

# NANO SHARK

## BUILDING INSTRUCTIONS

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Please review this entire manual before beginning assembly. Please visit our website [www.nanoplanes.net](http://www.nanoplanes.net) for more information.

This is not a toy. It is meant for use by the experienced Radio Control Hobbyist

# CONTENTS of the NANO SHARK KIT

## INCLUDED ITEMS

- ✓ All Depron Parts with Graphics
- ✓ Elevator and Aileron Push-rod wire
- ✓ Three Micro Control Horns
- ✓ All necessary wood parts
- ✓ Carbon fiber wing spar and elevator spars
- ✓ Fully illustrated building instructions

Please note:

The graphics on this kit may vary in color and design from the photos used in this manual

## YOU WILL NEED THE FOLLOWING ITEMS TO GET FLYING

- ✓ Little Screammers Brushless motor and 12 amp brushless speed controller
- ✓ Four channel radio receiver and 2 micro/parkflyer servos
- ✓ APC prop 6 x 5.5 and 3mm prop adapter
- ✓ 900 - 1320 mah 3 cell lipoly battery pack or similar - high discharge 12C +
- ✓ Foam safe / odorless CA (UFO brand highly recommended)
- ✓ Lightweight Spackling or hobby filler
- ✓ Hinge tape or Scotch tape



You will need to detach the ailerons and elevator from both wing halves and both elevator halves.



Flip over the elevator on the table with the graphic side face down. With a hobby knife carefully cut down the hinge line to cut the graphic tape.



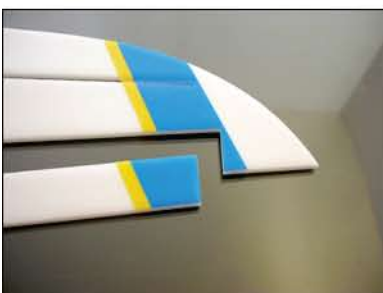
If done correctly it should be a clean cut. Repeat this for the other elevator as well.



The same process needs to be done for the ailerons. Place one wing half face down. You will need to make two cuts. The first cut shown here.

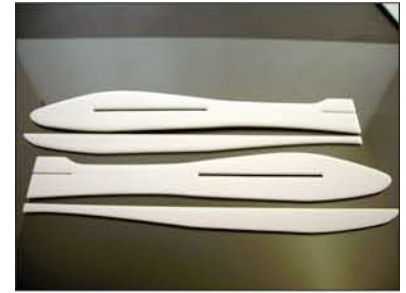


The second cut shown here. Repeat this process again for the remaining wing half.



Again if done correctly and with a sharp hobby knife you should have a clean cut as shown.

Find the following parts and lay out on your work table as shown. This will ensure you build a right and a left side.



Glue the half fuselage to the former as shown. There will be about 3mm edge at the slot. This is the way it should look. Make sure it stays straight with no warps until glue sets. Stack books on top to be sure it stays true.



A closer view shows the positioning as it should be.



A closer view of the positioning as it should be in the aft section of the fuselage half.

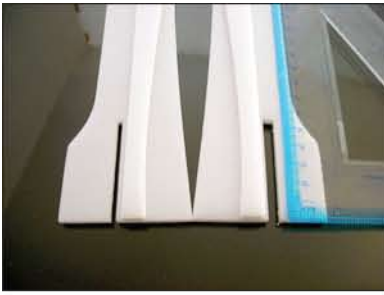


Complete both the left and right fuselage halves as shown.

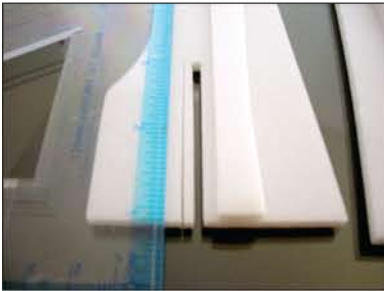


You will need to widen the slot for the elevator. Cut off about 3mm from the top side.





The new slot should be widened enough to allow the 6mm elevator to slide in without breaking the Depron.



Repeat this for the other side. Make sure you cut from the top side. The side opposite the fuselage doubler.



Glue the center piece as shown. Make sure it is laying completely flat onto the edge of the fuselage doubler.



Make sure you do not cover up the wing slots.



Glue the remaining fuselage half to the assembly. Stand on end as shown to ensure it is lined up properly before gluing.



Your fuselage assembly should be straight with no warps or bends or twists.

