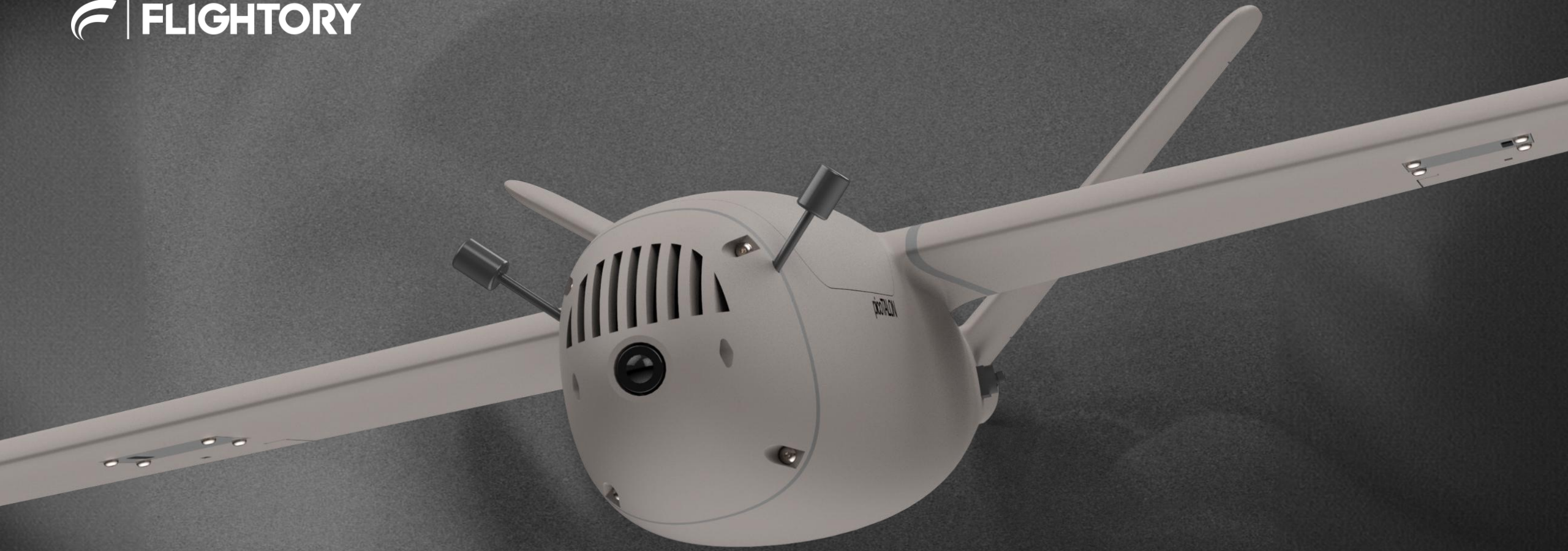
FLIGHTORY



picoTALON

USER MANUAL

V.2

SOCIALS

Join Flightory Tech group on Facebook and create community with us.
Share progress of your builds. Any suggestions or questions welcome.
www.facebook.com/groups/flightory

Join our Discord server, where the discussions are organized by topics, and the interaction between users is lively.
https://discord.gg/GPMgDZ3Cxv

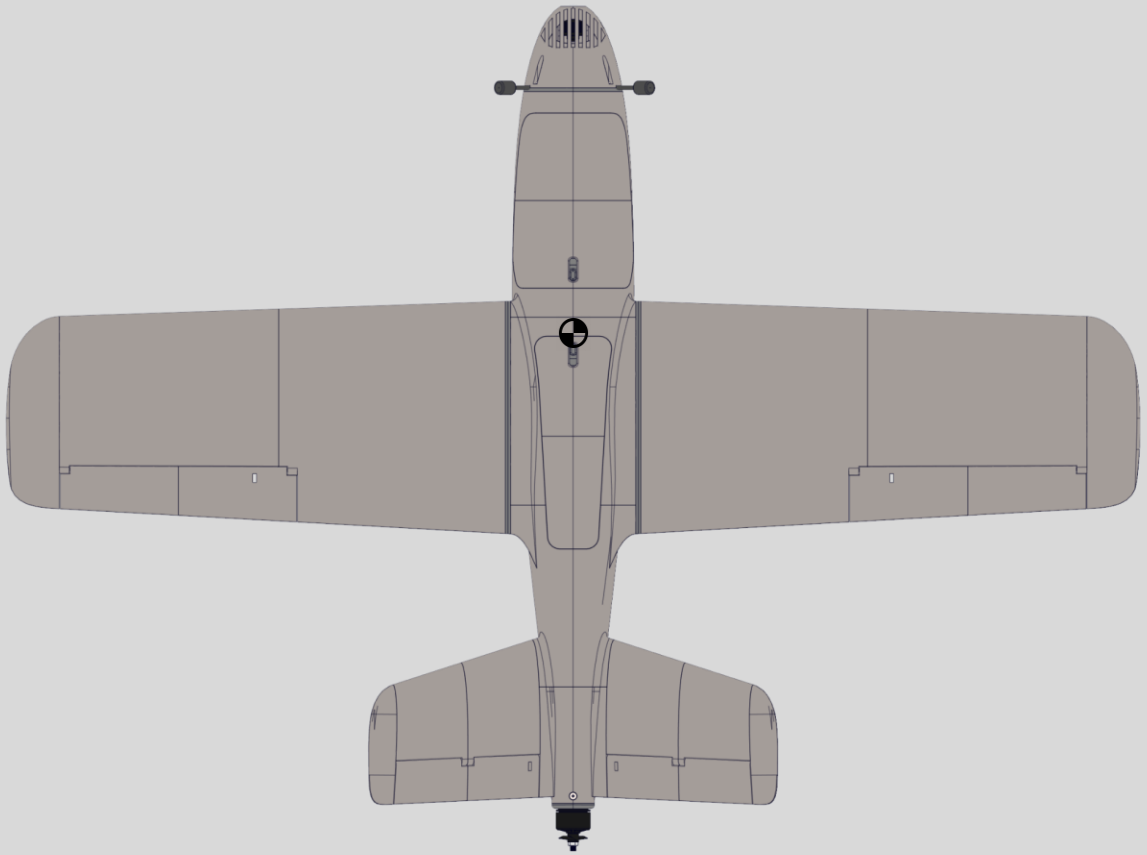
Follow us on Instagram for regular updates and fresh content
www.instagram.com/flightory_

TABLE OF CONTENTS

picoTALON

The pico Talon is a compact UAV platform designed in a classic configuration with a pusher motor and a V-tail. Its layout follows the Talon-style design featuring wide, low-aspect-ratio wings and a tail section positioned close to the wing, resulting in a compact and practical airframe. The aircraft uses a hybrid structure optimized for 3D printing with LW filaments, combined with high strength materials and reinforced with carbon tubes to ensure structural integrity and durability, while keeping the overall weight low. The nose section is modular and replaceable, allowing it to be adapted for different cameras, sensors, or mission-specific payloads. Pico Talon is intended primarily for FPV and performs best in a lightweight setups. Its compact size makes it especially suitable for operations where easy transport, quick deployment, and minimal storage space are important.

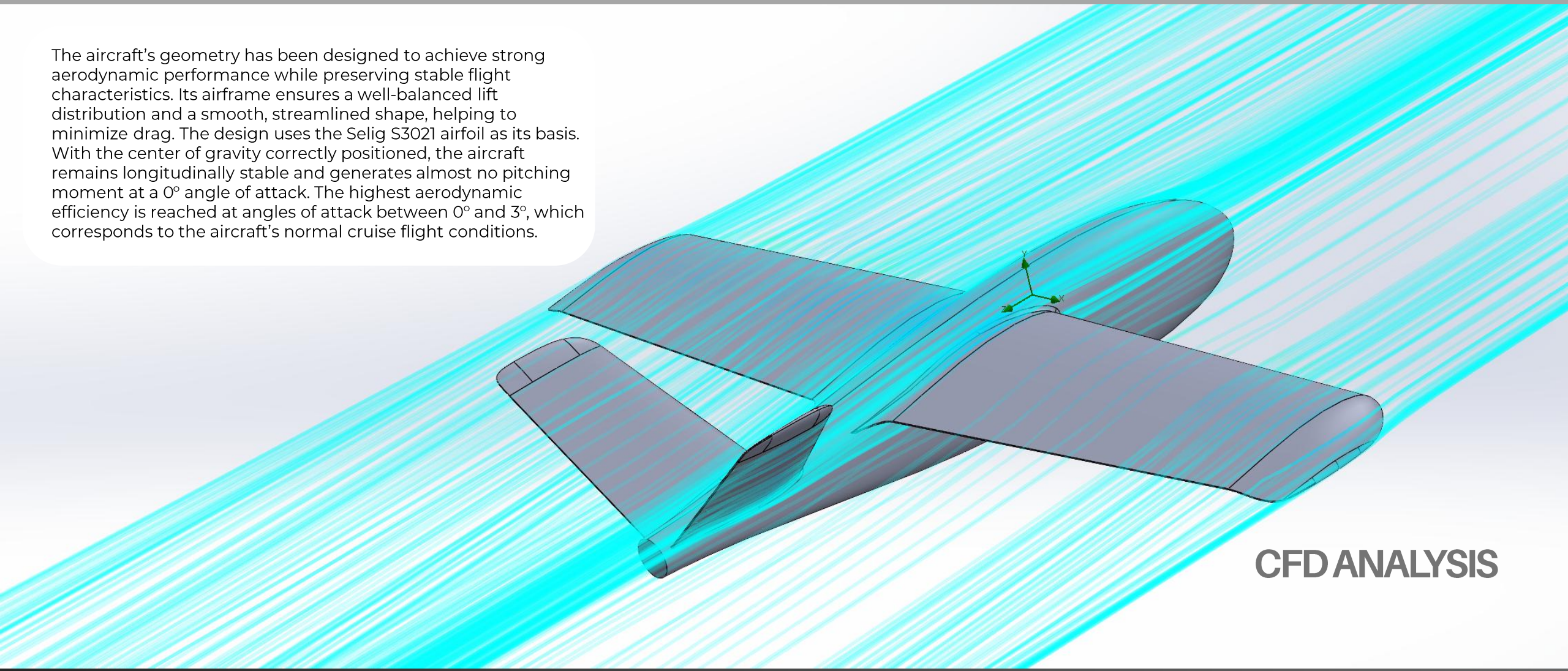
GENERAL AIRCRAFT DATA



Wingspan	905mm
Wing area	15 dm^2
Lenght	640mm
Center of Gravity	40mm from leading edge (at wing root)
AUW	650-1100g
Optimal Cruise Speed	50-70 km/h
Airfoil	S3021
Root Chord	190mm
MAC	170mm
Aspect Ratio	5,3
Wing load	45 - 75 g / dm^2

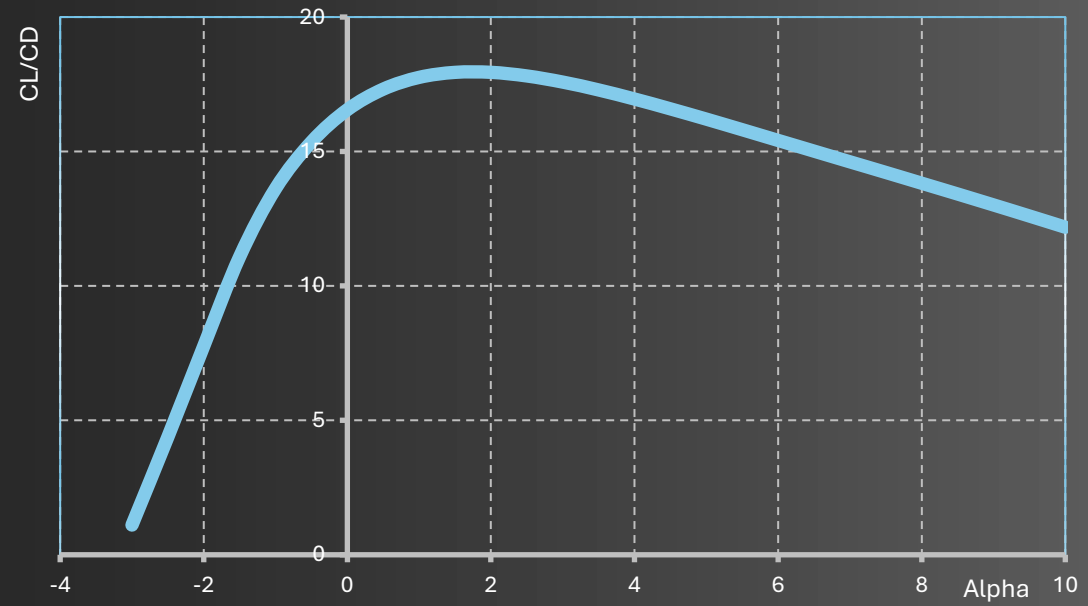
AERODYNAMIC DESIGN

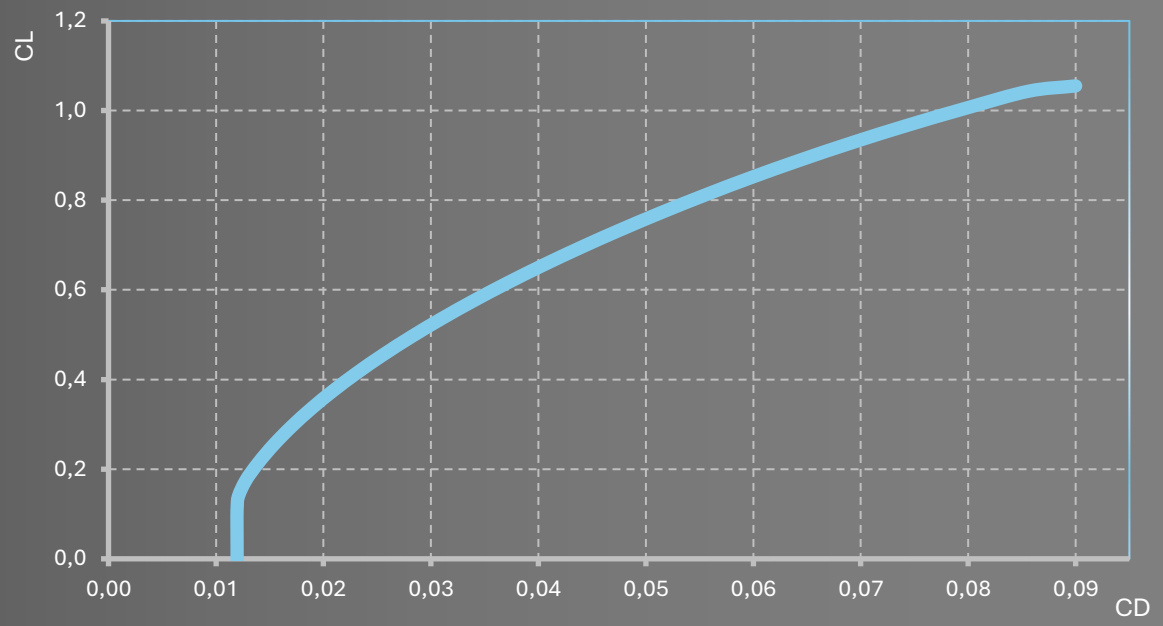
The aircraft’s geometry has been designed to achieve strong aerodynamic performance while preserving stable flight characteristics. Its airframe ensures a well-balanced lift distribution and a smooth, streamlined shape, helping to minimize drag. The design uses the Selig S3021 airfoil as its basis. With the center of gravity correctly positioned, the aircraft remains longitudinally stable and generates almost no pitching moment at a 0° angle of attack. The highest aerodynamic efficiency is reached at angles of attack between 0° and 3°, which corresponds to the aircraft’s normal cruise flight conditions.

