



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.

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		Motor Assembly
		Camera/VTX Mount

Build Guide

Camera/VTX Mount Unit Assembly

Antenna Mount

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Cable Connector

LED Cover

Canopy

Wing

Elevon

Elevon Assembly

Wing Mount

Servo Cover

Wing Assembly

Battery Strap

Setup

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POWER TO RIP. AGILITY TO EXPLORE.

The DNA is a compact 800mm FPV wing built for quad pilots who want an easy, fast, and familiar jump into fixed-wing flight. Its infill-based 3D-printed structure keeps things simple, durable, and easily repairable, while the efficient airframe offers a smooth cruise and the punch to reach up to 230 km/h when you let it rip.

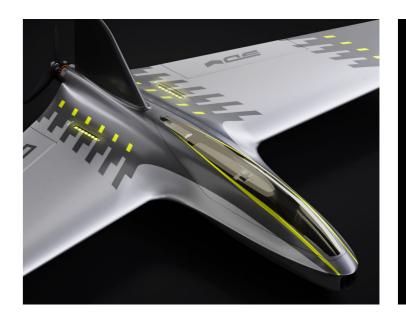
Designed for modern digital and analog FPV systems, the DNA features versatile 20mm, 25.5mm, and 30.5mm mounting options. Quick-lock wings and modular quick lock electronics ensure smooth transport and rapid turnaround whenever components need attention.

Crisp handling, compact size, and strong efficiency make the DNA ideal for tight lines, fast passes, and relaxed exploring alike. It's a travel-friendly, high-performance wing built around the gear FPV pilots already know and love.

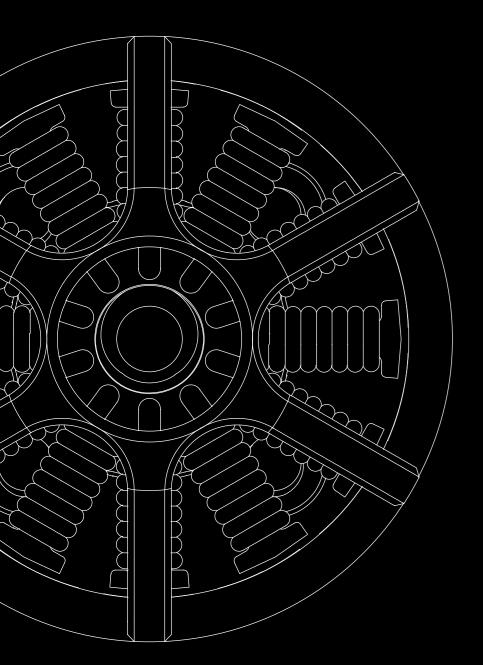


SPECIFICATIONS

Printed Weight		320
Take-Off Weight		630
Stall Speed	2	28 km/
Wing Span	8	800 mr
Wing Loading	46.0	6g/dm
Wing Area	13	.95 dm
Length		538 mr







HARDWARE

HARDWARE



3D Printer

Minimum Printer Volume: 180×180×180 (X,Y,Z)

Nozzle diameter: 0.4 mm



Filament

Fuselage: LW-PLA Wings: LW-PLA

Accessories: PLA, PETG or ABS-GF



Motor

4S: 2207 2450KV

6S: 2207 2020KV - 2807 1400KV



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 35A (4S) - 40A (6S) 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

4S: 2000mAh - 2400mAh 30C **6S:** 1300mAh - 1800mAh 45C



Propeller

3 Blade 5 x 5 inch 2 Blade 5 x 7 inch

10 | HARDWARE > BILL OF MATERIAL



Socket Head Cap Screw (SHCS)

ID	Part	Amount
46	M3 x 25 mm Motor Mount	1x
47	M3 x 8 mm Motor Mount, VTX Mount	6 x
48	M3 x 6 mm FC Mount	4 x
49	M2 x 8 mm VTX Mount	4 x
51	M2 x 6 mm Servohorn	2 x
52	M2 x 4 mm Camera_Mount	4 x
53	M2 Nut Servohorn	2 x



Self-Tapping Screw

ID	Part		Amount
54	M2 x 8 mm	Cable Connector, Servo Cover	16 x



Carbon Tubes / Rods

ID	Part		Amount	t
55	Carbon Tube 8n	nm x 6mm x 700 mm	Wing 1x	
56	Carbon Rod 3m	mx200mm Elevon	2 x	



Servo Linkages

ID	Part	Amount
57	M2 Clevis	2 x
58	Ball Joint Connector	2 x
59	M2 Threaded Rod	2 x





Threaded Inserts

	ID	Part		Amoun
•	60	M3 x 3mm	VTX Mount, FC Mount, Motor Mount	7×



Miscellaneous

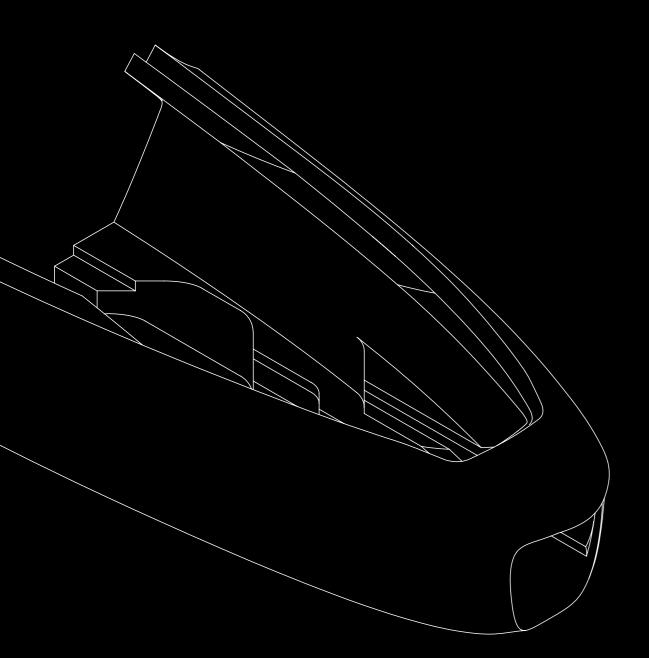
ID	Part	Amount
61	Ball Pen Spring Canopy	1x
62	Velcro Tape 20 mm x 80 mm	1x



Required Tools

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

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PRINT FILES

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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.

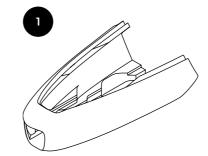
Additionally we have included detailed documents with screenshots of all slicer settings used. This way, you can easily replicate the settings and be on your way to creating amazing builds.

- Ready to use .gcode files
- .3MF files for Bambu Studio
- .3MF files for Prusa Slicer
- .STL files for use with any slicer of your choice.
- STP files for customizing setup-specific parts.

4 | **PRINT FILES** > FOLDER STRUCTURE

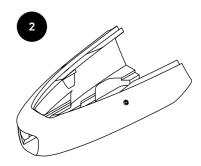
Download Folder Material Profile Select file & print 00_Instructions Profile_P4 LW-PLA Canopy_C1 Documentation and Settings ABS_ASA_PETG Canopy_C2 01_Bambu Studio PETG Fuse-F1 Project files (.3MF) for Bambu Studio ☐ PLA Fuse-F2 02_Prusa_Slicer Project files (.3MF) for Prusa Slicer Fuse-F3 ☐ 03_STL Stabilizer_Top 3D model files (.stl) for use with any slicer of your choice. 04_GCodes Ready to use print files (.gcode) for i3 style printers. D 05_STEP 3D model files (.stp) for (!) IMPORTANT customizing setup-specific parts. 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.

PRINT FILES > OVERVIEW > LW-PLA > PROFILE-P4



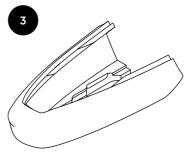
Fuse-F1

Profile: P4 Material: LW-PLA Weight: 21.93 g



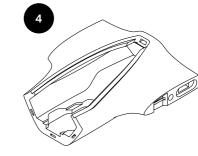
Fuse-F1_Antenna

Profile: P4
Material: LW-PLA
Weight: 21.93 g



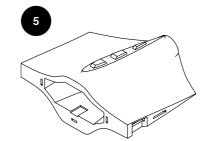
Fuse-F1_No_Cam

Profile: P4
Material: LW-PLA
Weight: 21.93 g



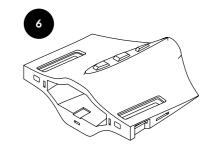
Fuse-F2

Profile: P4
Material: LW-PLA
Weight: 52.12 g



Fuse-F3

Profile: P4
Material: LW-PLA
Weight: 39.24 g

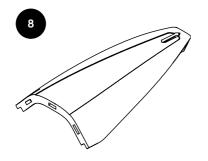


Fuse-F3_LED

Profile: P4
Material: LW-PLA
Weight: 39.24 g

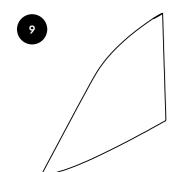
Canopy_C1

Profile: P4
Material: LW-PLA
Weight: 11.20 g



Canopy_C2

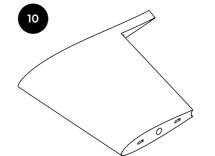
Profile: P4
Material: LW-PLA
Weight: 9.85 g



