PRINTING ASSEMBLING MANUAL

PLANE PRINT

Size 180x180x180
BAMBU A1 MINI
and PRUSA MINI

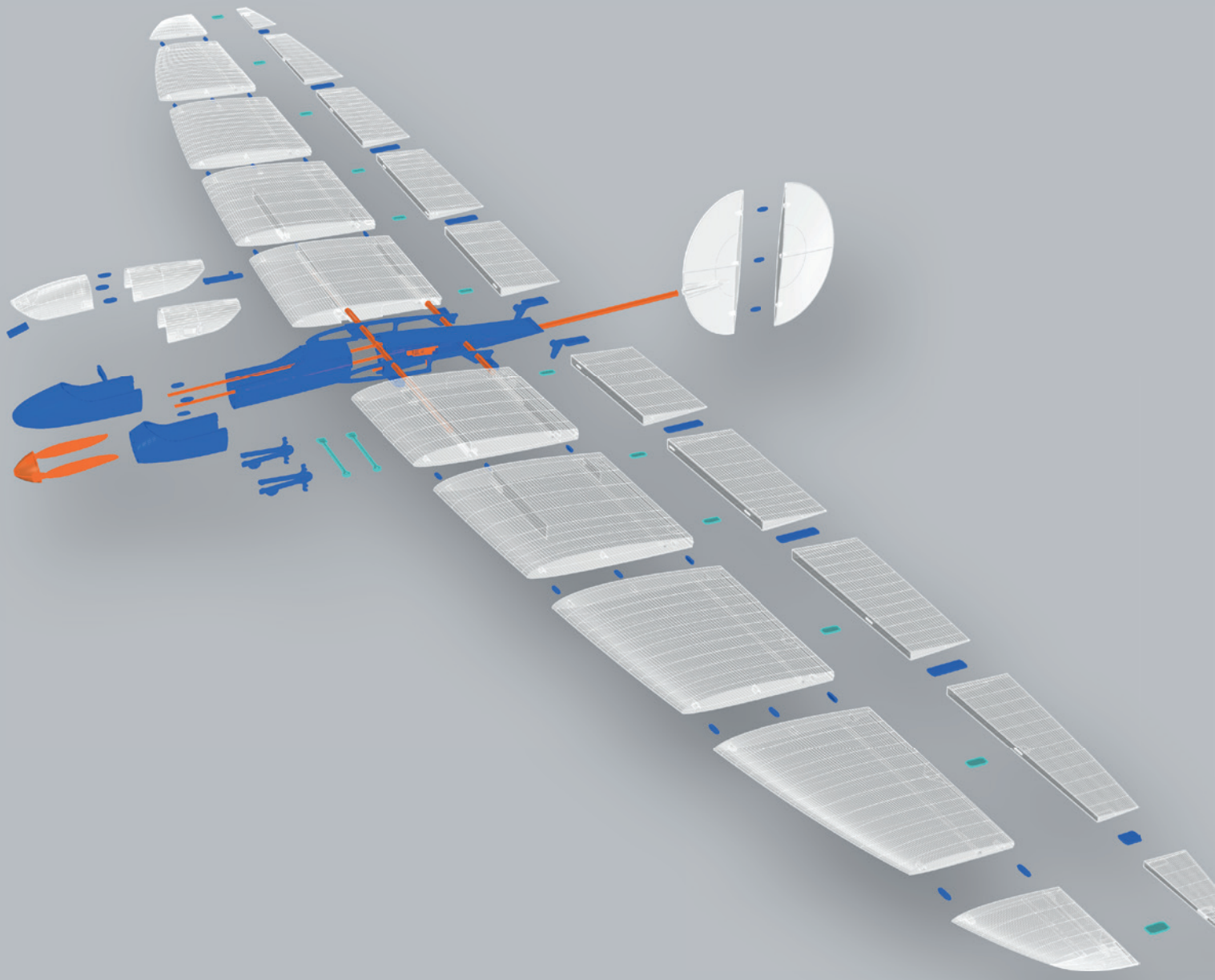
PLANE PRINT Halo+

Flying wing – Glider and Motor Version

www.planeprint.com

the **ONLY** place where you can get original Planeprint STL files **legally!**

PLANEPRINT Halo+

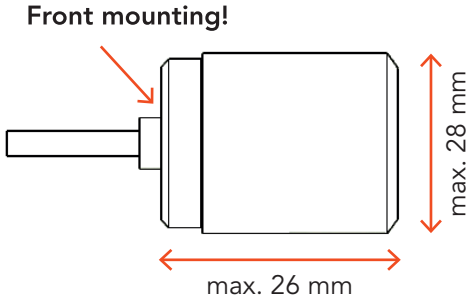


LW-PLA PLA TPU OTHER

RC Components

MOTOR Motors up to Ø 28 mm, for example:
- **XPower XC2212/18 1200KV**
- **SunnySky X2216 2216 1250KV (or 1100KV)**

or comparable motors



FOLDING PROP 6x4-7x4.5

SPINNER Ø 30mm

BEC-CONTROLLER min. 15 A (must fit the engine!)

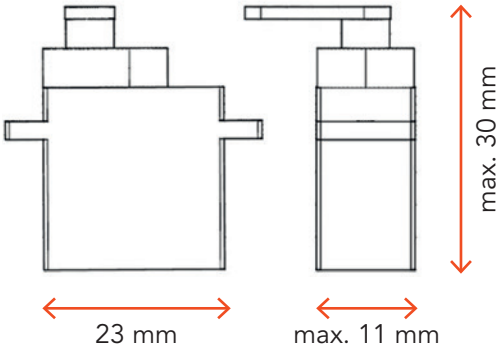
RECEIVER 2 Channel (Glider), 3 Channel (Motor version)

BATTERY 3S Lipo, about 600-1000 MaH (perfect weight 80-90 grams)

SERVOS We **strongly** recommend the **use of high quality servos with metal gears**, the model is **much more fun** when the elevons work precisely and without backlash.

2 Nano Servos for example:

- **CHASERVO D S 06** (perfect)
- PLANET-HOBBY ECO Plus Picco 8



Required accessoires – basic equipment

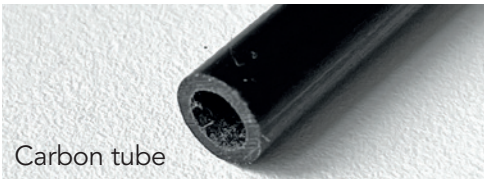
- **LW-PLA** foaming! **(cannot be replaced by PLA!)**, ~300 grams
- **Tough PLA** (or PLA), ~75 grams
- **TPU A95** ~10 grams

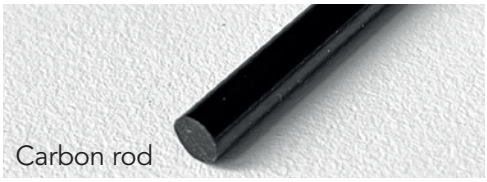
Printer space of 180x180x180mm (cube) needed!

Tapping screws 2mm

Materials

- some tapping screws
  (search for: M2 flat head tapping screw assortment)
- CA super glue (liquid and liquid medium)
- CA activator
- Carbon tube Ø6*1000mm (inside 4mm), 1 piece
  Cut the tube to the following lengths (mm): 400, 178, 348
- Carbon rod Ø3*1000mm, 2 pieces
  Cut the rods to the following lengths (mm): 2x763, 2x190
- Steel wire Ø0.8*200mm, (Ø1mm is also possible)
- Self adhesive velcro tape
- Some lead (for the glider version)


Carbon tube


Carbon rod

The development of a complex, airworthy RC flight model to express on any standard 3D printer is a very extensive process. **Therefore, we appeal to your fairness not to forward the STL data you have acquired to third parties.**

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

Printing the parts – Printing profiles

This manual is constantly being improved and supplemented, we recommend downloading the **latest version** from our website **before building**.

To print all **PLANEPRINT** models **you need to set some basic profiles in Cura** (If you use another slicer, please set the same parameters).

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

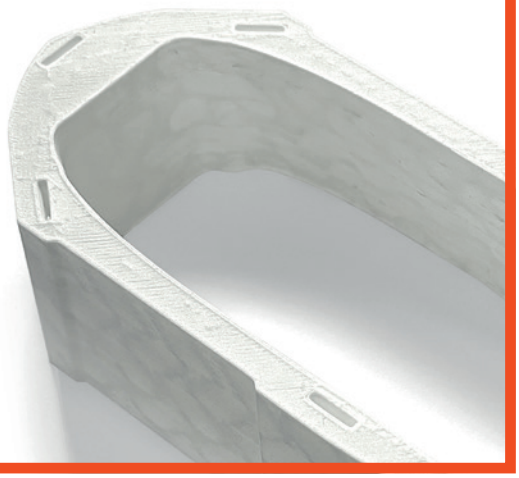
For this model you need the following profiles:

P2 **P4** **P5**

NOTE When printing the PLANEPRINT HALO+ you should pay particular attention to a light weight of **each** individual part.

PROFILE P5_Gyroid

It is **essential for the necessary stability** of the **LW parts printed with PROFILE_5 are as stable as possible**. Please use a test part to check the strength by fracture tests. It must not break along the layer lines under any circumstances! Also note that the printing temperature for LW-PLA is as low as possible to obtain a wall thickness of 0.4 to 0.6 mm at a flow of 55 to 65 % (depending on brand and printer).
Caution: at too high temperatures, LW-PLA becomes brittle and breaks more easily.



PROFILE P2_Hollowbody Tough PLA or PLA

P2

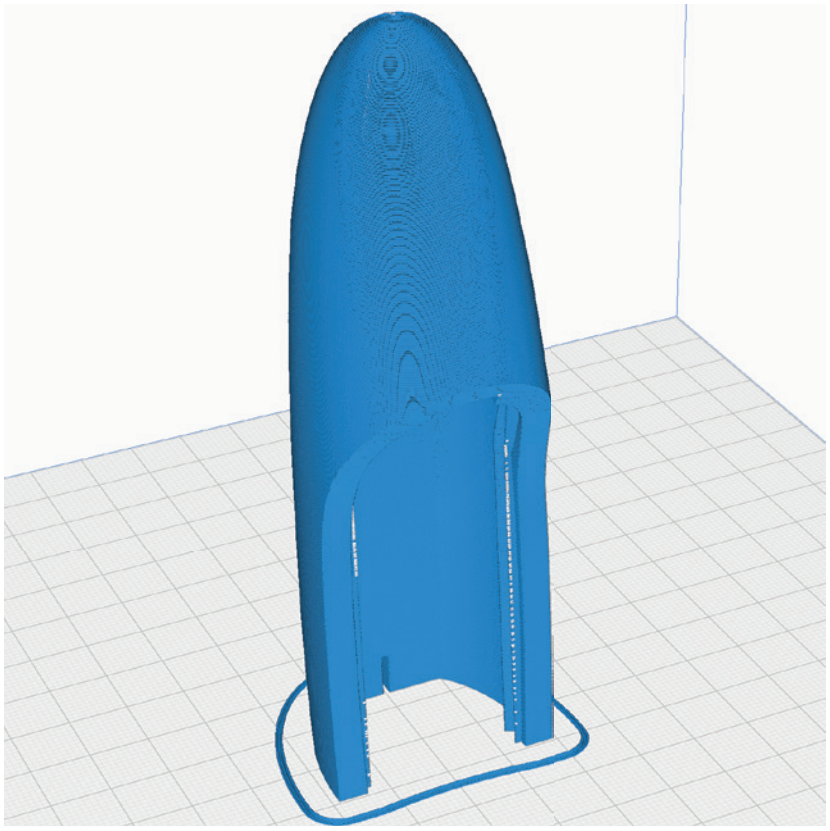
The information about the basic settings you can find on our website at PRINT.
Please note the additional settings for the individual parts!

P2_FUS1 Glider_hp.stl

MATERIAL PLA, Weight: ~ 13 g

ADDITIONAL SETTINGS

- Wall Line Count/Perimeters: 1
- Infill density: **8 %**



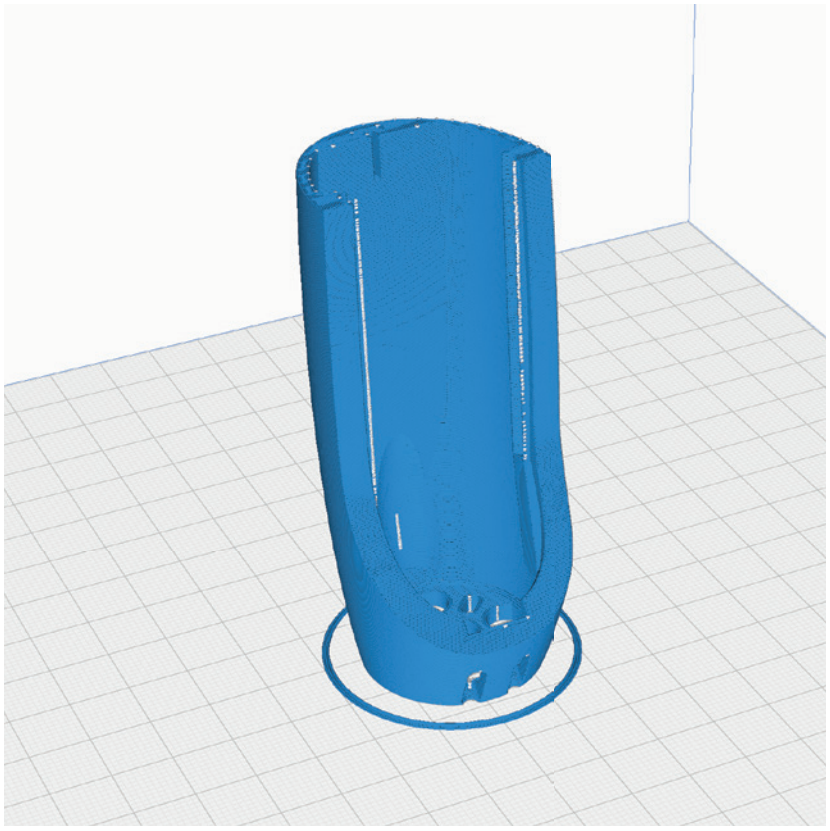
P2_FUS1 Motor_hp.stl or P2_FUS1 Motor28_hp.stl*

MATERIAL PLA, Weight: ~ 15 g

ADDITIONAL SETTINGS

- Wall Line Count/Perimeters: 1
- Infill density: **8 %**
- Bottom Layers: 10

* Optimized STL for motors up to 28 mm diameter (If it is not in your download, you can find it in the FREE TUNING PARTS on our website)



PROFILE P2_Hollowbody Tough PLA or PLA

P2

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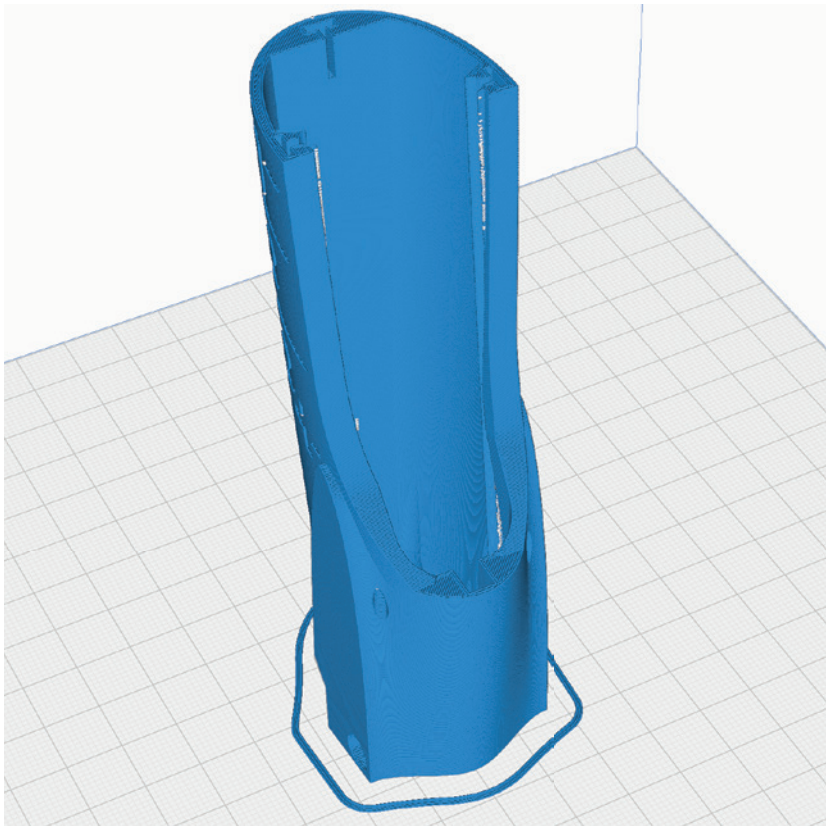
Please note the additional settings for the individual parts!

