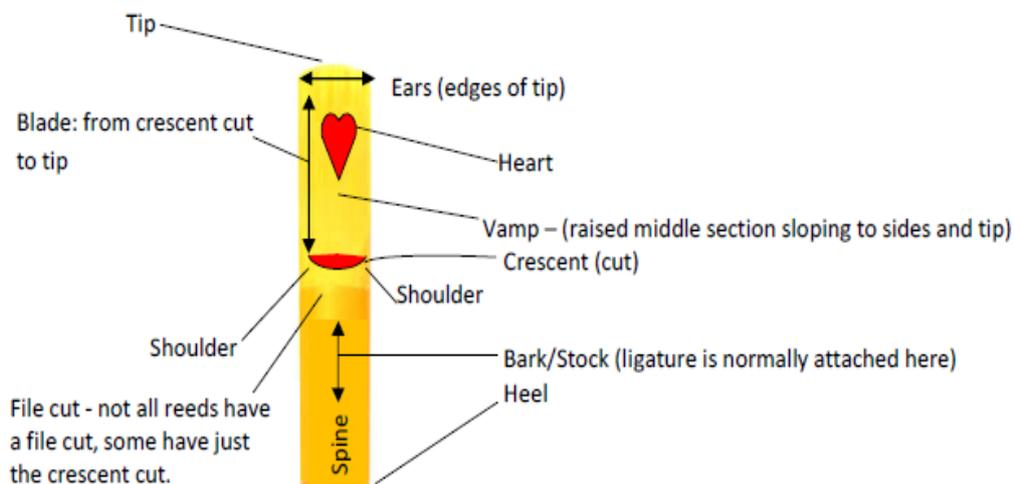


REED ADJUSTMENTS – by LESLIE CRAVEN



Reed balancing / adjusting. Above is a diagram of the names of the parts of the reed.

TOOLS REQUIRED : Abrasive paper / wooden or plastic block or similar constructed so as to allow the attached abrasive to slide over tip of reed see ATG method below / a sharp blade / a flat surface such as plate glass or marble.

REED RESPONSE TEST:

It is not necessary to assemble the entire clarinet for this test so we can use just the top parts - mouthpiece and barrel reed and ligature. This test requires the player to insert the mouthpiece and reed into the mouth as normal as if about to play.

1. Blow a fast, pressurised jet of air into the mouthpiece and barrel and note the response – does the reed play easily or is it stuffy and unresponsive?
2. If it is stuffy then we need to ascertain why the reed is stuffy - usually this is because both sides of the reed are not vibrating in harmony, at the same speed.

To discover which side is the least responsive we must find a way to vibrate just one edge of the reed at a time - we call this the “side to side test”.

SIDE TO SIDE TEST:

3. To do this we need to put the mouthpiece in the mouth and tilt it to one side so that one edge of the reed is pressing into the lower lip and is being “damped” – and unable to vibrate. The edge that is raised off the lip will vibrate freely as soon as we blow a fast jet of air into the mouthpiece in this position. Now blow a really fast short burst of air into the mouthpiece maintaining the strange tilted position. The reed may squeak during this test but do not be too concerned by this - simply note how easy or difficult it is to produce a sound.
4. Note the response of the reed when you blow the fast jet into the mouthpiece in this position and then do exactly the same with the other side – i.e. tilt the mouthpiece so that the edge just tested is the “damped” edge – not vibrating. It may take a while to master this so practise this at home- in a well soundproofed room !!

It is imperative that the player learns to master the test so that he/she knows exactly which side the reed is most unresponsive. It does not follow that just because the reed is visually thicker on one side – that it will be the stuffiest side – it all depends on the density of cane pores in the cane. See the diagram overleaf.

Heel of the reed shown in cut away cross – section view



In this cut - away view we can see the density of the micro-pores of cane in this reed is more concentrated on the right hand side. This normally causes the reed to feel stiffer when tested on the side with more micro-pore density. Each small circle represents a capillary or pore and these are similar to tiny sponge - like drinking straws that can absorb a lot of moisture. The more capillaries, the more moisture will be drawn into that part of the cane. This is also a factor to remember when “blowing in” reeds. If the reed becomes saturated it may change shape or even warp when it dries out so may need to be tested again once dry, for inconsistencies. After playing for a while always dry reeds on a flat piece of glass.

BALANCING:

To balance the reed we need to have ascertained which side is most resistant. If both sides are equally resistant the job of balancing the reed is simpler and is best done with the abrasive method described later. Generally speaking, inequality in the thickness and vibrating surfaces of the sides of the reed are responsible for most of the stiffness of a reed. The unequally vibrating sides need to be addressed first. The tip and ears can contribute to stiffness but it is best to address the sides then gradually work up to the tip and finally the ears of the reed using a blade to begin with and finishing with abrasives.

