

rc3Dprint

SCRUBBY

Carbon Cub

**PRINTING AND
ASSEMBLY
MANUAL**



THANK YOU

Thank you for purchasing the Scrubby Carbon Cub. These models take many hours of work to make available to you so please don't share the STL files with others. Direct them to www.rc3dprint.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" however some modelling skills are required. 3D printers often have many differences so you may need to tweak settings to get the best results.

Included in the document you will find Cura profiles and layouts for each part and assembly instructions. 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 you need to use Cura to slice the files and achieve the correct internal part structure. The walls of these solid bodies are single line 0.4mm thickness to reduce weight with some parts double walled 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 results on instagram and tag @rc3dprint for discount codes on future orders

PARTS LIST

REQUIRED

LW-PLA - TPU - PLA

Carbon Tube - 2mm, 4mm, 8mm, 10mm (see diagram below)

Carbon ROD - 4MM about 6cm length total

Radio Equipment

6 x 9g Servo + servo extensions

Piano wire (for pushrods)

Motor 2836 - ESC - Battery 4S/3S minimum

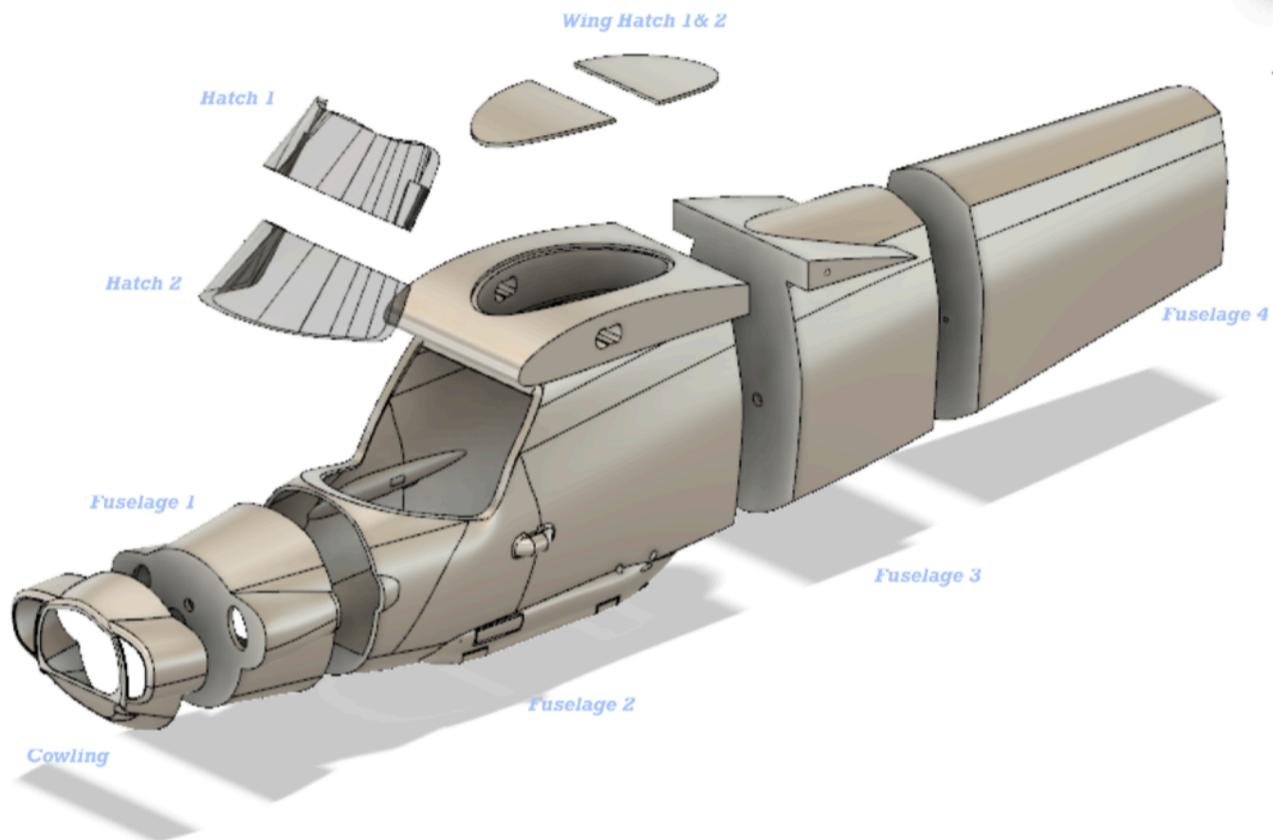
Glue - Activated CA i.e Mitre Bond

Wheels 89 - 105mm Dubro Low bounce with 4mm axle + suitable tail wheels

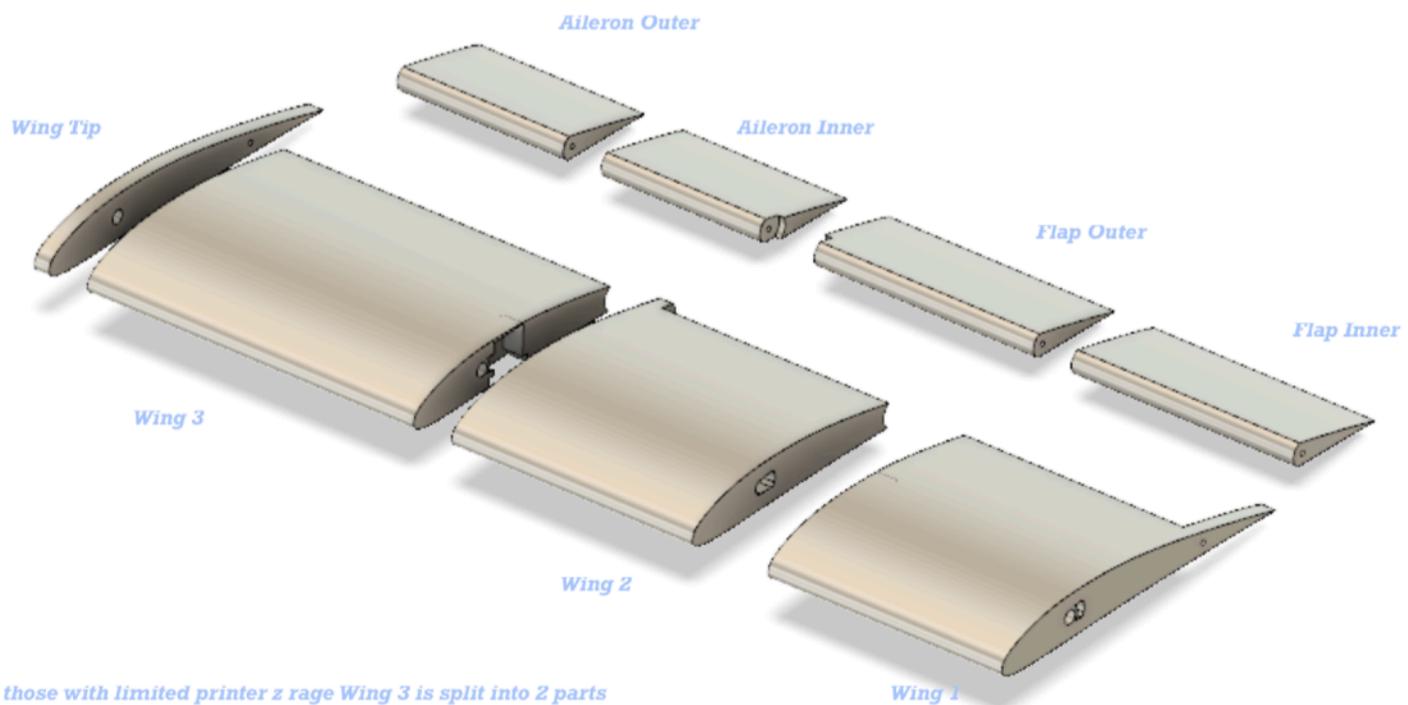
70mm Shock Absorbers - I used 70mm Silver Shock Absorber RC4WD

