F-35 Lightning II Parkjet v2

By Craig Clarkstone

v1 photo shown

Construction Guide

F-35 History

The F-35 Lightning II is a 5th Generation fighter, combining advanced stealth with fighter speed and agility, fully fused sensor information, network-enabled operations and advanced sustainment. Three variants of the F-35 will replace the A-10 and F-16 for the U.S. Air Force, the F/A-18 for the U.S. Navy, the F/A-18 and AV-8B Harrier for the U.S. Marine Corps, and a variety of fighters for at least ten other countries.

The Lightning II is a single-seat, single-engine fighter aircraft designed for many missions with advanced, integrated sensors built into every aircraft. Missions that were traditionally performed by small numbers of specialized aircraft, such as intelligence, surveillance and reconnaissance and electronic attack missions can now be executed by a squadron of F-35s, bringing new capabilities to many allied forces.

The F-35 is developed, produced, and supported by an international team of leading aerospace companies., Lockheed Martin , Northrop Grumman and BAE Systems & Pratt & Whitney.

The F-35 and the F-22 are both 5th Generation fighters featuring advanced stealth, integrated avionics, sensor fusion and superior logistics support. The F-35 also delivers additional 5th Generation features, such as multi-spectral sensors, interoperability and modernized avionics.

While the F-22 is superior to the F-35 in air-to-air missions, the F-35’s air-to-air capability is superior to all other fighters. The F-35 is better than any other fighter aircraft, including the F-22, for air-to-ground strike missions.

Designers Notes

The F-35 is not a simple shape, and as such is not a basic build, but it is worth putting in the detail to help it look amazing in the air.

The model is lots of fun to fly and handles really nicely. It is agile, has neutral handling characteristics. I have made this design to be able to be pusher prop driven, which meant that I had to tweak the tail area to accommodate a 6" prop. Only a purist would notice the difference.

I designed it based on the F-35B shape, but I added a little more wing area to improve gliding characteristics.

At sometime in the future, I intend to build a VTOL version,

I hope you enjoy building and flying this one as much as me!

If you enjoy this design please help me to fund my next project and send a donation for $10 to Paypal address :-

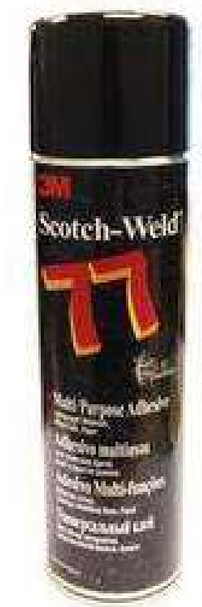
clicketyclarkstone@gmail.com

Thank you! and happy flying.

Craig :)

Construction

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

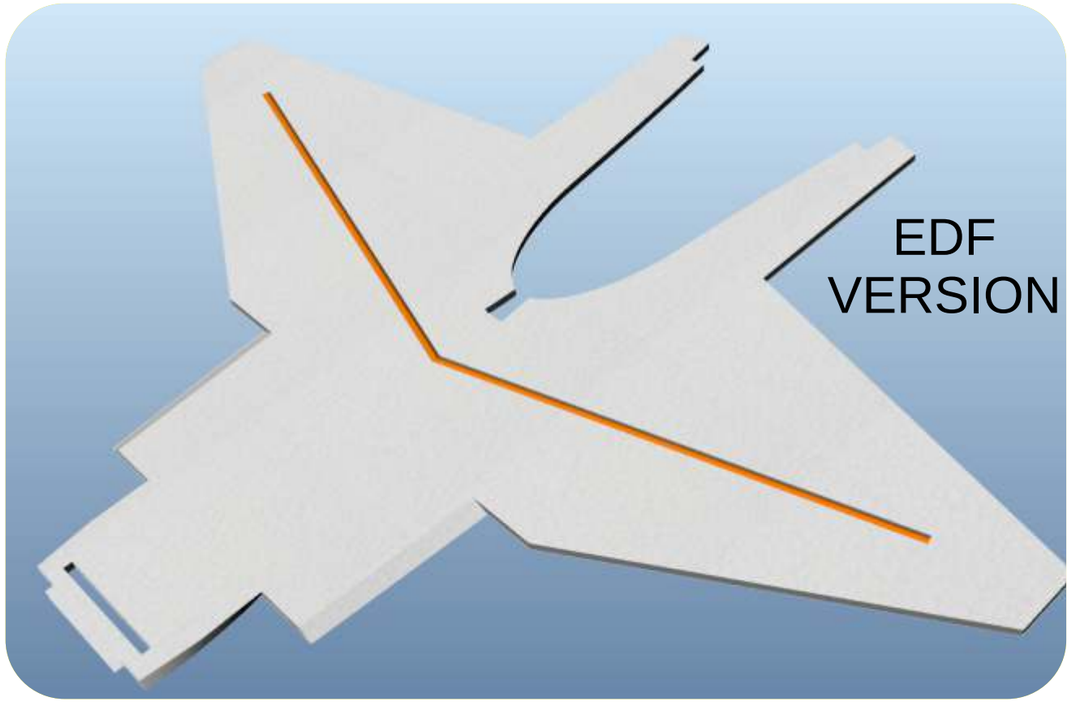
> For leading edges, hinges, general strengthening
- 3M Gift tape (Purple - not green one!) - I prefer lightweight plastic hinges.

> For decals
- Coloured parcel tapes (strips taped to waxed paper & cut out)

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

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

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



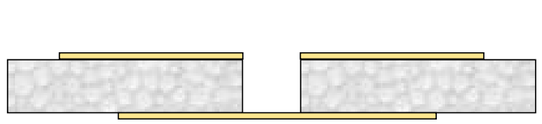
Glue 6mm Carbon rod into the Wing using Epoxy mixed with Micro Balloons.

For extra protection to the leading edges, pre-shaped balsa could be glued on at this stage.

NOTE : if using 5 minute epoxy, do not attempt to do both spars at the same time - (learned from experience!)

Gluing Carbon rod into depron.

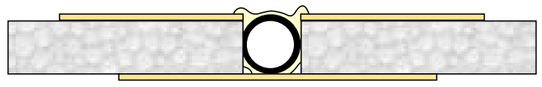
1. Apply masking tape as shown.



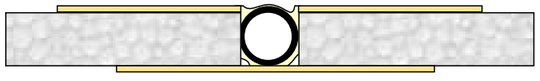
2. Mix Epoxy with micro-balloons and apply to carbon rod.

3. Spread epoxy mix evenly all over the rod.

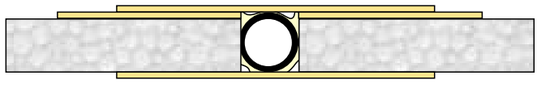
4. Slide rod into position. Take care not to detach lower masking tape. Do this on a flat surface.



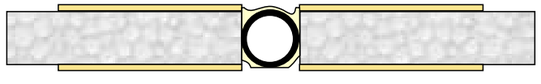
5. Whilst the mix is still fluid, Scrape excess epoxy away.



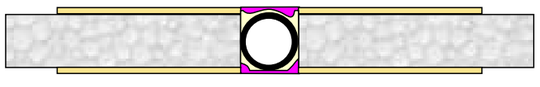
6. Apply masking tape to help smooth-out bumps. Place on flat surface with large books on top and leave to set (fully)



7. Remove all tape and apply fresh tape as shown.

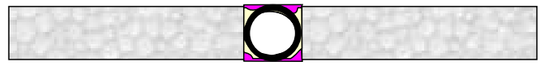


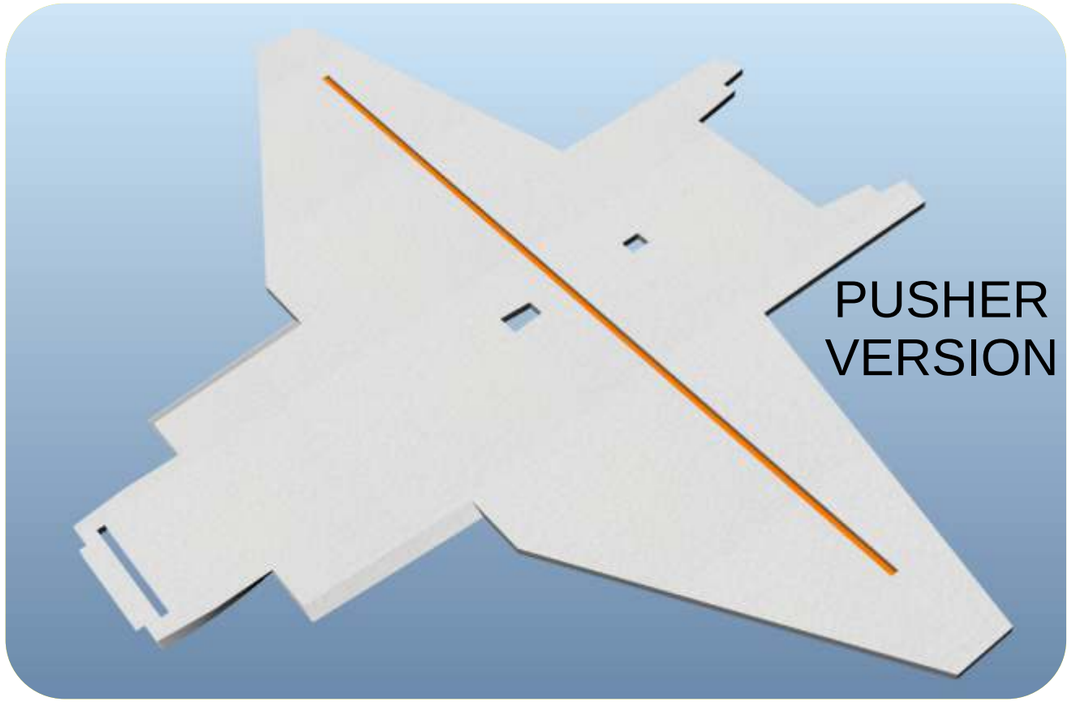
8. Fill using lightweight filler, gently using spatula to achieve a near-flat surface.



When the filler has set, gently sand flat using a purpose made sanding block - be careful not to sand through the masking tape.

9. Remove masking tape to leave a near-perfect finish.





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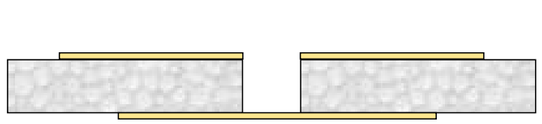
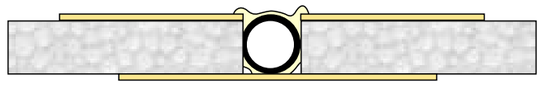
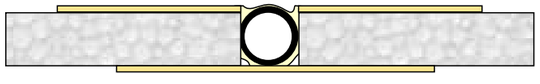
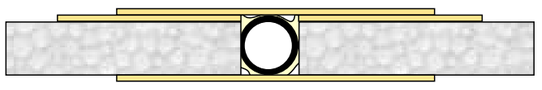
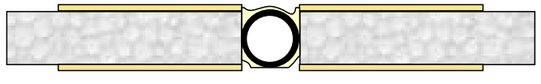
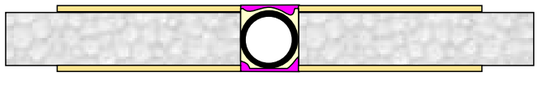
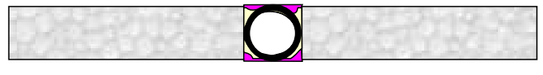
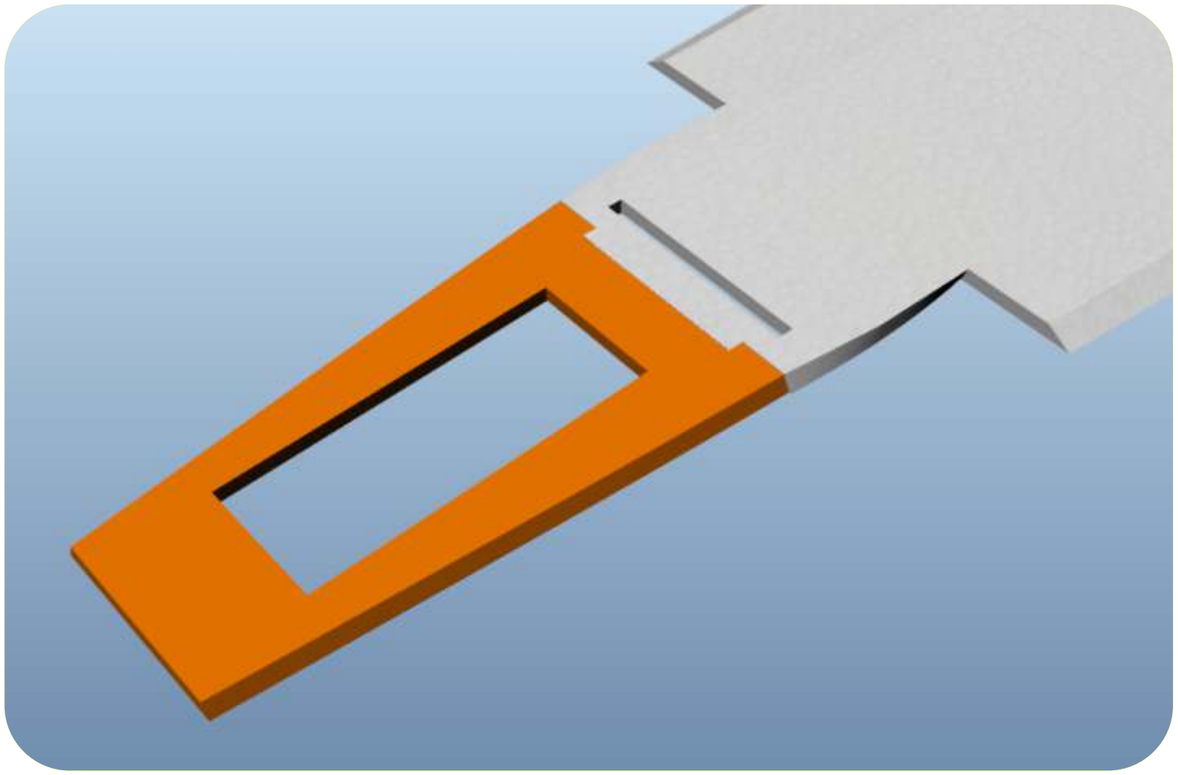
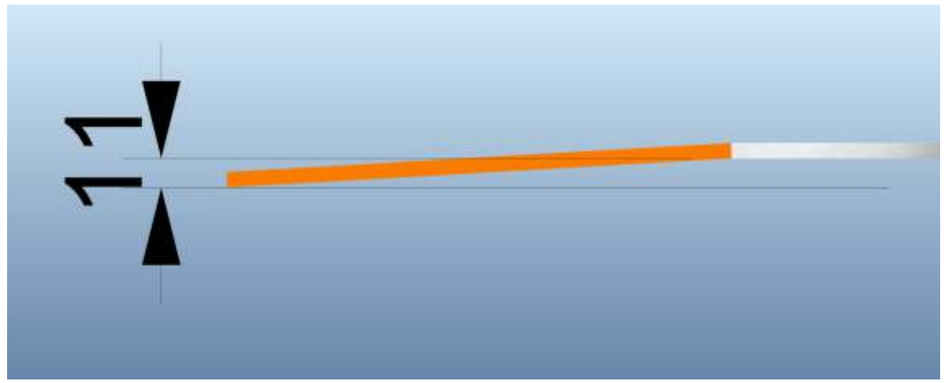
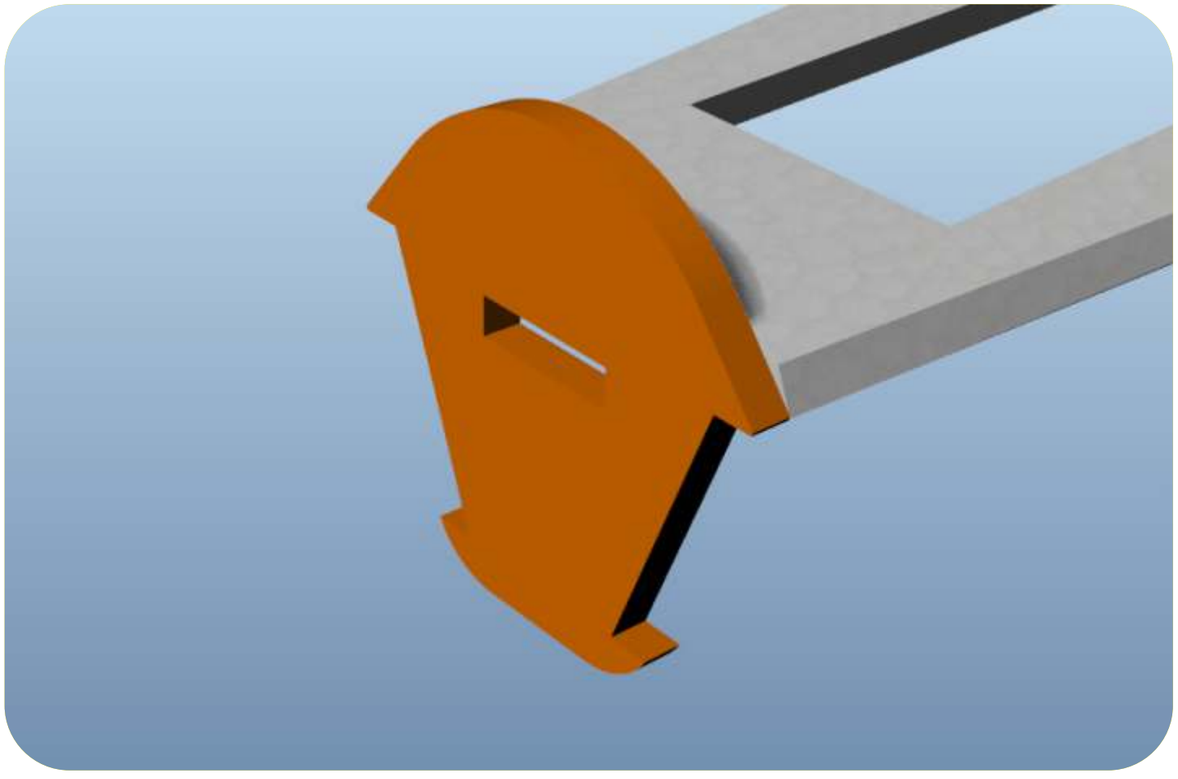
Gluing Carbon rod into depron.