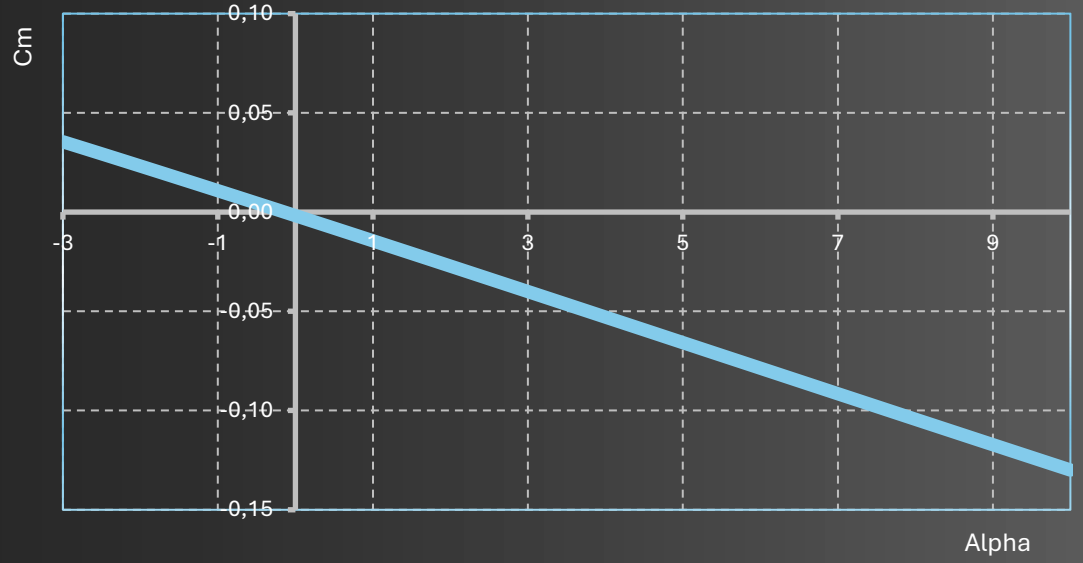


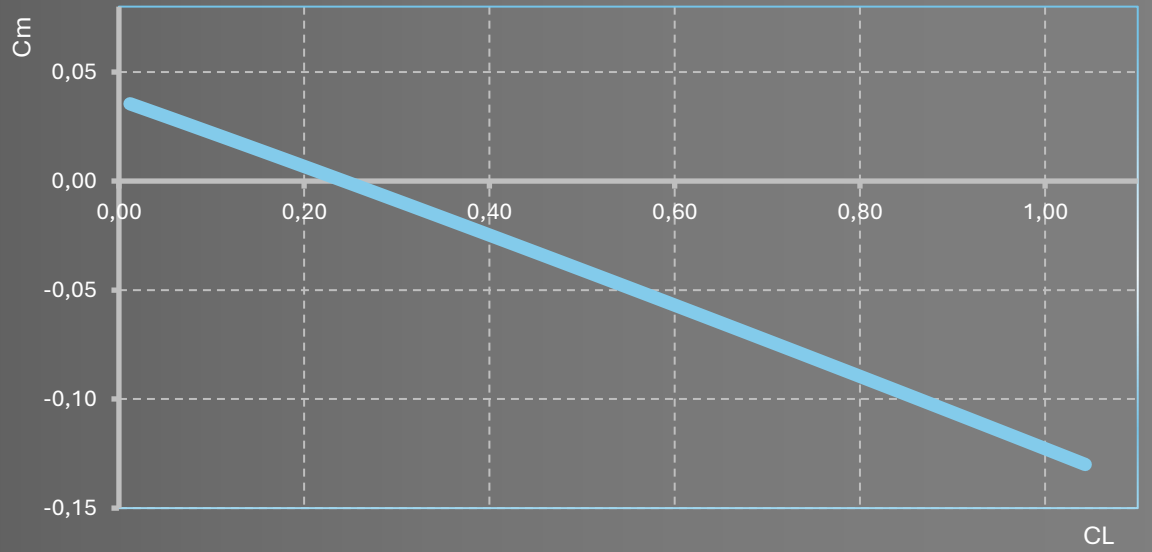
CFD ANALYSIS

CFD CHARACTERISTICS

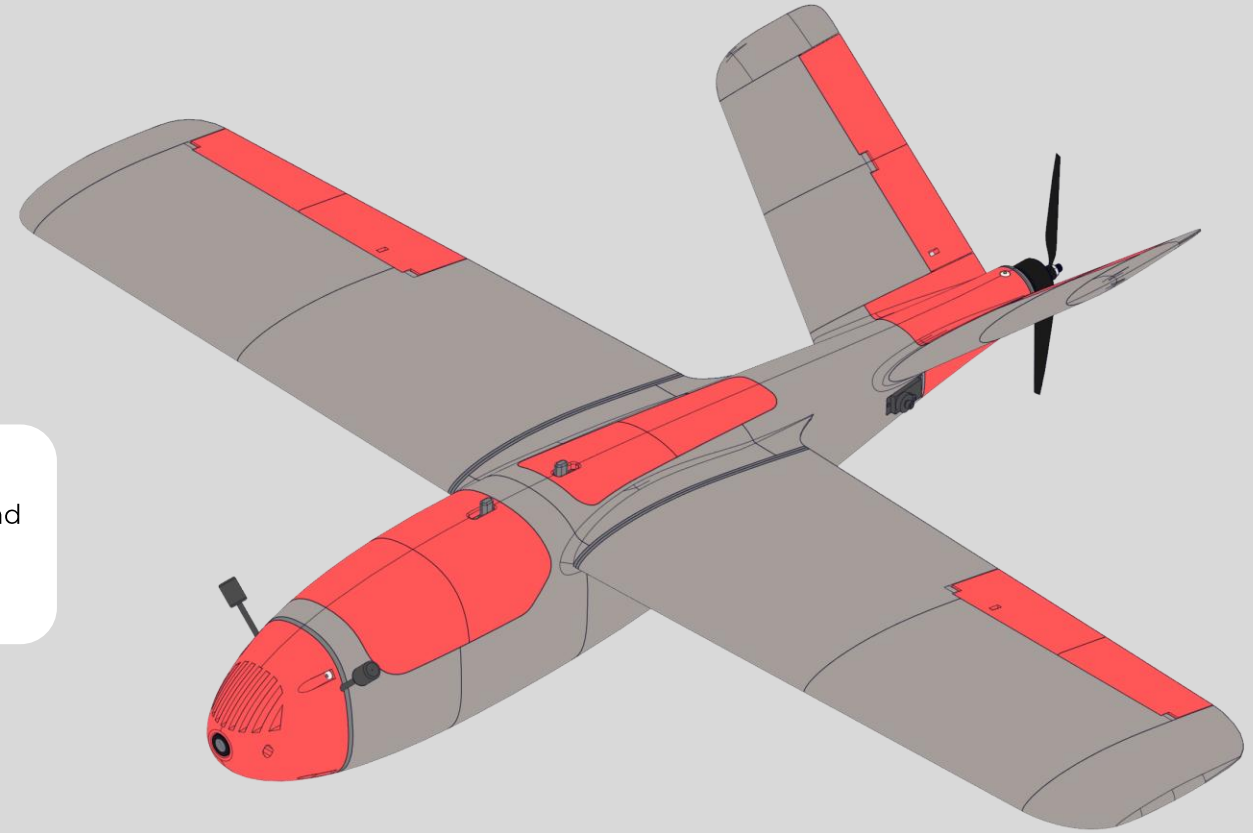








STEP FILES



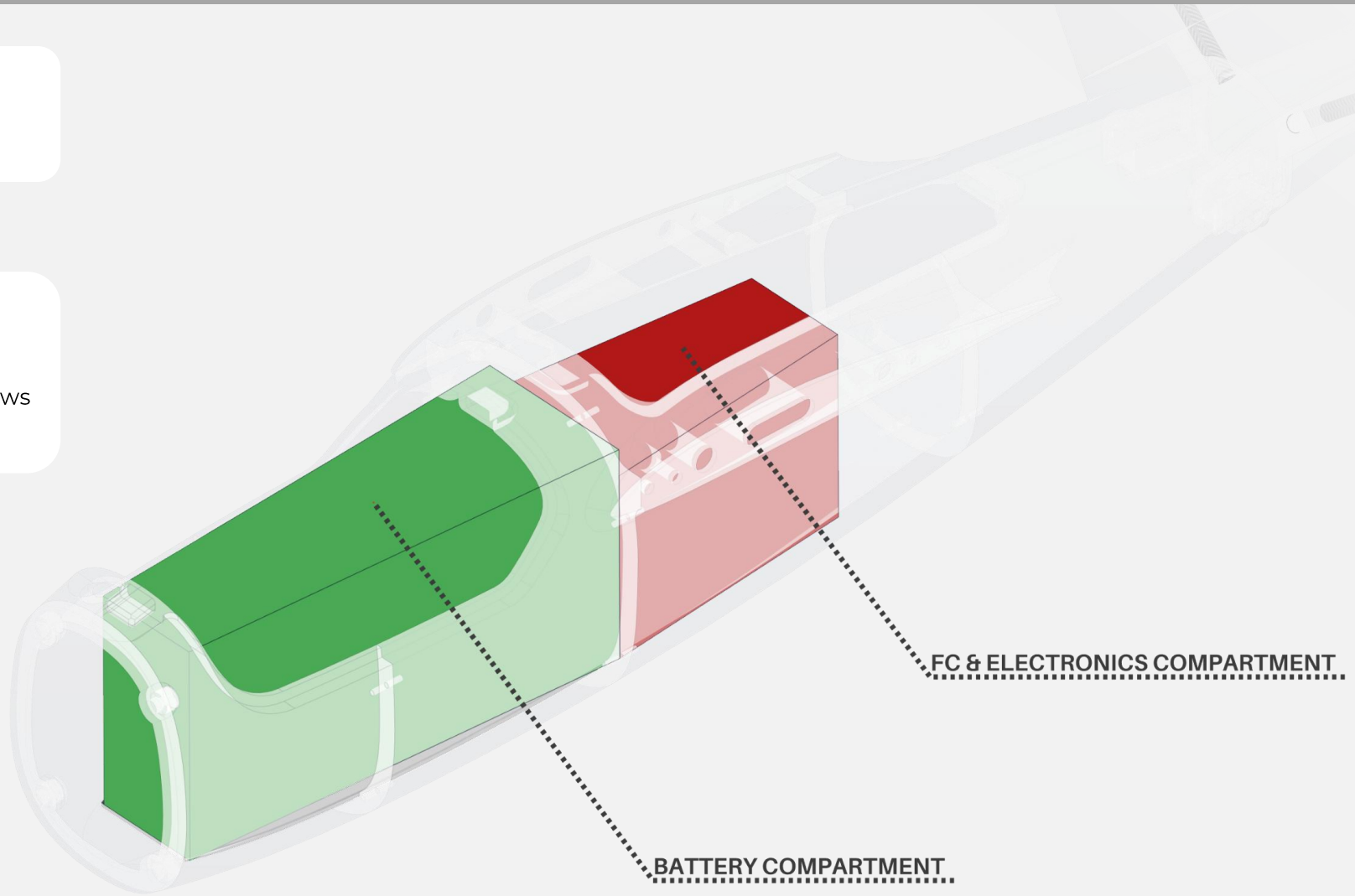
All files are available in STL format. In addition, some important elements are available in STEP format, which allows easier editing and customization. Check the full list of STEP files in the **STEP FILES LIST** section. You can find these files in folders labeled STEP.

COMPARTMENT DIMENSIONS AND LAYOUT

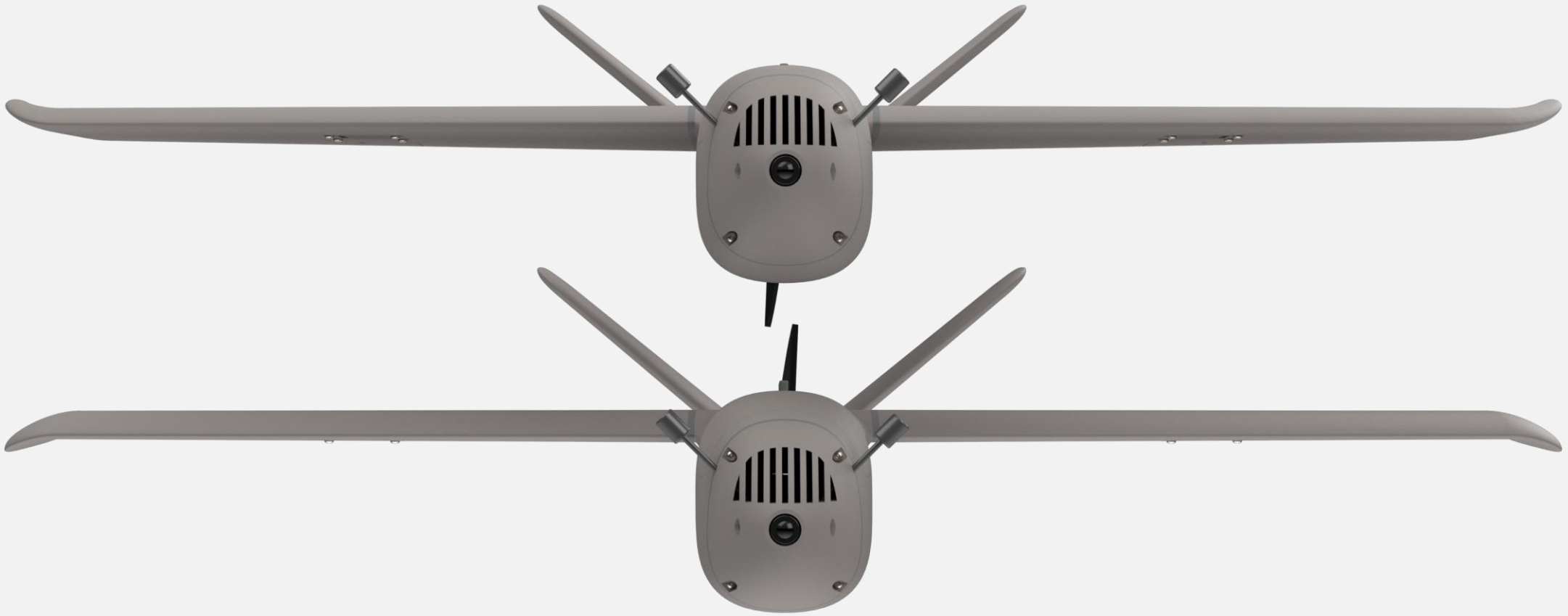
The fuselage is divided into suggested compartments, each designed to optimally house specific equipment.

Battery Compartment:
Height: 80 mm
Length: 170mm
Width: varies from 40 mm to 60 mm — the compartment narrows towards the nose of the fuselage.

Electronics Compartment
(Flight Controller and Other Electronics / Payload):
Height: 70 mm
Length: 100mm
Width: varies from 40 mm to 60 mm — the compartment narrows towards the tail of the fuselage.



WINGTIP VARIANT



Two wingtip variants are available: one with an upward-curved shape and one with a downward-curved shape.

RECOMMENDED EQUIPMENT

This section presents the recommended accessories and electronics needed to complete the entire aircraft. **This list, along with periodically updated store links, can also be found at the bottom of the aircraft description on the website.**

RECOMMENDED ELECTRONICS

COMPONENT	MODEL / SPECIFICATION
Motor	2207 Motor e.g. T-Motor F60 1750KV
Propeller	5-7 inch Propeller
Flight Controller	Speedybee F405 Wing or any other Mavlink FC
GPS	Matek M10Q or similar GPS with compass
Servos	4x EMAX ES08 MAII Metal Gear or similar
ESC	BlHeliS 20-40 A
Battery	4S-6S Li-Ion / Li-Po
Receiver	Matek R24-D ELRS or similar
FPV Camera + VTX	Walksnail Avatar or any Digital or Analog VTX
FPV Goggles	Walksnail Goggles X or any other matching the chosen VTX

RECOMMENDED ACCESSORIES

ITEM	QUANTITY
8x500mm Carbon Tube (MAIN SPAR)	1
6x500mm Carbon Tube (SECONDARY SPAR)	1
3x250mm Carbon Tube (WING SPAR)	2
3x250mm Carbon Tube (AILERON HINGE)	2
6x170mm Carbon Tube (V TAIL SPAR)	2
3x170mm Carbon Tube (RUDDER HINGE)	2
Thick CA Glue	1-2 Tubes
CA Activator	1
M3 Threaded Insert (Outer Ø5mm, height 5mm)	19
Hot Glue (optional)	Small amount

ITEM	QUANTITY
Epoxy Glue (optional)	Small amount
LW-PLA / LW-ASA	1 roll
PC / PETG / other rigid material	Small amount
Velcro Strap	2
Servo Extension Cable	2
Control Horn	4
Pushrod	4
M3x6mm Screw	12
M3x10mm Screw	3
M3x20mm Screw	2
M3x25mm Screw	2

POWERTRAIN SELECTION

There are multiple options for selecting the powertrain configuration, including the motor, propeller, and battery. Recommended motors are in the 2207 class, with propellers ranging from 5 to 7 inches, and batteries rated from 4S to 6S. The motor mount is available in two variants with bolt spacing of 16×16 mm and 19×19 mm, which corresponds to most motors in this class on the market. This component is also provided in STEP format for easy modification if a different bolt pattern is required.

EXAMPLE MOTOR AND PROP SETUP

A suggested motor for this aircraft is the T-Motor F60 1750KV which performs optimally with 5147 tri-blade propellers and a 6S battery. According to the manufacturer's specifications, this setup delivers up to approximately 1800 g of thrust per motor at a maximum power of 940W with a current draw of around 38A. This requires using an ESC rated at 40A (6S capable).
This setup fully utilizes the motor's performance potential and offers maximum available thrust for demanding applications.

It is worth noting that in recent years, brushless motor technology has significantly improved. Modern motors in this class are capable of delivering around 1000W of power and exceptionally high thrust, which was not achievable with this motor size just a few years ago. This is a result of advancements in materials, winding efficiency, cooling design, and overall manufacturing quality.

As a result, the market trend has shifted towards motors optimized for higher voltage systems, particularly 6S setups, which now dominate availability in this size class. However, this does not limit the possibility of operating these motors effectively on 4S systems, depending on user preferences and mission requirements.

POWERTRAIN SELECTION

FLEXIBLE OPERATION WITH 4S

While the 6S configuration allows the motors to deliver maximum thrust and performance, the same setup can be operated very effectively with a 4S battery, offering a more efficient and lighter alternative without compromising flight capabilities. In this case, it is recommended to use a slightly larger propeller, such as a 7x5 two-blade, to compensate for the lower RPM resulting from the reduced voltage. This results in proportionally lower motor speed and a significantly reduced current draw, which allows for the use of smaller and lighter ESCs rated at 20–30A for 4S. At the same time, the overall system weight decreases, providing the option to use larger capacity 4S batteries. Despite the lower voltage, the total thrust generated by motor remains around 1500 grams, which is fully sufficient for this aircraft's design and operational requirements.

Prototype testing confirmed that during cruise flight with a 4S battery and 7x5 propellers, the required throttle setting was below 50%, demonstrating efficient power utilization and good endurance potential.

The main reason for choosing 4S operation is the current state of the market, which is heavily saturated with high-performance motors optimized for 6S in this size class. Finding lighter motors designed specifically for 4S that could match or exceed this performance is challenging. For this reason, using a motor like the T Motor F60 1750KV, even when operating on 4S remains a practical and efficient solution. Although this setup does not fully utilize the maximum power capabilities of the motor, it offers several important advantages, including improved efficiency during cruise flight, a lower total system weight, the use of smaller and more cost-efficient ESCs, and the ability to select 4S batteries with higher capacity while maintaining similar weight compared to smaller 6S packs.

This flexible approach allows users to tailor the system to their needs. Whenever the mission demands higher thrust, greater payload, or higher airspeed, the same airframe can be seamlessly scaled by switching to 6S batteries and appropriate ESCs, immediately unlocking the full performance potential of the motors without requiring any changes to the mechanical setup.

PRINT SETTINGS

PRINT SETTINGS

This aircraft is designed with optimization for LW-PLA / LW-ASA filaments, reinforced with additional components printed from PC, PETG, or other rigid materials. All parts are designed to fit within a print volume of 220x220x220 mm. The entire design is tailored for printers equipped with 0.4 mm nozzles.

GENERAL GUIDLINES

- All airframe components should be printed using lightweight filaments (LW-PLA, LW-ASA) with single-wall construction.

- Fuselage sections: Recommended to print with gyroid infill between 3% and 6%.

- Wings: Use Lateral Lattice infill, or optionally Cubic Subdivision, with an infill density between 2% and 4%.This approach ensures an optimal balance between strength and low weight while allowing flexibility for tuning print settings.

- For reinforcement parts that require higher strength, it is essential to use rigid and durable materials such as PETG, PC, ABS, or others . These components should be printed using the default print settings for the selected material and the standard strength profiles available in your slicer, ensuring reliable performance without the need for extra configurations.

SUPPORTS AND WALL SETTINGS

- All airframe parts are designed to be printed without supports and with a single wall. (This applies to LW components; reinforcement parts can have a higher wall count.) Some files include pre-designed supports, which is indicated in the file name.

- Some components may benefit from adding supports touching the build plate, or increased wall count for improved strength in specific areas. These exceptions are clearly marked and explained in the *Parts Orientation* section of this manual.

PRINT SETTINGS

PART LIST AND MATERIAL ASSIGNMENT

- The **PART LIST** section contains a complete list of all files required for assembly.

- Each file is accompanied by a clear recommendation regarding: The type of material it should be printed with (e.g. LW-PLA, LW-ASA, PETG, PC, etc.).

PRINT SETTINGS AND PROFILES

- Complete print settings, including filament breakdown and settings for Active Foaming and Prefoamed filaments, are available on our website under the **“PRINT SETTINGS”** tab.

- You will find: Pre-configured profiles for PLA Aero and ASA Aero for Bambulab printers - ready to use out of the box and general configuration templates for Active Foaming and Prefoamed LW-PLA for Cura, providing a reliable starting point for further tuning.

- Currently, we primarily focus on testing and validating settings in Orca Slicer, Bambu Studio and Cura.

PRINTING VARIABLES AND TUNING

Printing results may vary depending on several factors, such as the printer model, filament brand, filament moisture levels, ambient conditions like temperature and humidity, as well as whether the printer is equipped with an enclosed chamber. These variables can influence print quality, strength, and weight. Because of this, achieving optimal results often requires fine-tuning key parameters, particularly printing temperature, flow rate, and retraction settings. In most cases, only minor adjustments are necessary to reach excellent quality. It is strongly recommended to perform test prints when changing filaments, switching printers, or printing in different environmental conditions, in order to refine the settings for the best possible outcome.

PRINT SETTINGS

FINAL NOTES

Achieving optimal results is feasible on the majority of modern 3D printers, provided that appropriate calibration and parameter tuning are performed. Variability in printer hardware, filament manufacturers, material properties, and operating conditions such as ambient temperature, humidity levels, and the presence or absence of an enclosed build chamber, can all have a measurable impact on print quality. As a result, full standardization of print settings across all equipment and environments is not possible.

The provided print profiles and configuration guidelines serve as a reliable baseline; however, minor adjustments to parameters such as temperature, flow rate, or retraction may be required to achieve the intended balance of strength, weight, and surface quality specific to each user's setup.

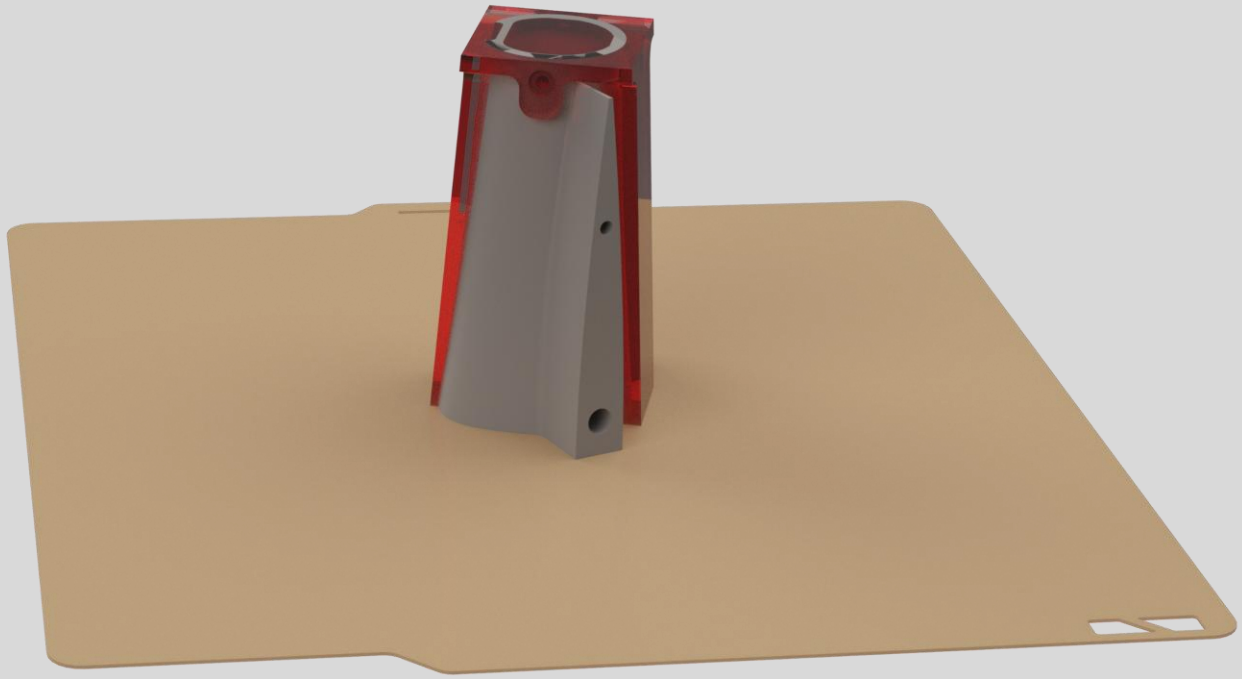
To facilitate consistency and knowledge sharing across different hardware configurations, an online user community is maintained via Discord. This platform serves as a technical resource where users can exchange verified print profiles, discuss material-specific settings, share build results, and troubleshoot technical challenges related to the printing process.

MOFIDIERS

USING FILES WITH MODIFIERS

The package includes FUS 5 MODIFIER file in STEP format, which contain an additional solid in the motor mount area, This prepared file can be opened and sliced directly in the slicer by setting the additional solid as a modifier. This allows you to apply different print settings, such as increasing the number of walls to 2–3 and the infill density to 5–10%. These changes will only affect the overlapping volume between the wing and the modifier solid.

This method significantly strengthens the motor mount area, where higher forces are applied. You can also create your own modifiers directly in the slicer or in any CAD software and plan additional reinforcements if needed for your specific use case. This ready-made solution is provided in the package and can be used directly in the slicer.



