

EDGE 540



ElectriFly[™]
by Great Planes

INSTRUCTION MANUAL

SPECIFICATIONS

| | | | | | |
|-------------------|--|----------------------|--|----------------|---|
| Wingspan: | 32 in [815 mm] | Weight: | 6.0–6.3 oz [170–180 g] | Length: | 35 in [890 mm] |
| Wing Area: | 274 in ² [17.5 dm ²] | Wing Loading: | 3.2–3.3 oz/ft ² [10–11 g/dm ²] | Radio: | 4-channel |
| | | | | Motor: | RimFire [™] 250 outrunner brushless motor |

WARRANTY

Great Planes[®] Model Manufacturing Co. guarantees this kit to be free from defects in both material and workmanship at the date of purchase. This warranty does not cover any component parts damaged by use or modification. **In no case shall Great Planes' liability exceed the original cost of the purchased kit.** Further, Great Planes reserves the right to change or modify this warranty without notice.

In that Great Planes has no control over the final assembly or material used for final assembly, no liability shall be assumed nor accepted for any damage resulting from the use by the user of the final user-assembled product. By the act of using the user-assembled product, the user accepts all resulting liability.

If the buyer is not prepared to accept the liability associated with the use of this product, the buyer is advised to return

this kit immediately in new and unused condition to the place of purchase.

To make a warranty claim send the defective part or item to Hobby Services at the address below:

Hobby Services

3002 N. Apollo Dr. Suite 1
Champaign IL 61822 USA

Include a letter stating your name, return shipping address, as much contact information as possible (daytime telephone number, fax number, e-mail address), a detailed description of the problem and a photocopy of the purchase receipt. Upon receipt of the package the problem will be evaluated as quickly as possible.

READ THROUGH THIS MANUAL BEFORE STARTING CONSTRUCTION. IT CONTAINS IMPORTANT INSTRUCTIONS AND WARNINGS CONCERNING THE ASSEMBLY AND USE OF THIS MODEL.



Champaign, Illinois
(217) 398-8970, Ext 5
airsupport@greatplanes.com

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INTRODUCTION

Following on heels of the highly successful Great Planes Extra 330SC is the Edge 540. With the Edge 540 flight performance has been taken to the next level. The Edge 540 is capable of mild to all out wild 3D maneuvers and even some you may have never seen before. The Edge 540 will make any pilot look good. So, let's get this plane built and go have some fun.

For the latest technical updates or manual corrections to the Edge 540 visit the Great Planes web site at www.greatplanes.com. Open the "Airplanes" link, then select the Edge 540 Indoor Foam Plane. If there is new technical information or changes to this model a "tech notice" box will appear in the upper left corner of the page.

Academy of Model Aeronautics

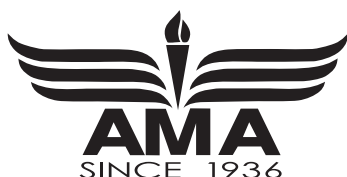
If you are not already a member of the AMA, please join! The AMA is the governing body of model aviation and membership provides liability insurance coverage, protects modelers' rights and interests and is required to fly at most R/C sites. The AMA has two classes of membership available: Open membership or their Park Pilot Program, which this aircraft qualifies for. The Park Pilot Program is for people flying electric aircraft and gliders under two pounds and which fly slower than 60mph. This will enable you to enjoy most AMA benefits and organize clubs and flying sites in more congested areas.

Academy of Model Aeronautics

5151 East Memorial Drive
Muncie, IN 47302-9252

Ph. (800) 435-9262
Fax (765) 741-0057

Or via the Internet at:



<http://www.modelaircraft.org>

<http://www.modelaircraft.org/parkflyer.aspx>

IMPORTANT!!! Two of the most important things you can do to preserve the radio controlled aircraft hobby are to avoid flying near full-scale aircraft and avoid flying near or over groups of people.

SAFETY PRECAUTIONS

Protect Your Model, Yourself & Others ... Follow These Important Safety Precautions

1. Your Edge 540 Indoor Foam Plane should not be considered a toy, but rather a sophisticated, working model that functions very much like a full-size airplane. Because of its performance capabilities, the Edge 540, if not assembled and operated correctly, could possibly cause injury to yourself or spectators and damage to property.
2. You must assemble the model **according to the instructions**. Do not alter or modify the model, as doing so may result in an unsafe or unflyable model. In a few cases the instructions may differ slightly from the photos. In those instances the written instructions should be considered as correct.
3. You must take time to **build straight, true and strong**.
4. You must use an R/C radio system that is in good condition, a correctly sized engine, and other components as specified in this instruction manual. All components must be correctly installed so that the model operates correctly on the ground and in the air. You must check the operation of the model and all components before **every** flight.

5. If you are not an experienced pilot or have not flown this type of model before, we recommend that you get the assistance of an experienced pilot in your R/C club for your first flights. If you're not a member of a club, your local hobby shop has information about clubs in your area whose membership includes experienced pilots.

6. Carefully read and follow all the instructions included with your LiPo battery and battery charger. LiPo batteries are not forgiving like NiCd or NiMH batteries. Overcharging or charging the LiPo battery at too high a current **will** damage the battery and could damage property.

We, as the kit manufacturer, provide you with a top quality, thoroughly tested kit and instructions, but ultimately the quality and flyability of your finished model depends on how you build it; therefore, we cannot in any way guarantee the performance of your completed model, and no representations are expressed or implied as to the performance or safety of your completed model.

Remember: Take your time and follow the instructions to end up with a well-built model that is straight and true.

DECISIONS YOU MUST MAKE

This is a partial list of items required to finish the Edge 540 Indoor Foam Plane that may require planning or decision making before starting to build. Order numbers are provided in parentheses.

Indoor Motor and Battery Recommendations

For best *indoor* flight performance, a lightweight battery is recommended. We recommend:

- (1) Great Planes® Competition Series 7.4 volt 300mAh 20C LiPo battery (GPMP0700)
- (1) FlightPower® EON-X™ Lite 7.4 volt 350mAh 25C LiPo battery (FPWP4014)
- (1) RimFire™ 250 (GPMG4502)
- (1) ElectriFly™ 8amp Brushless ESC (GPMM1800) or FlightPower 10amp Brushless ESC (FPWM0210)
- (1) 8 × 3.5 PowerFlow™ Propeller (GPMQ6608)

Outdoor Motor and Battery Recommendations:

- (1) Great Planes Competition Series 11.1 volt 300mAh 20C LiPo battery (GPMP0701)
- (1) FlightPower EON-X Lite 11.1 volt 350mAh 25C LiPo battery (FPWP4015)
- (1) RimFire 300 (GPMG4505)
- (1) 8amp Brushless ESC is recommended (GPMM1800)
- (1) 8 × 3.5 PowerFlow Propeller (GPMQ6608)

Radio Recommendations

A 4-channel radio system is required.

- (3) Futaba® S3114 Micro High Torque servos (FUTM0414)
- (1) Futaba R6004FF Mini Receiver (FUTL7624)

Charger

A LiPo compatible charger is required to charge LiPo batteries. The Great Planes ElectriFly PolyCharge4™ is designed for LiPo packs only; however, it is able to charge four LiPo packs simultaneously. The ElectriFly Triton2™ and AC/DC Triton2 EQ chargers will only charge one pack at a time, but are capable of charging NiCd, NiMH, Pb acid and LiPo batteries. Order numbers are provided below.

- Great Planes PolyCharger4 DC Only 4 Output LiPo Charger (GPMM3015)
OR
- Great Planes ElectriFly Triton2 DC Comp Peak Charger (GPMM3153)
OR
- Great Planes AC/DC Triton2 EQ Charger/Balancer (GPMM3156)

Throughout the life of a LiPo battery, the individual cells located inside the battery may become unbalanced. These unbalanced cells can shorten the life of the battery or cause it to malfunction. For this reason, it is always recommended that a cell balancer be used when charging LiPo batteries. The Electrifly Equinox™ is a cell balancer that may be used with any LiPo charger and is capable of maintaining the cell balance of the battery. **Note:** The AC/DC Triton2 EQ does not require a cell balancer.

- Great Planes ElectriFly Equinox LiPo Cell Balancer (GPMM3160)

ADDITIONAL ITEMS REQUIRED

Adhesives and Building Supplies

This is the list of adhesives and building supplies that are required to finish the Edge 540 Indoor Foam Plane

- (1) UFO Foam Safe Thin CA 1oz. (HOTR1040)
- (1) CA Activator Foam Safe 2oz. pump (GPMR6035)
- (1) Hobby Knife with 5 blades (XACR3511)
- (1) Phillips head screwdriver
- Hobbico® Soldering Iron 30 Watt (HCAR0775)
- Straightedge

Optional Supplies

Here are optional tools that will help you build the Edge 540.

- CA applicator tips (HCAR3780)
- CA debonder (GPMR6039)
- Precision Magnetic Prop Balancer (TOPQ5700)
- Waxed Paper

IMPORTANT BUILDING NOTES

• **Photos** and **sketches** are placed **before** the step they refer to. Frequently you can study photos in following steps to get another view of the same parts.

KIT INSPECTION

Carefully remove the major parts from the kit. Take an inventory to make sure it is complete, and inspect the parts to make sure they are of acceptable quality. If any parts are damaged or missing or are not of acceptable quality, or if you need assistance with assembly, contact **Product Support**. When reporting defective or missing parts, use the part names exactly as they are written in the Kit Contents list.

Great Planes Product Support

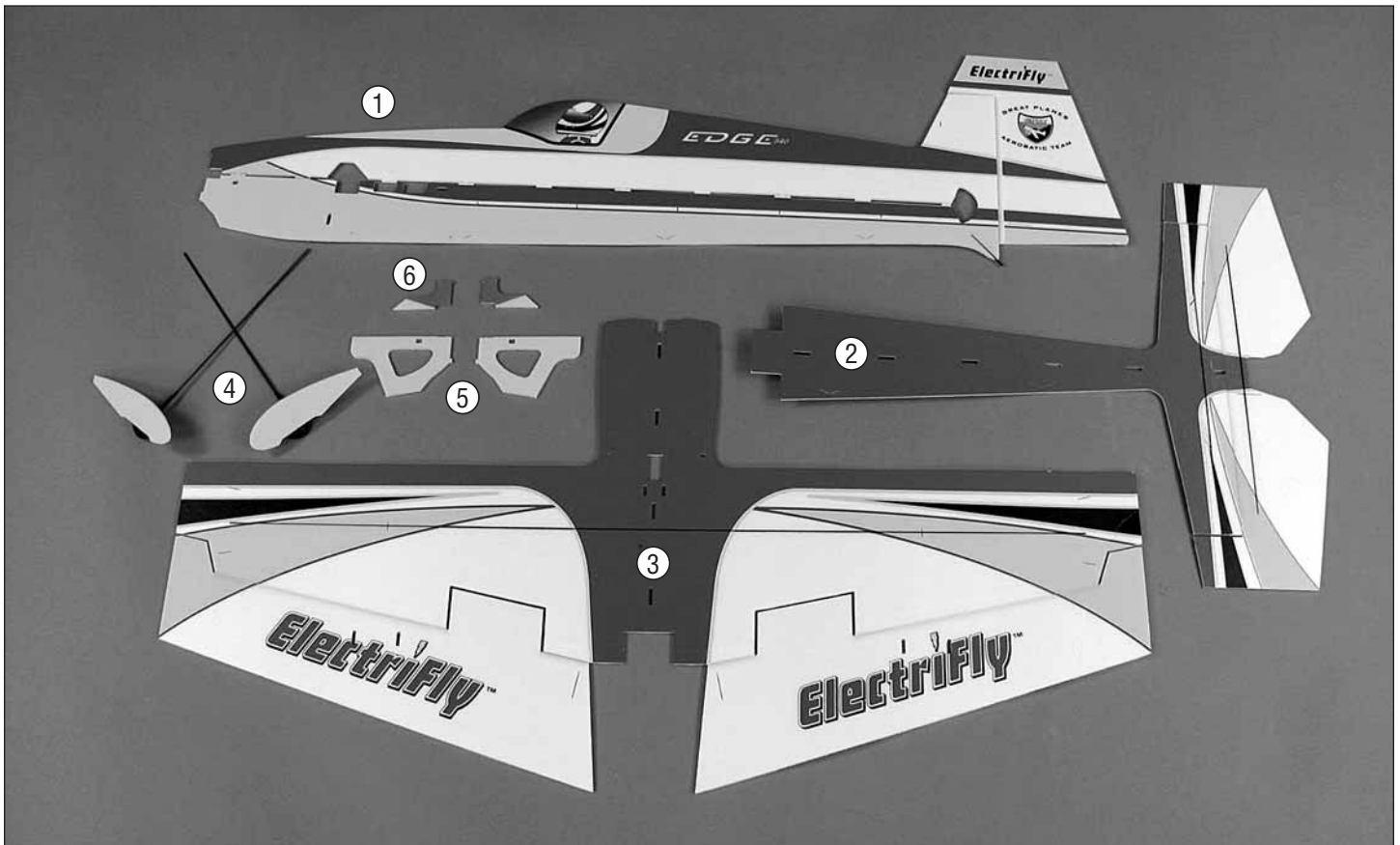
3002 N Apollo Drive, Suite 1
Champaign, IL 61822

