

## MUSING IN MY WORKSHOP 6

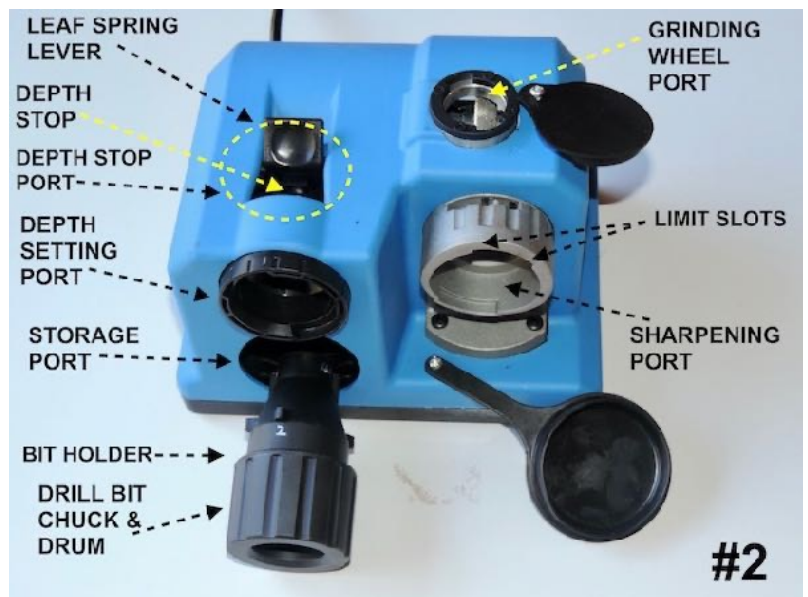
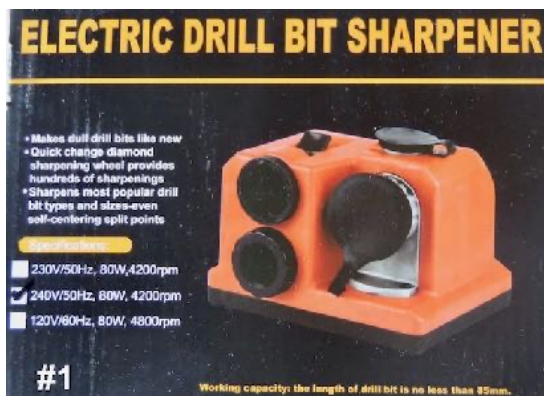
Is there a (Drill) Doctor in the house? - By Alex Bendeli

As mentioned in my previous “Musings” (By Hand and Eye Nov 2021), I use my hobby experiences, developed since age 14, and woodturning skills acquired from TAFE as tools to do a variety of tasks necessary around the home, including producing the occasional “art” work. A tool I purchased a few years ago and the need to keep sharpening drill bits triggered the idea for this article.

So ... I have many drill bits of varying sizes 3 to 24mm. I was shown various ways to sharpen them. Occasionally I sharpen the bits, but I never mastered the skill. I was rarely “really satisfied” with the result and sometimes the bit was blunter than before. It was a “hit and miss” task. The last day of the Working with Wood Show, exhibitors usually have “special prices” just before packing time. I bought a “Drill Doctor” bit sharpener for a much reduced price. It was stored unused in my tool cupboard until this year when I decided to have a go. I am sure that many members have not used such a tool, but just in case you contemplate buying one, here are instructions on how to use it. It is essentially a jig to sharpen the dill bits in a precise and repeatable method, the same concept as the various woodturning chisels jigs. Once you followed the instructions the first time, the next time will take 60 seconds to perform the grind.

### The “Doctor” tool:

This tool is sold under various names, but in essence it is likely to be made by a company in China and rebadged for different resellers. Many safety tips are included as usual, but the sharpening instructions were impossible to follow. This was due to a poor English translation; item numbers in the text not matching the parts list or schematic; the parts description giving a vague indication of the function they perform and the setting-up process was confusing.