1. Apply masking tape as shown. 	2. Mix Epoxy with micro-balloons and apply to carbon rod. 	3. Spread epoxy mix evenly all over the rod. 
4. Slide rod into position. Take care not to detach lower masking tape. Do this on a flat surface. 	5. Whilst the mix is still fluid, Scrape excess epoxy away. 	6. Apply masking tape to help smooth-out bumps. Place on flat surface with large books on top and leave to set (fully) 
7. Remove all tape and apply fresh tape as shown. 	8. Fill using lightweight filler, gently using spatula to achieve a near-flat surface.  When the filler has set, gently sand flat using a purpose made sanding block - be careful not to sand through the masking tape.	9. Remove masking tape to leave a near-perfect finish. 

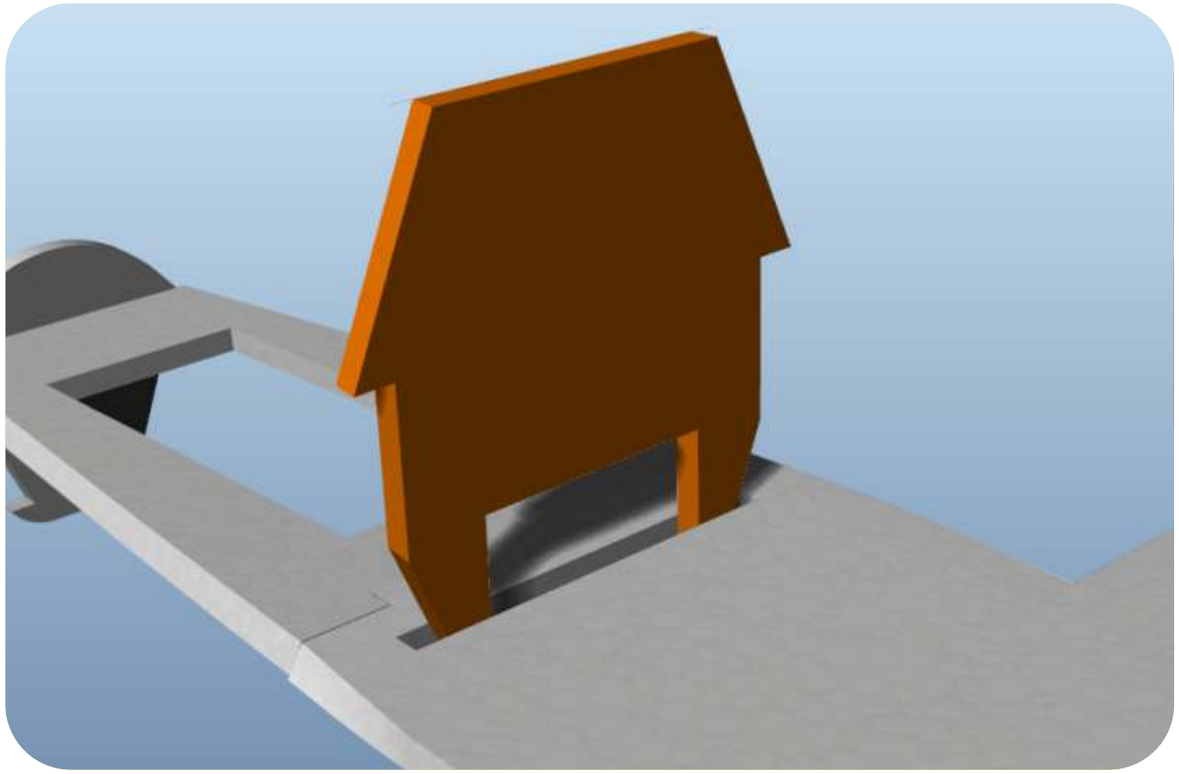


Attach Forward fuselage support piece. Glue with epoxy.



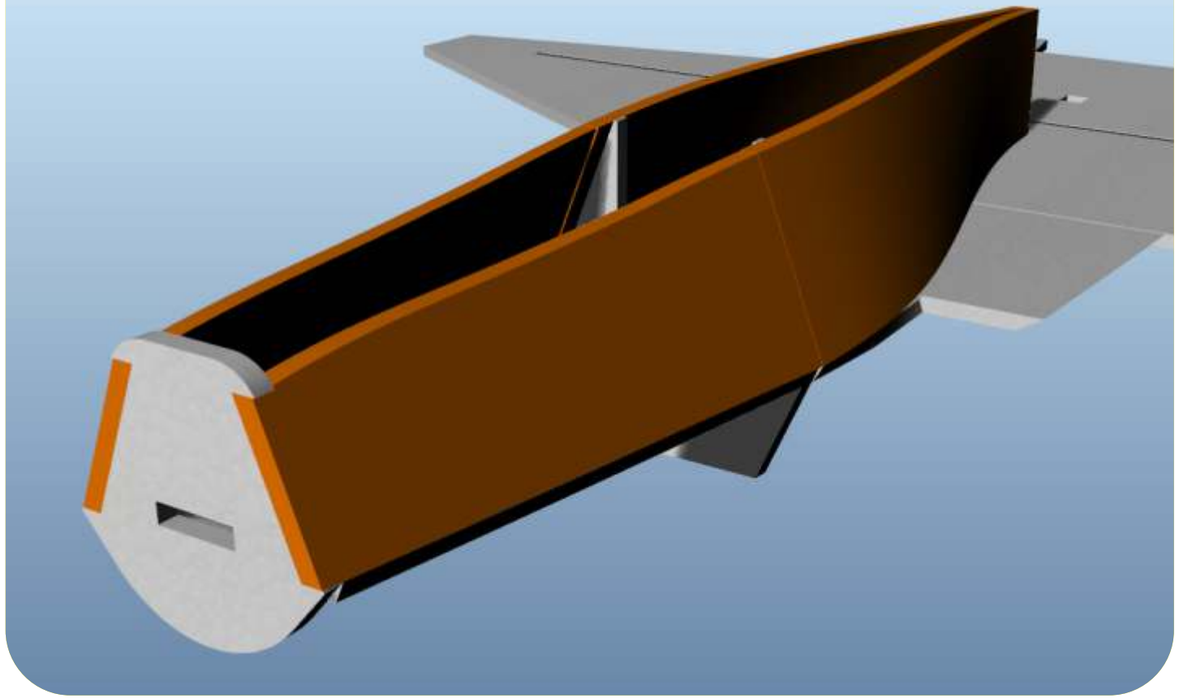


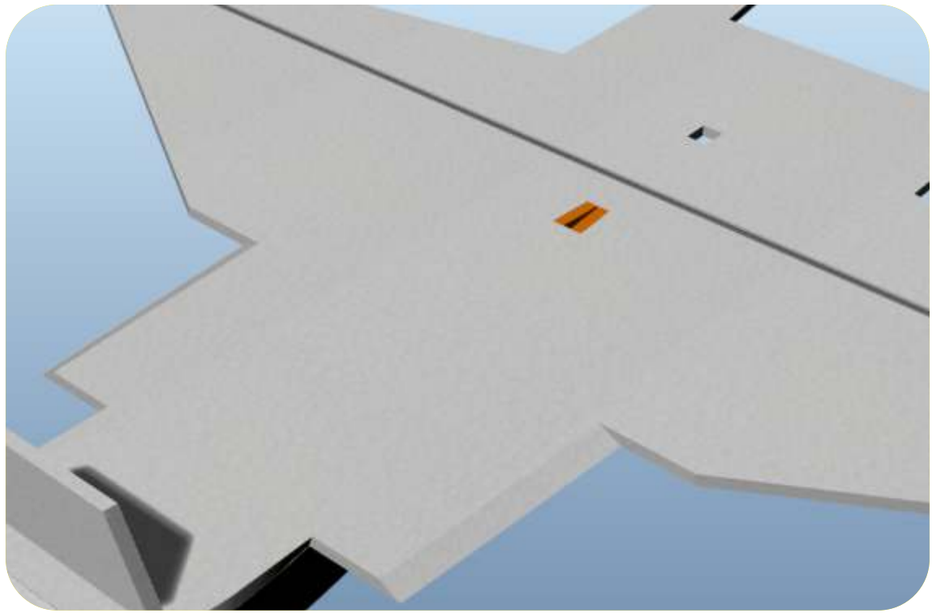
Attach Bulkhead 1

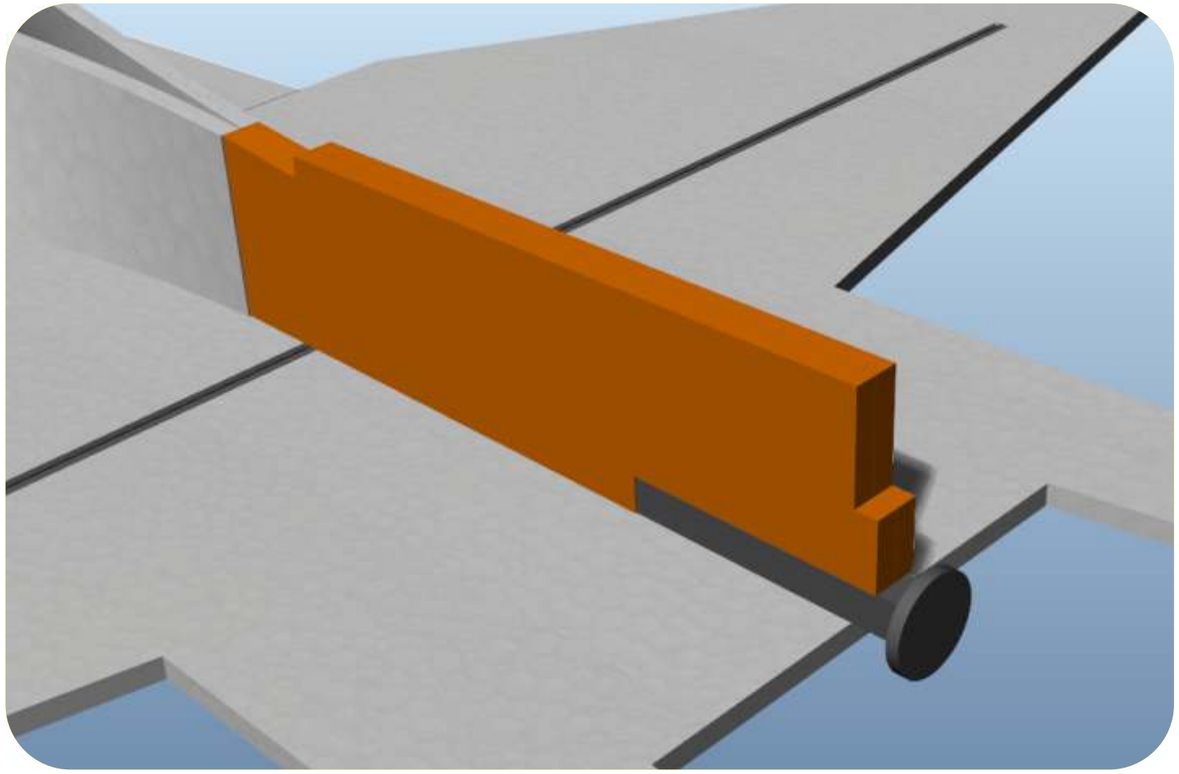


Glue in bulkhead 2

Shape the Lower fuselage sides and glue in place using the bulkheads and hole in the wing panel (see below) to align them

