

3015

95" Extra 330-E

Assembly Manual



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Please take a few moments to read this instruction manual before beginning assembly. We have outlined a fast, clear and easy method to assemble this aircraft and familiarizing yourself with this process will aid in a quick, easy build.

Please read the following paragraph before beginning assembly of your aircraft!

THIS IS NOT A TOY! Serious injury, destruction of property, or even death may result from the misuse of this product. Extreme Flight is providing you, the consumer, with a very high quality model aircraft component kit, from which you, the consumer, will assemble a flying model. It is beyond our control to monitor the finished aircraft you produce. Extreme Flight RC will in no way accept or assume responsibility or liability for damages resulting from the use of this user assembled product. This aircraft should be flown in accordance with the AMA safety code. It is highly recommended that you join the Academy of Model Aeronautics in order to be properly insured and operate your model at AMA sanctioned flying fields only. If you are not willing to accept ALL liability for the use of this product, please return it to the place of purchase immediately.

Extreme Flight RC, Ltd. guarantees this kit to be free of defects in materials and workmanship for a period of 30 DAYS from the date of purchase. All warranty claims must be accompanied by the original dated receipt. This warranty is extended to the original purchaser of the aircraft kit only. Extreme Flight RC in no way warranties its aircraft against flutter. We have put these aircraft through the most grueling flight tests imaginable and have not experienced any control surface flutter. Proper servo selection and linkage set-up is absolutely essential. Inadequate servos or improper linkage set up may result in flutter and possibly the complete destruction of your aircraft. If you are not experienced in this type of linkage set-up or have questions regarding servo choices, please contact us at info@extremeflightrc.com or 770-887-1794. It is *your* responsibility to ensure the airworthiness of your model.

Extreme Flight designers Ben Fisher and Chris Hinson have long shared a mutual dream to bring to market a Giant Scale airframe purpose designed for electric power. Discussions and brainstorming sessions began even before the merger of Extreme Flight and 3DHS. With the development, release and overwhelming enthusiasm for the Xpwr line of motors and in particular the Xpwr 60, this vanity project has now become reality! Extreme Flight is proud to present the 3DHS 95" EXTRA 330E!

The EXTRA 330E is a beautiful synergy of advanced composite materials implementation, extreme weight reduction measures and well informed aerodynamic choices all wrapped around one of the most powerful, efficient and reliable electric power systems currently available. Far from being fragile and hard to handle, the EXTRA 330E is strong where it needs to be and can handle any of the aggressive maneuvers performed by its gas powered siblings.



Items needed for completion:

- ✓ Masking tape
- ✓ Hobby knife with #11 blades
- ✓ Thin and medium CA. We highly recommend Mercury M5T thin and M100XF medium formulas as well as the Mercury glue tips
- ✓ 30 minute epoxy. Pacer Z-Poxy is a long time favorite
- ✓ Goop Silicon glue
- ✓ Blue and Red Loctite
- ✓ Electric drill with an assortment of small drill bits
- ✓ Small flat head and Phillips head screw drivers
- ✓ Standard and needle nose pliers
- ✓ Side cutters
- ✓ Metric ball driver or allen key set
- ✓ Sanding block and sandpaper
- ✓ 5 x MKS HV-777A, HBL-380 X8 or comparable servos
- ✓ Extreme Flight Socket Head Servo Screws
- ✓ 2 x 1.5" Extreme Flight aluminum servo arms for the ailerons
- ✓ 2 x 2" Extreme Flight aluminum arms for the elevators
- ✓ 1 x 4" Extreme Flight double aluminum arm for pull-pull rudder.
- ✓ 1 1.5" Extreme Flight aluminum servo arm if using push-pull rudder
- ✓ 2 x Extreme Flight 6" 20 awg Servo Extensions.
- ✓ 2 x Extreme Flight 12" 20 awg Servo Extensions.
- ✓ 1 24" Extreme Flight 20 awg Servo Extension.
- ✓ 2 x 36" Extreme Flight 20awg Servo Extensions. If you need to remove the stabs for transport use 48" extensions.
- ✓ 1 36" Extreme Flight 20 awg servo extensions if using rear mounted rudder servo and push-pull assembly
- ✓ Extreme Flight Servo Safety Clips
- ✓ 4.5" Spinner
- ✓ Xpwr 60 Brushless Outrunner
- ✓ Castle Creations EDGE 160HV ESC running Firmware v4.22
- ✓ Series wiring harness to hook up 2 batteries in series with your choice of connectors
- ✓ Blazing Star XXL Standoff Set
- ✓ Xoar 24X10 or 24X12 PJN Electric Prop
- ✓ High quality High C rating 12S Lipo batteries 5000-8000 mah capacity
- ✓ Heavy duty Velcro and Velcro straps to secure batteries.
- ✓ Optional-Extreme Flight Anodized Washer sets to add some bling!

Tips for Success:

- 1. Before starting assembly, take a few minutes to read the entire instruction manual to familiarize yourself with the assembly process.**
- 2. Go over all the seams on the aircraft with a covering iron on a medium heat setting. Also, due to climate changes, wrinkles may develop in the covering. These are easily removed with a little bit of heat. Use a 100% cotton tee-shirt and your heat gun and heat the covering while gently rubbing the covering onto the wood with the t-shirt. Be careful not to use too much heat as the covering may shrink too much and begin to lift at the edges. Take your time, and a beautiful, paint-like finish is attainable.**
- 3. Apply CA to high stress areas such as servo mounting trays, landing gear mounts, anti-rotation pins, wing and stab root ribs, and motor box joints etc.**
- 4. By the time your aircraft arrives at your door step, it will have been handled by a lot of people. Occasionally, there are small dings or imperfections on some of the surfaces. An effective method to restore these imperfections to original condition is to use a very fine tipped hypodermic needle and inject a drop of water under the covering material and into the ding in the wood. Apply heat to the area with a sealing iron and the imperfection will disappear. Deeper marks may require that this process be repeated a couple of times to achieve the desired result, but you will be surprised at how well this technique works.**
- 5. Use a high quality epoxy for installing the composite control horns and hinges. We highly recommend Pacer Z-poxy. We are very pleased with the results and ease of application and cleanup of this product.**
- 6. Take the time to properly balance and trim your aircraft and set up rates and exponential values. Your flying experience will be greatly enhanced once your plane is properly dialed in.**

Please Note: Because the assembly process is basically the same for all of the models in this size, some photos may show parts from another model if it was deemed that these photos better illustrated the assembly step.

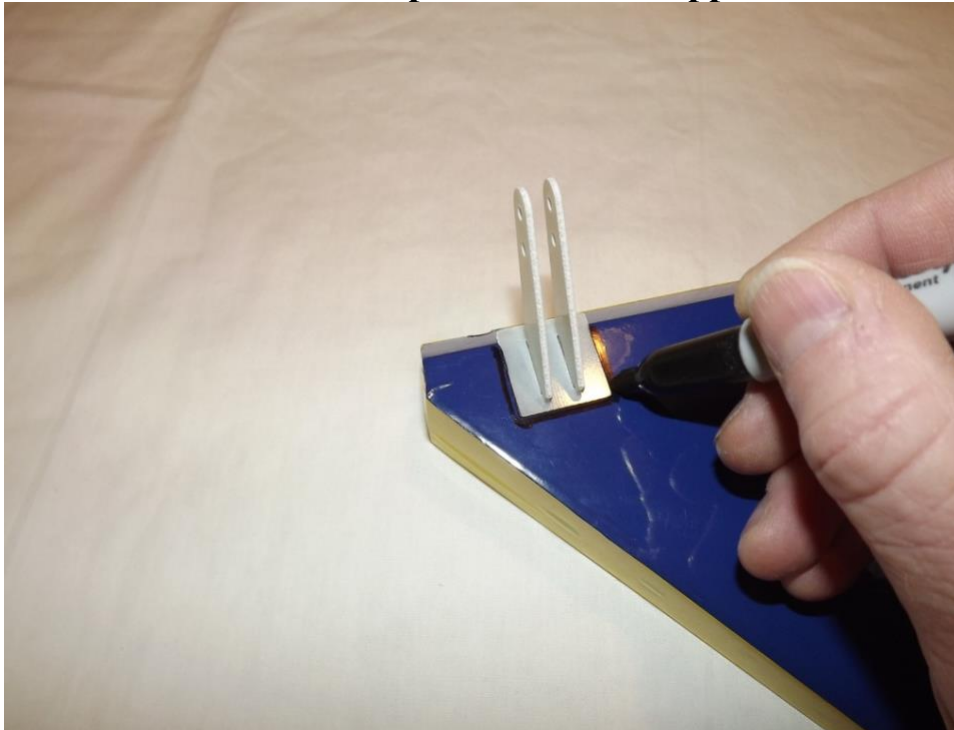
Let's begin!

Elevator Assembly

- 1. Locate the horizontal stabilizer/elevator assemblies as well as the composite control horns and base plates from the elevator hardware package. Trial fit the assembly into the slots in the elevator.**



- 2. Trace around the base plate with a felt tipped marker.**



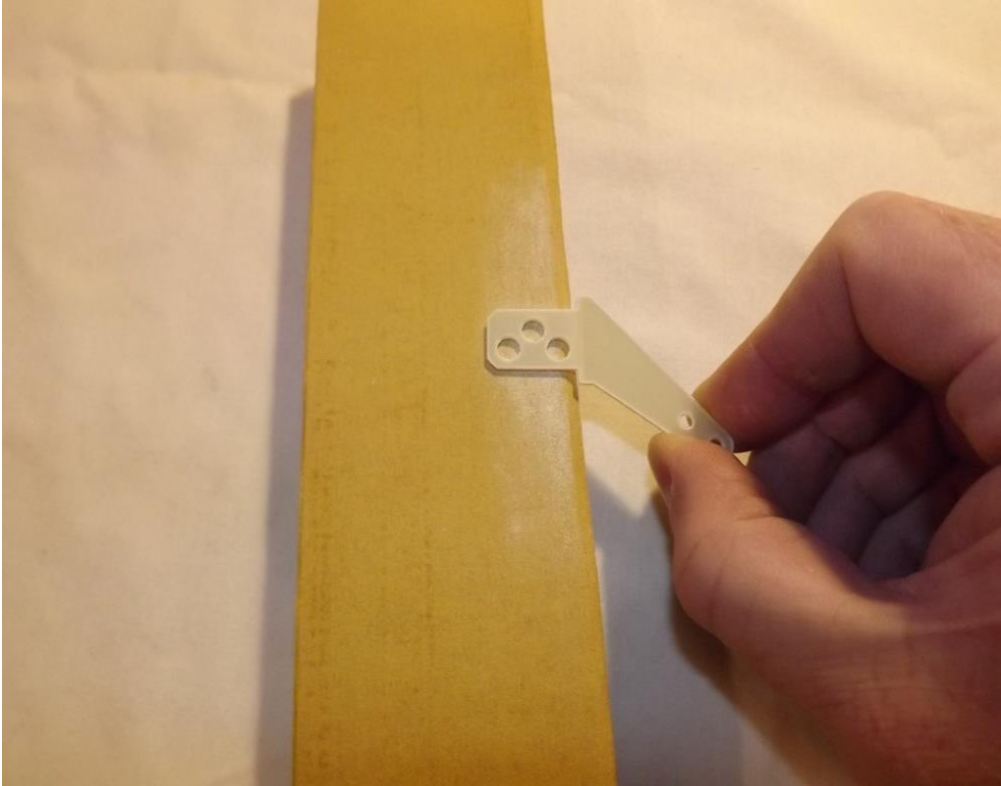
3. Remove the horn assembly and use a #11 blade to remove the covering from inside the ink line you traced around the control horn base.



