AF37 V2 Adrenaline 3D

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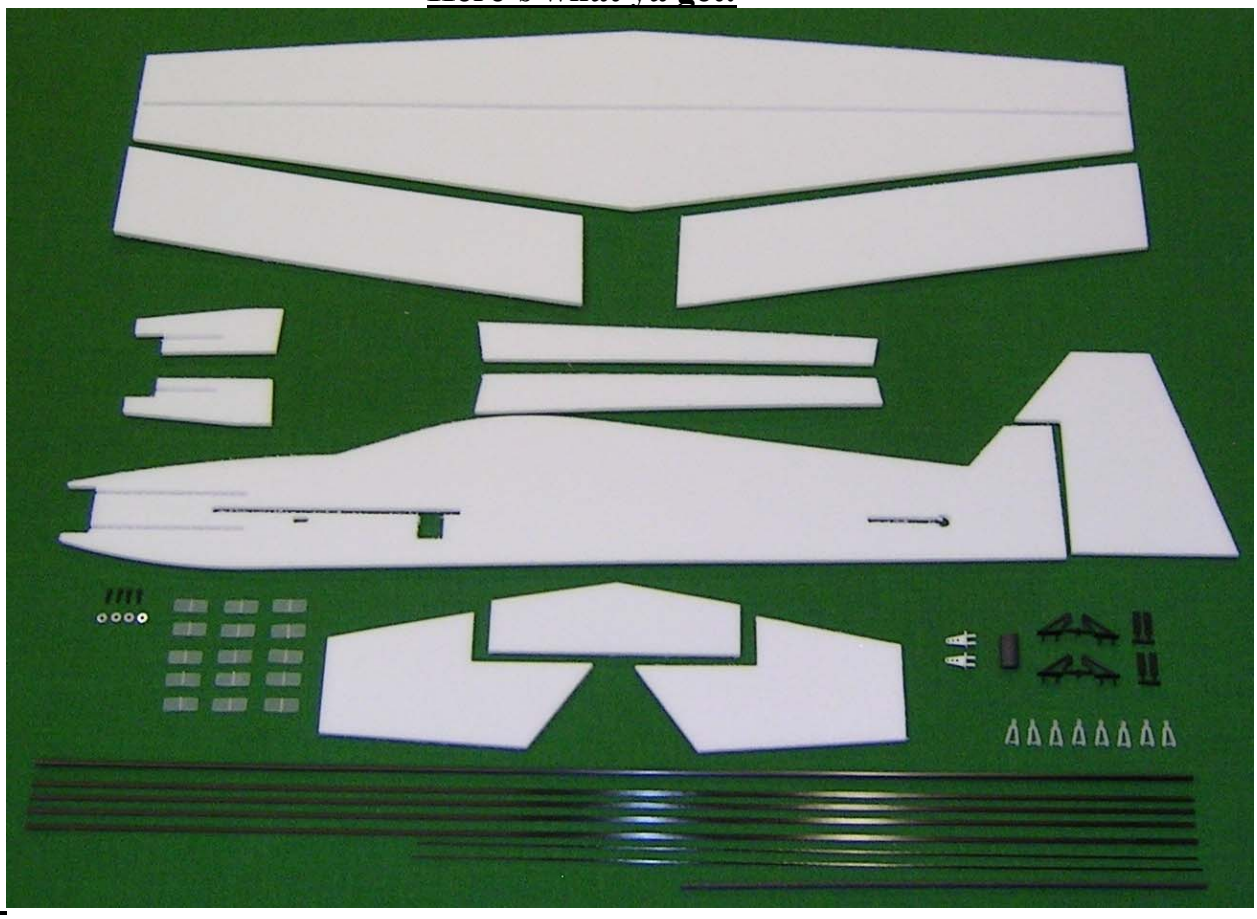
Here's what ya get!

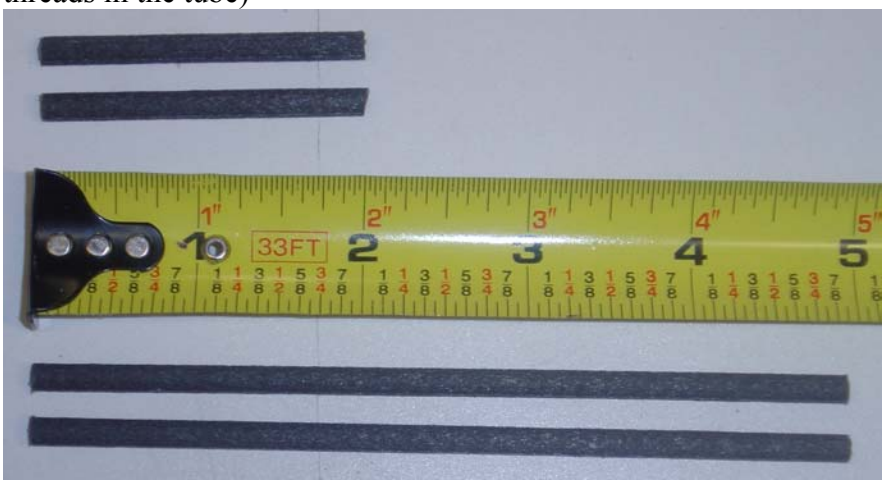


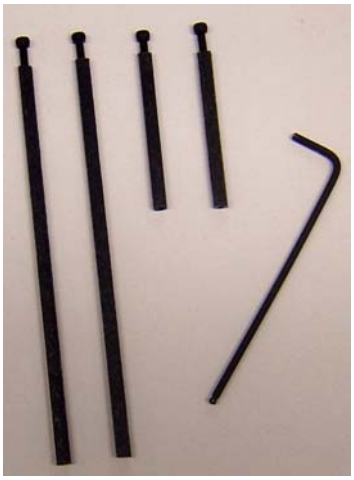
Main Wing (1)
Ailerons (2)
Fuselage Side Front Left (1)
Fuselage Side Front Right (1)
Fuselage Sides Center (2)
Main Fuselage (1)
Rudder (1)
Horizontal Stabilizer (1)
Elevators (2)
4-40 x 3/8" Socket Head Cap Screws (4)
#4 Flat Washers (2)
Hinges (15)
Push Rod Guides (2)
3/8"x 1" Shrink Tube (1)
Control Horns (4)
Control Horn Retainers (4)
Clevises (8)
3/16"x 36" Carbon Fiber Wing Spar (1)
1/16"x 3/16" x 36" Carbon Fiber Sticks (4)
1/16"x 24" Round Carbon Fiber Rod (2)
3/16"x 16" Round Composite Tube (1)
Decals

Here's what you'll need!

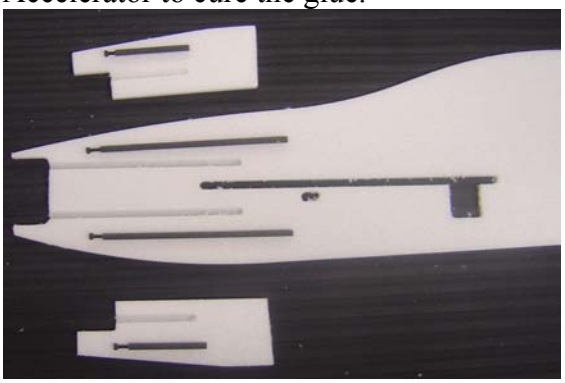
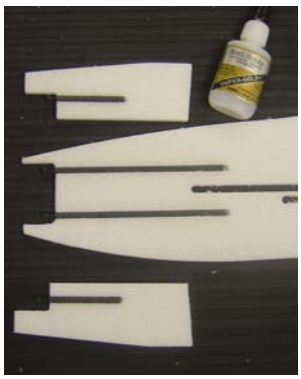
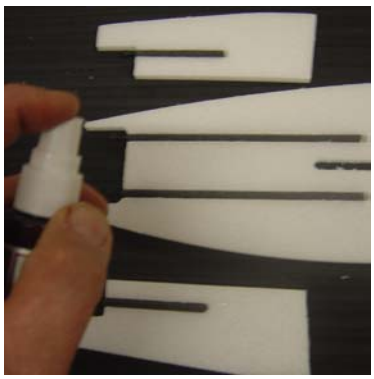
Abell Hobby Super Gold + Odorless CA, Abell Hobby Insta-Set Accelerator, 1/6" Drill Bit, 5/64" Drill Bit, Hobby Knife, Small piece of 3/16" or 1/4" Brass or Aluminum Tubing, Masking Tape, 3M Hook & Loop (Velcro), Cutting tool to cut Carbon Fiber, 3/32" Allen Wrench, Soldering Iron & Solder, Sand Paper and Sanding Block.

