



**rc3Dprint**



# Dragon

**PRINTING &  
ASSEMBLY**

*Inchaneer Vikramsinh Mane Desh.....*

# THANK YOU

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Thank you for purchasing the Draco. 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](http://www.rc3print.com) so they can purchase them at a reasonable price. This enables us to keep making improvements and bring you new aircrafts.

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.

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 @imd\_fpv for discount codes on future orders.

# PARTS LIST

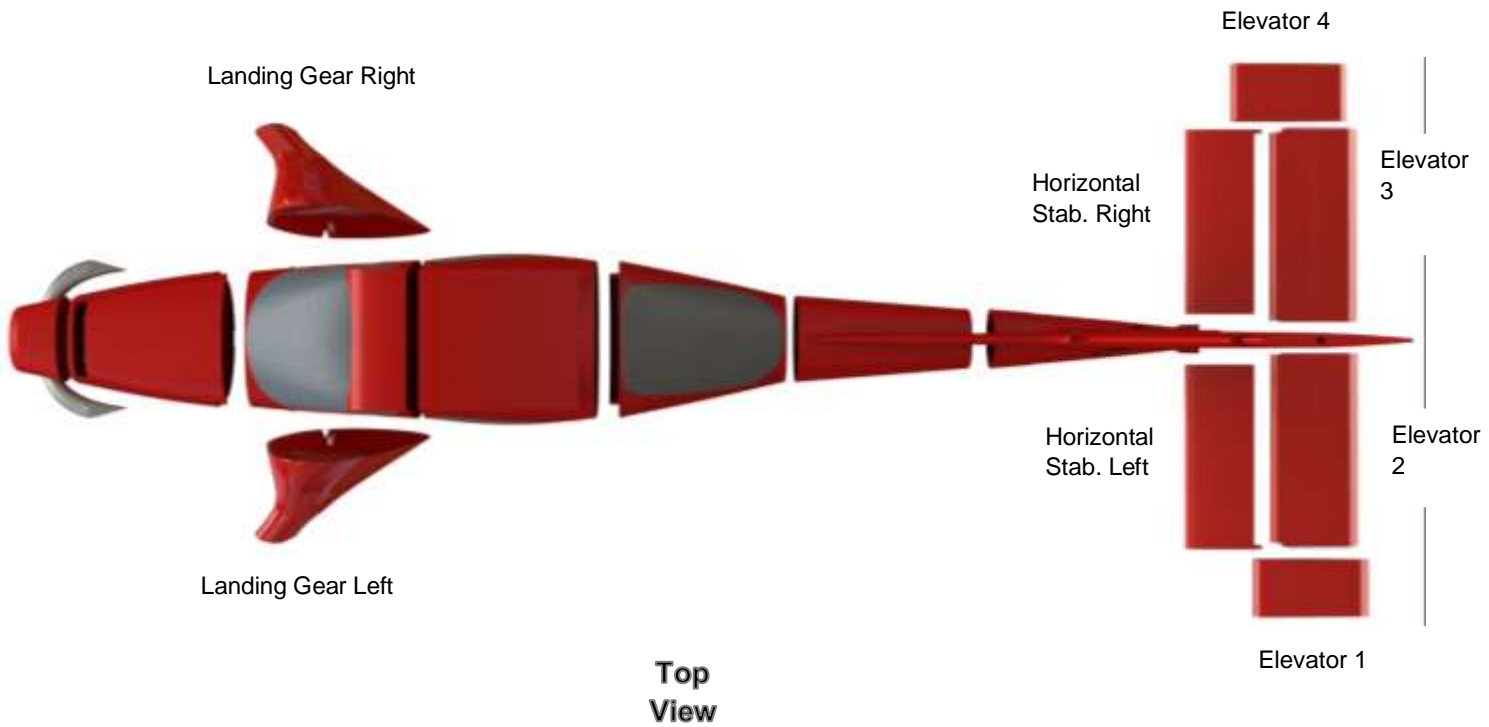
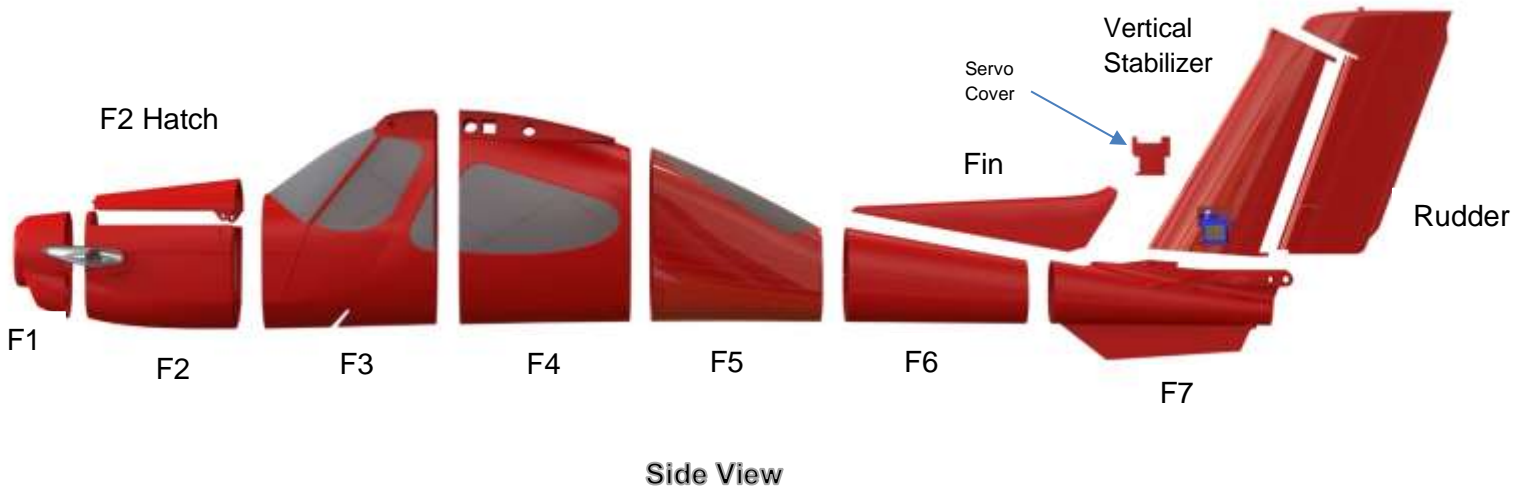
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1. **Motors x 1 - 3548 (minimum) or larger Brushless Motor. (Static Thrust should > 1500gm).**
2. **60-amp ESC (minimum).**
3. **LIPO - 3S/4s battery minimum.**
4. **1 x Propellers.**
5. **6 - Channel radio kit.**
6. **6 x 9g servo + servo extensions.**
7. **12mm OD 10mm ID Carbon Fiber Tubes. (1 meter Long 2 Tubes)**
8. **5mm\*1m Cf Hollow Tube.**
9. **2mm-3mm thick spring steel wire for landing gear. (You Can also Use Wire Cloth hanger of reasonable stiffness)**
10. **CA glue**

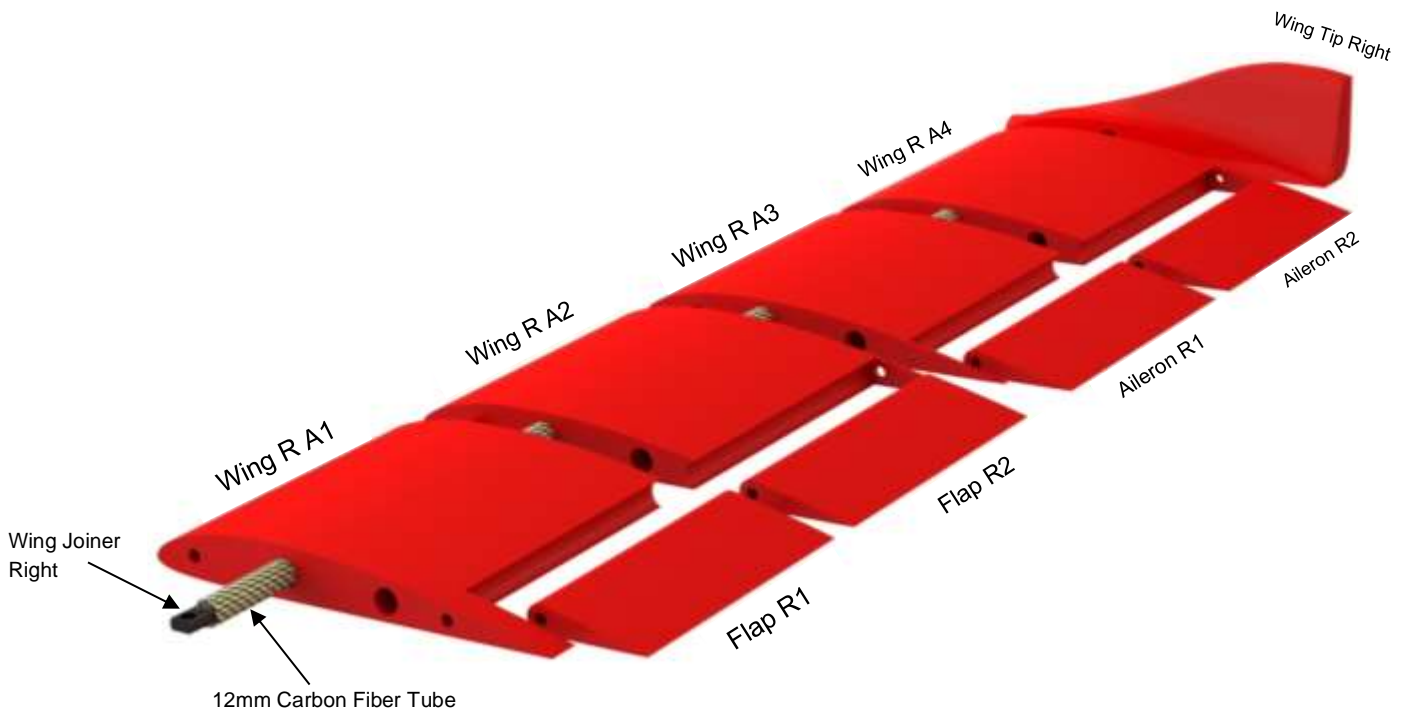


# INCLUDED STL FILES

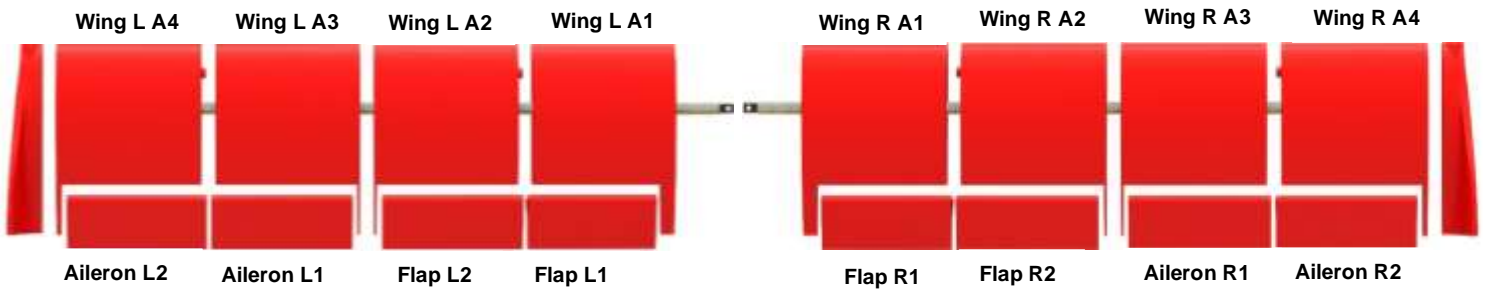
## *Fuselage*



# Wing



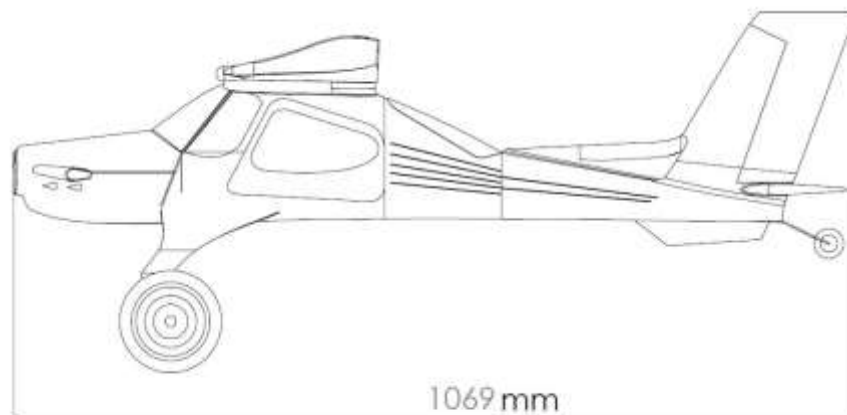
Wing Isometric View



Wing Top View

# SPECIFICATIONS

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- **Wing Span : 1400 mm.**
- **Empty Weight: 1550gm**
- **Flying Weight : 1700gm**
- **Wing Loading: 22 oz/sq.ft**  
**: 68 g/dm<sup>2</sup>**
- **Channels: 5 Channel**  
Diff. Throttle/Aileron/ Elevator/Rudder/Flaps.
- **Centre of Gravity: 6.6cm behind leading (Exactly on the Main Wing Spar)**

