

INTERCEPTOR

BY WILDMAN



Kit Components:

- 1 54mm slotted body tube
- 1 38mm motor mount tube
- 1 nose cone
- 1 nose cone bulkhead
- 2 centering rings
- 3 fins



Additional materials: optional Aeropack motor retainer, Kevlar, Rocketpoxy, parachute, eyebolt, rail buttons, JB Weld (if using retainer), and sandpaper

Assembly of this rocket begins with cleaning, sanding and fitting all parts.

Start with the centering rings, sand off the tabs and fit them to the motor mount tube and inside the body tube. Then sand two notches opposite each other on the inside of the forward centering ring.

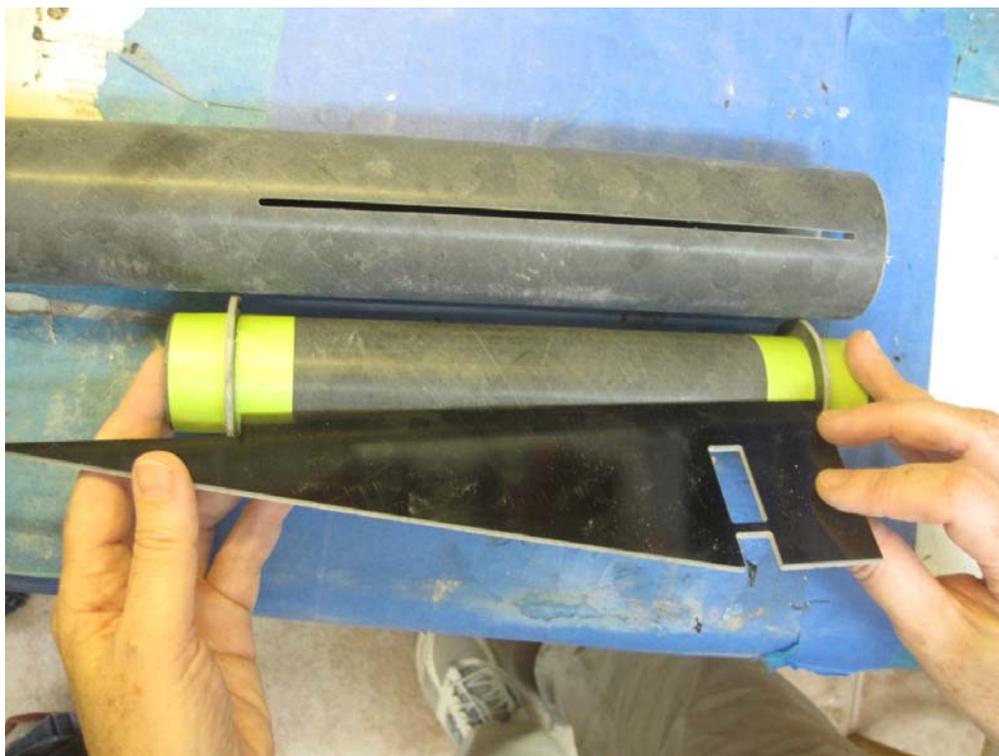




At this point this is a good time to mark where the Aeropack retainer will fit on the body tube



Temporarily assemble the motor mount with the centering rings taped in place to fit the fins, if using an Aeropack retainer make sure the fit includes extending the motor mount tube about 1/2 inch behind the body tube.



Insert the motor mount assembly into the body tube and test fit all fins. While the motor mount is in there, use a sharp object to draw lines through the fin slots onto the motor mount tube.



The next step is to make a Y-harness by attaching Kevlar to the motor mount tube. Start by measuring the Kevlar (1/4 inch Kevlar was used in this build) to the length of the fin can, leaving enough room at the top to make an overhand loop.



Mark where the slots in the upper centering ring fit on the motor mount tube, making sure not to impact the lines drawn where the fins will be attached and then cover the fin lines with tape to prevent epoxy overlap.



Place the kevlar on the body tube and insert the upper centering ring over it, making sure the kevlar runs through the slots. If you wish you can tack the upper centering ring into place with a small amount of CA glue.



Before epoxying it should look like this, making sure the length of the Kevlar still allows for leaving enough room at the top to make an overhand loop. This is a good time to double and triple check your Kevlar and centering ring placement BEFORE epoxying.