METHOD:

The reed needs to be worked, supported on a flat, solid surface such as a piece of plate glass or marble. Hold the spine of the reed firmly in place (by pressing on the bark) on the glass plate or marble.



Diagram1.

Firstly holding the reed firmly, (supported on a firm surface) using a reed knife - or if you do not have one of those, a sharp hobby knife, (Swiss army knife or similar) begin the adjustment by scraping the reed in the direction of the arrows in the yellow sectors of Diagram 2.

Start in the yellow shaded areas; scrape upwards and outwards towards the tip and ears of the reed as in Diagram 3. Stop short of actually scraping the tip and ears (approximately where the yellow sections end). Scrape lightly - not too much pressure on the blade and use careful movements away from your body keeping the hands and fingers behind the blade. Avoid scraping the tip area at this stage and do not remove material from the heart of the reed.

Diagram2.

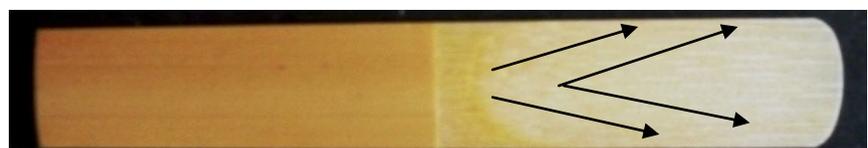
Scrape the reed in equal proportions if the reed is stuffy on both sides.



Test frequently to achieve the desired resistance level. If the reed is stuffy on one side only, scrape the side that is stiffest until the desired balance has been achieved and the reed is resilient enough to still be a little firm to blow. The reed at this stage must still feel a little too hard generally, to leave room for fine adjustment to the tip and ears. Do not remove too much cane - the reed will become too soft. **Test frequently** and scrape the right hand side if that is the stiffest side, or left hand if that is the most resistant side. Arrows represent the direction of scrape using a blade.

Diagram3.

Cane can only be removed, not replaced, so test frequently and scrape little by little. Remember; only scrape the side that is stuffy – you may not necessarily have to scrape both sides.



FINISHING THE REED:

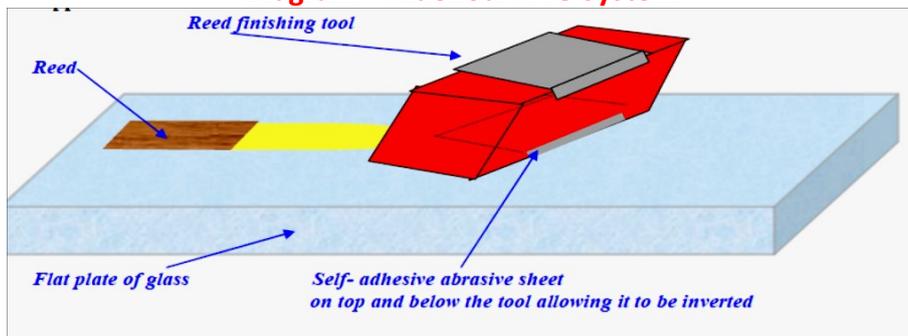
All the reed adjustments performed with a blade can be done with abrasives if you have no sharp blades. Blades can be useful however if there is only a tiny adjustment to be made and they also offer greater accuracy as one can pin-point specific areas for attention. Sometimes a quick, small adjustment is best done with a blade and can even be done with the reed on the mouthpiece provided a thin sheet of plastic is wedged between reed and facing of the mouthpiece to support the reed and protect the mouthpiece (a Vandoren reed comparison chart or guitar plectrum is ideal for this).

TOOLS: ATG METHOD

To finish the reed balancing I use and recommend Tom Ridenour’s ATG Universal reed system available from www.ridenourclarinetproducts This method includes a DVD a booklet and all the equipment to finish reeds successfully. Tom also has several interesting you tube videos and he goes under the name of “Billy boy” for those videos. Alternatively if you do not have the ATG system or cannot afford to buy the system - it is easy to make a sanding block. You will also need a piece of flat plate glass about a centimetre thick. The block needs to be about 7 – 8 cm long and about 3cm wide (or about 3ins x 1.5 inches) and you will need to find some neoprene material about 2mm or 1/16th of an inch thick. Other cushioning materials may also be used – soft rubber type material is best. This is to cushion the block when we wrap the abrasive around it and to form a bevel at the edges to allow the block to pass smoothly over the tip of the reed.

Glue the neoprene (or soft rubber) to both sides of the block but leaving a gap at the edges of the block of about 2mm each side. (see **Diagram 4. in black below**) Once the glue is dry - you can attach self adhesive abrasive or find a thick elastic band, smaller than the size of the block so when stretched around the block, it can hold the abrasive firmly in place. You will need two grades of abrasive – about 400 and anything from 800 – 1200 grade for very fine polishing of the reed. These materials will be obtainable from a good hardware shop.

