Beam

Instruction Manual

The CARF-Models BEAM continues to represent the legacy of its big brother, the BOLT! and its predecessor, the UltraFlash. It features the same aerodynamics of a simply perfect wing and stab design, just subtly adjusted for the smaller size and slightly higher wingloading of the smaller jet. The successful one-piece wing design has been copied from our UltraFlash, the late symbol of modern mid size jet performance. The fuselage features a slightly different approach with separately removable hatch and nose cone, allowing a smaller package for shipping and providing perfect access to all components. This modular build is especially important in a time where shipping costs are constantly on the rise. The clear canopy has been made an "option", avoiding this critical work step for most of our customers. The landing gear is identical, thus interchangeable with the one for our all time winner "UltraFlash".

Liability Exclusions & Safety Responsibility

You have acquired a kit, which can be assembled into a fully working R/C model when fitted out with suitable accessories, as described in the instruction manual with the kit. However, as manufacturers, we at CARF-Models are not in a position to influence the way you build and operate your model, and we have no control over the methods you use to install, operate and maintain the radio control system components. For this reason we are obliged to deny all liability for loss, damage or costs which are incurred due to the incompetent or incorrect application and operation of our products, or which are connected with such operation in any way. Unless otherwise prescribed by binding law, the obligation of the CARF-Models company to pay compensation is excluded, regardless of the legal argument employed. This applies to personal injury, death, damage to buildings, loss of turnover and business, interruption of business or other direct and indirect consequent damages. In all circumstances our total liability is limited to the amount which you actually paid for this model.

BY OPERATING THIS MODEL YOU ASSUME FULL RESPONSIBILITY FOR YOUR ACTIONS!

It is important to understand that CARF-Models Ltd., is unable to monitor whether you follow the instructions contained in this instruction manual regarding the construction, operation and maintenance of the aircraft, nor whether you install and use the radio control system correctly. For this reason we at CARF-Models are unable to guarantee or provide a contractual agreement with any individual or company that the model you have made will function correctly and safely. You, as operator of the model, must rely upon your own expertise and judgement in acquiring and operating this model.

Personal safety

There are a couple of things that are good to keep in mind when you are assembling your CARF-Models Beam. Some of them are common sense, but it doesn't hurt to be reminded. While you are working with tools and sharp implements, be aware of others around you and the environment you are working in. When cutting or sanding materials, always wear a face mask to avoid inhaling particles. Keep your work environment clean and tidy at all times. A clean workshop will enhance the experience. Protect all parts from scratches and dents. Use rubber matting on your bench, and be careful of components like screws getting between the part you are working on and the bench. BE CAREFUL with the two combined ultra torque servos, open pushrods, and bell cranks - there is imminent danger to break your fingers when you switch on the RC system.

Assembly process

This manual is set to provide detailed pictures of the building steps. You may wish to change and do some things in a different order, which is fine provided you keep in mind that some things need to be done before some others. When planning out the installation of your components, always keep the centre of gravity location in mind. If you plan ahead you can avoid having to add weight to your model. It is far easier to remedy a nose heavy model than a tail heavy model. A few grams of lead at the rear is preferable to hundreds of grams in the nose! You will find that it is easiest to fit items that cannot be relocated, like aileron, elevator, rudder and throttle servos, before you do a preliminary C of G check. Receivers, ignition and batteries etc. can generally be relocated to suit your requirements.

Most of all, enjoy the process of creating your CARF Beam, a job well done is always satisfying!

Beam

Category – Sport Jets

About

This is a quick guide to the successful installation of RC and propulsion equipment into your new Diablo. We do not have a lengthy manual to bore you with how to tighten a bolt or how to clean a surface before gluing and such. We will provide within this manual the specific details of rigging this airplane successfully for many hundreds of hours of competition flying.

All the equipment we provide is thoroughly tested in this airplane. We did so many flights with the help of nameful pilots, powerful engines to proof if the power is enough and servos to make sure to recommend the best working equipment for you – and that's what we do with this manual now. PLEASE do yourself a favor and do not modify any of the design until you have a considerable amount of flights on the airplane and have a feel for WHY you might want to change this or that, if anything. Please give us the chance to show you that our research and development has been serious and successful and the sophisticated final setup we came up with works better than anything else we tried. We tried a lot!

We have seen a lot of equipment, hardware problems and failures during our testing. What you hold in your hands now is the result of all this hard work. Every detail has a reason. If it isn't exactly what you would have used, please give us the benefit of the doubt, and consider that we might have ALSO been trying to use something else instead which hasn't been working reliably or safely. We do not intend to save cost by providing a cheap solution in hardware and equipment. We are ONLY driven by our test results.

What do you need???

An expample of the basic and main accessories required...

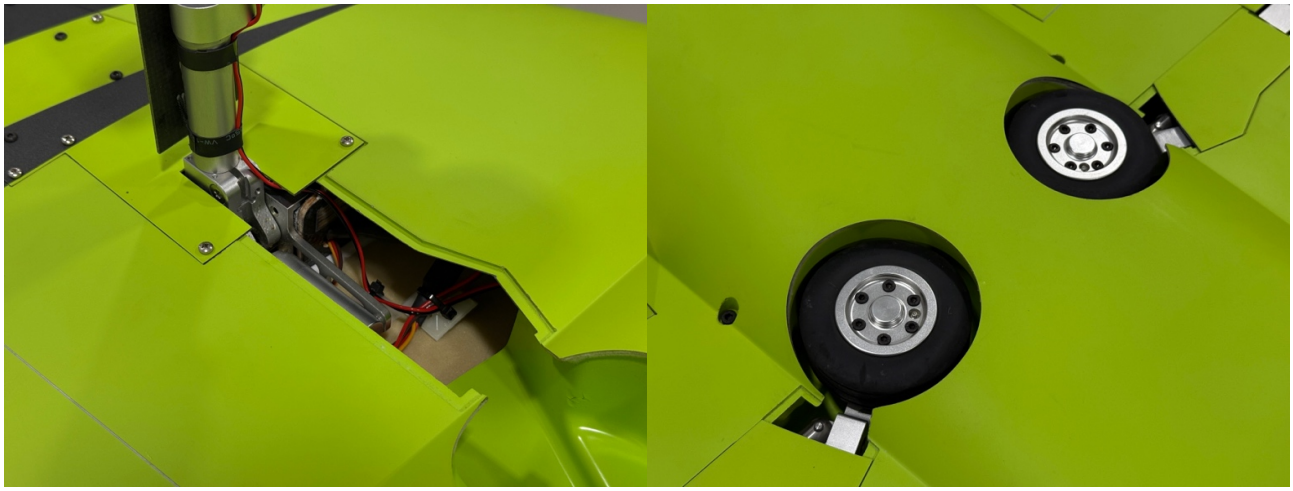
This is a list of required products to complete your Beam KIT. This list is only a recommendation of what to equip your airplane with. There is no reason that similar products from other brands cannot be used in this plane. There are many ways and products on the market that you can use with the Beam.