1) **<u>Prepare Motor mounts spars</u>.** Find the 16 inch black composite tube and cut two pieces 5 inches long and two pieces 2 inches long**.** Now find the 4-40 socket head cap screws and screw one into each motor mount spar. (<u>hint</u>; run the screws all the way in and out several times to form threads in the tube)

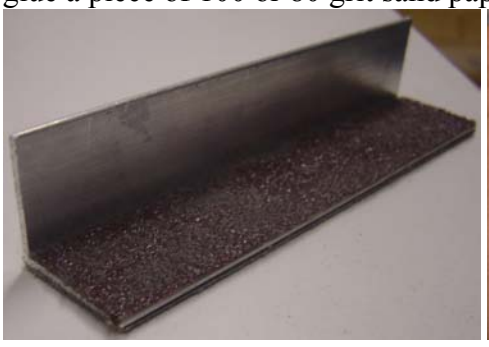
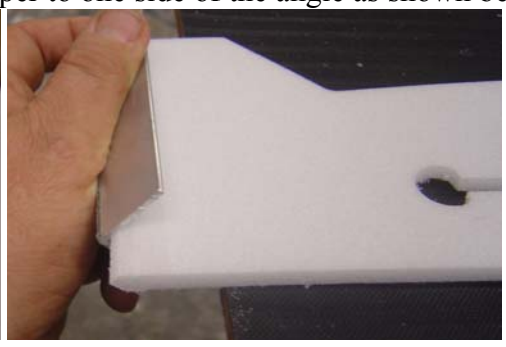




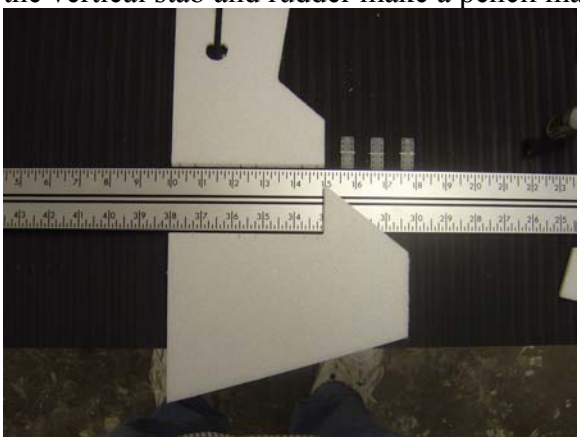
2) **<u>Prepare fuselage for motor mount spars.</u>** Locate the front fuselage sides (one left and one right) and the main fuselage. Now glue the motor mount spars into the foam with Abell Hobby Super-Gold + Foam Safe glue as shown making sure to keep the end of each spar flush with the edge of the foam. (<u>hint;</u> It may be necessary to clean the machining debris out of the grooves before you glue the spars in place) Then spray the glue joints with Abell Hobby Insta-Set Accelerator to cure the glue.

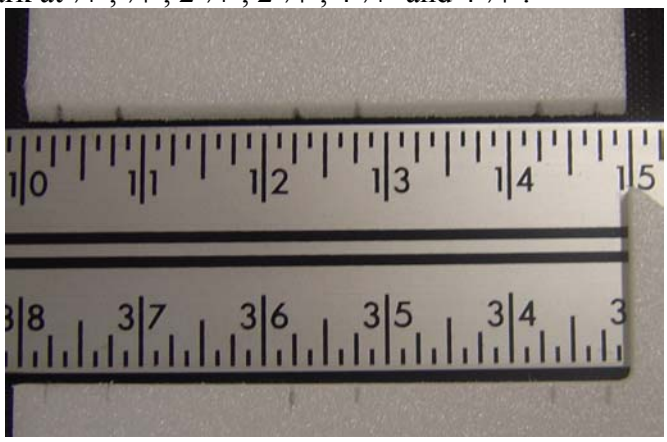




3) **<u>Build a beveling tool.</u>** A piece of angle aluminum was used in the picture below but you can build a similar tool using wood or even the spare pieces of foam that are included in the AF37-V2 kit by simply gluing two pieces of wood or foam together forming a 90 degree angle. Then glue a piece of 100 or 80 grit sand paper to one side of the angle as shown below.

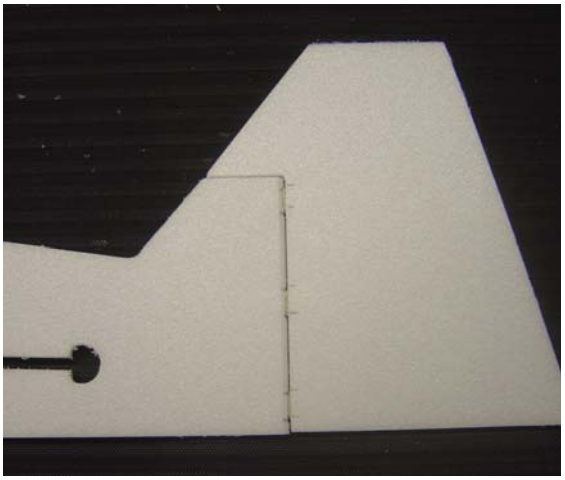




4) **<u>Hinging rudder to vertical stabilizer.</u>** Using the beveling tool carefully sand a 45 degree bevel to each side of the vertical stabilizer as shown above making sure that the point of the bevel is centered and the bevels are the same on both sides. Now lay the fuselage and rudder flat on your work surface and mark the hinge locations as shown below. Measuring from the bottom edge of the vertical stab and rudder make a pencil mark at ¼", ¾", 2 ¼", 2 ¾", 4 ¼" and 4 ¾".

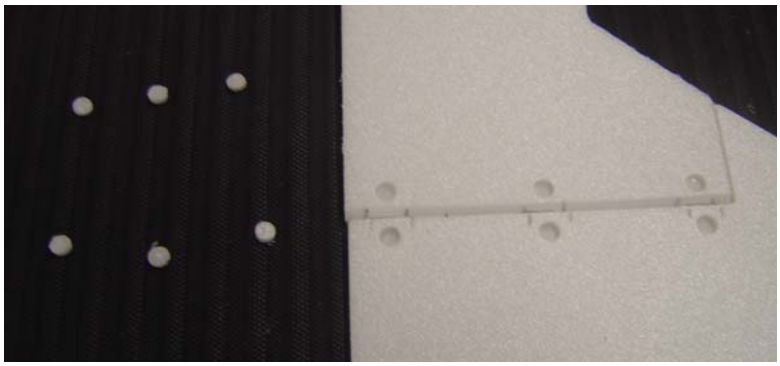




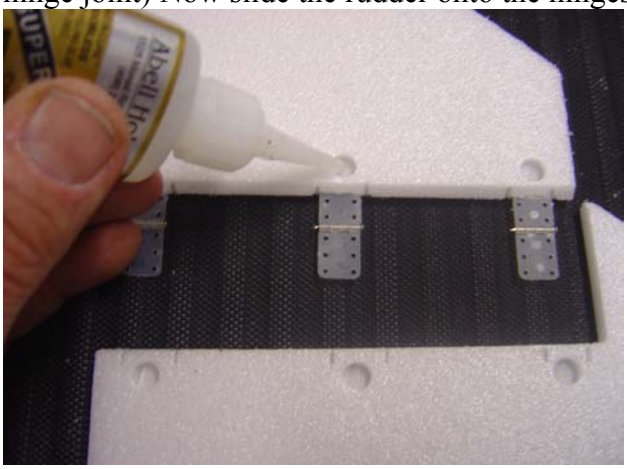
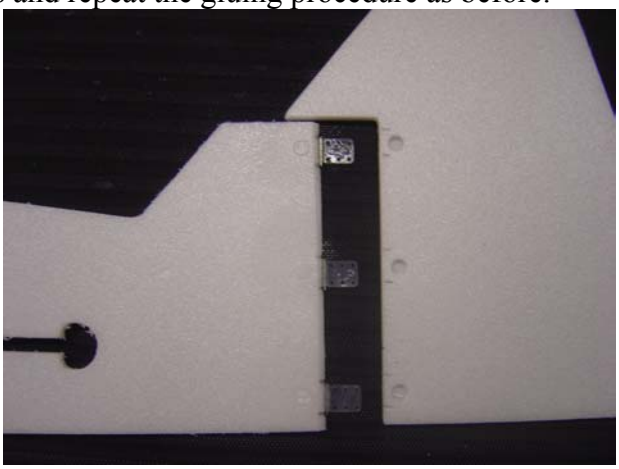
Using a hobby knife with a #11 blade cut three ½" long slices into the rudder and vertical stabilizer using your marks as a guide. Be sure to keep the slices centered in the thickness of the foam. Now slide the hinges into the vertical stabilizer **(DO NOT GLUE AT THIS TIME)** and then the rudder onto the hinges making sure to keep the hinges properly aligned with the hinge line to avoid hinge binding. Leave a hinge gap of 1/16"**.** Next you will need to make a boring tool. A boring tool can be made from any thin walled tubing, a piece of ¼" aluminum tubing was used in the illustration below but brass or hard plastic will work as well. The tubing should have an outside diameter of about 3/16" to ¼". Sharpen one end of the tubing with sand paper.



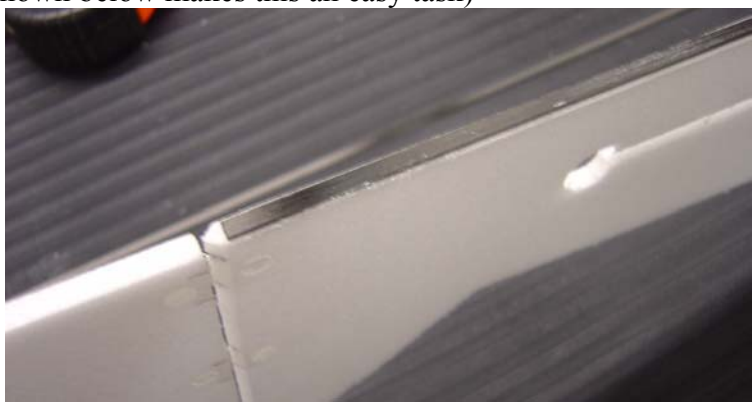
Now, using the boring tool bore a hole into the foam until you reach the hinge. The hole should be centered over the portion of the hinge that is in the hinge slot. (Do not cut into the hinge) Remove the boring tool, push out the foam plug with a screwdriver or hex wrench and set the plug aside aside. When you are finished you should have six foam plugs and six holes cut into the foam as shown below.

