92" Edge 540 V2 ARF

Assembly Manual



EXTREME FLIGHT

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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 RC 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 setup 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.

Congratulations on your purchase of the 3DHS 92" Edge 540 V2 ARF!

The original 3DHS 92" Edge 540 was a legendary airframe among devotees of 3D Aerobatics. It was beloved due to its ability to be both stable and gentle for 3D newbies yet aggressive and satisfying for the more experience flyer. Now the 3DHS Edge 540 has been updated to current specifications with generous use of carbon and composites to strengthen the airframe while keeping the weight low. The cowl has been remodeled to the latest high performance racing design borrowed from the Edges that currently dominate the air race series. Little has changed however in the basic aerodynamic package that the Edge is built around as it has more than proven itself. The DA 70 or Xpwr 60cc motor are both excellent choices for the 92" Edge.

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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.**
- **Pacer Formula 560 Canopy Glue**
- **Blue Loctite.**
- **Electric drill with an assortment of small drill bits.**
- **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 METAL GEARED servos with a minimum of 400 oz/inches of torque. MKS HV777A+ or HBL 380 recommented**
- **Extreme Flight aluminum servo arms: 2 x 1.5 inch arms for aileron, 2 x 2 inch arms for elevators and 1 x 4" dual arm for the rudder.**
- **2 x 12” Servo Extensions for the Ailerons.**
- **1 x 12” Servo Extension for throttle or ESC**
- **2 x 48” Servo Extensions for the elevator.**
- **Xpwr 60cc brushless outrunner motor**
- **Blazing Star Standard XL standoff kit for electric motor mounting**
- **Castle Creations 160 HV ESC.**
- **Receiver battery**
- **2 x 6S 5000-5500 mah LiPo battery hooked up in series for 12S operation**
- **Xoar 24 x 12 PJN electric prop.**
- **DA-70 with mufflers if using a gas engine.**
- **Blazing Star DA 70 stand off.**
- **Flowmaster 17 or 24 oz. fuel tank.**
- **EF 4.5" CARBON FIBER spinner with aluminum backplate.**

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Let's get started!



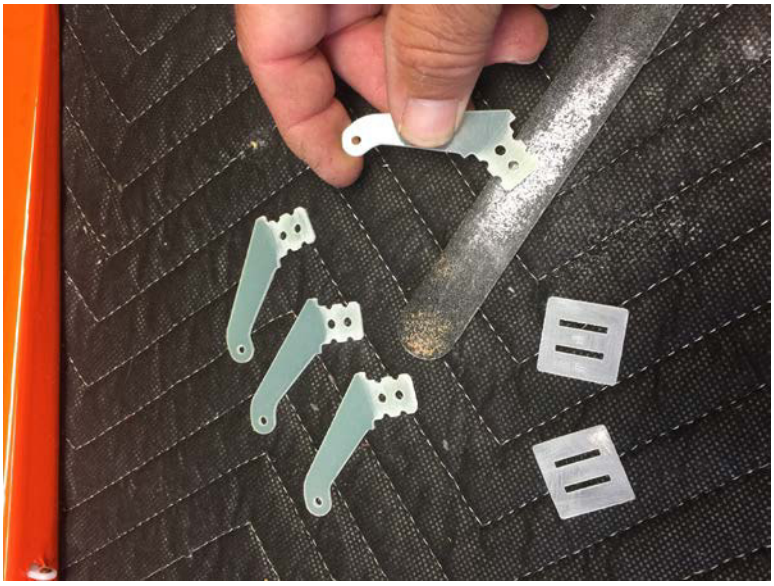
Wing assembly

1. **Locate the 2 wing panels as well as the composite aileron control horns and base plates. Use a soldering iron or sharp hobby blade to remove the covering over the slots for the aileron horn and aileron servo mount as shown. Make sure you are doing this on the <u>bottom</u> of the wing and aileron!**



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2. **Scuff the portion of the horn that will glue into the aileron and secure with 30 minute epoxy. Wipe away any excess glue with an alcohol soaked rag. Insert the ball link between the horns to ensure proper alignment while the glue dries.**



