EVORA

BUILD GUIDE Ver. 1.1

FAIR DATA USE

Dear Pilots,

we are thrilled to bring you our latest creation and we can't wait for you to try it out.

However, we must bring to your attention the extensive process and resources that went into the development of this model. With this in mind, we humbly appeal to your fairness in protecting the integrity of our data.

Please do not forward or share the files you have acquired with any third parties, including friends or online communities. Your cooperation in maintaining the fairness of data use will enable us to continue bringing you new and innovative models.

Thanks for joining us in our mission to make 3D printed RC planes accessible and thrilling for all. We appreciate your understanding and support, and your love for aviation.

Best regards,
3DBlackbox

SAFETY PRECAUTIONS AND WARNINGS

- Always keep a safe distance in all directions around your model to avoid collisions or injury. This model is controlled by a radio signal subject to interference from many sources outside your control. Interference can cause momentary loss of control.
- Always operate your model in open spaces away from full-size vehicles, traffic and people.
- Always carefully follow the directions and warnings for this and any optional support equipment (chargers, rechargeable battery packs, etc.).
- Always keep all chemicals, small parts and anything electrical out of the reach of children.
- Always avoid water exposure to all equipment not specifically designed and protected for this purpose. Moisture causes damage to electronics.
- Never place any portion of the model in your mouth as it could cause serious injury or even death.
- Never operate your model with low transmitter batteries
- Always keep aircraft in sight and under control.
- Always use fully charged batteries.
- Always keep transmitter powered on while aircraft is powered.
- Always remove batteries before disassembly.
- Always keep moving parts clean.
- Always keep parts dry.
- Always let parts cool after use before touching.
- Always remove batteries after use.
- Always ensure failsafe is properly set before flying.
- Never operate aircraft with damaged wiring.
- Never touch moving parts.

IMPORTANT

While we strive to develop our models to the best of our knowledge and ability, we disclaim any liability for consequential damages and injuries resulting from improper use or incorrectly printed parts. Users are advised to handle motors, batteries, and propellers with care. Ensure your model is operated with appropriate insurance coverage and only in designated, approved areas.

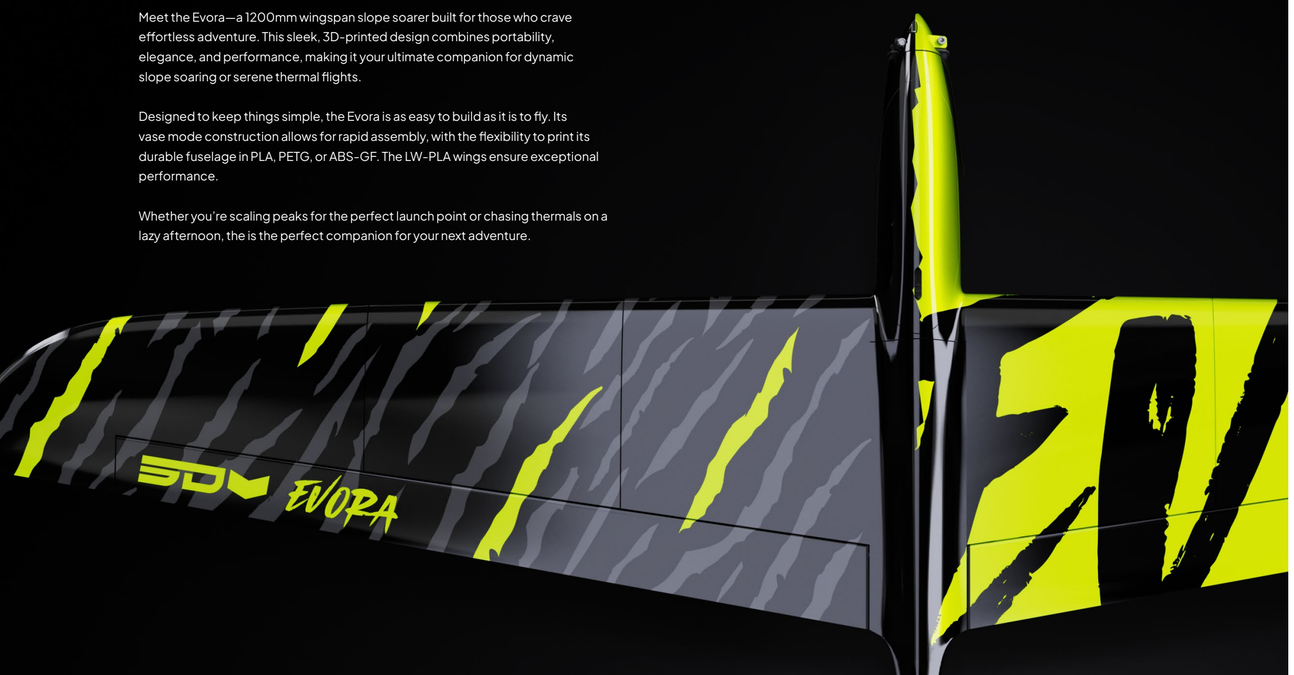
TABLE OF CONTENTS

SURF THE SLOPE. MAKE IT YOURS.

Meet the Evora—a 1200mm wingspan slope soarer built for those who crave effortless adventure. This sleek, 3D-printed design combines portability, elegance, and performance, making it your ultimate companion for dynamic slope soaring or serene thermal flights.

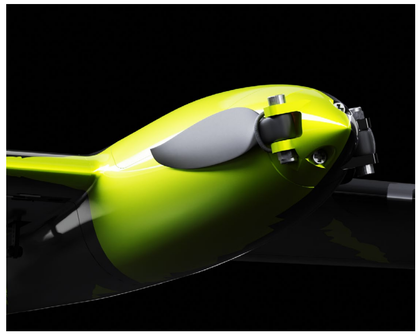
Designed to keep things simple, the Evora is as easy to build as it is to fly. Its vase mode construction allows for rapid assembly, with the flexibility to print its durable fuselage in PLA, PETG, or ABS-GF. The LW-PLA wings ensure exceptional performance.

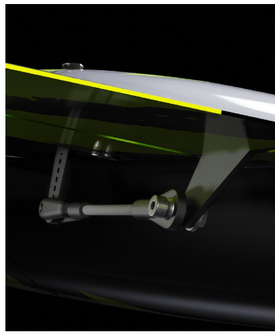
Whether you're scaling peaks for the perfect launch point or chasing thermals on a lazy afternoon, the is the perfect companion for your next adventure.

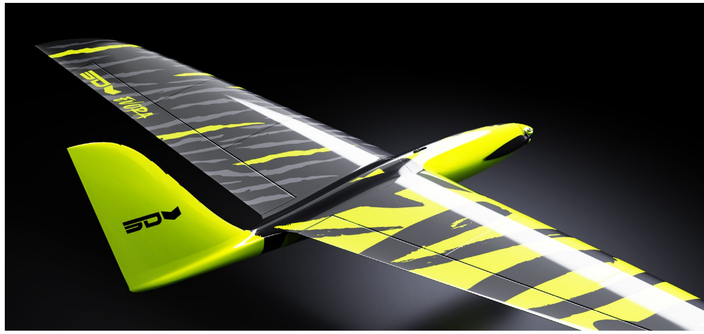


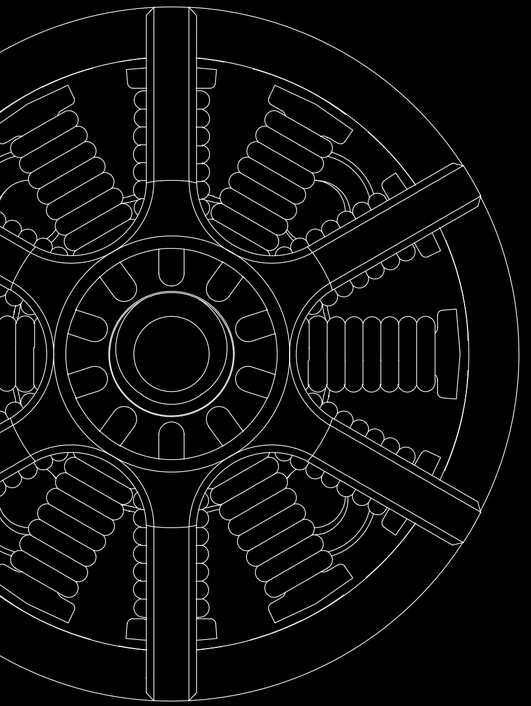
SPECIFICATIONS

Printed Weight	290 g
Take-Off Weight	380 g
Stall Speed	25 km/h
Wing Span	1200 mm
Wing Loading	20g/ dm²
Wing Area	19 dm²
Length	678 mm









01

HARDWARE

HARDWARE

3D Printer

Minimum Printer Volume:
180×180×200 (X,Y,Z - Motorized)
180×180×235 (X,Y,Z - Glider)
Nozzle diameter: 0.4 mm

Filament

Fuselage: PLA, PETG or ABS-GF
Wings: LW-PLA
Accessories: PLA, PETG or ABS-GF

Motor

2S: 2207 2450KV
3S: 2207 1950KV

Servos

2 x Savöx SH-0255MG+
Alternatively, use servos of 22.8 x 12.0 x 29.4 mm and 3 kg/cm torque.

ESC

Current 20A (2S) - 30A (3S)
Voltage up to 11.1V / 3S
Ensure that the ESC fits your motor.

Receiver

3 Channel
1 channel for motor,
2 for elevons (delta mixer required).

Battery

2S: 800mAh - 1800mAh 30C
3S: 650mAh - 1500mAh 45C

Folding Propeller

aero-naut CAM Carbon
2 Blade 7×4 inch
2 Blade 7×5 inch

Socket Head Cap Screw (SHCS)

ID	Part	Amount
30	**M3 x 18 mm** Spinner	2 x
31	**M3 Locking Nuts** Spinner	2 x
32	**M3 x 8 mm** Motor	4 x
33	**M3 Washer** Motor	4 x
34	**M3 x 6 mm** Wing Mount	4 x
35	**M3 Nuts** Wing Mount	4 x

Self tapping Hex Screw

ID	Part	Amount
36	**M2× 8 mm Self-Tapping Screw** Spinner/ Servo Cover	10 x
37	**M2× 6 mm Self-Tapping Screw** Servos	4 x

Carbon Tubes / Rods

ID	Part	Amount
38	**Carbon Tube** 6 mm x 4 mm x 1000 mm Wing	1 x
39	**Carbon Rod** 1.8 mm x 460 mm Elevon – Wing V1	2 x
50	**Carbon Rod** 3 mm x 500 mm Elevon – Wing V2	2 x

Servo Linkages

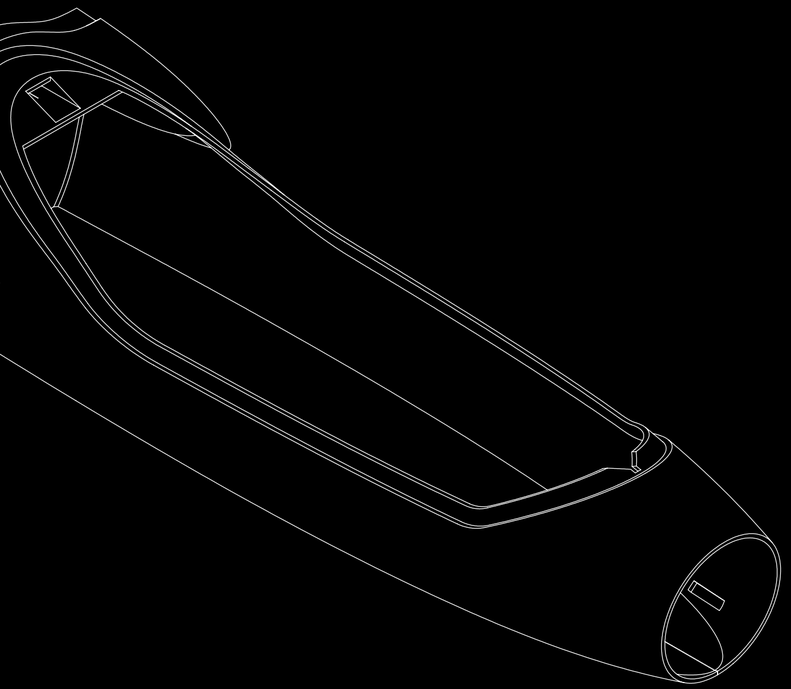
ID	Part	Amount
42	**M2 Clevis**	2 x
43	**Ball Joint Connector**	2 x
44	**M2 Threaded Rod**	2 x

Miscellaneous

ID	Part	Amount
45	**Rubber Band** Spinner	1 x
46	**Rubber Band** Canopy	1 x
47	**Velcro Tape** 20 mm x 80 mm	1 x

Required Tools

Tools
Scalpel
Drill 6mm
CA Glue Medium
Screwdriver Hex, Phillips



02

PRINT FILES

WHAT’S INCLUDED

We are here to simplify your printing experience and bring your builds to the next level! Our print files are designed with the user in mind, providing all necessary information for a smooth and efficient printing process. Instead of the standard .stl format, we use .3MF/.factory, which includes all settings and part orientation details.

