

Pentel™ Pencil Conversion

Pentel™ pencils, especially the P205, P207 and the P209 are very popular with accountants and engineers. In the mid 2005 or so I was contacted by a CPA from Florida asking if I could take one of these pencils and replace the plastic barrel with wood: actually, he wanted antler. Someone was making them for him but was no longer turning. My research started. The only information I could find was an article written in 1987 by Nick cook outlining the process: No Pictures! The article is still on Nick's website: www.nickcookwoodturner.com/articles-pencil-pusher.htm

The blank has to be drilled with a 17/64 bit and the last 1/8 inch or so is drilled with a 5/32 bit. This is how I made them for a couple of years. I learned about a step bit from Nick Cook's article but availability was scarce. CSUSA once sold them but not when I started making them. I later had several made by a local tool grinder. I am still used 4 of those today.

The step bit made making these conversions much easier. But in the December 2012 issue of Woodturning Design magazine had an article by my friend, the late Rich Kleinhenz, describing a very clever way to make this conversion. I only wish I had thought of this. Rich allowed me to share his article and one place it is archived is here:

<https://drive.google.com/file/d/0BwK15ZnanVojREI3N2JGSDdYM0U/view?usp=sharing>

I now use a combination of my process and Rich's process to make this conversion that is what I share here and in the demo.



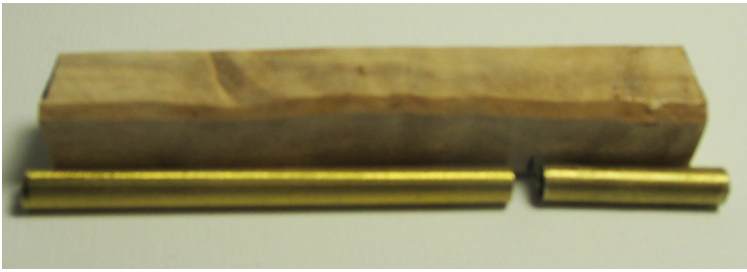
The Pentel™ pencil to use in this conversion. Blue is the P207(.7mm), yellow is the P209(.9mm) and black is the P205(.5mm)

The writing tip will unscrew from the pencil mechanism and the mechanism can be removed. Remove the clip.

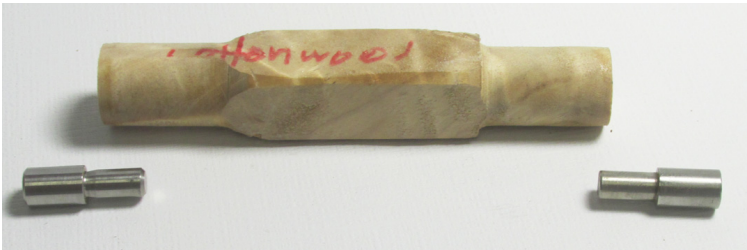
Measure the pencil barrel to determine the length of the new wooden, or plastic, barrel. The measurement is 4.451 inches. This is the length to cut the blank.

To drill the longer blank I mount it between centers and turn each end round to just under $\frac{3}{4}$ inches in diameter. I can then hold the blank in my collet chuck and drill as far as possible with a jobber bit. Then flip the blank around and drill from the other end meeting the first bore with the second. Works for me. Other ways to drill can be figured out depending on the blank holding tools available. Drill completely through the blank. Use 7mm bit.

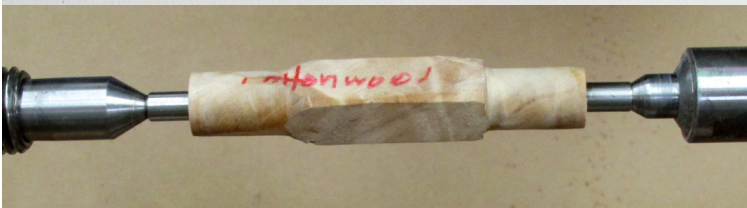
Longer bits, called aircraft bits, are readily available. Use a 17/64 aircraft bit first drilling totally through the blank. Then drill with a 7mm bit from both ends to enlarge the hole to 7mm.



Longer 7mm tubes will be needed. 10" tubes are available. Two tubes will be needed: the longer tube is about 3.7 " long and the shorter tube is the balance of the blank's length. The longer tube is glued in place flush with one end and the shorter tube is inserted in the other end. It is NOT glued in the blank.



After the tubes are inserted square both ends tuning the blank to the correct length. I plan to turn the blank between centers using these two between center bushings holding the blank between a dead center and a live center;



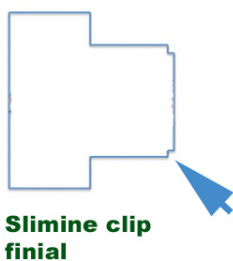
The blank is mounted with between center bushing between a dead center and live center.



The blank is turned, sanded and a finish applied. Notice the recess on the right end for the clip. Take measurements from the original barrel. Also, did you notice I changed to standard slimline busnings and a mandrel? The longer blank was flexing being held between centers as the diameter reduced.

NOTE: Take measurements for the ends and diameter of the new barrel. Personally, I like to make the new barrel just a bit larger in diameter than the original. The writing tip gets really thin and the brass tube can become exposed if the writing end is too small. I like to keep it a little larger and round over the edge to soften the transition to the metal "nib".

