

# Reedmaking Notes by Michael Burns

## A Step-by Step Description of the Construction of the Reed:

### SHAPING:

1. Lightly sand the inside of the dry gouged-only cane (I use several canes: concentric gouge Donati at 1.40mm thickness from Bill Woodward, Neuranter or Danzi Medium from Justin Miller at Miller Marketing, etc.) with #400 or #600 sandpaper.
2. Place the cane in a #3 Fox straight shaper being careful to align the grain with the axis of the shaper. Tighten the screws very securely! Using an x-acto knife, cut off excess cane until you are flush with the sides of the shaper. Remember that the narrowest points of the shaper are not the ends but that it has waists. This means that you will need to do some cuts from the end towards the center of the shaper as well as the normal cuts from the center towards the ends. Repeat for all four quadrants. ALWAYS BE VERY CAREFUL AND AWARE OF THE EXTREMELY SHARP BLADE OF THE X-ACTO KNIFE. ALSO REPLACE OR SHARPEN THE BLADE OFTEN.
3. Cut the Center notches on each side.
4. Remove shaped cane from the shaper and, if you soaked the cane allow it to dry for at least 48 hours.
5. Lightly sand the outside edge where the cane was shaped to smooth any irregularities from the knife.

### PROFILING:

1. Soak the shaped cane overnight in water that starts out hot.
2. Place the soaked cane on the easel of the profiler being careful to align the grain with the axis of the profiler. Tighten the screws very securely! Mark the collar line with the profiler by having the carriage all the way to the right and rotating the cane with the left hand. Begin on one edge of the cane slicing off a very thin sliver by moving the carriage from right to left. Do not try and cut too deep immediately or cut too large a surface area of the reed. After each pass you should lift the carriage and place it all of the way back to the right while incrementally moving the left hand. Do a series of thin slivers gradually rotating your left hand on the easel until one side of the blade has had complete coverage. Lift easel and turn 180° and repeat the process. Continue repeating process on the two sides until profiler is removing no more cane. Make sure of the depth of cut at the tip and collar areas as these are the most prone to lifting up the profiler blade. Make sure that you get ALL of the cane off that the profiler can as this will help make it more consistent. For the final passes you may rapidly move the carriage back and forth without lifting it.
3. Remove shaped and profiled cane from the profiler and allow to dry for 48 hours or more.
4. Measure and mark lines for the three wires and for the collar (you may wish to mark these lines on your easel for easy reference.) Score the marks for the three wires into the cane with an x-acto knife first, followed by creating shallow trenches with a triangular jeweler's file. Do **not** score the collar with file but only with the x-acto knife. Cut off any excess cane at the bottom end of the longer tube if applicable. See separate sheet for the dimensions of the tube and the placement of the wires.

