

Assembly Manual / Airframe – 58” Edge 540

Thank you for purchasing this 3DHobbyShop by Extreme Flight ARF RC aircraft. If you have any issues, questions, concerns or problems during assembly, please contact our tech department at: Info@extremeflightrc.com or 770-887-1794 10am-5pm Eastern Monday thru Friday.

SAFETY in Assembly

During assembly of this aircraft, you will be asked to use sharp knives and hobby adhesives. Please follow all safety procedures recommended by the manufacturers of the products you use, and always follow these important guidelines:

ALWAYS protect your eyes when working with adhesives, knives, or tools, especially power tools. Safety glasses are the best way to protect your eyes.

ALWAYS protect your body, especially your hands and fingers when using adhesives, knives, or tools, especially power tools. Do not cut toward exposed skin with hobby knives. Do not place hobby knives on tables or benches where they can roll off or be knocked off.

ALWAYS have a first-aid kit handy when working with adhesives, knives, or tools, especially power tools. ALWAYS keep hobby equipment and supplies out of the reach of children.

SAFETY in Flying

This is NOT a toy! It is a very high-performance RC airplane capable of high speeds and extreme maneuvers. It should only be operated by a competent pilot in a safe area with proper supervision.

- [ONLY fly your aircraft in a safe, open area, away from spectators and vehicles and where it is legal to fly. NEVER fly over an unsafe area, such as a road or street.
- [NEVER fly near overhead power or utility lines. If your airplane ever becomes stuck in a line or a tree DO NOT attempt to retrieve it yourself. Contact the authorities for assistance in retrieving your aircraft. Power lines are DANGEROUS and falls from ladders and trees CAN KILL!
- [Never fly too close to yourself or spectators.
- [Spinning propellers are DANGEROUS!
Never run your motor inside a house or building with the propeller attached Remove the prop for safety. Always fly within your control.
- [Always follow manufacturers instructions for your radio system.
- [Always preform a pre-flight check of your aircraft to be certain of the aircraft's airworthiness.
- [

Limits of Responsibility

Extreme Flight provides high-quality aircraft and components to its customers and end users. These aircraft and components are assembled by the end user to produce a flying model. It is beyond Extreme Flight's control to monitor the end user's completed aircraft. Therefore, Extreme Flight in no way accepts or assumes responsibility or liability for damages resulting from the end user assembled product. The end user assumes all responsibility and liability in use of Extreme Flight aircraft and components and agreeing to hold harmless Extreme Flight, its distributors and dealers.

Required Items

Hobby Knife
Small Phillips Screwdriver
Set Metric Allen Wrenches
Scissors
Small Pliers
Wire Cutters
Adjustable wrench
Masking tape
Drill and drill bits
Threadlocker (Blue Loctite)

Optional:

Heat gun and covering iron
Dremel tool

Assembly Instructions – Read completely before starting assembly!

UNPACK :

Unpack your airplane and examine the components. Check for damage of any kind. If you have damage, please contact Extreme Flight to discuss. Contact info listed above.

WRINKLES :

Your airplane was packed in plastic at the factory without any wrinkles in the covering. You may notice some wrinkles now; more likely, you will notice a few in a day or two or the first time you take the plane out to the flying field. These wrinkles are the result of wood shrinkage and/or expansion. Balsa wood changes size and shape slightly as it is exposed to varying humidity in the air. This is a

natural property of balsa wood. As your airplane adjusts to the weather in your part of the world, wrinkles may appear and disappear. Wrinkles may be removed with the gentle application of heat to the covering material on your airplane. The best tools to use are a heat gun and covering iron. Apply the heat gently: the covering material will shrink as you apply the heat, and this will remove the wrinkles. **BE CAREFUL!** Too much heat applied too quickly can damage the covering, either by causing it to pull away from the wood at seams and corners or even by melting it. The covering will shrink at low temperature with patient application of heat. Wrinkles in the covering **DO NOT** affect flight performance. If you must shrink on a color-seam, use the iron and go slowly and carefully to avoid any pulling or lifting at the seam.

Remove the canopy before attempting to use heat on your covering! The canopy is made of thermo-activated plastic and **WILL** deform with the application of heat. Do not apply heat to the canopy.

