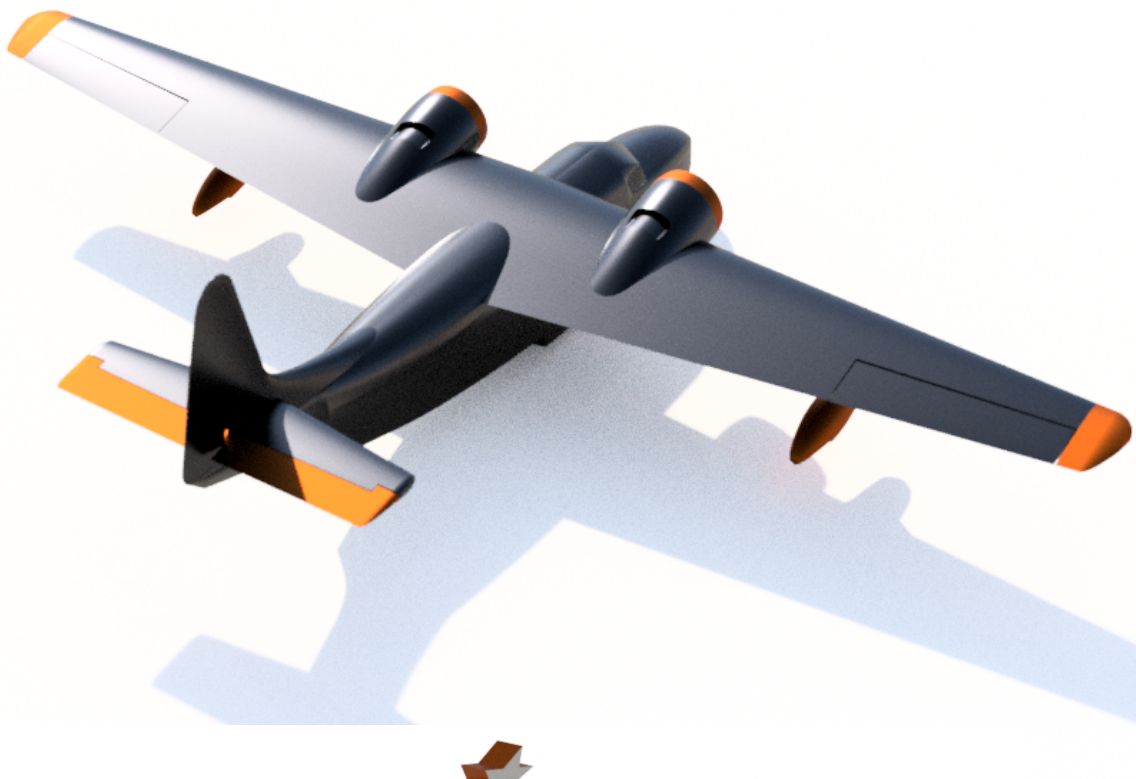
rc3Dprint



PRINTING AND ASSEMBLY

THANK YOU

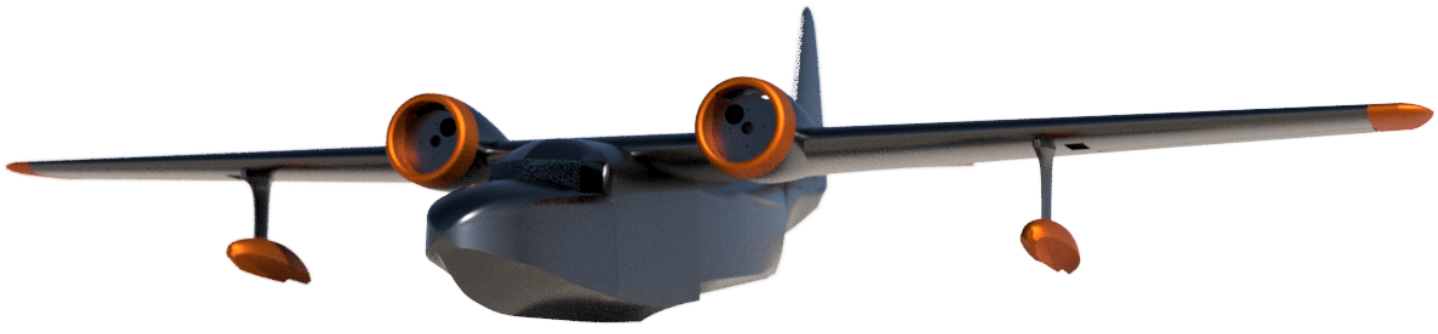
Thank you for purchasing the Grumman Mallard. These models take many hours of work to make available to you so please don't share the STL files with others. Send them to www.rc3print.com so they can purchase them at a reasonable price. This enables us to keep making improvements and bring you new aircraft.

This document aims to help you print and assemble your aircraft. Our designs are made to be simple "print and glue builds". If you follow the instruction you will end up with a beautiful flying machine. That being said 3D printers often have many differences so you may need to tweak settings to get the best results.

Included in this document you will find suggested Cura settings and layouts for each part and assembly instructions. Many of the components in the design are *solid bodies,* this has some advantages over hollow bodies in that you can adjust some settings such as wall thickness, infill percentage, etc. As such we recommend using Cura to slice the files. The walls of these solid bodies are single line 0.4mm thickness to reduce weight with parts like the fuselage having an inside and outside wall for strength.

As you are printing and assembling the model yourself we take no liability for damage or loss resulting from your use of these files. Please fly responsibly and follow all local laws.

Share your flights on instagram and tag @rc3dprint for discount codes on future orders.



PARTS LIST

REQUIRED

Motors x 2 - 2217 ~1000kv(minimum) or larger - 30A ESC and LIPO - 3S battery minimum

2 x Propellers 9x5. 9 inch diameter is maximum - 3 bladed 8 inch gives more clearance but looses a little thrust due to the large nacelles. No problem with the turbo nacelles.

4 - Channel radio kit.

3 x 9g micro servos + servo extensions

2 x BBQ Skewers + Elastic Bands for wing mounting

8 x “servo size” screws for mounting motor and wing struts

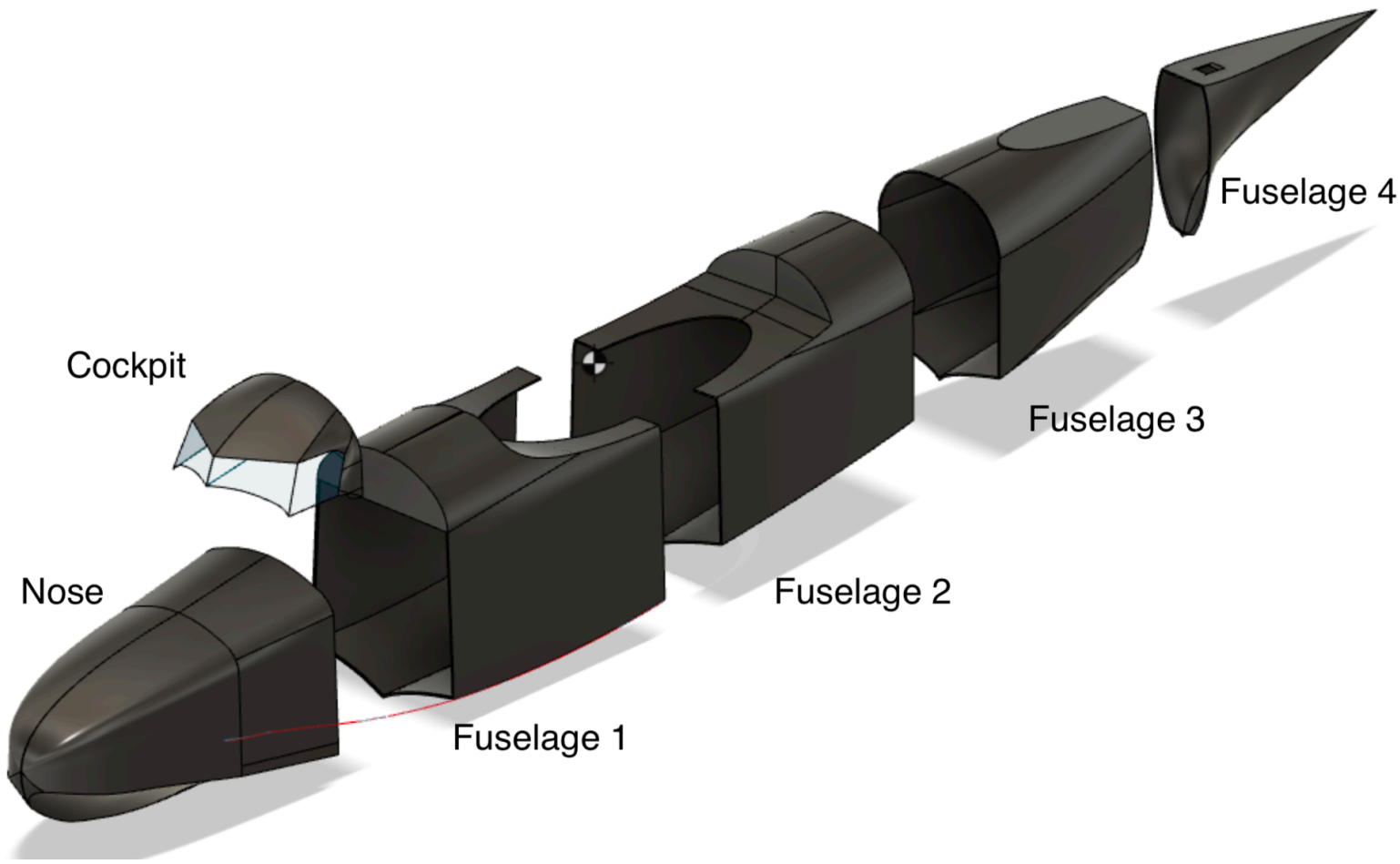
2m of piano wire for control rods, landing gear and hinges

CA glue

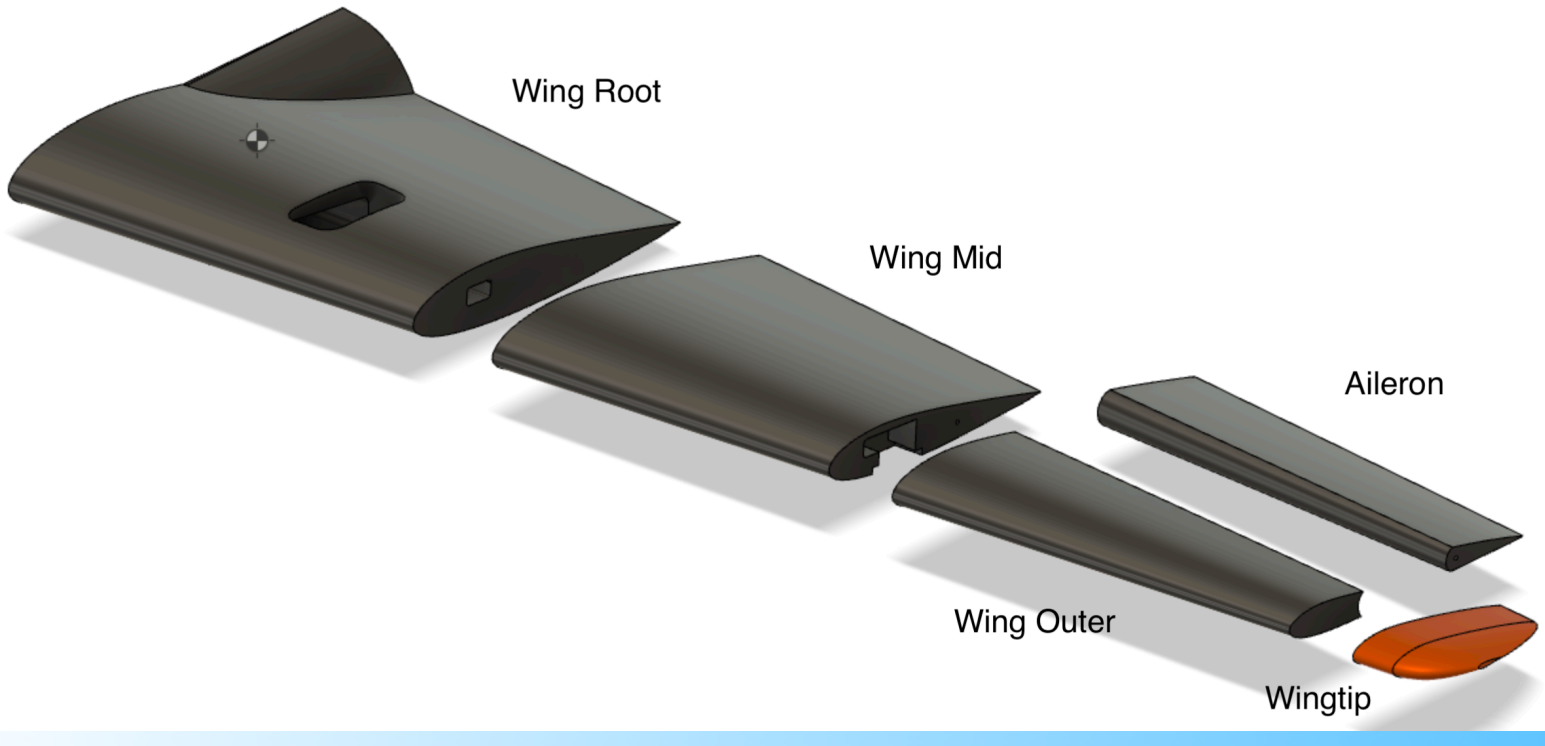
Hot glue (optional)

