

MUGIN-5 PRO & MUGIN-6 PRO VTOL UAV

BUILD GUIDE



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Safety & Warning

Thank you for your purchase of the Mugin VTOL. This product is a sensitive item and illegal use is strictly prohibited. Mugin UAV is not responsible for any consequences arising out of illegal use, or third party responsibility incurred with the product use.

For safety, please read the manual before moving forward with building and operating the product. Please pay attention to all local laws, flight zone restrictions, and ensure the personnel operating the aircraft have proper licensing and approval for flight plans.



Important notes:

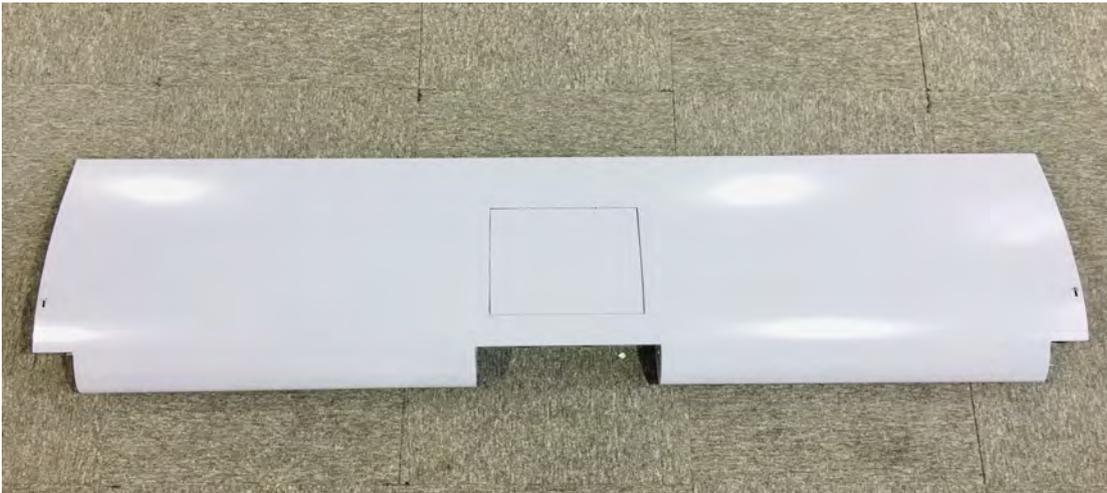
1. Pay close attention to the polarity when soldering the wires and avoid soldering them in reverse.
2. Ensure proper positioning before making openings.
3. After making openings, it is recommended to polish the edges to prevent wire abrasion.
4. Before installing the equipment, test its functionality to ensure it is working properly.
5. After installation, do not immediately power on the system. First, test the circuit for any issues. Only proceed with powering on the system if the test results are satisfactory.
6. If the circuit test is successful, apply adhesive (insulating or fixing adhesive) to secure the connectors.

1. Description of Parts

Fuselage: Install rear push engine, landing gear, structural boards, etc.



Center Wing: Connects power arms, ailerons, fuselage, and installs power and signal lines.



Front Power Arm: Install VTOL motors and ESC's.



Rear Power Arm: Install vertical motors, electronic speed controllers, rudder servos, navigation lights, etc.



Horizontal Stabilizer: Installs elevator servos and servo reversers.



Outer Wings: Install aileron servos and navigation lights.



Landing Gear: Installs onto the fuselage, supporting the entire aircraft.

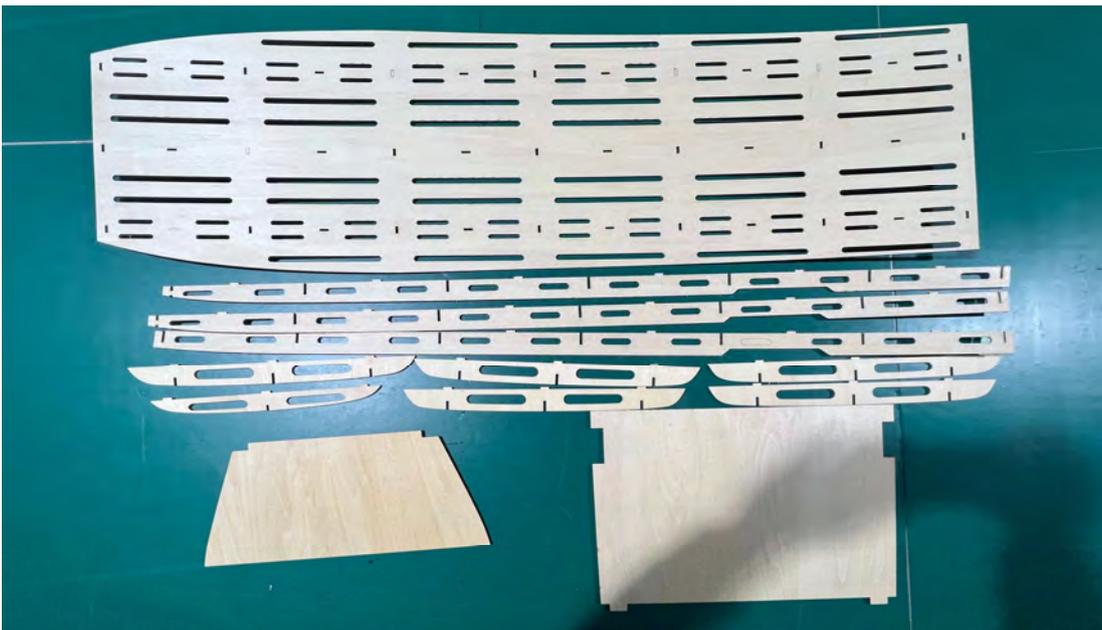


2. Component Installation

Steps of Fuselage Component Installation:

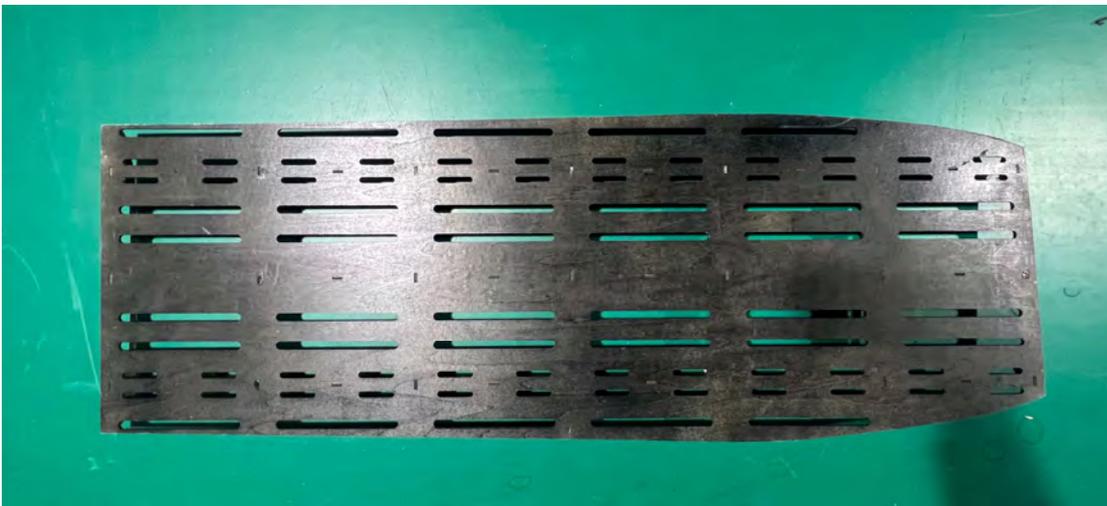
Structural Boards => Engine => Fuel Tank => Electronic Devices => Landing Gear

Assemble the internal structure and secure it with adhesive as shown in the figure.





