



*Hawker*  
***Hunter***  
*Parkjet*



2nd Generation Fighter

**Construction Guide**

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# Hunter History

The Hawker Hunter is a transonic British jet-powered fighter aircraft that was developed by Hawker Aircraft for the Royal Air Force (RAF) during the late 1940s and early 1950s. It was designed to take advantage of the newly developed Rolls-Royce Avon turbojet engine and the swept wing, and was the first jet-powered aircraft produced by Hawker to be procured by the RAF. On 7 September 1953, the modified first prototype broke the world air speed record for aircraft, achieving a speed of 727.63 mph (1,171.01 km/h; 632.29 kn).

The single-seat Hunter was introduced to service in 1954 as a manoeuvrable day interceptor aircraft, quickly succeeding first-generation jet fighters in RAF service such as the Gloster Meteor and the de Havilland Venom. The all-weather/night fighter role was filled by the Gloster Javelin. Successively improved variants of the type were produced, adopting increasingly more capable engine models and expanding its fuel capacity amongst other modifications being implemented. Hunters were also used by two RAF display teams: the "Black Arrows", who on one occasion looped a record-breaking 22 Hunters in formation, and later the "Blue Diamonds", who flew 16 aircraft. The Hunter was also widely exported, serving with a total of 21 overseas air forces.

During the 1960s, following the introduction of the supersonic English Electric Lightning in the interceptor role, the Hunter transitioned to being operated as a fighter-bomber and for aerial reconnaissance missions, using dedicated variants for these purposes. Two-seat variants remained in use for training and secondary roles with the RAF and the Royal Navy until the early 1990s. Sixty years after its original introduction it was still in active service, being operated by the Lebanese Air Force until 2014.

The Hunter saw combat service in a range of conflicts with several operators, including the Suez Crisis, the Aden Emergency, the Sino-Indian War, the Indo-Pakistani War of 1965, the Indo-Pakistani War of 1971, the Rhodesian Bush War, the Second Congo War, the Six-Day War, the War of Attrition and the Yom Kippur War. Overall, 1,972 Hunters were manufactured by Hawker Aircraft and its successor, Hawker Siddeley, as well as being produced under licence overseas. In British service, the Hunter was replaced in its principal roles by the Lightning, the Hawker Siddeley Harrier and the McDonnell Douglas F-4 Phantom II.



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## Designers Notes

The Hunter Parkjet makes a decent model due to its low wing loading and clean aerodynamic shape. With its round fuselage makes it simple to belly land.

Can be made with or without 3D printed parts. Suitable for either a single 64 or 70mm EDF unit or pusher propeller.

For simplicity I chose to design the horizontal stabilisers as full flying - which was something that the later Hunters had to maintain good control in the transonic speeds. Early Hunters had a fixed tailplane with trailing edge elevators.





# 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.

## 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!)

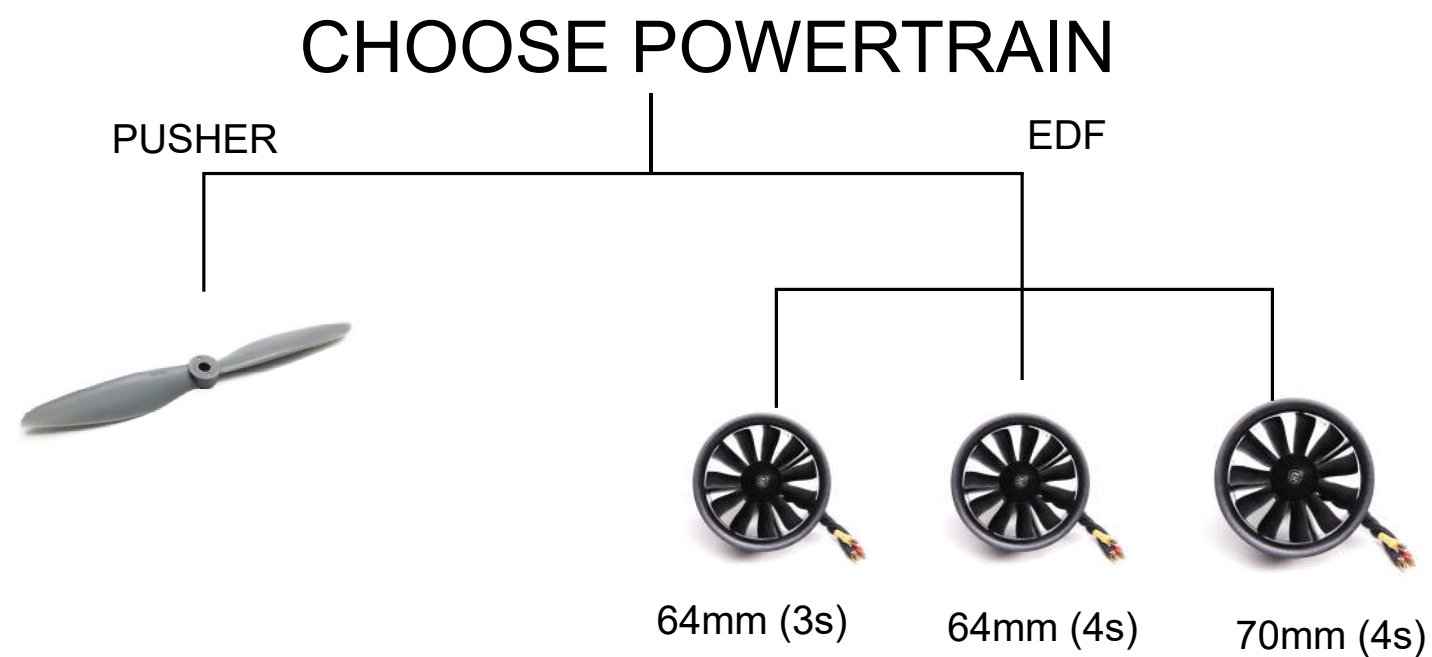
**IMPORTANT** Wherever the plans call for marking guidelines onto the depron, please ensure that you do otherwise it can cause problems later on. I suggest you use a Sharpie Fineliner to transfer the lines.

## Glueing parts together.

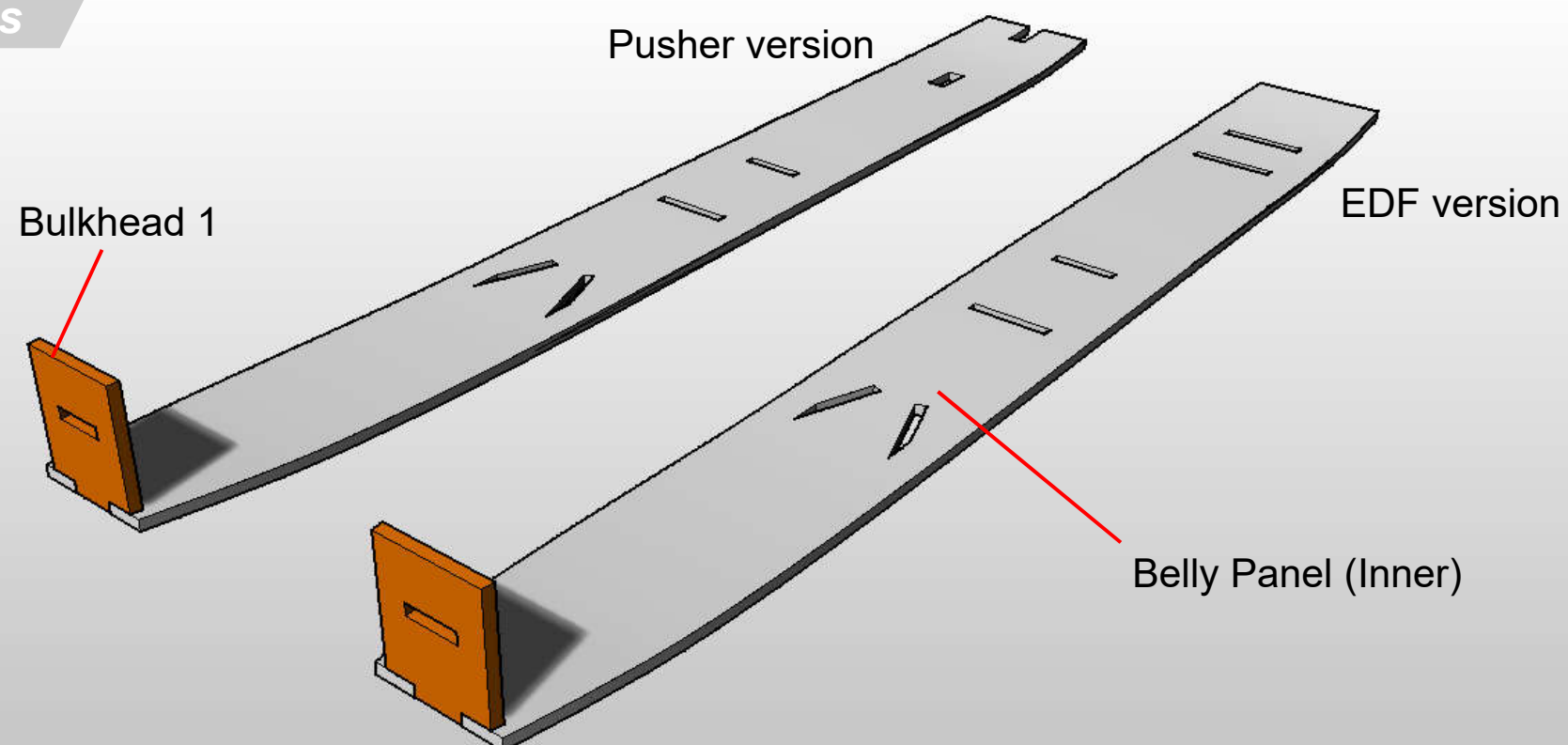
1. Ensure a really good fit - this will reduce the amount of adhesive used. The Bar Sander is a great tool for this.
2. Follow the adhesive instructions closely.
3. Use ordinary steel head pins to help keep the parts located whilst epoxy sets.
4. Use objects as weights such as paperweights to apply pressure 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.



Choose your preferred variant  
and its powertrain.



*All versions*

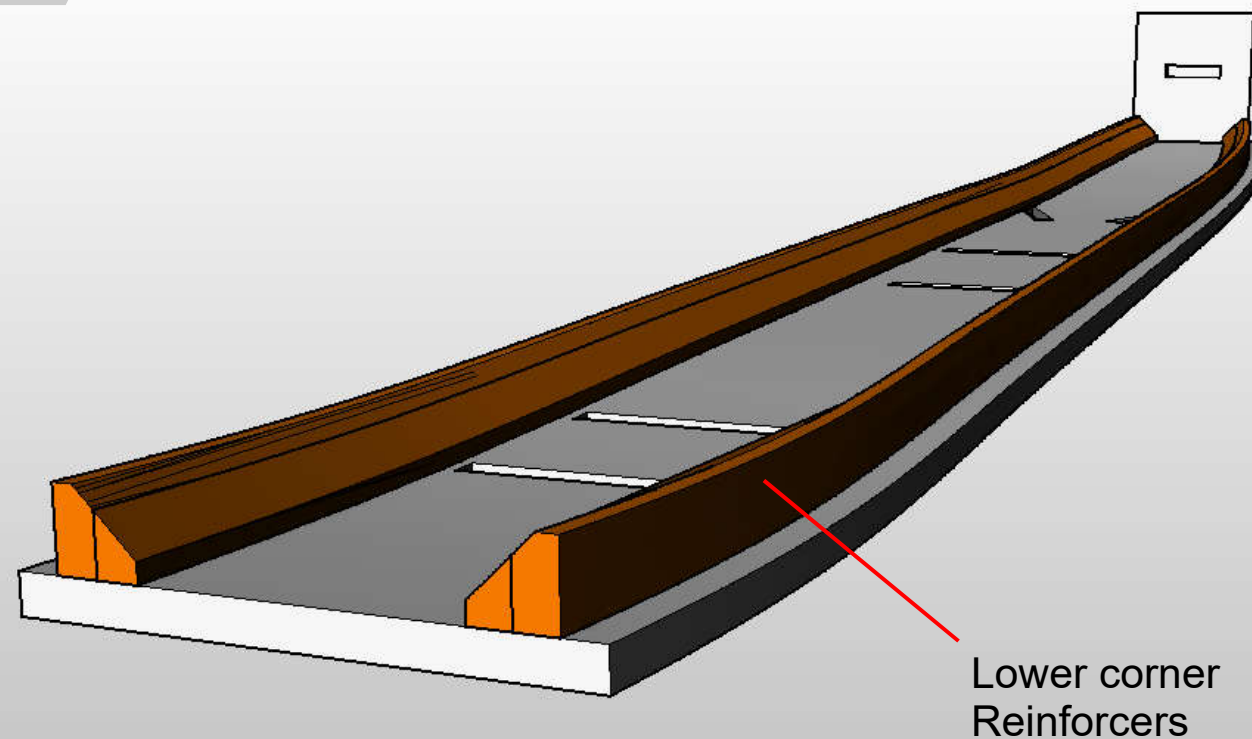


Glue **Bulkhead 1** to the **Belly Panel (Inner)**

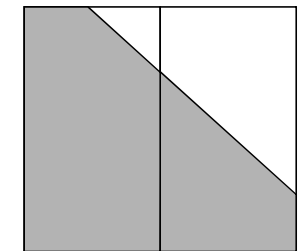




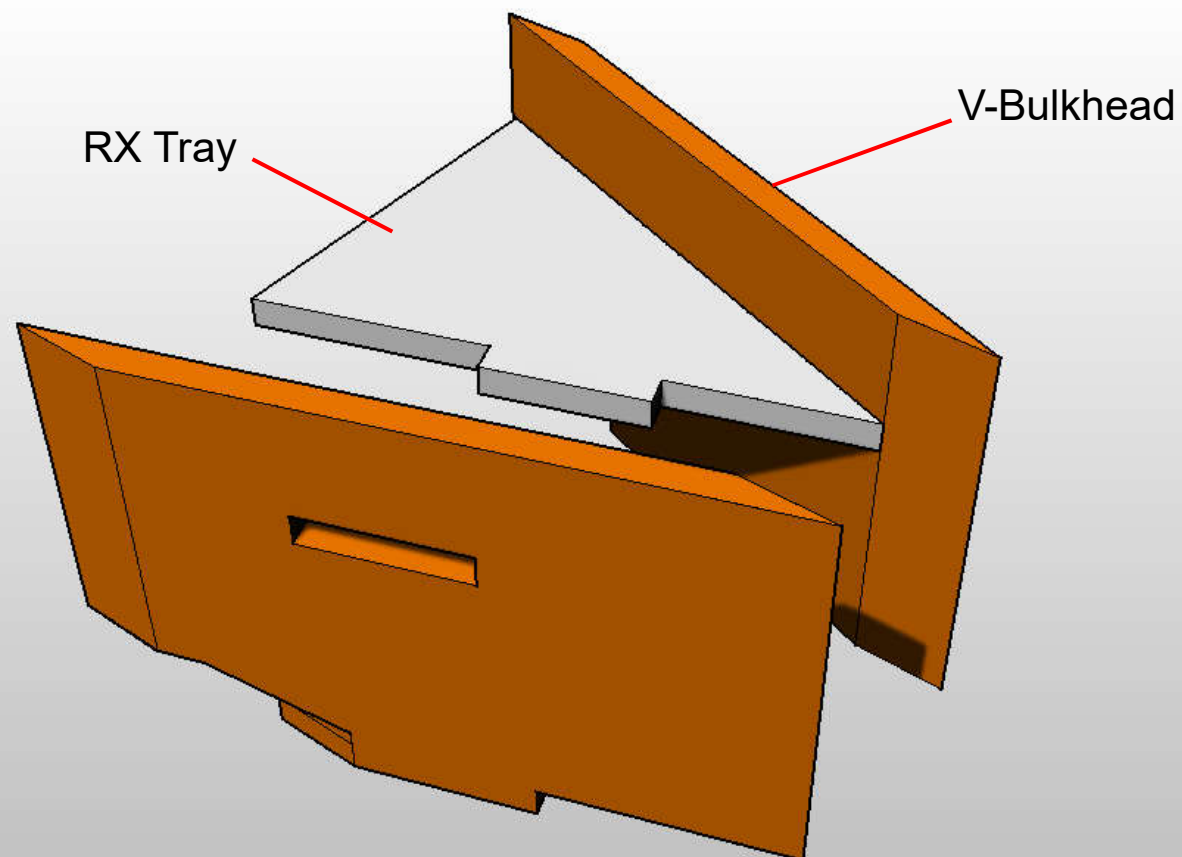
All versions



Put a 9 x 9mm chamfer on the inside top edges of the **Lower corner Reinforcers** and glue to the Belly Panel (Inner) offset 6mm from the edge.



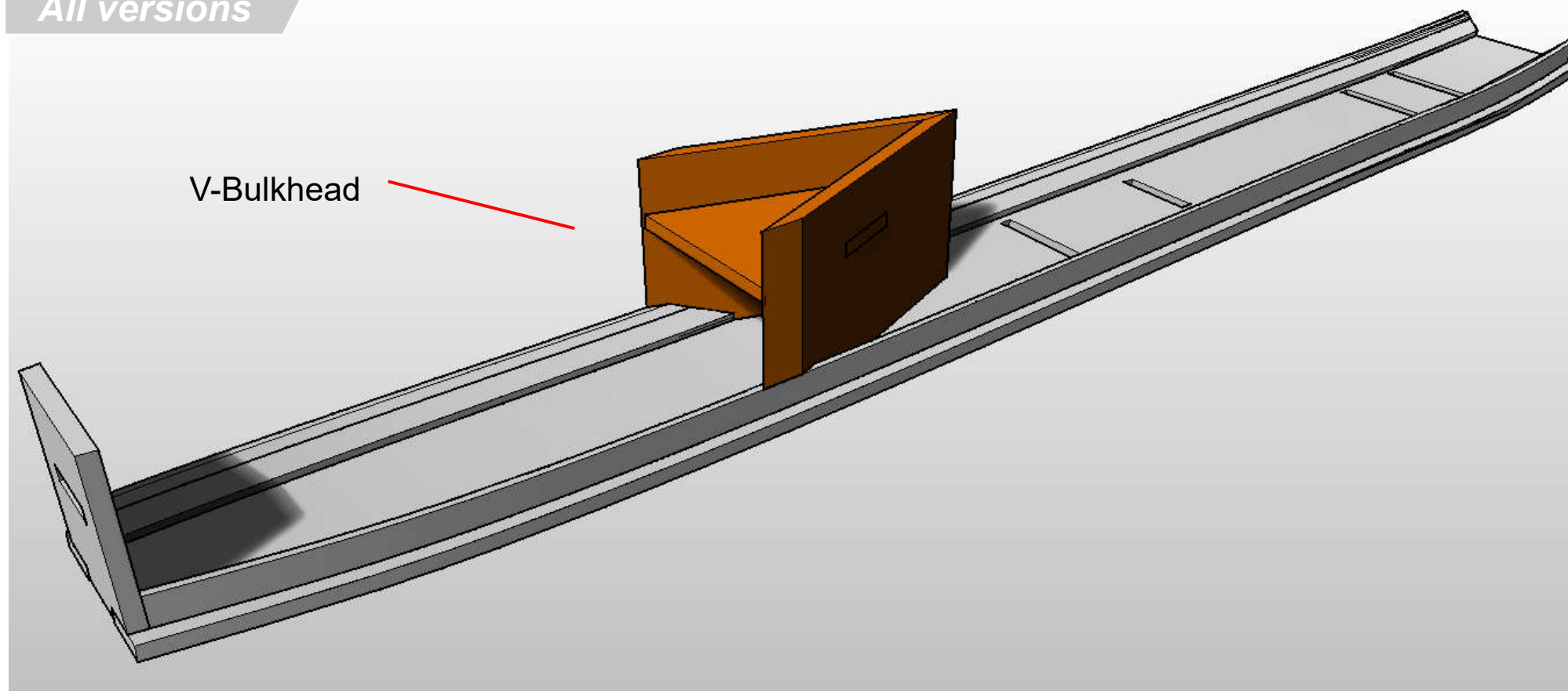
All versions



Glue the two pieces of the **V-Bulkhead** together around the RX Tray.



