

Building the...

WILDKARID



build it, fly it.

brubakermodels.com

WARNING!

A model aircraft is not a toy and must be handled with respect and care. The following warnings apply. Please read this entire page.

- This aircraft may be capable of speeds in excess of 60 miles per hour. As such it is capable of severe injury. This is not a “beginner” aircraft. If you are a student pilot please get help from an experienced pilot or model club before flying this aircraft. <http://www.modelaircraft.org/> is a great place to start.
- The spinning propeller can cause severe injury. Stay clear of it at all times. Do not allow spectators to stand in the “arc” of the prop. Always treat an electric motor as “armed” if you are unsure! Wear safety glasses and hearing protection as required. Keep loose clothing and tools away. Do not start and run the engine over loose gravel or sand. Carefully train your helper to hold the aircraft while starting, and navigate or carry it safely to the flight line.
- Lithium batteries can explode and cause intense fires. Read and understand the instructions for your particular batteries. Handle them properly and use the correct charger.
- Fly the model at a designated field or other safe place. Do not fly over spectators or other persons, private property, or buildings. Maintain a positive image of our hobby for all concerned.
- While building, use safe shop procedures. Remember to provide adequate ventilation while using any glues, finishes or other chemicals.
- Use common sense at all times and don't be afraid to ask for help from experienced modelers or contact us at Brubaker Models.

WARRANTY

Brubaker Models guarantees that this kit is free from defects in workmanship and materials when purchased. This warranty will not cover any modified parts or damage due to use. Brubaker Models liability shall not exceed the original purchase price of the kit under any conditions. The quality, safety, and performance of the completed model depends entirely upon the builder. No guarantee to the safety or performance of this model is expressed or implied. Brubaker Models has no control over the construction of this product and as such, assumes no liability for damage or injury resulting from its use. The builder assumes all liability by assembling and using this product. If the builder does not wish to assume this liability, he/she is advised to return the kit in new and resalable condition to Brubaker Models.

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INTRODUCTION

Thank you for purchasing a Brubaker kit! There are many choices in the model aircraft market. My commitment is to make sure that you end up with an aircraft that you are proud to own and love to fly. This is a KIT. Yes, it will require thought and craftsmanship to build. I have made every effort to work out the “kinks” during the design process. I will do my level best to support you should any questions arise during the build. Parts are available. I also value your suggestions. Please contact me should you need assistance or have feedback on the model.

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facebook - <https://www.facebook.com/brubakermodels>



Aircraft Specs:

Wingspan: 30"
Length: 30"
Weight: 18 - 22 oz.
4 Channel w/Mixing

The Contents of this Kit:

- 3 Laser Cut Foamboard Sheets (fuselage, right wing, left wing)
- Posterboard Parts Sheet
- Lite ply Motor Mount
- Birch ply Control Horns
- Elevator Joiner Wire
- Hardware for 3 Pushrods
- Velcro
- Motor Mounting Screws w/Nutplates

Required Components (not included in kit):

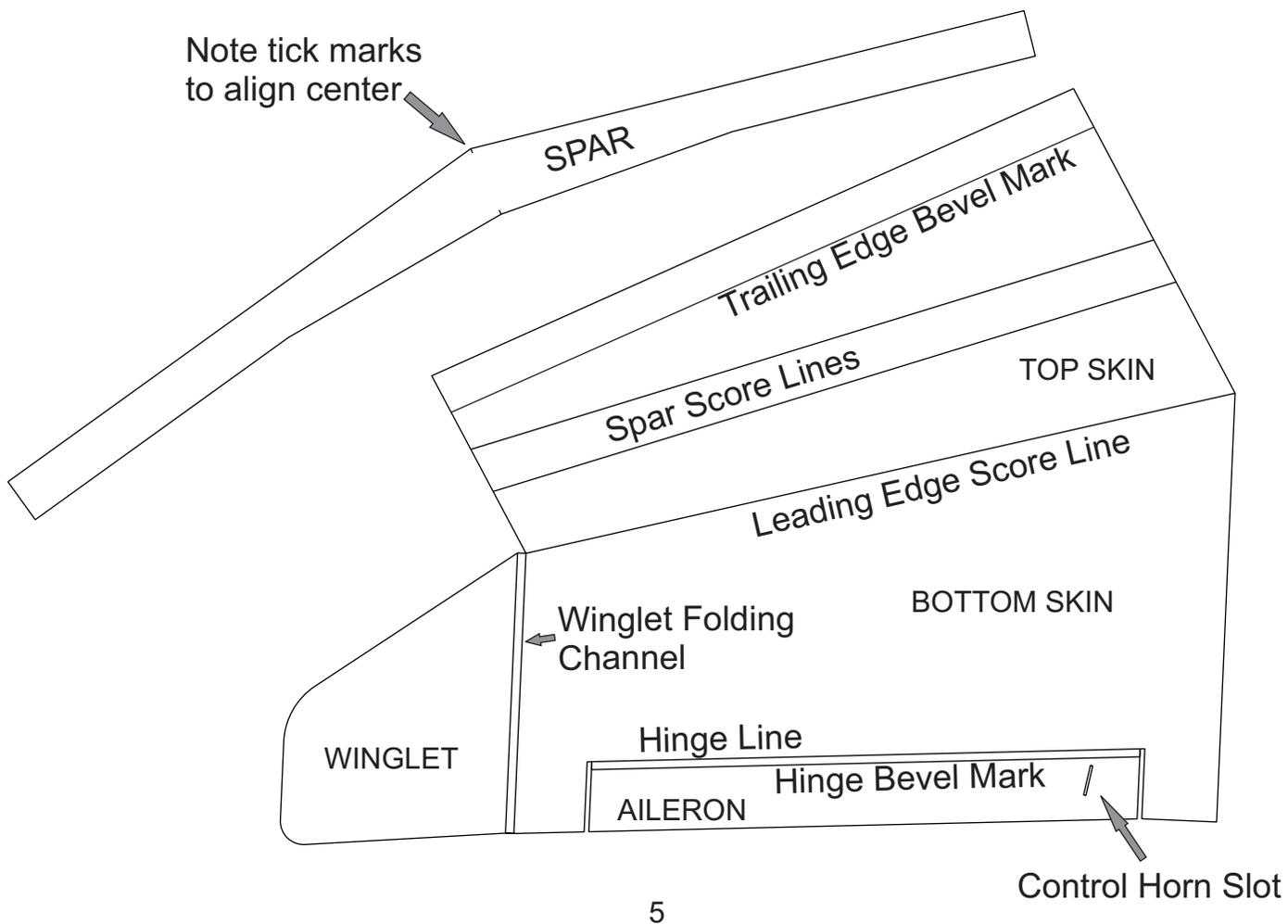
- Park 400 and up Brushless Motor w/Speed Control
- Prop and Prop Hub (Sized to fit Motor)
- 3 Micro Servos (HiTec Hs55 or similar)
- Lipo Battery Pack (800-1200 mah, 3-4 cell)
- Transmitter with Mixing Capability
- Receiver with at least 4 Channels

*Note: The laser cut motor mount is pre-drilled to fit either the Great Planes Cross Mount for 28mm Rimfire Motors (Tower stock #LXVPC2) or the HobbyKing Turnigy Park 450 mount. The bolting diameter is 1.310".



WINGS

Getting started! You'll need these parts:



Begin by removing the pieces from the foam board, using a hobby knife to cut the connecting tabs when necessary.

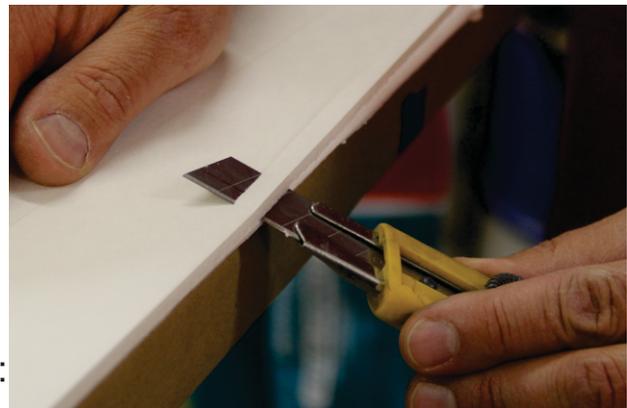
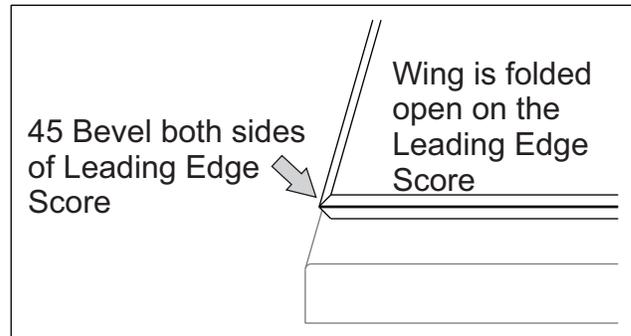
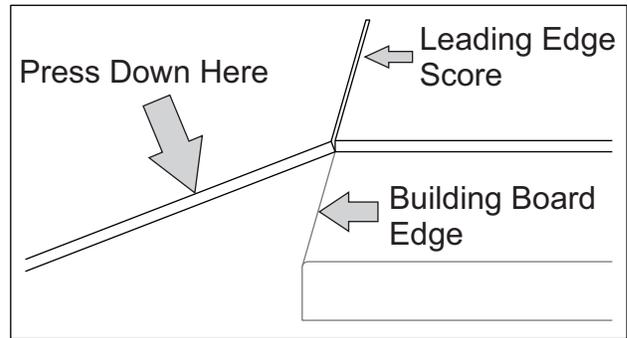
Starting with the right wing panel, “break” open the score mark at the leading edge. Do this over the edge of your building board.

 THE DIAGRAM ON PAGE 5 WILL HELP IDENTIFY SCORE LINES ETC.

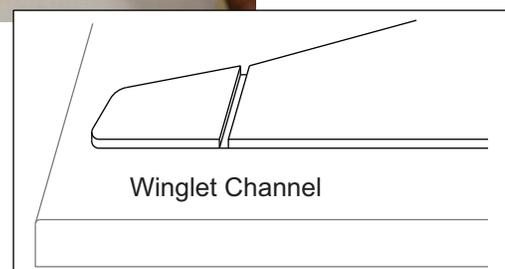
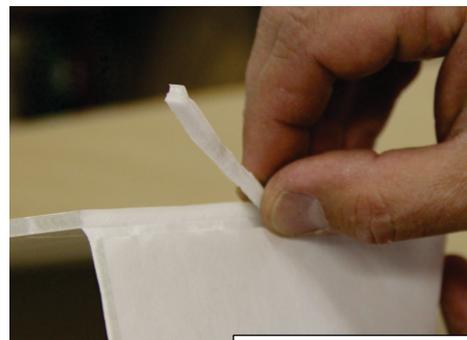
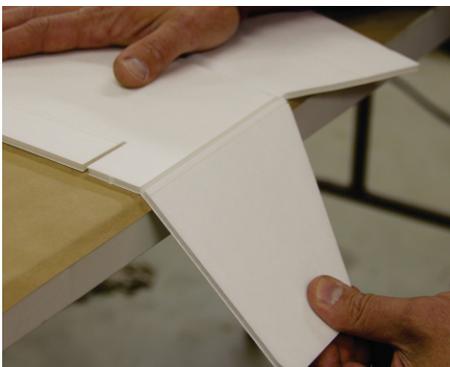
Fold the wing in half on the score line and cut a 45° bevel on both sides of the fold it opens up. Use a sharp knife and be careful to not cut through the paper in the center; it will become your leading edge. You can sand these bevels a bit with your 180 block if desired.

 REMEMBER: SAVE THE CENTER CONNECTING PAPER!

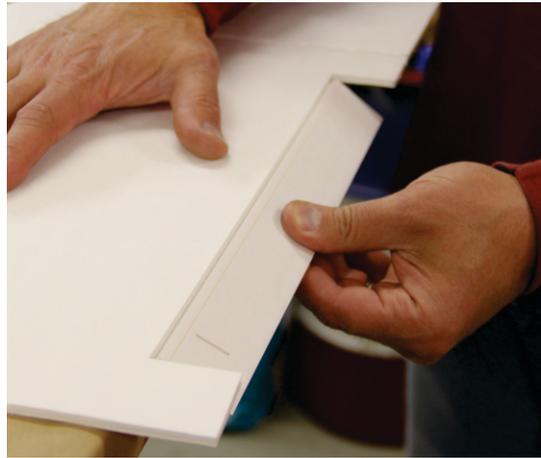
Cutting the bevel:



Break open the winglet along both score lines and peel out the strip of foam between them to create a channel.

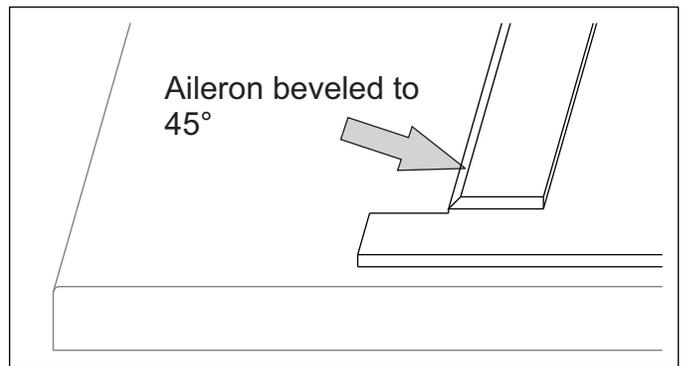


Break open the aileron.
The connecting paper
will become the hinge.

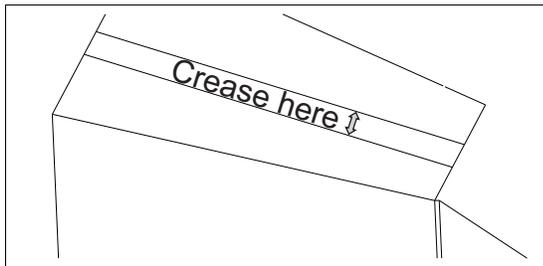


Flip the wing over and fold the aileron
over onto the bottom surface. Cut a
45° bevel on the aileron using the
marking line provided. Sand the
bevel smooth if necessary.

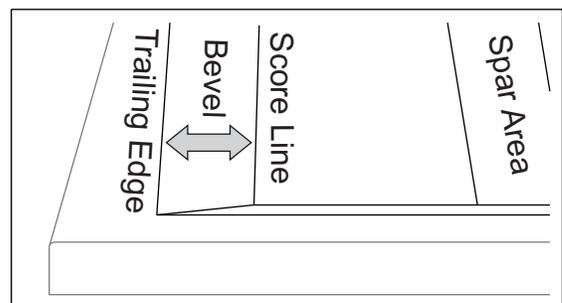
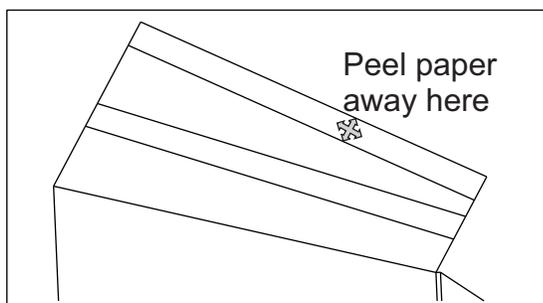
 REMEMBER: SAVE THE HINGE
CONNECTING PAPER!



