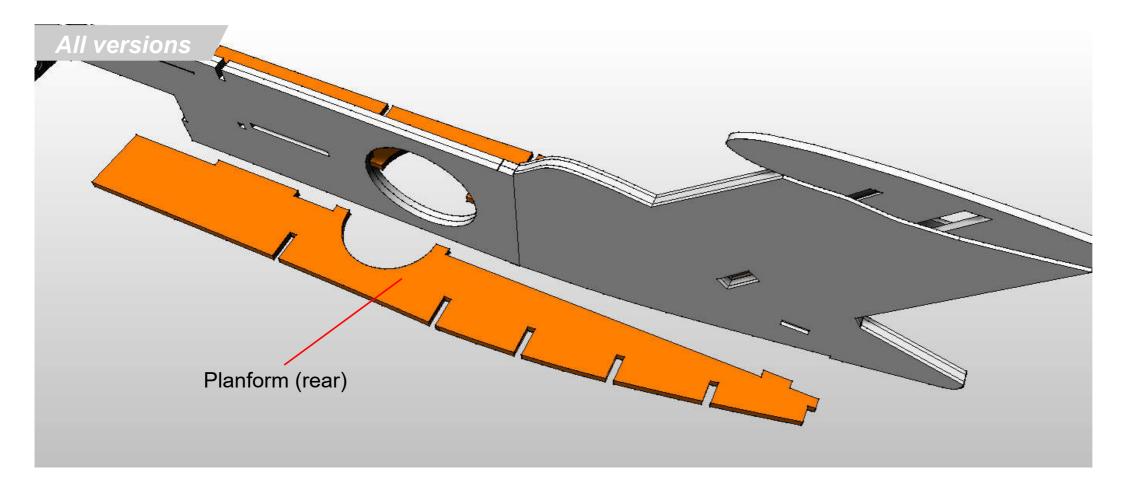
Glue **Bulkhead 3** assembly to the box assembly.







Glue the Box assembly to the longitudinal beam assembly using UHU por for the top, and Epoxy for the slot.

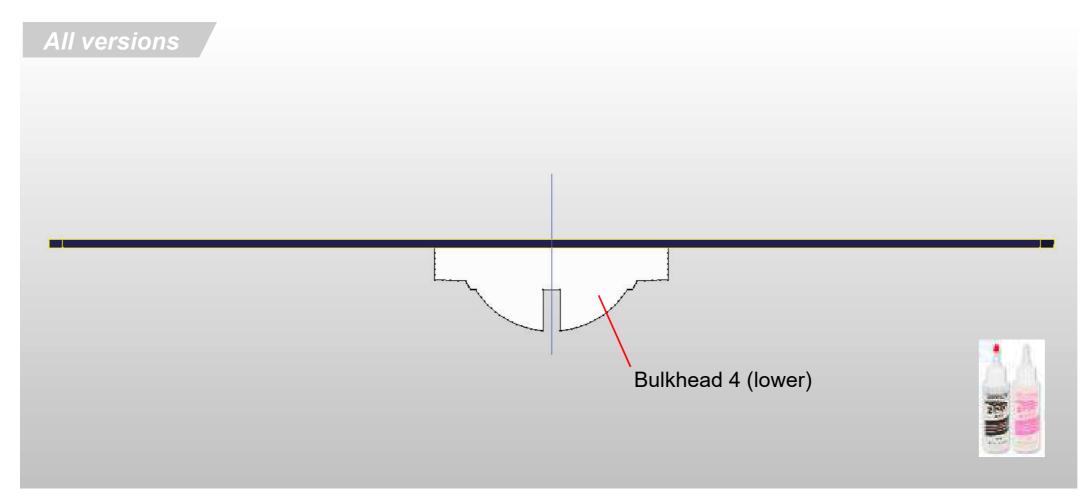


Glue **Planform (Rear)** to the assembly.



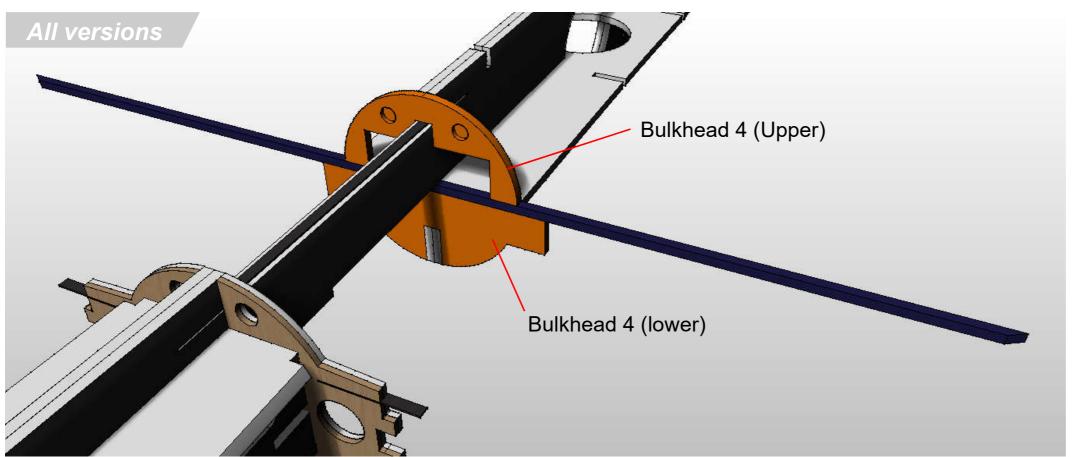






Cut the 6mm box sectioned carbon pultruded tube to size and shape the ends to the correct angle.

Carefully mark the centreline on the carbon and glue on the centreline of **Bulkhead 4 (lower)** 



Glue the spar assembly onto the fuselage.

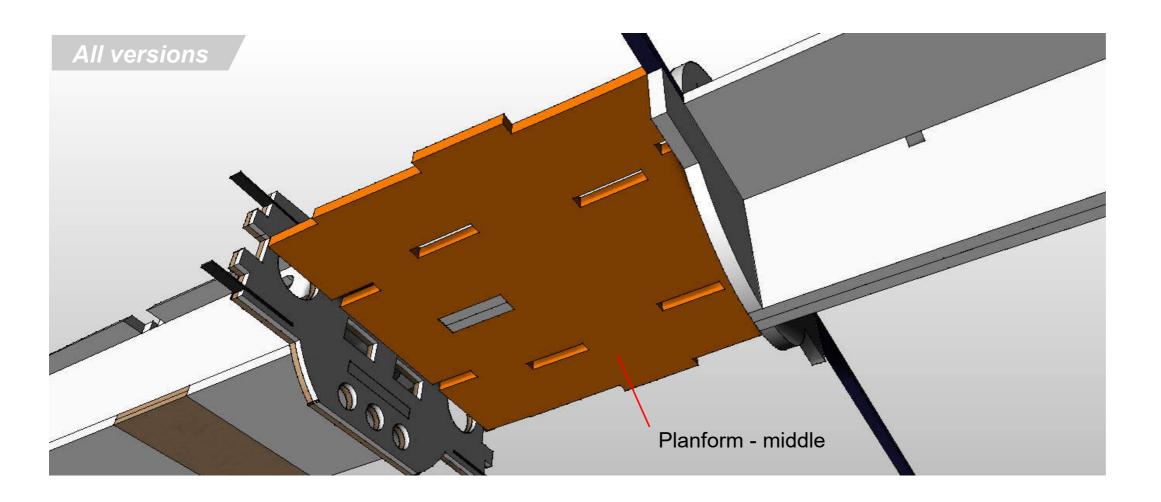
You may wish to glue magnets into **Bulkhead 4 (upper)** at this stage.

Glue **Bulkhead 4** (Upper) to the assembly.





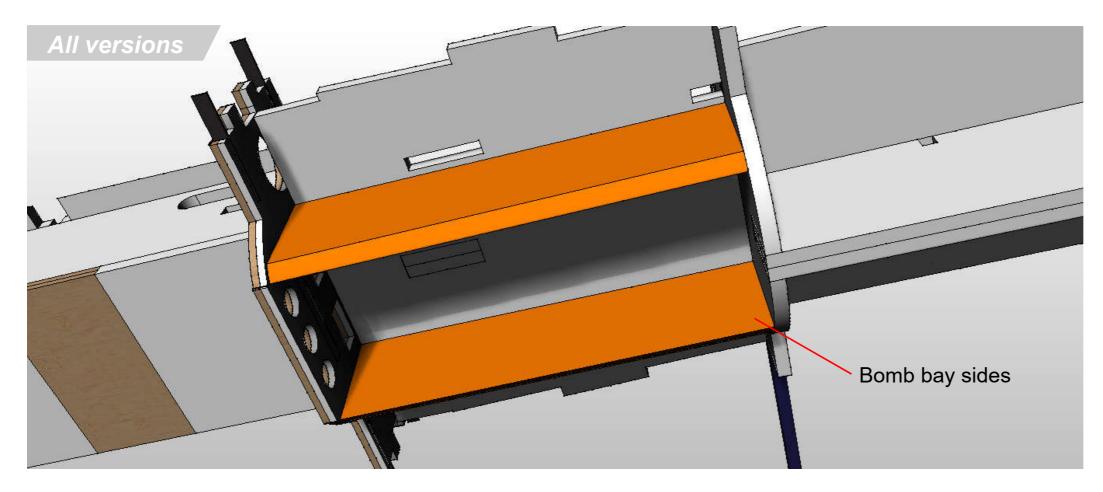




Glue the **Planform Middle** to the assembly. Use Uhu Por along the top and Epoxy at the ends.

Use epoxy sparingly as it adds a lot of weight.





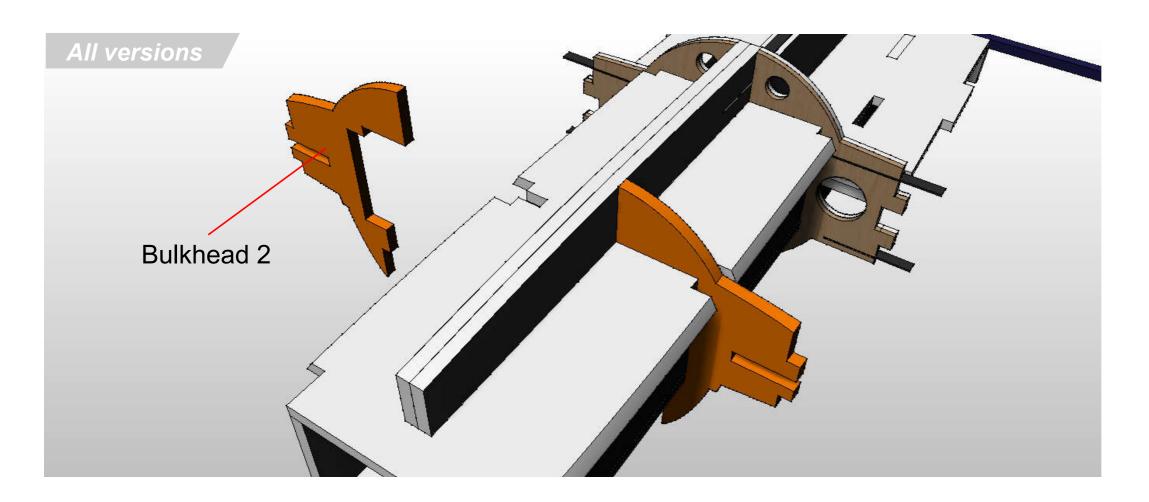
Glue the **Bomb Bay sides** onto the assembly. Use UHU por along the top and epoxy on the edges.





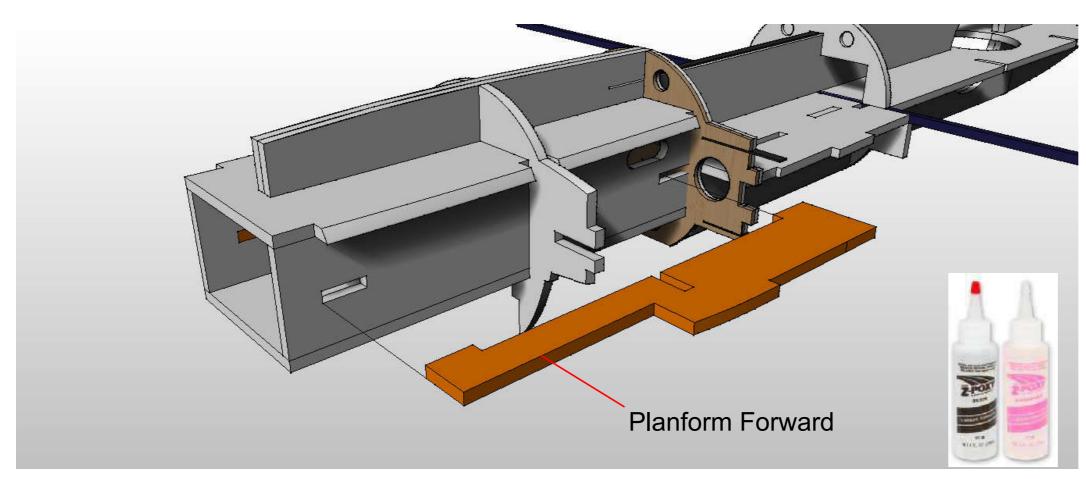






Glue the two **Bulkhead 2** pieces to the assembly in the slots provided.

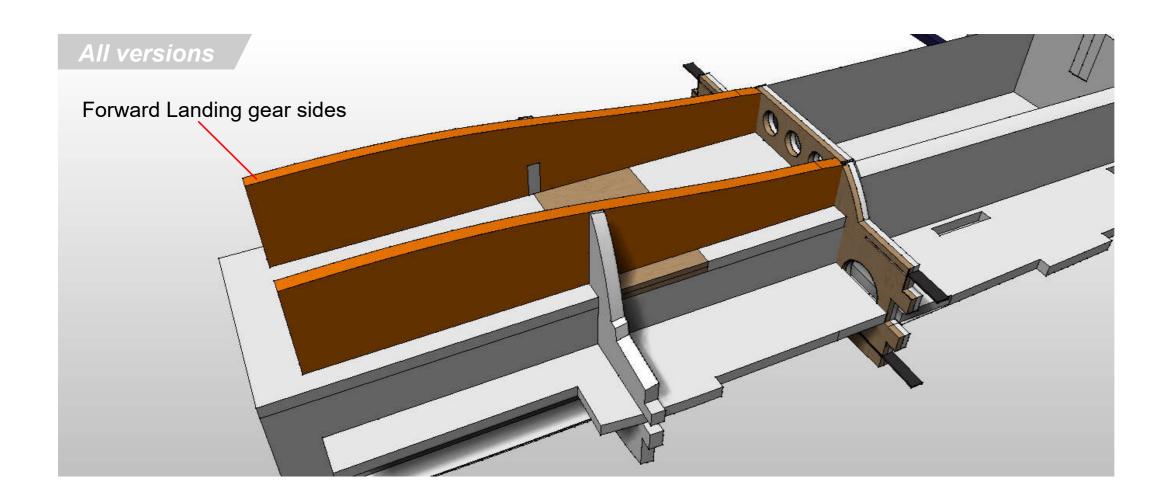




Glue the two **Planform Forward** pieces to the assembly in the slots provided.



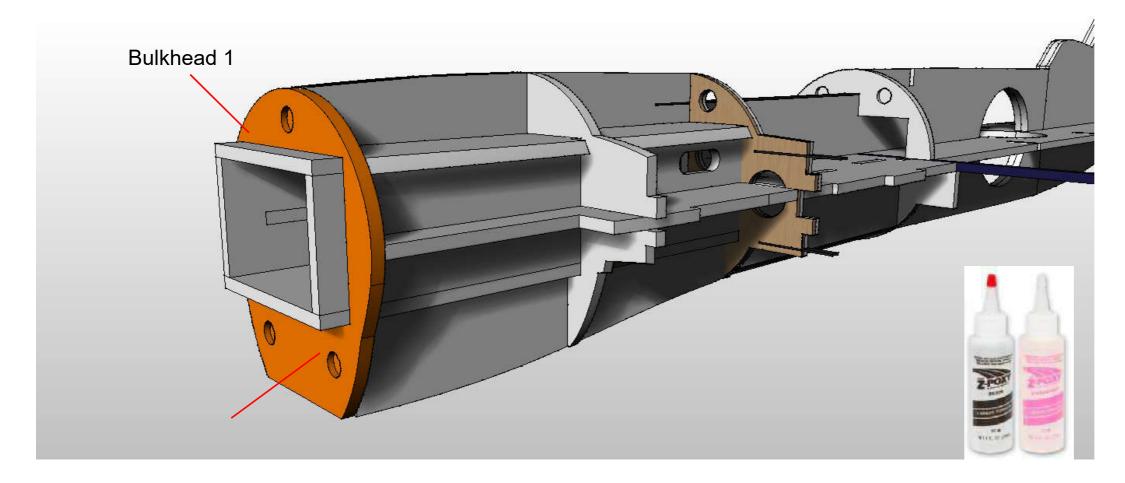




Glue the two **Forward landing gear Side** pieces to the assembly in the slots provided.

Ensure they are running parallel to the 'box' edges.



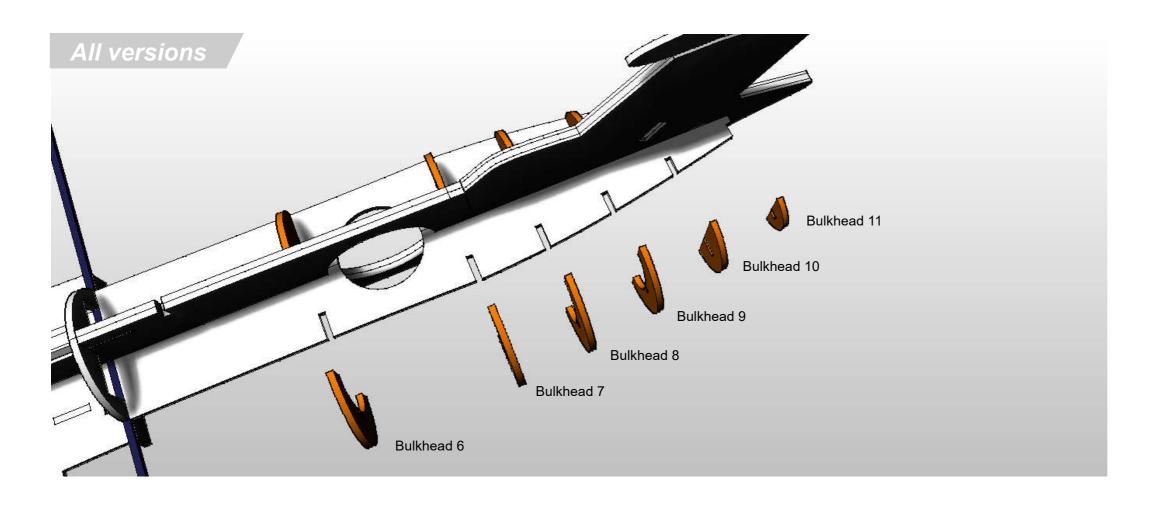


Slide **Bulkhead 1** over the box assembly until it touches the longitudinal beam at the top.

Ensure that the bulkhead remains vertical so that the protruding box part is protruding at an equal amount all around.

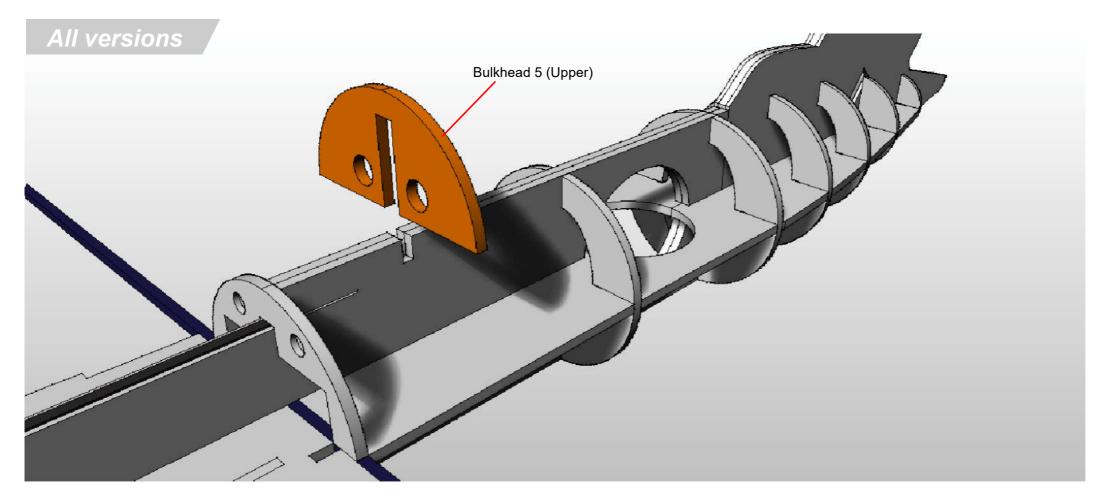






Glue the **aft bulkheads** to the fuselage



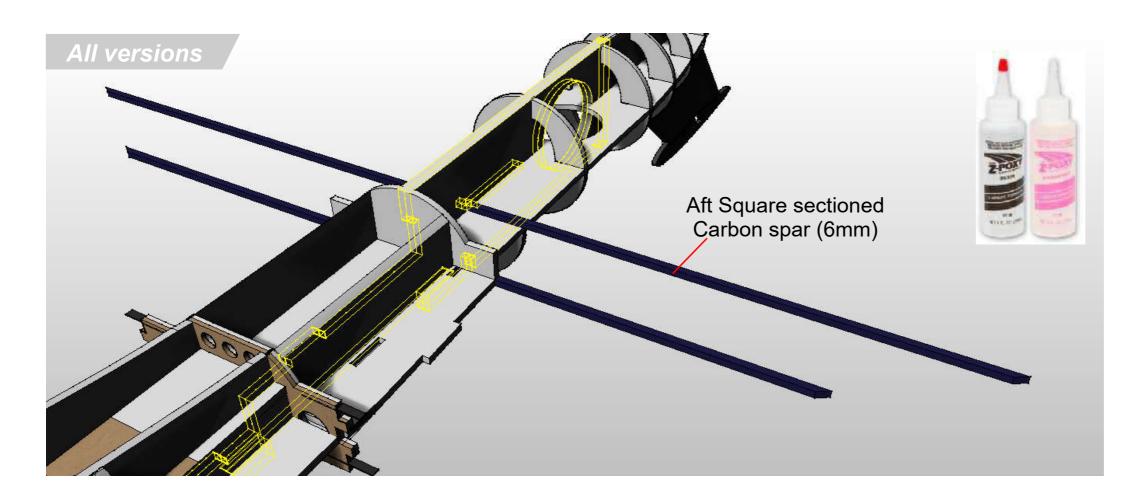


Glue **Bulkhead 5 (upper)** to the fuselage







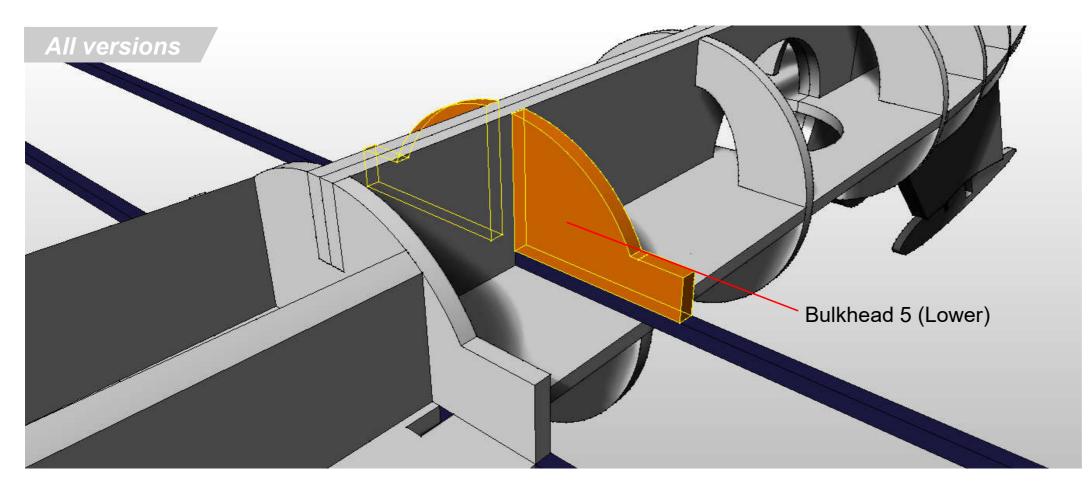


Cut the Aft square sectioned carbon spar to the correct length, with the correct angles at each end.

Mark a centerline on the carbon spar - then offset a 6mm line either side of the centerline.

Make a support cradle to ensure that both spars are parallel.

Slide the spar in place, then glue in place using epoxy.

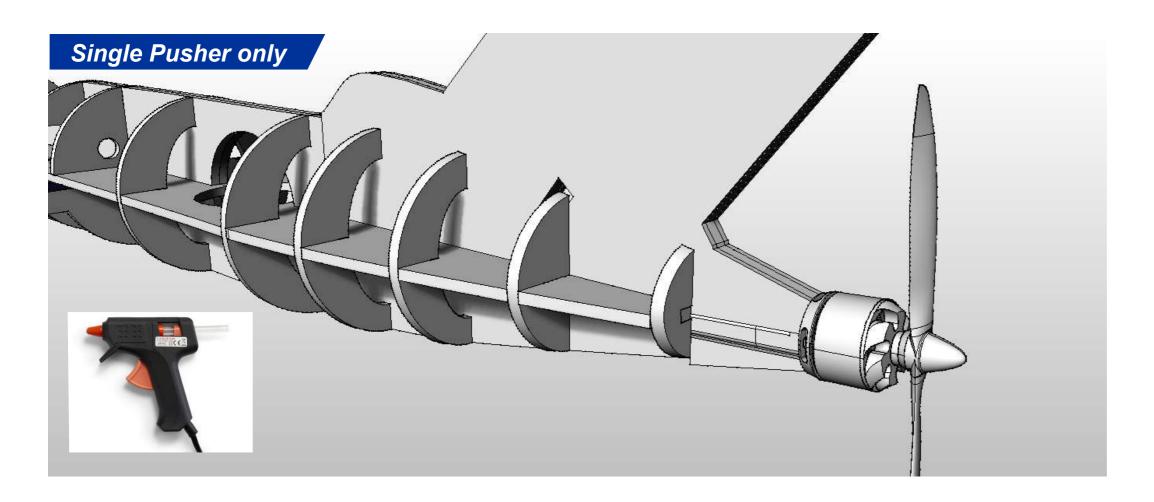


Glue the lower pieces of **Bulkhead 5** in place.





