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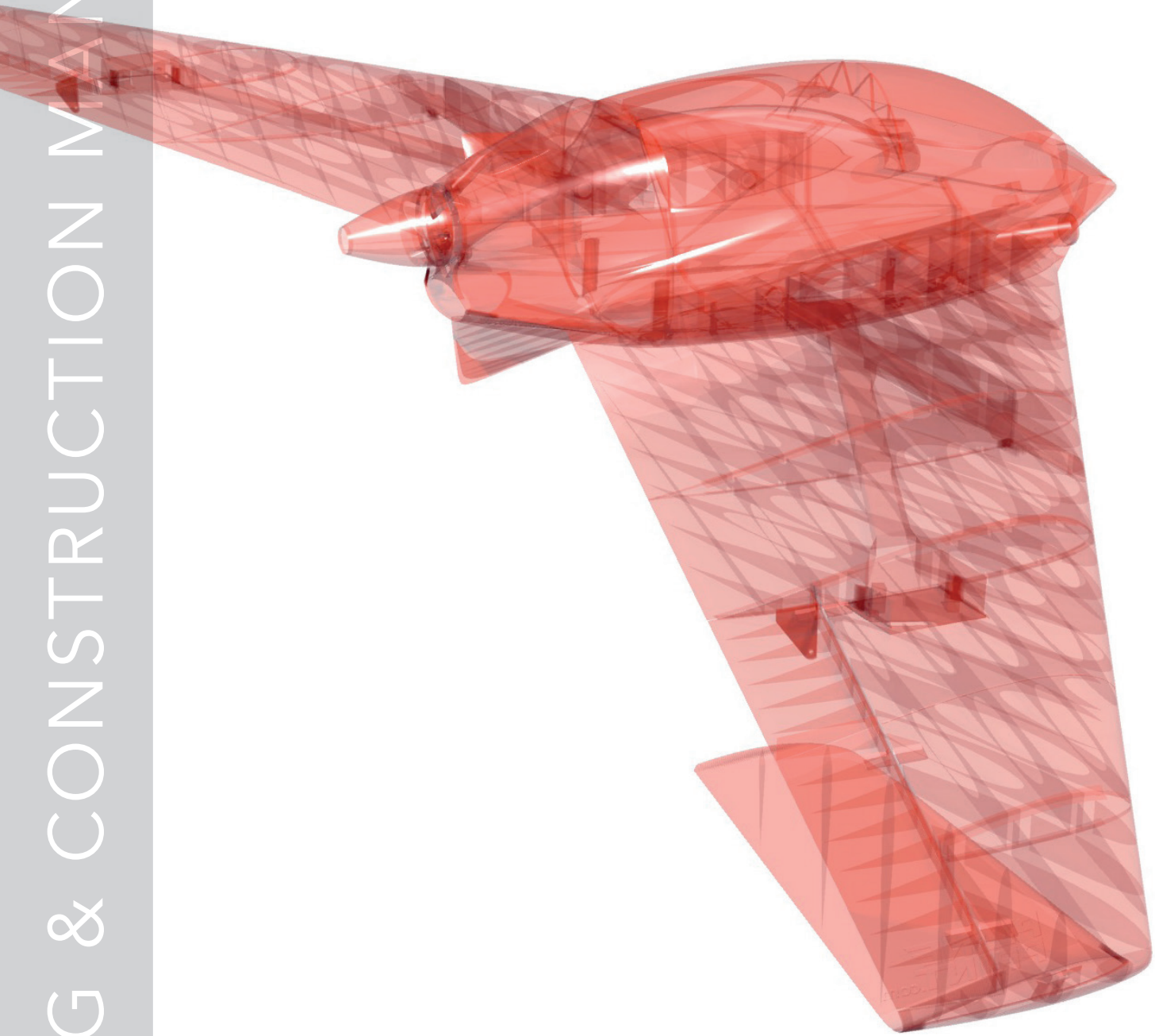
PRINTING & CONSTRUCTION MANUAL

PLANE PRINT.com

*very light 3d printable rc planes*



# Planeprint V-TURN

- Our first self designed wing in 3D super lightweight construction.
- Real 1 wall construction (Currently only supported by CURA!).
- Wingspan 1400 mm (55 inches).

**WATCH OUT!**
This 3D print model is specially optimized for CURA.

FAIR USE DATA ©

STL DATA FOR DOWNLOADING AT **www.planeprint.com**

V1.3 2020

# PRINTING THE PARTS – PRINTING PROFILES

You may wonder why this 3D model is suitable exclusively for CURA right?

The most important thing about small RC model airplanes is always the ratio of size to weight. The lighter a model is, the better its flight characteristics and also the flight time is significantly increased.

With our unique design process, we manage to make Weights relevant items in a **true 1-wall printing process** for the outer skin but also for the filling offer. So we save weight while maintaining the necessary stability.

Here we show you how to get started from a standard CURA profile Make settings. For this model we only need 4, easy to create profiles.

It is **absolutely necessary** to observe the information provided by **PLANEPRINT.com** in order: to slice the component correctly. However, it may make sense to perfect your 3D printing by additionally performing several hiring activities depending on your printer and the filament used.

***For slicing all Planeprint models, four profiles have to be created in Cura:***

***PROFILE P1_fullbody***
***PROFILE P2_hollowbody***
***PROFILE P3_surface***
***PROFILE P4_flex***

***You can find the description at www.planeprint.com/print***

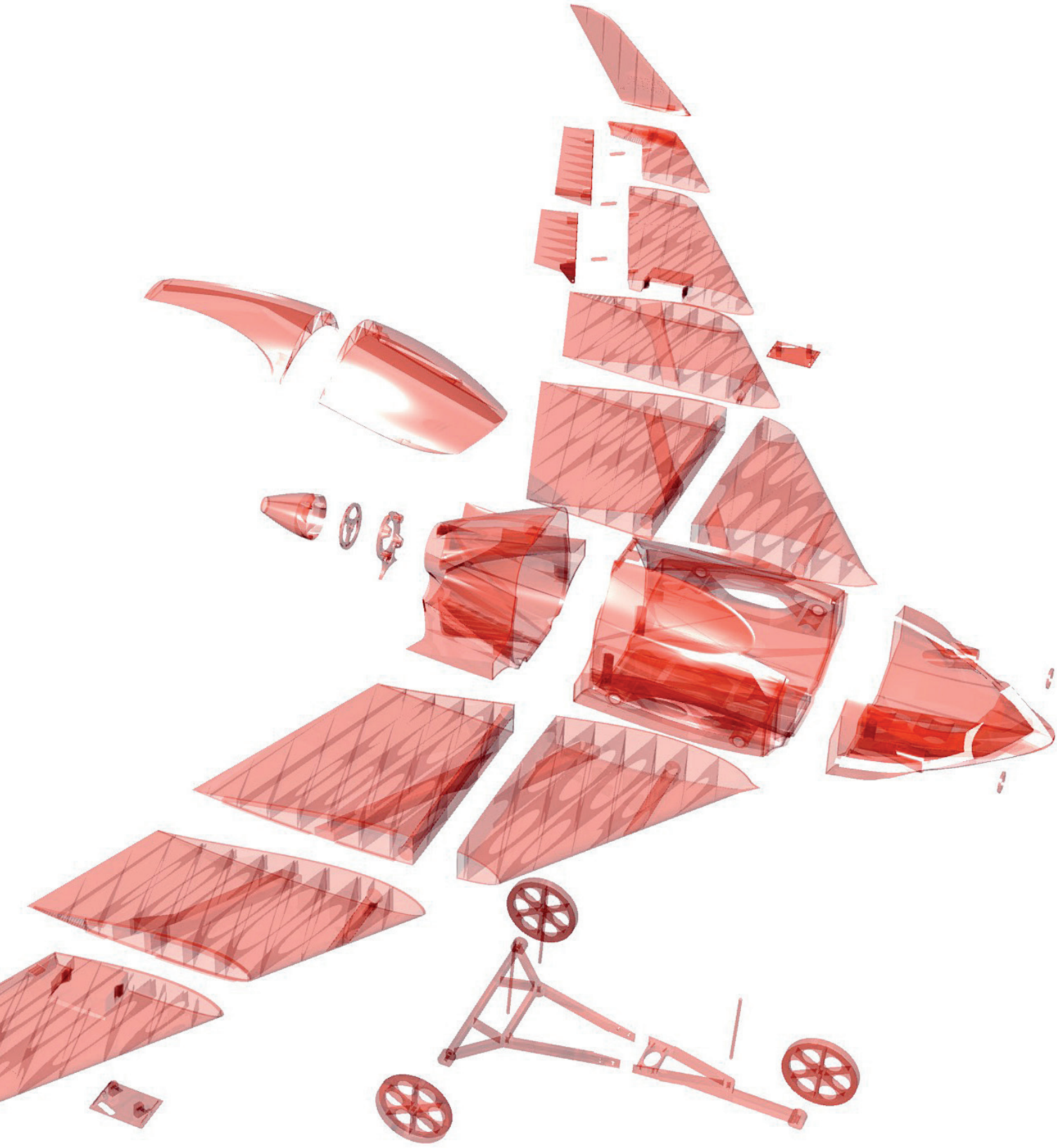
## Important for the 1-wall-print!

In order to print airfoils of the lowest possible weight with high stability, it is necessary to print with only one wall line (Nozzle 0.4 mm). Decisive here is the adhesion between the layers! To achieve this, you must print at a much higher temperature than normal. As a **guideline**, 230 ° C is a good starting point. The parts-cooling fan should be set to 0% or a maximum of 20%. Since not every printer works the same, it may be necessary to make small adjustments to these settings.


The development of a complex, airworthy RC flight model to express on any standard 3D printer is a very complex and extensive process. Therefore, we appeal to your fairness not to forward the STL data you have acquired to third parties. Our STL files are provided with indelible copyright watermarks that can be verified at any time.

**Thank you for your understanding and have fun with your PLANEPRINT MODEL!**

# PRINTING MANUAL



# PROFILE P1_FULLBODY

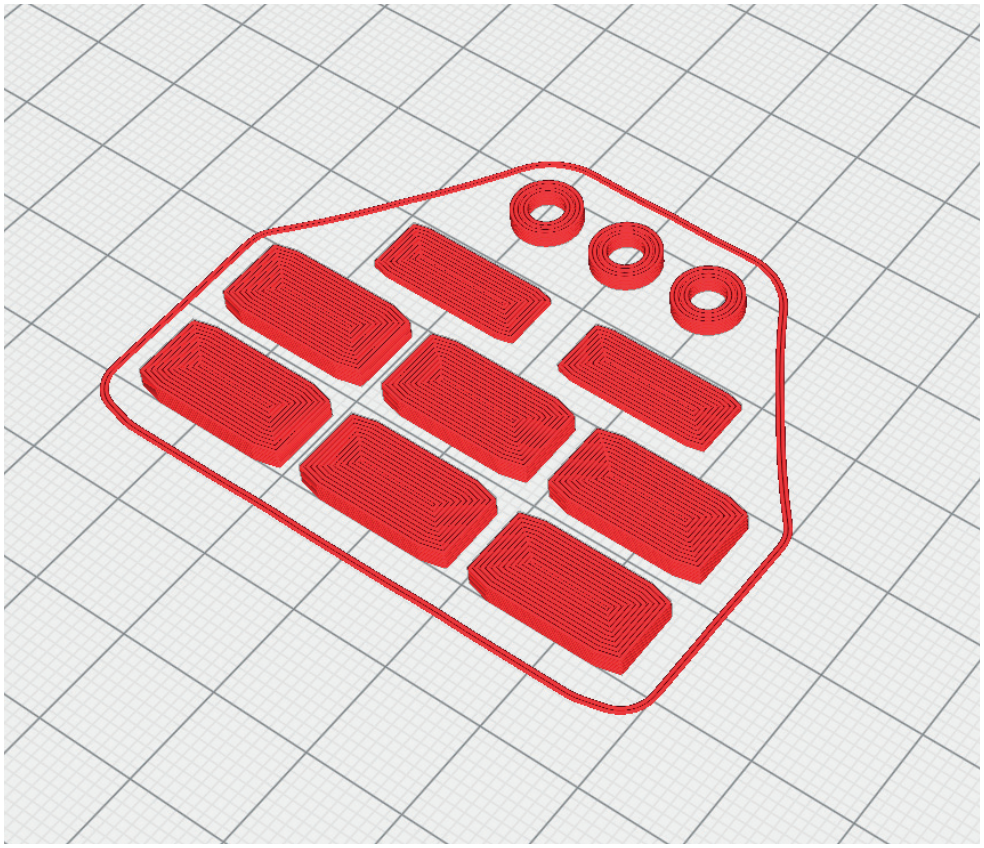
The following parts must be sliced with the profile P1_FULLBODY.
Recommended additional settings are listed in the screenshots.

## INFO

STL: Interconnects_profile1.stl
Material: PLA
Weight: ~ 2 g

## ADDITIONAL SETTINGS

• Use transparent PLA, then they are not visible

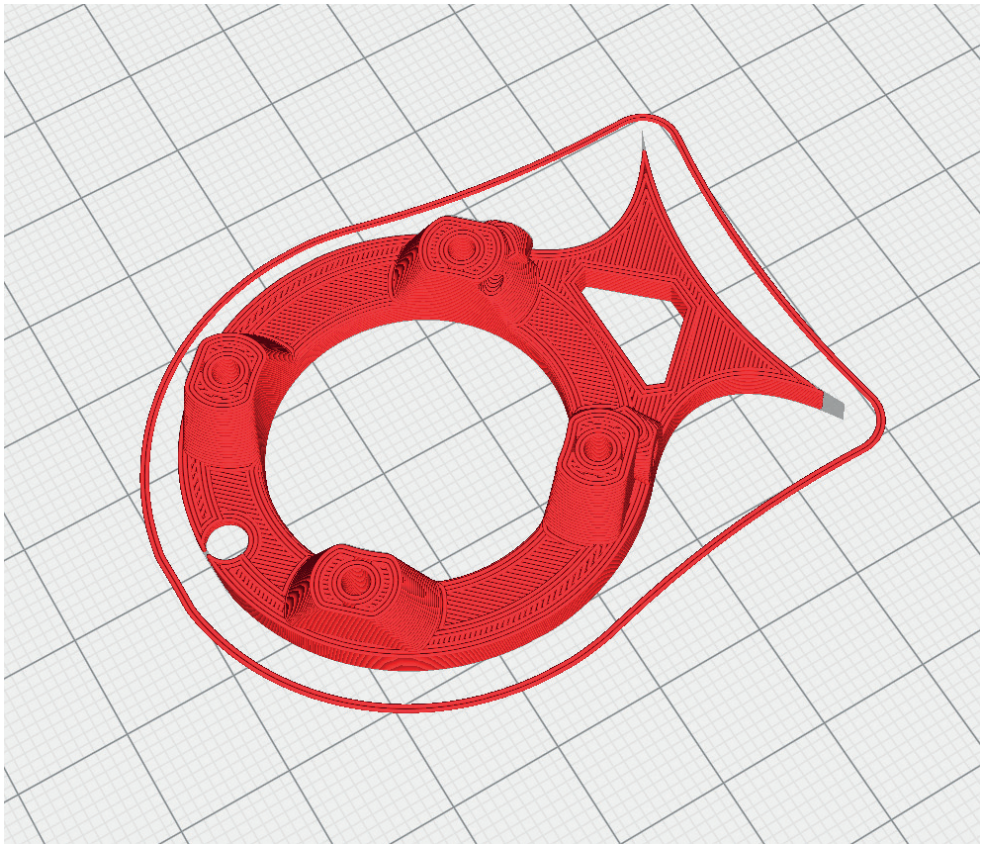


## INFO

STL: Motorframe_profile1.stl
Material: PLA
Weight: ~ 5 g

## ADDITIONAL SETTINGS

None nessesery



# PROFILE P1_FULLBODY

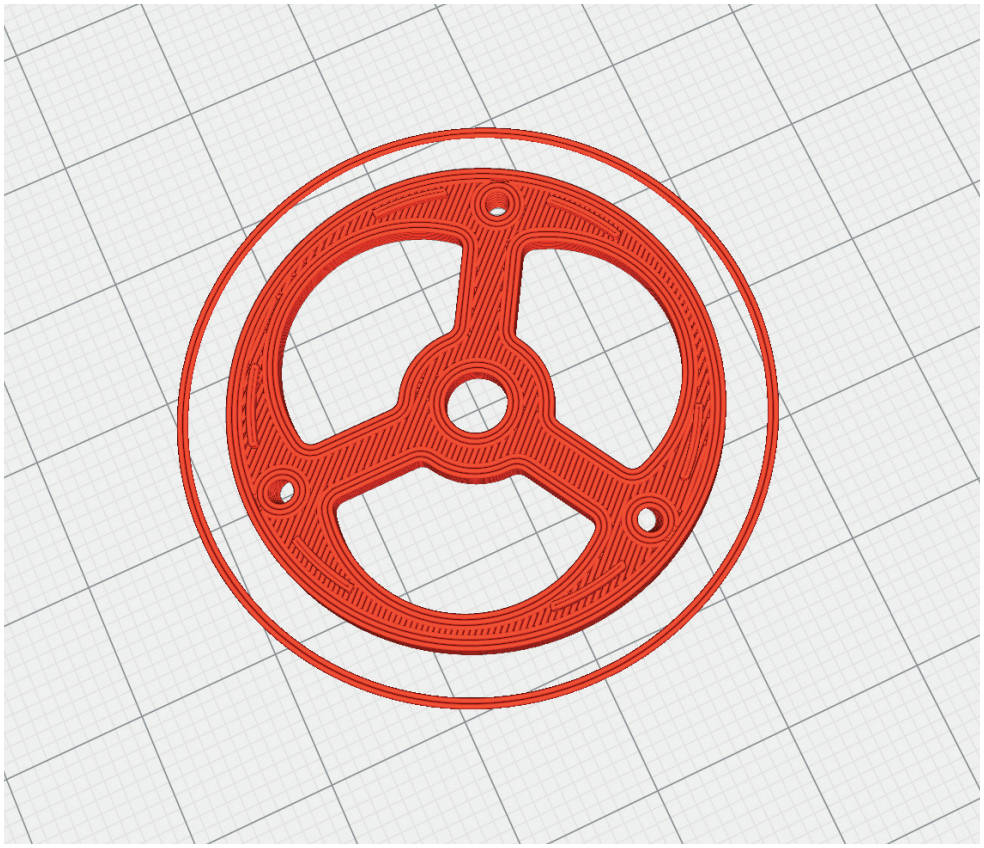
The following parts must be sliced with the profile P1_FULLBODY.
Recommended additional settings are listed in the screenshots.

