

The following is my response to a questionnaire about reed making by a former student of mine, William Hestand. In it you will find many specific and general thoughts of mine about reed making. I hope you find it helpful.

Barrick Stees

Reed Making Legacy Questionnaire

The following is a questionnaire about the reed making process. Please answer these questions in detail, where needed, so that I can better understand your style and approach to reed making. I want to gather information about your style of reed making to aid the production of my film “Reed Making Legacy.” If you have a particular talent of teaching or explaining any of the steps involved with reed making, then please let me know, and we’ll highlight this step during the filming. Thank you for your time, information, and help with my project; I truly appreciate it.

-Billy Hestand

Reed Making History

Who taught you how to make reeds? **My first teachers were Sanford Berry and Wilbur Simpson. David Van Hoesen had the major influence on my reeds, however.**

At what age did you start making your own reeds?

Probably around age 16.

How many years had you been playing bassoon before you started making your own reeds?

About five years

Are you still using the same style reed that you first learned, or have you changed certain aspects of your reed design? If so, what, and what effect has it had on your reeds?

I changed styles several times. The biggest change was adopting Van Hoesen's scrape and shape upon entering Eastman. I have also changed some things since then - shape, scrape and bevel method have evolved to give my reeds more depth of sound and better low note response and a slightly flatter pitch.

Choosing Cane

What do you look for when choosing a piece of cane?

The cane must be straight in the grain, not warped. The gouge must be smooth and consistent throughout the "Bahn". Poorly gouged cane can be due to sloppy workmanship or a sign that the cane is warped. I also check to see if the gouged piece of cane contacts a flat surface at all four corners. This checks for any warping.

The cane diameter shouldn't change much, if at all, from end to end. Bassoon cane should be between 24-26mm. If it changes more than a millimeter, I don't use it.

I check the cane density - see below.

Cane should not float after a few hours in the water when soaking. This cane never turns out to be useable.

What kind of cane do you use?

I use Rigotti, California cane from the Sonoma Reed Co., some old tubes of Jones cane, and some Van Doren cane.

What have you used in the past?

I have used just about any type you could mention: Glotin, Ghys, Van Doren, Rieger, etc.

And, do you find that the different types of cane have qualities consistently unique from each other? (One type always being brittle, one being too soft?)

Not really. It depends upon the gouge and the age of the cane. When you order gouged cane, you can't always specify the type of gouge you want. I don't believe there is a "Coke" or "Pepsi" of cane in which one company has cane that is substantially different from another. I think there is only useable cane and that which is not useable. Every supplier will sell some pieces that cannot be used and some that can. It has more to do with each player's idiosyncrasies.

Do you check hardness/density of your cane before making your reeds?

Yes.

If so, what is your ideal hardness/density?

I prefer a density of between 14-16 on the Rockwell scale. However, different hardness testers are calibrated differently, so I don't know if you can really compare numbers. My range listed above falls right in the middle of the range I experience when testing cane.

What is the total length of the cane that you use?

Total gouged length is 120mm.

Gouging

Do you gouge your own cane?

Sometimes

If so, what thickness do you gouge your cane?

I gouge to between .053-.055"

What kind of gouger do you use?

I have a Rieger gouger and an old Sassenberg gouger that handles 126mm length cane. The Rieger has a 24mm bed and the Sassenberg 26mm. This lets me handle cane that is both smaller in diameter and larger.

Profiling

Do you profile your own cane?

Yes.

If so, what kind of profiler do you use?

I use a Pfeifer single barrel profiler

If not, what kind of profiled cane do you use?

Shaping

Do you shape your own cane?

Yes

If not, what kind of shaped cane do you buy?