PAINT:

If you need to clean your airplane, we recommend using a damp towel. The paint used on the canopy and cowl is not safe for all cleaners. In particular, **DO NOT** use alcohol on these parts, it will remove the paint.

Let's get started!



Install the wheels onto the axles and secure with the wheel collars, as shown.



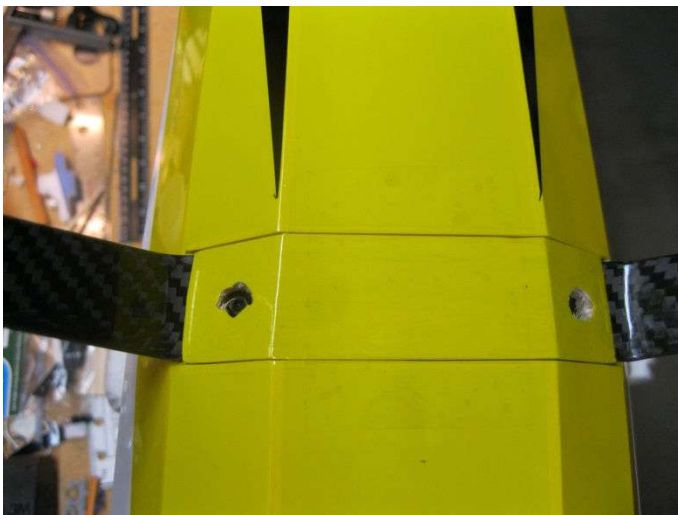
Slide one wheel/axle assembly into a wheel pant, and install the wheel assembly on the landing gear leg.



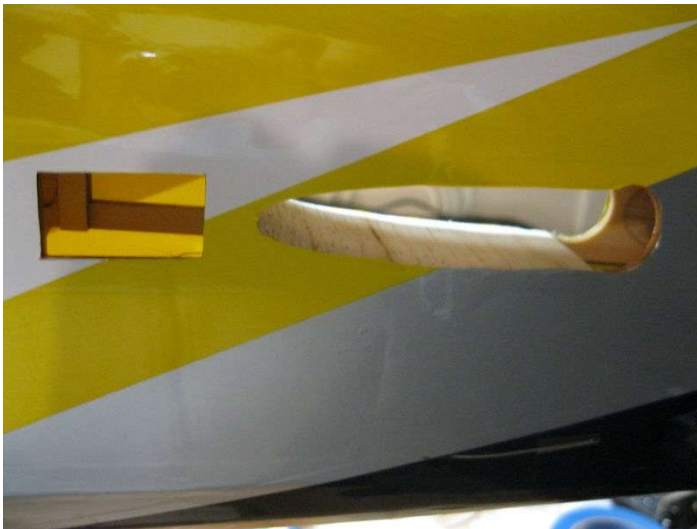
Tighten the locknut as shown to secure the assembly onto the gear leg. Repeat for other side. Install wood screw through drilled hole in gear leg into pant.



Attach the gear to the fuselage with short 3mm screws, use loctite.



Install gear cover plate as shown, with clear tape, thick CA or epoxy glue.



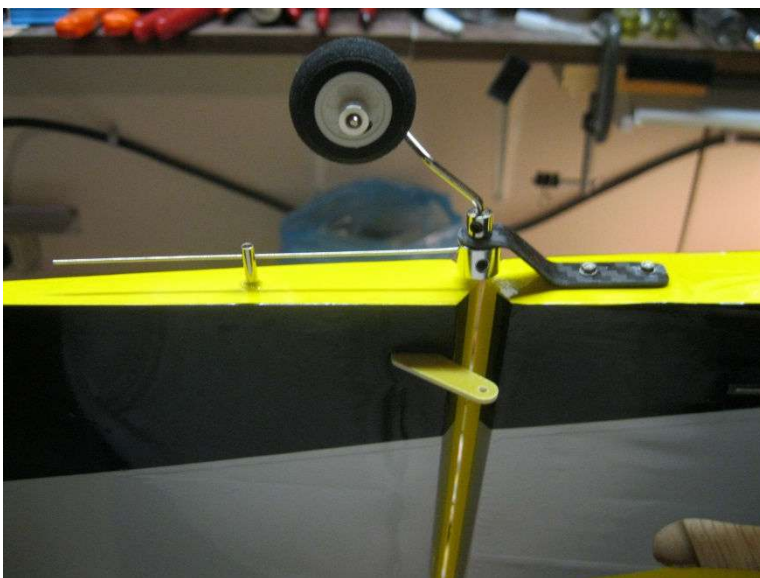
Remove covering over horizontal stabilizer slot on both sides of fuselage as shown. Remove covering over elevator servo opening on LEFT side of the fuselage as shown.