## INFO

STL: Spinner3blade plate_profile1.stl
or Spinner2blade plate_profile1.stl
Material: PLA
Weight: ~ 1 g

## ADDITIONAL SETTINGS

None nessesery

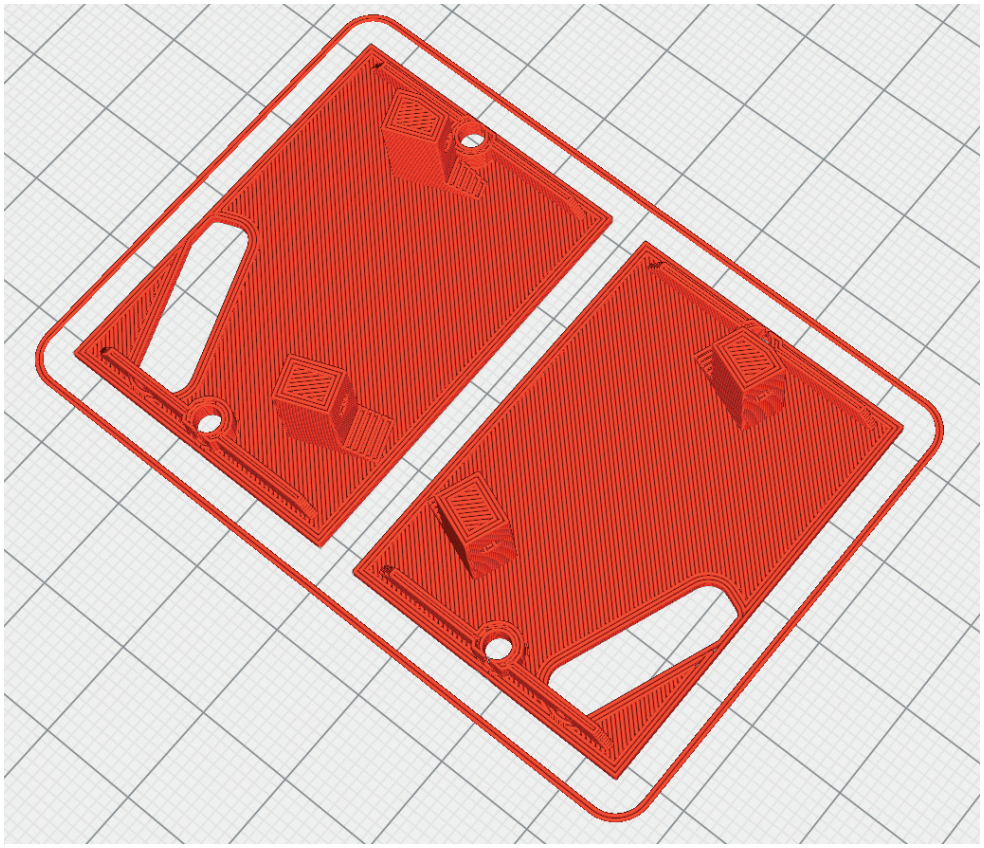


## INFO

STL: Servocover-X_profile1.stl
Material: PLA
Weight: ~ 5 g

## ADDITIONAL SETTINGS

None nessesery



# PROFILE P1_FULLBODY

The following parts must be sliced with the profile P1_FULLBODY.
Recommended additional settings are listed in the screenshots.

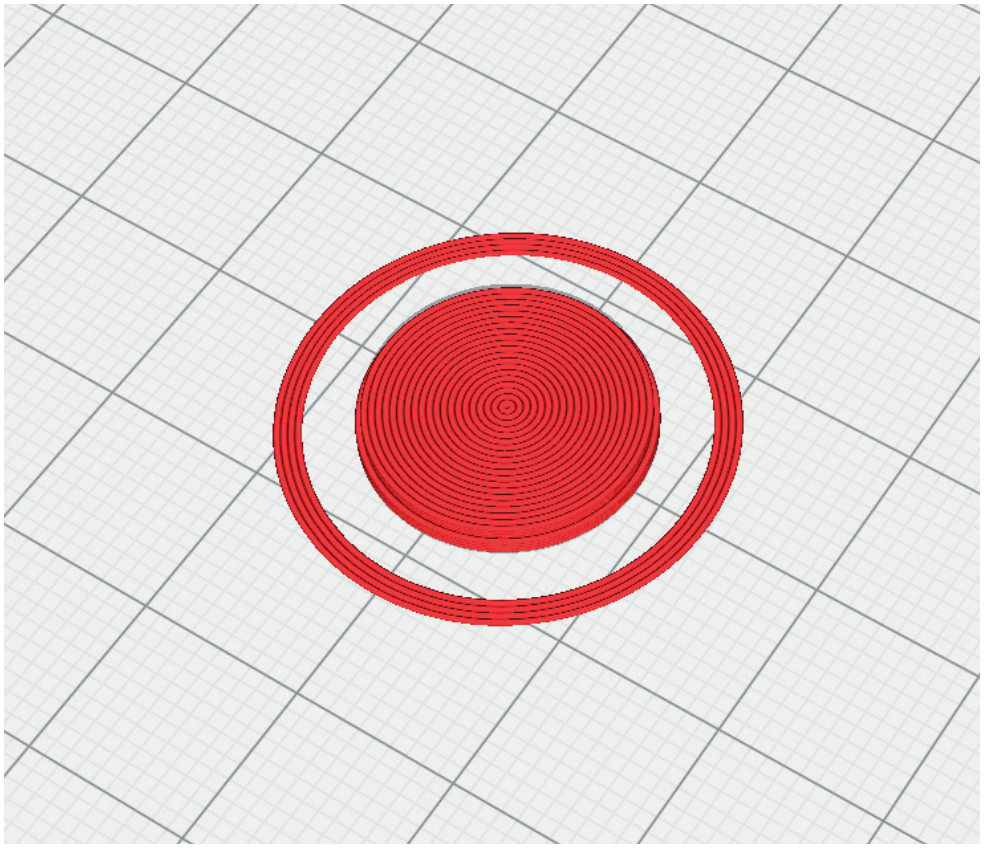
## INFO

STL: Light_profile1.stl
Material: PLA
Weight: ~ 1 g

## ADDITIONAL SETTINGS

• Wall Line Count 20

The lights should be printed separately, then the result is nicer because the print head does not have to switch between the two parts.



# PROFILE P2_HOLLOWBODY

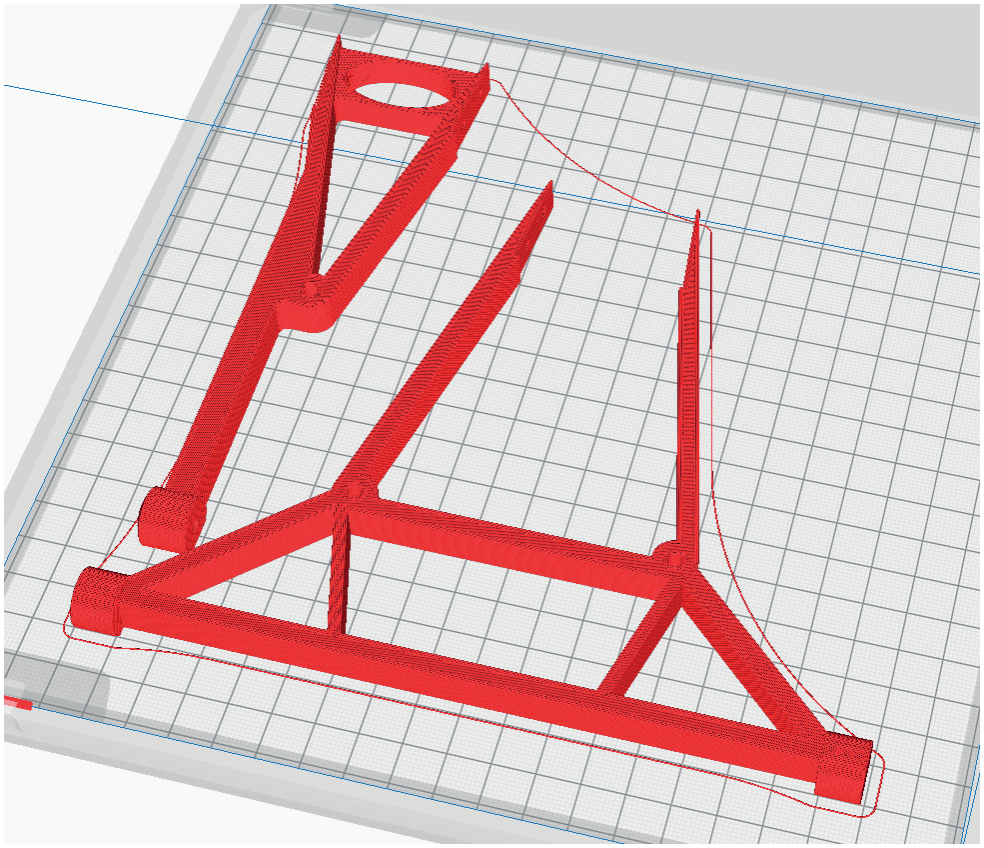
The following parts must be sliced with the profile P2_HOLLOWBODY.
Recommended additional settings are listed in the screenshots.

## INFO

STL: Starter car_profile2.stl
Material: PLA
Weight: ~ 29 g

## ADDITIONAL SETTINGS

- Wall Line Count 4
- Top Layers 3
- Bottom Layers 3



# PROFILE P3_SURFACE

The following parts must be sliced with the profile PROFILE P3_SURFACE (1 Wall Print). Recommended additional settings are listed in the screenshots.

**PLEASE NOTE**

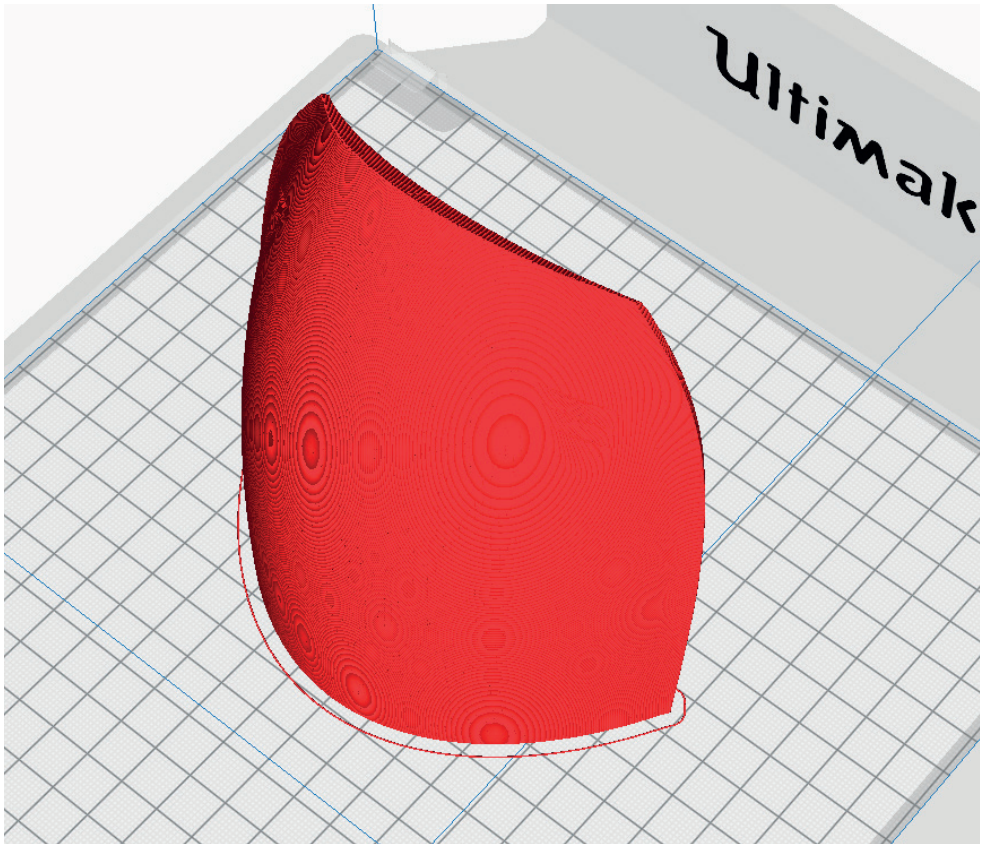
In profile P3_SURFACE, there should not be more than one STL on the buildplate at the same time, otherwise slicing errors can occur!

## INFO

STL: Canopy1_profile3.stl
Material: PLA
Weight: ~ 20 g

## ADDITIONAL SETTINGS

- brim
- use transparent PLA

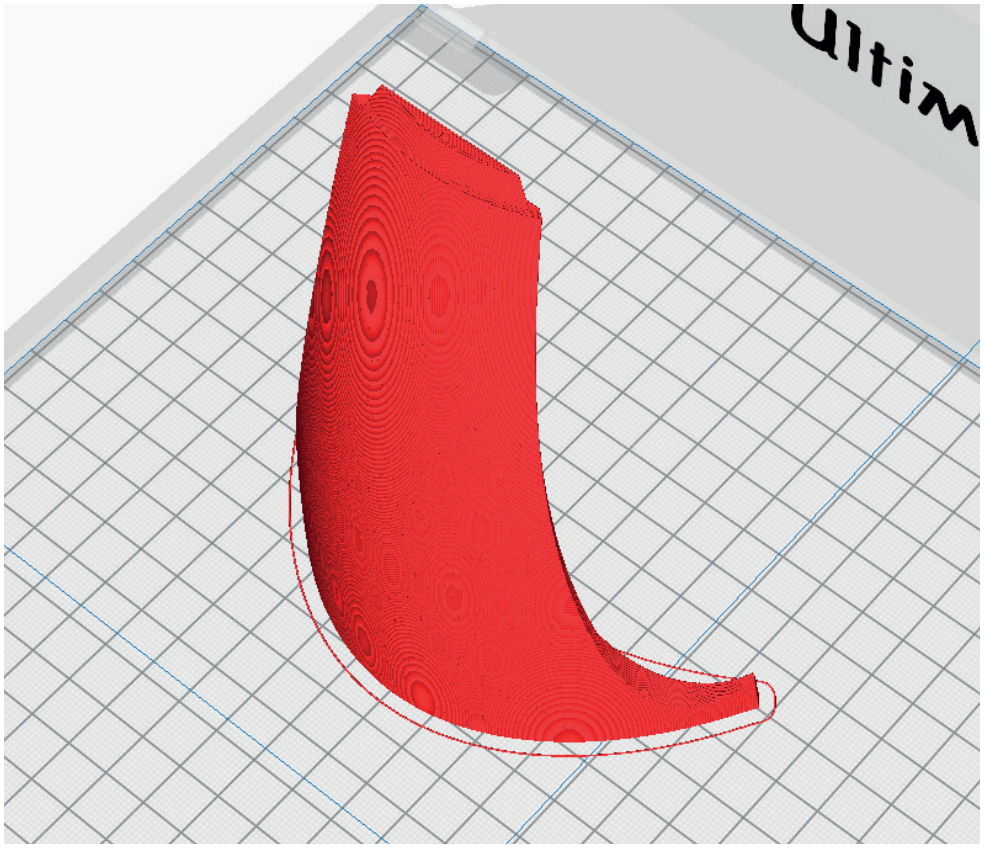



## INFO

STL: Canopy2_profile3.stl
Material: PLA
Weight: ~ 12 g

## ADDITIONAL SETTINGS

Depending on your printer, a **brim** may not be nessesery.



# PROFILE P3_SURFACE

The following parts must be sliced with the profile PROFILE P3_SURFACE (1 Wall Print). Recommended additional settings are listed in the screenshots.

**PLEASE NOTE**

In profile P3_SURFACE, there should not be more than one STL on the buildplate at the same time, otherwise slicing errors can occur!

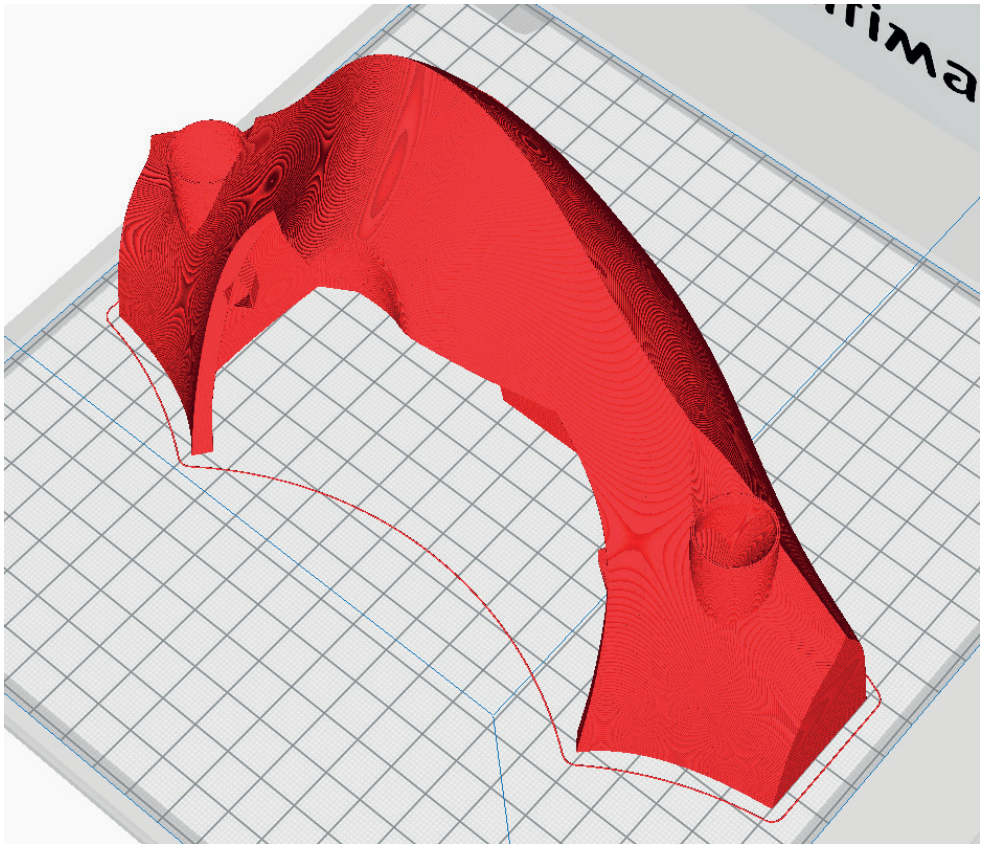
## INFO

STL: Fuselage1_profile3.stl
Material: PLA
Weight: ~ 45 g

## ADDITIONAL SETTINGS

Reduce Nozzle heat a little and more fan around the nose.

Depending on your printer, a **brim** may not be nessesery.

