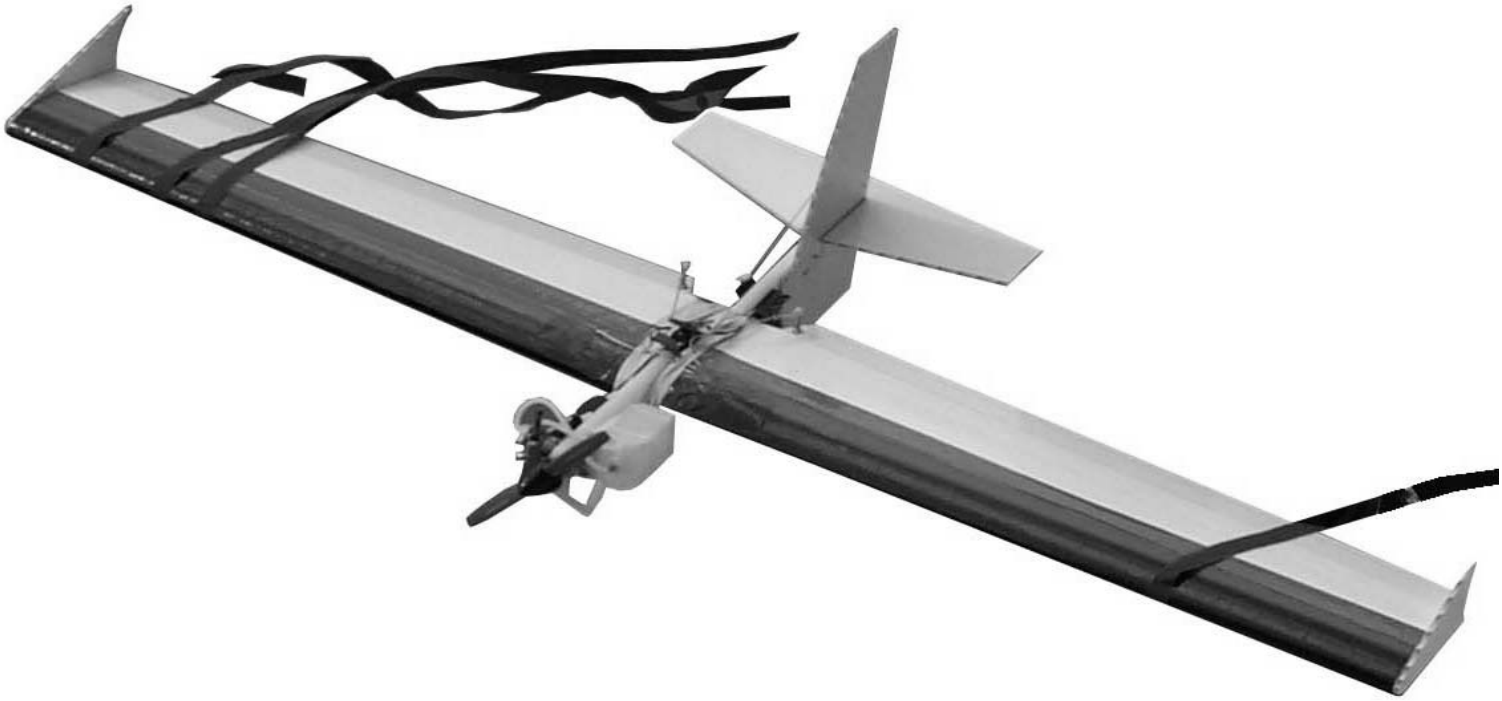
Ripper



Combat plane for SSC and Open A .15 engines

Lanier R/C Inc.
P.O. Box 458
Oakwood, GA. 30566
Phone 770 532 6401
Fax 770 532 2163

Important information:

Please inspect the plane before beginning to assemble to make sure you are happy with it. After assembly has begun you cannot return the kit. If you find a problem before beginning to assemble the plane you must contact us, please do not return to the dealer.Lanier R/C is proud of the care and attention that goes into the manufacture of parts for its model kits. The company warrants that for a period of 30 days, it will replace, at the buyers request, any parts or material shown to the company's satisfaction to have been defective in workmanship or material at the time of purchase.

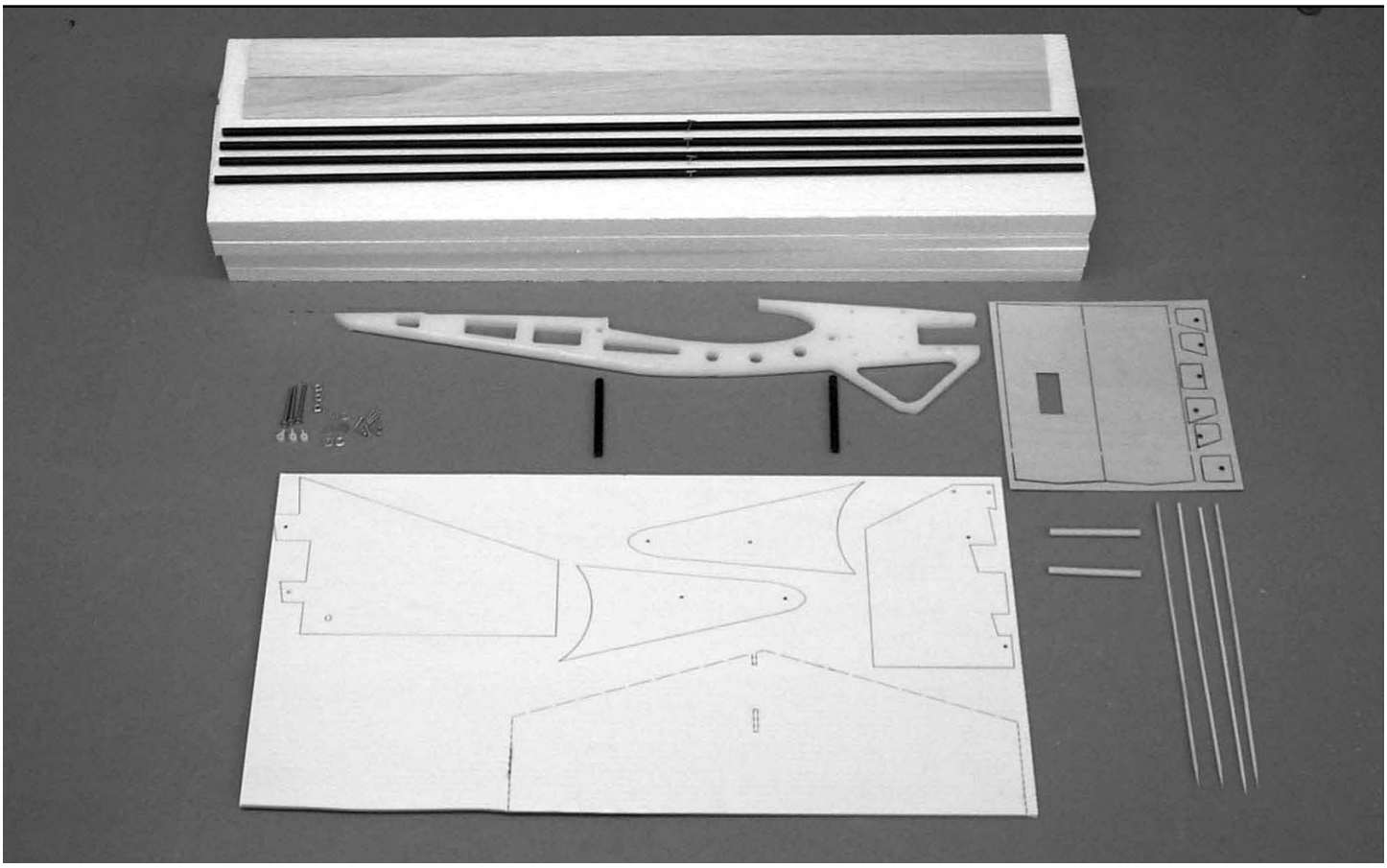
No other warranty of any kind, expressed or implied, is made with respect to the merchandise sold by the company. The buyer acknowledges and understands that he is purchasing only a component kit from which the buyer will himself construct a finished flying model airplane. The company is neither the manufacturer of such a flying model airplane, nor a seller of it. The buyer hereby assumes the risk and all liability for personal or property damage or injury arising out of the buyers use of the components or the finished flying model airplane, whenever any such damage or injury shall occur.

Any action brought forth against the company, based on the breach of the contract of sale to the buyer, or on any alleged warranty there under, must be brought within 1year of the date of such sale, or there after be barred. This one year limitation is imposed by agreement of the parties as permitted by the laws of the state of Georgia.

Introduction

Thank you for purchasing the Lanier R/C Ripper Combat Plane. We believe we have one of the best combat designs for SSC available. It is very fast to build, will come in at or below the minimum weight, and be very sturdy in combat. The flight characteristic of the plane allow you to be very aggressive because you can concentrate on your opponent and not on keeping the plane in the air. The roll rate is very quick, allowing you to quickly change from one knife edge to the other and be on your opponent very quickly. So get on with construction and go get some streamers.

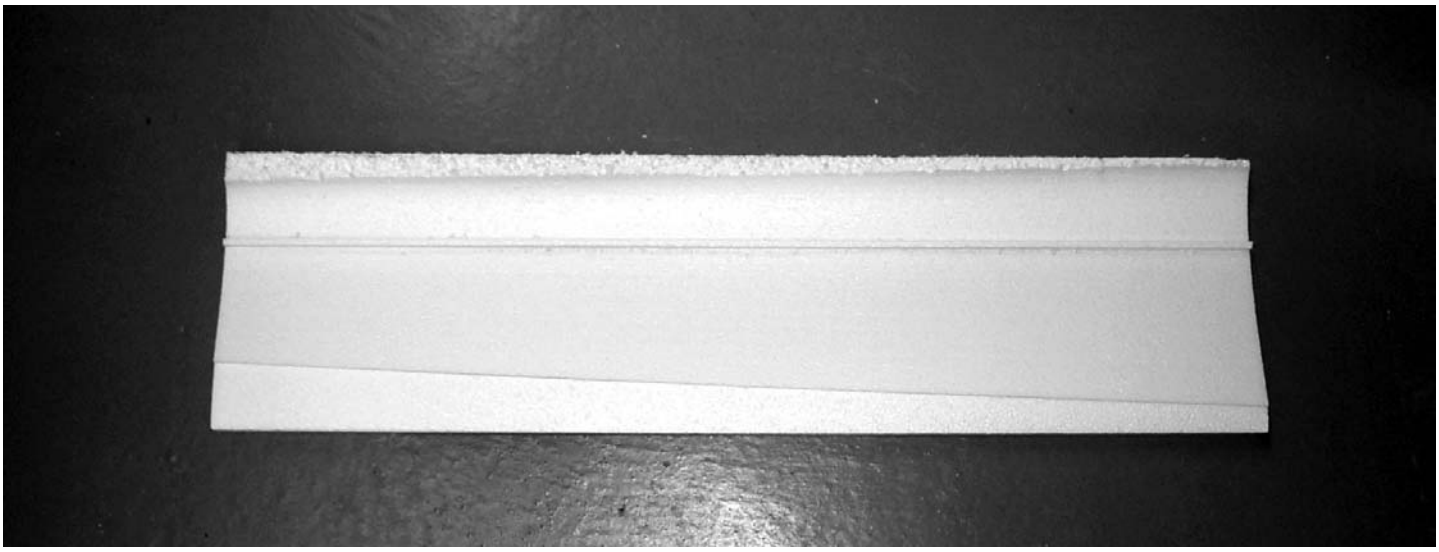
To stay under the weight limit of 2.5 lbs. on open A you may need to omit the leading edge reinforcements. Depending on servos and battery pack used it may be over 2.5 lbs. For SSC there is no problem since you must be over 2.5 and the plane will come in under that if built with light equipment.



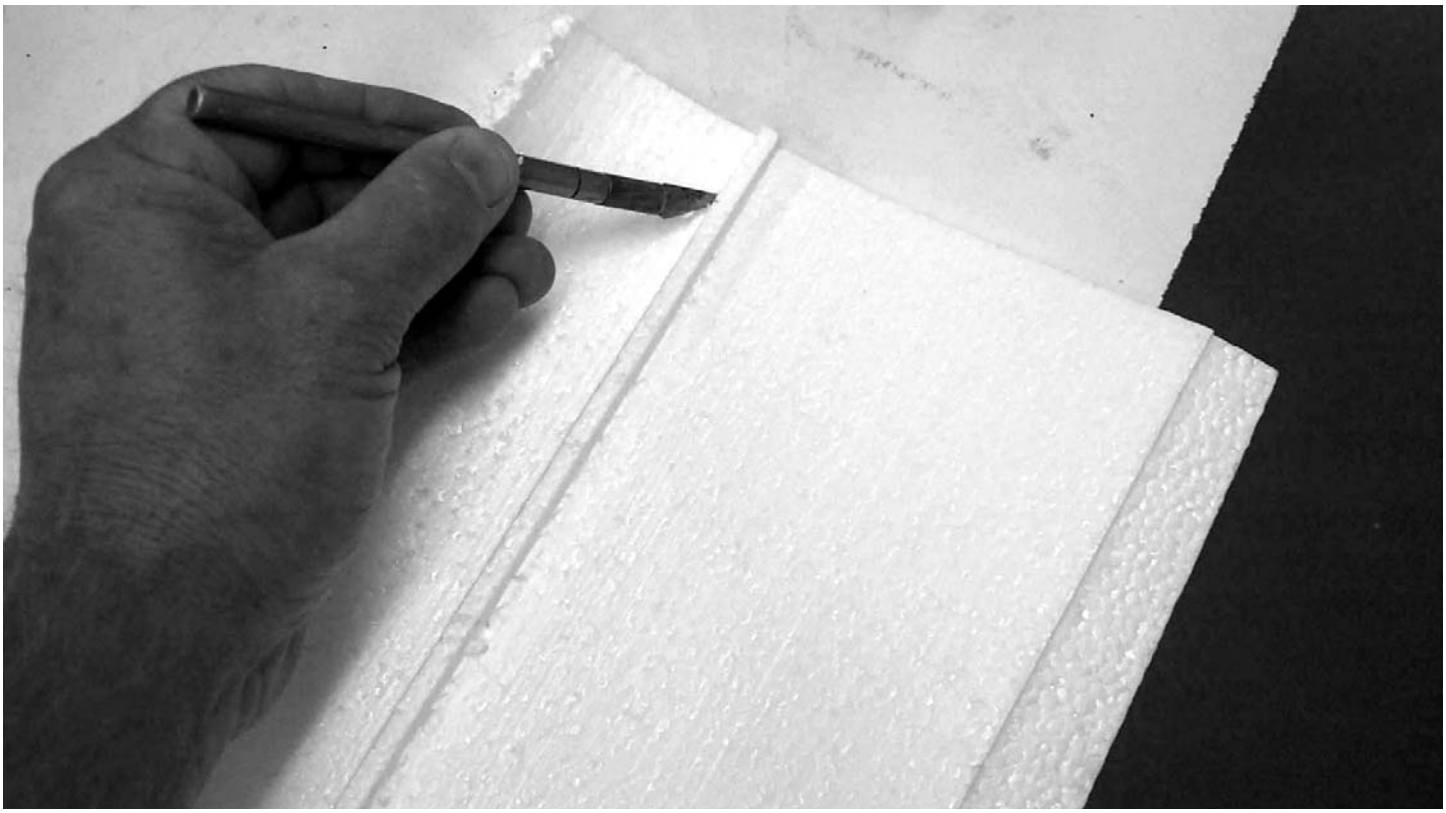
Parts list

1. Wing panels 2
2. Epoxy glass spars 4
3. Balsa Ailerons 2
4. HDPE fuselage 1
5. epoxy glass wing dowels 2
6. Coroplast component sheet 1
7. Hardwood spar joiners 2
8. 1/32" Plywood doublers 1
9. bamboo skewers 4
10. 2-56 threaded pushrods 4
11. 2-56 Golden clevises 4
12. 2-56 jam nuts 4
13. Golden clevis retainer clips 4
14. nylon snap-r-keepers 4
15. 6-32X1-1/2" bolts 3
16 6-32 nuts 3
17. #6 Flat washers 6
18. Nylon pushrod fittings 3
19. #2x1/2" sheet metal screws 6
20. #2x3/4" sheet metal screws 2
21. #4 flat washers 8
22. Laser cut 1/16" plywood stab reinforcement 1
23. Vacuum formed leading edges 2
24. 1/8" lite ply laser cut trail ing edge reinforcement.
25. 1/32"x12" plYwood trailing edge

Wing



Begin construction with the wing. Remove the wing panels from their cores and lay aside. All work on the wing panels should be done with the wings laying in the cores so as not to warp them. Using a knife or saw blade, split the cores down the leading edge so you have a top and bottom half.

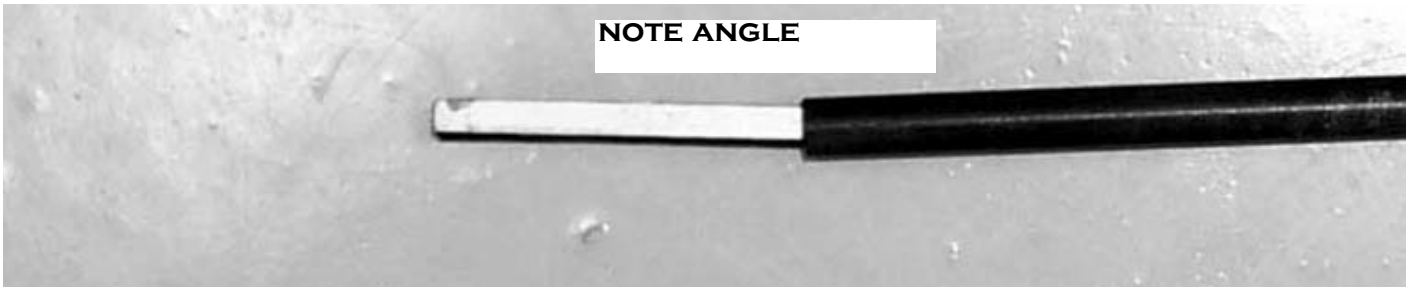


Using a knife, remove the foam left from cutting the spar slot in the wing. This is so you can flip the wing over in the cores after the spars are installed.

Lay a piece of wax paper over the center of the root so the glue does not stick the panel to the core when gluing together. Mix some 5-minute epoxy and spread on the root of both wing panels. Place the panels in the cores and use masking tape to hold the panels together till the epoxy sets.

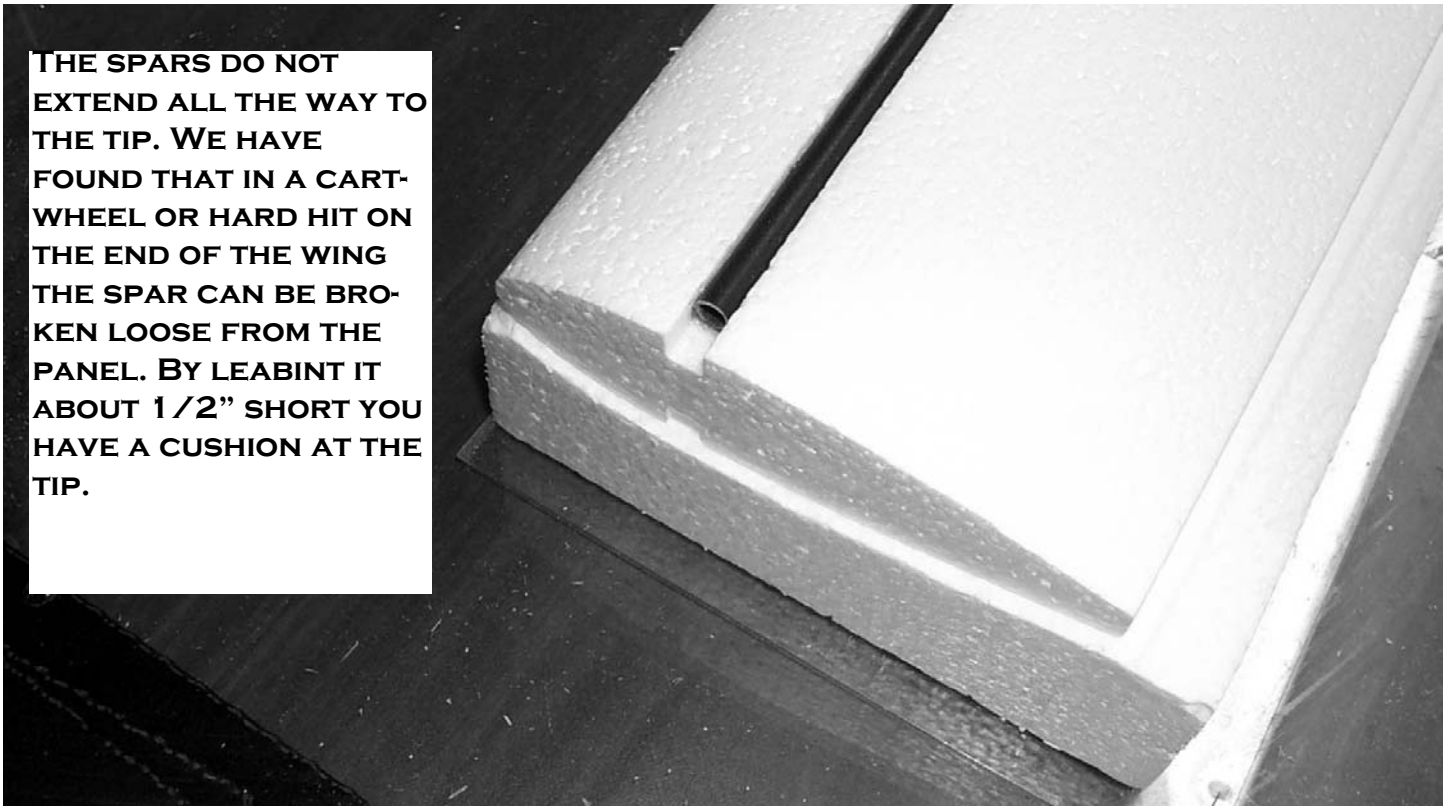
The wings are fully symmetrical so there is no left and right until you glue on the center doublers. Lay the cores on a flat surface with the roots butted together, if your table is not straight your wings will not be straight. You may have to shim one side to make sure the two halves are perfectly even with each other.