Ph: (217) 398-8970, ext. 5

Fax: (217) 398-7721

E-mail: airsupport@greatplanes.com

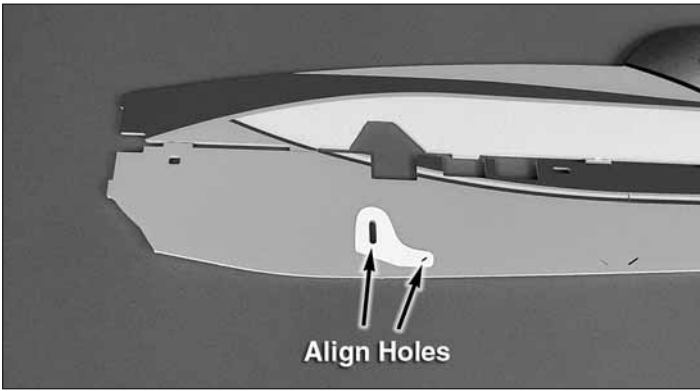
KIT CONTENTS



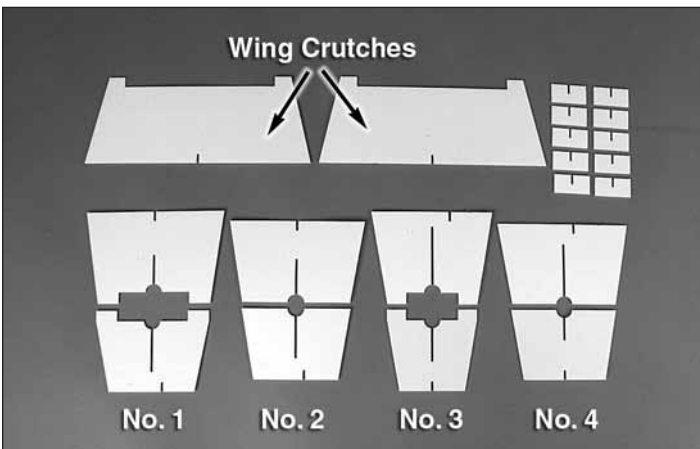
Kit Contents

- | | |
|--------------------------------|------------------------------|
| 1. Vertical Fuselage | 4. Landing Gear |
| 2. Aft Horizontal Fuselage | 5. Vertical Fuselage Doubler |
| 3. Forward Horizontal Fuselage | 6. Upper Motor Doubler |

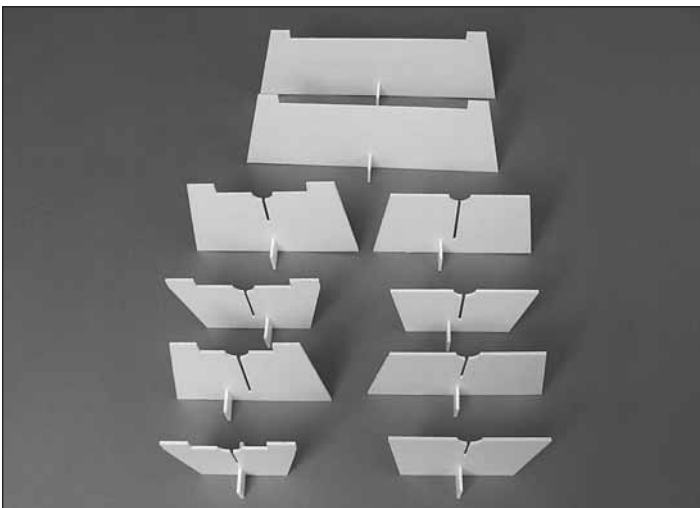
BUILD THE FUSELAGE



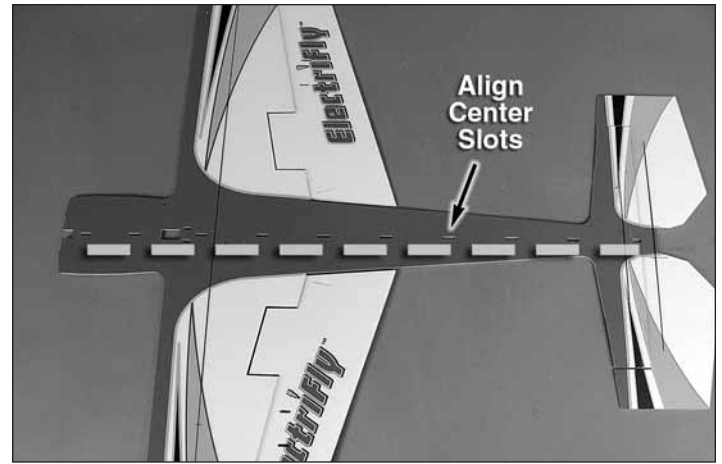
❑ 1. Locate the two **ABS landing gear supports**. Glue a landing gear support to each side of the **fuselage** in the location shown.



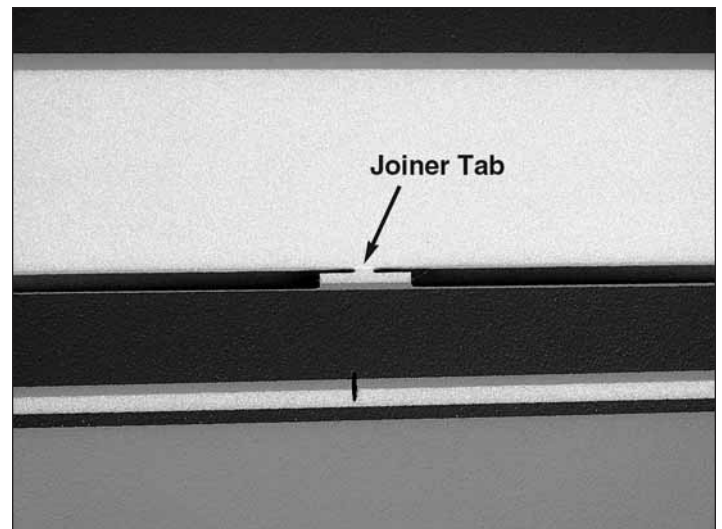
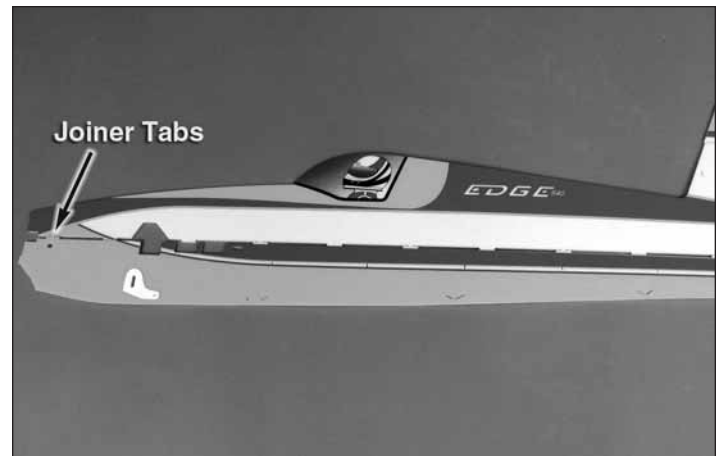
❑ 2. Remove the ten **fuselage alignment crutches** from the surrounding foam. **Note:** Use a sharp hobby knife to cut the crutch pieces from the surrounding foam, trimming the tabs flush with the edges of the crutches.



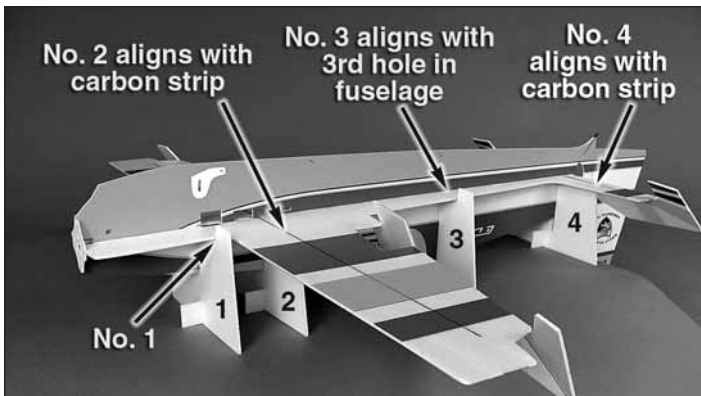
❑ 3. To prevent the parts from adhering to your building table, place a piece of waxed paper, or the clear plastic bag the parts came in, on your table. Use foam-safe CA to glue the ten **alignment crutch feet** to the alignment crutches. Make sure the crutches and feet are flat against the building table and that the crutches are perpendicular to the table.



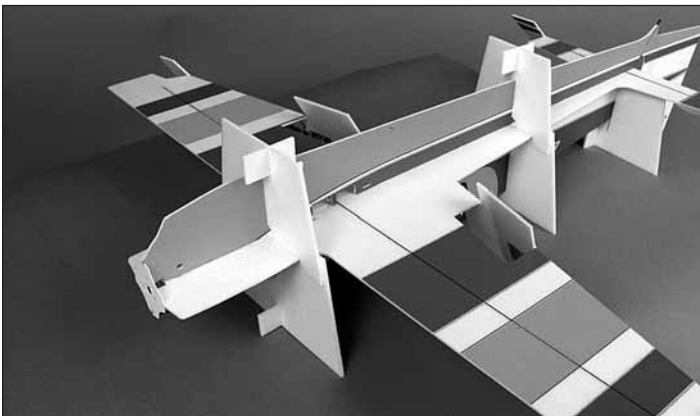
❑ 4. Glue the **forward horizontal fuselage** (wings) to the **aft horizontal fuselage** (stabilizer). Make sure the joint between the two parts is tight. Lay a straightedge along the center slots to make sure the parts are straight before gluing. **Note:** It only requires a small amount of thin CA to glue the parts together. Excessive amounts of CA will only wick through the joint and harden on the bottom surface of the parts.



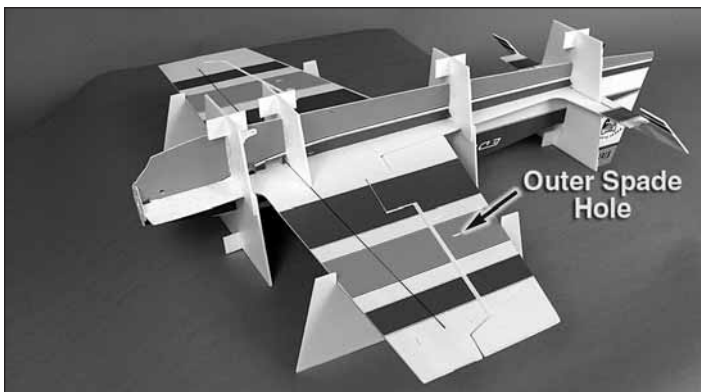
❑ 5. Use a sharp hobby knife to remove the four joiner tabs holding the top and bottom of the fuselage together. Do not cut the aft end of the fuselage apart. Insert the aft end of the horizontal fuselage into the front end of the vertical fuselage. Key the horizontal and vertical fuselages together.



❑ 6. On your building table, place the four top crutches with the feet on them underneath the fuselage in the locations shown. Note that the plane is positioned upside down and the vertical fin is hanging over the edge of the table. Crutch #1 is positioned in front of the radius at the front of the wing. #2 is positioned under the carbon fiber strip in the wing. #3 is positioned at the third hole in the side of the fuselage and #4 is positioned under the carbon fiber strip in the stabilizer.