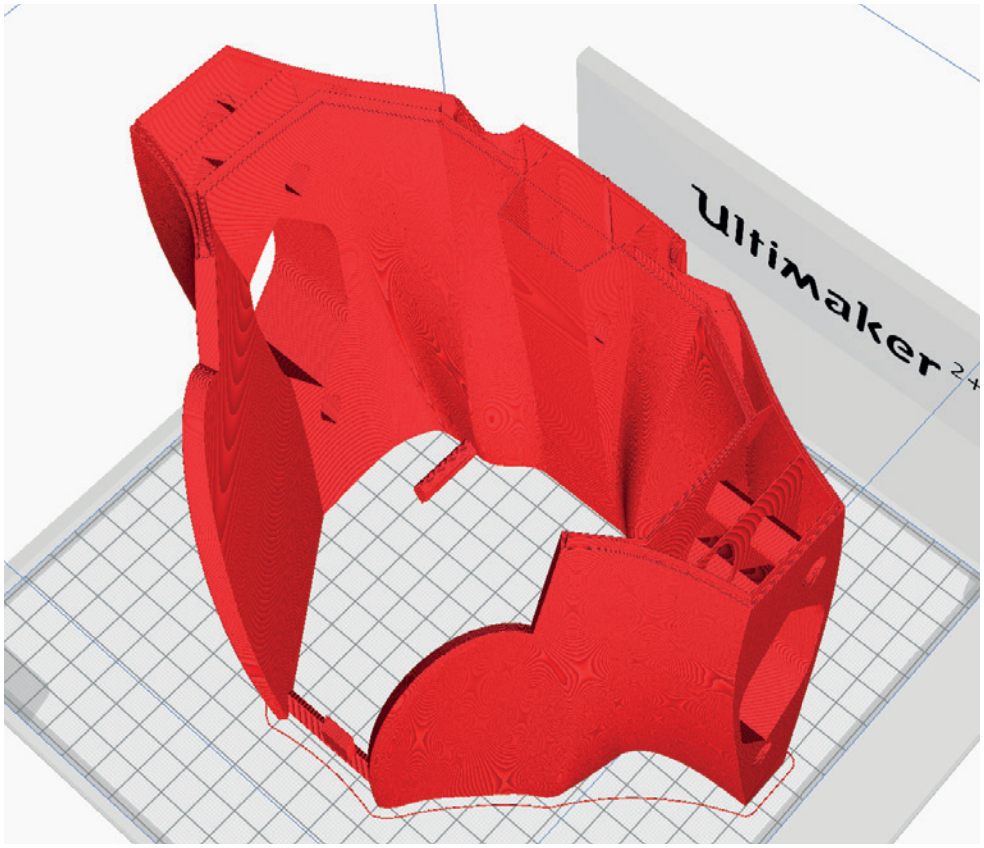


## INFO

STL: Fuselage2_profile3.stl
Material: PLA
Weight: ~ 98 g

## ADDITIONAL SETTINGS

Depending on your printer, a **brim** may not be nessesery.



# PROFILE P3_SURFACE

The following parts must be sliced with the profile PROFILE P3_SURFACE (1 Wall Print). Recommended additional settings are listed in the screenshots.

**PLEASE NOTE**

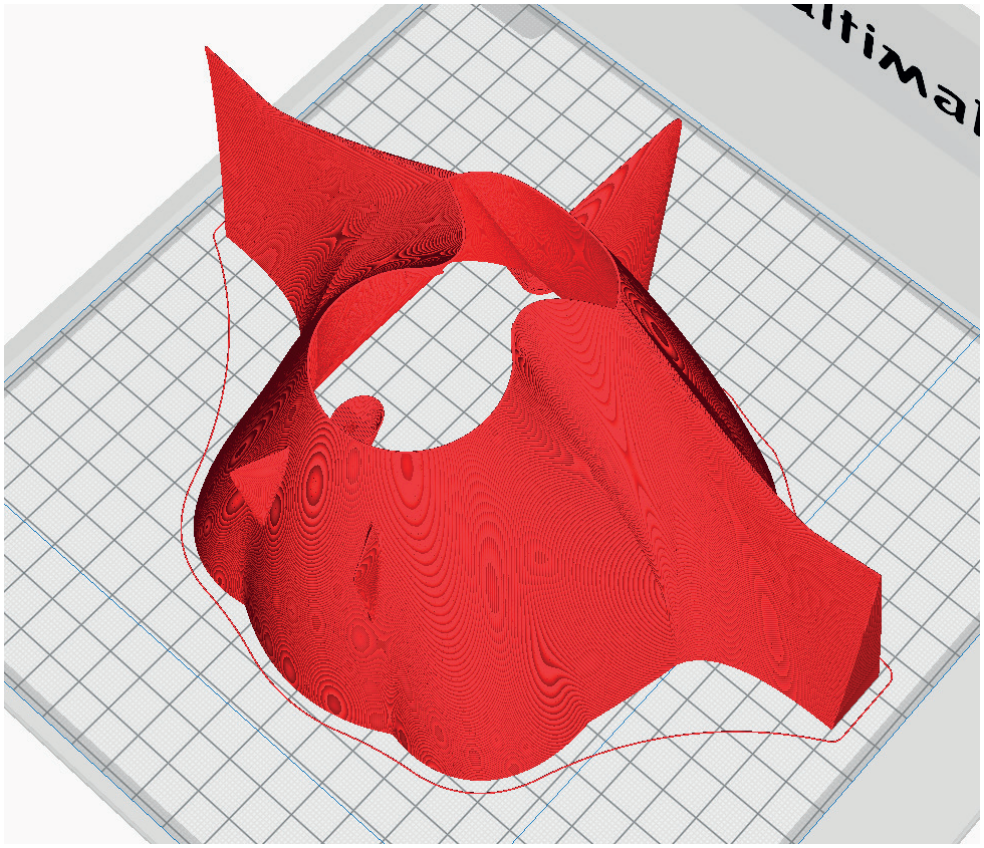
In profile P3_SURFACE, there should not be more than one STL on the buildplate at the same time, otherwise slicing errors can occur!

## INFO

STL: Fuselage3_profile3.stl
Material: PLA
Weight: ~ 46 g

## ADDITIONAL SETTINGS

Depending on your printer, a **brim** may not be nessesery.

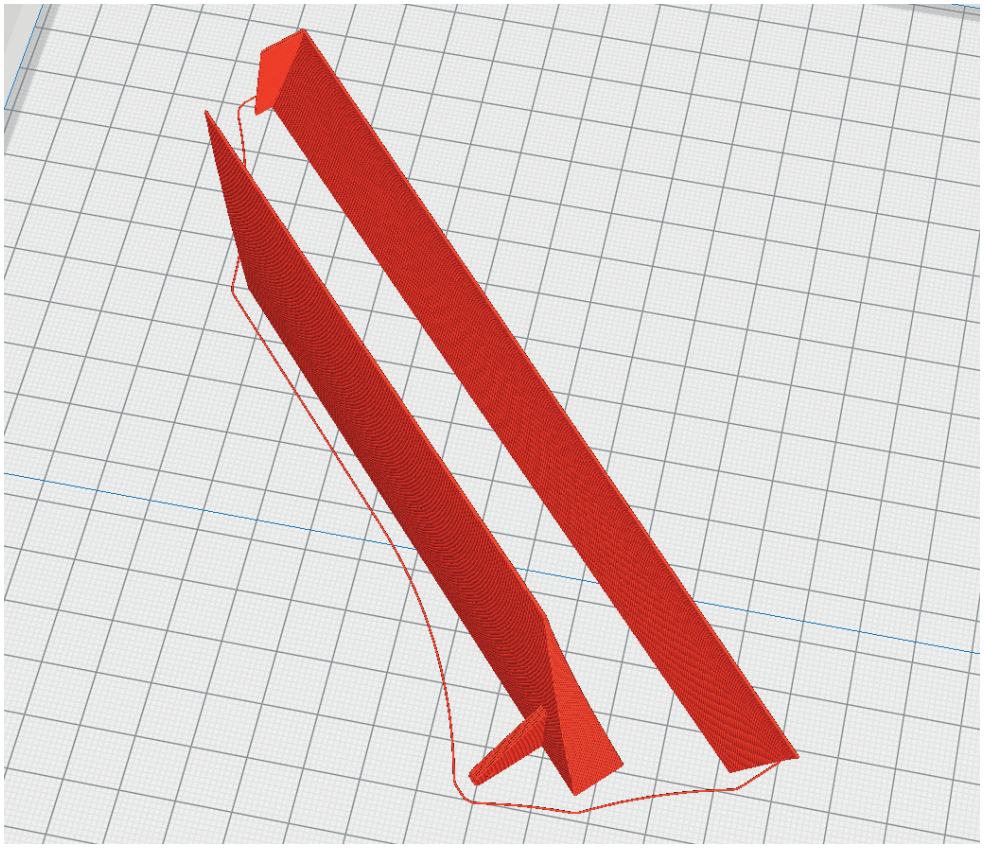


## INFO

STL: Aileron-left_profile3.stl
Aileron-right_profile3.stl
Material: PLA
Weight: ~ 15 g

## ADDITIONAL SETTINGS

Depending on your printer, a **brim** may not be nessesery.



# PROFILE P3_SURFACE

The following parts must be sliced with the profile PROFILE P3_SURFACE (1 Wall Print). Recommended additional settings are listed in the screenshots.

**PLEASE NOTE**

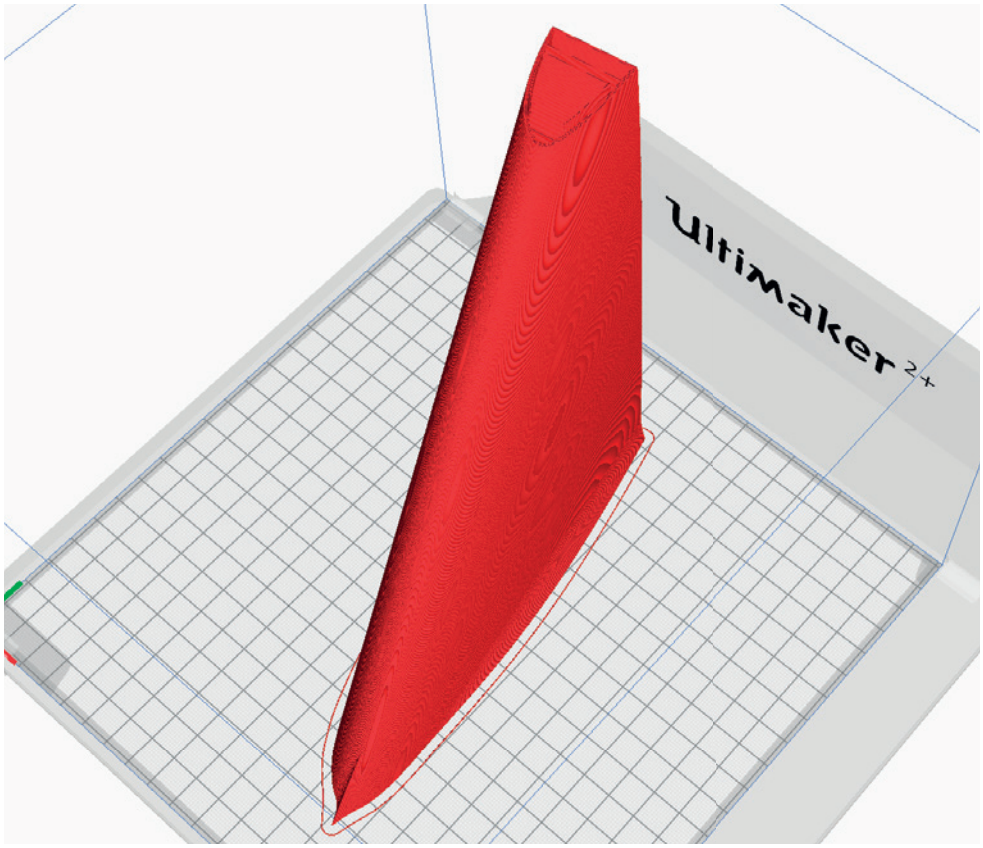
In profile P3_SURFACE, there should not be more than one STL on the buildplate at the same time, otherwise slicing errors can occur!

## INFO

STL: Wing 1-left_profile3.stl
Wing 1-right_profile3.stl
Material: PLA
Weight: ~ 41 g

## ADDITIONAL SETTINGS

Depending on your printer, a **brim** may not be nessesery.

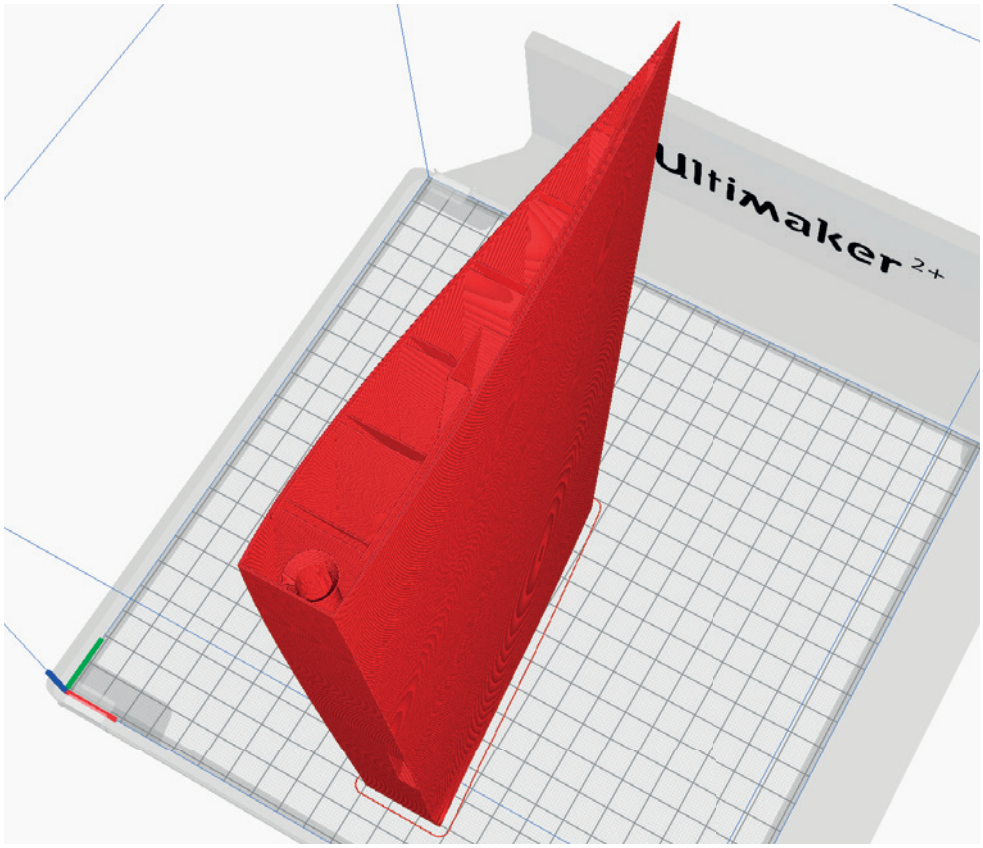



## INFO

STL: Wing 2-left_profile3.stl
Wing 2-right_profile3.stl
Material: PLA
Weight: ~ 55 g

## ADDITIONAL SETTINGS

Depending on your printer, a **brim** may not be nessesery.



# PROFILE P3_SURFACE

The following parts must be sliced with the profile PROFILE P3_SURFACE (1 Wall Print). Recommended additional settings are listed in the screenshots.

**PLEASE NOTE**

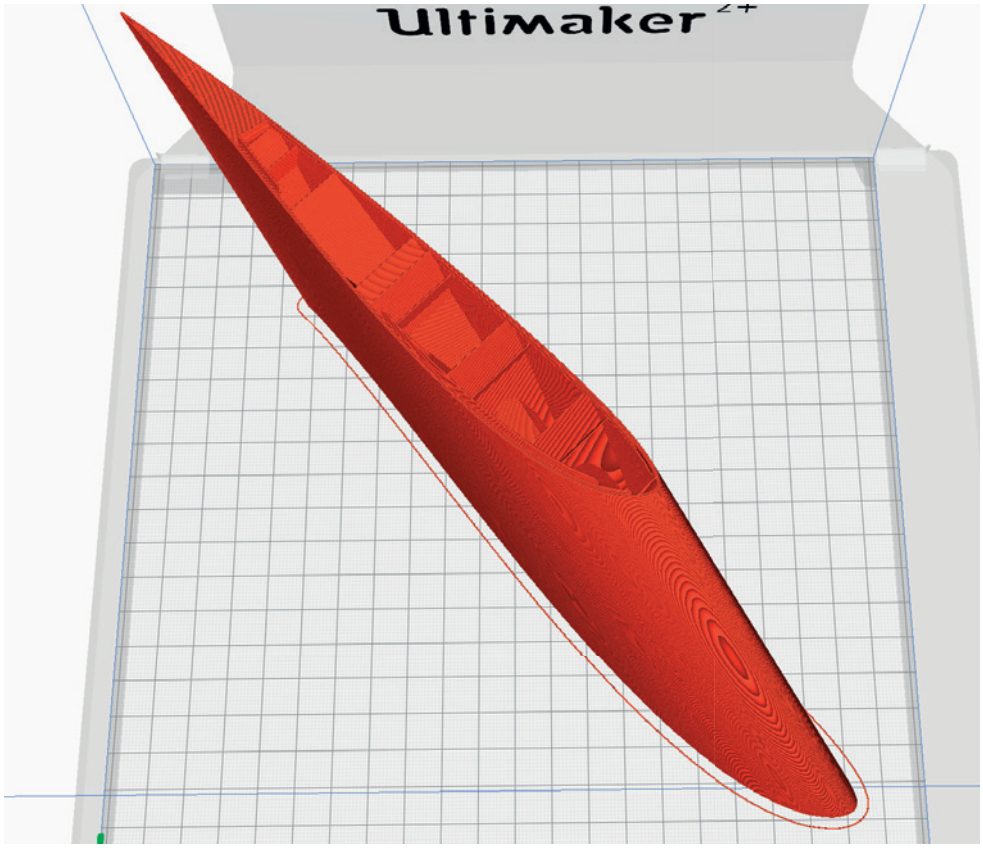
In profile P3_SURFACE, there should not be more than one STL on the buildplate at the same time, otherwise slicing errors can occur!

## INFO

STL: Wing 3-left_profile3.stl
Wing 3-right_profile3.stl
Material: PLA
Weight: ~ 37 g

## ADDITIONAL SETTINGS

Depending on your printer, a **brim** may not be nessesery.