LOCATE THE FOUR EPOXY GLASS SPARS, AND THE TWO LASER CUT JOINERS. TRIAL FIT THE SPARS IN THE GROOVES. THE SPARS ARE AT A SLIGHT ANGLE,SWEPT FORWARD, SO INSTALL THE JOINER WITH THE ANGLE TOWARD THE FRONT OF THE WING.WHEN HAPPY WITH THE FIT, GLUE A JOINER IN THE END OF ONE OF THE SPARS. WE RECOMMEND USING PRO-BOND URETHANE GLUE WHICH CAN BE PURCHASED AT MOST ANY HARDWARE STORE OR BUILDING SUPPLY SUCH AS HOME DEPOT OR LOWES. ANOTHER NAME IS GORILLA GLUE WHICH IS THE SAME THING.



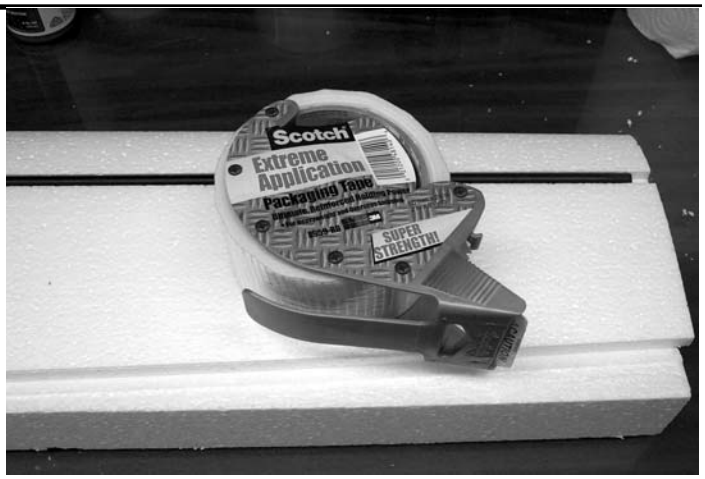
USING THE URETHANE GLUE, RUN A BEAD DOWN THE ENTIRE LENGTH OF THE SPAR SLOTS AND USE A BRUSH TO MAKE SURE IT COAT THE SIDES AND BOTTOM.

Coat the other end of the joiner and insert it into the other spar. Lay the spars in the slots and press down firmly. Remember this must be done with the panels in the cores so as not to warp them.



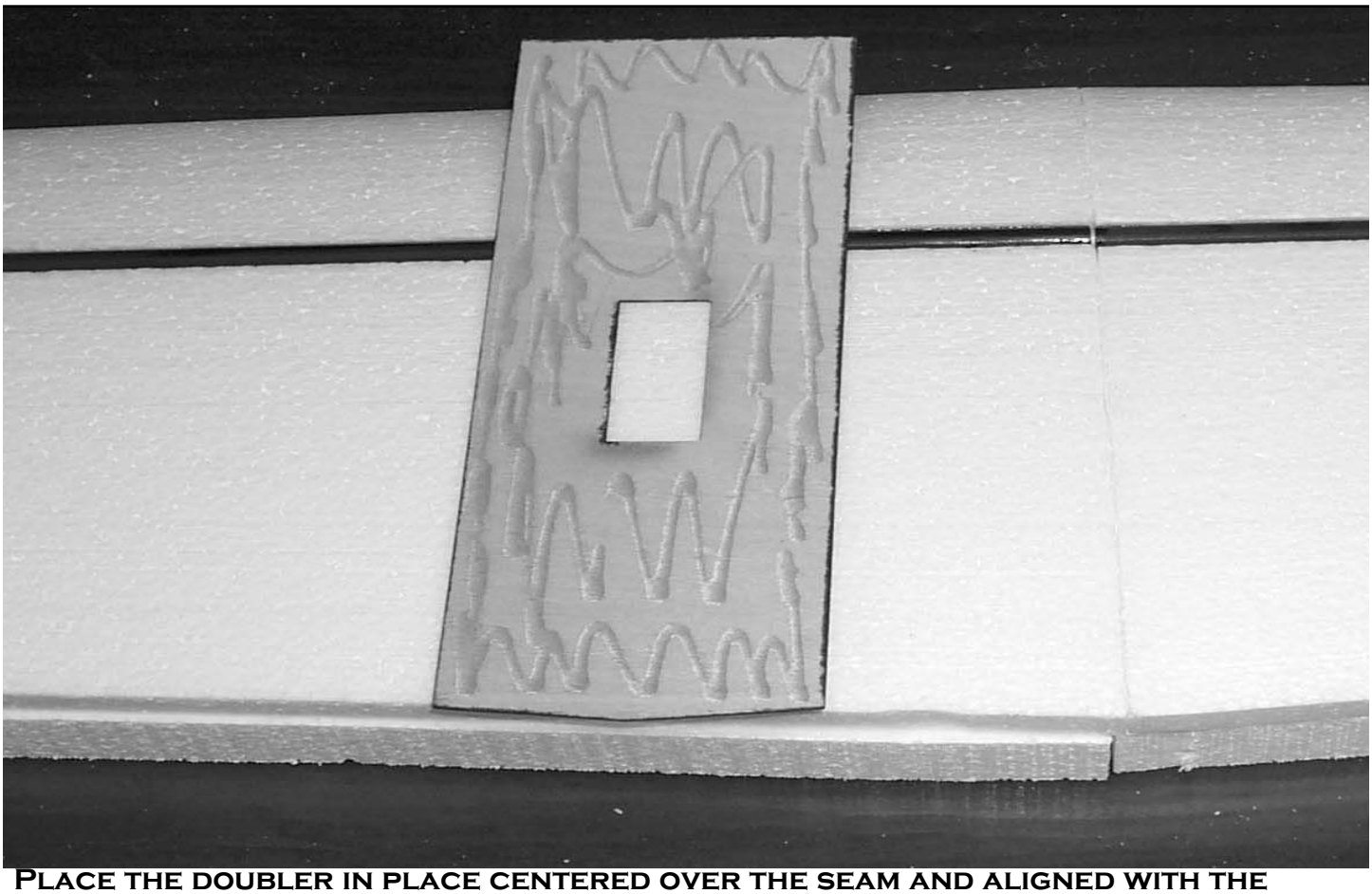
The spars do not extend all the way to the tip. We have found that in a cart-wheel or hard hit on the end of the wing the spar can be bro-ken loose from the panel. By leabint it about 1/2" short you have a cushion at the tip.

The pro-bond glue will expand when drying so you must go ahead and apply the center plywood doublers and bi-directions tape now or temporarily cover with masking tape till the glue dries The tape can be purchased at any office supply. It is a 3m product called extreme application.



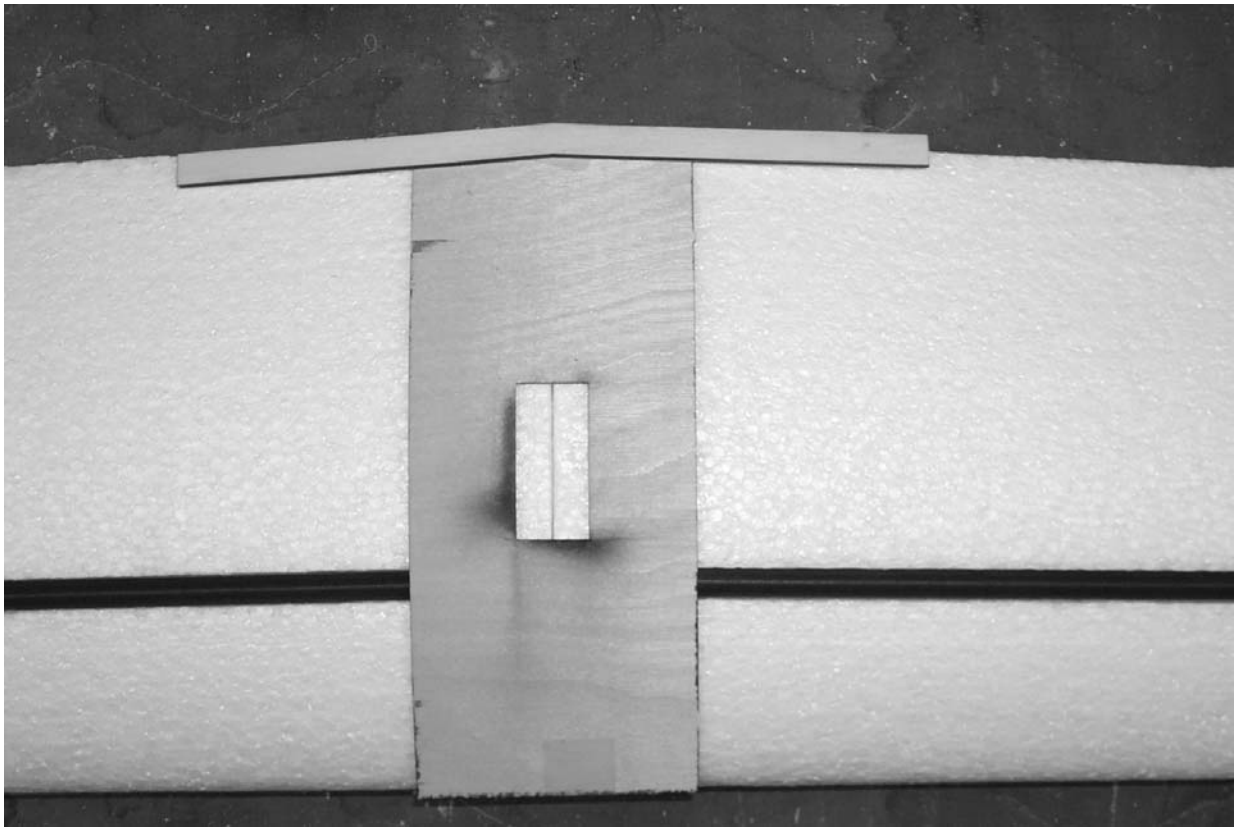
Next locate the top and bottom center section doublers. the top doubler has the servo cut out and is made of 1/32" plywood. The bottom doubler is 1/32" plywood.

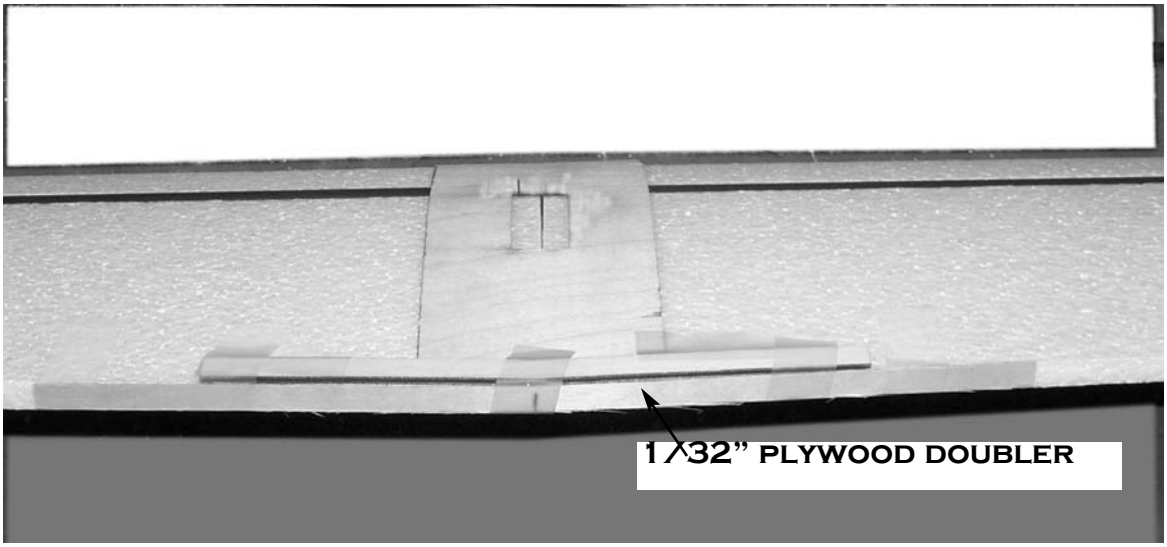
Coat both pieces with urethane or epoxy glue.Make sure to get a good coat over the spars so they will be firmly glued to the doublers.



Place the doubler in place centered over the seam and aligned with the trailing edge. Flip wing over and install the bottom doubler. Pull masking tape around the trailing edge to hold in place. Next pull the leading edge down and tape in place until the glue dries.

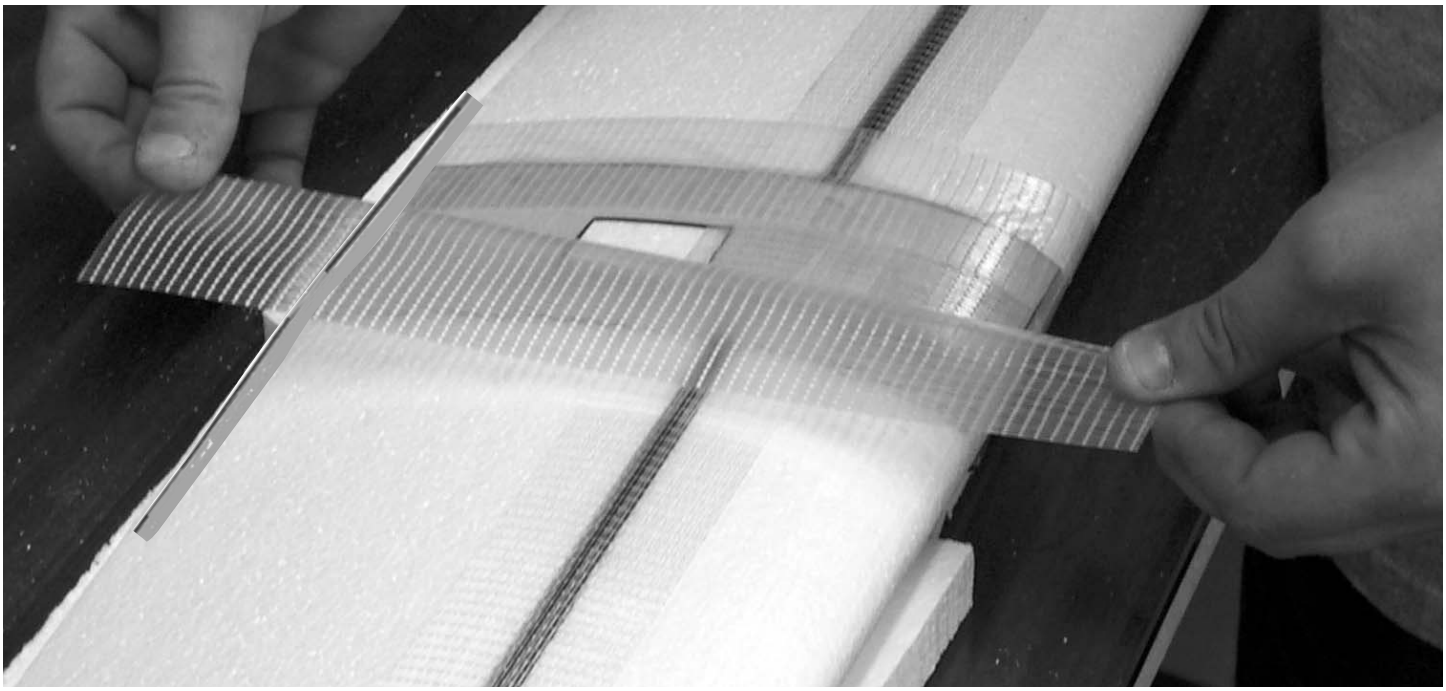
Locate the 1/8" lite ply trailing edge doubler and epoxy in place flush with the trailing edge of the wing. The angle is cut to match the angle of the trailing edge. This will prevent the rubber bands from crushing the trailing edge





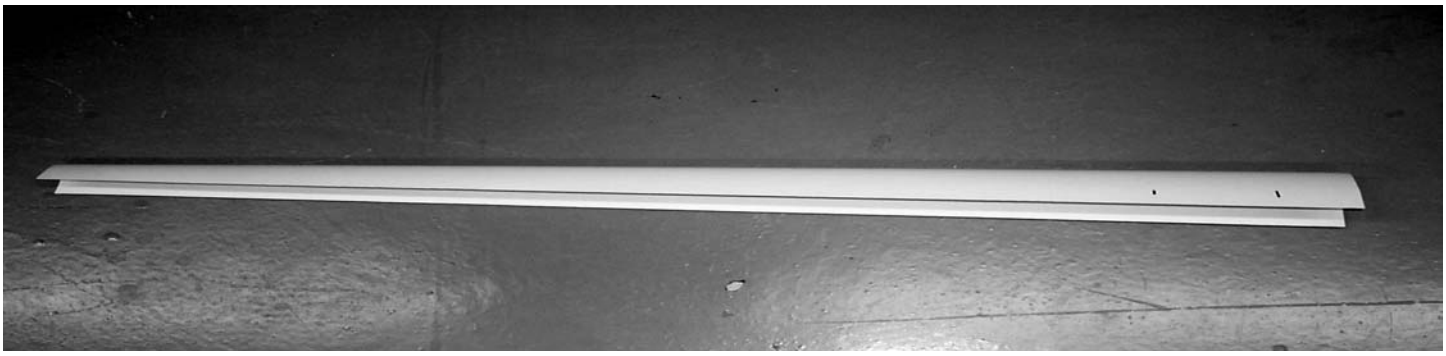
Next locate the 1/32" x 3/8" x 12" plywood strip. Make a mark in the center and and ailgn on the center line of the wing. Mark a mark at both ends and carefully sand 1/32" off the foam so the plywood will be flulsh with the trailing edge. Epoxy to the trailing edge of the wing. This piece will stop the wing from splitting from the trailing edge up to the wing spars when you hit the ground hard. All the wood should be glued directly to the foam with the tape going on top, not under the wood.

Next pull a single piece of the bi-directional tape from one wing tip to the other across the center section, center on the spar.

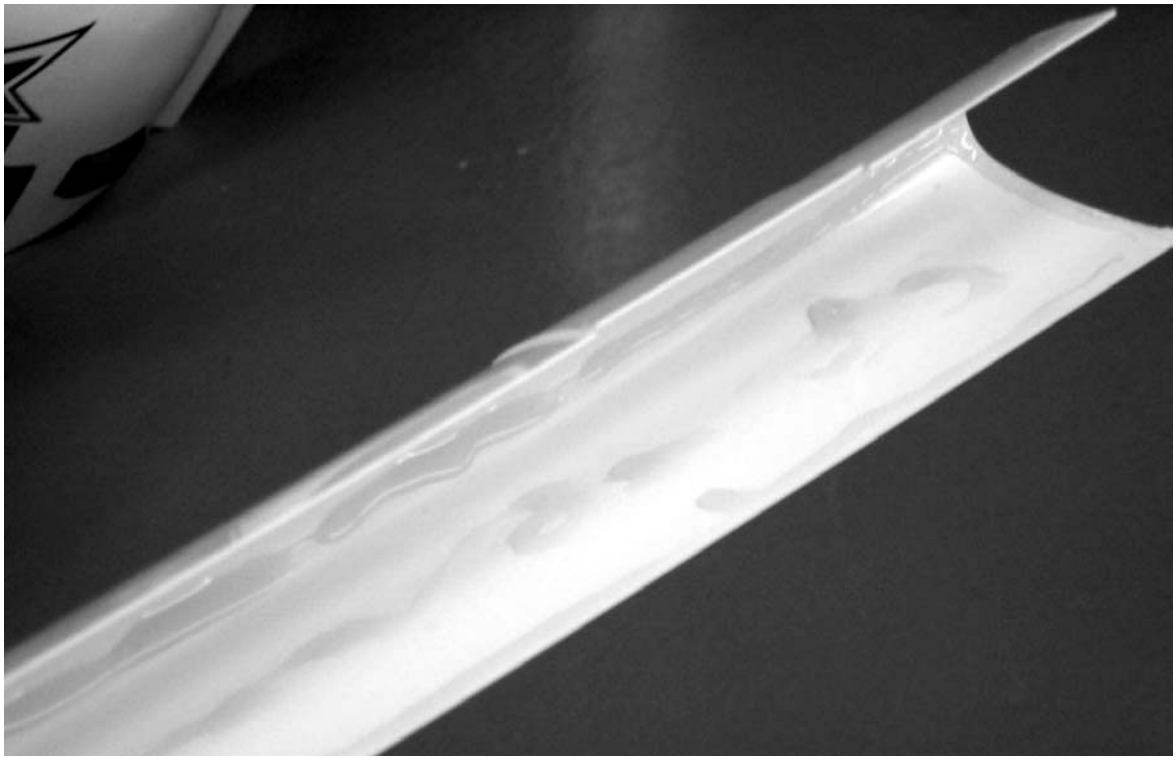


Now tape the center section from front to rear centering the tape on the edge of the plywood. Do the tapeing both top and bottom.

