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Boomerang Lancer

Instruction

SPECIFICATION

Wing Span.....1524 mm (60 in)
Wing Area .....34 dm² (527 sq.in)

Empty weight...5.7 kg
Total length..... 1700mm (67 in)
Radio.....9 channels. 8 servos
Engine.....,6-7 kg thrust turbines

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Required for Flight:

(1) 9+ Channel Transmitter

(1) 9+ Channel Receiver

(1) 50-70N Sized Turbine

(6) Standard Sized Servos

(2) Mini Servos

What's Included:

(1) Boomerang Lancer ARF Jet Kit

(1) Composite Fuel Tank

(1) Hardware Package

(1) Electric Retract System w/ Electric Brakes

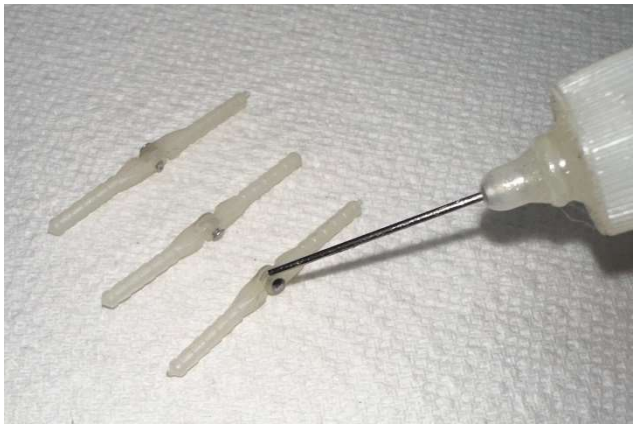
Carbon Fiber Wing and Stab Tubes

1. Unpack the Lancer and examine all components.

Hinging

2. Make sure all hinges fit into the holes and line up with their respective hole on the other side.

3. Remove all hinges and place on a paper towel and apply a small amount of oil along the pin on each of the hinge to prevent the glue from sticking and gluing the hinge so it will not move.



4. Locate one of the short control horn screws, 36.5mm with corresponding washer and nut as well as the rudder.

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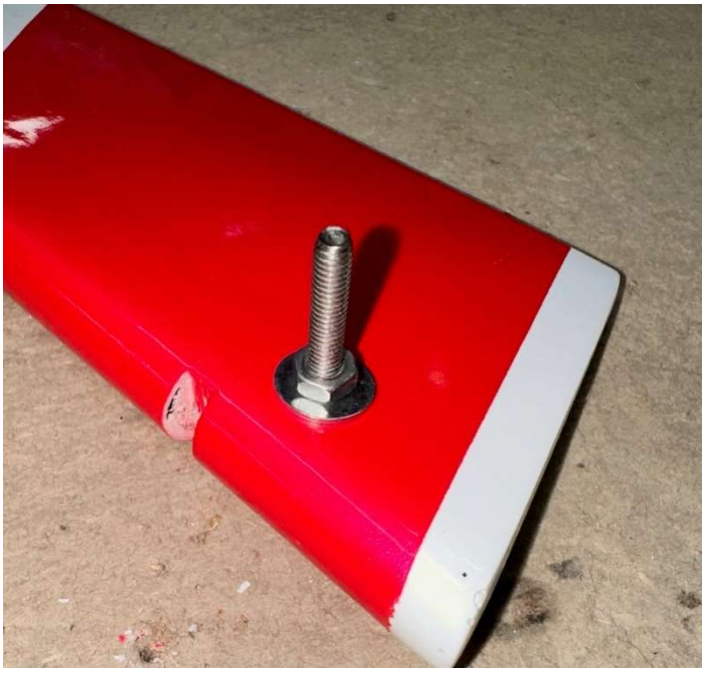
5. Using a 3.5mm drill bit drill the hole in the rudder for the control horn bolt to go through. The rudder has the location marked as to where to drill the hole. We find it easier to do this before gluing the hinges for the rudder.

6. Using a 2.5mm driver install the control horn through the rudder and once through put a tiny drop of Loctite on to secure the bolt in place.



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7. We chose to use Hysol inorder to make gluing the hinges quick and easy. With the Hysol tip it was easy to control the amount of glue going into the hinge hole and exactly where it was going. Once the glue was put in the holes the hinges were lined up and installed and the surface put on and taped in place.

Wings

1. Locate the servo hatch for each wing, the servo arm cut outs go to the leading edge of the wing.

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2. Using a 1.2mm drill bit drill the 6 holes to secure the Hatch to bottom of the wing.


3. Test fit the hatch with the 6x Phillips head 13mm screws to secure the hatch and then remove the hatch and put 2-3 drops of thin CA into the hole in the wood to harden the threads. Let the CA dry on its own, do not use accelerator.

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4. Assemble your servo, we like to tie up the servo lead and then later we will run all the extensions to the servo locations. If you ever need to do any work in the servo bay it makes it easier to drop the hatches and get in there.

5. Test fit the servo into the hatch and using the 1.2 mm drill bit drill the holes for the servo screws, then tap them with the servo screws and put a drop or two of thin CA in each hole and allow to air dry.

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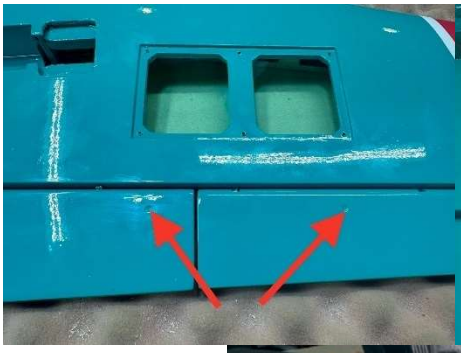
6. Using your 3.5 mm drill bit drill the holes for the control horns in the ailerons and flaps.



7. Now locate the 40 mm control horn screws, washers and nuts and thread them into the flap and aileron. Remember just a drop of Loctite to keep the nut secure is all that is needed.

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8. Thread on the nylon portion of the control horn to the bolts so that they are flush with the top of the bolt.

9. Center your servos now and install the servo arms for your ailerons and flaps.

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10. Assemble your aileron pushrods to be about 96 mm's.