Take two of the wood sticks and glue them to the underside of the fuselage as shown. Sand a taper to the tail end pieces to make it fit.



Make sure both sticks of wood are pressed securely into the corner for the full length of the fuse while gluing.



If you find that your wings are curled then you must straighten them out using ruler or hard flat tool.

Press with a sweeping action all the way across the wing. Be sure to hold the wing firmly on both sides of the spar line so that you do not break the Depron. Pick up the wing to see if it still has a warp. If you pressed too hard you might find that the warp has changed directions. If this is the case flip over the wing and lightly sweep the wing again to straighten it out. After a few swipes you should find it easy enough to make your wing straight and true. Try to make it as flat as possible.

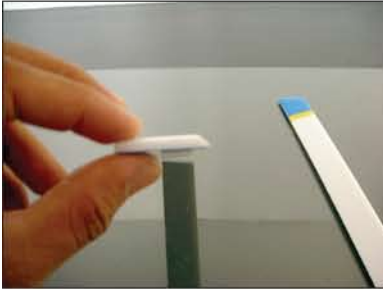


Although in this photo this spar is wood, your kit will include a Carbon fiber spar. Glue the wing halves as shown and glue in the wing spar as shown.

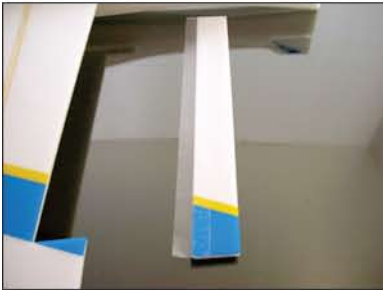




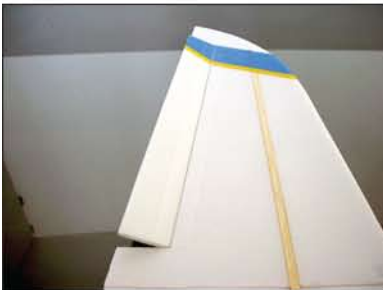
Make sure you glue the spar while the assembly is on a flat surface. Make sure your wing stays straight.



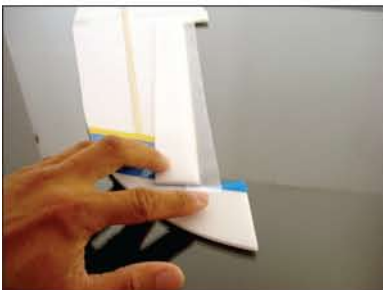
Sand a 45 degree bevelled edge on the ailerons. Make sure you are sanding the correct aileron and you are sanding the bottom side of it.



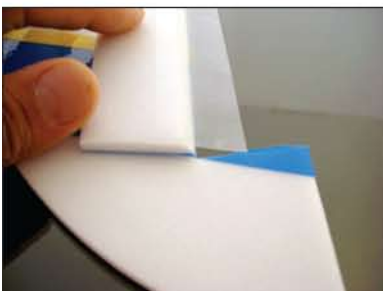
Apply Hinge tape or Scotch tape to the aileron top side first. Trim the ends then attach it to the wing.



Complete this for both sides.

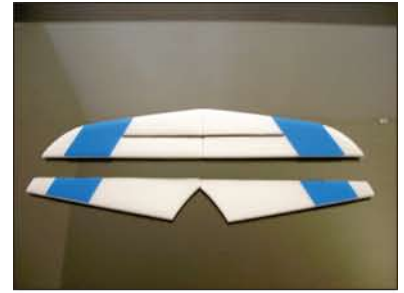


Then flip over the ailerons all the way on its back as shown. Apply hinge tape to the bottom as shown. Trim the ends and seal the aileron hinge over the bottom side of the wing.

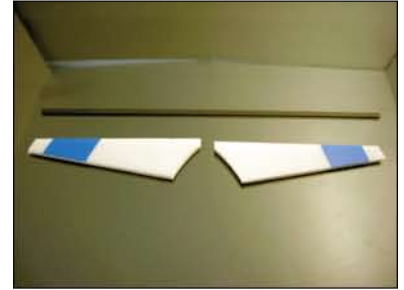


Trim the end before folding over the tape to finish sealing the aileron hinge.

Locate the 4 elevator parts. Glue the to halves together and glue in the carbon fiber spar. Work on the elevator control surfaces next.



