

# STORK

## USERMANUAL

V.2

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<https://discord.gg/GPMgDZ3C xv>



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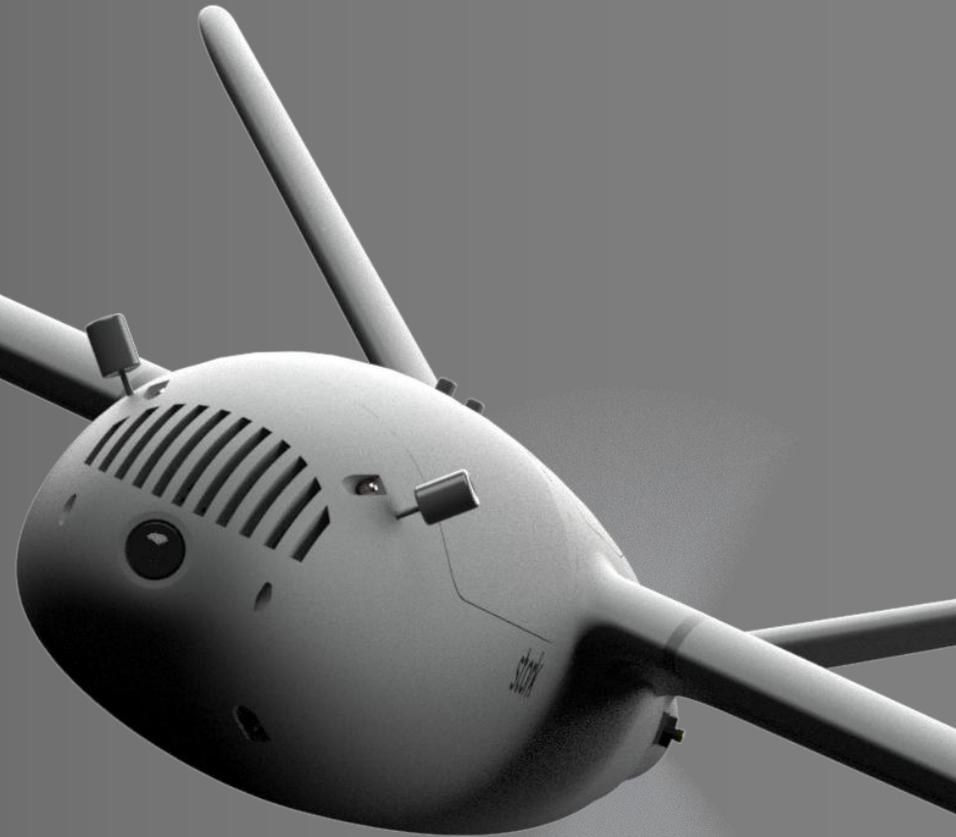
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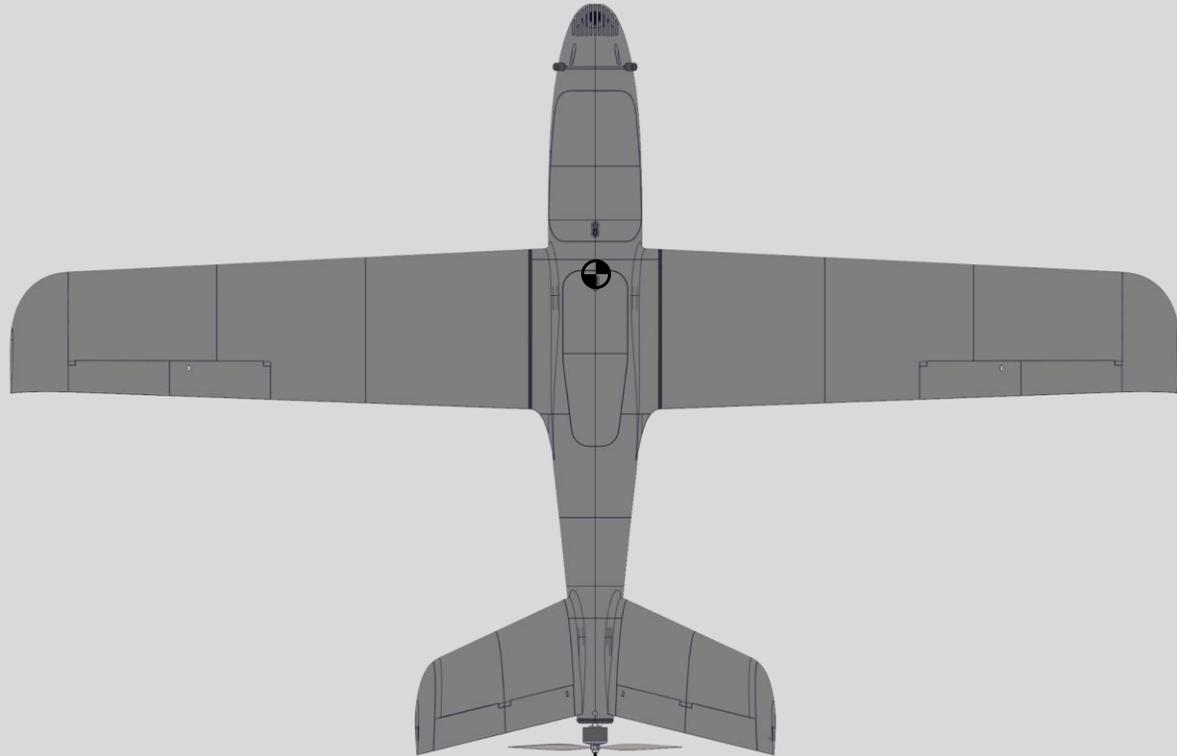
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# STORK

The Stork is a UAV platform designed in a classic configuration with a pusher motor and a V-tail. It delivers high efficiency and stability, while its high aspect ratio wing provides smooth flight characteristics and the capacity to carry a substantial wing load. The hybrid airframe is optimized for 3D printing with LW filaments, combined with high strength materials and reinforced with carbon rods to ensure excellent structural integrity and durability. A notable feature of the Stork is its modular nose section, which can be easily swapped or customized for specific mission profiles, making the platform highly adaptable to a wide range of applications. While designed primarily as an FPV aircraft, Stork also offers strong potential for autonomous missions and can be configured to carry custom equipment and payloads.



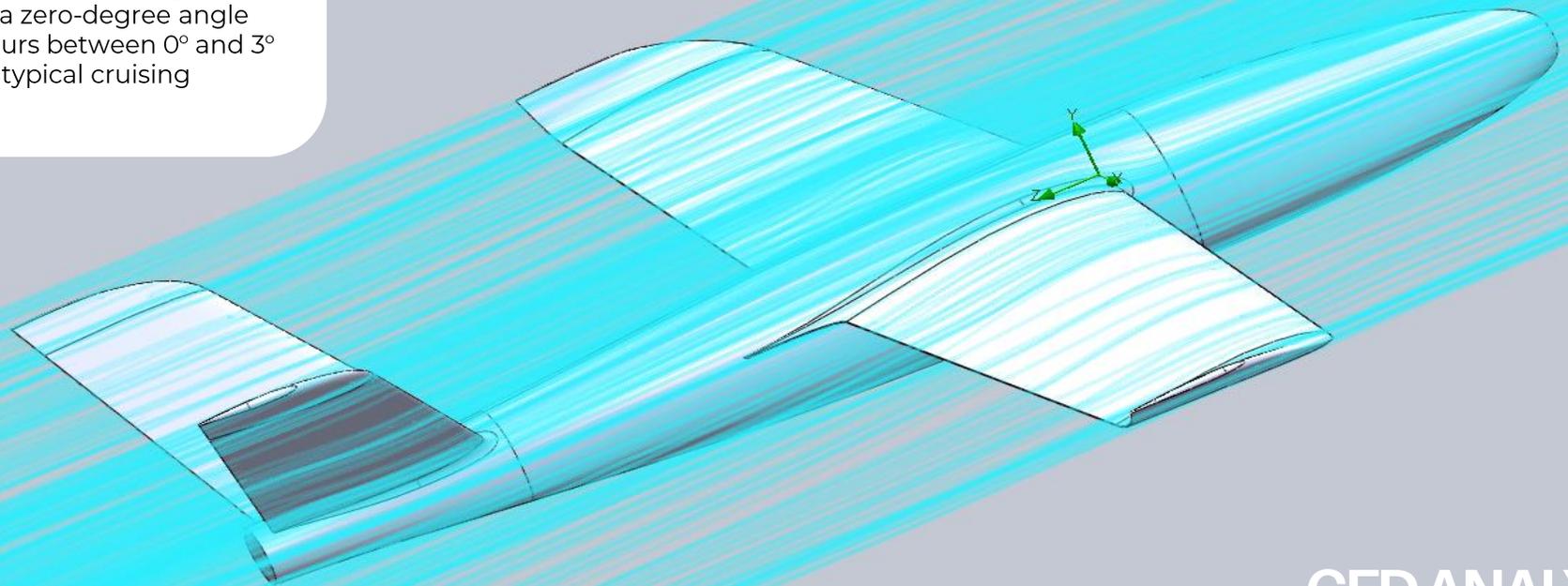
# GENERAL AIRCRAFT DATA



Wingspan	1620mm
Wing area	31 dm <sup>2</sup>
Length	1000mm
Center of Gravity	47mm from leading edge (at wing root)
AUW	1400-3100g
Optimal Cruise Speed	50-70 km/h
Airfoil	S3021
Root Chord	230mm
MAC	195mm
Aspect Ratio	8,3
Wing load	45 - 100 g / dm <sup>2</sup>

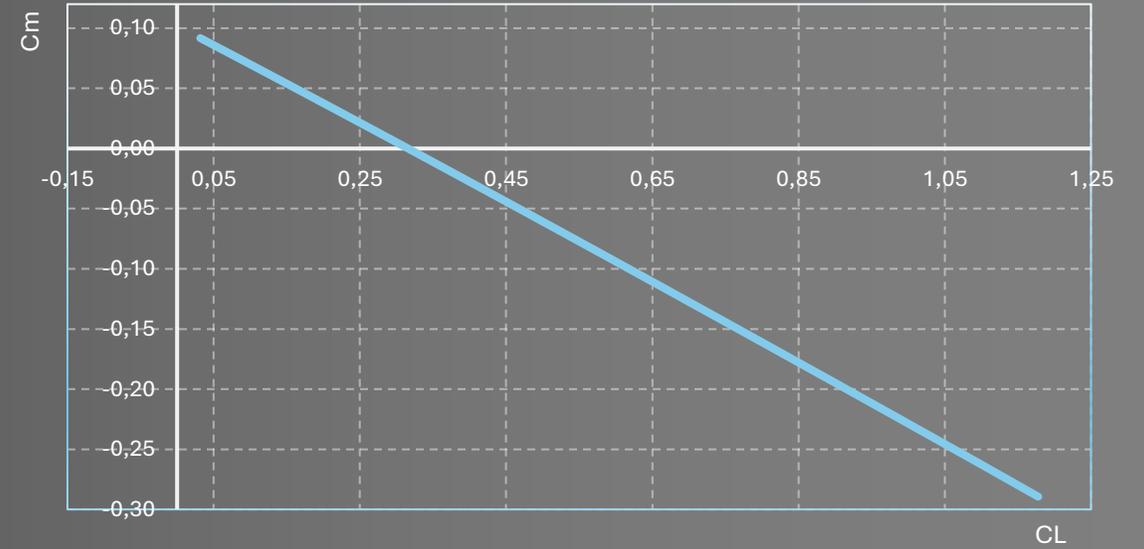
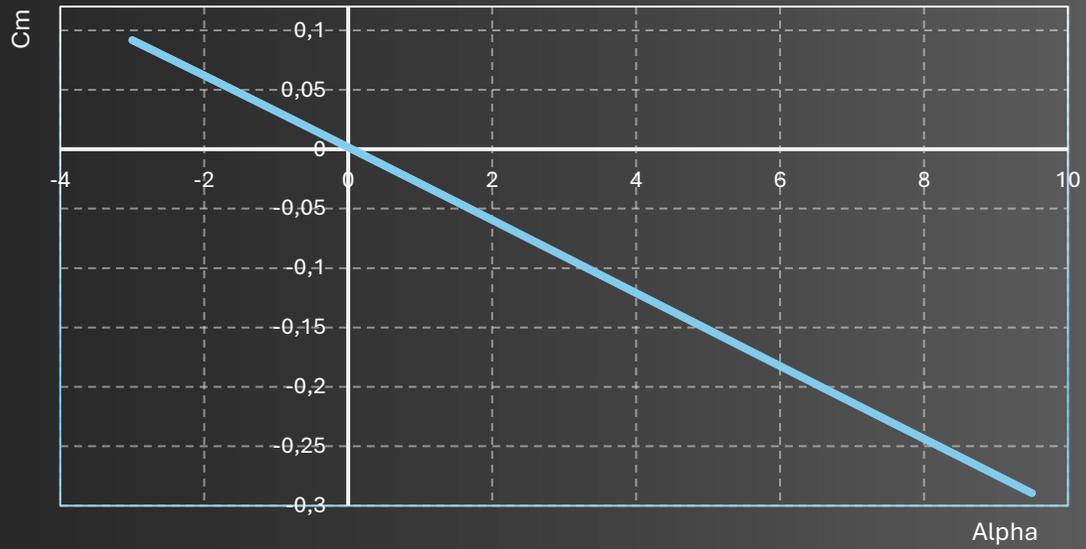
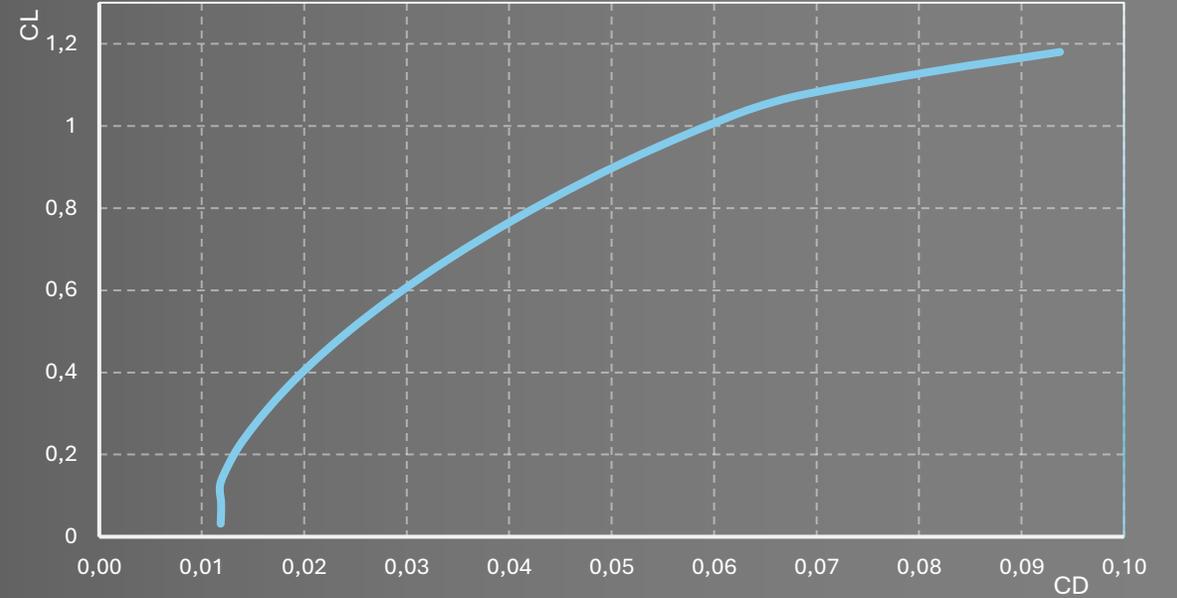
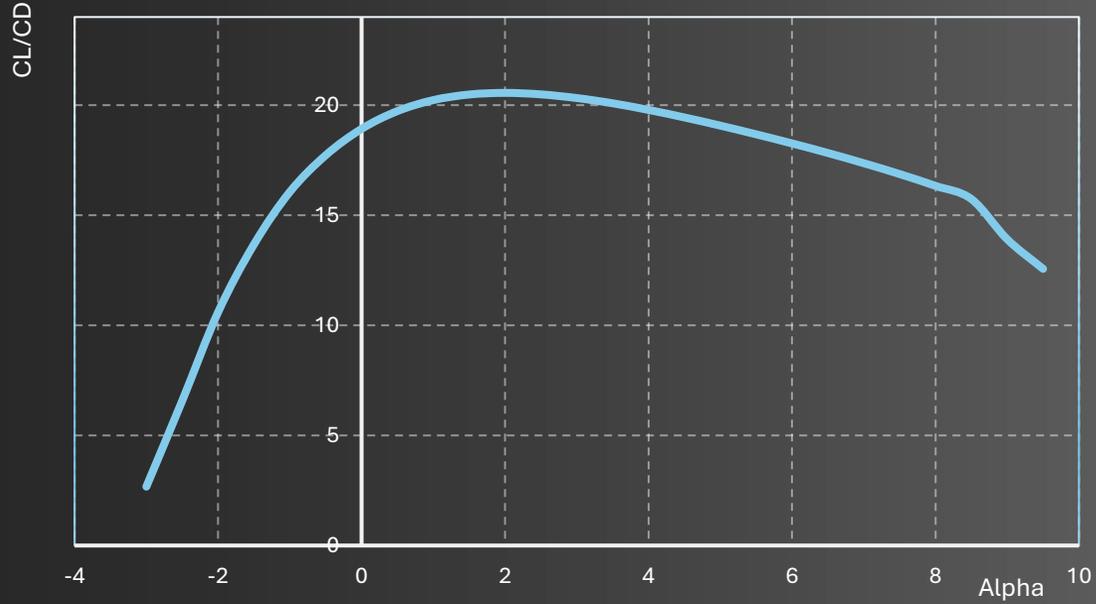
# AERODYNAMIC DESIGN

The geometry of the aircraft has been engineered to deliver high aerodynamic efficiency without compromising stability. Its airframe provides a balanced lift distribution and a clean, streamlined profile that effectively reduces drag. The design is based on the Selig S3021 airfoil. When the center of gravity is properly set, the aircraft maintains longitudinal stability and produces virtually no pitching moment at a zero-degree angle of attack. Peak aerodynamic efficiency occurs between  $0^\circ$  and  $3^\circ$  angle of attack, aligning with the aircraft's typical cruising conditions.



## CFD ANALYSIS

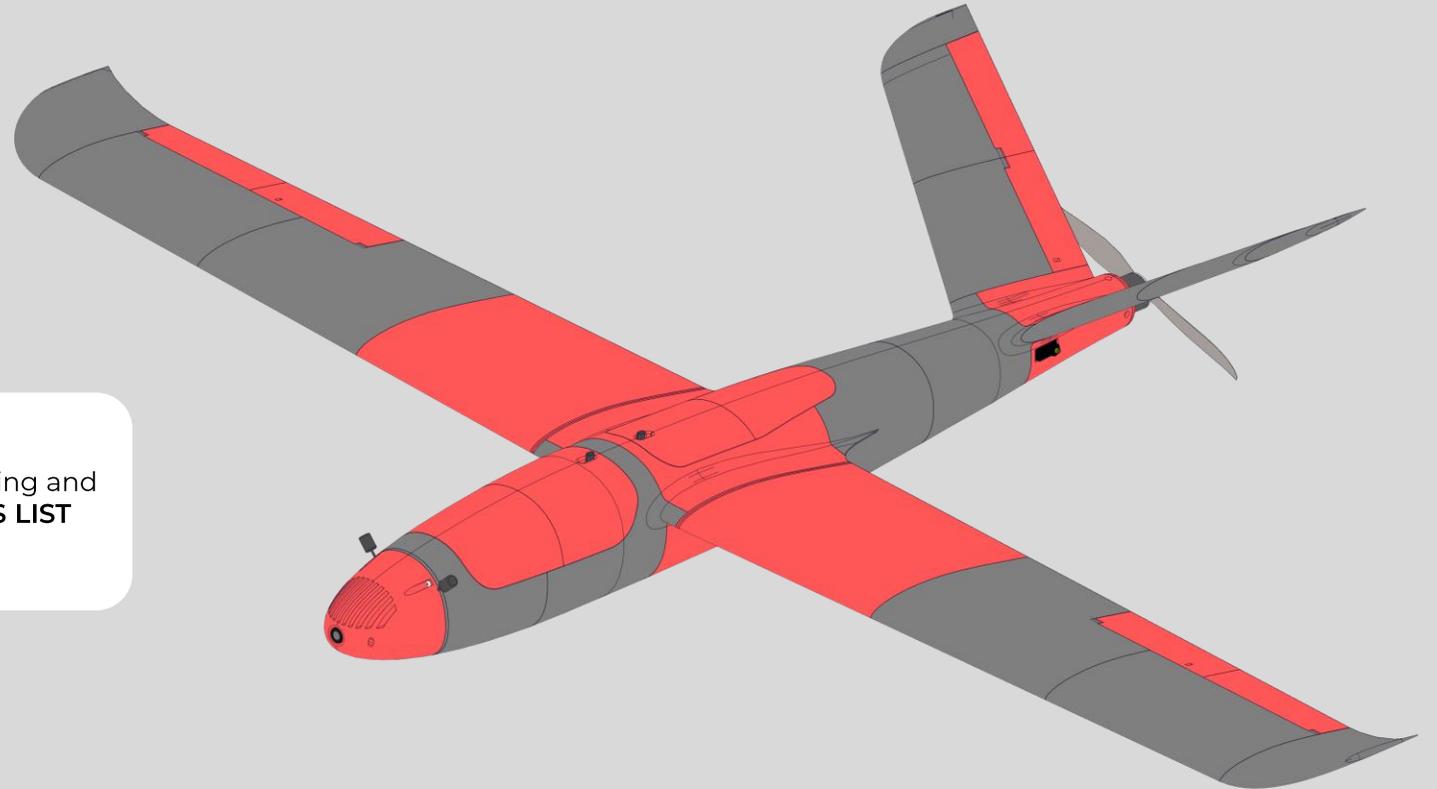
# CFD CHARACTERISTICS



# 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: 220 mm

Width: varies from 65 mm to 80 mm — the compartment narrows towards the nose of the fuselage.

