

High-Speed FPV Quadcopter

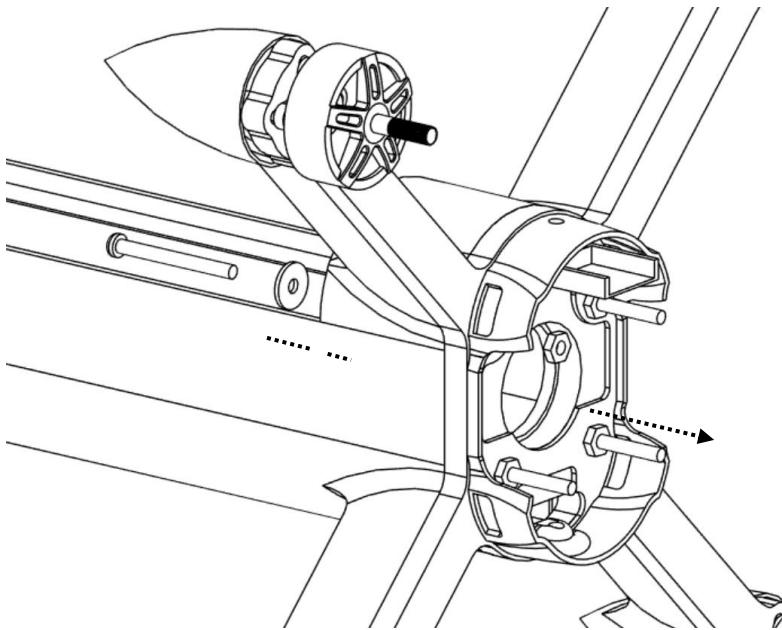
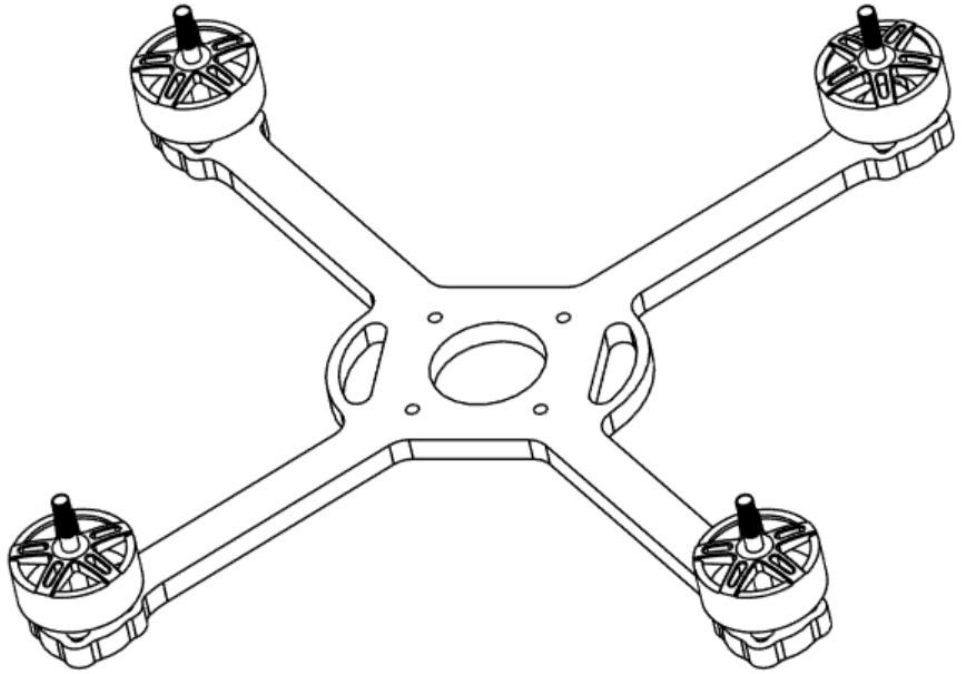
Recommended Setup:

- **Motors:** 2312 motors or similar with equivalent stator volume
- **KV Rating:** 1700kV
- **Batteries:** 2x 8S 1050mah Tattu R-Line
- **Electronic Speed Controller (ESC):** Fettec 8S 65A
 - **Capacitors:** 2 × 470μF 50V
- **Propellers:** HQ 5.3x8
- **Receiver (RX) System:** Long-range system such as ELRS or CRSF
- **GPS Module:** HGLRC 100 Mini

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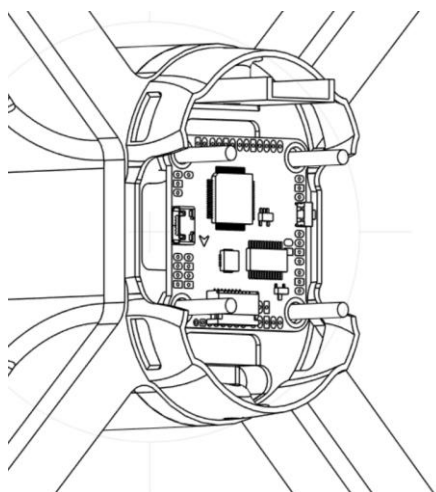
DISCLAIMER: This DIY project is intended only for individuals with robust experience in FPV drones and DIY electronics. It is not suitable for beginners. If you require guidance to complete the build, this project is not for you—yet. Attempting this build without the necessary skills may result in damage, malfunction, or injury. Proceed at your own risk.

Step 1: Secure the Motors to the Carbon Frame. Attach each motor to the designated mounting points on the carbon frame using the provided screws.



Step 2: Attach the Main Shell, Carbon Frame, and Printed Mounting Plate

Align the main shell, carbon frame, and printed mounting plate. Secure them together using M3x30 screws, ensuring all components are properly positioned and tightened evenly. Avoid over-tightening.



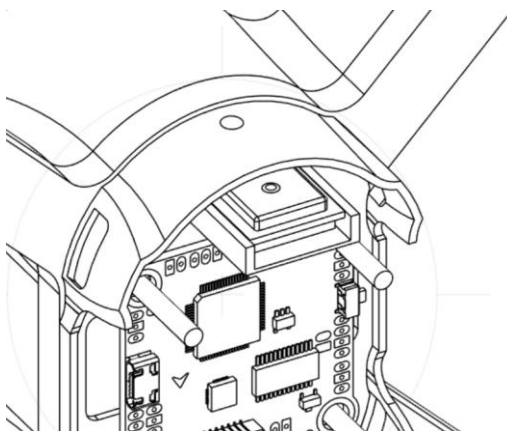
Step 3: Install the Flight Controller

Secure the flight controller onto the M3 mounting hardware. Make sure the USB port remains accessible.

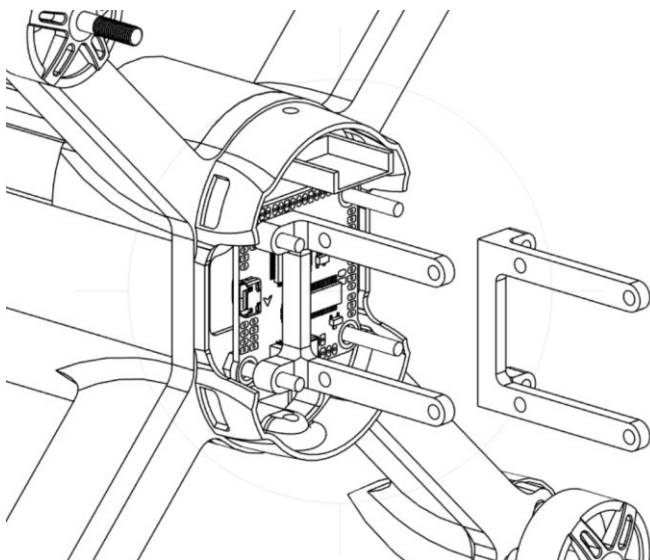
Step 4: Connect GPS, VTX, and Receiver to the Flight Controller

Attach the GPS, video transmitter (VTX), and receiver (RX) of your choice to the designated ports on the flight controller. Route the wires neatly through the lower frame opening, ensuring they are directed toward the front of the frame.