Remove covering over wing spar tube hole and wing pin holes in fuselage as shown.



Install rudder onto fuselage and apply 2 large drops of thin CA to each hinge.



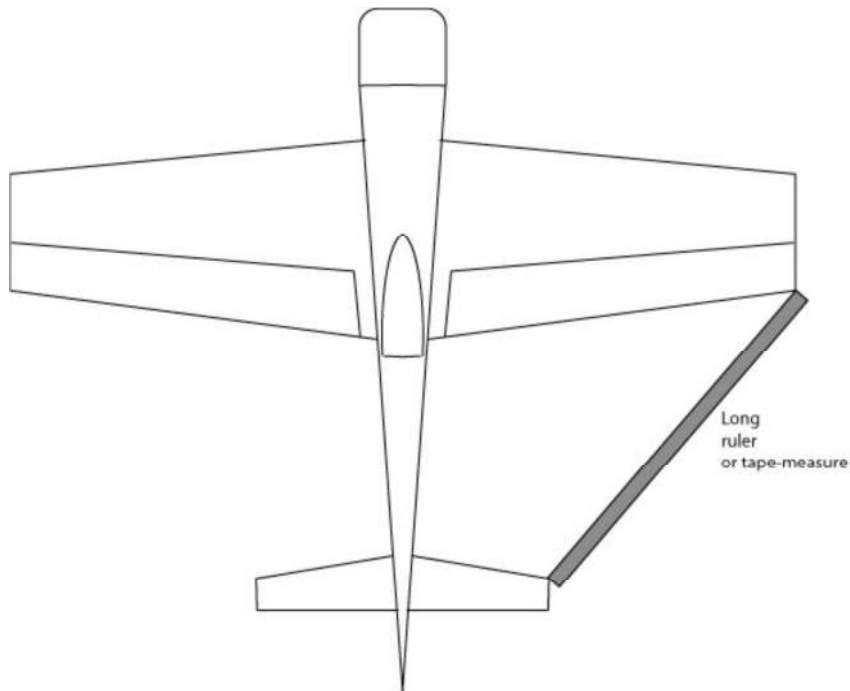
Remove covering over control horn slot in rudder. Install double-sided rudder control horn as shown with plenty of medium or thick CA, or epoxy glue. Install tail wheel as shown with two small wood screws. Remove the set screws in the tailwheel assembly and re-install with blue loctite.



Remove a square or two of covering on the bottom of the fuselage behind the wing as shown, for cooling.



Insert the horizontal stabilizer into its slot. Do not glue yet. Center the stabilizer side-to-side in the slot using a ruler.



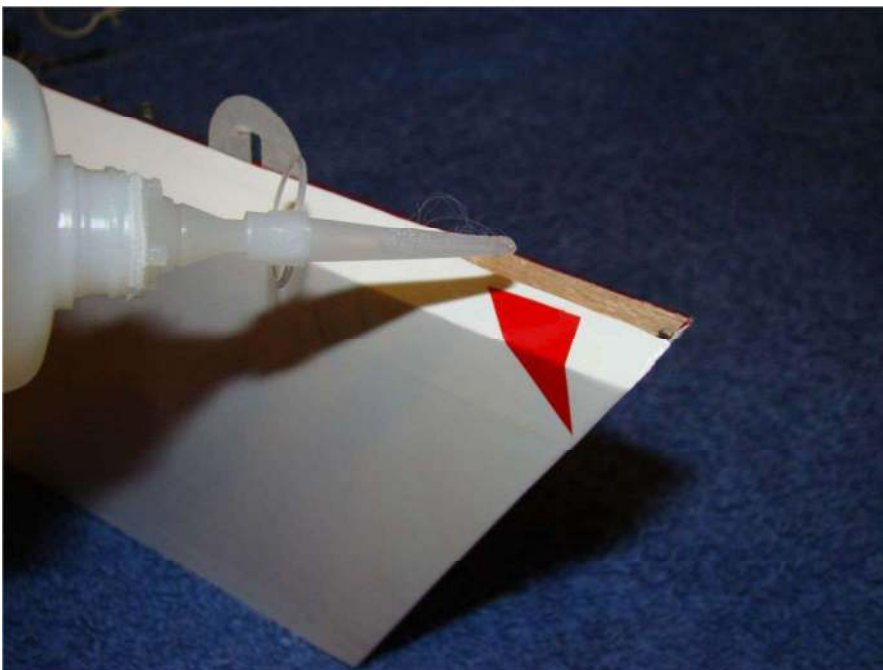
Install the carbon wing spar tube into the fuselage (Note – never glue the carbon wing spar tube to the airplane, it is designed to be removable). Install the wings temporarily. Measure as shown in the illustration. Make sure this measurement is the same on both sides.