Stabilizer_Top

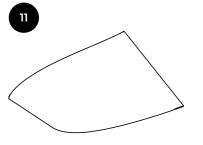
Profile: P4 Material: LW-PLA Weight: 8.56 g

PRINT FILES > OVERVIEW > LW-PLA > PROFILE-P4



Wing_L1/R1

Profile: P4
Material: LW-PLA
Weight: 33.70 g



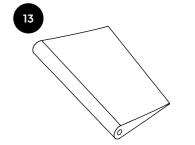
Wing_L2/R2

Profile: P4
Material: LW-PLA
Weight: 16.09 g



Elevon_L1/R1

Profile: P4
Material: LW-PLA
Weight: 3.85 g

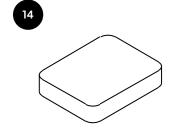


Elevon_L2/R2

Profile: P4
Material: LW-PLA
Weight: 3.68 g

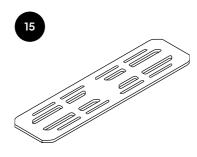
PRINT FILES > OVERVIEW > PLA > PROFILE-P2

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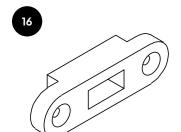
Alignment_Tab

Profile: P2 Material: PLA Weight: 0.17 g



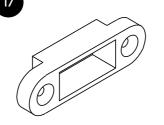
Battery_Mount

Profile: P2 Material: PLA Weight: 7.48 g



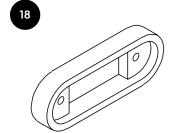
Cable_Connector_JR_L/R

Profile: P2
Material: PLA
Weight: 1.11 g



Cable_Connector_MPX_L/R

Profile: P2 Material: PLA Weight: 0.79 g



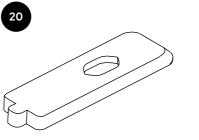
Cable_Connector_Mount_L/R

Profile: P2 Material: PLA Weight: 1.14 g



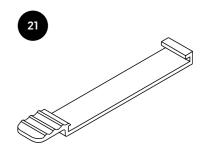
Canopy_Lock_Grip

Profile: P2 Material: PLA Weight: 0.23 g



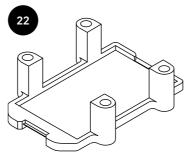
Canopy_Lock

Profile: P2 Material: PLA Weight: 1.00 g



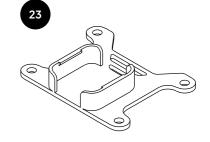
FC_Mount_Latch

Profile: P2 Material: PLA Weight: 2.00 g



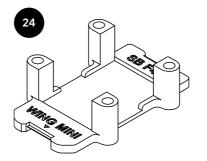
FC_Mount_SB_F405_Wing

Profile: P2 Material: PLA Weight: 7.49 g



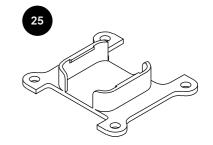
GPS_Mount_SB_F405_Wing

Profile: P2 Material: PLA Weight: 2.68 g



FC_Mount_SB_F405_Mini

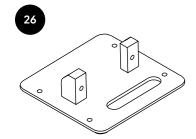
Profile: P2 Material: PLA Weight: 4.76 g



GPS_Mount_SB_F405_Mini

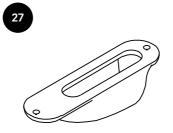
Profile: P2 Material: PLA Weight: 2.24 g

PRINT FILES > OVERVIEW > PLA > PROFILE-P2



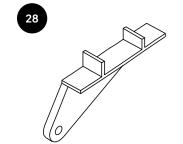
Servo_Cover_L1/R1

Profile: P2 Material: PLA Weight: 4.94 g



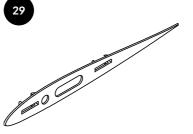
Servo_Cover_L2/R2

Profile: P2 Material: PLA **Weight:** 1.33 g



Servohorn_L/R

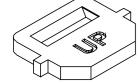
Profile: P2 Material: PLA Weight: 0.64 g



Wing_Mount_L/R

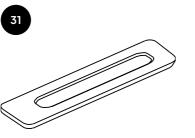
Profile: P2 Material: PLA Weight: 5.90 g





Wing_Lock

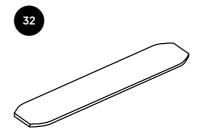
Profile: P2 Material: PLA Weight: 0.80g



LED_Cover_L/R

Profile: P2 Material: PLA Weight: 5.90 g

PRINT FILES > OVERVIEW > PETG > PROFILE-P2



LED_Cover_Glass_L/R

Profile: P2 Material: PETG or similar transparent Material

Weight: 2.00 g



Wing_Lock_Clip_L1/L2

Profile: P2

Material: PETG or similar flexible

Material

Weight: 2.00 g



Wing_Lock_Clip_R1/R2

Profile: P2

Material: PETG or similar

high temperature resistant Material

Weight: 2.00 g



Profile: P2

Material: PETG or similar flexible

Antenna_Mount_3mm_L/R

Material

Weight: 2.00 g





Antenna_Mount_4mm_L/R

Profile: P2

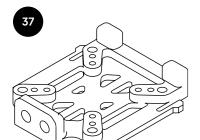
Material: PETG or similar

high temperature resistant Material

Weight: 2.00 g



PRINT FILES > OVERVIEW > ABS/ASA/PETG > PROFILE-P2

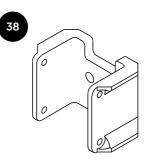


VTX_Mount

Material: ABS or similar

high temperature resistant Material

Weight: 0.52 g



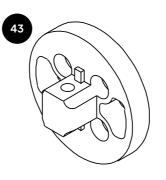
Camera_Mount_DJI_O4

Profile: P2

Material: ABS or similar

high temperature resistant Material

Weight: 2.41 g



Motor_Mount_16mm

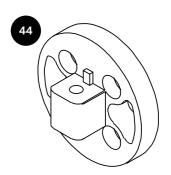
PRINT FILES > OVERVIEW > ABS/ASA/PETG > PROFILE-P2

Profile: P2

Material: ABS or similar

high temperature resistant Material

Weight: 2.80 g



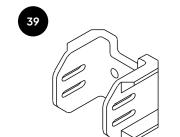
Motor_Mount_19mm

Profile: P2

Material: ABS or similar

high temperature resistant Material

Weight: 2.80 g



Camera_Mount_20mm

Profile: P2

Material: ABS or similar

high temperature resistant Material

Weight: 2.51 g

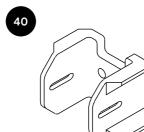


Camera_Mount_19mm_Single_Slot

Profile: P2

high temperature resistant Material

Weight: 2.60 g



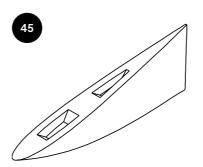
Motor_Mount_Base

high temperature resistant Material



Material: ABS or similar



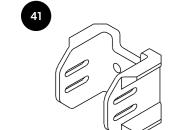


Stabilizer_Bottom

Profile: P2

Material: ABS or similar impact resistant Material

Weight: 2.55 g



Camera_Mount_19mm_Dual_Slot

Profile: P2

Material: ABS or similar

high temperature resistant Material

Weight: 2.53 g



Profile: P2

Material: ABS or similar

Weight: 2.10 g

INTRODUCTION

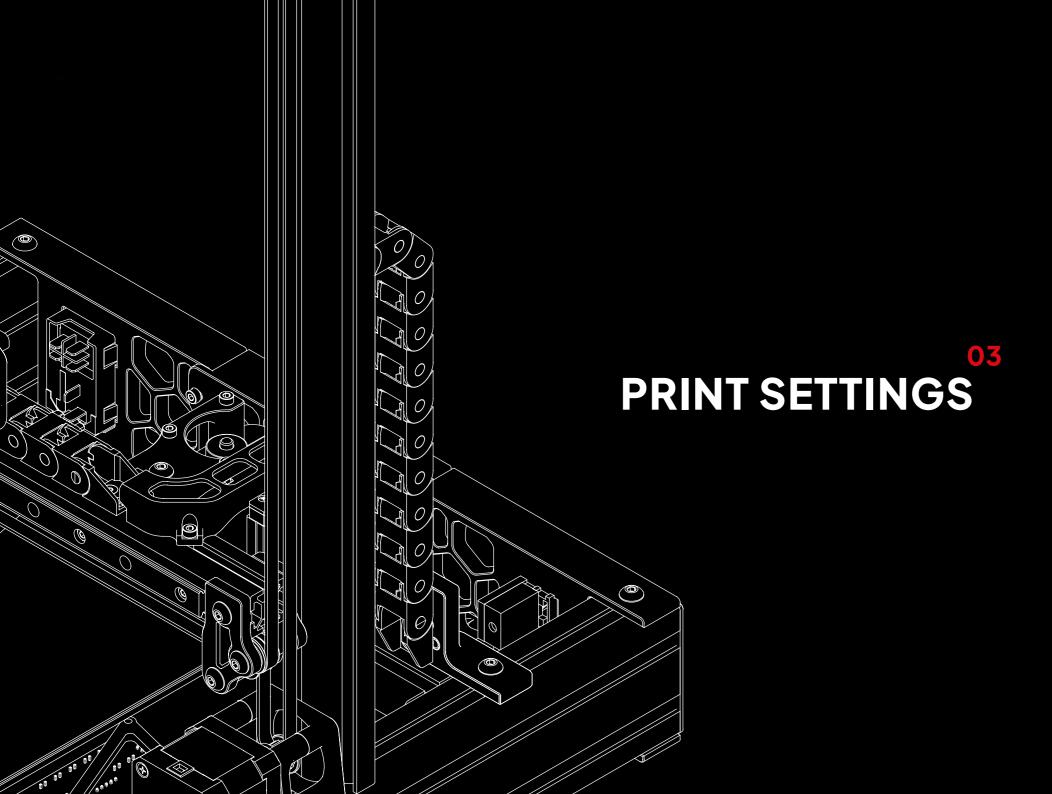
SIMPLIFYING YOUR PRINT EXPERIENCE

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.

