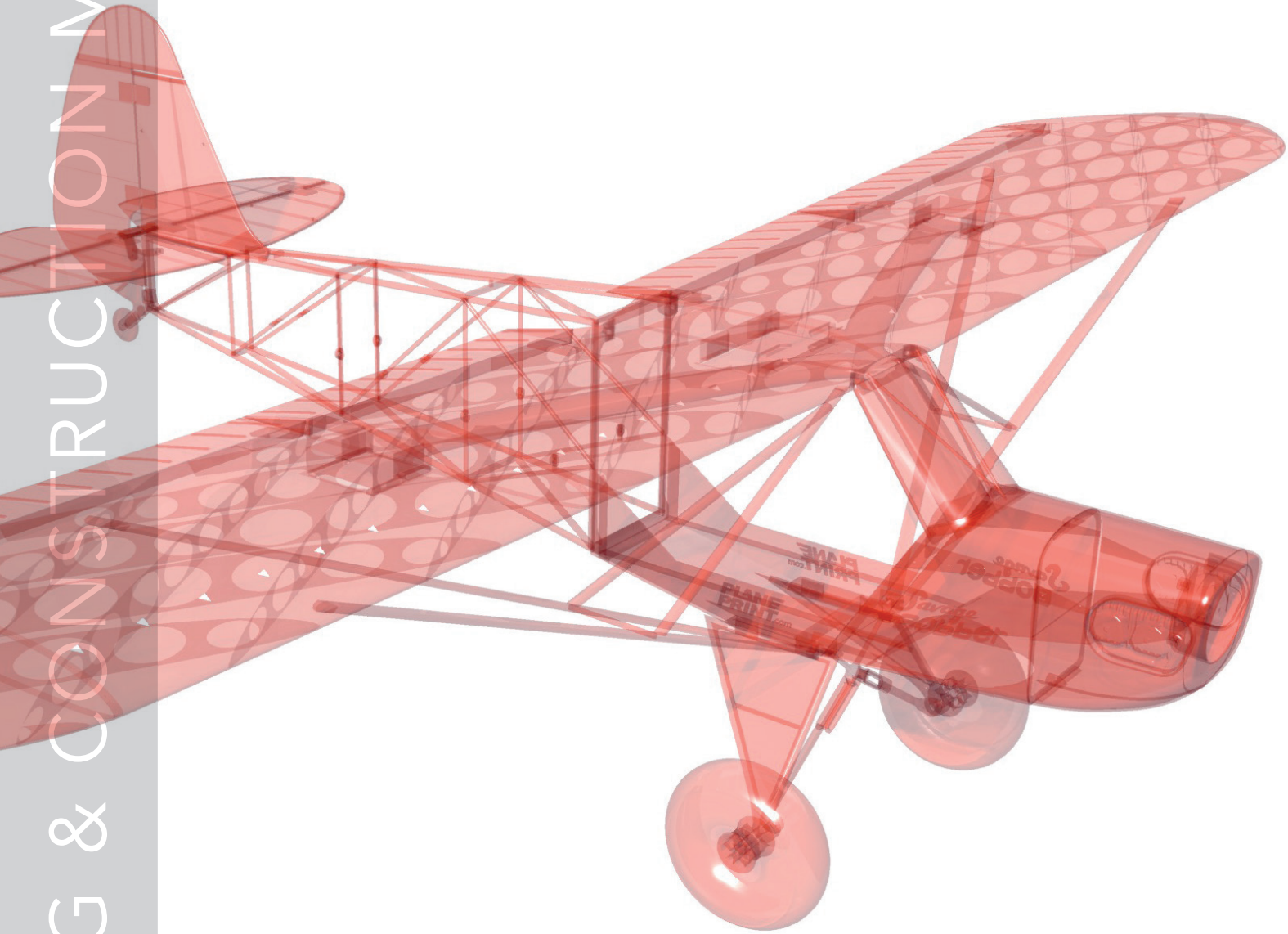
EN

PRINTING & CONSTRUCTION MANUAL

PLANE PRINT.com

very light 3d printable rc planes



ZLIN „SAVAGE BOBBER“

- Detailed Semiscale model in 3D lightweight construction.
- Real 1 wall construction (Currently only supported by CURA!).
- Wingspan 900mm (35.4 inches). Designed for micro sized electronics.

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

FAIR USE DATA ©

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

V3 2020

THE ORIGINAL AIRPLANE

The Savage went into production between 1997 and 1998 in Italy. The idea was to develop an aircraft with good handling and STOL properties, in the classic, proven design and traditional construction, which is economical and easy to build but also to repair.

Inspired by one of the 20th century aviation legends - the Piper Cub - several prototypes were built by SAVAGE designers, aeronautical engineers Bonaldo, Franchini and Vizzini (the latter had worked for Aeritalia and was a long time before joining Aermacchi at Boeing in Seattle) which should form the basis for the final Savage in the ULM category.

Designed with the most advanced CAD design and simulation software (CATIA, Solidworks and NASTRAN), the Savage has undergone an intensive validation process for on-board static testing and testing to meet the most stringent industry standards for lightweight aircraft design and manufacturing.

Shortly after its conception and prior to its official launch, the Savage won first prize in 1999 as the Best Plan-Built Ultralight at the Experimental Aircraft Association meeting in Carpi, Italy. In 1999, the production of the Savage was relocated to the Czech Republic and since then, the aircraft manufacturer Zlin Aviation S.r.o. carried out. The highest quality aviation materials from the USA, Italy and France are processed by the most competent staff.

By May 2014, more than 280 Savages had been delivered to various countries worldwide. Zlin Aviation is always looking for new markets and dealers. Do not hesitate to contact Zlin if you think you want to become part of the dealer network.

Courtesy of Zlin Aviation S.r.o.

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

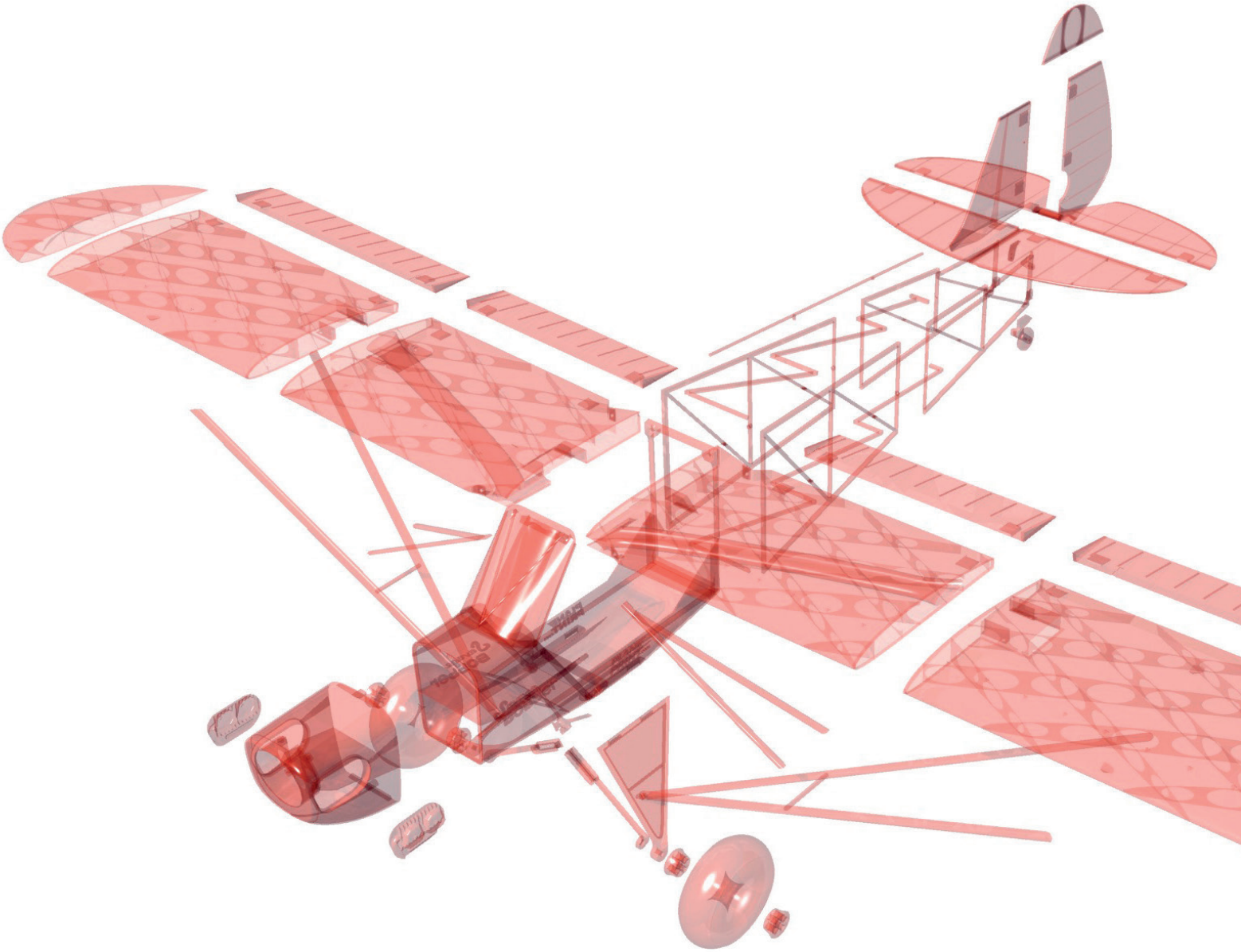
Important for the 1-wall-print!

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

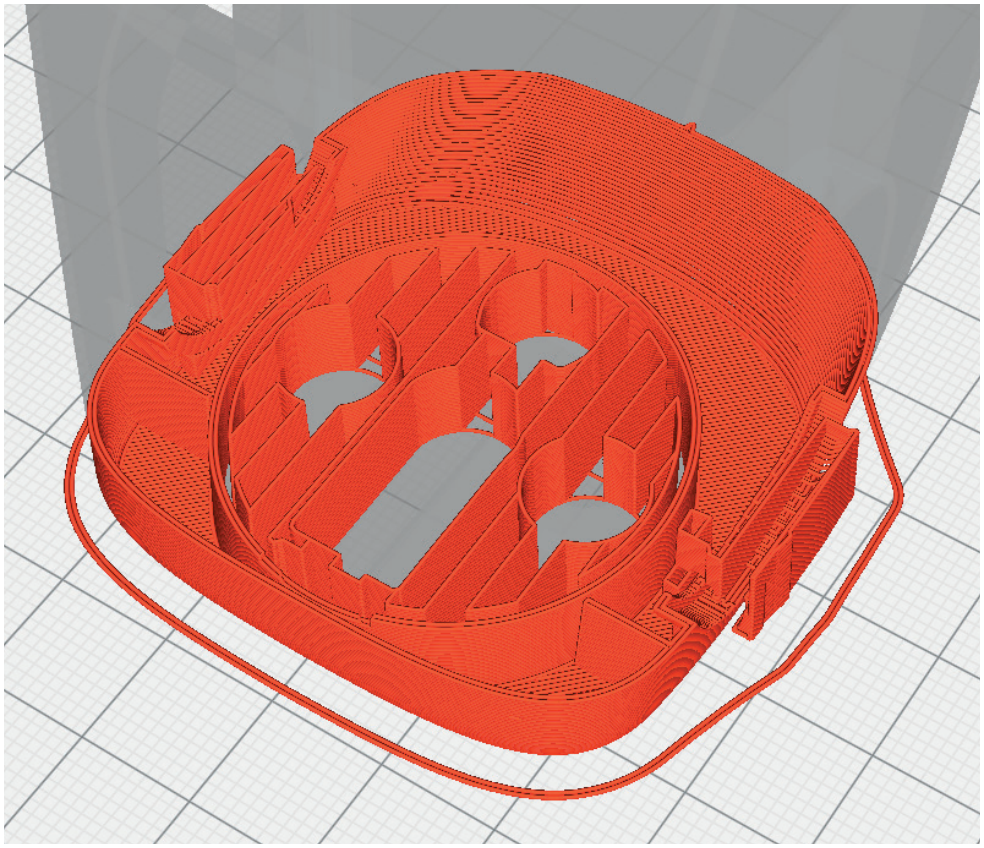
The following parts must be sliced with the profile P1_FULLBODY.
Recommended additional settings are listed in the screenshots.

INFO

STL File: COWLING_p1.stl
Material: PLA
Weight: ~ 20 g (without support)

