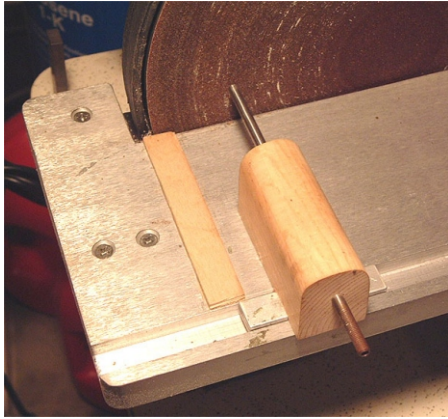


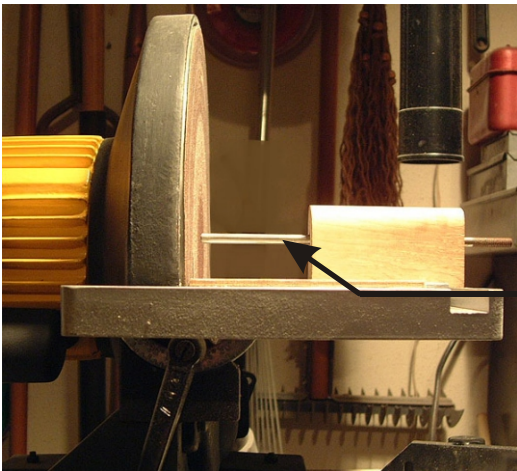
Blank Squaring Jig For Disk Sander



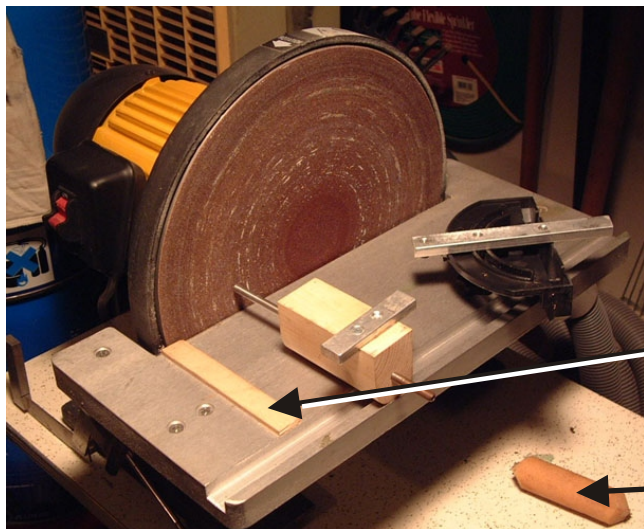
This is the very simple jig that will provide much satisfaction to your past problems of squaring your pen blanks for a perfect centerband fit with little to no visible line, where your upper and lower blanks rest together

It is made with a 2x4" block of wood - (Mine is 3-1/2" long), with a 1/4" hole drilled through it, and a used mandrel rod (one no longer good for turning) hammered into the drilled hole. This is a 7mm mandrel rod (all I use) and will fit tightly inside a 1/4" drilled hole.

When drilling your 1/4" hole down the center of the block of 2x4, it is important that your drill bit travels as straight as possible through the wood so that when finished drilling and with the mandrel rod hammered into place, that when you rest the block flat on the sander's table, that the mandrel rod is parallel with the table (see next photo). If it isn't quite parallel, you can skillfully hammer on the rod, until it is parallel. The wooden block can be left with sharp edges, or rounded off, as I did. Doesn't matter!



Be sure that the mandrel rod (see arrow) is parallel with the Sander Table just below it. Can't tilt up or down - must be level and parallel with the table. Once this is done, half the battle of permanent accuracy is done!



Here, you see the underside of both the Pen Squaring Jig AND the Miter that comes with the sander. Originally the bar was about 9" long. To guarantee a good fit in the slot, I just sawed 3" off the end of the miter guide. Still plenty left for sanding other items - and 3" is perfect for the Jig.

This strip is simply a piece of thin plywood I have epoxied down to the surface precisely 90° to the sanding disk. Ever now and then is handy just to put a nice "square" end to something.

A rubber "cleaning bar" that I use to clean up the disk after use. This disk is probably 6-months old and have sanded everything from brass to wood to Polyester Resin.

These two pictures are the Key to getting it Right!!

Cut a rabbit (is that what it's called) or a SLOT OR A DADO across the bottom of your jig block. Start the CUT at about 1/4" - 3/8" from the end, and the cut should be about 1/8" WIDER than the 3" Aluminum bar you cut off your Sander's Miter Guide - I set the depth of my small table saw to about 1/8" depth (or up from the saw's table, and using it's miter Guide set at 90°, ran it back and forth across the blade until I had produced a clean slot all the way across - 1/8" deep - and a overall width about 1/8" WIDER than the AL bar (A LOOSE FIT!)

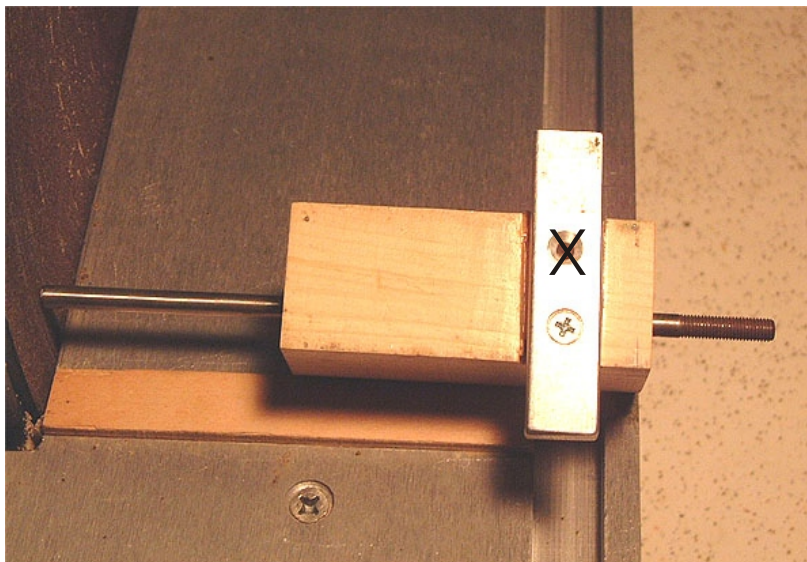


And Here's The Reason!

