

A Guide to Bassoon Reed Making
by
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Welcome to the wonderful world of bassoon reed making! I have prepared this handout to serve as a guide for your journey through the reed making process. It represents my 16+ years experience of studying reed making with several teachers from several universities and orchestras across the United States. I hope that it will contribute to your success as reed maker and bassoonist.

The overwhelming majority of professional bassoonists state that over 60% of successful bassoon playing can be linked to having a good reed. I enthusiastically agree with this statement. As bassoonists, we are called upon to produce sounds at the loudest and softest end of the dynamic spectrum. Composers regularly require the bassoon to perform technical passages that would test the mettle of a trained fighter pilot!! To successfully achieve all that is asked of us as bassoonists, we must have a supply of good reeds that meet these challenges.

It is often said that "practice makes perfect." This could also be said of the reed making process as well. The former principal bassoonist of the Philadelphia Orchestra Sol Schoenbach said that if you take a laundry basket and fill it with reeds that you have made, by the time that you have filled the basket you will know how to make a reed. The practice of reed making must be done as often as the practice of the bassoon itself. The only way that you can be successful as a reed maker is to make lots of reeds. Much of this has to do with the substance that we make reeds out of: cane. Cane is a natural material; no two pieces will ever be alike. In my own reed making, I can expect one out of every five reeds that I make to be a quality product. Therefore, I make a substantial amount of reeds for my own performances and rehearsals.

The good news is that reedmaking is a skill that can be learned with practice (and a helping of patience ☺). If you work slowly, intelligently, and diligently, you can become a successful reed maker! Let's begin!

1. Take several pieces of gouged cane and soak them in water until they sink to the bottom of the container. This process usually takes anywhere from five to eight hours. After eight hours, some of the cane might still be floating at the top. That is normal - you can go ahead with the next step.

2. Take your gouged cane out of the water and lightly sand the underside of the cane with sandpaper (200 grit or higher). This step will smooth out any imperfections on the surface of the underside of the cane.

3. You are now ready to profile your cane. (If you are using a flat shaper, go to step four and then do this step). Place your cane on the barrel of the profiler so that it rests in the middle of the barrel. Place the saddles on the barrel and tighten the screws. Place the barrel in the profiling machine. Draw the carriage all of the way back and begin profiling the cane. It is important to always bring the carriage as far back as it will go so that equal amounts of cane are removed from both sides. Use a light touch with the carriage - it is not necessary to press very hard for the machine to work properly. I have found for the best results that if you do most of the work in the middle of the cane and save the corners for last you will get a better "finish" on your cane. If you find that you must work a bit harder for the machine to work, the blade may be dull. If you are having difficulties, **see the instructor immediately! Do not attempt to adjust the machine! Any attempts to adjust the machine by you will cause your reed room privileges to be revoked.** When you cannot remove any more cane, this process is completed. Take an exacto knife and put small slits in the side of your cane following the template on the barrel.

4. Take your piece of soaked, gouged cane with the bark side down and find the exact middle of the cane. Most cane is cut at 120mm, so 60mm is most often the middle, but every piece of cane is slightly different. Once you have found the middle of the cane, mark that spot with a pencil line perpendicular to the ruler. Unscrew the knobs of the shaper in order to open the shaper wide enough to place the piece of cane between the halves. The pencil line you have made on the cane should line up with the "V" of the shaper. Tighten the knobs as evenly as you can until they close tightly on the cane. When the shaping is completed, loosen the knobs and try to keep the upper half of the shaper parallel to the bottom half as you unscrew the knobs.

5. Lay the cane flat on a table and pick up your ruler. Place the middle of your ruler directly on the fold of the cane (I usually put my 3" mark on this fold). Measure $2 \frac{5}{16}$ " in both directions and mark the cane with a pencil. Take your rose shears and cut off the excess. **CAUTION: Rose shears are usually very sharp - please be careful!** Fold the cane again and see if the edges line up at the bottom. If they do not, simply trim the longer side.

6. Place the cane on a round surface (such as a section of broom handle) and pick up your Exacto knife. Starting just behind the collar, make 6-10 horizontal cuts all the way to the end of the bark. Do not do this in the middle of the bark, as it will cause your blank to crack. Do not press very deeply, just enough for your knife to leave a mark. Repeat the process on the other side.