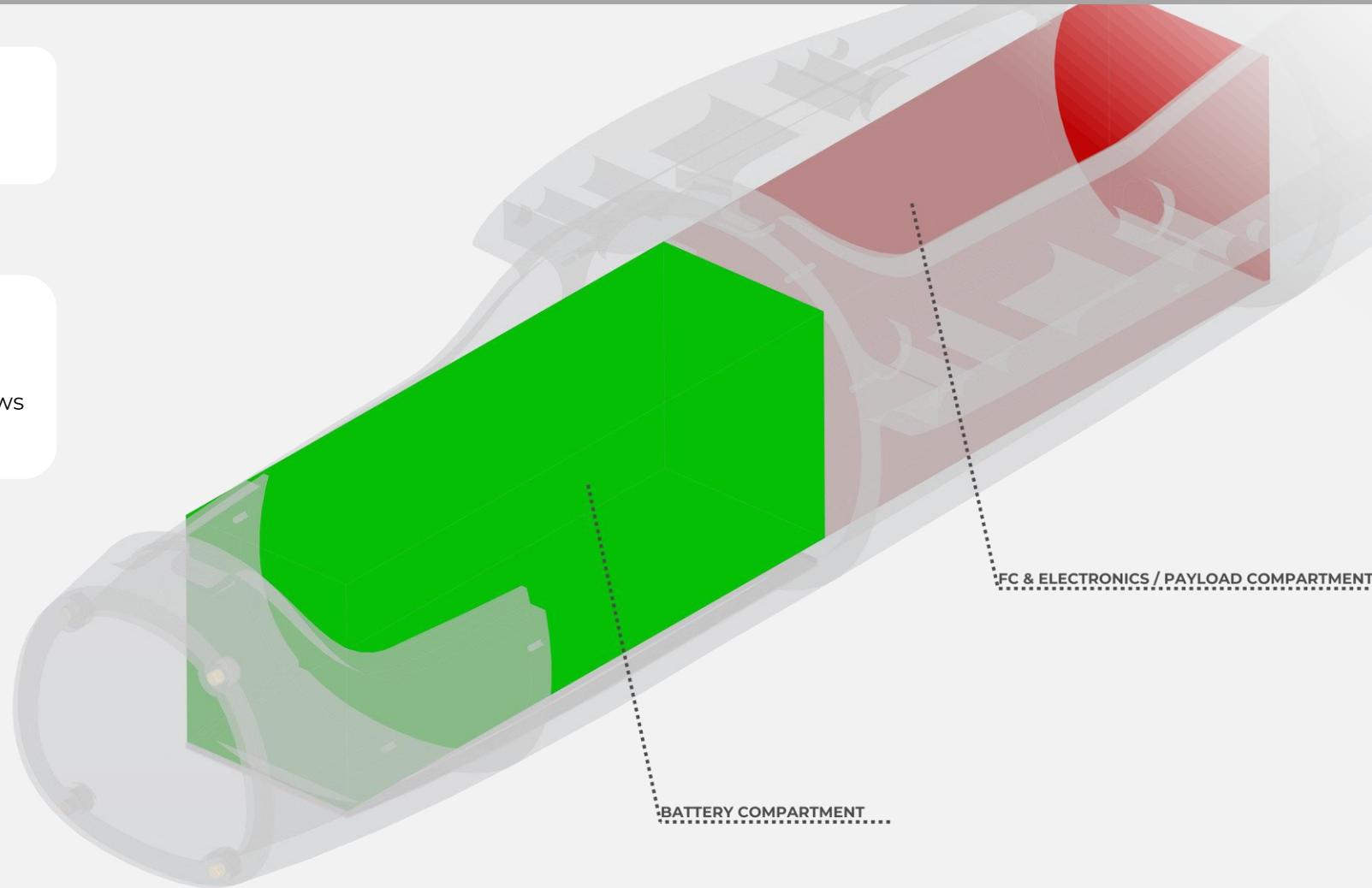
## **Electronics Compartment**

**(Flight Controller and Other Electronics / Payload):**

Height: 80 mm

Length: 205 mm

Width: 65 mm





## 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
Motors	28XX Motor e.g. BrotherHobby Avenger 2812 V5 910KV
Propeller	9-10 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	BIHeliS 35-60A
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
10x1000mm Carbon Tube (MAIN SPAR)	1
8x1000mm Carbon Tube (SECONDARY SPAR)	1
6x500mm Carbon Tube (WING SPAR)	2
3x500mm Carbon Tube (AILERON HINGE)	2
8x155mm Carbon Tube (V TAIL SPAR)	2
6x265mm Carbon Tube(V TAIL SPAR)	2
3x265mm Carbon Tube (RUDDER HINGE)	2
Thick CA Glue	1-2 Tubes
CA Activator	1
M3 Threaded Insert (Outer Ø5mm, height 5mm)	15

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

# POWERTRAIN SELECTION



There are multiple options for selecting the powertrain configuration, including the motor, propeller, and battery. Recommended motors are in the 28XX class, with propellers ranging from 9 to 10 inches, and batteries rated from 4S to 6S. The motor mount is available in two variants with bolt spacing of 19×19 mm and 16×19 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 BrotherHobby Avenger 2812 V5 910KV, which performs optimally with 9453 tri-blade or two-blade propellers and a 6S battery. According to the manufacturer's specifications, this setup delivers up to approximately 3800 g of thrust per motor at a maximum power of 1280W with a current draw of around 50A. This requires using an ESC rated at 60A (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 the 28XX class are capable of delivering over 1200W 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

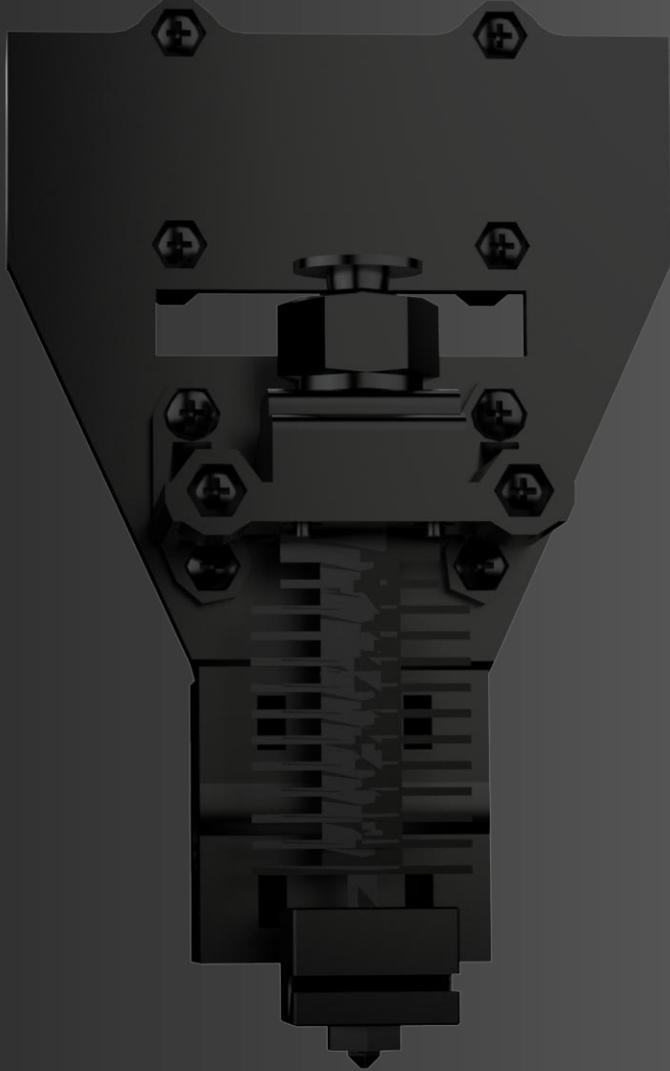
## FLEXIBLE OPERATION WITH 4S

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 10x6 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 35–40A 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 2000 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 10x6 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 BrotherHobby 2812 V5 910KV, 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 GUIDELINES

- 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.

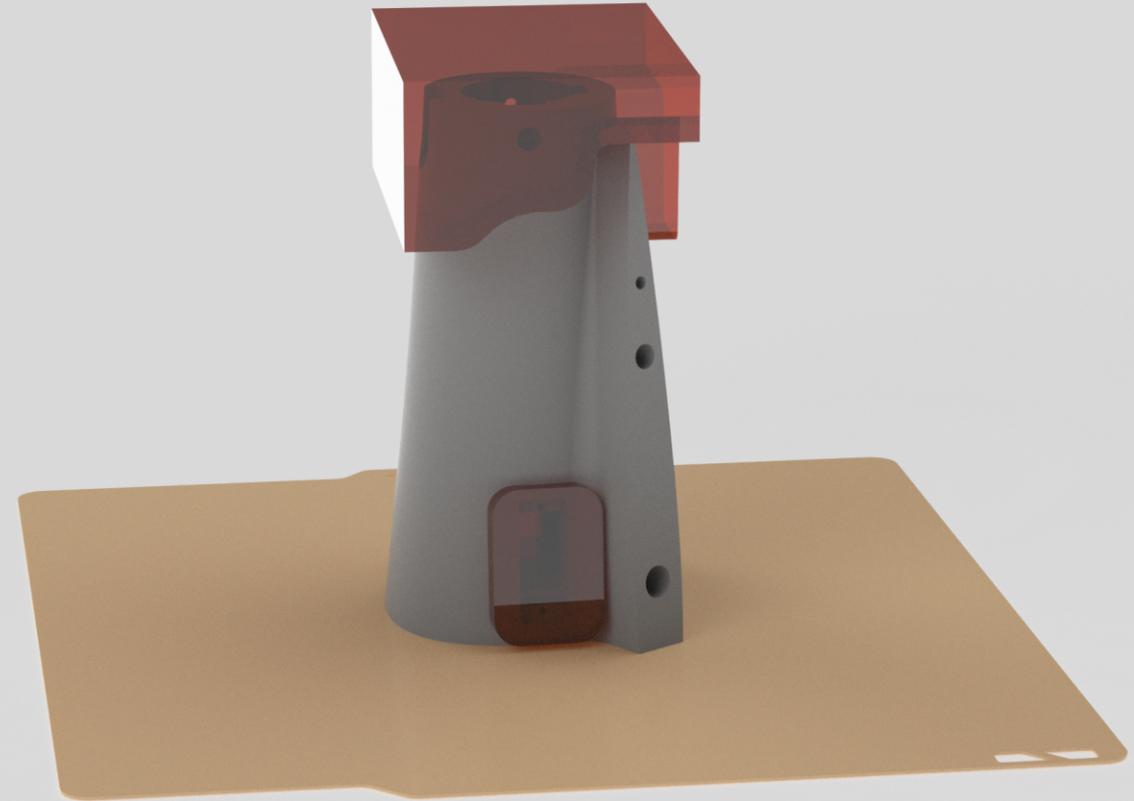
To facilitate consistency and knowledge sharing across different hardware configurations, an online user community is maintained via Discord. This platform serves as a technical resource where users can exchange verified print profiles, discuss material-specific settings, share build results, and troubleshoot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

# MODIFIERS

## USING FILES WITH MODIFIERS

The package includes FUS 6 MODIFIER file in STEP format, which contain an additional solid in the motor mount and servos 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
FUS 6	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 / NOSE CLEAN	LW-PLA/ASA

PART	MATERIAL
WING BOLT WASHER	PC / PETG
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 19x19 / 19x16	PC / PETG

# PARTS LIST - WINGS

PART	MATERIAL
WING 1 L / R	LW-PLA/ASA
WING 2 L / R	LW-PLA/ASA
WING 3 L / R	LW-PLA/ASA
WING TIP L / R	LW-PLA/ASA
AIL 1 L / R	LW-PLA/ASA
AIL 2 L / R	LW-PLA/ASA

PART	MATERIAL
WING BAY PLATE L / R	PC / PETG
SERVO COVER L / R	PC / PETG
WING ROOT L / R	PC / PETG
WING KNOB	PC / PETG
WING BOLT	PC / PETG

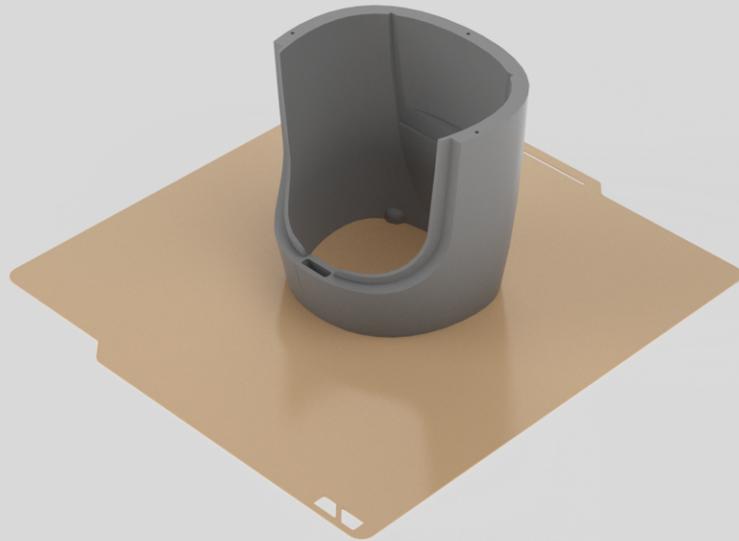
# PARTS LIST - TAIL

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

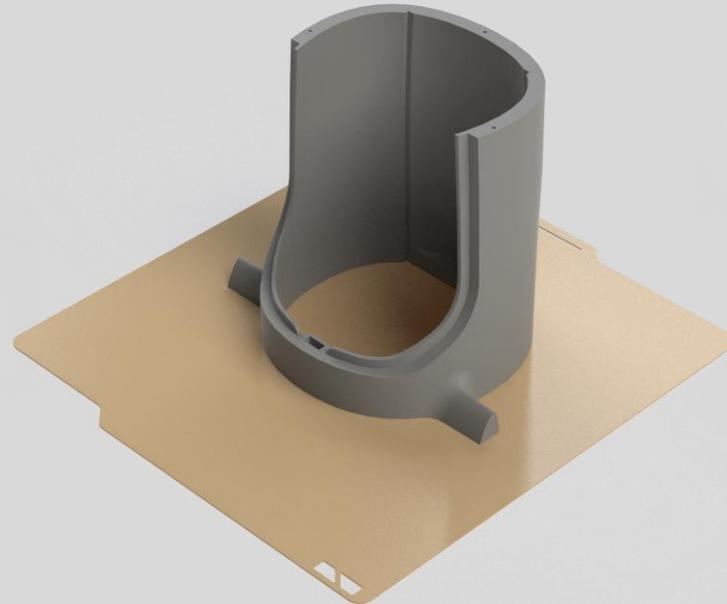
PART	PART
FUS 3	WING ROOT L
FUS6 MODIFIER	FUS ROOT L
WING 1 L	RUDDER L
WINGTIP L	WING BAY PLATE L
NOSE / NOSE CLEAN / NOSE CUSTOM	SERVO COVER L
HATCH FRONT	BATTERY PAD
HATCH MIDDLE	MOTOR MOUNT 19x19mm / 19x16mm
AILERON L	

# PARTS ORIENTATION



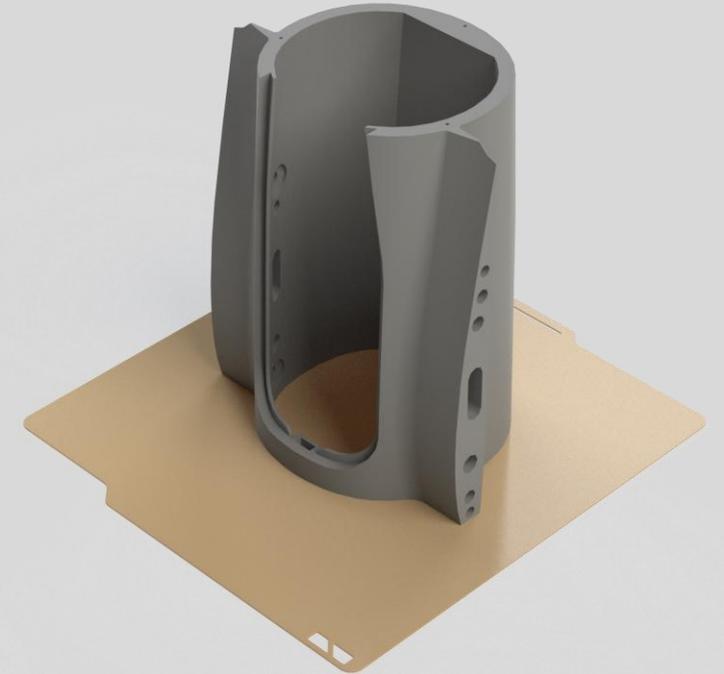
**FUS1**

3%-6% GYROID INFILL



**FUS2**

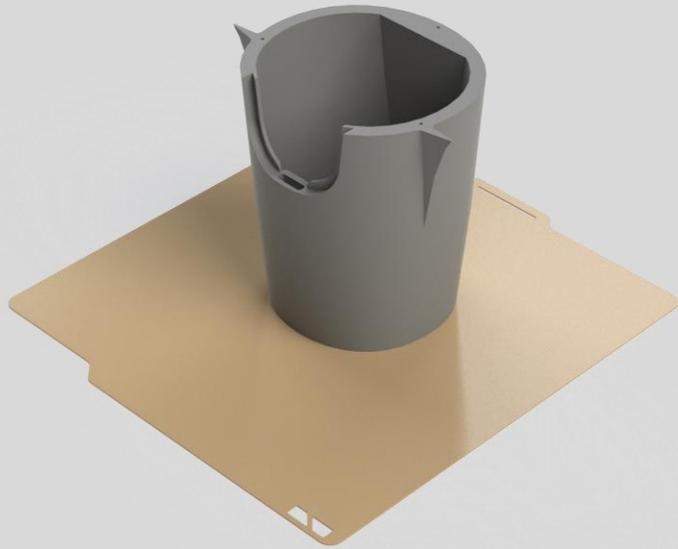
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**FUS3**

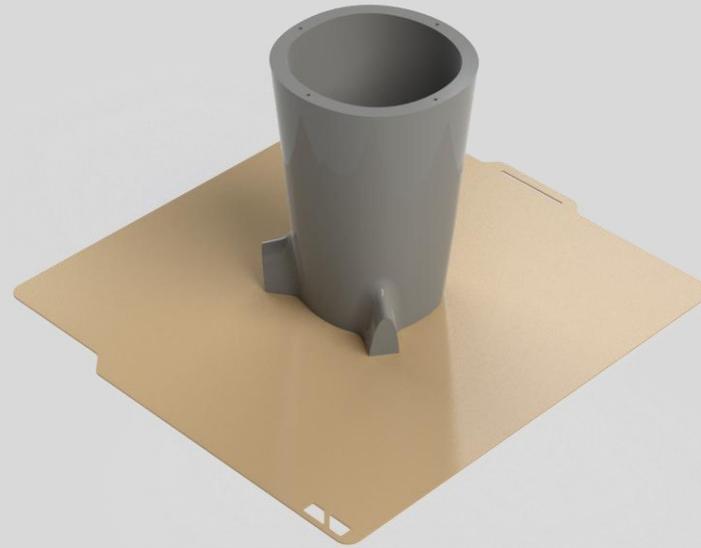
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# PARTS ORIENTATION



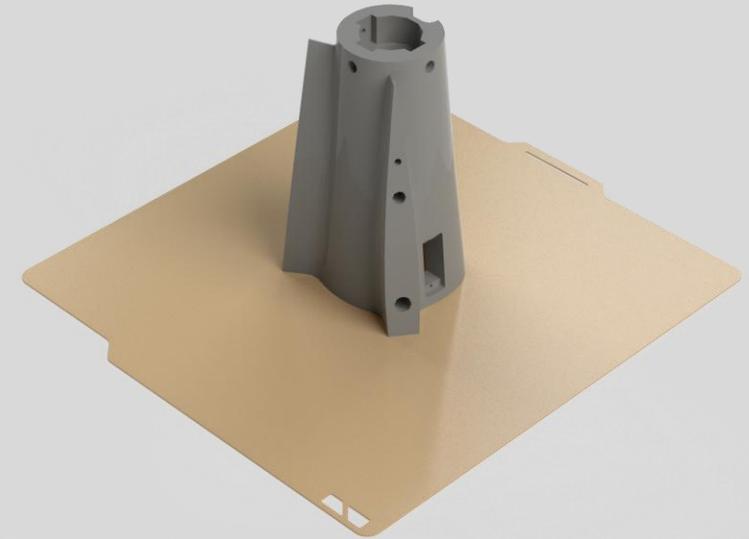
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**FUS5**