### FORMING THE TUBE:

1. Soak the shaped and profiled cane in hot water for at least 15 minutes.
2. Remove from the water and place one end of the cane into Bonazza scoring machine. Rotate knob on scoring machine until bottom of cane hits the stopper. Reverse direction of knob to release cane. Turn cane over and repeat on the other end. In the absence of a scoring machine this step may be performed by hand with an x-acto knife. I have done this both on the easel prior to folding and adding wires or after folding and with the first wire already in place.
3. Fold cane over flat straight object (knife, ruler, etc.) Check alignment of collars and if not aligned raise lower collar to alignment (push up on the end of the lower side and reestablish fold.)
4. Cut three pieces of 22-gauge soft brass wire, two to a length of approx. 2.5" and one to a length of approx. 3.5". Reduce 'kinking' in the wires by grasping one end of each piece with flat nose pliers. Have the wire pointing out from the nose of the pliers in the same direction (i.e. NOT angled or perpendicular) wrap the exposed wire with a soft cloth or paper towel and firmly grasp around the end of the wrapped wire closest to the pliers with the thumb and finger of the opposite hand. Gradually pull the pliers with the end of the wire away so that the entire length of the wire is pulled through the cloth. Repeat for each wire.
5. Using one of the shorter pieces of wire, place the first wire down approx. 1 mm from the NEW collar (NOT the collar set by the profiler, but the one marked in step 4. of profiling above.) Place the wire behind the cane with 1/3<sup>rd</sup> to the left and 2/3<sup>rd</sup>s to the right. Wind the longer section of the wire around the front of the cane (to the left) and back around the back to face the same way as it began making sure that you keep the upper part of the wire upper and the lower part lower--i.e. do not cross the wire until you form the knot. Twist the two ends together to form the knot and then twist with pliers in a pull-and-twist motion. Hold the cane from the sides at this point or it may split along the scores. Also be careful to only twist enough to take up the slack each time. Look for the little "triangle" of slack in the wire and only tighten up until the triangle becomes flush to the cane before pulling to create more slack again. The first wire should be very tight for forming but do not overtighten so that the wire starts to buckle onto itself. Periodically flatten the wire down at the base of the knot to eliminate extra slack but BE CAREFUL to not break the spine of the reed! When you cannot create slack by pulling directly perpendicular to the cane then it is fully tightened.
6. LOOSELY place on the second wire (the other shorter wire) facing the opposite direction from the first with the same kind of twisting action but NOT taking up the slack at all. The large piece of wire is for the third wire which will face the same direction as the first wire. There is extra length so do another complete circle of the cane before forming the knot (triple thickness.) Also place third wire very loosely and do not take up the slack.
7. Briefly resoak the cane and then place pliers to the sides of the third wire and gradually squeeze until the base of the tube opens enough to insert the short holding mandrel.
8. Continue to insert the short mandrel, kneading the cane with the pliers to make the tube conform to the round shape of the mandrel. Squeeze and knead all the way from the base up to a point a little above where the second wire will be placed (it is still loose at this point so you can move it out of the way as needed.) Insert the short mandrel up to the second line. When the tube is fully conformed to that diameter remove the short mandrel and insert the long forming mandrel. With a gradual twisting / drilling motion make the tip of the long mandrel open up the throat of the reed until the base of the reed is snug against the long mandrel. Withdraw the mandrel and then re-insert it but only until 'snug' (usually approx. 1-2 mm less far on the mandrel than before) confirm correct wire placement with ruler (see wire placement computer sheet) and fully tighten second and third wires making sure to periodically snug down at the base of the knot on each side of each wire to prevent teardrop shape.
9. Using parallel pliers, gently squeeze the first wire from the sides and then the 2<sup>nd</sup> wire from the top and bottom on both sides of the wire.
10. Do one final pass with the flat nose pliers squeezing the cane between the 2<sup>nd</sup> and 3<sup>rd</sup> wires and the 'skirt' below the 3<sup>rd</sup> wire and making conform to the round shape of the mandrel as well as possible.
11. Remove reed blank from the mandrel and allow to dry for 48 hours or more on a drying rack.
12. Retighten wires when dry and make sure that bottom of tube is flush with emery board. Cut off excess wire, and file third wire stub.

13. Paint bottom of tube from base up to the bottom of the second wire with your favorite nail polish and allow to dry.
14. Select your favorite wrapping method (shrink-wrap, thread turks-head, hot glue gun, etc.) and seal up the bottom of the tube. You can scrape some bark off between first and second wires and write an identifying number or whatever with ballpoint pen if you like. Fold down first and second wires.
15. Ream dry reed before cutting the tip (I will often go through a cycle of reaming, soaking, drying for 48 hours, re-reaming, soaking, drying, etc.)
16. Soak reed and cut tip--preferably with end nippers Or SHARP scissors! Or Guillotine!!!
17. Cut the little triangular corners off the blade to help prevent tearing / chipping.
18. If available, use a tip profiler on both sides of the reed. Soak the reed for at least five minutes beforehand. Place the reed onto the mandrel. Carefully insert the reed tip onto the plaque up to the marked line. Do this SLOWLY as the plaque is quite thick and the reed could split if not enough care is taken. Once it is in place then similar to using the profiler you should begin on one edge of the reed blade slicing off a very thin sliver by moving the carriage from right to left. Do not try and cut too deep immediately or cut too large a surface area of the reed. Do a series of thin slivers gradually rotating your left hand on the easel until one side of the blade has had a complete pass. After each pass you should lift the carriage and place it all of the way back to the right while incrementally moving the left hand. Make sure that you get ALL of the cane off that the tip profiler can as this will help make it more consistent. For the final passes you may rapidly move the carriage back and forth without lifting it. When finished, move the mandrel so that the reed backs off the plaque. Rotate the reed 180°. Now repeat the process on the other side of the reed tip.
19. Sand, soak, play on, measure with the dial indicator, and adjust your new wonder reed.  
This is where the REAL fun begins! 😊