Note: at this time only the upper centering ring will epoxyed into place.

Tucking the excess kevlar into the motor mount tube will help keep it out of the way.

Don't get any epoxy inside the motor mount tube.

Be sure to sand areas to be epoxyed and then wipe with alcohol or acetone and then allow to dry before applying epoxy to any surfaces.

Mix up a small amount of Rocketpoxy and, dependent on the temperature of your work area, let sit up to 20 minutes until the consistency is like peanut butter. This will minimize “flow” of the epoxy to places other than where you want it.



While waiting for the Rocketpoxy to set up, sand the areas where the kelvar will lay on the motor mount tube. Once the Rocketpoxy is ready to spread, lift up the end of the Kevlar and paint a line of Rocketpoxy down the motor mount tube.



Lay down the kelvar onto the Rocketpoxy and encapsulate it with the epoxy, paying close attention to the end.



Encapsulate the kevlar on the other side as well, then run Rocketpoxy around the top edge of the forward centering ring, keeping Rocketpoxy clear of the notches where the Kevlar is placed.



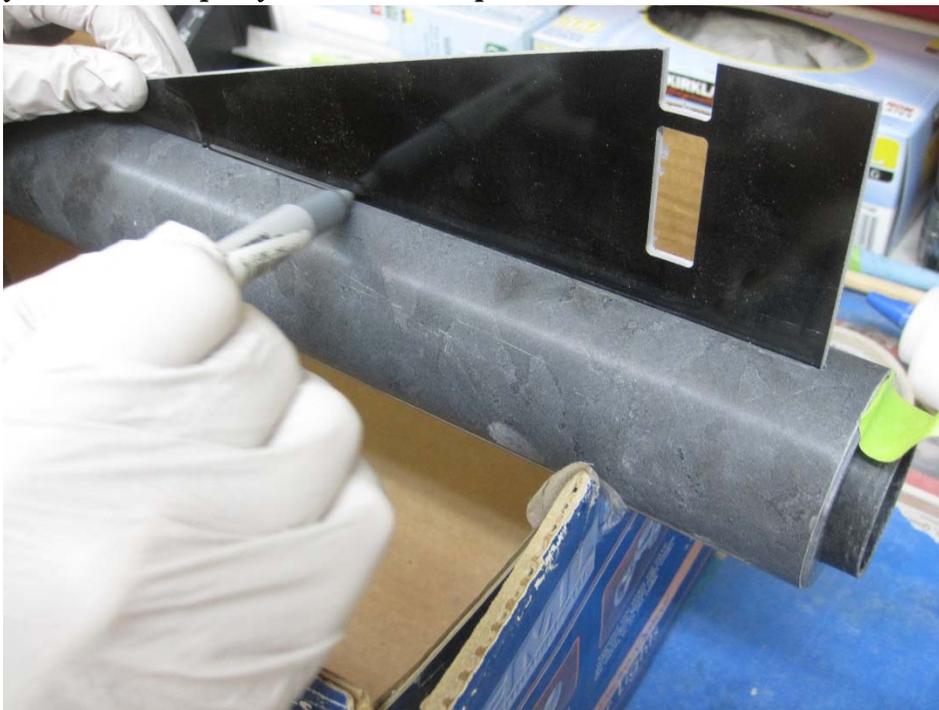
Once all the epoxy is in place let dry at least one hour, the longer the better. Overnight is good too....



Next up is to insert the fins. Start by numbering and test fitting the fins to the slots, being sure to sand down the root edge to get a close fit.



