Squaring Pen Blanks On a Belt/Disc Sander

Contributed by:
John Carlisle

A.K.A "Rangertrek"

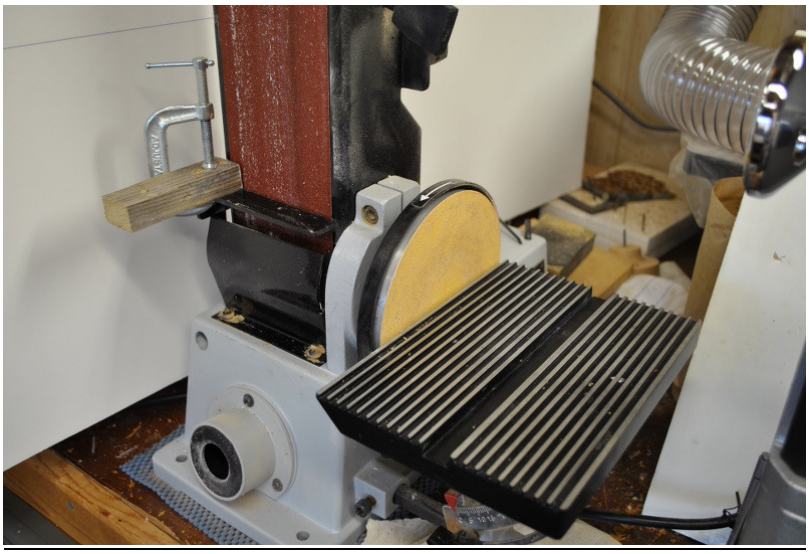
Over the past year or so, I have seen many posts on “squaring pen blanks” in the forum. I was one of those posting this question when I was “new” to penturning. (I think I will always be new to penturning, since I learn something almost daily from other IAP members and posts.)

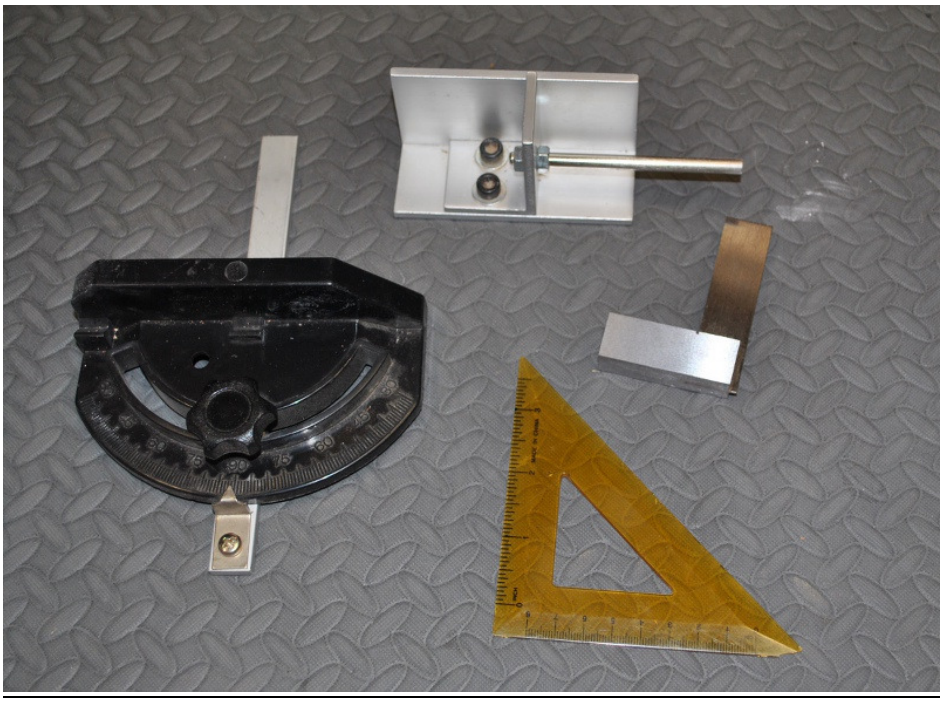
This is just my method of squaring pen blanks using a belt / disc sander. This method works for me. I am not knocking any of the other methods that are out there such as pen mills, squaring on the lathe, etc. I just find this method easy and accurate and I have nothing to “sharpen”. I tried using a pen mill; but, found that I had a few issues with keeping the dang thang sharp enough to do a good job. Since I had a belt / disc sander and had seen several posts on using it for squaring, I gave it a try and it is now my preferred method. It doesn’t make any difference if the blank is square or round, or even oval.

