

JETWORKS



LTV A-7
Corsair II
Parkjet



3rd Generation Light Attack Aircraft

Construction Guide

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Corsair II History

The LTV A-7 Corsair II is an American carrier-capable subsonic light attack aircraft designed and manufactured by Ling-Temco-Vought (LTV).

The A-7 was developed during the early 1960s as replacement for the Douglas A-4 Skyhawk. Its design was derived from the Vought F-8 Crusader; in comparison with the F-8, the A-7 is both smaller and restricted to subsonic speeds, its airframe being simpler and cheaper to produce. Following a competitive bid by Vought in response to the United States Navy's (USN) VAL (Heavier-than-air, Attack, Light) requirement, an initial contract for the type was issued on 8 February 1964. Development was rapid, first flying on 26 September 1965 and entering squadron service with the USN on 1 February 1967; by the end of that year, A-7s were being deployed overseas for the Vietnam War.

Initially adopted by USN, the A-7 proved attractive to other services, soon being adopted by the United States Air Force (USAF) and the Air National Guard (ANG) to replace their aging Douglas A-1 Skyraider and North American F-100 Super Sabre fleets. Improved models of the A-7 would be developed, typically adopting more powerful engines and increasingly capable avionics. American A-7s would be used in various major conflicts, including the Invasion of Grenada, Operation El Dorado Canyon, and the Gulf War. The type was also used to support the development of the Lockheed F-117 Nighthawk.

The A-7 was also exported to Greece in the 1970s and to Portugal in the late 1980s. The USAF and USN opted to retire their remaining examples of the type in 1991, followed by the ANG in 1993 and the Portuguese Air Force in 1999. The A-7 was largely replaced by newer generation fighters such as the General Dynamics F-16 Fighting Falcon and the McDonnell Douglas F/A-18 Hornet. The final operator, the Hellenic Air Force, withdrew the last A-7s during 2014.



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Designers Notes

The Unorthodox but very effective Corsair II - Nicknamed the 'SLUF'... (which I like to think it means 'Short Little Unusual Fellow') with its high wing with a larger aerofoil than supersonic fighters really I ends itself well to RC models.

Designed to take the 64mm EDF without Cheater holes, 70mm with Cheaters or Pusher prop.

Can be made 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-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.

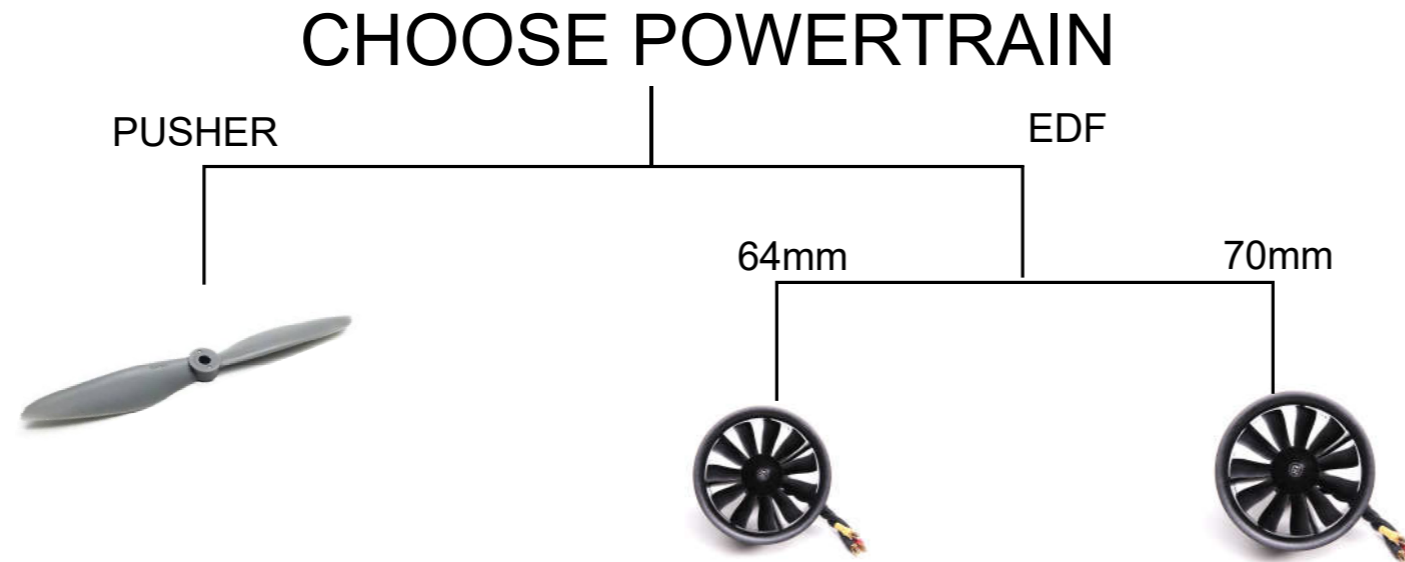
Glueing parts together.

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.

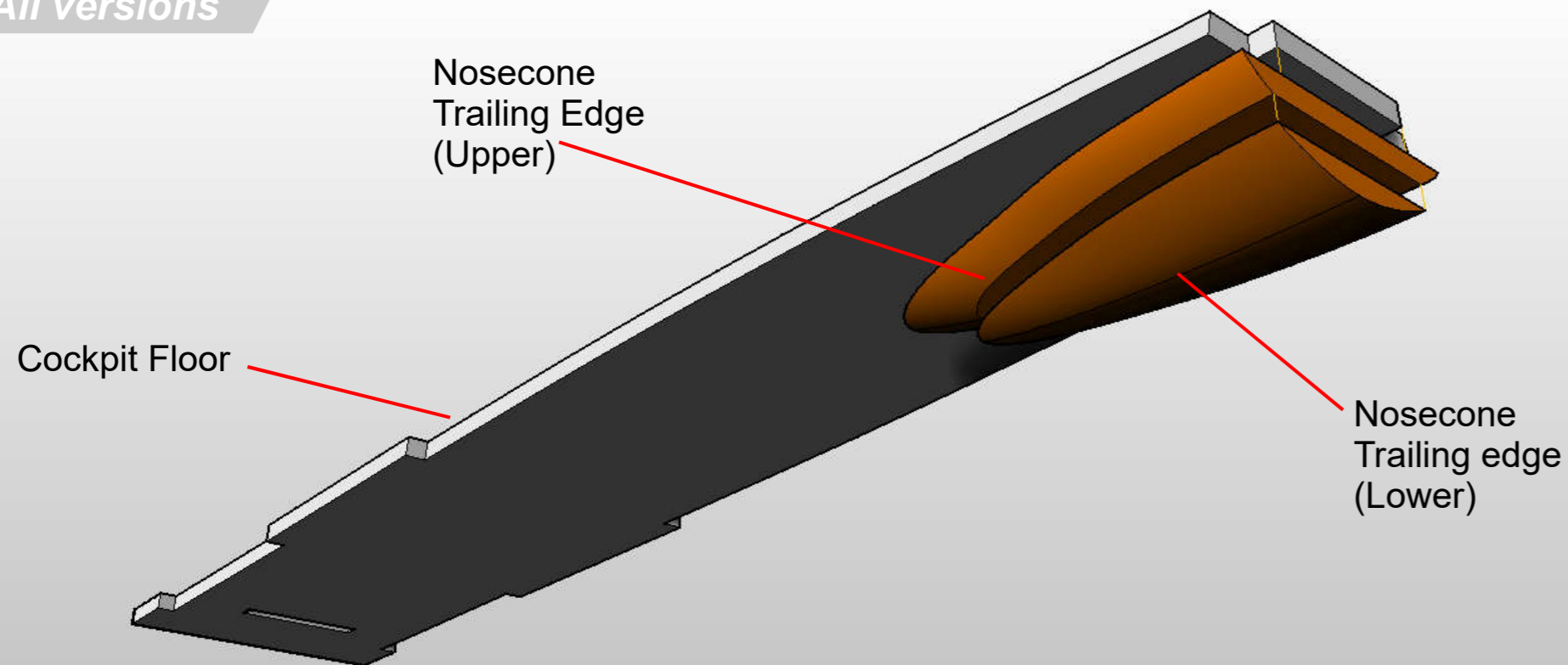
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Choose your preferred variant and its powertrain.



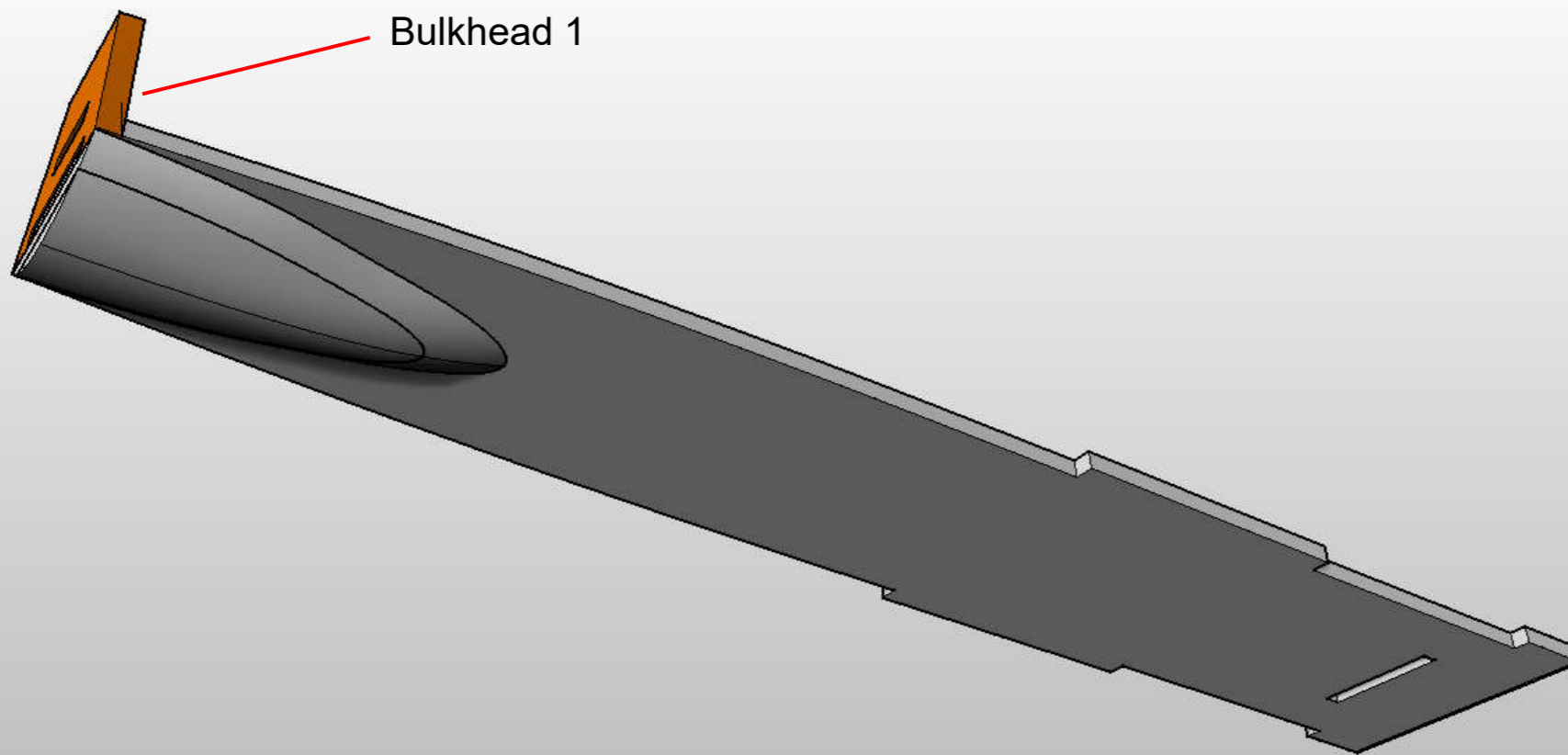
All versions



Mark a centreline on each part and glue the two **Nosecone Trailing Edge Pieces** to the underside of the **Cockpit floor**.



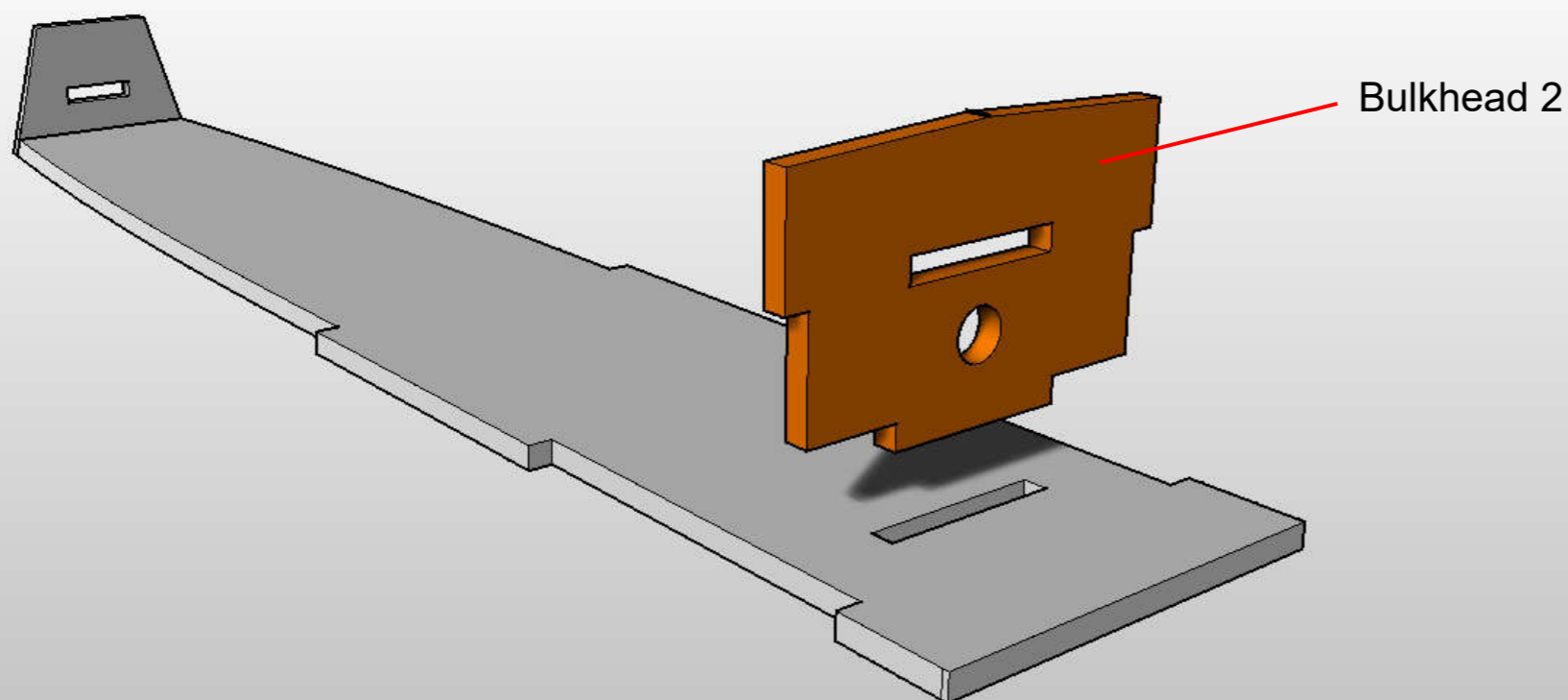
All versions



Glue **Bulkhead 1** to the **Cockpit floor panel**



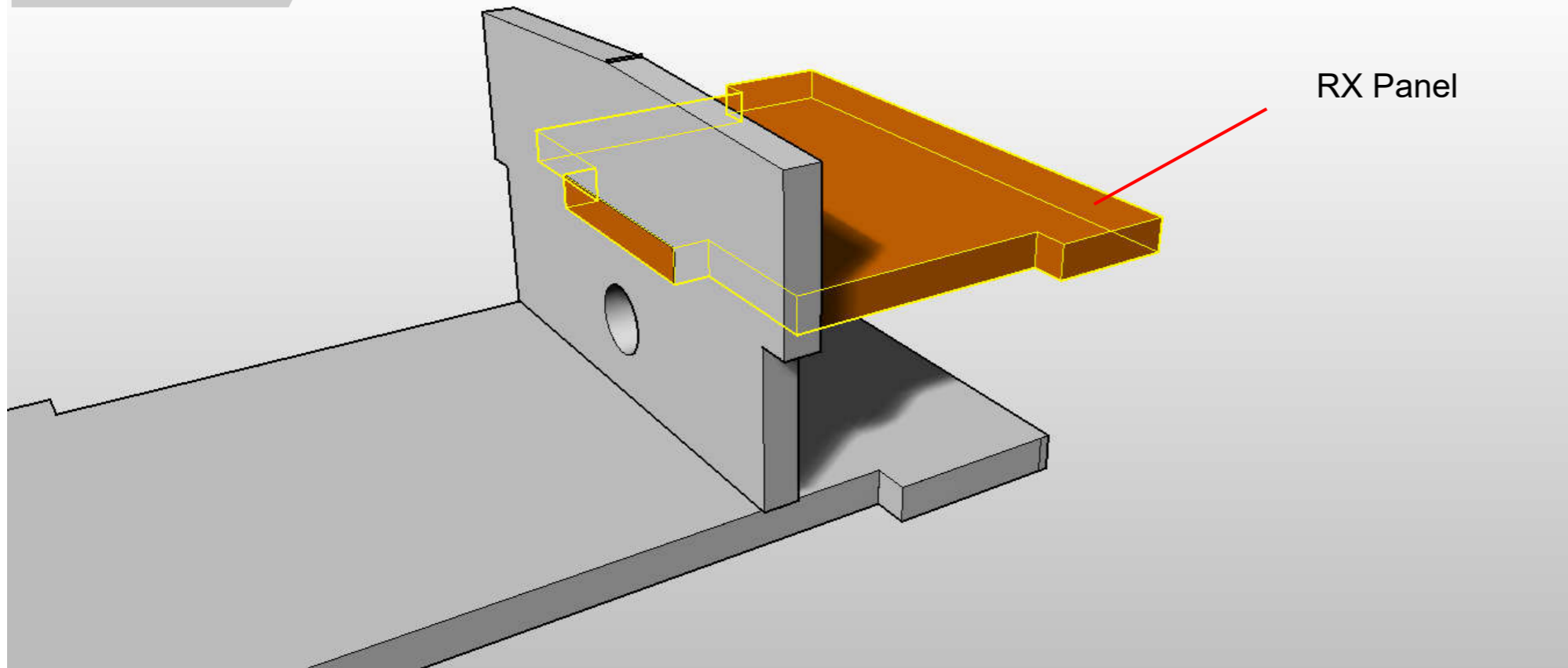
All versions



Glue **Bulkhead 2** to the **Cockpit floor**.



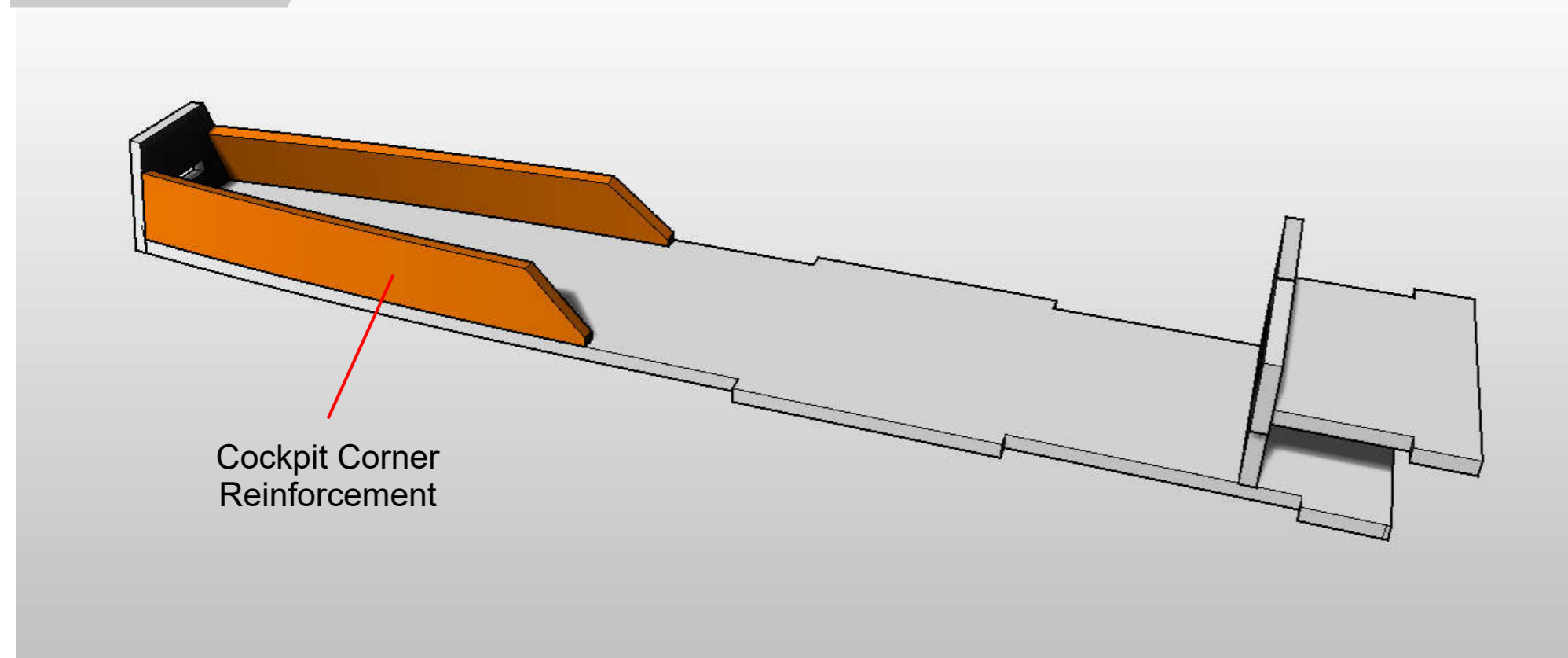
All versions



Glue the **RX Panel** to the Assembly



All versions

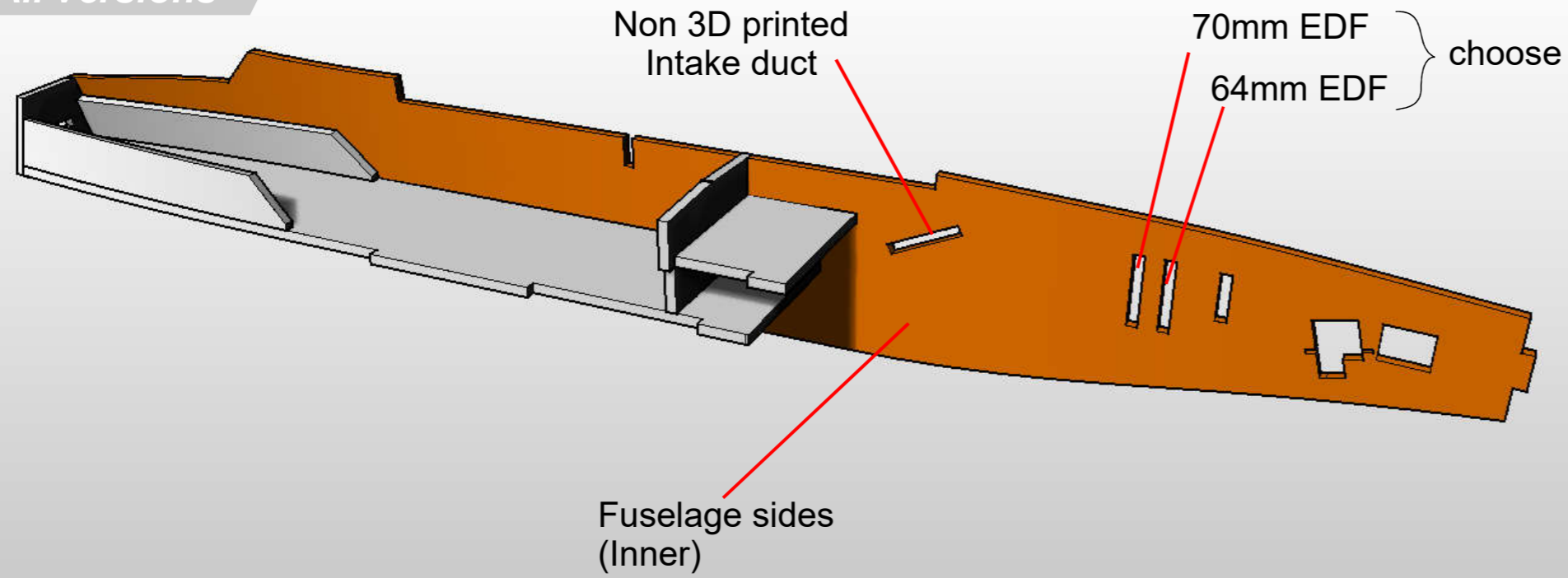


Dry fit the fuselage sides (inner) to the assembly, then twist the **Cockpit Corner Reinforcer** panels gently to match the fuselage sides.

Glue the two pieces in place.



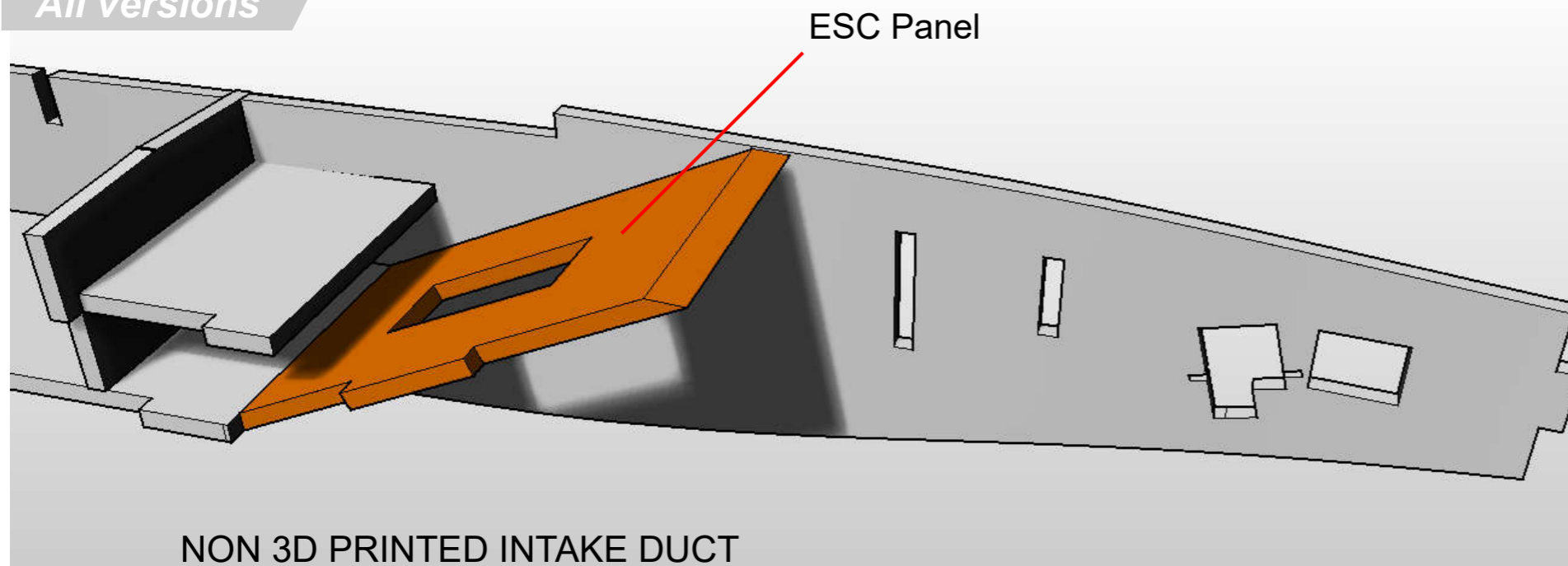
All versions



Glue **ONE** of the two fuselage sides (inner) pieces to the Assembly



All versions

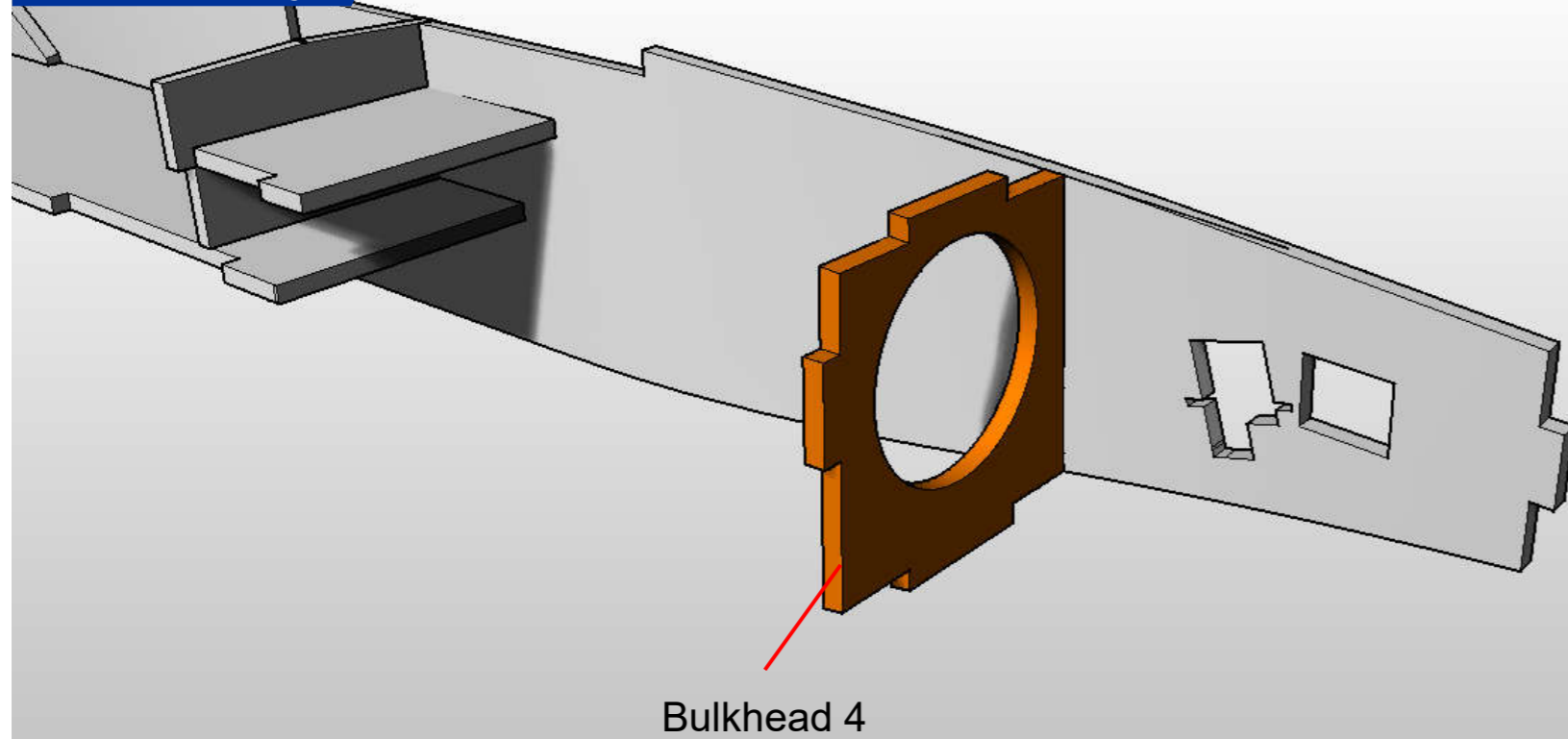


Glue the **ESC Panel** to the Assembly.