11. Install the pushrods and secure the hatch.

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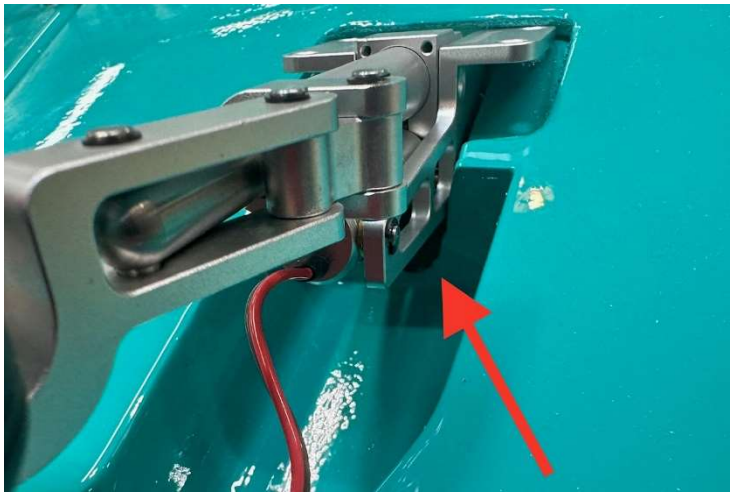
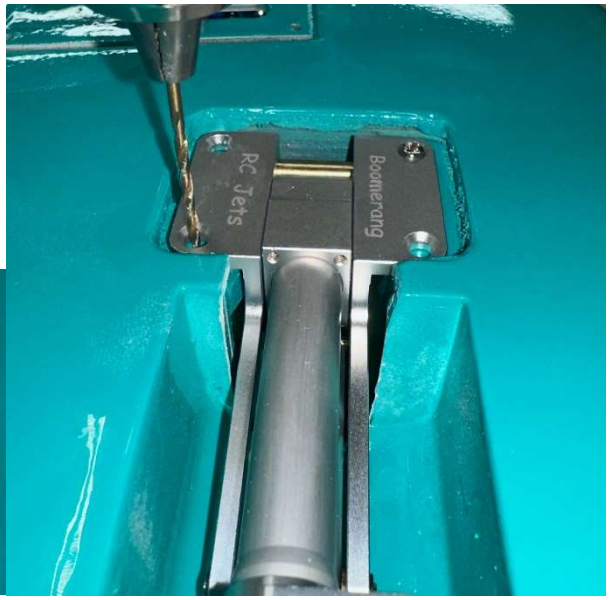
12. It may be necessary to trim a little bit of the fiber glass for the landing gear to drop into position.



13. Center the wheel in the wheel well and the mounting rails on the blocks and drill one hole at a time to secure the landing gear.



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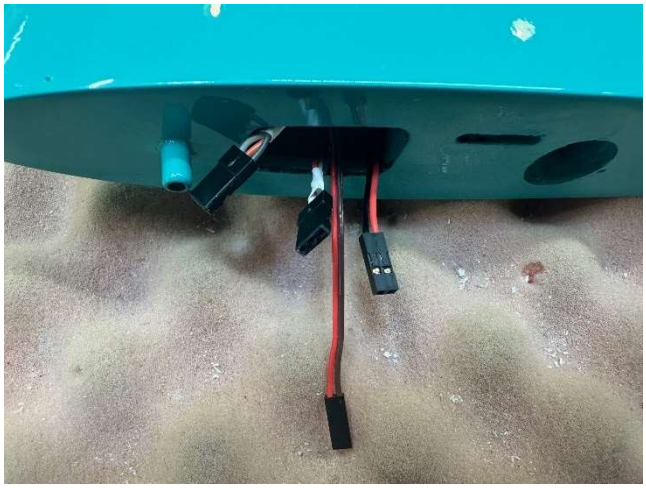
14. Neatly organize your wires and run them down the strut and through the wing.

15. Run your servo Extensions for your Flaps and Ailerons, about 16 inch extensions depending how you choose to run your extensions is what is required.



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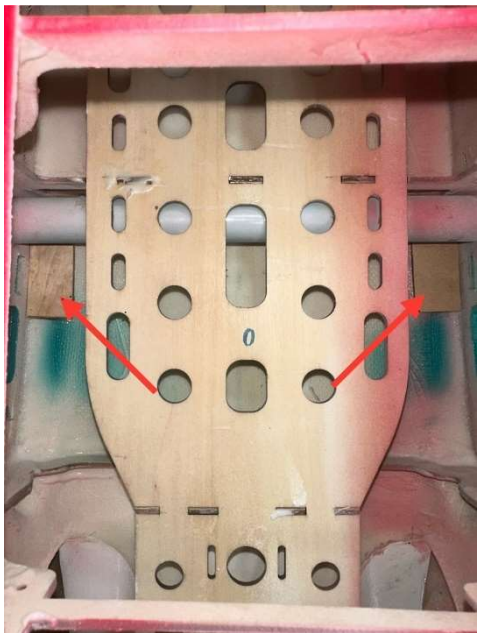
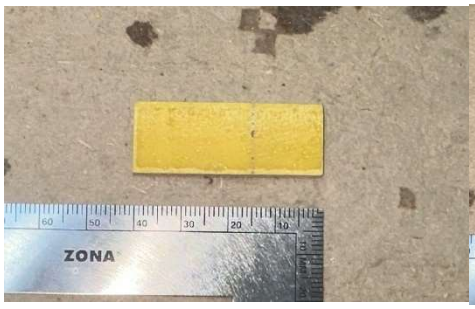
Mounting the Wing

16. Cut 2 pieces of lite ply to be 1 inch by 1.5 inch and glue, we used 5 min Epoxy to the floor of the fuselage, centered on the wing hold down slot.



17. Locate the fiberglass wing tabs, they will be epoxied into the wing. Measure 15 mm from one end and draw a line. Then scuff up the fiber glass and clean off the dust, this will ensure that the epoxy will make a good secure bond.



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18. Test fit the fiberglass tab into the wing, mix up the epoxy and put into the slot in the wing, then slide the tab into it and line it up on the fuselage to hold it in place and ensure everything stays lined up while the glue dries.

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19. Flip the fuselage over so the belly is up. Measure to find the center of the joiner slot and then measure in 10mm and drill your hole with a 3mm drill bit. Do this on both the left and right side. Then glue in your blind nut on the inside on each side.

20. Then taking an extra 3mm bolt and putting a point on it we will use this to make a mark on the fiber glass tab in the wing to show where to drill your mounting hole.

