The Pen Turner's Corner: A Slimline Modification: The Challenge Pen

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by Don Ward
Beginner

I often get the question, “What pen should I make next since I’ve made several slimlines?” My answer is always something to the effect that if all you’ve made is slimlines per the instructions then you have not explored all the slimline kit has to offer. Yes, other kits can be modified or customized but not like the slimline. The slimline kit is an excellent kit for customizing or modifying. It is very forgiving and versatile. Skills and techniques learned from experimenting with the slimline kit can be transferred to other kits.

In the next few months’ issues I will share some particular modifications to make unique and interesting “non-slimline” looking slimlines. I will be using the components of the slimline kit, but the finished pens will not look particularly like slimlines. There are several modified slimlines that I make. I hope these designs and instructions will be an encouragement and will provide the motivation to try something new, different, and somewhat stimulating.

Figure 1: Several pens made using slimline parts: modified slimlines.

Is one kit better than another for these modifications? There are several slimline, or 7mm kits available. I am not a fan of the kits whose clips have the black line. These kits work fine but I just don't like the black line. So, my favorites are: (1) the comfort pen from PSI which is available in several plating choices. PSI item #PKCFFUNCH is the chrome version. (2) The trimline from PSI also comes in several plating choices. The Trimline in chrome is item #PKXMCH. I like theses two because the clip allows for a larger cap barrel than other slimline versions. I also like the clip design better, especially the Trimline's clip. And, I like the under $3 price which is cheaper if purchased in quantity. Your favorite PSI reseller probably has these kits in stock or they can be purchased directly from PSI.

The Challenge Pen

The pen to be made is a modification of a pen I first saw in an article in the AAW publication *The American Woodturner* written by Angelo Iafrate entitled "Signature Pen". The pen used parts from both the slimline and the European kits. The use of two modified pen mills was also necessary. I decided to make the pen using only slimline parts and non-modified tools we all have in our penturning toolboxes. Another penturner, Jay Pickens, had made the pen using only slimline parts and standard tooling. He called it his 'challenge' pen and challenged me to figure it out. So, I adopted this name for my pen: The Challenge Pen since Jay challenged me to make the pen from only slimline parts and using only normal penturning tools.

Figure 2: My first completed pen challenge pen but it has not been my last.

The pen in figure 2 is made from gold crushed velvet, black PVC rod, and a titanium gold slimline kit. For the pen in this article I choose gold dyed stabilized maple and African Blackwood. I like that combination of wood colors together. Other choices of woods or plastics are possible.

Tools for this pen

The tools and materials needed include: (1) 7mm bit, (2) 11/32 drill bit, (3) slimline kit and bushings, (4) two part epoxy glue, (5) pen mill or other blank squaring tool, (6) small clamp, (7) adjustable mandrel, (8) two pen blanks, and (9) abrasives and penturner's finish of choice. If no adjustable mandrel is available, then the adjustable mandrel can be worked around using appropriate spacers when needed.

Preparing the Blank

Three pieces of wood are needed for the blank to make this pen. I used ¾" pen blanks of maple and blackwood. I use a compound miter saw to cut these pen blanks but had a way to hold the blanks so my hand was not close to the blade. Be careful if using a miter saw. Plans for sleds for table saws and band saws are readily available and quite useful and safe. **Figure 2** shows the three pen blank sections next to the pen from fig. 1.

Figure 3: The pen blank sections for this pen.

NOTE*:* Two of the three sections will have ends cut at an angle. Drilling section B and C can be done prior to cutting them to length. Drilling onto a slanted surface can prove problematic. Consider drilling first then cutting to length.

The pen blanks for this pen contain three pieces. I labeled them A, B, and C in figure 3. I will describe each of these sections and how to cut and drill them.

Section A is 1.25" long and drilled with a 7mm bit. Both ends are cut straight so no problem drilling this section.

