…..…..... BLACKHAWK 38MM.....

What can you say other than Wildman has done it again! Due to popular demand, the BlackHawks have a new big brother! This one is made of Carbonite. Not fiberglass, not carbon fiber. A fiberglass impregnated with graphite, spiral wound G-12 with the wind at different angles. This gives you a tube with more strength than regular fiberglass, but not quite as strong as carbon. But at Half the price of carbon!

Ready to eat 38mm motors for breakfast and fly all day! This little screamer will embarrass a lot of other rockets that dare to challenge it on the flight line. Comes with the high performance Von Karmen nose cone & dual de-ploy right out of the box. Nothing else to add.

Put one on your pad today!

THE PARTS:

G-10 fin alignment guides
3 Black graphite G-10 plate fins beveled

1 Carbonite 32in [81.28 centimeter fincan] black tube
1 Carbonite 16in [40.64 cent payload] black tube
1 6in [15.24 cent] coupler/av-bay

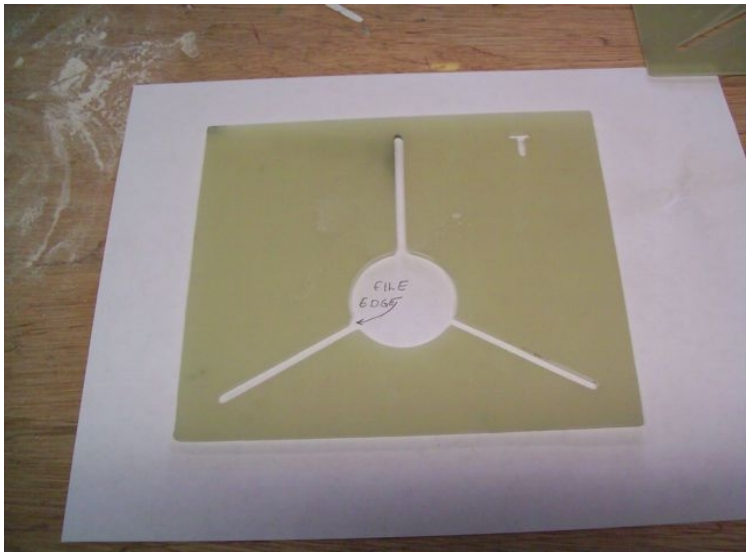
bulkplates [4] for av-bay
1in [2.54 cent] coupler to attach shock cord to airframe

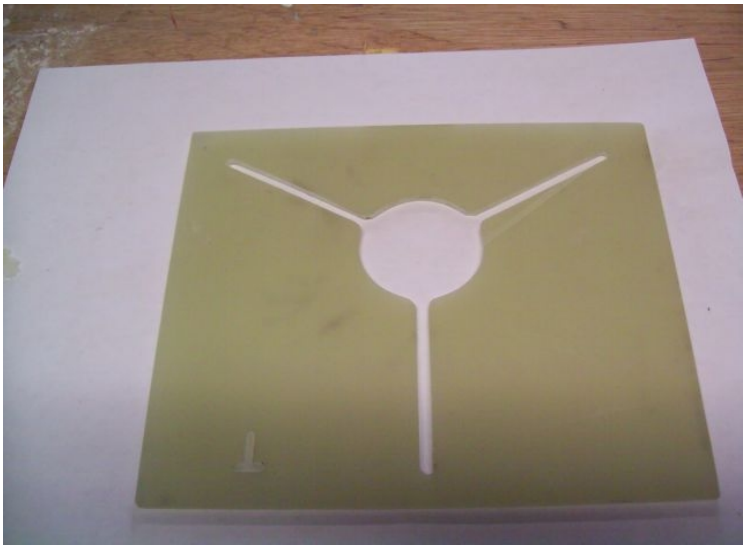
Von Karmen black Nose Cone

Kevlar shock cord 1/4 in shock cord
24in. Topflight chute
Pro-line black epoxy [same is supplied in the Mongoose kits] 500 degree high temp for minimum diameter rockets

First thing to be done is sand and fit the fin guides so the tube and fins slide in freely when it comes time to glue.

Crazy Jim tip:
Sand off the corners of guide so when tacking the fins on, the glue squishing out from underneath won't end up gluing the guides on the tube. Don't ask how I came up with this!