INCLUDED STL. FILES

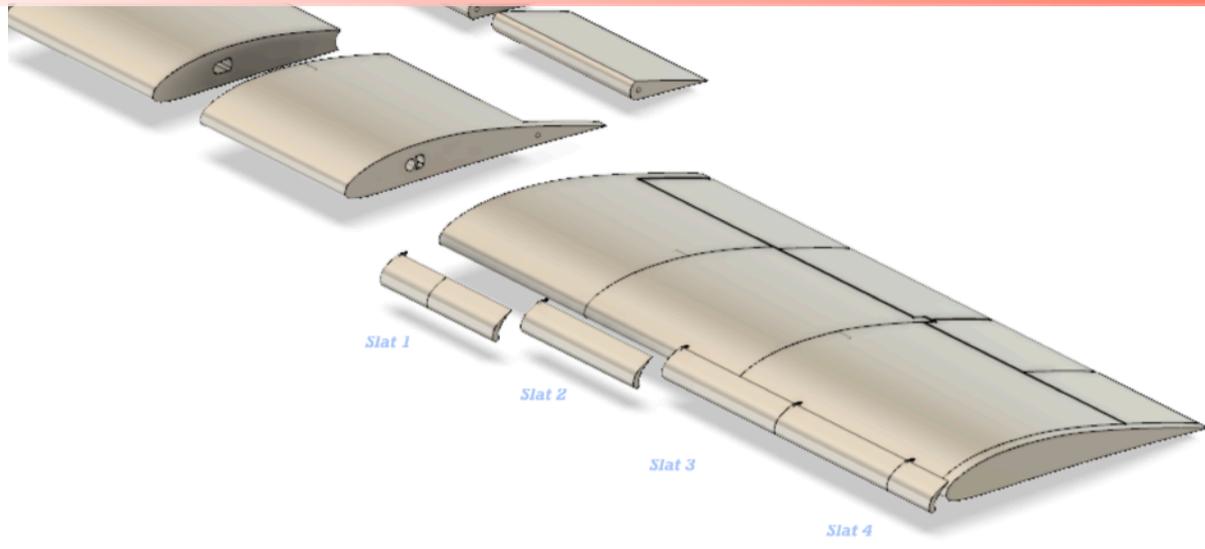
FUSELAGE



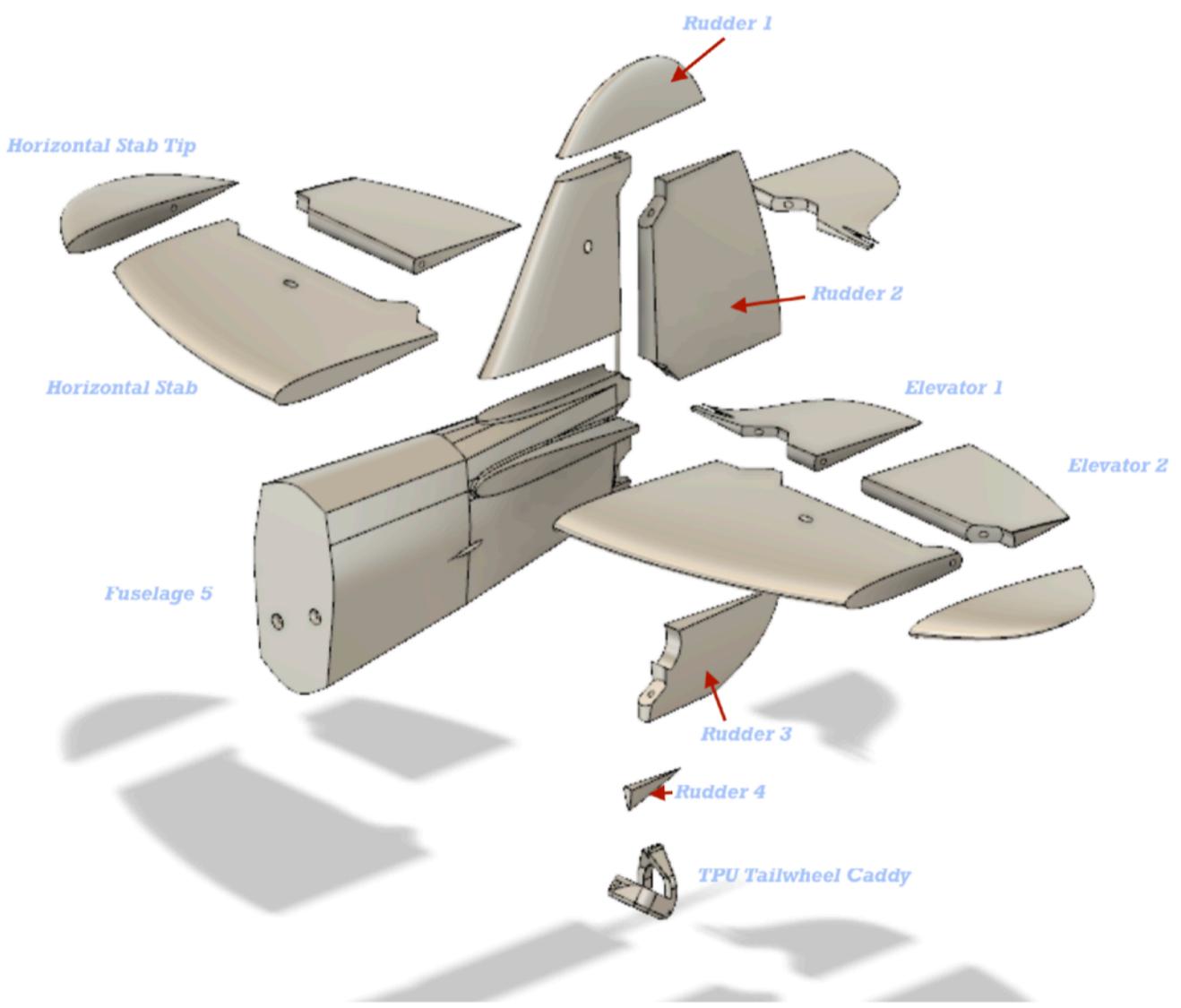
WING



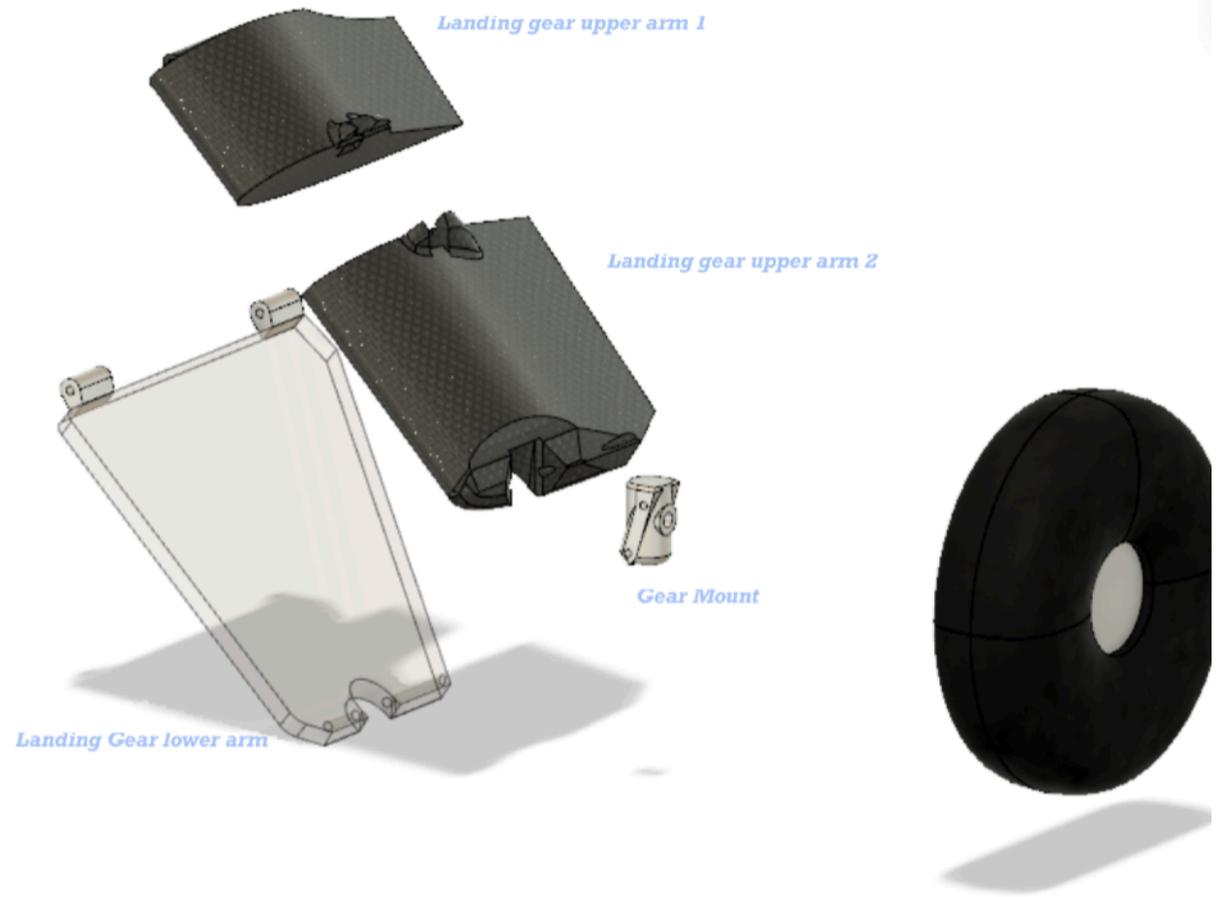
For those with limited printer z range Wing 3 is split into 2 parts



