

Closed End Pen

By

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The International Association of Penturners



The Penturner's Corner

The Utah Woodturner's Symposium and the AAW Annual Symposium are now history. I hope all of you that planned on attending were able to do so. I also hope that those interested were able to attend the Penturner's Rendezvous. I was not able to attend and I truly missed not being there. I really enjoyed attending last three years. We must now get ready for the Southwest Association of Turners (SWAT) Symposium in Wichita Falls, TX in early October. I live in Wichita Falls and I will be at that one. Some of us are planning on a penturning meeting of some kind and I will report on any activities we put together in the next few months. Stay tuned.

Last month I introduced the use of a pin chuck for turning calligraphy dip pens. I promised to revisit the use of a pin chuck for turning closed end pens. This month I will offer several methods for holding a pen blank to make closed end pens. Next month I will actually use some of these methods and document the making of several closed end pens. I've included a photo of a closed end pen made from the baron kit. **See figure 1.** The baron is a pen kit sold by <http://www.arizonasilhouette.com> and the pen in figure 1 was made by John Solberg. John demonstrated closed end pens at the Southwestern Association of Turners' annual symposium in 2006. For more information on the annual symposium held in Texas, log onto their website at <http://www.swaturners.org>



Figure 1

A closed end pen is a pen with no terminal hardware on the outside end of either the barrel or the cap, or both. **See Figure 1a** for a double closed end pen (a closed end pen on both ends).



Figure 1a

Closed end pens have been very popular on the various penturning forums the past couple of years. The challenge of making closed end pens lies in holding the pen blank since using a standard mandrel as it is designed to be used will not work. It will not work since the mandrel, used as intended, has to pass through the pen blank and the blank is held in place by bushings and a brass nut. Making a closed end pen requires the mandrel to go into the pen blank but not completely through it. I will show several ways to hold the pen blank to make a closed end pen. Closed end pens have become so popular that one of our

suppliers is selling a specialty mandrel for turning closed end pens. More information on these “expanding” closed end pen mandrels will come later.

One draw back to using a special mandrel for making closed end pens is the requirement to have a mandrel for each size of brass tube. The mandrel, no matter what kind, will fit only one size of brass tube. True, several pen kits use the same size tube, but even more don't! I didn't actually do extensive research but I would guess that it would be necessary to have close to 15 pin chucks or expanding chucks to be able to turn any kits as closed end pens. That gets expensive! Selecting kits that use the same size tubes might allow 4 or 5 different kits to be made as closed end pens using only two or three closed end pen mandrels. This article will show several ways to hold a pen blank for making closed end pens.

Another negative in making closed end pens is holding the actual closed end pen mandrel. The tool of choice for me and others is the Beall Collet Chuck. Take a look at this link for an excellent article on The Beall Collet Chuck and how it works: <http://www.theturnersshop.com/turning/colletchuck/bcc1.html> . The Beall Collet chuck uses industry standard ER32 collets from the metal working industry and make them useable in woodturning. The wide range of collets and the gripping surface allows wooden parts to be held without marring. Marring often occurs when using a Jacob's chuck. These special closed end pen mandrels can also be held using scroll chucks with pin jaws. Other scroll chucks and jaw combinations may also work.

PIN CHUCKS

Pin chucks for turning bowls and other large turnings have been around for some time. A pin chuck is basically a slot cut into a mandrel with a pin dropped into the slot. Here is a link to a pin chuck that screws onto the nose of the lathe and is used to hold bowl blanks. <http://home.pacbell.net/latheart/chucks.htm> . Someone in the pen turning community adapted that idea, scaled it down and made a closed end pen with a smaller pin chuck. **See Figure 2** for a picture of two homemade pin chucks.