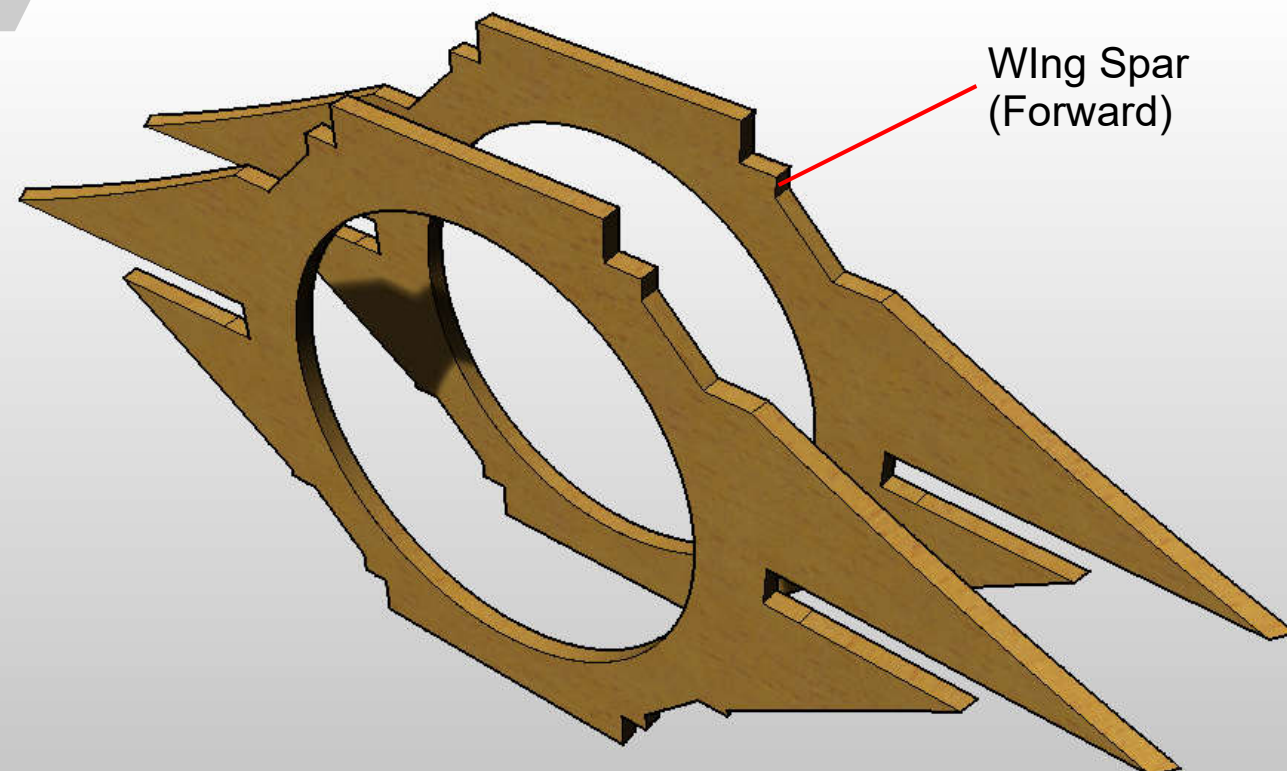
All versions



Glue the **V-Bulkhead** assembly to the Belly Panel (Inner)



All versions

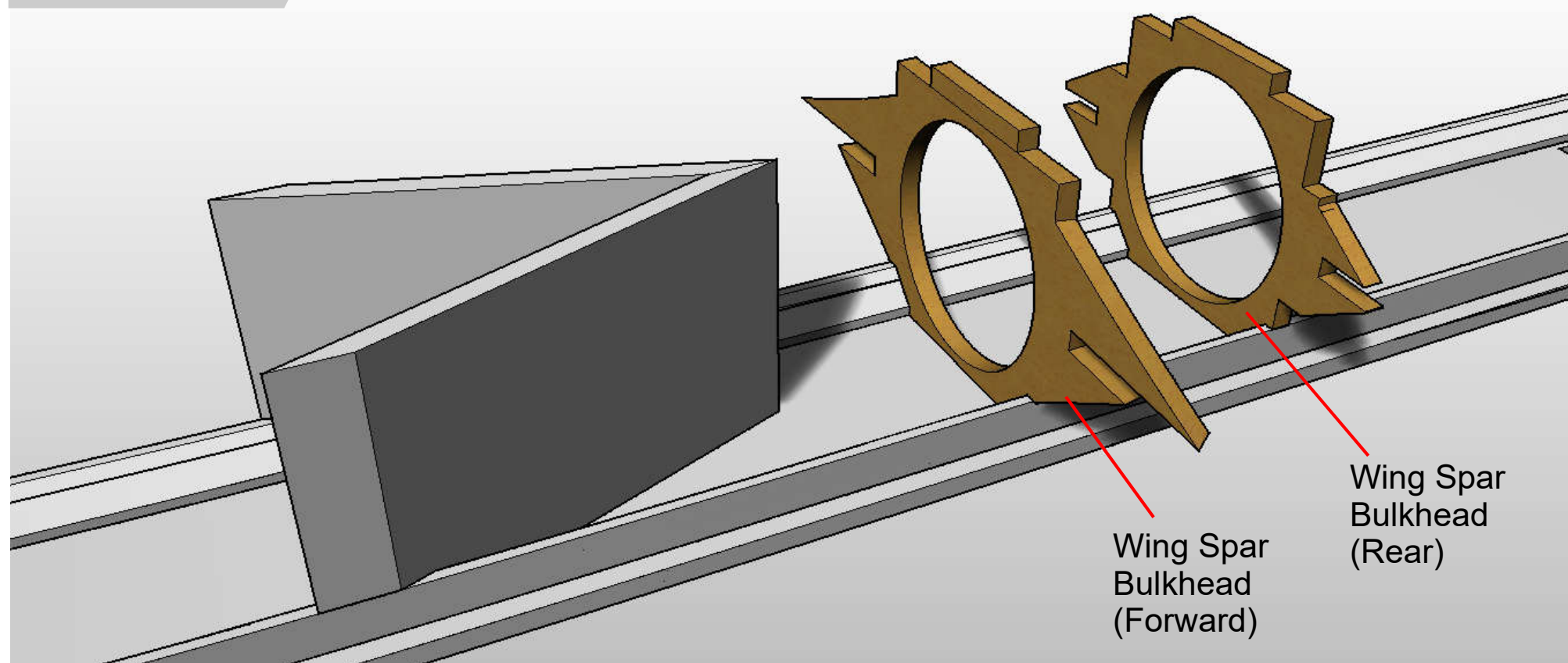


Glue the two 3mm lite-ply **Wing Spar (Forward)** pieces together





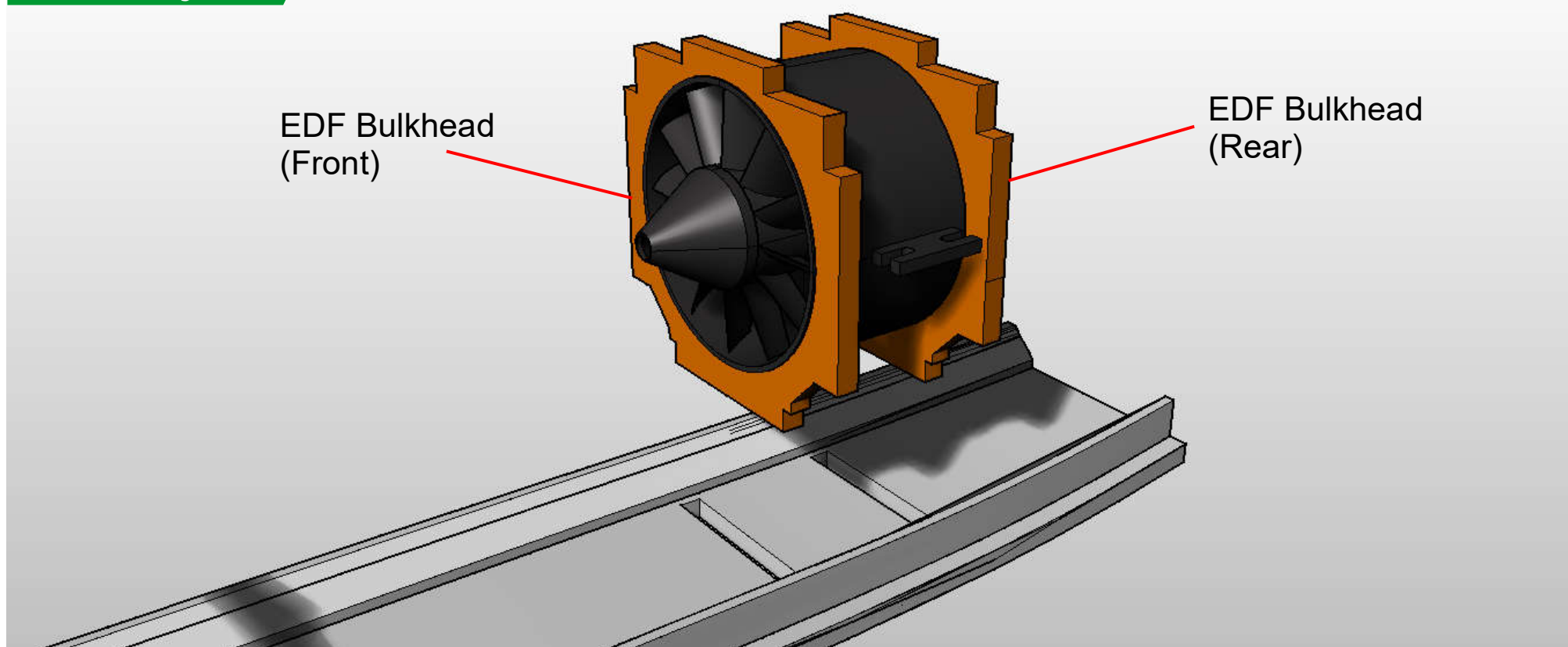
All versions



In the same way as the **Wing Spar (Forward)** create the rear spar Bulkhead and glue in place into the slots on the belly panel.



EDF only



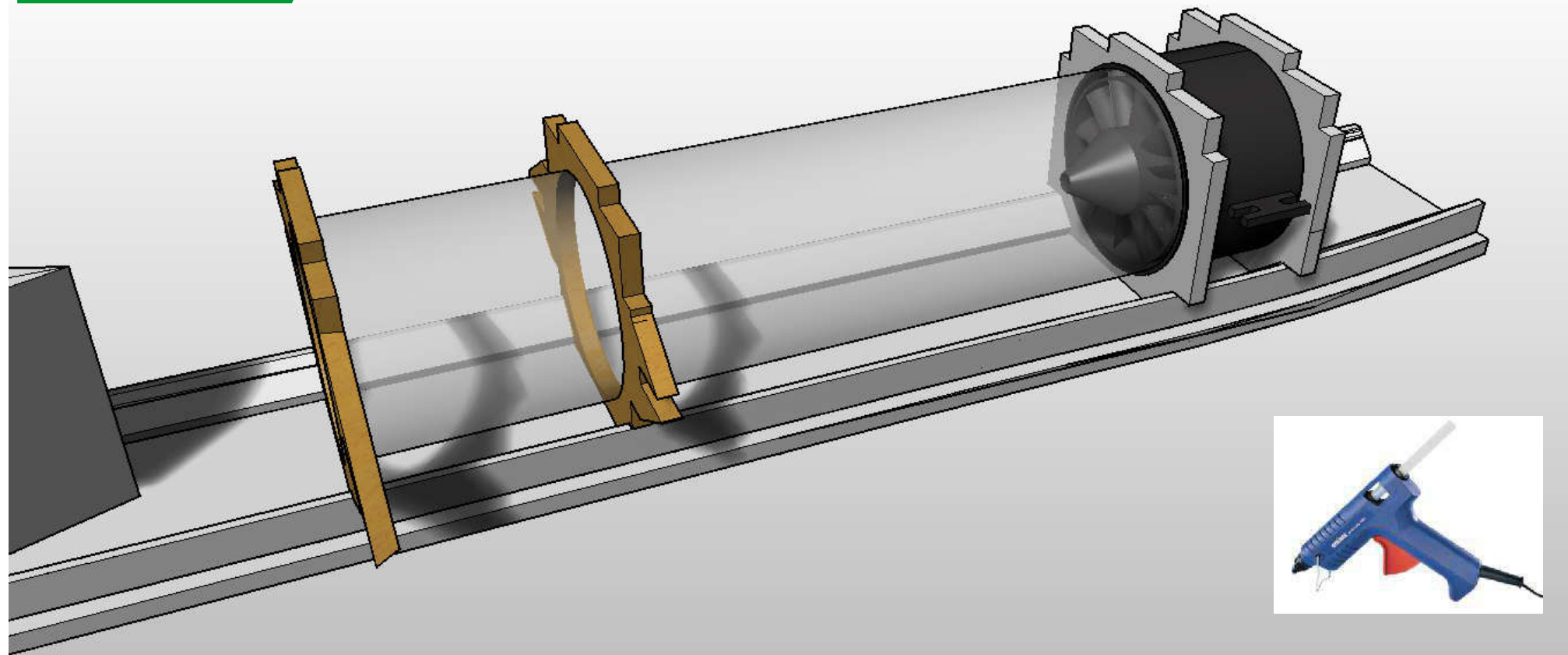
Trim the **EDF Bulkheads** to fit your EDF unit, then glue the bulkheads to the belly panel.

At this stage don't glue the edf to the bulkheads but leave it in.





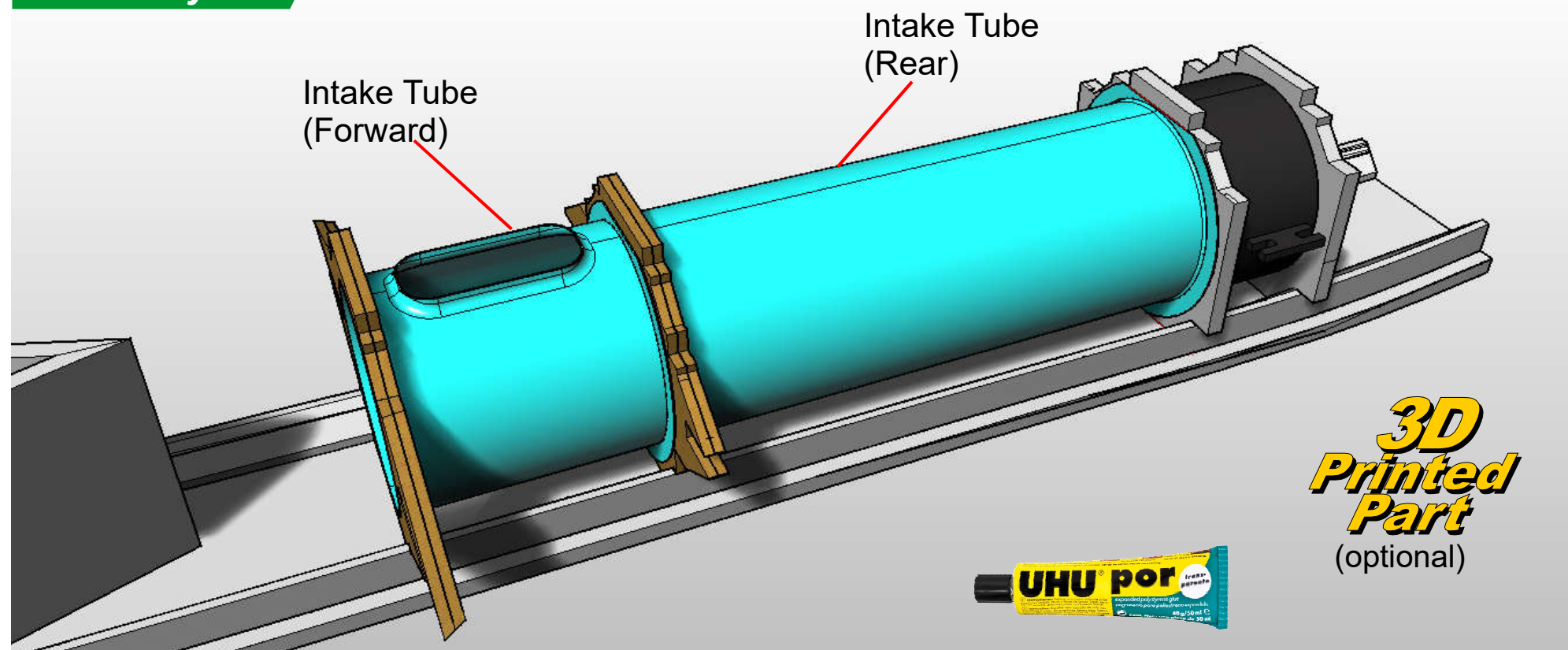
EDF only



Using either a 3d printed tube or rolled up plastic sheet (<0.4mm) create the intake tube as shown. Join the edges using Nylon reinforced tape.



EDF only



EDF only

**3D  
Printed  
Part**  
(optional)

EDF Intake



Glue the 3D printed intake in place as shown, using the marked lines on the V bulkhead as a guide.

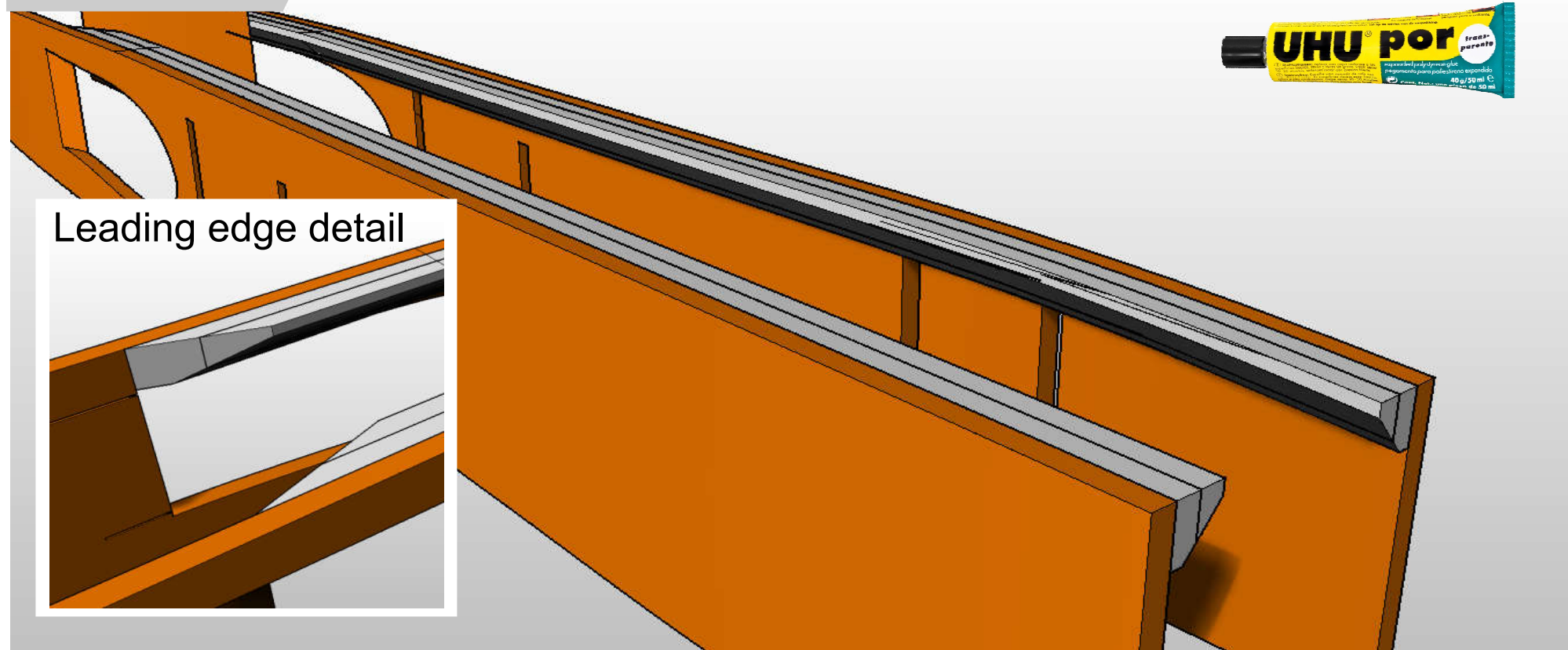
If you are not using 3D printed parts, then glue the EDF inlet ring to the forward Wing spar bulkhead, trimming away the belly panel to accommodate it if necessary.

EDF only



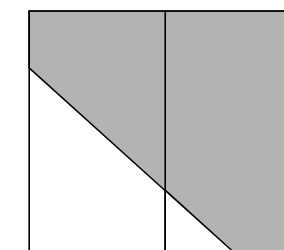


All versions

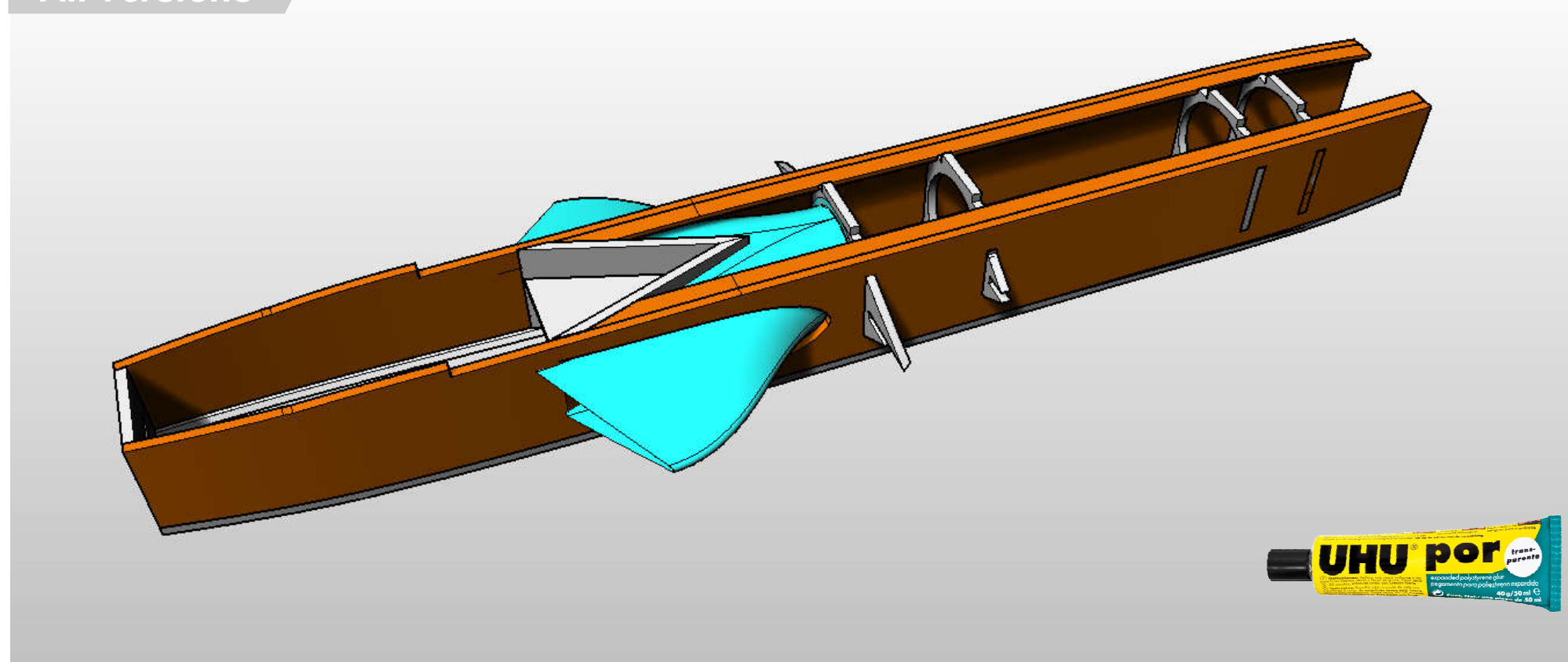


Glue both parts of the **Corner Reinforcers (upper)** together then shape the leading edge.

Glue into place as shown to the **Fuselage Sides (Inner)**.