Additionally we have included detailed documents with screenshots of all slicer settings used. This way, you can easily replicate the settings and be on your way to creating amazing builds.

- Ready to use .gcode files
- .3MF files for Bambu Studio
- .3MF files for Prusa Slicer
- .3MF files and Profiles for Cura
- .factory files for Simplify3D
- .STL files

Download Folder → **Material** → **Profile** → **Select file & print**

00_Instructions
Documentation and Settings

01_Bambu Studio
Project files (.3MF) for Bambu Studio

02_Prusa_Slicer
Project files (.3MF) for Prusa Slicer

03_Cura
Project files (.3MF), print profiles (.curaprofile) and materials (.fdm_material) for Cura

04_Simplify3D
Project files (.factory) for Simplify3D

05_STL
3D Files (.stl) for the LED covers for SLA printing (optional)

06_GCodes
Ready to use print files (.gcode) for i3 style printers.

LW-PLA

PETG

PLA

Profile_P1

Profile_P2

Canopy_C1

Canopy_C2

Fuse_F1

Fuse_F1_Alternative

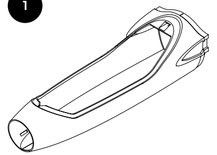
Fuse-F2

Fuse-F3

IMPORTANT

For further insight into the proper print settings, please refer to the print settings section beginning on page 23. Here, you'll find all the information you need to ensure successful 3D printing.

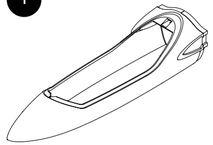
1



Fuse-F1

Profile: P1
Material: PLA
Weight: 27.19 g

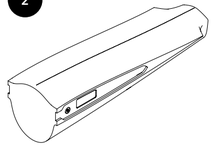
1



Fuse-F1_Alternative

Profile: P1
Material: PLA
Weight: 29.00 g

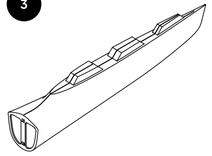
2



Fuse-F2

Profile: P1
Material: PLA
Weight: 28.94 g

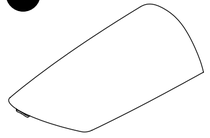
3



Fuse-F3

Profile: P1
Material: PLA
Weight: 13.00 g

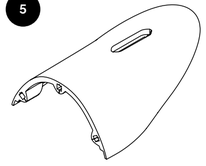
4



Canopy-C1

Profile: P1
Material: PLA
Weight: 6.47 g

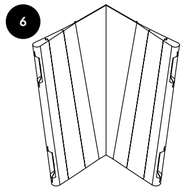
5



Canopy-C2

Profile: P1
Material: PLA
Weight: 4.46 g

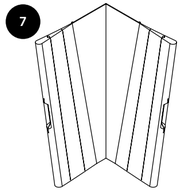
6



Elevon_L1/R1

Profile: P1
Material: PLA
Weight: 28.01 g

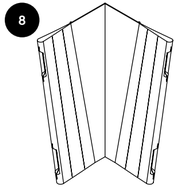
7



Elevon_L2/R2

Profile: P1
Material: PLA
Weight: 27.53 g

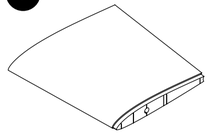
8



Elevon_L3/R3

Profile: P1
Material: PLA
Weight: 24.39 g

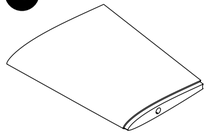
9



Wing_L1/R1

Profile: P1
Material: LW-PLA
Weight: 21.29 g

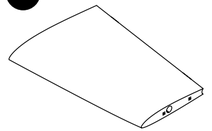
10



Wing_L2/R2

Profile: P1
Material: LW-PLA
Weight: 16.72 g

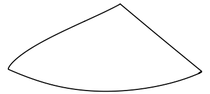
11



Wing_L3/R3

Profile: P1
Material: LW-PLA
Weight: 12.08 g

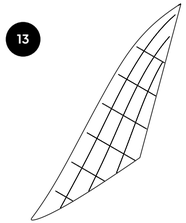
12



Wing_L4/R4

Profile: P1
Material: LW-PLA
Weight: 5.27 g

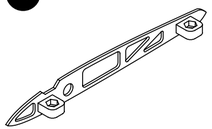
13



Stabilizer

Profile: P1
Material: LW-PLA
Weight: 12.08 g

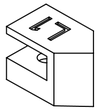
14



Wing_Mount_L/R

Profile: P2
Material: PLA
Weight: 2.90 g

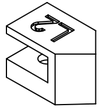
15



Wing_Mount_L1/R1

Profile: P2
Material: PLA
Weight: 0.97 g

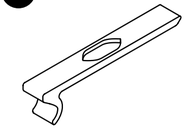
16



Wing_Mount_L2/R2

Profile: P2
Material: PLA
Weight: 0.87 g

17



Canopy_Lock

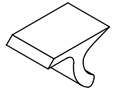
Profile: P2
Material: PLA
Weight: 0.64 g

18

Canopy_Lock_Grip

Profile: P2
Material: PLA
Weight: 0.18 g

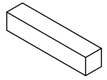
19



Canopy_Lock_Hook

Profile: P2
Material: PLA
Weight: 0.11 g

20



Alignment_Tab

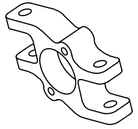
Profile: P2
Material: PLA
Weight: 0.05 g

21

Spinner_S1

Profile: P2
Material: PLA
Weight: 2.51 g

22



Spinner_S2

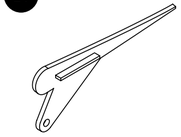
Profile: P2
Material: PLA
Weight: 2.06 g

23

Spinner_S3

Profile: P2
Material: PLA
Weight: 1.00 g

24



Elevon_Servohorn_L/R

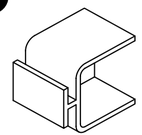
Profile: P2
Material: PLA
Weight: 0.65 g

25

Elevon_L4/R4 (Wing V1)

Profile: P2
Material: PLA
Weight: 0.26 g

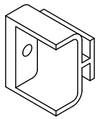
26



Servo_Mount_L1/R1 (Wing V1)

Profile: P2
Material: PLA
Weight: 0.52 g

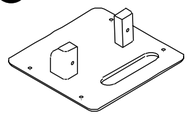
27



Servo_Mount_L2/R2 (Wing V1)

Profile: P2
Material: PLA
Weight: 0.37 g

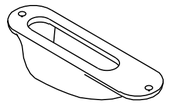
48



Servo_Cover_L1/R1 (Wing V2)

Profile: P2
Material: PLA
Weight: 4.59 g

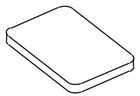
49



Servo_Cover_L2/R2 (Wing V2)

Profile: P2
Material: PLA
Weight: 1.70 g

50



Alignment_Tab (Wing V2)

Profile: P2
Material: PLA
Weight: 0.46 g

28

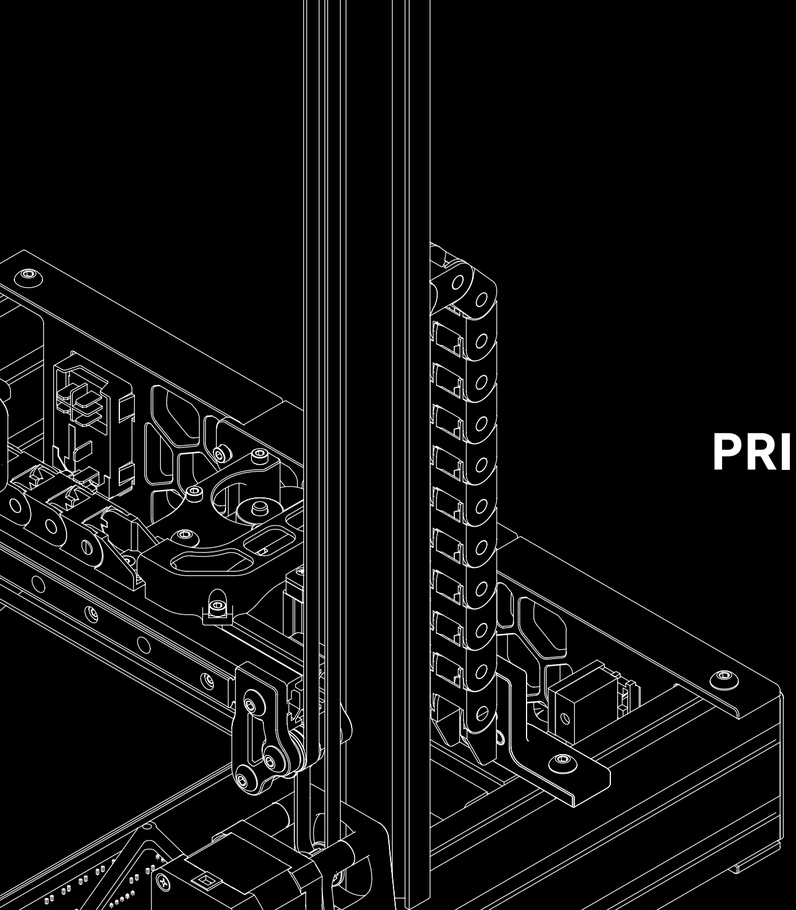
Motor_Mount

Profile: P2
Material: PETG or similar
high temperature resistant Material
Weight: 2.00 g

29

Hinge (Wing V1)

Profile: P2
Material: PETG
Weight: 0.05 g



03 PRINT SETTINGS

SIMPLIFYING YOUR PRINT EXPERIENCE

Thin wall printing is a challenging aspect of 3D printing that requires precision and a well-calibrated printer. In order to produce high-quality prints, it's essential to have a printer that is properly set up and dialed in.

We understand that the 3D printing community encompasses a diverse range of users, each possessing unique levels of experience and expertise. The Evora has been created with the aim of maximizing user accessibility, making the building journey as convenient as possible. The files included in the package offer settings for the most commonly used slicers, as well as pre-made project files, to streamline your process.

The goal is to make 3D printing more accessible for everyone, regardless of the skill level, so you can effortlessly enjoy the advantages of this remarkable technology.