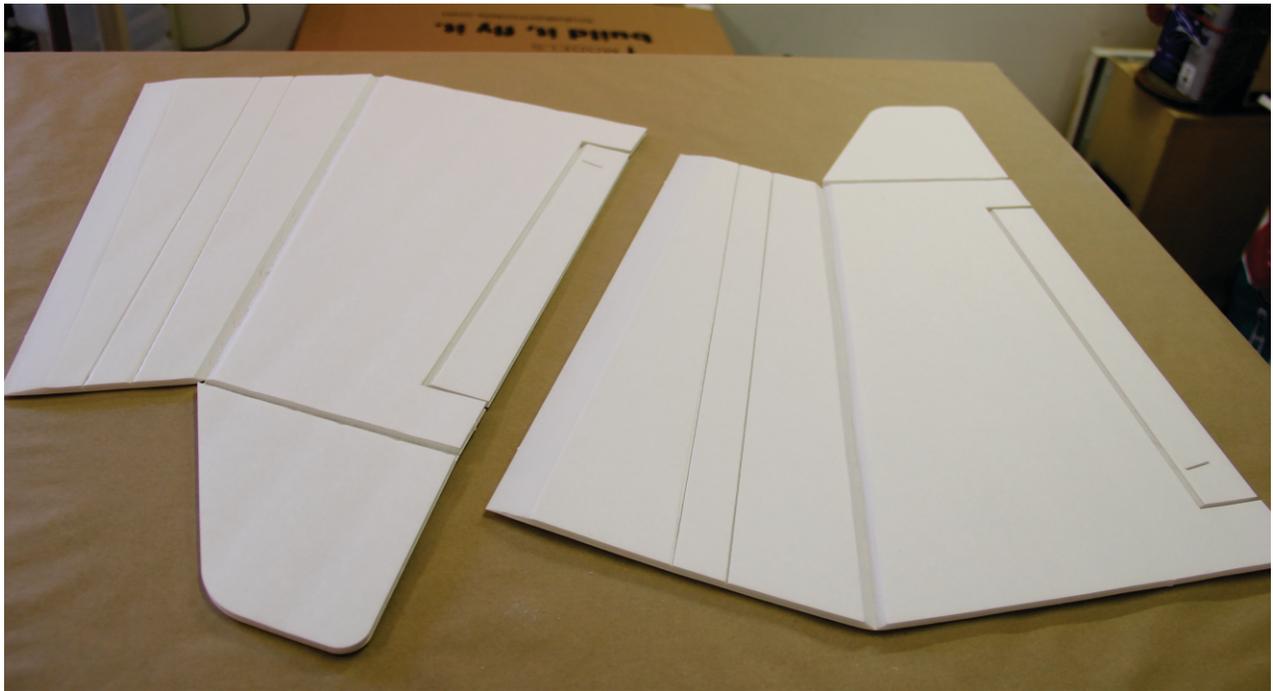
Using a popsicle stick, lightly
crease the two spar score lines.



Peel away the paper at the trailing edge of the top skin to the trailing edge bevel
mark. You may have to score the paper a bit if it isn't cut through. Sand this area
to a knife edge bevel. Be careful not to sand through the paper on the
underneath side.

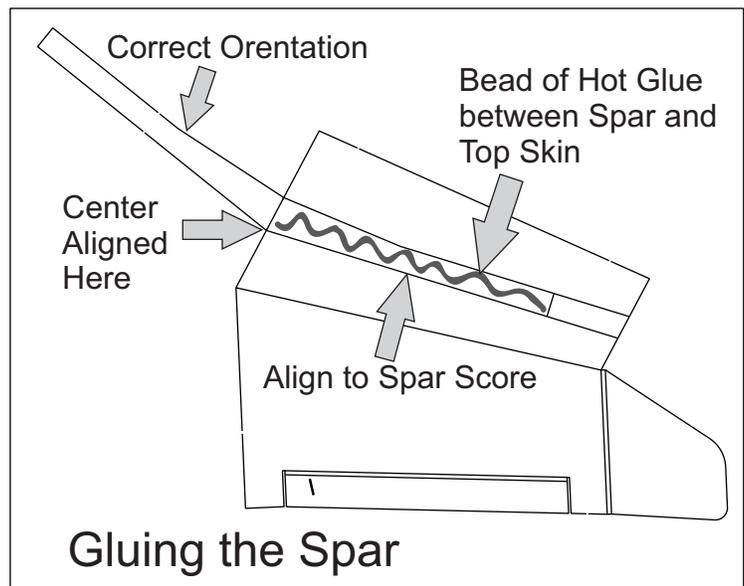


Now repeat the entire process for the left wing. When finished you will have 2 wing panels that look like this, ready for glue!



YOU WILL BE USING YOUR HOT GLUE GUN FOR MOST OF THIS BUILD. WHERE OTHER ADHESIVES ARE UTILIZED IT WILL BE NOTED.

Place the right wing panel on your board and glue the spar in its location as shown. You can draw a pencil line between the tick marks at the spars center if you wish. Make sure it is correctly aligned on the center and along the score line closest to the leading edge fold.



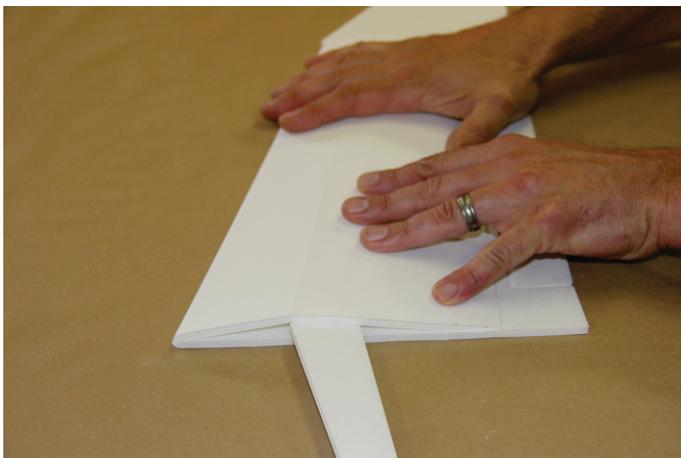
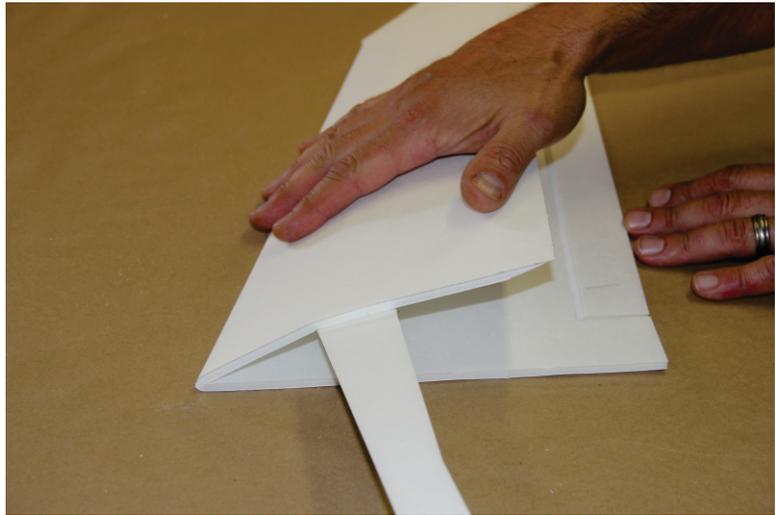
Press the glue down firmly:



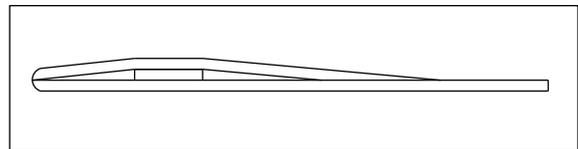
KEEP YOUR GLUE GUN LYING ON A SCRAP OF CARDBOARD SO IT DOESN'T DRIP HOT GLUE ON THE BENCH



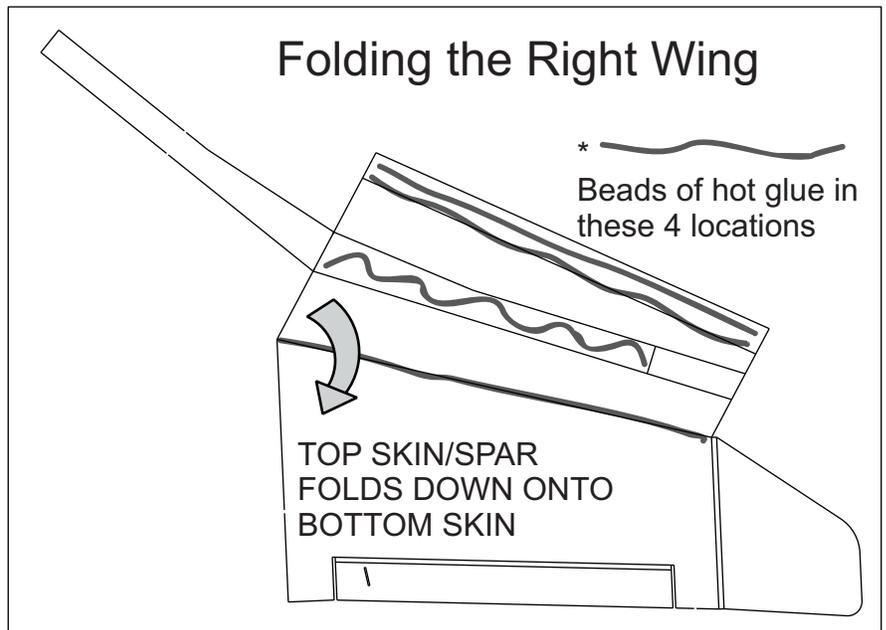
Without gluing fold the top skin over onto the bottom skin. Work it down gently, back and forth, pressing from front to back, forming the airfoil.



The airfoil cross section looks like this:

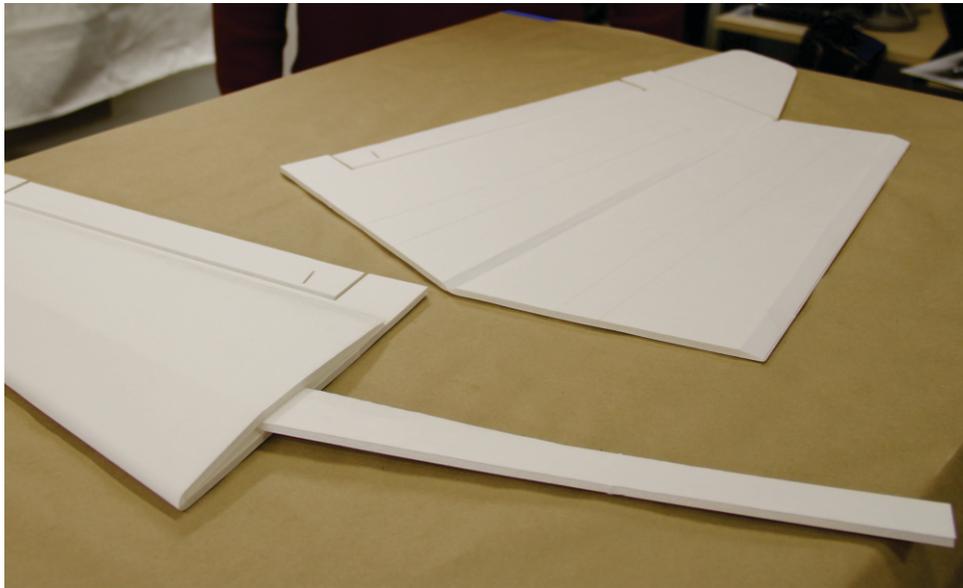


When you are satisfied that it folds as it should, put beads of glue in the 4 locations shown in the diagram. Immediately fold it over and press it down in place as you did above. Make sure the spar is firmly seated and continue to work the trailing edge down as the glue cools.

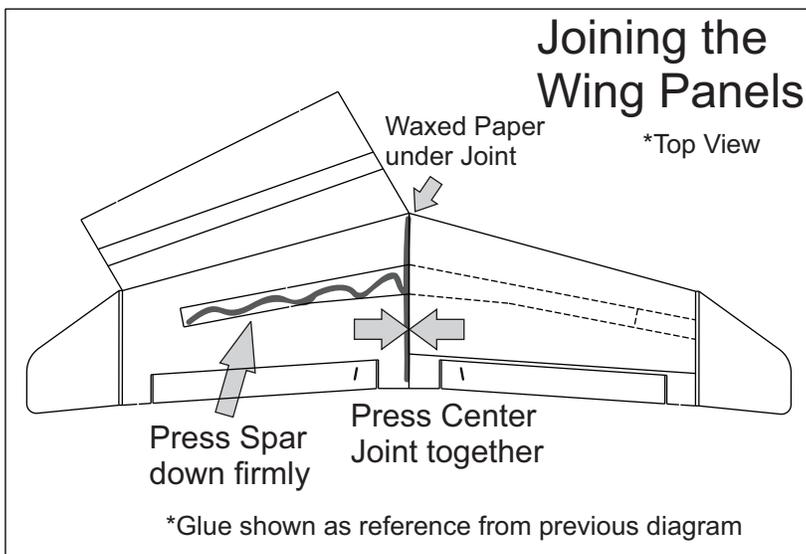
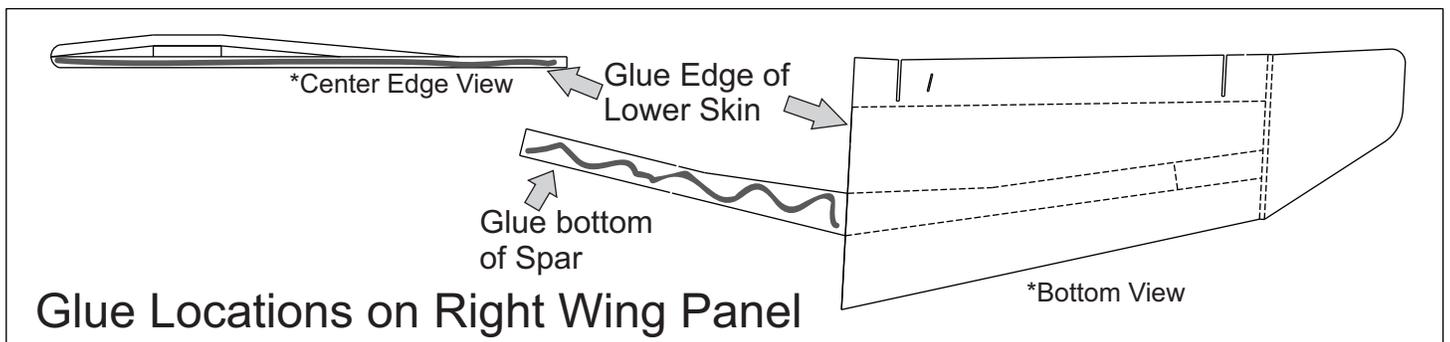


*Note that right and left are always designated as if you were in the cockpit with the aircraft right side up.

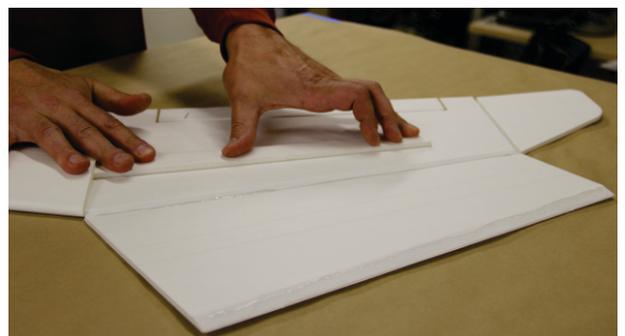
JOINING THE WINGS



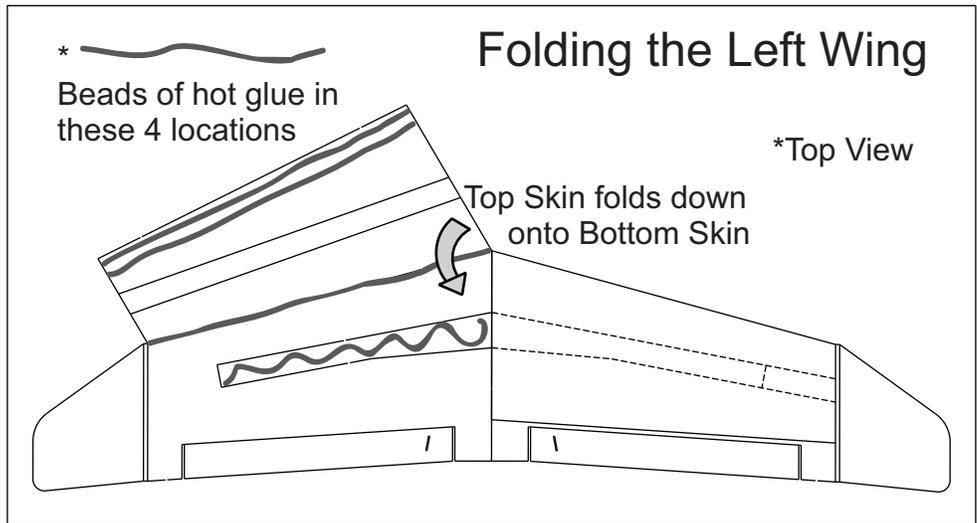
Place the wing panels together and check the fit. Now run a bead of glue on the bottom of the spar and along the edge of the lower skin on the RIGHT wing panel. Immediately place the two panels back together, holding them firmly, and press the spar down onto the left wing panel. See the diagrams.