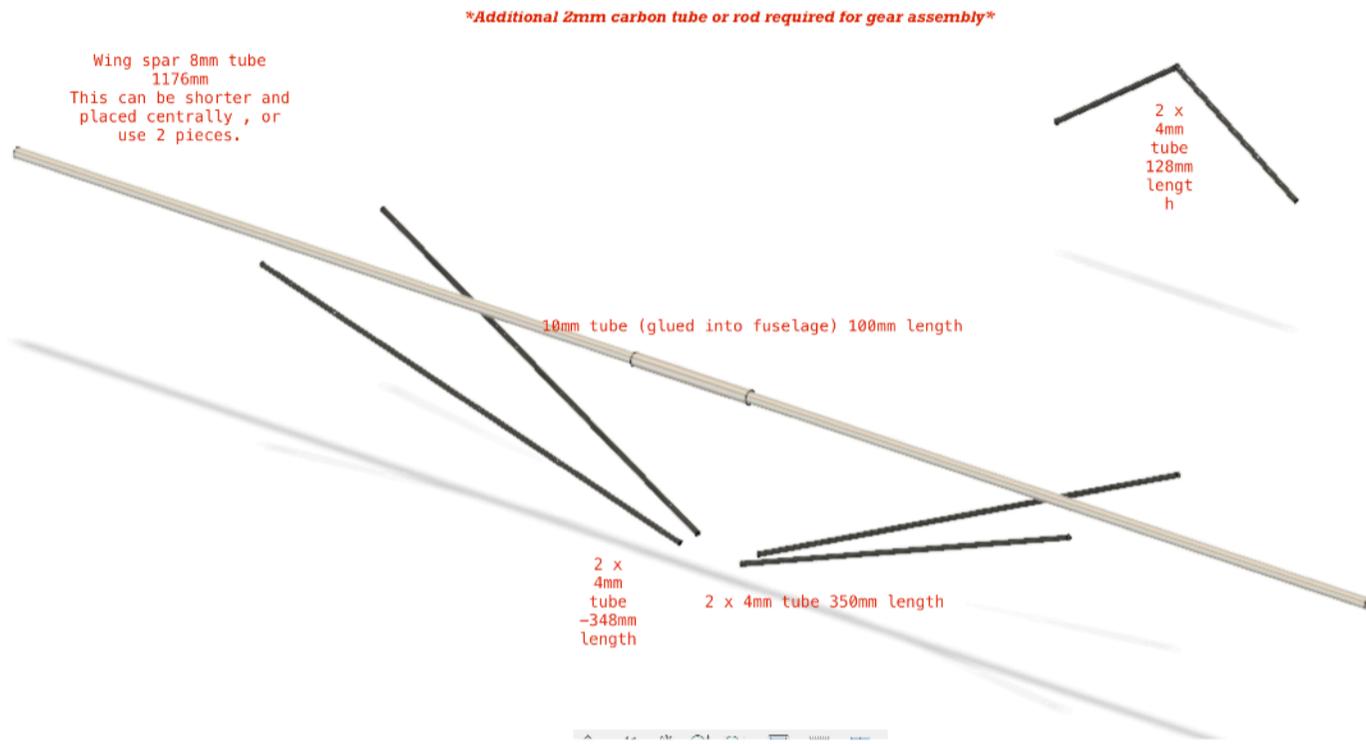
EMPENNAGE



LANDING GEAR



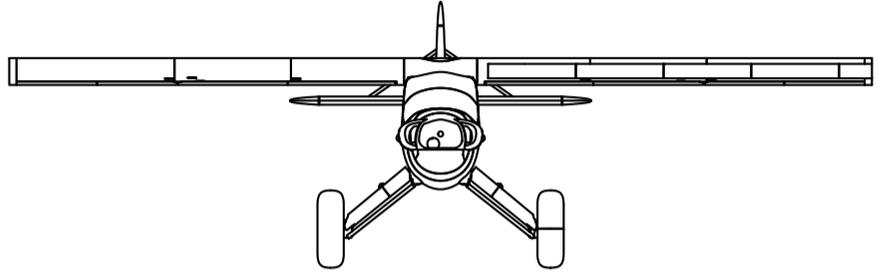
CARBON TUBE



SPECIFICATIONS

Wing Span

1180 mm

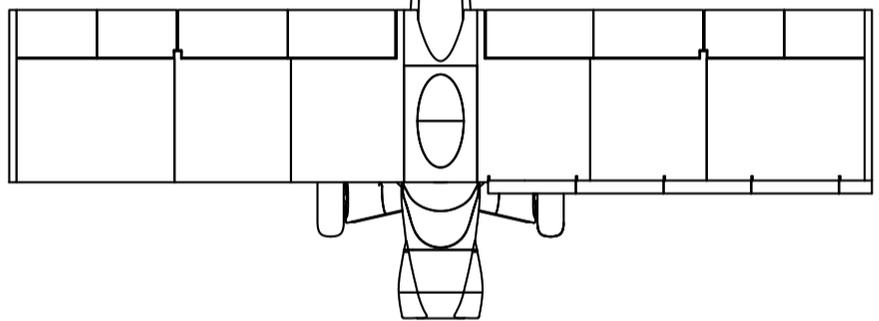
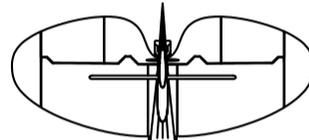


Flying Weight

(4S 2650mAh):1450g

Wing Loading

**57.6 g/dm² 18.9oz/
sq.ft**

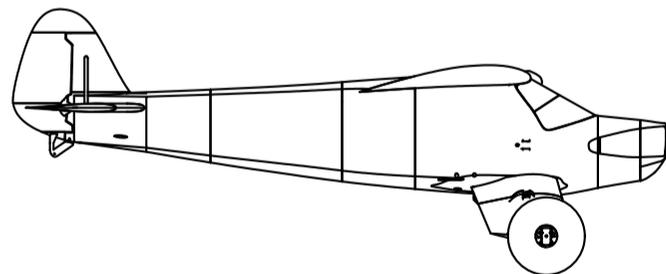


Wing Cube Loading

11.5

Channels

5 Channel



Centre of Gravity

**Located under wing
spar**

PRINTING PROFILE

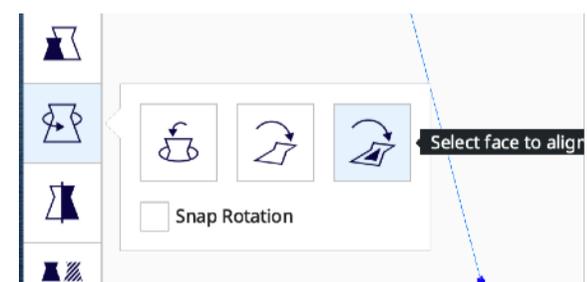
Load a generic PLA profile into Cura for your printer, then change or check the following from the default options. With LW-PLA it is definitely worth doing the calibration as suggested by ColorFabb, my settings for temp and flow should be used only as a guide.

LW-PLA PROFILE

Wall Thickness	0.4mm
Wall line count	1
Top/Bottom Pattern	Lines
Infill Density	2-3%
Infill Pattern	Cubic
Printing Temperature	235 -240C
Flow	53%
Build Plate Temperature	60C (optional)
Fan Speed	20% Maximum
Generate Support	No
Build Plate Adhesion	Brim

Save this profile as LWPLA PROFILE - Exceptions to these settings are listed in the Placement guide.

Use the Cura Placement guide later in this manual to ensure the parts are orientated correctly with the print bed. It is best practice to use the lay flat tool.



ASSEMBLY

After printing all of the parts they should be carefully cleaned up with a craft knife and or some sanding paper. Make sure to carefully remove all of the brims.

What follows is assembly advice, these models are pretty simple to put together.

GENERAL NOTES ON GLUING PARTS:

I prefer not to use tabs and other guide for gluing parts together as they add weight and complexity. I recommend using a CA glue that uses an activator. I apply the glue to one of the sides being glued together and position the parts, Once in position I spray some activator onto the join.

FUSELAGE

The cutouts where the gear hinges and shock absorber fit need to be cut out after printing, this was so that the overhangs were ok. Do this with a sharp or hot knife.

You should mount your motor to Fuselage 1 before gluing the cowling on.

Elevator and Rudder servos should be affixed in place using a dab of hot glue before assembling the fuselage pieces.

The 10mm Carbon tube should be glued into position in the top of the Fuselage 2 but before doing so make sure that the 8mm spar nests inside it.

You may need to sand the *Wing Hatch* down to size. This is due to LW-PLA expansion

EMPENNAGE

It is easier to assemble around Fuselage 5 prior to attaching it to the rest of the fuselage. Glue together the non-moving parts of the empennage first, don't forget the Carbon stays.

When ready, assemble the moving parts, the rudder and elevator, around the hinges. It should be possible to glue the parts together and keep the hinges free to move.

The TPU tail wheel assembly is glued to the rudder hinge, which sticks out the bottom of the rudder, and glued to Rudder 4 so that the wheel turns with the rudder. Attach the

control linkages once the model is assembled with piano wire control rods in place to check positioning.

WINGS

Assemble the wings from the wing tips in, building around around the carbon tube. Make sure you dry fit everything first, servos, and servo wires etc. as it will be too hard to feed the wires after.

Originally I designed the model with removable wings in mind, that is why we have the 10mm tube in the fuselage to allow for screws to be drilled through to hold each wing but I decided to go for glued down wings.

The aileron hinges pass into the fuselage so leave enough. Also make sure that the hinges are not accidentally glued to pieces that would stop the ailerons moving.

LANDING GEAR

The landing gear pieces are assembled using the 2mm carbon tube. You may need to clean out the holes with a 2mm drill bit. The 2mm carbon tube should be pressed in, the fit is tight but any loose tubes should have some glue added to stop them moving. If you want to cut them to size before gluing you can use another piece of rod to push them in all the way.

Glue together the two landing gear upper arms first then assemble to the fuselage using the 2mm rods. Always best to dry fit them before cutting to size.

When gluing the suspension arm carbon hinges in place, make sure you have the suspension arm the correct way up as this is irreversible. (Ask me how I know).

Fit the wheel axle last, after the gear is assembled. Carbon rod (not tube) should be used for the wheel axle and 4mm collars fitted to keep the wheel in place. When cutting the

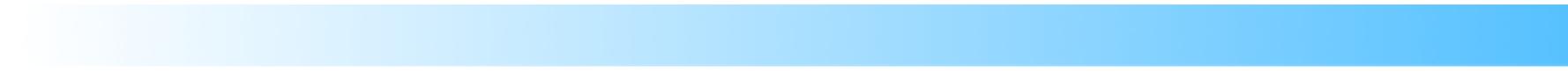




rod to size, position the wheel and check that it doesn't rub on the gear are at full depression, you may need to space the wheel 1-2mm away from the Gear mount.

Unless you have managed to get really stiff shocks for the landing gear you will need to glue the Spring Mounts to the underside for each Gear Lower arm to attach stiff spring or rubber band across them. This prevents the aircraft slumping on its gear.

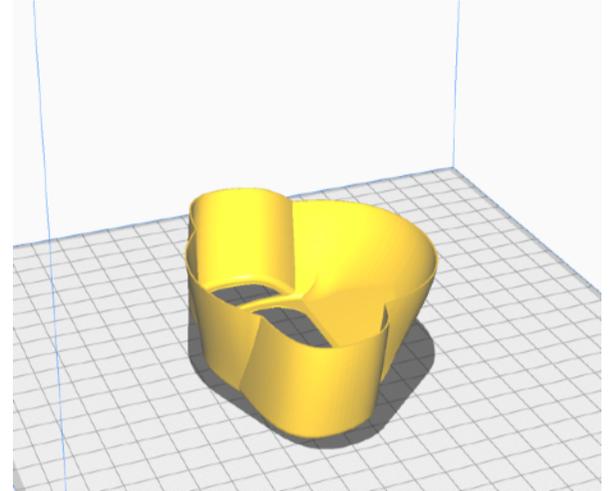
This is intended as a guide as the build is pretty straight forward. Please email me at rc3dprint@icloud.com if you need any more explanation.