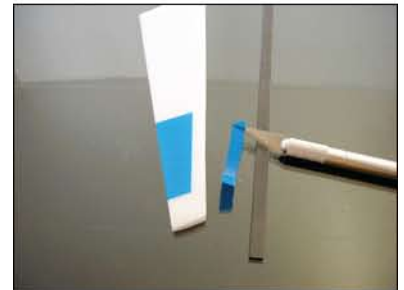
Find the flat spar about 13 inches and the elevator section.



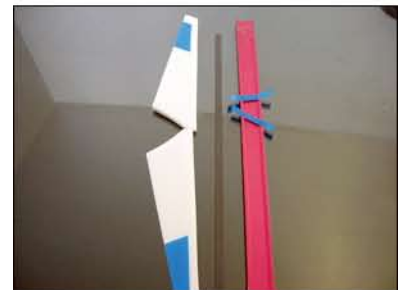
Place the spar over the top of the elevator as shown. Use it as a guide to cut away the color graphic tape.



Don't discard the tape. Peel it away carefully as you will re-apply it later.

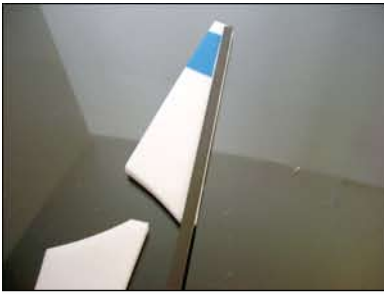


Repeat the process for both sides. Remember save the tape for re-application.

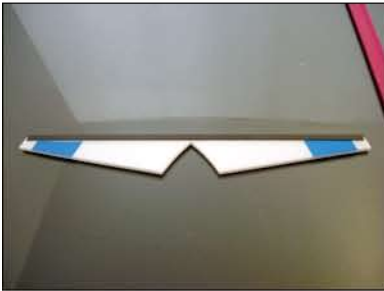


Measure the flat spar to length of the elevator spanwise. Cut the length to match the elevator span. Use cutting shears. Be careful of slivers and splinters from the carbon fiber.





Glue the flat spar to the front edge of the elevator as shown. Make sure it is flush with the edge.



Glue the remaining elevator half. Make sure it is straight and flush with the front edge for the full span of the elevator edge.



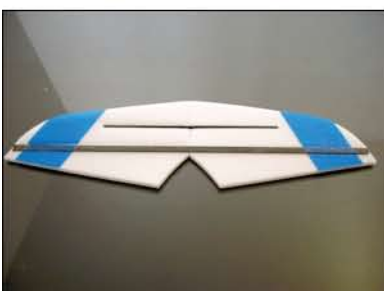
Re-apply the tape cut off earlier over the carbon fiber flat spar as shown. Do both sides.



Take this assembly and place it on the edge of the table on its back, carbon fiber and graphic side face down. Sand a 45 degree bevel as shown.



Use hinge tape or Scotch tape on the top first.



Attach the elevator with the tape.

Bend back the elevator all the way back and tape the bottom side to finish off this hinge.



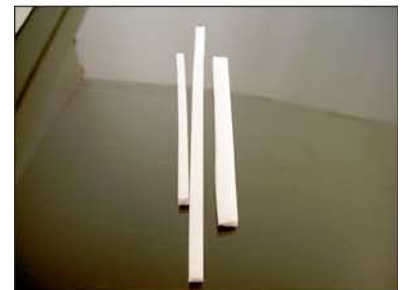
Your completed elevator should have 3/8 inch travel freedom both up and down.



Turn over your fuselage belly side up and front pointing away from you. Glue the motor mount as shown. This will give you the proper right thrust needed.



Cut various strips from the scrap Depron included in the kit.



Using the scrap strips fill in the gaps where the motor mount has been glued. Try to make it a tight fit wherever possible.



After filling the gaps on both side use Thin foam safe CA and glue in the scraps. This will help secure the motor mount to the fuse.





Continue with one more level of filling the sides with scrap depron. Try to make it from one piece on each side. Secure with more Thin foam safe CA.



Sand the elevator slot wider to accept the elevator without breaking the depron if needed.



Glue the top part together as shown. Pinch it together with your fingers without cracking the depron. Be gentle yet firm.



Squeeze the bottom part as shown and apply glue to fill any poor glue adhesion.



The front of the fuselage shown here while belly side up.



The upright front view of the fuselage.

With a sponge type sanding block smooth down the corners to make a rounded fuselage bottom.



Sand it round for the full length of the fuselage bottom.