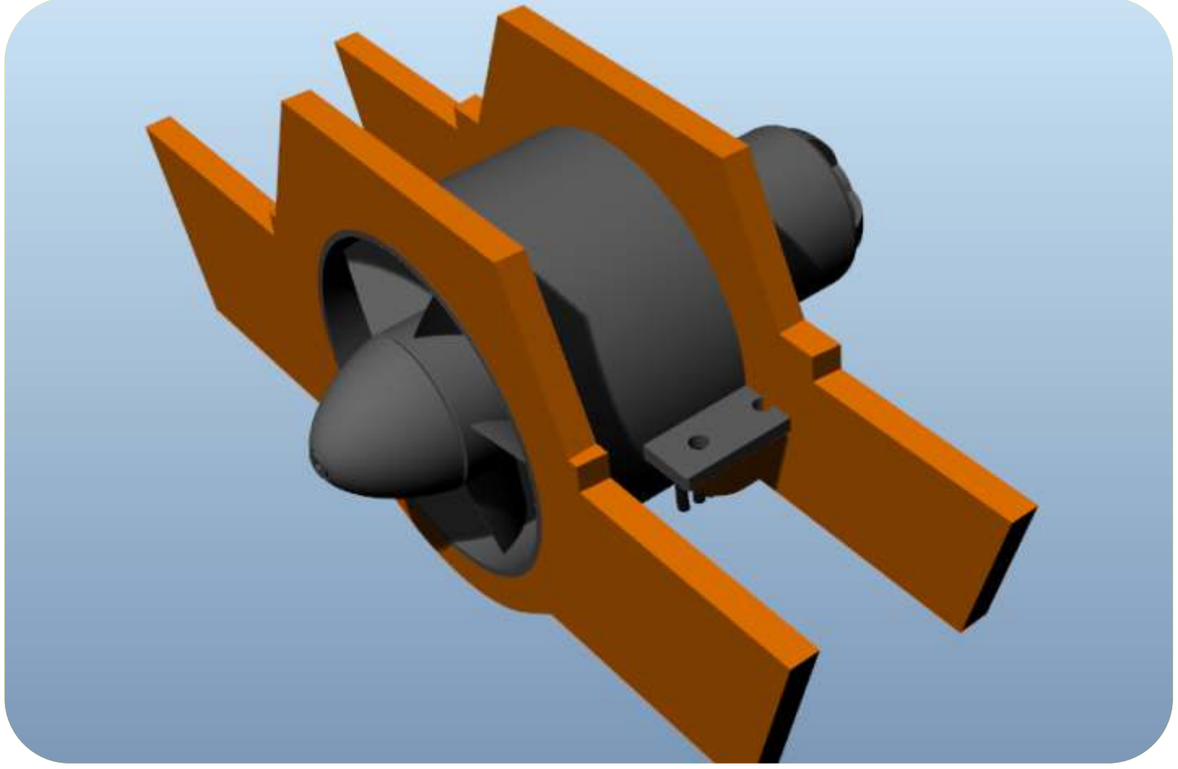






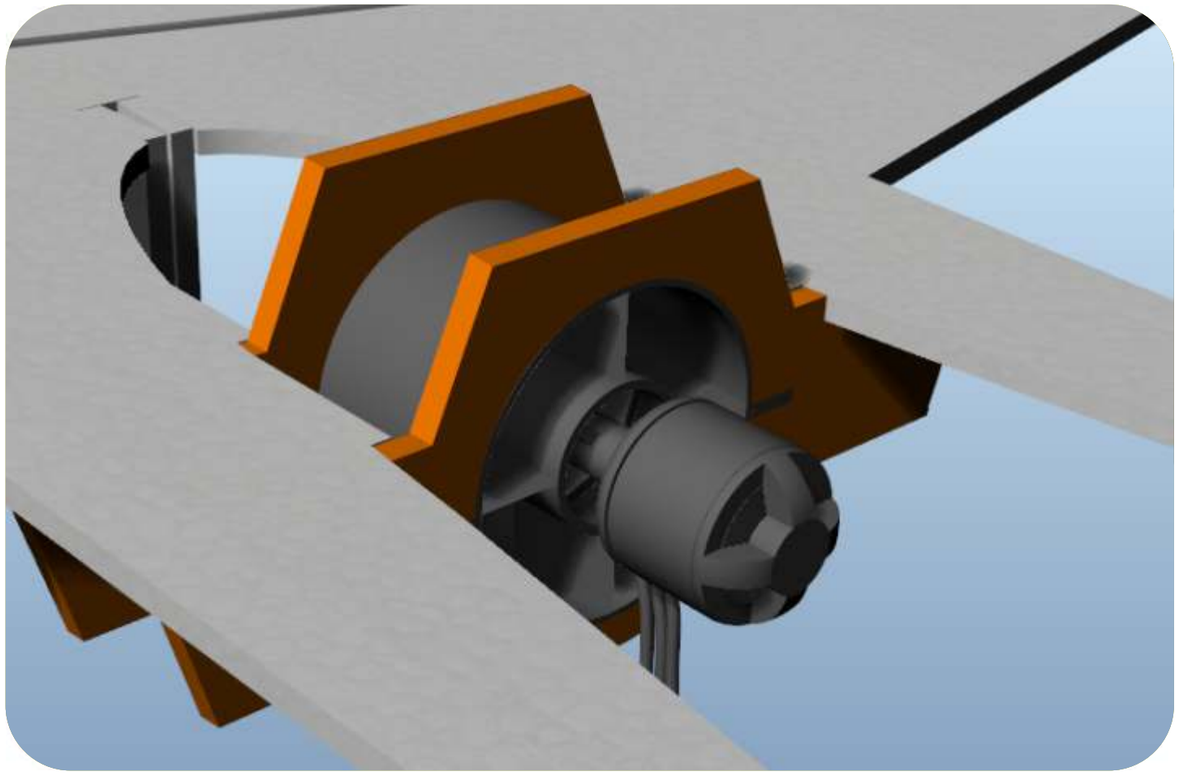
PUSHER ONLY
Glue the two parts of the motor mount together, then onto the assembly with UHU por, then gluethe plastic stick mount to the assembly with hot melt.

Important - set up the 6" prop so that the tips of the blade fit inside the notches in the depron wing panel.

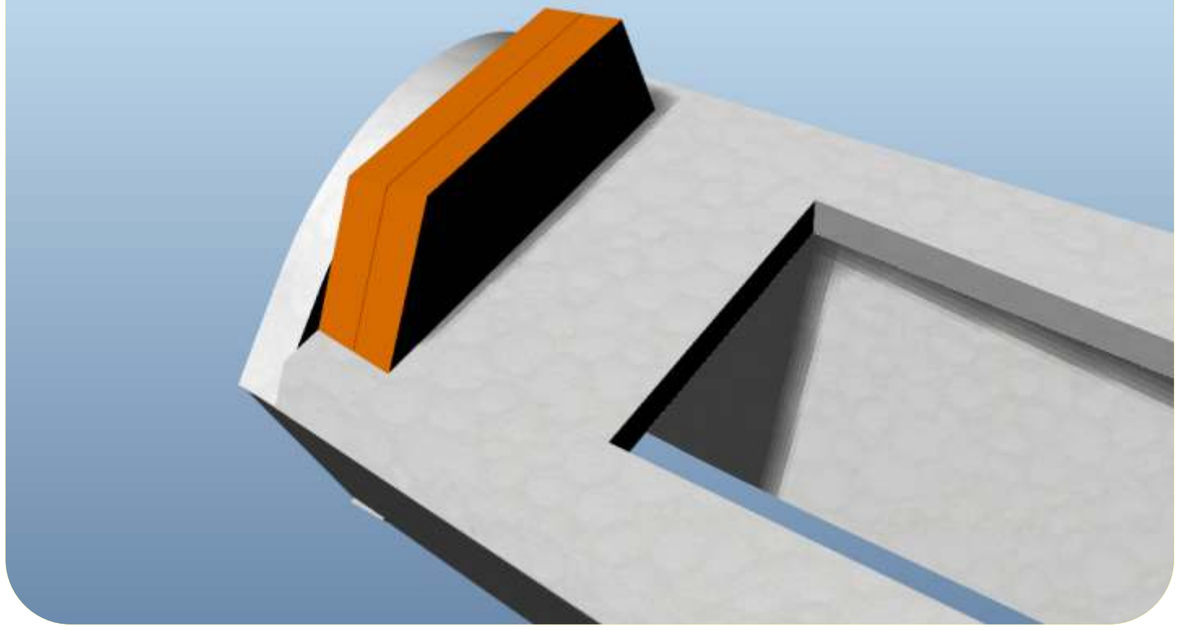


EDF ONLY

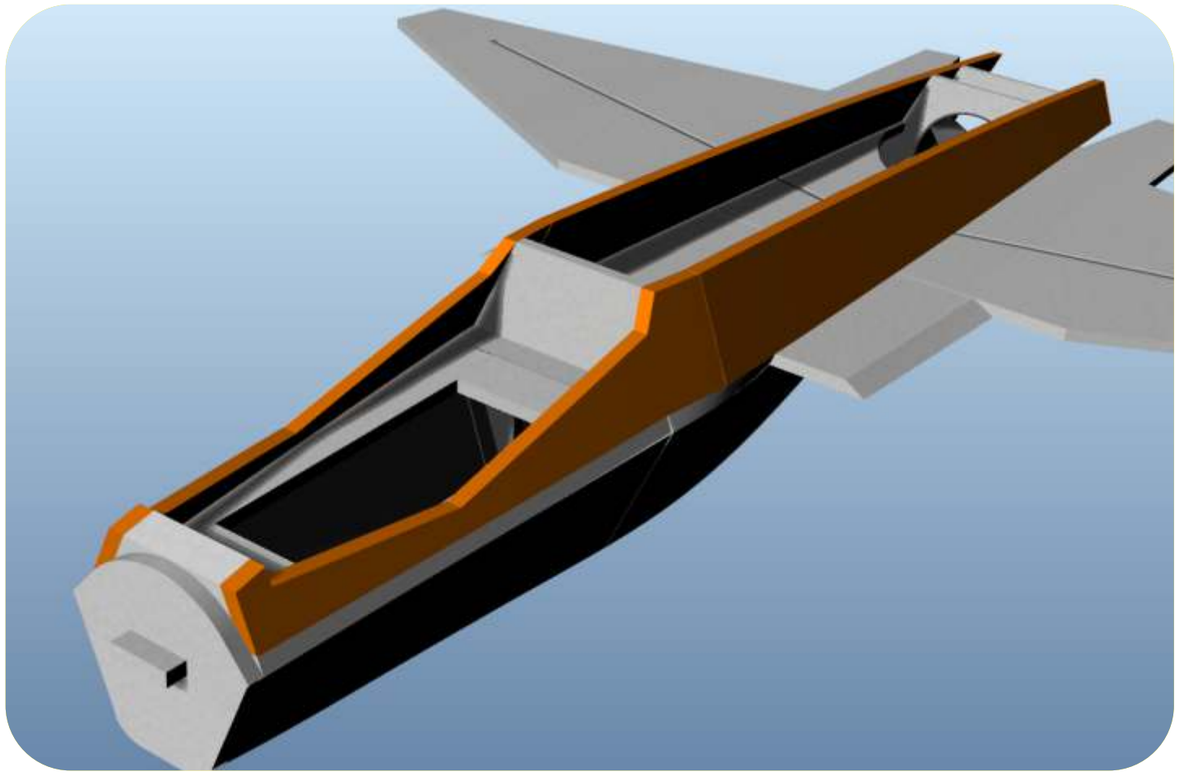
Cut the EDF mounts to suit the EDF, and once located in the aircraft, add a few beads of hot melt glue to stop it moving around.



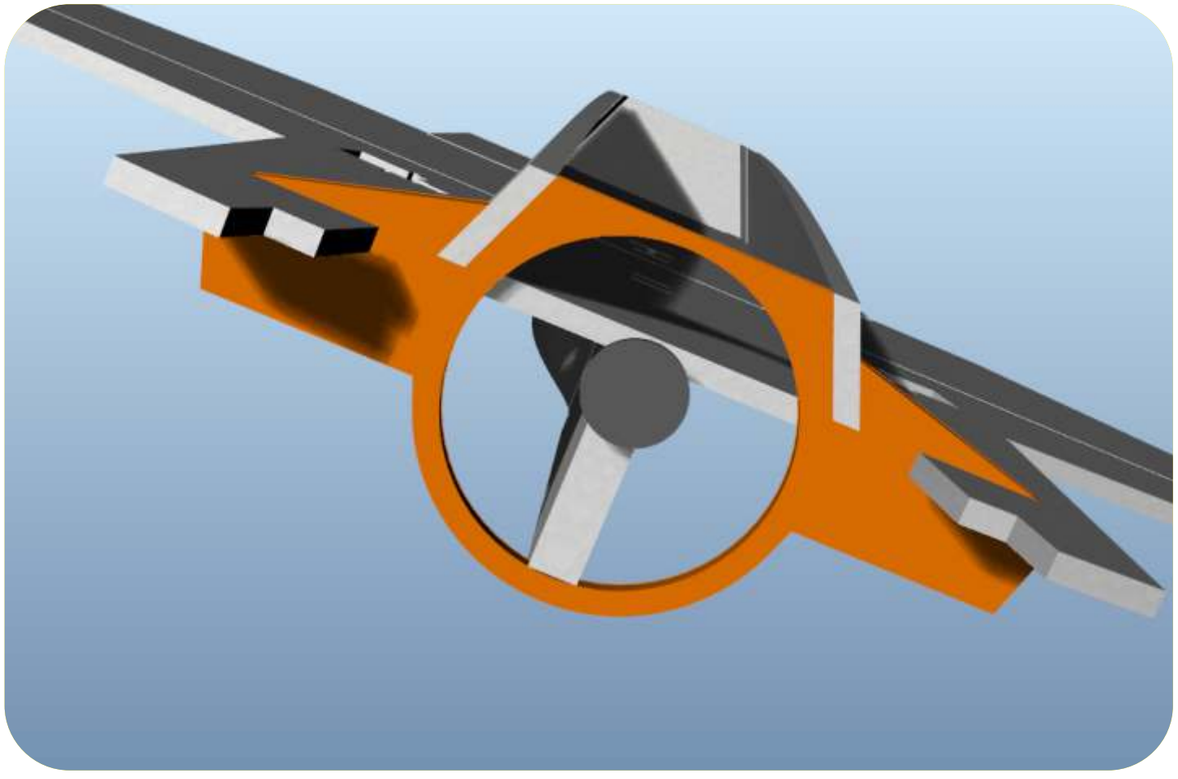
Glue the two EDF bulkheads to the wing assembly.



Glue the canopy forward supports in place.

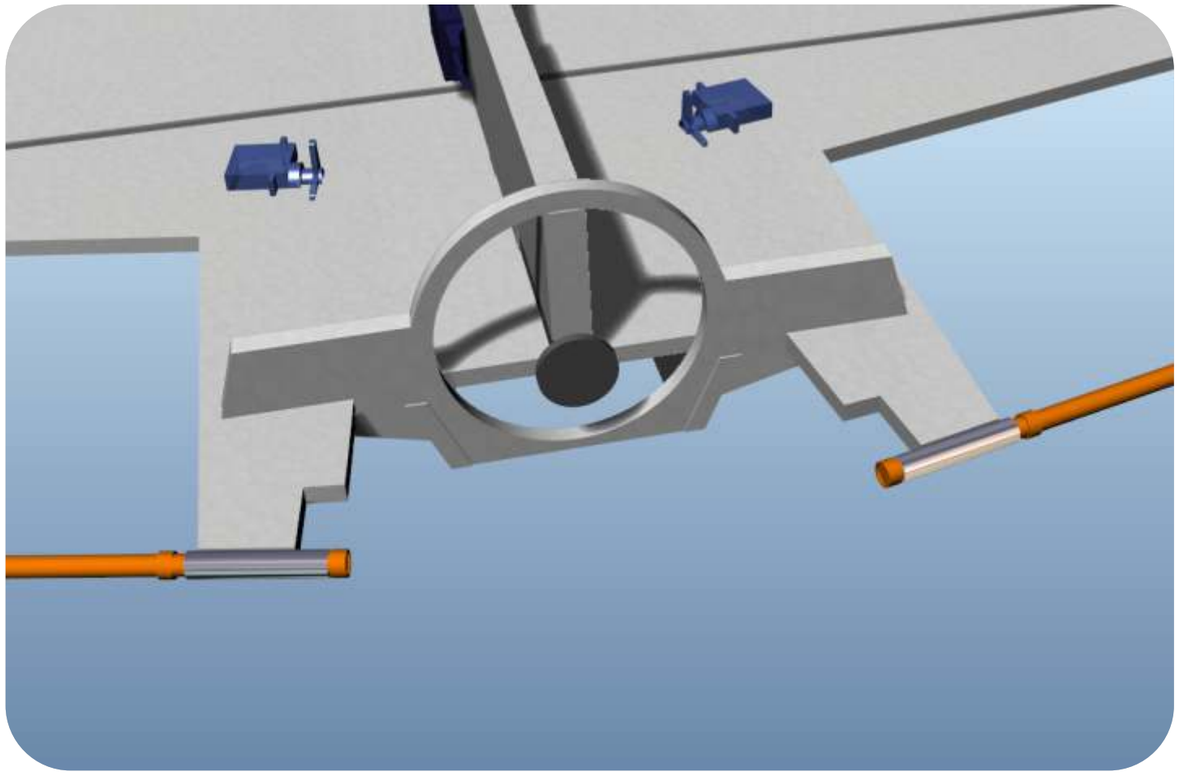


Align and glue the upper fuselage sides (inner) in place.