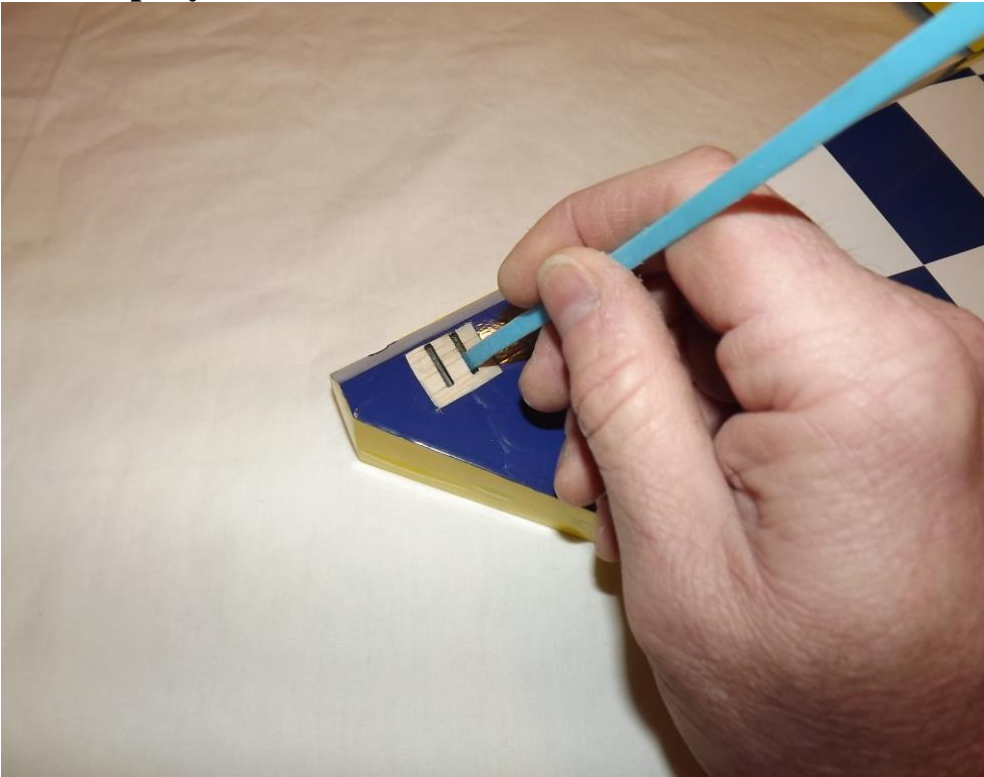
4. Wipe away the ink line with a cotton cloth or paper towel soaked in denatured alcohol.



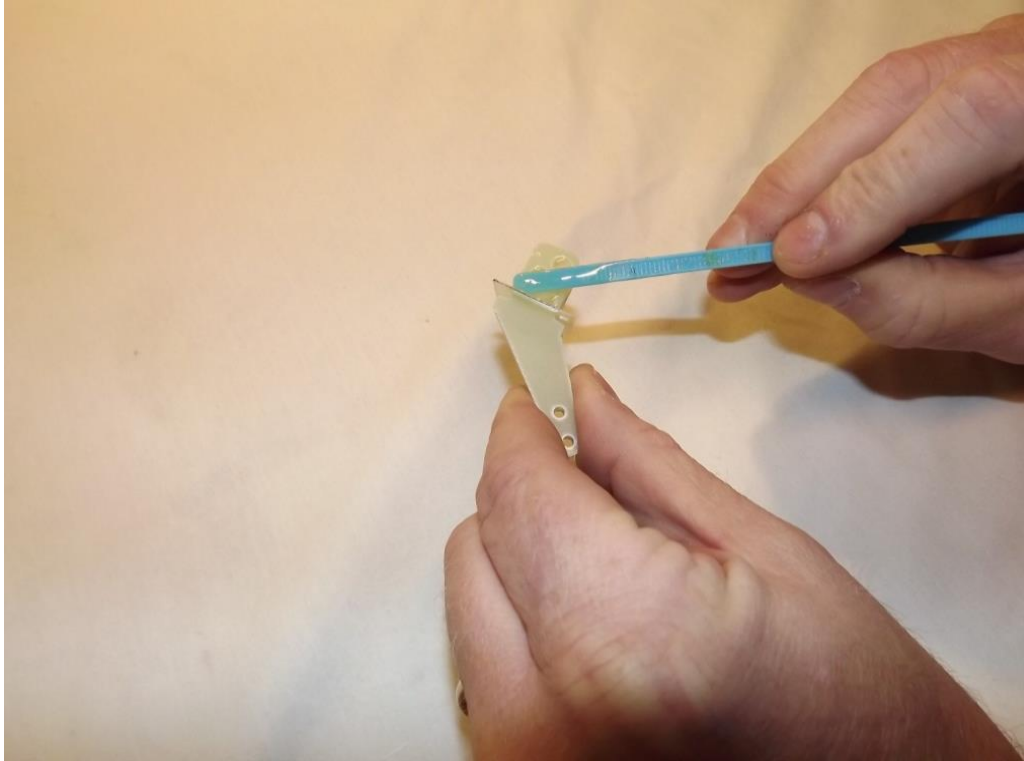
5. Use sandpaper to scuff the portion of the horns and base plate that will be inserted into the elevator.



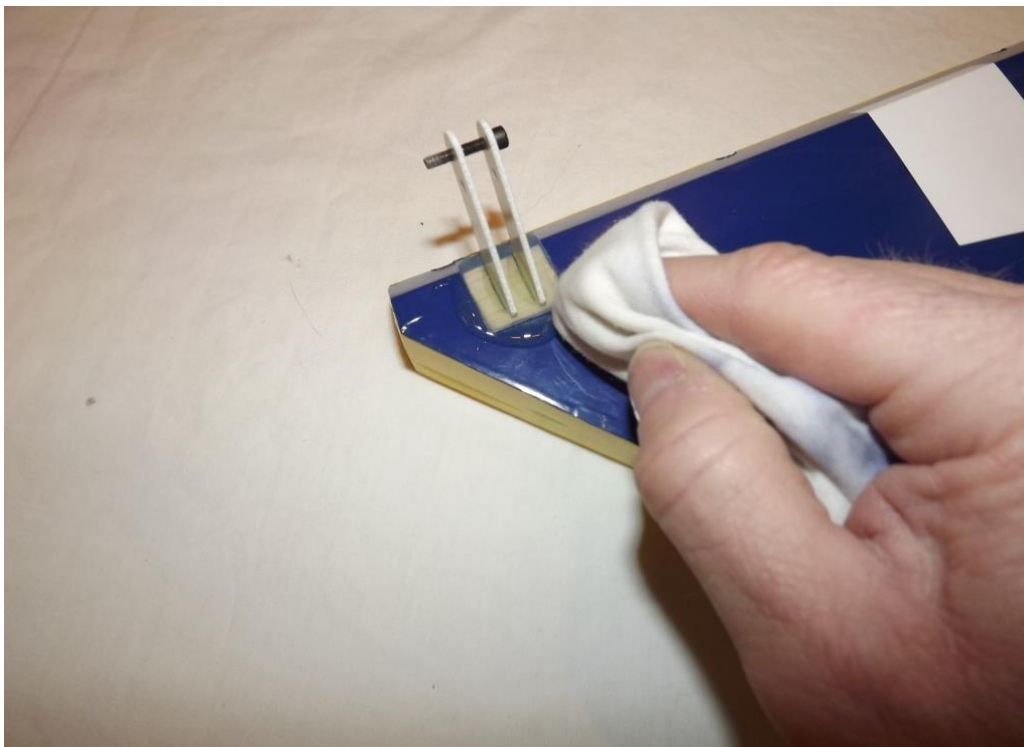
6. Apply 30 minute epoxy to the elevator slots using a zip tie to ensure the slots are filled with epoxy.



7. Apply a generous amount of epoxy to the bottom of the G-10 control horns and base plate.



8. Reinsert the assembly into the elevator and wipe away any excess epoxy with a cloth and denatured alcohol. Place a 3mm bolt through the horns to help insure proper alignment and set aside to dry. Repeat for the other elevator half.

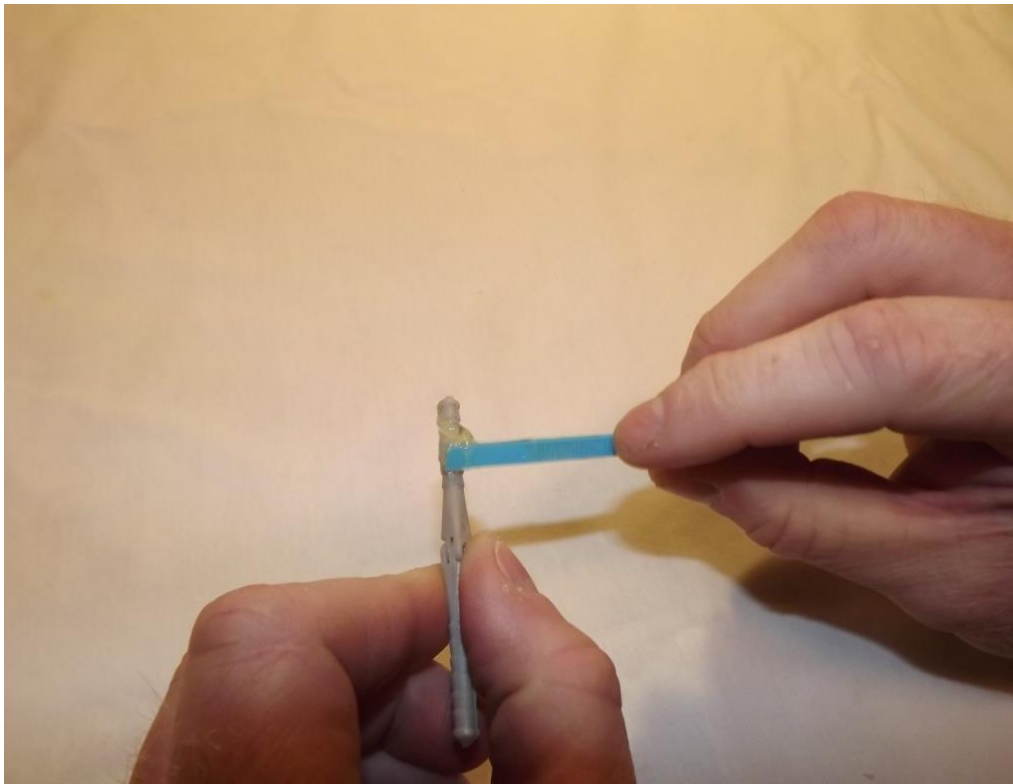


Note: There are several methods and adhesives that can be used for installing the hinges. We will describe the way we do it as this method has proven itself over many years of model building.

