

Please review this entire manual before beginning assembly.

By doing so it will help you better understand each step as you progress in the actual building of your kit, and you will do a better job in assembly.

INCLUDED IN THIS KIT:

- All laser cut Depron parts
- Balsa ailerons, balsa horizontal stabilizer, and balsa elevator
- Plywood motor mount
- 3 Pushrods + 1 Pushrod tube
- 3 Micro control horns
- 1 Carbon fiber tube and 2 flat spars
- 1 Balsa short stick for servo mount

SPECIFICATION:

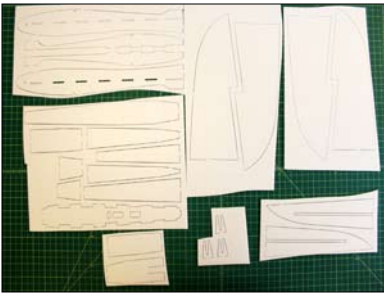
- Wing Span: 24 inch
- Length: 17.5 inch
- Dry weight: 5.5 oz
- Ready to Fly Weight: 7.7 oz with 2S 7.4v 1050mAh

NEEDED BUILDING TOOLS:

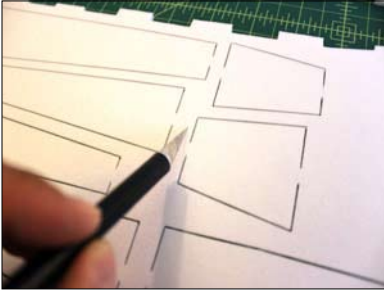
- Foam Safe / Odorless CA glue + Foam Safe Accelerator
(User Friendly Odorless "UFO" highly recommended)
- Blenderm Hinge Tape or Transparent Scotch Tape
- Sandpaper + Sanding Bar
- Hobby Knife
- Ruler (preferably metal)

REQUIRED EQUIPMENT:

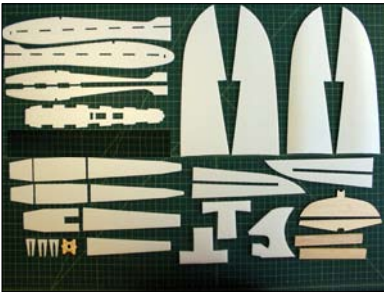
- 4 Channel Transmitter + Micro Receiver (AR6100E, AR6110E or similar)
- 2 Micro Servos (5~8 gram)
(HXT500, SG-50 or Hitec HS-55 or similar)
- Small & Light High KV Outrunner
(HXT 24gram 3000kv, Turnigy 2730 3000kv or similar)
- ESC: 30Amp
- APC Prop: (4.75x4.75 on 3S ONLY), or (5x5~6x5 on 2S only)
- Prop Adapter: 3mm (will fit both recommended motors)
- Lipo Battery: Nano-Power 1100mAh 11.1v 35C
- Maximum Battery size: 73x34x18 mm
(Size is very crucial here. This size is the largest fit for width and thickness possible in the small fuselage)



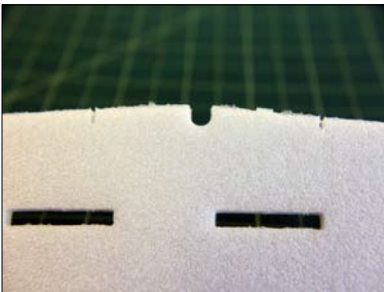
The uncut Depron parts as you will receive them.



Begin by carefully cutting all the tabs.



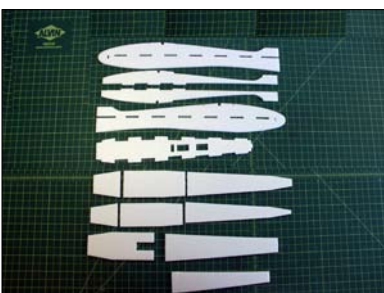
All the parts once cut out.



The edges may be burred.

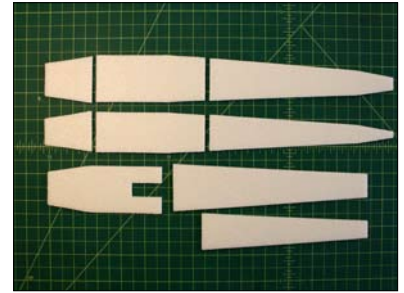


Using 400 grit sand paper give all the edges a light sanding.

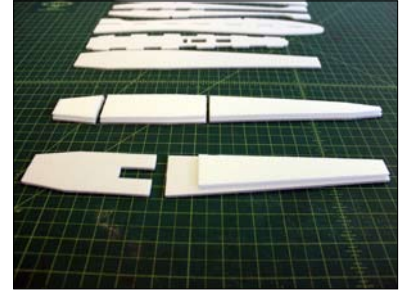


The fuselage section parts shown here.

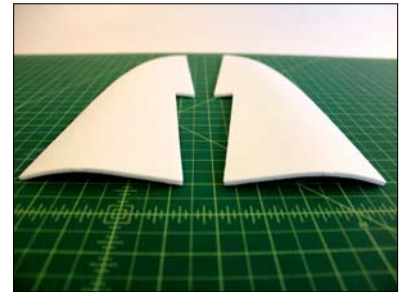
Look carefully at this 4 rows of parts. These parts will be doubled up. *(Notice the direction of the taper on the center sections on the first 2 rows.)*



Double up the parts and glue them together as shown. Keep them centered leaving 3mm on each left and right side. The 3 sections of parts is the bottom fuselage.



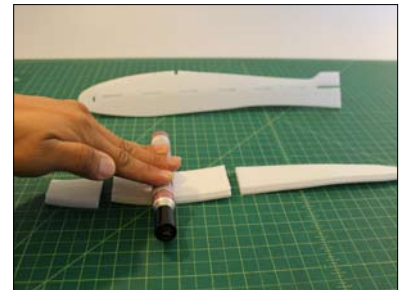
The kit will include 2 wing halves that are pre-curved. These will be the top skins of the wing.



The carbon fiber parts and hardware as included.

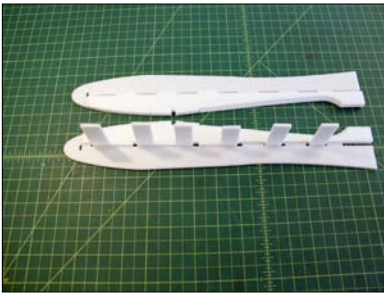


Using a marker as a rolling pin, roll the bottom parts to form a similar shape as the bottom of the fuselage.

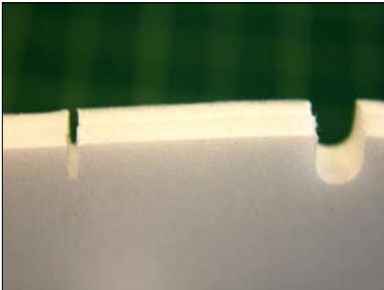


Use 2 hands and roll it as if you're rolling dough, and it will curve up.