Amount	Required	Possible Accessories
1x	Engine 120-160N	Kingtech K-142 / Jetcat P-130
1x	Thrust Tube	CARF Models Thrust
1x	Fuel Tank	CARF Models Fuel Bag Set
1x	Landing Gear	JP Retract Set / Electron Retract Set
5x	Aileron, Elevator, Rudder	Mac Gregor MGB 5216HV
2x	Flap Servo	Mac Gregor MGB8346HV
1x	Steering	Mac Gregor MGB6928 V2
8x	Servo Arm short	CARF Servo Arm 25T 16-28mm
1x	Power Supply / Gyro	Jeti Rex12 Assist / Powerbox Pioneer / Cortex Pro / PB Igyro
1x	RX Battery	Lipo 2s 2000 - 3000mAh
1x	Turbine Battery	Lipo / Life 3s 2000 - 3000mAh
-	Servo Wire	Powerbox Servo Wire Maxi
-	JR Connectors	JR Connectors

Build Description

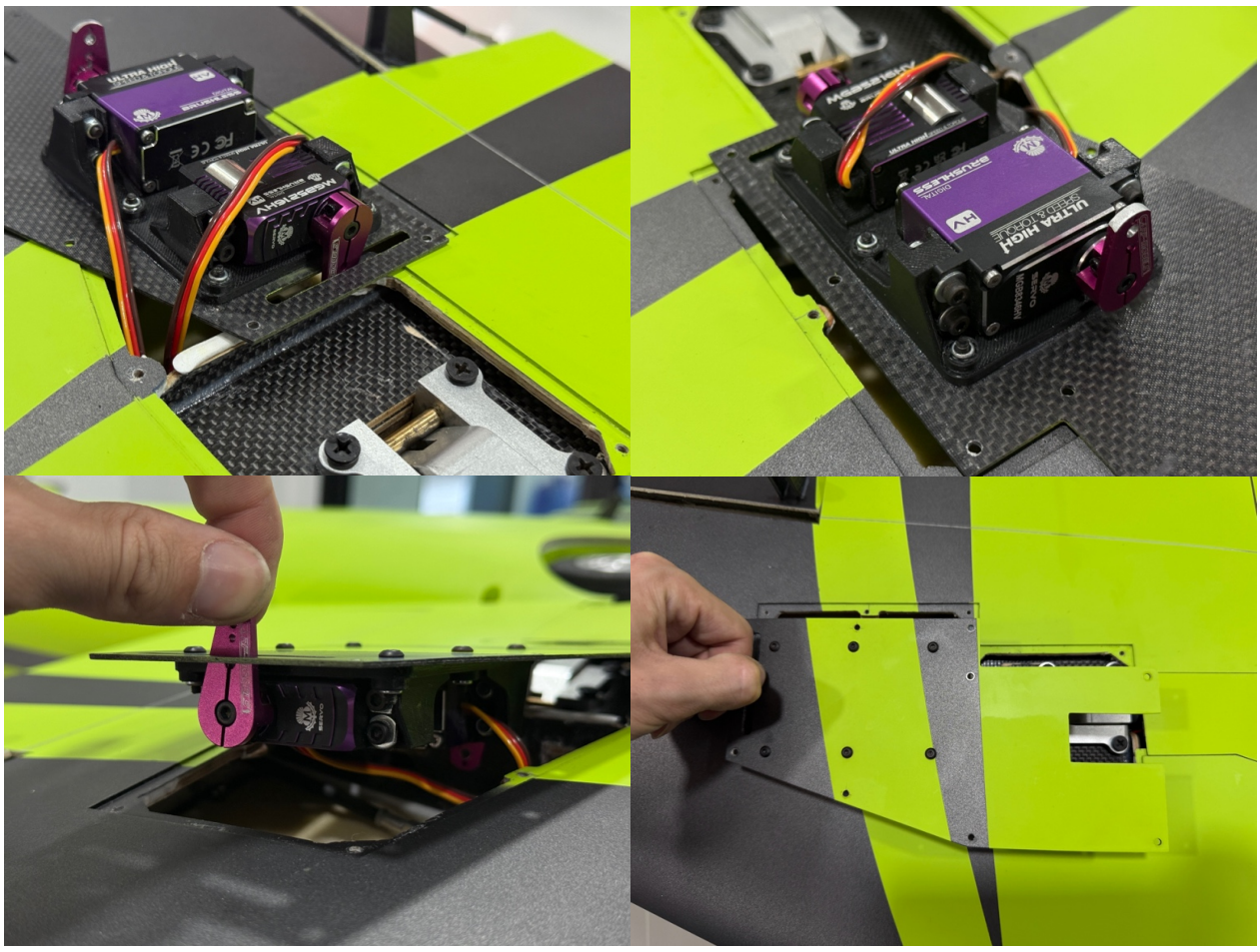
Main Gear Installation:

- Position the landing gear in the landing gear slot in the wing and center it within the slot to mark the mounting positions with a pen or marker
- After you mark the four mounting points, please double-check the position of the landing gear
- For now, only mount the gear with two metal screws and keep going (use the other two screws after the landing gear is finished, in case you have to change the position)
- Retract the gear to check if the gear retracts flawlessly or might hit the gear slot at some point (if so, you need to adjust the gear slot with a bit of sandpaper)
- Next up, you should install the brake wire to the strut (use zip ties or shrinking tube)
- Retract the landing gear one more time and check if the brake wire is moving without an issues
- If the gear retracts without any issues, you should now add all metal screws to the gear and tighten all screws on the strut with Loctite
- For installing the gear door, please sand both surfaces before using glue (we recommend Aeropoxy) to fix the gear door to the gear strut
- In case you're using the Electron gear, you can mount the gear door to the strut by using two bolts



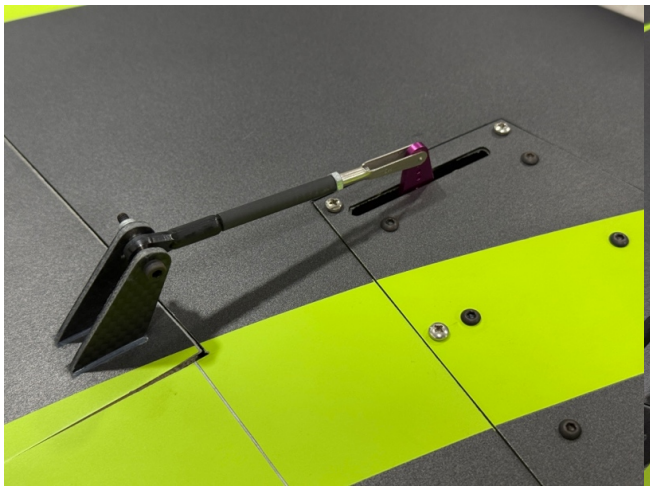
Aileron & Flap Servo Installation:

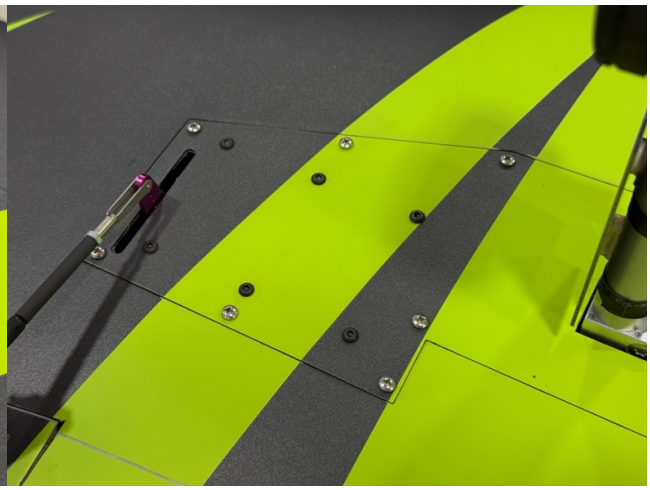
- Install the aileron & flap servo to the mount in the servo hatch by using the included M3 bolts
- Do not forget to use Loctite after your servo is positioned
- It's time to prepare and install your flap linkage using 1x M3 ball link, M3 thread, M3 nut, M3 clevis, and a carbon tube on top of the thread
- Now you can put your extension wire through the wing to the servo slot, connect the servo wire, secure it with a safety clip or shrinking tube, and put the servo hatch onto the wing
- Install your aileron linkage and mount the servo hatch to the wing using 9x allen metal screws
- Your aileron servo and linkage should be all assembled now, and you can go on to the next step