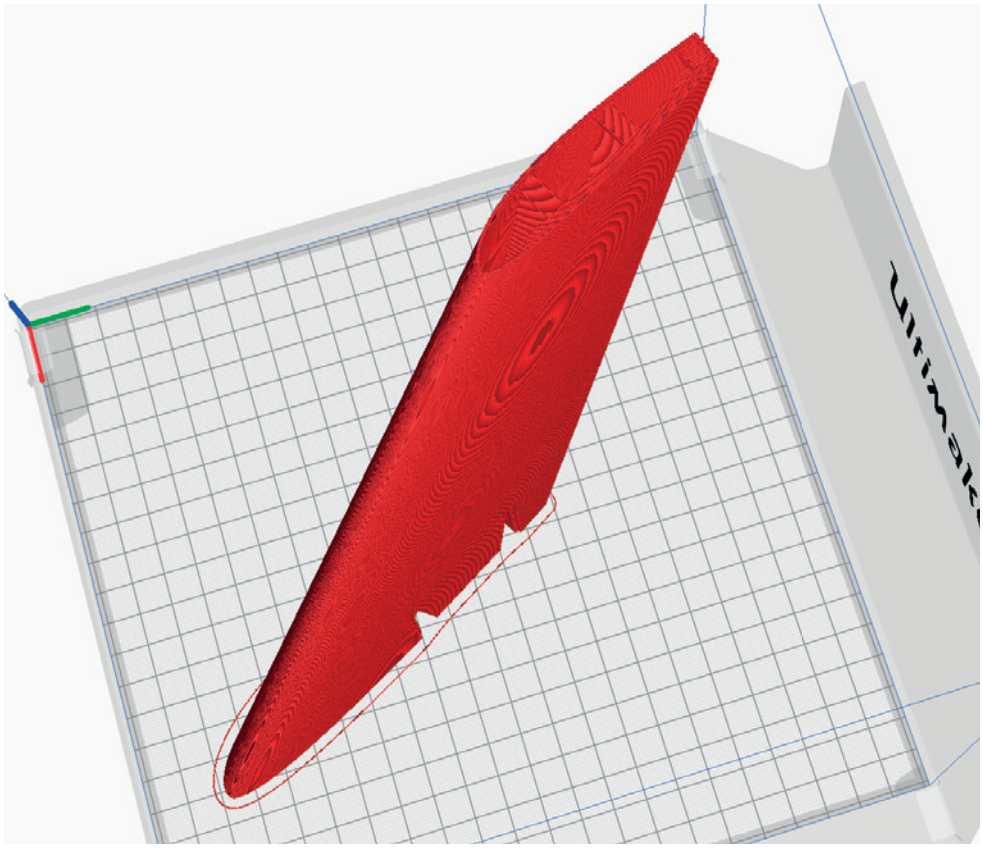



## INFO

STL: Wing 4-left_profile3.stl
Wing 4-right_profile3.stl
Material: PLA
Weight: ~ 37 g

## ADDITIONAL SETTINGS

Depending on your printer, a **brim** may not be nessesery.



# PROFILE P3_SURFACE

The following parts must be sliced with the profile PROFILE P3_SURFACE (1 Wall Print). Recommended additional settings are listed in the screenshots.

**PLEASE NOTE**

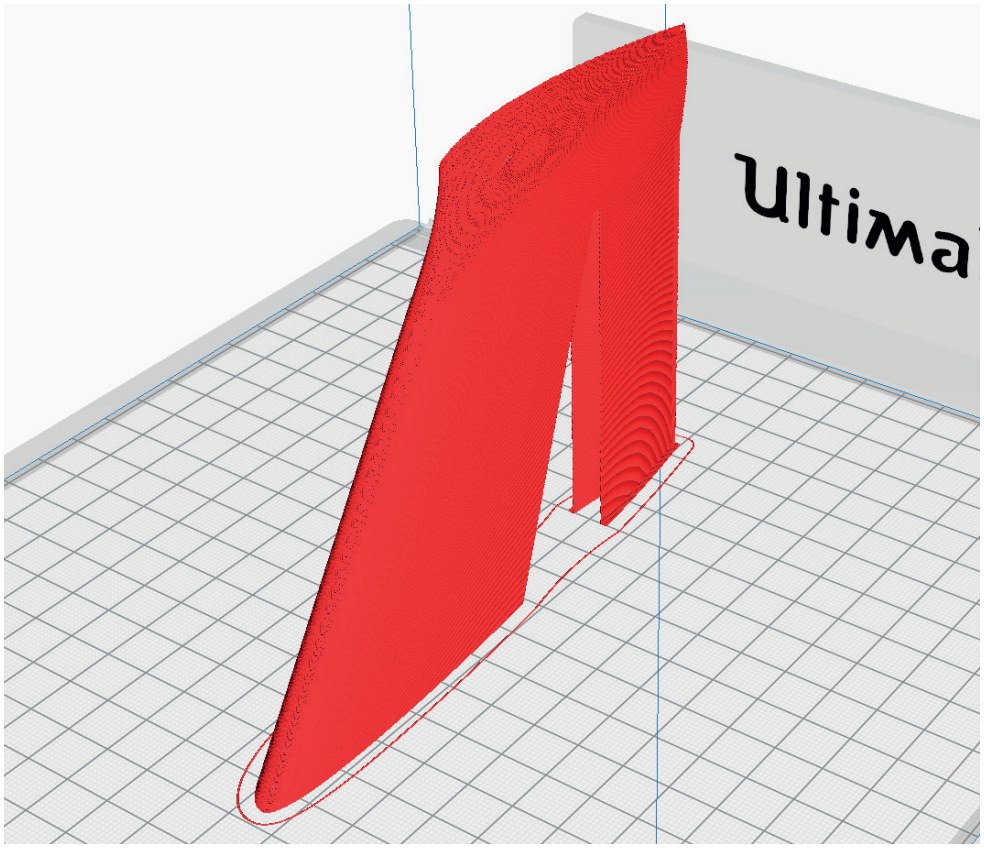
In profile P3_SURFACE, there should not be more than one STL on the buildplate at the same time, otherwise slicing errors can occur!

## INFO

STL: Wing 5-left_profile3.stl
Wing 5-right_profile3.stl
Material: PLA
Weight: ~ 16 g

## ADDITIONAL SETTINGS

Depending on your printer, a **brim** may not be nessesery.

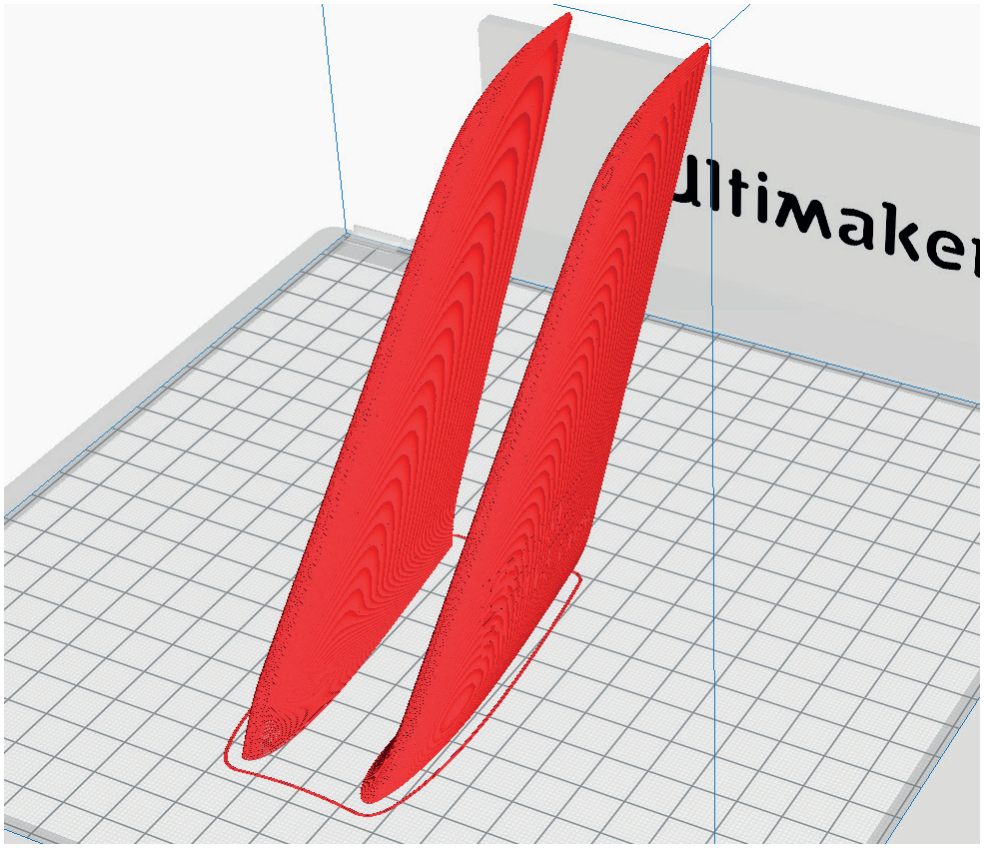



## INFO

STL: Winglets_profile3.stl
Material: PLA
Weight: ~ 16 g

## ADDITIONAL SETTINGS

Depending on your printer, a **brim** may not be nessesery.



# PROFILE P3_SURFACE

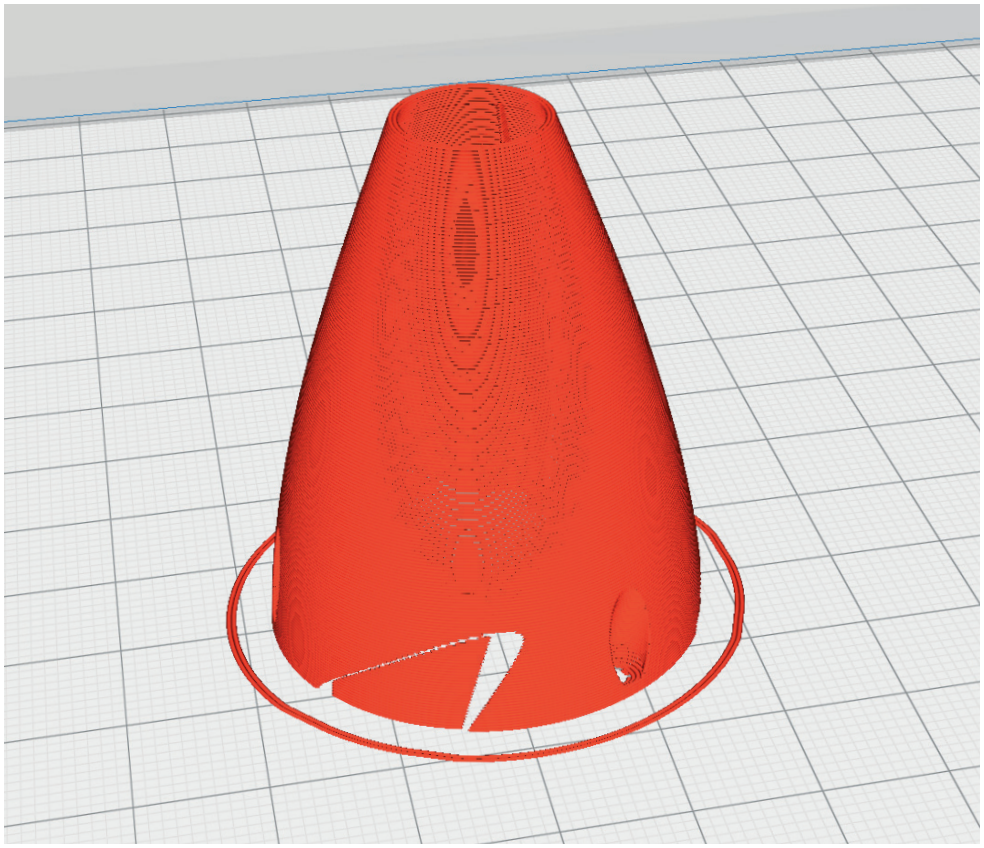
The following parts must be sliced with the profile PROFILE P3_SURFACE (1 Wall Print). Recommended additional settings are listed in the screenshots.

**PLEASE NOTE**

In profile P3_SURFACE, there should not be more than one STL on the buildplate at the same time, otherwise slicing errors can occur!

## INFO

STL: Spinner3blade_profile3.stl
or Spinner2blade_profile3.stl
Material: PLA
Weight: ~ 3 g



## ADDITIONAL SETTINGS

Depending on your printer, a **brim** may not be nessesery.

# PROFILE P4_FLEX

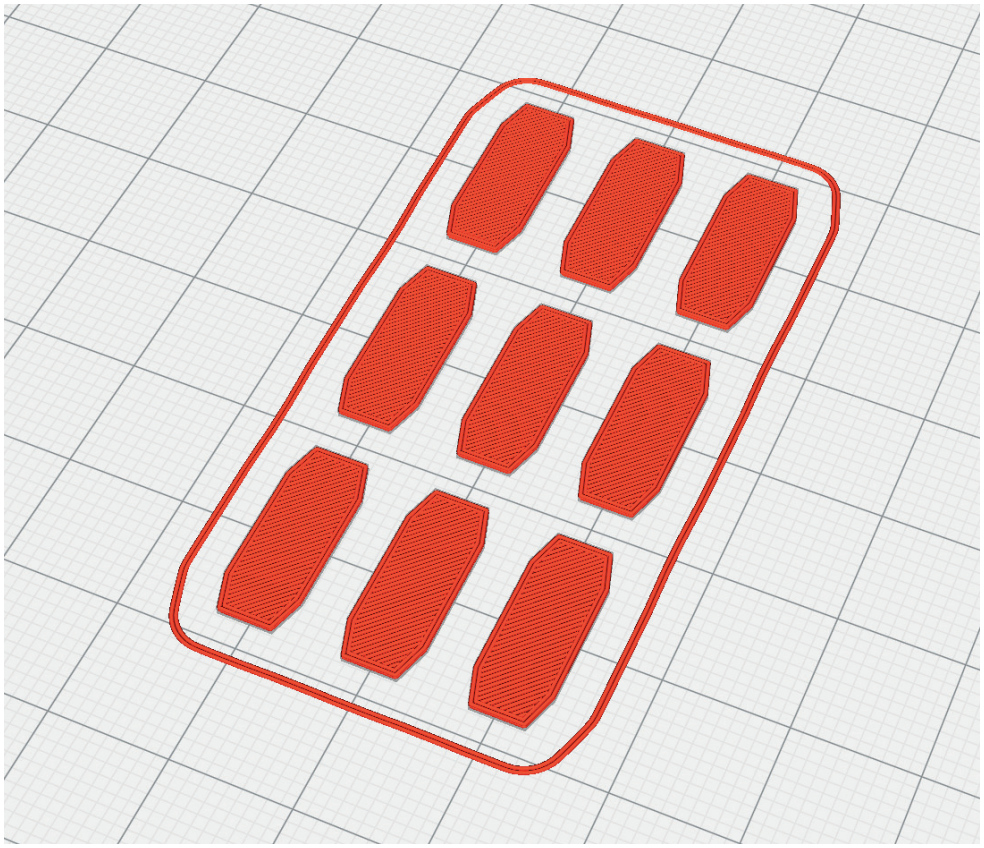
The following parts must be sliced with the profile PROFILE P4_FLEX (flexible materials).
Recommended additional settings are listed in the screenshots.

## INFO

STL: Hinges_profile4.stl
Material: TPU soft
Weight: ~ 1 g

## ADDITIONAL SETTINGS

None nessesery

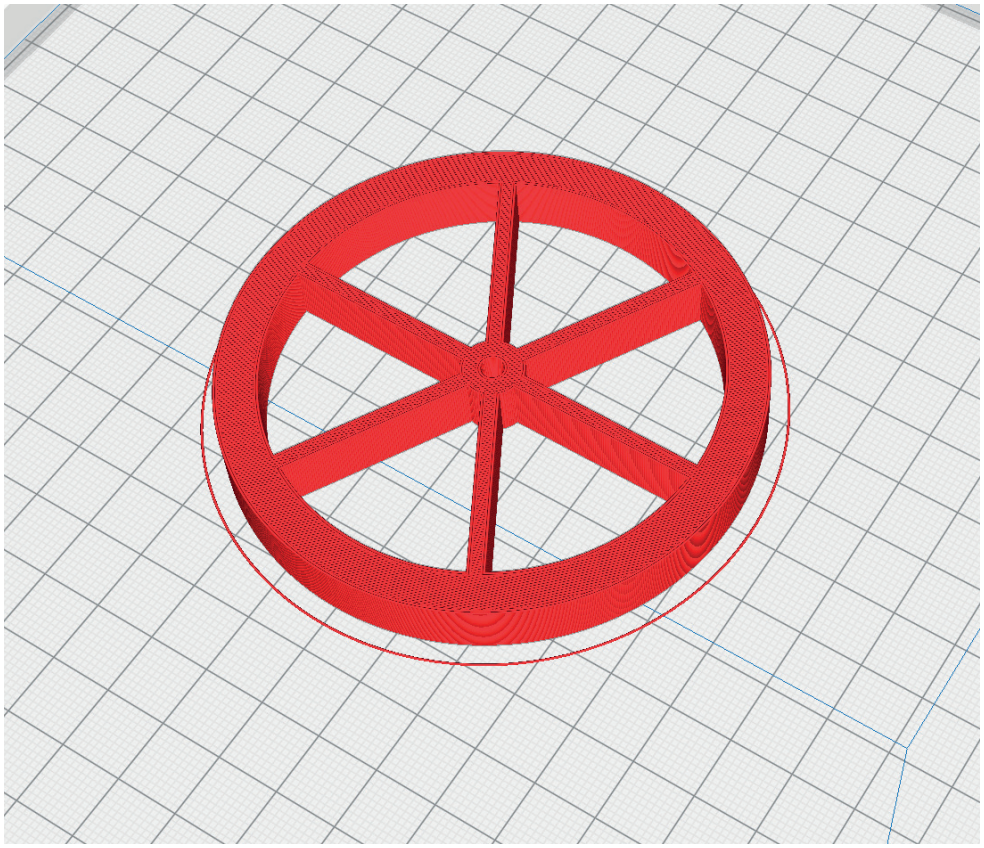


## INFO

STL: Wheel_profile4.stl
Material: TPU soft
Weight: ~ 9 g

## ADDITIONAL SETTINGS

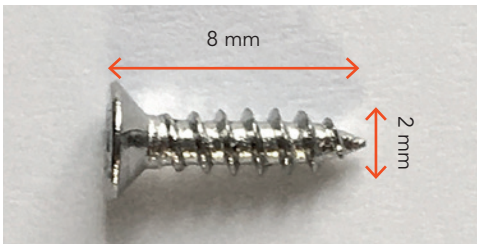
- Wall line Count 10



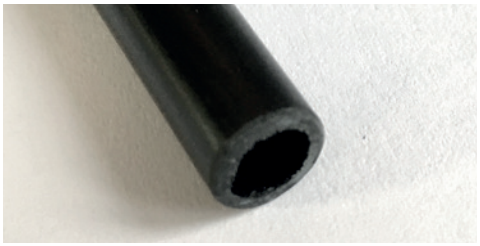
# NESSESERY ACCESSORIES

## MATERIALS

- some tapping screws Ø2*8mm

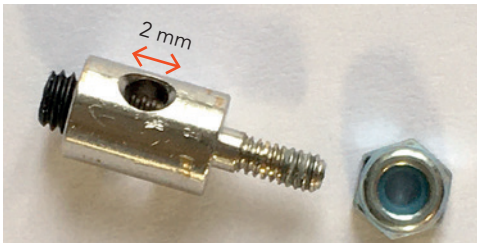



- CA super glue, liquid and liquid medium
- Activator
- servo extension cable
- Carbon rod Ø 3 mm 1 Piece
- Carbon tube Ø8*1000mm 1 Piece
- Steel wire Ø1mm



- Neodym-Super-Magnet 5x5x5mm 4 Pieces

- rod connection 3 Pieces



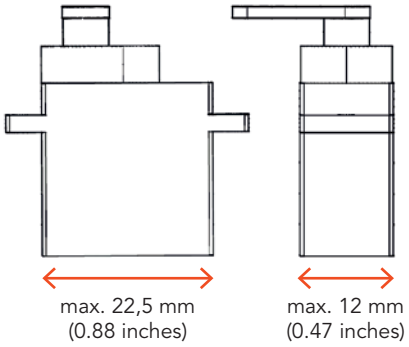

- Velcro and fastening tape for the battery pack and receiver

## TOOLS

- Cutter knife
- Philips screwdriver
- Drill Ø3mm, Ø1,5mm

## RC COMPONENTS

Servo 2 Pieces:
- Hitec HS-55 or EMAX ES08A




Engine:
- Turnigy D2826-10 1400kv Brushless
- Torcster Brushless Gold A2826/10-1400

BEC-Controller: 3S, min. 25A, BEC

Prop: 7045 7x4.5" 3-blade Counter Rotating Propeller CW CCW Blade-Black (can be used left and right turning when the motor direction is reversed)

or a suitable 2-blade prop

Battery pack: 3S LiPo-Akku 1.500 – 2.200 mAh

## TIPP

We recommend the purchase of a small range of screws, which can be used for all future PLANEPRINT models.