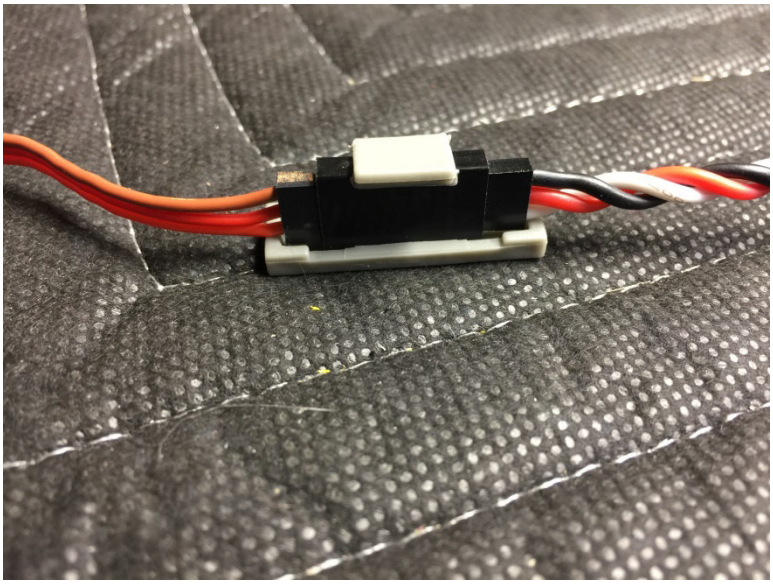


3. **Inspect the hinges and make sure that each hinge is seated properly. Adjust any hinge holes that are impeding movement. Remove all of the hinges from the wing and aileron. Mix a generous batch of 30 minute epoxy. Use a zip tie or an old pushrod to thoroughly coat and fill the hinge holes in the wing with epoxy. Coat one side of each hinge with epoxy and insert it into the wing taking great care to make sure it is centered properly. Wipe away any excess glue with an alcohol soaked rag or paper towel. Once all hinges are installed in the wing set it aside to dry.**

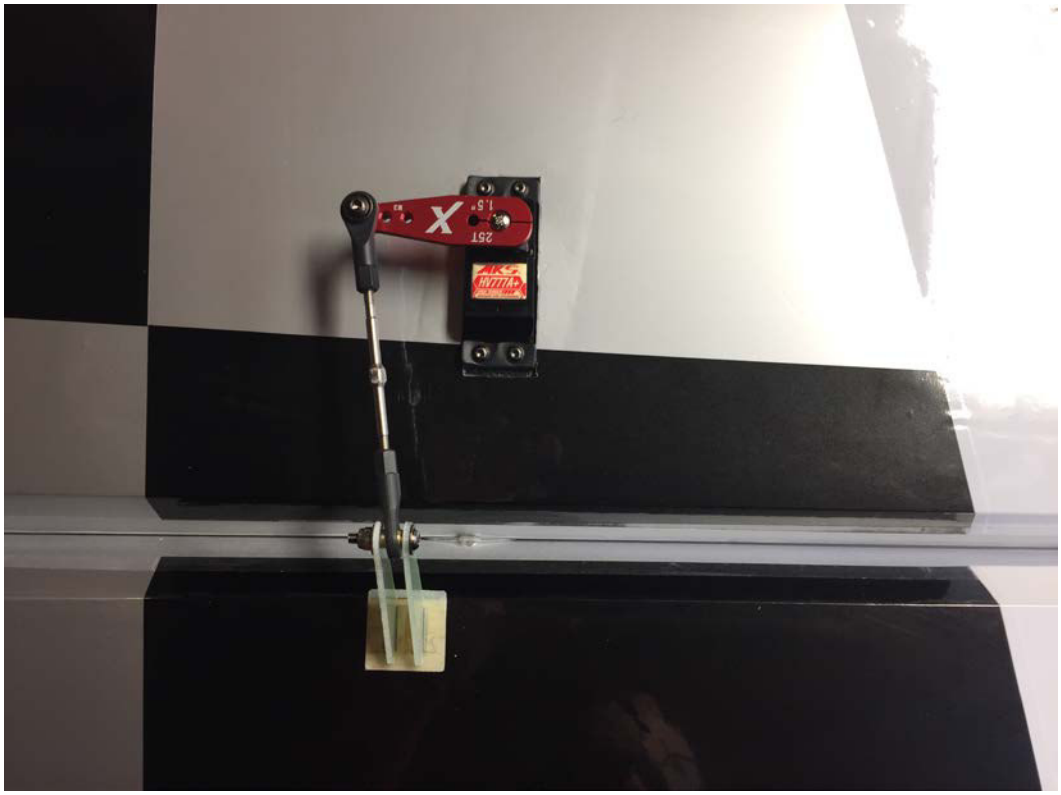
4. **Once dry use the same procedure to fill the hinge holes in the aileron with epoxy. Coat the protruding hinges with epoxy then slide the aileron into position. Make sure the aileron is seated properly with minimal gap between the wing and aileron and wipe away any excess glue with an alcohol soaked rag. Pay careful attention to wipe any excess glue from the hinge knuckle. Set the assembly aside to dry. Once dry the aileron movement may feel a bit stiff. A drop of Acetone placed on the knuckle of each hinge will help to free the aileron. Then apply a drop of Teflon or silicon lubricant to each hinge and work it into the joint by moving the aileron back and forth multiple times. Wipe away any excess lubricant with an alcohol soaked rag. Now is a good time to seal the hinge line gap with Blenderm tape or Oracover (Ultracote) if you desire to do so.**

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5. **Secure a 12 inch servo extension to the aileron servo lead and install your aileron servo as shown with the output shaft oriented toward the leading edge of the wing.**



6. **Assemble the aileron linkage as shown and secure to the aileron horn assembly and servo arm with the provided 3mm bolts. Apply blue Loctite to all bolts!**



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7. **Repeat this process for the other wing, then inspect them both for taut covering and any lifting seams that need attention with a hot iron or heat gun. Give a good tug on the aileron to make sure all is secure, then clean the wings with a soft cloth and Windex and set aside. Note, the wings mount to the fuselage with nylon wing bolts.**



Fuselage Assembly

8. **Locate the carbon fiber landing gear and mounting bolt set in the hardware bag. Insert each bolt into a washer, through the carbon gear and fuselage and secure with a nylon insert locknut.**



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9. **Trial fit the landing gear cuffs to the carbon gear legs and mark their location. Remove the cuffs and apply a bead of Silicon based Goop glue completely around the gear leg as shown. Slide the cuffs into place and secure with tape until dry.**





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10. Locate the landing gear hardware pack with includes two axles, two locking nuts, two large washers, two wheels, four wheel collars, two wheel pants and four M3 bolts and blind nuts. Attach the axles to the landing gear with the locking nuts and large washers. Install one wheel collar, then wheel, then a second wheel collar. Test fit the wheel pant for proper wheel placement. Attach both the inside and outside wheel collars to center the wheel in the wheel pant. Now would be a good time to grind a flat spot in the axle to give the outer wheel collar a better grip.