9. Mix a generous batch of 30 minute epoxy. Use a zip tie or an old pushrod to thoroughly coat and fill the hinge holes on the stab with epoxy.



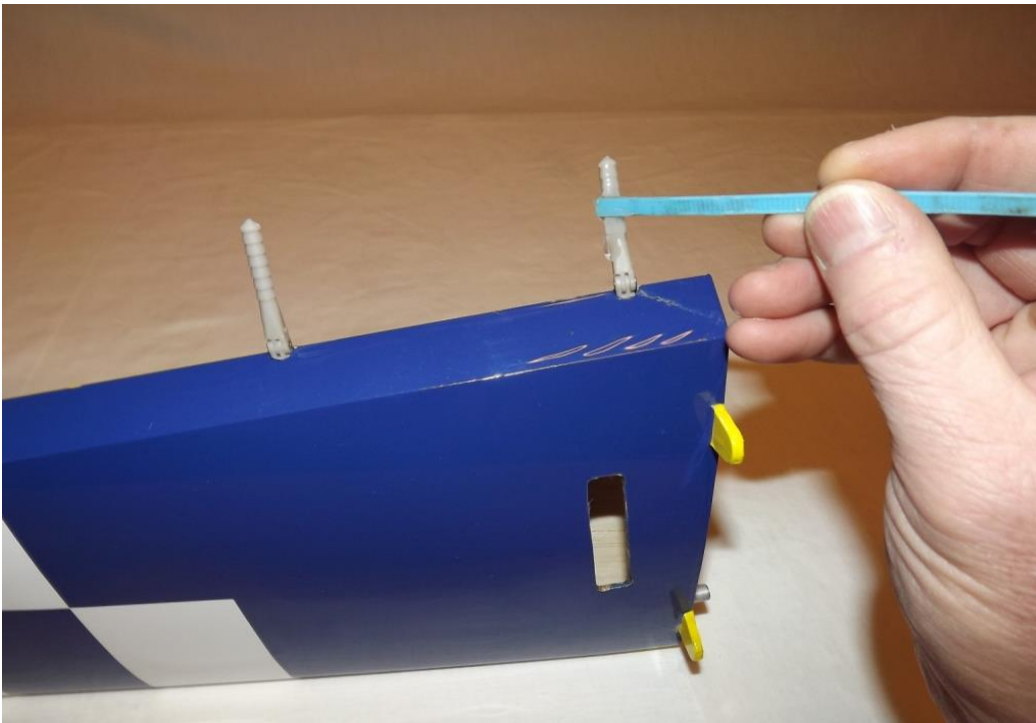
10. Next, coat one side of the hinges with epoxy and push the hinges into the holes of the horizontal stab.

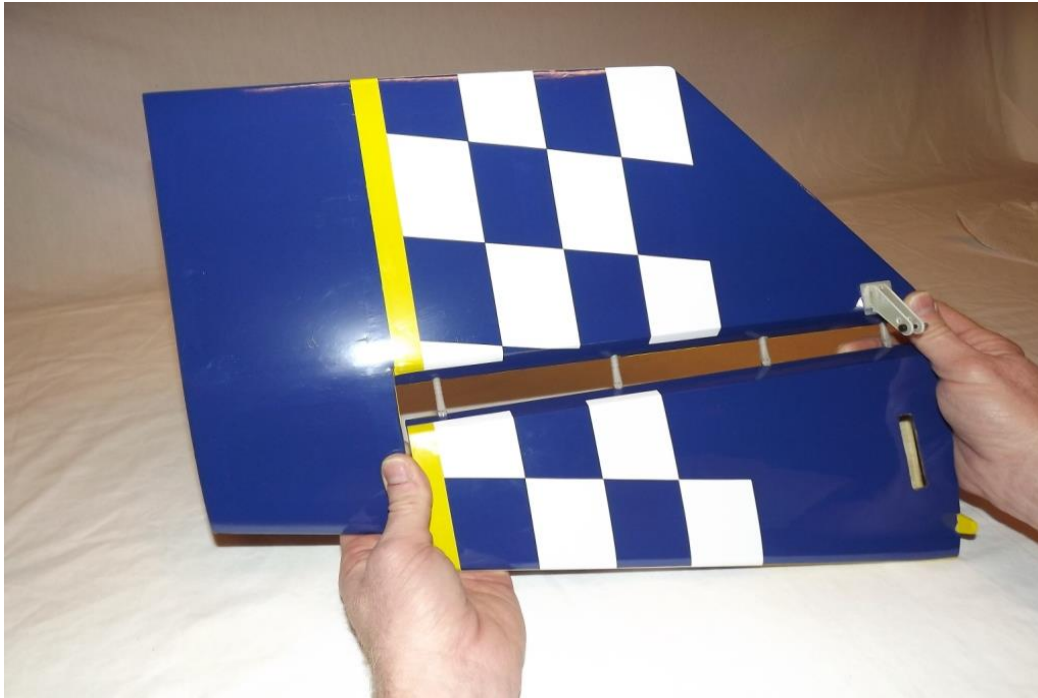


11. Make sure the hinge pins are centered in the hinge gap and that they pivot 90 degrees to the stab.

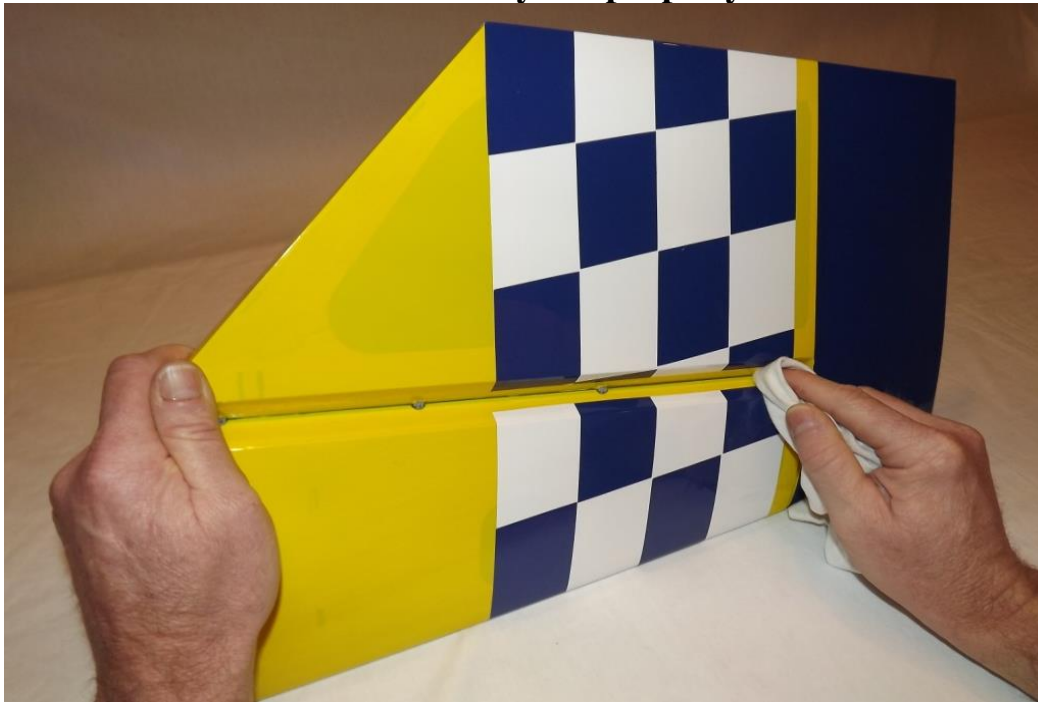


12. Now coat the other side of the hinges as well as the hinge holes in the elevator with epoxy and install the elevator onto the stab. Don't forget to apply epoxy in the hinge holes on the stab before installing the stab to the elevator.





