JETWORKS

Lockheed T-33 Shooting Star

Parkjet

1st Generation Fighter

Construction Guide

Shooting Star History

The Lockheed T-33 Shooting Star (or T-Bird) is an American subsonic jet trainer. Design work on the Lockheed P-80 began in 1943, with the first flight on 8 January 1944 and made its first flight in 1948. The last operator of the T-33, the Bolivian Air Force, retired the type in July 2017, after 44 years of service.

The T-33 was developed from the Lockheed P-80/F-80 by lengthening the fuselage by slightly more than 3 feet (1 m) and adding a second seat, instrumentation, and flight controls. Following on the Bell P-59, the P-80 became the first jet fighter to enter full squadron service in the United States Army Air Forces. As more advanced jets entered service, the F-80 took on another role—training jet pilots. The two-place T-33 jet was designed for training pilots already qualified to fly propeller-driven aircraft.

The two seater T-33 proved suitable as an advanced trainer for the U.S. Air Force and U.S. Navy, and it has been used for such tasks as drone director and target towing. Other nations' T-33s retained two machine guns for gunnery training, and in some countries, the T-33 was even used in combat: the Cuban Air Force used them during the Bay of Pigs Invasion, scoring several kills including sinking two transport ships. The RT-33A version, reconnaissance aircraft produced primarily for use by foreign countries, had a camera installed in the nose and additional equipment in the rear cockpit. T-33s continued to fly as currency trainers, drone towing, combat and tactical simulation training, "hack" aircraft, electronic countermeasures, and warfare training and test platforms right into the 1980s.

On 21 June 1996, 1 T-33A-5-LO (trainer TR-602) from the Hellenic Air Force piloted by Squadron Leader Ioannis Kouratzoglou successfully intercepted a Turkish F-16C violating Athens FIR by engaging in low-altitude high-G maneuvers.

Designers Notes

The Shooting star is a favourite amongst modellers - it makes a decent model due to its wide wings and clean aerodynamic shape.

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

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!

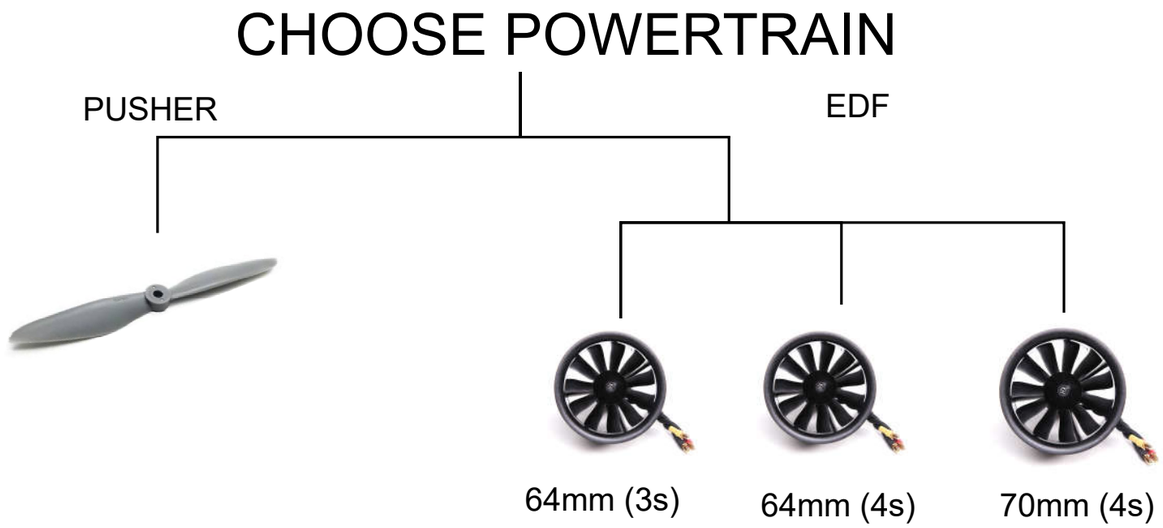
Tapes
> For holding parts tightly together whilst glue sets
- Low tack masking tapes

> 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.

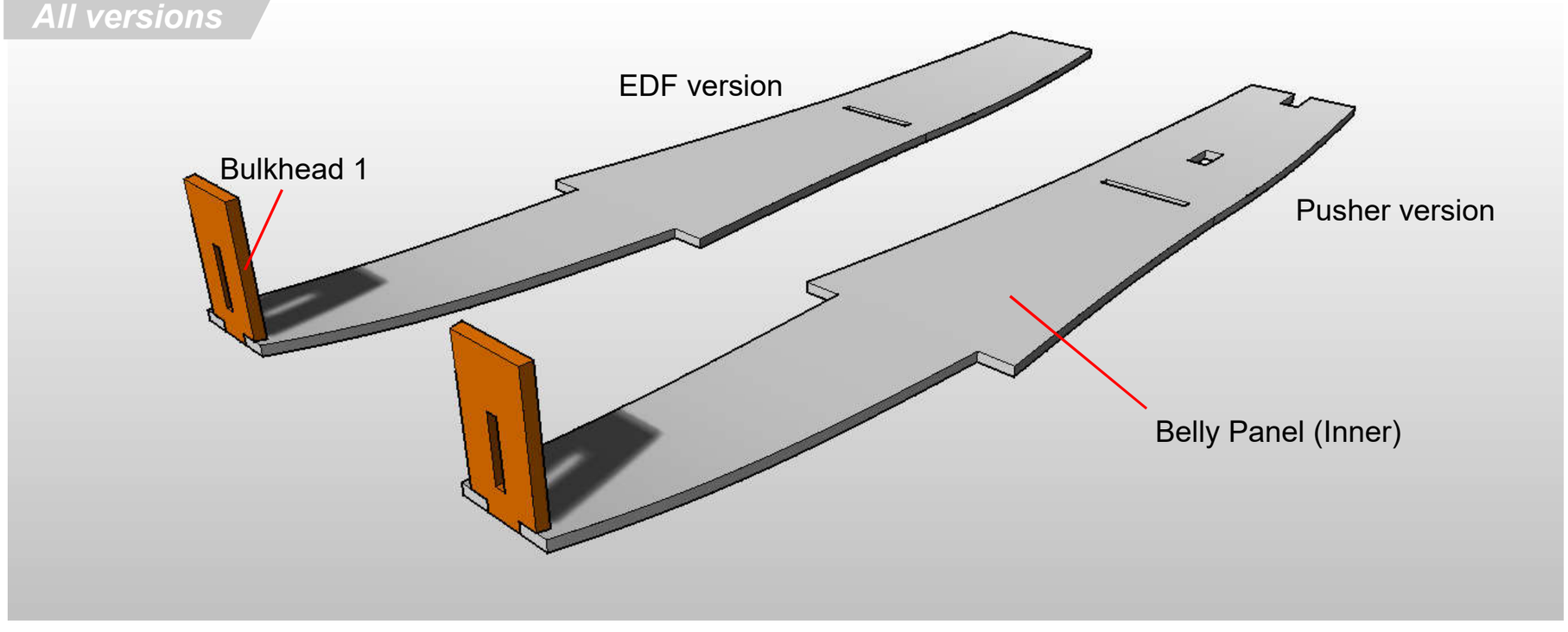
Glueing parts together.
1. Ensure a really good fit - this will reduce the amount of adhesive used. The Bar Sander is a great tool for this.
2. Follow the adhesive instructions closely.
3. Use ordinary steel head pins to help keep the parts located whilst epoxy sets.
4. Use objects as weights such as 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. This prevents the glue protruding and gives a nice finish.



Choose your prefered variant and its powertrain.

Please remember higher power setups are usually harder on the airframe due to the increased weight and higher stall speeds when landing.

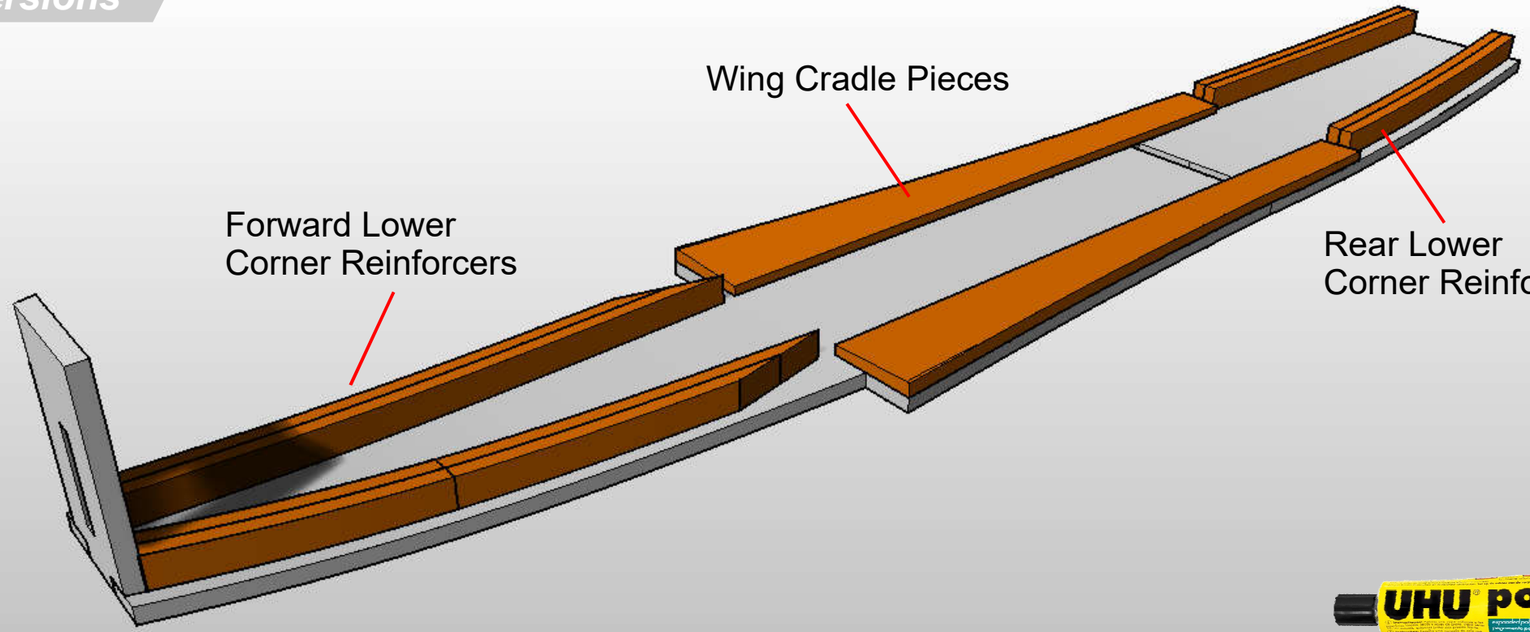
All versions



Gently Pre-curve the belly panel.

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

All versions

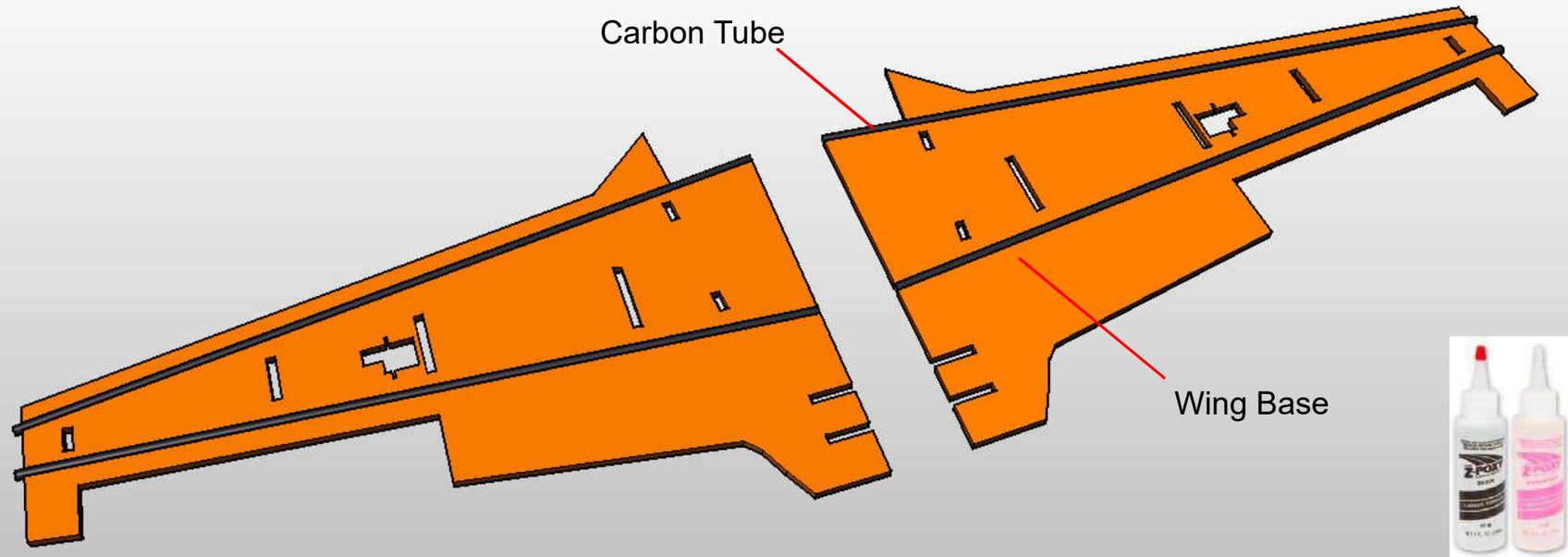


Carefully pre-shape the **Forward Corner reinforcers**.

Sand to shape the wing angle on the **Wing Cradle pieces** according to the plans.

Using the markings from the plans, on the inside of the belly panel, Glue all the pieces carefully to the Belly panel as shown

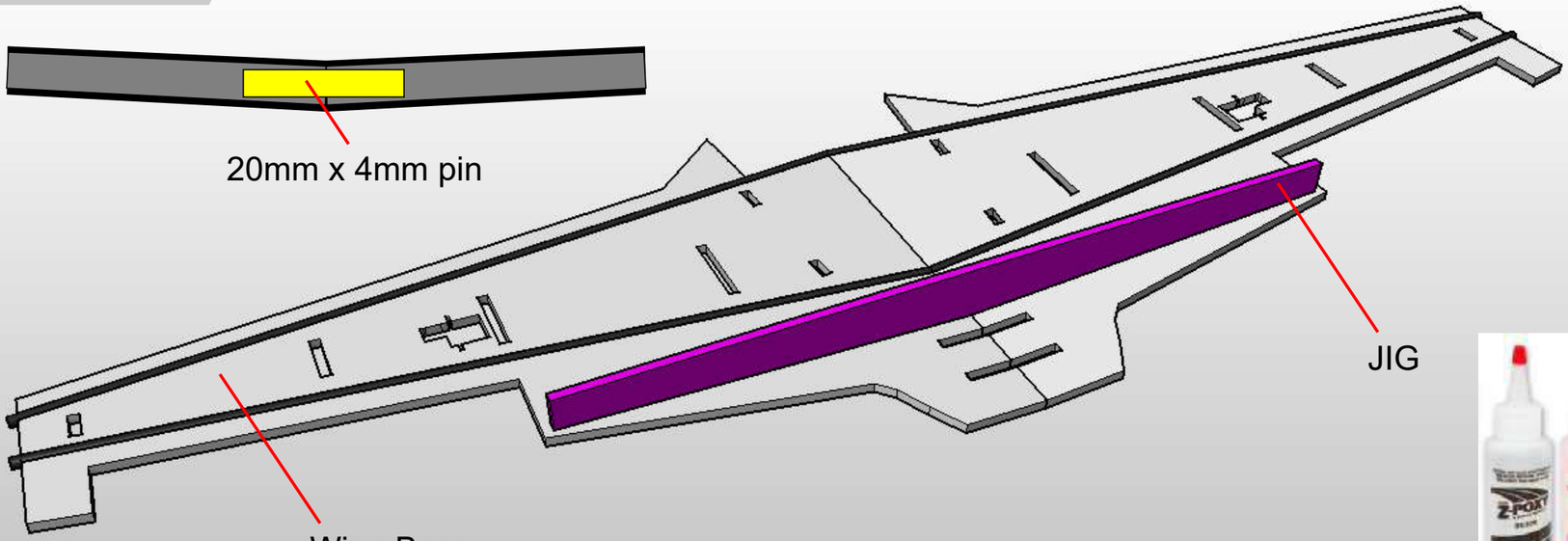
All versions



On each **Wing Base**, Glue 5 or 6mm carbon tubes into the 'slots' using Epoxy, containing the glue using masking tape top and bottom.

Ensure the carbon tube sticks out of the end 6mm to give something secure to affix the tip-tanks to.

All versions

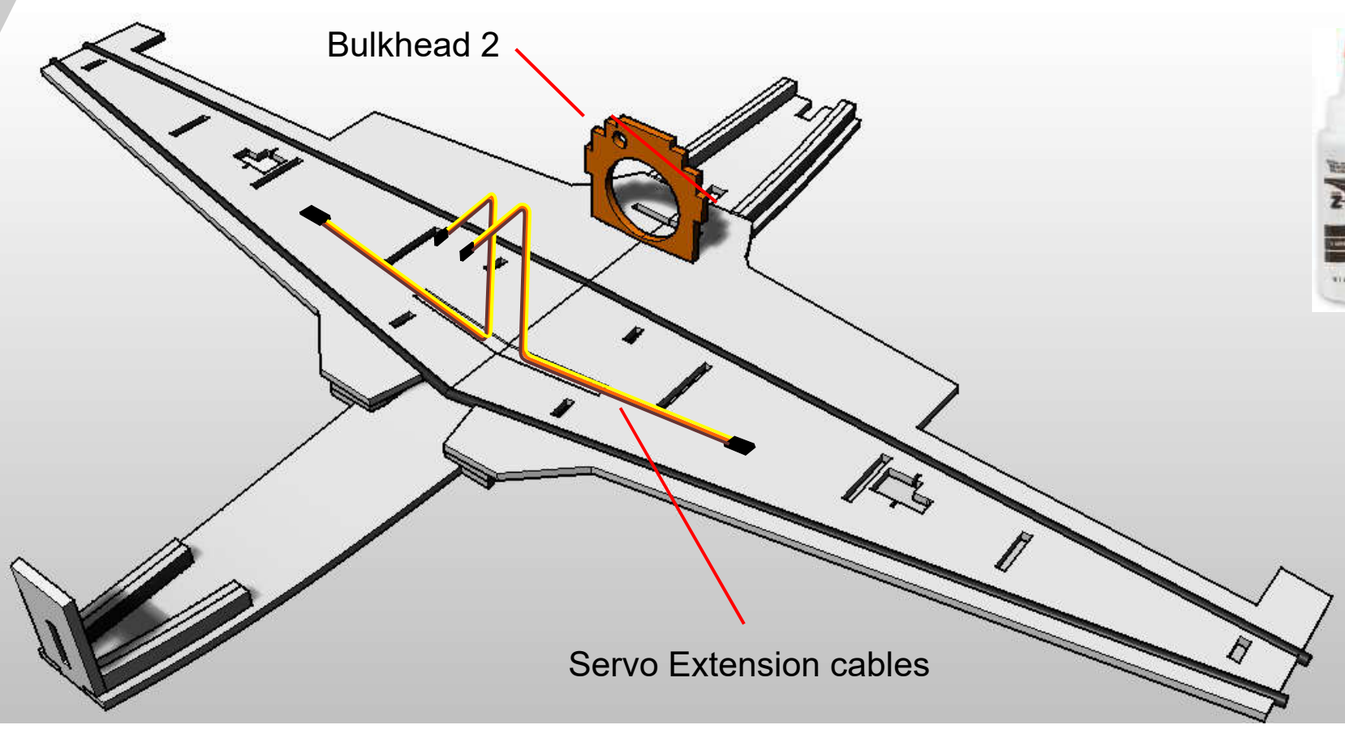


Create a cradle using two books of equal thickness to support the wing angle. Use the Jig to get the correct angle.