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11. Position wheel pants in place. Use the two holes in the landing gear as a guide to drill two holes in wheel pants for attachment. Use M3 blind nuts and bolts to attach as shown.

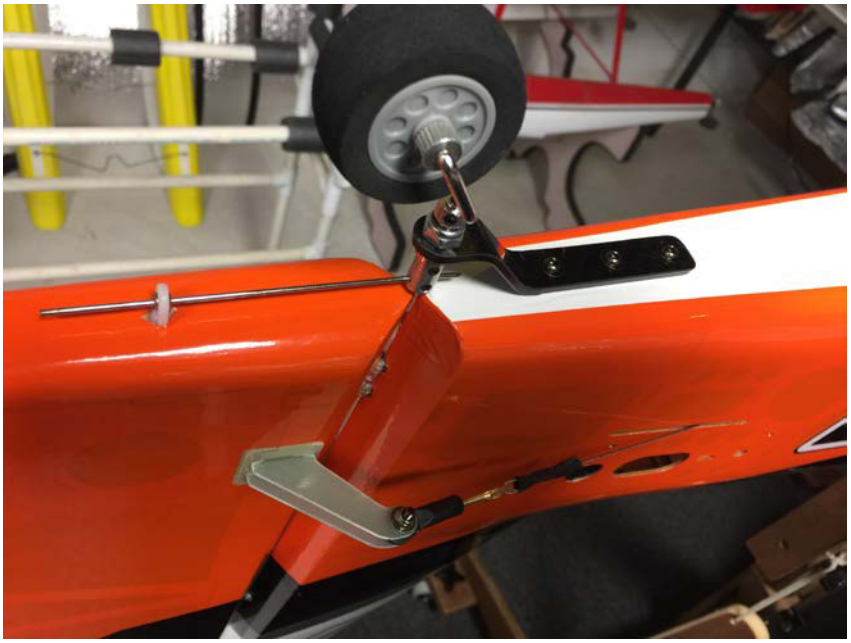




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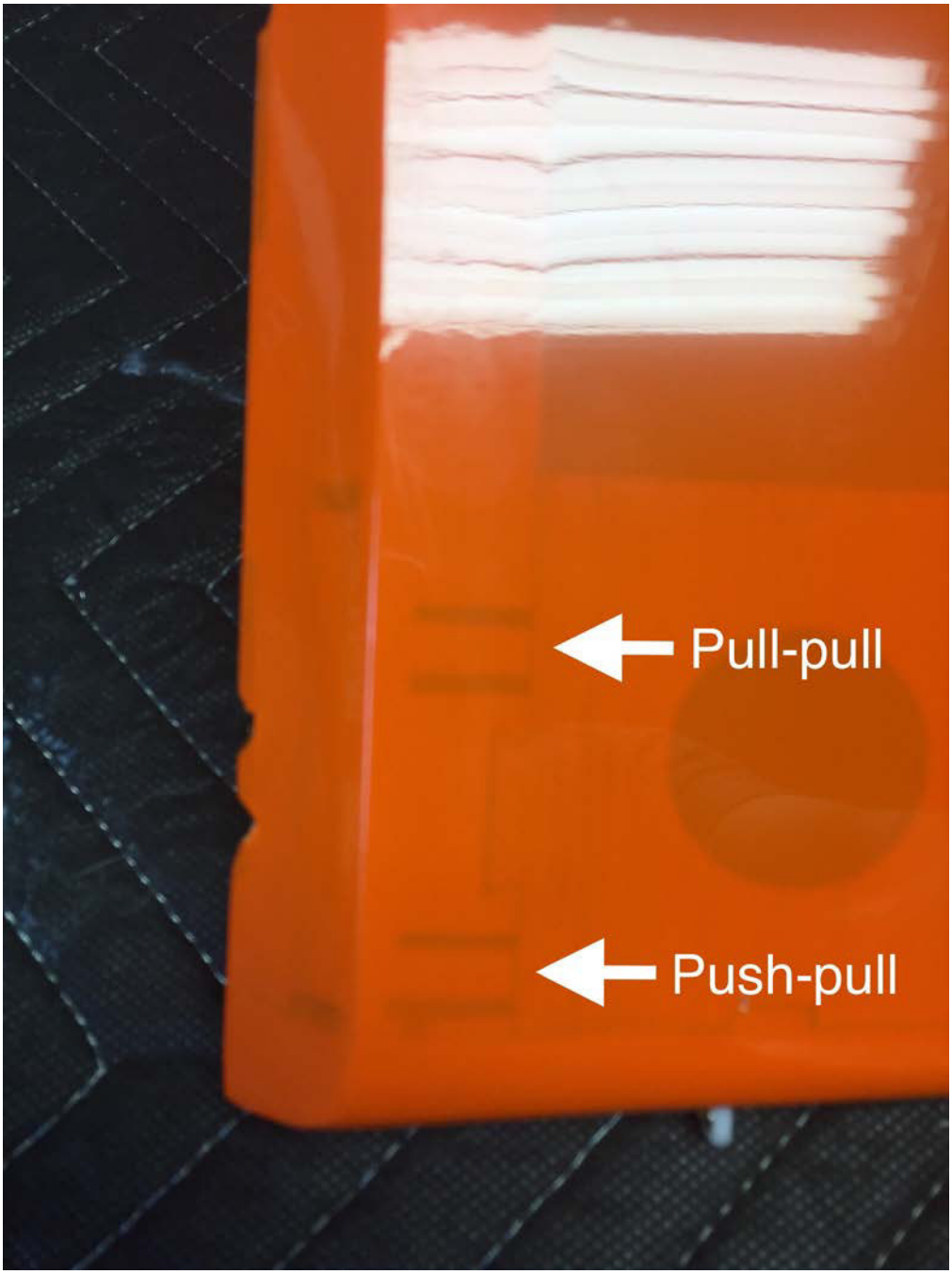
12. Locate the tail wheel assembly. Now is a good time to remove all bolts and fasteners in the assembly and apply blue Loctite to these fasteners. Locate the three holes in the rear of the fuselage for the M3 bolts. Fasten the tail wheel assembly as shown.