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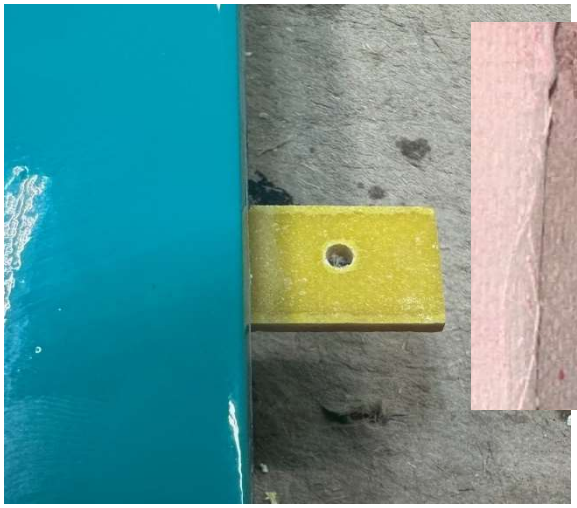
21. Once the tab is marked use a 3 mm drill bit to drill the hole. Make sure you are square while you are drilling.



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Stabs

22. Locate the threaded hole on the bottom of the stab, run a 3mm tap in and back out just to clean out any paint that might have gotten in there.

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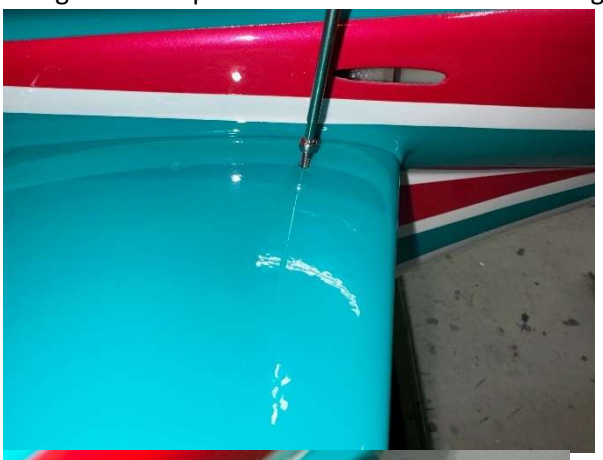
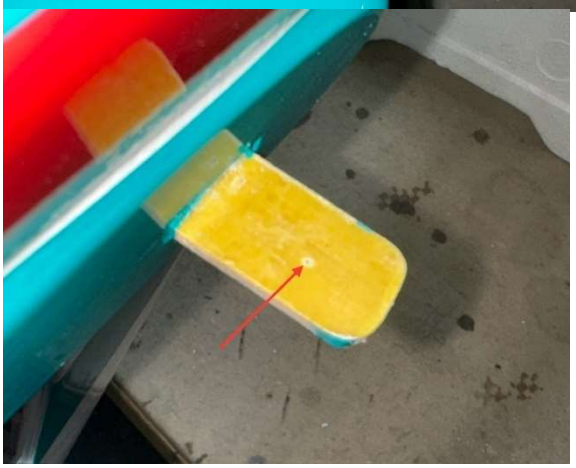
23. Using the same pointed 3mm screw from the wing, use it to mark fiberglass stab joiner plate.





24. Drill on the mark and the test fit the stab and remove.

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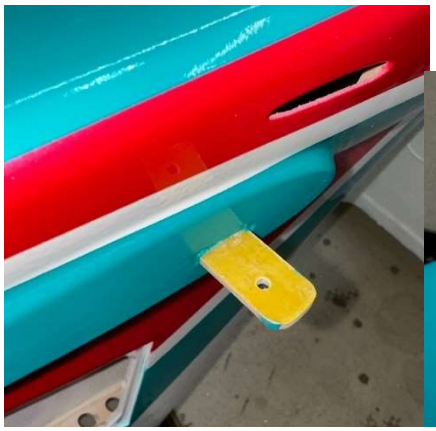
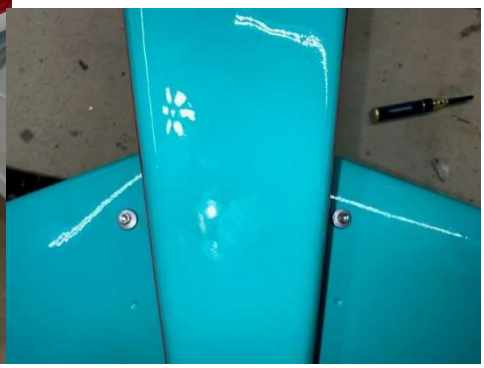

25. Locate the indents in the elevators and drill them out with a 3.5mm bit to allow the control horns to pass through the elevator and install with washer and nut, then thread on the nylon control linkage.



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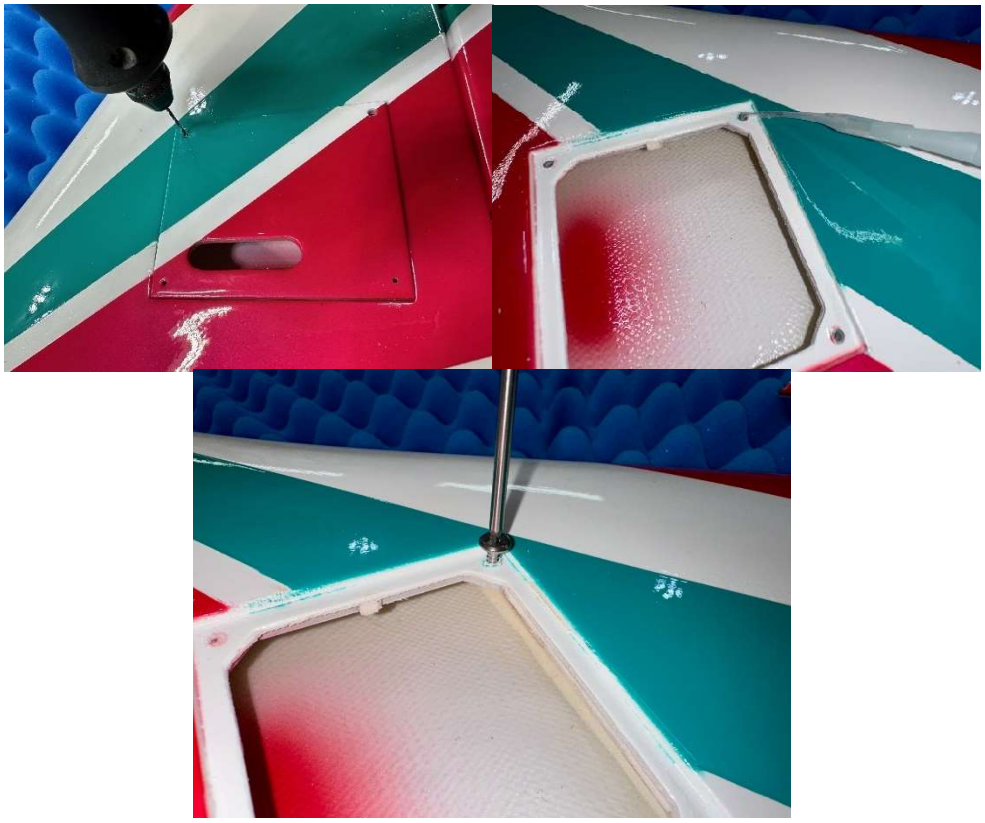
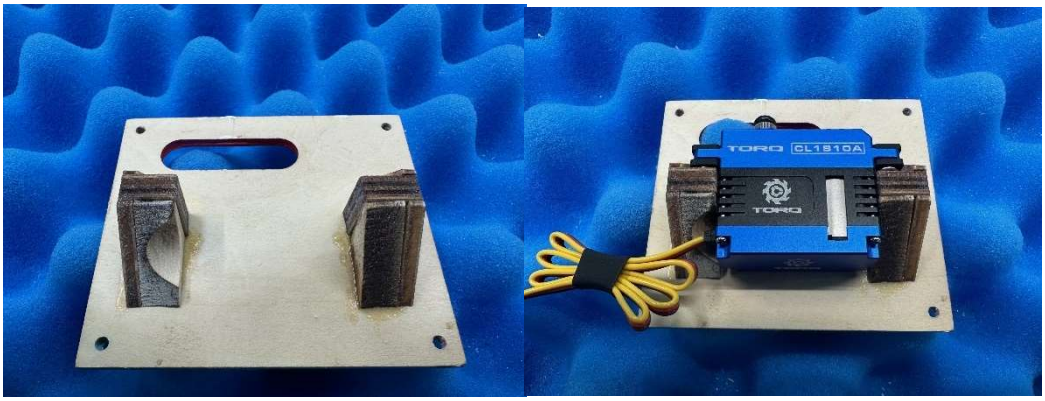
26. Drill the servo hatch cover screw holes using the hatch as a guide for where to drill. Then test fit each of the four screws and put a drop of CA into each hole to harden the threads.