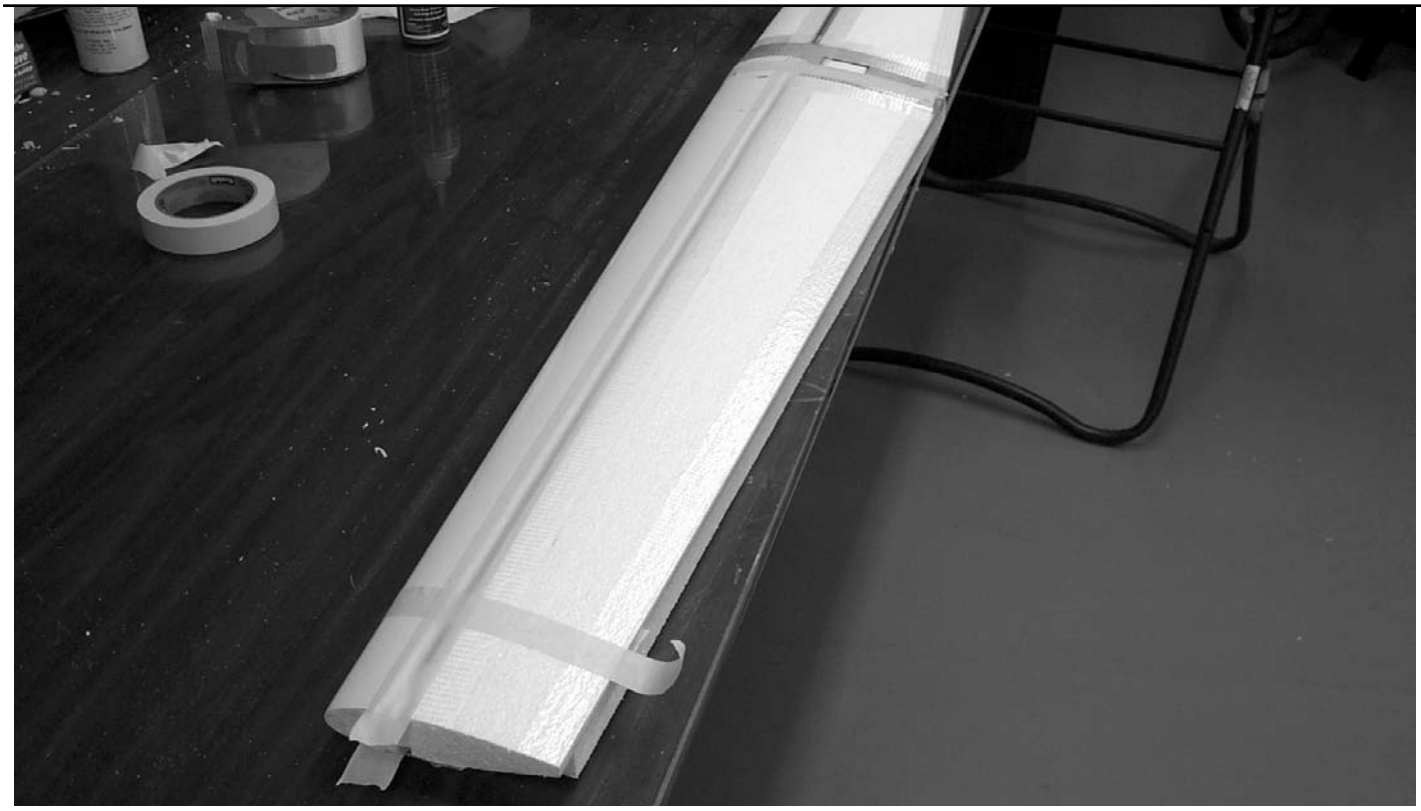
Next pull a piece of the bi-directional tape down the trailing edge, over lap the top 1 inch then carefully wrap around the trailing edge being careful not to warp the trailing edge.



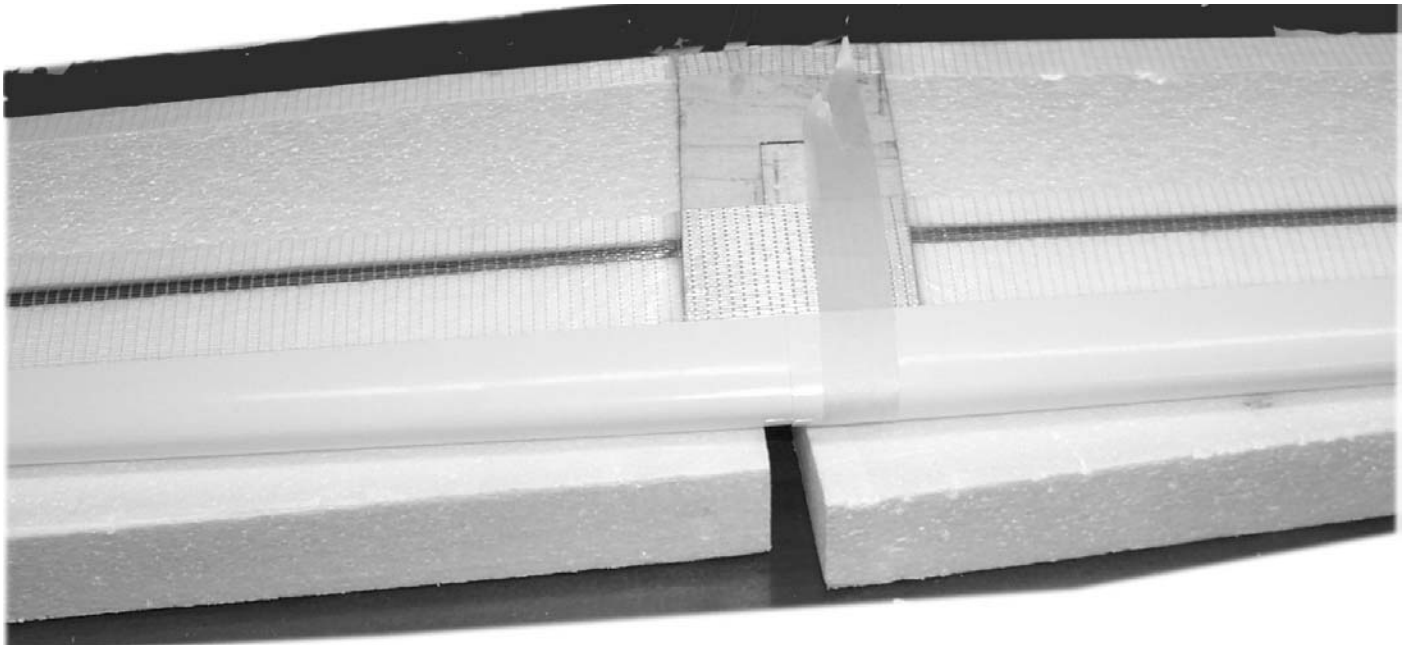
Locate the two pre-formed leading edge caps.



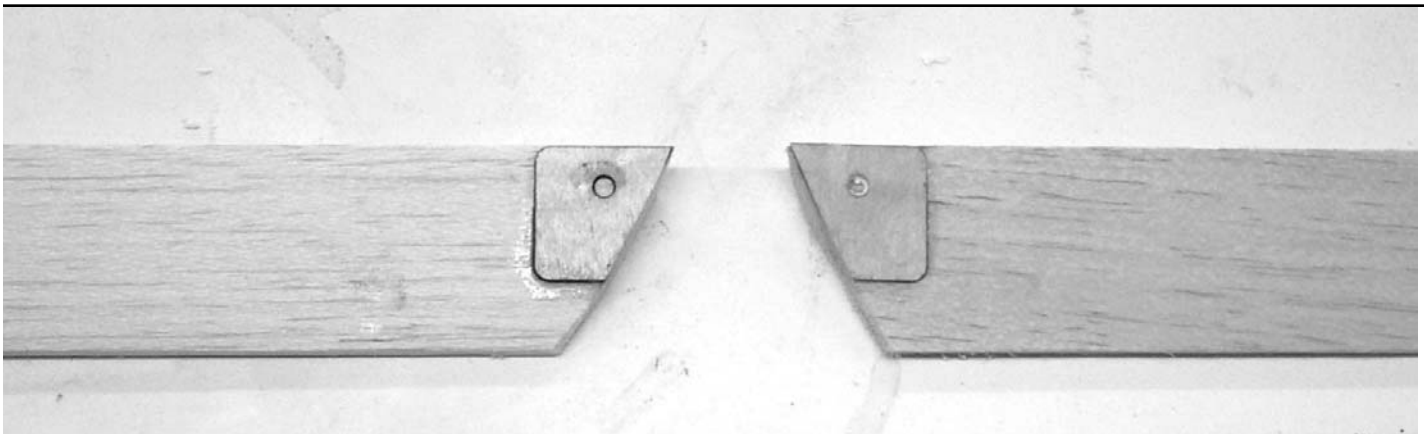
Apply urethane glue to the inside of the leading edge cover. Don't over do it with the glue because it does expand.



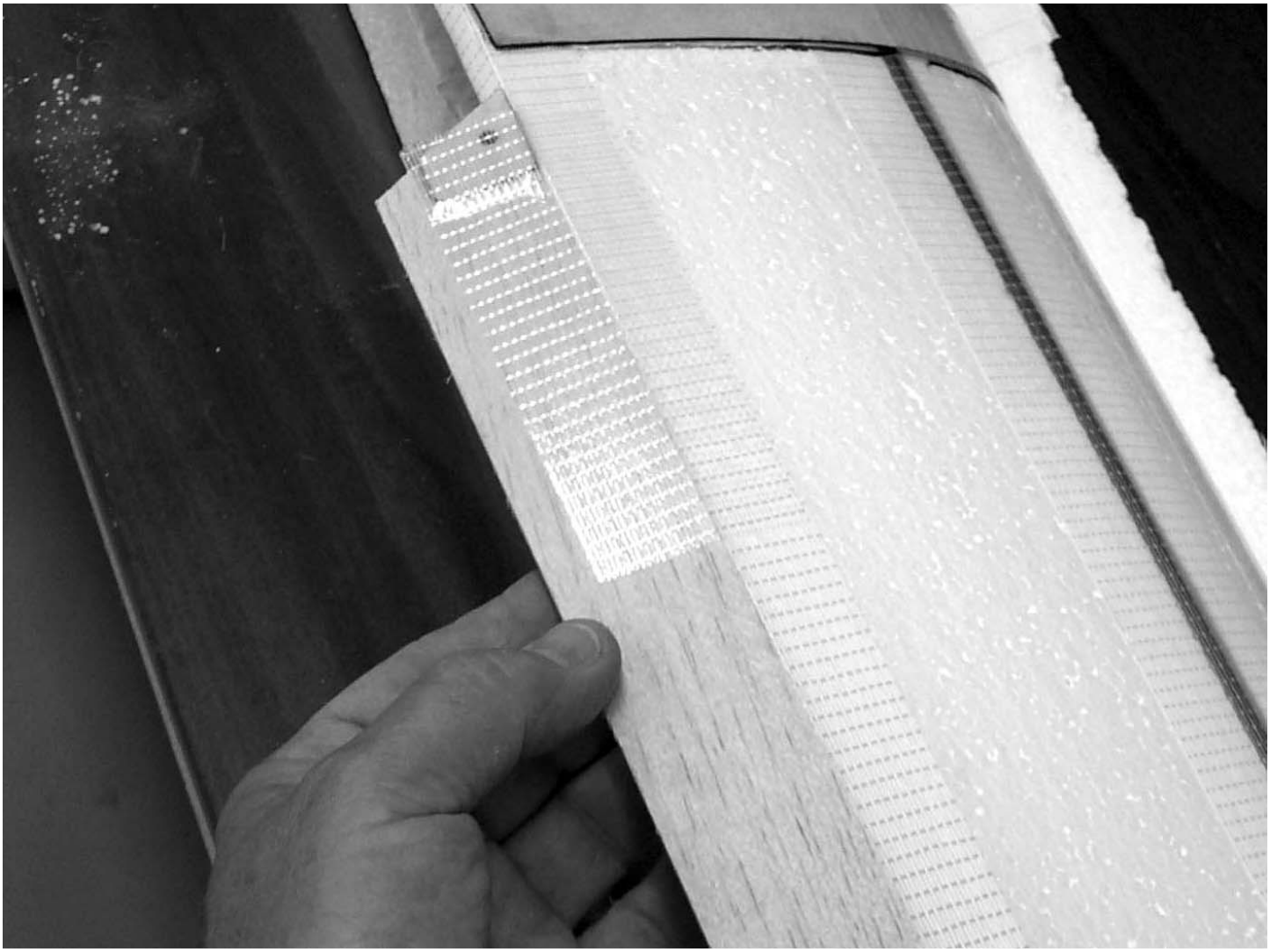
Align the leading edge cover with the tip of the wing and allow them to over lap in the center about 1/2" and tape in place. Repeat for the other wing.



Glue the overlap area with thin ca. This adds a lot of strength to the center section of the wing.

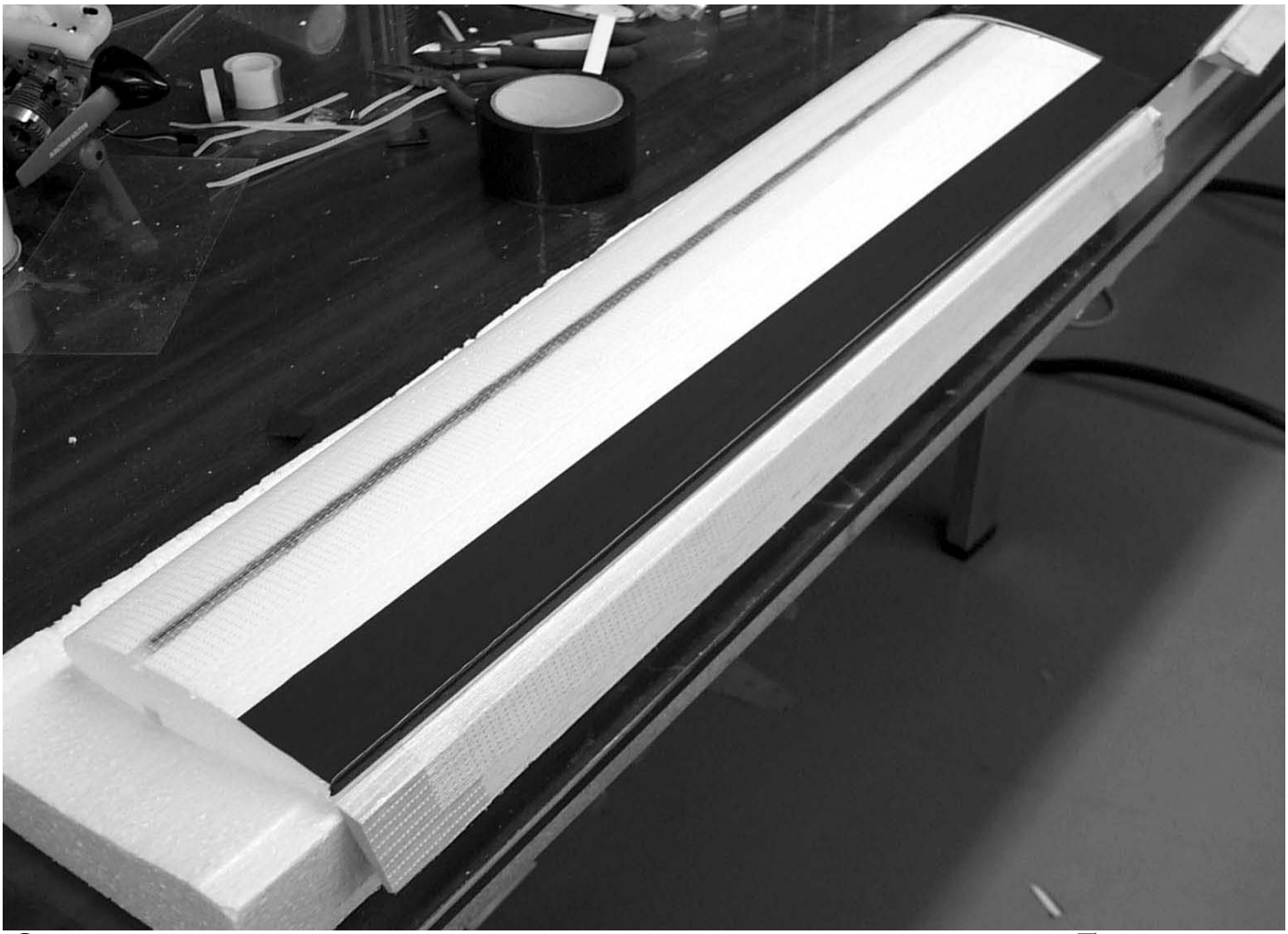


Prepare the ailerons by gluing the laser cut plywood doublers to the tapered ends. The hole is closer to the edge on the bottom that the top. Tops are marked with a T. Glue flush with the end and leading edge of aileron. Run a 9/64" drill through the hole and aileron. Turn the aileron over and glue the bottom doubler on. Align the hole in the doubler with the hole in the aileron.



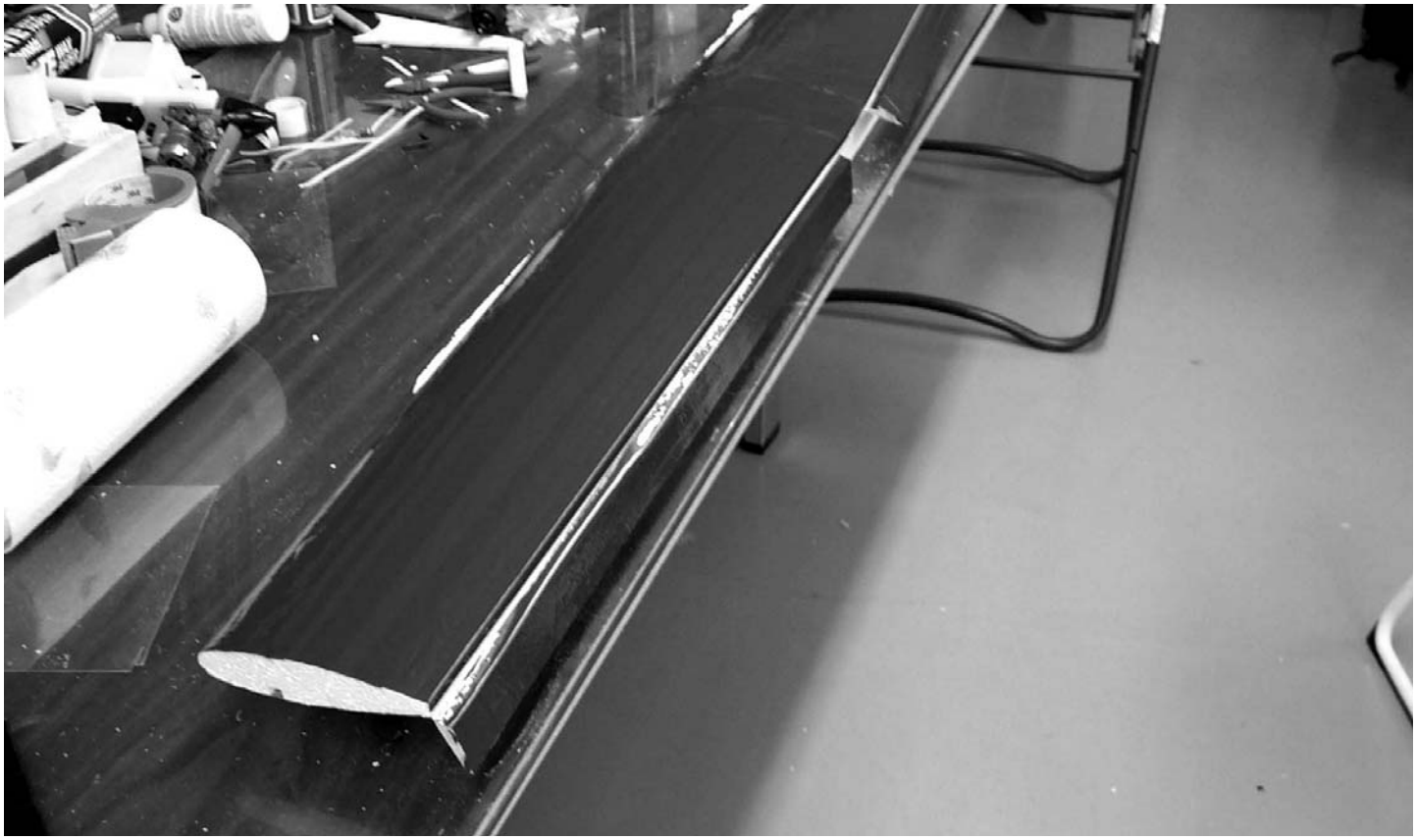
Hinge the ailerons using the bi-directional tape.