Figure 2

Placing the brass tube over the pin chuck's slot and pin and then slightly rotating against the rotation of the lathe locks the pen blank in place and holds it securely. **See Figure 3.**



Figure 3

Pin chucks can be homemade using a metal lathe and mill. Not all of us have those pieces of equipment. Pin chucks can be made at a machine shop but the cost of tooling and computer code writing is often much greater than the cost of the actual chuck. I once checked on having some made and the chuck itself cost \$10 each, but the CNC code was going to cost \$250...for each different size pin chuck. Ouch! Once in a while members on one of the penturning message boards will offer making pin chucks for a reasonable price. I've seen them for sale, ranging \$5 - \$15. This is much more reasonable than using a commercial machine shop. **Pen Point:** Make friends with someone who has a metal lathe and milling machine.

Pin chucks can be made using a standard file and/or sandpaper. The only limitation is finding the correct size of rod to use. A pin chuck has to be large enough to just slide inside the tube of the pen being made. The fit of the rod inside the brass tube has to be such that there is as little slack as possible between the OD of the rod and the ID of the tube. Less slack is better and will make a more accurate pen. Drill rod comes in a wide selection of sizes. If luck has it, the exact size will be available. If not, get the smallest available diameter just larger than the ID of the tube. Hold the drill rod with a chuck of some kind and reduce its diameter until the tube will just slide over it. This can be done with sandpaper or file or both. Then the slot for the pin can be made using a grinding wheel and then finished off with a file. When making a pin chuck I use kits that require little or no sanding on the rod. Drill rod is available from industrial suppliers such as ENCO and MSC DIRECT and can be found on the web at <http://www1.mscdirect.com> and <http://www.use-enco.com>. Be sure to order a small diameter rod for making pins. I use 1/8" drill rod for the pens. Small nails can be used on the pin chucks for smaller tubes such as the 7mm pens. Notice in **Figure 2** that one of the pin chucks was made from a standard bolt which had to be sanded down just a tiny bit. I used a grade 5 case hardened bolt.

Harbor Freight sells a set of 28 transfer punches that some penturners have used to make pin chucks. These punches have several sizes that just fit into the brass tubes of several popular pen kits. Then, only the slot for the pin has to be formed. Here is a link to the set: <http://www.harborfreight.com/cpi/ctaf/displayitem.taf?Itemnumber=3577>. These punches are also excellent for disassembling pens. Every size I have ever needed has been included in this set.

I would offer one word of warning and safety. If a Jacob's chuck is ever used in the head stock without tailstock support, then the use of draw bar is essential. When purchasing a Jacob's chuck a threaded hole in the MT arbor should be a requirement. I use an all thread rod, large washer, and wing nut to hold a Jacob's chuck securely in the head stock taper.

Richard Kleinhenz has an excellent article about using and making pin chucks: <http://penmakersguild.com/articles/pinchuck.pdf>

EXPANDING CLOSED END PEN MANDRELS

Expanding closed end pen mandrels are basically hollow tubes with a bolt passing through. An integrated bushing is on one end and the other end has a slit and a cone shaped threaded washer. As the bolt is tightened the cone shaped washer pulls the split end apart and holds the brass tube. These expanding mandrels are sold by Arizona Silhouette:

http://arizonasilhouette.com/Closed_End_Pen_Mandrel.htm ..

See Figure 4 showing a close up of the closed end pen mandrel sold by Arizona Silhouette.



Figure 4

This mandrel is a clever idea and works great. But, it is a pricey tool because it only useable on one size pen tube. Each different size brass tube requires its own dedicated closed end pen mandrel. Arizona Silhouette also sells a video showing Ed Davidson using these mandrels and turning closed end pens.

WOODEN JAM CHUCK

I noticed a post on IAP by Gerry Rhoades and how he uses a wooden homemade jam chuck for turning closed end pens. Gerry explained that the idea was shared with him by Mike Vickery. **See Figure 5.** Here is what Gerry had to say about making and using these wooden jam chucks:



Figure 5

"The idea is not mine. I got it from Mike Vickery. We were corresponding about pin chucks and he told me that he sometimes did this (made his own from wood) if he didn't want to wait for a pin chuck to be made or shipped. I use a Beall collet chuck with a $\frac{3}{4}$ " collet. I've been using a $\frac{3}{4}$ " poplar dowel. I cut a piece of dowel about 6" long and put it in the collet chuck. I then turn it down until it's close to the inside diameter of the tube. I finish taking it the correct dimension with sandpaper. When the tube will just barely fit, I give it two coats of thin CA and then sand it back down. I also turn a shoulder on it that's about 0.020" larger than

the bushing diameter and coat that also with CA. I then force the blank onto it until it meets the shoulder. I use the tailstock just like I would if I was using a dedicated closed end mandrel.” -Thanks Gerry and Mike.