PUSHER ONLY

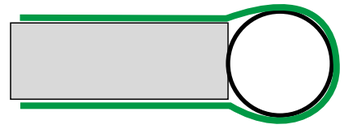
Glue the exhaust bulkhead in place.

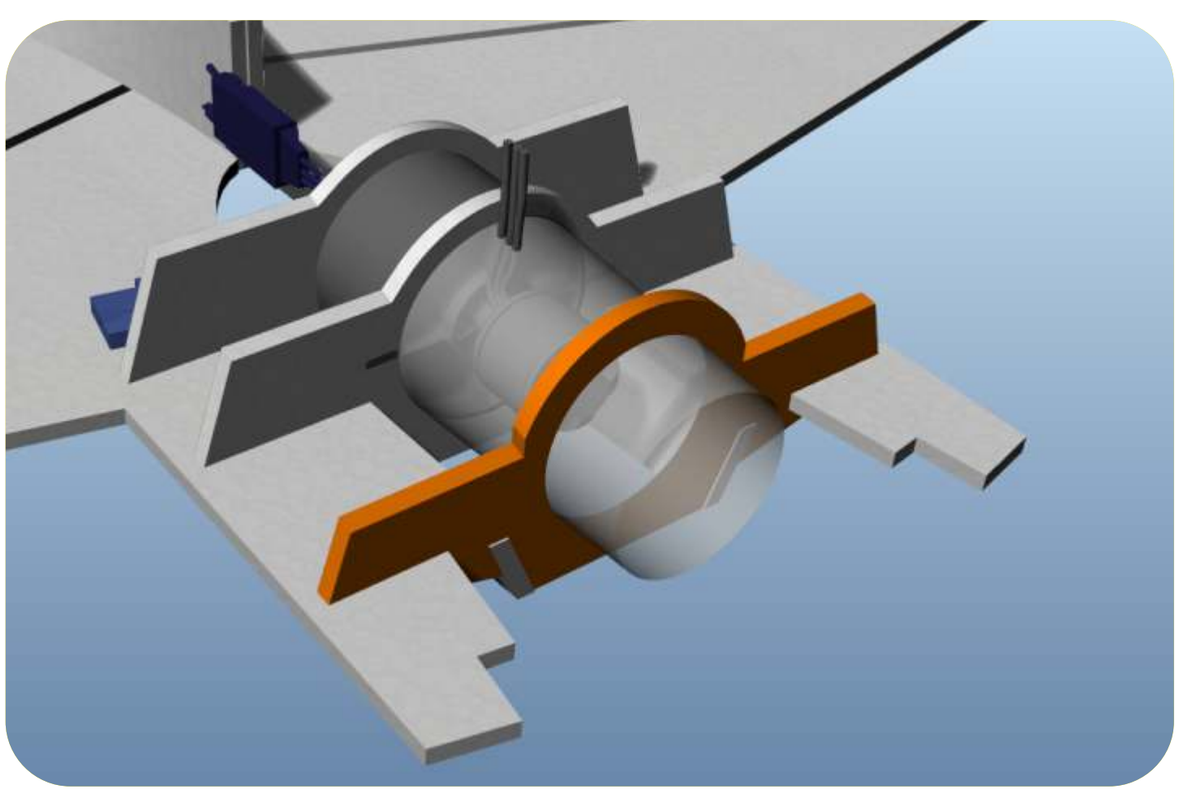


BOTH VARIANTS

Using fibreglass or nylon cloth with epoxy to attach the aluminium tubes to the edge of the depron.

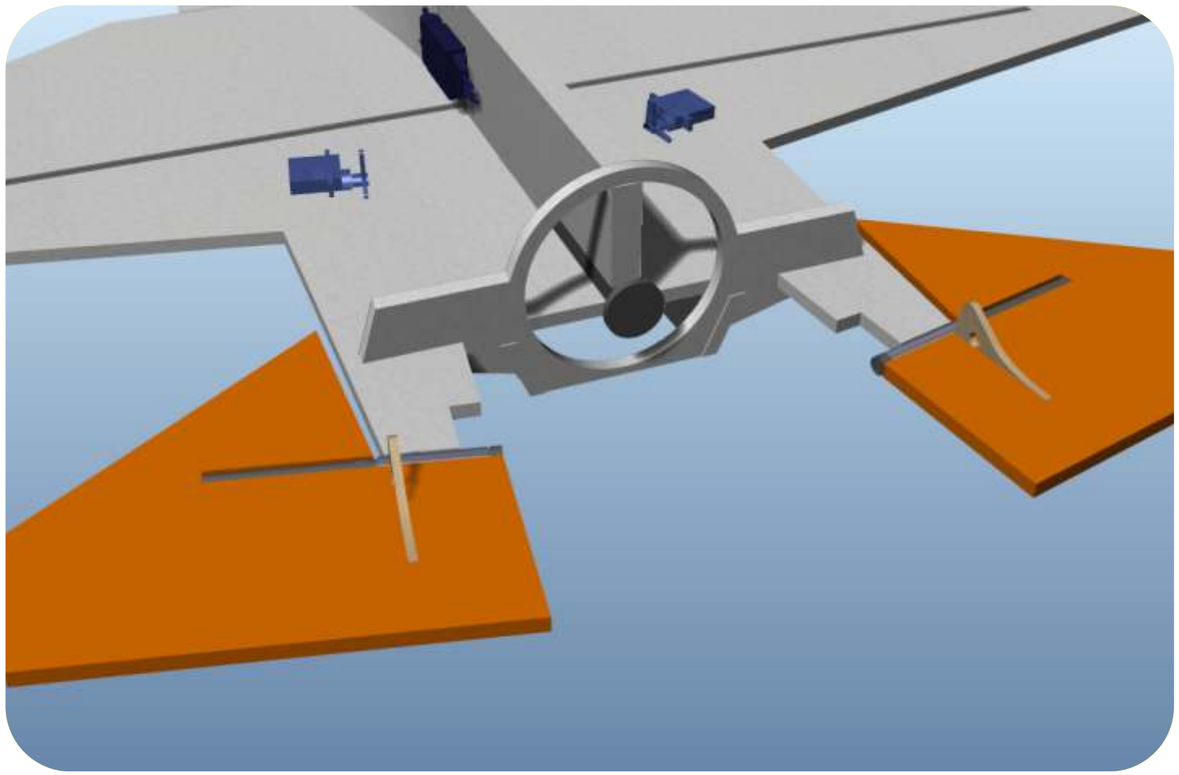
0.6oz lightweight woven GRP is perfect for it.



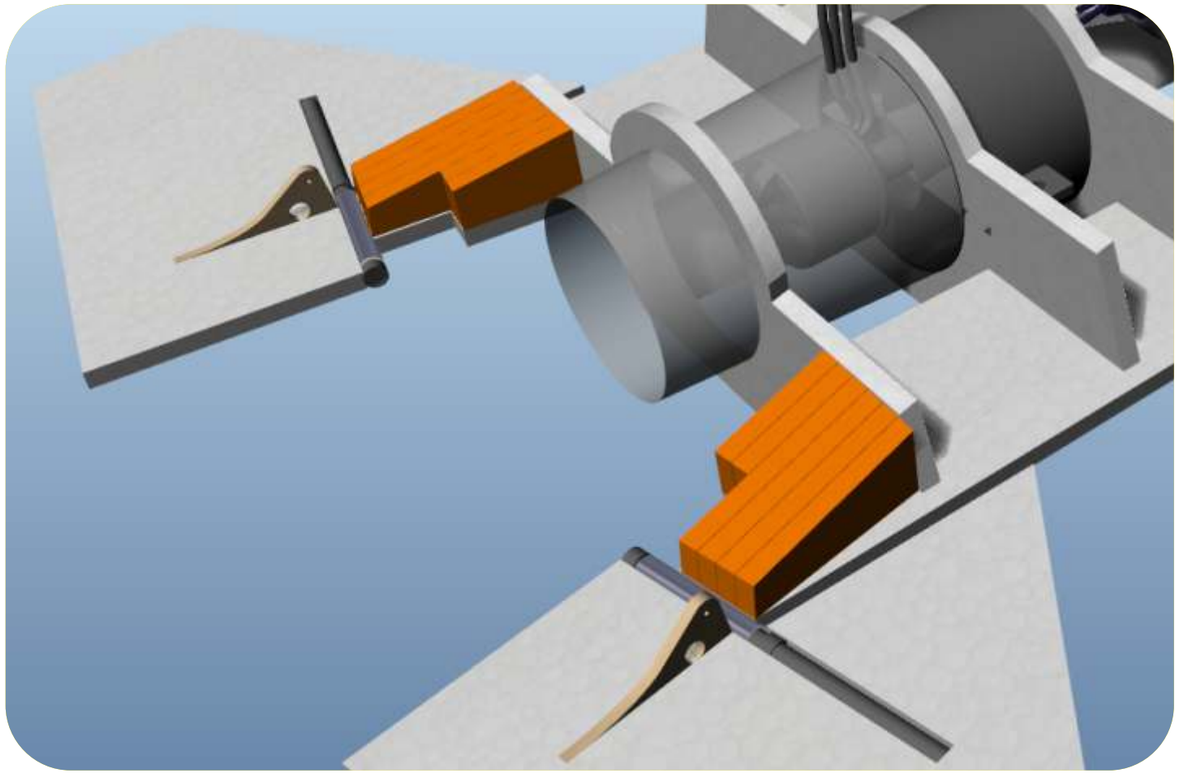


EDF only.

Fit the exhaust bulkhead and use it as a template to build a thrust tube using .5mm plastic sheet, joined together with nylon tape.

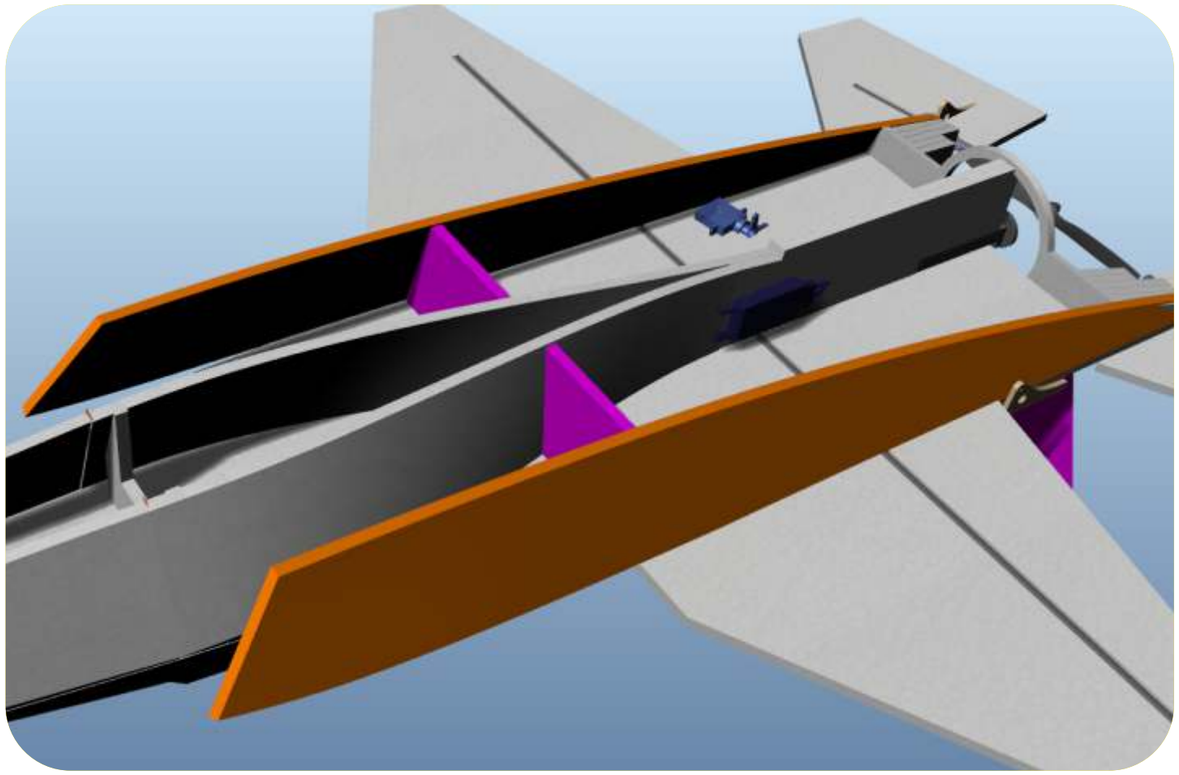


Glue in place the wooden control horn, and then the 6mm carbon tube into the elevators. Use two cut down prop-adaptors to act as end stops to prevetn the elevators from moving sideways.

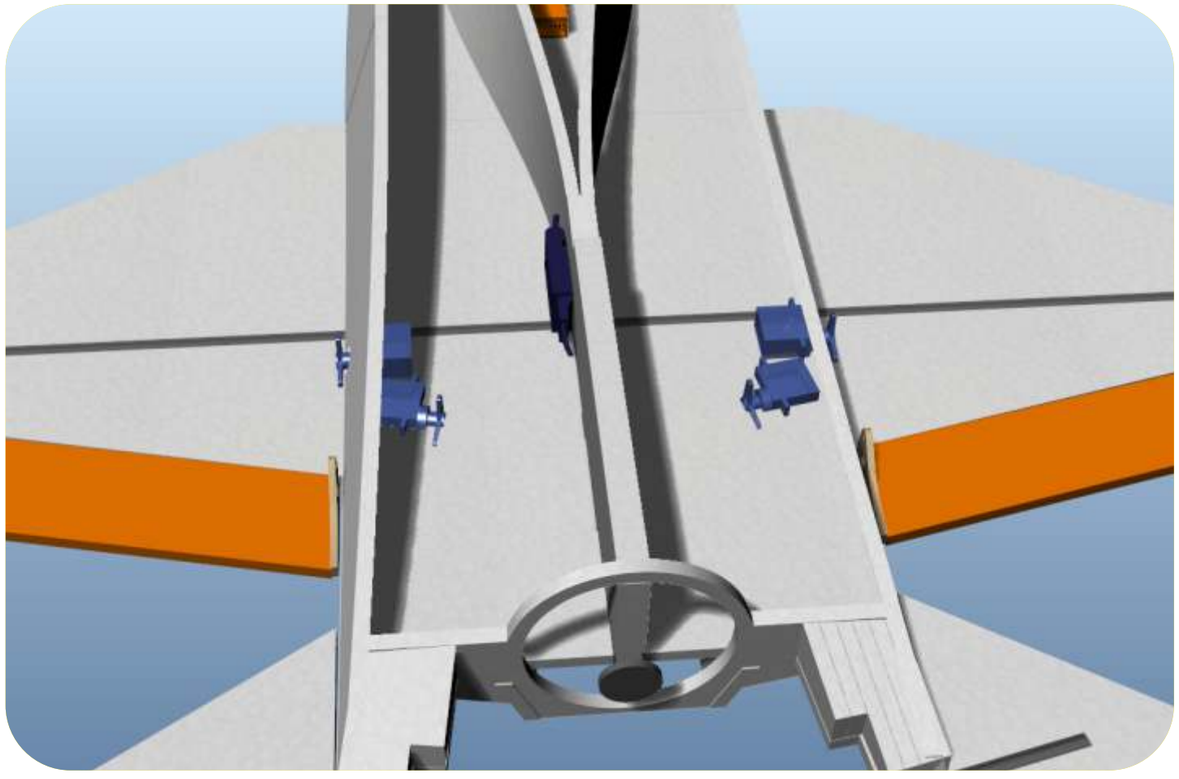


Create two stiff push rods to connect the servos to the elevator control horns. Ensure zero flex when resistance applied to the elevators.