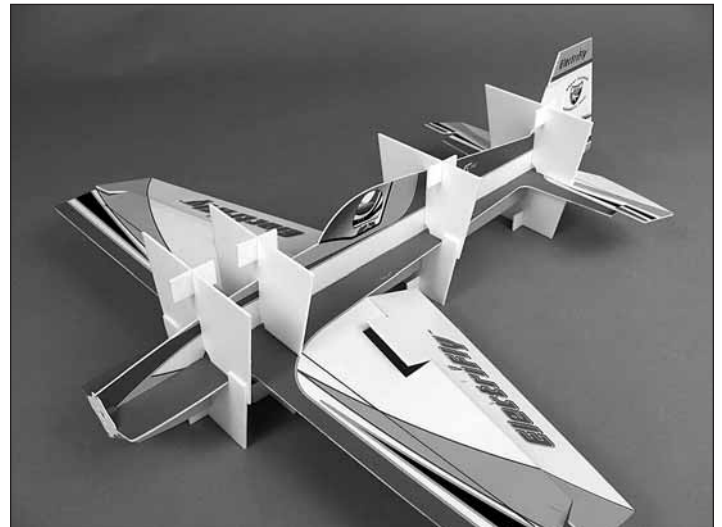


❑ 7. Test fit the #1 and #3 **bottom crutches** over their corresponding top crutches. Install the **ABS motor mount** onto the front of the firewall, but **DO NOT** glue it in place at this time. Check that all the crutches are seated against the fuselage and the horizontal and vertical fuselages are keyed together. Then, glue the top and bottom of crutches #1 and #3 together by applying a small amount of foam-safe CA to the tabs of the crutches. **Be careful not to glue the crutches to the fuselage.**

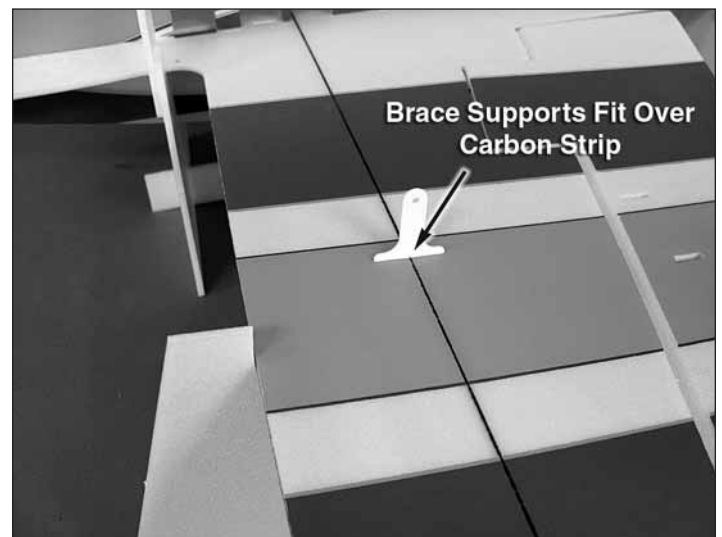


❑ 8. Position the two wing tip crutches under the wing tips at the outer spade hole in the aileron and the bottom crutches #2 and #4 over the carbon fiber strip in the wing and stabilizer.

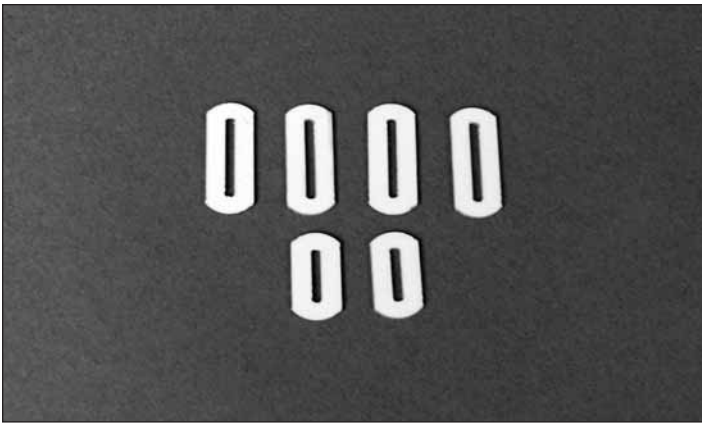
❑ 9. Make sure the horizontal and vertical fuselages are keyed together and the crutches are flat on your building table. Glue the horizontal and vertical fuselages together by applying thin foam-safe CA along the joint on the bottom of the horizontal and vertical fuselages. Be careful when gluing around the crutches. **DO NOT** glue the crutches to the fuselage. Allow the CA to cure for a few minutes before moving the plane. The use of foam-safe accelerator will quicken the curing of the CA, but use it sparingly. Excessive amounts of accelerator can cause the CA to cure quickly, causing it to get hot and melt the foam.



❑ 10. Carefully turn the Edge 540 over and position the bottom crutches #2 and #4 under the carbon fiber strips in the wing and stabilizer. Check that the crutches are flat on the building table and the horizontal and vertical fuselages are keyed together. Use thin foam safe CA to glue the top of the horizontal and vertical fuselages together.

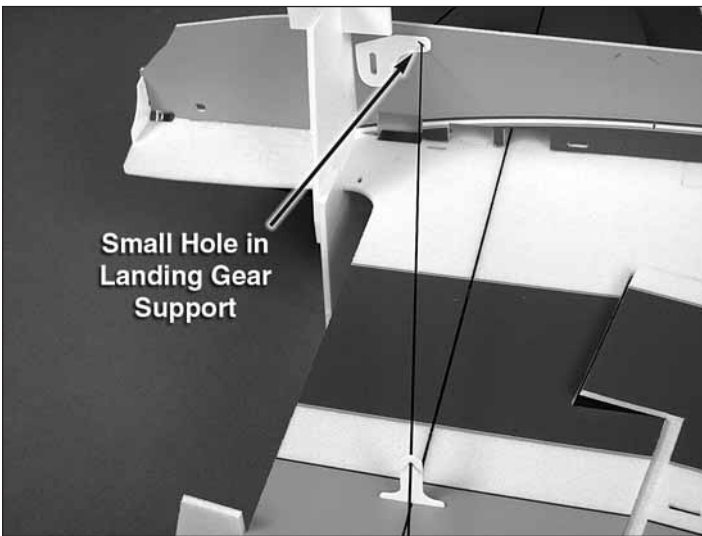


❑ 11. Turn the plane back over so that it is sitting upside down. Locate the two **ABS brace supports**. There is a slot located in the center of each wing. Glue the ABS brace supports into the slots, perpendicular to the underside of the wing. It is possible that, during manufacturing, some glue may have gotten into the slot. If this has happened, **DO NOT FORCE** the supports into the slot. Use a sharp hobby knife to remove any excess glue.

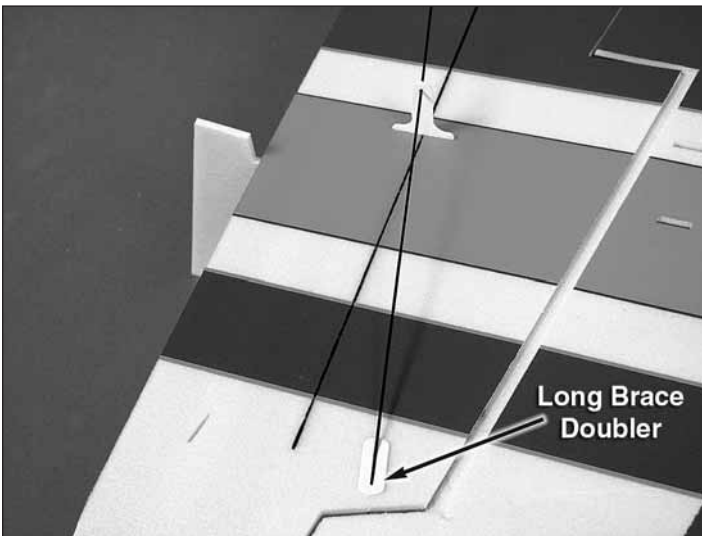


☐ 12. Locate the four long and two short ABS brace doublers.

Note: For steps 13 through 15, **DO NOT** glue the parts until told to do so.

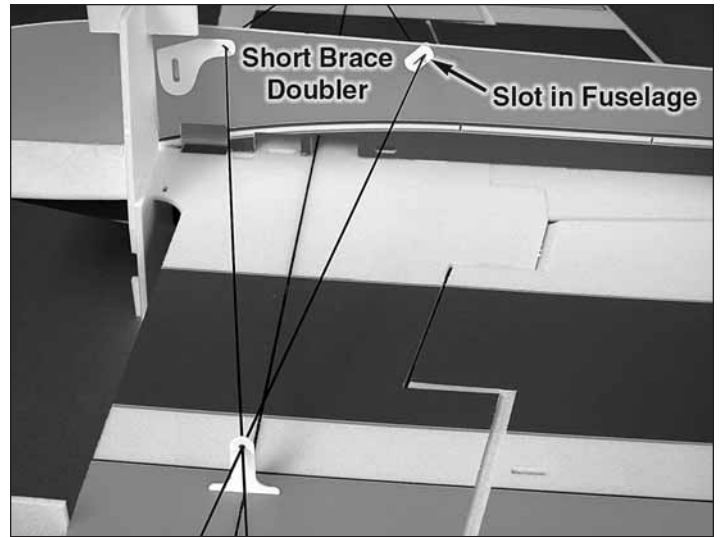


Small Hole in Landing Gear Support



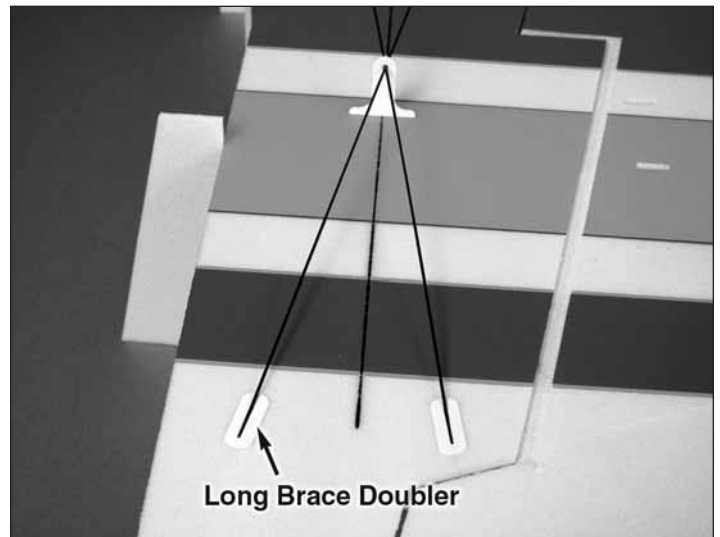
Long Brace Doubler

☐ ☐ 13. Slide one of the long brace doublers onto a **1 x 390mm carbon rod**. Slide the carbon rod through the brace support in the wing and into the small hole in the landing gear support. With the long brace doubler on the carbon rod, insert the other end of the carbon rod in the slot at the tip of the wing. The carbon rod should go through the long brace doublers and the top of the wing.



Short Brace Doubler

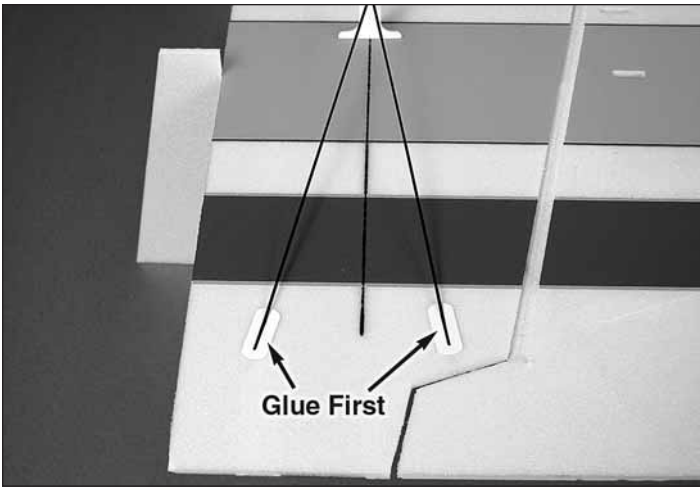
Slot in Fuselage



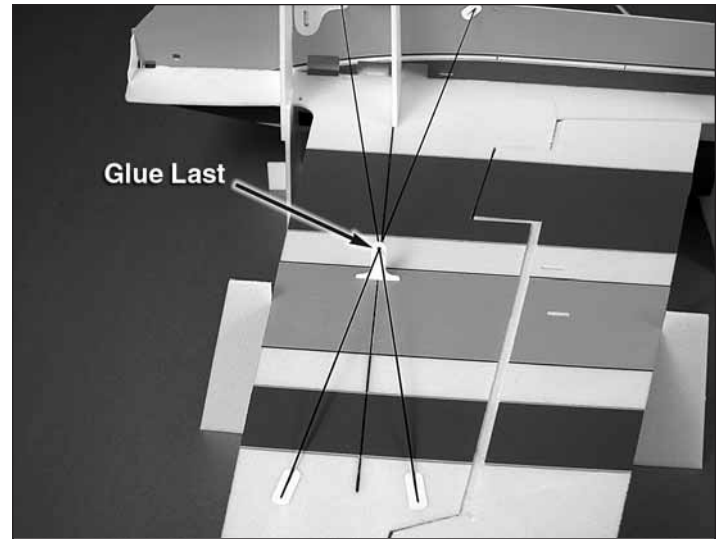
Long Brace Doubler

☐ ☐ 14. Slide a second long brace doubler onto another 1 x 390mm carbon rod. Slide the carbon rod through the brace support in the wing and into the small hole in the landing gear support. Slide a **short** brace doubler on the rod and then insert the end of the rod in the slot in the bottom of the vertical fuselage. Insert the other end in the slot at the tip of the wing. The carbon rod should go approximately 1/16" [1.5mm] through the top of the wing.

