

Growing beyond the basic kit pen

Kurt Hertzog looks at developing pen-turning skills



The entry point for a large percentage of new woodturners is the 7mm kit pen, a great starting point for many reasons. The ability for the newcomer to successfully create a finished project in a short period of time is the key. It introduces many aspects of woodturning, such as materials, adhesives, work mounting, turning tools, safety, cutting techniques, sanding and finishing in a low-key, low-cost, fun manner. The newcomer either walks away simply having enjoyed making a

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pen or becomes hooked on woodturning. Rarely is there middle ground. Some of these new turners pass right through pen turning, moving on to other types of turning, while others remain entrenched in the pen-turning arena. It is easy for those who stay with pens to become engrossed with making their successful 7mm kits using every species known to mankind. They tend to get stuck making all of their subsequent pens identical in size and shape, differing only in species. This

month I'd like to offer a few easy ways for the new pen turner who has mastered the basics to branch out into other challenges while still using that initial kit. These simple changes can vastly expand pen-turning horizons. Of course, there are myriad other kits, manufacturers and materials to explore, but I'd like to focus on developing different looks by adapting the basic 7mm kit. Even though we'll use the 7mm kit, some of these ideas can apply to others. ►

◀ Eliminate the centre band

The handcuff that comes with the 7mm kit design is the centre band. By design, the centre band allows for grain mismatch, trimming length errors, and completed interface diameter sloppiness. I suggest that once you've successfully completed a few 7mm pens, begin to make pens using the kit without the centre band. Without it, you'll free yourself from the shape constraints



The centre band forces the user to 'meet' in the middle. To overcome, wild shapes are created

that it brings. Having dimensional requirements on both ends of the pen barrels for the press fits is constraining enough. Forcing you to neck down to meet the centre band dimensions tends to create some bizarre and ugly pens. To overcome this shape and dimensional constraint, many try including beads and coves, ridges, and more. Eliminate the centre band altogether.



Being freed of the centre band constraints opens a whole world of sizes and shapes



Butting the two barrels together makes it easy to have them fit perfectly since you create them simultaneously



A 7mm kit with no centre band is just a bit shorter. Not really a problem in most cases



You can easily make up this missing dimension by inserting trim colours on the barrel ends

Two simple methods

There are two simple methods of completing the 7mm kit without the centre band. The easiest is to simply eliminate it. By doing so, the completed pen will be shorter by the dimensional length of the centre band. You simply turn the pen as you would but leave the sizing bushing out that would normally separate the upper and lower barrels on the mandrel. Without this bushing in place, you can still turn and size both ends as normal to accept the hard press fits of the factory nib and end cap. Those two end point dimensions are your only constraints. Now the 7mm kit can become a cigar-style kit or any other size and shape you wish. Turn, sand, finish and assemble as you normally would. If you have properly trimmed the length of the upper barrel, there is plenty of room for the transmission and ink-fill inside without

them touching the underside of the pressed in end cap.

SHAPE AND SIZE

If you want your finished kit to be the same original length (or longer) than the 7mm kit, you simply leave some barrel unsupported by brass tube at one or both of the interface ends of the barrels. This is easily done by not trimming until you reach the brass tube at those inner ends of the barrels. How much do you leave unsupported? You choose based on the desired overall length of the finished pen. Do you leave all of the unsupported length on one barrel or split it between both barrels? You choose based on the look you want. Splitting the unsupported length between both barrels will keep the upper and lower barrel interface joint centred as usual. Putting all of it on one

side or the other will move the interface seam slightly. Keep track of which end of each barrel is trimmed flush to the end of the brass tube when you assemble things on the mandrel for turning. The brass-flush trimmed ends of each barrel will be located at both ends of the mandrel with their corresponding sizing bushing. Turn, sand, finish and assemble as normal. The slightly unsupported bit of barrel located in the middle of the finished pen at the interface will have no detrimental impact. The press for the transmission in the lower barrel will easily reach the brass tube when being seated for proper ink-fill extension. You now have the ability to create your own size and shape from the 7mm kit. Being turned, sanded, and finished with both barrels pushed flush together will make that interface fit match perfectly.



You can make up any missing length by leaving some of the interface barrels unsupported by brass



When the situation dictates, you can also insert another brass tube and trim as needed



Another method of mating barrels with missing centre bands is to create a small overlap



Press depth is very forgiving with the 7mm kit. As long as the brass portion of the transmission seats, all is OK



The choice to make up the missing dimension in one barrel or both will be yours

Custom components – the end cap and nib

Going a step farther, you can easily make your own end cap and/or nib. Either part can be readily made on the wood lathe using the same species as the pen barrel, a different species, plastic, or metal. I often favour Corian for one or both parts, particularly the nib, because of the material properties. It turns and polishes well, having no grain orientation to cause difficulties. It also is available in a wide variety of colours. Remember that, when making your

own nibs or end caps, you will not be able to hard press them into place as you would with the kit-supplied brass parts, unless you make them from metal. You'll glue them into place. This is not difficult at all but it does require a change in the assembly process. You can now make the nib end or clip end to the original dimension or any diameter you want. You now have total freedom in length, shape and diameter at both ends and the middle.