Painting of Structural Board (optional, no specific requirements for fixation) as shown in the figure.



Secure the structural boards to the fuselage using structural adhesive as shown in the figure.



Installation of the airspeed tube holder. It is necessary to make openings during installation as shown in the figure.



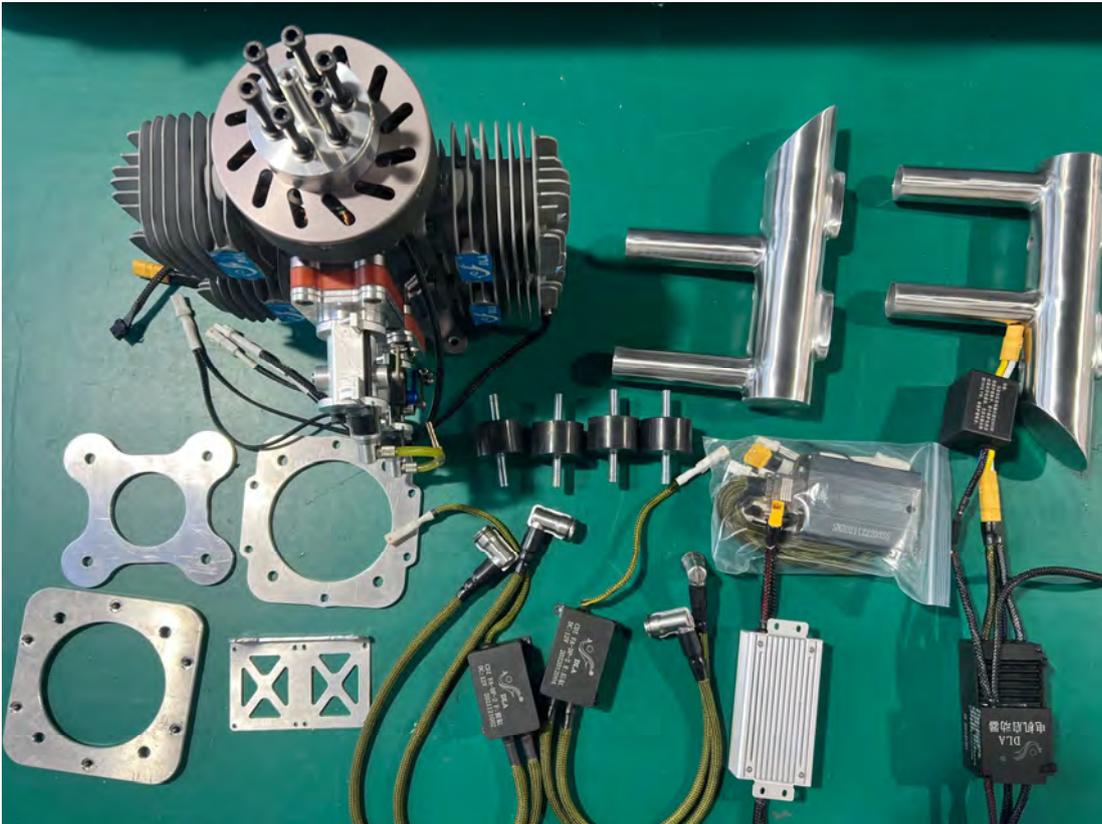


3. Engine Installation *(Using DLA232 Engine as an Example):*

Engine Installation requires making openings. Before making the openings, it is necessary to determine the proper positions as shown in the figure.

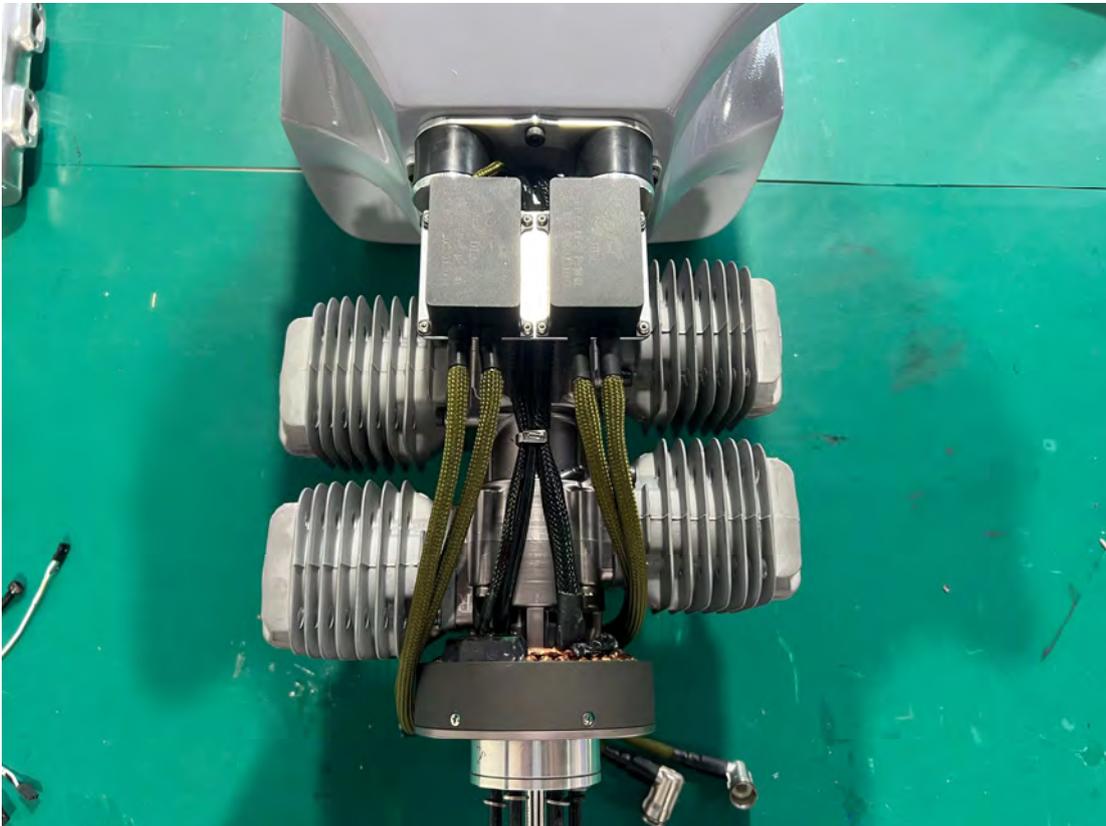


Engine Mount Installation, as shown in the figure.