Use either a piece of 4mm carbon tube, or a 4mm machine screw with the head cut off, to create the pin.

Apply epoxy, then insert the pin into the end of each carbon tube, then glue the two wing bases together.

All versions

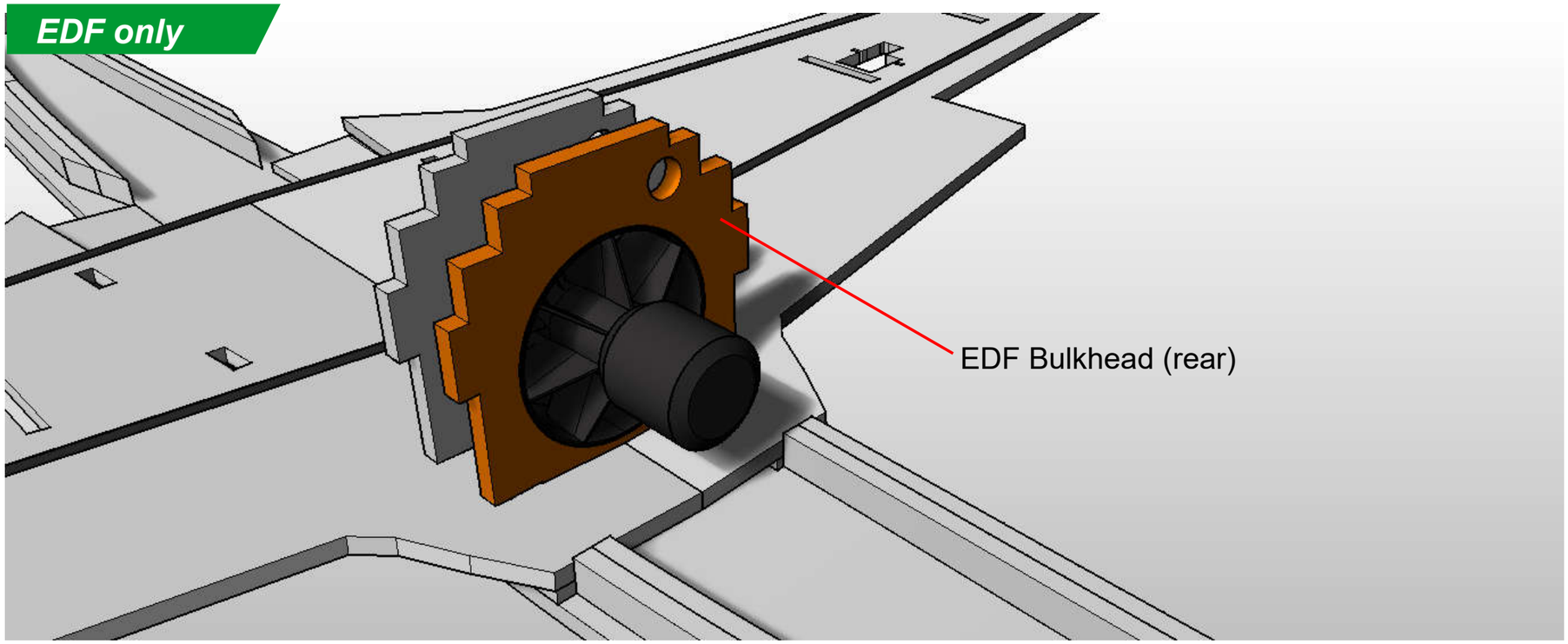


Mark a centreline down the belly panel, then glue the wing base assembly onto the Fuselage belly assembly using **Bulkhead 2** to act as an alignment piece.

If you are making the EDF version, you may find it easier to fit the EDF unit and rear bulkhead simultaneously (see next step)

Using nylon reinforced tape, attach the servo extension cables to the wing recess.

EDF only



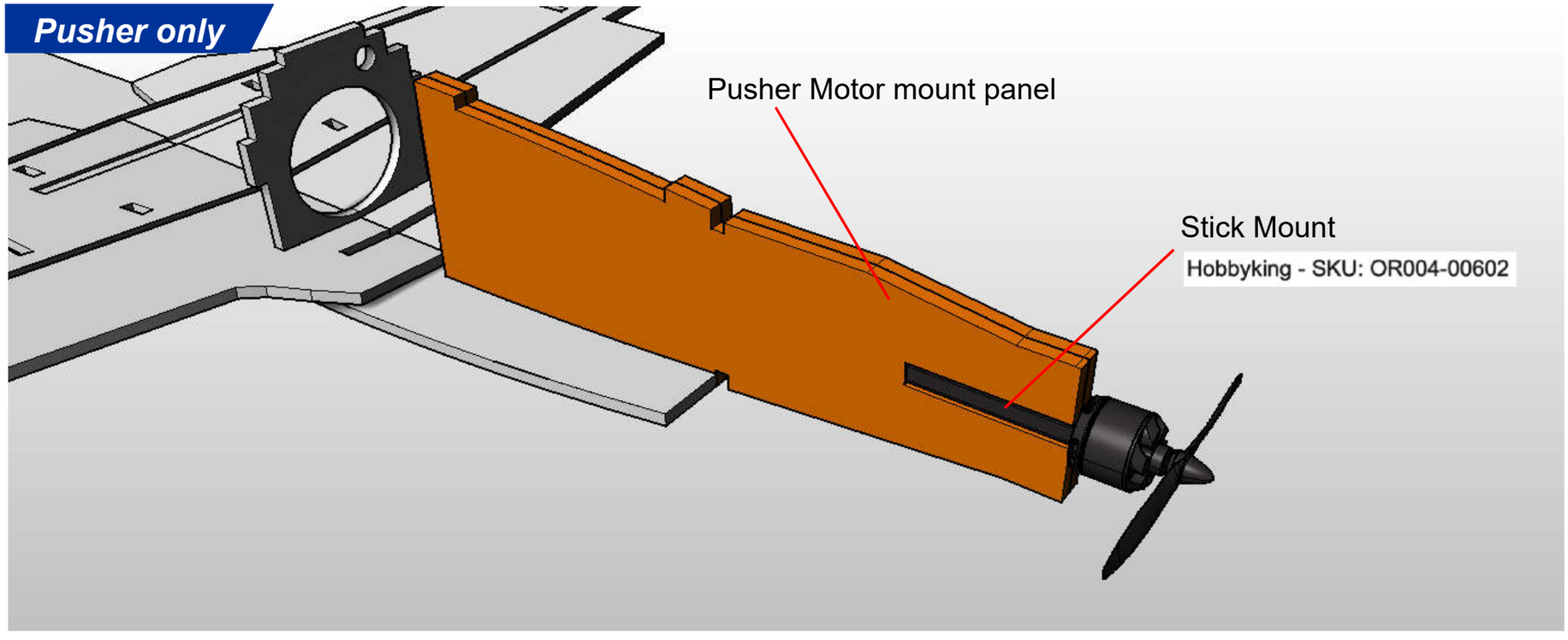
Dry fit your chosen EDF into the bulkheads, and adjust to size if necessary.

Glue the EDF Bulkhead (Rear) into the slot.

Ensure any tabs sticking out of the sides of the EDF unit don't foul the fuselage sides.

Glue in place using hot melt glue.

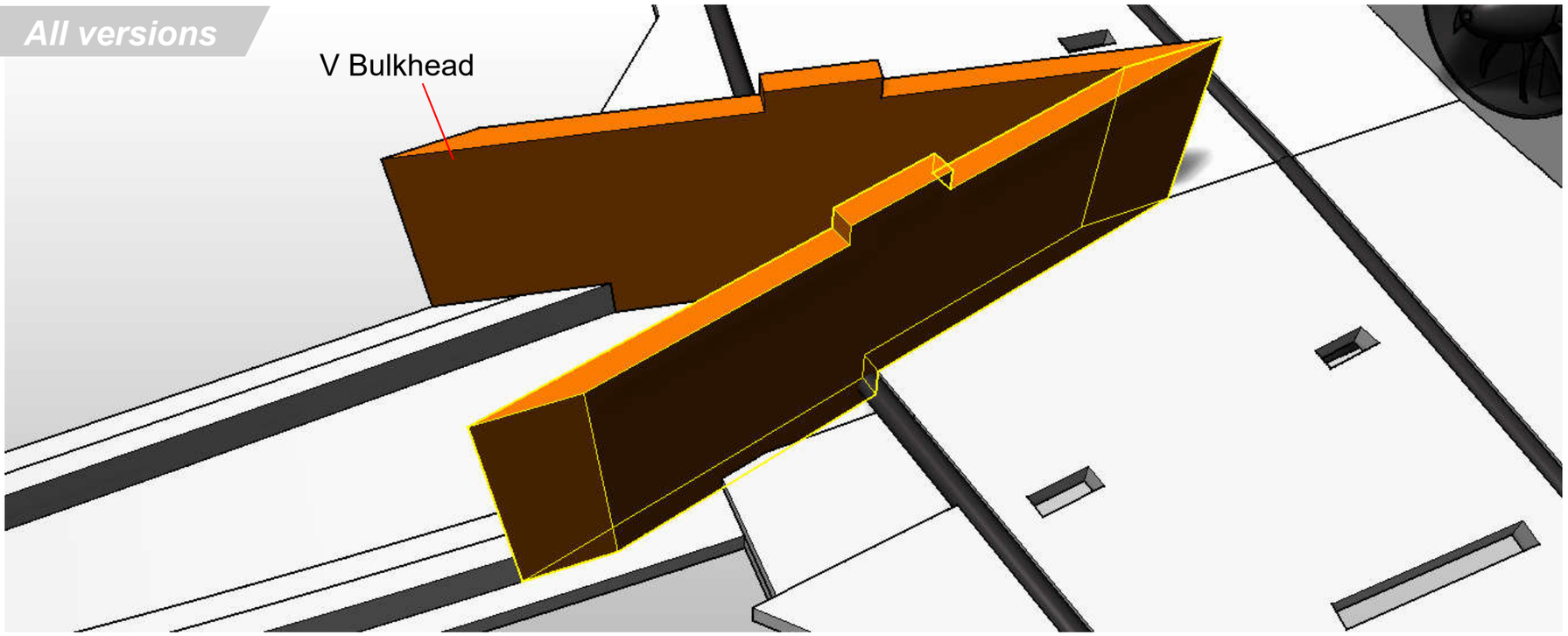
Pusher only



Glue the two pieces of the **Pusher Motor Mount Panel** together, then into the airframe assembly using UHU Por.

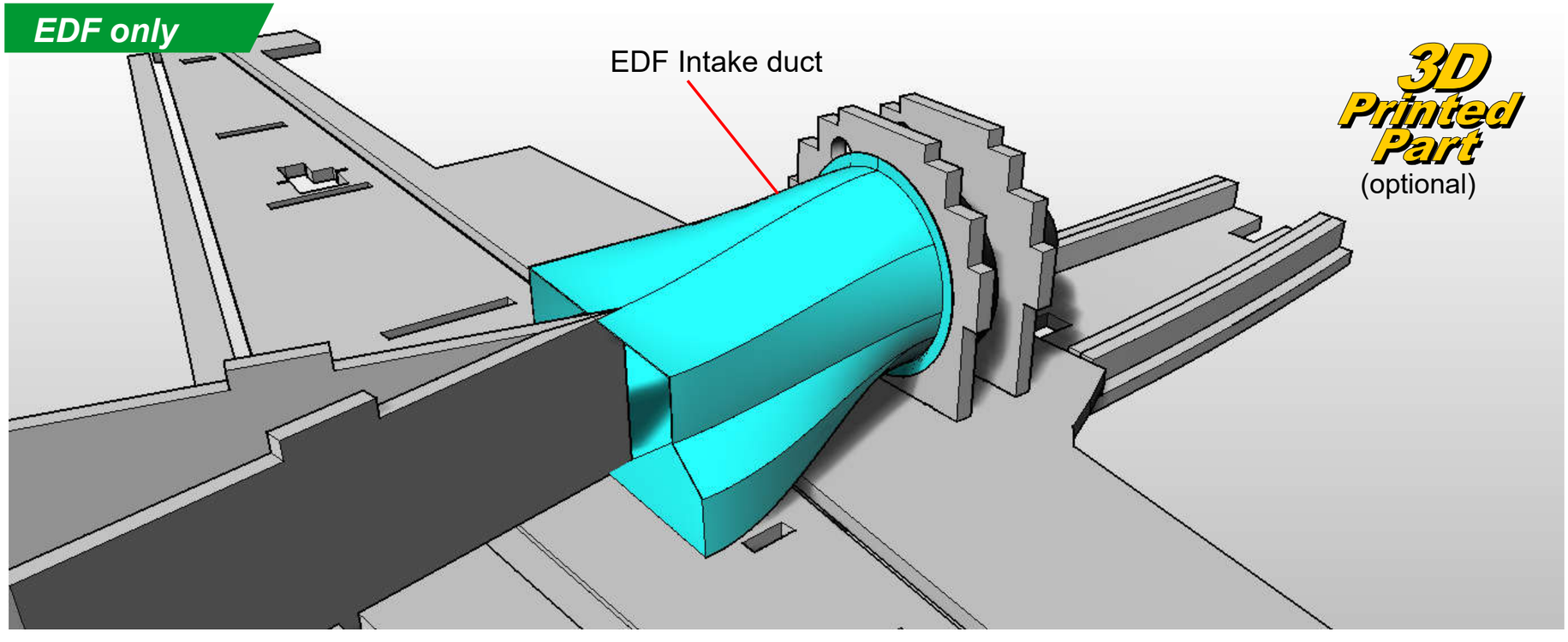
Either 3d Print or purchase a Stick mount which are available on Ebay etc, then glue into the slot using hot melt glue.

All versions



Glue the two pieces of the **V Bulkheads** in place.

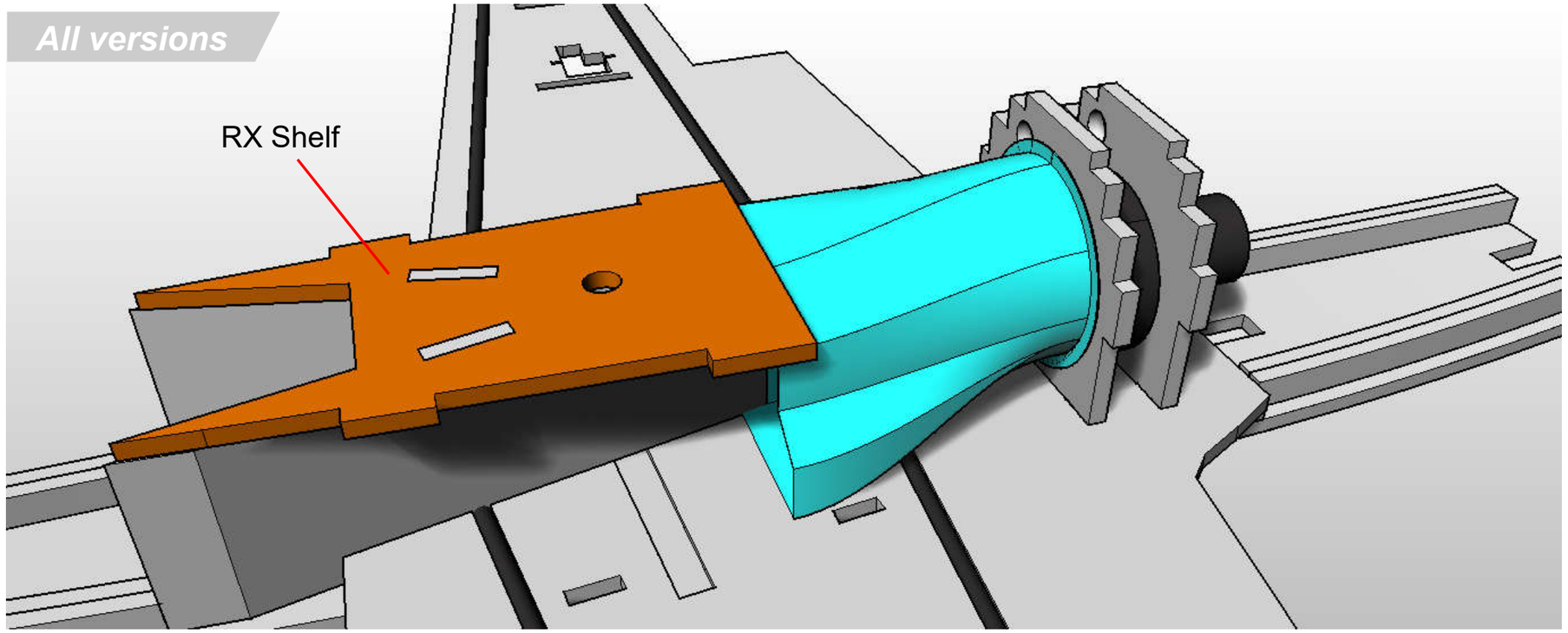
EDF only



Glue the **EDF Intake Duct** to the assembly.

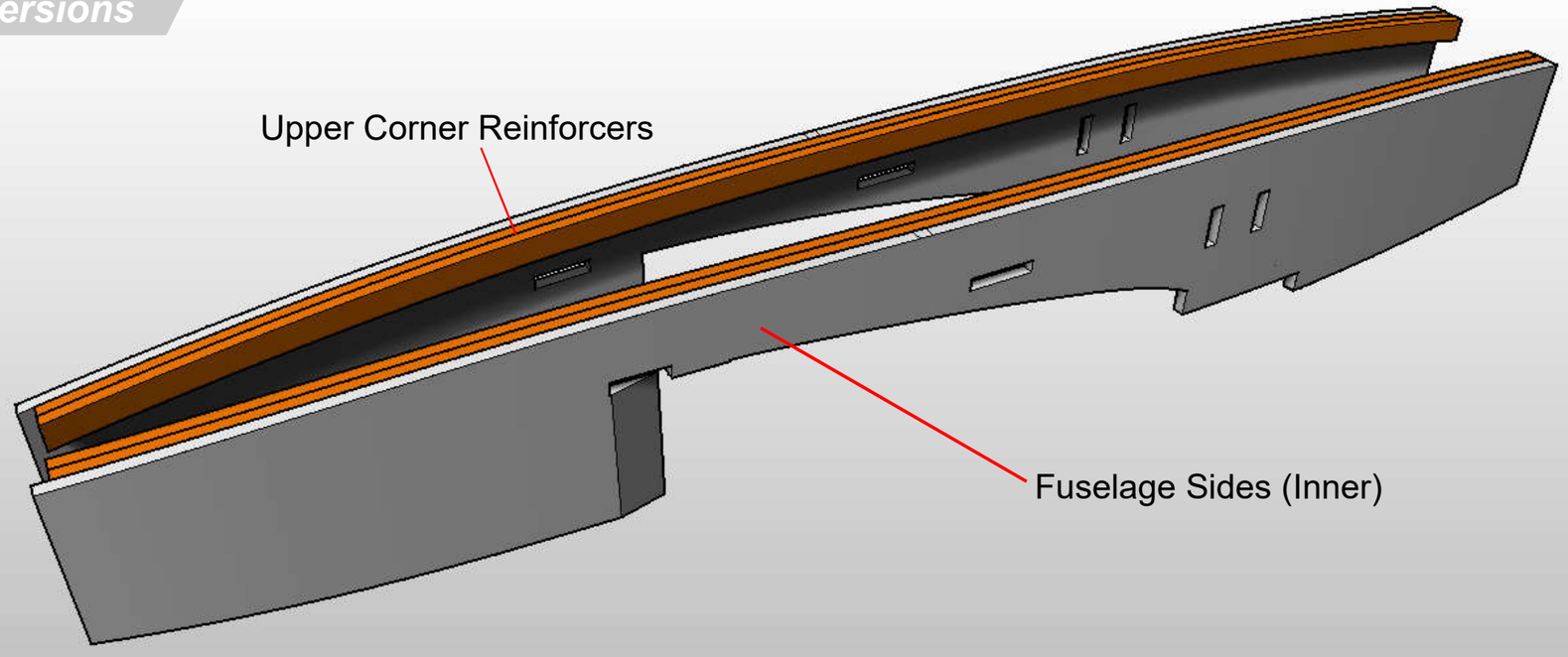
If you are not using 3D printed parts, ensure that the EDF Inlet ring is fitted to the EDF unit.