NOTE : Omit this part if you are planning to have an EDF 3D printed intake duct.



Pusher only

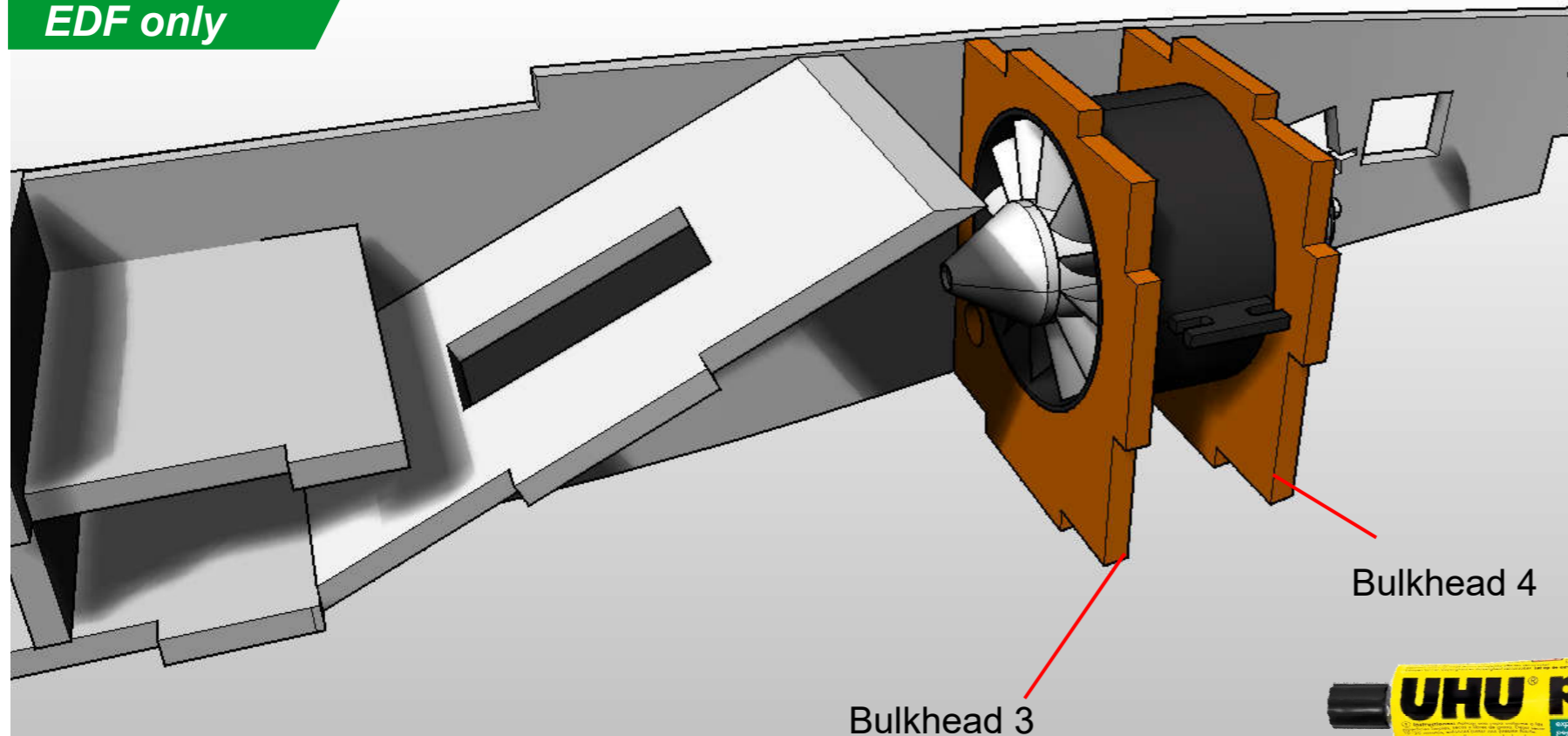


PUSHER VERSION

Glue **Bulkhead 4** to the assembly.



EDF only



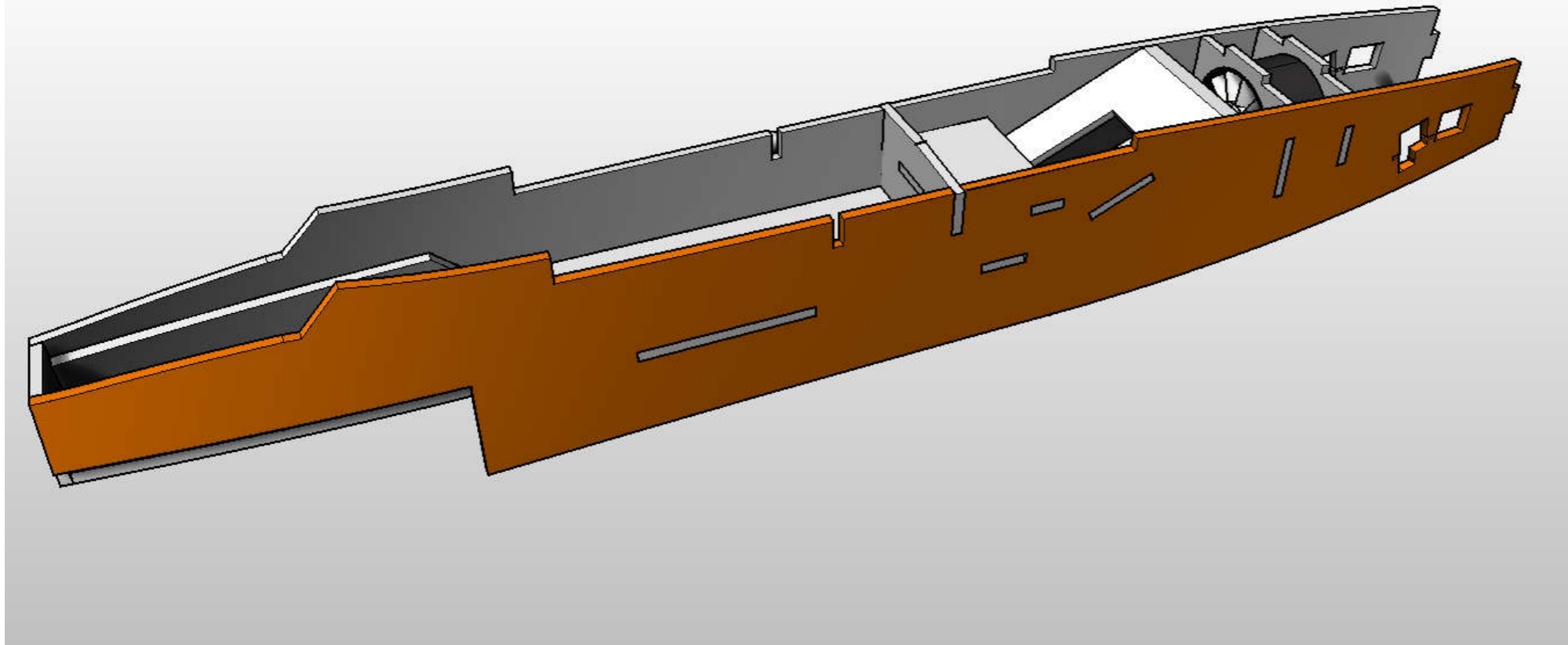
EDF VERSION

Adjust the circular cut-outs to match the diameter of your EDF unit.

Dry fit your EDF unit into the bulkheads then glue the bulkheads into place onto the Fuselage side. Don't glue the EDF into the bulkheads just yet.

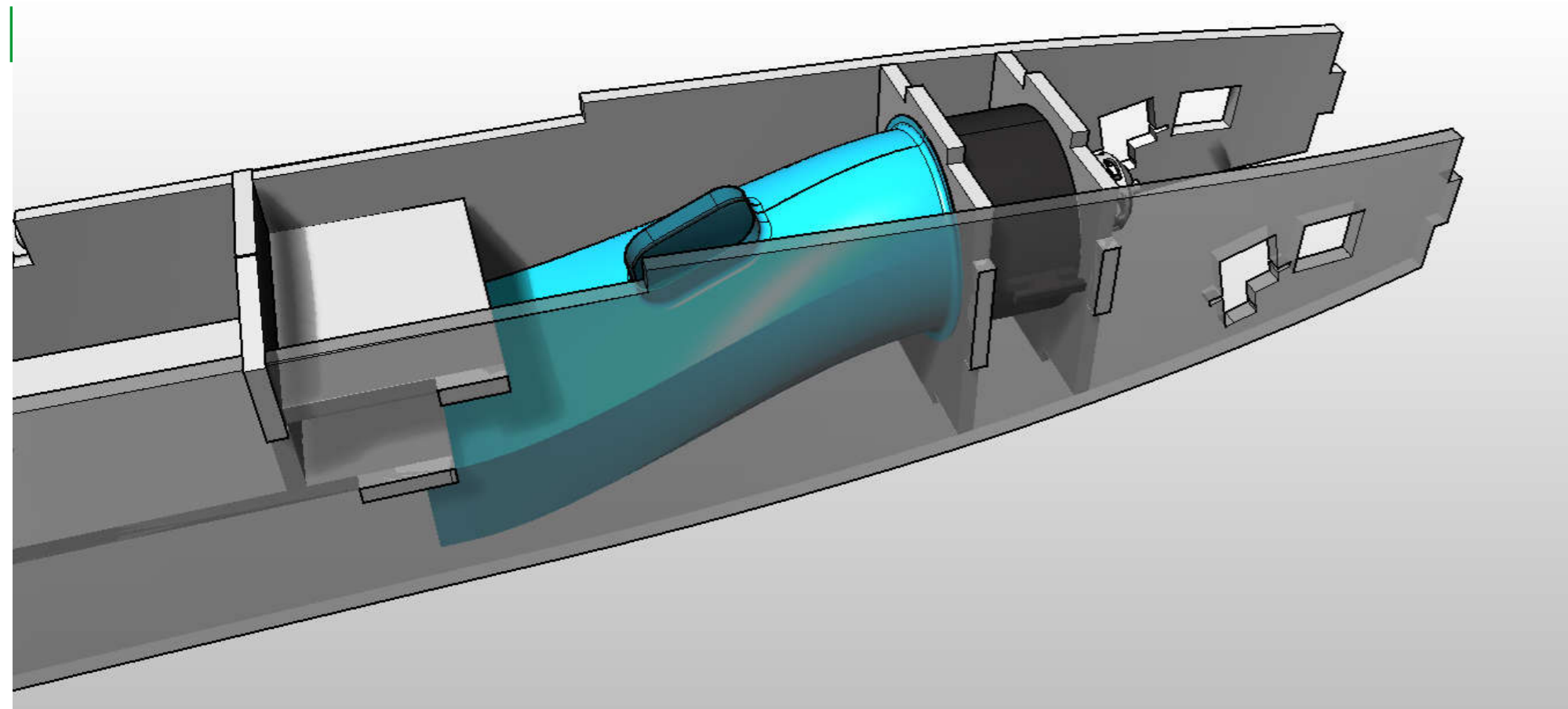
IMPORTANT! Non-3D Printed Intake version - Make sure that the inlet ring on the EDF is fitted to the EDF.





Glue the other fuselage side in place as shown.

EDF version- Glue the EDF in place using hot melt glue

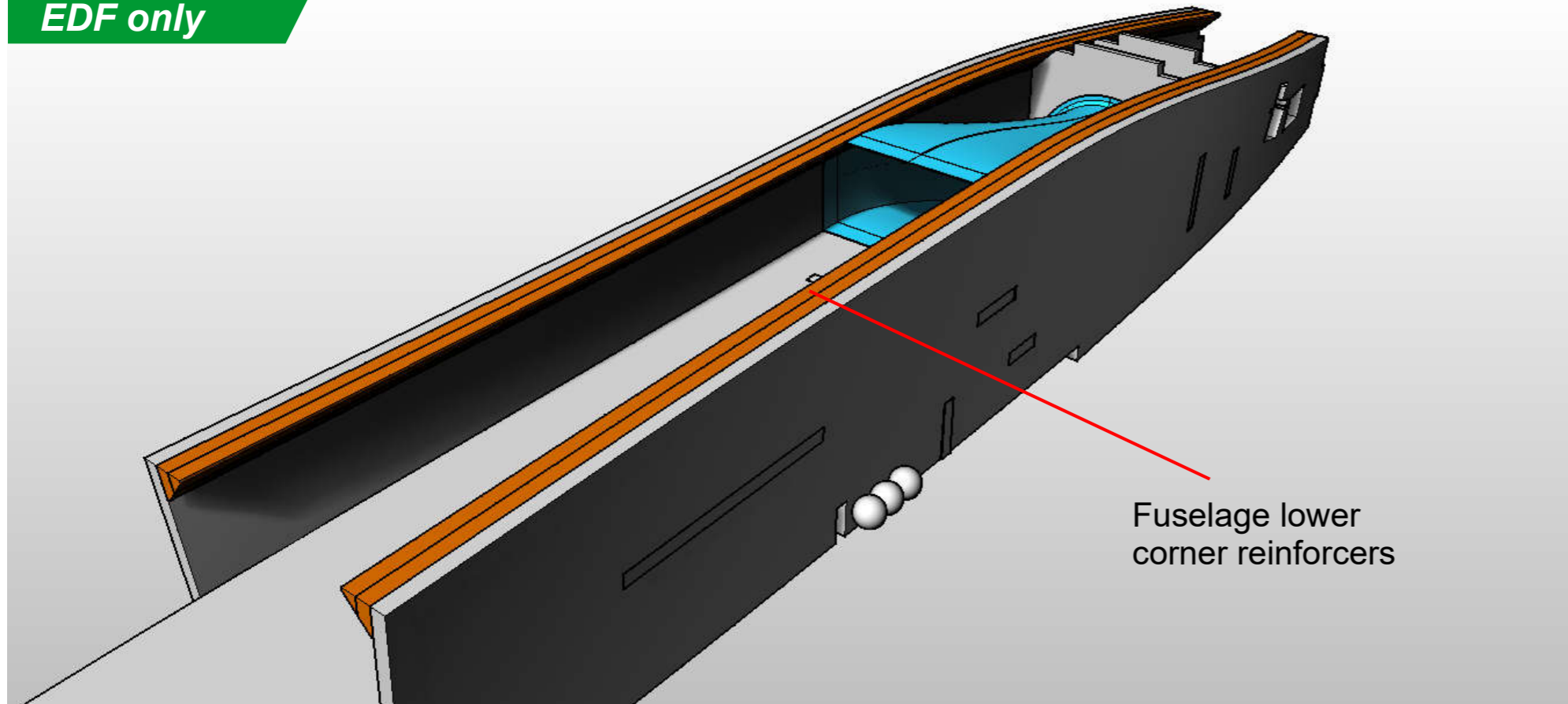


EDF VERSION

Glue the **3D printed EDF inlet duct** into the fuselage.

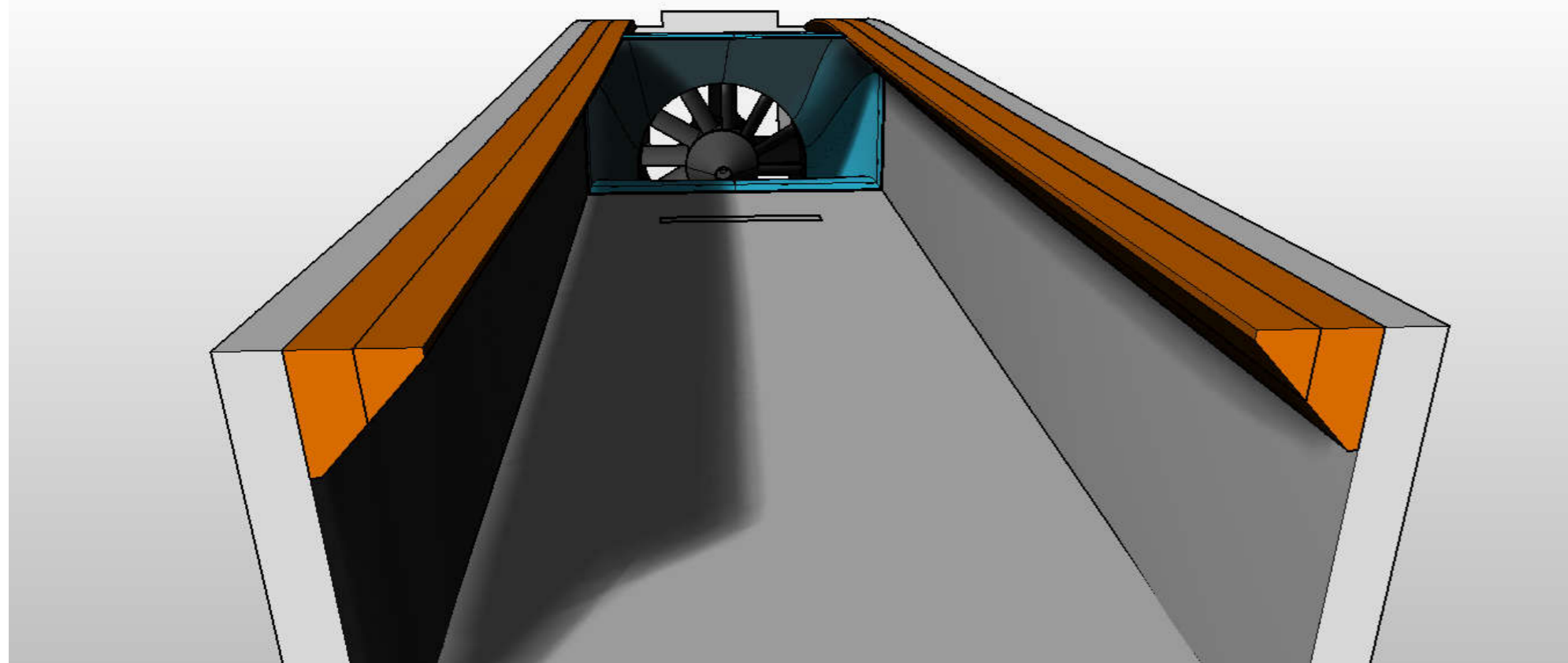
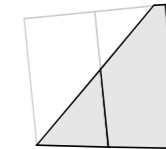


EDF only



Glue the two pieces of the **Fuselage Lower Corner Reinforcers** together using UHU por.

Cut/sand across from corner to corner to form a triangular shape.



Run a sanding block across the corner reinforcers to create a good bonding surface for the belly pieces.

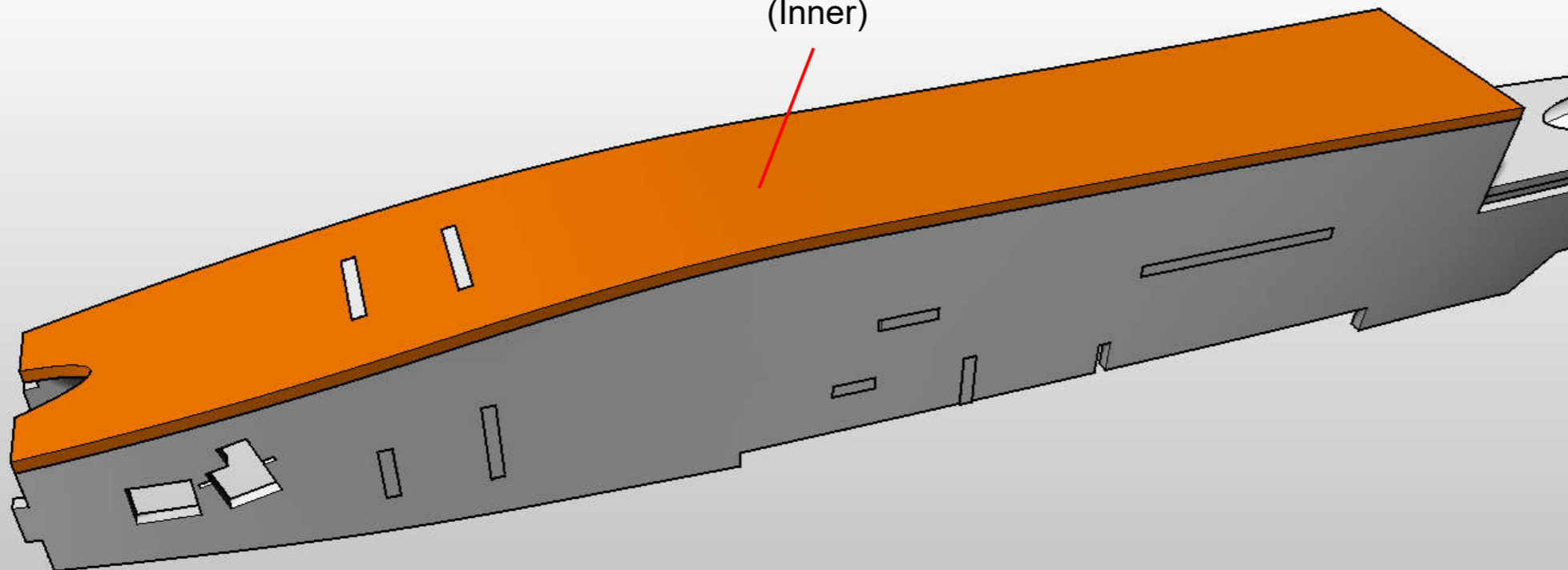
In order to reduce aerodynamic friction, carefully line the intake duct with parcel tape.

Do the same with the belly panel when you put it on.



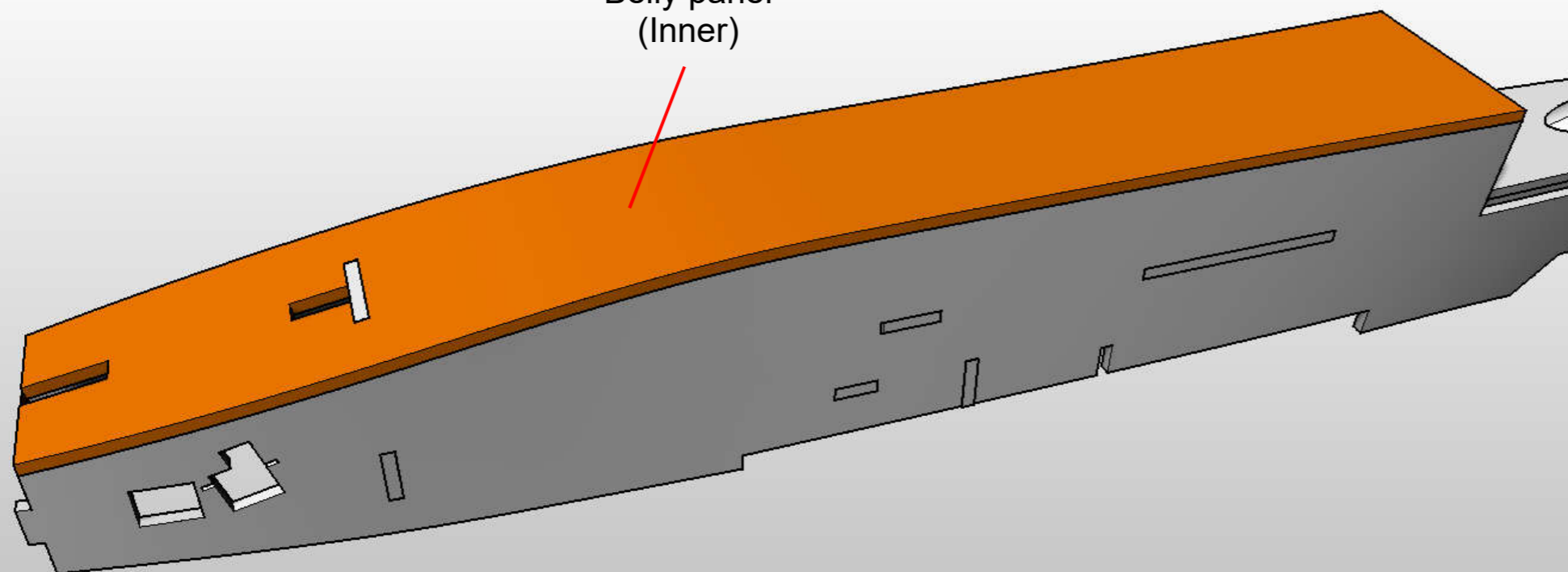
EDF only

Belly panel
(Inner)