ADDITIONAL SETTINGS

- Generate support
- Support Overhang Angle 55°
- Support Wall Line Count 0

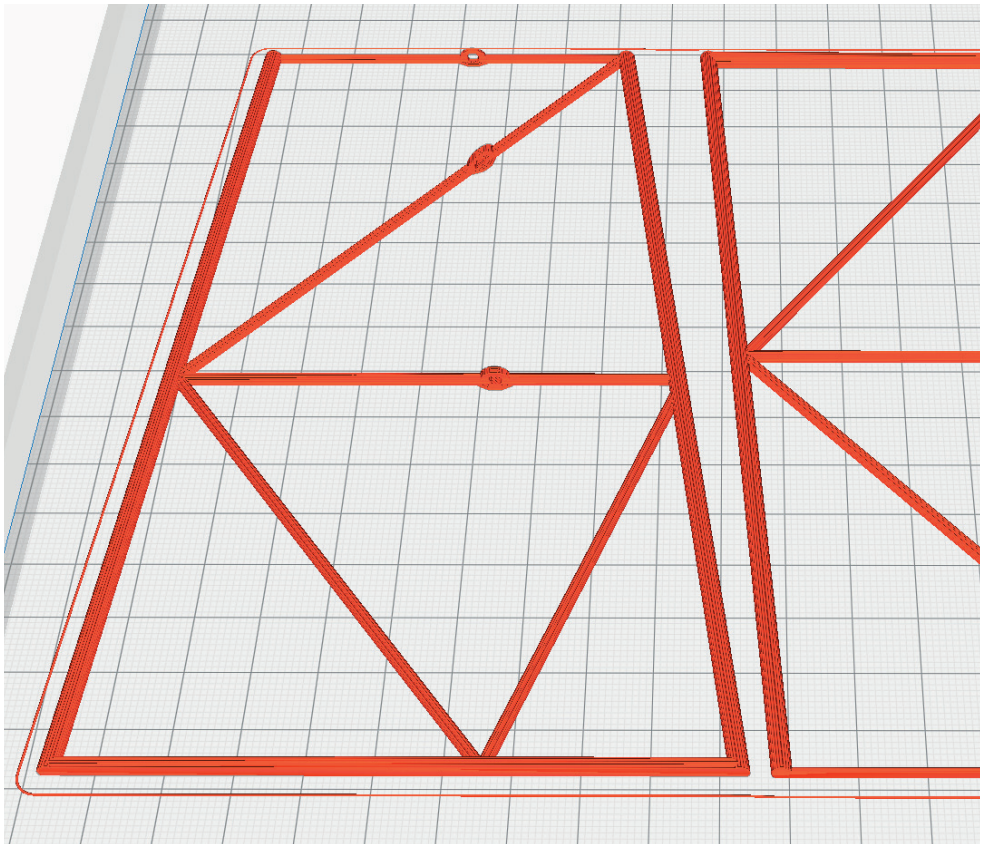


INFO

STL file: GRID-1_p1.stl
Material: PLA or Carbon
Weight: ~ 10 g

ADDITIONAL SETTINGS

None required



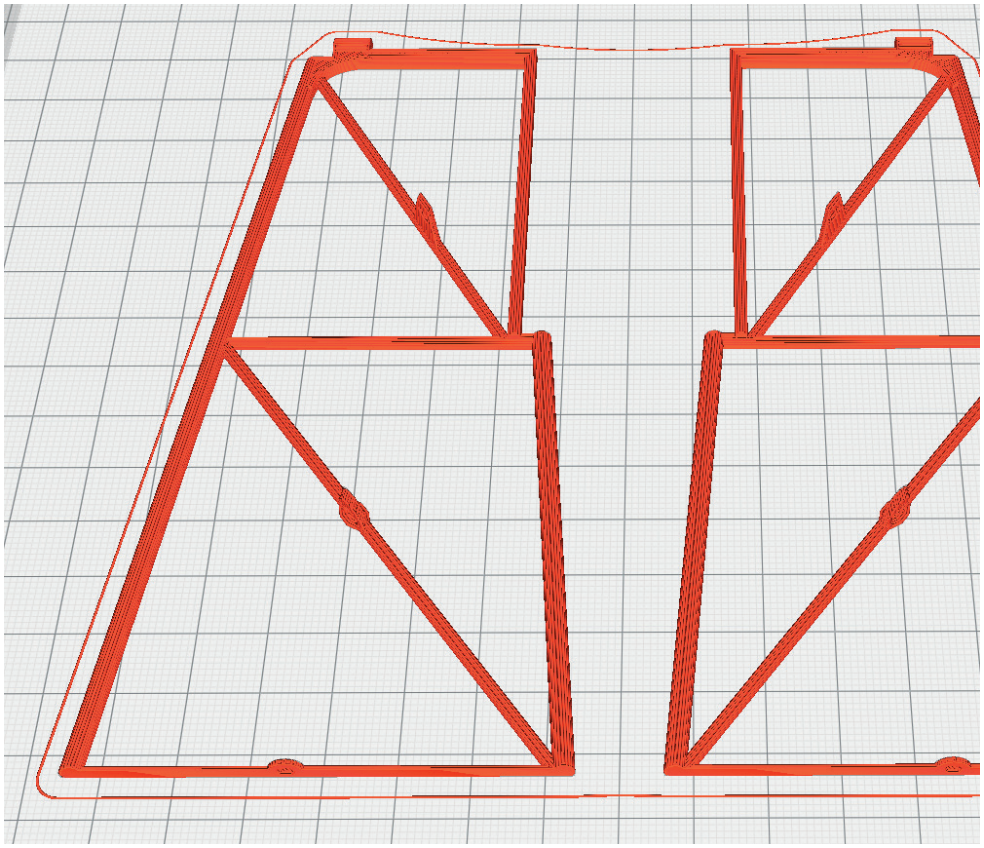
PROFIL P1_FULLBODY

INFO

STL file: GRID-2_p1.stl
Material: PLA or Carbon
Weight: ~ 8 g

ADDITIONAL SETTINGS

None required

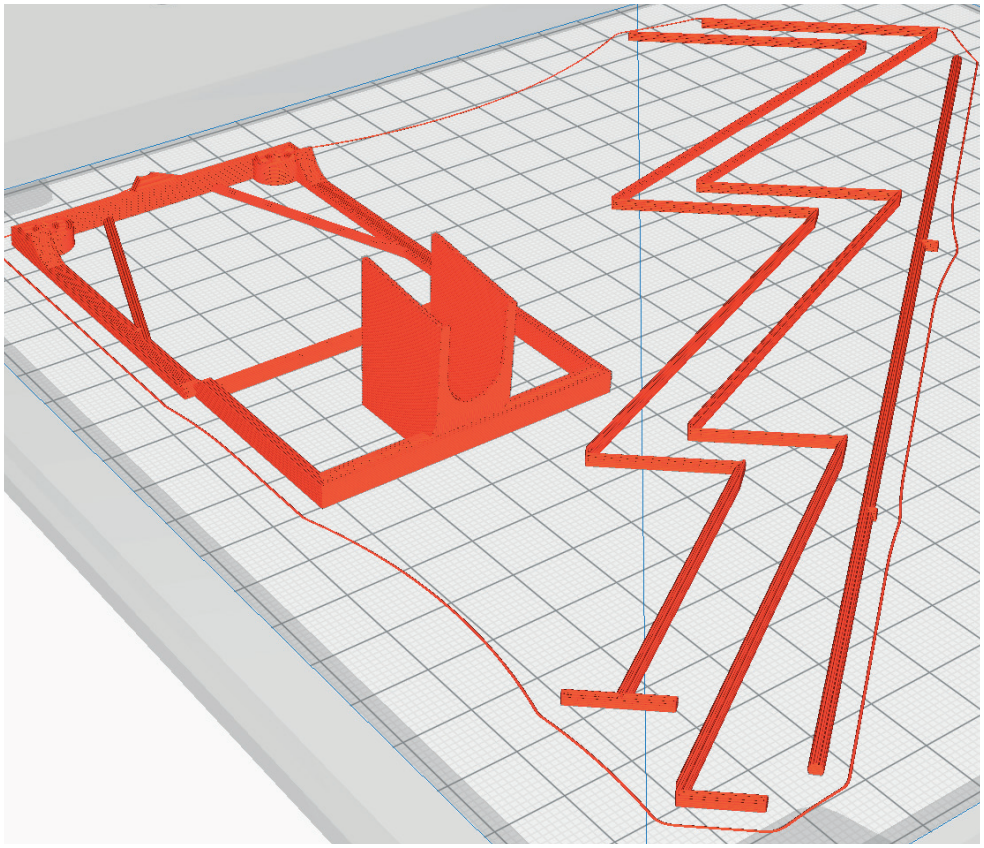


INFO

STL file: GRID-3_p1.stl
Material: PLA or Carbon
Weight: ~ 9 g

ADDITIONAL SETTINGS

None required



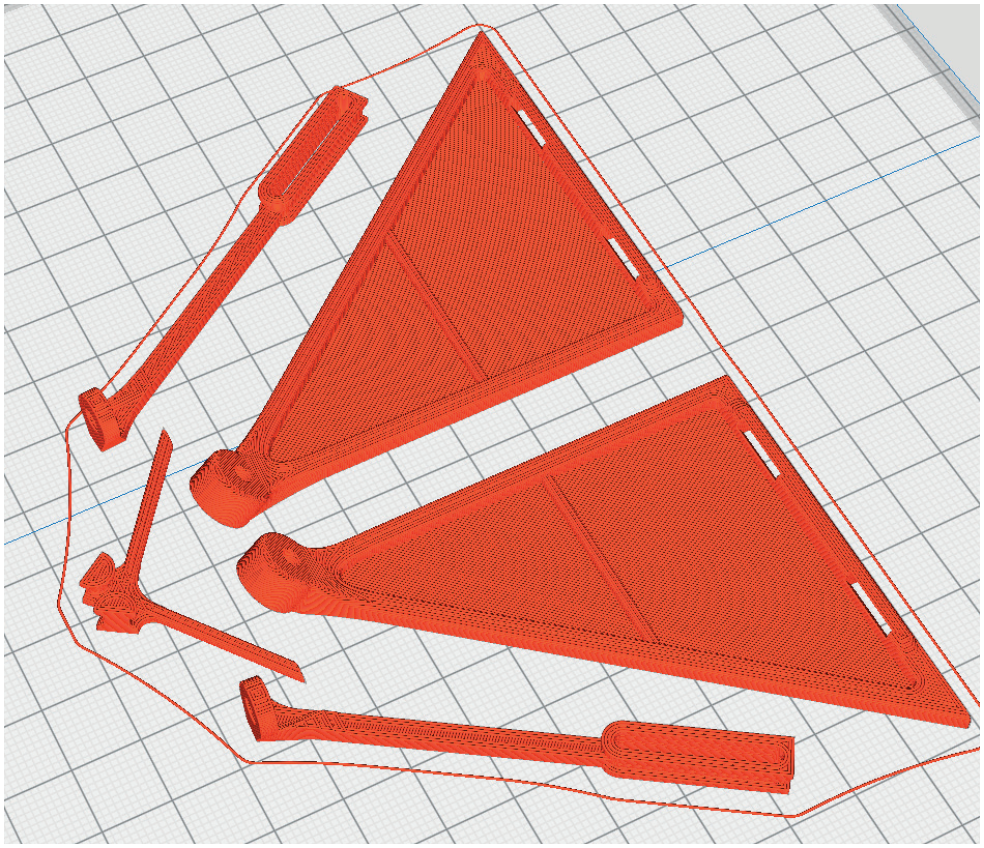
PROFIL P1_FULLBODY

INFO

STL file: LANDING GEAR_p1.stl
Material: PLA or Carbon
Weight: ~ 11 g

ADDITIONAL SETTINGS

- as needed support structure activate

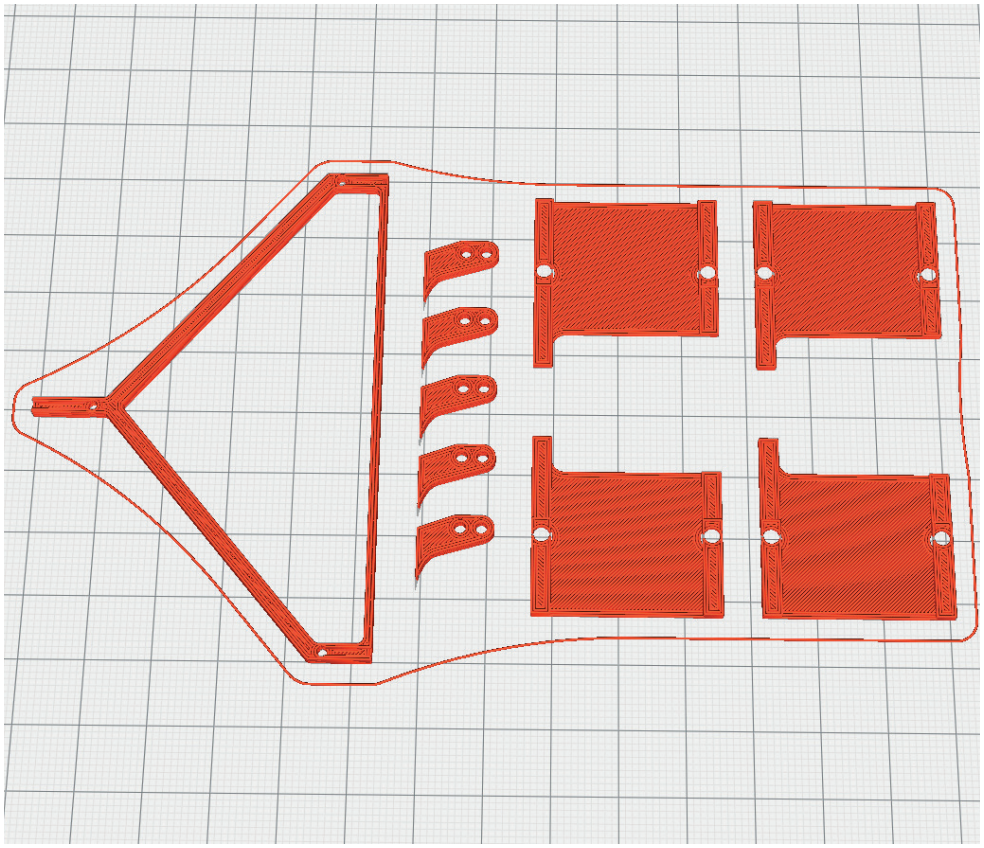


INFO

STL file: PARTS_p1.stl
Material: PLA
Weight: ~ 4 g

ADDITIONAL SETTINGS

None required



PROFILE P1_FULLBODY

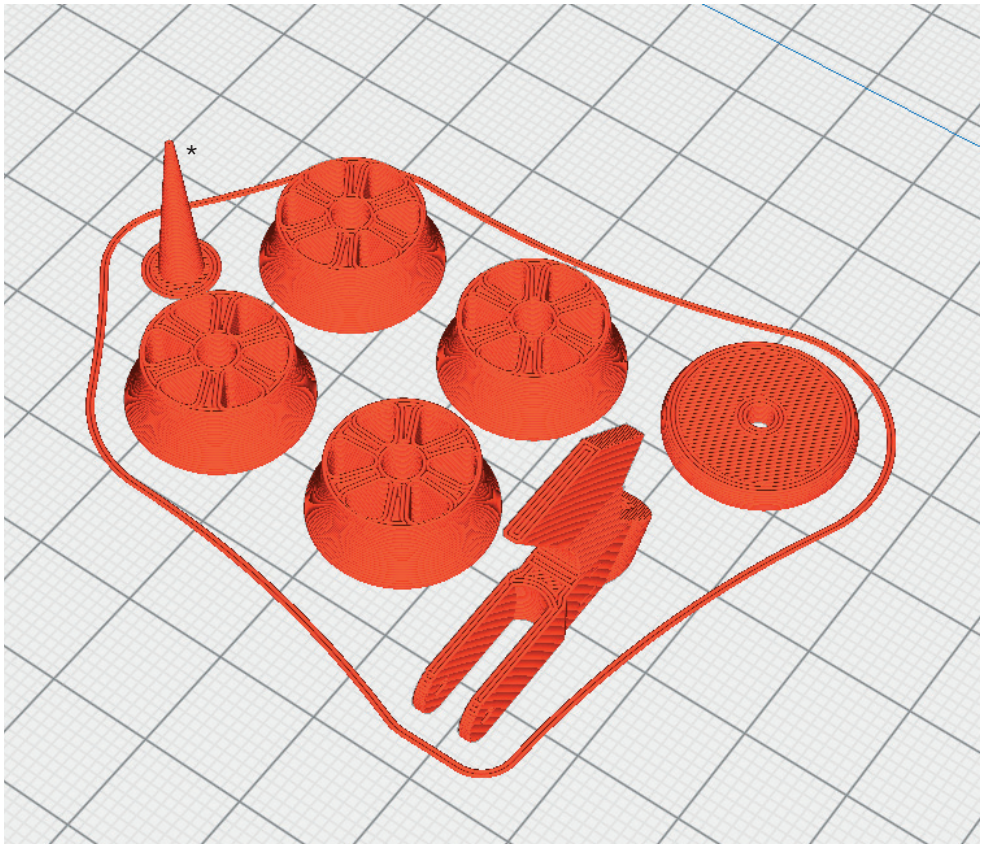
INFO

STL file: RIMS_p1.stl
Material: PLA
Weight: ~ 5 g

ADDITIONAL SETTINGS

- as needed support structure activate

* This cone improves printing and can then be thrown away.

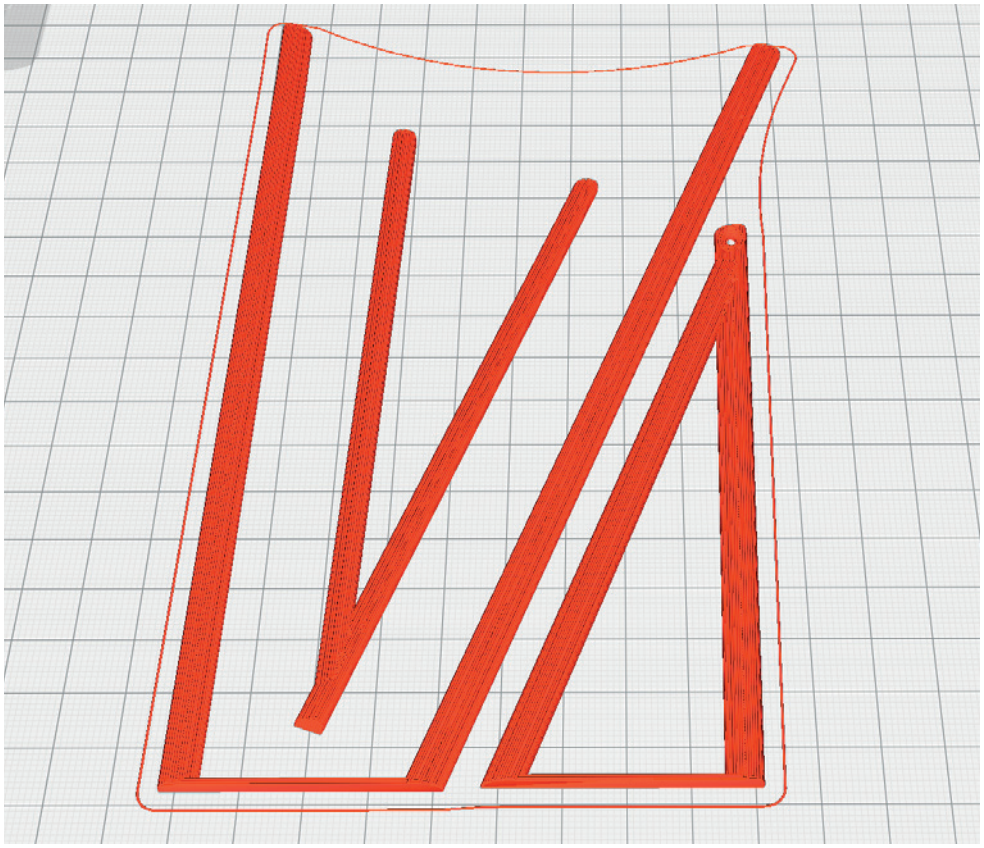


INFO

STL files: STRUT-L_p1.stl
STRUT-R_p1.stl
Material: PLA
Weight: ~ 12 g

ADDITIONAL SETTINGS

None required



PROFILE P2_HOLLOWBODY

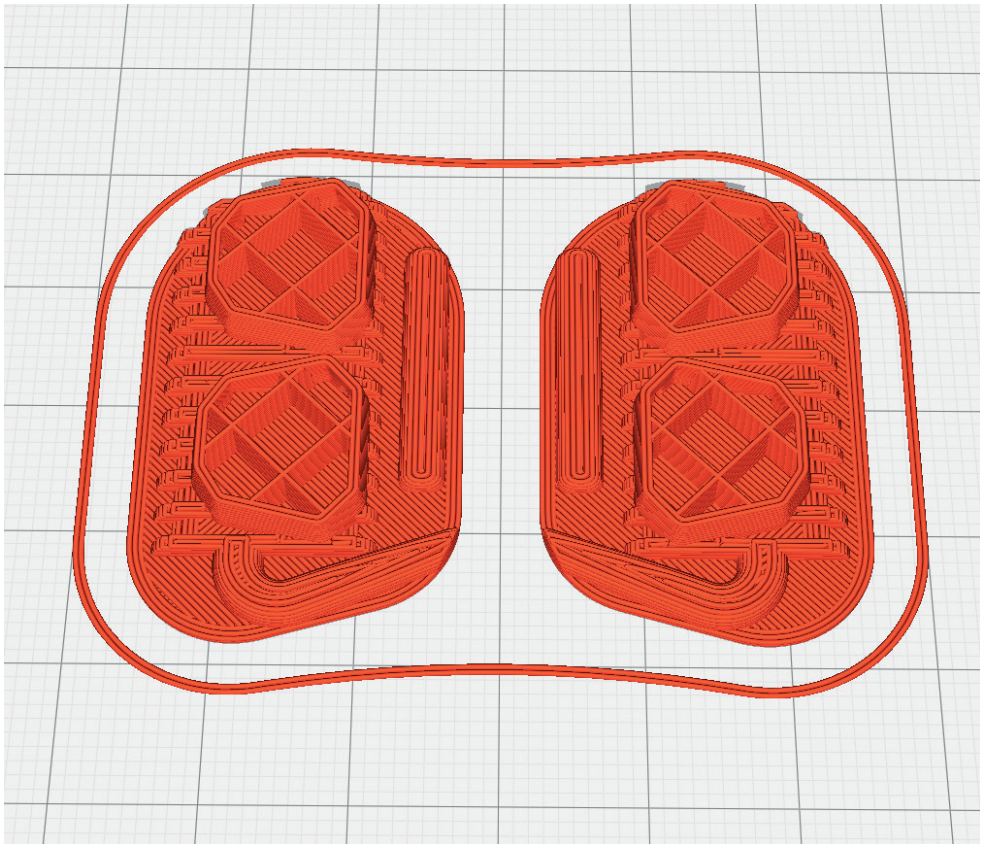
The following parts must be sliced with the profile PROFILE P2_HOLLOWBODY.
Recommended additional settings are listed in the screenshots.