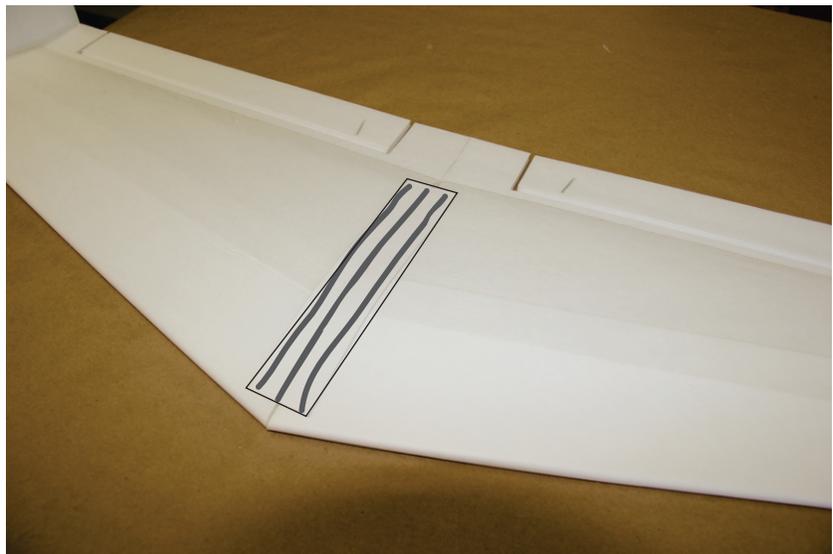
A piece of waxed paper on your bench can keep parts from sticking



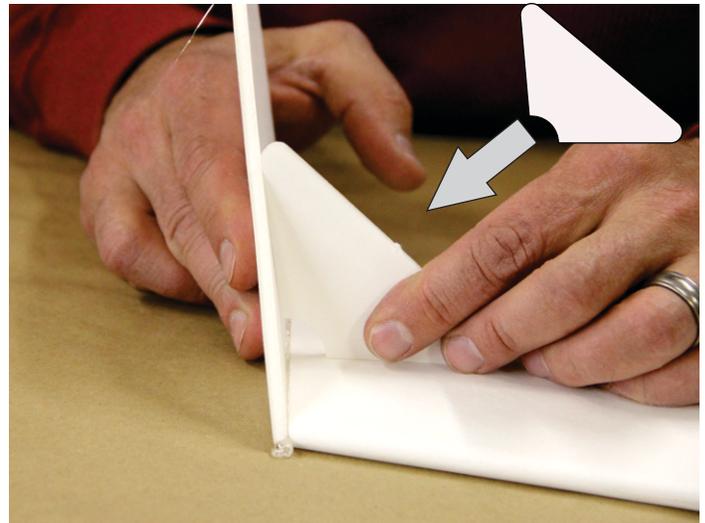
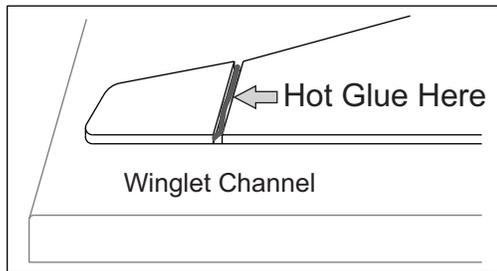
Fold the top left wing skin down as you did for the right one, pressing it all the way down to check the fit. Put glue in the leading edge bevel, on the top of the spar, and along the trailing edge and fold it over again, pressing the spar and trailing edge down firmly until the glue cools.



Put a bead of glue in the top skin center joint. Glue the #3 Posterboard Part in place over the top center joint with 3 beads of glue as in the photo.



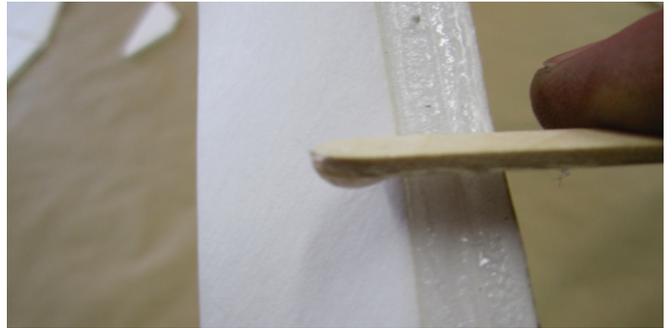
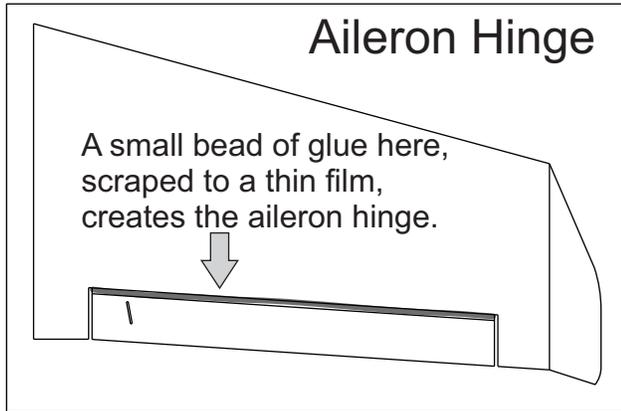
Put a bead of glue in the winglet channel. Fold it up vertical and align it with the winglet angle alignment tool from your kit. See the diagram and photo.



Once the glue has cooled, squeeze a new bead in the corner and wipe it with a popsicle stick to form a nice fillet.

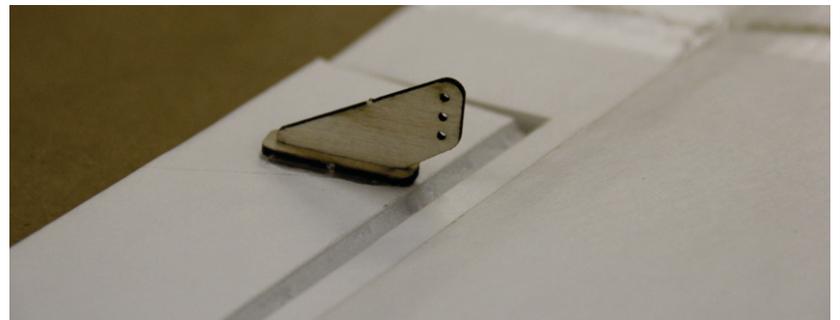
Aileron Hinges

Put a small bead of glue in the aileron hinge gap and fold the aileron open so the gap is open flat. Scrape excess glue off, being careful to leave only a thin film behind. This will be your aileron hinge. Repeat for the other aileron.

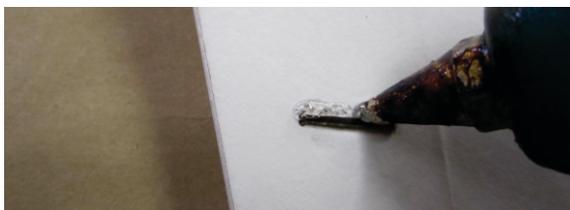


Aileron Control Horns

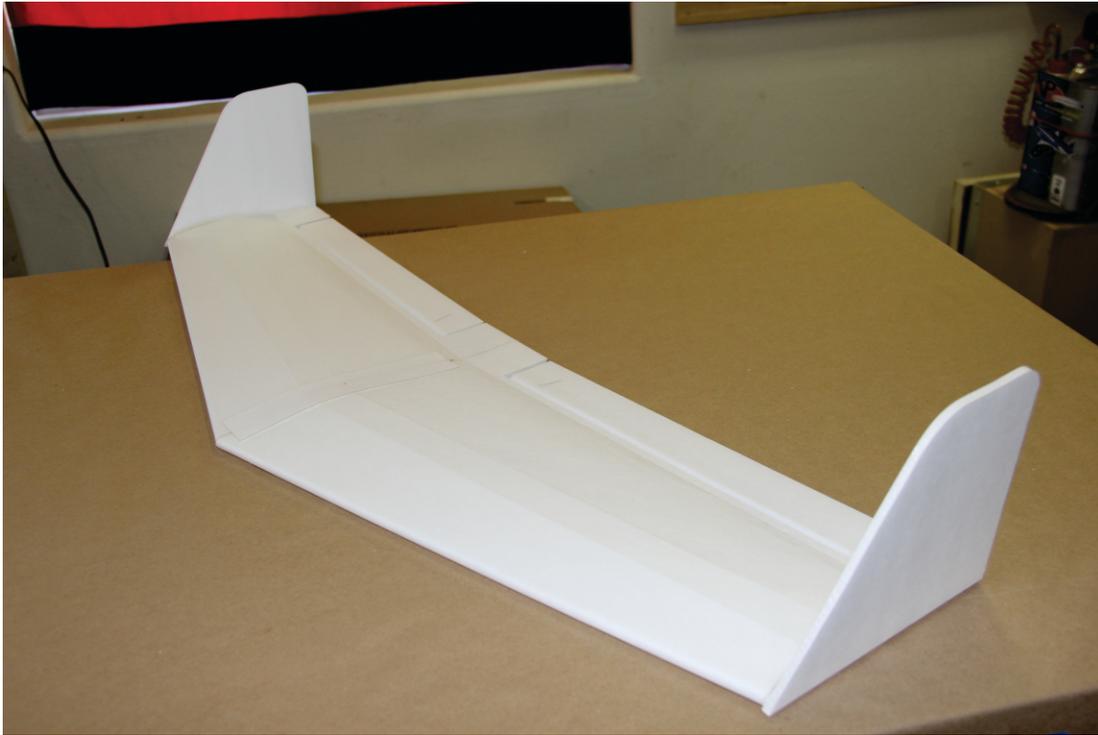
Remove control horns from their sheet. Slide one base plate onto each control horn. Add some hot glue and insert each one into its slot. Make sure that it is in the TOP of the aileron and pointed FORWARD.



Glue a second base plate onto the bottom of each tab that extends through the bottom of the aileron.



The Main Wing is Finished!



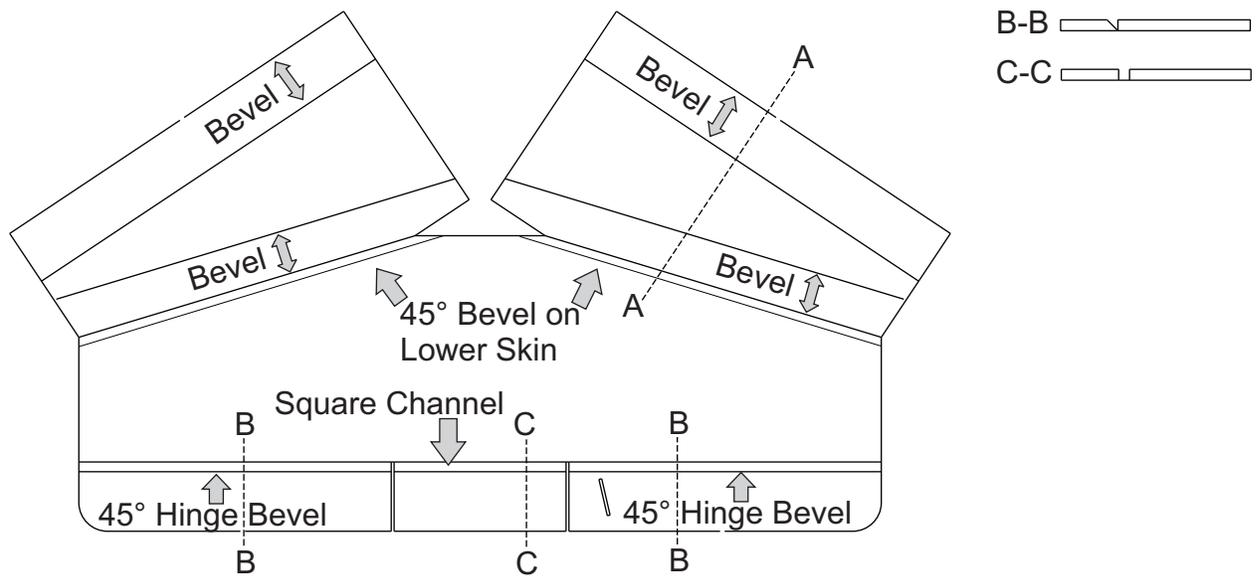
To invent an airplane is nothing. To build one is something. But to fly is everything. ~ Otto Lilienthal

CANARD

Getting started! You'll need these parts:



Beveling the Canard



Remove canard from the foam board sheet. Familiarize yourself with the required bevels in the diagram above. Break open the elevators and center trailing section. Cut a 45° bevel on the elevators and peel out the foam strip in the center section area. Also cut a 45° bevel at the leading edge of the lower skin. Peel away the paper from the bevel areas on the upper skins and sand these to a knife edge bevel. Check your work against the diagram, and don't glue the skins down yet.

Cutting the Elevator Bevel:



Peeling out the Center Section Channel:



Sanding a Bevel:



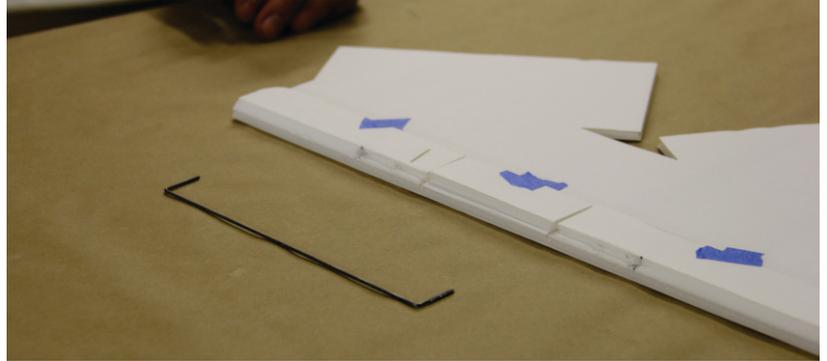
REMEMBER: SAVE THE CENTER CONNECTING PAPER!

Joiner Wire

Take the 8" section of .062" music wire included in the kit and mark 3/4" from each end. Bend it with pliers to match this sketch.

*Actual Size

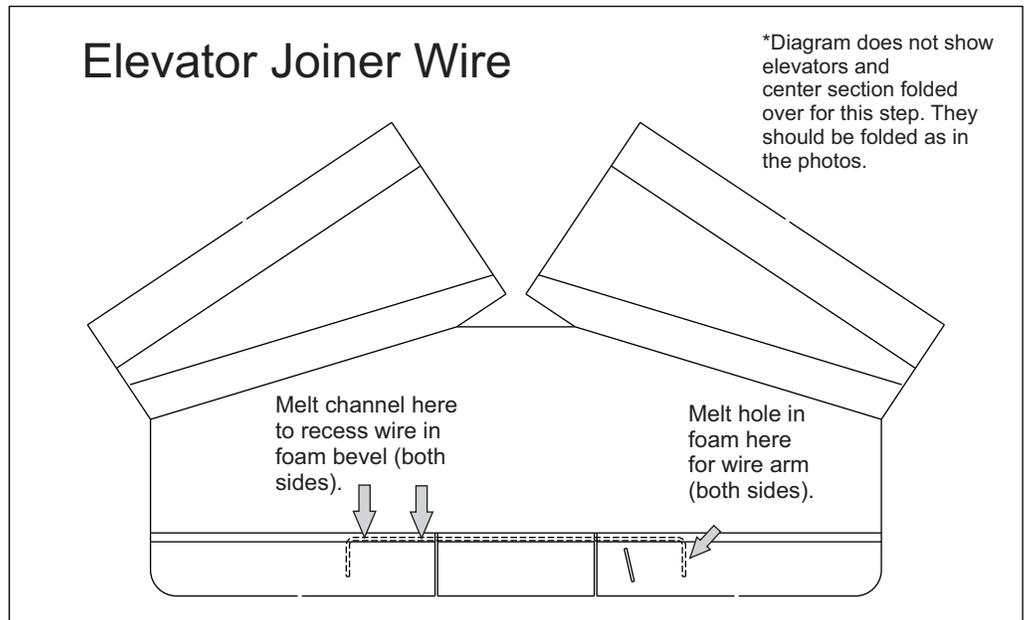
Flip the canard over on the bench. Tape the elevators and center section back over the canard, like in the photo. I like blue painter's tape here because it is not quite as tacky as other tape.