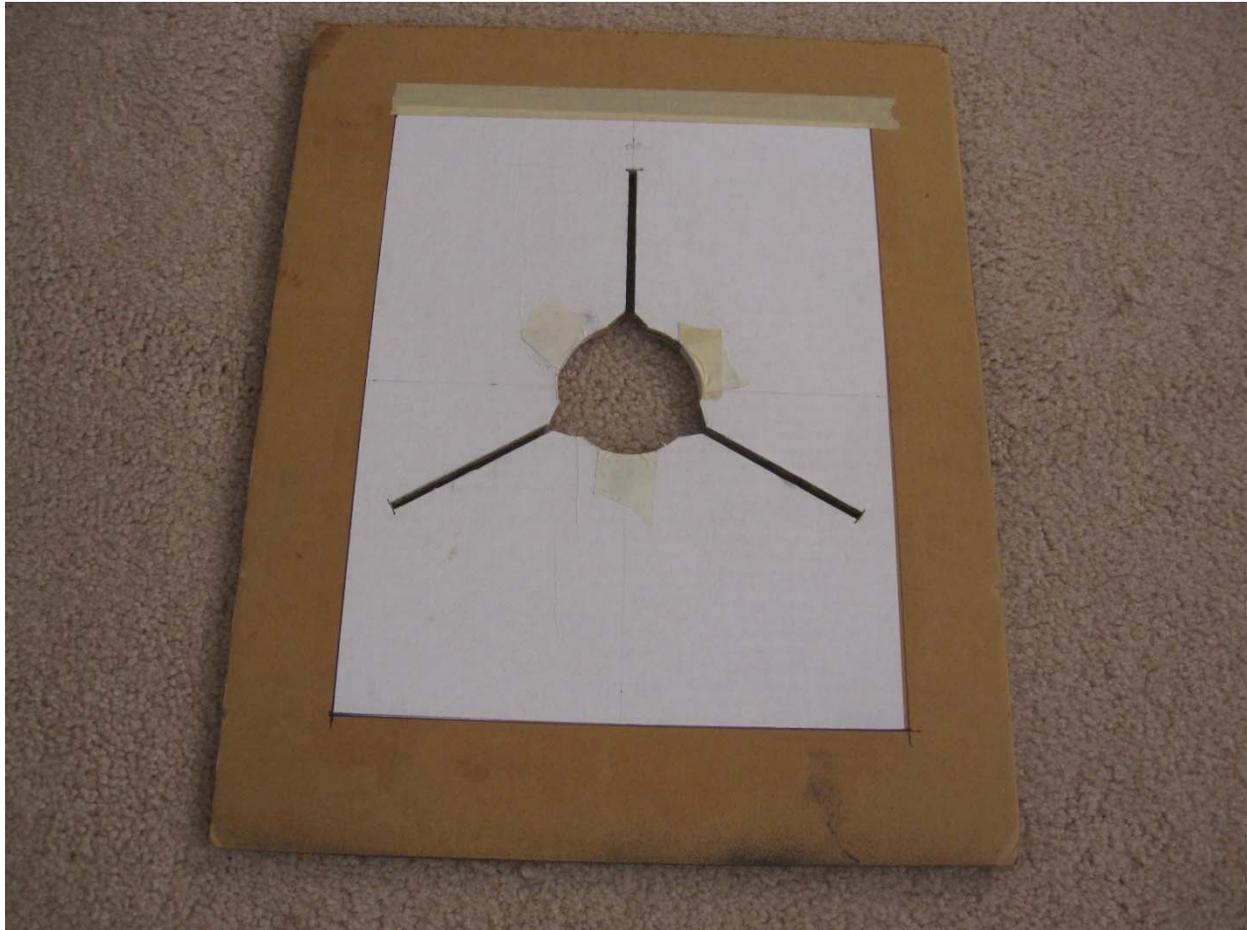
When test fitting the fins, insert all the way into the slot and then draw a line along the edge of the fin can so you can tell if the fin has seated completely once you start to epoxy the fins into place.



Make a fin template by going to this website:

<http://www.payloadbay.com/index.php?page=Tools&action=FINGUIDES>

Create the template and print it out and glue it to a piece of cardboard and cut out the slots



Keep your rear centering ring removable by using tape or attaching screws.

