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Reed-making

REQUIREMENTS

High school students and First-year Undergrads

- May purchase finished reeds from an online seller, other students or the professor
- Will learn the UNCSA/Patterson method of forming through finishing in reed class
- May purchase GSP, Gouged and Profiled Cane, or just Gouged Cane
- Can choose to learn processing (from tube cane through gouged) once they have independence in forming and some finishing

Undergraduates (second year and beyond) and Graduate students

- Must learn the Patterson method before they can make changes to the process or finishing
- Must purchase Gouged cane and use the studio machines until they have learned the Patterson method, they they may choose to purchase GSP cane
- Must play their lessons, juries, and recitals on their own reeds
- May purchase reeds to study and compare
- Can choose to learn processing (from tube cane through gouged) once they have independence in forming and finishing

Bassoon Reed Making

Required tools (College and Grad):

- Plaque
  - specific to bassoon/contra, plastic is best
- Knife
  - any are ok, but talk w/ SP first
- Files
  - any, diamond or fine, best to have a flat one and a round one
- Mandrel
  - forming or holding, recommend the Rieger, Andante e Rondo, or Chiarugi (handle with removable pins) models
- Needle-nose Pliers (with or without forming hole)
- Sand paper: 350-1000 grit, varieties, wet/dry
- Spiral Reamer
- Ruler (metric)
- Wire, 22 gauge (.7) brass, optional to have 23 gauge (.6) as well
- Soaking container
- Ducot cement, UHU Hart, Hot glue, beeswax, nail polish, etc for wrapping
- Thread for wrapping (nylon ff, cotton, etc)

Optional tools:

- Diamond reamer
- Reed geek
- Forming mandrel
- Easel
- Drying rack
- Tip cutter
- String for forming (cotton twine, like canning string)

Companies that supply these things: Forrests Music, Midwest Musical Imports, etc

Cane suppliers (in addition to those above): Lavoro, Medir, Rimpl, West Double Reed Company

Link to videos of reed making process:

https://youtube.com/playlist?list=PLMLDZjMyrvSqqg0F5ujg6LSrAT-i8xtZK&si=O9K3G8DRD1CMpL1U

Profiling and Shaping

Bassoon Reed Making: Shaping and Profiling

1. If using a straight shaper, shape first (dry or soaked 2-3 hours):

- Place dry gouged cane in the shaper so the curve of the cane matches the curve of the shaper, and tighten the screws well
- With a new razor blade, cut small slivers of cane off from the middle out to the sides, keeping the blade even with the sides of the shaper
- Alternate between the left and right sides of one side of the shaper, so that one side of the cane gets evenly scraped
- When you get close to done, cut up from the bottom to accommodate the flare outwards
- Option to sand the edges once it is off the shaper. **Do not use sandpaper on the shaper.**

CLEAN UP WHEN YOU'RE DONE

2. Profile (cane shaped on straight shaper, or to shape later on a fold-over) (soak 2-3 hours)

- Soak the cane for 2-3 hours
- Place the cane on the barrel so that it is centered front to back and side to side, secure
- Score the collar and the middle
- While carefully holding the metal bridge between the two barrels, profile gently, applying even pressure to the blade from the collar to the middle of the reed
- After taking off the bark, switch the barrel to the other side, scoring the new collar
- On the second and third times on each side, you can do more than one pass on each
- Profile until no more cane will come off of either side
- **DON'T PULL ON THE EXTRA CANE STICKING OUT OF THE MIDDLE, THIS WILL COME OFF NATURALLY**
- When done, take the cane off the barrel and fold it over a razor or other flat edge
- *If cane is already shaped, dry (folded) for several days before forming*

CLEAN UP WHEN YOU'RE DONE

3. Shape with the fold-over shaper (already profiled)

- If you just finished profiling, you don't need to soak the cane any more, but if the profiled cane is dry, dip it in water before you shape

- Fold the cane and place on the shaper so that the spine is centered and tighten the screw/secure the arms
- With a new razor blade, cut cane by slivers from one side of the shaper. Keep the blade even with the two sides of the cane
- Towards the end, cut up from the bottom to accommodate the flare
- Cut until there is no more cane left above the level of the shaper
- Dry for several days before forming