CURA COMPONENT PLACEMENT

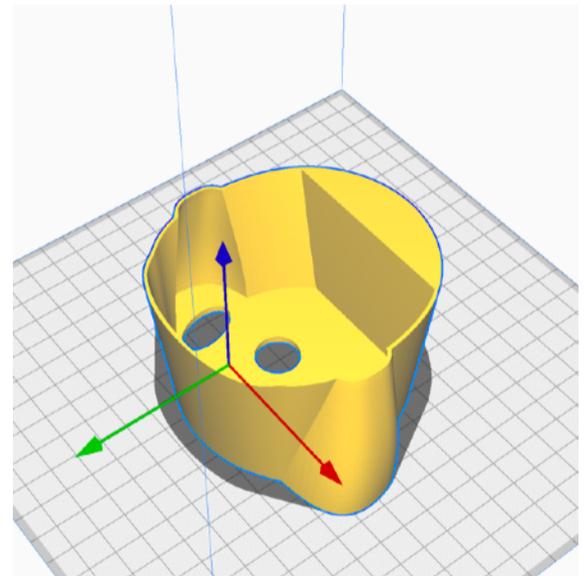
COWLING

Supports on



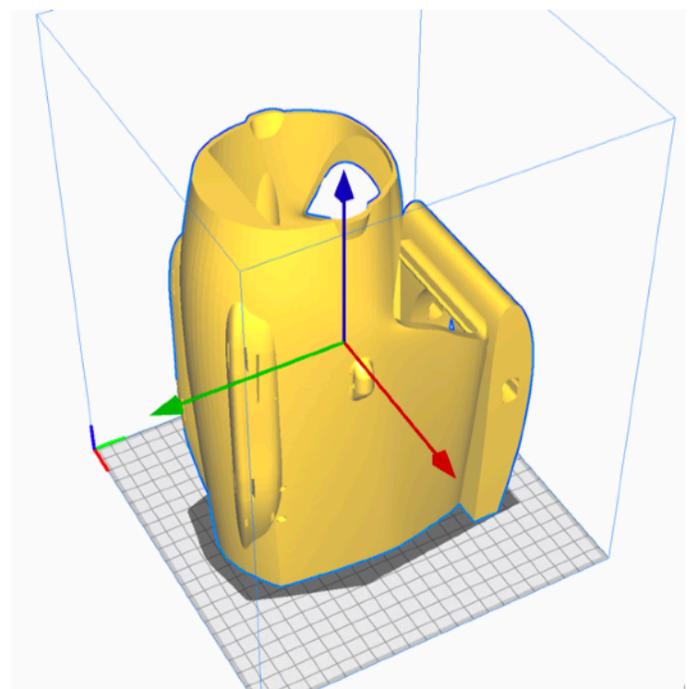
FUSELAGE 1

Bottom layers: 6



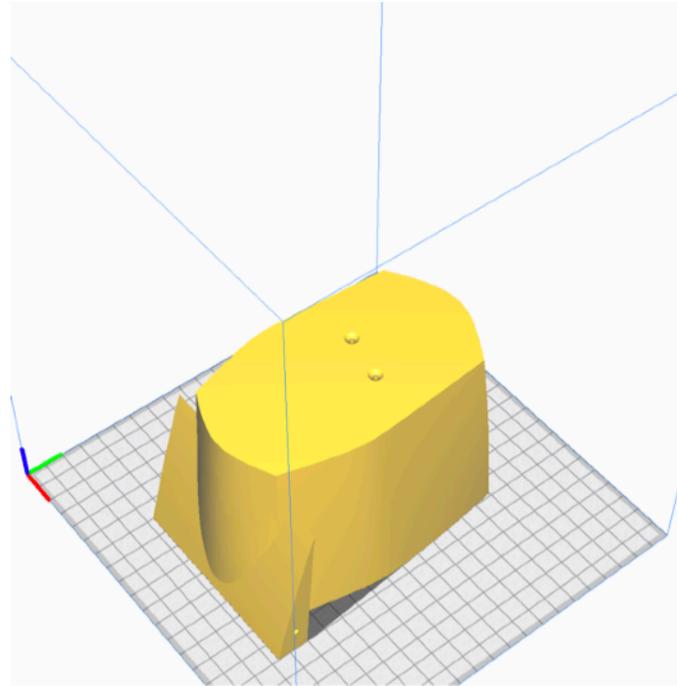
FUSELAGE 2

This is the hardest part to print. Pay special attention to the extra prime amount to avoid under extrusion. You may need to increase the print flow during the print if you notice the start of any under extrusion.

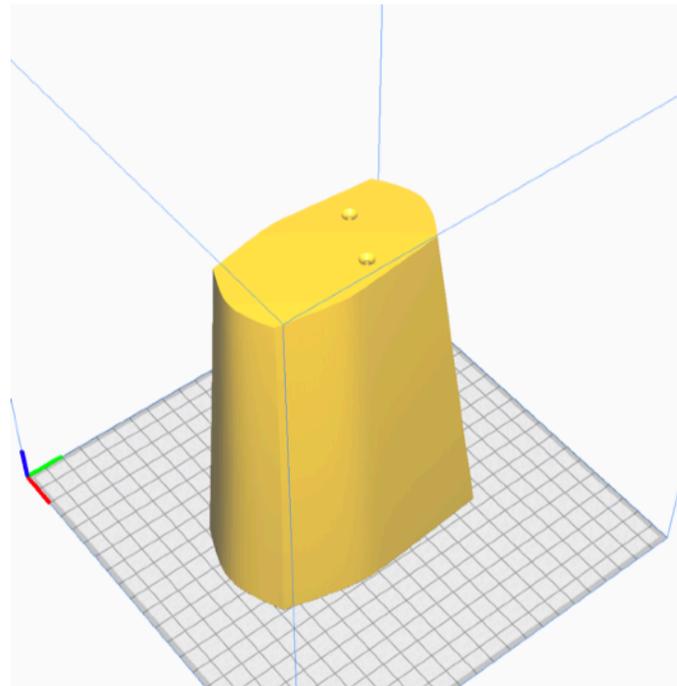


If you don't have a large z printer *Fuselage 2a* and *2b* are included for 200z printers.