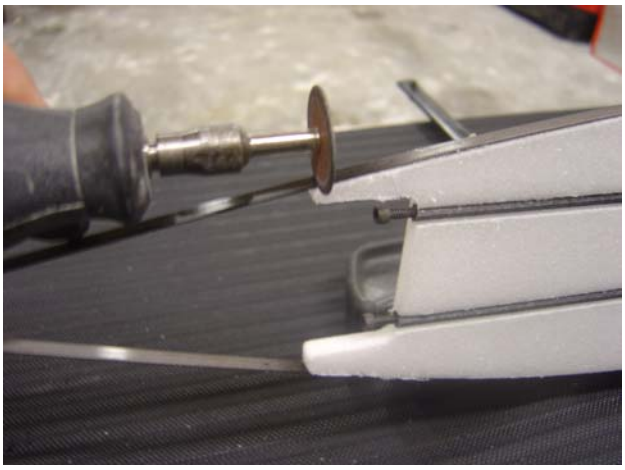
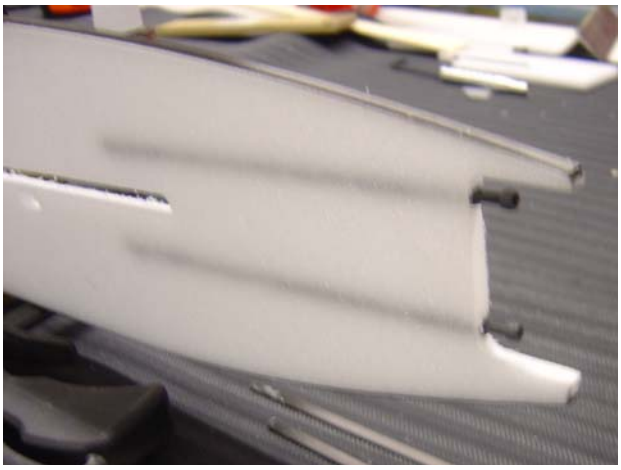



Remove the rudder. Position the hinges in the vertical stabilizer so that the hinge just begins to appear in the holes that you bored into the foam. Put two drops of Abell Hobby Super-Gold + Foam Safe glue into each of the bored holes on the vertical stabilizer. Slide the hinges into position making certain that they are aligned properly. Insert the foam plugs and spray with Insta-set to cure the glue. (Hint; when spraying the Insta-set, be sure that you also spray where the pivot point of the hinge meets the foam. This will prevent the glue from wicking into the hinge joint) Now slide the rudder onto the hinges and repeat the gluing procedure as before.

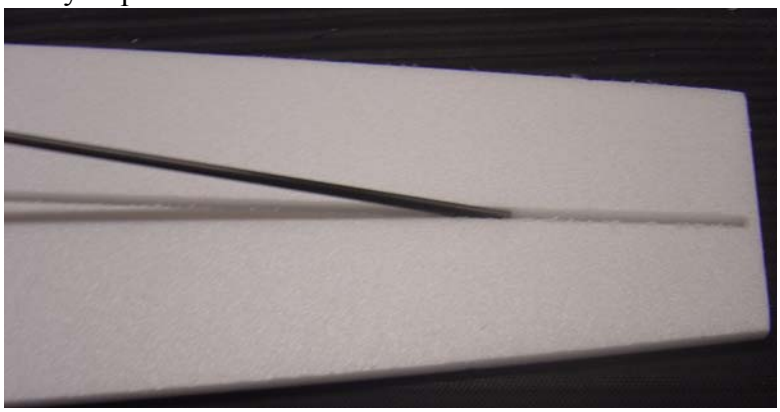



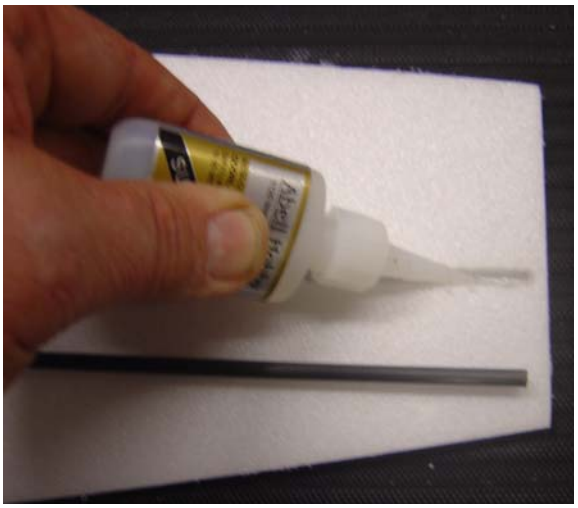
5) **Install fuselage spars.** Find two of the four flat carbon fiber sticks. Using the Abell Hobby Super Gold + and Insta Set, Glue one of the flat carbon strips to the top edge of the fuselage starting at the base of the vertical stabilizer and the other to the bottom edge of the fuselage starting ¼" ahead of the rudder hinge line. Trim off the excess with a cut off wheel. (Hint; supporting the fuselage vertically as shown below makes this an easy task)

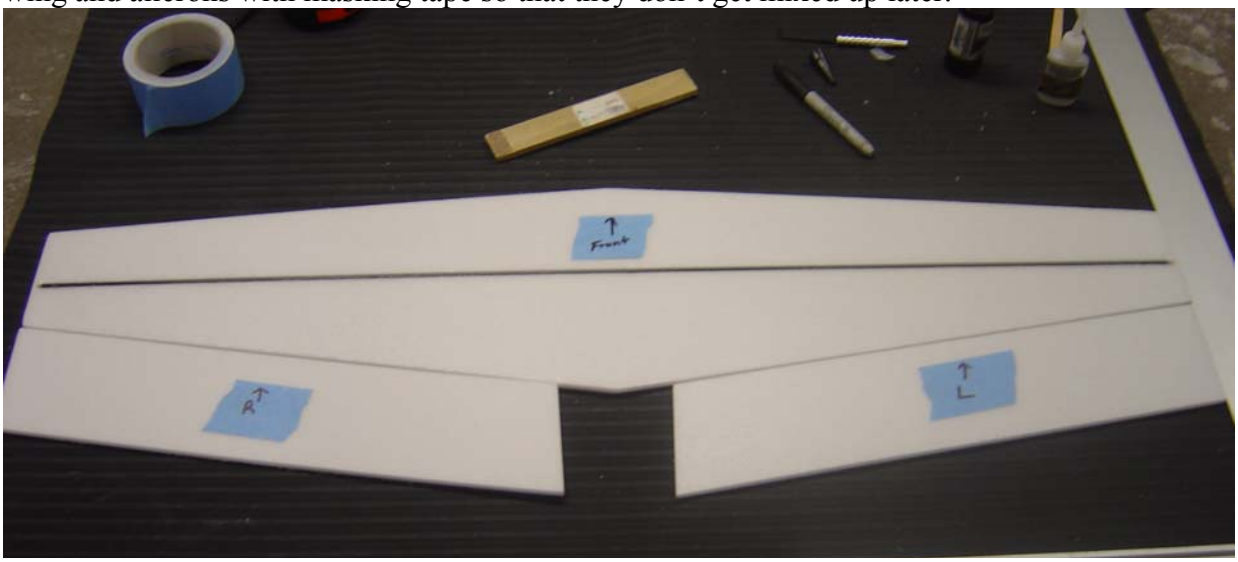
6) **<u>Prepare main wing and horizontal stabilizer</u>**. Place the wing on a flat surface making sure that the side with the groove is up. Find the 3/16" X 36" carbon fiber wing tube. Clean the groove in the wing so that the 3/16" tube fits nearly flush with the bottom of the wing. (<u>Hint</u>; the 3/16" tube can be used to clean the debris from the groove). Now glue the wing spar into the groove in the wing using the Abell Hobby Super Gold + and Insta Set.