The best way to cover the wing is with packing tape. Most local stores only carry the clear and olive drab colored tape. It is available in most all colors. On the top, start at the trailing edge of the aileron and simply pull a piece from the tip to the center section. Have the aileron in the full down position.The tape is 2" wide, start the next row by overlapping about 1/4" to 3/8" of the row you just put down. Continue on to the leading edge.

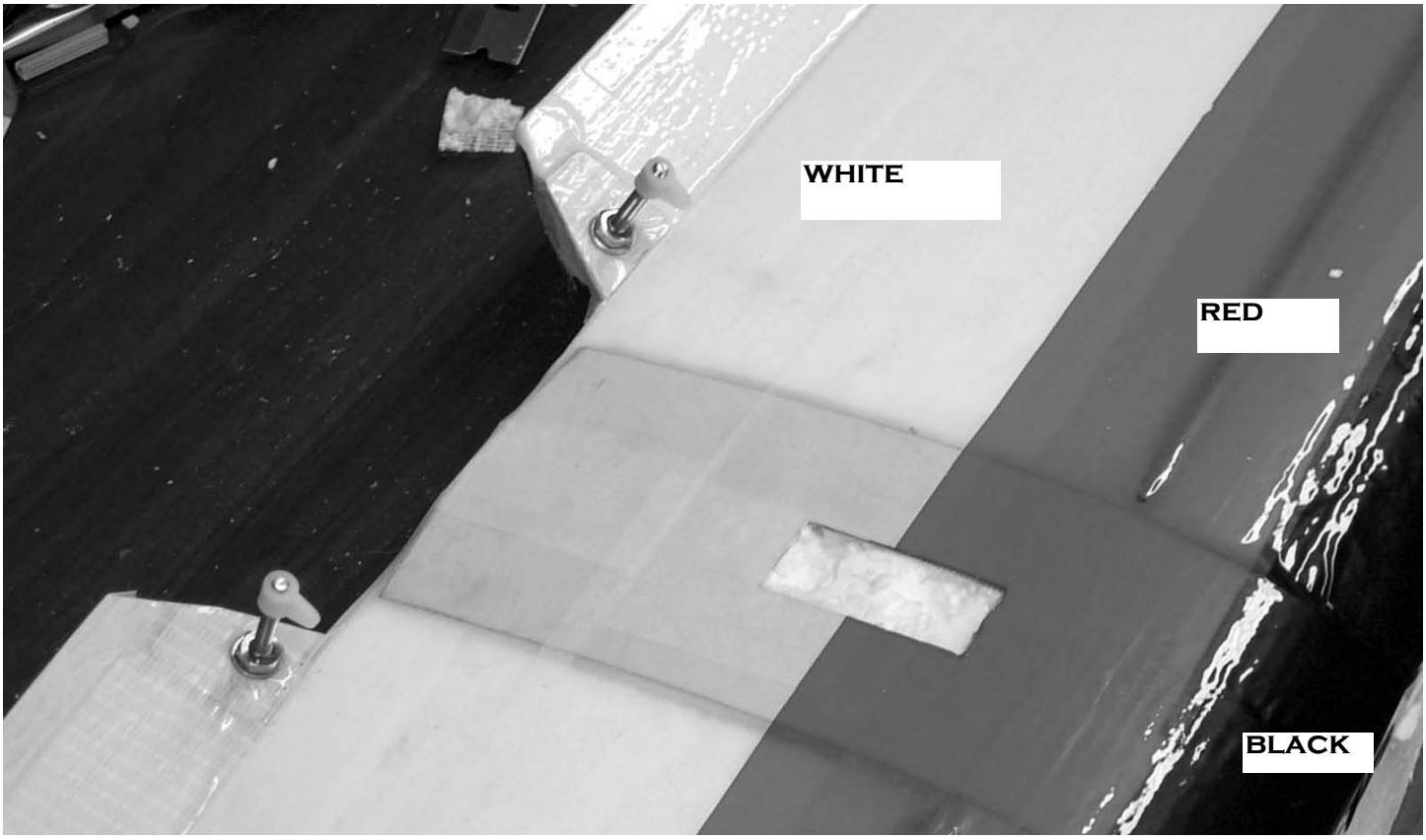


On the bottom of the wing start at the trailing edge of the wing. Flex the aileron down and let the covering go around the trailing edge. You can then start a piece at the leading edge of the aileron and cover it. Continue forward with the tape to the leading edge.

The other method is to use rip-stop nylon which can be purchased at a cloth store. You simply cut to the shape of each wing panel and brush clear polyurehtane onto the cloth. This will result in a tougher wing but will also weigh more.

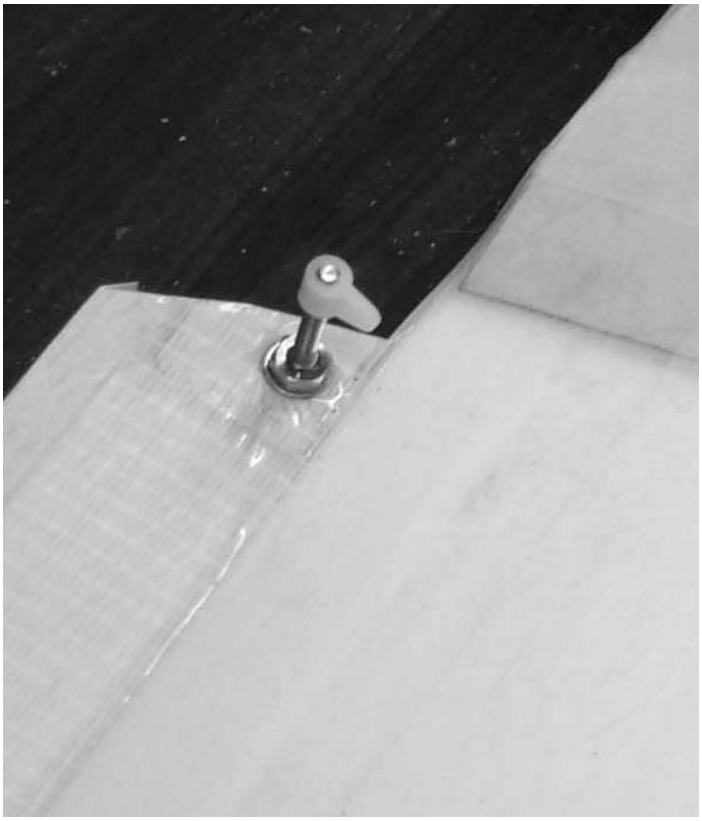


Bottom of wing fully covered.



center of wing on top showing three colors of packing tape and aileron servo cutout. Cover top and bottom in contrasting colors to help you see the plane better.

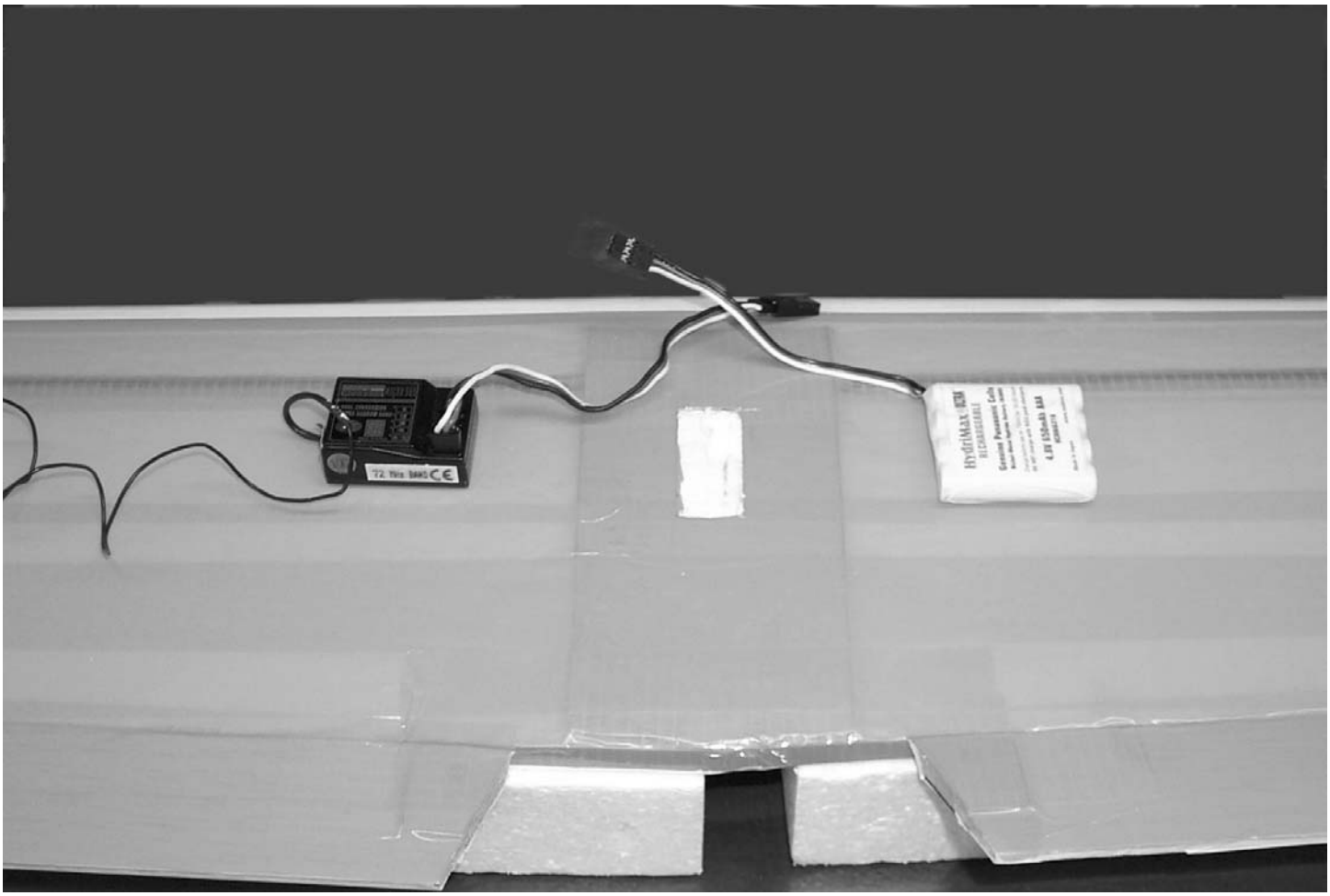
finished wing



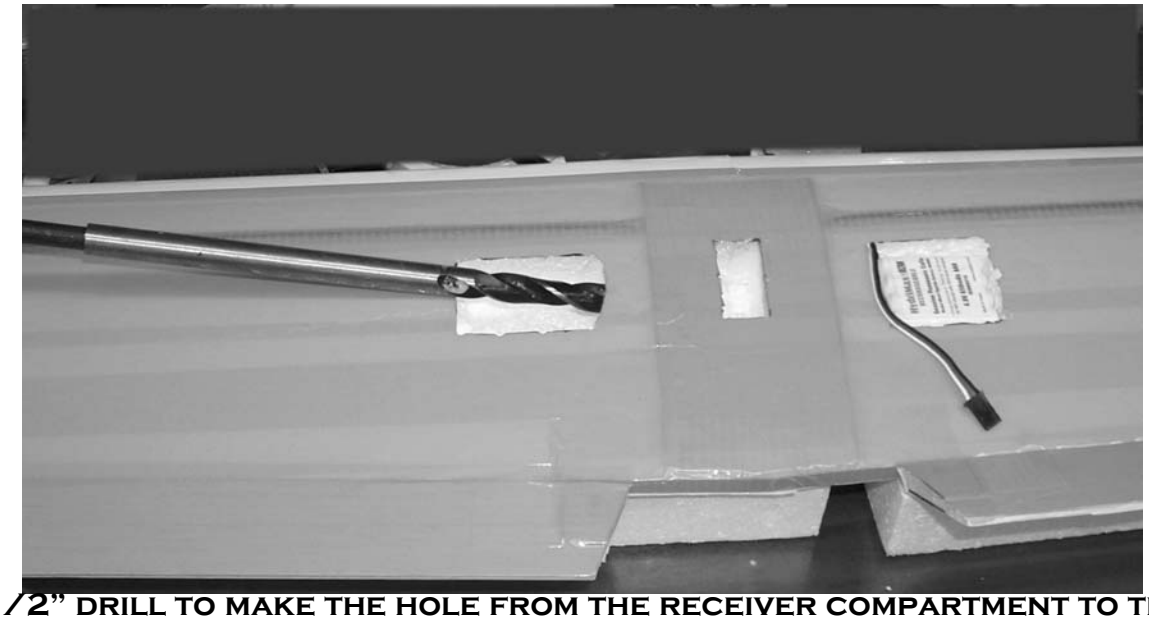
Cut the tape from the holes in the ailerons and install the control horns. Locate the 6-32 x 1-1/2" bolts number 6 washers and nuts and the nylon pushrod fittings. Install the bolt with a washer on each side of the aileron and the nut. Put a drop of CA on the nut to make sure it does not come loose. Screw the nylon fitting on top flush with the end of the screw.

Align the aileron with the end of the wing and lay the angle cut in the leading edge against the trailing edge of the wing(aileron in the full down position). Use a short piece of tape on each end and one in the middle to form the hinge. Allow the tape to overlap the wing one inch and the aileron one inch. After the aileron is aligned fill in the spots between the tape with more tape so the entire top surface is covered. Now fold the aileron over so the top surface is laying on the top of the wing and apply tape to the bottom of the aileron allowing it to over lap the wing one inch and the aileron one inch. Repeat for other wing.

The best way to remove the foam from the servo, battery and receiver compartment is with a soldering iron with a piece of #10 copper wire formed into a loop 3/4" wide which will just fit into the servo cutout.

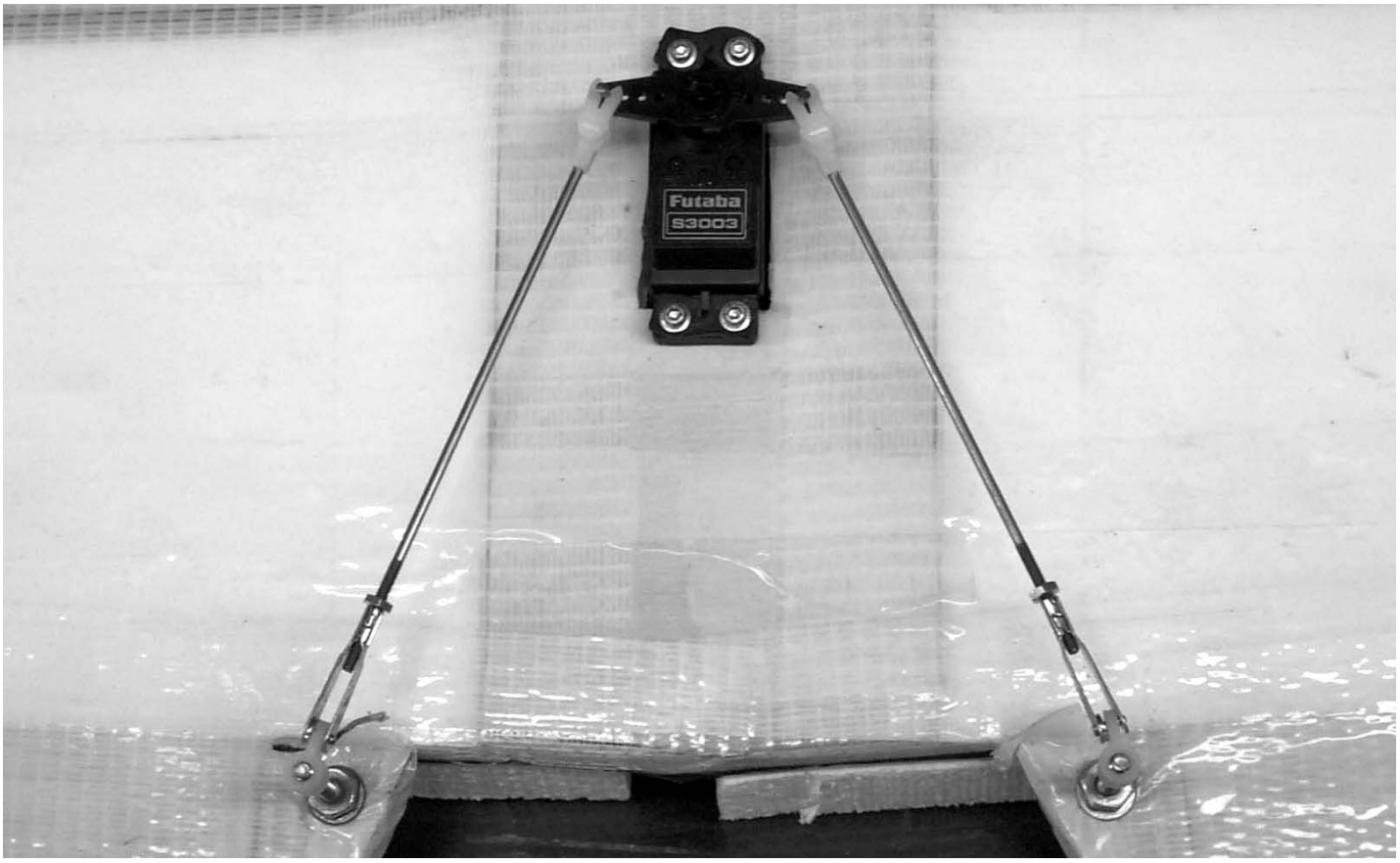


Lay out the receiver and battery pack and mark thier location on the wing. Put the receiver on the left side and the battery on the right side about 1/2" behind the spar. Use the soldering iron to cut the foam out. Cut just deep enough for the battery to fit flush with the top of the wing and the receiver to have room for the wires.

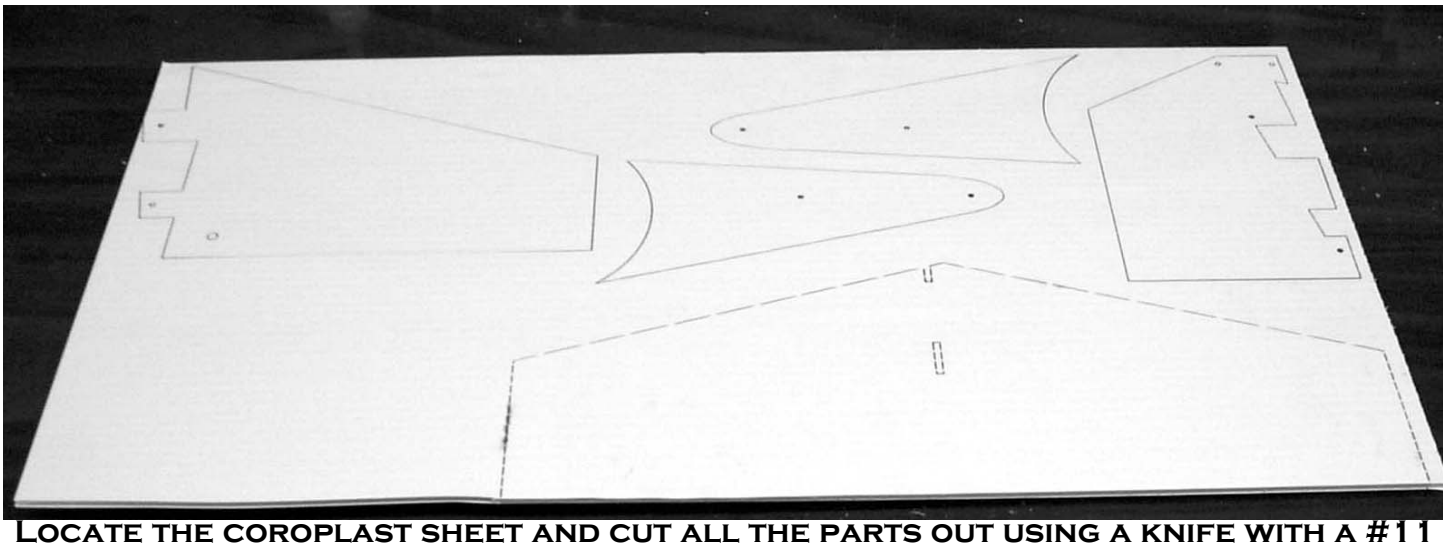


Use a 1/2" drill to make the hole from the receiver compartment to the aileron servo mount hole.