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13. Locate the rudder, rudder control horns and hardware. Prepare the rudder control horns as previously done with aileron control horns. NOTE: IT IS RECOMMENDED TO USE THE PULL-PULL RUDDER SERVO LOCATION FOR THE 92" EDGE V2! This is for weight and balance purposes. The rudder has two positions for the rudder control horns. Please note in the following picture.



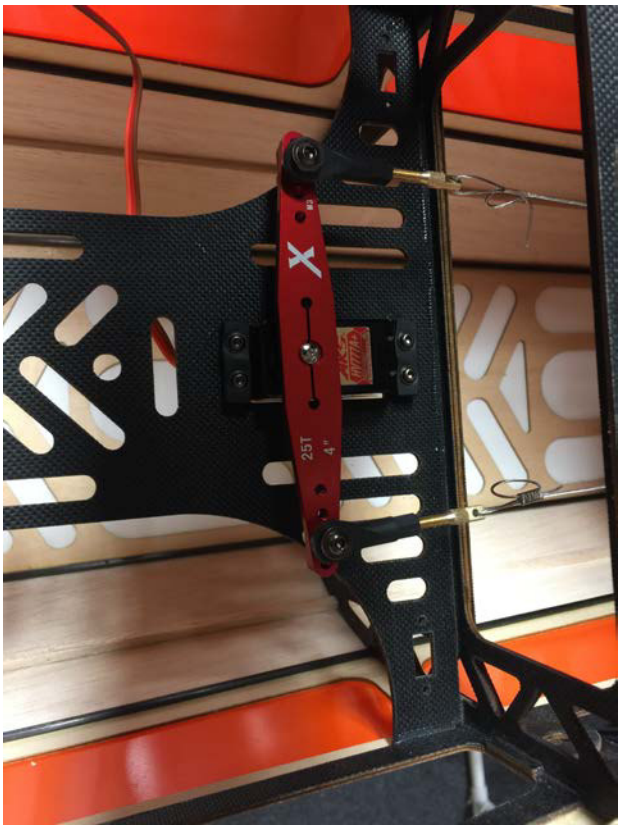
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14. Glue the control horns in the upper position with the same technique used for aileron control horns. Hinge rudder the same as the ailerons.

