

Do not ever, repeat EVER flatten a tonehole without then going back and re-establishing the original angle of the under and overcut and the original pad seat width. This is true on any plastic or wood tonehole, on any fine soldered tonehole, and also applies if you flatten by filing or sanding any rolled tonehole.

Anything else is butchery. Period.

I teach the repair school students why this is so and have done so at NAPBIRT clinics as well. You must not leave toneholes "flattened" only.

Ed at KMP

You dramatically increase the amount of area in contact, which reduces the contact pressure at the pad seat. To seal the key now needs to be pushed down with two, three, ?? times the force.

Tonehole geometry exists for a reason, you cannot flatten without re-establishing the correct shape. If this is a Yamaha product, the overcut was already very minimal compared to Buffet or Selmer, which makes it harder to get the pads to seal as it is. If anything, you need to cut the overcut with a more pronounced angle, not flatten it.

This is an hour long lecture with slides etc.

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You have not heard this from me. What I teach is that instruments usually are not finished to the same degree of precision we would like. I never have advocated or taught that anyone should accept a "sharp uneven surface." I have never advocated leaving a bad tonehole in that condition, and in fact have produced many tools over the years for fixing bad toneholes.

What I do teach today is this;

IF you do "flatten" a tonehole to get the tonehole seat into planar condition (there are no longer high or low spots) by removing material ... either by filing, sanding, by power or by hand ...

Then you must followup by re-establishing the proper tonehole seat width afterwards. Otherwise you create new problems by having a tonehole seat that is too wide.

Every instrument design has an ideal tonehole seat width. No one is advocating producing a "sharp knife edge" or advocating that uneven (out of plane) tonehole seats should be left as is.

If you look at a good condition tonehole on a clarinet there is usually a very small radius at the very top of the intersection of the undercut and overcut at the tonehole edge. If you look at a properly finished flute tonehole, there is a flat at the top of intersecting tapers, one of the flute specialists can weigh in if this is somewhere between 0.010 and 0.015 inches width. If you look at a sax tonehole, most today are rolled and there is a small radius at the top where the seat happens.

If you widen this dimension during a process of putting the tonehole into planar condition (loosely called "flattening") then you must re-establish correct tonehole seat width. **Otherwise the work is incomplete and can cause more problems than solve.**

In my latest clinics at repair schools and at NAPBIRT, I spend time explaining this and do not spend any time teaching how toneholes can be flattened, since this should be already understood by anyone in the industry. Perhaps this wasn't clear to everyone. Metal toneholes can be sanded, filed, raised, tapped, and plastic and wood toneholes can be filled, sanded, cut with cutting tools, raised, lowered. Toneholes can even be completely replaced. If I spent time explaining how to "flatten a tonehole" I would never have had time to get to the relatively new content I'm sharing, which is specifically that you have to be sure to re-establish proper tonehole seat width afterwards. If you saw a clinic from me and thought I was advocating not making pad seats planar, they I'm sorry that wasn't clear.

No one is advocating this level of work should be routine on a cheap throwaway instrument, you can't make a silk purse out of a sow's ear.

If you heard me speak/teach ... then as described above I never advocated for not "dressing" or "leveling" tonehole seats.

However you have heard me say that you should not widen the tonehole seat blindly. In particular, the classes I have taught teach that the firmness of the pad and the width and diameter of the tonehole seat area **have to be in balance**.

This means that firmer pads require less contact area to achieve adequate compression at the pad set to work properly. Softer pads can tolerate more contact area on the same tonehole and work.

Everything has to be in balance. Increasing the pad seat area and keeping everything else the same will cause problems. The worst situation is to simultaneously increase pad set area and switch to an even harder pad material. That's double trouble.

If anyone else is teaching some magic voodoo about more surface area results in better seal results in better sound wave, then these people are rewriting science. I can't be responsible for what others teach. Starting from the assumption we all agree that we want no defects in the tonehole seat and it should be planar, more surface area will not make the tonehole seal better, if everything else stays constant, in fact quite the opposite. Toneholes that do seal better produce a more secure transition from one note to the other, something we like to call response. Toneholes (and instruments) that seal better tend to have tone and pitch that is more predictable when the keys go up and down. It's a totally different conversation if this is a musical plus or minus, as sometimes instruments that have pitch locked in can be harder to play in tune in the moment, and predictable tonal quality can mean less tonal flexibility. So let's not get confused what makes toneholes seal correctly with a fuzzy conversation about what changes to the positive seal of a pad can make to the musical possibilities of an instrument.

I've seen instruments that leak like a sieve play beautifully, and I've seen instruments that have to be perfect to play at all. Most instruments benefit from having a positive seal on every pad, so that should be the default to aim at but there always are exceptions.

Buffet Tools designed to recut the contour.

Why would they bother with these if you could simply use a flat disc backed with sandpaper to achieve a better result?