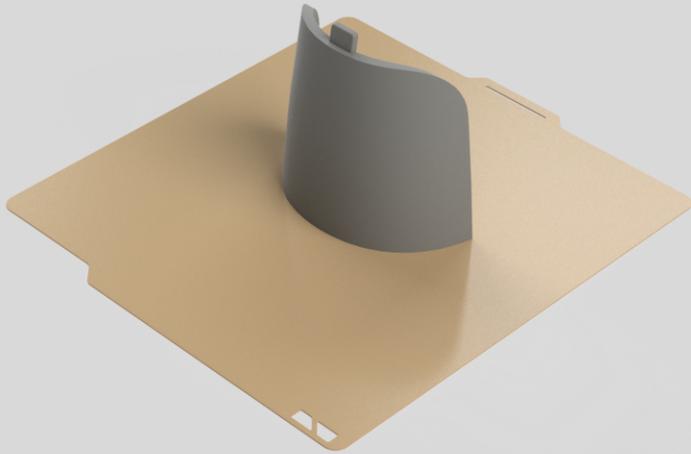
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**FUS6**

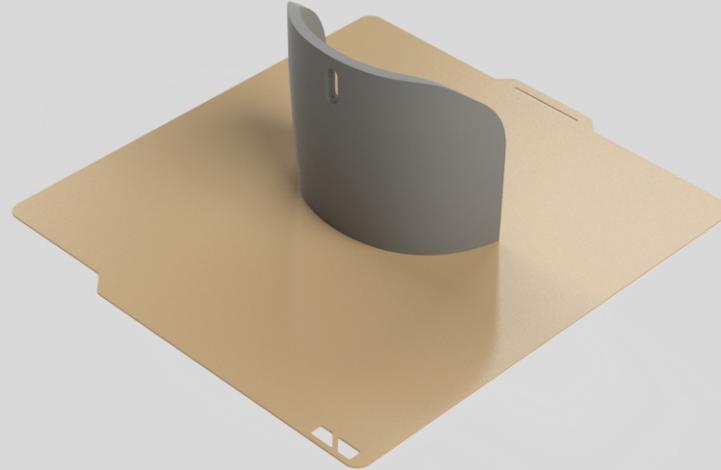
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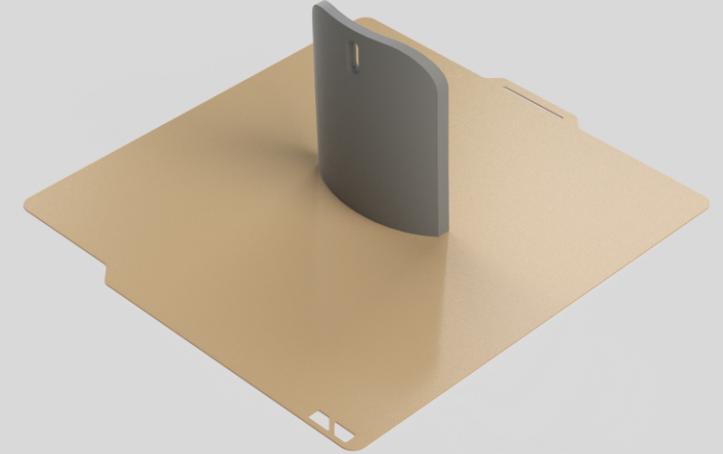
**HATCH FRONT1**

3%-6% GYROID INFILL



**HATCH FRONT2**

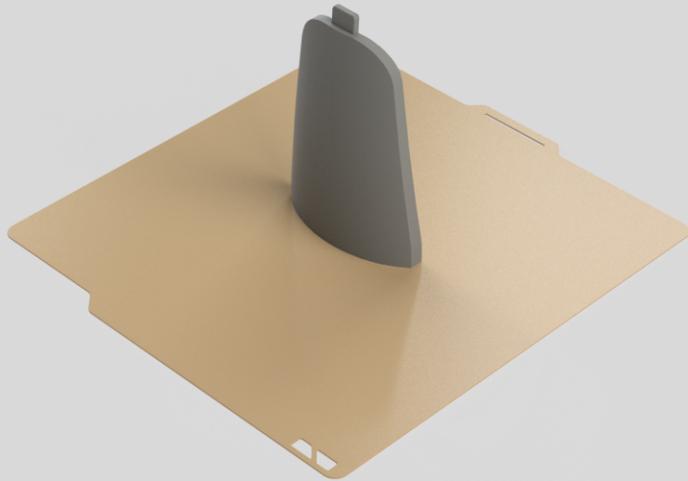
3%-6% GYROID INFILL



**HATCH MIDDLE1**

3%-6% GYROID INFILL

# PARTS ORIENTATION



**HATCH MIDDLE2**

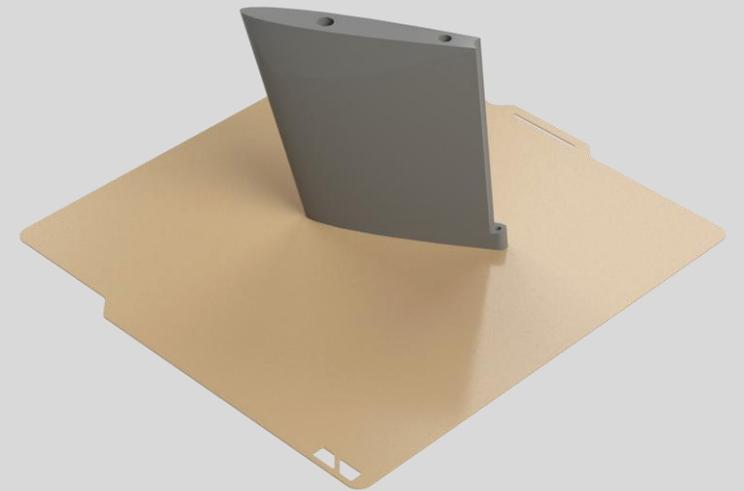
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**NOSE**

2 WALLS

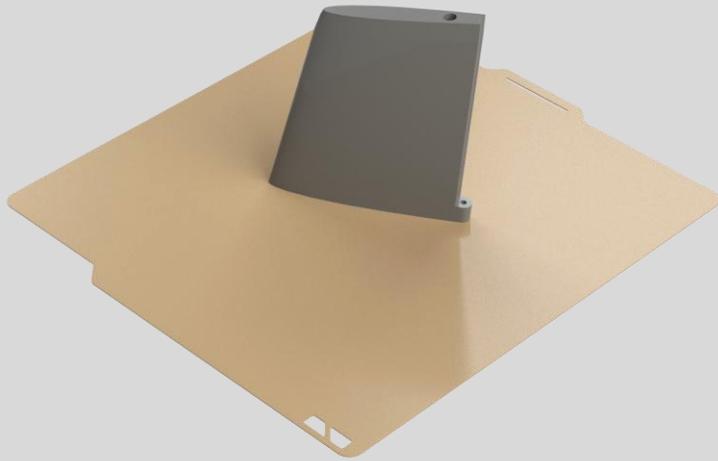
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**VTAIL1**

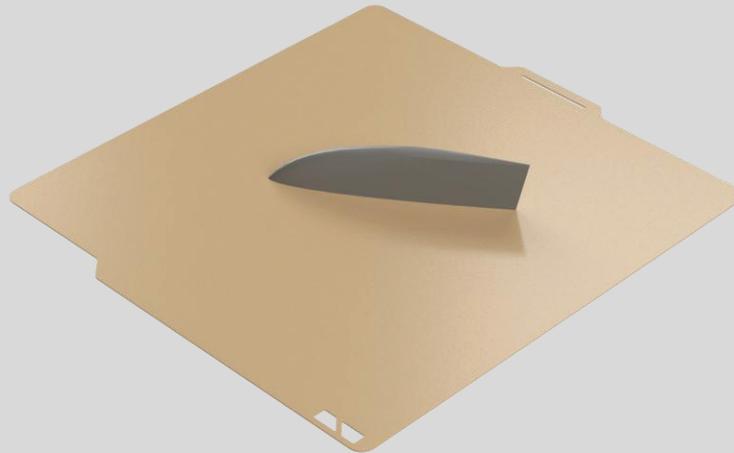
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# PARTS ORIENTATION



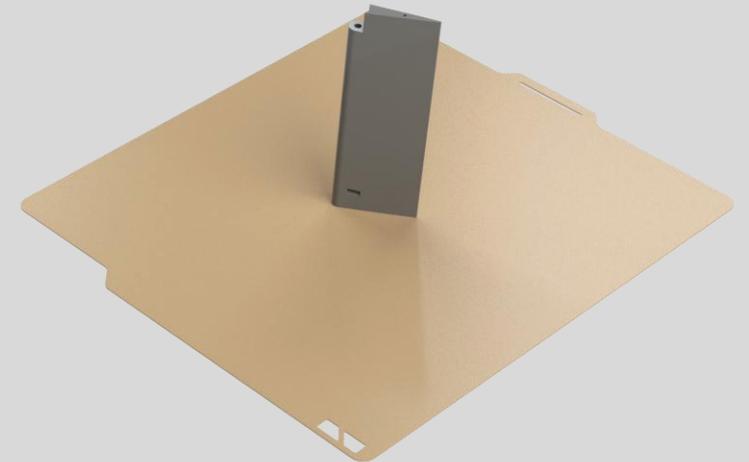
**VTAIL2**

3%-6% GYROID INFILL



**VTAIL3**

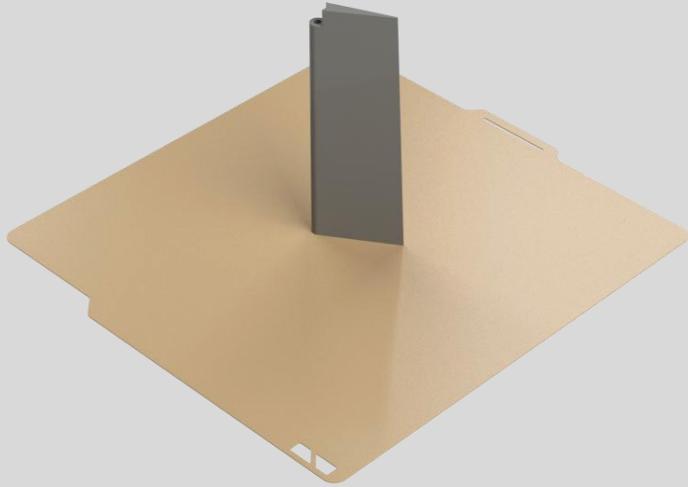
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**RUDDER1**

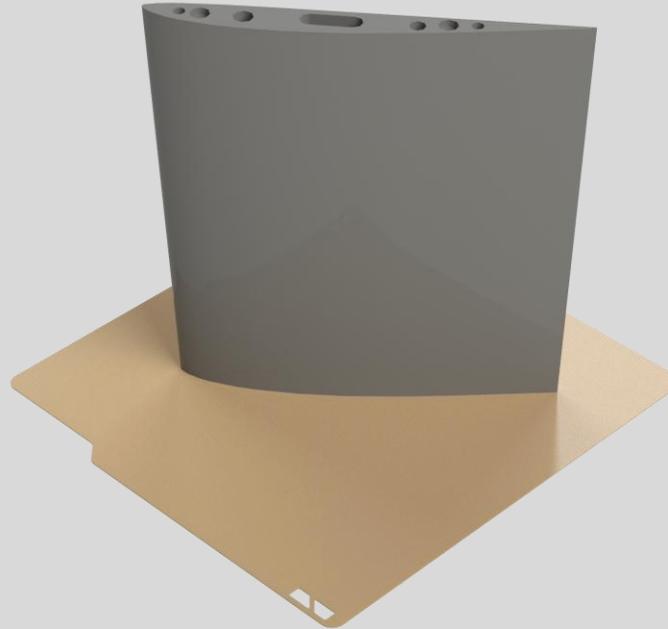
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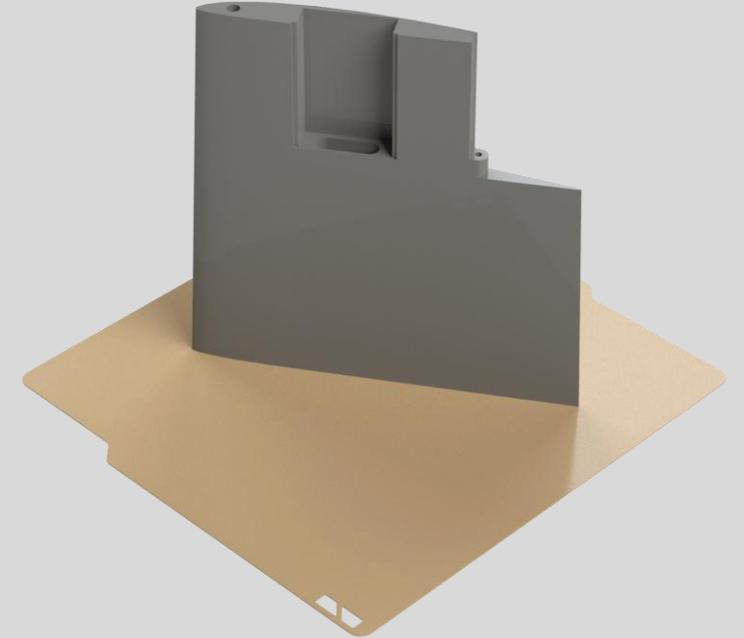
**RUDDER2**

3%-6% GYROID INFILL



**WING1**

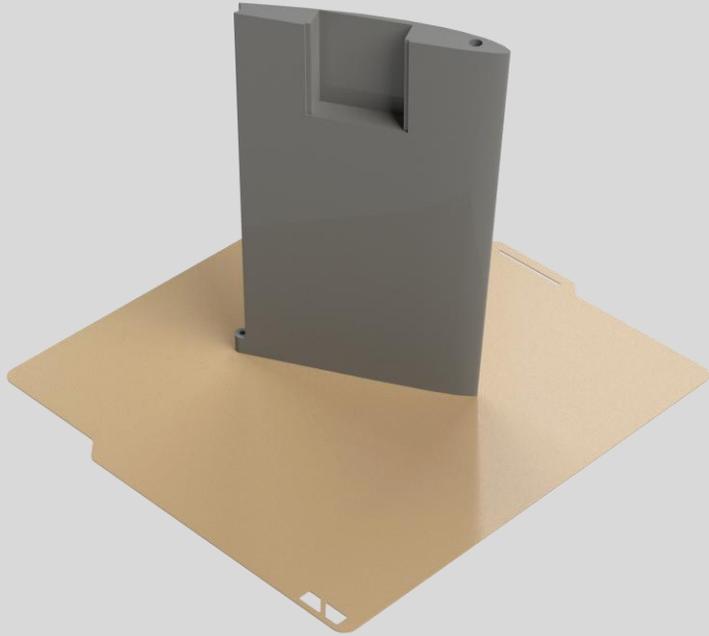
2%-4% LATERAL LATTICE  
INFILL



**WING 2**

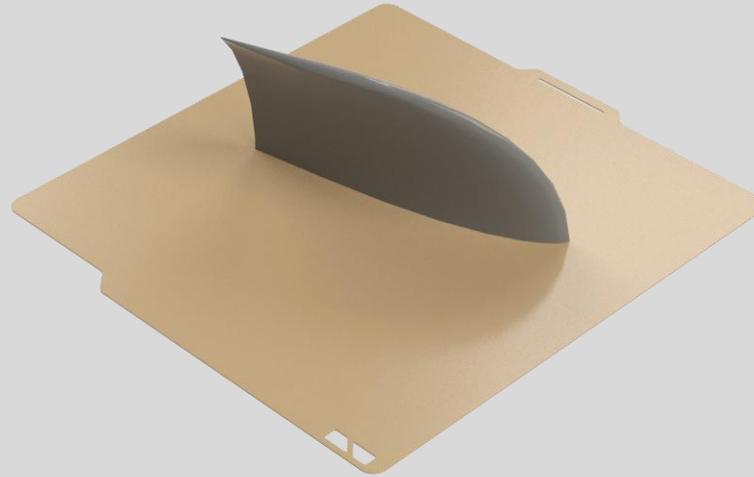
2%-4% LATERAL LATTICE  
INFILL

# PARTS ORIENTATION



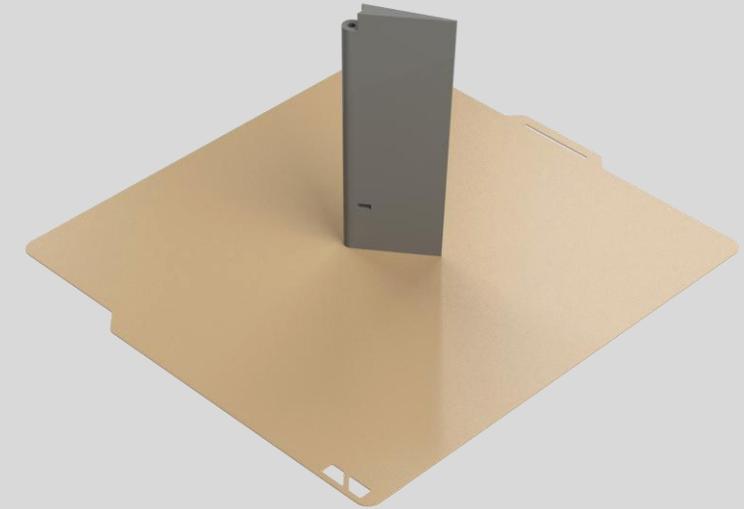
**WING3**

2%-4% LATERAL LATTICE  
INFILL



**WINGTIP**

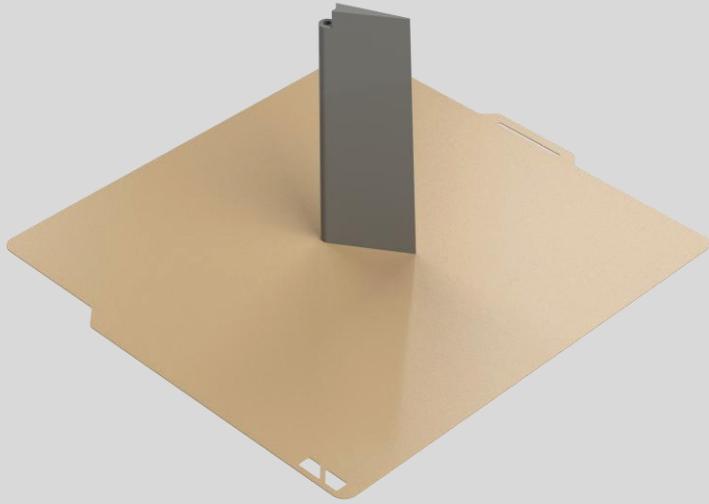
2%-4% LATERAL LATTICE  
INFILL



**AIL1**

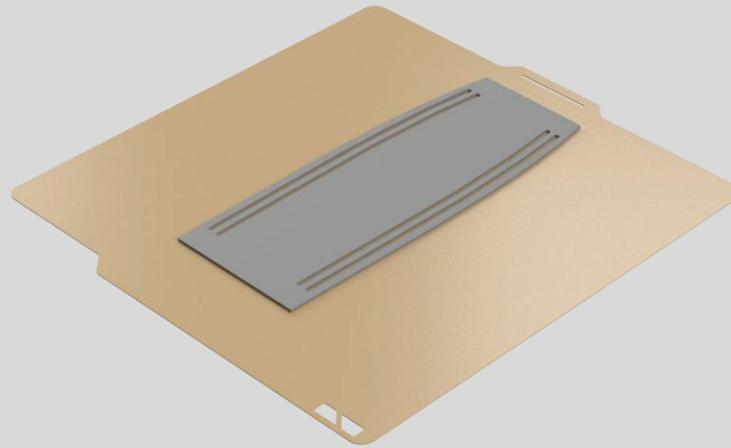
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# PARTS ORIENTATION



**AIL2**

3%-6% GYROID INFILL



**BATTERYPAD**

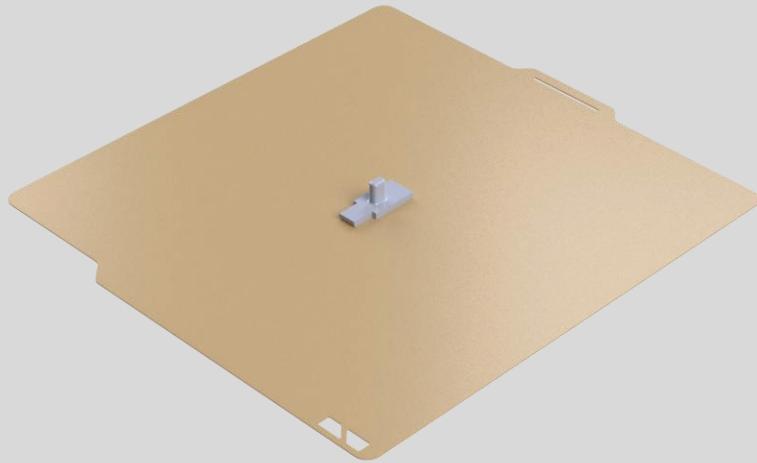
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**WING BOLT WASHER**