INFO

STL file: ENGINE_p2.stl
Material: PLA
Weight: ~ 3 g

ADDITIONAL SETTINGS

None required

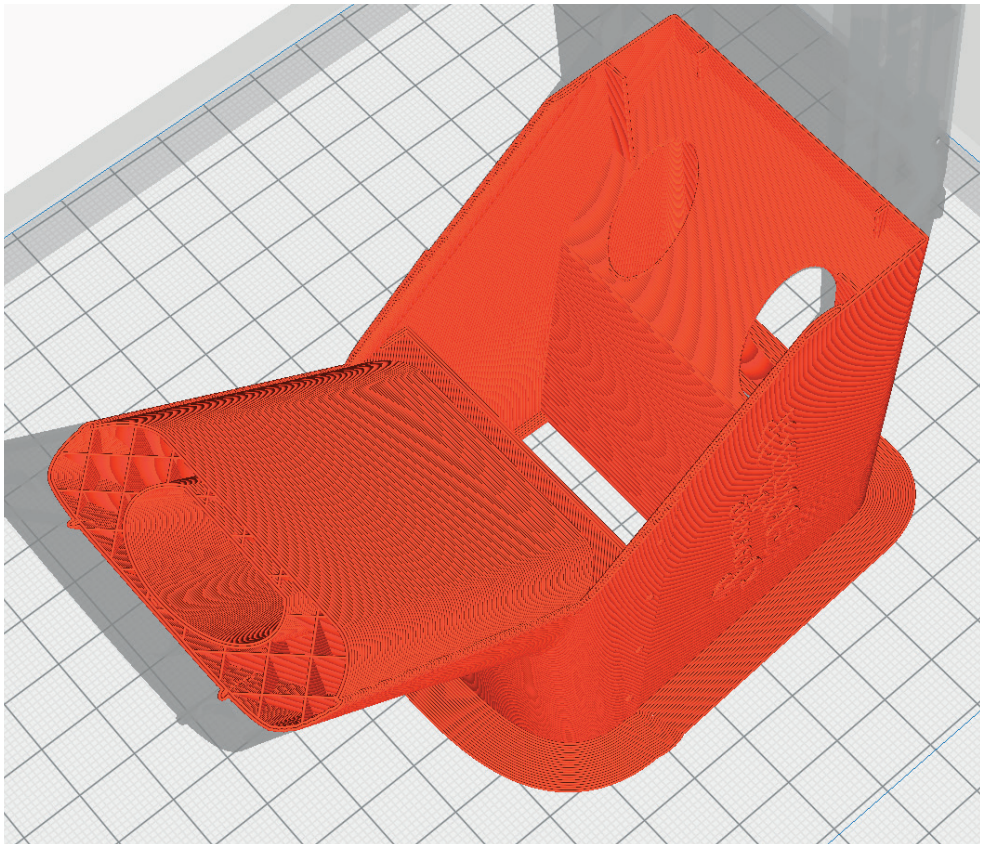


INFO

STL file: FUSELAGE_p2.stl
Material: PLA
Weight: ~ 47 g

ADDITIONAL SETTINGS

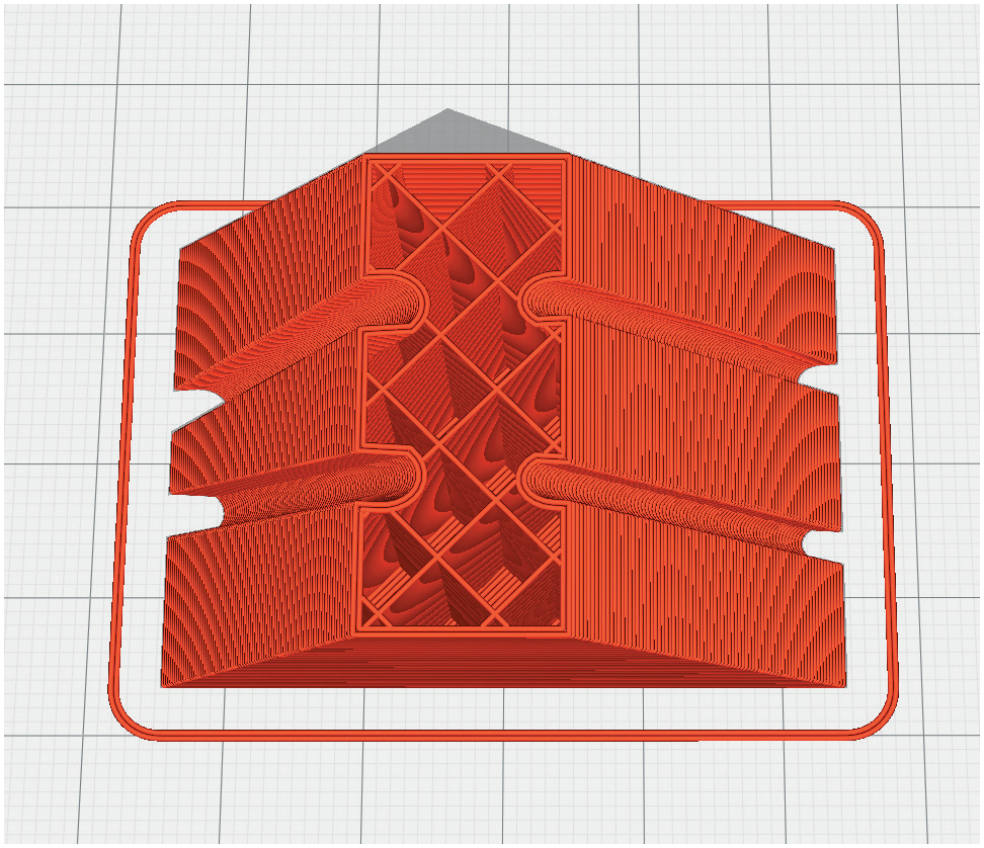
None required



PROFILE P2_HOLLOWBODY

INFO

STL file: TEMPLATE_p2.stl
Material: PLA



ADDITIONAL SETTINGS

None required

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.

INFO

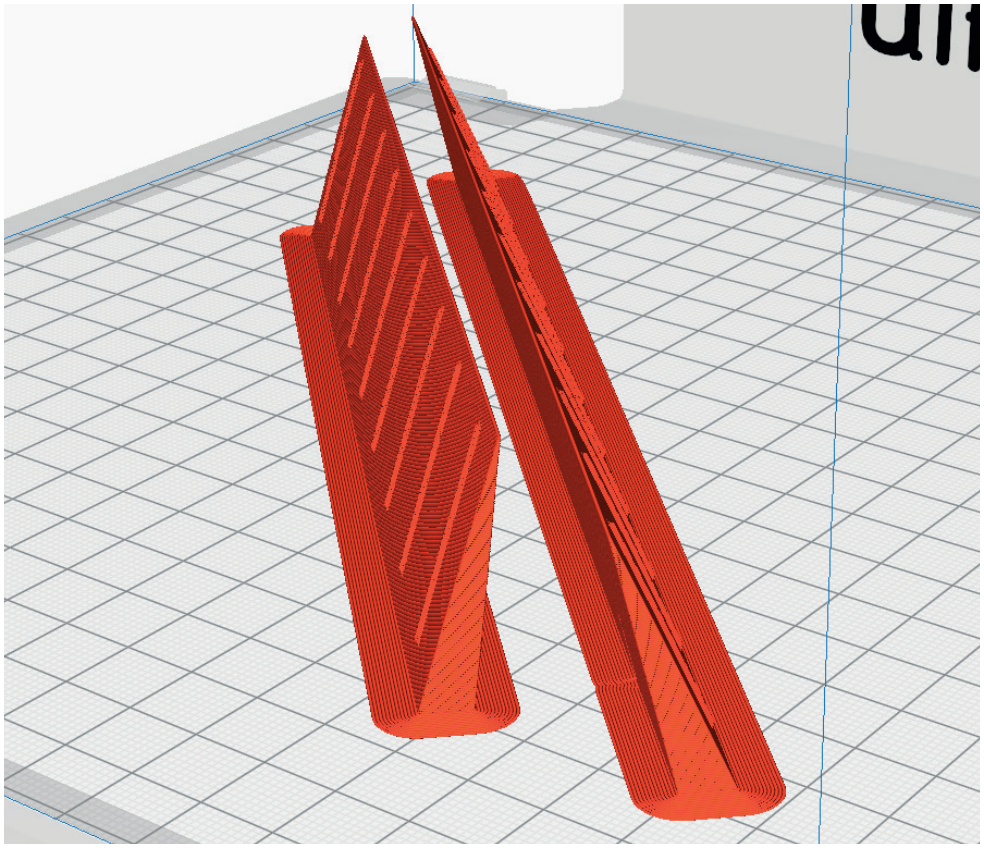
STL files: AILERON-L_p3.stl
AILERON-R_p3.stl
Material: PLA
Weight: ~ 14 g

ADDITIONAL SETTINGS

None required

PLEASE NOTE

The slots for the hinges hinges rest on the pressure plate and must be opened slightly with the cutter. Please be carful!



INFO

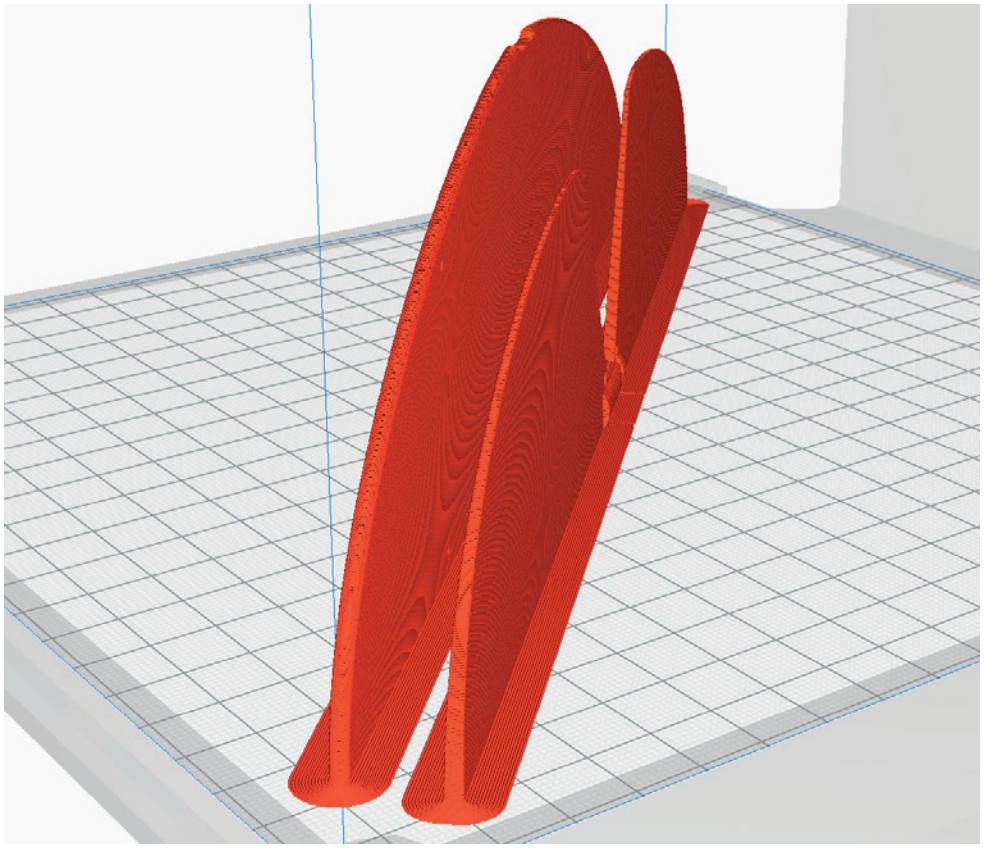
STL file: ELEVATOR_p3.stl
Material: PLA
Weight: ~ 29 g

ADDITIONAL SETTINGS

None required

PLEASE NOTE

The slots for the hinges hinges rest on the pressure plate and must be opened slightly with the cutter. Please be carful!



PROFIL P3_SURFACE

INFO

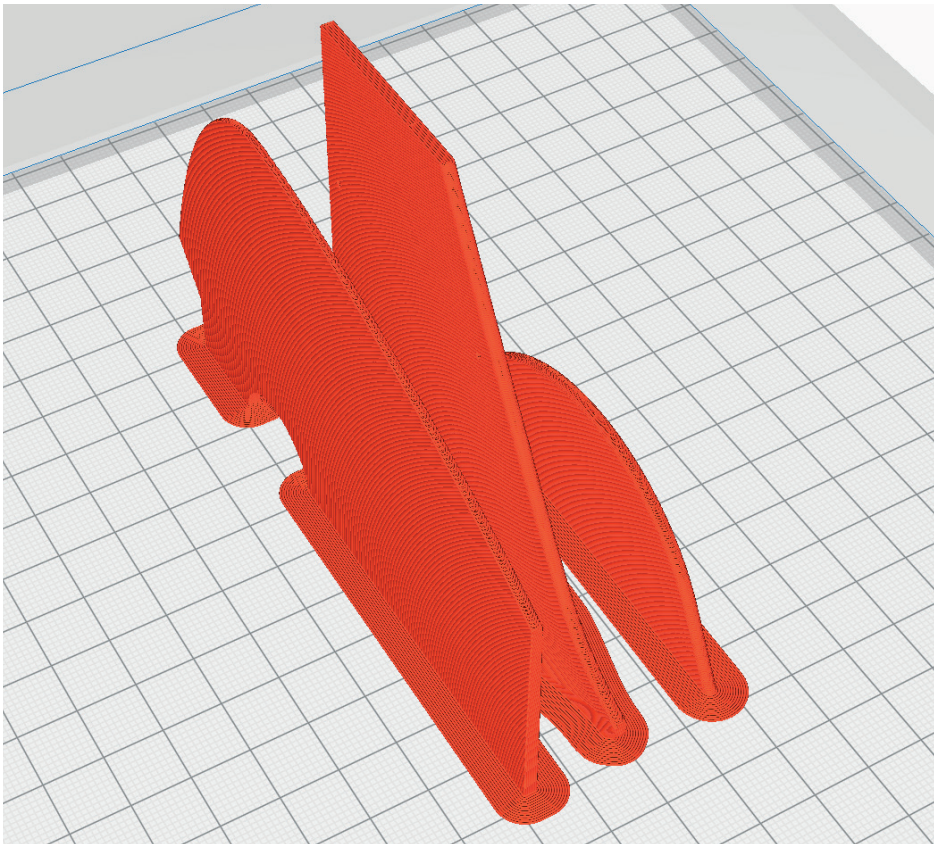
STL file: RUDDER_p3.stl
Material: PLA
Weight: ~ 15 g

ADDITIONAL SETTINGS

- as needed support structure activate

PLEASE NOTE

The slots for the hinges rest on the pressure plate and must be opened slightly with the cutter.
Please be careful!