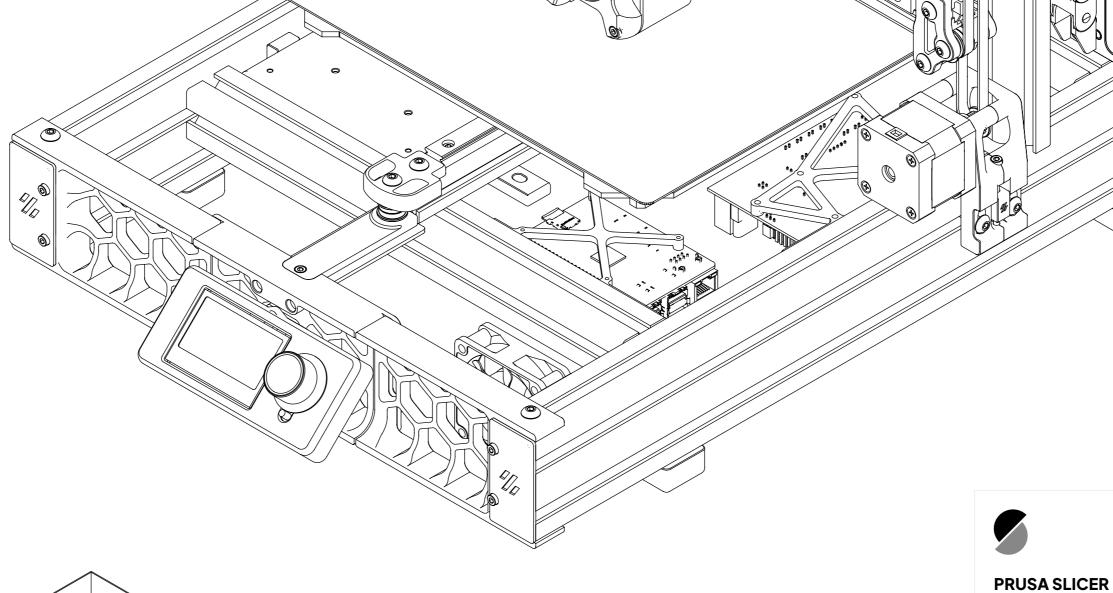


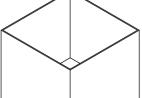
Please avoid using pre-foamed LW-PLA. It's only about 20% lighter than regular PLA, whereas actively foaming LW-PLA can reduce weight by roughly 50% compared to standard PLA.

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 and measure the wall thickness with a digital caliper at several points. Adjust the print temperature until the wall thickness reaches 0.52 mm - 0.58 mm.





Calibration_Cube

Wall-line-count: 1 Top-Layers: 0 Bottom Layers: 3 Infill:0

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

BAMBU STUDIO

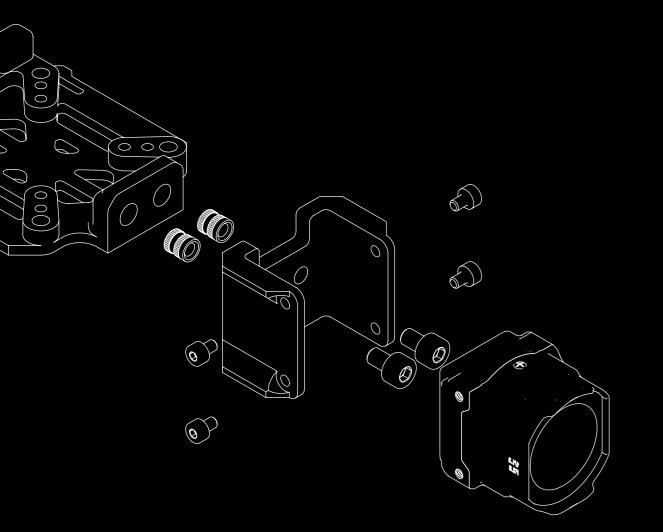
Bambu Studio files provide ready-to-print build plates with 3D files and settings for an easy printing experience. However, it's recommended to disable automatic flow

calibration and spaghetti detection.

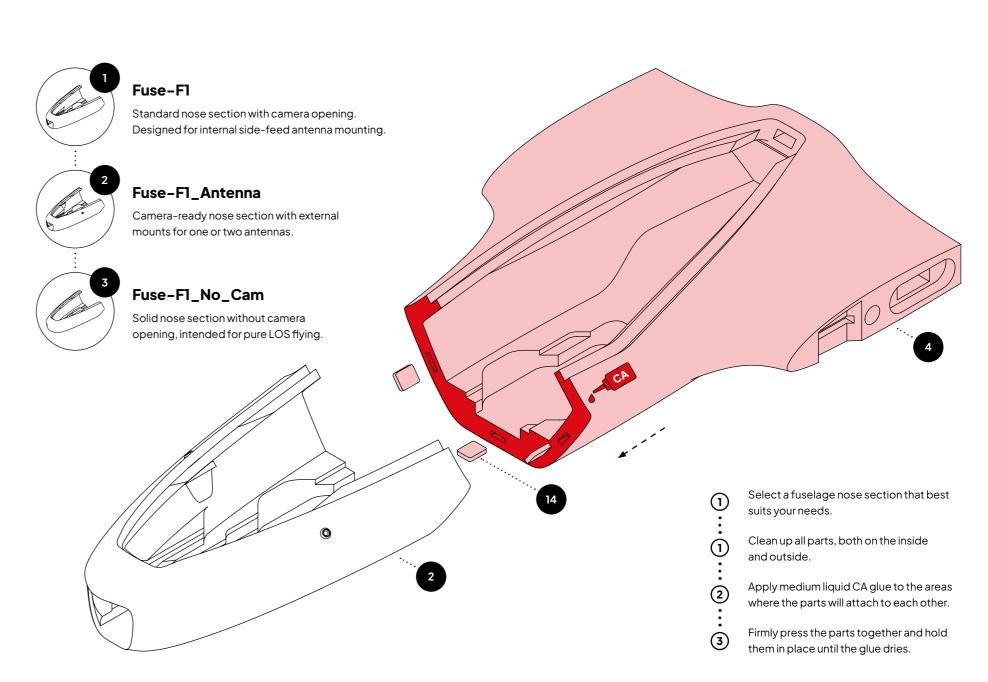
For Cura, use the Profiles PDF and .STL files, as full project files can cause compatibility issues. Other slicers include pre-configured settings, making setup quick and easy.