Center the elevator joiner wire on the hinge line and mark where each arm will enter the foam of the elevator.



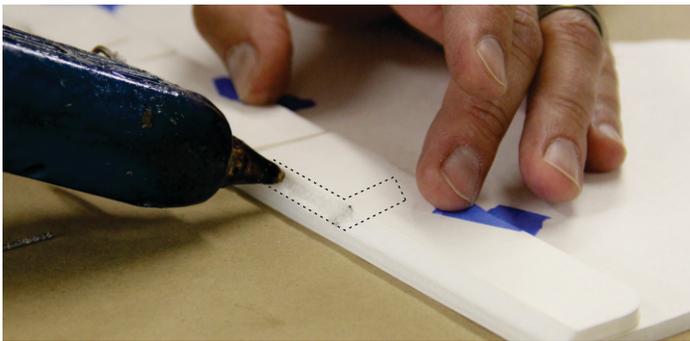
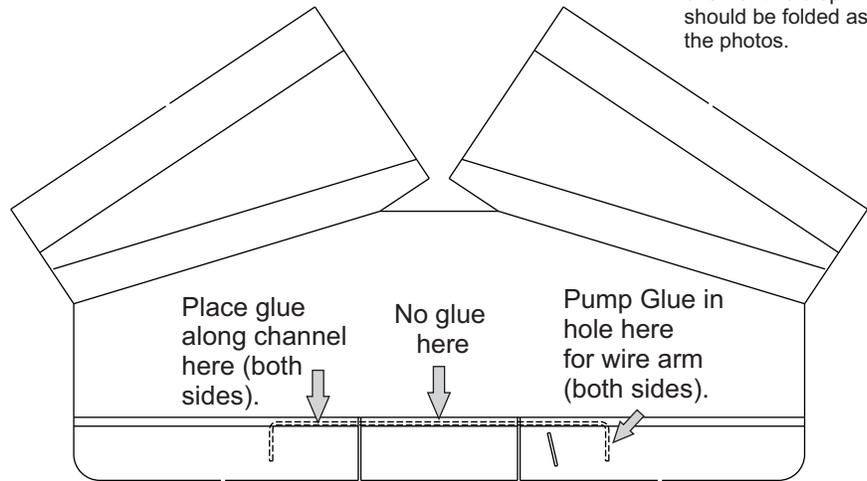
Using a heat gun, kitchen stove or even a lighter, heat the wire until it will melt the foam. Test this on a scrap piece. Use the heated wire to make the holes and channels in the elevators as shown in the diagram. When you are finished, the wire should fit flush into the bevels of the elevators.



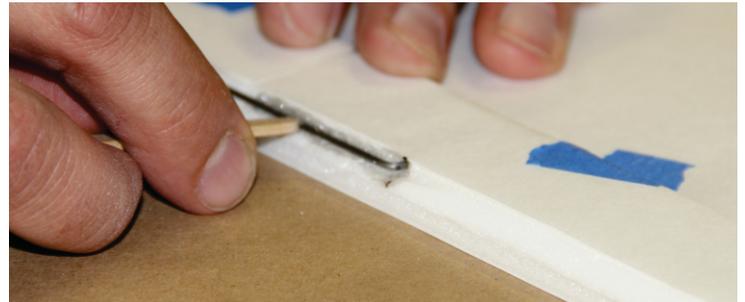
Now fill the holes and channels with hot glue and press the wire into place with a popsicle stick. Scrape away excess glue from the hinge line. Also do not get any glue in the center section channel area. The rod must turn freely here. You can now un-tape the control surfaces from the canard.

Gluing the Elevator Joiner Wire

*Diagram does not show elevators and center section folded over for this step. They should be folded as in the photos.

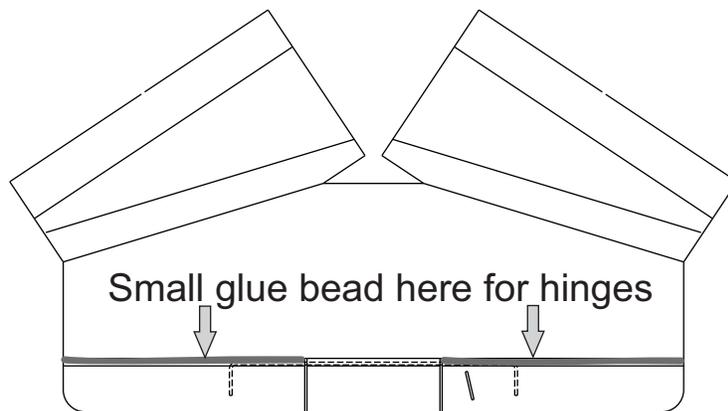


Pressing the wire in.



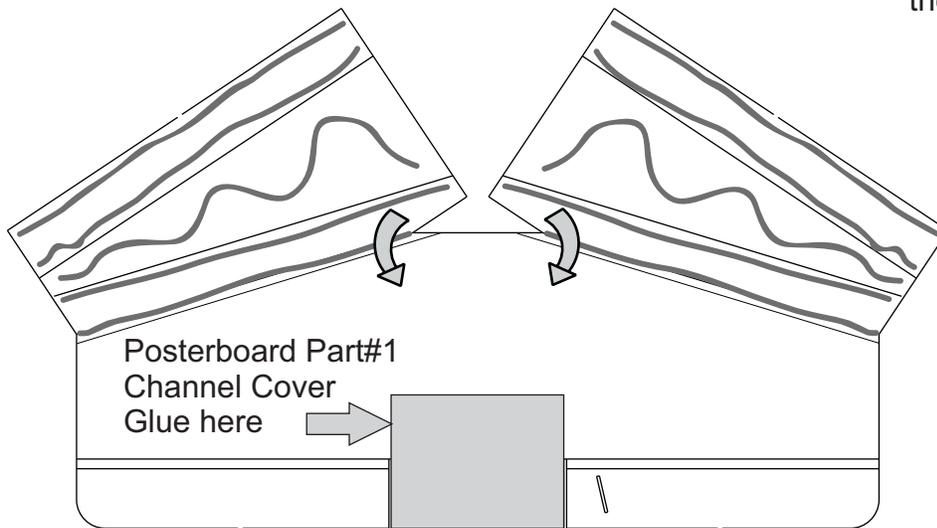
Elevator Hinges

Create the hinges just as you did for the aileron, by applying a small bead of glue, removing any excess, and scraping it to a thin film. Be careful not to get glue in the center section channel.



Folding the Canard

* 
Place beads of glue in these locations.



Glue the Posterboard Part #1 Channel Cover on as in the diagram. Now dry fold the top skins of the canard to the trailing edge, just as you did on the wing section, working them down. Next, doing one side at a time, put beads of hot glue in the locations shown, and then fold, pressing firmly until the glue cools. Pay special attention to get the trailing edge sealed down tight.



Glue the center joint with a bead of hot glue, scraping the excess away.



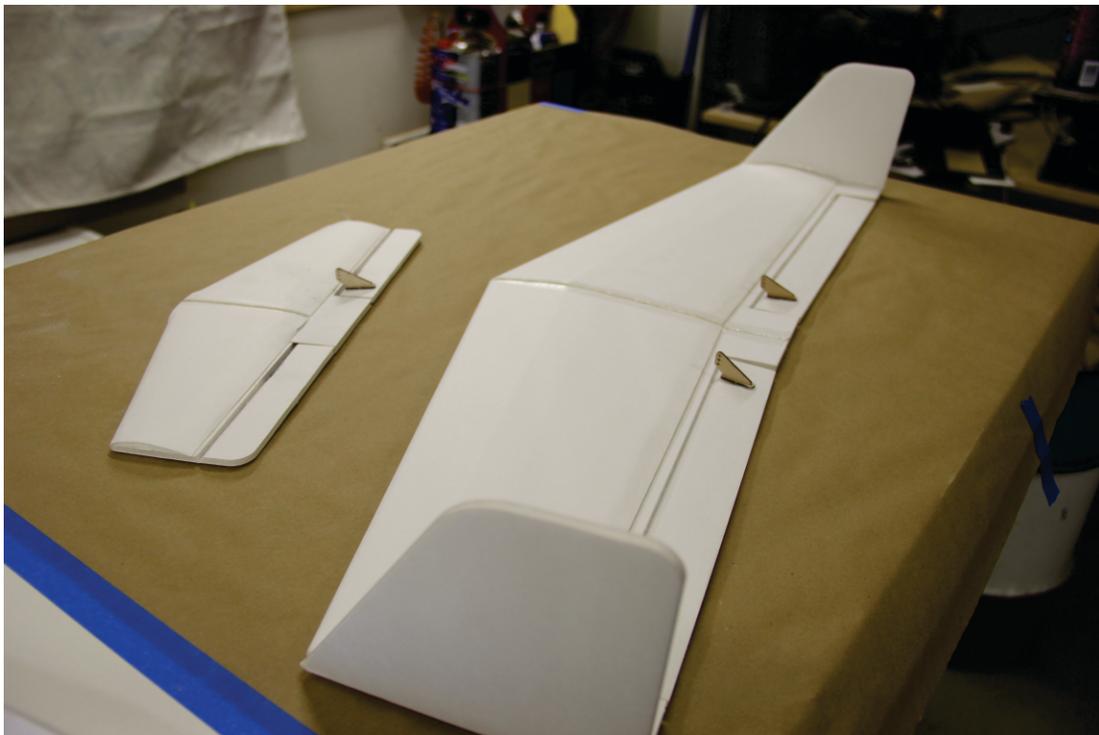
Glue the control horn in the elevator just as you did for the ailerons. The control horn should be in the TOP of the right hand elevator and pointing forward. Be sure to glue the base plate on the bottom.



You are now finished with the canard!



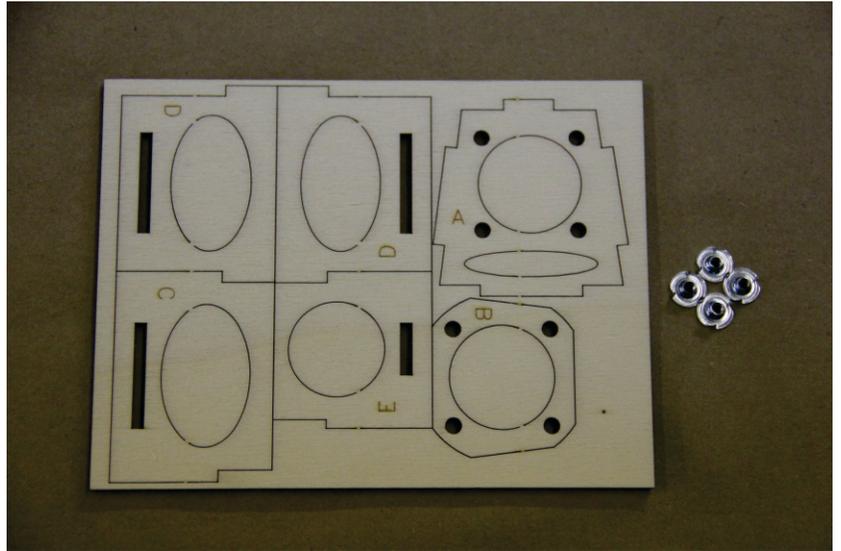
The parts pile is growing!



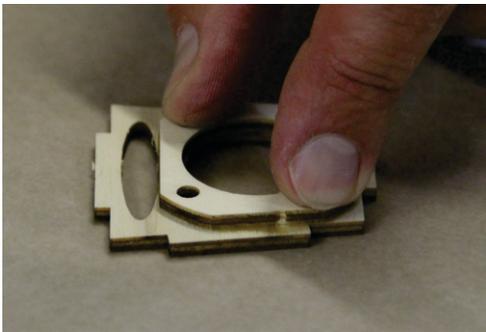
MOTOR MOUNT

Now we will assemble the motor mount. You will need the Lite Ply Motor Mount sheet and the 4 T-nuts included in your kit. Remove the ply parts from their sheet. I build this part with CA glue, but you can also use wood glue if you wish. Follow the sequence in the photos.

Getting started! You'll need these parts:



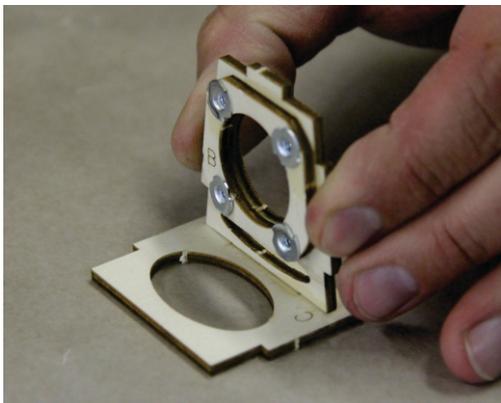
1. Glue B to A. Align the mounting holes:



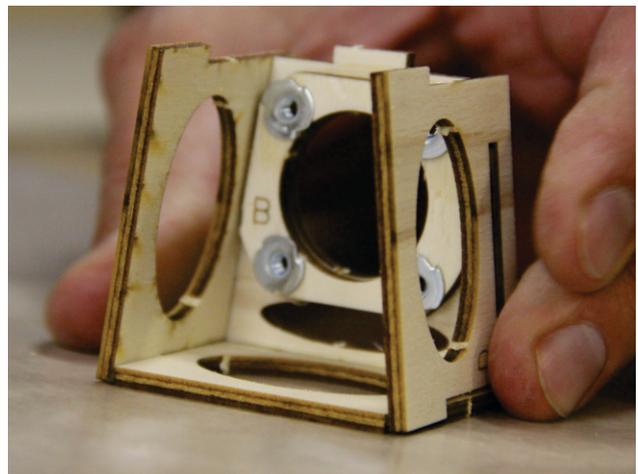
2. Glue and press T-nuts into B:



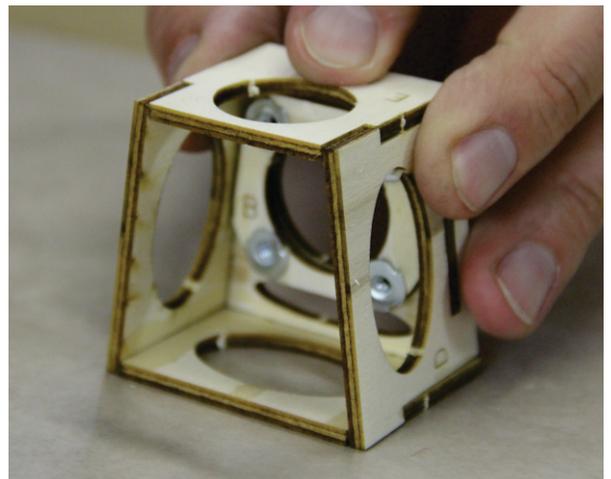
3. Glue A/B into C:



4. Glue a D on each side:

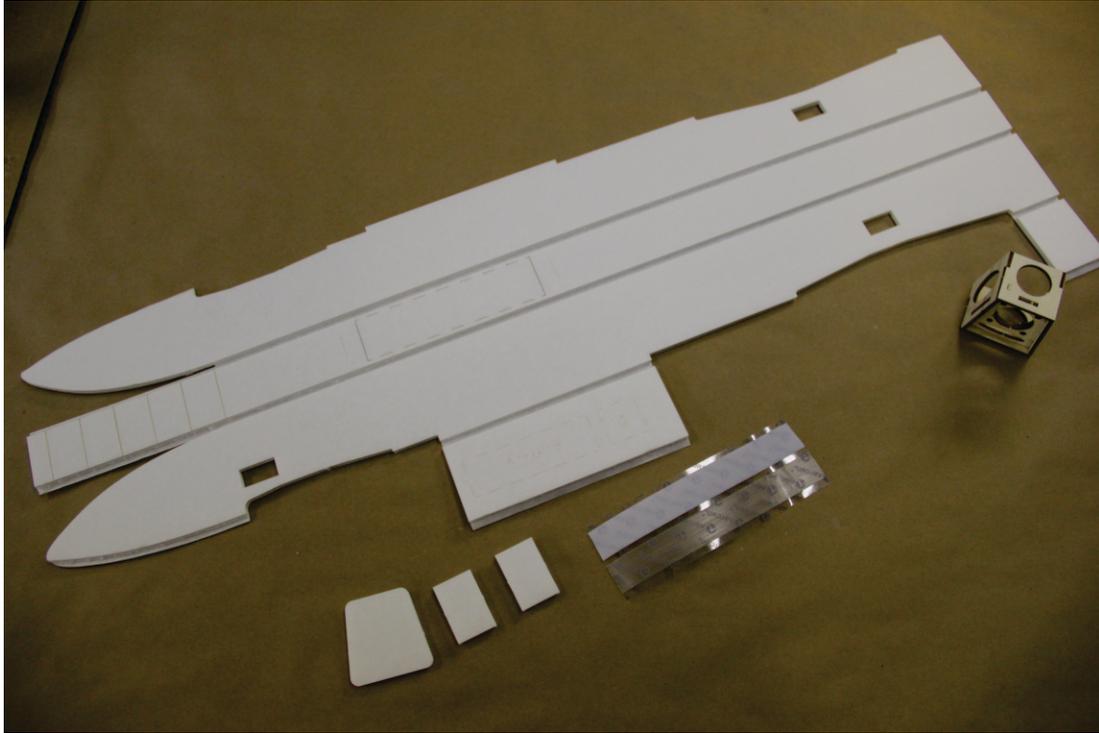


5. Glue E on top:

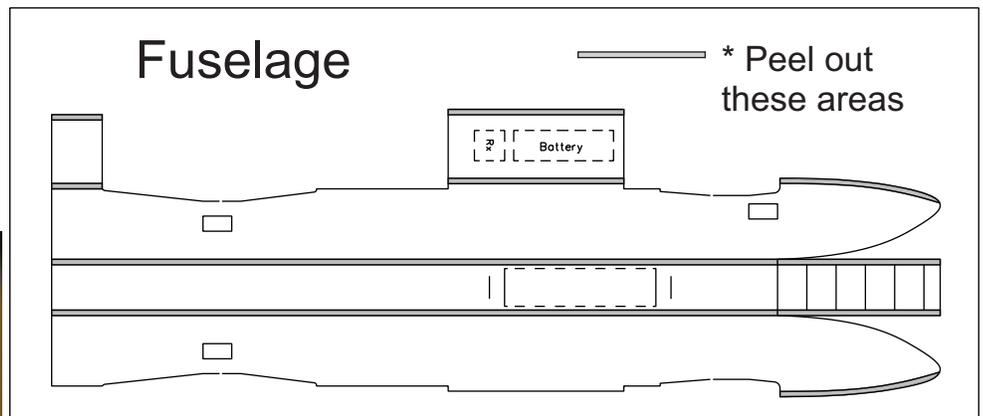
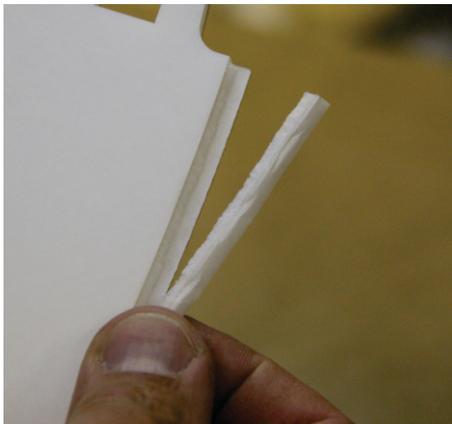


FUSELAGE

Getting started! You'll need these parts:



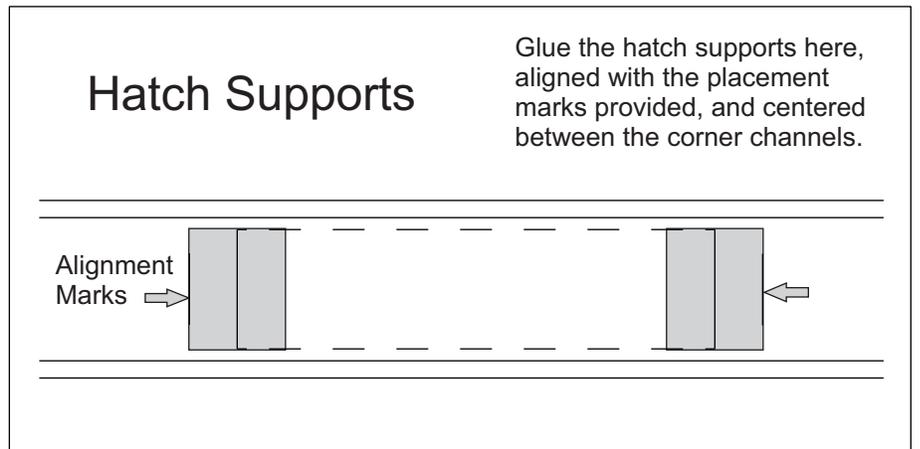
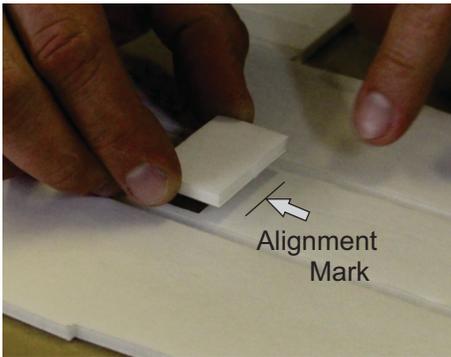
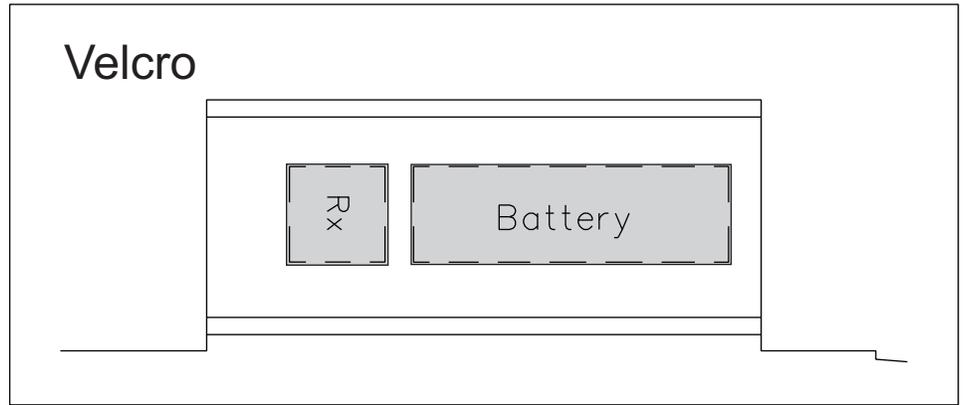
Begin by breaking open the corners of the fuselage and peeling out the foam strips just as you did before.



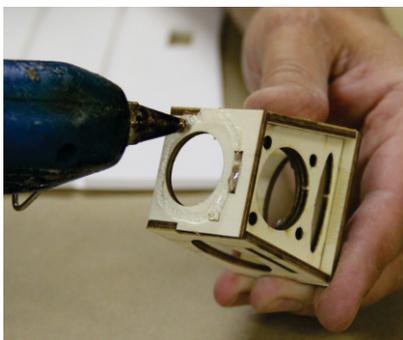
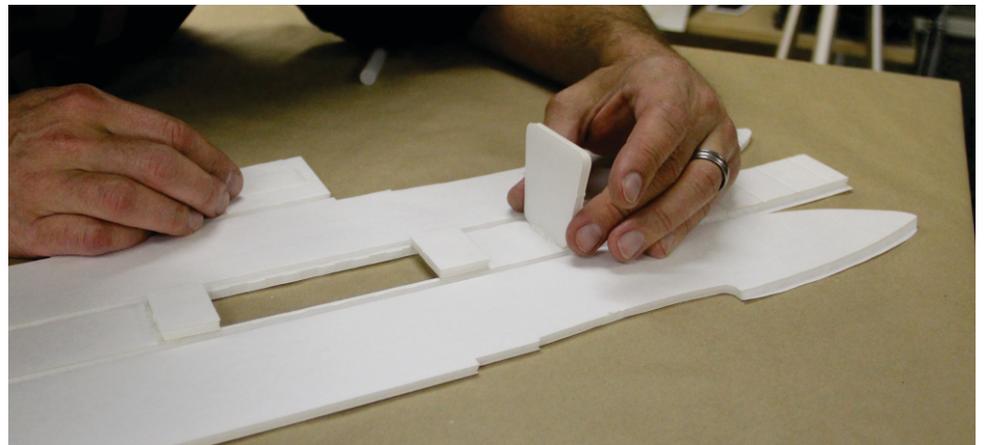
Next cut out the hatch area by connecting the dotted lines. Cut through from both sides and take the piece out. Be sure to do this after the corners are peeled out.



Cut the velcro strip into 3 pieces - 3 ¼", 1" and ½". Stick hook side of the 3 ¼" piece on the Battery area, and the hook side of the 1" piece on the Rx area. Save the ½" piece, it will be your hatch hold down.



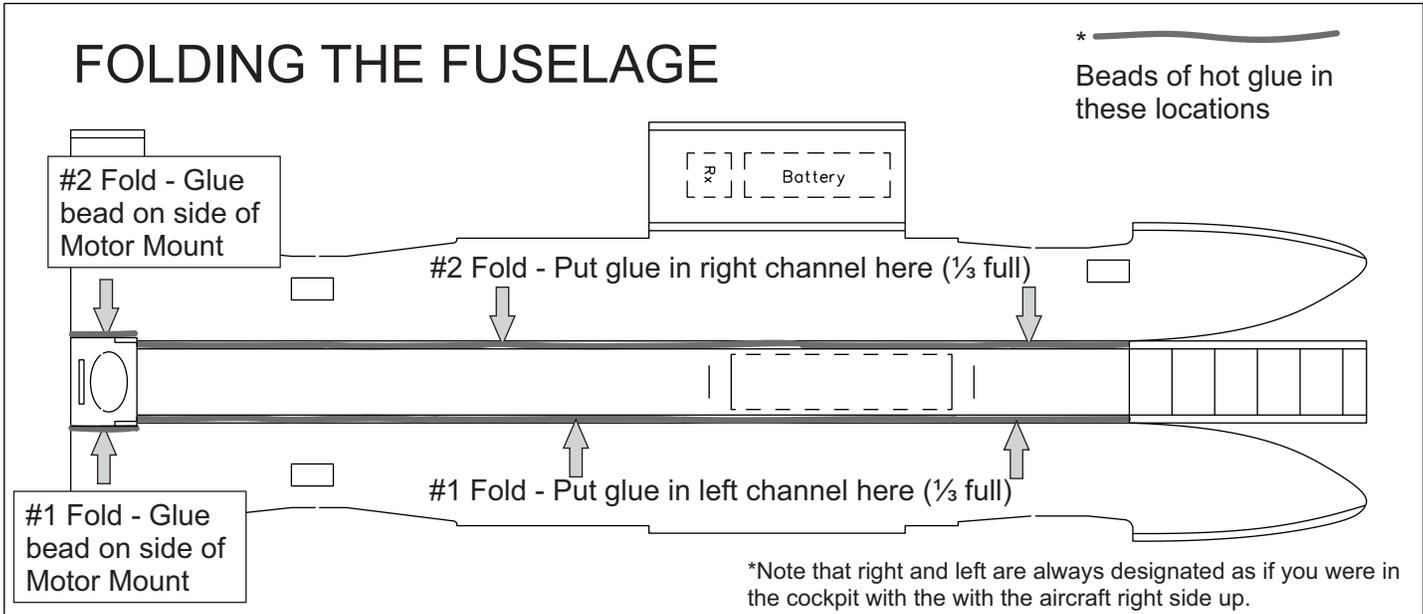
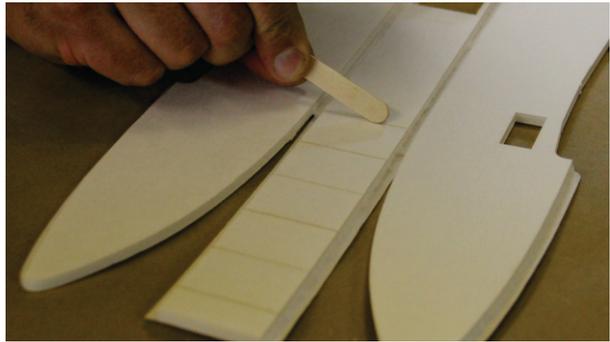
Glue the temporary fuselage former on about 2" in front of the hatch opening. Just use a little glue here; you will remove it later. Note that the former is upside down, you are gluing it to the top skin.



Glue the motor mount in place, upside down, flush with the back edge of the fuselage and centered between the channels.

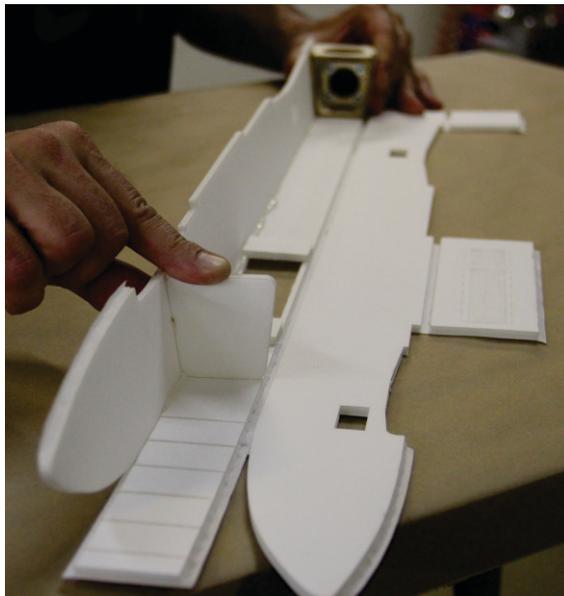


Crease the score marks in the nose area lightly with a popsicle stick. This allows the nose sheet to bend to its contour.

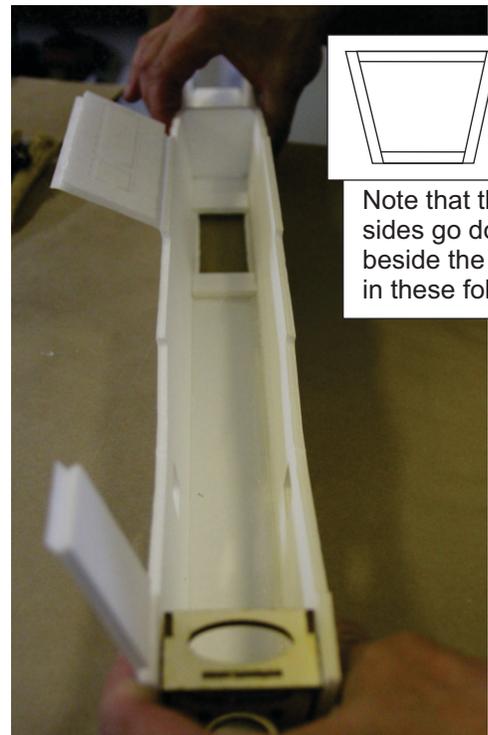


Glue and fold the fuselage sides in the sequence shown. Glue is applied in the channel and to the side of the motor mount for each fold. Do not glue the sides to the temporary former, just use it as a guide to set the angles. Hold each side firmly as the glue sets.

