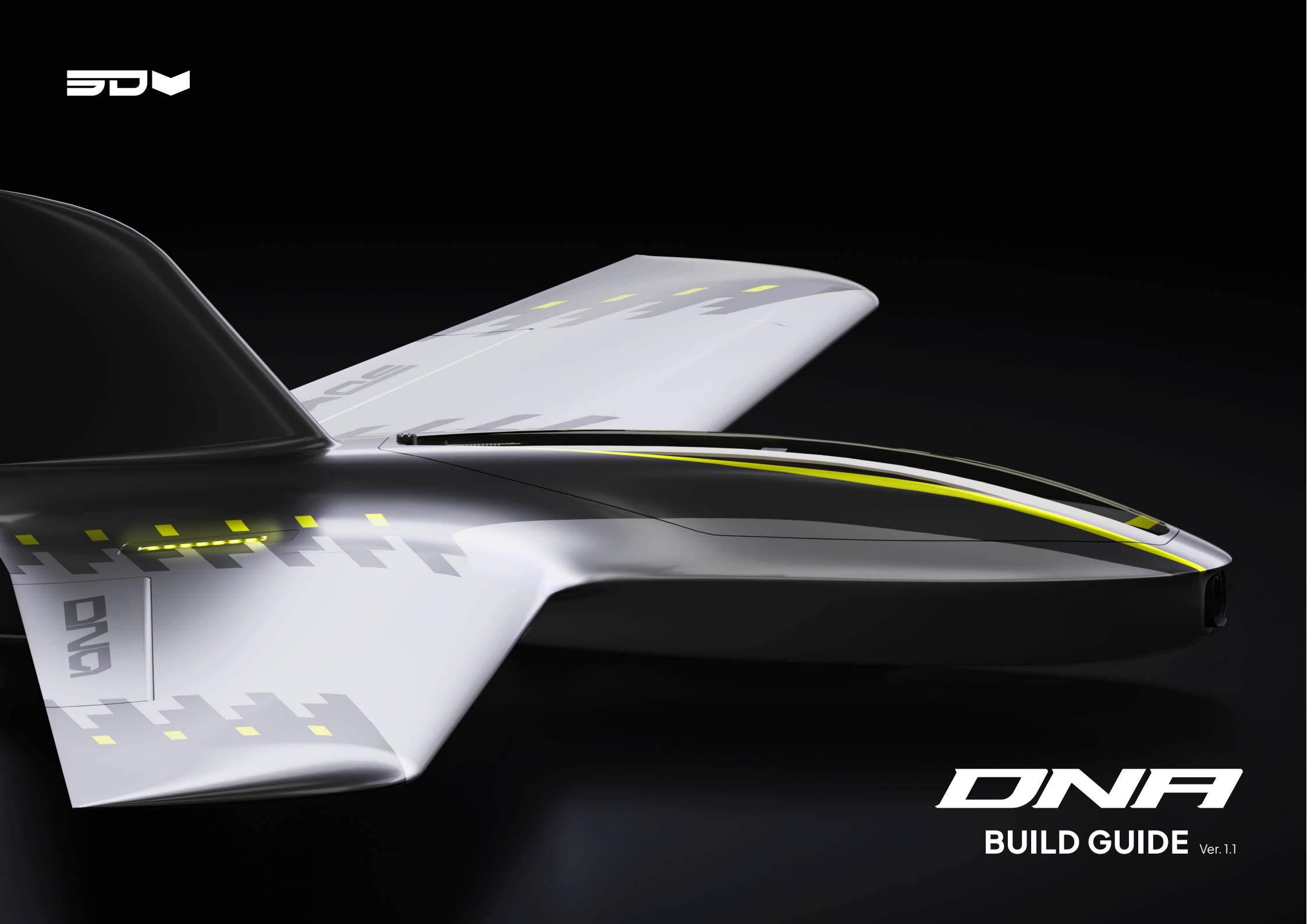

DNA

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.

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POWER TO RIP.
AGILITY TO EXPLORE.

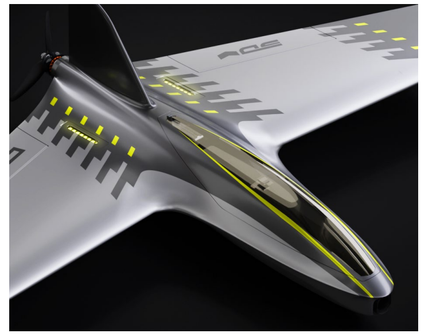
The DNA is a compact 800mm FPV wing built for quad pilots who want an easy, fast, and familiar jump into fixed-wing flight. Its infill-based 3D-printed structure keeps things simple, durable, and easily repairable, while the efficient airframe offers a smooth cruise and the punch to reach up to 230 km/h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

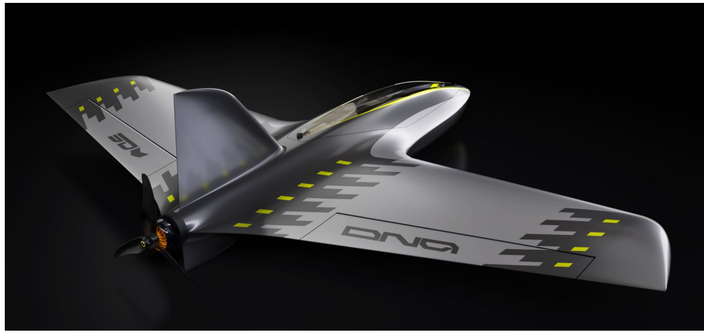
Designed for modern digital and analog FPV systems, the DNA features versatile 20mm, 25.5mm, and 30.5mm mounting options. Quick-lock wings and modular quick lock electronics ensure smooth transport and rapid turnaround whenever components need attention.

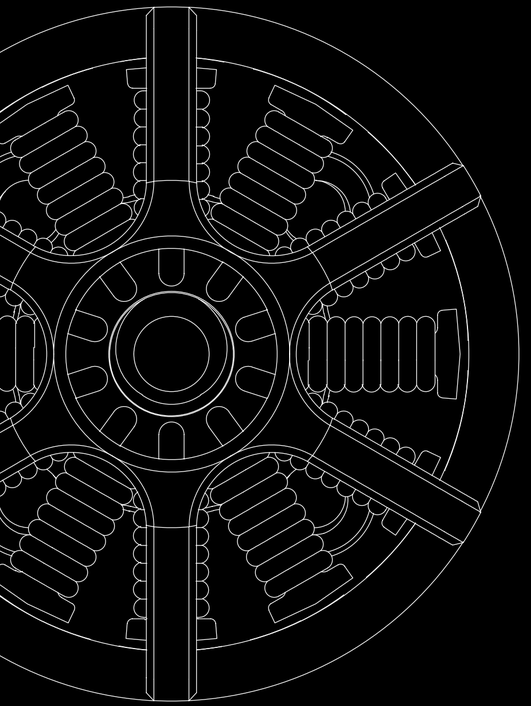
Crisp handling, compact size, and strong efficiency make the DNA ideal for tight lines, fast passes, and relaxed exploring alike. It's a travel-friendly, high-performance wing built around the gear FPV pilots already know and love.

SPECIFICATIONS

Printed Weight	330 g
Take-Off Weight	650 g
Stall Speed	28 km/h
Wing Span	800 mm
Wing Loading	46.6 g/dm²
Wing Area	13.95 dm²
Length	538 mm







01

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)
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 - 5 x 11 inch

Socket Head Cap Screw (SHCS)

ID	Part	Amount
46	**M3 x 25 mm** Motor Mount	1 x
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
55	**Carbon Tube** 8mm x 6mm x 700 mm Wing	1 x
56	**Carbon Rod** 3mm x 200 mm 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

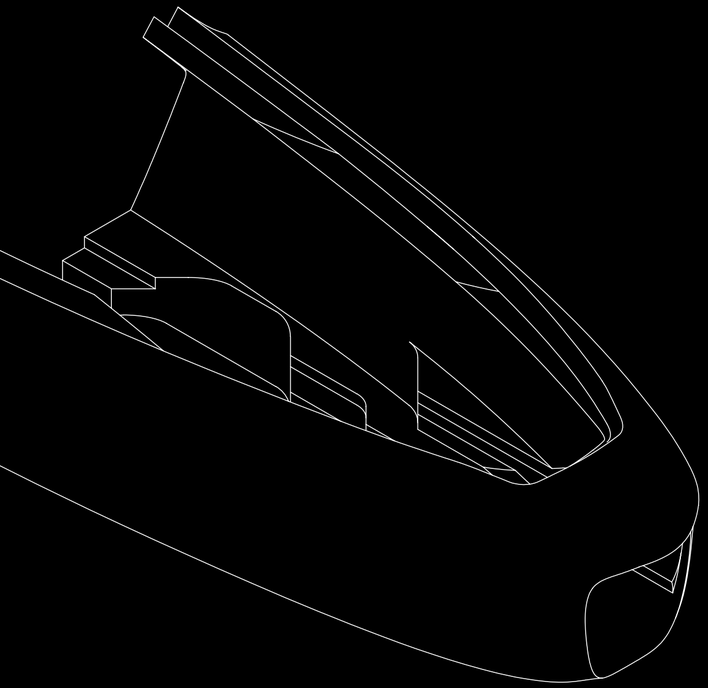
ID	Part	Amount
60	**M3 x 3mm** VTX Mount, FC Mount, Motor Mount	7x

Miscellaneous

ID	Part	Amount
61	**Ball Pen Spring** Canopy	1 x
62	**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
- .STL files for use with any slicer of your choice.
- .STP files for customizing setup-specific parts.

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_STL
3D model files (.stl) for use with any slicer of your choice.

04_GCodes
Ready to use print files (.gcode) for i3 style printers.

05_STEP
3D model files (.stp) for customizing setup-specific parts.

06_Tools
Calibration Cube

LW-PLA

ABS_ASA_PETG

PETG

PLA

Profile_P4

Canopy_C1

Canopy_C2

Fuse-F1

Fuse-F2

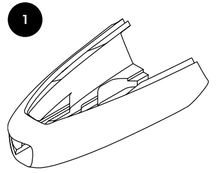
Fuse-F3

Stabilizer_Top

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.