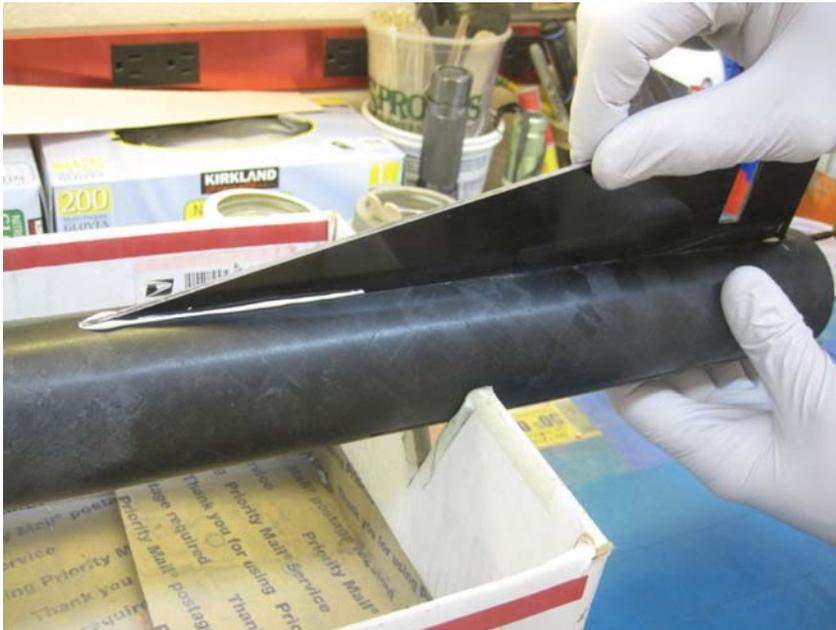
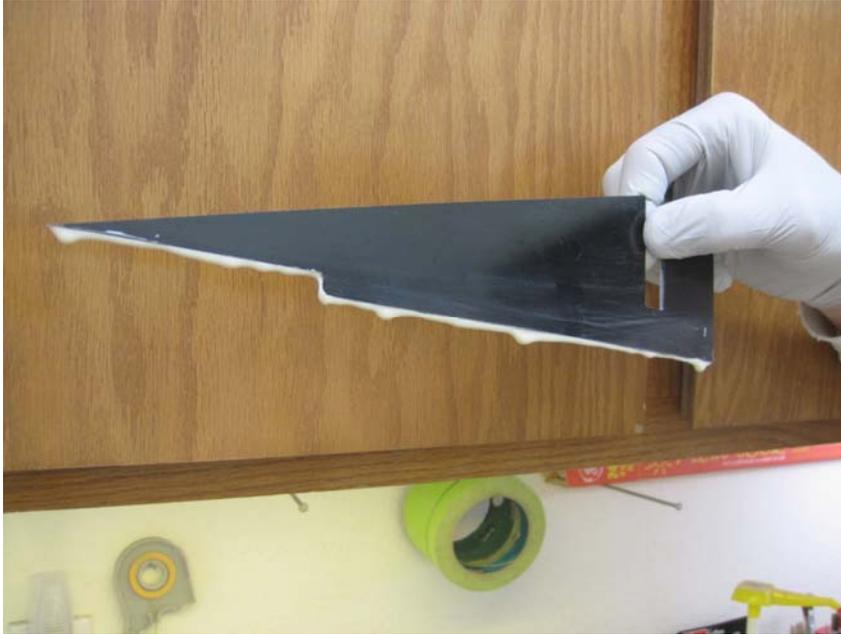


Sand and clean the root edge of the fins.

Prepare enough Rocketpoxy to stick just one fin and add a layer to the root edge of the fin, holding upright as shown



Then flip it straight down and insert the fin into the correctly numbered slot, pushing down and towards the forward centering ring, making sure the entire root edge gets pressed onto the tube.



Clean up the edges and then put your template on the fin and tape it all down prior to letting it cure. Cure time for Rocketpoxy is somewhat temperature dependent, which may be an hour to several hours. Make sure you don't epoxy your template to your rocket.



After the Rocketpoxy has sufficiently cured, place fin number 2 and let it cure.