I spot check for “square” each time (explained later) I start to use the disc sander, it just takes a few seconds and is essential to getting good results. I typically have several blanks ready for squaring at a time, like a small production run.

This is the equipment that I am currently using:

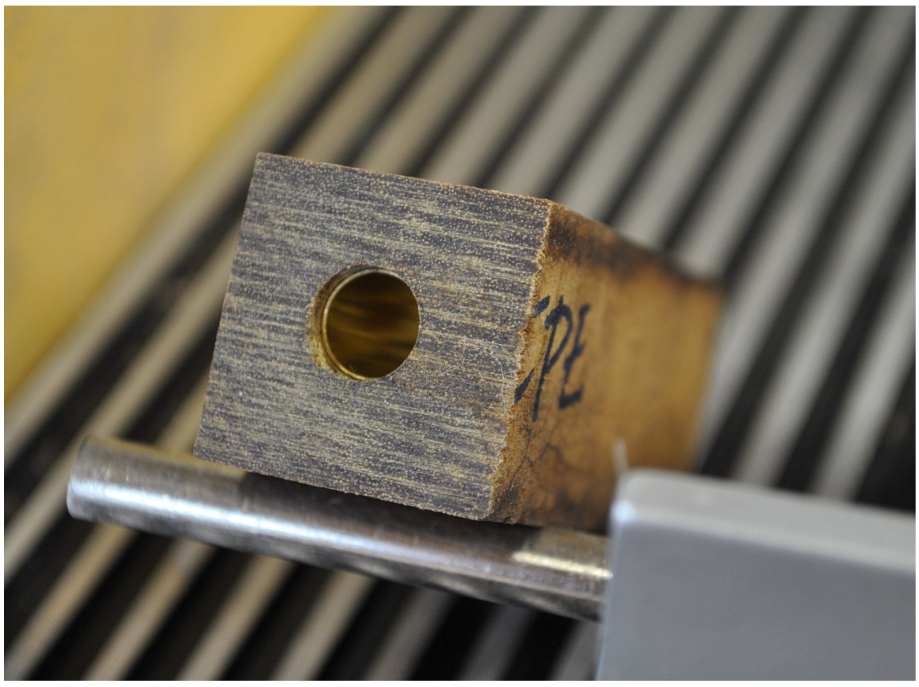
- Delta Shopmaster model belt / disc sander
- 80 grit on the belt sander
- 120 grit disc (Gator) on the 6” disc sander
- PSI squaring jig
- Drafting triangle or engineers square
- Miter Gauge (came with sander)
- Belt cleaner (abrasive cleaner)





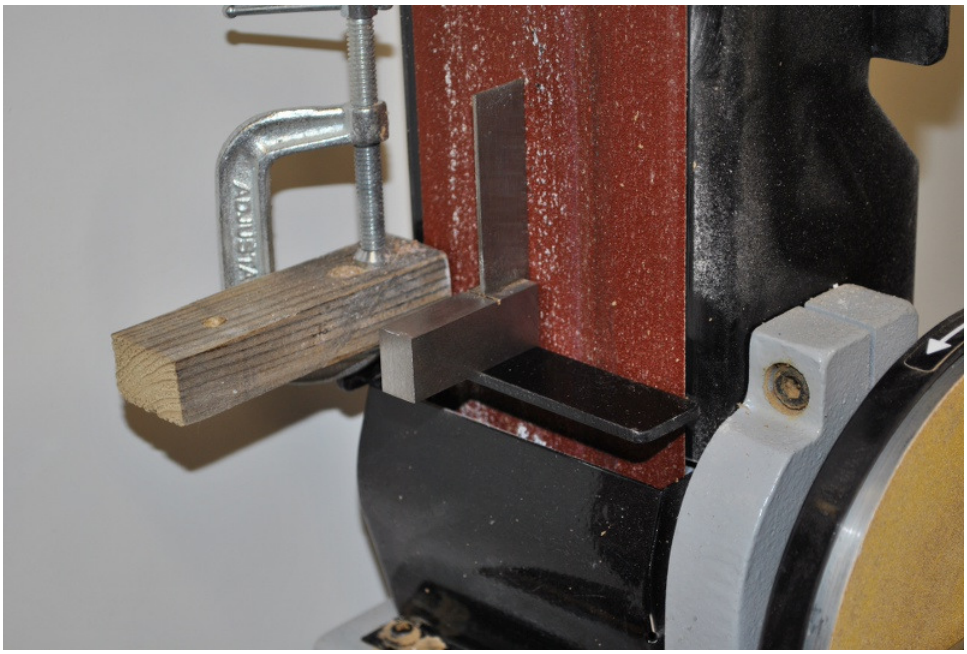
Preparing the blanks, wood, acrylic, etc.