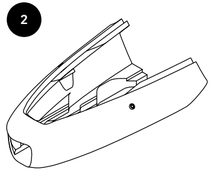
1



Fuse-F1

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

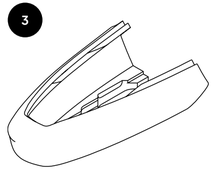
2



Fuse-F1_Antenna

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

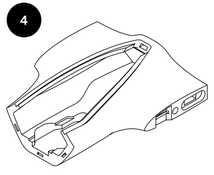
3



Fuse-F1_No_Cam

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

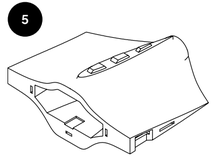
4



Fuse-F2

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

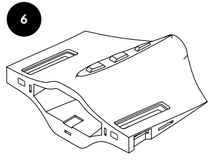
5



Fuse-F3

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

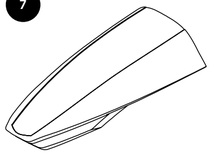
6



Fuse-F3_LED

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

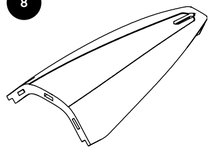
7



Canopy_C1

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

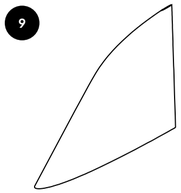
8



Canopy_C2

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

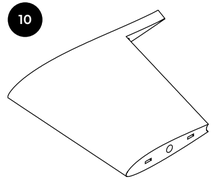
9



Stabilizer_Top

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

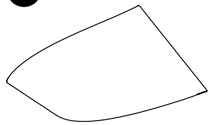
10



Wing_L1/R1

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

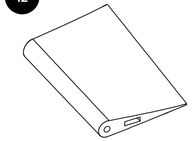
11



Wing_L2/R2

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

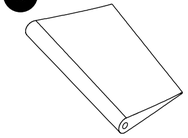
12



Elevon_L1/R1

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

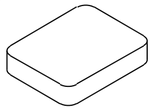
13



Elevon_L2/R2

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

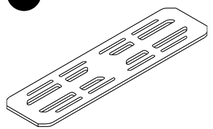
14



Alignment_Tab

Profile: P2
Material: PLA
Weight: 0.17 g

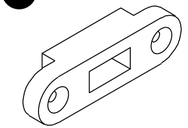
15



Battery_Mount

Profile: P2
Material: PLA
Weight: 7.48 g

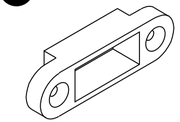
16



Cable_Connector_JR_L/R

Profile: P2
Material: PLA
Weight: 1.11 g

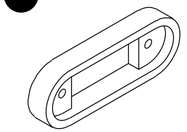
17



Cable_Connector_MPX_L/R

Profile: P2
Material: PLA
Weight: 0.79 g

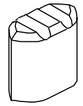
18



Cable_Connector_Mount_L/R

Profile: P2
Material: PLA
Weight: 1.14 g

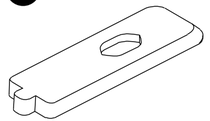
19



Canopy_Lock_Grip

Profile: P2
Material: PLA
Weight: 0.23 g

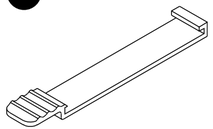
20



Canopy_Lock

Profile: P2
Material: PLA
Weight: 1.00 g

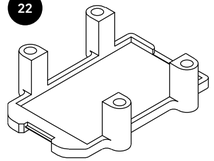
21



FC_Mount_Latch

Profile: P2
Material: PLA
Weight: 2.00 g

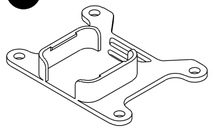
22



FC_Mount_SB_F405_Wing

Profile: P2
Material: PLA
Weight: 7.49 g

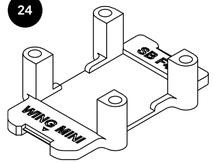
23



GPS_Mount_SB_F405_Wing

Profile: P2
Material: PLA
Weight: 2.68 g

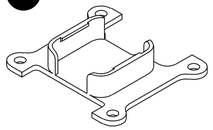
24



FC_Mount_SB_F405_Mini

Profile: P2
Material: PLA
Weight: 4.76 g

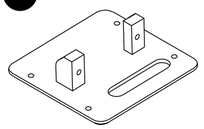
25



GPS_Mount_SB_F405_Mini

Profile: P2
Material: PLA
Weight: 2.24 g

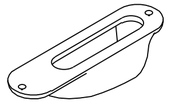
26



Servo_Cover_L1/R1

Profile: P2
Material: PLA
Weight: 4.94 g

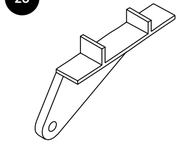
27



Servo_Cover_L2/R2

Profile: P2
Material: PLA
Weight: 1.33 g

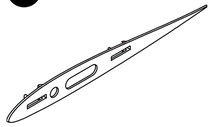
28



Servohorn_L/R

Profile: P2
Material: PLA
Weight: 0.64 g

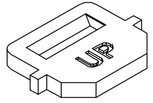
29



Wing_Mount_L/R

Profile: P2
Material: PLA
Weight: 5.90 g

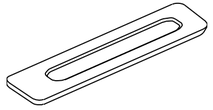
30



Wing_Lock

Profile: P2
Material: PLA
Weight: 0.80g

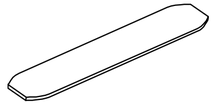
31



LED_Cover_L/R

Profile: P2
Material: PLA
Weight: 5.90 g

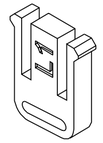
32



LED_Cover_Glass_L/R

Profile: P2
Material: PETG or similar transparent Material
Weight: 2.00 g

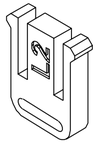
33



Wing_Lock_Clip_L1/L2

Profile: P2
Material: PETG or similar flexible Material
Weight: 2.00 g

34



Wing_Lock_Clip_R1/R2

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

35

Antenna_Mount_3mm_L/R

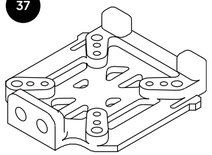
Profile: P2
Material: PETG or similar flexible Material
Weight: 2.00 g

36

Antenna_Mount_4mm_L/R

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

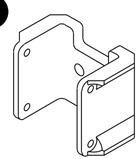
37



VTX_Mount

Profile: P2
Material: ABS or similar
high temperature resistant Material
Weight: 0.52 g

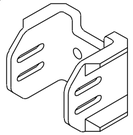
38



Camera_Mount_DJI_O4

Profile: P2
Material: ABS or similar
high temperature resistant Material
Weight: 2.41 g

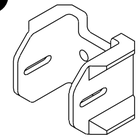
39



Camera_Mount_20mm

Profile: P2
Material: ABS or similar
high temperature resistant Material
Weight: 2.51 g

40



Camera_Mount_19mm_Single_Slot

Profile: P2
Material: ABS or similar
high temperature resistant Material
Weight: 2.60 g

41

Camera_Mount_19mm_Dual_Slot

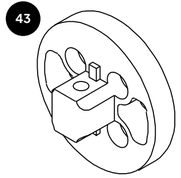
Profile: P2
Material: ABS or similar
high temperature resistant Material
Weight: 2.53 g

42

Motor_Mount_Base

Profile: P2
Material: ABS or similar
high temperature resistant Material
Weight: 2.10 g

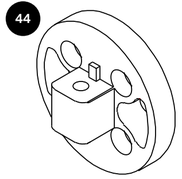
43



Motor_Mount_16mm

Profile: P2
Material: ABS or similar
high temperature resistant Material
Weight: 2.80 g

44

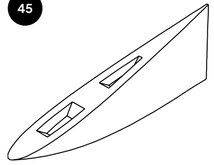


Motor_Mount_19mm

Profile: P2
Material: ABS or similar
high temperature resistant Material
Weight: 2.80 g

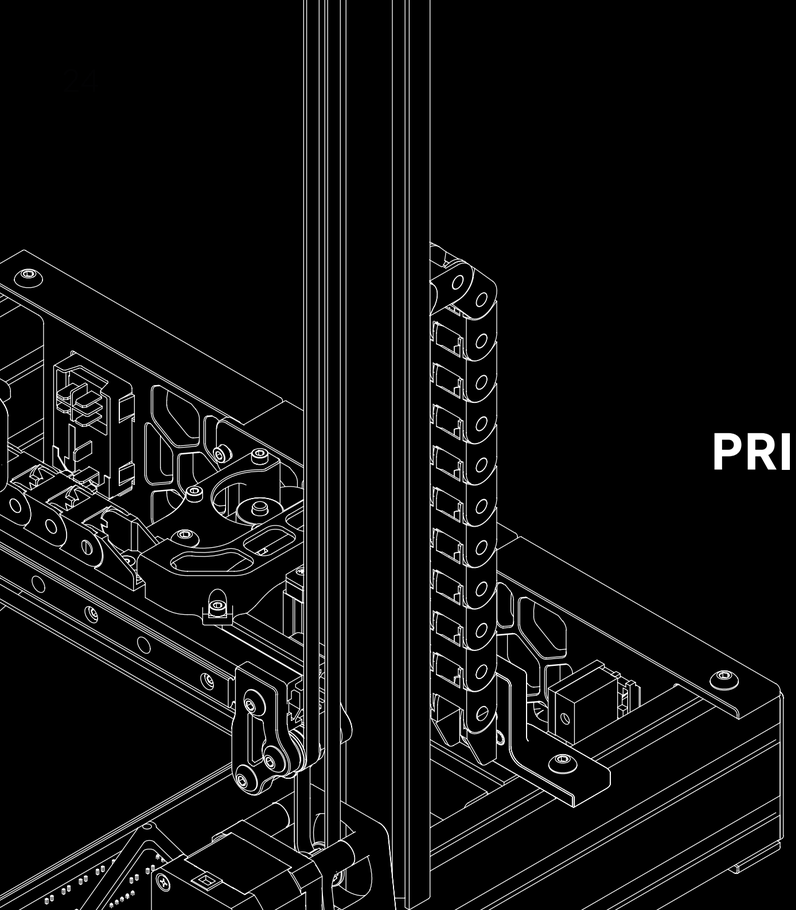
ABS/ASA/PETG › PROFILE-P4

45



Stabilizer_Bottom

Profile: P2
Material: ABS or similar
impact resistant Material
Weight: 2.55 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 DNA 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.