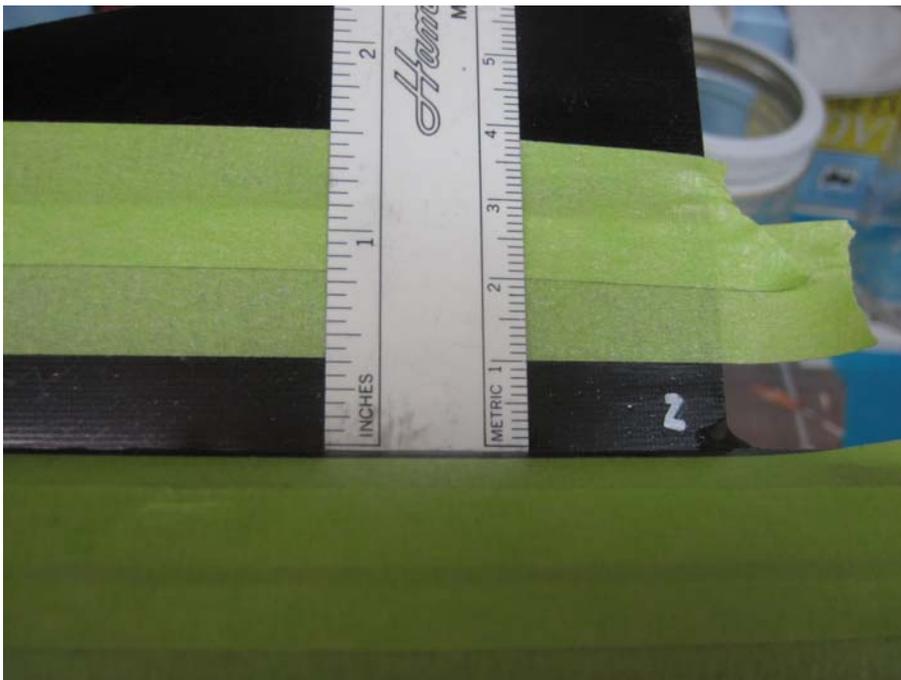


Once you have placed fin number 3 and allowed it to cure pull the rear centering ring out and using a flashlight, inspect the inside of the fin can. There should be Rocketpoxy visible along the fin lines. If necessary, at this time you could very carefully add additional Rocketpoxy using a small stick. If satisfied, epoxy the rear centering ring in place and (if you are using one) add your retainer with JB Weld at this time.



Next step is to do the external fillets.

Using a piece of 1 inch PVC pipe or by measuring with a ruler, make lines along the fin and the body tube and place tape along those lines to create an area to fill with epoxy.





Be sure to tape off areas you DON'T want epoxy. That stuff gets everywhere....

Measure 40 grams of Rocketpoxy (20 grams Resin and 20 grams Hardener) and if you wish enough black or any other color tint to color the epoxy to your satisfaction. Mix for 1 minute and then spread out the mixture on a flat surface and wait 20 minutes (depending on temperature) to minimize bubbles.



While waiting, sand and clean your fillet areas.

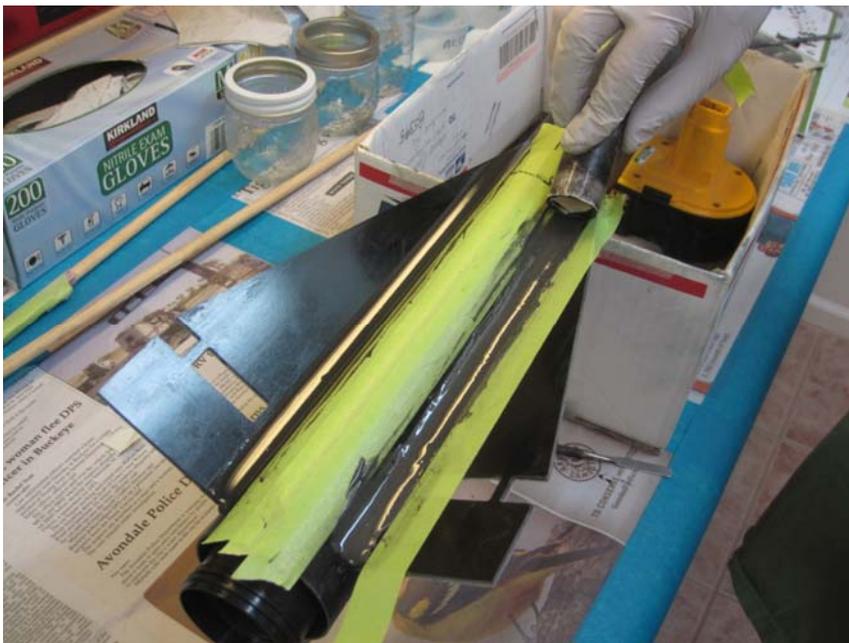


Then scoop up a portion and let it flow into the area created for your fillets.