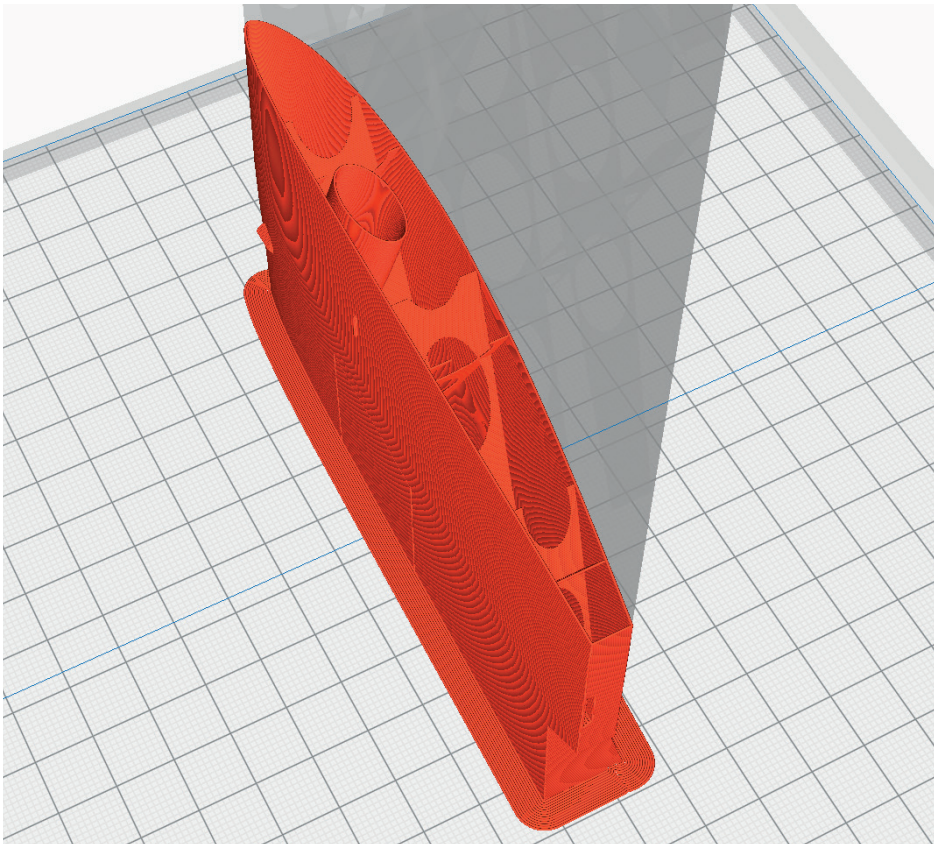
INFO

STL files: WING-INSIDE-L_p3.stl
WING-INSIDE-R_p3.stl
Material: PLA
Weight: ~ 33 g

ADDITIONAL SETTINGS

None required

CAUTION:
All P3_SURFACE parts should be printed one at a time, otherwise slicing errors may occur. In addition, the surface will exhibit fewer blobs and oozing defects if the print head doesn't move from one component to another.



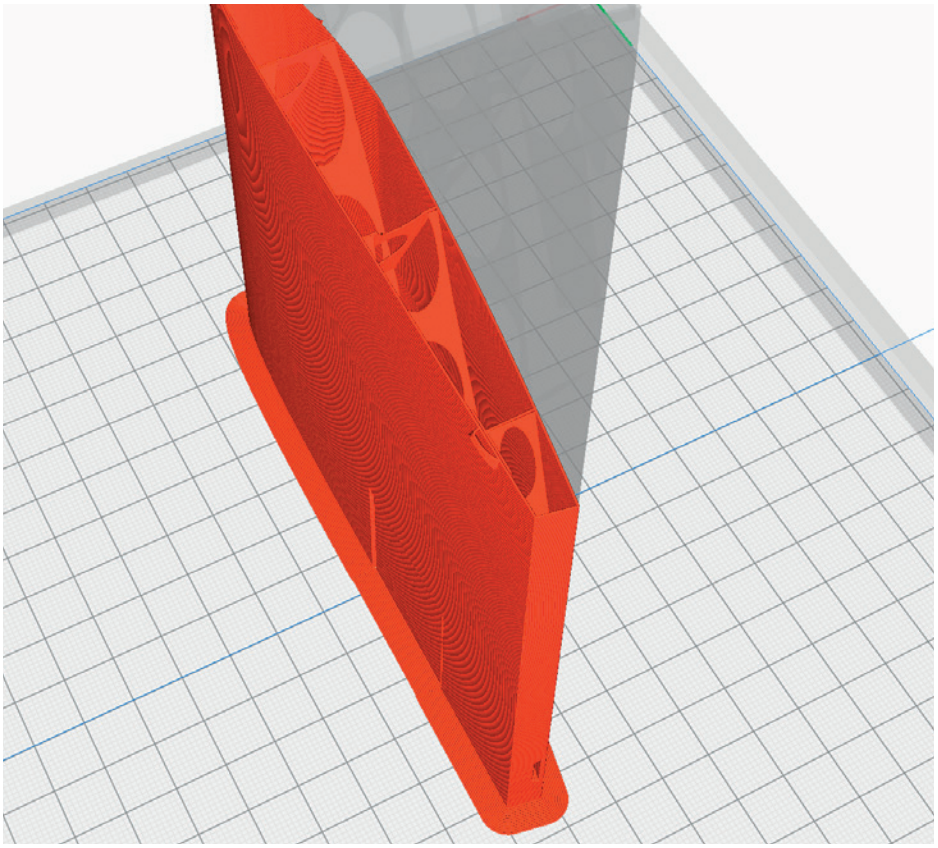
PROFILE P3_SURFACE

INFO

STL files: WING-OUTSIDE-L_p3.stl
WING-OUDSIDE-R_p3.stl
Material: PLA
Weight: ~ 31 g

ADDITIONAL SETTINGS

None required

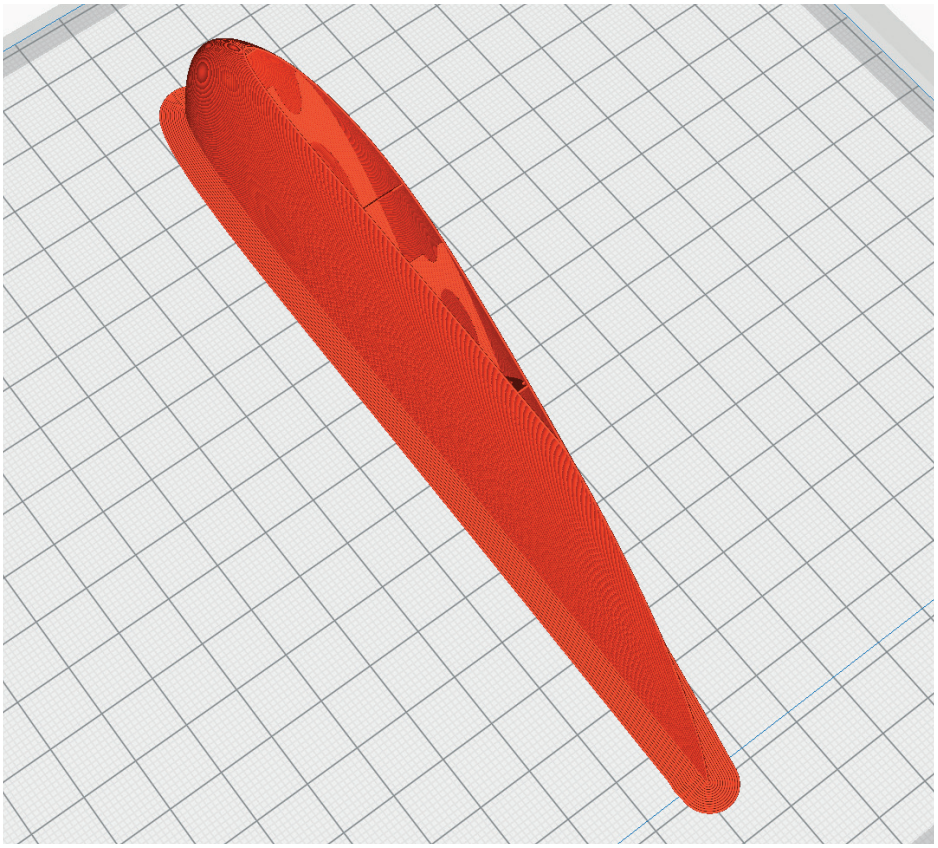


INFO

STL files: WINGIP-L_p3.stl
WINGTIP_p3.stl
Material: PLA
Weight: ~ 9 g

ADDITIONAL SETTINGS

None required



CAUTION:
All P3_SURFACE parts should be printed one at a time, otherwise slicing errors may occur. In addition, the surface will exhibit fewer blobs and oozing defects if the print head doesn't move from one component to another.

PROFILE P4_FLEX

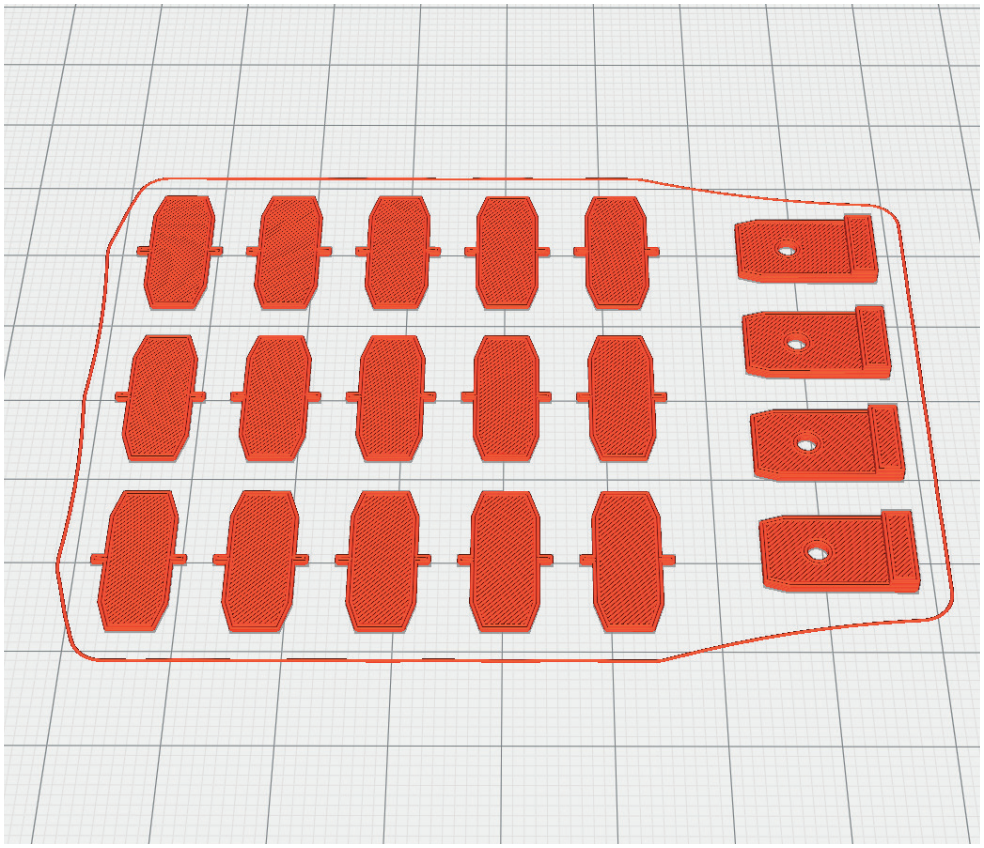
The following parts must be sliced with the profile PROFILE P4_FLEX (flexible materials).
Recommended additional settings are listed in the screenshots.

INFO

STL file: HINGES_p4.stl
Material: TPU soft or mittelhart
Weight: ~ 2 g

ADDITIONAL SETTINGS

None required

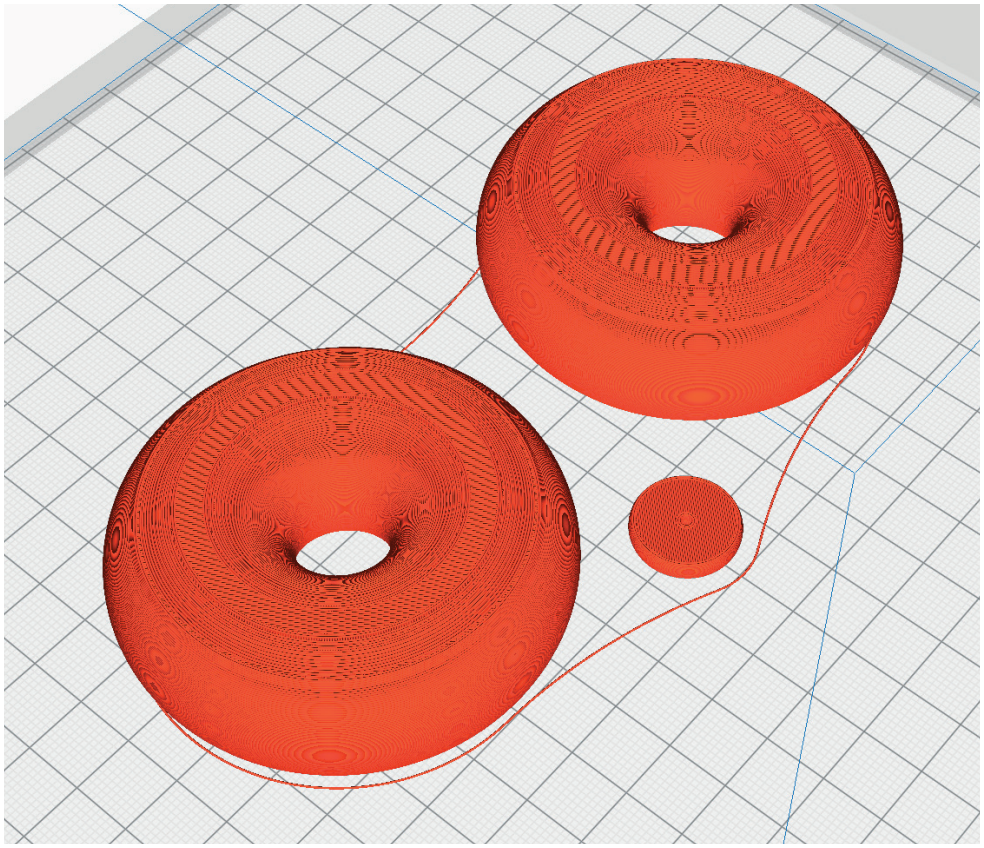


INFO

STL file: WHEELS_p4.stl
Material: TPU soft or medium hard
Weight: ~ 32 g

ADDITIONAL SETTINGS

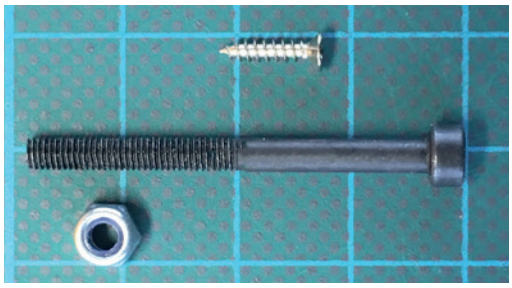
None required



REQUIRED ACCESSORIES

MATERIALS

- tapping screws M2*10 — 11 Pieces
- metal screws M3*35 — 2 Pieces
- stop nut M3 — 2 Pieces
- CA super glue, liquid and liquid medium
- Activator
- hair gums ~ 15 mm
- carbon rod Ø 1,2 mm — 1 m
- servo extension cable — 50 cm
- double-sided adhesive tape (padded)
- steel wire Ø 1mm
- rod connection — 6 Pieces



TOOLS

- Cutter knife
- Philips screwdriver
- Needle nose pliers

RC COMPONENTS

STANDARD ENGINE 2S

Engine: e.g. AXI 2203/40 VPP

BEC-Controller: suitable for your engine
Prop: APC 8X3,8 SF, 8X4
Battery pack (~ 50 g): 2S LiPo-Akku ca. 950 MAH

PERFORMANCE ENGINE 3S

Engine: e.g. Volta 2206/1400 kV

BEC-Controller: suitable for your engine
Prop: APC 8X4,7
Battery pack (~ 50 g): 3S LiPo-Akku 600-800 MAH