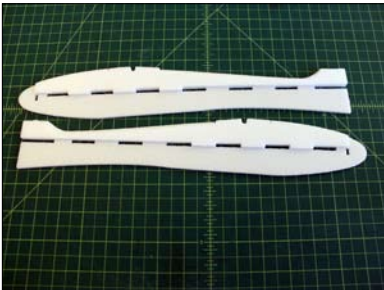




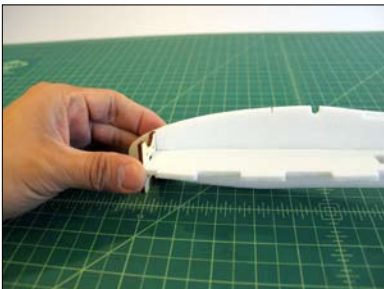
Glue the fuselage doublers over the side pieces. Use left over scraps to ensure the parts line up properly by inserting them in the slots. *(Do not glue the scraps in!)*



Make sure that these parts line up exactly when gluing the doubler



VERY IMPORTANT! Make sure you have a left and right side with the doublers on the inside.



Assemble half a fuselage first along with the motor mount by gluing the center section with all the tabs. Remember the doublers need to be facing toward the inside.



Glue the remaining fuselage half together as shown.

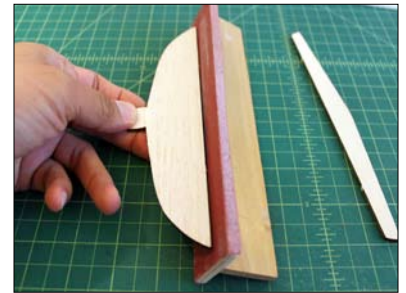
(Don't forget to install the motor mount in this step)



Glue the bottom rear portion of the fuselage. For now stop here on the fuselage and lets start on the elevator next.

Sand a bevel on the stabilizer about 20 degrees.

(It is better to sand a bevel on both sides than only on the elevator.)



Sand a bevel on the elevator about 20 degrees.



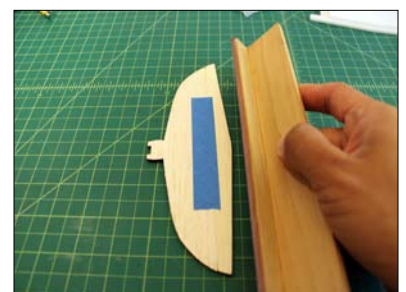
Sand the leading edge of the stabilizer round. *(Sanding rounded leading edges and tapered trailing edges will improve performance, don't skip these steps)*



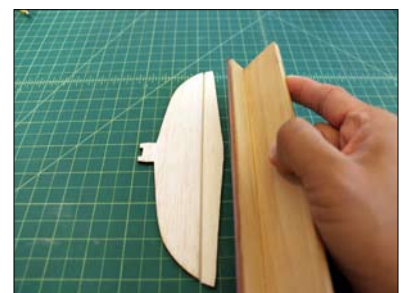
Here you can see the difference: Sanded on the left and not sanded on the right.



Use blue painters tape or masking tape and attach the elevator. Then sand a taper to the trailing edge. Don't over do it since you will be sanding both top and bottom.



Now flip over the tail and leave on the tape for now. Again sand a taper to the trailing edge. Again don't over do it.





This is how it should look like after sanding both the top and bottom to a taper towards the trailing edge.



Use "transparent" Scotch tape, (NOT the "invisible" type)

Or you can use 3M Blendederm tape, commonly referred to as "Hinge Tape"



Tape the top first. Trim any overhanging tape.



Then flip up and tape the bottom. Again trim any overhang.



After taping the bottom of the hinge it will remain flipped up. With a hard tool, like your blade handle, press down and flatten the hinge edge to help it remain neutral.

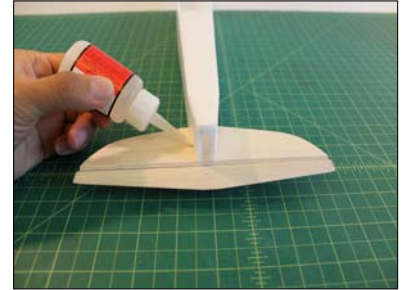


With a very sharp blade lightly score the scotch tape over the hole meant for the control horn. Cut away a section about 1/4 inch square.

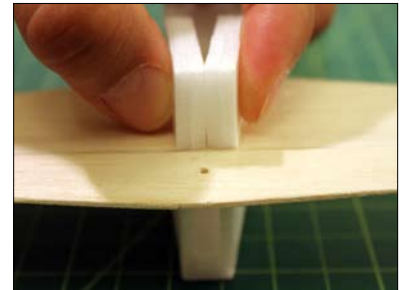
Here is what your stabilizer with elevator attached should look like. (Note the bevel on both sides... This is important that you do it this way for best performance.)



Now insert the stabilizer into the fuselage and glue ONLY the bottom part for now. Make sure the bevels are facing toward the bottom. (Photo shows the fuselage upside down.)



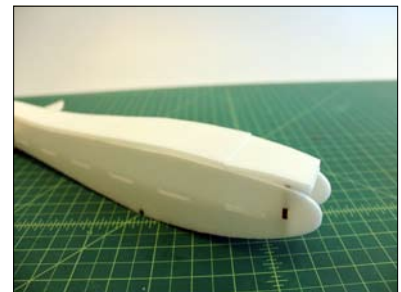
Flip the fuselage back right-side up. The top portion where it is being squeezed should NOT be glued yet.



It should be free to open as it is shown here. We will glue it later.



Flip over the fuselage belly up again. Lay out the remaining bottom cover parts but do NOT glue them in at this point. Just position them.



Flip the fuselage back over and check the front. You can see that the motor mount does not let the bottom piece go all the way in. PRESS down hard to leave an imprint.

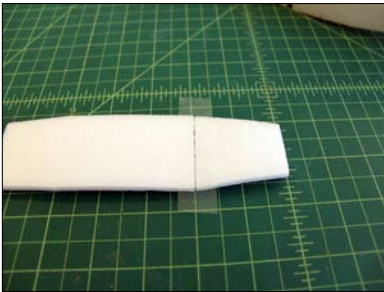




Remove the part and look carefully as you will see the imprint of the motor mount.



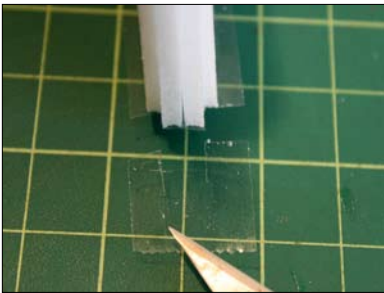
Cut out just the one layer (3mm deep) of foam where the imprint was left. Now it will go in just fine and add strength to the motor mount and foam bonding area.