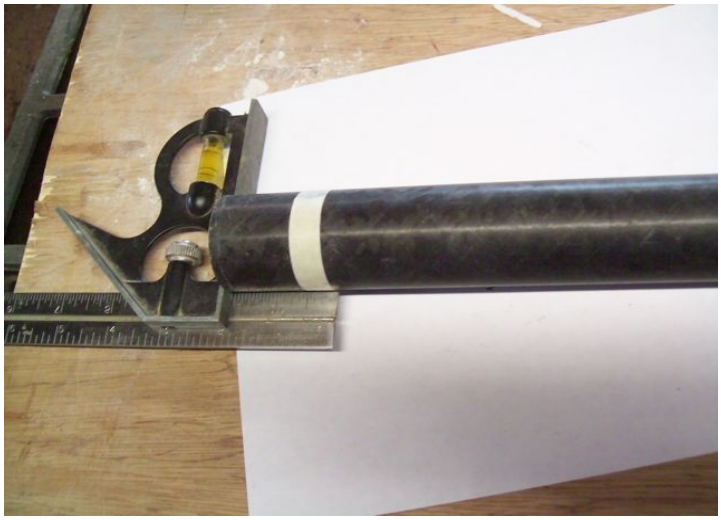




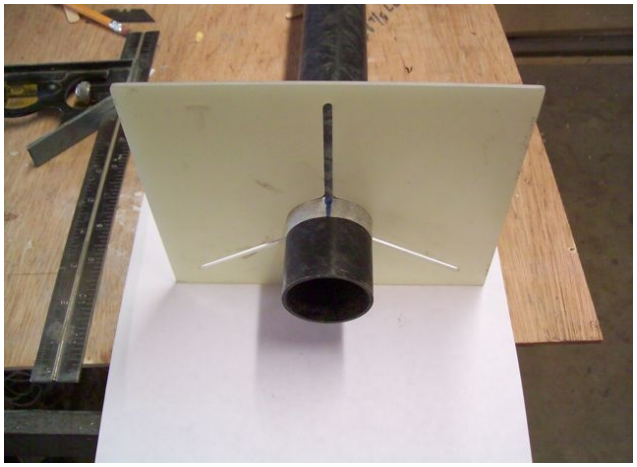
I measured 1.75in [45mm] from rear of tube and taped to mark for fin positions.

This does 2 things, gets the fins slightly more than the one caliper needed [from rear of tube]to allow the turbulence from the fins to return to laminar flow.

Protects them from landing damage.



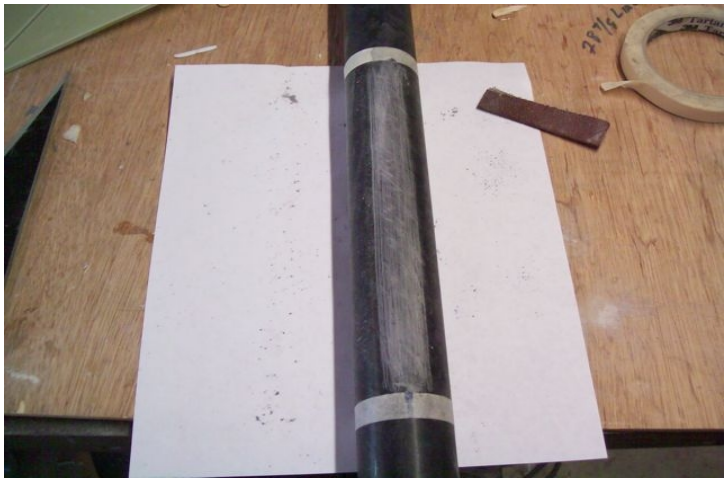
Next mark all 3 fin positions.



Extend lines using your favorite method.

Measure and mark front for tape ring. [I just used the fin, pure lazy]