7. Fold the cane again and twist a piece of wire (3" works well) placing the middle of the wire exactly one inch from the bottom of the blank. Pull and twist the wire a few turns. The wire should be fairly loose. Do not tighten it so much that you make dents in the cane. Once this is accomplished, take some string and wrap it tightly around the bark so that all of the bark is covered. I usually take some string, fold it in half (creating a loop at one end), wrap the loop around the wire, and then cover the bark. You are now ready for the forming process.

8. Fill a hot pot with water and set it to boil. Once it is boiling, pick up your pliers and grab the reed blank by the bark at the bottom. Dip only the wrapped part of the reed in the boiling water for about 30 seconds. Take the blank out of the water and insert it onto a forming mandrel, gently squeezing the blank open at the bottom. It is very important not to twist the blank onto the mandrel. Simply insert the forming mandrel into the reed as far as it will go. Then, take your pliers and gently squeeze the sides of the blank so that the edges are tucked in, especially at the bottom. Let the blank dry for three days.

9. Remove the string and cut off the wire. Open up the blank and measure $\frac{3}{8}$ of an inch from the bottom of the cane. Wrap some garnet sandpaper around a block of wood or place the sandpaper on a table. Lightly sand the marked section of the cane (the section from the bottom to the middle) with

10 double strokes on the sandpaper. This process is called **beveling** and will keep the tip open of your reed as well as give your sound a dark quality. To prevent blade slippage, I also use a secondary bevel. Place the entire tube of the blank on the sandpaper and gently sand the seams of the tube with two light strokes.

In general, a shorter bevel ($3/8"$) will open up the blades more and strengthen the lower register of the bassoon. The blades will be in gentle contact with each other, so you can actually have a thicker tip on your reed. If you need a stronger higher register reed, a good multipurpose bevel is $9/16"$, but you can go as high as one inch if need be. A higher bevel on the reed will put more pressure on the blades of the reed, raising the pitch and resistance of the reed somewhat. This will require a bit more scraping at the tip for ease of response.

10. Take the blank and place it back on your forming mandrel. Take a piece of wire and wrap it around the bottom so that the middle of the wire is $3/16"$ from the bottom of the cane. While tightening this wire, it is important to twist and pull at the same time. Pulling the wire takes the slack out of the wire and evenly tightens the wire around the cane. When you cannot get any more slack out of the wire, snip off the excess leaving about $1/4"$. Go to the top of the reed and wrap a piece of wire there as well. The slack of this wire needs to be on the same side as the bottom wire. The **top** of this wire should touch the **one inch** mark on the ruler from the very bottom of the reed. Repeat the tightening process that you used for the bottom wire, taking care not to "cinch" the sides of the cane in towards the middle (if your top wire looks like a person is wearing a belt that is too tight, snip off the top wire and put on another one that is slightly looser). Snip off the excess. Take the third wire and wrap it below the second wire so that the excess faces in the opposite direction from the other two. The middle of this wire should be $11/32"$ down from the one inch mark used to position the top wire. Snip off the excess.

At this point, you are ready to seal the tube so that the reed can be reamed, clipped, and trimmed. My favorite method of sealing the tube that I have used for the past several years is using a hot glue gun. I like using hot glue for several reasons: 1) it is inexpensive, 2) hot glue is nontoxic, 3) it dries quickly so that you can immediately begin working on a reed blank, 4) finding

hot glue and hot glue guns is very easy compared to many other products (Duco Cement, etc.). When working with a hot glue gun, there are a few things to keep in mind. First, you must get a high temperature glue gun with high temperature glue sticks. Do not get anything else or the glue will not dry and form properly. Secondly, **BE CAREFUL WHEN USING A HOT GLUE GUN!** The nozzle of the glue gun can easily reach 400 degrees and the glue can cause burns on your hands if you are not careful. All of that being said, I still find hot glue to be a superior method to seal tubes. This is especially noticeable in the fall and winter months when string wrappings have a tendency to come loose due to drier humidity levels. Hot glue never loses its bond and creates a stable supporting structure for the tube.