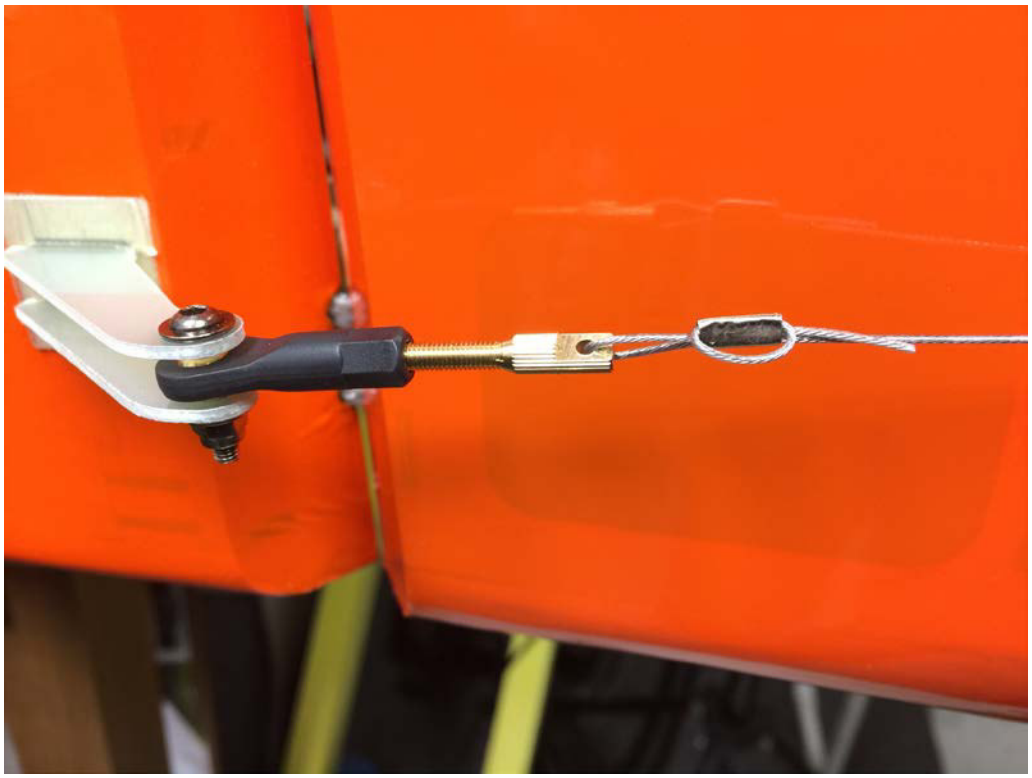


15. Locate the slots for the pull-pull cable exit and open with a sharp Xacto knife or soldering iron. Run the pull-pull cables through the fuselage. Note, the wires should cross inside the fuselage. Mount the rudder servo as show. Using the Extreme Flight 4 inch arm, tapped for M3. Assemble four ball links to the pull-pull ends, screwing into the ball links 1/3 of the way. This will allow room to tighten the cables when assembly is complete. Install one crimp sleeve on cable before inserting cable into pull-pull end. Allow enough cable to go back in crimp sleeve and a second loop around sleeve. See photos below for reference. Once satisfied with the loops, crimp sleeve with pliers. Also crimping the sleeves with a wire (side) cutters is good practice. Be sure not to press too hard to cut the sleeve. It is easier to do the rudder servo side first. Tape the rudder in the neutral position and finish pull-pull wires at the rudder.

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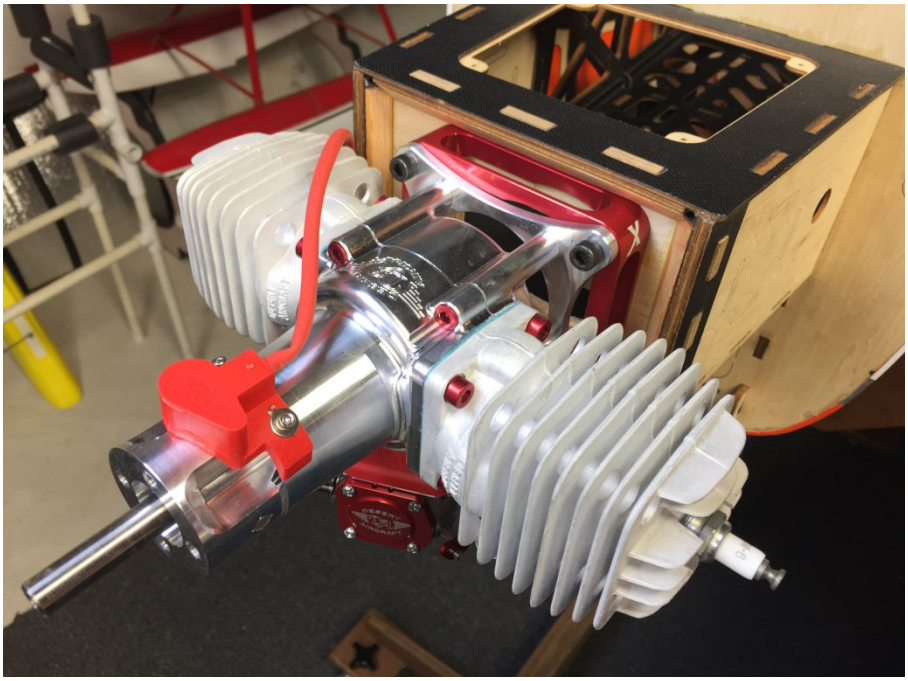




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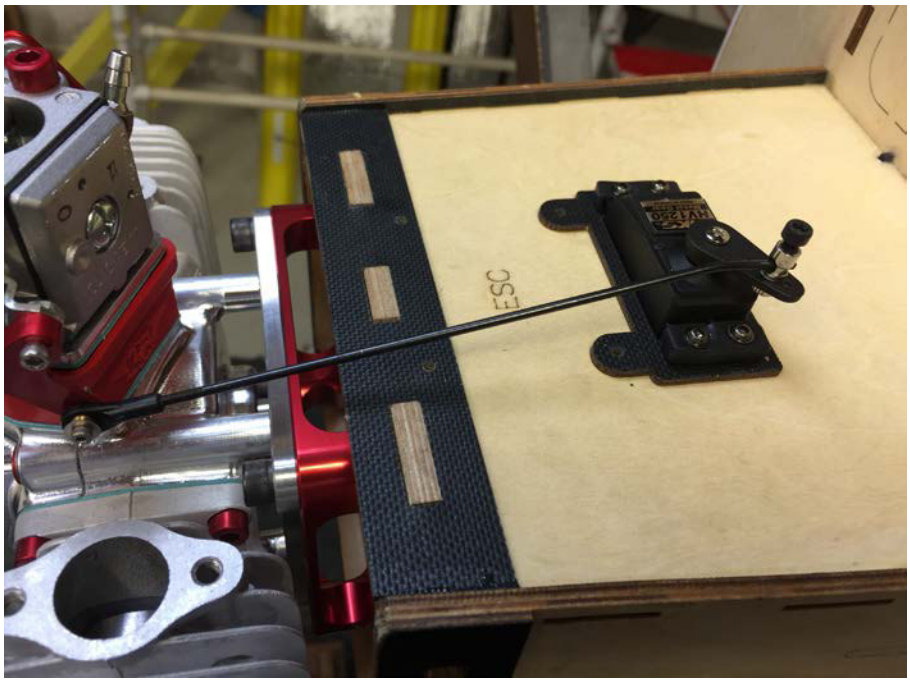
16. **The firewall of the Edge has laser scribed locations for mounting the DA 70. Drill at the correct location for your choice of power plant. If using an alternative motor/engine simply download the mounting template from the engine manufacturer's website and align with the centering marks on the firewall and drill the appropriate holes. Mount the DA 70 using EF's Blazing Star DA 70 stand off.**