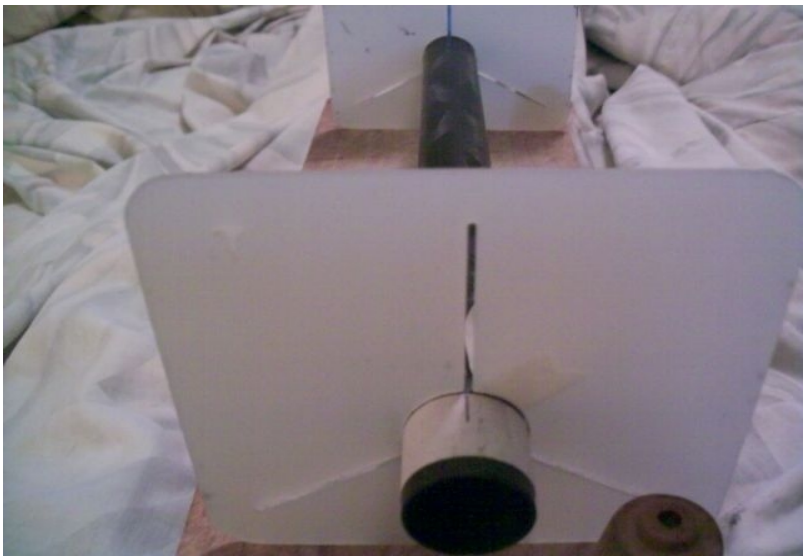
Rough up the surface on each side of line with 60-80 grit sandpaper for fillet adhesion.



If you are clear coating, might want to tape off the tube so you don't get scratch marks all over the place. They are extremely hard to cover. If painting, not needed.

Fins come beveled, so you only need to sand the root for glue adhesion and fillets.

Fin guides are labeled with a "T" for top on one corner. I mention this due to the many inquiries I've had asking what it was.
It works best when oriented this way



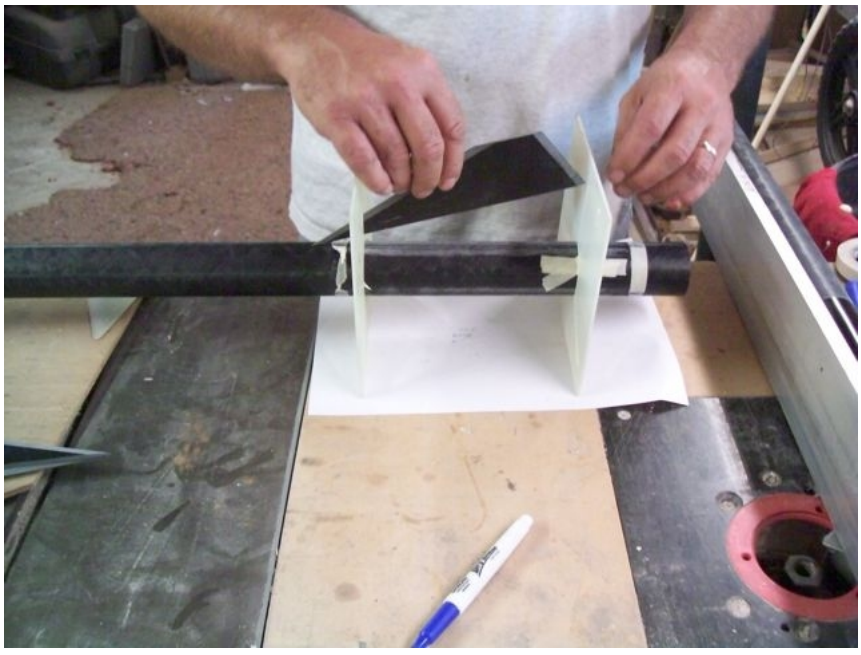
Prep tube & guides by pre-fitting a fin in place to show where they should be located. I had to shim the tube a little with tape to get a snug fit, then taped guides in place.

Black epoxy is mixed 5.5 resin to 1 part hardener. This stuff is pretty gooey and a tad hard to work with if you've never used it before. I use a scale to weigh it. It does flow out beautifully however.
For tacking the fins, I use JB Weld, either will work fine. I just did not want to measure and mix such a small amount of the high temp stuff.

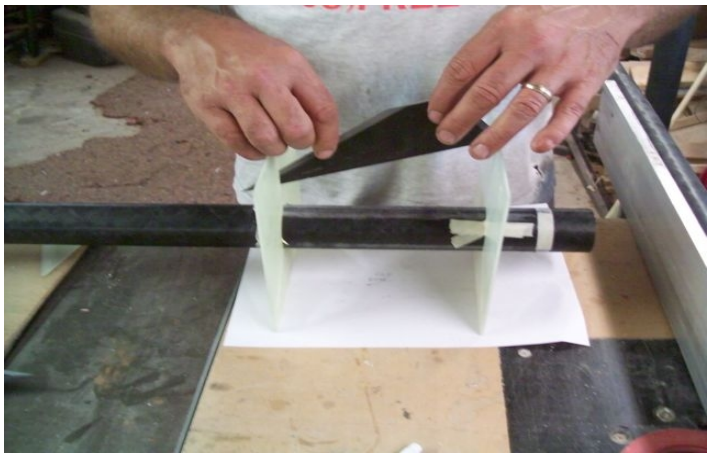
Butter the root edge of fin to tack. If it's your first time with minimum diameter or you're a tad uncomfortable doing all 3 at once, just do 1 at a time. JB is so easy to mix small amounts.