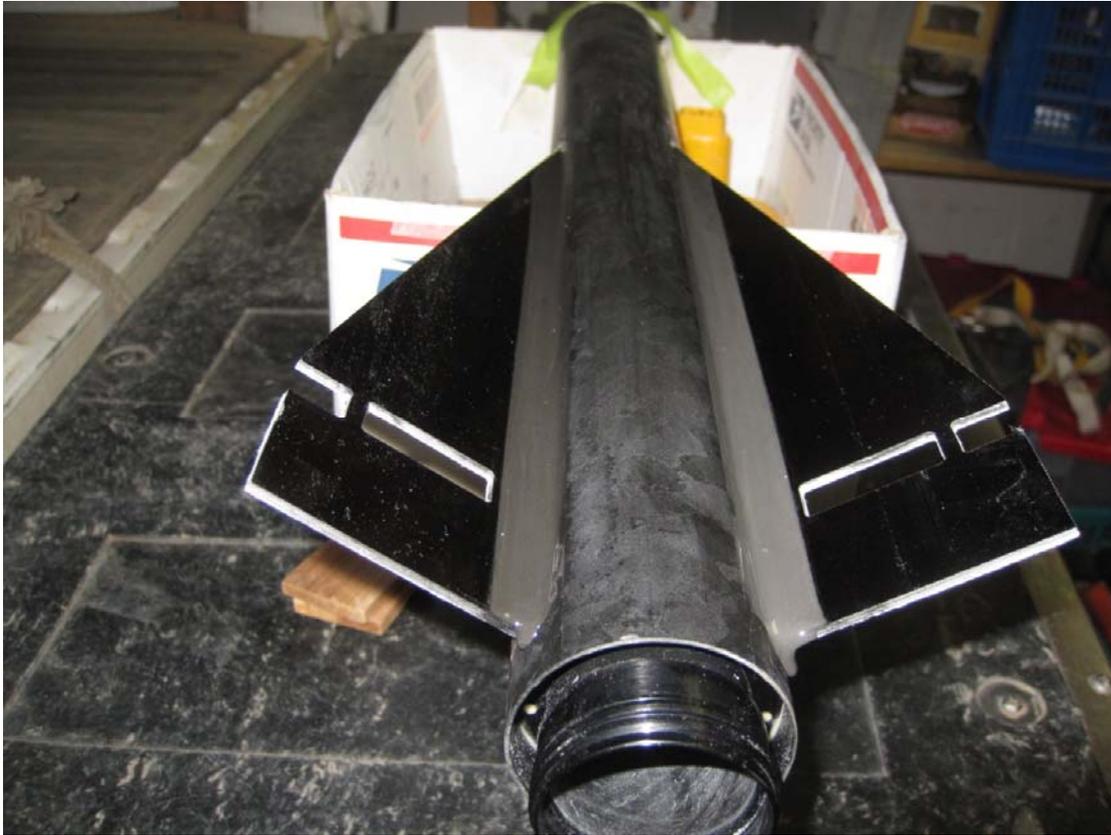


Spread epoxy along the length of the area. Then wet the PVC piece in some alcohol and pressing evenly along the body tube and the fin, stroke it down the length of the area.



This procedure *should* minimize any bubbles. Not making promises.....

You may need to wipe your PVC piece, re-dip in alcohol and re-stroke the area a couple of times to achieve a smooth fillet. Relax, it takes awhile for Rocketpoxy to cure so there is plenty of time to make a nice fillet.