INCLUDED STL. FILES

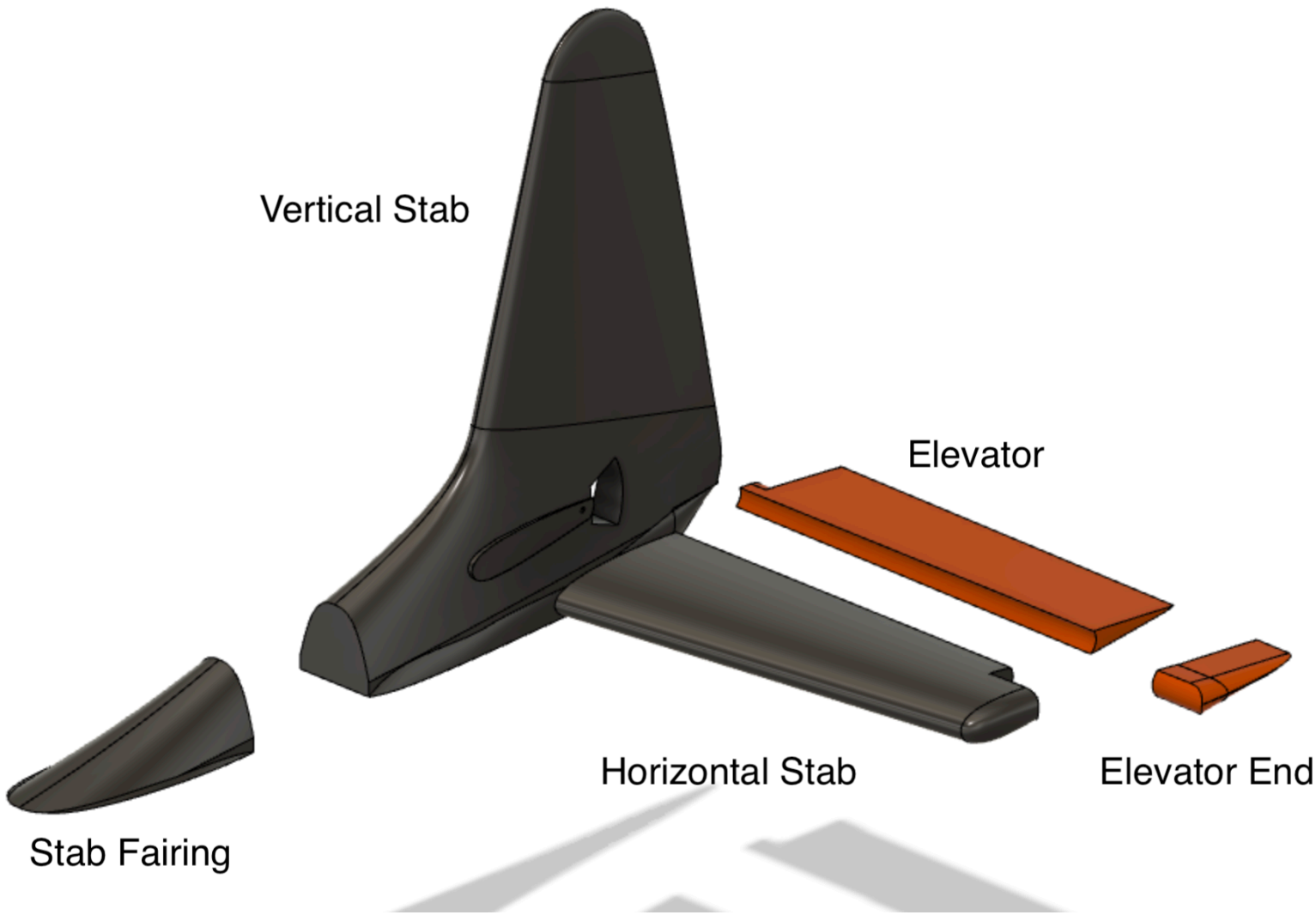
FUSELAGE



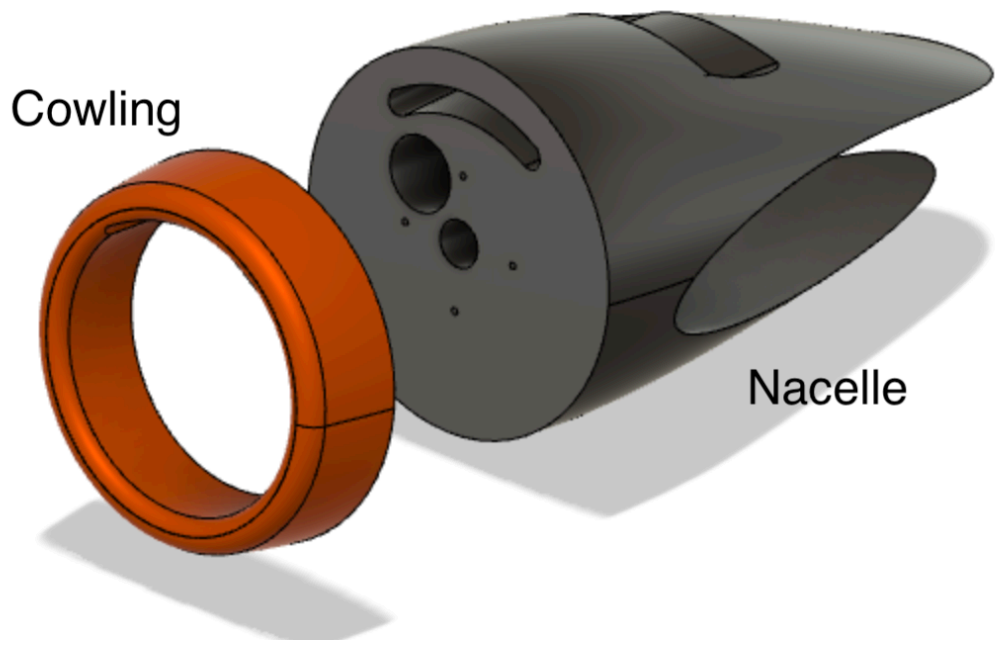
WING



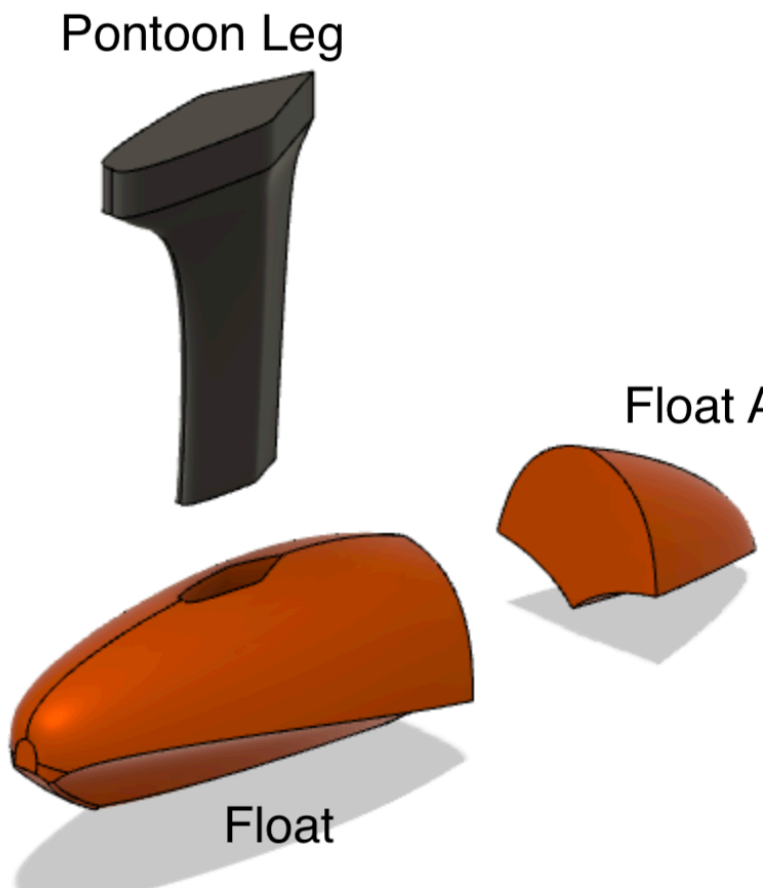
STABILISER

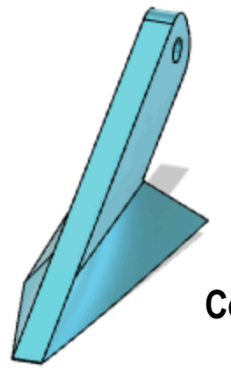


NACELLE



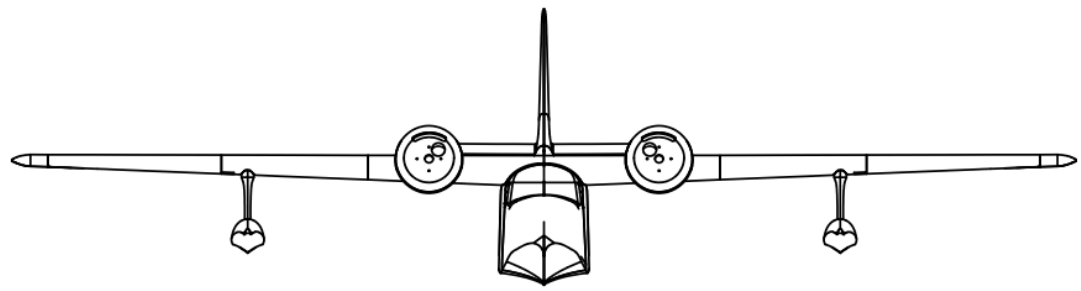
PONTOON & EXTRAS

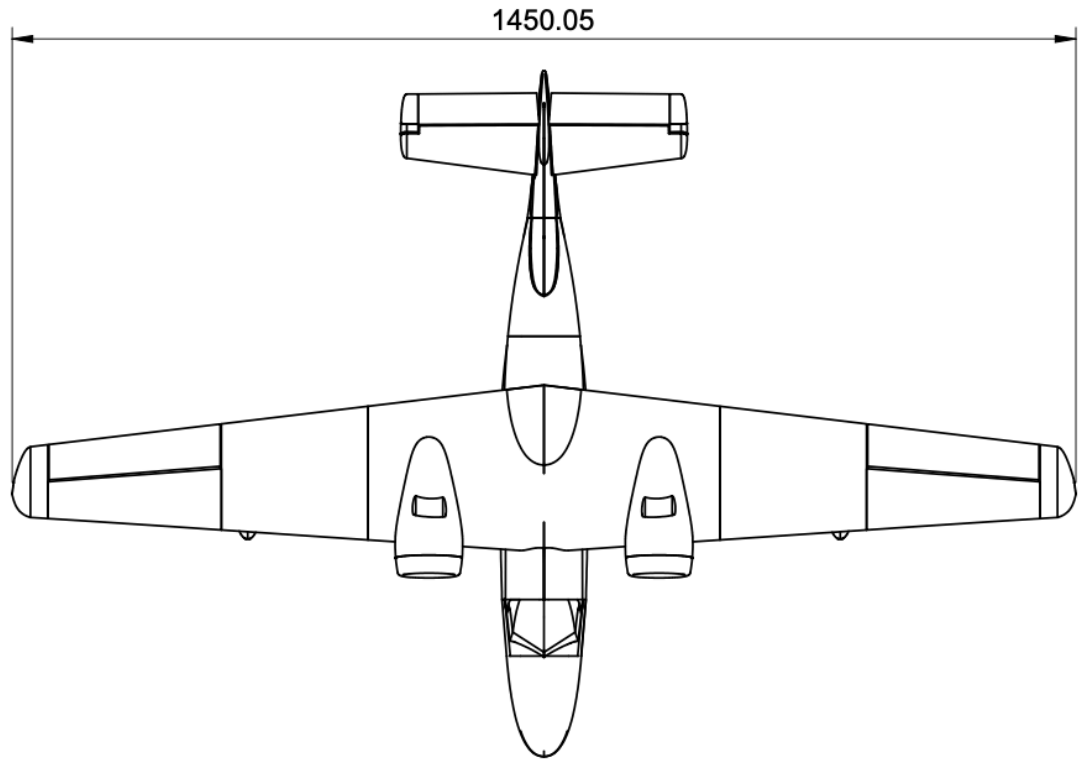


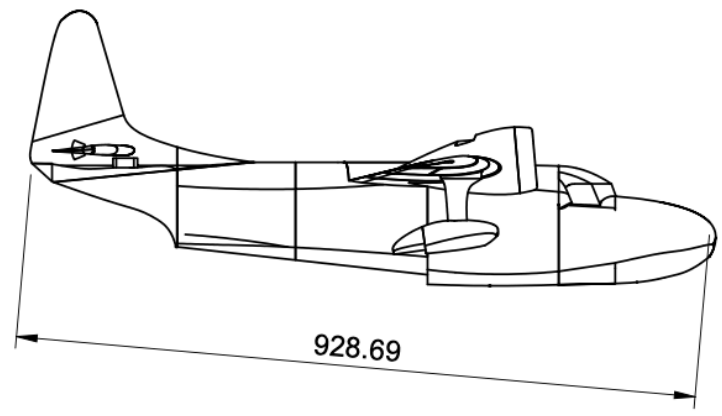


Control Link

SPECIFICATIONS







Wing Span

1450mm

Flying Weight

(2200mAh 3S): 1450g

Wing Loading

64.7 g/dm2 21.2 oz/ sq.ft

Wing Cube Loading

13.4

Channels

4 Channel

Diff. Throttle/Aileron/ Elevator

Centre of Gravity

6.5-7.4cm back from the leading edge. Marked on latest STL

PRINTING PROFILES

Please save the following two profiles in Cura, ready to be used as required for the selected parts to be printed.

Load a generic PLA profile into Cura for your printer, then change the following from the default options Profile 1.

PLA PROFILE 1

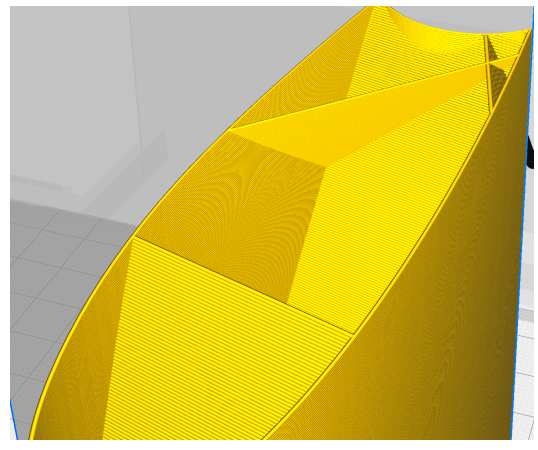
Wall Thickness	0.4mm
Wall line count	1
Top/Bottom Pattern	Lines
Infill Density	3
Infill Pattern	Cubic
Connect Infill Lines	Off
Printing Temperature	215 -230C
Build Plate Temperature	60C (optional)
Fan Speed	20% Maximum
Generate Support	No
Build PLate Adhesion	Skirt, or Brim as recommended for individual pieces

Save this profile as PROFILE 1

PLA PROFILE 2 - MOUNT

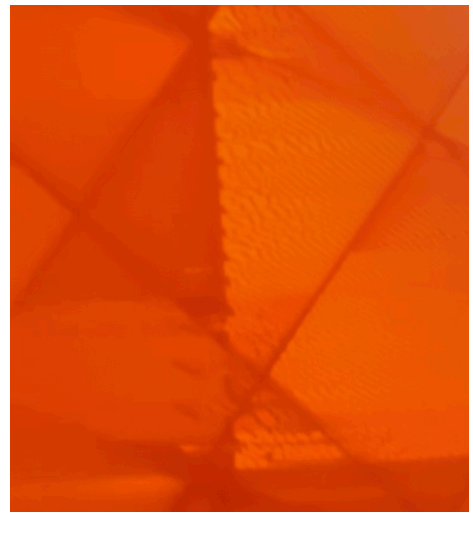
Wall Thickness	0.4mm
Wall line count	1
Bottom Thickness	2mm
Top/Bottom Pattern	Lines
Infill Density	4
Infill Pattern	Cubic
Connect infill lines	Off
Printing Temperature	215 -230C
Build Plate Temperature	60C (optional)
Fan Speed	20% Max
Generate Support	No
Build PLate Adhesion	Skirt

Save this profile as PROFILE 2 - Used for Nacelles



When you preview the part you should see something like this: A single wall around the outside with lines of infill inside.

If you get under extrusion upon layer change (see image right) increase the setting: *retraction extra prim amount = 1-3mm*



ASSEMBLY

I know how excited we all get and like to bound ahead without looking at instructions so here are

3 MUST READ POINTS

1. **THE ELEVATOR IS ASSEMBLED IN PLACE, DON'T GLUE IT TOGETHER PRIOR TO ASSEMBLY.**

2. **THE AILERON-SERVOS SHOULD BE IN PLACE BEFORE GLUING THE WING TOGETHER.**

3. **THE AILERON NEEDS TO BE IN PLACE BEFORE GLUING THE WINGTIP ON.**

4. **IF USING 9 INCH PROPS CHECK YOUR PROP CLEARANCE WHEN GLUING THE NACELLES IN PLACE.**

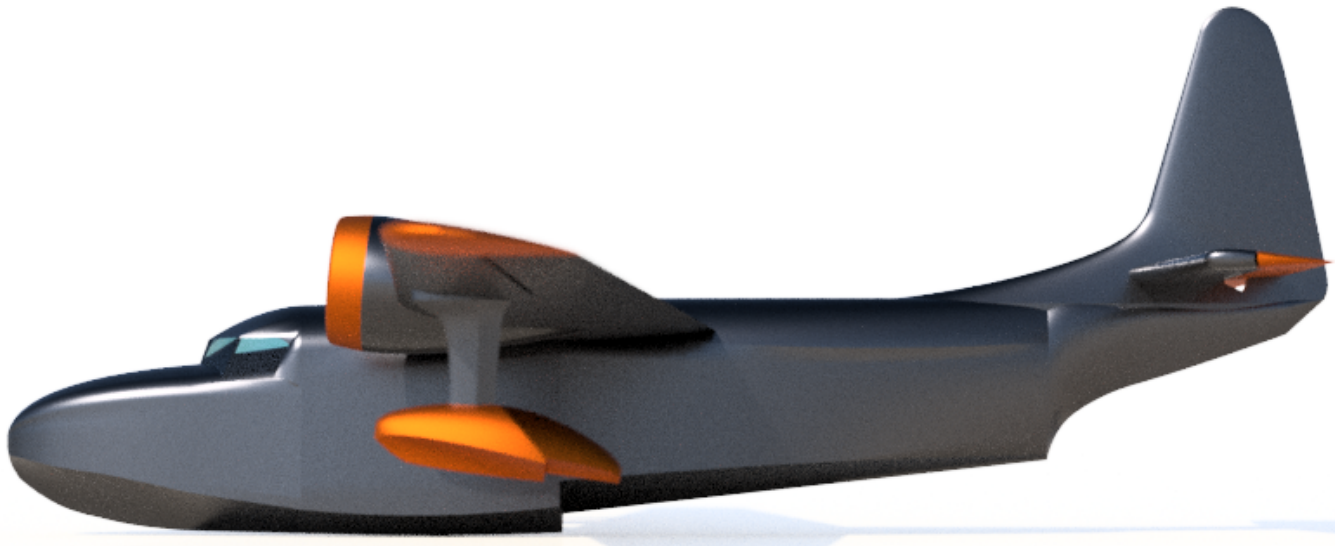
- Glue together the sections of the fuselage starting from the nose. It is important to sand each surface to make sure the joins are strong. You can affix the cockpit in place.