Certainly a Jacob’s chuck could be used to hold the $\frac{3}{4}$ ” dowel if a Beall collet chuck or other collet chuck were not available. The dowel could even be held in some scroll chucks with regular or pin jaws.

PIN CHUCK ALTERNATIVE

There is an alternative to these special chucks and mandrels. It uses a standard mandrel and one of the kit’s bushing. **Pen Point:** Be sure to use the correct bushing for the end of the pen accepting the mandrel. Cut a blank longer than needed for the pen barrel. I usually make it 3 inches longer than is needed just to be safe. Drill a hole using the suggested bit and make the hole as long as the tube. Making the hole $\frac{1}{16}$ ” longer will give some room to square the end of the blank to the tube. Then, drill another hole, $\frac{1}{4}$ ” in diameter, centered on the first one. The total of the two holes should be long enough to accommodate the rollerball refill and spring, or the ink pump if a fountain pen is being made. Drilling these two holes is easier done on the lathe than on a drill press. The length of the two holes will be different for each pen, so take careful measurement. In next month’s column I will carefully explain how to determine the length of each hole and the combined total length of them both.

Once the holes are drilled, slide a spacer onto the mandrel, then the proper bushing, and then the pen blank. The mandrel should fit into the $\frac{1}{4}$ ” hole and the spacer should take up the extra room between the end of the bushing and the end of the MT arbor. Bring up the tail stock and tighten the blank and bushing against the spacer. A mandrel whose length is adjustable makes this method much easier. The same spacer can be used on every kit. **See Figure 6.** This is one case where a picture is worth a thousand words.

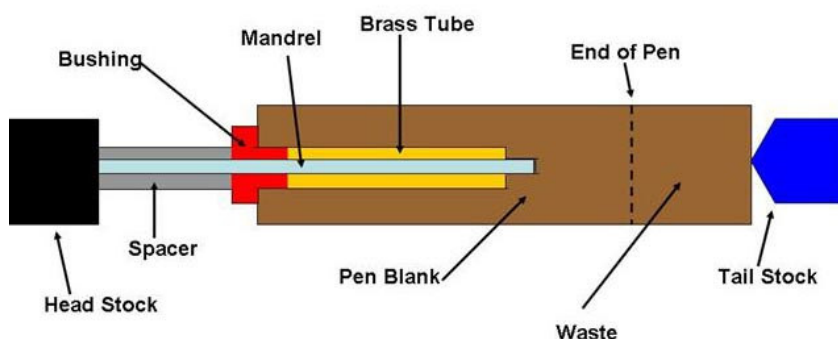


Figure 6

CONCRETE ANCHOR TOOL

Another penturning friend, Ron McIntire, showed me how to use a rather unusual piece of hardware for turning closed end pens. This piece of hardware is an anchor used in concrete. The anchor is placed into a hole in concrete and as a bolt is turned the anchor expands and holds inside the hole. Using it to hold a pen blank the hole in the blank and brass tube act as the hole in the concrete and the anchor is expanded holding the pen blank securely. The exposed part of

the anchor's bolt is then held in a Jacob's chuck or a collet chuck as mentioned earlier. This is a rather unique idea but only works on a few kits because of the limited sizes of these anchors. But, it does work and costs little. **See figure 7.**



Figure 7

The top image is two anchors. One is 3/8" x 1 7/8" and the second one is 3/8" x 3". I removed the sleeve from the shorter bolt and placed it on the longer bolt with washer and nut as shown in the third image. The bottom image is a baron cap tube over the sleeve and the nut was turned against the washer enough to lock the brass tube in place. I placed the "anchor mandrel" in a Jacob's chuck and surprisingly it ran straight and true. I noticed no wobble. This is the first time I've tried this and I will have a complete report next month on exactly which kits can be used with the limited sizes of these anchors. Oh, and the two anchors only cost \$.87. -Thanks Ron for sharing this.