□ 03_Cura → Slicer_Settings.pdf

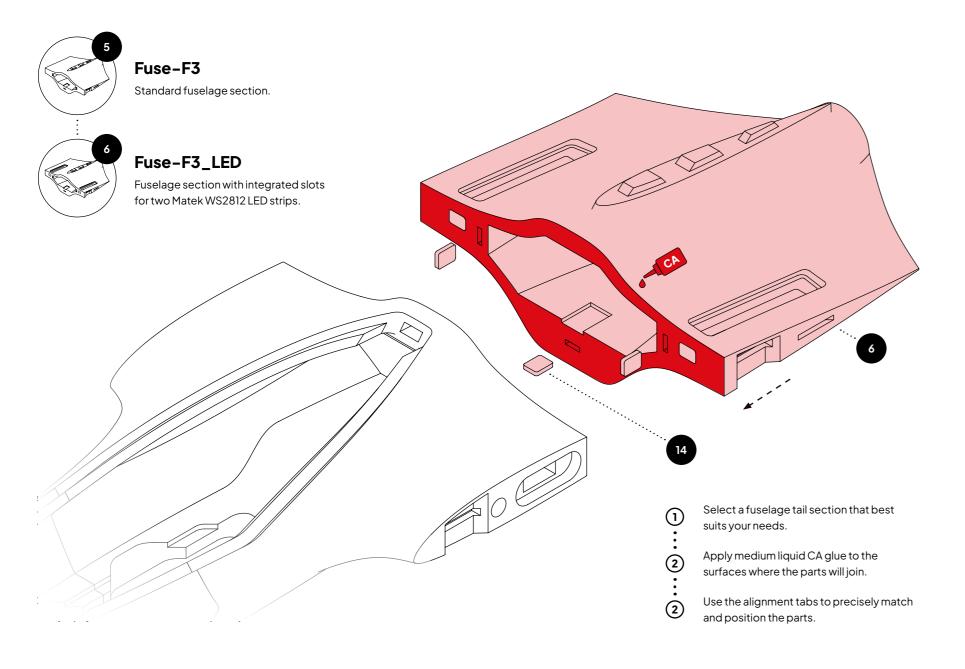
FUSELAGE



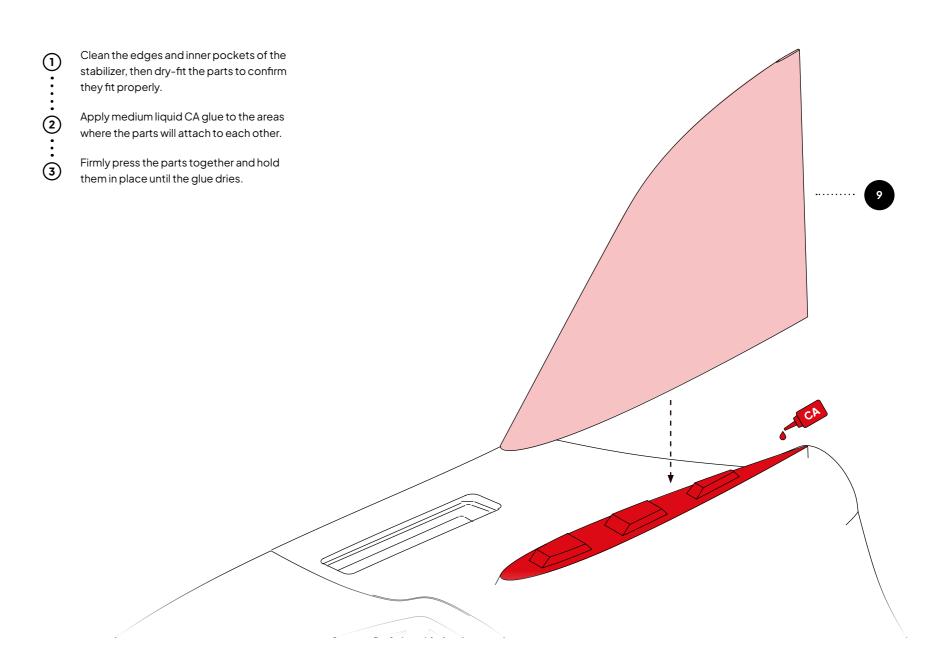
BUILD GUIDE



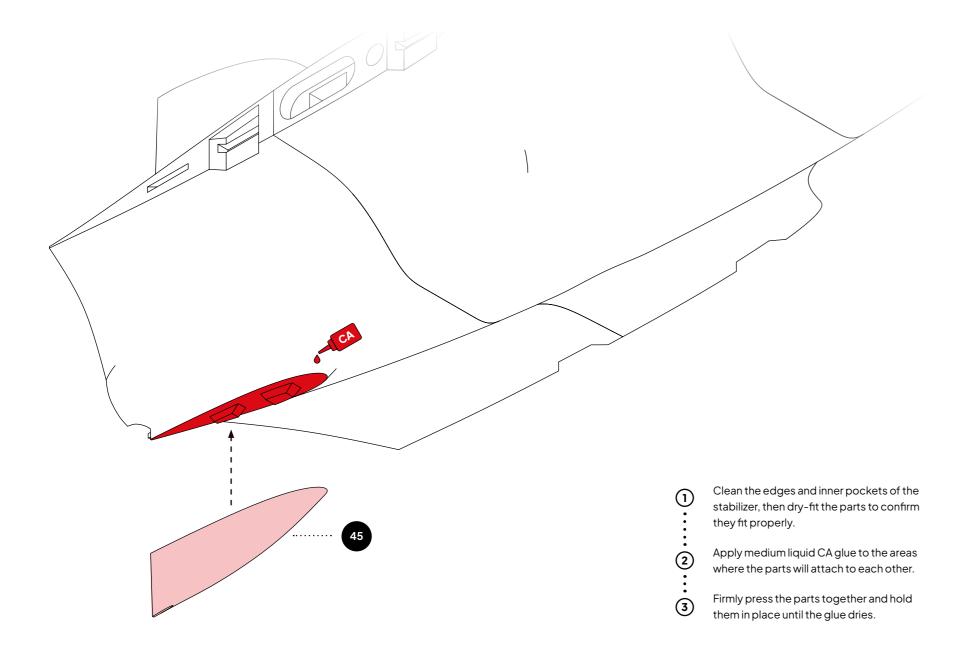
30 FUSELAGE



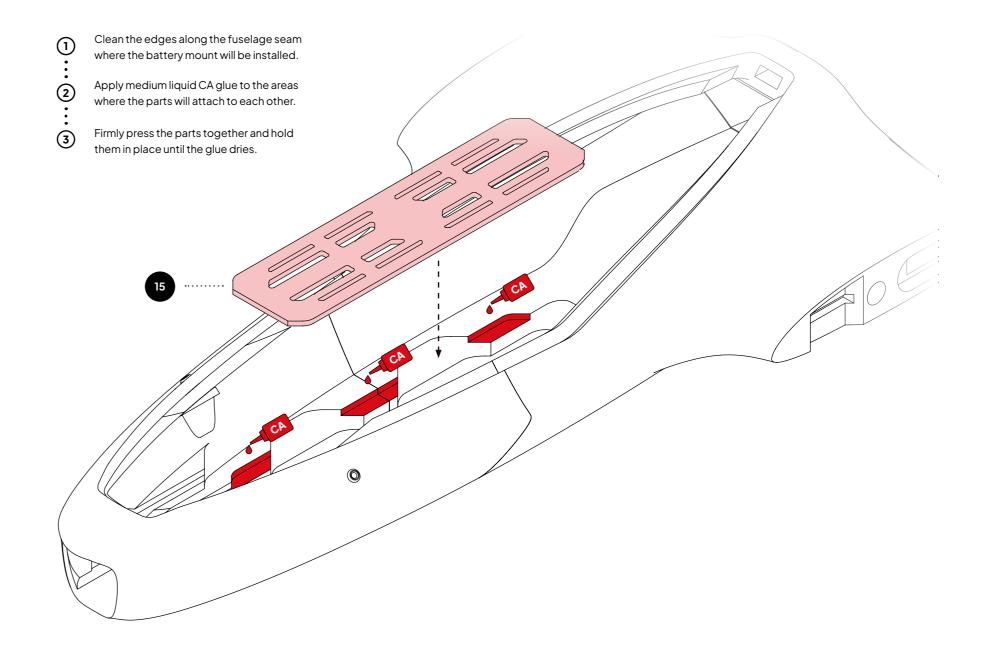
STABILIZER TOP



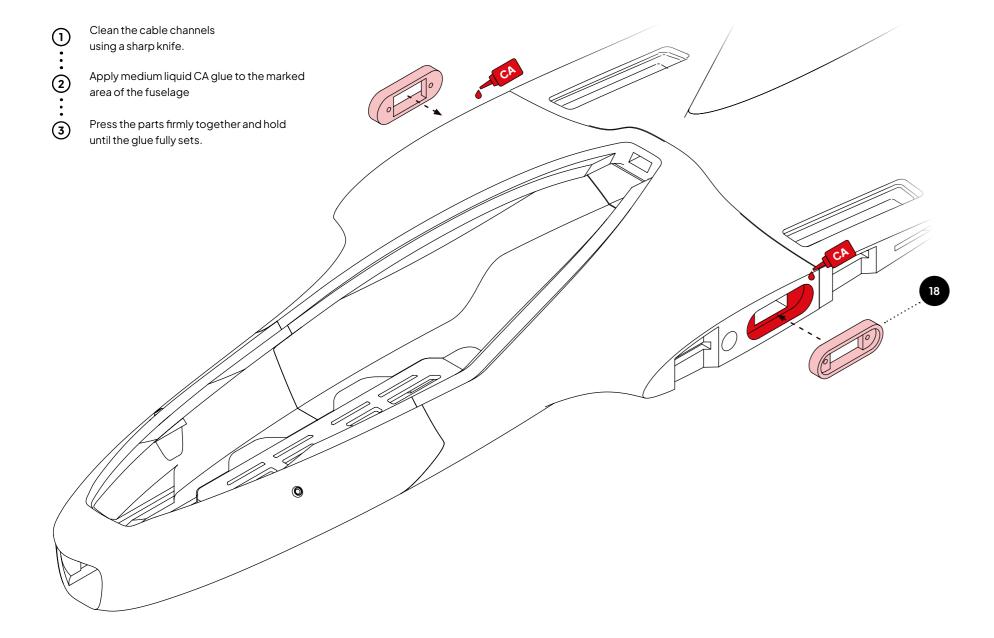
32 | **STABILIZER BOTTOM**



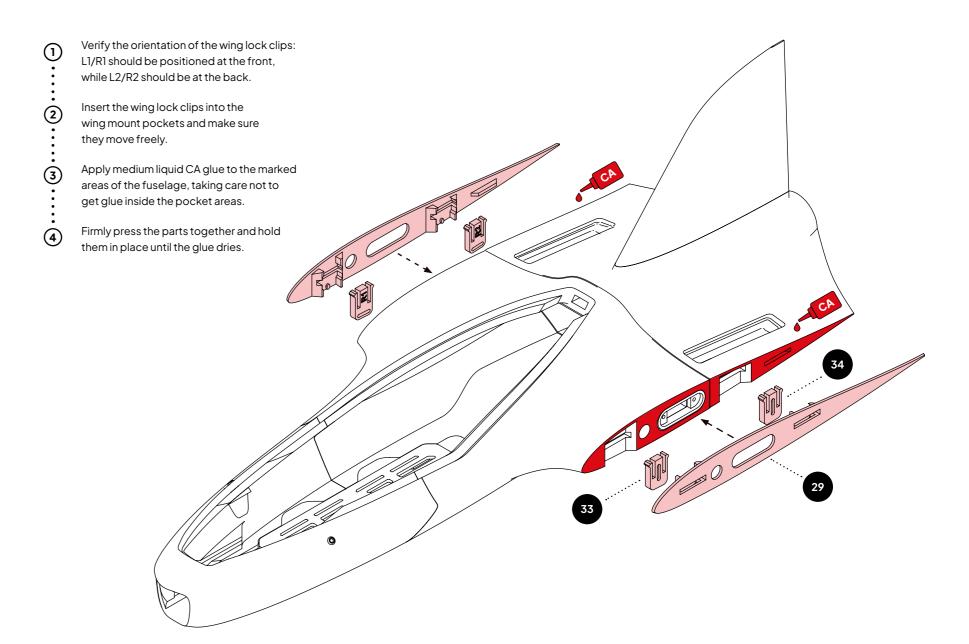
BATTERY MOUNT



34 | CABLE CONNECTOR MOUNT



WING MOUNT



36 | FC/GPS MOUNT

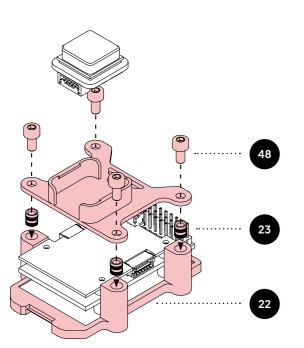
Select one of the provided FC mounts or create a custom mount using the included .step files.

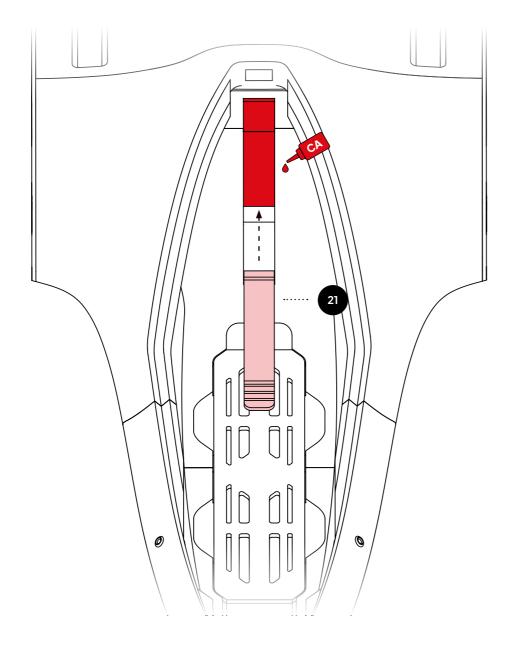