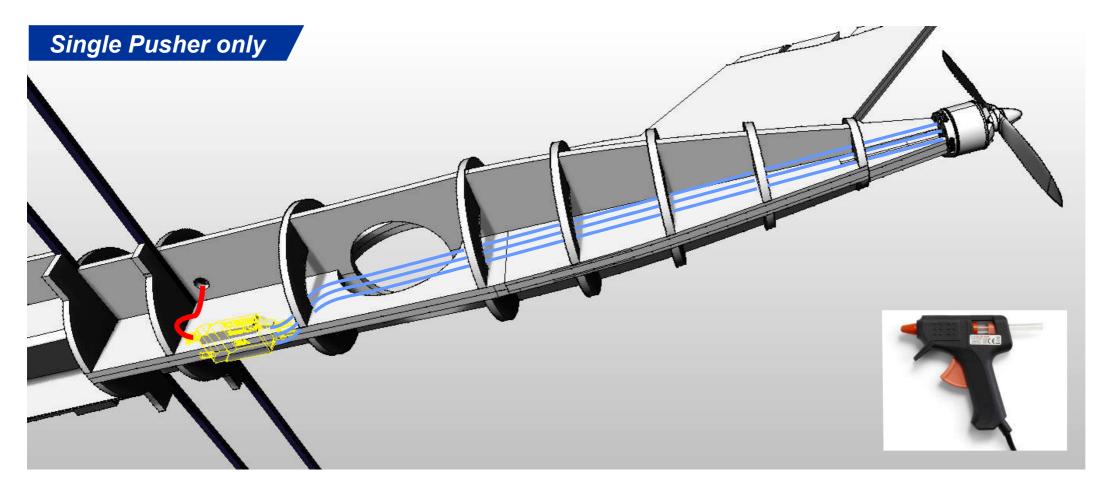




## SINGLE PUSHER ONLY

Glue the stick motor mount into the fuselage using hot melt glue.

Make some holes in Bulkheads 11 and 10. Run the motor cables forward. Match the cable type that is on your motor, and extend the motor cables all the way forward to



## SINGLE PUSHER ONLY

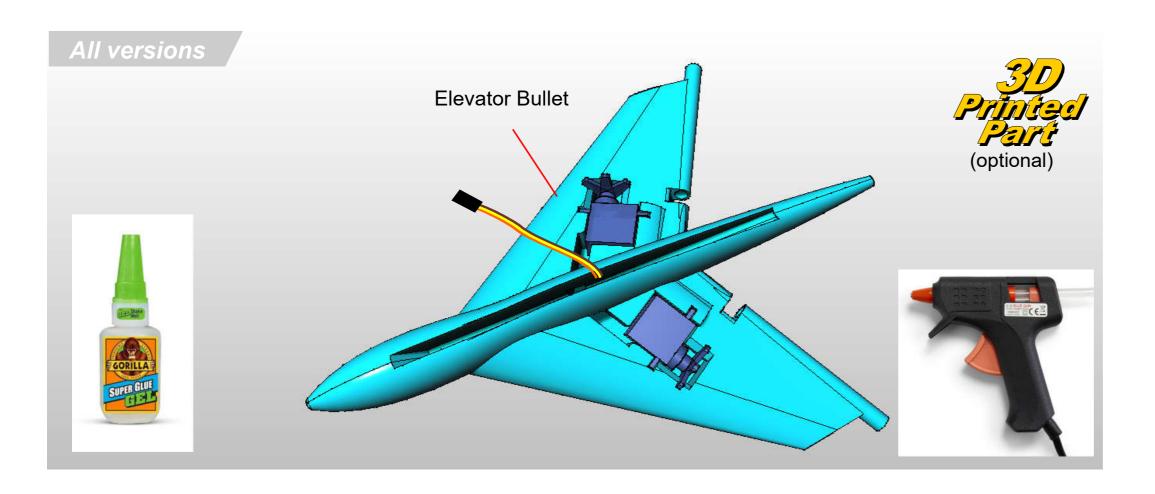
Cut into the Longitudinal beam between bulkhead 5 & 6 to make space for the ESC - so that it doesn't protrude past the outer skin.

Mount the ESC into place using hot melt glue.

Connect the cables and run the power cables forward through the two holes in the Planform Rear part.



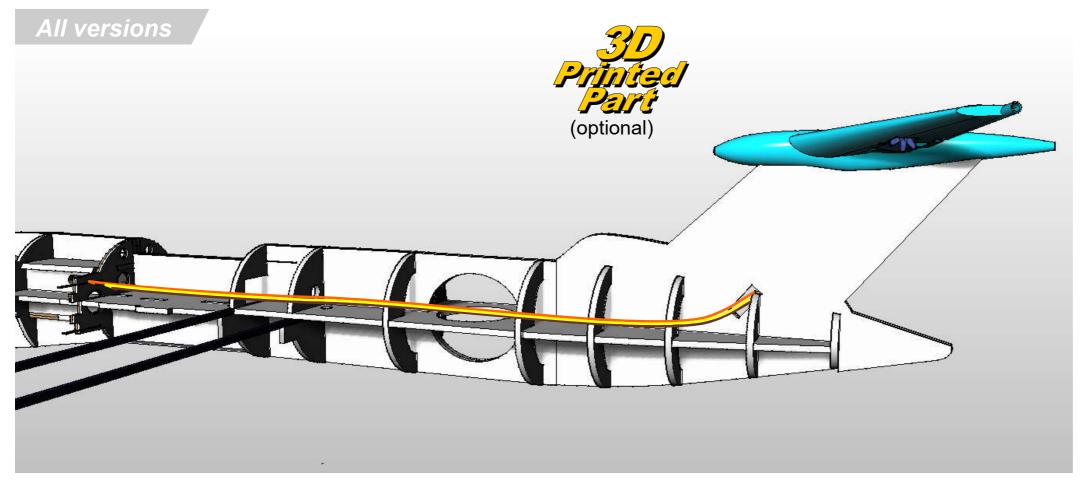




# 3D PRINTED ELEVATOR BULLET

Glue the parts of the **Elevator bullet** together using CA Gel glue (Superglue).

Thread the servo cables through the holes into the central slot.



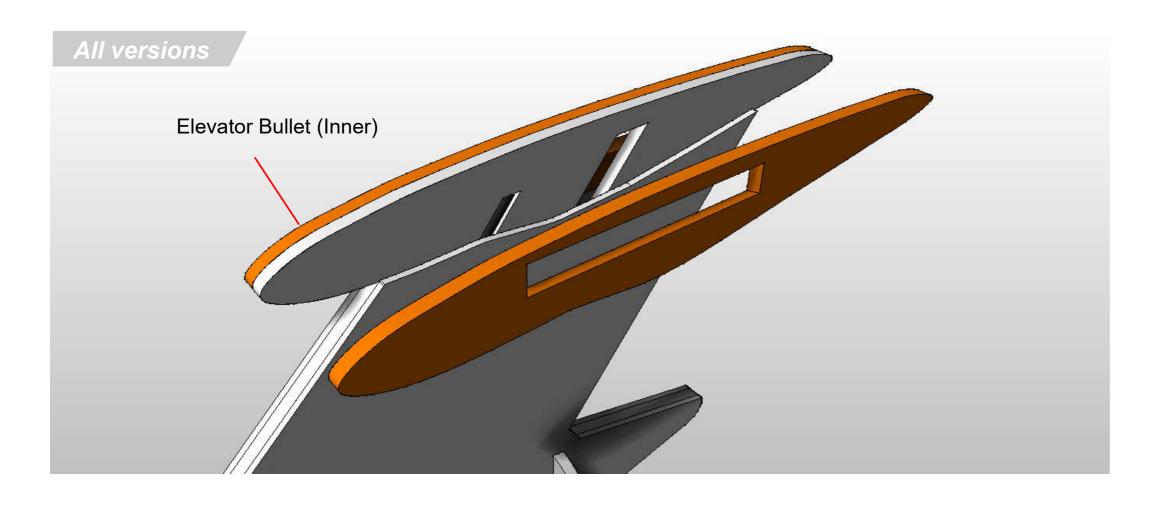
Connect the servo lead extensions to the servos and thread through the vertical stabiliser and into the box to the RX.

Glue the Elevator Bullet onto the vertical stabiliser using Epoxy.









# NON 3D PRINTED ELEVATOR BULLET

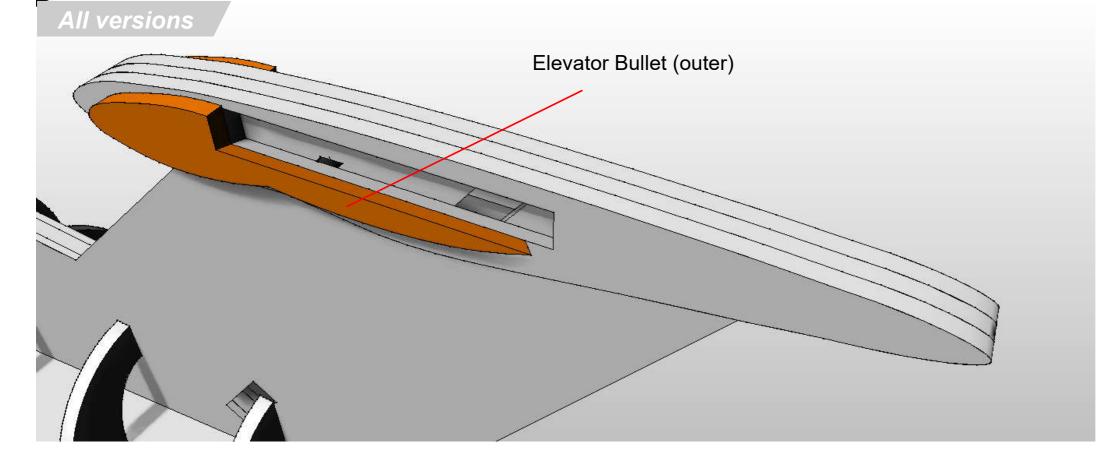
Glue the two **Elevator bullet** (Inner) pieces to the vertical stabiliser.

ensure that the angled slot is correct - matching the dihedral wing angle of the Victor tail.



Glue the two **Elevator bullet** (outer) pieces to the vertical stabiliser.

position by matching the angled slot.



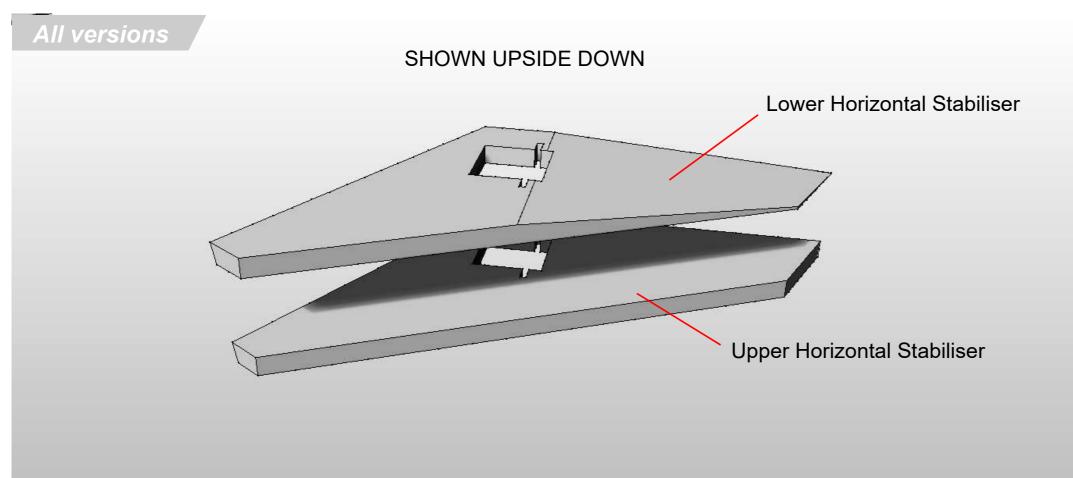








Shape the tail bullet using sandpaper to resemble the real plane.

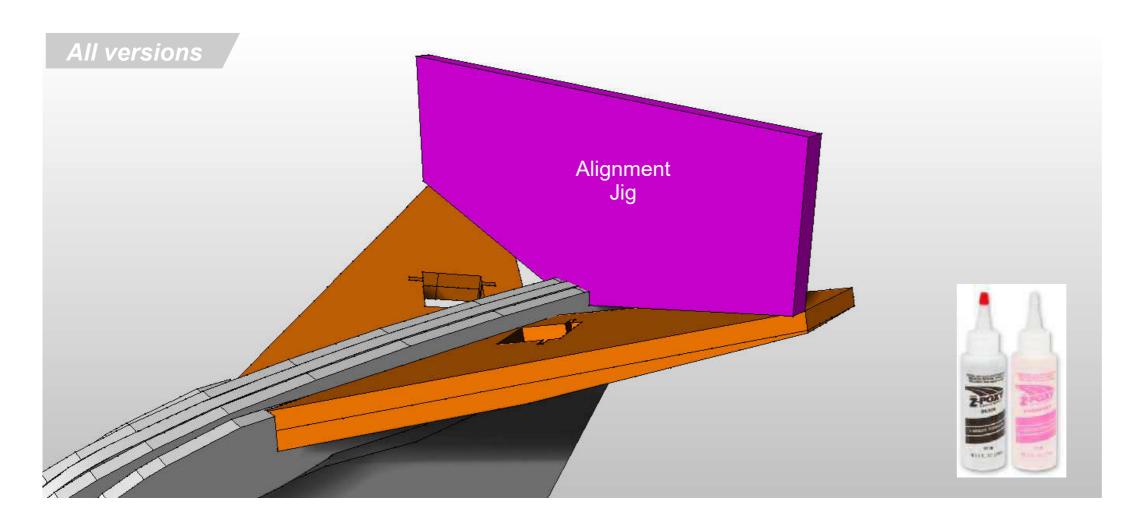


Pre sand to shape, then glue the Upper and Lower Horizontal stabiliser parts together.

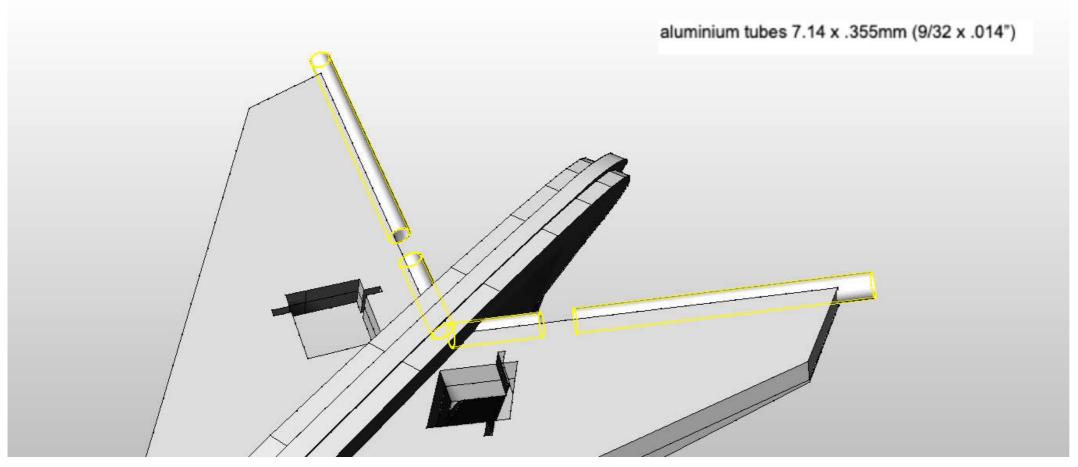








Using the alignment jig glue the two horizontal stabilisers into position



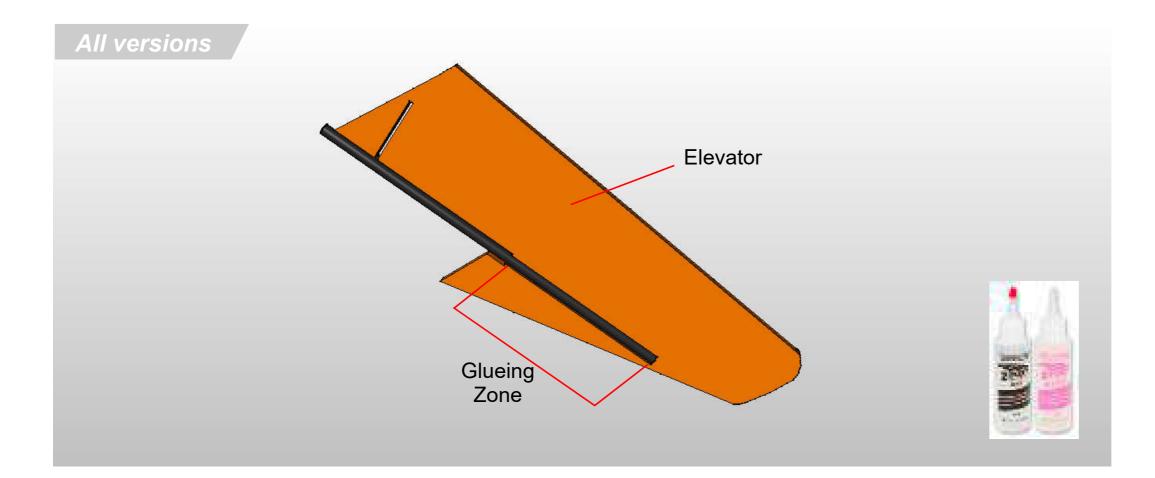
Epoxy four aluminium tubes aligned to the upper trailing edge of the horizontal stabiliser as shown - leaving a gap in line with the servo horn as shown.

Secure the tubes in place using 0.6oz lightweight Fibreglass cloth with Water Based Polyurethane Varnish. Wrapping around the tube and onto the foam.

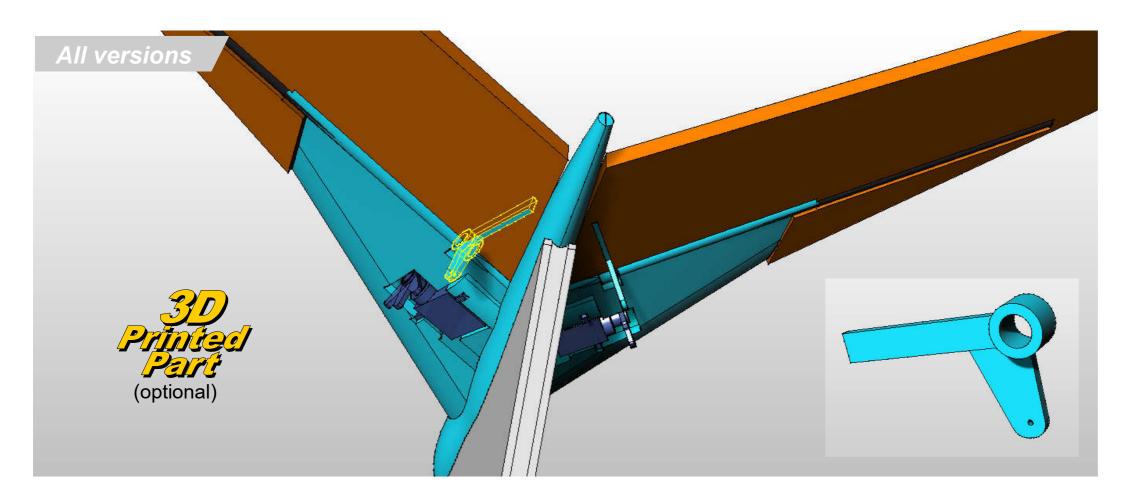








Glue the 6mm Carbon tube into the slot in the Elevator.

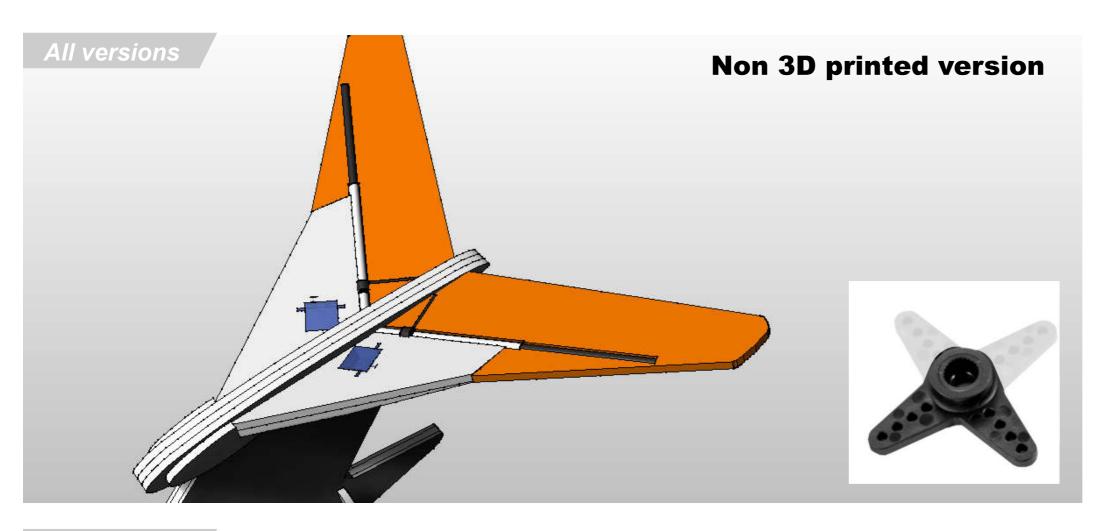


Slide the elevator shaft into the tube.

Position the control horn in the gap, so that the elevator shaft passes through. It should be a tight fit so it takes some effort to push it through. Its this friction fit that holds the elevator in place.

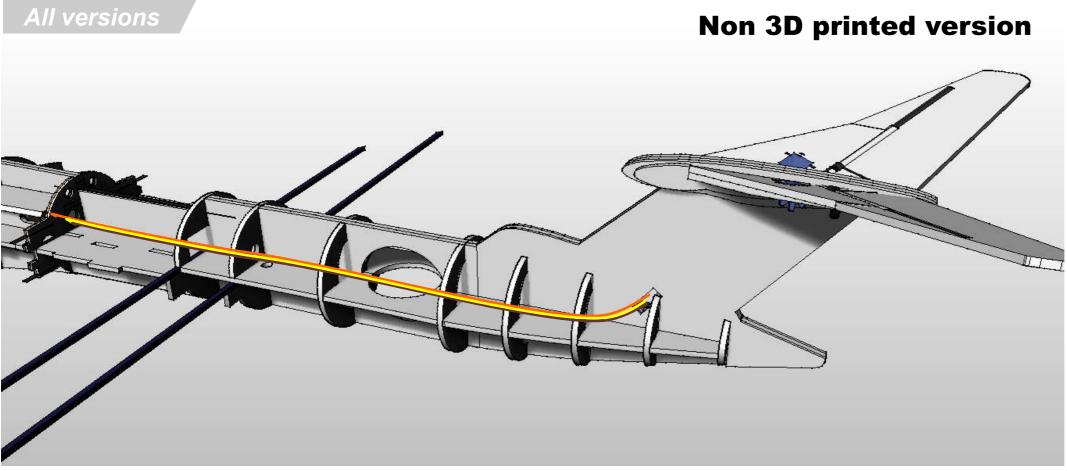






Slide the elevator shaft into the tube.

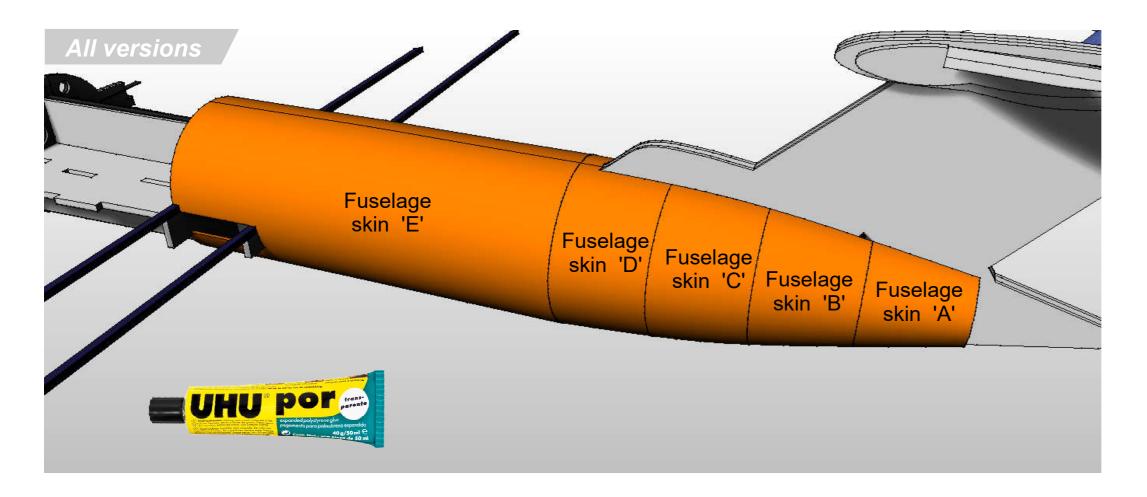
Create a two pronged control horn from a standard sized servo horn (see image). Position in the gap, so that the elevator shaft passes through. It should be a tight fit so it takes some effort to push it through. Its this friction fit that holds the elevator in place.