PARTS LIST - FUSELAGE

PART	MATERIAL
FUS 1	LW-PLA/ASA
FUS 2	LW-PLA/ASA
FUS 3	LW-PLA/ASA
FUS 4	LW-PLA/ASA
FUS 5	LW-PLA/ASA
HATCH FRONT 1	LW-PLA/ASA
HATCH FRONT 2	LW-PLA/ASA
HATCH MIDDLE 1	LW-PLA/ASA
HATCH MIDDLE 2	LW-PLA/ASA
NOSE	LW-PLA/ASA

PART	MATERIAL
FRONT REINFORCEMENT	PC / PETG
BATTERY PAD	PC / PETG
FUS ROOT L / R	PC / PETG
LOCK 1	PC / PETG
LOCK 2	PC / PETG
LOCK 3	PC / PETG
MOTOR MOUNT 16x16 / 19x19	PC / PETG

PARTS LIST - WINGS

PART	MATERIAL
WING 1 L / R	LW-PLA/ASA
WING 2 L / R	LW-PLA/ASA
WINGTIP UP L / R	LW-PLA/ASA
WINGTIP DOWN L / R	LW-PLA/ASA
AIL 1 L / R	LW-PLA/ASA

PART	MATERIAL
AIL 2 L / R	LW-PLA/ASA
WING BAY PLATE L / R	PC / PETG
SERVO COVER L / R	PC / PETG
WING ROOT L / R	PC / PETG
WING KNOB	PC / PETG

PARTS LIST - TAIL

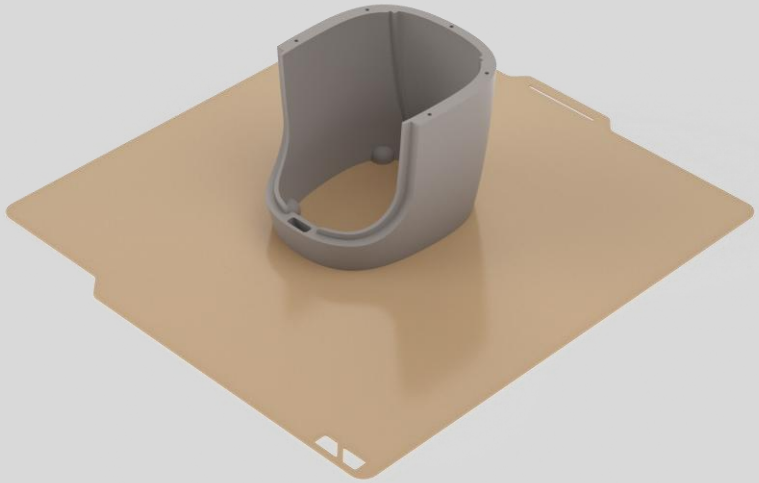
PART	MATERIAL
VTAIL 1 L / R	LW-PLA/ASA
VTAIL 2 L / R	LW-PLA/ASA
VTAIL 3 L /R	LW-PLA/ASA
RUDDER 1 L / R	LW-PLA/ASA
RUDDER 2 L / R	LW-PLA/ASA

STEP FILES LIST

PART	PART
FUS5 MODIFIER	WING ROOT L
WINGTIP UP L	FUS ROOT L
WINGTIP DOWN L	RUDDER L
NOSE / NOSE CLEAN	WING BAY PLATE L
HATCH FRONT	SERVO COVER L
HATCH MIDDLE	BATTERY PAD
AILERON L	MOTOR MOUNT 16x16mm / 19x19mm

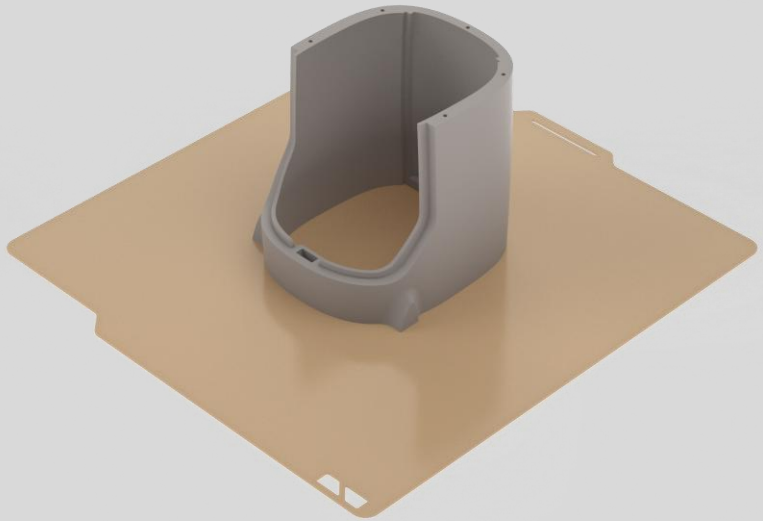
Components that exist in the aircraft as mirrored left-hand (L) and right-hand (R) versions are provided in STEP format only as the left-hand variant.
This approach avoids unnecessary duplication. Users who need to modify these parts can easily generate the corresponding mirrored version themselves.

PARTS ORIENTATION



FUS1

3%-6% GYROID INFILL



FUS2

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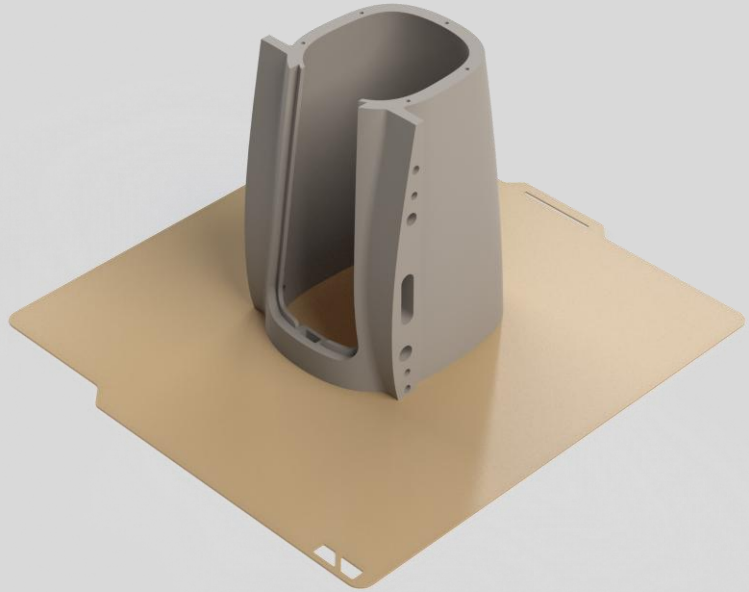

FUS3

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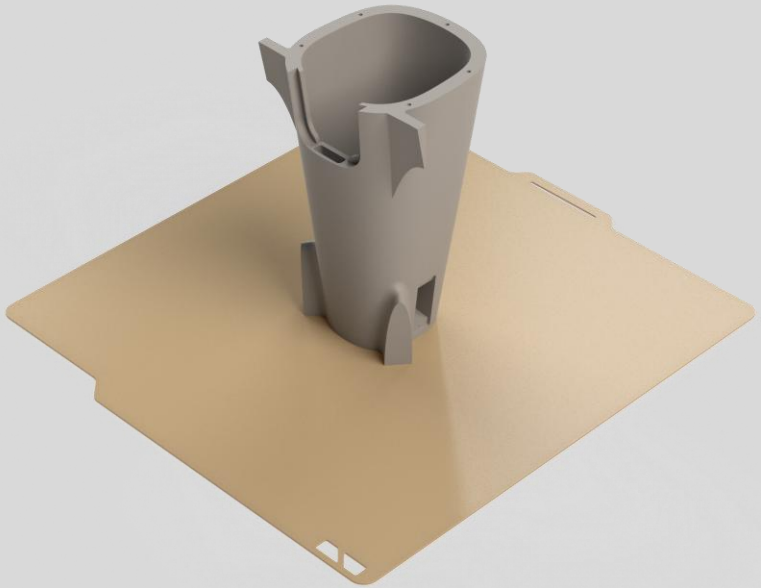
PARTS ORIENTATION



FUS 4

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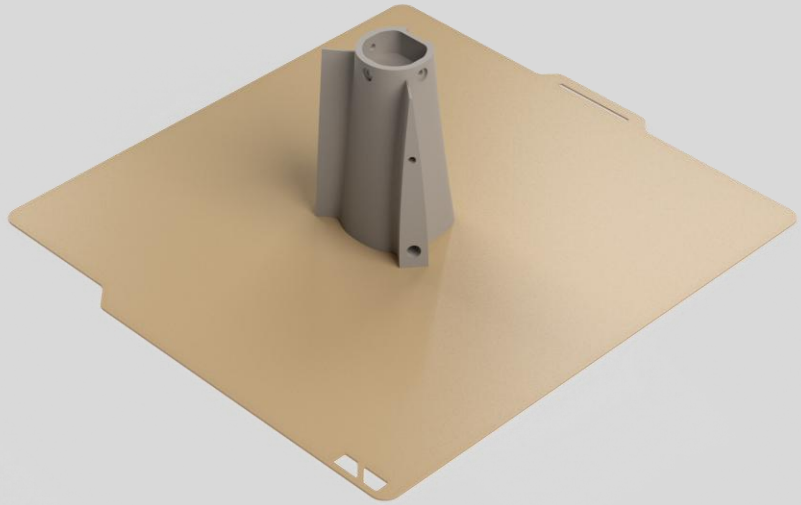

FUS 5

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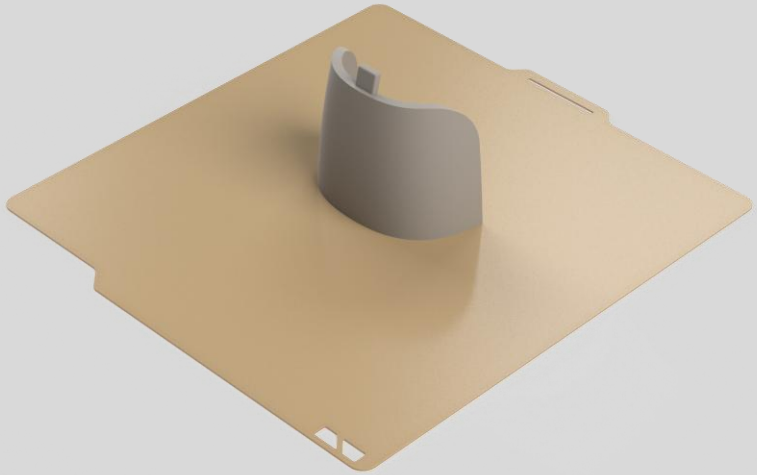
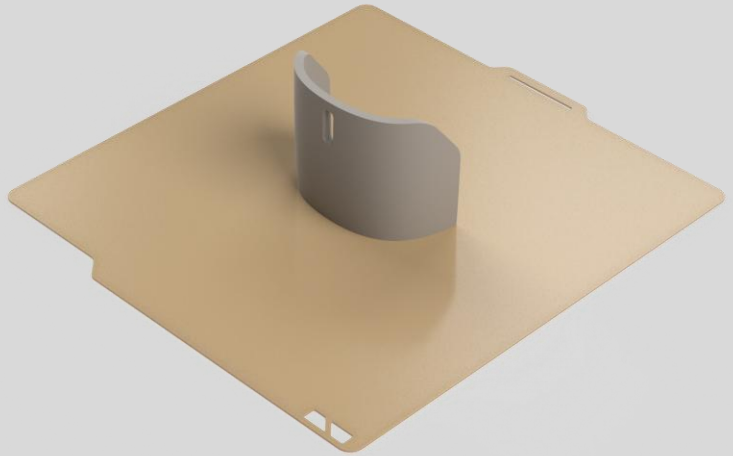


HATCH FRONT 1

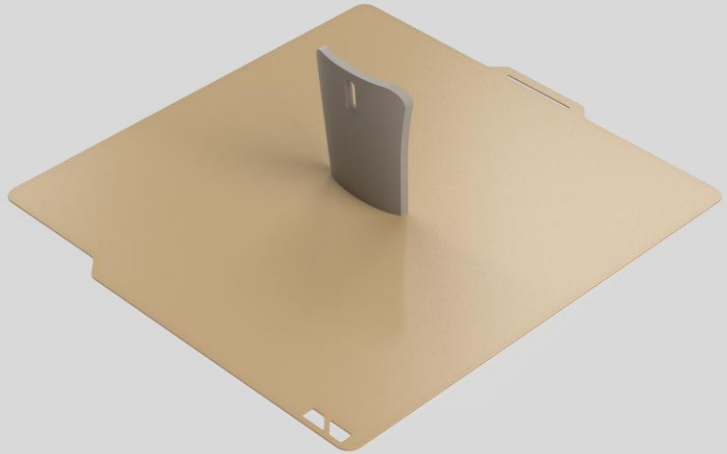
3%-6% GYROID INFILL

PARTS ORIENTATION



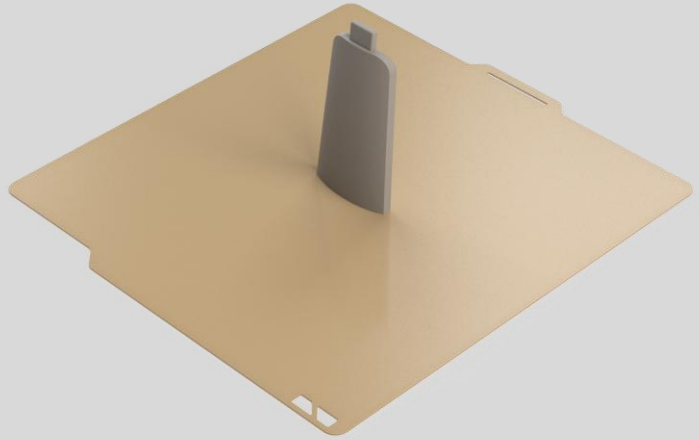
HATCH FRONT 2

3%-6% GYROID INFILL



HATCH MIDDLE 1

3%-6% GYROID INFILL



HATCH MIDDLE 2

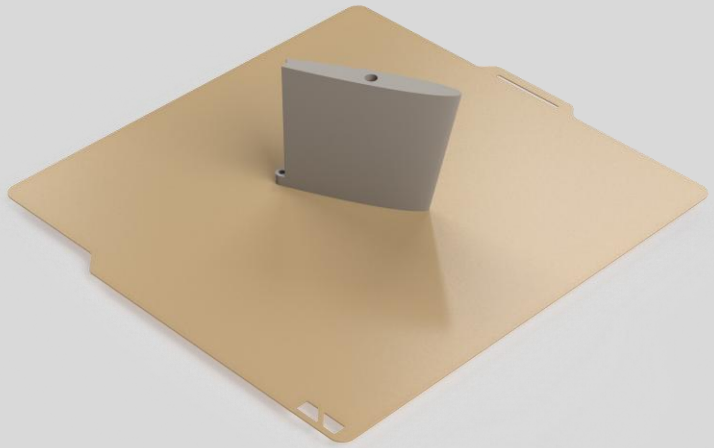
3%-6% GYROID INFILL

PARTS ORIENTATION

NOSE

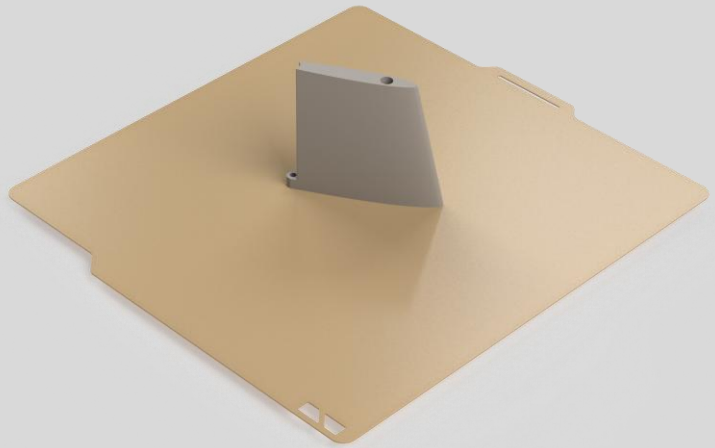
2 WALLS

3%-6% GYROID INFILL



VTAIL1

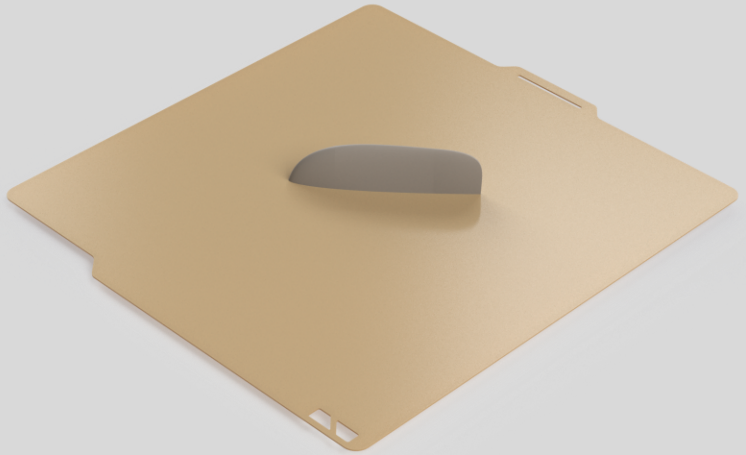
3%-6% GYROID INFILL



VTAIL2

3%-6% GYROID INFILL

PARTS ORIENTATION



VTAIL3

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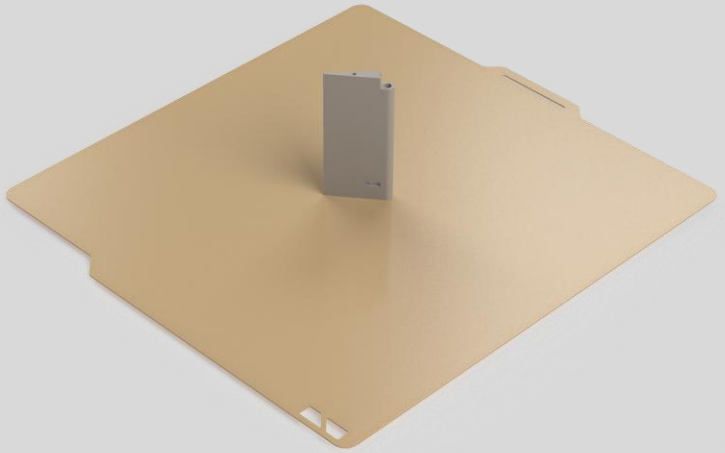
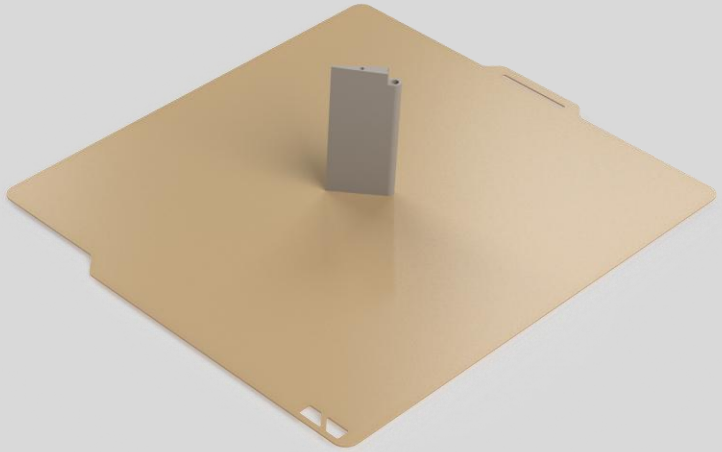


RUDDER1

3%-6% GYROID INFILL



RUDDER2

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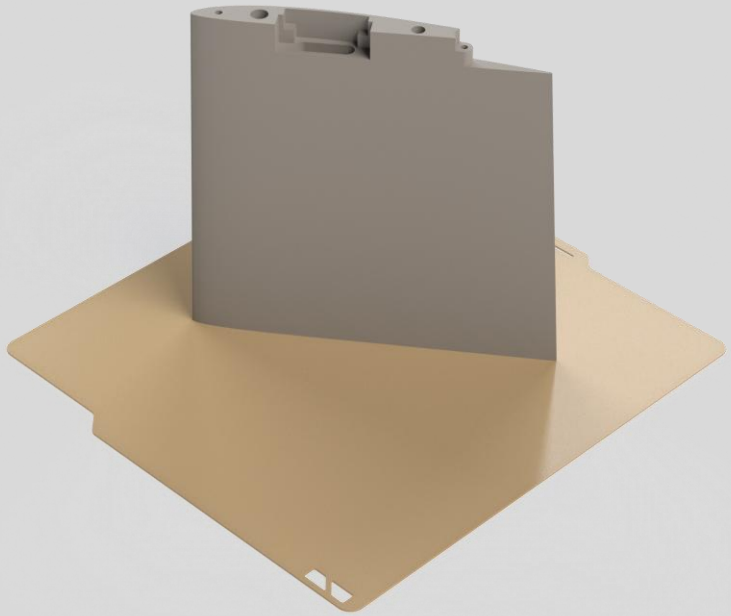
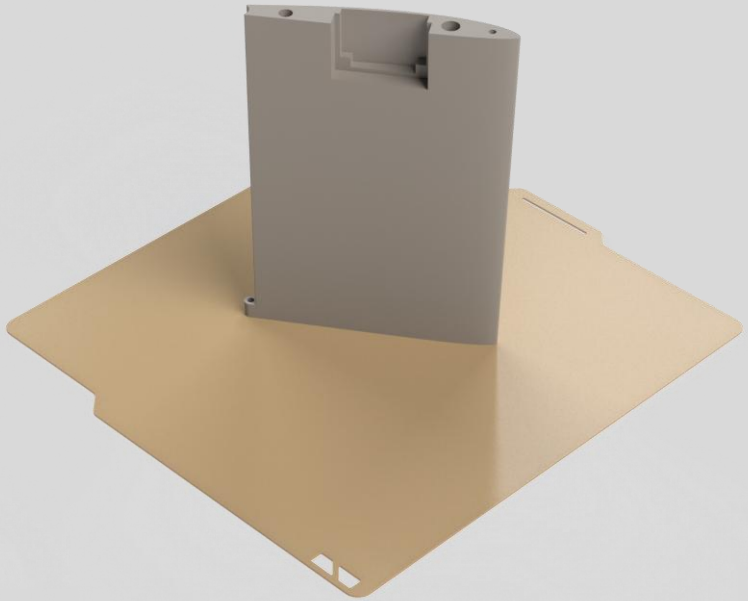
PARTS ORIENTATION