# PRINTING PROFILES

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

| <b>PLA Profile</b>                   |                             |
|--------------------------------------|-----------------------------|
| <b>Layer Height</b>                  | <b>0.2mm</b>                |
| <b>Line Width</b>                    | <b>0.4mm</b>                |
| <b>Wall Line Count</b>               | <b>1</b>                    |
| <b>Top/Bottom Layer</b>              | <b>3</b>                    |
| <b>Z-Seam Alignment</b>              | <b>Sharpest Corner</b>      |
| <b>Infill % *</b>                    | <b>5%</b>                   |
| <b>Infill Pattern</b>                | <b>Cubic</b>                |
| <b>Infill Before Walls</b>           | <b>Enabled (Box Ticked)</b> |
| <b>Combing Mode</b>                  | <b>All</b>                  |
| <b>Skin Overlap Percentage</b>       | <b>5%</b>                   |
| <b>Printing Temperature</b>          | <b>215-220 C</b>            |
| <b>Build Plate Temperature</b>       | <b>60 C</b>                 |
| <b>Print Speed</b>                   | <b>40-50 mm/s</b>           |
| <b>Retraction</b>                    | <b>Yes</b>                  |
| <b>Extra Retraction Prime amount</b> | <b>0.15mm<sup>3</sup></b>   |
| <b>Cooling fan</b>                   | <b>45 %</b>                 |
| <b>Supports **</b>                   | <b>No</b>                   |
| <b>Build Plate Adhesion</b>          | <b>Brim 5mm</b>             |
| <b>Surface Mode</b>                  | <b>Normal</b>               |

\* Infill % is different for a few prints refer the parts list for changes

\*\*support setting is different for a few prints refer the parts list for changes

# Printing Sequence

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The parts in the folder that you download are segregated in different folders depending on plane parts they are numbered according to the sequence you should follow for simplicity. The folders are:

## 1. Fuselage.

## 2. Empennage.

## 3. Wings.

**-Right Wing**

**-Left Wing**

## 4. Control Surfaces.

## 5. Landing Gear.

Start with the Fuselage and follow the sequence. This will help you all the parts and easy assemble them.

| Name               | Date modified    | Type        | Size |
|--------------------|------------------|-------------|------|
| 1.Fuselage         | 06-03-2021 19:47 | File folder |      |
| 2.Empennage        | 06-03-2021 21:09 | File folder |      |
| 3.Wing             | 06-03-2021 22:17 | File folder |      |
| 4.Control Surfaces | 06-03-2021 22:16 | File folder |      |
| 5.Landing Gear     | 06-03-2021 21:02 | File folder |      |



# ASSEMBLY

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1. THE ELEVATOR IS ASSEMBLED IN PLACE, DON'T GLUE IT TOGETHER PRIOR TO ASSEMBLY.
2. THE AILERON-SERVOS EXTENSIONS SHOULD BE IN PLACE BEFORE GLUING THE WING TOGETHER.
3. THE AILERON NEEDS TO BE IN PLACE BEFORE GLUING THE WINGTIP ON.
4. DO NOT GLUE THE FUSALEGE SECTION (F1) BEFORE ATTACHING THE MOTOR

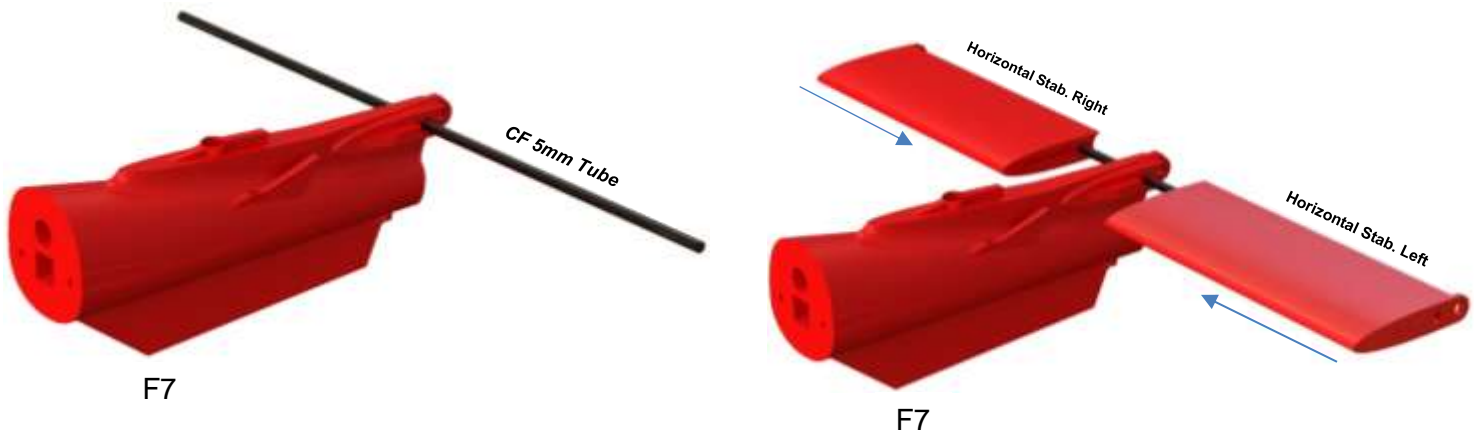
## Fuselage

1. Print all parts in the folder **Fuselage**.
2. Sand all the sections for better adhesion between the parts.
3. **F1** Section should be glued once the motor is installed on section F2.
4. All sections should be glued together with the help of **12x12\_SectionJoiner** these joiners help you align the parts and gives strength to the joint. (orientation of these section joiner is shown below)
5. Start Gluing together Fuselage sections **F2 - F3 - F4 - F5 - F6 - F7**.

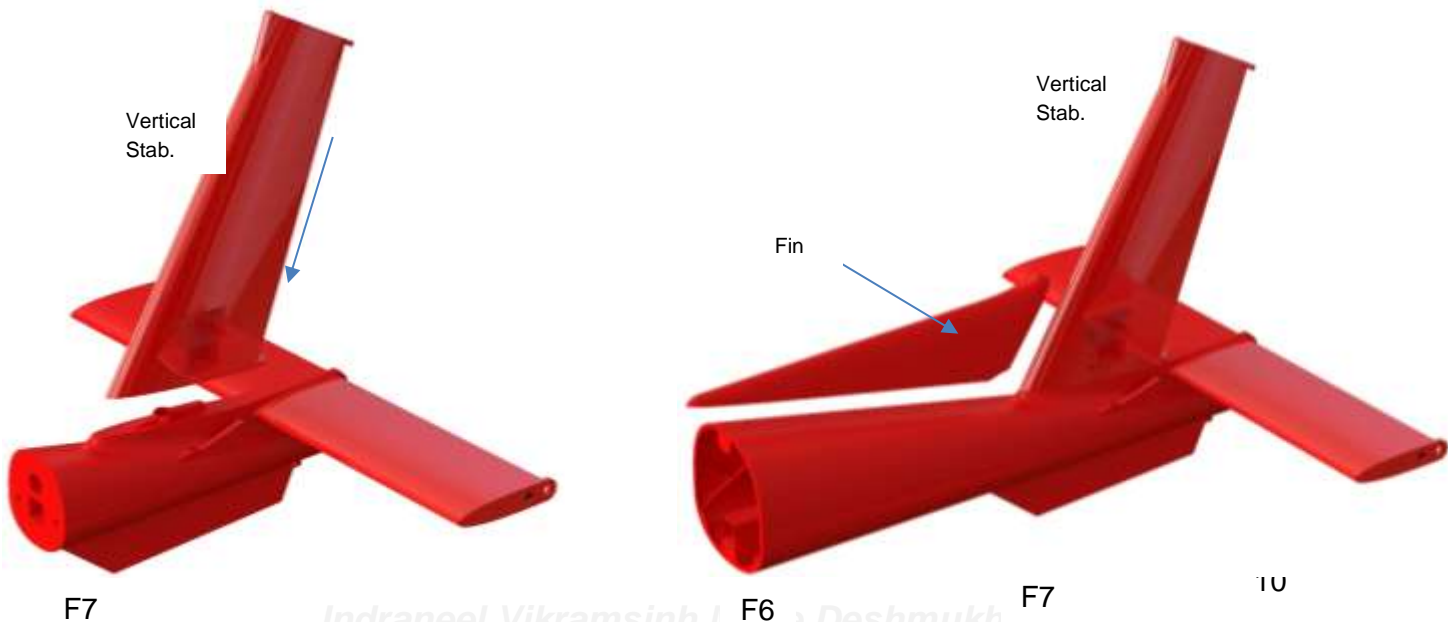


# Empennage

1. After completion of the fuselage glue the empennage parts
2. Start with the horizontal stabilizers, check if both the Right and Left horizontal Stabilizers fit properly with the F7 Fuselage Section.
3. Pass 35cm long **5mm carbon fiber hollow tube** through the hole in the F7 Section of fuselage and center it.
4. Insert the Right and left horizontal Sections through the 5mm tube and glue the F7 section and horizontal sections together. (As shown below)