27. Depending on the servo you are using you may need to open up the block like we did here.



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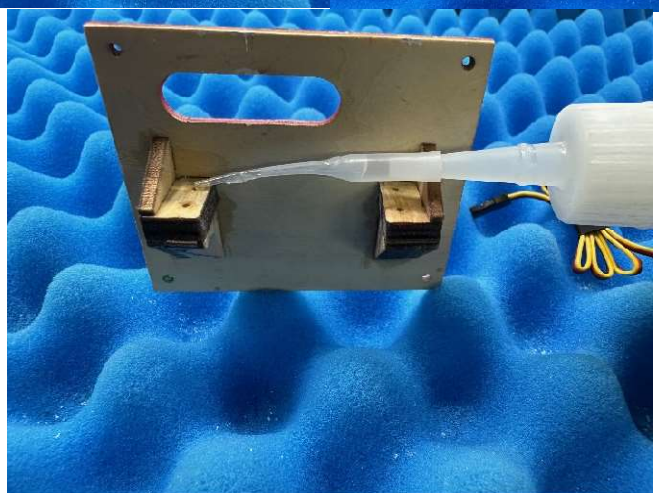
28. Install the servo onto the servo plate and center the servo arm.



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29. Install the nylon end of the control horn on the post, then assemble the pushrod to about 80mm end to end. This will have to be fine tuned to your model but is a good and close starting point.

30. Install the pushrod guide tubes, one on each side. There are 2 bulkheads inside the fuselage they go through as well as should exit just outside at the tail end. Once installed use a small drop of epoxy to hold them in place.

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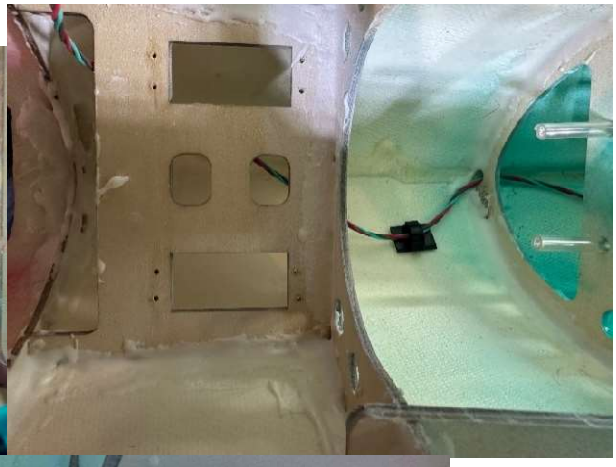
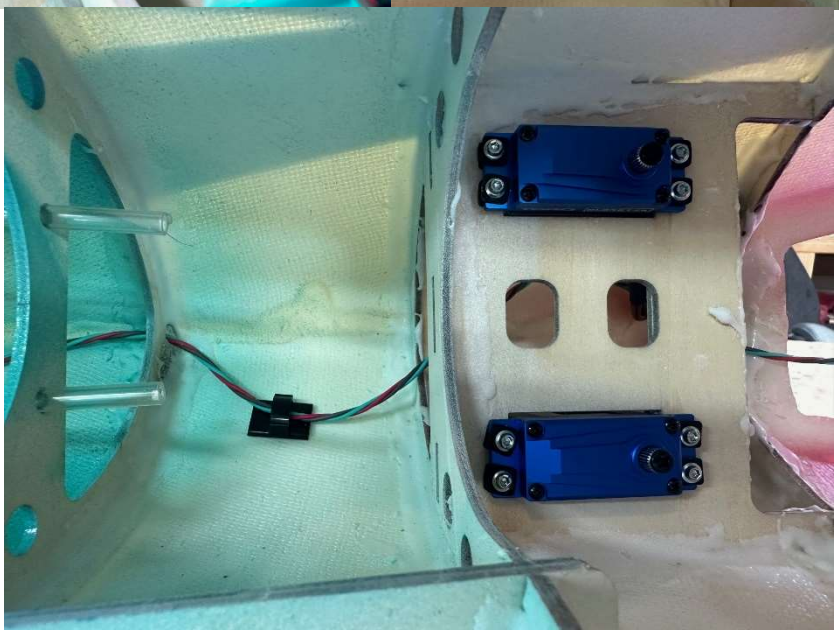
31. Installing the elevator servos is next. The spline will go towards the nose. Install the servo, drill holes for servo mounting screws. Thread the screws in and remove and put a drop of CA in each hole and let dry.

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32. Assembling the elevator pushrods, we find it easiest to put the ball link on the servo arm and then putting it onto the pushrod. Then slide the pushrod in from the front of the plane and when it exits out the back install the clevis. Then center the servos and put the arm on. It is up to you if you want to put the stabs on now and get the elevators neutral or do that later. We do that later.