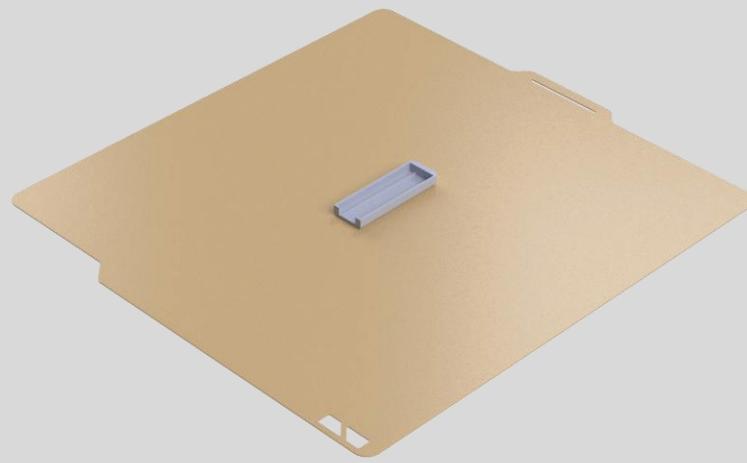
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# PARTS ORIENTATION



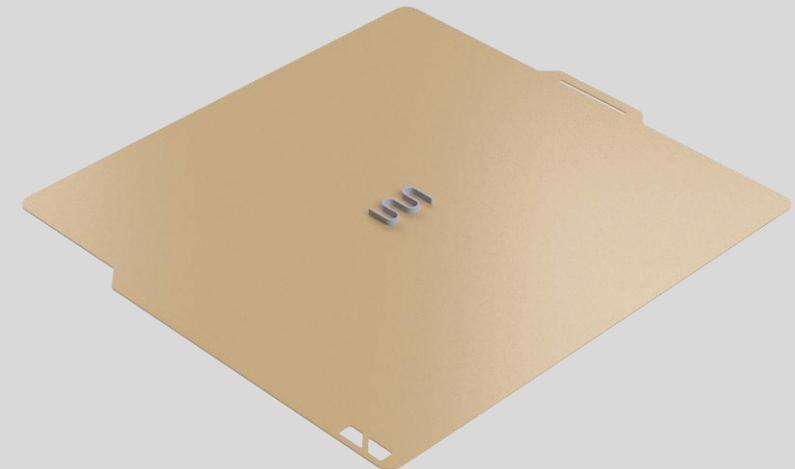
**LOCK1**

20%-100% GRID INFILL



**LOCK2**

20%-100% GRID INFILL



**LOCK3**

20%-100% GRID INFILL

# PARTS ORIENTATION



**FRONT REINFORCEMENT**

20%-100% GRID INFILL



**FUS ROOT**

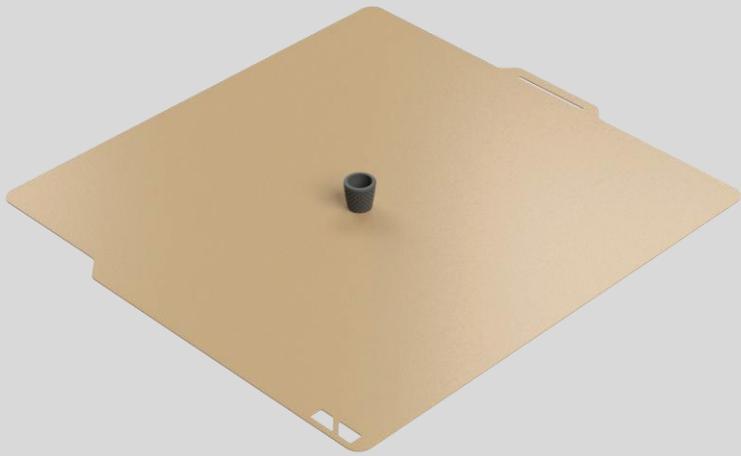
20%-100% GRID INFILL



**WING ROOT**

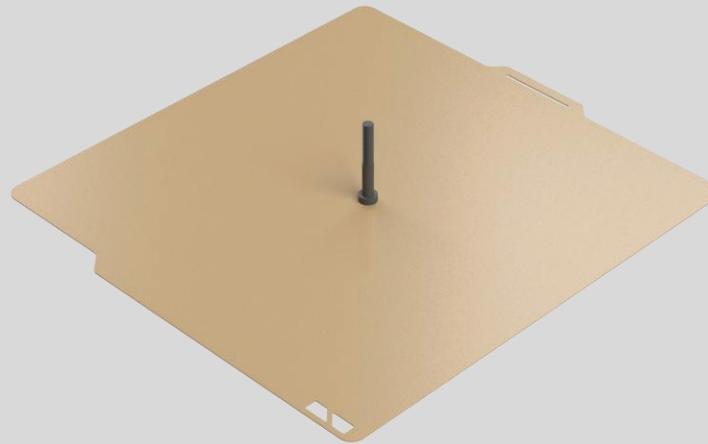
20%-100% GRID INFILL

# PARTS ORIENTATION



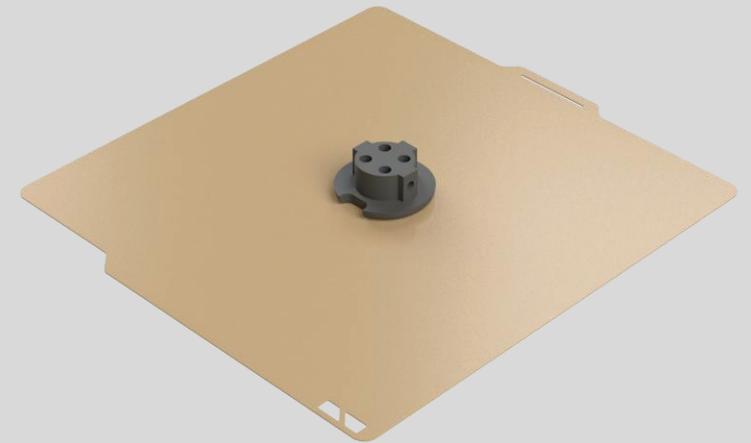
**WING KNOB**

20%-100% GRID INFILL



**WING BOLT**

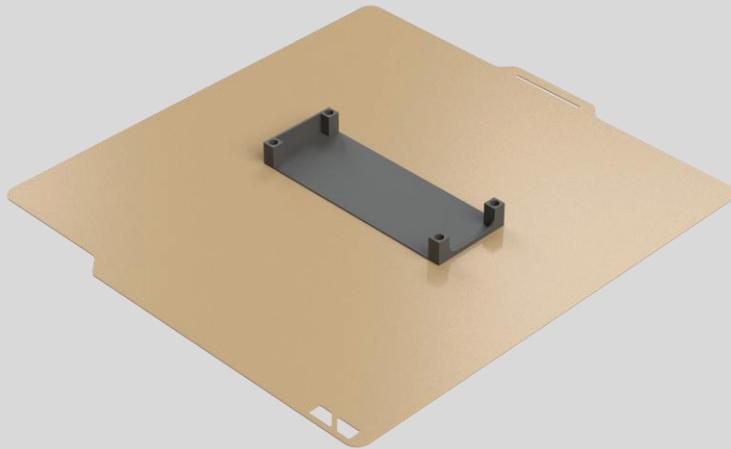
20%-100% GRID INFILL



**MOTOR MOUNT**

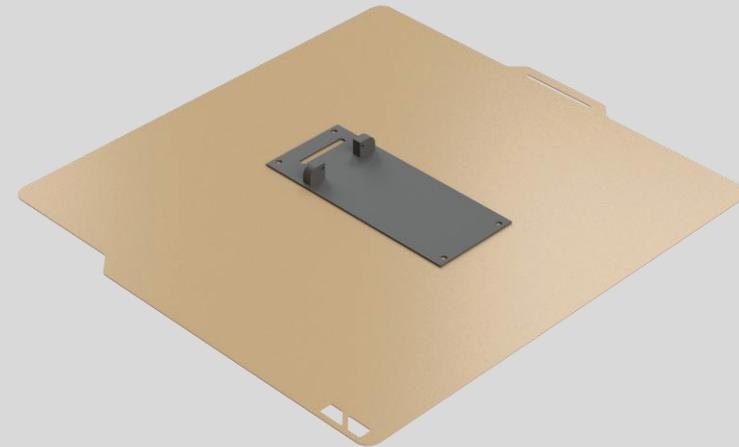
20%-100% GRID INFILL

# PARTS ORIENTATION



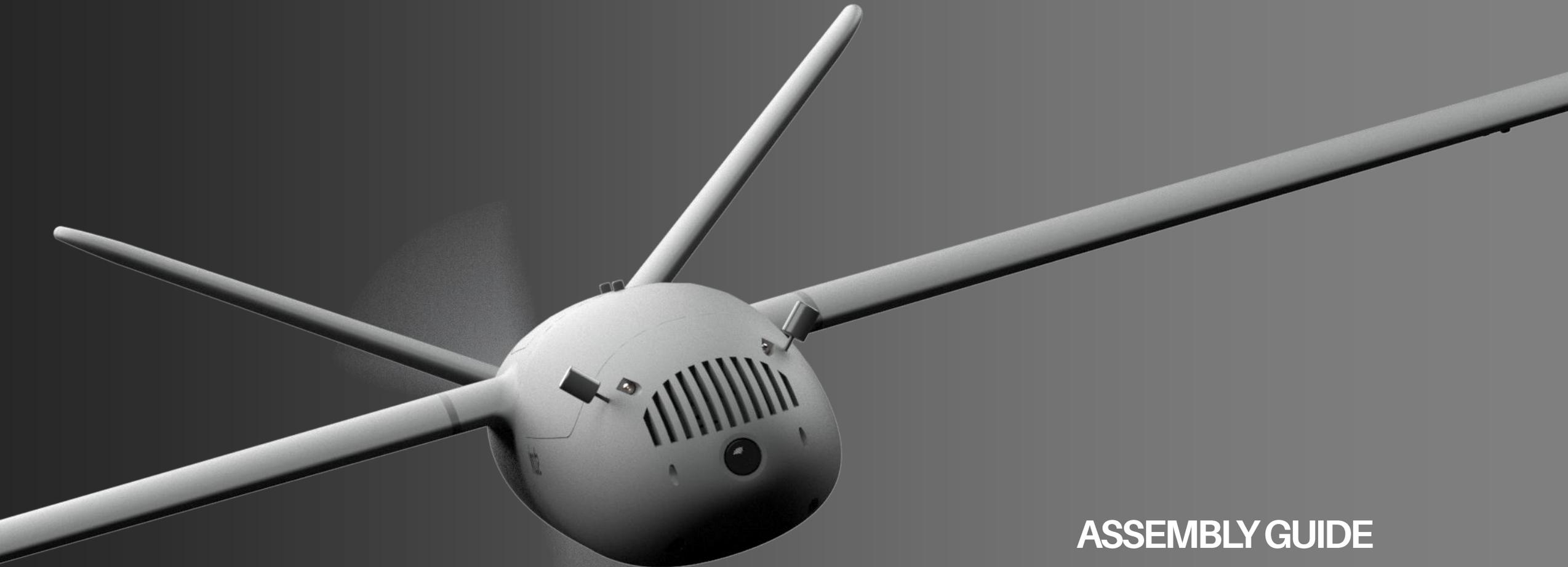
**WINGBAYPLATE**

20%-100% GRID INFILL



**SERVO COVER**

20%-100% GRID INFILL



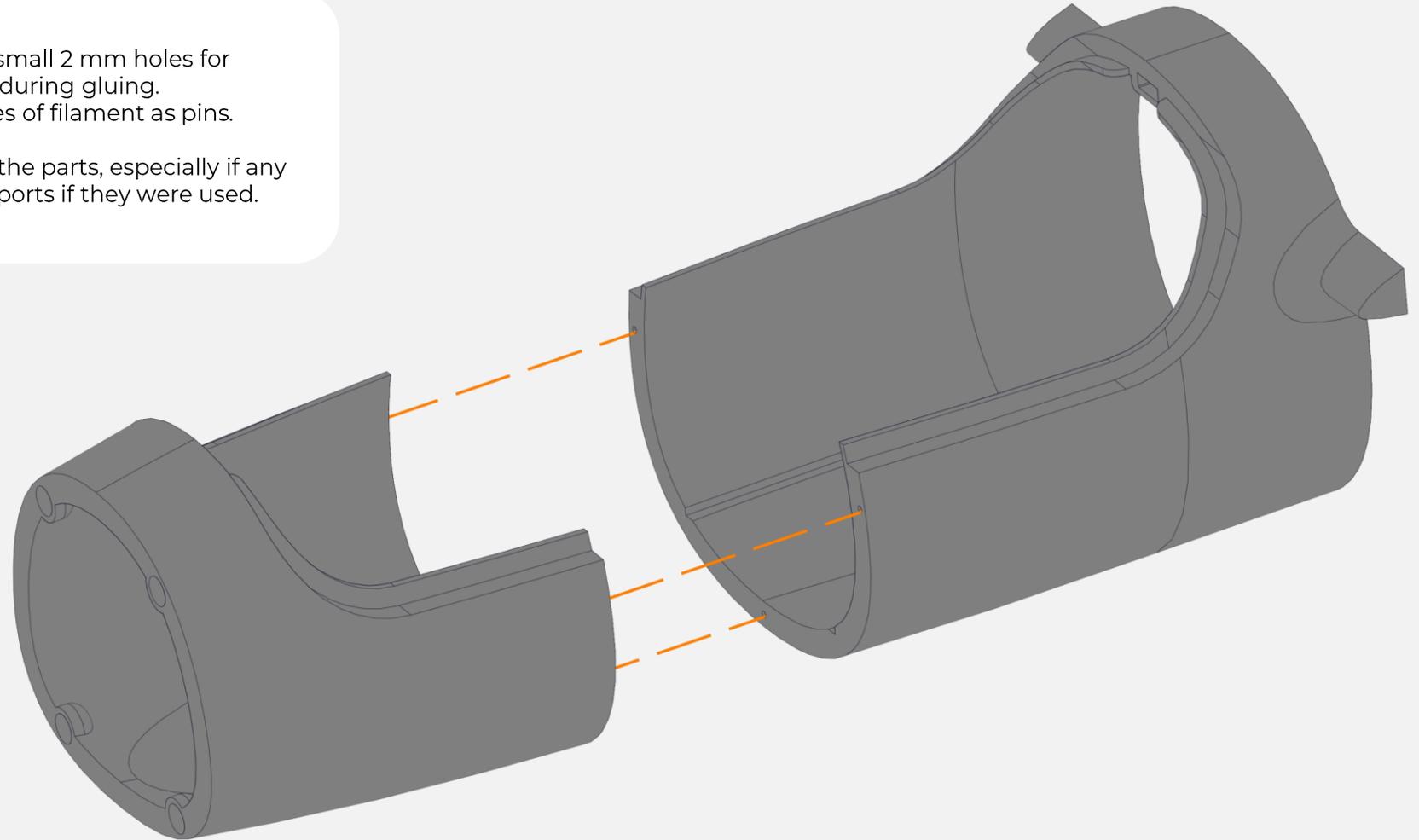
## ASSEMBLY GUIDE

# 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.

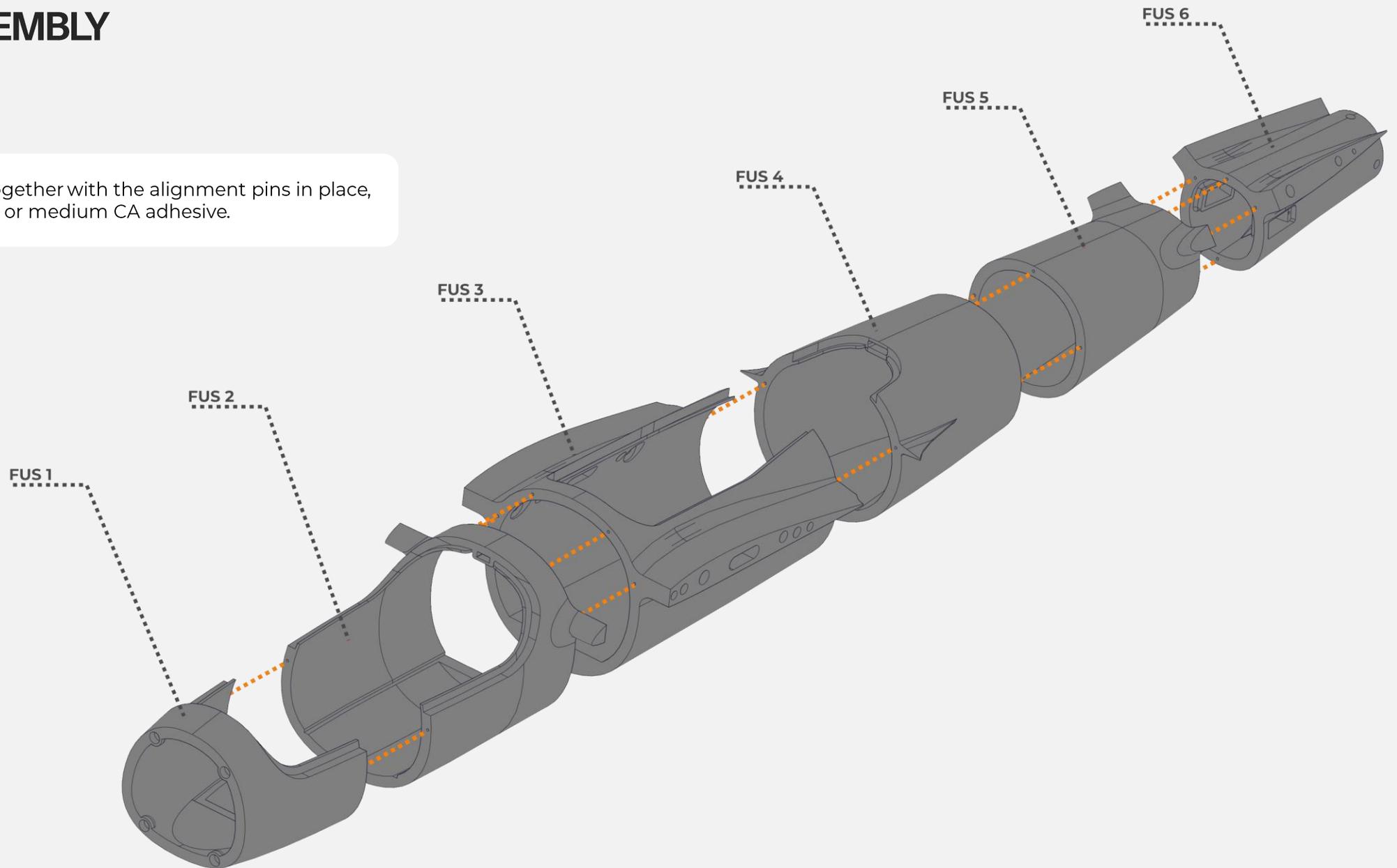


# FUSELAGE ASSEMBLY

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



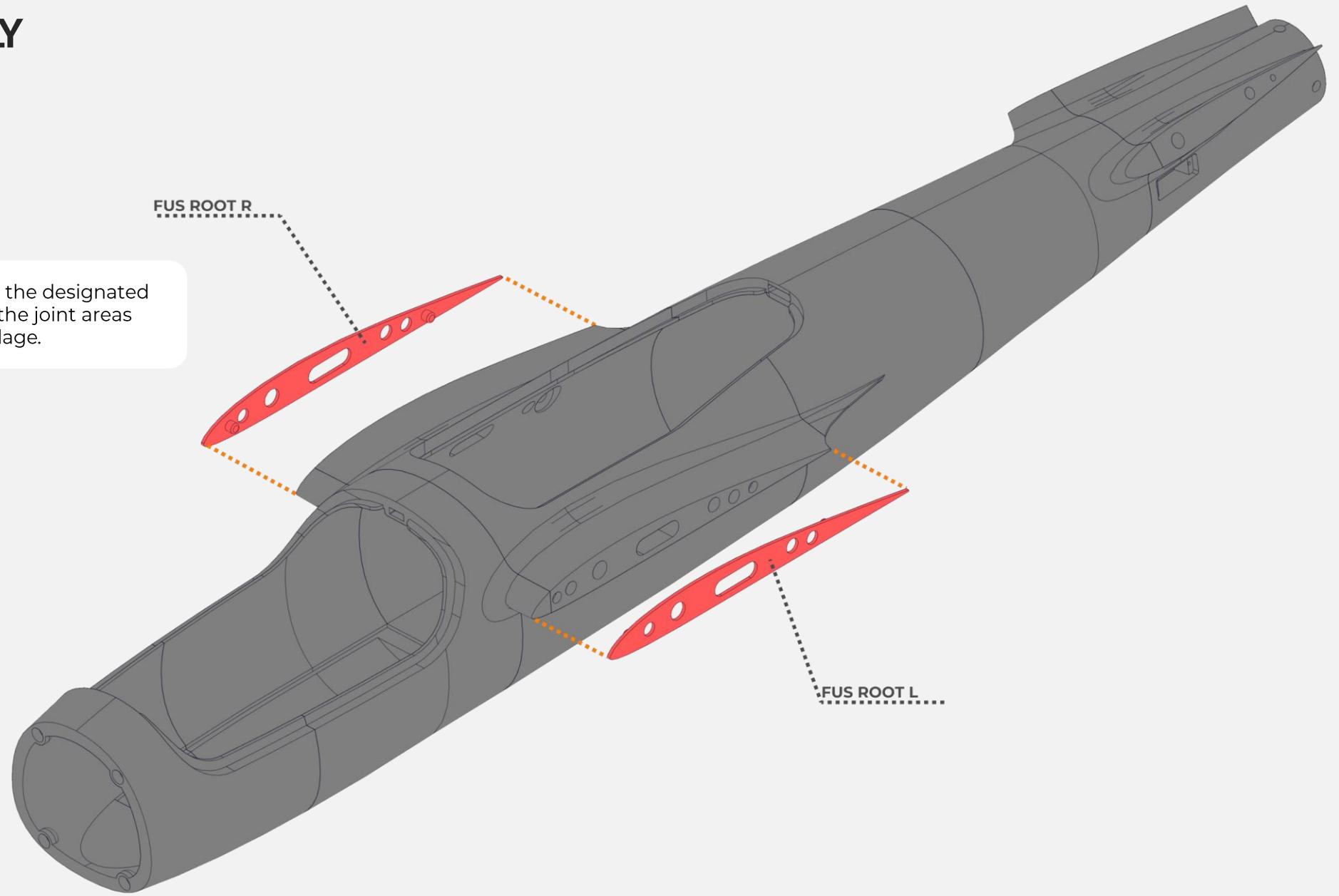
CA GLUE



# 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

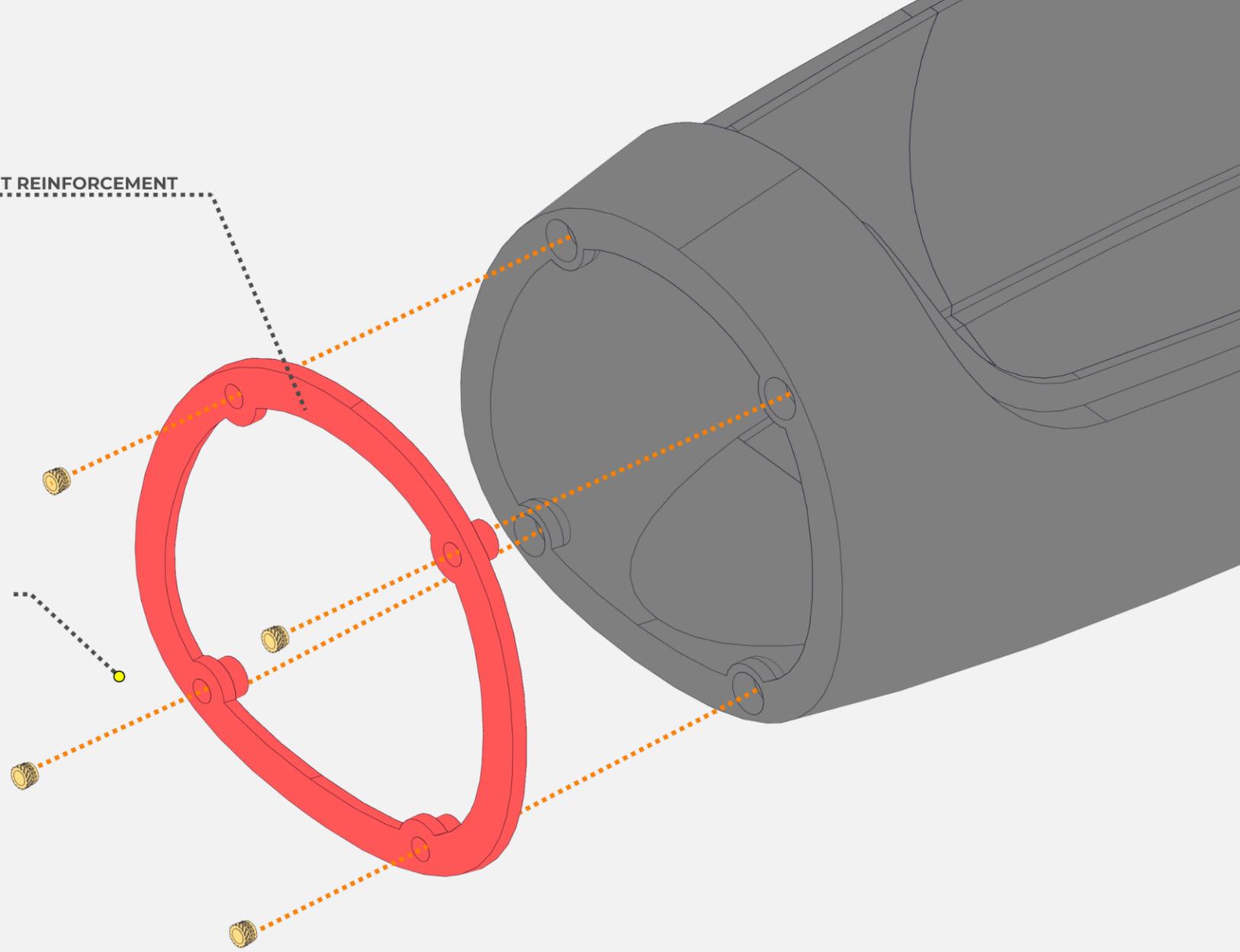