P2_FUS2_hp.stl

MATERIAL PLA, Weight: ~ 17 g

ADDITIONAL SETTINGS

- Wall Line Count/Perimeters: 1
- Infill density: **8 %**

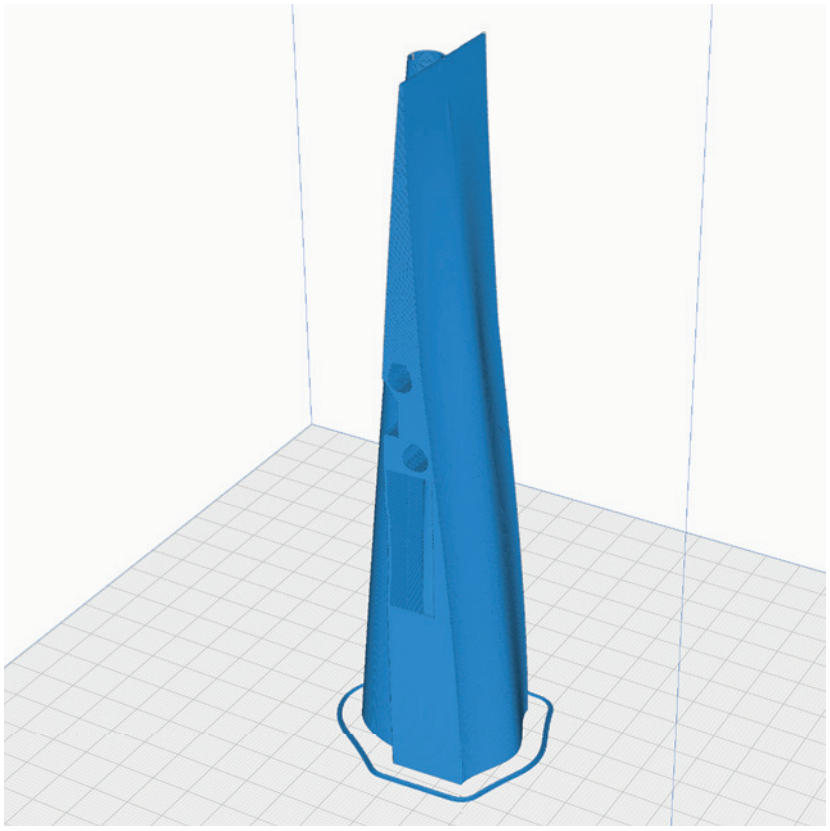


P2_FUS3_hp.stl

MATERIAL PLA, Weight: ~ 21 g

ADDITIONAL SETTINGS

- Wall Line Count/Perimeters: 1
- Infill density: **8 %**



PROFILE P2_Hollowbody Tough PLA or PLA

P2

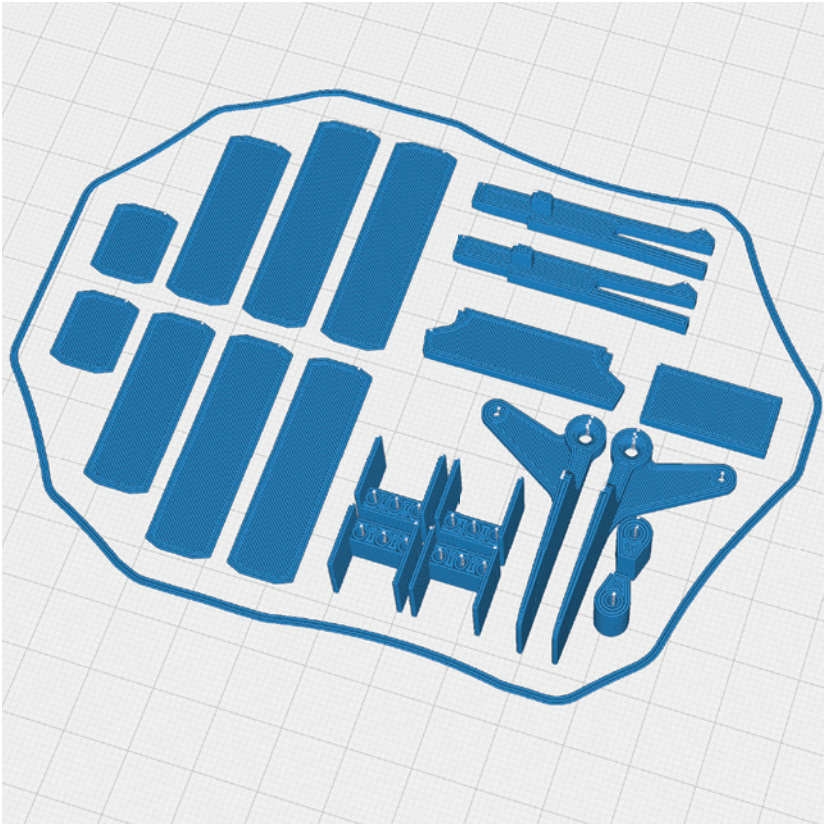
The information about the basic settings you can find on our website at PRINT.
Please note the additional settings for the individual parts!

P2_Parts_hp.stl

MATERIAL PLA, Weight: ~ 8 g

ADDITIONAL SETTINGS

None required

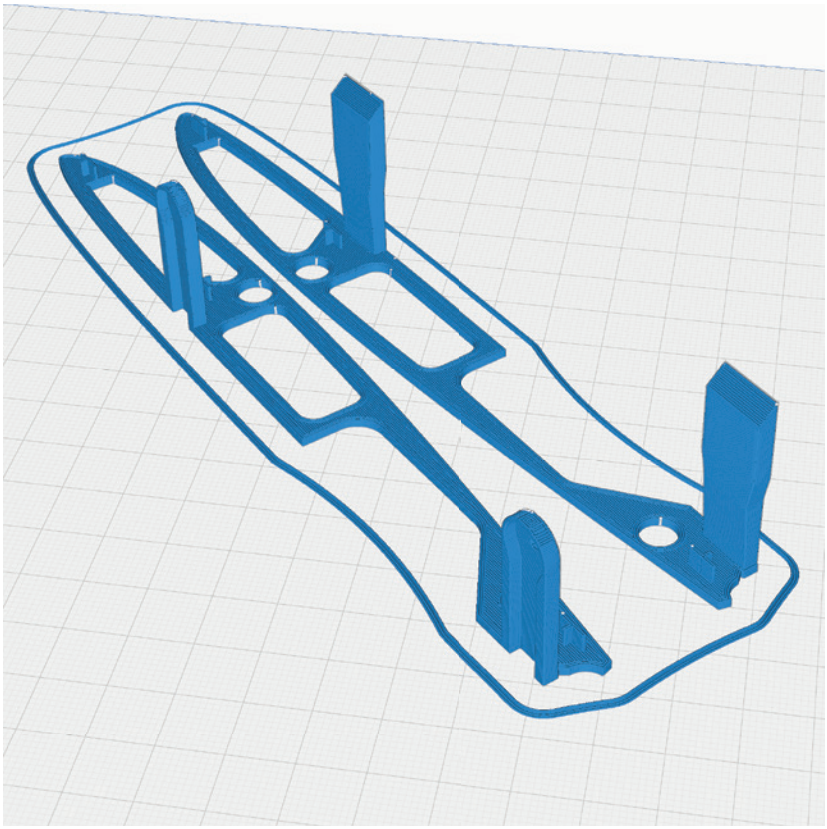


P2_Protectors wing_hp.stl

MATERIAL PLA, Weight: ~ 7 g

ADDITIONAL SETTINGS

None required



PROFILE P2_Hollowbody Tough PLA or PLA

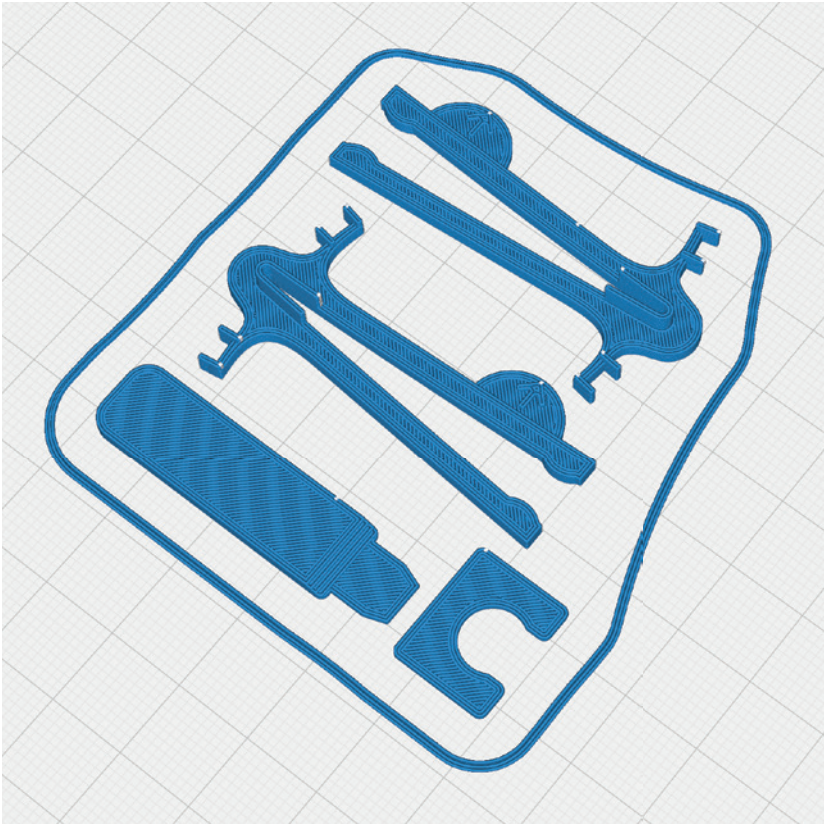
The information about the basic settings you can find on our website at PRINT.
Please note the additional settings for the individual parts!

P2_Tools_hp.stl

MATERIAL PLA, Weight: ~ 3 g

ADDITIONAL SETTINGS

None required

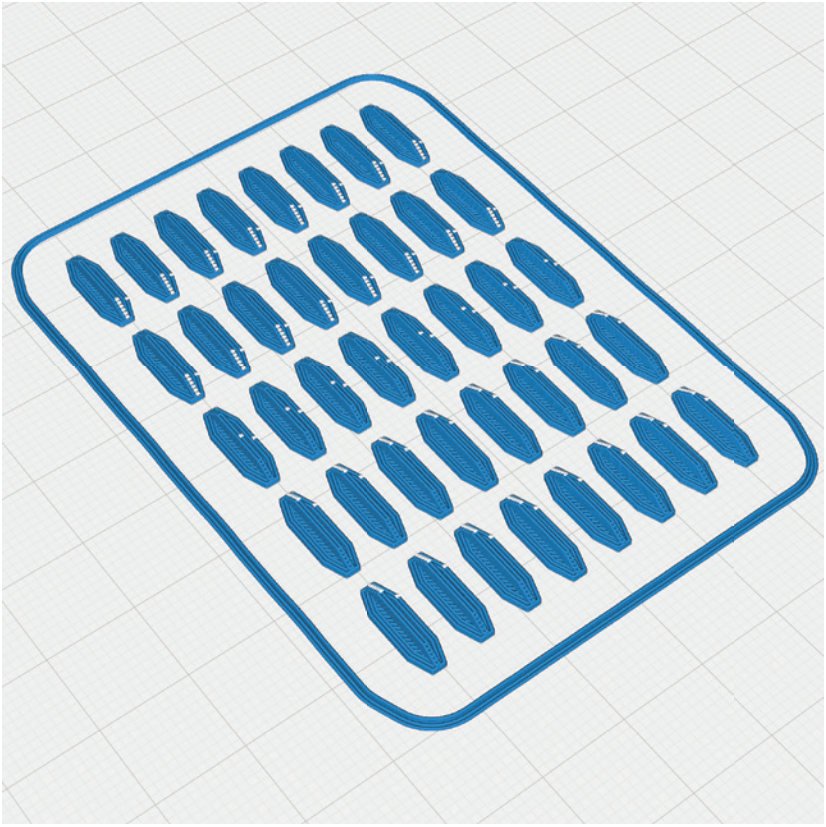


P2_T-Connects_hp.stl

MATERIAL PLA, Weight: ~ 2 g

ADDITIONAL SETTINGS

None required



PROFILE P2_Hollowbody Tough PLA or PLA

The information about the basic settings you can find on our website at PRINT.
Please note the additional settings for the individual parts!