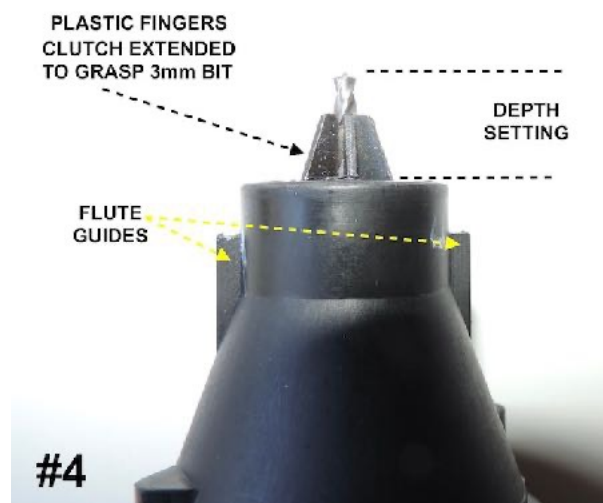
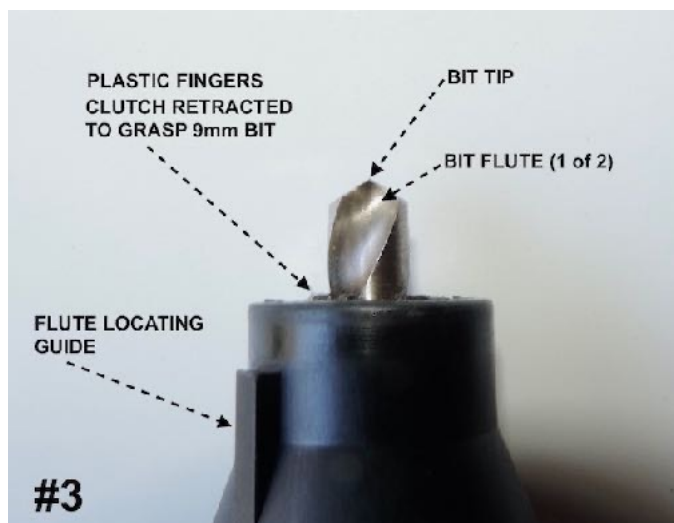


Photos 1 & 2 - I have labelled the various components using names that describe their function. Note: there are several ports for different uses.

### Parts description:

- The most important part is the **Bit Holder** which consists of a bit chuck and drum. It controls the bit depth setting and the presentation of the bit to the diamond-coated grinding wheel (which itself is tapered to grind the correct angle on the bit faces). It is driven by an 80W motor. The drill capacity is stated as 3-13mm diameter with a minimum of 85mm bit length.

- The **Sharpening Port** is where the Bit Holder is inserted to grind one face of the drill. The rotation of the Bit Holder by a fixed angle (about 30 degrees) in the Sharpening Port ensures that the first drill face is swept back. Limit slots incorporated in the Sharpening Port secure the bit holder and ensure grinding angle repeatability on both the drill bit faces.
- Grinding of the second face is achieved by retracting the Bit Holder, rotating it by 180 degrees, reinserting it and grinding it in the same rotational motion.
- The **Grinding Wheel Port** is used to confirm the initial line-up before turning on the motor. It also allows you to check the state of wear on the grinding wheel over time. A rubber cover stops any debris from flying upwards when the sharpening process is being undertaken.
- The **Depth Stop Port** allows for a visual examination of the tip depth setting and flute position.
- The **Leaf Spring Lever**, when depressed, opens two metal leaf springs. These **MUST** grip the drill bit flutes and allow the drill tip to reach and touch the Depth Stop.
- The **Storage Port** is just a convenient hole to store the Bit Holder when not in use.

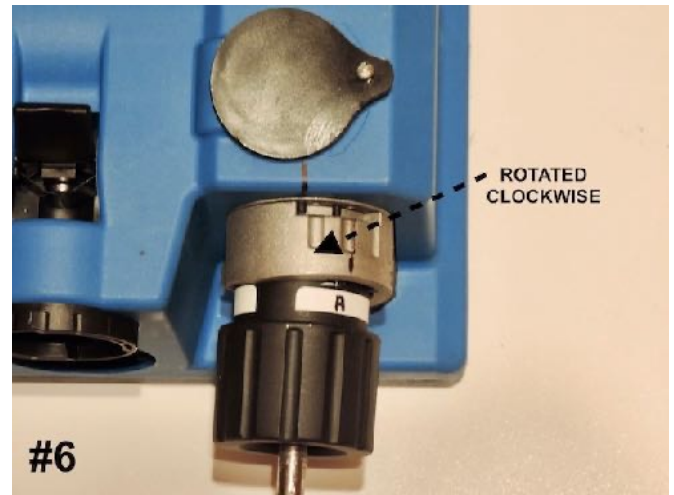
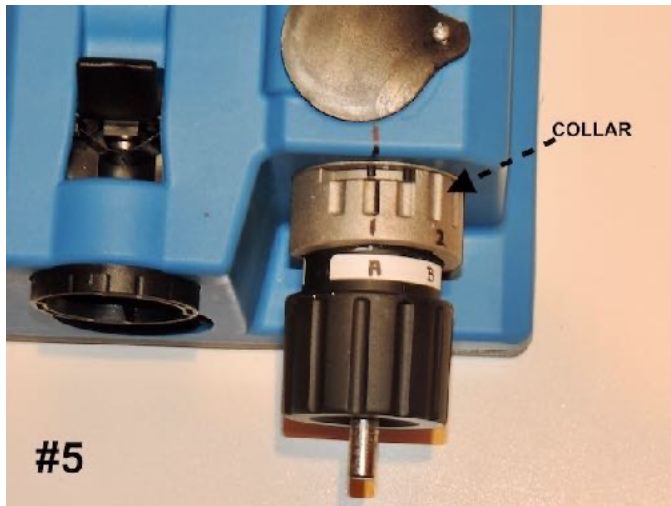