All versions



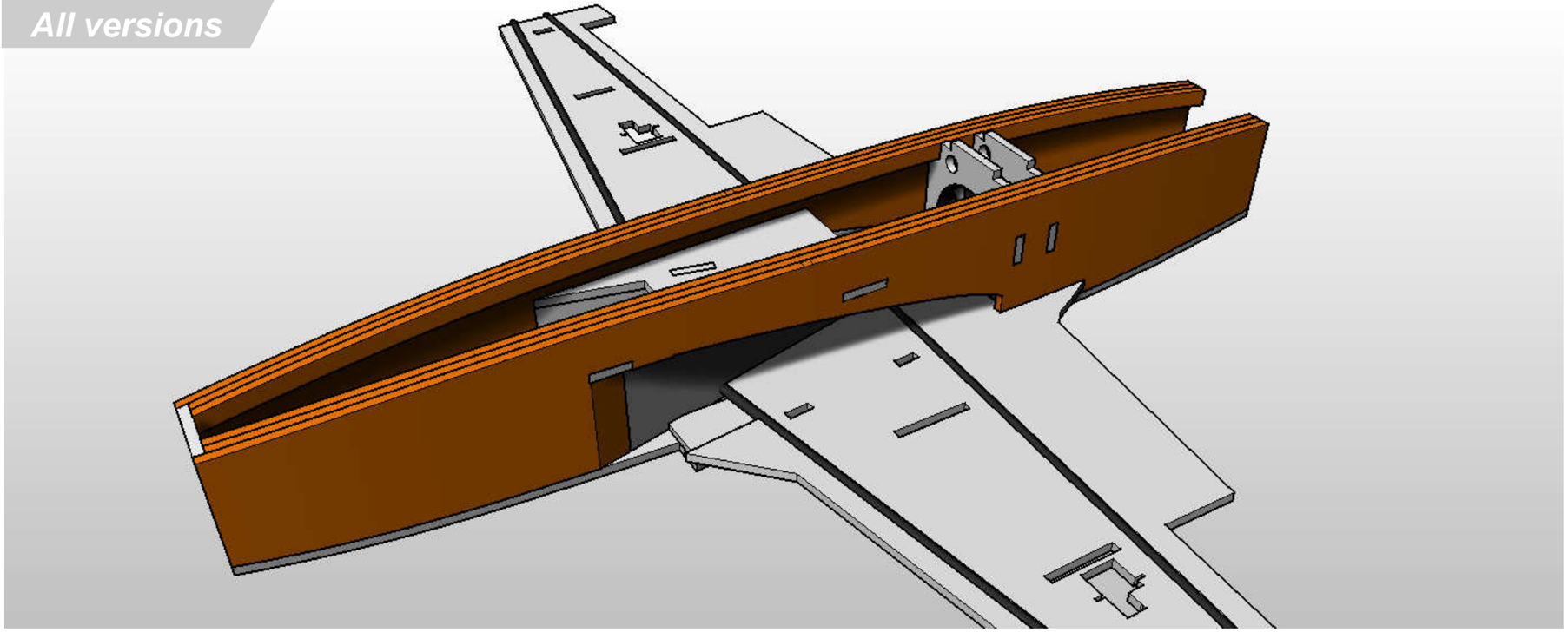
Glue the **RX Shelf** to the assembly.

All versions



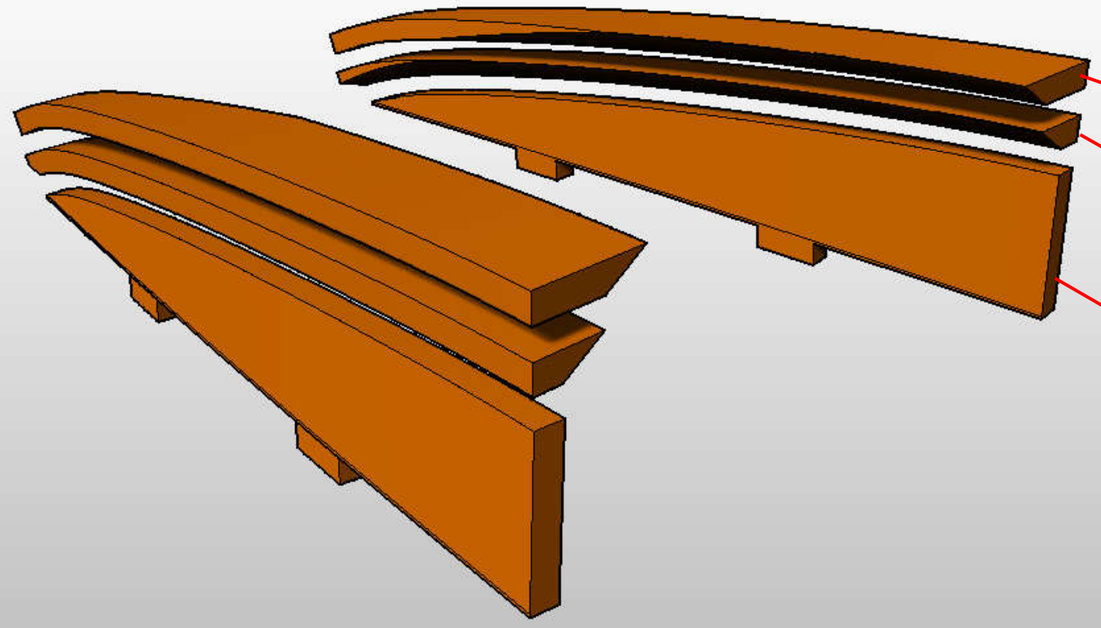
Glue the **Upper Corner reinforcers** to the **Fuselage sides (Inner)**

All versions



Glue the fuselage sides onto the airframe.

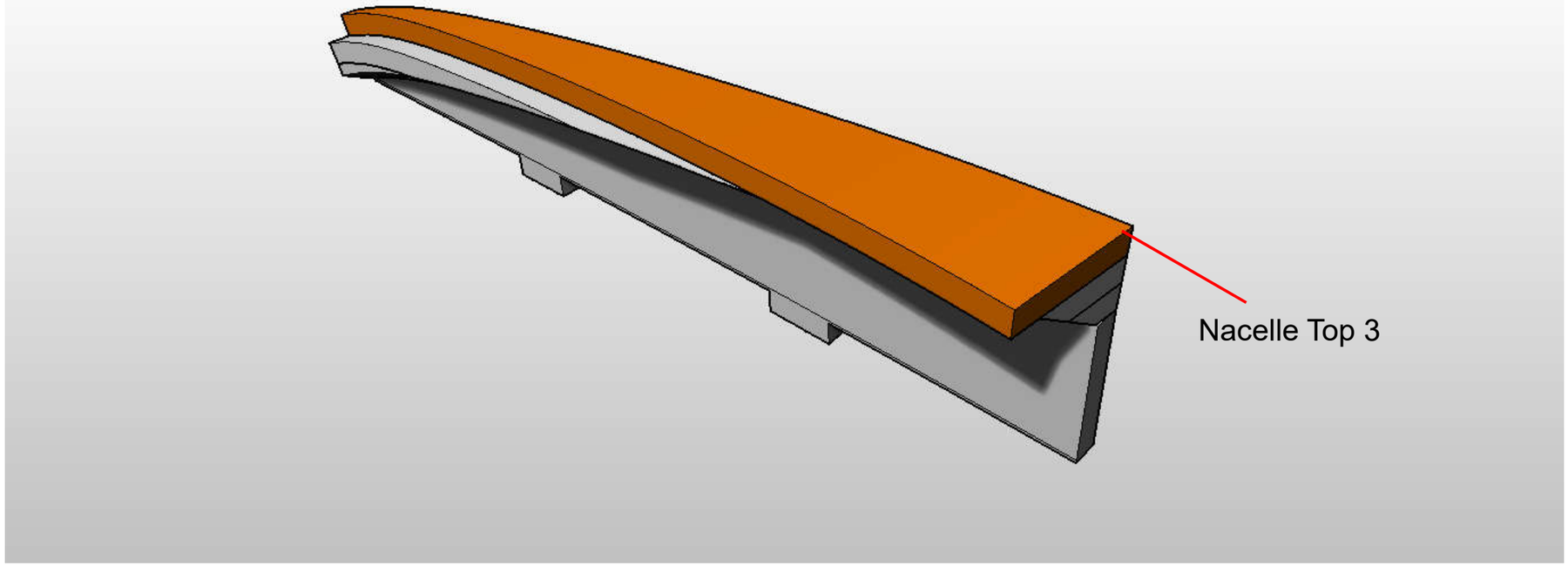
All versions



Pre shape and sand all the **Nacelle pieces** as shown.

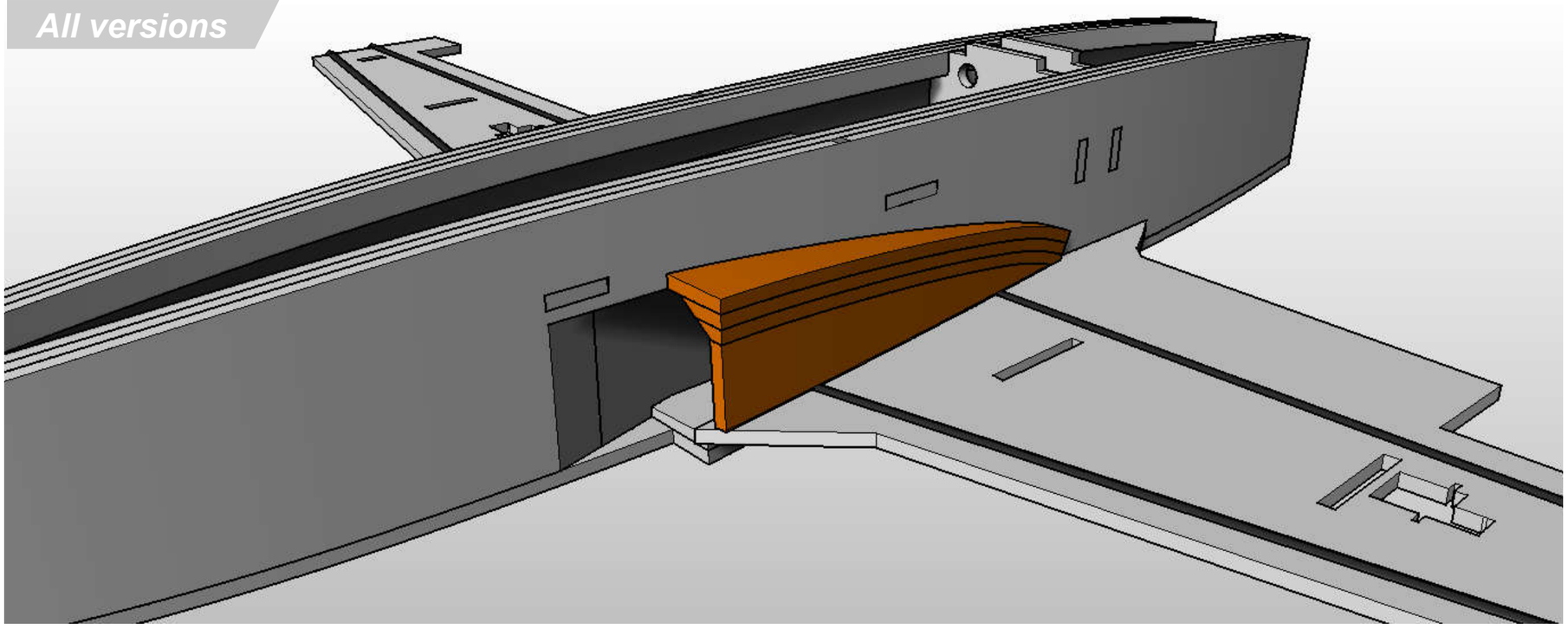
Glue together the two mirrored pair.

All versions



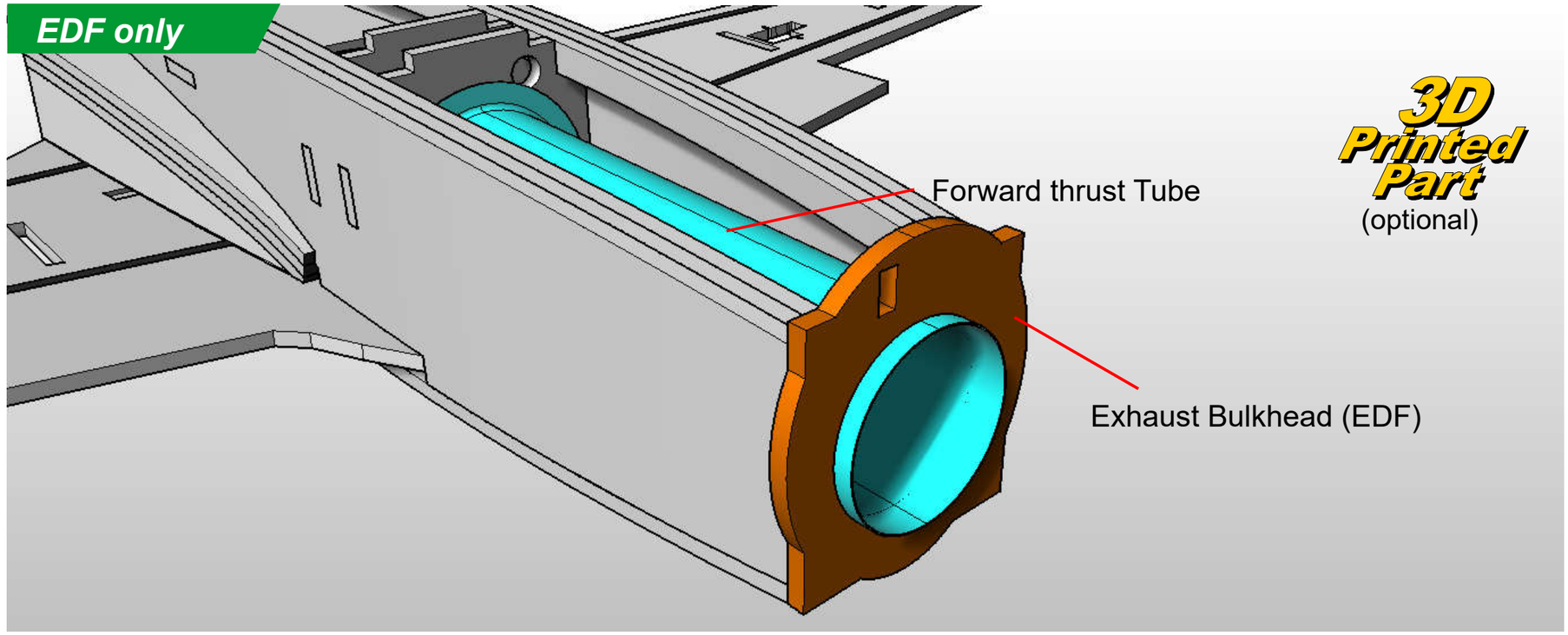
Glue the **Nacelle Top 3** on to the Two mirrored Nacelle assemblies aligned to the outer edge as shown.

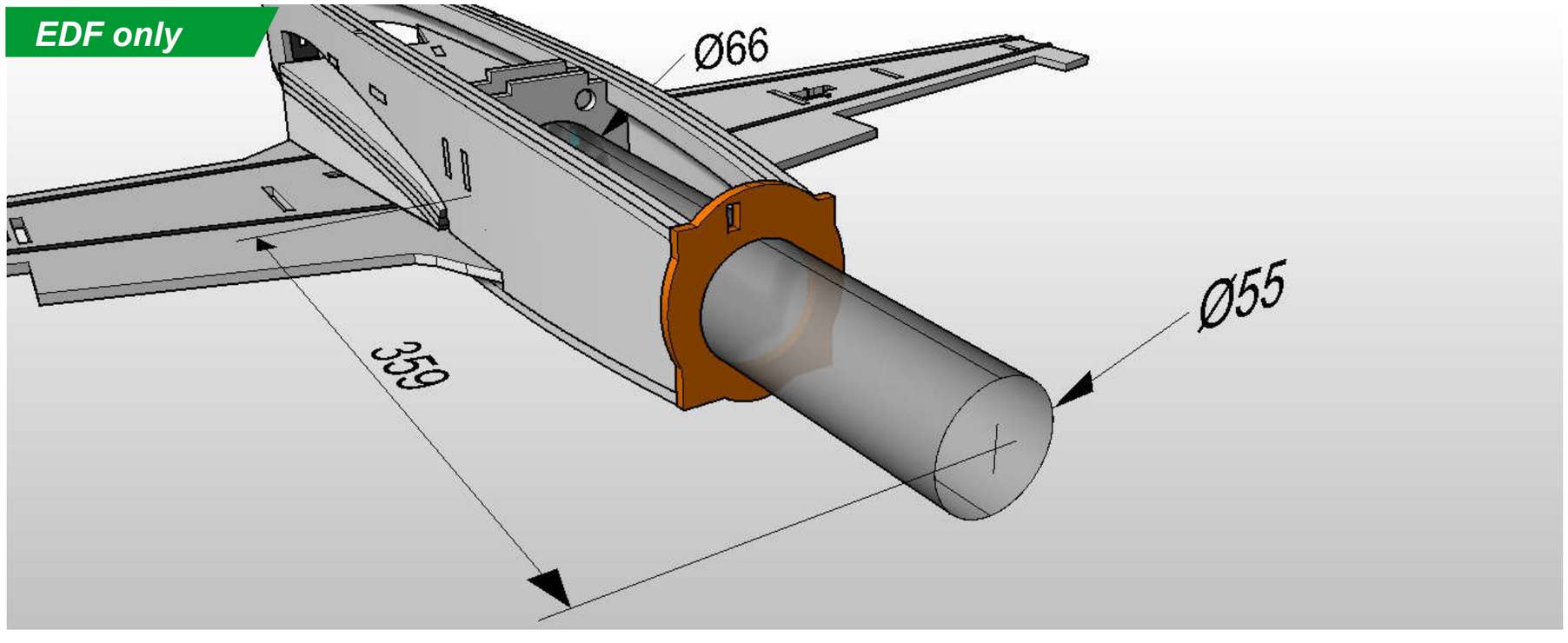
All versions



Glue the Nacelle sides onto the assembly.

You will need to sand away a small area behind the 3D printed intake duct to ensure a good fit.





