

Building Rubber Stopper Foam Crossbow Bolts for the SCH (Omarad)



Inga's Method
By Ingilborg Sigmundardottir of Caid.

Please note that there are multiple ways to build these bolts, this is not the “only” or even the “right” way. I am not an expert by a long shot, but I have found that this method works the best for both myself and my students.

Materials you will need:

- 5 foot sticks of 100 psi Siloflex equivalent Polyethylene Pipe. Please go to www.combat-archery.com for a list of equivalents. You will get 4 bolts per stick.
- PVC pipe cutters, or hacksaw.
- Leather punch, or drill.
- #6.5 white gum undrilled rubber stoppers.
- 1” diameter good quality monofilament strapping tape. Please do not use cheap strapping tape, Scotch 3M is highly recommended. If you use bargain strapping tape you will save some change at the register, but your bolts will quickly fail due to the cheap adhesive and you will find yourself restrapping your bolts prematurely.

- Cordage. Either 1/8" polypropylene cord (avoid nylon, it unties itself) or doubled lengths of artificial sinew and leather sewing needle.
- Closed cell foam pads, 1 3/8 or 1 1/2 inch diameter and 1 inch thick. See the Install the Foam Pad section below on how to make foam choices.
- Scissors, and razor blade or matte knife.
- Duct tape, red.
- Duct tape, any color.
- 1/2" to 1" long, 1" diameter wood dowel for end plugs
- Labels and clear packaging tape to cover them.

If you want to fletch your bolts by the one piece slot/foam method which I really love you also will need:

- Drill and 7/32" drill bit.
- Measuring tape.
- Craft foam (Wal Mart nonadhesive "Foamie") or 1/8" neoprene, which likes to tear and needs to be reinforced with duct tape.
- Vinyl electrical tape, any color.
- Rotary cutting tool, such as a Dremel, with cutting wheel.

Step One: Prepare the Bolt Blanks.

Using the PVC pipe cutters or the hacksaw, cut four 15 inch sections from your Siloflex stick.

Using the leather punch or drill, drill or punch 6 small holes comparable to the diameter of your cordage around one end of the blank.

If you want to fletch, now jump to the Fletching section near the end of the article and install the fletching cuts.

Step Two: Install the Rubber Stopper.

The rubber stopper now needs to be wedged into the end of the pipe where you punched your holes. It will only go in about 1/3 of the way and this is normal. A small screwdriver or metal nail file can be helpful to wedge it in place: pounding is pointless.

Using your cordage or artificial sinew, lace the rubber stopper tightly in place. Tie a square knot on the side of the stopper and not the top.

Pull three pieces of your strapping tape and tape the stopper down, spreading the pieces of tape down the sides of the pipe to make maximum contact with it.

Pull a fourth piece and wrap it sideways around the circumference of the pipe right where the rubber stopper and the pipe meet. This anchors the first three pieces of tape in place and protects your cordage and knot.

Step Three: Install the Foam Pad.

Remember Society standard calls for 1 inch of closed cell foam padding on these bolts. Side wrappings are not necessary. So if your foam is less than 1 inch thick you need to build them up till they are.

You need to use closed cell foam, not open cell like a sponge or eggcrate foam. (Closed cell foam is watertight and will float.) Please choose your foam carefully. Blue camping mats sold by Wal Mart, Target et al are closed cell, but please avoid using them. In the first place they are only 3/8" thick so you need to glue 3 layers together to get an inch: and in the second place the quality is variable and mostly poor: they last an average of 5 shots before they decide not to spring back anymore and then you have to replace them. You can get good quality foam if you look around. Look for crosslinked polyethylene, polyurethane or polyolefin materials such as the "Minicell" brand, which I use. If nothing else, go to your local army/navy surplus store and buy their sleeping mats: they are made to military spec and if nothing else are relatively consistent in their quality. Hit the foam with a hammer several times if you're in doubt to see how long it's going to live when shot from your bow, and remember to use common sense: if the foam you're considering feels like either concrete or mush it is not going to work and the marshal is going to fail your arrows.

OK, you've found the foam of your dreams. Cut 1 3/8" or 1 1/2" circles and make sure they're 1 inch thick. Put your precious pad on top of the taped stopper and pull 3 more pieces of strapping tape. Tape the pad down the sides of the pipe as you did the stopper and be sure not to compress the pad while doing so. Then pull a fourth piece and wrap it circumferentially around the blunt right where the foam pad and the rubber stopper meet.