Fold #1:

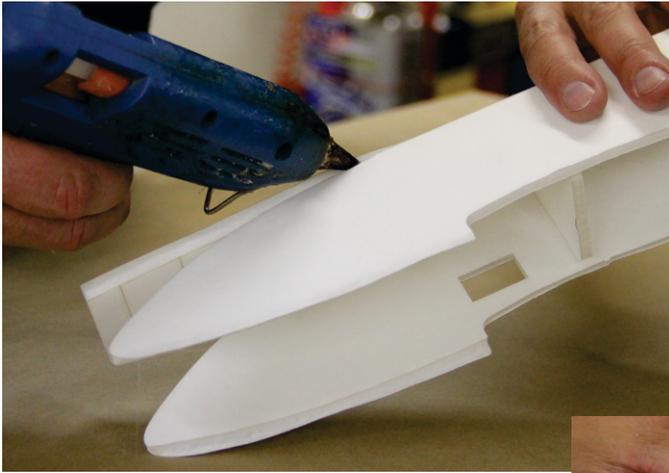


Fold #2:

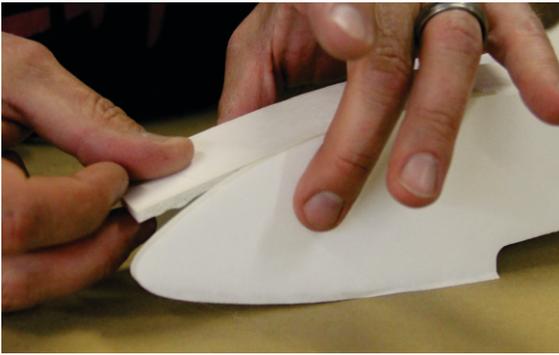


Note that the sides go down beside the top in these folds.

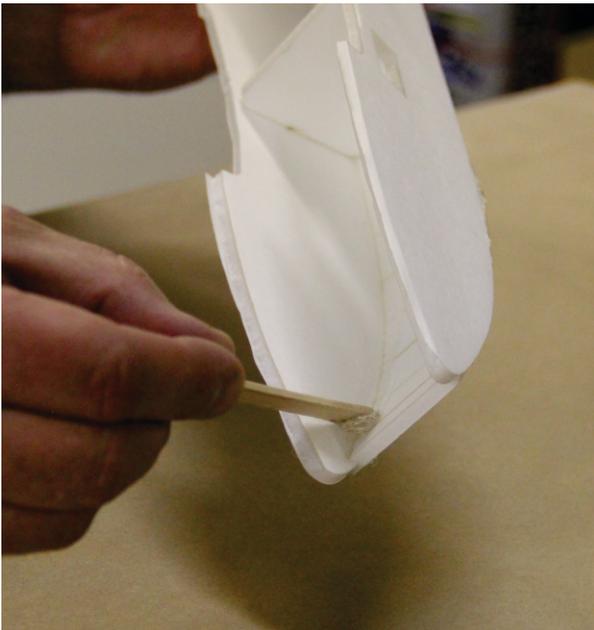
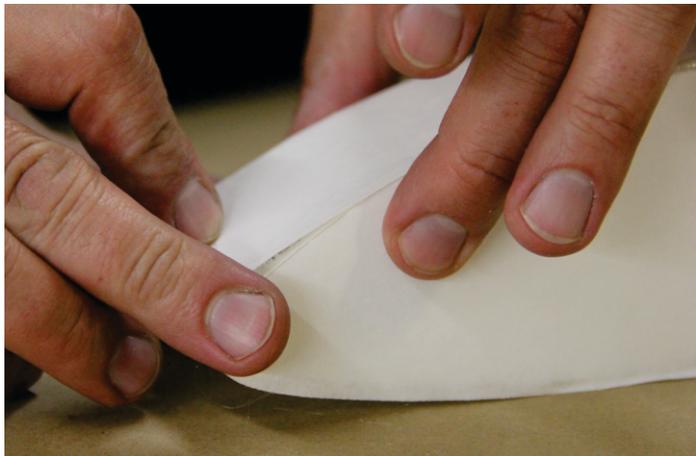
When the glue has cooled, run a new bead in each corner and wipe it to a radius with your popsicle stick.



Run a bead of glue along both sides of the nose top piece (in the channels created along the edge). Then fold it down between the sides and press everything tightly together. It may take a little patience here... Don't burn your fingers!



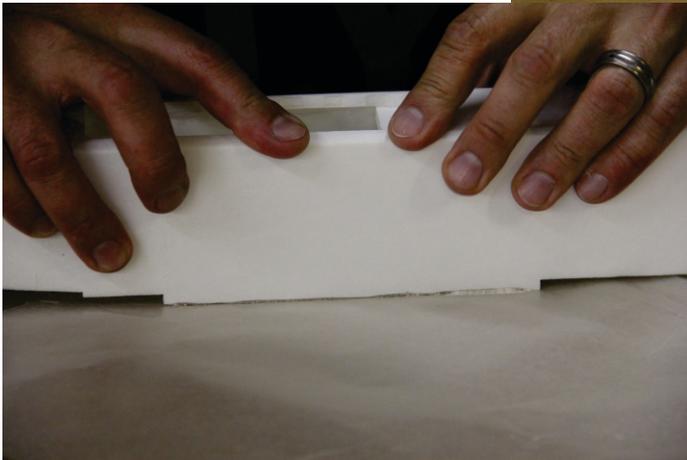
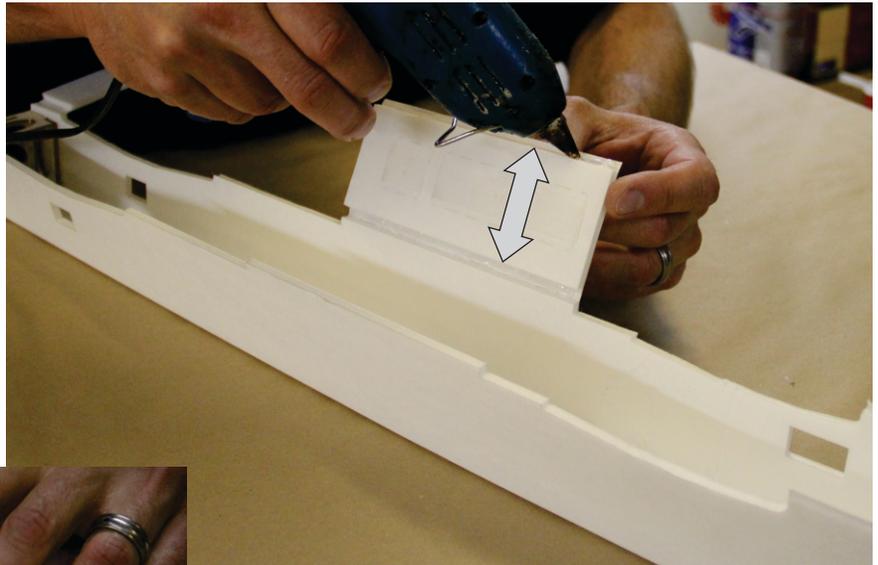
Now flip it over and put a bead in each corner on the inside, spreading them into a radius with a popsicle stick as you go. Also run a bead on each of the crosswise creases.



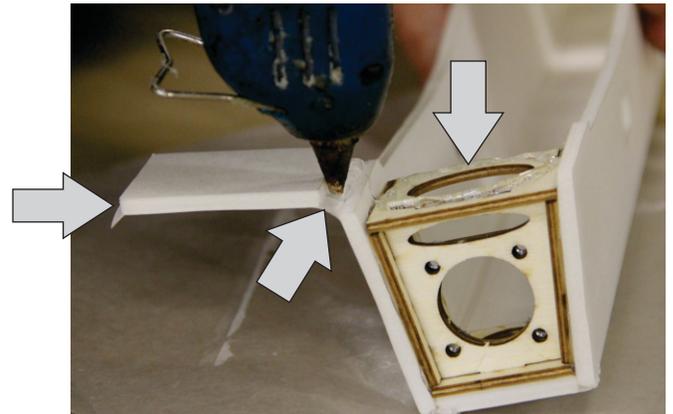
Twist out the temporary former and discard it:



Put glue in both channels on the bottom center section and glue it in between the sides. Try to get it flush with the bottom edge of the sides. Pressing it down on a sheet of waxed paper while the glue cools may be helpful.



Repeat the process for the aft bottom tab. Glue the motor mount also in this area.



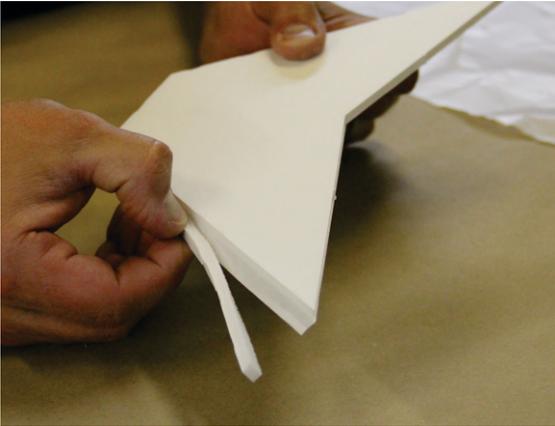
build it, fly it.
(The “fly it” part is getting closer!)



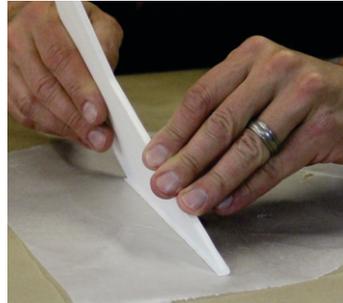
Pressing it down on waxed paper:



Strake



Peel out the foam on the edges of the strake. Put a small bead of glue in the corner of the channel created. Wrap the paper around the edge on a piece of waxed paper. Press it down. This finishes off the leading edges of the strake.



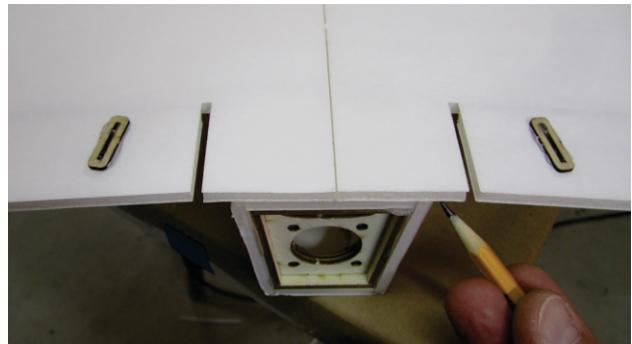
You now have the completed components for your airframe!



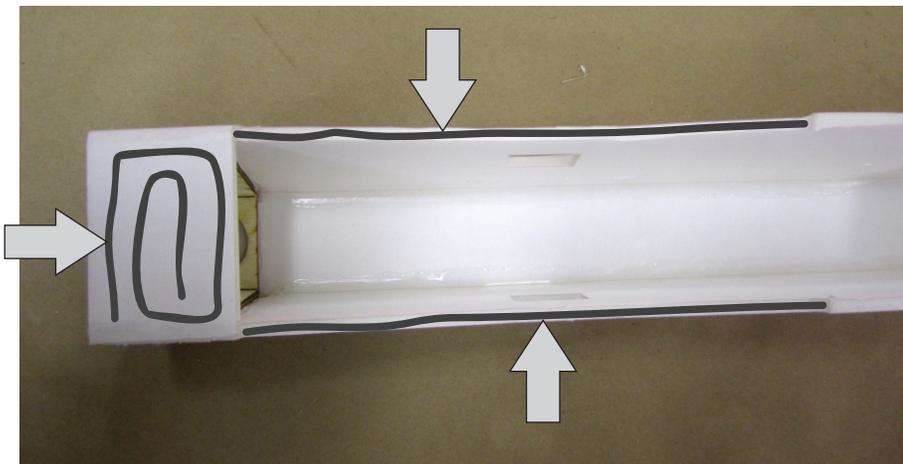
Assembly

Gluing on the wing:

Lay the fuselage upside down on your bench. Locate the wing in its saddle and center it on the fuselage. Mark the wing at the front and back so you can repeat the location when you glue it. Note that the winglets will need to hang off the edge of the table for some of these procedures. Working on a corner of your bench helps here.

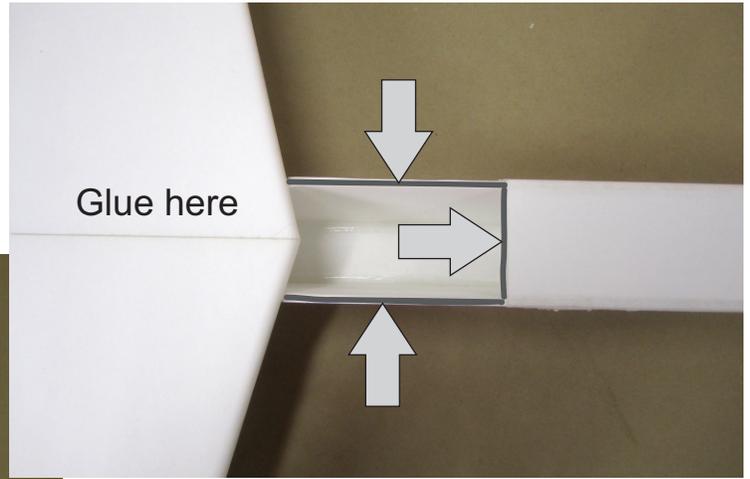
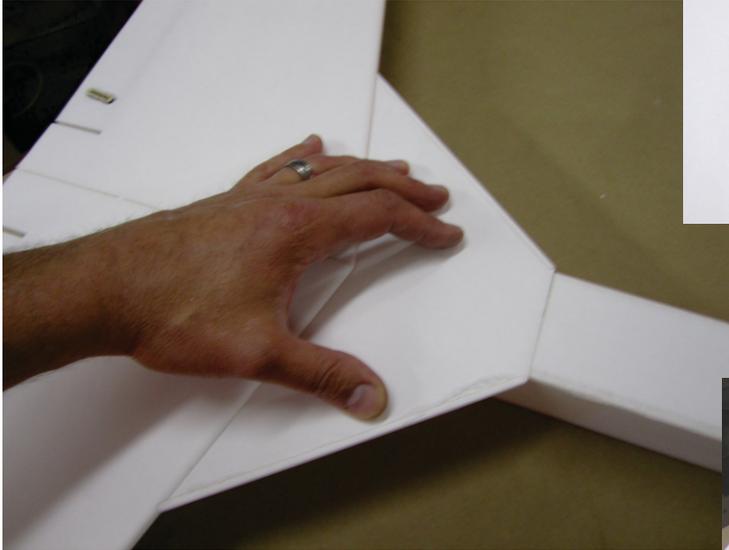


Put beads of glue in these locations. Press the wing in place using your alignment marks to get it straight. Make certain it is straight - crooked aircraft don't fly well!

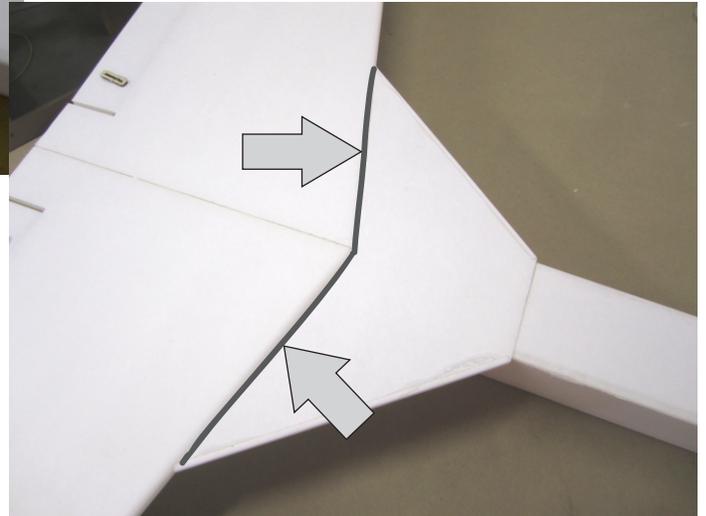


Gluing on the strake:

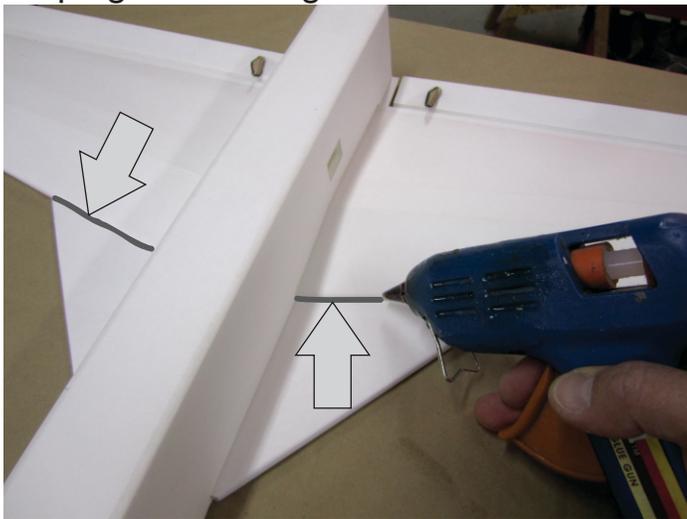
Put glue along the saddle for the strake. Press it in place, making sure that it is correctly aligned and centered.