All versions

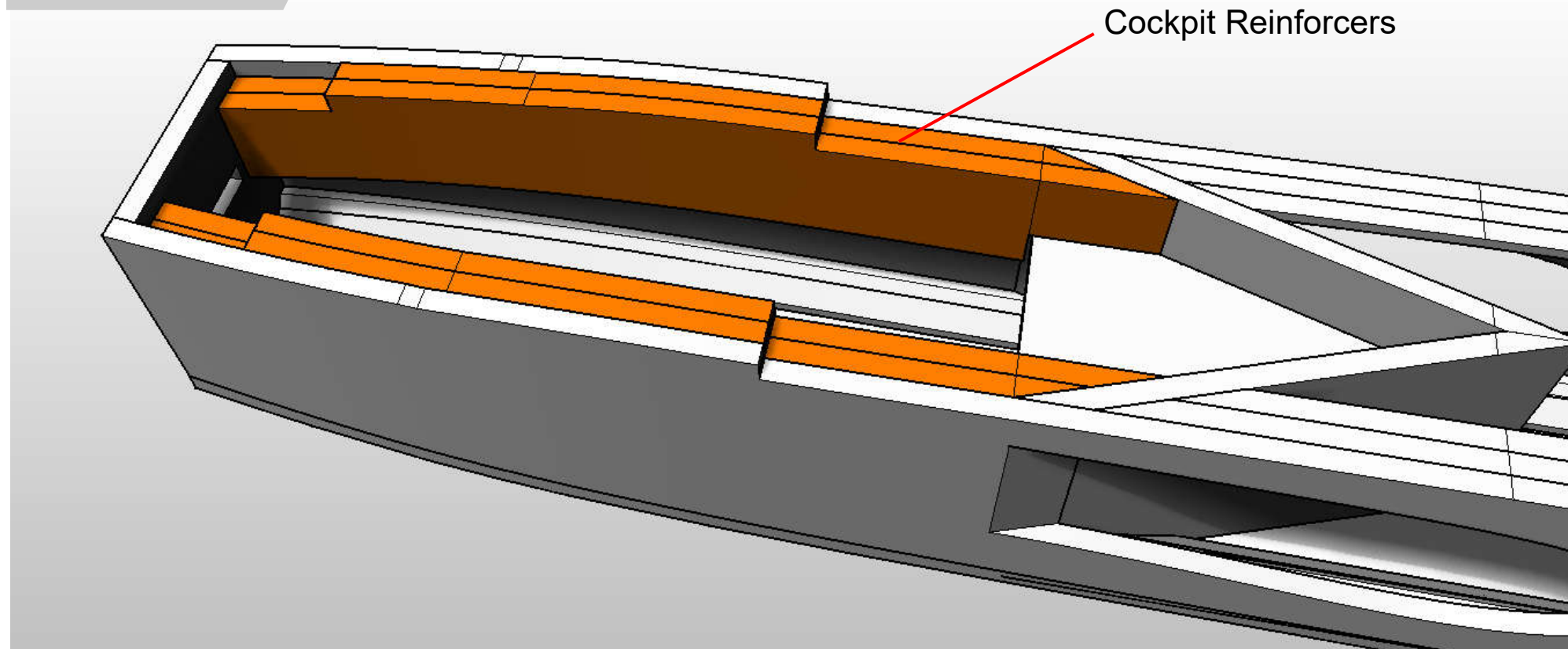


Glue the fuselage side assembly onto the main fuselage





All versions

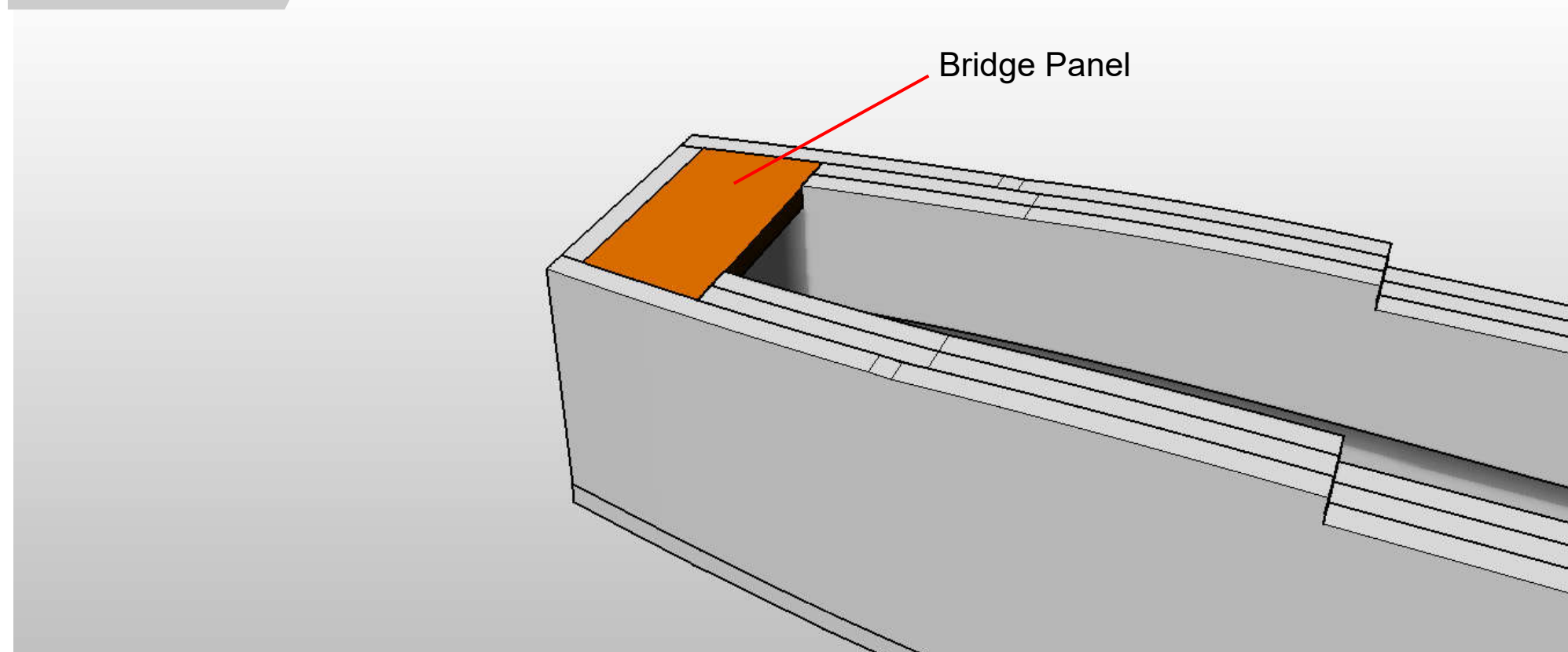


Glue the two pieces of each **Cockpit Reinforcer** together, then trim the rear edge to match the V Bulkhead as shown.

Glue in place.



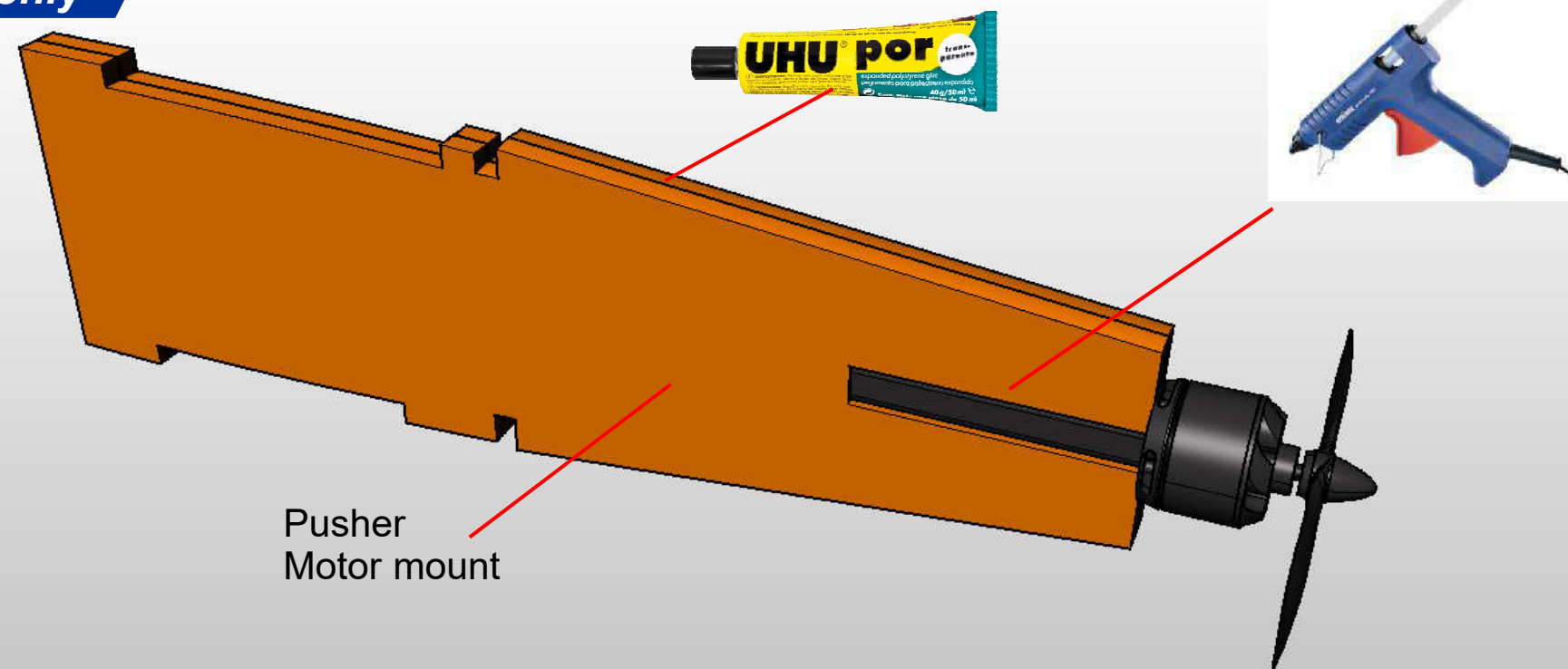
All versions



Glue the **Bridge Panel** in place.



## Pusher only

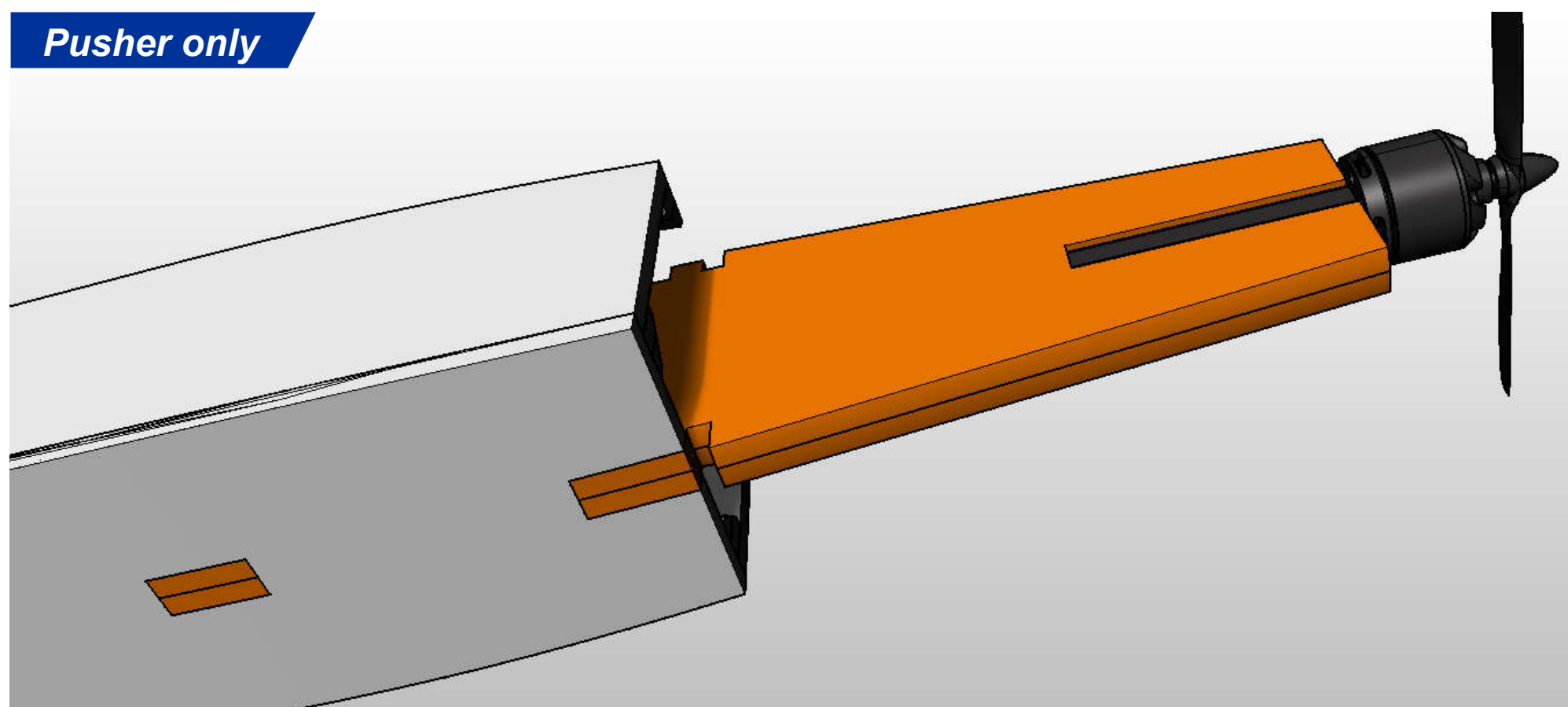


Glue the two pieces of the **Pusher Motor Mount** together using UHU POR.

Fix the motor in place to the stick mount. Either use the **Hobbyking - SKU: OR004-00602** or 3d print one from the [www.Jetworks.online](http://www.Jetworks.online) website.

Glue the motor&mount to the **Pusher Motor mount** panels using Hot melt glue.

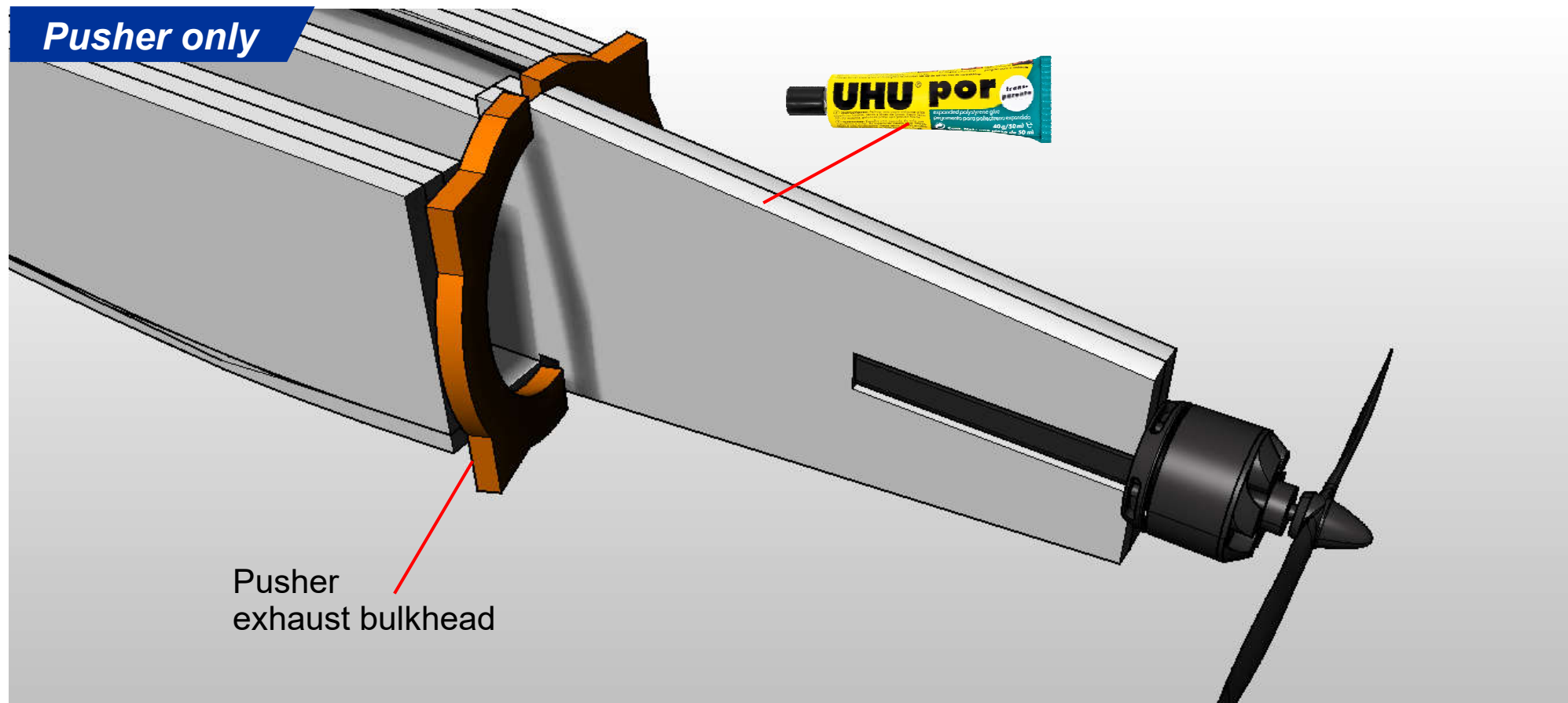
## Pusher only



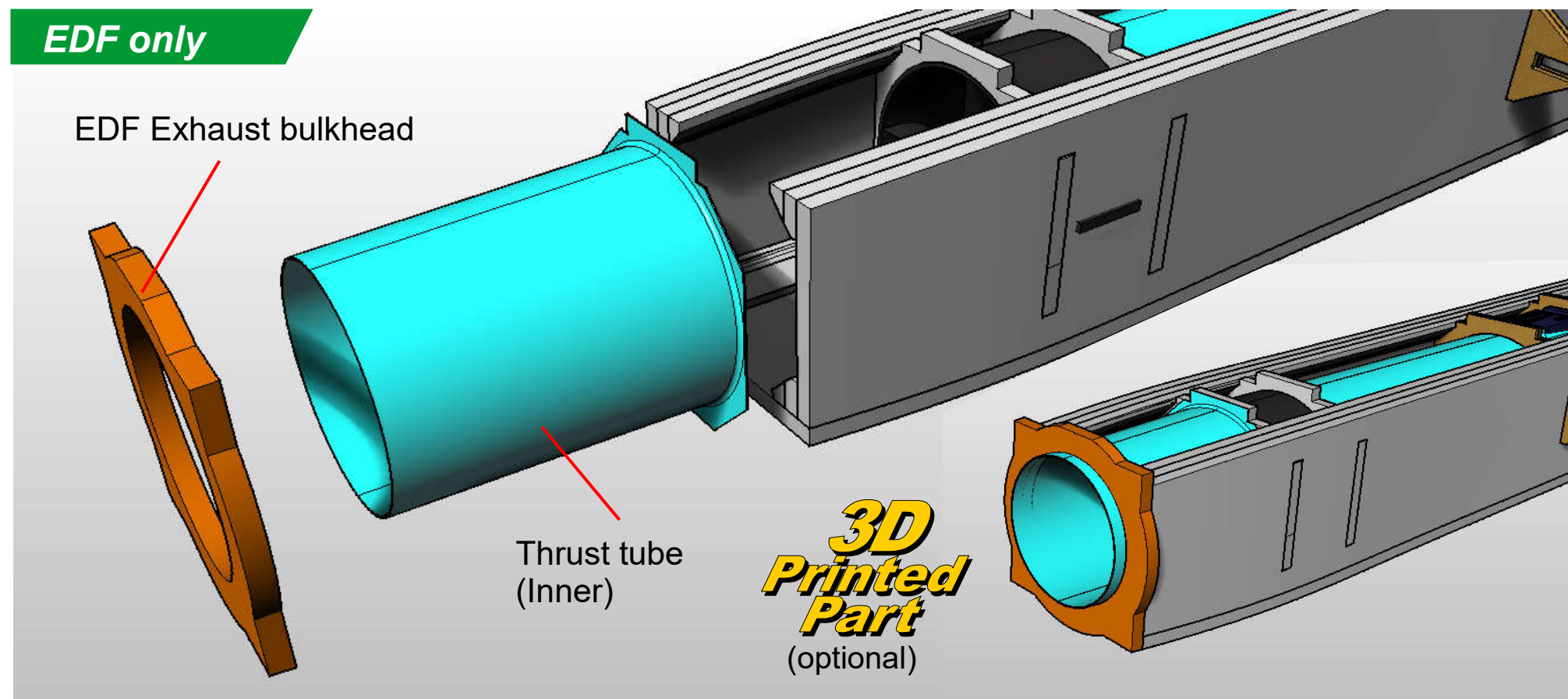
Glue the Pusher Motor mount assembly to the fuselage assembly.







Glue the **Pusher Exhaust** panel in place.



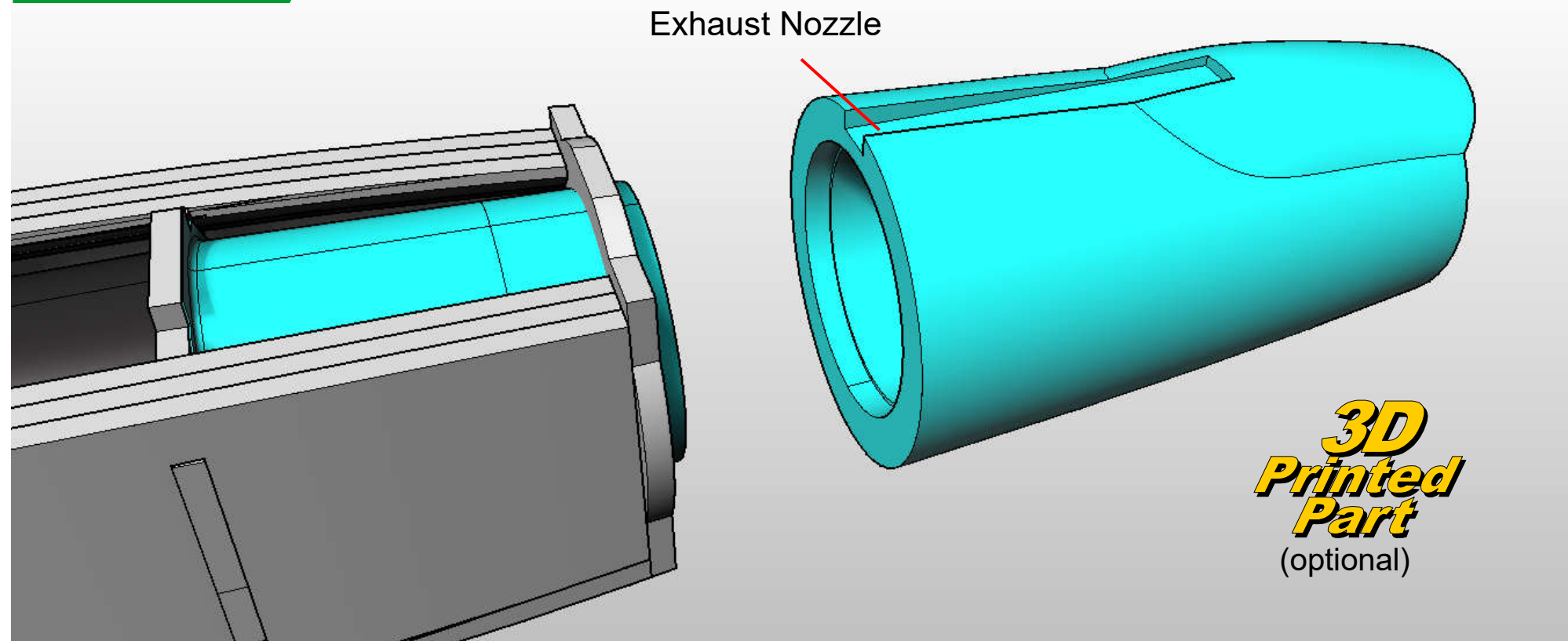
If you are using 3D printed parts, print out the **Thrust Tube (Inner)** and glue in place against the rear face of the EDF bulkhead.

Slide the **Exhaust bulkhead** over the thrust tube leaving 6mm sticking out. Glue in place.





**EDF only**

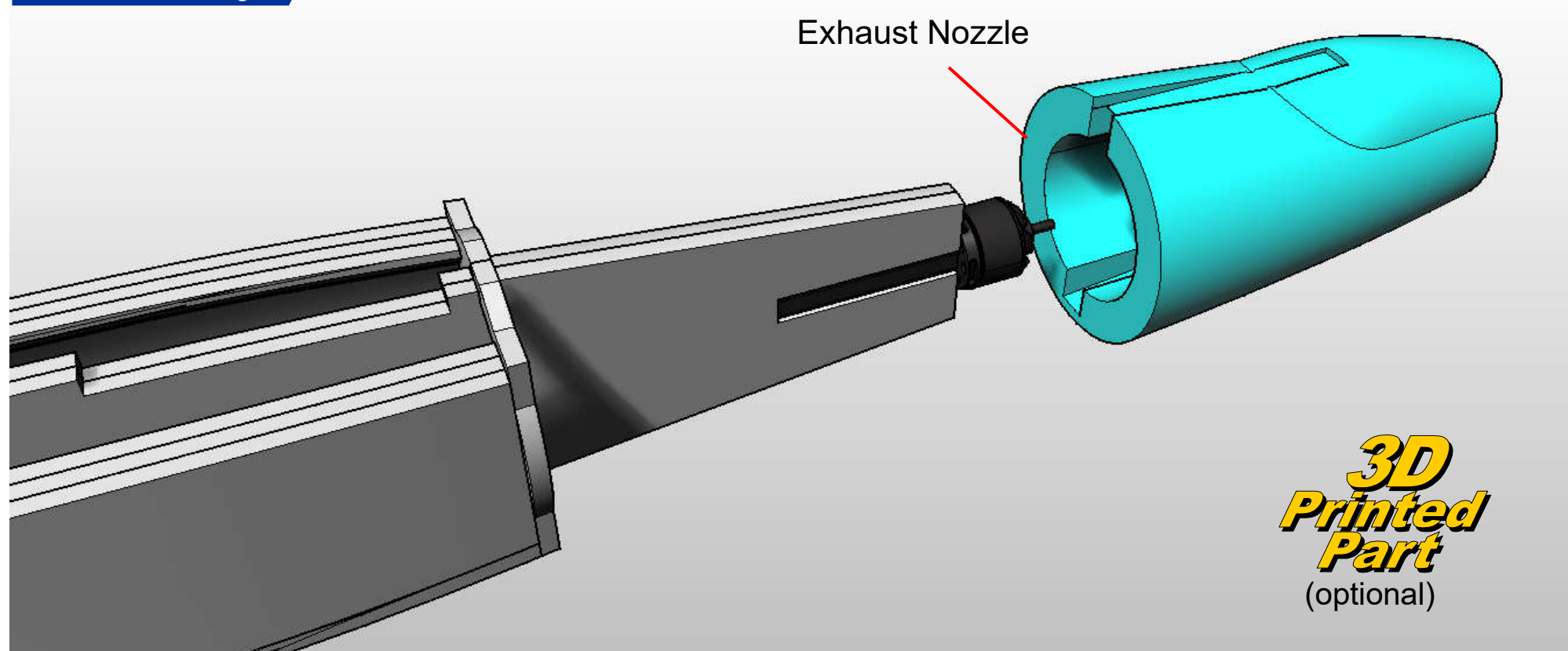


Glue the 3D Printed **Exhaust nozzle** in place.