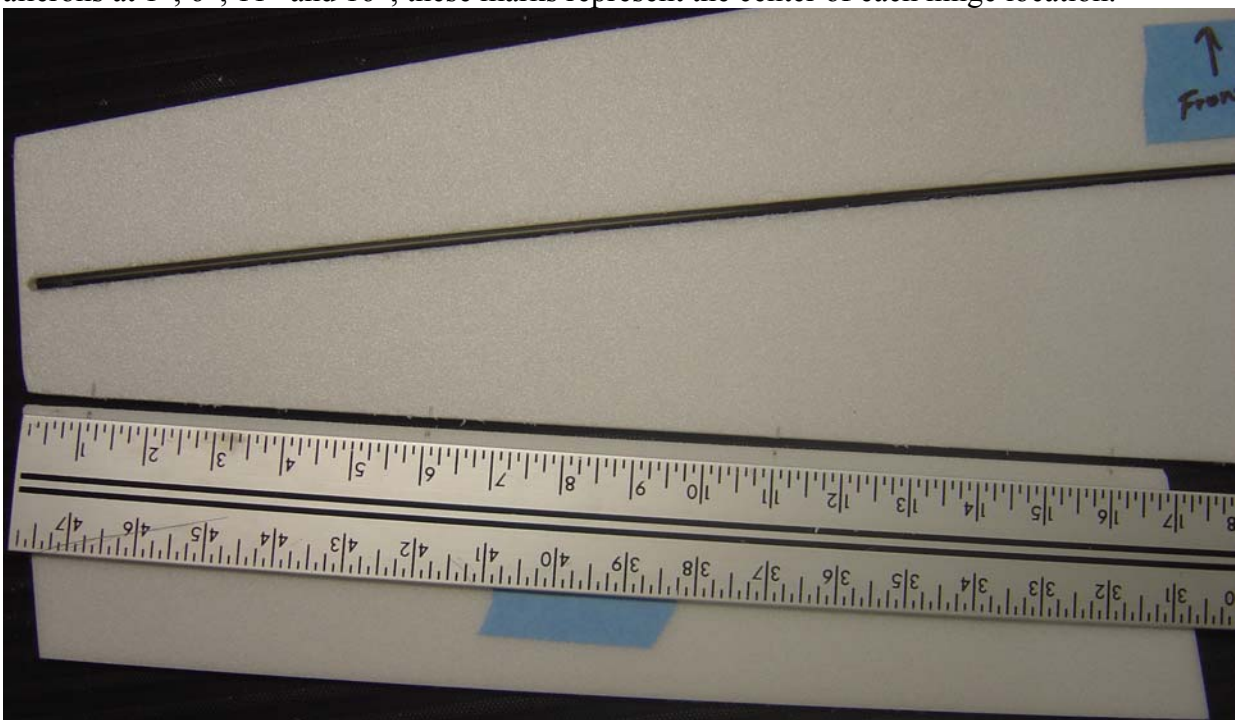



Next find the Ailerons and position them with the wings as shown. (<u>Hint</u>; the rear of the wing is the edge that is closest to the wing spar at the end of the wing. Also make sure that the end of

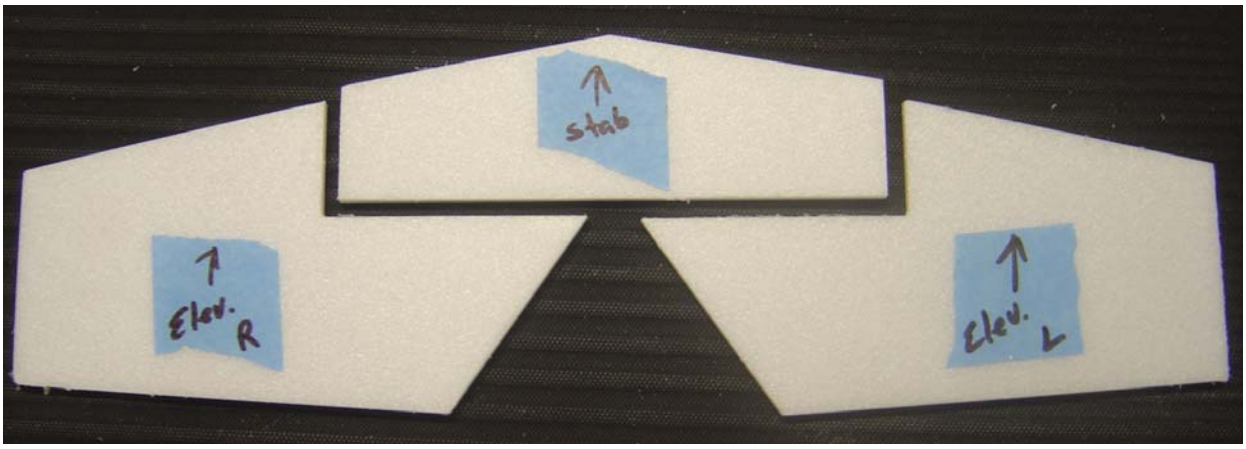
the ailerons forms a straight line with each wing tip.) It is helpful to mark the bottoms of the wing and ailerons with masking tape so that they don't get mixed up later.



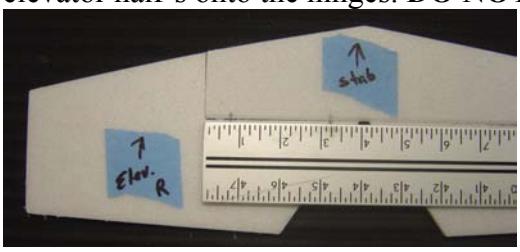
Now bevel the leading edge of each aileron using the beveling tool. Do not bevel the wing! Now mark your hinge locations. Measuring from each wing tip make a mark on the wing and ailerons at 1", 6", 11" and 16", these marks represent the center of each hinge location.

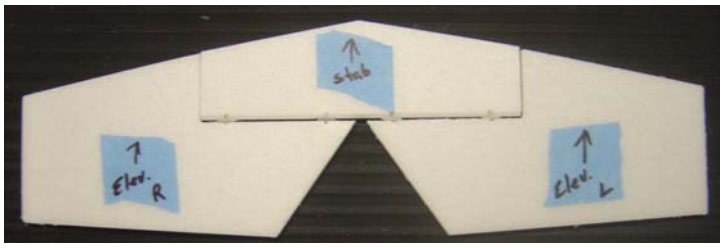


Cut the hinge slots into the leading edge of each aileron and the trailing edges of the main wing. Temporarily install the hinges into the wing and the ailerons onto the hinges. **DO NOT GLUE!**

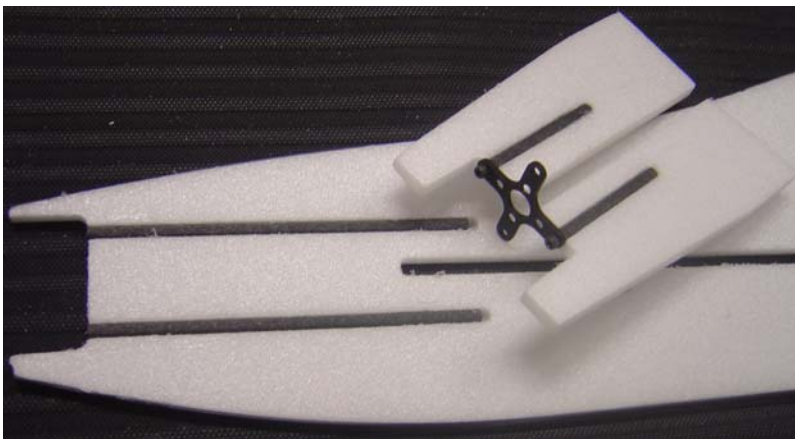


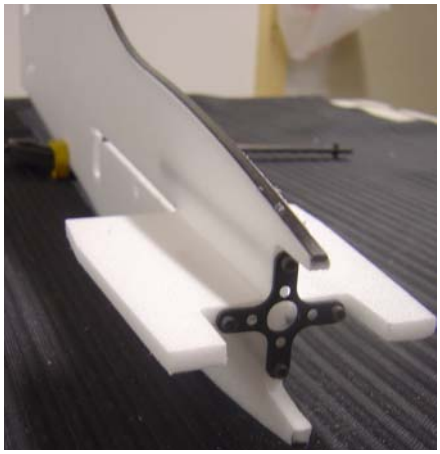
Locate the horizontal stabilizer and two elevator half's. Bevel the trailing edge of the horizontal stabilizer with the beveling tool. Mark the bottom of each component with masking tape as shown to avoid confusion later on. Measuring from each end of the horizontal stabilizer mark the center of the hinge locations at ¾" and 3 ¼" on both elevator half's and the horizontal stabilizer. Cut the hinge slots and temporarily install the hinges into the horizontal stabilizer and then the elevator half's onto the hinges. **DO NOT GLUE**!





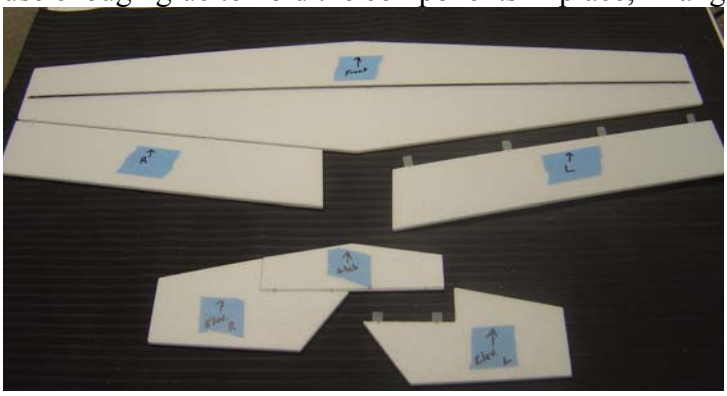
7) **<u>Assemble components</u>**. Locate the + shaped motor mount that is included with the Scanner RC 3213–1250 Brushless Motor. Attach the fuselage sides to the motor mount as shown below. Then attach the front motor mount assembly to the fuselage. **DO NOT GLUE**!