Connect the servo lead extensions to the servos and thread through the vertical stabiliser and into the box to the RX.



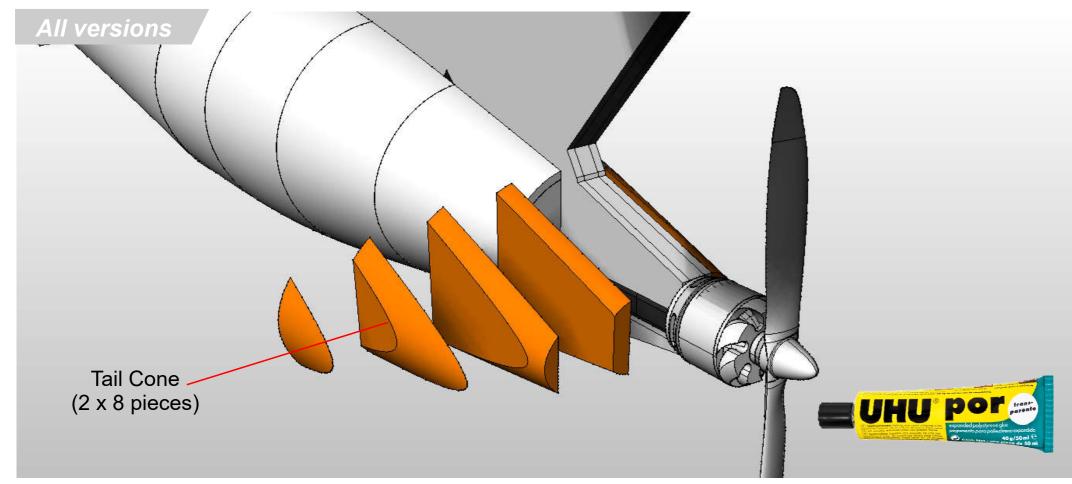




Check all the electrical connections, Elevator Servo's and Single Pusher (if chosen). If all works ok, then cover the rear part of the fuselage using 3mm foam sheet.

Cut out each sheet slightly oversized and tailor to fit your plane.

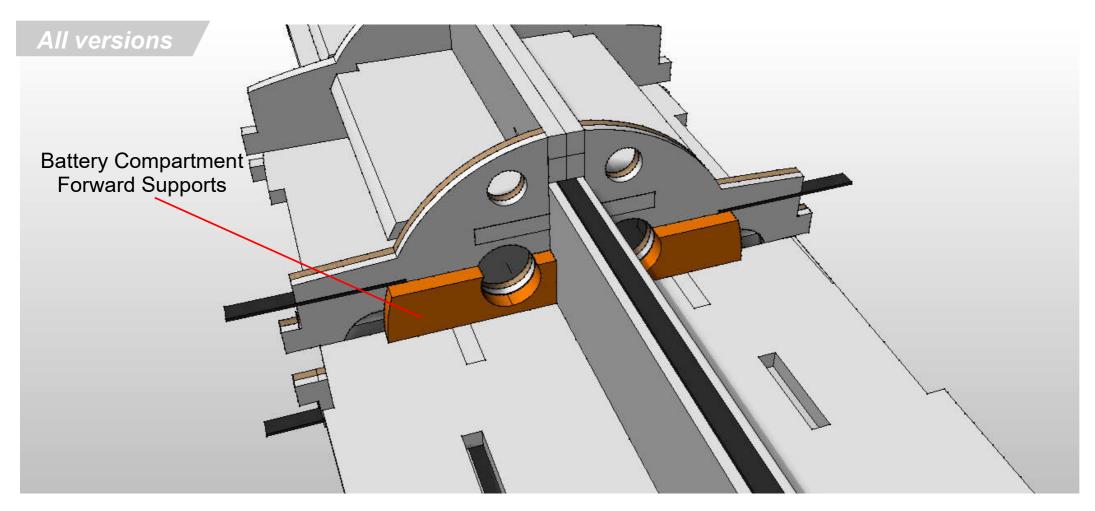
With the exclusion of bulkhead 11 and bulkhead 5. Sit the 3mm foam sheets halfway onto each bulkhead (3mm) so it allows a 3mm flange for the next sheet.



Whether you are making a single pusher version or not, make the **tail cone** by laminating the parts together as shown and glue in place.







Glue the **Battery compartment Forward Supports** in place.

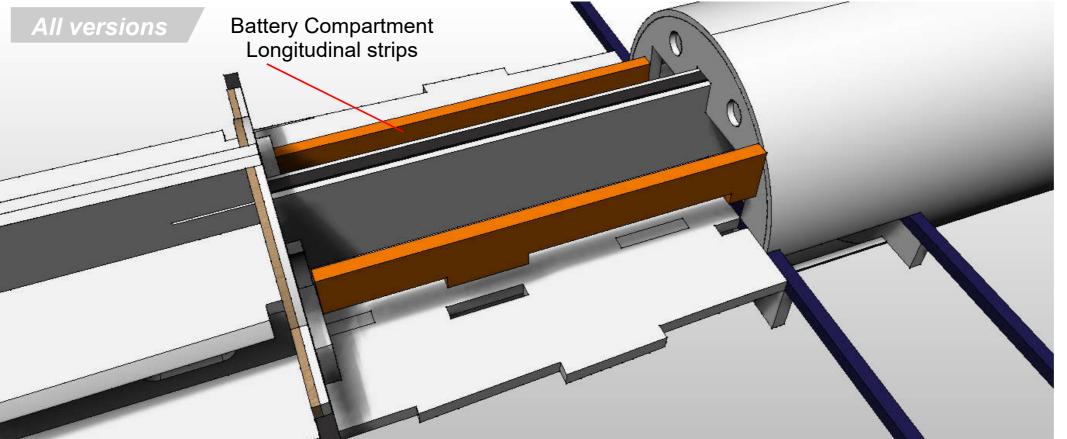




Use a drop of epoxy on each end and UHU por along the bottom.

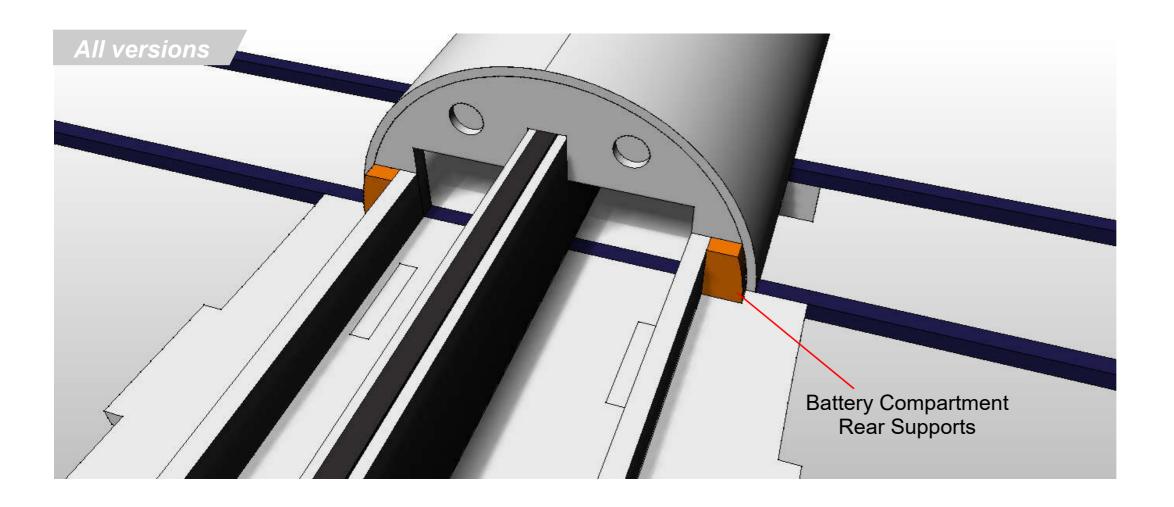












Glue the **Battery compartment Rear Supports** in place.

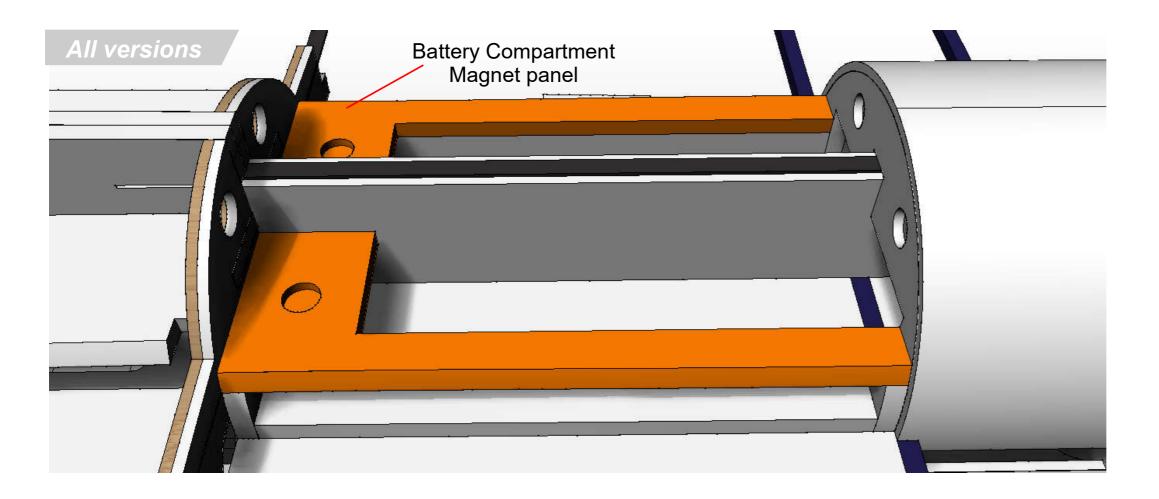




Glue the **Battery compartment lower Supports** in place.

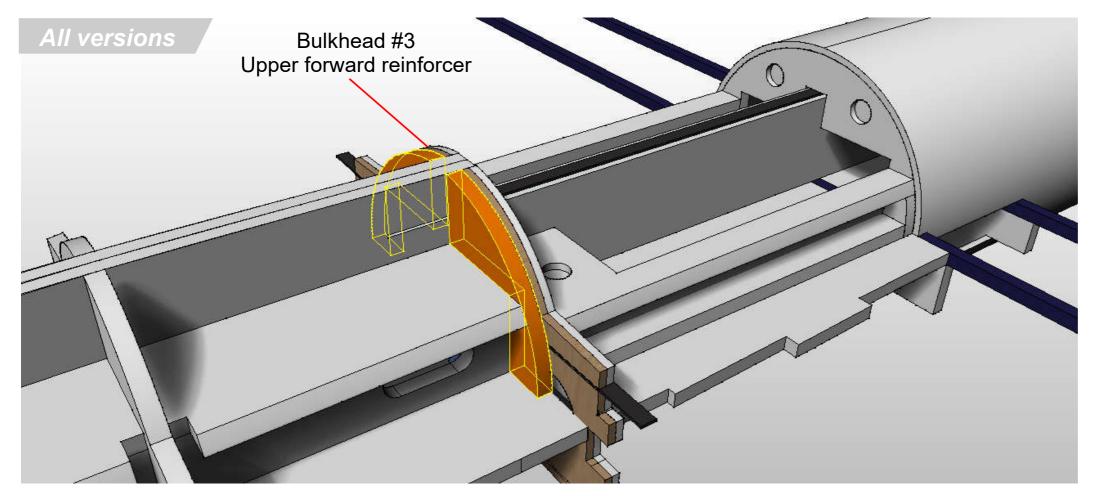






Glue the **Battery compartment Magnet panels** in place.



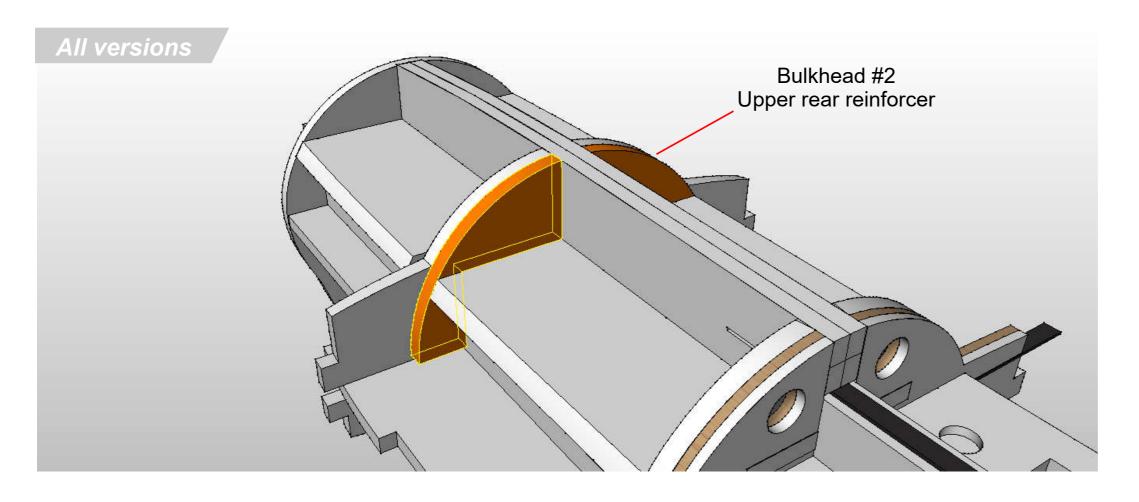


Glue the two **Bulkhead #3 Upper forward Reinforcers** in place.









Glue the two **Bulkhead #2 Upper rear Reinforcers** in place.

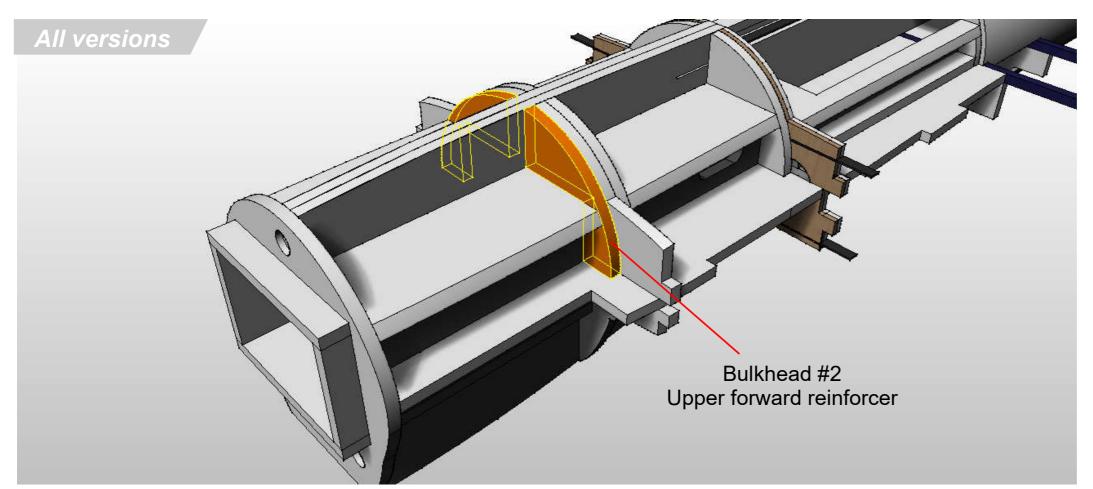
Use a non-contact glue sparingly.



Glue the two **Bulkhead #2 Upper Forward Reinforcers** in place.

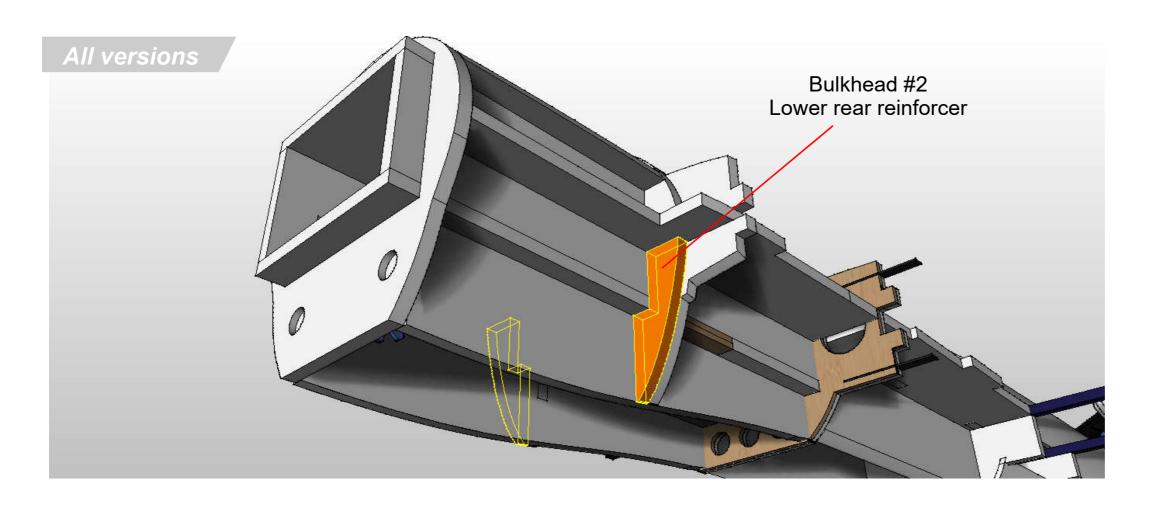
Use a non-contact glue sparingly.





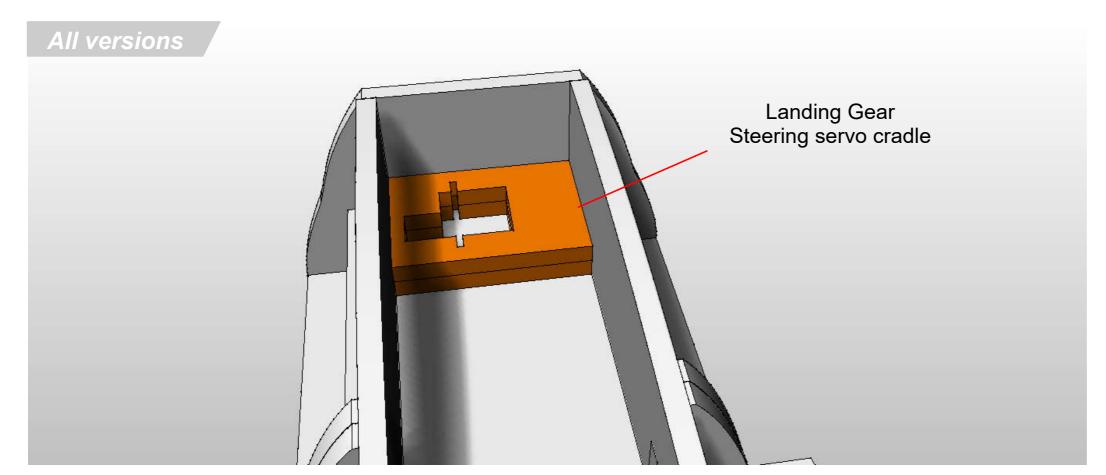






Glue the two **Bulkhead #2 Lower rear Reinforcers** in place.



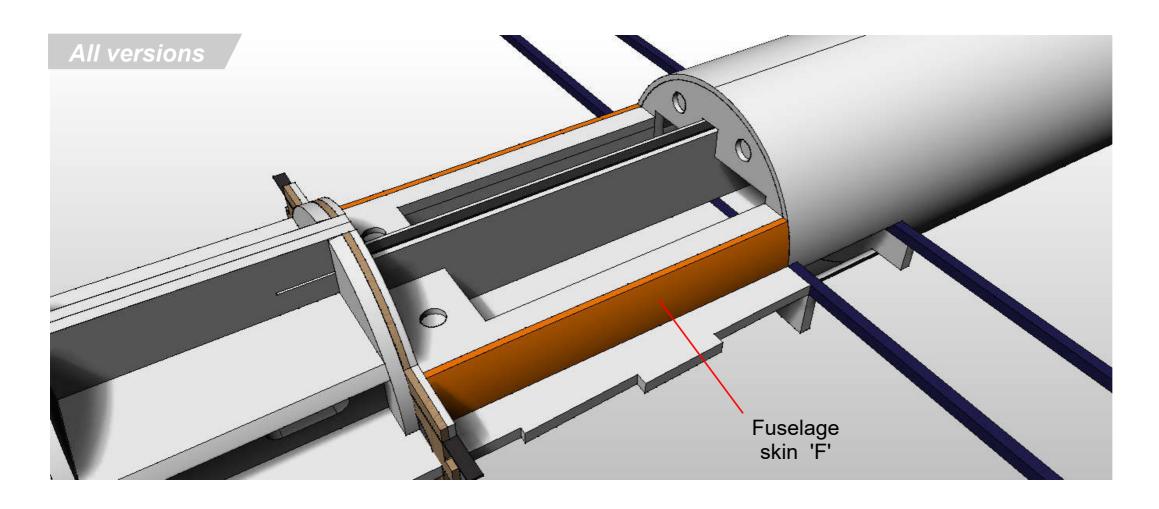


Glue the two **Landing Gear Steering Servo Cradles** in place.



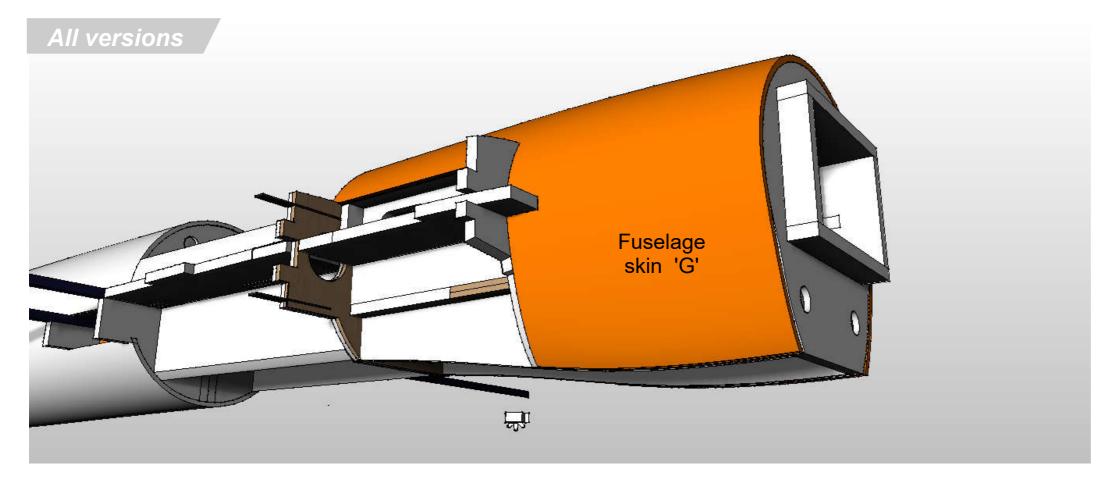






Glue the two 3mm Fuselage Skin 'F' pieces in place.



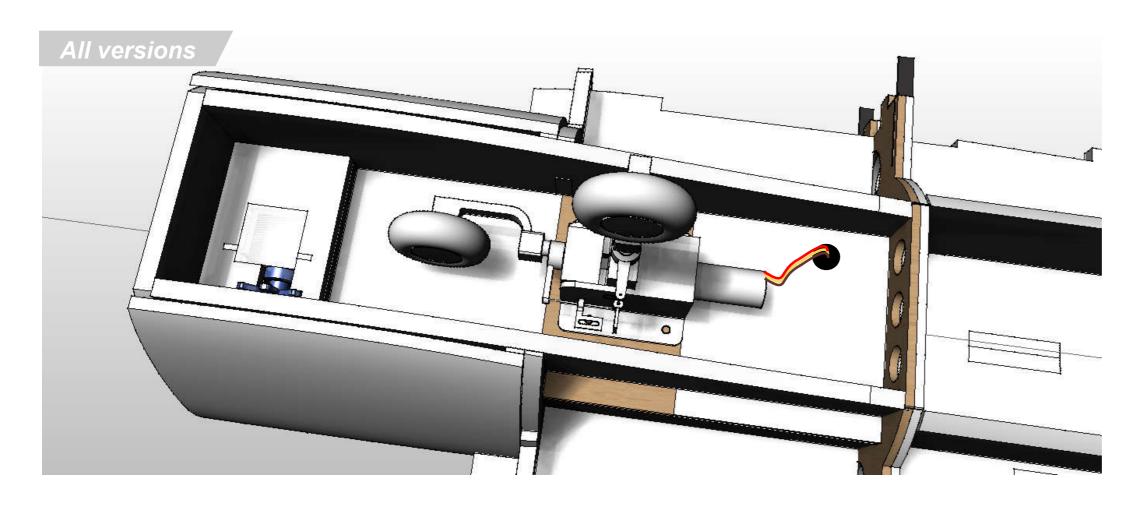


Glue the two 3mm Fuselage Skin 'G' pieces in place.