When stabilizer is centered and aligned, drip Thin CA glue onto the stab-to-fuselage joint top and bottom. NOTE: We do not remove any covering from the horizontal stabilizer. This keeps the stabilizer strong, and thin CA makes an excellent joint to covering material. If your stab joint is not tight enough for thin CA glue, or if you have to trim the opening to align the stab, you can use thick CA glue as well.



Install the elevator half with the fiberglass joiner rod onto the stabilizer. Make sure it flexes easily at least 45 degrees up and 45 degrees down. Apply thin CA glue to the hinges, 2 large drops on each.



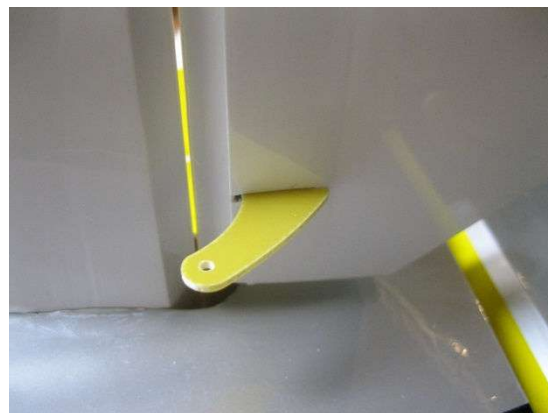
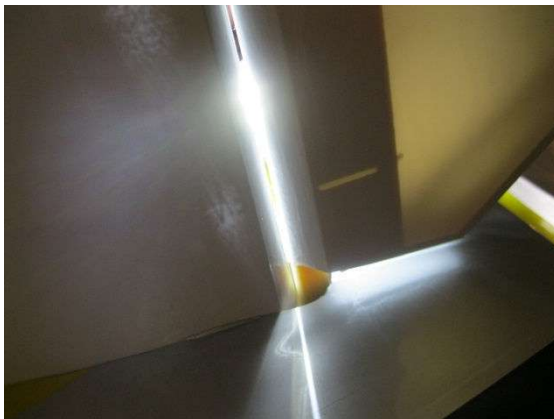
Place a generous amount of medium or thick CA into the joiner slot on the remaining elevator, and slide the elevator into place on the stabilizer. Make sure it is aligned and flexes easily at least 45 degrees up and down. Glue the hinges with thin CA.



Assemble elevator pushrod as shown. Use thin CA on the ball-link to pushrod joint after installation to lock the ball-link onto the pushrod permanently. Slide carbon tube stiffener over pushrod.



Install the pushrod connectors onto the servo arms as shown. Tighten the nuts just to a snug fit – the connector must be able to rotate after installation. Use medium CA glue on the nut to keep the connector from falling off due to vibration. Remember – the pushrod connector must be able to rotate so that the servo arm can move.