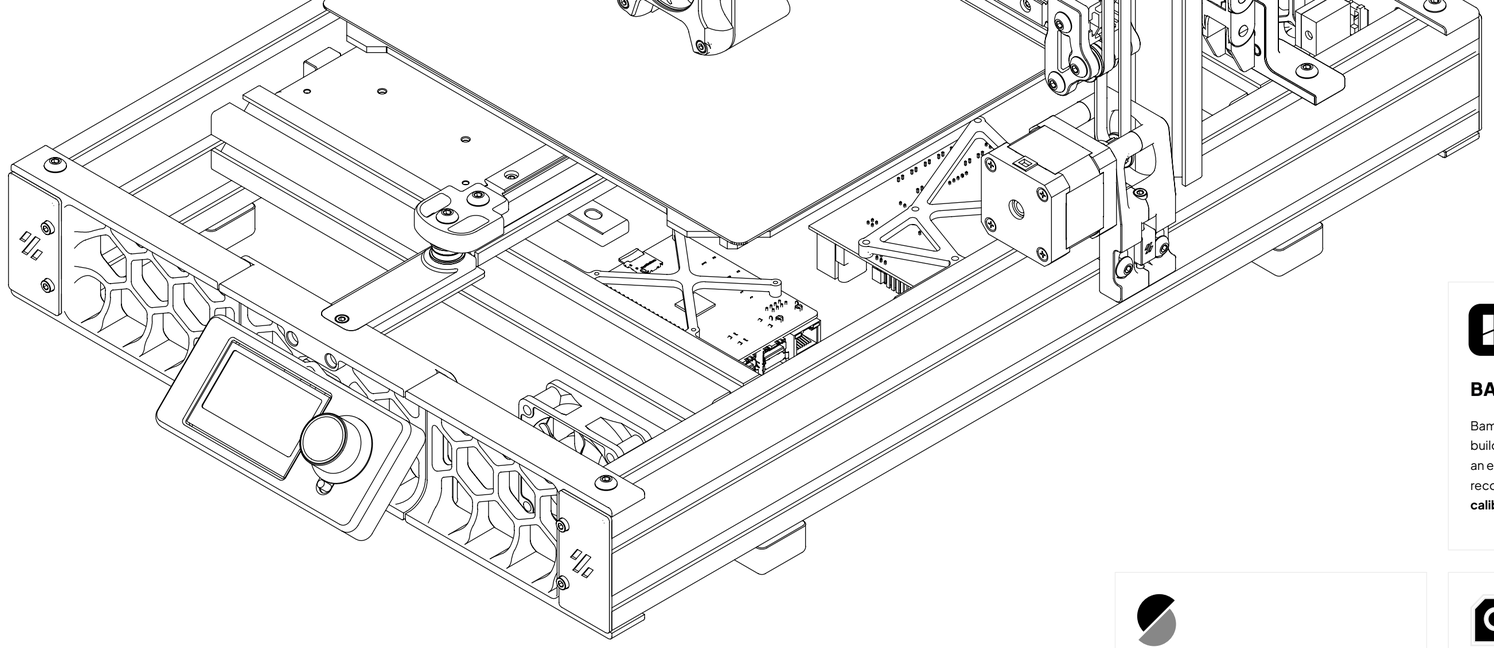
IMPORTANT

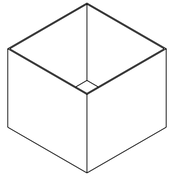
Please avoid using pre-foamed LW-PLA. It's only about 20% lighter than regular PLA, whereas actively foaming LW-PLA can reduce weight by roughly 50% compared to standard PLA.

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

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**.

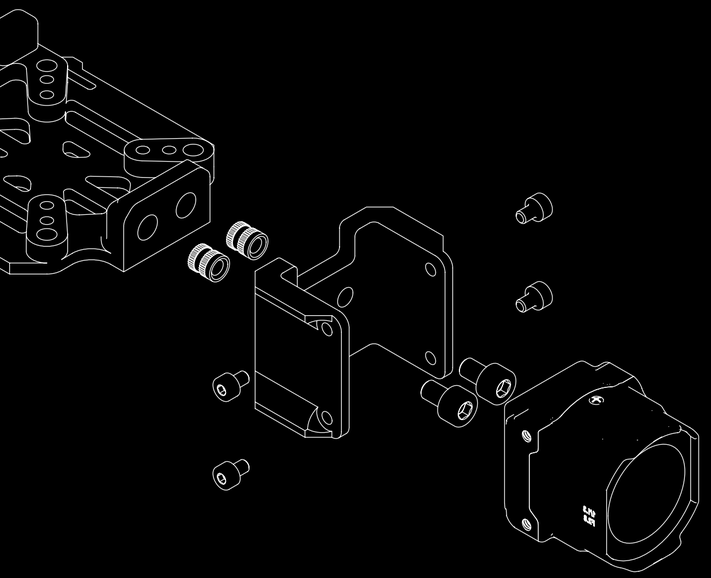
PRUSA SLICER

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

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



04

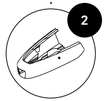
BUILD GUIDE

FUSELAGE

1

Fuse-F1

Standard nose section with camera opening.
Designed for internal side-feed antenna mounting.



2

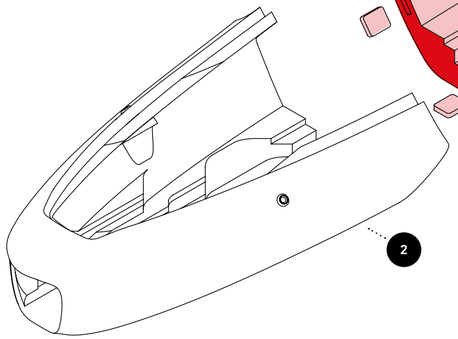
Fuse-F1_Antenna

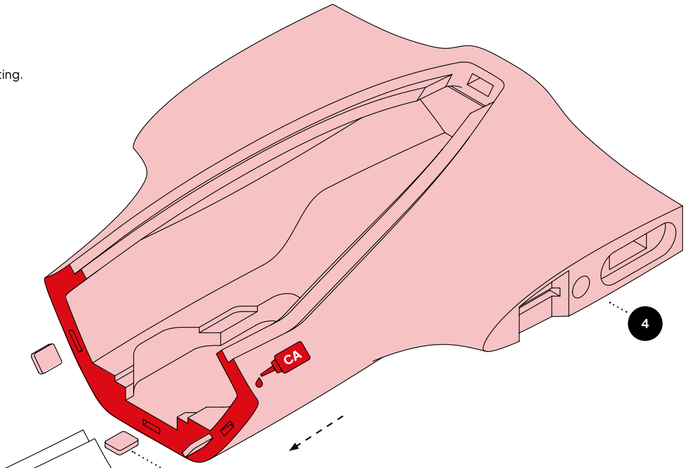
Camera-ready nose section with external mounts for one or two antennas.

3

Fuse-F1_No_Cam

Solid nose section without camera opening, intended for pure LOS flying.





1. Select a fuselage nose section that best suits your needs.
1. Clean up 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

Fuse-F3

Standard fuselage section.

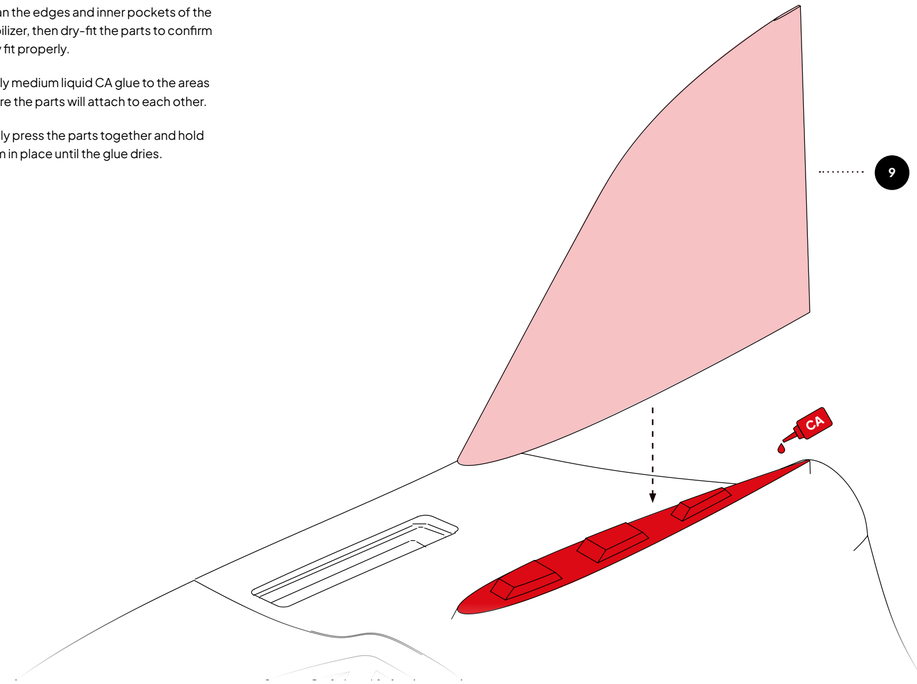
Fuse-F3_LED

Fuselage section with integrated slots for two Matek WS2812 LED strips.

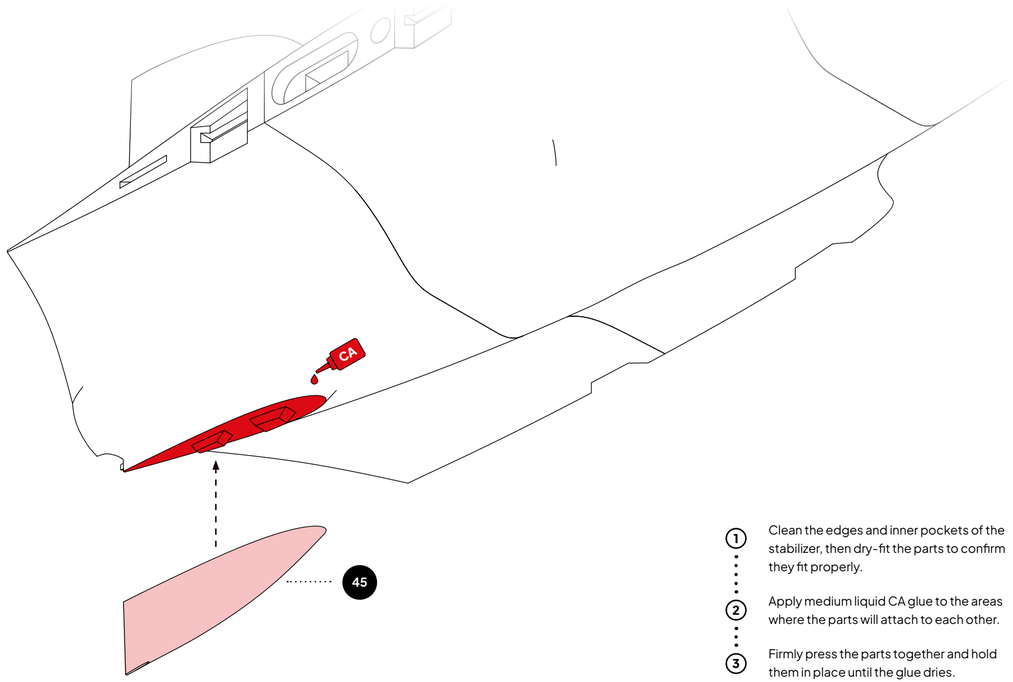
1. Select a fuselage tail section that best suits your needs.
2. Apply medium liquid CA glue to the surfaces where the parts will join.
2. Use the alignment tabs to precisely match and position the parts.