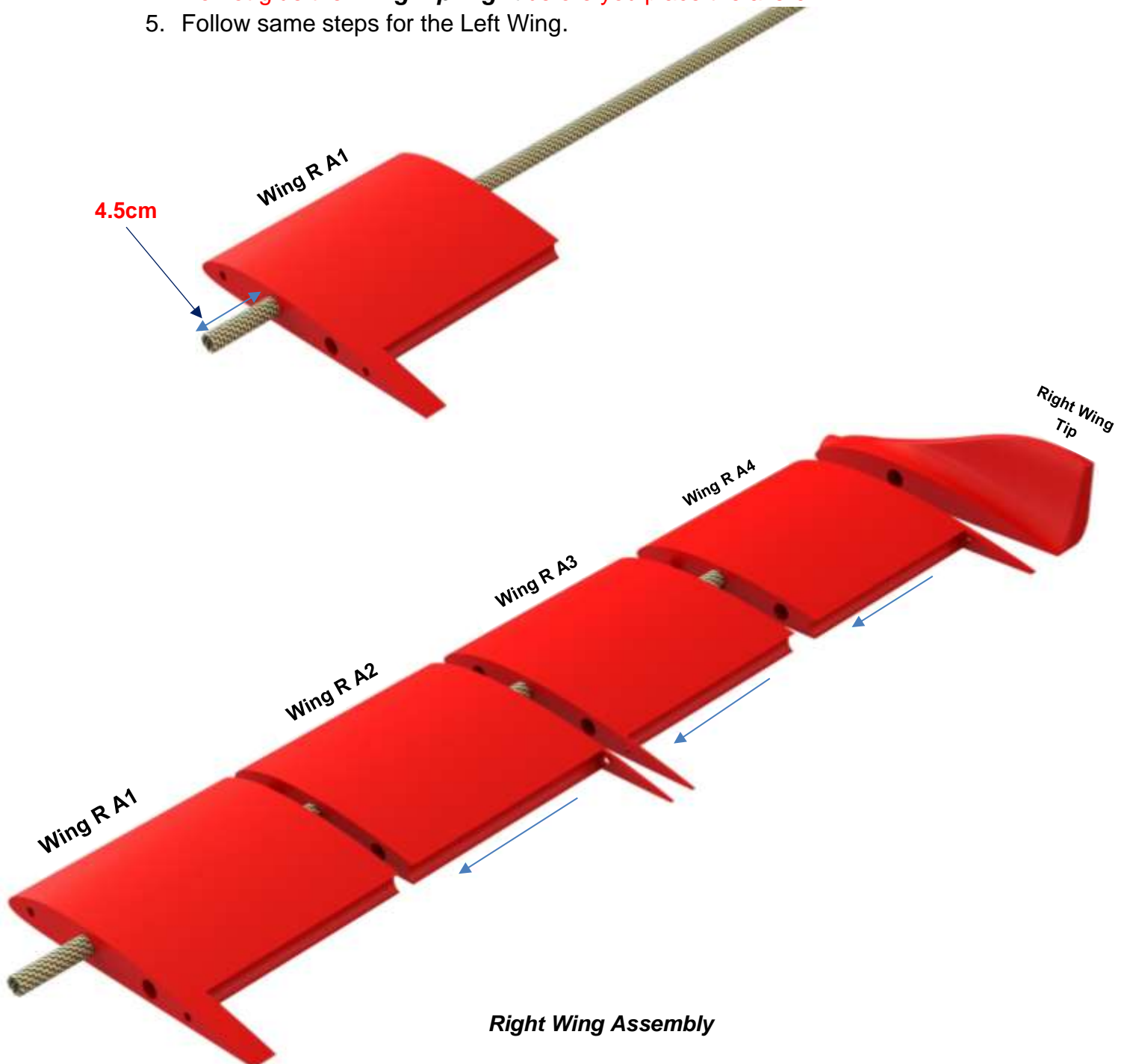
5. Insert Vertical Stabilizer and glue it with the F7 Section.
6. Place Fin and glue, it with the fuselage.



# Wing

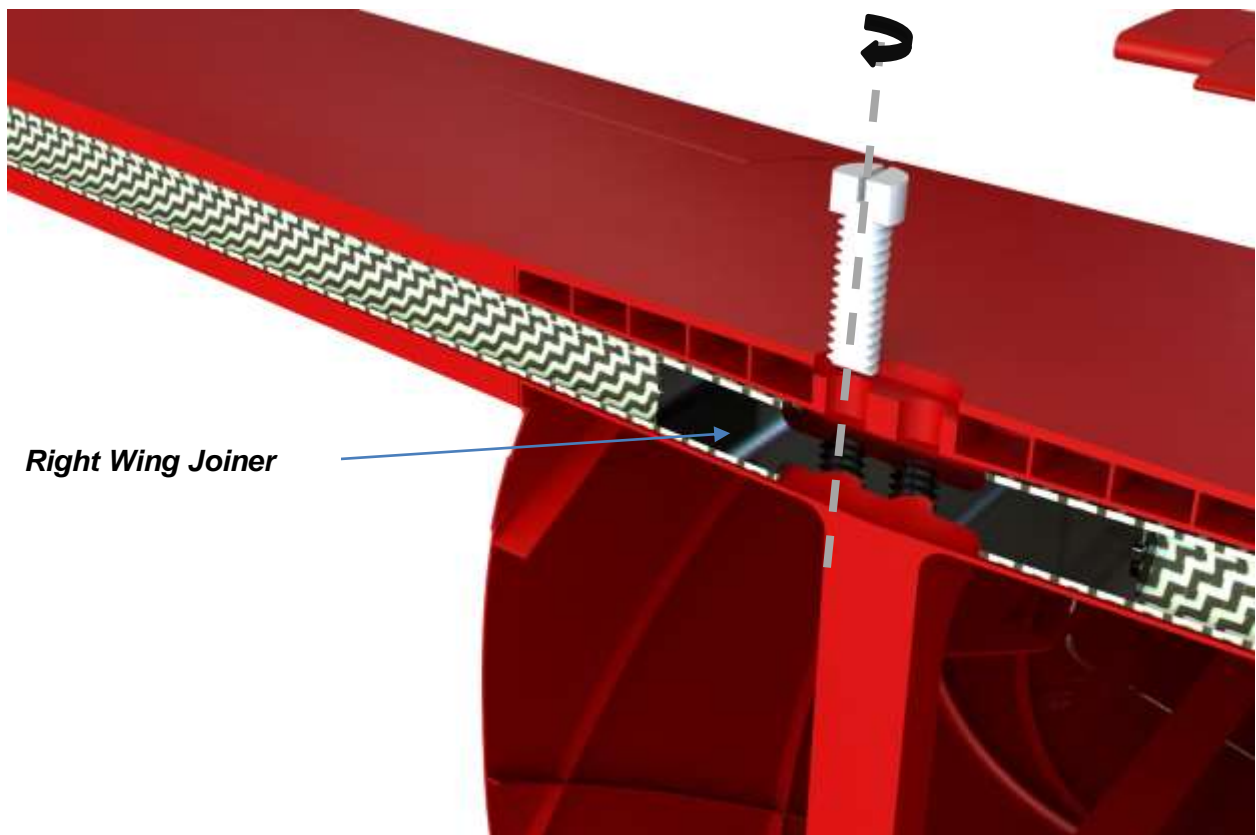
The wing Assembly consists of two half's Right wing and Left wing.

1. Take a 67cm Long 12mm OD 10mm ID Carbon Fiber Tube Mark **4.5cm** on one side of the section leave that area as it will be inserted into the fuselage.
2. Insert **Wing R A1** Section and glue it to the CF tube.
3. Similarly insert **Wing R A2 --- Wing R A3 --- Wing R A4** sequentially, and glue them with each other and the CF tube.
4. **Do not glue the Wing Tip Right before you place the aileron.**
5. Follow same steps for the Left Wing.



**Right Wing Assembly**

6. Insert the wing joiner in the CF tube align it in such a way that when the wing assembly is inserted in fuselage the hole of wing joiner and the hole in that fuselage (F4 Section) should match with each other as it will be used to hold the wing in position by inserting a screw through it.



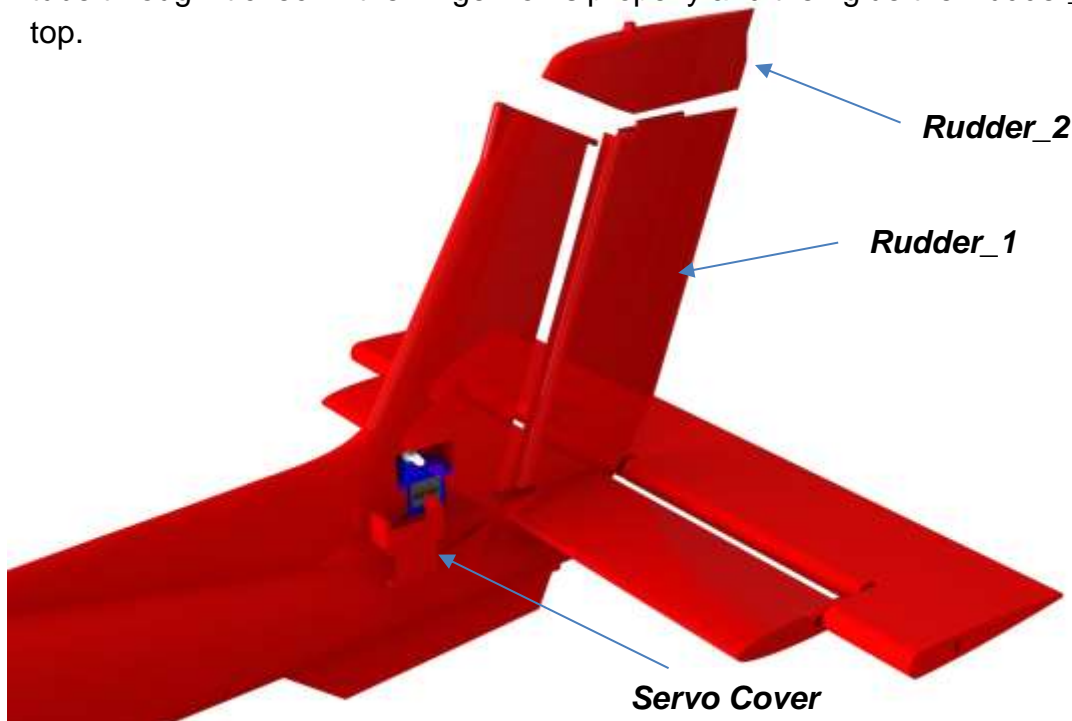
7. The wing joiner is designed to made a tight fit so it could hold the position before you glue it.
8. The screw will secure the wing in position.
9. Follow the same process for Left wing.

## **Control Surfaces Wing**

1. Insert 3cm long 5mm CF tubes between **Flap R1** and **Flap R2** and glue them together.
2. Insert 3cm long 5mm CF tubes between **Aileron R1** and **Aileron R2** and glue them together.
3. Attach the Right Flap with the wing by inserting the 5mm dowel from the left side first then align the hinge holes of the flaps right side with Wings holes and insert a 5cm dowel and align it mid-way so that it comes out on the other side as well where the aileron can be inserted in the same dowel finally insert the last dowel from the Wing A4 section hole through aileron and **glue the Right-Wing Tip at last.**
4. Repeat the steps for left wing

## **Control Surfaces Elevator /Rudder**

1. Assemble the Elevator's 4 parts **Elevator 1-- Elevator 2 --Elevator 3-- Elevator 4** and glue them together.
2. Align the Assembled Elevator with the Horizontal Stabilizer Holes and Pass the 5mm CF tube through it.
3. Rudder consists of two parts **Rudder\_1** and **Rudder\_2** do not glue them together before assembling the Rudder \_1 part to vertical Stabilizer
4. Place and Align the Rudder\_1 part with vertical stab dowel holes and insert a CF tube through it check if the hinge works properly and then glue the Rudder\_2 part on top.



## **Servo Mounting**

1. Place and screw in your Vertical Stabilizer, print the servo cover it fits directly in the vertical stabilizer.
2. Elevator Servo Mount is provided on F7 Fuselage Section.
3. Pass the Servo wire through the holes, the wires will directly come out in the internal part.
4. Wing R A1 : Wing R A3 and Wing L A1 : Wing L A3 have servo mounts for Flaps and Ailerons Respectively. And space is provided to pass the servo extensions through the wing volume.

## **Landing Gear**

1. Landing gears glue on the fuselage and run a 3mm wire through the slot for reinforcement and add wheels directly on the wire  
Fill the slot with a strong epoxy.

## **Final Checks**

- Line up your motor mounts on the front of the nacelle. The printed hole markers may not be in the right place, 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(F1) onto F2. With the motors in place connect up your
- 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.
- Check all links and motor mount is secured
- CG Position is under the main wing spar please make sure the aircraft is well balanced before going for a test flight.