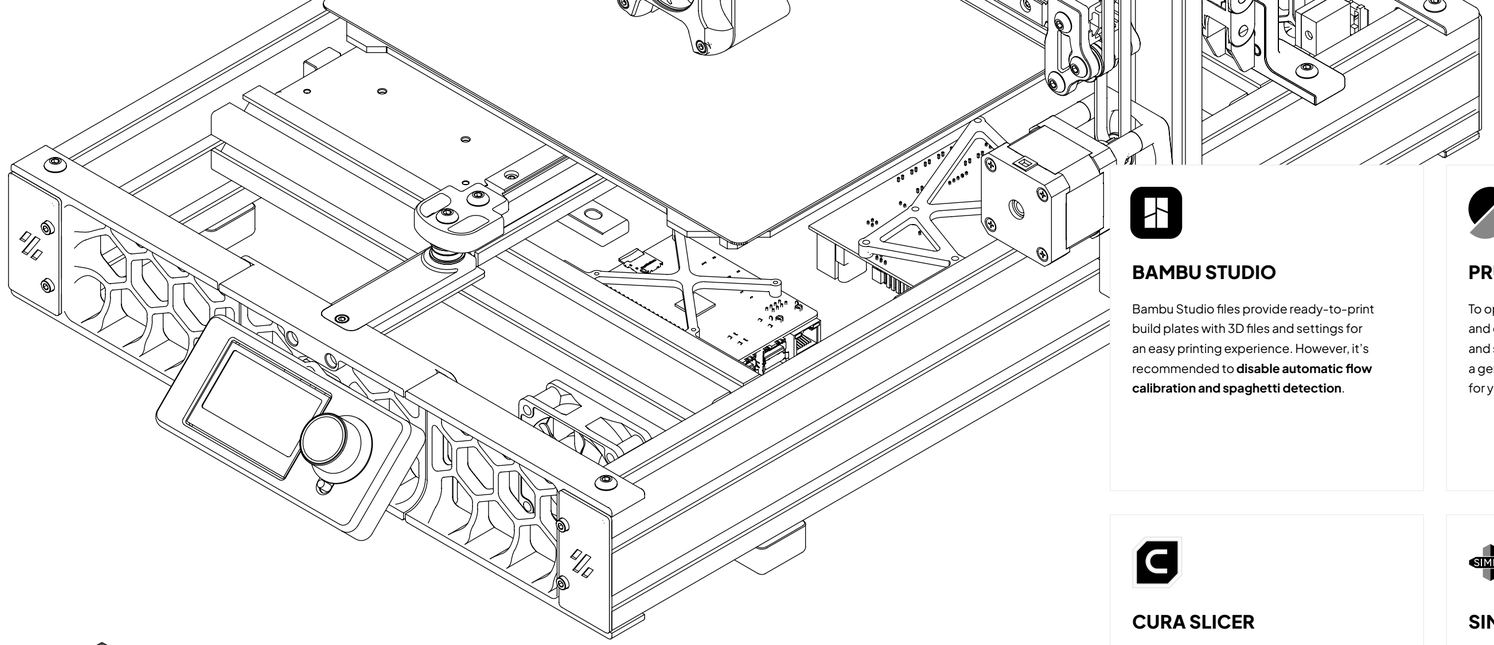
Although we strive to provide standardized settings for all 3D printers, it is important to note that every machine is unique and may require adjustments to achieve optimal results. We encourage you to experiment with these settings to find the best fit for your specific setup.

PRINT SETTINGS

ABOUT LIGHTWEIGHT PLA

LW-PLA is a specialized filament designed specifically for 3D printing. It is particularly useful for creating lightweight airplanes due to its unique properties. One of its key features is its active foaming, which causes the filament to expand as it is printed, resulting in a strong, durable and lightweight final product. These properties make it the perfect material for printing our planes.

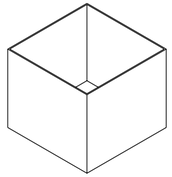
Due to its foaming properties, it is crucial to fine-tune your printer settings to ensure the parts fit correctly and maintain strong. If you encounter any issues with layer adhesion, try reducing the cooling fan. Using a heated bed is highly recommended, with a temperature range of 56–60° Celsius, to prevent warping.



CALIBRATION

The degree of foaming varies depending on parameters such as extrusion multiplier and temperature. Since every 3D printer is unique, it's essential to adjust these settings properly to ensure the parts fit together well.

We recommend using the provided test file to fine-tune your printer. Print the cube using Profile-P1 and measure the wall thickness with a digital caliper. Adjust the print temperature until the wall thickness reaches 0.52 mm - 0.58 mm.



Calibration_Cube

Profile: P1
Material: LW-PLA
Weight: 2.23 g

BAMBU STUDIO

Bambu Studio files provide ready-to-print build plates with 3D files and settings for an easy printing experience. However, it's recommended to **disable automatic flow calibration and spaghetti detection**.

PRUSA SLICER

To open a .3mf file in Prusa Slicer, simply drag and drop the file into the Prusa Slicer window and select "Open as Project". This will generate a generic Printer, printing profile, and materials for you to use as a starting point.

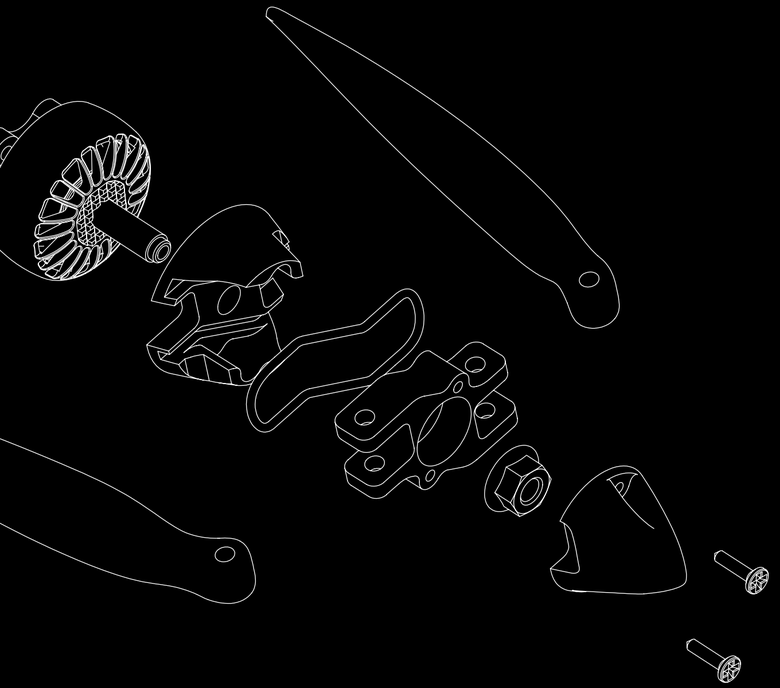
CURA SLICER

Although we provide Cura project files, it's best to import materials and profiles separately, using .3MF files only for part orientation to avoid compatibility issues. Create a new generic printer matching your own instead of using pre-defined machines.

03_Cura › Slicer_Settings.pdf

SIMPLIFY3D

The .factory files for S3D include all necessary print settings for compatibility with your printer. Simply adjust the build volume in the Gcode tab to match your printer's specifications, as well as modify the start and end routines in the Scripts tab according to your needs.

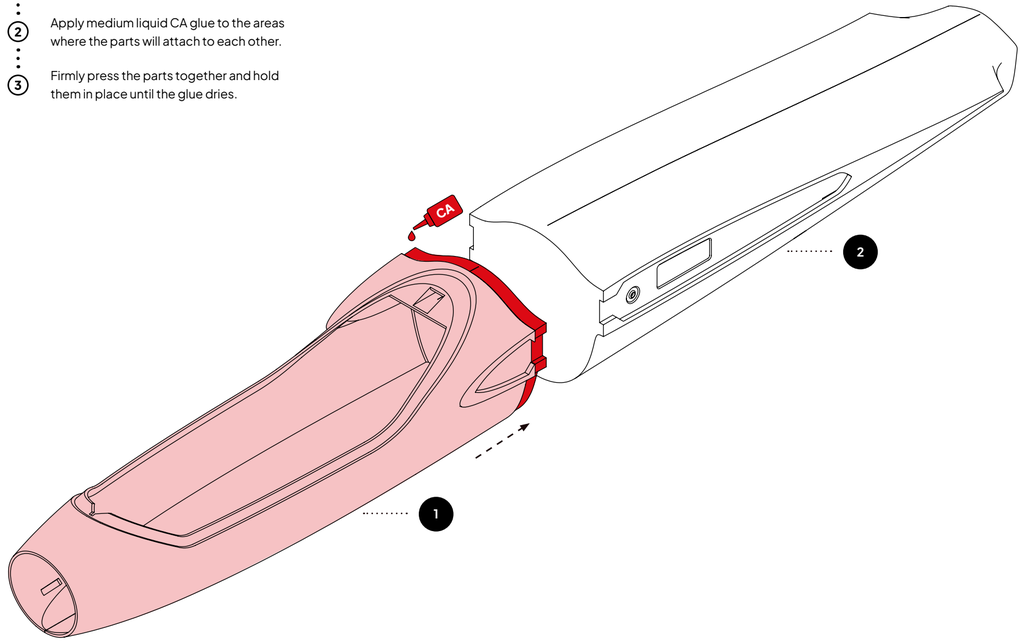


04

BUILD GUIDE

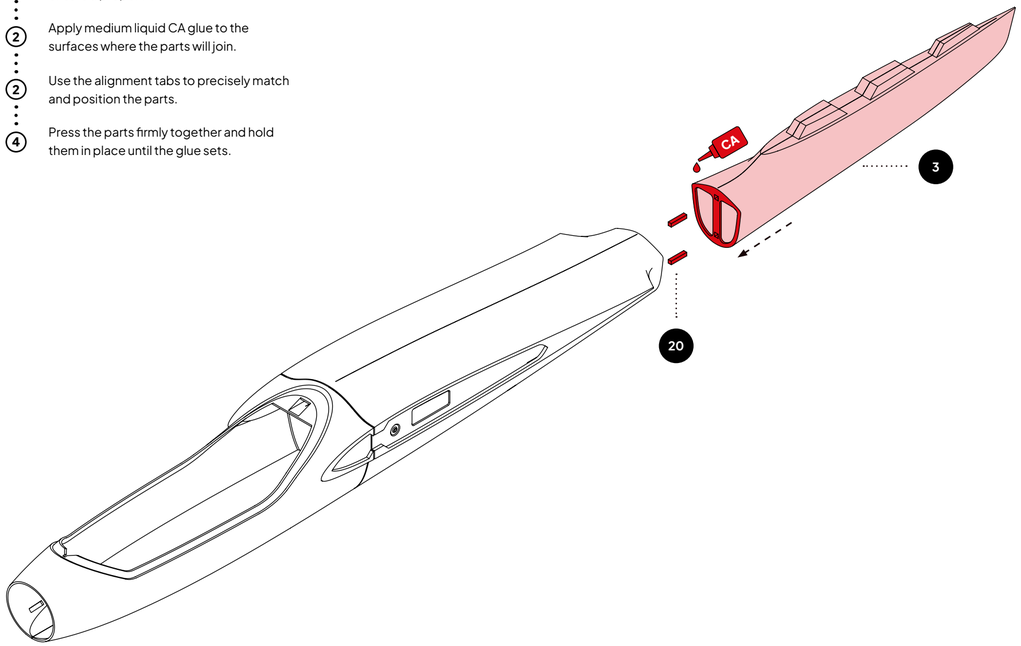
FUSELAGE

1. Clean up the edges of all parts, both on the inside and outside.
2. Apply medium liquid CA glue to the areas where the parts will attach to each other.
3. Firmly press the parts together and hold them in place until the glue dries.



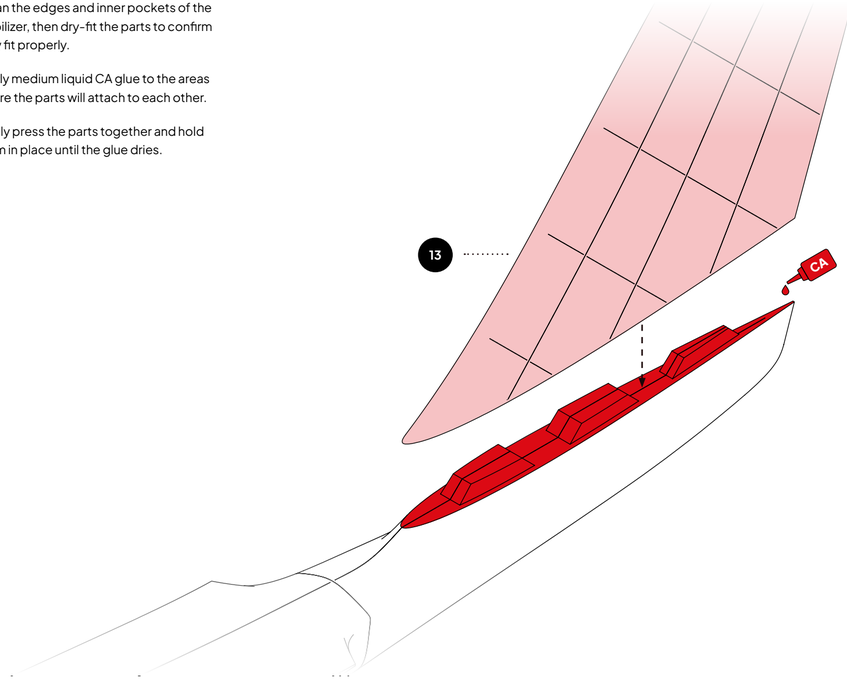
FUSELAGE

1. Dry fit the parts together to ensure a proper fit.
2. Apply medium liquid CA glue to the surfaces where the parts will join.
2. Use the alignment tabs to precisely match and position the parts.
4. Press the parts firmly together and hold them in place until the glue sets.



STABILIZER

1. Clean the edges and inner pockets of the stabilizer, then dry-fit the parts to confirm they fit properly.
2. Apply medium liquid CA glue to the areas where the parts will attach to each other.
3. Firmly press the parts together and hold them in place until the glue dries.