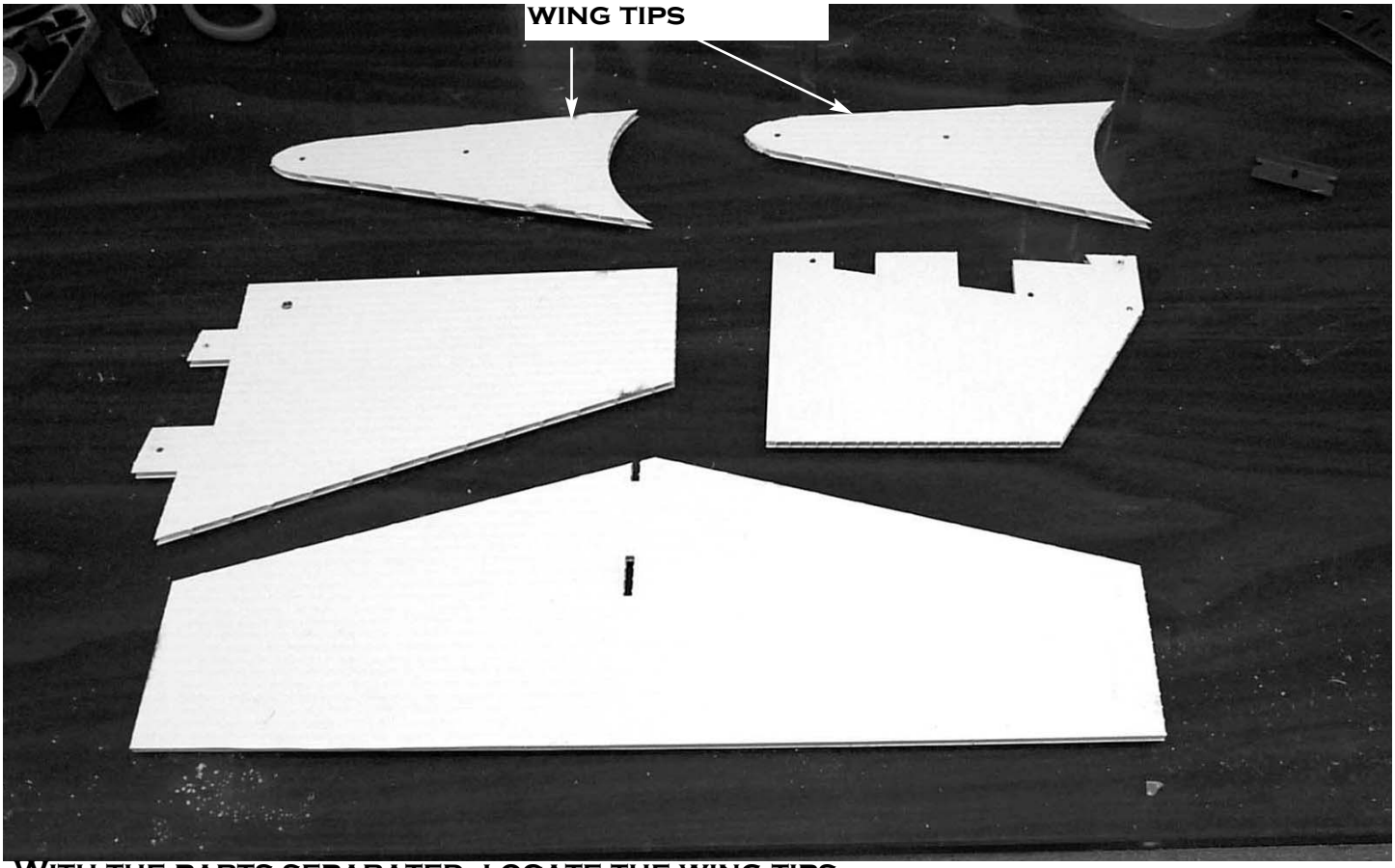
Mount the aileron servo in the cutout and pull the wire into the receiver compartment.



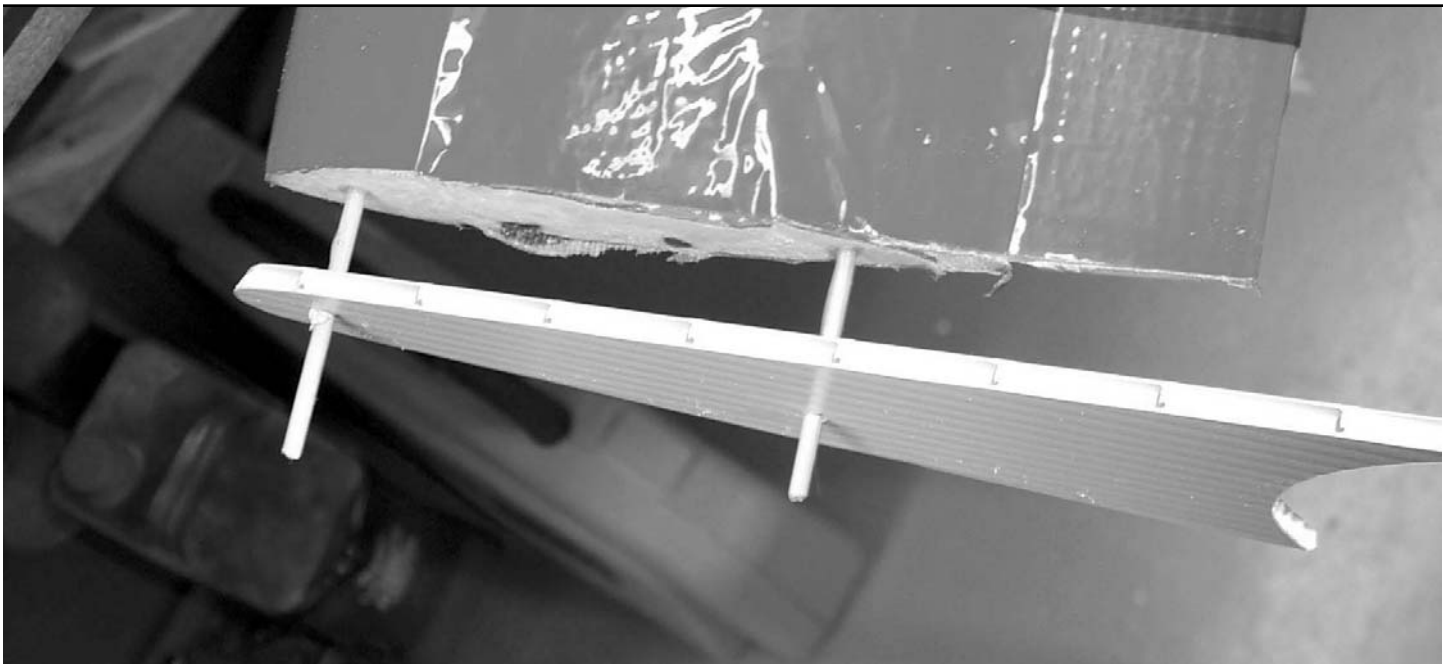
Install a servo arm on the servo and center it. Locate the 2-56 threaded rods, 2-56 golden clevises and 2-56 nuts. install the nut and clevis and attach to aileron horn. Measure the wire to the center of the control horn and bend at 90 degrees. Cut the bend at 3/8" and install in horn. The horn will have to be drilled out to .078" to accept the rod. Retain on the horn with the nylon snap-r-keeper. Don't forget to put the screw in the servo horn. After adjusting center, install the retainer clip on the clevis.



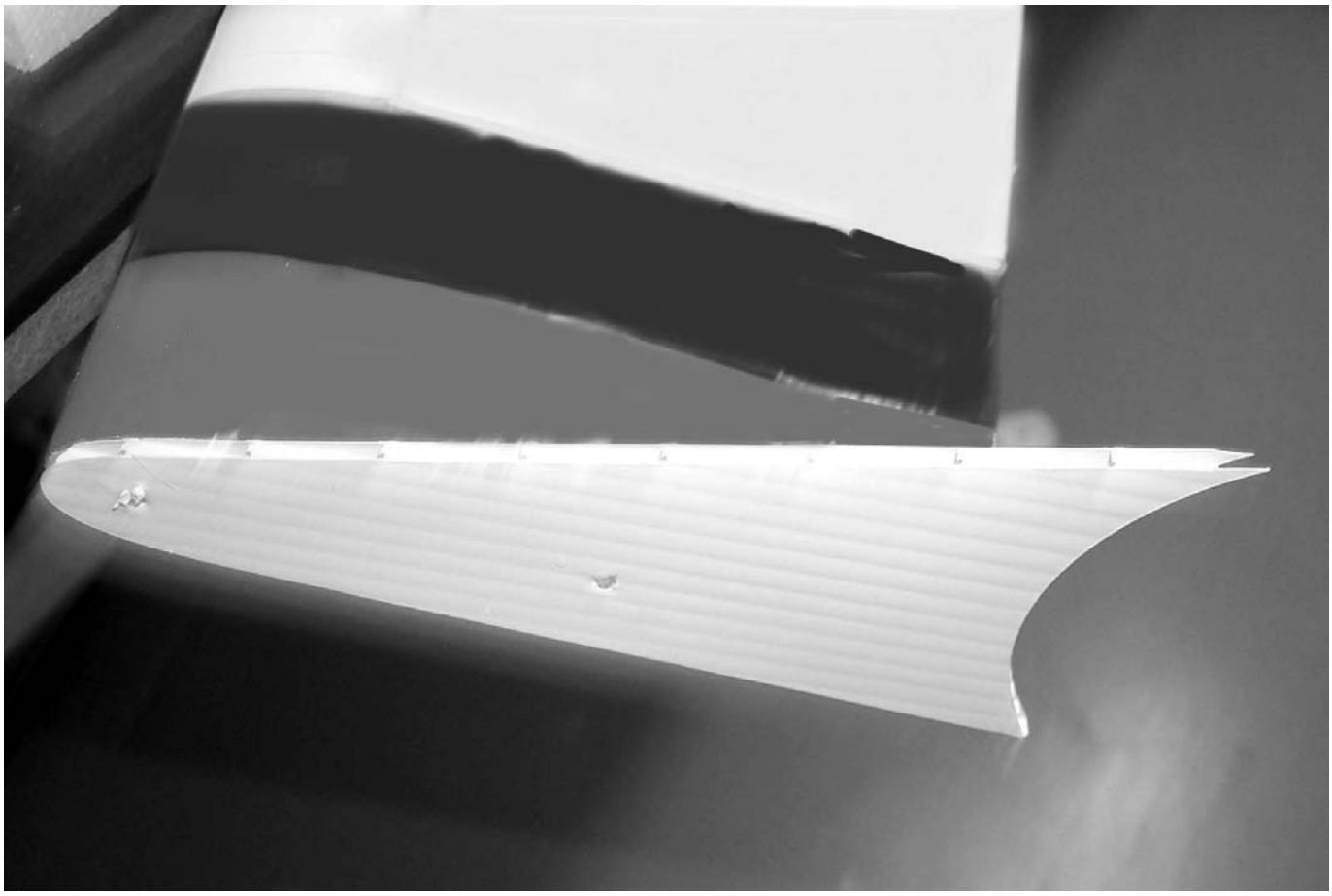
Locate the coroplast sheet and cut all the parts out using a knife with a #11 blade. If some discoloration is present from the laser cutting, it can be removed with some solvent or alcohol and a rag. Be careful with solvent and don't desolve the coroplast.

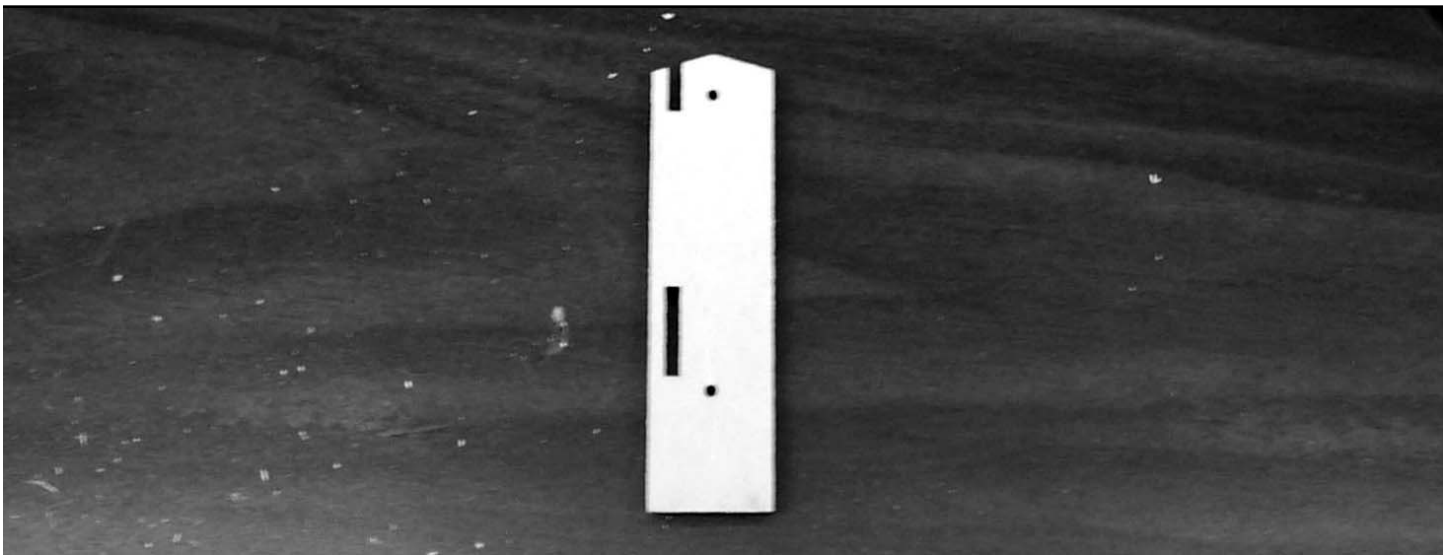


With the parts separated, locate the wing tips.

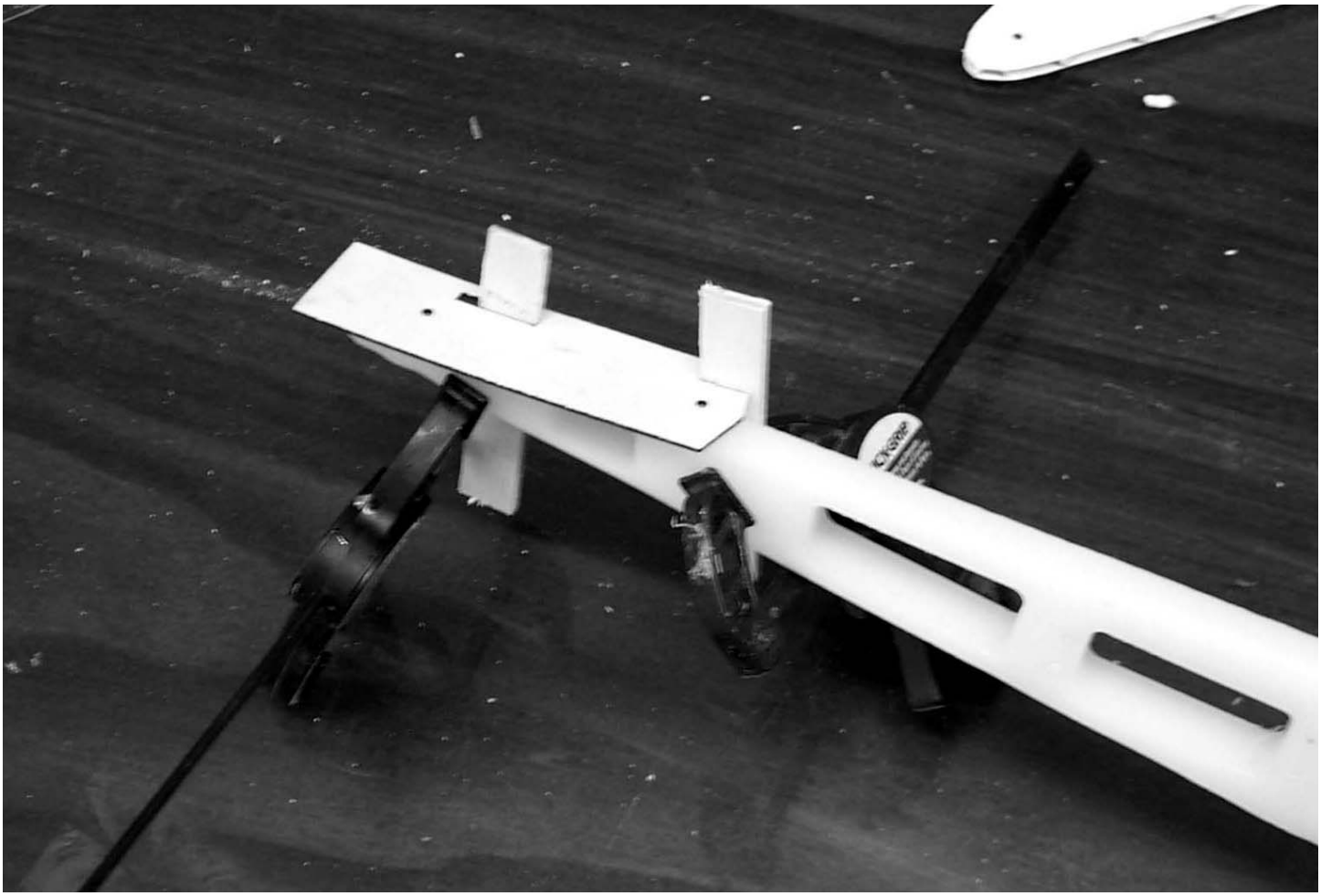


Take one of the bamb0o skewers and cut it into 4 equal pieces align the wing tip with the leading edge of the wing and insert one of the skewers. Align the rear hole in the tip to the center of the wing and insert the other skewer. Push the tip against the end of the wing and mark the outline on the tip. Remove the tip an apply urethane glue where the wing will contact the tip and on the wooden skewers. Push the tip flush against the end of the wing and secure with masking tape till dry.

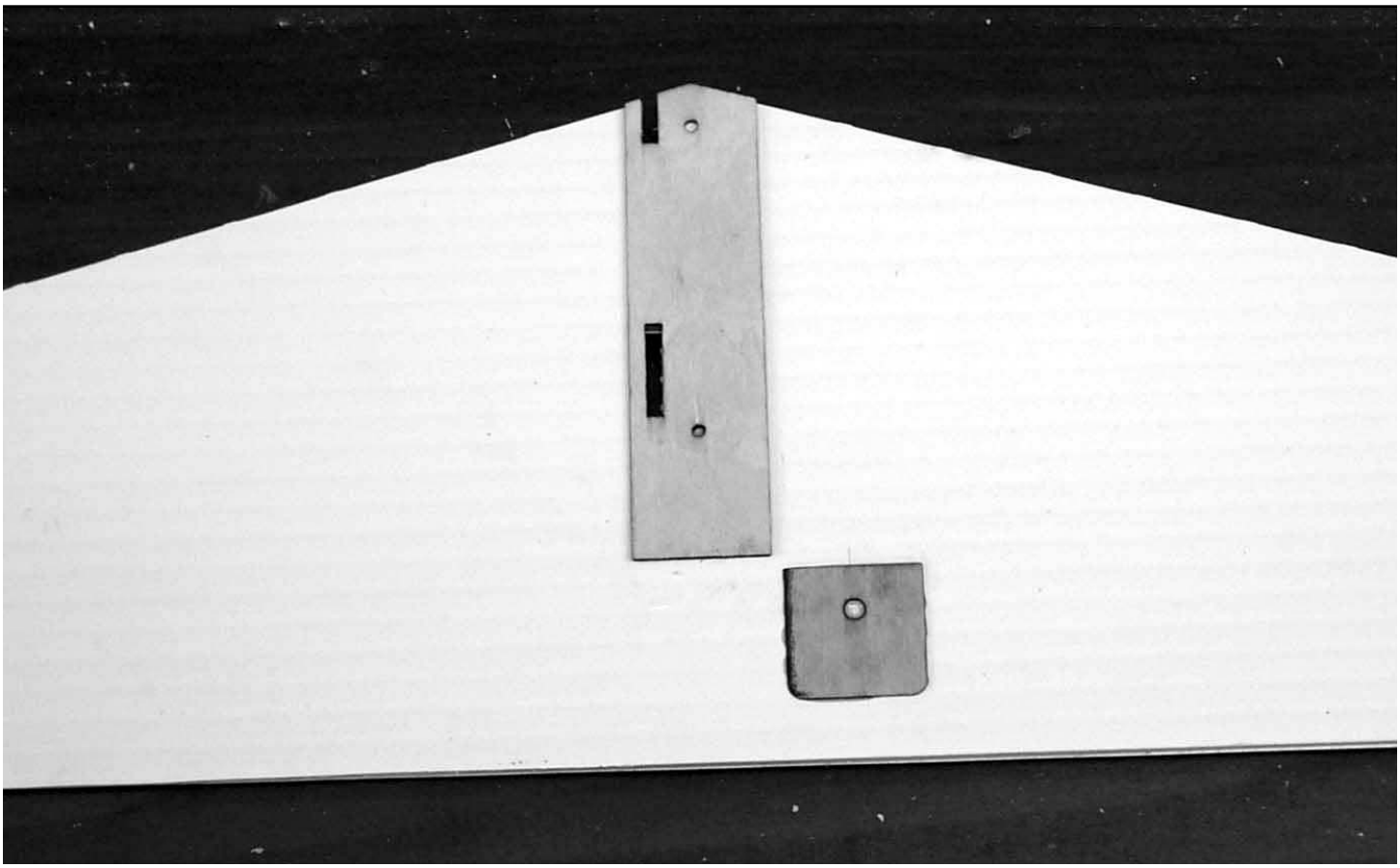




Locate the laser cut 1/16" ply stab reinforcement plate.