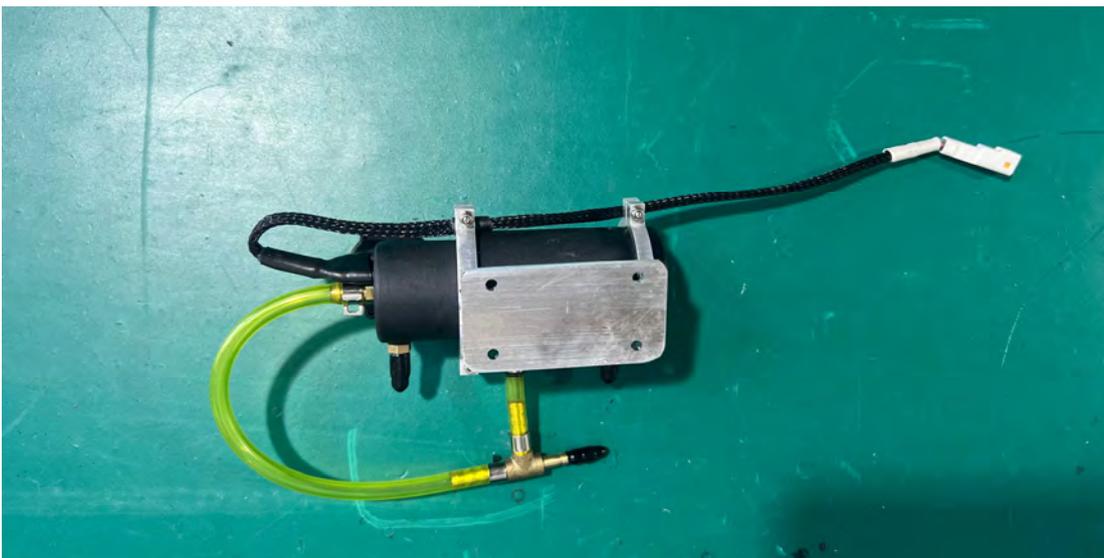


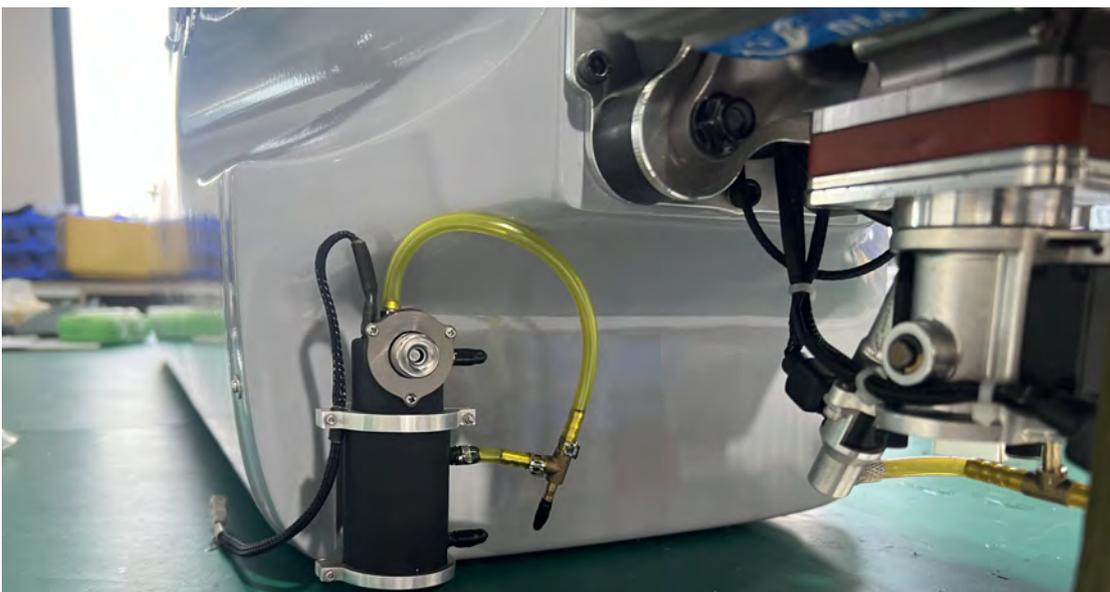


Secure the engine to the fuselage as shown in the figure.

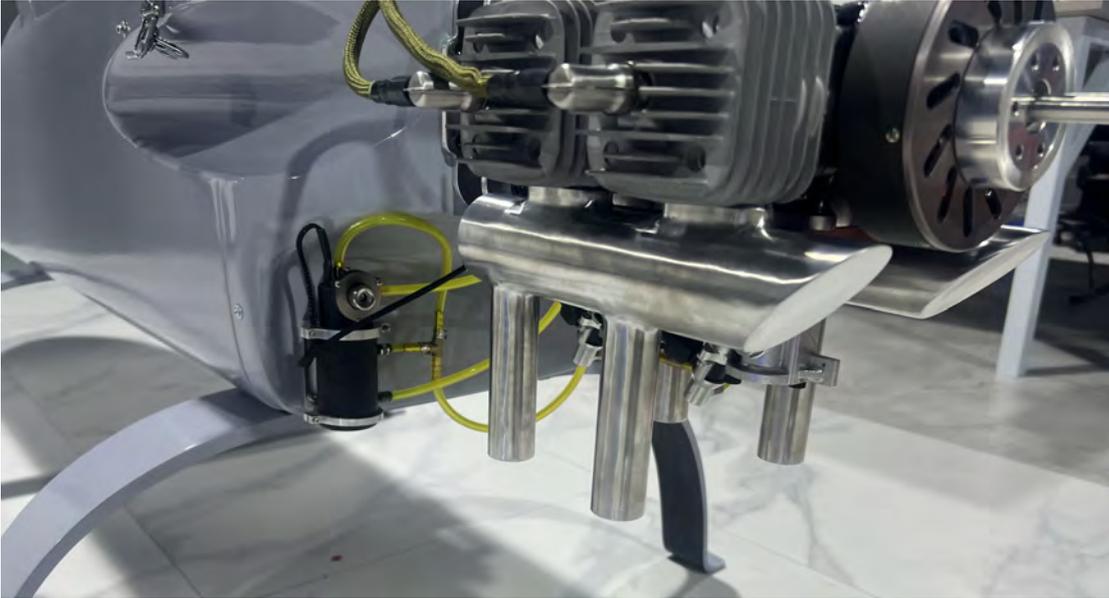


Install the fuel pump onto the fuselage. Openings are required during installation as shown in the figure.





Exhaust Pipe Installation and Fuel Line Management as shown in the figure.