Parting off

I have reported on several methods of holding pen blanks for making closed end pens. In next month's column I will document the actual making of a closed end pen using these methods. This will allow me to share the nuances of each method and how best to make them work correctly. I hope several readers will get one of these methods ready, order a kit or two, and prepare to make a pen that will be truly be different than any other pen they've made. Closed end pens are really unique and the shape or style of the closed end portion is limitless. Even twist pens can be made closed end for dramatic and unique effect.

Here is a short list of pens with caps that lend themselves to being modified into closed end pens. These pens are available as both rollerballs and fountain pens. Several other suppliers carry limited offerings of Berea and PSI kits, but the suppliers listed carry the complete line from both manufacturers. Craft Supplies USA has no resellers. CSUSA kits are only available from them.

From Craft Supplies USA: <http://www.woodturnerscatalog.com>

- Gentleman's and Jr Gentleman's II
- Statesman and Jr Statesman II
- Emperor, Jr Emperor, Imperial, Lotus
- Executive
- The Americana Rollerball or Fountain pen
- Artisan Rollerball or fountain pen]
- Ligerio and Havana Pens

Berea kits: <http://www.arizonasilhouette.com>

- Baron, Churchill, Sedona
- El Grande, El Presidente, El Toro
- Lady's Pocket/Purse pen
- Streamline Americana Screwcap, Streamline RT Screw Cap

PSI kits: <http://www.woodturningz.com>

- The Majestic
- Traditional (posting and non posting cap)
- Designer, Designer Elite
- Mini Purse Pen, Capri Mini

I look forward to sharing more about the actual making of closed end pens in next month's column. As always, your comments and questions are welcome.

Email them to me at don@RedRiverPens.com .

Do a good turn daily!

Don

The Penturner's Corner

This installment of The Penturner's Corner is a follow-up to last month's column. Last month I explored several ways to hold a pen blank with a blind hole from which to turn the closed end pen. This month I will explain some of the "behind the scenes" planning needed prior to turning the pen. I will discuss things such as the blank's length, the holes to be drilled and how long they should be, and other nuances of turning a closed end pen. Then, I will actually chronicle the turning of a couple of closed end pens.

Two months ago I discussed using the pin chuck to hold the blanks for turning the dip pen, which is a type of closed end pen. So, in this article, I will not discuss the use of a pen chuck. It is important to remember that these various specialized chucks and mandrels for turning closed end pens must have a diameter as large as possible and still slip into the brass tube of the kit being used. This is true for the pin chuck and the specialized expanding closed end pen mandrels. Several kits use the same size tube and thus one pin chuck or expanding closed end pen mandrel may possibly work on more than one kit.

Last month I reported on using a type of concrete anchor for holding the pen blank. I also promised to report on which kits and which size anchor will work together. Well, I took a bag full of kit tubes to the local home blue and orange home centers to do some matching. I quickly discovered that the tube's diameters vary greatly and the anchors only come in the standard sizes we use here in the USA: $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, $\frac{1}{2}$, and so on. The diameter of the end that expands must be a very close fit into the tube for the blank to not turn off center. I suppose tape could be used to keep the non expanding end from wobbling. I may investigate this method in a later article, but not now.