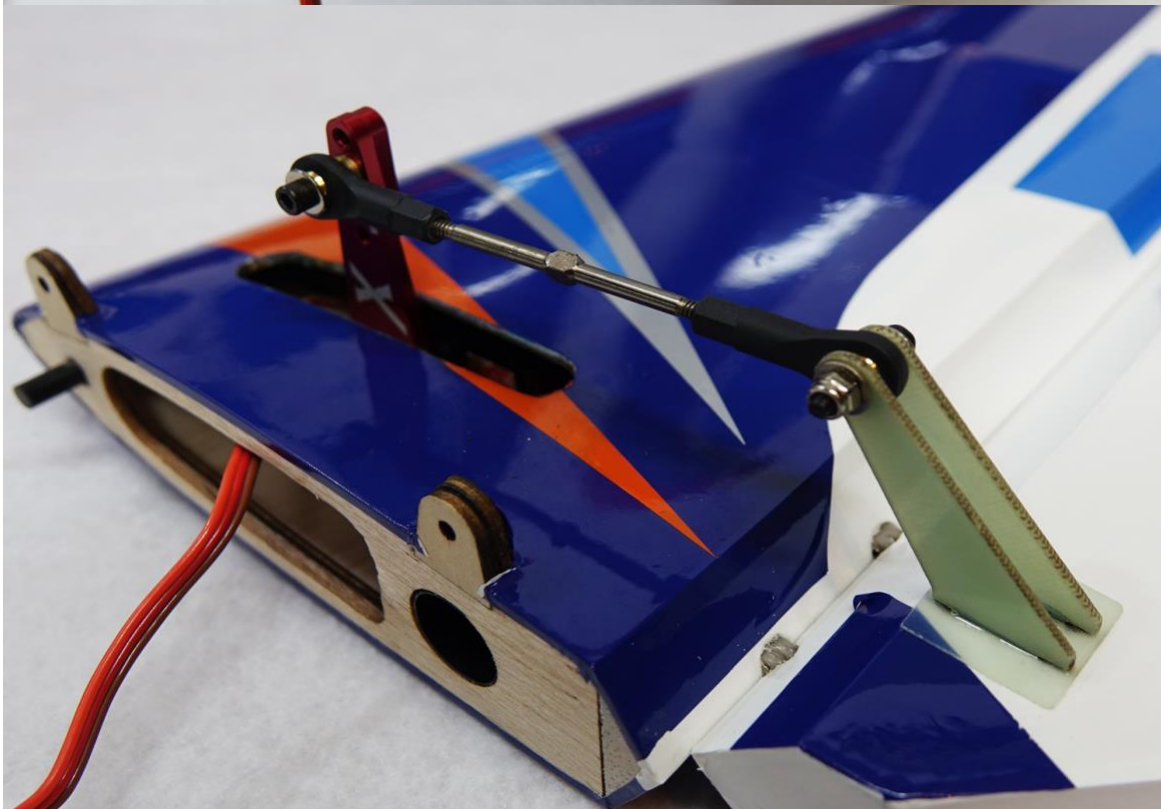
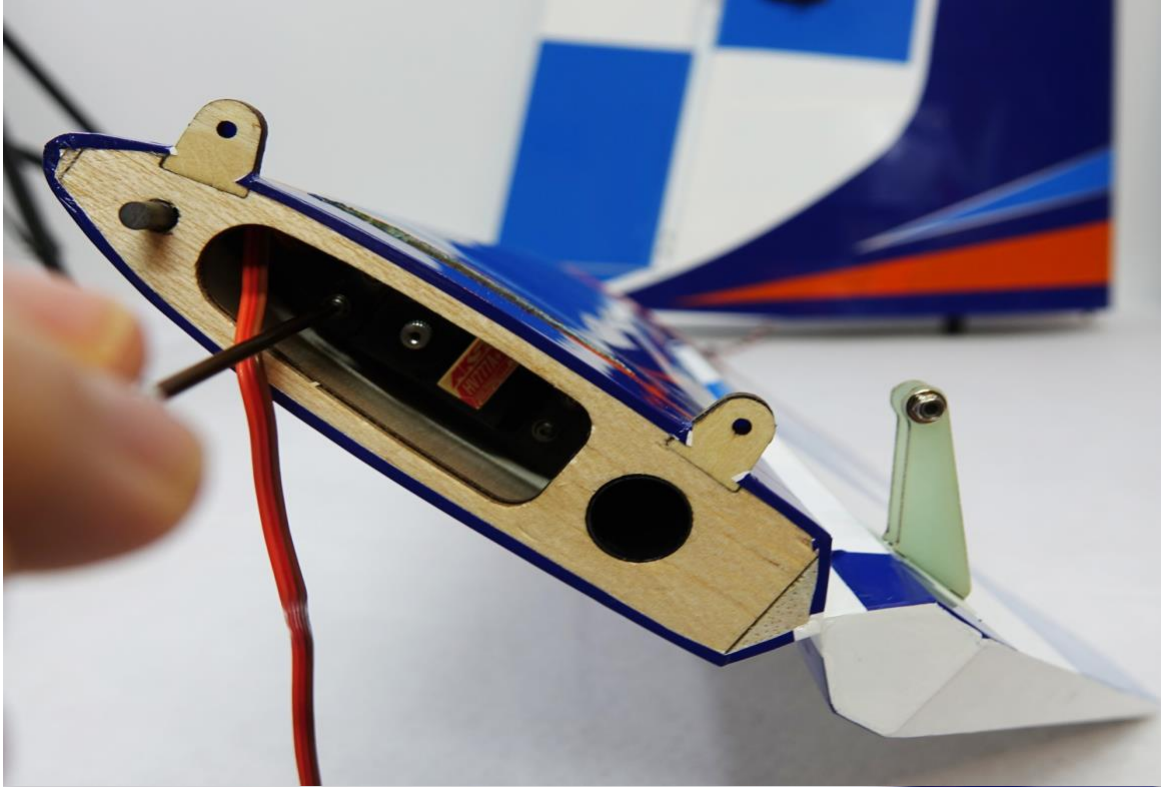
13. Use denatured alcohol and a cloth to remove all excess epoxy, especially on the hinge pin. Make sure you have full deflection in both directions – once satisfied with the results, set the surface aside to dry. After the hinges have dried thoroughly, pull on the surfaces to make sure they are properly secured.



Note: Before installing the servos, it's a good time to seal the hinge gap with a strip of Ultracote or Blendederm tape. Also, I recommend that you dilute a small amount of epoxy with a few drops of alcohol and apply a light coat to the inside of the stab and to the servo mounting rib as well as to the root rib and mounting tabs to protect against exhaust residue that can collect in these areas, especially if you plan to run a smoke system.

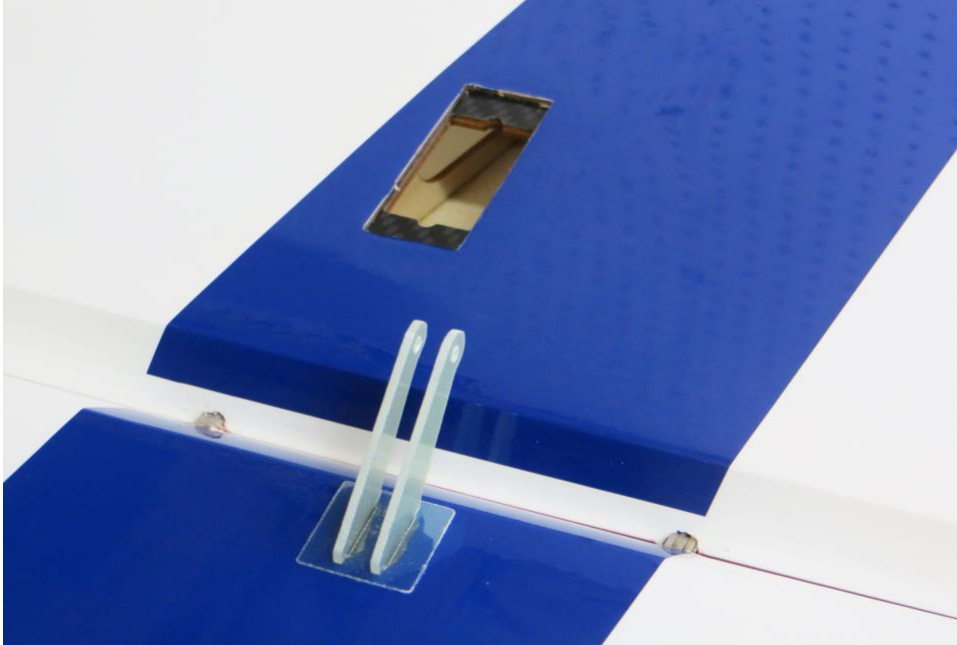
14. Before installing the elevator servos, temporarily install the servo arms and electronically center the servos. Using the manufacturer supplied mounting hardware, install the elevator servo with the output shaft toward the rear of the stab and re-attach the servo arm.

15. Assemble the linkage and install as shown in the picture, using an Extreme Flight 2 inch servo arm and the provided 3mm hardware.

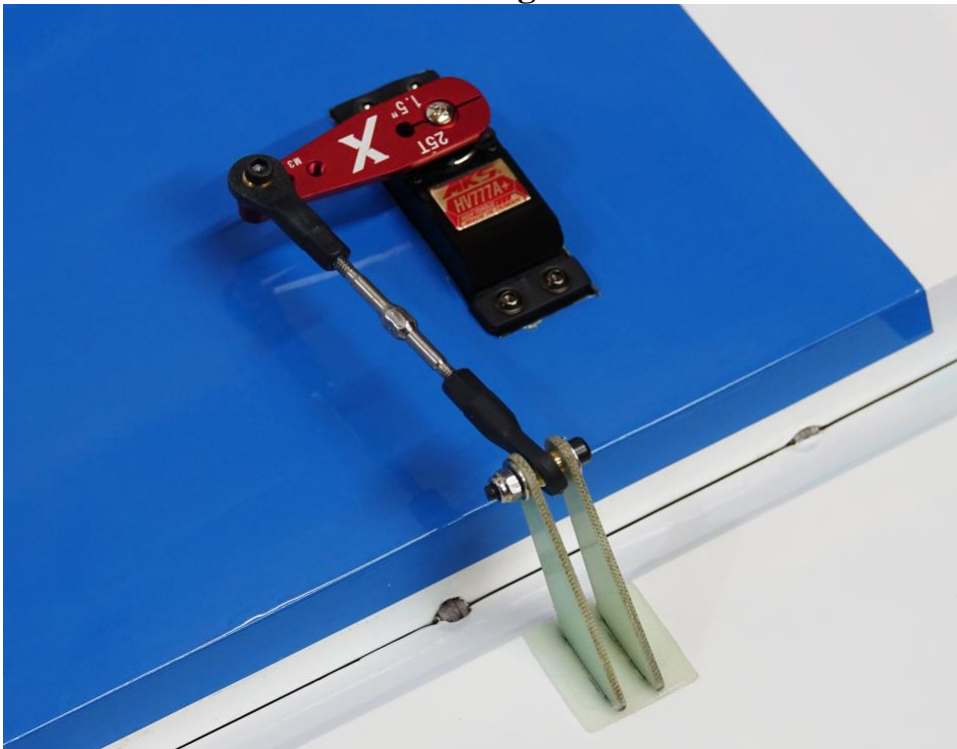


Wing Assembly

16. Locate the wing/aileron assemblies as well as the composite control horns and base plates from the wing hardware package. Following the same procedure as outlined with the elevator/stabs, install the control horns and hinges for both wings.



17. Attach a 12 inch EF 20 awg servo extension to the aileron servo lead and secure with a servo safety clip or heat shrink tubing. Install the aileron servo using the manufacturer provided hardware with the output shaft oriented toward the leading edge of the wing. Electronically center your servo and install the 1.5" EF servo arm and linkage as shown.



Note: Before moving to the next step – it would be a good time to seal the hinge gaps with a strip of Ultracote or Blendederm tape. Be sure to fully deflect the control surface when sealing the gap to allow for full deflection once the gap is sealed. Also, take a few minutes to go over the wings with a trim iron on a medium heat setting to seal all the trim seams and remove any wrinkles in the covering. Use caution and avoid excessive heat as this may cause the Ultracote to shrink too much and lift at the seams.

Fuselage Assembly

18. Locate the Carbon Fiber main landing gear, 4 x 4mm bolts, lock nuts and washers. Place the landing gear onto the landing gear plate on the bottom of the fuse and align the 4 holes. Use a metric driver to attach the gear, securing with the 4 bolts, washers and nylon insert locking nuts inside the fuselage.