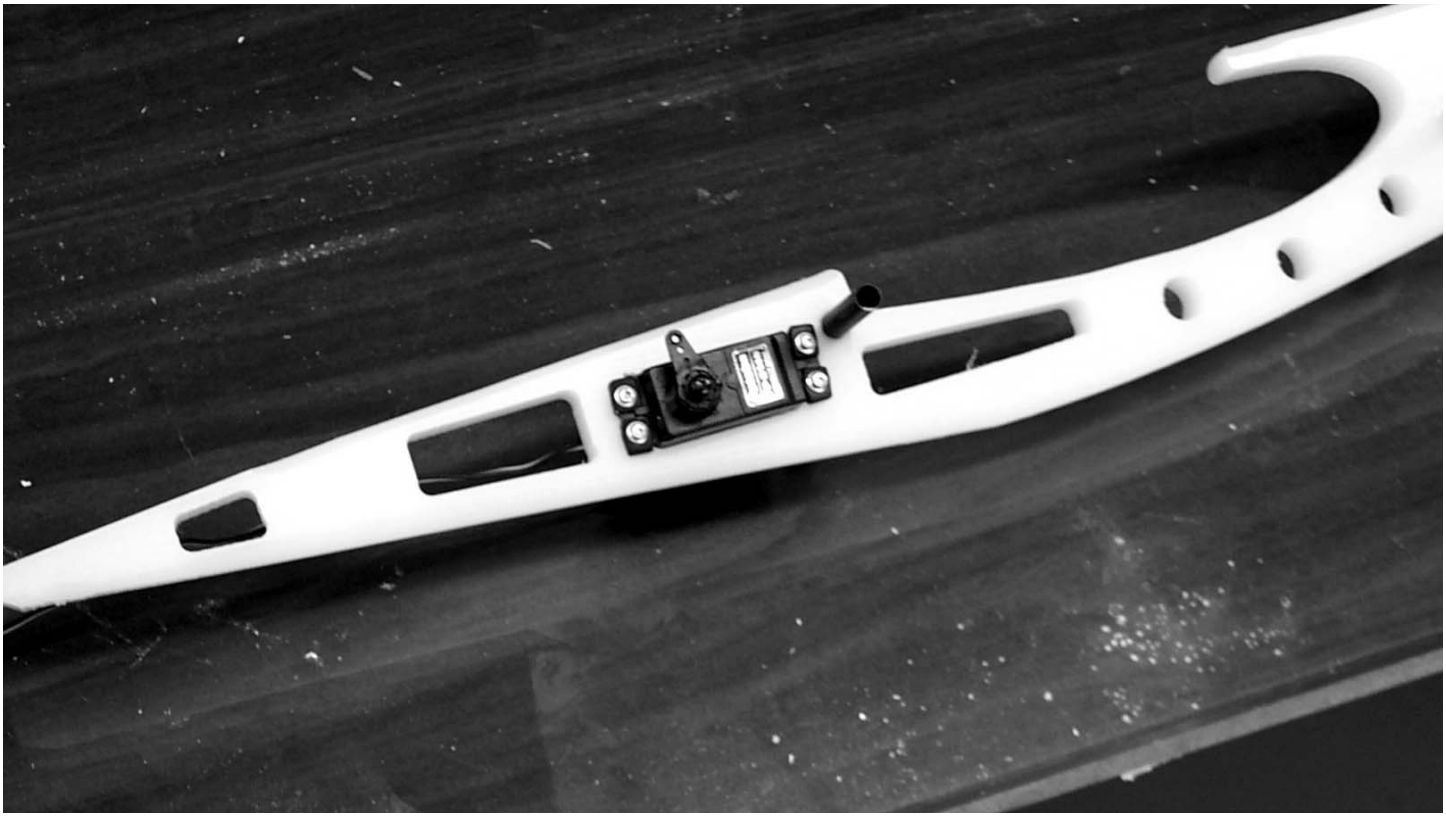


Align the rear edge of the stab reinforcement plate with the rear end of the fuselage. Insert a scrap piece of wood in the slots and clamp to the fuselage side. This will insure the fin is square when installed. Drill two 5/64" holes through the holes in the plywood plate into the fuselage to mount the stab.

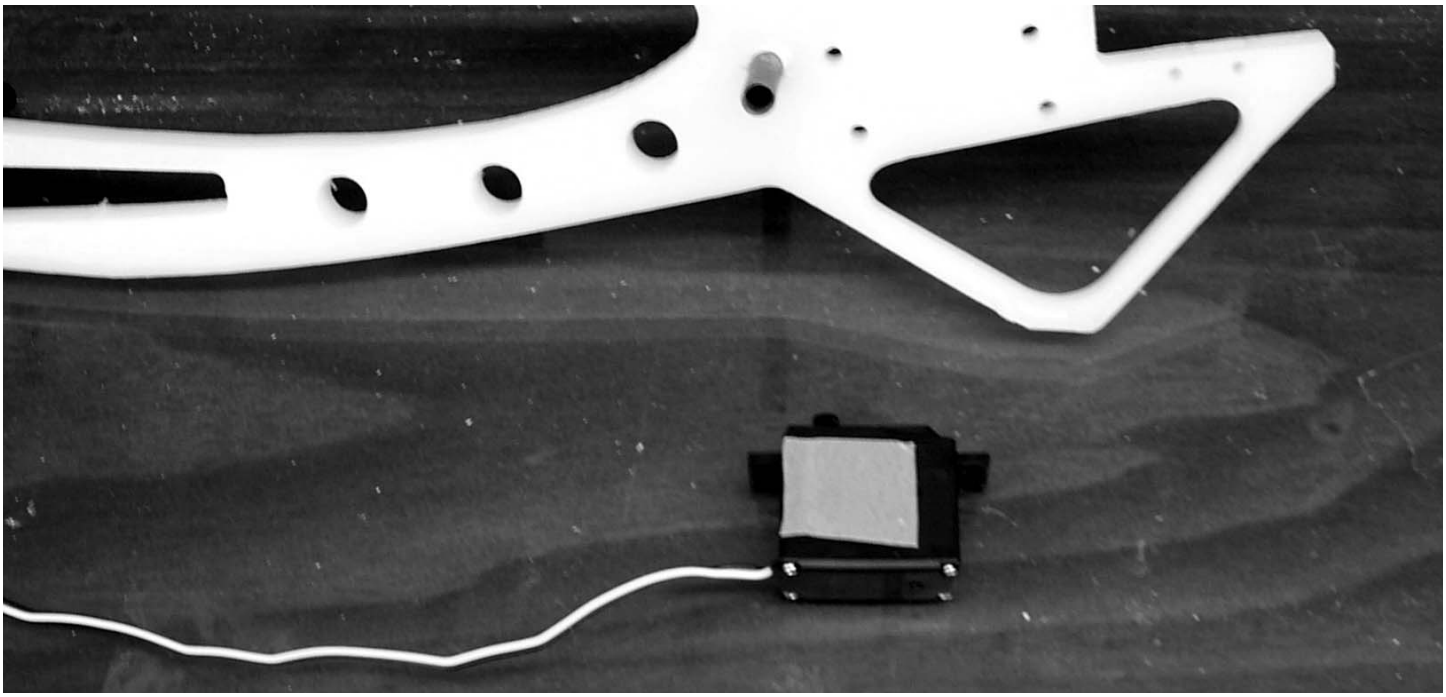


Glue the stab reinforcement plate to the top of the stabilizer. the cutout for the hinge line goes on the bottom. Align the slots for the fin in the stab with the slots in the plywood. Glue the elevator horn reinforcement plate to the top of the elevator, aligned with the rear of the stab reinforcement plate. Drill a 9/64" hole through the laser cut hole in the plywood reinforcement plate on the elevator. Turn the assembly over and glue the bottom reinforcement plate in place centered over the hole.

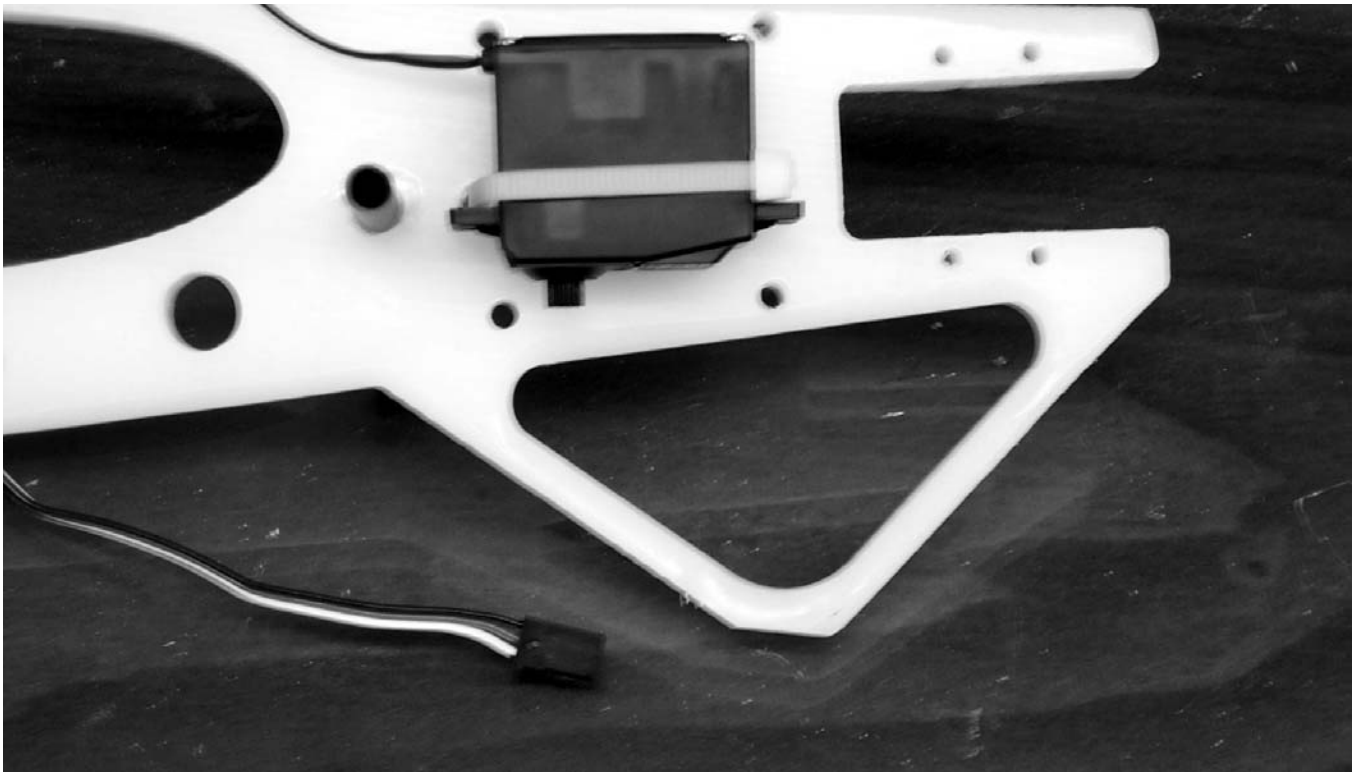
Locate the two 3” epoxy glass dowels and insert in fuselage at the front and rear of wing saddle. These are a press fit and do not require any glue.



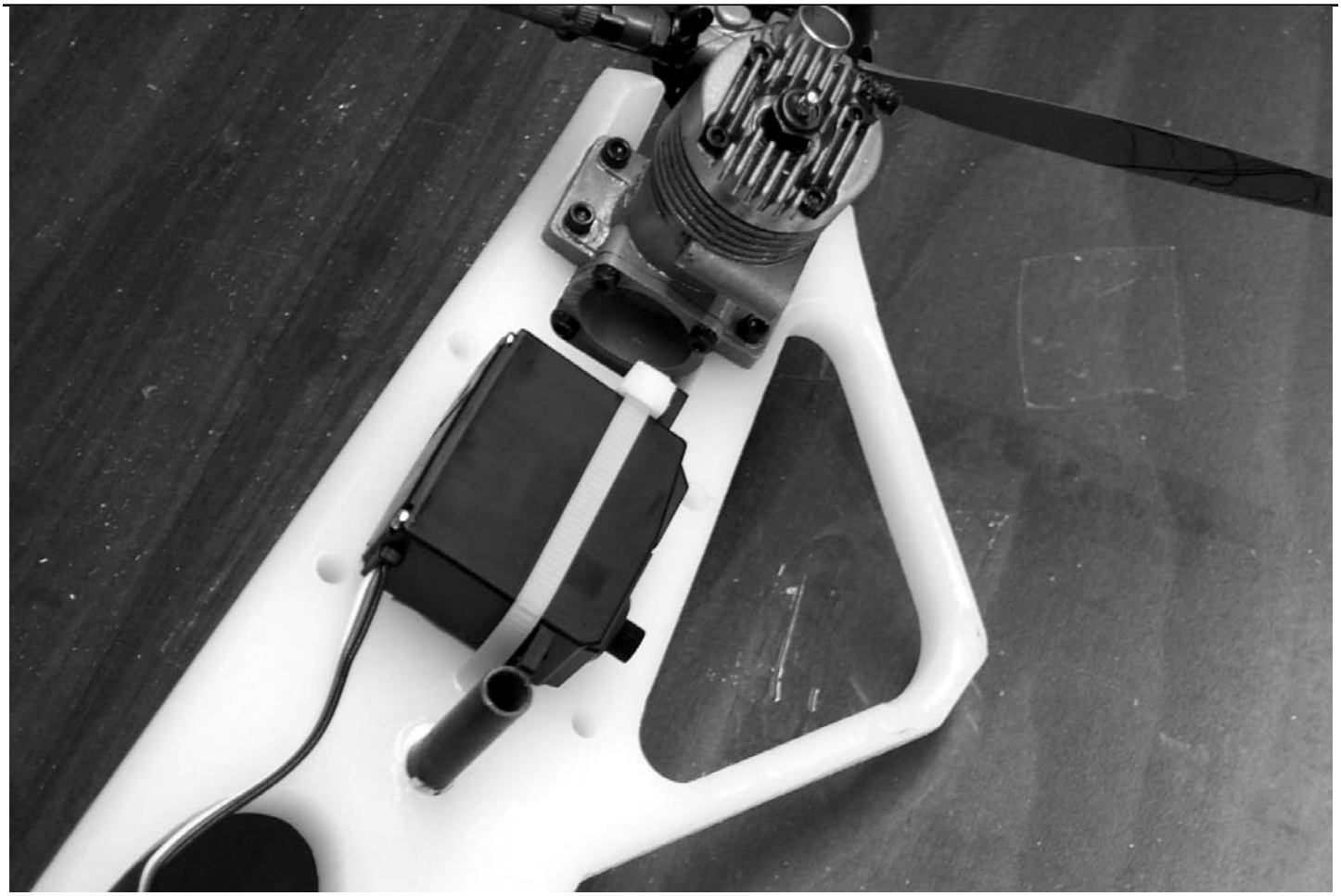
Install the elevator servo in the precut hole at the rear of the wing saddle. Use the hardware supplied with the radio.



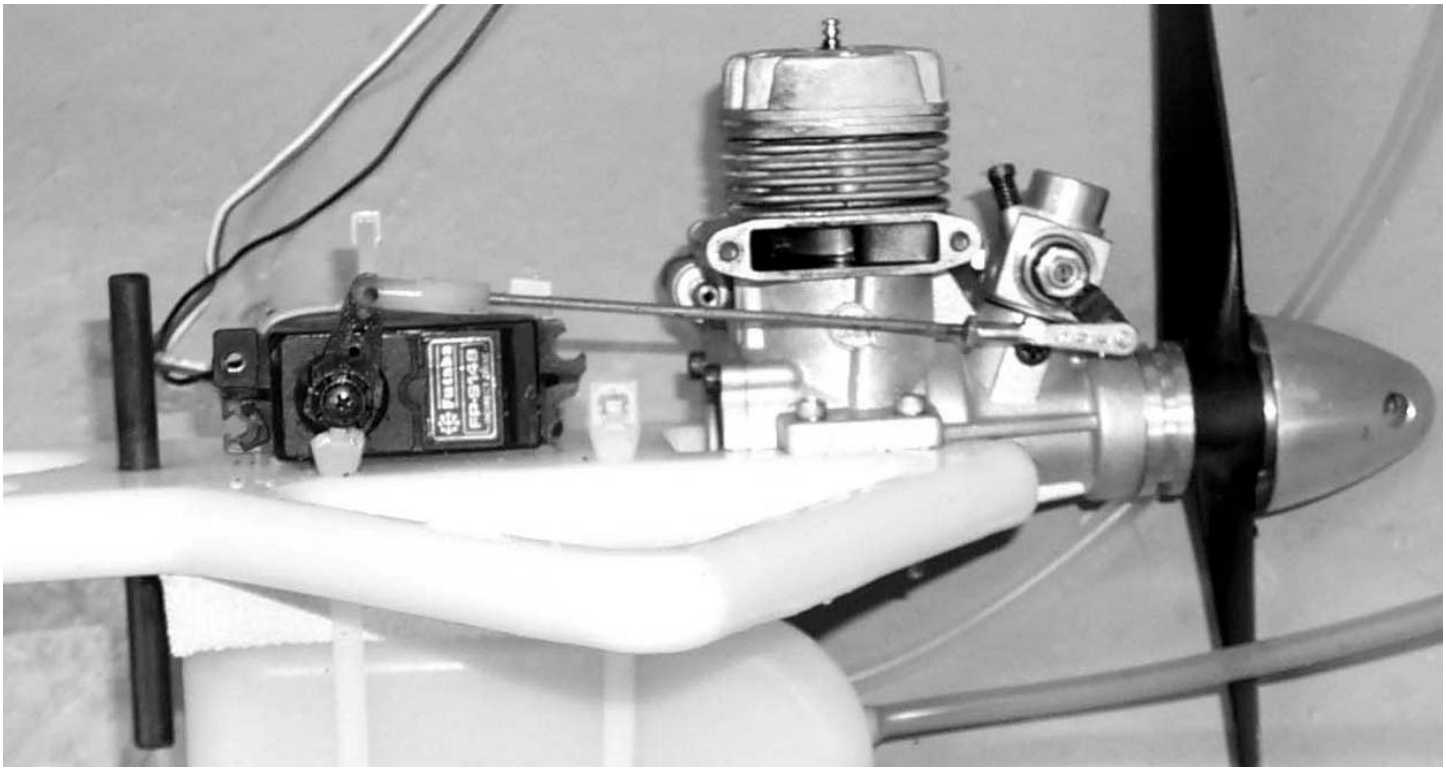
PUT A SMALL PIECE OF DOUBLE SIDED TAPE (NOT SUPPLIED) ON THE THROTTLE SERVO.