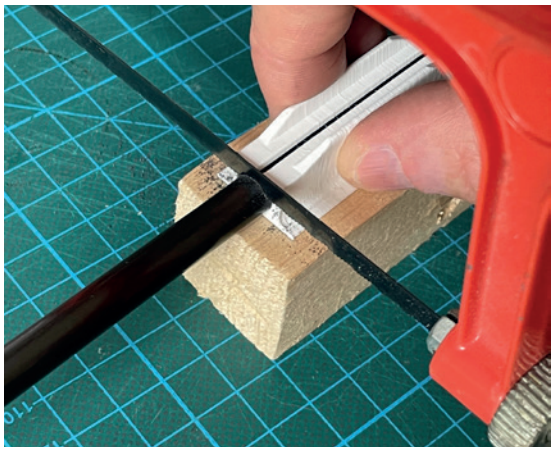
P2_Carbon tool 6mm.stl

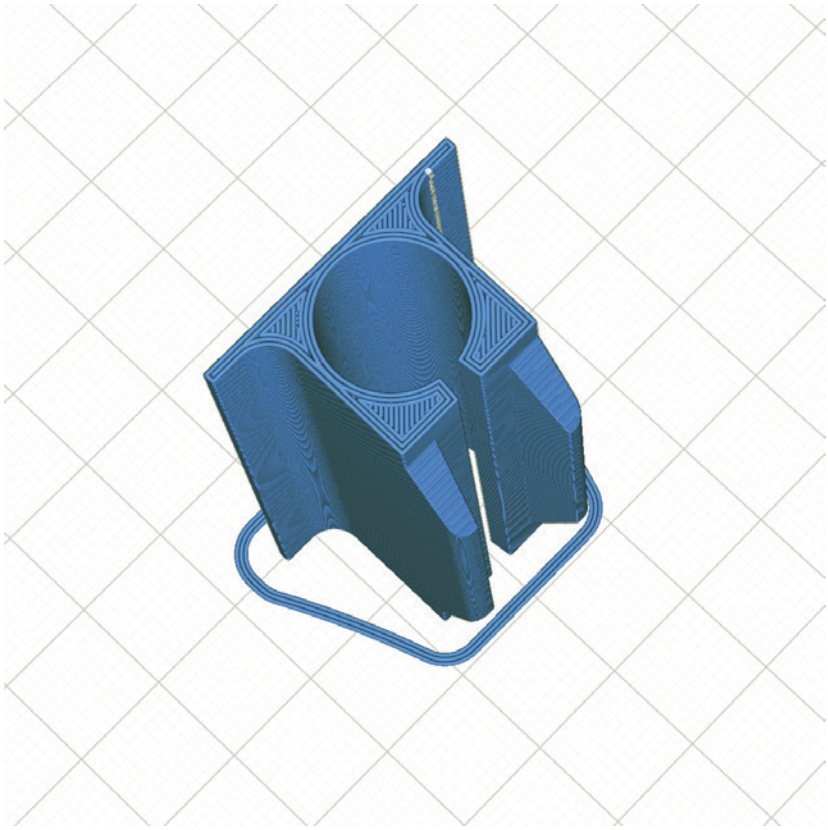
MATERIAL PLA

ADDITIONAL SETTINGS

None required

This tool helps to saw the carbon tubes





PROFILE P4_Flex TPU A95

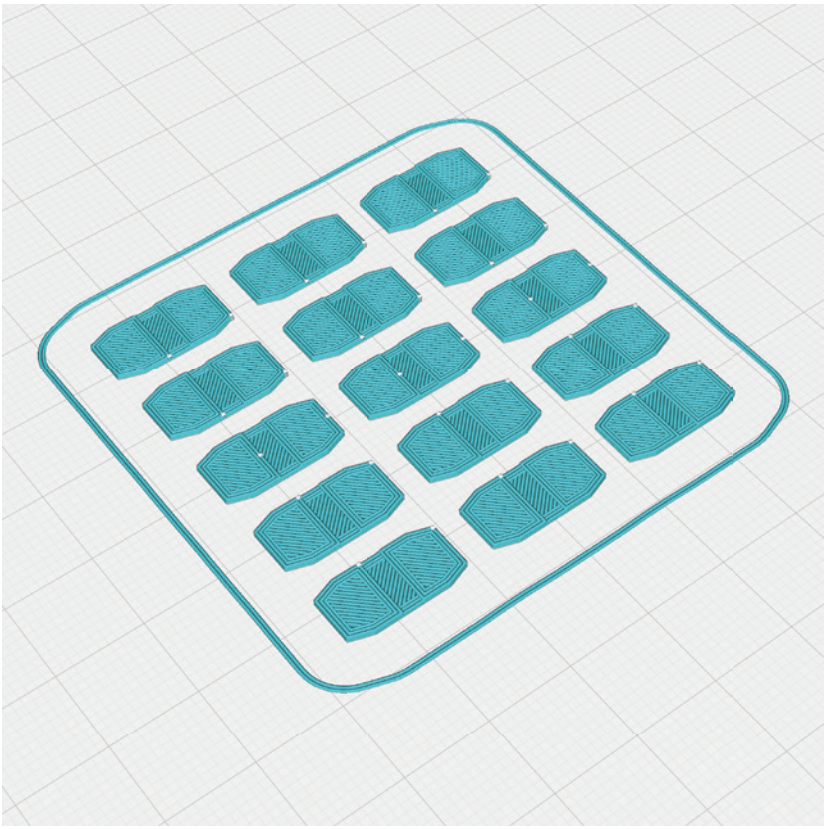
The information about the basic settings you can find on our website at PRINT.
Please note the additional settings for the individual parts!

P4_Hinges_hp.stl

MATERIAL TPU, Weight: ~ 2 g

ADDITIONAL SETTINGS

None required

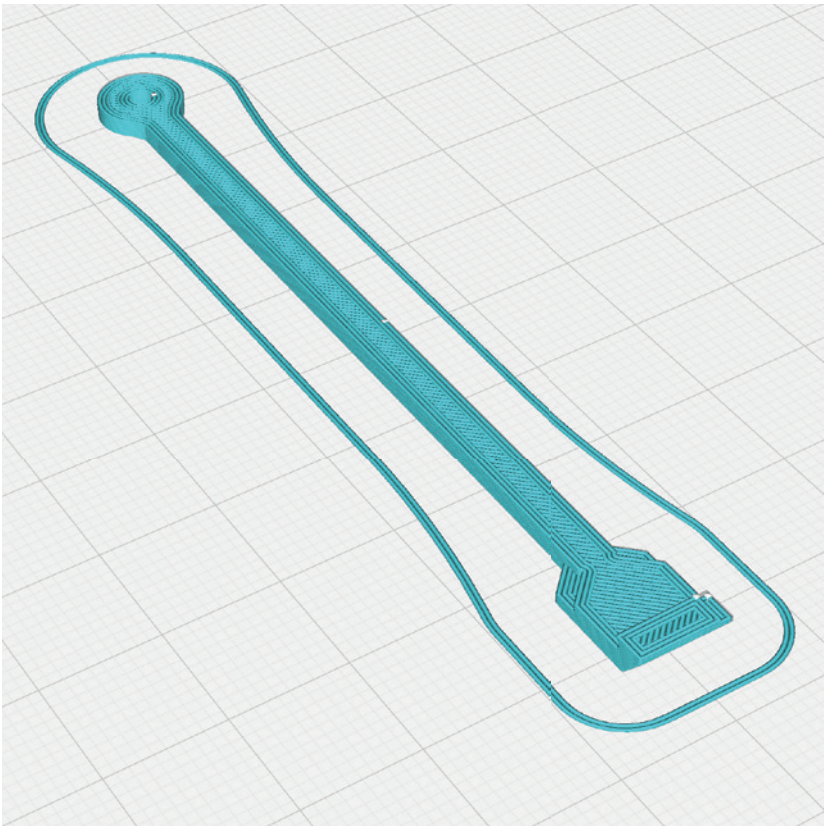


P4_Wing Belt_hp.stl

MATERIAL TPU, Weight: ~ 1 g

ADDITIONAL SETTINGS

- Wall Line Count/Perimeters: 10
- Print it twice



PROFILE P5_Gyroid LW-PLA (foaming)!

The information about the basic settings you can find on our website at PRINT.
Please note the additional settings for the individual parts!
It is essential to print these parts with foaming LW-PLA (pre-foamed is heavier)!

Basic settings for LW-PLA: Please follow the instructions in our **WINGTEST AND CALIBRATION TOOL** on our website for correct adjustment! Print only one STL at a time!

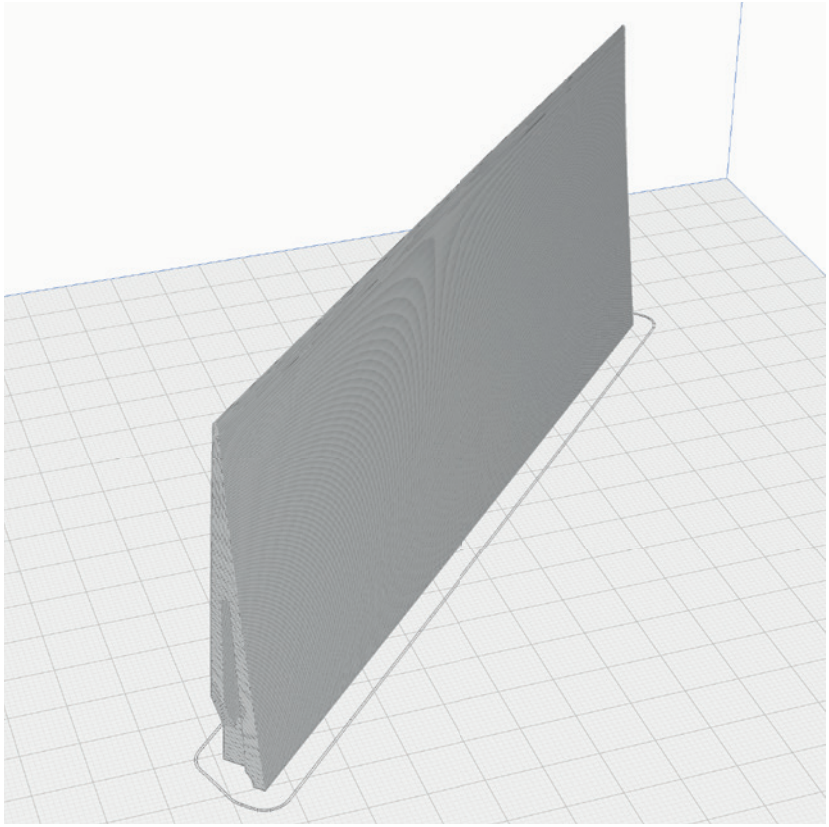
P5_Elevon L1_hp.stl and P5_Elevon R1_hp.stl

MATERIAL LW PLA, Weight: ~ 9 g

TIME ~ 1 hour 30 minutes

ADDITIONAL SETTINGS

None required



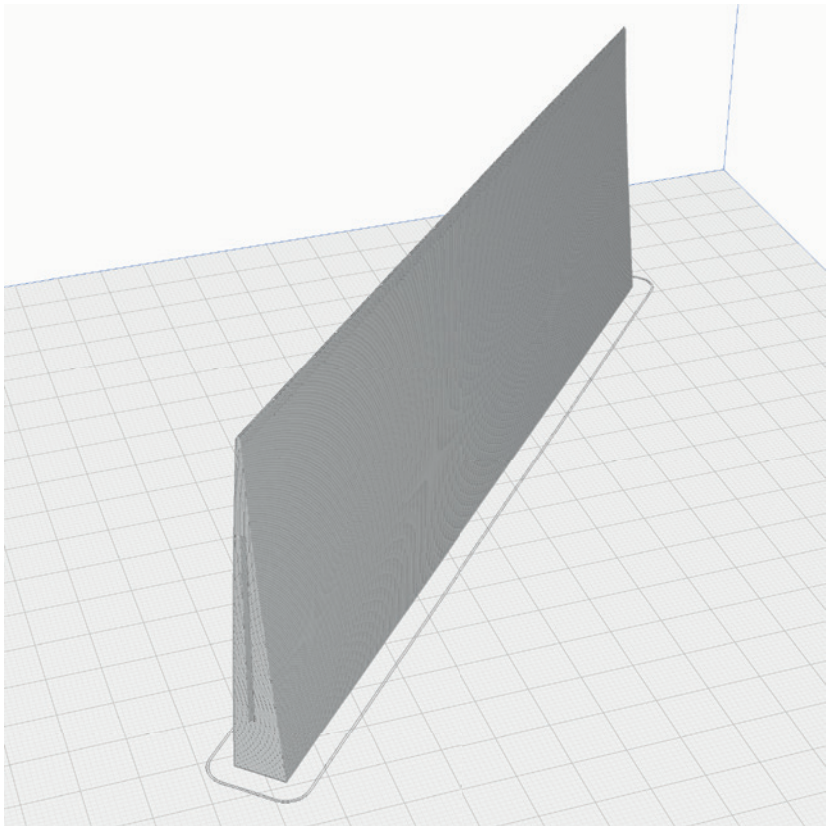
P5_Elevon L2_hp.stl and P5_Elevon R2_hp.stl

MATERIAL LW PLA, Weight: ~ 8 g

TIME ~ 1 hour 40 minutes

ADDITIONAL SETTINGS

None required



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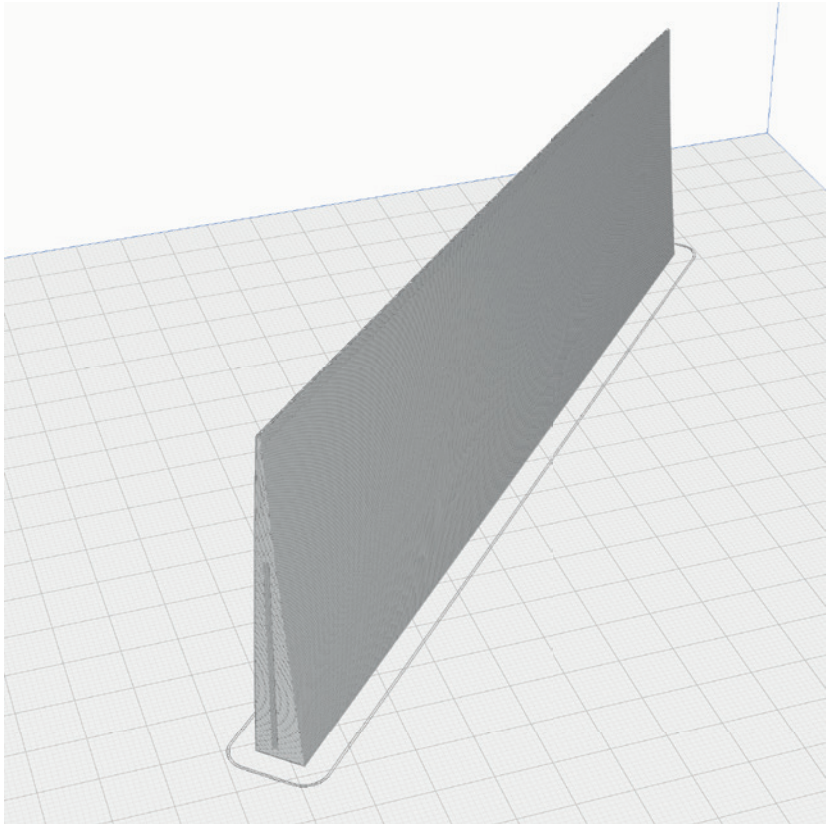
P5_Elevon L3_hp.stl and P5_Elevon R3_hp.stl

MATERIAL LW PLA, Weight: ~ 7 g

TIME ~ 1 hour 20 minutes

ADDITIONAL SETTINGS

None required



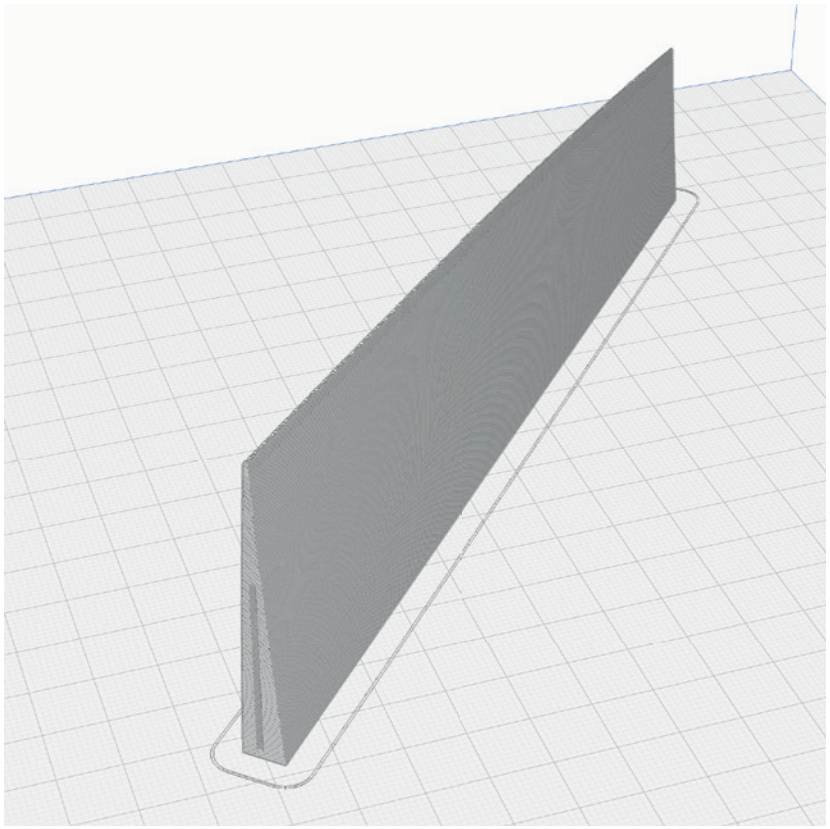
P5_Elevon L4_hp.stl and P5_Elevon R4_hp.stl

MATERIAL LW PLA, Weight: ~ 5 g

TIME ~ 1 hour

ADDITIONAL SETTINGS

None required



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Basic settings for LW-PLA: Please follow the instructions in our **WINGTEST AND CALIBRATION TOOL** on our website for correct adjustment! Print only one STL at a time!