# STL files

This is a list of all the files included and the variations from print **Profile 1** in print settings required per file to get the best results.

| <b>Fuselage</b> |                 |                                   |
|-----------------|-----------------|-----------------------------------|
| <b>Sr.no</b>    | <b>Parts</b>    | <b>Settings</b>                   |
| 1.              | F1              | Layer Height: 0.16mm              |
| 2.              | F2              | Infill: 20%<br>Top/Bottom Wall: 4 |
| 3.              | F3              | No Change                         |
| 4.              | F4              | No Change                         |
| 5.              | F5              | No Change                         |
| 6.              | F6              | No Change                         |
| 7.              | F7              | No Change                         |
| 8.              | F2_BatteryHatch | Infill: 20%<br>Top/Bottom Wall: 4 |
| 9.              | Section_Joiner  | Infill:20%<br>Wall Count:3        |

| <b>Empennage</b> |                            |                 |
|------------------|----------------------------|-----------------|
| <b>Sr.no</b>     | <b>Parts</b>               | <b>Settings</b> |
| 1.               | VerticalStabilizer         | Support enabled |
| 2.               | HorizontalStabilizer_Right | No Change       |
| 3.               | HorizontalStabilizer_Left  | No Change       |
| 4.               | Vertical_Fin               | Support enabled |
| 5.               | Verticalstab_ServoCover    | Support enabled |

| <b>Wing</b>  |                  |  |
|--------------|------------------|--|
| <b>Sr.no</b> | <b>Parts</b>     | <b>Settings</b>                                    |
| 1.           | Wing_R_A1        | No Change  |
| 2.           | Wing_R_A2        | No Change  |
| 3.           | Wing_R_A3        | No Change  |
| 4.           | Wing_R_A4        | No Change  |
| 5.           | Wing_L_A1        | No Change  |
| 6.           | Wing_L_A2        | No Change  |
| 7.           | Wing_L_A3        | No Change  |
| 8.           | Wing_L_A4        | No Change  |
| 9.           | WingTip_Right    | No Change  |
| 10.          | WingTip_Left     | No Change  |
| 11.          | WingJoiner_Right | Infill:20%<br>Wall Count:3<br>Layer Height :0.12mm |
| 12.          | WingJoiner_Left  | Infill:100%<br>Wall Count:3<br>Layer Height;0.12mm |
| 13.          | Wing_Screw       | Infill:100%<br>Wall Count:3<br>Layer Height;0.12mm |

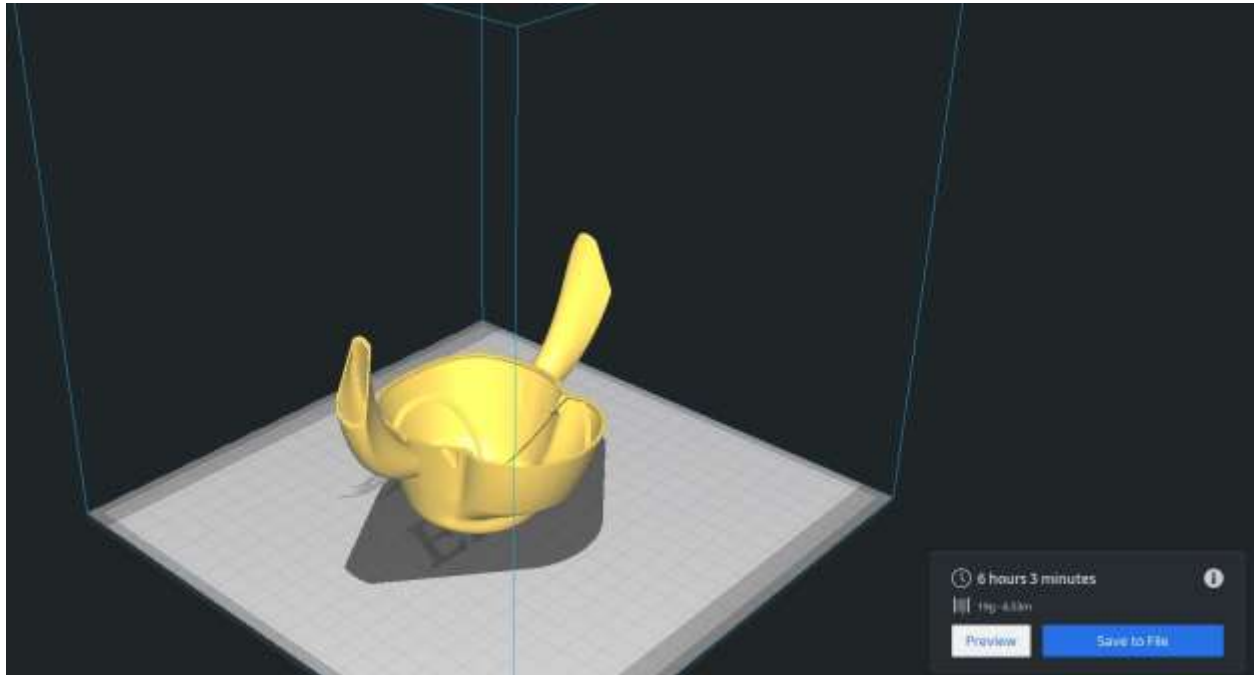
| <b>Control Surfaces</b> |              |  |
|-------------------------|--------------|--|
| <b>Sr.no</b>            | <b>Parts</b> | <b>Settings</b>  |
| 1.                      | Flap_R1      | No Change  |
| 2.                      | Flap_R2      | No Change  |
| 3.                      | Aileron_R1   | No Change  |
| 4.                      | Aileron_R2   | No Change  |
| 5.                      | Flap_L1      | No Change  |
| 6.                      | Flap_L2      | No Change  |
| 7.                      | Aileron_L1   | No Change  |
| 8.                      | Aileron_L2   | No Change  |
| 9.                      | Rudder_1     | Support enabled<br>Support placement: Touching Build plate<br>Top/Bottom Wall: 4 |
| 10.                     | Rudder_2     | No Change  |
| 11.                     | Elevator_1   | No Change  |
| 12.                     | Elevator_2   | Top/Bottom Wall: 4   |
| 13.                     | Elevator_3   | No Change  |
| 14.                     | Elevator_4   | No Change  |



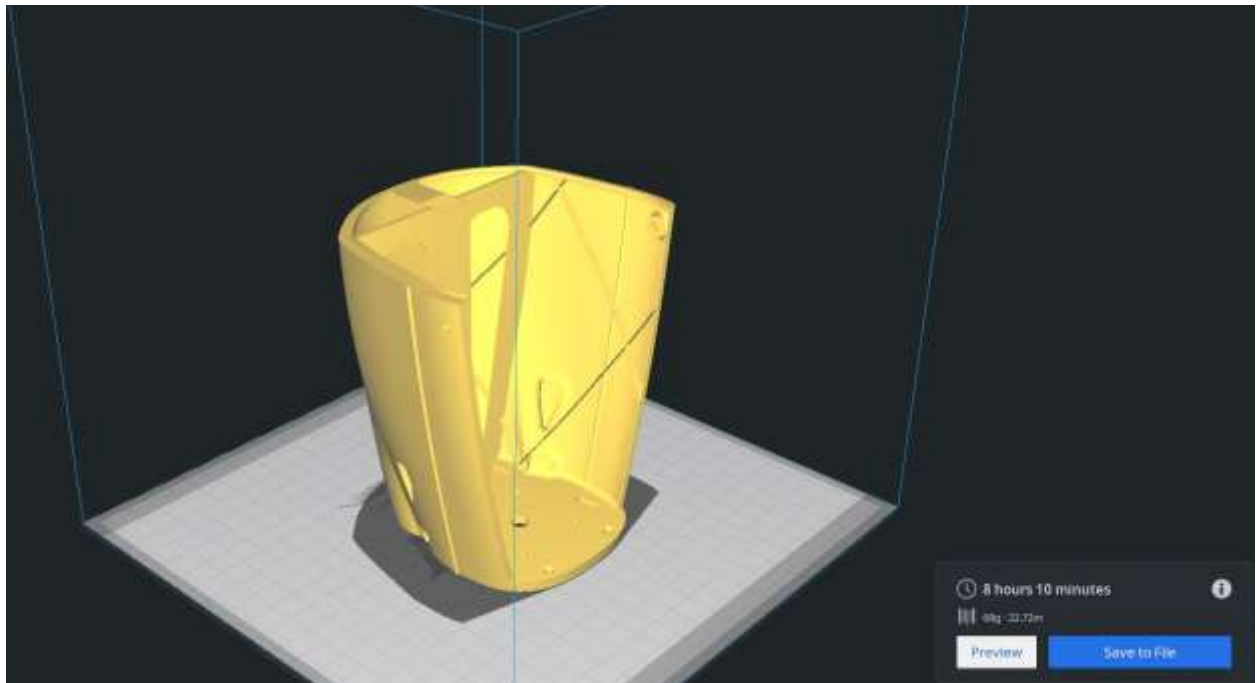
| <b>Landing Gear</b> |                           |  |
|---------------------|---------------------------|--|
| <b>Sr.no</b>        | <b>Parts</b>              | <b>Settings</b>                          |
| 1.                  | <i>Landing_Gear_Right</i> | Infill:15%<br>Support enabled            |
| 2.                  | <i>Landing_Gear_Left</i>  | Infill:15%<br>Support enabled            |
| 3.                  | <i>Wheel_hub</i>          | Infill:15%                               |
| 4.                  | <i>Wheel_Tpu</i>          | TPU Print<br>Wall count:2<br>Infill %:10 |

# CURA COMPONENT PLACEMENT

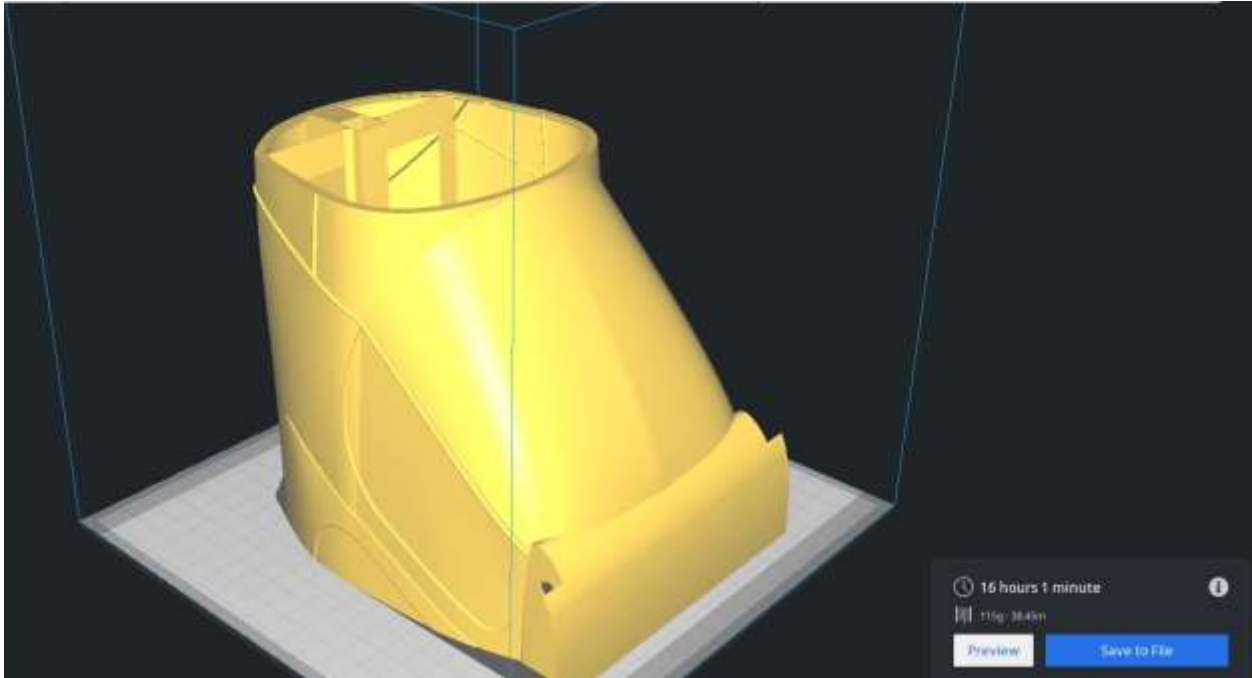
Part orientation of all the important parts have been shown below for your reference.