Measure Twice and Drill Twice

This article will explain how to make a closed end pen using fountain pen or roller-ball kits. I will be using the baron kit which is available from <http://www.arizonasilhouette.com>. Two critical lengths will be the blank length and the depth of the drilled hole. The depth of the hole to be bored may vary between the roller ball and fountain pen of the same kit. Consideration must be given to the fountain pen for the use of either cartridges or converter or both. Roller balls must have a hole bored long enough to accommodate the refill and spring. One hole is bored long enough to accept the brass tube. Another hole is bored centered on this hole to accept the spring and the end of the roller-ball refill or fountain pen converter or ink cartridge. This smaller hole will also serve as a pocket in which the mandrel will rest and support the blank. The process for boring the hole for the fountain pen that will be made will transfer to the roller-ball of this same kit or to another kit. The skills presented in this article are applicable to making closed end pens from any kit and using any of the methods presented for holding the blank.

To start the pen use a blank that is longer than a standard blank. Cut an 8" blank from a board and mark where to cut for the cap and barrel. The barrel section will be longer than needed, but will be parted off of the unused portion. The baron cap tube measures 1.815". Cut the blank into a 2" and a 6" piece. **See figure 1.** Mark the pieces so they can be assembled into a pen where the cap and barrel

portions will match the grain patterns. **TIP:** I usually cut the blanks into pieces that are a little longer than needed. I also drill from what will be the outside ends of the pen to the center. I do this because the entrance of the hole is usually a little larger than the actual bit. By pushing the tube past this slightly larger end, I can get a better fit.



Figure 1

Lay out the front section, coupler, and roller ball refill, ink cartridge, or converter as they would be when the kit is assembled. Using a baron fountain pen kit, I installed the converter, and placed two cartridges back to back. The measurement from the retaining ring to the end of the cartridges measured $2 \frac{7}{8}$ ". This length will accommodate a converter or one installed cartridge and a spare behind it. **See figure 2** for an illustration of these parts laid out with measurements. Measure carefully and write it on a note pad.

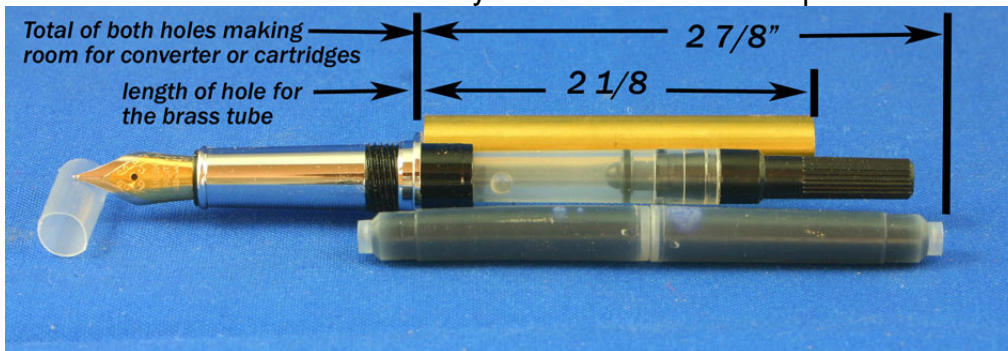


Figure 2

The length of the bored hole for the tube is $2 \frac{1}{8}$ ". I used the recommended $\frac{25}{64}$ " bit and drilled to a depth of $2 \frac{1}{8}$ ". Without moving the blank I changed to a $\frac{1}{4}$ " bit and drilled another $\frac{3}{4}$ " to make the two combined holes total $2 \frac{7}{8}$ " in length. The $\frac{1}{4}$ " hole will accommodate the converter, but to store a spare cartridge the $\frac{1}{4}$ " hole must be enlarged after the closed end pen barrel is finished. The $\frac{1}{4}$ " hole is needed to accept the mandrel and have no wobble. These dimensions will also work if making the baron roller-ball. If a different kit is used, these measurements will not work, but the process of measuring to determine the correct lengths will transfer to those other kits. It is important that the second smaller hole be centered on the first hole. Drilling can be done on a drill press or on the lathe. I will assume that those who read and attempt making this pen already know how to drill holes for brass tubes. I find drilling on the lathe slower but much more accurate. When extreme accuracy is required I drill on the lathe. **See figure 3** which shows a clear acrylic blank drilled. The hole appears as the frosty portion and shows the holes placements quite well. Figure 3 is on the next page.