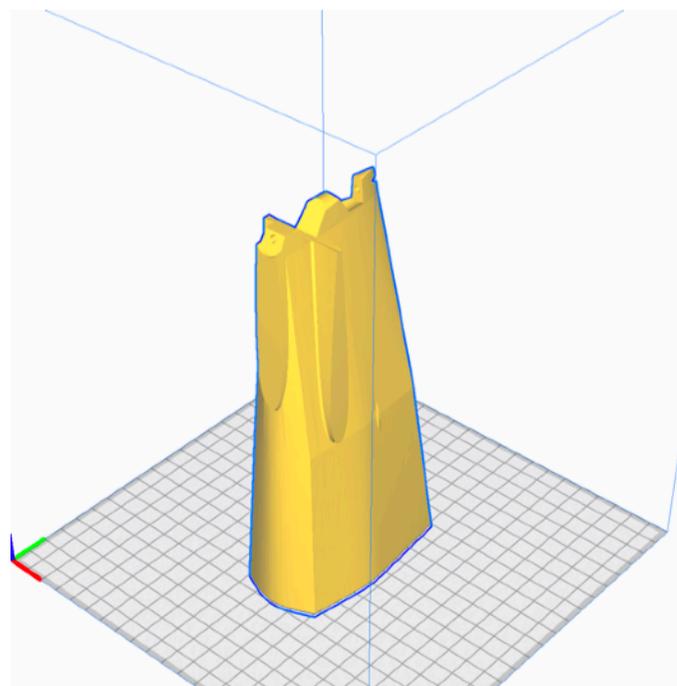
FUSELAGE 3



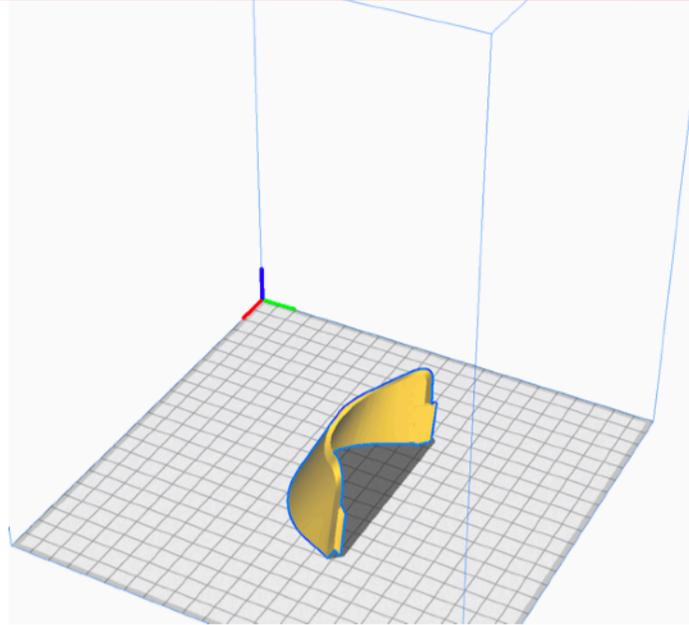
FUSELAGE 4



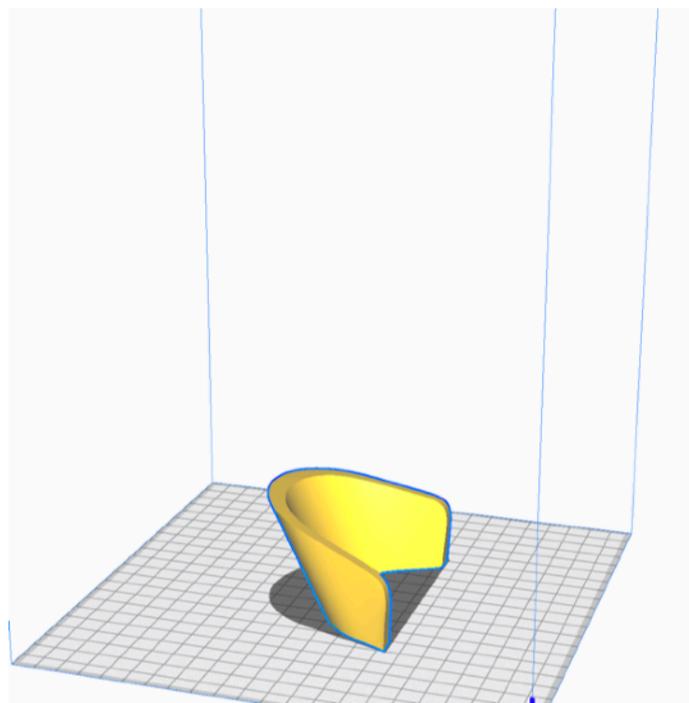
FUSELAGE 5



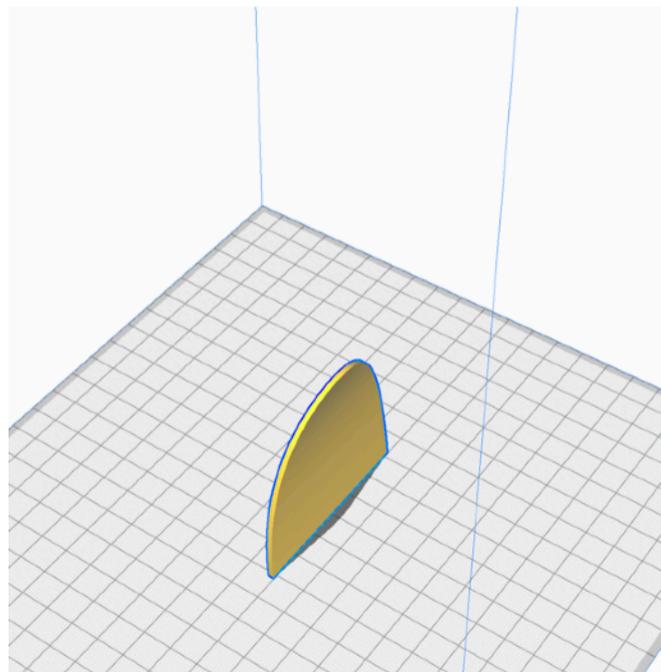
HATCH 1



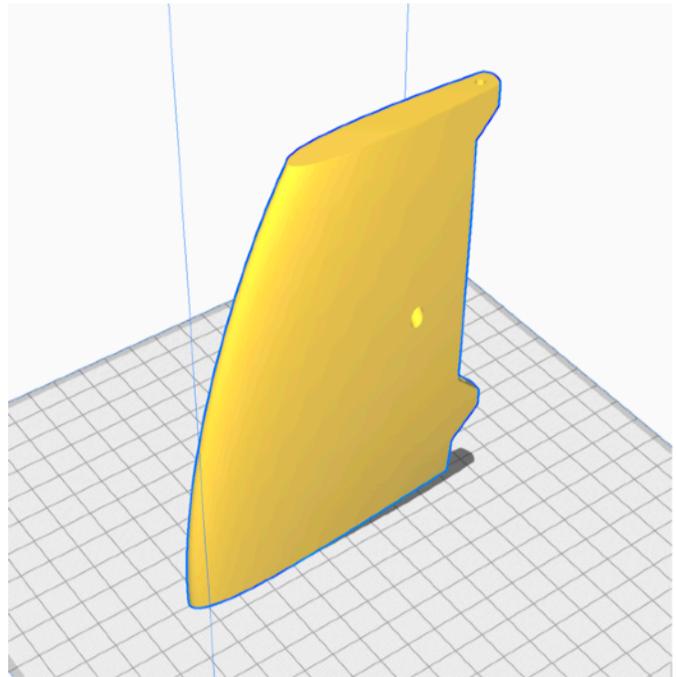
HATCH 2



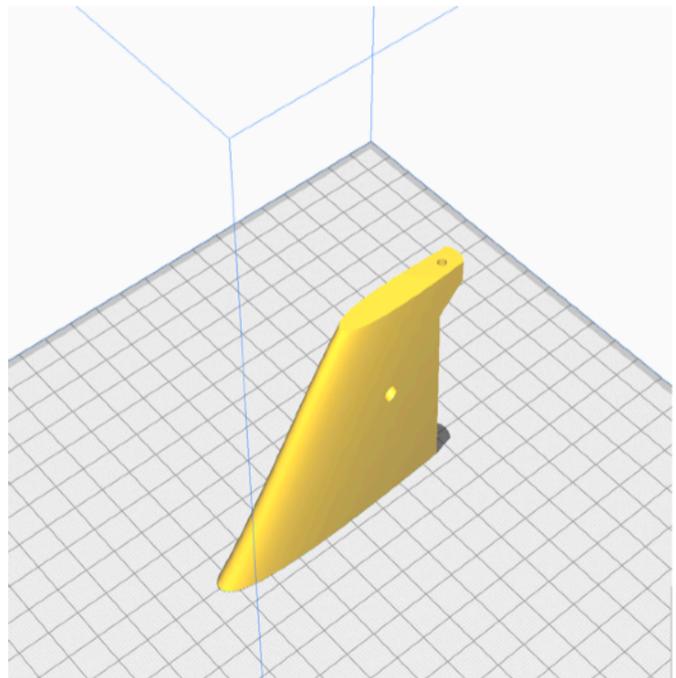
WING HATCH 1&2



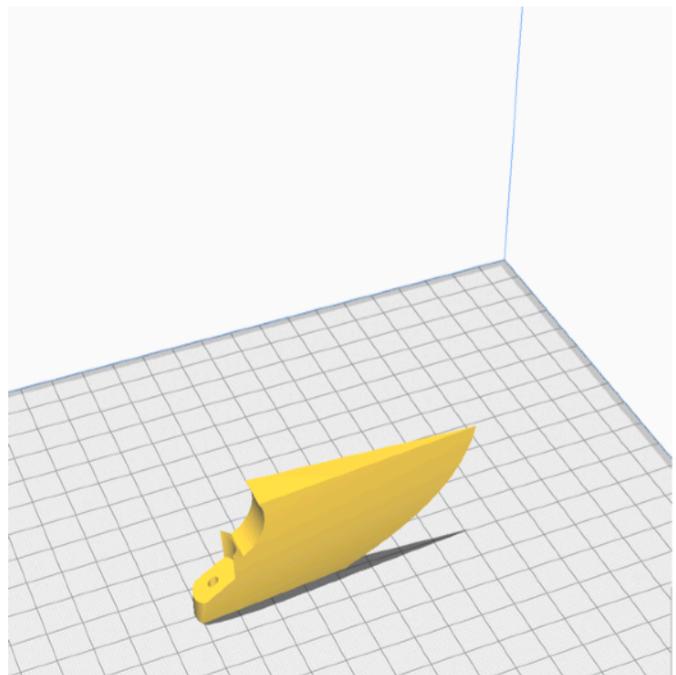
HORIZONTAL STAB



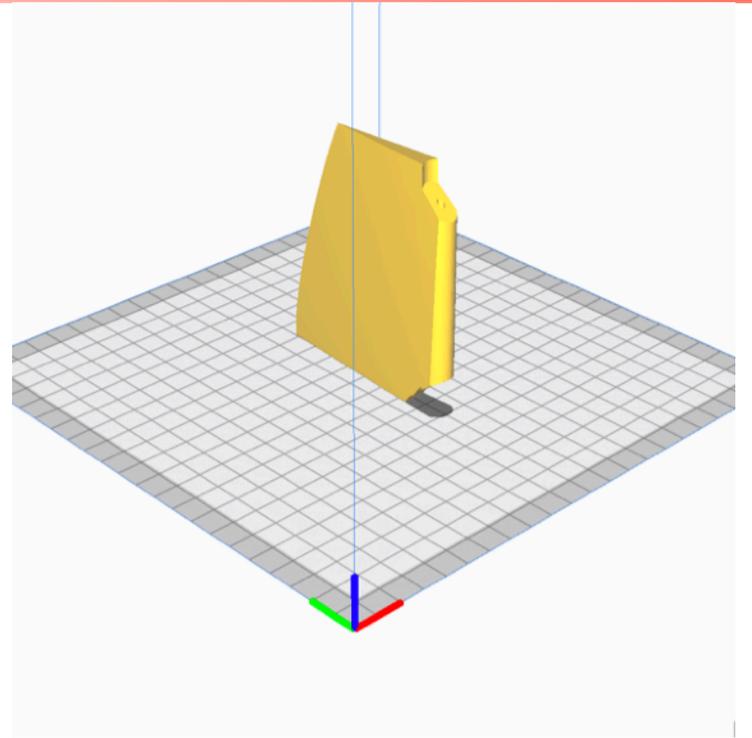
VERTICAL STAB