Simply search the Internet for: M2 Flat Head Tapping Screw Assortment …

# CONSTRUCTION MANUAL

# Gluing the parts

To glue the fuselage and wing parts well, use **medium**-liquid CA adhesive.

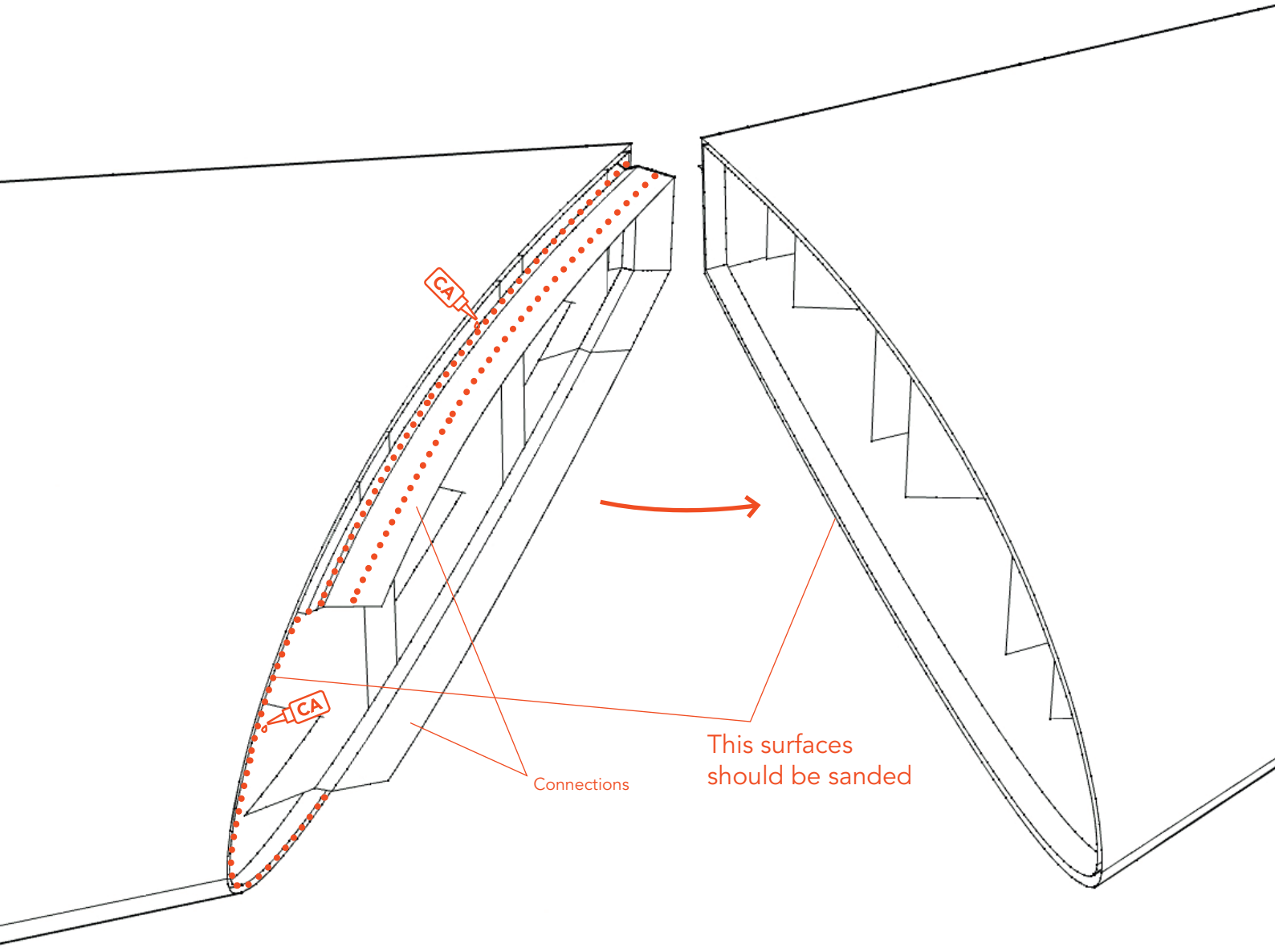
First check whether the parts go well together. Then apply a lot of CA glue to the part with the connections and all surfaces that will touch later (except the bowden tubes). Put the parts together and align the parts perfectly. If glue comes out, wipe with a cloth. Then spray activator spray on the glue points.

For a strong connection, the adhesive surfaces should be sanded.

Please only use **fresh** CA glue and activator spray for curing!

The adhesive connections must hold perfectly!

**IMPORTANT!**



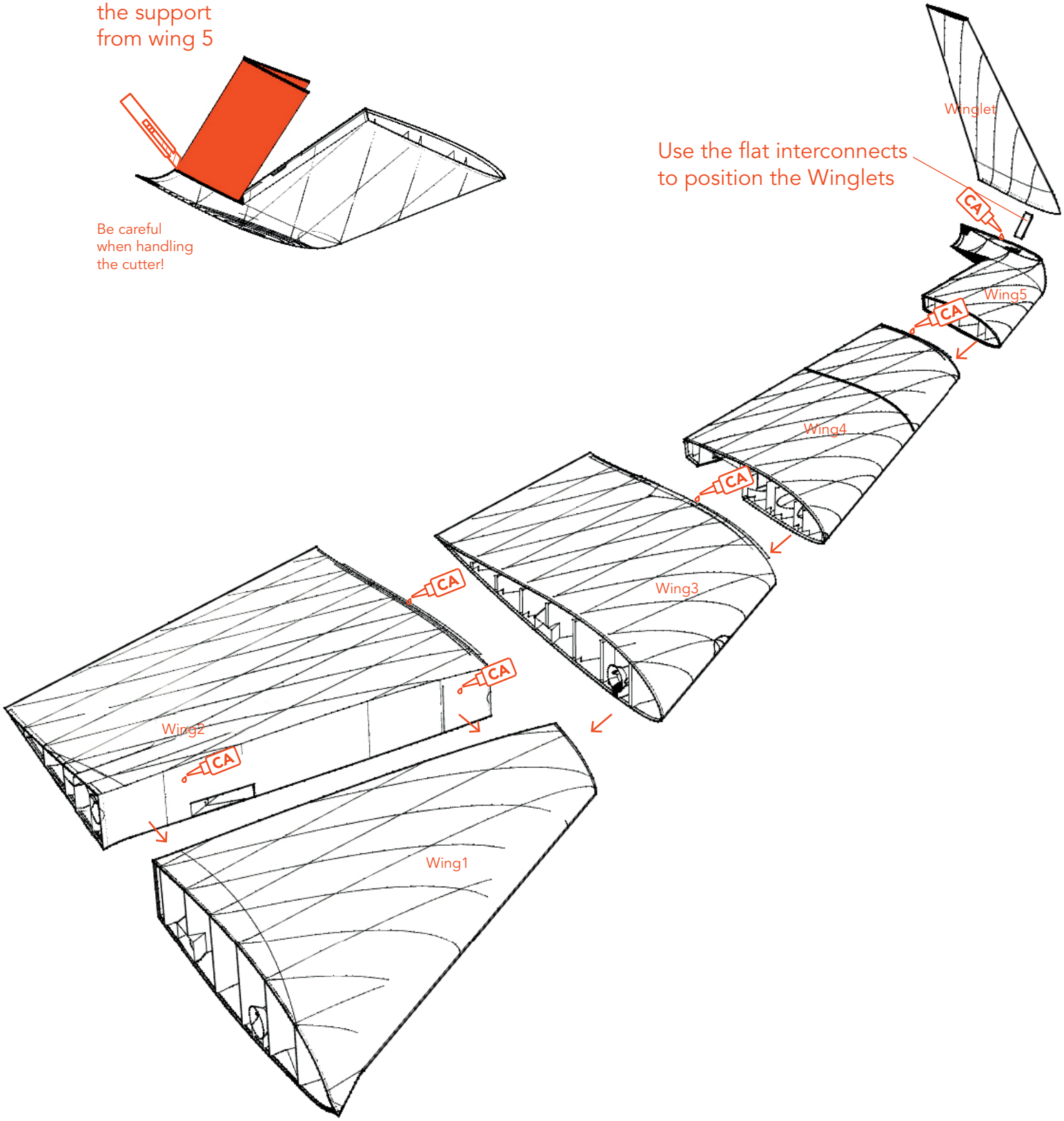
# Assembly of the wings

First remove the support from wing 5

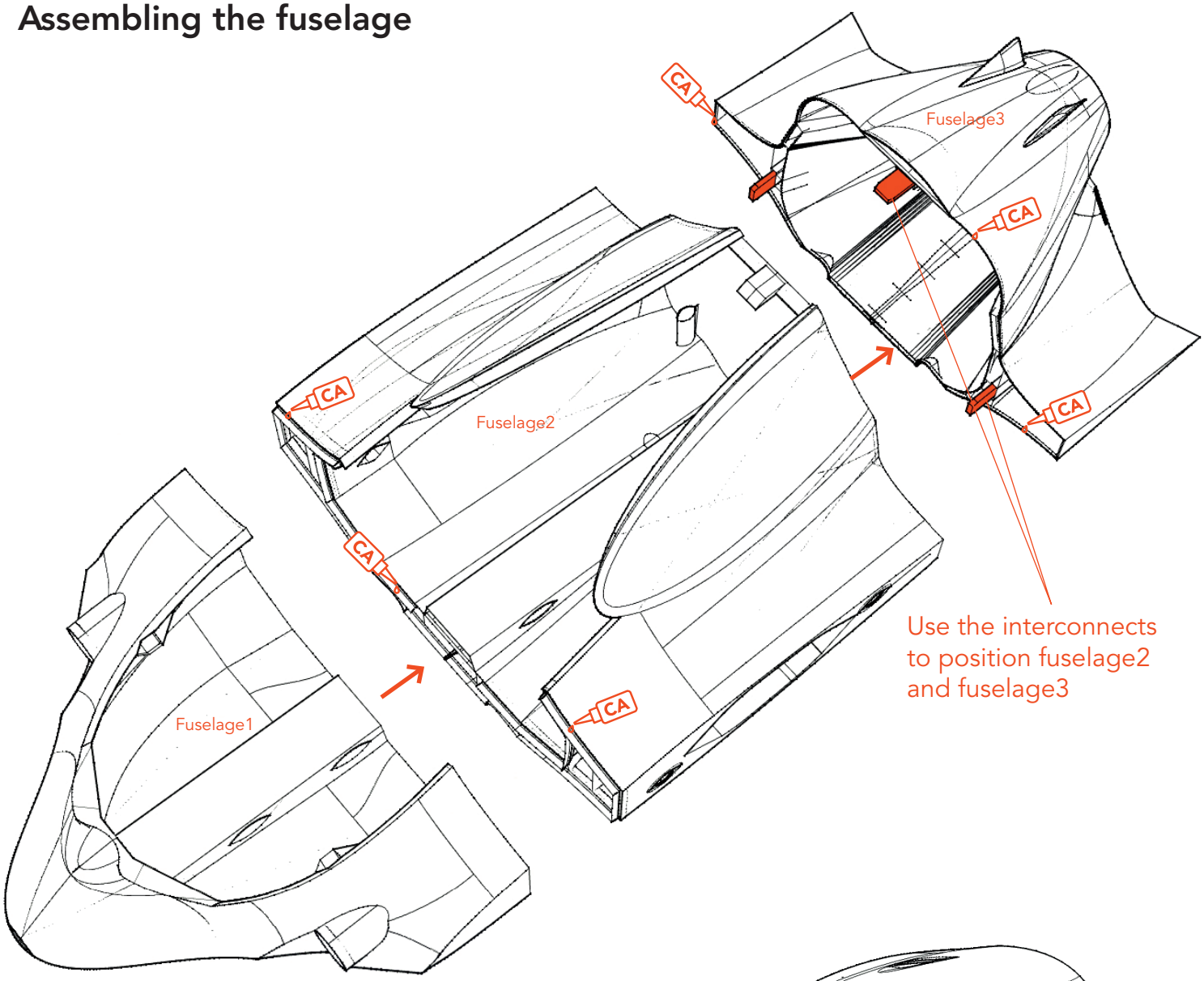


Be careful when handling the cutter!

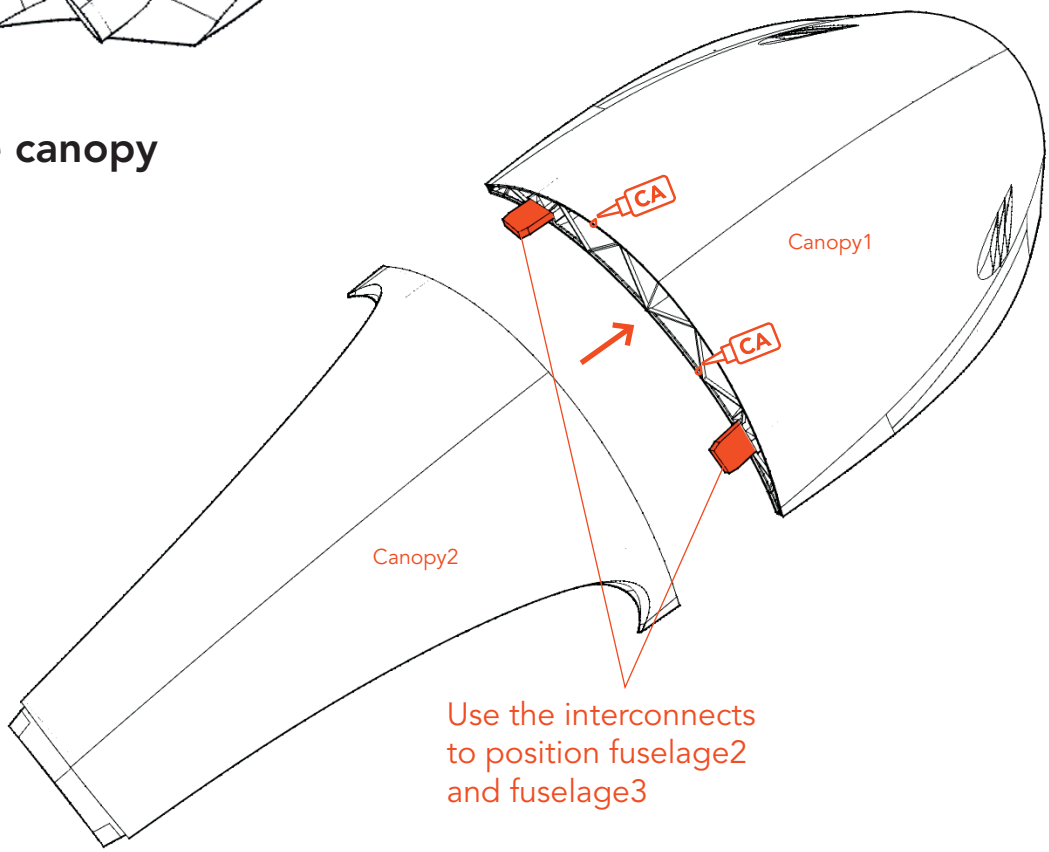
Use the flat interconnects to position the Winglets



## Assembling the fuselage



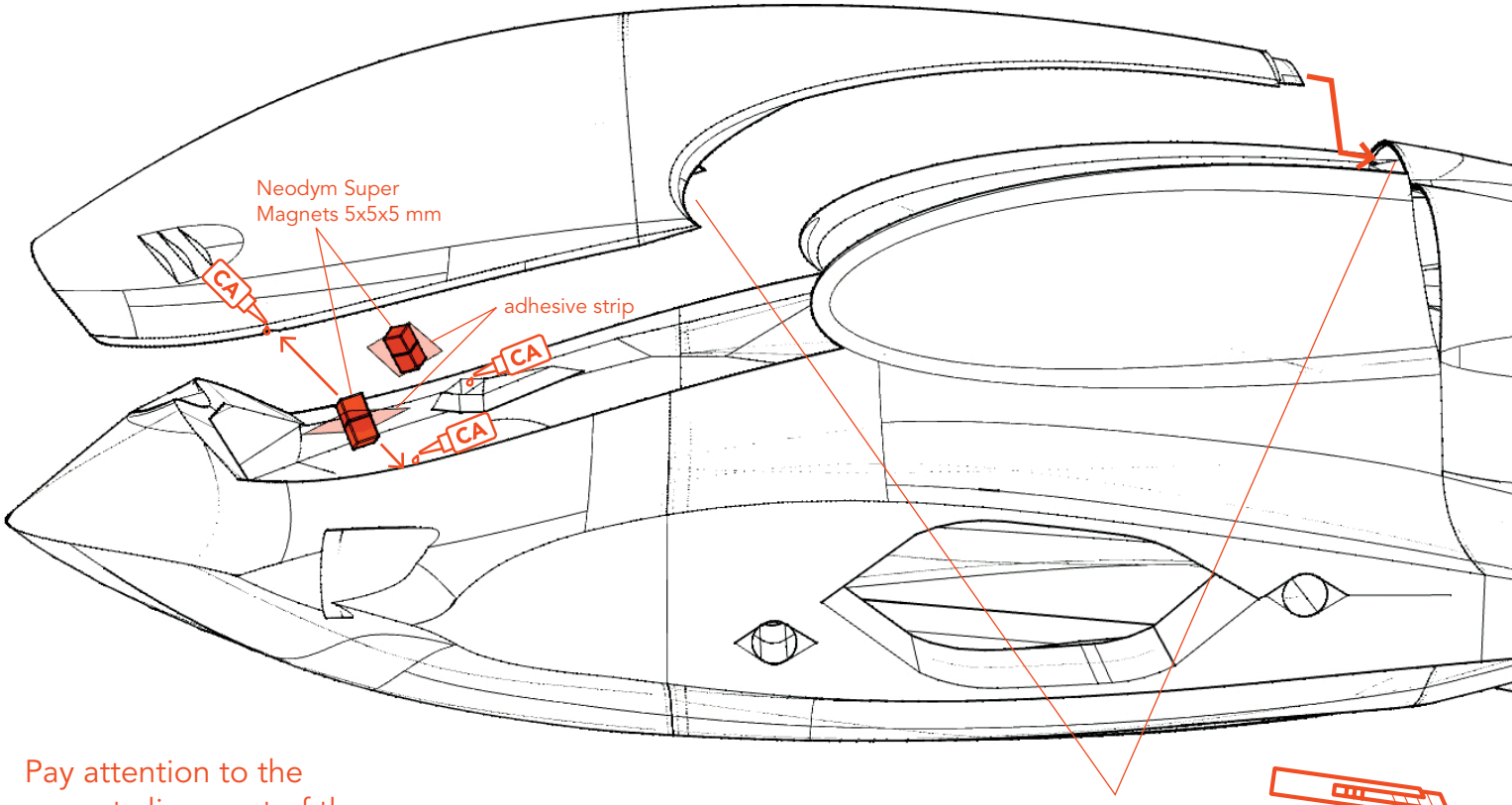

## Assembling the canopy



# Magnetic clasp canopy

Put a piece of tape on one magnet and put the second magnet on it. add some CA glue to the magnetic holders in the fuselage and canopy. then stick the canopy to the fuselage and let the glue harden.
The adhesive tape ensures that the wing and fuselage can be separated again.