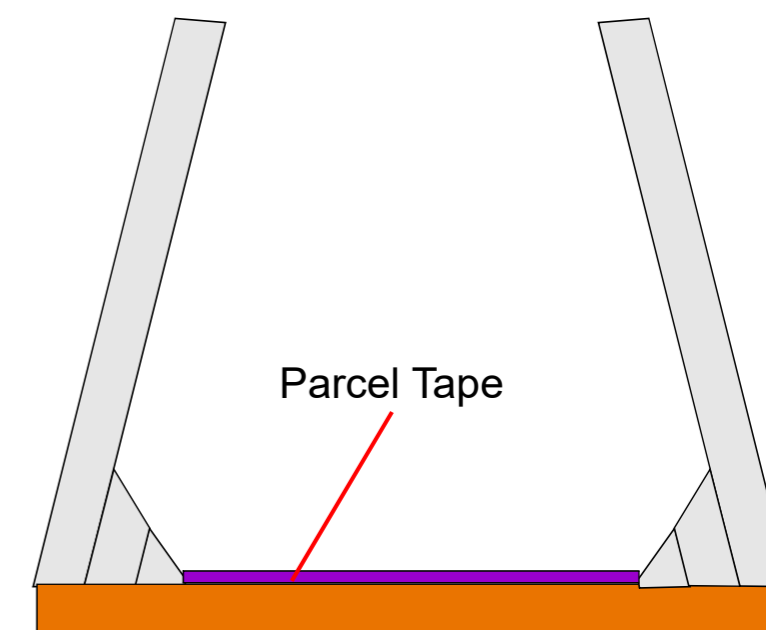
Pusher only

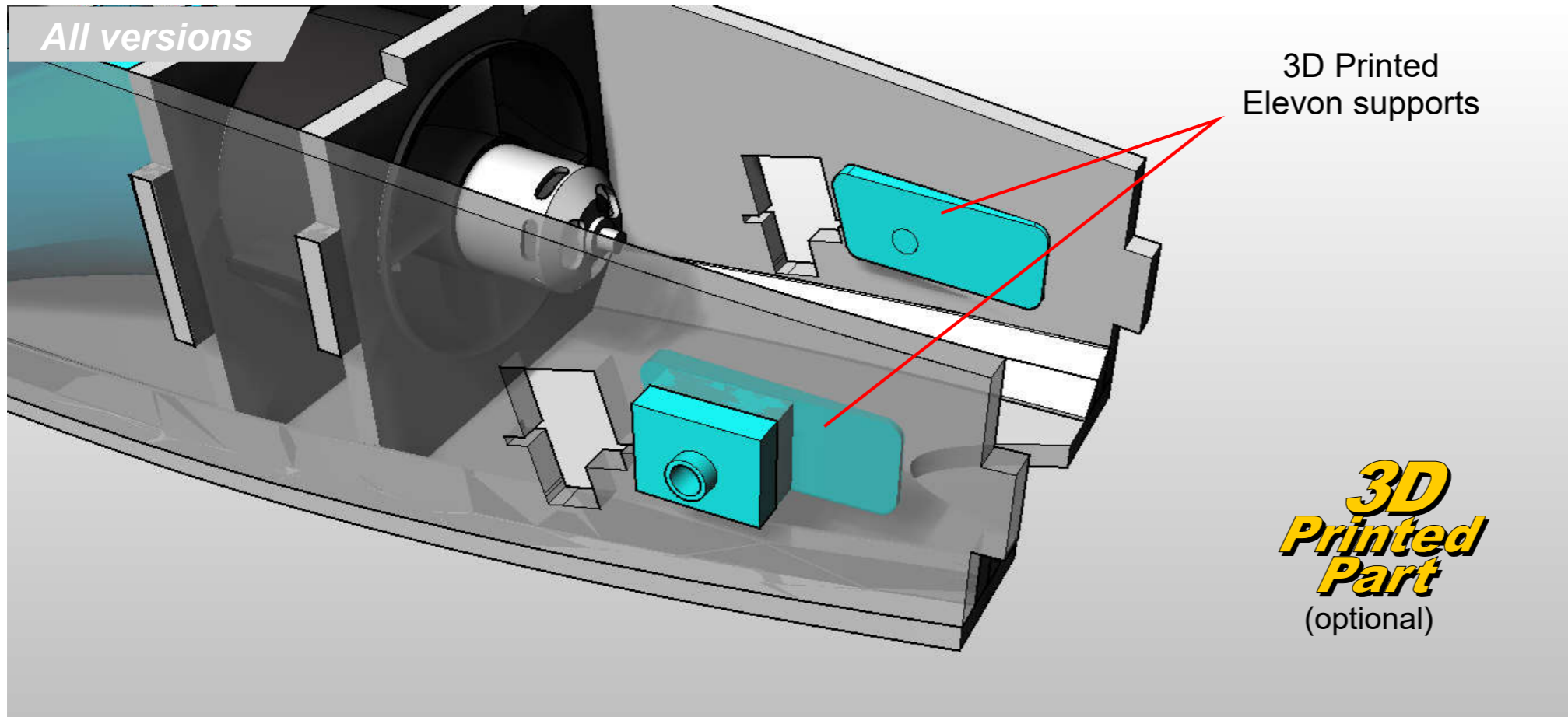
Belly panel
(Inner)



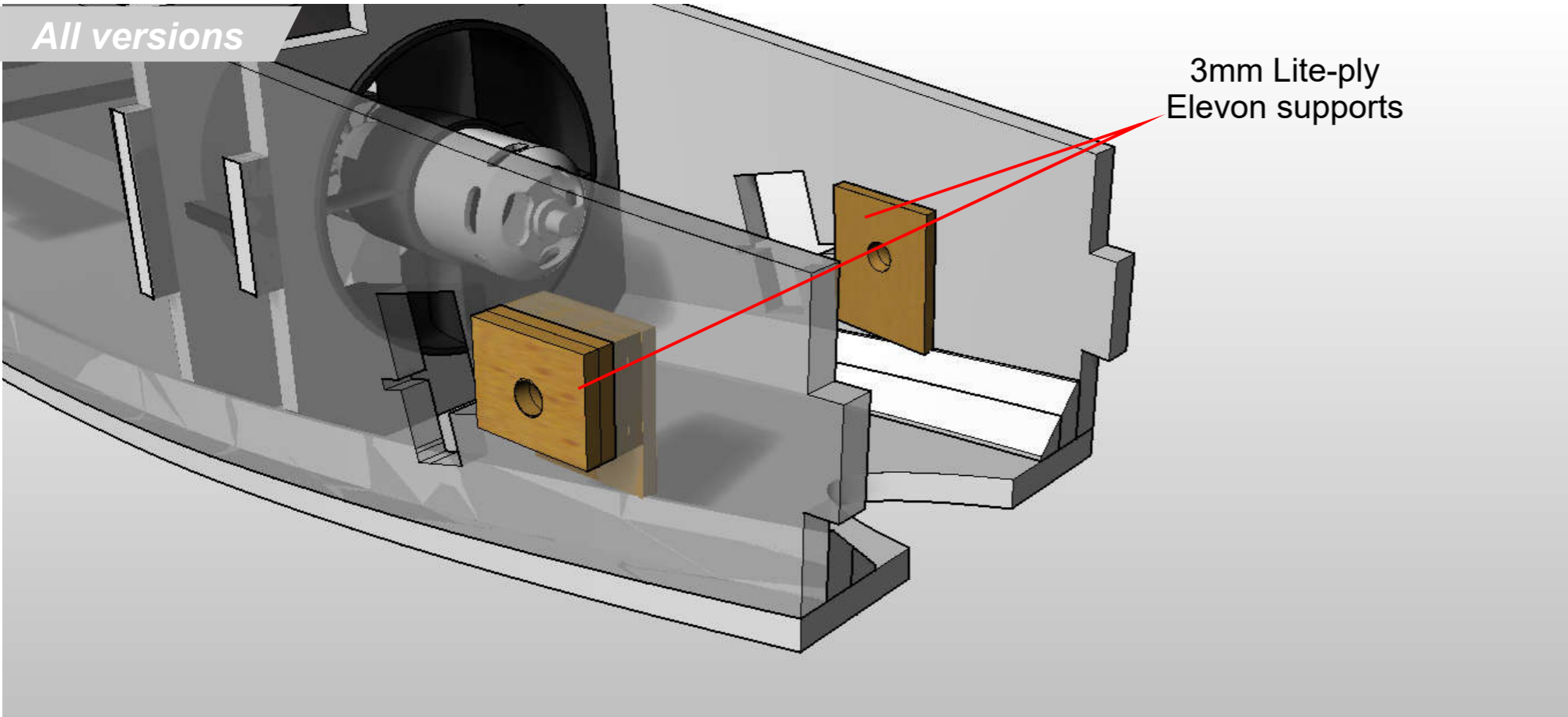
Carefully mark where the glueing surfaces are, then line the belly inside with parcel tape to reduce friction. Don't put tape where the foam pieces glue together.

Glue the **Belly Panel (Inner)** to the assembly.

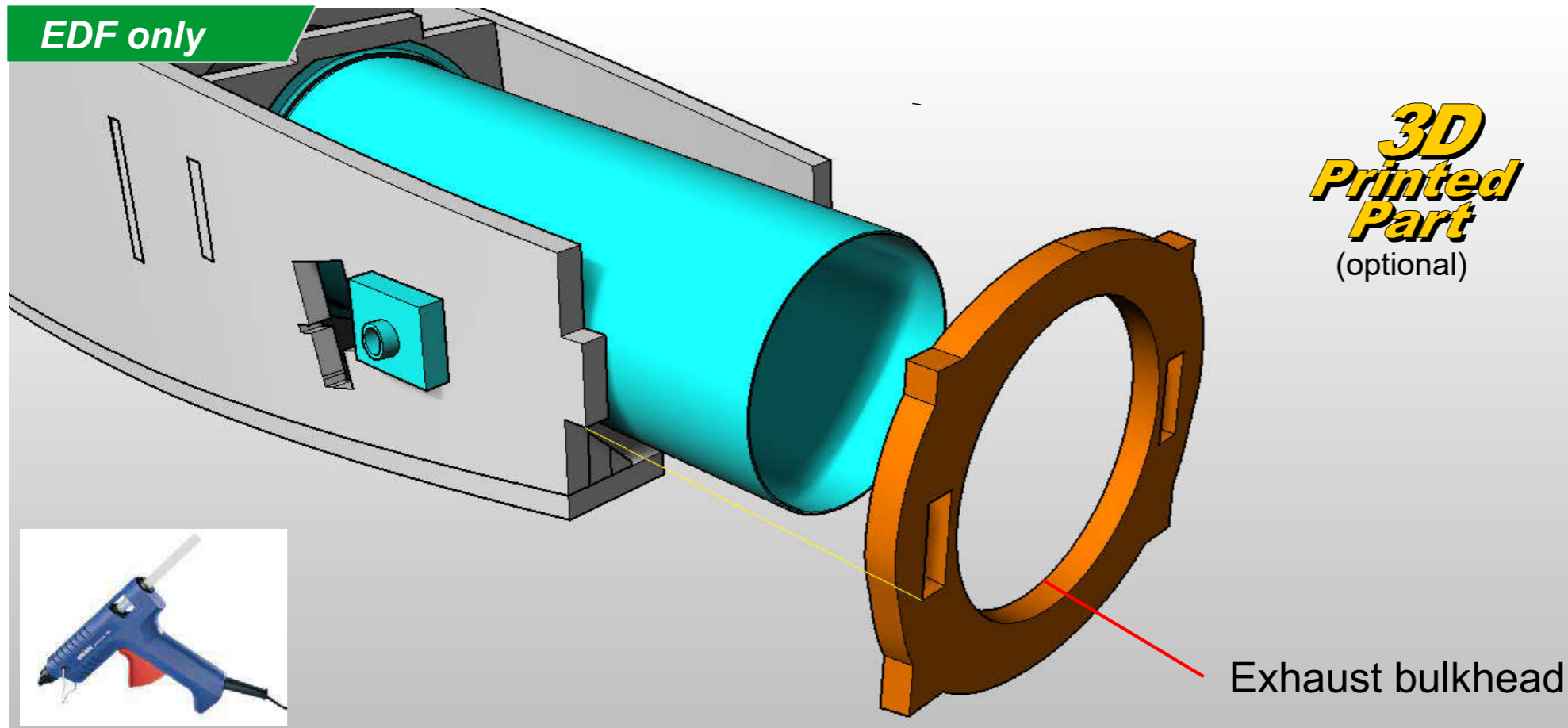




Glue the 3D Printed **Elevon Supports** to the assembly



EDF only



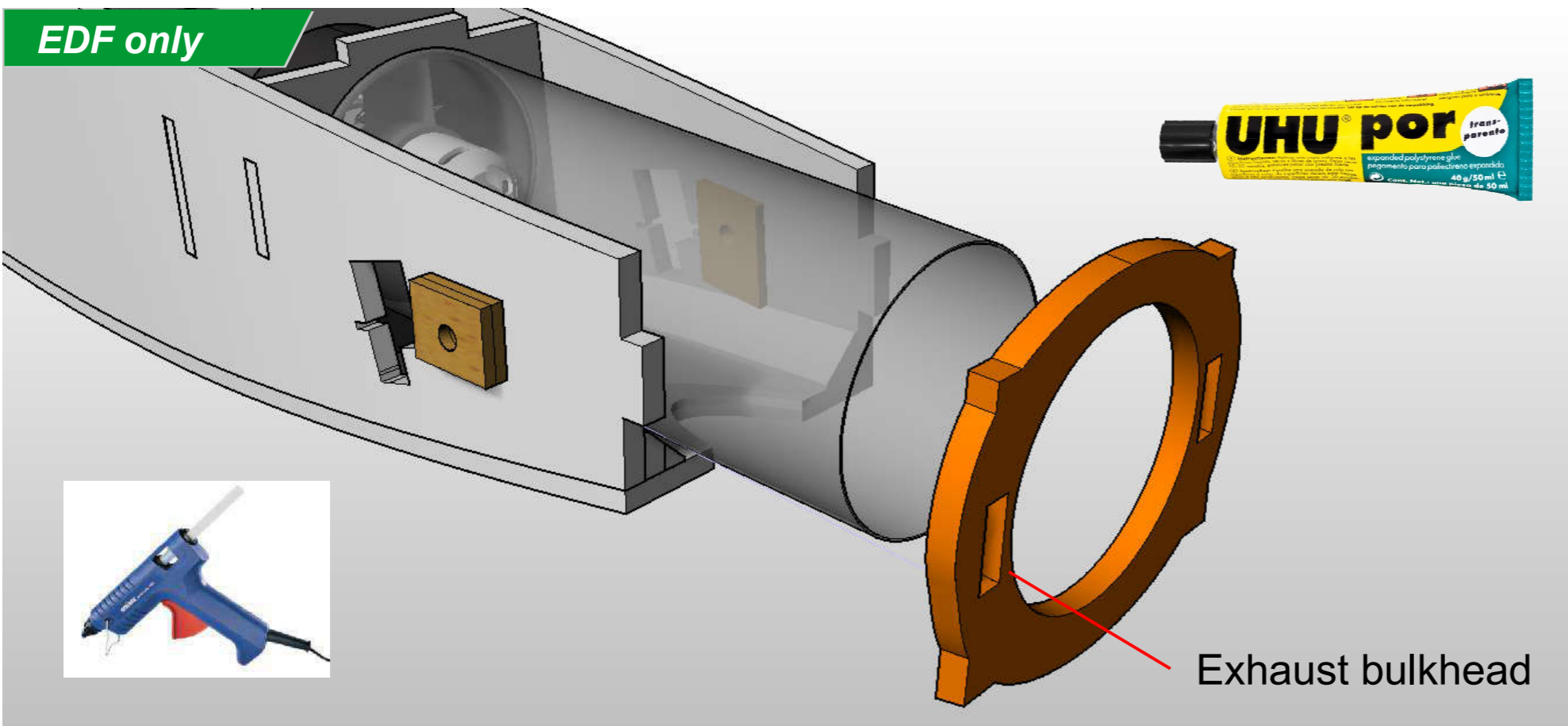
3D Printed Version

Glue the 3d Printed Thrust tube onto the rear EDF bulkhead then slide the exhaust bulkhead over the tube and onto the two tabs in the fuselage sides.

Put a little hot melt glue on the forward face of the exhaust bulkhead / thrust tube



EDF only



Non-3D Printed Version

Prepare the thrust tube using <math><0.4\text{mm}</math> plastic sheet, taped together using nylon reinforced tape.

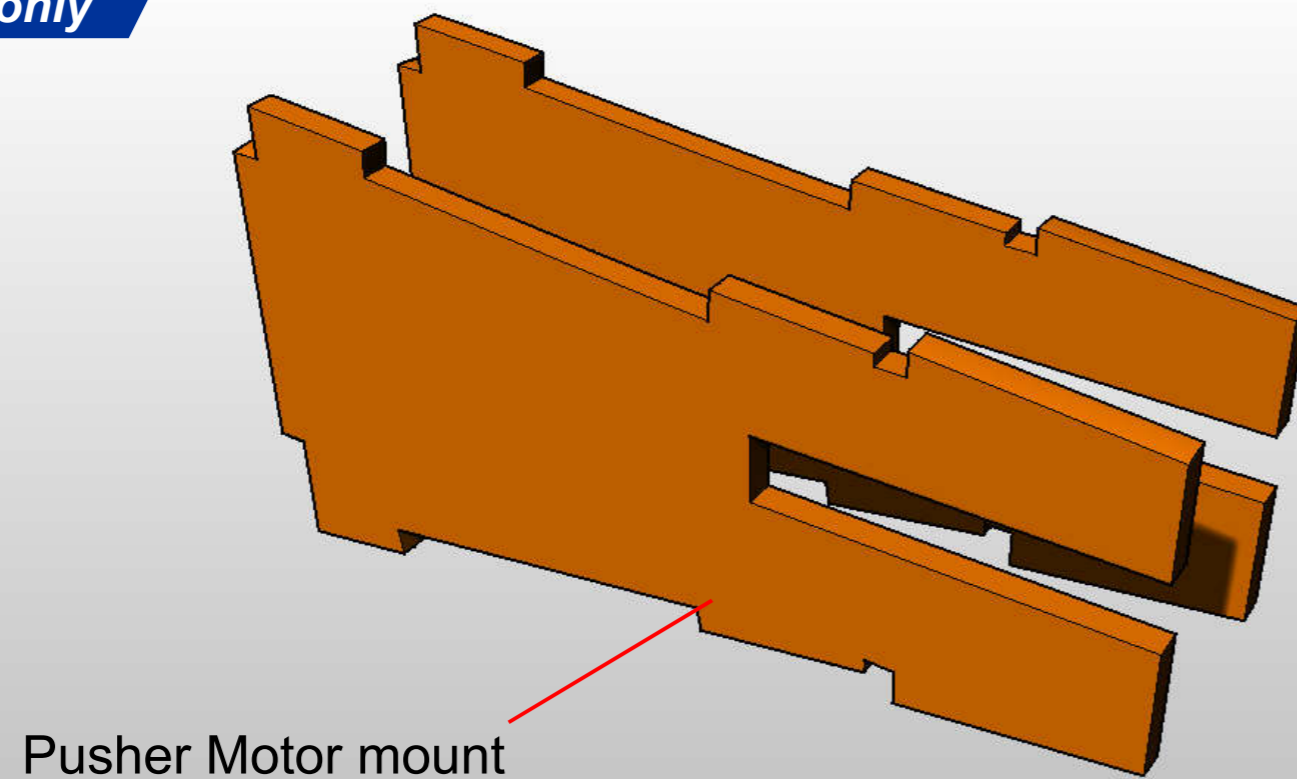
Make a depron ring around the front edge of the tube to enable you to glue it to the EDF bulkhead.

Slide the exhaust bulkhead over the tube and glue to the assembly - locating on the tabs as shown.

Glue the tube to the assembly using hot-melt glue - be careful not to melt the plastic tube - test on scrap first.



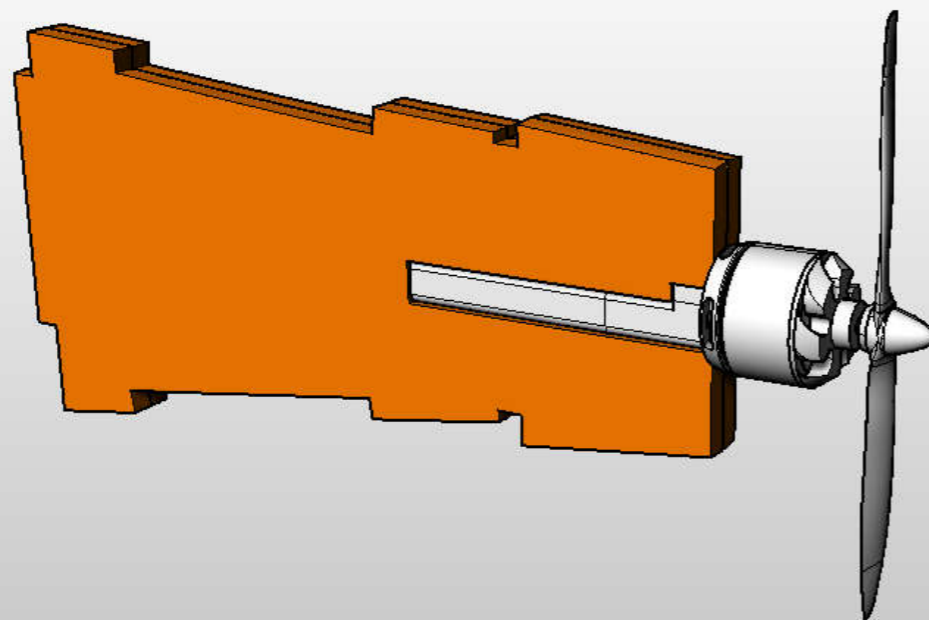
Pusher only



Glue the two pieces of the **Pusher Motor mount** panel together.



Pusher only



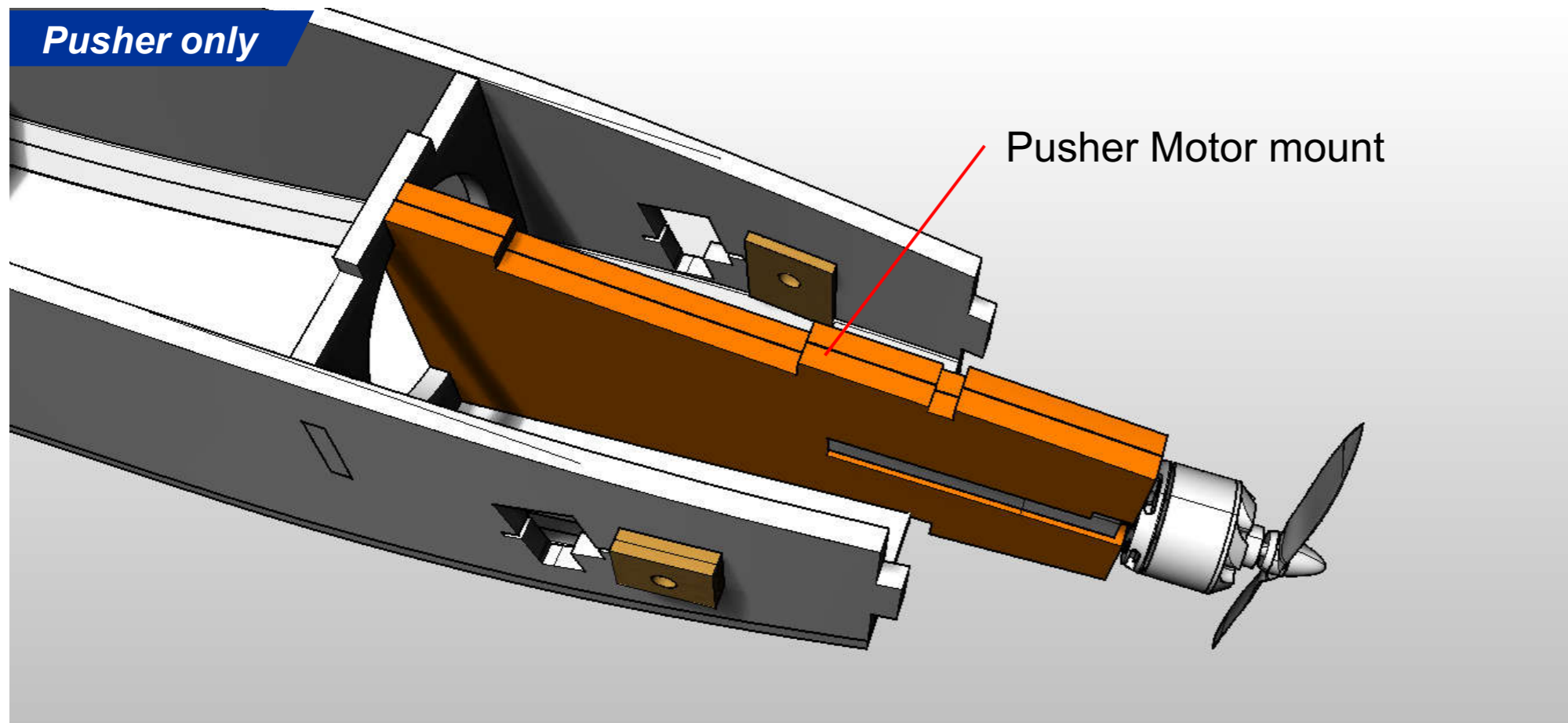
Glue the Motor stick mount to the Motor mount panel using Hot melt Glue.

Either use the Hobbyking stick mount - SKU: OR004- 00602 or 3d print one from the www.Jetworks.online website.

Attach the motor and prop to the assembly.

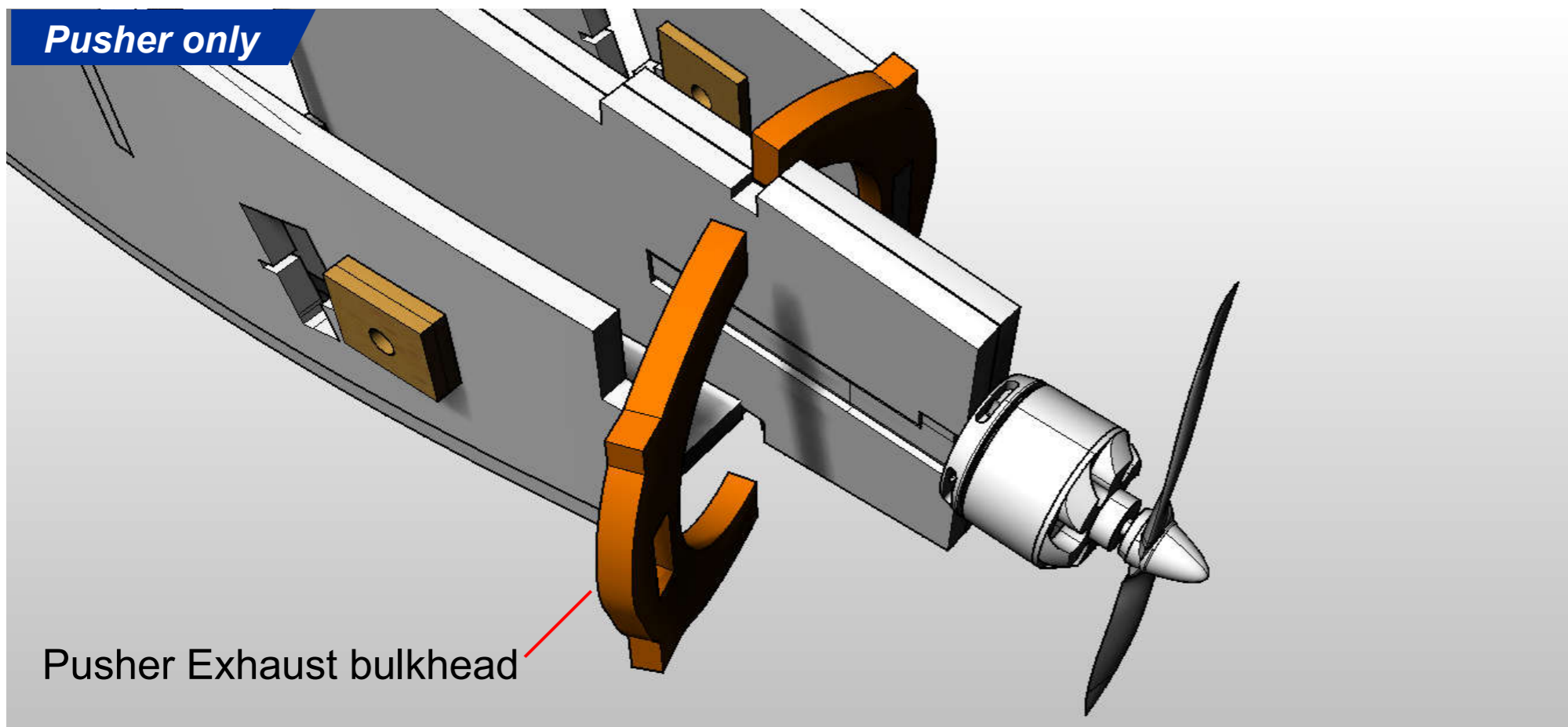


Pusher only



Glue the **Pusher Motor mount** assembly to the fuselage.