3D print the **Forward Thrust Tube**

or fabricate the entire Thrust tube using <0.5mm plastic sheet using the dimensions shown in the image (64mm)

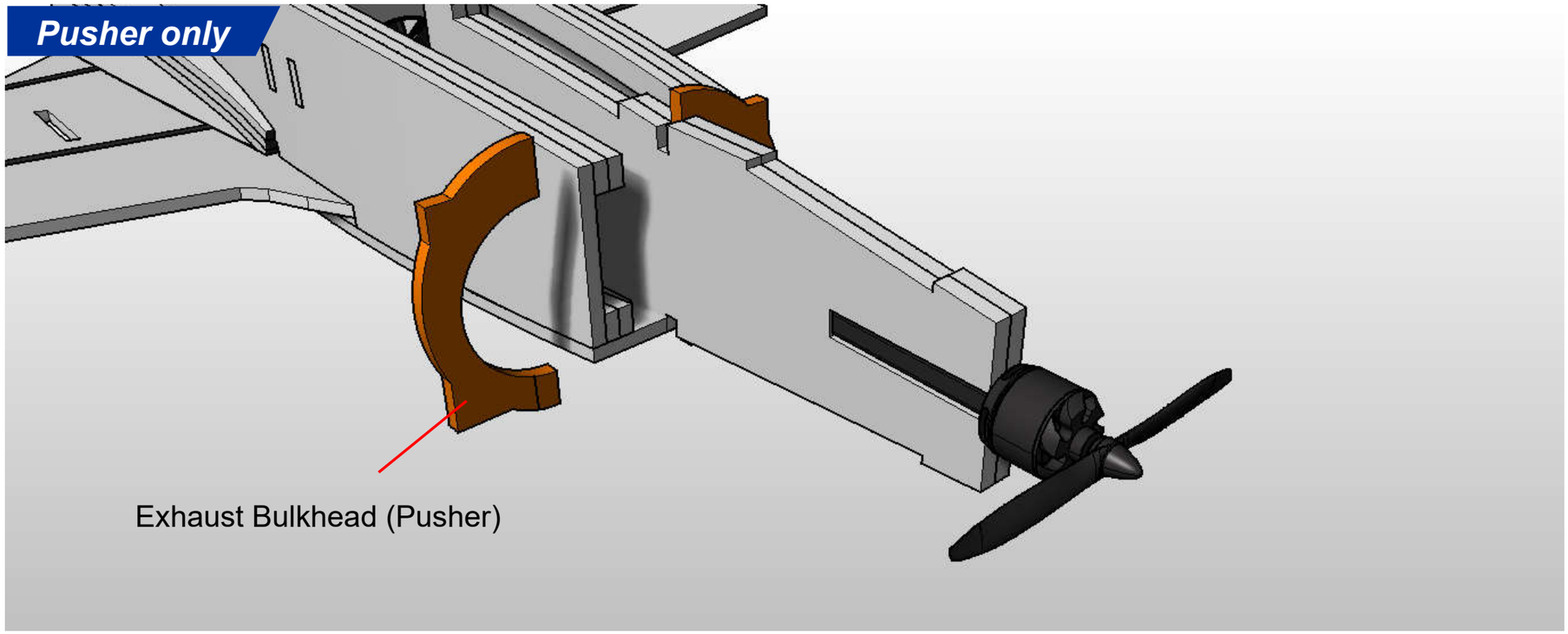
For 70mm EDF the Thrust tube sizes are :-

Inlet Dia = 72mm
Length = 359mm
Outlet Dia = 61mm

Glue to the rear face of he EDF bulkhead (rear) using scrap depron to support it (non 3d printed tube)

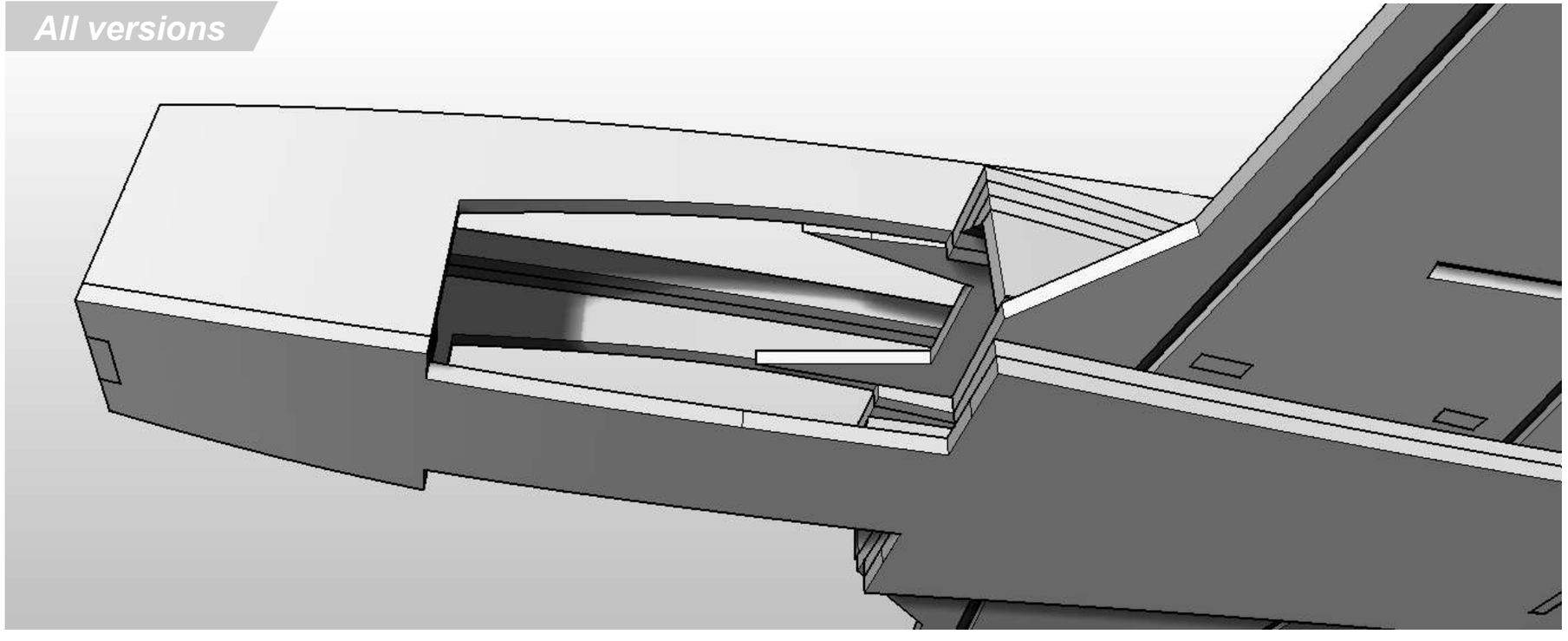
Glue the **Exhaust Bulkhead** in place.

Pusher only



Glue the **Exhaust Bulkhead (Pusher)** in place.

All versions



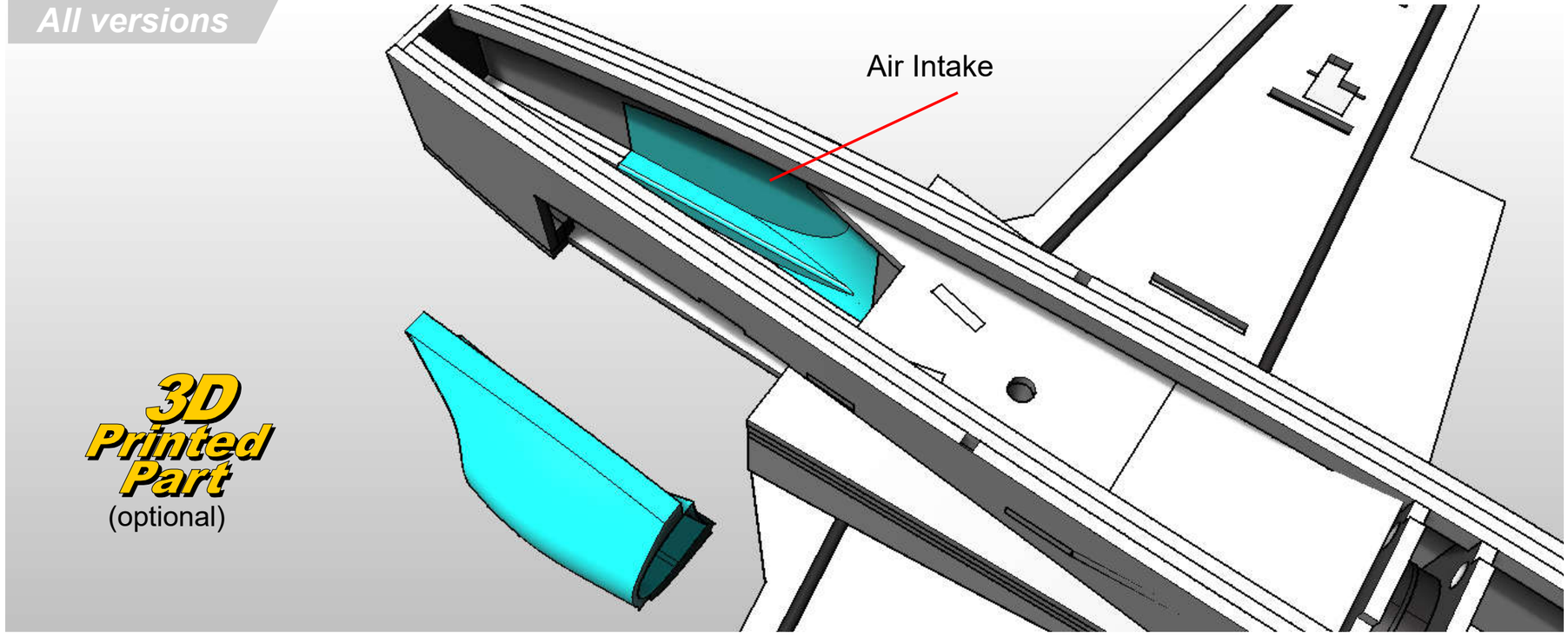
3D Printed air intakes only

Carefully trim away the areas indicated on the plans in order to make space for the 3D printed **Air Intake.**

Align to the inside faces so that they are flush.

The non-3d printed air intakes will be done later in the build.

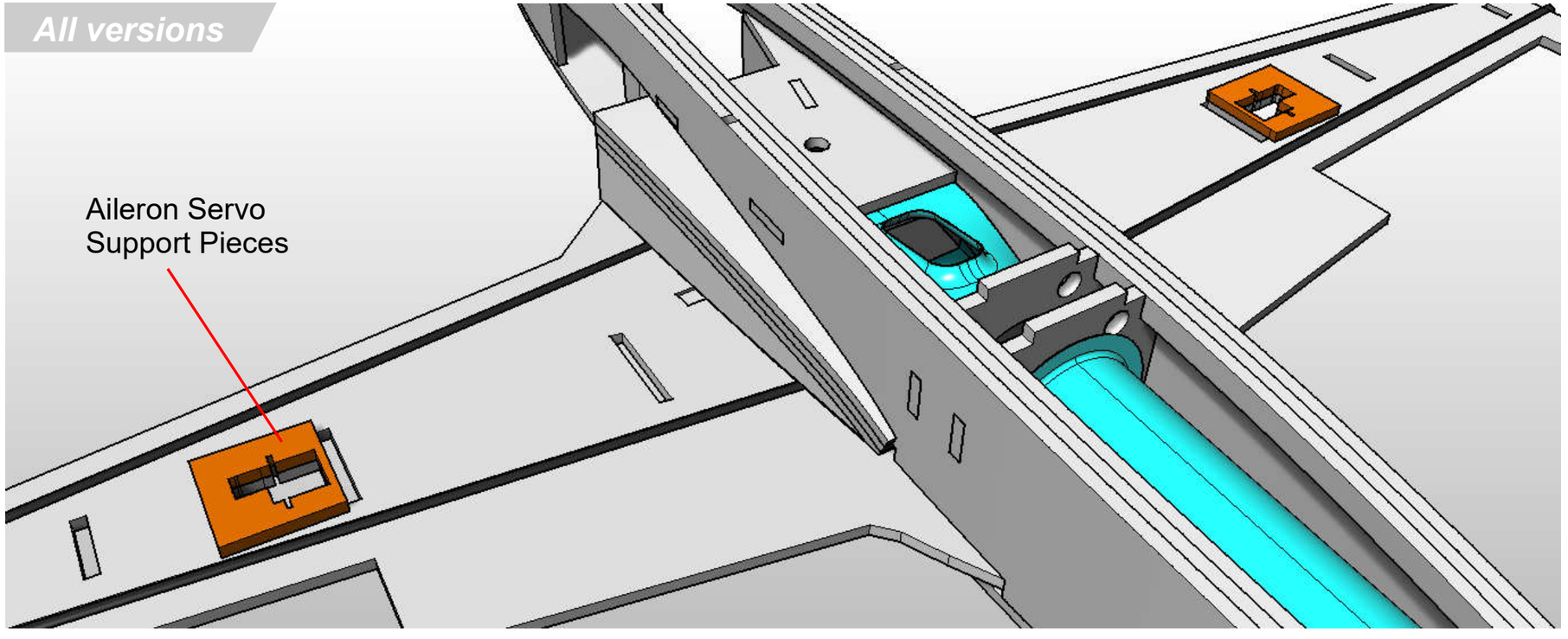
All versions



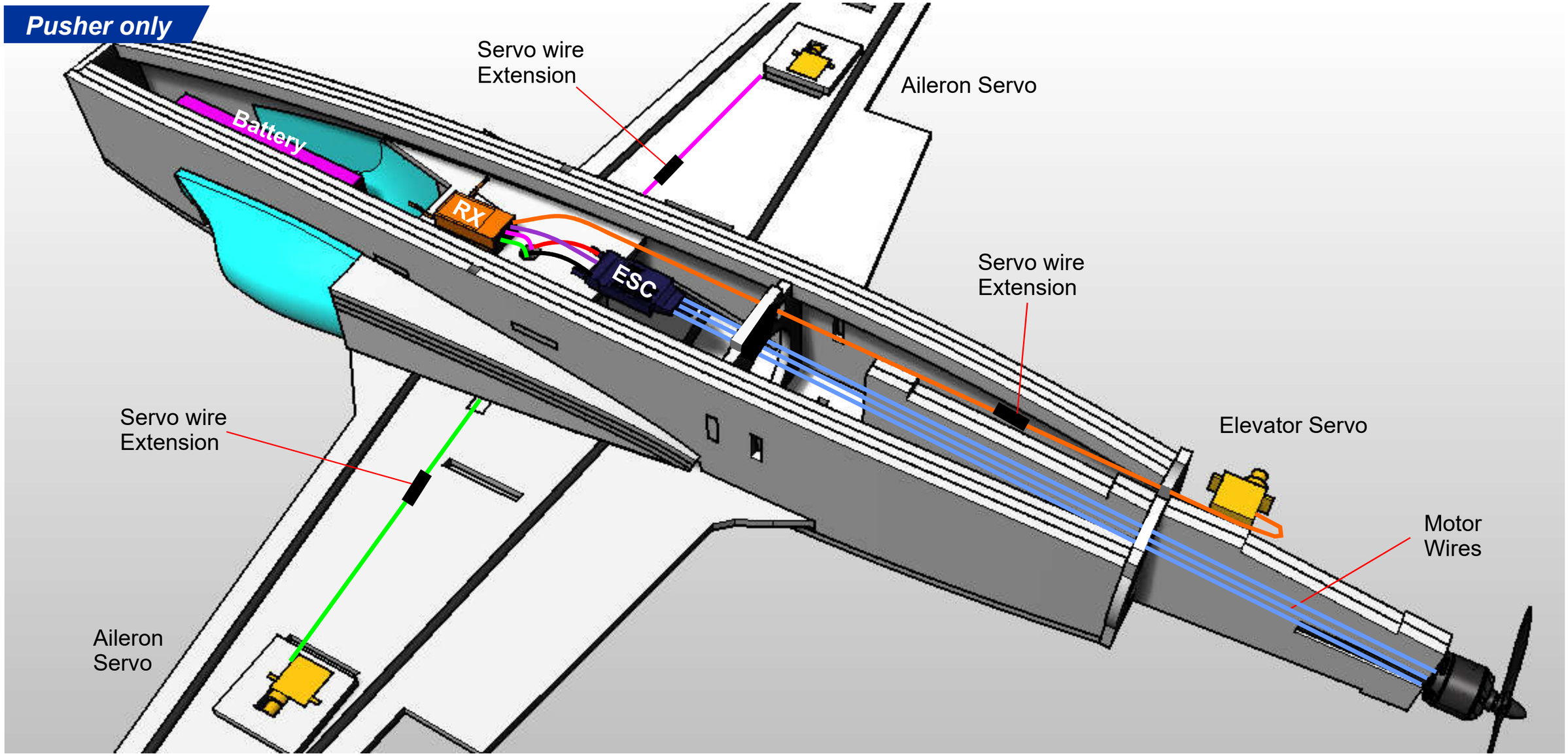
3D Printed air intakes only

Glue the intakes into the area cut away using a non-contact adhesive such as epoxy or BSi foam-Cure

All versions

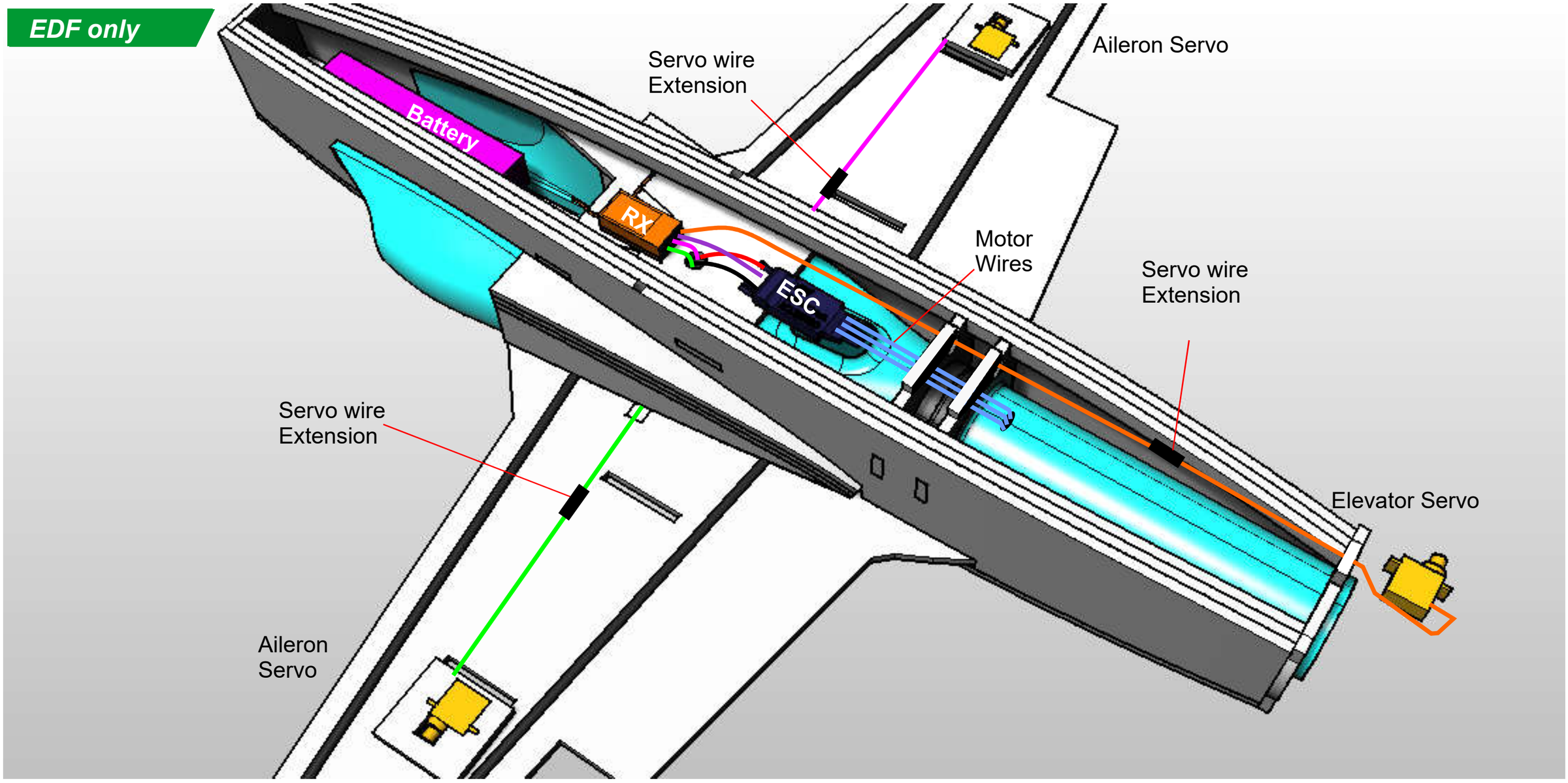


Glue the **Aileron Servo Support Pieces** to the wing base using UHU PORepoxy or BSi foam-Cure