Because of the thin wall needed for nibs, materials with no grain, such as plastic, work well



End caps have no issues with grain or orientation so feel free to use nearly anything



As metal is easily turned on your lathe, aluminium can be made into caps, nibs, and trim

◀ End caps

Using a chuck, the end cap can be easily made, although other work-holding methods can be brought to bear if needed. You can use the same species of wood as for the barrels or something different. You can grain match by cutting the end cap stock from one end of the barrel material. Of course, you'll need to minimise kerf loss and maintain orientation to perform a decent grain match. I don't usually bother with this. There are several ways of turning an end cap but let me describe my method. It does require a second chucking but I find the ability to test the slip fit of the barrel dimension with a brass tube worth it.



Use a brass tube to size your shaft on your end cap. Quick, easy, and no measurement errors



Once you've got the correct size, transfer that down the length of the shaft



Add some glue traps as well and be certain there is no radius in the corner to prevent flush assembly



Size the head of the end cap based on your application and part it off for reverse mounting



Shape your end cap as you wish. A rounded edge will be less prone to dinging and damage



Add your finish to the end cap. I tend to use a CA finish for ease of application and durability



The wooden end cap will work exactly as the pressed cap when properly glued in under some compression

SIMPLE END CAP METHOD

Chuck the end cap material so that there is about an inch projecting from the chuck. This will allow for clearance while cutting yet provide a sturdy, secure mounting. Turn the blank round and reduce the diameter until you almost reach the inner diameter of a brass tube. At the very end, reduce the diameter, testing this dimension with a brass tube. Once the brass tube just barely slips over, turn more of the shaft to this diameter. This 'slip' fit should be easily pushed on by hand but not looser.

Once you've turned about an inch in length to this slip fit, cut the corner between this shaft and the remaining

stock to be a sharp 90°. A radius in this corner will prevent a good fit at assembly time. Reverse-mount the end cap, grasping on to about half of the turned shaft. You can carefully and gently engage the tailstock centre if you wish. Turn the stock round to just proud of your final desired diameter to allow for sanding. Remove the tailstock centre when needed, shape and face off the end cap per your planned shape. Sand and finish.

GLUE TRAPS

Cut a few glue traps in the tube shaft length using your skew chisel or corner of a narrow parting tool. These shallow V-cuts will help collect excess glue as

it travels up the shaft towards the end cap. Size and location aren't very critical. Using the appropriate amount of adhesive along with these traps will reduce the likelihood of glue squeeze-out at assembly. No need to sand this shaft surface since it will be a glue surface. Part the end cap off at the shaft length of the original end cap at about 6mm.

If this shaft is left too long you may interfere with the ink-fill end if you have eliminated the centre band in your kit. Too short isn't a problem but you won't be taking advantage of alignment length and glue surface. Staying close to the original end cap dimension will work nicely.

Nibs

You can make a custom nib for your 7mm pen kit using the same guidelines. Wood of the same species can make a very interesting look but be certain that the species you are using lends itself to thin wall turning. Dense-grained hardwoods will work best, as will plastics and metals. I usually use Corian based on the absence of grain and its ability to be turned to thin but sturdy walls.



The two drill bits for nibs are the same for virtually every Cross style ink-fill. Using 3.175mm and 2.03mm works well



Use the same process for sizing and removing the radius from the inner corner on the nib



Plan your nib length before you get too far. Mark for drill depths and end point



With the 7mm transmission controlling your ink-fill extension, you'll make that 3.175mm drilling a bit deep



Shape the nib with the tool of your choice, being aware that there are drillings inside



Part off and reverse mount. I recommend sanding from here on using a backing board



Sand through the grits until you are content with the shape and finish. Again, I use a CA finish

MAKING THE NIB

Make your material selection and mount the blank into your chuck with about 38mm exposed for turning. Face off the end to create a perpendicular surface. From the end, reduce the diameter for a short length to match the inner diameter dimension of a 7mm brass tube. You can measure this dimension and check as you turn, but I find it easier to have a 7mm brass tube that I use to test as I go. Once the tube will slip over the end of the turning in a slip fit, I continue this diameter down the length of the blank for a distance of about 13mm. There is no need to agonise over this length. There is plenty of room inside the tube for this so 13mm works nicely for the reverse work-holding yet to come. The goal is to have a loose slip fit over the length of the shaft. A slip fit is defined as easily slid into the tube by hand but with sufficient drag that when inverted it won't slide off under its own weight. Be certain the corner interface of the shaft and remaining material is a 90° cut without a radius. This corner will seat on the end of the lower barrel and a radius here will prevent flush seating. Now is a good time to make the two drillings for the ink-fill. Use a 3mm drill for the major diameter of the Cross-style ink-fill. Most Cross-style ink-fills are 3.05mm in this area.