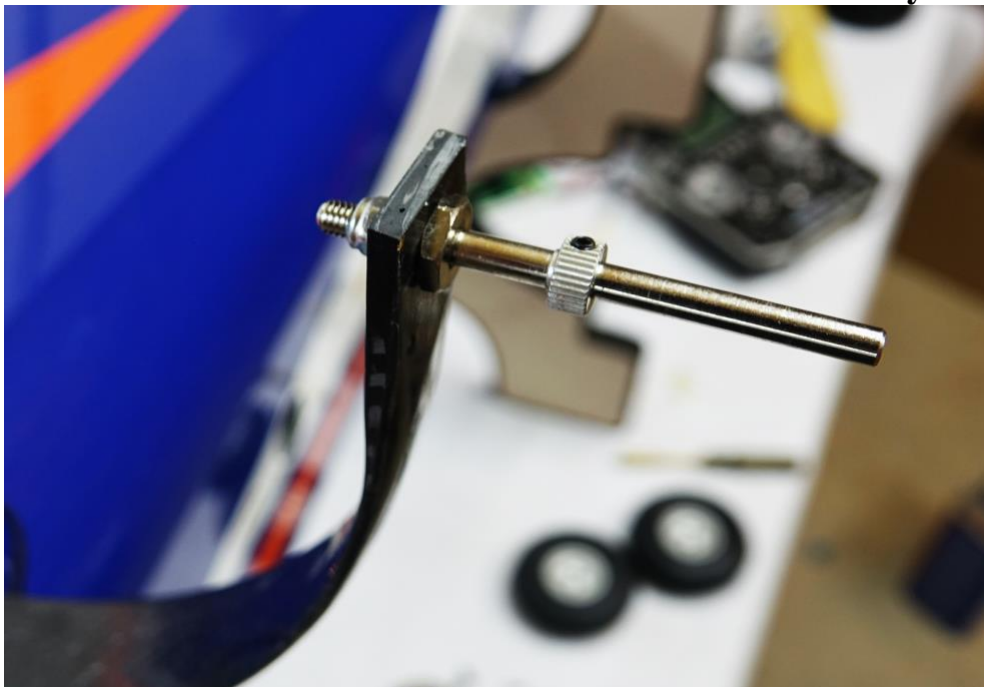


19. Trail fit the landing gear fairings and when satisfied with fit secure with Goop style silicon glue. Tape in position until dry.



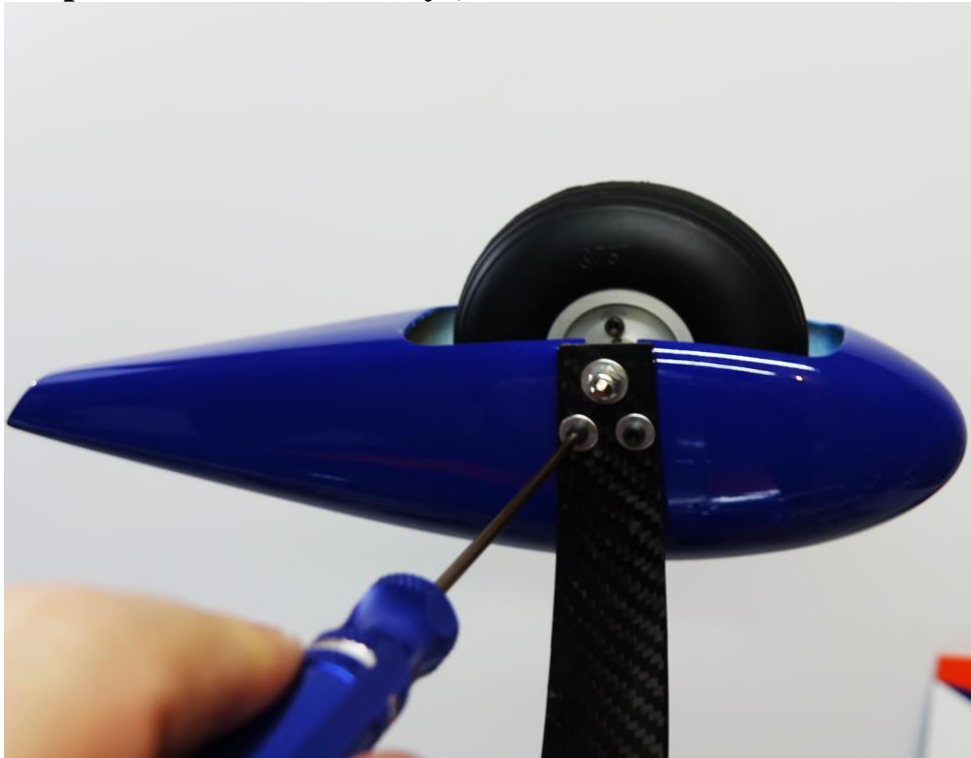
20. Locate the 2 axles, 2 locking nuts, 2 washers, 2 wheels, 4 wheel collars and 2 wheel pants. Place the threaded portion of the axle through the hole in the landing gear, place a washer onto the axle and secure the axle with a locking nut. Repeat this process for the second wheel axle.

21. Install one wheel collar on the axel first in order to center the wheel in the wheel pant. Next, slide the wheel onto the axel and secure the wheel with the second wheel collar. Repeat this process for the remaining wheel. I usually place a short length of fuel line on the end of the axle as shown for added security.

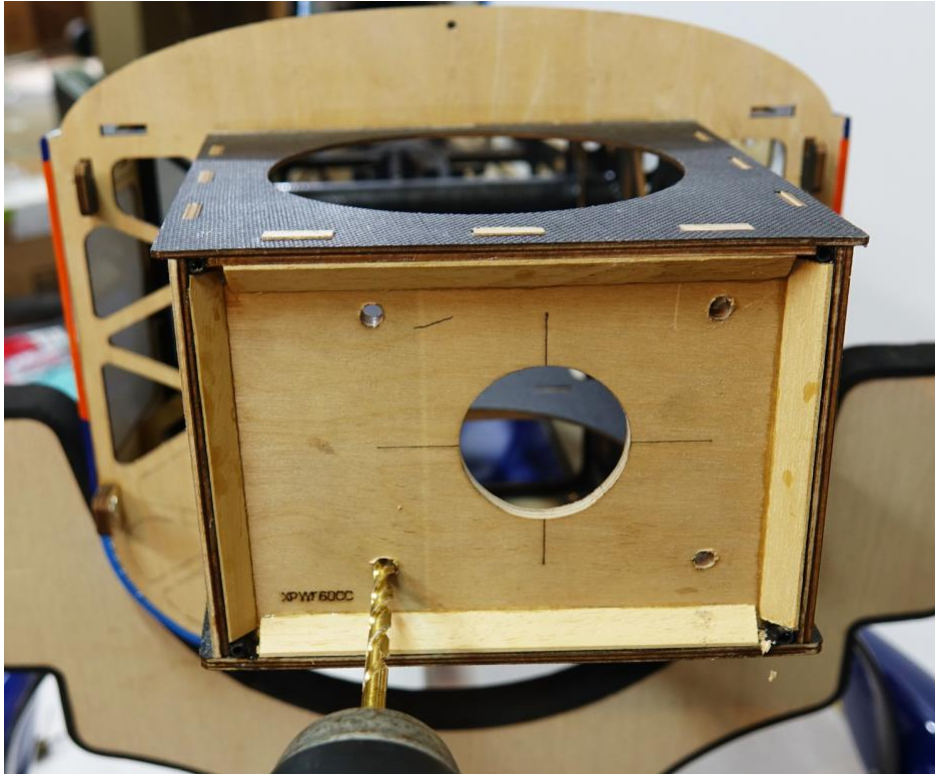




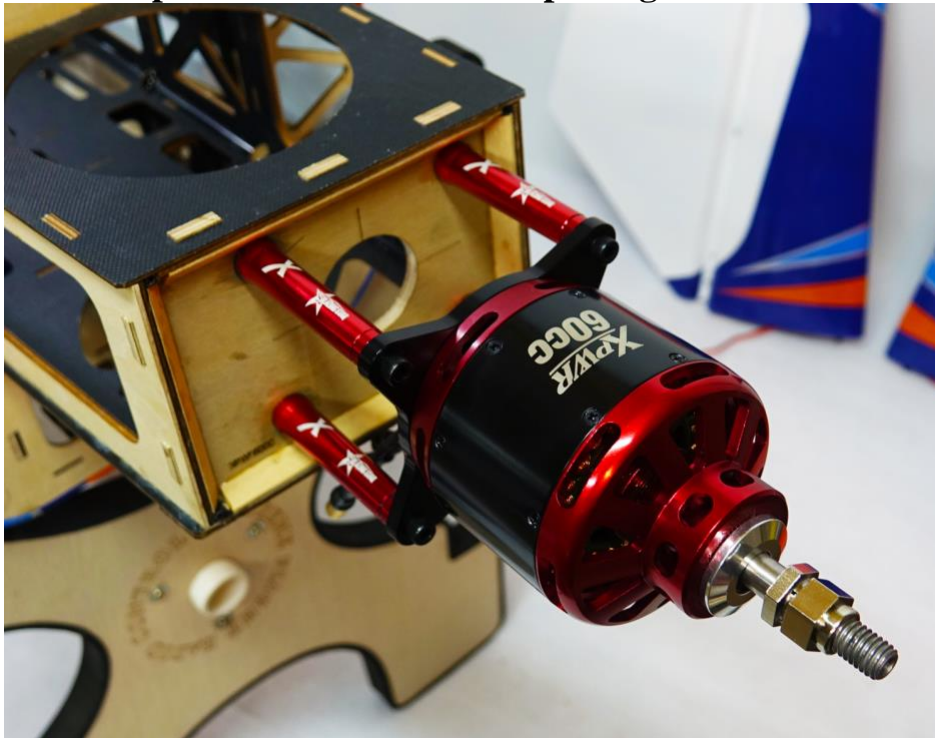
22. Install each wheel pant using the supplied 3mm bolts and washers as shown in the picture below. As always, use blue Loctite on ALL bolts.