Prepare the FRONT REINFORCEMENT. Press M3 THREADED INSERTS into the designated holes, preferably using a slightly heated soldering iron. Once prepared, glue this part onto the front section of the fuselage. This component reinforces the connection between the nose and the fuselage, where the modular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



CA GLUE

M3 THREADED INSERTS

FRONT REINFORCEMENT

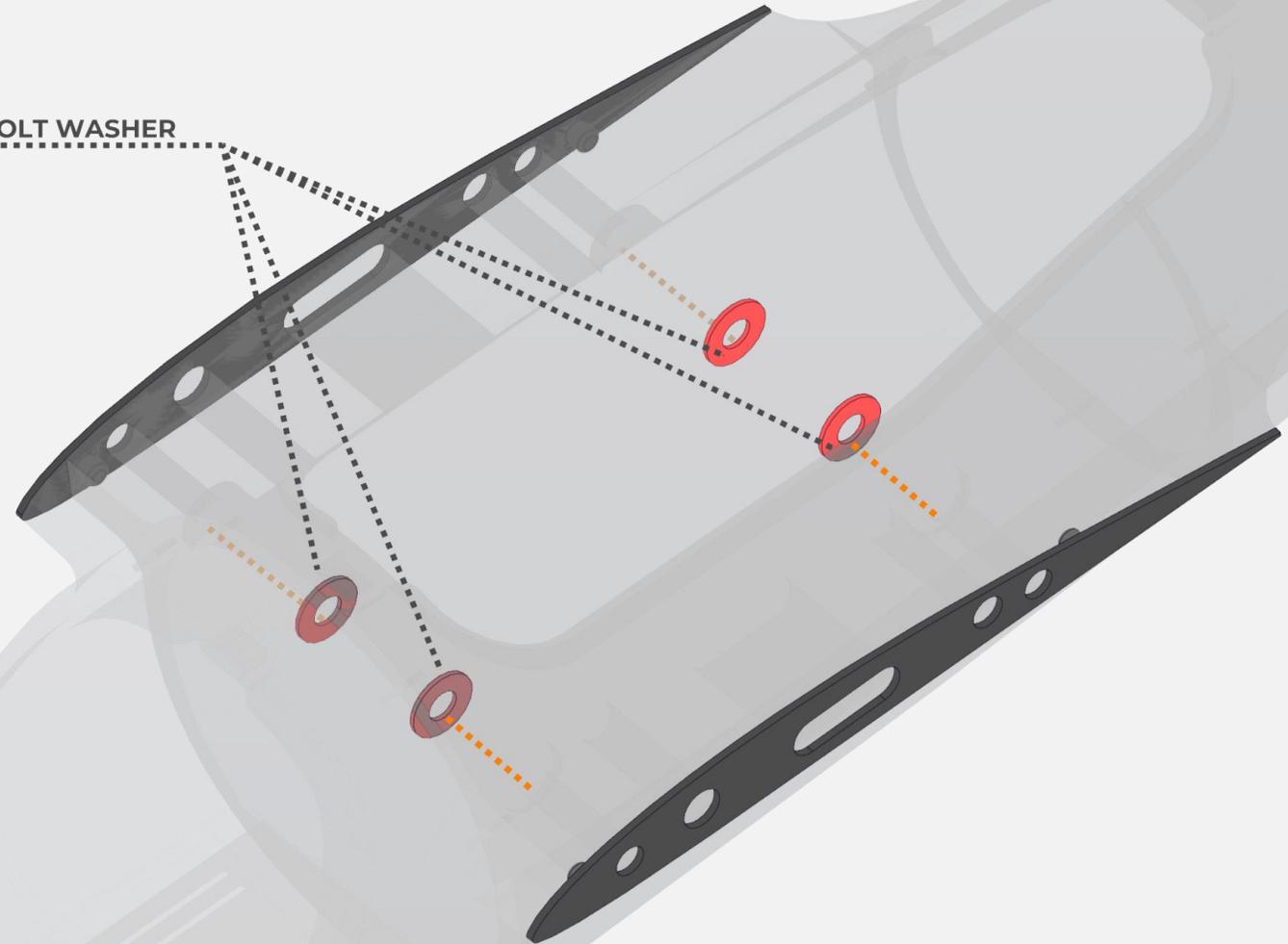


# FUSELAGE ASSEMBLY

WING BOLT WASHER

Take the WING BOLT WASHERS and glue them into the designated spots inside the fuselage. They serve as reinforcement for the knobs that will be used to attach the wings to the fuselage.

 CA GLUE



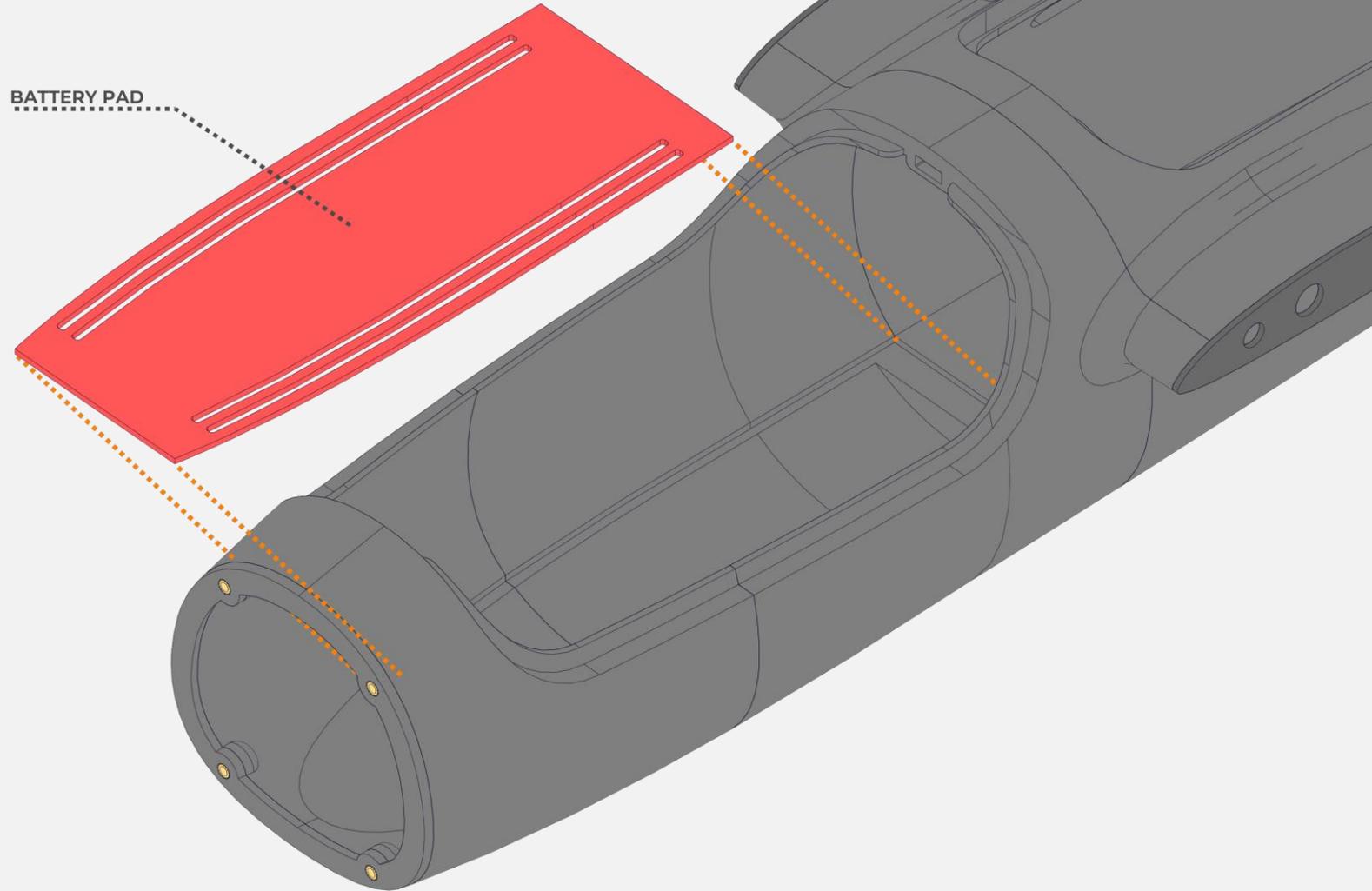
# FUSELAGE ASSEMBLY

Prepare the BATTERY PAD. This part serves as the battery mounting base. The designed holes can be used to route velco 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

BATTERY PAD

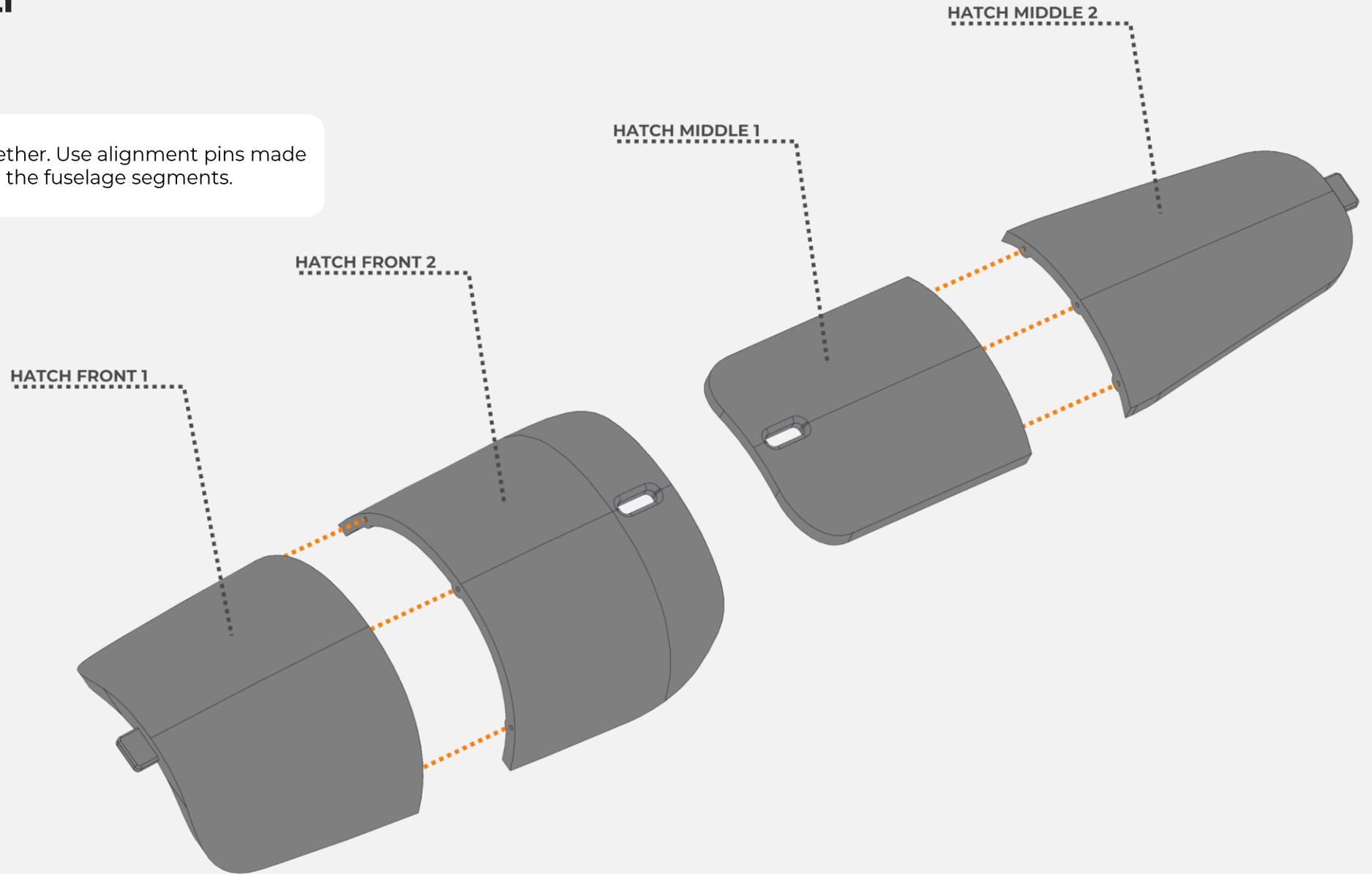


# FUSELAGE ASSEMBLY

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

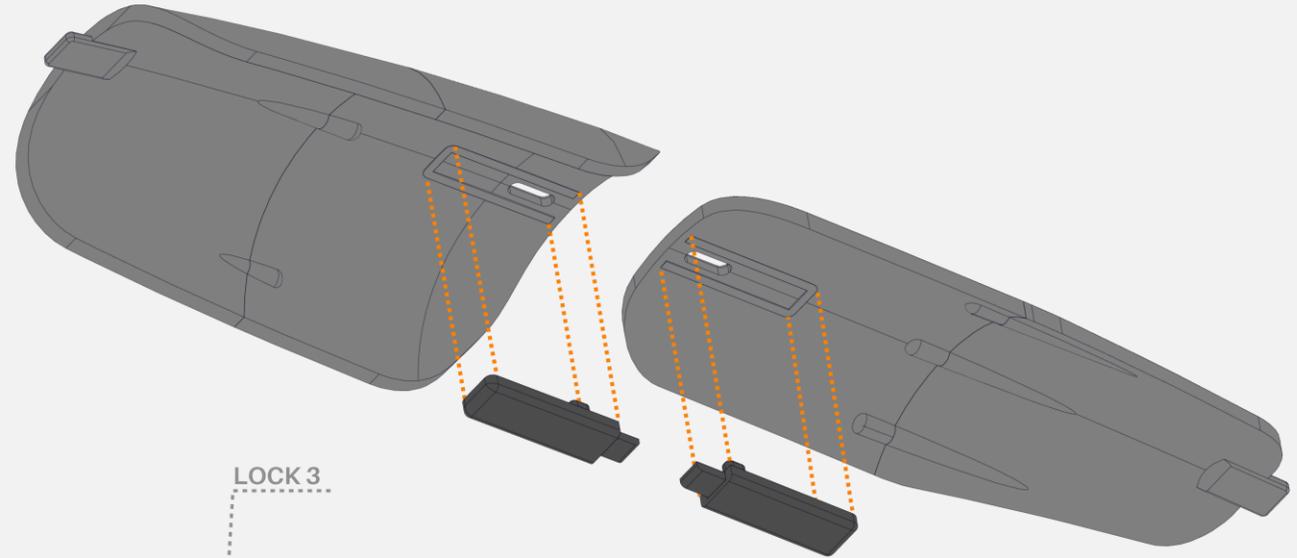
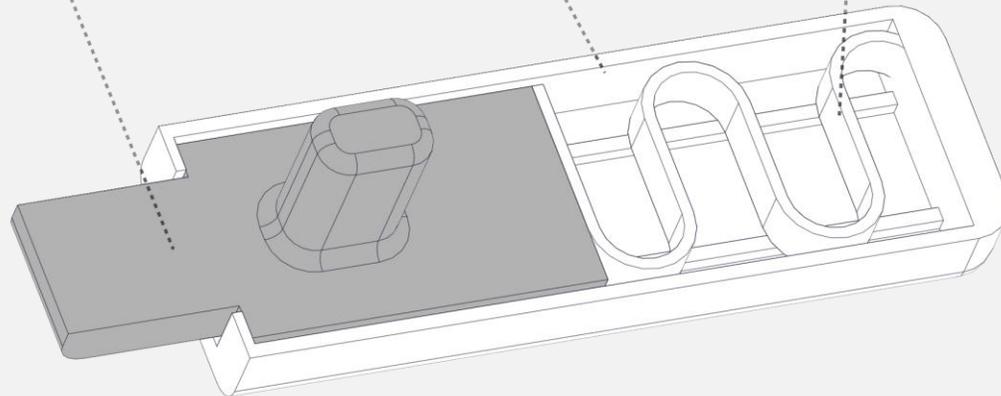
Assemble the lock, which consists of three parts. Glue the completed locks into the designated slots in the hatches. A thin layer of CA glue applied from the outside along the joint line is sufficient after the parts are properly fitted.