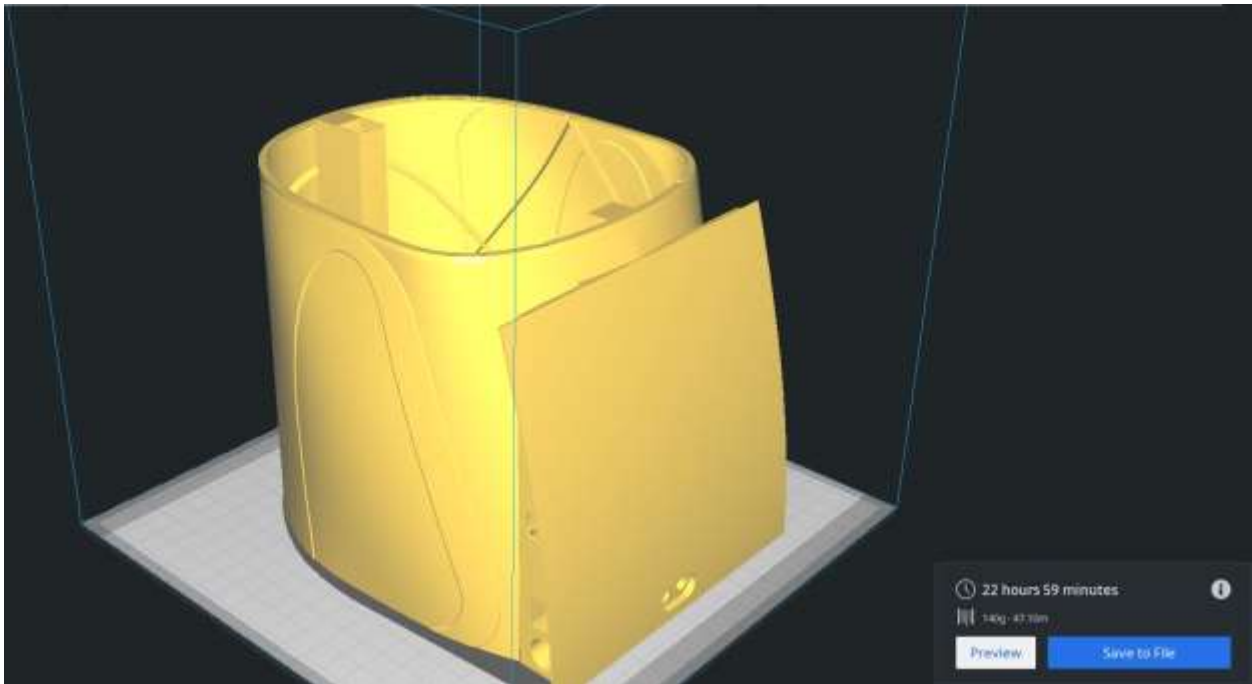
*F1 Section.*



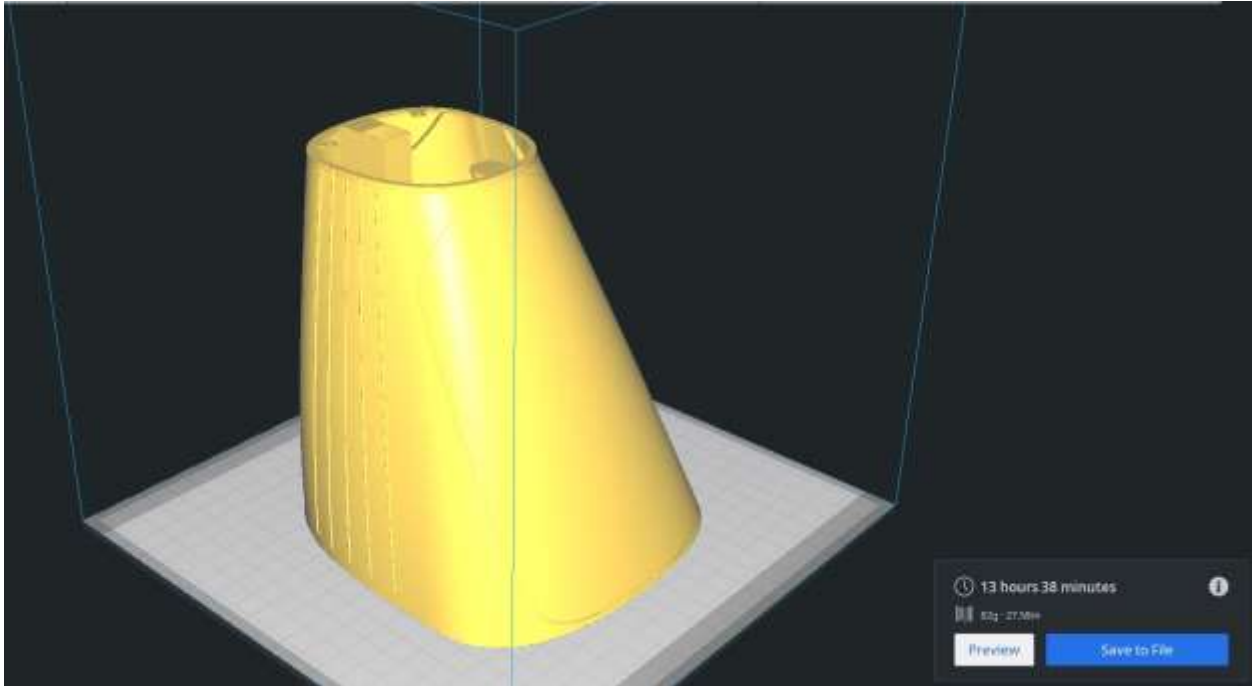
*F2 Section.*



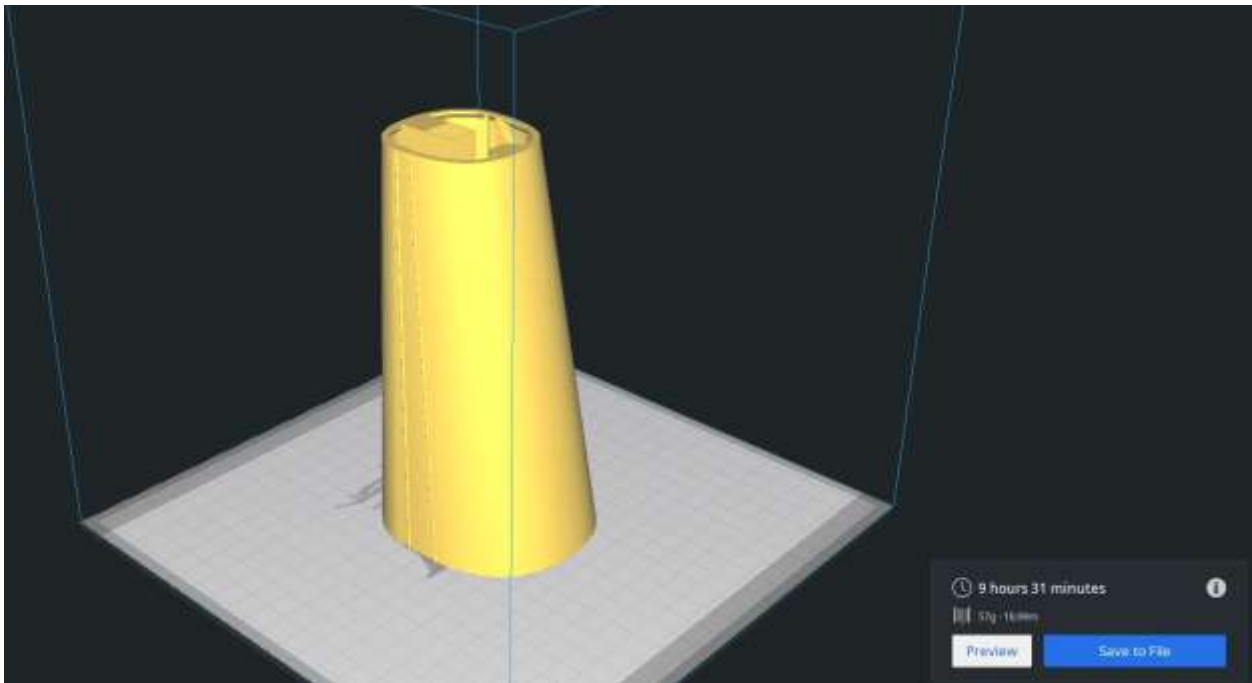
**F3 Section.**



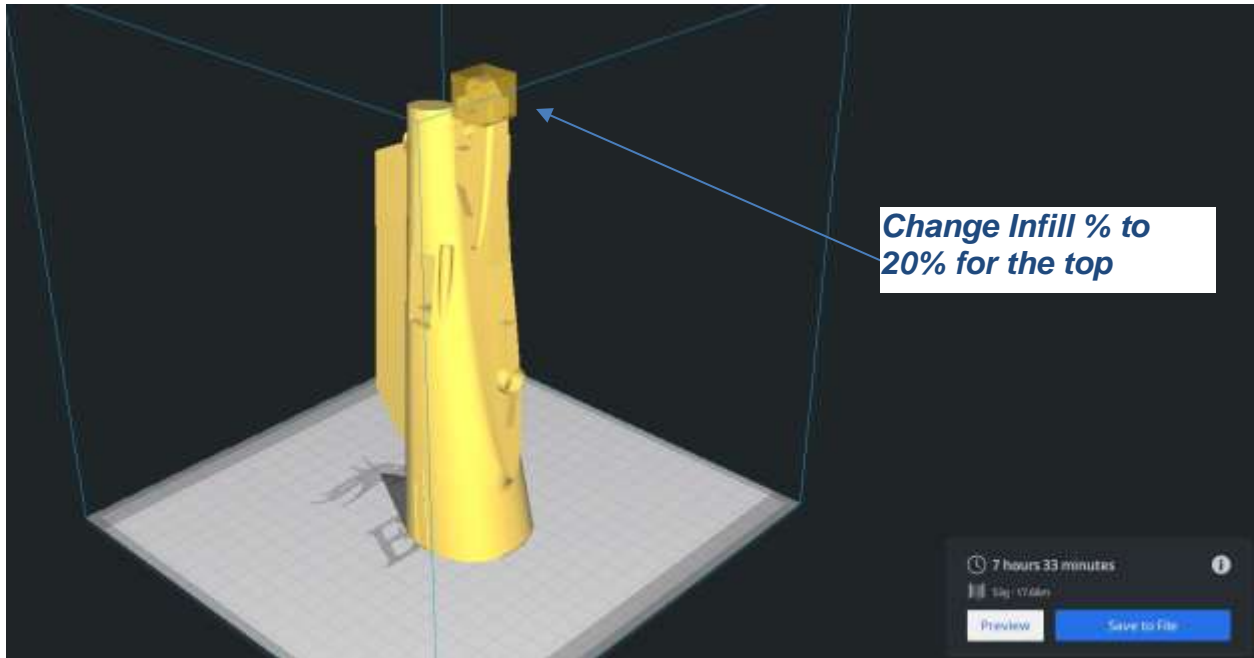
**F4 Section.**



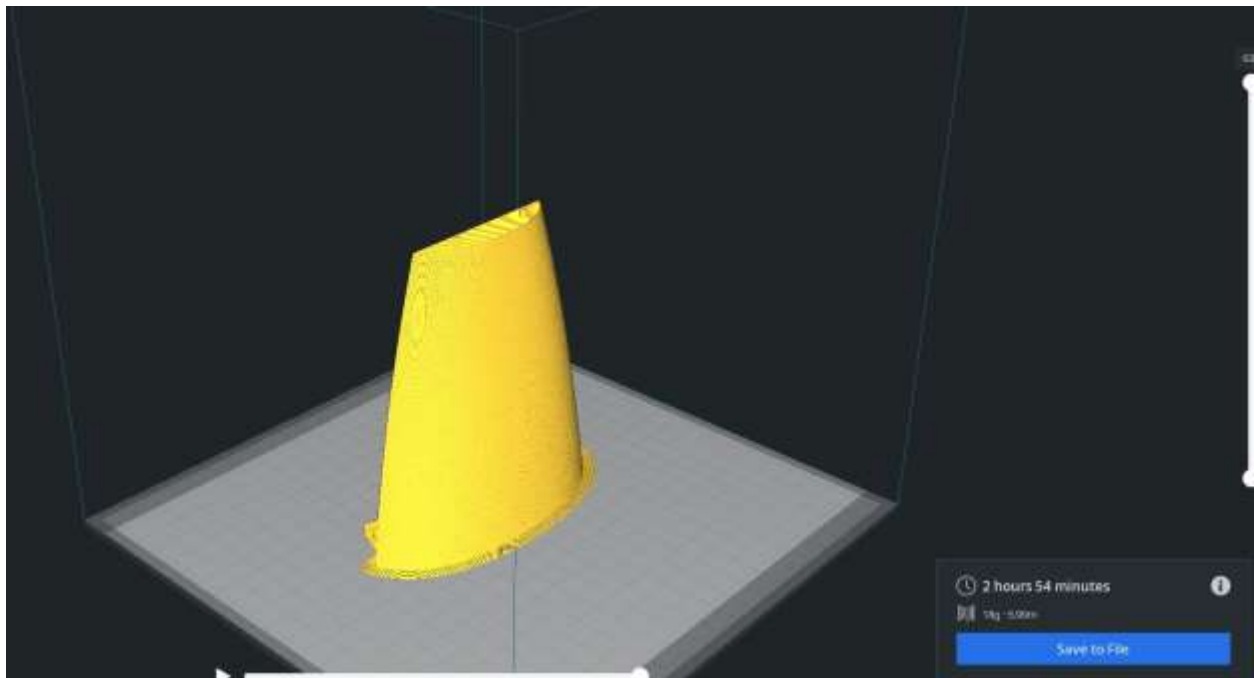
**F5 Section.**



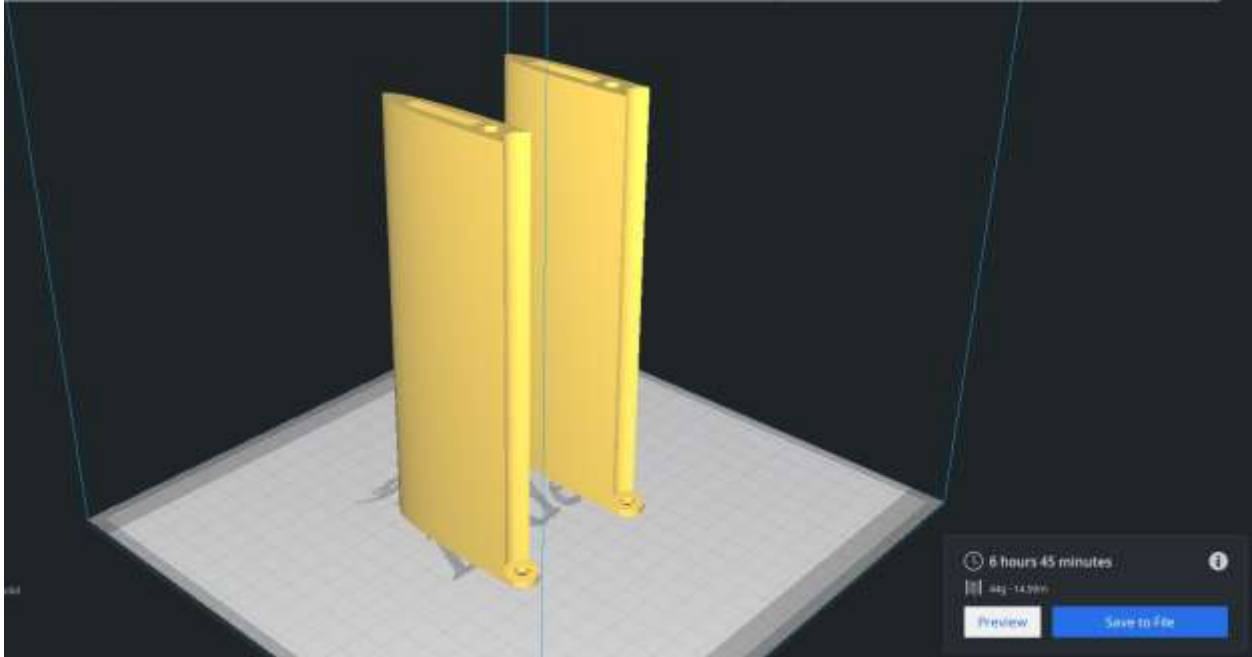