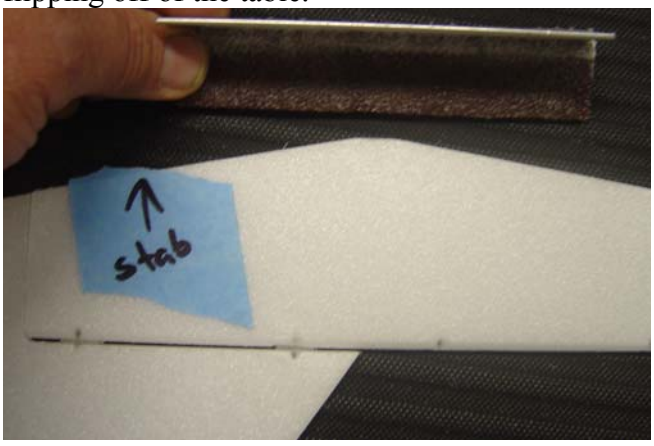
Now place the wing assembly and horizontal stabilizer assembly on your work surface. Remove the left aileron, left stabilizer and hinges. Slide the main wing into the fuselage. Position the wing so that it is centered and square to the fuselage making sure that the front of the wing is making full contact with the fuselage side pieces and that the side pieces are making full contact

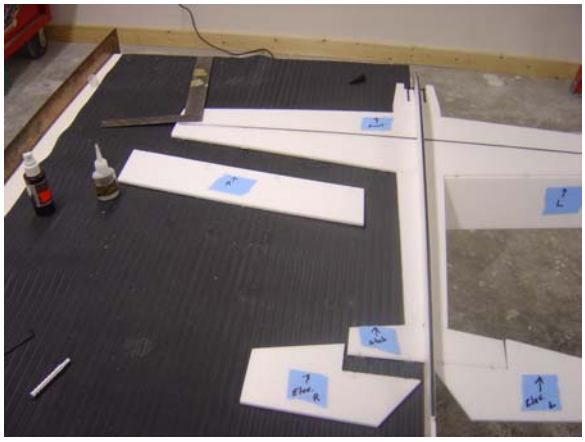
with the fuselage. Once you are certain that the wing is positioned correctly apply a small amount of Abell Hobby Super Gold + to the points where the front and rear of the wing meet the fuselage and then where the fuselage sides meet the wing and again where the fuselage sides meet the fuselage. Then spray the glue joints with Abell Hobby Insta Set Accelerator. (Hint; only use enough glue to hold the components in place, final gluing will be done in a later step)




Slide the horizontal stabilizer into the fuselage. Now place the wing and fuselage assembly on your work surface so that the wing and horizontal stabilizer are flat on the surface and the fuselage hangs over the edge as shown. Find the center fuselage side pieces and lightly glue in place making sure that they are properly aligned with the wing and stabilizer. (Hint; slide the assembly towards the edge of your work surface so that the fuselage makes contact with it. This will help hold the fuselage straight and support the side pieces during installation.) Now position the horizontal stabilizer so that it makes contact with the fuselage side pieces and is centered and square to the fuselage. Lightly glue into place using just enough glue to hold the pieces in place, final gluing will be done later. (Hint; if the horizontal stabilizer will not slide far enough forward to make good contact with the fuselage side pieces it may be necessary to sand off the point on the front of the stabilizer flat.)

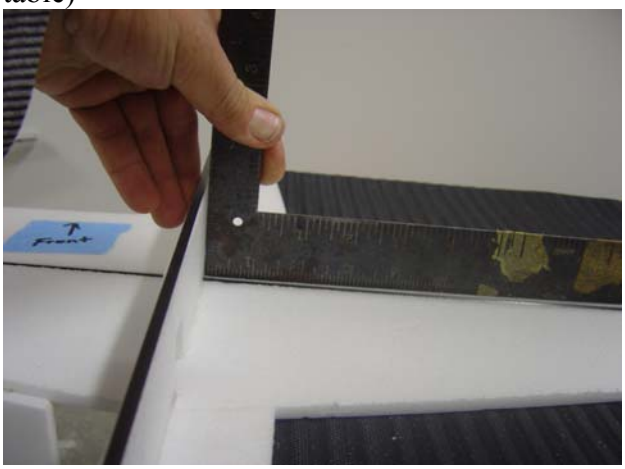
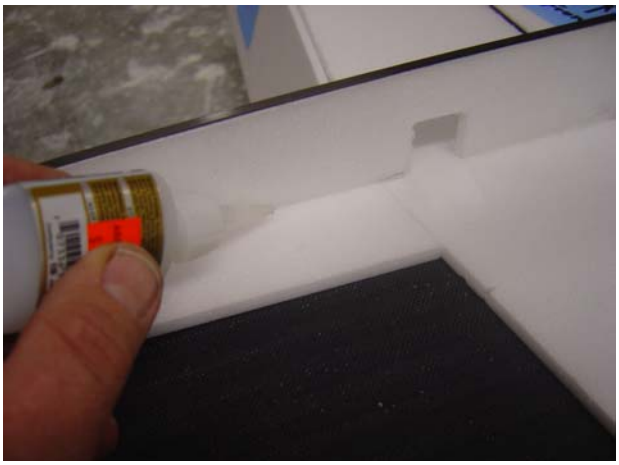
(Hint; make sure to place some sort of weight on the wing tip to keep your AF37 V2 from flipping off of the table.



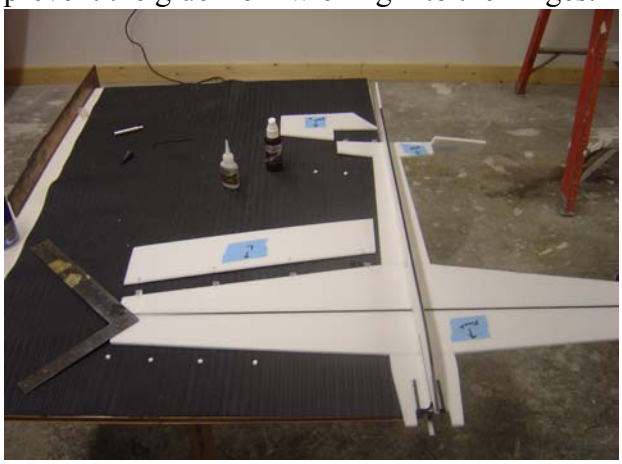
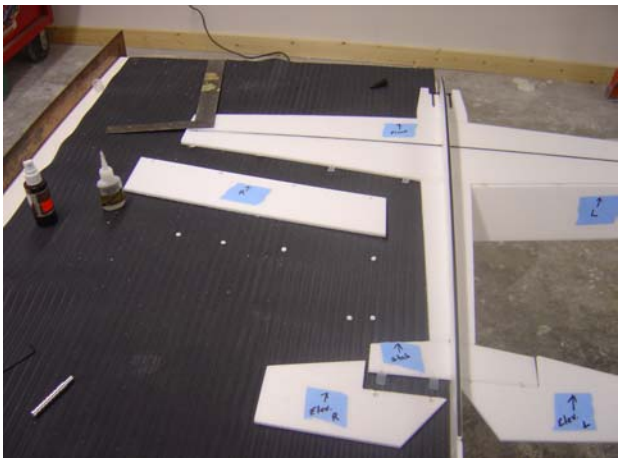


Now re install the hinges, aileron and elevator. **DO NOT GLUE**! Now look at the entire airframe very closely checking for proper alignment of all components. Make sure that the wing and horizontal stabilizer are square to the fuselage both laterally and horizontally. Also look down the fuselage from front to back to see if the wing lines up with the horizontal stabilizer. Make any adjustments necessary. Now you can final glue the wing and horizontal stabilizer to the fuselage on both the top and bottom side. Final glue the front and center fuselage sides to the

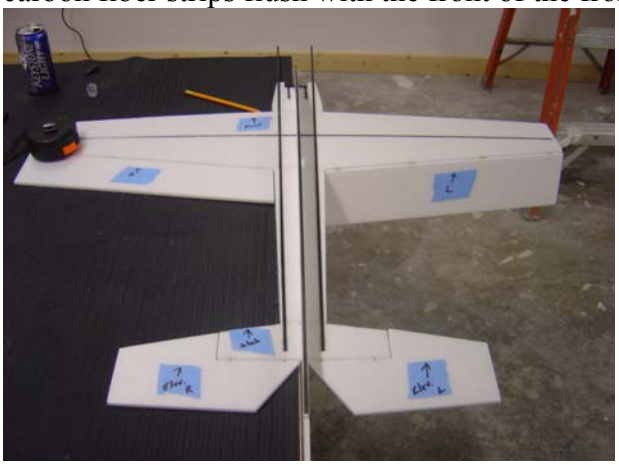
fuselage, wing and stabilizer. (Hint; when final gluing move the fuselage side away from the side of your work surface so that the glue doesn't wick through the joint and glue your plane to the table)

Bore hinge gluing holes into wing and horizontal stabilizer and glue hinges in place and spray with Insta Set. Slide ailerons and elevator half's onto hinges, bore holes and glue. **Remember** to spray the Insta Set on the glue joints and where the pivot point of the hinge meets the foam to prevent the glue from wicking into the hinges.

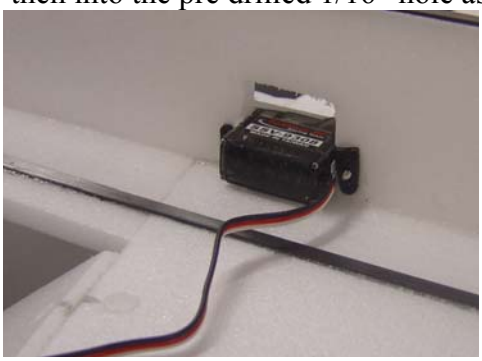



Find the two remaining flat carbon strips and glue to the bottom of the fuselage sides, wing and horizontal stabilizer as shown starting ½" ahead of the elevator hinge line. Cut off the excess carbon fiber strips flush with the front of the front fuselage sides and save.