5 X PICCO-Servo (max. 23x26x8 mm): e.g. PLANET-HOBBY ECO PLUS PICCO 8 DIGITAL SERVO or Diamond D47

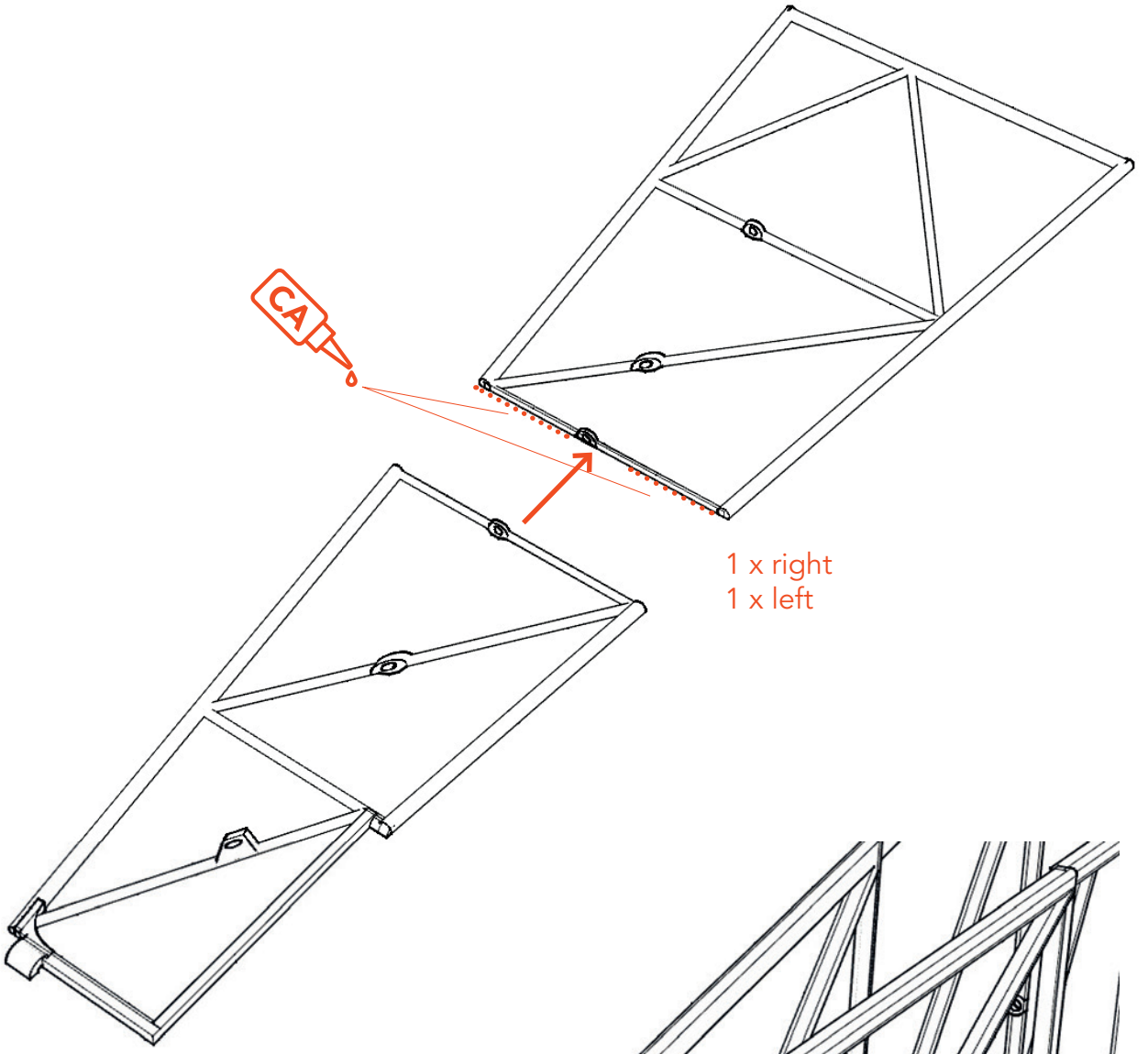
TIPP

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

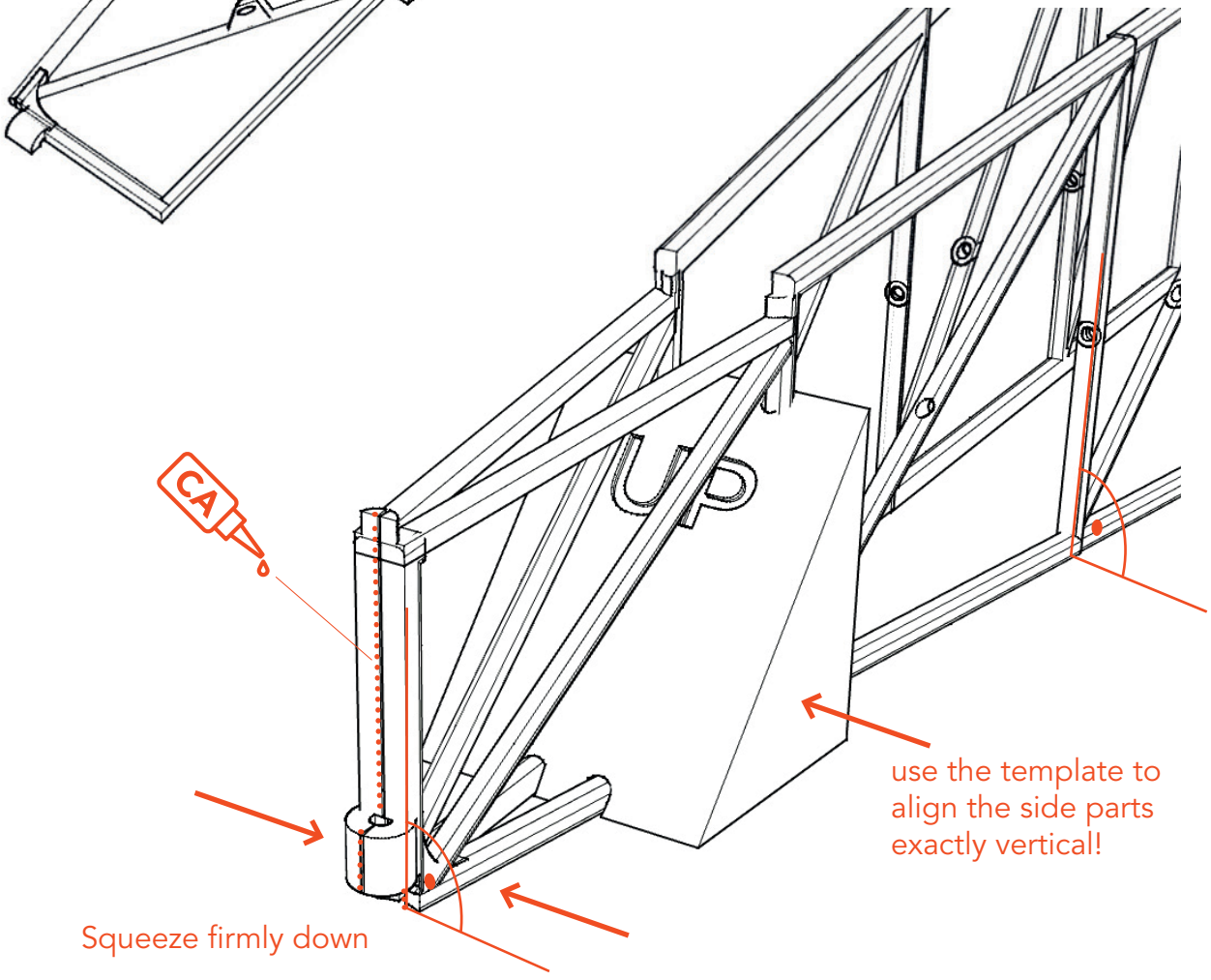
Simply search the Internet for: M2 Flat Head Tapping Screw Assortment …

CONSTRUCTION MANUAL

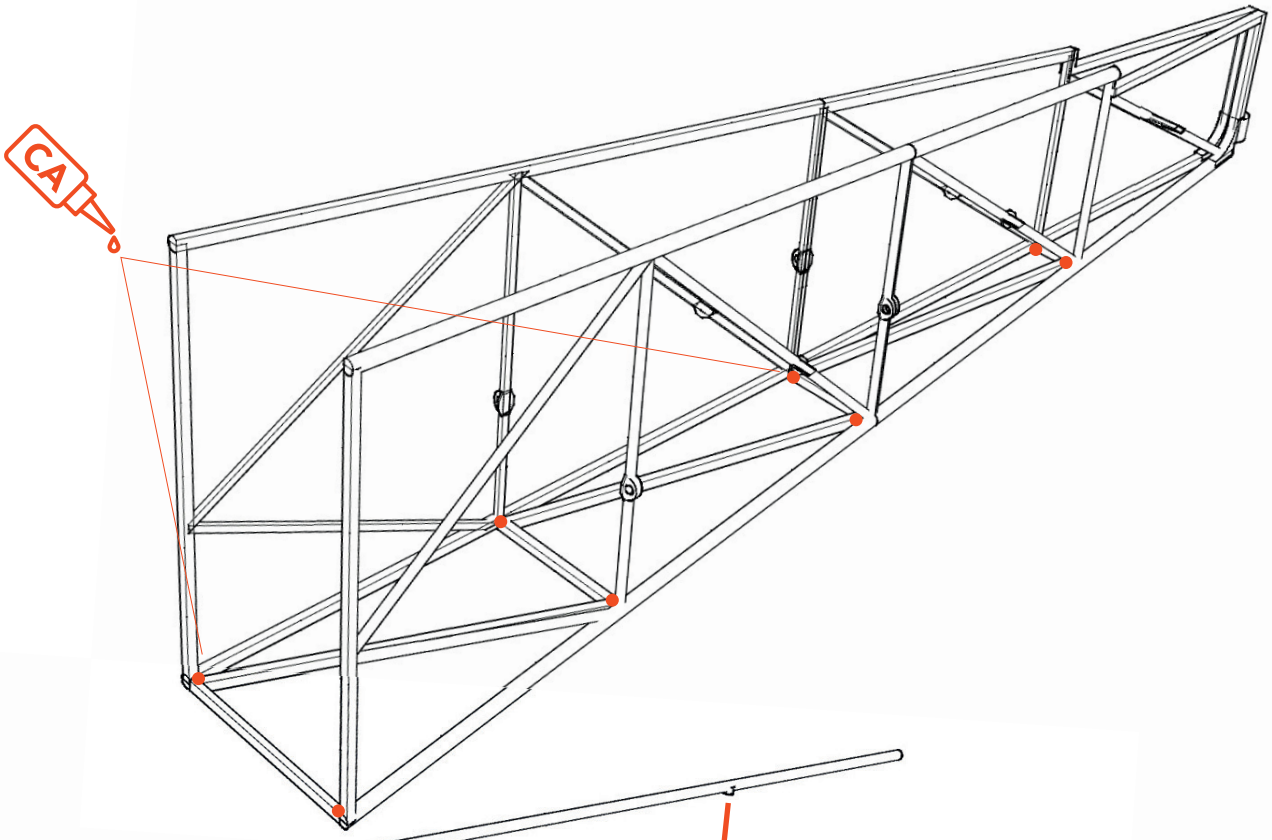
1


CA
1 x right
1 x left

2


CA
UP
use the template to
align the side parts
exactly vertical!
Squeeze firmly down

3



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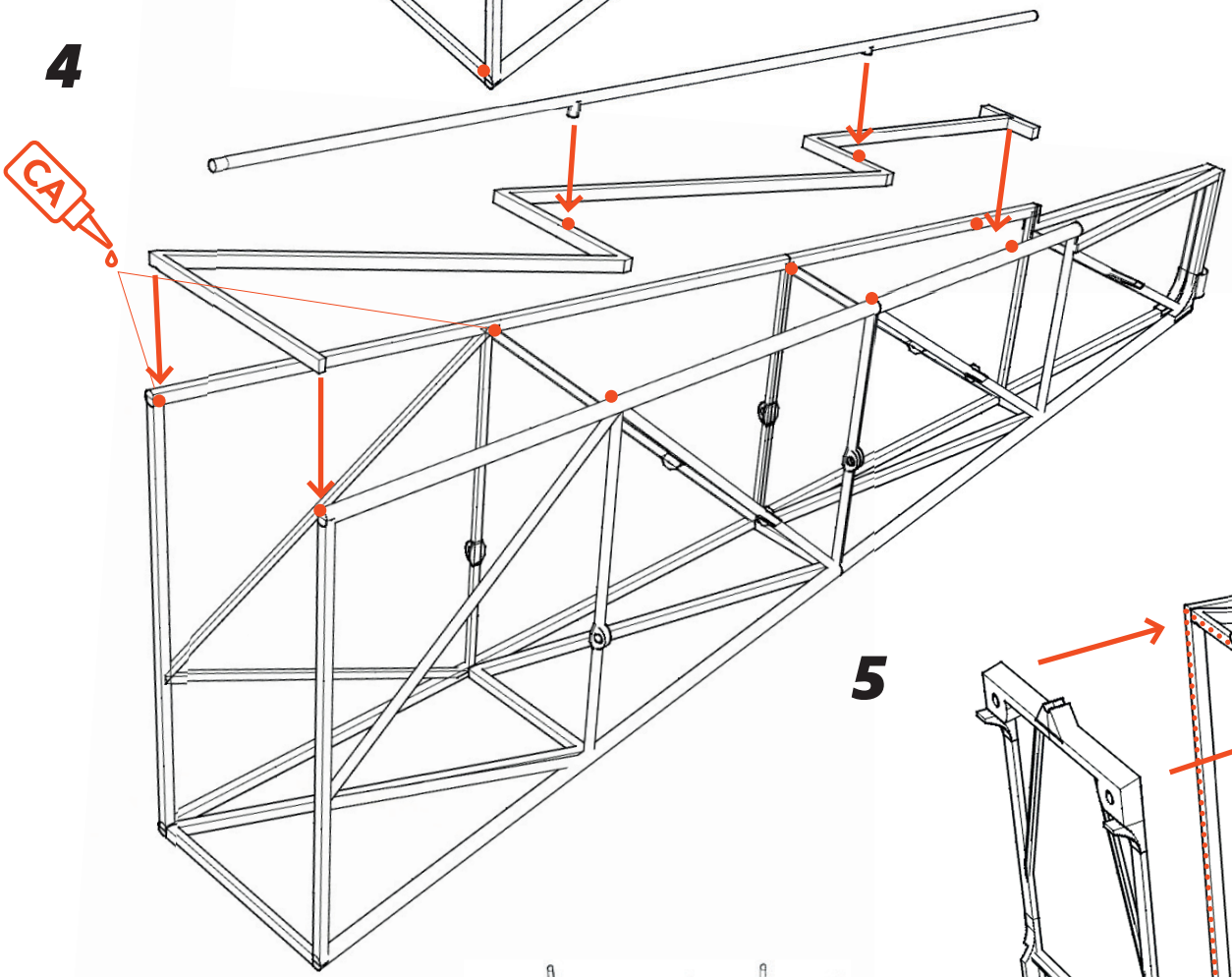

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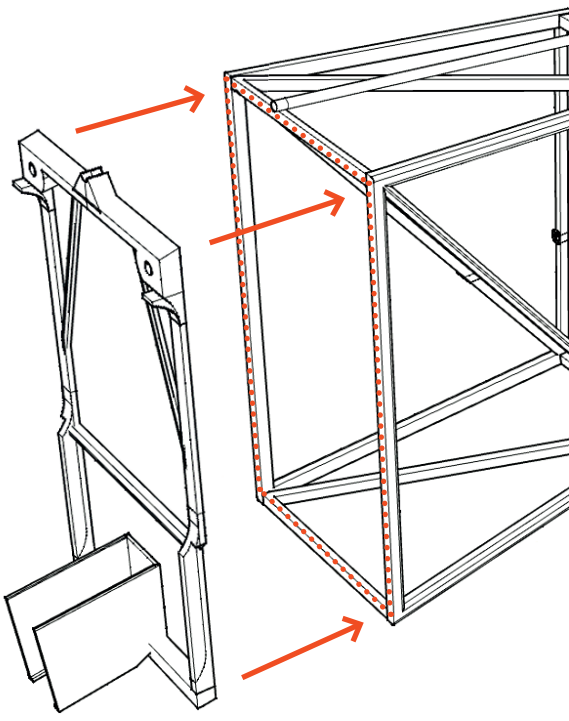

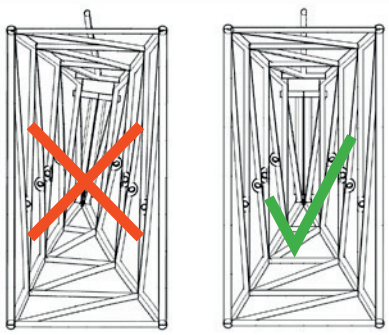

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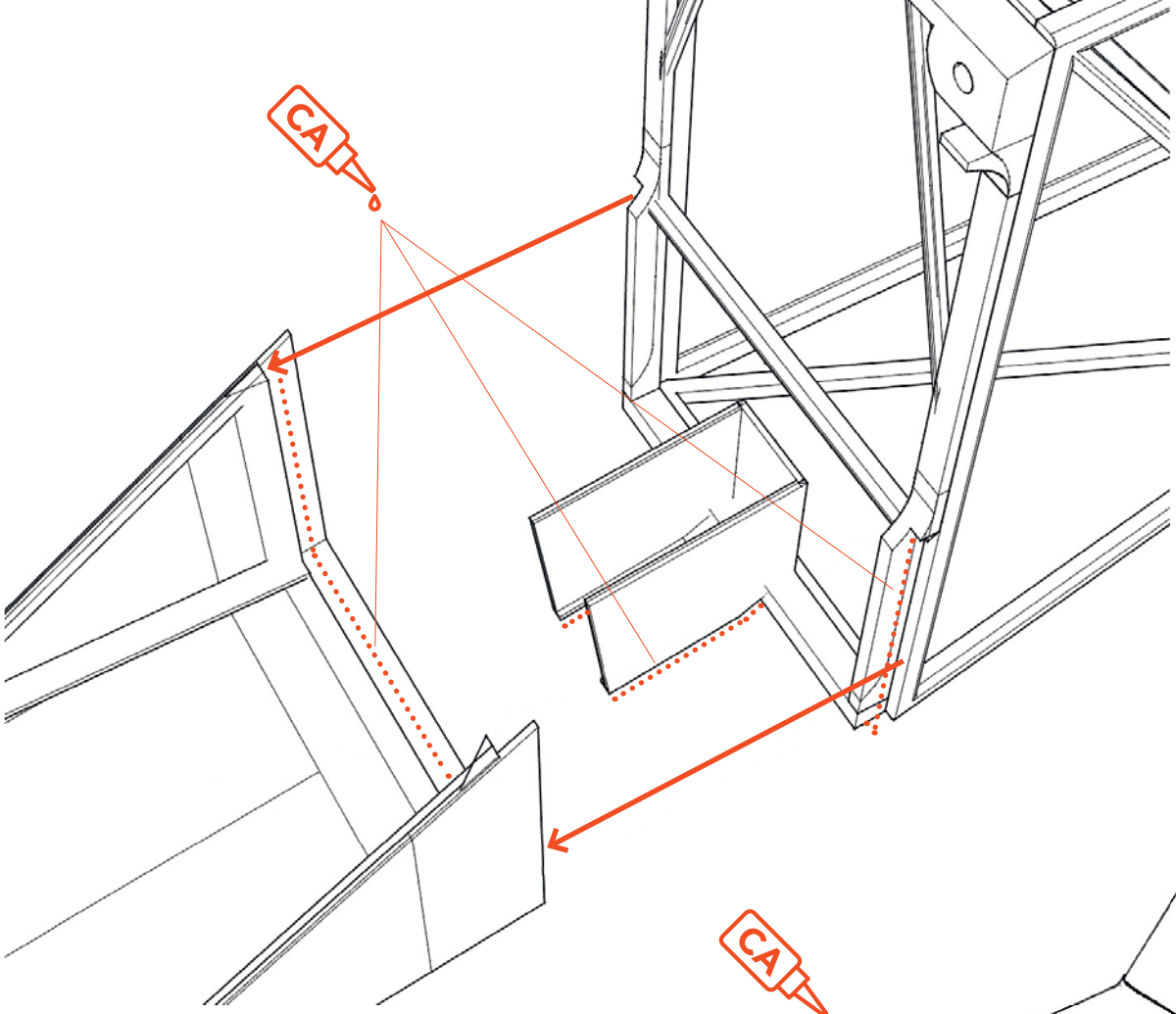