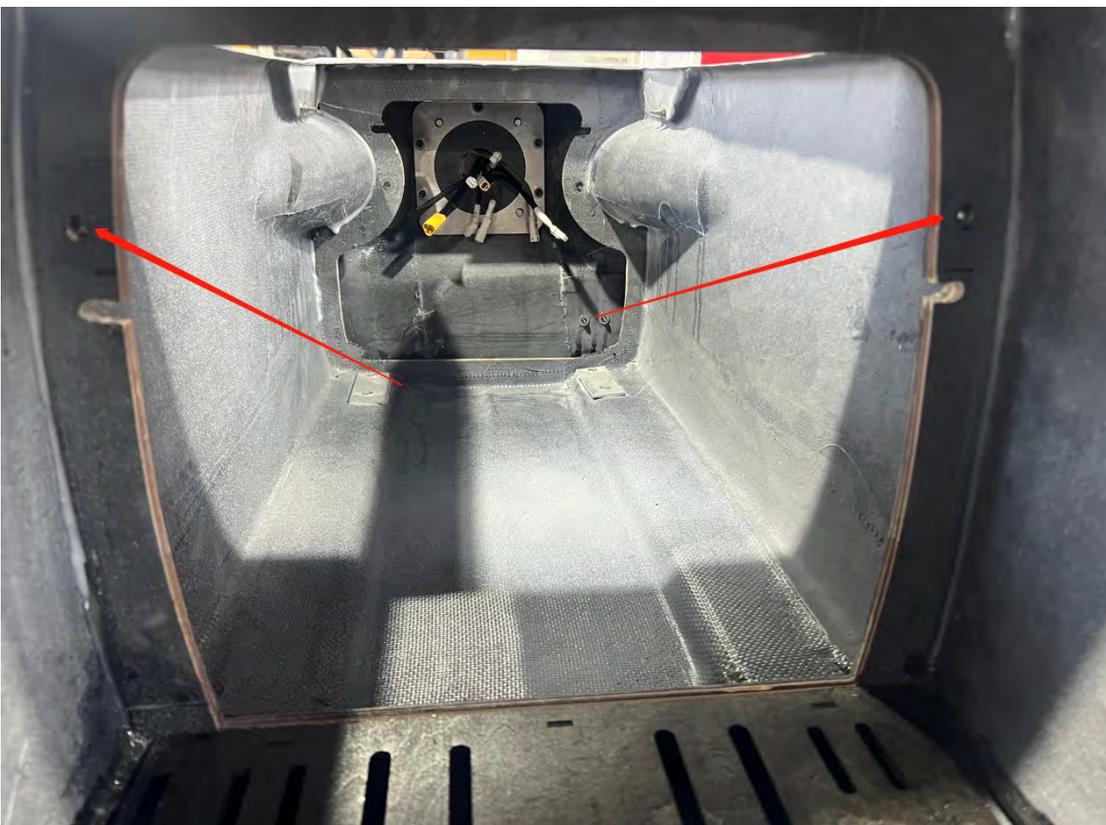
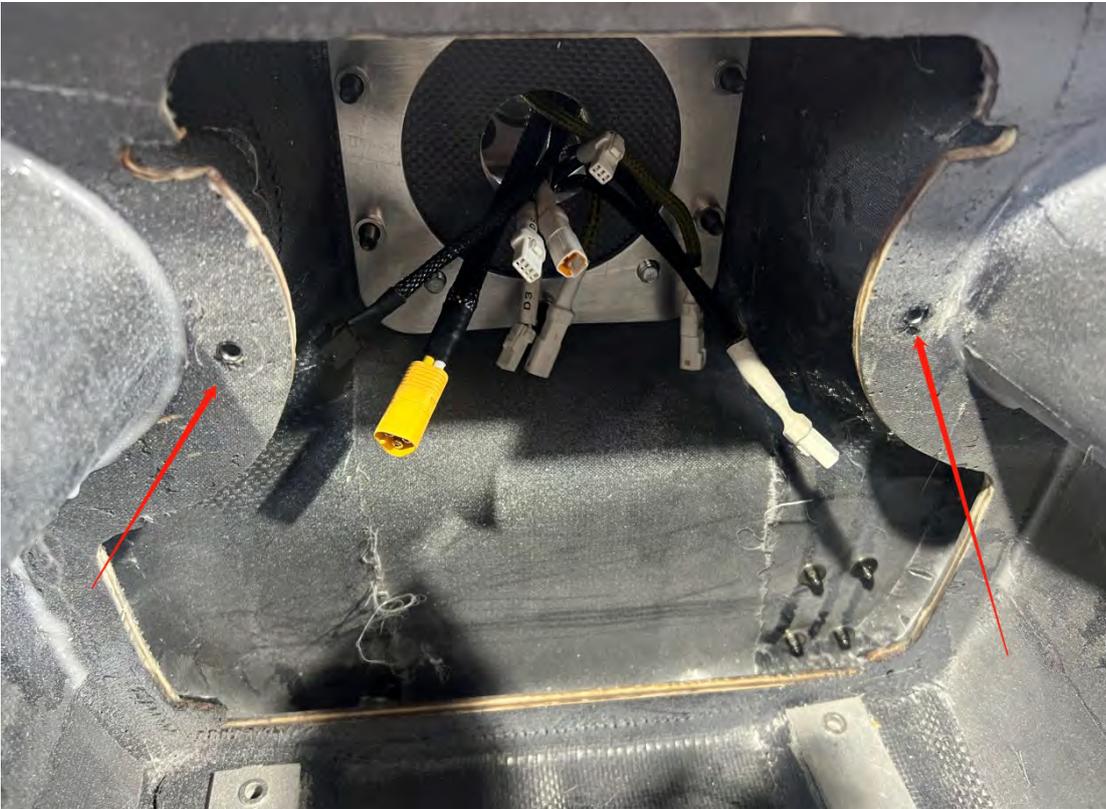


4. Fuel Tank Installation

Before installing the fuel tank, it is necessary to create mounting holes on the equipment board as shown in the figure.



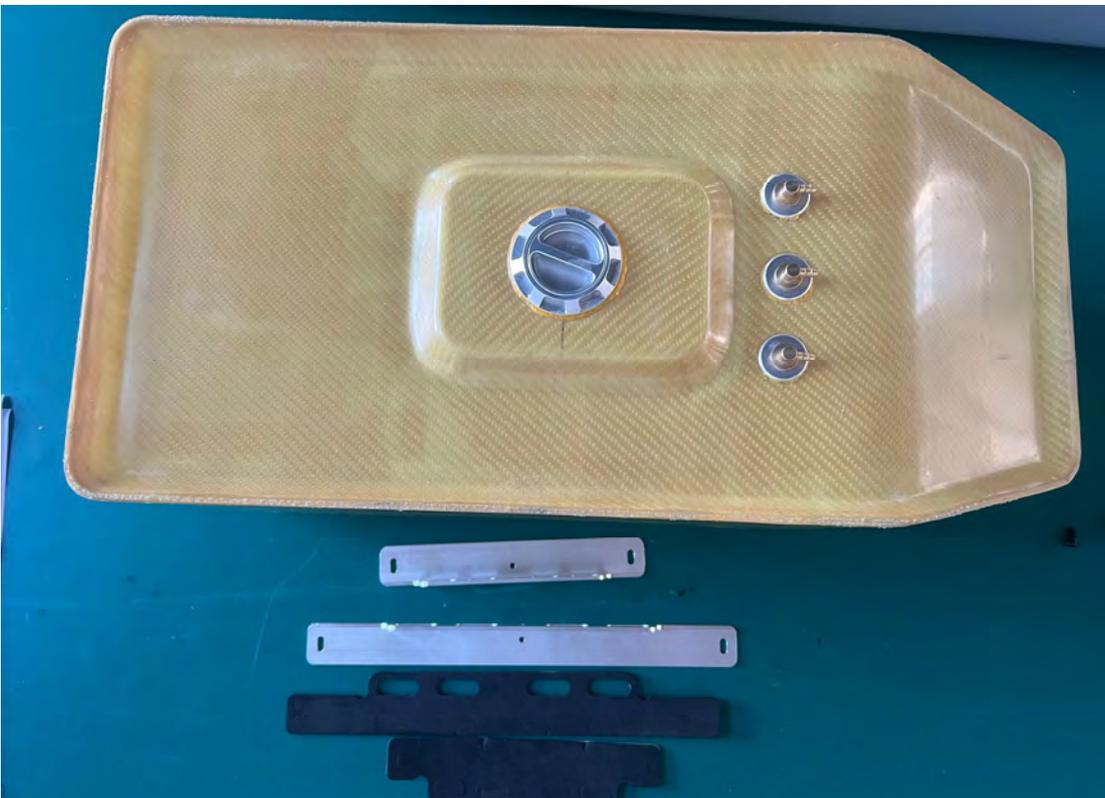
Install the fuel tank mounting nuts. Before making the openings, it is necessary to determine the positions of the nuts and then proceed with drilling as shown in the figure.