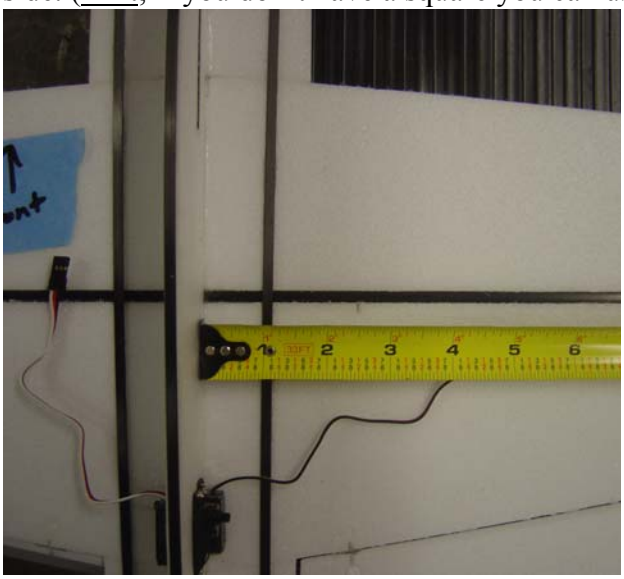


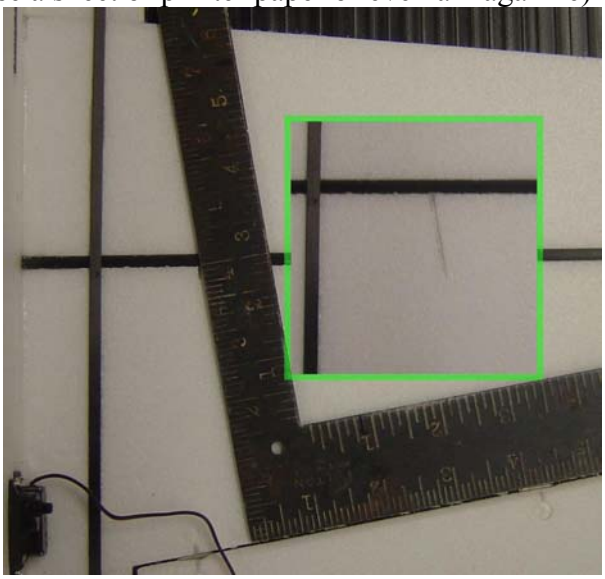

Use the cut off flat carbon strips for elevator joiners. Glue one strip on the top and one on the bottom. The edge of the carbon fiber strip should be flush with the leading edge of the elevator half's.

8) **<u>SERVO AND CONTROL HORN INSTALATION</u>.** Slide the rudder servo into the fuselage as shown**.** Position the rudder servo so that it lays flat against the bottom of the wing and the wire lead exits the servo towards the front of the plane on the left side of the fuselage. Now slide the elevator servo into the fuselage from the opposite side so that the wire lead exits the servo towards the front of the plane on the right side of the fuselage. Fasten the servos into the fuselage with the screws that came with your servos and a plastic blind nut. (<u>Hint</u>; plastic blind nuts can be made from the small servo arm that came with the servo by cutting off the ends and drilling the center hole of each end with a 1/16" drill bit, drive each screw through the foam and then into the pre drilled 1/16" hole as shown below)

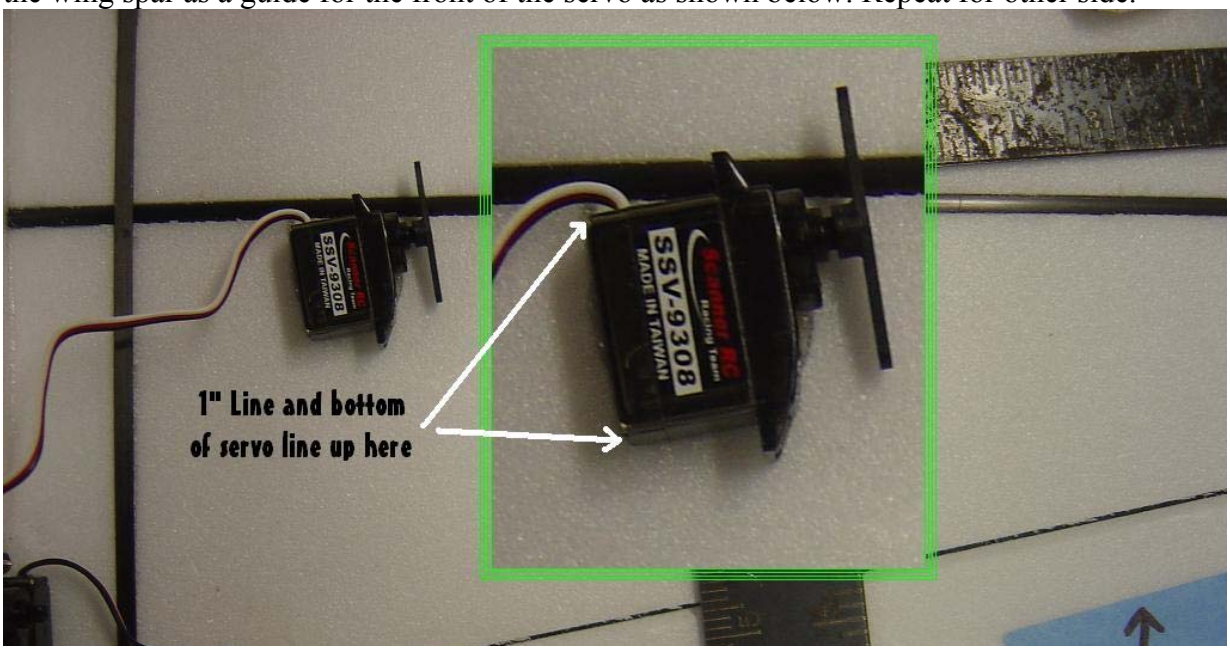


Next is plotting the position of the aileron servos. First you will need to make a mark on the bottom of the wing 2 ½" away from the fuselage just behind the wings spar. Place a square on the bottom of the wing so that one edge lines up with the aileron hinge line and the other edge lines up with the mark on the bottom of the wing. Using the edge of the square as your guide, draw a 1" line starting from the mark and stopping 1" behind the wing spar. Repeat for other side. (Hint; if you don't have a square you can use a sheet of printer paper or even a magazine)