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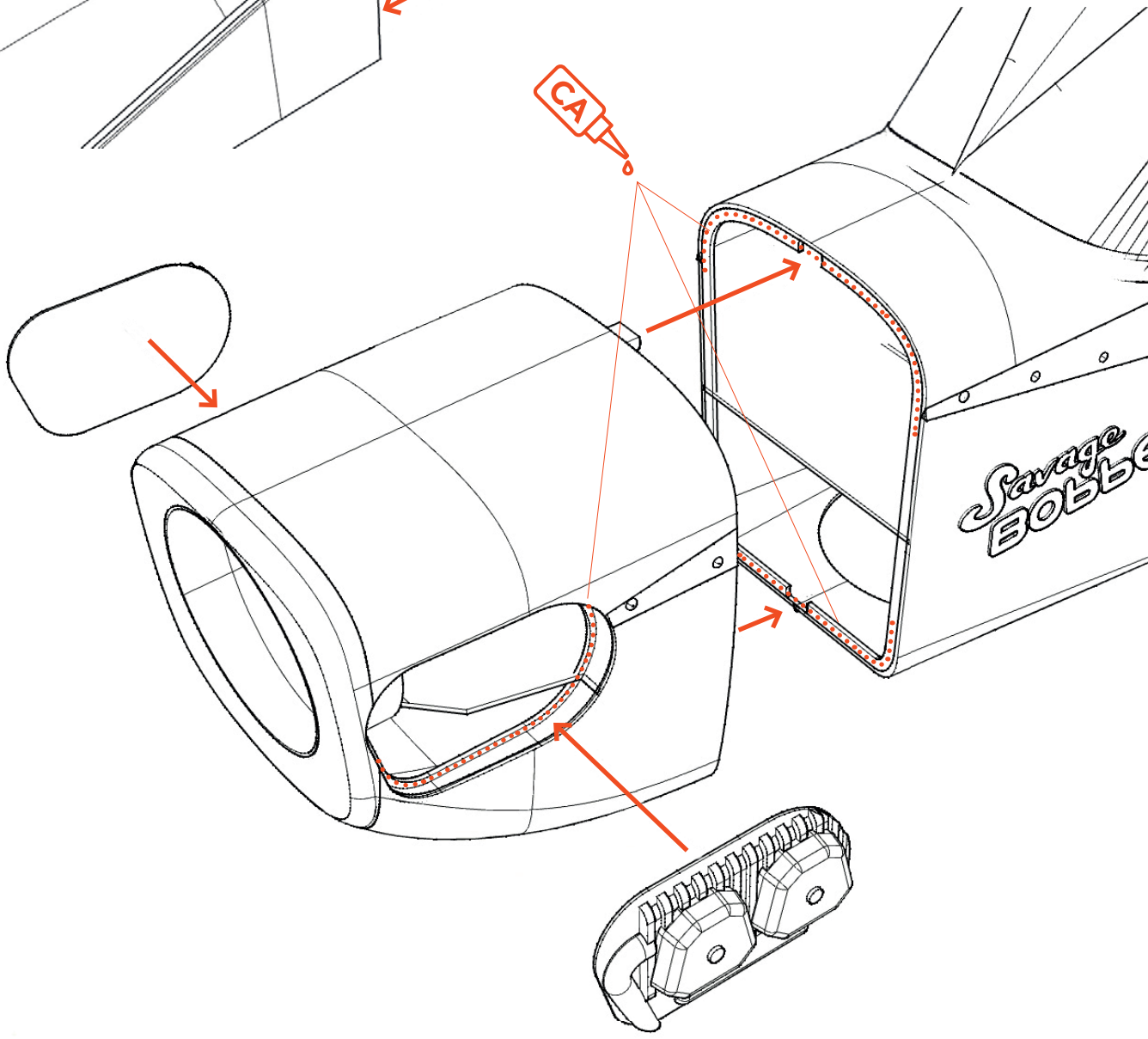

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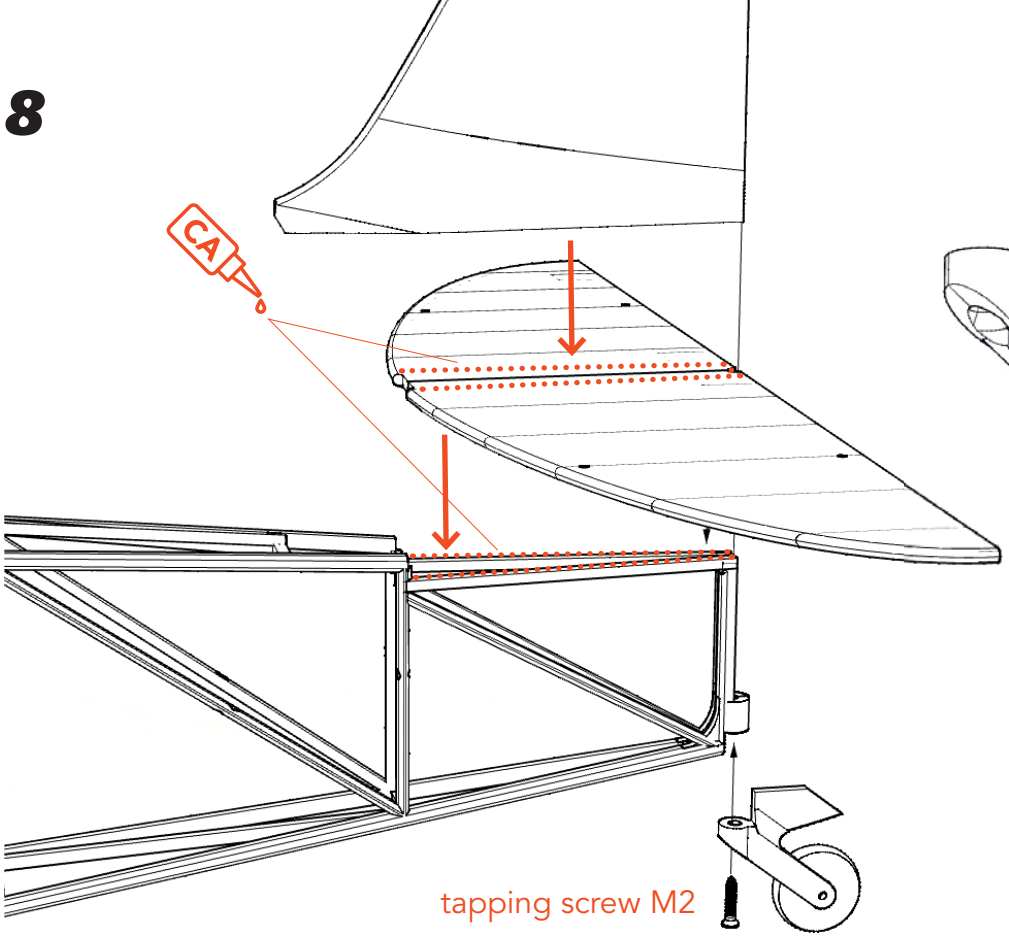
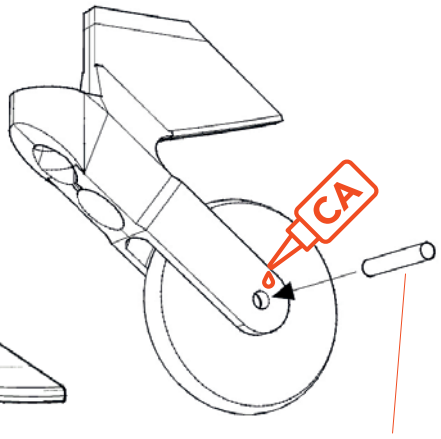
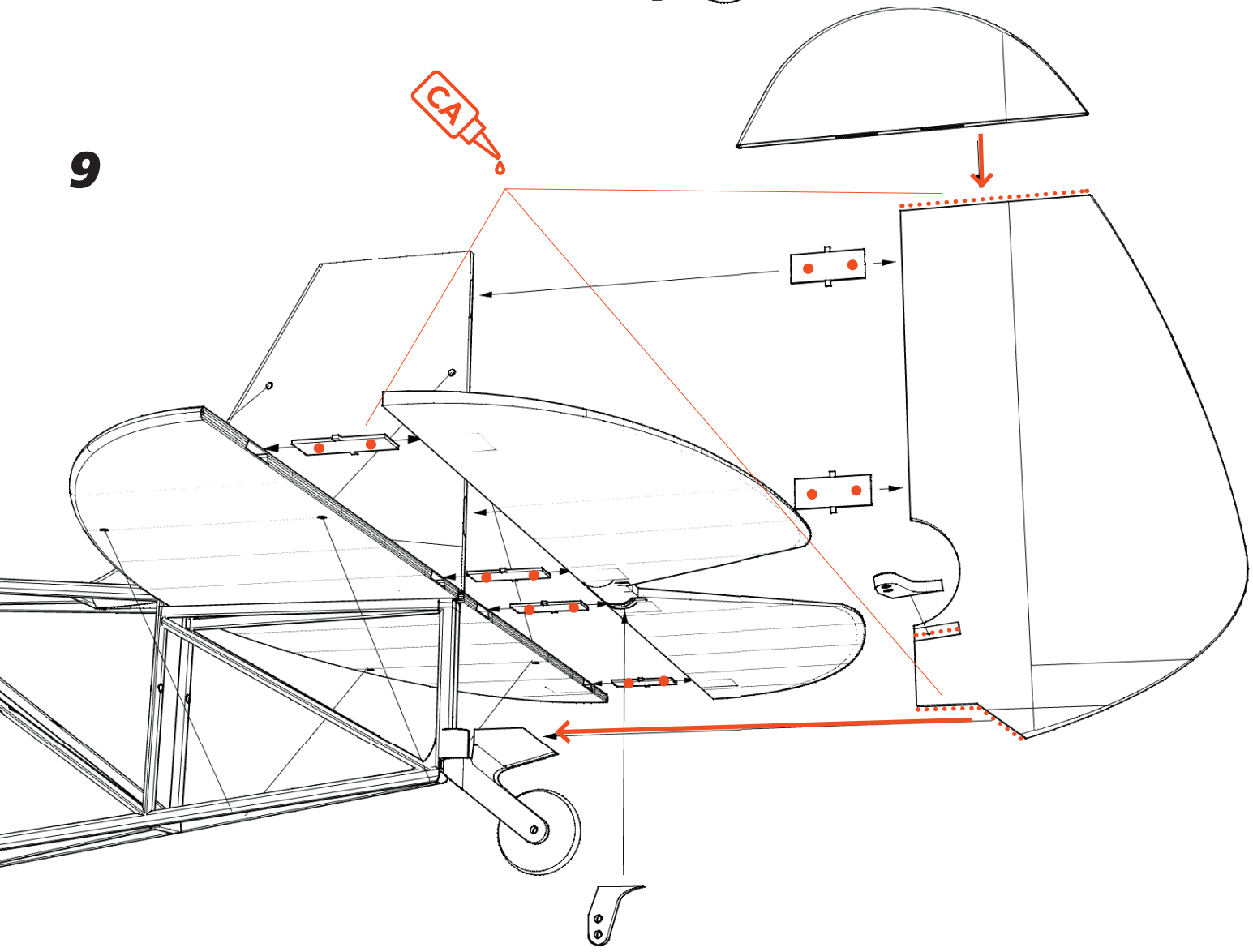
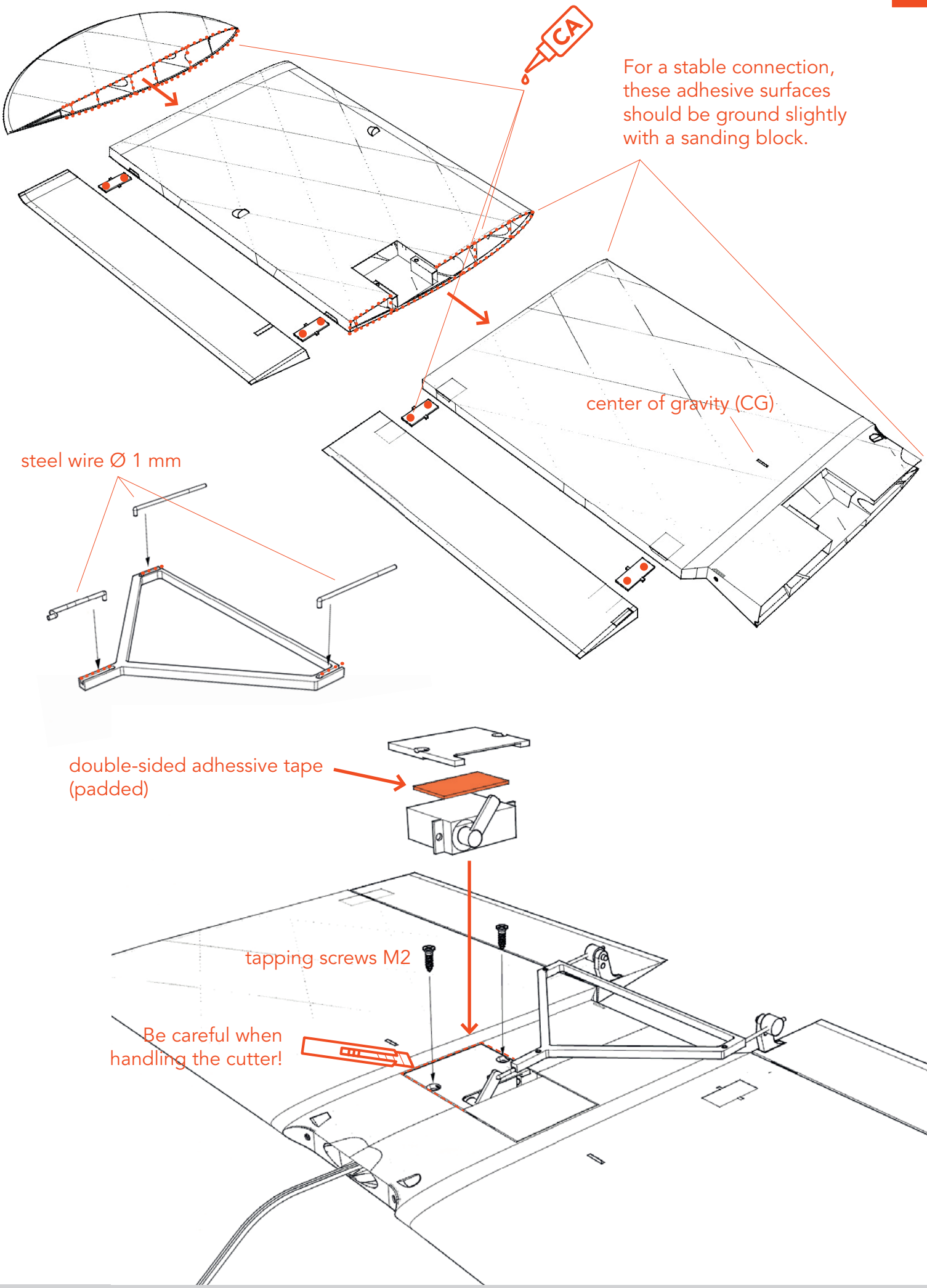