Install the anti-collision foam onto the fuselage as shown in the figure.



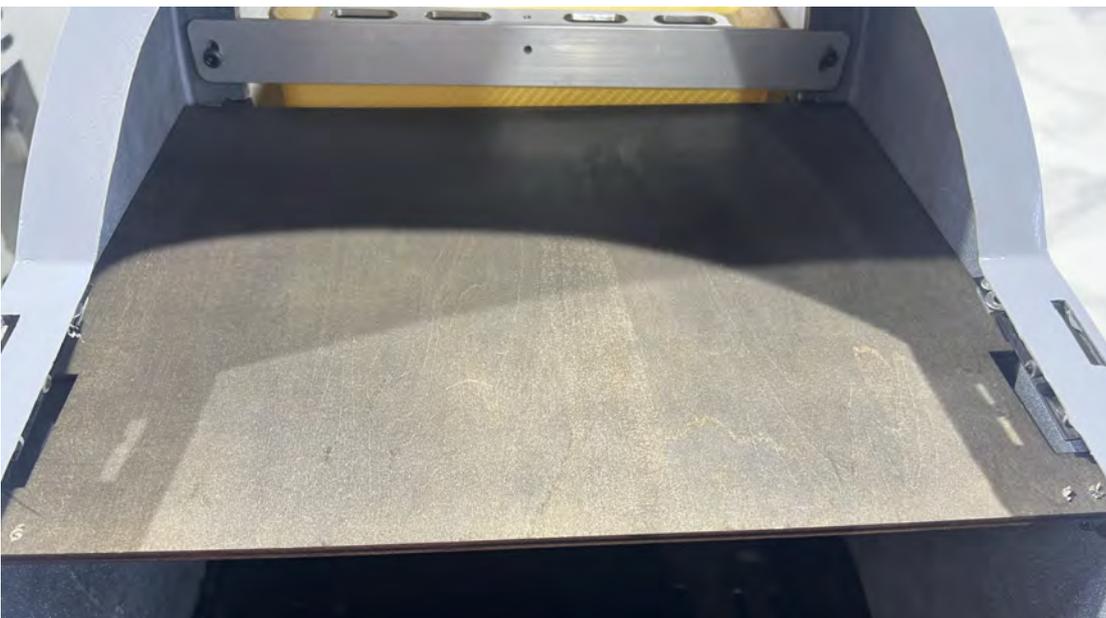
Install the fuel tank onto the fuselage.







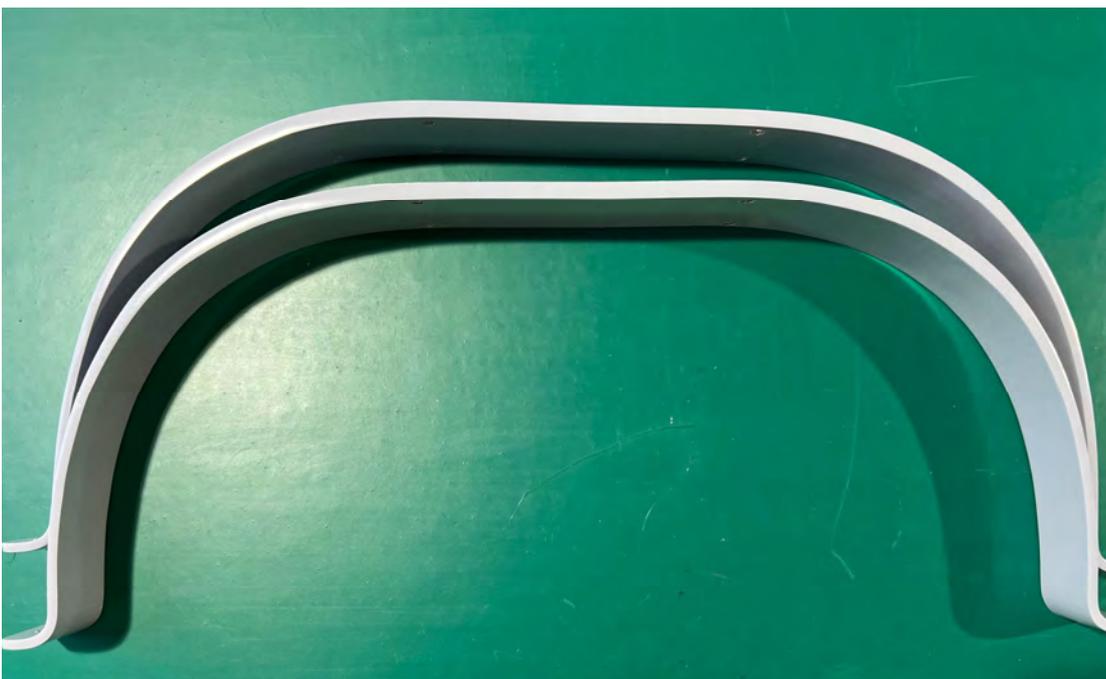
Install the front equipment board. Before installation, it is necessary to make positioning holes and limit holes as shown in the figure.



5. Installation of Landing Gear

Realign the screw holes of the landing gear (using a tap drill bit for realignment).