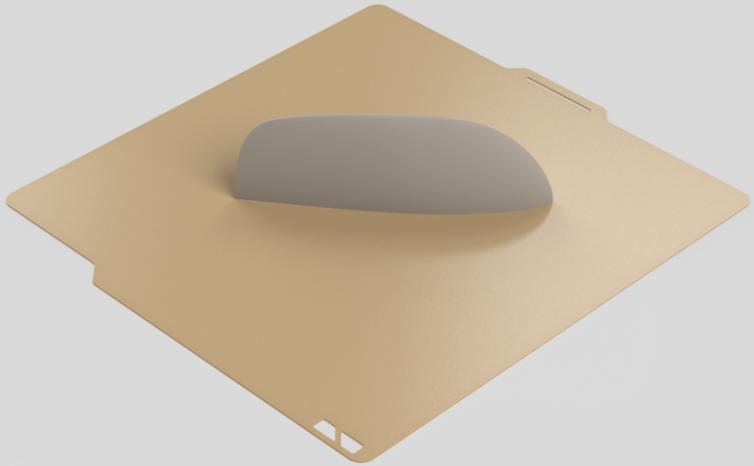
WING1

2%-4% 2D LATTICE INFILL



WING2

2%-4% 2D LATTICE INFILL



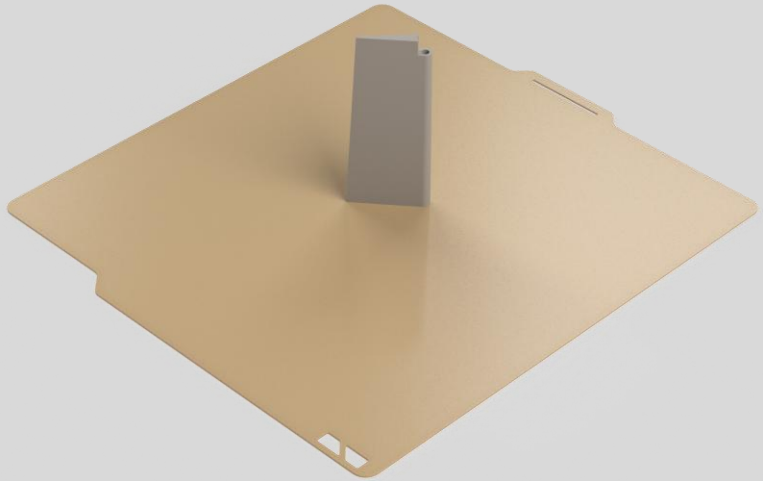
WINGTIP UP/DOWN

2%-4% 2D LATTICE INFILL

PARTS ORIENTATION

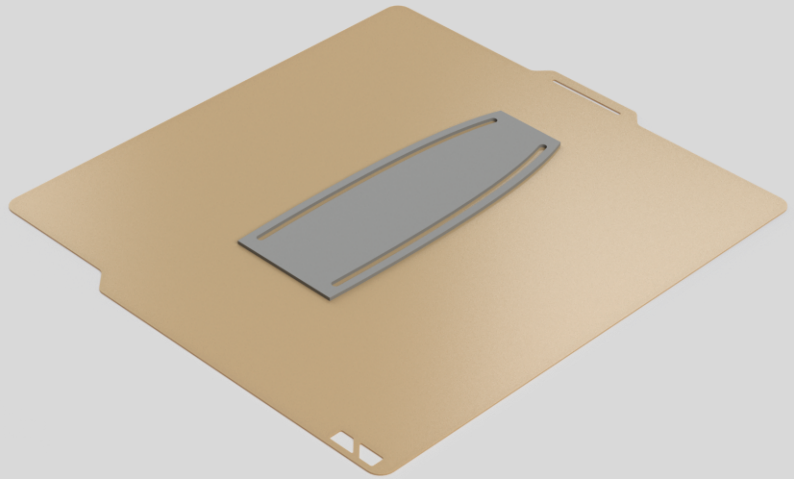
AIL1

3%-6% GYROID INFILL



AIL2

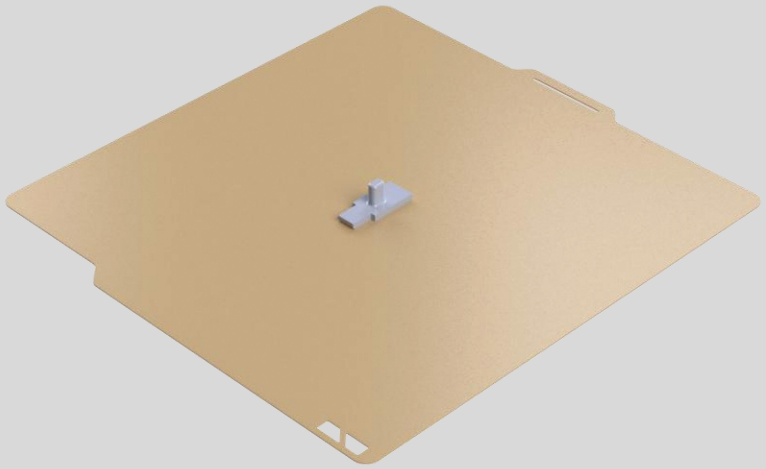
3%-6% GYROID INFILL



BATTERY PAD

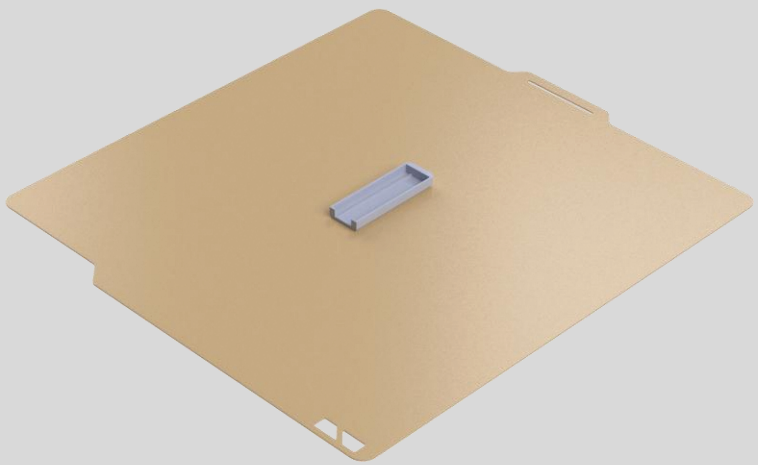
20%-100% GRID INFILL

PARTS ORIENTATION



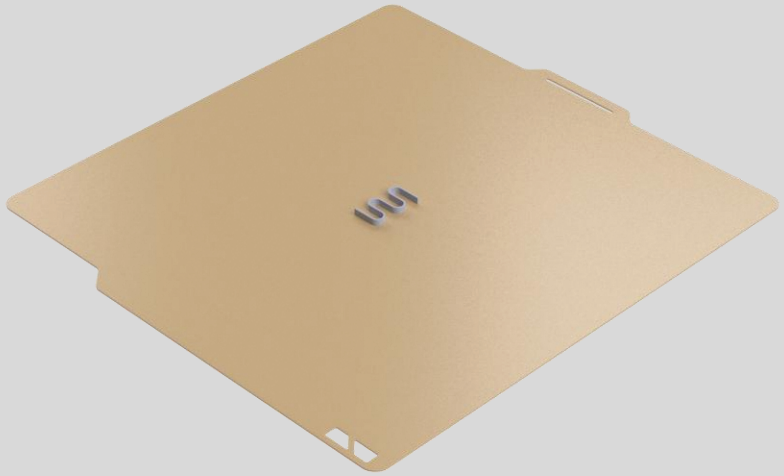
LOCK1

20%-100% GRID INFILL



LOCK2

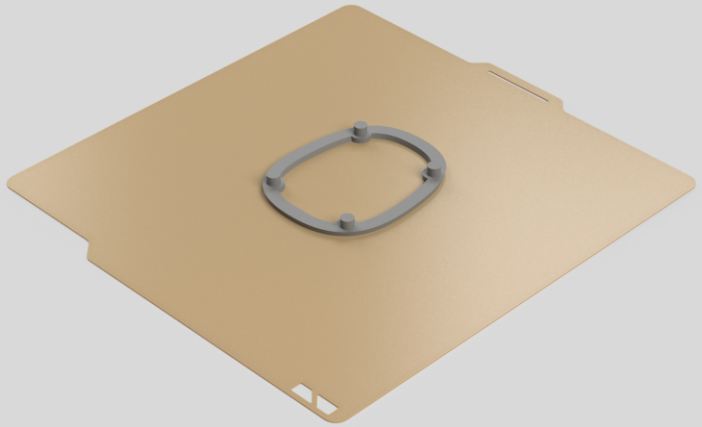
20%-100% GRID INFILL



LOCK3

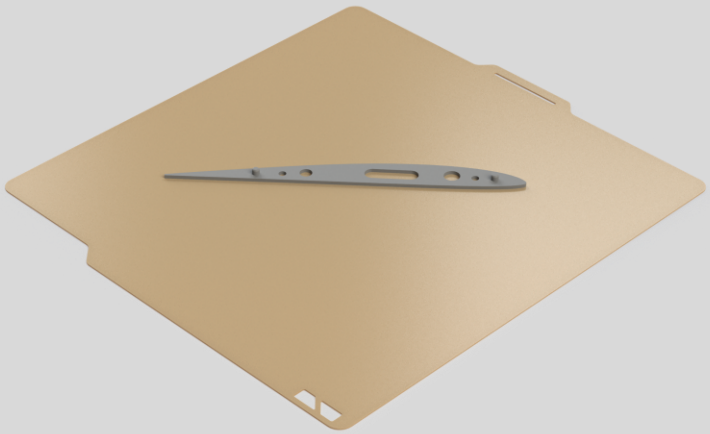
20%-100% GRID INFILL

PARTS ORIENTATION



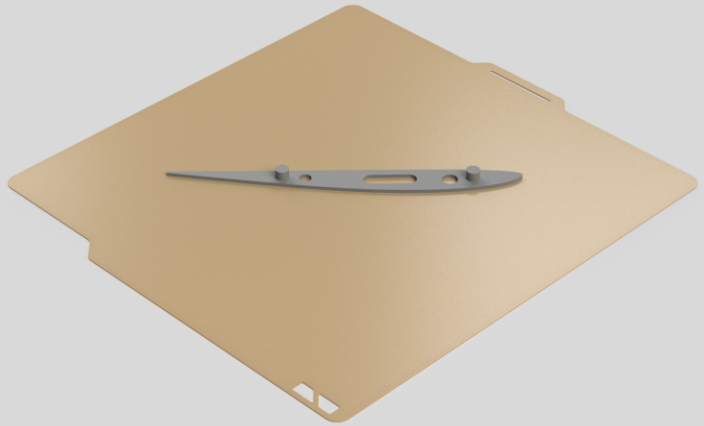
FRONT REINFORCEMENT

20%-100% GRID INFILL



FUS ROOT

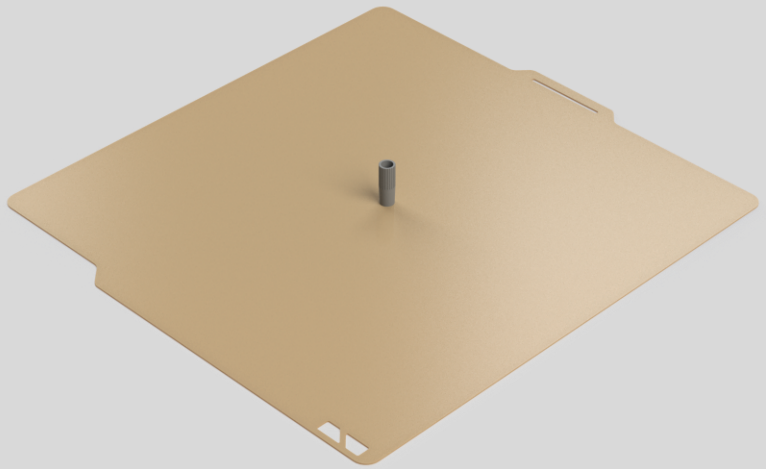
20%-100% GRID INFILL



WING ROOT

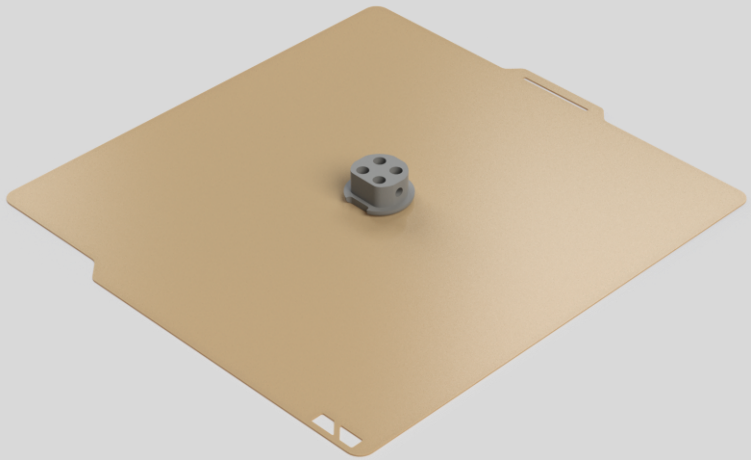
20%-100% GRID INFILL

PARTS ORIENTATION



WING KNOB

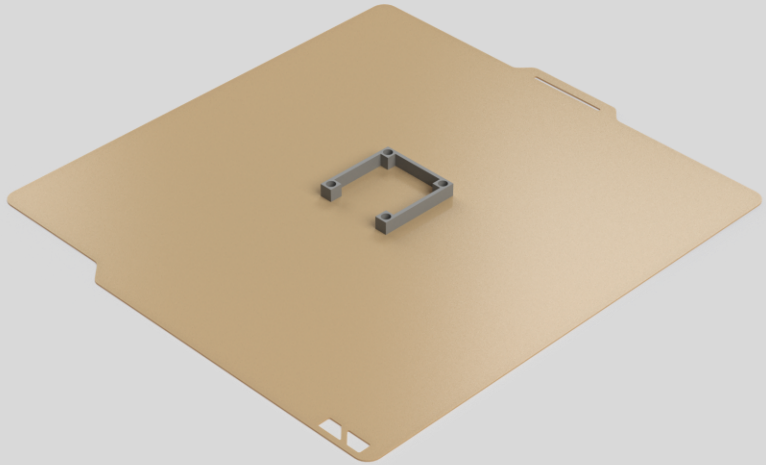
20%-100% GRID INFILL



MOTOR MOUNT

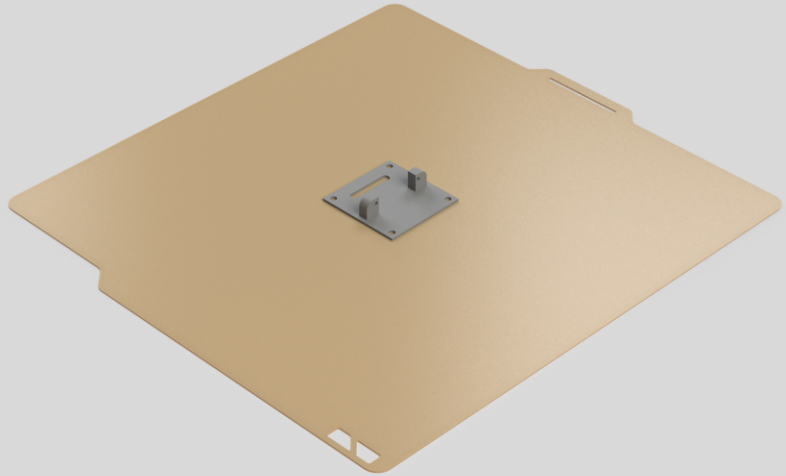
20%-100% GRID INFILL

PARTS ORIENTATION



WING BAY PLATE

20%-100% GRID INFILL



SERVO COVER

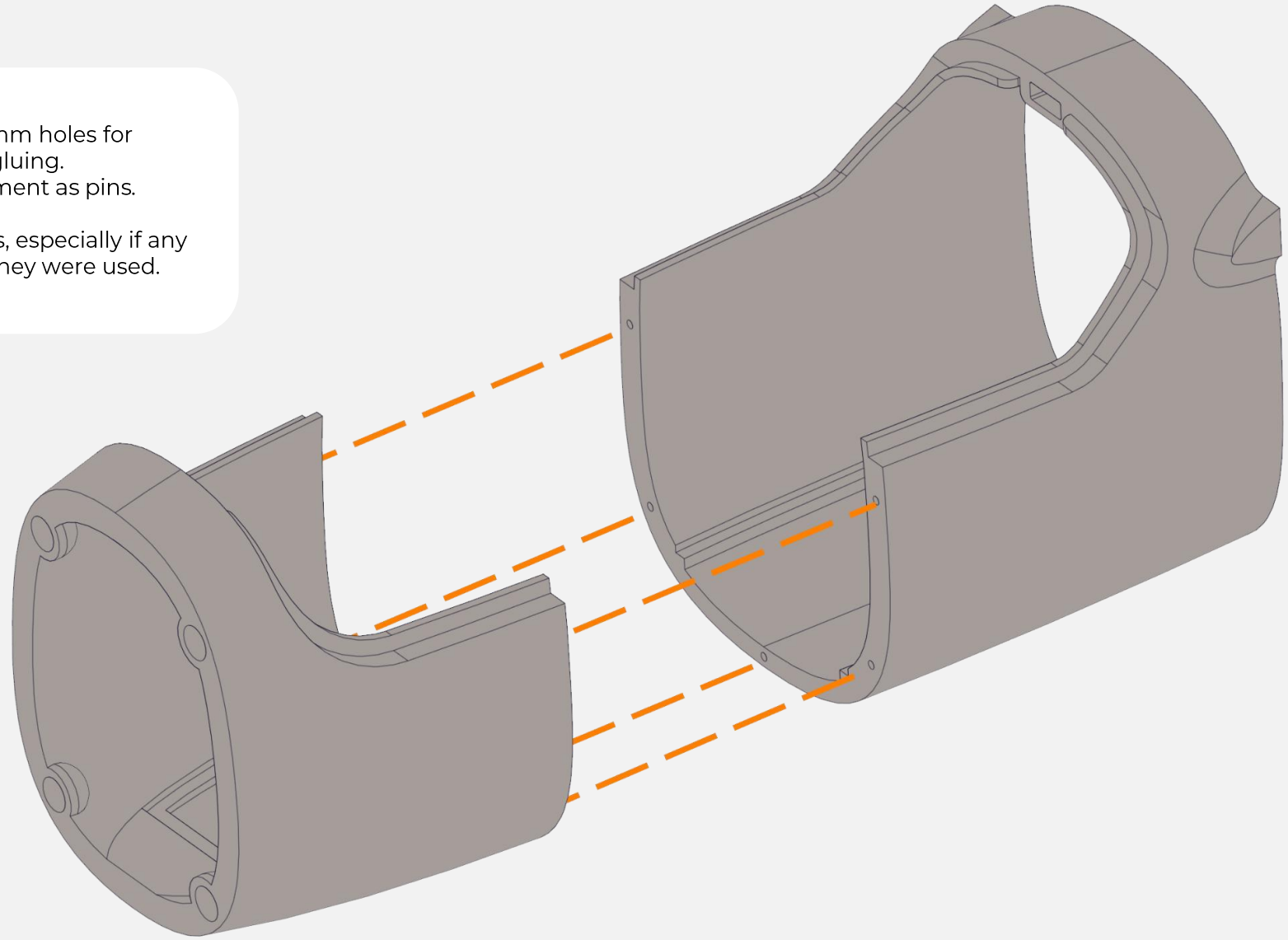
20%-100% GRID INFILL

ASSEMBLY GUIDE

FUSELAGE ASSEMBLY

The fuselage segments are designed with small 2 mm holes for alignment pins, which help align the parts during gluing.
The best option for this is to use short pieces of filament as pins.

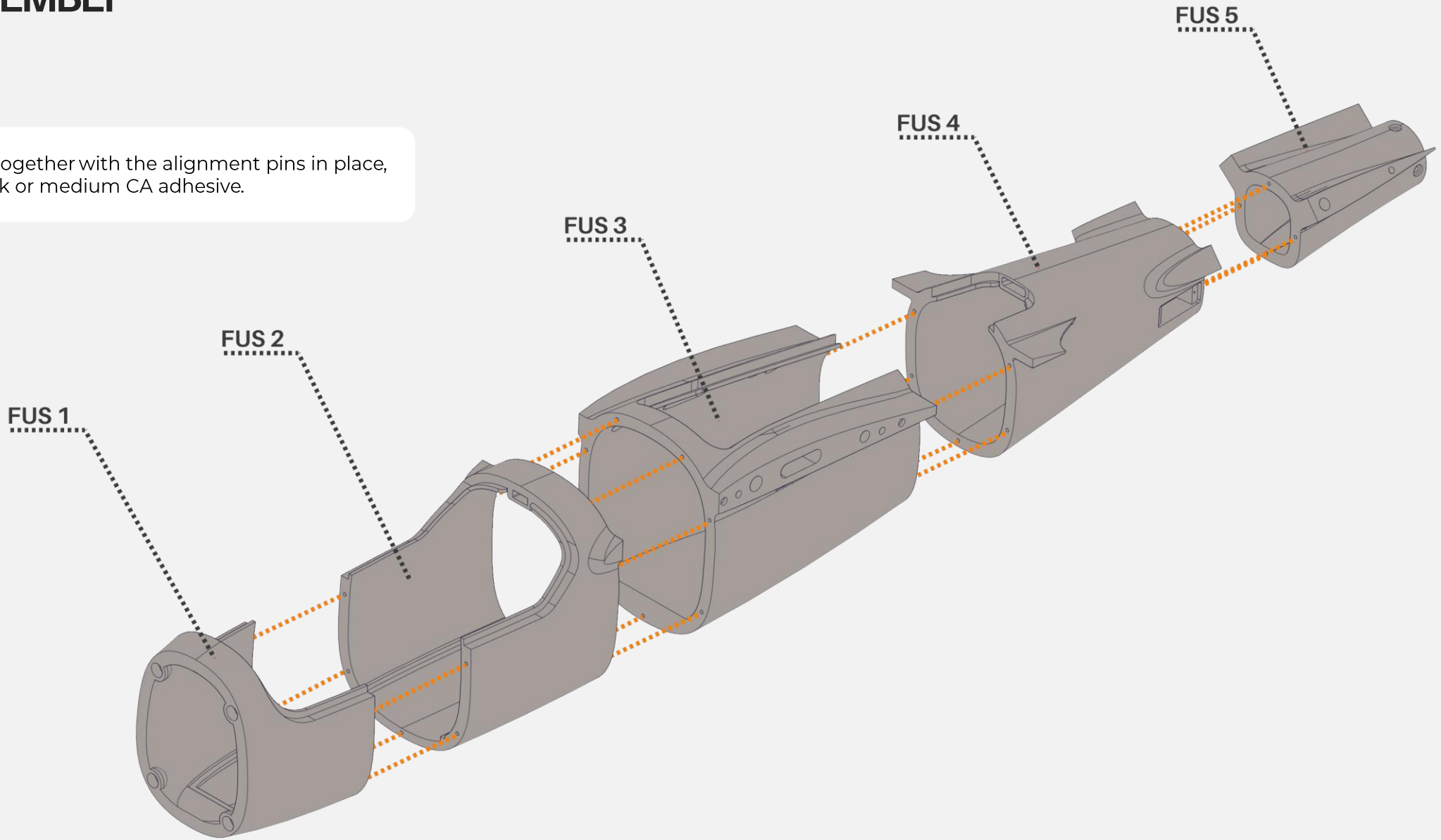
Before gluing, it is recommended to clean the parts, especially if any stringing occurred, and to remove any supports if they were used.



FUSELAGE ASSEMBLY

Fit all fuselage segments together with the alignment pins in place, then glue them using thick or medium CA adhesive.