Flap Servo Rules:

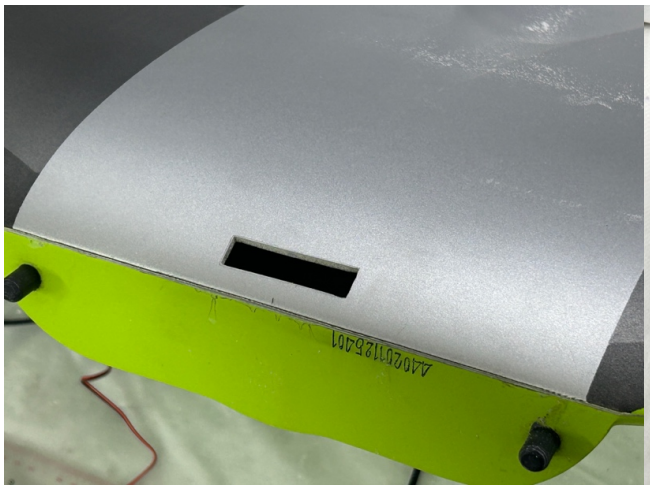
At full deflection of the flap, the servo arm needs to be in one line with the linkage to massively reduce the load to the servo! Otherwise, it could break your flap servo within a few flights...!

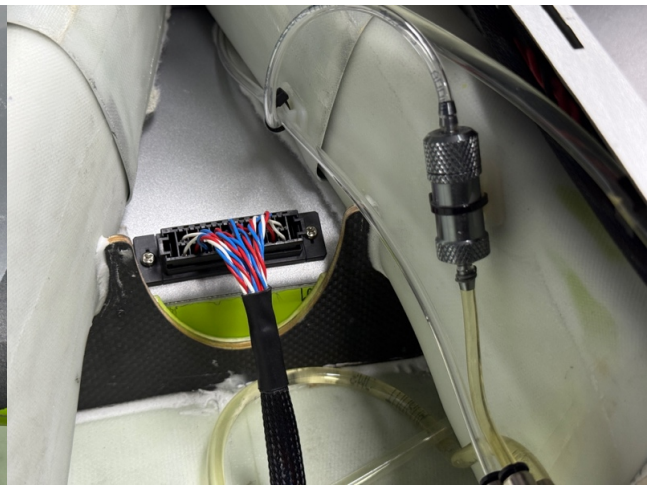




Wing Connector:

- We recommend using connectors like the click connect/amp connectors or some others with minimum 20pins