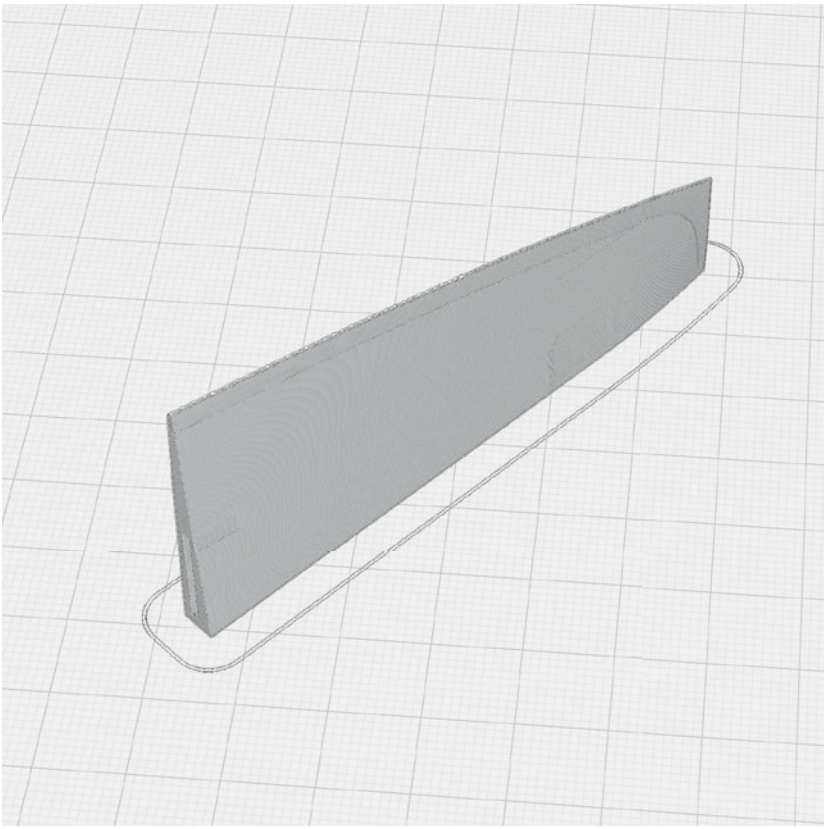
P5_Elevon L5_hp.stl and P5_Elevon R5_hp.stl

MATERIAL LW PLA, Weight: ~ 2 g

TIME ~ 15 minutes

ADDITIONAL SETTINGS

None required



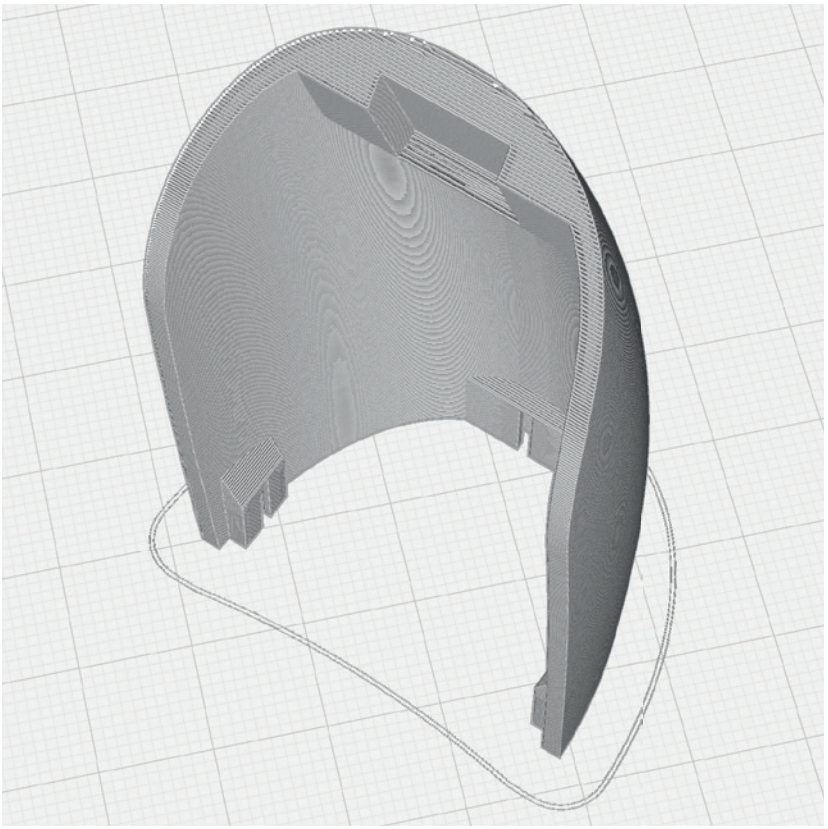
P5_Cover 1_hp.stl

MATERIAL LW PLA, Weight: ~ 3 g

TIME ~ 40 minutes

ADDITIONAL SETTINGS

None required



PROFILE P5_Gyroid LW-PLA (foaming)!

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Basic settings for LW-PLA: Please follow the instructions in our **WINGTEST AND CALIBRATION TOOL** on our website for correct adjustment! Print only one STL at a time!

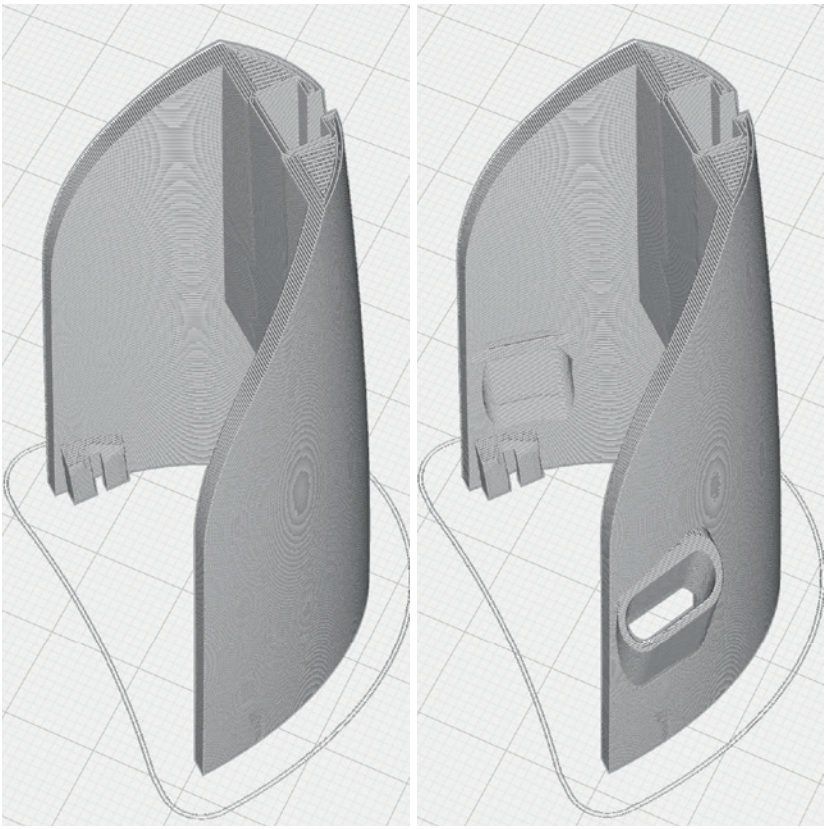
P5_Cover 2 Glider_hp.stl or P5_Cover 2 Motor_hp.stl

MATERIAL LW PLA, Weight: ~ 3 g

TIME ~ 40 minutes

ADDITIONAL SETTINGS

None required



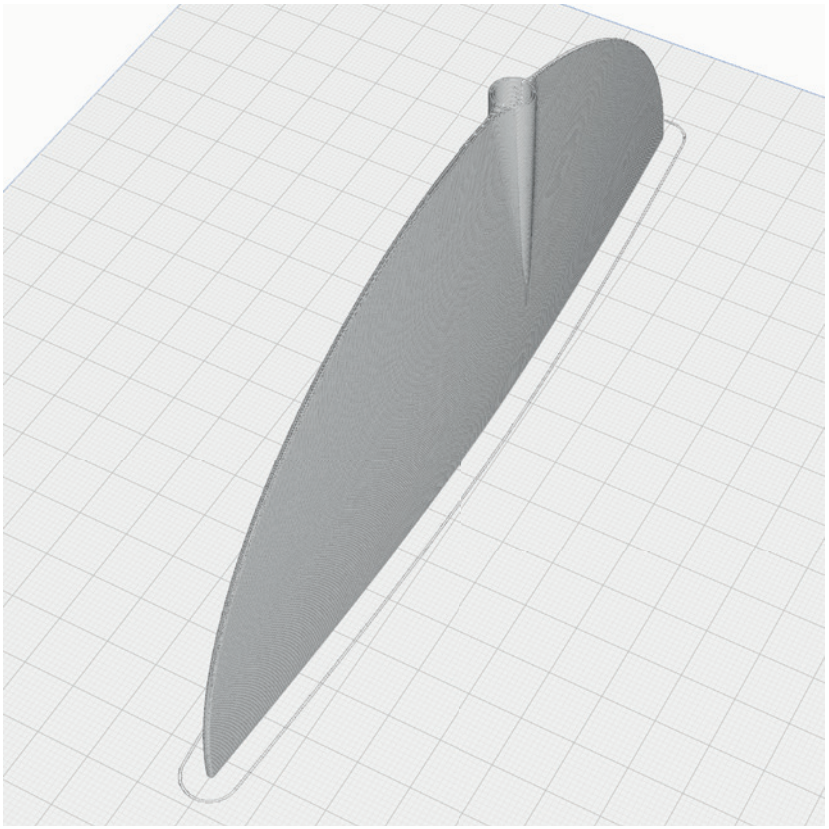
P5_Rudder 1_hp.stl

MATERIAL LW PLA, Weight: ~ 7 g

TIME ~ 1 hour 20 minutes

ADDITIONAL SETTINGS

None required



PROFILE P5_Gyroid LW-PLA (foaming)!

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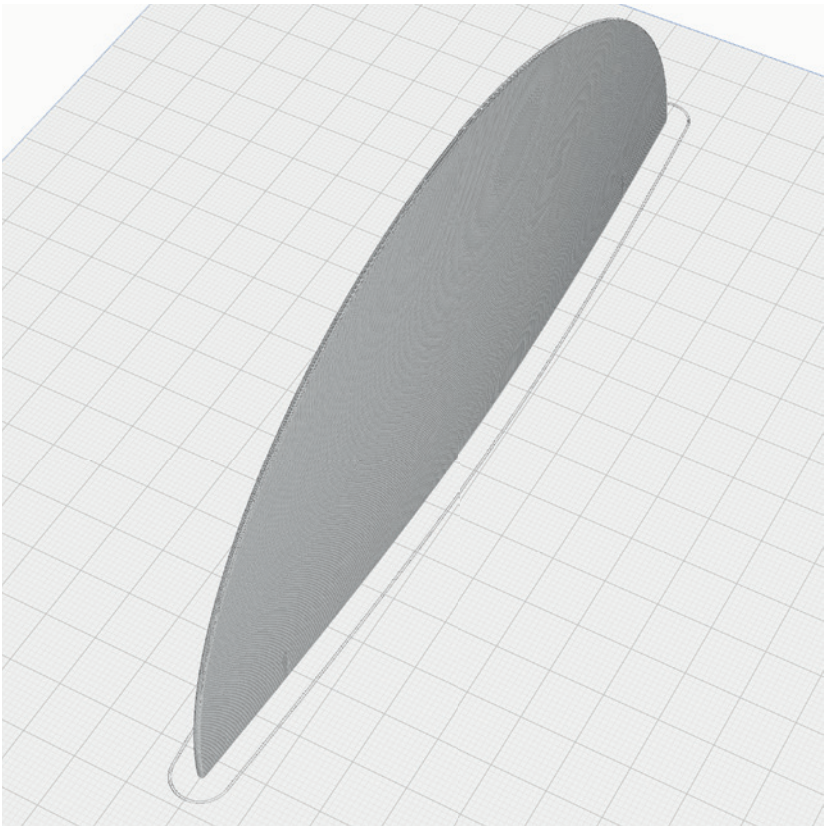
P5_Rudder 2_hp.stl

MATERIAL LW PLA, Weight: ~ 6 g

TIME ~ 1 hour 20 minutes

ADDITIONAL SETTINGS

None required



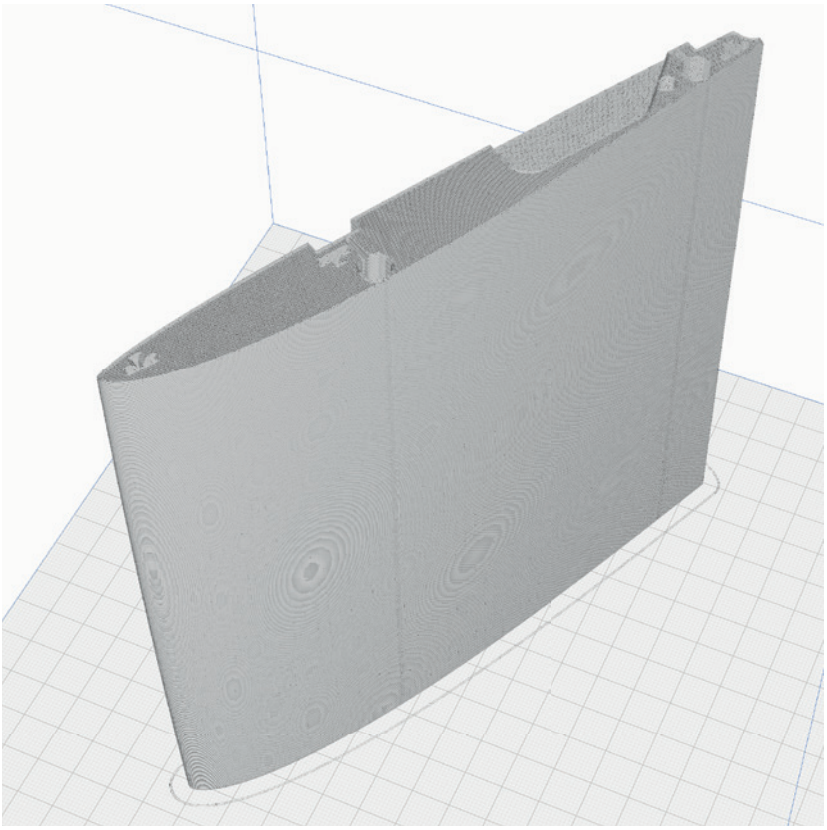
P5_Wing L1_hp.stl and P5_Wing R1_hp.stl

MATERIAL LW PLA, Weight: ~ 30 g

TIME ~ 6 hours

ADDITIONAL SETTINGS

None required



PROFILE P5_Gyroid LW-PLA (foaming)!