Pusher only

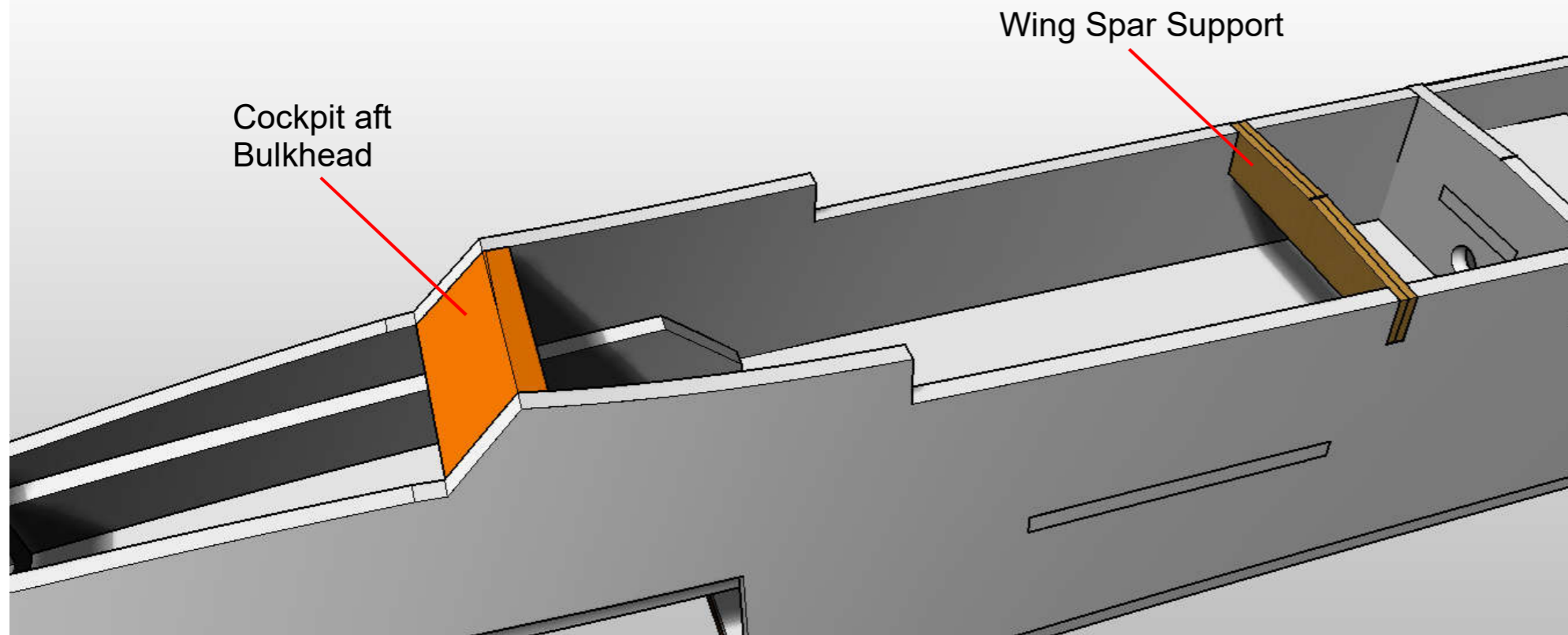


Glue the **two pieces of the Pusher Exhaust Bulkhead** to the assembly.

Pusher Exhaust bulkhead



All versions



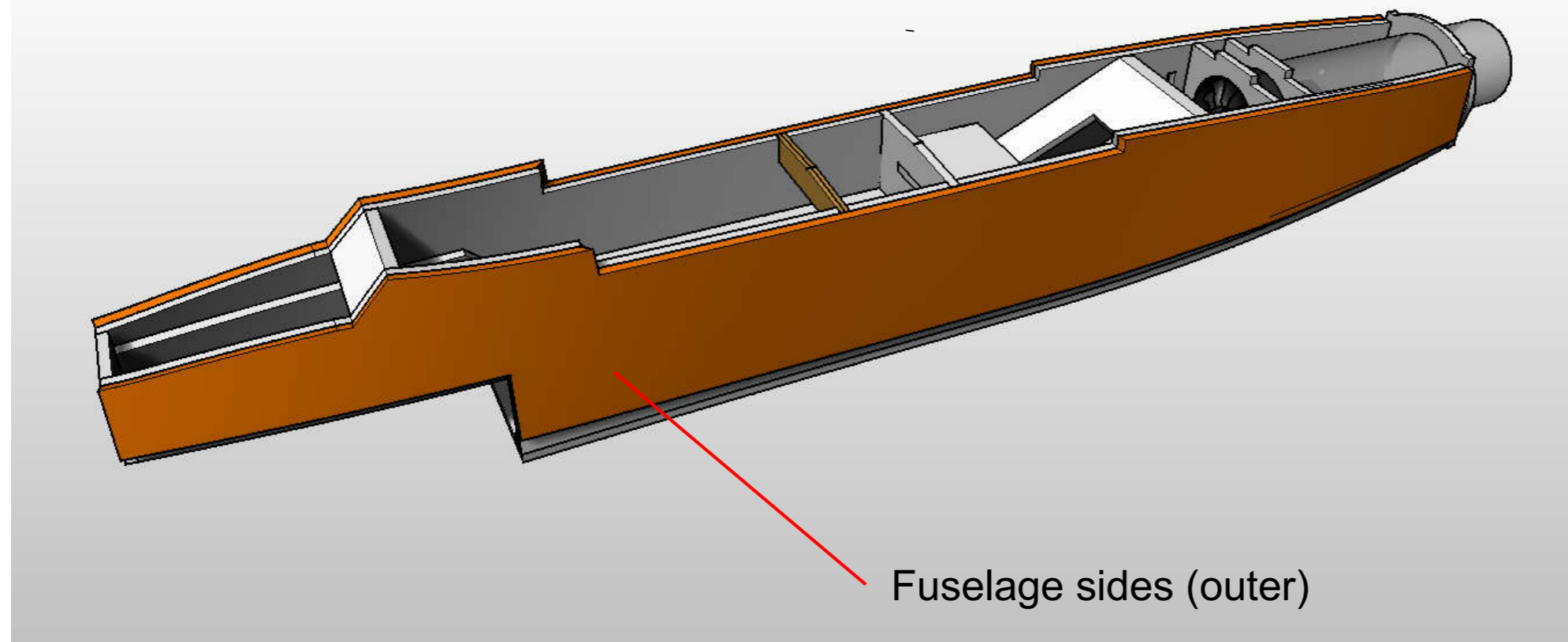
Offer the Fuselage Top Panel #1 to the assembly to help realise the correct fuselage side shaping.

Glue the **Cockpit Aft bulkhead** in place as shown using UHU por.

Glue the two 3mm lite-ply **Wing Spar Support** pieces together, then glue into the slot using Epoxy.



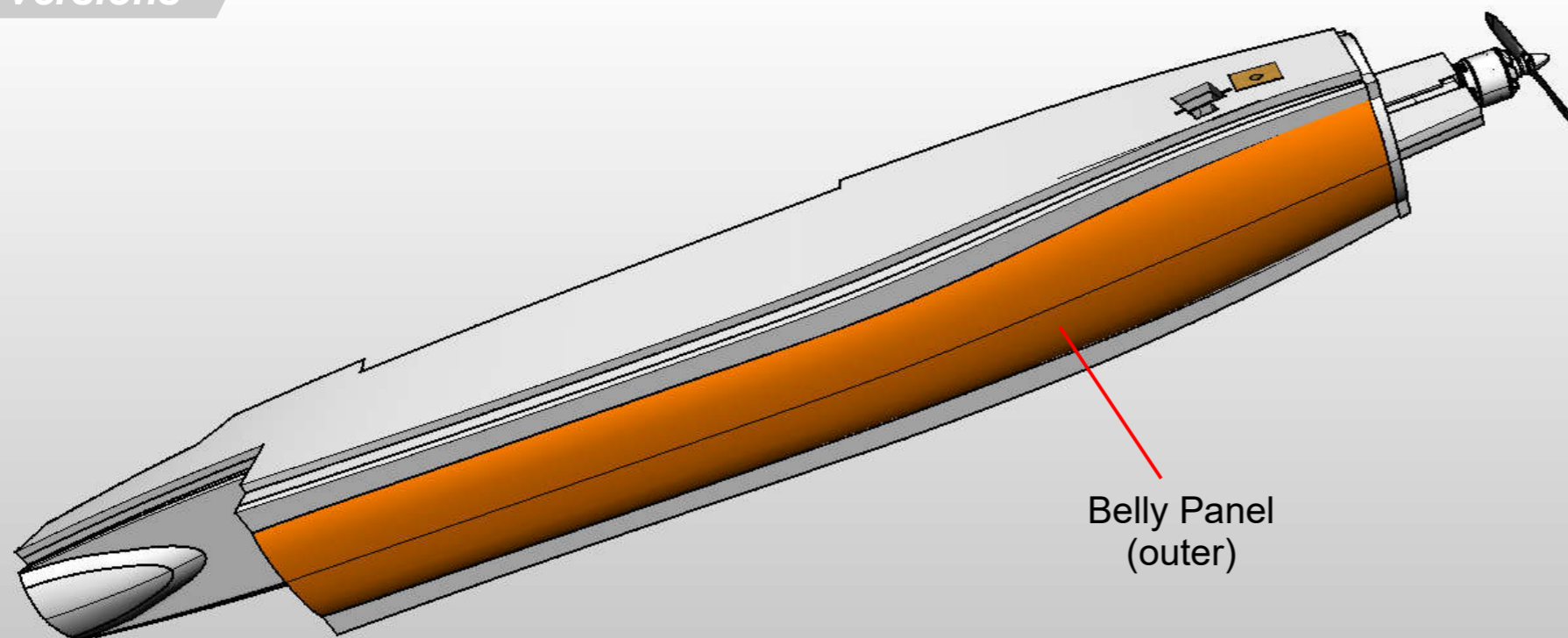
All versions



Glue both **Fuselage Sides (Outer)** in place - aligning to the top edges of the Fuselage sides (Inner)



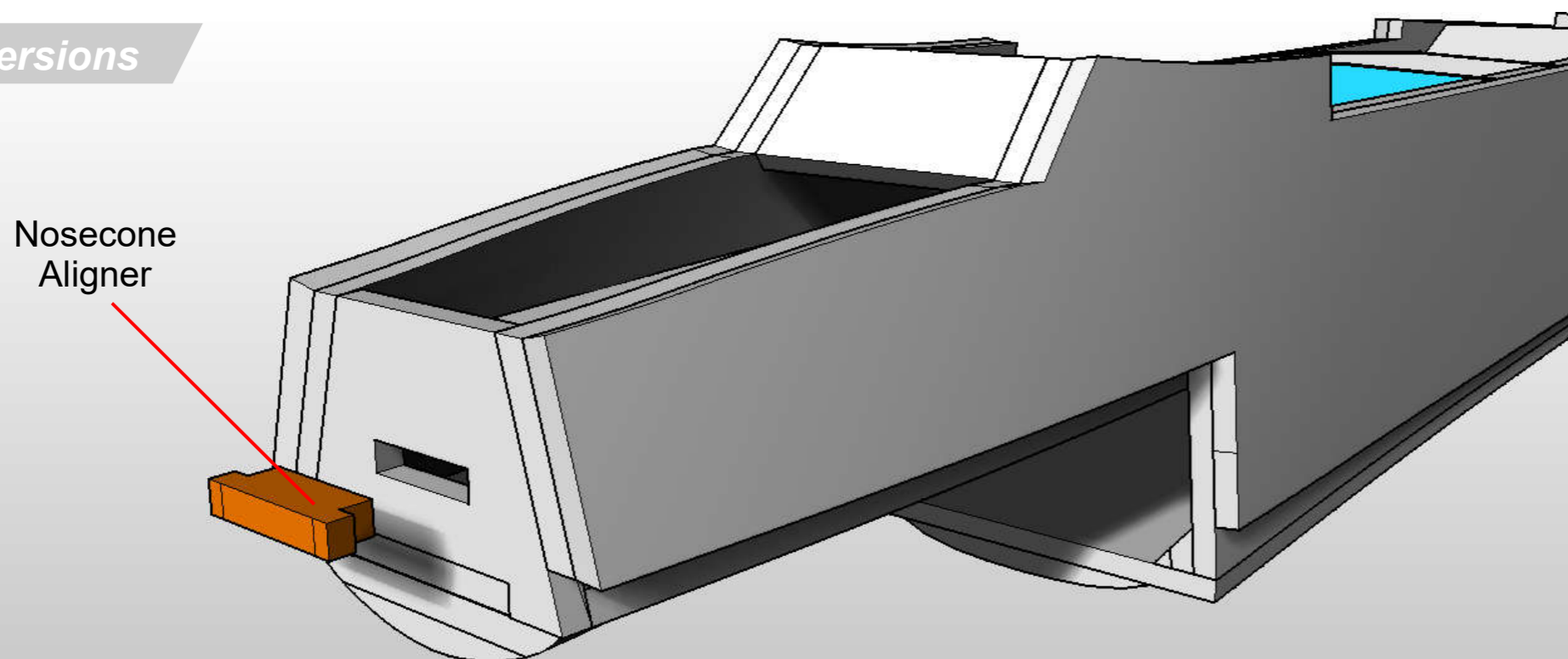
All versions



Glue the **Belly Panel Outer** to the assembly. Aligned on the centreline.



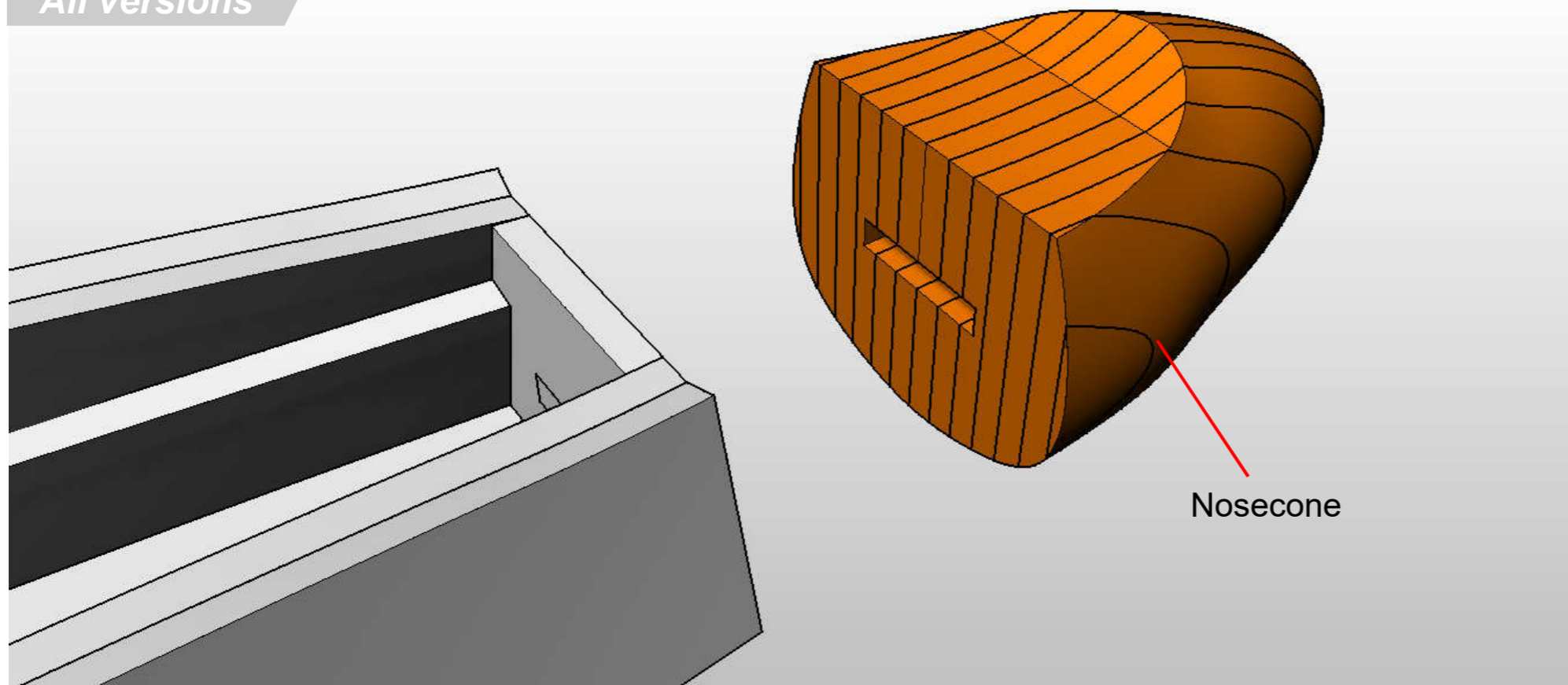
All versions



Glue the **Nosecone Aligner** in place as shown.



All versions

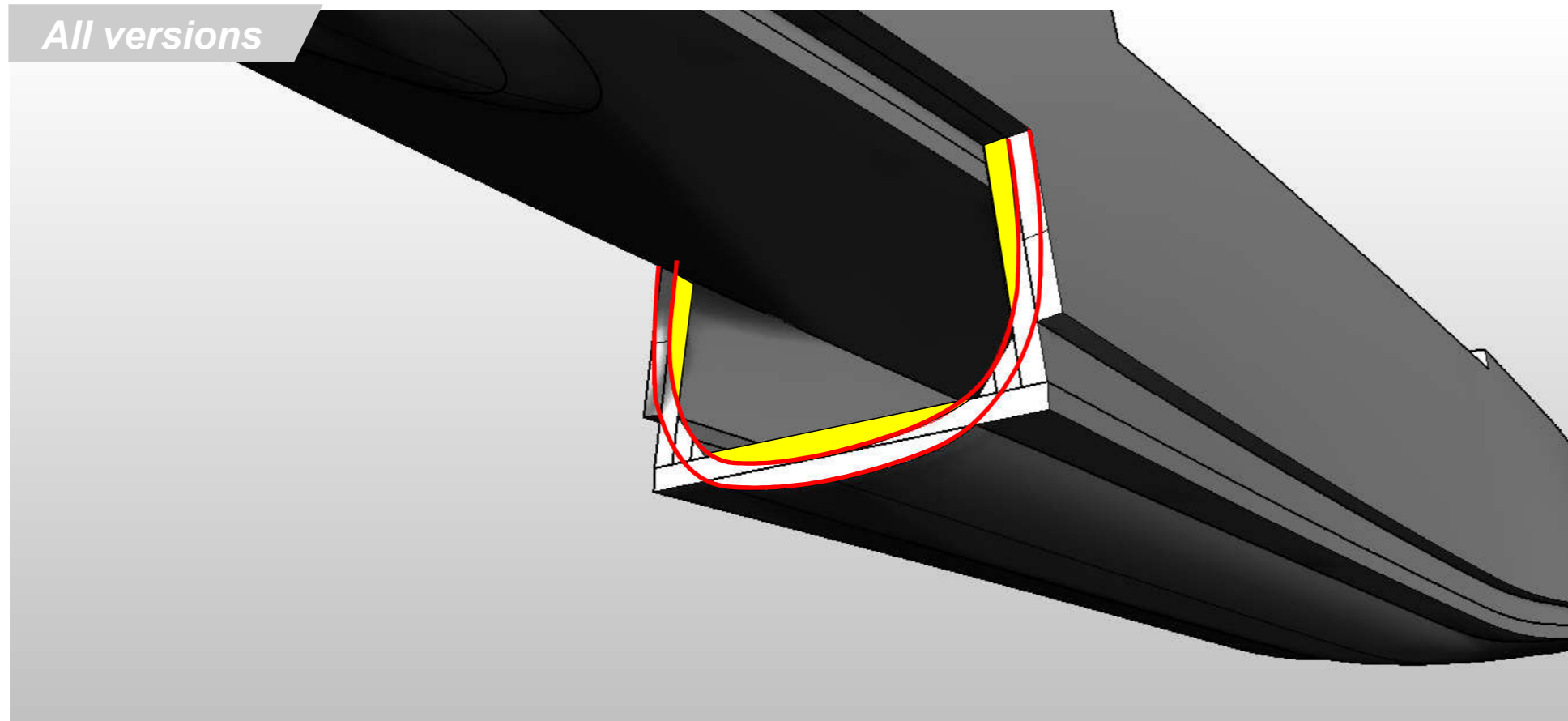


Non-3D printed part

Glue the **Nosecone pieces** together and sand to shape. Glue to the airframe located by the nosecone aligner.



All versions

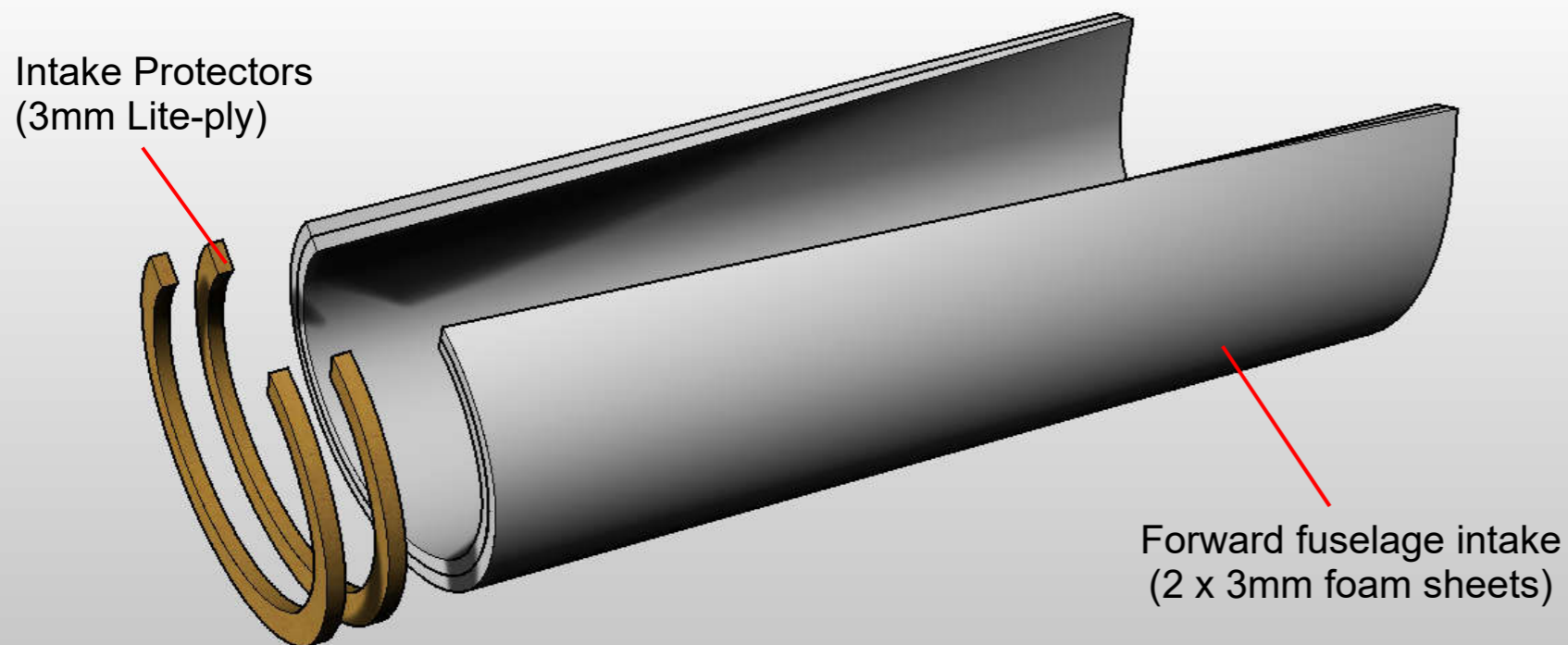


Mark the end of the depron to match the Jig (or 3 printed intake) - see red line.

Sand the internal shapes (areas marked in yellow) to allow a smooth airflow into the intake chamber.



All versions



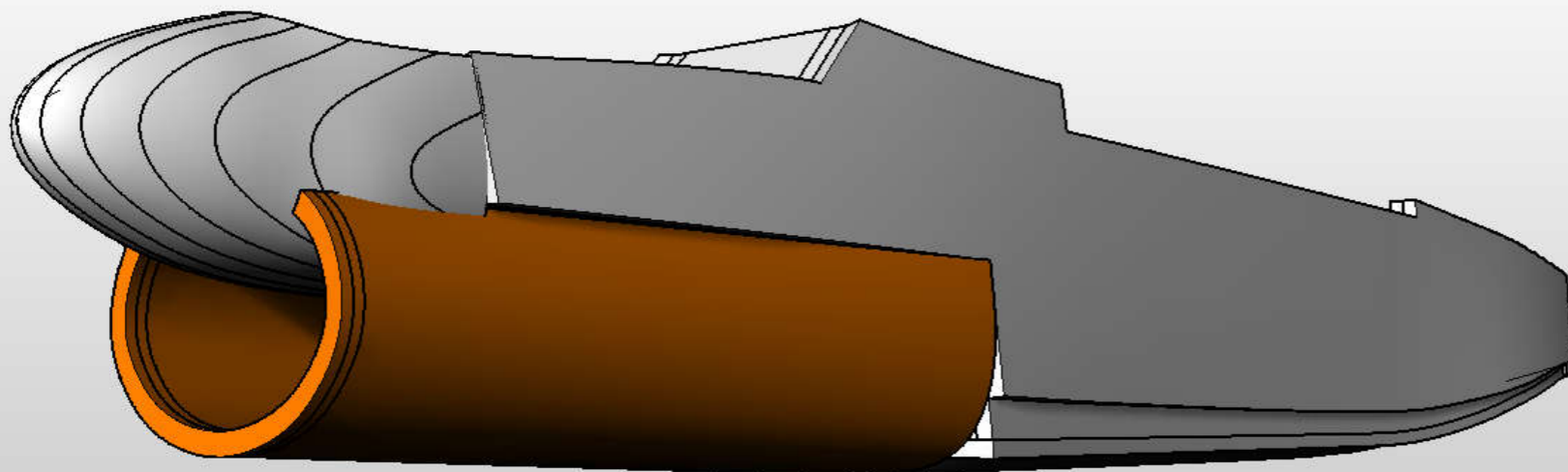
Non-3D printed part

Using the Jigs, create the intake shape using 2x 3mm depron pieces, rolled to create the shapes.

Use 2x 3mm lite-ply intake protectors glued together, with a full half-circle shape sanded to help the airflow.



All versions



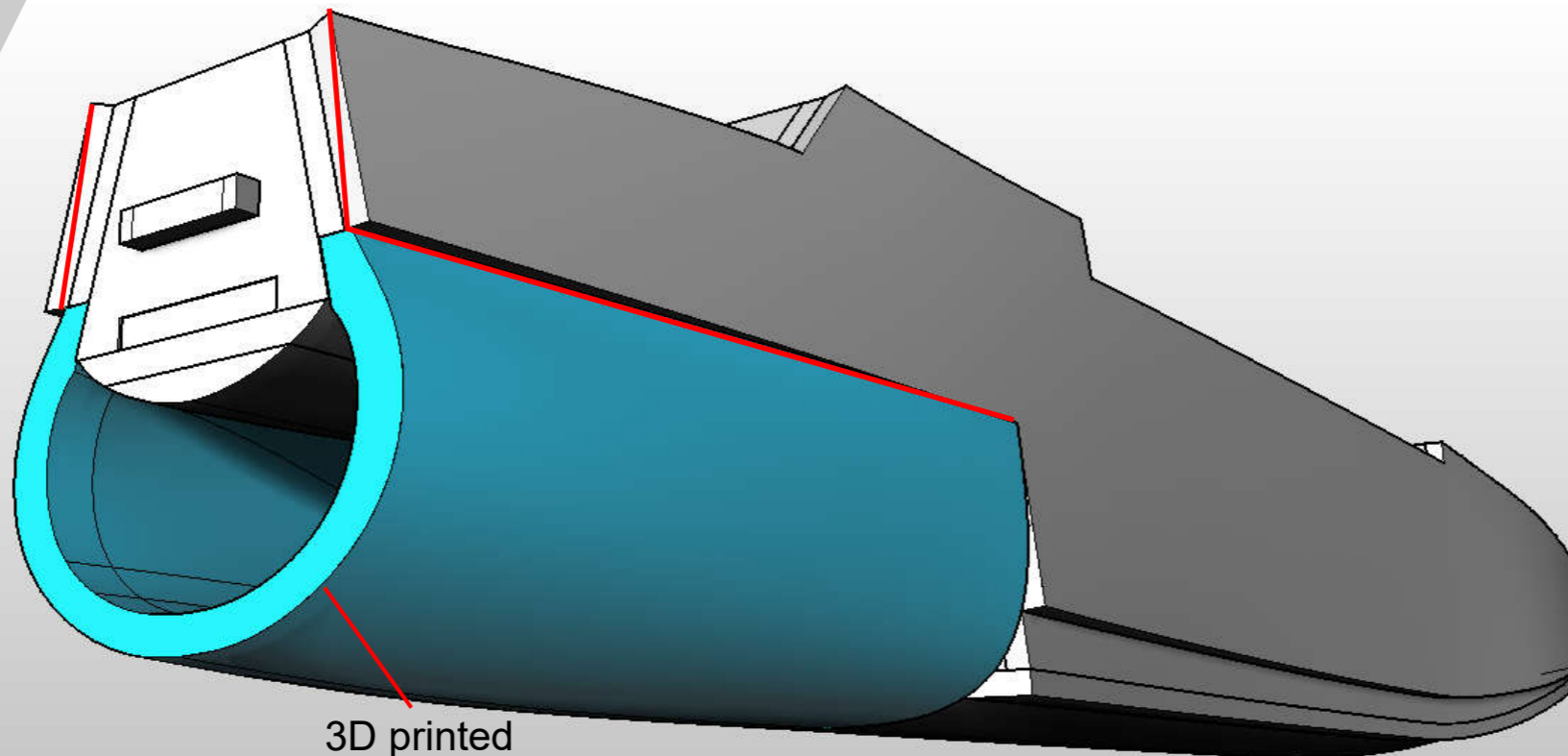
Non-3D printed part

Glue the intake assembly to the fuselage - trimming and sanding where required.