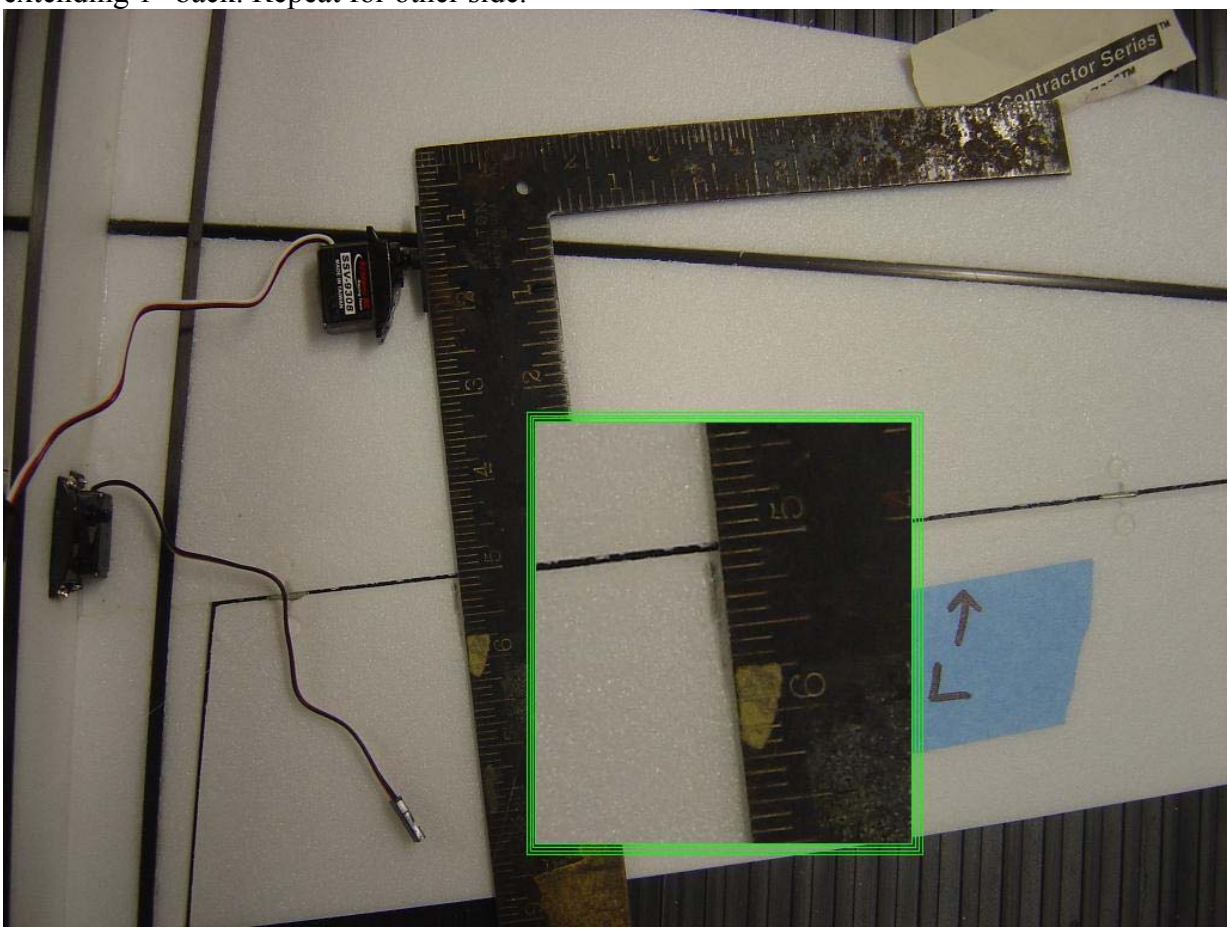




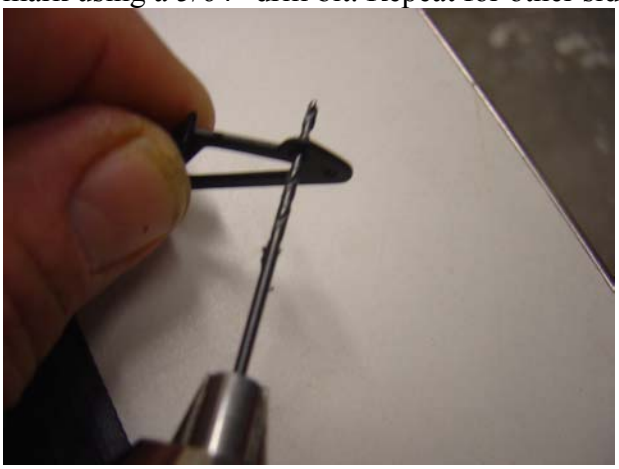
Lightly sand one side of one of the aileron servos with sand paper then lightly sand the opposite side of the second servo. Hot glue is used to attach the servos to the wing, ***do not*** apply the hot glue directly on the foam. Apply the hot glue to the sanded side of the servos and then place the servo into position on the wing using the 1" line as a guide for the bottom edge of the servo and the wing spar as a guide for the front of the servo as shown below. Repeat for other side.

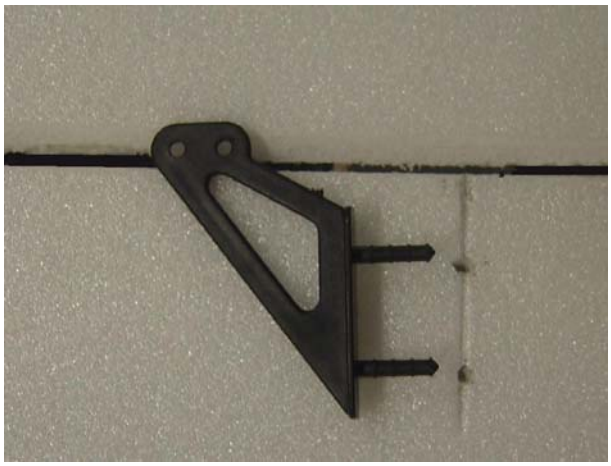


Now place the square on the wing so that it lines up with the servo arm and extends over the aileron and draw a 1” line on the aileron starting at the leading edge of the aileron and extending 1” back. Repeat for other side.

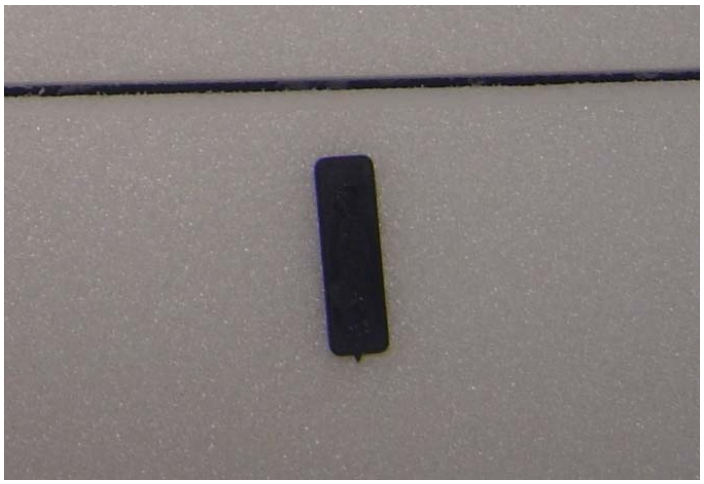


Now locate the four control horns and drill the two holes with a 1/16” drill bit. Measuring from the leading edge of the aileron make a mark on the line at 7/16” and 7/8” then drill a hole at each mark using a 5/64” drill bit. Repeat for other side.

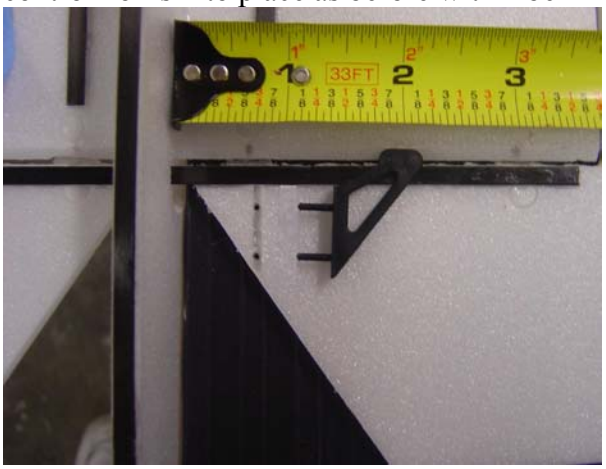


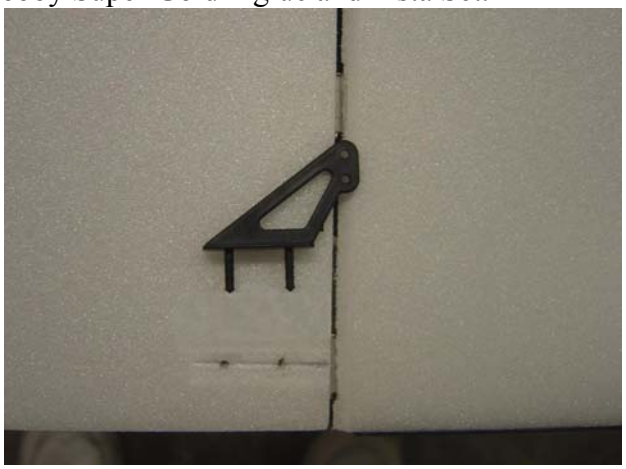


Test fit the control horns making sure that the pegs fit into the predrilled holes. Remove the control horns and apply Abell Hobby Super Gold + glue to the area that the control horns will contact and reinstall the control horns. Apply Abell Hobby Super Gold + glue to the control horn clip and push the clip onto the control horn pegs on the opposite side of the ailerons and spray Abell Hobby Insta Set to cure the glue.

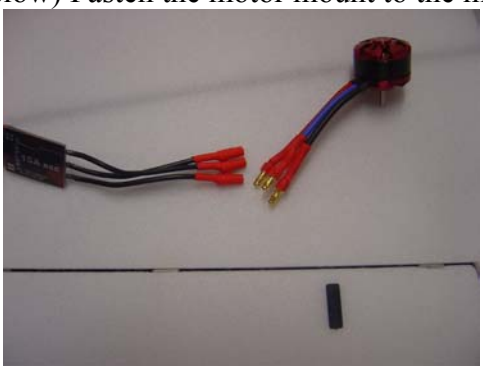


Draw a 1” line 3/4” away from the fuselage on the bottom of the left elevator half. Make a mark on the line 7/16” and 7/8” back from the leading edge of the elevator and drill the marks with a 5/64” drill bit. Draw a 1” line on the right side of the rudder ½” away from the bottom of the rudder. Make a mark on the line at 7/16” and 7/8” and drill the marks with a 5/64” drill bit. (**Note**; the 5/64” holes are drilled through the foam and the hinge in the control surface) Glue the control horns into place as before with Abell Hobby Super Gold + glue and Insta Set.