Mount the M100 Mini GPS as shown in the illustration for optimal performance.



Note: Running servos can be challenging with certain versions of Betaflight and some flight controllers. If you experience issues, connecting the servos directly to the receiver is often the simplest solution.



Step 5: Install ESC Mounts and Secure the ESC

Attach the ESC mounts to the frame, then secure the ESC using M3 hardware. Ensure the ESC is firmly in place and positioned to allow proper cable management.

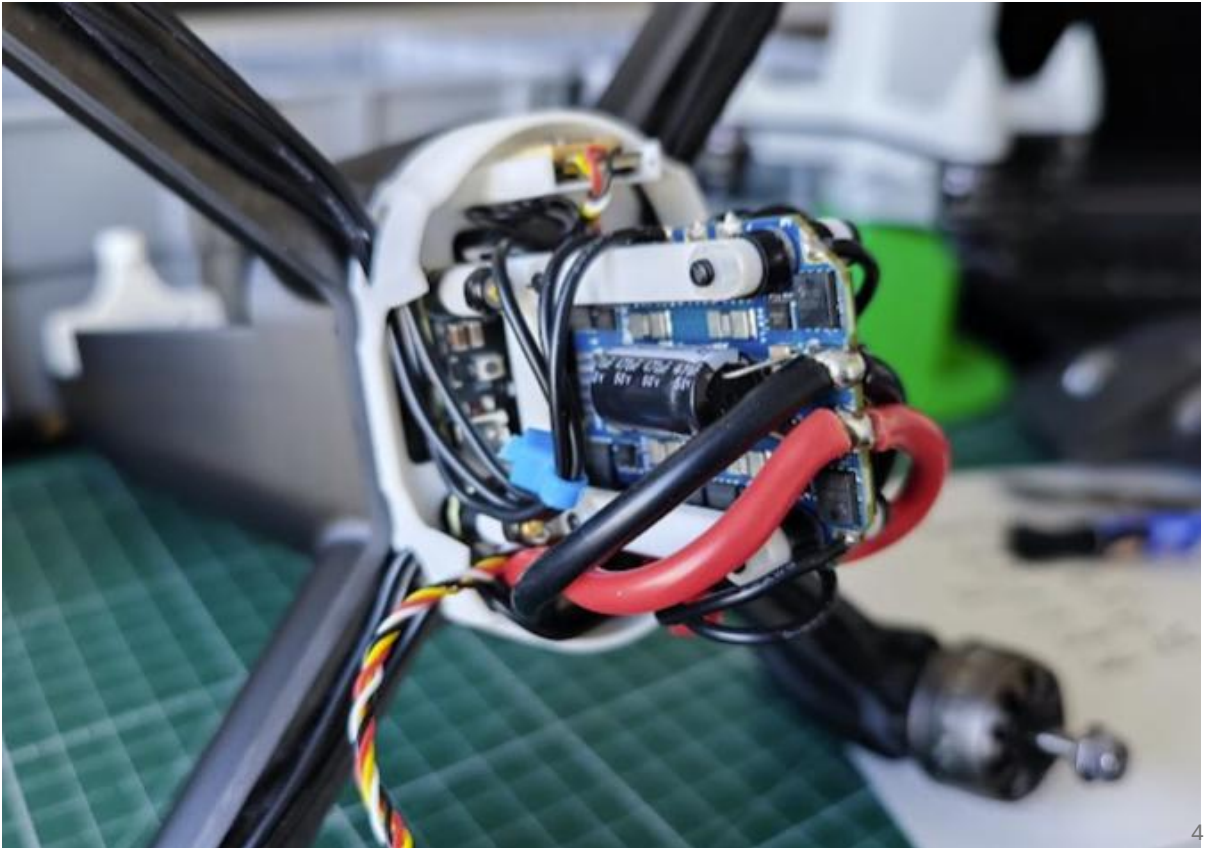
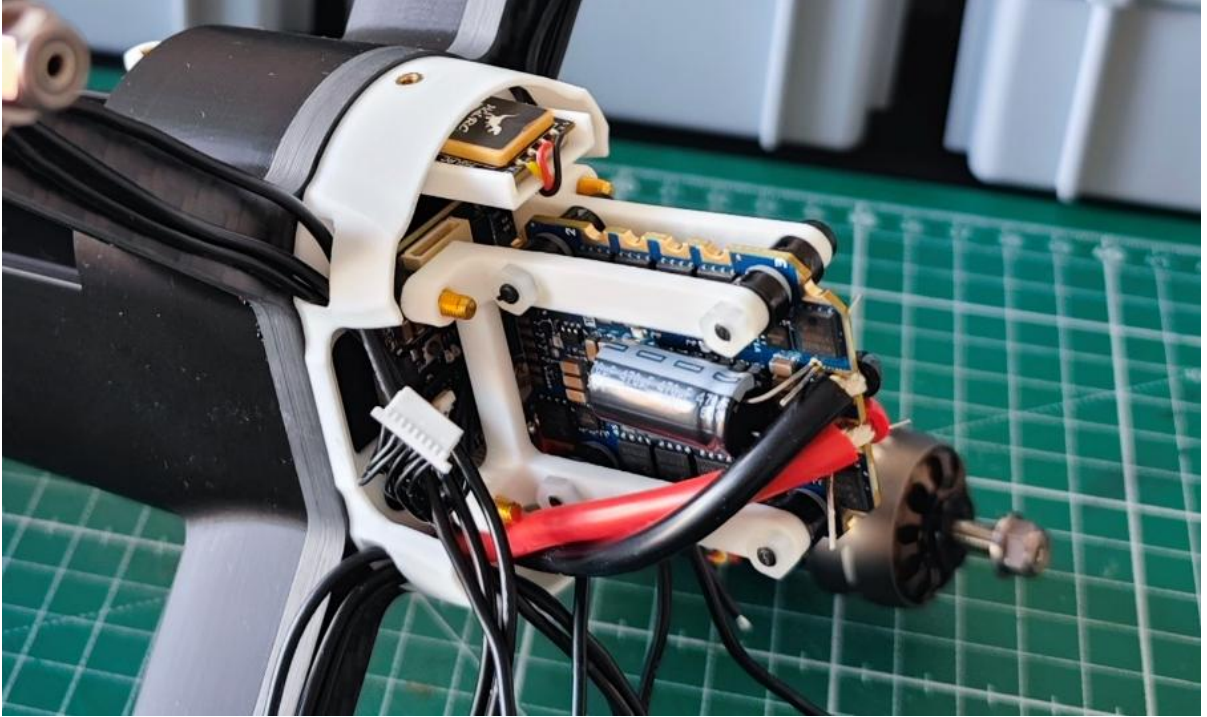
Step 6: Connect the ESC to the Flight Controller and Solder Motor Wires