**F6 Section.**



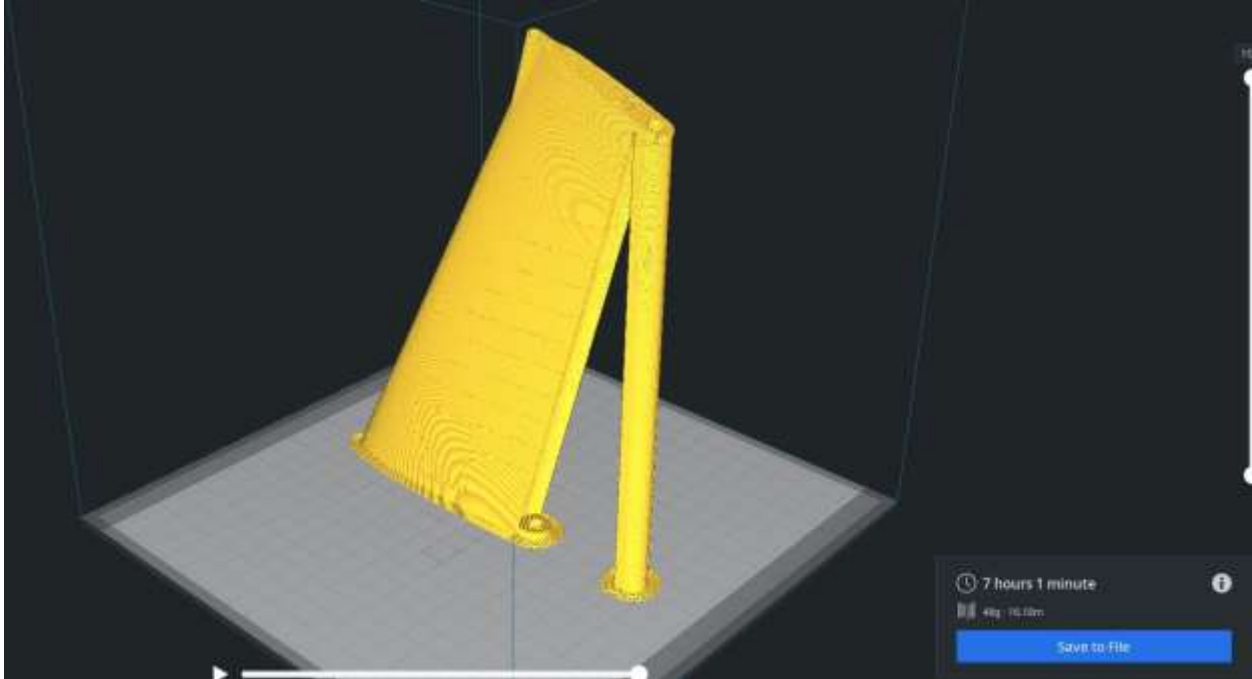
**F7 Section.**



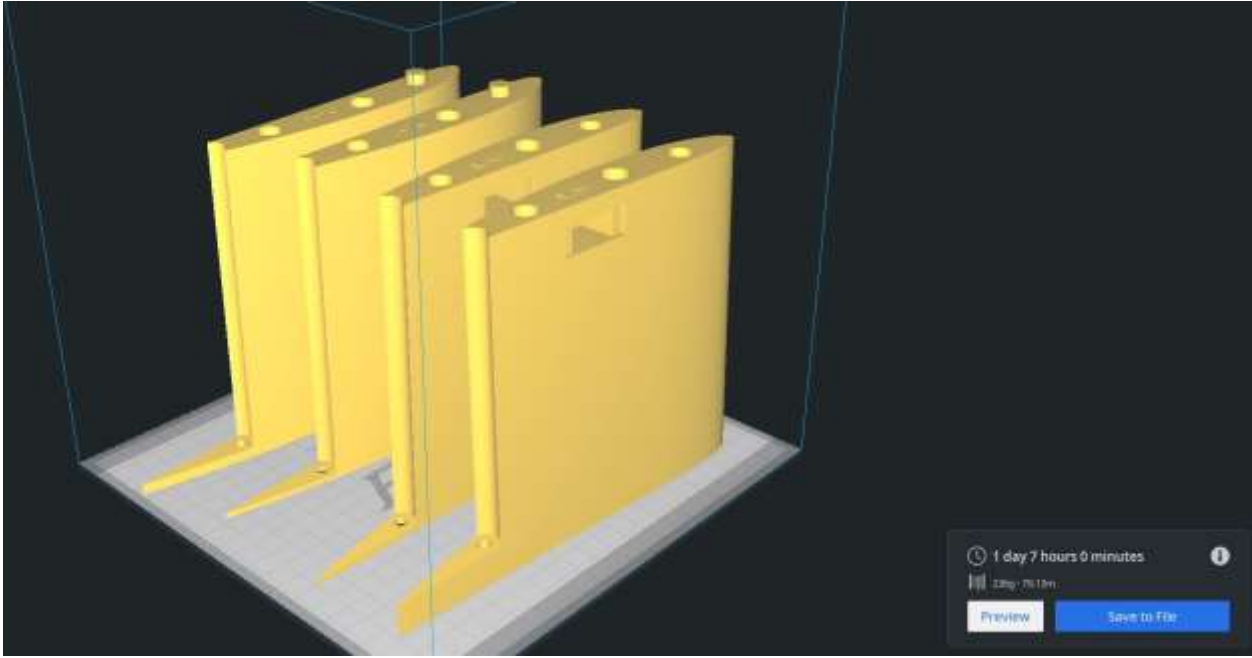
**F2 Battery Hatch.**



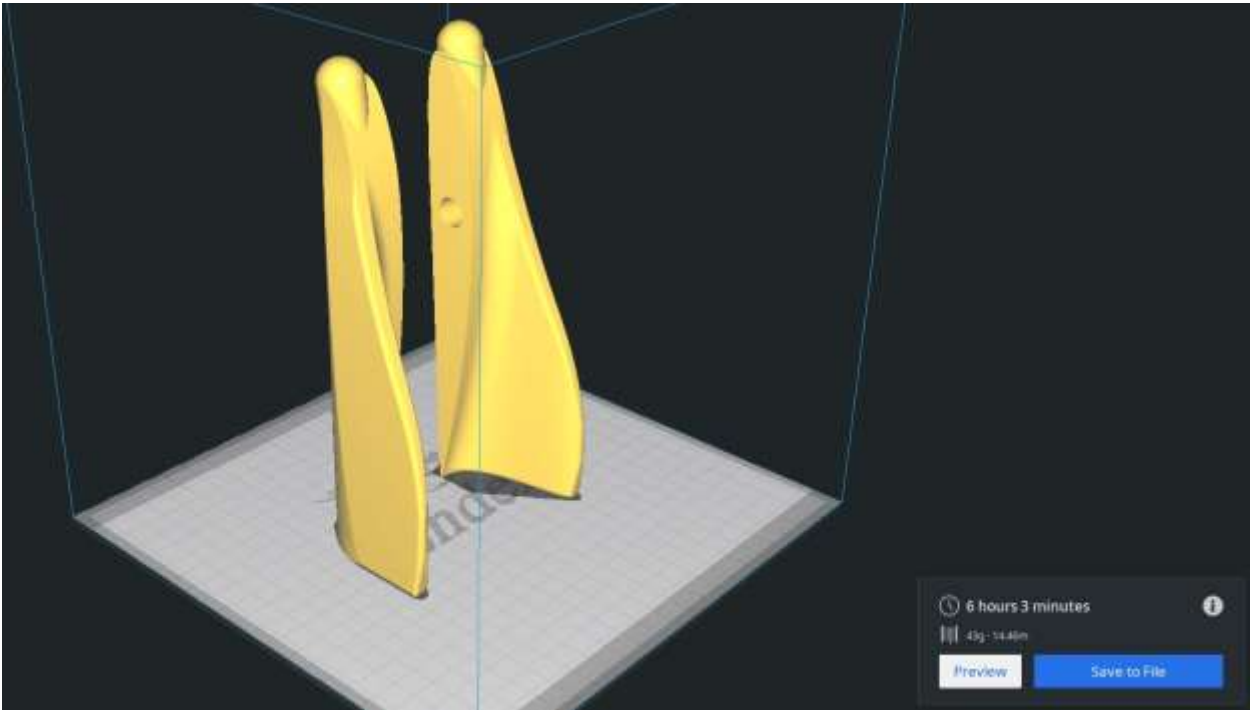
**Right/Left Horizontal Stabilizer.**



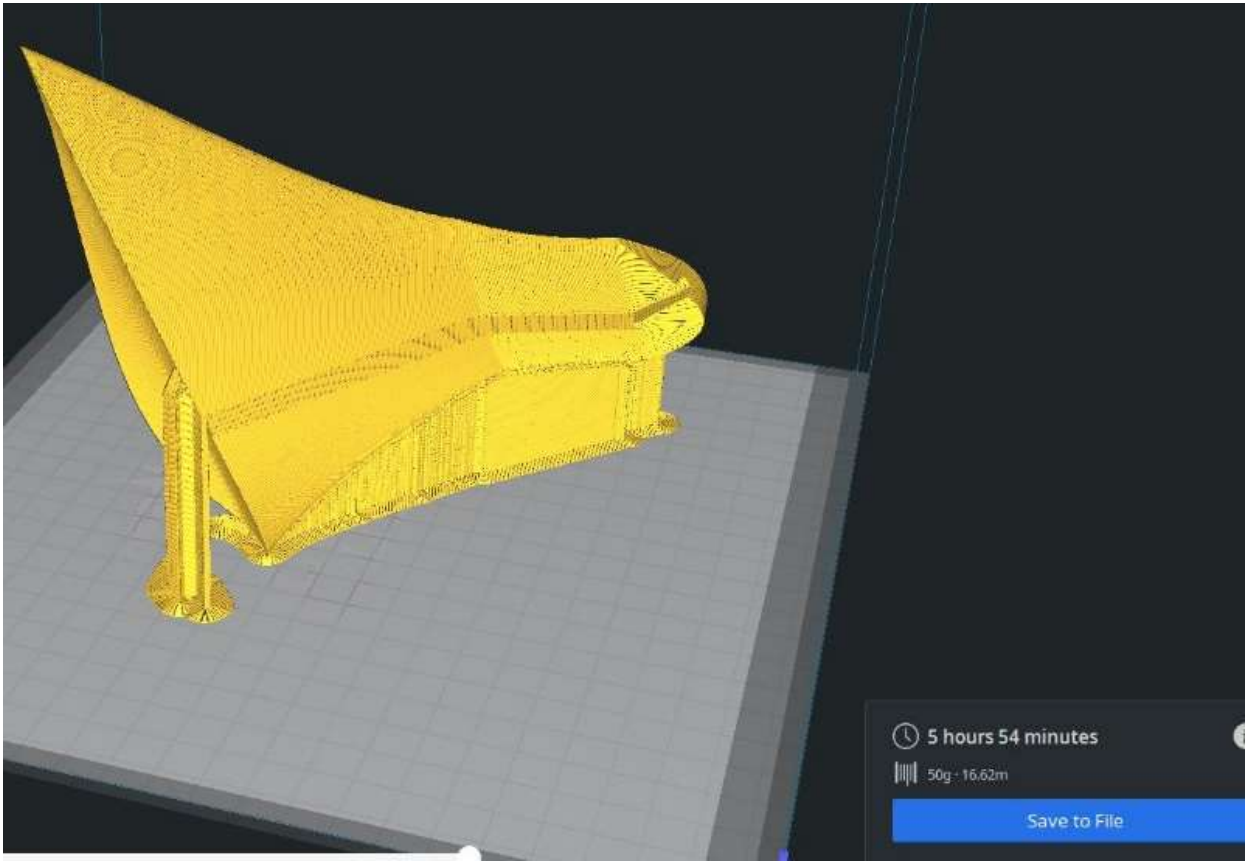