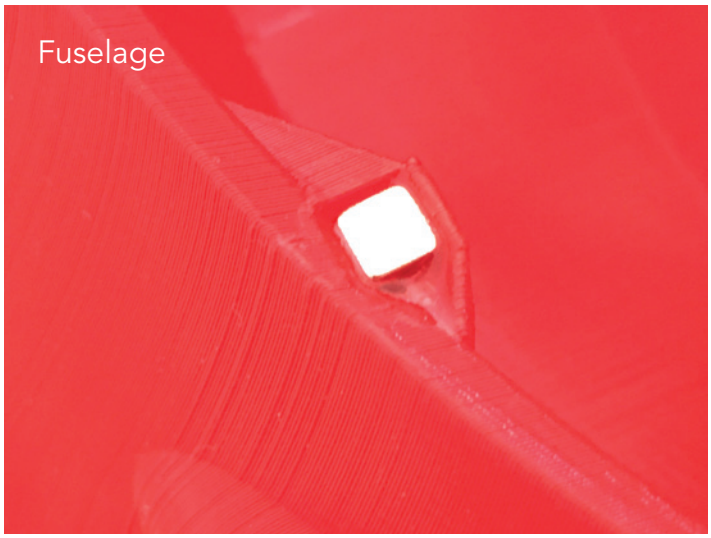
**Important:** the magnets must touch so that they achieve the maximum force!

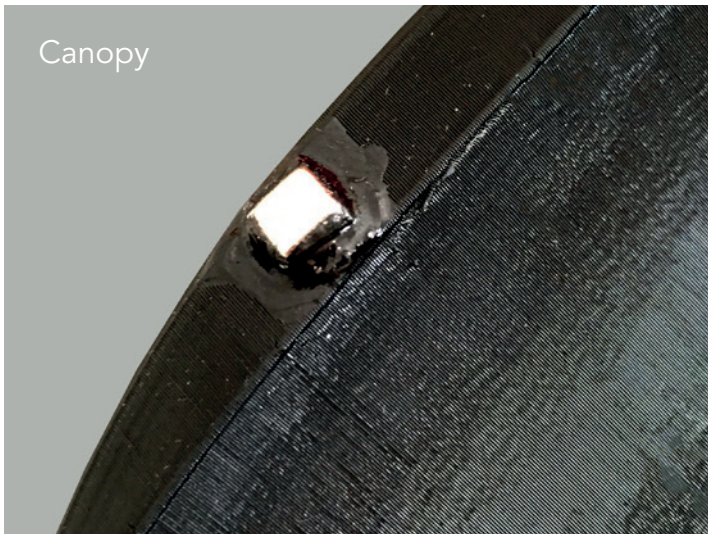



Pay attention to the correct alignment of the magnets so that they do not reject each other!

If the canopy does not fit exactly, work a little with the cutter knife.

Be careful when handling the cutter!

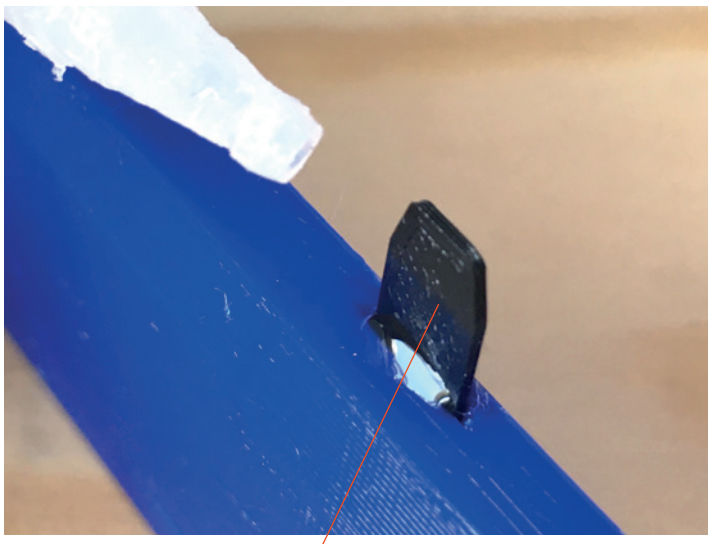


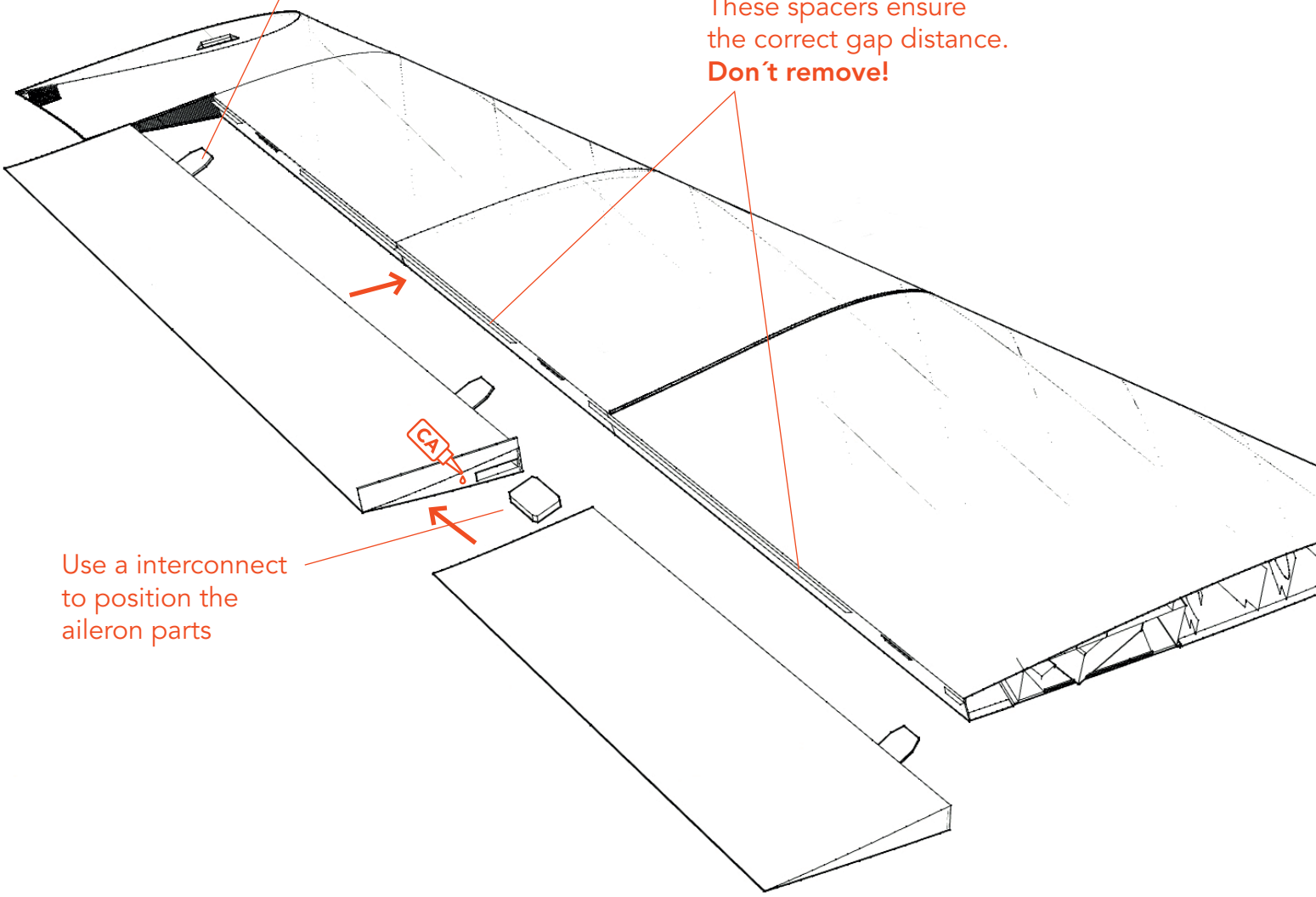



# Install the hinges (aileron)

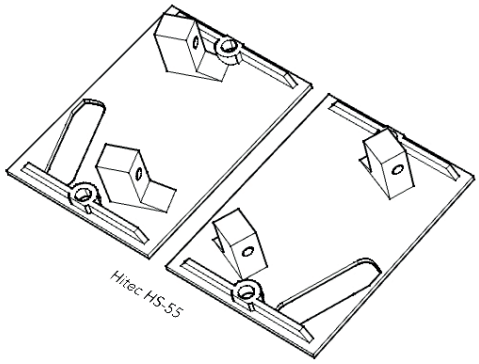
First insert the hinge into the movable flap and add a drop of liquid CA adhesive into the gap. Wait for the glue to drain completely, then spray the activator on it.

Then put the flap in the wing **until the flap touches the spacers** and put a drop of CA glue on the hinge. Wait again for the glue to run in, and then spray the activator on it.

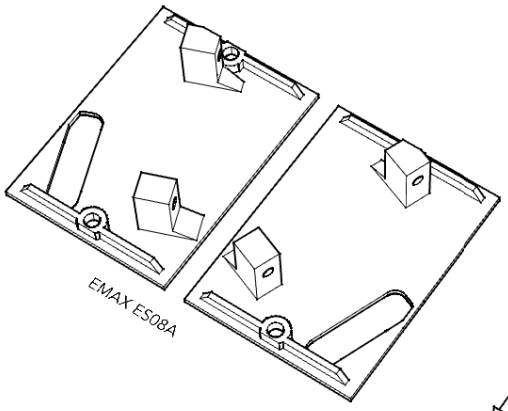


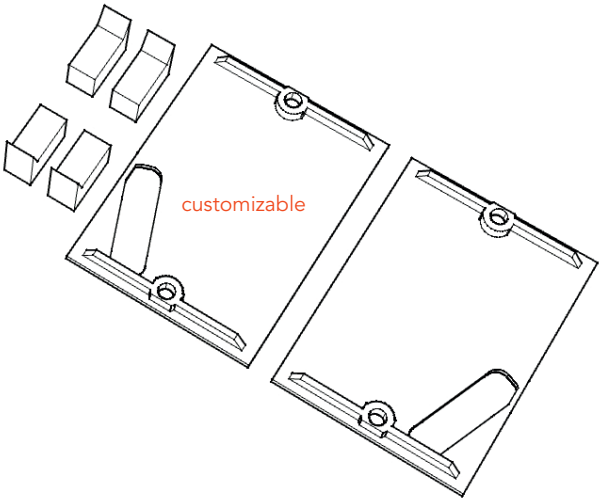



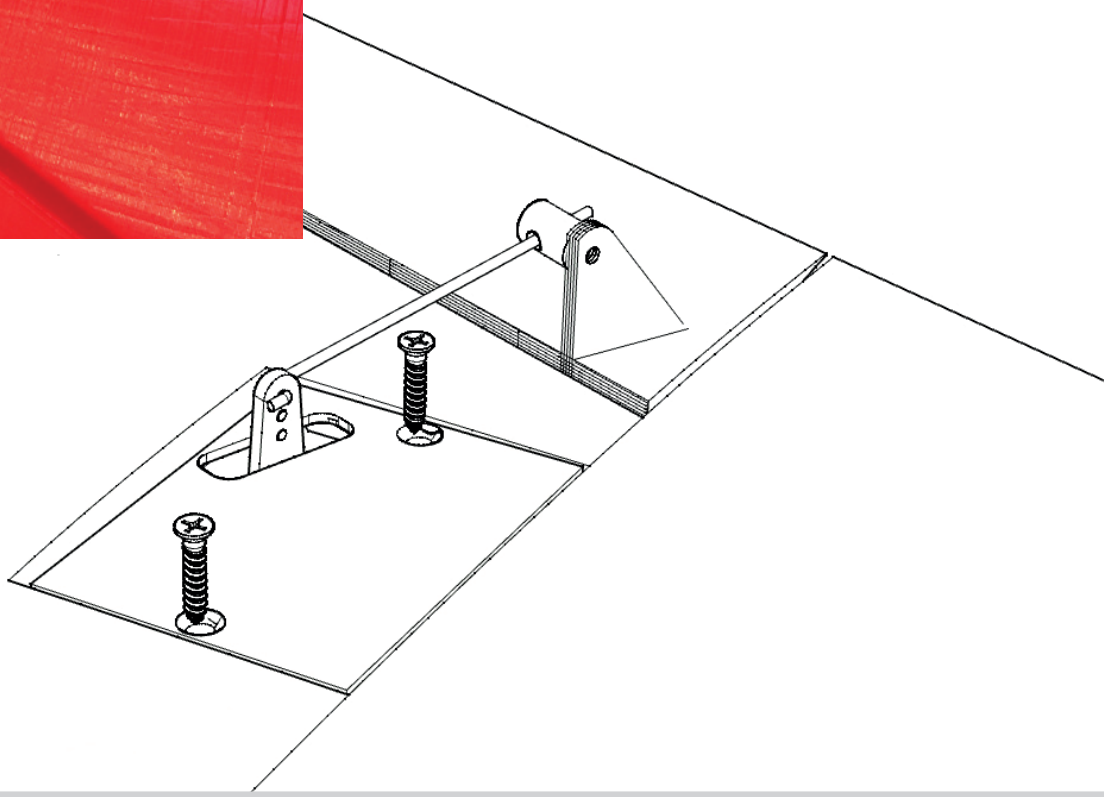
# Installation of the servos



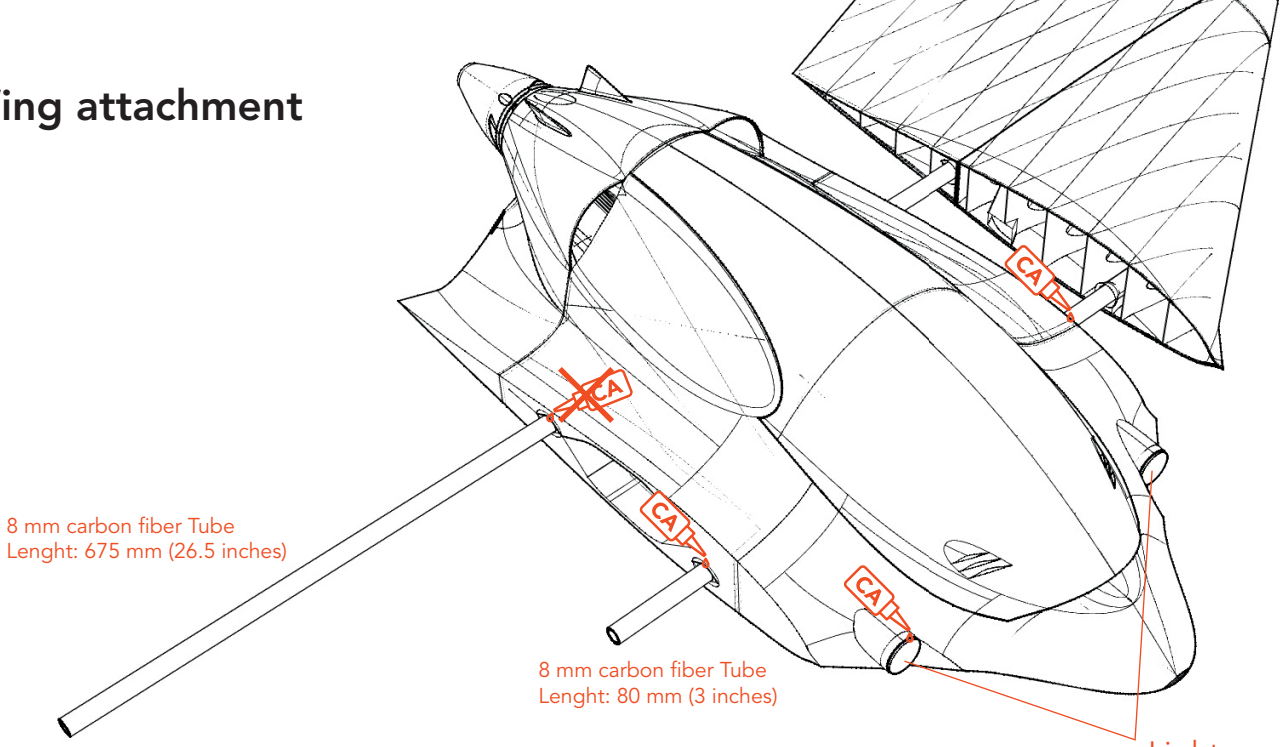

There is a choice of servo covers for different servos and also a customizable version.