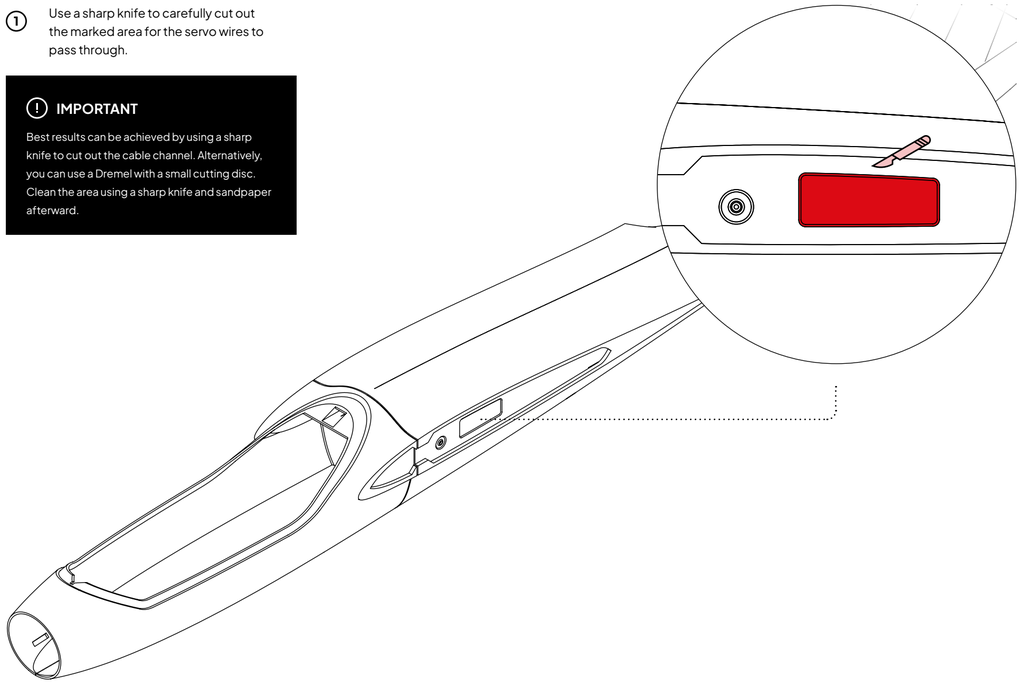


SERVO CHANNEL

1. Use a sharp knife to carefully cut out the marked area for the servo wires to pass through.

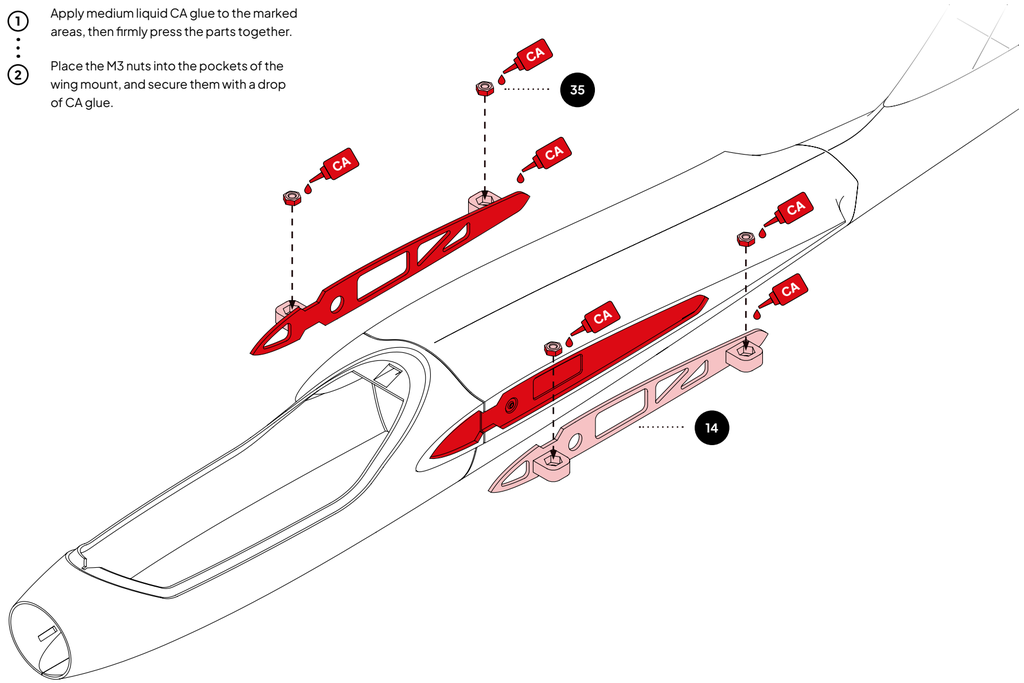
! IMPORTANT

Best results can be achieved by using a sharp knife to cut out the cable channel. Alternatively, you can use a Dremel with a small cutting disc. Clean the area using a sharp knife and sandpaper afterward.



WING MOUNT

1. Apply medium liquid CA glue to the marked areas, then firmly press the parts together.
2. Place the M3 nuts into the pockets of the wing mount, and secure them with a drop of CA glue.

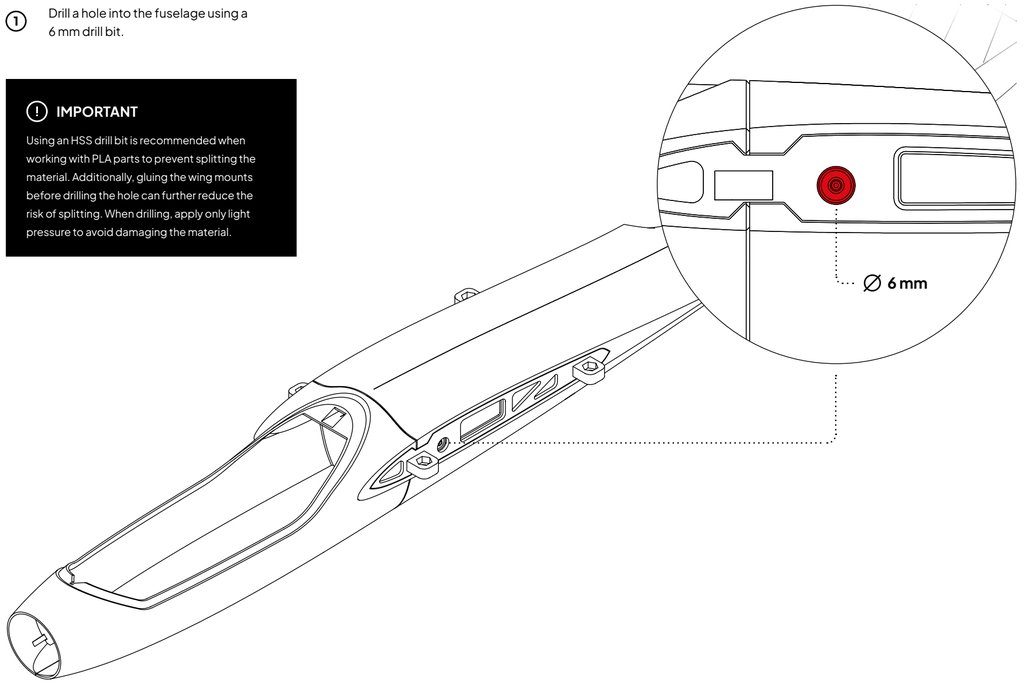


MAIN SPAR

1. Drill a hole into the fuselage using a 6 mm drill bit.

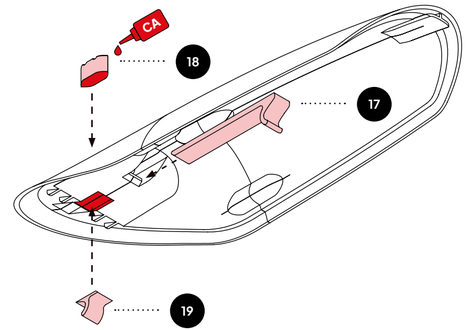
IMPORTANT

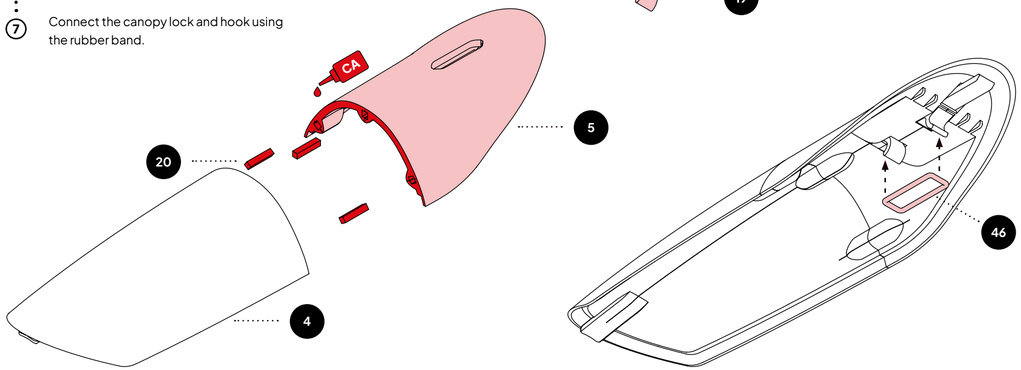
Using an HSS drill bit is recommended when working with PLA parts to prevent splitting the material. Additionally, gluing the wing mounts before drilling the hole can further reduce the risk of splitting. When drilling, apply only light pressure to avoid damaging the material.



CANOPY

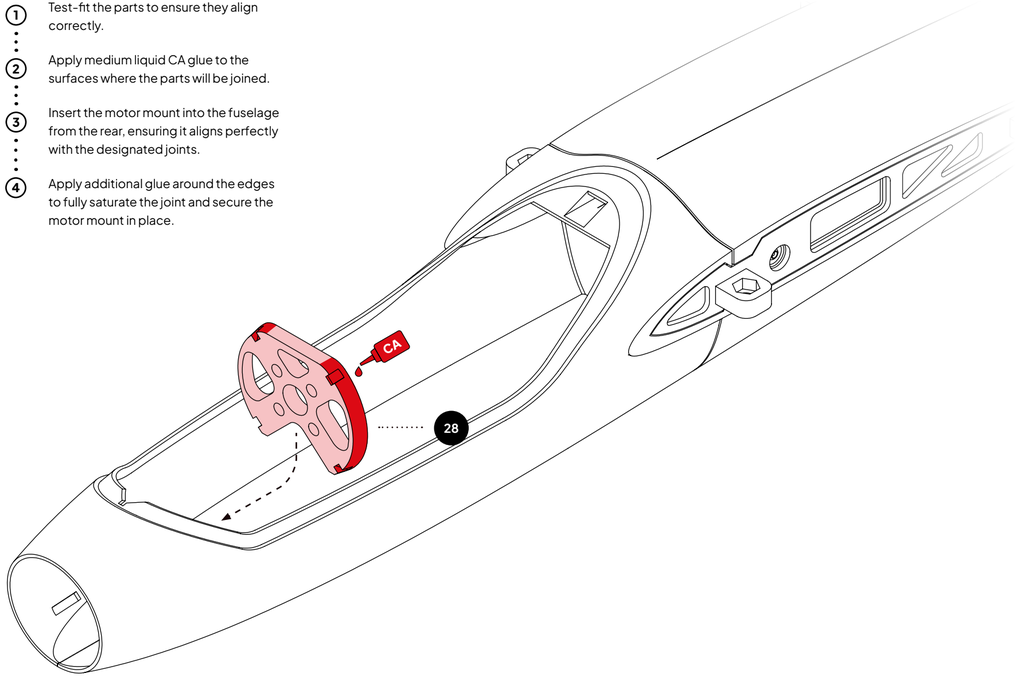
1. Dry-fit the parts to confirm proper alignment.
2. Use the alignment tabs to accurately position the parts.
3. Apply medium liquid CA glue to the joints where the parts connect.
4. Press the parts firmly together and hold until the glue fully sets.
5. Insert the canopy lock into its pocket and attach the grip with glue.
6. Secure the canopy hook to the canopy with glue and allow it to dry completely.
7. Connect the canopy lock and hook using the rubber band.