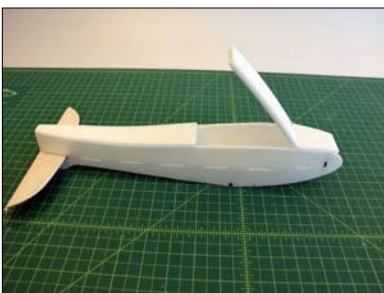
Now flip the part over again and attach the remaining battery hatch to the piece we just worked on. Tape it as you did the elevator. Keep in mind there is no bevel though.



Just as you did with the elevator flip over the part and tape the under side. You will now have a one-way moving hinge.

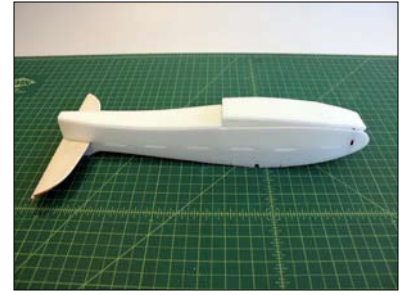


Trim along the edges, do not fold over the tape. This will allow the foam to glue nicely into the fuselage with foam on foam.

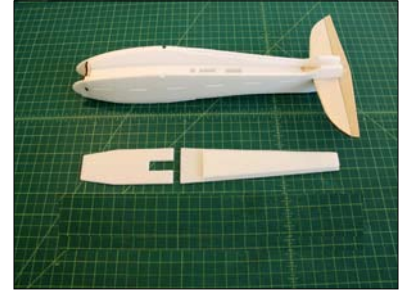


Now insert this assembly into the bottom part of the fuselage and ONLY glue the front part on.

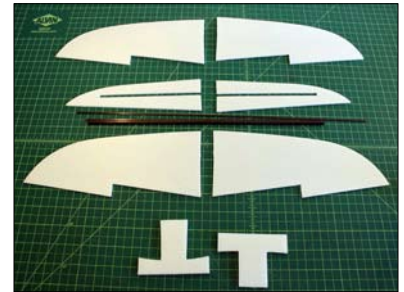
Make sure there is room for the battery hatch to open and close. Again, ONLY glue the front part on.



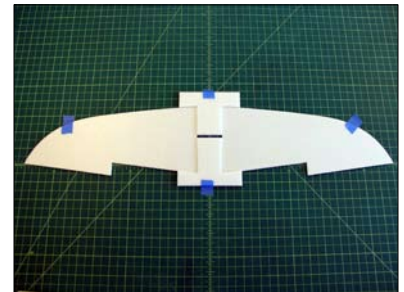
The remaining parts of the fuselage as shown here. Put aside for now, we will get back to it later.



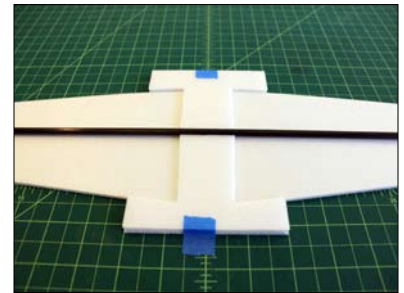
The parts required for the main wing assembly.



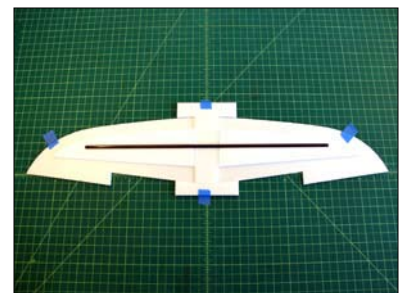
Tape down the left and right bottom (flat) wings and use the 2 "T" spacing jigs to set the proper distance. Make it secure and use more tape if needed.

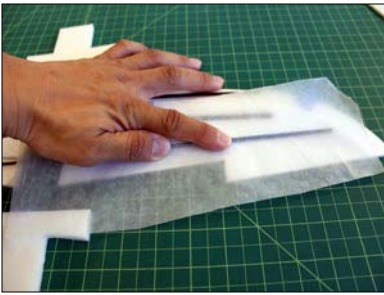


Lay down the carbon fiber tube. But do NOT glue it in yet.

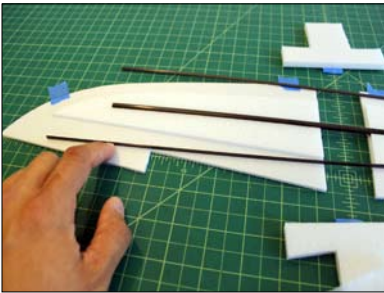


Lay out the center wing panels as shown and glue them in. Do NOT glue the "T" jigs to this assembly. After gluing the center wing panels and the carbon tube remove the "T" jigs

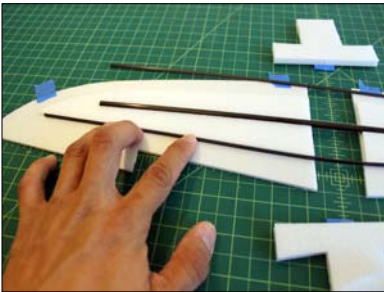




Glue the longer 20" carbon flat spar to the back of the center wing panel. Make sure it is centered equally on the left and right of the wing. Use wax paper to keep your fingers clean.



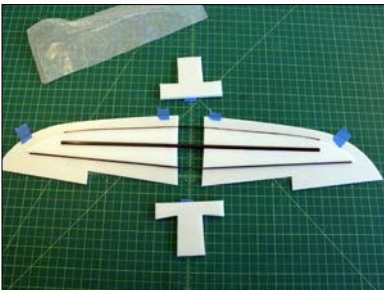
Repeat this process for the other side.
(In case you don't get it: It is being glued to the trailing edge of the smaller center wing panel)



It will require some light bending. It will bend very easily as long as your flat spar is standing vertically and not laying flat.



With the Remaining shorter flat spar repeat the same process but on the front leading edge of the center wing panel. Again using wax paper to keep your fingers clean.

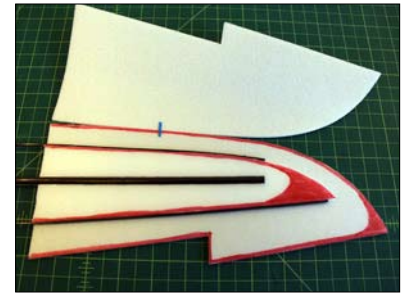


Spraying accelerator while holding the spar with the wax paper will make the end parts that curve easier to assemble.

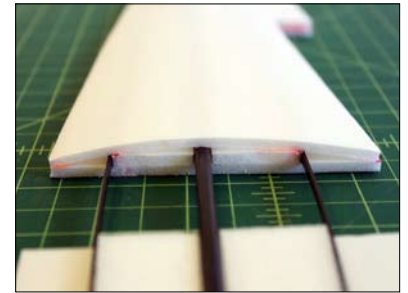


Use small 1/8" strip of masking tape to line up the top cover. This will help you get the wing on right with one try by flipping it over after you apply glue on the inside.