This will help your fuselage be more streamlined and resist drag better.



Fill any remaining cracks and gaps with lightweight spackling. Let it dry and sand smooth with fine sand paper.



Use the end of an Exacto knife and cold crush all trailing edges and leading edges top & bottom for all flying surfaces. Wings, elevator and rudder.

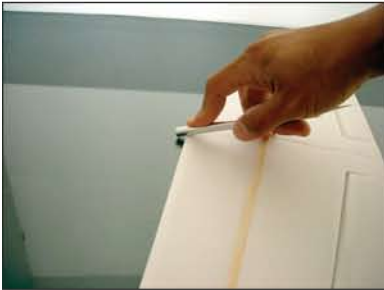


After cold crushing the edges use a fine sponge sand paper and round smooth all flying surfaces leading and trailing edges.





Continue with this process for all the wings.



Just a reminder. It makes it easier to round the edges if your first cold crush a slight bevel to the edges first.



It also helps to place the wing on a flat surface and sand with a sponge sander to bevel the edge first then sand round second.



Trial fit the elevator and then make some very light cuts to remove the hinge tape in order to allow a better glue joint.

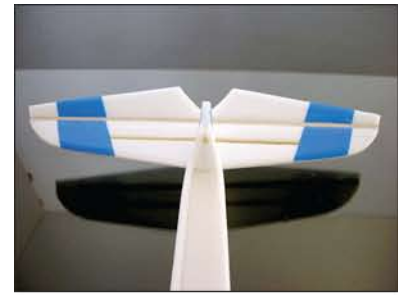


Carefully cut out some hinge tape to expose the Depron. This will facilitate a foam to foam glue bond at this part of the elevator.



Remove the cut out tape. (Please note that your kit will not have wood as shown in these pictures. Just ignore this difference)

Attach the elevator and make sure it is squared up to the fuselage. Once you are sure it is aligned then glue it with Thin foam safe CA. Apply a few drops and let it seep into the joint.



Attach the rudder as shown. You will realize that the bottom part of the rudder does not reach the fuselage.



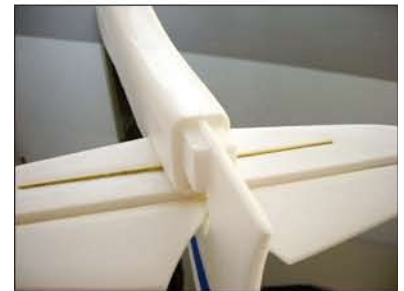
It will look like this if done correctly. Do not glue this part yet.



Cut out a couple of scrap pieces sized to fit into the tail openings and to create a secure fitting for the rudder.



Make sure your scrap parts create a snug fit into the open tail end of the fuselage and that it also creates a secure grip of the rudder.



Use more thin foam safe CA to lock in the rudder and then sand a tapered effect as shown.







Be careful not to accidentally sand other parts of the plane.



Fill in the rest of the fuselage end to make a smooth airflow over the fuselage. The smooth shape of the fuse helps reduce drag greatly.



Use a ruler or hard flat object to make sure the main wing slot is wide enough to fit the wing. Press while moving forward and back along the slot.



Make sure it is at least 5 - 6mm thick for a snug fit of the wing. Use a file sander if needed to widen this slot.

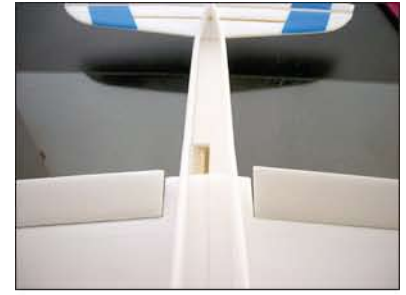


After sliding in the wing you might notice that the fuselage may have warped a bit. Use a straight edge to straighten it out.

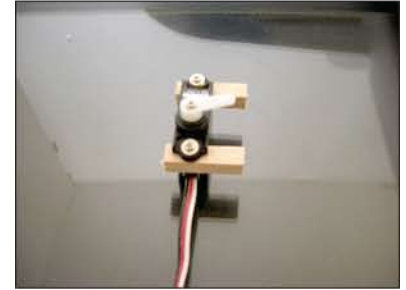


It should be very easy to line it up as shown. Make sure the wing is squared up properly and glue it in place. Again thin foam safe CA works great.