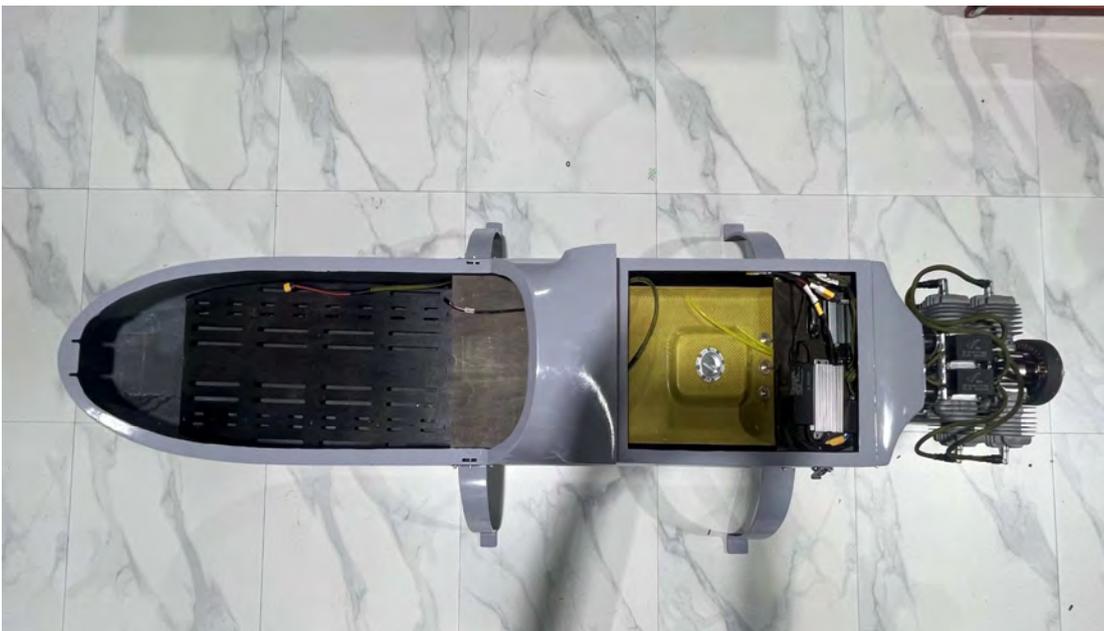
The landing gear is divided into front and rear parts. Ensure proper identification before installation as shown in the figure.





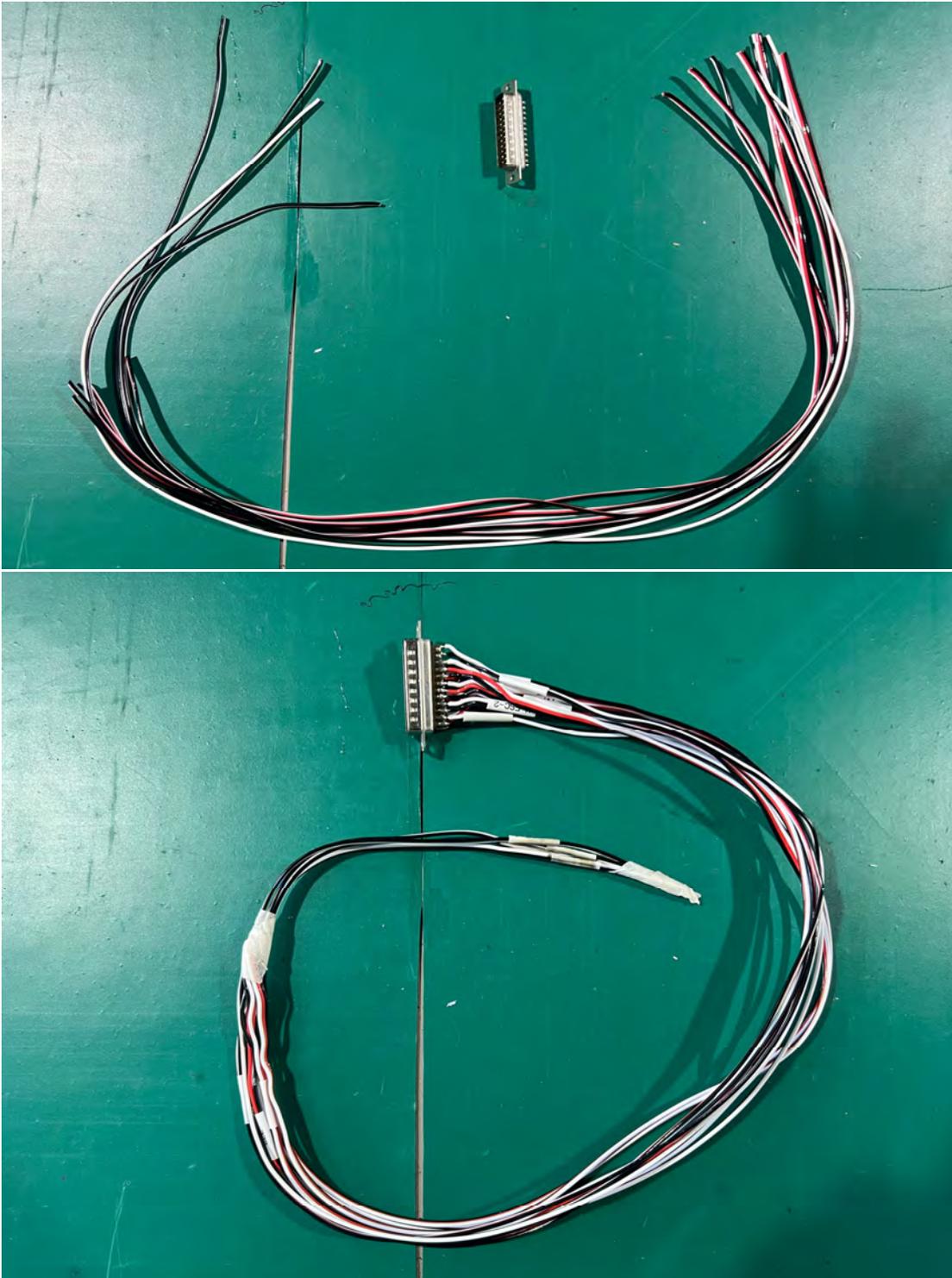
6. Organize the electronic devices and wiring of the fuselage.,

Organize the engine equipment, including RPM, throttle, start, shutdown, and extension of power lines. The engine equipment can be installed on the rear equipment board as shown in the figure.



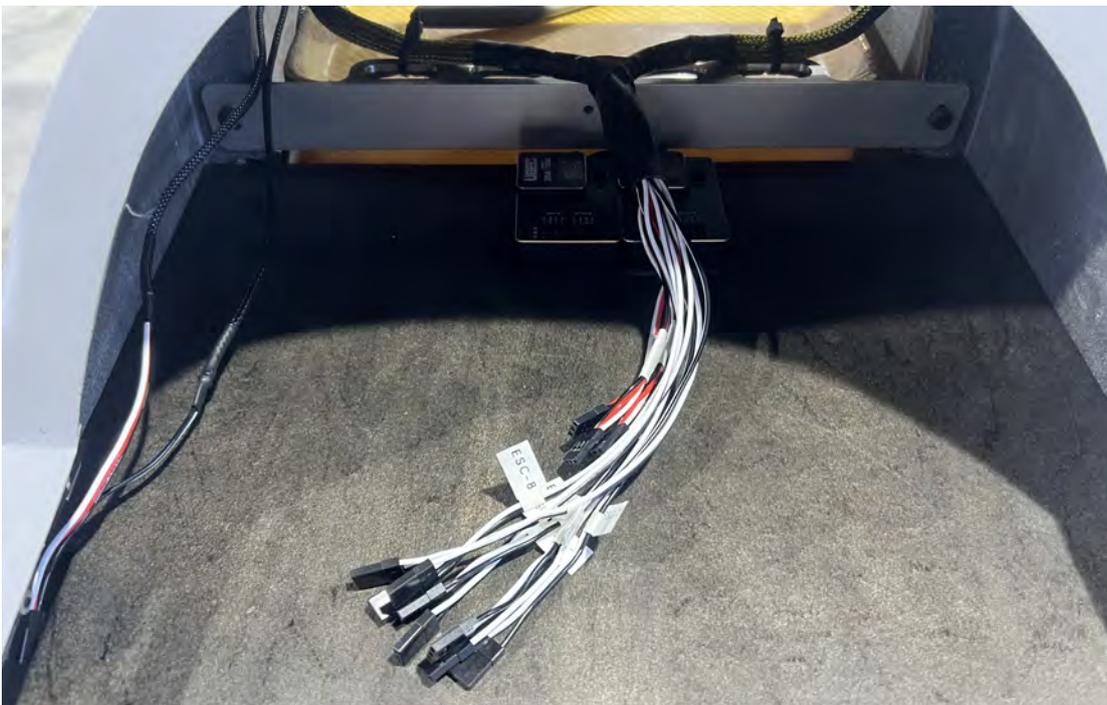
Wiring and organization of the fuselage circuits.