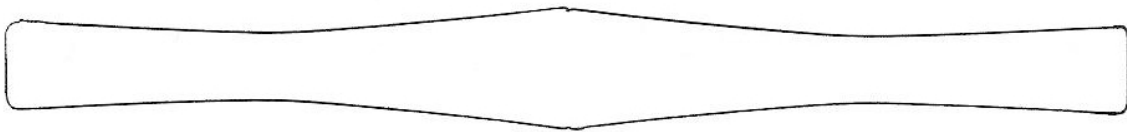
If so, what kind of shaper do you use? (Flat or folded)

Folded

Who manufactured your shaper and what is the number?

Berdon #6 available from Keith Bowen or Rieger #13 (Van Hoesen copy)

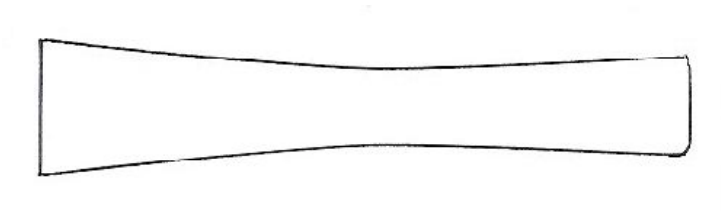
Shaper dimensions (flat):



<u> </u> A <u> </u> m	<u> </u> B <u> </u> mm	<u> </u> C <u> </u> mm
<u> </u> D <u> </u> mm	<u> </u> E <u> </u> mm	

- A) Width at center
- B) Width at most narrow point
- C) Width at end
- D) Distance between center and most narrow point
- E) Distance between most narrow point and end

Shaper diminutions (Folded):



<div> <div>A</div> <div>mm</div> </div>	<div> <div>B</div> <div>mm</div> </div>	<div> <div>C</div> <div>mm</div> </div>
<div> <div>D</div> <div>mm</div> </div>		<div> <div>E</div> <div>mm</div> </div>

A) Width at tip

15.875mm

B) Width at most narrow point

8.89mm

C) Width at end

10.6943mm

D) Distance between tip and most narrow point

40.894mm

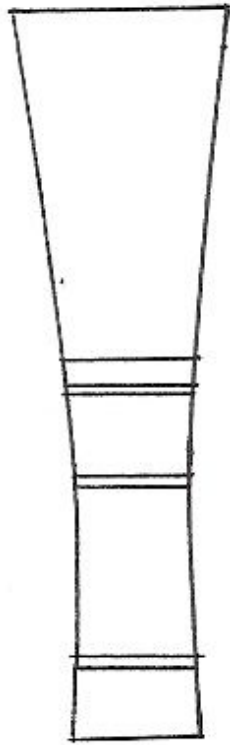
E) Distance between most narrow point and end

28.321mm

Reed/Wire Measurements

Reed lengths and wire placement:

<div> <div>A</div> <div>mm</div> </div>	
	<div> <div>C</div> <div>mm</div> </div>
	<div> <div>D</div> <div>mm</div> </div>



I use English measurements. Below are metric conversions.

A) Full length of reed

53.97mm

B) Tube length (from bottom to shoulder)

28.57mm

C) Blade length (from shoulder to tip)

25.4mm

D) First wire (from bottom to wire)

25.4mm

E) Second wire (from bottom to wire)

16.67mm

F) Third wire (from bottom to wire)

4.76mm

Forming a blank

What steps do you take when forming a blank?

1. Score the center line for folding.
2. Fold over knife or ruler
3. Line up shoulders of two blades if needed.
4. Put on first wire and tighten.
5. Wrap a long rubber band that you have cut so it is a segment and not a circular band around the tube area going one or two revolutions above the first wire and cover the bark all the way down to the butt. Wrap with no tension around throat of reed. Increase tension as you wrap towards the butt. Band should be very tight at butt. Tie off or hold band ends down with fingers while you insert forming mandrel part way.
6. Squeeze first wire on sides until its shape looks like that of a finished reed.
7. Insert forming mandrel, pushing with very little twisting if any.
8. Push mandrel in up to collar on mandrel pin.

Do you bevel your cane? If so, how?