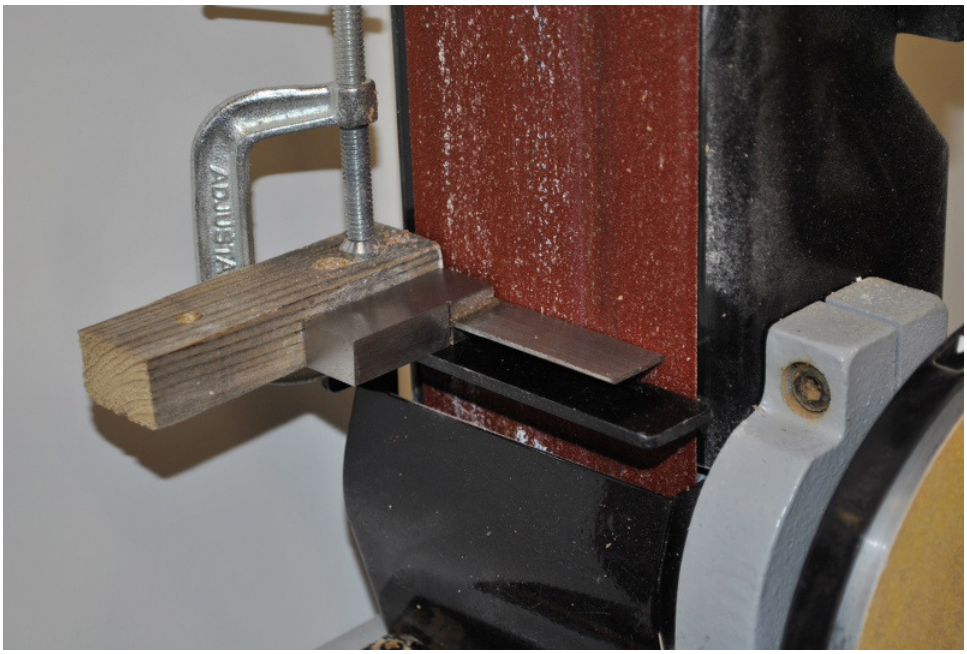
I typically cut my blanks about 1/8” longer than required for the particular tube or pen being made. This gives me a little extra material for drilling the blanks on the lathe. I drill all the way through the blanks, so if I get a little chip out on the end, I still have room to work with the blank. (I find that if I drill slowly and remove the debris, the potential of end chip outs are greatly reduced.



Rough squaring of the blank ends

I have the belt sander mounted in the vertical format and have a small wood block clamped to the little “rest”. I keep this block approximately “square” to the belt. Being square in not essential, it just helps with the next step on the disc sander. I move the wood block along the rest to utilize different areas of the sanding surface. I also clean both the belt and disc with an abrasive belt cleaner.