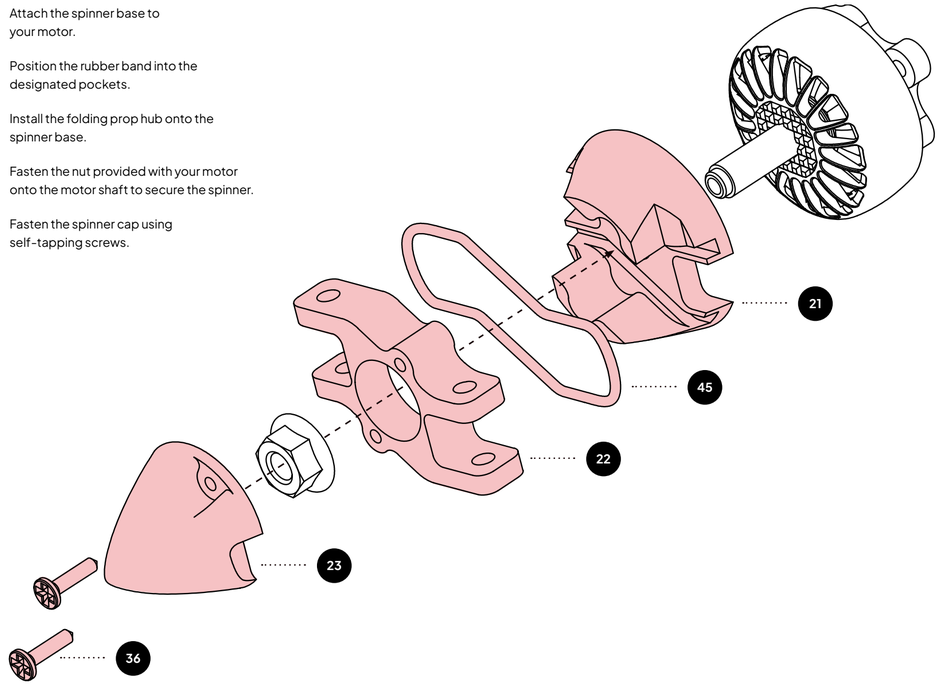
MOTOR MOUNT

1. Test-fit the parts to ensure they align correctly.
2. Apply medium liquid CA glue to the surfaces where the parts will be joined.
3. Insert the motor mount into the fuselage from the rear, ensuring it aligns perfectly with the designated joints.
4. Apply additional glue around the edges to fully saturate the joint and secure the motor mount in place.

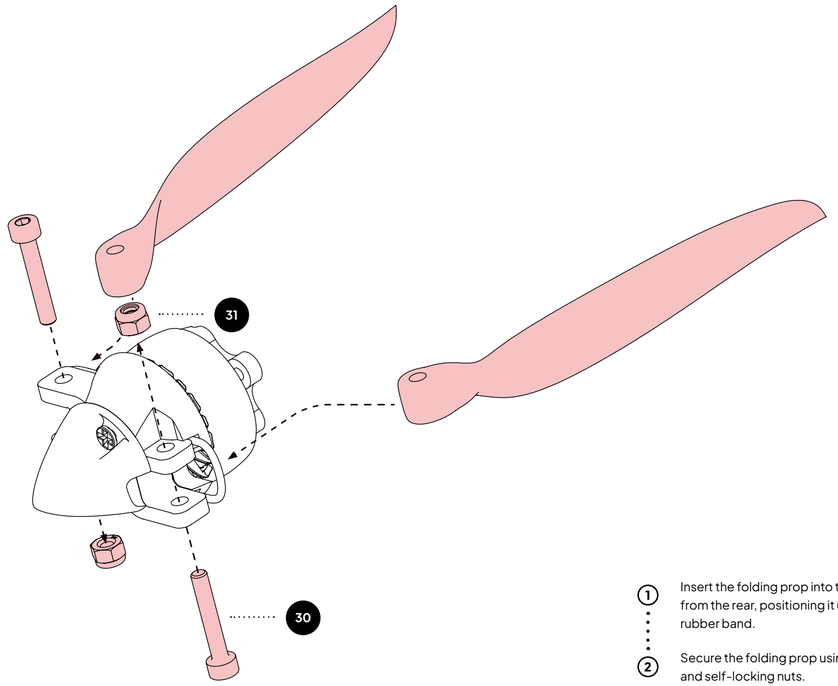


SPINNER

1. Attach the spinner base to your motor.
2. Position the rubber band into the designated pockets.
3. Install the folding prop hub onto the spinner base.
4. Fasten the nut provided with your motor onto the motor shaft to secure the spinner.
5. Fasten the spinner cap using self-tapping screws.

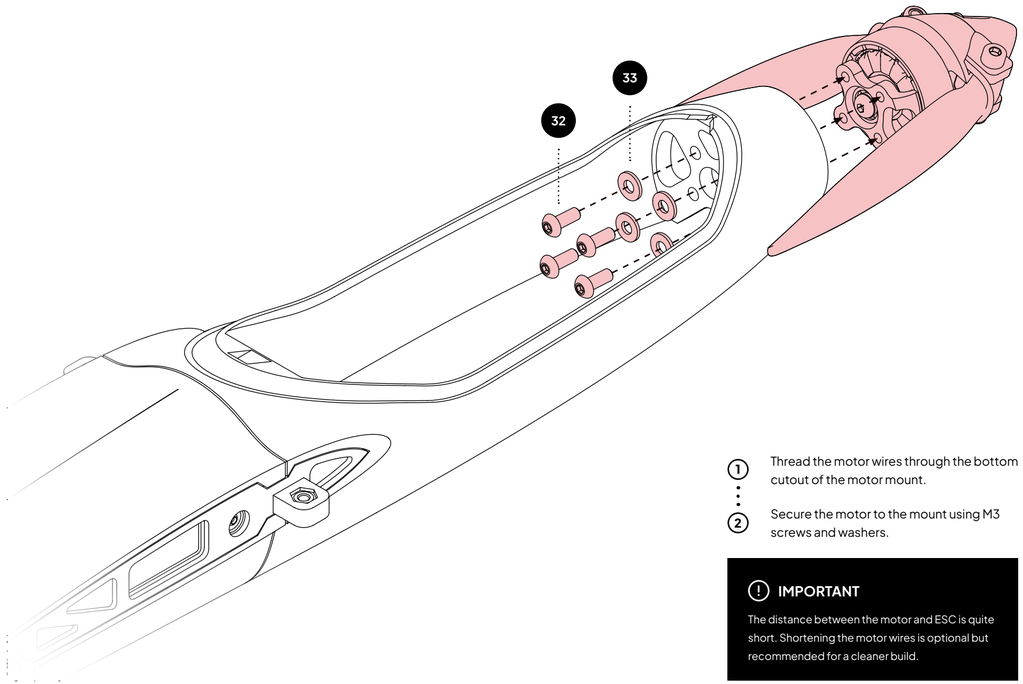


FOLDING PROP



1. Insert the folding prop into the spinner hub from the rear, positioning it underneath the rubber band.
2. Secure the folding prop using M3 screws and self-locking nuts.

MOTOR ASSEMBLY

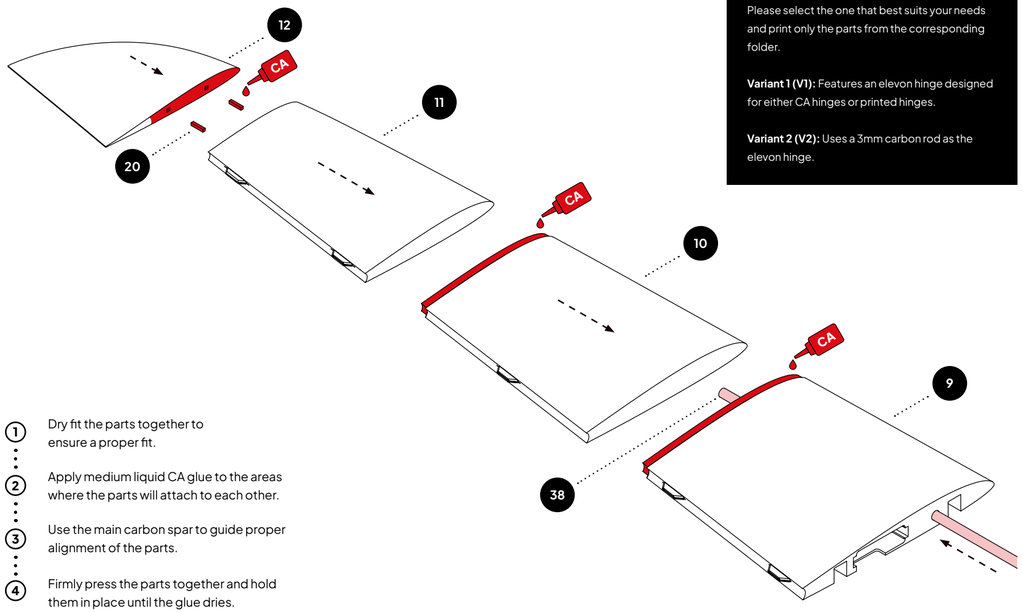


1. Thread the motor wires through the bottom cutout of the motor mount.
2. Secure the motor to the mount using M3 screws and washers.

IMPORTANT

The distance between the motor and ESC is quite short. Shortening the motor wires is optional but recommended for a cleaner build.

WING V1



IMPORTANT

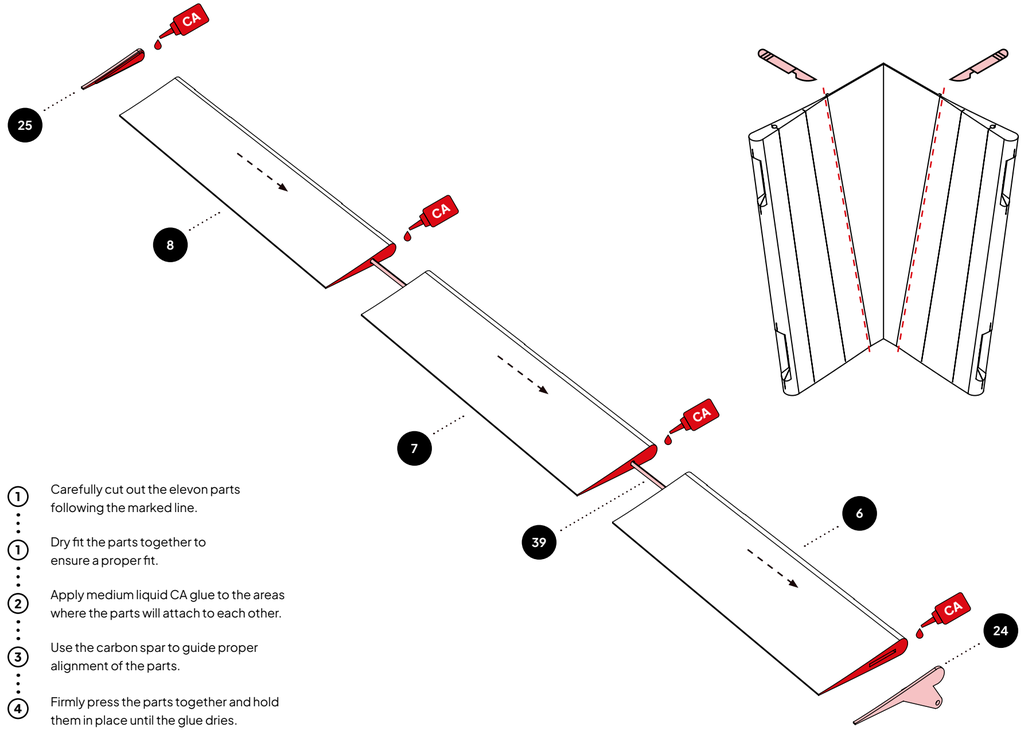
Two wing variants are available.
Please select the one that best suits your needs and print only the parts from the corresponding folder.

Variant 1 (V1): Features an elevon hinge designed for either CA hinges or printed hinges.

Variant 2 (V2): Uses a 3mm carbon rod as the elevon hinge.

1. Dry fit the parts together to ensure a proper fit.
2. Apply medium liquid CA glue to the areas where the parts will attach to each other.
3. Use the main carbon spar to guide proper alignment of the parts.
4. Firmly press the parts together and hold them in place until the glue dries.