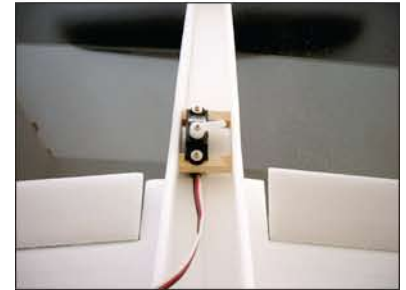
Cut out a servo hole to fit your servos. Do not cut through the wood as you will weaken the fuselage if you do. Just cut away the Depron.



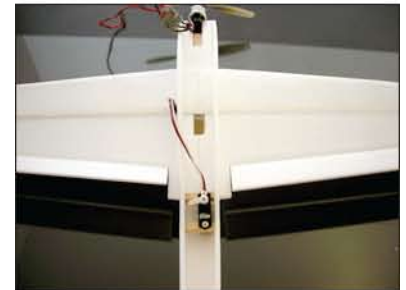
Measure the width of your fuse and cut two pieces of wood to length. Attach your servo first to the wood as shown. Then glue the wood to the fuse with the servo attached.



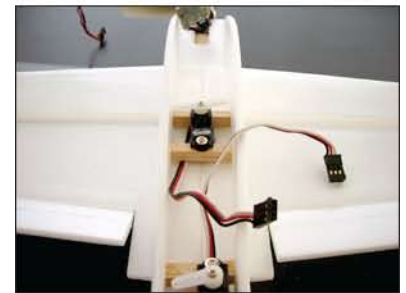
Make sure you line up your servo to fit into the hole you cut out. This should bring your servo arm just outside the fuselage top.



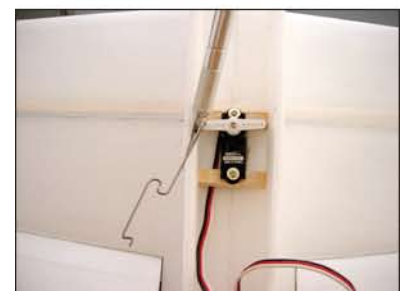
Cut out the aileron servo hole behind the main spar line and keep it centered as well.

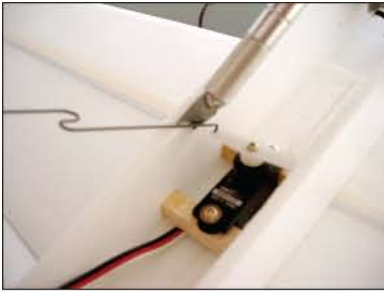


Again measure the width of the fuselage and cut to length the two servo mounts. Again attach the mounts first to the servo then insert and glue into the fuselage as shown.

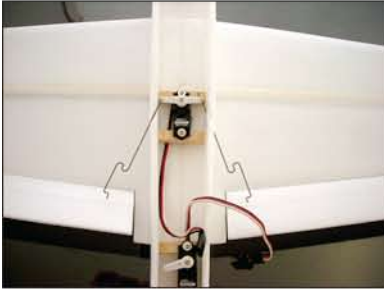


Attach the push-rod to the servo arm then use the pushrod as a guide for cutting a slot down the side of the fuselage.

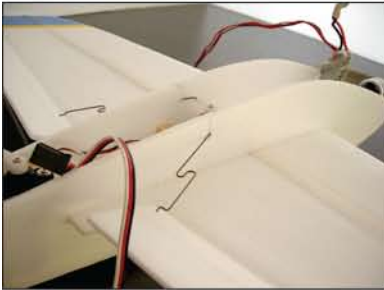




Cut down to the height of the servo arm as shown.



Repeat this for both sides.



Make sure the future positions of the control horns are evenly line up for both sides.



Install your Rx behind the aileron servo. Also Cut out about 1/2 in. to 3/4 in. to allow free movement of the aileron pushrods.

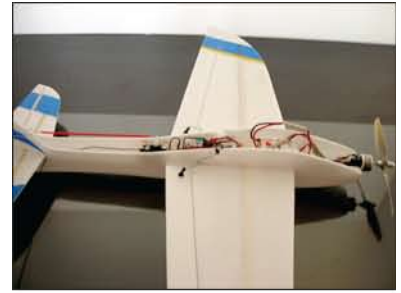


The Battery position is in front of the aileron servo. Install your motor and ESC in front of the battery.