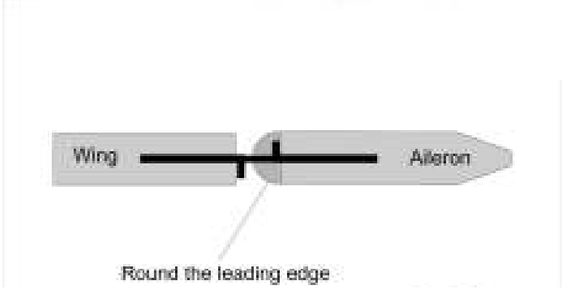
Assemble the block of boom supports and then cut a channel for the pushrods to travel through.

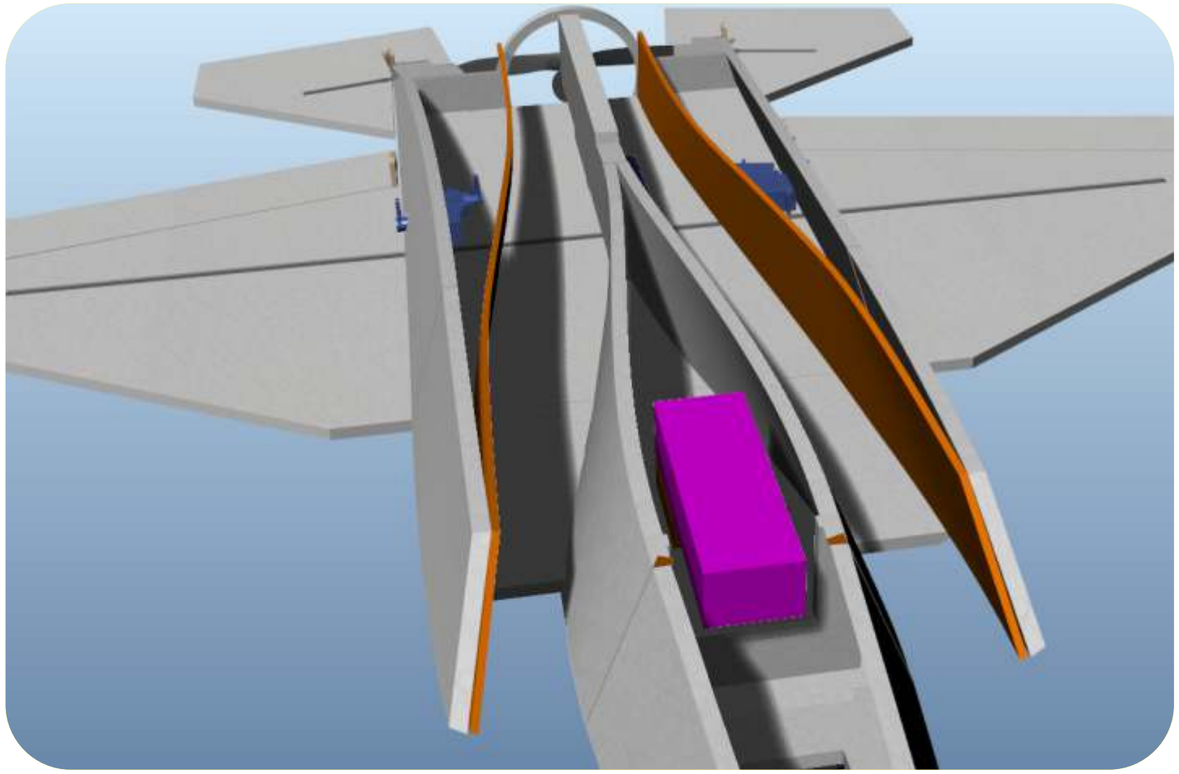


Using the jig, glue the belly sides to the main assembly,

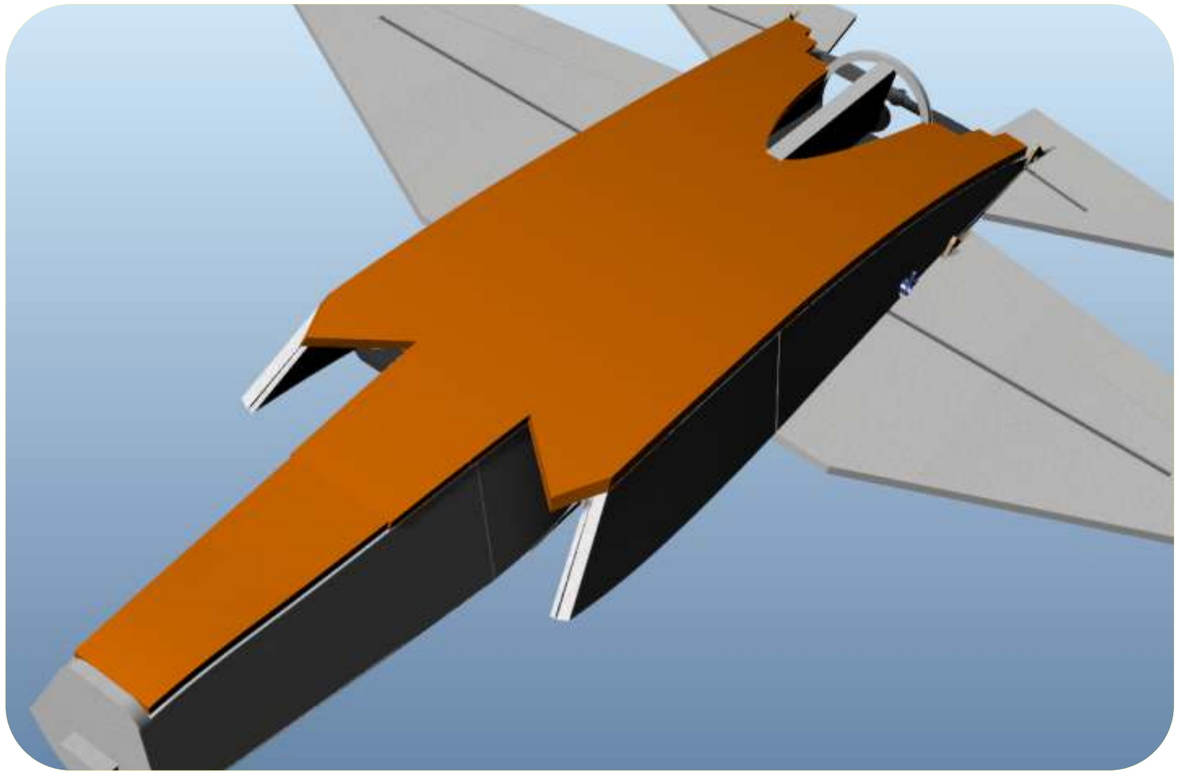


Attach the Ailerons as shown.

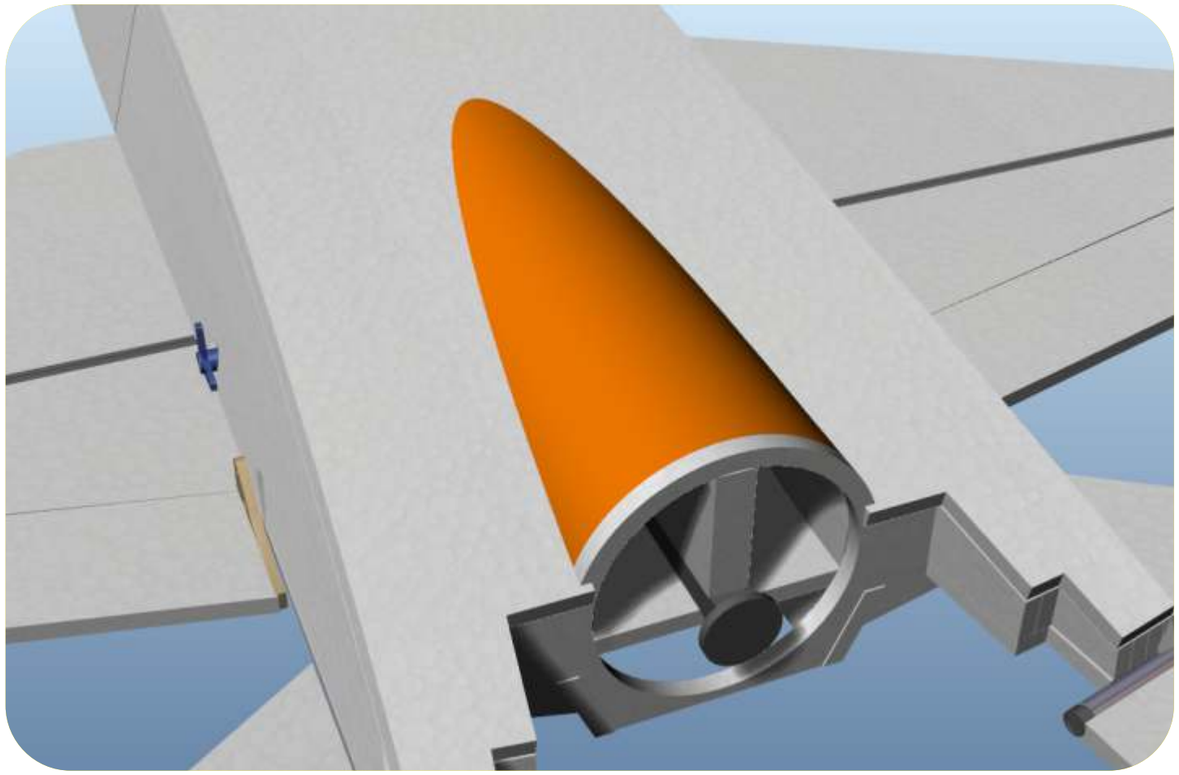




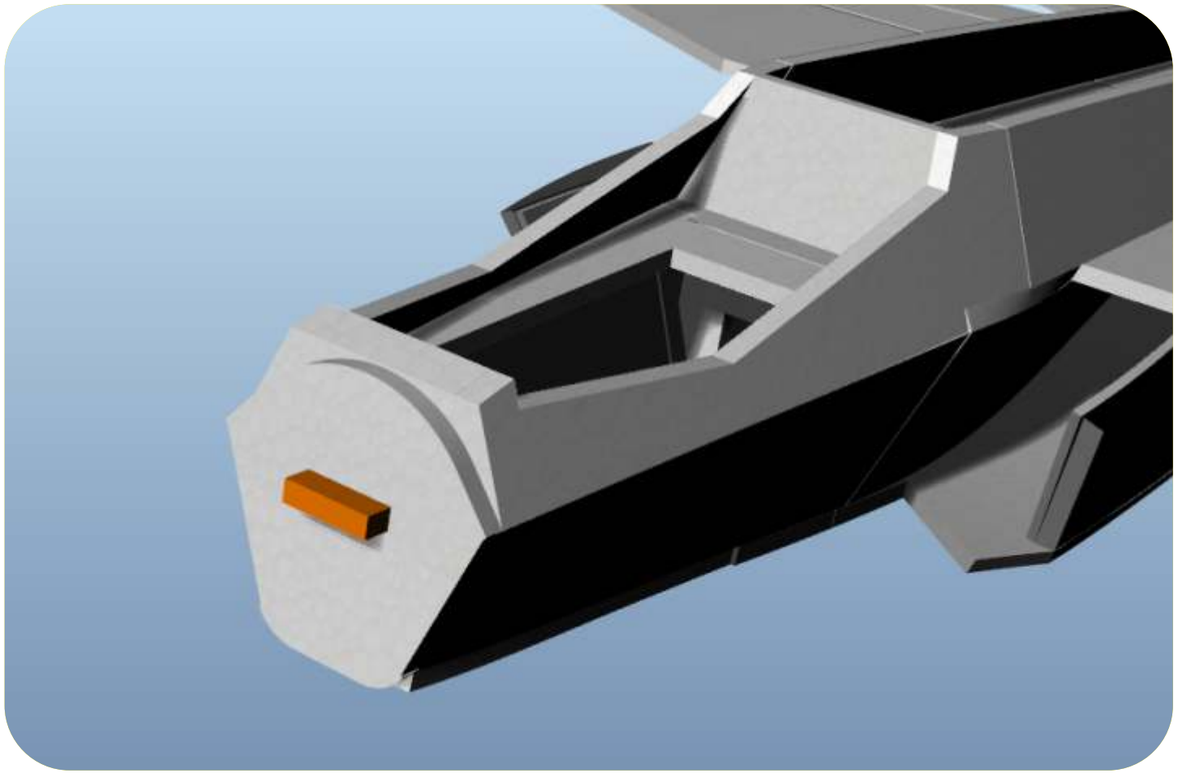
Shape and attach two strips of 3mm depron to help airflow through the fuselage. (both variants)



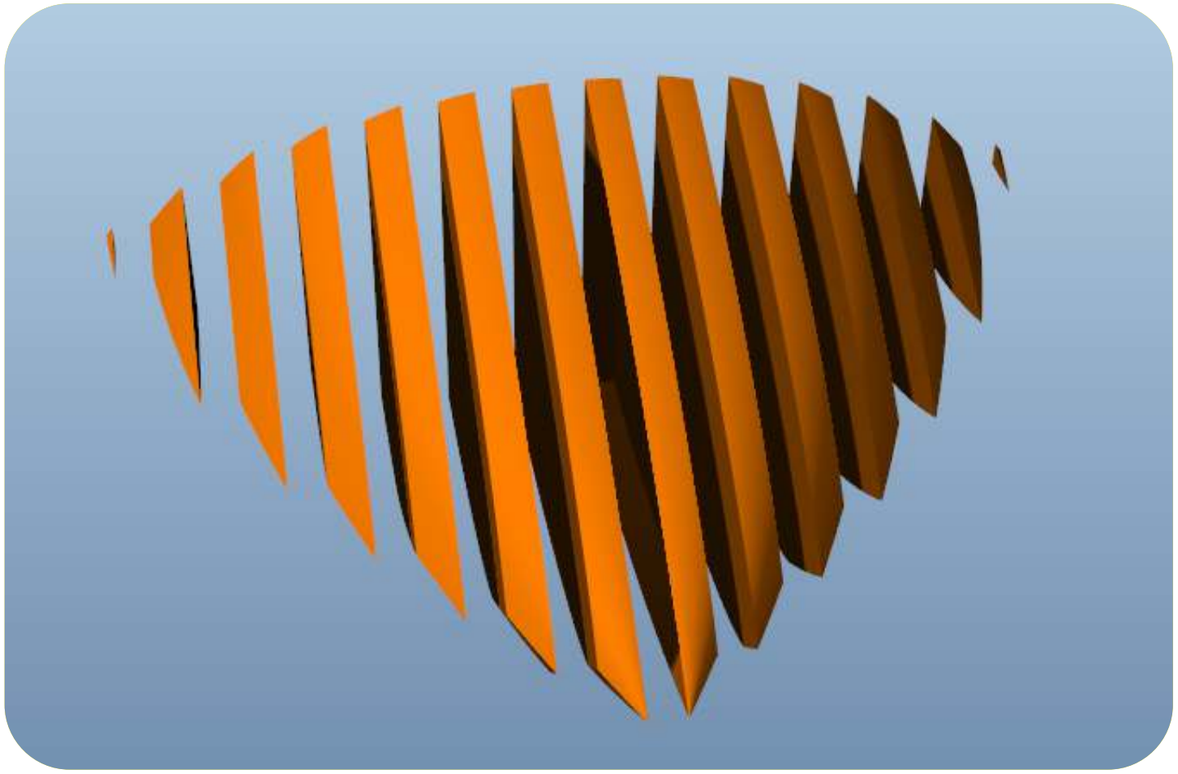
Glue the belly panel in place.