- Place your servo into the vertical stab and feed the servo wire into the fuselage before gluing the Vertical Stab in place. Then glue the stab fairing in place.
- Drill through the Vertical stab at the back of the horizontal stab join, so that the elevator hinge can pass through (optional).

- Glue the horizontal stabilisers into place. Make sure you take a moment to put them the right way round.
- The 2 sections of the elevator are glued together in the middle, there is a cutout for a pice of filament or piano wire to stiffen the join. I recommend using a ice lolly stick taped under the join to make sure the 2 halves of the elevator are lined up correctly whilst gluing.
- Cut the elevator hinge to size and glue the elevator ends in place over the hinge.
- Start the wing build with the wing root. Glue the 2 wing roots together and work outwards.It is a good idea to run the servo wires through the wing before gluing on the wing outers.
- Before gluing the wingtip on you need to install the aileron with piano wire hinges into the holes.
- Line up your motor mounts on the front of the nacelle. The printed hole markers may not be in the right place depending on your mount, this is ok. Mark and drill your holes with a drill bit size suitable for whatever screws you are going to use to secure your motors. Glue the cowlings onto the nacelles. With the motors in place connect up your ESC's. You can now gently slide the nacelle over the thinner outer part of the wing and feed the ESC's into the slot whilst positioning the nacelle.
- It is important not to glue the nacelles too close to the fuselage. On the top of the wing the nacelle should only just cover the channel in the wing. This allows for a 9 inch prop. Its a good idea to glue the nacelle in place with the props attached (not connected to any battery!) to check for fit.
- Glue together and fit the pontoons. You may have to clean out the slots for the pontoon legs but the fit should be snug.
- Glue in place the servo linkages to the elevator and ailerons. Hook up the servo linkages in the usual way. I usually use a dab of hot glue to secure the servos in place.
- In order to steer the aircraft on the water we use differential thrust - refer to your Tx User guide (or Google) for how to do this.

WATERPROOFING

PLA is NOT by itself waterproof. Often there are small gaps in the print through which water can pass. The glued joins may also not be water tight.

It is important before flying the Mallard from water to make sure you have waterproofed the hull. This can be done in a multitude of ways, from lacquering with epoxy to covering in vinyl. I would suggest the simplest method would be to properly prime and paint he fuselage with spray paints, making sure to get into the joins.