(see next page for sanding detail)



All versions



**3D
Printed
Part**
(optional)

3D printed
Air Intake

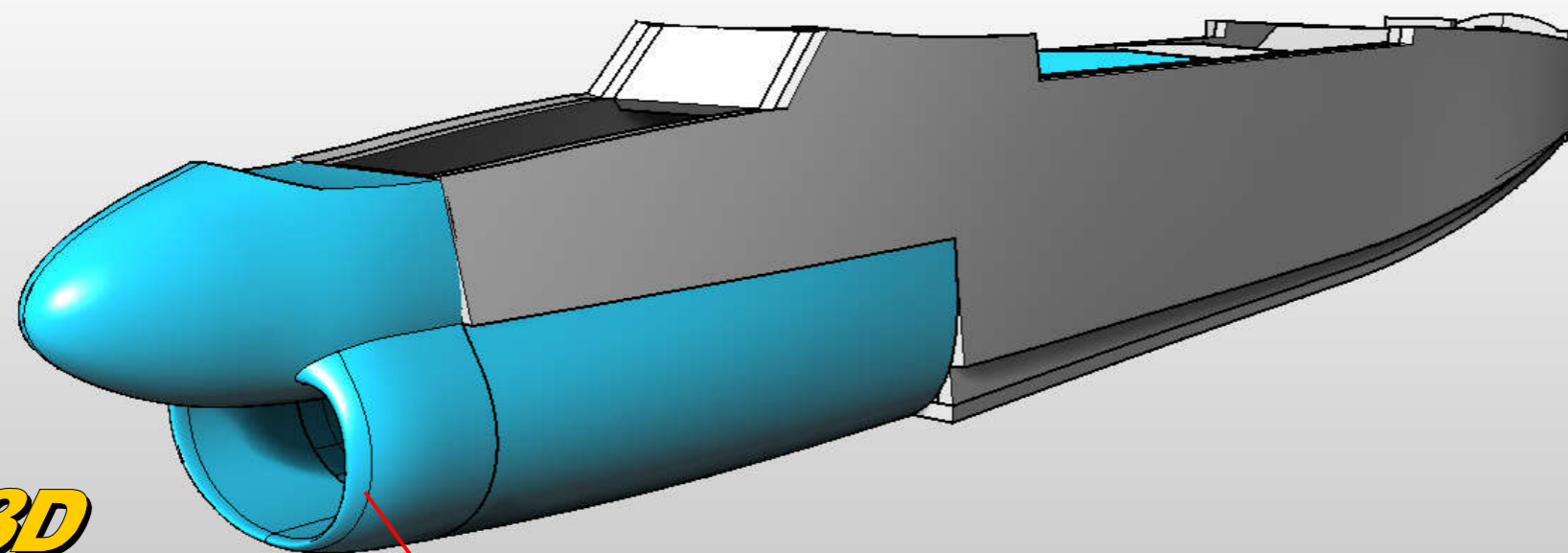
3D Printed part

Glue the **Air Intake** to the fuselage as shown.

The fuselage directly above it should be sanded to the shape indicated by the red lines.



All versions

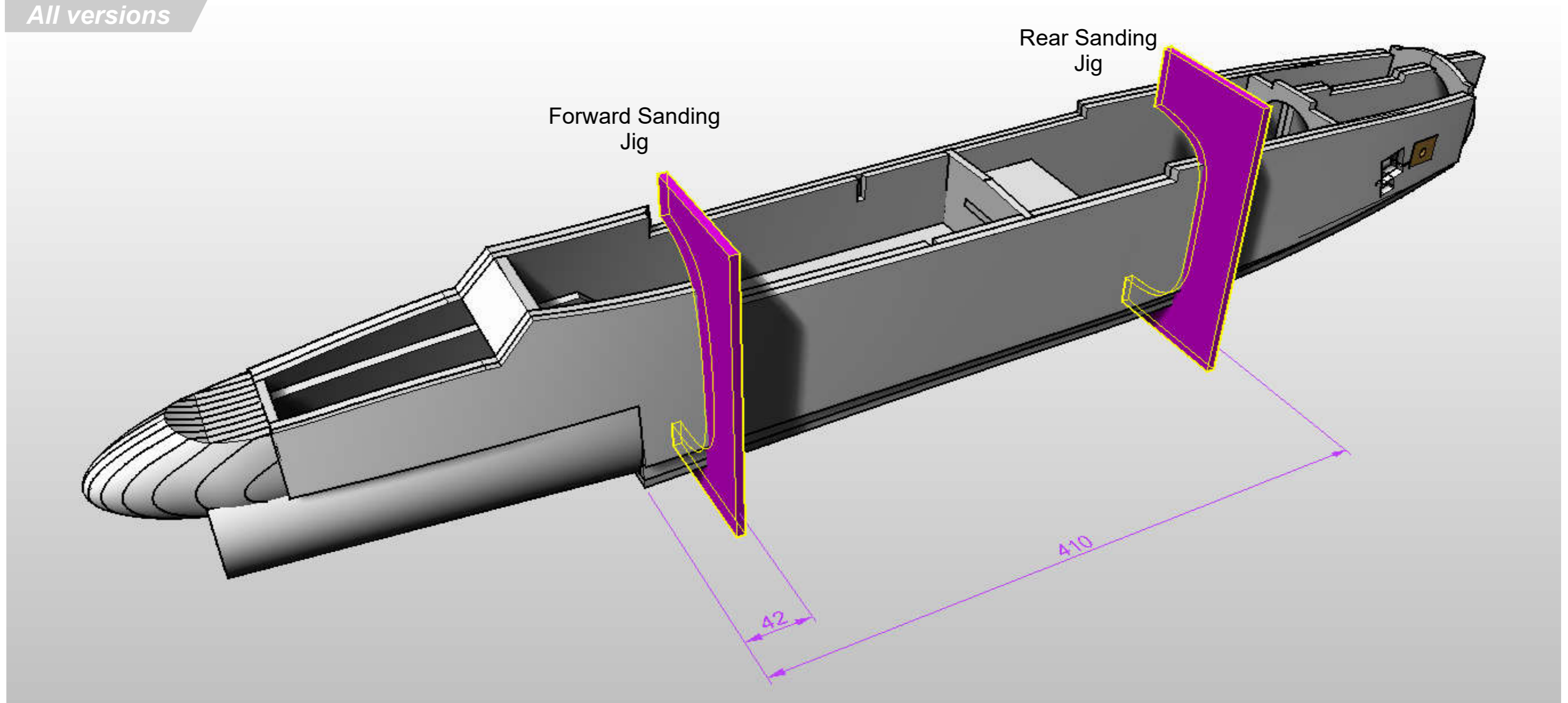


**3D
Printed
Part**
(optional)

3D printed
Nosecone

Glue the **Nosecone** to the fuselage - trimming and sanding where required.



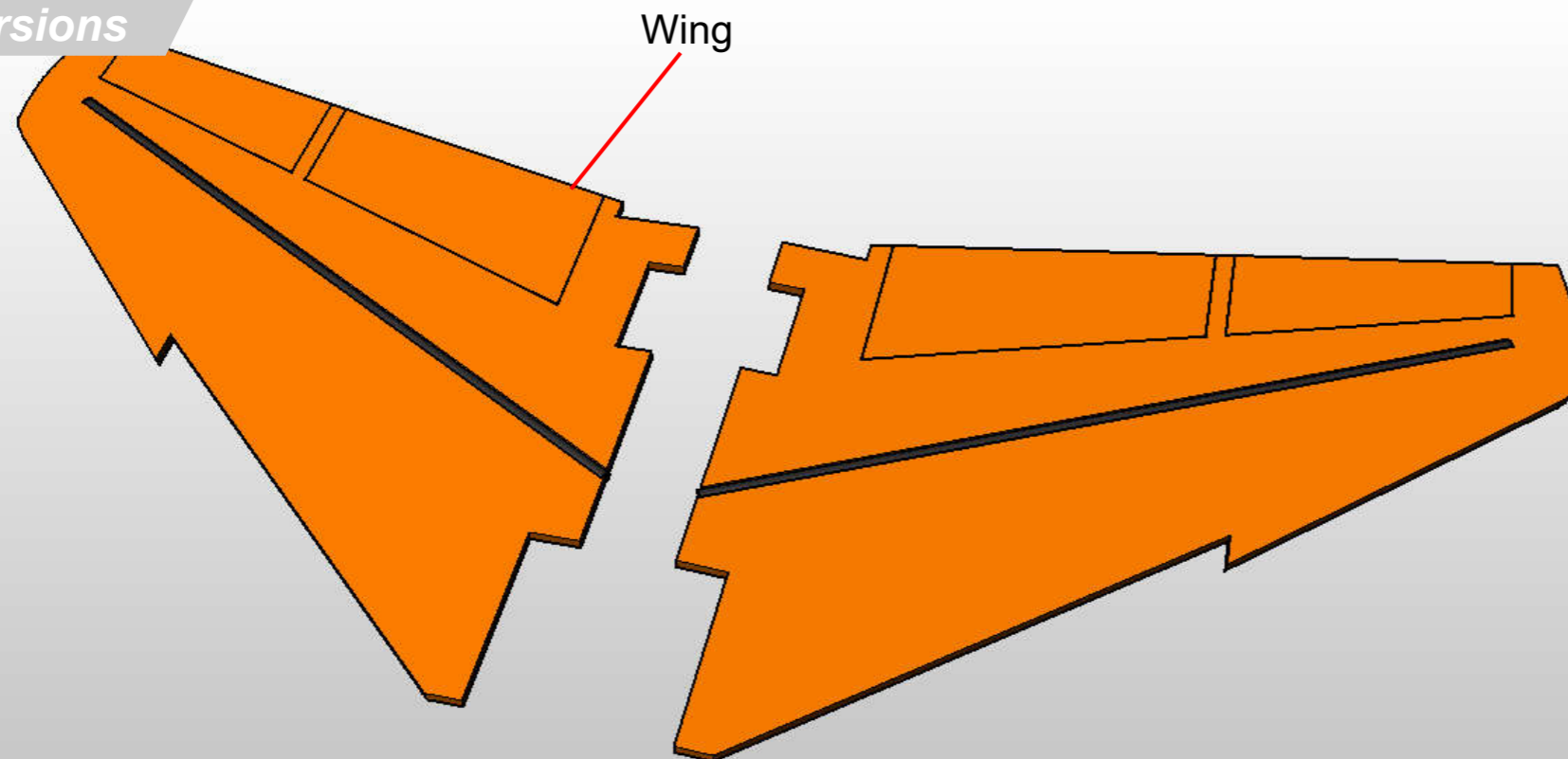


Sand the upper and lower fuselage to represent the real aircraft now as it isn't quite as easy when the wings are attached.

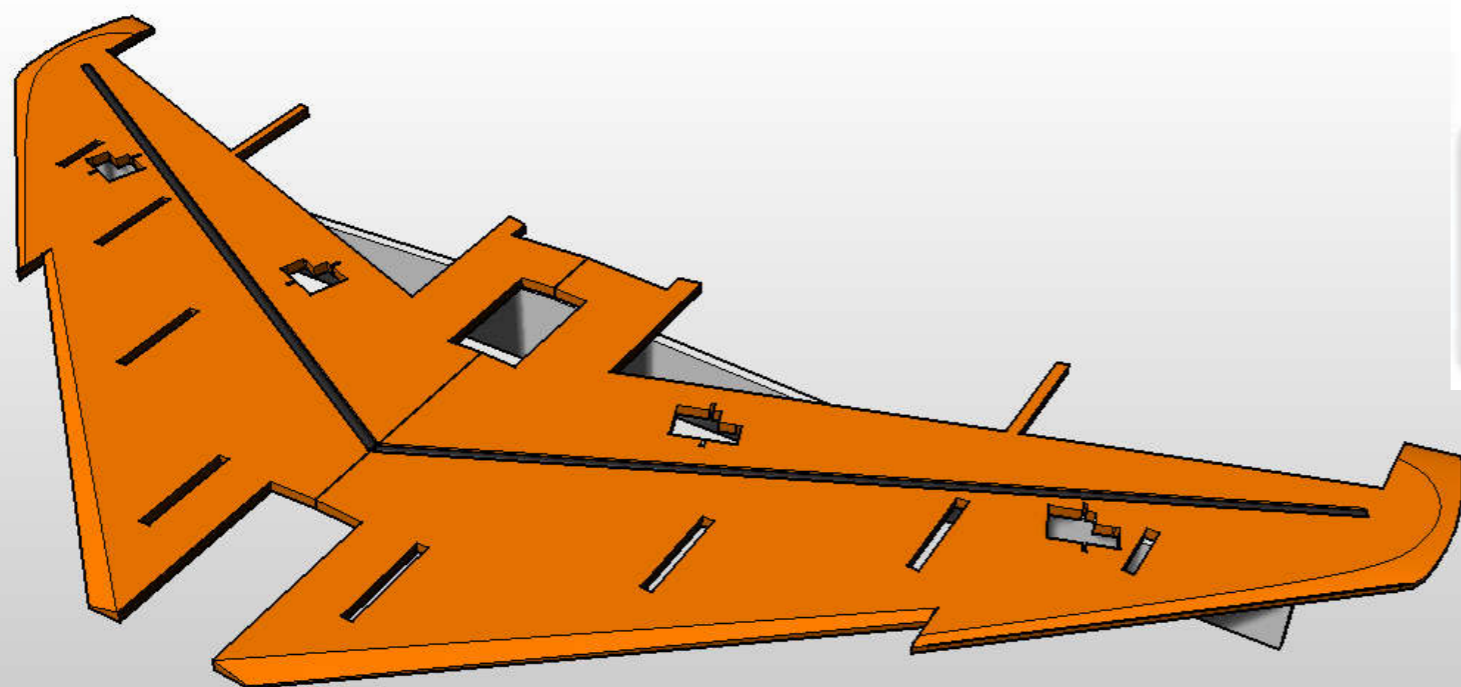
Later on in the build use the Nosecone, Exhaust nozzle and the two Sanding Jigs to help you smooth the shape to help you get the right shape.



All versions



Glue the carbon spar into the two **Wing** pieces.



Prepare the mating edges on the centreline for glueing together by carefully sanding a perfect mitre.

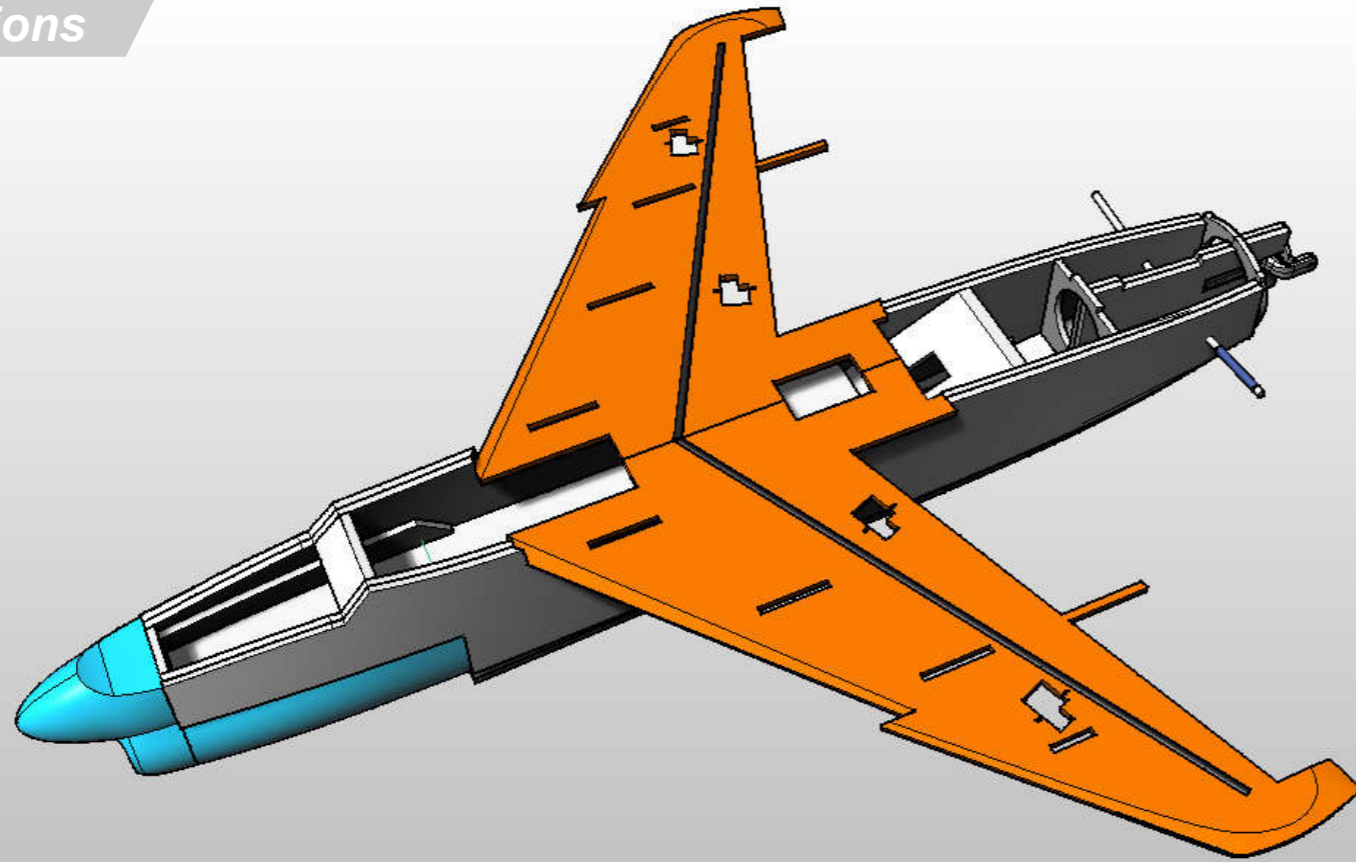
Using the Wing Jig to support the wings at the correct angle, glue the two pieces together using Epoxy.

Put masking tape top and bottom and lay upside-down on a flat surface with matching objects e.g. books lifting up the tips, the centreline laying on the surface.

Lay supported upside down

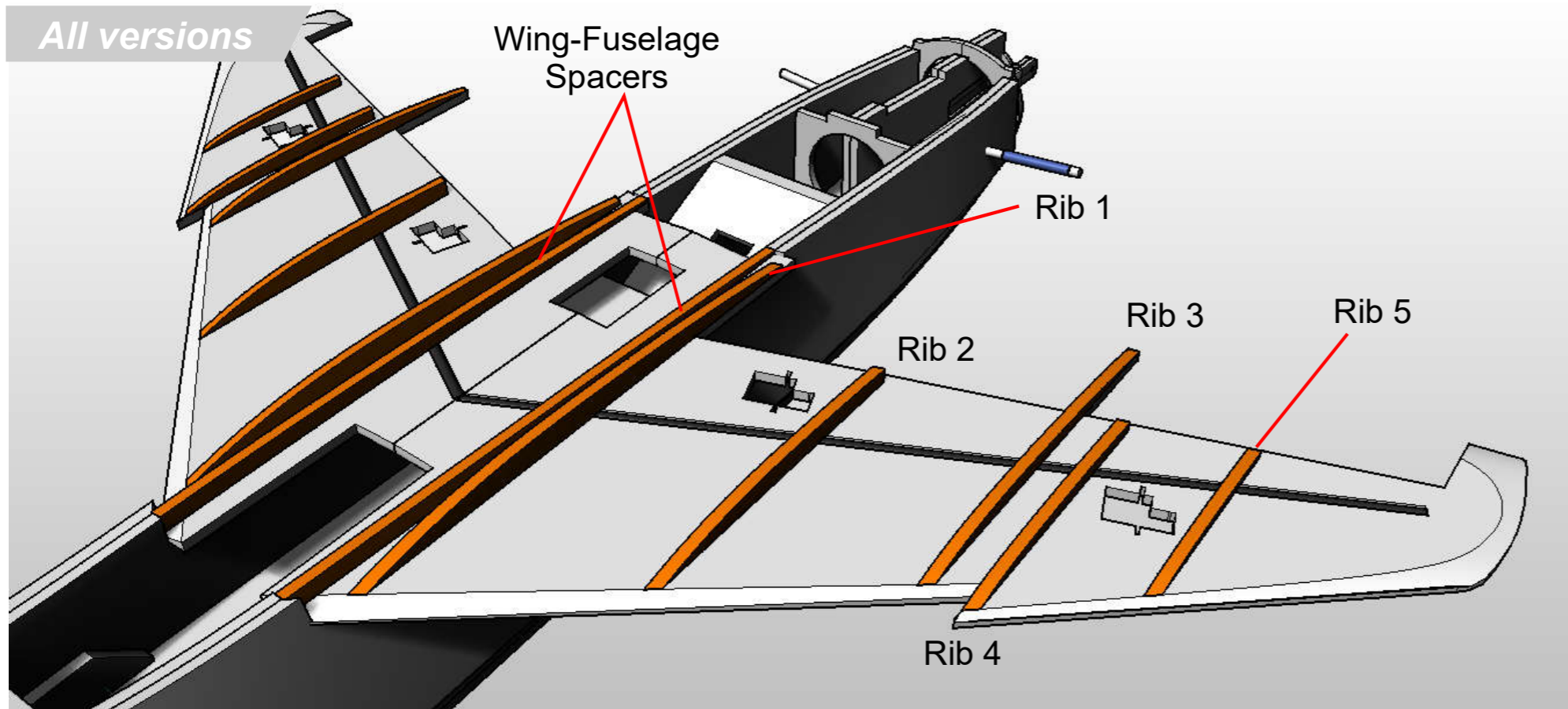


All versions



Glue the wing to the assembly carefully ensuring it is perfectly on centreline.

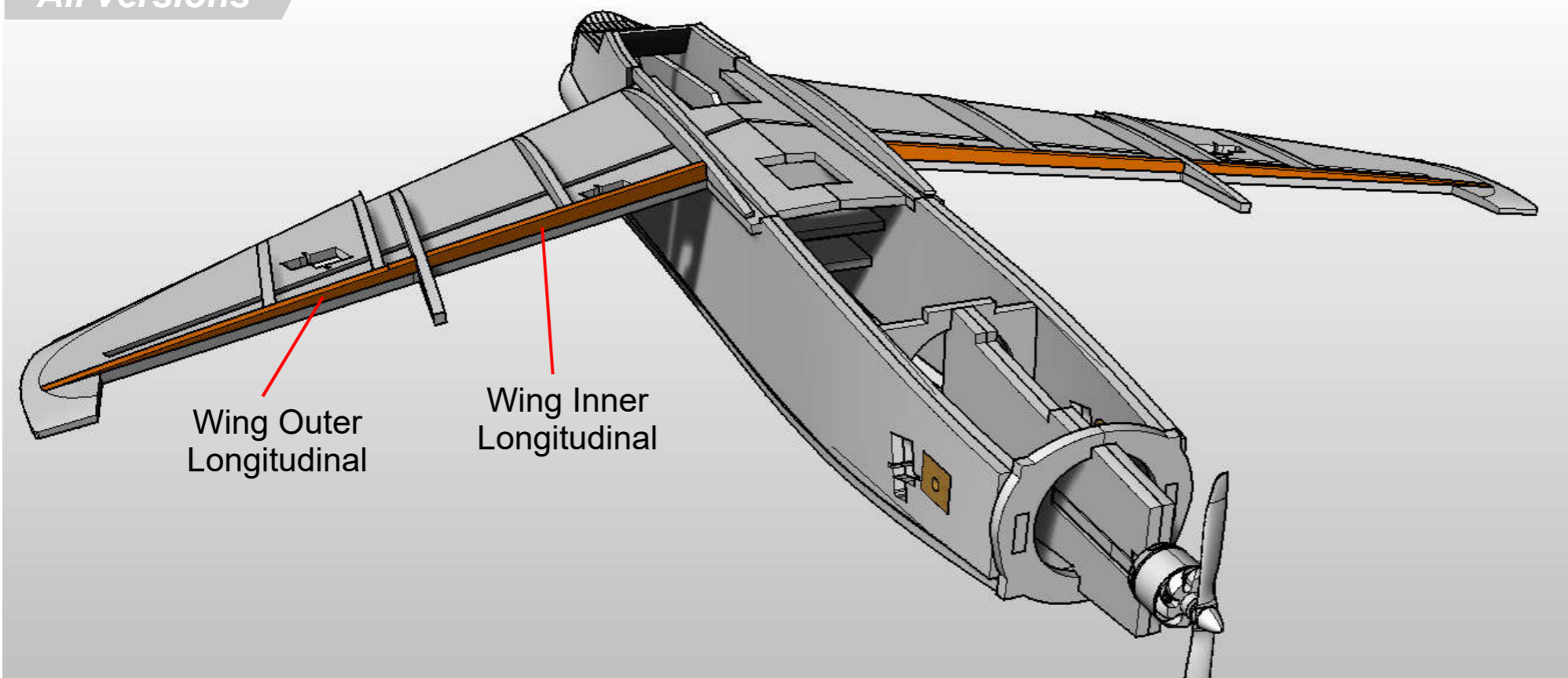
All versions



Glue the **Wing Ribs** and **Wing-Fuselage Spacers** to the assembly as shown



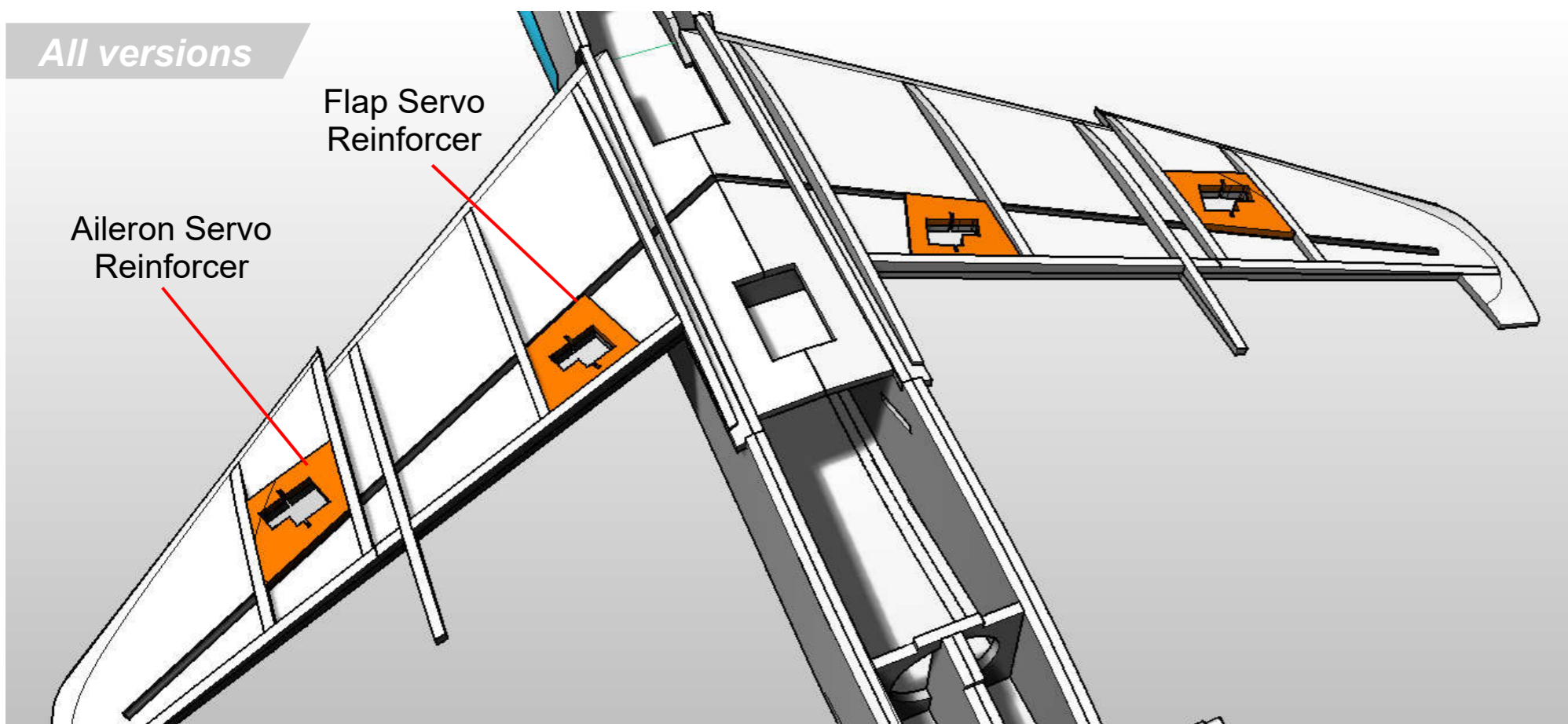
All versions



Glue the **Wing Longitudinals** to the wing as shown.