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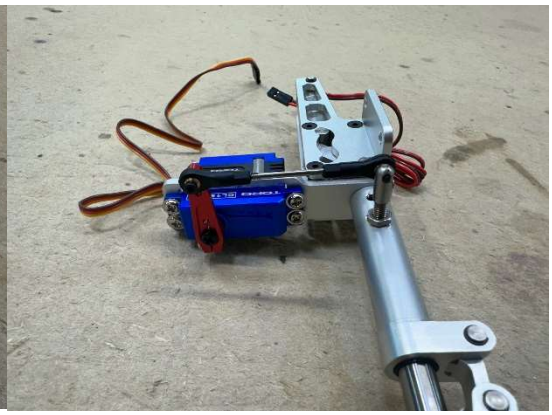
33. Assemble the nose steering servo onto the servo plate on the landing gear. The spline goes away from the strut. No need for the gromets here, just directly mount the servo to the plate. Then find the pushrod with standoff attached and using thread lock thread it into the nose strut and lock in position with the lock nut. Center the servo and put the arm on the servo and adjust the pushrod to proper length.

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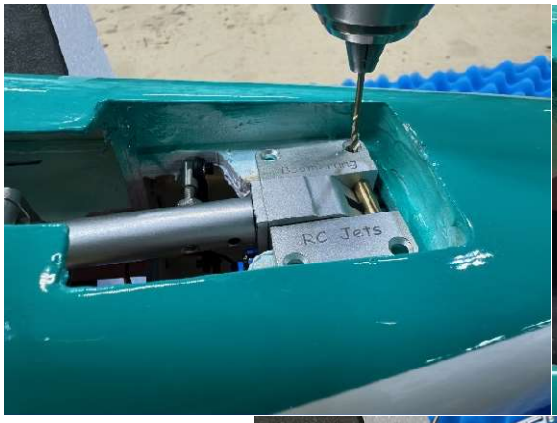
34. Installing the nose gear, slide the retract into position and secure it on center. Then with a 2mm drill bit drill the first of four holes, then screw in that one hole with the included wood screws. Then carefully drill the next hole and put in the next screw, then drill the other two holes and screw them in. Now remove the screws and put a drop of CA in each hold to harden the threads in each hole.



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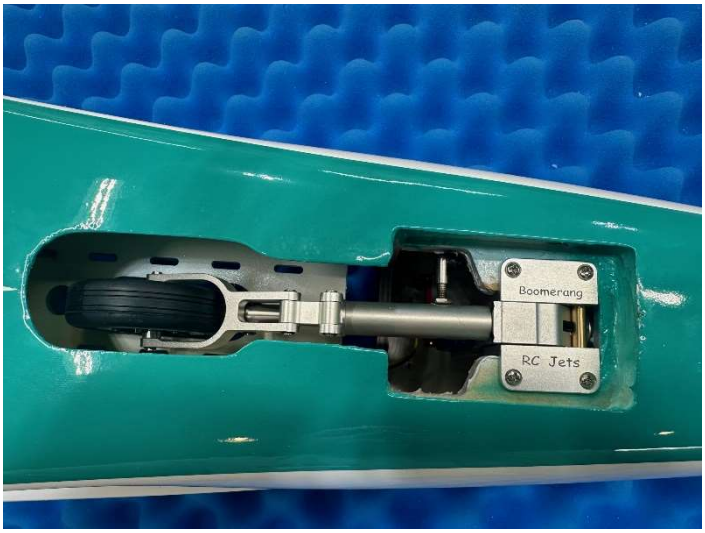
35. Re install the nose retract with servo and run the wires into the fuselage.



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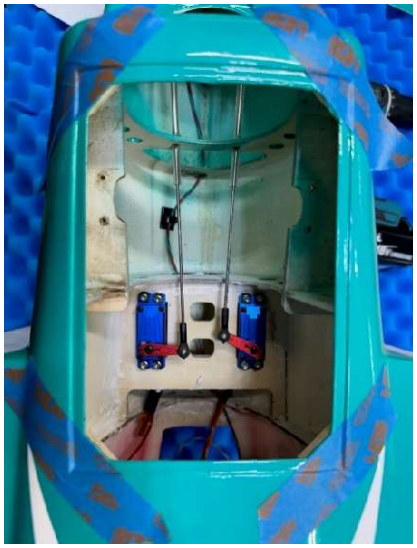
36. Mounting the turbine is next, center the turbine between the rails, it may be necessary to trim the rails so that everything fits. Also remember that the airplane is upside down so make sure to mount the turbine so that its top up when the model is on its wheels.


37. Make sure that you have about ¼- ½ inch of the tail pipe on the turbine exit the fuselage. Make sure the turbine is square and go ahead and drill the mounting holes for the turbine and then using thin CA again harden the threads.

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38. A trick to make sure that when you put the hatch on and drill the holes that you don't miss and find the corners, take masking tape and put it across the lip. Then put the hatch into position and put tape over the tape that you have put down that is now under the hatch and it will line up and you will know where the edge of the lip is and can safely drill and know you will have plenty of meat when you drill.