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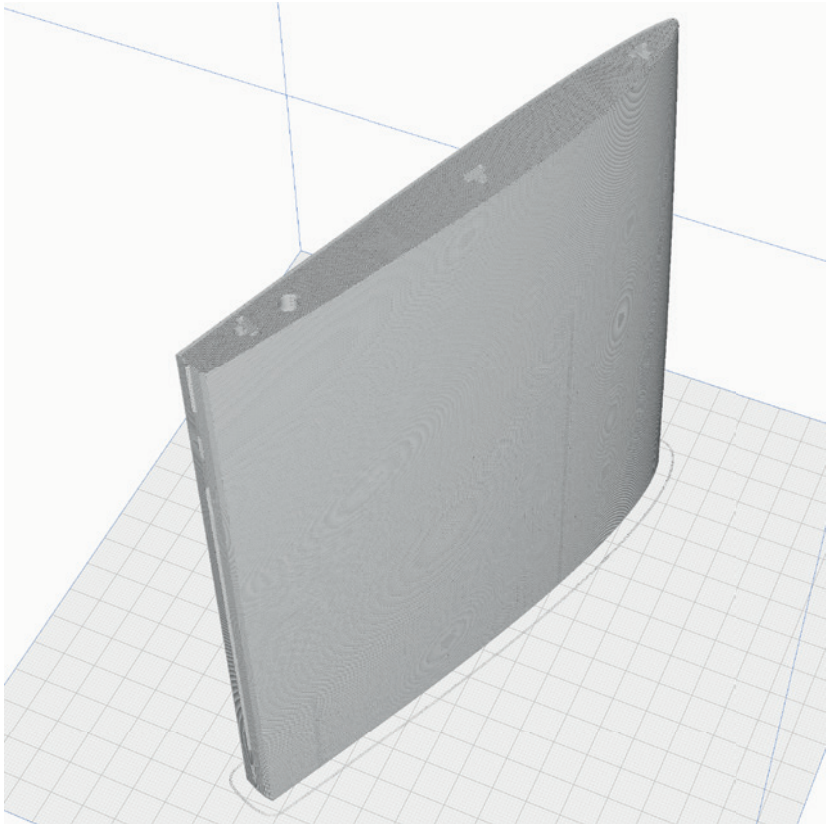
P5_Wing L2_hp.stl and P5_Wing R2_hp.stl

MATERIAL LW PLA, Weight: ~ 30 g

TIME ~ 6 hours

ADDITIONAL SETTINGS

None required



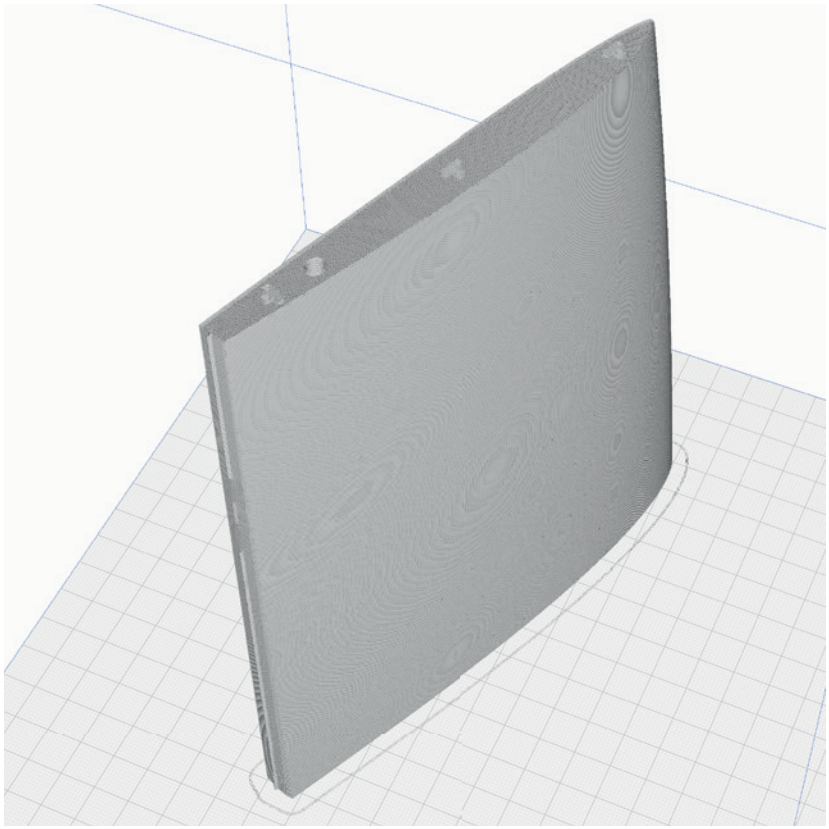
P5_Wing L3_hp.stl and P5_Wing R3_hp.stl

MATERIAL LW PLA, Weight: ~ 25 g

TIME ~ 5 hours

ADDITIONAL SETTINGS

None required



PROFILE P5_Gyroid LW-PLA (foaming)!

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Please note the additional settings for the individual parts!
It is essential to print these parts with foaming LW-PLA (pre-foamed is heavier)!

Basic settings for LW-PLA: Please follow the instructions in our **WINGTEST AND CALIBRATION TOOL** on our website for correct adjustment! Print only one STL at a time!

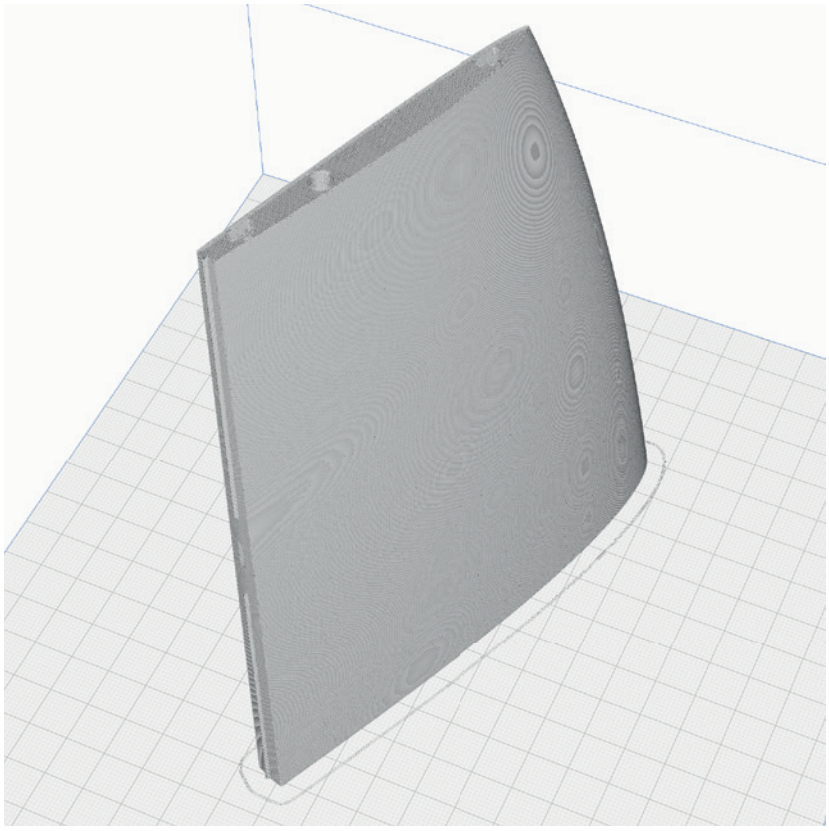
P5_Wing L4_hp.stl and P5_Wing R4_hp.stl

MATERIAL LW PLA, Weight: ~ 17 g

TIME ~ 3 hours 30 minutes

ADDITIONAL SETTINGS

None required



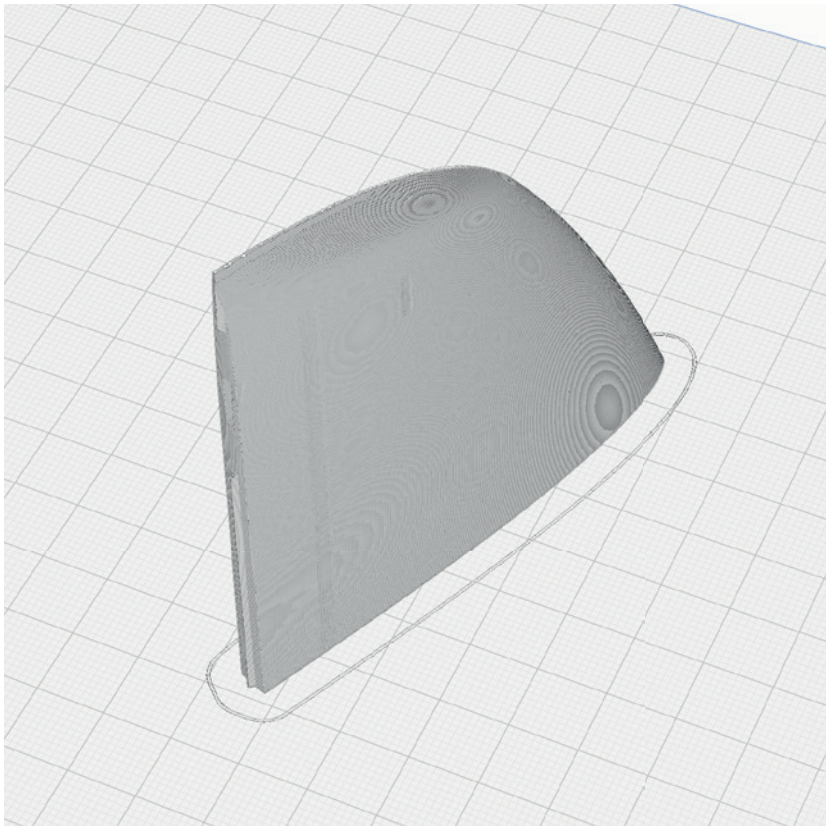
P5_Wing L5_hp.stl and P5_Wing R5_hp.stl

MATERIAL LW PLA, Weight: ~ 4 g

TIME ~ 50 minutes

ADDITIONAL SETTINGS

None required



Gluing the parts printed with PROFILE P5

STEP 1 As a first step, it is important to **roughen and smooth the adhesive surfaces** with sandpaper.

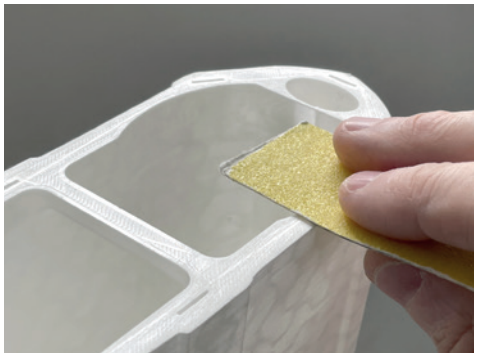
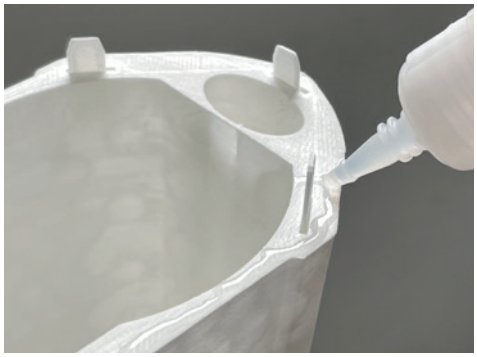
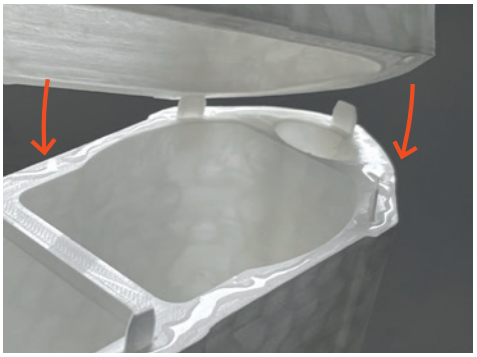
STEP 2 Insert the **interconnects into the slots** provided on one side.

STEP 3 Apply **a lot of glue** to the side with the interconnects. It is important that there is glue everywhere, especially on the outside and inside of the wall surfaces, in order to achieve a perfect connection. The interconnects only serve to align the parts to each other. It is better **not** to apply glue here, otherwise it can happen that the glue suddenly hardens while the parts are being put together and stops the process.

Use medium viscosity CA glue, thinner glue would run down the parts too easily.

After assembly, **align the two parts exactly** and wipe off the excess CA glue from the surface with a cloth. Now spray with activator spray along the gluing surface and carefully press the parts together.

STEP 4 Clean the glued areas slightly with a **sharp-bladed** cutter.

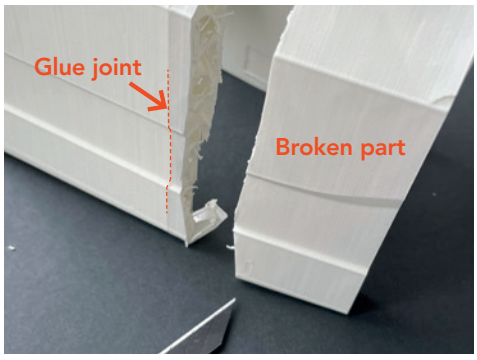




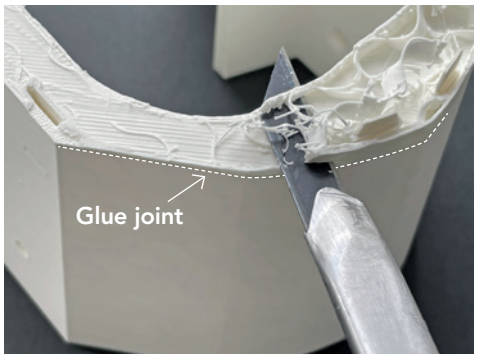
PROFILES 5 parts are easy to repair

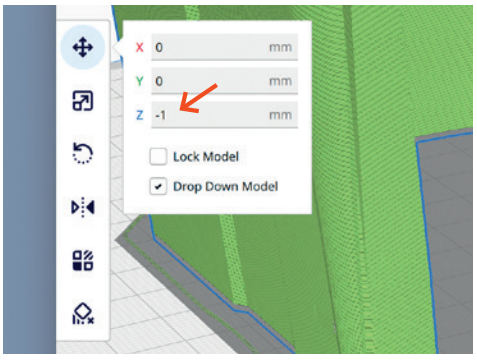
STEP 1 Using the knife, carefully remove the damaged part about 3 mm from the glue joint between two parts.

STEP 2 Cut wall and infill and clean the surface with sandpaper. **The top surface of the damaged part remains!**

STEP 3 The remaining top surface is about 1 mm thick. To compensate for this, you can move the new part to be printed down the Z axis in Cura by 1 mm.