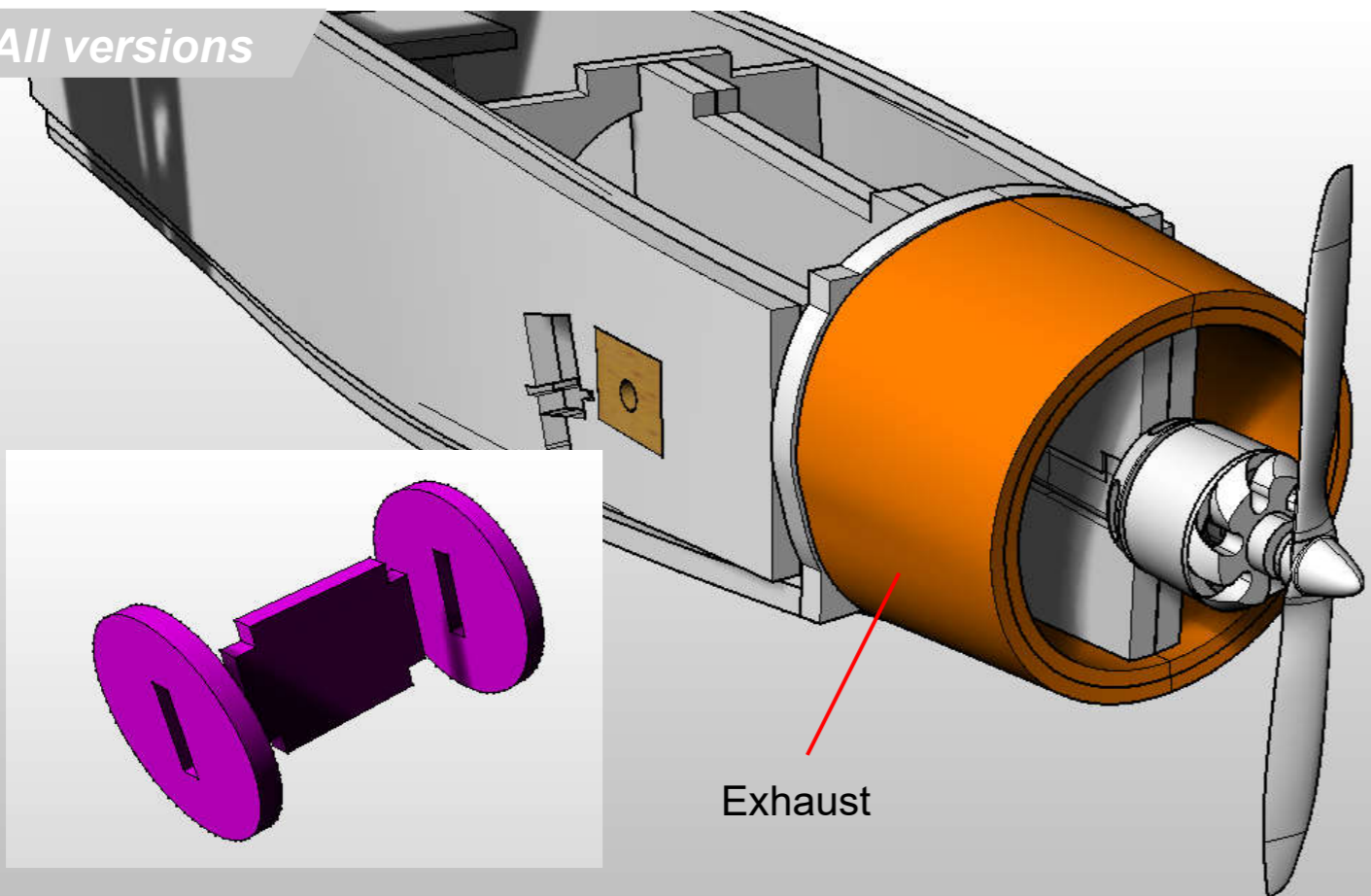
All versions



Glue the **Servo Reinforcers** to the wing as shown.



All versions

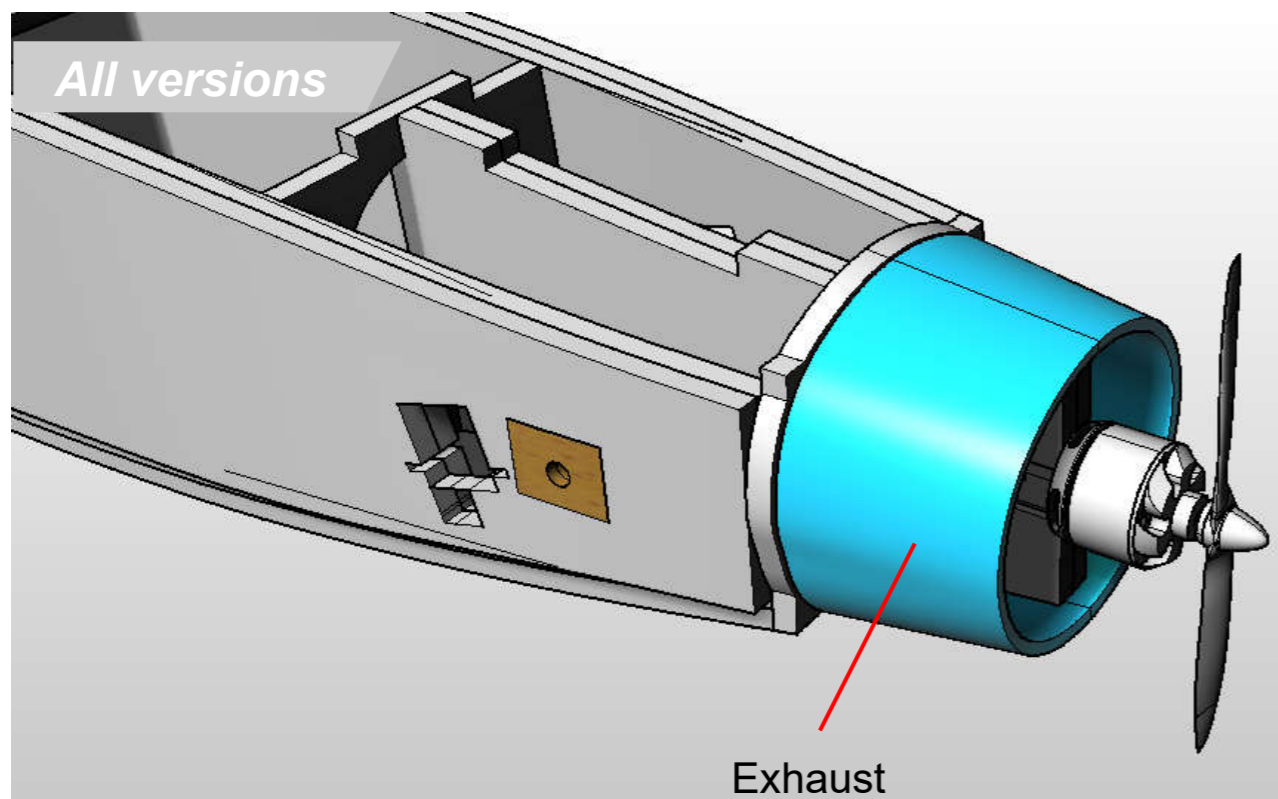


Using the Exhaust Jig, Create the **Exhaust** using 2 x 3mm foam sheets, with each seam at opposite sides.

Glue to the assembly



All versions

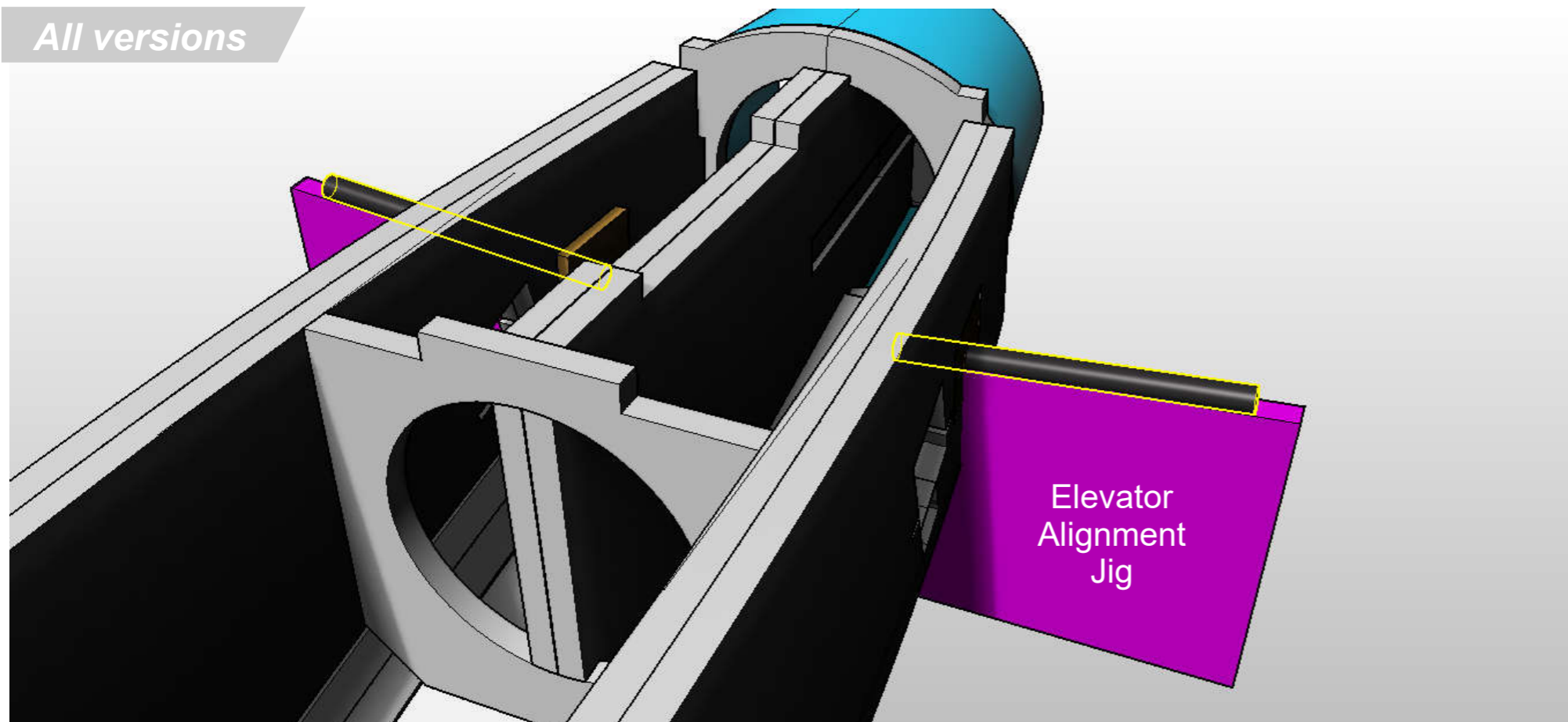


**3D
Printed
Part**
(optional)

Alternatively, print out the **Exhaust** and glue to the assembly.



All versions

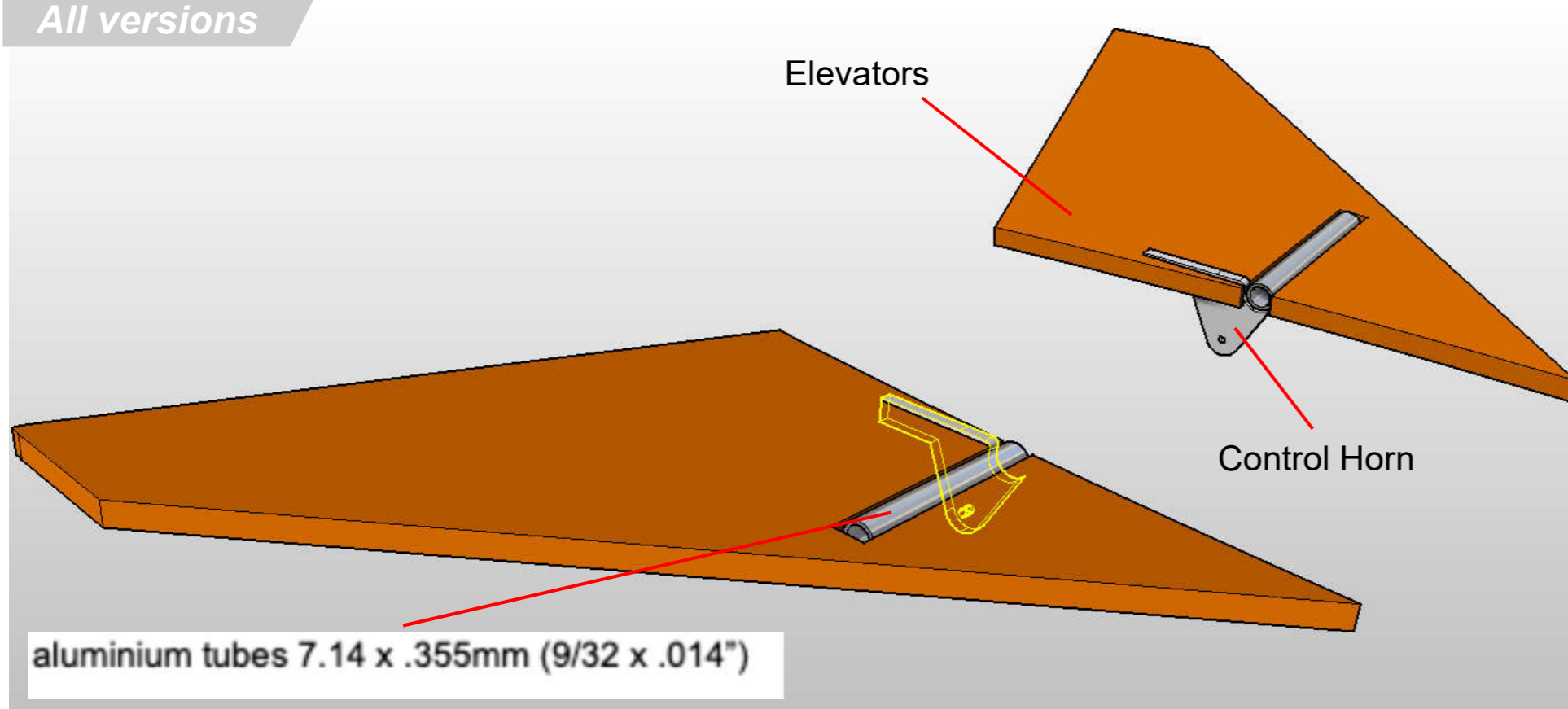


Using the Elevator alignment Jig, Glue the two 6mm Carbon elevator shafts in place using epoxy.

If they aren't fitting very well, drill out the support blocks using a 6.5mm drill and let the epoxy gap-fill



All versions

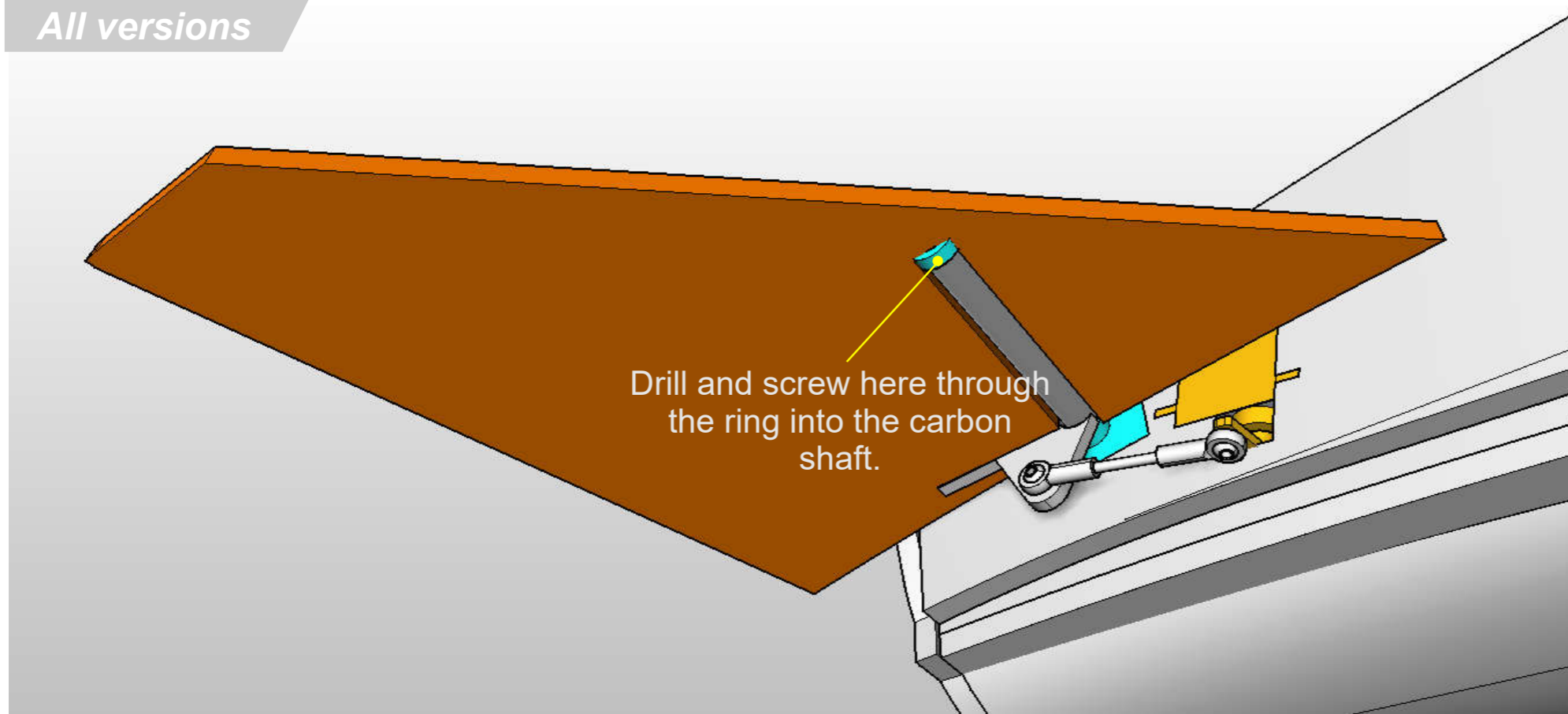


Glue the Control Horn and Aluminium tubes to the Elevators using Epoxy. Use Masking tape to help contain the glue while it sets

Be careful not to get any glue into the aluminium tubes.



All versions



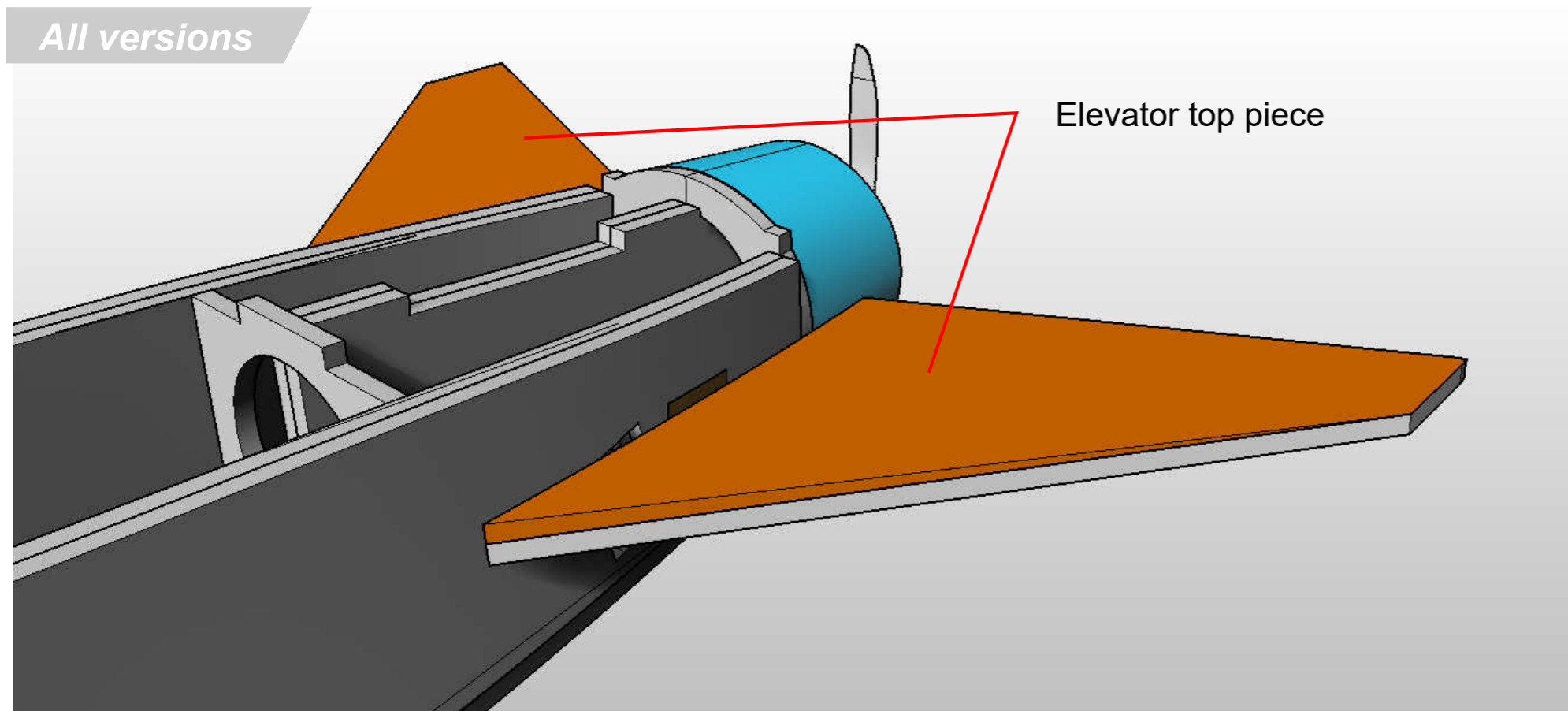
Once the epoxy in the elevators has set, slide over the carbon shaft and test to ensure free movement.

Either using a 3d printed ring or a drilled out Prop adaptor, slide it in place over the tip of the carbon tube in the gap prepared in the elevator as shown.

Drill using a 2mm drill bit and secure the ring in place using a servo screw to prevent each elevator from sliding off.

Glue the two Elevator servos into place using hot melt glue, and connect to the elevator using two ball joints as shown.

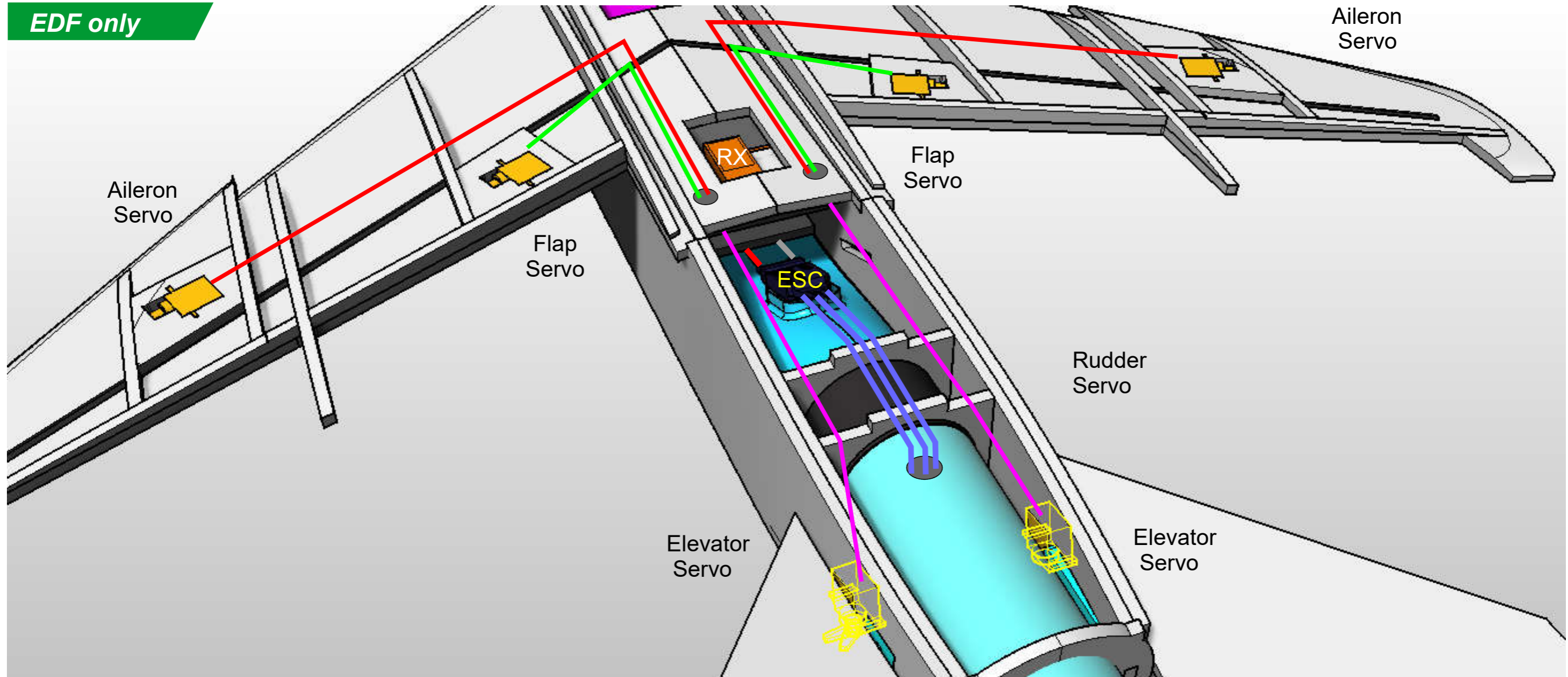
All versions



Sand the two **Elevator Top pieces** to shape, feathering out towards the rear of the elevator. Glue in place.



EDF only



EDF VERSION :

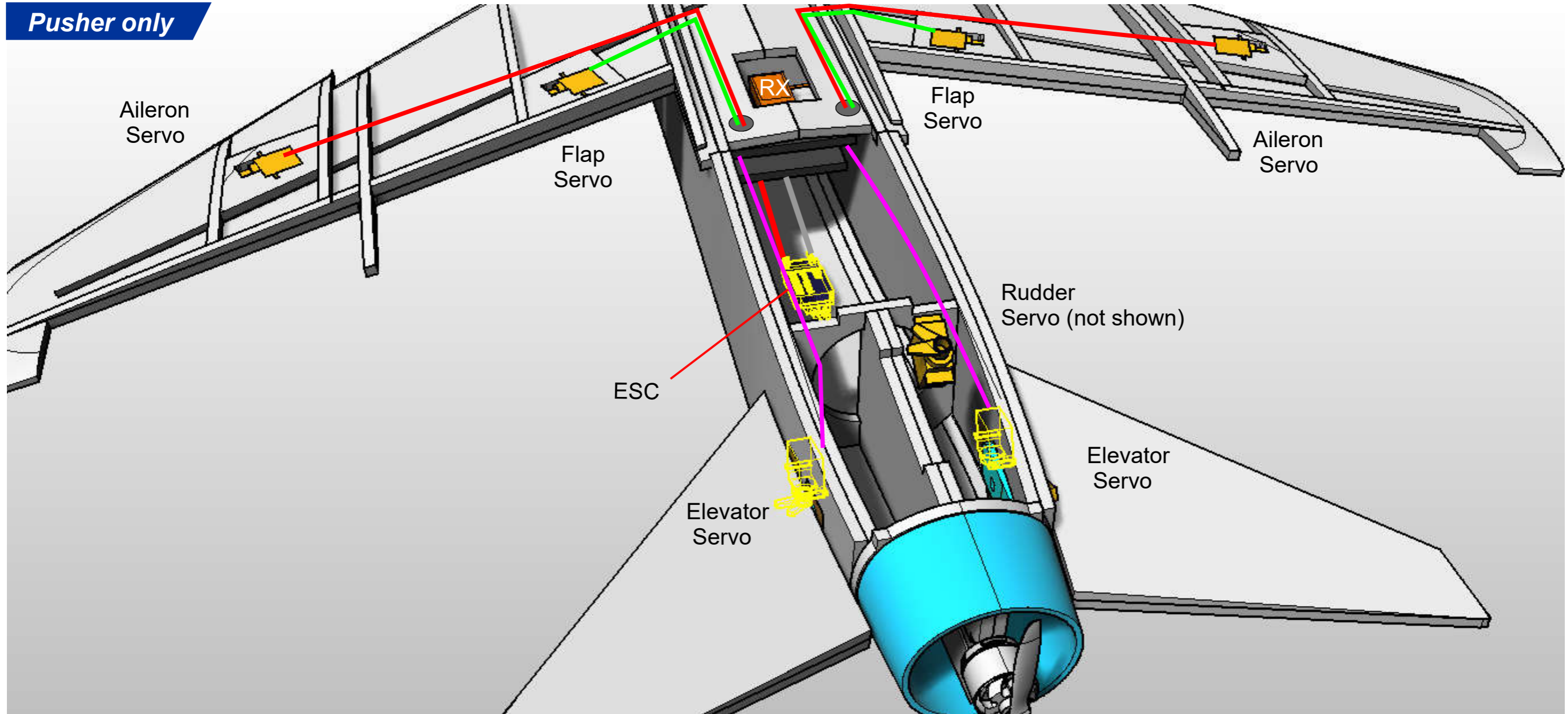
Run the ESC battery cables into the forward fuselage battery area to a battery connector. Run the Servo cable from the ESC to the RX.