DRILLING

A drilling of 3.175mm will provide clearance without removing excess stock. Determine where you will have the end of the nib when completed. Mark this position and set your drill length so the major diameter drilling will be close to the end position but short by about 3mm. The ink-fill extension through the nib will be controlled by the transmission so you need to drill this diameter deep enough to not interfere with the extension. Use a centre drill to mark the location and then drill the major diameter to your mark. After making this drilling, drill the minor diameter for the ink-fill. You can measure this diameter on your ink-fill to be certain you have sufficient clearance. Most Cross-style ink-fills require a 2.03mm drilling that allow for a couple of thousandths clearance around the ink-fill at extension. Make this drilling deep enough so it will project through the end of the nib at completion. You can also drill this hole from the front when the nib is reverse-mounted in the chuck. It is a shorter drilling and usually more accurate.

TURNING

Allowing for sanding and finish, turn the diameter of the nib at

the interface point to match the diameter of your pen at the nib end. This may be the original 8.43mm or something different based on your design. From this diameter, turn the balance of the nib to taper to the endpoint. As you get closer to the end of the nib, the wall thickness will be greatly reduced. I recommend parting the nib off slightly beyond your planned endpoint. After parting off, reverse-mount the nib gripping on the shaft of the nib. Grip the nib lightly, checking for centring in the chuck when rotating. Slight adjustment of the grip will let you position the nib so that the end runs true when rotating. Keep making this adjustment until you get a good alignment. Once you've achieved this, snug the grip of the chuck, keeping in mind that the nib has a drilled hole and is somewhat fragile. Rather than cutting the balance of the nib at this point, I recommend that you sand it to completion.

SHAPING

Take a flat piece of wood to back your sandpaper and start with a coarse grit. Sand the nib into shape working through the grits to your completion finish. At completion, your ink-fill should slide in easily and the point of the ink-fill should extend beyond your desired extension position. You'll control this extension with the press depth of the transmission. The tube shaft of the nib should be a slip fit into the 7mm brass tube.

Assembly of modified 7mm kits

If you have eliminated the centre band only, your assembly process is exactly as the kit specifies. You'll press in the nib to seat fully and then press in the transmission short of the final position. Insert the ink-fill, advance the ink-fill, and check for the desired ink-fill project through the nib. Intentionally being short of the end press depth initially allows you to remove the ink-fill and slightly advance the transmission press depth. Repeat the

check of extension and removal of ink-fill followed by increased depth until the desired extension is achieved. The end cap and clip is assemble and pressed to the hard stop. With the centre band missing, the top and bottom barrels are assembled to complete the pen.

CUSTOM-MADE END CAP

For the custom-made end cap, dry fit your clip and end cap into the upper barrel. The slip fit should allow you to easily insert the end cap by hand. If you are content with the look and fit, remove the end cap for gluing. I always roll up a piece of sandpaper and sand the lid of the brass tube to be certain it is clean and ready for glue. Apply a small amount of epoxy on the shaft at the very end of the end cap that inserts into the brass. Insert the end cap into the upper barrel, rotating the clip to the desired location. Use a small clamp to lightly clamp the end cap in place with some compression load while the adhesive cures. This light compression will help hold the clip in the desired location.

Custom-made nib assembly

The custom-made nib assembly process is very easy. Press the transmission in well short of the expected location. Insert the ink-fill and rotate the transmission to extend the ink-fill to the maximum forward position. Slide the custom nib into the brass tube of the lower barrel. Examine the ink-fill projection through the nib. Remove the nib, rotate the transmission to the retracted position, remove the ink-fill from the transmission, and press the transmission slightly deeper. Check again repeating the above checking process until content with the extension. Once you are happy with the ink-fill projection, apply a small amount of epoxy to the end of the insertion area of the nib after the light sanding of the brass lid. Press the nib fully into place. A piece of tape will hold the nib in place until the adhesive cures.

Conclusions

The 7mm kit is a wonderful starting point for the pen turner. It is modestly priced, simple to make, and is designed for a high success rate. It is often the hook into woodturning. Once the hook is set, move on to bigger and more challenging things. Taking the 7mm kit and using the adaptations suggested is only the start. Ideas not covered yet are the creation of custom clips, elimination of all of the kit parts except the ink-fill, exotic blank designs and creations, and more. Use the ideas here to expand your horizons. Each of these ideas lends itself to a host of personalisation ideas. You can continue on with exploring the modifications of the 7mm kit for quite some time before you run out of ideas. Long before that, I'm certain you'll have moved into other kits with these changes. Those, along with materials exploration and presentation ideas, should keep you challenged for quite a while. ●



Loosing the centre band and creating your own parts can make the 7mm kit hugely versatile