CLEAN UP WHEN YOU'RE DONE

Basic Forming

Bassoon Reed Making: Forming

1. Bevel

- Soak the cane for 1-2 minutes
- Measure 18 mm from the butt on both sides, mark the side of the tube
- Bevel with a file or razor blade from the 18 mm mark down to the butt, so that the sharp edge is flat from the bark to the inside of the cane (Figure 1)

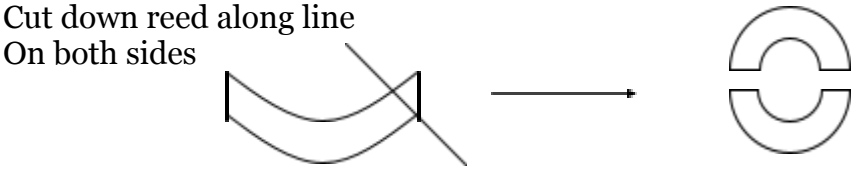


Figure 1. Beveling so that the reed can form a round tube

2. Define the collar

- With the cane supported by a dowel, define the collar by cutting vertically along the top of the bark at the edge of bark and blade (you can use this step to align the collar with the other side if they are not at the same length).
- Cut horizontally along the blade back toward the collar to remove any excess cane along the collar, creating a 90 degree angle

3. Score the tube

- With the cane supported by a dowel, score with a razor blade 5-7 times from 1 mm below the collar to the butt, deep enough to cut through the top layer of bark
- Fold the cane over and make sure the two sides are flush, avoiding any slippage between the blades. Put the first wire on just below the collar, snug to the bark, but don't pull and tighten with pliers (Figure 2)

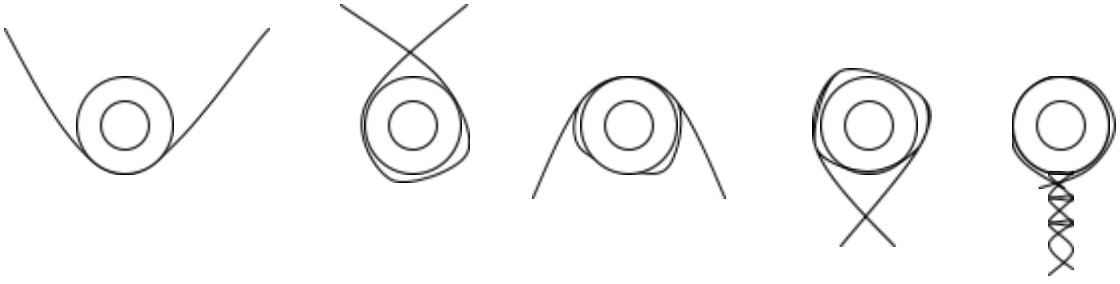


Figure 2. Putting on the wires

4. Form the Tube

- Soak the cane for 7-8 minutes
- Wrap the whole reed from the blade down in string, starting snugly on the blade and getting tight as you reach the tube
- With a thumb and forefinger supporting the blades (not squeezing) gently ply the bottom of the tube with pliers, opening the bottom slightly until a mandrel will fit in
- Slowly and **without twisting** insert the mandrel into the bottom of the tube, keeping your thumb and forefinger still supporting the blades to feel if it starts to open too fast
- Gently continue to ply the tube open, only squeezing against or with the original arc of the tube, not in any other directions. As it opens, slowly push the mandrel on until the reed reaches at or below the line
- Round the tube carefully up to the first wire, so that the blades are slightly bulged

5. Add the wires

- When the tube reaches the line on the mandrel, make the bottom as round as possible, then remove the string from the very bottom and add the third wire at 5 mm from the butt. The third wire's twist should be on the same side as the first wire's twist
- With pliers, round the tube a little more, and then unwrap the string
- Add the second wire at the 18 mm mark, with the twist on the opposite side from the other two wires. It should be snug but not constricting the tube
- Use the pliers to close in any gaps between the two sides of the tube. It should form an almost perfect tube as if it had grown that way. You can now use the pliers to squeeze the reed from all angles of the circle, between the second and third wires and below the third wire, but not between the first and second wires
- Crush the cane slightly below the third wire, and check that the tube is round, with no leaks between the cane and the mandrel
- Transfer the reed to a drying rack, **without twisting**, and wrap the string tightly around the tube from the butt to the second wire
- Dry for 3 days up to 2 weeks before wrapping