Heat the threaded inserts with a soldering iron and press them into the FC mount.

Place the FC in the mount and screw the GPS mount on top to secure it.

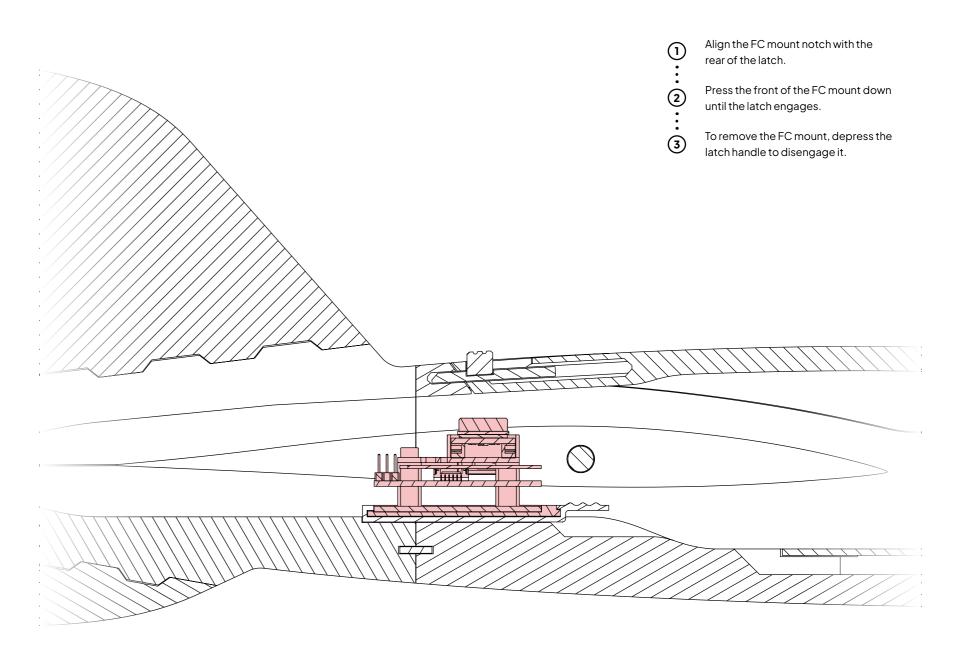
Secure the GPS by clicking it into position.

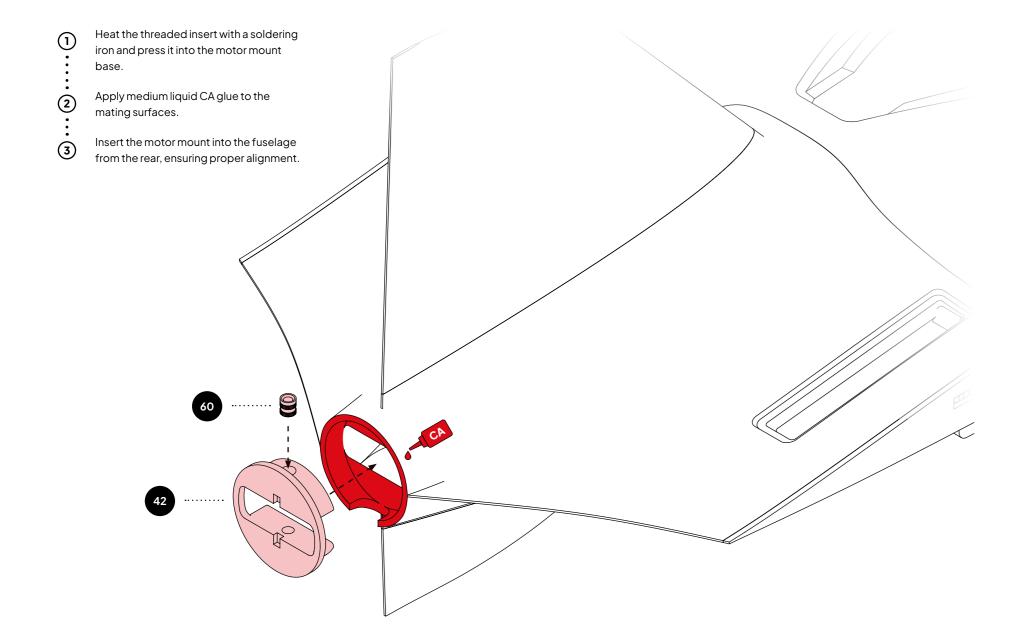
Apply medium CA glue to the fuselage pocket and secure the FC mount latch in place.



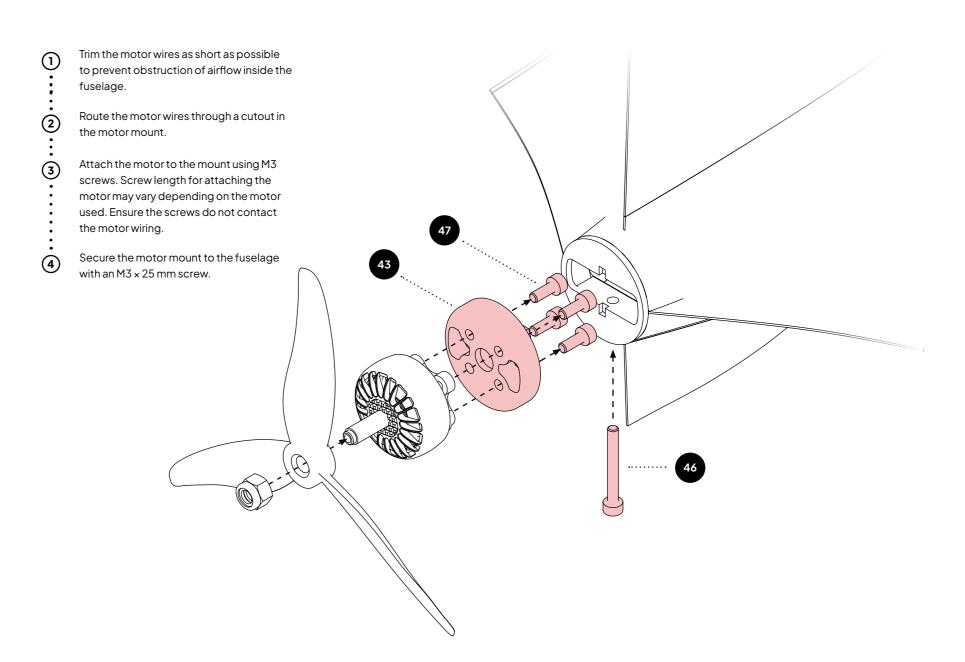


FC/GPS UNIT ASSEMBLY





MOTOR ASSEMBLY

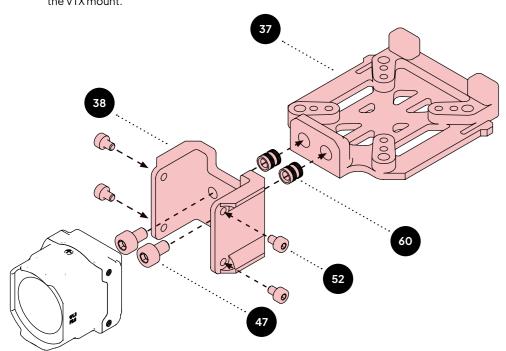


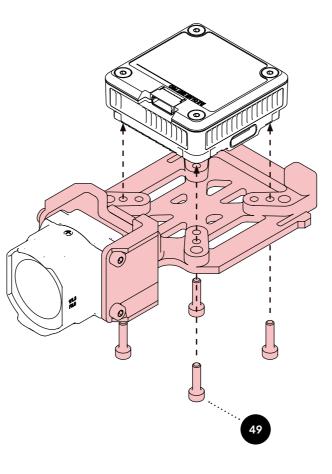
Heat the threaded inserts with a soldering iron and press them into the VTX mount.