I bevel after forming. After the cane has dried for several weeks, I remove the first wire and unfold the blank.

Using 320 wet/dry sandpaper, I bevel by lightly sanding the edges of the whole tube area by laying one half of the cane on the sandpaper with both edges of the semicircular tube touching the sandpaper and sand back and forth with the grain (with the length of the tube, not across).

After the light sanding above, I sand more aggressively by contacting the sandpaper with the tube half from the second wire mark to the butt end. I hold only this much over the table I'm resting this on, using my fingers to stop the sanding. I sand from tube to second wire mark. This takes out some of the flair made by the shaper and creates a wider flat surface for the four sides of the tube to meet. I stop after seven or eight passes.

What kind of forming mandrel do you use?

I use my own, designed by David Van Hoesen. I have these in quantity for sale on my website. It has three different tapers blended into the length of the mandrel. The mandrel pins are used with a pin vise so the blank can be transferred from wrapping on the vise to the drying rack without disturbing the wrapped tube.

How far do you push the reed on to the mandrel?

My mandrel pins have a collar that acts as a stop.

How do you let your blank dry? Do you keep it wrapped in thread, put all the wires on, or do you use a different method?

I let the blank dry for at least two weeks. Longer is better. It remains wrapped in the rubber band during this time.

How long do you let your blanks rest before you start the finishing process?

The finishing can start immediately after the glue is dry from wrapping. Usually the reed does need a week or so of rest after cutting the tip, adjusting the wires and initial scrapes, however.

When your reed has rested for the desired amount of time, what are the steps you take before finishing your reed?

I wrap, tighten wires, number the reed with indelible marker, cut the tip and put it on my tip finisher.

What kind of wrapping do you bind your reed with, and what method do you use?

I use embroidery floss. I wrap with a Turk's head style. I coat the tube from second wire to butt with Duco cement, wrap and then coat thread with Duco.

Do you ream your reed? How far does your reed go on to your bocal?

Yes. It goes on the bocal between 6-8mm.

Finishing Reed Blank and Testing your Reed

After you've made a reed and cut the tip, what are the initial tests you do before working on your reed?

I adjust the wires so the tip opening is natural for playing. I crowd the reed to find its predominant pitch. Usually the pitch of an unscraped reed is at G or F# in the treble clef staff, if it crowds at all.

What method do you use when finishing a reed? Scraping with knife, sanding, filing?

I use a Rieger tip finisher that is set a bit thick to allow for cane that is a bit soft. I use all of the above methods, depending upon whether I want to darken or brighten the reed's tone. Knife will slightly brighten, the others will darken.

Do you use a light when finishing your reeds? If so, what are you looking for? Describe the shading of your reed.

Yes. I try for a "thumbnail" or "bullet head" silhouette at the tip. The blade should be lighter in color under the light at the tip and the sides, darker in the center and back.

When finishing a reed do you use any special tools such as a tip profiler?

Yes.

When you crowd your reed, how do you know if it is good? What sound are you listening for when crowing your reed?

I look for a full spectrum of sound in the crowd with a gentle resistance to the blowing. The predominant pitch should be an F first spaced note in treble clef staff.

Do you check harmonics on your bassoon when finishing a reed?

Sometimes I will check the second harmonic of low E, low F and compare to real B and C on top of the staff. If harmonic fingering is sharp, the tip needs further scraping. For the channels, I check the Baroque fingering for Bb: xxx/xox to the regular fingering. If sharp, scrape channels.

Are there any specific orchestral excerpts that you use to find out if your reed plays up to par? If so, what are they, and what are you listening for and expecting from the reed while playing them?

I don't use excerpts. I use scales and long tones.

How many days do you take to finish a reed, and what are the steps you do on each of these days?

Finishing can take 1 - 2 weeks. The steps depend upon how the reed plays at the time.

Do you break your reeds in? If so, describe this process.

Yes, but I have found that the break-in process is significantly reduced if the cane is soaked for a longer period of time prior to profiling.