**Vertical Stabilizer.**



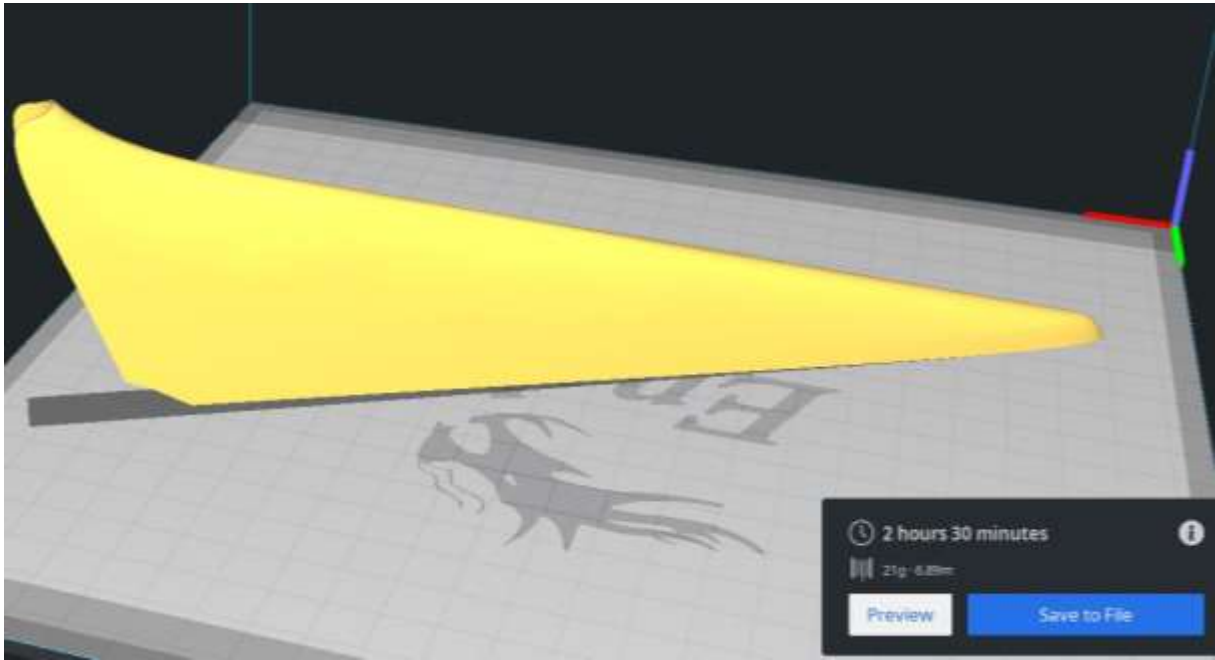
*Right Wing Sections . (A1-A2-A3-A4)*



*Right/Left Wing Tip*

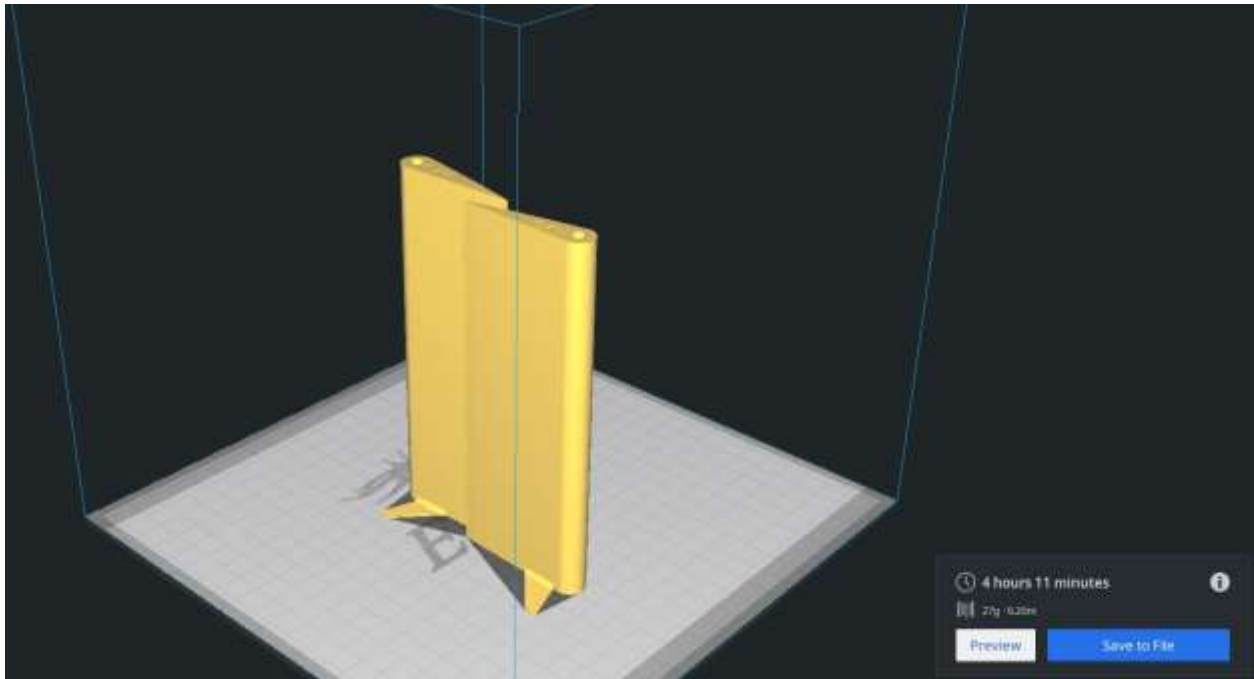


**Right Landing Gear**

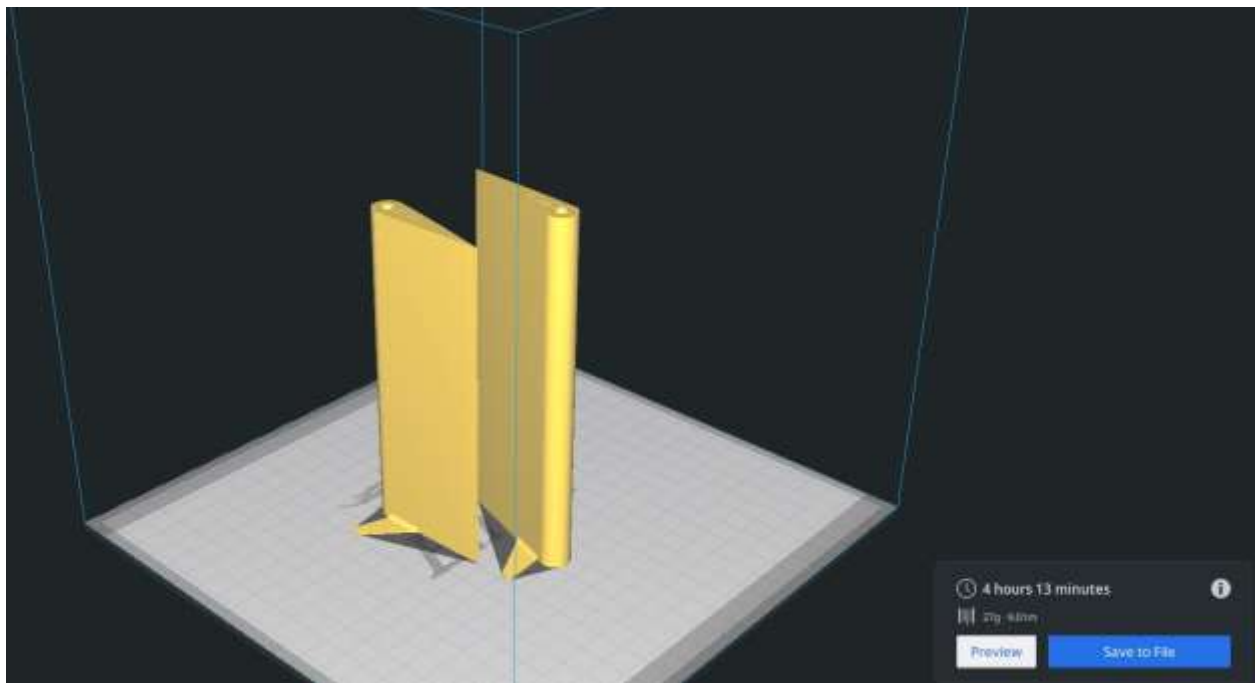


**Vertical Fin.**

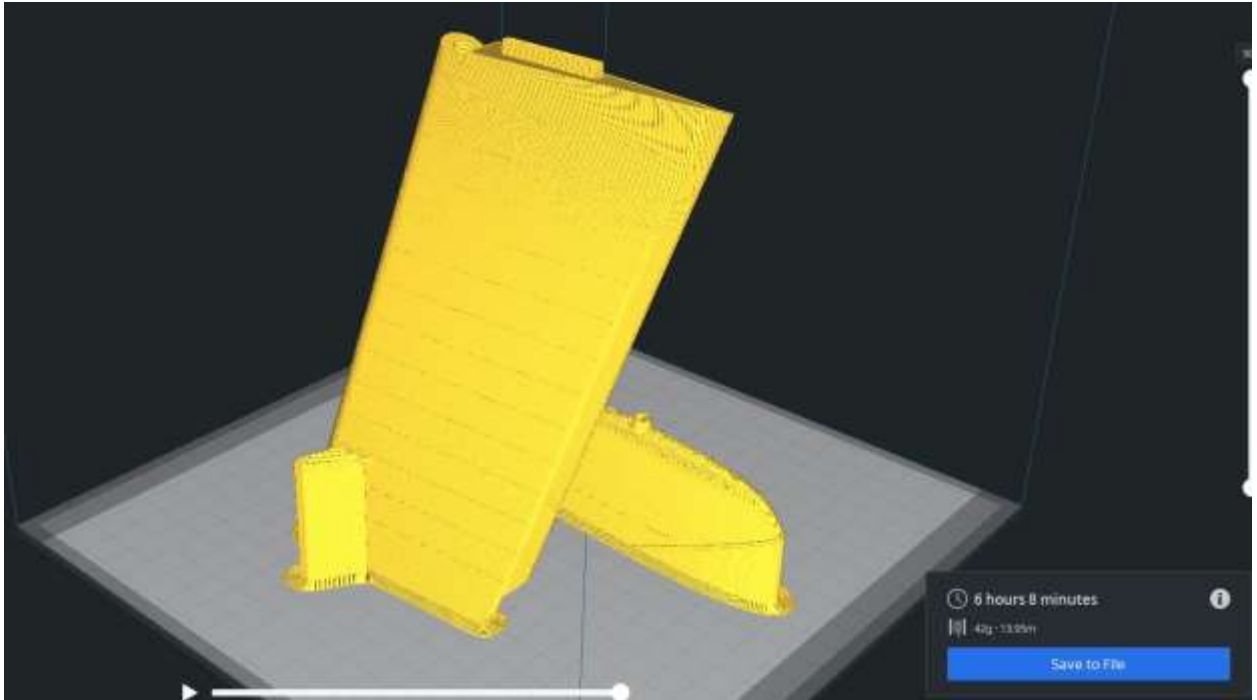




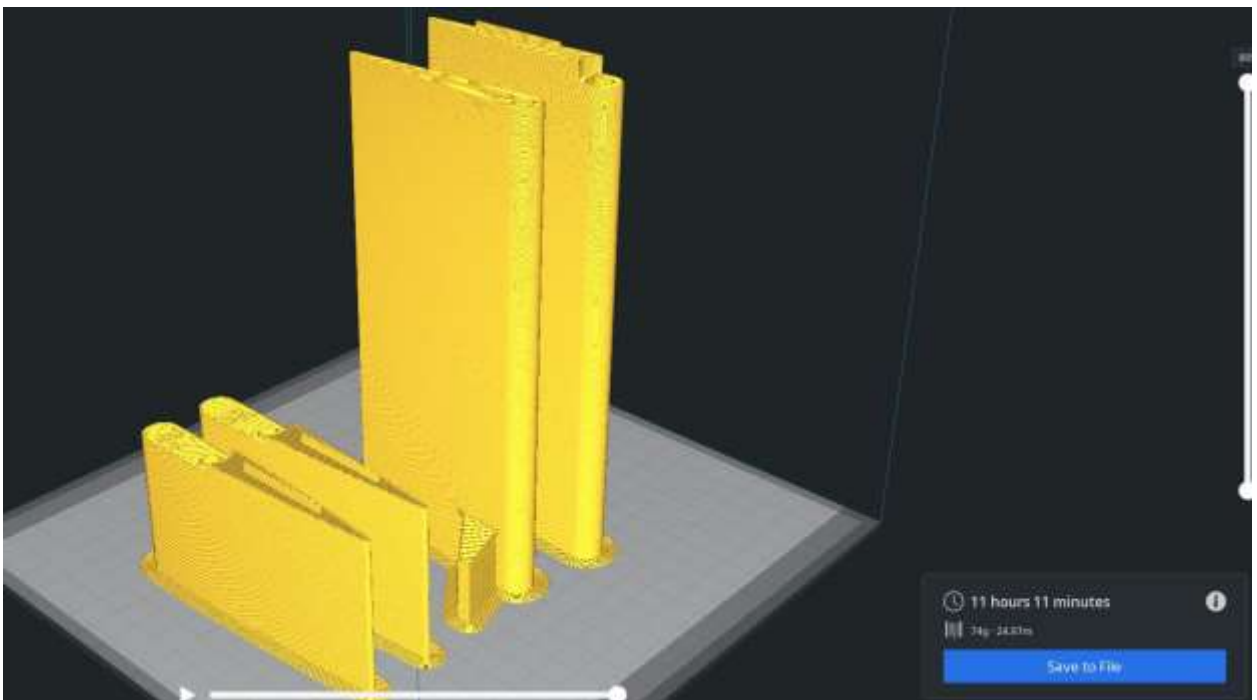