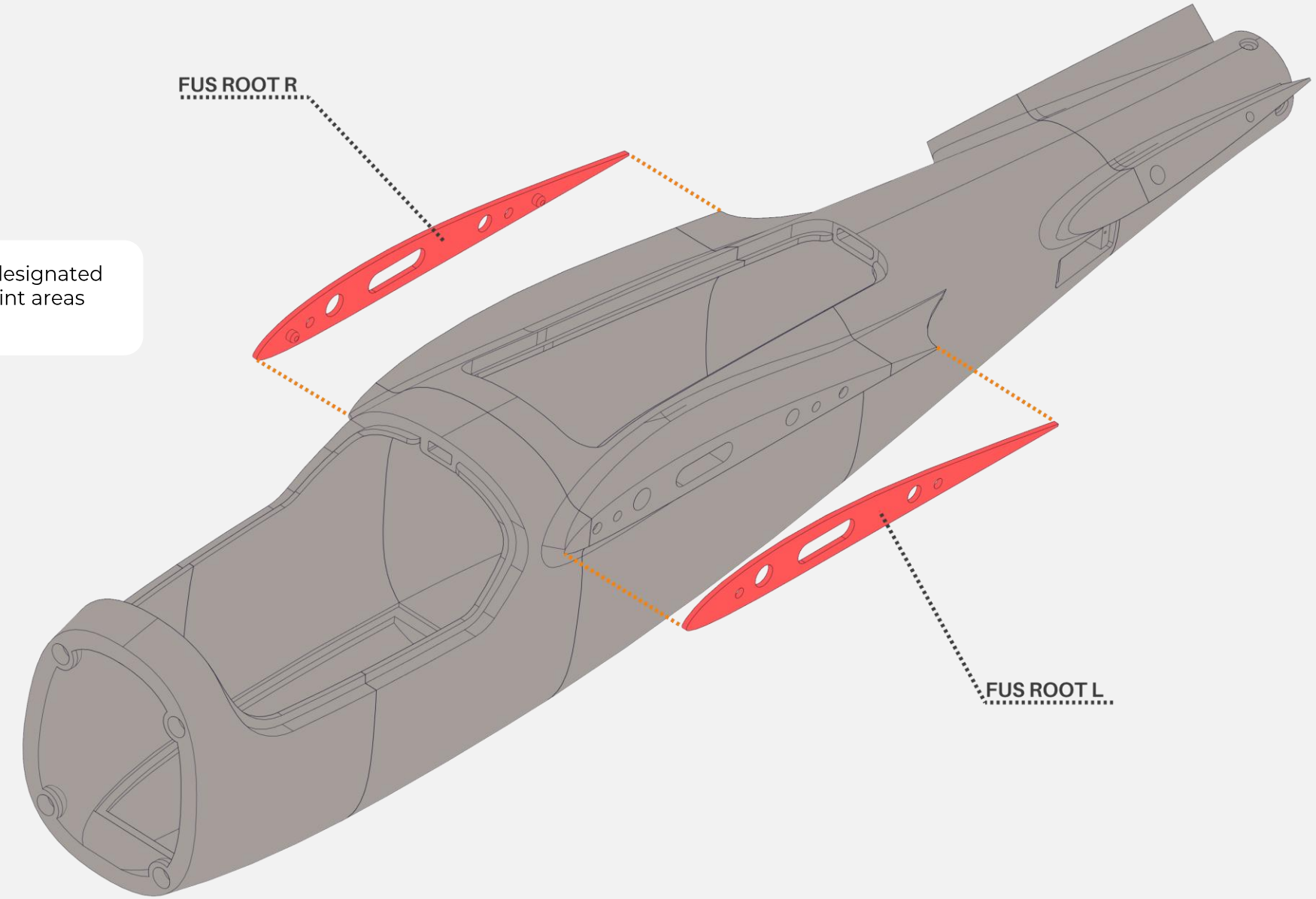
CA GLUE



FUSELAGE ASSEMBLY

Prepare the FUS ROOT. Glue them in the designated places. These components reinforce the joint areas where the wings connect to the fuselage.

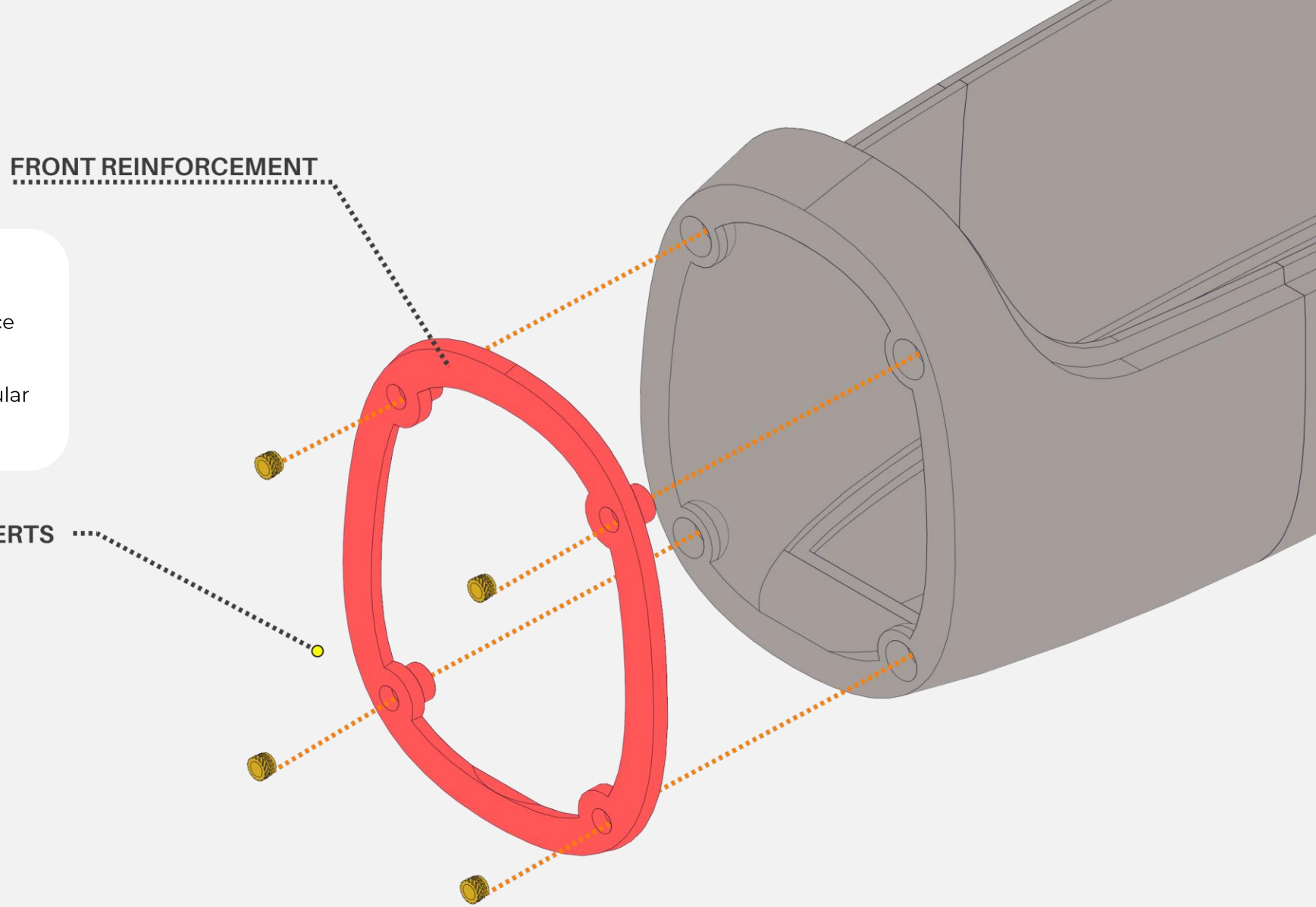
CA GLUE



FUSELAGE ASSEMBLY

Prepare the FRONT REINFORCEMENT. Press M3 THREADED INSERTS into the designated holes, preferably using a slightly heated soldering iron. Once prepared, glue this part onto the front section of the fuselage. This component reinforces the connection between the nose and the fuselage, where the modular nose can be easily attached and removed.

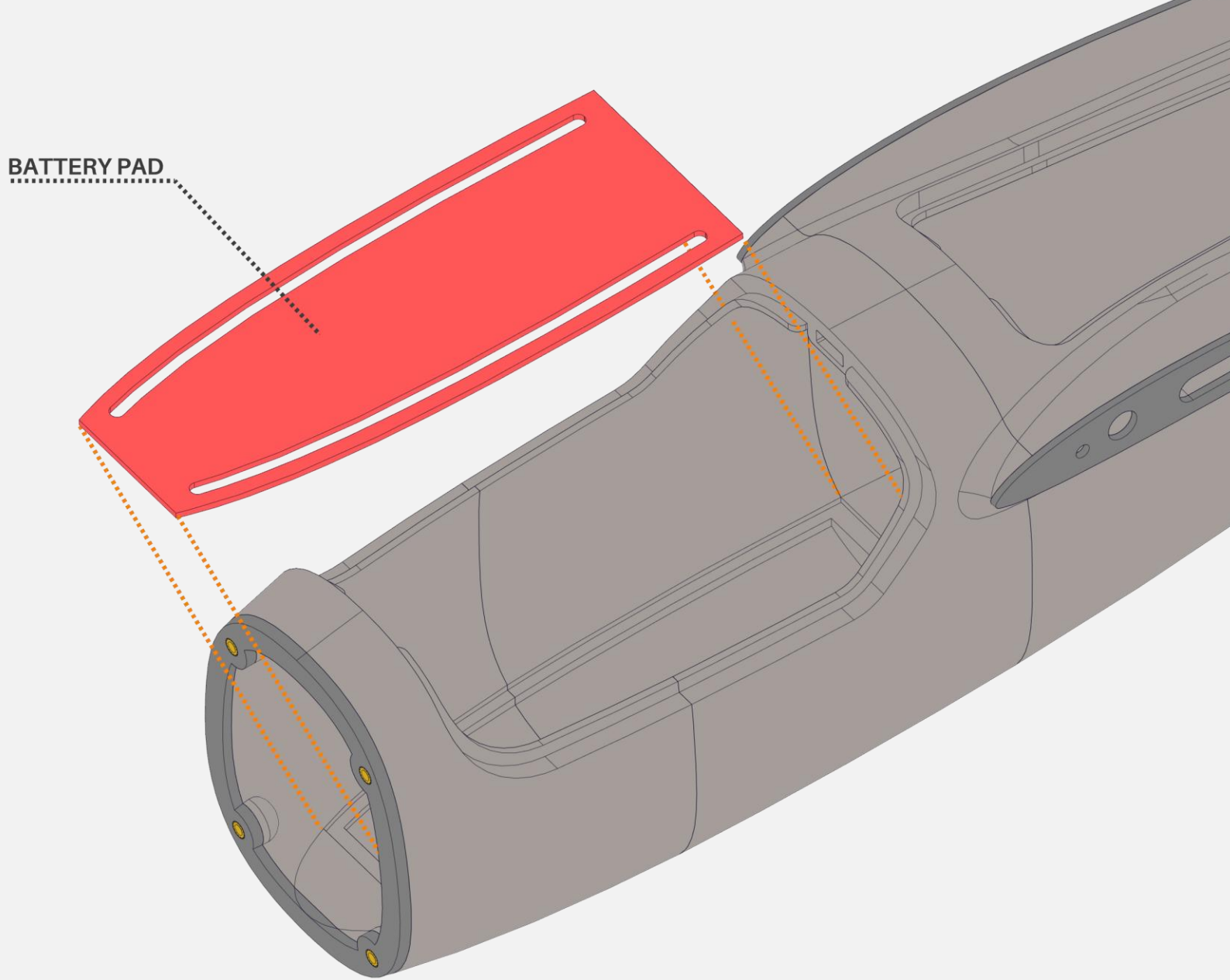
CA GLUE



FUSELAGE ASSEMBLY

Prepare the BATTERY PAD. This part serves as the battery mounting base. The designed holes can be used to route velcro ties for securing the battery. This part is also available in STEP format to facilitate customization of the hole pattern or mounting options if needed.

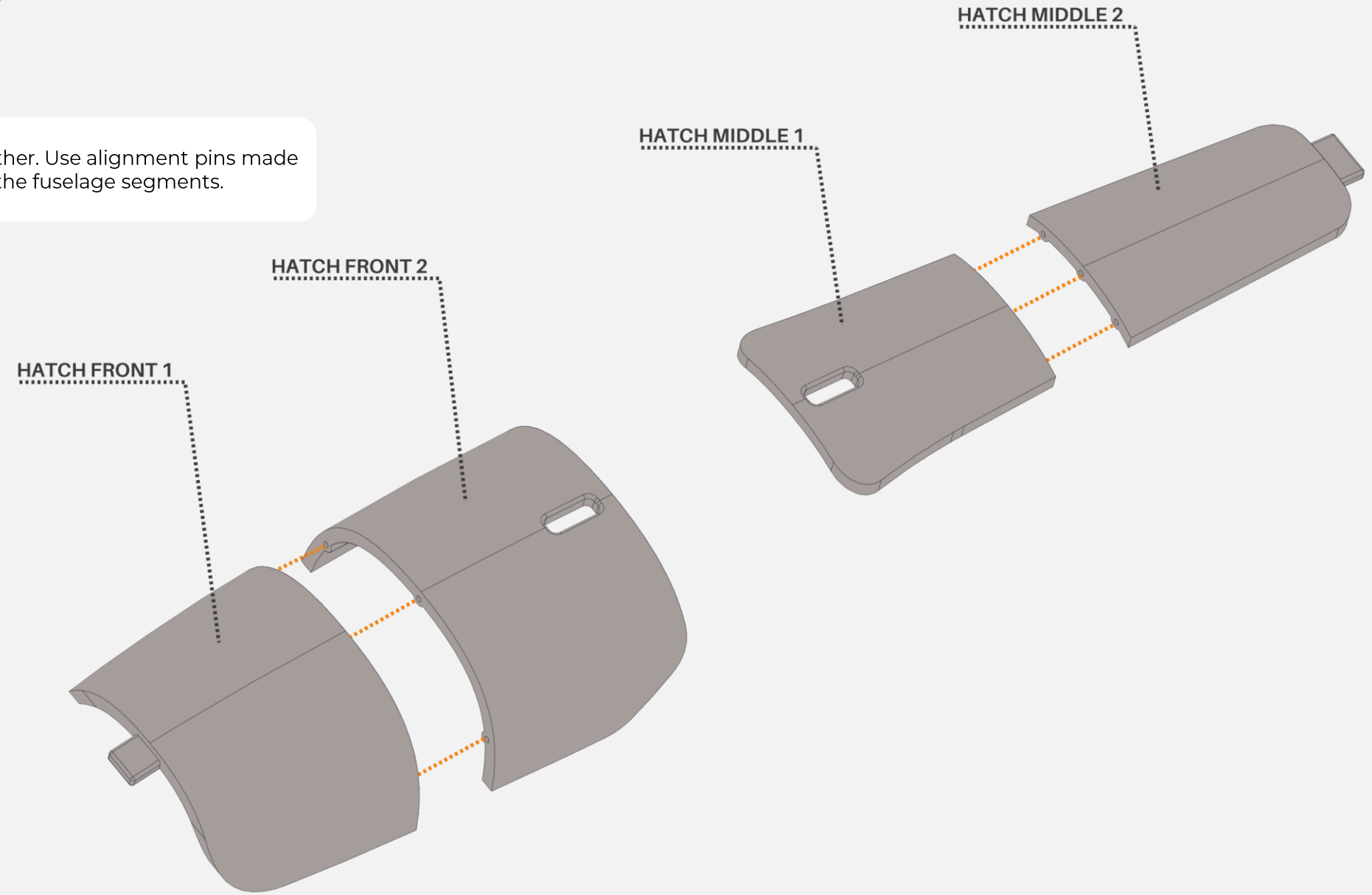
CA GLUE



FUSELAGE ASSEMBLY

Glue the front and middle hatch together. Use alignment pins made from short pieces of filament, as with the fuselage segments.

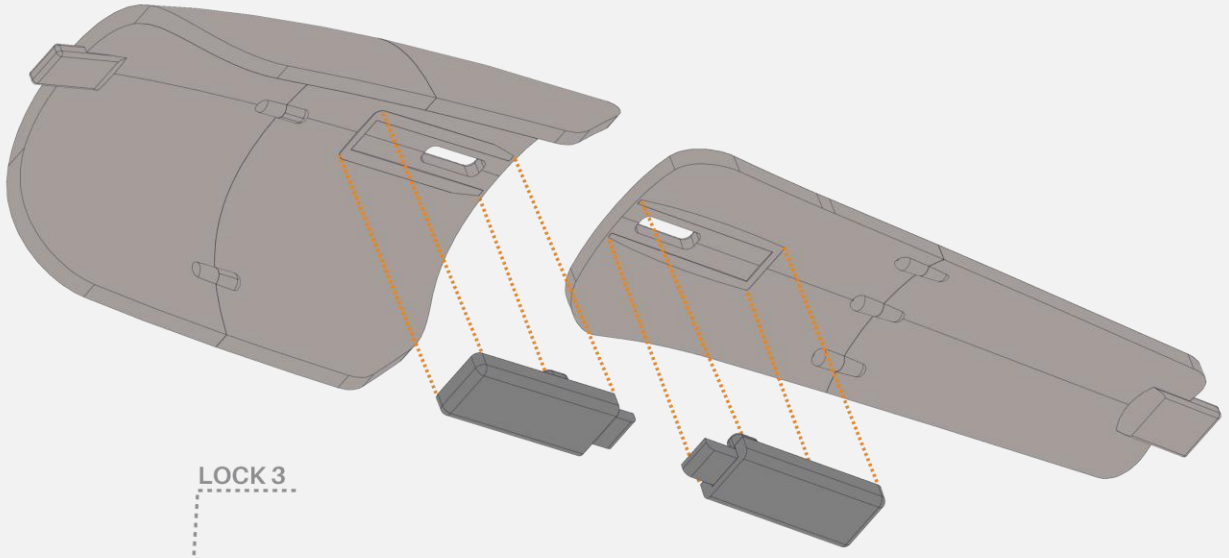
CA GLUE

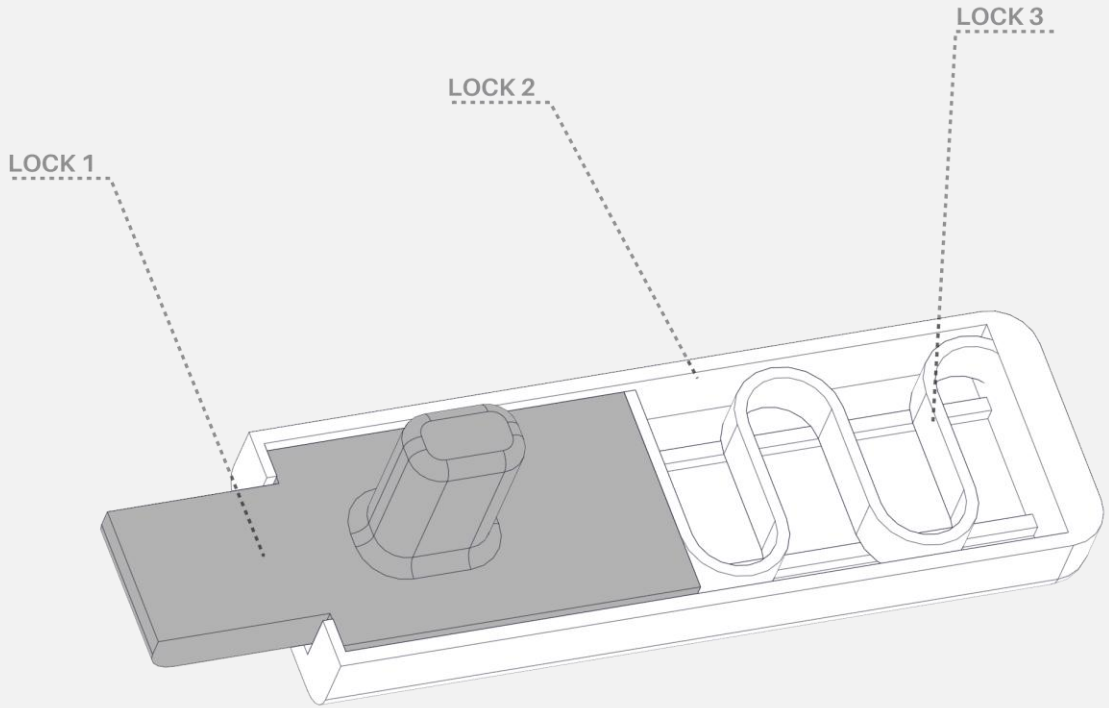


FUSELAGE ASSEMBLY

Assemble the lock, which consists of three parts. Glue the completed locks into the designated slots in the hatches. A thin layer of CA glue applied from the outside along the joint line is sufficient after the parts are properly fitted.