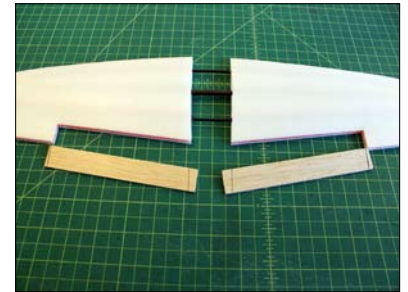
Apply glue to sections in Red. Marking yours the same way only on the outer most edges will help you in later steps with sanding the leading and trailing edges. *(Don't forget to apply glue on the Carbon tube also)*



Carefully flip over the top and make sure it is lined up. Hold it down with pressure until the glue starts holding. Spray accelerator over the edges to assist.



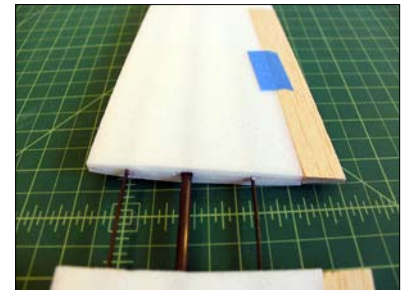
Cut and trim the balsa wood aileron stock to fit.



Sand the inside edge lightly if needed to form a nice clean edge for the aileron. Use a Sanding Bar for even results.



With the wing upside-down attach the aileron so that it will lay flat when right-side up as shown in the next step.



If your aileron is thicker than your wing then sand it down to create a smooth air flow over the wing. If it fits nicely then just leave it as it is. Again use a sanding bar.

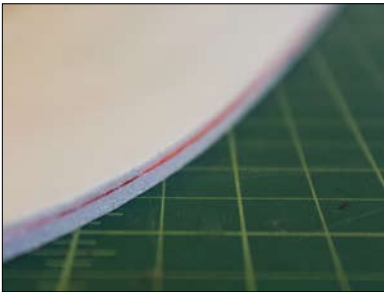




The trailing edge of the wing tips will need sanding.



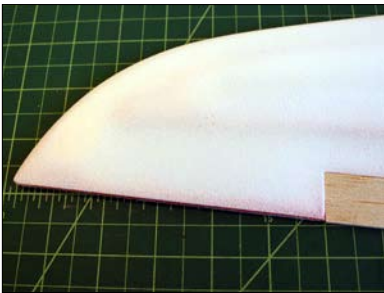
Sand them down to closely match the aileron.



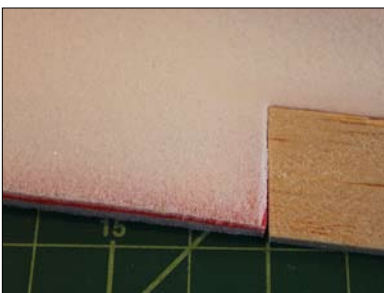
The leading edge is blunt as shown here. *(You can see the line where the marker on the edges will now act as a guide for you when sanding)*



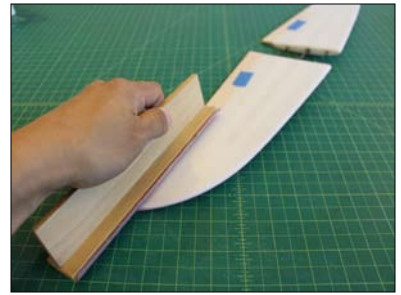
With the guide line showing you can be sure to sand a uniform rounded edge.



Now flip over the bottom side and also sand a slight taper on the bottom outer trailing edge of the wing. This will create some slight washout



You can see the red marker lines beneath the Depron to prevent you from sanding too much. Stop before it starts showing through too much.



Make sure you use a sanding bar to ensure your sanding is uniform and level where needed. This helps greatly with sanding the tapered trailing edges.



Here you can see another angle of the taper at the bottom trailing edge. *(Bottom side is facing up in this photo)*



More photos to show the sanding.



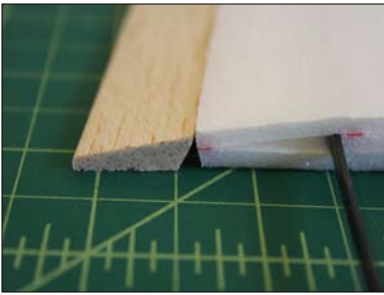
Here is a shot of the shape of the airfoil at this point. Right now it is "Flat Bottom" later we will make it "semi-symmetrical" for better high speed performance.



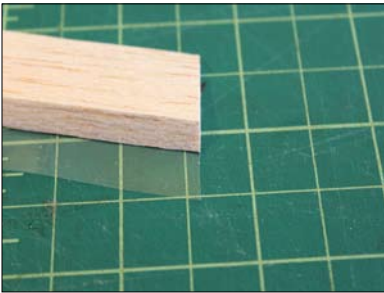
This photo shows the wash out better.



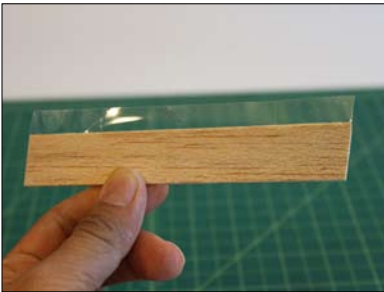
Before we sand a bevel to BOTH the wing and the aileron.



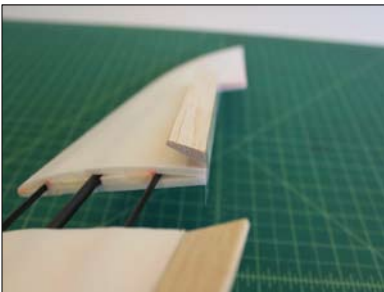
See here how both sides are bevelled



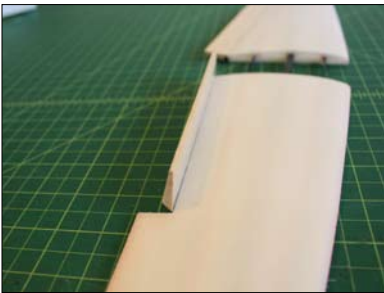
Tape the aileron and trim as shown



Trim both sides and attach to the wing.



Flip up the aileron and tape the underside.

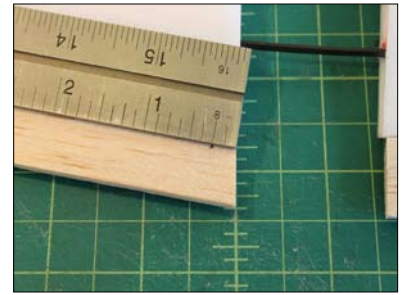


Now it will stay flipped up like the elevator did.

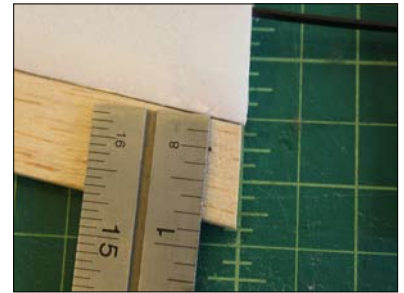


Again using your blade handle or a pen, press down on the hinge edge to help it resist flipping up.