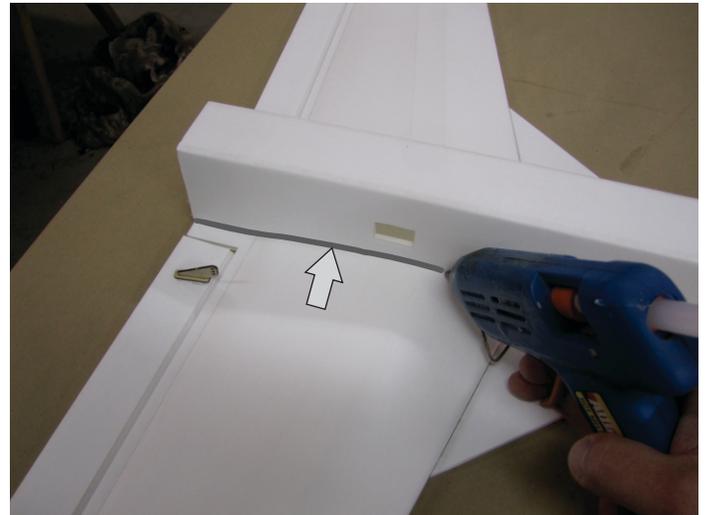
Now glue the back edge and wipe it with a popsicle stick:



Flip the airframe over and glue the back edge of the strake on top, wiping a radius again:



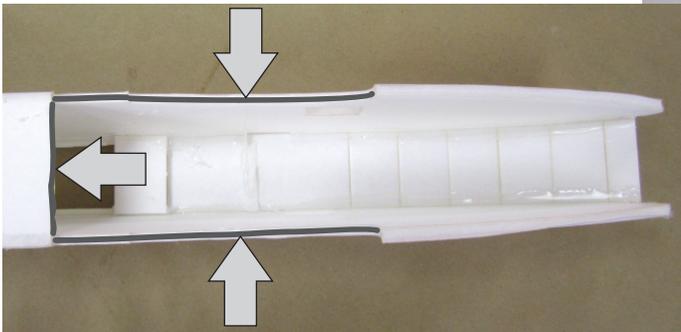
Also run a bead of glue along each side where the wing and strake meet the fuselage. Do one side at a time and wipe a nice heavy fillet here:



Gluing on the Canard:

Dry-fit the canard in its saddle. Make some alignment marks so that you can glue it on centered and straight. Note that it goes on with the control horn on the right side of, and pointed to the top of, the fuselage. Glue the canard in place.

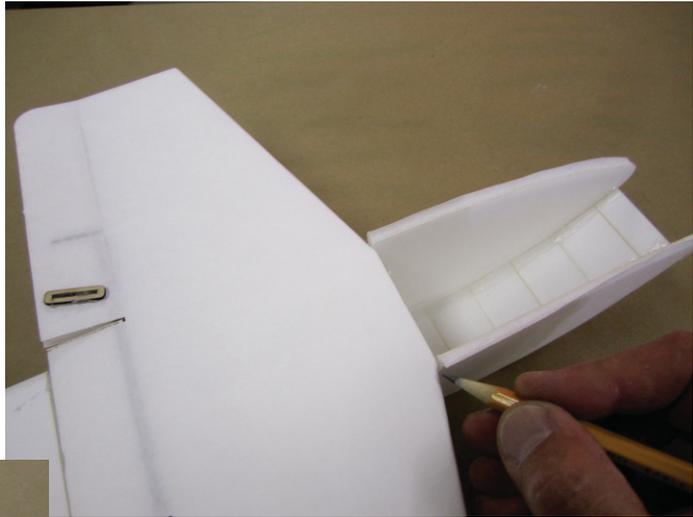
Glue here:



Finally, flip the airframe over and put a bead along each side of the canard saddle, wiping a radius with your popsicle stick.



Mark:

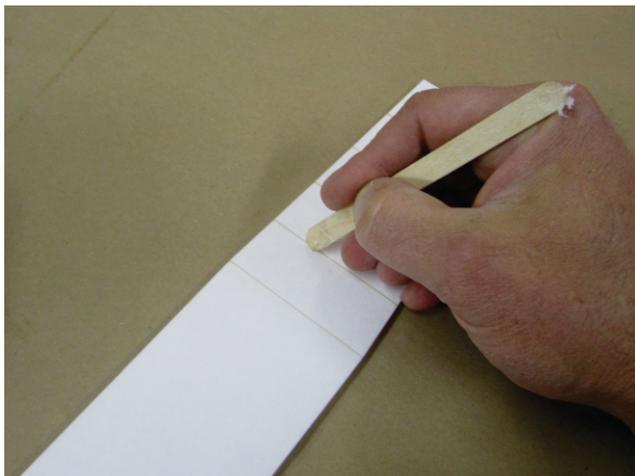


Press in place:

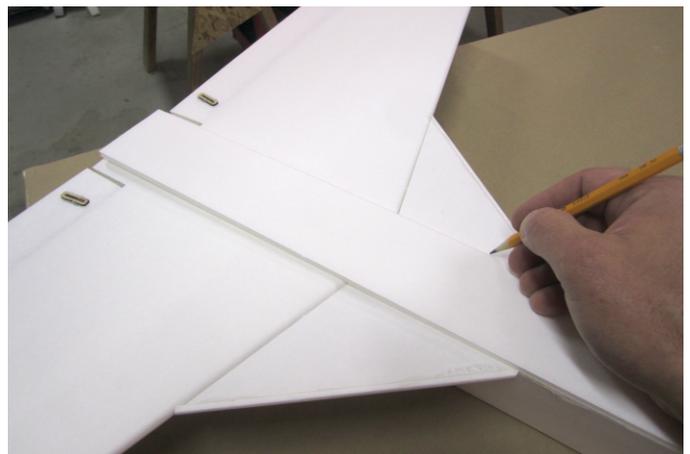


Gluing on the Belly Strip:

Locate the Belly Strip from your kit. Crease the score marks at the nose end of the strip.

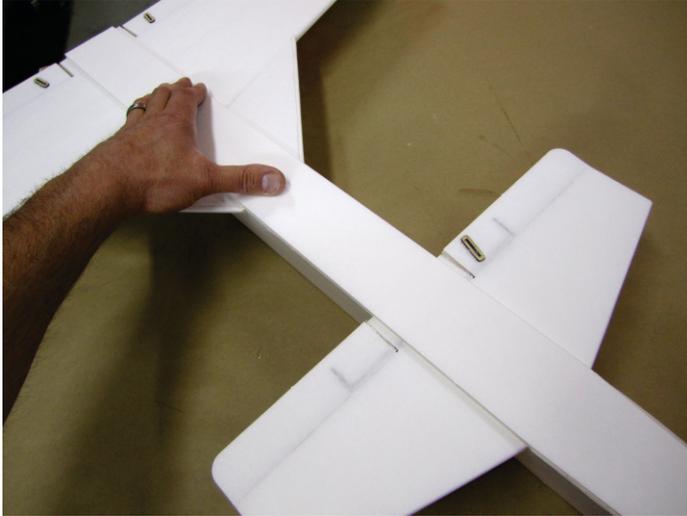


Position the Belly Strip centered on the belly and flush at the back. Mark it along both edges on the wing, strake and canard.

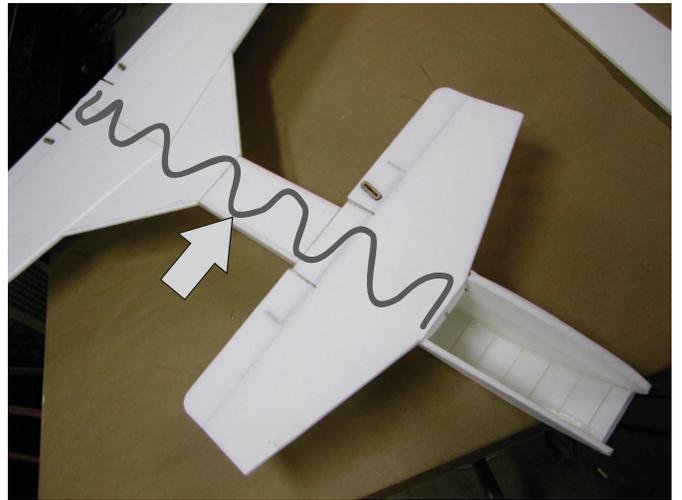


Now glue the Belly Strip in place. I like to do the large flat area first and when it has cooled, then glue and bend the bottom of the nose into place.

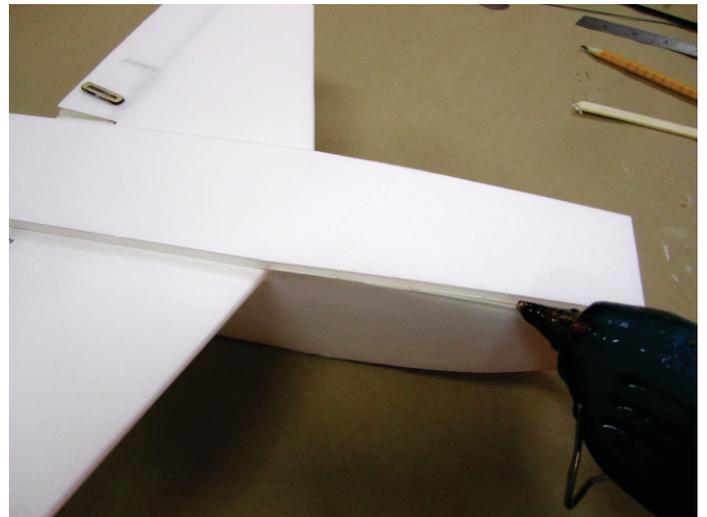
Press it down:



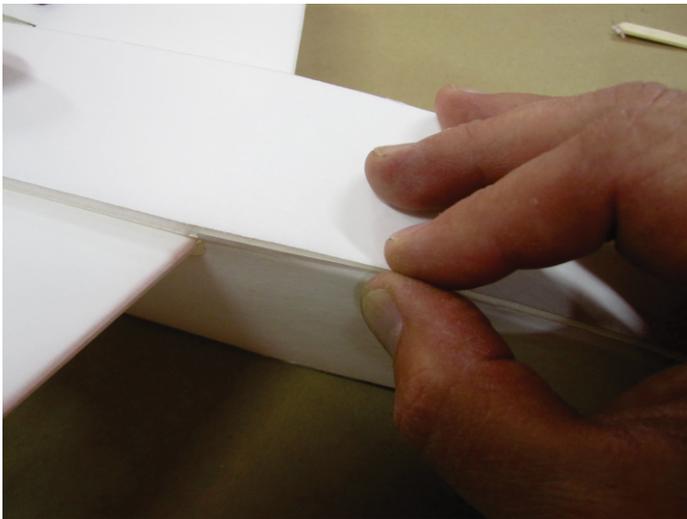
Glue here:



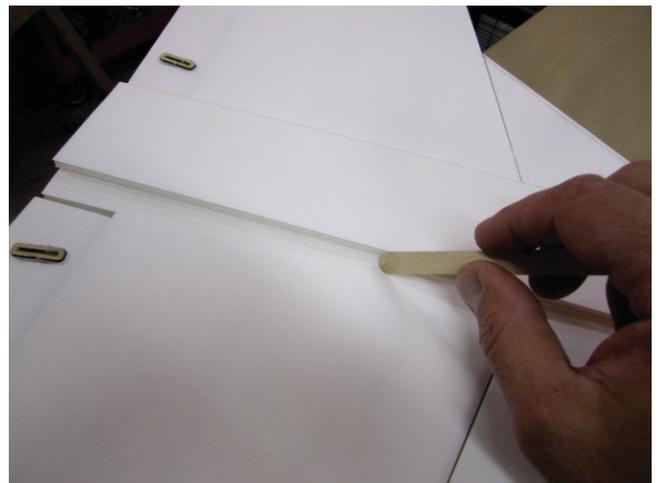
Glue the sides of the nose:



Press the corners together:

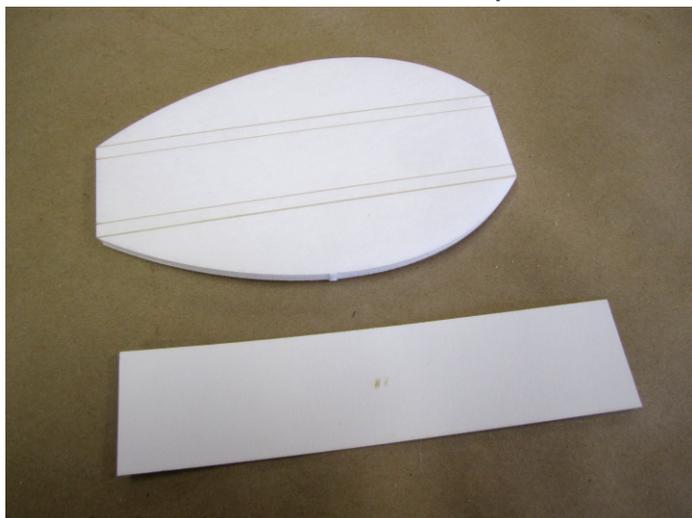


Run a bead of glue along the sides of the Belly Strip and wipe it to a radius:

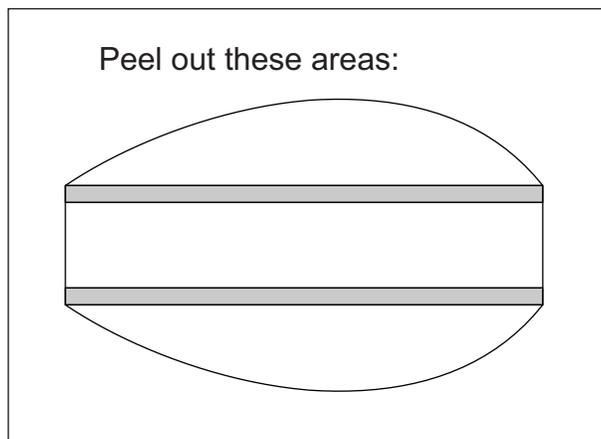
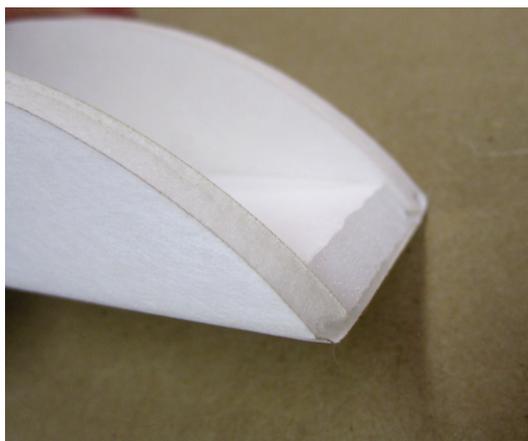


CANOPY

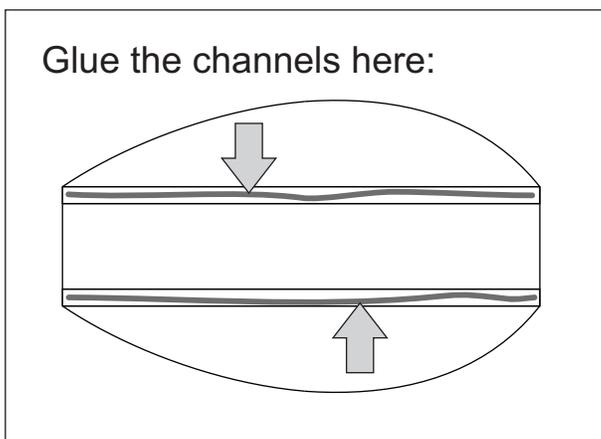
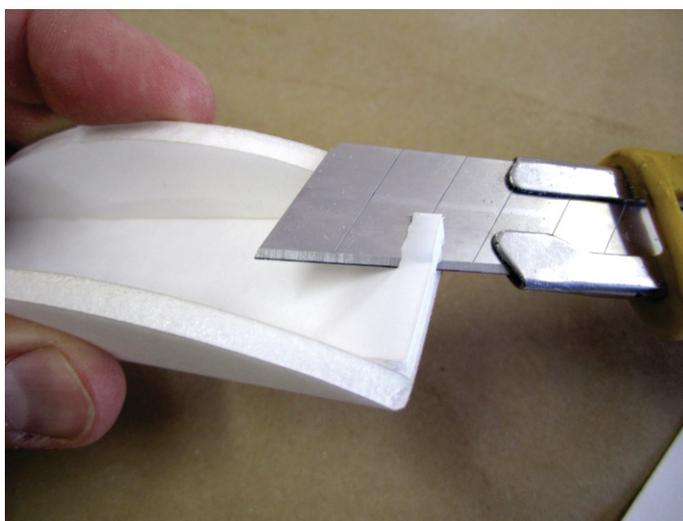
You will need these two pieces:



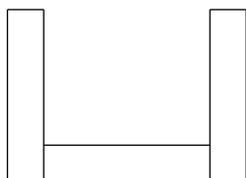
Peel out the foam strips scored in the canopy. Fold the sides up and trim off the leading and trailing edges to match the contour of the sides.