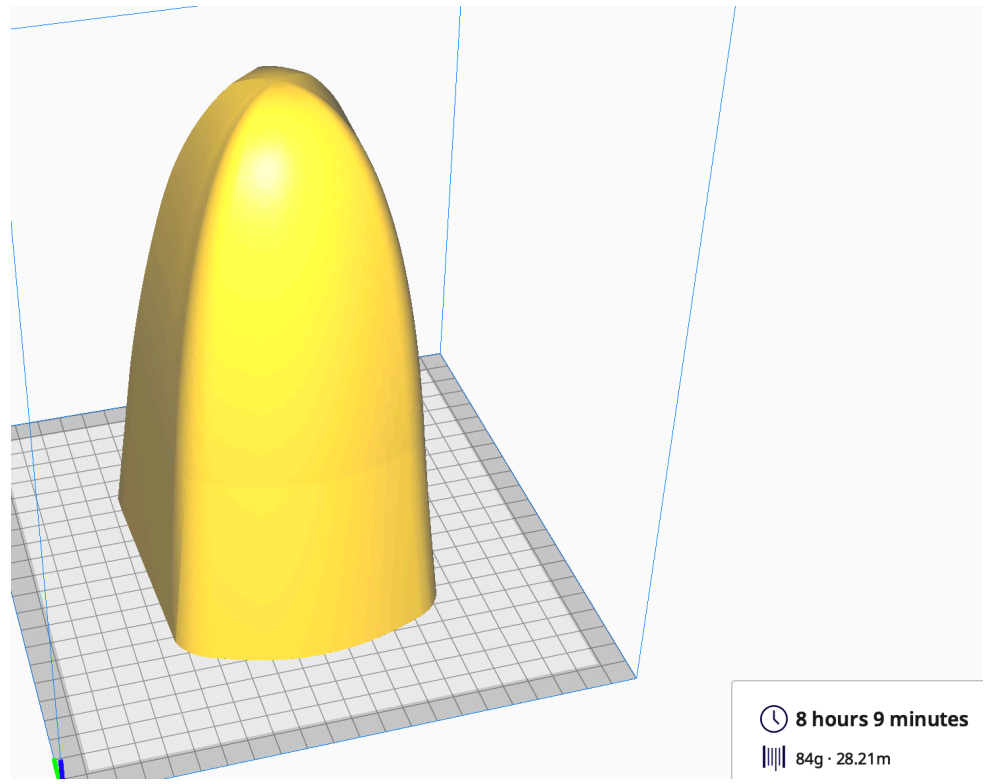


CURA COMPONENT PLACEMENT

NOSE

Profile 1

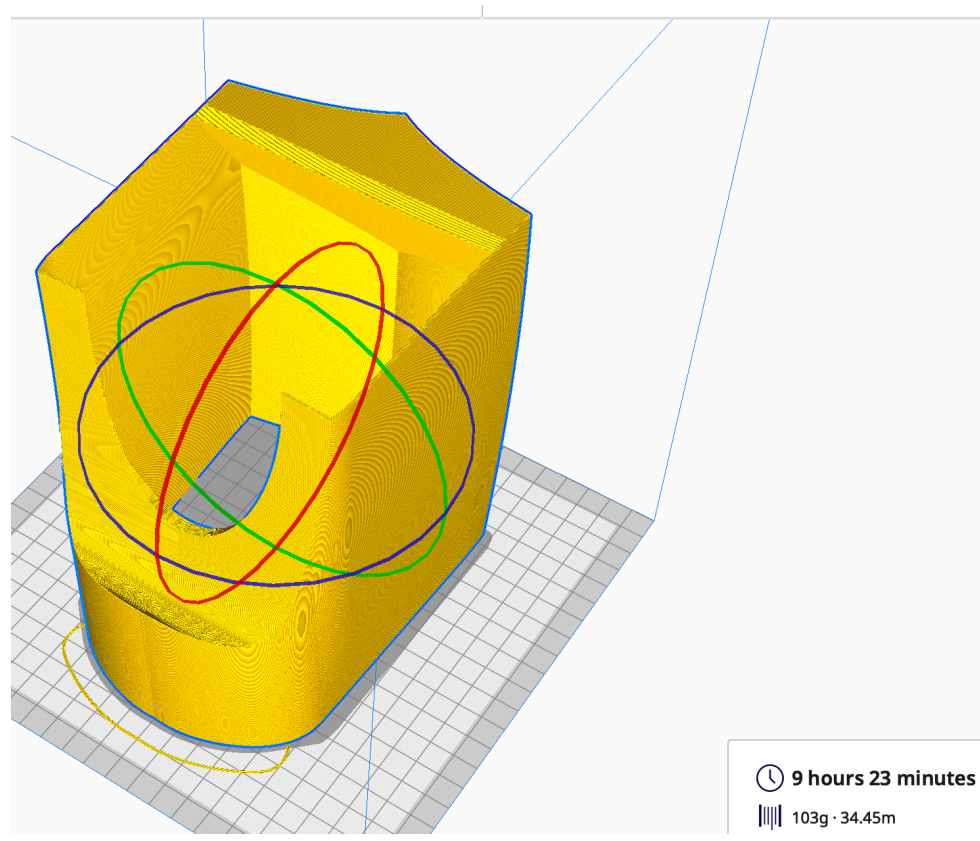
Adhesion: skirt



FUSELAGE 1

Profile 1

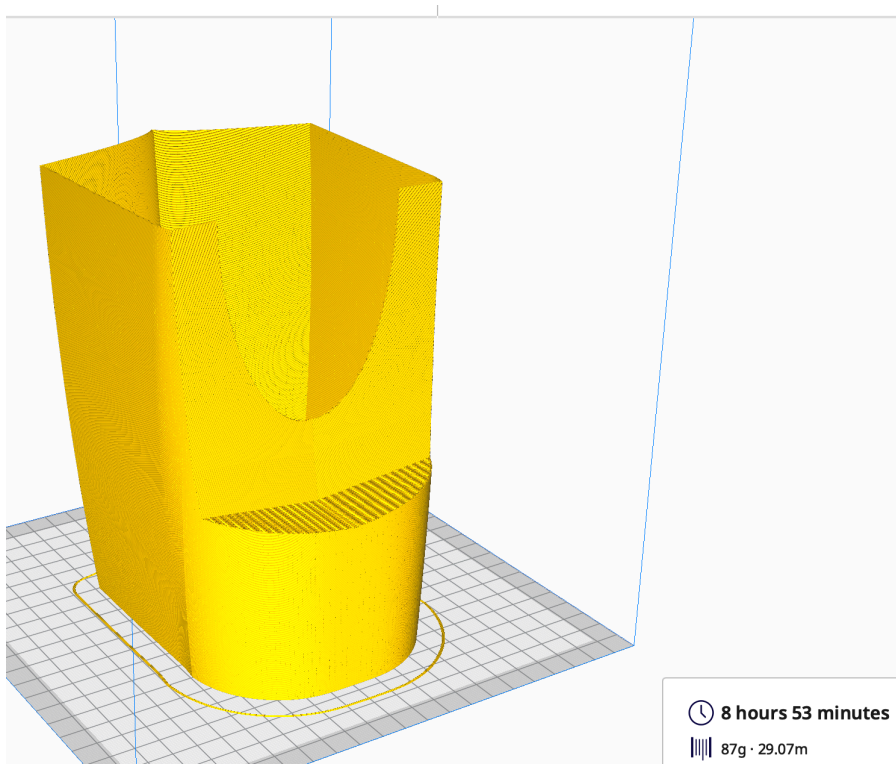
Adhesion: Skirt



FUSELAGE 2

Profile 1

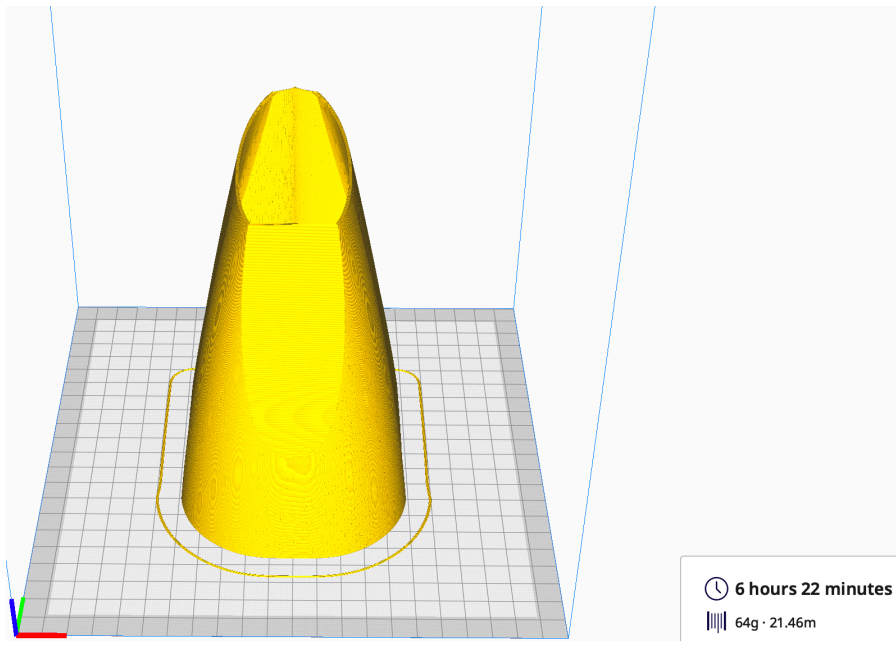
Adhesion: skirt



FUSELAGE 3

Profile 1

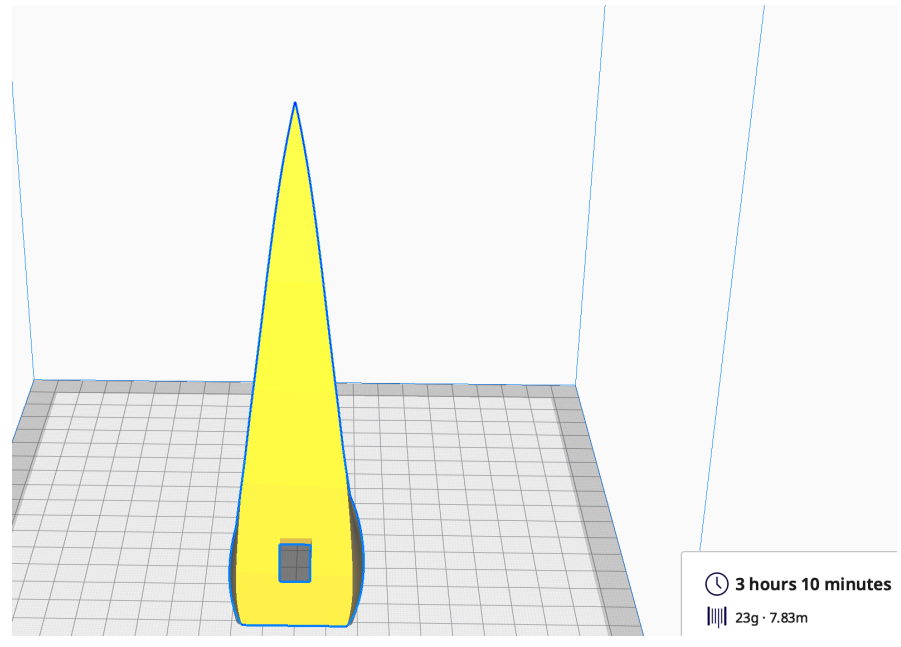
Adhesion: Skirt



FUSELAGE 4

Profile 1

Adhesion: Skirt

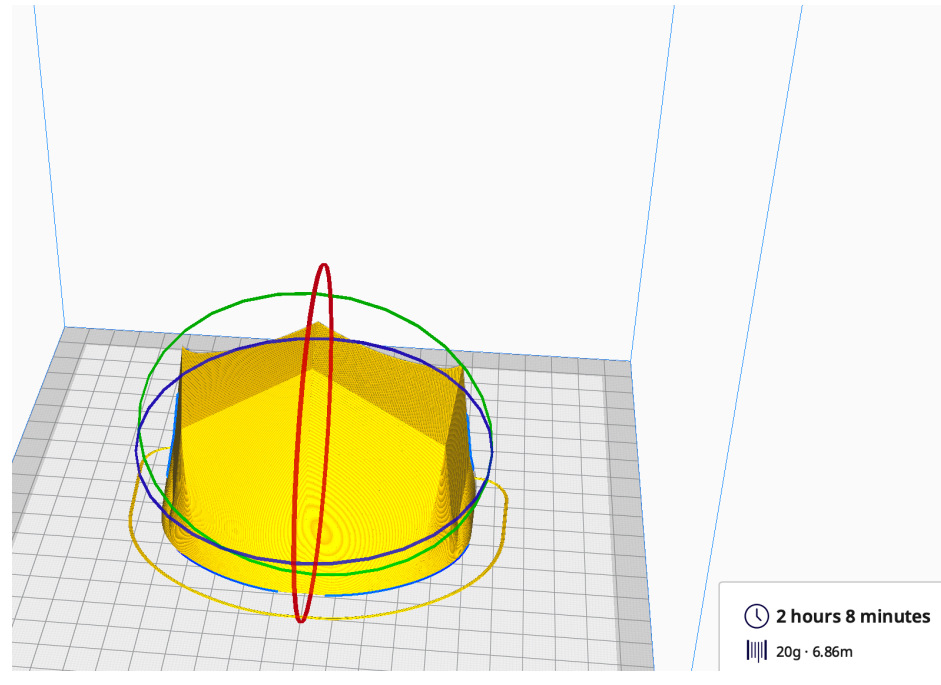