I recommend a dry run with all 3 fins and no glue to find any pitfalls for the first timer.
You may wish to re-adjust guide placement for ease of slipping the fins in place. It helps to number each fin & corresponding slot. They always seem to fit better this way when it's time to glue.

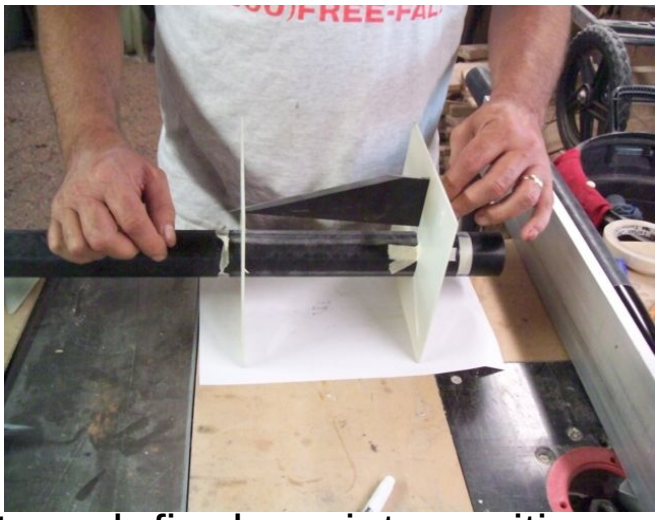
Take fin with thin bead of epoxy on bottom [buttered root edge] slip it into the front guide at a down angle, going past the rear guide. Don't let fin touch tube yet!



With one hand holding fin in front of guide, use other to grab fin between guides. Slide fin through rear guide and position above the line.



Keep front of fin up and lower back onto line, and into proper position.

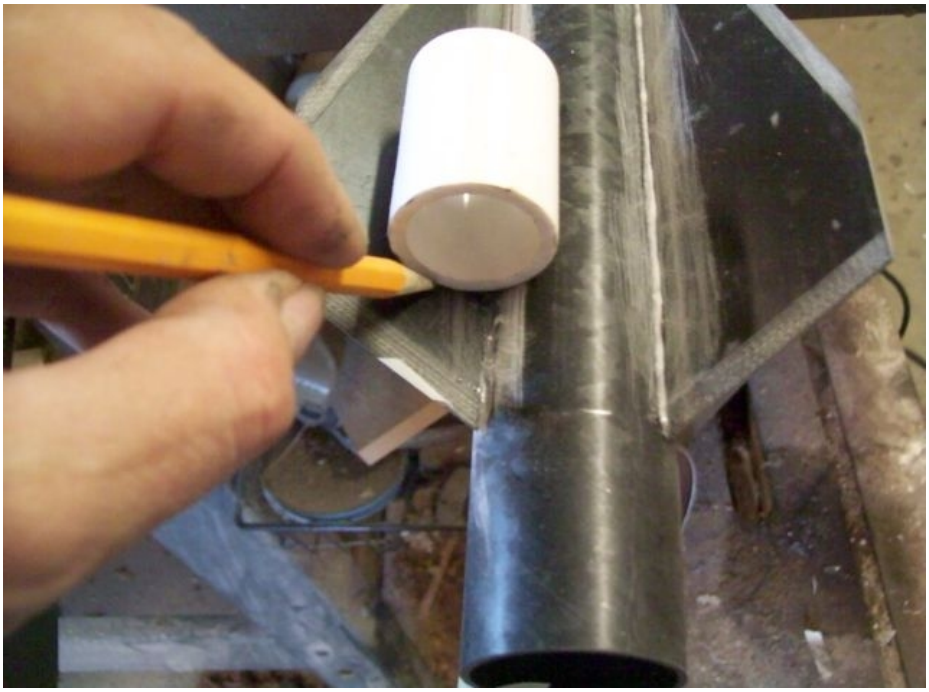


Working from rear to front, push fin down into position.
Not to hard but firmly, you do not want to push out all the epoxy from under the fin. Rotate guide and repeat for 2nd and 3rd fins. Or just do one. Set aside to cure.