PUSHER VERSION

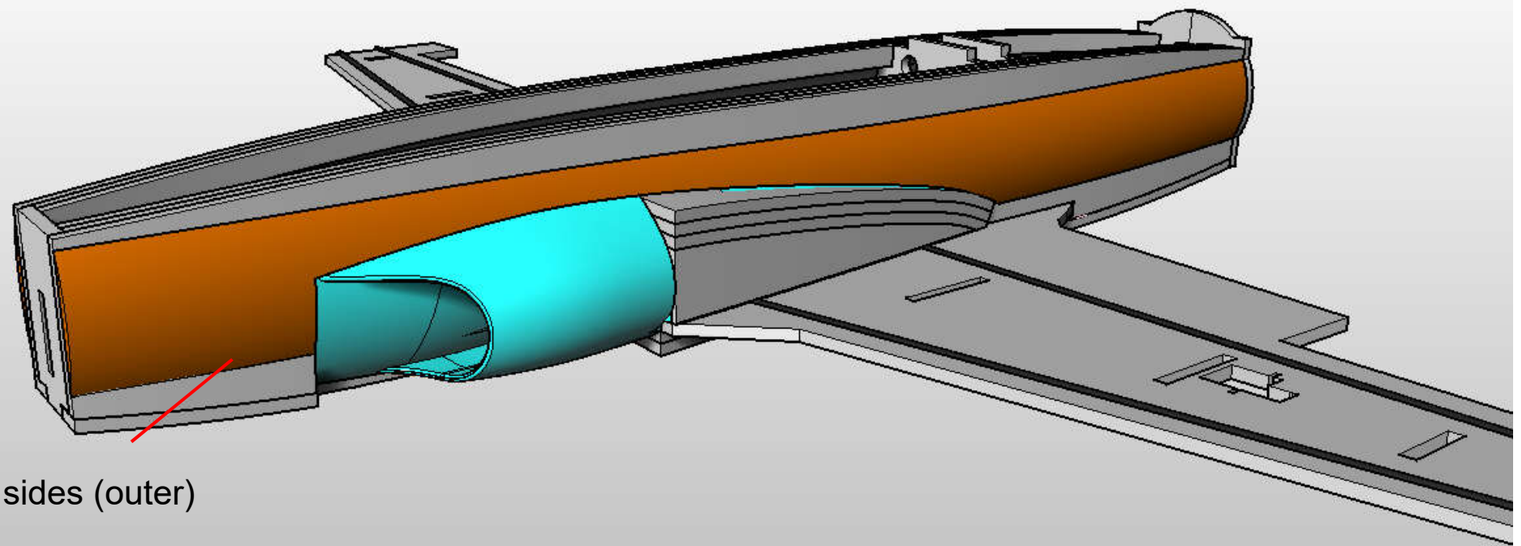
- Run the ESC battery cables into the forward fuselage battery area to a battery connector under the TX tray. Run the Servo cable from the ESC to the RX.
- Run **all** servo cables to the RX, using servo extension cables if required.
- Once wired up, thoroughly test all electronics to ensure they function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

All versions

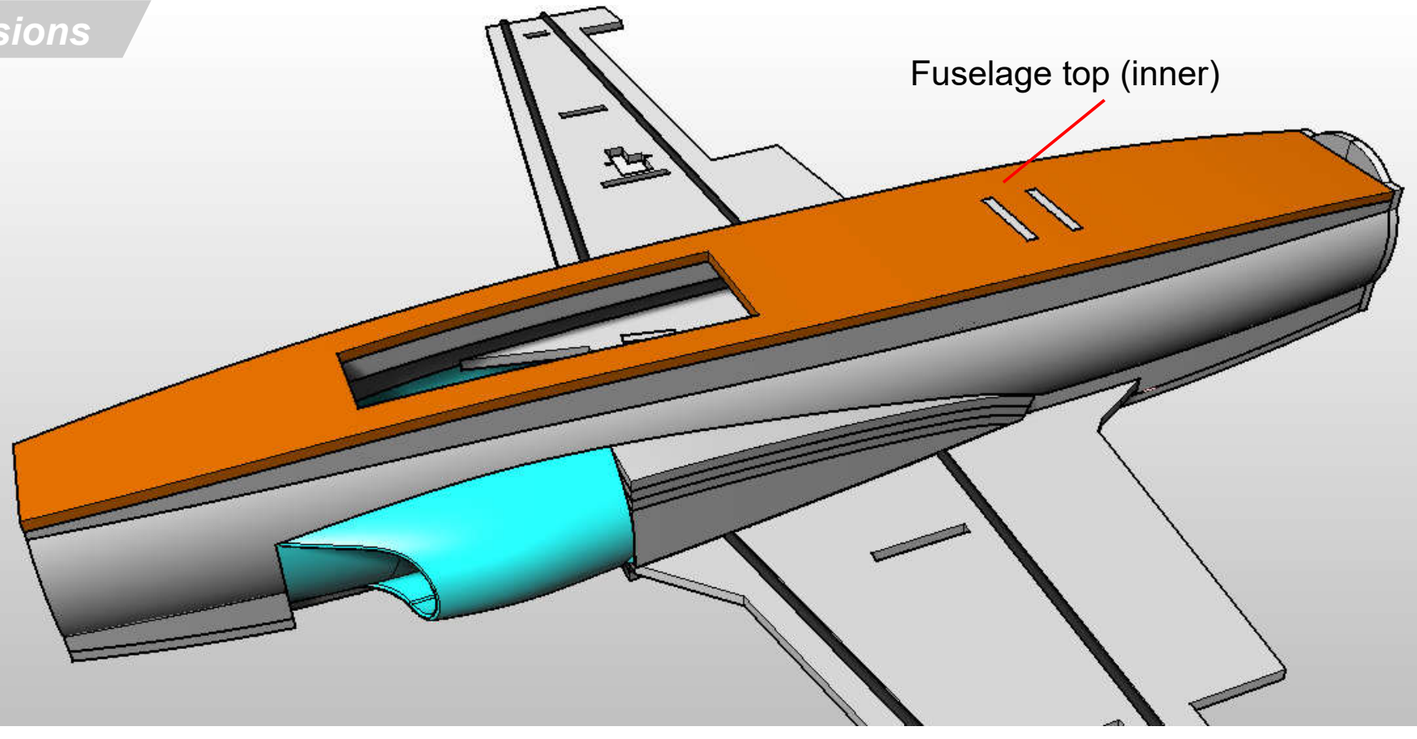


Fuselage sides (outer)

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

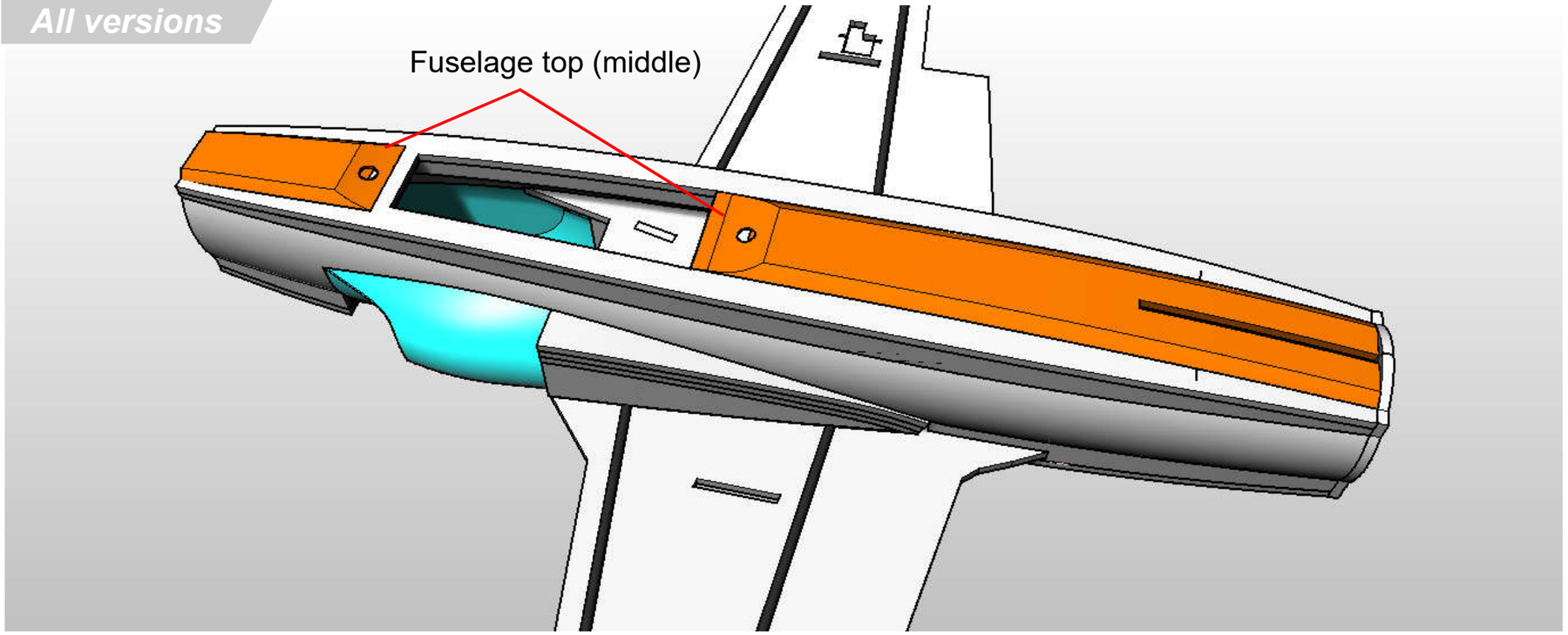
Trim away the area around the 3D Printed intake if you have chosen this option.

All versions



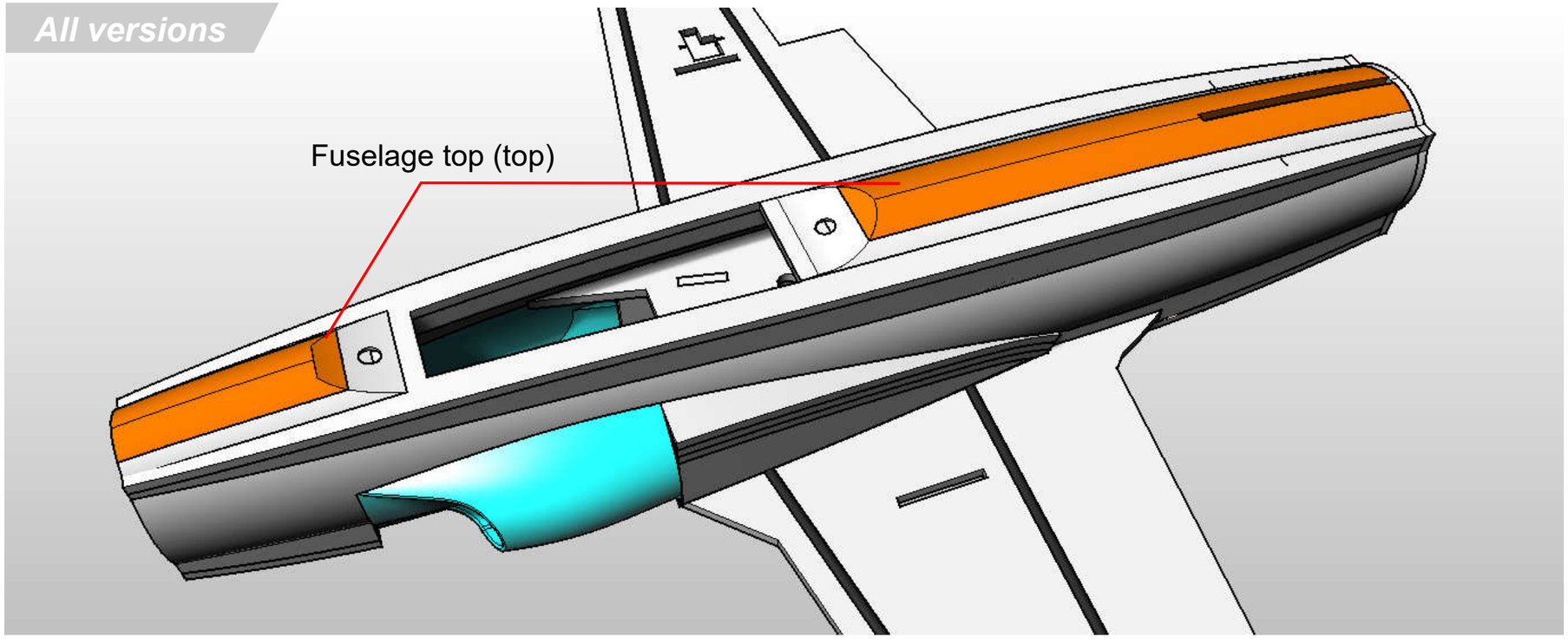
Glue the **Fuselage Top (inner)** in place.

All versions



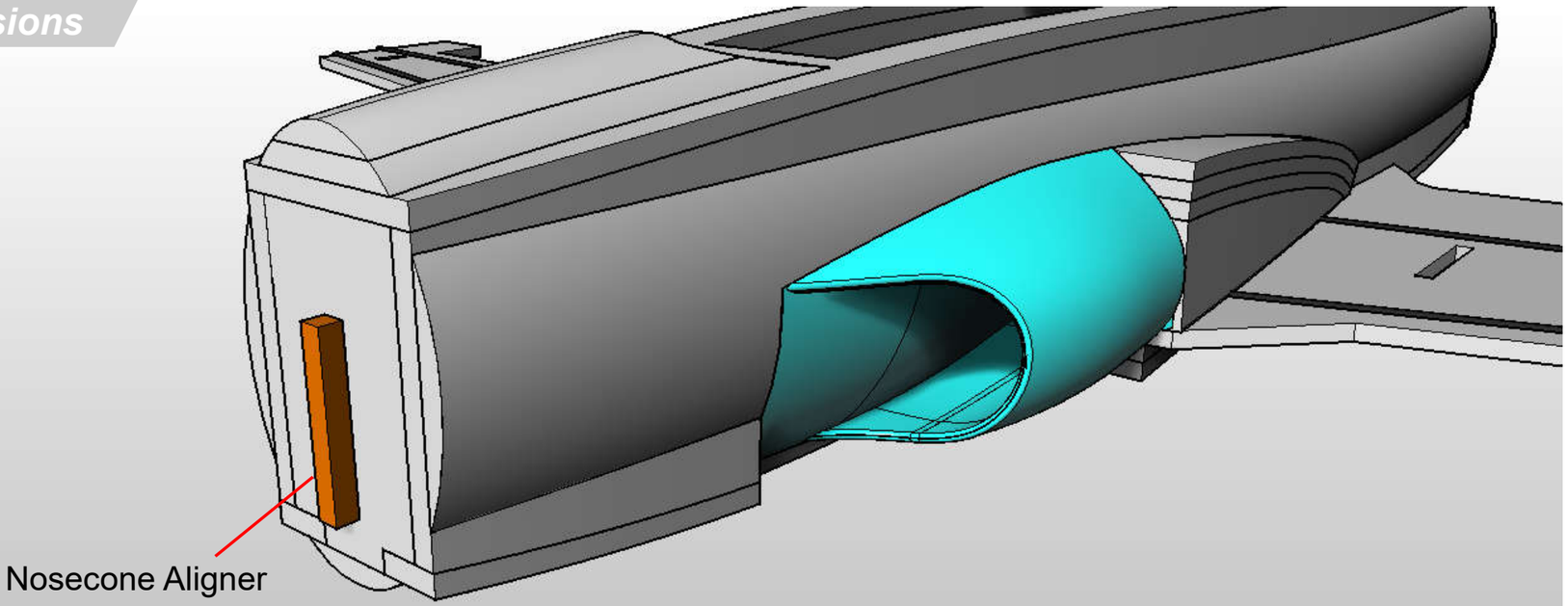
Glue the **Fuselage Top (Middle)** in place.

All versions



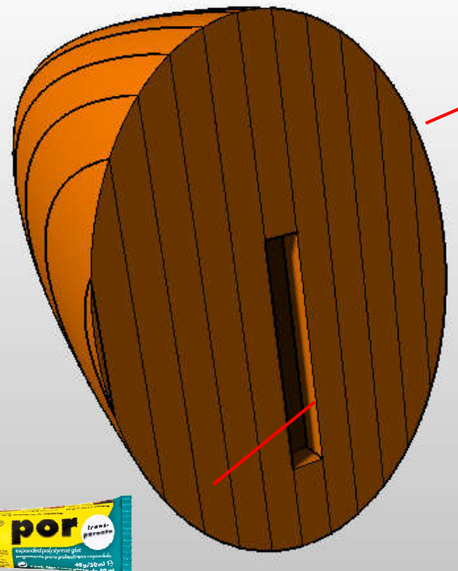
Glue the **Fuselage Top (Top)** in place.

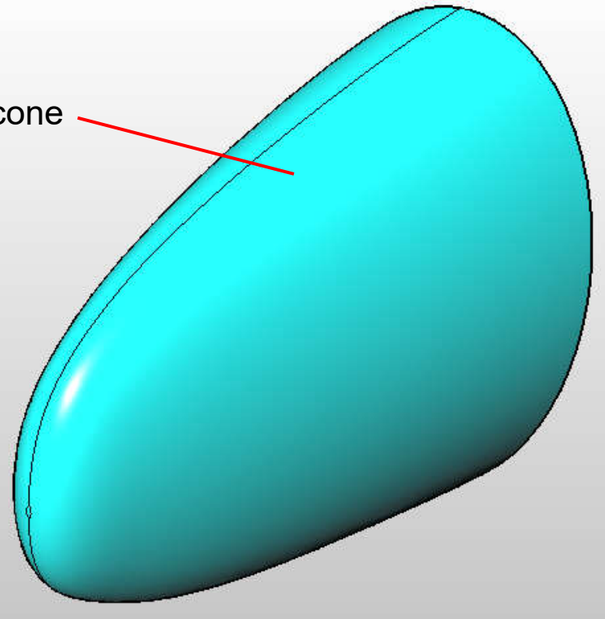
All versions



Glue the **Nosecone Aligner** in place

All versions



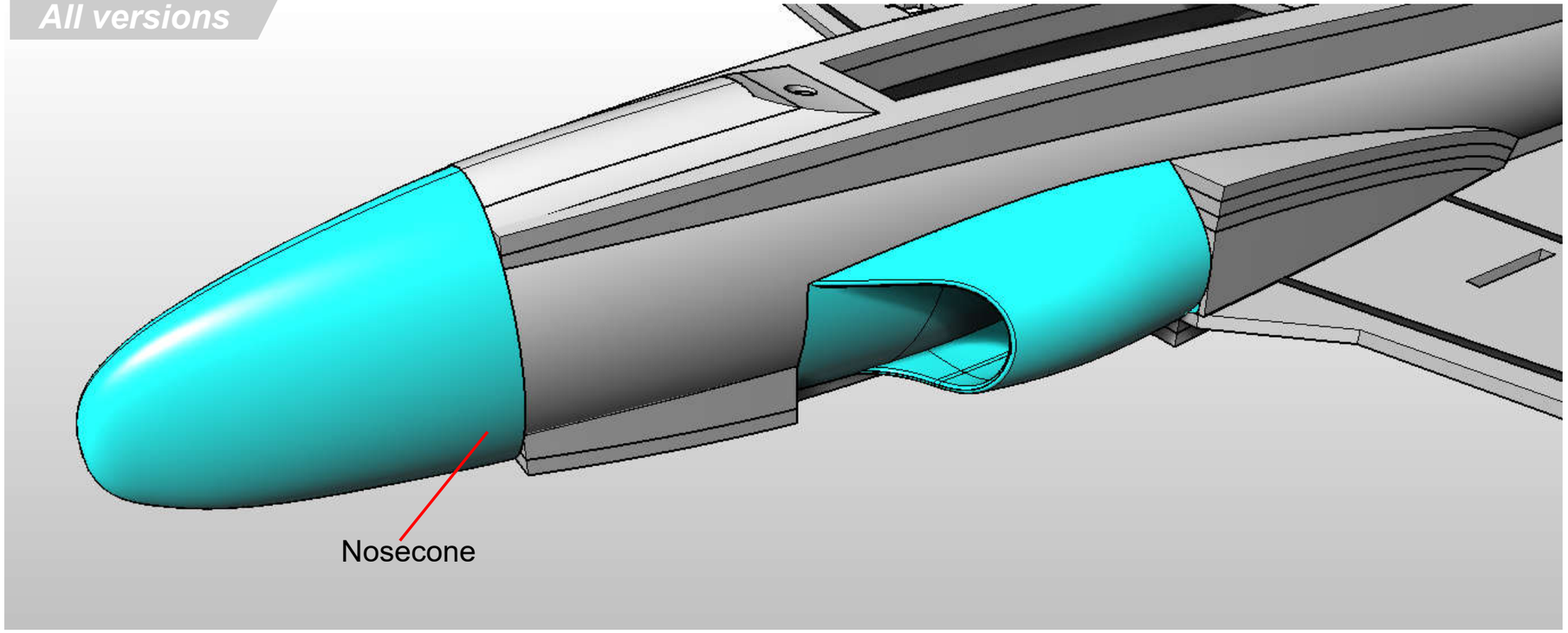


3D Printed Part
(optional)

Fabricate the **Nosecone** from layers of 6mm foam - noting that their is a single layer on centreline with the recess for the nosecone aligner within it.

or 3D print one.