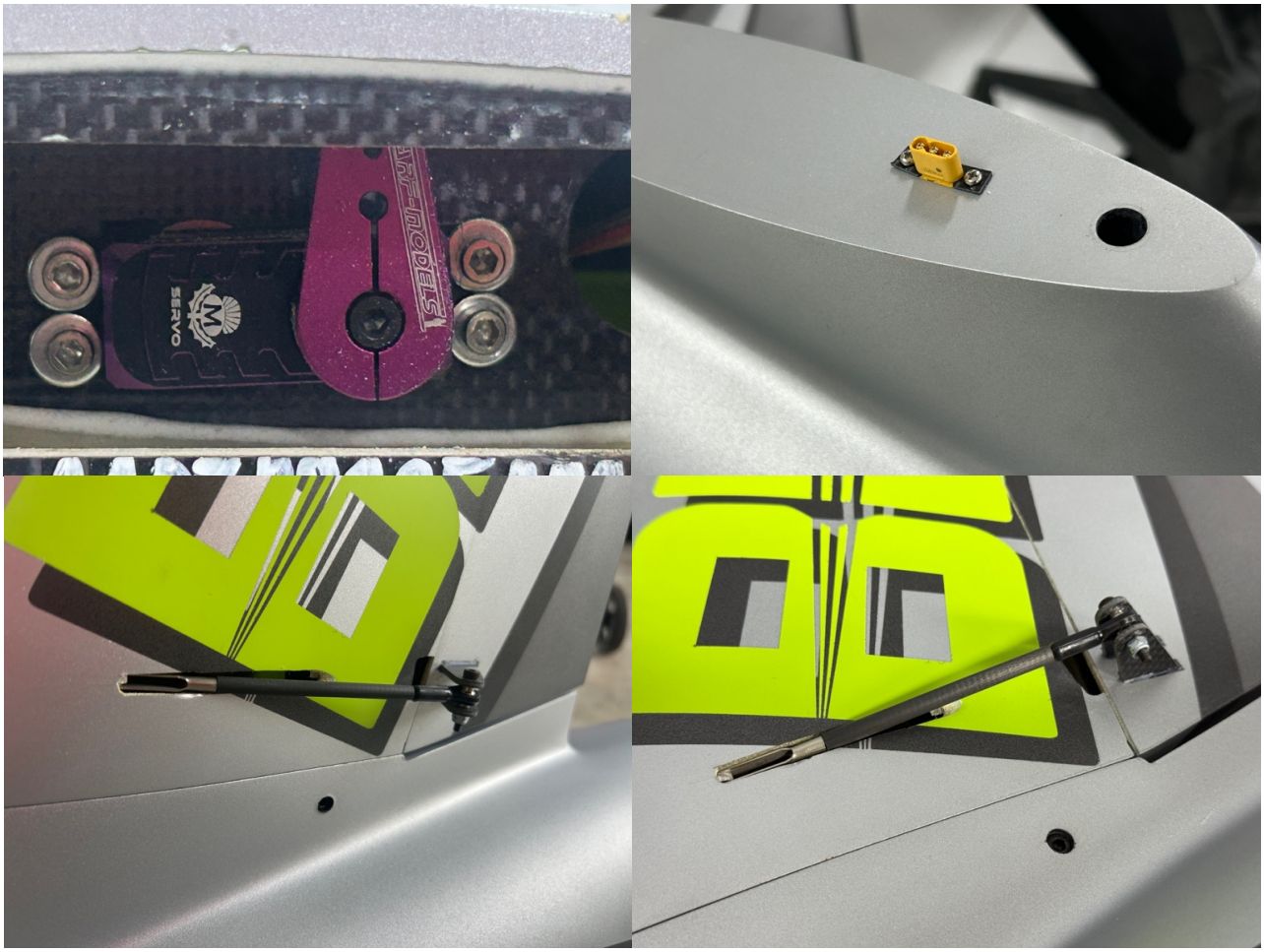




Fin

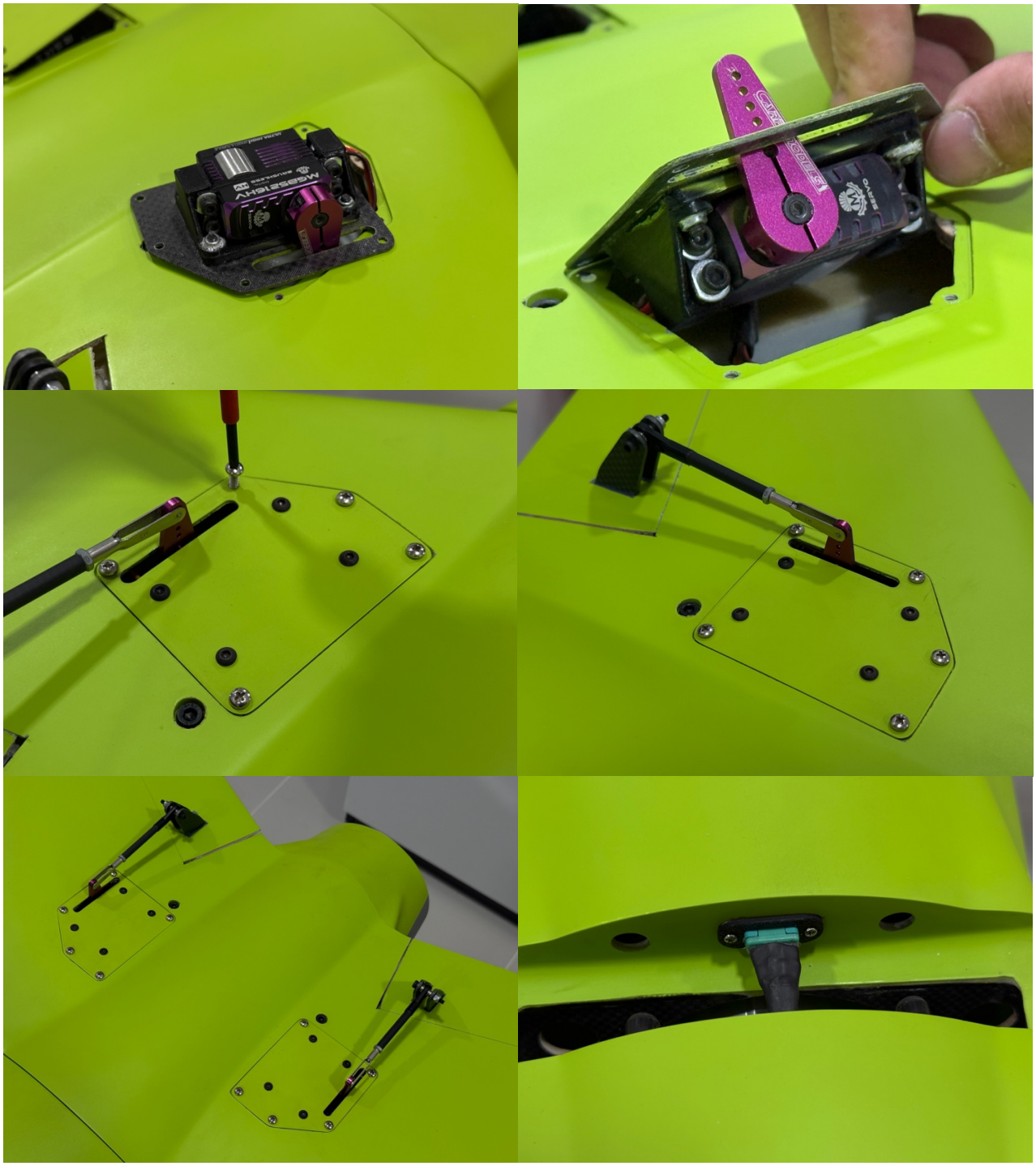
Rudder Servo Installation:

- Install your rudder servo, including the servo arm, into the rudder servo slot and prepare the rudder linkage with 1x M3 ball link, 1x aluminium clevis, and M3 thread
- Center your rudder with some tape and connect the rudder servo to power to keep it in the center
- Now adjust your rudder linkage and add the carbon tube if done
- Retighten the servo screws as well as the linkage screws and check if the rudder is moving flawlessly
- For the servo connection, you can use the standard JR plug or the yellow MR30 connector



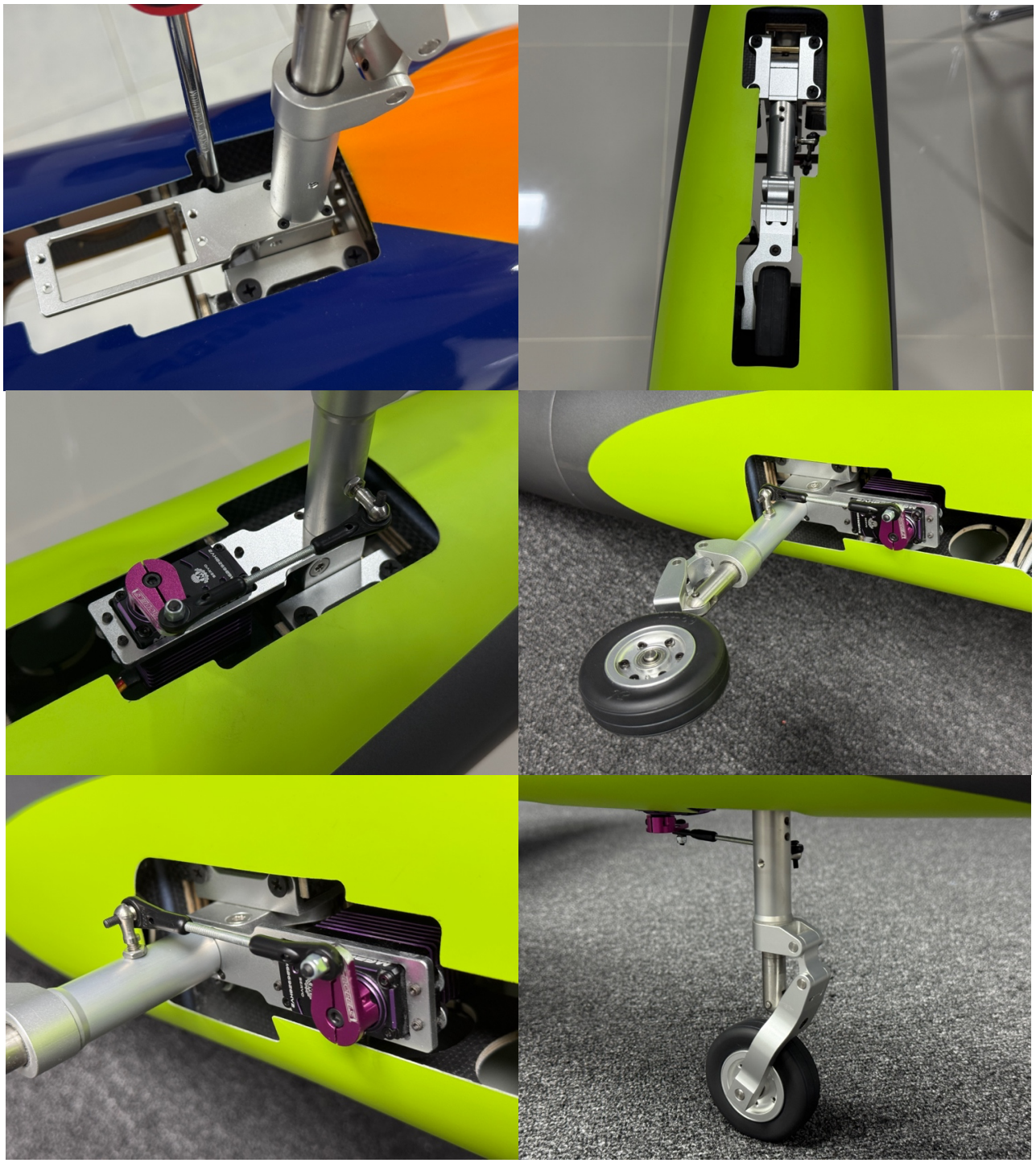
Elevator Servo Installation:

- Install your elevator servos, including the servo arm, into the servo mounts at the servo hatch and prepare the elevator linkages with 1x M3 ball link, 1x M3 Nut, 1x aluminium clevis, and M3 thread
- Center your elevators with some tape and connect the servo to power to keep it in the center
- Now adjust your elevator linkage and add the carbon tube if done
- Retighten the servo screws as well as the linkage screws and check if both elevators are moving flawlessly
- For the servo connection, you can use an AMP 6-pin or MPX connector



Nose Gear Installation:

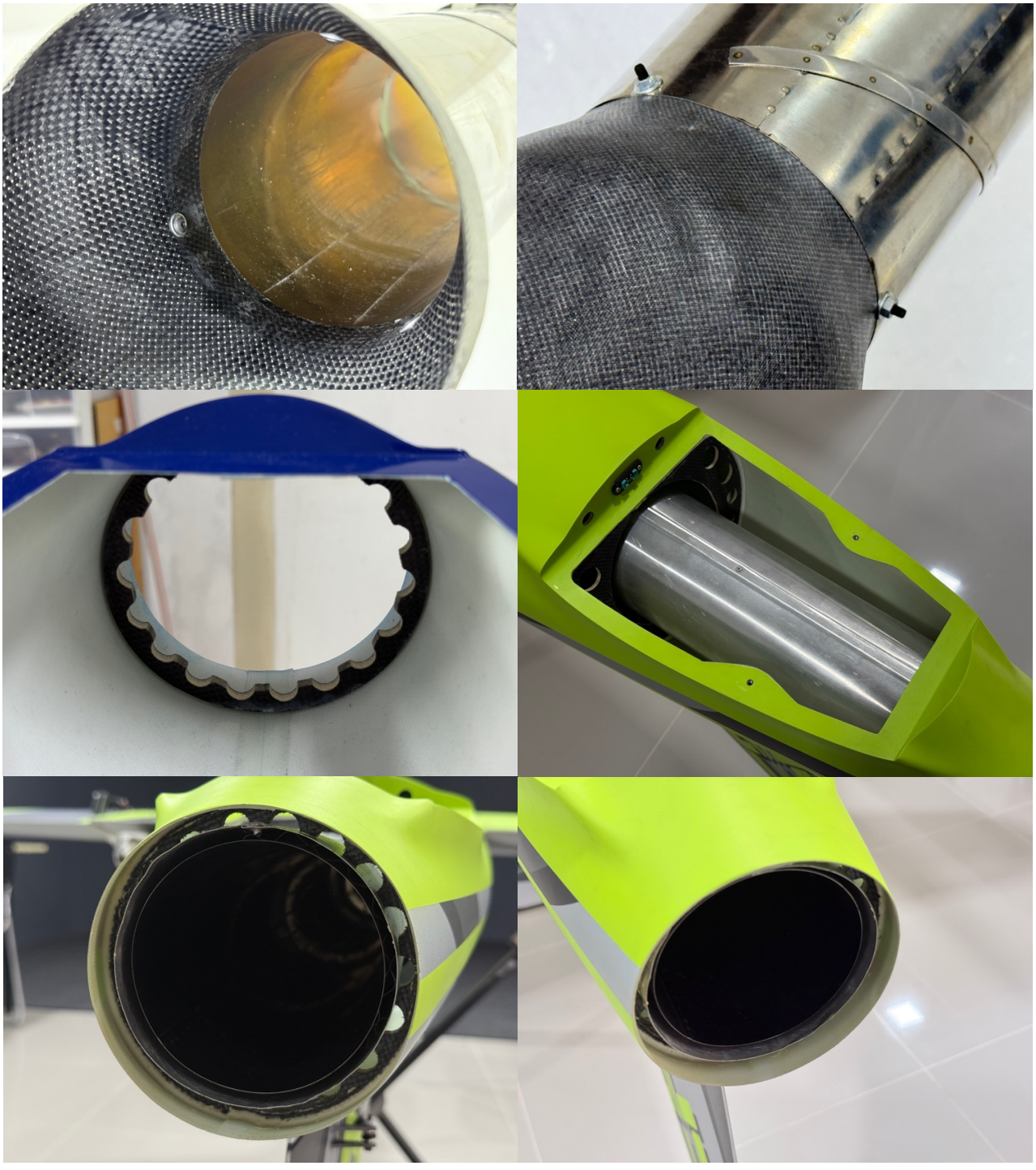
- At first, you should install the steering servo to the nose gear and connect the steering linkage (a 16mm servo arm is enough)
- Position and center the nose gear on the gear mount
- To adjust the position, you should install only two screws first, recheck if the gear is still aligned, and then add the other two screws to hold it in place
- Make sure the landing gear retracts without damaging the gear slot
- If that's the case, you can now retighten the strut screws with Loctite



Wiring before Thrust Tube installation

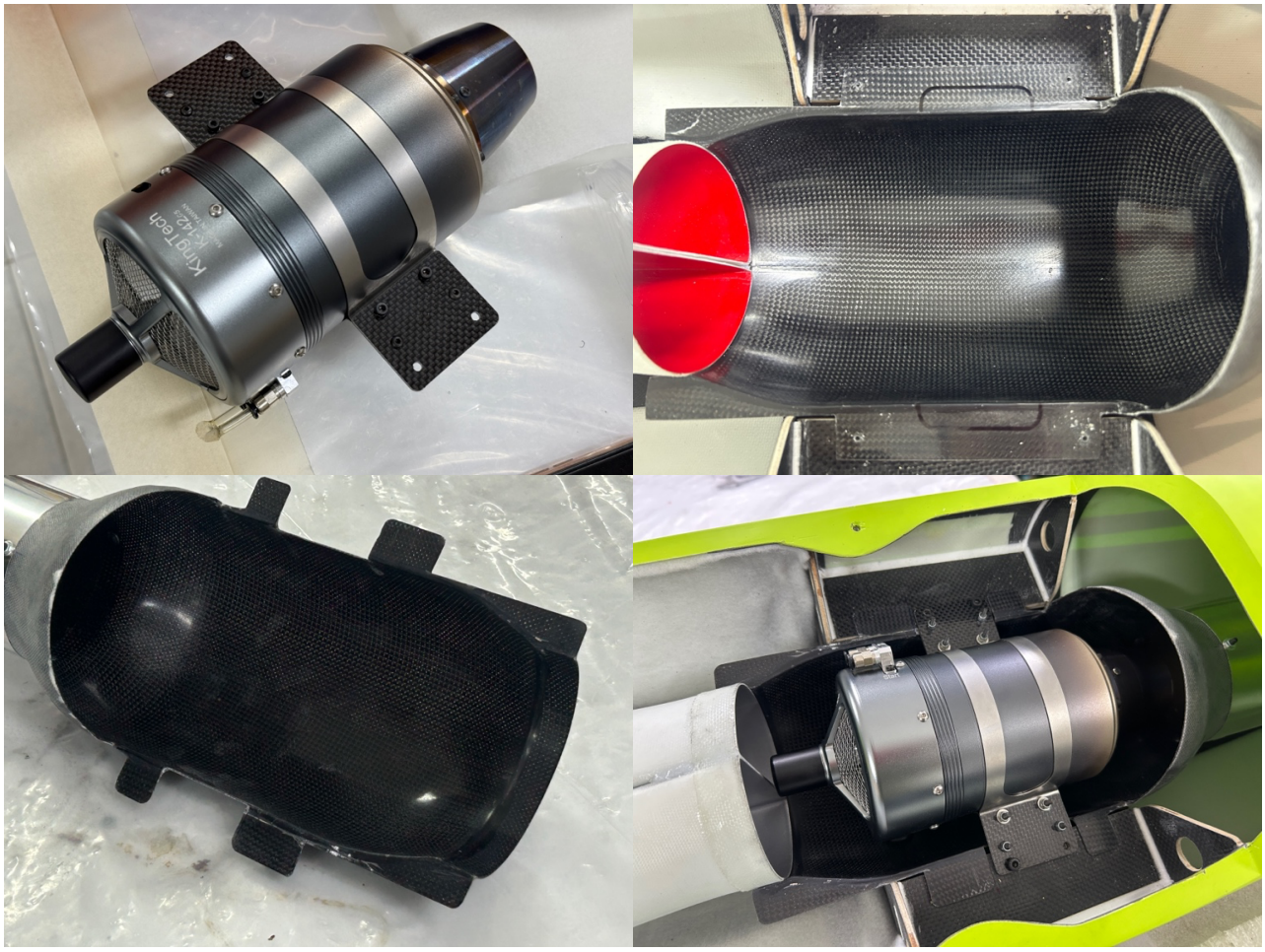
Thrust Tube & Turbine Installation:

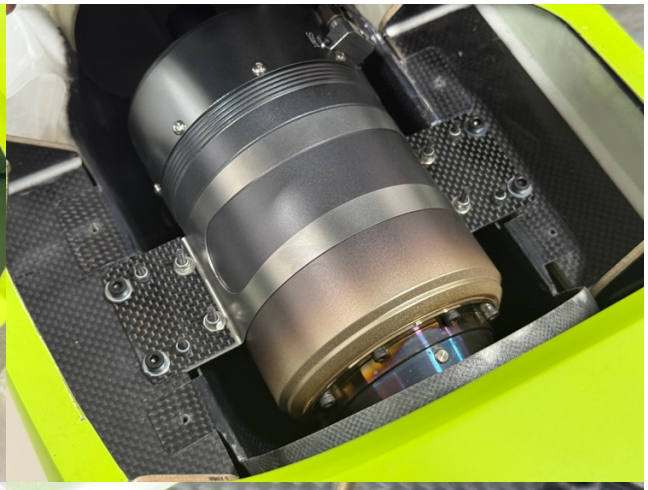
- At first, you'll need to assemble the thrust tube using 3x M3 bolts and 3x M3 nuts
- Now your thrust tube should be connected to the bottom part of the engine duct
- Before installing the thrust tube, you'll need to install the thrust tube former all the way into the rear of the fuselage
- The surface along the former needs to be sanded before the former can be glued in place with epoxy or ca
- Next up, you should install the whole thrust tube assembly into the fuselage and adjust the position of the thrust tube assembly by using the air intake
- Now your thrust tube should be connected to the bottom part of the engine duct

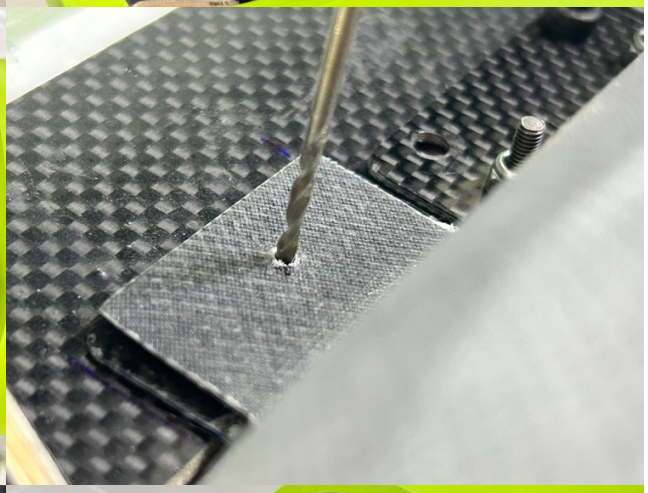
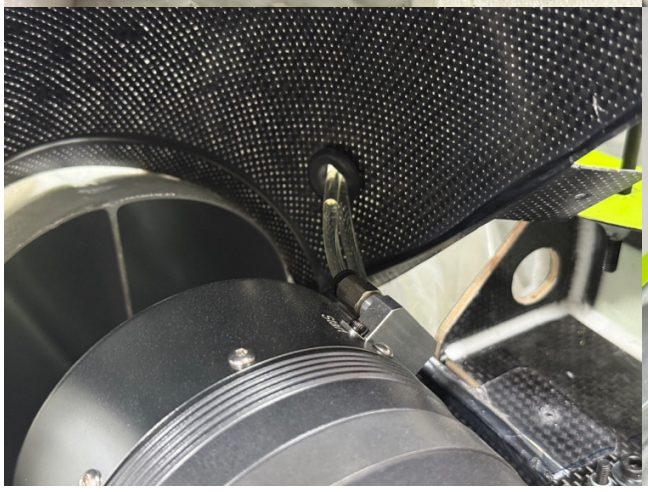


Turbine Installation:

- Prepare your turbine with the included carbon extensions (Picture 1)
- Test fit the turbine into the fuselage and mark the cutout for the carbon extension of the turbine to be cut (Pictures 2 & 3)
- Place the turbine and ensure that that it is centered within the thrust tube (check by watching from the back)
- After the turbine is centered, you should mark the turbine mounting points with a pen or marker and remove the turbine (Pictures 3, 4 & 5)
- Now you can drill the holes for your turbine mount into the carbon mounts and glue 4x t-nuts from the back (Pictures 3, 4 & 5)
- That way, you can have access to your turbine at all times (example: removing it for service)
- The final step is to install the top duct by using 4x allen screws (Pictures 8, 9 & 10)
- Do not forget to cut holes into the top duct for the fuel line and electronic wire (Pictures 5 & 9)
- Test fit the turbine into the fuselage and mark the cutout for the carbon extension of the turbine to be cut (Pictures 2 & 3)