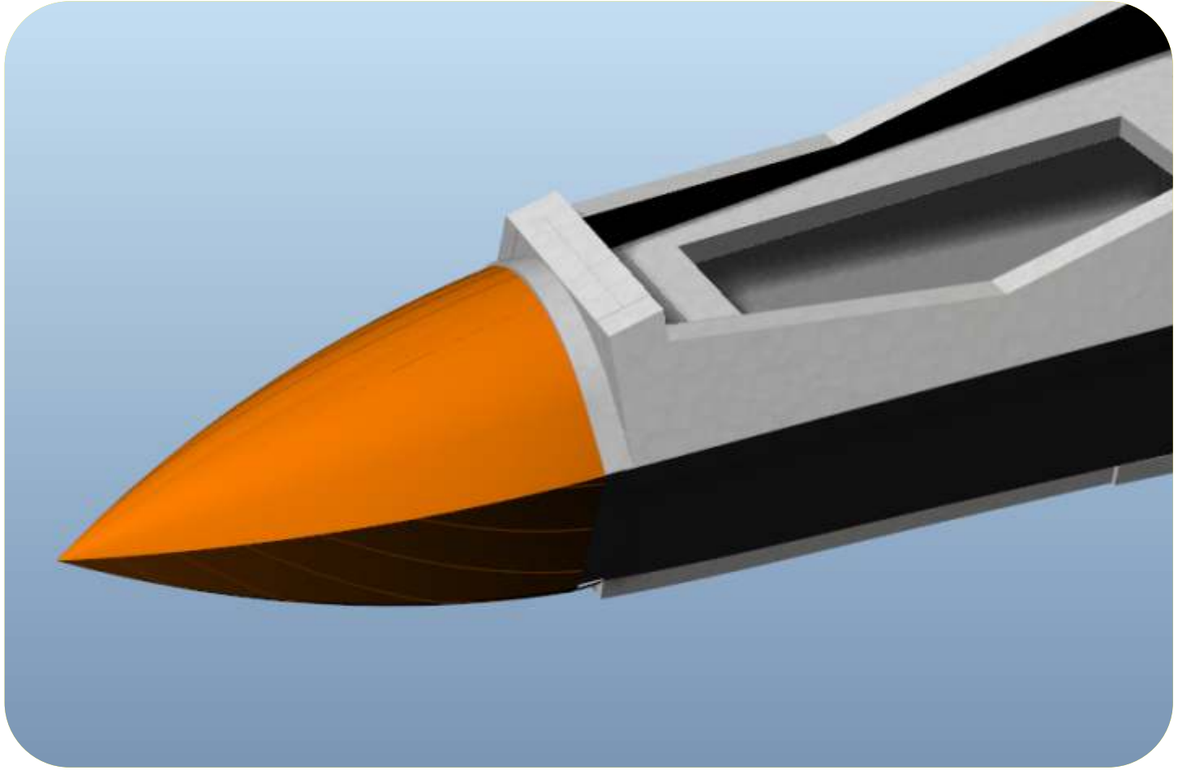
Curve and shape a 3mm piece of depron to give the belly engine cowl shape.



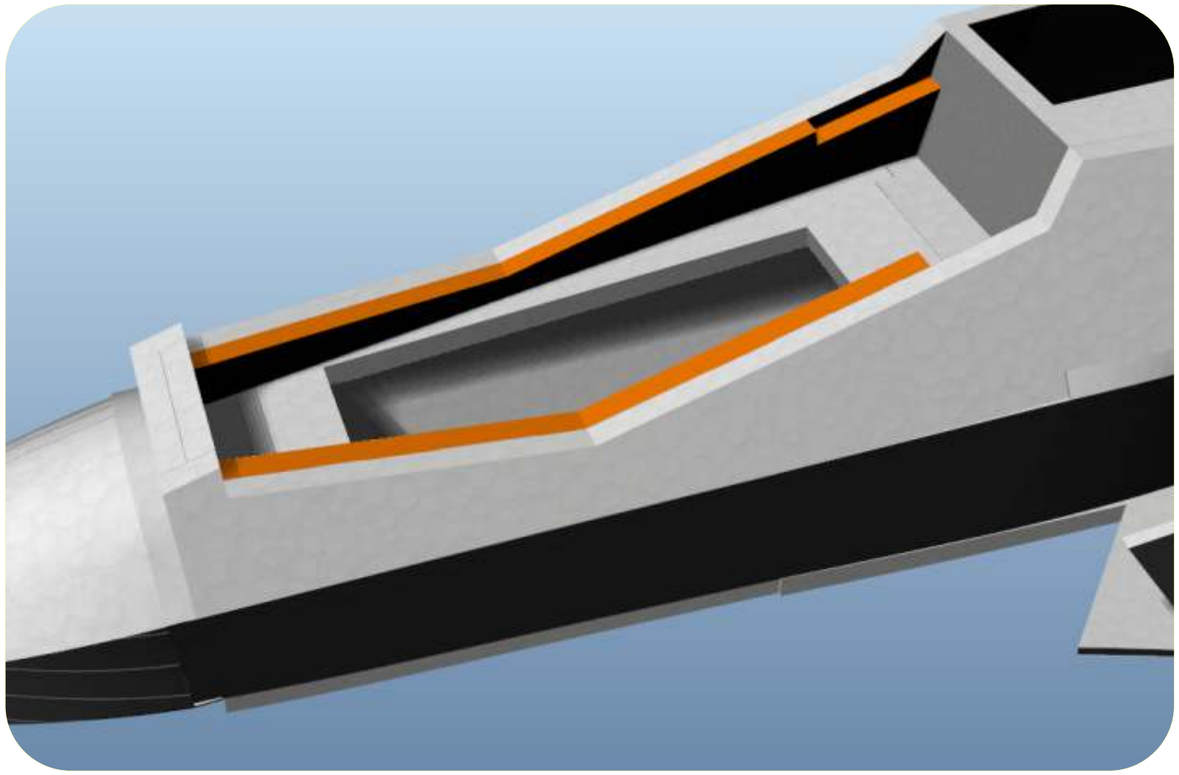
Glue the nosecone alignment piece in place.



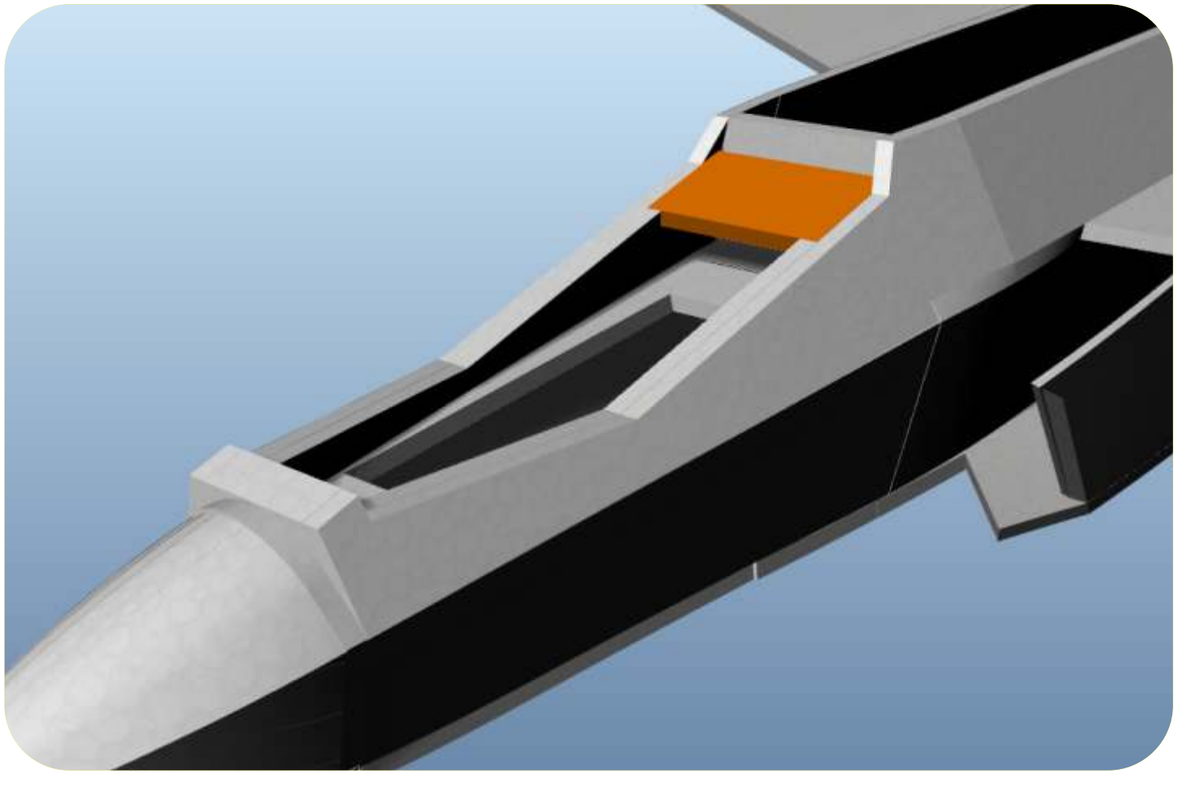
Assemble the nosecone and sand to shape.



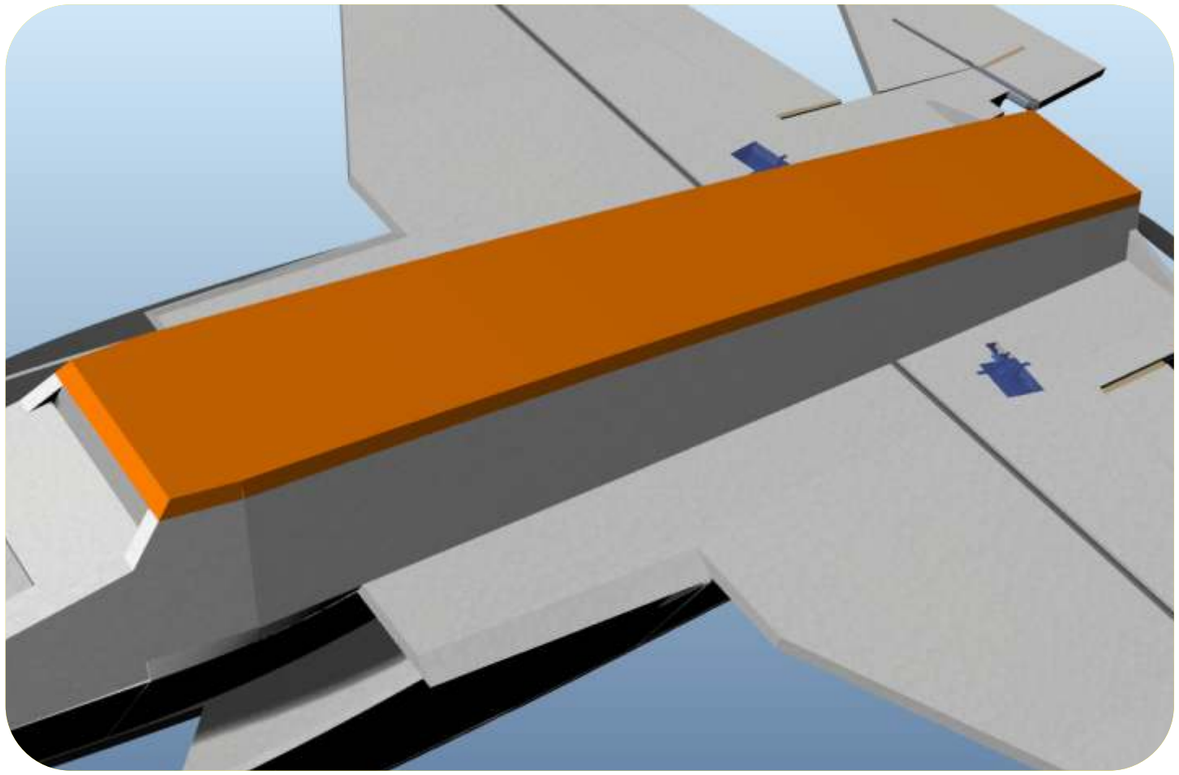
Locate the nosecone onto the main assembly.



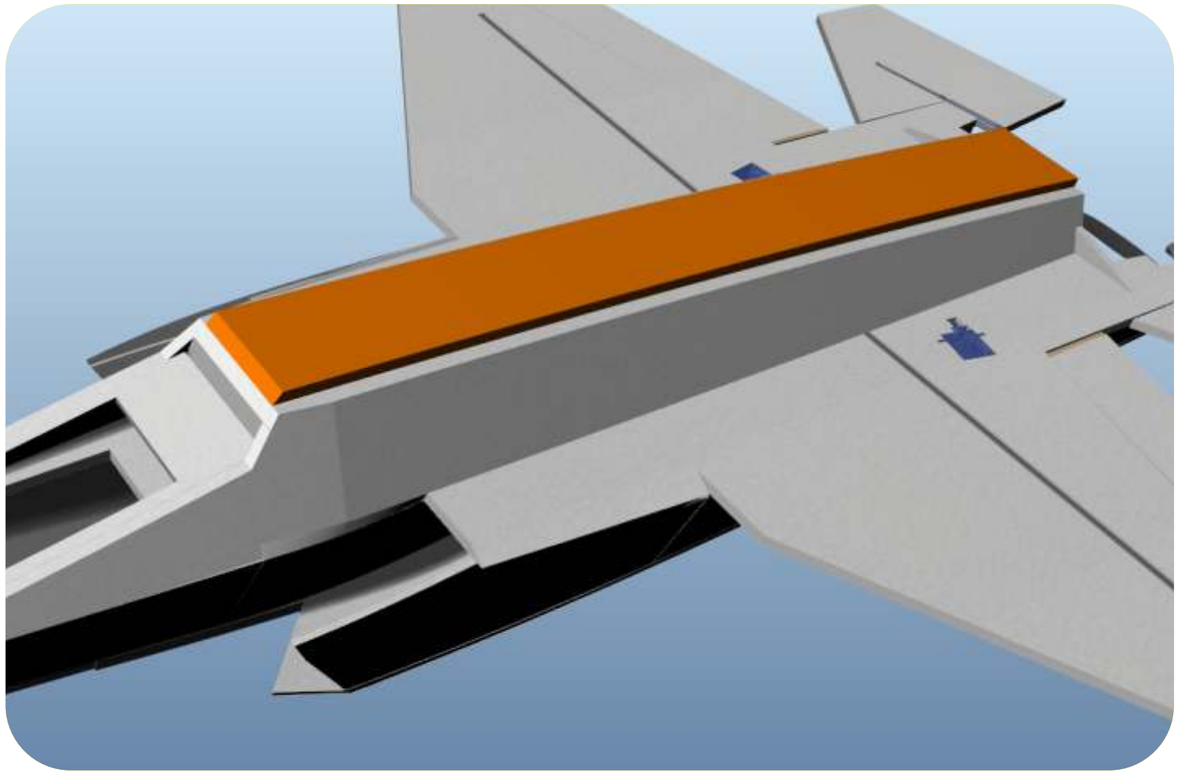
Glue in place the canopy side supports.