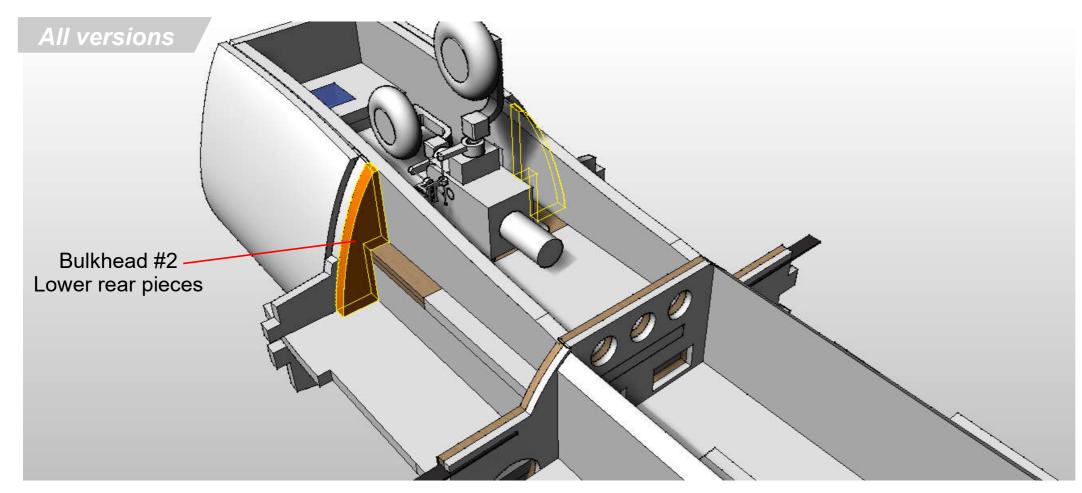


Screw the landing gear retract to the plywood mount. The shaft when deployed should be on the centre point of the plywood area.

The height of the landing gear assembly from the bottom of the tyre to the plywood is 100mm.

Wheel diameter is 35mm

Make a hole and run the retract cables into the Box area.

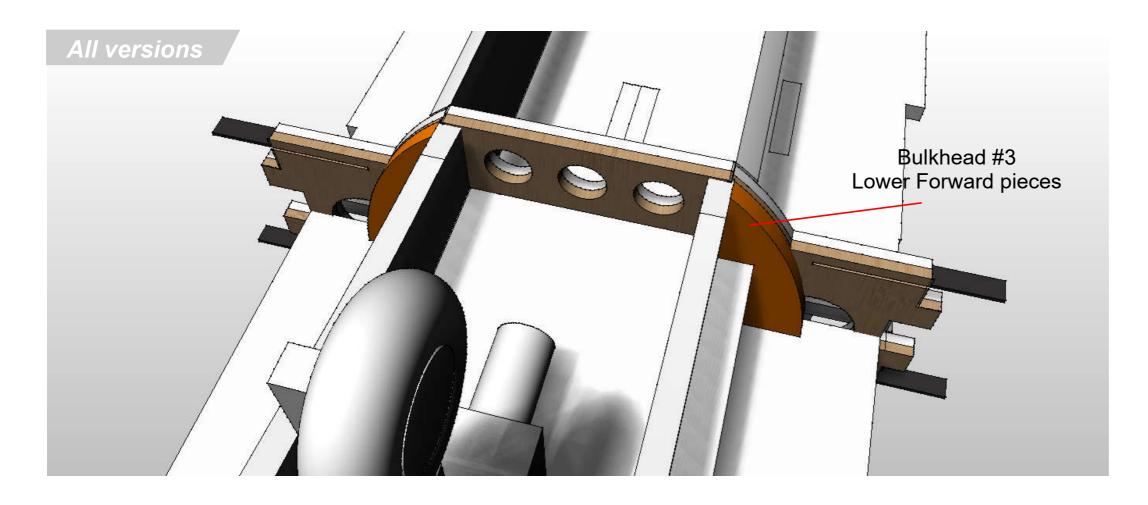


Glue the two **Bulkhead #2 Lower rear** pieces in place.

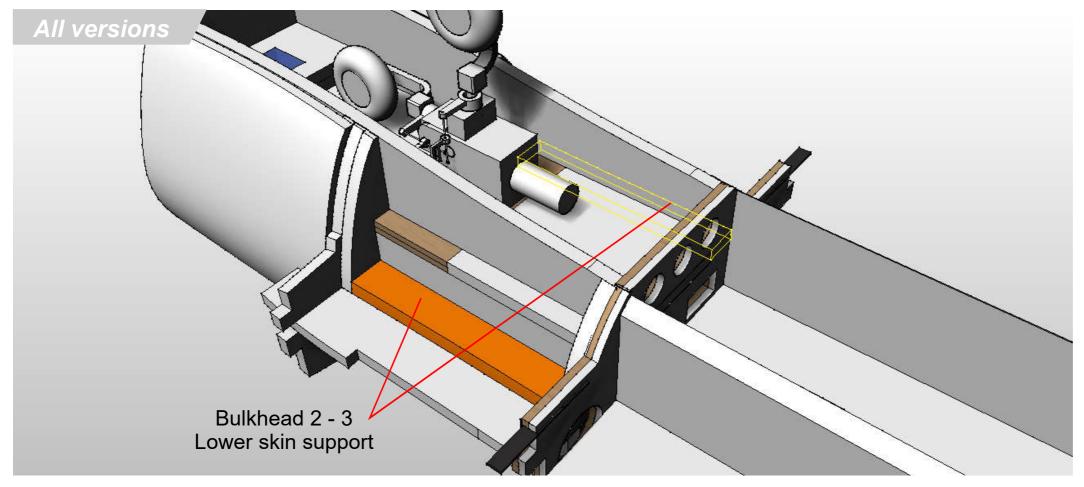








Glue the two **Bulkhead #3 Lower Forward** pieces in place.

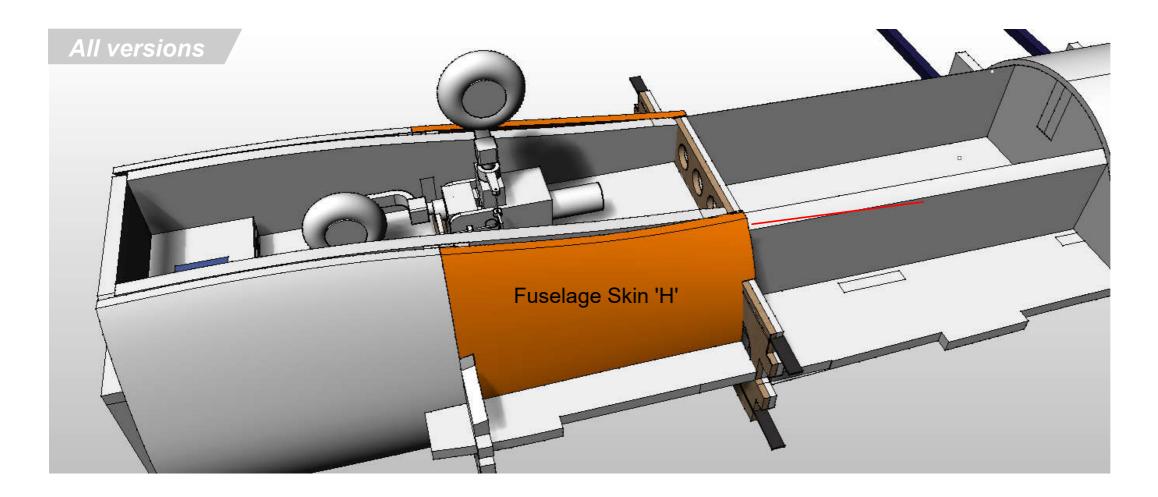


Glue the two **Bulkhead 2-3 Lower skin support** pieces in place.



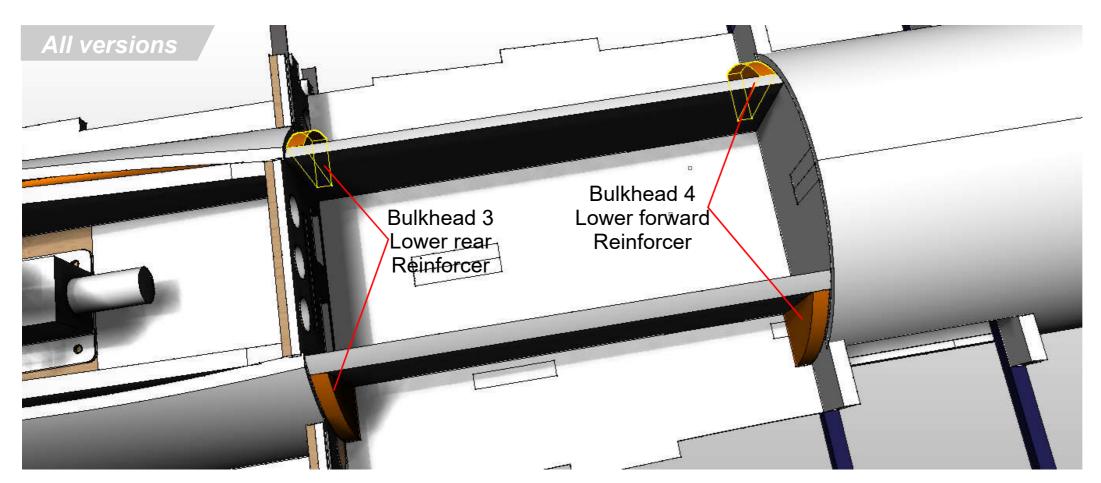






Glue the two 3mm Fuselage Skin 'H' pieces in place.



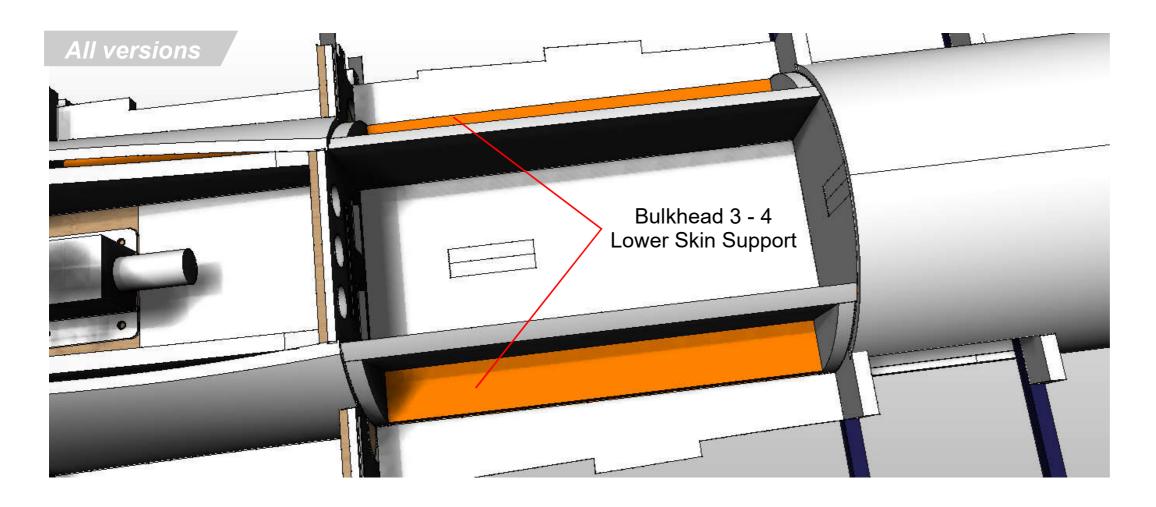


Glue the **Bulkhead Reinforcer** pieces in place as shown.



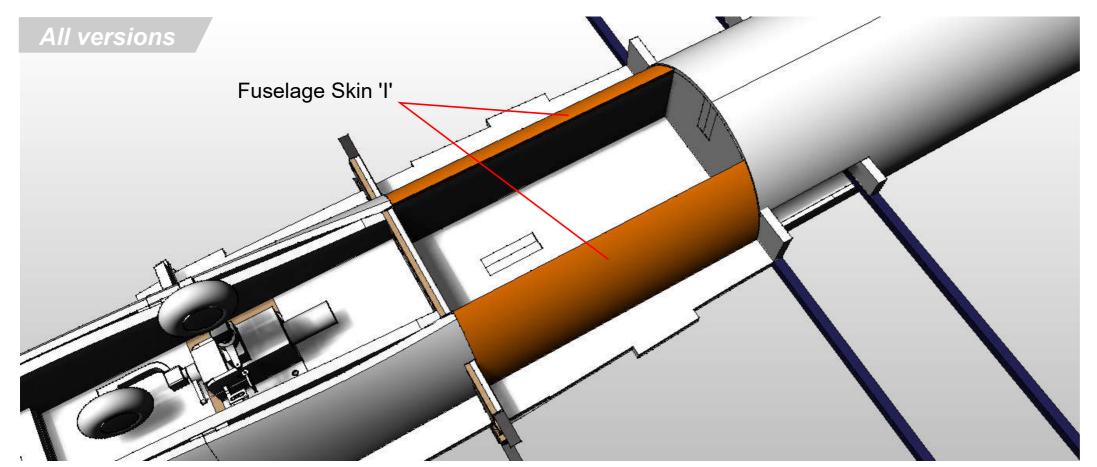






Glue the two **Bulkhead 3-4 Lower Skin Support** pieces in place.



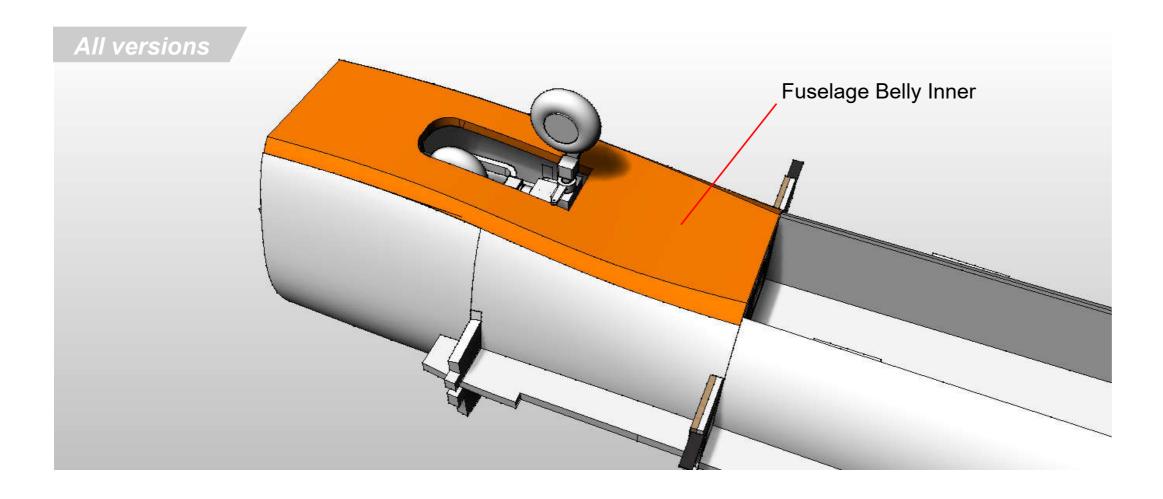


Glue the Fuselage Skin 'I' pieces in place as shown.



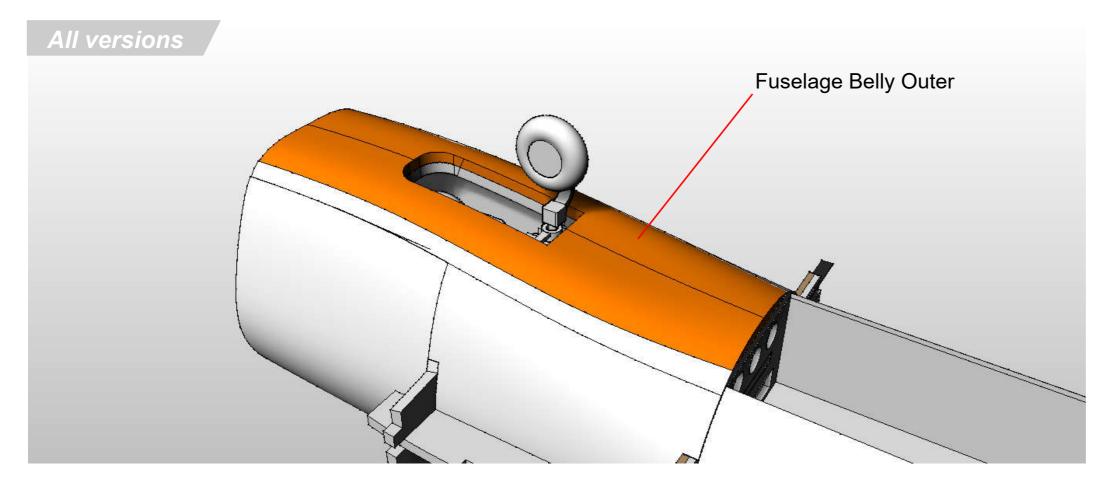






Pre-curve then glue the **Fuselage Belly (Inner)** in place.



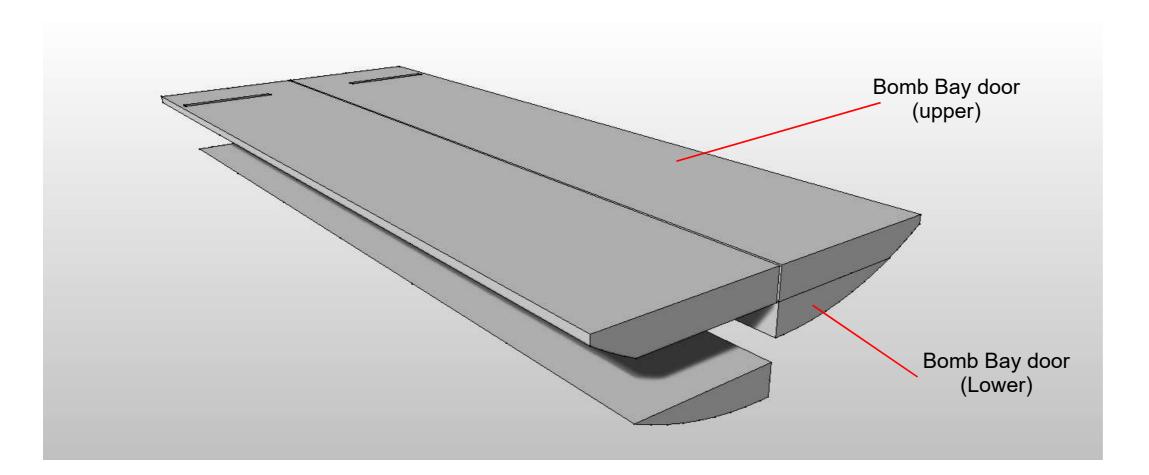


Pre-curve then glue the **Fuselage Belly (Outer)** in place.



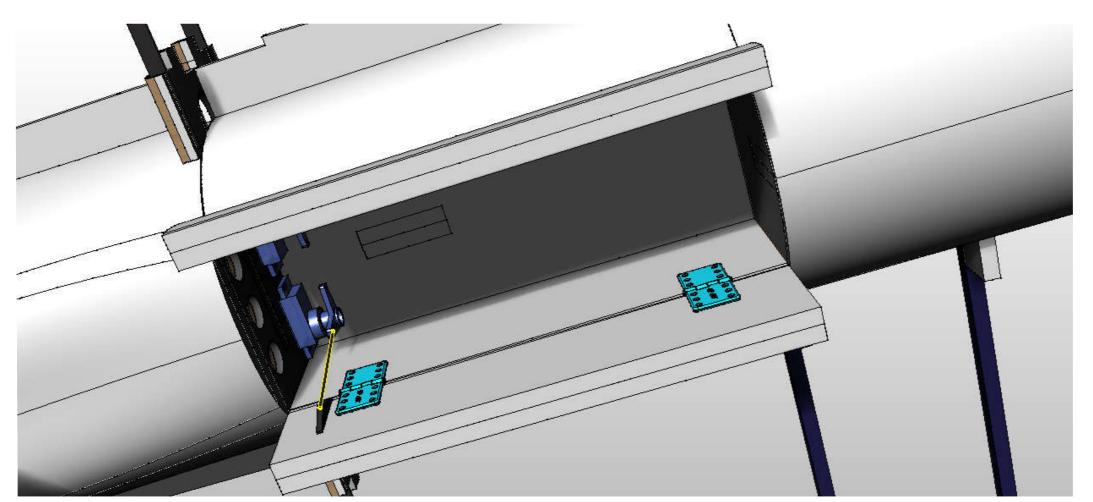






Glue and sand to shape the two pieces that make each bomb-bay door.



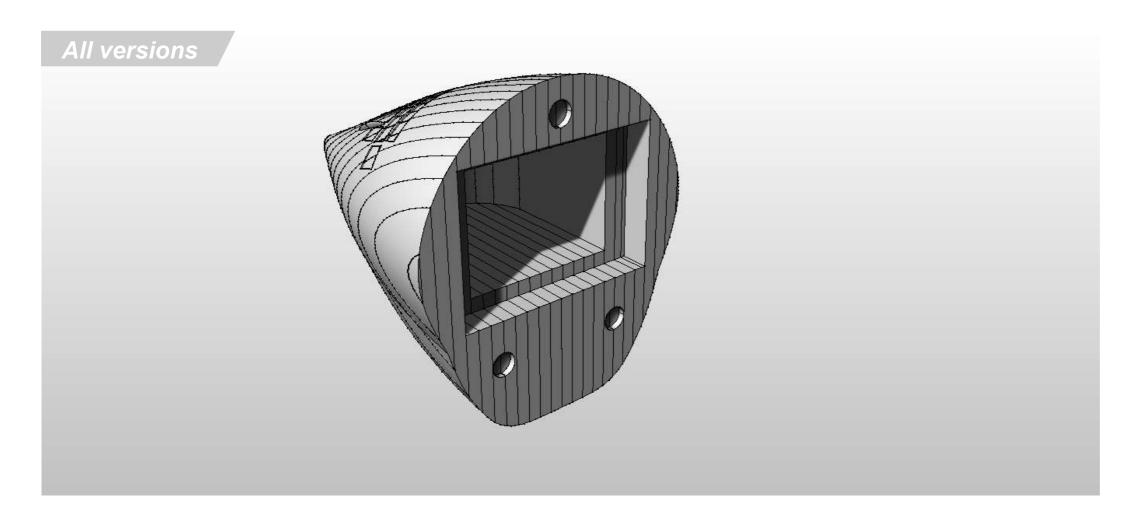


Set the Control horn into the bomb bay doors, then using hinges glued to the faces, secure in place.

Connect the servos to the control horn using piano wire (approx 43mm centres)





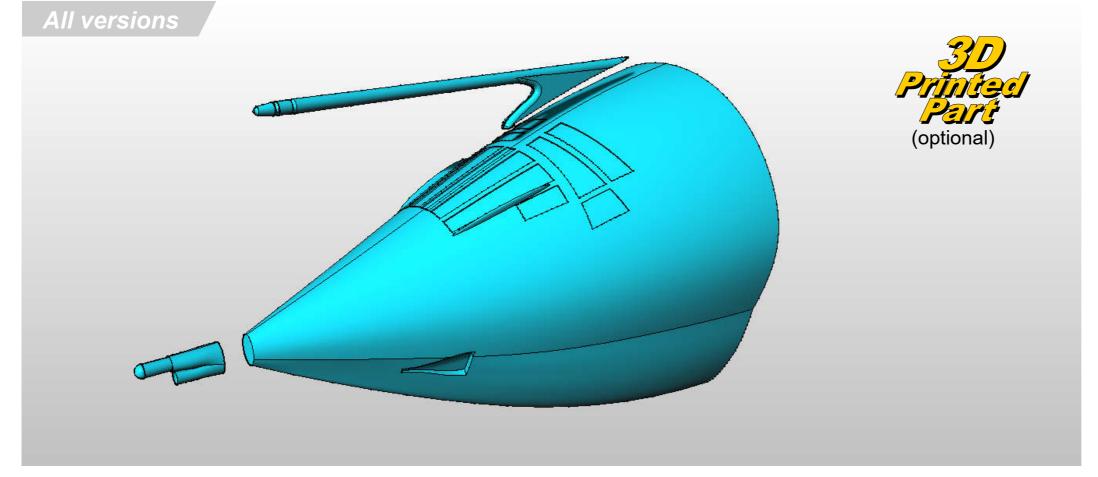


Laminate the (2x12) pieces of the **Nosecone** together using UHU por and sand to shape

Fabricate the Pitot tubes and refuelling nozzle from 5mm carbon tube / 3mm lite-ply with epoxy.

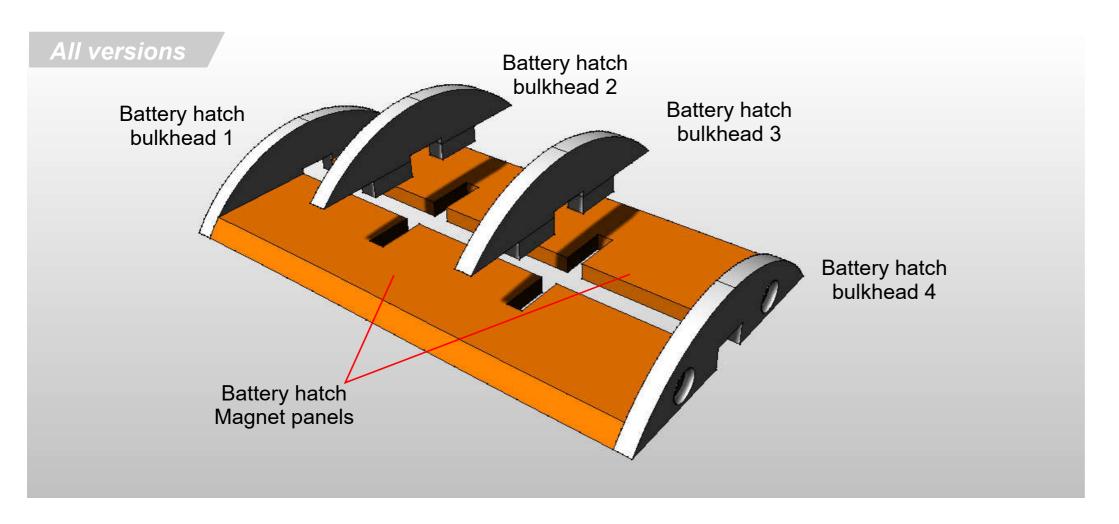


If you have a 3D printer, print out the **Nosecone** as shown









Glue the four battery hatch bulkheads to the Battery hatch magnet panels (upper)

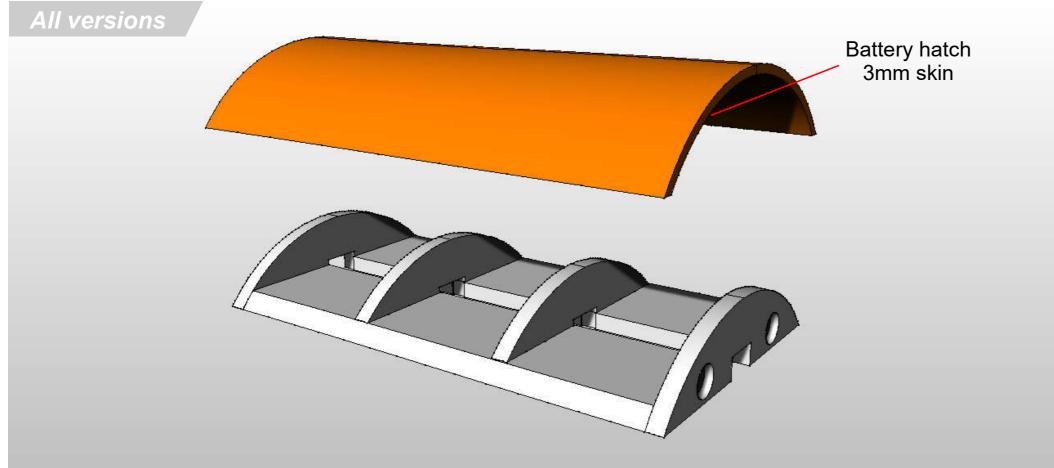


Glue the 3mm **Battery hatch skin** to the assembly.