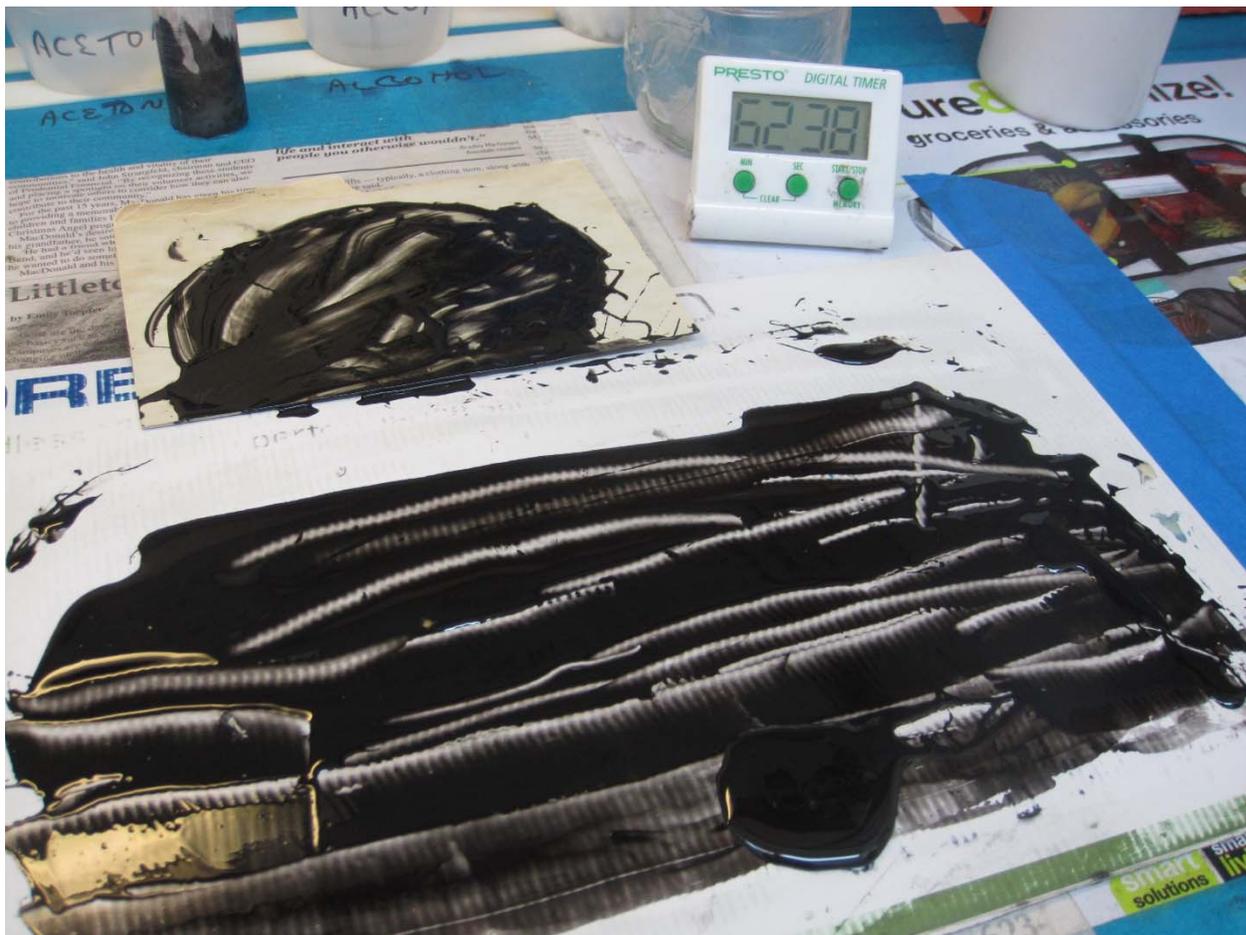
Clean up any drips along the side and remove the tape to get a nice clean line. It needs to be removed before the epoxy fully hardens over it will be Very Difficult to remove later. Clean up any drips, such as the one on the right hand side of the photo above.

Place in an undisturbed area and use a level to make sure the fillets are level both front/back and left/right.



Let the epoxy set, the time will be dependent on the temperature in your work area, at least two hours to overnight. Check on the fillets every 20 minutes or so until you are satisfied that there will be no more drips. Use alcohol to clean any stray epoxy off the tube and fins. Now is the time to do it!

One way to determine how hard the epoxy has cured is to test the leftover epoxy for hardness as the rocket cures.



Once the fillets are set, repeats these steps for the other two sides.

Once all the fillets are set up and dried then drill a 1/8' vent hole about 6 inches down from the top of the fin can.

Next step is to create recovery.