CLEAN UP WHEN YOU'RE DONE

Advanced forming

Forming the tube

- Soak the cane for 1 minute.
- Bevel the edges of the cane so that they can fit flat against one another in the tube.
- With the cane supported by an easel, define the collar
- Fold the cane in half, using either the scoring mark from the profiler, or a ruler to measure the middle of the profile.
- Add the first wire 1mm below the collar, try to make it snug, but not too tight.
- Divide the bottom of the tube in three equal parts and cut up towards the first wire to about 15mm with a razor blade (cut both sides of the cane in the same cut).
- Soak the cane for 7 more minutes.
- Introduce the wider mandrel to the tube. The score marks will split the cane up to the first wire.
- Take the cane off the mandrel and add at least 3 more cuts up from the bottom with a razor blade. Cut each side individually.
- Put the reed back on the mandrel and round with pliers.
- Add the third wire around 5mm above the butt, and second wire 18mm above the butt
- Continue to round the reed on the mandrel, crushing the cane below the 2nd wire.
- Place the reed on a drying rack and wait at least 24 hours to wrap the reed.

CLEAN UP WHEN YOU'RE DONE

Finishing the Reed Blank: First Scrape

Bassoon Reed Making: Tip Profiling

1. Ream the reed
    a. Ream the reed before soaking, make sure it fits to the line on the mandrel
2. Clip the tip
    a. Soak for 5-10 minutes
    b. Define the collar with a razor blade
    c. Measure 29mm from the collar, mark several points on the blade, and clip with a tip clipper.

FIRST SCRAPE

3. Define the tip
    a. There are two ways to define the tip, using a tip profiler* (see video for instructions), or by hand. If using a tip profiler, skip to step 2 afterwards. Image 1 on the next page shows the order of the scrape.
    *students are allowed to use the tip profiler *after* they have shown proficiency in consistently creating a tip by hand
    b. To define the tip by hand, start with the very tip: with the reed on a mandrel and with a plaque inserted, scrape the front 1-2mm at an angle into the plaque, creating a slope into the heart (Image 1: Step #1, Image 2: Backlit tip)
    c. After defining the very tip, create a thumbnail shape by scraping on either side of the heart, in the front 1/6 of the reed (Image 1: Steps #2 and 3, Image 3: backlit).
    d. If the heart is thick, you may choose to scrape lightly in the front third of the spine, bringing it down to the suggested measurements for a first scape (#4).
    e. Finally, to get a more sloped tip opening, you may scrape on either side of the heart farther back (step #5)
4. Check the levels of the spine:

FIRST SCRAPE MEASUREMENTS

	Tip	4mm	8mm	12mm	16mm	20mm	Back
mm	.35-45	.65-.7	0.75-.8	0.85-.9	.9 - .95	.95-1	1 - 1.1
in	.13-.17	.25-.27	.29-.31	.33-.35	.35-.37	.37-.39	.39-.43

5. Balance the reed
    a. Make sure the reed has similar measurements from one blade to the other
    b. Check the size of the opening (see image 4), and that it closes from the sides, taking down the rails if they are too strong
    c. Make sure the taper from front to back is steady, using the spine measurements as a guide and creating the same taper in the rails (image 5) and channels
6. Play it in
    a. Your first scrape should have a decent response and you should be able to play on it for 20 minutes. It will be buzzy and might be slightly flat, and as you play it in it may harden up and become more difficult to play. After playing, let it rest for at least a day before you scrape or play on it again.