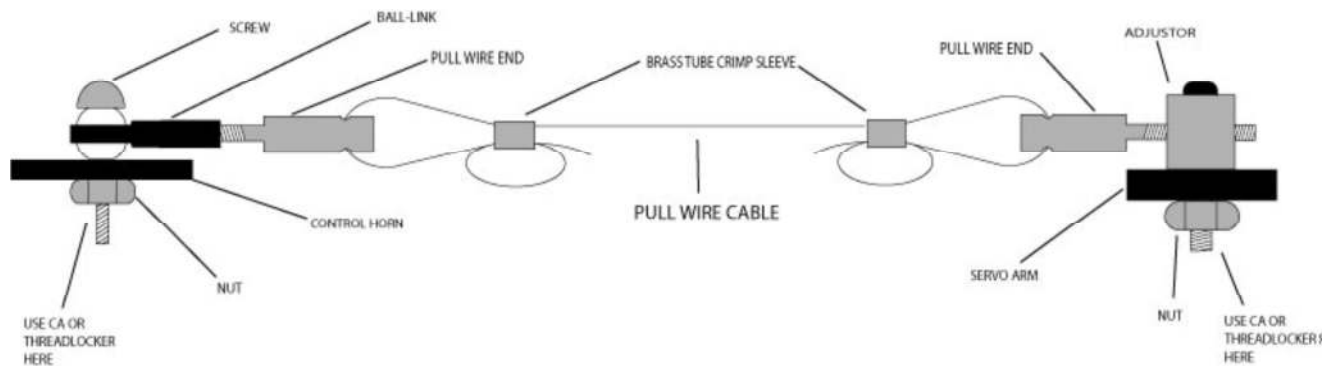
Remove covering over elevator horn slot and install elevator control horn into elevator as shown using a generous amount of medium or thick CA glue. Shining a bright light from the back of the surface will help identify the elevator horn slot.



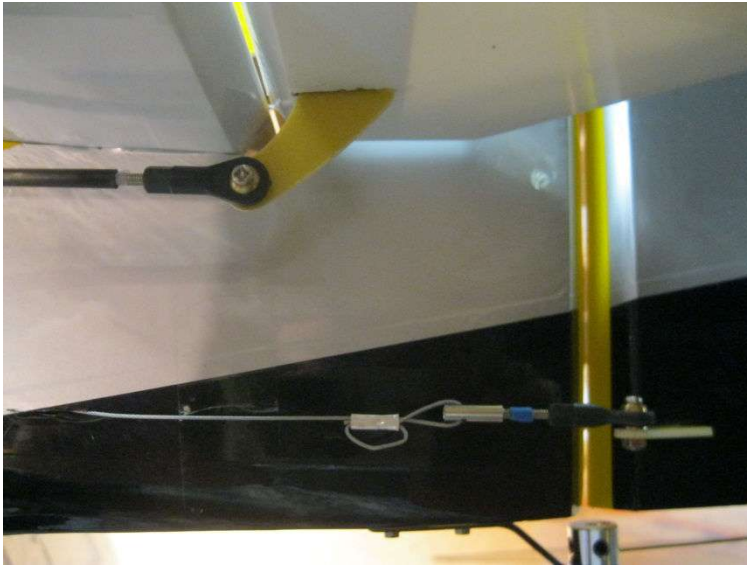
Install elevator pushrod onto horn as shown. Tighten the ball-link to the elevator horn using a 2mm screw, washer, and nut. Once the 2mm screw and nut are tight, use medium or thick CA glue to lock the nut in place so it cannot rotate. Make sure the 2mm screw and nut cannot come loose in flight.



Install elevator servo with servo output spline toward front of plane and install arm and tighten pushrod connector.



The rudder pull-pull cables are assembled as shown in the above diagram.



Assemble the pull-pull wires onto the rudder horn as shown, double-looping the wire through the brass crimp sleeve before crimping. Crimp the brass crimp sleeve tightly with pliers and apply a drop of thin CA to the crimp. Be SURE to use medium or thick CA to lock the 2mm nuts on the rudder control horn. Feed the wires into the fuselage slots and forward to the front of the fuselage. Cross the wires once so they make an X inside the fuselage.