STABILIZER TOP

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.



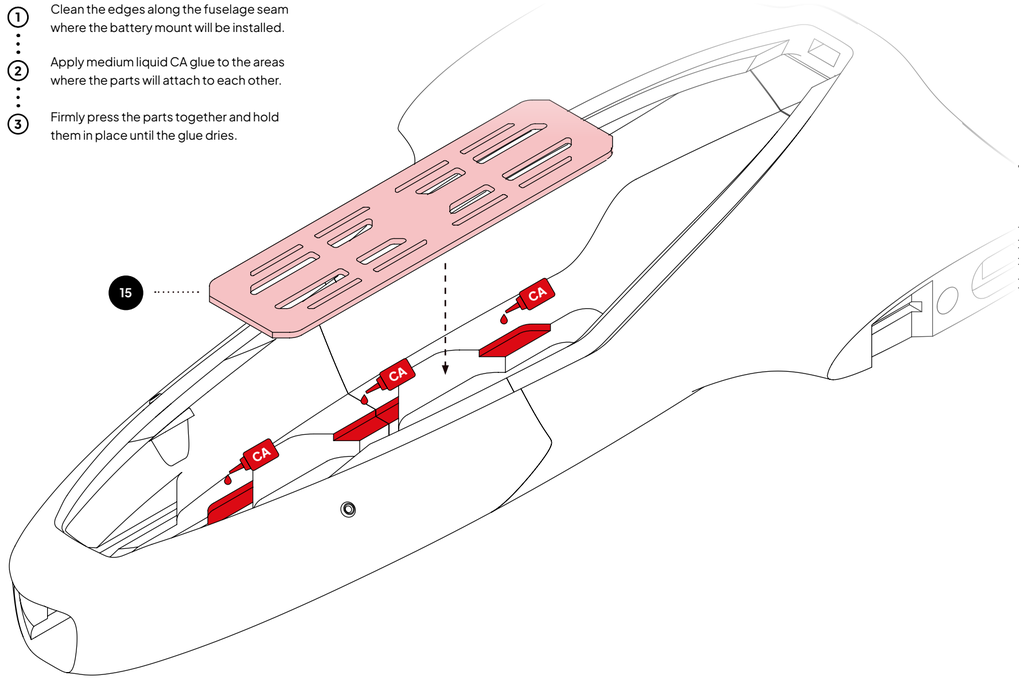
STABILIZER BOTTOM



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.

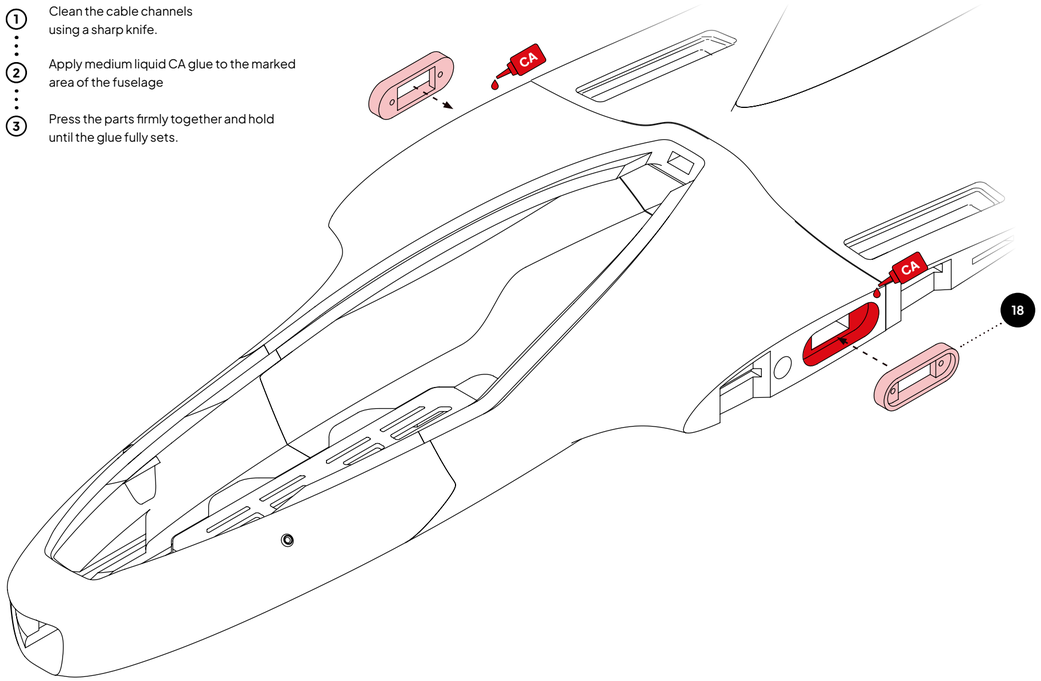
BATTERY MOUNT

1. Clean the edges along the fuselage seam where the battery mount will be installed.
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.



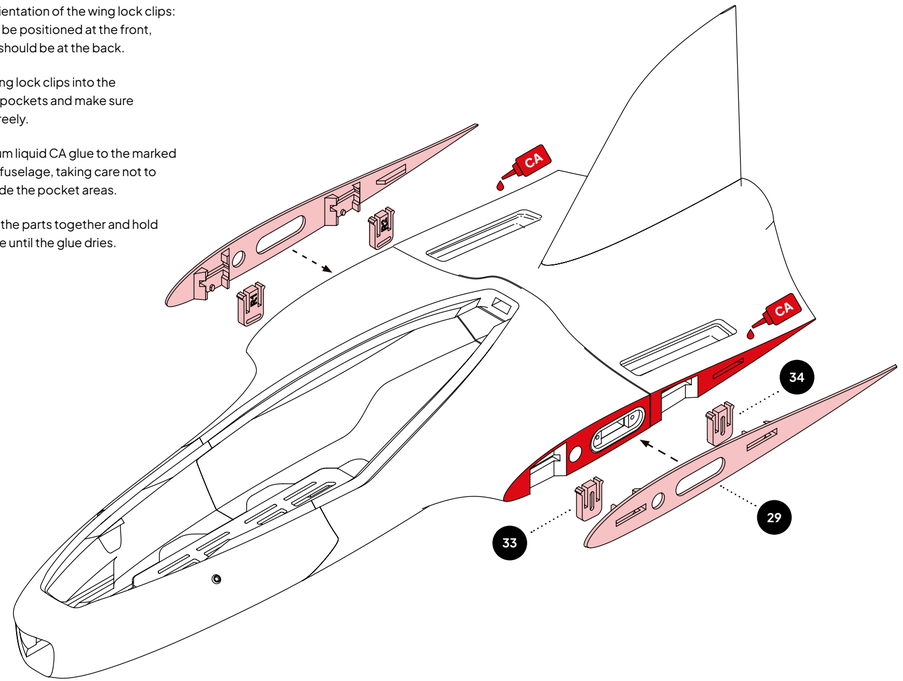
CABLE CONNECTOR MOUNT

1. Clean the cable channels using a sharp knife.
2. Apply medium liquid CA glue to the marked area of the fuselage
3. Press the parts firmly together and hold until the glue fully sets.



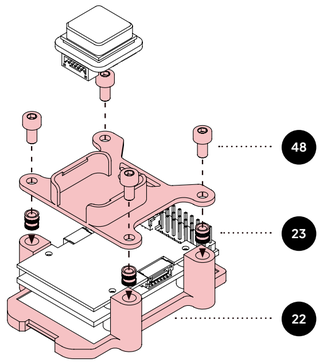
WING MOUNT

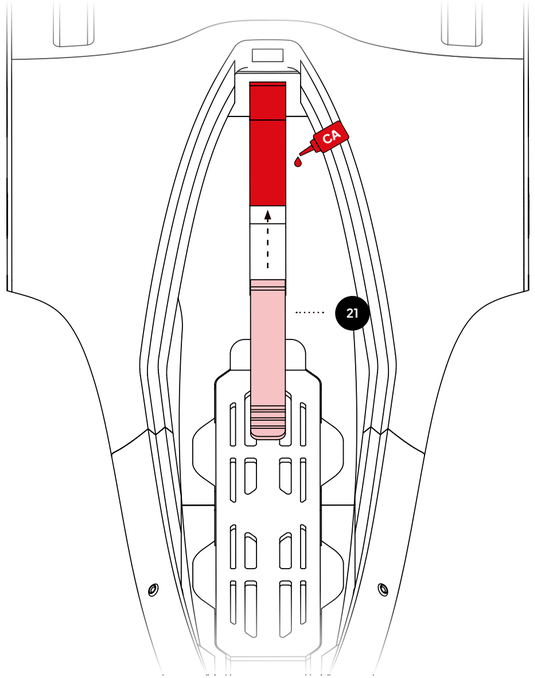
1. Verify the orientation of the wing lock clips: L1/R1 should be positioned at the front, while L2/R2 should be at the back.
2. Insert the wing lock clips into the wing mount pockets and make sure they move freely.
3. Apply medium liquid CA glue to the marked areas of the fuselage, taking care not to get glue inside the pocket areas.
4. Firmly press the parts together and hold them in place until the glue dries.



FC/GPS MOUNT

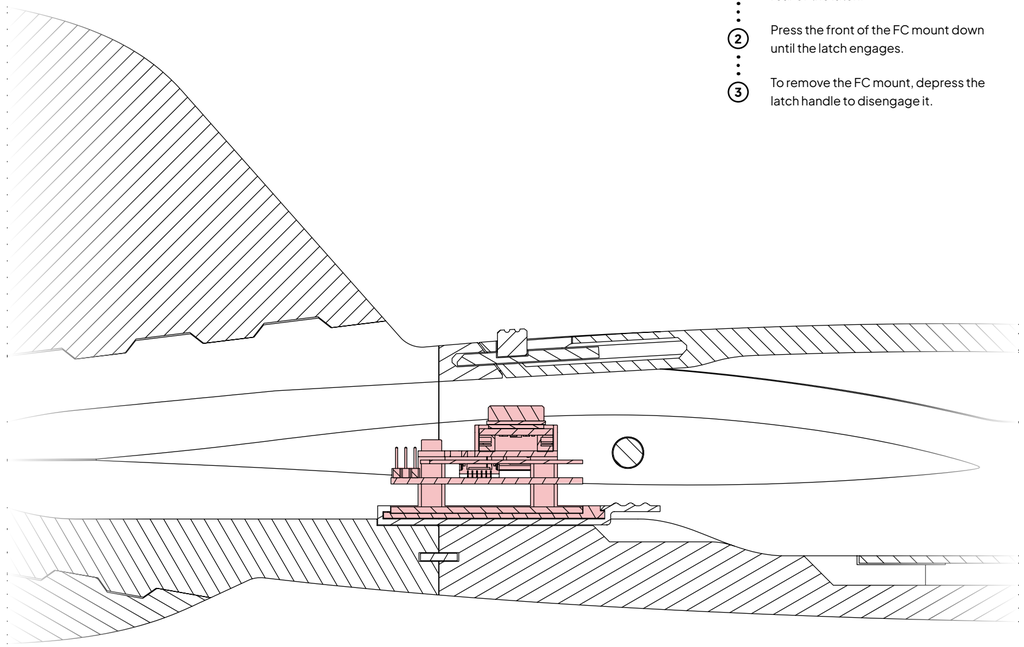
1. Select one of the provided FC mounts or create a custom mount using the included .step files.
2. Heat the threaded inserts with a soldering iron and press them into the FC mount.
3. Place the FC in the mount and screw the GPS mount on top to secure it.
4. Secure the GPS by clicking it into position.
5. Apply medium CA glue to the fuselage pocket and secure the FC mount latch in place.