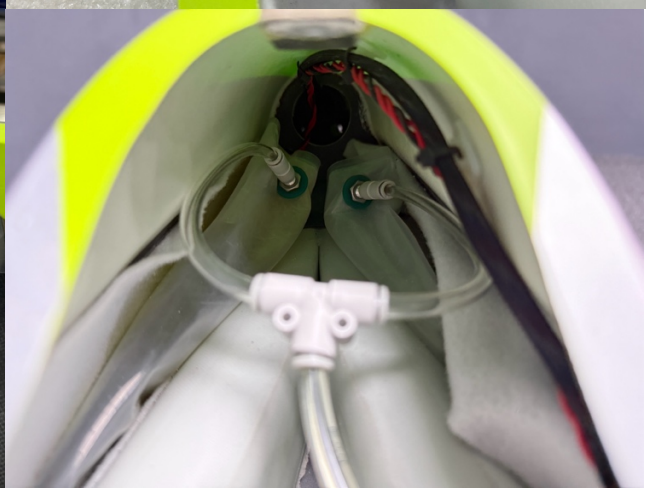


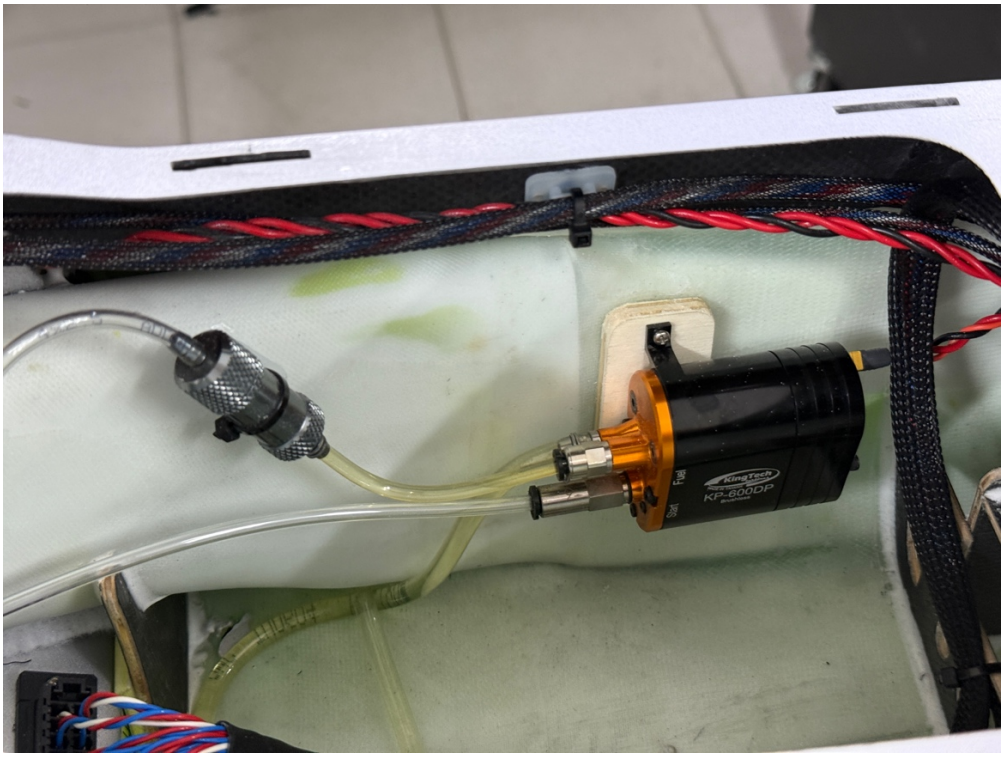

Fuel Bag Installation:

- First, you should prepare the fuselage wall and the air intake with the included felt to protect the fuel bags from possible damage (Pictures 1 & 2)
- After this step, you need to install the fuel line through the hole next to the intakes (Picture 4)
- To fix the tray in place, use some resin with micro balloon, a small stripe of fiberglass, and let everything cure
- Next, you can install the two fuel bags so the fitting will be all the way at the top (Pictures 5 & 6)
- The two fuel lines should be connected with a Y-Piece to connect to the fuel pump



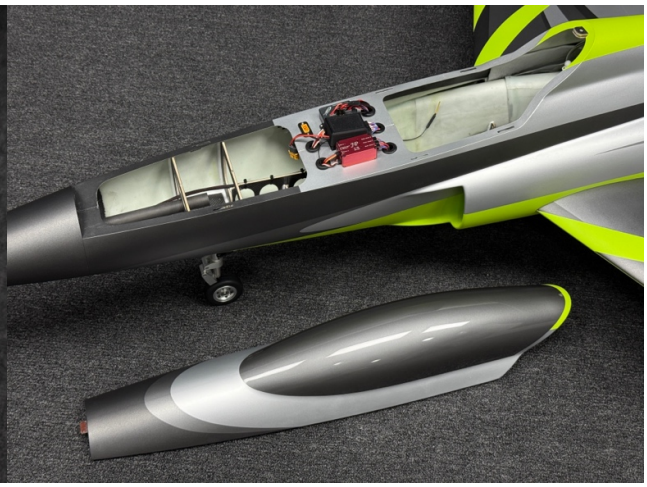
Fuel Pump & Valve Installation

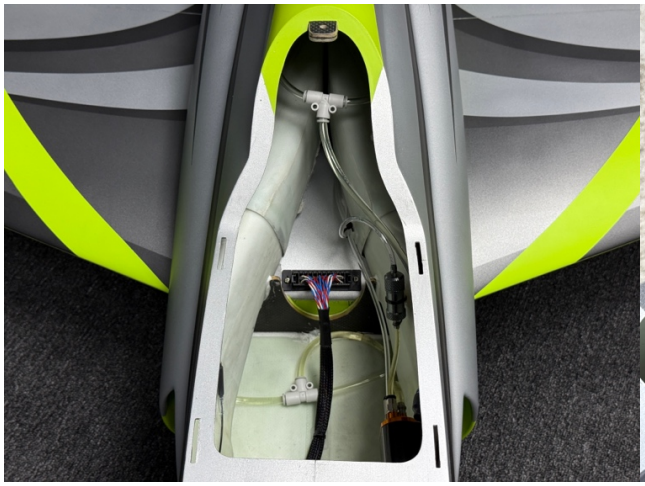
- We recommend this area to install the fuel pump with the nessesary fuel valves
- Don’t forget to put some wood pieces below the mounting points of these items



Power distribution, Gyro, ECU Gear Controller Installation

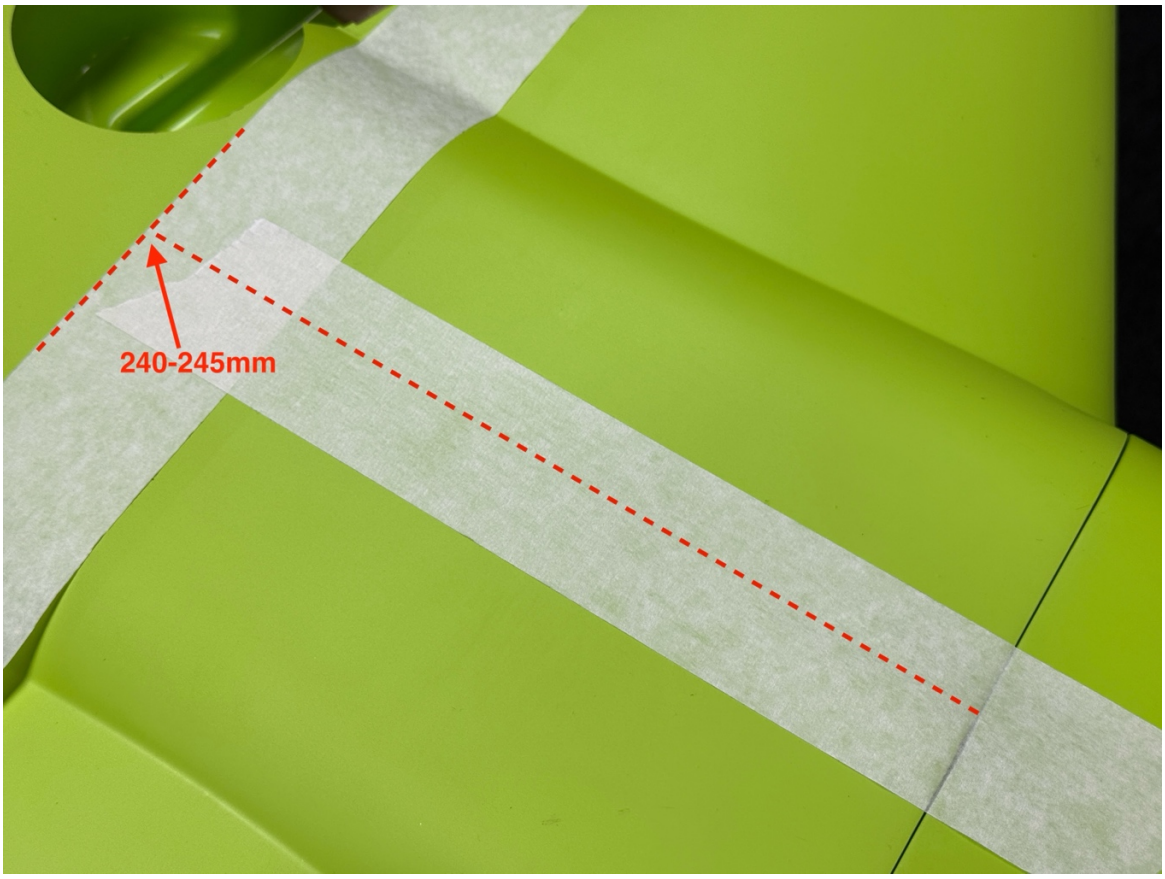
- Here we have an example of how the RC board should look like
- In this area, we recommend installing the gear controller, ECU, power supply, and the gyro
- Before you install anything here, you’ll need to add some plywood from below the RC board