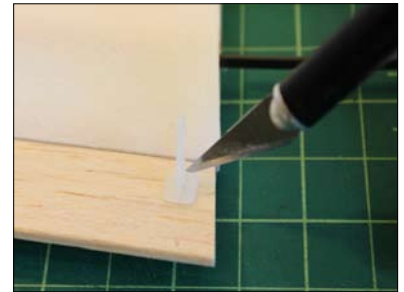
Measure 1/4 inch from the inside



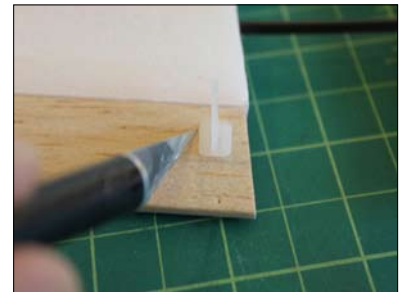
And measure 1/4 inch down. Make a dot and drill and hole for the control horn.



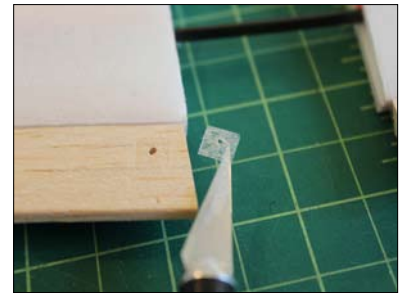
Here is another easy way to trim the tape for the control horn... Insert the control horn without glue and trim the tape around the edges.



Remember use a sharp knife and lightly cut it away.

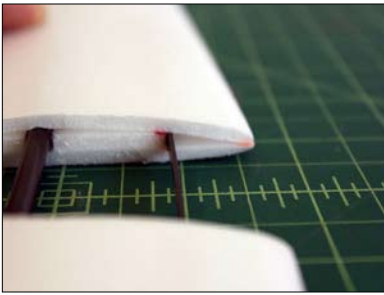


Remove the control horn and remove the tape.

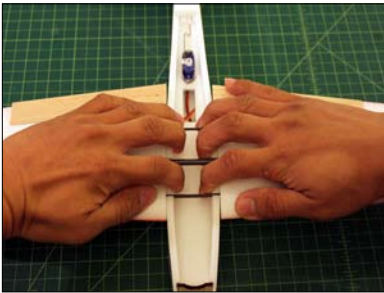


Optional.. You can also sand the bottom part of the leading edge to make the wing Semi-symmetrical. Sand a slight curve and make the leading edge sharper than just a round edge.





A close up of the leading edge. Notice that the front bottom edge is lifted up from the floor. This is all there is to create the Semi-symmetrical airfoil.



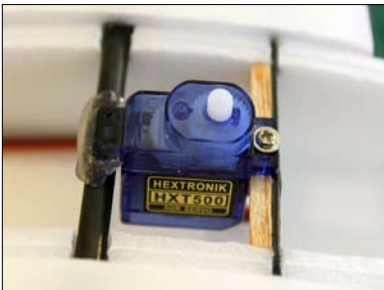
Your wing and fuselage will not fit perfectly and will seem to be incorrectly spaced. It's not. Apply glue into the gaps and seat the wing **COMPLETELY** down in the slots, then spread the fuselage walls with elerator.



Trim to fit the included servo mount wood piece and glue it right up behind the front carbon fiber flat spar.



The servo should now be a tight perfect fit and will require you to insert it diagonally and twist it into position.

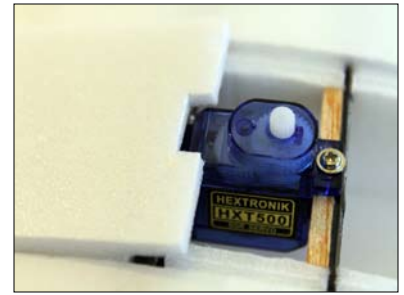


Use 1 screw on the front wood mount and use hot glue on the rear mount over the carbon tube to secure your aileron servo.

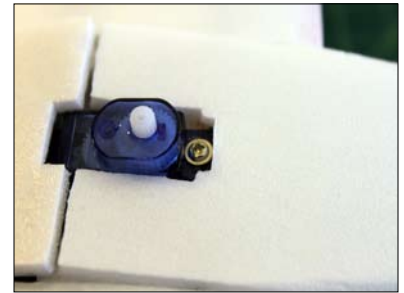


Now test fit the rear top cover and you will see that the servo area needs to be trimmed in order to close properly.

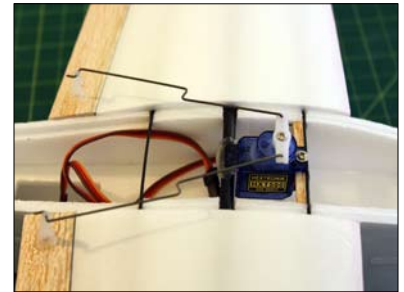
Trim the area around the servo.



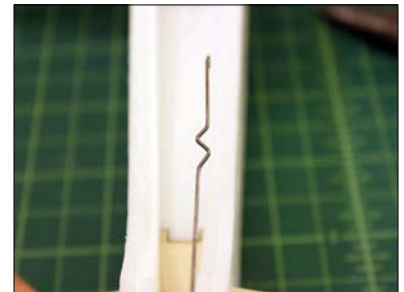
You will also need to trim the area on the front top cover piece. These 2 top pieces should not be glued on. Close them with tape only for access to the gear if needed



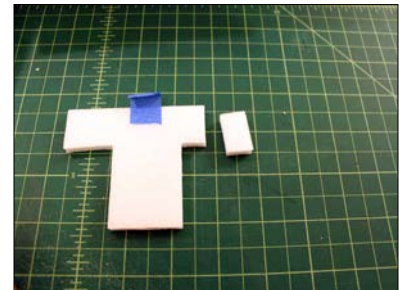
Now that the top covers are trimmed to fit the servo, you can complete the aileron set up as shown by installing the control horns and push-rods. Make Z bends on the pushrod to make minor adjustments.



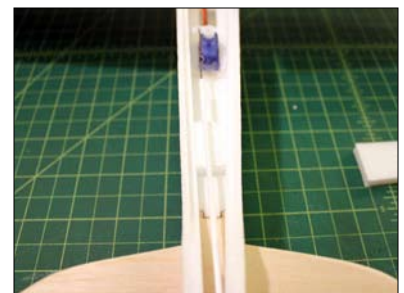
Prepare your elevator push rod with this zig-zag bend (or Z bends) to allow for minor adjustments if needed. Also make a Z bend at the tip to install into the elevator servo arm.



Use the "T" jigs for scrap parts to support the pushrod tube.



2 pieces of the foam was enough height to create a nice support for the pushrod tube. You may need to trim the height to close the top cover.