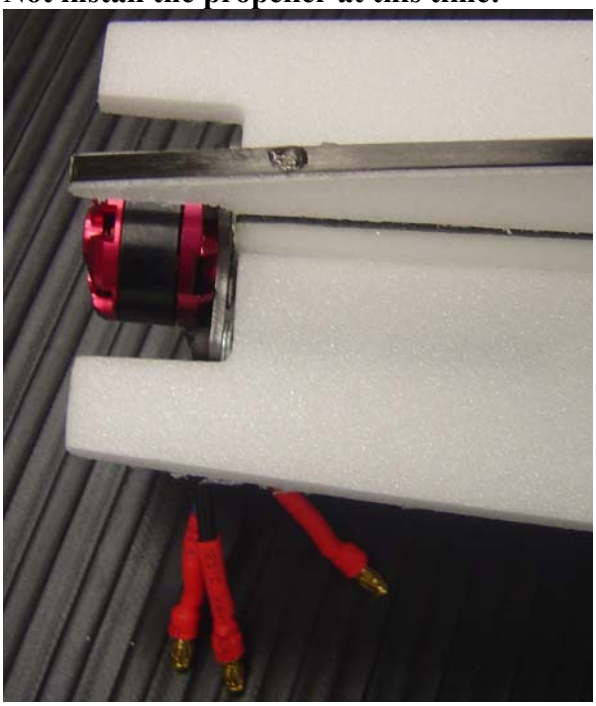
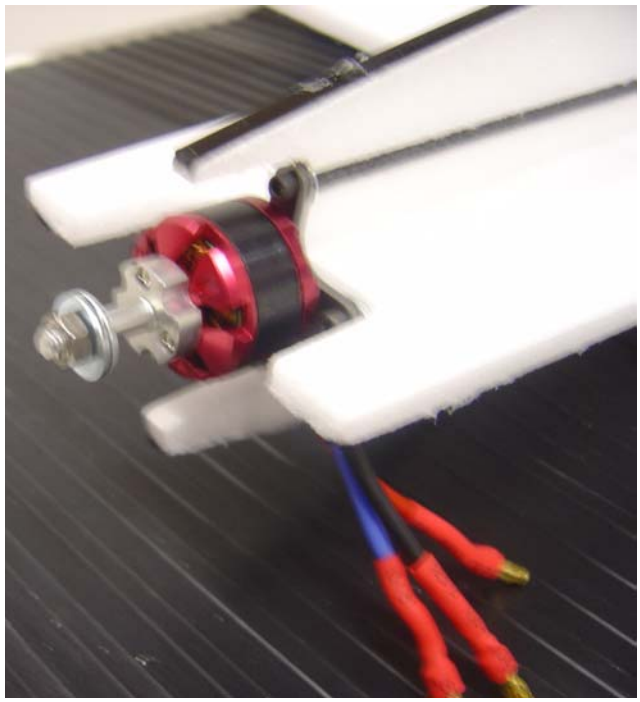




9) **<u>Motor, Speed Controller & Receiver Installation</u>**. Using the center of the motor mount as guide, remove the foam ½" deep into the fuselage center. (<u>Hint</u>; foam can be cut out with a rotary tool, knife or even melted away with a soldering iron) Remove motor mount from fuselage. Solder the male bullet connectors to the three motor leads and the female bullet connectors to the three motor leads on the Scanner RC 15 amp speed controller, then the male Deans connecter to the two power supply leads on the speed controller. **NOTE!** Make sure that the polarity is correct (see diagram below) Fasten the motor mount to the motor.

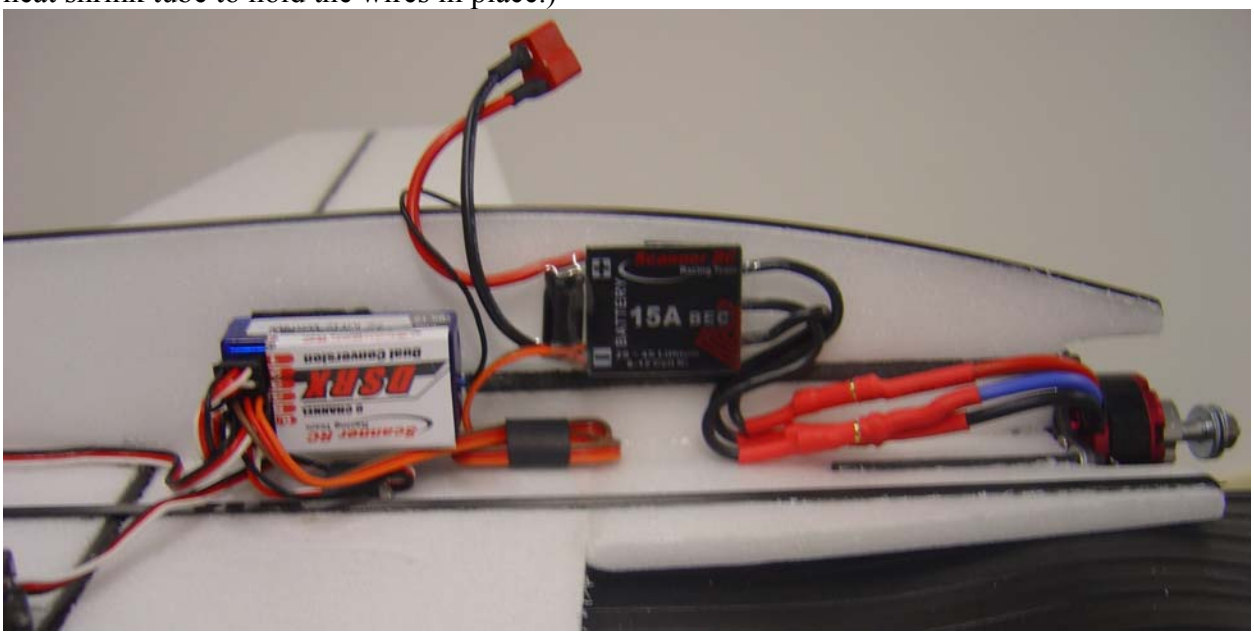




Install motor onto the fuselage so that the motor wires are on the bottom left of the fuselage. **Note!** Install the four provided #4 flat washers as follows to achieve the proper right thrust. Two of the washers go on the left motor mount screw between the motor mount and motor mount spar, one washer on the top and bottom screws between the motor mount and motor mount spar and no washers on the right motor mount screw. Install prop adapter onto motor as shown. **Do Not install the propeller at this time!**

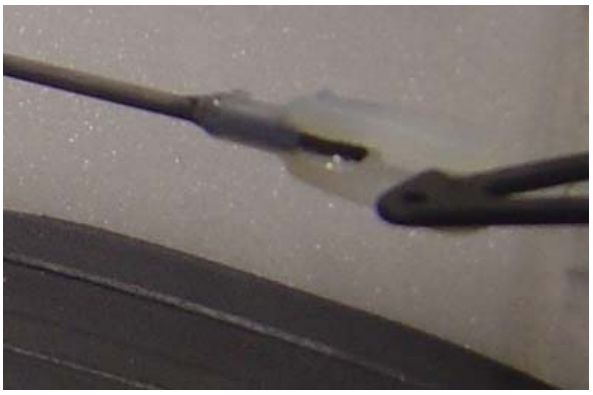



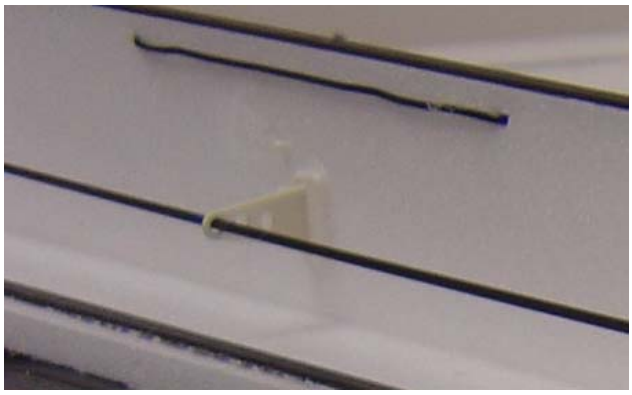
Now connect the servos to the receiver. (**Note**; if you are not using a computer radio you will need 1 short Y adapter so that you can connect the two aileron servos into the aileron channel on your receiver) Route the servo wires neatly and determine the best location to mount the receiver so that all four servos and the speed controller connecters can easily reach and plug into the

receiver. Fasten the receiver to the fuselage with the provided 3m Hook & Loop. Mount the speed controller to the fuselage in the same way. See the pictures below. (Hint; use the large heat shrink tube to hold the wires in place.)



10) **Pushrods and Linkage**. Now turn on your transmitter and connect your battery to the speed controller. Now check to make sure that all of the servos are running the correct direction (make adjustments to servo rotation direction if necessary) set all trims and sub trims to "0" and install the servo arms onto the servos making sure that they are centered (use your sub trims to help center the servo arm). (**Note**; verify that the motor is turning in the correct direction, if it is not, reverse any two of the three wires that connect the motor to the speed controller) Next find the 8 nylon clevis's and install them onto the servo arms and control horns. Position the rudder, elevator and ailerons so that they are in their neutral position (0 degrees deflection) and secure with masking tape. Determine pushrod lengths by measuring from the clevis on the servo arm to the clevis on the corresponding control horn. Cut pushrods from the small carbon fiber rod. **(Note!** The Carbon Fiber pushrods should be long enough so they protrude 1/8" into the center of each clevis.) . Install the white pushrod guides onto the elevator and rudder pushrods (**Note**; Pushrod should go through the outer hole of the pushrod guide) Install the pushrods into the clevises for each control surface.





Once you are certain that the servo arm is centered and the control surface is centered, apply two drops of Abell Hobby Super Gold + to the pushrod where it enters the clevis and also the point

where the pushrod protrudes into the center of the clevis. Allow the glue to set about a minute so that it can wick into the joint then spray the glue joint with Abell Hobby Insta Set accelerator. Glue the pushrod guides into position (**Note**; Pushrod guides should be positioned in the center of the rudder and elevator pushrods. They should also be in a position that allows the pushrod to be as straight as possible.

Install your decals as you see fit. It is not necessary to use all of the decals that are provided. Remember, decals are heavy.

11) **<u>Final set up</u>**. Set all throws for 20 degrees of deflection in both directions for intermediate pilots. For advanced 3D pilots set throws for 40 to 45 degrees in both directions. The balance point for the Adrenaline 3D is ¼" to 1 ¼" behind the wing spar. Use battery position to achieve proper balance. Once you have determined the battery position, use the provided 3M Hook & Loop to secure the battery to the side of the fuselage on the opposite side of the receiver and speed controller. Install the 9 x 4.7 SF APC prop and FLY!!