Attach the camera mount to the VTX mount using M3 screws.

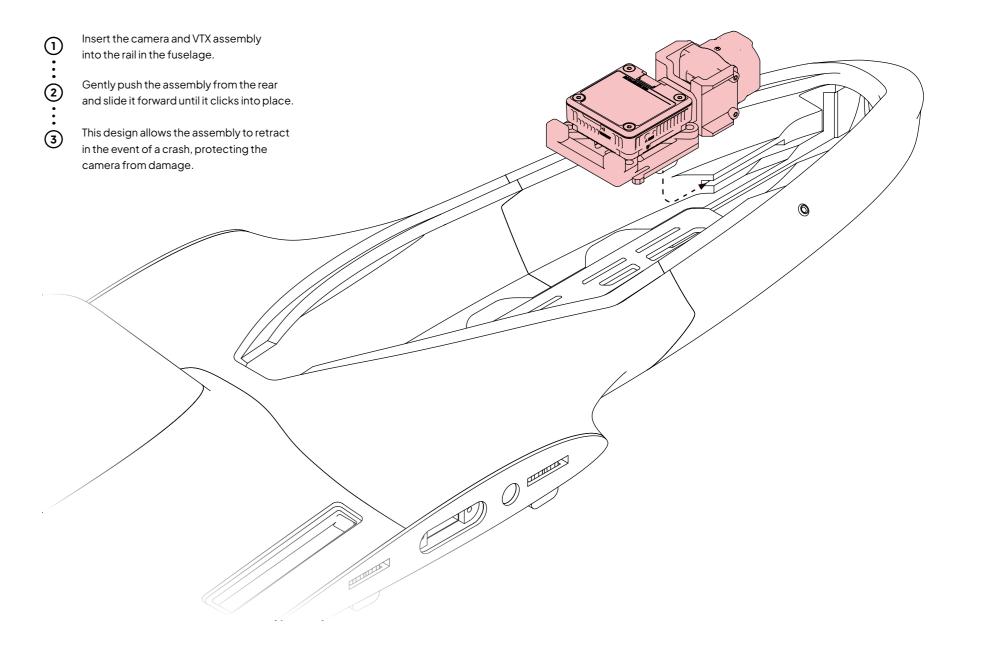
Secure the camera using its supplied screws or M2 x 4 mm screws.

Mount the VTX using M2 or M3 screws, depending on your VTX, and secure it to the VTX mount.





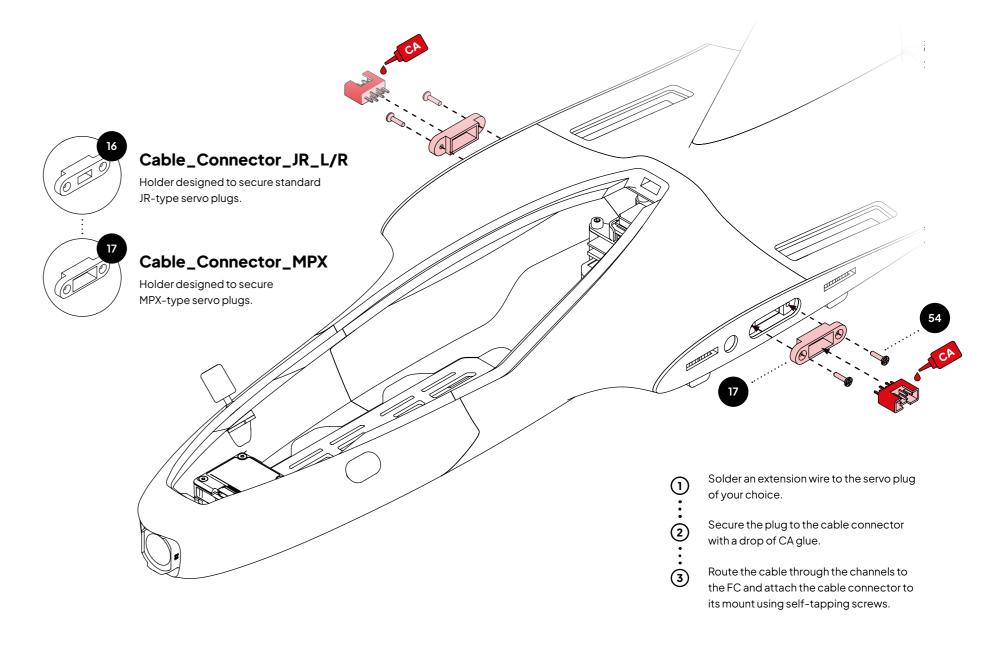
CAMERA/VTX UNIT ASSEMBLY



ANTENNA MOUNT

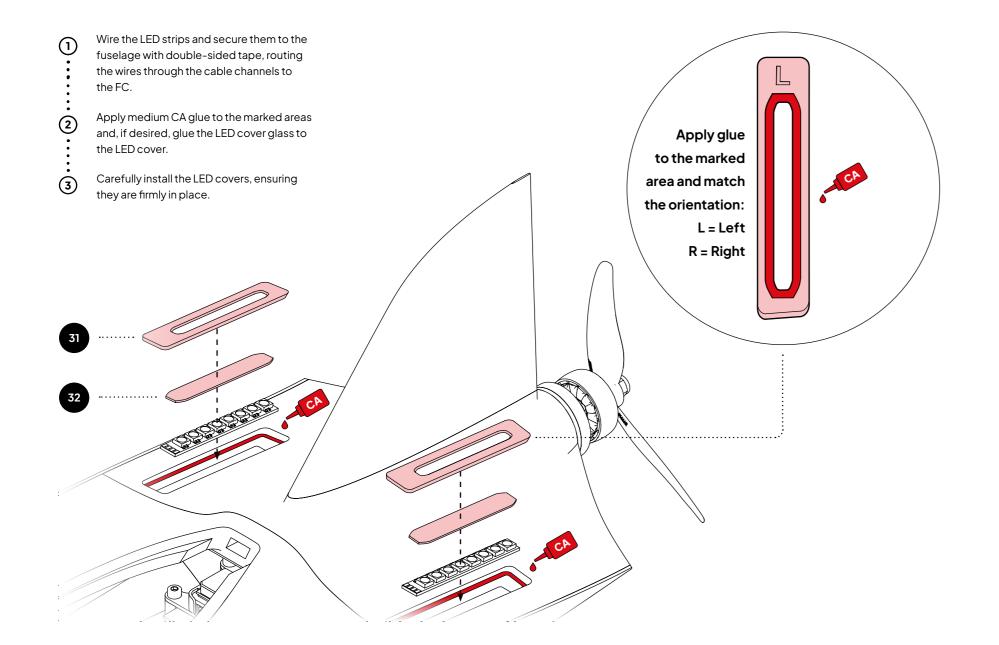
Drill a hole to fit your antenna Choose one of the provided antenna mounts or design a custom mount using the included .step files. Drill a hole in the marked area of the fuselage to match your antenna's Route the antennas through the fuselage and clip them into the antenna mount. Secure the antenna mount in the fuselage with a drop of glue or by friction fitting