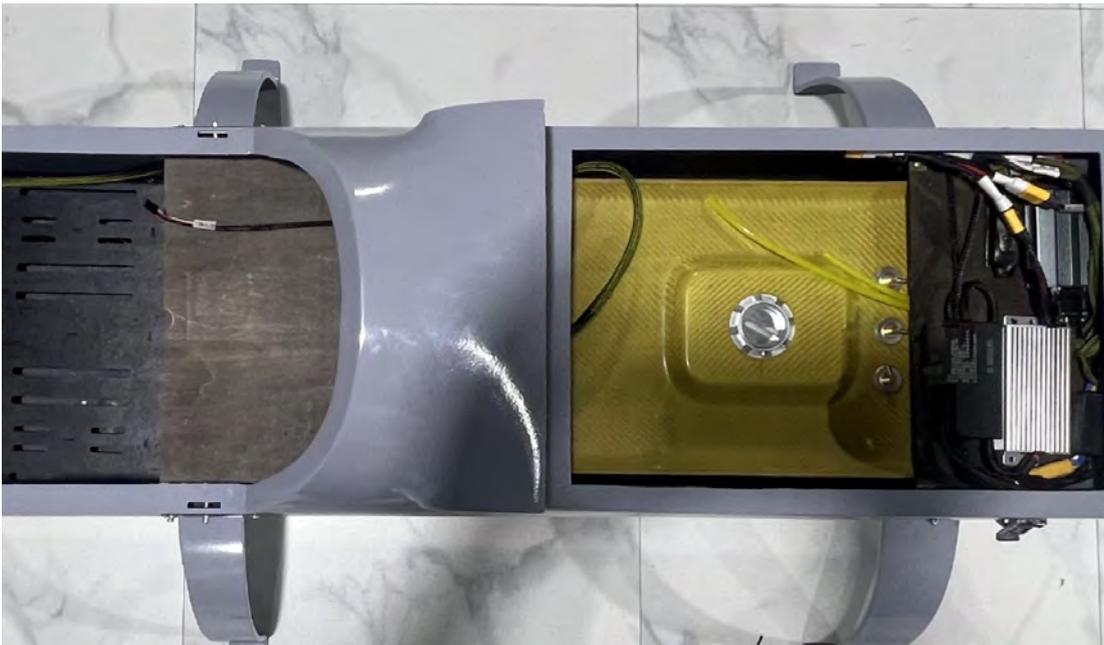
Circuit soldering: When soldering, pay attention to the definition of the connectors and avoid incorrect soldering as shown in the figure.



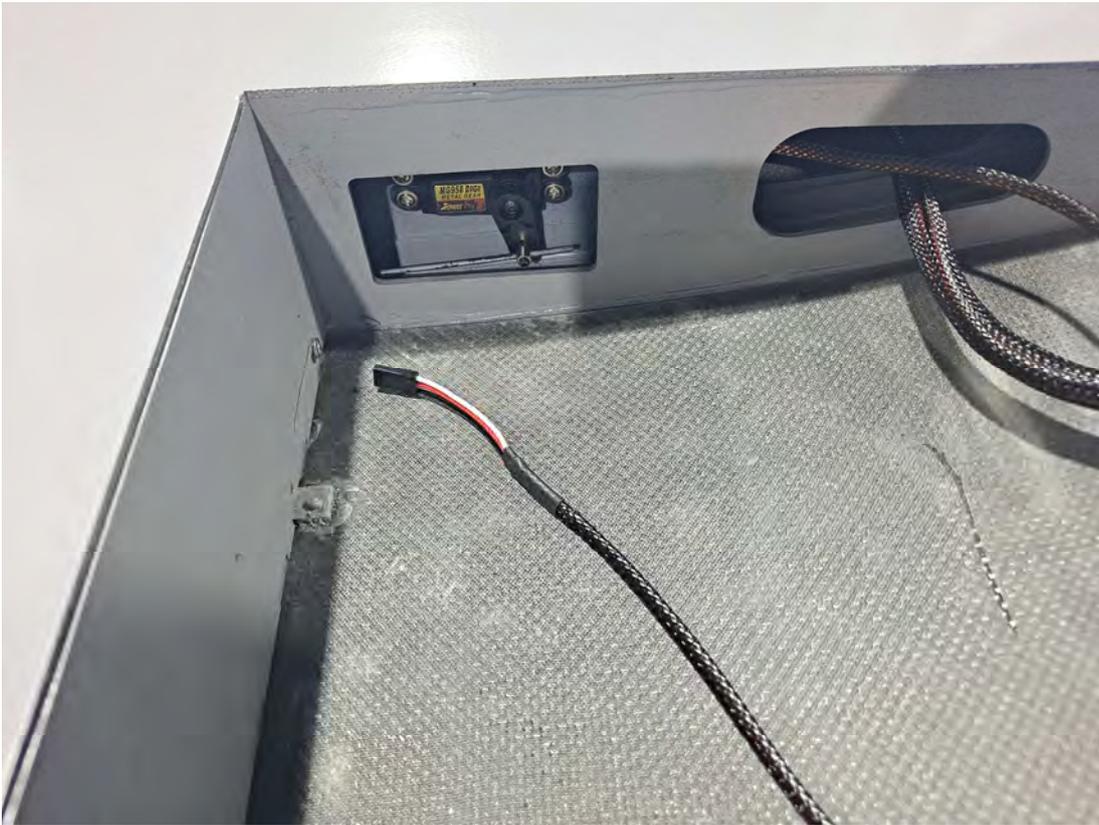


Circuit organization and installation.





Installation of the wiring for the center wing and installation of the servo in the center wing compartment.



Circuit soldering and layout as shown in the figure.