Ensure that it is oriented perfectly!



**Pusher only**

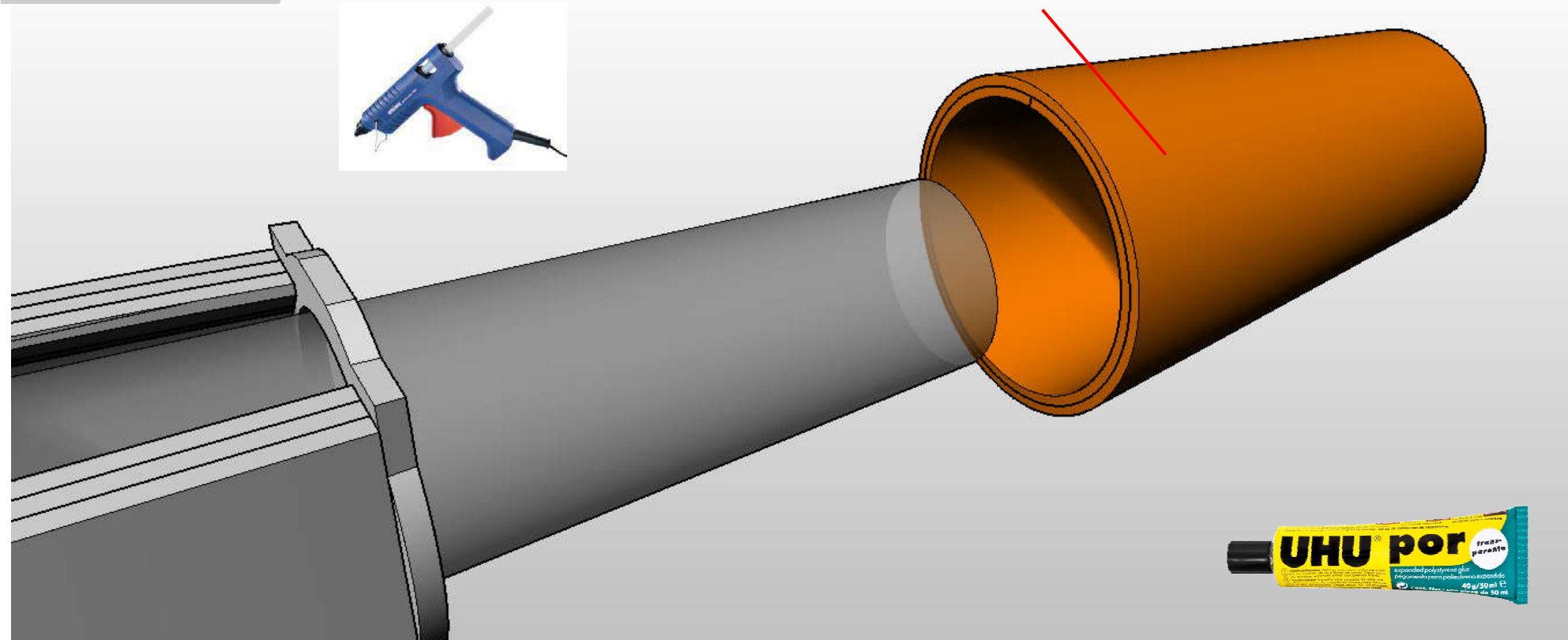


Glue the 3D Printed **Exhaust nozzle** in place over the Pusher Motor mount.



All versions

Exhaust Cone



For the non-3d printed version, create the thrust tube using <0.5mm plastic tube.

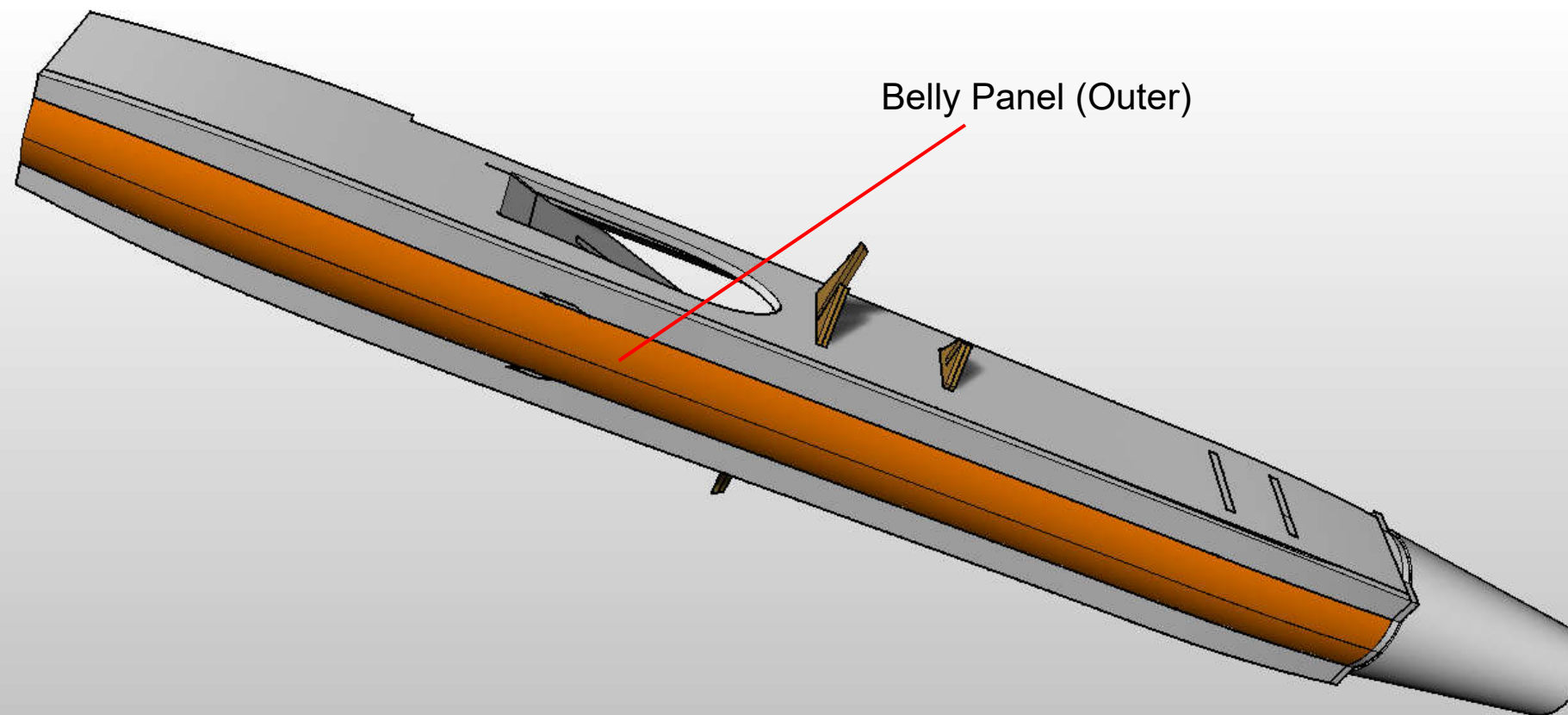
Create the **exhaust cone** using two curved 3mm foam pieces formed around the Jigs.

Glue the thrust tube in place using hot melt glue.

Use UHU por to glue the cone in place.

Sand the forward area to blend it into the main fuselage shape.

Belly Panel (Outer)

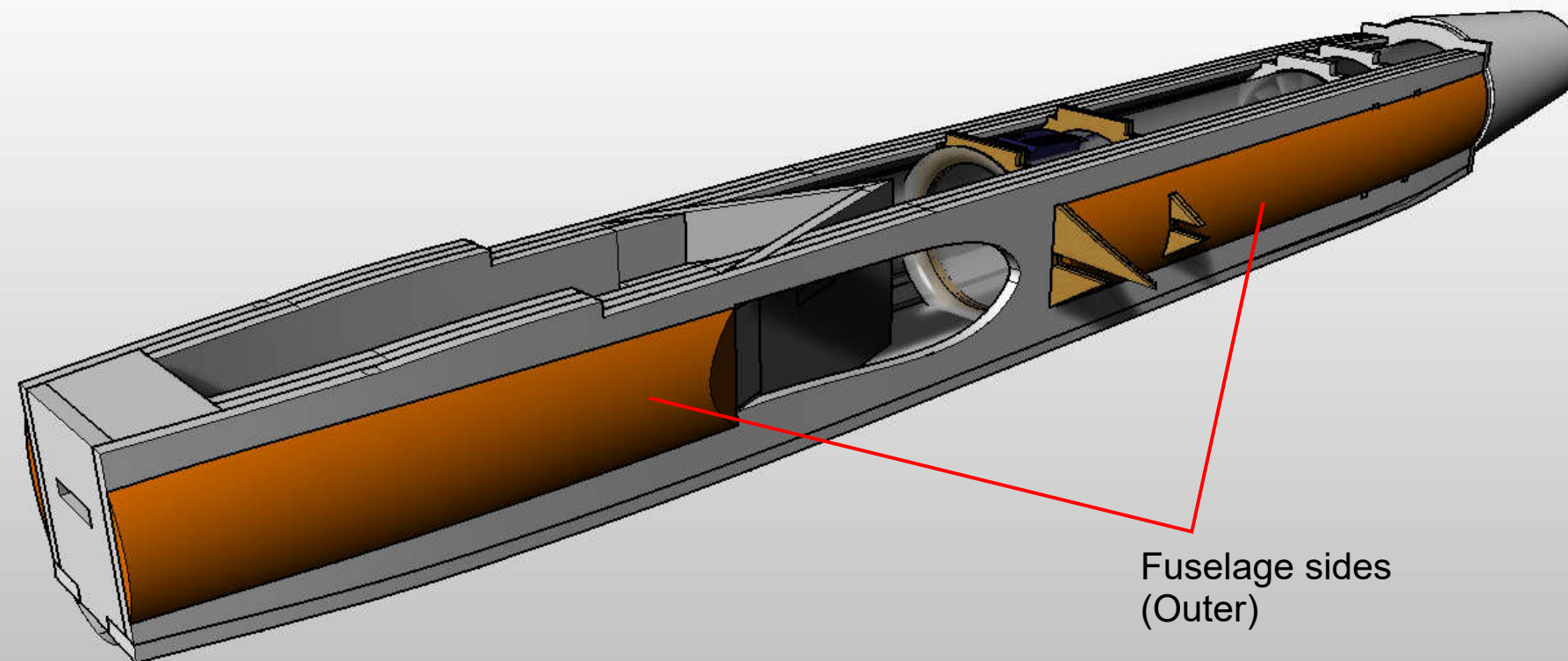


Pre-sand the **Belly Panel (Outer)** and glue to the assembly





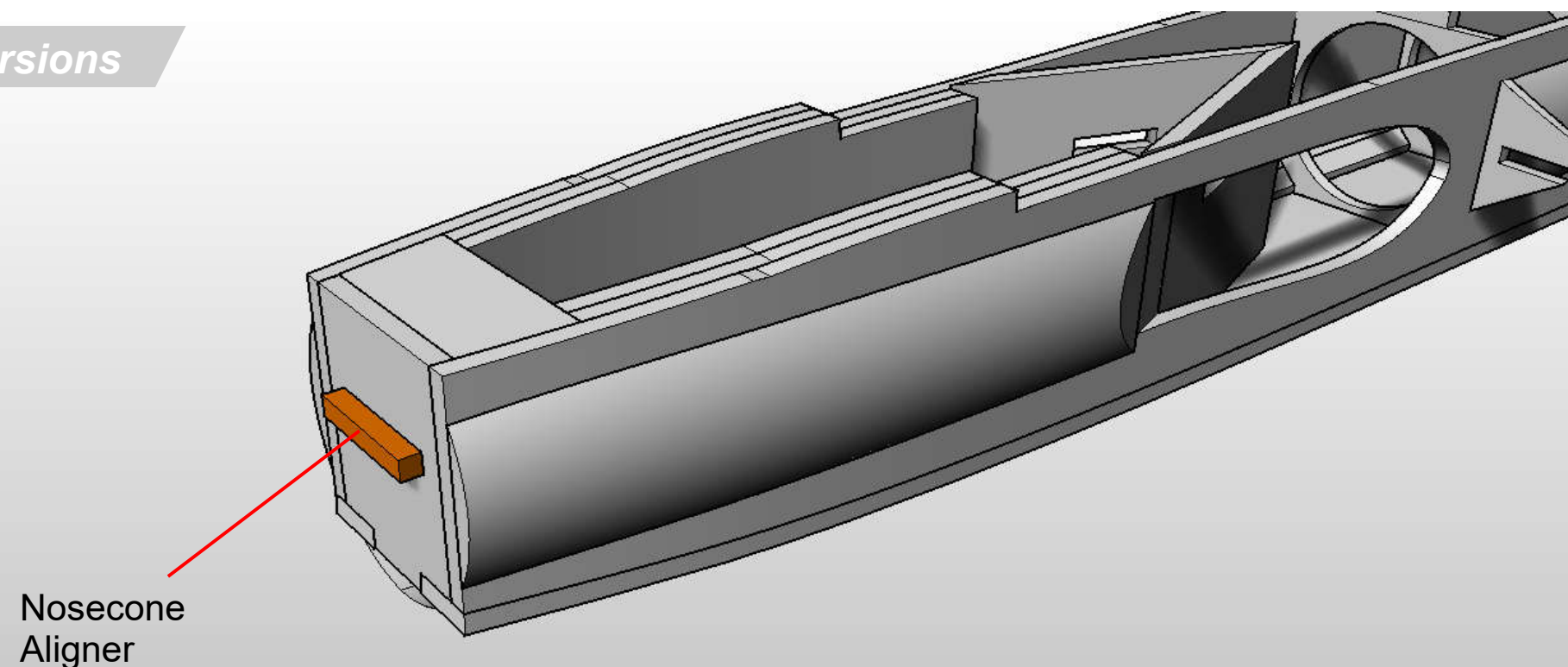
All versions



Glue the **Fuselage Sides (Outer)** in place.



All versions

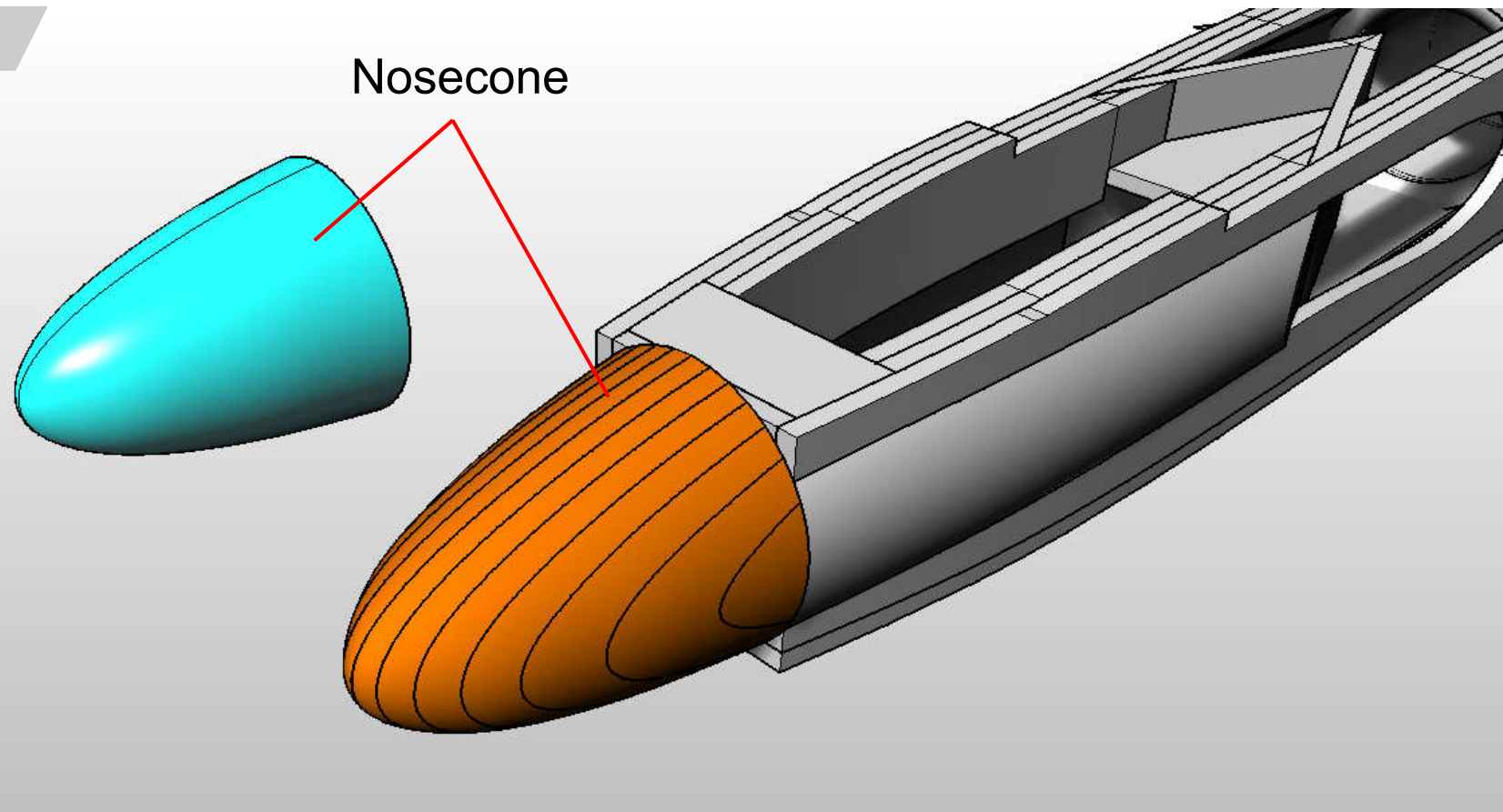


Glue the **Nosecone Aligner** in place.





All versions

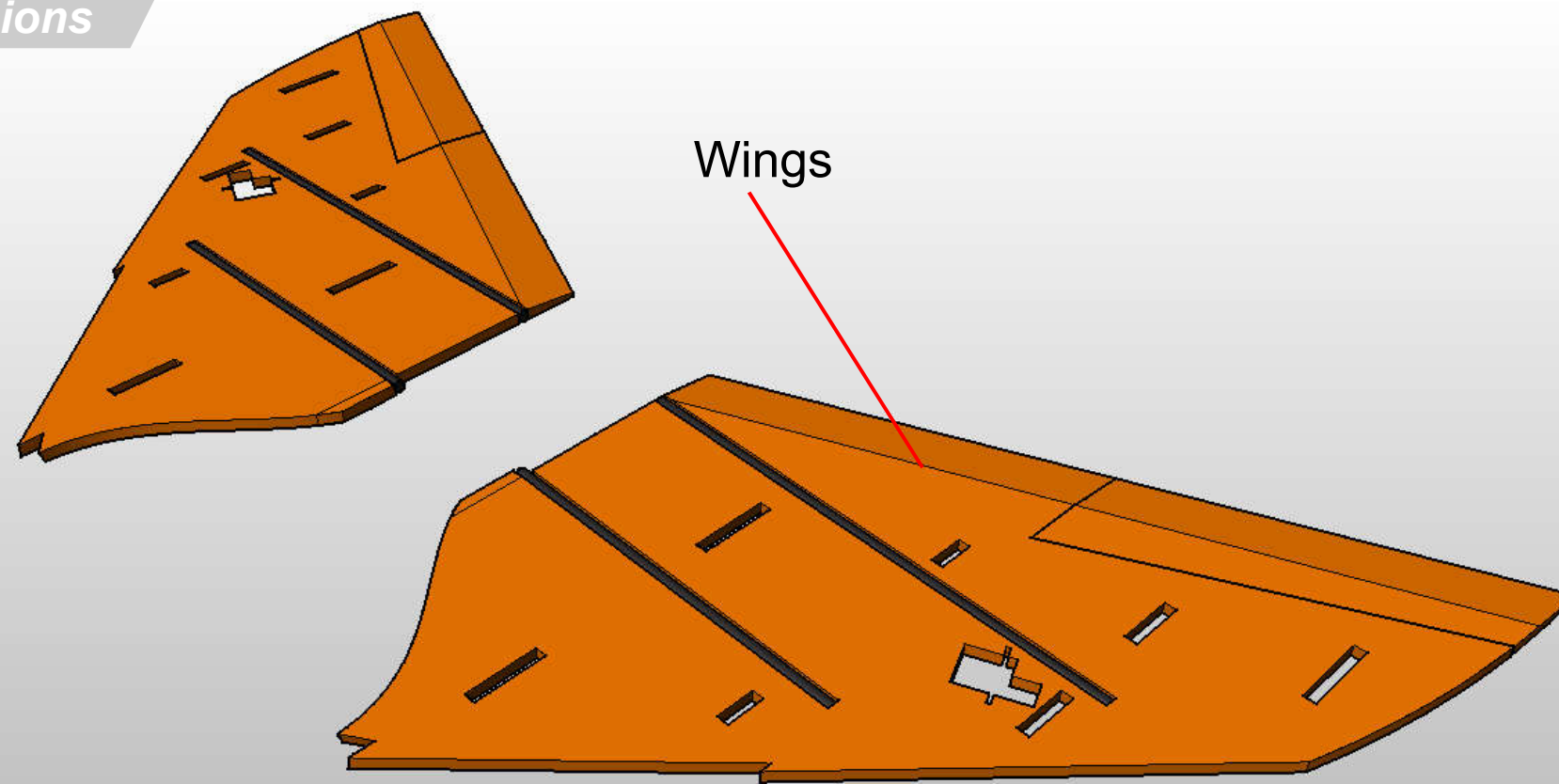


Create the **Nosecone** by either 3D printing one, or laminating pieces of foam together and then sanding.