COCKPIT

Profile 1

Adhesion: Skirt

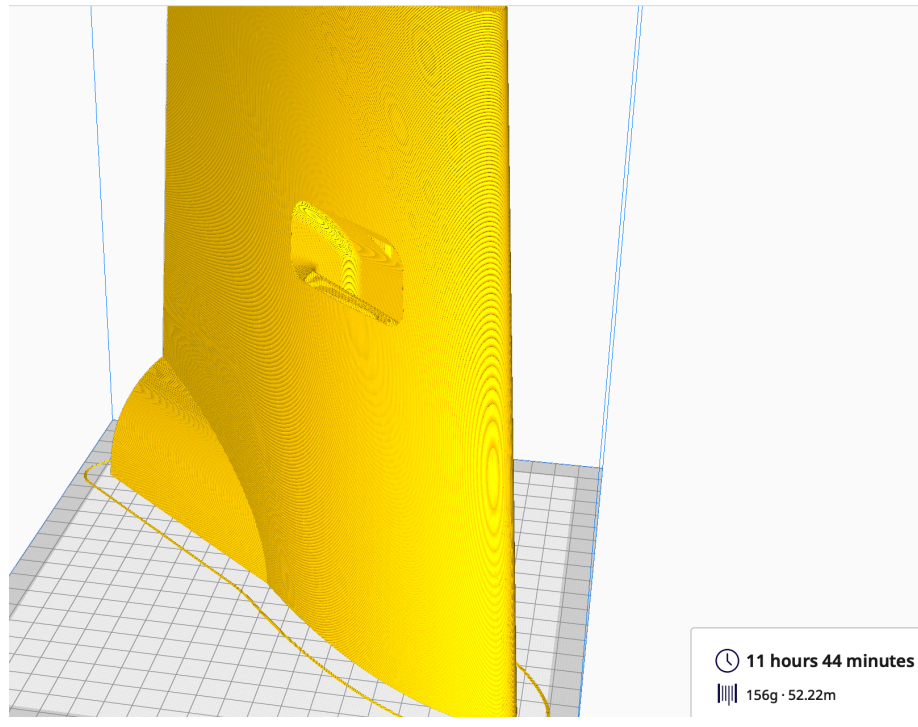
Special Settings: Infill can be reduced.



WING ROOT

Profile 1

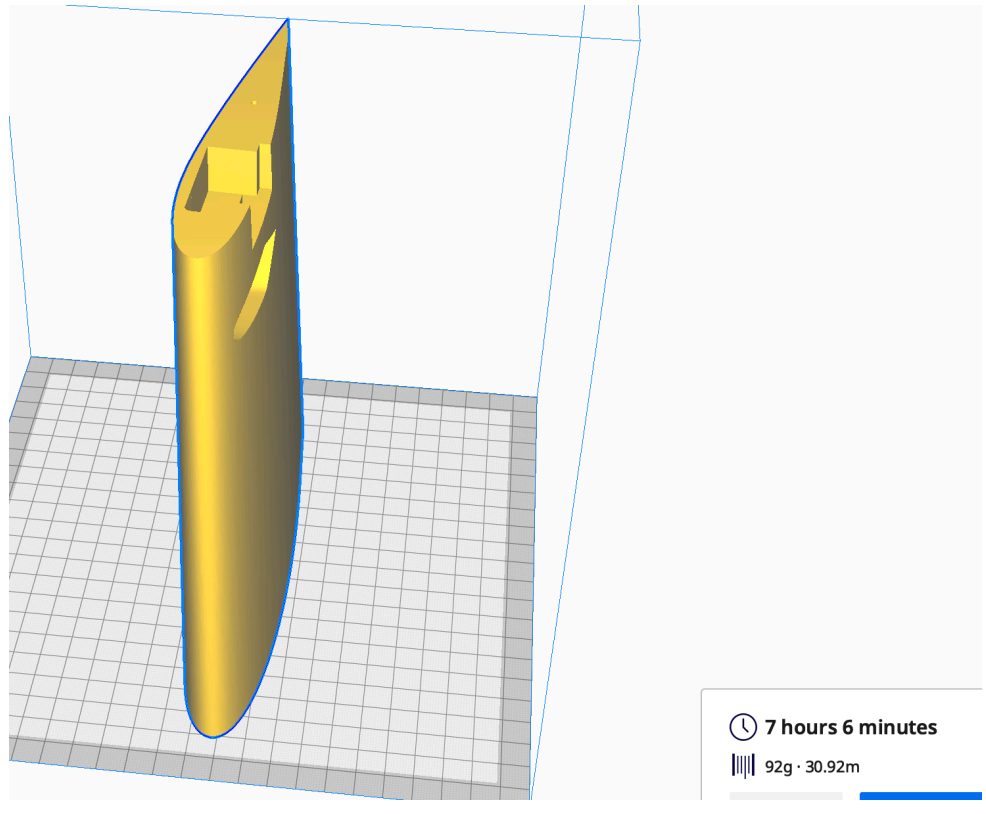
Adhesion: skirt



WING MID

Profile 1

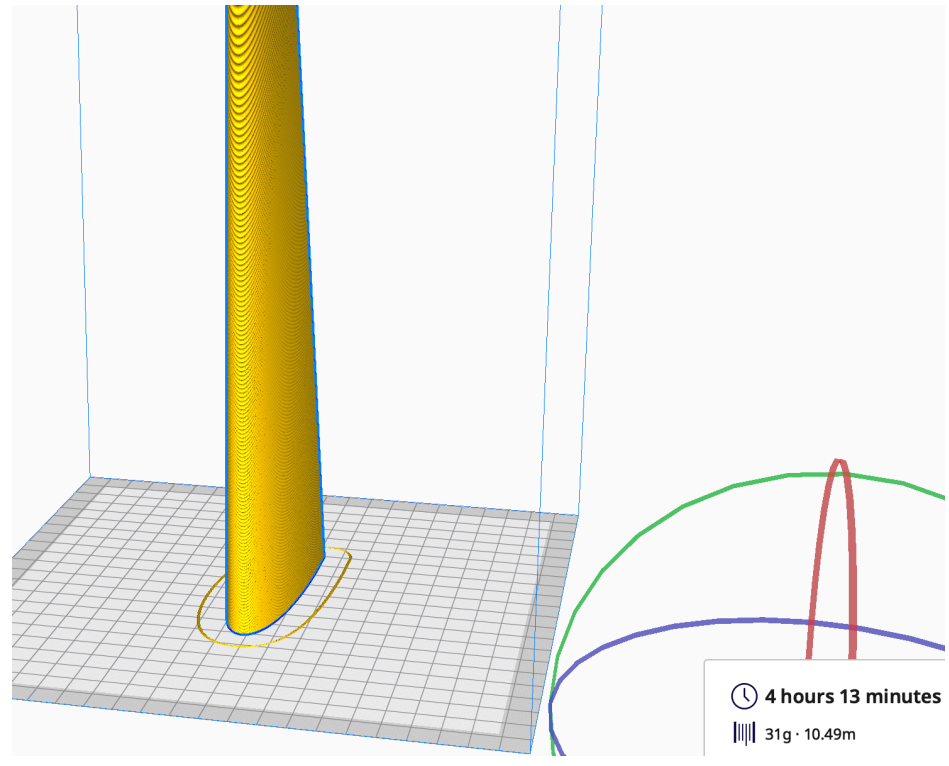
Adhesion: skirt



WING OUTER

Profile 1

Adhesion: Brim or Skirt

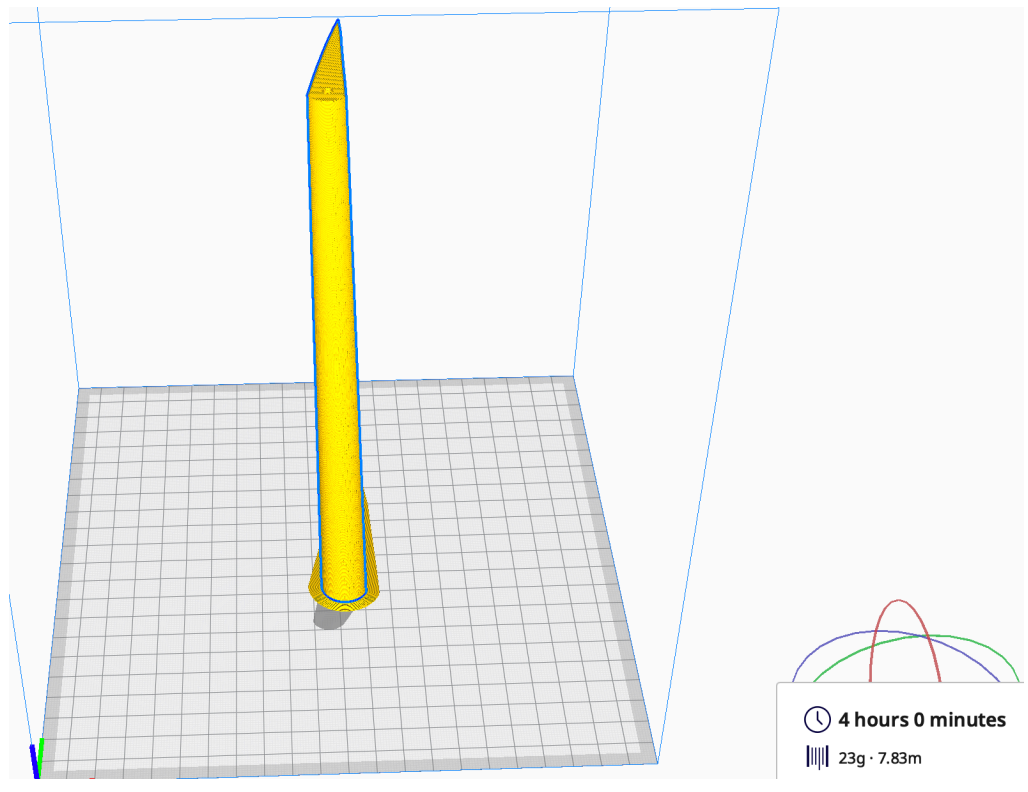


AILERON

Profile 1

Adhesion: Brim

Special Settings: Infill can be reduced to 0%.