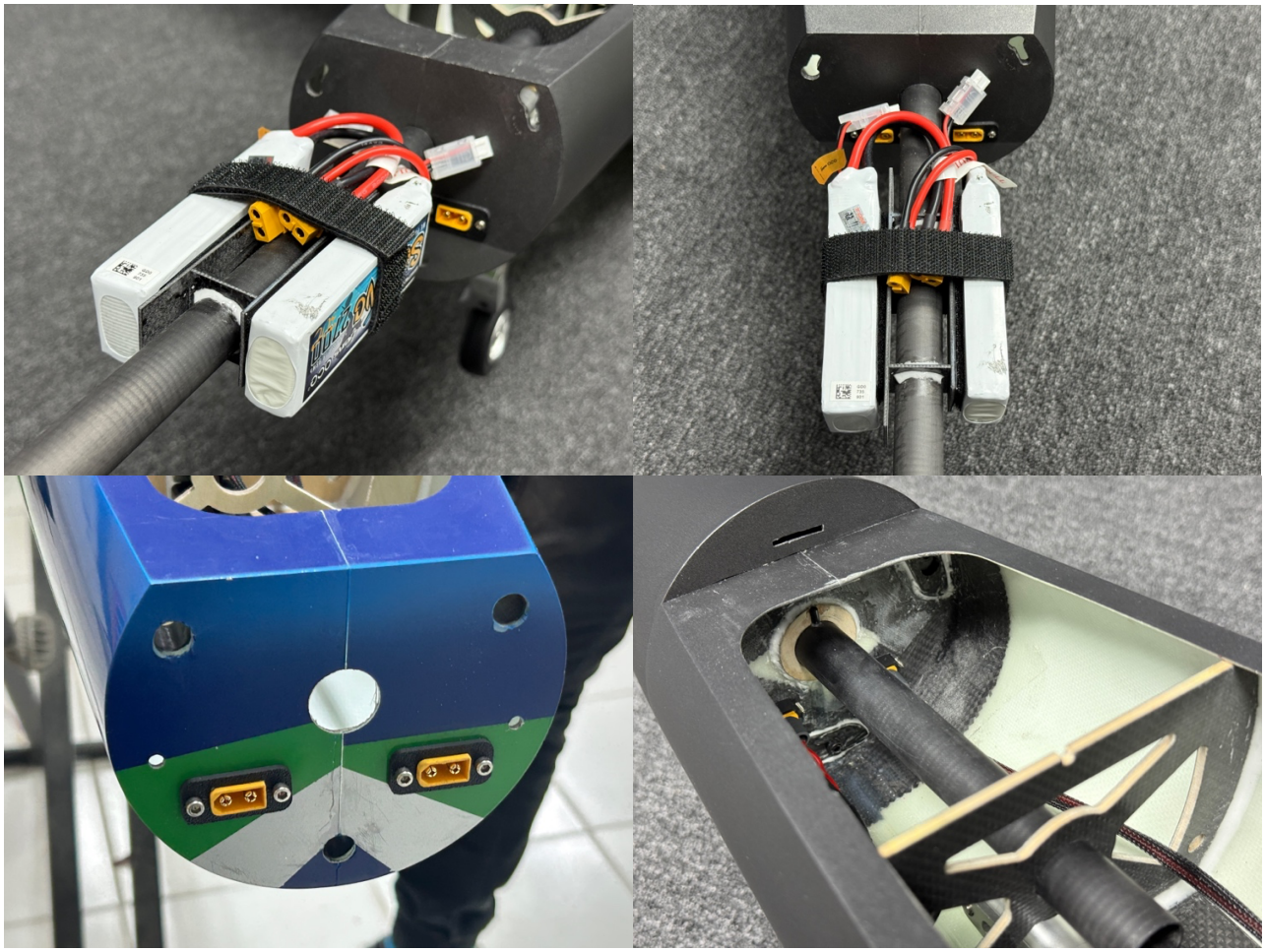
Center of Gravity

The center of gravity is at 240mm – 245mm behind the front of the wing-to-fuselage transision. Measured with empty fuel bags and gear down.



Batteries

- The turbine/ecu battery and rx-battery will be placed either on the left or right side of the battery tray under the nose cone
- The battery ports can be positioned at the front of the fuselage to be at the perfect distance from the battery tray
- The nose cone and the battery tray, as well, are easily removable by turning; both will lock automatically
- All of them should be attached and secured with Velcro



Final Settings

Control Throws:

Here is a list summarizing the surface rate values (mm) as well as the expo amount and some other information:

We recommend using 3 Flight Modes to adjust trim in each mode.

Normal – Take Off – Landing

Please do not add aileron crow to the full flaps; based on our testing, it will have a significant negative effect. The airplane will have a higher angle of attack, which, in specific situations, can cause an air stall on the stab only, resulting in no elevator control.

Throws:

Function	Rate (Expo)
Aileron	18mm up/15mm down (70% Expo)
Elevator	14mm up/14mm down (50% up/30% down Expo)
Rudder	30mmm (45% Expo)
Flaps Take Off Flaps Landing	30mm 100mm
Elevator Mix (At Takeoff Flaps)	6mm
Elevator Mix (At Full Flaps)	14mm
Steering	90% Servo Travel / 65–80% Expo

Jeti Assist SETUP:

Main Gain (Damping Mode): 35%

	Gain	Hold
Aileron	18	8
Elevator	20	12
Rudder	20	15

Thank you for being a loyal customer and for choosing a fine, highly sophisticated aircraft over many other, perhaps simpler, options on the market. We are sure you will enjoy every minute of building and flying your Beam, pushing it to its limits.

We hope you have enjoyed assembling your CARF-Models Beam and you have many years of happy flying with it. If you have encountered difficulties and need assistance, your sales rep is only an email away. Please contact your rep, and they will endeavour to assist you and get you back on track. Alternatively, you can contact us via the emails below. We also welcome your feedback. Don't hesitate to get in touch with us if you would like to see something added or altered. We are always looking to improve our products and the information we supply.

www.carf-models.com

Beam Manual (December 2025)

Additional pictures