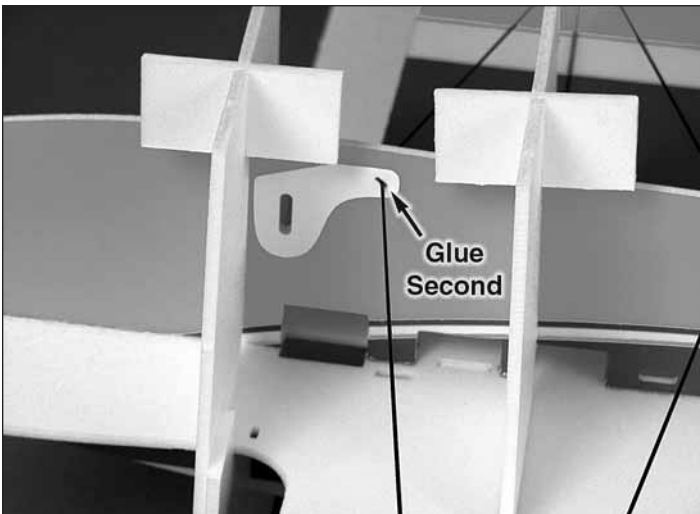
☐ 15. Go back to step 13 and install the carbon rods on the other side of the fuselage. Check that all the carbon rods are straight.



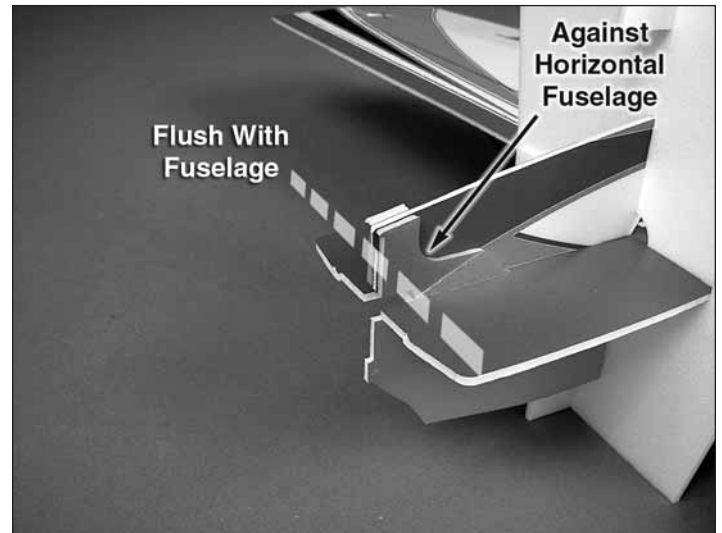
❑ 16. Check that all the carbon rods and brace doublers are in position and straight and the crutches are in position and flat on the building table. Start by gluing the carbon rod and long brace doublers to the wing at the wing tips.



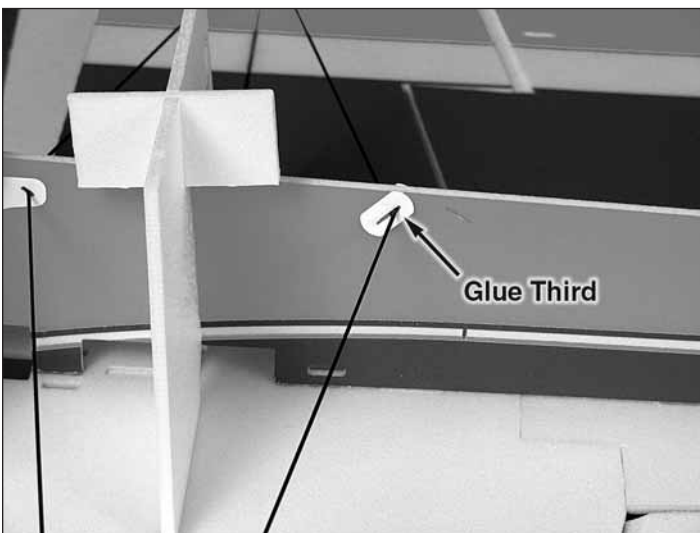
❑ 19. Once the glue has cured, glue the carbon rods to the brace supports.



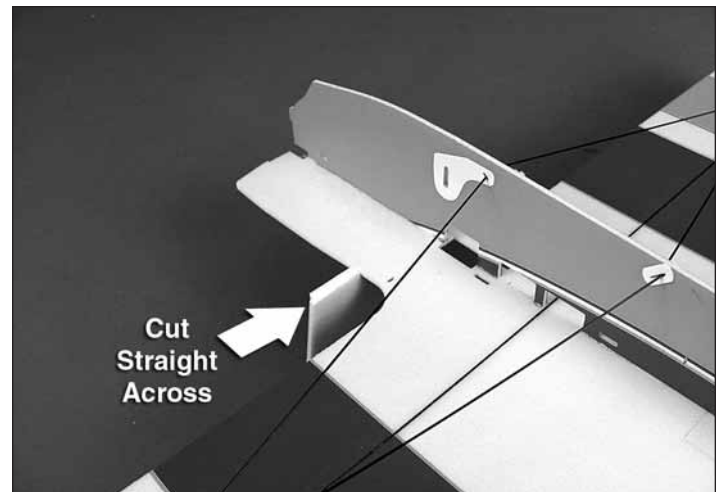
❑ 17. Next check that everything is still straight and glue the carbon rod to the landing gear support.



❑ 20. Remove the motor mount and glue the **upper motor doubler** to the front of the vertical fuselage. The front of the upper motor doubler should be flush with the front of the fuselage.

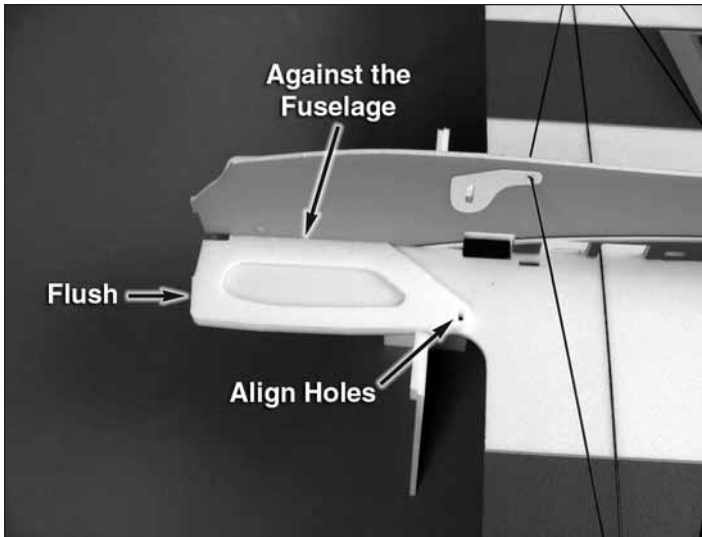


❑ 18. Position the short brace doublers so that both carbon rods pass through the brace doubler on each side. Glue the brace doubler and carbon rods to the vertical fuselage.

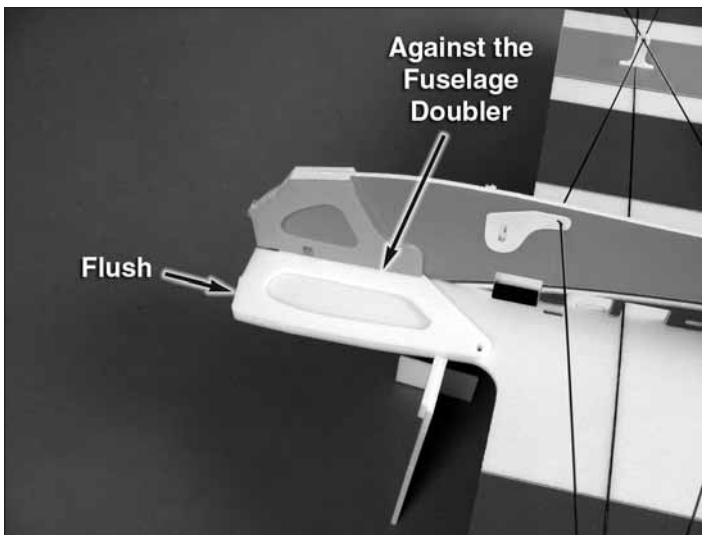


❑ 21. Use a sharp hobby knife to carefully cut the #1 and #3 top crutches from the bottom crutches.

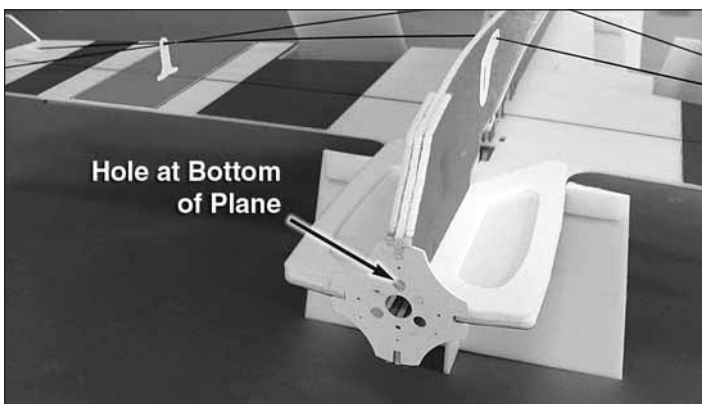
RADIO INSTALLATION



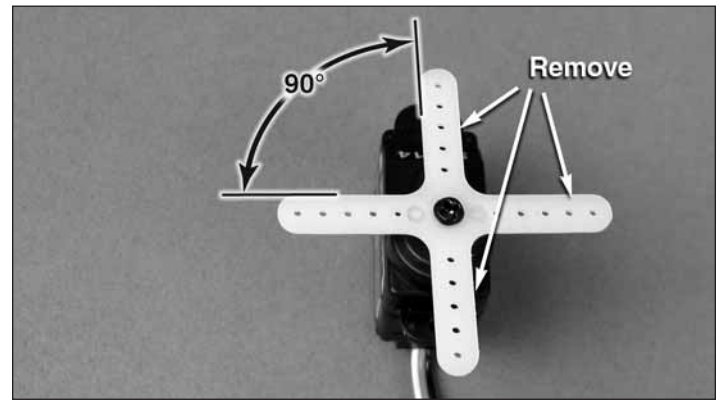
□ 22. Turn the plane upside down and glue the two **horizontal fuselage doublers** to the front of the fuselage. Make sure they are flush with the front of the fuselage and against the vertical fuselage.



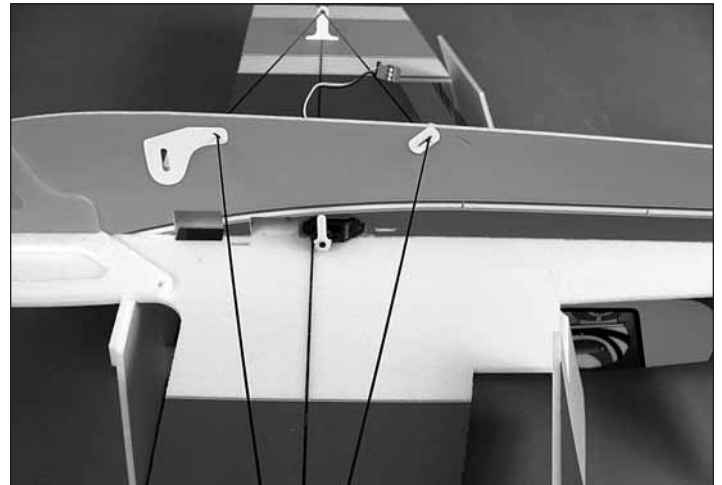
□ 23. Glue the two **vertical fuselage doublers** to the front of the fuselage. Make sure they are flush with the front of the fuselage and against the horizontal fuselage doublers.



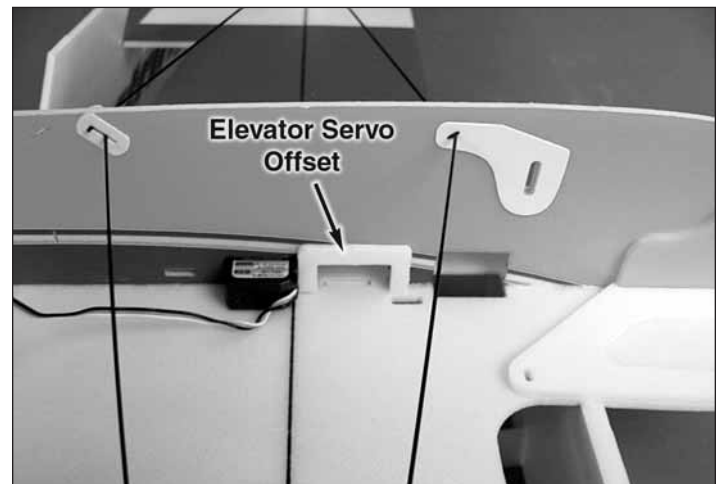
□ 24. Glue the motor mount to the front of the fuselage. Apply a bead of glue to the joint on all sides of the fuselage and motor mount. Take note of the orientation of the three large holes.