I break reeds in by playing long tones and scales. I check response and tone quality and pitch and adjust if any of these are off.

The reed must have a stable E in the staff (not too weak) and a low D that is warm in tone quality and in tune (not too stiff).

I never play on a new reed for more than 20 minutes at a time. It usually changes during that period and needs to dry out and stabilize in the reed box.

How long does a finished reed last?

Depends upon climate, how much and what kind of playing I'm doing and how many other useable reeds I have. Can be between 2 weeks to 4 weeks.

Tools

What tools do you use when making reeds?

Gouger, profiler, ruler, X-Acto knife, files, reed knife, pencil, rubber bands, #22 gauge brass wire, wire cutter, mandrel pins, drying rack, holding mandrel, reamer, dial indicator, plaque, embroidery thread, indelible marker, tip cutter, 320, 400, 600 sandpaper, rat-tail file, pliers, cutting block, light, density gage, tuner,

Who is the manufacturer of your reed tools?

Various, some are found at a good hardware store. Reed knife is Graf modified by Albert Alphin, density gauge is Rolf Potratz, Pfeifer profiler, Potsic dial indicator, Rieger tip profiler and gouger, Berdon mandrel, and mandrel pins are designed for me by Ken Potsic.

Using Dial Indicator

Do you use a dial indicator when finishing a reed? If so, please take a moment and complete the following Reed Profile (on next page). By taking measurements of your best reed/s in micrometers at each specified location I hope to understand the unique way you finish your reeds.