Trim the ends to match the sides:



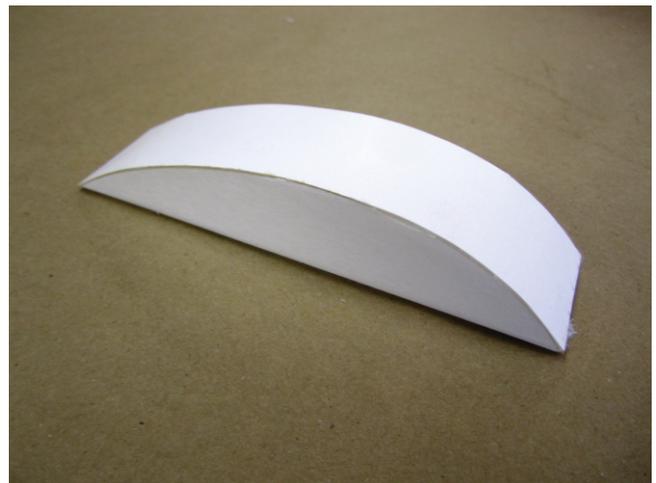
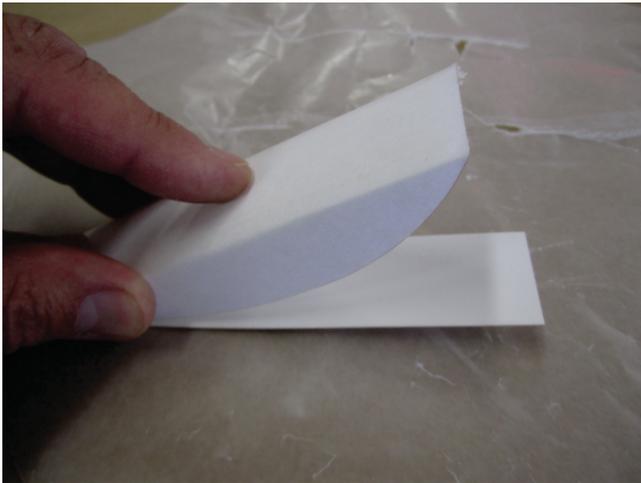
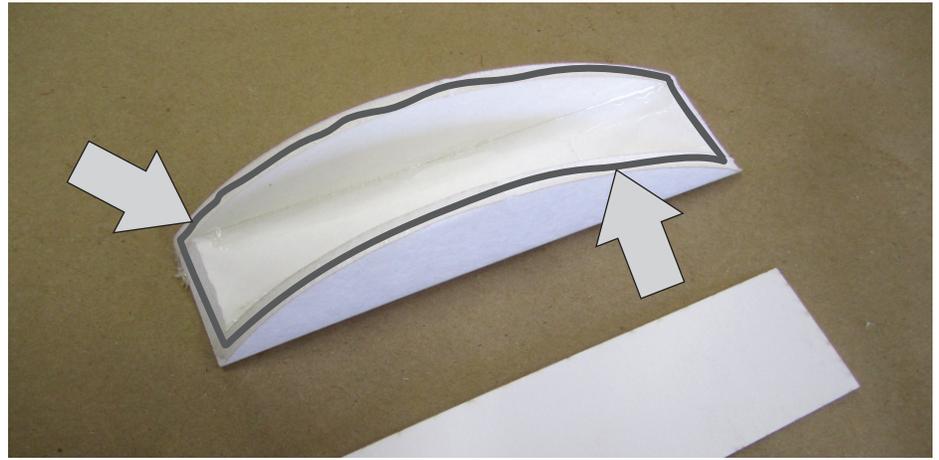
Canopy folds like this:



Glue the channels and fold up the sides. Note that the sides go down beside the bottom part. You are getting good at this by now, aren't you?



Run a bead of glue around the top of the canopy sides and glue the posterboard top (part #2) in place. One way to do this is to flip it over and “rock” it on a piece of waxed paper. Once it has set, trim off any posterboard that is hanging out.



Check the fit of the canopy to your airframe. You did it! Now you are ready to apply graphics and install components!



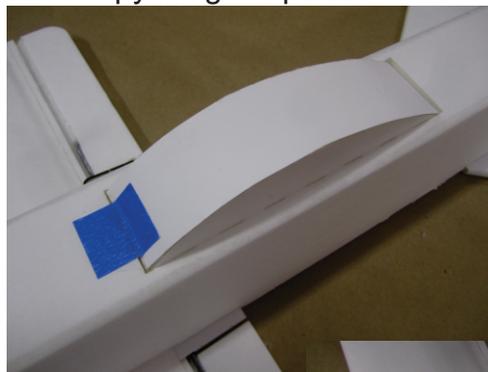
Your airframe is ready for graphics and electronics. I like to mask off some graphics and spray paint them lightly on the airframe. Do not apply the paint too heavily as it will disbond the paper from the foam.

There are also some posterboard stencils included in your kit. **Lightly** mist the back of the ones you wish to use with 3m 77 spray adhesive, let dry several minutes, stick it on the airframe, surround with newspaper, and paint lightly.

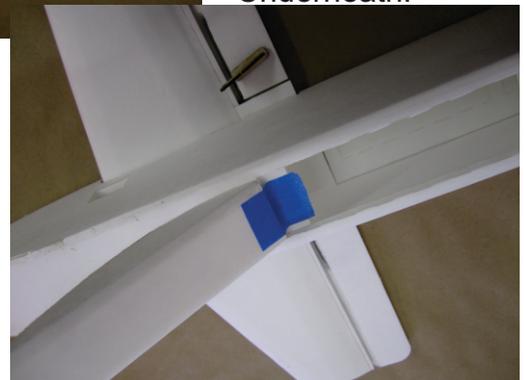


Canopy Hinge Tape:

Hinge the canopy at front with a piece of tape inside and out. I like electric flyer hinge tape from Dubro for this. Scotch tape will work also.



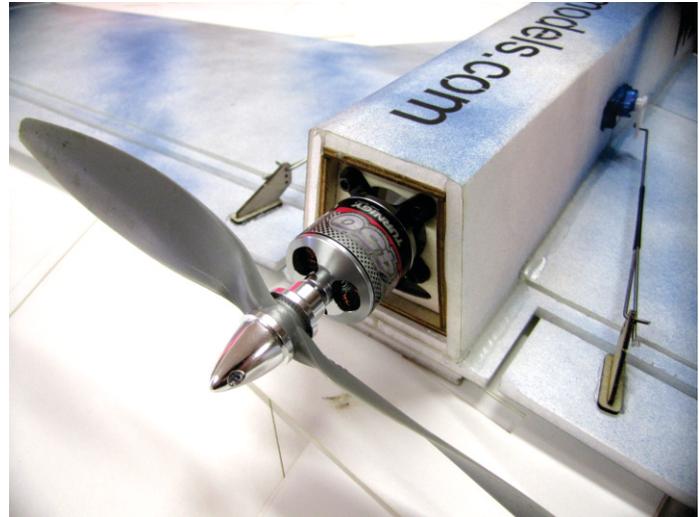
Canopy Hinge Underneath:



Put a small piece of velcro on the rear canopy support block to hold it closed.

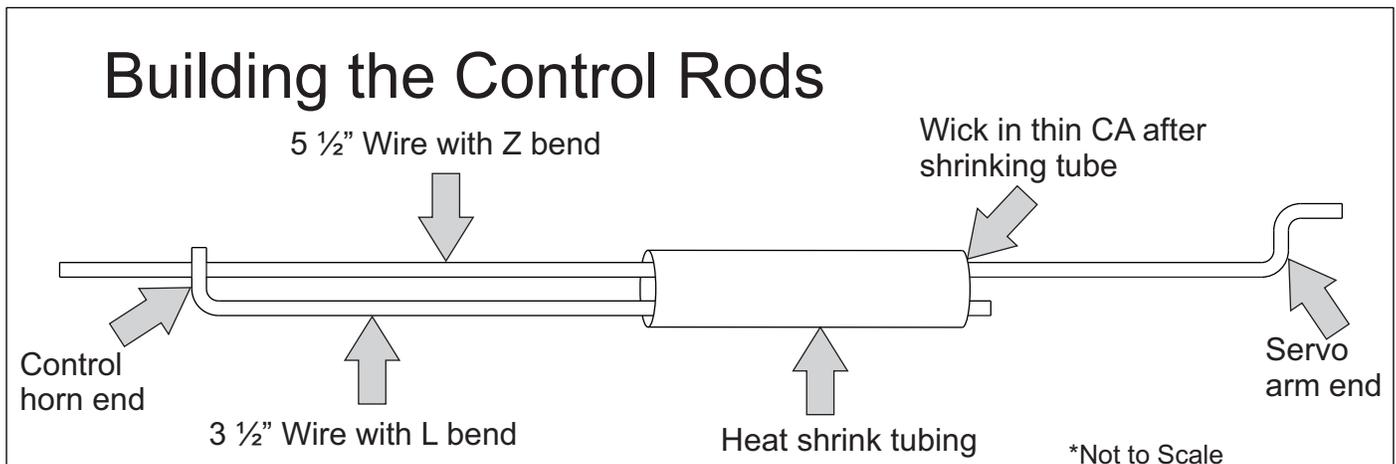
Lay out your electronics on the bench and determine if you need servo extensions, longer motor leads, etc. Get everything set up so it will fit where necessary in the airframe. The receiver is attached to its velcro square. Fish all wiring through the fuselage. The motor wires exit through the small oval cooling slot below the mount.

Install the motor with the supplied screws. Check all your connections. Check the motor for correct direction. If necessary switch any two wires on the motor connection to reverse direction. Make sure you put the prop on with the airfoil facing forward.



Build the control rods per the following instructions. This type of control rod is easily removed without tools.

Glue in your servos with hot glue. Bend a Z bend in one end of each 5 1/2" inch piece. Bend a L bend in one end of each 3 1/2" piece. With the radio on and operating, set the servo arm at 90°. Use a small piece of tape to hold the aileron surfaces at neutral. Reflex the canard elevator down about 3/32" and hold with tape. Put the Z bend end in each servo arm. Slide on a piece of the heat shrink tubing. Slide the L bend piece into the tubing and insert it into the control horn.



I slip a piece of doubled aluminum foil under the control rod here to protect the foamboard from heat and shrink the tubing with a heat gun. Be careful not to get the foam too hot! Alternatively, you can carefully mark the two rods and remove them to shrink the tube. Once everything is set where you want it, and the tubing shrunk tight, wick a small amount of thin CA into the tube to “lock” the rods in place. Note how the straight end is underneath the L bend protruding from the control horn and captures it there. This setup is easy to maintain. To remove the rod, just lift the straight end out around the control horn and pull out the L bend.

I use mixing for this model. The ailerons are setup as elevons and mixed with the canard elevator. You should be able to do this with most computer radios. Use exponential as desired.

Control throws:

Canard Elevator - 1/4" up and down
(Canard Elevator surface moves DOWN for aircraft UP!)

Elevon-Elevators - 1/4" up and down
(Elevon-Elevators move UP for aircraft UP - normal)

Elevon-Ailerons - 1/4" up and down for low rate
7/16" up and down for high rate

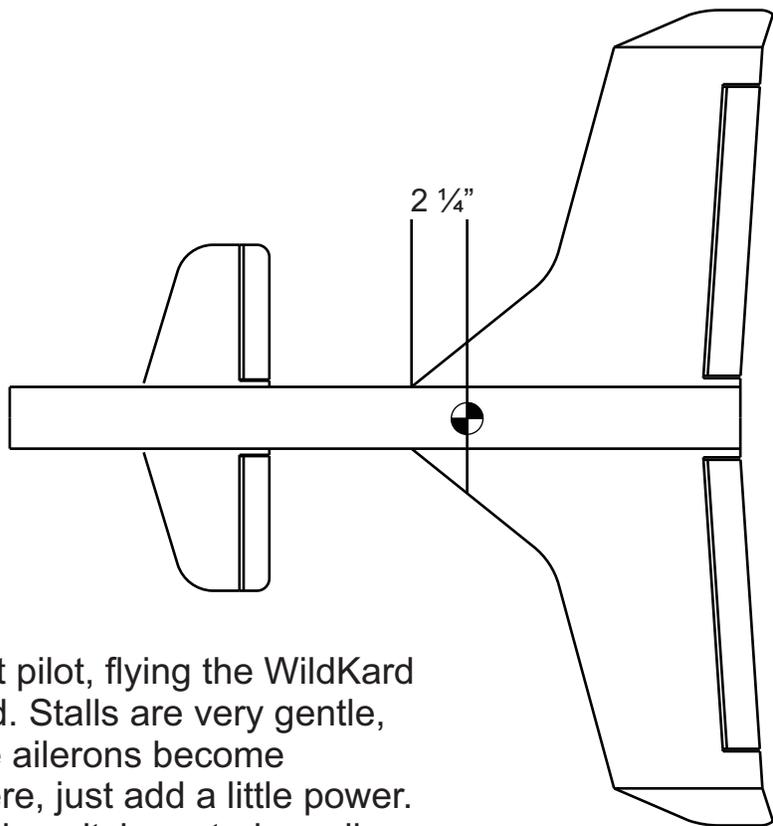
Be sure to balance your model. I have done considerable testing with different CG locations. I like it best at 2 1/4" behind the front edge of the strake.

Flying Notes: This is not a trainer. If you are new to RC, get some help from an experienced modeler.

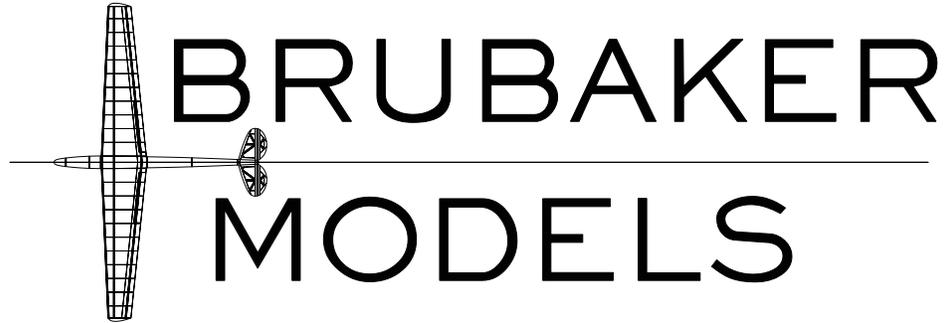
Start with low rates.

Launching: Give it a good chuck over-head with quite a bit of power on. Keep your hand out of the prop! There are some videos on my facebook page that depict launches.

If you are an intermediate sport pilot, flying the WildKard should be fairly straight forward. Stalls are very gentle, however, at very low speed the ailerons become sluggish. If you find yourself here, just add a little power. Rolls are fast on high rate. Having pitch control on all surfaces helps to tighten the turns. As with most canards, inverted flight requires some attention! Landings are simple, just carry a little power through your turn to final, then chop the throttle and float on in. Enjoy!



Thanks for building and flying with



NOTES:

build it, fly it.

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