LOCK 1

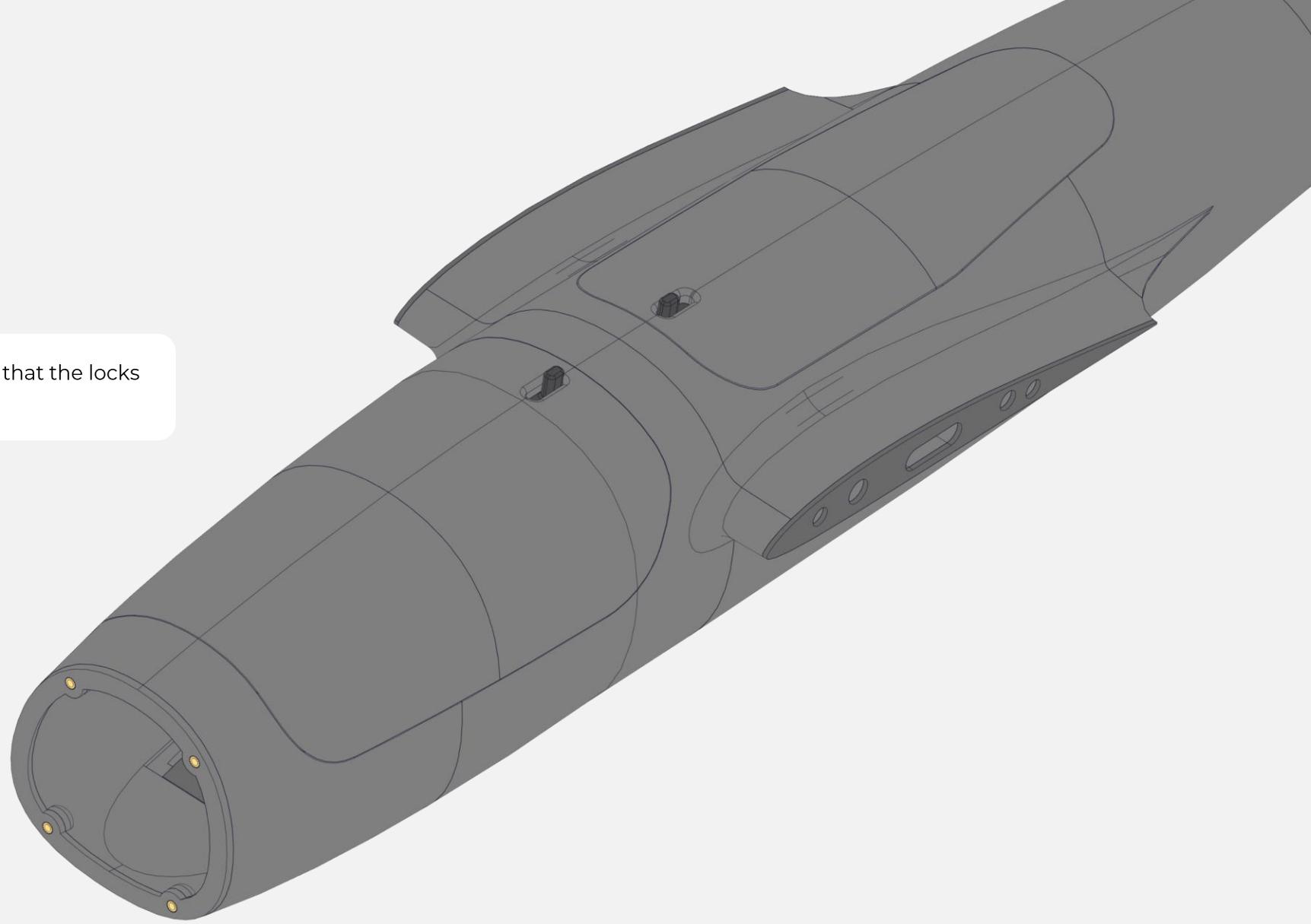
LOCK 2

LOCK 3



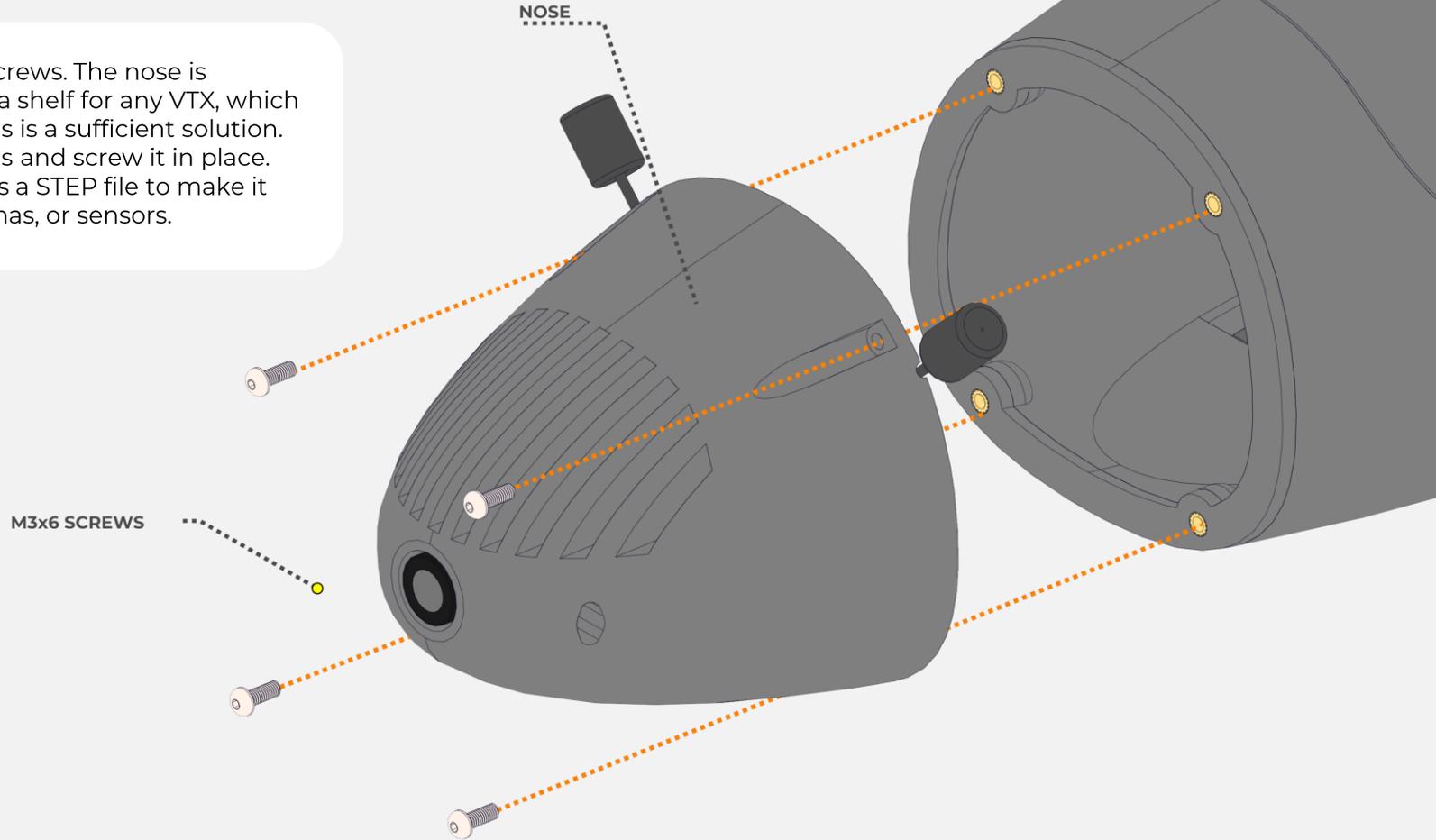
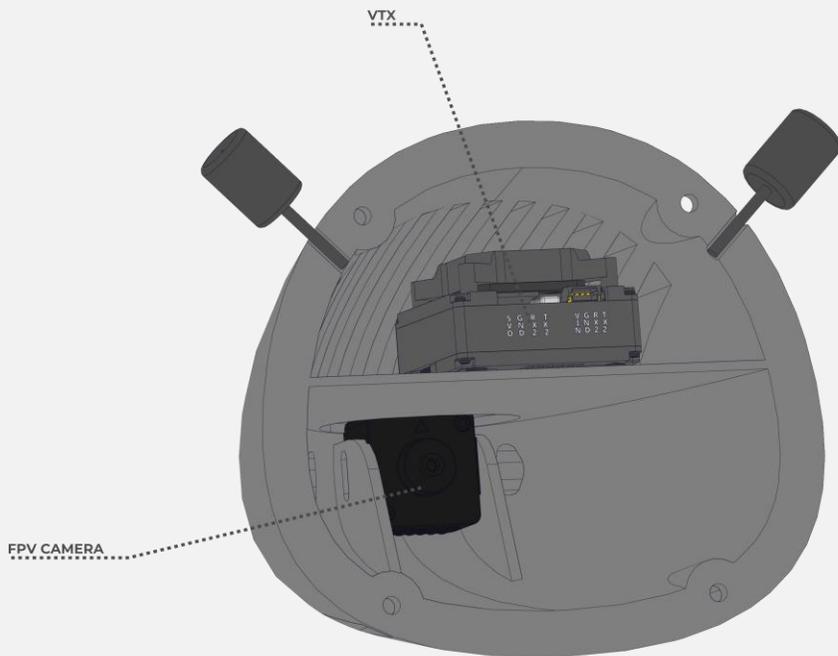
# FUSELAGE ASSEMBLY

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



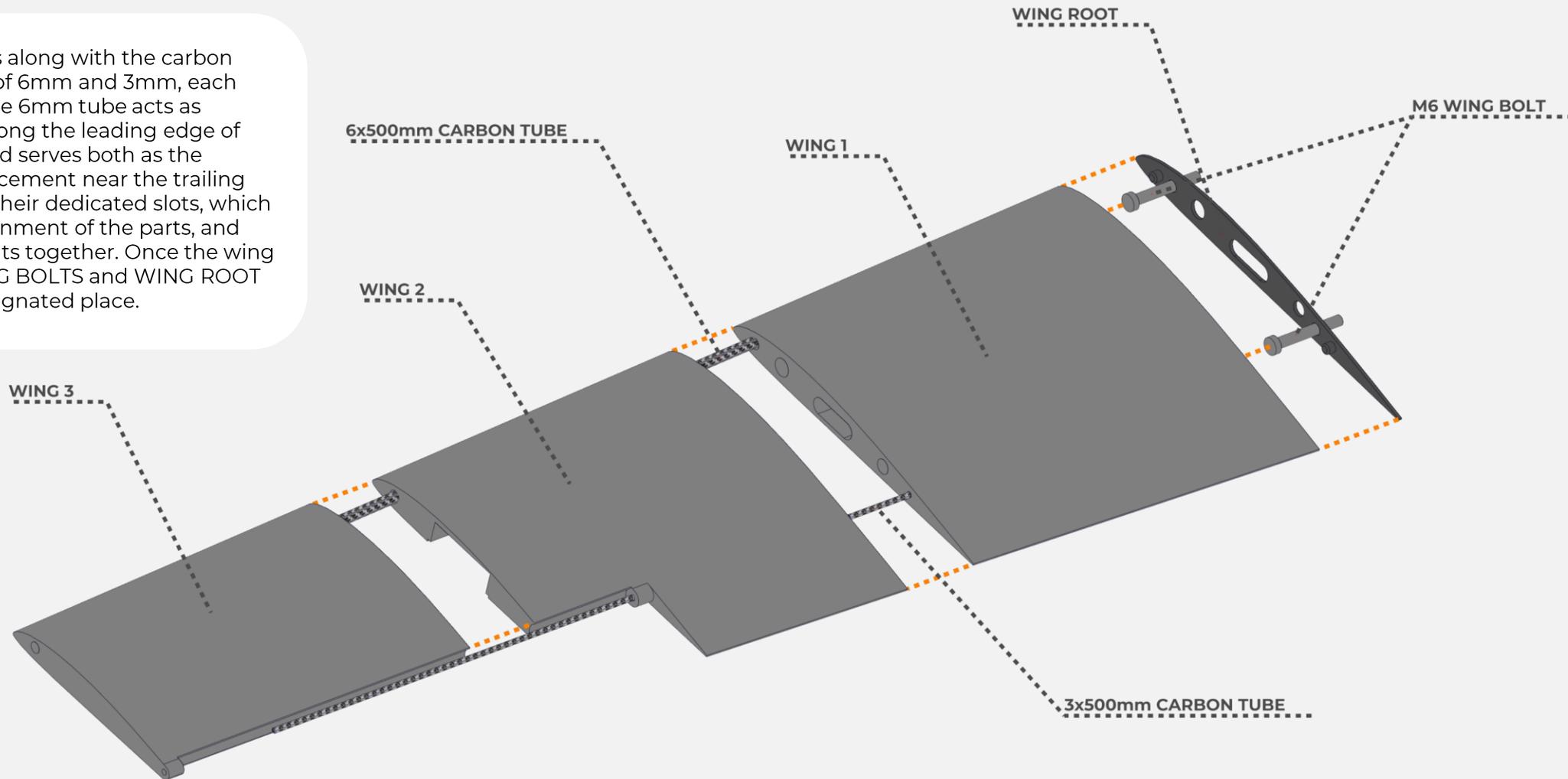
# FUSELAGE ASSEMBLY

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 along with the carbon fiber tubes with diameters of 6mm and 3mm, each with a length of 500mm. The 6mm tube acts as additional reinforcement along the leading edge of the wing, while the 3mm rod serves both as the aileron hinge and as reinforcement near the trailing edge. Insert the tubes into their dedicated slots, which will help ensure precise alignment of the parts, and then glue the wing segments together. Once the wing is assembled, take the WING BOLTS and WING ROOT and glue them into the designated place.



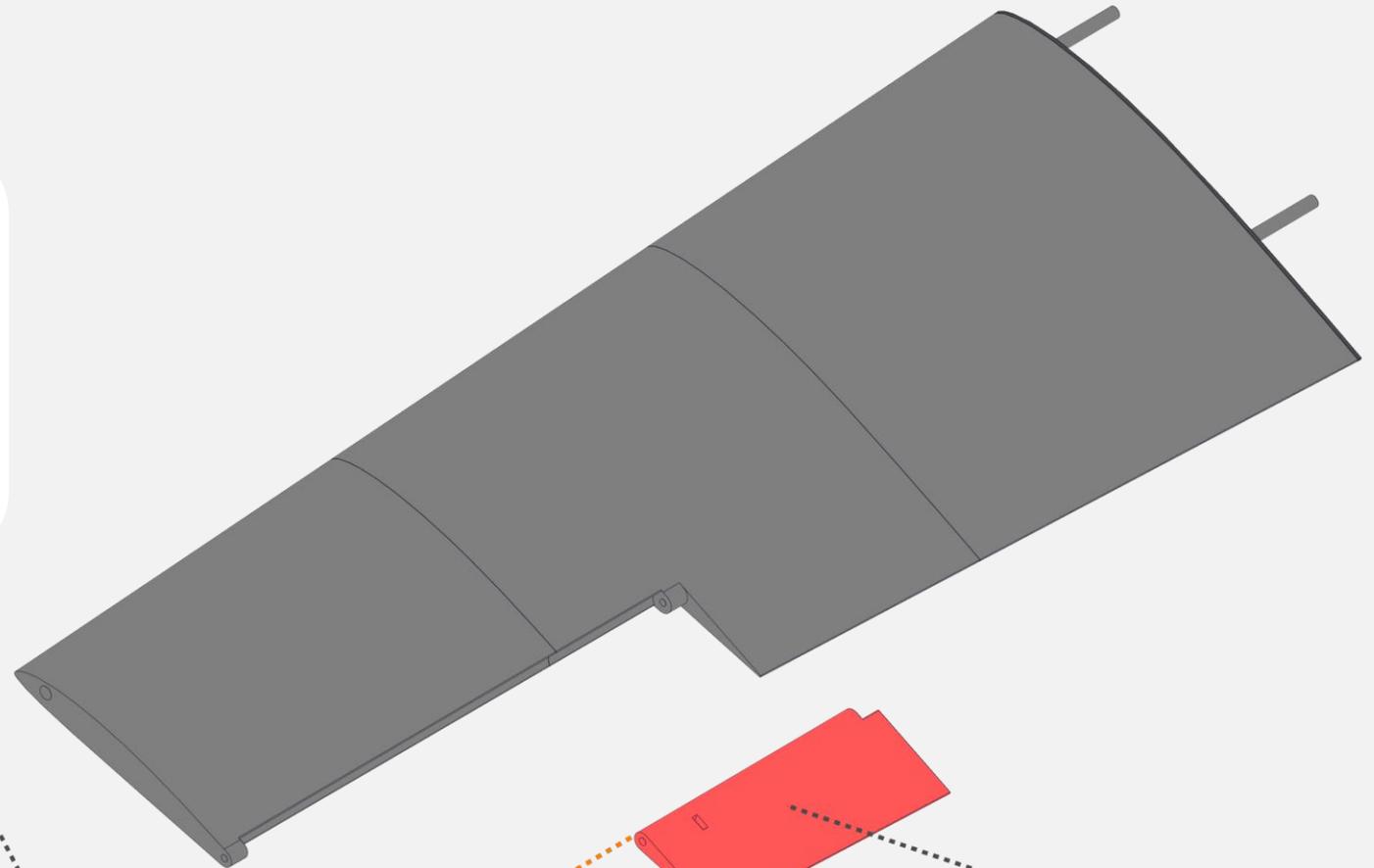
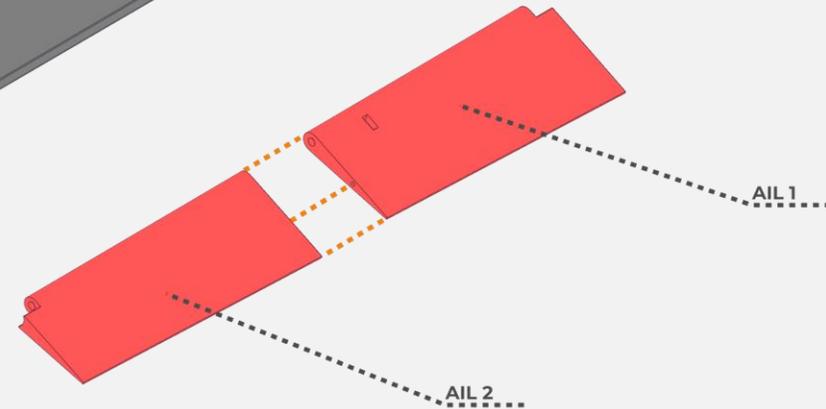
# WING ASSEMBLY

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. If the 3mm carbon tube was previously inserted into the wing during previous step, slide it out at this stage. During the gluing process, the 3mm tube 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

3x500mm CARBON TUBE

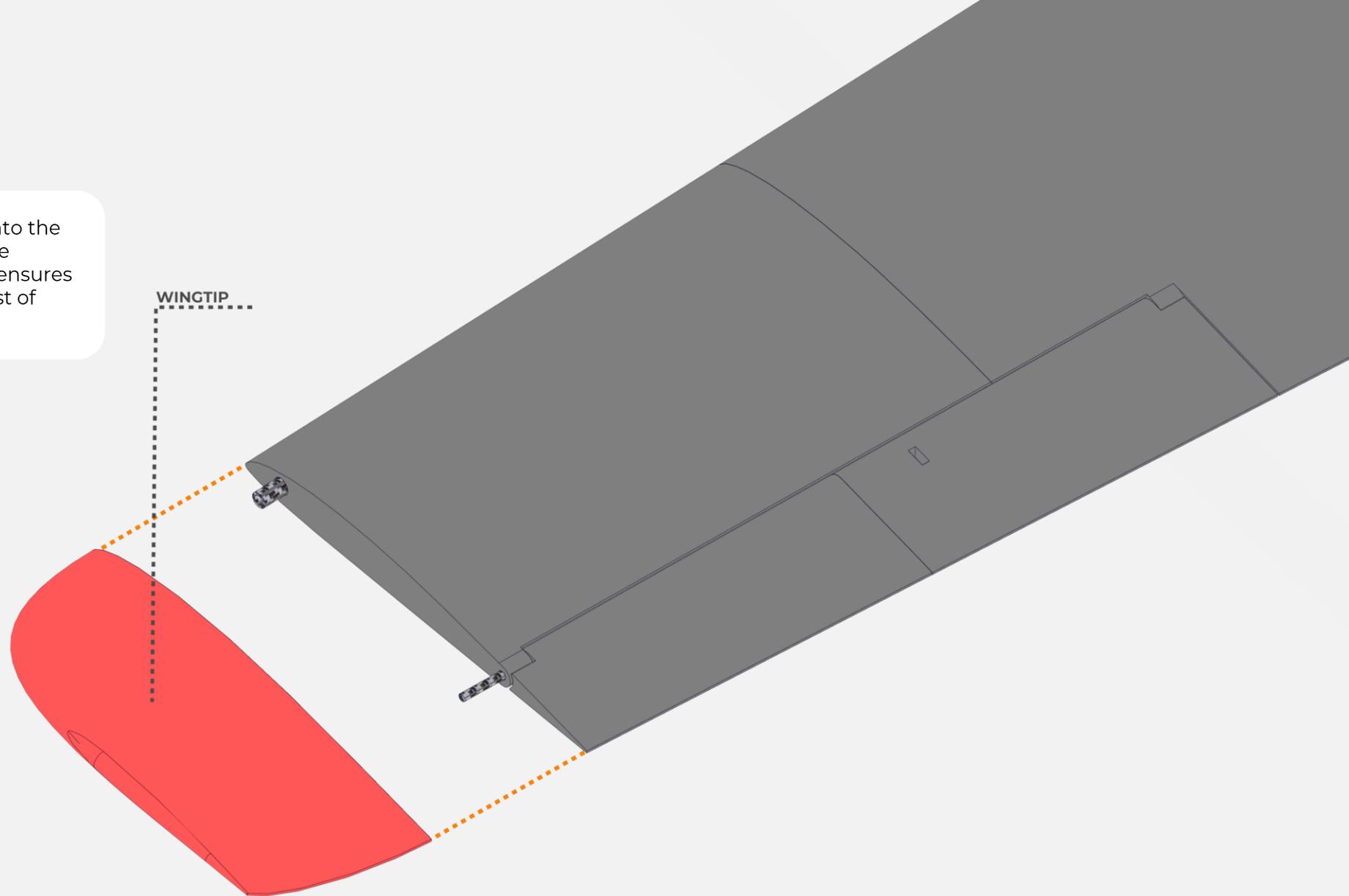


# WING ASSEMBLY

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.