Connect the ESC to the designated pads on the flight controller. Carefully solder the motor wires to the ESC pads.

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Step 7: Connect 12AWG Silicone Wires to the ESC

Attach the 12AWG silicone wires to the ESC power pads. Ideally, use a single 50cm wire and strip approximately 5mm of insulation at the center (around the 25cm mark) to create a double connection for power distribution. Route the wire through the lower frame opening towards the front, ensuring a clean and secure layout.



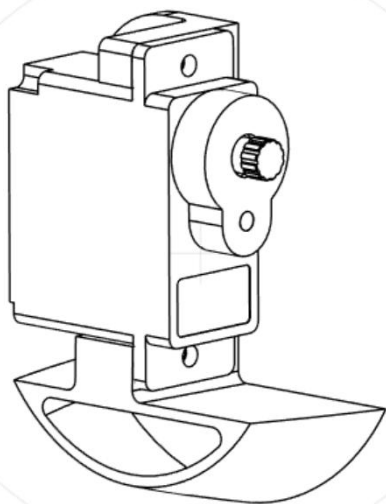
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Step 8: Connect the Battery Leads to the XT60-M Mount

Solder the battery leads to the XT60-M connector, ensuring a secure and clean connection. Attach the XT60-M mount to the main shell using superglue (if using PLA) or an adhesive suitable for your specific 3D-printed material.



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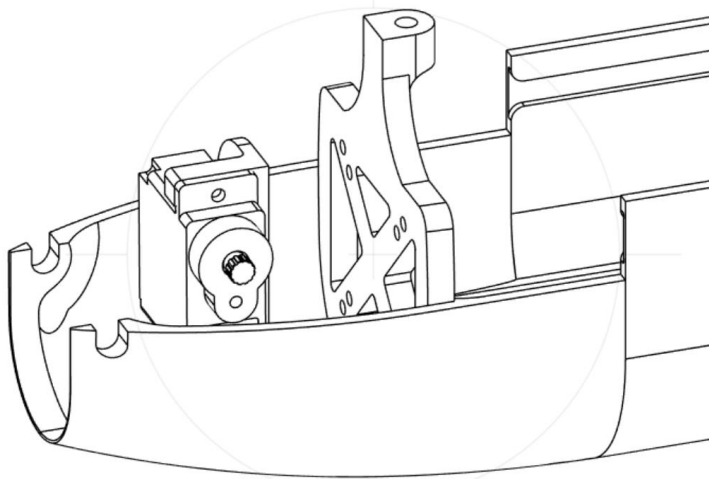


Step 9: Install the 9g Servo onto the Servo Mount
Secure the 9g servo to the designated servo mount.

Step 10: Attach the Servo Assembly and VTX Mount

1. Securely glue the servo assembly and VTX mount to the main shell using an adhesive suitable for your 3D-printed material.

2. Once the glue has dried, attach the VTX to the mount using M2 hardware.

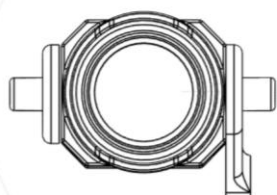
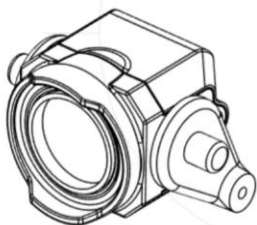


Step 11: Attach the Camera Mounts to Your Camera

1. Apply T-7000 glue to the camera mounts and carefully attach them to your camera of choice. This adhesive is recommended as it provides a strong bond while remaining removable if needed.

2. The mounts are specifically designed for **20mm DJI cameras**. If using a different camera standard, slight modifications may be necessary.