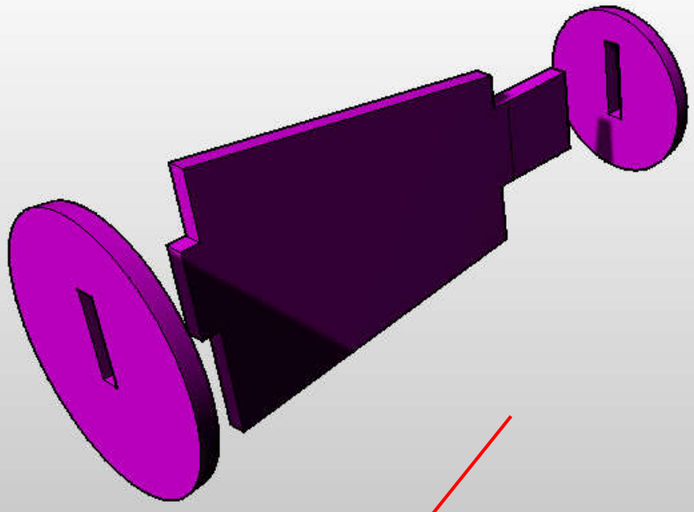
All versions

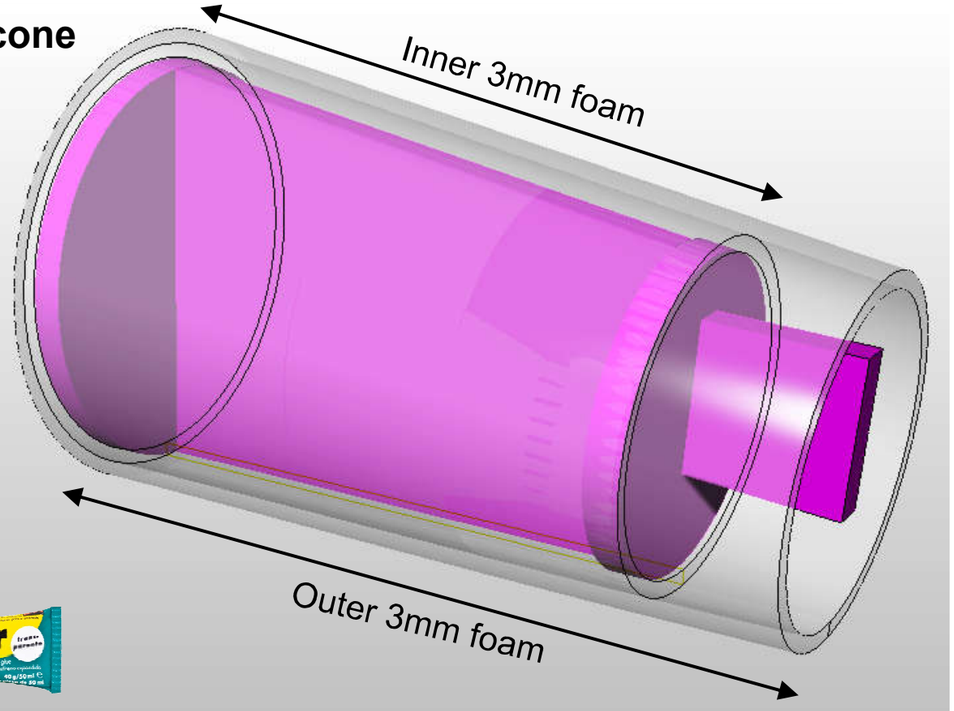


Glue the **Nosecone** in place

All versions

NON-3D printed Tailcone





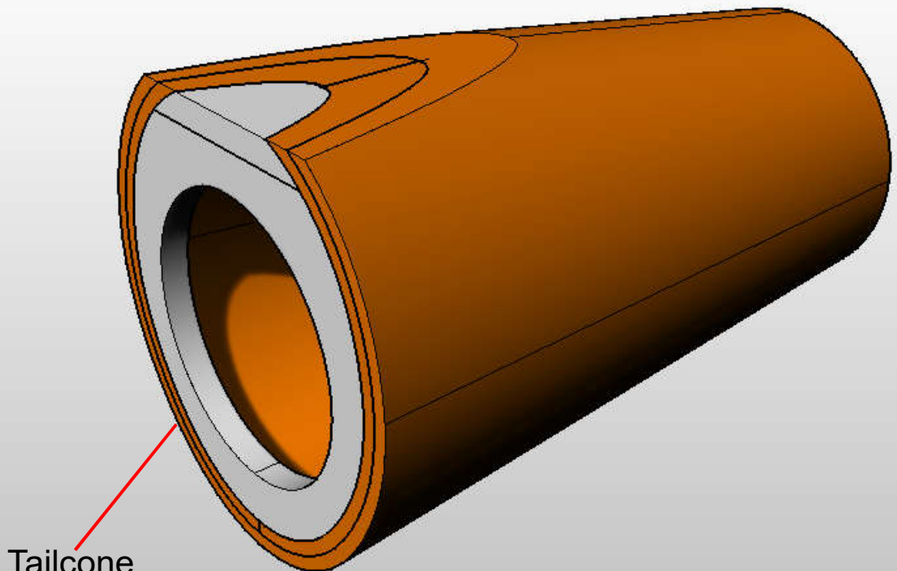
Tailcone

Glue the Tailcone JIG pieces together

Wrap the inner 3mm foam around the two circular Jig parts (do not glue to jig) Trim the length to match the two circular parts.

With the seam on the opposing side, glue the outer 3mm piece to the inner piece. but extend the rear past, trimming in line with the protruding tab on the jig as shown

All versions



NON-3D printed Tailcone

Glue the Tailcone Inner pieces together at exactly 90 degrees angle.

Glue the Inner pieces into the cone, using a marked centreline to help position it accurately.

Sand the flat area at the top of the cone 90 degrees to the mounting face.

EDF only

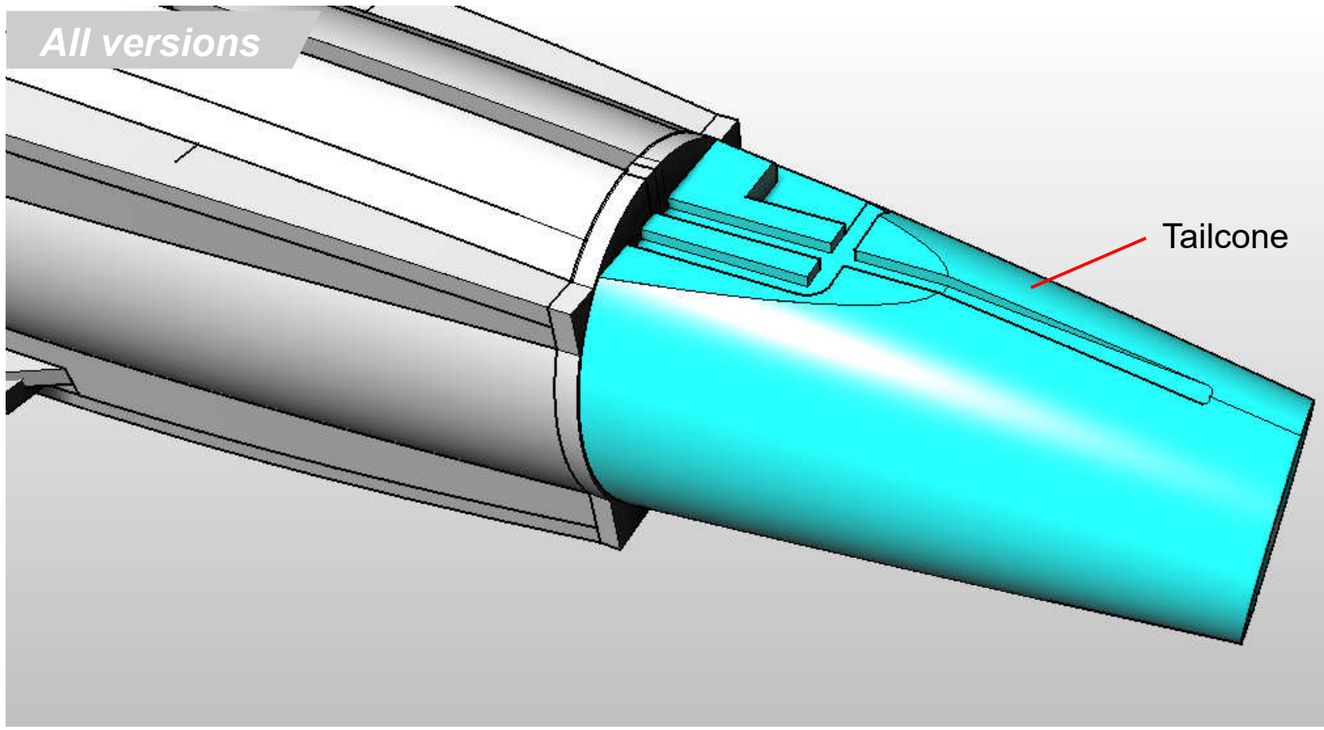
Pusher only

Ensure that the tailcone flat area is horizontal.

EDF Version.
Slide the tailcone over the Thrust tube and glue to the exhaust bulkhead.

PUSHER version
Trim away the slots top and bottom of the tailcone mounting face, slide over the pusher motor mount and glue to the exhaust bulkhead.

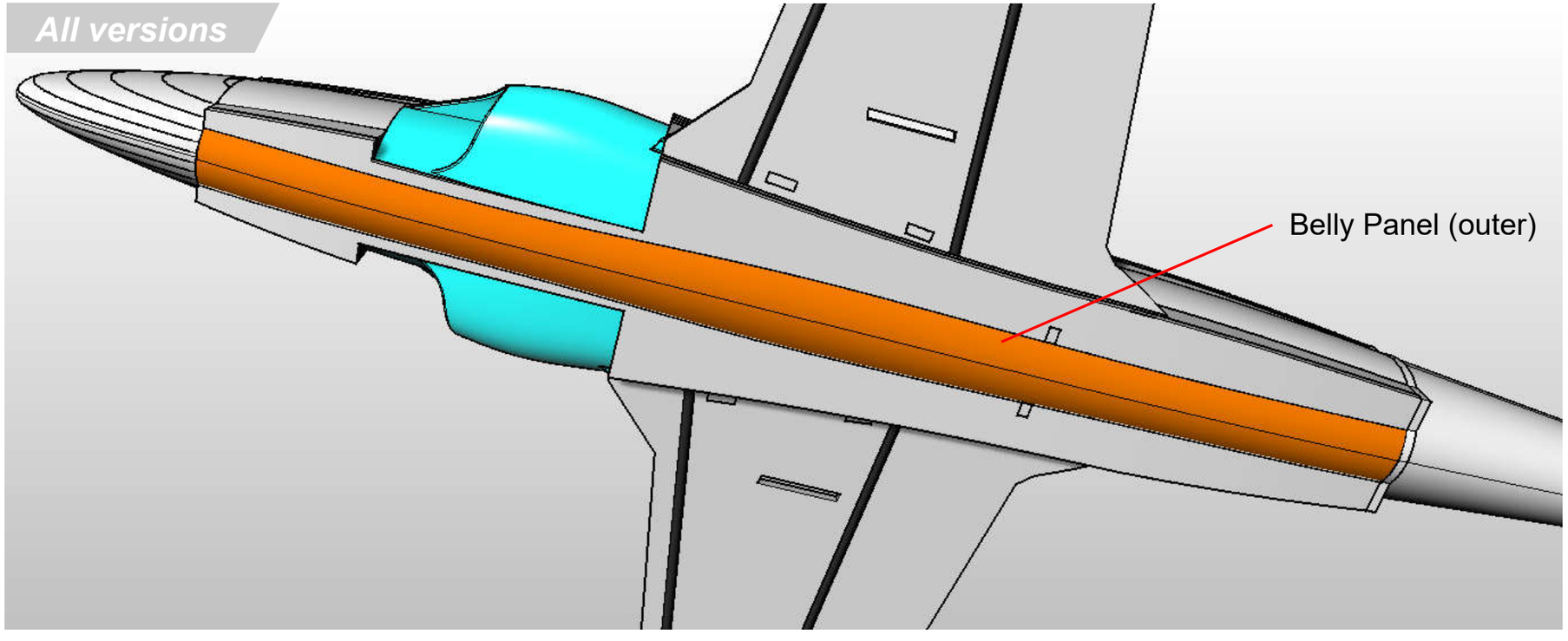
All versions



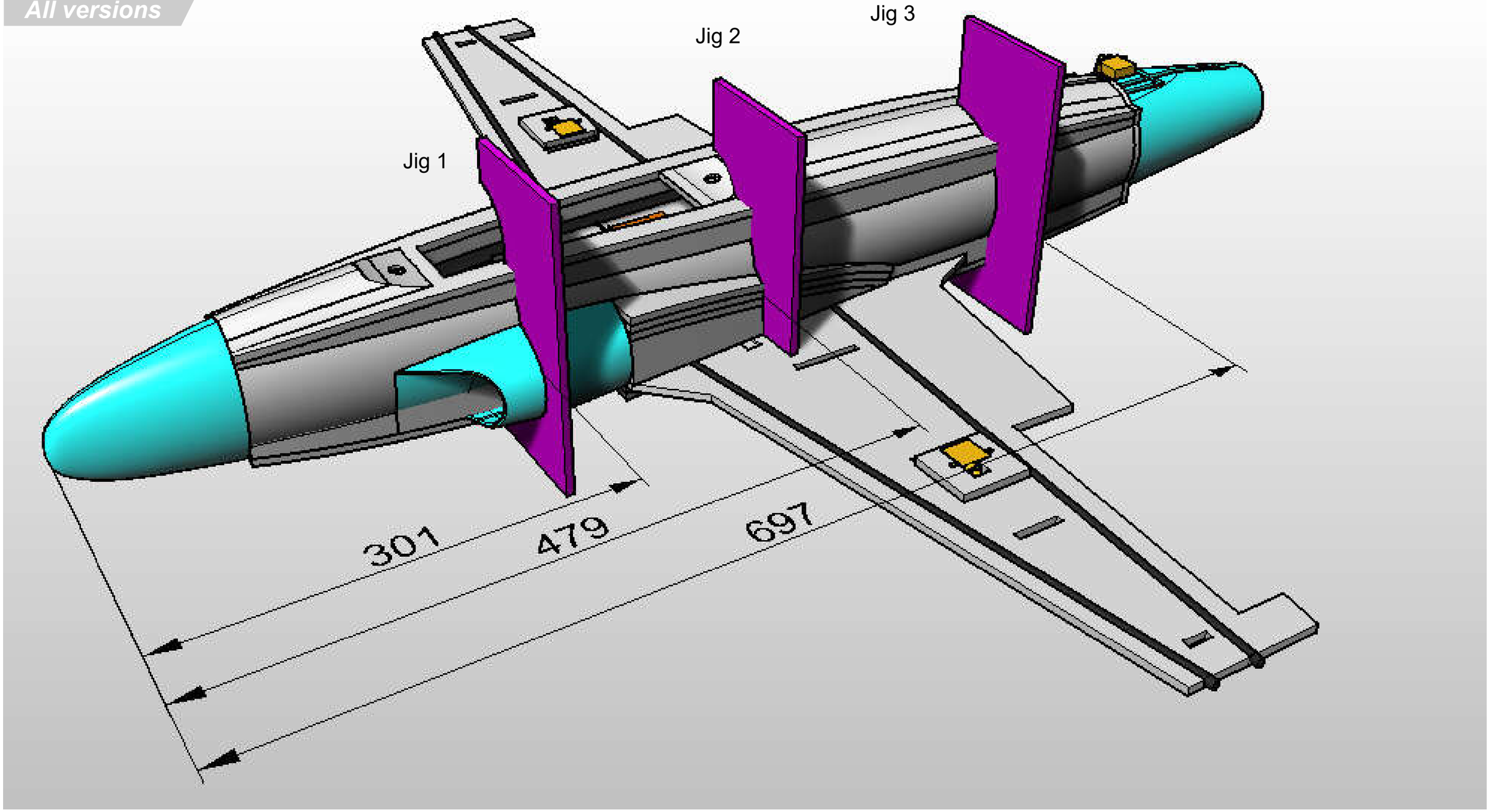
3D Printed Part
(optional)

Glue the **Tailcone** in place

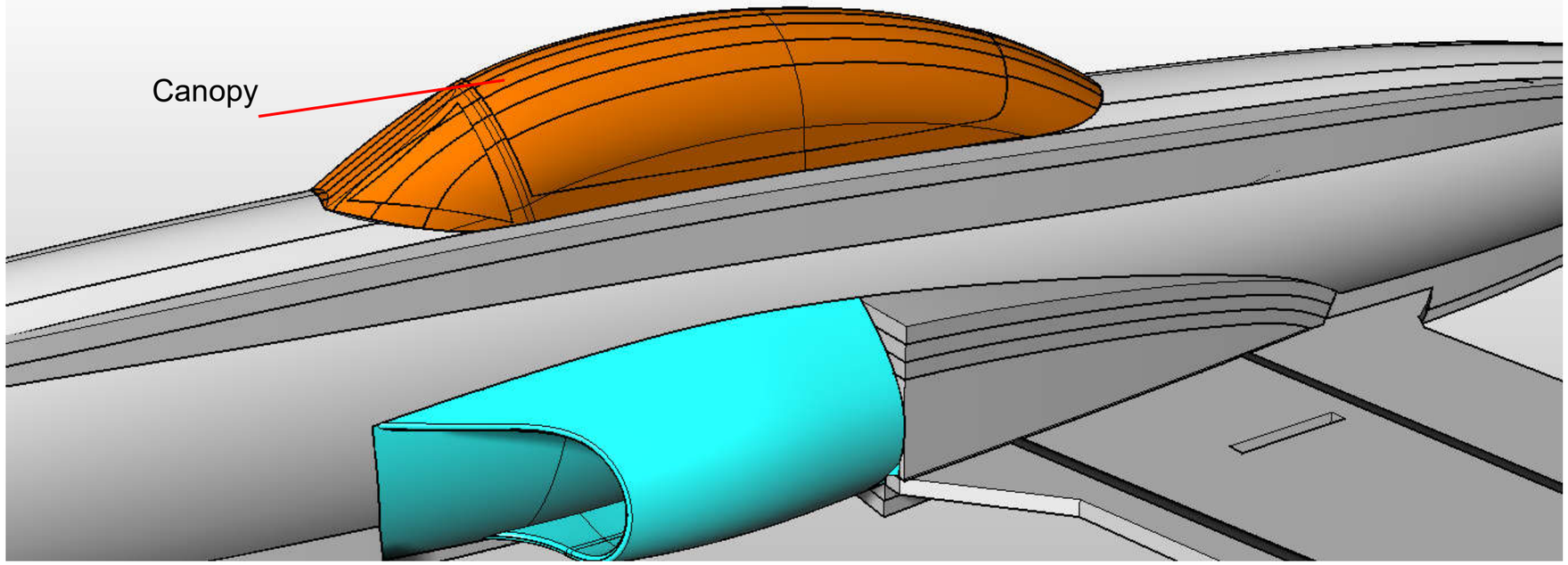
All versions



Glue the **Belly Panel (Outer)** in place.