CA GLUE

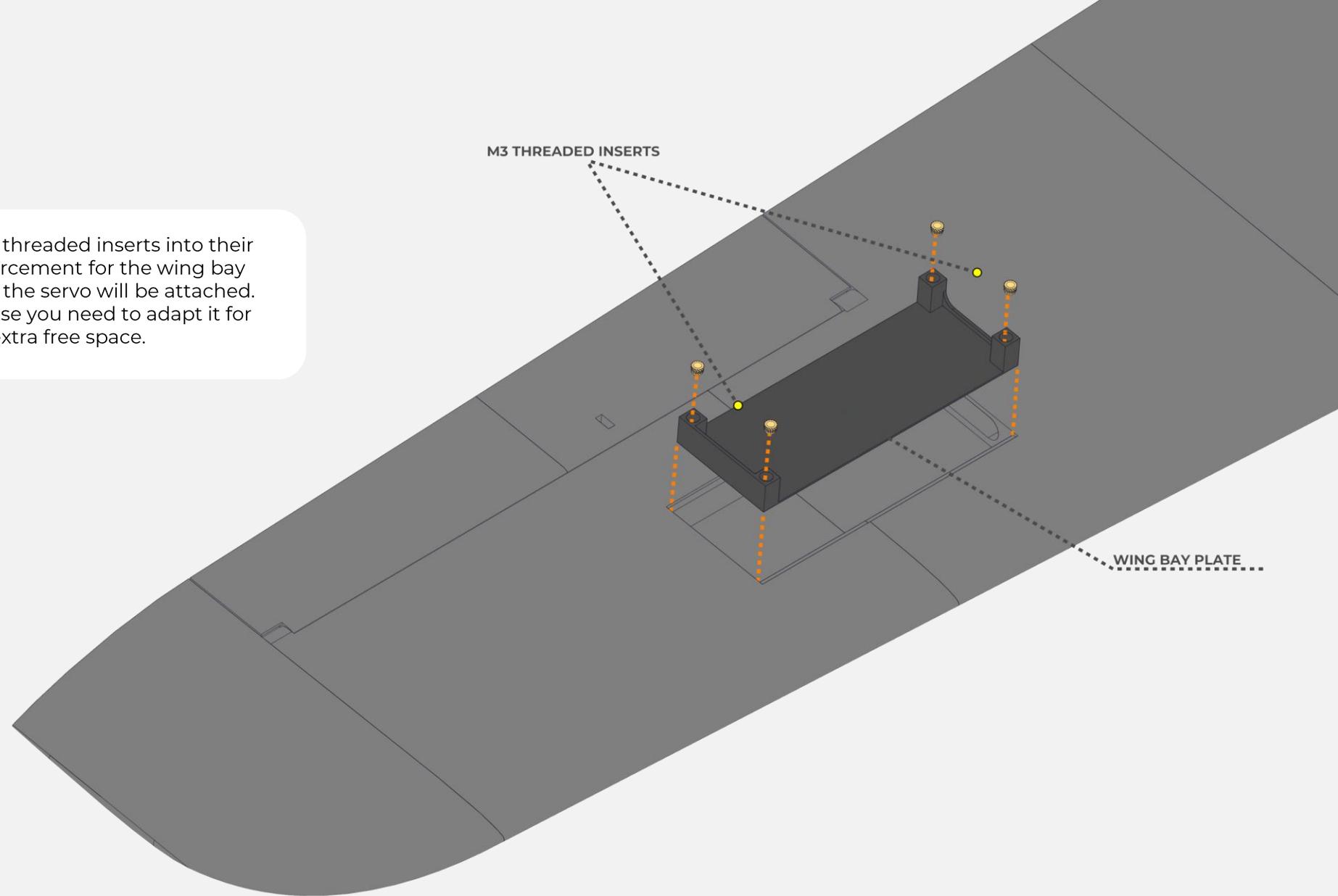


# WING ASSEMBLY

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 additional equipment to the bay, which has extra free space.



CA GLUE

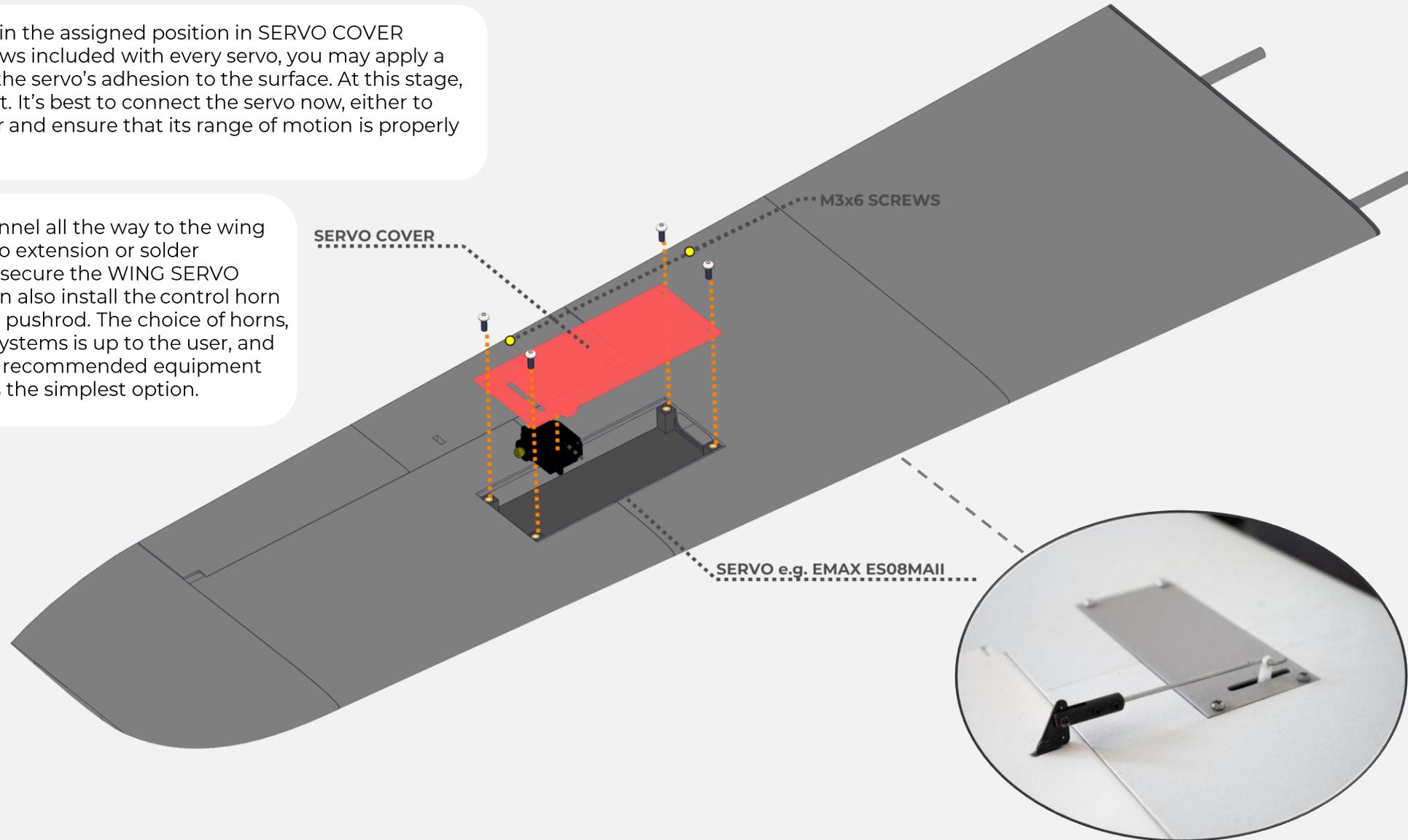


# WING ASSEMBLY

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

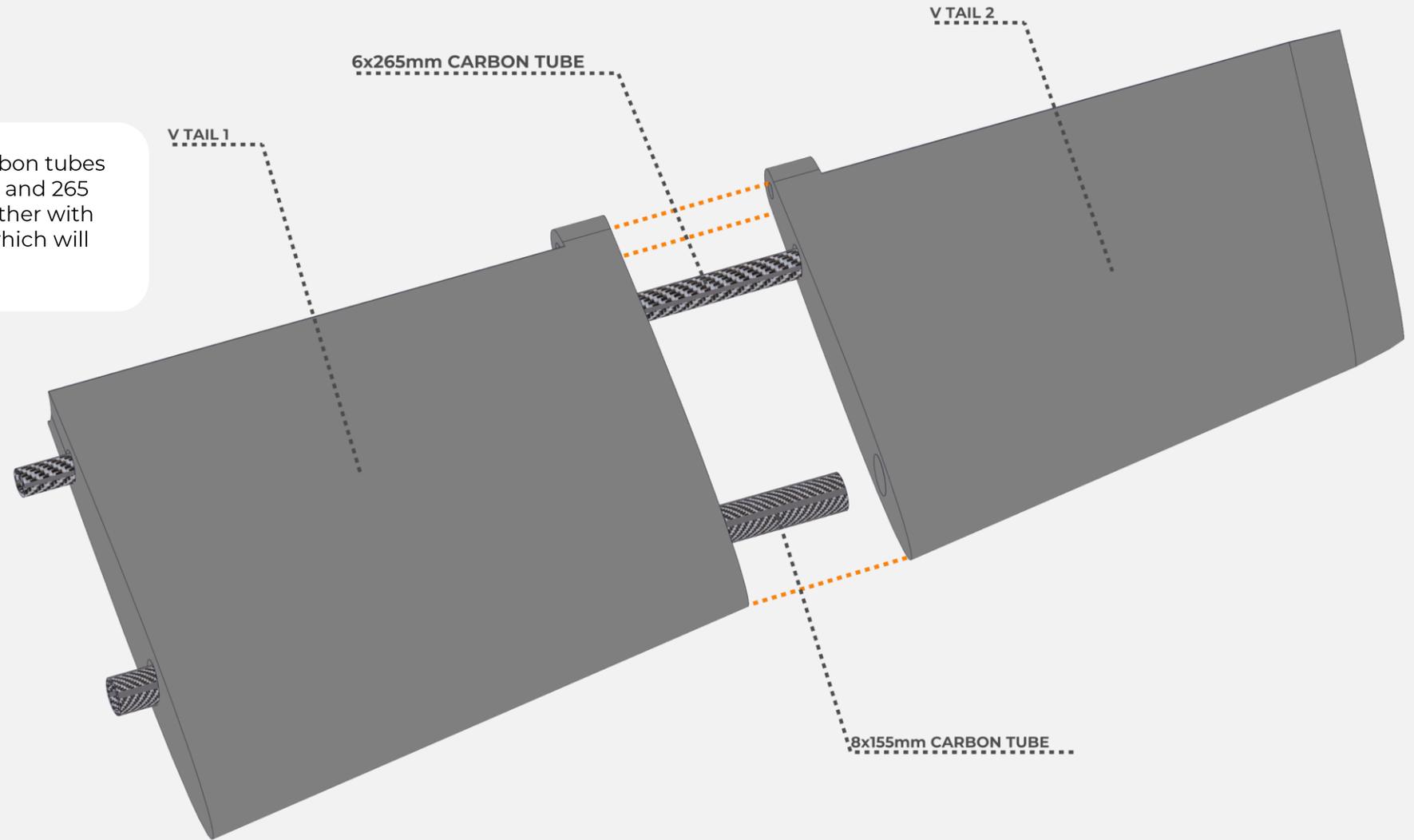


# TAIL ASSEMBLY

Prepare the two VTAIL segments and the carbon tubes of 8 mm and 6 mm, cut to lengths of 155 mm and 265 mm respectively. Assemble all the parts together with the tubes inserted into its designated slots, which will help with proper alignment during gluing.



CA GLUE

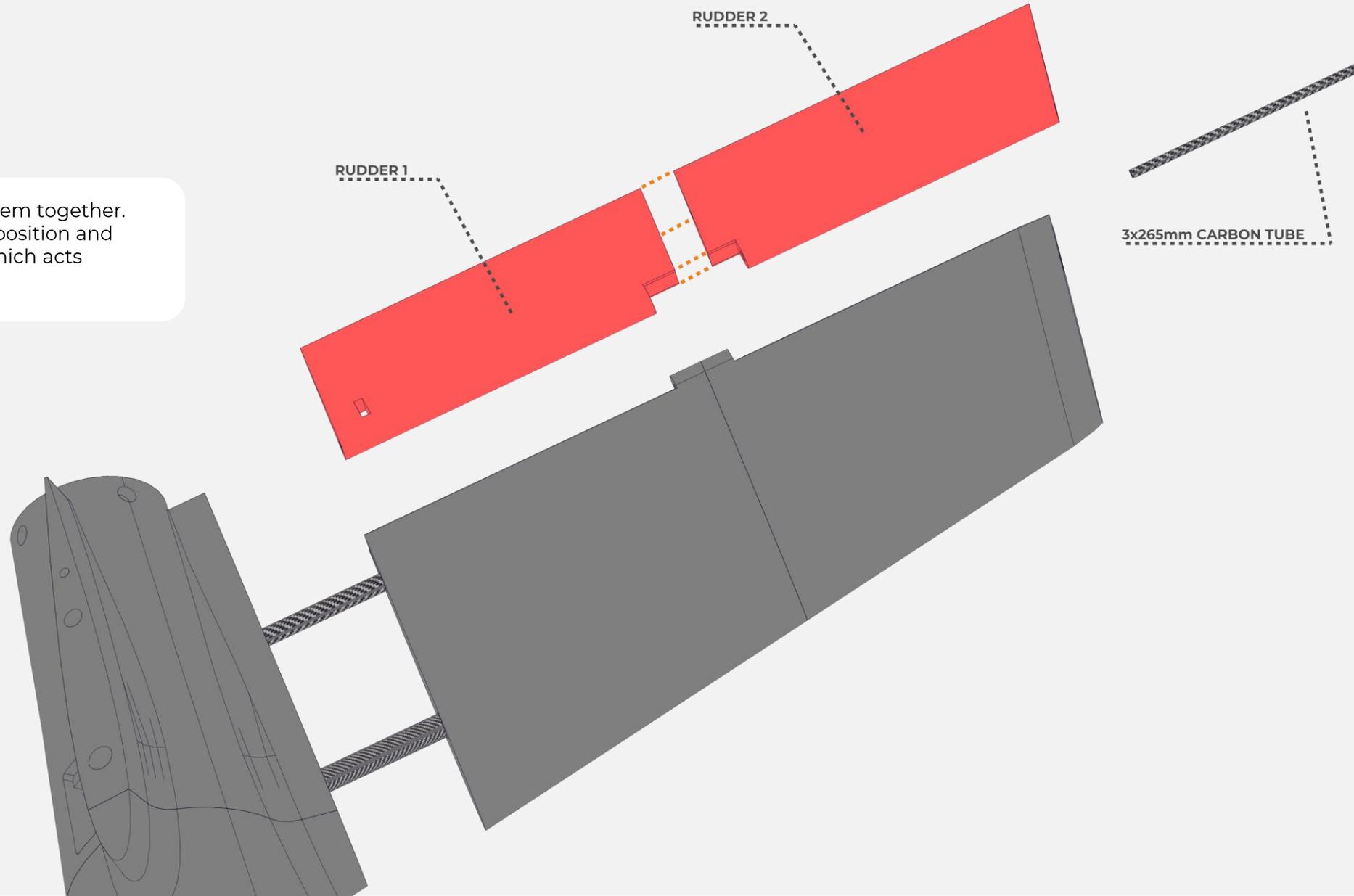


# TAIL ASSEMBLY

Take the ruddervator parts and assemble them together. Place the completed part in its designated position and insert a 3mm carbon tube cut to 265mm, which acts as the control surface hinge.



CA GLUE

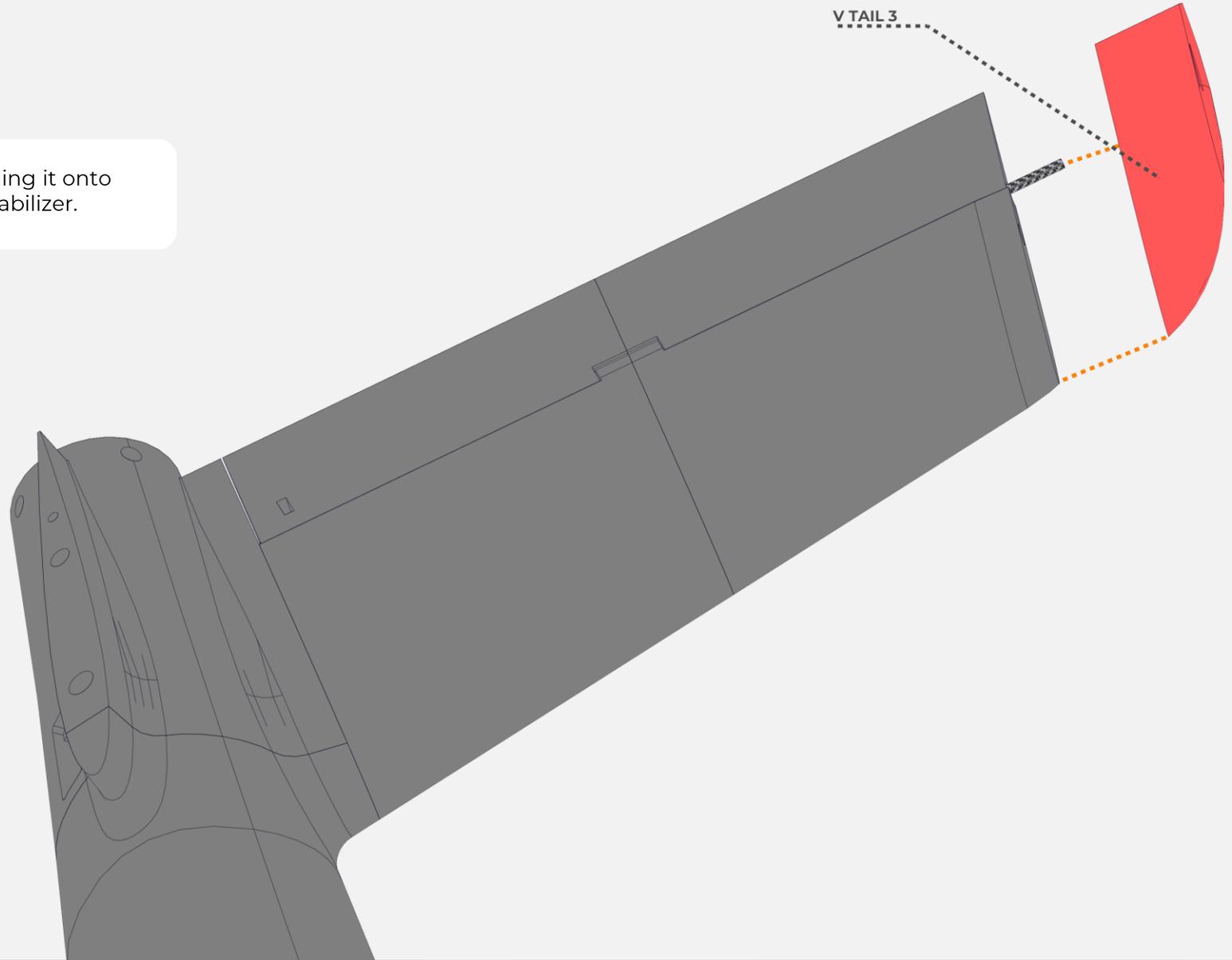


# TAIL ASSEMBLY

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.



