

Forming Bassoon Reed Blanks

Bassoon reed making has many steps and can take anywhere from a few days to a month, depending on the process. There are many different ways to do any one of these steps, though I'll provide you with my own process here. If you are interested in reading more, there is a list of resources below.

I would recommend working with 1-4 reeds per batch to start, in order to keep the water hot. The more reeds you make, the faster the process will be and you can increase your batch size.

1. Buy gouged, shaped and profiled cane (also called GSP)

*I use **Rigotti** cane, in **Rieger shape 1a**. Once you've got the hang of forming, try different types of cane and different shapes to see what you like best. A great resource for experimenting with this is Barton Cane (www.bartoncane.com), or Midwest Musical Imports (www.mmimports.com)*

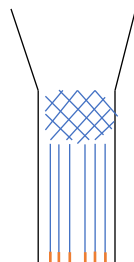
2. Gather the tools listed on my *Bassoon Reed Class* sheet. **Cut wires** to 3 inches in length: amount should be 3 x the amount of reeds you will make in this batch—ex. For 4 reeds, cut 12 wires.
3. **Boil** about 2-3 cups of water or get hot water from a dispenser. If you boil, pour into a heat-proof bowl or mug big enough to immerse the pieces of cane, then **allow to sit for 5 minutes** and cool down to about 180°F.

*If water is hot enough to "cook" the cane, the cane's properties will change and the reed won't be as stable. Make sure the water is hot enough to help bend the wood, but not so hot that the cane will bubble up. Around **160-180 °F** is appropriate.*

*A traveler mug will work, but it's best to use a bowl that fits both the length of the cane, and is shallow enough to soak the reeds in their folded form and still be able to reach them without pouring out the water. A **medium plastic or glass mixing bowl** would be perfect.*

4. Immerse the cane for about 5 minutes.
5. **Score** the cane with an exacto knife or razor blade.

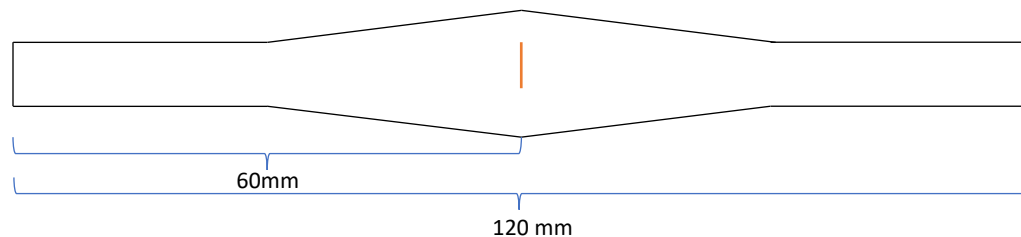
I do both 5-7 straight scores (2/3 from bottom of cane, NEVER directly in the middle) and cross hatching (top 1/3 square, about 6-7 lines per direction), plus small 2mm incisions at the bottom of the cane to allow for forming into a well-rounded tube without cracking.



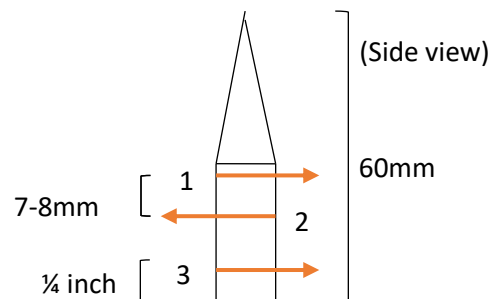
6. Using a thin metal reed ruler, **measure** the length of the cane. It should be 120 mm long. Make a mark at 60 mm with a pen or pencil. Line up the ruler underneath the cane with the mark, then **fold** the cane over the ruler at the mark.

If the ends of the cane on both sides (front and back) don't line up, you'll need to remedy this. Place the folded cane on a surface and push GENTLY on the longer side of the cane towards the folded tip of the reed in order to even out the sides. Once they match up, you're ready for the next step. Hold the cane where you want it to line up—if you put it down, it may reset and you'll have to find it again.

*** Note: pushing the cane too hard will cause it to rip in half. Less is more! Wiggling it back and forth while pressing forward is a great technique to prevent too much pressure.*



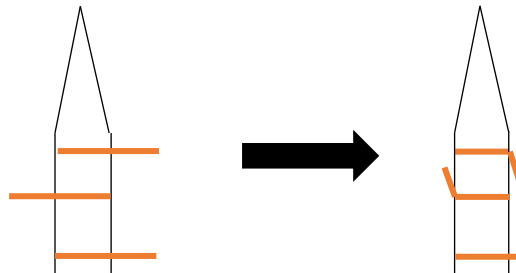
6. Place the **first wire** 2 mm below the collar of the reed. (2 wraps, loosely placed) Clip off excess wire, leaving twisted part, with wire cutters.



7. **Wrap** the folded reed with one wire in cotton twine. Wrap tight enough to create pressure and prevent cracking when forming.
8. **REPLACE WATER.** When Forming, HOT water is key to prevent cracking. Repeat step 1, getting water to 180°F, then place wrapped reeds in hot water.
9. **Form.** Let reeds soak for 1-2 minutes to absorb heat, then pull one out at a time to work on. Use forming pliers to open up the bottom end of the reed (bottom ½ to 1/3) and then open up the first wire just a bit, to create room for the reed to become round. Insert mandrel in the end of the wrapped reed slowly, until it feels tightly in place. Mash the bottom ½ of the reed with the forming pliers while rotating the mandrel, making the reed into a perfect cylinder at the very bottom. Push reed down with pliers until you are a few mm past the mark on the mandrel. Unwrap reed while still on the mandrel, preserve string.