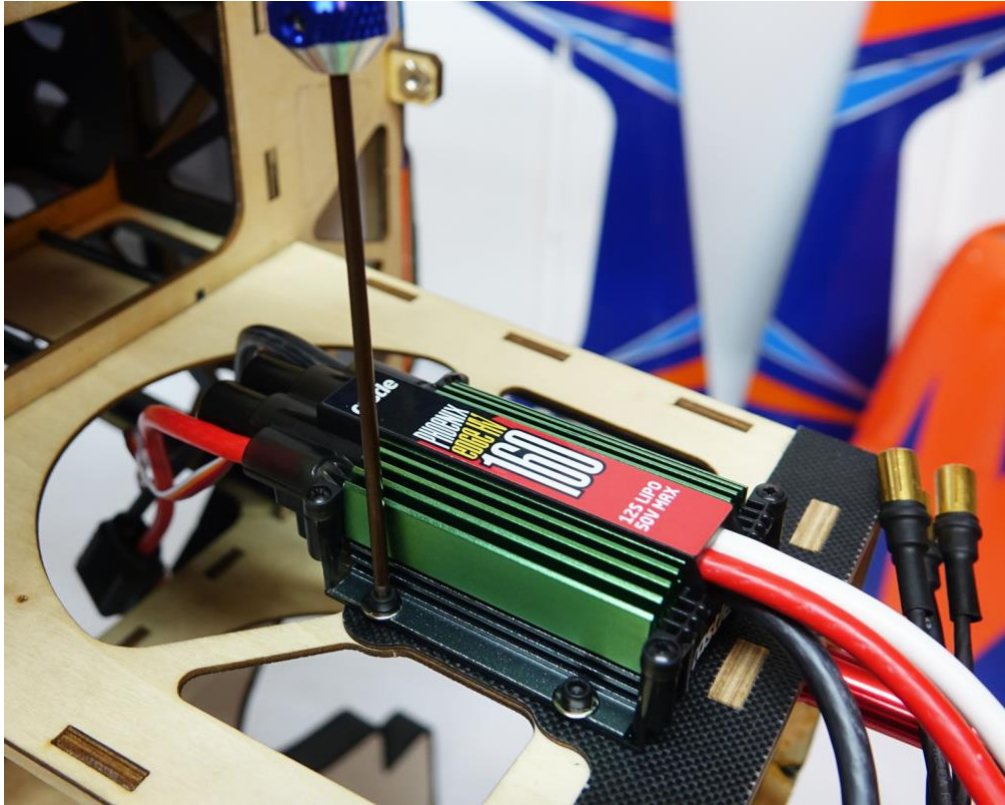
23. There are laser scribed marks for drilling for the motor mounting bolts for the Xpwr 60. Drill to accommodate 6mm bolts. If using another make of electric motor get the mounting template from the manufacturer and align on the laser inscribed crosshairs on the front of the motorbox.



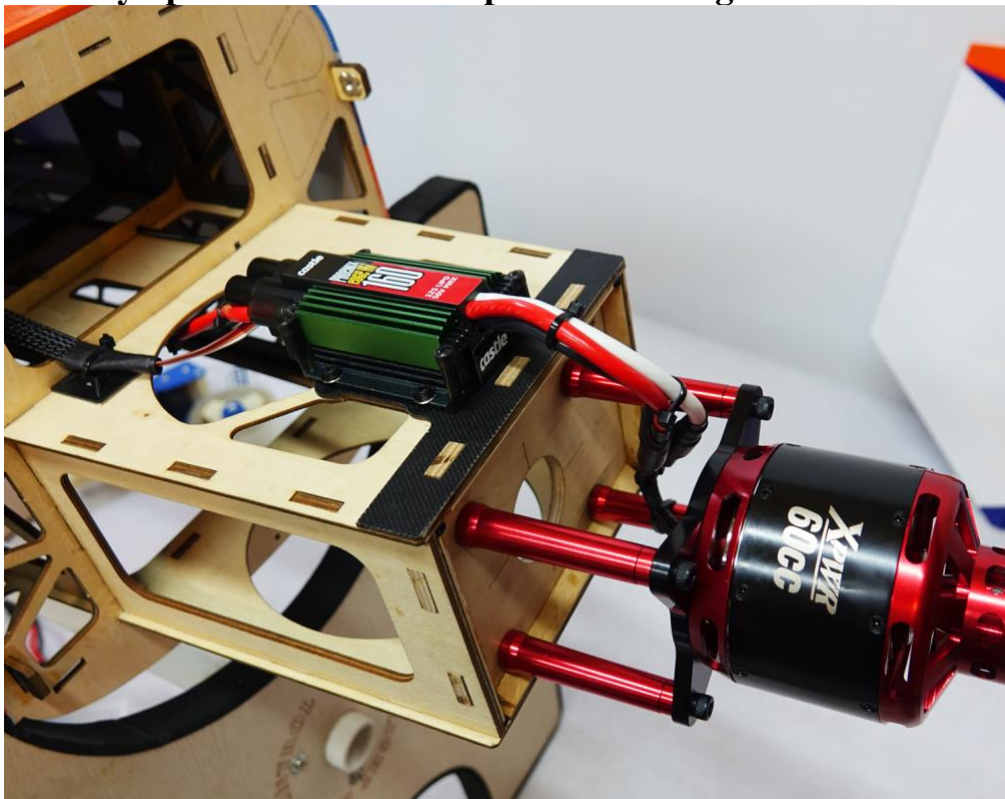
24. We highly recommend using the Blazing Star XXL Standoff Set to easily and accurately mount your Xpwr motor to the Extra airframe. All necessary mounting bolts are provided in the standoff package.



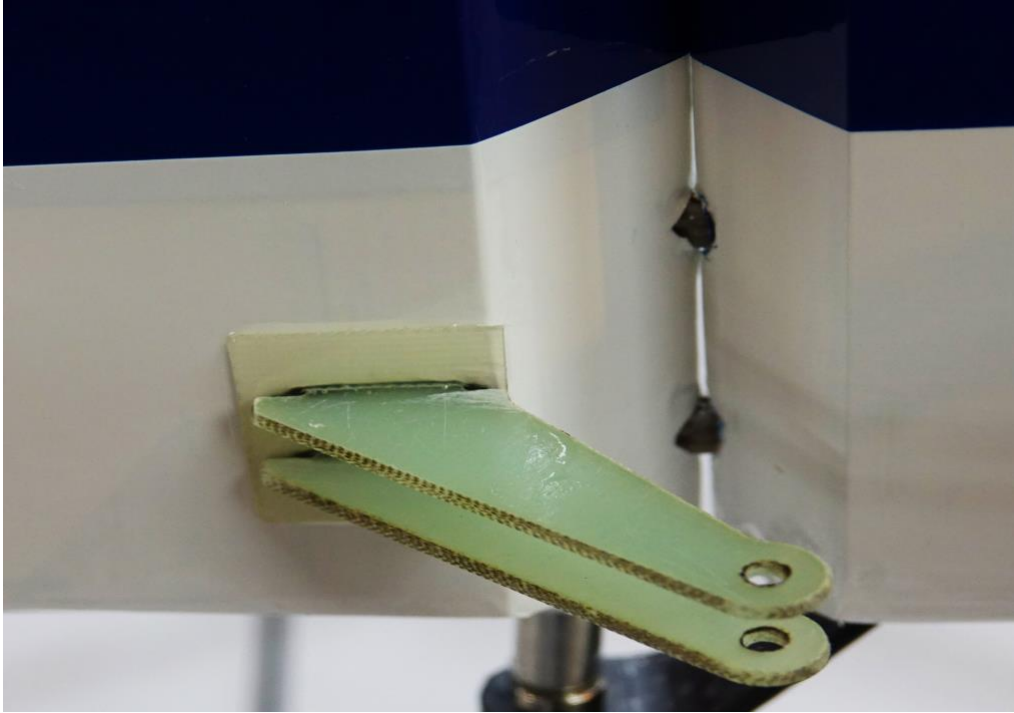
25. There is a dedicated location with pre-installed blind nuts for mounting our recommended ESC, the Castle Creations Edge 160HV. Simply bolt it in place with 3mm bolts. Remember the Loctite!



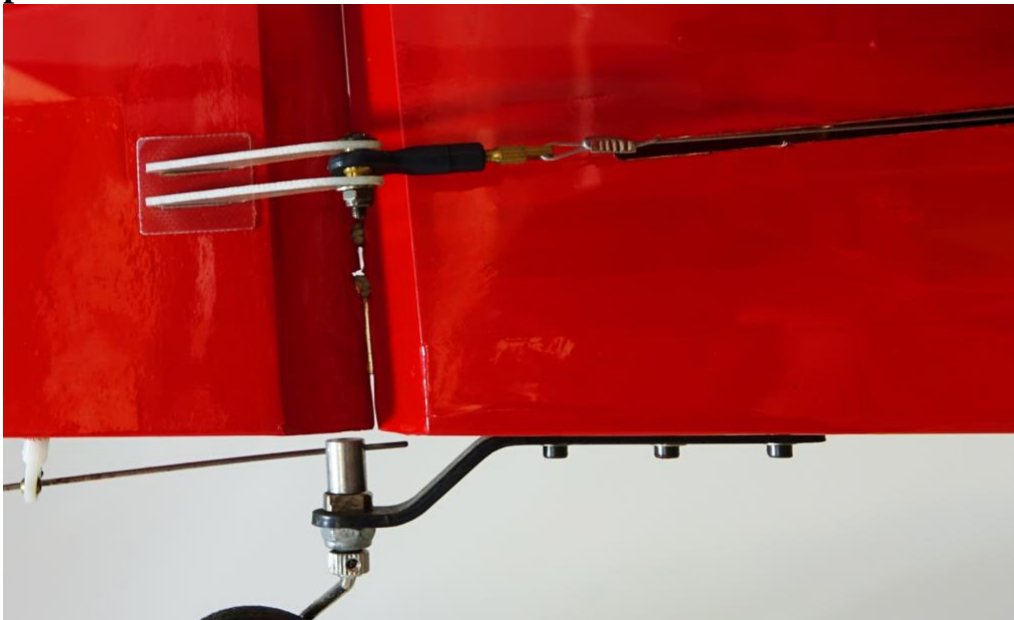
26. Take a few minutes to secure the motor wires, battery leads and receiver lead and tidy up the installation to prevent chafing.