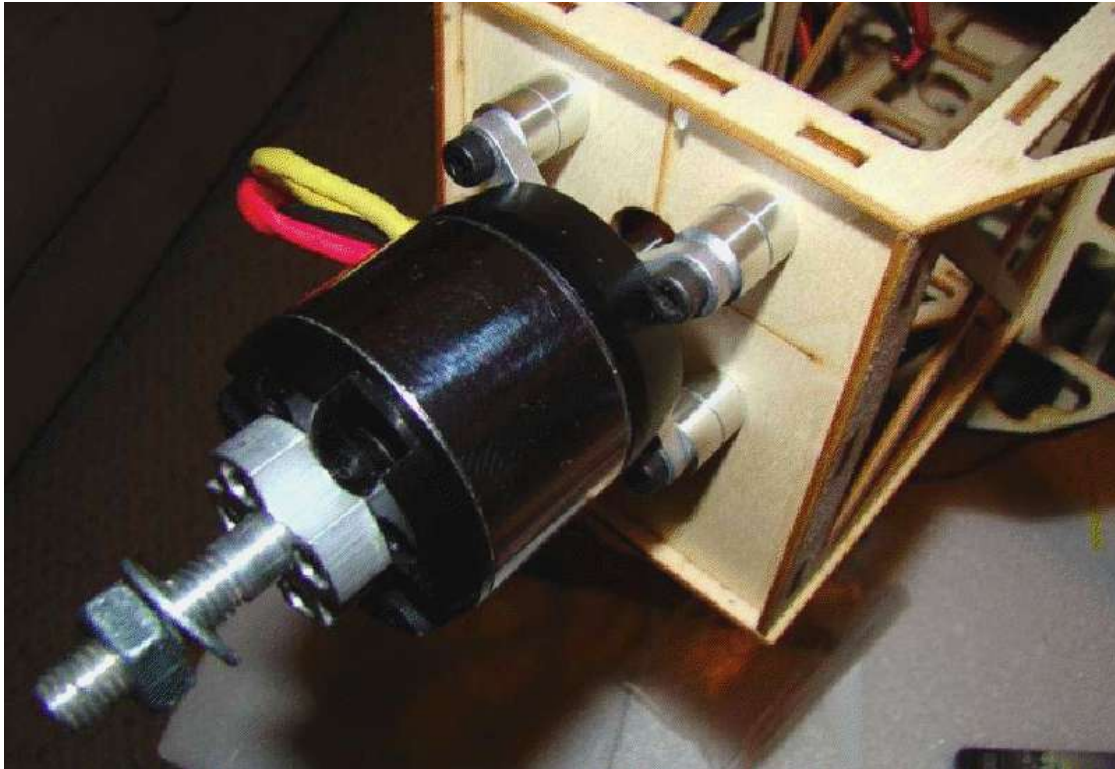


Mount the rudder servo and assemble the connectors onto the rudder servo arm as shown. Note that the connectors must be free to rotate on the servo arm. We use CA to lock the nut on the bottom of the connector for this reason.

Assemble the front ends of the pull-pull cables as shown, double looping the wire through the crimp sleeve. NOTE: the pull-pull cables cross over once inside the fuselage, forming an "X". Adjust your pull-pull cables to be snug, with no sag, but not too tight. "Banjo-string-tight" pull-pull cables only sap the power from your rudder servo and cause poor handling. Just snug is all you need.



Use the X-mount for your motor to mark the firewall for drilling. Drill the 4 mounting holes.



The firewall is arranged to allow the widest possible selection of motors to fit. Extra space has been provided for long motors and long prop adaptors. For this reason, if your motor is compact, you will need to supply spacers to extend the motor forward as shown. Attach the motor using the included 4mm screws and blind nuts, using loctite. Mount your ESC to the side of the motor-mounting box.

The cowl is mounted onto the fuselage with 4 wood screws. These screws go into the small plywood squares on the front inside of the fuselage. Soak these squares in thin CA glue to harden them before proceeding.

The following procedure is helpful to be sure the wood screws hit the plywood squares.

First, make small holes into the plywood squares through the covering, with the cowl and canopy off.

Tape small pieces of paper over these holes, as shown, and mark the hole locations on these pieces of paper.