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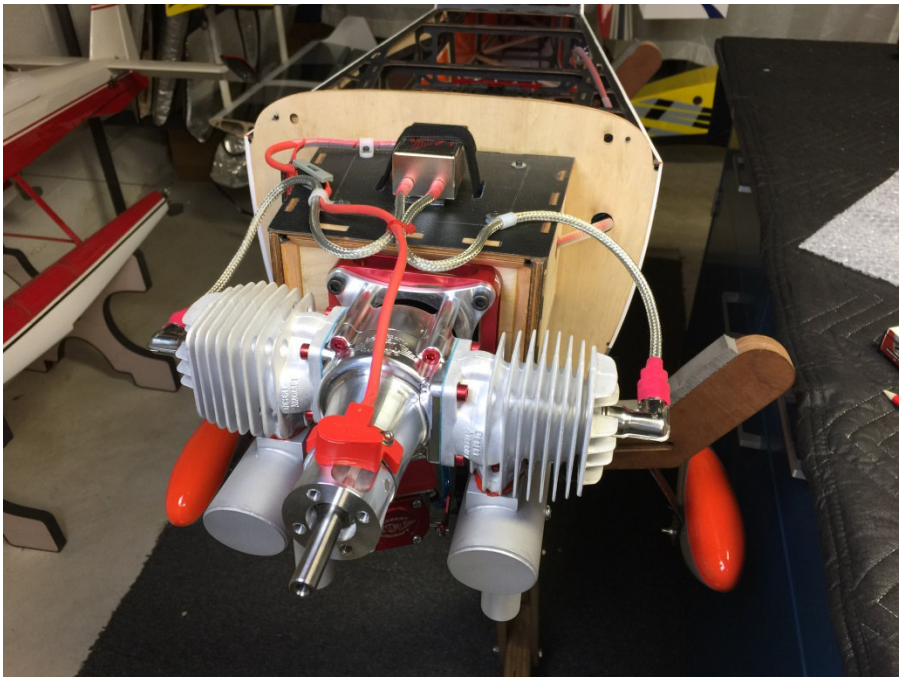
17. Throttle servo may be mounted under the motor box as shown.



18. If using stock mufflers, it is recommend to remove the tunnel cover for additional airflow. Also open vents on the bottom of the fuselage.