### **Setting the bit:**

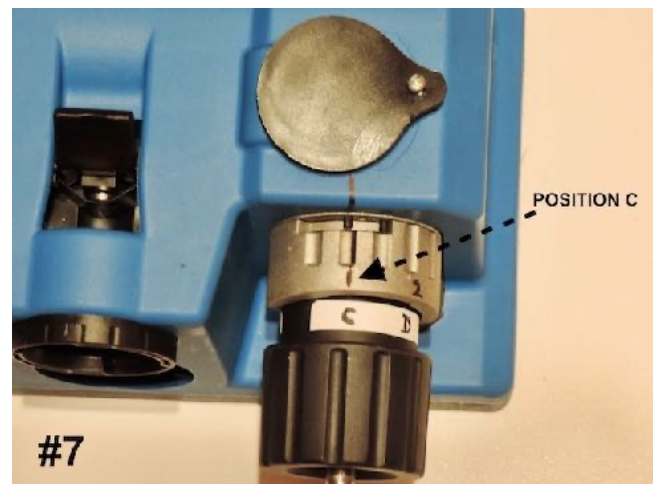
- 1- Before inserting the Bit Holder, it is imperative to be aware that the drill bit must be initially lightly gripped in the Bit Holder using its six plastic clutch fingers. Rotating the drum causes the fingers to retract (photo 3) or project (photo 4) depending on the diameter of the drill. Nine drum rotations may be required to go from a minimum to maximum aperture.
- 2- Before inserting the Bit Holder into the Depth Setting Port, align the flutes (on the drill to be sharpened) so that the flutes at the drill tip initially line up with the flute guides on the Bit Holder.
- 3- Now insert the Bit Holder into the Depth Setting Port so that the **Flute Locating Guides** slip into their corresponding slots in the port.
- 4- While viewing down through the Depth Stop Port, depress the Leaf Spring Lever to open up the springs and gently push the Bit Holder in so the drill tip touches the Depth Stop.
- 5- While viewing down the Depth Setting Port, release the Leaf Spring Lever, but ensure that the springs actually grip on the bit flutes and not on the drill body. You may have to rotate the rear of the bit itself using your fingers until the leaf springs clamp onto the flutes. This is the reason why the drill should be initially lightly clamped in the Bit Holder. Practice with a 10mm drill bit first to get a grasp of the setting process.
- 6- Once this position is reached, rotate the drum on the Bit Holder to tighten, secure and lock the drill bit in THAT position.
- 7- Now remove the Bit Holder from the Depth Stop Port.

## **The sharpening process:**

1. The Bit Holder will now be inserted into the Sharpening Port. Ensure the Collar (photo 5) of the Limit Slots is rotated fully anticlockwise. I have marked reference positions A, B, C, D, 1, 2. (Note: C & D are on the opposite side of the Bit Holder as shown in photo 7)



2. When inserting the Bit Holder place it close to, but not YET touching the grinding wheel. You can confirm it by looking down through the Grinding Wheel Port (motor stopped). This first position lines up "A" with the "1" on the collar.
3. Once the drill is in this position (not touching yet), cover up the Grinding Wheel Port, and start the motor. Gently push in the Bit Holder until the grinding of the tip is heard. Gently rotate the Bit Holder clockwise, then anticlockwise. The Limit Slots limits the Bit Holder rotation. Repeat rotations until the grinding noise abates substantially. That first face is now ground.
4. With the motor still running, remove the Bit Holder from the Sharpening Port, rotate the Bit Holder by 180 degrees and reinsert it again so that "C" now aligns with "1". Slowly repeat Step 3 until the grinding is completed on the second face of the drill bit.
5. Remove the Bit Holder and then the drill from the Bit Holder. Sharpening is now complete.



## **Conclusion:**

I gathered all the loose, dull drill bits and sharpened the lot. Once the process is understood and the bit correctly secured in the Bit Holder, it becomes a very rapid operation to precisely and repeatedly sharpen your drill bits every time. Perhaps a video should accompany this article.

Q- So where is the woodturning activity in this project ??

A- Most woodturning usually requires a 7mm sharp drill for screw-chuck work as well as other applications. Hence we can note the parallel skills between this drill bit jig and the woodturning chisels jig.