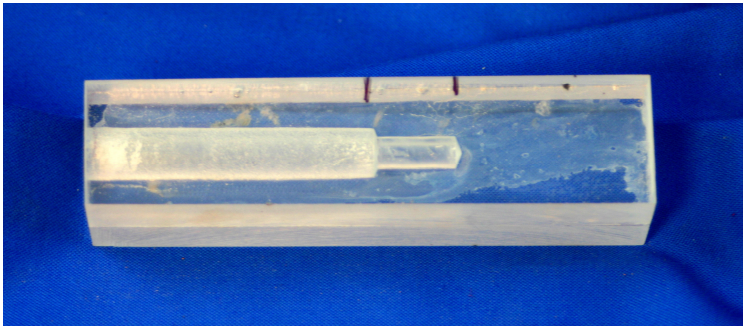


Figure 3

Choosing a Method to Hold the Blank

As discussed in last month's column, there are several ways to hold the blank for turning a closed end pen. Remember, I've abandoned the concrete anchor usage for the time being, and maybe forever. The choices for holding the blanks are the pin chuck, the expanding closed end pen mandrel, wooden jam chucks, and the standard mandrel as explained last month. **Figure 4** shows all four of these methods for comparison.

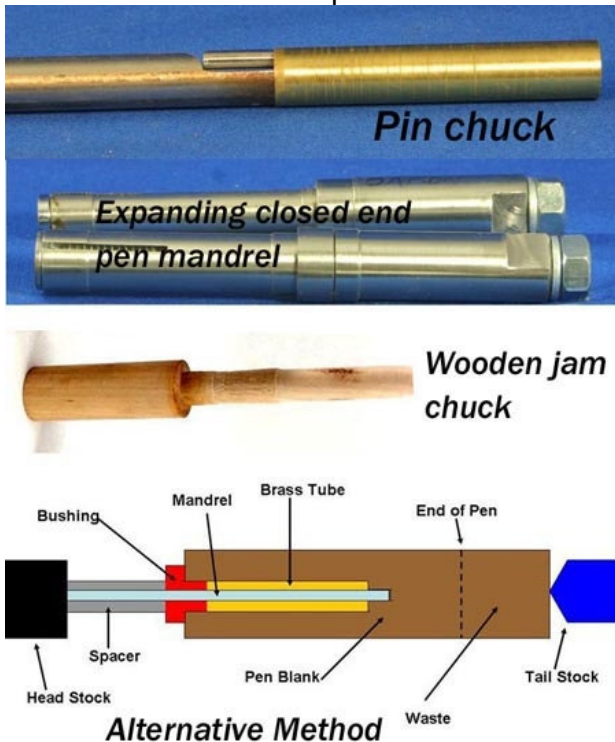


Figure 4

The pin chuck was used for the calligraphy pens (closed end pens) in last month's article. Using the expanding closed end pen mandrel is similar to the pin chuck and rather straight forward. I would recommend using the tail stock for added support when using either of these methods for holding the pen blank. The method I will use for making this month's pen will be the alternative method which uses a standard mandrel and kit bushing. No other special tooling will be required. Remember, using the pin chuck or closed end pen mandrel requires a dedicated pin chuck or closed end mandrel for each different size tube. The method I will present here, using the standard mandrel, will work with any kit.

Maybe the wooden jam chuck should be investigated for a future article. I think it has possibilities.

After boring the holes test fit the pen parts to make sure the hole is long enough to accept the tube, the converter, cartridges or rollerball refill. Once the bored holes are correct the tube is ready to be glued into place. Glue the tube and square the end of the blank. A pen-mill with a shim for the barrel's tube may work...mine does. The blank is now ready to be placed onto the mandrel.