Glue in place



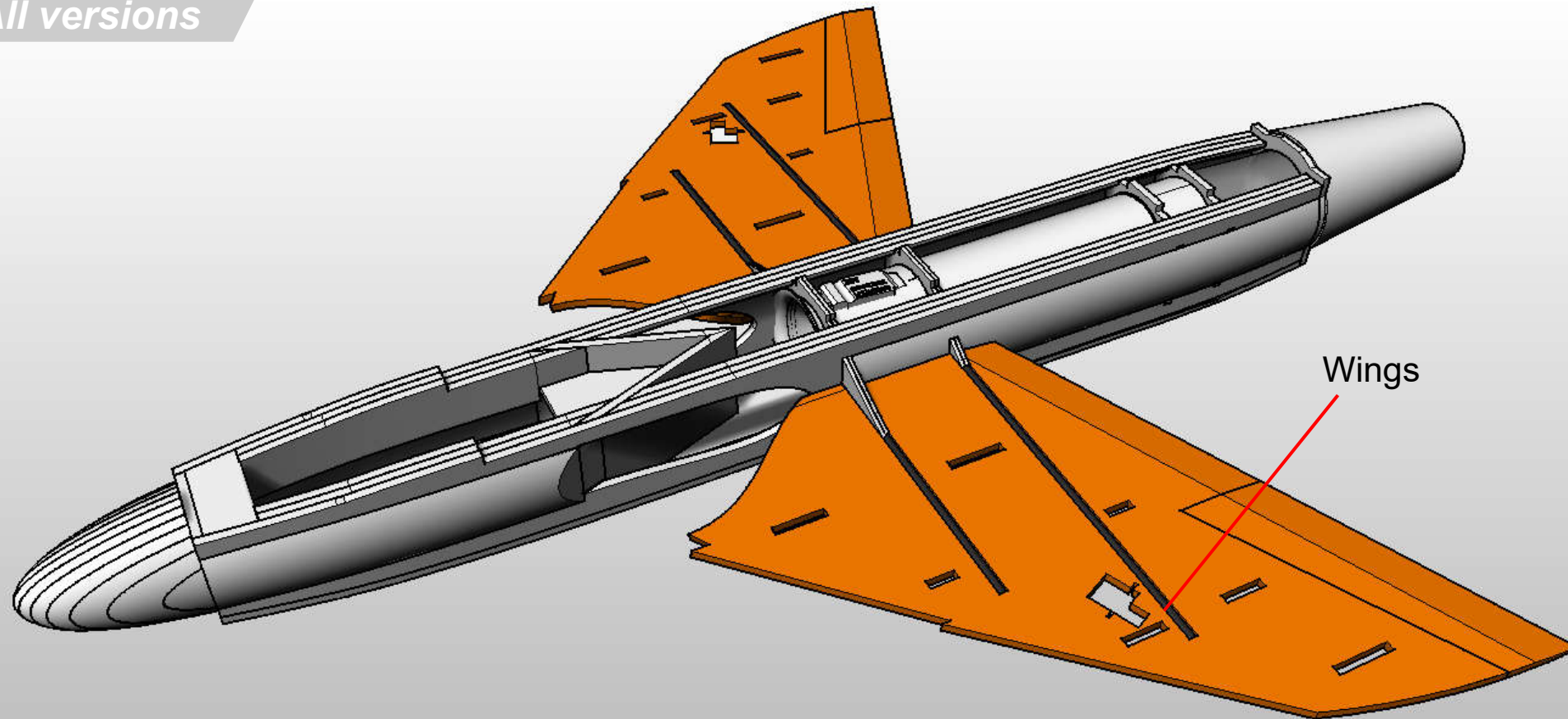
All versions



Glue the carbon spars into the two **Wings** using epoxy, held in place using masking tape until it sets.



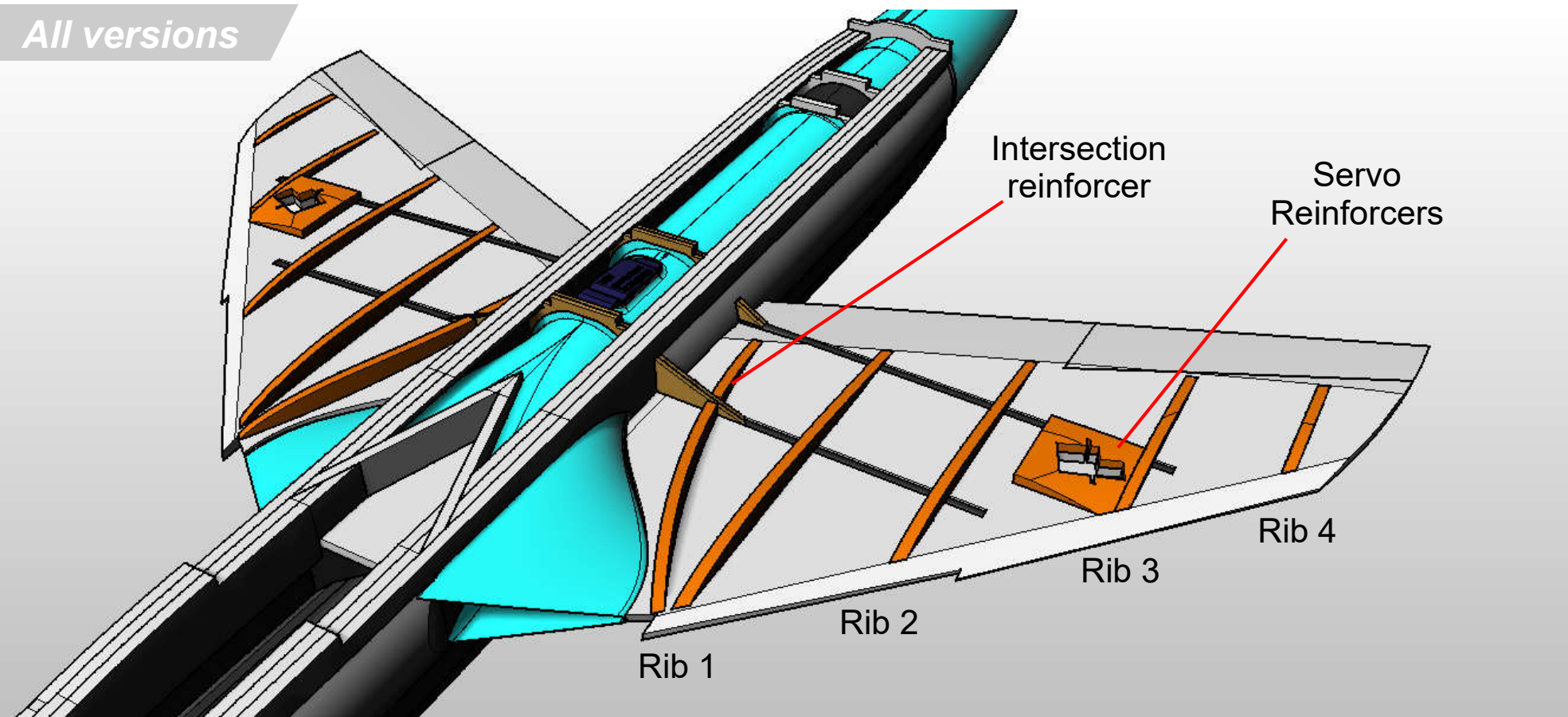
All versions



Using Epoxy, glue the two wings into the slots - the carbon aligned to the light-ply bulkheads - Use two piles of equal height books or similar to support the wings while the glue sets.



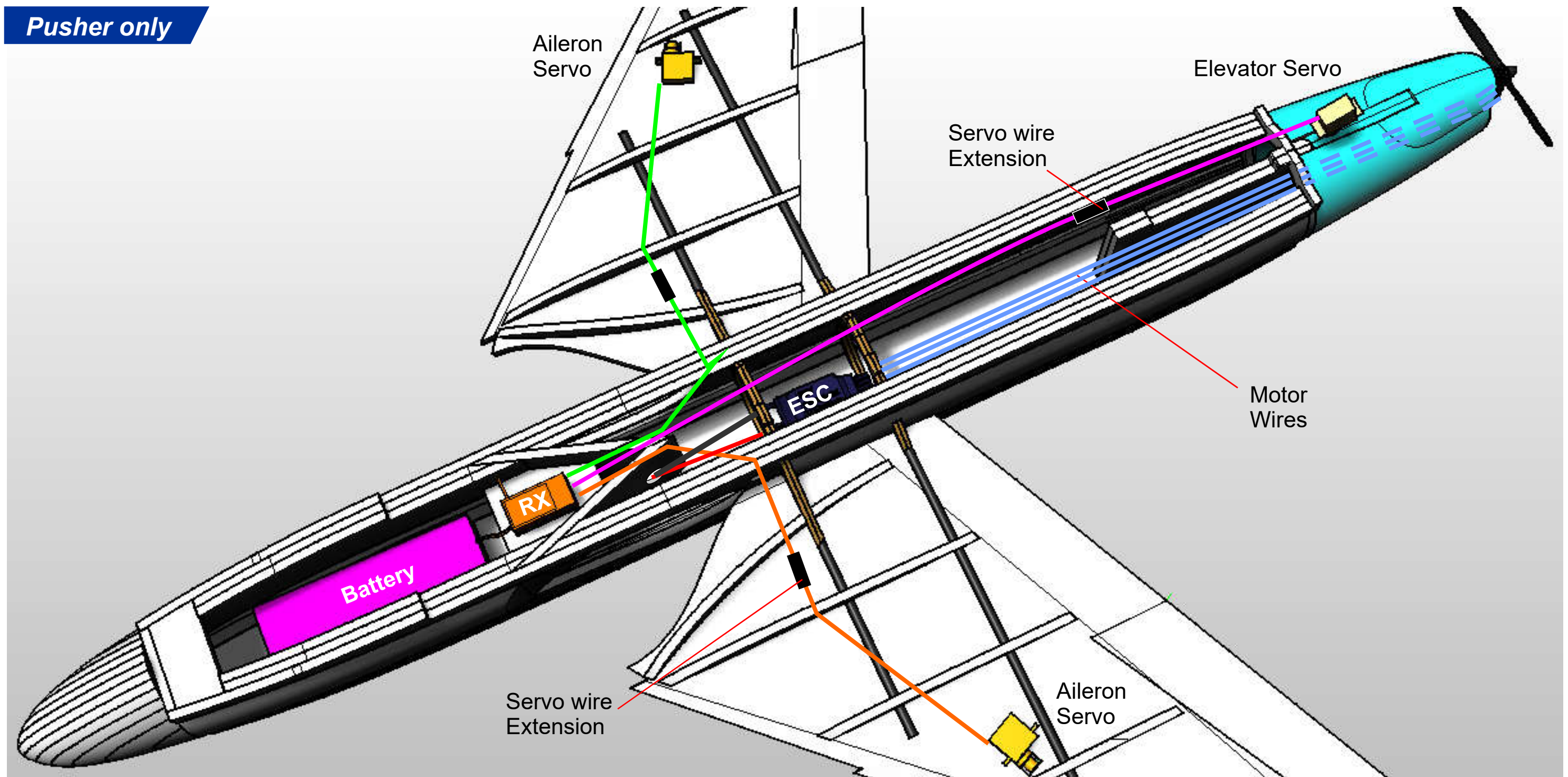
All versions



Glue the **Ribs**, **Servo Reinforcers** and **Intersection Reinforcer** to the wings as shown.





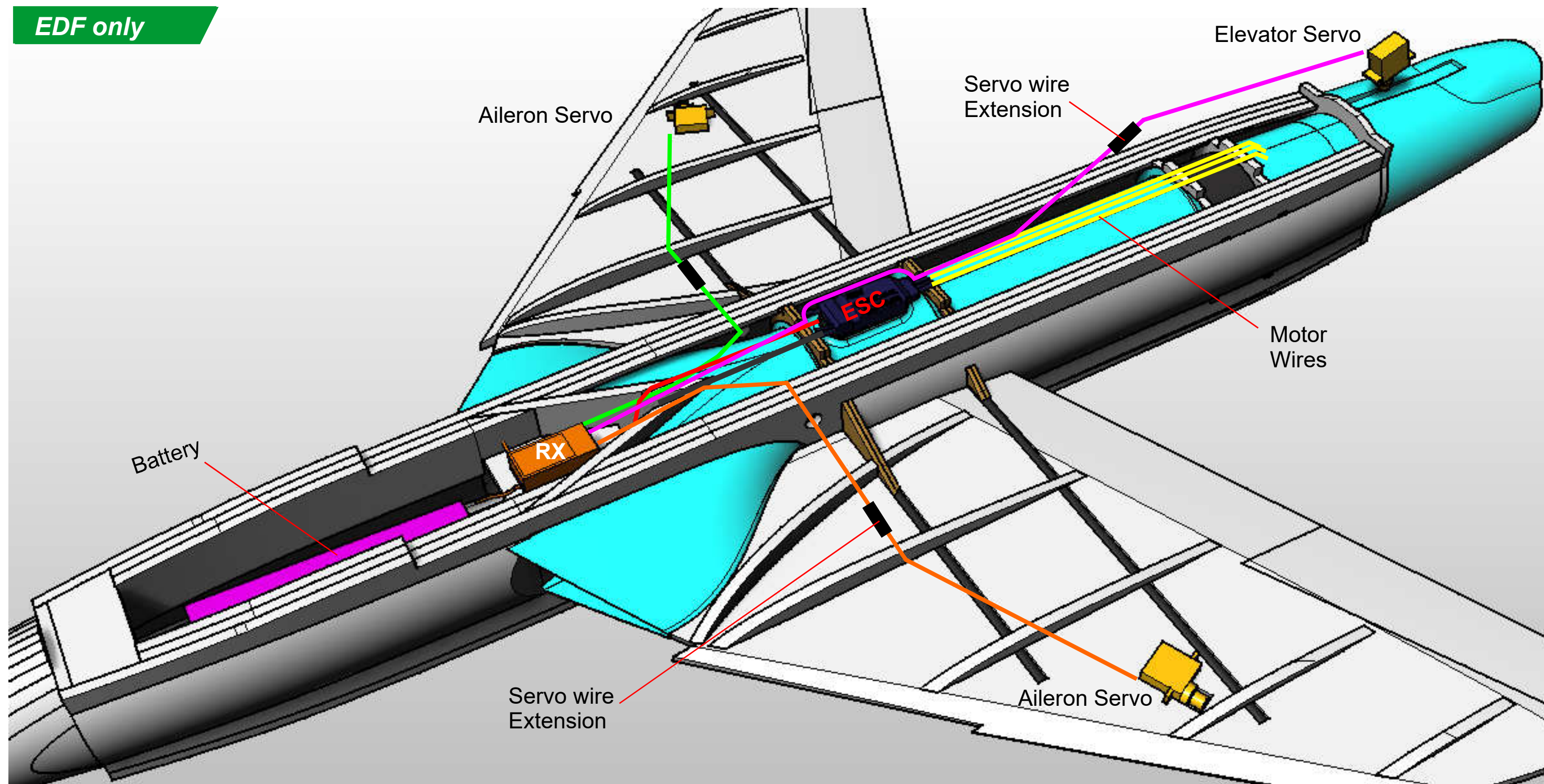


### **PUSHER VERSION**

- Run the ESC battery cables into the forward fuselage battery area to a battery connector under the TX tray. Run the Servo cable from the ESC to the RX.
- Run **all** servo cables to the RX, using servo extension cables if required.
- Once wired up, thoroughly test all electronics to ensure they function correctly, making sure there are no loose connections anywhere or dry solder joints.







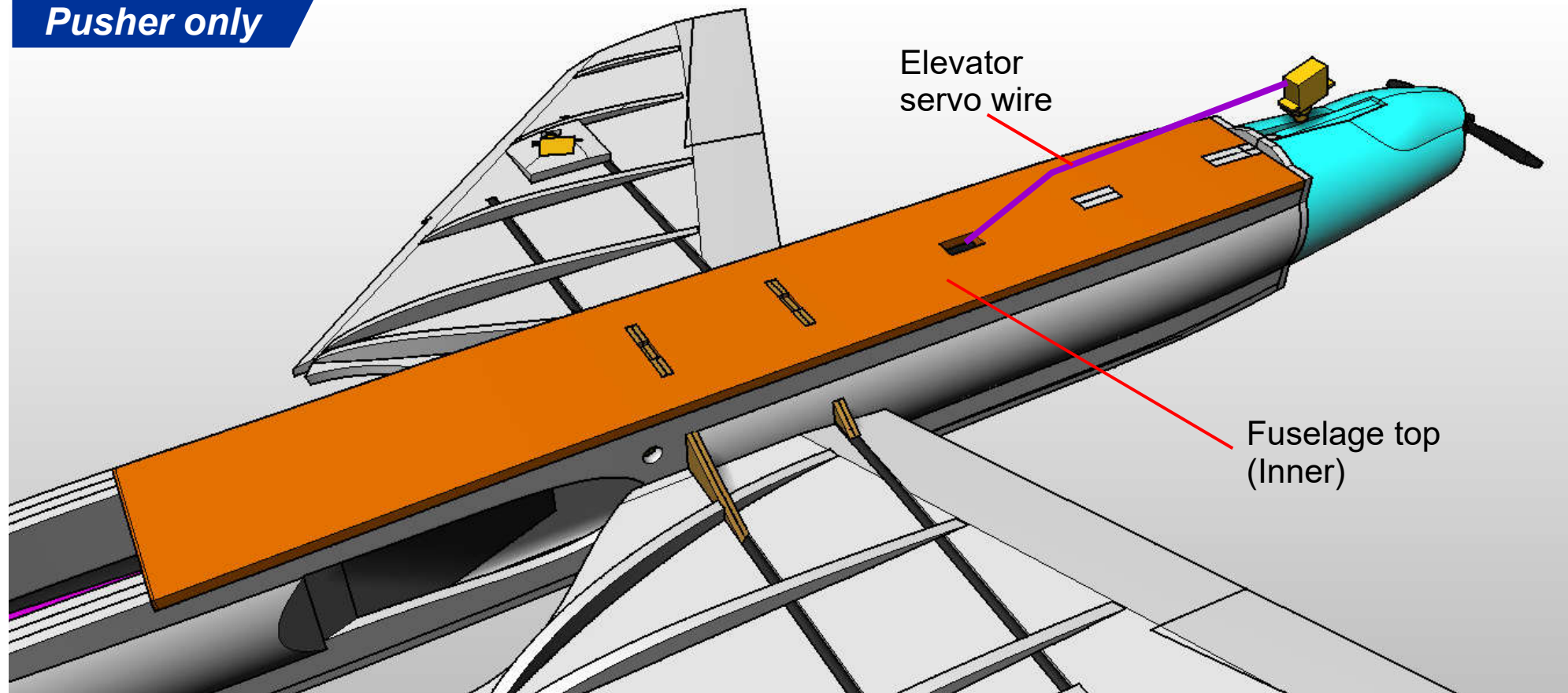
### EDF VERSION

- Run the ESC battery cables into the forward fuselage battery area to a battery connector under the TX tray. Run the Servo cable from the ESC to the RX.
- Run **all** servo cables to the RX, using servo extension cables if required.
- Once wired up, thoroughly test all electronics to ensure they function correctly, making sure there are no loose connections anywhere or dry solder joints.





## Pusher only

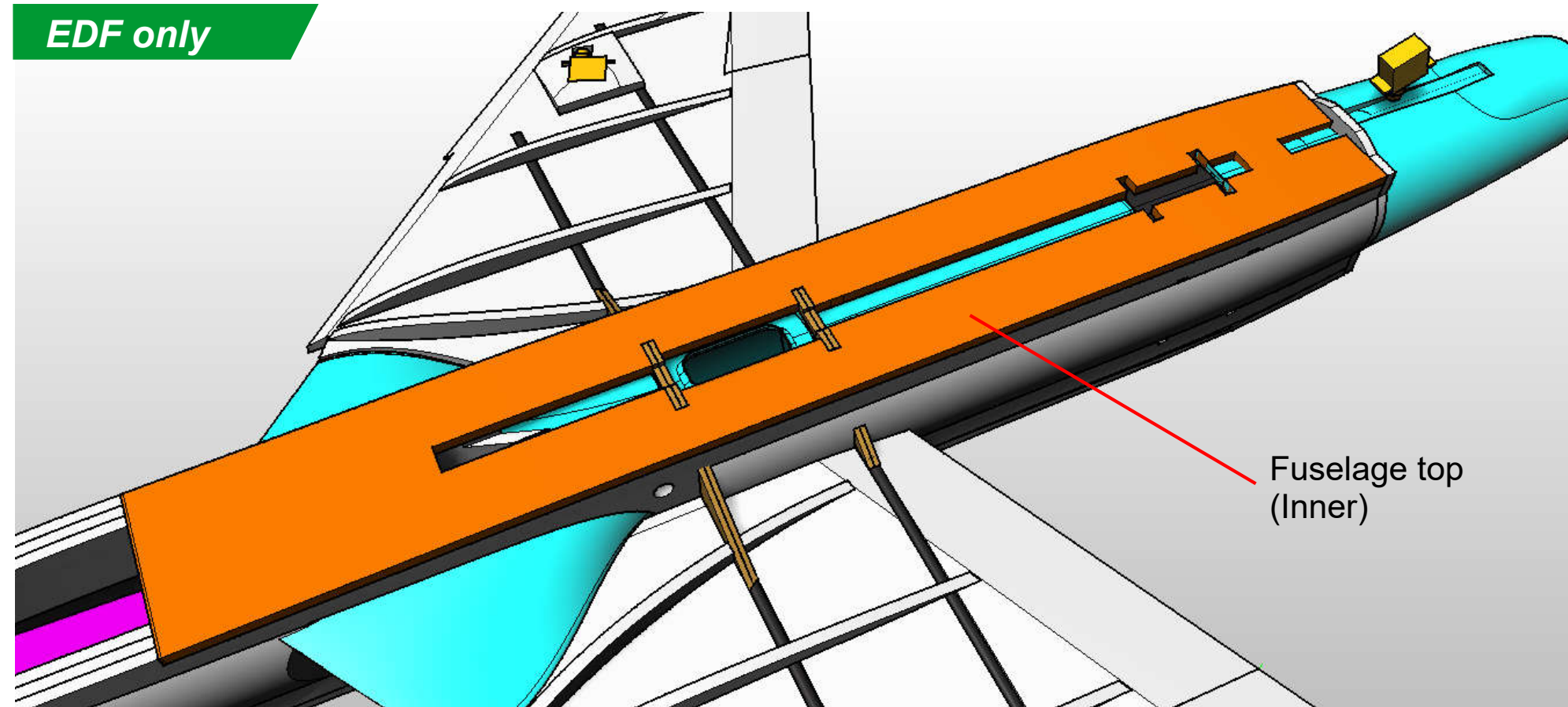


Thread the Elevator Servo wire through the **Fuselage Top (Inner)**.

Glue the **Fuselage Top (Inner)** to the fuselage as shown



## EDF only



Thread the Elevator Servo wire through the **Fuselage Top (Inner)**.