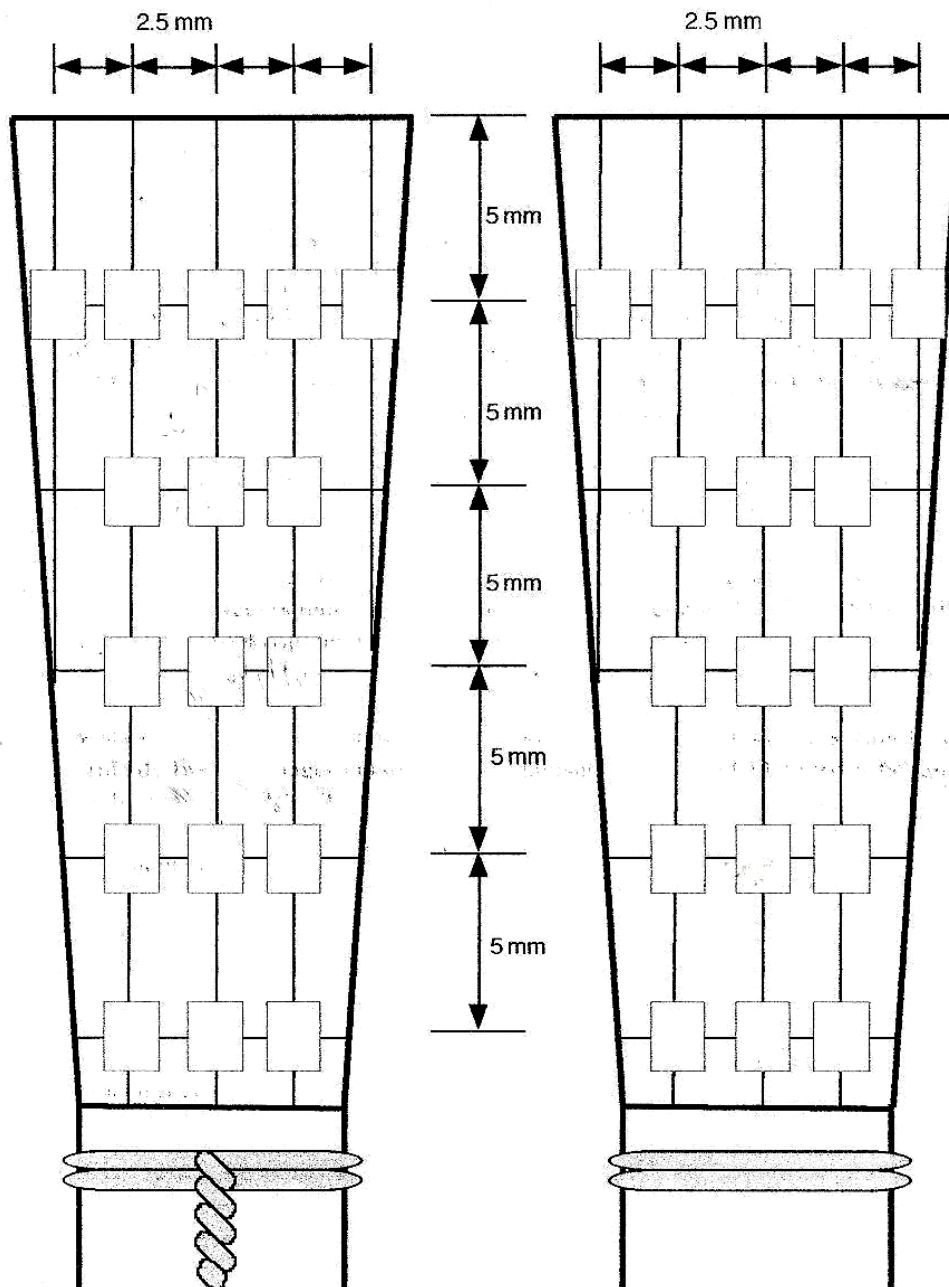
Yes

Reed number:

Cane:

Shape:

Length:



I couldn't enter data into the box above for the dial indicator measurements. The measurements are below. I've included tip measurements even though you don't have boxes for them in the diagram.

Cane: Rigotti
Shape: Berdon #6
Length: 2 1/8"

SIDE A

	Left rail	Left channel	Spine	Right channel	Right rail
Tip	.179	.203	.254	.203	.203
5mm	.254	.406	.457	.356	.279
10mm	NA	.0553	.610	.508	NA
15mm	NA	.660	.686	.635	NA
20mm	NA	.686	.660	.737	NA
25mm	NA	.737	.660	.737	NA

SIDE B

	Left rail	Left channel	Spine	Right channel	Right rail
Tip	.203	.229	.229	.203	.203
5mm	.254	.356	.457	.406	.279
10mm	NA	.457	.610	.533	NA
15mm	NA	.610	.686	.584	NA
20mm	NA	.686	.635	.635	NA
25mm	NA	.762	.686	.660	NA

Final Thoughts

Are there any steps of the reed making process that I have not mentioned that you would like to address? If so, then please feel free to write about anything of importance relating to the reed making process, or reeds in general.

Measuring a profiled reed and a finished reed and comparing the measurements is extremely important for understanding what areas need the most attention in scraping. I even plot my measurements on a graph with two different colors for the profiled and finished cane from time to time.

Reed making is best learned by having the courage to make mistakes and learn from them. Many people are too careful with reeds and end up not knowing how to solve problems.

Quantity builds quality. Making lots of reeds at a time insures consistency and keeps you in practice. It also raises your standards. Reeds last longer when there are several others to rely upon and use in rotation.

It is also important to know when to give up on a reed. If, after the initial scraping I don't see things going in the right direction, I will discard a reed or put it away and not work on it for months. Sometimes, I'll go through a group of discards a year or so later and find one or two that are useable.

Having a good acoustical environment is extremely helpful for breaking in reeds. Students are at a distinct disadvantage here because they often have only small practice rooms or bedrooms for testing. The reed must be tuned to the hall in which it will be played if at all possible.

With my reeds I go for a good balance between ease of response and good resistance. That is why long tones are so important for breaking them in. Testing the reed at extremes of the dynamic range lets you know in advance how they will work in real music. Pitch is also extremely important. I find that if I have a reed that has good response/resistance and good pitch it often has the tone I desire as well.