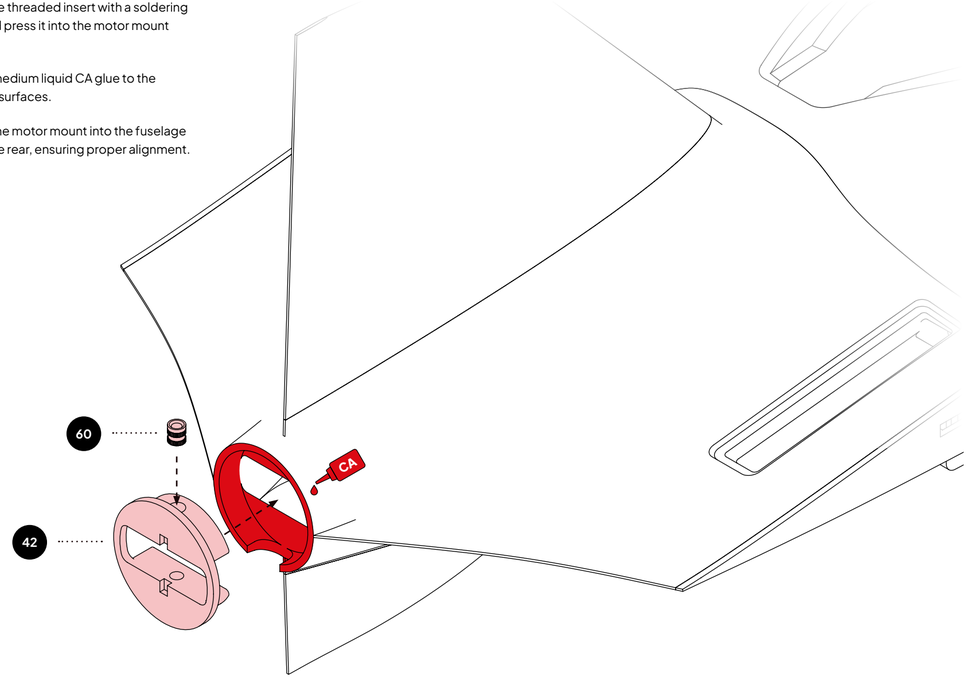
FC/GPS UNIT ASSEMBLY

1. Align the FC mount notch with the rear of the latch.
2. Press the front of the FC mount down until the latch engages.
3. To remove the FC mount, depress the latch handle to disengage it.



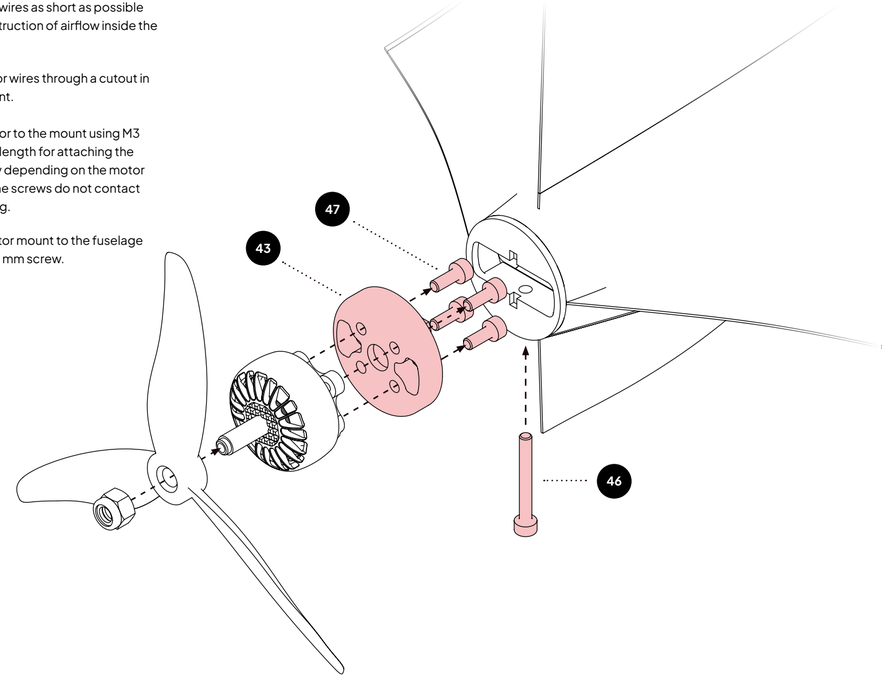
MOTOR MOUNT

1. Heat the threaded insert with a soldering iron and press it into the motor mount base.
2. Apply medium liquid CA glue to the mating surfaces.
3. Insert the motor mount into the fuselage from the rear, ensuring proper alignment.



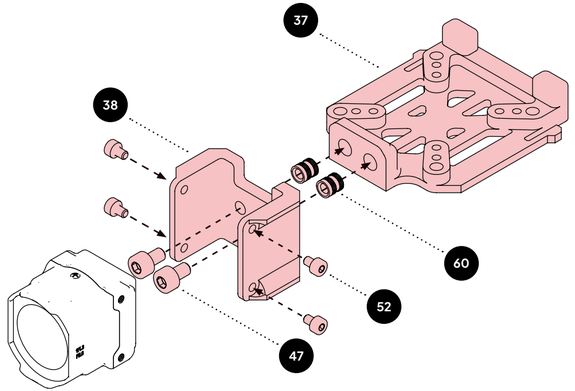
MOTOR ASSEMBLY

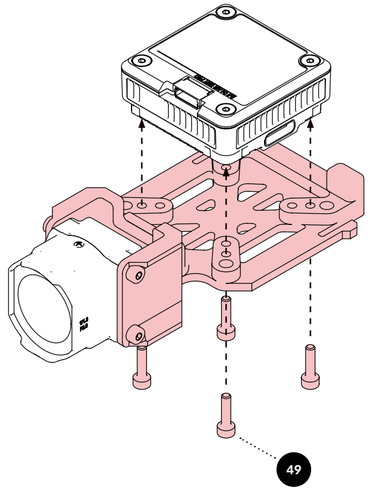
1. Trim the motor wires as short as possible to prevent obstruction of airflow inside the fuselage.
2. Route the motor wires through a cutout in the motor mount.
3. Attach the motor to the mount using M3 screws. Screw length for attaching the motor may vary depending on the motor used. Ensure the screws do not contact the motor wiring.
4. Secure the motor mount to the fuselage with an M3 × 25 mm screw.



CAMERA/VTX MOUNT

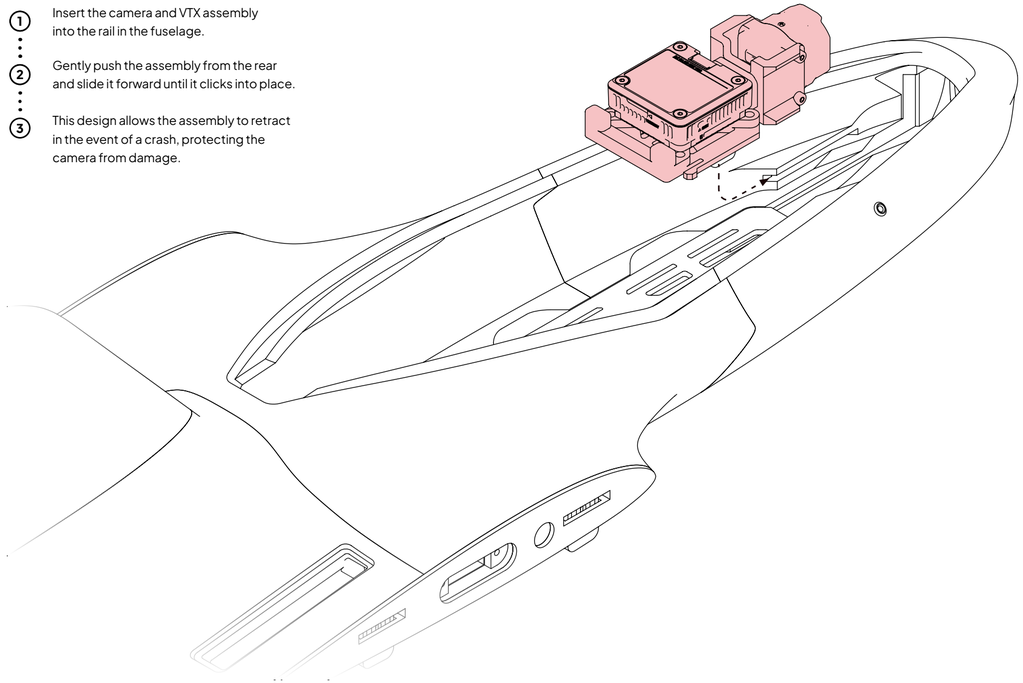
1. Select one of the provided camera mounts or create a custom mount using the included .step files.
2. Heat the threaded inserts with a soldering iron and press them into the VTX mount.
3. Attach the camera mount to the VTX mount using M3 screws.
4. Secure the camera using its supplied screws or M2 × 4 mm screws.
5. Mount the VTX using M2 or M3 screws, depending on your VTX, and secure it to the VTX mount.