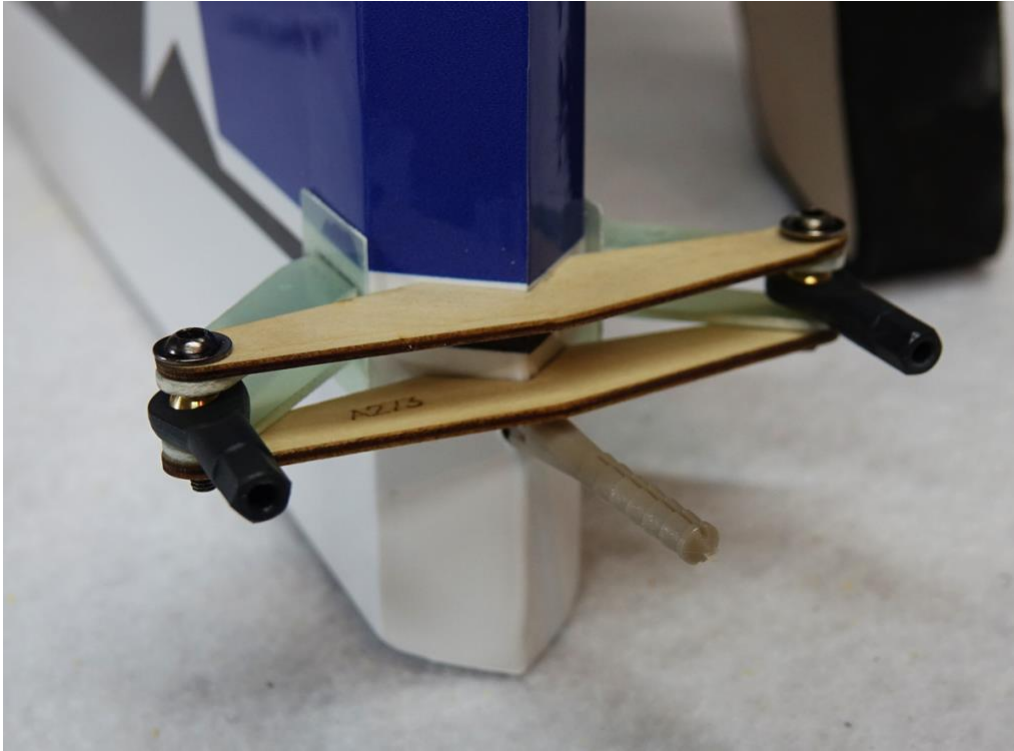
27. Locate the rudder, the rudder control horns and the 2 slotted base plates. Use sandpaper to scuff the bottom of the control horns as well as the side of the base plates that will attach to the rudder. If using a direct drive push-pull linkage (which is our recommended setup) only glue one set of horns in place on the right side of the rudder (pilot's perspective) in the lower position using the same procedure as you did with the elevators and ailerons.



28. As mentioned there are two locations available to install the rudder control horns. If using the pull-pull system use the upper horn location as shown in this photo.



There is a plywood jig included in the hardware package to help properly align the dual control horns if using a pull-pull setup. This makes achieving correct alignment a breeze.

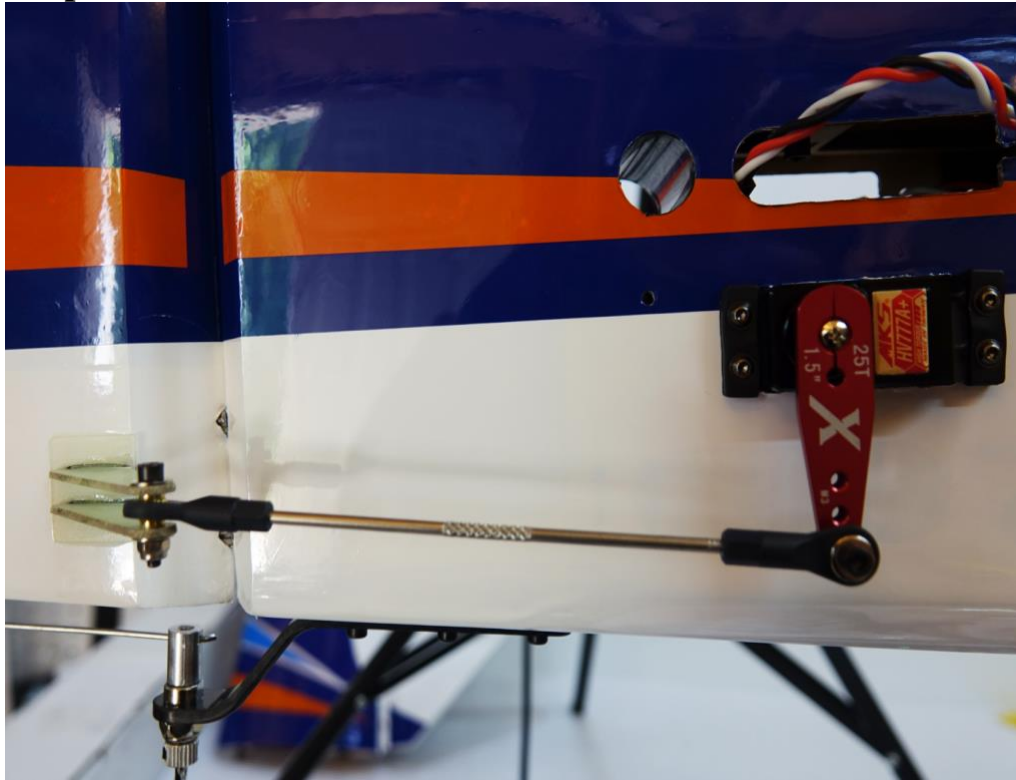


29. Once your control horn installation has cured, mount the rudder to the fuselage using the same process as you did when gluing on the ailerons and elevators.

30. Locate the 2mm ball link from the tailwheel hardware bag. Drill a hole to accept the shaft of the ball link and secure it with epoxy. Once dry mount the tailwheel assembly as shown.



31. Attach a 36" EF 20awg servo extension to your rudder servo and secure with an EF Servo Safety Clip. Install the rudder servo in the rear of the fuselage as shown if using a direct drive rudder actuation setup and assemble the linkage as shown with the provided hardware.



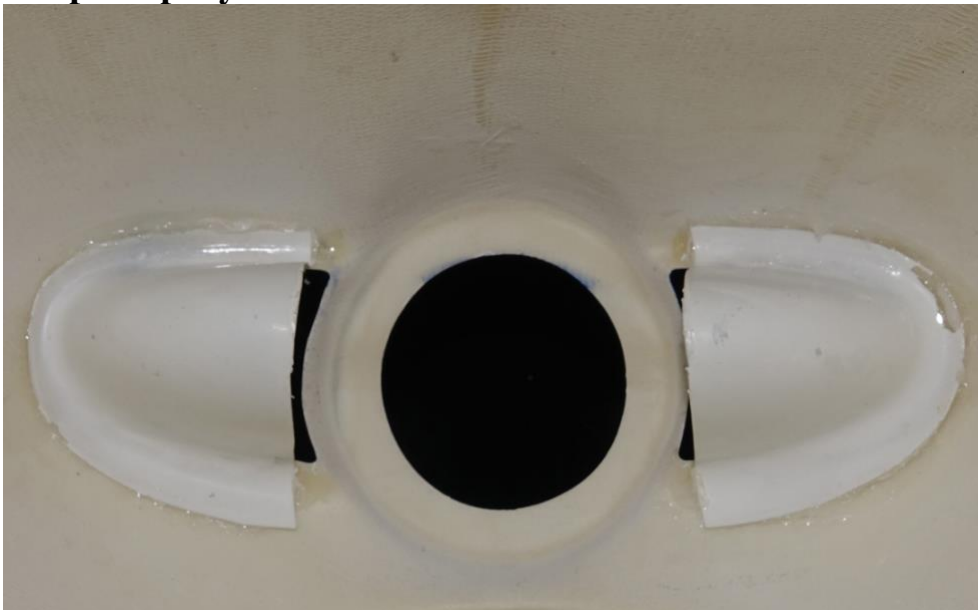
32. If using a pull-pull setup now is the time to install the pull-pull rudder cables. Install the cable onto the brass threaded connector as shown, using the aluminum crimp tube to secure.



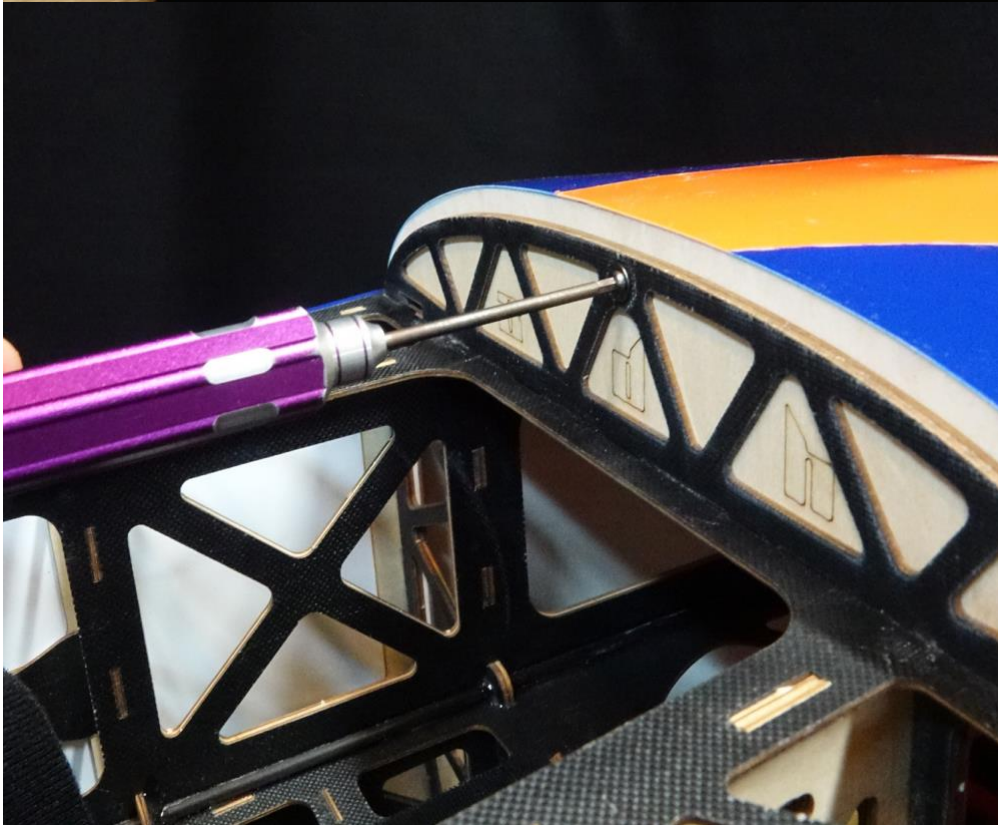
33. Install the rudder servo in the designated location in the rudder tray. Electronically center the servo and install the EF 4" pull-pull arm. Secure the cables to the arm as show using 3mm bolts. As you'll notice in this picture we used the SWB Pull-Pull Tensioning Kit which makes getting the proper tension on the cables very easy and is a worthwhile investment. Please also note we are using the holes at the 3.5" location for best geometry. The cables should be crossed in a X pattern before exiting the rear of the fuselage through the tubes installed in the fuselage sides.