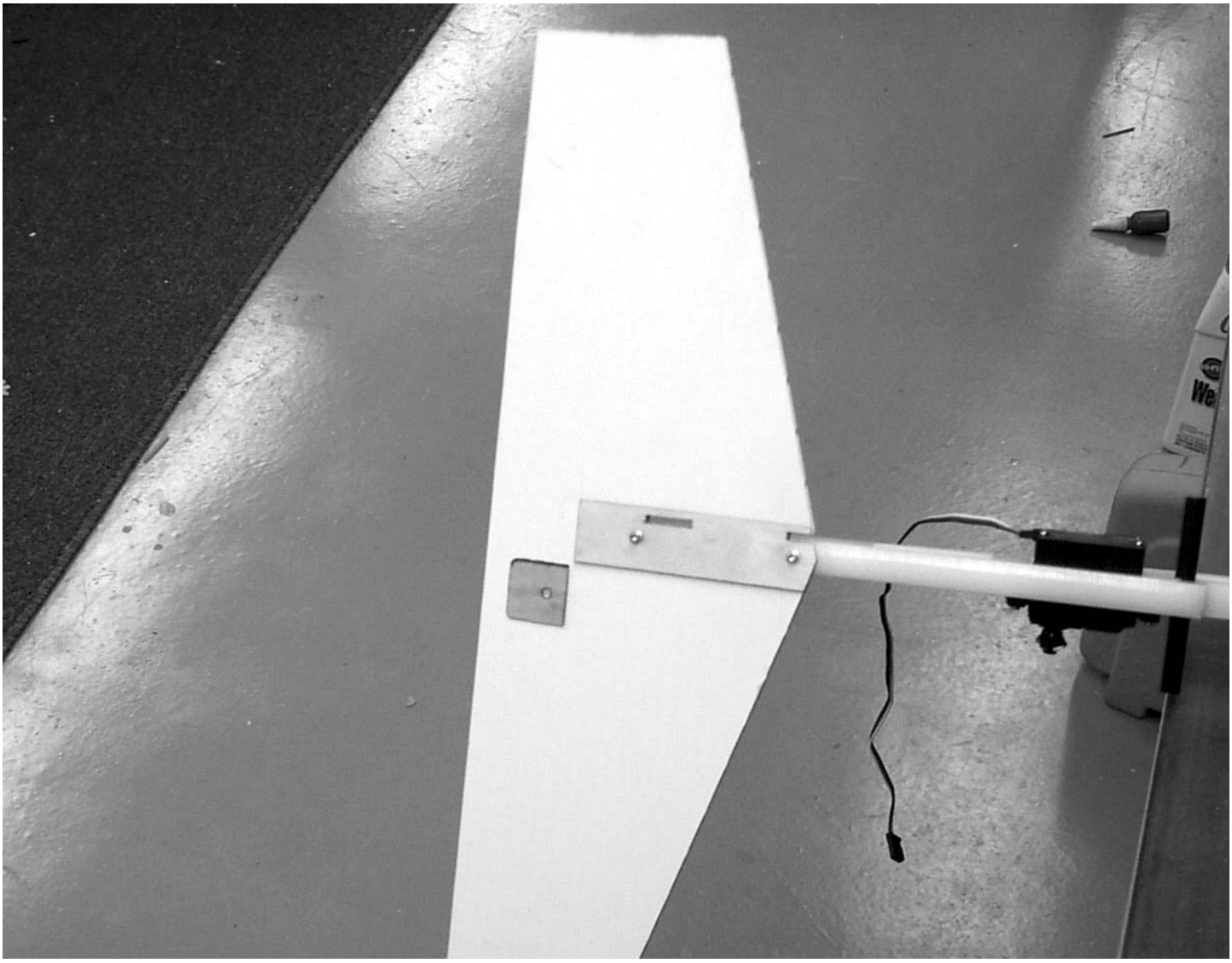
Stick the throttle servo on the side of the fuse centered between the predrilled holes with the hole just at the bottom of the mounting lugs,and secure with a cable tie through the predrilled holes.



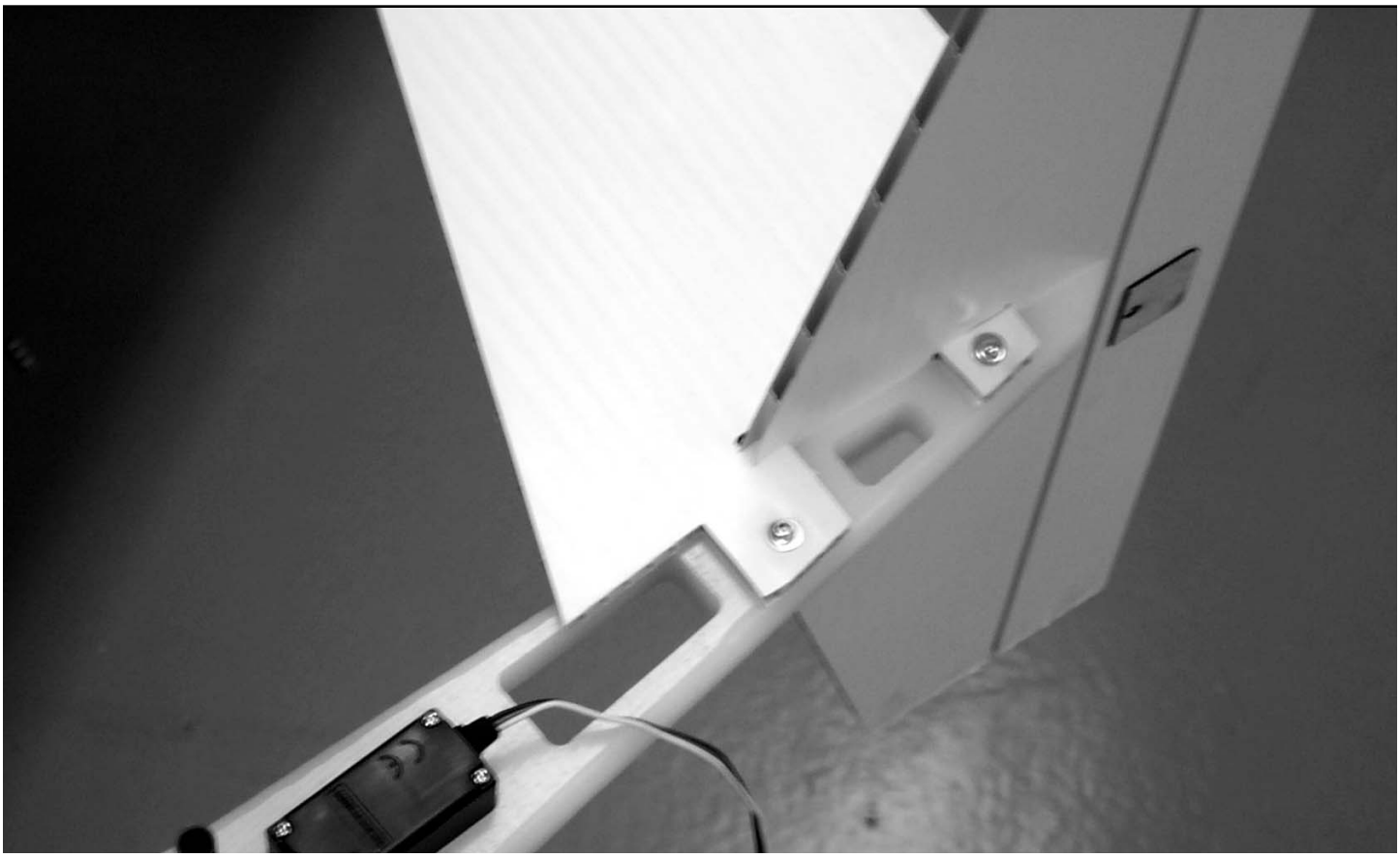
Center your engine in the mounts and mark the mounting hole locations. Drill a 1/8" hole at the marks and mount the engine using 4-40 bolts and lock nuts (not supplied).



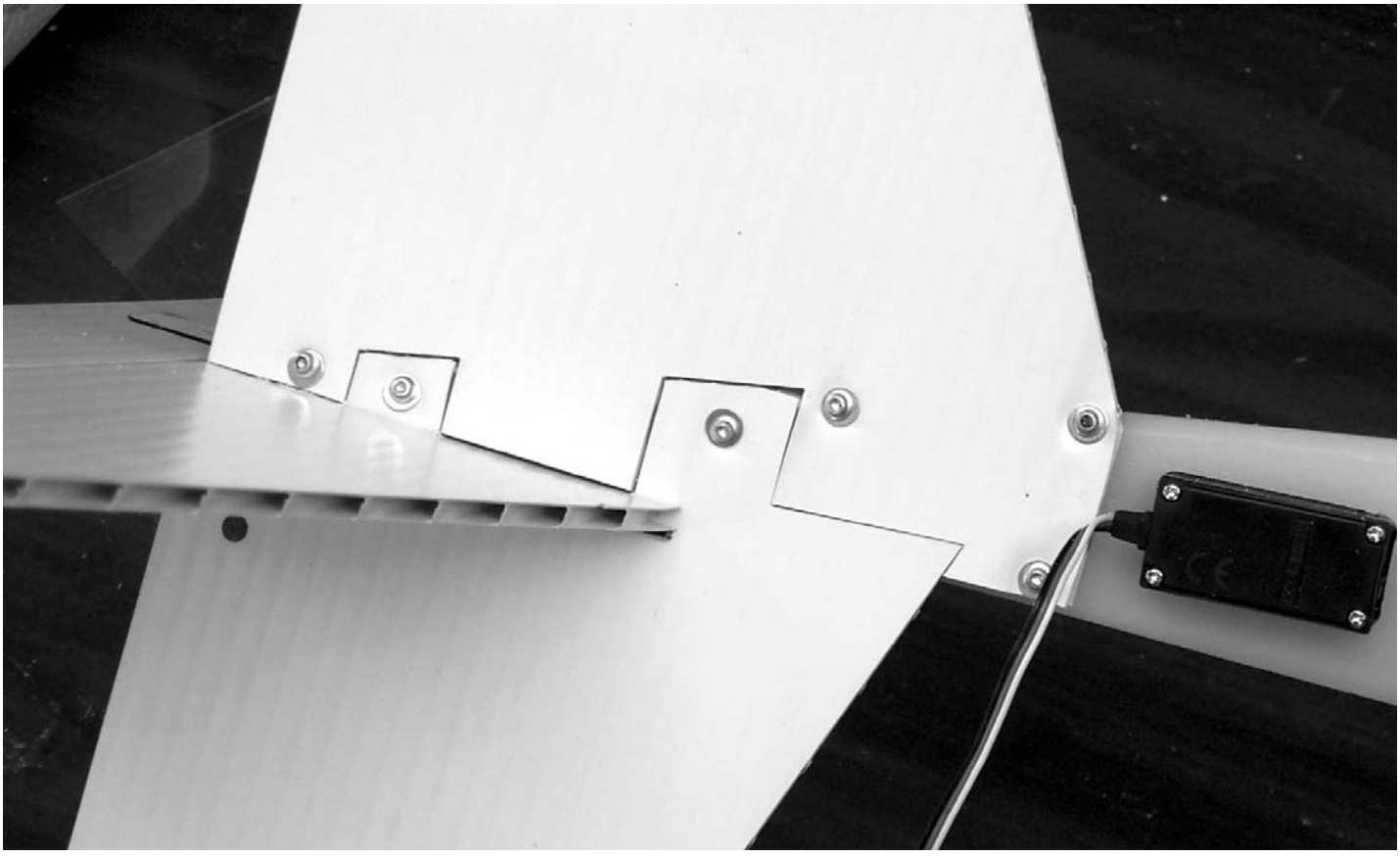
Locate the 2-56 threaded rod , the 2-56 golden clevis and nut. Install the nut and clevis and attach to the throttle arm on the motor. With the throttle fully open and the servo at high motor, mark the location of the bend in the rod and bend at 90 degrees. Cut off at 3/8" and attach to servo using the nylon snap-r-keeper. the servo arm will have to be drilled out to .078".



Mount the stab to the fuselage using two #2x3/4" screws with #4 washers under the heads.

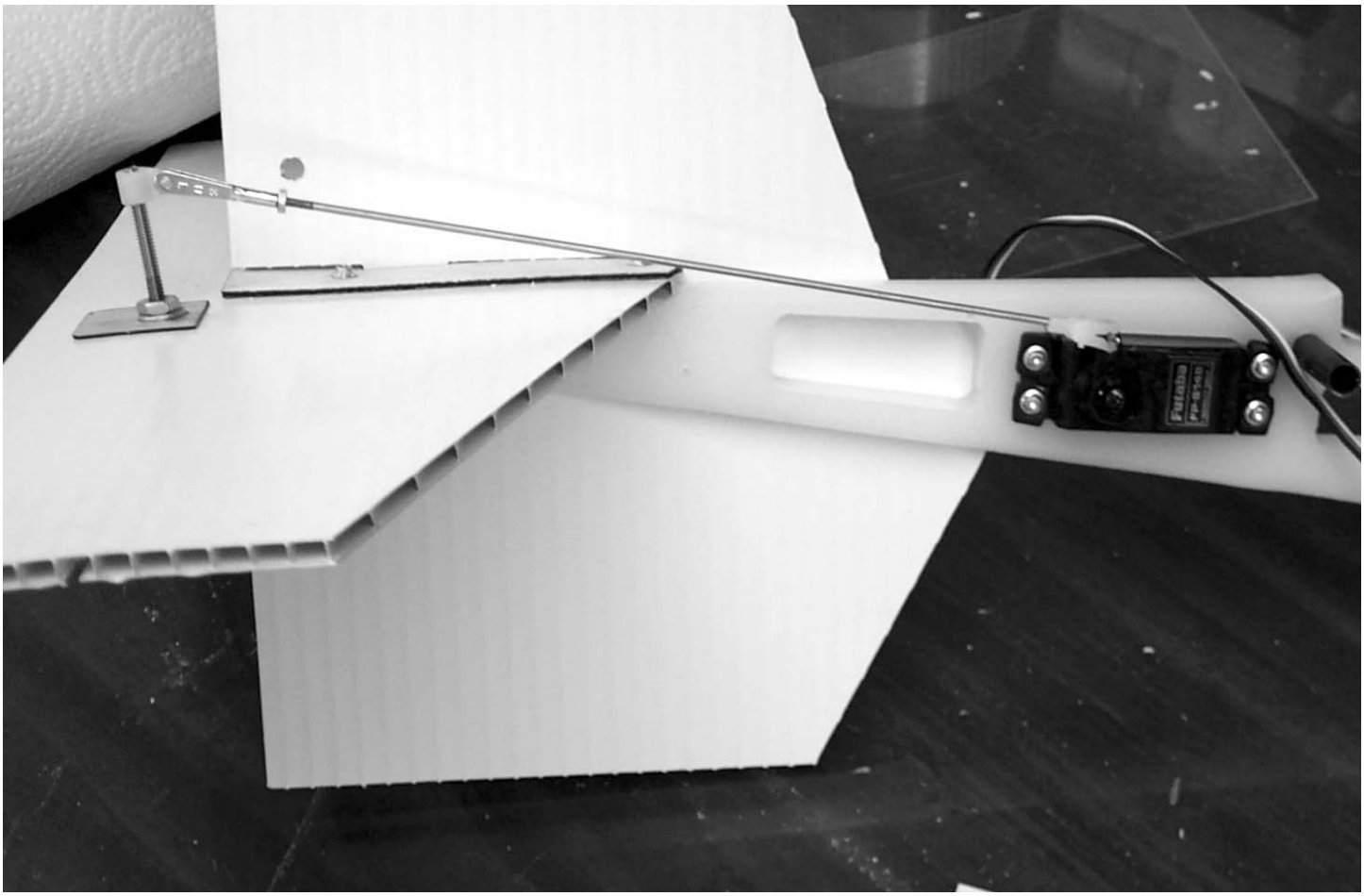


Insert the fin through the holes in the stab and drill a 5/64" holes at the two mount locations. Mount the fin using #2x1/2" screws and #4 washers under the heads.

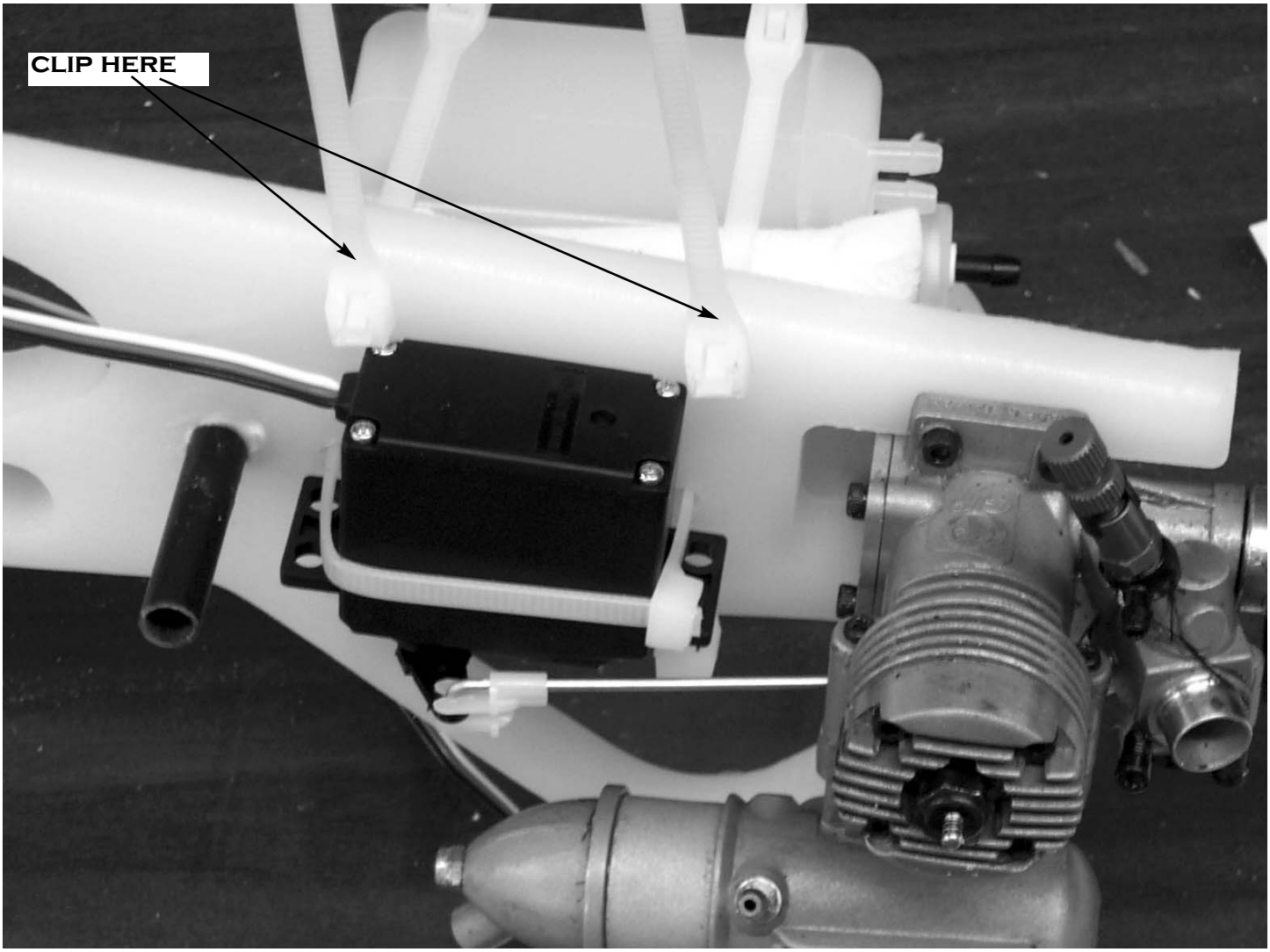


Fit the sub-fin in place and drill 5/64" holes at the 4 mount locations. Mount sub-fin using four #2x1/2" screws and #4 washers under the heads.

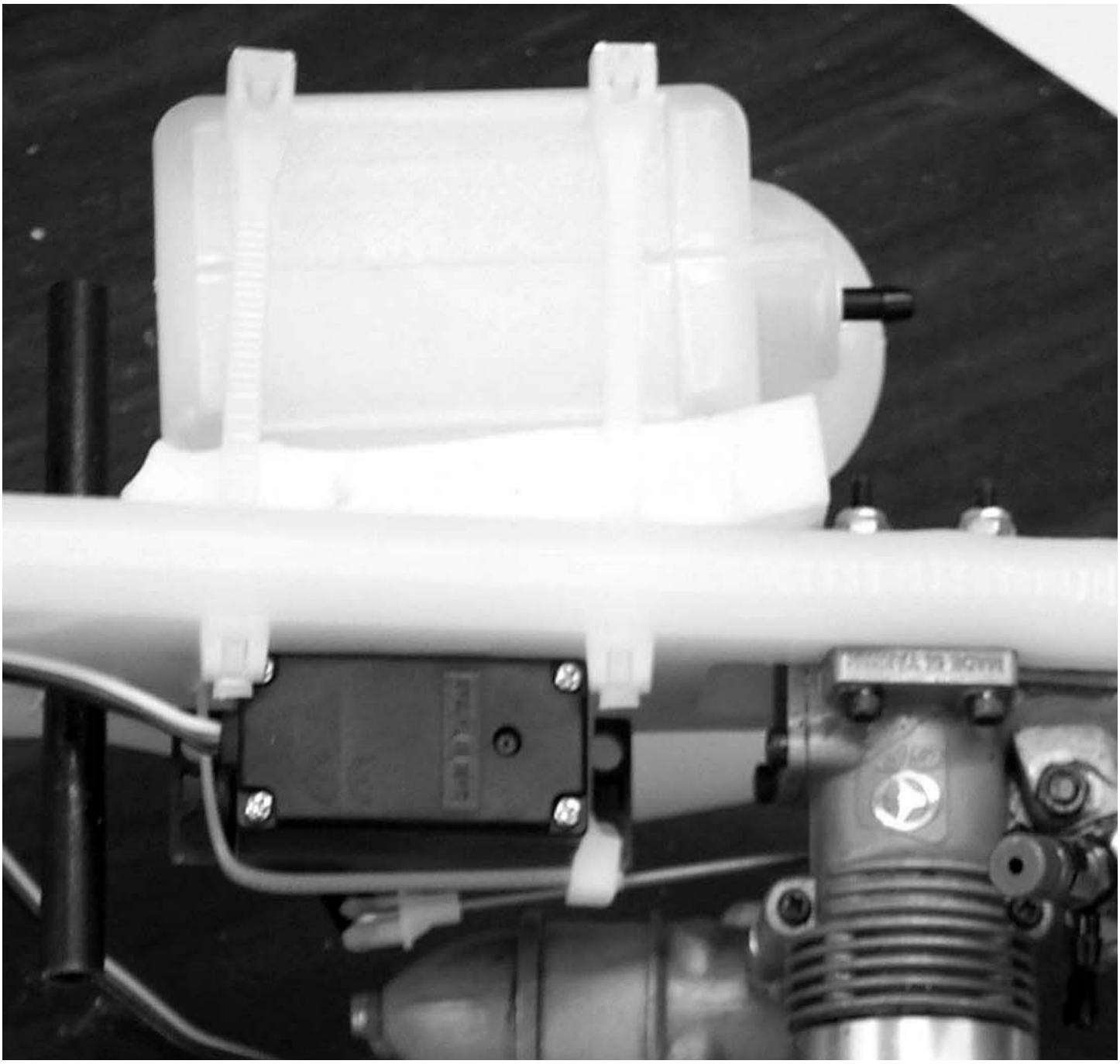
Install the elevator horn (6-32x1-1/2" screw) with a washer on both sides and secure the nut with a drop of CA glue. Screw the nylon fitting on the end flush with the end of the bolt.



