

Making rings for thumbholes

Worn thumbholes are a regular problem on intensively played recorders, making some high notes more difficult to articulate. They can often be seen on instruments made of softer types of wood (fruit wood, maple, see photo 1), but I have seen them also on historical recorders made of ebony, such as the alto recorder by Van Heerde in the museum of musical instruments in Lisboa (Portugal, see 2). Sometimes (but not so much on the instruments of photos 1 and 2), the direction of the groove gives us an indication how the recorder was mainly played, with the right or with the left hand below.

A worn hole is the result of a way of playing where for the overblown notes (where the hole has to be partly covered) the thumb is placed with the nail almost straight (perpendicular) to the surface of the hole (3a).

It is not my way of playing overblown notes, I prefer to shift my thumb (3b), 2 it is perhaps a less secure, but I must say that I am not a professional recorder player.



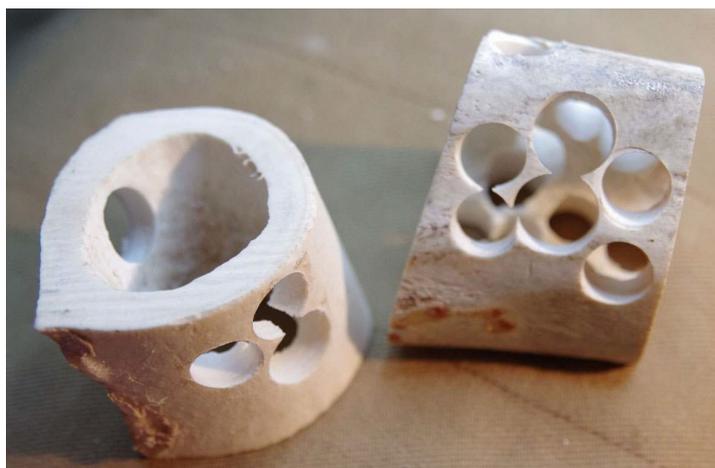
3a



3b

Inserting a ring generally improves the speaking, especially of the critical high notes (such as c#3 and f3 on an alto recorder) enormously.

Don't forget to measure the diameter of the hole before continuing with the next steps! Most thumbholes of alto recorders have a diameter between 5.5 and 6.0 mm.



I make the rings out of pieces of cow bone, which I buy at a local butcher (see photo 4 for some pieces of bone that already have been used for rings). This means that I must ask my customers if they perhaps have vegetarian-related objections with that material, but that has never happened. Larger pieces of bone can also be bought in shops where they sell dog food, but smaller pieces are easier to use. You can boil the bone pieces (making stock for a soup), but that is not strictly necessary! I have no experience with bones from other animals.

4

I use plug cutters to extract small cylindrical pieces out of the bone. Photo 5 shows two cutters, the right one (with cuts pieces with a diameter of 10 mm) was bought in a tool shop. On the internet you will find them in various sizes and shapes; they are made of hardened steel to be used on wood, but on bone they will do well. Protect your eyes when you are drilling with these tools (photo 6)! The other cutter I have made from a piece of so-called silver steel*, on my metal lathe. The cutting parts are much thinner (ca. 1 mm), I used a small metal saw with an HSS blade) and a file to make the teeth. I didn't harden the teeth - too much work for a small tool that I use not so often, and it cuts well.

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* silver steel is a type of high-carbon bright steel used for tools.

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It is sometimes a bit difficult to get the piece of bone out of the cutter. That is why a drilled a hole through the length of my self-made cutter, so I can get the plug out by pushing from the other end.



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The next step is flattening the surface of the bone plug, which I do in the metal lathe (8). You can do that job of course also on your wood lathe (with a chuck) or even an electric drilling machine, using a file or sanding paper. The best way is to flatten the plug at both sides.



8

Now follows the drilling of the hole, again on the metal lathe. I always begin with a small pilot drill bit (9), which gives the best guarantee that the hole will be correctly centered.



9

With a common metal drill the hole will now get its desired diameter, which I always keep a bit smaller (0.2 to 0.5 mm) than the hole that I have measured on the instrument. Drilling must be done with some care, not pushing the drill with too much force (10).