Fit Magnets to the 4 recesses using epoxy.

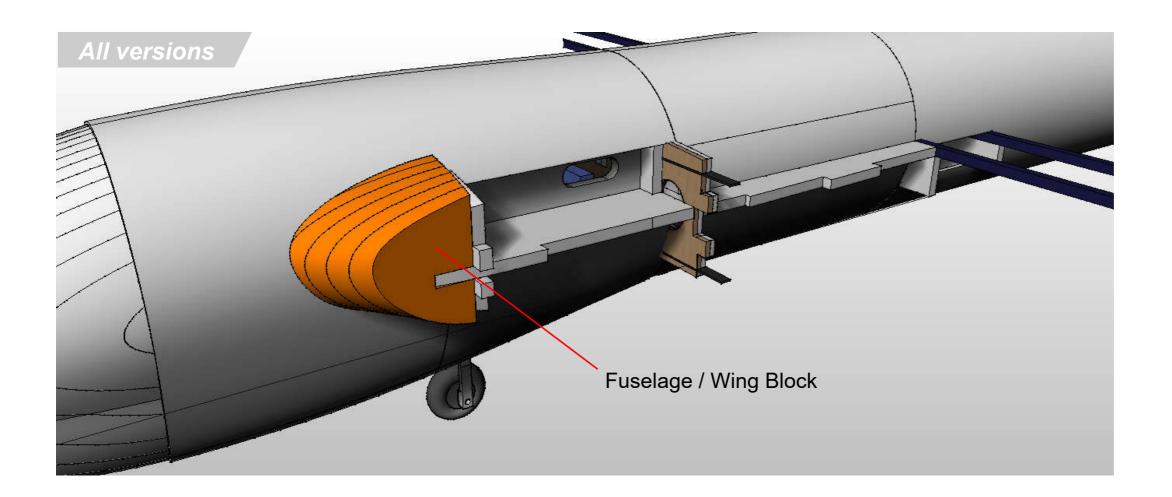
Fit magnets to the opposing parts on the fuselage ensuring the polarity is correct.

Fit to the fuselage - use masking tape between the parts until the epoxy has been dry a few days.



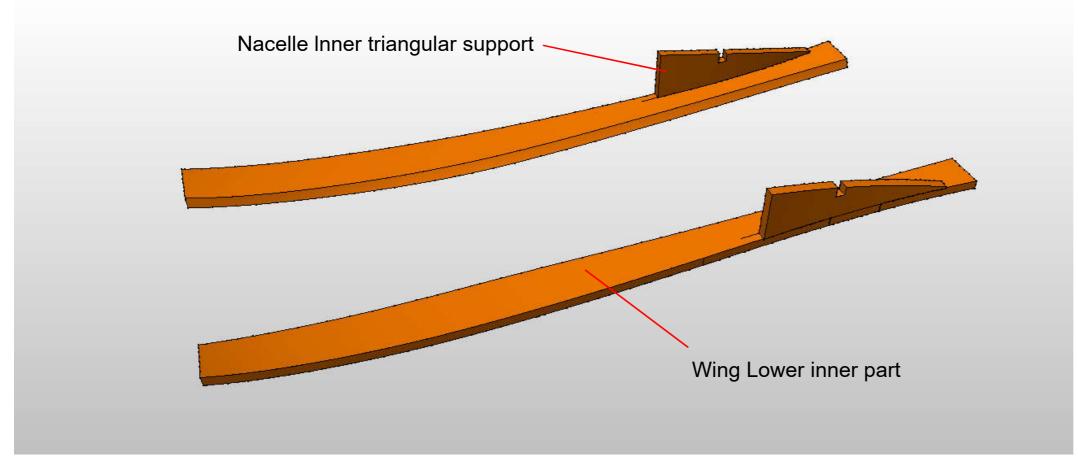






Glue the 6mm pieces of the **Fuselage/wing block** together and sand to shape. (both sides)

Glue to the assembly as shown.



Pre Curve the Mirrored Wing Lower inner Parts.

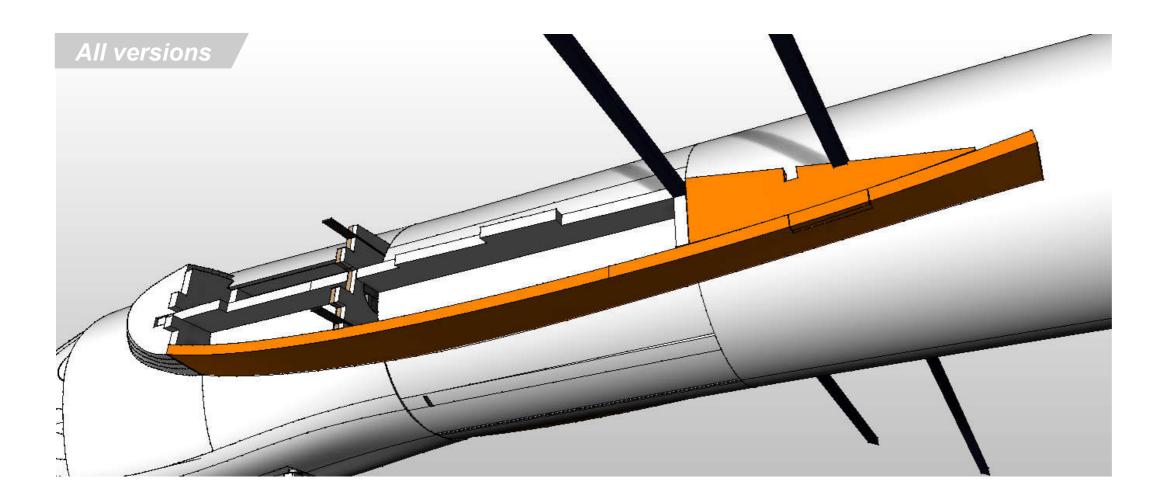
Pre Curve the **Nacelle Inner Triangular Support**.

Glue together as shown.



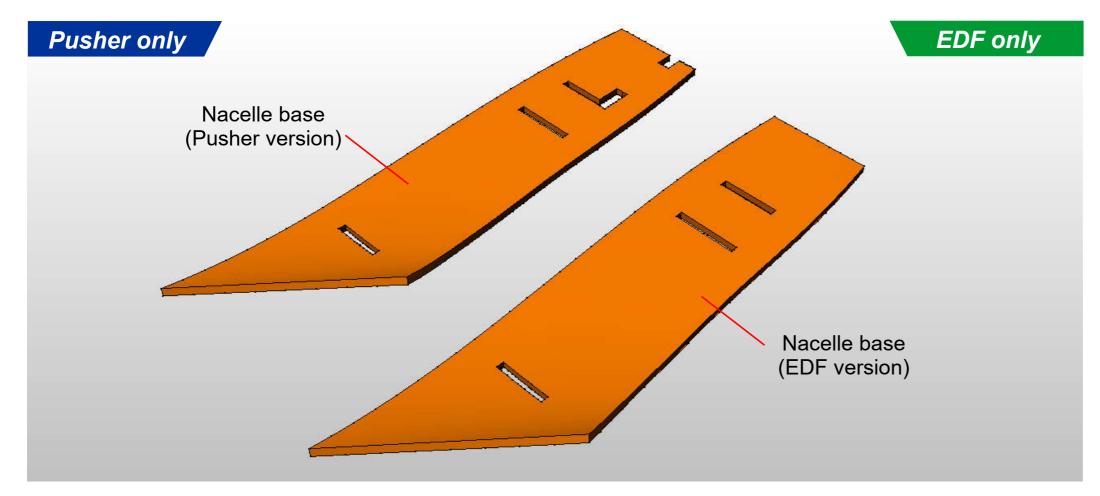






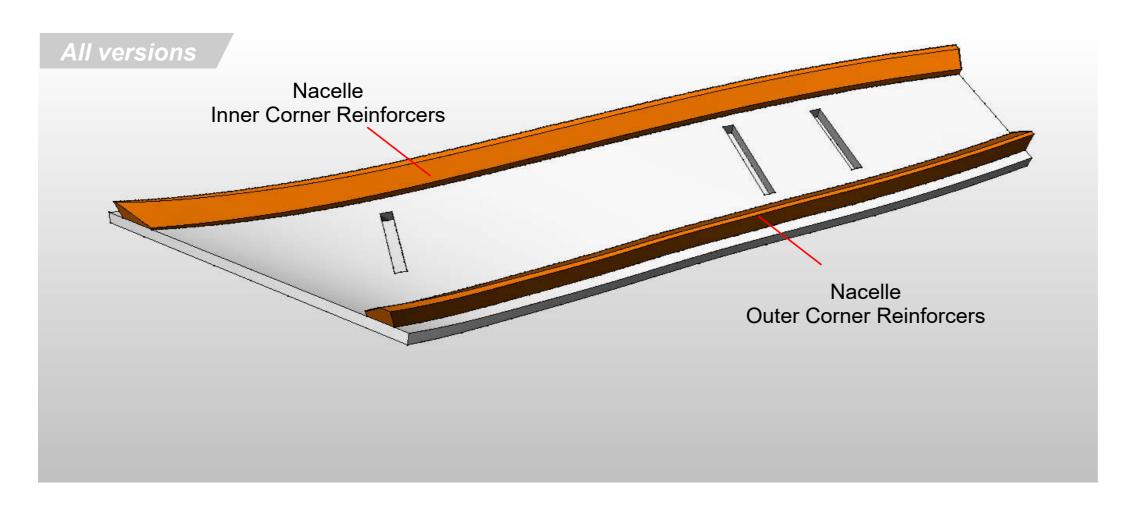
Glue the Inner wing assemblies to the fuselage as shown - bonding wherever the parts touch.





Choose EDF or PUSHER (Single or dual).

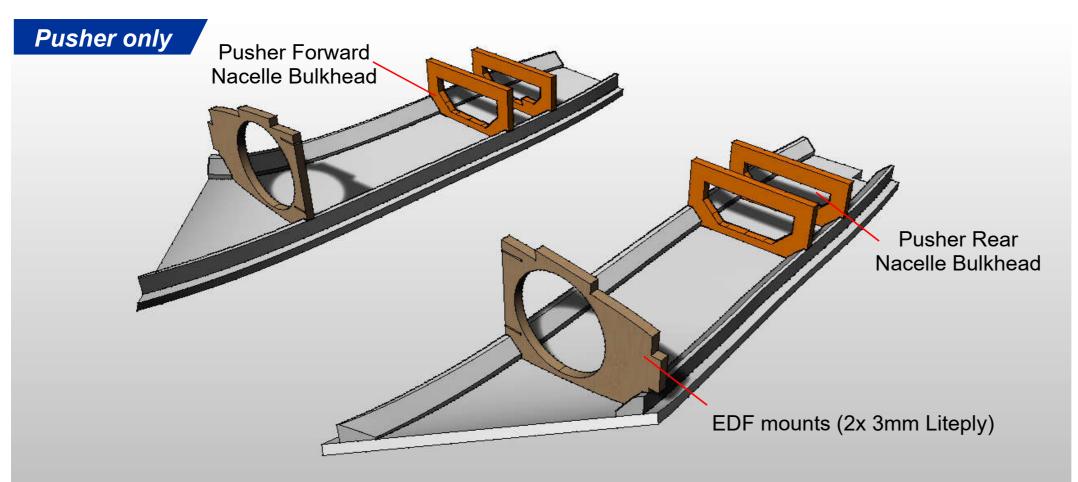
Cut out the Nacelle base to suit.



Glue the two 12mm corner reinforcer pieces together for both sides of both Nacelles.

Chamfer the inner edges to leave a 2mm wide edge as shown





For both PUSHER versions.

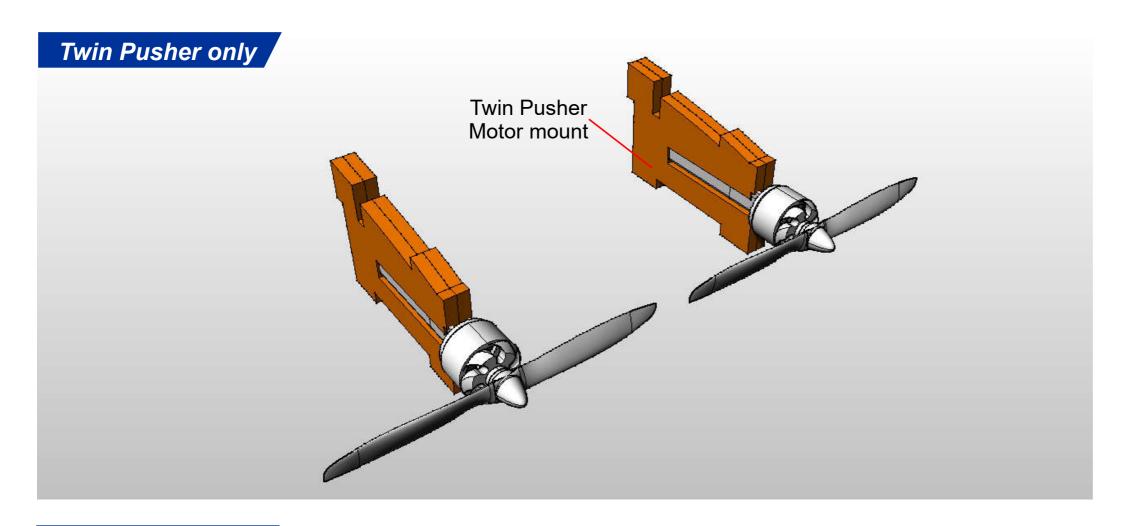
Glue the **Forward & Rear Nacelle Bulkheads** to the Nacelle base.

Glue the two EDF bulkhead pieces together then glue to the frame - this part is used on the pusher and EDF versions.







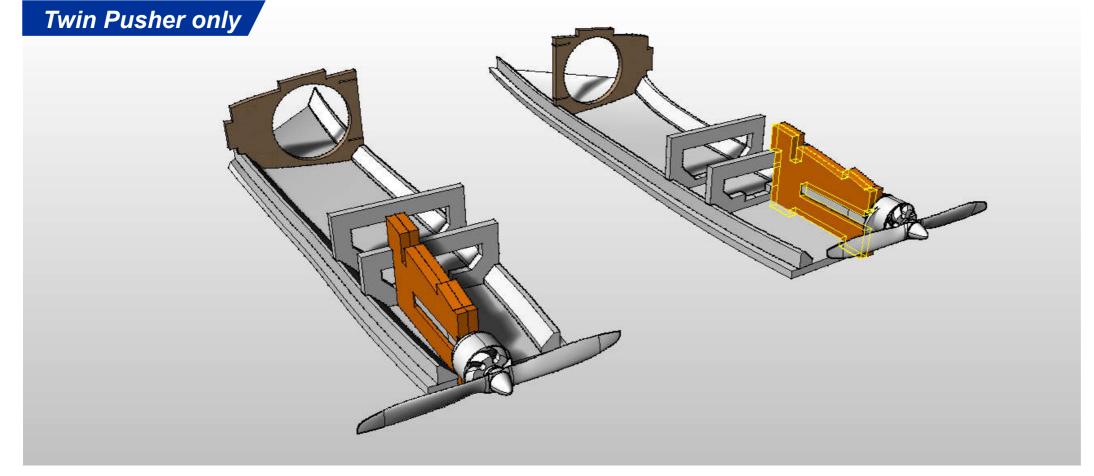


Glue the two pieces of each motor mount together.

Using Hot melt glue attach the motor stick mount into each motor mounts as shown.



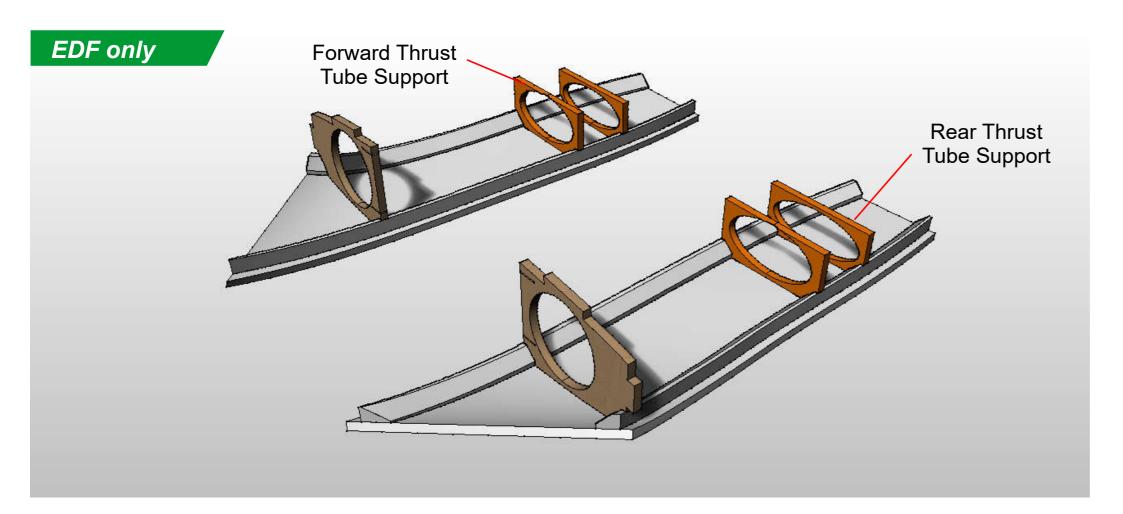
Glue the Twin motor mounts into the Nacelles as shown.











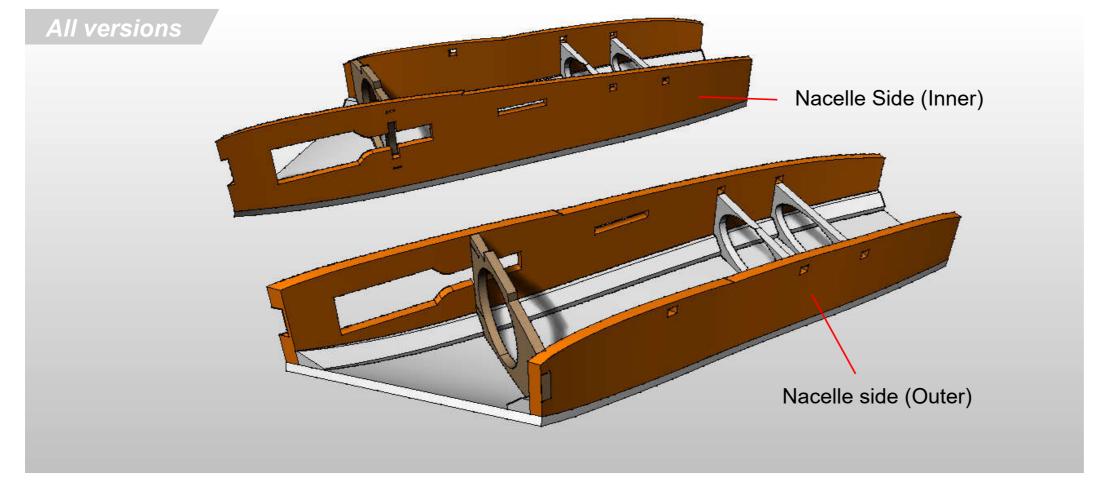
For the EDF version.

Glue the **Forward & Rear Thrust tube Supports** to the Nacelle base.

Glue the two EDF bulkhead pieces together then glue to the frame - this part is used on the pusher and EDF versions.



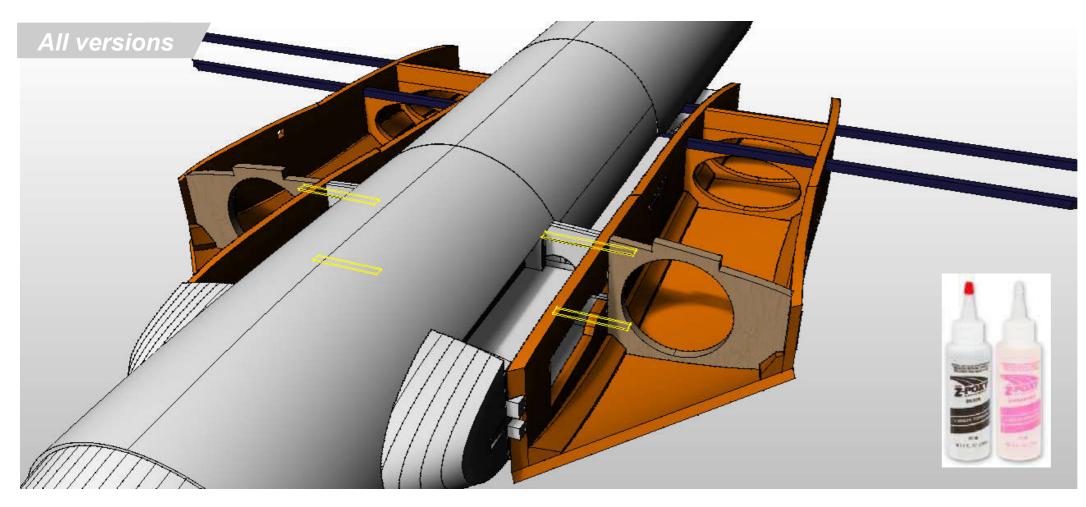
Glue both **Nacelle Sides** to the Nacelle assemblies.

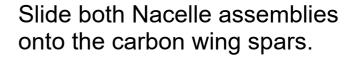






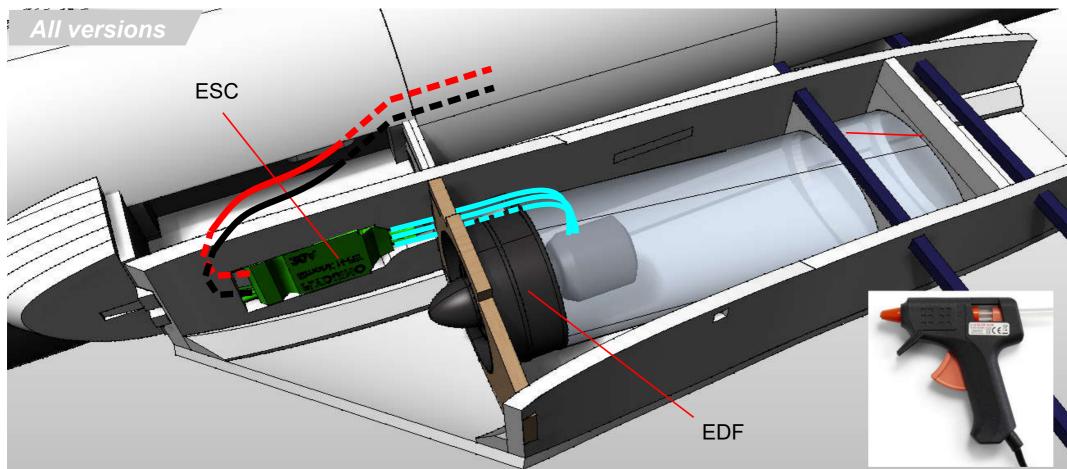






Use UHU por to connect all the depron parts to the fuselage, and epoxy on the EDF bulkhead carbon strips.





Fabricate the thrust tube using <0.4mm plastic sheet and nylon reinforced tape along the seam.