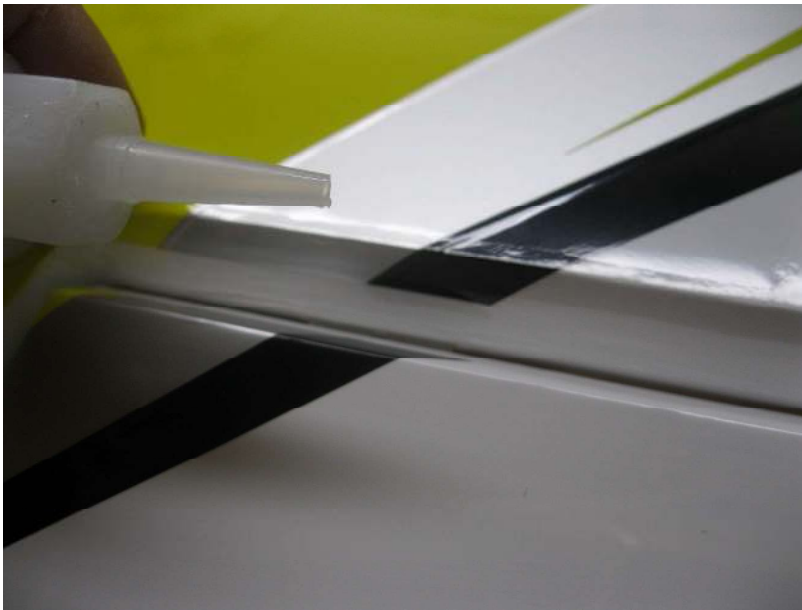


Install the canopy hatch (if the canopy hatch is not installed when you fit the cowl, it may be impossible to fit the canopy hatch after the cowl is installed!).

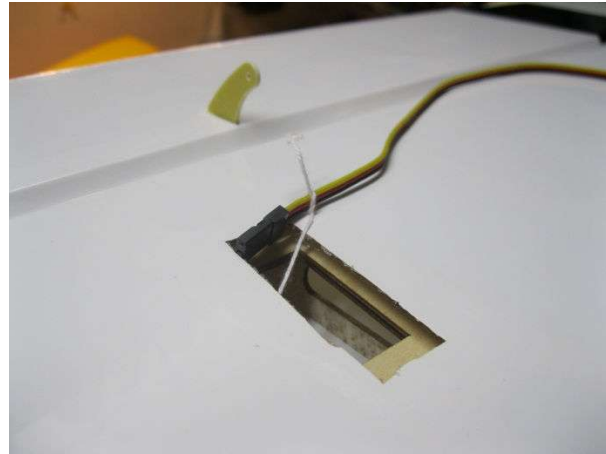
When you are satisfied with the cowl fit, tape the cowl to the fuselage with masking tape. Use the small pieces of paper as guides to make holes in the cowl and install the wood screws. Remove the screws and cowl, and soak the plywood mounting tabs in the fuselage with thin CA to harden them.



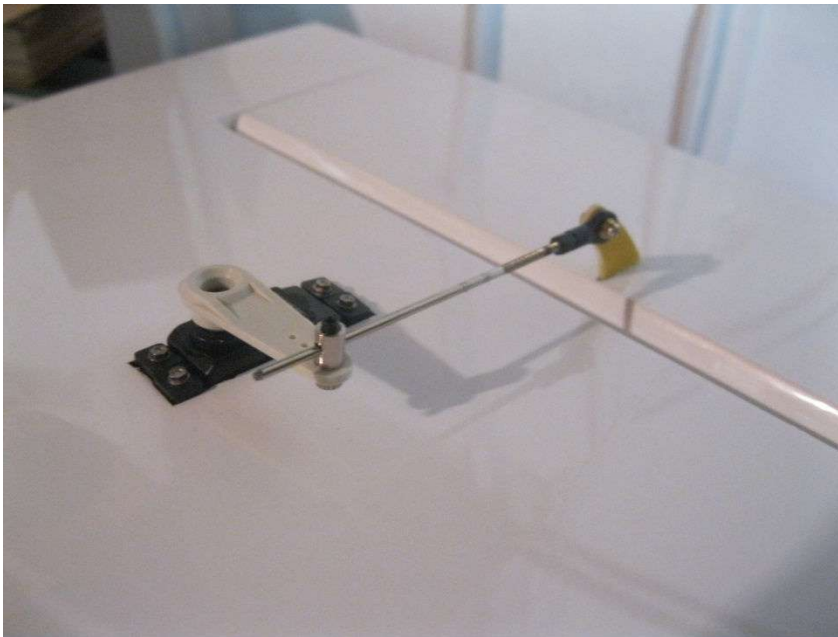
Re-install cowl and screws.