3. Allow the glue to fully cure before proceeding to the next assembly step.

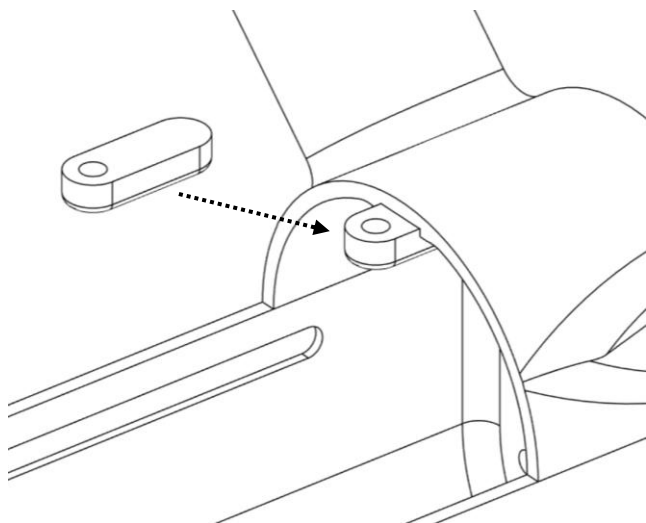
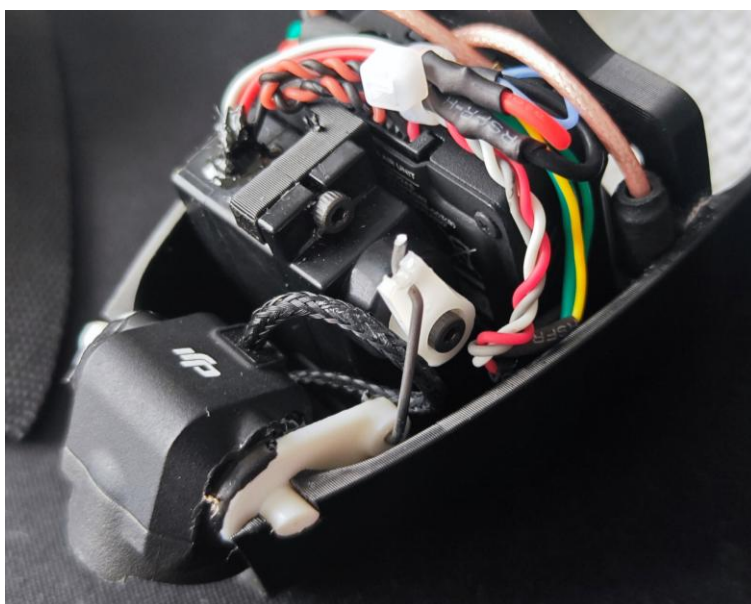


Step 12: Connect the Camera Mounts to the Servo Hinge

1. Bend a sturdy piece of servo wire to form a linkage between the camera mounts and the servo hinge.
2. If no specialized wire is available, a thick paperclip can be used as an alternative.

Step 13: Assemble and Adjust the Camera Tilting Mechanism

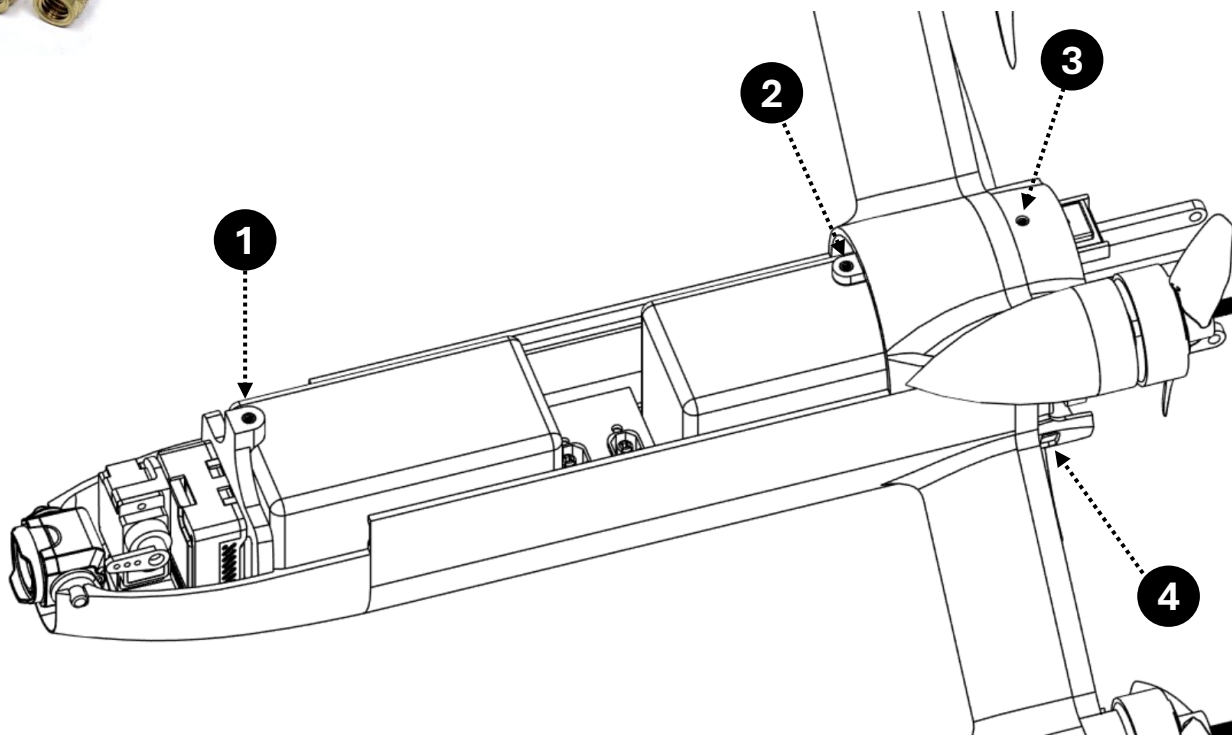
1. Complete the assembly of the camera tilting mechanism
2. Adjust the servo travel in your transmitter (TX) settings to prevent excessive movement that could cause mechanical stress or crashes.
3. The maximum camera tilt angle should be at or close to 90 degrees for optimal functionality. Test the movement to ensure smooth and controlled operation.