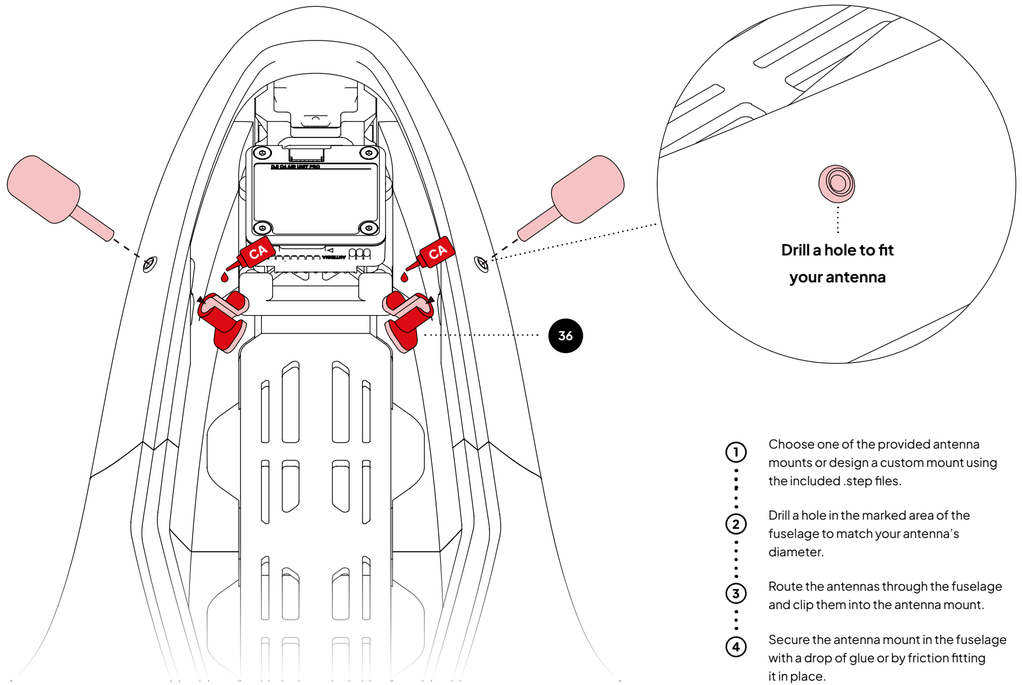


CAMERA/VTX UNIT ASSEMBLY

1. Insert the camera and VTX assembly into the rail in the fuselage.
2. Gently push the assembly from the rear and slide it forward until it clicks into place.
3. This design allows the assembly to retract in the event of a crash, protecting the camera from damage.

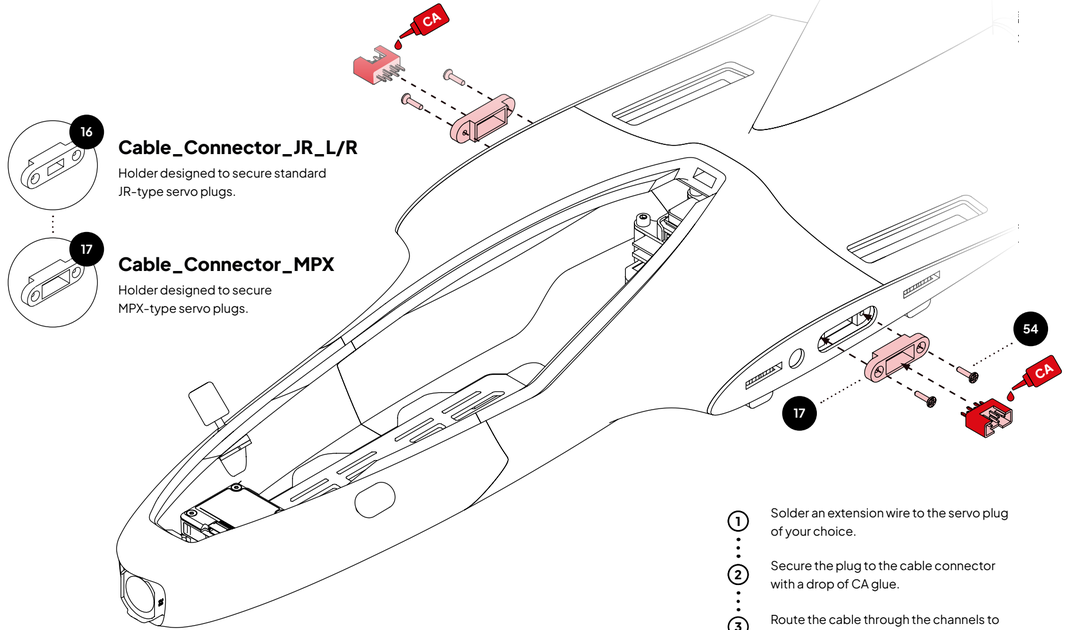


ANTENNA MOUNT



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

CABLE CONNECTOR



16 Cable_Connector_JR_L/R

Holder designed to secure standard JR-type servo plugs.

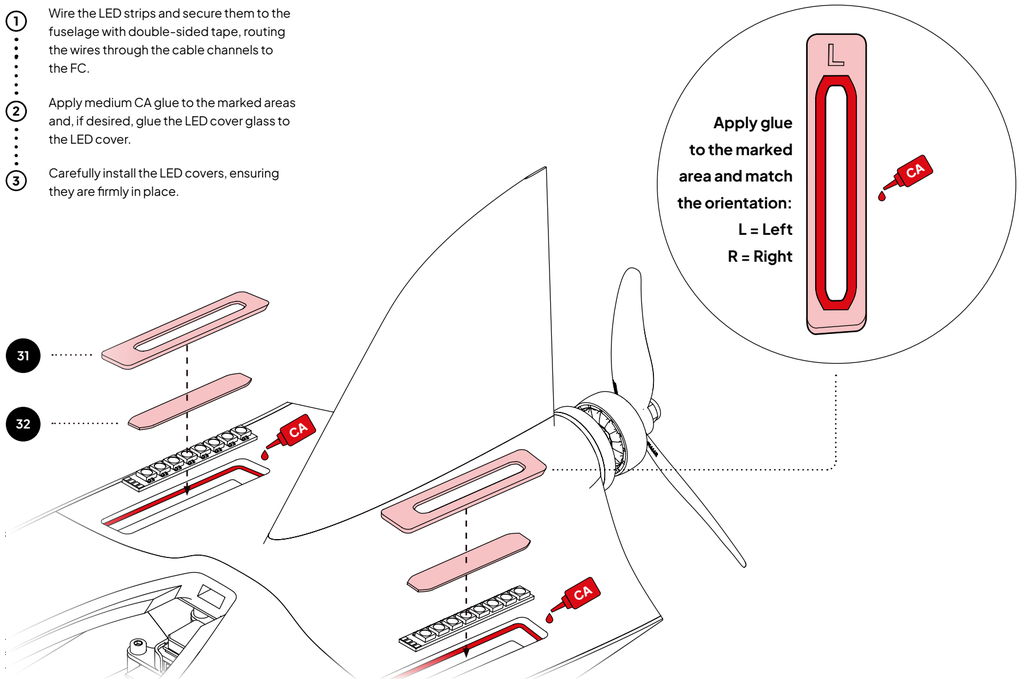
17 Cable_Connector_MPX

Holder designed to secure MPX-type servo plugs.

1. Solder an extension wire to the servo plug of your choice.
2. Secure the plug to the cable connector with a drop of CA glue.
3. Route the cable through the channels to the FC and attach the cable connector to its mount using self-tapping screws.

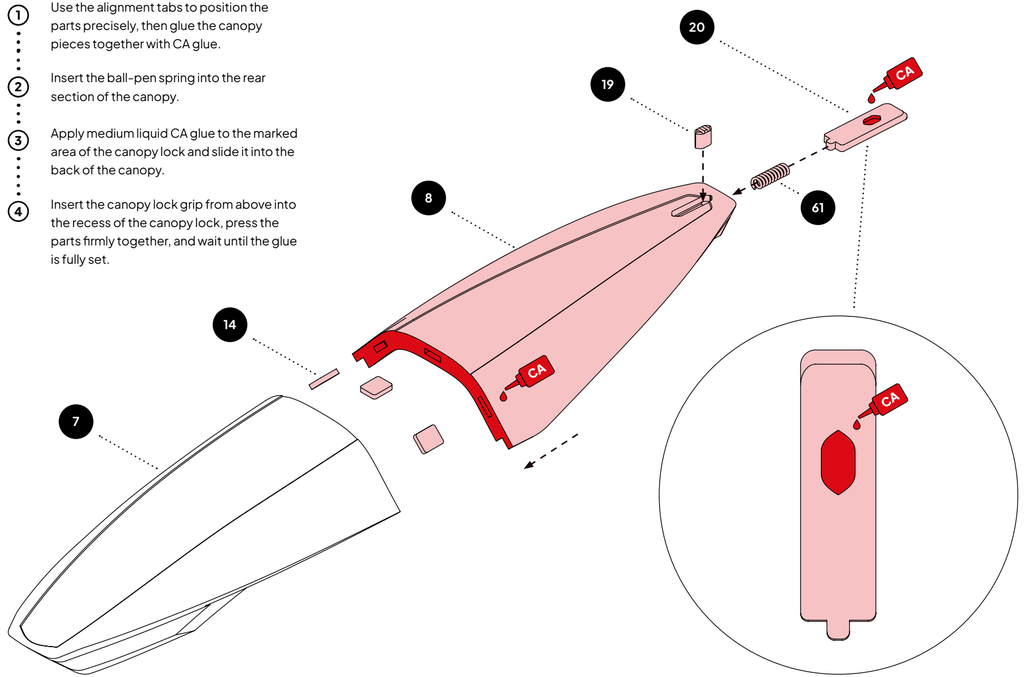
LED COVER

1. Wire the LED strips and secure them to the fuselage with double-sided tape, routing the wires through the cable channels to the FC.
2. Apply medium CA glue to the marked areas and, if desired, glue the LED cover glass to the LED cover.
3. Carefully install the LED covers, ensuring they are firmly in place.