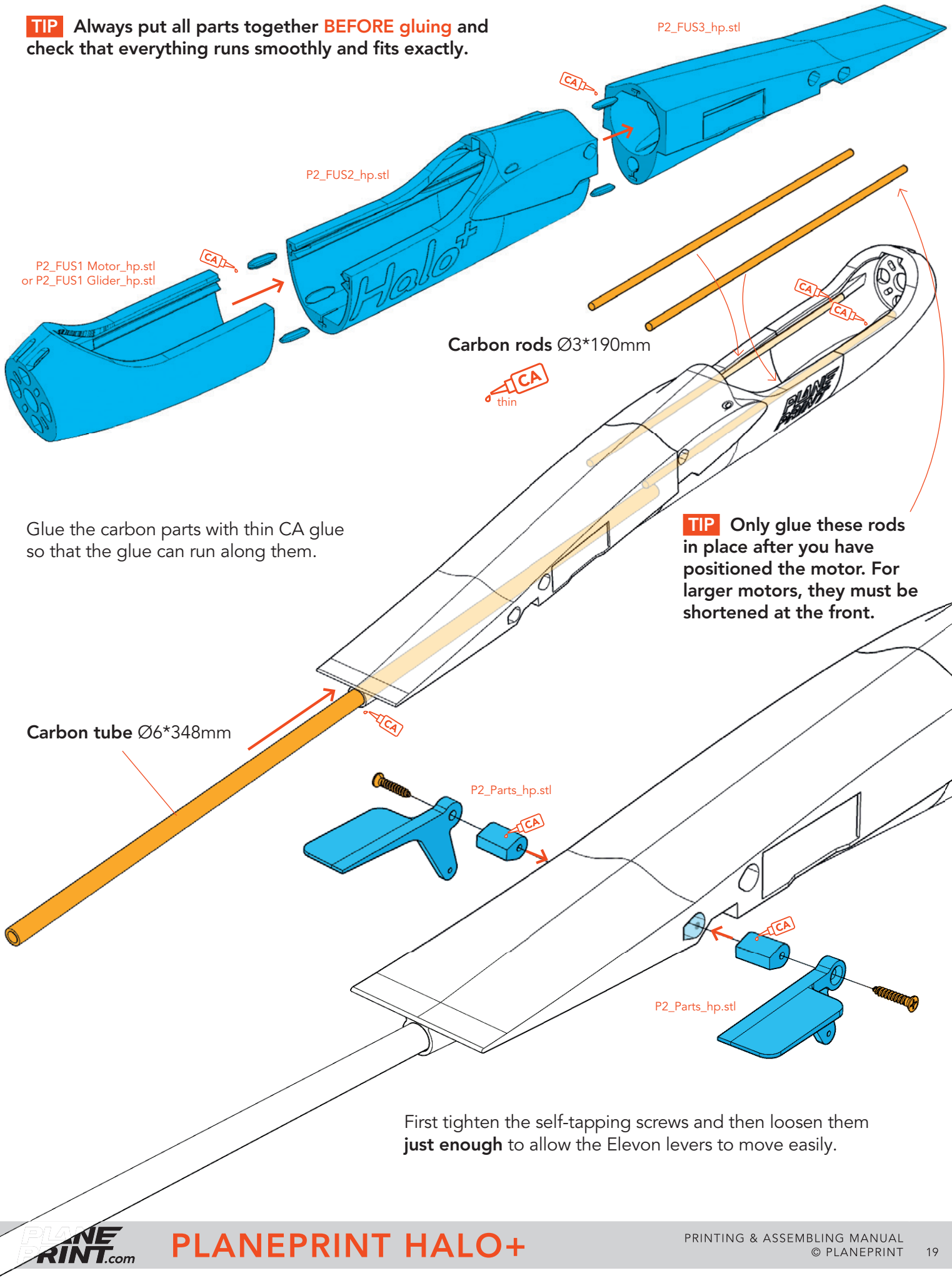




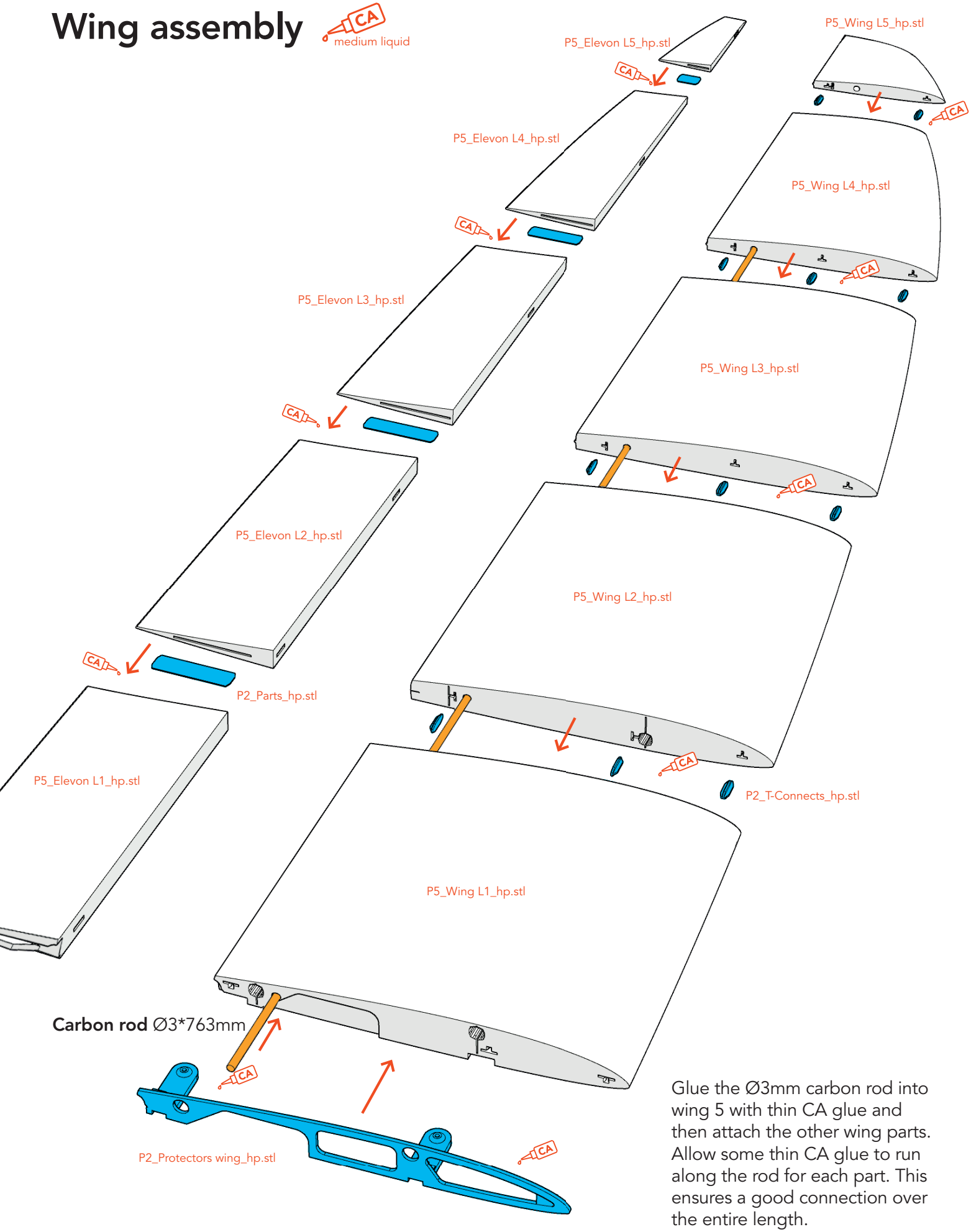
Fuselage assembly

CA medium liquid CA thin

TIP **Always put all parts together BEFORE gluing and check that everything runs smoothly and fits exactly.**



Wing assembly



Glue the Ø3mm carbon rod into wing 5 with thin CA glue and then attach the other wing parts. Allow some thin CA glue to run along the rod for each part. This ensures a good connection over the entire length.

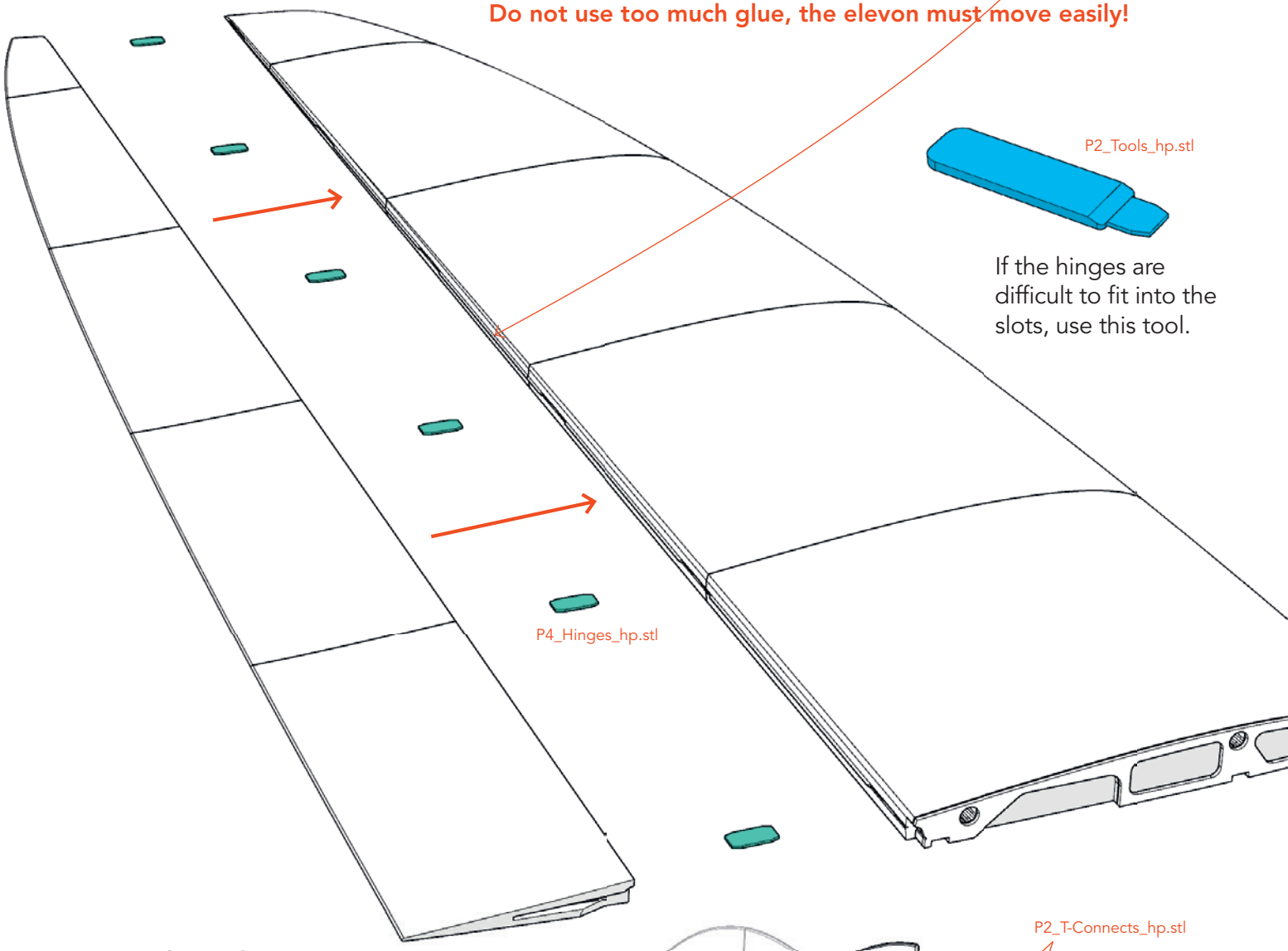
Hinges

CA thin

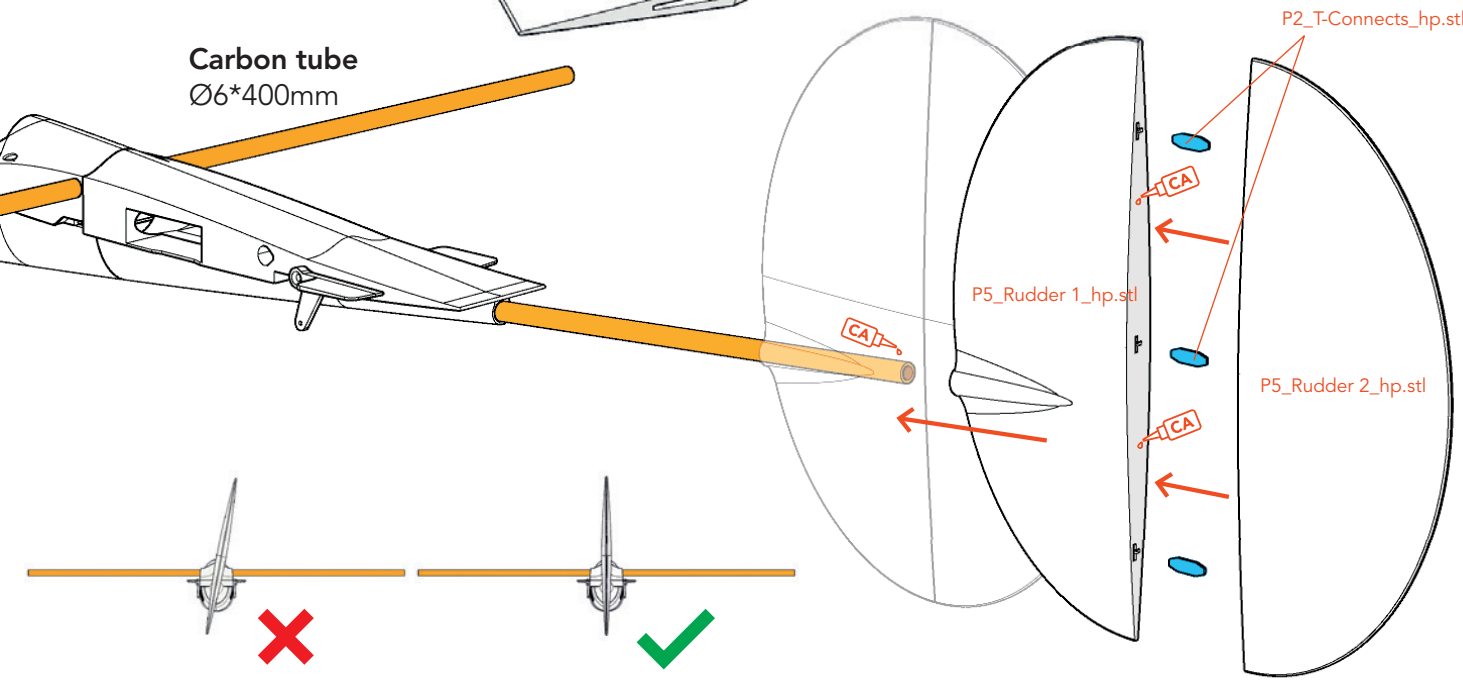
Installation the TPU Hinges: First insert the hinge into the **elevon** and add a drop of liquid CA adhesive into the gap. Wait for the glue to drain completely, then spray the activator on it. Then put the elevator in the wing until **the elevon touches the spacers** and put a drop of CA glue on the hinge. Wait again for the glue to run in, and then spray the activator on it.

Do not use too much glue, the elevon must move easily!

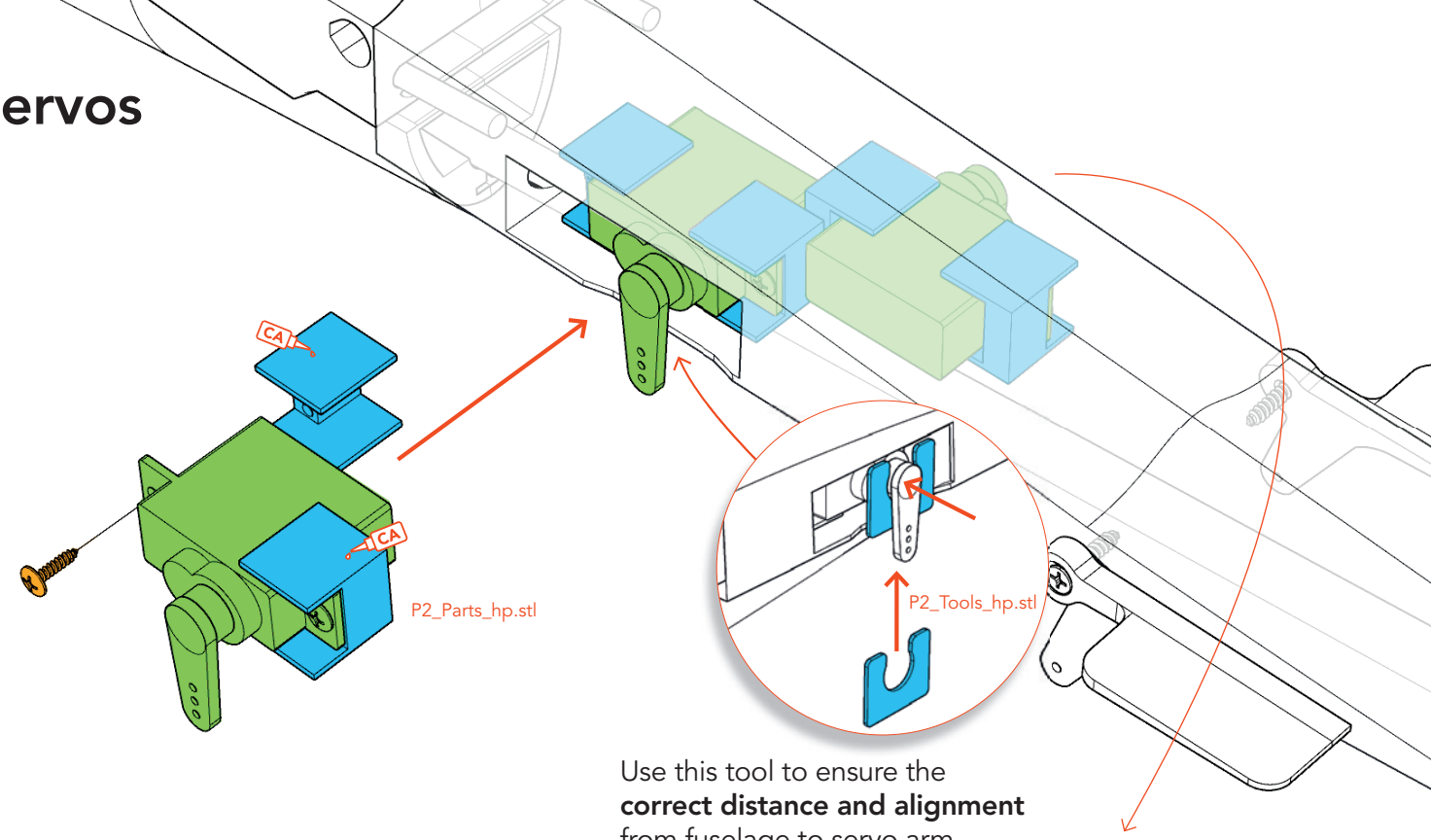
If the hinges are difficult to fit into the slots, use this tool.