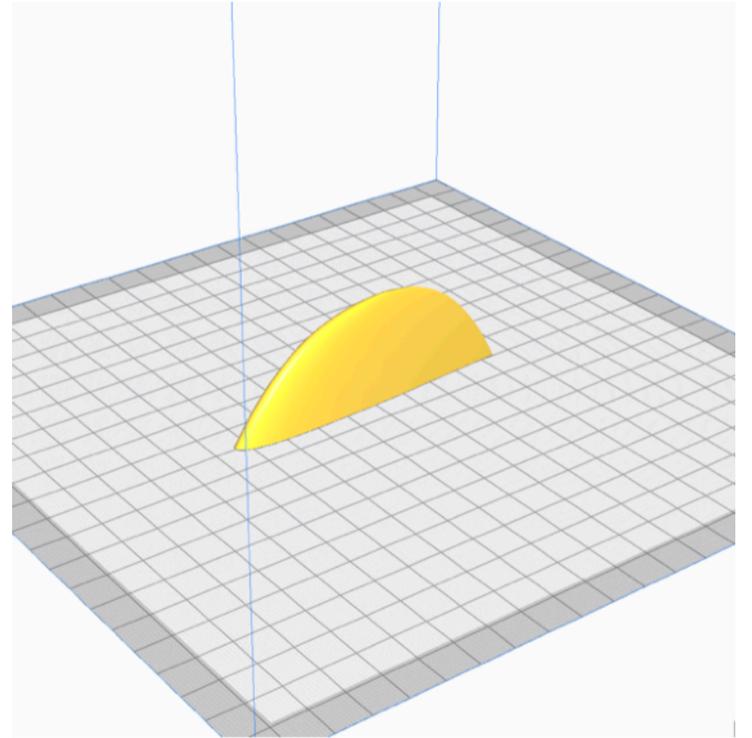
RUDDER 3



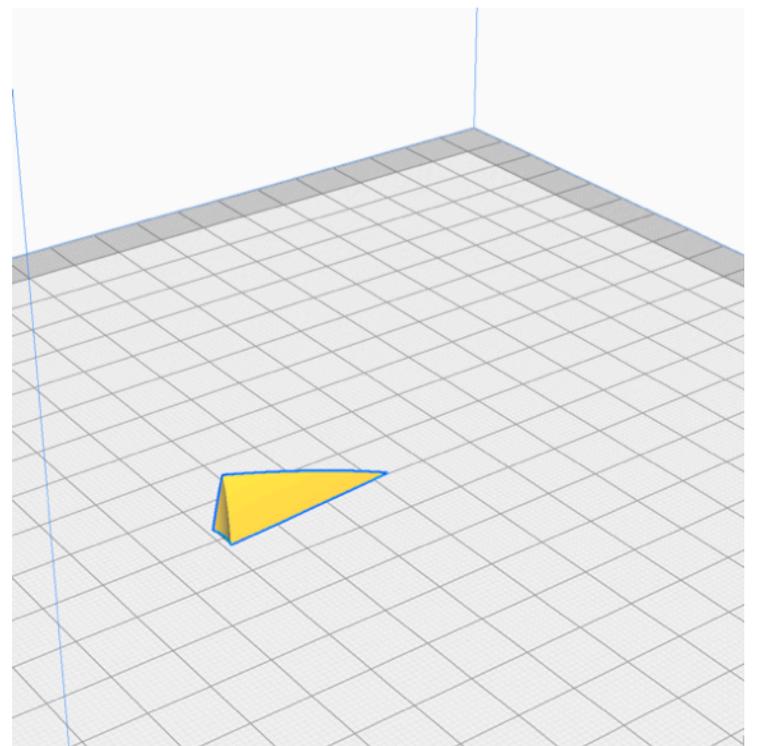
RUDDER 2



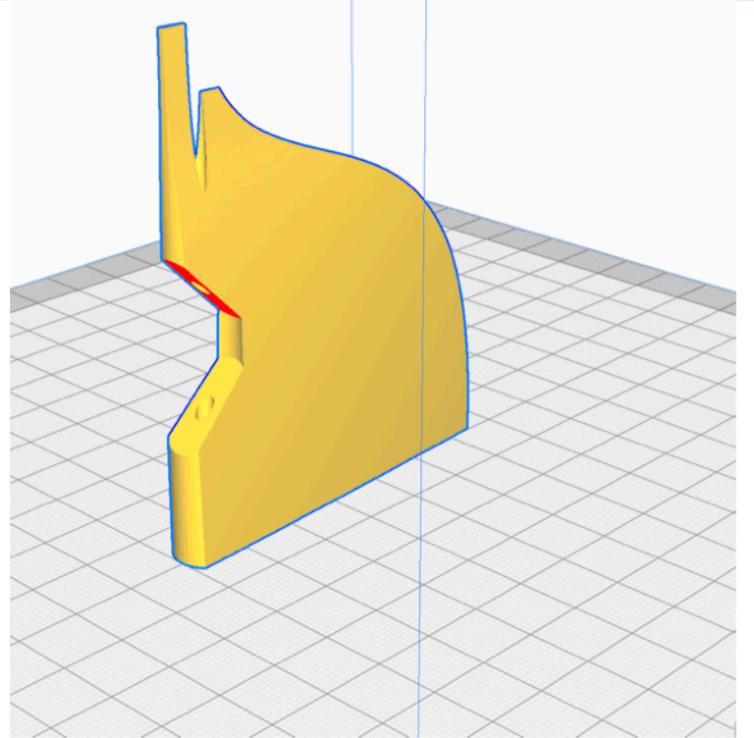
RUDDER 1



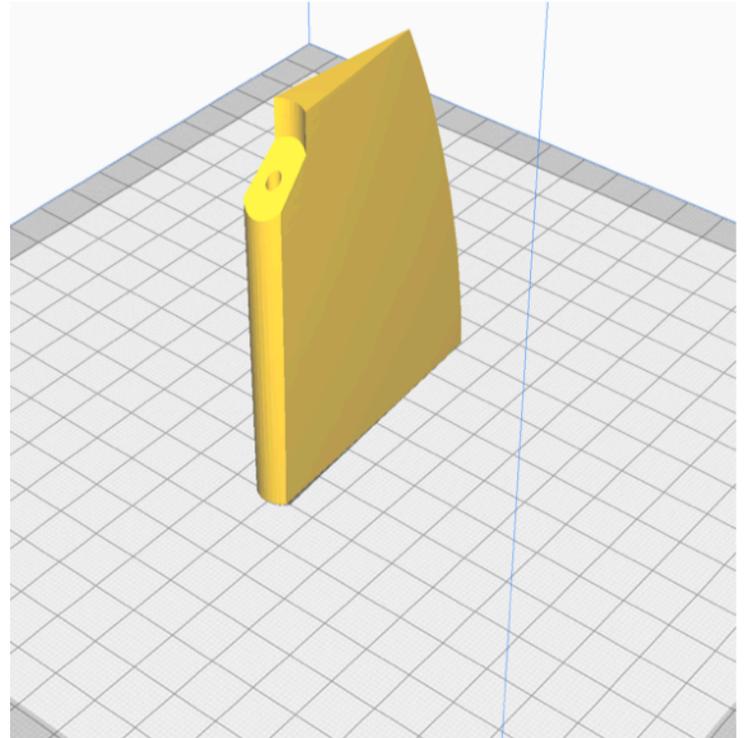
RUDDER 4



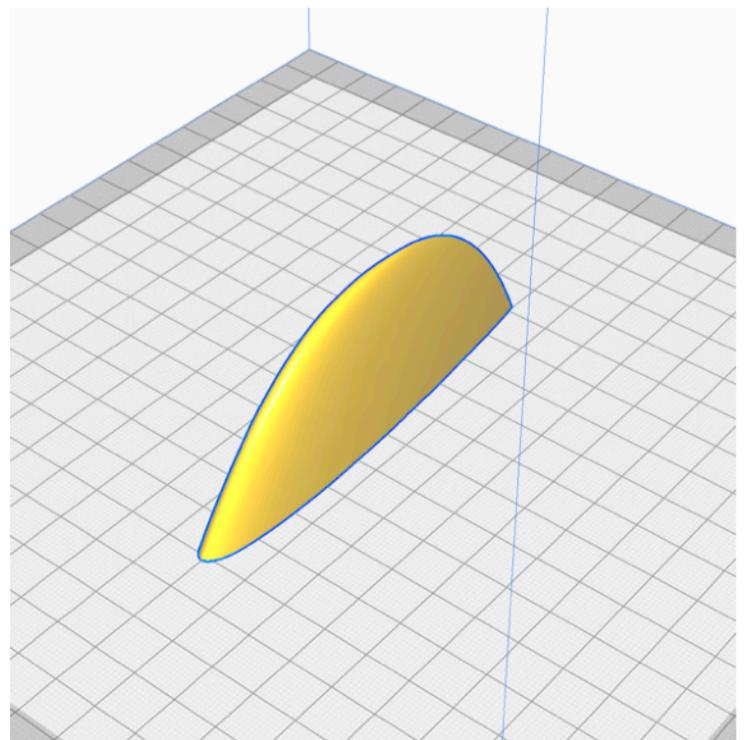
ELEVATOR 1



ELEVATOR 2

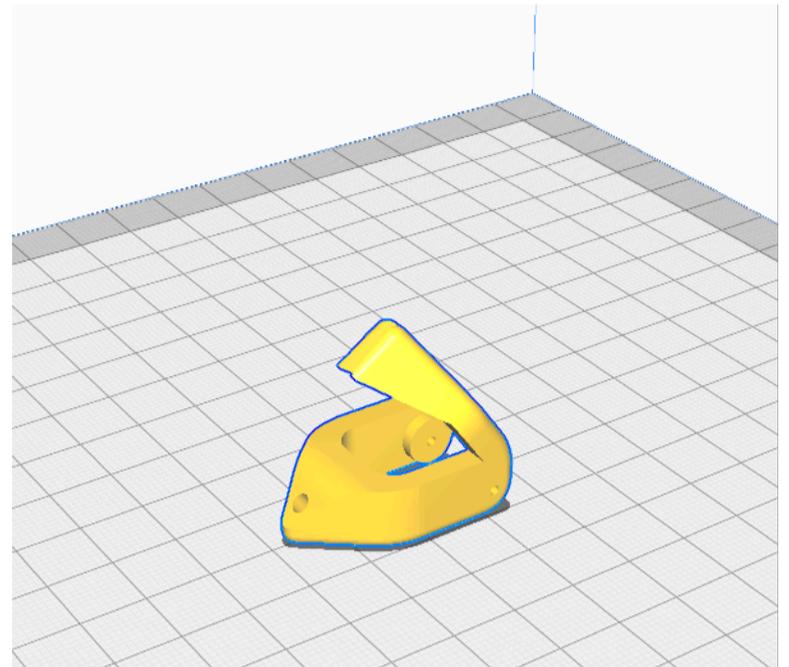


ELEVATOR 3



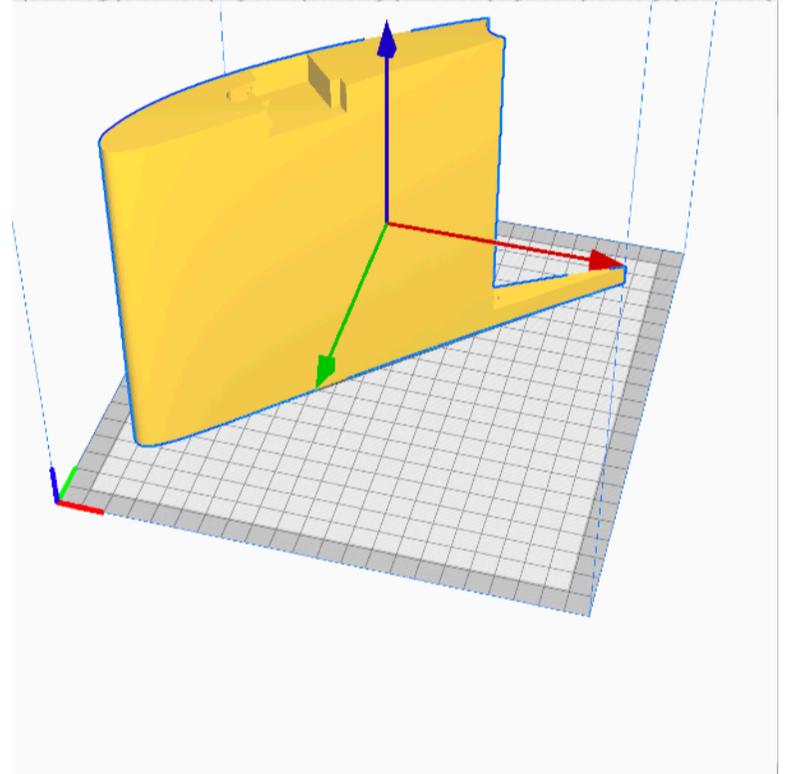
TPU TAILWHEEL MOUNT

Print in your standard TPU settings.