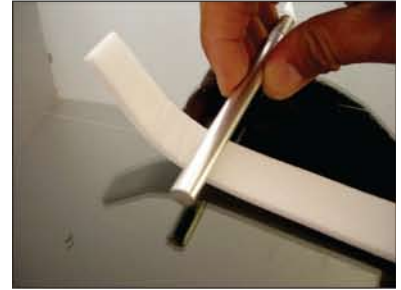


Attach your control horns on the ailerons and elevator along with the elevator pushrod.

At this point your should trial fit all your gear and test if all surfaces are moving as they should and check if the battery position is right in order to find the CG. Which is about 1/4 in. in front of the main wing spar.



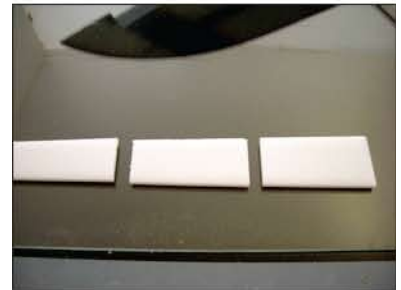
Cold crush the tail end of the fuselage cover and curve it upwards as shown.



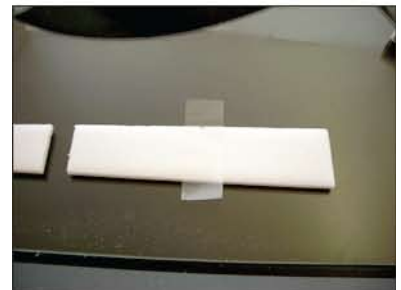
Measure and mark from the front of the cover piece at 3 inches and at 6 inches.



Cut off at the 3 and 6 inch points. You are making a battery hatch here.

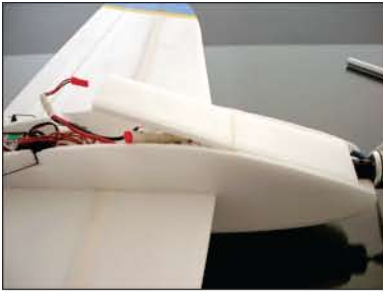


Apply hinge tape to the top side and trim the edges.

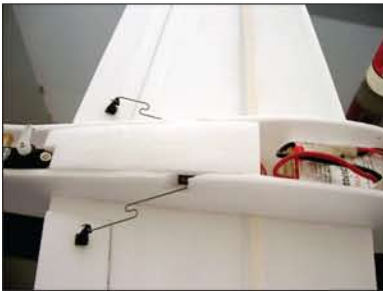


Flip over and tape the bottom. This is similar to the aileron and elevator hinges except there is no taper edge needed. This hatch only needs to move one direction.

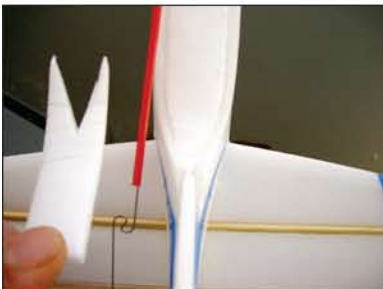




Glue the front part of the hatch only. Cover the hatch completely with tape. The use of tape to secure the hatch closed. Tape over tape makes a clean removable surface for repeated use of the hatch.



With the remaining top cover pieces measure and properly cover the rest of the fuselage. Cut out a small part to leave slightly exposed the elevator servo only. Slightly exposed.



Finish off the tail end by cutting off the unneeded part as shown. Glue in place the top cover. Tape the pushrod tube to the side of the fuselage.



Sand round edges for the top portion of the fuselage to complete the smooth airflow effect over the entire aircraft. This will greatly help reduce drag to make a much more enjoyable flying experience.



This is the finished aircraft.

The recommended surface throws are as follows:

**Aileron up and down: 5/8 inch**

**Elevator up and down: 3/8 inch**

**CG: 1/8 in. - 1/4 in. in front of main wing spar**

This aircraft can be extremely unmanageable with higher throw settings than mentioned above. You should try your first flights with less than recommended to get a feel of how this plane behaves then change if desired. It is recommended that you use a radio that has dual rates or exponential settings so you can adjust these throw settings at the field while testing it out to find your preferred set up. Once you have it tuned in this can be a very fun all around sport aerobatic aircraft with great capacity for speed depending on the motor set up used.

Thanks for choosing a Nanoplane. We hope you enjoy your new NanoShark.

If you have any problems or questions we will be more than happy to help you in any way we can to make your experience as satisfying as possible.

Feel free to leave comments in the guestbook at [www.nanoplanes.net](http://www.nanoplanes.net).