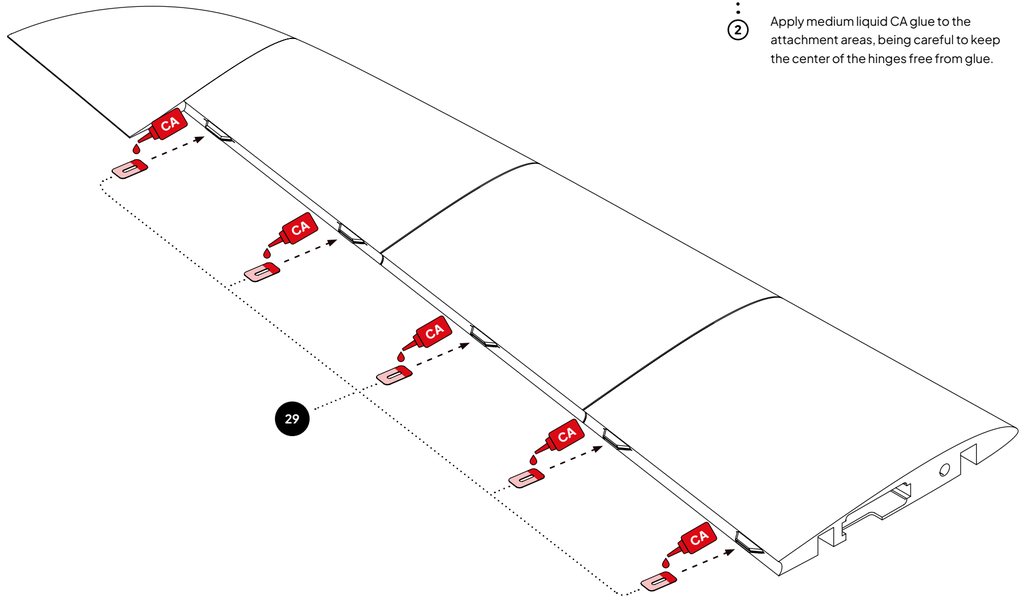
ELEVON (Wing V1)



1. Carefully cut out the elevon parts following the marked line.
1. Dry fit the parts together to ensure a proper fit.
2. Apply medium liquid CA glue to the areas where the parts will attach to each other.
3. Use the carbon spar to guide proper alignment of the parts.
4. Firmly press the parts together and hold them in place until the glue dries.

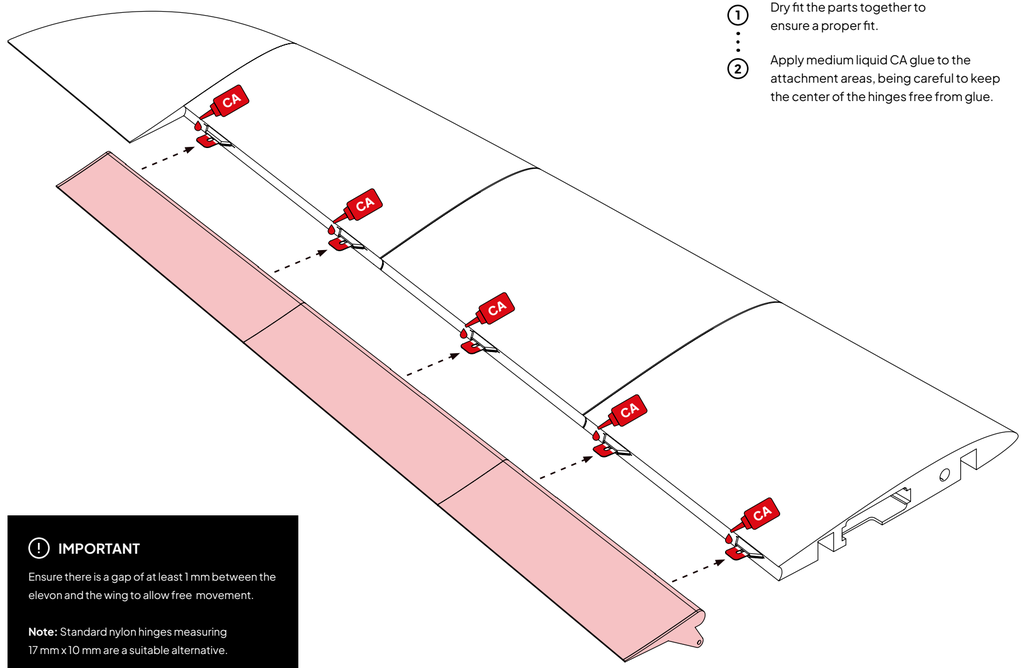
ELEVON HINGE (Wing V1)

1. Dry fit the parts together to ensure a proper fit.
2. Apply medium liquid CA glue to the attachment areas, being careful to keep the center of the hinges free from glue.



ELEVON ASSEMBLY (Wing V1)

1. Dry fit the parts together to ensure a proper fit.
2. Apply medium liquid CA glue to the attachment areas, being careful to keep the center of the hinges free from glue.



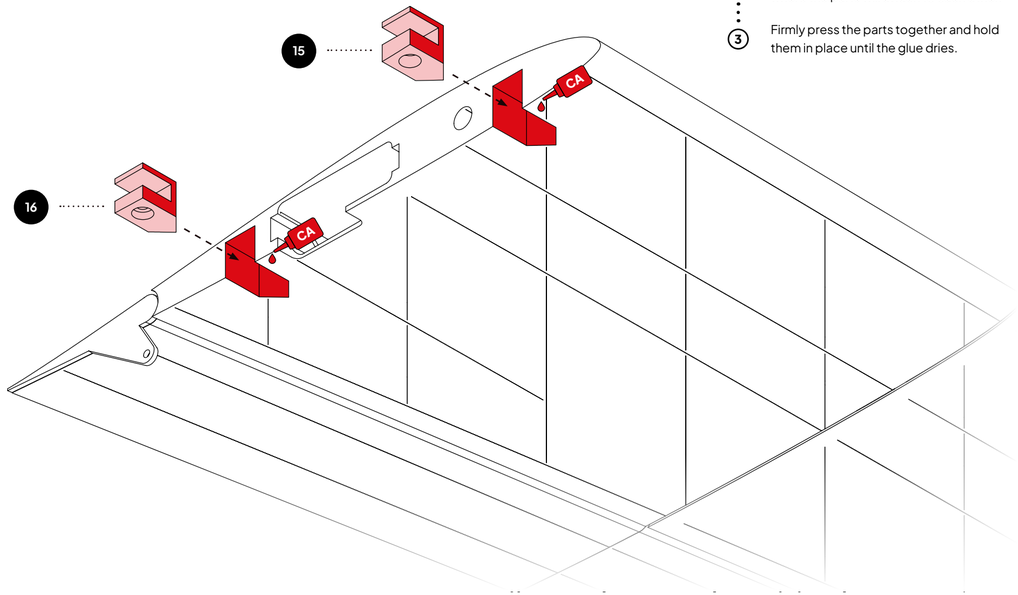
IMPORTANT

Ensure there is a gap of at least 1 mm between the elevon and the wing to allow free movement.

Note: Standard nylon hinges measuring 17 mm x 10 mm are a suitable alternative.

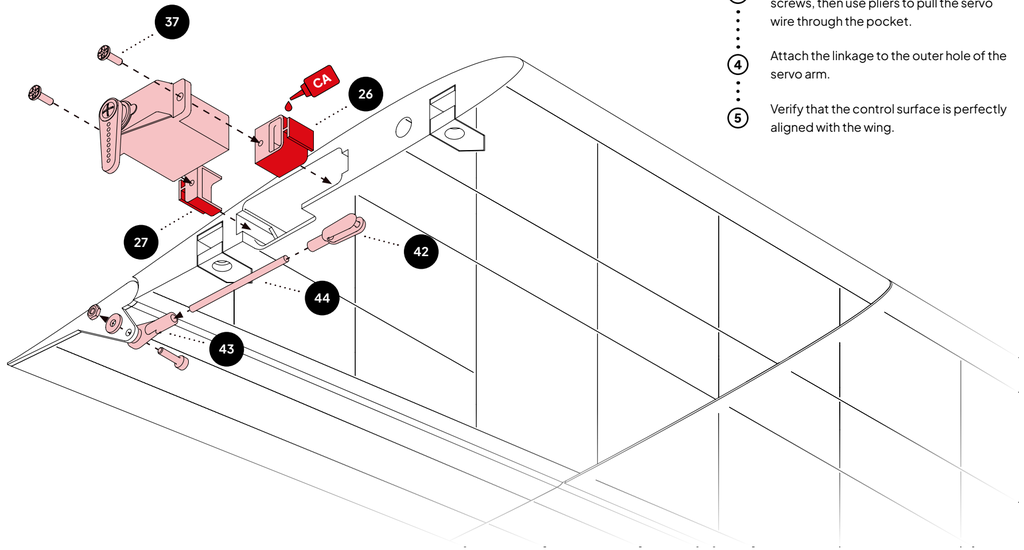
WING MOUNT (Wing V1)

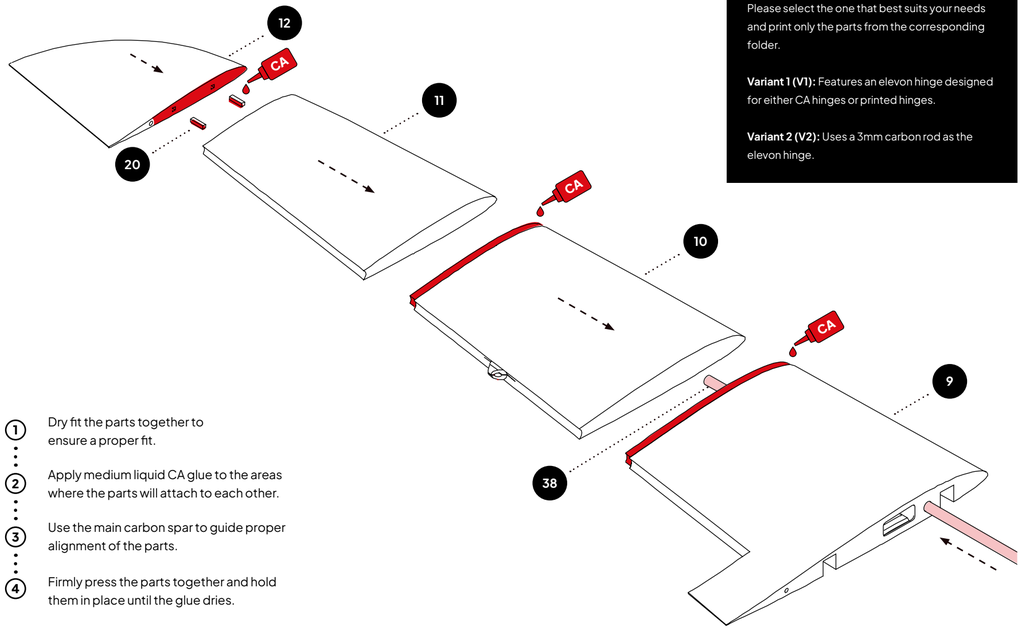
1. Dry fit the parts together to ensure a proper fit.
2. Apply medium liquid CA glue to the areas where the parts will attach to each other.
3. Firmly press the parts together and hold them in place until the glue dries.



SERVO MOUNT (Wing V1)

1. Apply medium liquid CA glue to the areas where the parts will attach to each other.
2. Insert the servo mounts into the wing and wait for the glue to fully cure.
3. Secure the servo with M2 self-tapping screws, then use pliers to pull the servo wire through the pocket.
4. Attach the linkage to the outer hole of the servo arm.
5. Verify that the control surface is perfectly aligned with the wing.





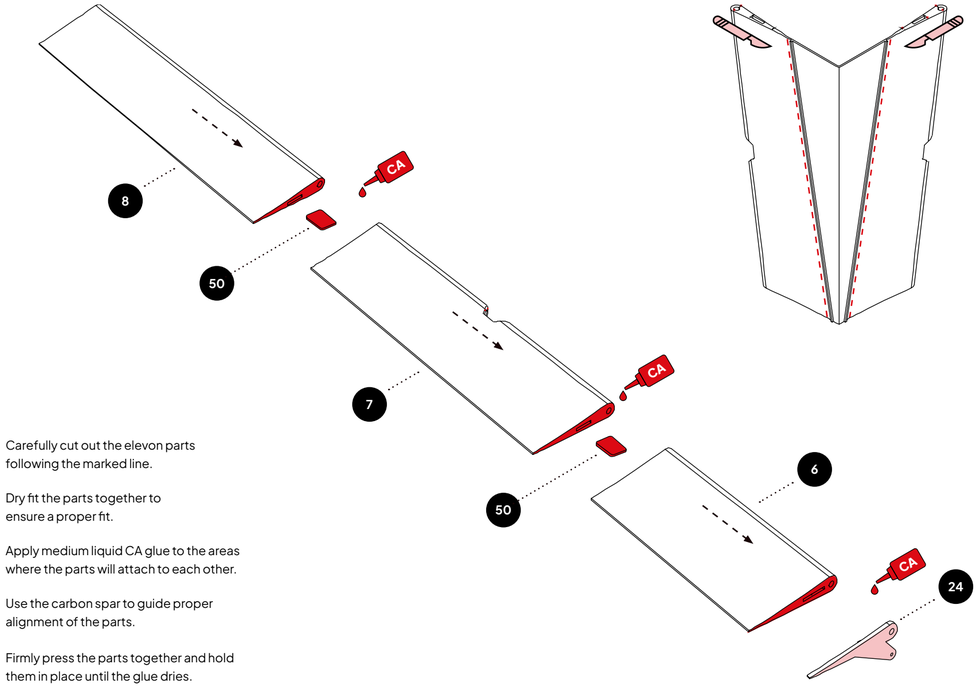
IMPORTANT

Two wing variants are available.
Please select the one that best suits your needs and print only the parts from the corresponding folder.