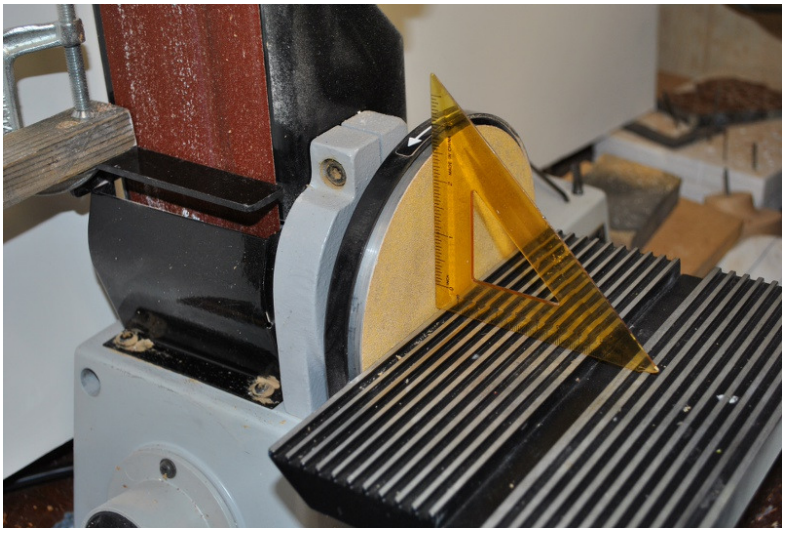




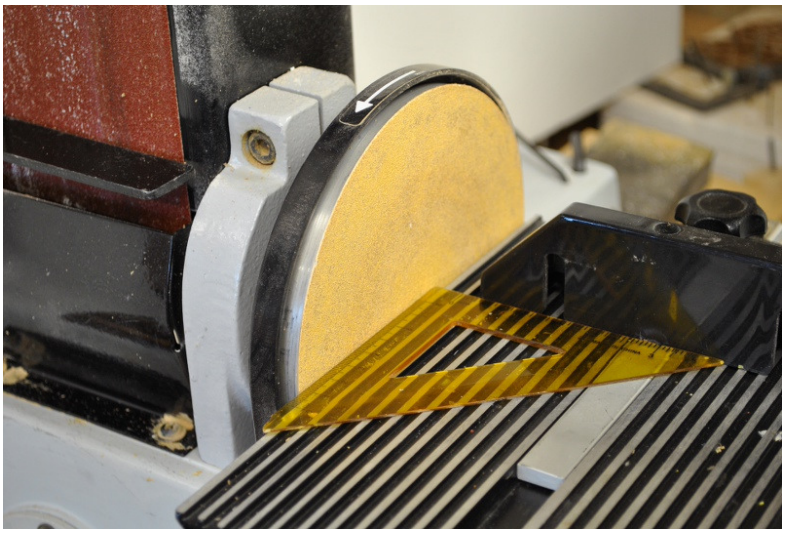
Squaring the "JIG" to the Disc Sander

This is the most important step to have nice square ends on your blanks. When I say "square", I mean the relationship of the brass tube and the end of the blank are square (perpendicular) to each other. If you drilled the hole in the blank off center, this is where everything comes back in alignment. You must have the rod (mandrel) square to the rotating disc sander faceplate. This rod needs to be square in two directions both vertical (perpendicular) to the table and horizontal to the miter gauge.

First, adjust the table bed square to the faceplate using a drafting triangle or a small engineer square. I call this the vertical position.



Next, adjust the Miter Gauge in relation to the sander faceplate. I call this the horizontal position.



Next, place the “squaring jig” on the table and check for “square” in both directions. Hold the “jig” tight to the face of the miter gauge. Use the small engineer square or a drafting triangle to check the rod (mandrel) to the face of the disc sander. You are now “squaring” the rod or mandrel to the face plate.

If the vertical if off, adjust the angle of the bed slightly as needed.

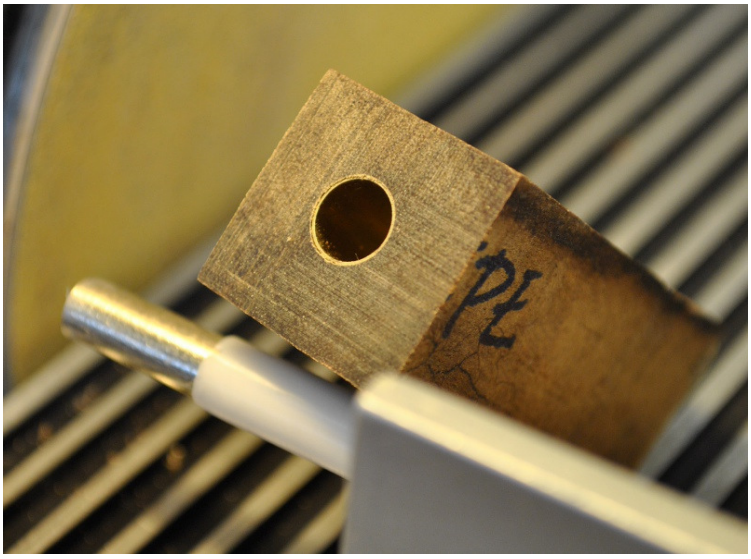
If the horizontal is off, adjust the angle of the Miter Gauge as needed.