10. **Beveling.** With the reed still on the mandrel, the sides should be open under the first wire. Using an exacto knife or razor blade, gently run the blade along the angled inside edges of the cane, creating a smooth surface equal to the other side (L and R) to create a solid surface for the reed to seal properly. Repeat on the other side. Don't take off too much cane here—less is more. Just make it cleaned up a bit.
11. **Placing the 2nd and 3rd wires.** Leave the reed on the mandrel so the ends of the cane are 2 mm past the mark on the mandrel. About 7mm below the *middle* of the first wire, place the second wire. If you placed your cross hatching right, it should line up with the bottom of the cross hatch. Place the 3rd wire about a ¼ inch from the bottom of the cane. Tighten all three wires until they are not going to move, but not pinching the cane. When the cane dries, you'll need to tighten them again anyway.
- Note: a good way to remember how to place the wires opposite of each other is by looking at the smooth side of the wire, not the twisted side. For example, place the middle of the 2nd wire on the side of the reed with the smooth side of the 1st wire in order to get them to be opposite. The 3rd wire doesn't matter as much, but you don't want the 1st and 2nd wires on the same side of the reed. As for twisting the wires, it helps to twist them all the same way. The wire that ends up on top of the other should be twisted over the other wire always to avoid a "knot" in the wire.*
12. After placing all the wires, mash the reed between the 2nd and 3rd wires to get an even and well-sealed tube. Then mash the cane under the 3rd wire to do the same—sometimes the cane down here "flares out" in the process of putting the 3rd wire on, so you'll need to push it back down into place to dry properly.
13. Gently work reed off mandrel, then place on a drying rack. Allow to dry for at least 24 hours.
14. **Wrapping the traditional bulb crosshatch style.** After drying for at least 24 hours, the wires will be a bit loose. Using a mandrel, tighten the wires so that they don't move but aren't "pinching" the cane, making sure the sides of the reed do not have any gaps. When off the mandrel, the wires should not wiggle. Cut the first two wires down to a ½ inch so you can fold them over (fold first wire down, 2nd wire up, as shown). The bottom wire needs to be tight enough so when you wiggle it with pliers, it won't move at all. Then cut the wire down to leave only 1.5-2 twists of the wire.

***At this point, it's important to make sure your reed can easily come off the mandrel so you don't wreck the cane after it's glued. Place your pliers between the 2nd and 3rd wires and take the reed off the mandrel, placing it back on so you can still get it off easily, but it won't move while you're wrapping it. Don't worry if it doesn't line up with your mandrel's line—that's what a reamer is for later.*



- a. Get your string ready to unwind. Using Duco Cement, coat the entirety of the reed below the 2nd wire with a thin layer of glue to seal the cane and keep the 3rd wire in place under the string. (**Make sure not to glue over the 2nd wire—you want to be able to move this one later if needed!)

- b. Before the glue dries, put the string diagonally over the 3rd wire near the protruding wire. Wrap the string once around the top of the 3rd wire, crossing over the protruding wire and down to the bottom side of the 3rd wire. Turn the reed 180 degrees and cross the string over the wire. Keeping the string as close to the wire as possible, rotate another 180 degrees, crossing over again, this time about 2mm after the last crossing you made. Repeat this step until you have a bulb of your desired size.
- c. Once you finish the bulb, wrap the string straight up the reed, about 2 mm below the 2nd wire. Using your first finger, wrap the string once around the reed and your finger as one, cut the string so you have a 2-inch tail, then thread the string through the loop where your finger was and tighten to the best of your ability. You may need to push the string down a bit with your fingernails if you can see the cane through the string at this point.
- d. Once the string is secure, cut the tail off the string as close as possible, then coat the string and bulb with more Duco cement, again avoiding the 2nd wire.

***different types of string will react differently to Duco cement.*

--cotton string: 2 coats of duco, letting the first coat dry before putting the 2nd coat on. (you can find thin crochet thread at any craft store in many different colors)

*--nylon/silk string: often only requires one coat of duco cement. (I use **Squirrely Stash** thread, sold on Etsy.com)*

Alternative wrapping:

- Hot glue alone
- Hot glue over string
- Shrink Wrap
- Nail polish over string (not recommended, but you can use it in a pinch)
- Bees Wax, alone or with string
- Epoxy (quite difficult, wouldn't recommend unless you're in a bind and have nothing else)

Bassoon Reed Making Resources

***Recommended #1 resource!* [The Bassoon Reed Manual: Lou Skinner's Theories and Techniques](#) by James McKay (2000)

[Bassoon Reed Making](#) by Mark Popkin and Loren Glickman (1987, rev. 2013)

[Bassoon Reed Making: A pedagogic history](#) by Christin Schillinger (2015)

[A Guide to Bassoon Reed Tuning](#) by Mark Eubanks (2017)

[Bassoon Reed Making: A basic technique](#) by Christopher Wait (1989)

Barrick Stees' website (Prof of Bassoon at Cleveland Institute of Music)

<https://www.steesbassoon.com/reed-making>