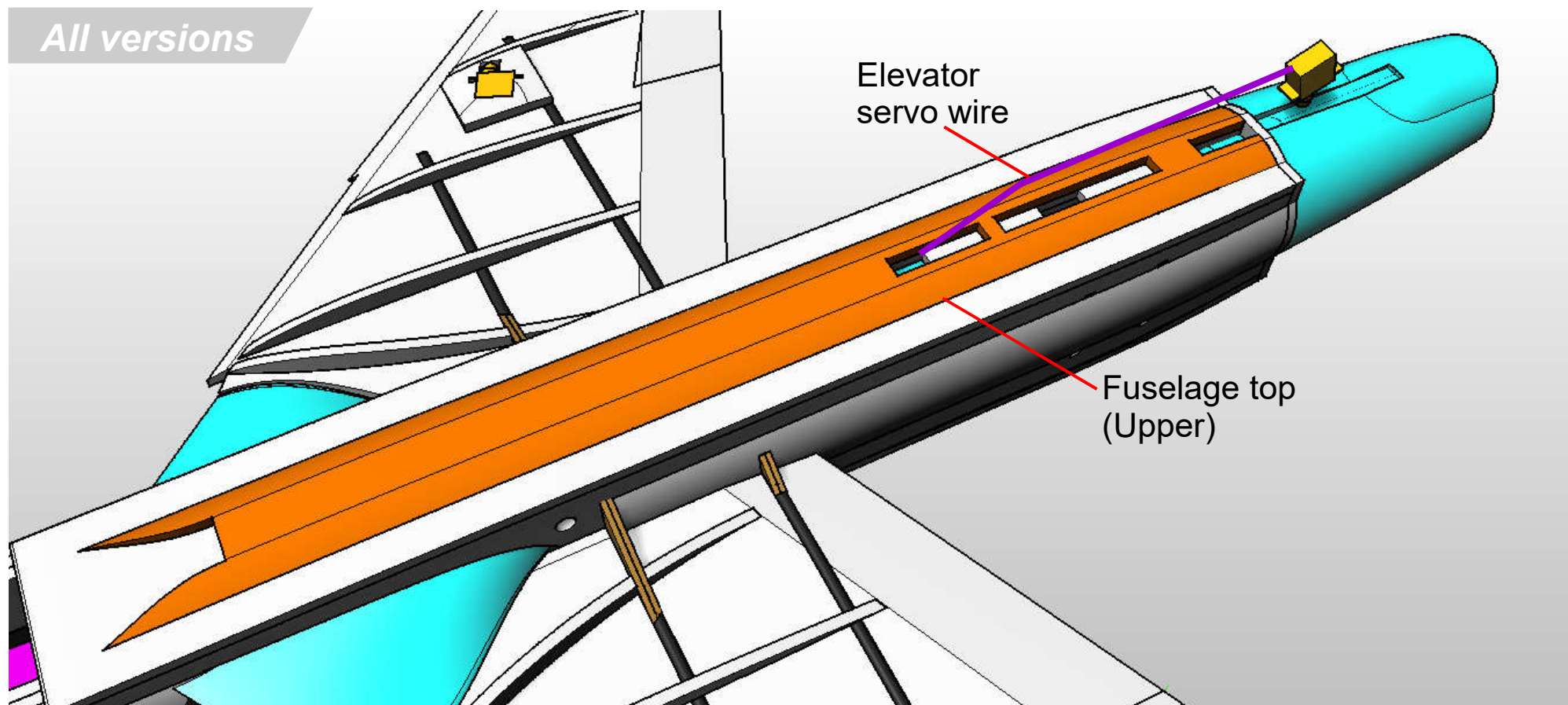
For the 70mm EDF version you will need to sand away the underside in order to accommodate the thrust tube

Glue the **Fuselage Top (Inner)** to the fuselage as shown.





All versions



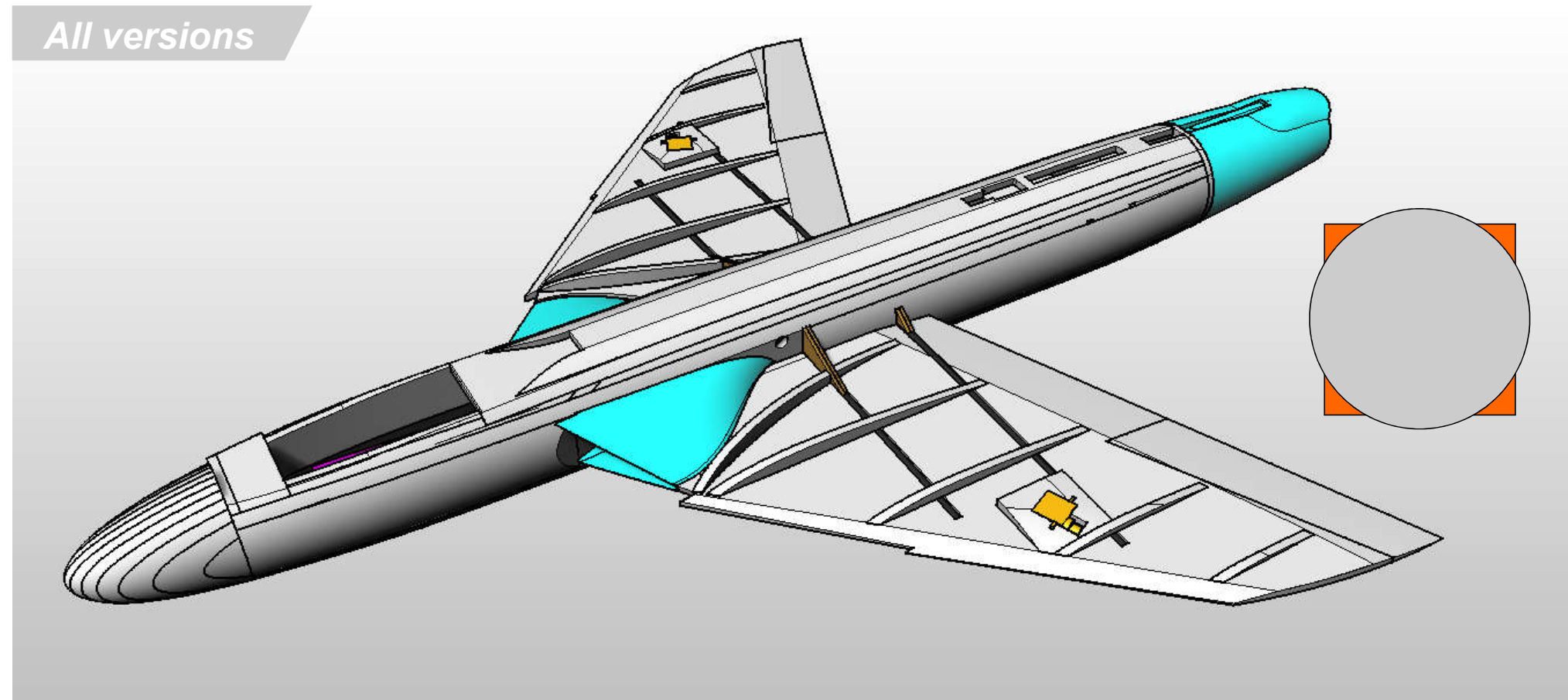
Mark the centreline on both fuselage tops to ensure accurate alignment.

Thread the Elevator Servo wire through the **Fuselage Top (Upper)**.

Glue the **Fuselage Top (Inner)** to the fuselage as shown



All versions

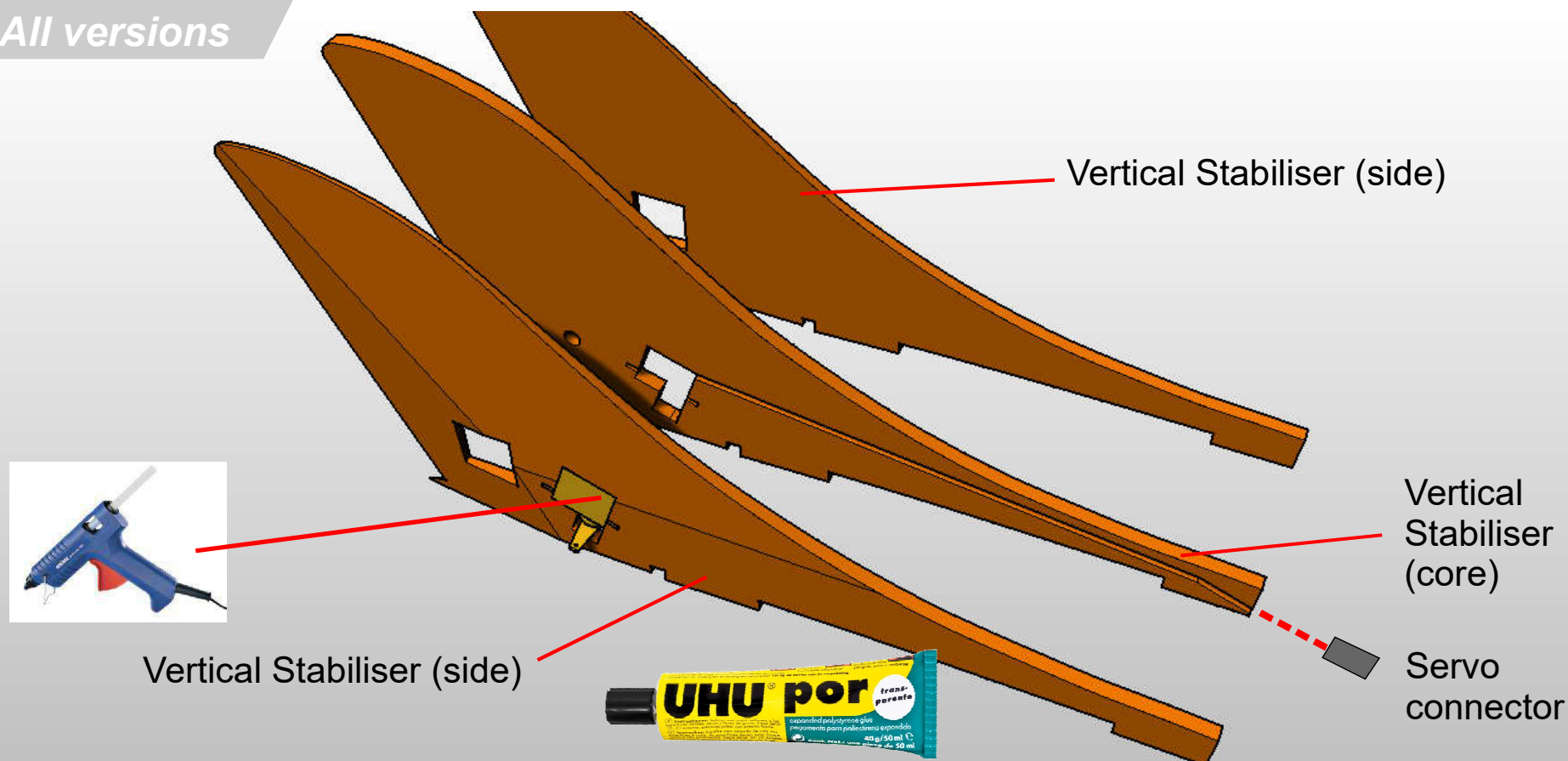


Trim away 75% of the corners of the 'box' corners of the fuselage with a fresh craft knife blade.

Using sandpaper with a block sand the fuselage to shape as shown, using the nosecone and nozzle as guidance, along with the depron parts : Belly (Outer), Sides (Outer) and Top (Outer) to guide you.



All versions



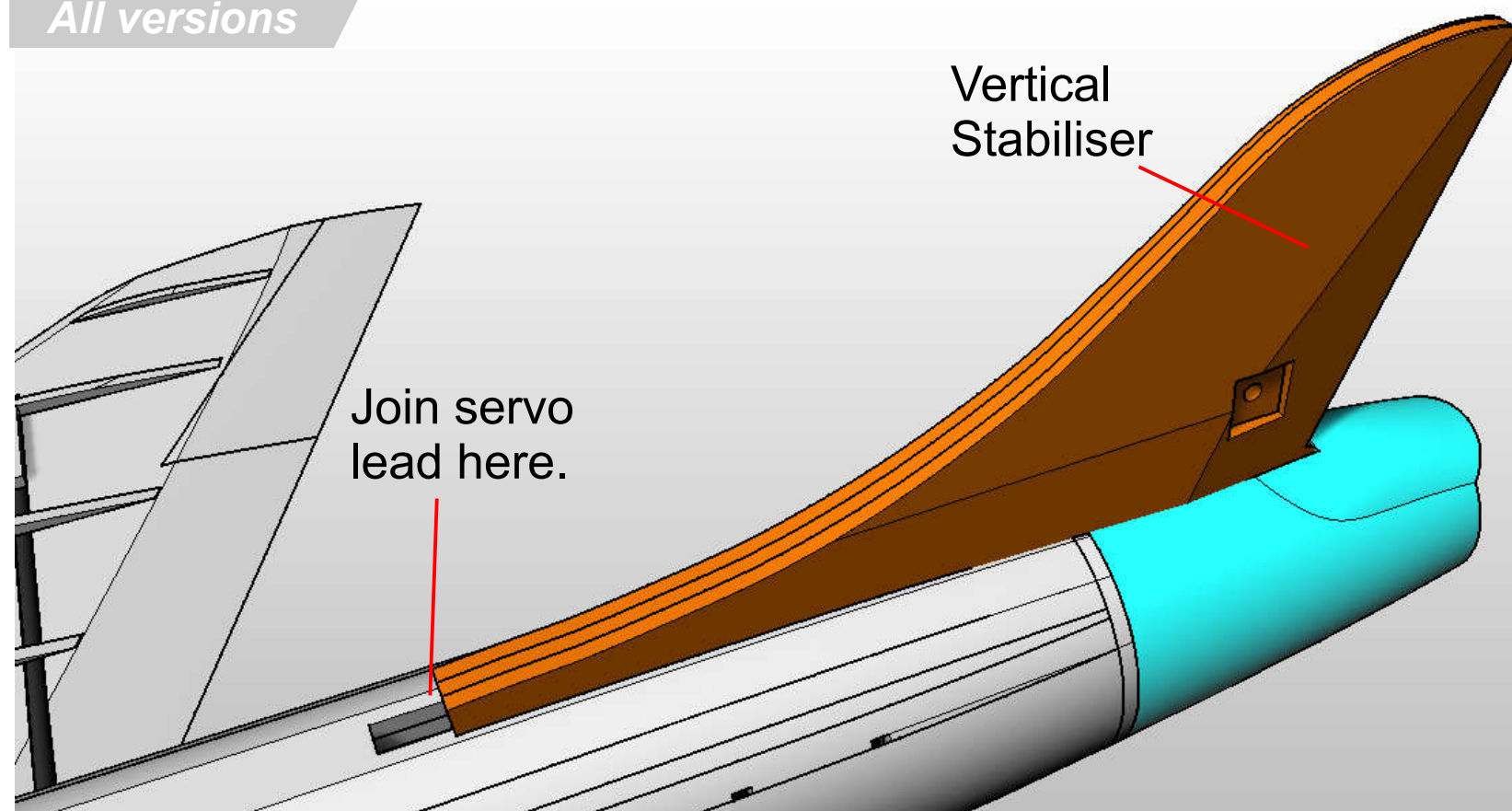
Shape the Vertical Stabiliser sides according to the plan - use sandpaper and block.

Thread the servo cable through the slot in the Vertical Stabiliser (core) so that the wire extends out of the tip.

The servo sits offset to centreline - popping out of one side only.

Glue the pieces together using UHU por, and the Servo in place using Hot melt glue.

All versions

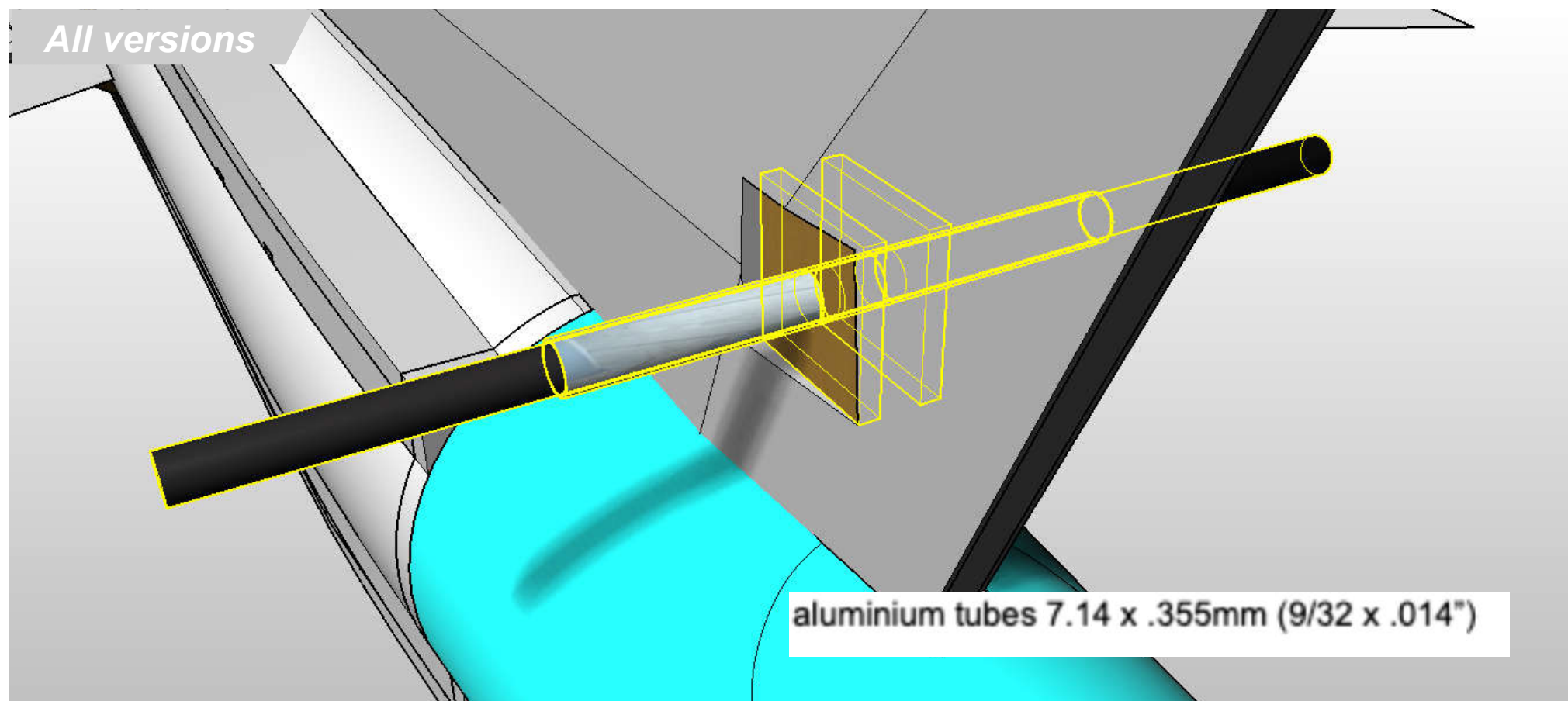


Connect the Vertical Stabiliser servo lead to the servo extension and test to check its working properly.

Glue the Vertical Stabiliser into the slots on the fuselage using Epoxy.



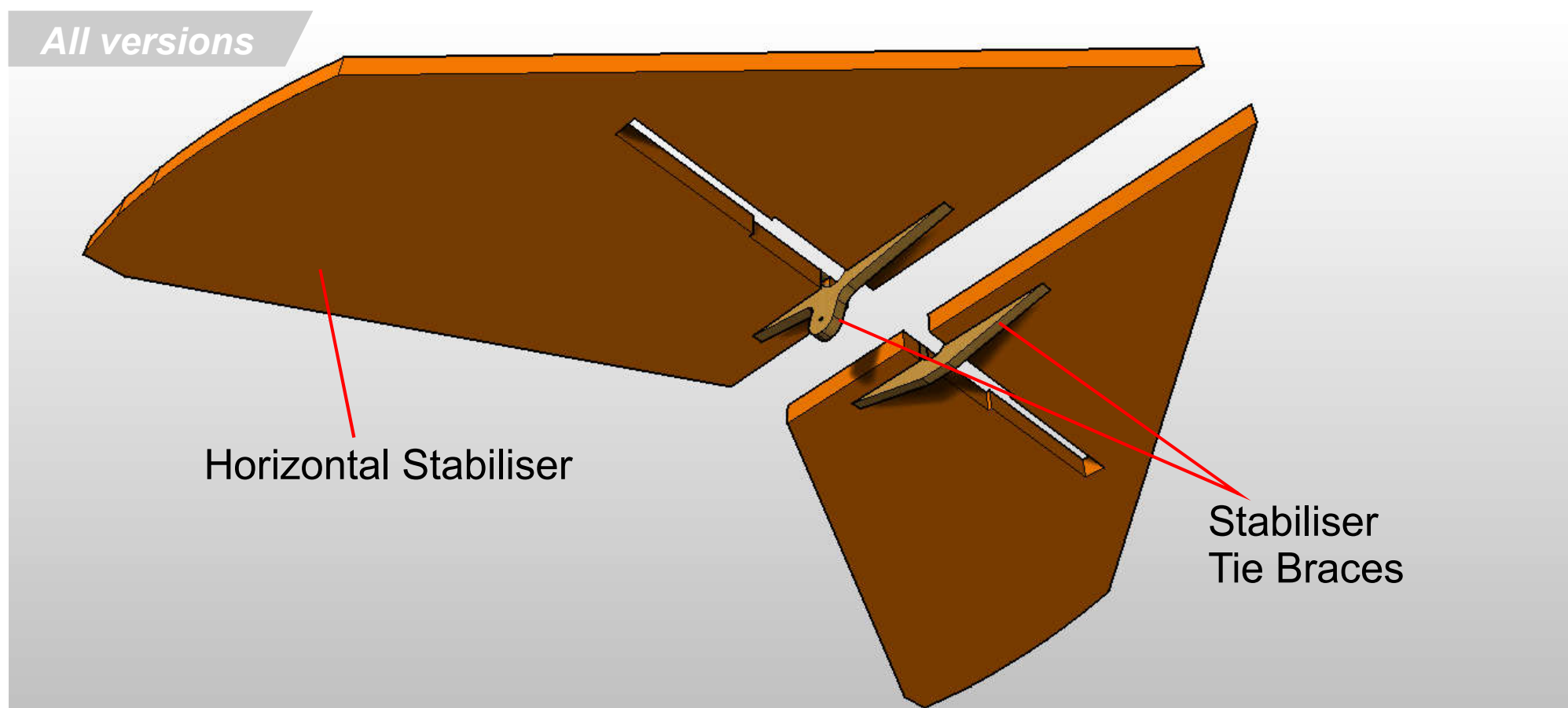




Glue the two 3mm liteply squares into the recesses for the elevator spar using epoxy.

Drill out and glue the aluminium tube through the vertical stabiliser using epoxy - ensuring it is kept horizontal.

Fill in the recessed area using lightweight filler.