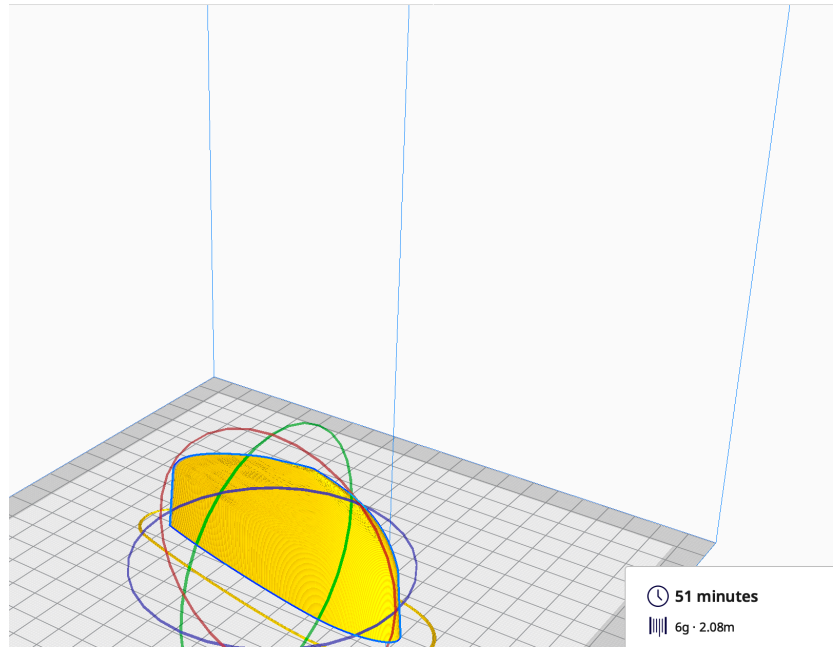


WING TIP

Profile 1

Adhesion: Brim recommended

Special Settings: Infill can be reduced to 0%

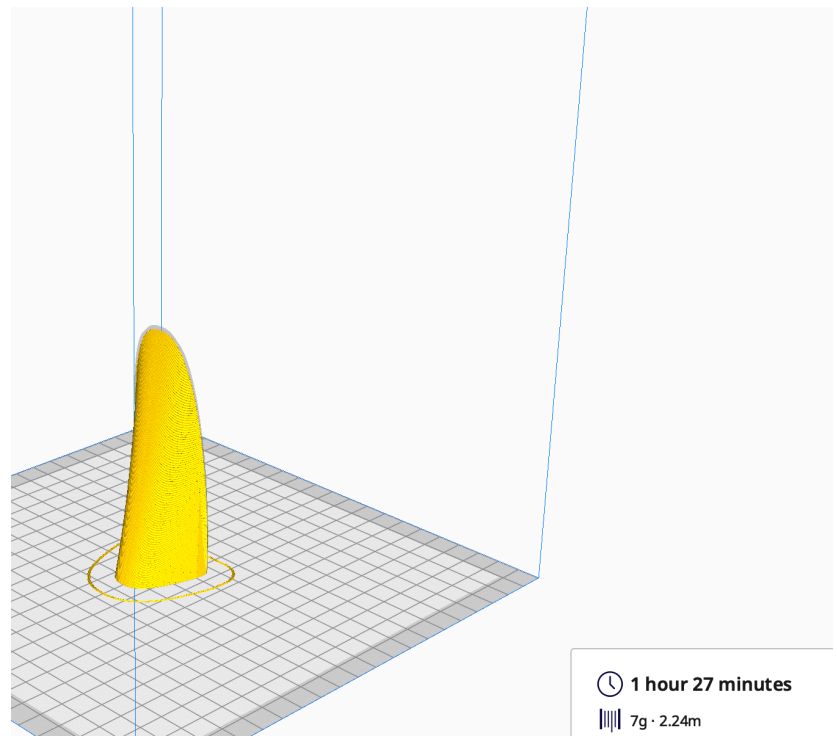


STAB FAIRING

Profile 1

Adhesion: skirt

Special Settings: Infill can be reduce to 0%

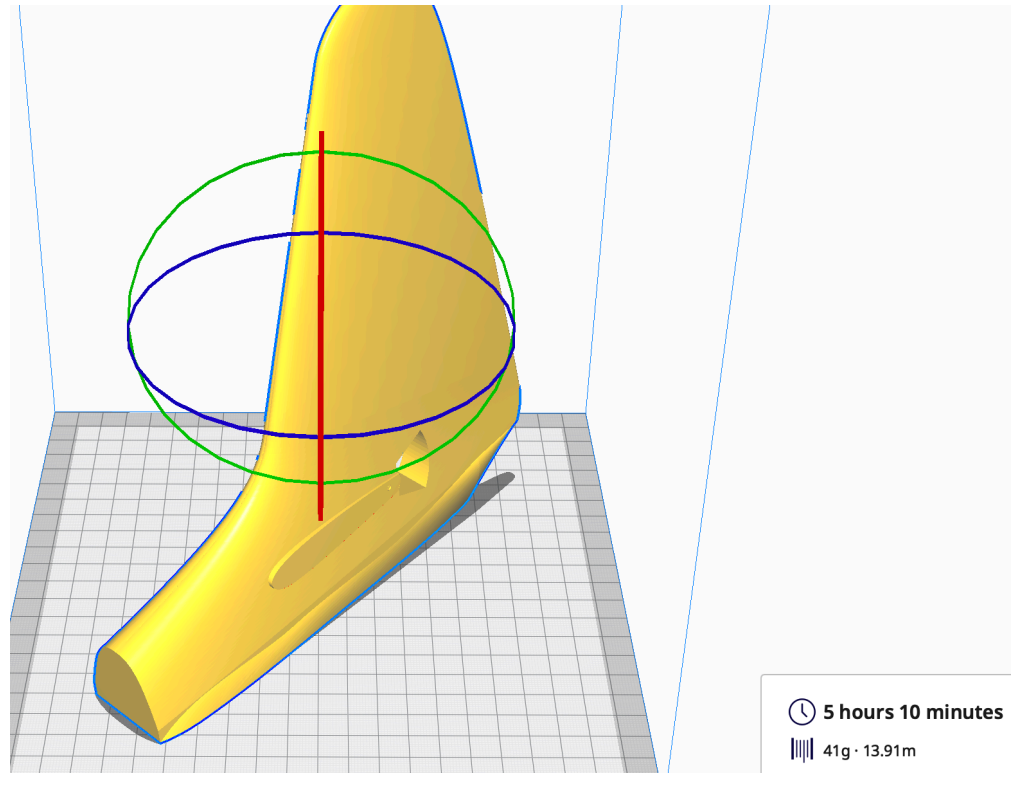


VERTICAL STAB

Profile 2

Adhesion: Skirt

Special Settings: Infill can be reduced to 1%.