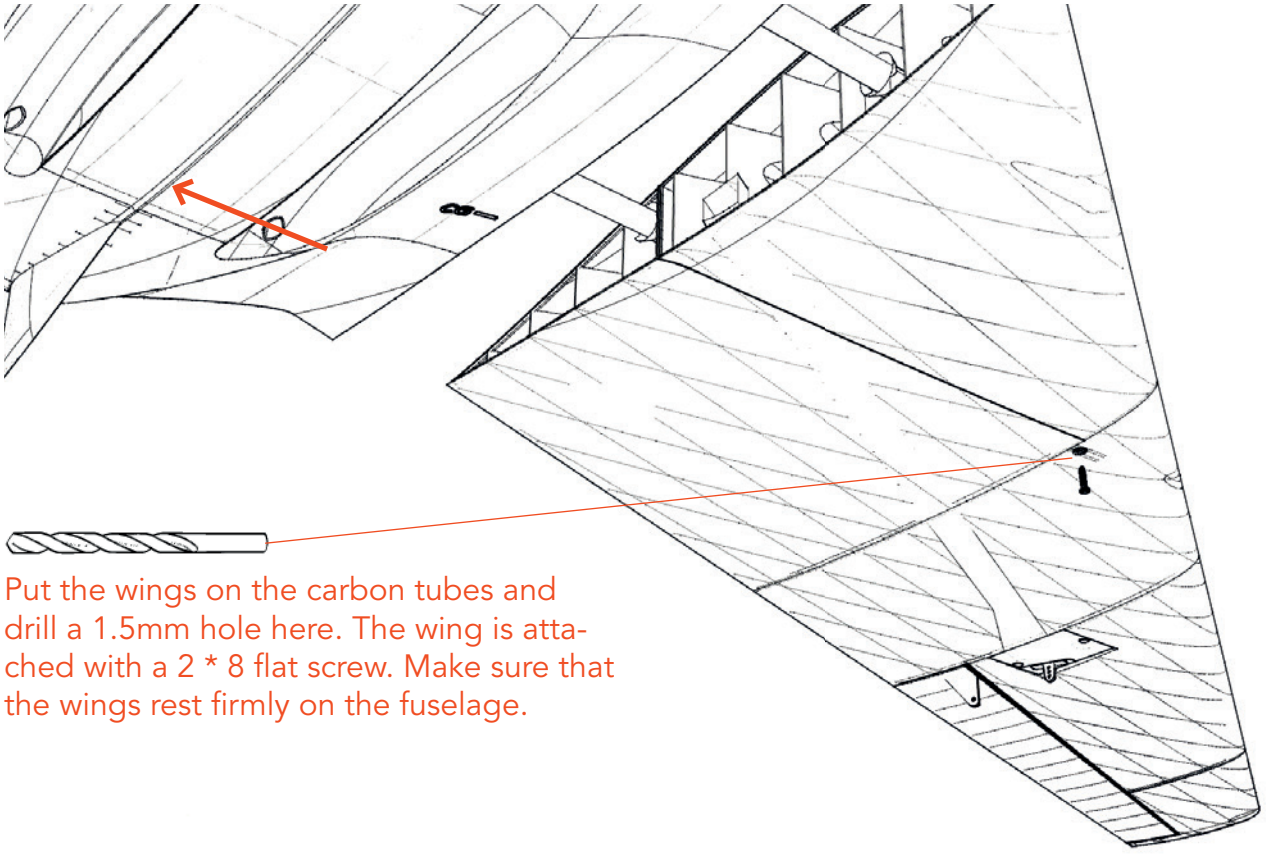


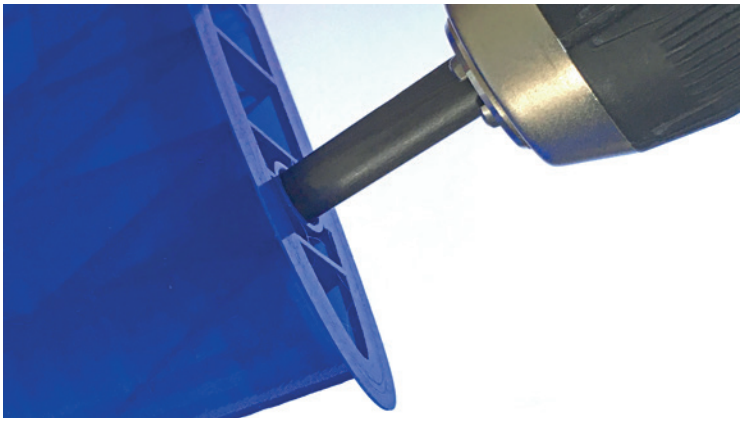
# Wing attachment



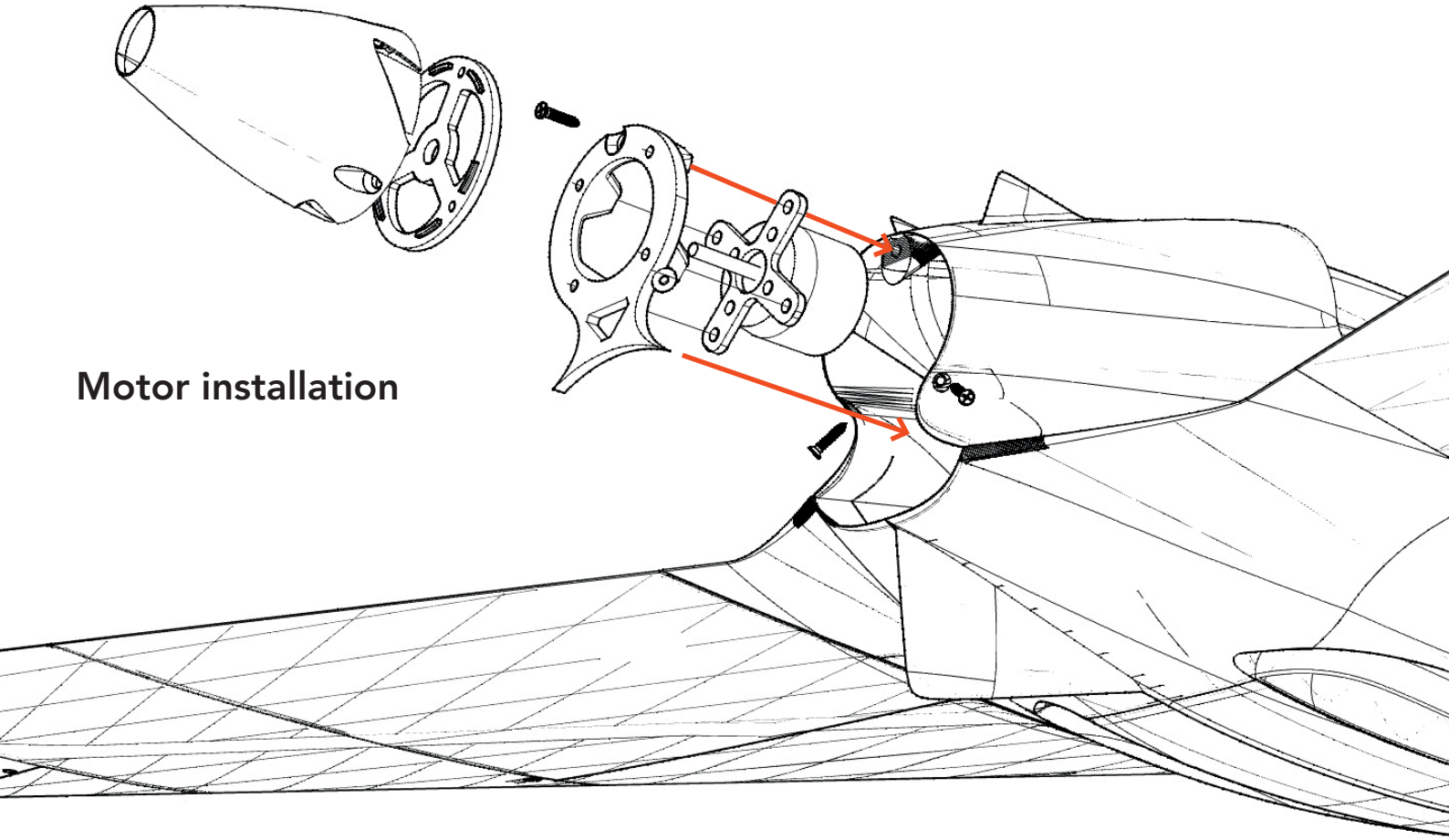



Put the wings on the carbon tubes and drill a 1.5mm hole here. The wing is attached with a 2 * 8 flat screw. Make sure that the wings rest firmly on the fuselage.

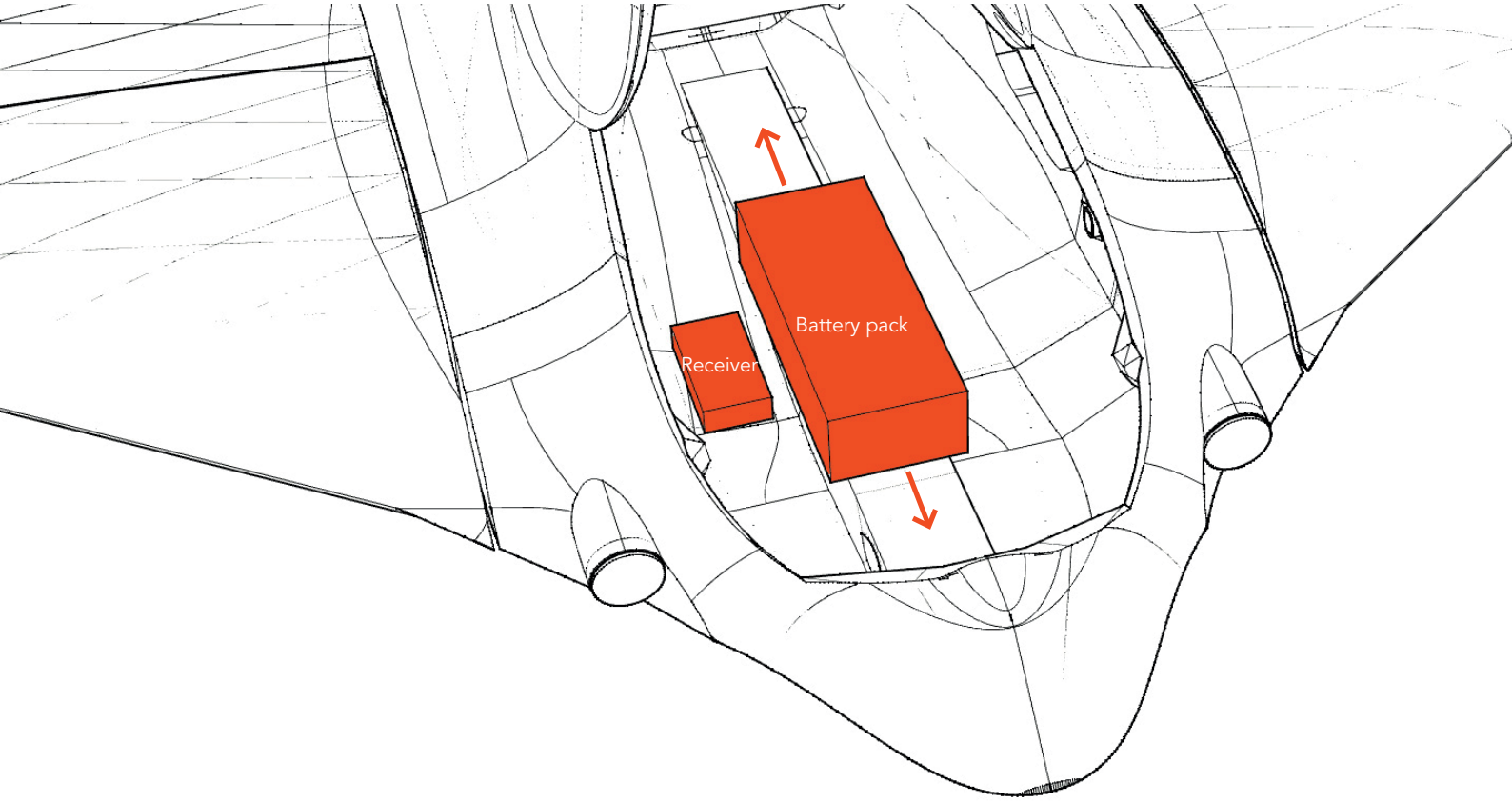
If the carbon tubes in the wings are a little stiff, clamp the remaining tube in a drill and enlarge the hole a little.