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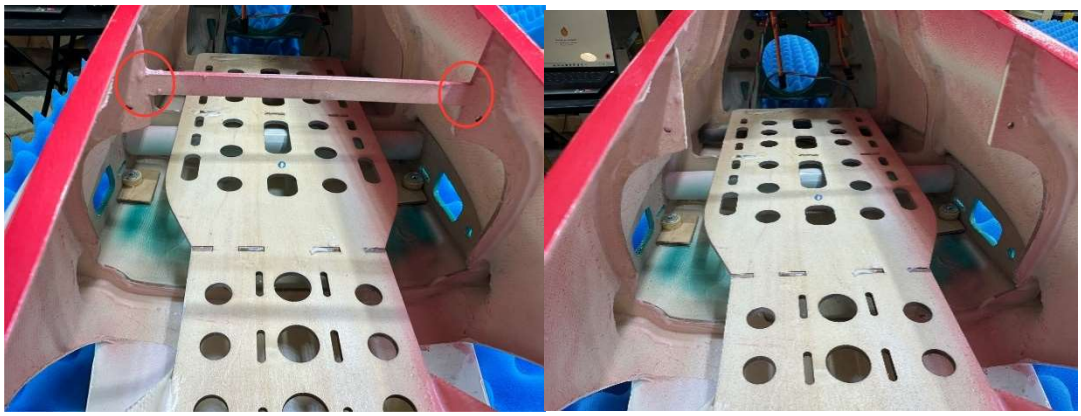
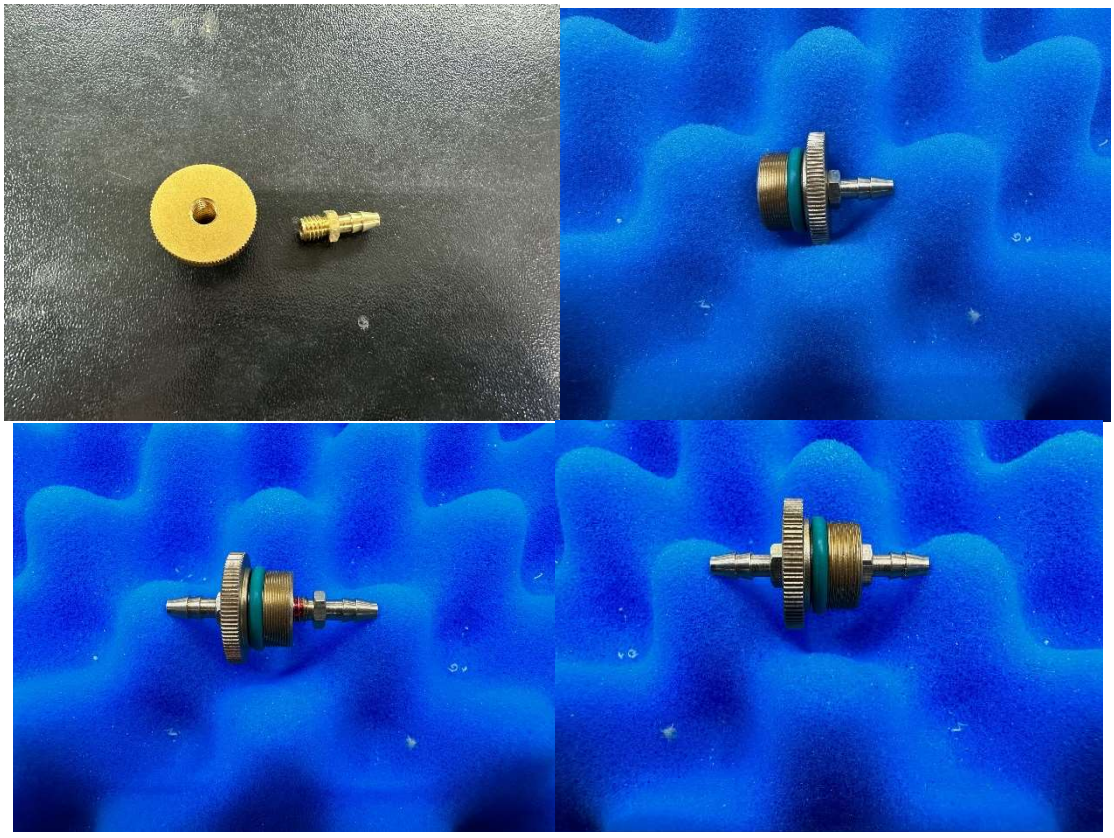
39. To install the fuel tank, there is a cross brace in the fuselage when it is molded that you will need to remove. A small saw will work great, cut where shown below.



40. Onto the front of the fuel tank, the stopper is a quick assemble. The stopper has two nipples that get screwed onto it, one on each side. We use a drop of thread lock.



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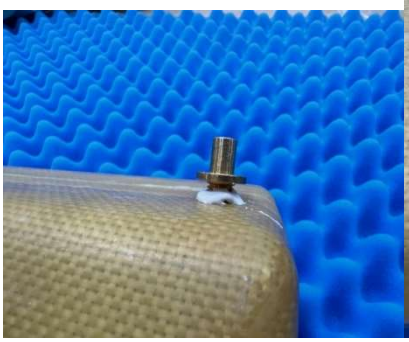
41. Installing the overflow into the tank requiers drilling a hole just large enough that you can start to thread the provided overflow into. Once drilled and test fit run a bead of epoxy/ hysol under the lip and gently screw the overflow into the tank. Set the exit spout into a position that that it will work with the way you are planning to run your over flow.



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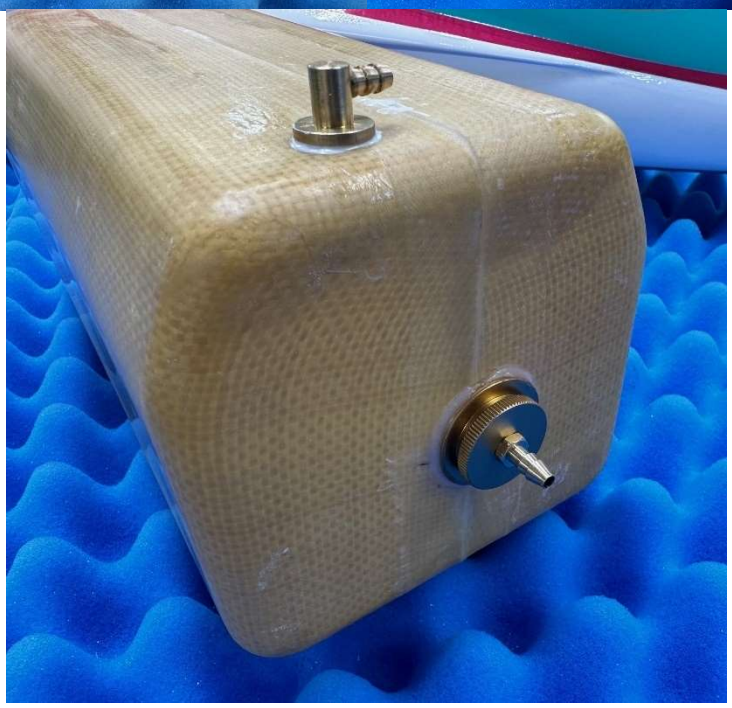
42. Installing the clunk, trim off a section of provided fuel tube to about 8.5 inches and put it on the nipple on the inside of the stopper and the fuel clunk. Once on and in place test fit it into the fuel tank to ensure its not rubbing on the back of the thank. If everything is good, go ahead and safety wire the connections on to ensure they will not separate and then screw the stopper into the front of the tank.



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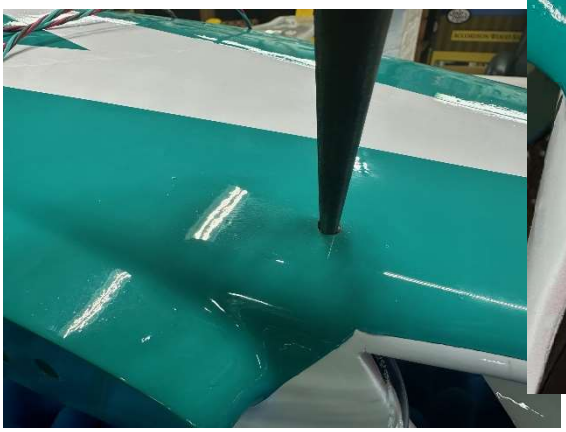
43. Now you will need to decide where you want to mount the overflow and drill for that to the proper size of the overflow you will be using.