Use a soldering iron to make a hole in the thrust tube and pull out the motor cables. Connect the EDF motor to the ESC using bullet connectors, as the cables will need to travel over the 1st fuselage top panel. You will need to disconnect and re-connect - please ensure that the cables are the correct length to achieve this.

Run **all** servo cables to the RX, using servo extension cables and Y leads if required. If you are fitting a rudder, then include the servo extension cable to enable it to be fitted after the fuselage has been enclosed. Cut slots in the wing ribs and bulkheads to pass the cables through. 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



PUSHER VERSION :

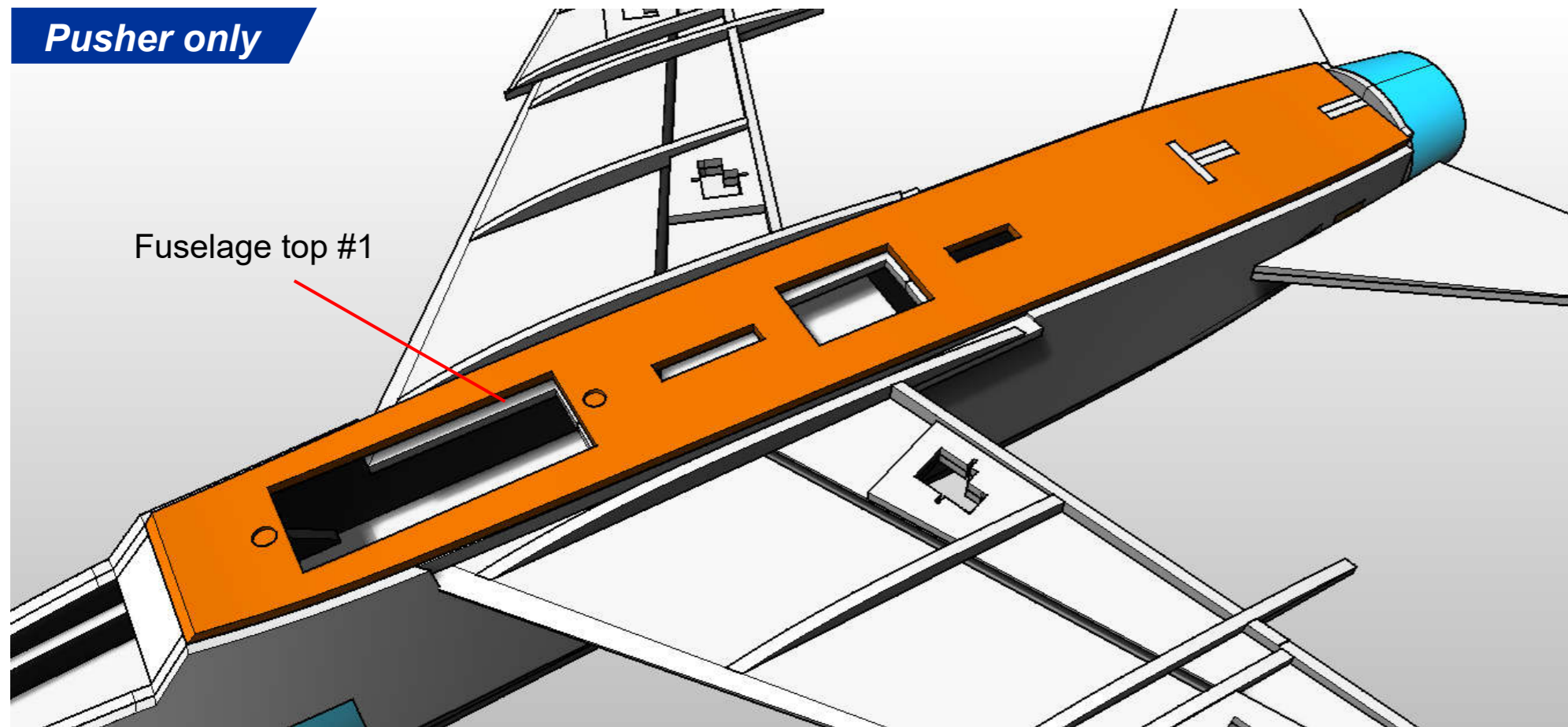
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Run **all** servo cables to the RX, using servo extension cables and Y leads if required. If you are fitting a rudder, then include the servo extension cable to enable it to be fitted after the fuselage has been enclosed. Cut slots in the wing ribs and bulkheads to pass the cables through. Connect the motor cables to the motor and check its spinning the right way around.

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

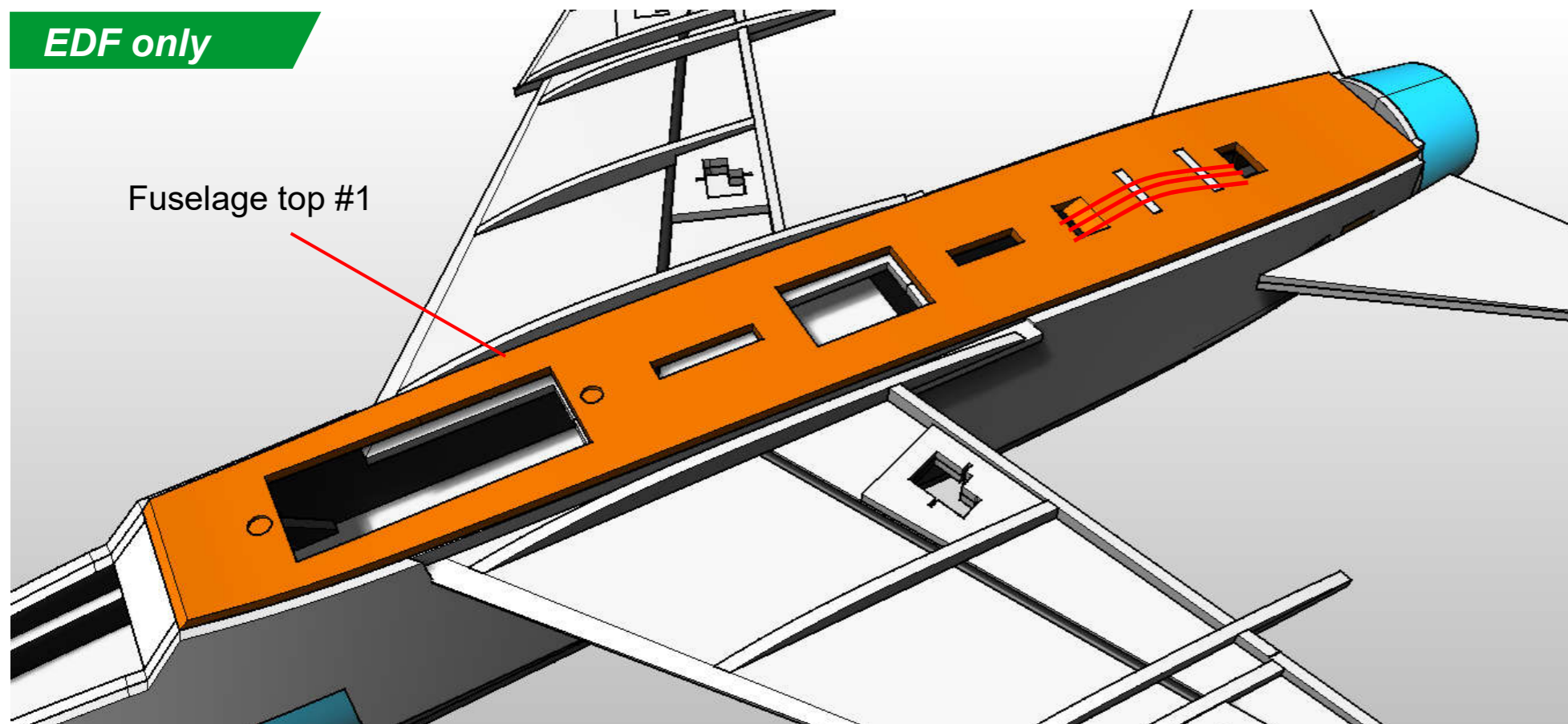


PUSHER VERSION

Glue the **Fuselage top #1** to the assembly.



EDF only



EDF VERSION

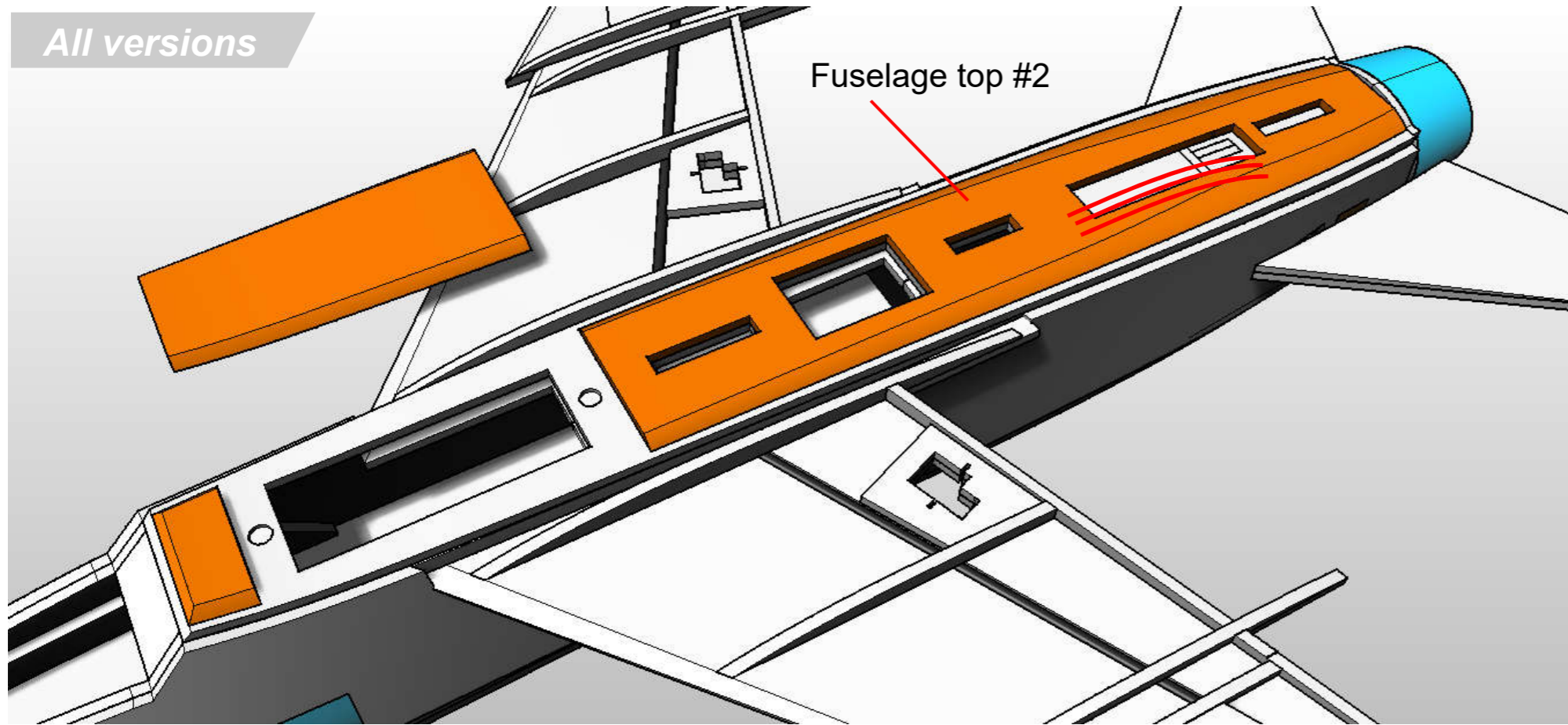
Run the EDF / ESC cables through the slots over the top of the EDF as indicated by the red wires.

Glue the **Fuselage top #1** to the assembly.



All versions

Fuselage top #2

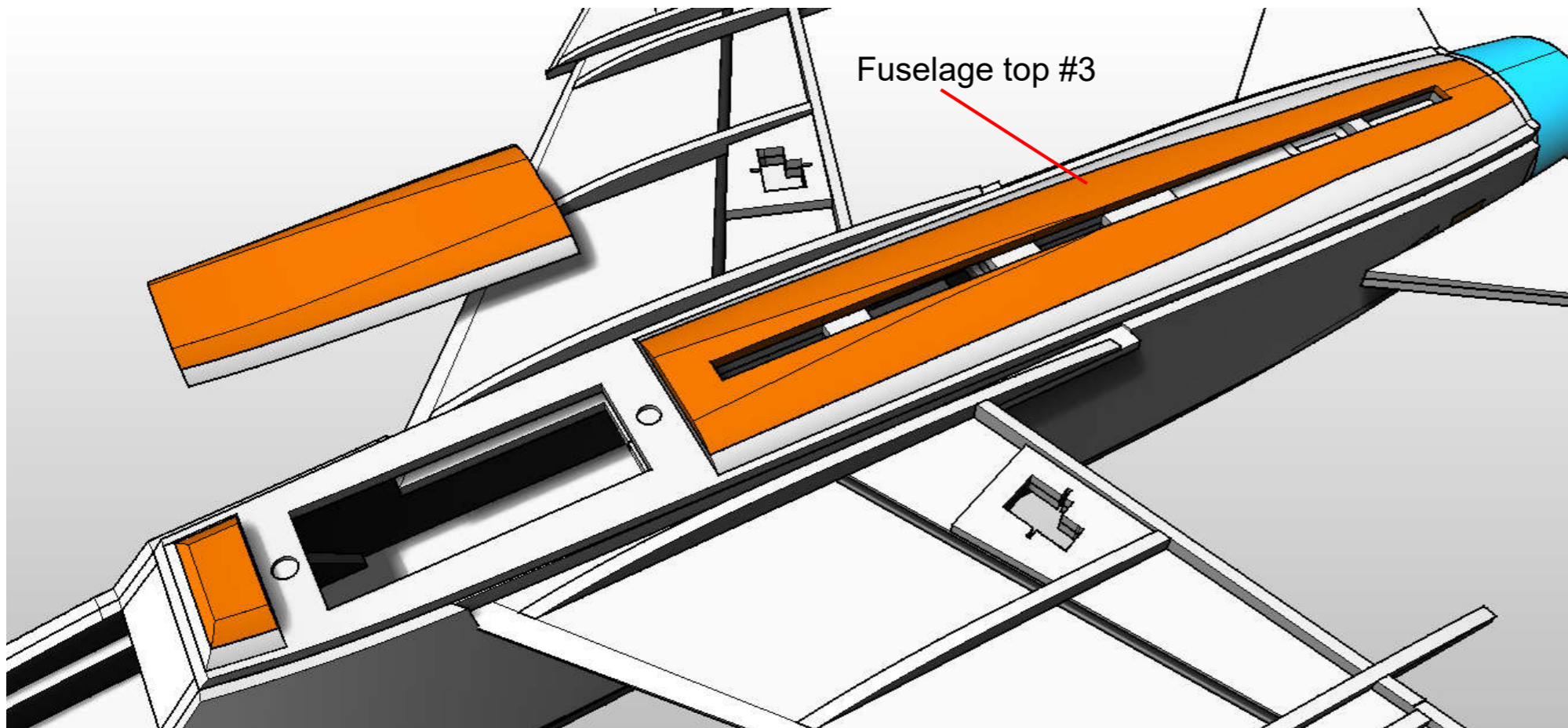


Trim away the battery access hatch then glue the **Fuselage top #2** to the assembly.

Attach magnets to the access hatch and Fuselage top #1 using the same method as described for the canopy.



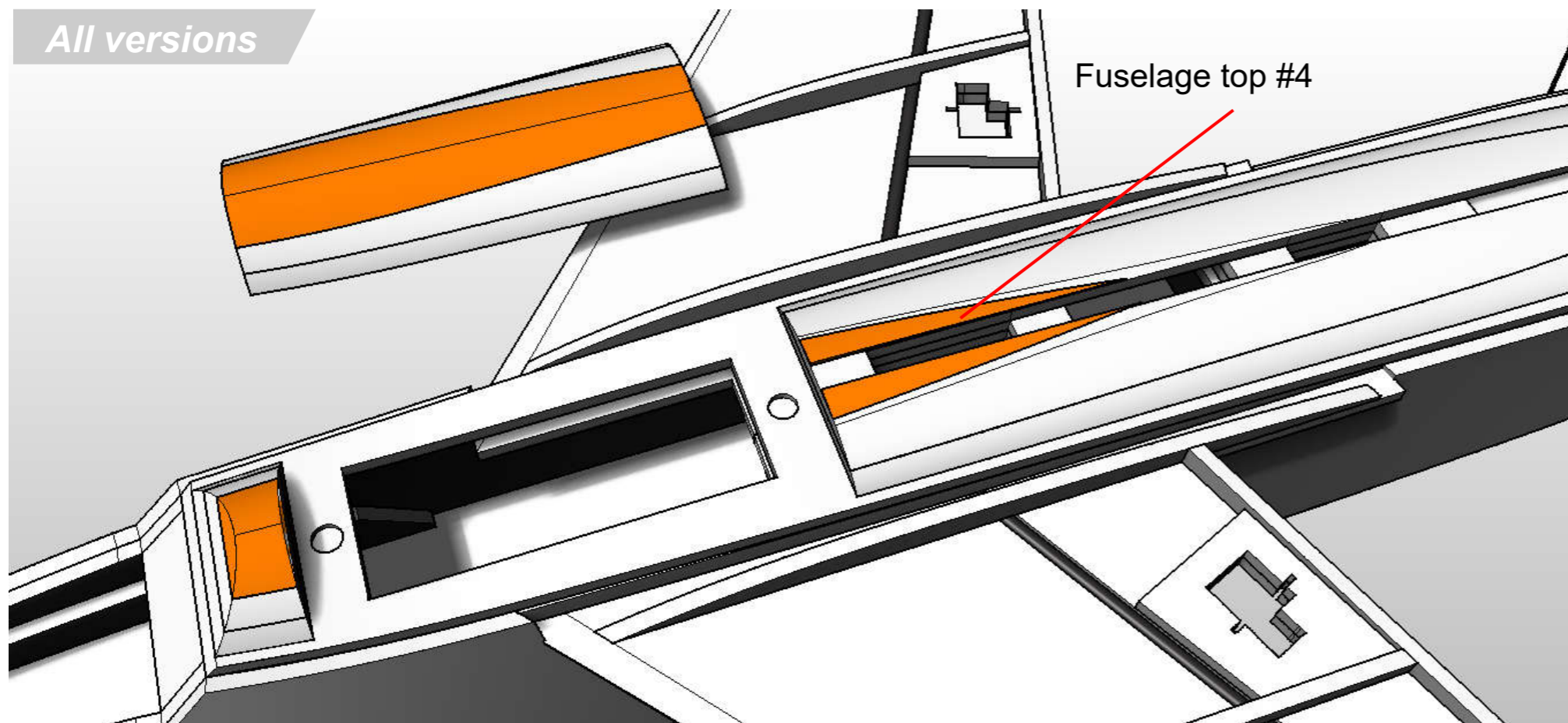
Fuselage top #3



Separate the Battery access hatch from **Fuselage top #3**, then glue the remaining parts to the assembly as shown.

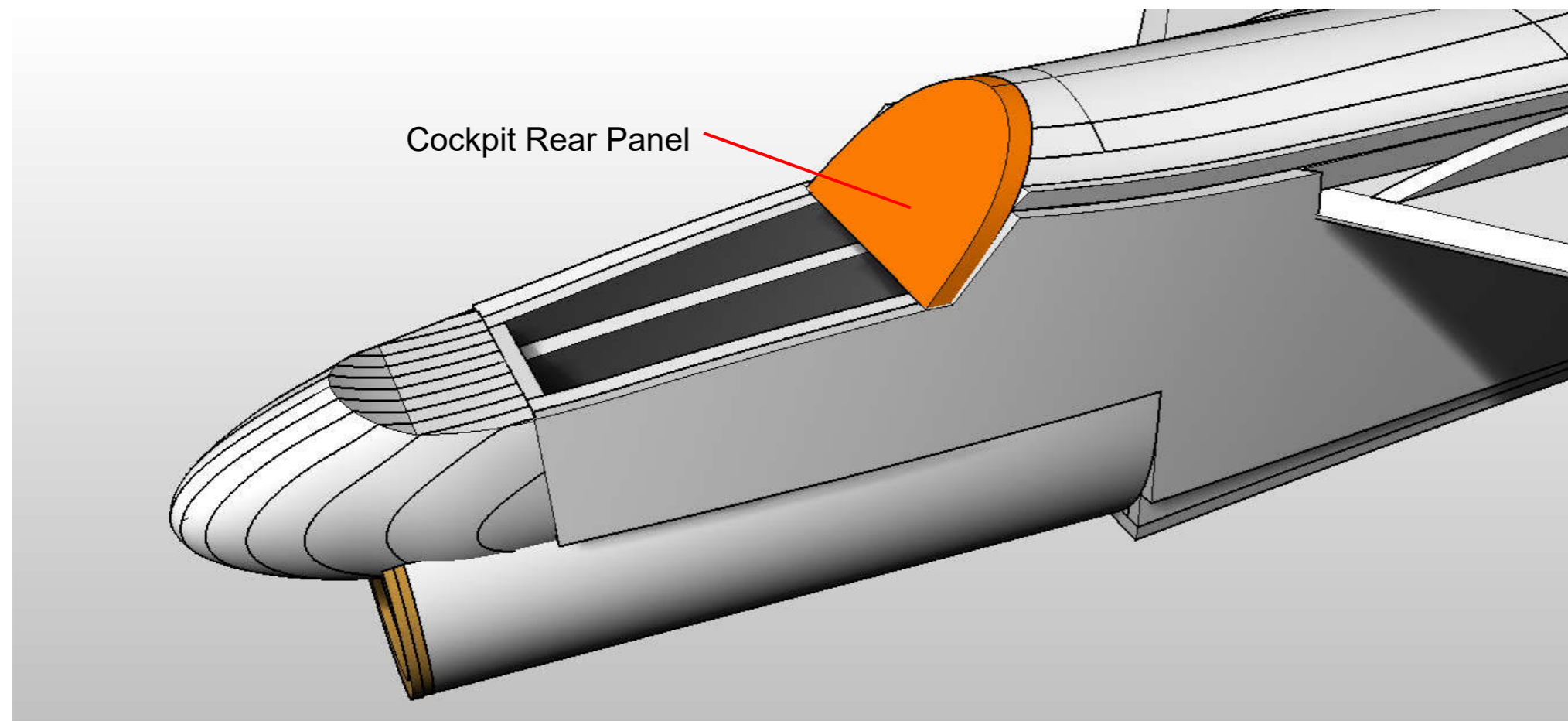


All versions



Fuselage top #4

Glue the **Fuselage top #4** to the assembly.

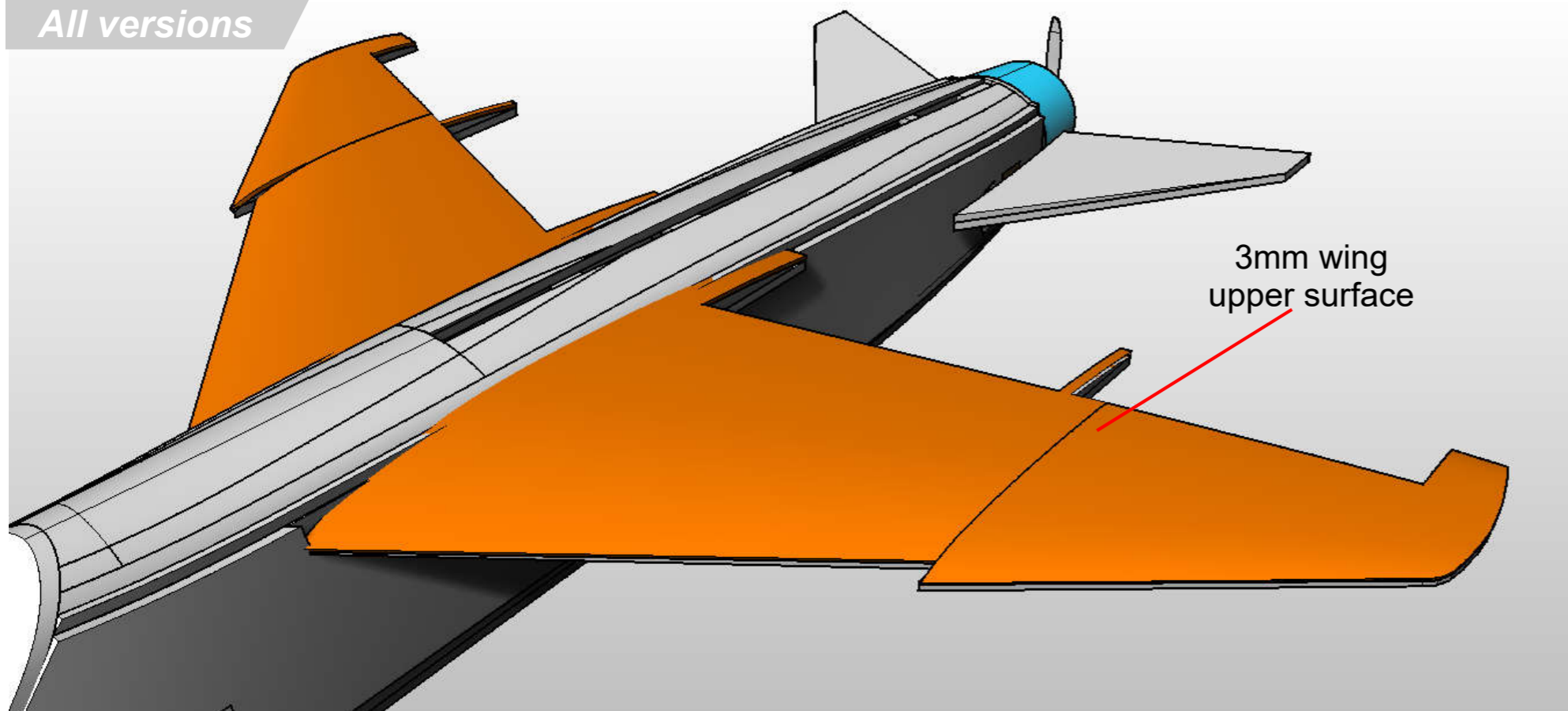


Cockpit Rear Panel

Glue the **Cockpit Rear Panel** in place as shown.