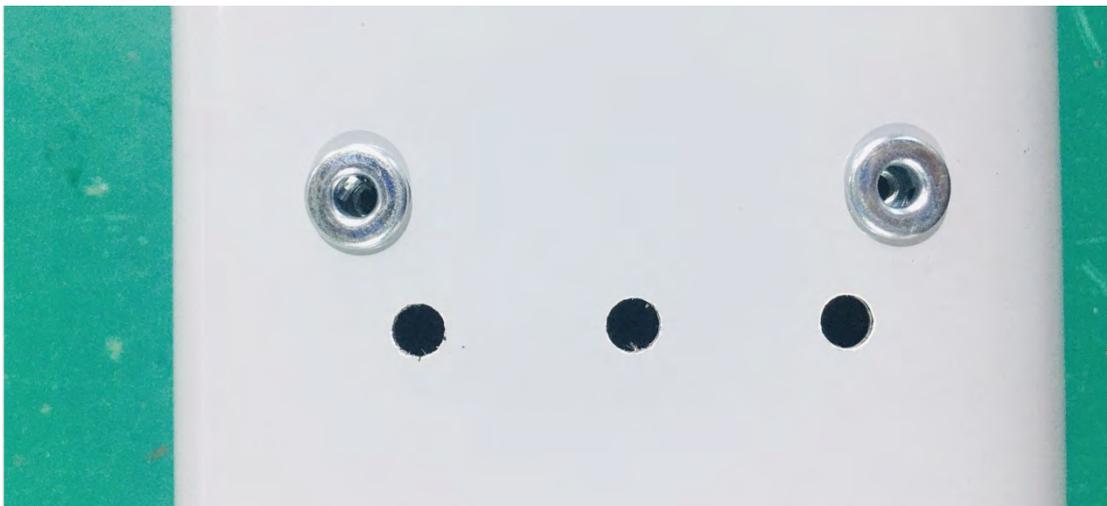


7. Power arm installation.

Motor connector soldering as shown in the figure.



Openings for the installation of lift electronic speed controllers (ESC). Before making the openings, ensure proper positioning and then proceed with drilling as shown in the figure.



Soldering the ESC (Electronic Speed Controller), rudder, elevator, and LED extension cables. Pay attention to avoid cold solder joints during the soldering process as shown in the figure.



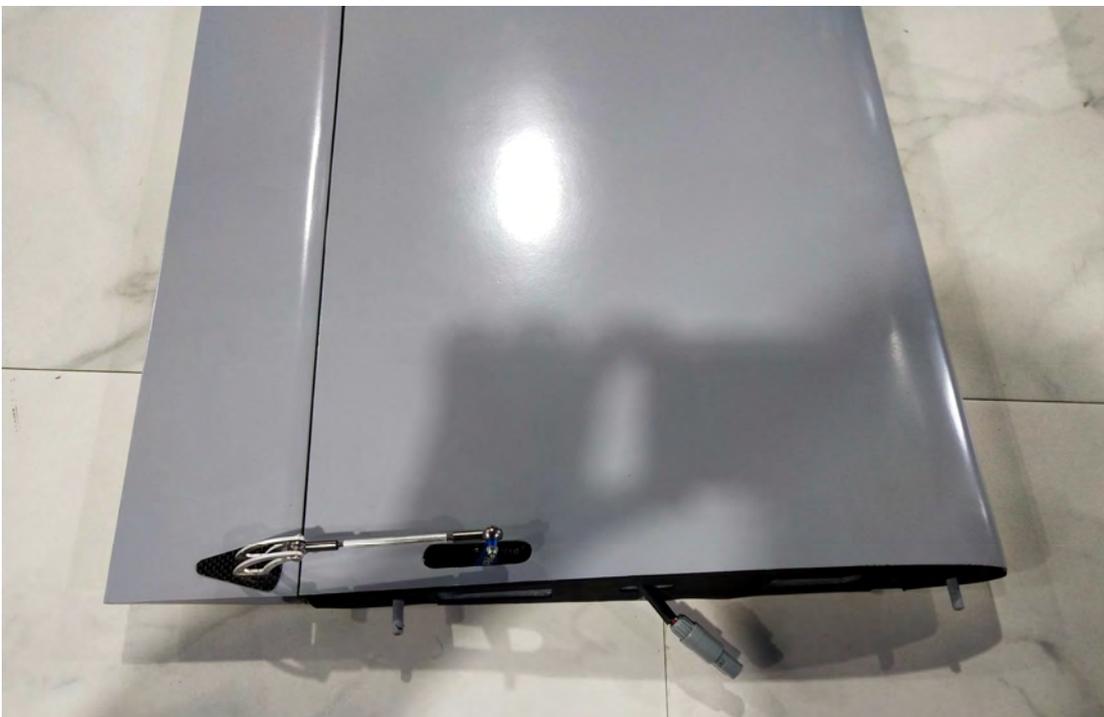
Install the motor, ESC (Electronic Speed Controller), servo, LED, and wiring as shown in the figure.





8. Installation of the horizontal tail.

Soldering and installation of the servo extension cable, aviation plug, and servo inverter wiring as shown in the figure.



9. Installation of outer wings.

Soldering and installation of the outer wing servo, LED, and wiring as shown in the figure.





10. Installation complete as shown in the figure.



Aviation plug definitions

DB25 Pin Definitions of Center Wing to Fuselage		
Pin #	Definition	Remarks
1	Aileron -	
2	Aileron +	
3	Aileron s	
4	Elevator -	
5	Elevator +	
6	Elevator s	
7	Rudder -	
8	Rudder +	
9	Rudder s	
10	Left Upper Motor -	
11	Left Upper Motor s	
12	Left Down Motor -	
13	Left Down Motor s	
14	Right Upper Motor -	
15	Right Upper Motor s	
16	Right Down Motor -	
17	Right Down Motor s	
18	LED -	
19	LED +	
20	LED S	
21	Center wing compartment servo -	
22	Center wing compartment servo +	
23	Center wing compartment servo s	
24		

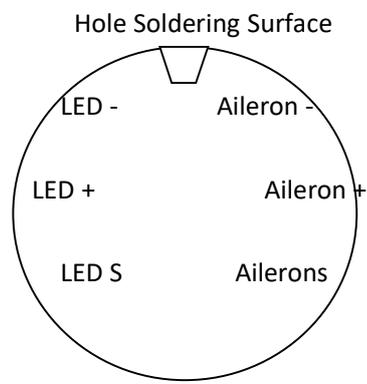
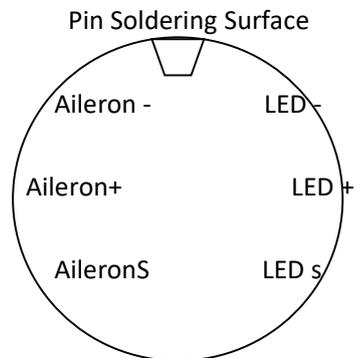
DB15 Pin Definitions of VTOL Power Arms to Center Wing

1	Rudder	-	
2	Rudder	+	
3	Rudder	S	
4	Elevator	-	
5	Elevator	+	
6	Elevator	S	
7	Right Upper Motor 1	-	Left Upper Motor 3 -
8	Right Upper Motor 1	S	Left Upper Motor 3 S
9	Right Down Motor 4	-	Left Down Motor 2 -
10	Right Down Motor 4	S	Left Down Motor 2 S
11	LED	-	
12	LED	+	
13	LED	S	
14			
15			

DB15 Pin Definitions of Front Power Arm to Rear Power Arm

1	Rudder	-	
2	Rudder	+	
3	Rudder	S	
4	Elevator	-	
5	Elevator	+	
6	Elevator	S	
7	Right Down Motor 4	-	Left Down Motor 2 -
8	Right Down Motor 4	S	Left Down Motor 2 S
9	LED	-	
10	LED	+	
11	LED	S	
12			
13			
14			
15			

6-Pin Definitions of Center Wing to Outer Wings



3-Pin Definitions of Horizontal Stabilizer to Vertical Stabilizer