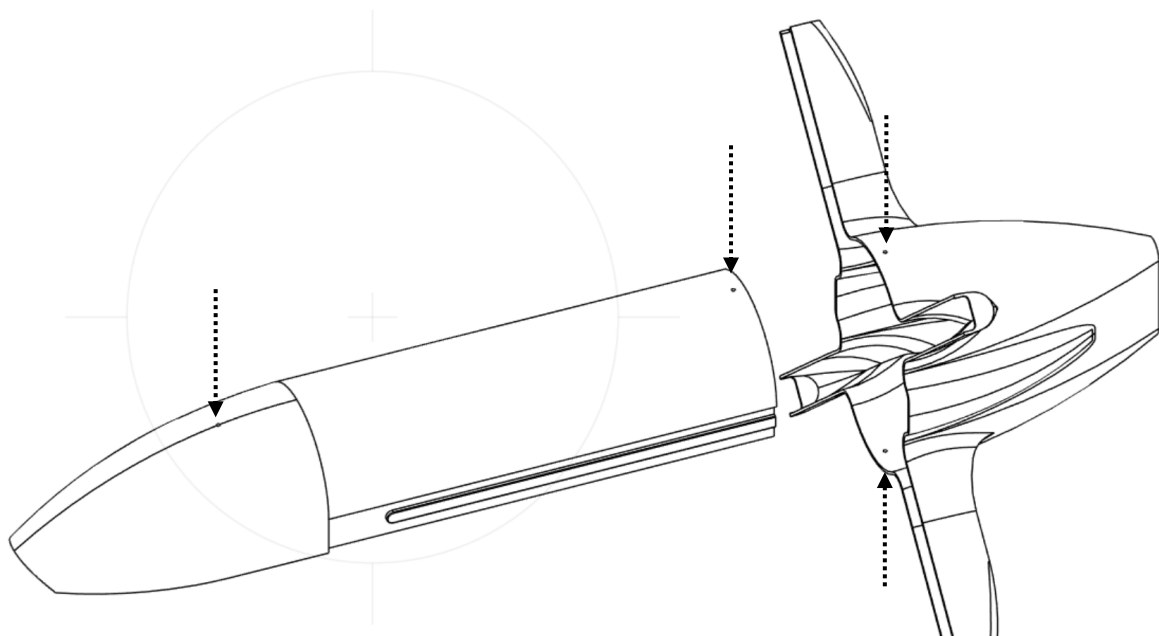
Step 14: Attach the Rear Cover Mount to the Main Shell

1. Apply an appropriate adhesive to the rear cover mount. Use super glue for PLA or another glue compatible with your 3D-printed material.
2. Carefully align the mount with the main shell and press it firmly into place.
3. Allow the glue to fully cure before proceeding to ensure a secure and stable attachment.