I use the Beall Collet chuck to hold my mandrel and the mandrel's length is adjustable. Some mandrels with 2MT arbors are also adjustable. So, either adjust the mandrel to the proper length or use the longer slimline bushings as spacers. Or, make a spacer the correct length for your mandrel. The space needs to bridge the space between the left hand end of the mandrel and the bushing on the right hand side. Be sure the mandrel is seated in the 1/4" hole. Use the tail stock to put enough pressure on the blank to hold it while turning. Periodic tightening of the live center just a little may be needed while turning the pen. **See figure 5** which shows the blank placed onto the mandrel using the longer slimline bushings as spacers. Any bushings can be used as spacers. If several of these pens will be made, a special spacer may come in handy.

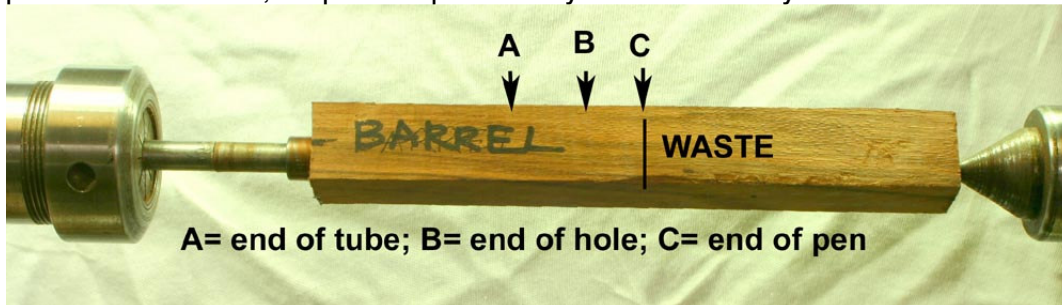


Figure 5

Ready to Turn

The closed end portion of the pen is now ready to turn. Turn the blank round and then begin to fashion it to the shape you desire. Be aware of where the bored hole stops and do not turn the diameter small enough to turn into the brass tube or into the hole where the mandrel is seated. I've made several of these closed end pens and for the barrel a length of just less than 3 1/2" seems to have a pleasing length. The length can be a little shorter or longer if desired. The closed end part of the pen can be rounded over, tapered, or can even have decorations of a couple of beads. It can also be squared off. I would suggest sketching a few profiles for the treatment of the closed end portion and turn the profile that grabs you. Looking at commercial fountain pens on the various fountain pen website or catalogs may provide some ideas for the closed end treatment. You may even find a shape you like and let it become your signature for these closed end pens. Or, take a look at Ed Davidson's (aka YoYospin) IAP photo album for some excellent examples of closed end pens. <http://tinyurl.com/2eh59r>

The closed end barrel should be turned to its final shape with the far right hand portion of the blank, the waste part, almost parted off, but leave enough wood to support the blank for sanding and finishing. **See figure 6** for a completed barrel ready for the waste portion to be removed. Figure 6 is on the next page.



Figure 6

Sand and finish as much of the closed end barrel as can be done. Then, part off the waste portion. Be careful not to disturb the profile that has been established. I will show how to secure the blank for final shaping of the very tip of the pen.

Now, use masking tape and tape the pen barrel, bushing, and spacers to the mandrel or the nose of the lathe. The tape will be strong enough for that final shaping, sanding, and finishing of the tip of the pen. **See figure 7** to see a barrel taped into place and ready for the final touches. I use blue painter's tape which holds well enough and releases easily. The tip of the closed end portion of the pen is not completed. With the closed end barrel taped to the mandrel, the tip can now be detailed, sanded and a finish applied.



Figure 7

The cap portion can now be turned normally as per the kit instructions. Sand and finish the cap and assemble the pen following the kit's instructions. Your pen should now be finished and look somewhat like the one I made for this article. It can be seen in **figure 8**.



Figure 8

Congratulations! Closed end pens are easy modifications that turn these kits into a pen that looks more like a commercial pen than a kit pen. The possibilities are almost endless.....so let those creative juices flow. The techniques used in this article can be transferred to other kits to make a variety of closed end pens.

Remember, emails with your comments are welcome. Please send me a photo of your closed end pen. It may just show up in next month's article. In fact, send me a photo of any pen you've made using these articles. Who knows? Email me at don@RedRiverPens.com

Do a good turn daily!
Don