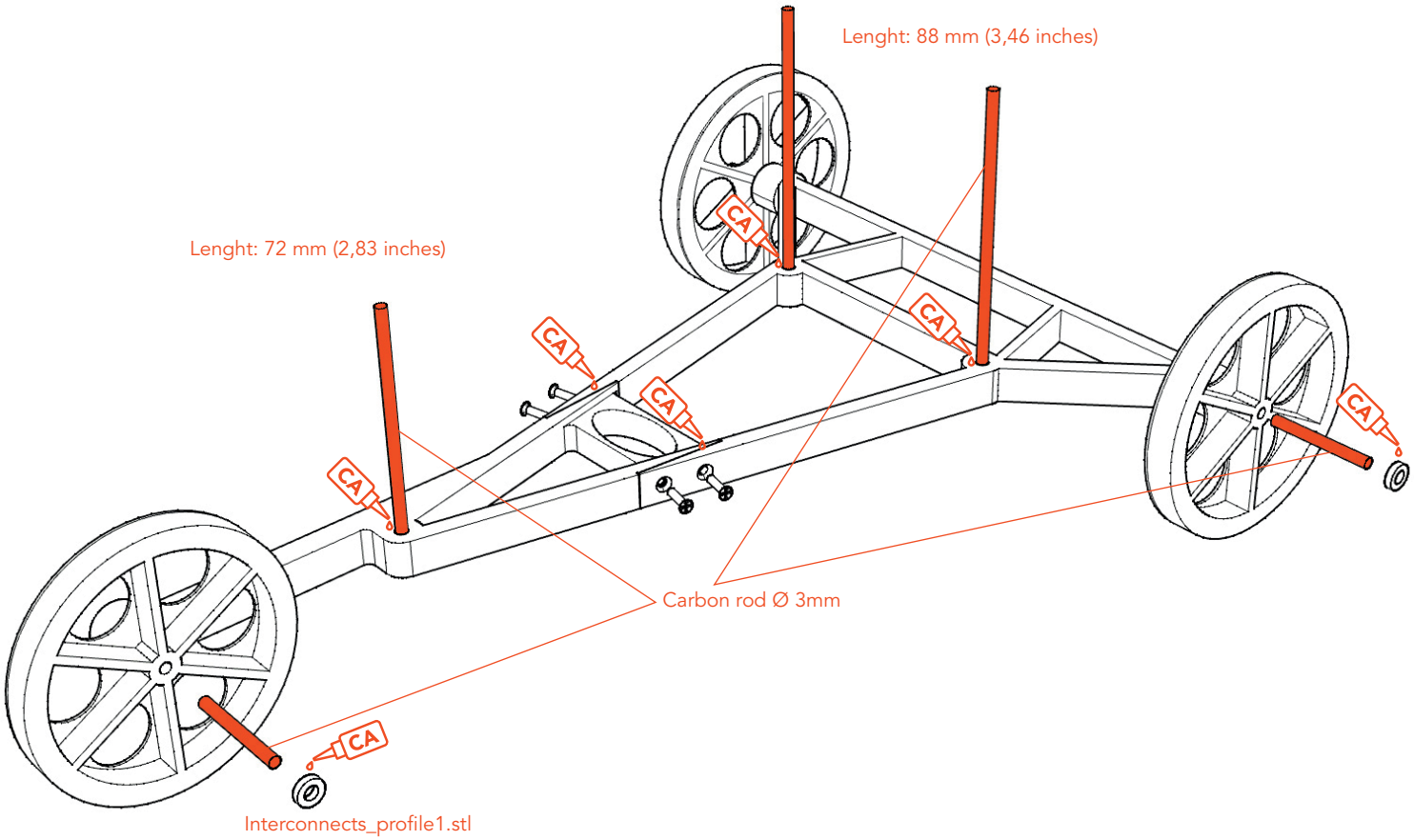
## Motor installation



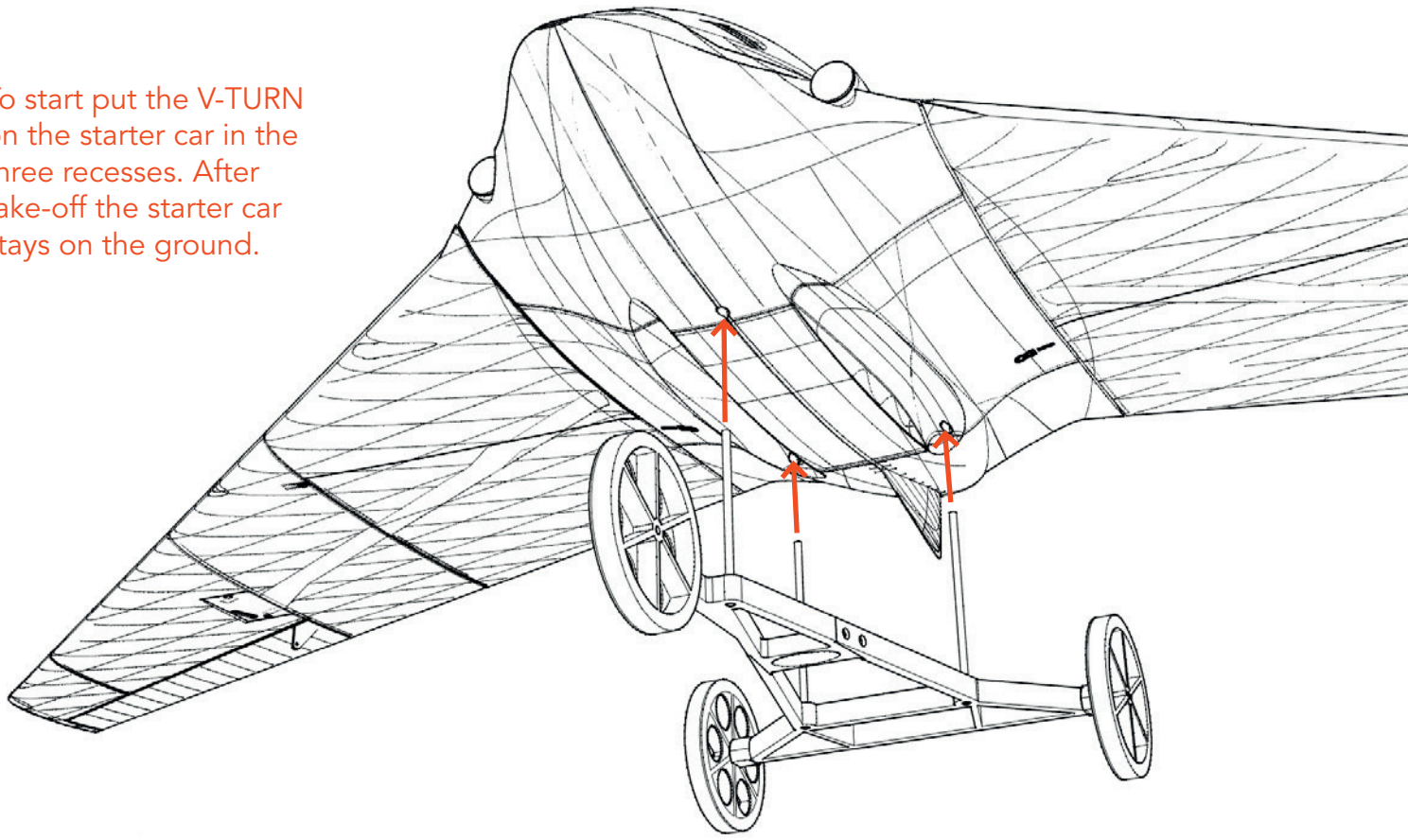
## RC components



# Starter car



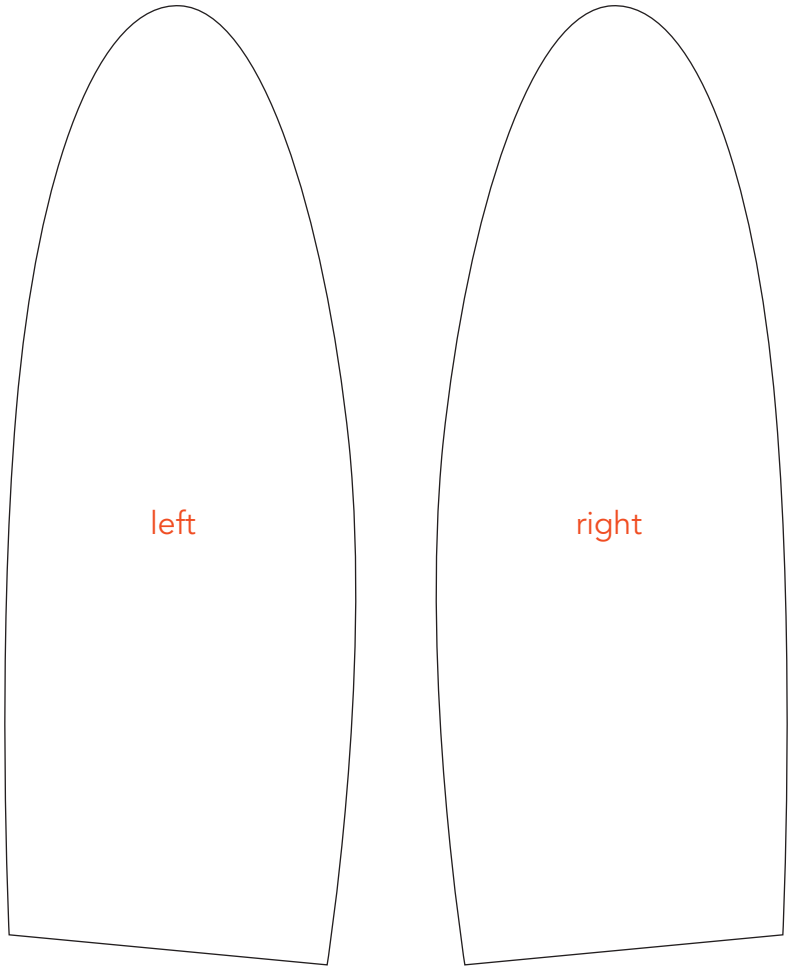

To start put the V-TURN on the starter car in the three recesses. After take-off the starter car stays on the ground.

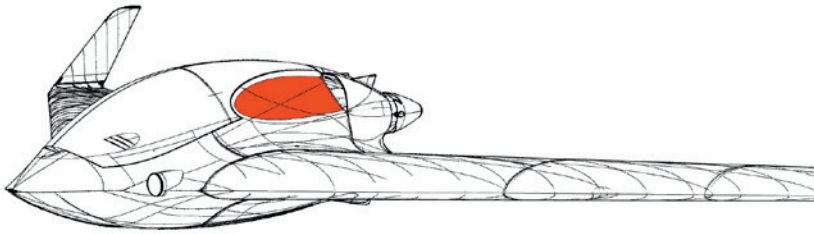


# Air inlet foils cutting template

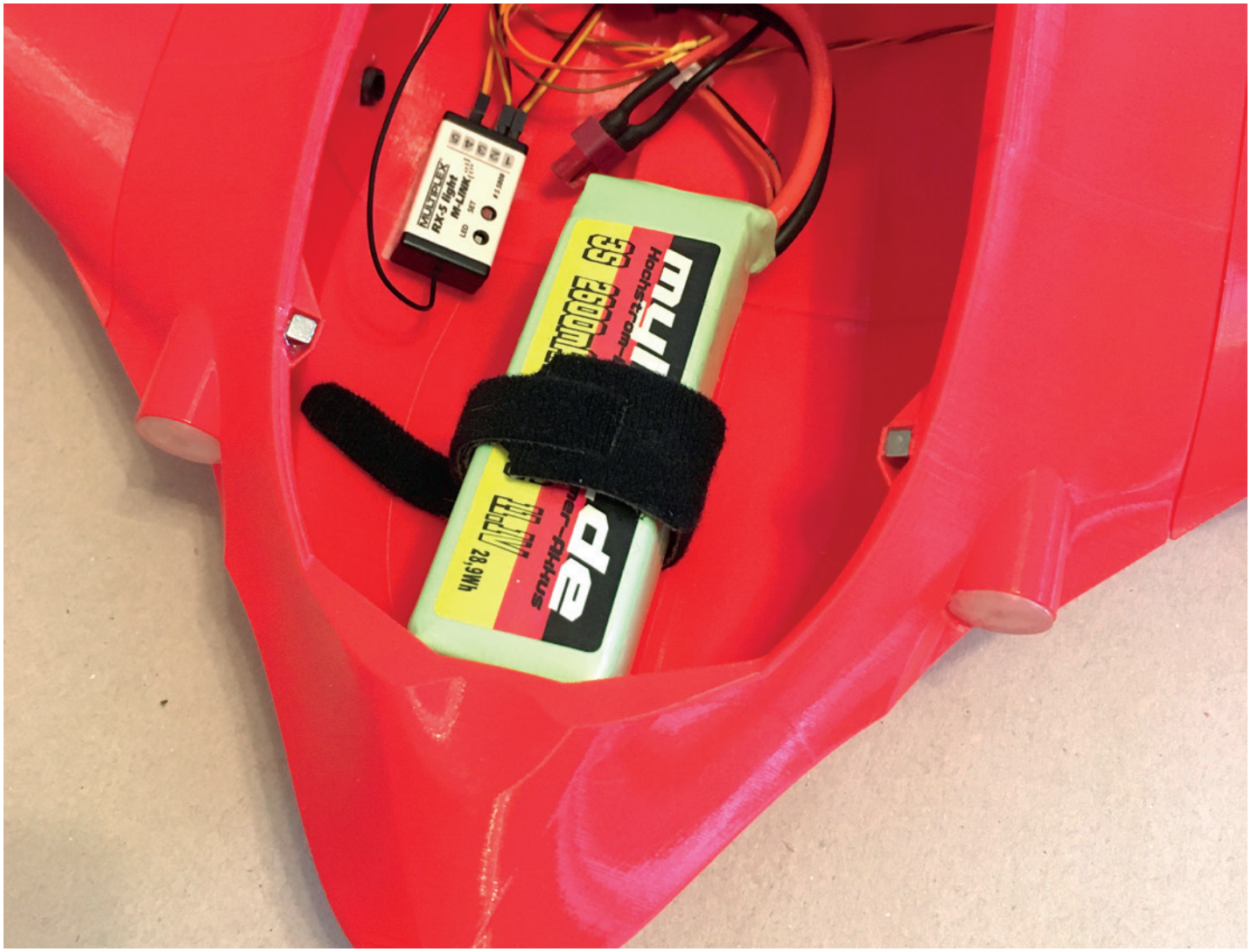
Print this page, fix it on adhesive foil (silver) and cut the foil.
IMPORTANT: The print must be set to 100% page size, so that the size fits exactly!

Be careful when handling the cutter!



# DETAIL PHOTOS




# QUICK START GUIDE

After installing the electronics and setting up the transmitter, check that the control surfaces are aligned correctly. Set the transmitter trim to zero. The ailerons should be aligned with the trailing edge of the wing tip. Then align the flaps with the ailerons. The elevator should be aligned with the horizontal stabilizer and the rudder to the vertical stabilizer. Change the position of the moving parts by changing the length of the linkage from the servo arm to the control horn. In-flight adjustments can be made later with the trim.

## TRANSMITTER CONFIGURATION

1. Select empty (Delta) model
2. Reversing the direction of servo
   as nessesery (see control function)
3. Servo adjustment all: 100%

## FLIGHT TIMER

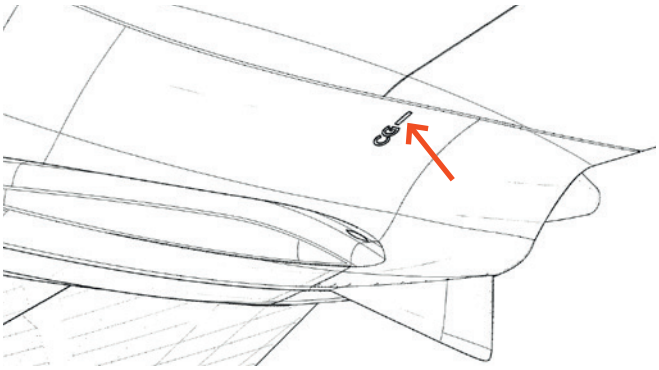
Flight time will vary depending on the battery size. Engine runtime expect 4 minutes under normal circumstances (1000 2S battery). It is a good idea to be conservative with the flight timer until you gain experience with your airplane.

## SETTING THE SERVO TRAVEL

| | |
|---|---|
| Aileron | ▲ = 10 mm<br>▼ = 10 mm |
| Elevator | ▲ = 10 mm<br>▼ = 10 mm |

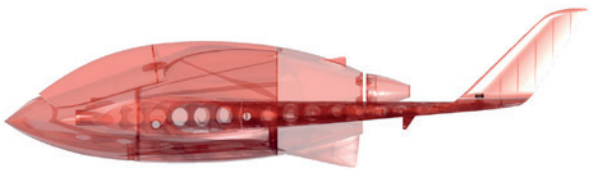
## CENTER OF GRAVITY (CG)

See the Marker on the Wings.
**The CG has to fit exactly!**

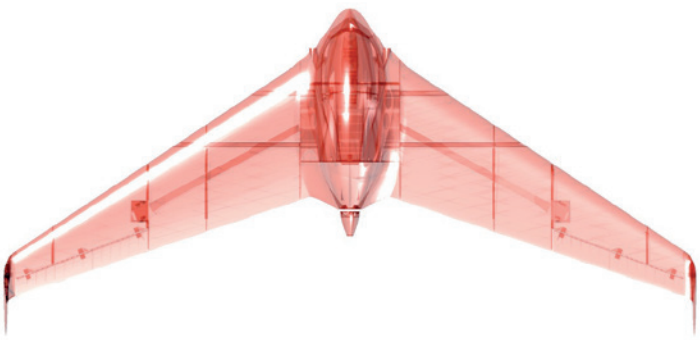


## TECHNICAL SPECIFICATIONS

647 mm (25.4 inches)



1400 mm (55 inches)



FLYING WEIGHT:

~ 1000 g
(depending on RC components and 3D printing)

# CONTROL DIRECTION TEST

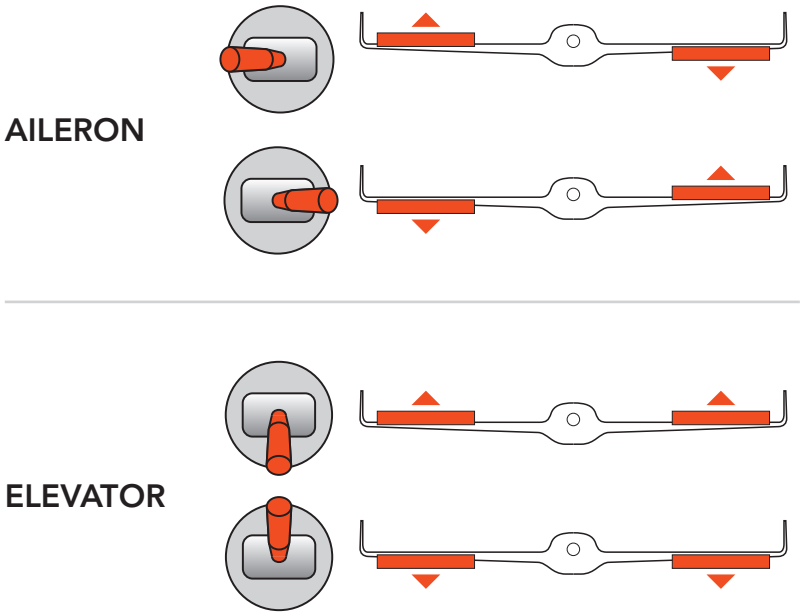
Turn on the transmitter and connect the battery. When checking the control directions, look at the aircraft from behind.

1. Move the aileron lever to the left. The right aileron should move down and the left aileron should move up so that the aircraft tilts to the left.

2. Move the aileron lever to the right. The right aileron should move up and the left aileron down so that the aircraft is tilting to the right.

3. Pull back the elevator lever. The elevators should move up, causing the aircraft to rise.

4. Push the elevator lever forward. The elevator should move down so that the aircraft sinks.



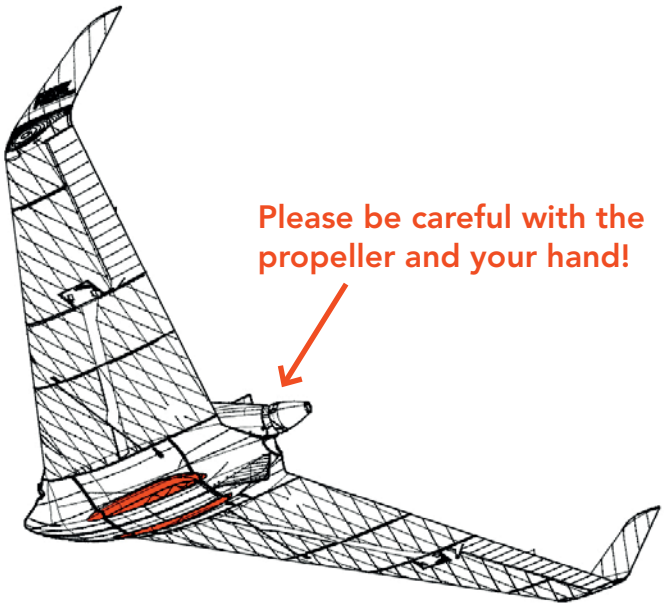

# MAIDEN FLIGHT

Trim the ailerons 2 mm up. In flight, the V-TURN is very neutral and shows no peculiarities if the CG fits exactly. Typically for flying wings, he slowly pulls his nose down if he is flown too slowly.

There are two ways to start it:

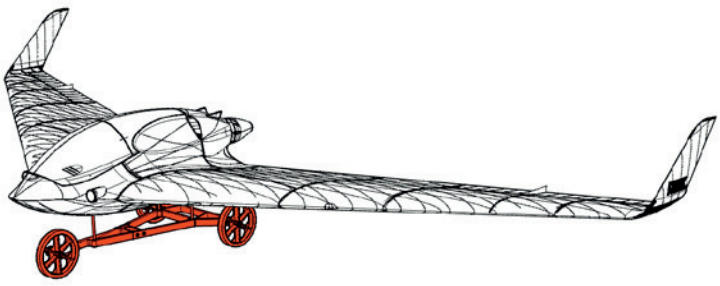
# TAKE OFF FROM THE HAND

Ask an experienced pilot to throw the V-TURN for you. The V-TURN should be thrown horizontally against the wind. There are recessed grips at the bottom of the fuselage to hold it in your hand. **Please be careful with the propeller!** We recommend that you do not switch on the engine until the V-TURN is in the air.




# TAKE WITH THE STARTER CAR

Place the V-TURN on the starter car and start on an asphalt surface or flat grass track and set the engine to maximum speed. When the take-off speed is reached, give some elevator rudder. The starter car stays on the ground.



# AGE RECOMMENDATION 14+

**NOT FOR CHILDREN UNDER 14 YEARS.**
**THIS IS NOT A TOY!**

By using the download data, an RC model airplane, called „model" for short, can be manufactured using a 3D printer. As a user of this model, only you are responsible for safe operation that does not endanger you or others, or that does not damage the model or property of others.

PLANEPRINT.com assumes no responsibility for damage to persons and property caused by pressure, transport or use of the product. Filaments, printing supplies, hardware or consumables that can not be used after faulty 3D printing will not be replaced by PLANEPRINT.com in any way.

When operating, always keep a safe distance from your model in all directions to avoid collisions and injuries.

This model is controlled by a radio signal. Radio signals can be disturbed from outside without being able to influence it. Interference can lead to a temporary loss of control.

Always operate your model on open terrains, far from cars, traffic and people.

Always follow the instructions and warnings for this product and any optional accessories (servos, receivers, motors, propellers, chargers, rechargeable batteries, etc.) carefully.

Keep all chemicals, small parts and electrical components out of the reach of children.

Avoid water contact with all components that are not specially designed and protected. Moisture damages the electronics.

Never take an item of the model or accessory in your mouth as this can lead to severe injuries or even death.

Never operate your model with low batteries in the transmitter or model.

Always keep the model in view and under control.
Use only fully charged batteries.

Always keep the transmitter switched on when the model is switched on.

Always remove the battery before disassembling the model.

Keep moving parts clean and dry at all times.

Always allow the parts to cool before touching them.

Always remove the battery after use.

Make sure that the Failsafe is properly set before the flight.

Never operate the model with damaged wiring.

Never touch moving parts.

We develop our models to the best of our knowledge and belief. We accept no liability for consequential damage and injuries caused by improper use. Please be careful when handling motors, batteries and propellers and only move your model with insurance and in approved places!

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