Pull two pieces of your red duct tape: remember the striking surface of your bolt needs to be red. Cover the blunt with the red duct tape till it's covered. Then pull one piece of your any color duct tape and wrap it again circumferentially around the bolt below the rubber stopper

level if you can (feel for it).

Using your razor or matte knife, trim off any pieces of strapping tape that protrude below that last piece of duct tape. Any strapping tape left exposed will degrade and unravel, and look sloppy besides. So off with it.

Step Four (Optional): Fletch.

Please go to the “Fletching” section if you want to fletch by the one piece slot/foam method. Remember that most any soft material such as foam, duct tape, feathers, etc can be used to fletch combat archery bolts. But if you want to use the one piece slot/foam method that I like you need to do it before the nock goes on.

Step Five: Install the End Plug:

You need to have “something” at the butt end of your crossbow bolt for

- 1) the string to push evenly against;
- 2) to keep dirt out, and
- 3) to keep the end of the bolt from crushing if it is stepped upon.

Simply closing the end with a piece of duct tape isn't going to do the job. 3/4" diameter 160 psi Siloflex reinforcing rings are fine but they don't keep dirt out. Film cans crush like paper if they're stepped on and aren't so great for your string to push against and make a nice even flight. The best thing I have found is a simple piece of 1" diameter wood dowel cut with a bandsaw or hacksaw 1/2" to 1" long depending on how fussy you are about balancing your bolts.

Here's how I do it and it works just great:

I use a small amount of Liquid Nails brand contact cement around the wooden dowel plug to hold it in place temporarily before it's drilled and tied. Remember that **NOTHING BONDS TO SILOFLEX**. You **CANNOT** just glue the dowel into place and go out and shoot. The dowel will

pop out the first time the bolt hits something and the marshal is going to serve you up for dinner to your Crown.

Leave the glued dowel in place for about 15-30 minutes. Then, with your drill, drill two small holes comparable to the size of your leather sewing needle in a cross configuration. Push the leather sewing needle through with doubled artificial sinew and tie the dowel in place with a square knot. Then cover the suture with a piece of any color duct tape. It takes less time to do than to explain!

If there are any gaps at the end between the dowel and the pipe that are large enough to admit dirt, cover the whole thing with a piece of duct tape. The marshal should be able to feel the dowel and the artificial sinew suture through the duct tape without having to remove it.

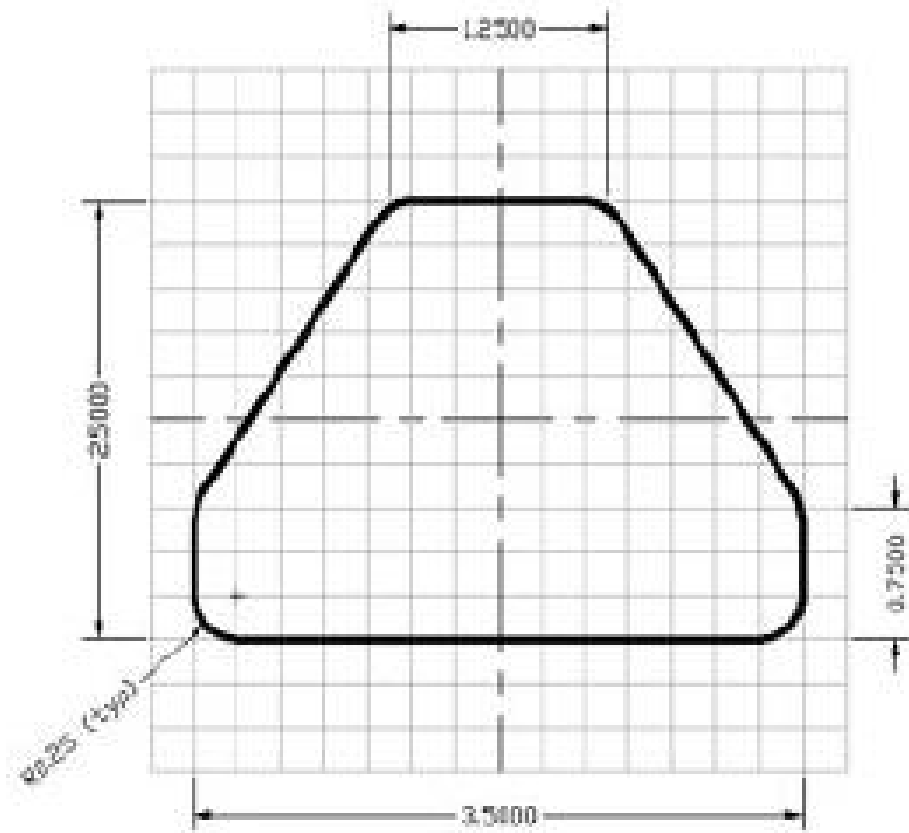
Step Six: Mark Your Bolts.