Step 15: Add M2 threaded inserts using a soldering iron

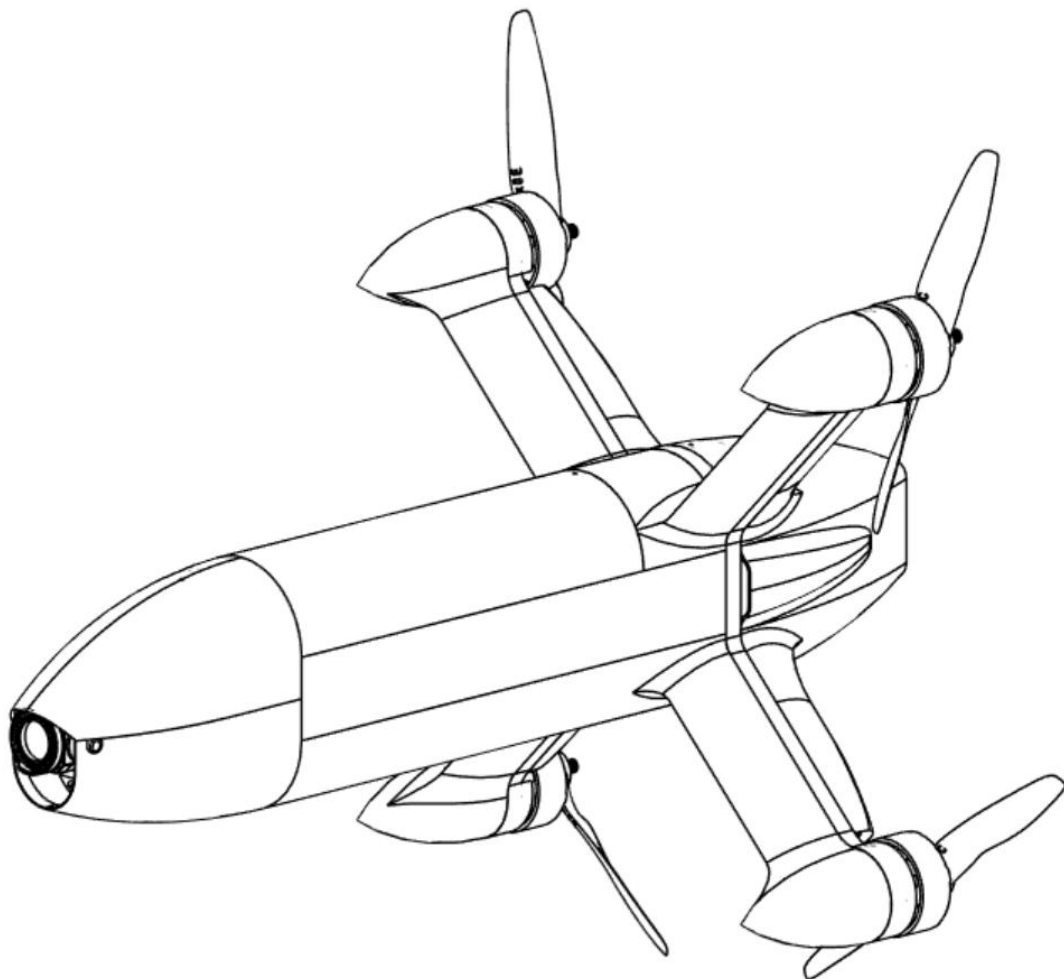


Step 16: Extend holes in the top and rear cover to 2-2.4mm using a small drill.



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Congratulations – Hope you enjoyed the design and build process!



CAUTION: Your required setup may vary depending on your powertrain. Always ensure compatibility and make the necessary adjustments. Prioritize safety at all times—improper setup can lead to equipment failure or injury.

- Setup like any other quad with the arms in a horizontal plane
- Lower RC rates to around 200 to 260 degrees per second
- Start with stock filters
- Baseline PID tune: Master multiplier to 1.1
- Put servo on a three-position switch to be able to activate it quickly