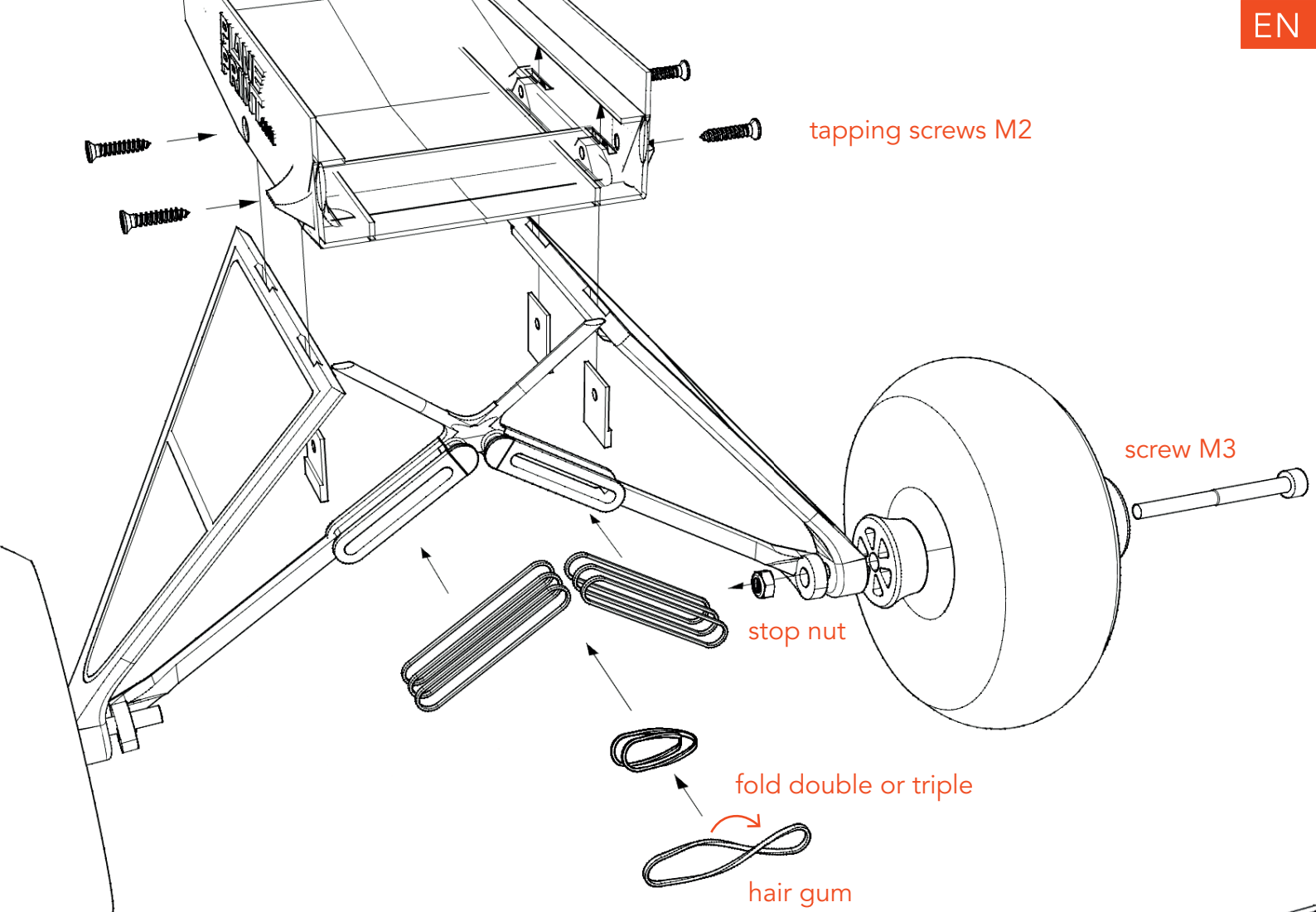


carbon rod 1,2 mm
Attention: do not stick the wheel!

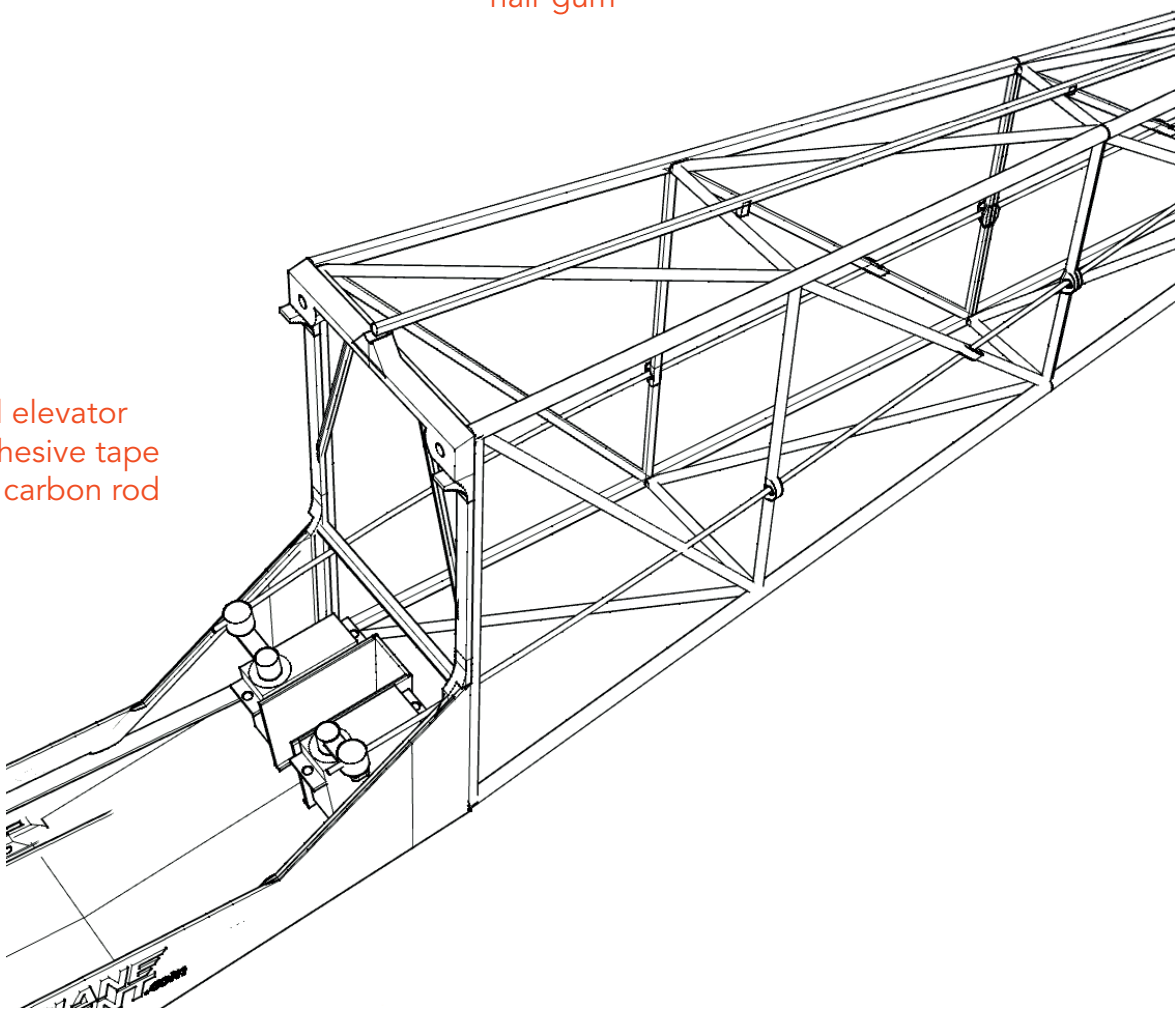
9

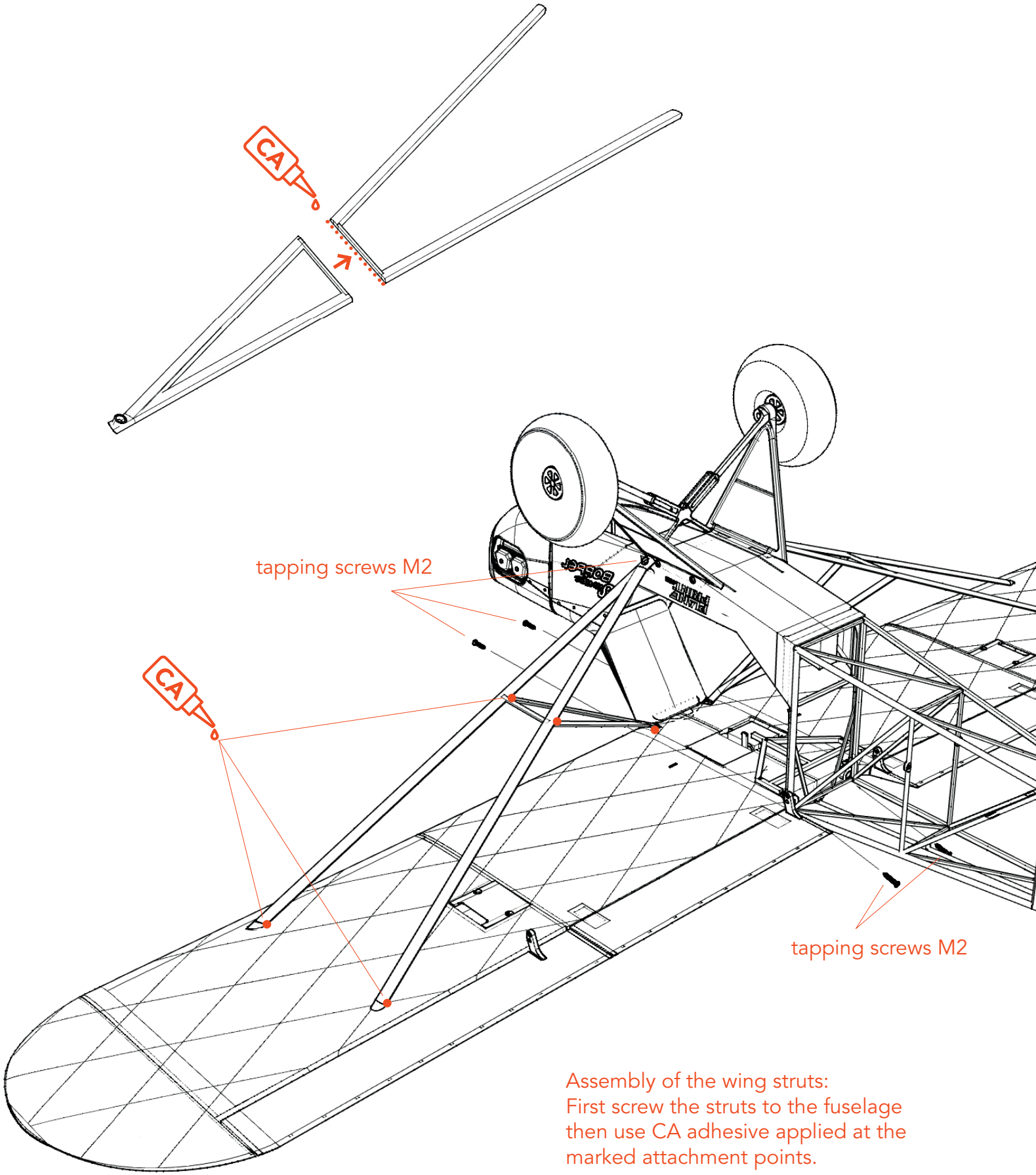



CA
For a stable connection, these adhesive surfaces should be ground slightly with a sanding block.
center of gravity (CG)
steel wire Ø 1 mm
double-sided adhesive tape (padded)
tapping screws M2
Be careful when handling the cutter!



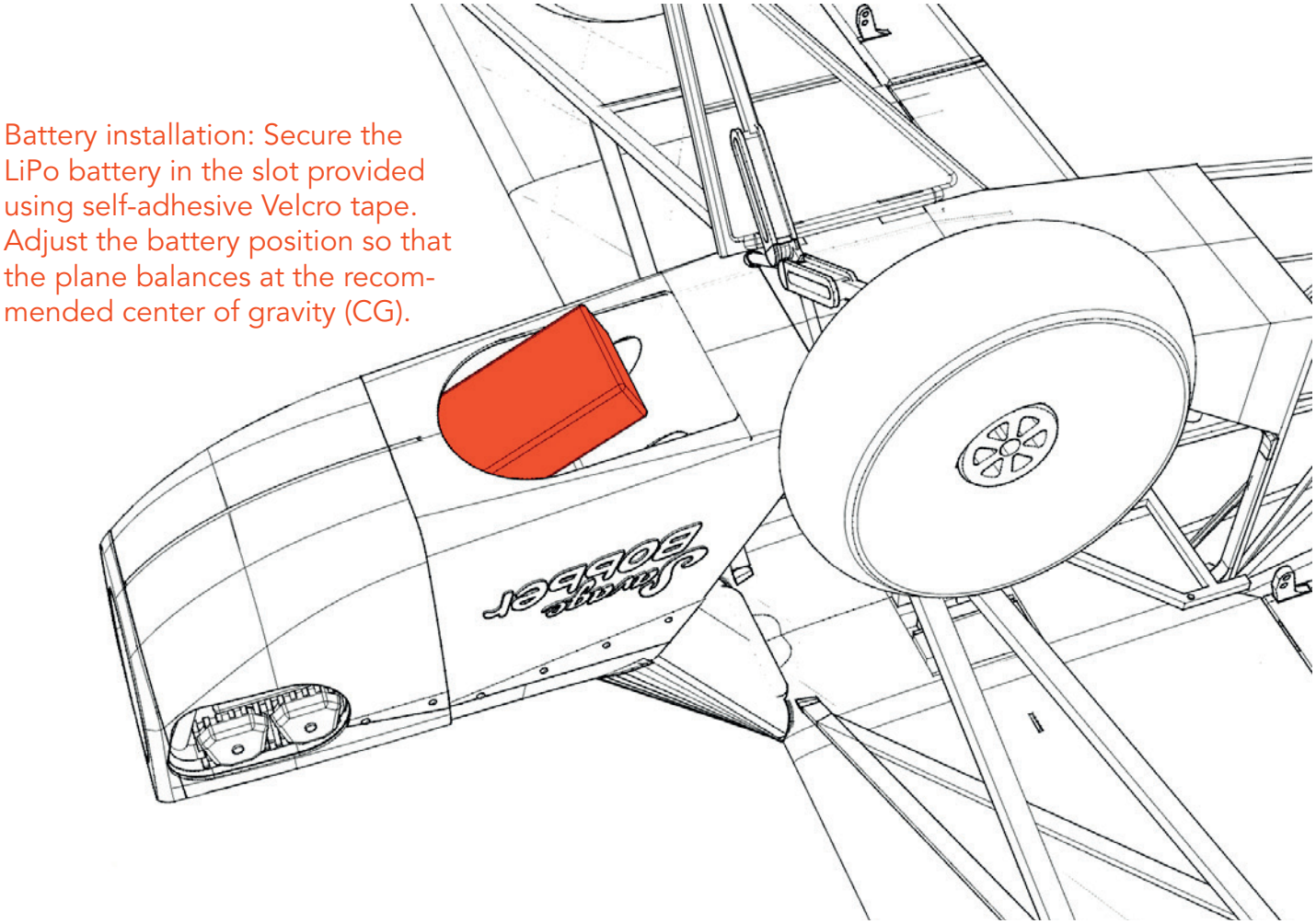
Servos for rudder and elevator with double-sided adhesive tape (padded) and fix with carbon rod Ø 1.2 mm

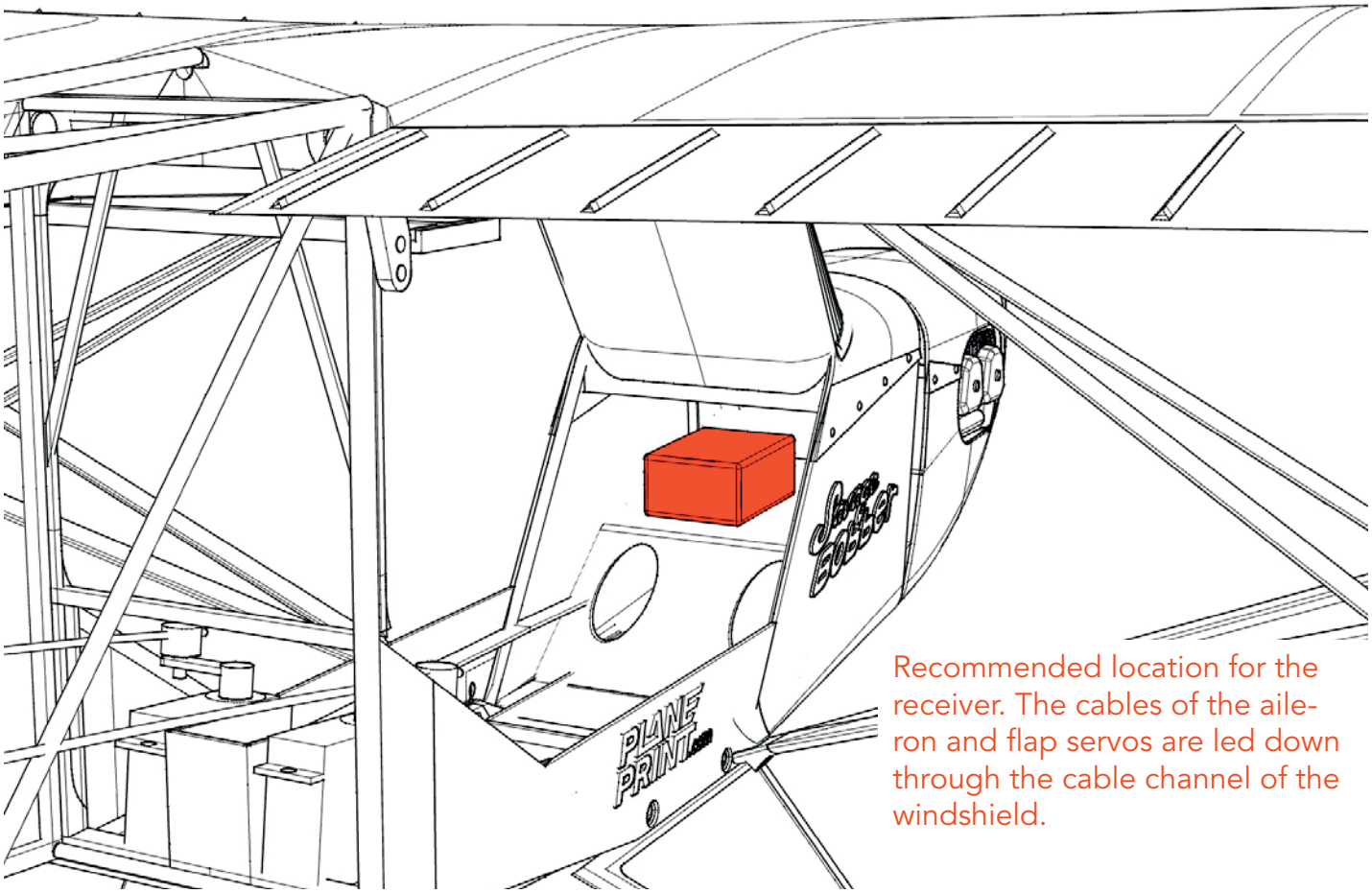




Assembly of the wing struts:
First screw the struts to the fuselage then use CA adhesive applied at the marked attachment points.