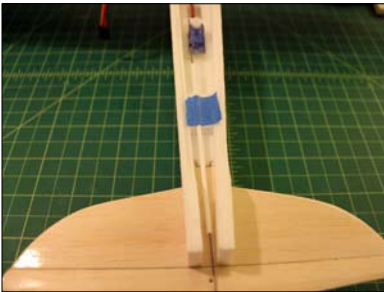




Cut a V groove to nicely seat the pushrod tube.



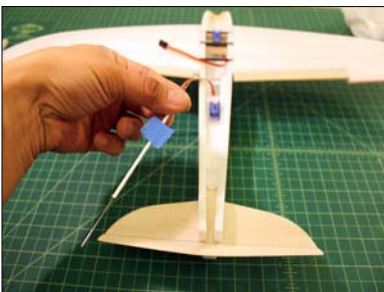
Trim the elevator control horn as shown and glue it in the elevator.



Insert the pushrod into the inner most hole of the elevator servo arm and then tape down the pushrod inserted in the tube to line up the end that will install on the elevator control horn.



While making sure the elevator is in neutral position make an mark with a sharpie marker on the position of the hole of the control horn.

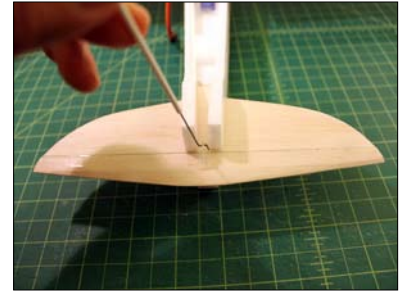


Remove the whole pushrod with tube. To be able to better grip and align your Z bender tool

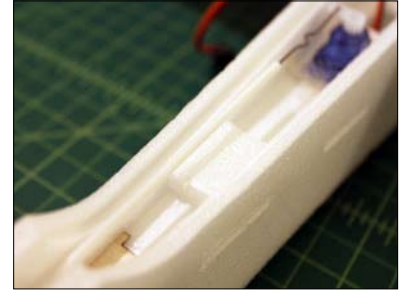


Align the Z bender tool on the mark you made. Watch the angles to make sure you position it properly.

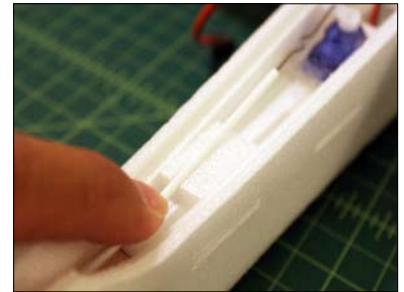
Install the Pushrod on the control horn first.



Now insert it on the inner most hole of the servo arm then screw in your servo arm to the servo.



Push down the slop in the pushrod and tube into the V groove of the support piece. Glue it in.



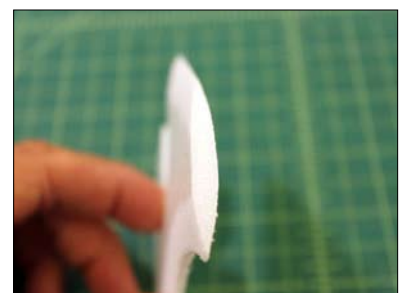
Trim the stub on the under side of the elevator.

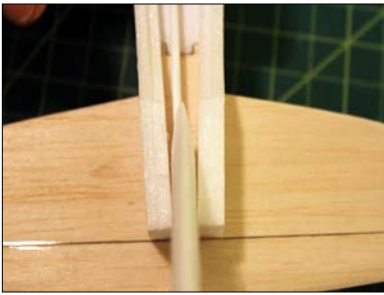


Sand the leading edge and the trailing edge of the rudder. Be careful and gentle not to over do it and break the tips,

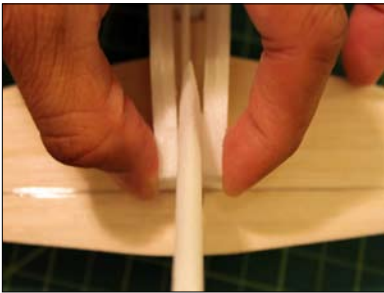


Try to create a symmetrical shape.

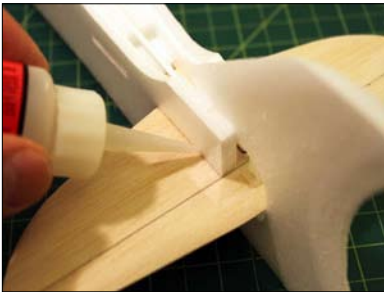




Insert the rudder into the slots both below and above the elevator. It should fit easily.



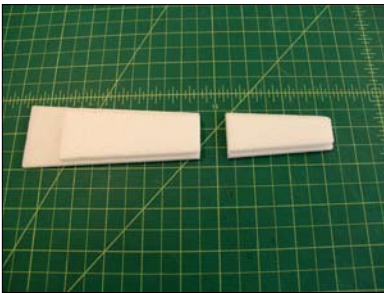
On the top portion, only apply glue to the ends and pinch as shown. Don't forget to also glue in the rudder in the bottom slot. ***Make sure the rudder is straight!***



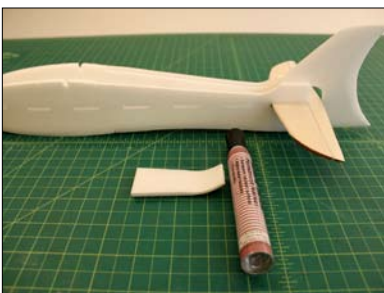
Apply glue the stabilizer as shown. *(The reason we waited for this step to glue it is to allow proper alignment with the rudder.)*



Now back to the top rear cover that we put aside in the beginning. Measure 3" inches from the rear and mark both sides.

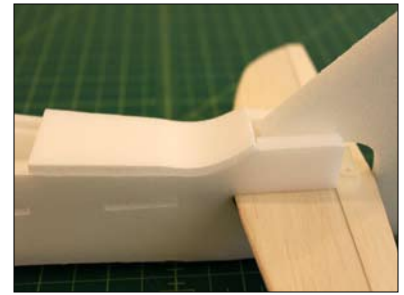


Cut apart along the 3" inch marks you just made.



Again using the marker roller method, curve up the end only to match the fuselage.

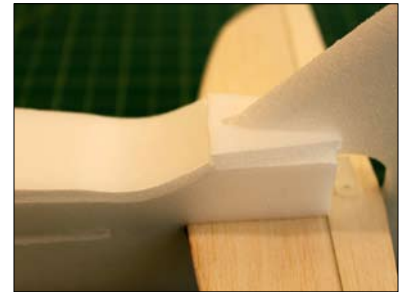
Insert it and glue it in.



You will notice 3 different pieces as shown. They are different in size only at the part shown with the arrows. Choose the size that best fits your rudder after your sanding.