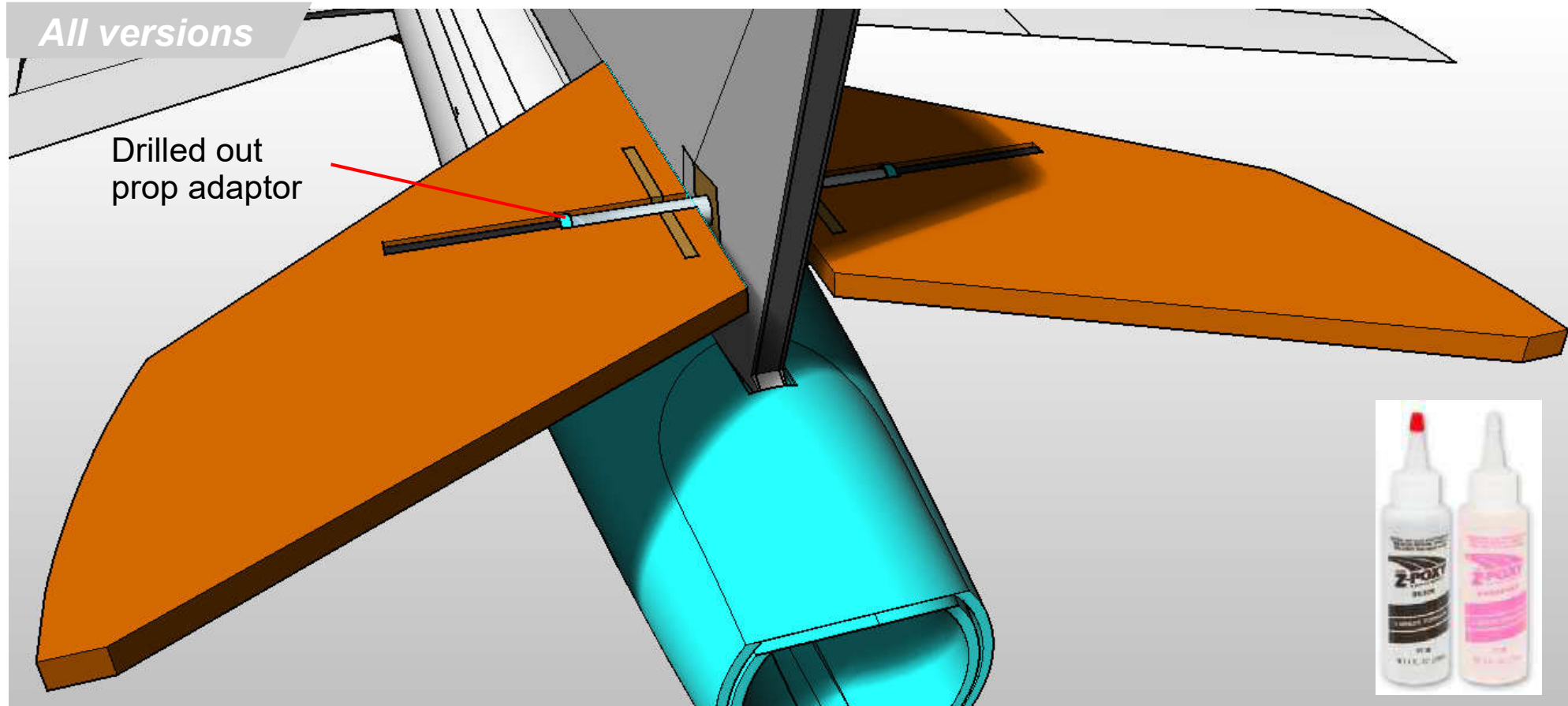


Glue the two 3mm liteply **Stabiliser tie-braces** into the slots on the **Horizontal Stabiliser**.

Be sure to fit the horn on the same side as your servo!



All versions



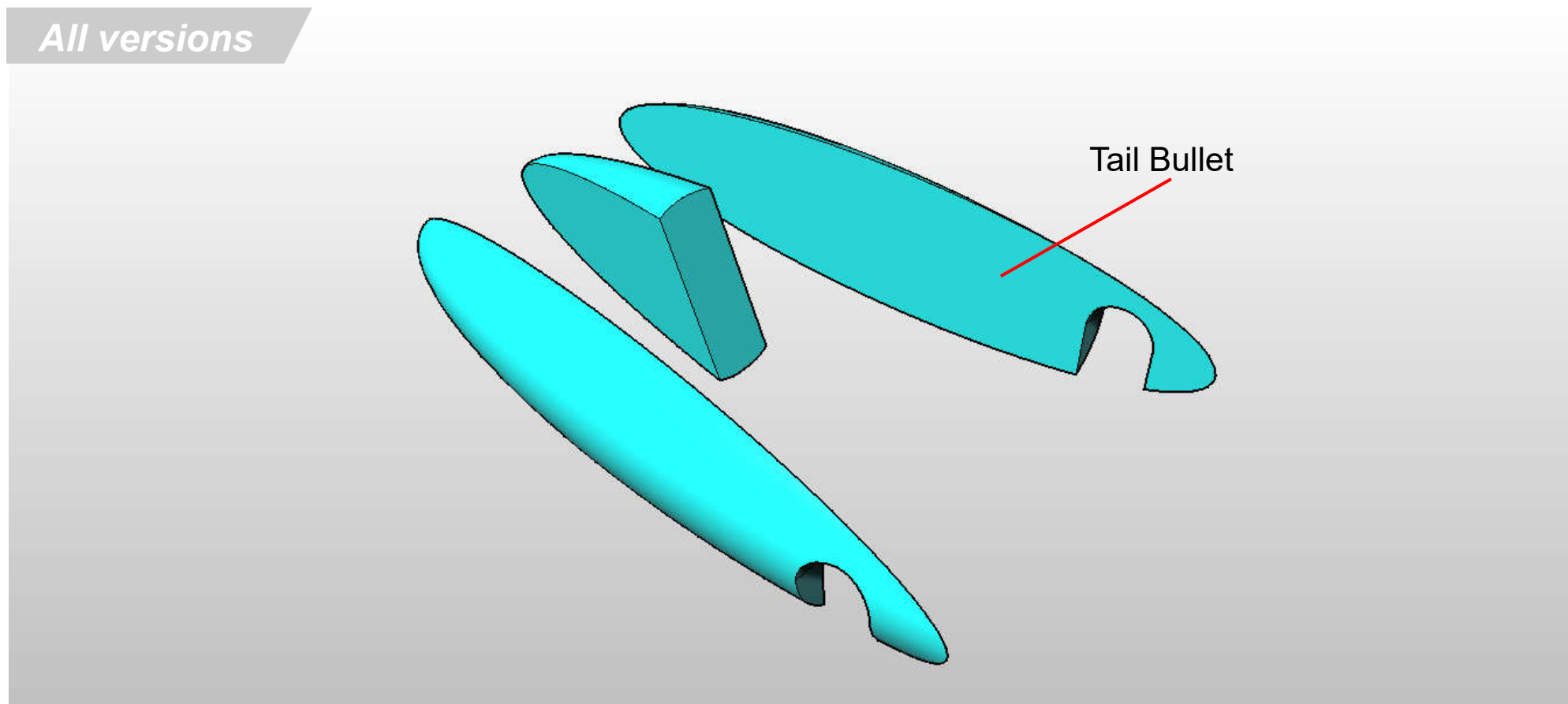
Slide the carbon Horizontal stabiliser shaft through the Aluminium tube.

Using two drilled out prop adaptor, slide them onto the shaft to act as bushings as shown.

Epoxy the Horizontal Stabilisers onto the carbon shaft using masking tape to hold the glue in place until it sets.

Support the stabilisers to remain horizontal while the epoxy sets.

All versions



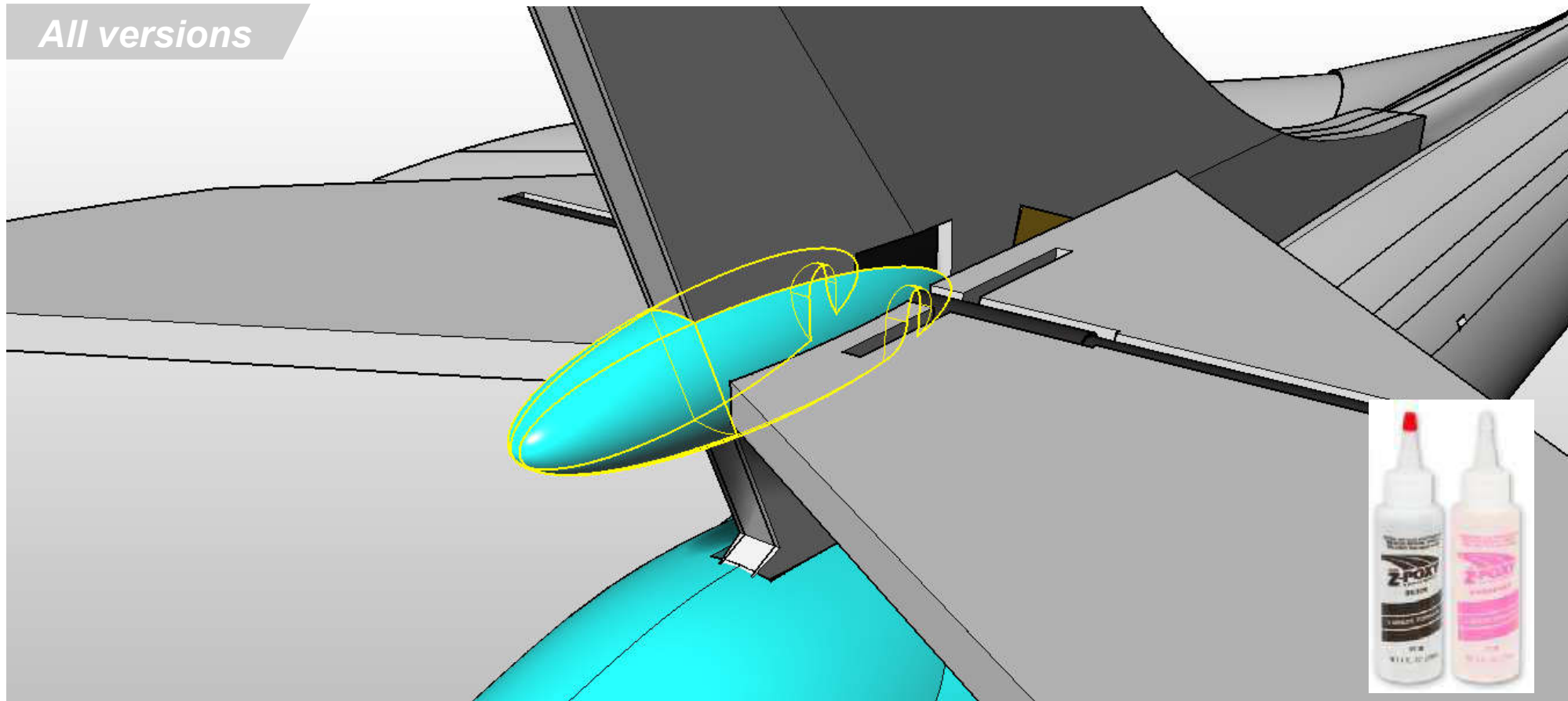
Either Fabricate from 3mm Liteply or 3D print the **Tail Bullet**.

Glue together.



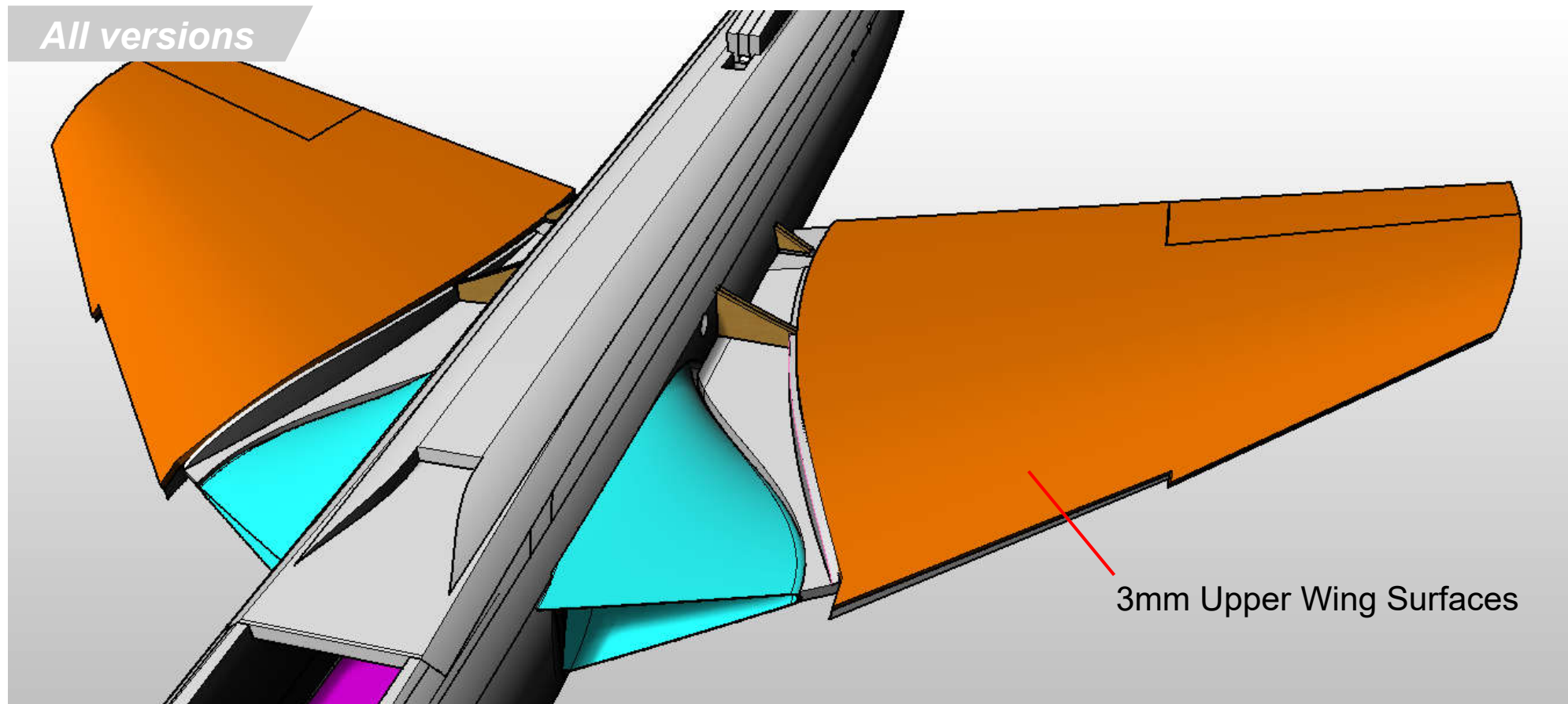


All versions



Hook the **Tail Bullet** over the Horizontal Stabiliser tube and glue in place as shown.

All versions

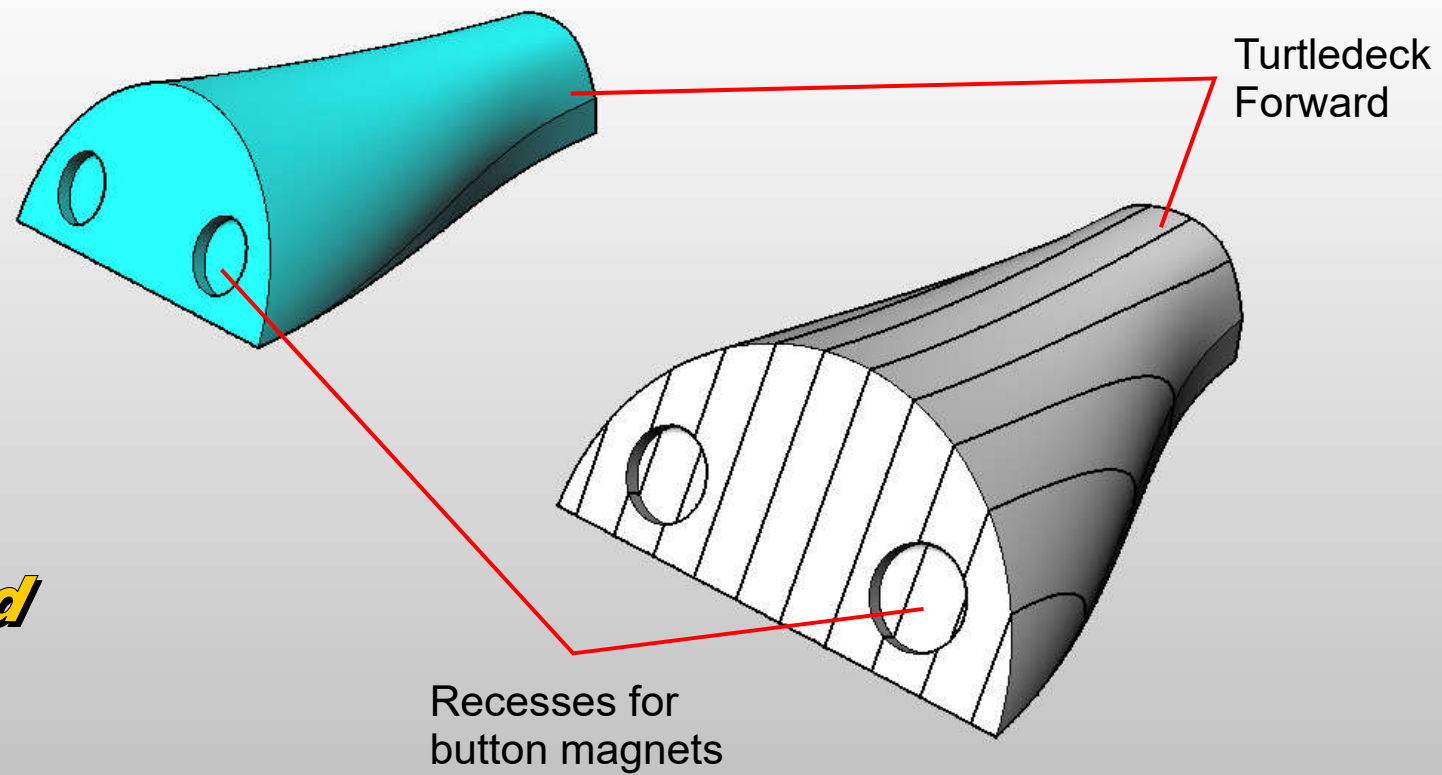


Cut oversize, then trim back the two **3mm Upper wing surfaces** to fit to the wing.



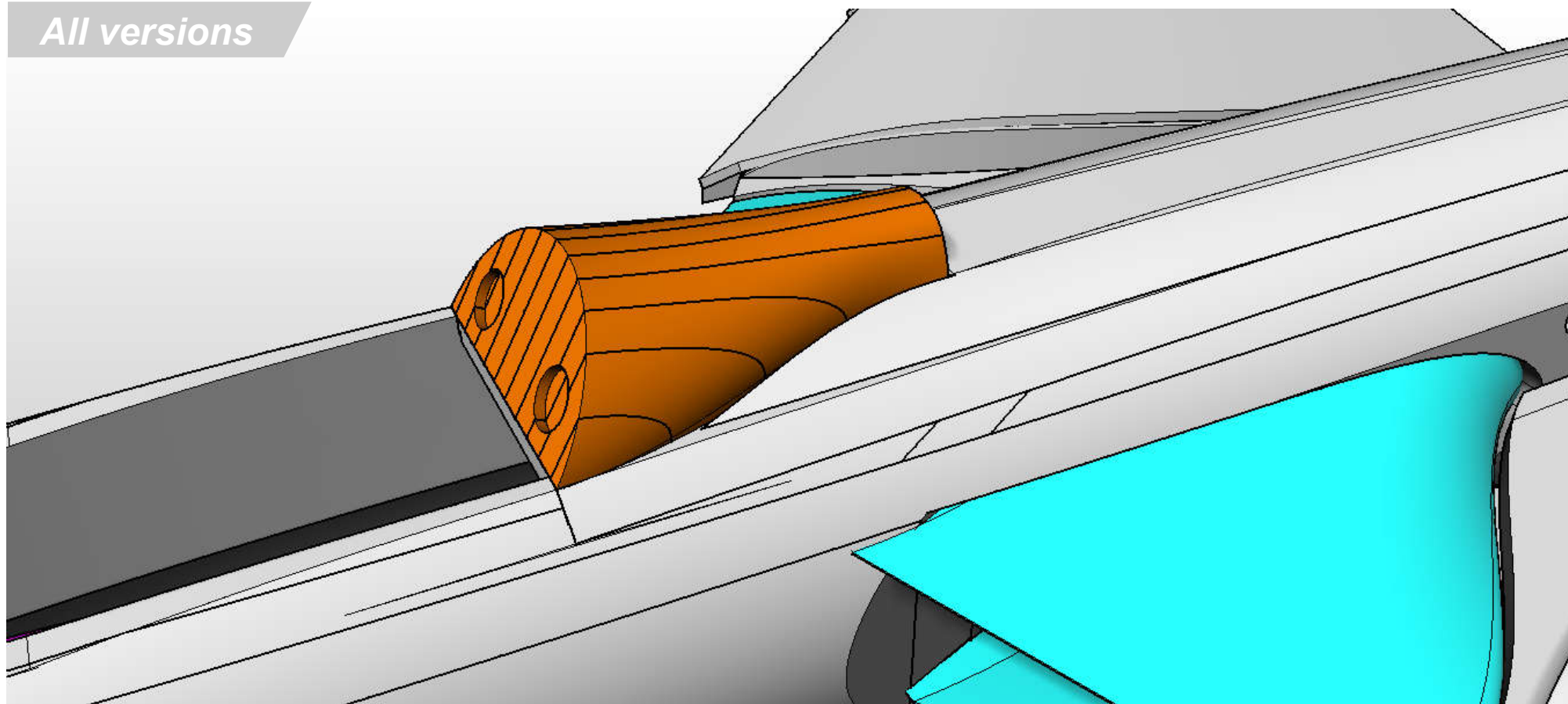
All versions

**3D  
Printed  
Part**  
(optional)



Either 3D print or fabricate the **Turtledeck Forward** using layers of 6mm foam glued together.

All versions

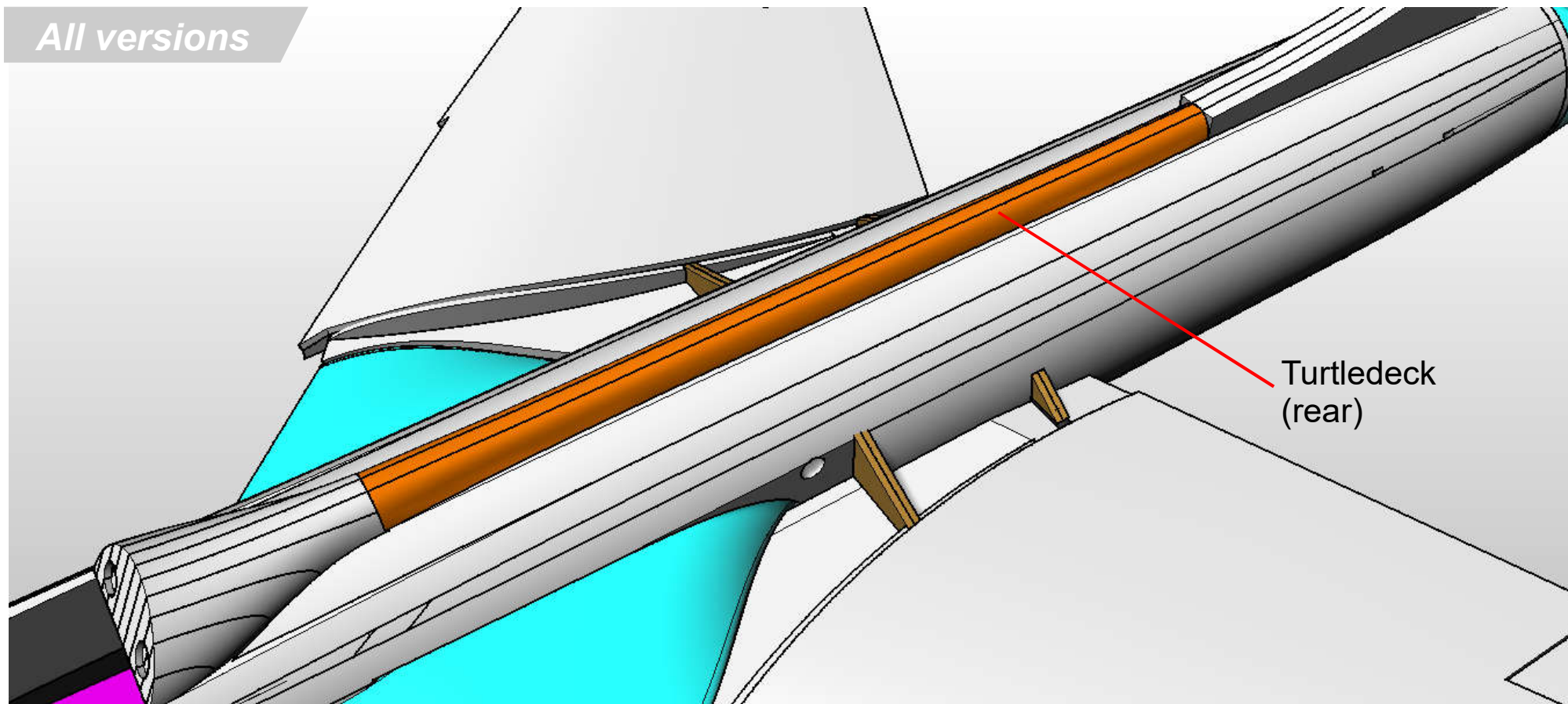


Glue the **Turtledeck Forward** in place as shown.