NOTICE THAT THE ALUMINUM BAR below has TWO holes drilled (with countersink) I first thought I would carefully drill two holes and countersink them. EASY! Then, carefully place the AL square rod into position in the DADO I had cut out - mark your hole positions, to the drill press for drilling, insert the bar and then the 2-screws and screw them in - WHAT COULD BE SIMPLER?

Turned it over and dropped the bar into the table's miter-guide slot. "Uh oh - the mandrel doesn't look perpendicular to the wheel!" IT WASN'T AND NEVER WOULD BE!! - regardless of how many tries - and there was NO "give" in anything - No way to make any adjustments!!

But it was a simple fix



I simply removed one of the screws - either one, it doesn't matter.

NOW, with the obvious space remaining between the AL bar and the wood (oversized DADO, remember?), You can now slightly swing the AL bar one way or the other, as it pivots about the single screw. Though a small amount, it will be enough to let you adjust the mandrel rod to be EXACTLY perpendicular to the sanding wheel.

FIRST, tighten the remaining screw snugly - not overly tight. It needs to stay in position, but still allow movement inside the DADO. Flip it over and place it in the sanding table groove - see how it lines up with the disk. Use a small rt. Angle triangle or accurate rt. Angle engineer's small fixed 90°. If the angle needs slight adjustment, move it to correct for EXACT rt. Angle "fit" between the mandrel rod and the face of the sanding disk.

Once you have achieved the perfect 90° angle, CAREFULLY LIFT THE JIG FROM THE TABLE, turn it over and with a screwdriver, tighten the AL bar down to the wooden jig (a bit tighter than before).

Now, again, flip it over and re-place it into the Sander's Miter groove and see if it is still perfectly aligned - IF NOT, have a small hammer handy and tap where necessary, to get it back to the proper 90° angle.

Once it is perfect, CAREFULLY remove it from the sander - take it to a comfortable work area. GENTLY sit it down and mix some 2-part epox (or whatever you choose) and then before setting up, lay the glue into the remaining opening or DADO on both sides of the Aluminum Bar - this gives some physical support and also will disallow that bar to ever move again!!!

I glued mine up nearly two-years ago and have never had to re-build or dig out the glue and re-align.

I feel a little stupid, doing nearly three pages to describe the technique of making such a simple little jig BUT if it isn't done right - and if you don't understand why I did what I did, then your blanks are never going to really square with your tubes (using a dedicated Disk Sander.) Don't get me wrong - other Pen Makers (who have had far more experience than I, will have other techniques that work.) THIS IS JUST MY TECHNIQUE - AND IT WORKS!

A COUPLE OF QUICK AND EARLY TRICKS, in squaring your blanks

1. You can come directly from drilling your blanks to the disk sander and this jig. Simply slide a 7mm tube over your jigs mandrel rod. Then, take you newly drilled pen blank and slide it onto the mandrel and 7mm tube on your sanding jig. Tho not yet glued, it will give you a quick (and almost perfect) "squaring" of your blank. Then later, you'll go ahead and glue in your tubes and do a light finishing touch to your squaring process, USING THE JIG.

You probably noticed that in my pics, the 7mm mandrel rod in my jig SEEMS to be almost resting on the sanding disk. Well, actually it's about 1/8" - 1/4" from the surface of the sanding wheel. I often use some pretty small pieces that need squaring BUT under normal blank-squaring procedures, it doesn't need to be anywhere near the close proximity I'm using. I would suggest you leave a clearance of at least 1/2" between the mandrel rod END and the surface of the sanding disk - much safer and no problem to use.

2. YOU'LL NEED ANOTHER (UNUSEABLE FOR PEN TURNING) MANDREL ROD. Get one of those adjustable brass 2-part "stops" for your old mandrel rod (can't remember what they're really called). On the UNTHREADED end of your old mandrel rod, slide this brass adjuster and tighten it down where the remainder of the mandrel rod will hold both your upper and lower pen blanks.

At the threaded end of the rod, where normally the big brass knurled knob would rest, replace this big brass knob with a small hex-head nut. WHY? It gives more room to work on the blanks - not a big brass wheel.

You want the lowest profile on this rod, so as to take the rod against the sanding disk - thus allowing you to sand away the CORNERS OF YOUR BLANK - EVENTUALLY ALMOST MAKING THEM ROUND IF YOU PLEASE, We're just removing wood from your blanks BEFORE we even go to the lathe - most of that wood is going directly to the floor anyway - and this sander REALLY removes wood fast. Once you get you blanks decreased in size and bulk a bit, remove the blanks from your "Sanding Mandrel", place them on your good Lathe Mandrel and get to turning, knowing that a lot of your removal work has already been done - and quickly.

WELL, I GOTTA GET SOME DINNER NOW, SO GIVE THIS A TRY IF YOU HAVE A 10" OR PREFERRABLY A 12" DEDICATED SANDER (Mine's from Harbour Freight - on sale, \$99) Other than price, little difference to Jet 12", Delta 12" and several others.

If you come up with suggestions or better approach or design of the jig, please let me know. I'm always looking for the better way.

Enjoy!
Jay