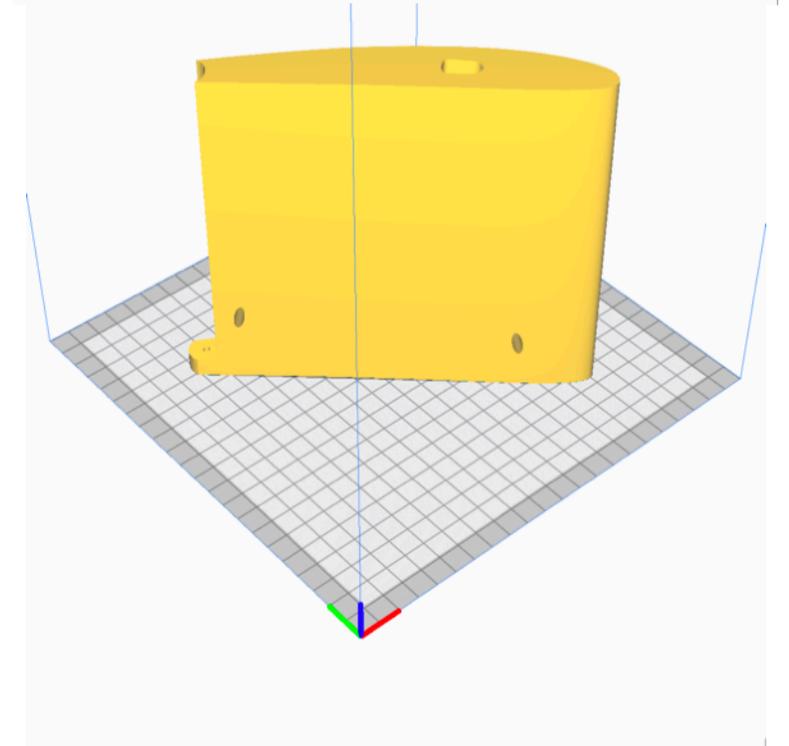


WING 1

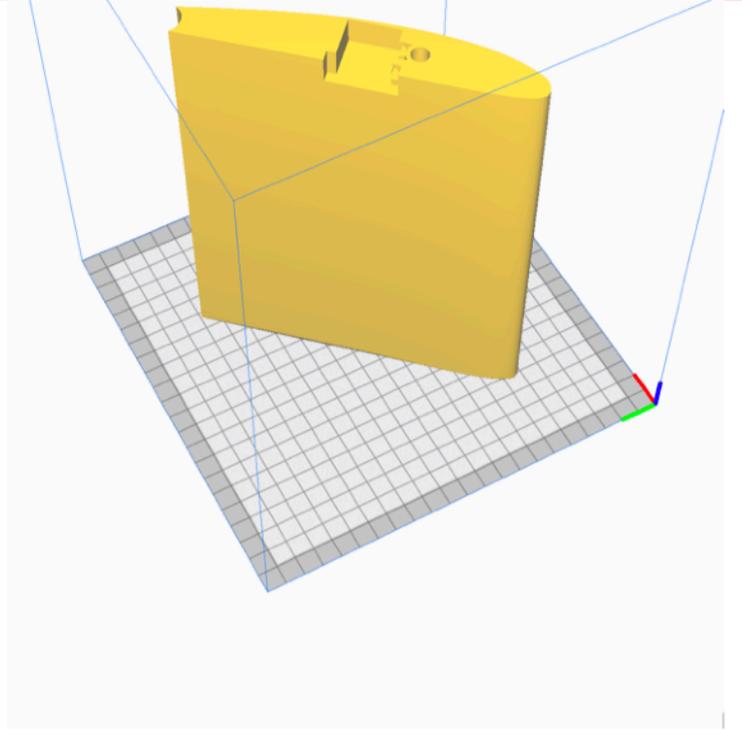
Note: it may appear that the servo tray will print in 'mid-air' it's prints fine, trust me!