All versions



Fabricate the **Turtledeck (rear)** using strips of Depron glued together.

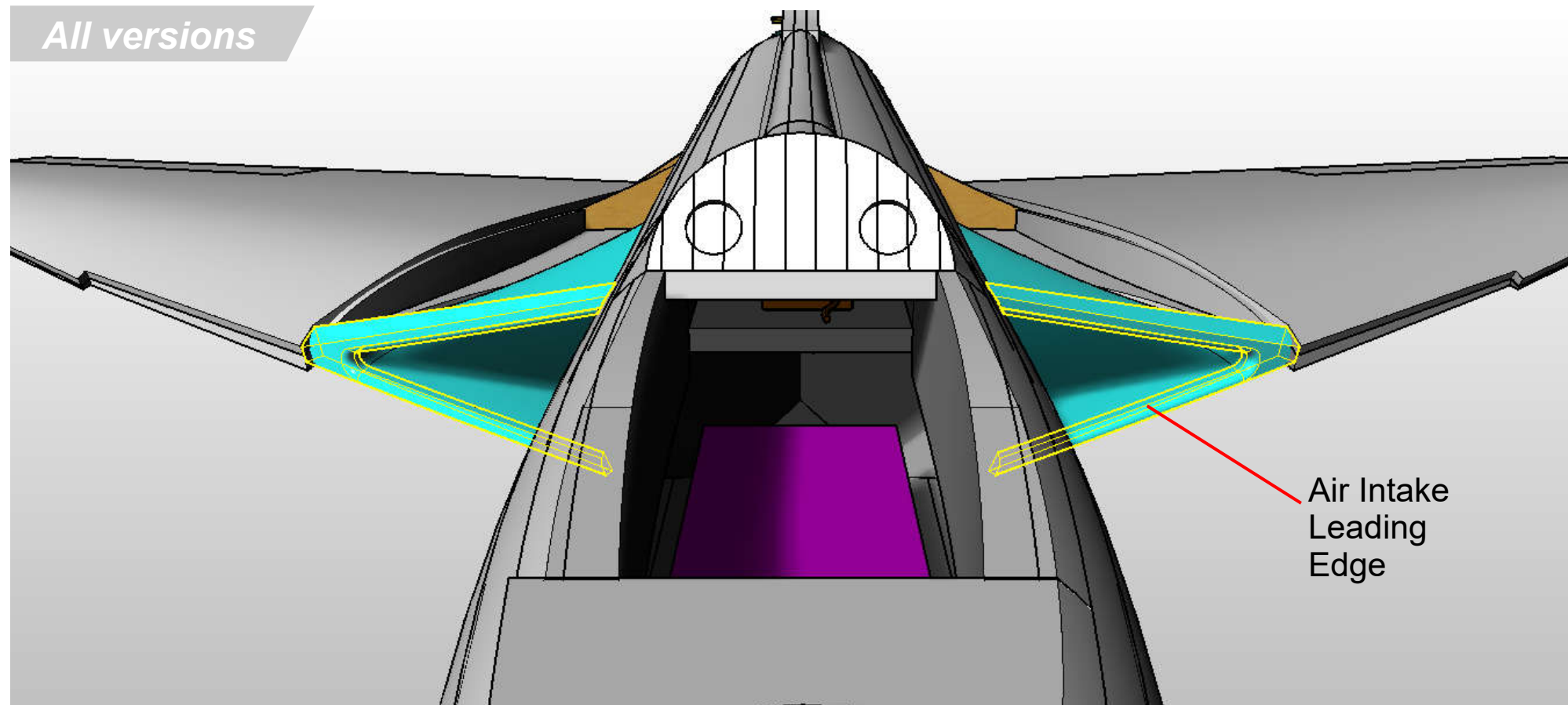
Sand a half-circular shape over its 'back', similar to the trailing edge of the Turtledeck (front).

Glue to the fuselage as shown.

Sand the leading edge of the vertical stabiliser to match.



All versions



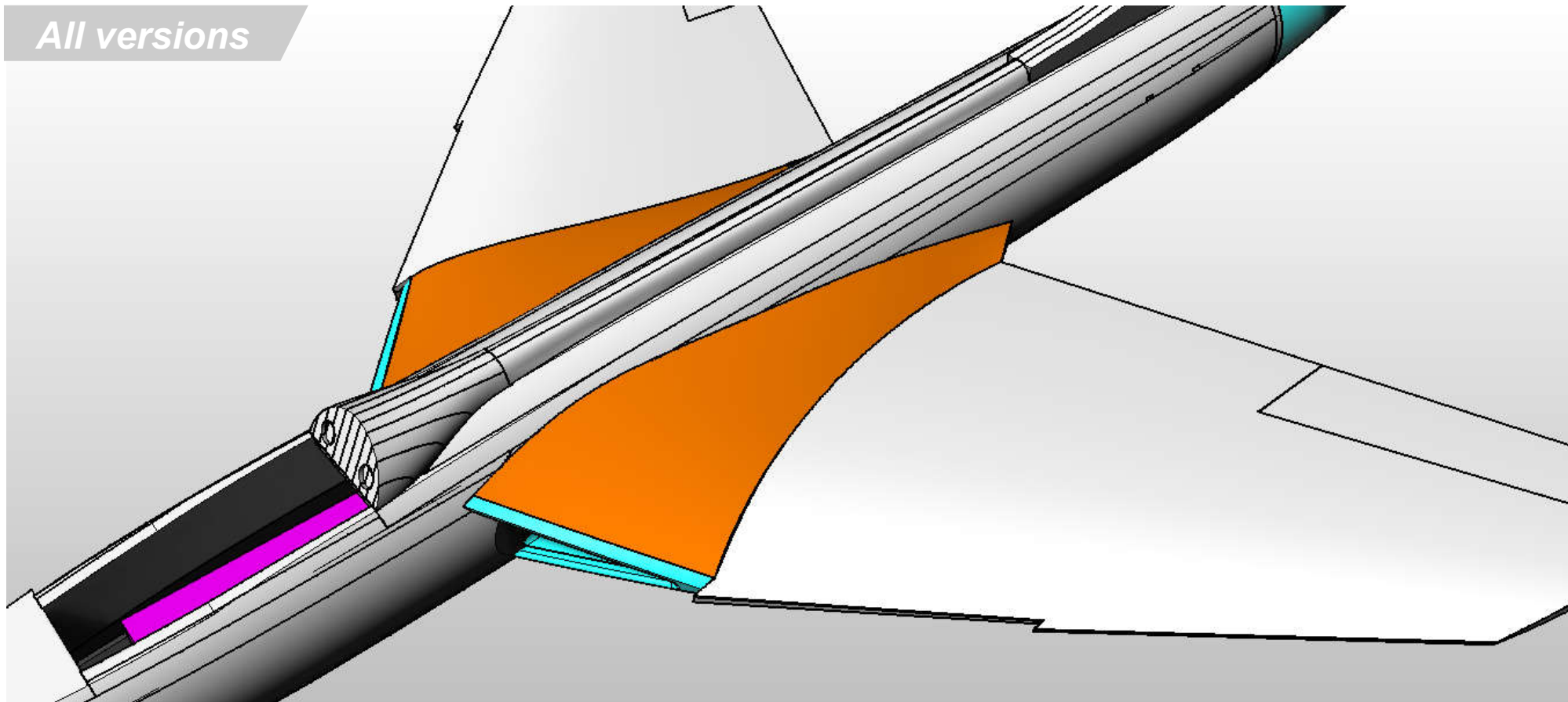
Either Fabricate from 3mm lite ply or 3D print the **Air Intake Leading Edge**.

Glue to the assembly - align to the holes created especially for it on the fuselage sides.





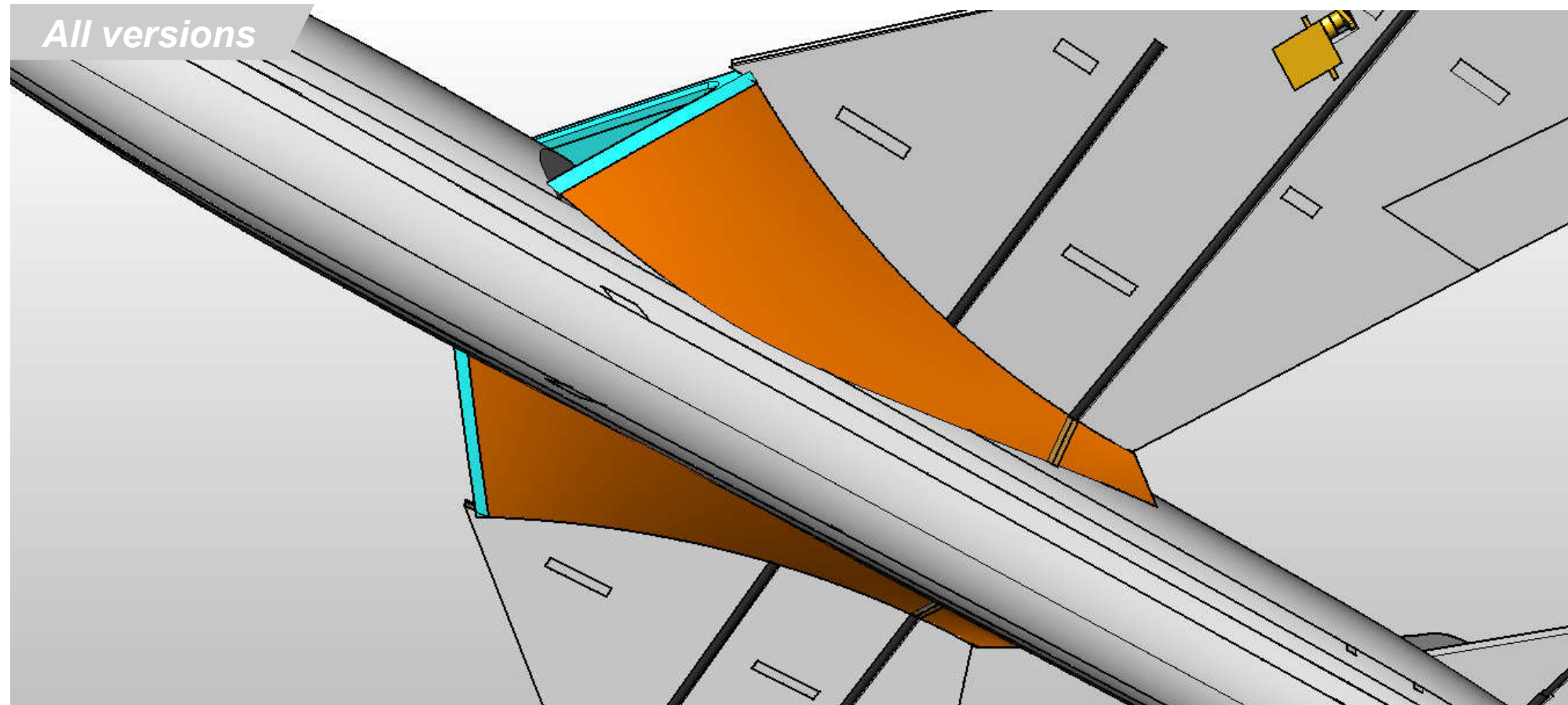
All versions



Trim to fit the 3mm foam **Intake Cowling (Upper)** and glue in place



All versions

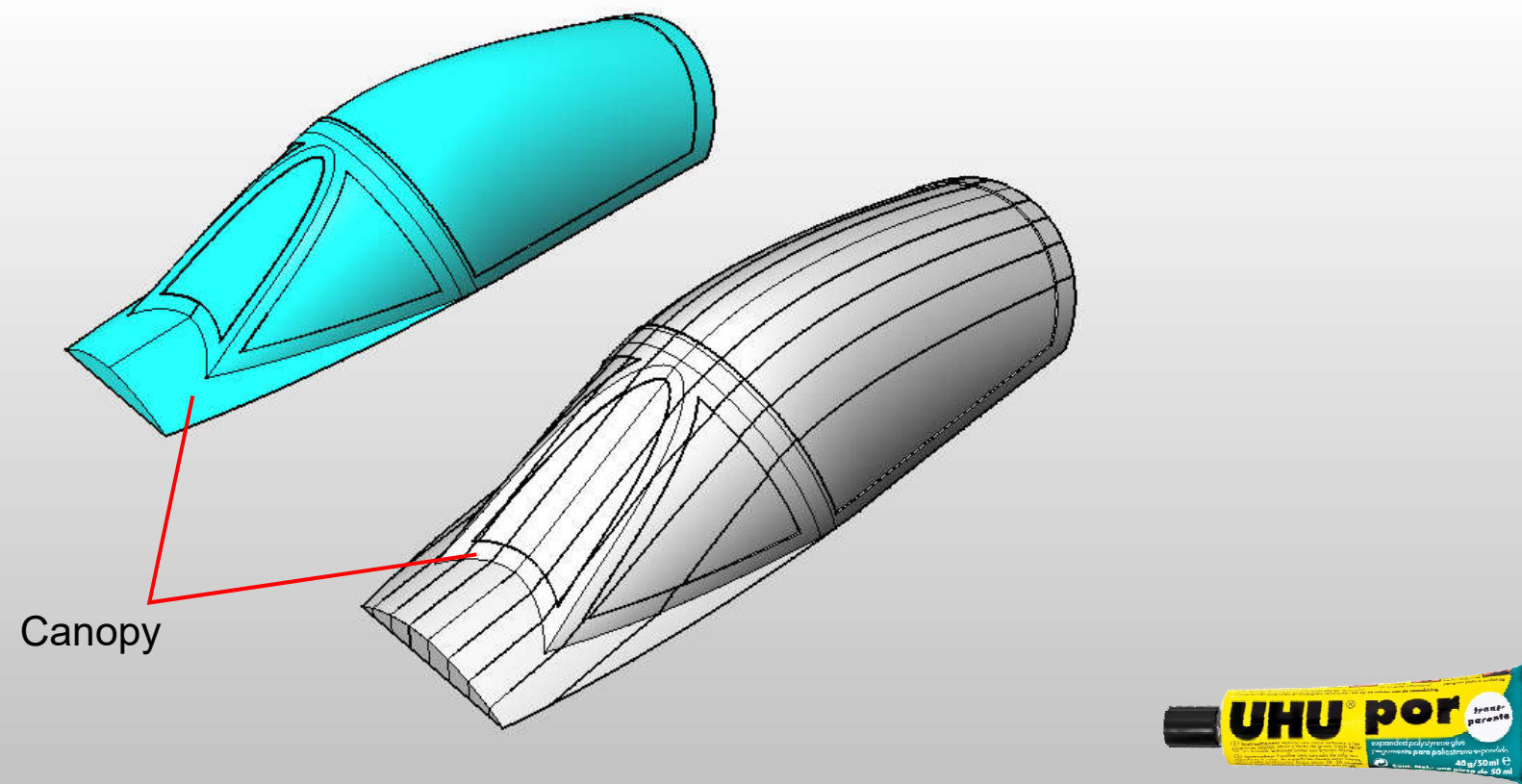


Trim to fit the 3mm foam **Intake Cowling (Lower)** and glue in place.

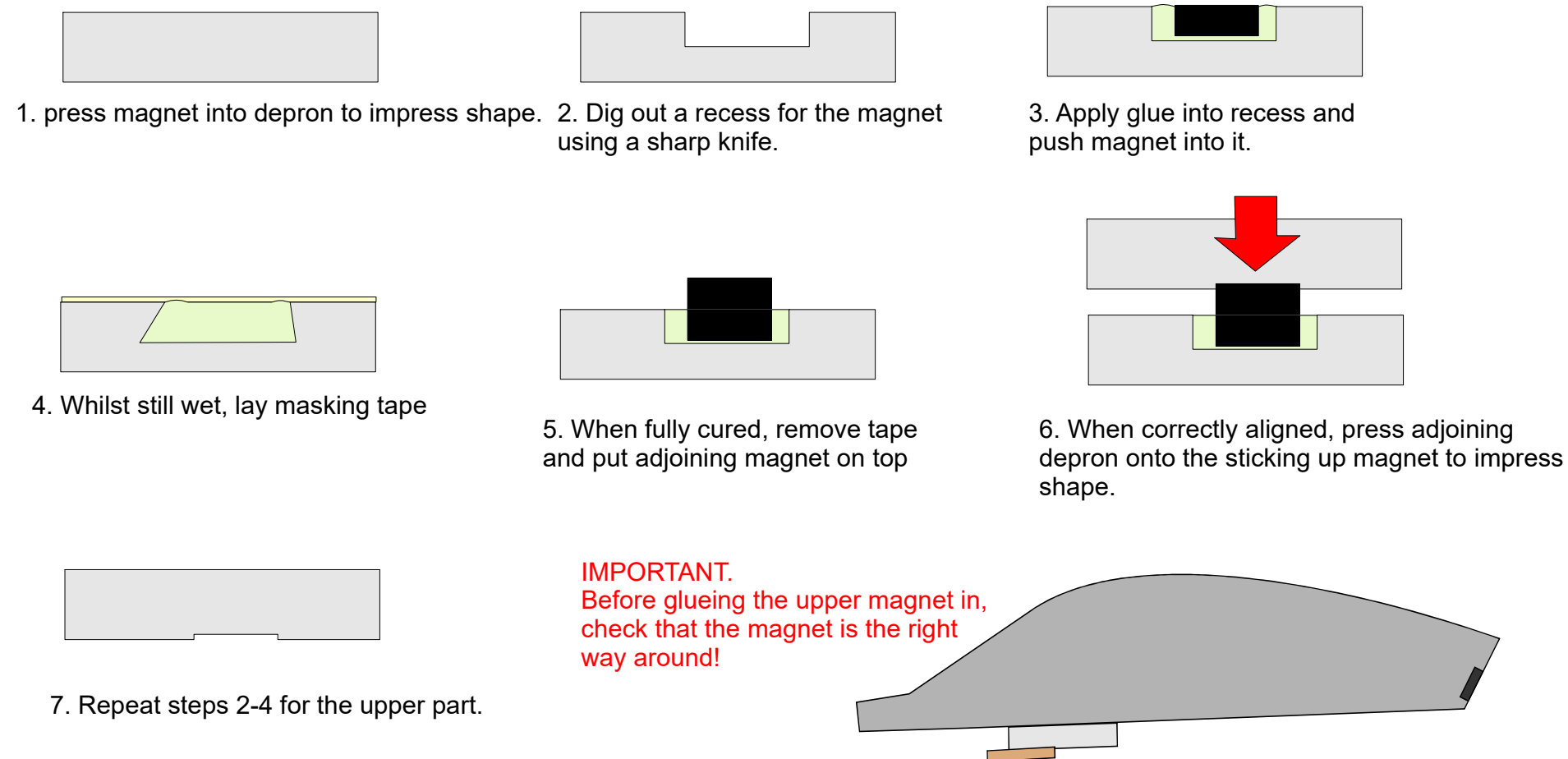
Trim either side of the lite-ply bulkhead (rear)







Either 3D print or fabricate the **Canopy** using layers of 6mm foam glued together.

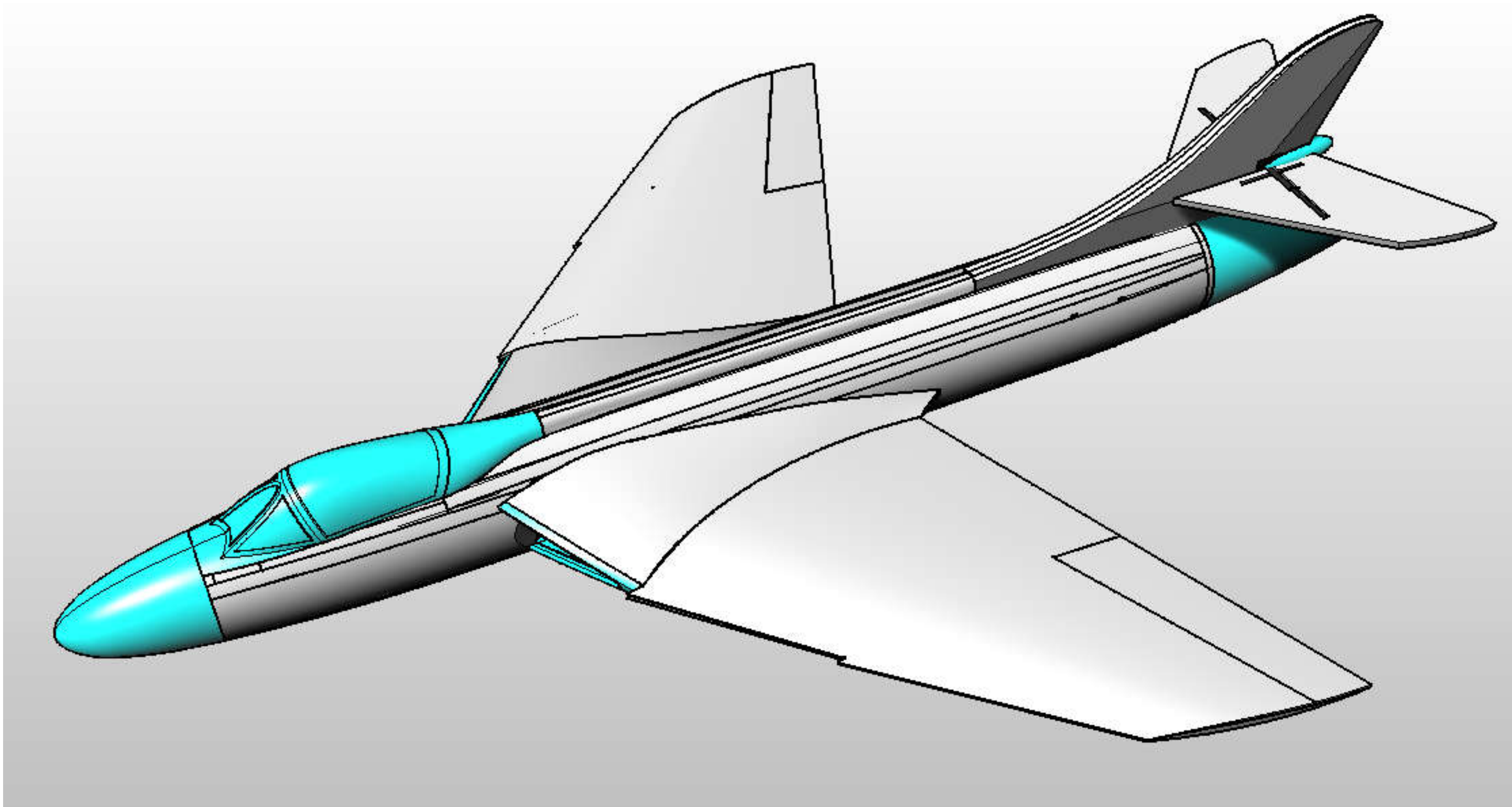


Build a tongue using a piece of scrap 6mm foam and 3mm liteply at the front of the canopy.

Attach the magnets to the magnet panel

Epoxy the magnets to rear of the canopy so that the canopy is removable but holds firmly in place when mounted.





Congratulations! Your Hunter is complete! Either fly it as it is, or go ahead and paint it.







Use images of the real plane to help you get the right scale details