Variant 1 (V1): Features an elevon hinge designed for either CA hinges or printed hinges.

Variant 2 (V2): Uses a 3mm carbon rod as the elevon hinge.

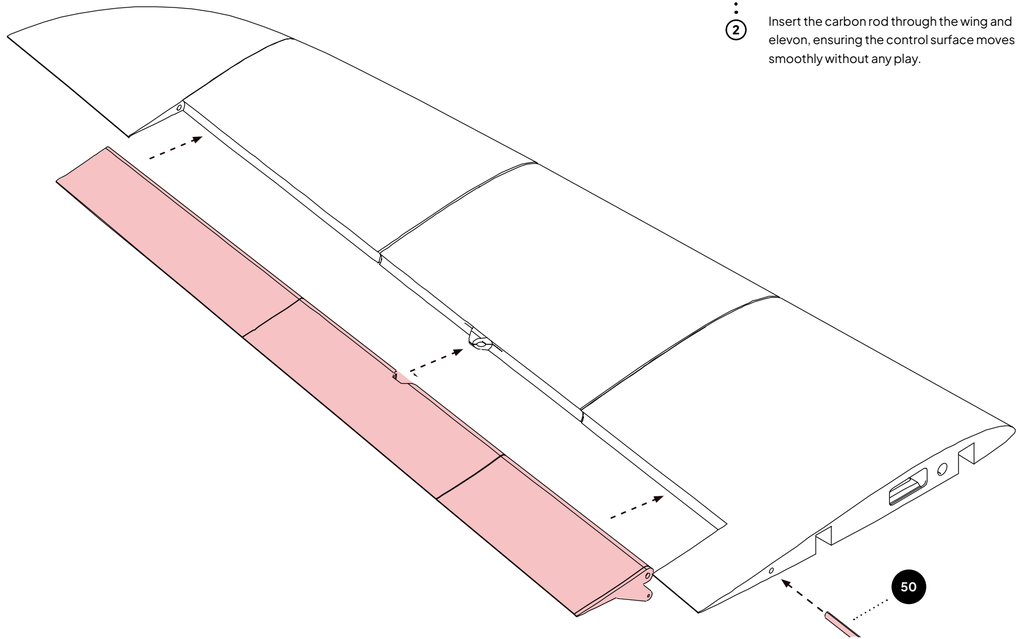
1. Dry fit the parts together to ensure a proper fit.
2. Apply medium liquid CA glue to the areas where the parts will attach to each other.
3. Use the main carbon spar to guide proper alignment of the parts.
4. Firmly press the parts together and hold them in place until the glue dries.



1. Carefully cut out the elevon parts following the marked line.
1. Dry fit the parts together to ensure a proper fit.
2. Apply medium liquid CA glue to the areas where the parts will attach to each other.
3. Use the carbon spar to guide proper alignment of the parts.
4. Firmly press the parts together and hold them in place until the glue dries.

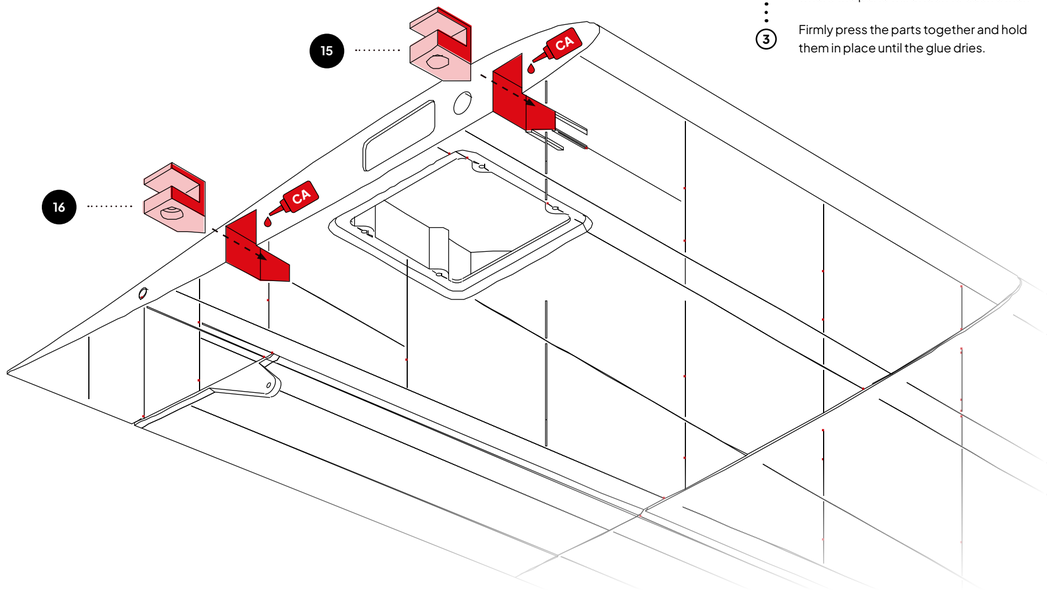
ELEVON ASSEMBLY (Wing V2)

1. Dry fit the parts together to ensure a proper fit.
2. Insert the carbon rod through the wing and elevon, ensuring the control surface moves smoothly without any play.

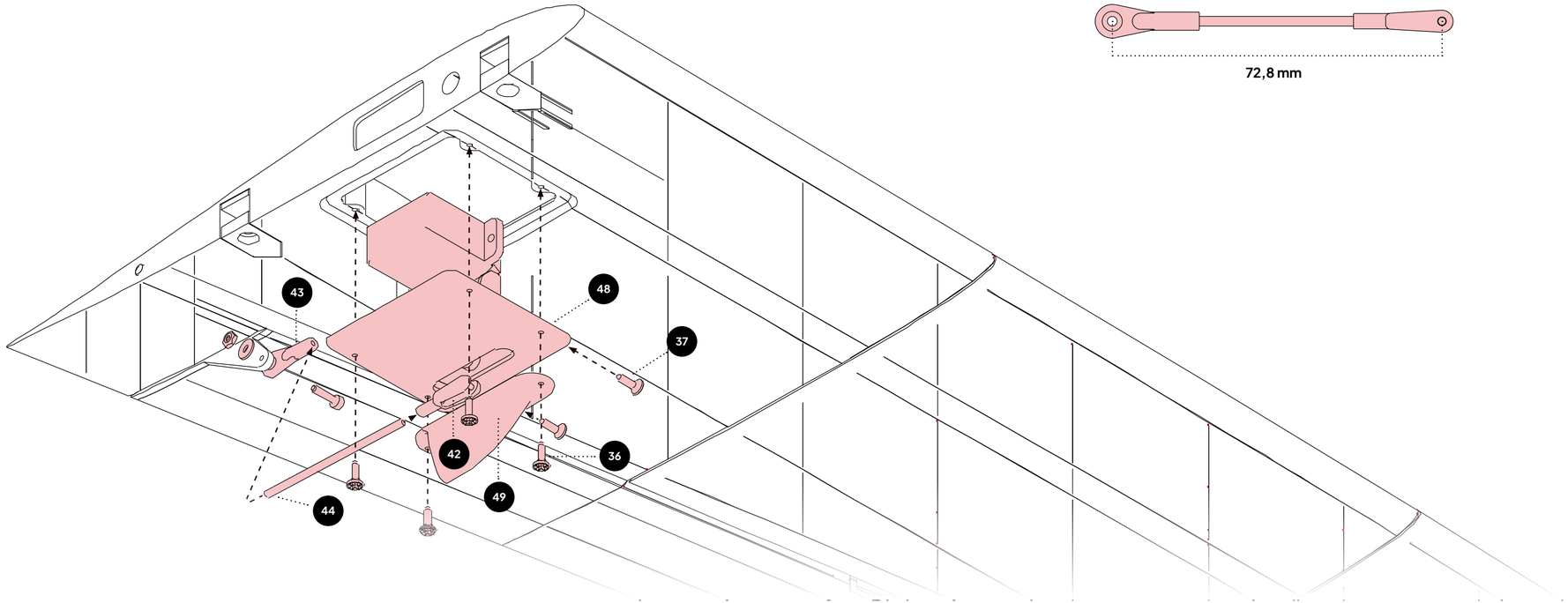


WING MOUNT (Wing V2)

1. Dry fit the parts together to ensure a proper fit.
2. Apply medium liquid CA glue to the areas where the parts will attach to each other.
3. Firmly press the parts together and hold them in place until the glue dries.

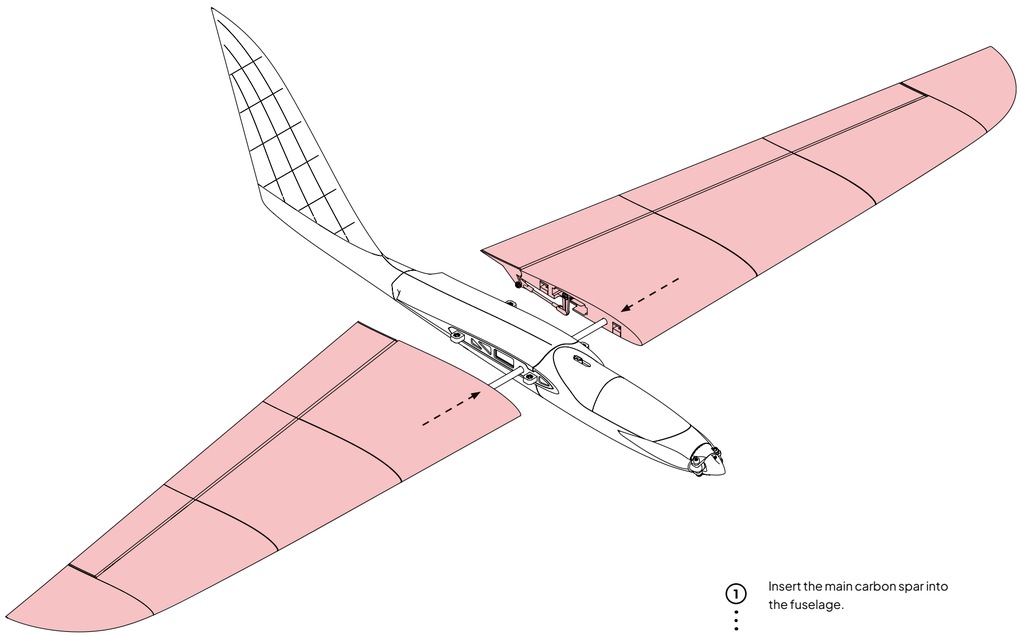


SERVO COVERS (Wing V2)



1. Insert the servo into the servo cover and fasten it with two self-tapping screws.
2. Guide the linkage through the servo cover cap and connect it to the servo.
3. Mount the complete servo cover assembly onto the wing using self-tapping screws.
4. Attach the ball joint connector of the linkage to the servo horn.
5. Ensure the control surface is perfectly aligned with the wing and moves smoothly without resistance.