Carbon tube
Ø6*400mm

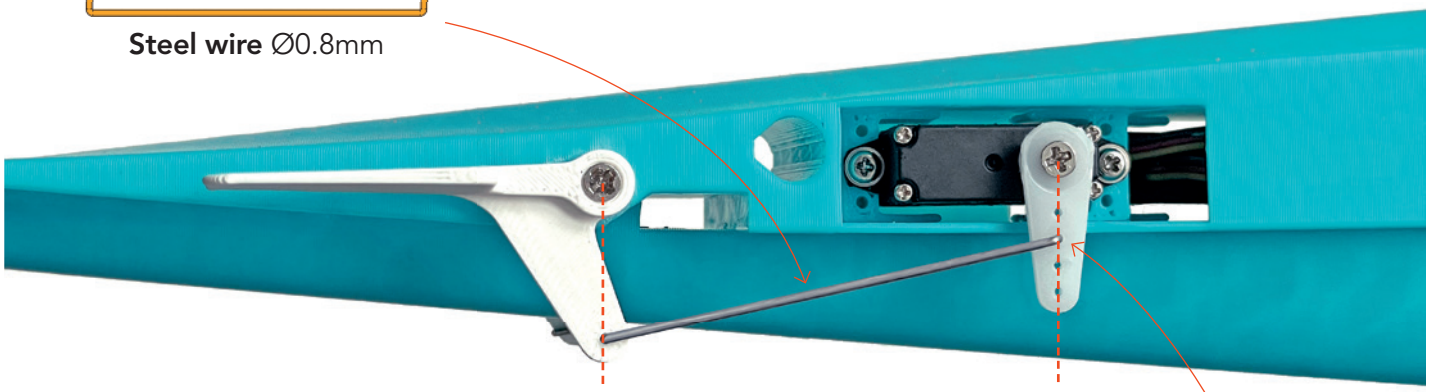


Servos



Use this tool to ensure the **correct distance and alignment** from fuselage to servo arm.

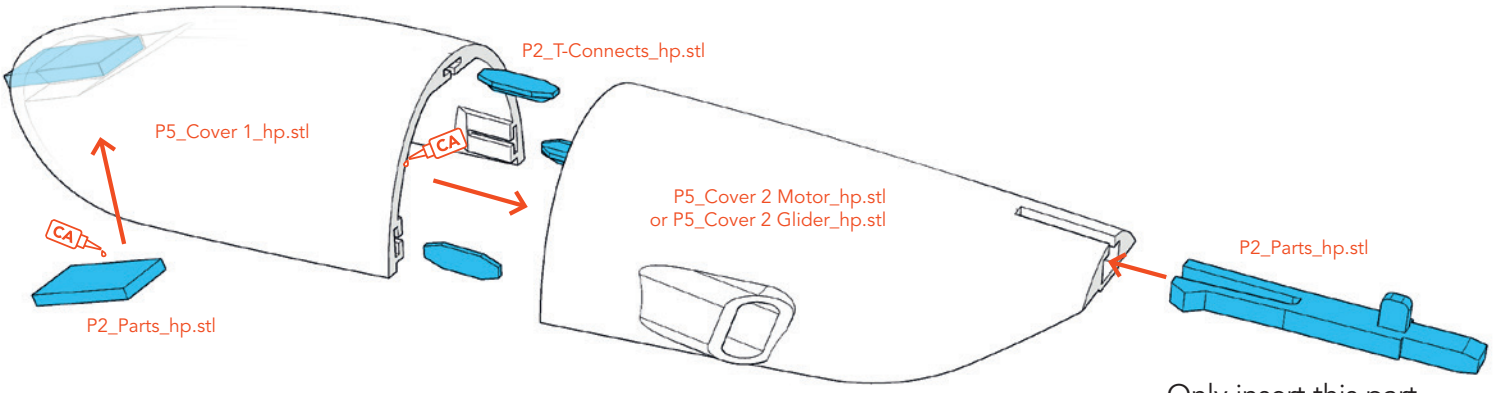
Steel wire Ø0.8mm



The steel wire should be just long enough for both levers to point vertically downwards. It is longer on the left because the servo is mounted further forward.

Attach it to the servo arm at an inner hole. This allows the entire travel of the servo to be used and the elevator to be programmed more precisely.

Cover

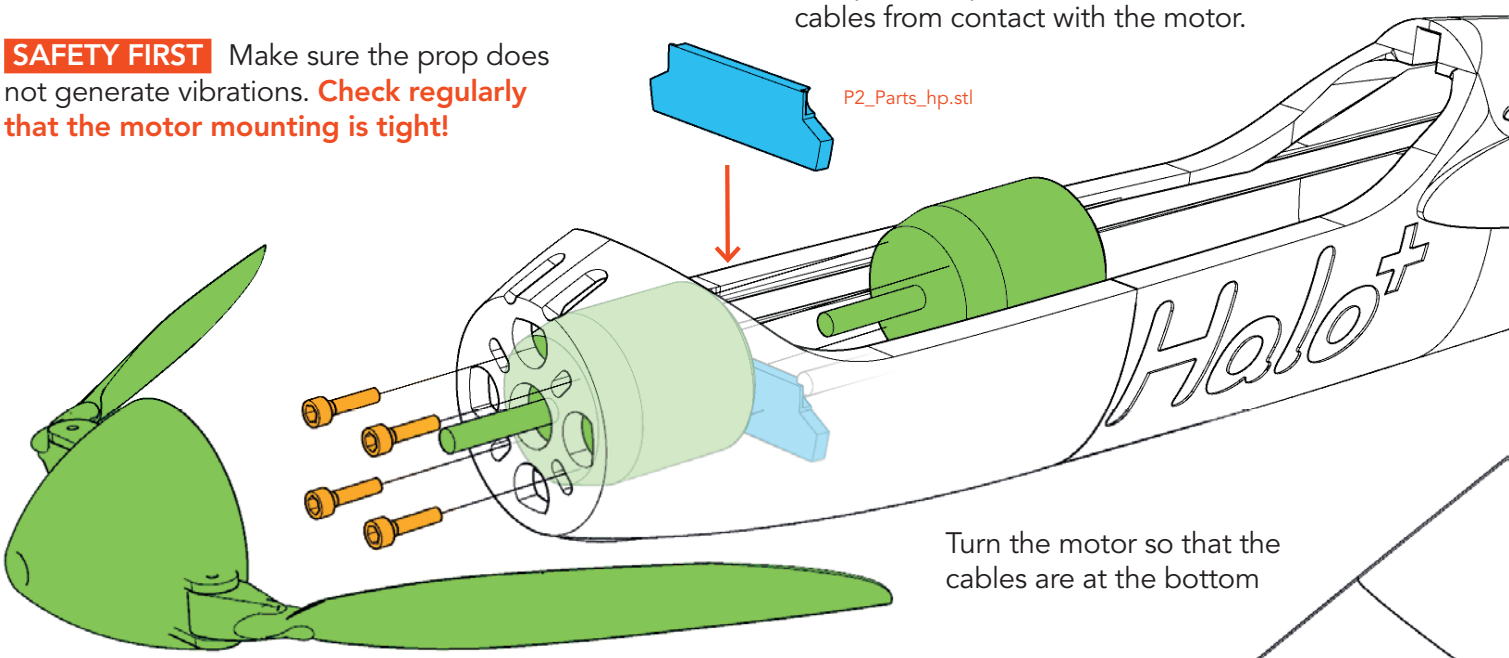


Only insert this part, **do not glue it!**

Motor

SAFETY FIRST Make sure the prop does not generate vibrations. **Check regularly that the motor mounting is tight!**

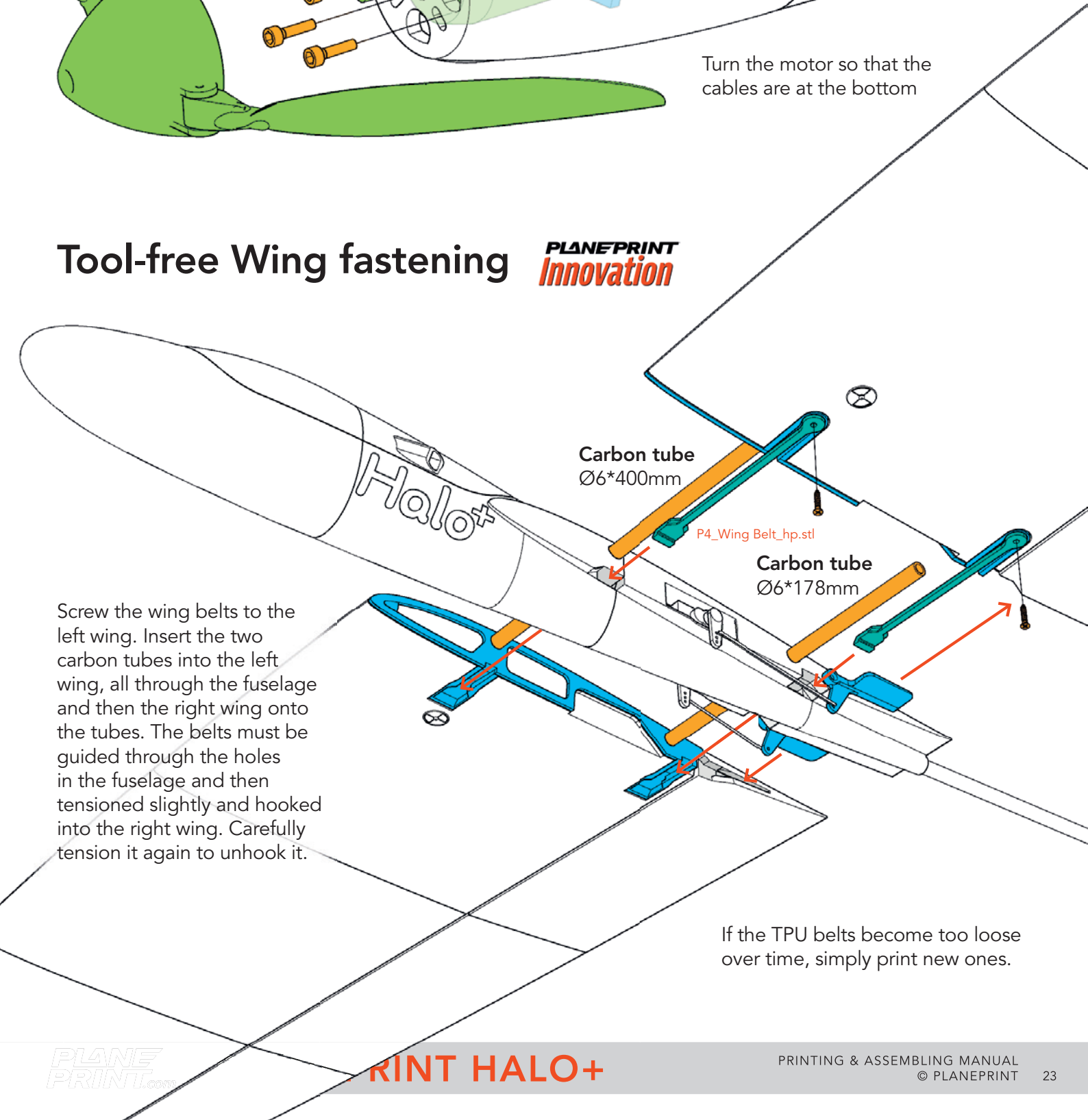
This partition protects the controller cables from contact with the motor.



Turn the motor so that the cables are at the bottom

Tool-free Wing fastening

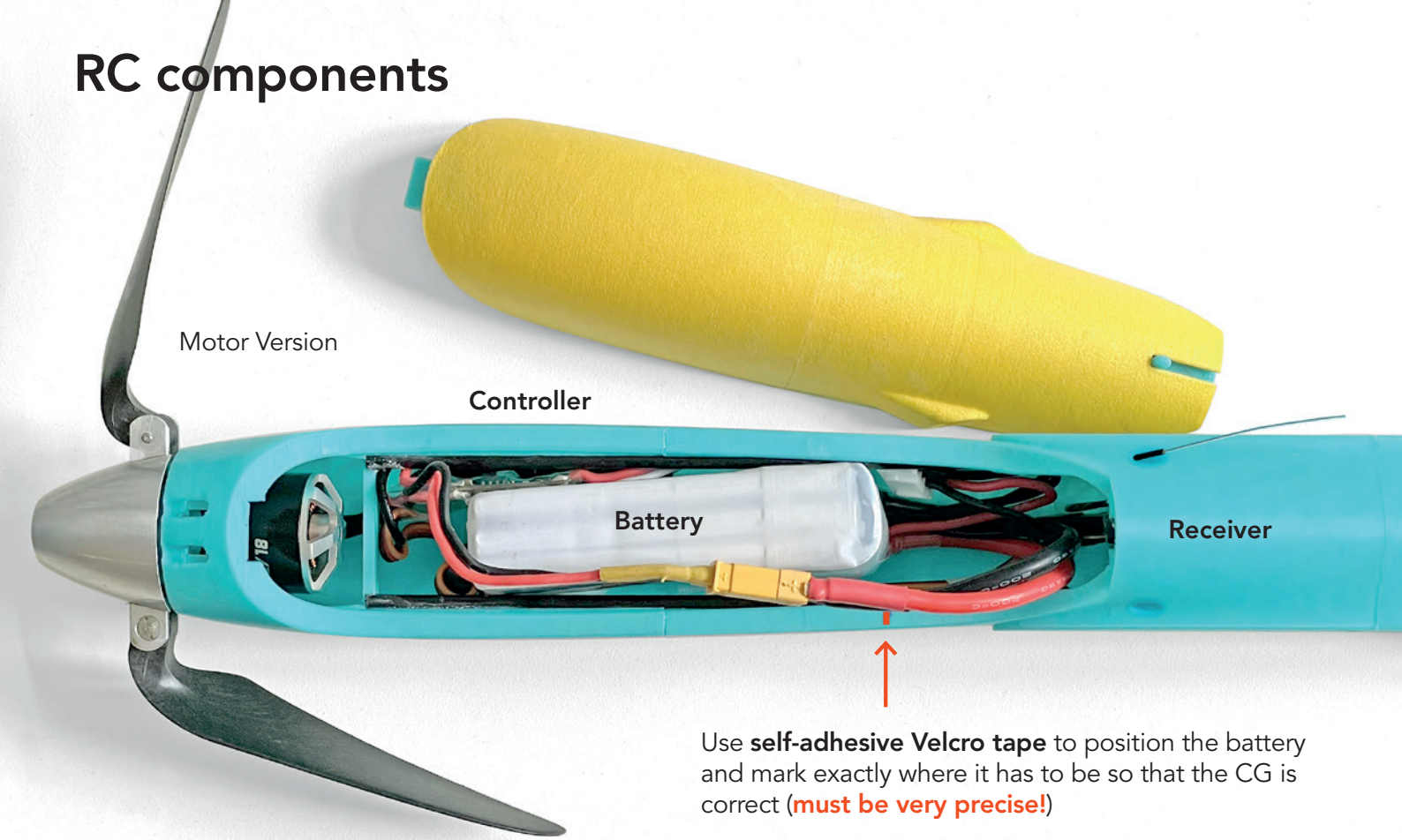
PLANEPRINT Innovation



Screw the wing belts to the left wing. Insert the two carbon tubes into the left wing, all through the fuselage and then the right wing onto the tubes. The belts must be guided through the holes in the fuselage and then tensioned slightly and hooked into the right wing. Carefully tension it again to unhook it.

