Pencil Pusher
by Nick Cook

I have been making this particular pencil since about 1987, long before the current kits were introduced in this country. Over the years, I have made literally thousands of pens and pencils both from scratch and from kits currently available from many suppliers. I started out making the old stick pens around 1986 or ’87 using Bic pen inserts. They were very popular before the twist pen kits became readily available, first from suppliers in the UK and later from Craft Supply, USA. Kits can now be purchased most anywhere and virtually everyone with a lathe is making pens. The market is just not what it was.

Originally, the kits were not the quality of what we have available today. The pencils in particular were inconsistent to say the least. The kits also require the maker to work to the metal parts and the preverbal center ring is especially restrictive when it comes to designing the finished pencil. You are very limited in shape and design. A pencil without a separating ring in the center allows for more creativity. It also makes for a more attractive and more comfortable pencil to use.

This pencil will allow you a great deal more flexibility in shape and design of the finished product. You will be able to make the pencil from a single piece of wood rather than having to use two separate pieces. The mechanism is Pentel, the plastic barreled pencil from Japan and is the standard of the industry. They are available in office supply, art supply and discount stores everywhere. You can select from four different lead sizes, .03mm, .05mm, .07mm and .09mm. The price ranges from $2.50 to just over $4.00 depending on where you purchase them and in what quantity. The Pentel P-205 (.05mm) is the choice of many accountants and architects. They can even recognize the mechanism after you place it into a wood barrel.

Special equipment

Unlike most of the kits available for making pens and pencils, you will not really need anything special for turning these pencils. A special step drill will make producing this pencil much faster but using two separate drill bits will work if you are making a few pencils. You will need a long or taper length, 17/64" bit and a standard 5/32" drill bit. The special step drill bit can be made locally by anyone who sharpens drill bits or ordered from Nick Cook Woodturner or Craft Supply, USA. The bit is extra long, six inches, and 17/64" diameter. The last ½" is machined down to 5/32". The mandrel is made from a piece of scrap maple or other hard wood mounted onto a faceplate or in a chuck.

Stock selection

Stock selection is easy; most anything will work. And, it takes very little of whatever you wish to use. This is a great way to use many of the bits and pieces left over from other projects. Straight, close-grained hardwoods are ideal. Most of what I turn for sale are made from Cocobolo or Tulipwood. Both turn very well and have beautiful color and grain patterns when turned and properly finished. I use hard maple for demonstrations and hands-on instruction. It turns quite easily and finishes well with little effort. It is great for practice and set up before going on to the exotics and more expensive stock.

Stock preparation

Depending on the size of the finished product, you will need to cut your stock appropriately. I make oversized pencils for individuals with arthritis in their hands and for them I start out with 5/4" stock approximately one inch square and 4-3/4" long. I make standard sized pencils from ¾" stock cut to the same length. I do not have a table saw so everything I cut is on the bandsaw. The bandsaw is much safer than a table saw and the thin kerf of the bandsaw blade eliminates a lot of wasted material. I use a shop-made fence to rip all my material to the proper dimensions. A shop-made sliding table with a permanent stop allows me to cut the materials to length without measuring for each piece. I have a sliding table for each of the products I make on a regular basis plus two additional ones with adjustable ones for limited production items. These fixtures save a great deal of time and effort not to mention the frustration of measuring incorrectly.

Most drill presses do not allow for deep drilling operations. The 4-3/4" hole of this pencil is certainly beyond the capacity of most. The lathe is the obvious alternative. You may or may not wish to rough turn your blanks to cylinders before drill. I prefer to make them round first. Place the blank between centers and turn to a cylinder. This allows the blank to be held in the old style three jaw (knuckle buster) machinist chuck for the drilling operation. Any of the standard scroll chucks will also work. The longer jaws allow you to align the blank faster and easier. I mount a Jacob’s chuck with the drill bit, in the tailstock with a stop positioned to control the depth of the hole. Depending on which Jacob’s chuck I use, I either adjust the depth of the bit in the chuck or use a stop on the bit.

The hole is drilled through the blank so that only the last 7/16" of length is 5/32" diameter. The remainder of the blank has a 17/64" hole. The resulting shoulder or step allows the pencil mechanism to be locked into the barrel. A portion of this will be removed during the turning process. With the blank in

the headstock and the drill in the tailstock, set the lathe speed at approximately 500 RPM. Most tailstock rams will not extend more than a couple of inches so I lock the ram in place push the bit into the blank. Move the bit into the blank very slowly and withdraw the bit frequently and completely to clear chips from the hole. This will avoid excessive heat buildup that could result in splitting the wood. Exotics are more likely to split than most domestics. You may also need to use a pick to remove shavings from the drill bit with some woods. Be careful though, it can get extremely hot.

Making a chuck or mandrel

The next step is to make a wood chuck or mandrel for turning the pencil. I prefer to use hard maple but a scrap of most any hard wood will work fine. I use 2" x 2" squares (cut-off from other products) 2" to 4" long. The piece is mounted in a chuck or screwed to a faceplate or screw chuck. Turn the blank to a cylinder and taper the end down to just under 1" diameter using a roughing gouge or skew. Then use a 3/8" bedan or parting tool to turn the last 3/8" down to exactly 5/32" and taper end slightly. The resulting shoulder should be square to the small tenon. The mandrel is ready for use.

Mounting the stock

Use a few drops of thick CA glue on the end of the blank around the small hole. Be careful not to get any of the glue in the hole. Spray a little accelerator onto the mandrel and slip the blank onto the mandrel. Mount a cone shaped live center in the tailstock and bring it up to support the opposite end of the blank. Use only light pressure to avoid splitting the blank. A little more accelerator can be sprayed on the exterior of the joint to set excess glue.

Turning the pencil

A six-inch tool rest will allow you to get close to the workpiece. Adjust it to approximately ¼" below the center line and about ¼" away from the blank. Set the lathe speed at about 3000 RPM and start turning the pencil. I use a 1-1/4" oval skew to do most of the turning. A ½" skew is good for tight details and finishing cuts on each end. Work from the tailstock back toward the headstock. You can be as creative and as decorative as you wish. I tend to keep my shapes as simple as possible. Once the primary shape is done, use the ½" skew to trim the top (tailstock end) of the pencil. This will leave a good clean surface unlike that left by the bandsaw. Adjust the tailstock a bit to compensate for the 1/32" or so removed. The opposite end, or nose of the pencil needs to be trimmed approximately 3/16". Start this cut with the ½" skew pointed toward the headstock slightly to create a cone shaped end. Do not cut all the way through at this time.

Finishing

Remove the tool rest and start sanding with 220 grit sandpaper. Continue with 400 grit and finish up with 600 grit. Apply your favorite finish and buff to a sheen. Replace the tool rest and finish the cutting through the nose end of the pencil. Use care not to cut through the mandrel. A light cut across the end of mandrel will remove the waste and leave a surface ready for the next pencil blank. I have made literally dozens of pencil without reshaping the mandrel.

I hope you enjoy making these attractive and functional pencils. They make great gifts and sell well at craft show as well. Happy turning.