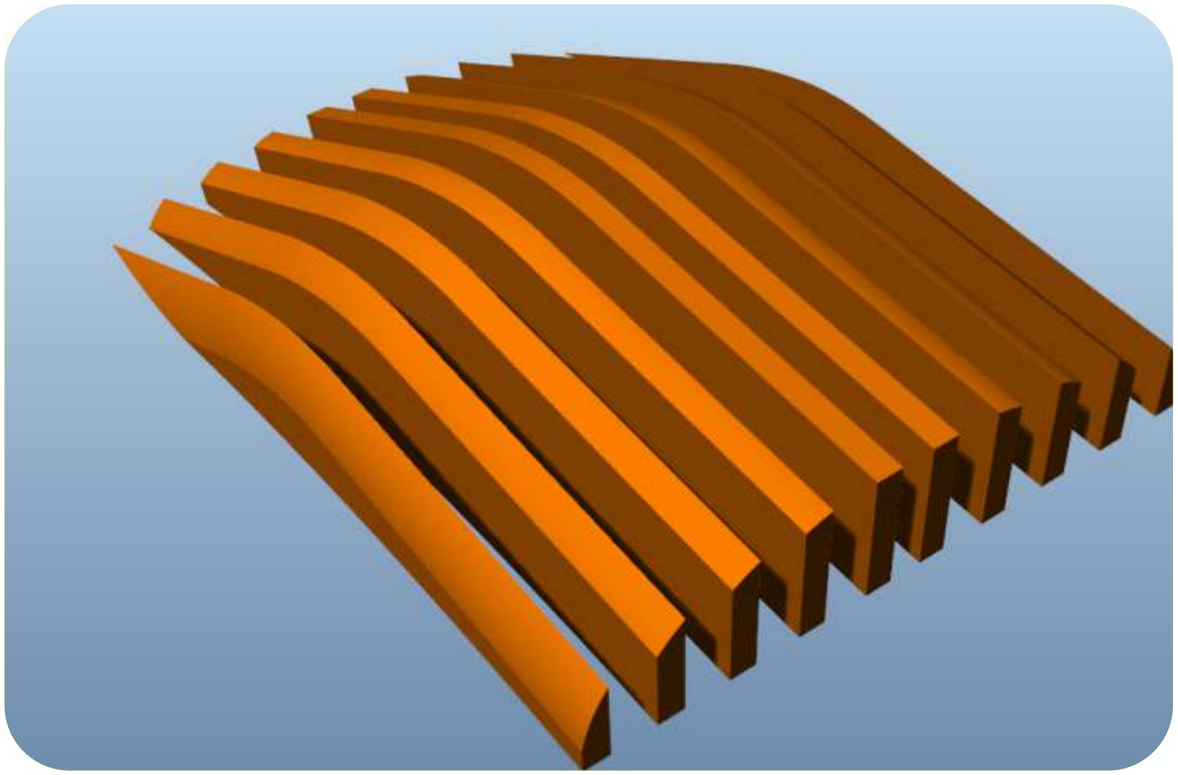
Glue the canopy magnet strip in place.



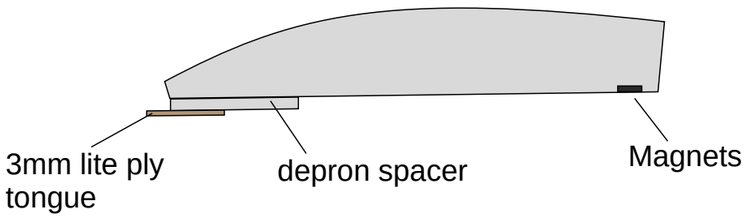
Glue the lower fuselage turtledeck in place.



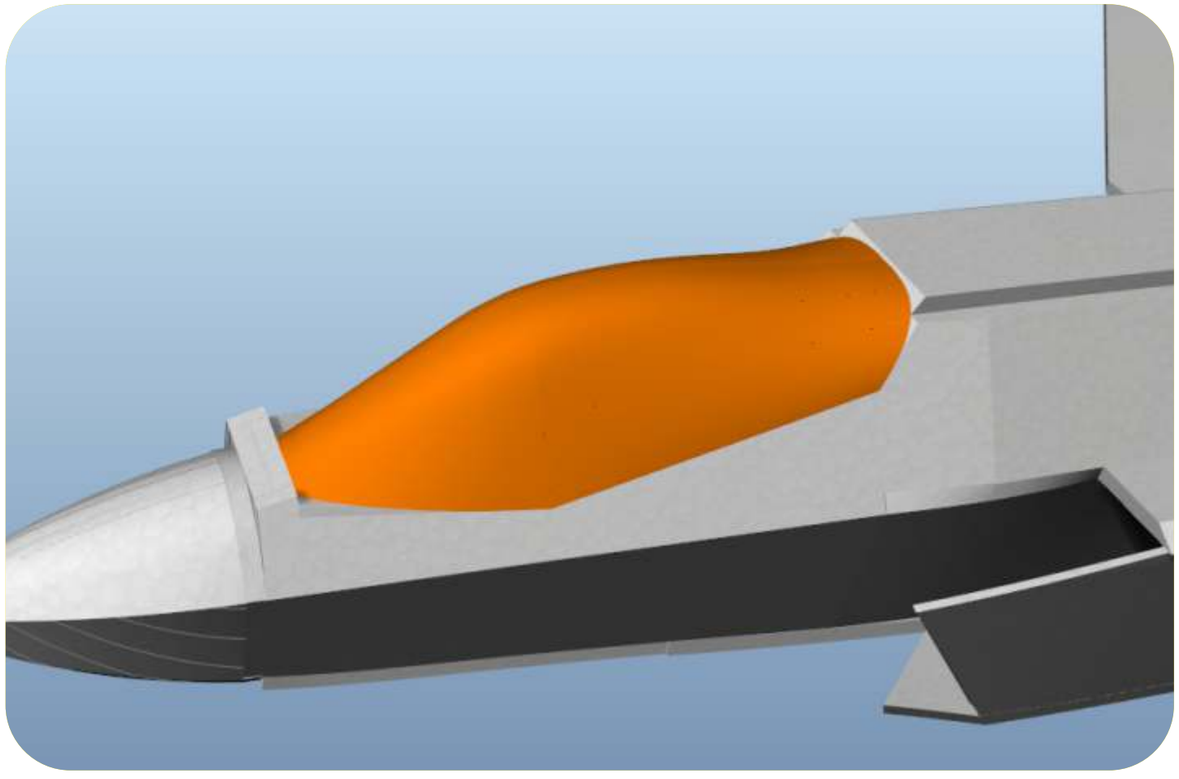
Glue the Upperr fuselage turtledeck in place.



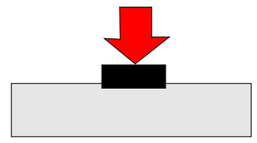
Glue together the canopy pieces and sand to shape.



Create a 3mm lite ply lip at the front end, and 2 rare earth magnets at the rear end..

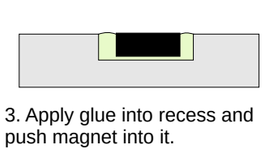


Rare-earth Magnet attachment process



1. press magnet into depron to impress shape.

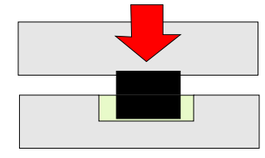
2. Dig out a recess for the magnet using a sharp knife.



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

4. Whilst still wet, lay masking tape over the area.

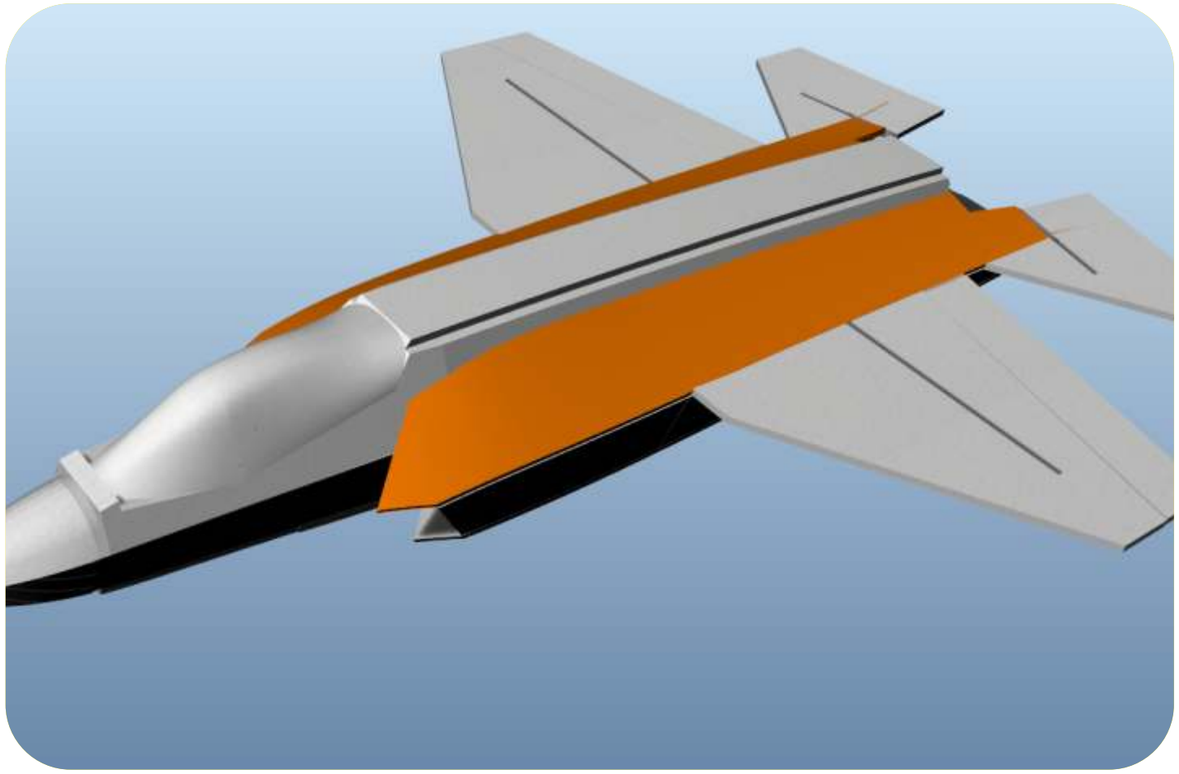
5. When fully cured, remove tape and put adjoining magnet on top



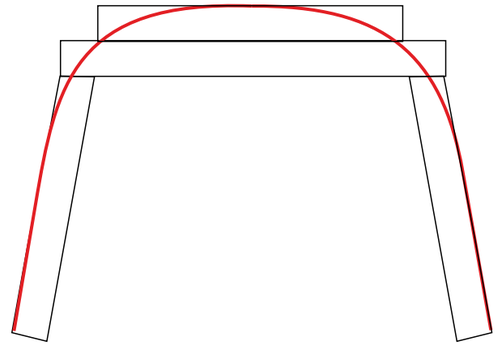
6. When correctly aligned, press adjoining depron onto the sticking up magnet to impress shape.

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

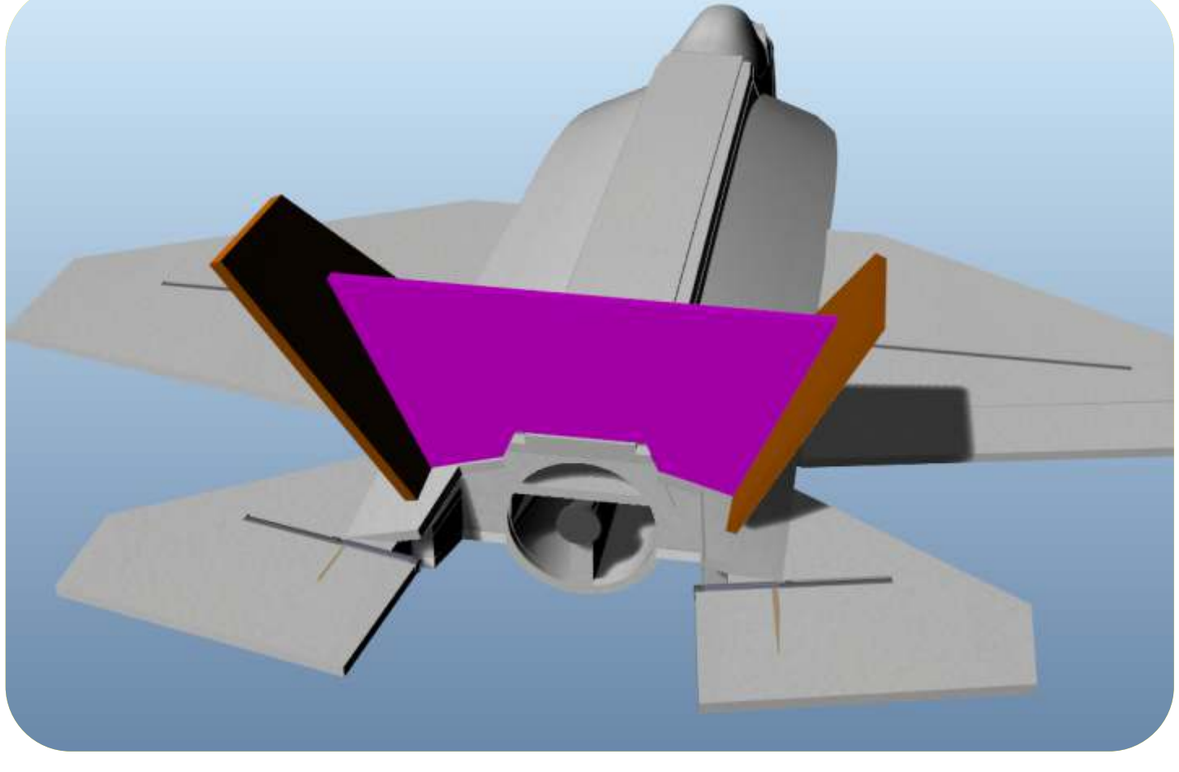
IMPORTANT.
Before glueing the upper magnet in, check that the magnet is the right way around!



Before attaching the angled pieces, sand the canopy / turtledeck to the right shape as indicated by the canopy shape.