If guide holds the fins a tad loosely you can improvise by using pencils to wedge them in place while curing so they can not move. A little more tape to hold things in place.

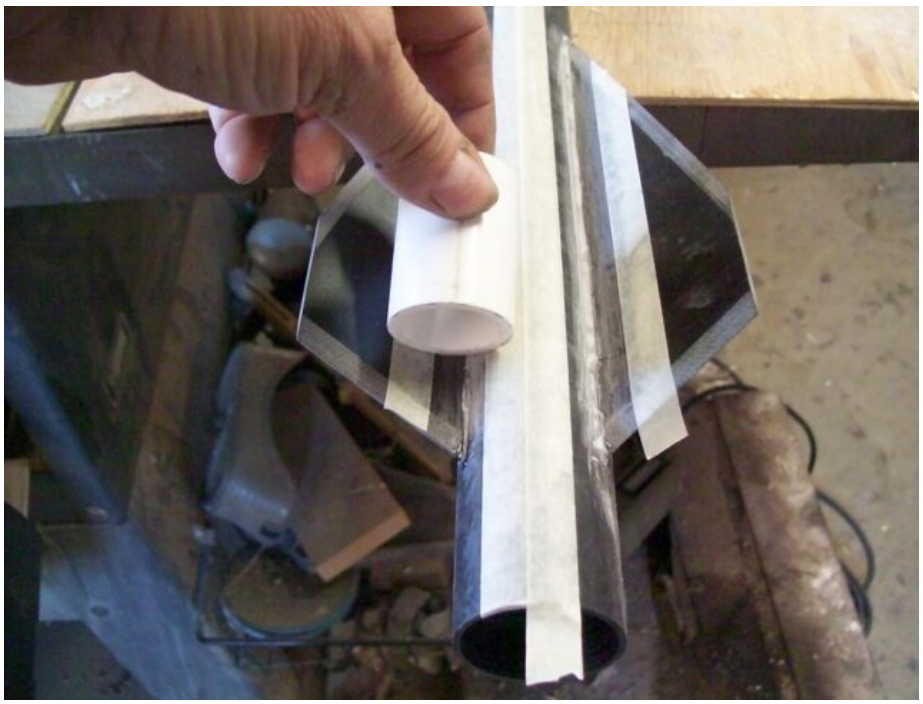
Using a 1in. section of PVC pipe for my tool to pull out fillets, first use it as the guide for placement of masking tape.
If done correctly the edge of the tool will just hit edge of tape when smoothing the fillets, keeping all the excess on the tape where it can easily be removed.
Leaving little or none to be sanded when the tape is removed.

Lay the tool in the V-groove and mark where edge touches fin. Mark at rear and front of fin.



Mark where tool edge hits tube. Mark at front and rear of tube.

Lay tape ,butted to marks front to back. check alignment with tool and adjust tape. The closer to where the tool hits tube and fin, the less sanding will be needed to attain great fillets!



Use 15 grams of resin to 3 of hardener for each set of fillets [2 fins] .

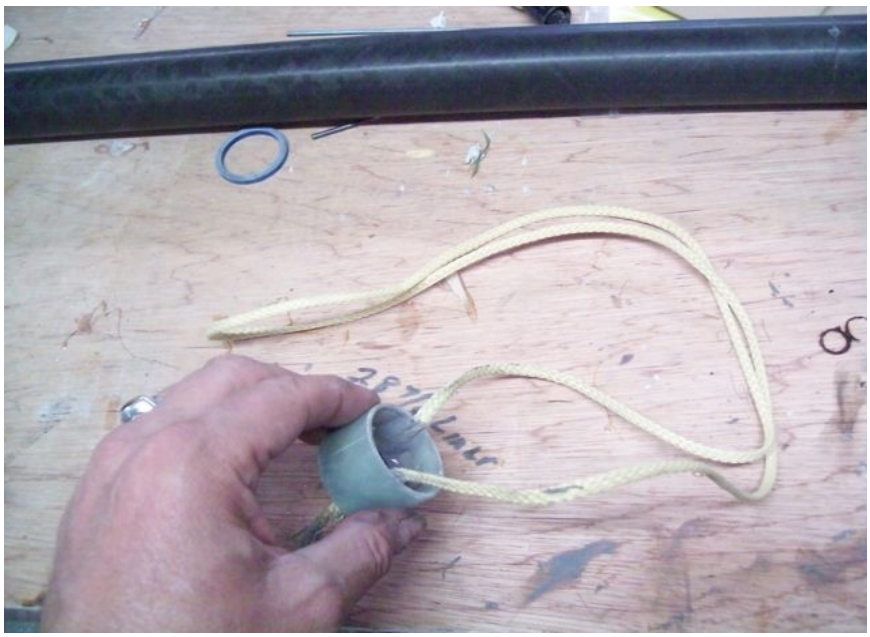
Spreading the epoxy into the V-groove as evenly as possible. Level out the epoxy as best you can. Makes it easier to pull the fillet later.