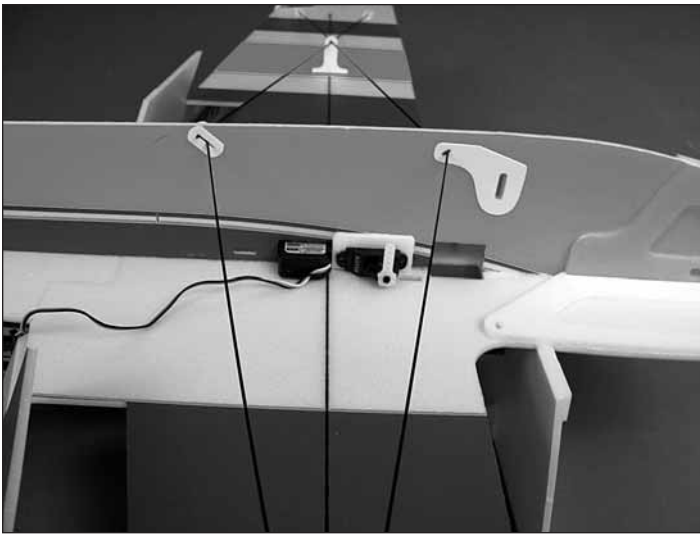
□ 1. Connect the rudder servo to your receiver. Remove the servo screw from the servo and install a large servo arm onto the servo. Center the trims on the transmitter. Position the servo arm so that one arm is perpendicular to the centerline of the servo. Use diagonal pliers to remove the three extra servo arms.



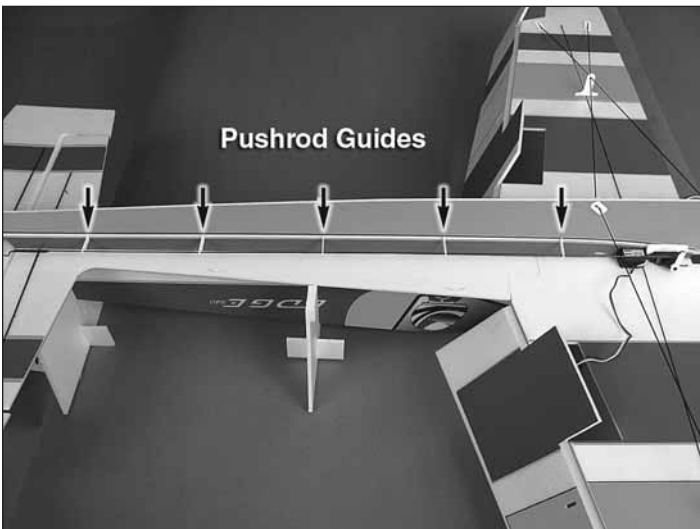
□ 2. Install the rudder servo by placing it into the aft servo mount location with the output shaft towards the front of the fuselage. Glue the servo in place with foam safe CA. Be careful not to get any glue inside the servo case.



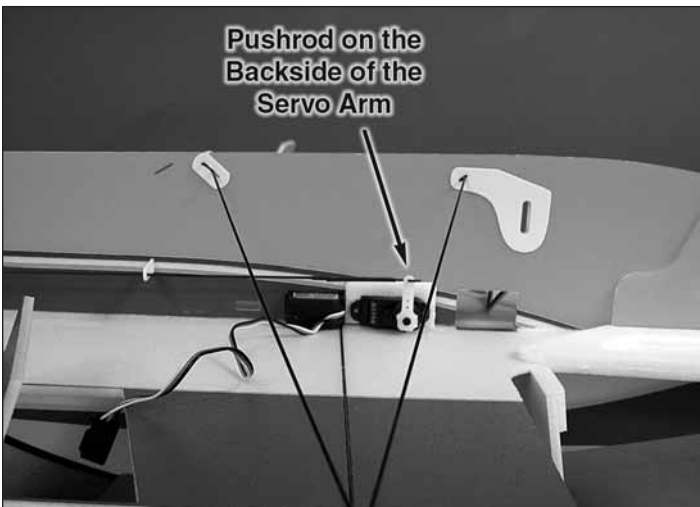
□ 3. Use foam-safe CA to glue the **elevator servo offset** around the elevator servo mounting hole.



❑ 4. Center the servo arm on the elevator servo and trim off the three extra arms. Use foam-safe CA to glue the elevator servo to the elevator servo offset.



❑ 5. Install the pre-assembled elevator pushrod by inserting the pushrod guides through the fuselage as shown. **DO NOT** glue the pushrod guides in place at this time.

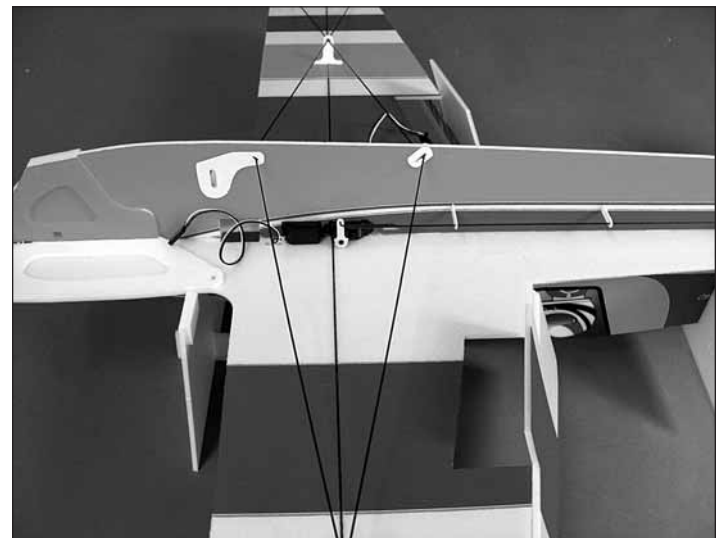


❑ 6. Remove the elevator servo arm and insert the z-bend into the outer hole of the arm. **Note:** If you are not using a

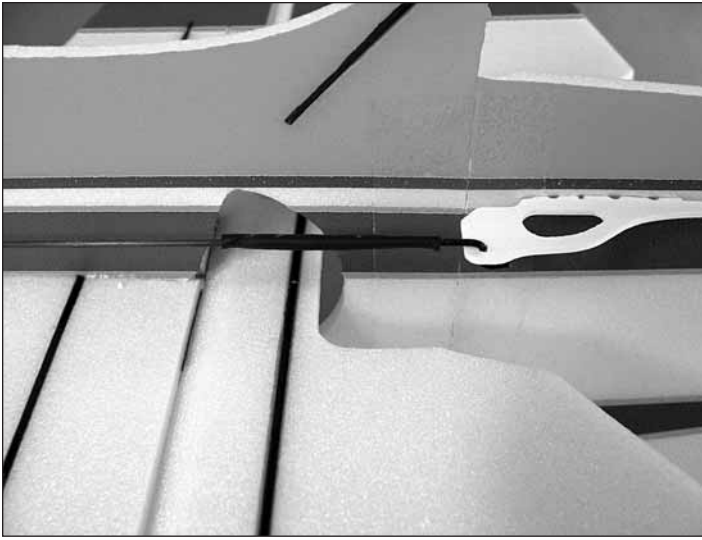
computer radio, and do not wish to set your model up with 3D control throws, you will need to insert the z-bend in a hole closer to the servo. The z-bend should be installed so that the pushrod is on the back side of the servo arm, closest to the fuselage. Center the servo and reinstall the servo arm onto the servo, securing it with the servo screw.



❑ 7. Insert the z-bend in the elevator control horn. Insert the control horn in the slot in the elevator. The notch in the control horn should slide over the carbon fiber strip in the elevator. If the control horn will not fit over the carbon fiber strip, use a sharp hobby knife to remove the excess glue from the slot. **DO NOT** glue the horn in yet.



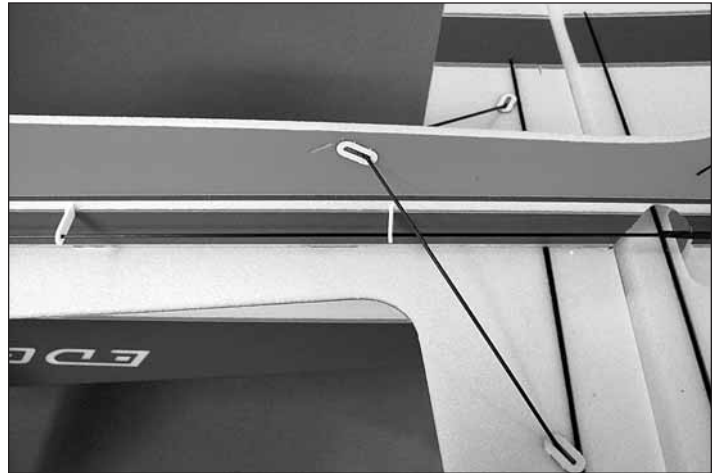
❑ 8. Insert the **rudder pushrod**, from the front, through the five pushrod guides. The z-bend should be next to the rudder servo arm. Remove the servo arm from the rudder servo and insert the z-bend in the servo arm so that it is on the outside of the arm, away from the fuselage. Re-install the servo screw in the servo.



❑ 9. Slide the **black heat shrink tubing** over the aft end of the rudder pushrod. Insert the **z-bend wire** into the hole in the **rudder control horn** from the bottom. Slide the other end of the z-bend wire into the heat shrink and install the rudder control horn in the rudder. **Note:** The rudder hinge tape may be covering the front of the rudder control horn slot. Use a sharp hobby knife to trim the tape from the slot. Secure the z-bend wire to the rudder pushrod by shrinking the heat shrink tubing using a soldering iron. **Be careful** when using the soldering iron close to the foam. The foam will melt if it is touched with the hot soldering iron.



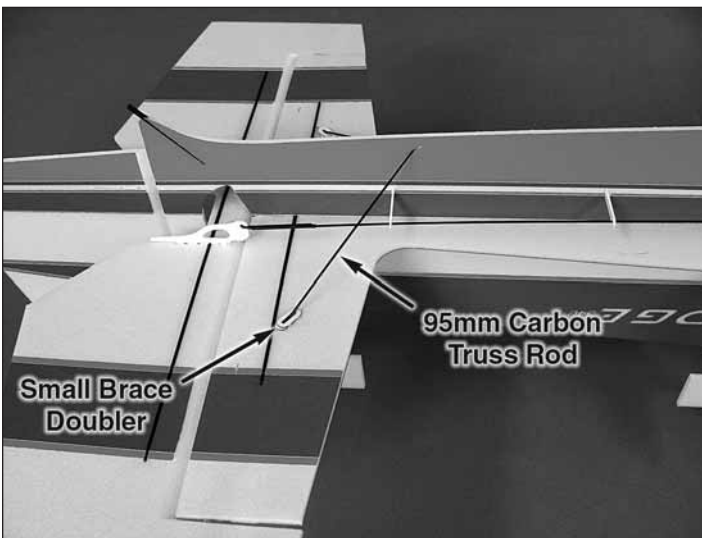
❑ 2. With the plane setting flat on the top building cruches, center the two carbon rods in the slots. Use foam-safe CA to glue the rod and one brace doubler to the stabilizer on both sides of the fuselage.



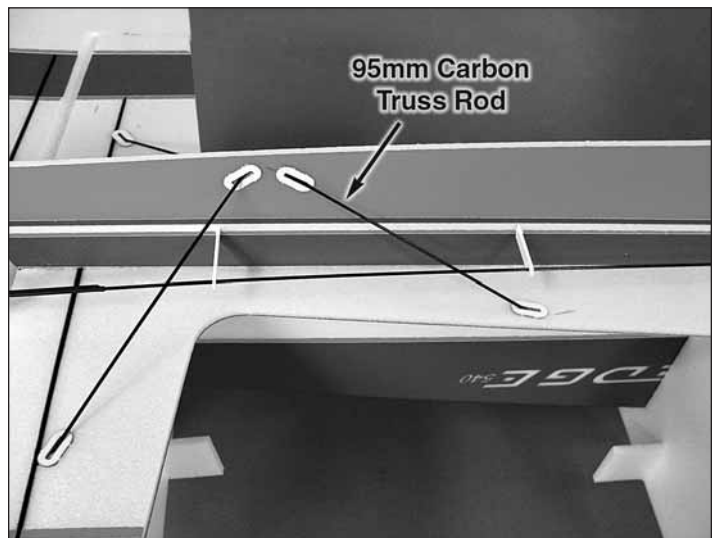
❑ 3. Use foam-safe CA to glue the carbon rods and brace doublers to the vertical fuselage side.