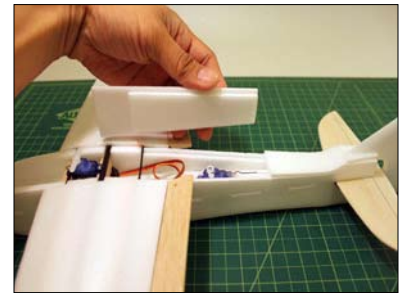
Glue it in. I will discuss your options for trimming and sanding at the end so don't worry about it's looks right now.



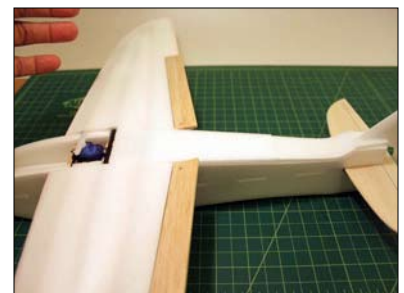
This remaining part should not ever be glued in.

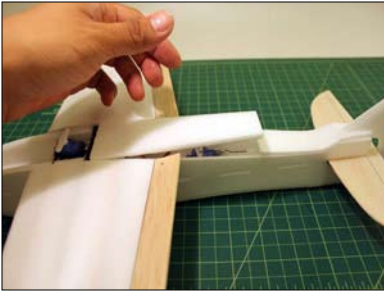


This will simply be taped on. This way you have access to your servo if you need to adjust or change it.

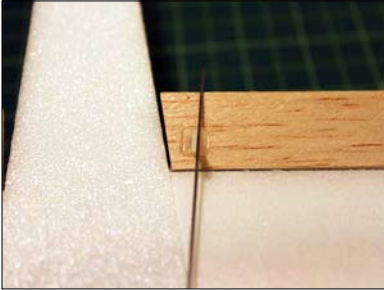


It should fit snug, then just tape it down.

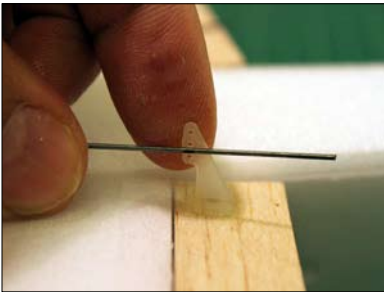




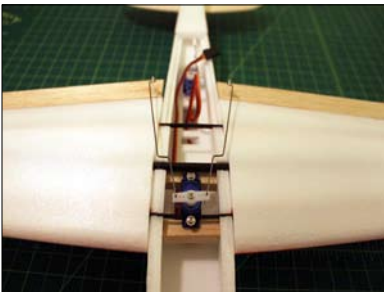
And remove it if and when needed by cutting the tape.



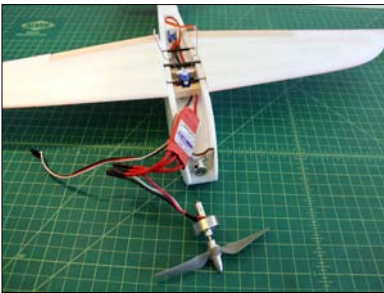
Now insert your aileron pushrod on your servo arm and line up your control horn.



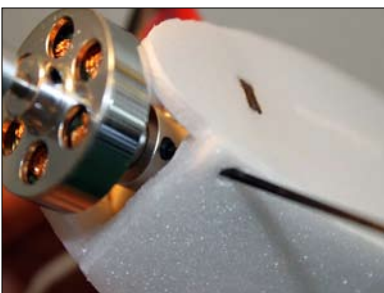
Again make a mark on the pushrod with a sharpie to mark where you will make the Z bend. (*Before doing this make a zig-zag bend in the middle for minor adjustments if needed.*)



Again, you can use a Zig-Zag bend or a simple Z bend as shown here to allow for minor adjustments since we are not using ez-connectors.

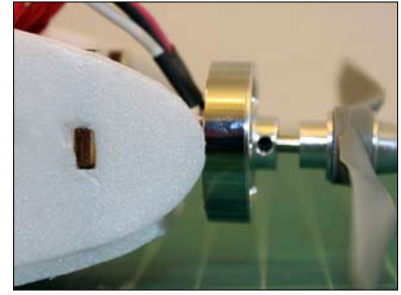


It is a very tight fit so I recommend you solder your motor to the ESC to allow it to fold inside the tight fuselage. Test fit it now and cut the wires shorter if necessary. **Also, make sure your motor is spinning the right way!**

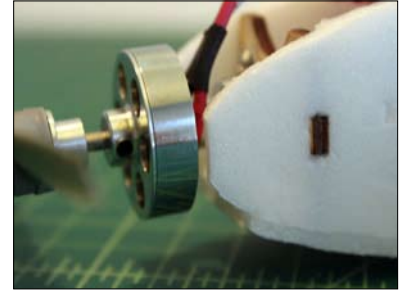


Install the motor mount first to the firewall. Then install the motor. You may have to make a small access hole to reach the grub screw to tighten your motor onto the motor mount.

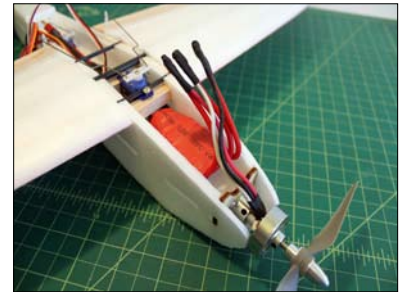
The motor may be too close to the nose of the fuselage.



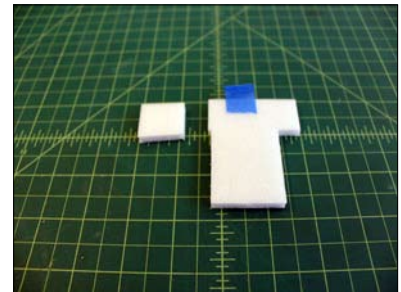
Trim it to clear the motor if needed



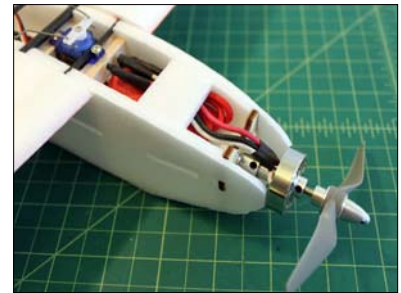
Position the ESC as shown. You may have to extend the wires to the battery connector to reach the hole for the wires in front of the elevator servo.



You can continue to use the T jigs for scraps. See next step

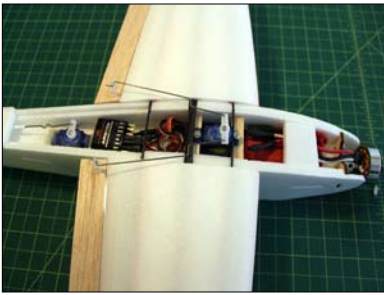


Glue the scrap foam down over the ESC and wires so you have clearance to put on the top cover. This part will be a tight fit.