After dipping the tool in alcohol, smooth the fillets. You can see they are pretty clean, all excess on the tape. I got a good close edge with no lip.

Remove tape after 15-20 minutes, before epoxy cures. If you wait till full cure it will be very difficult. Finished fillets.

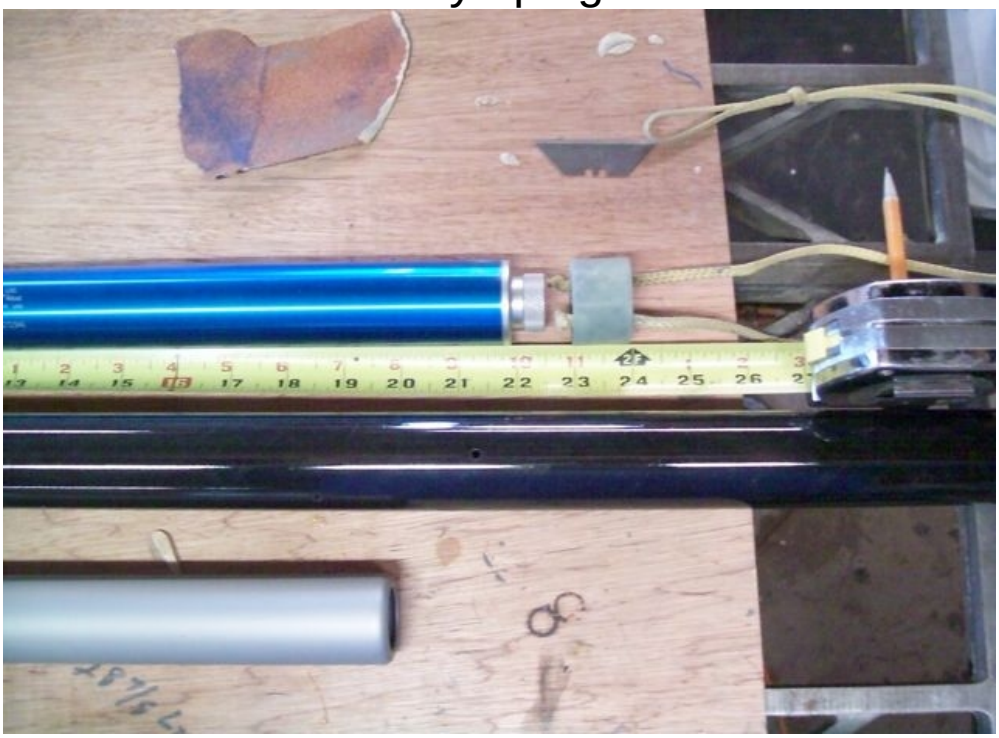
Cut a small section of Kevlar off the supplied shock cord to make an attachment point on the nose cone.
Tack it on both sides with CA to hold the tails in place while applying epoxy or JB weld.

Cut loop of Kevlar to make recovery harness.
Epoxy into the inside of small coupler, that will be slid inside the fincan.
I actually used a small slice of coupler that fit inside this one to "sandwich" the Kevlar.[seen in upper left of photo, just sliced a bit out so I could compress it, to make it fit inside the coupler.]