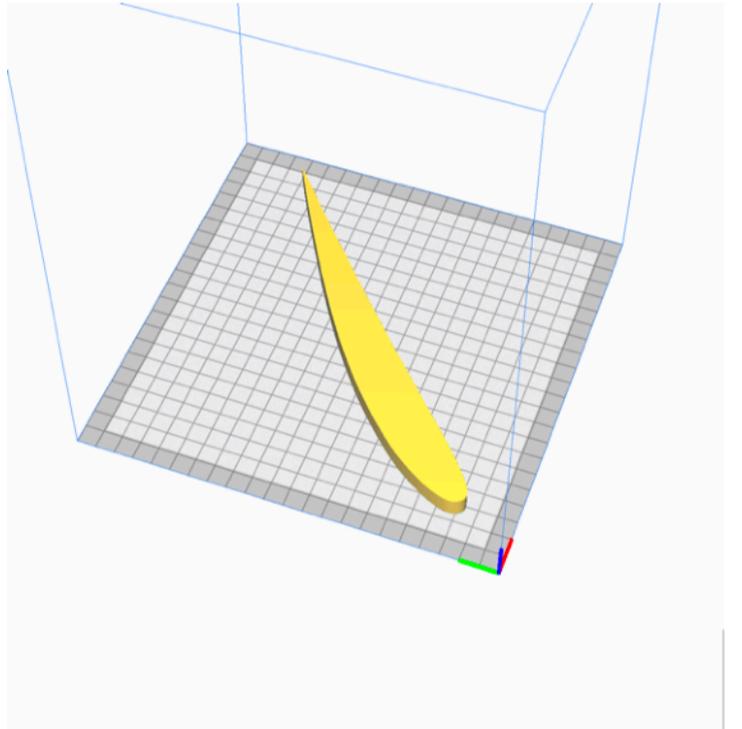
WING 2



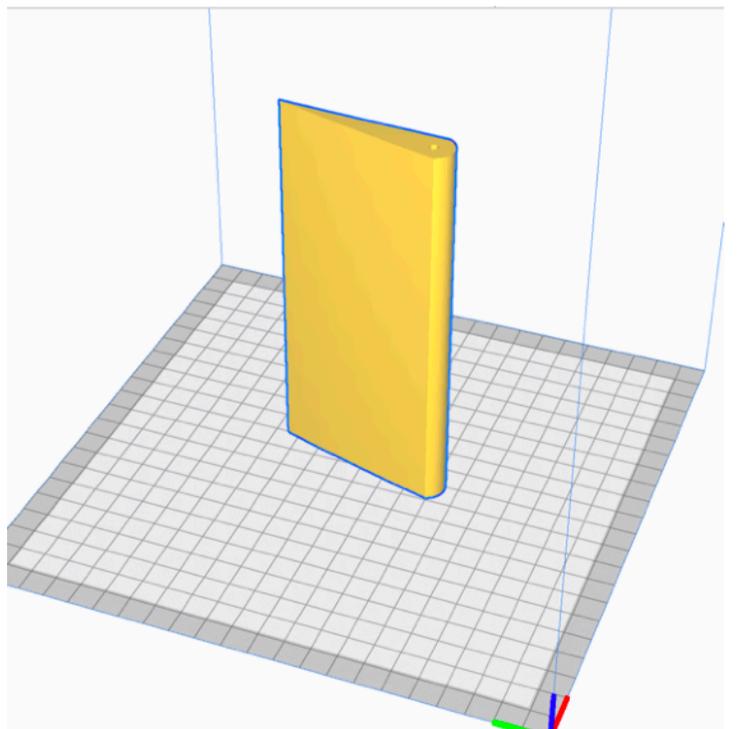
WING 3



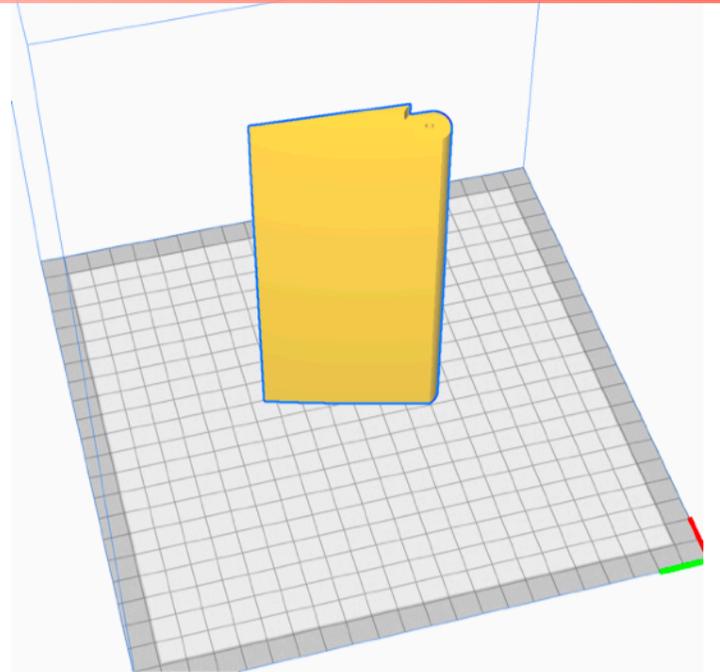
WING TIP



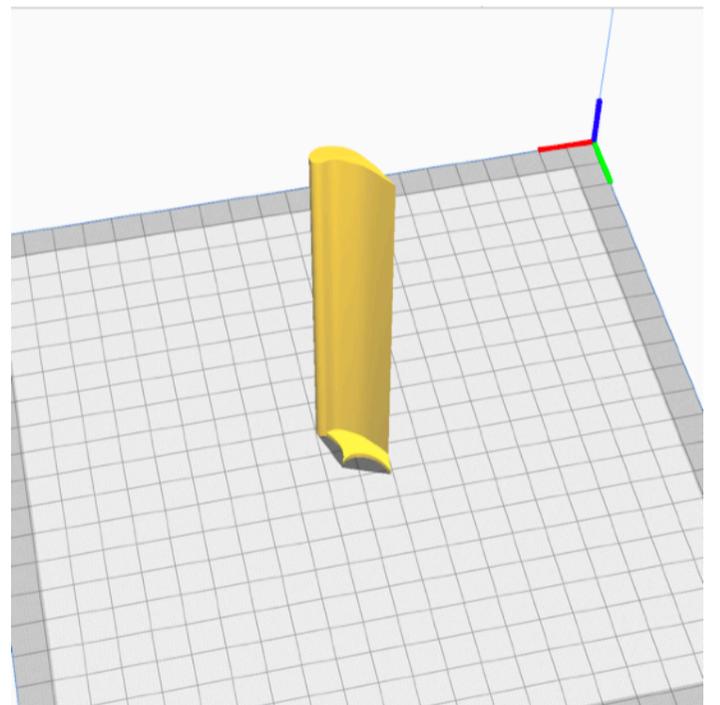
FLAP INNER & AILERON OUTER



FLAP OUTER & AILERON INNER



SLATS

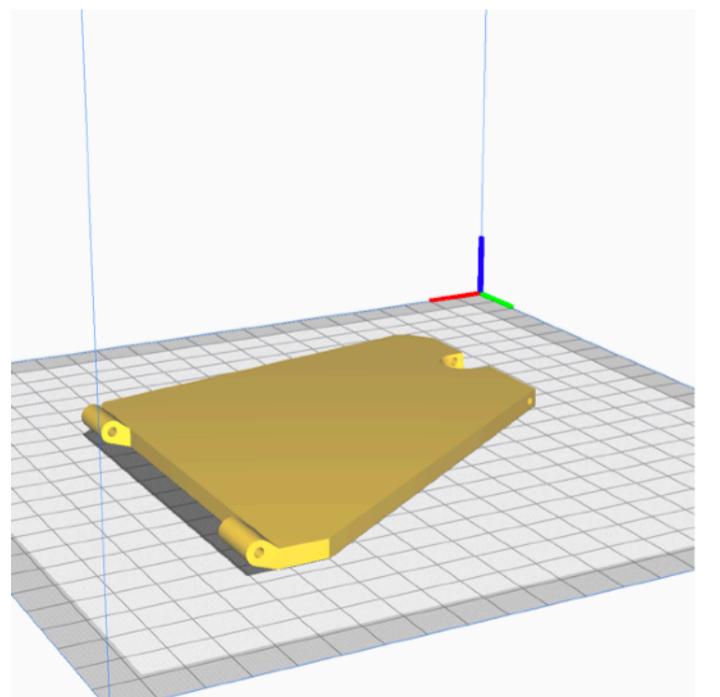


GEAR LOWER ARM

This part can be printed in LW or regular PLA.

Infill: 15%

Wall count: 2

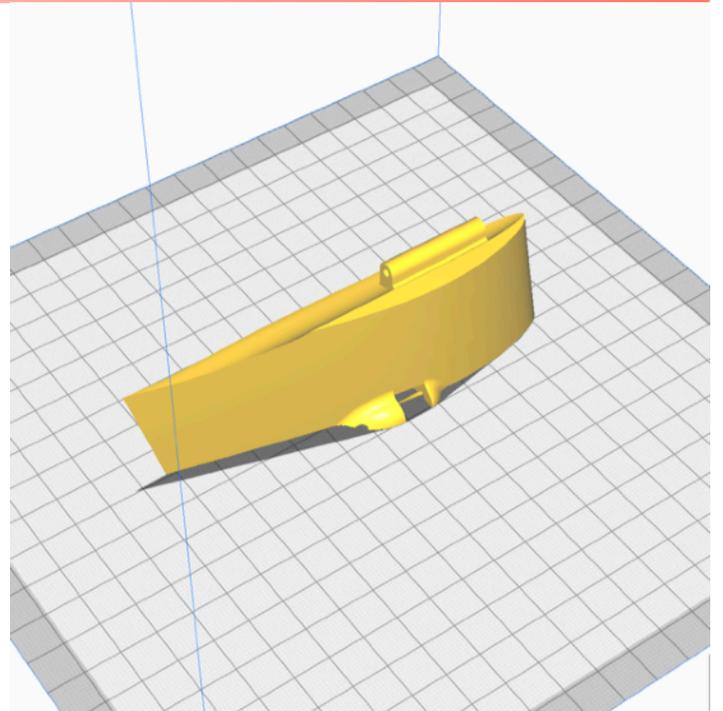


LANDING GEAR UPPER ARM 1 (PLA)

Temperature for PLA

INFILL 7%

SINGLE WALL OR 2 WALL

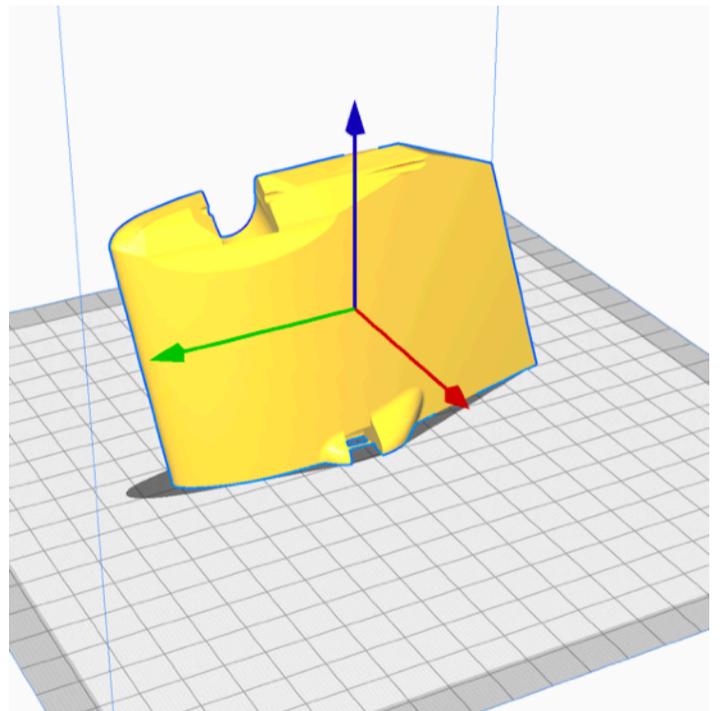


LANDING GEAR UPPER ARM 2 (PLA)

Temperature for PLA

INFILL 7%

SINGLE WALL OF 2 WALL

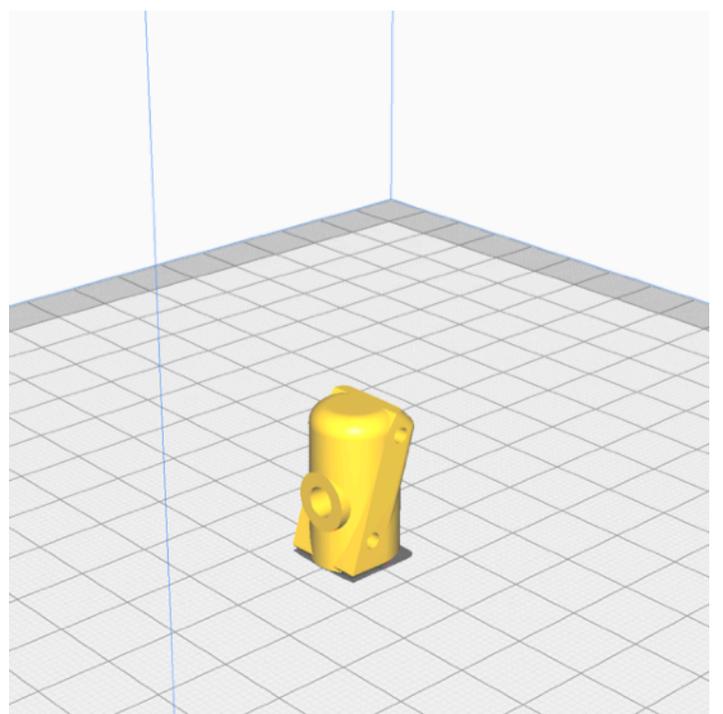


GEAR MOUNT (PLA)

PLA Temperature

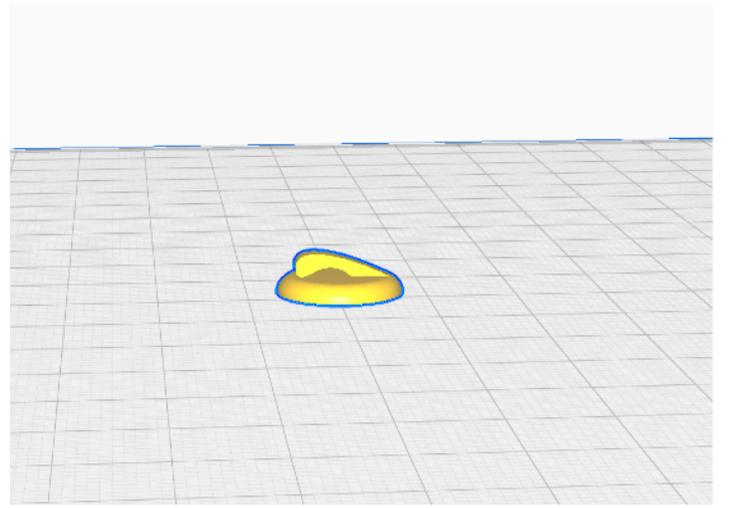
2 WALLS

INFILL: 20%



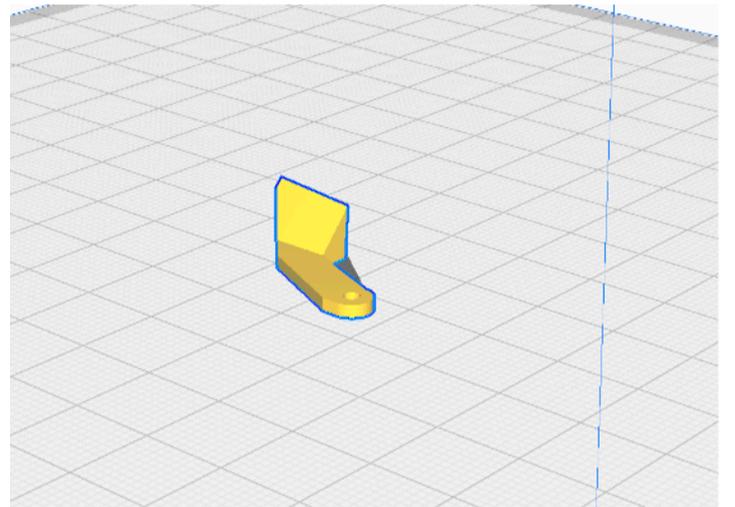
SPRING MOUNT (PLA)

Normal PLA settings



SERVO ARM (CONTROL LINKAGE)

Can be printed in PLA or LW-PLA



FLAP LINKAGE

Can be printed in PLA or LW-PLA