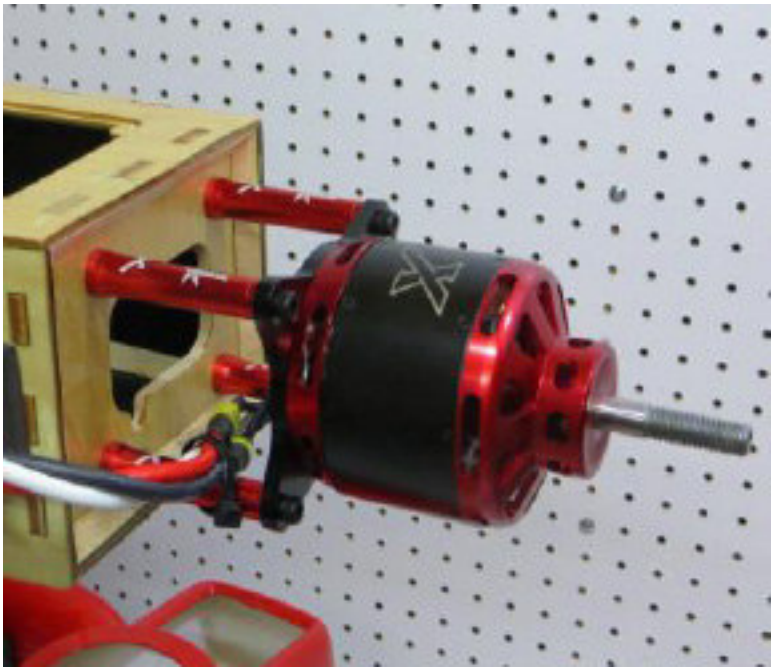
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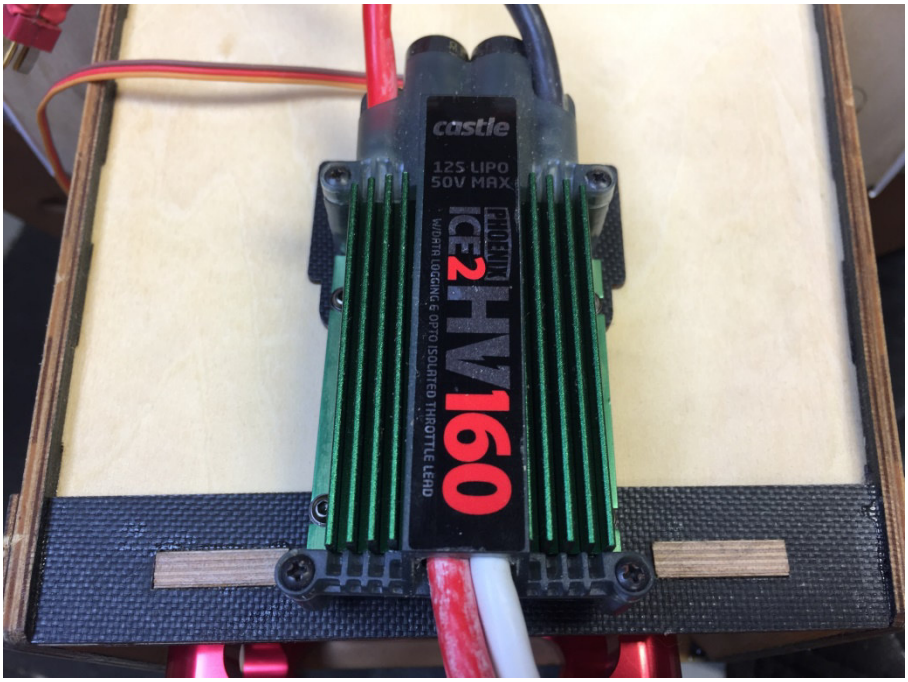


19. **Mount mufflers, cut cowl as needed for mufflers. Install EF's 17 or 24 oz. Flowmaster fuel tank. Mount ignition on the top of the motor box as shown. Complete the engine installation with your preferred components.**

20. **The Xpwr 60 Brushless Electric Outrunner from Extreme Flight is also an excellent powerplant for the Edge, producing gobs of clean quiet power rivaling that of the DA-70. We sell a set of Blazing Star XL standoffs that make mounting the Xpwr 60 very easy. Below is a photo of the Xpwr 60 installed along with our recommended ESC, the Castle Creations HV160. Make sure to use firmware version 4.22 for best results! The Xoar 24x12 PJN is the ideal prop for this setup. There is a mounting option on the bottom of the motor box for the HV160. This position provides needed airflow.**

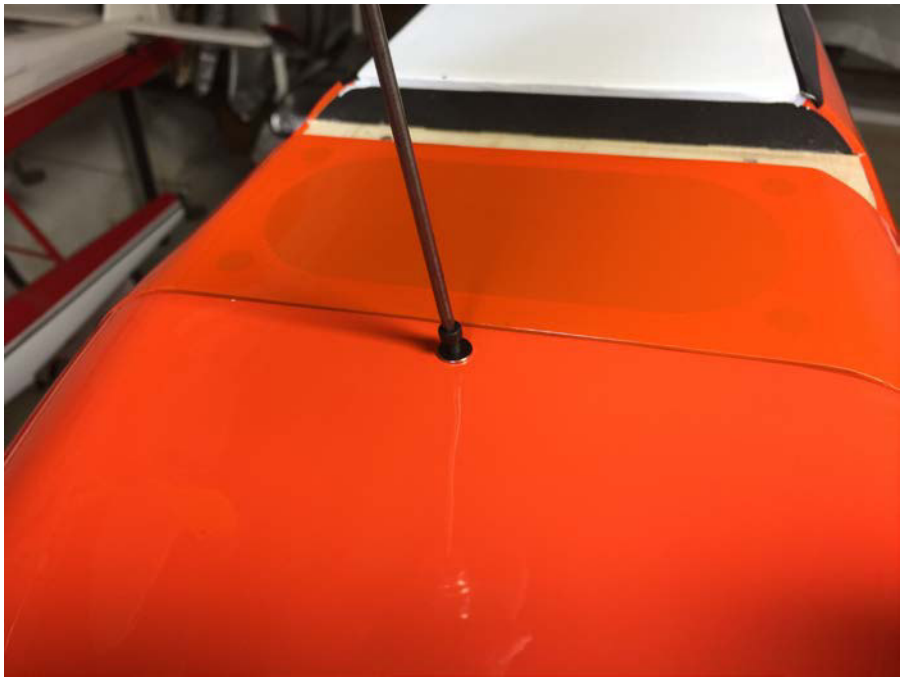
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21. **When satisfied with motor or engine installation, mount the cowl using supplied M3 hardware installed through holes in the F1 former into blind nuts in the cowl. There is one additional cowl bolt on the bottom.**