INSTALL CARBON TRUSS RODS

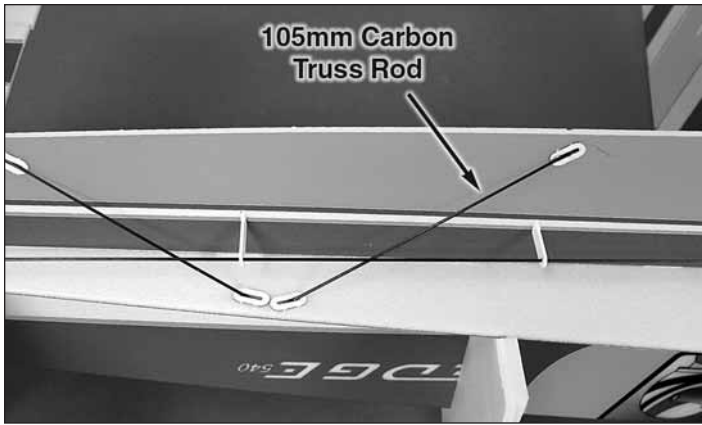
Before the rudder and elevator control horns are glued, the carbon truss rods need to be installed to stiffen the fuselage.



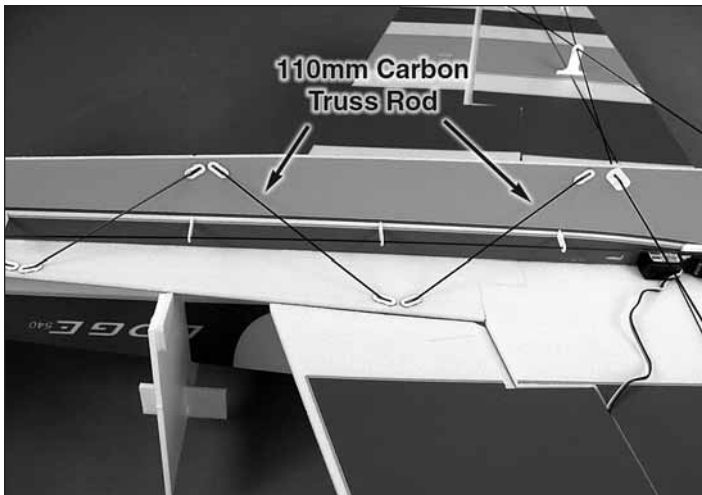
❑ 1. Cut four small brace doublers from the ABS sheet. Slide two of the braces on a 95mm long carbon truss rod. Insert the rod into the slot at the aft bottom end of the fuselage. Insert the other end in the forward slot in the stabilizer. Insert a second 95mm long carbon truss rod on the other side of the stabilizer.



❑ 4. Cut two more brace doublers from the ABS sheet. Use foam-safe CA to glue the third 95mm carbon rod and brace doublers to the horizontal and vertical fuselage sides. Note that the carbon rod goes between the elevator pushrod and the fuselage.



5. Repeat the procedure to install a 105mm long carbon rod next.



6. Install the final two 110mm long truss rods following the same procedure.

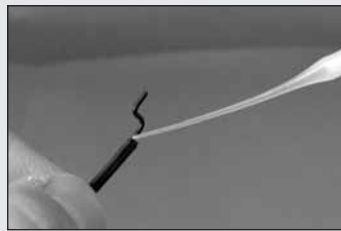
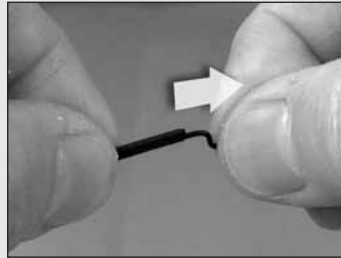
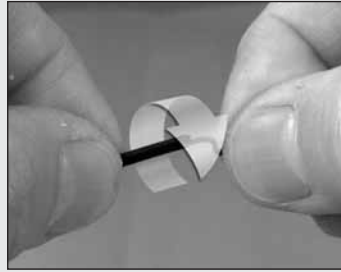


7. Turn the plane upright. Install the two 130mm carbon rods and brace doublers between the vertical fin and stabilizer.

ADJUST THE PUSHRODS

1. With the transmitter and receiver switched on and the elevator servo centered, make sure that the elevator control horn is seated against the elevator. Check that the elevators are centered. If they are not, you will need to adjust the length of the z-bend.

PUSHROD LENGTH ADJUSTMENT



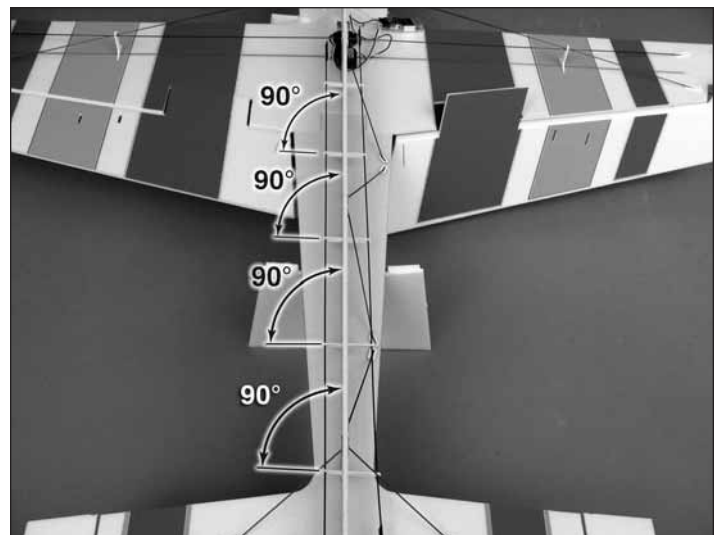
For your convenience, the aileron and elevator pushrods have been pre-assembled. If you are not using a Futaba S3114 servo, or due to manufacturing tolerances, it may be necessary to change the pushrod length. This may be done by holding the heat shrink tubing that connects the pushrod to the z-bend and gently rotating the z-bend until the glue holding the z-bend breaks loose. Then, adjust the length by pulling or pushing the z-bend until the appropriate length is achieved. Re-glue the z-bend to the pushrod using a drop of thin CA. Be careful that the CA does not run down the pushrod and into the pushrod guides.

2. Once the elevator is centered, apply a bead of foam-safe CA along the joint between the elevator control horn and the elevator.

3. Use foam-safe CA to glue the rudder control horn to the rudder.

4. Adjust the length of the pushrod so that when the rudder servo is centered, the rudder is centered.

5. Apply a drop of thin CA to the end of the heat shrink to further secure the z-bend to the pushrod.



6. Operate the rudder and elevator, checking that the pushrods do not bind in the pushrod guides. Adjust the position

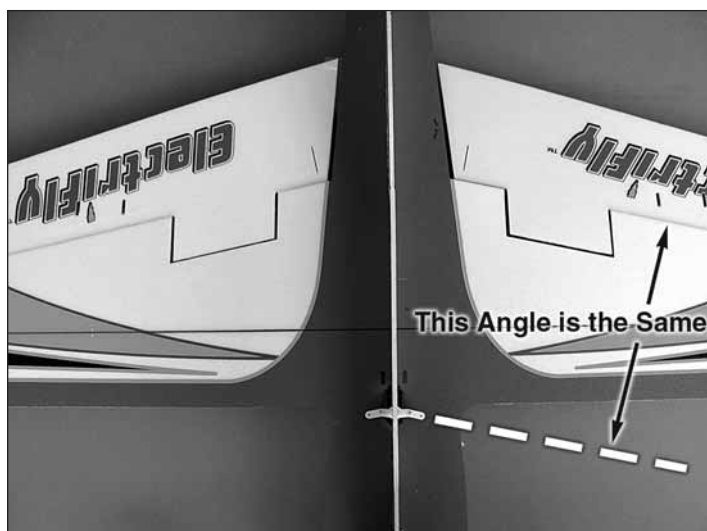
of the pushrod guides so that the pushrods are straight and the guides are 90° to the fuselage. Glue the pushrod guides to the fuselage with foam-safe CA.



❑ 7. Locate the **anti-differential arm**. Place the anti-differential arm on the underside of the servo arm. If you are using Futaba servo arms, the holes in the servo arm and the holes in the anti-differential arm will align. If you are using another brand of servo arm, you will need to use a #60 [1mm] drill bit to drill a pilot hole through the servo arm that will align the servo arm with the anti-differential arm.



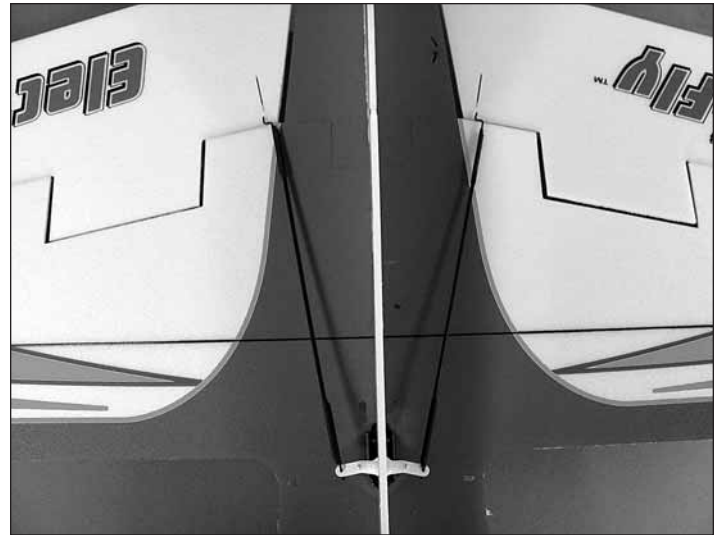
❑ 8. Attach the anti-differential arm to the servo arm using two **3/64" [1.2mm] self tapping screws**.



❑ 9. Insert the aileron servo in the fuselage. Center the aileron servo trims and attach the servo arm to the servo using the

servo screw. Note the direction of the anti-differential arm. The angle is the same as the aileron hinge line.

❑ 10. Use foam-safe CA to glue the aileron servo to the fuselage.

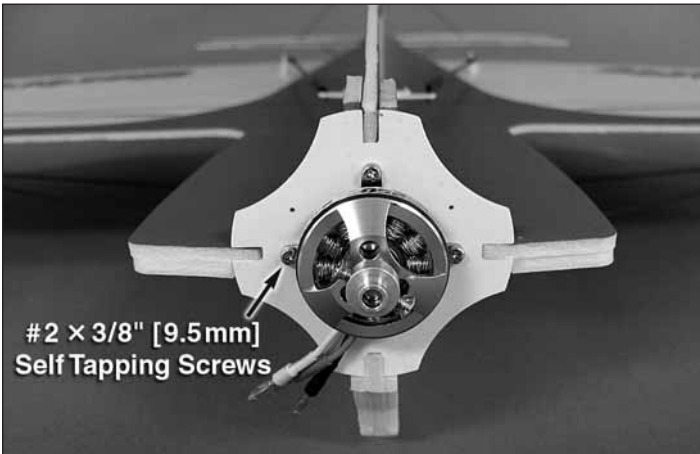


❑ 11. Insert the z-bend of both **aileron pushrods** in the anti-differential arm.

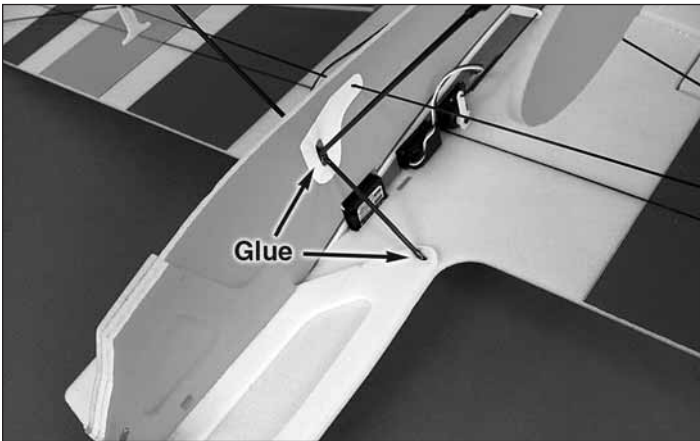


❑ 12. Insert an aileron control horn onto each end of the aileron pushrods. Insert the control horns in the slot of the ailerons. Center the aileron trim on the transmitter. Check that the ailerons are centered. If they are not, adjust the length of the pushrods as needed. Then, glue the aileron control horns in the ailerons, adjust the pushrods and apply a drop of thin CA to the end of the heat shrink tubing.

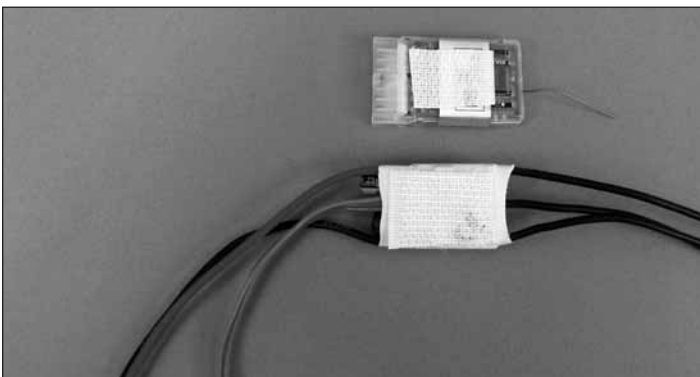
INSTALL THE MOTOR



- ❑ 1. Install the motor to the motor mount using the included #2 x 3/8" [9.5mm] self-tapping screws.