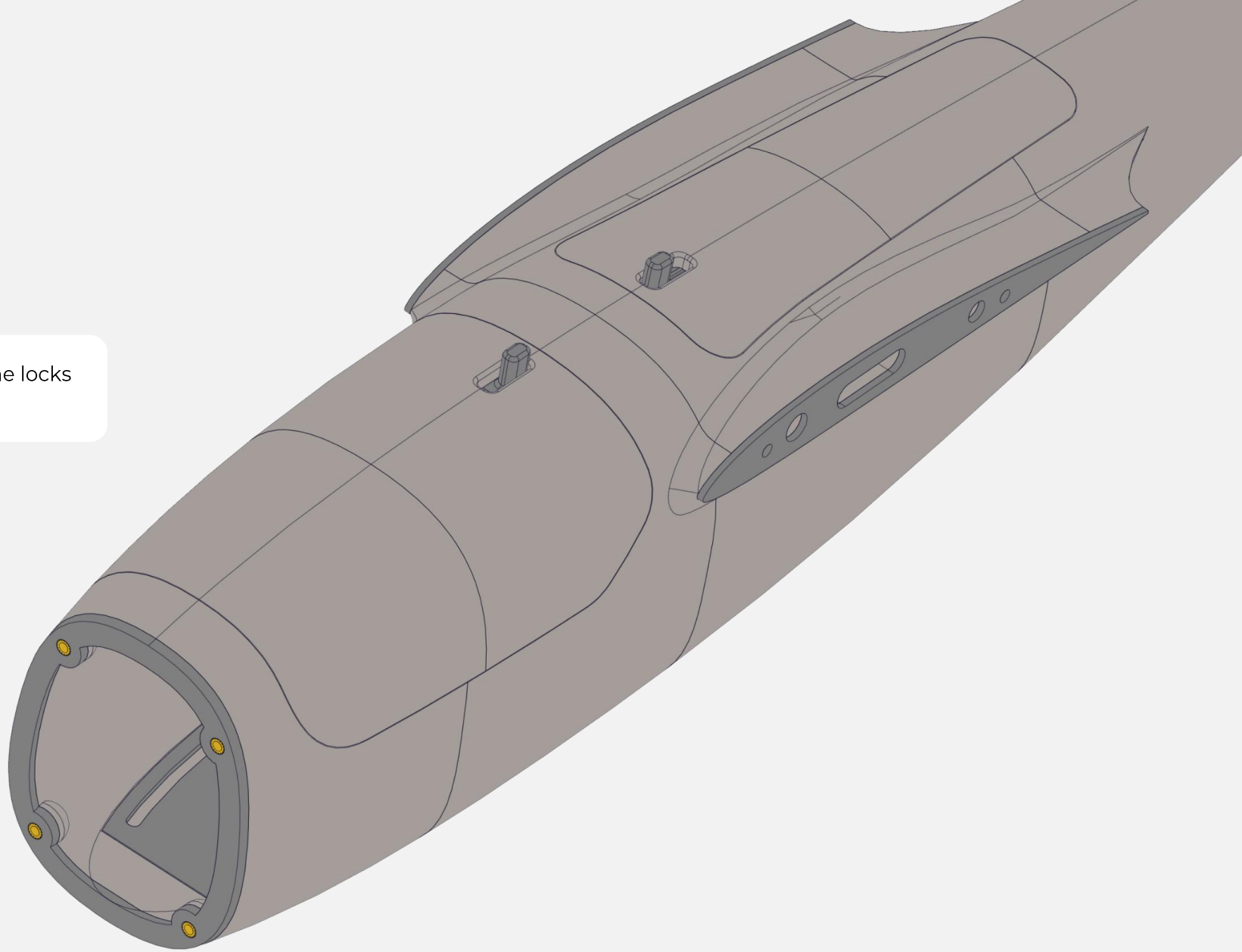
CA GLUE





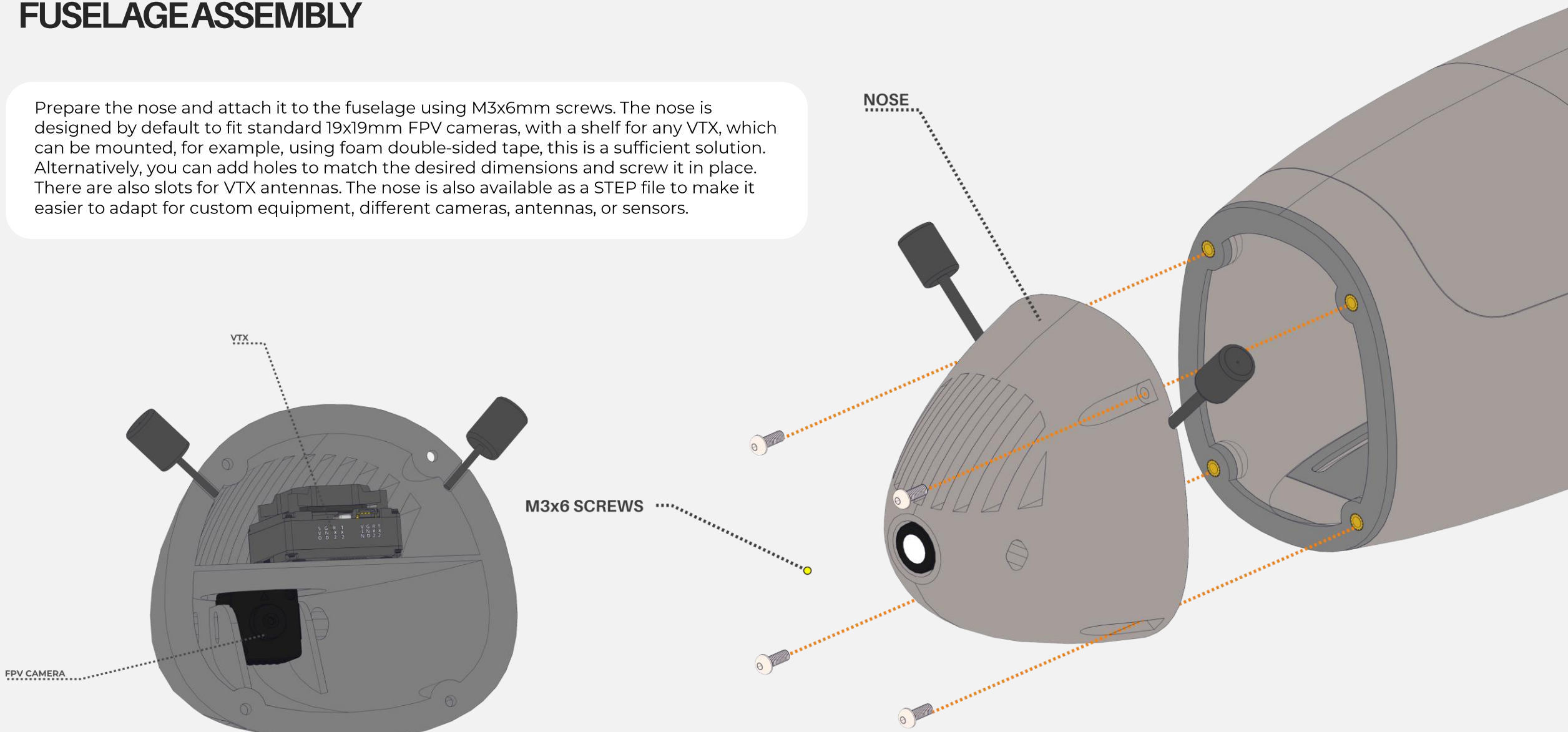
FUSELAGE ASSEMBLY

Fit the prepared hatches to the fuselage and make sure that the locks work properly and securely hold the hatches in place.



FUSELAGE ASSEMBLY

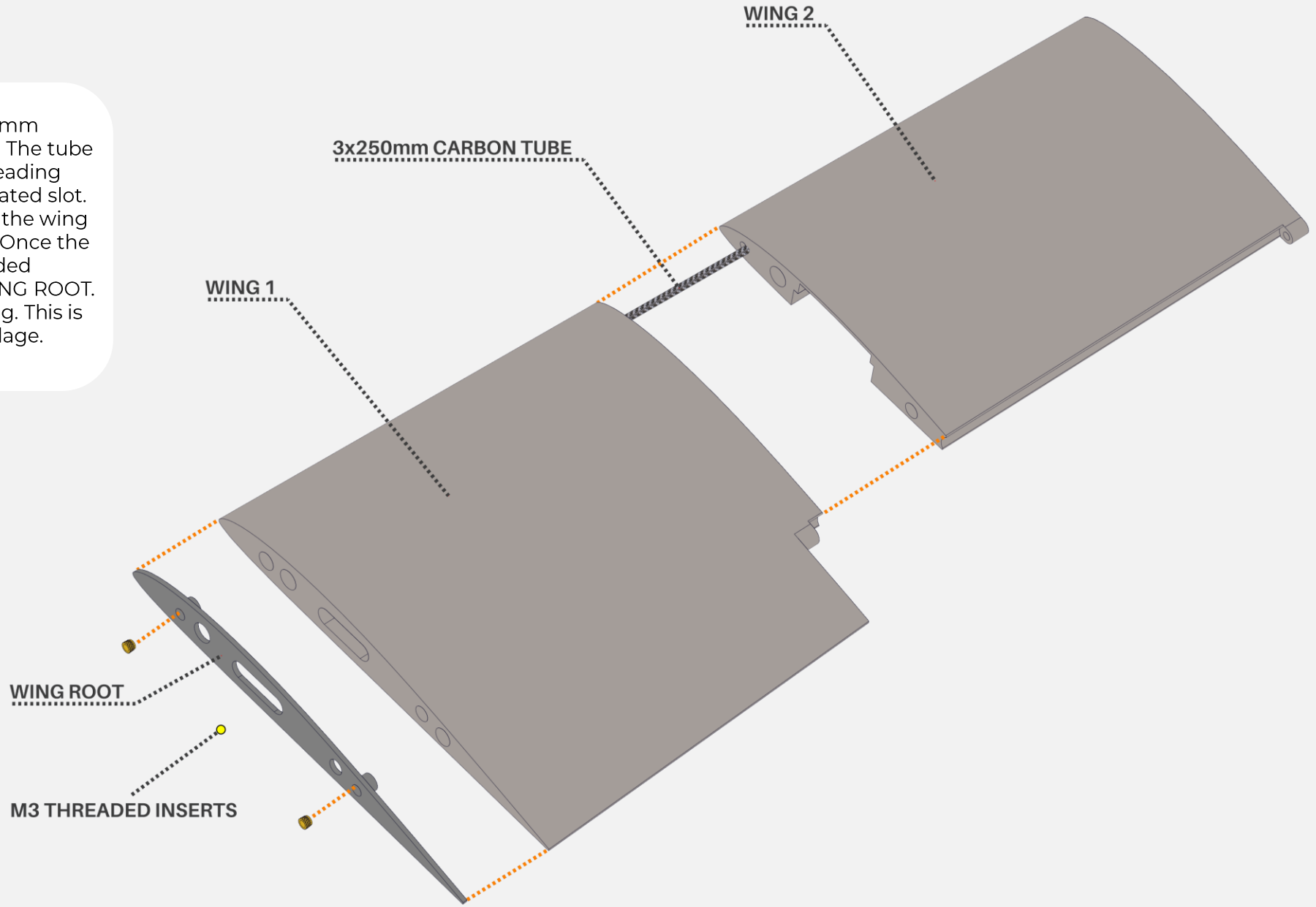
Prepare the nose and attach it to the fuselage using M3x6mm screws. The nose is designed by default to fit standard 19x19mm FPV cameras, with a shelf for any VTX, which can be mounted, for example, using foam double-sided tape, this is a sufficient solution. Alternatively, you can add holes to match the desired dimensions and screw it in place. There are also slots for VTX antennas. The nose is also available as a STEP file to make it easier to adapt for custom equipment, different cameras, antennas, or sensors.



WING ASSEMBLY

Prepare the wing segments together with a 3 mm diameter carbon fiber tube, 250 mm in length. The tube serves as additional reinforcement along the leading edge of the wing. Insert the tube into its dedicated slot. This will also help ensure precise alignment of the wing parts. Then glue the wing segments together. Once the wing has been assembled, press the M3 threaded inserts into the designated locations in the WING ROOT. After preparing this element, glue it to the wing. This is responsible for mounting the wing to the fuselage.

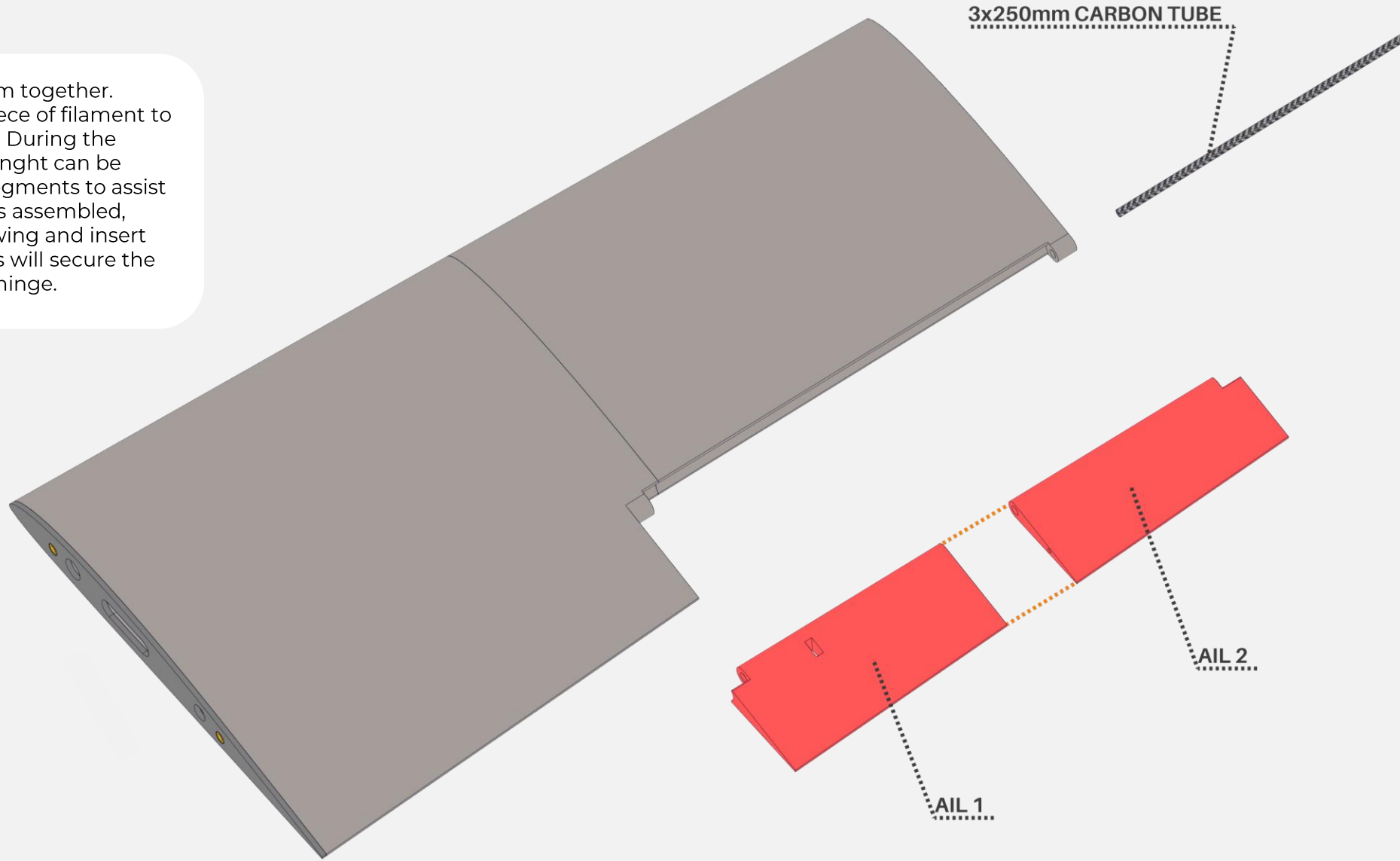
CA GLUE



WING ASSEMBLY

Prepare the aileron segments and glue them together. Use an alignment pin made from a short piece of filament to ensure proper positioning during assembly. During the gluing process, the 3mm tube, 250mm in lenght can be temporarily inserted between the aileron segments to assist with accurate alignment. Once the aileron is assembled, place it into its designated position on the wing and insert the carbon tube into the dedicated slot. This will secure the aileron to the wing, forming the functional hinge.

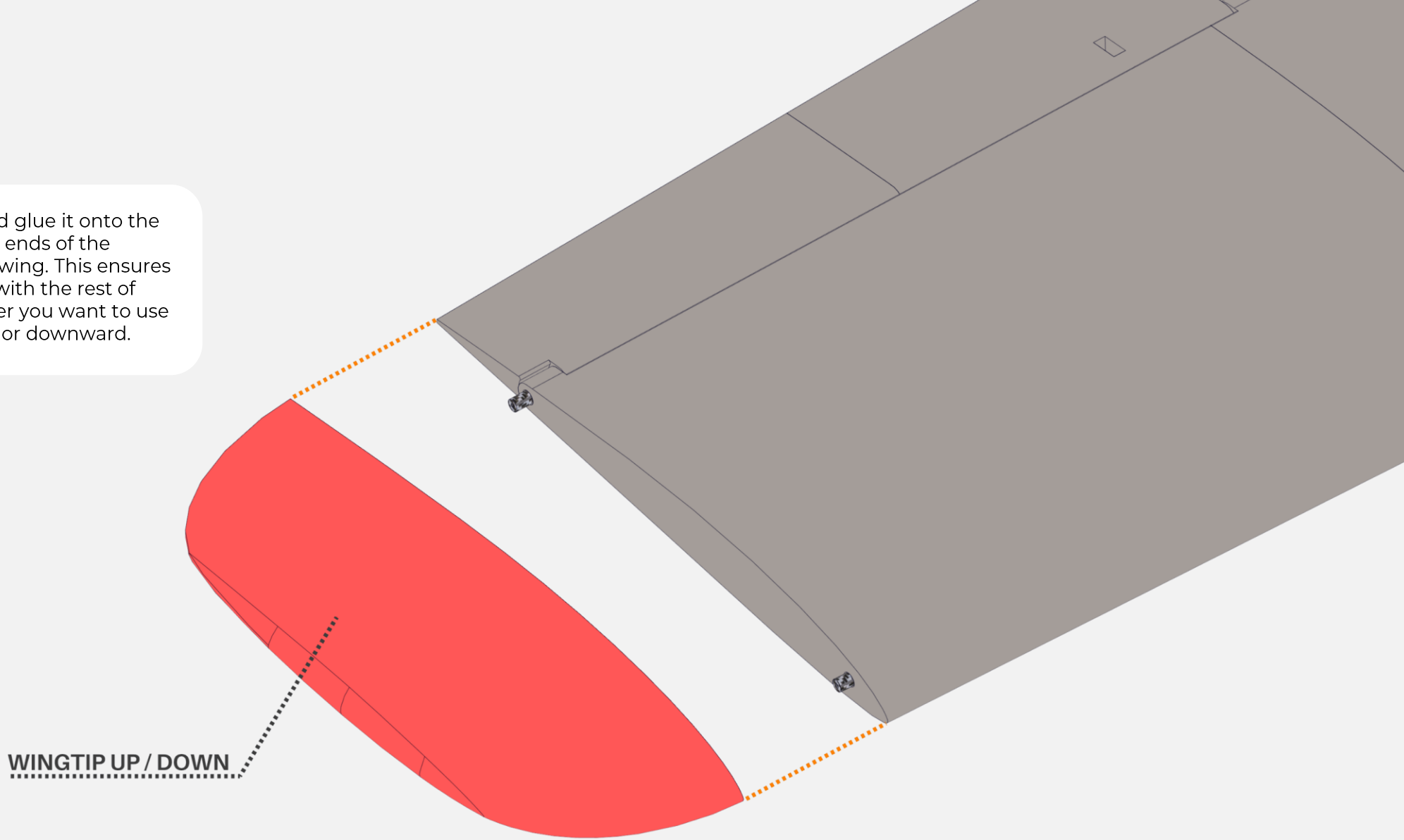
CA GLUE



WING ASSEMBLY

At this stage, take the WINGTIP and glue it onto the wing by sliding it over the exposed ends of the carbon tubes protruding from the wing. This ensures a secure fit and proper alignment with the rest of the wing assembly. Choose whether you want to use the wingtip version facing upward or downward.

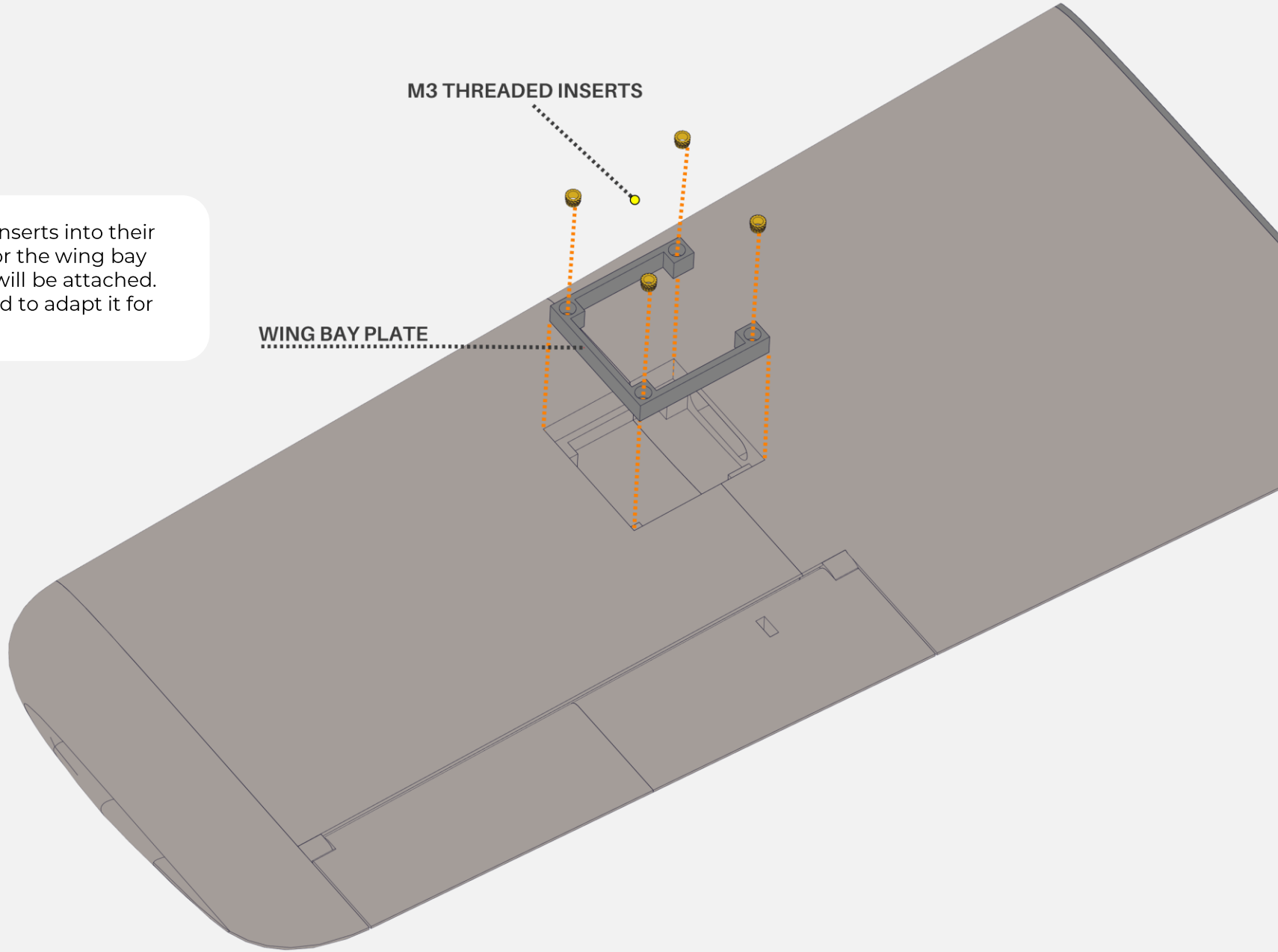
CA GLUE



WING ASSEMBLY

Take the WING BAY PLATE and insert the M3 threaded inserts into their designated holes. This plate serves as a reinforcement for the wing bay and as the base to which the servo cover and the servo will be attached. This part is also available in STEP format in case you need to adapt it for custom equipment to the bay.