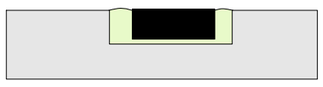
Sand the fuselage to the right shape using the Jigs located as shown.



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

1. press magnet into depron to impress shape.

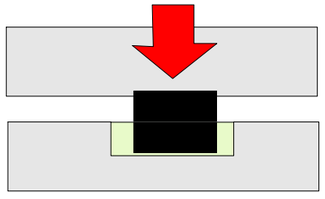
2. Dig out a recess for the magnet using a sharp knife.



3. Apply glue into recess and push magnet into it.

4. Whilst still wet, lay masking tape

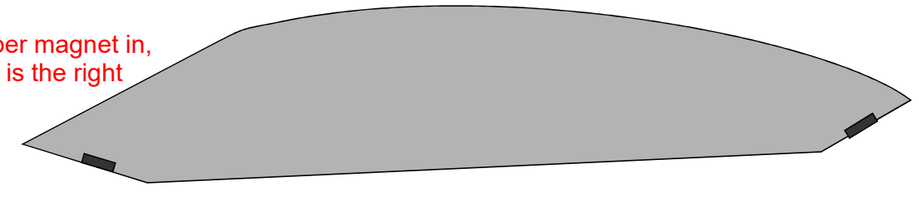
5. When fully cured, remove tape and put adjoining magnet on top



6. When correctly aligned, press adjoining depron onto the sticking up magnet to impress shape.

7. Repeat steps 2-4 for the upper part.

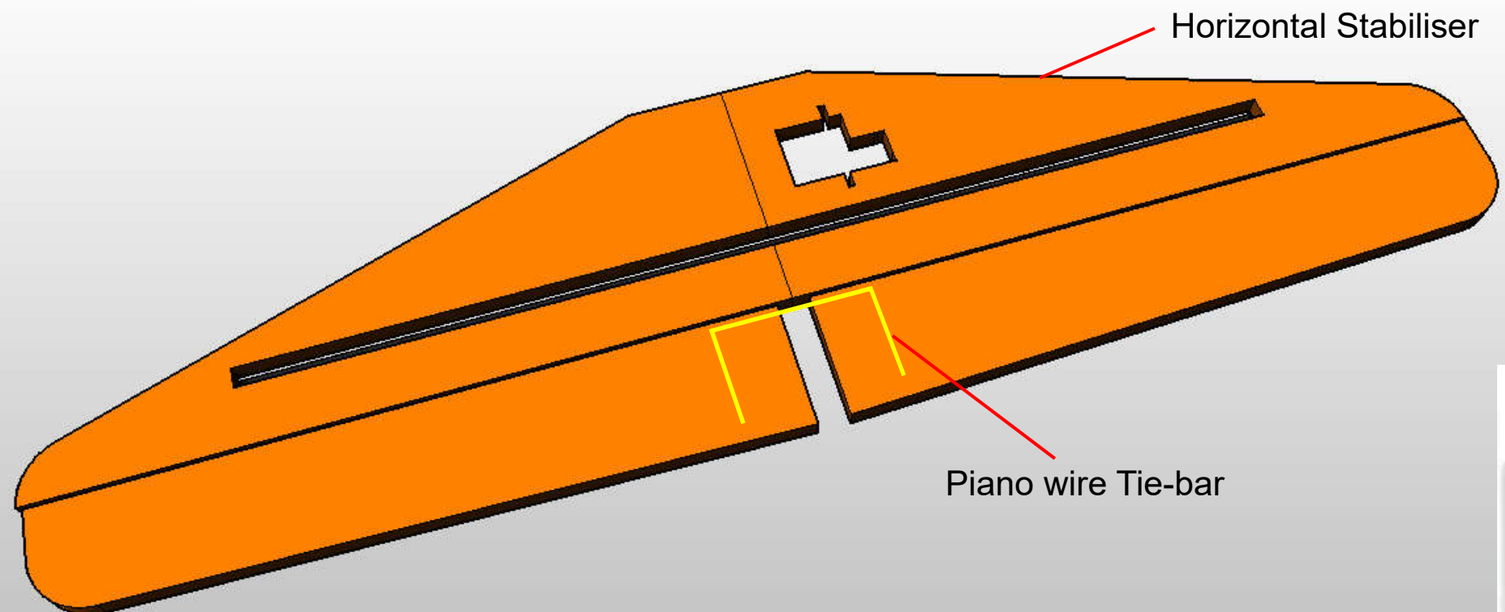
IMPORTANT.
Before glueing the upper magnet in, check that the magnet is the right way around!



Attach the magnets to the fuselage as indicated on the parts.

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

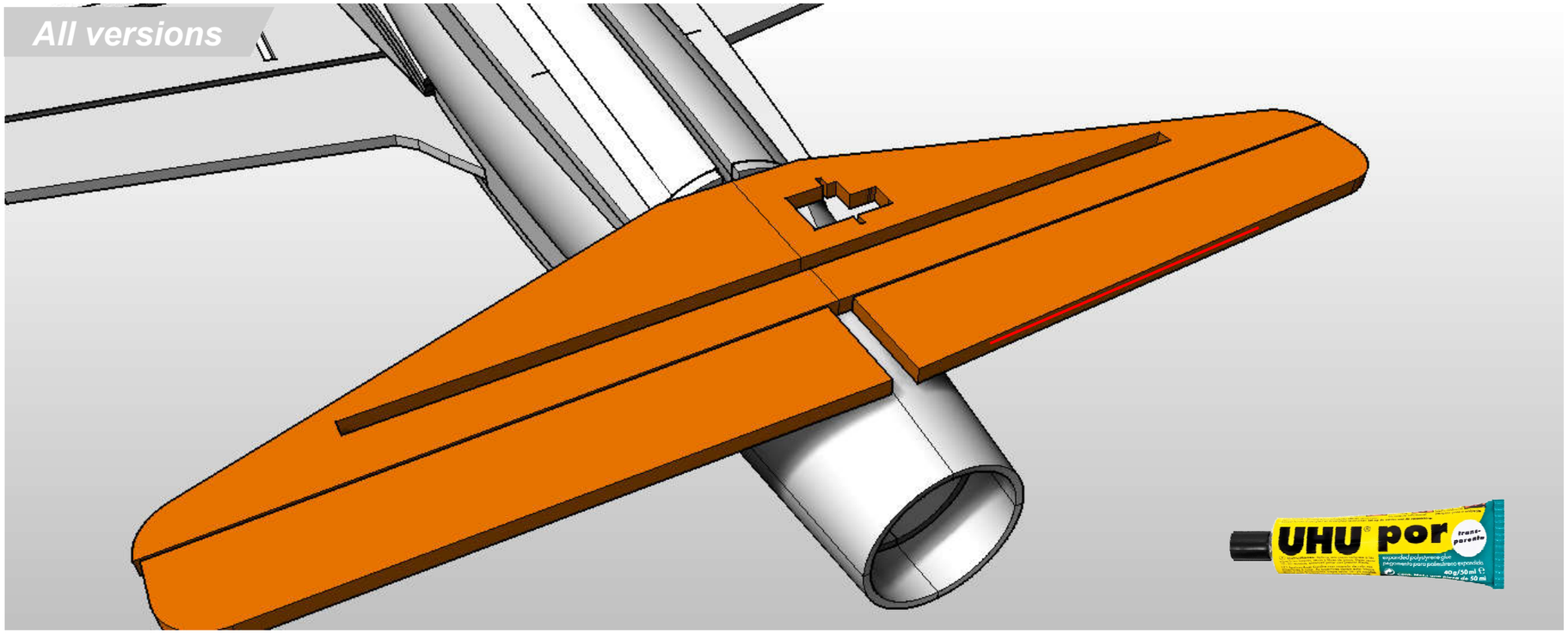
All versions



Glue the carbon tube into the **Horizontal stabliser.**

Attach the elevators to the horizontal stabiliser, including a piano wire tie-bar to enable the single servo to operate both elevators.

All versions



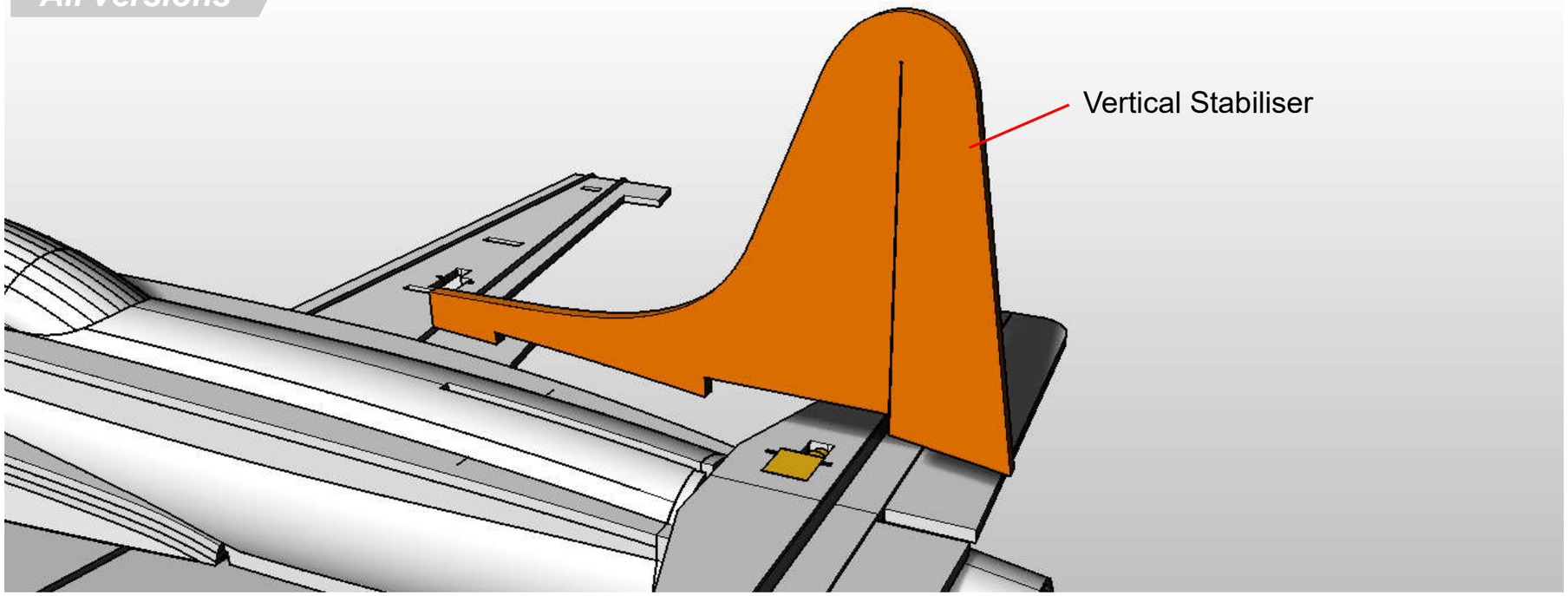
Mark a centreline on the horizontal stabiliser and fuselage.

Trim away the area under the servo hole to allow for fitment of the servo on the non-3d printed version.

Glue the servo into the horizontal stabiliser, connect the servo wire to the servo extension cable.

Glue in place.

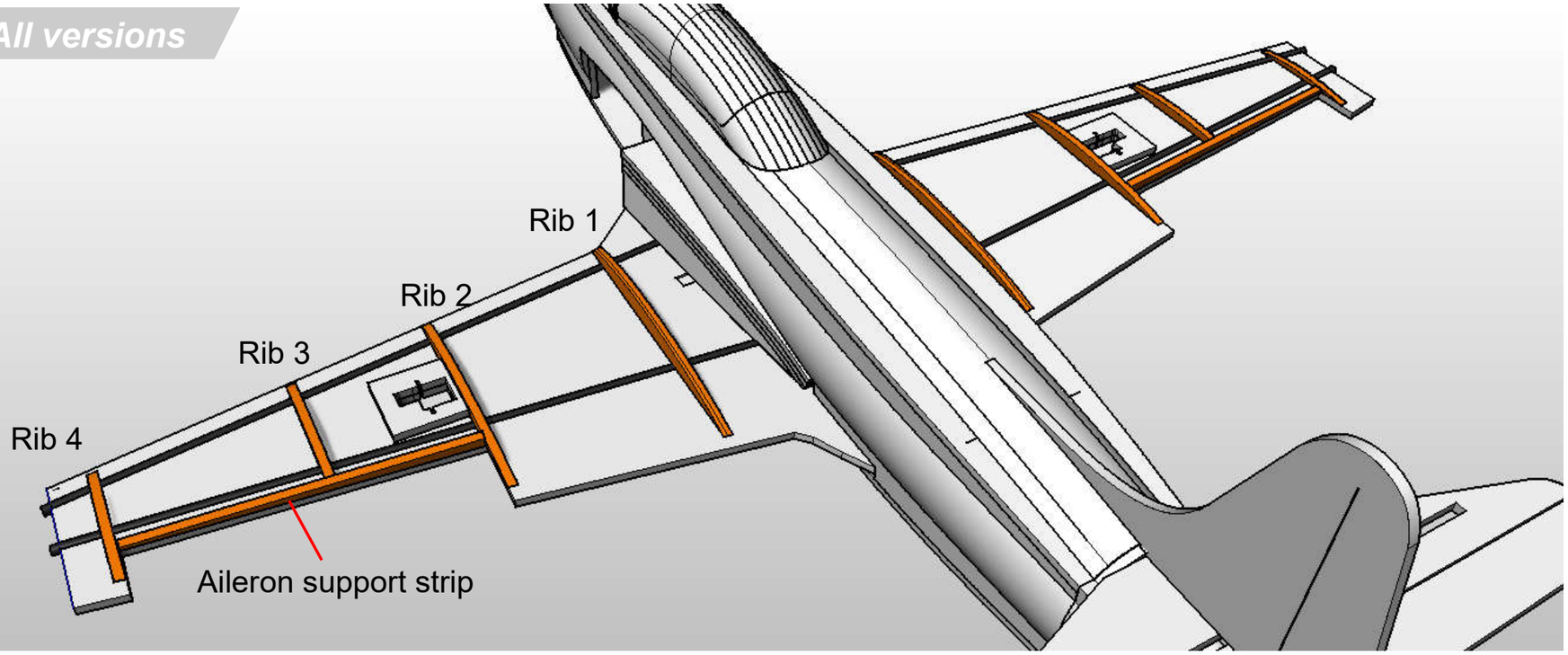
All versions



Glue the 1x6mm carbon strip into the **Vertical Stabiliser** using epoxy.

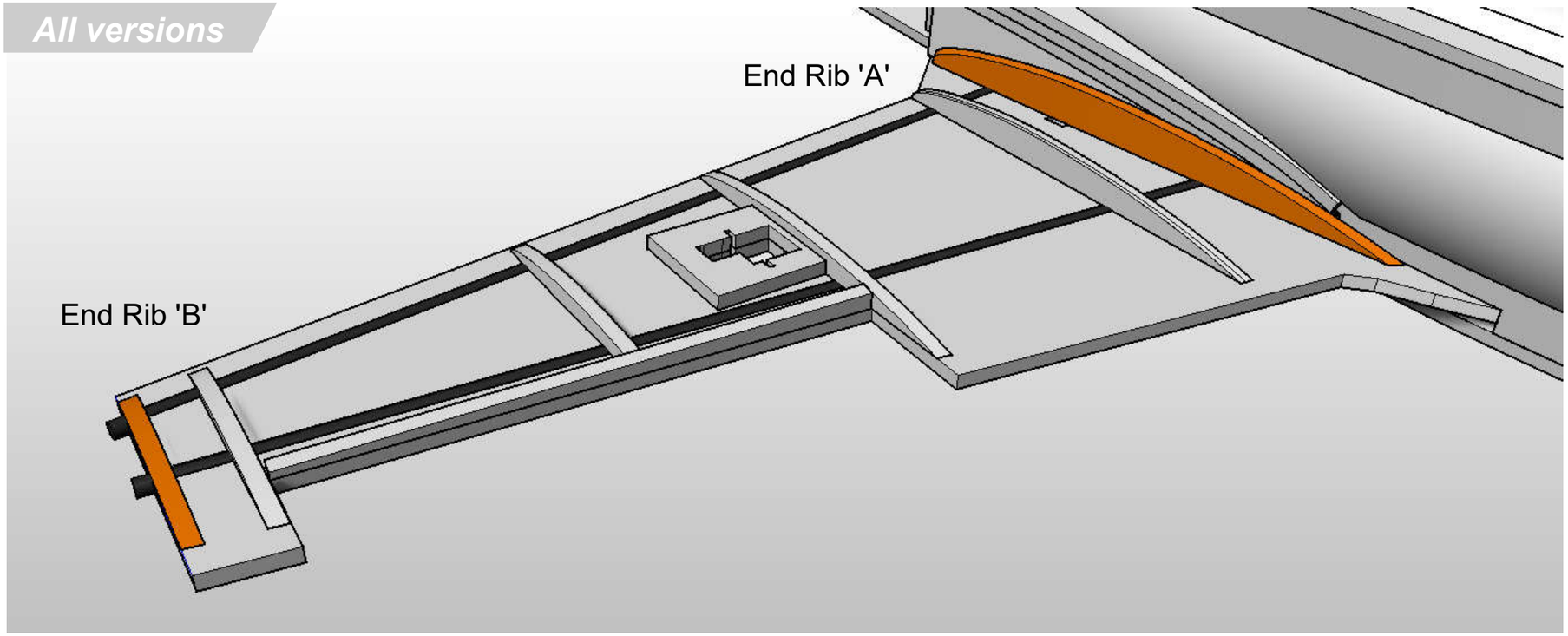
Glue the **Vertical stabiliser** onto the fuselage - ensure it remains completely vertical while the glue sets.