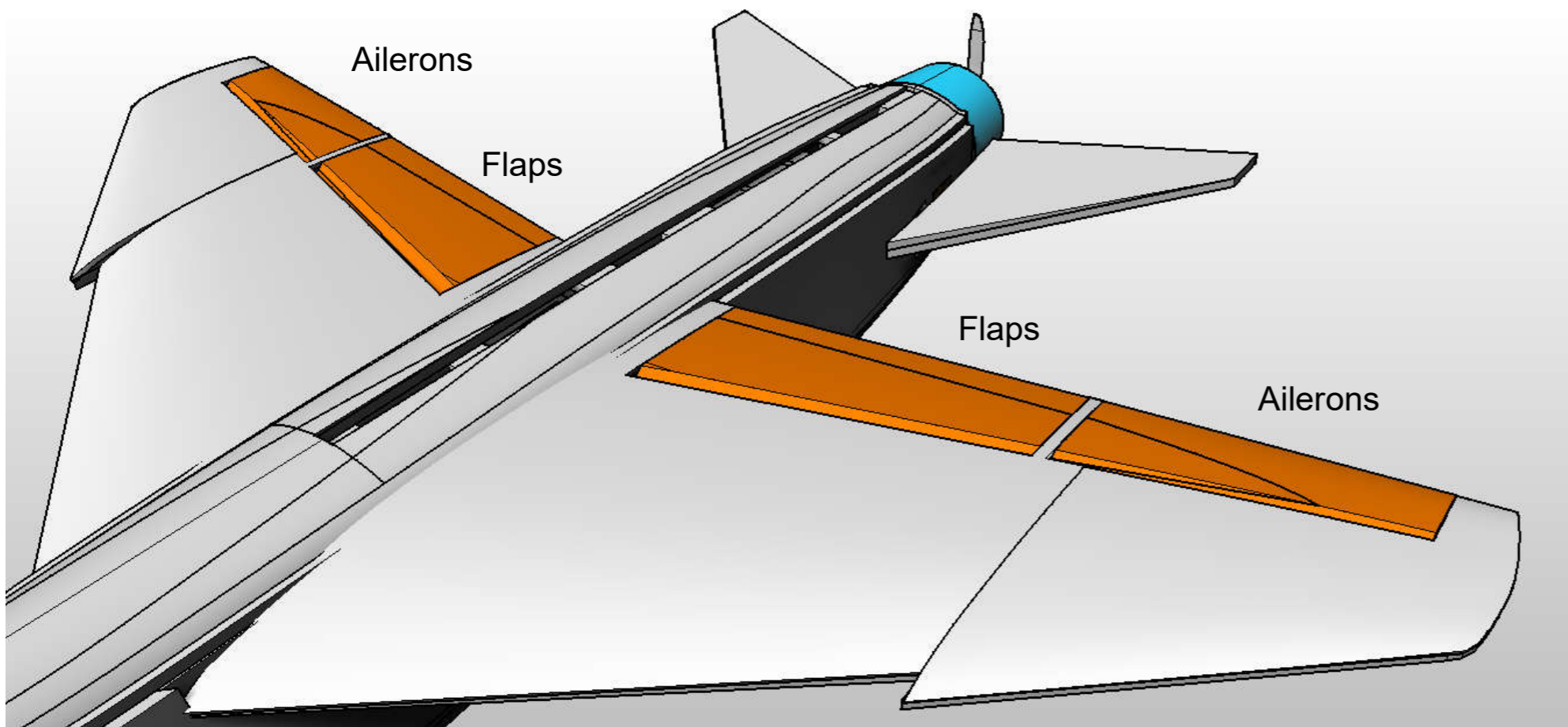


All versions



Glue the 3mm foam **Wing Upper Surface** to the assembly.

You will probably find the wing upper surface intrudes a bit into the battery access hatch area. As a result, I recommend you cut away the rear corners of the hatch where it intersects with the wing, and glue them down to the fuselage.



Glue the pieces of the **Flaps** and **Ailerons** together and sand to shape.]

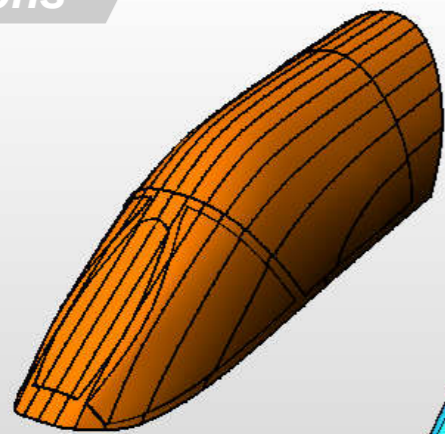
Shape the 'V' leading edge shape that will allow them to operate +/- 30 degrees.

Use pinned hinges and cut slots in the foam for them. Glue the Flaps and Ailerons in place using hot melt glue.

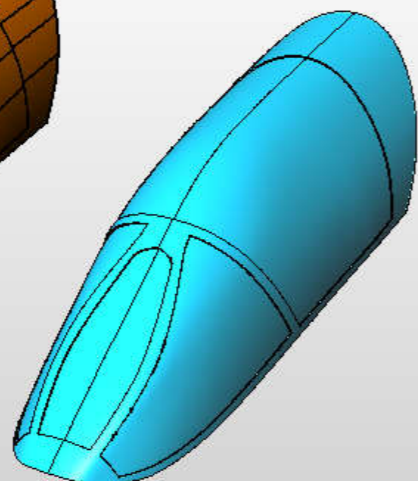
Attach control horns on the underside to fall in line with the servos.



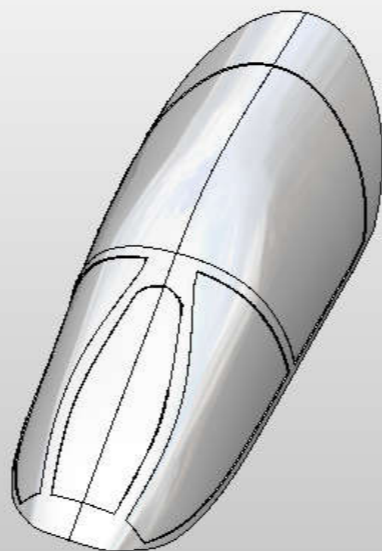
All versions



Laminated Canopy



3D Printed Canopy



Vacuum formed Canopy

3D Printed Part
(optional)

Prepare the **Canopy / Cockpit** either using laminated 6mm foam sheets, Vacuum formed with a constructed base/ cockpit or 3D printed - (Suggest Clear PLA)

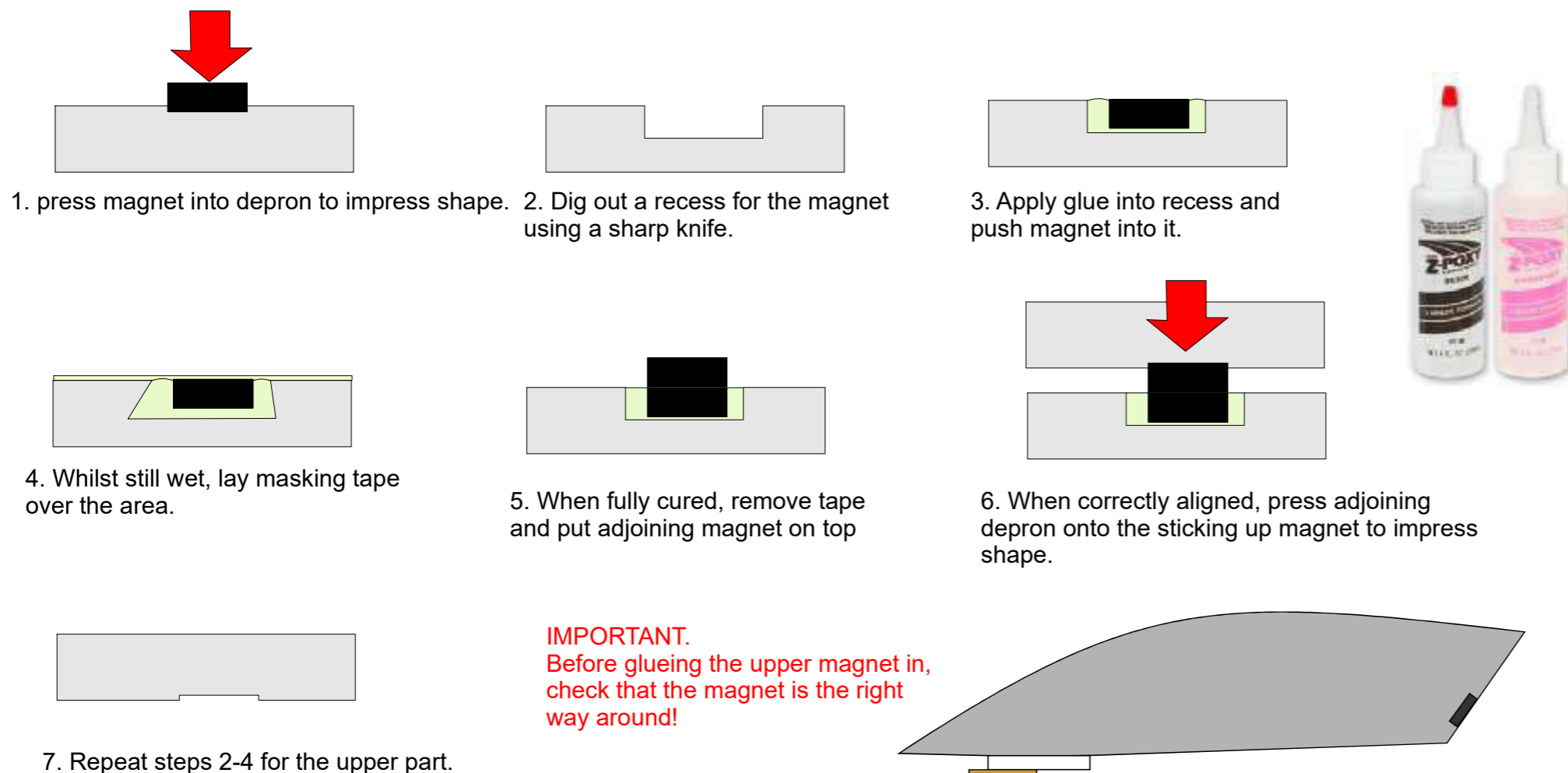
When deciding whether or not to have a removable canopy for battery access, first work out where your battery location sits to achieve the correct centre of gravity.

If you can benefit from having a removable canopy, then I suggest you fit the canopy using magnets using the method below - if not simply glue it in place.

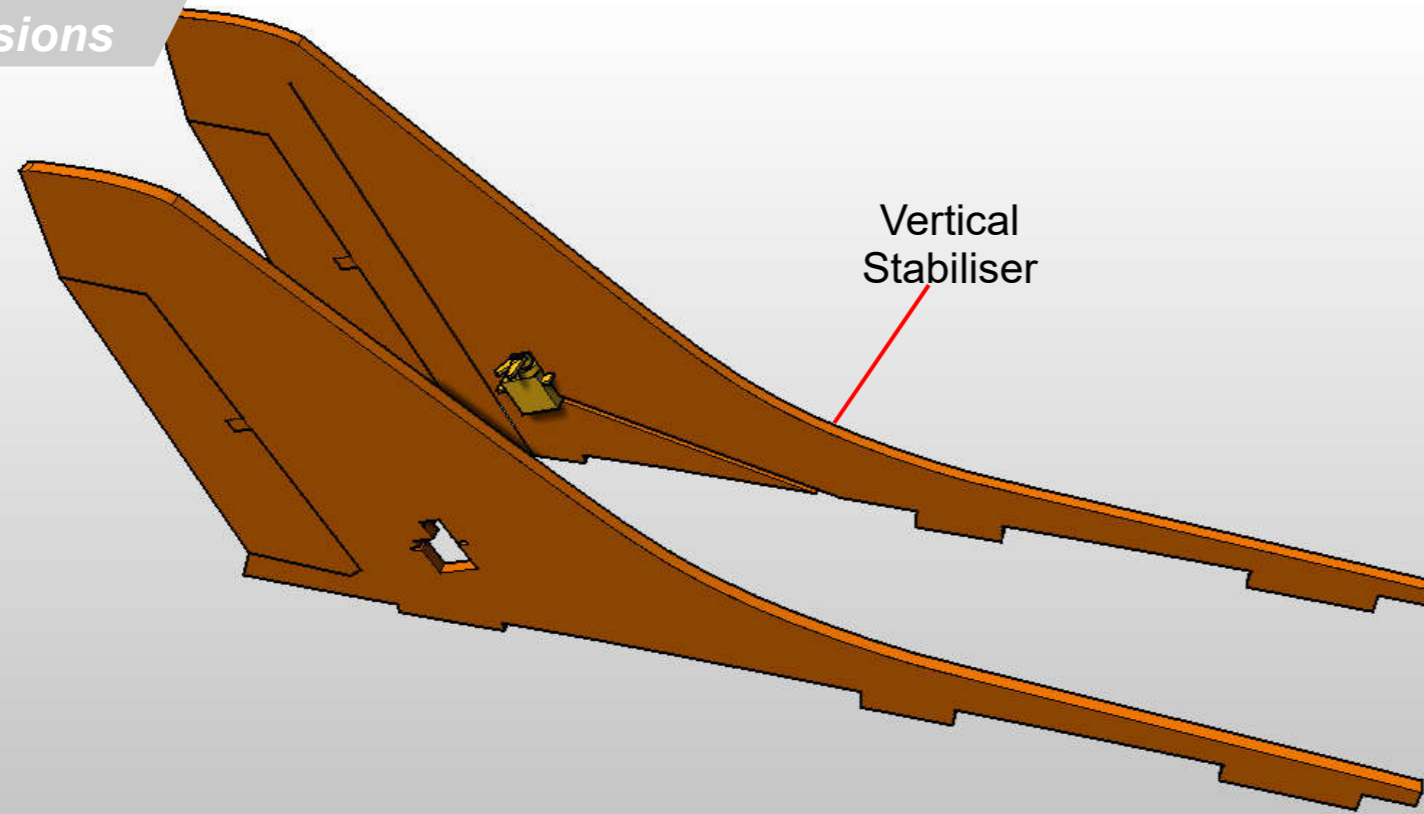
Build a tongue using a piece of scrap 6mm foam and 3mm liteply at the front of the canopy.

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.



All versions



Carefully cut a 1mm slot into both inner faces of the **Vertical stabiliser**, 3mm deep.

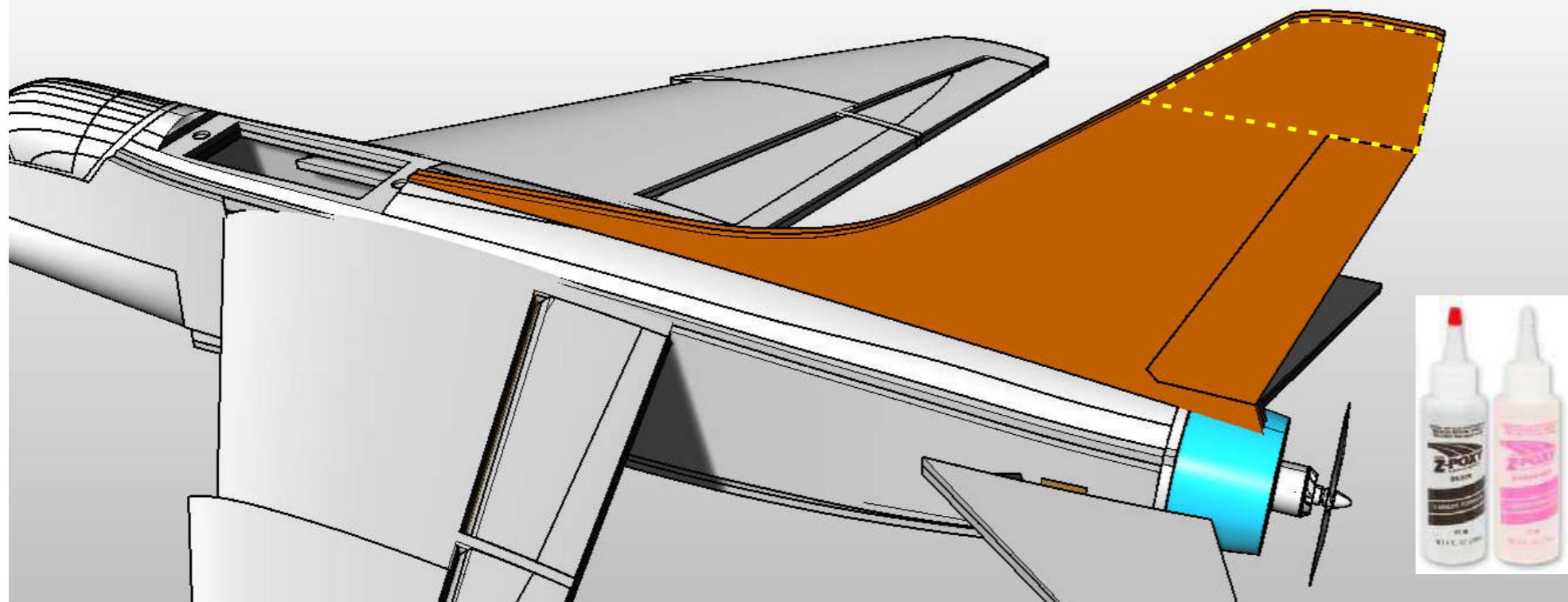
Glue in a 6x1mm carbon strip across the centre of the two.

If you are planning to have a working rudder (optional), glue it into the vertical stabiliser parts, running the servo cable out through the channel.

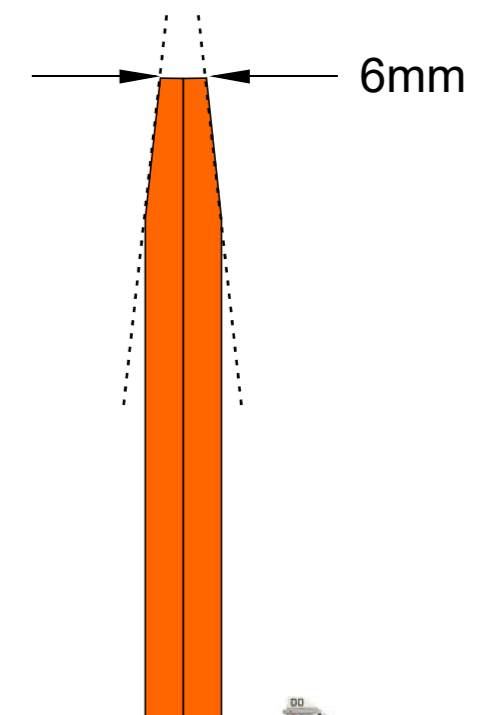
Glue both sides together



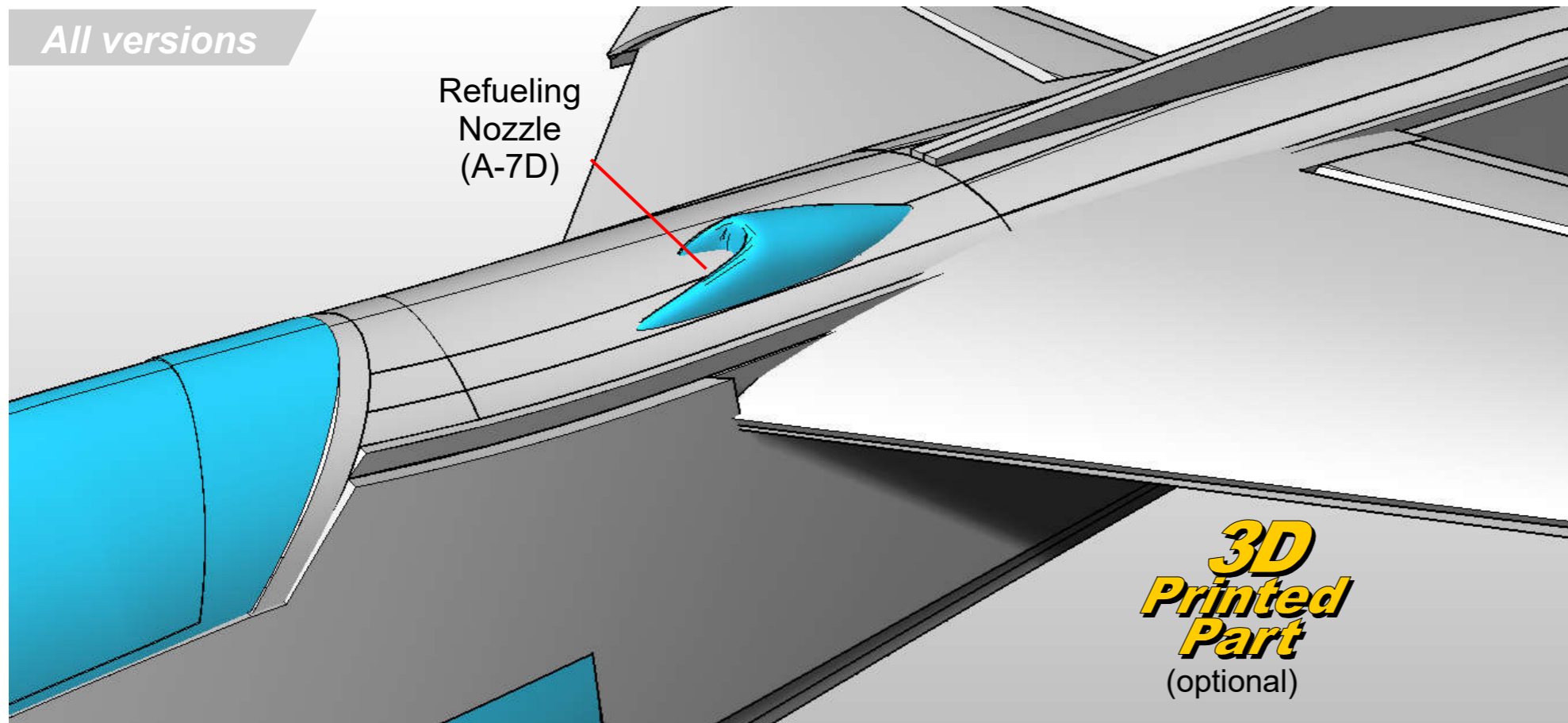
All versions



Glue the Vertical Stabiliser in place using Epoxy. Ensure that it completely vertical. Taper the top part as indicated.



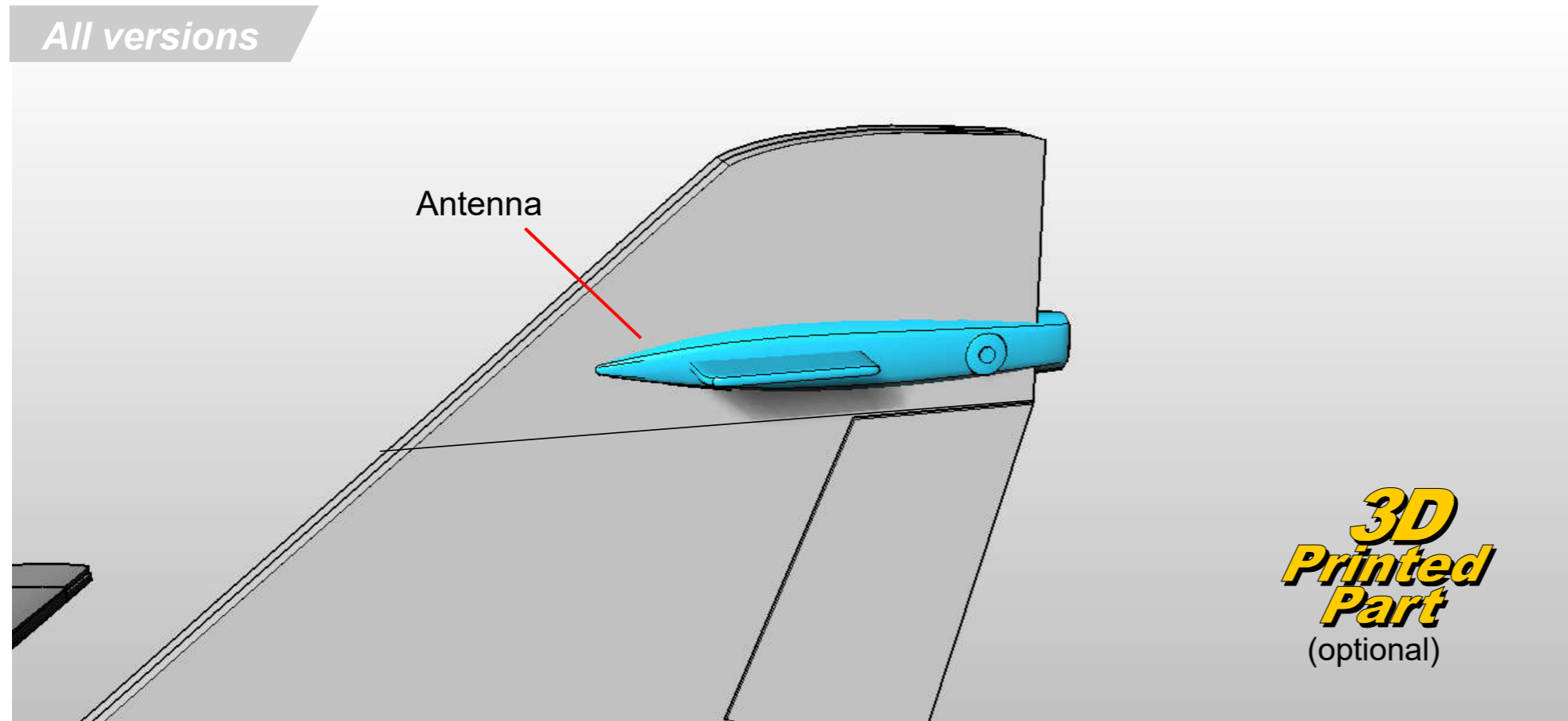
All versions



Either Fabricate from foam or use the 3d printed **Refuelling Nozzle** and glue in place as shown

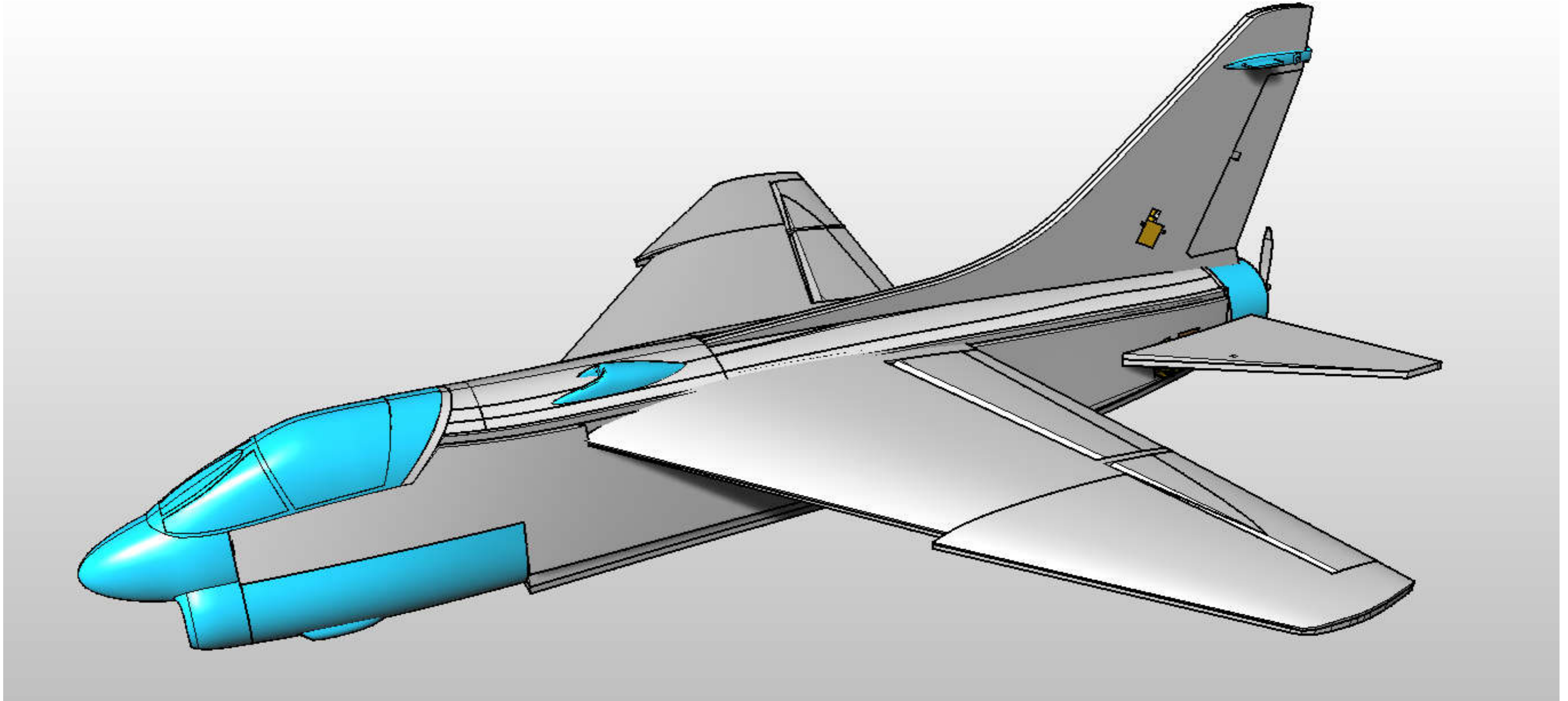


All versions



Either Fabricate from foam/plywood or use the 3d printed **Antenna** and glue in place as shown





Congratulations! Your Corsair 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