CA GLUE

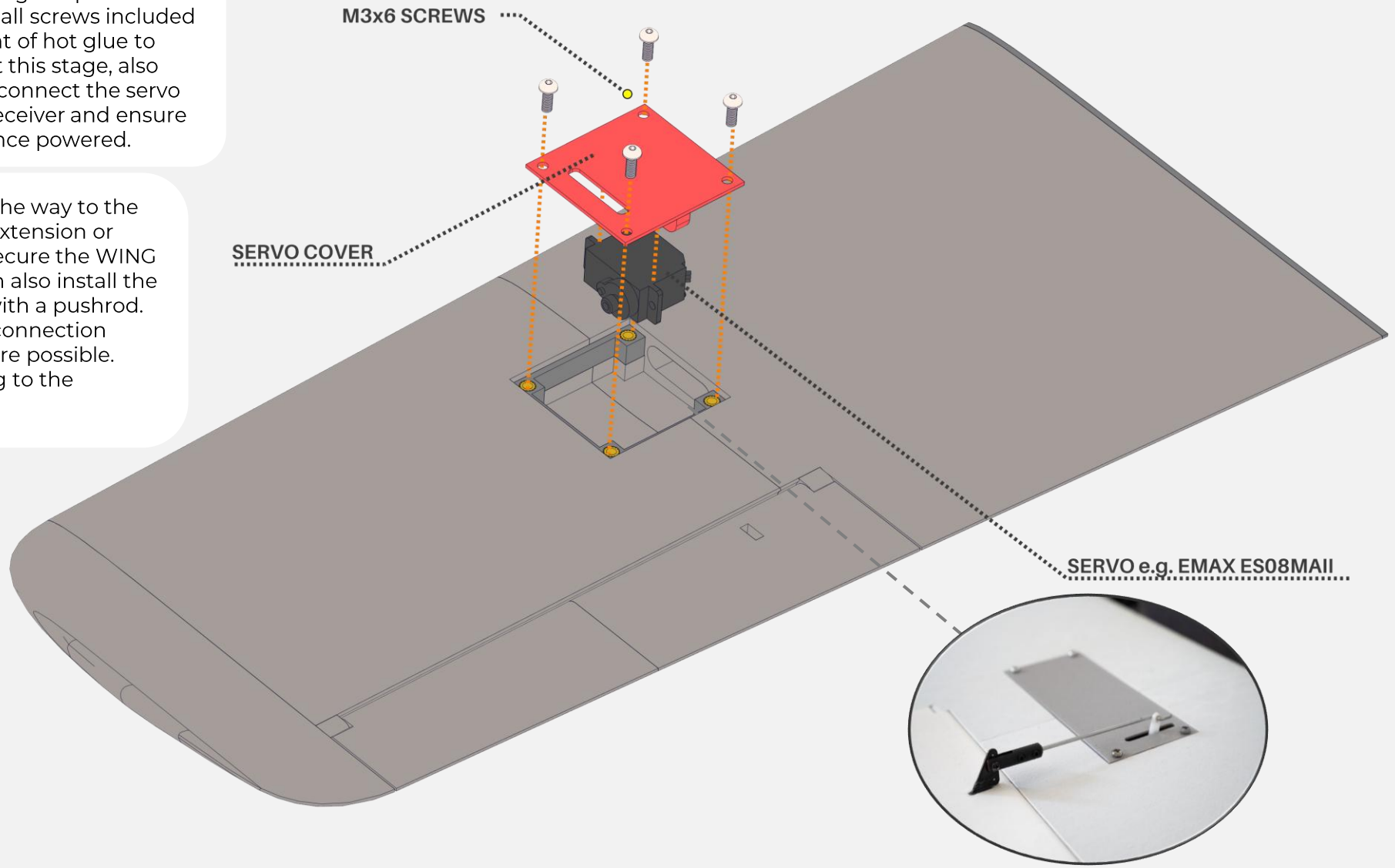


WING ASSEMBLY

Prepare the micro servo and mount it in the assigned position in SERVO COVER Besides securing it with the small screws included with every servo, you may apply a small amount of hot glue to enhance the servo's adhesion to the surface. At this stage, also attach the servo horn and center it. It's best to connect the servo now, either to a servo tester or directly to the receiver and ensure that its range of motion is properly centered once powered.

Route the servo wires through the channel all the way to the wing root. If the cable is too short, use a servo extension or solder additional wires. At this stage, you can secure the WING SERVO COVER using M3x6mm screws. You can also install the control horn and connect it to the servo horn with a pushrod. The choice of horns, pushrods, snaps, or other connection systems is up to the user, and many solutions are possible. Using the recommended equipment according to the suggested parts list is the simplest option.

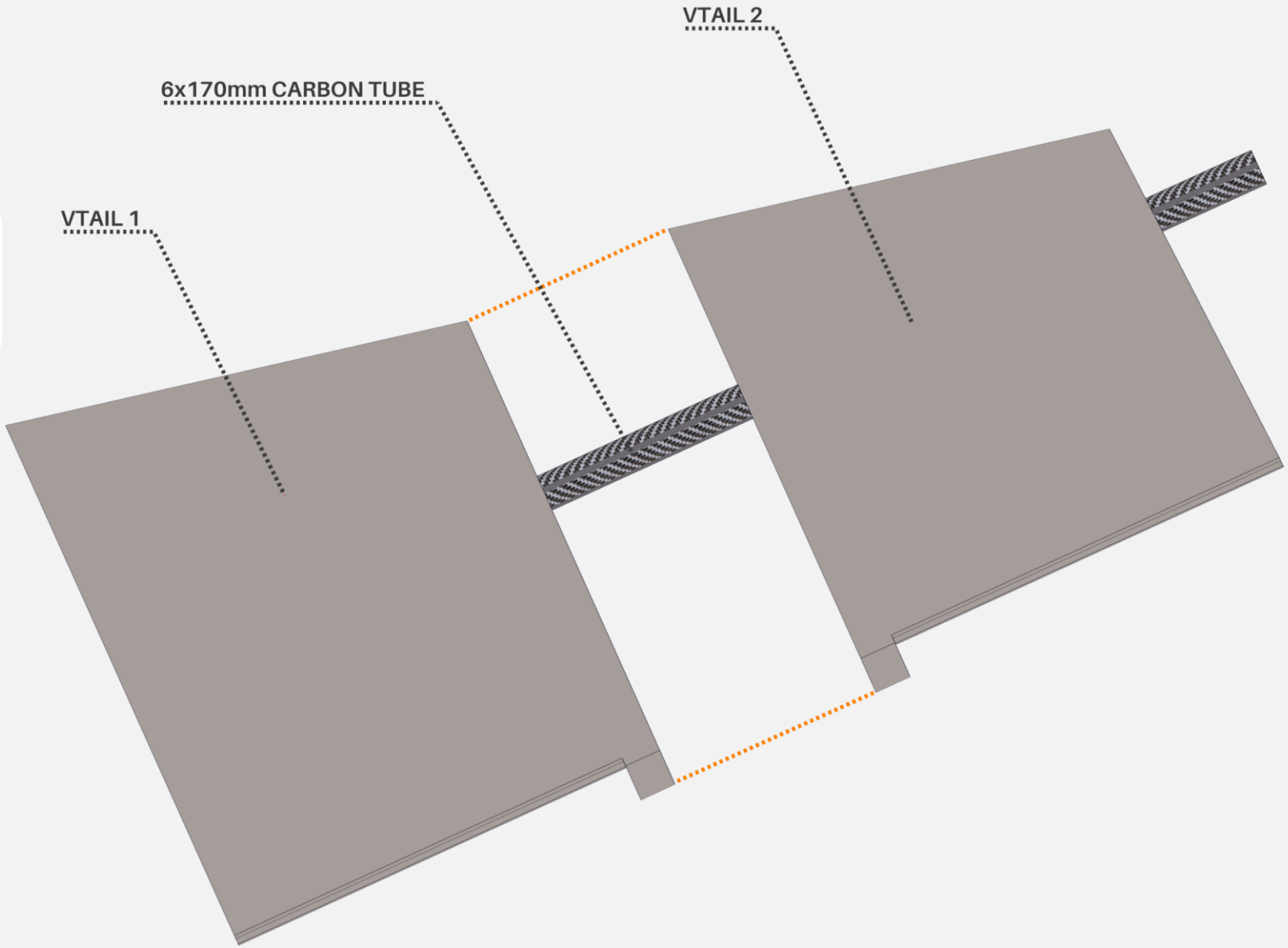
HOT GLUE
OPTIONAL



TAIL ASSEMBLY

Prepare the two VTAIL segments and the carbon tube 6 mm, cut to length of 170 mm. Assemble all the parts together with the tube inserted into its designated slot, which will help with proper alignment during gluing.

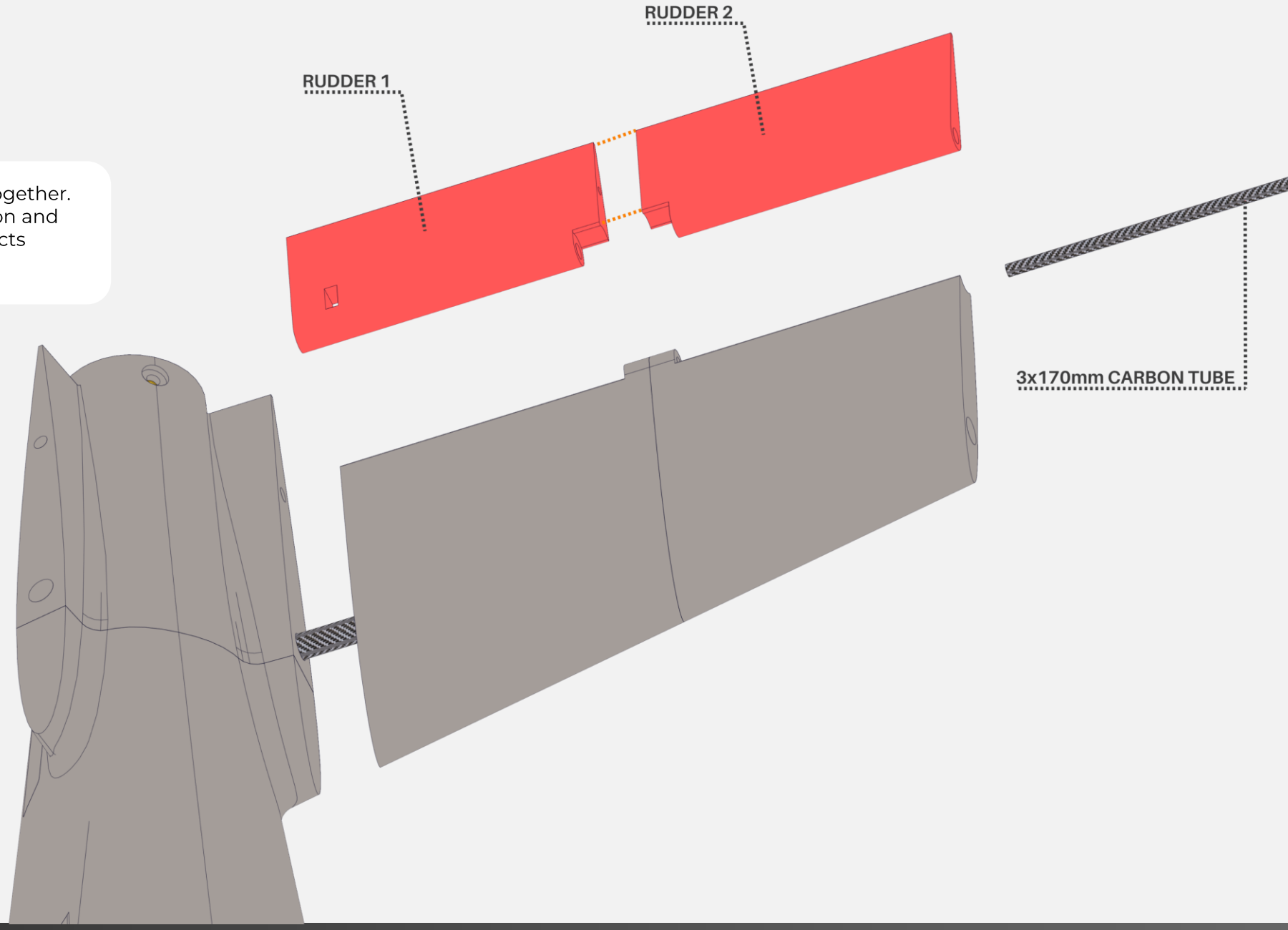
CA GLUE



TAIL ASSEMBLY

Take the ruddervator parts and assemble them together. Place the completed part in its designated position and insert a 3mm carbon tube cut to 170mm, which acts as the control surface hinge.

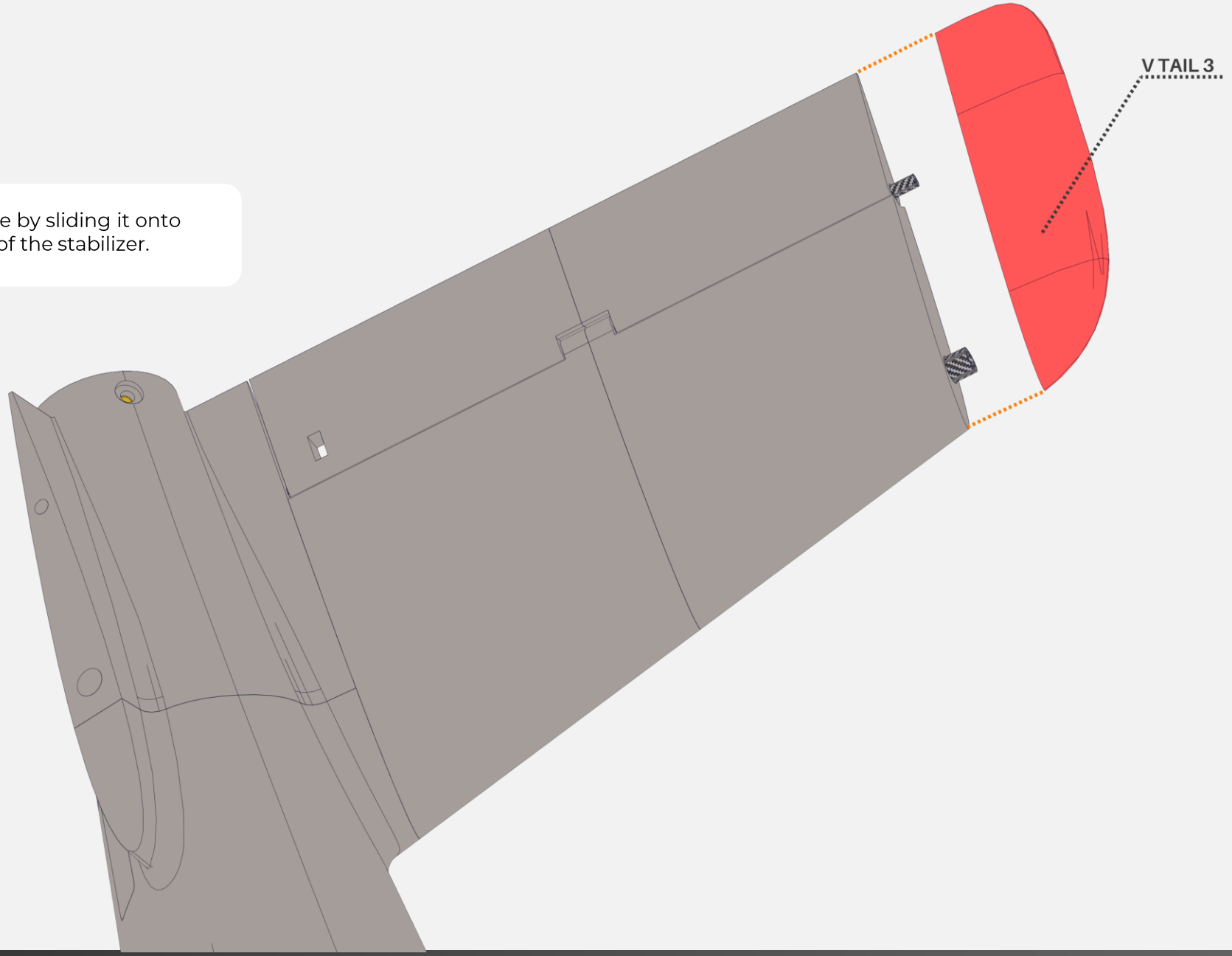
CA GLUE



TAIL ASSEMBLY

Take the last V-tail segment and glue it in place by sliding it onto the exposed end of the carbon tube at the tip of the stabilizer.

CA GLUE

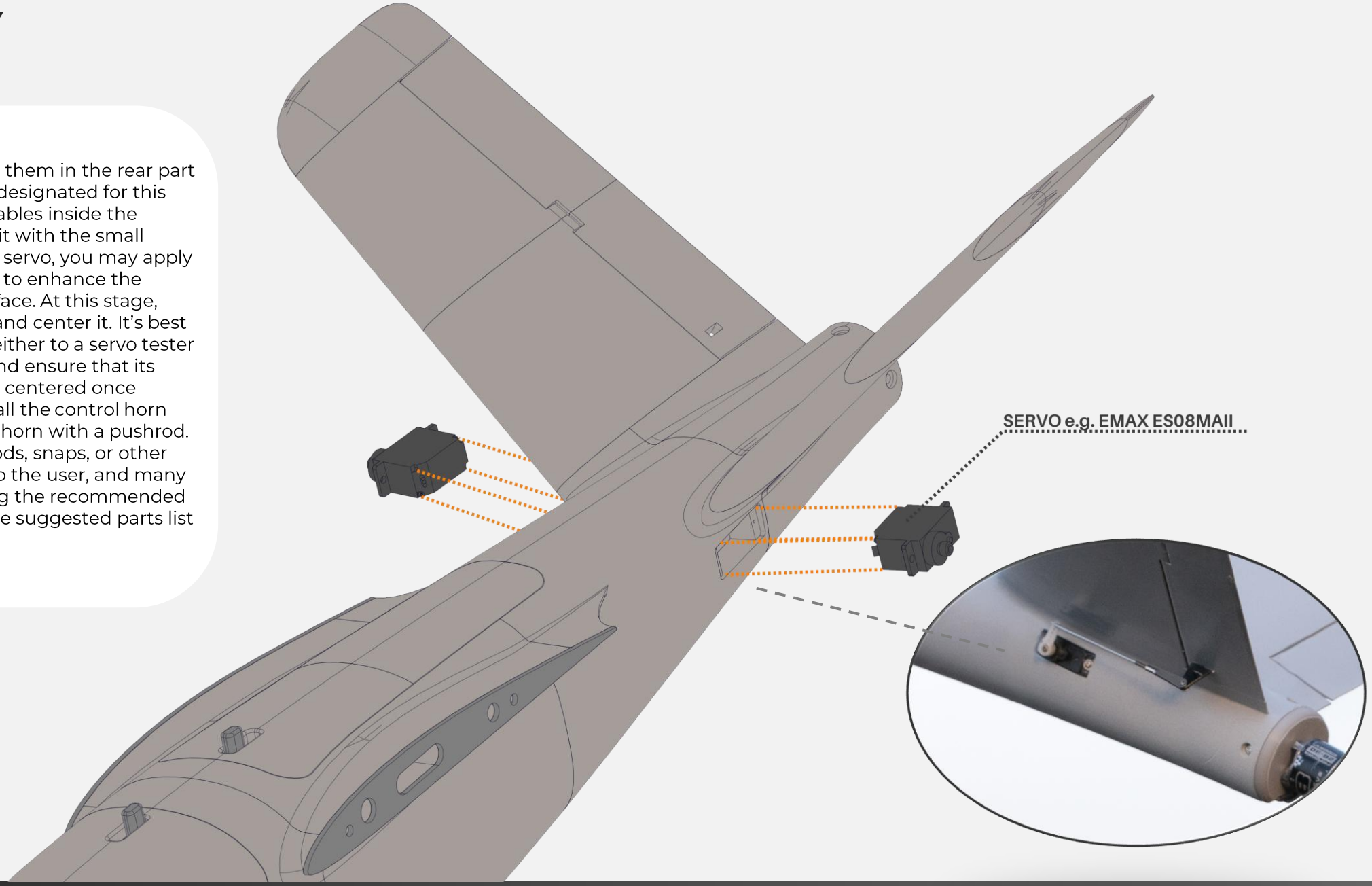


TAIL ASSEMBLY

Take the servos and mount them in the rear part of the fuselage in the slots designated for this purpose. Route the servo cables inside the fuselage. Besides securing it with the small screws included with every servo, you may apply a small amount of hot glue to enhance the servo's adhesion to the surface. At this stage, also attach the servo horn and center it. It's best to connect the servo now, either to a servo tester or directly to the receiver and ensure that its range of motion is properly centered once powered. You can also install the control horn and connect it to the servo horn with a pushrod. The choice of horns, pushrods, snaps, or other connection systems is up to the user, and many solutions are possible. Using the recommended equipment according to the suggested parts list is the simplest option.