Don't proceed to finish sand the blanks until you have both directions "square".

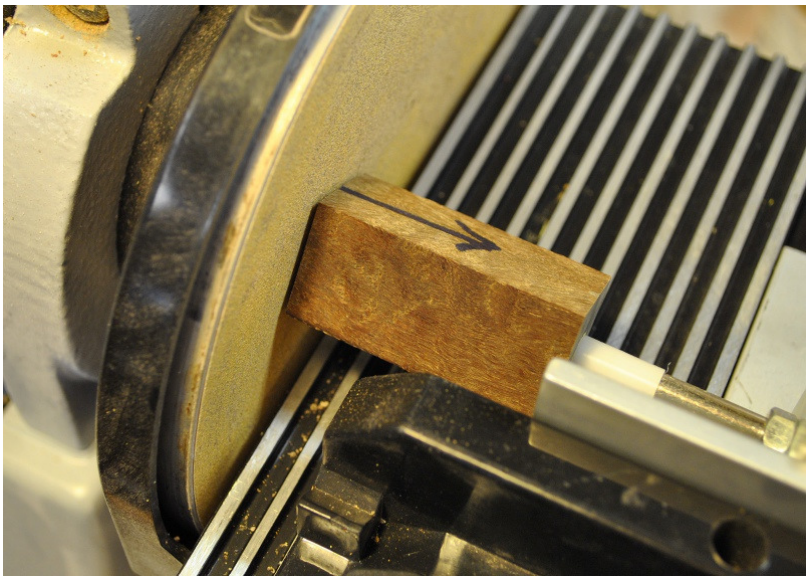
Did I mention not to proceed until both are square? I guess you get the point. If this step is done properly, you will have a nice fit of the blank to the pen parts.

I "spot check" both directions each time I start squaring blanks. It takes a few seconds and is well worth the time. Just in case something has come out of alignment, you can fix it now instead of seeing a gap on your new pen.

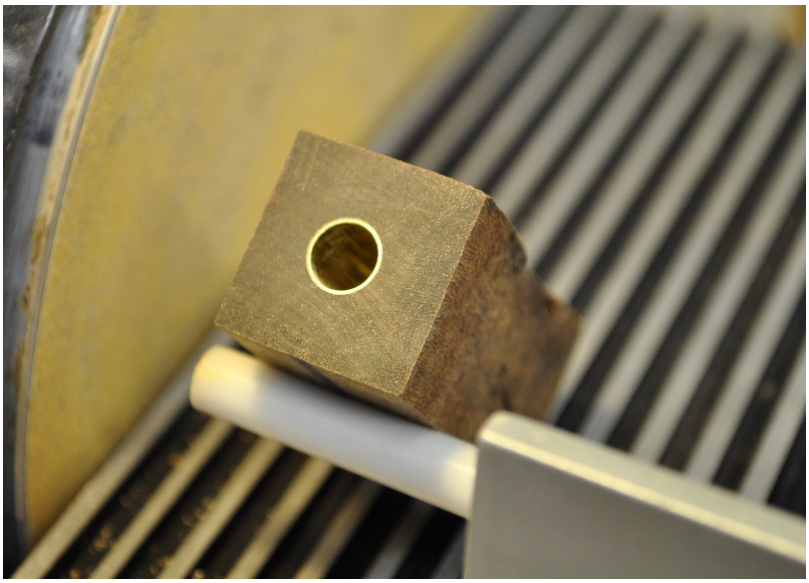
Now that all the equipment is aligned and ready, you can rough sand the ends of the blanks with the belt sander. Take off a little at a time until you can see a small recess at the brass tube.



Now, finish sand the end of the blanks on the mandrel (jig). Go slowly, take off a little bit at a time and check the ends frequently until you can see the end of the brass tube. Sand until you have a light, even shine, on the brass tube. It must be even all the way around the tube. If not, it's still not square.



Finish sanding on the mandrel; rotate the blank as you touch the end to the disc sander.



This is a finished end; the brass has a light, even shine all around the tube. The brass tube and end of the blank are now square in relation to each other. The entire process only takes a few minutes after the equipment is set and you learn the procedure.

Please let me know if you have any comments, or if I can attempt to explain in more detail. I am always open to suggestions or improvements. Enjoy, JC.