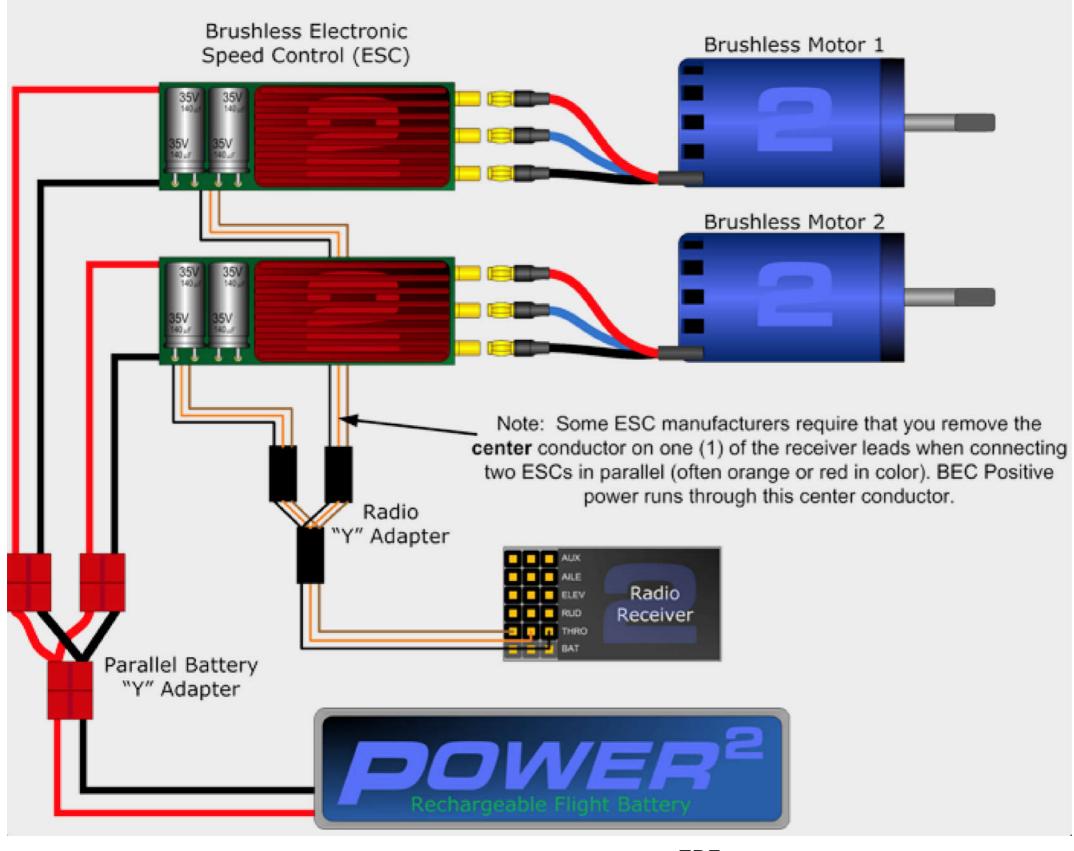
Fit the Thrust tube / EDF into the assembly and Glue in place using Hot melt Glue. ensure the thrust tube end is only 3mm onto the rear thrust tube support piece if you aren't using 3d prints.

Run the cables as shown using the holes provided to connect the EDF to the ESC, the power cables into the Battery compartment and the ESC servo cable into the forward box area.





# 50mm EDF only



I found this image on the internet - I am not sure who created it, but it is a clear diagram of how to set up a single battery / twin motor setup.

Be sure to investigate with your RX manufacturer whether you need to have a single or can have dual power feeds from your ESC's.

If in any doubt, remove one red wire terminal from the ESC and tape it to prevent it touching anything.

**EDF** 





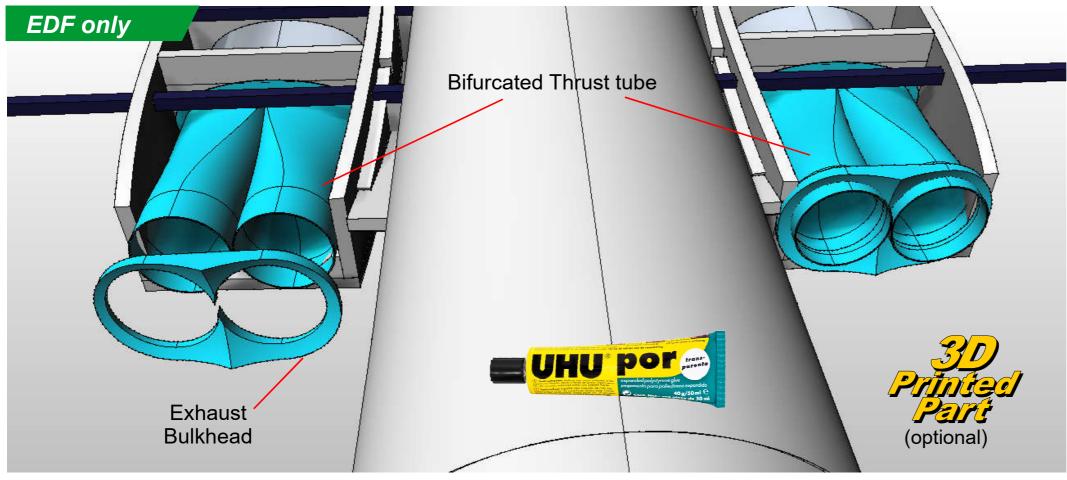


# NON 3D printed EDF exhaust nozzles.

Glue the exhaust bulkhead to the fuselage using UHU por.

Using sandpaper wrapped around a pencil / dowel, sand a path on the nacelle sides for the rear thrust tube to sit in.

Fabricate the rear thrust tube in the same way as the forward part and connect together as shown.



#### 3D Printed Exhaust Nozzles.

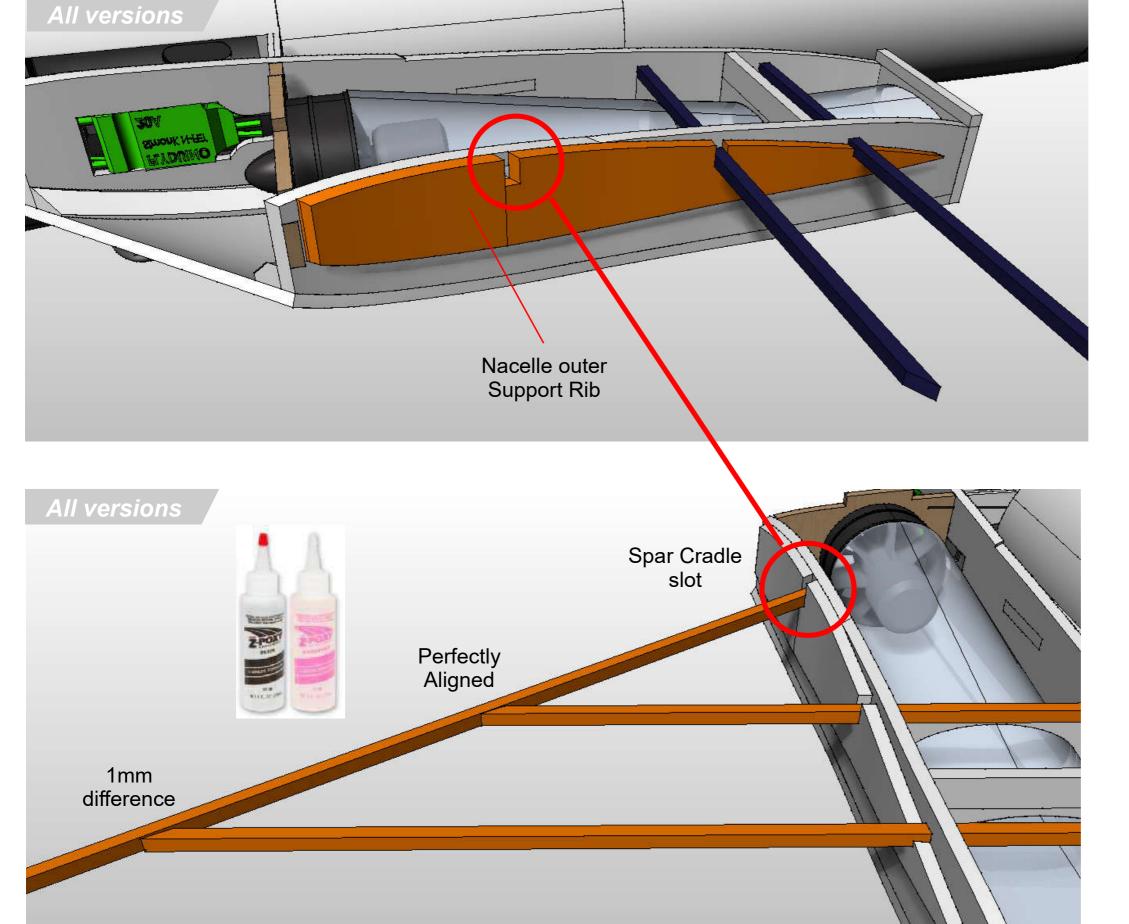
Using sandpaper wrapped around a pencil / dowel, sand a path on the nacelle sides for the rear thrust tube to sit in.

Dry fit the 3d printed exhaust bulkheads (carefully noting the correct orientation) to help position the Bifurcated thrust tubes.

Glue the Bifurcated thrust tubes to the rear Thrust tube support and all contacting surfaces, followed by the Exhaust bulkhead.







Glue the **Nacelle outer support Rib** to the fuselage side as shown.

Repeat on the other wing (mirrored)



Glue the main wing spar to the assembly;

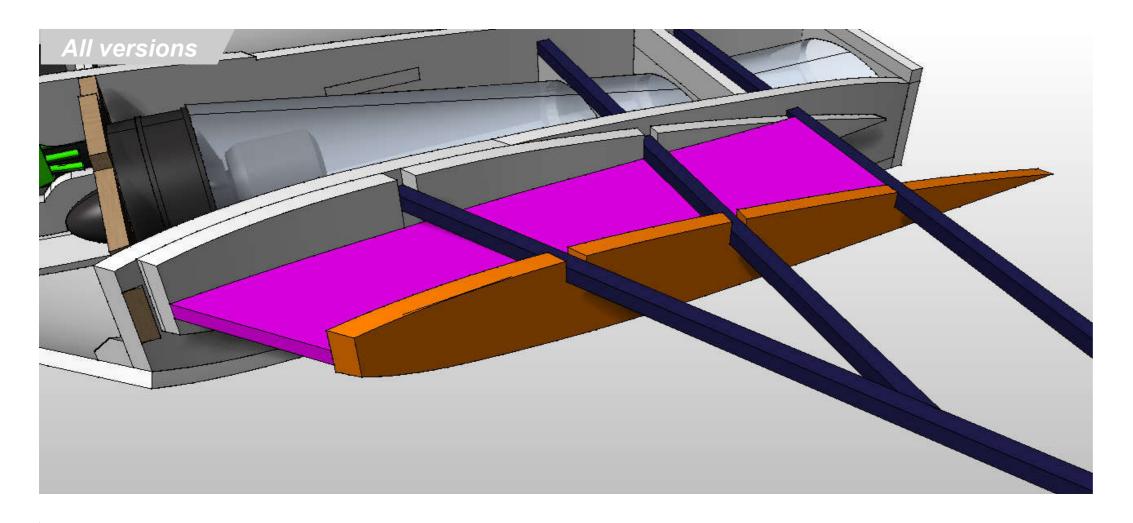
- 1. Cradle the inner end into the bottom of the slot.
- 2. Perfectly aligned to the forward spar.
- 3. 1mm higher than the rear spar.

Clamp in place until the Epoxy sets.

Then add more epoxy, while wet, wrap nylon thread around each joint to reinforce the connection





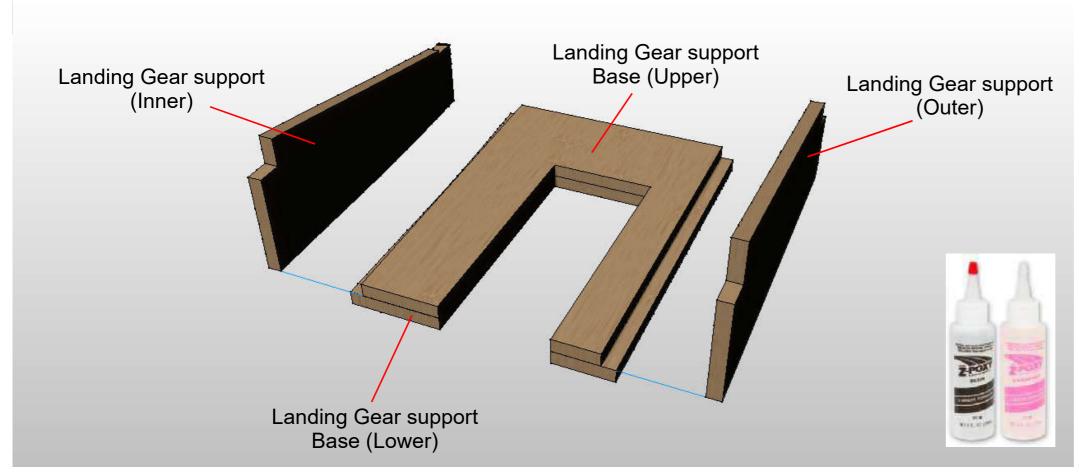


Using the Alignment Jig, Glue **Rib 2** to the Carbon spars using epoxy.

Repeat the process (Mirrored) on the other wing.

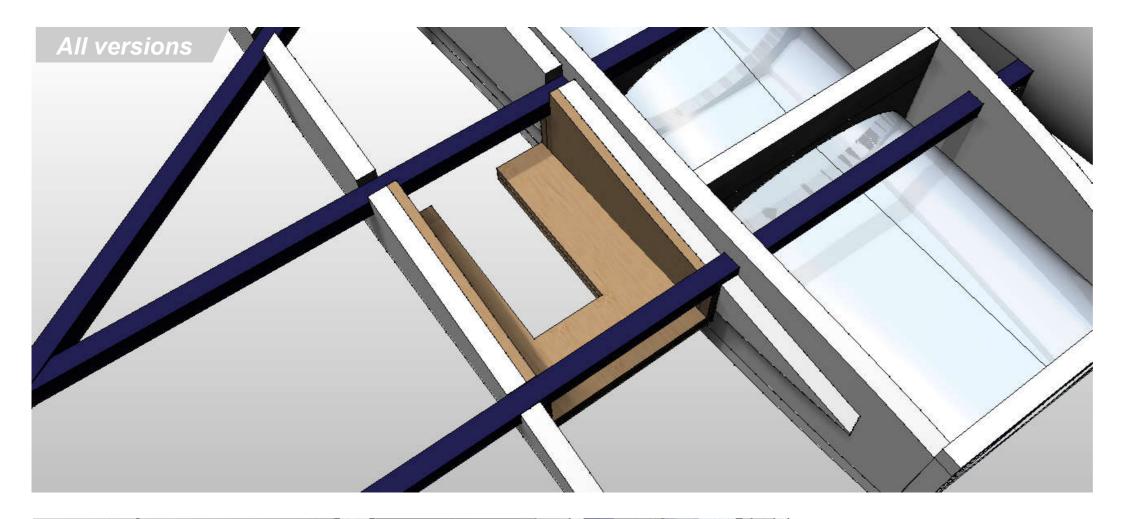


Glue together the 3mm wing landing gear support pieces as shown.



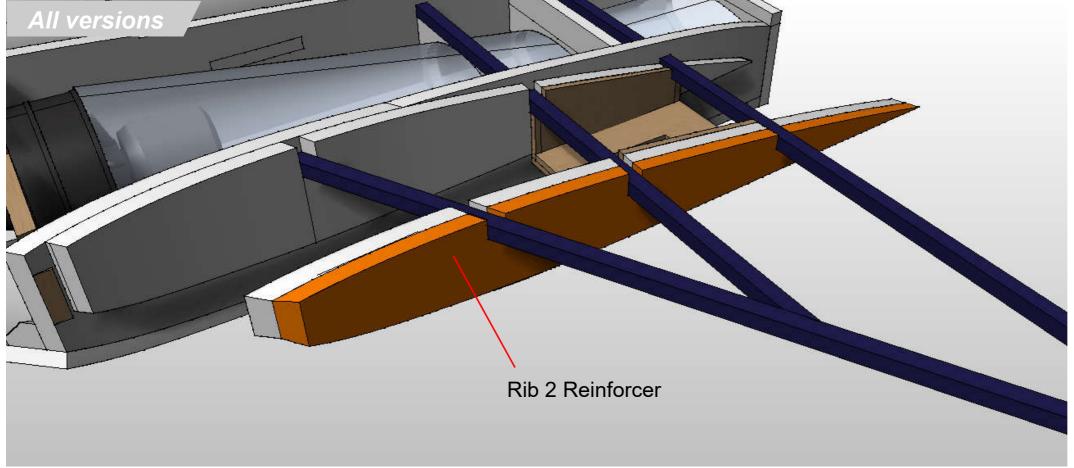






Glue both Landing Gear Reinforcers into the assembly



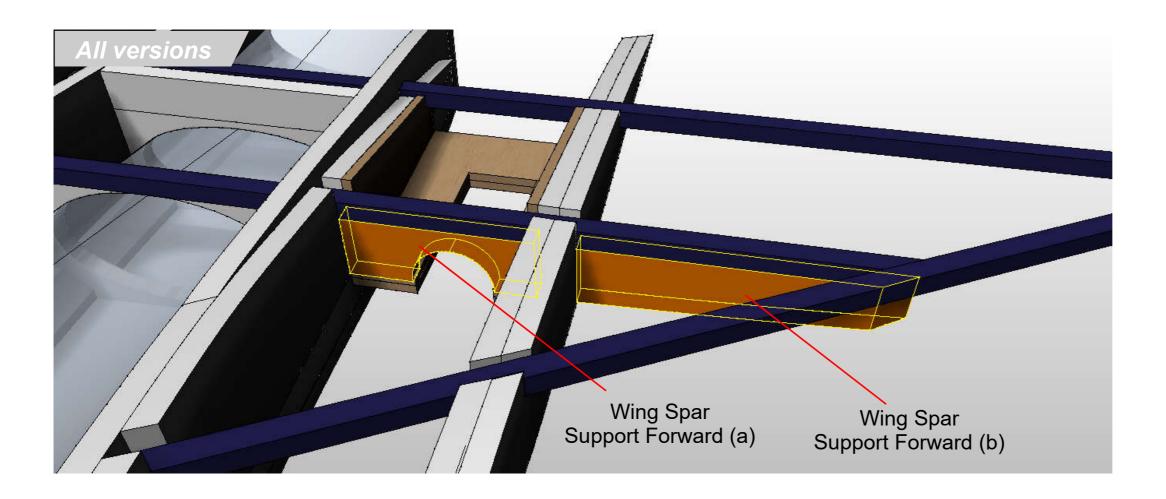


Glue the **Rib 2 Reinforcer** to the assembly.









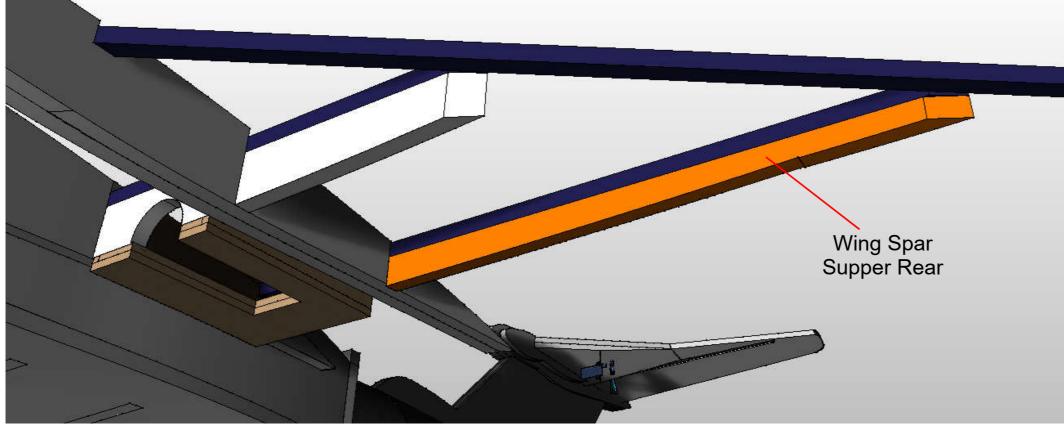
Glue both **Wing Spar Support** (Forward) pieces into the assembly

Repeat the process (Mirrored) on the other wing.



Glue the **Wing Spar Support** (**Rear**) pieces into the assembly

Repeat the process (Mirrored) on the other wing.

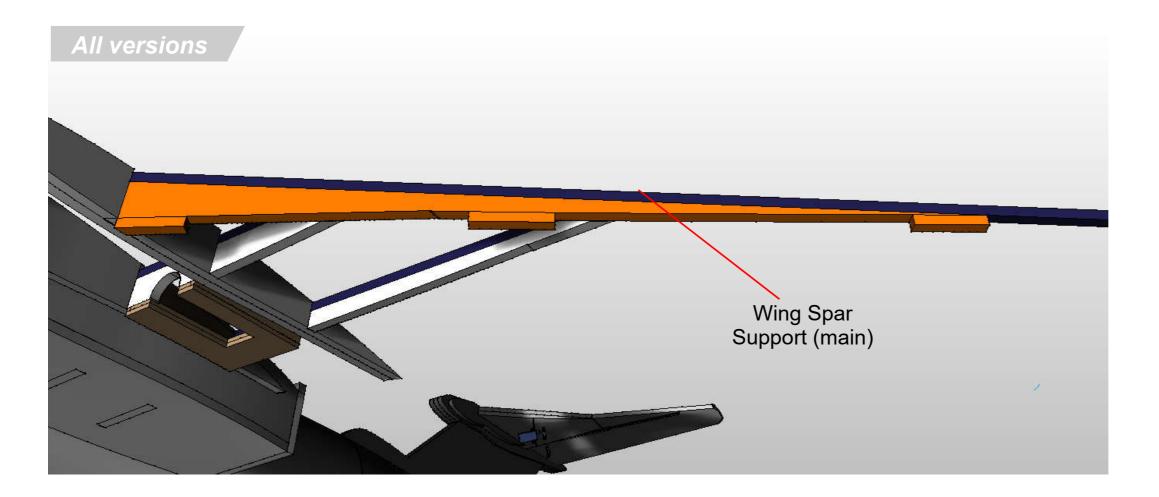






All versions





Glue the **Wing Spar Support** (main) pieces into the assembly

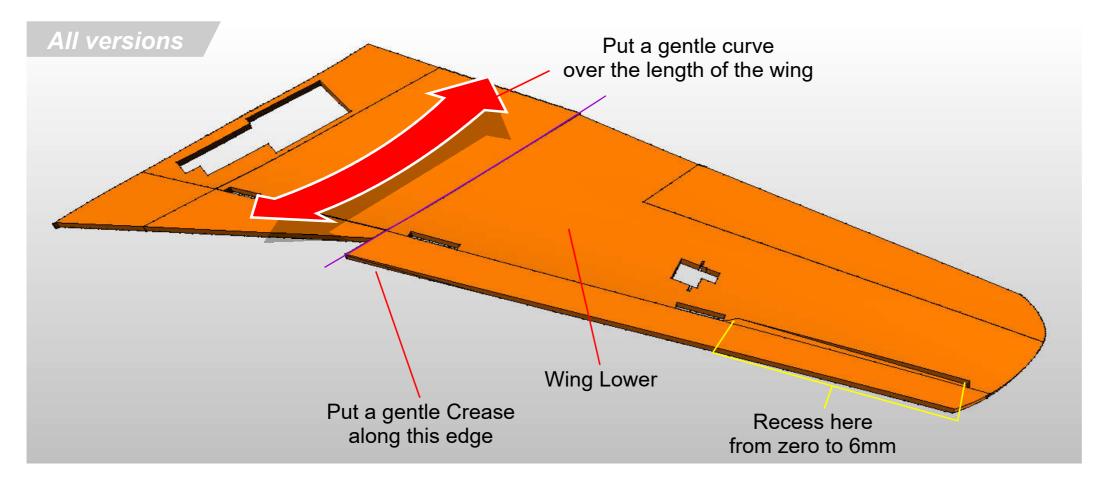
Repeat the process (Mirrored) on the other wing.



Prepare the **Wing Lower** to attach to the assembly.

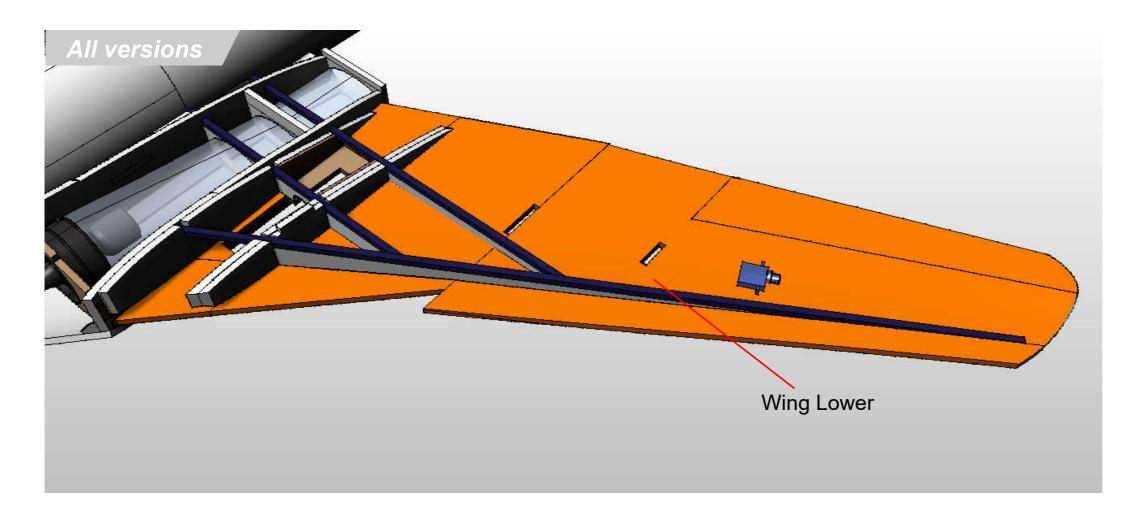
It is important that both sides match equally or your aircraft may demonstrate a mild rolling effect.

You may need to split the wing along its crease line if the curvature demands it. if this is the case - at the end of your build you may wish to re-join them using a little 0.6oz fibreglass with Water based Polyurethane varnish as a resin.









Glue the **Wing Lower** pieces into the assembly

Repeat the process (Mirrored) on the other wing.