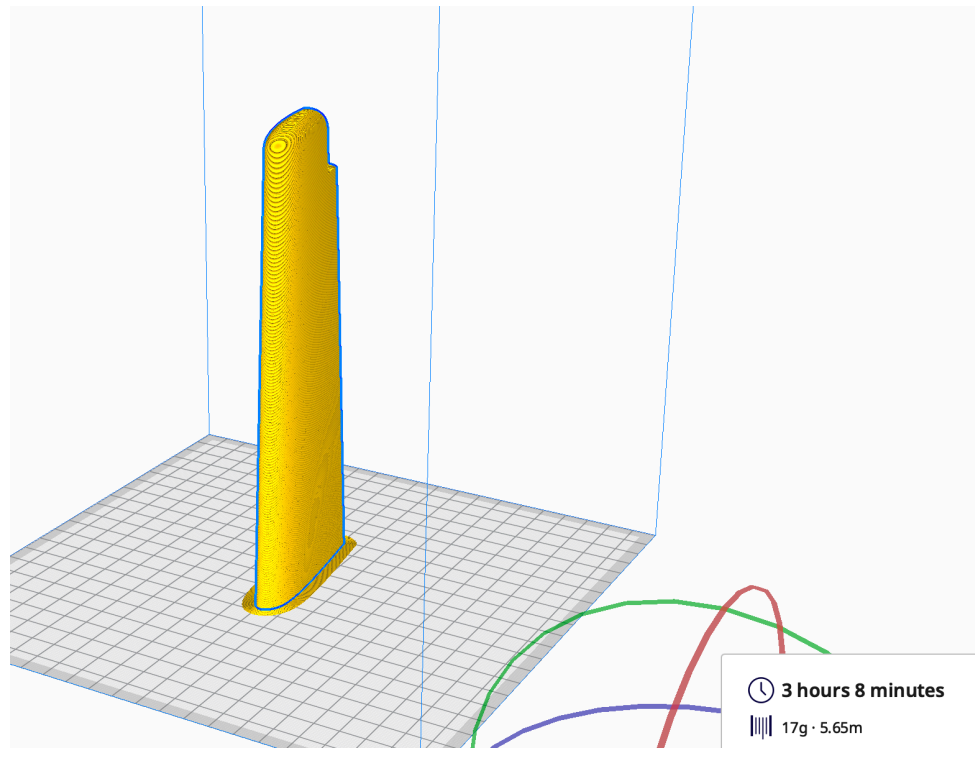


HORIZONTAL STAB

Profile 1

Adhesion: Skirt

Special Settings: Infill can be reduced to 1%

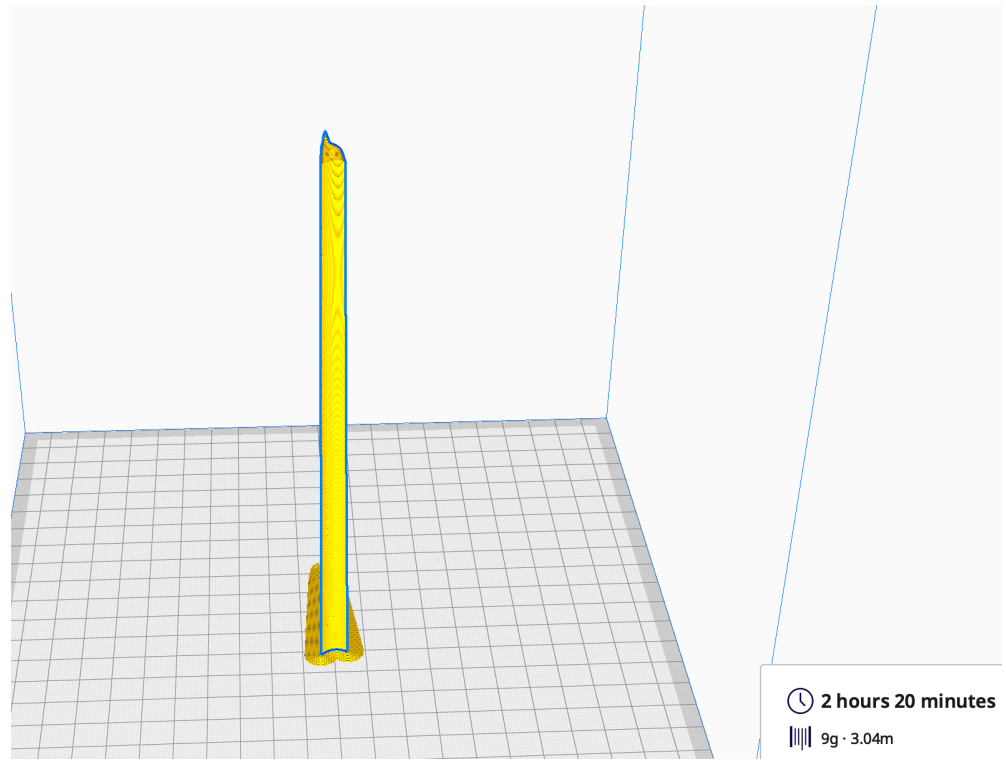


ELEVATOR

Profile 1

Adhesion: Brim

Special Settings: Infill can be reduced to 1%

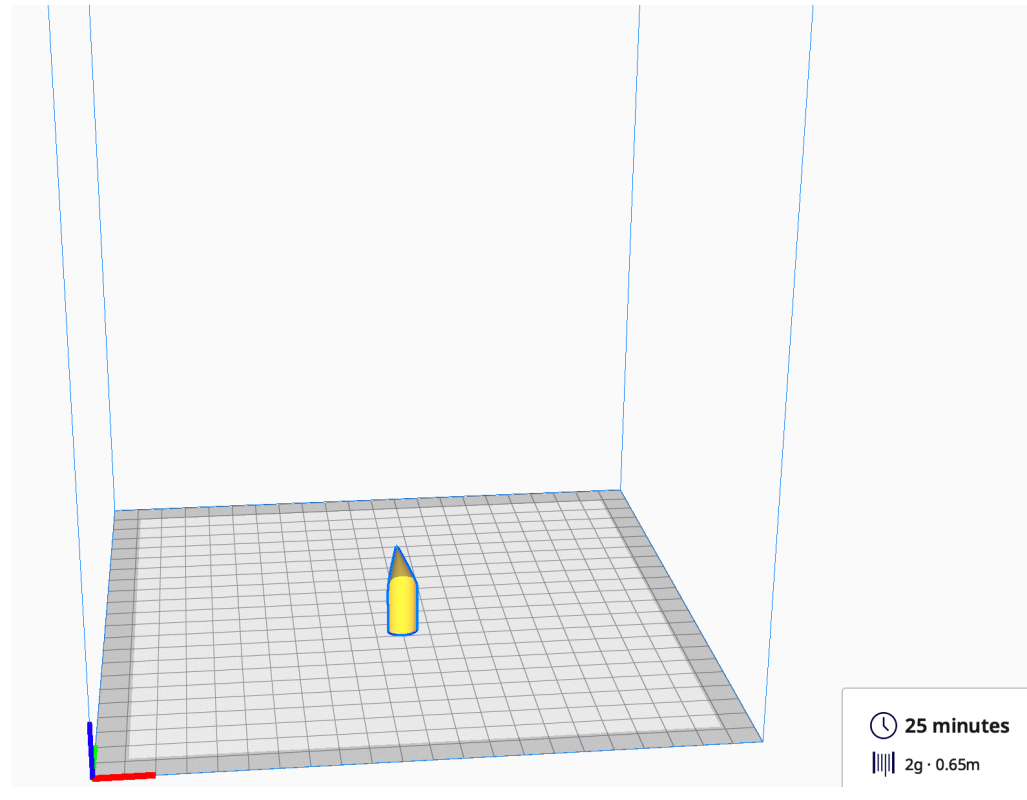


Elevator end

Profile 1

Ahesion: Skirt

Special Settings: Infill can be reduced to 1%

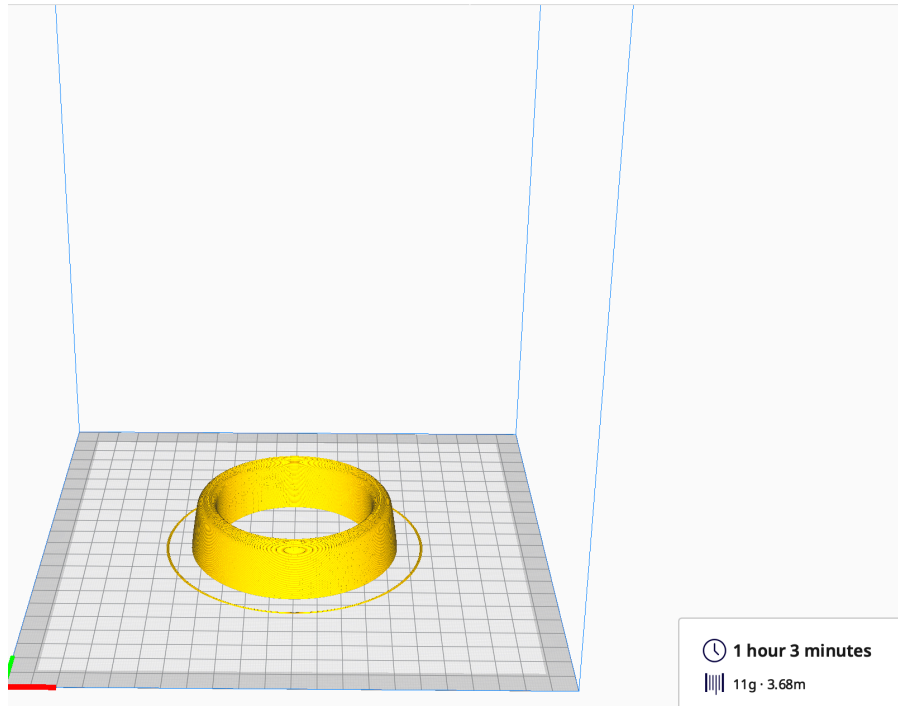


COWLING

Profile 1

Adhesion: Skirt

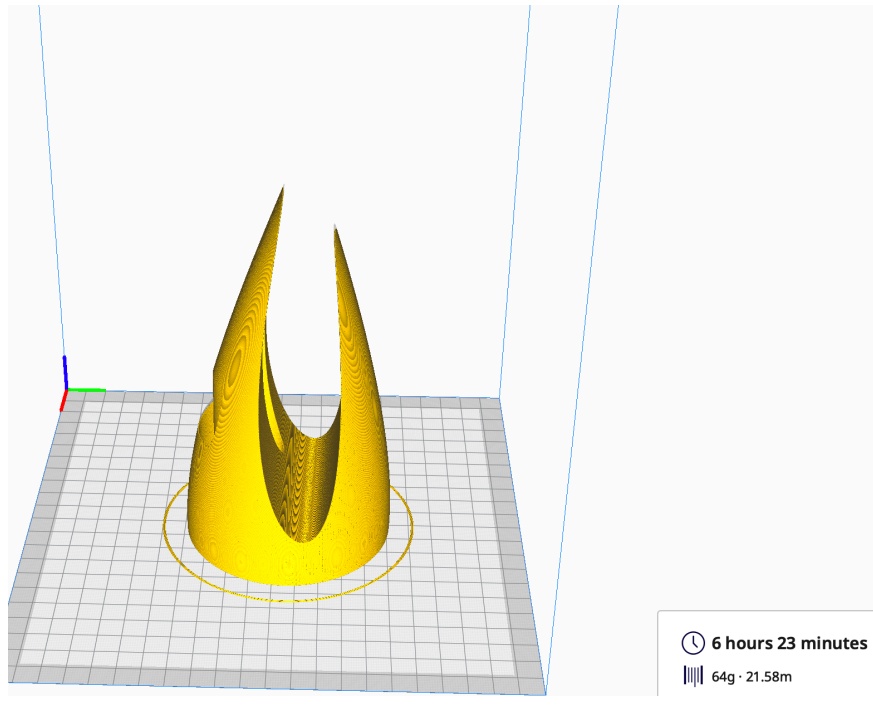
Special Settings: Infill can be reduced to 0%



NACELLE

Profile 2

Adhesion: Skirt

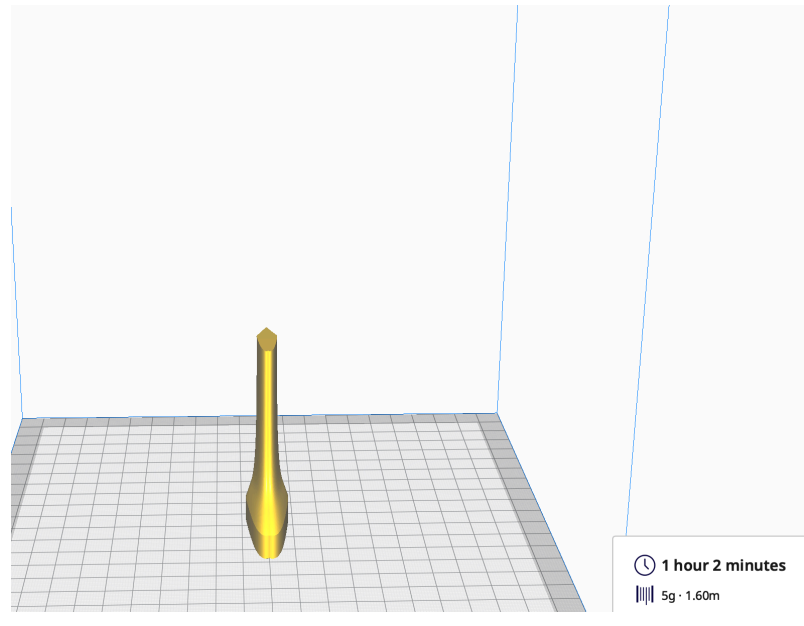


PONTOON LEG

Profile 1

Adhesion: Skirt or brim as required

Special Settings: Infill can be increased to 5% for more rigidity.

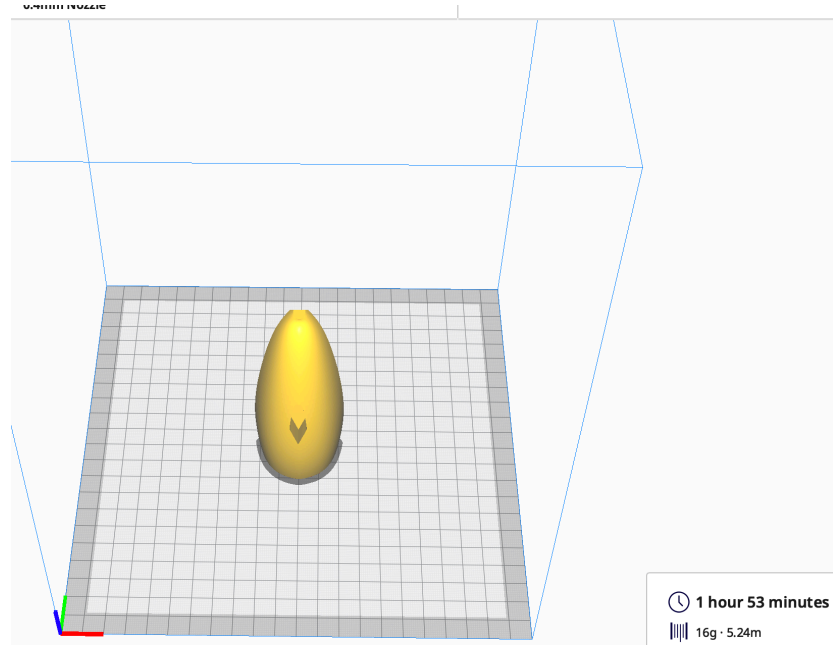


FLOAT

Profile 1

Adhesion: Skirt

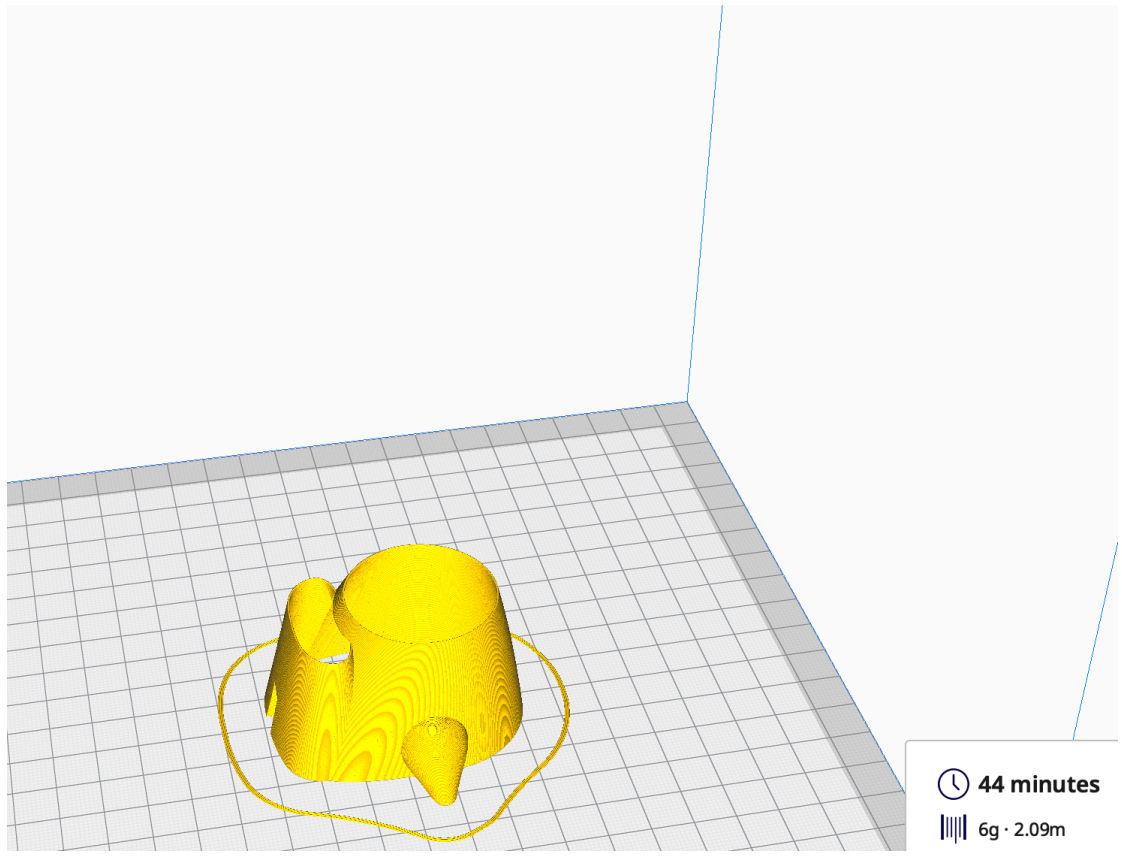
.