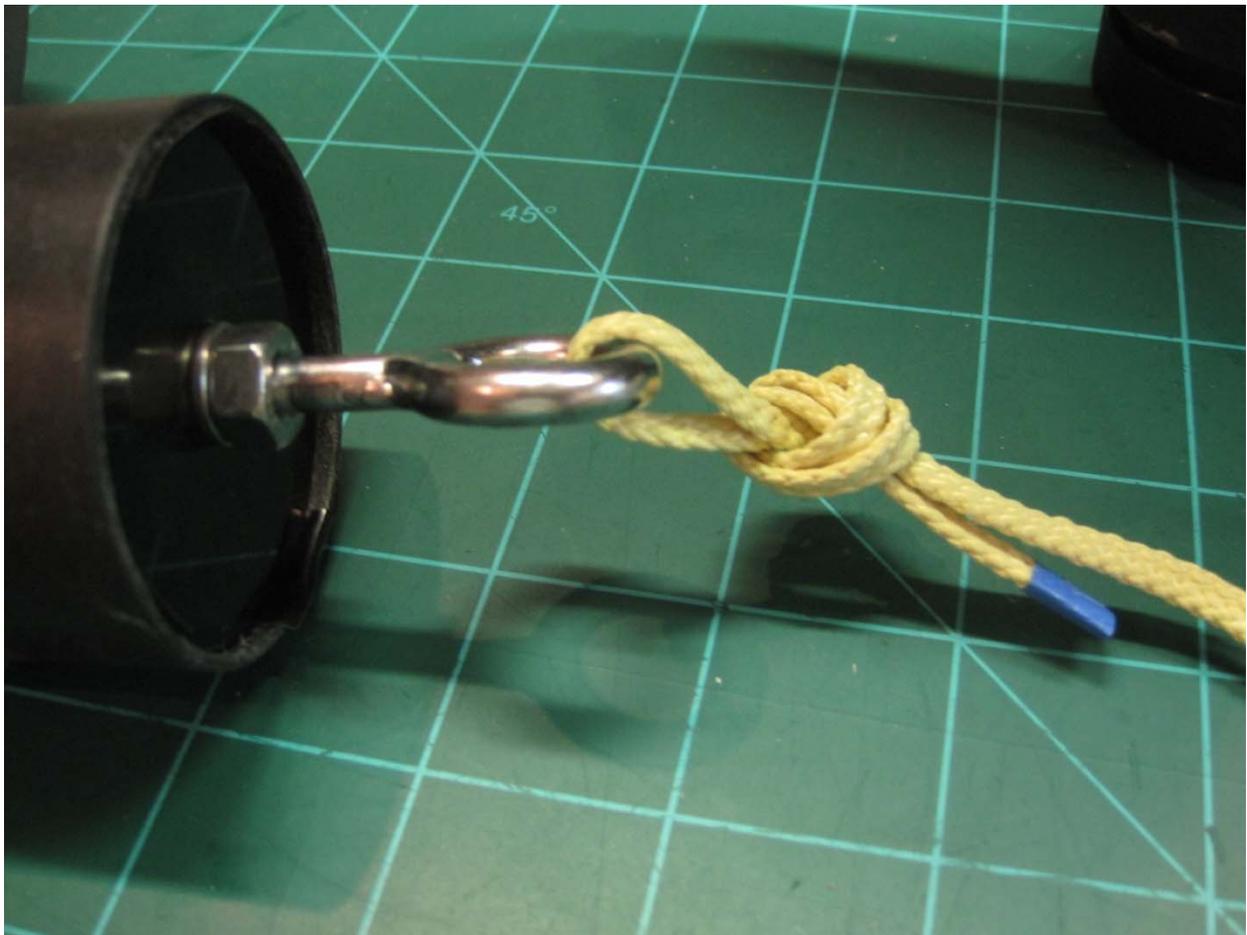
Take the nosecone bulkhead and install an eye-bolt into the pre-drilled hole.



Then sand and clean the nosecone bulkhead and the inside edge of the nose cone and epoxy the bulkhead approximately $\frac{1}{4}$ inch inside the nose cone.



Once dried, attach 10 feet $\frac{1}{4}$ inch Kevlar (approximately 3 times the length of the entire rocket with some extra for the knots) to the eye-bolt using an overhand loop (or other favorite knot of choice)



About 3 feet down from the nosecone add an overhand loop to add a 30 inch parachute.

Attach the Kevlar to the loop in the body tube with an overhand loop.

Install rail buttons, one at the rear of the fincan and one just above the front of the fins.

Sand the fins to a slight bevel if you so desire.

Enjoy your Interceptor!