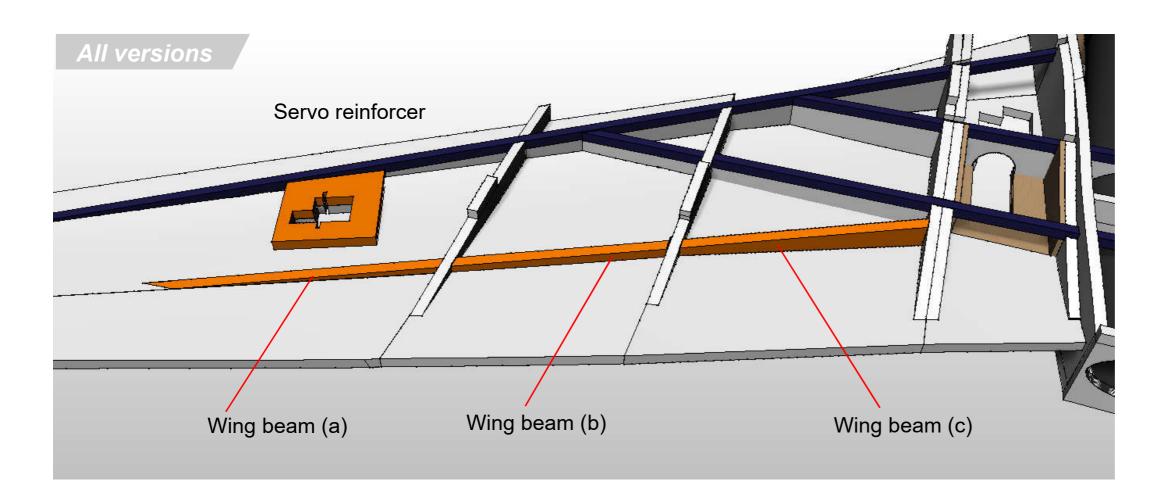


Rib 3 (a)

Glue Wing Rib 2 and Rib 3 (a & b) to the wing as shown.





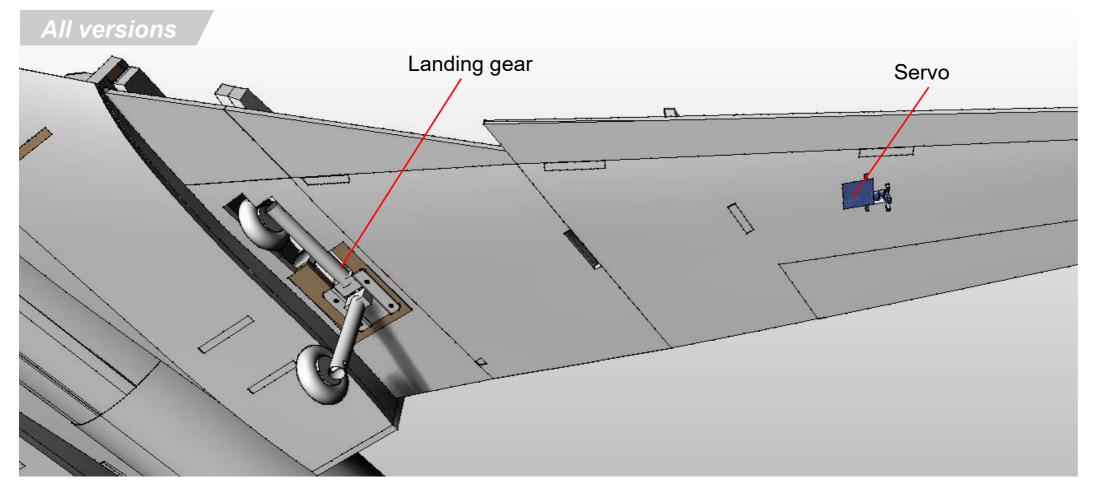


Glue the **Wing Beam** pieces to the assembly

Glue the **Servo Reinforcer** to the assembly

Repeat the process (Mirrored) on the other wing.



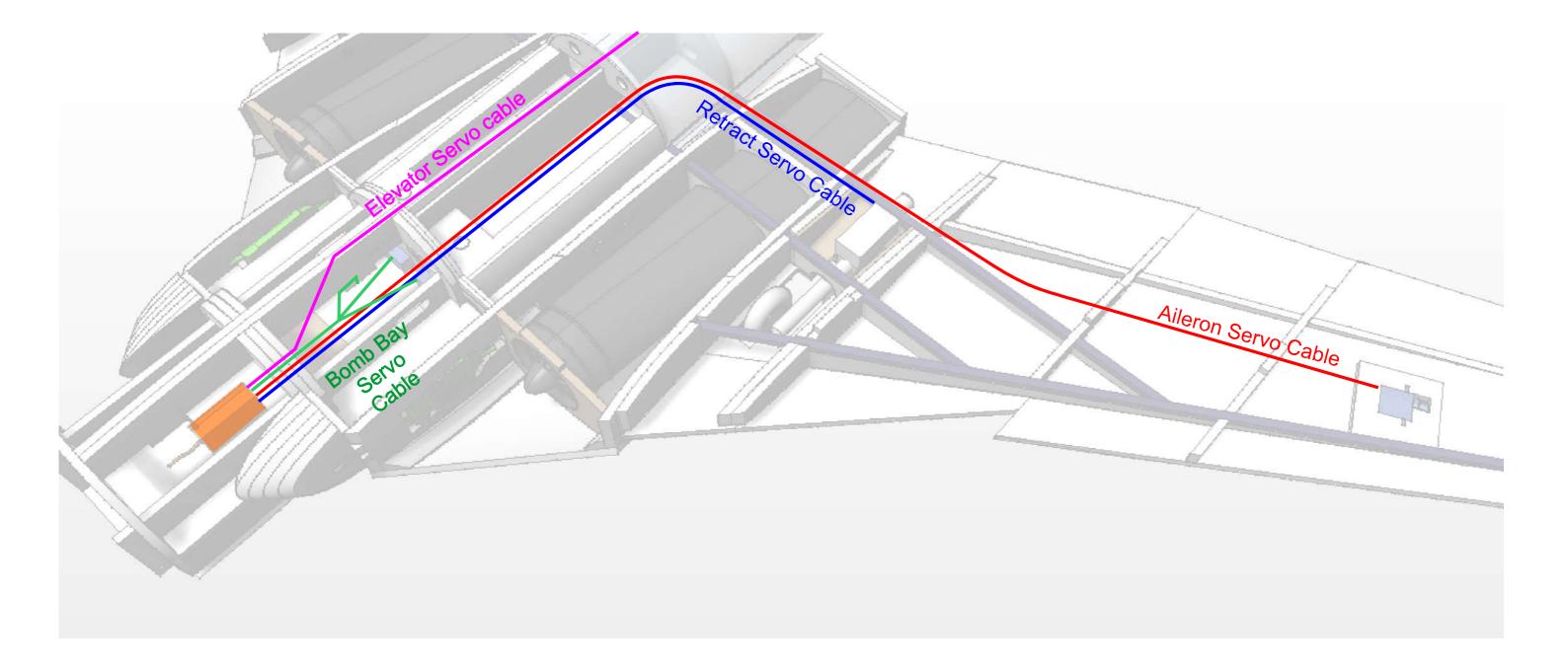


Glue the Aileron servo into its slot using hot melt glue.

Screw the retracts onto the Liteply landing gear mount as shown.







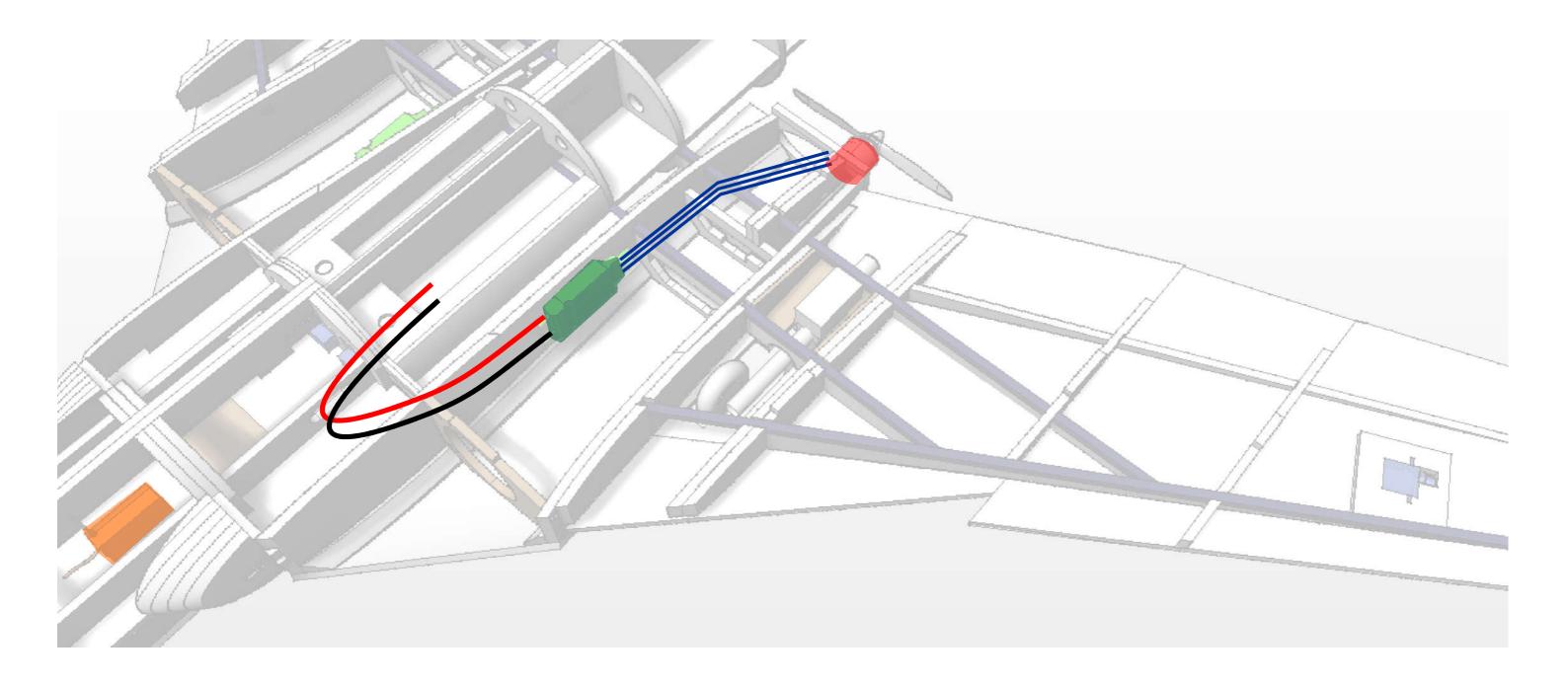
## **EDF** version

NOTE: Panels removed to help see the cable routes.

- Position the RX in the forward box. Run all servo cables to it, via the battery bay or Bomb bay. Use Servo extensions cables - reinforced with some nylon reinforced tape to prevent them coming apart







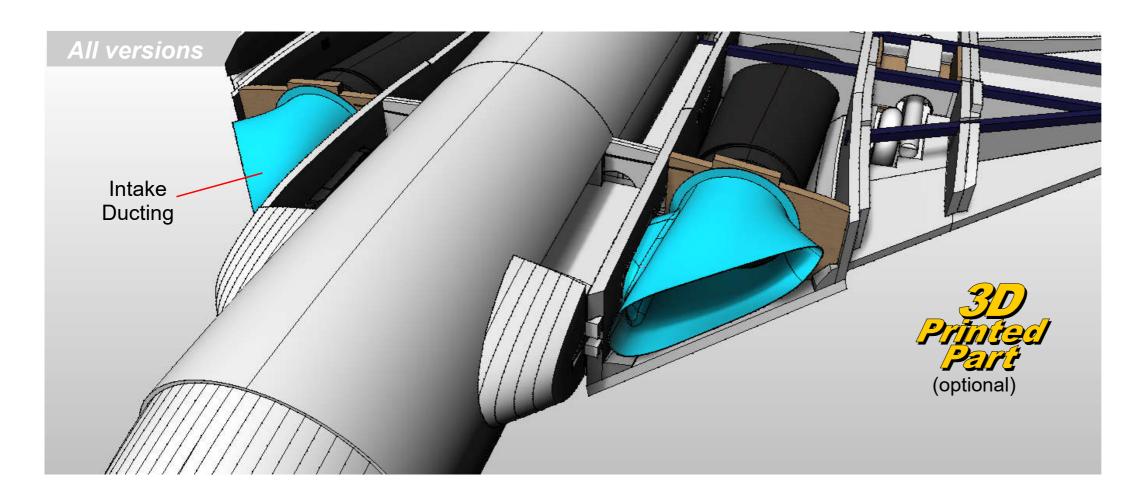
### TWIN PUSHER Version

NOTE: Panels removed to help see the cable routes. Position the RX in the forward box. Run all servo cables to it as per the EDF version using servo extension cables - reinforced with some nylon reinforced tape to prevent them coming apart

Depending on your 3dprints / motor / battery choice you may find that your batteries are too far aft in the battery bay. If this is the case, then move your batteries into the forward box, and swap your RX into your battery bay.





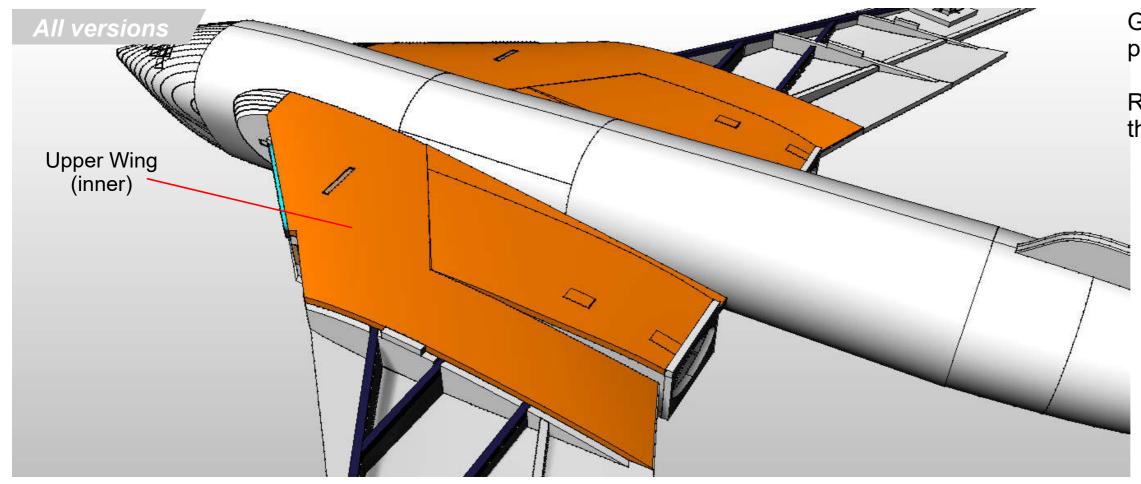


Glue the 3D Printed Intake Ducting to the LitePly Bulkhead.

Dry fit the intakes (outer) part to it to make sure it is on straight.

If you DON'T have a 3d printed part then leave the inlet ring on your EDF unit instead.

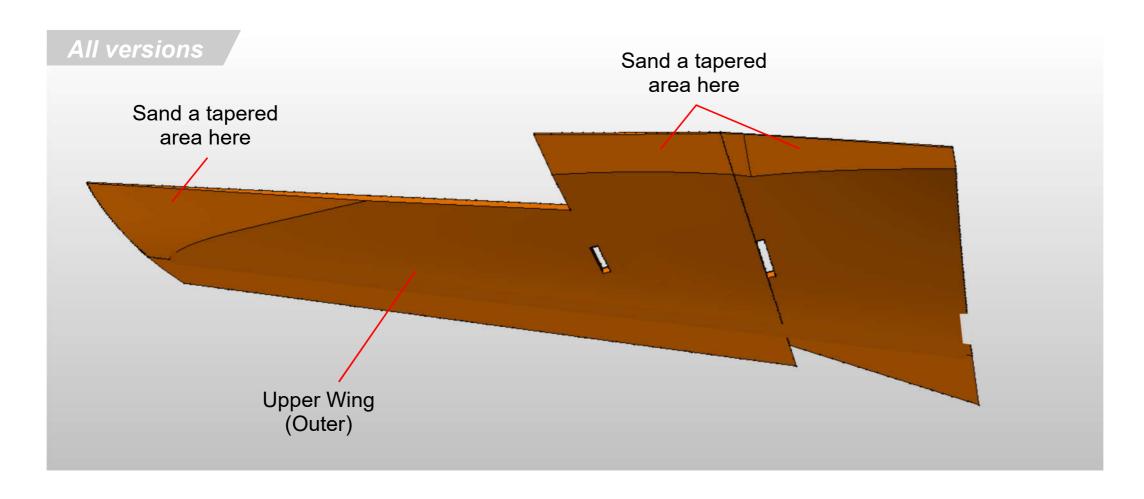




Glue the **Upper Wing (Inner)** part to the assembly as shown.

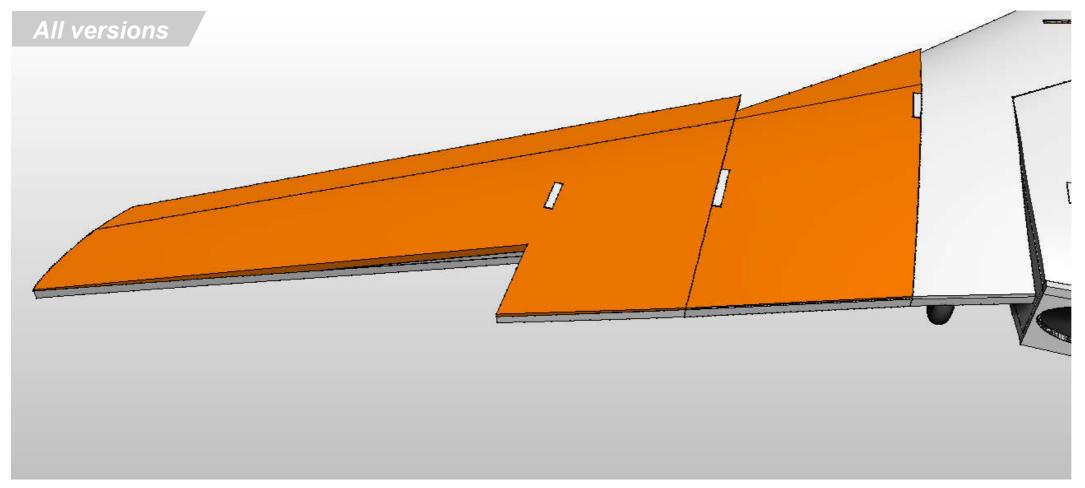






Sand the tapered areas on the trailing edges of the **Wing Upper** (outer).

Repeat the process (Mirrored) on the other wing.

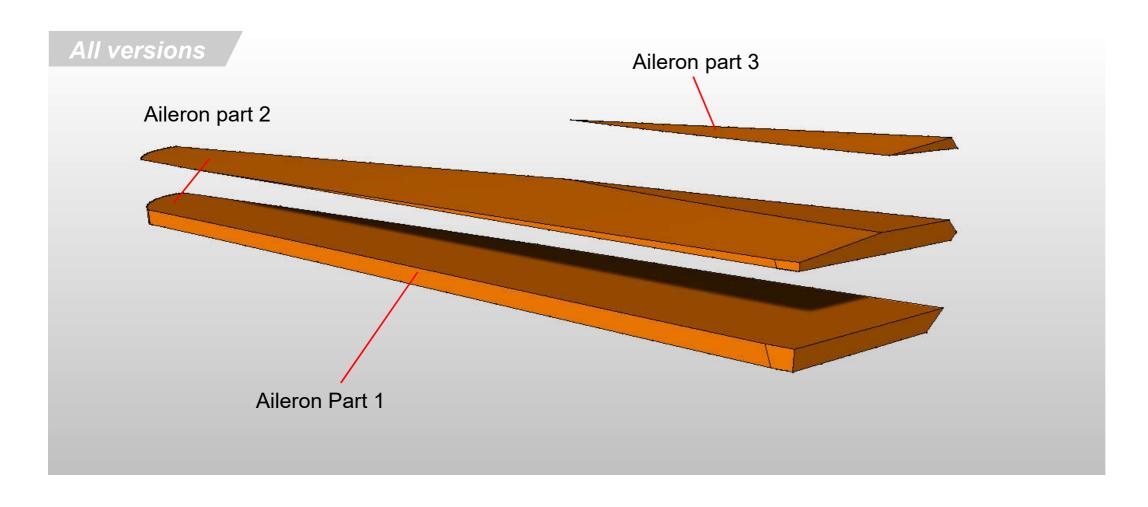


Glue the **Upper Wing (Outer)** part to the assembly as shown.





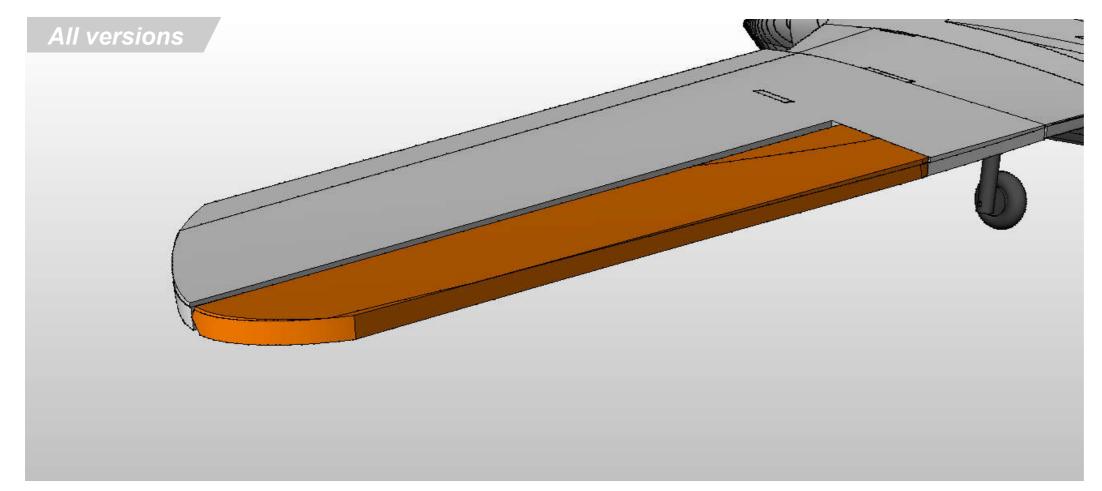




Glue the 3 parts of the **Aileron** together.

Repeat the process (Mirrored) on the other wing.

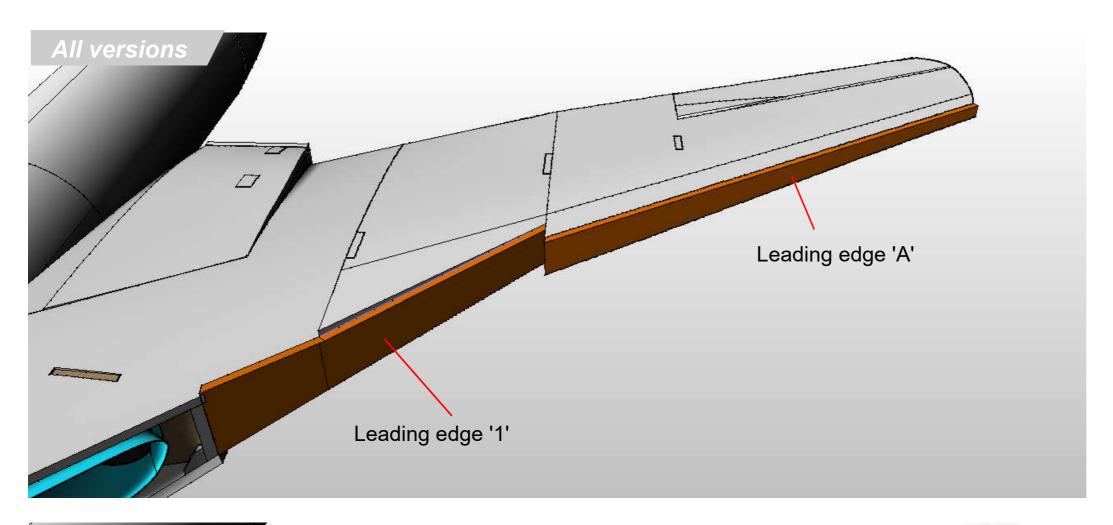




Glue the **Aileron** to 3 robust hinges then onto the wing - marking a centreline through the tapering shape.





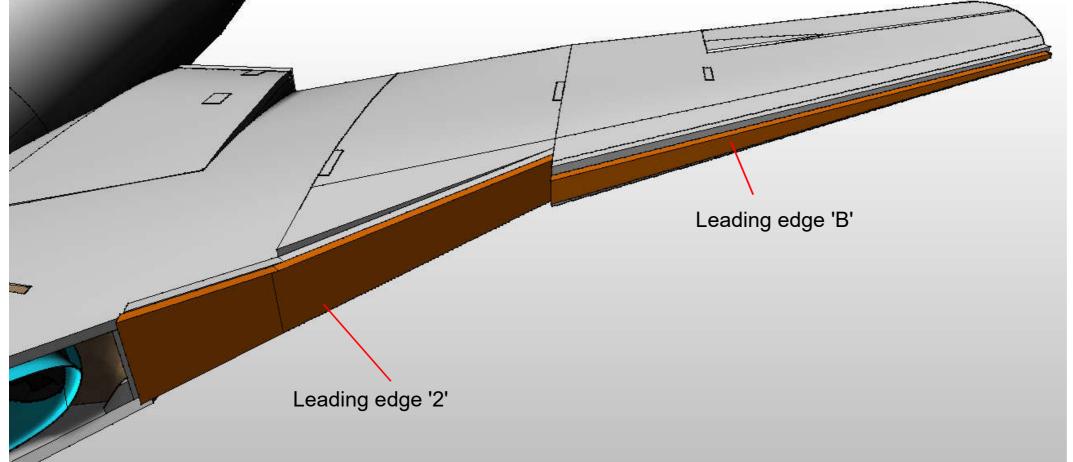


Glue the 1st Layer of **Leading Edge strips** to the front of the wing.

Repeat the process (Mirrored) on the other wing.