Your bolts need to be labeled in English with your name, kingdom and local area of play. Other identifying information such as warband, etc, helps too. Label your bolts and cover the label with clear packaging tape to protect the writing. You also can crest your bolts with brightly colored duct or electrical tape to make for easy spotting on the field.

Fletching Your Bolts:

Fletches can be made of just about soft anything. This method describes the one piece/ slot method which is Society approved and works very, very well. I use it on all of my crossbow bolts. They really do fly better if they are fletched.

Here is a pattern for the one piece fletch. Wal Mart (non-adhesive) craft "Foamies" sheets work beautifully to make these. If you have neoprene that works too but be forewarned—neoprene likes to tear while you are pulling it into place and it is best to cover neoprene fletches with duct tape to aid in their longevity—and they'll last pretty much forever, much longer than craft foam if you want to take the extra time/hassle for immortal fletches. Suit yourself.



(Thanks to Brun Canutesson, Middle Kingdom, for the drawing)

Step One: Cut the Stopholes.

Measure 1 inch from the end of your bolt and drill a 7/32 hole completely through the pipe—leather punch won't do it. Then with the measuring tape measure up 2 3/4" (or a bit more) and then drill another hole, again completely through the pipe. The purpose of these holes is to prevent the slot you are about to cut from extending itself any further ("stop holes").

Step Two: Cut the Connecting Slots.

Using a rotary cutting tool such as a Dremel with a cutting wheel, cut a slot connecting the first stop hole to the second stop hole. Wear gloves as some of the plastic will melt and sting your skin if it lands on it. If you are a fussy budget, angle the slot ever so slightly so that you start at the **bottom** of the first stop hole and end up at the **top** of the second, and exactly the opposite on the other side. This very minor detail will make your fletch spiral ever so slightly, so your bolts spin beautifully once you loose them.

Flip the bolt over and cut another slot on the other side, connecting the stop holes.

If any gunks of melted plastic cling to the slots, trim them off with your razor or matte knife.

Step Three: Pull the Fletch Through.

Self explanatory. Push the one piece fletch through one slot and then pull it out the other side and center it. If the fletch rips, feel free to cuss if nobody's listening.

Step Four: Close Up the Stop Holes.

The stop holes are now dirt portals. Pull two pieces of duct or vinyl electrical tape of your choice color and tape over them by wrapping a piece circumferentially around the bolt bottom and top. Don't bunch the fletches while doing so.

Happy Combat Archery!!

The Authors:



The Author:

Ingilborg Sigmundardottir is an 11th century Norsewoman. Her husband died long ago on a campaign, and her fair daughter sailed away on a longship to be wedded to a brave Viking prince. She spends her crone years as an accomplished healer, birthing the babies of her village and tending wounded warriors of all types. She contemplates the White Christ, whose teachings she finds sensible and fascinating. She is known as a very accomplished archer, meadmaker, and Healer. She lives away from her village in the surrounding forest and is rarely seen among the villagers, but is intensely loyal to them and offers the services of her bow whenever her village is threatened. Her cottage is rich with plants of all types and she keeps the company of wolves, and the wiser of the villagers know that in times of extreme, she is quite capable of running with them whenever necessary.

Roberta Ashley is a 21st century Norsewoman, a very accomplished anesthetist who is all too often seen in the hallways of various healing institutions in the City of Angels, where she assists in the birthing of babies and the tending of wounded warriors of all types. She is an accomplished archer, meadmaker, and practices in her spare time a very ancient form of Eastern hands-on healing when it is needed. Her cottage in the more remote canyons of the San Gabriel Mountains is rich with plants of all types and she keeps the company of two rescued captive bred wolves, Cheyenne and Mai-Coh. The wiser of her colleagues know that in times of extreme, she is probably quite capable of running with them whenever necessary.

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