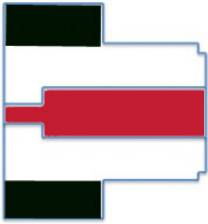
The next step is where this conversion is really unique and clever. The way others have made this conversion is to bore barrel with a 17/64 bit to almost all the way through. Then the last 1/8 or so is drilled with a 5/32 bit. Actually, the smaller bit is used first and then the larger bit is used. But, the technique that Richard Kleinhenz presents in his article does not require this step drilling...well not on the wooden blank. And, as has been done, brass tubes are used. The barrel can be one piece or made from two pieces with some sort of treatment where the two shorter pieces meet at the center. Reading Rich's article will give all the information I am leaving out. I prefer a one piece so about the only part of Rich's technique used in this demo is the next part..the best part.



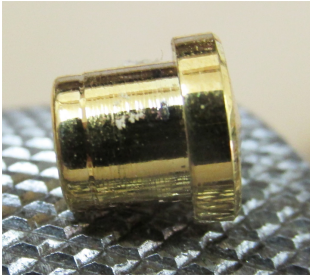
Slimline clip finial

A slimline clip finial is used in "nib" the end of the barrel to accommodate the pencil mechanism. But, first the finial must be modified. The large diameter will be reduced to match the smaller diameter and then it will be step drilled for the mechanism. This modified piece will be pressed into the "nib" end. Stay tuned.

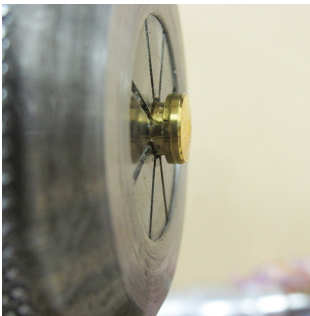
Notice the blue arrow. This is the end that will be pressed into the end of the longer brass tube glued in earlier.



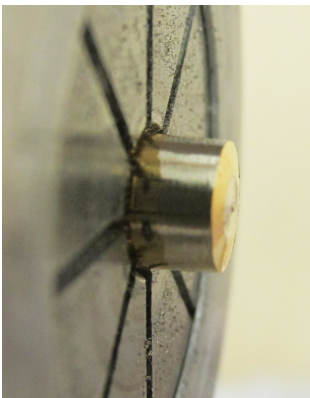
The black will be removed and the drilling will form the red shaded area.. I hold the clip finial in a collet chuck but other methods can be used. Possibly a jacob's chuck will work to hold the piece. DO NOT USE A JACOB'S CHUCK IN THE HEADSTOCK WITHOUT A DRAWBAR.



Here is a picture of the actual part that will be modified. One way to remove the larger diameter is to press the part into a brass tube and rotate it on a grinding wheel using the tube as a handle. Remove the larger (black area in the previous image) diameter until a cylinder is formed. Time to drill.

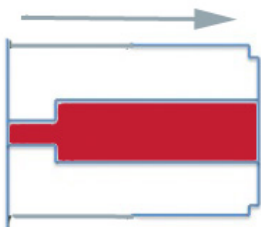


The clip finial held in a PSI collet chuck with a $\frac{1}{4}$ inch collet. Use a parting tool to remove the larger diameter. This part is brass so removing material will be quite easy. Just go slow, taking light cuts but a fast speed seems to be best. Be sure to face the slightly domed surface.

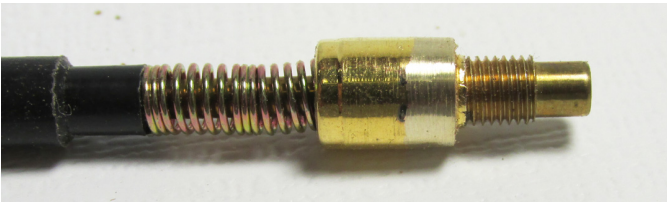


The larger diameter is reduced and the next step will be to drill this piece to accept the pencil mechanism. Leave the piece in its current place to drill the first hole. Use a center drill to make a starting hole. Then drill all the way through with a # 22 (.157) drill.

Remove the brass piece and turn it around and put it back ready to drill with the second bit. Now use a #15 (.180) bit and chase the first hole to almost all the way through, stopping short about $\frac{1}{8}$ inches from exiting.



The modified clip finial should look like the image to the left. The arrow indicates the direction this piece will press into the pen barrel. Test the mechanism in this piece and adjust as needed. Or, as I have done, start over on this piece.



Test fit seems to be OK. I like to have about 8 threads exposed beyond the brass part for the nib to screw onto.



This piece is ready to be pressed into place. Pay attention to the orientation of the piece with pressing it in. The larger diameter hole should enter the pen blank first. But, it can be removed and pressed in the correct way if needed. DAMHIK!



Ready to assemble. Remove the short brass tube from the other end of the blank. Drop the mechanism in place and screw on the “nib” tightening it securely. Test the mechanism to be sure it is working properly. If the short tube is not removed it will bind with the mechanism’s eraser cover and the mechanism will not work properly. Now you know. This short tube can be used over again unless it is lost. Again, DAMHIK. Slide the clip into place. In Righ Kleinhenz’s article is a neat easily made tool to help in putting the clip into place. I have not used it.



The completed pen is shown to the left.. Anyone guessed the wood species yet? It is a nice piece of curly cottonwood that has been stabilized.

My email is don@RedRiverPens.com if anyone needs questions answered.