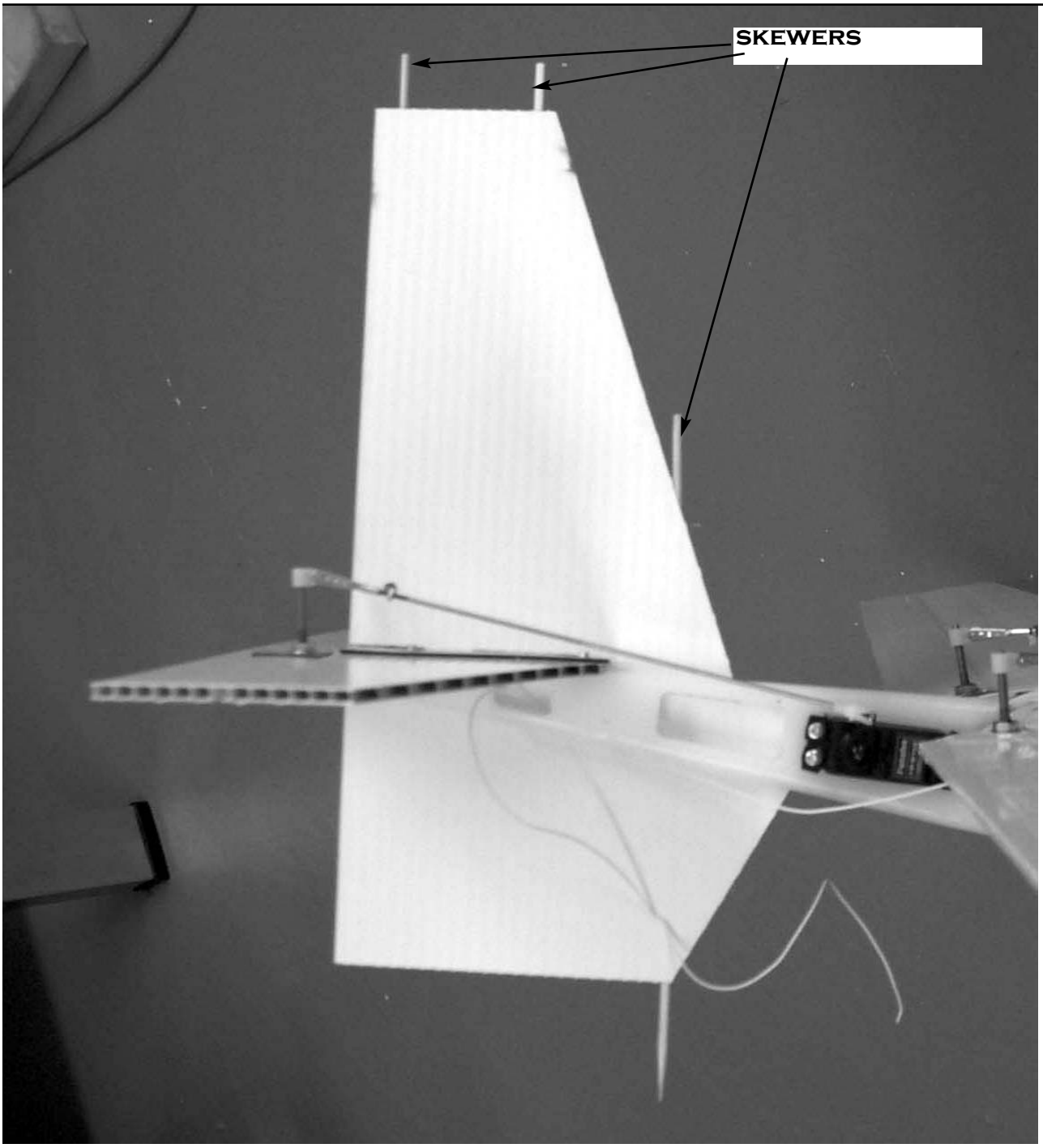
Locate the 2-56 threaded rod and golden clevis and nut. Attach to elevator horn and center the servo. Bend the rod 90 degrees and cut off at 3/8". Attach to servo with the nylon snap-r-keeper.



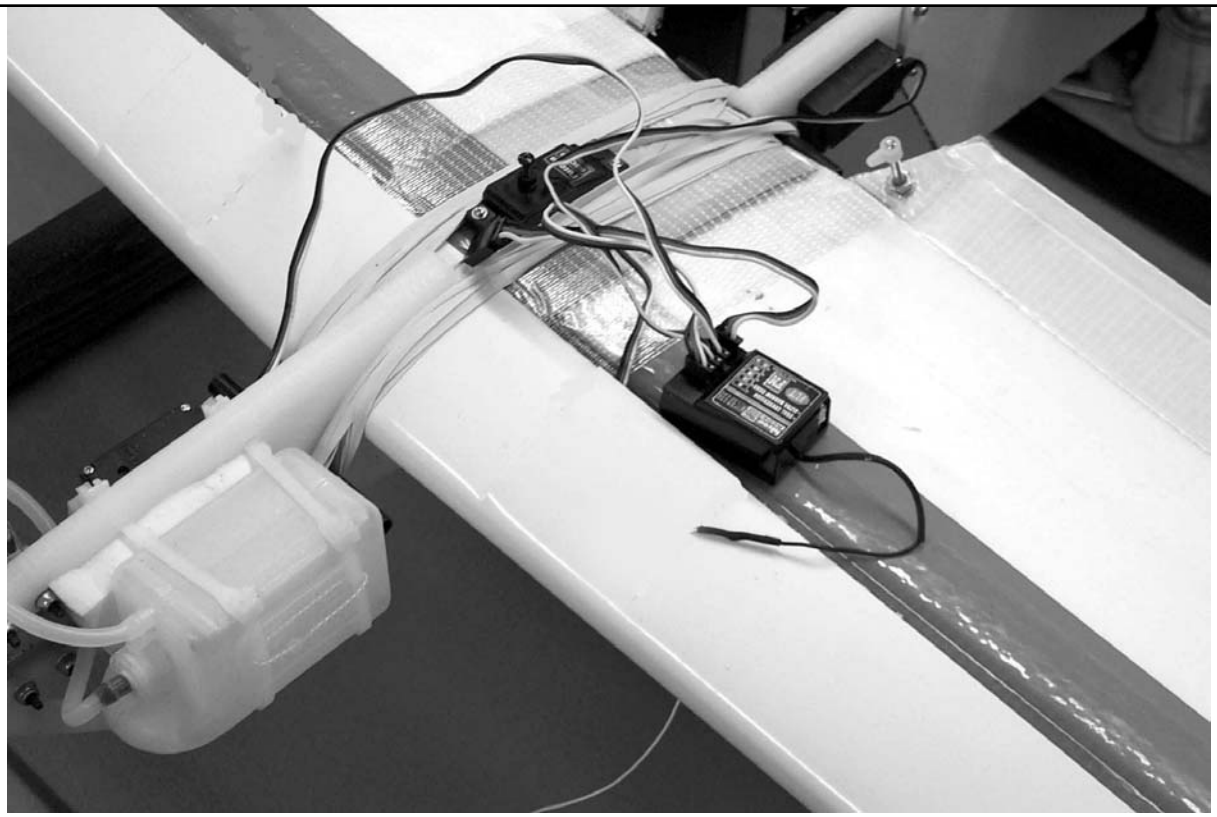
The cable ties that mount the tank do not go all the way around the fuselage. Insert one through the holes on the bottom, around the tank and back through the holes on the top side. Use another tie wrap to secure the end and clip using just the end of the tie wrap.



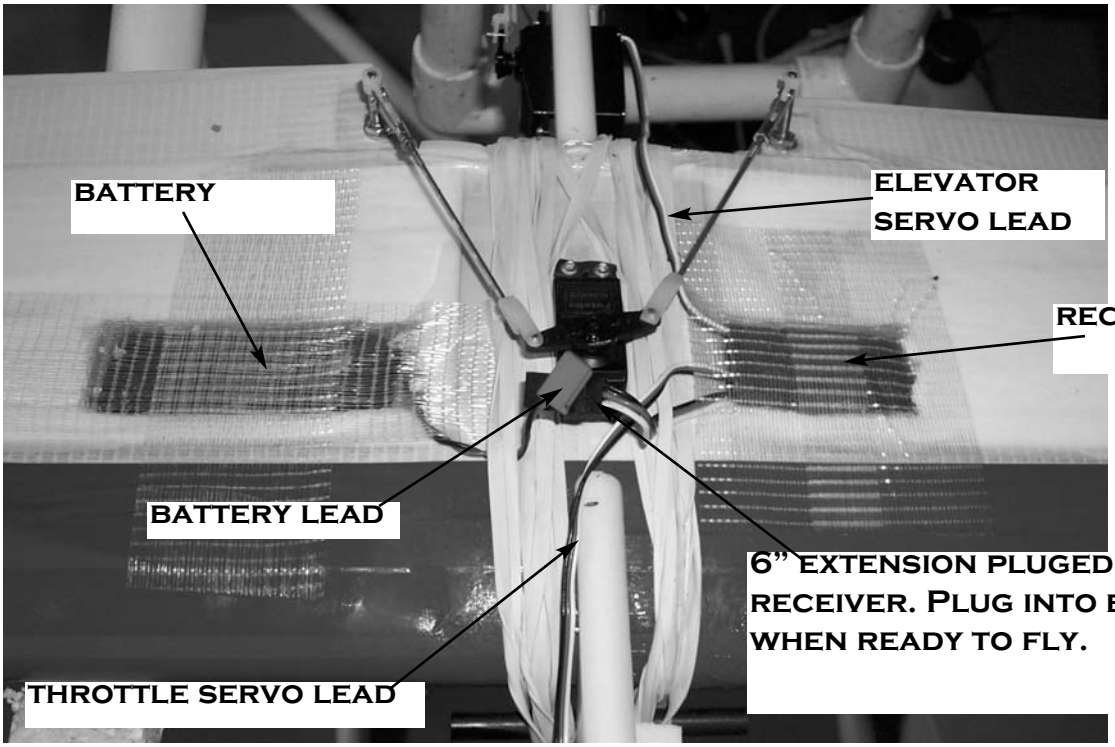
Use a piece of 1/2" foam under the tank and do not pull the tie wraps tight. Leave loose so as not to cause bubbles in the tank.



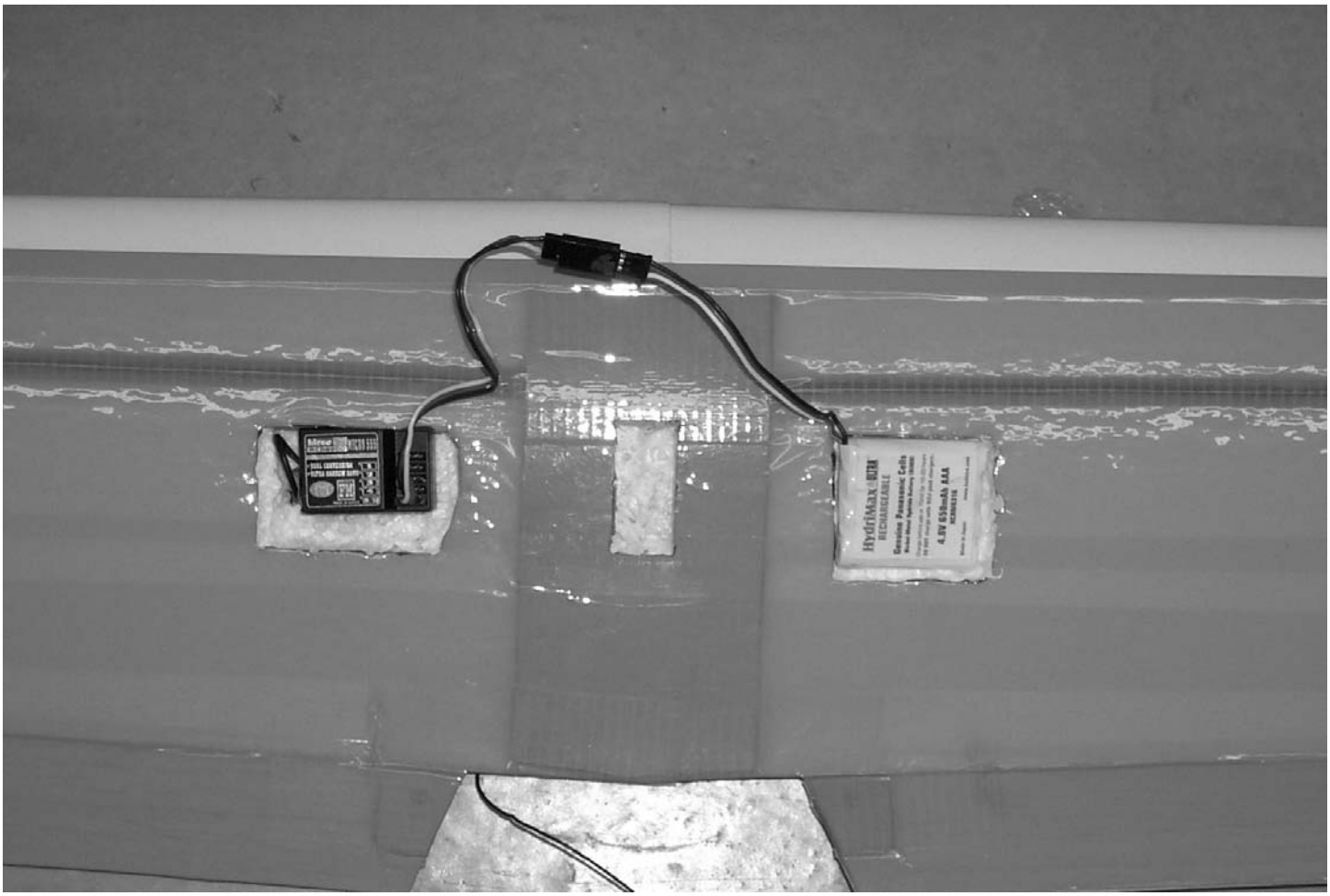
Locate the other 3 skewers and install in fin, sub-fin assembly. The skewers should go from the top, through the stab and into the sub-fin. If you have a long 1/8" drill you can drill through the stab from the top of the fin. If not mark the location of the holes, remove the fin and drill a hole in the stab so the skewers can pass through. Apply a drop of CA at one end of the skewer to prevent it from backing out. Do not glue to stab so if you need to replace the fin or stab during a match it will be a matter of a couple of screws coming out.



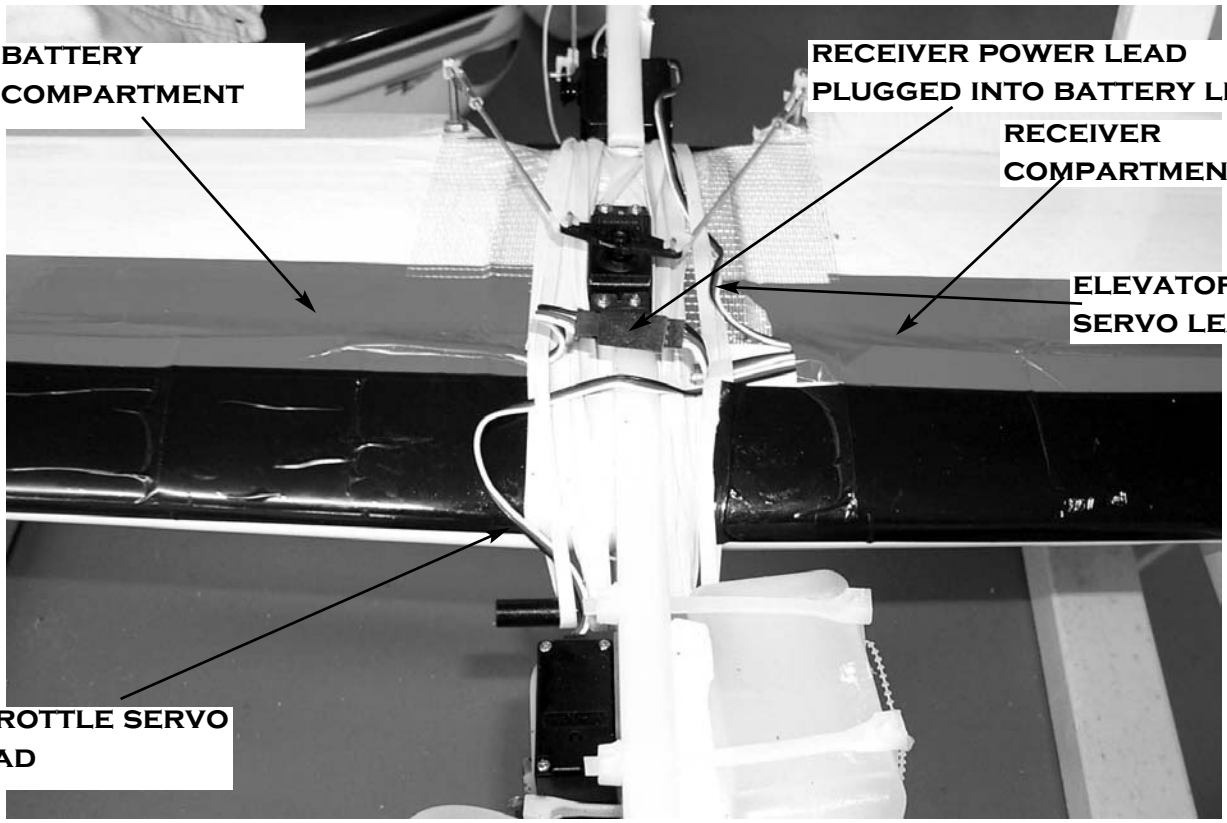
Place wing in saddle and secure with at least 6 #64 rubber bands on each side. Plug the aileron lead, elevator lead and throttle lead into the receiver. Drill a 5/64" hole in the bottom of the receiver compartment and pass the receiver antenna through to the bottom of the wing. Plug a 6" extension into the battery terminal on the receive, we will not be using a switch.



Place receiver in compartment with foam and tape in place. The throttle servo wire and elevator servo wire can be held in place with another rubber band.



INSTALL THE BATTERY IN THE OTHER WING AND TAPE DOWN. THE WIRE CAN BE SECURED UNDER ONE OF THE RUBBER BANDS.



The CG should be between 2-1/4" and 2-3/4". If set up as shown, it should be fine with no weight added. I have use O.S. LA.15. Thunder Tiger .15, Mecoa .15 and all were fine with no added weight. Some have added weight to the tail to make the plane more sensitive on elevator. You can adjust to your flying style. The elevator throw should be set up so you can do loops without snapping out. I have found that 1/2" throw works out about right. If you cannot do loops without snapping out, adjust throw. the ailerons work really well with 3/4" throw on high rate and 1/2" on low rate.

Parts price list

1. Fuselage HDPE		$34.95
2. Wing Kit CORES, SPARS, SPAR JOINERS, AILERONS, WING TIPS,LEADING EDGE REINFORCEMENTS, 1/32 PLYWOOD DOUBLERS		$39.95
3. Wing Cores	each	$10.00
4. Spars EPOXY GLASS	each	$3.95
5. Leading edge reinforcement covers	each	$6.95
6. Ailerons Balsa	each	$1.95
7. Laser cut 1/32" plywood doublers	set	$4.95
8. Laser cut 1/16" stab reinforcement		$1.00
9. Bamboo skewers	each	.10
10. Spar joiners	each	.75
11. Coroplast wing tips	each	$1.50
12. Coroplast stab		$3.95
13. Coroplast fin		$2.95
14. Coroplast sub fin		$2.50