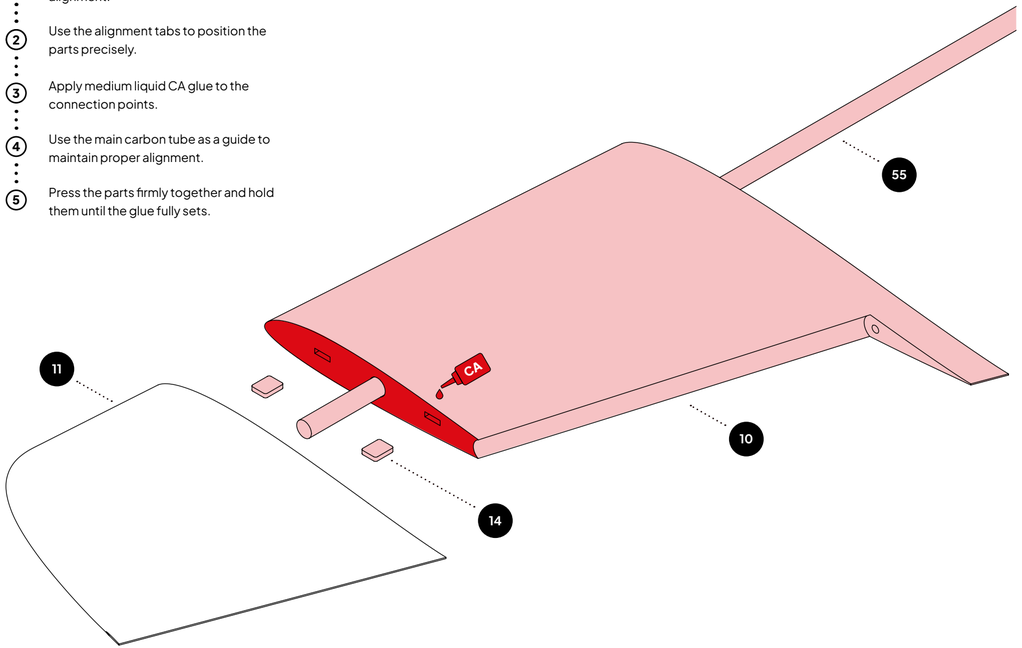
CANOPY

1. Use the alignment tabs to position the parts precisely, then glue the canopy pieces together with CA glue.
2. Insert the ball-pen spring into the rear section of the canopy.
3. Apply medium liquid CA glue to the marked area of the canopy lock and slide it into the back of the canopy.
4. 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.



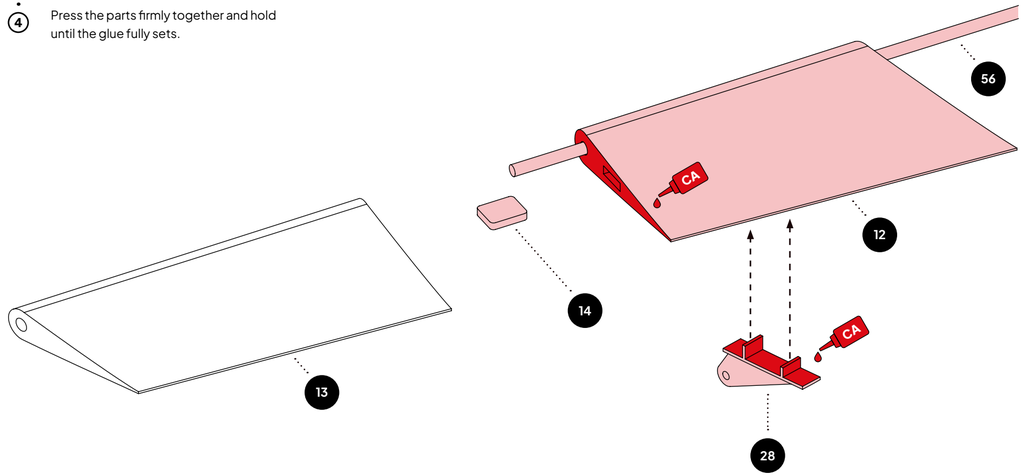
WING

1. Dry-fit the parts to confirm proper alignment.
2. Use the alignment tabs to position the parts precisely.
3. Apply medium liquid CA glue to the connection points.
4. Use the main carbon tube as a guide to maintain proper alignment.
5. Press the parts firmly together and hold them until the glue fully sets.



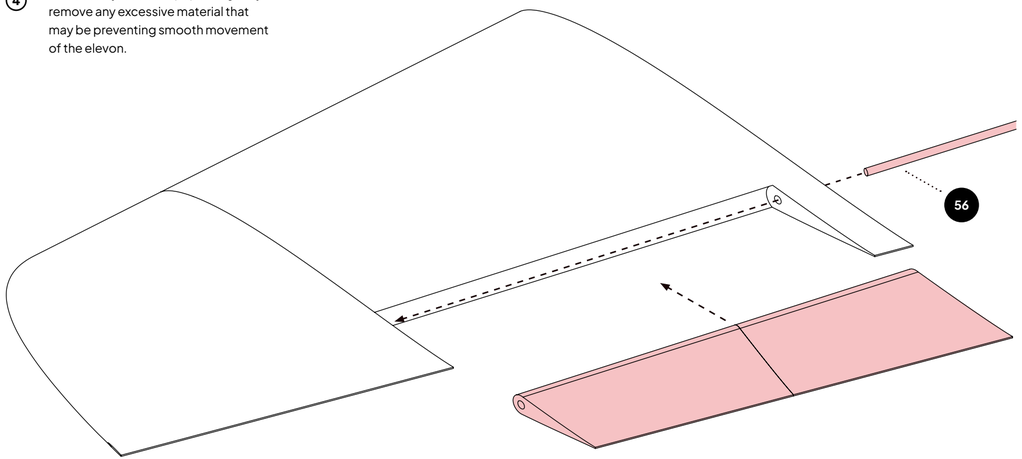
ELEVON

1. Dry-fit the parts to ensure that they move freely on the carbon rod.
2. Insert the carbon rod through the parts, making sure they are properly aligned.
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.



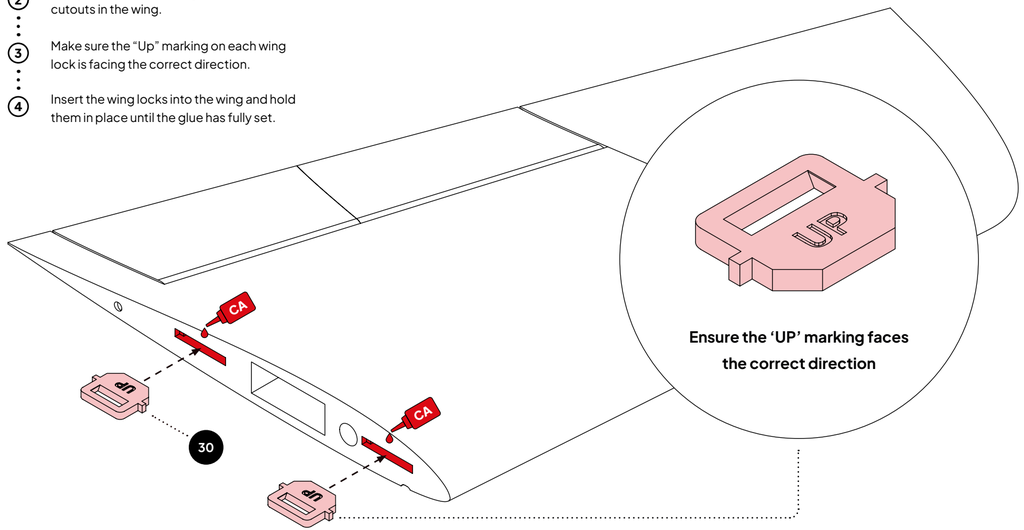
ELEVON ASSEMBLY

1. Insert the carbon rod at the root of the wing through the elevon.
2. Do not glue the carbon rod in place. This allows for easy replacement.
3. Check that the elevon moves freely and not catch on the wing.
4. If necessary, use sandpaper to gently remove any excessive material that may be preventing smooth movement of the elevon.

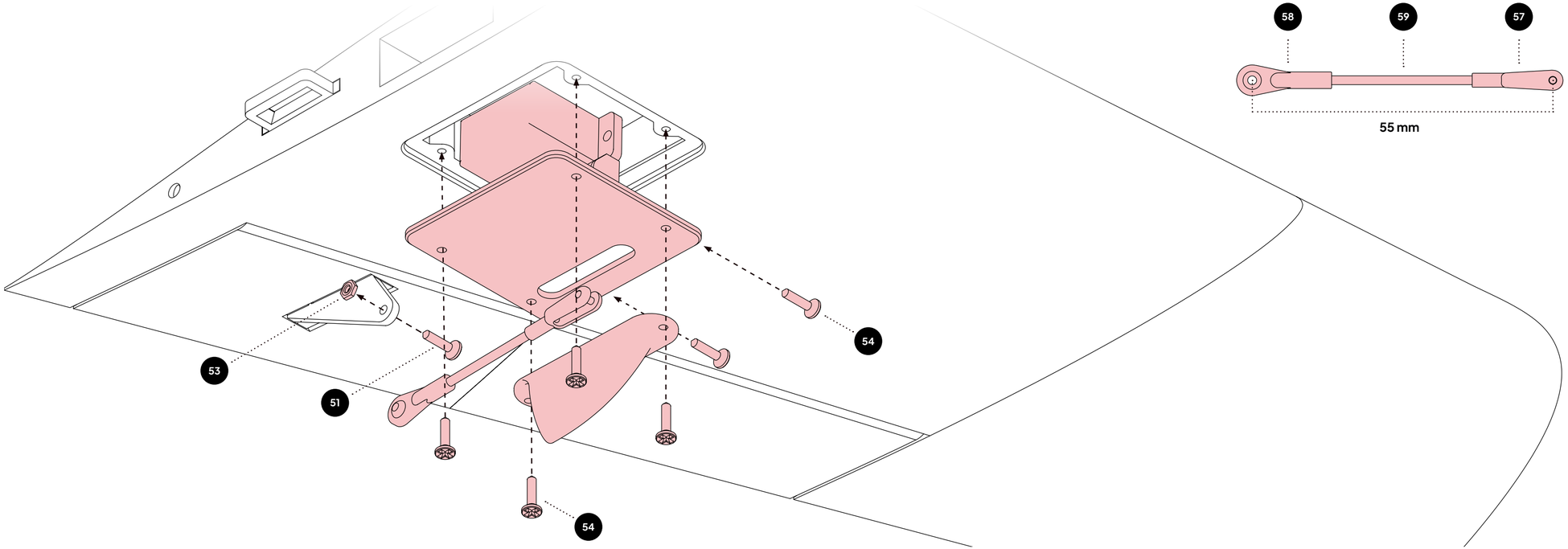


WING MOUNT

1. Dry-fit the wing locks to confirm they align perfectly with the wing root.
2. Apply medium liquid CA glue to the marked cutouts in the wing.
3. Make sure the “Up” marking on each wing lock is facing the correct direction.
4. Insert the wing locks into the wing and hold them in place until the glue has fully set.