Image 1: Order for first scrape

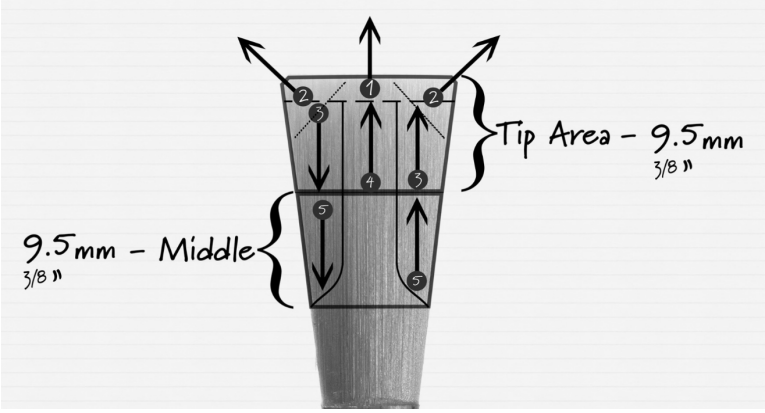


Image 2: Tip only



Image 3: Thumbnail

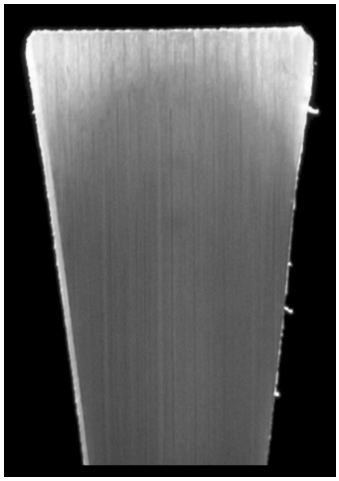
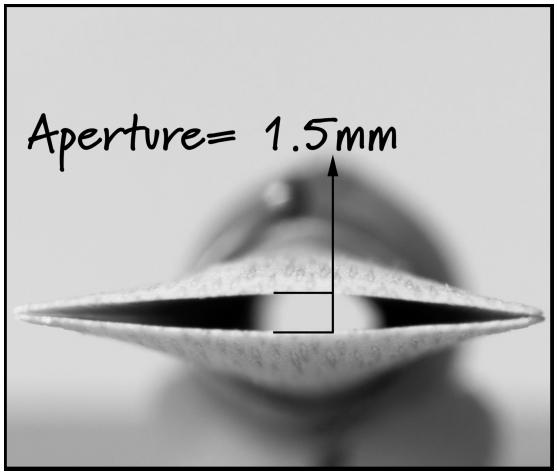


Image 4: opening



SECOND SCRAPE

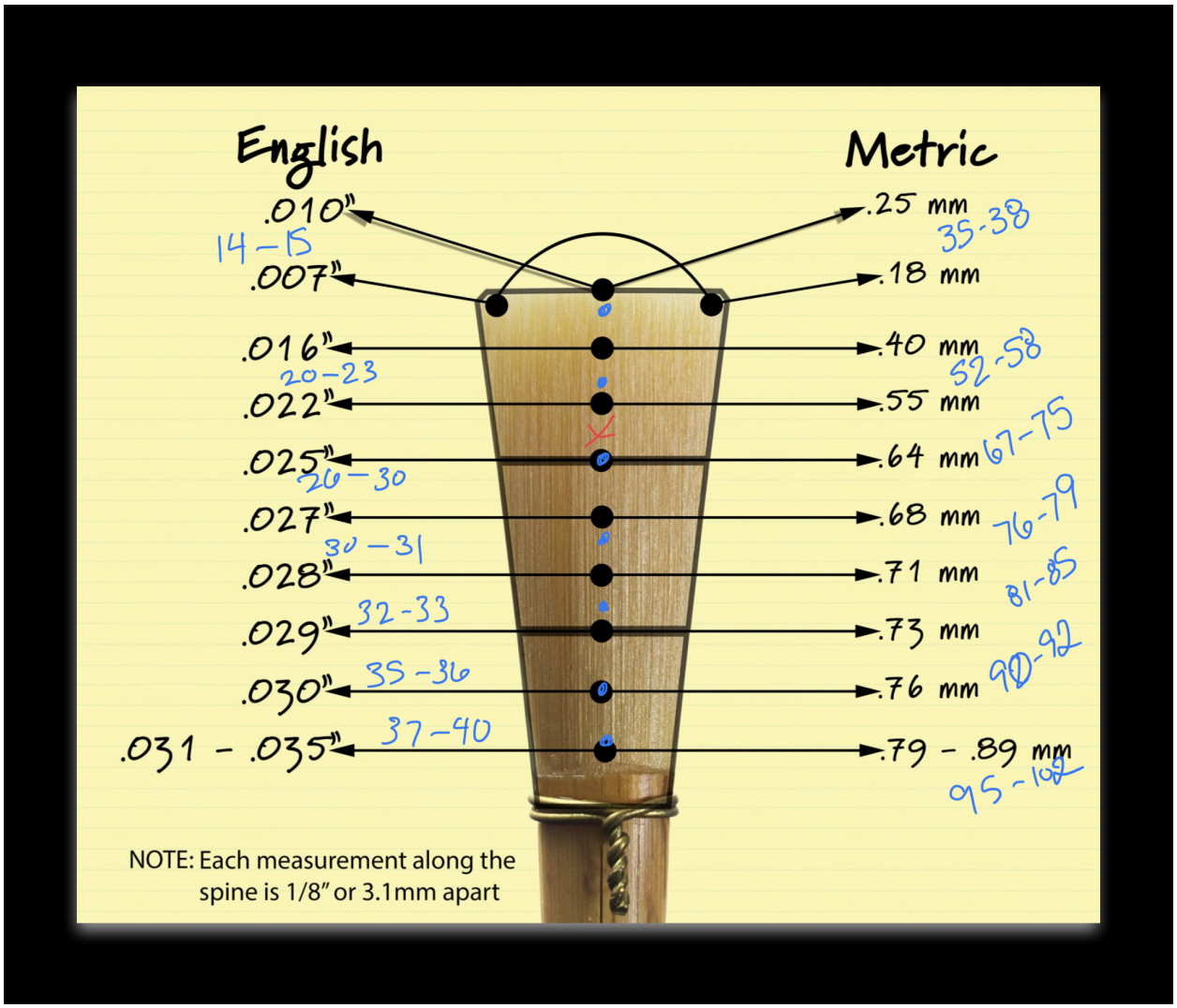
1. After playing in a first scrape, and letting it rest for at least 24 hours, soak and test the reed to see how it has changed and address any additional adjustments it may need.
2. Response: If the response is delayed, check the tip and bring it down further to allow for clearer attacks. If there are any significant bumps or irregularities, make sure to even those out over the surface of the reed.
3. Thumbnail: Refine the thumbnail to improve:
    a. Response
    b. Intonation
    c. Resonance
4. Channels and Rails
    a. Check in the light for a defined spine and balance from side to side
5. Spine: Check the measurements