- ❑ 2. Insert the landing gear through the landing gear support and into the horizontal fuselage. Be careful not to push the landing gear all the way through the horizontal fuselage. The end should be flush with the top of the horizontal fuselage. If it is difficult to insert both landing gear legs through the landing gear support, use a hobby knife to enlarge the hole slightly. Rotate the wheels so that they are parallel to each other. Apply glue to the joint between the landing gear support and the landing gear legs and the horizontal fuselage and the landing gear legs.



- ❑ 3. Place a small piece of loop (soft) side of the self adhesive hook and loop material to the back of the ESC and the receiver.



- ❑ 4. Place a piece of hook (rough) material under the fuselage, close to the front. Route the motor leads through the fuselage and connect them to the motor. Attach the ESC to the loop material.

- ❑ 5. Connect the servos to the receiver so that the wires do not interfere with any of the pushrods. Note that a hole has been provided to route the rudder and aileron servo wires to the bottom right side of the fuselage.



- ❑ 6. Position the receiver on the side of the fuselage, under the wing as far forward as possible. Make sure that the servo wires do not interfere with the pushrods. Apply a piece of hook material on the side of the fuselage, at the receiver location. Attach the receiver to the fuselage. To prevent the wires from interfering with the pushrods, use a small piece of tape to attach them to the fuselage.



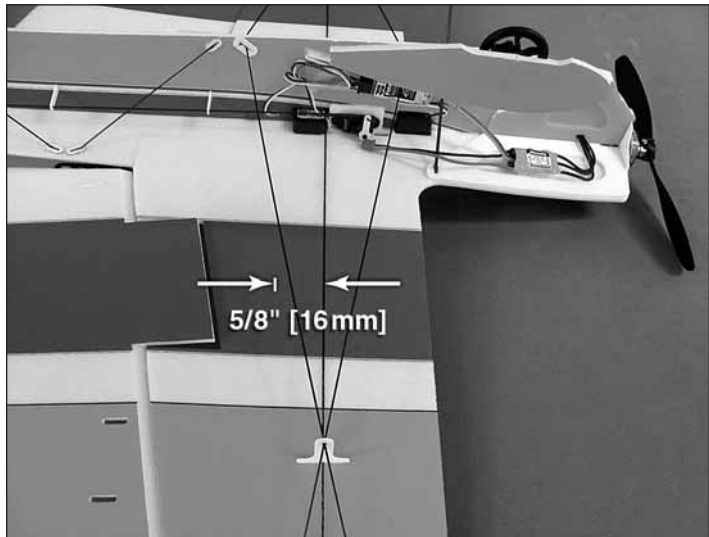
- ❑ 7. Install the propeller on the motor following the motor instructions. **Hint:** The rubber o-ring can be difficult to stretch

over the screw, then the propeller and over the other screw. A small jewelers phillips head screwdriver can be used to pry the rubber o-ring over the screws and propeller. Be careful not to allow the screwdriver to slip and damage the windings inside the motor.

Balance the Model (C.G.)

More than any other factor, the C.G. (center of gravity/ balance point) can have the greatest effect on how a model flies and could determine whether or not your first flight will be successful. If you value your model and wish to enjoy it for many flights, **DO NOT OVERLOOK THIS IMPORTANT PROCEDURE.** A model that is not properly balanced may be unstable and possibly unflyable.

Because the Edge 540 is an indoor lightweight plane, adding weight to balance the plane is not an option. At this stage the model should be in ready-to-fly condition with **all** of the components in place except the motor battery. The motor battery will be moved forward and aft to balance the plane.

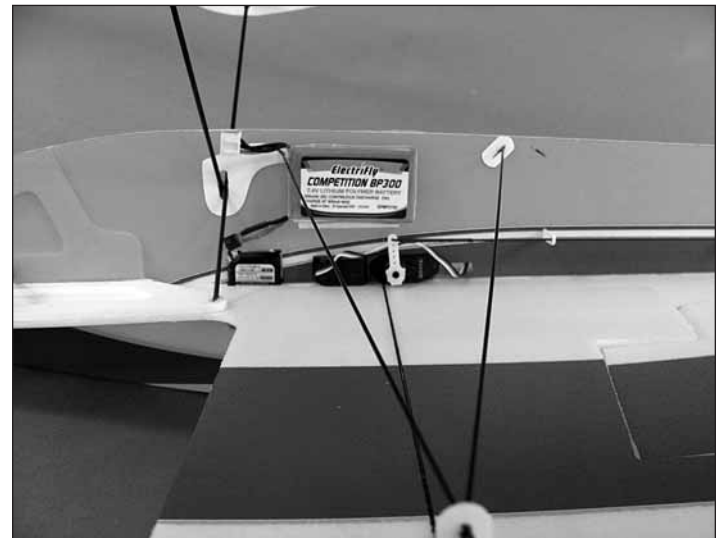


❑ 1. Use a fine-point felt tip pen to mark lines on the bottom of the wing, 5/8" [15mm] aft from the carbon strip in the wing, on both sides of the fuselage. Apply narrow (1/16" [1.5mm]) strips of tape over the lines so you will be able to feel them when lifting the model with your fingers.

This is where your model should balance for the first flights. Later, you may experiment by shifting the C.G. 1/4" [6mm] forward or 1/4" [6mm] back to change the flying characteristics. Moving the C.G. forward will improve the smoothness and stability, but the model will then be less aerobatic (which may be fine for less-experienced pilots). Moving the C.G. aft makes the model more maneuverable and aerobatic for experienced pilots. In any case, **start at the recommended balance point** and do not at any time balance the model outside the specified range.

❑ 2. Place the motor battery on the top of the fuselage on the recommended CG. Lift the model from the bottom at the recommended CG.

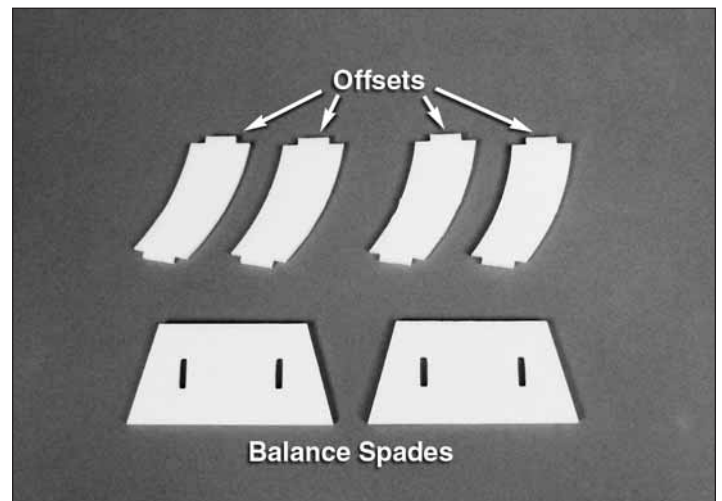
❑ 3. If the tail drops, the model is "tail heavy." Move the motor battery forward to get the model to balance. If the nose drops, the model is "nose heavy." Move the motor battery aft. Once you have determined the battery location required to balance the plane, note the location and where the battery would need to be attached on the bottom of the fuselage.



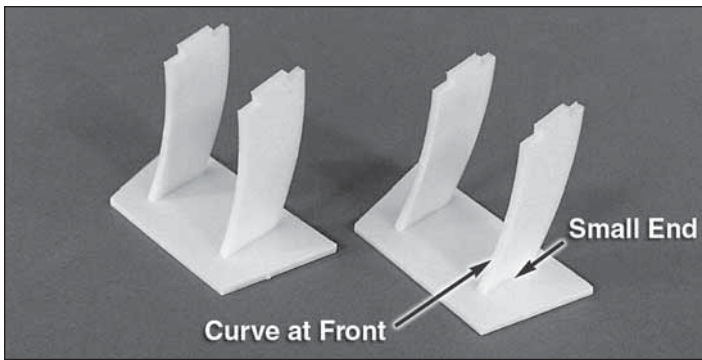
❑ 4. Apply the remaining hook and loop material to the side of the fuselage at the approximate location for the motor battery. Attach an opposite piece of hook and loop material to the battery. Trial fit the motor battery to the side of the fuselage and recheck the CG.

OPTIONAL AILERON BALANCE SPADES

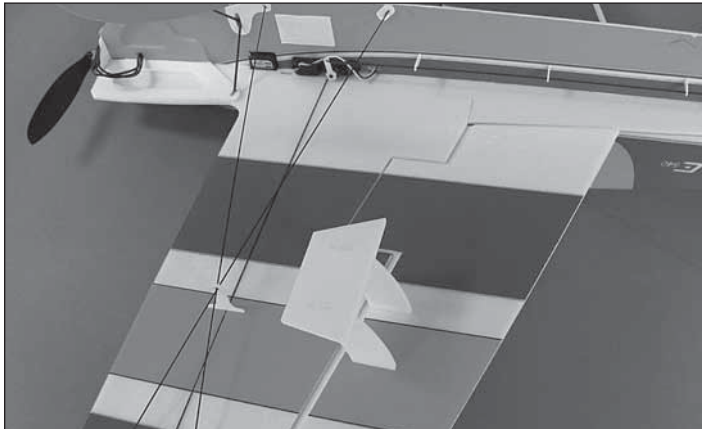
We found in our testing that the aileron balance spades enhanced the turning ability of the Edge 540. Most flat foam planes require some rudder input to turn. With the aileron balance spades, turns are easily accomplished with just aileron and elevator.



❑ 1. Remove the two balance spades and the four offsets.



❑ 2. Use foam safe CA to glue the offsets, perpendicular to the balance spades as shown.



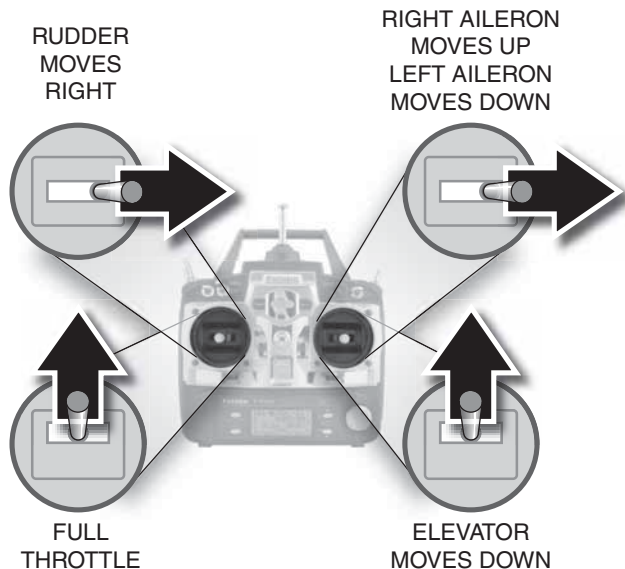
❑ 3. Use foam safe CA to glue the balance spade assembly to the bottom of the ailerons.

GET THE MODEL READY TO FLY

Check the Control Directions

❑ 1. Switch on the transmitter and connect the motor battery. Check all the control surfaces to see if they are centered.

4-CHANNEL RADIO SET UP (STANDARD MODE 2)



❑ 2. Make certain that the control surfaces respond in the correct direction as shown in the diagram. If any of the controls

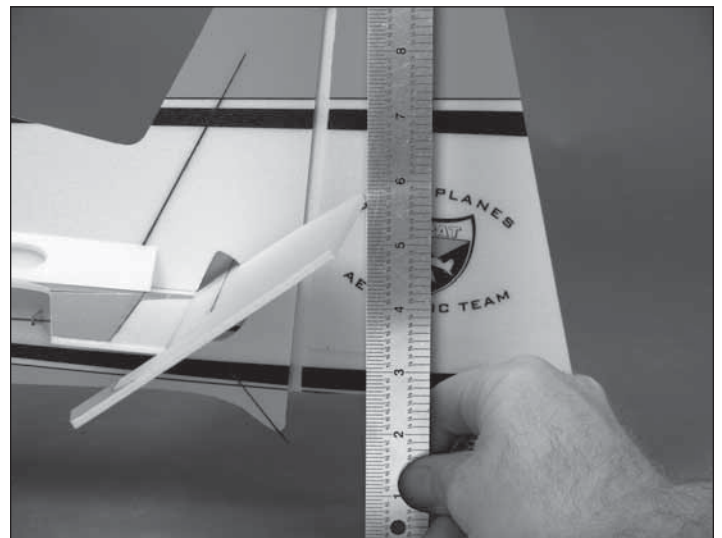
respond in the wrong direction, use the servo reversing in the transmitter to reverse the servos connected to those controls. Be certain the control surfaces have remained centered. Adjust if necessary.