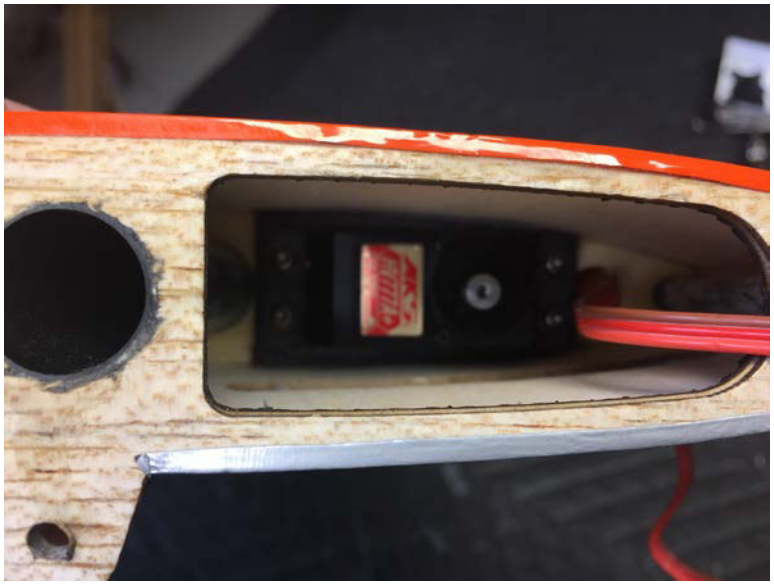


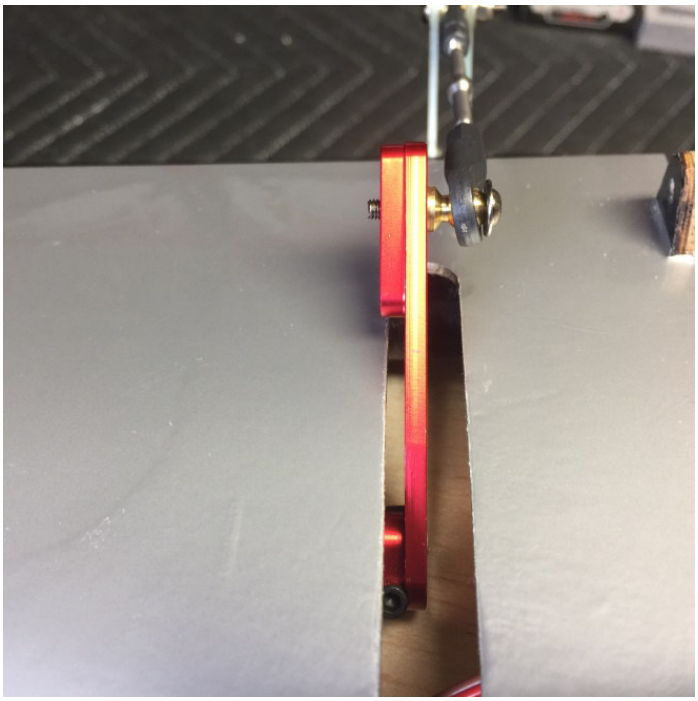
Horizontal Stabilizers

22. **Prepare and install the elevator control horns as previously done with the aileron control horns. Also install elevator hinges the same as the ailerons. Note, there are shorten hinges at the inboard location of the elevator to allow clearance of the stab tube and control horn. See picture below for reference. Mount elevator servos inside stabilizers as shown. Mount the EF 2 inch servo arm and complete elevator pushrod assembly. Be sure both elevator push rods are equal length. The stabilizers mount to the fuselage with one carbon fiber tube and two M3 bolts (per side).**

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23. The 92” Edge V2 includes wing tips and side-force-generators (SFG’s). These are mounted with three M3 bolts.





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Set up and Trimming

The CG range for the 3DHS 92" Edge 540 V2 can be measured at the wing root and starts at 5.25 - 6 inch which closely correlates to the location of the wing tube. If you balance at the center of the wing tube for the first flight you will be safe. There is plenty of room on the battery tray to move your batteries or receiver batteries to achieve this CG location. Depending on your flying style you can adjust the position of the battery to alter the CG to accommodate your preferences.

We highly recommend fine tuning your CG using the 45 degree line test. Fly the aircraft from left to right or right to left, whichever direction you are more comfortable with at 3/4 to full throttle. Pull the aircraft to a 45 degree up line and establish this line and immediately roll the aircraft inverted. Establish this line and let go of the elevator stick. Ideally the aircraft will continue to track on that 45 degree line for several hundred feet before slowly starting to level off. Adjust the position of your batteries and components to achieve this flight condition. Once satisfied with the location of your CG scribe a mark on the battery tray so that you can position the batteries in the same location each flight and achieve the same feel and flight characteristics each flight.

We also highly recommend taking the time to properly set up your rates and exponential settings. Setting up low rates for precision maneuvers and high rates for aggressive aerobatics and 3D flight will allow you to experience the best attributes of the 3DHS Edge or any aircraft for that matter. Here are some suggested rates to get started with. These are the rates and exponential values I feel comfortable with. If they feel awkward to you please adjust to your taste.

Elevator: Low rate-8-10 degrees; 15-20% Exponential
3D rate-45-55 degrees; 40-50% Exponential
Insane tumble rate: As much as possible! 65-70% Exponential

Rudder: Low rate-20 degrees; 45-50% Exponential
3D rate- As much as possible; 60-70% Exponential

Aileron: Low rate-15-20%; 40-45% Exponential
3D rate- As much as possible; 50-60% Exponential

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