11. Ream the reed blank so that it will go on the bocal approximately 7-10mm. Soak the reed in water for a few minutes. If you have a spiral reamer that is sharp, you can ream the reed again until it fits on the bocal. If you do not have one, let the reed totally dry out before reaming it again. You will notice that the reed will swell in between these steps. This is normal. By reaming the reed, soaking it, drying it and reaming it again, you will stabilize your blank, thus increasing your chances for success. Keep an old toothbrush handy to clean your reamer. Keeping your reamer clean and dry will significantly prolong its life.

12. Soak your blank for a few minutes then remove it from the water. Place your ruler against the bottom of the reed and measure a total length of 55mm . Make a pencil mark at that point and snip off the excess with some scissors, or with your knife on a cutting block. Snip off the very corners of the reed. Check the inside of the reed. If there is "fuzz" in the throat of the reed, take a rat tail file and remove it.

If you have used a short bevel, when you clip the tip the reed will "yawn" open due to the material removed from the bottom of the tube. This will need to be closed a bit to facilitate scraping, testing, and performing. To close this aperture, place the reed on a holding mandrel, and then use your pliers to close the first wire. If the reed is not placed on a mandrel when doing this step, the aperture of the second wire will be affected which is not desirable at this point. Once the first wire is properly adjusted, it will take on the shape of an oval, which is typical of most reeds using a short bevel. Consequently, a reed using a longer bevel will need to have the blade

opened somewhat. The process is exactly the same to open up the aperture of the reed - place the reed on a holding mandrel before making any adjustments. Reeds utilizing a longer bevel will have a rounder first wire than those using a short bevel.

13. You are now ready to begin removing material from the reed. The most important thing to remember about this process is that it must be done over a period of at least three days if not longer. If you try to finish a reed too soon, you will not get a quality product. I usually begin removing material from the back of the reed, gradually moving towards the tip. On the first day, I suggest that you bring the reed down to the following measurements using the dial indicator:

13	17	23	27	35
tip	1/8	2/8	5/8	back

The measurements refer to the distance from the tip to the back. The measurements at the 5/8 are as thin as you should go! The back of the reed is responsible for the reed's strength and volume. You should also leave the very sides of the reed thick at this point. The pin on the dial indicator is marked in increments of 1/8". When working on the two measurements behind the tip, you must hold the back of the reed parallel with the table or the reed will tilt up, causing an incorrect reading on the dial indicator. Once you have brought the reed down to these measurements, play on it for a few minutes and then put it away. Over the next few days, use the reed for your warm-ups, etudes and other practice material. Once you have played on the reed for at least two days, begin removing material from the front two measurements and the sides. Eventually, your reed should resemble these measurements:

10-12	15-16	20-21	27	35
tip	1/8	2/8	5/8	back

Now, just because your reed is at these measurements does not necessarily mean that your reed will play! The use of a light to look for thick spots is an invaluable tool to aid you in finishing a reed. If it is a particularly hard piece of cane, you may need to bring down the first two measurements even more. If it is a soft piece of cane, you may need to leave the tip thicker. A good piece of cane will react to any scraping that you do, while a bad piece of cane will stubbornly refuse to comply with the demands that we wish upon it!

To test the tip of the reed, play B on top of the bass clef staff, and then finger low E but place your thumb on the C flick key. If the harmonic fingering is sharp, thin the tip until the pitches match. To test the "heart" of the reed (2/8' back), play C on top of the staff, and then play low F with your left thumb on the C flick key. If these do not match, thin the 2/8 measurement slowly and carefully!

The best advice that I can give you about reed making is to make lots of reeds and work slowly and patiently. When I was a young bassoonist, I made reeds until I got a good one and didn't make another one until the reed "died". I was asking for disaster and I was lucky that I didn't get caught in a situation where I didn't have a reed. Playing one reed all of the time is like playing Russian Roulette. The reed will lose its flexibility much faster if it used all of the time, rather than rotated. I have certain reeds that I use only for performances and important rehearsals. I have other reeds that I use for practicing and even others for special musical demands. It is better to have a reed and not need it than to need a reed and not have one!!!

Your success as a bassoonist will be directly proportional to the time and effort that you spend on reed making. I think of reed making as another component of my practicing. I am still learning things about reed making and hope to continue learning throughout my career. If you take the approach that reed making is a lifelong process, I think that you will find reed making an enjoyable and even a fun(!) aspect of what we bassoonists do.

Good luck!!!!!!!!!!