	Tip	4mm	8mm	12mm	16mm	20mm	Back
mm	.30 - .35	.60-.65	0.70-.75	0.80-.85	.85 - .90	0.90-.95	.95 - 1.1
in	.11-.13	.2-.25	.27-.29	.30-.33	.33-.35	.35-.37	.375-.45

Chart of Wire Adjustments:

First Wire		**Second Wire**	
Close the reed (flatten)	Open the reed (round)	Close the reed (round)	Open the reed (flatten)
Adds resonance (less resistance)	Adds resistance	Adds resistance	Adds resonance (less resistance)
Weakens	Strengthens	Strengthens	Weakens
Brightens	Darkens	Darkens	Brightens
Flattens pitch	Sharpens	Sharpens	Flattens pitch

Black is George Sakakeeny's measurements, Blue is Dag Jensen's



Gouging:

Bassoon Reed Making: Splitting, Pre-gouging, and Gouging

1. Split the Tube (dry):

- Find the node (run your finger inside the tube)
- Align the node with the mark on the splitter
- Punch the splitter down in order to divide the tube (try do this with only one movement)

2a. Pre-Gouging (dry)

- Place the dry, split pieces of cane in the bed of the pre-gouger
- Line up the pusher with the end of the cane, and use the hammer to send the cane through the pre-gouger

2b. Gouging (soaked 2-3 hours)

- Soak the pre-gouged pieces of cane for 2 to 3 hours.
- Find the straightest part of the cane.
- Place the cane in the guillotine and cut off both ends
- Cut all pieces of cane to the correct measurement using the measurement bar on the guillotine.
- Fit the cane in the Gouger, centering the edges and securing it under the spring-loaded cane holders.
- Put the metal cane holders down (horses head).
- Position the blade in the middle of the cane and pull the handle backwards to begin to gouge.
- **Never lift the handle during this process. Lifting the handle at either end of the cane will cause damage to the blade**.
- Switch the side of the cane when you can't take out more wood.
    - Only gouge one stroke on the other side. This is just to balance the sides.
- Once the gouging process is completed, dry the cane **bark-side-up** for at least 3 days or more if possible. Stacking the canes in groups of 4-5 can save space.

CLEAN UP WHEN YOU'RE DONE