Set the Control Throws

To ensure a successful first flight, set up your Edge 540 according to the control throws specified in this manual. The throws have been determined through actual flight testing and accurate record-keeping, allowing the model to perform in the manner in which it was intended. If, after you have become accustomed to the way the Edge 540 flies, you would like to change the throws to suit your taste, that is fine. However, too much control throw could make the model too responsive and difficult to control, so remember, "more is not always better."

❑ 1. Use a box or something similar to prop up the bottom of the fuselage so the horizontal stabilizer and wing will be level.

❑ 2. Measure the 3D elevator throw first. Hold a ruler vertically on your workbench against the widest part (front to back) of the trailing edge of the elevator. Note the measurement on the ruler.



❑ 3. Move the elevator up with your transmitter and move the ruler forward so it will remain contacting the trailing edge. The distance the elevator moves up from center is the "up" elevator throw. Measure the down elevator throw the same way.

❑ 4. Measure and set the **high and low rate** elevator throws and the high, low, and 3D rate throws for the rest of the control surfaces the same way.

If your radio does not have dual rates, we recommend setting the throws at the high rate settings.

NOTE: The throws are measured at the **widest part** of the elevators, rudder and ailerons.

| These are the recommended control surface throws: | | | |
|---|------------------------|----------------------------|----------------------------|
| | LOW RATE | HIGH RATE | 3D RATE |
| ELEVATOR | Up & Down | Up & Down | Up & Down |
| | 1" [25mm] 17 deg | 1-3/4" [44mm] 30 deg | 2-3/4" [70mm] 58 deg |
| RUDDER | Right & Left | Right & Left | Right & Left |
| | 2" [50mm] 25 deg | 2-3/4" [70mm] 35 deg | 3-3/4" [95mm] 52 deg |
| AILERONS | Up & Down | Up & Down | Up & Down |
| | 1" [25mm] 14 deg | 1-5/8" [41mm] 23 deg | 4" [102mm] 79 deg |

PREFLIGHT

Identify Your Model

No matter if you fly at an AMA sanctioned R/C club site or if you fly somewhere on your own, you should always have your name, address, telephone number and AMA number on or inside your model. It is **required** at all AMA R/C club flying sites and AMA sanctioned flying events (except when flown indoors). Fill out the identification tag on page 20 and place it on or inside your model.

Charge the Batteries

Follow the battery charging instructions that came with your radio control system to charge the batteries. You should always charge your transmitter batteries the night before you go flying, and at other times as recommended by the radio manufacturer.

CAUTION: Unless the instructions that came with your radio system state differently, the **initial** charge on **new** transmitter batteries should be done for 15 hours **using the slow-charger that came with the radio system.** This will "condition" the batteries so that the next charge may be done using the fast-charger of your choice. If the initial charge is done with a fast-charger the batteries may not reach their full capacity and you may be flying with batteries that are only partially charged.

Balance Propellers



Carefully balance your propeller and spare propellers before you fly. An unbalanced prop can be the single most significant cause of vibration that can damage your model. Vibration of props on small models can cause a loss of power, but vibration may also damage your radio receiver, battery and possibly the motor bearings.

We use a Top Flite® Precision Magnetic Prop Balancer (TOPQ5700) in the workshop and keep a Great Planes Fingertip Prop Balancer (GPMQ5000) in our flight box.

Ground Check and Range Check

Always ground check the operational range of your radio before the first flight of the day following the manufacturer's instructions that came with your radio. This should be done once with the motor off and once with the motor running at various speeds. If the control surfaces do not respond correctly, **do not fly!** Find and correct the problem first. Look for loose servo connections or broken wires, corroded wires on old servo connectors, poor solder joints in your battery pack or a defective cell, or a damaged receiver crystal from a previous crash.

MOTOR AND BATTERY SAFETY PRECAUTIONS

Failure to follow these safety precautions may result in severe injury to yourself and others.

Do not run the motor in an area of loose gravel or sand; the propeller may throw such material in your face or eyes.

Keep your face and body as well as all spectators away from the plane of rotation of the propeller as you start and run the motor.

Keep these items away from the prop: loose clothing, shirt sleeves, ties, scarfs, long hair or loose objects such as pencils or screwdrivers that may fall out of shirt or jacket pockets into the prop.

The motor can get hot! Do not touch it right after operation.

Once the motor battery is plugged in to the ESC, stay clear of the propeller. The motor could start at any time.

LITHIUM BATTERY HANDLING AND USAGE

WARNING!! Read the entire instruction sheet included with your battery. Failure to follow all instructions could cause permanent damage to the battery and its surroundings, and cause bodily harm!

ONLY use a LiPo approved charger. **NEVER** use a NiCd/NiMH peak charger.

NEVER charge in excess of 4.20V per cell.

ONLY charge through the “charge” lead. **NEVER** charge through the “discharge” lead.

NEVER charge at currents greater than 1C.

ALWAYS set the charger’s output volts to match the battery volts.

ALWAYS charge in a fireproof location.

NEVER trickle charge.

NEVER allow the battery temperature to exceed 150° F (65° C).

NEVER disassemble or modify the pack wiring in any way or puncture the cells.

NEVER discharge below 2.5V per cell.

NEVER place the battery or charger on combustible materials or leave it unattended during charge or discharge.

ALWAYS KEEP OUT OF THE REACH OF CHILDREN.

NEVER charge the battery in the plane.

ALWAYS remove the battery from the plane after a crash. Set it aside in a safe location for at least 20 minutes. If the battery is damaged in the crash it could catch fire.

If the battery starts to swell, quickly move the battery to a safe location, preferably outside: Place it in a bucket, covering the battery with sand.

AMA SAFETY CODE

Read and abide by the following excerpts from the Academy of Model Aeronautics Safety Code. For the complete Safety Code refer to *Model Aviation* magazine, the AMA web site or the Code that came with your AMA license.

General

- 1) I will not fly my model aircraft in sanctioned events, air shows, or model flying demonstrations until it has been proven to be airworthy by having been previously, successfully flight tested.
- 2) I will not fly my model aircraft higher than approximately 400 feet within 3 miles of an airport without notifying the airport operator. I will give right-of-way and avoid flying in the proximity of full-scale aircraft. Where necessary, an observer shall be utilized to supervise flying to avoid having models fly in the proximity of full-scale aircraft.

- 3) Where established, I will abide by the safety rules for the flying site I use, and I will not willfully and deliberately fly my models in a careless, reckless and/or dangerous manner.
- 5) I will not fly my model unless it is identified with my name and address or AMA number, on or in the model. Note: This does not apply to models while being flown indoors.
- 7) I will not operate models with pyrotechnics (any device that explodes, burns, or propels a projectile of any kind).

Radio Control

- 1) I will have completed a successful radio equipment ground check before the first flight of a new or repaired model.
- 2) I will not fly my model aircraft in the presence of spectators until I become a qualified flier, unless assisted by an experienced helper.
- 3) At all flying sites a straight or curved line(s) must be established in front of which all flying takes place with the other side for spectators. Only personnel involved with flying the aircraft are allowed at or in the front of the flight line. Intentional flying behind the flight line is prohibited.
- 4) I will operate my model using only radio control frequencies currently allowed by the Federal Communications Commission.
- 5) **I will not knowingly operate my model within three miles of any pre-existing flying site except in accordance with the frequency sharing agreement listed** [in the complete AMA Safety Code].
- 9) Under no circumstances may a pilot or other person touch a powered model in flight; **nor should any part of the model other than the landing gear, intentionally touch the ground, except while landing.**

CHECK LIST

During the last few moments of preparation your mind may be elsewhere anticipating the excitement of the first flight. Because of this, you may be more likely to overlook certain checks and procedures that should be performed before the model is flown. To help avoid this, a check list is provided to make sure these important areas are not overlooked. Many are covered previously in the instruction manual, so where appropriate, refer to the manual for complete instructions. Be sure to check the items off as they are completed (that’s why it’s called a *check list!*).

- 1. Check the C.G. according to the measurements provided in the manual.
- 2. Be certain the battery and receiver are securely mounted in the fuse with hook and loop material.
- 3. Confirm that all controls operate in the correct direction and the throws are set up according to the manual.
- 4. Make sure all servo arms are secured to the servos with the screws included with your radio.

- 5. Make sure all wires are clear of servo arms and pushrods.
- 6. Make sure all hinge tape is securely attached.
- 7. Balance your propeller (and spare propellers).
- 8. If you wish to photograph your model, do so before your first flight.
- 9. Range check your radio when you get to the flying field.

FLYING

The Edge 540 Indoor is an airplane suitable for both indoor and outdoor flying. If you plan on flying outdoors, make sure that you choose days with very light to calm winds (less than 5 mph). If this is your first experience with an indoor-style foamie, seek help from experienced modelers. Join a local flying club or ask your local hobby dealer where the nearest approved flying sites are in your area.

CAUTION (THIS APPLIES TO ALL R/C AIRPLANES): If, while flying, you notice an alarming or unusual sound such as a low-pitched “buzz,” this may indicate control surface *flutter*. Flutter occurs when a control surface (such as an aileron or elevator) or a flying surface (such as a wing or stab) rapidly vibrates up and down (thus causing the noise). In extreme cases, if not detected immediately, flutter can actually cause the control surface to detach or the flying surface to fail, thus causing loss of control followed by an impending crash. The best thing to do when flutter is detected is to slow the model **immediately** by reducing power, then land as soon as safely possible. Identify which surface fluttered. Make certain all pushrod linkages are secure and free of play. If it fluttered once, under similar circumstances it will probably flutter again unless the problem is fixed. Some things which can cause flutter are; Excessive hinge gap; Not mounting control horns solidly; Excessive free play in servo gears; Insecure servo mounting; and one of the most prevalent causes of flutter; Flying an over-powered model at excessive speeds.

Takeoff

The Edge 540 can take off from a smooth surface (ROG) or can be easily hand-launched. If you want to perform an (ROG) takeoff, make sure the surface you are using is free of holes that can flip the plane over or break the landing gear. Rise-off-ground (ROG) takeoffs should be reserved for indoor flying and should be performed with the model rolling away from you and others. For the first flight set the controls to low rate. If for the first flight the plane is to be hand-launched, have an assistant hand launch it. This will allow you, the pilot, to have both hands on the control sticks to make any flight corrections if the plane is out of trim. Once the Edge 540 has been flown and trimmed out, you will be able to hand launch the plane easily by yourself. If you are flying outdoors, always takeoff into the wind.

Flight

For reassurance and to keep an eye on other traffic, it is a good idea to have an assistant on the flight line with you. While full throttle is usually desirable for takeoff, the Edge 540 will fly great at ½ to ¼ throttle indoors.

Take it easy with the Edge 540 for the first few flights, gradually getting acquainted with it as you gain confidence. Adjust the trims to maintain straight and level flight. After flying around for a while, and while still at a safe altitude with plenty of battery power remaining, practice slow flight and execute practice landing approaches by reducing the throttle to see how the model handles at slower speeds. Add power to see how it climbs as well. Continue to fly around, executing various maneuvers such as gentle rolls, loops, stalls and hammerheads, making mental notes (or having your assistant write them down) of what trim or C.G. changes may be required to fine tune the model so it flies the way you like. Mind your battery power. It is best to have a timer set to alert you when it is time to land.

Landing

To initiate a landing approach, lower the throttle while on the downwind leg. Allow the nose of the model to pitch downward to gradually bleed off altitude. Continue to lose altitude, but maintain airspeed by keeping the nose down as you turn onto the crosswind leg. You will notice that the plane bleeds off speed very quickly if the nose is raised with power off. Make your final turn toward the landing area, keeping the nose down to maintain airspeed and control. Level the attitude when the model reaches the edge of the landing area, modulating the throttle as necessary to maintain your glide path and airspeed. If you are going to overshoot, smoothly advance the throttle (always ready on the right rudder to counteract torque) and climb out to make another attempt. When you're ready to make your landing flare and the model is a foot or so off the deck, smoothly increase up elevator. You may also have to blip the throttle until it gently touches down.

One final note about flying your model. Have a goal or flight plan in mind for **every** flight. This can be learning a new maneuver(s), improving a maneuver(s) you already know, or learning how the model behaves in certain conditions (such as on high or low rates). This is not necessarily to improve your skills (*though it is never a bad idea!*), but more importantly so you do not surprise yourself by impulsively attempting a maneuver and suddenly finding that you've run out of time, altitude or airspeed. Every maneuver should be deliberate, not impulsive. For example, if you're going to do a loop, check your altitude, remember to throttle back at the top, and make certain you are on the desired rates (high/low rates). A flight plan greatly reduces the chances of crashing your model just because of poor planning and impulsive moves. **Remember to think.**

Have a ball! But always stay in control
and fly in a safe manner.

GOOD LUCK AND GREAT FLYING!



This model belongs to:

Name

Address

City, State, Zip

Phone Number

AMA Number