44. Install the fuel tank and secure with Velcro straps and screw the included front cross brace in place.

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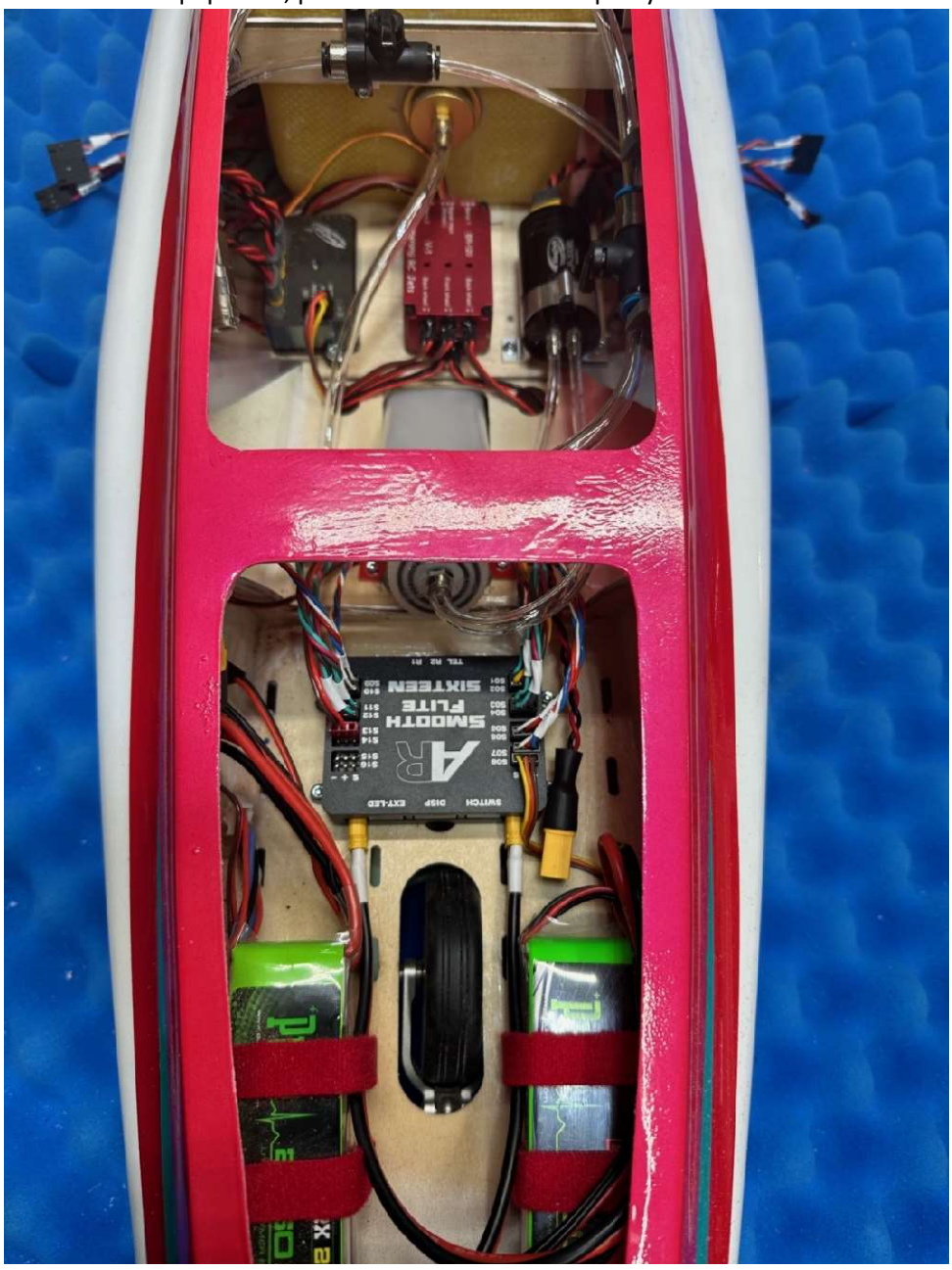
45. Now is to install all of your components, UAT, Gyro, ECU, Batteries, Gear controller and receiver along with your fuel lines. Please refer to the pictures below for how we did it using our equipment, please feel free to set it up any.



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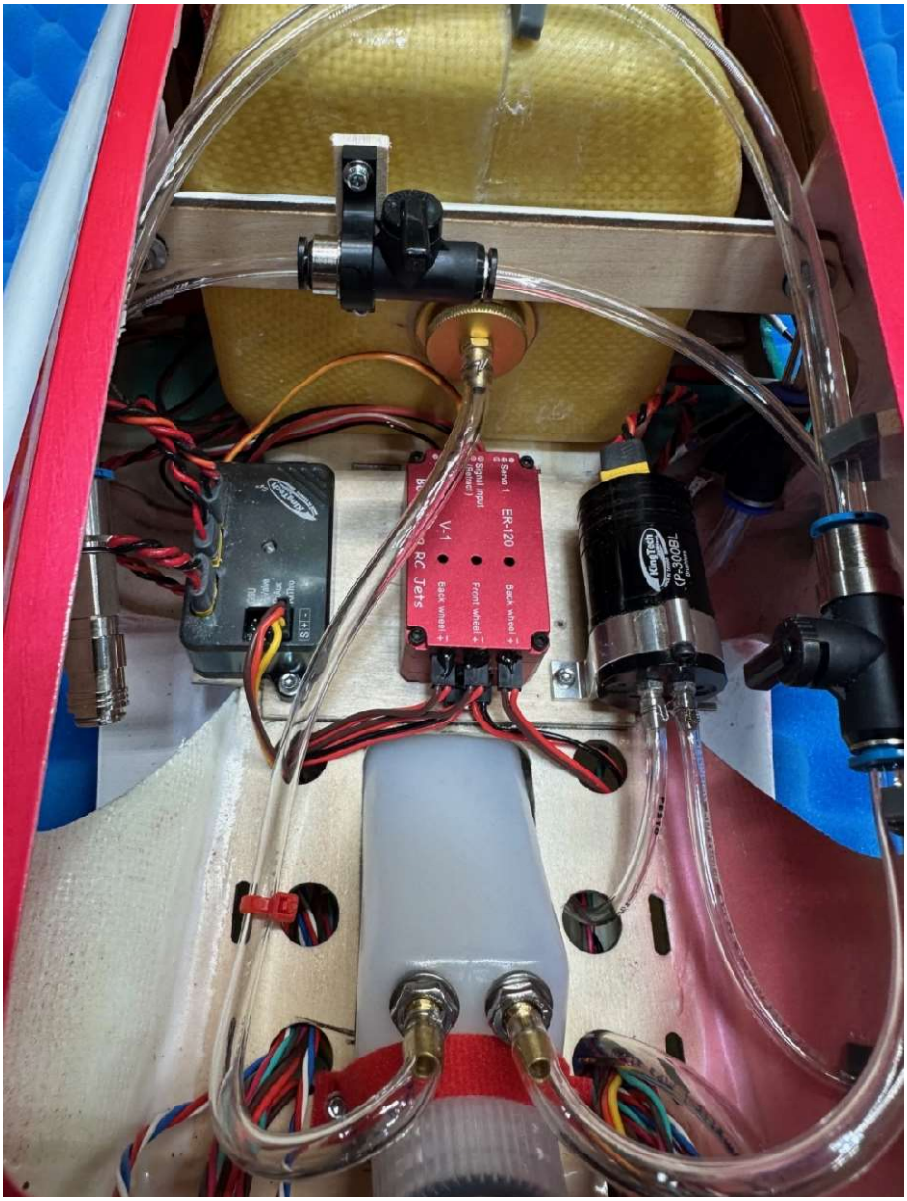