Section B is cut square on the lower end and at an angle on the upper end. The angles I use are 15°or 22**.**5°. I like the look of both of these but 15° really catches my eye. Other angles can be used to suit individual tastes but don't get too large. To make section B, first cut the blank 3**.**2" long. Lay the blank on the bench top and the left end will be the nib end and remain square. The right end will be the finial end and will be cut at the 15° (or 22**.**5°) angle, taking off just enough to get the angle. The longer side of section B will stay as close to 3**.**2" as possible. Starting with a little longer Section B, cutting the angle first and then cutting to length has proven to be easier. Section B will be drilled with the 7mm bit also (See NOTE above).

Section C is a little more challenging. Notice it has a parallelogram shape--both ends are cut at the desired angle. Take the blackwood blank and cut the appropriate angle on one end. Measure down about **.**60" or a little longer and make another angled cut. The final length of section C will be obtained later. Drilling section C is a little tricky, so be careful or drill before cutting. The clip end of section C will have the 7mm hole chased with a larger drill bit. The larger hole needs to be centered on the smaller 87mm hole. If drilling after cutting, place section C in the drill vice and drill a centered 7mm hole. Do not move section C or the vice. *This is very important*. Replace the bit with an 11/32 bit or a Letter S bit. Drill with this larger bit using the same centerline as the 7mm bit. Drill about half way through. Exact measurements here are not necessary. This section will work out later. You may want to practice this part with some scrap blanks first. Drilling the 7mm hole before cutting and then drilling the larger hole works also. Drill the 7mm hole and remove the blank from the vice for cutting. Do not move the drill vice! Clamping the drill vice to the drill press table is a good idea. This way the vice will not move. Follow the above cutting instructions. Replace section C in the drill vice and drill the 11/32" hole as instructed. Be sure the 7mm hole is centered for chasing with the 11/32 bit.

Use a pen mill or your method of squaring and square both ends of section A. If using a pen mill slide a brass tube (tube not glued in---use it loose) over the pilot shaft and square the ends of section A. The non-slanted end of section B will also need squaring. Other methods of squaring the ends of a pen blank will also work. Square these three ends in your usual manner. The blanks are now ready for the tubes to be glued in place. Section A gets a tube and section B and section C will be glued together on the other tube.

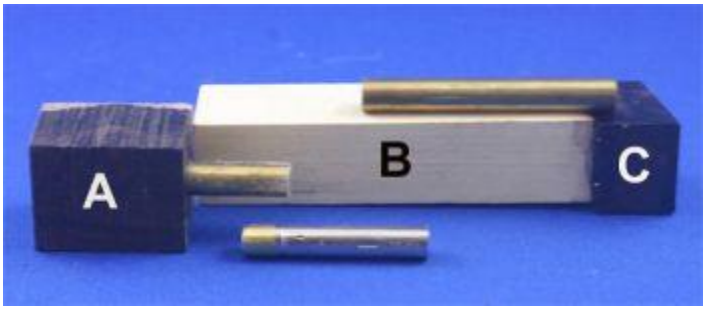

Figure 4: The blank sections cut, drilled and ready for the tubes to be glued in place.

Figure 4 shows all of the parts laid out relative to each other. I think figure 4 will help make assembling the pen clearer. Putting the pieces together for making the blank for the pen is the next step. First, glue a tube into section A. A portion on the tube will be exposed. This is okay. The next step is to glue a tube into sections B and C and glue these two sections together. Sanding the mating surfaces on a flat surface will help guarantee a nice tight fit of these two pieces. A portion of section B will have no tube until section A's exposed tube is inserted into it later. Gluing section B and C together with the tube is a critical step. Care must be taken to not get any glue inside. The tube is inserted into the 7mm hole in section C and pushed up toward the larger 11/32 hole until it clears the concave end of the 11/32 hole. See figure 5 for relative placement of the tube inside sections B and C. Glue and clamp the two parts together along with the tube. I suggest two-part epoxy be used for gluing to give time for tube and wood placement.