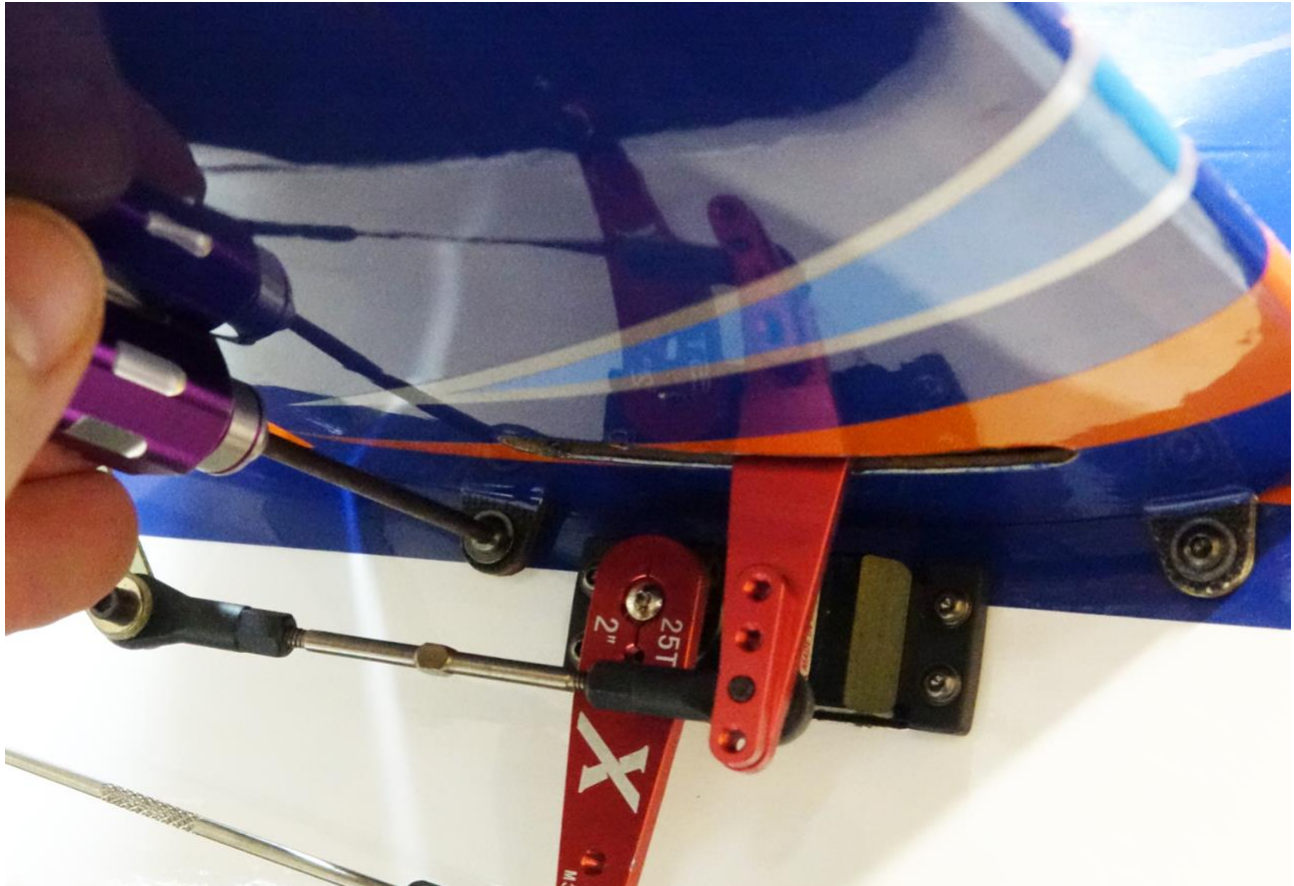
34. There is a set of baffles that install behind the cowl openings to direct air over the Xpwr 60. Do not omit installation of these baffles! They are a very important part of the cooling equation for the Extra's power system! Glue them in place with Goop or epoxy.



35. The cowl has a unique method of mounting that allows easy installation and removal. It is secured with 3 3mm bolts, 2 on the lower external portion of the cowl and one mounted from the interior of the fuselage. The cowl hangs on 2 hooks and is secured at these 3 locations. I chose to use 2 of the EF Thumb Screws for the exterior mounting and spray painted them to match the paint on the cowl.



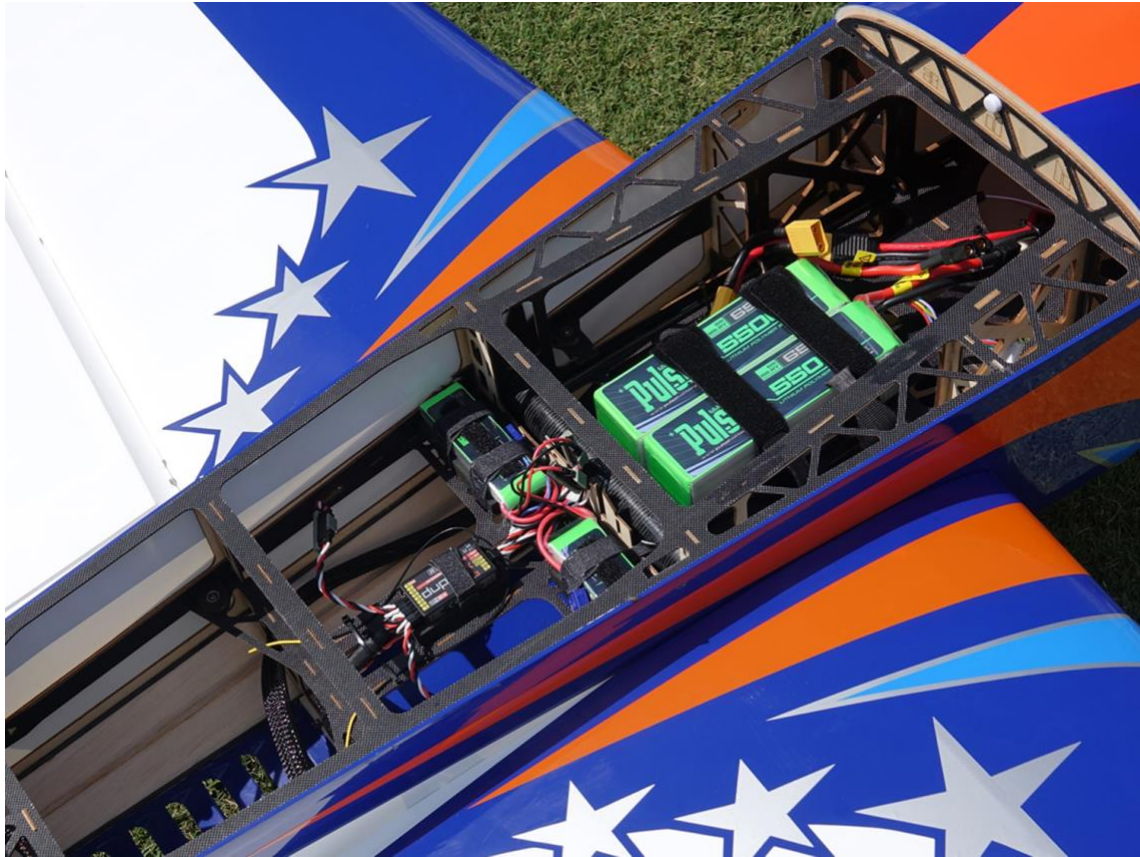
36. Attach a 36 inch EF 20 awg servo extension to each elevator servo lead. If you plan to remove the stabs for transport, you will need to use 48 inch extensions. Secure with EF Servo Safety Clips or heat shrink tubing. Slide the stab halves onto the carbon fiber stab tube and secure with a 3mm bolt and washer inserted through the mounting tabs and into the pre-mounted blind nuts. Make sure to use a drop of blue Loctite on these bolts.



37. The wings are mounted on the provided carbon fiber wing tube and retained by inserting a 3mm bolt and washer through the two tabs that protrude from each wing root and into the corresponding blind nuts that are mounted in the fuselage structure. Be careful not to cross thread the bolts. Also, included with your Extra 330E is a set of side force generators (SFGs) and racing tips. They are secured to each wingtip with 3mm bolts inserted into pre-installed blind nuts in each wing tip.

38. The canopy is retained by 2 spring loaded latches. Make sure both latches are completely engaged before taking off!

39. There is plenty of room inside the fuselage to secure all of your servo extensions and battery wires. Take a few minutes and tidy up your installation and make sure everything is secure and protected from chafing. Here is a picture of the interior of our Extra to show how we secured the internals.



Set-up and trimming

Besides basic assembly, this is the most important part of preparing your airplane for flight. It can also be the most time consuming, but once your plane is properly dialed in you will agree it was time well spent. One of the most practical ways to check the CG on an aircraft this size is to insert the carbon fiber wing tube into its sleeve in the fuselage and tie a length of rope around the tube on each side of the fuselage, forming a loop that you can pick the aircraft up with. Slide the wings into position, install the canopy and pick up the plane with the rope. Extra 330E should balance in a horizontal position. Move your batteries and radio equipment to achieve this condition. This will give you a safe starting place for the first flights. One of the best ways to fine tune the CG for your aircraft is the 45 degree line test. Fly the aircraft in front of you from left to right (or right to left if you prefer) at full throttle. Pull the aircraft into a 45 degree up line and establish this line. Roll the aircraft inverted, neutralize the elevator and pay close attention to what the plane does. Ideally the plane will continue on this line for several hundred feet before it starts to slowly level off. If the airplane immediately drops the nose and dives toward the ground it is nose heavy. If it begins to climb inverted toward the gear it is tail heavy. There is no need to have the Extra 330E excessively tail heavy to perform 3D maneuvers.

Control surface throws

I highly recommend that you purchase a throw meter that measures in degrees. There are several units available commercially. These units are a great aid in set-up and definitely beat the “that looks about right” method. For any type of precision flying, surfaces that travel equal distances are a must. The following control surface travels are what I use on my own Extra. These are a good starting point, but are by no means the only way to set up the Extra. Start here and then adjust to fit your own preferences and style of flying.

Elevator: 8-10 degrees low rate, 20% exponential; all you can get high rate, 60-65% exponential

Aileron: 20 degrees low rate, 30-40% exponential; 38-45 degrees high rate, 50-60% exponential

Rudder: 20 degrees low rate, 50% exponential; all you can get for high rate, 50-60% exponential.

This completes the assembly of the 3DHS 95" Extra 330E. As a final step clean the entire aircraft with glass cleaner, then apply a coat of spray-on wax and buff the finish to a high gloss. My favorite product for this is Eagle One Wet Wax AS-U-DRY, available in the automotive section of most Wal-Marts, K-marts, Sears, Targets, etc. People often ask me at trade shows how I get the planes to look so shiny, this is my secret. You may wish to apply all of your graphics before applying the coat of wax.

Thanks again for your purchase of the 3DHS Extra 330E ARF. I hope you enjoy assembling and flying yours as much as I have mine.

See you at the flying field!

Chris Hinson

EXTREME FLIGHT ✖