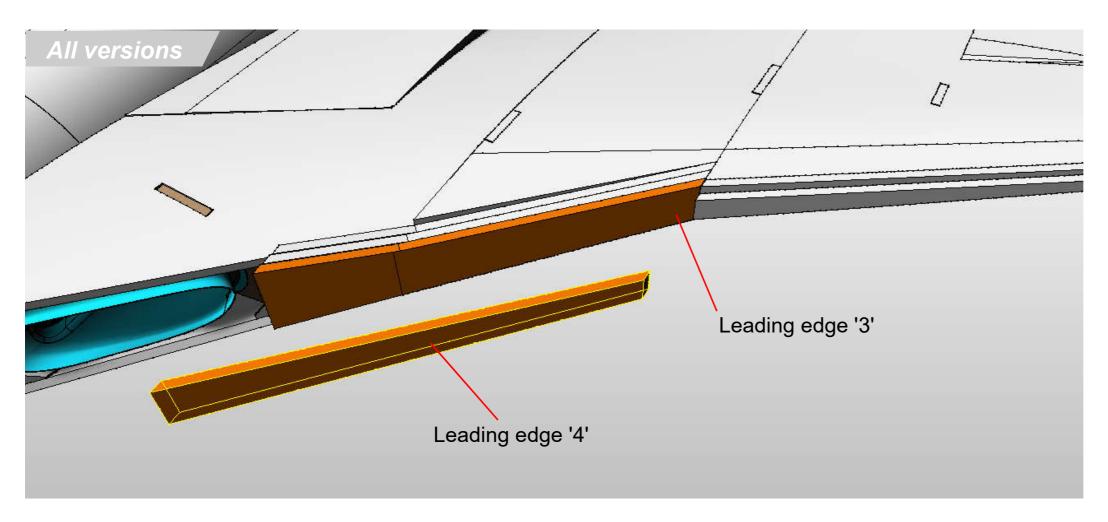
Glue the 2nd Layer of **Leading Edge strips** to the front of the wing.







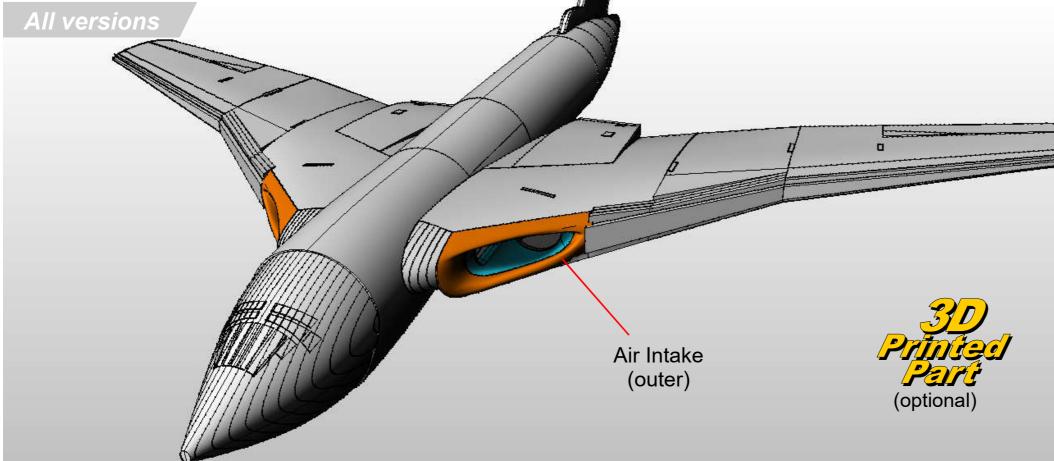




Glue the 3rd and 4th Layer of **Leading Edge strips** to the front of the wing.

Repeat the process (Mirrored) on the other wing.





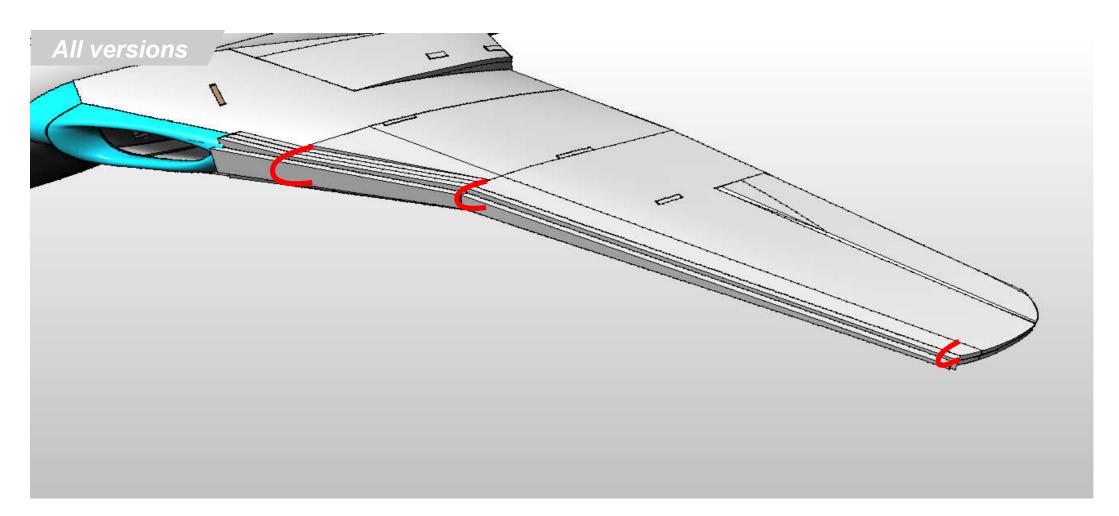
Either 3D print or Laminate the **Air intake (Outer)** parts together and sand to shape.

Glue to the assembly

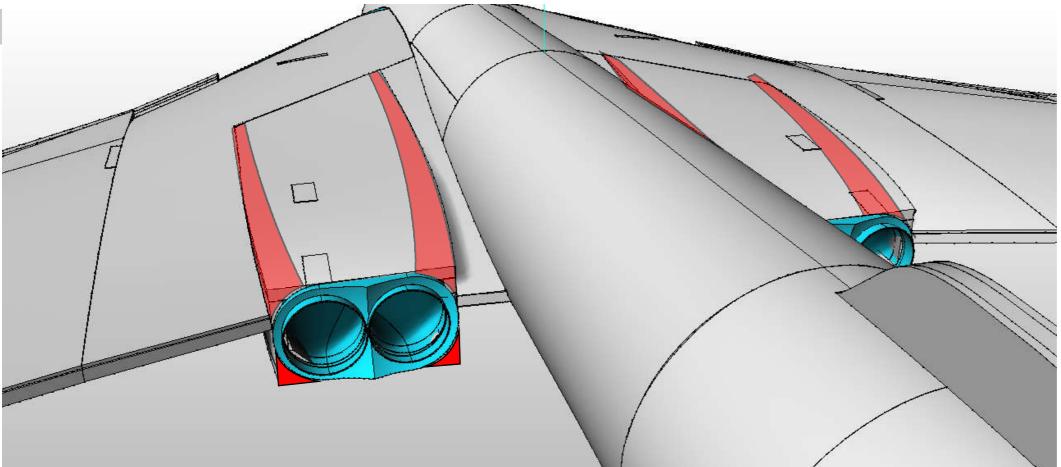








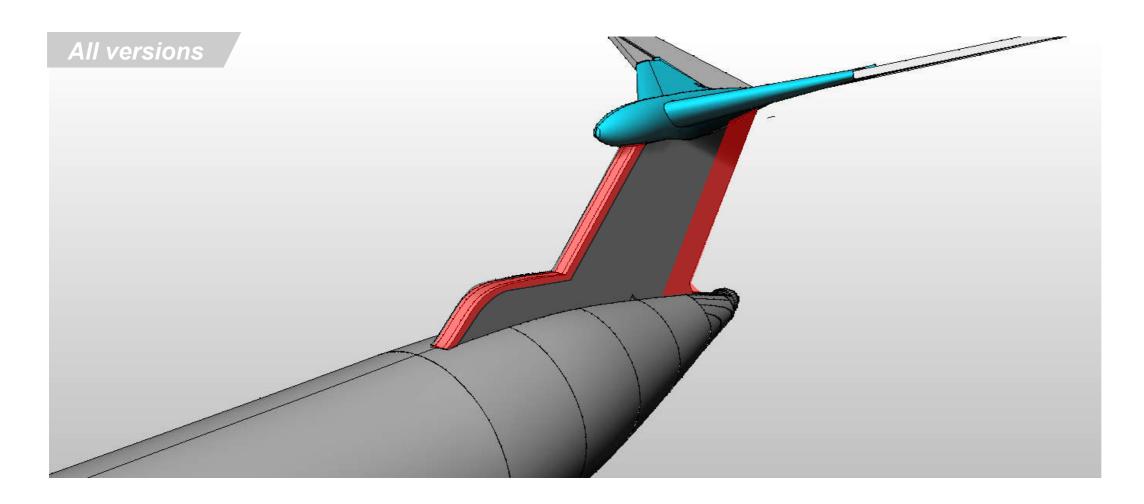
Sand the Leading edges to an elliptical shape - ensuring both wings are symmetrical.



Sand the Corners of the Nacelles as shown to they are more oval than square.

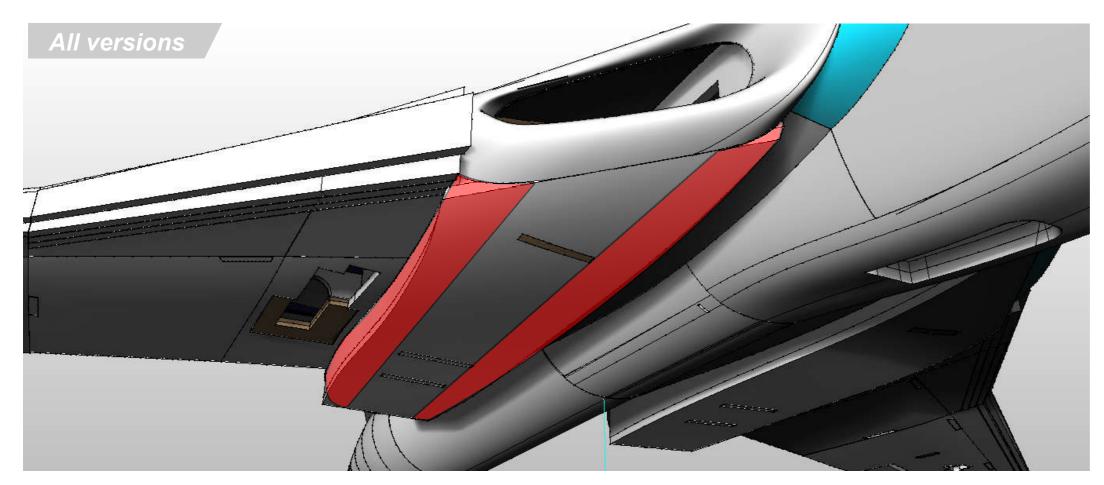






Sand the Leading edges to an elliptical shape.

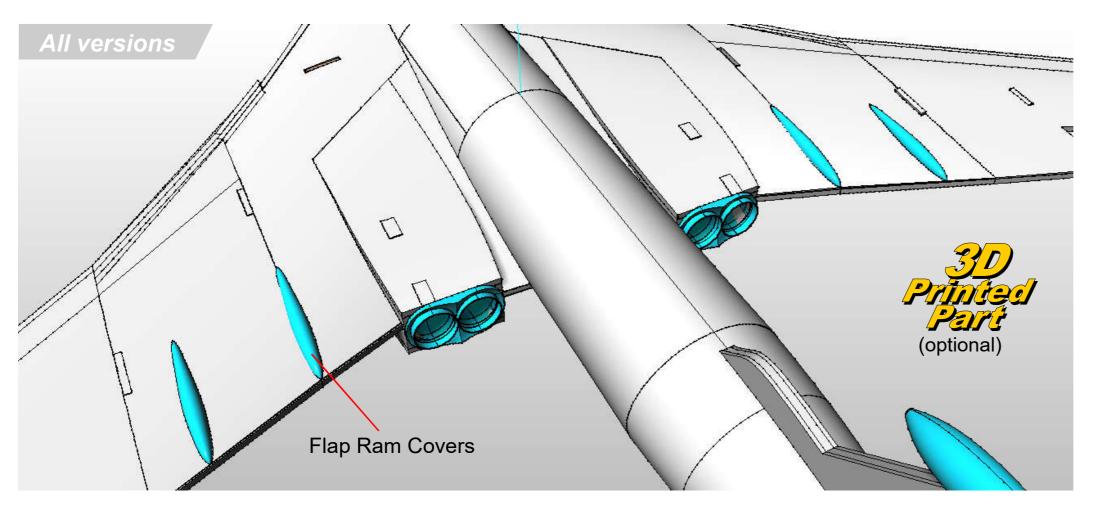
Sand the Trailing edges to an elongated elliptical shape.



Sand the Lower Nacelle to match up with the shape of the intake.







Either Fabricate from foam, or 3d print the **Flap Ram Covers**.

Glue to the position marked on the plans onto the wing.

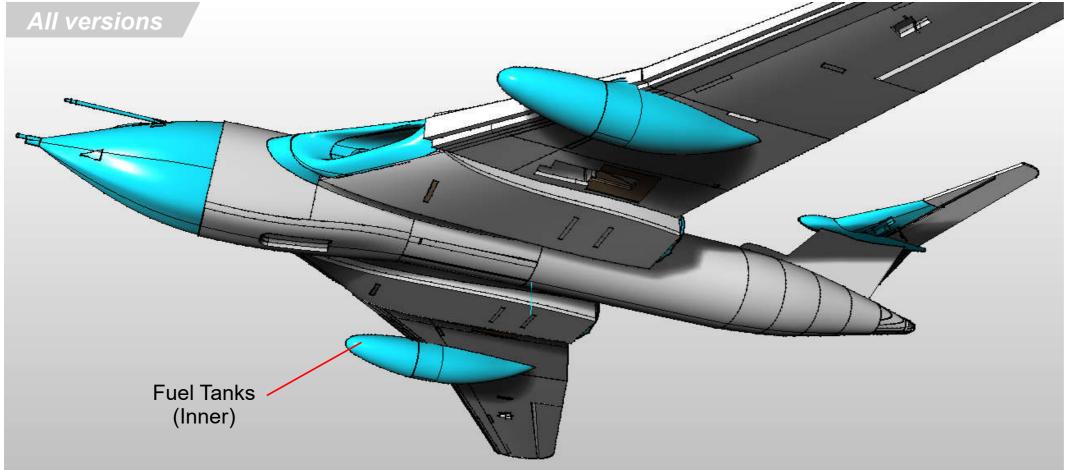
Repeat the process (Mirrored) on the other wing.



Either Fabricate from foam, or 3d print the **Fuel Tanks (Inner)**.

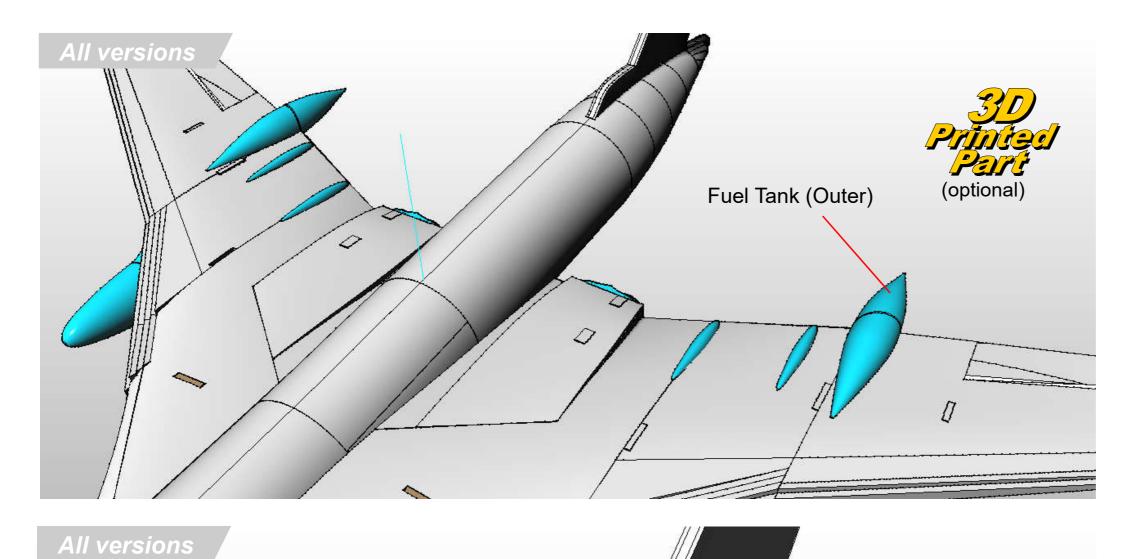
Glue to the position marked on the plans onto the wing.











Either Fabricate from foam, or 3d print the **Fuel Tank (Outer).** 

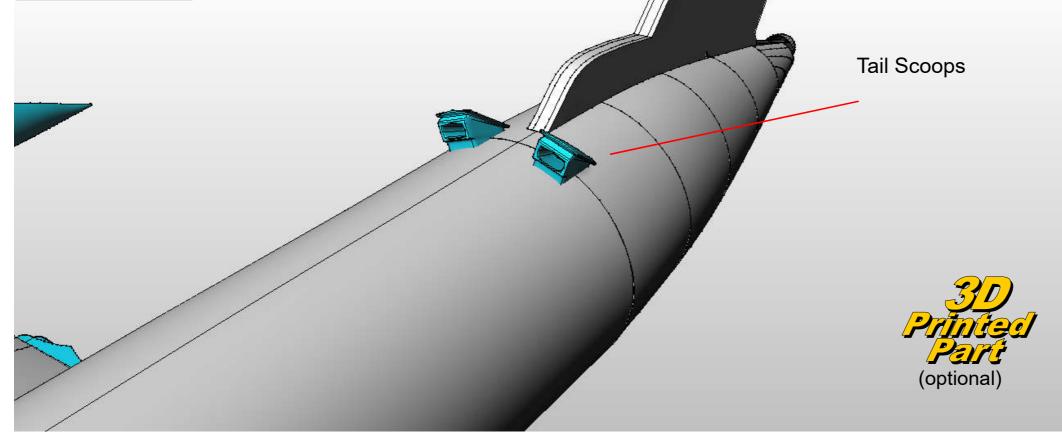
Glue to the position marked on the plans onto the wing.

Repeat the process (Mirrored) on the other wing.



Either Fabricate from foam, or 3d print the **Tail Scoops**.

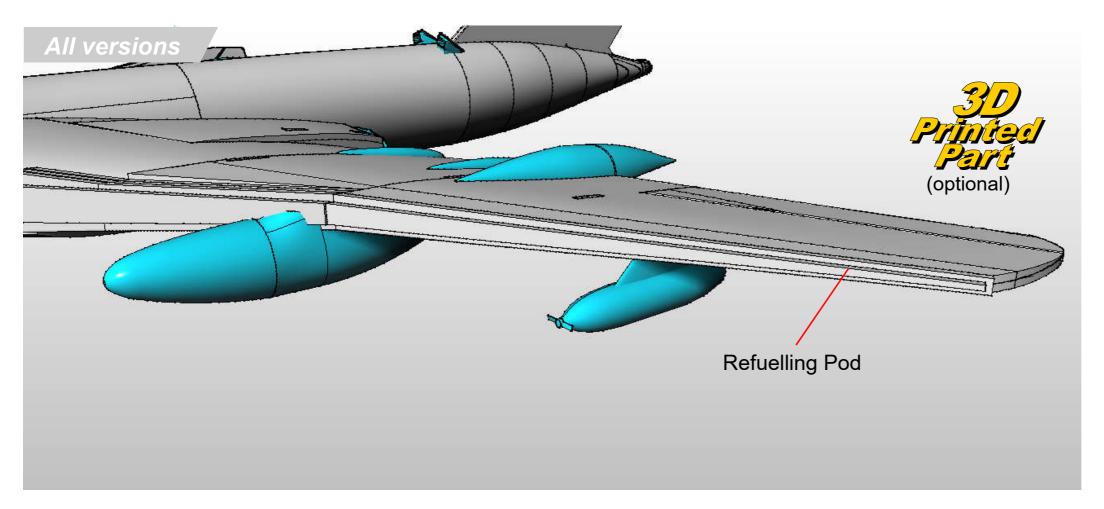
Glue to the position marked on the plans onto the fuselage.









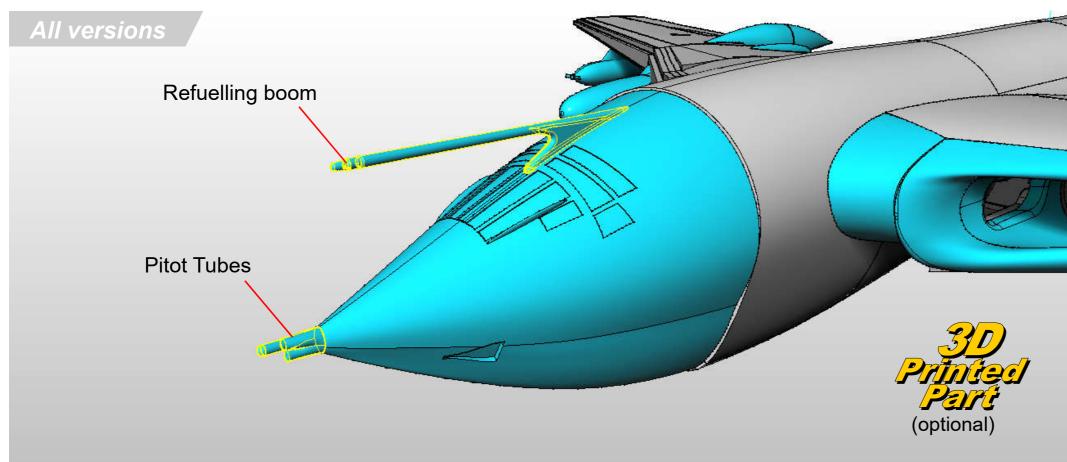


Either Fabricate from foam, or 3d print the **Refuelling pod.** 

Glue to the position marked on the plans onto the wing.

Repeat the process (Mirrored) on the other wing.



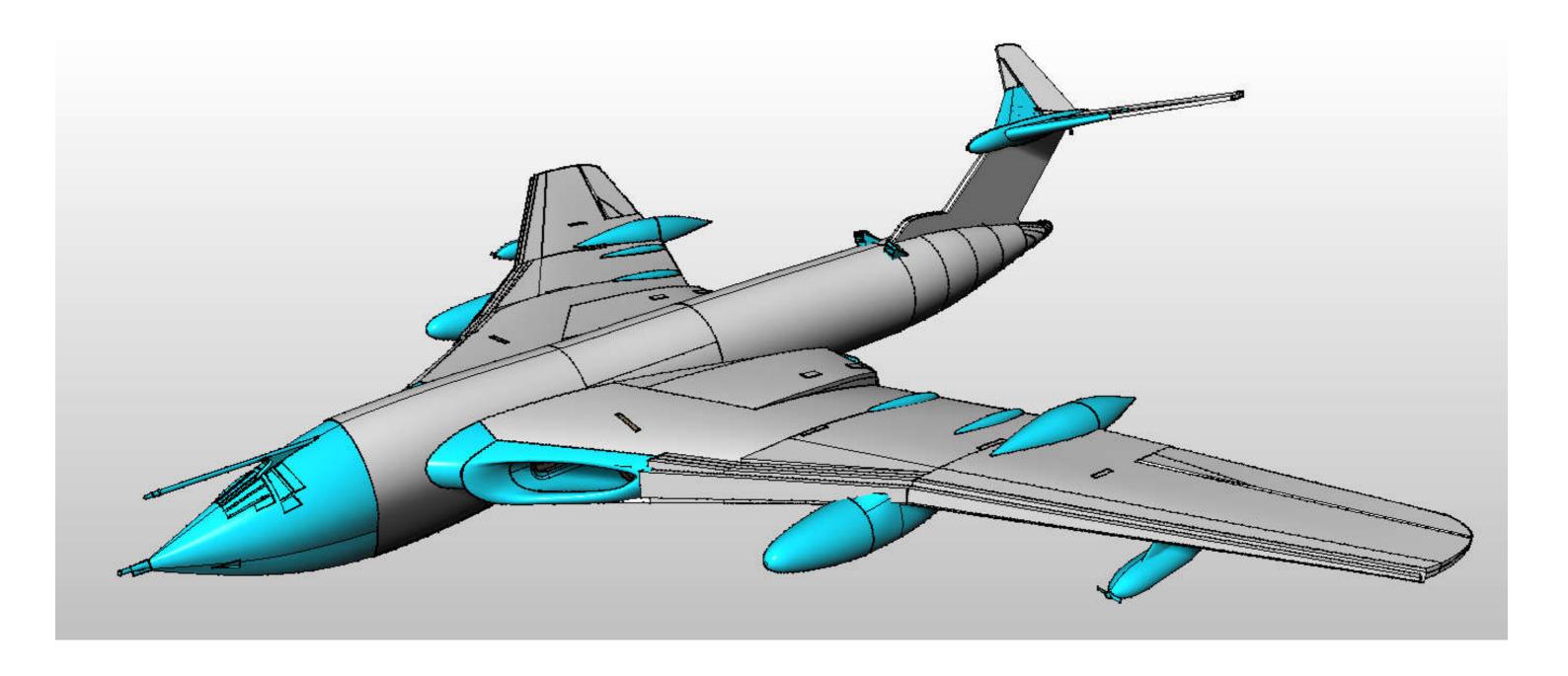


Either Fabricate from 5mm carbon tube, or 3d print the **Refuelling Boom / Pitot tubes.** 









Congratulations! Your model is now complete.

Either fly it as it is, or finish it further - look at www.jetworks.online for finishing guides.





The internet is full of images of the Victor. Use them to help finish and detail your model.