If the TPU belts become too loose over time, simply print new ones.

RC components



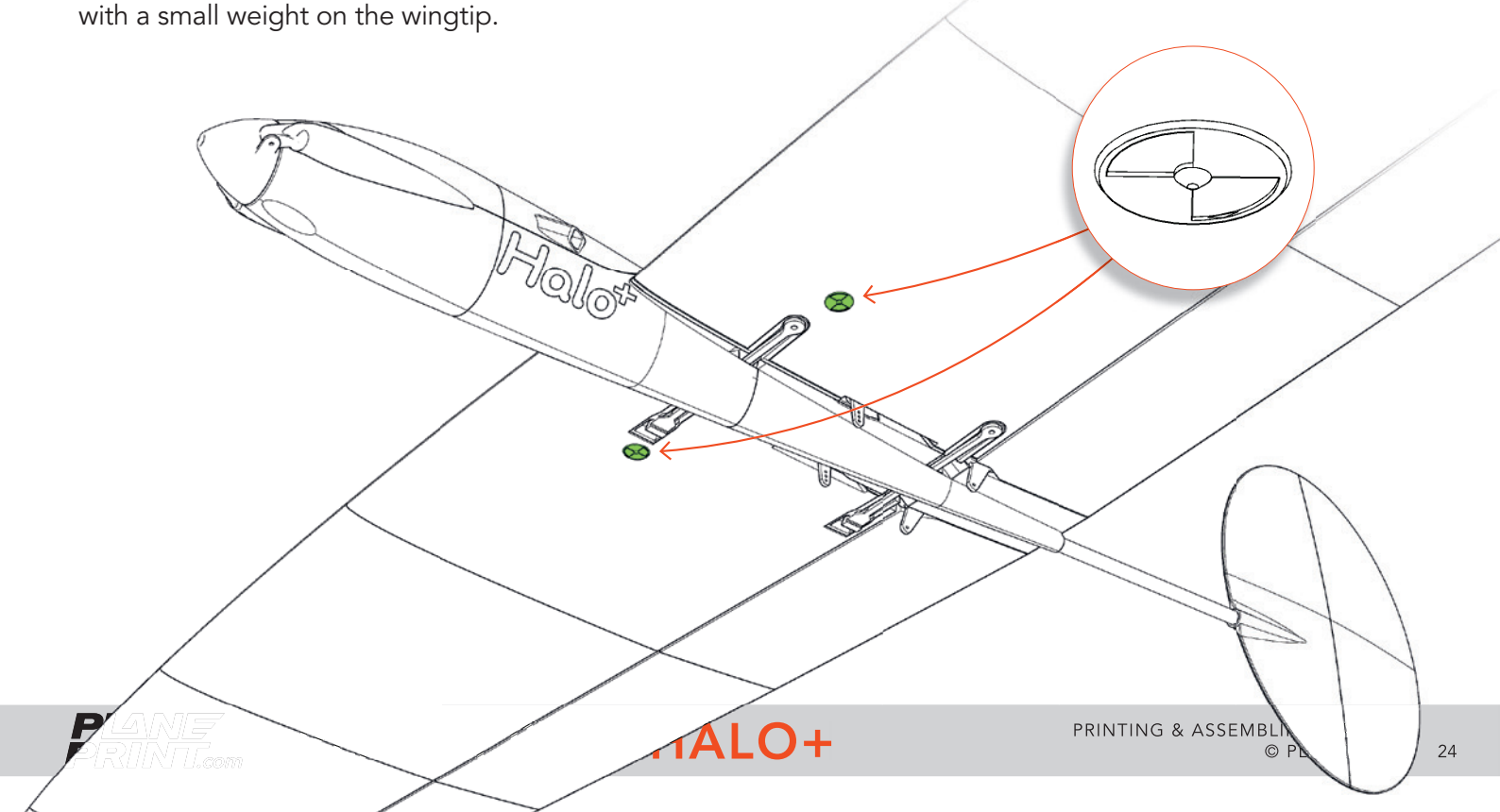
Use **self-adhesive Velcro tape** to position the battery and mark exactly where it has to be so that the CG is correct (**must be very precise!**)

Center of Gravity (CG)

The aircraft must balance on these points (never behind it!) – **see the markings on the wing**.

NOTE The range of optimum CG is particularly small with a flying wing and you have to find the most comfortable CG for yourself in flight. The further forward it is, the easier the model is to fly, the further back the performance is greatest.

Do not forget to check if the wings are exactly in ballance in the roll axis. If one wing is heavier, correct this with a small weight on the wingtip.



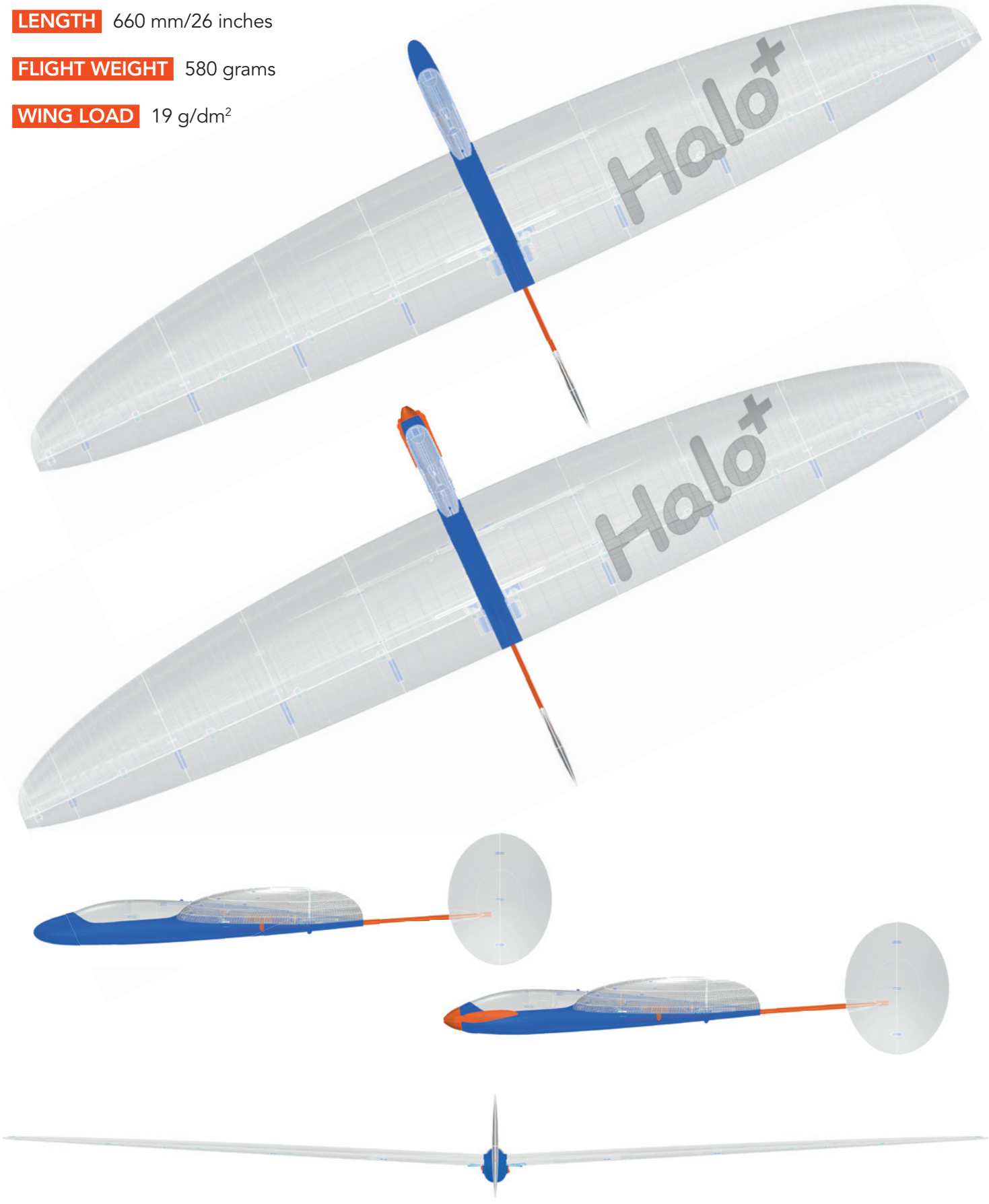
Technical specifications

WINGSPAN 1600 mm/63 inches

LENGTH 660 mm/26 inches

FLIGHT WEIGHT 580 grams

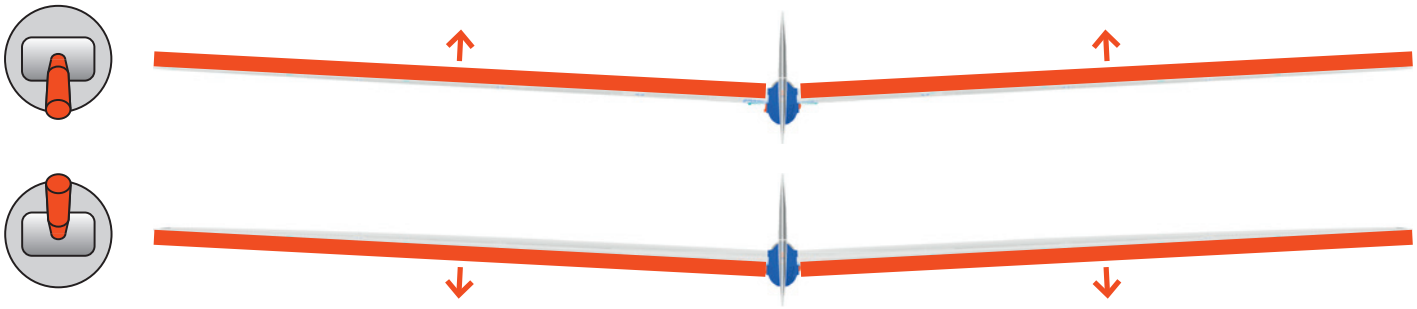
WING LOAD 19 g/dm^2



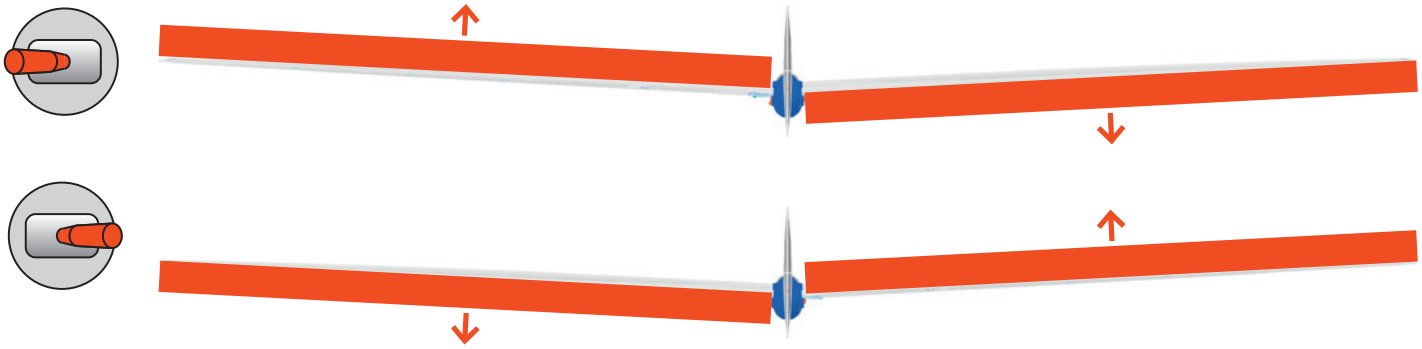
Control Direction Test

Look at the aircraft from behind

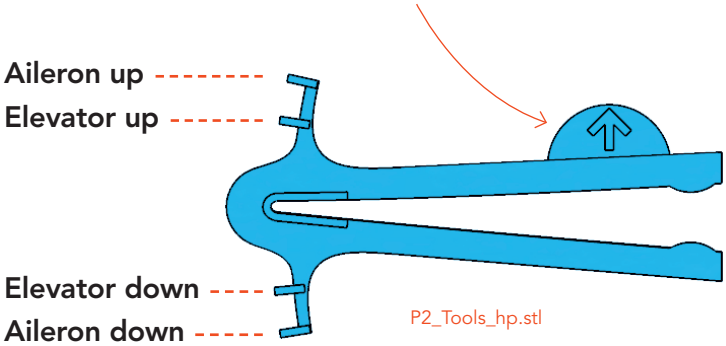
ELEVATOR 8 mm up
8 mm down

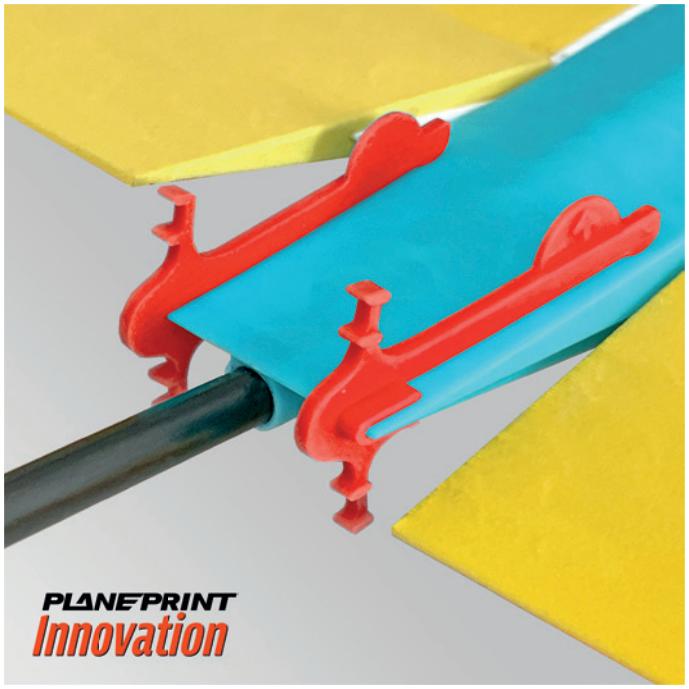


AILERON 12 mm up
12 mm down



TIP Use this tool to adjust the elevons.
The arrow must point upwards!

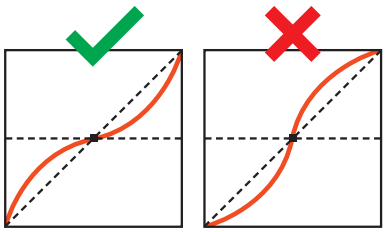




EXPO

ELEVATOR 50 %

AILERON 20 %



(for some remote controls a minus has to be in front of the number)

AGE RECOMMENDATION 14+

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

The STL data (or data processed from it, such as G codes) must never be passed on to third parties!

The purchase of the STL does not authorize the production of models for third parties.

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 or incorrectly printed parts. **Please be careful when handling motors, batteries and propellers** and only move your model with insurance and in approved places!

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