HOT GLUE

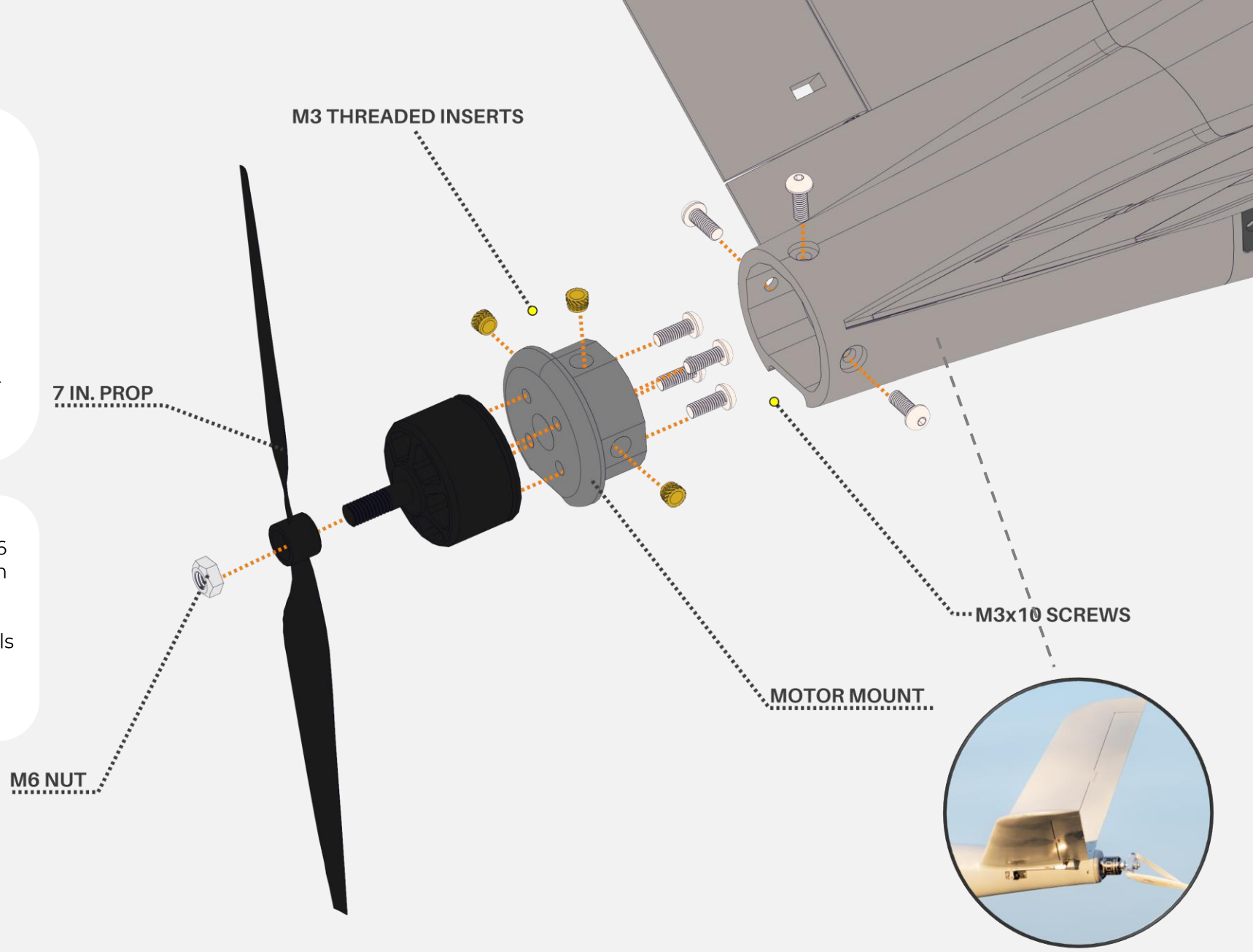
OPTIONAL



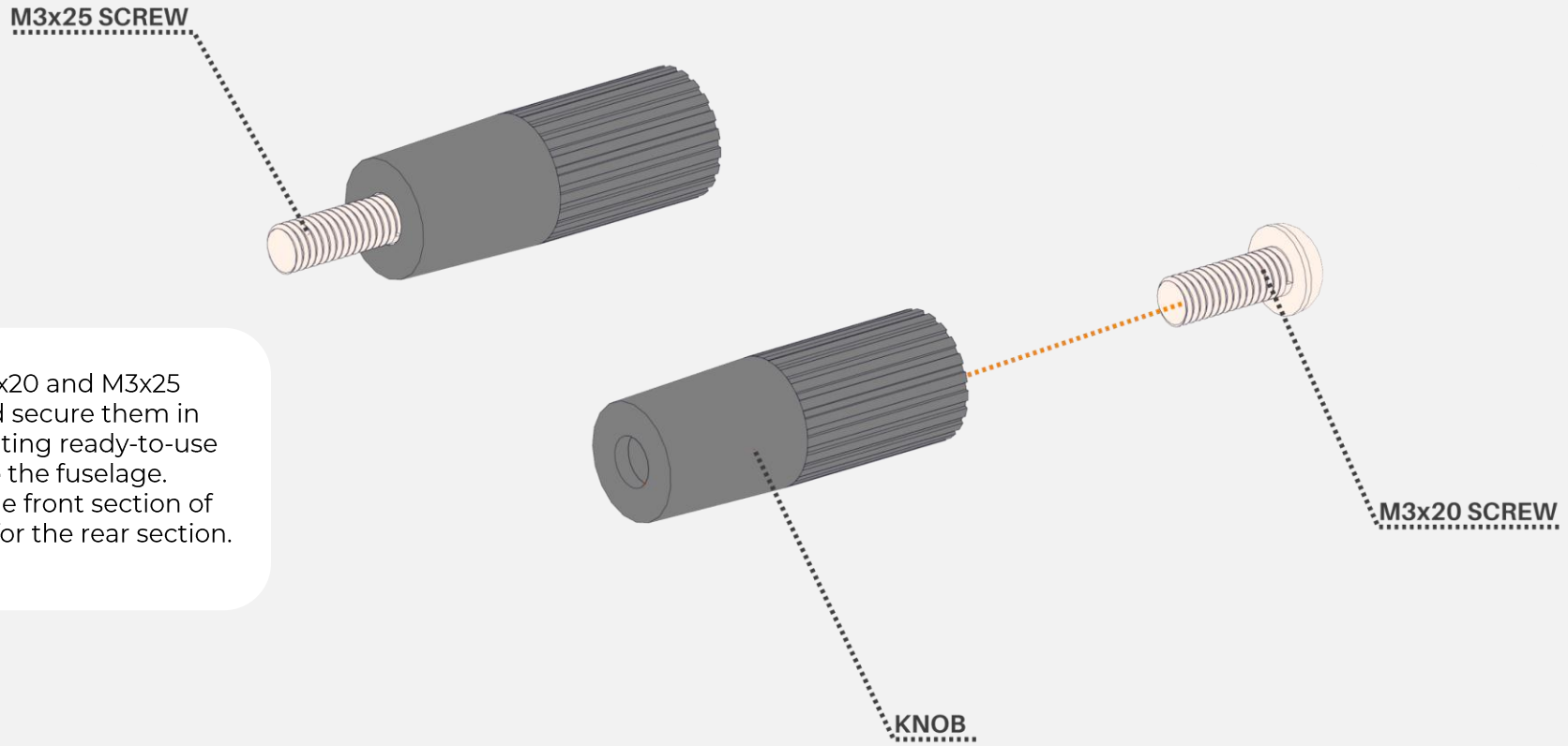
TAIL ASSEMBLY

Prepare the motor mount with the screw spacing you chose to match selected motor. Press the M3 threaded inserts into the sides as well as the top. Attach the motor to the motor mount using the M3 screws from the motor kit, or other suitable screws in the 8–12 mm range. This part is also available in STEP format in case you need to adapt it for different motors. Insert the assembled unit into the designated position in the fuselage and secure it with M3x10mm screws. Route the motor wires through the channel in the lower part of the fuselage, extend them and solder the connectors beforehand if necessary.

You can install a regular propeller by simply using an M6 nut to secure it, or you can use a folding propeller, which is a safer choice considering belly landings in the field. Propeller selection depends on the chosen motor, battery, and your performance expectations. More details on this topic can be found at the beginning of the document in the POWERTRAIN SELECTION section.



FINAL ASSEMBLY

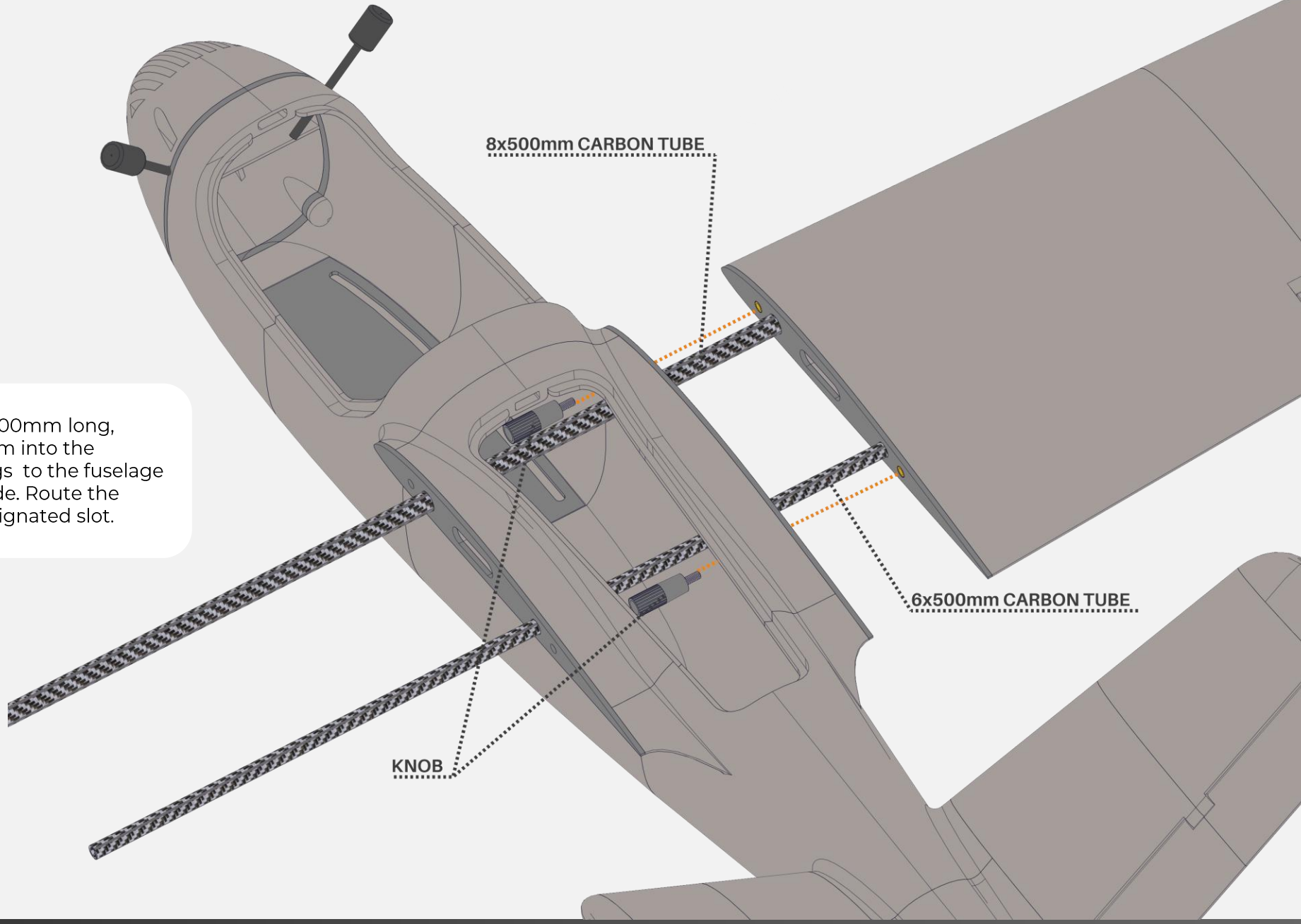


Take the WING KNOBS and prepare the M3x20 and M3x25 screws. Insert the screws into the knobs and secure them in place using a small amount of CA glue, creating ready-to-use tightening knobs for attaching the wings to the fuselage.
The M3x20 screws are used for mounting the front section of the wing, while the M3x25 screws are used for the rear section.

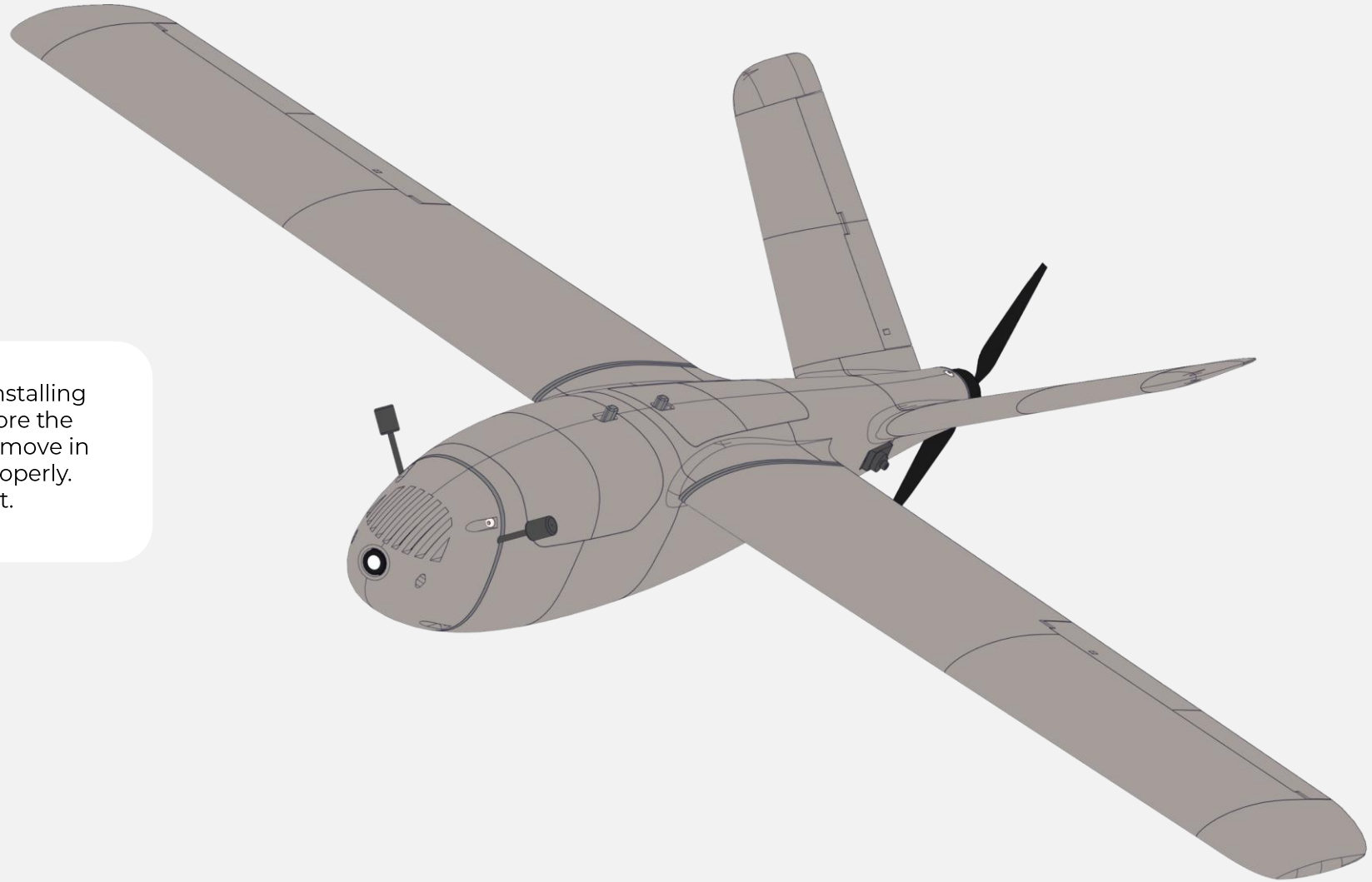
CA GLUE

FINAL ASSEMBLY

Take the 8mm and 6mm carbon tubes, each 500mm long, which serve as the main wing spars. Insert them into the designated slots in the fuselage. Slide the wings to the fuselage and secure them with the knobs from the inside. Route the servo cables into the fuselage through the designated slot.

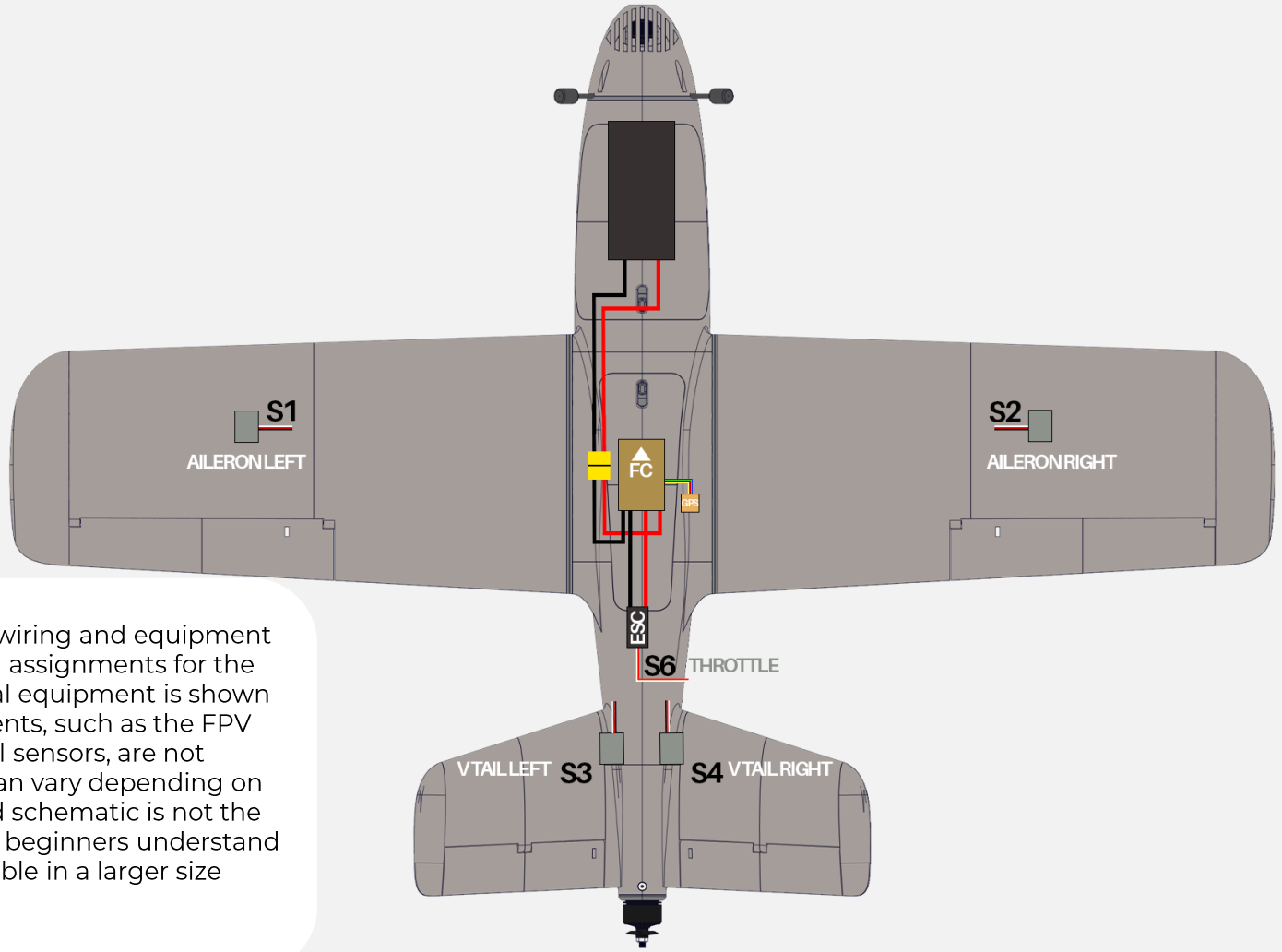


FINISHING BUILD



At this stage, the entire airframe is ready for installing and arranging the remaining electronics. Before the first flight, make sure that all control surfaces move in the correct directions, the propellers rotate properly. Ensure that the center of gravity is correcly set.

WIRING DIAGRAM



The diagram illustrates an example wiring and equipment layout, including suggested channel assignments for the servos and motors. Only the essential equipment is shown in the schematic. Optional components, such as the FPV camera, VTX, receiver, and additional sensors, are not included, as their implementation can vary depending on the chosen hardware. The presented schematic is not the only solution but is intended to help beginners understand the setup. This diagram is also available in a larger size in PDF format in the file package

ARDUPILOT CONFIGURATION

For beginners, a document with a preconfigured parameter (.param) file is also available. The document outlines the key parameter settings for a Fixed-Wing configuration in ArduPilot. It is intended to serve as a reference and a solid starting point for further configuration and tuning of this type of aircraft.

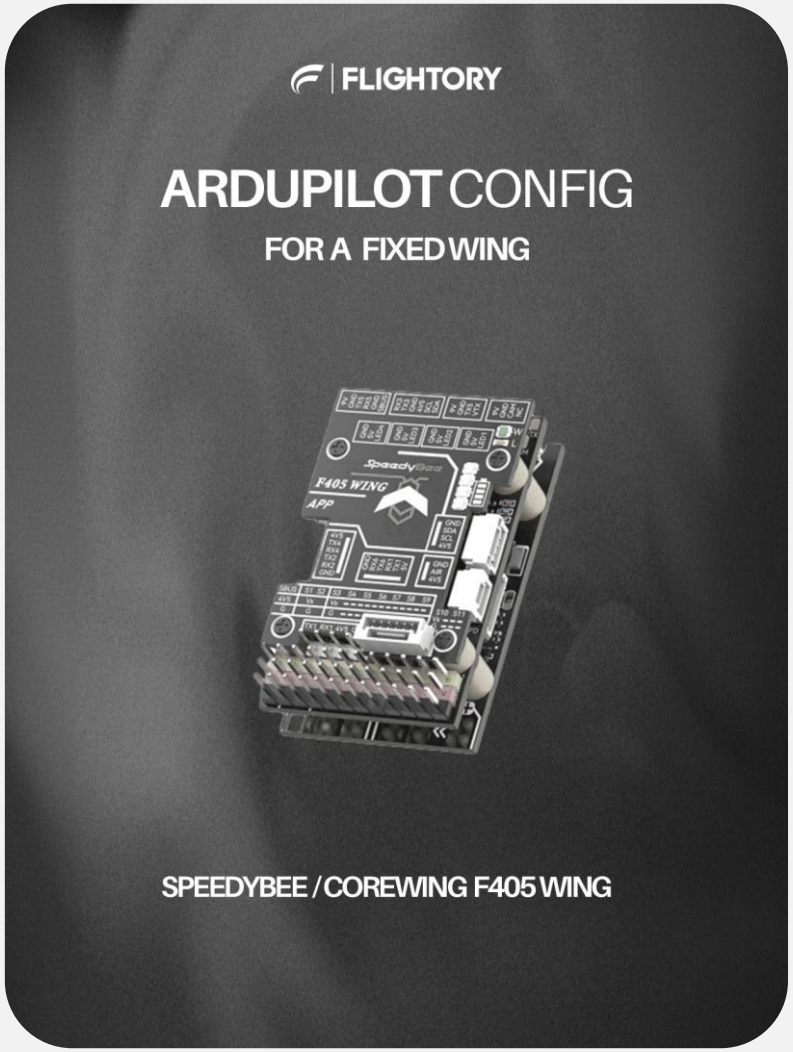
The file is prepared for the Speedybee/Corewing F405 Wing used with an ELRS receiver, GPS, Walksnail FPV system, and the Yaapu telemetry script option.

This is not a ready-to-use configuration and must not be applied without proper verification. Before flight, you are required to configure the correct servo outputs according to your airframe setup and perform all necessary calibrations, including compass and accelerometer. The following sections of the document present the main parameters along with explanations of their functionality.

All information, as well as the firmware, is available onthe ArduPilot website. It is also recommended to review the user manual of the flight controller for configuration.

https://ardupilot.org/plane/docs/common-speedybeef405wing.html

The document is available for free download from the Flightory Discord server in the #free-files channel.



FLIGHTORY

picoTALON