10

Sometimes the plug is thick enough to make two rings out of it. That can be done with a fine metal saw, on a turning lathe, and the last bit with the lathe turned off. But it is not such an easy job; you have to be careful being so close to the jaws of the chuck. Sometimes the result was two pieces of useless or broken rings (or I lost one of them somewhere in the caverns of the lathe).

Now it is time to make a hole for the ring. The best way is using a drilling press with the recorder part in a V-block (11a and 11b). It is also possible to secure the wood in the V-block with clamps, but this must be done with care to avoid scratches.



11a



11b

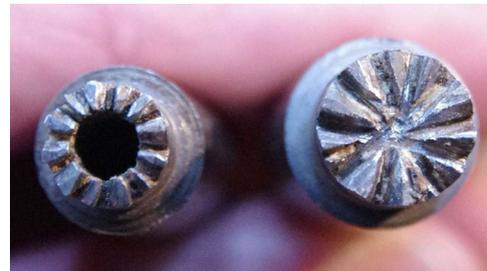
The hole for the ring must preferably have a flat bottom (see 12). That means that you can't use common wood or metal drills. I have made from silver steel a few types of milling drill, with flat ends in which I have made several sharp grooves (again with a metal saw and fine triangular files), see 13 (the two at the left) and 14 (frontal view). These tools work perfectly for me. The only thing is that I have to clear them regularly out, especially when they have to mill in wood that is impregnated with paraffin or similar stuff.



12



13



14

And it is of course important that the diameter of these tools (I have made them in three sizes, Ø 10, 12 and 15 mm) correspond perfectly with the rings.

The ring can now be put into the hole (15) and glued. This can be done with all types of glue, historic or modern. I prefer UHU Hart, used in model making with hard plastics and wood.

Don't be too economical with the glue, but remember that the hardest or most time consuming part of the job is the finishing (cleaning and so on) of the direct surroundings of the thumbhole.



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When the glue is dry and the ring tightly fitted, the exposed part of the bone has to be removed. I do that by sanding and filing. It is almost inevitable that some wood near the ring will be damaged. That means that I have to sand more surface and avoid discoloration of the wood surface. It sometimes looks (and smells) very messy, with all the dust. Restoring the colour on painted or stained wood is a painstaking job, asking all your skills. And don't forget the inner side, the bore, where some glue maybe has fallen.

Last task: tuning the hole: that can sometimes be done by undercutting, but often it is also necessary to enlarge all of the hole. I do that with a sharp knife, made from a small (thin) chisel, and round files. Checking the result does not only mean looking at your tuning device, but also playing (real) music and listening to the pitches. Of course you must know the fingerings (primary and secondary) of the notes whose pitch depends on this hole.

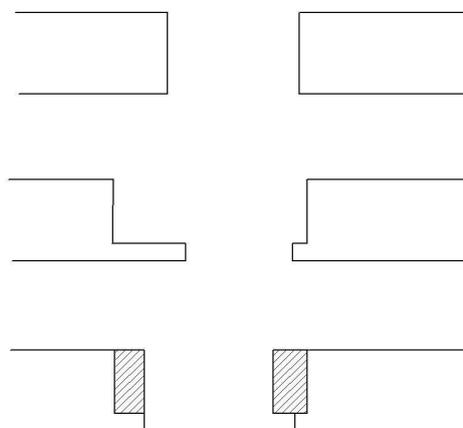


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To photo 16: The left instrument is made from boxwood, I had drilled (milled) the hole for the ring just a little bit too small and put the bone ring in with some force. The result: two cracks (see red lines, A). The other instrument is an alto made of Rio palissander (a type of rosewood), of which I still have some pieces (it is nowadays on the Red List of CITES). Here were some problems with filing of the ring, but too much wood (see B) was affected, though this is only visible when the light comes from the side.

It is also possible to move a hole a bit upwards or downwards (or to the side) with a ring, simply by drilling the hole for the ring a bit off-centre of the original hole. See the steps on the diagram (17).

Final remark: I do not know about other ways to make thumbhole rings. It is important to be creative and not afraid of experimenting with self-made tools.



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