Glue the aileron hinges with two large drops of CA per hinge.



On the bottom of the wings, locate the servo cutout and aileron control horn slot. As with the elevator and rudder, shining a bright light such as an LED flashlight will help discover the slot. Remove the covering over both. Glue the horn into the slot with a generous amount of medium or thick CA. Use the string in the wing to pull the servo wire through the wing.

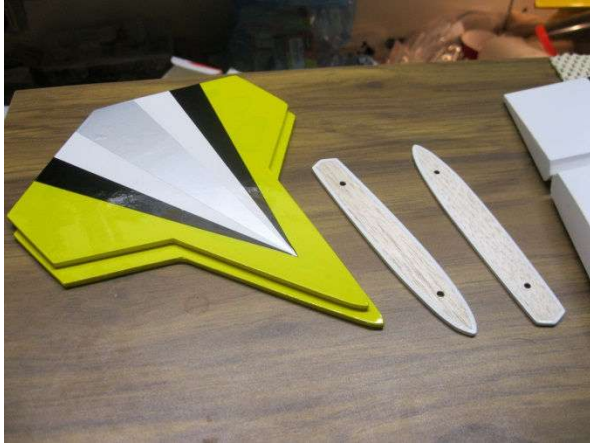


Assemble the aileron pushrods. Assemble the pushrod connectors onto the servo arm as you did for the elevator and rudder arms, and install the pushrod as shown. Be sure to use medium CA glue to lock the 2mm nut that holds the ball link onto the control horn. Repeat for other wing.

Mount the wings to the fuselage using the white nylon thumbscrews.

Locate the balsa receiver mount marked "Rx". You can mount your receiver to this mount with Velcro and use CA glue to mount the balsa to the airframe.

Apply one side of the self-adhesive Velcro tape to the battery tray, the other to your battery. Use the Velcro strap as a "seatbelt" to hold your battery in position. Always make sure your battery is firmly strapped down before flight.



Your Edge 540 includes optional Side-Force-Generators (SFG's) for the wingtips. Install them as shown with the spacers in-between the SFG and the tip. It is a good idea to use thin CA glue to harden the screw holes in the wingtips, this will allow you to remove and insert the SFG screws many times.



The blind nuts in the wingtips are 3mm.



Balancing – Balance your Edge 540 3.75 inches or 95mm behind the leading edge of the wing where the wing meets the fuselage for your maiden flight. This is approximately on the forward edge of the carbon wing spar tube. Move the flight battery to balance as necessary. With lighter motors, the battery will have to be moved very far forward to balance. For 3D flight, move the CG slowly rearward as needed based on your preference.

Remember – It is much more important to have a properly balanced airplane than to save one ounce of total weight. The Edge 540 carries additional weight very well because of its superior aerodynamic design, and nose weight can always be removed again if desired. After you have flown several flights, you can tune your CG to suit your personal flying preferences.

When you experiment with CG location, move the CG only small amounts, 1/8 inch or so, at a time. A small change in CG can have a large effect on flight characteristics.

Control Throws (in degrees and inches) and Corresponding Exponential Control Throws

Elevator

Low rate - 25 degrees - 30% expo
High rate - 50 degrees - 66% expo

Ailerons

Low rate - 20 degrees - 30% expo
High rate - 40 degrees - 66% expo

Rudder

max throw - just short of touching elevator - 60% expo

Remember, JR and Spektrum radios use positive (+) exponential, Futaba and Hitec use negative (-). The above throw measurements were taken at the aft edge of the ailerons and elevator, and from the bottom aft edge of the rudder. Keep in mind that even the low throws mentioned here are relatively aggressive, so be sure to also program the matching exponential listed to help soften the model's feel around center stick.

Test your power system in a safe manner on the ground before ever attempting to fly your aircraft.

Range check your radio system according to manufacturer's instructions.

Make your first flight with the controls set on low rates. During the trimming phase, we recommend landing with some throttle, and not attempting to "dead stick" the airplane. This may mean you need to time your flights and keep them a bit shorter than usual. After your first flights, check all control connections and motor and prop mounts for tightness.

We hope you enjoy your **3D HOBBY SHOP** Aircraft.
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