All versions



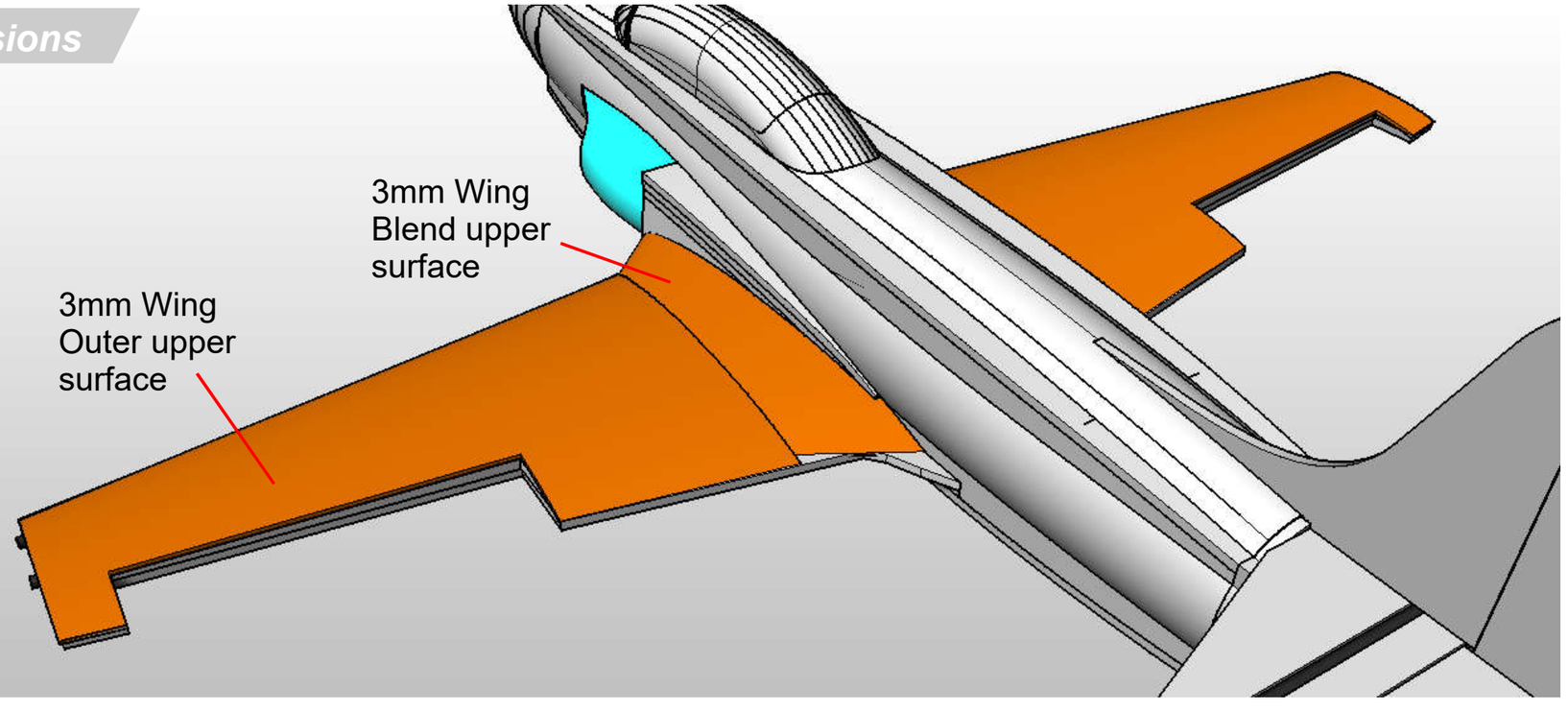
Trim to allow the servo cables to pass through then glue the **Ribs** and **Aileron support strips** in place.

All versions



Glue the **End Ribs** in place. (both wings).

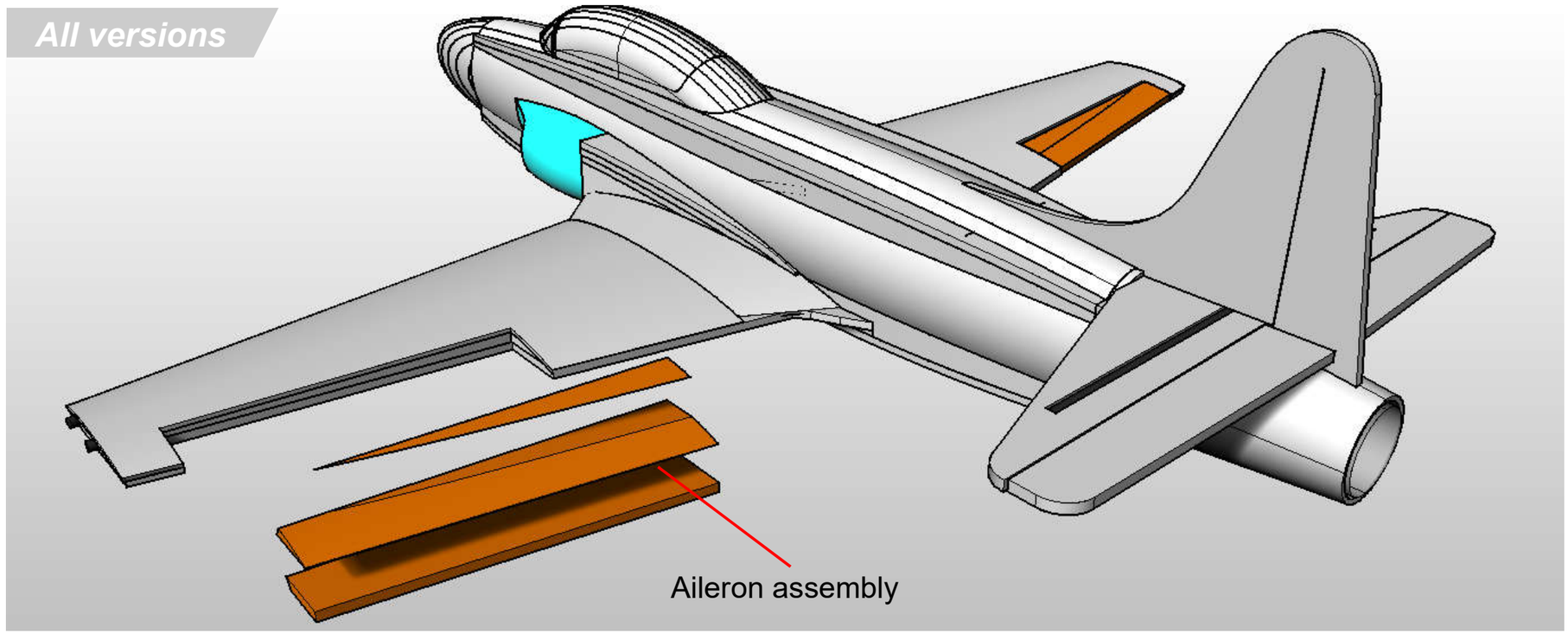
All versions



Pre curve the 3mm foam **Upper surfaces** and glue in place.

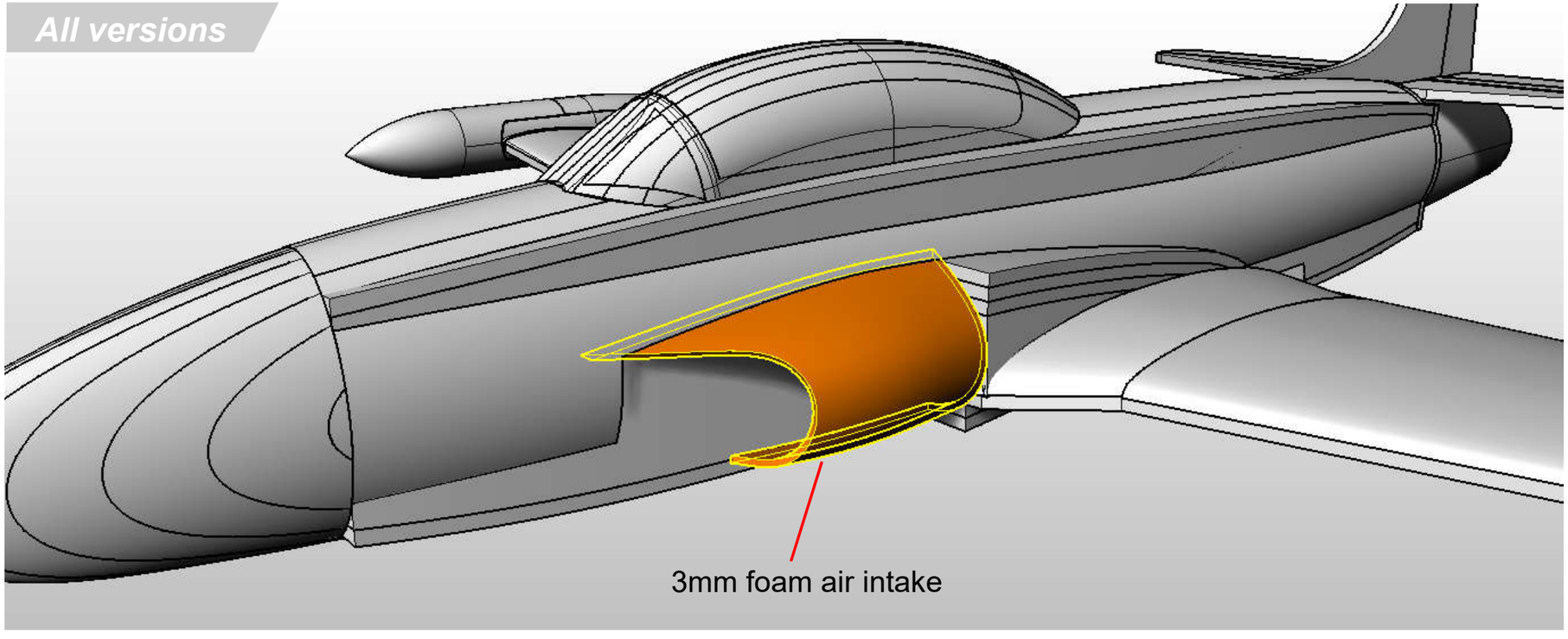
Round the leading edge equally on both wings.

All versions



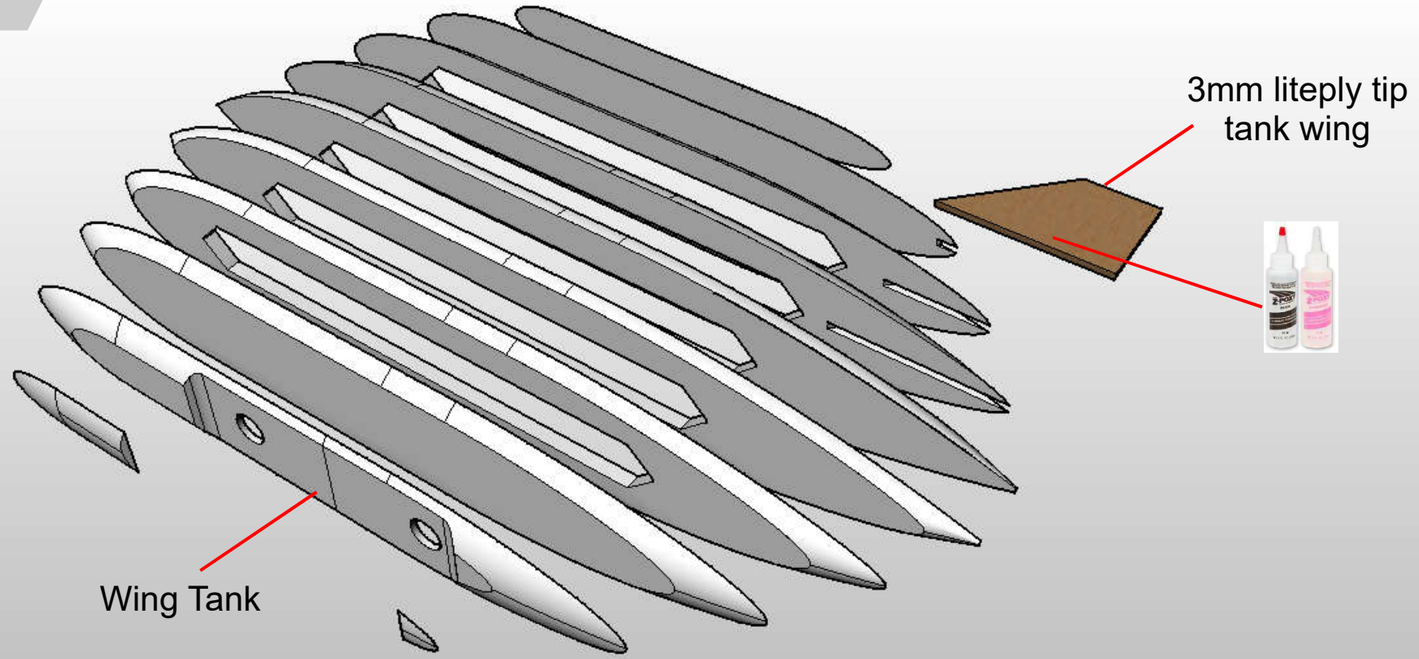
Glue the **Aileron** components together, then fix via hinges to the wings.

All versions



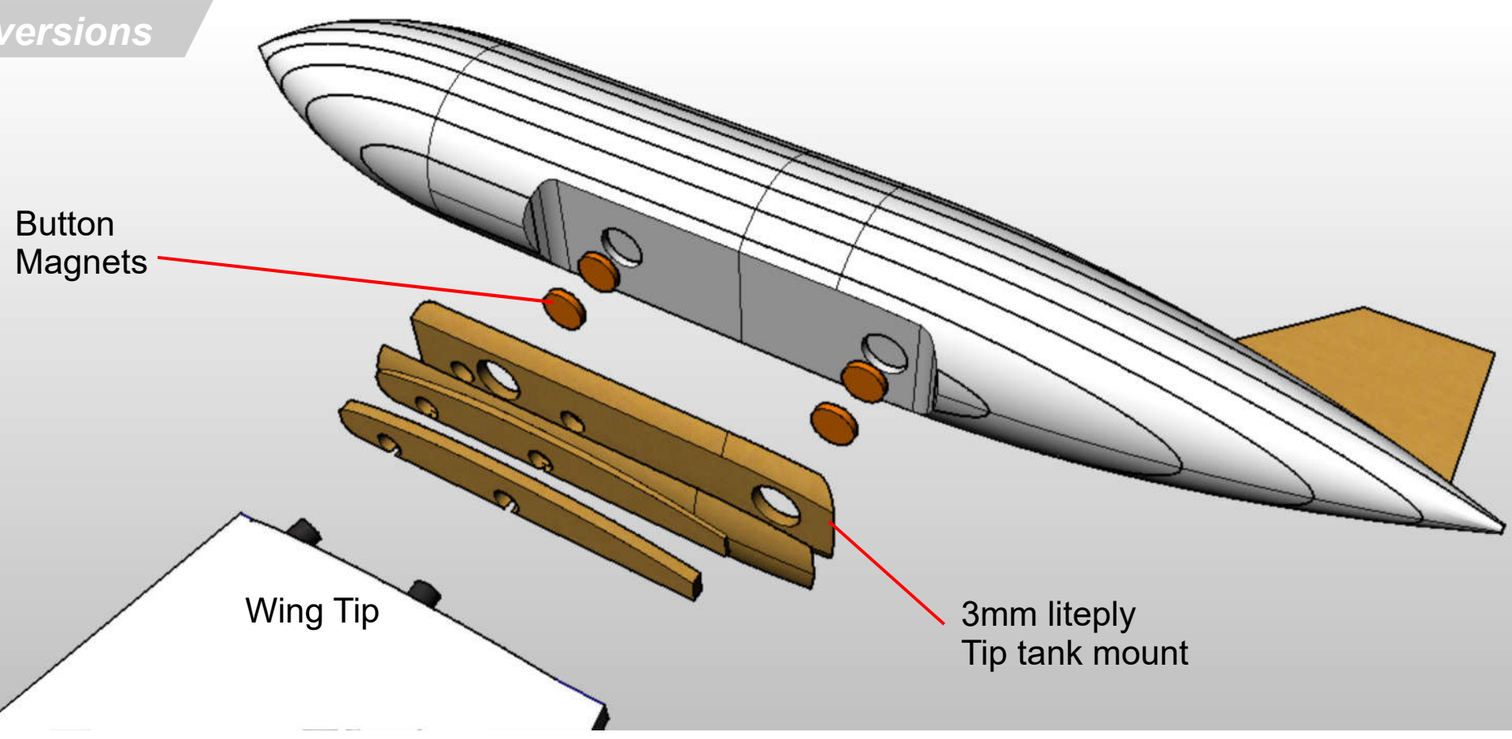
For the non-3D printed intake, carefully curve the **3mm Foam air intake** to shape and glue to the fuselage.

All versions



Either 3D print the **Wing Tanks** or assemble the foam and 3mm lite-ply pieces and sand to shape as shown using UHU por - use epoxy on the tank wing.

All versions

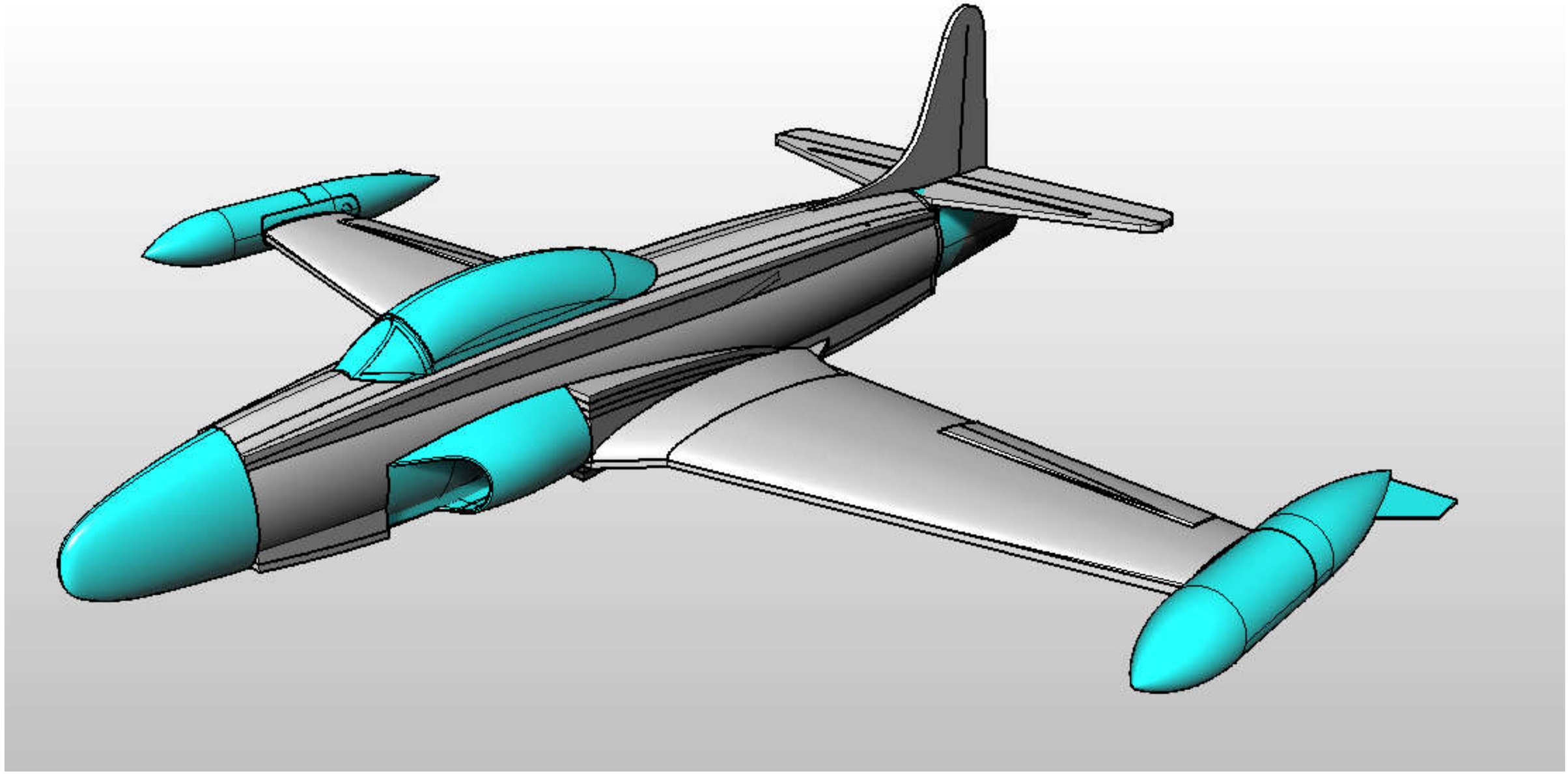


Glue together the **Tip Tank mount** and sand to shape using mini files etc.

Glue the tip tank mount to the end of the wings.

Mount the magnets into both the tip tank and the mount. before the epoxy is fully set.

Position carefully to ensure horizontal mounting to prevent the tip tanks from affecting aerodynamics.



Congratulations! Your Shooting Star 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