CABLE CONNECTOR

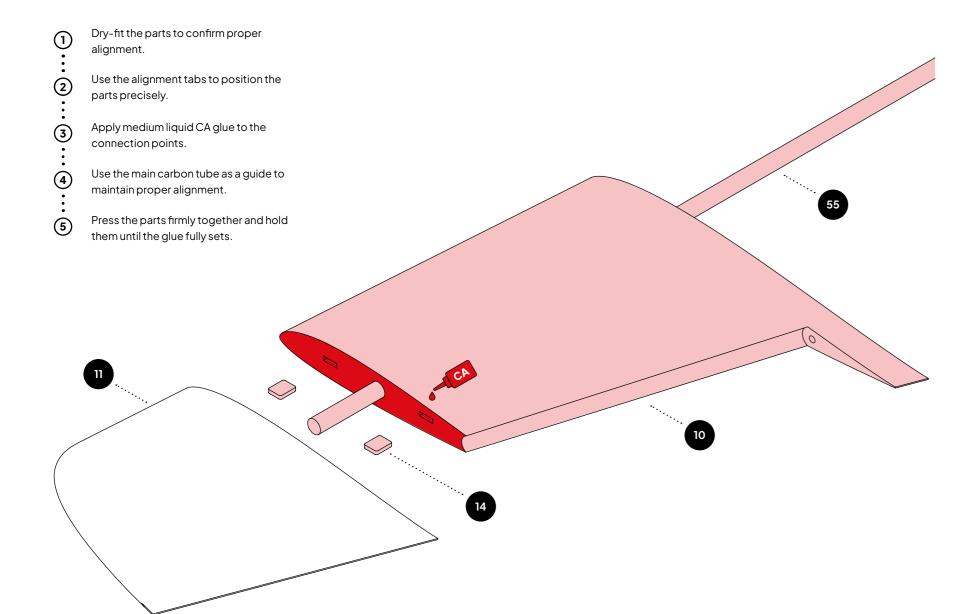


CANOPY

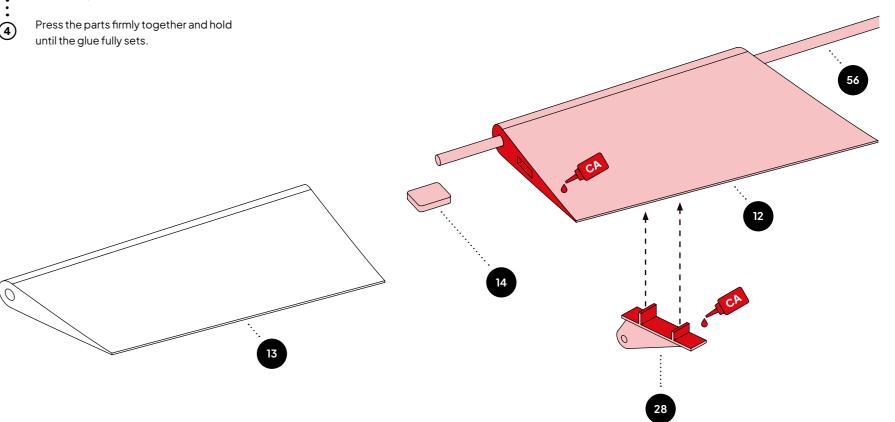
44 | LED COVER



Use the alignment tabs to position the parts precisely, then glue the canopy pieces together with CA glue. Insert the ball-pen spring into the rear section of the canopy. Apply medium liquid CA glue to the marked area of the canopy lock and slide it into the back of the canopy. Insert the canopy lock grip from above into the recess of the canopy lock, press the parts firmly together, and wait until the glue is fully set.



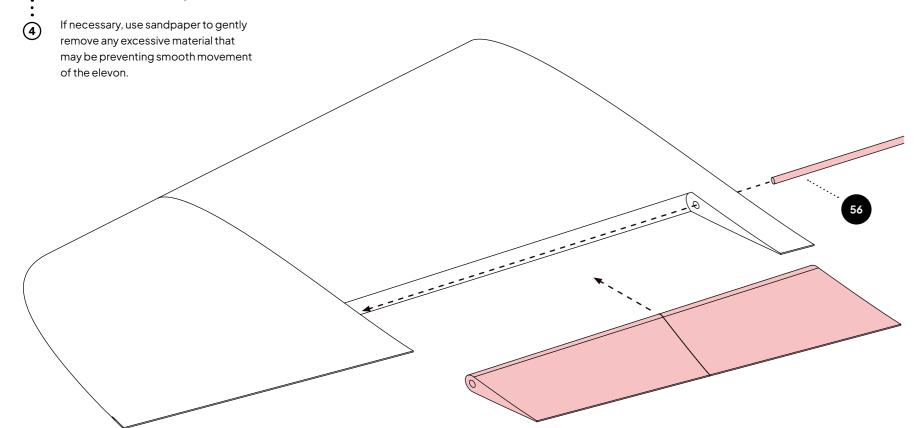
- Dry-fit the parts to ensure that they move freely on the carbon rod.
- Insert the carbon rod through the parts, making sure they are properly aligned.
- Apply medium liquid CA glue to the joints where the parts connect.



Insert the carbon rod at the root of the wing through the elevon.

Do not glue the carbon rod in place. This allows for easy replacement.

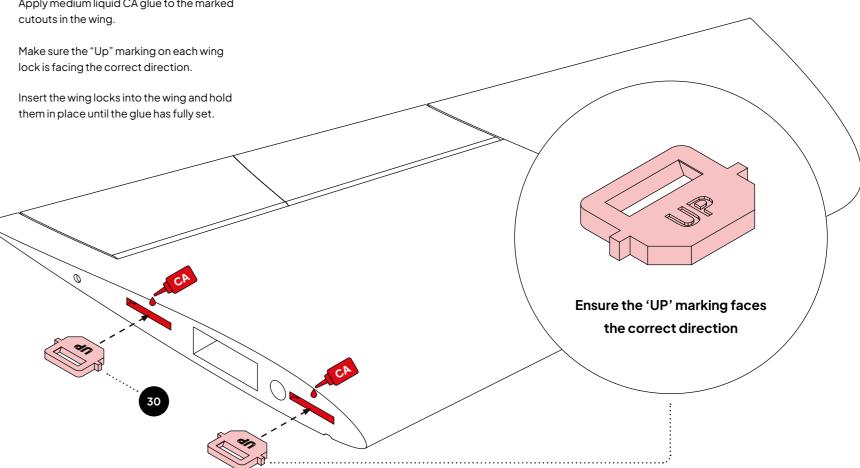
Check that the elevon moves freely and not catch on the wing.



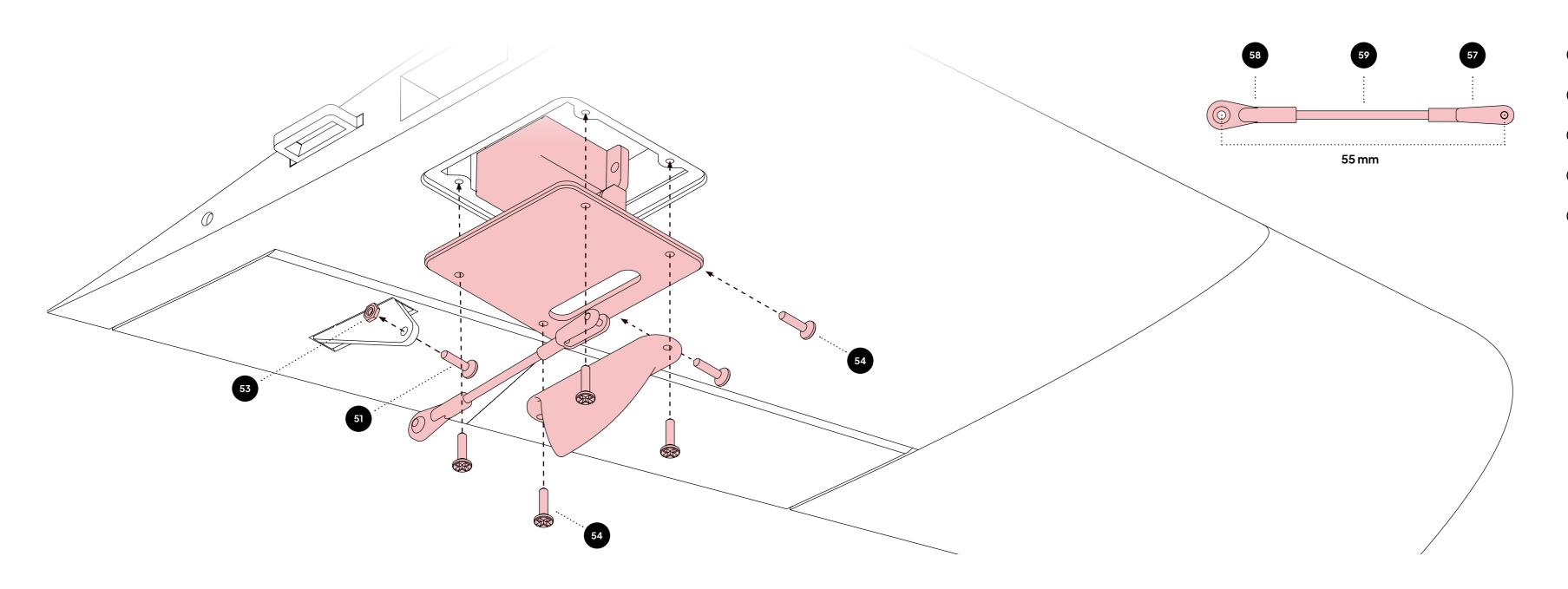
Dry-fit the wing locks to confirm they align perfectly with the wing root.

WING MOUNT

Apply medium liquid CA glue to the marked



50 | SERVO COVER



Insert the servo into the servo cover and fasten it with two self-tapping screws.