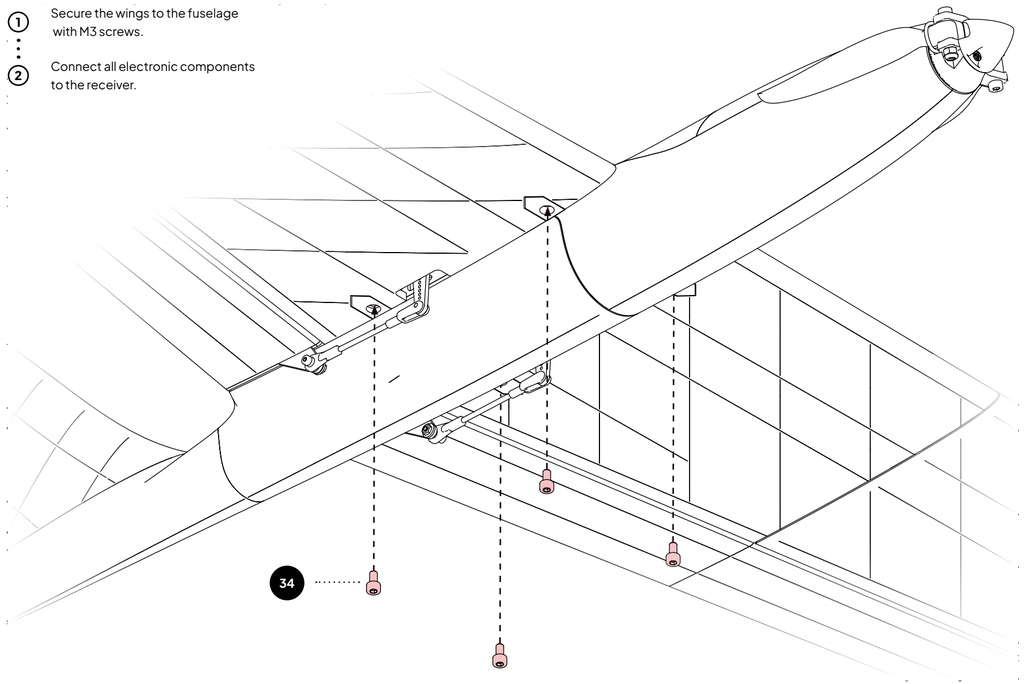
WING ASSEMBLY

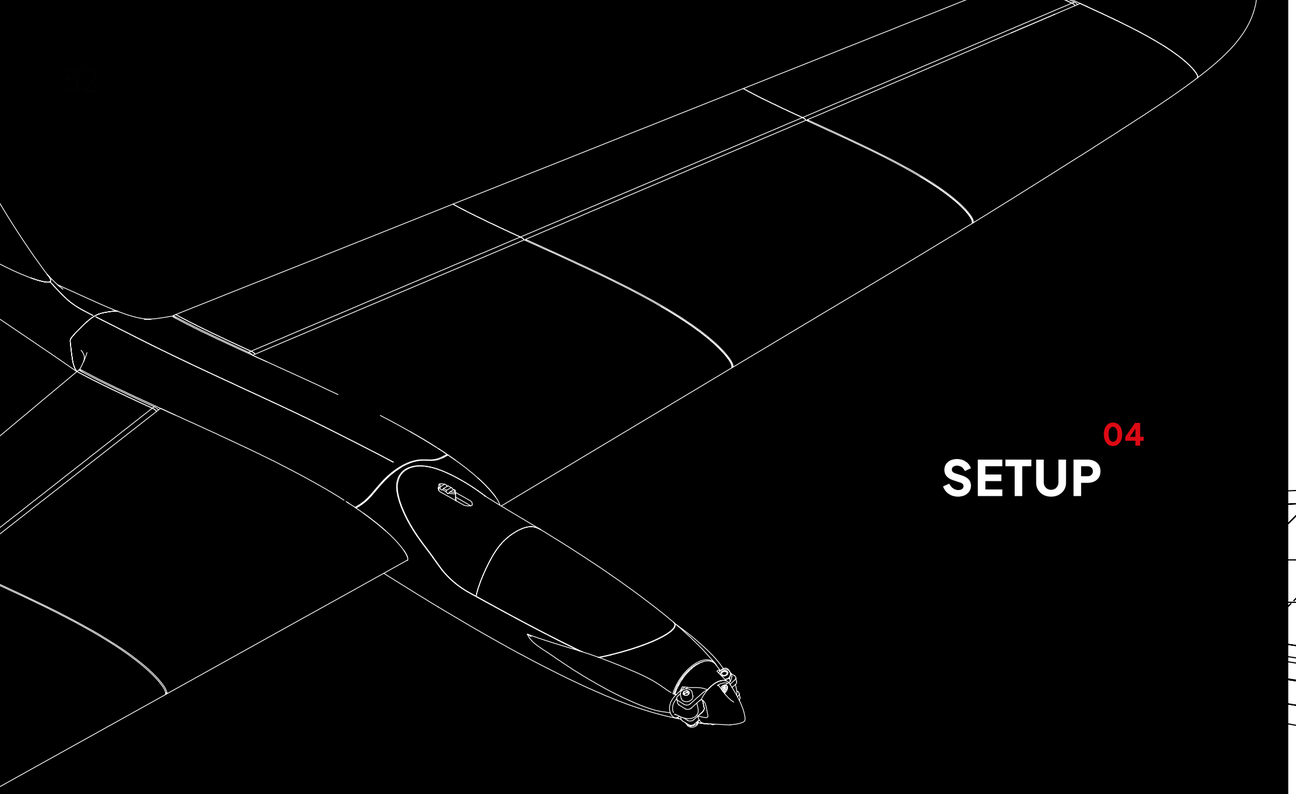


1. Insert the main carbon spar into the fuselage.
2. Slide the wings onto the main carbon spar.

WING ATTACHMENT

1. Secure the wings to the fuselage with M3 screws.
2. Connect all electronic components to the receiver.



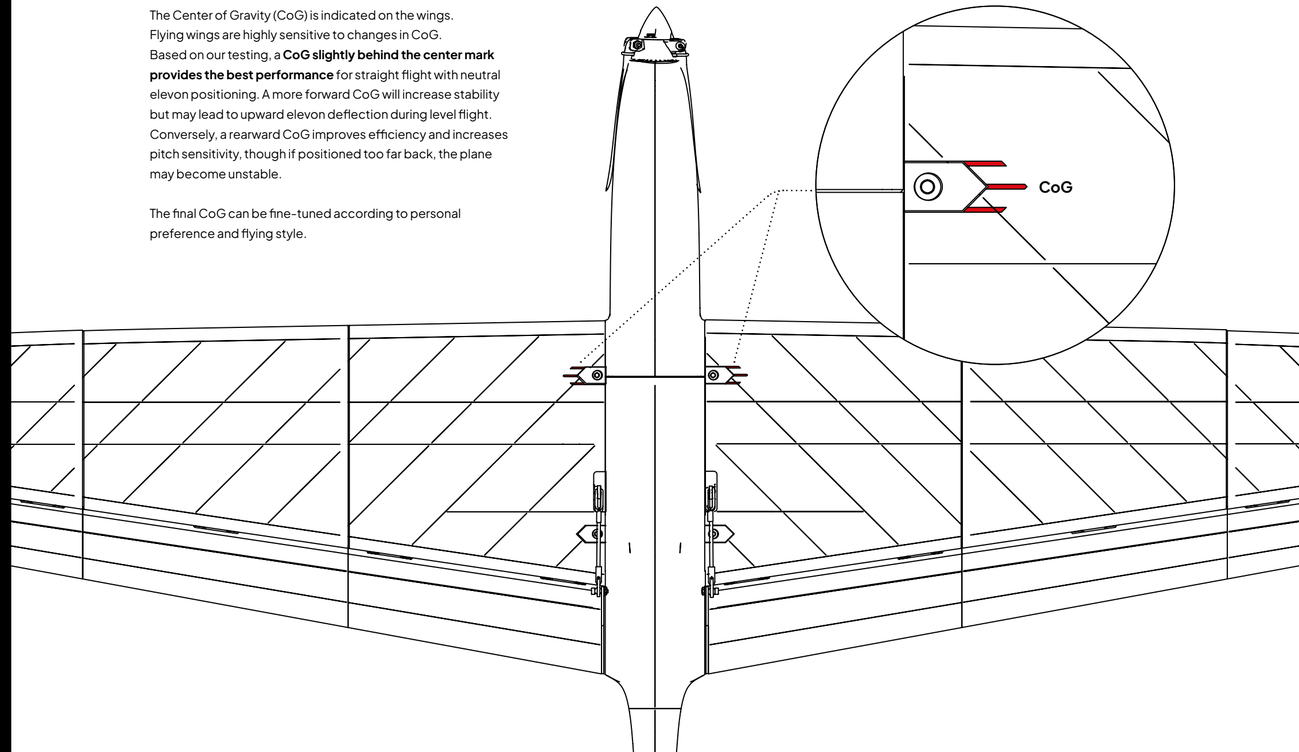


04 SETUP

CENTER OF GRAVITY

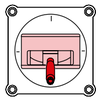
The Center of Gravity (CoG) is indicated on the wings.
Flying wings are highly sensitive to changes in CoG.
Based on our testing, a **CoG slightly behind the center mark provides the best performance** for straight flight with neutral elevon positioning. A more forward CoG will increase stability but may lead to upward elevon deflection during level flight. Conversely, a rearward CoG improves efficiency and increases pitch sensitivity, though if positioned too far back, the plane may become unstable.

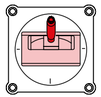
The final CoG can be fine-tuned according to personal preference and flying style.

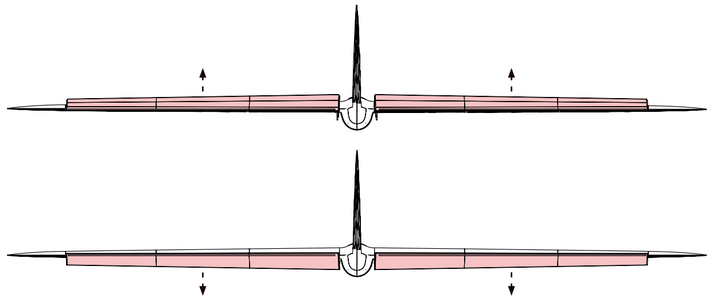


CONTROL DIRECTIONS

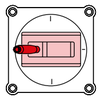
Pitch

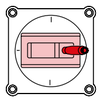


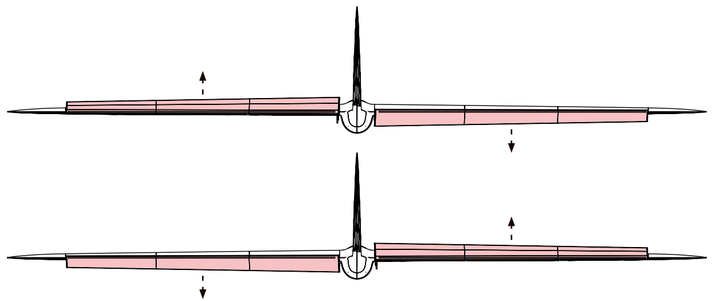




Roll







RATES & THROWS

Servo Travel > Dual Rate 1 – Low

Stick input	Differential	Expo	Weight	Throw
Pitch	0 %	20 %	30 %	10 mm
Roll	20 %	20 %	40 %	12 mm

Servo Travel > Dual Rate 2 – High

Stick input	Differential	Expo	Weight	Throw
Pitch	0%	20 %	40 %	15 mm
Roll	20 %	20 %	60 %	19 mm

Launch Mode

Stick input	Offset	Throw
Pitch	4 %	1 mm

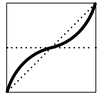
These basic settings are only a recommendation and can be changed according to your own preferences.

Dual Rates

Dual rates adjust control surface sensitivity, letting pilots switch between two deflection levels via a transmitter switch for flexibility in different flying styles and conditions.

Expo

This feature makes the control sticks less responsive around the center. This reduces unintended shaking and minimizes the impact of small stick movements. As the sticks are moved away from the center, the control surface becomes increasingly more responsive, following an exponential curve.



Differential

Differential aileron movement involves unequal aileron deflection, with greater upward movement. Since downward deflection creates more drag, it can pull the airplane out of a turn.
This setup reduces adverse yaw during turns, ensuring stable, balanced flight.

Launch Mode

Launch mode, set via a transmitter switch, adds pre-set upward elevon deflection for nose-up trim during launch. Once stable and at sufficient speed, switch it off to neutralize the elevons.
This mode is only needed for the motorized Evora.

STAY UP TO DATE WITH OUR FUTURE PROJECTS AND DEVELOPMENTS

Be the first to hear about our upcoming projects and to see our continuous development!
Thank you for your support! Your help makes the future a reality.

Contact

Do you have any questions or need assistance?
Don’t hesitate to reach out.

info@3dblackbox.io