FLOAT AFT

Profile 1

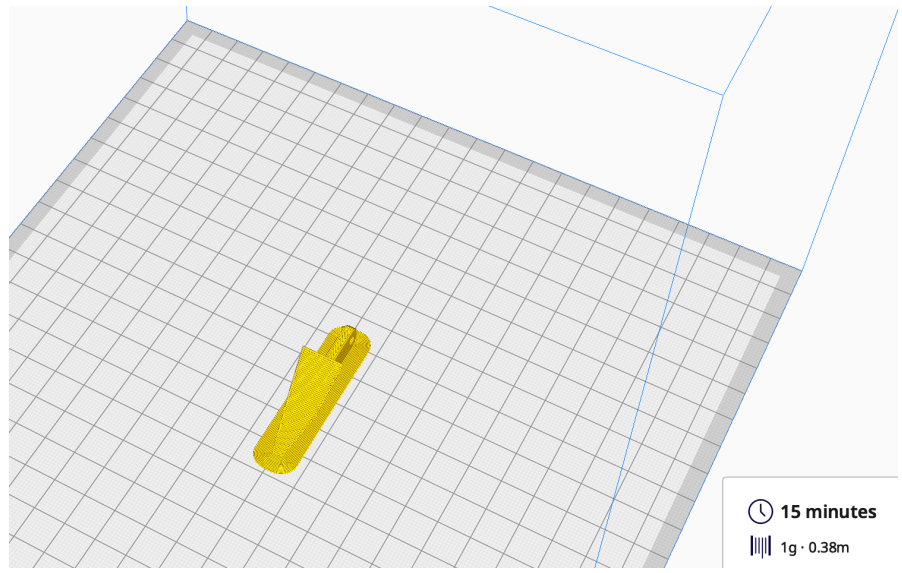
Adhesion: Skirt



CONTROL LINKAGES X 3

Profile 2

Adhesion: Brim



TURBO NACELLE PLACEMENT

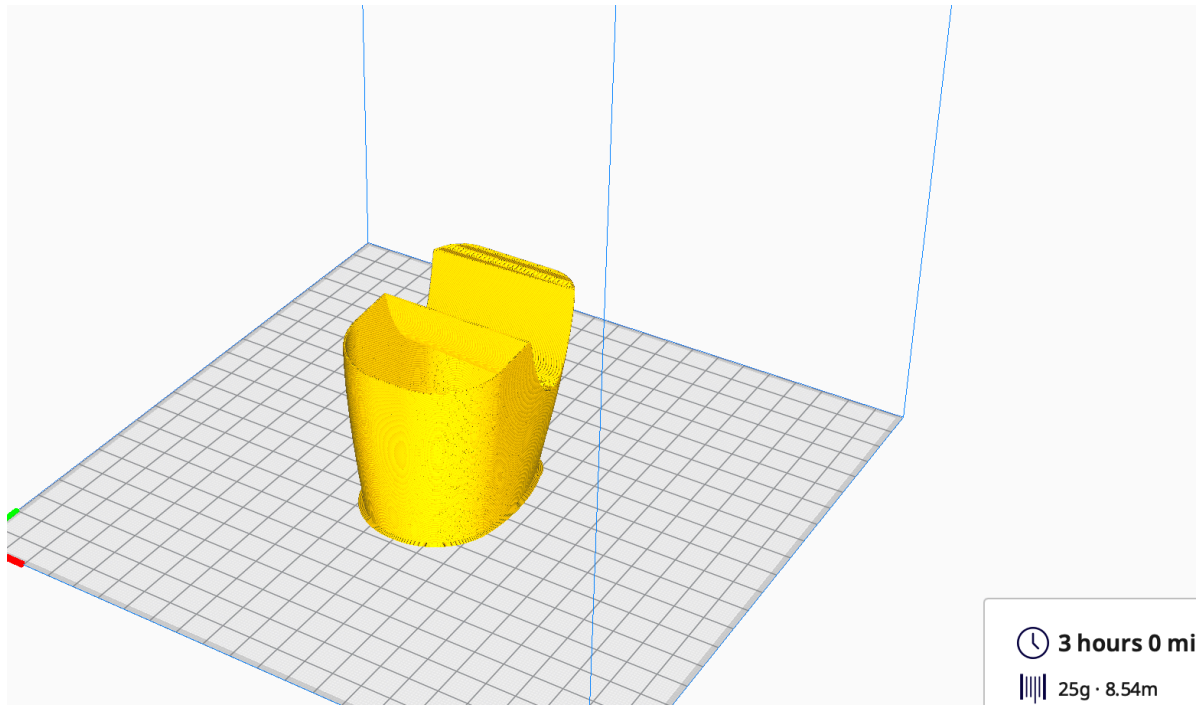
NACELLE COWLING

Profile 1

Try to place the seam to the away from the air intake to enable a smooth bridge.

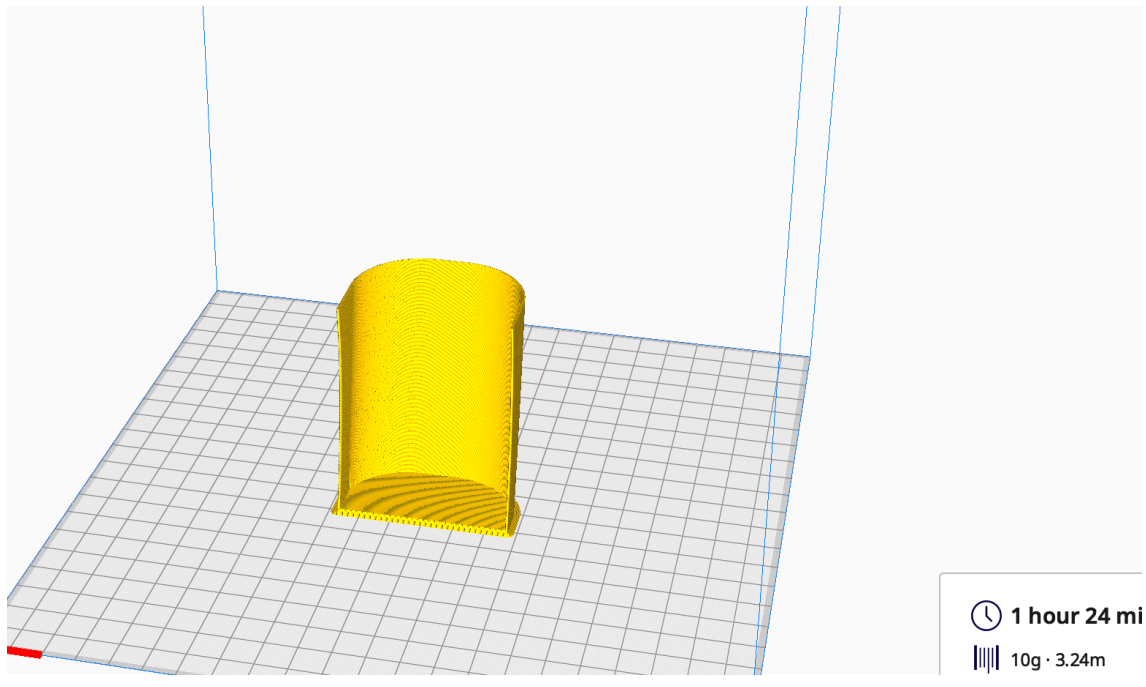
NACELLE MOUNT

Profile 2



NACELLE HATCH

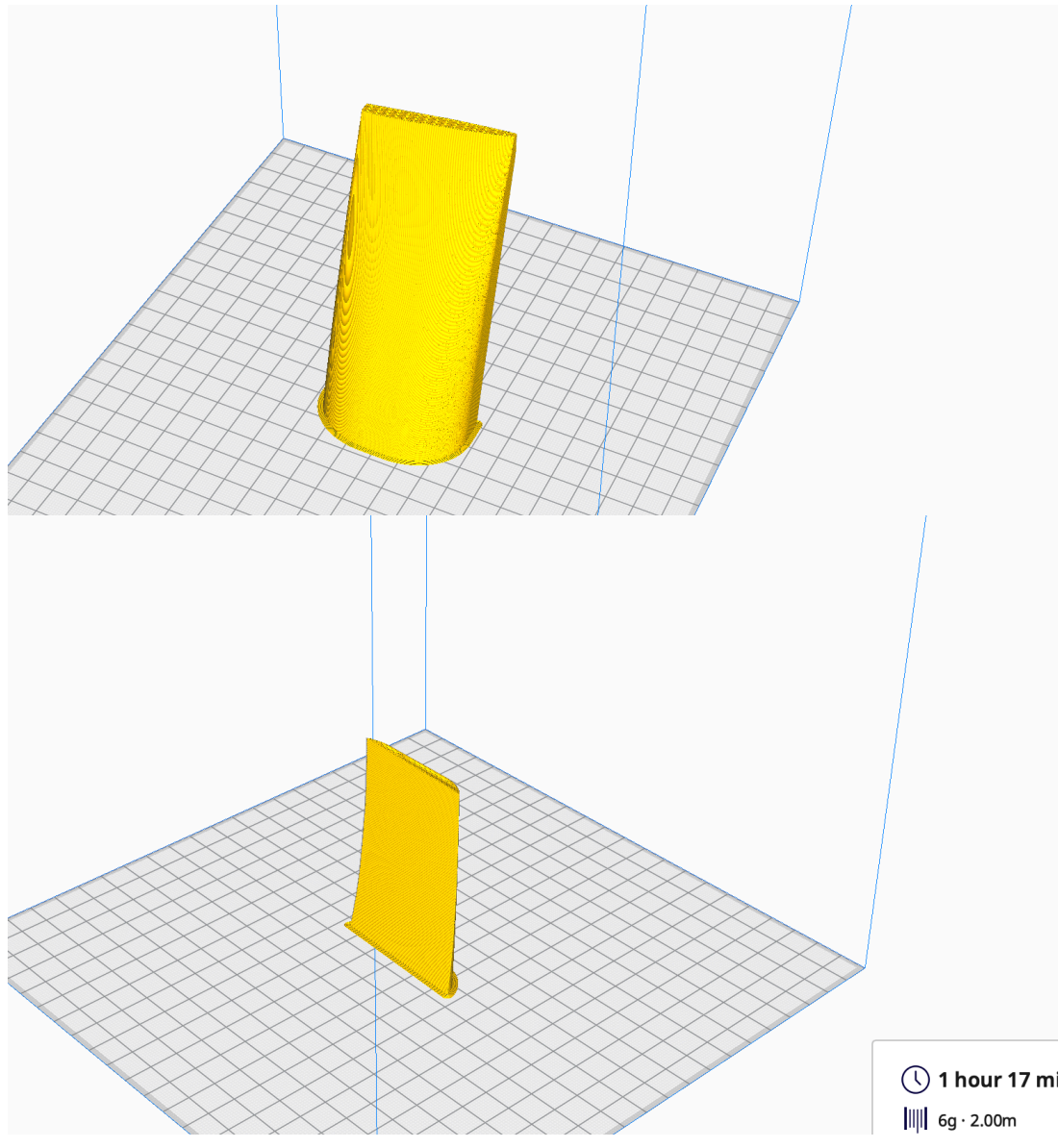
Profile 1



NACELLE AFT

Profile 1

NACELLE UNDERSIDE 1/2



Profile 1

Use brim adhesion

NACELLE UNDERSIDE 2/2

Profile 1

Use Brim Adhesion