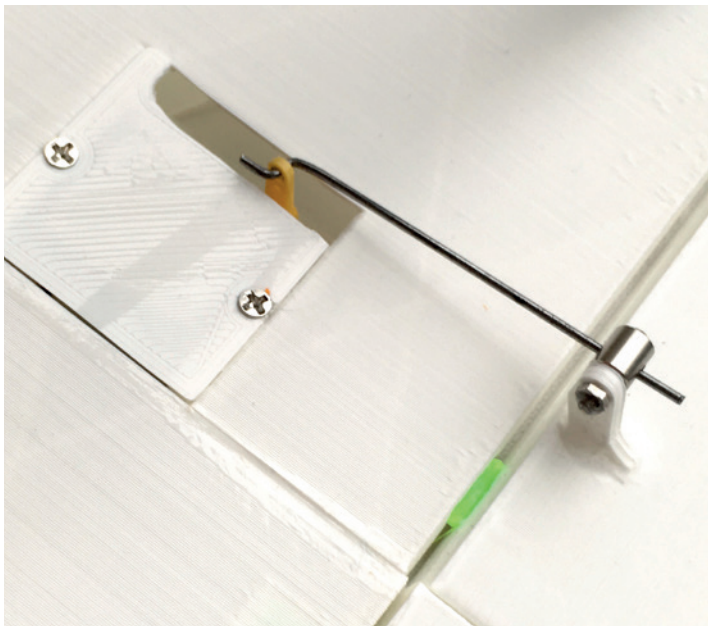
Battery installation: Secure the LiPo battery in the slot provided using self-adhesive Velcro tape. Adjust the battery position so that the plane balances at the recommended center of gravity (CG).

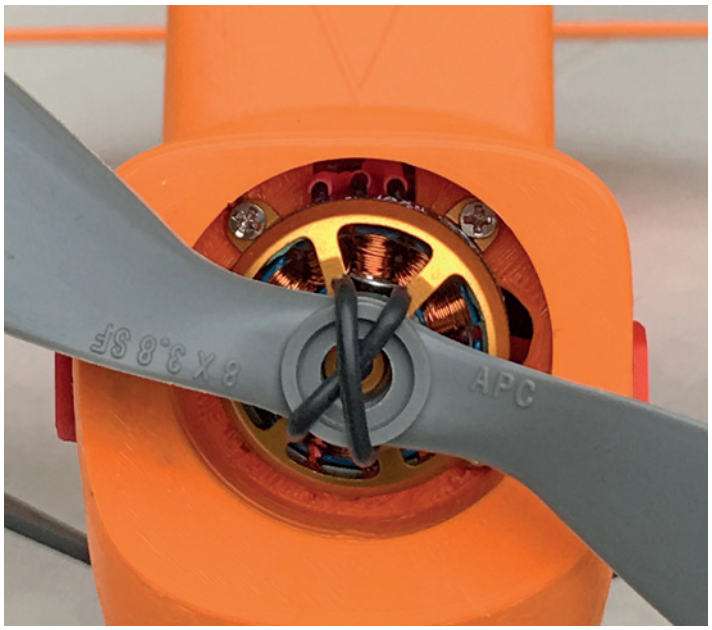


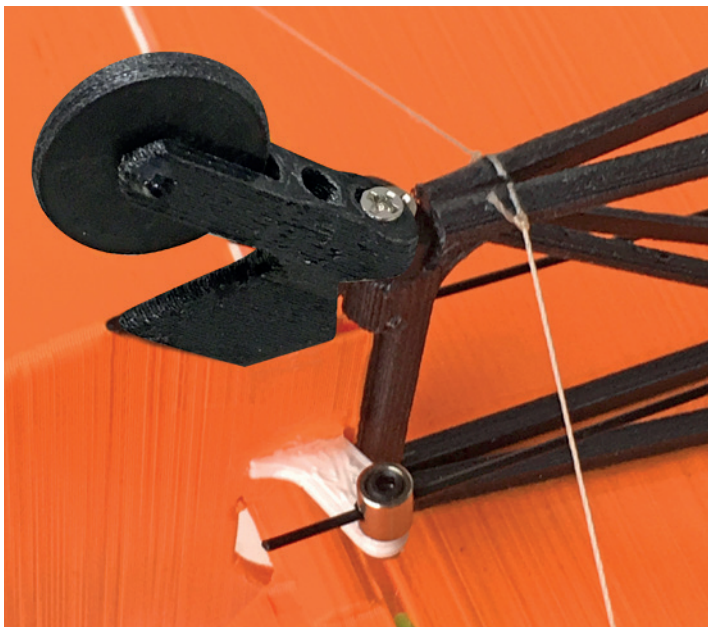


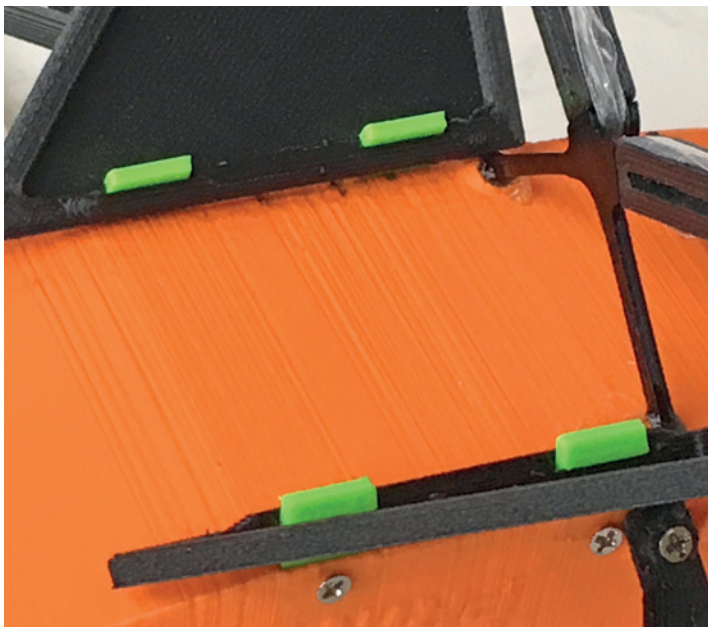
Recommended location for the receiver. The cables of the aileron and flap servos are led down through the cable channel of the windshield.

DETAIL PHOTOS

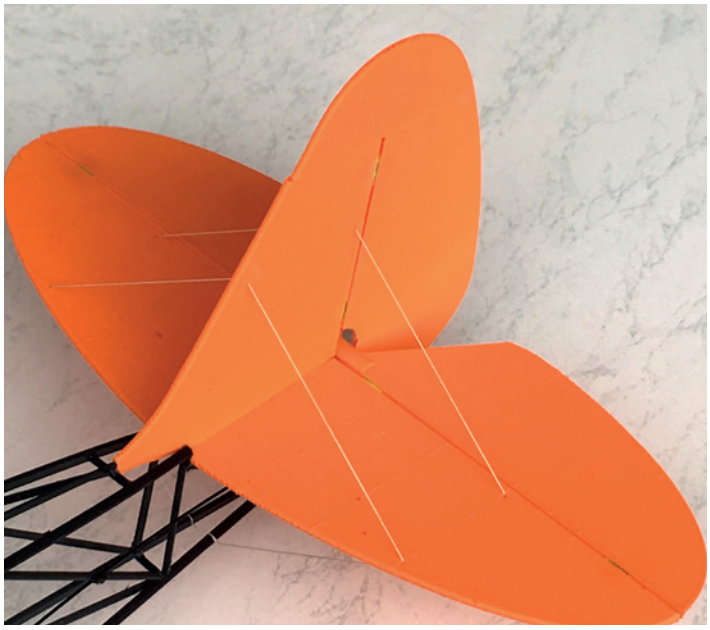


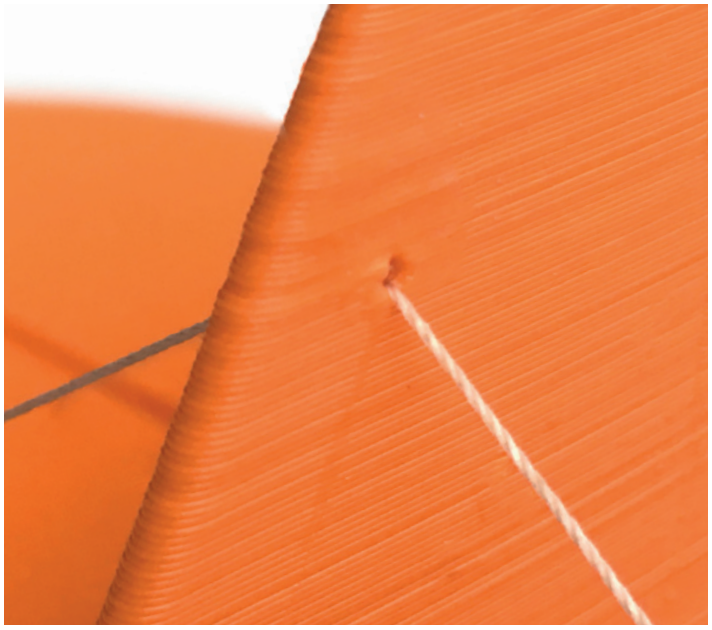






DETAIL PHOTOS





WINDSHIELD

Simply print this page out on adhesive film or label paper, cut out and stick on.
IMPORTANT: the print must be set to 100% page size, so that the size fits exactly!

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 (Acro) model
2. Wing type: 2 ailerons, 1 flap
3. Reversing the direction of servo as required (see control function)
4. Servo adjustment all: 100%

EXPO SETTING

	ADVANCED	BEGINNER
Aileron	15 %	30 %
Elevator	15 %	30 %
Rudder	15 %	30 %

SETTING THE SERVO TRAVEL

Aileron	▲ = 14 mm ▼ = 12 mm	
Elevator	▲ = 28 mm ▼ = 28 mm	
Rudder	◀ = 29 mm ▶ = 29 mm	
Flaps	half ▼ = 10 mm	full ▼ = 20 mm

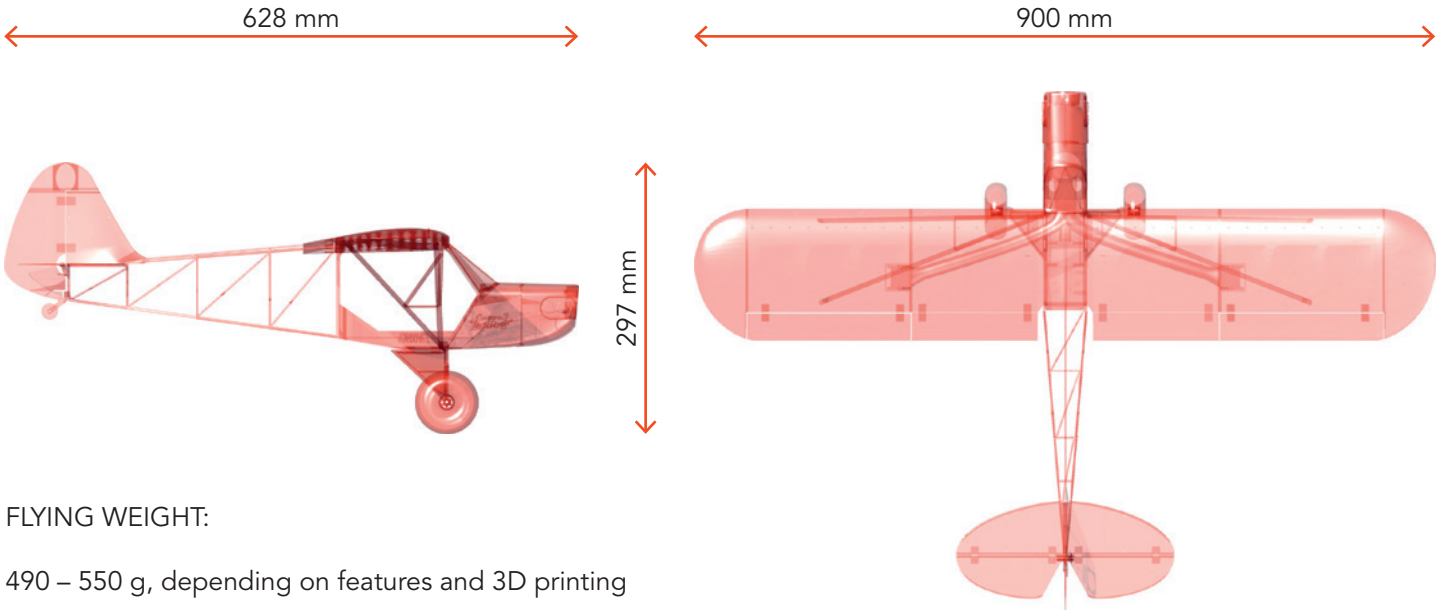
FLIGHT TIMER

Flight time will vary depending on the battery size. Expect 5 minutes under normal circumstances; however, it may be possible to fly for much longer. It is a good idea to be conservative with the flight timer until you gain experience with your airplane.

CENTER OF GRAVITY (CG)

57 mm behind the leading edge (see markings on the wing). For the first flight we recommend to move the center of gravity about 5 mm further forward.

TECHNICAL SPECIFICATIONS



FLYING WEIGHT:

490 – 550 g, depending on features 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.

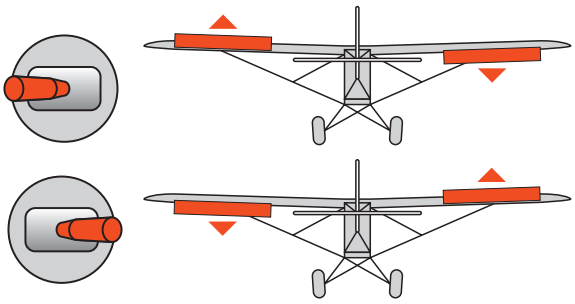
5. Move the rudder lever to the left. The rudder should move to the left.

6. Move the rudder lever to the right. The rudder should move to the right

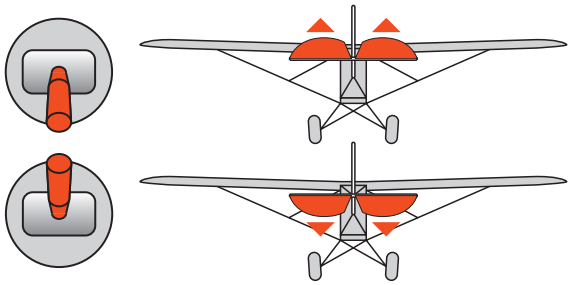
7. Move the flap switch to position 2. The flaps should move down by the set value „half".

8. Move the flap control switch to position 3. The flaps should move down by the set value „whole".

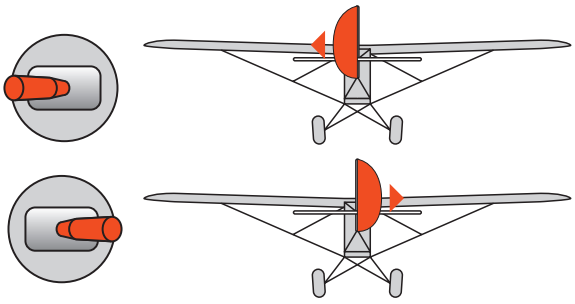
AILERON



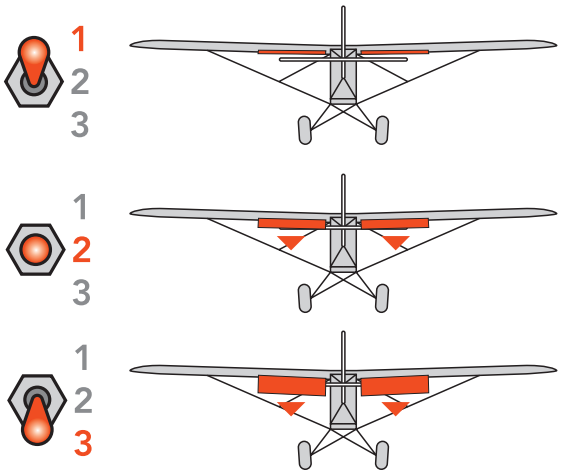
ELEVATOR



RUDDER



FLAPS



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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very light 3d printable rc planes

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