***Right Flap (F1 &F2)***



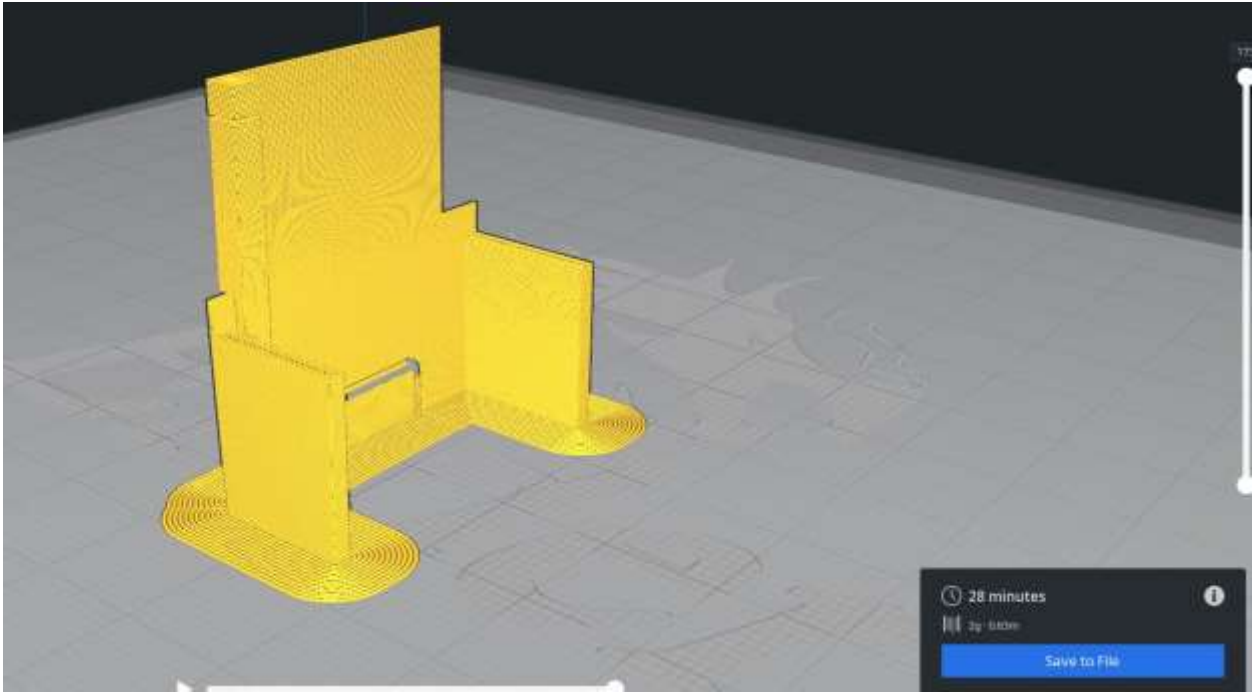
***Right Aileron (Aileron R1 &Aileron R2)***



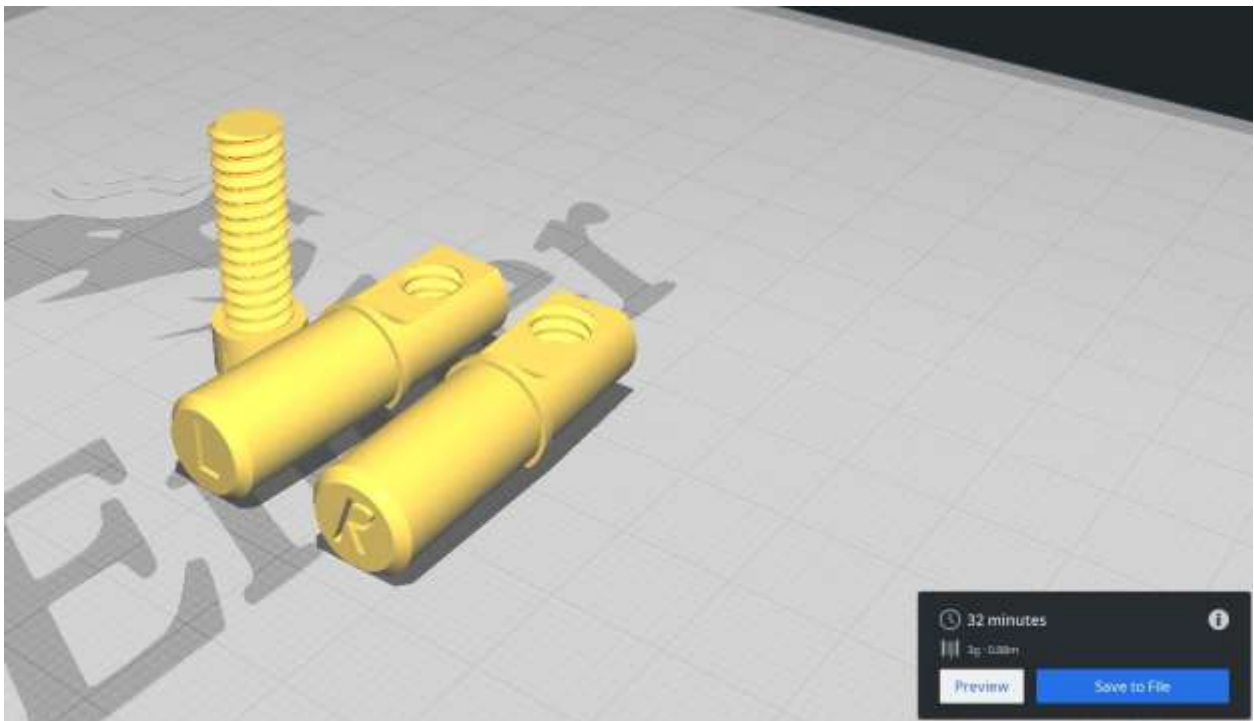
***Rudder 1 & Rudder 2***



***Horizontal Stabilizer (E1-E2-E3-E4)***



***Vertical -Stab Servo Cover.***



***Right /Left Wing Joiner.***



***Thank You***