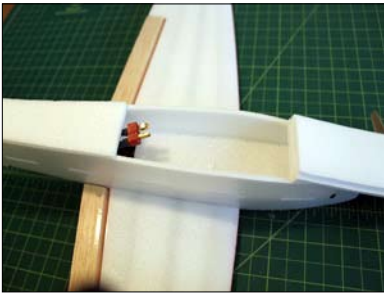


Use a small receiver. Also make sure the battery connector is tucked under into the hole and is coming out under the belly and accessible through the battery hatch.

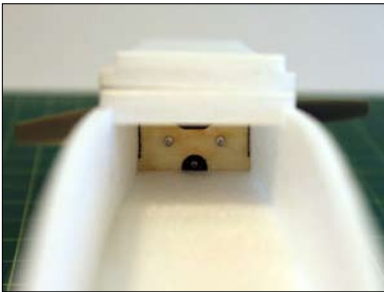




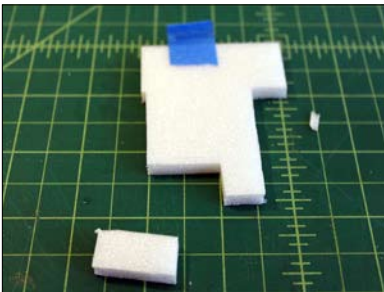
A view of the tight installation shown



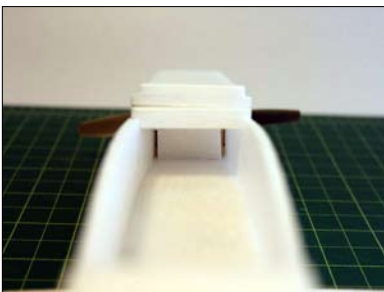
The battery connector showing through the hole.



You need to fill this hole and space under the front bottom. Cut scrap piece 3/4" Keep the battery away from those sharp screws and prevent the battery from sliding too far forward.



Cut more scrap pieces from the "T" jig. Fill up the front cavity ONLY 3/4" deep so that the battery position will slide partially into the nose area and not hit the screws.

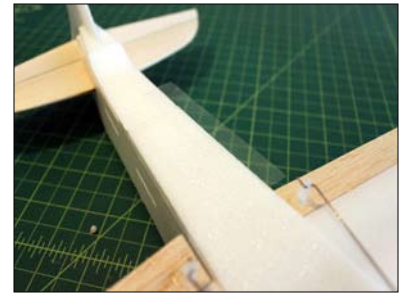


Test fit your battery and check for proper CG. Once proper CG is determined fill up the front cavity to allow your battery to be placed on the proper CG every time. Glue the scraps in place.



As you did with the rear hatch, simply tape down the top cover. You may want to lightly sand the edges smooth before attaching it. Unless you don't mind the way it looks.

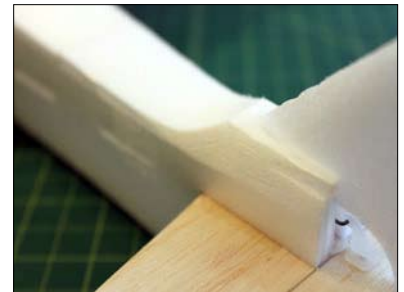
The tape over the rear hatch as shown. Again lightly sand the edges rounded while holding it down before taping the edges if you want streamlined rounded edges



For you to better understand where to tape I have used the blue tape for demonstration purpose only. You should use clear tape on yours.



Sand all edges of your fuselage as streamlined as you wish it to be. (Be careful not to damage the rudder or horizontal stabilizer when sanding the rear section.



Congratulations! You are almost done!

As a last step you should cover the entire fuselage with clear packing tape to add strength and apply a coating of water based polyurethane over the entire plane. The WBPU will help keep the airplane clean.

To see how to cover your plane with tape refer to the last couple pages of the NANOSHARK manual.

IT IS VERY IMPORTANT TO PROPERLY SET UP YOUR CONTROL SETTINGS AND THROWS. PLEASE READ ALL THE INFORMATION ON THE PAGE BELOW.

Warning! This aircraft is for experienced pilots only. This is not a PARKFLYER. Although it weighs under 2LBS, its speed can exceed 60mph. Therefore, it does not qualify as a "Parkflyer" as per AMA rules and regulations. It should be flown only in fields specifically reserved for RC aircraft which have been approved by the AMA. It is highly recommended that you join the AMA if you are not already a member. If built or flown incorrectly, this plane can cause damage property or injury to people. User assumes all responsibility and risk.

Airplane flight Characteristics:

This micro speed plane is Insanely FAST on the 3S setup PLEASE follow the recommended control set ups including EXPO, otherwise it will be challenging to fly as it is a very responsive high performance design that can be easy and fun to fly if set up properly.

The Babyshark is a high performance design that is fast, responsive, and aerobatic. It can retain its high speed energy in full elevator yank and bank pylon turns and will get your heart pumping and your knees shaking. PERFECT for you speed freaks! It is also Extremely maneuverable and can tear up the sky like **NO OTHER** Depron aircraft it's size and weight then slow down for sport flying. But what fun is that when you have a little pocket rocket like this in your control. Which ever way you like to fly this plane it is quite small and it can get away from you fast. So don't blink and hold on for a performance you never thought possible from a 3mm Depron foam airplane and wow everyone at the airfield, Guaranteed!

Alternatively, if you want a fast plane but need to work your way up to it like many pilots, then start with the 2S set up instead of the 3S on the same motor, ESC, and even the same 4.75x4.75 prop! And you will have your self a very manageable and still fast micro *parkflyer* that is great flying fun at a more manageable pace. But don't underestimate this set up either, it can still tear up the sky, but at a less-than-insane way.

PLEASE FOLLOW THE RECOMMENDED CONTROL THROW SET UP. VERY IMPORTANT!!!

R.T.F. Weight: 7.5 oz. ~ 9.0 oz

Center of Gravity: 1 1/4" from the leading edge at the wing root.

Aileron Throw: Up and Down = 3/16" ~ 5/16"

Dual Rates for 60% low, 90% high

Expo is at your preference 20% to 30%

Elevator Throw: Up and Down = 1/8" ~ 3/16"

Dual Rates 50% low, 60% high

Expo is a MUST at 50% to 70%

~Start with low rates until you are comfortable with the plane and gradually move up to the high rates if you feel the need.~

Here are the recommended set ups:

Wickedly fast super high performance: (24 Amps / 260+ watts!)

Motor: HexTronik 24 gram 3000 KV

ESC: ZTW 30 Amp (Other ESC's including Turnigy can not handle the high switching rate of this motor on 3S, this ZTW 30Amp ESC can!)

Battery: Nano-Power 1100mAh 11.1v 35C

Prop: APC 4.75x4.75

Light and fast parkflyer:

Motor: HexTronik 24 gram 3000 KV

ESC: ZTW 20 Amp (using a 30Amp ESC will enable you to fly both set ups simply by changing the battery)

Battery: Rhino 1050 mAh 2S 7.4v 20C or 30C

Prop: APC 4.75x4.75 or (5x5~6x5 on 2S only!)