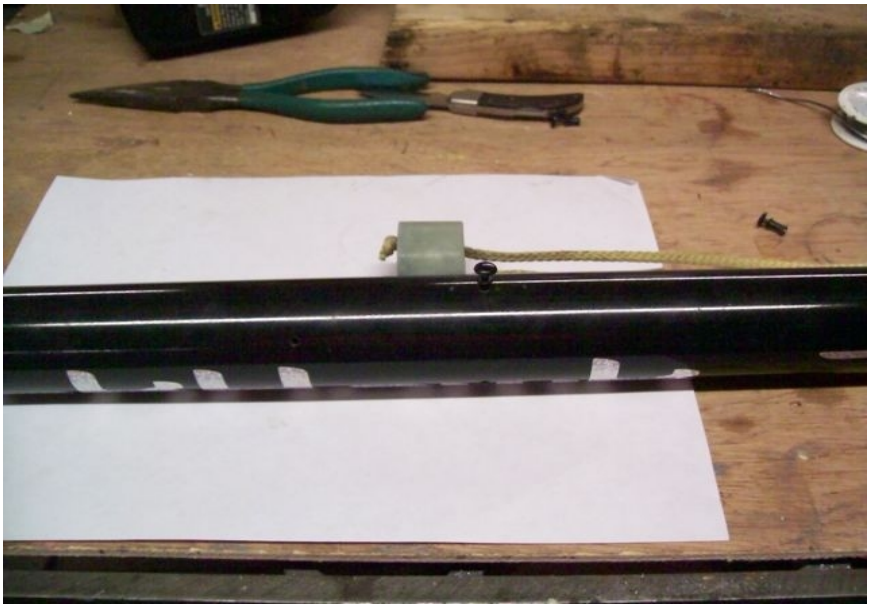


Proper placement of recovery harness is just above the largest motor case you will fly/fit into the rocket.
Here you see the 6grain XL CTI and the AT 1380. Lined up with rear of rocket to see how far north the coupler must go.

Close up reveals the magic number is 24in. for the edge of coupler. I will use rivets to hold in the assembly, but not drilled through the coupler, too hard to locate them. Drilled above the coupler
I want the coupler removable to clean and also bang out motors [friction fitted] with a stick. Insert the assembly push past the rivet holes. Insert rivets Pull assembly up tight to rivet so there is no slack.



This is what it would look like in proper position internally, rivet in place. 2 rivets 180 degrees opposite on airframe.
I'm sure the altitude junkies will use a glue in technique, or flush mount screws or some type aero-dynamic trickery to squeeze out the last bit of performance.



There are many ways to build an Av-bay. This is one example.

For the Av-bay use 6-32 [3/16] threaded rod and eyebolts [welded shut]. Anything larger you may not have be able to fit an altimeter in. It IS that tight!
After mounting all hardware, ground off excess rod on eyebolts to get more room. The sled fits on bottom rod. Had to tape battery in. Not enough room to get a wire tie around the battery in circumference or sled would not fit! Altimeters known to fit Raven, Missileworks, R-das. These I know will fit, I'm sure there are others.

No vent/switch band is supplied, I used the half-hole method for my power wire. Works just as well mounting a switch this way also.

Av-bay held in by 2 rivets opposite on another. 2 tiny vents between them. Positioned 1 ½ from edge of airframe. 5/32 bit used for drilling rivet holes.

Assemble, push the 2 airframe sections together and drill hole [5/32] centered on joint.

When prepping, just fish wire through hole in av-bay, or connect switch.

Just push both halves of rocket around the wire/switch. I tape wire to outside of payload for most flights to be able to dis-arm charges. On Mach-buster flights, I will tape end of wire & push inside of airframe.

Drill small [1/16] vent hole in the middle of both airframe sections to bleed off internal pressure during flight.

Finally the flight set up:

I used 1... 2-256 nylon screw for a shearpin in the NC, placed 1in. down from edge of tube.
½ supplied shockcord for main.
½ supplied shockcord for apogee.
.75 grams 4f BP for both charges.
24in chute for main, drogue-less at apogee. Wrapped burrito style in Nomex 12x 12 cloth. Attached 3ft down from NC.

Motor can be friction fitted with 2 wraps [approximately] of masking tape at rear 2 inches of motor.
1 wrap of duct tape around motor closure and rear of airframe.
If using rail buttons mount one at rear of fin & other at front after grinding excess screw length off to fit flush with inside of airframe. A drop of CA will insure they stay put.

Enjoy flying your Wildman BlackHawk 38 on the wide variety 38mm motors available.

A final word of caution, this little screamer will fly over 2500ft on H-motors & 12,000ft on large J's, hitting Mach plus speeds. It is recommended to use some form of tracking device when flying larger motors!