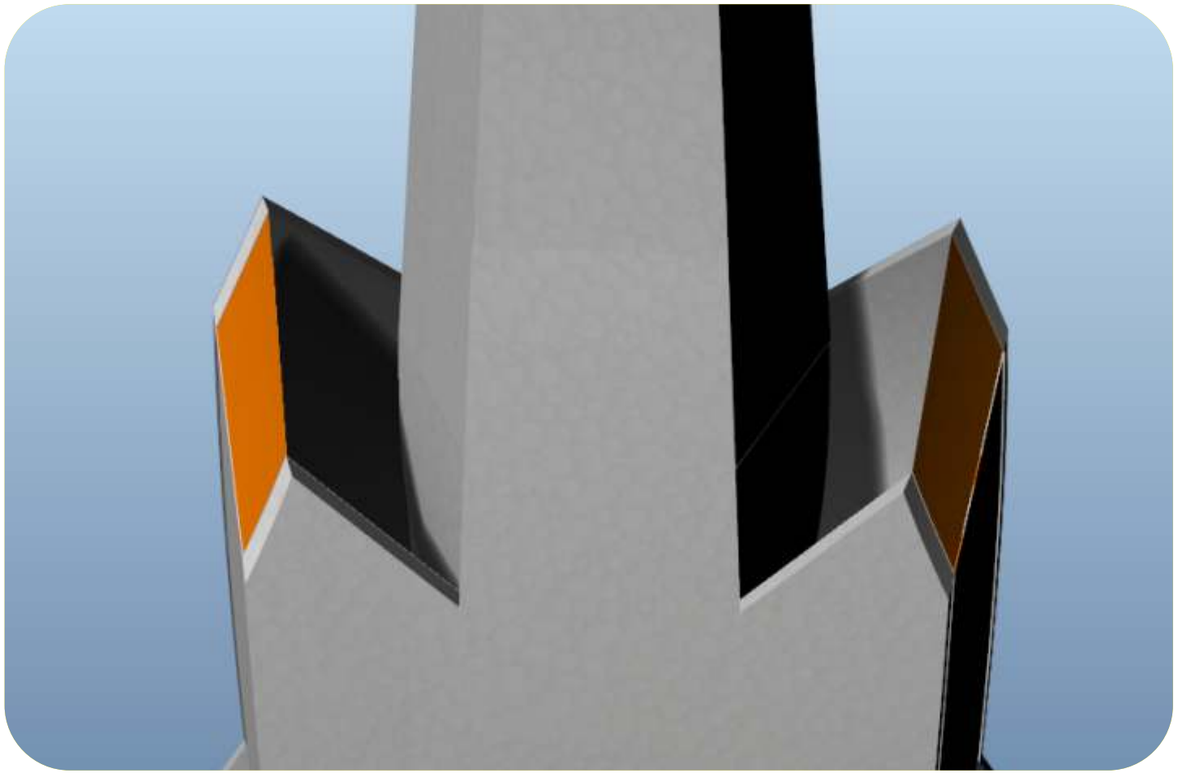


Use pre-marked lines on the assembly to identify where the angled pieces should fit.

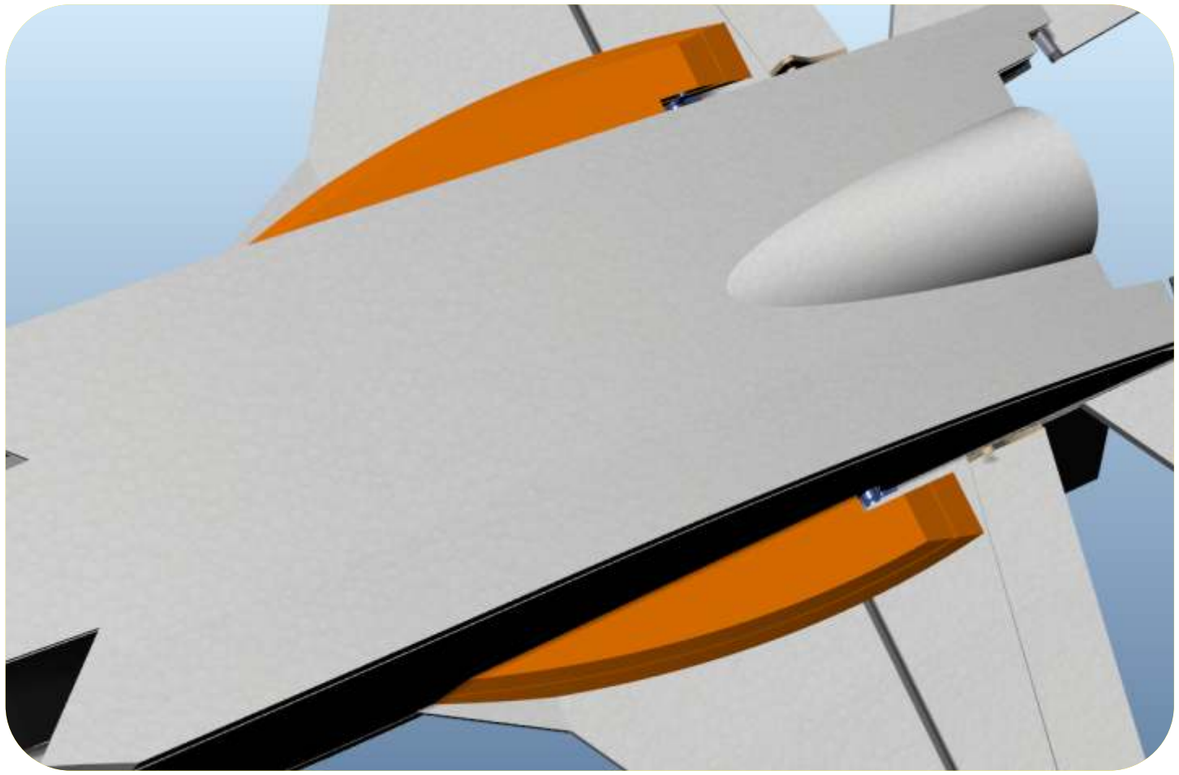


Using the Jig, glue the two vertical stabilisers in place.

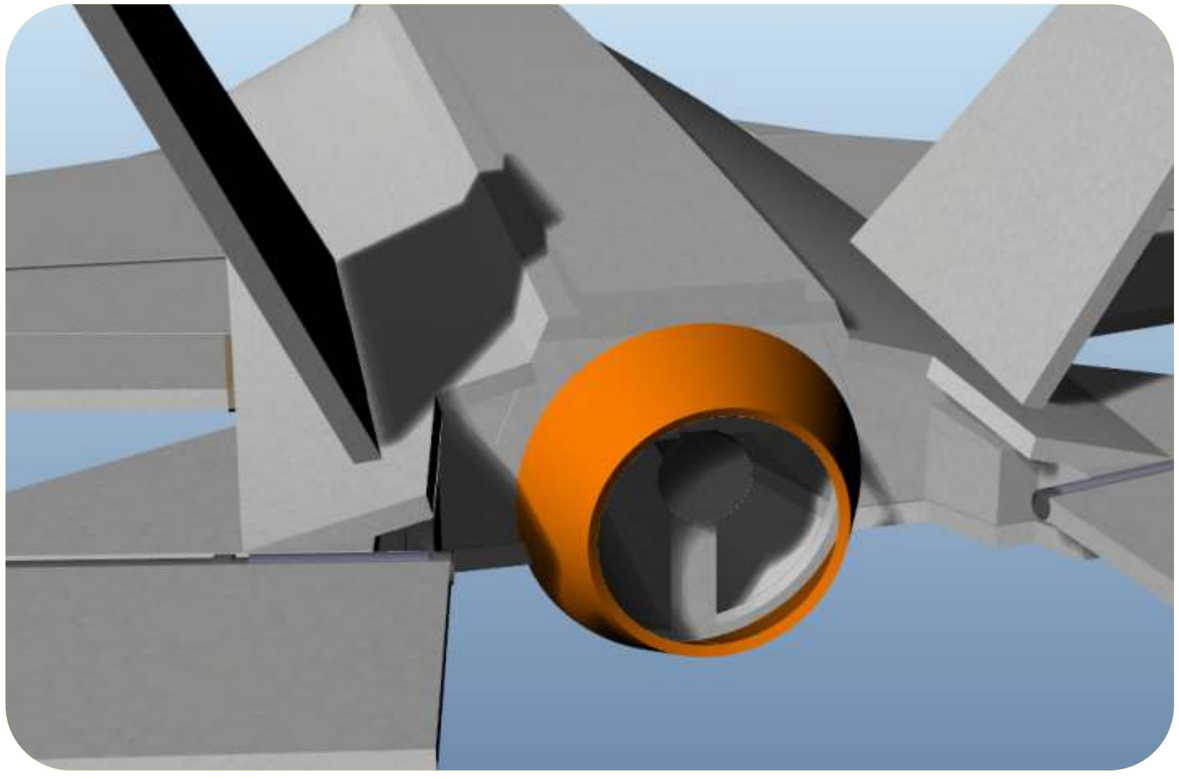
Glue on the two triangular wing pieces aligned slightly down to match the chine in the forward fuselage.



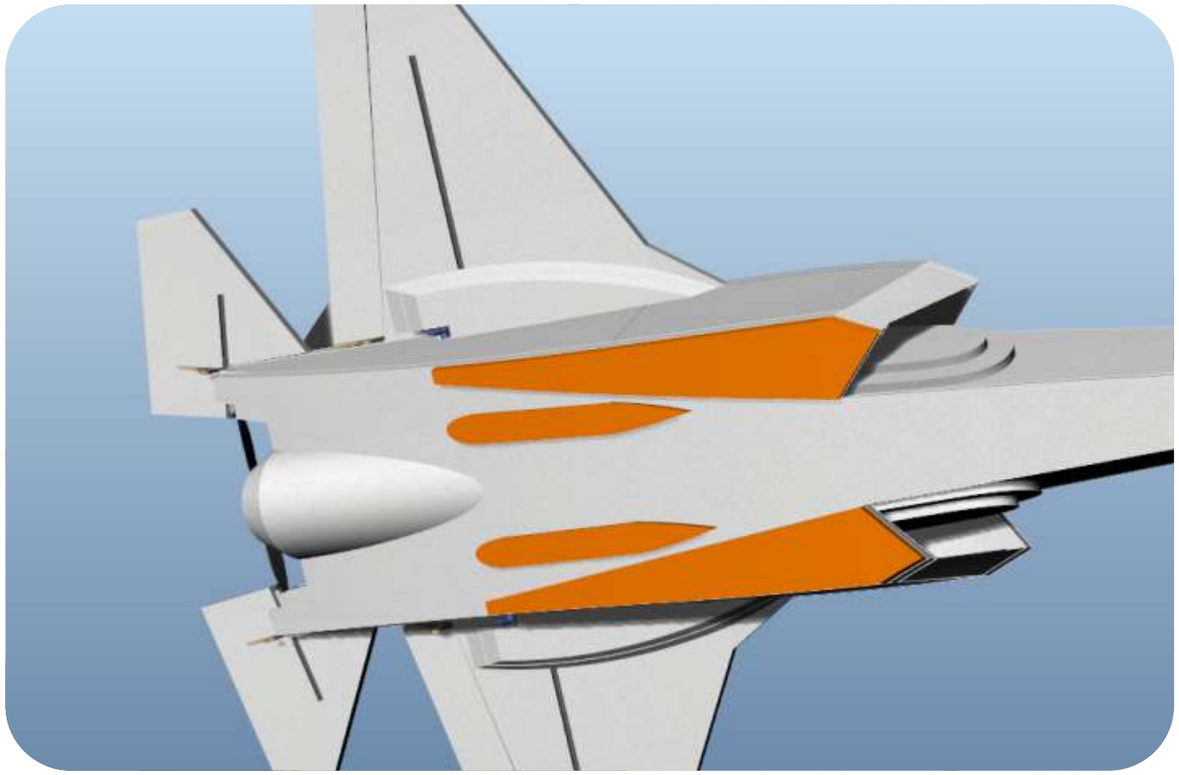
Glue the angled air intake pieces in place.



Pre-assemble and shape the two wing ‘bumps’ and glue to the wing ensuring free movement of ailerons.

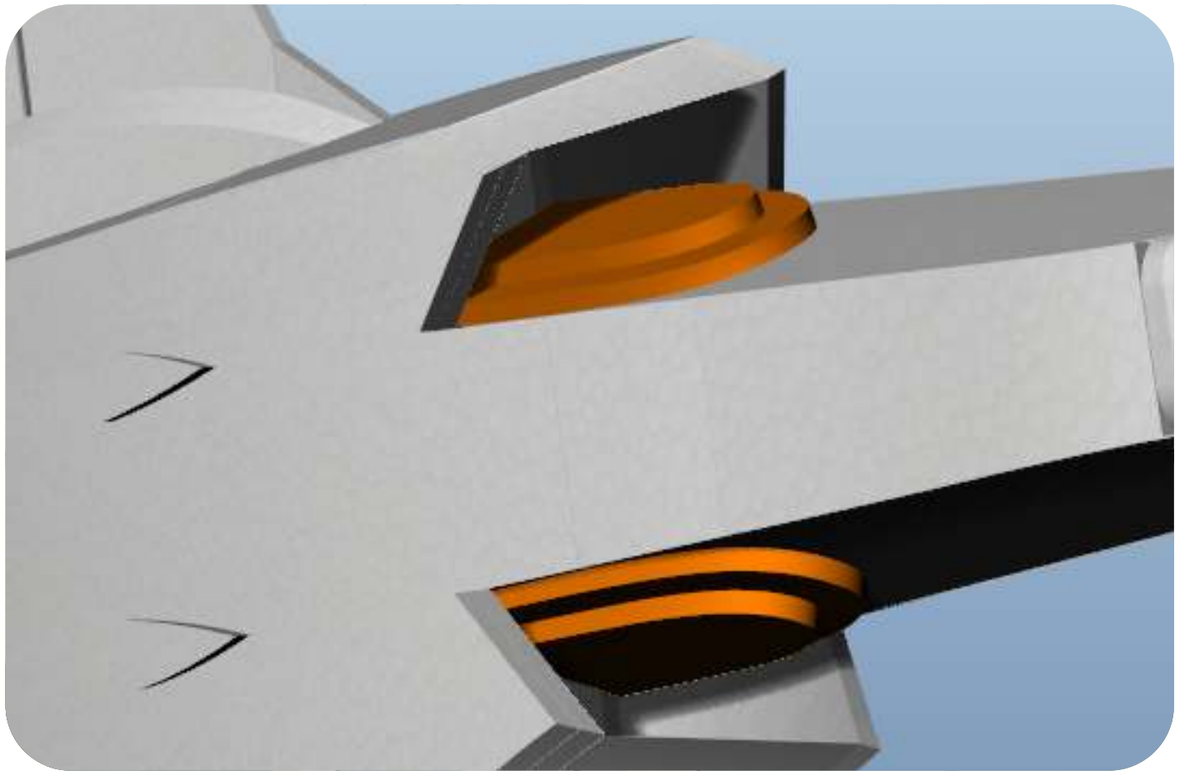


Shape the 3mm exhaust cone and glue to the assembly.



Using photos of the real plane, sand these parts to resemble the real thing and glue in place.

Using photos of the real plane, sand these parts to resemble the real thing and glue in place.



PUSHER ONLY.

To make your f-35 even more authentic, shape these parts to resemble the real f-35 and glue in place as shown.

Congratulations, your model is now complete.

Refer to finishing guide to help you paint it.

Use photo’s to help shape
Your model to represent
the real plane