Diagram – Ridenour ATG System



The inner black area in the diagram of the surface of the block represents the neoprene cushion. The Neoprene needs to be glued to the block up to about 2mm from the edges, thus creating a bevelled edge.

Diagram4.

Sanding block surface:



This will allow the abrasive to glide over the tip of the reed and cause no damage. The abrasive can then be attached with an elastic band around the middle of the block – two different grades for either side – 400 one side and 800 – 1200 on the other. Cut the abrasive to size leaving an overlap so the elastic band can hold both pieces in place when attached around the middle of the block.

Diagram5. Sanding block with thick elastic band to hold both grades of abrasive in place.

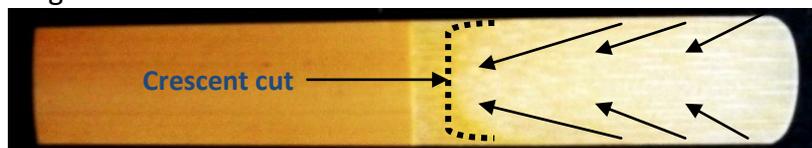
**Different grades of abrasive
Top 800 - 1200 bottom 400**



METHOD:

Step1.

Hold the reed firmly in place on the glass plate and begin by using 400 grade “wet or dry” paper on the block. Sand the reed in a diagonal direction avoiding the tip at this point, gently, against the grain in towards the crescent cut of the reed as indicated by the arrows in the diagram below.



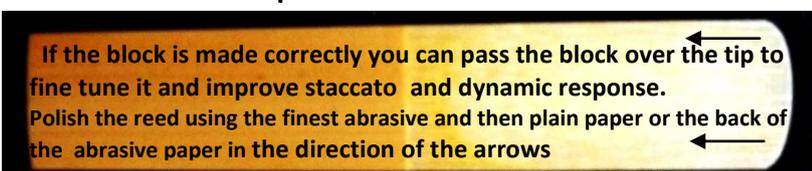
(Do not take the abrasive over the tip of the reed at this stage) Sand whichever area of the reed is stuffiest – either

right or left hand side, if the reed is stuffy on both sides then give each side equal attention.

Step2. After a couple of passes over and across the blade of the reed, inwards and towards the heel, stop and **test – and repeat the test procedure frequently**, noting the change in resistance and addressing the stuffiest side that is most in need of cane removal. Gradually work upwards starting each pass over the blade of the reed further towards the tip.

Step3. Once the reed is blowing freely but is still a little too firm then it is time to address the tip of the reed to **fine tune** articulation and dynamic control.

The diminuendo response test: This is a similar test to the side to side test but **this time using**



the whole instrument – so assemble your clarinet as normal. Insert the mouthpiece and adopt the damping position of the reed – i.e. with

one edge turned up towards the top lip the other pressed into the lower lip. Blow a constant, fast, jet of air to create a sustained **forte** then gradually **diminuendo** to the quietest possible dynamic keeping the airspeed constant and until eventually no sound emerges. Repeat this test on both sides of the reed, note the responses and adjust the side that responds least well to the diminuendo. Once the diminuendo is equal on both sides then the reed is very close to being balanced. Ideally at this stage the reed should still be a tiny bit too firm and this will enable you fine polish the surface using a finer grade of paper – either 800 or anything up to 1200. The abrasive block will allow you (if you have made it correctly or have the Ridenour version) to take the abrasive over the tip of the reed without damaging the tip – as the neoprene stopped at 2mm before the edges makes a bevel and this glides over the tip when drawn across the reed tip towards the heel. Use the lightest of touch for this fine finishing.

The more polished the surface of the reed the longer it will last and this will also cause less irritation and feel more comfortable on the lower lip – especially if you are one of those poor souls who have too much lip over the teeth when forming the embouchure – 99% of people in my experience! Polishing the reed can be continued by simply rubbing a strip of ordinary white computer paper or the back of the “wet or dry” abrasive (wet or dry is the name of the paper) over the reed surface against the grain. This will eventually result in highly polished surface and give much longevity to the reed. I sometimes use a razor – stone to polish my reeds but these items are becoming very difficult to find now the advent of the open (cut-throat) razor is long past. Further fine adjustments to the reed may be required from day to day as cane is a living material and is prone to be affected by climate and day to day changes in humidity. A reed is rarely balanced “for good” and some minor adjustments may be necessary to keep your reeds in top playing condition.

I highly recommend keeping your reeds in a reed case or hygrometer box which keeps them in a balanced constant humidity – there is a very good Vandoren product for this purpose, ask Kerry long about this. Rico humidipaks also do a fine job of keeping reeds at optimum humidity. I find a combination of a good reed case and some form of humidification is essential for maintaining a high level of performance from reeds. Check out reed cases etc., from JOHN PACKER LTD.