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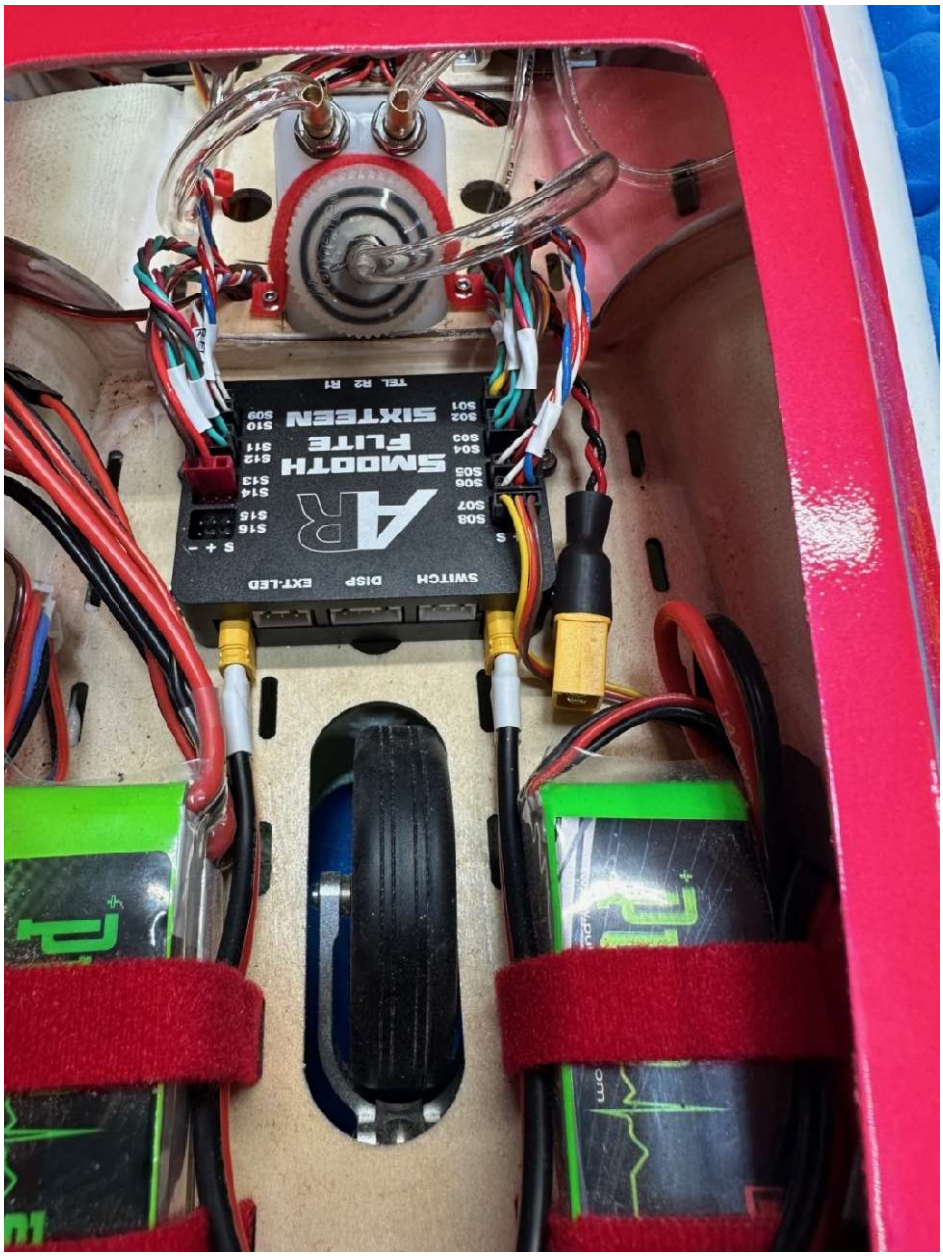

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46. Finally cut the instrument panel out and install it in the cockpit, trim the canopy to ensure the perfect fit and secure the canopy with either screws or glue. If you want to install a pilot now is the time to do it.

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Lancer Flight Mode Rates

Normal Flight

Ailerons:	20 degrees up and down
Elevator:	10 Degrees up and 13 down
Rudder:	Max

Take off Flap setting

Ailerons:	20 Degrees up and down
Elevator:	15 Degrees up and down
Rudder:	Max
Flaps:	14 Degrees down with 1.5 Degree down Elevator Mix

Landing Flaps Settings:

Ailerons:	20 Degrees up and down
Elevator:	20 Degrees up and 10 Degrees down
Rudder:	Max
Full Flaps:	50 Degrees Down with 7.5 Degree down Elevator Mix
Crow:	5 Degree up Ailerons

Lancer CG Settings

CG measured from Leading edge at Root: 163mm

Using the Sky RC CG device these are the settings to use:

Wheelbase:	660mm
Distance Between CG and Main Wheel Centerline:	64mm
Distance from mains to the weight placement point:	660mm
Correction Point:	Nose

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