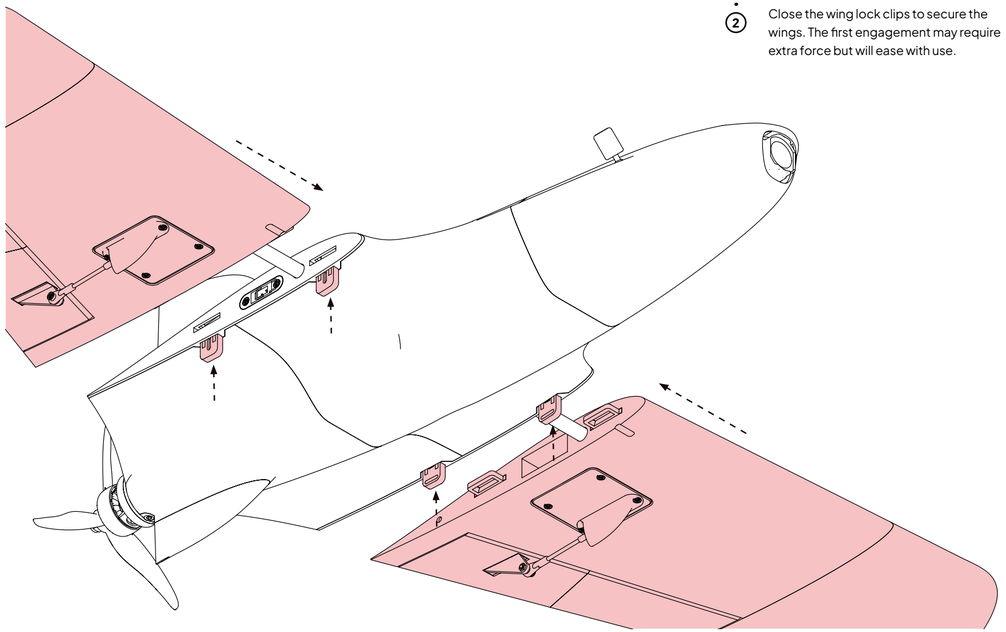
SERVO COVER



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.

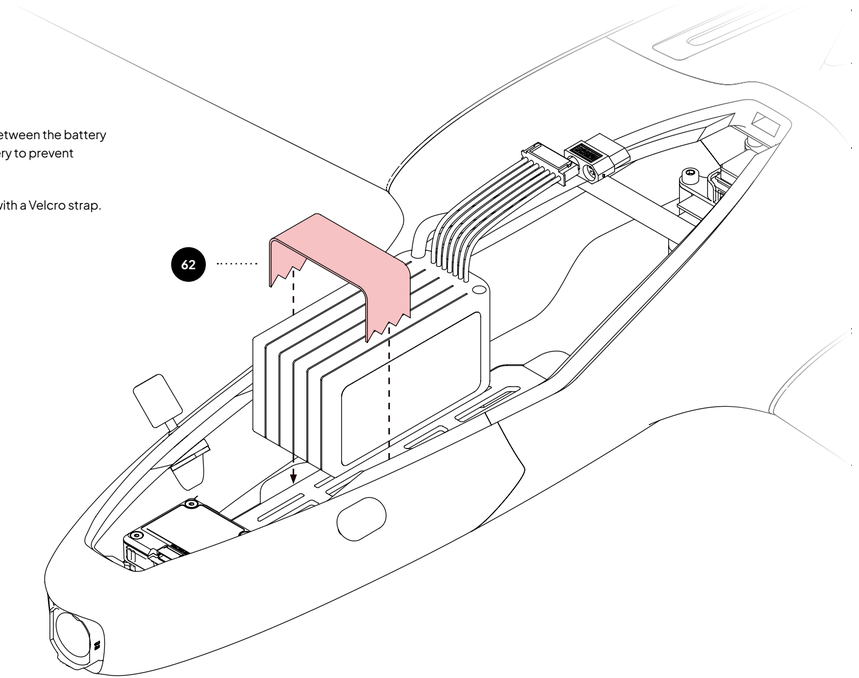
WING ASSEMBLY

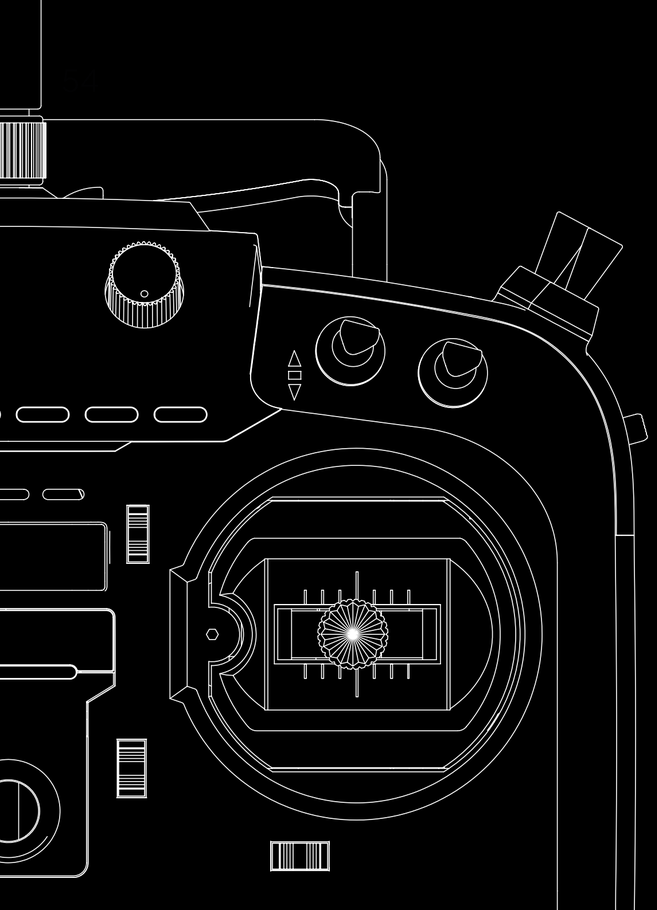
1. Slide the wings into position, ensuring all wing lock clips are fully open.
2. Close the wing lock clips to secure the wings. The first engagement may require extra force but will ease with use.



BATTERY STRAP

1. Apply Velcro tape between the battery mount and the battery to prevent movement.
2. Secure the battery with a Velcro strap.





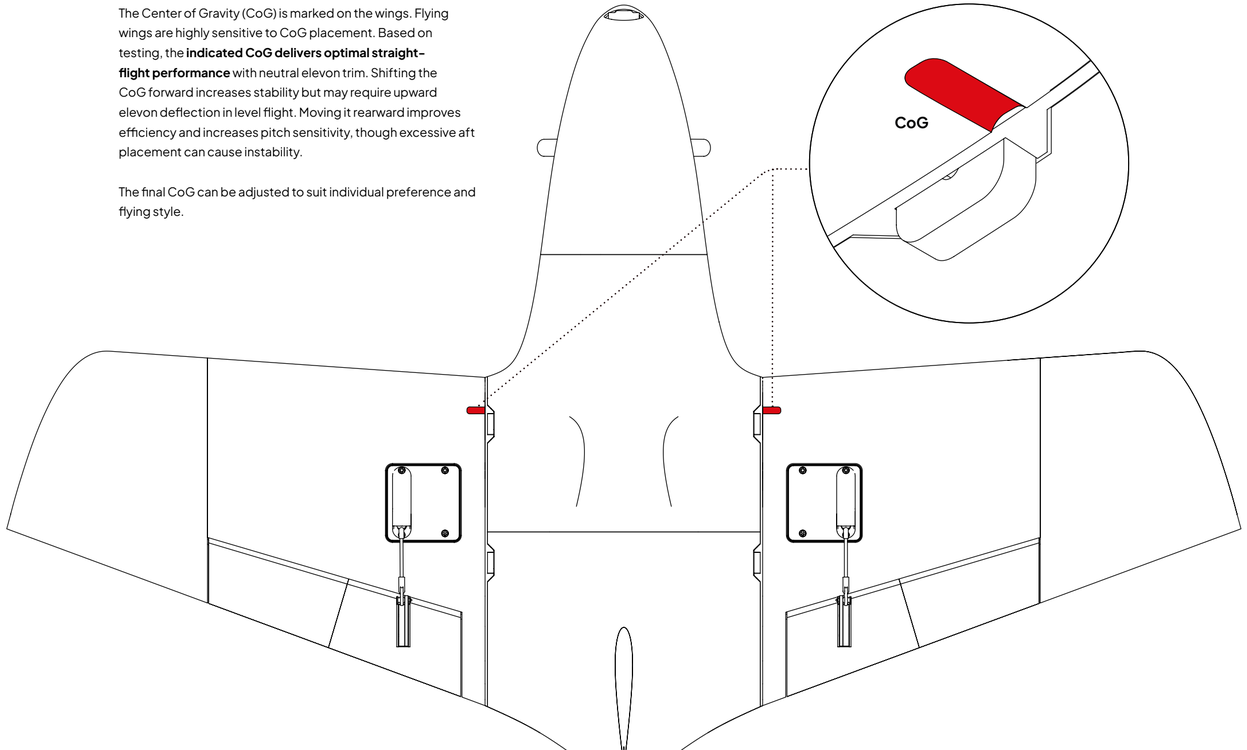
04

SETUP

CENTER OF GRAVITY

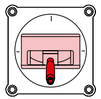
The Center of Gravity (CoG) is marked on the wings. Flying wings are highly sensitive to CoG placement. Based on testing, the **indicated CoG delivers optimal straight-flight performance** with neutral elevon trim. Shifting the CoG forward increases stability but may require upward elevon deflection in level flight. Moving it rearward improves efficiency and increases pitch sensitivity, though excessive aft placement can cause instability.

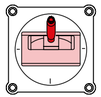
The final CoG can be adjusted to suit individual preference and flying style.

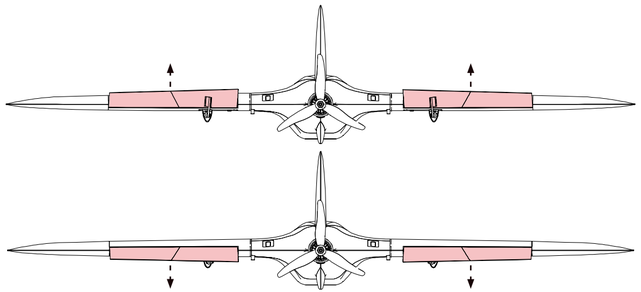


CONTROL DIRECTIONS

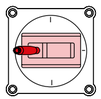
Pitch

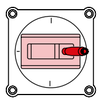


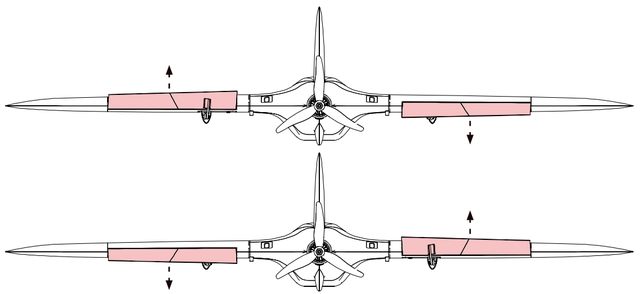




Roll







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%	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