Figure 5: Section C with both holes sizes drilled.

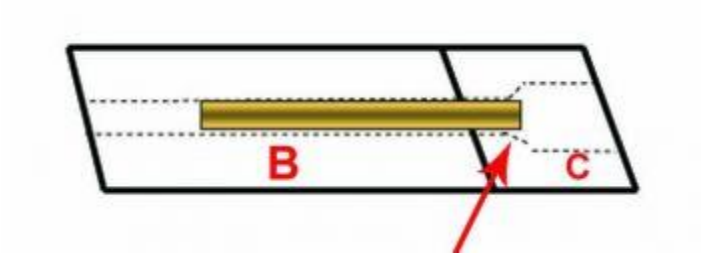

Figure 6: This drawing shows the relative positions of sections B and C and the brass tube placement.

Turning the Pen

After the glue sets, the pen is ready to turn. Place section A on the mandrel and rough turn until its diameter matches the circular footprint left by the pen mill. This is not necessary if squaring was done with a sander of some sort. If squaring was done on a sander this and the next step can be skipped. Now, place the glued sections B and C on the mandrel and rough turn the square cut end on section B down to the cut left by the pen mill. Place the exposed tube of section A into the square end of section B and place on the mandrel. These steps are where an adjustable mandrel comes in handy. If no adjustable mandrel is available then use bushings or other types of spacers to fill in the space on the mandrel out to the brass nut. If a mandrel saver is used no spacers will be necessary when using a non-adjustable mandrel. Your mounted blank should look like the blank arrangement in figure 6 and is now ready to turn.

Figure 7: The blanks arranged and mounted on the mandrel for turning.

Turn the blank into the desired shape but be aware of the clip size and make the clip end a diameter that will work with the kit's clip. I find that section C turned to an OD somewhere close to **.**460 works for most of the slimline kits I've used. Be very careful with the finial end as you turn the angled end of section C. You will be turning air part of the time. A steady hand is a must. Slimline bushings should fit inside the 11/32 hole. Turning at this end can be tricky and chip-out easily happens. Finish turning, sand, and apply finish. The pen is now ready to assemble after one last adjustment. The finial end, section C, may need a notch cut for the clip and section C should be shortened to make the pen's look more appealing.

Figure 8: The basic look of the clip end of section C.

I use a dremel tool to cut the notch for the clip and light sanding to remove the rough edges. The notch can be cut before the finish is added. Also, using a black sharpie inside the 11/32 hole around the finial helps the look of the end of the pen. I find shortening section C is done easier for me using a disk sander or sand paper. Section C could be cut to final length at the beginning, but I save this task for last just in case of chip-out on the very end. The chip-out can be sanded away. Now, the pen is ready to assemble.

The shorter the angled end of Section C is, the less of a notch is needed. I have made this section short enough that a very small notch is needed or none at all.

Figure 9: various clip end treatments.

Figure 5 also shows the finial depth that I often use. No notch is needed. It could be a little taller and still no notch needed.

Assembly

Assembly is rather straightforward. Press in the nib first into the end of section A and then press in the transmission into the end of the exposed tube in section A. The refill should be tested for proper transmission position and the transmission adjusted as necessary. The transmission should press in to its normal position since the lower section's length (tube) has not been changed. Drop the clip into its recess and notch and press in the finial. Be careful not to break the thin wood into which the finial is recessed. I warn you ahead of time. It can happen. Use something as a ram to push the finial to its home position. Now, place the upper section over the refill and transmission and push it into place. The fit should be perfect since both parts were turned together and the seam should be spot on.

Figure 10: The completed pen should look like the two in this picture.

Once again, your responses are welcome. I would like to hear from our readers with suggestions or comments on the content of my articles. Contact me via email at don@RedRiverPens.com.

Do a good turn daily!