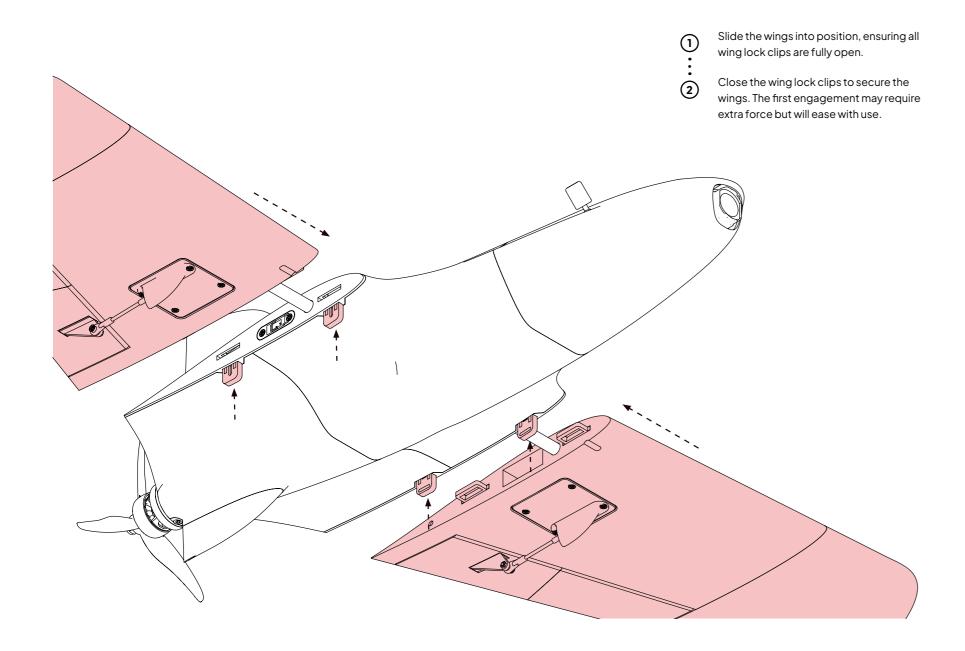
Guide the linkage through the servo cover cap and connect it to the servo.

Mount the complete servo cover assembly onto the wing using self-tapping screws.

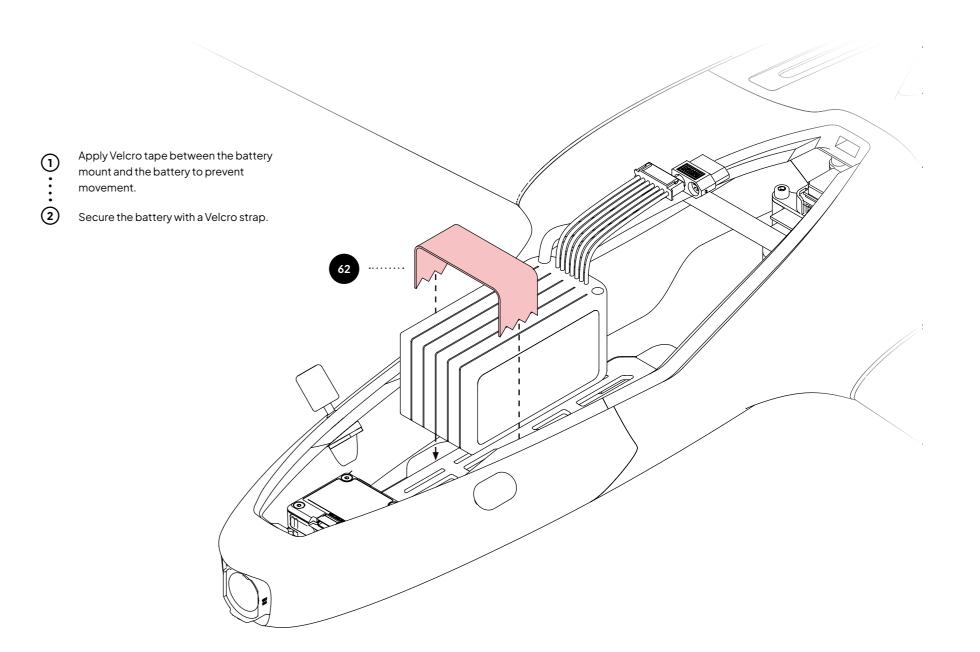
Attach the ball joint connector of the linkage to the servo horn.

Ensure the control surface is perfectly aligned with the wing and moves smoothly without resistance.

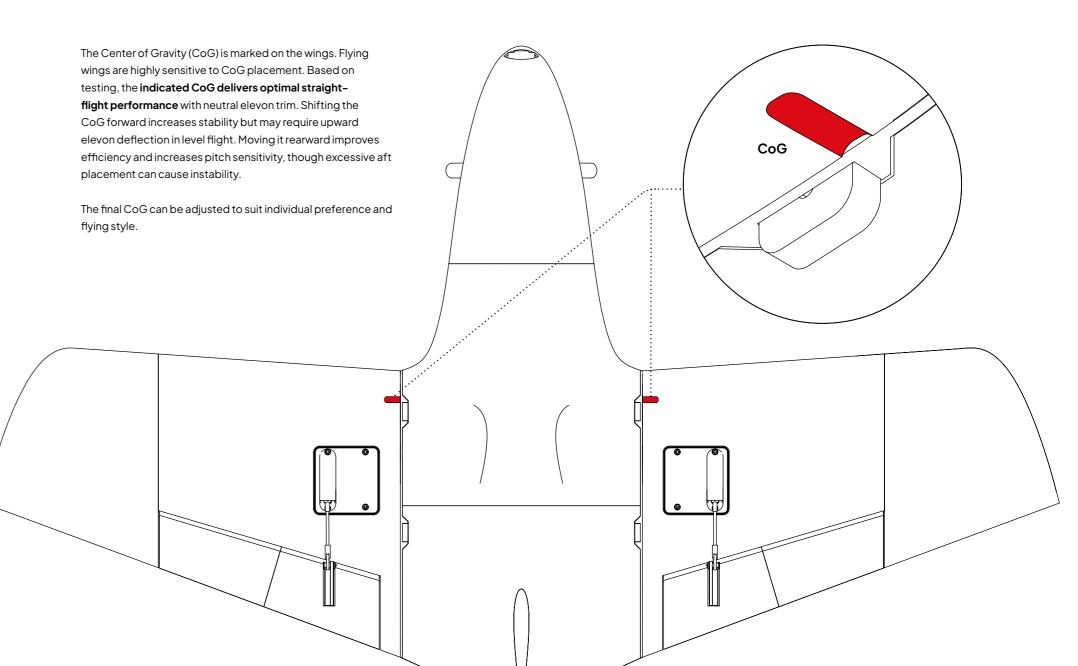
WING ASSEMBLY



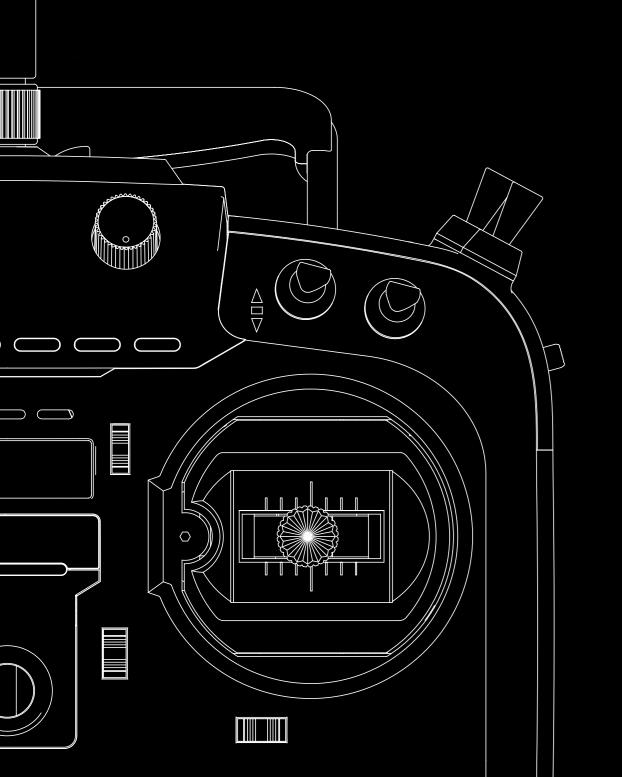
BATTERY STRAP



CENTER OF GRAVITY



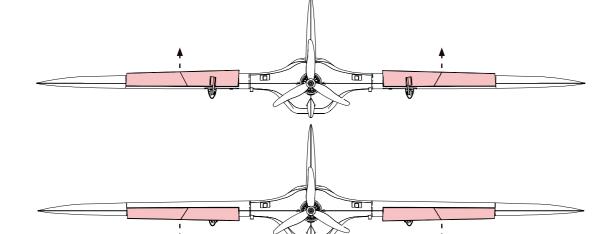




CONTROL DIRECTIONS

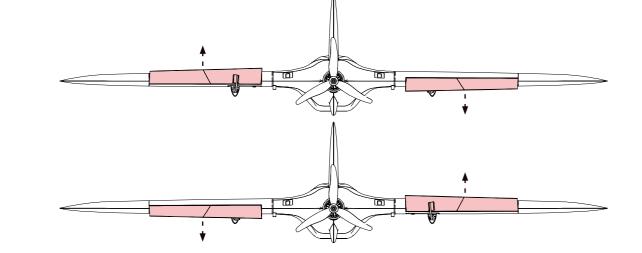
Pitch





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%	40%	40 %	15 mm
Roll	20%	40%	60%	19 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.

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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