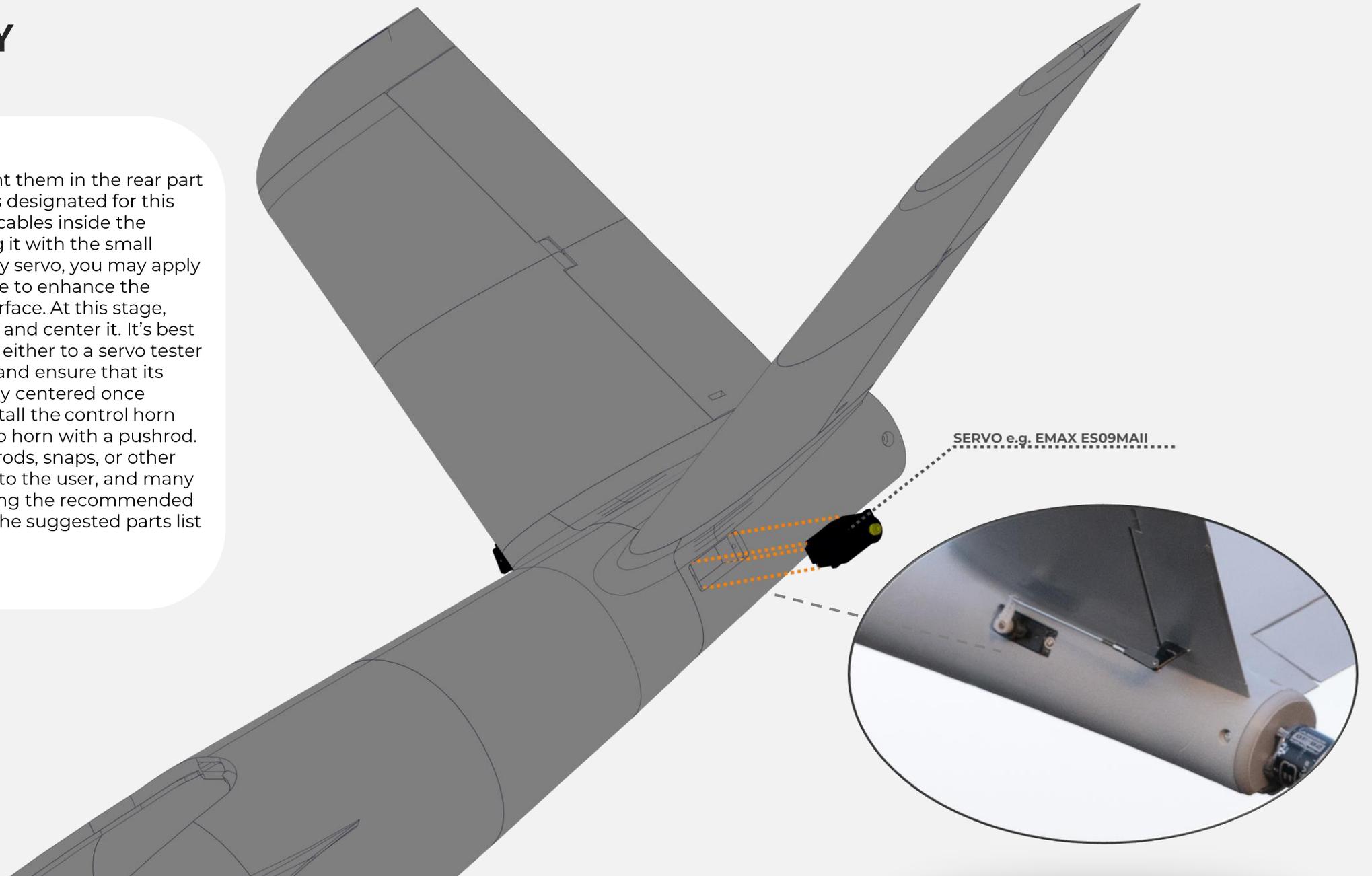
CA GLUE



# 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.

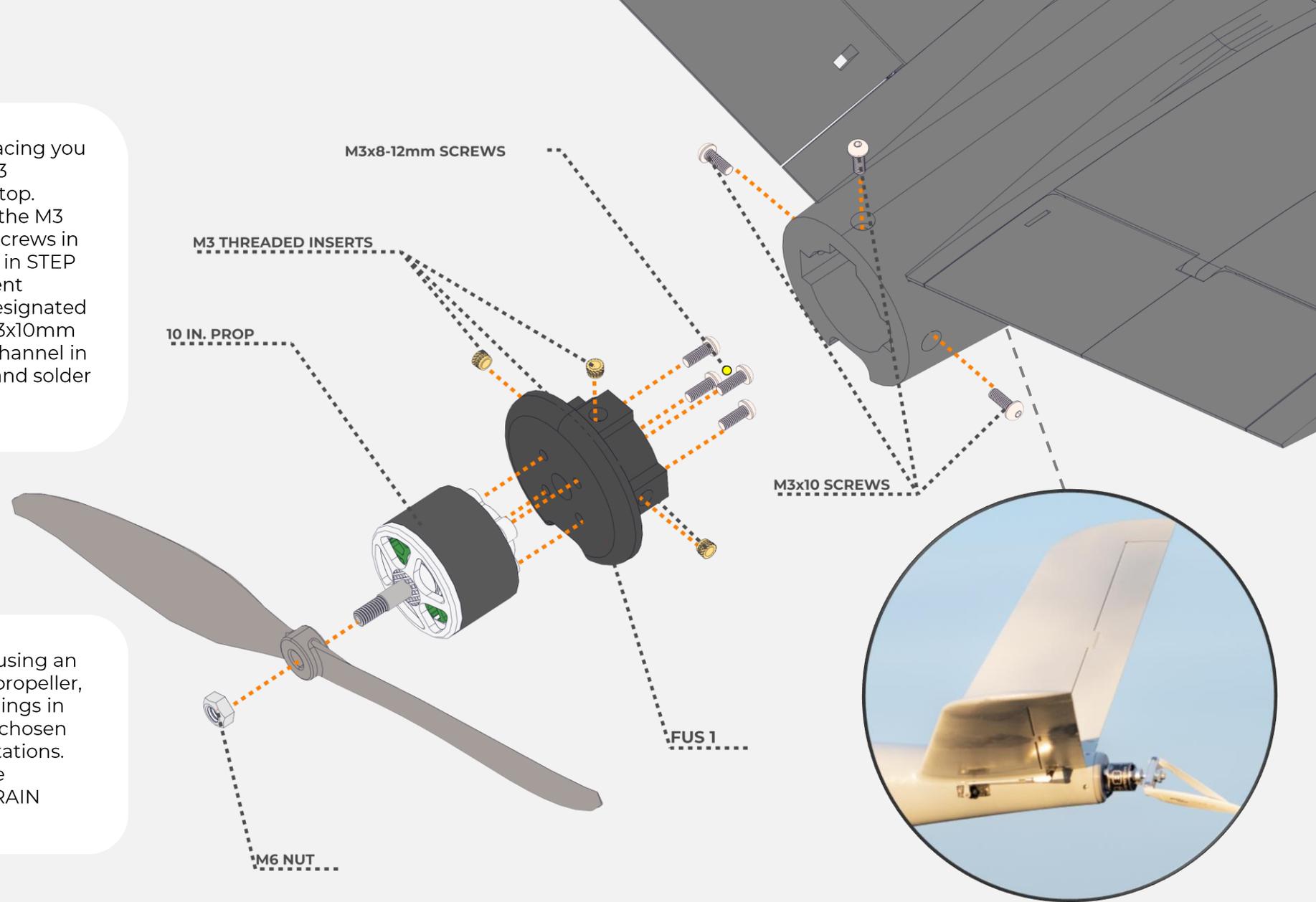
 HOT GLUE  
OPTIONAL



# TAIL ASSEMBLY

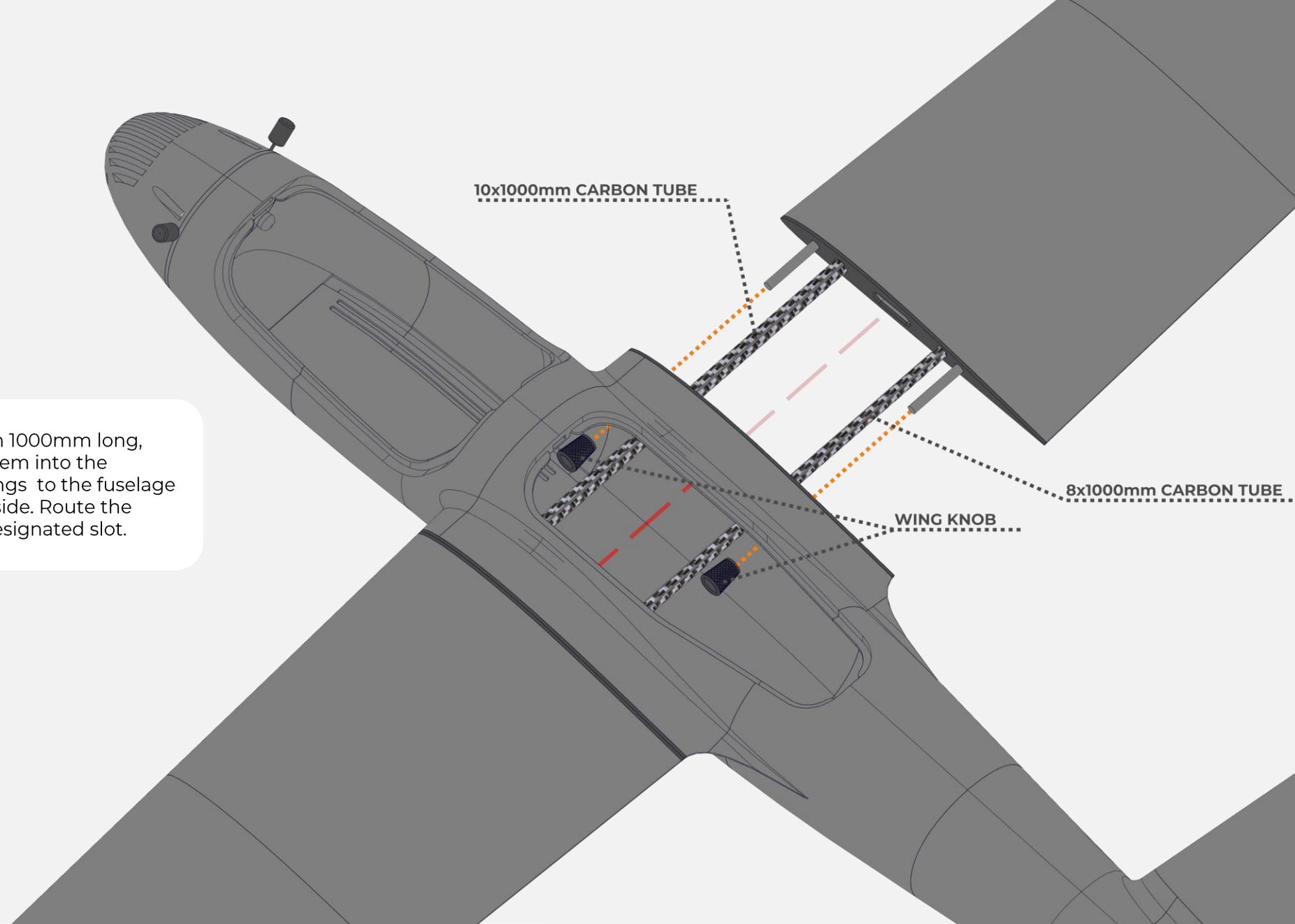
Prepare the motor mount with the screw spacing you chose to match selected motor. Press the M3 threaded inserts into the sides as well as the top. Attach the motor to the motor mount using the M3 screws from the motor kit, or other suitable screws in the 8–12 mm range. This part is also available in 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.



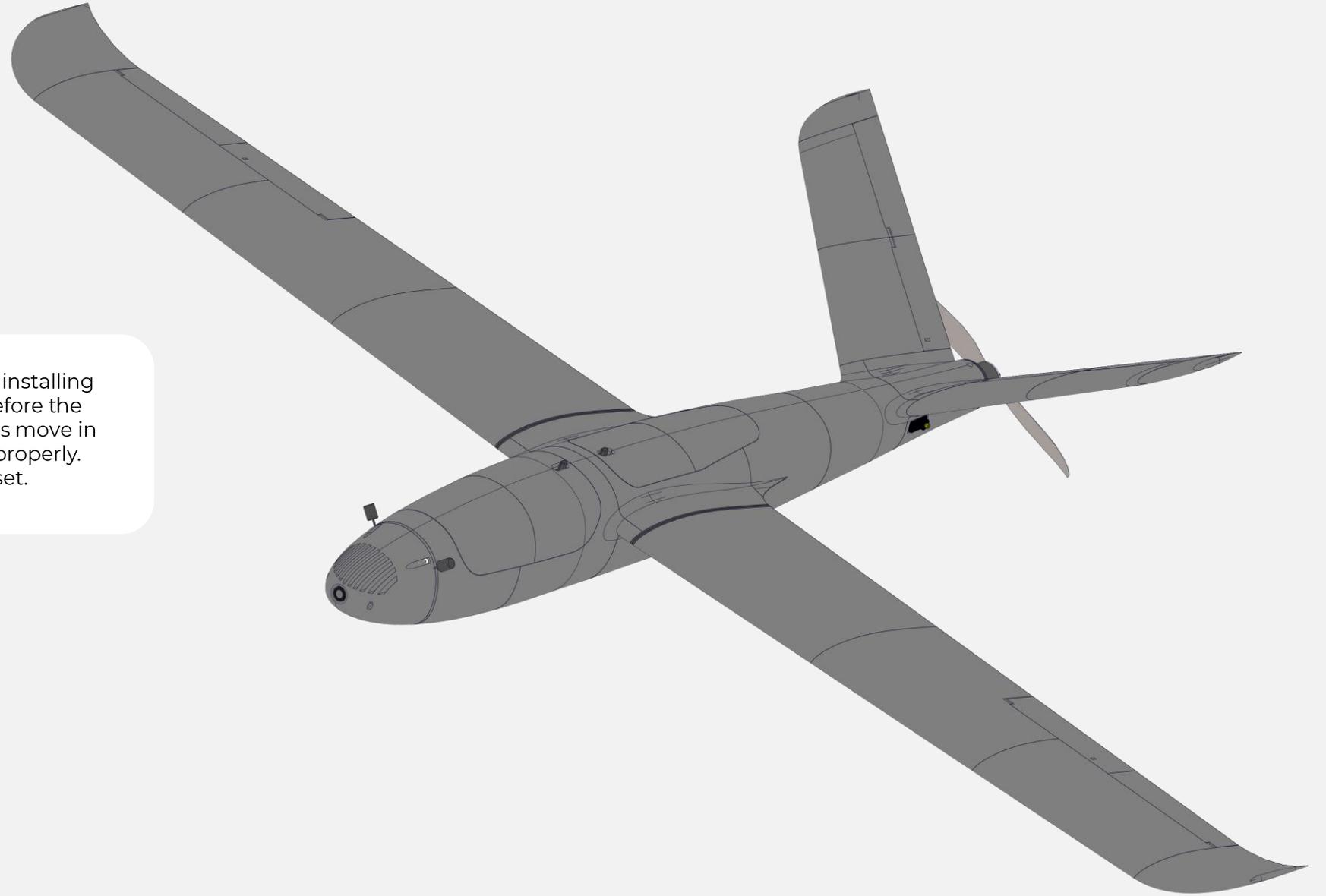
# FINAL ASSEMBLY

Take the 10mm and 8mm carbon tubes, each 1000mm 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.

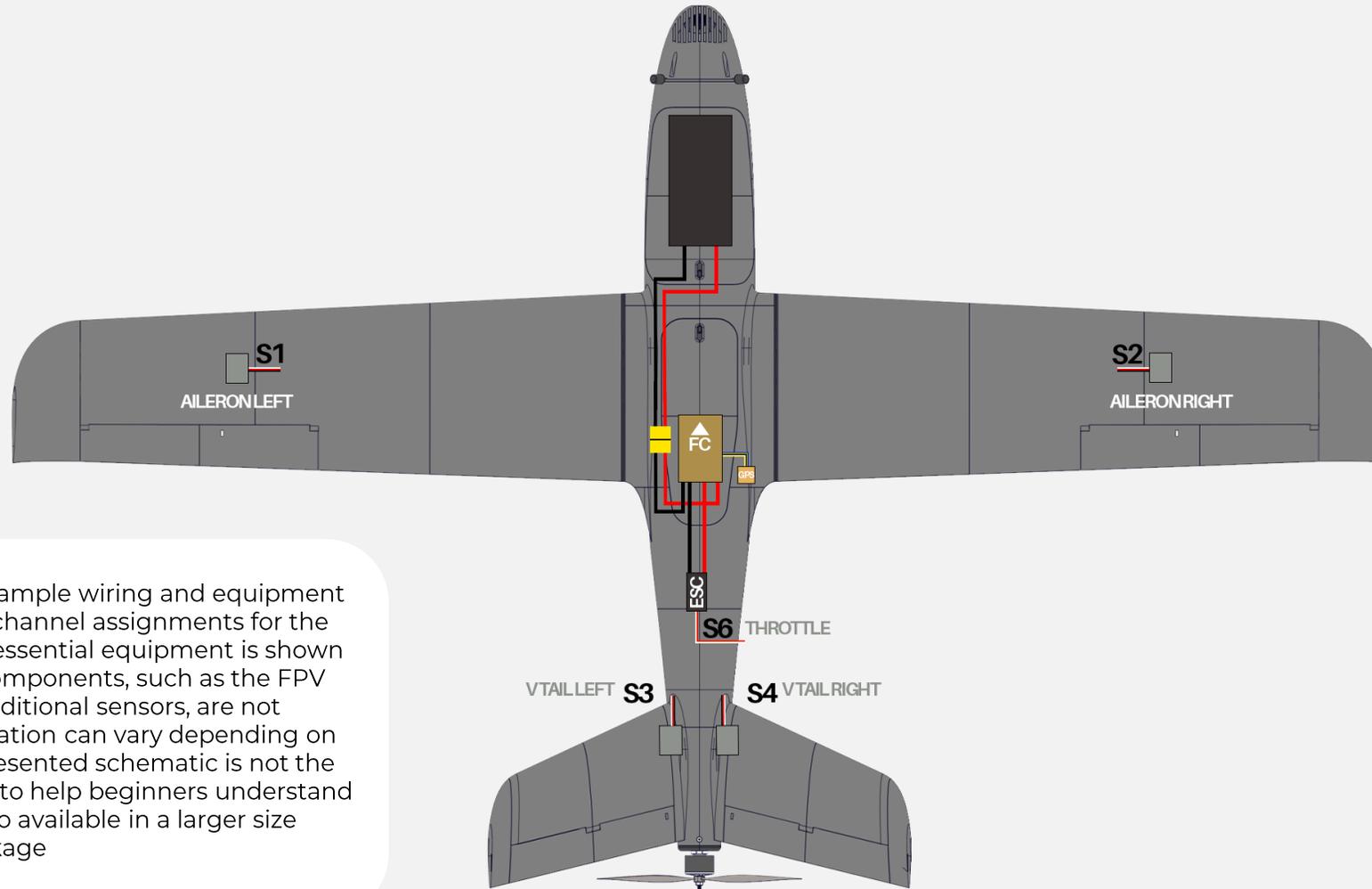


# FINISHING BUILD

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 correctly 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

**FLIGHTORY**  
**STORK**  
SAMPLE WIRING DIAGRAM

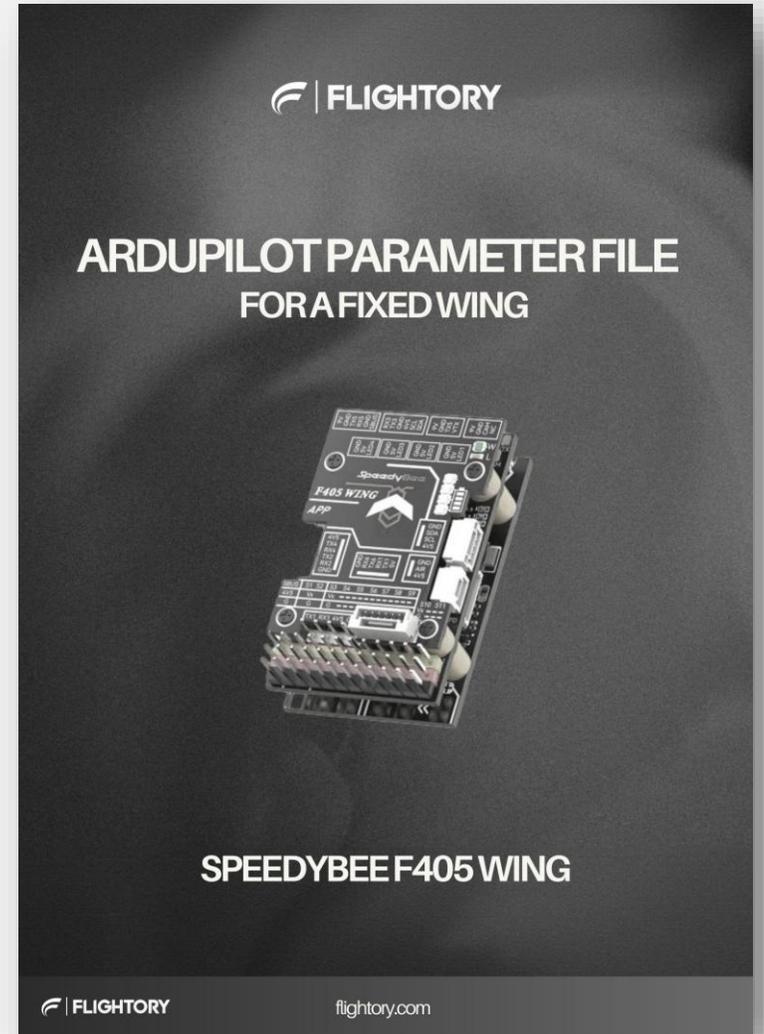
# ARDUPILOT CONFIGURATION

For beginners, a document with a preconfigured param. file is also available. The document outlines the key parameter settings of a .param file for ArduPilot, which can serve as guidance and a foundation for further configuration and tuning of a fixed-wing aircraft. The file pertains to the Speedybee F405 Wing flight controller used with an ELRS receiver, GPS, Walksnail FPV, and the Yaapu telemetry script option. This is not a ready-to-use configuration and should not be implemented without proper verification. Before flying, you must configure the appropriate servo outputs for your aircraft's setup and perform the necessary compass and accelerometer calibrations. The following sections will present the main parameters and explain their functionality.

**All information, as well as the firmware, is available on the 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.



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