Kurt's clinic

Kurt Hertzog answers readers' questions

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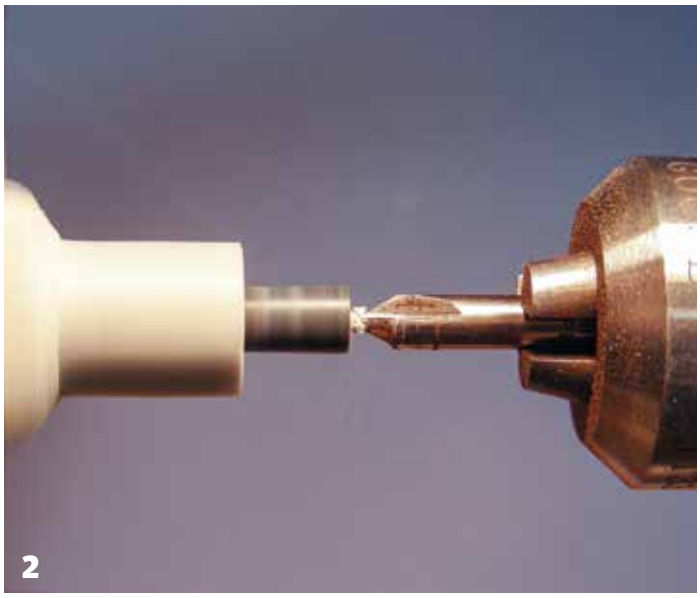
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PHOTOGRAPHY BY KURT HERTZOG

1 Starter drill assortments are not expensive. With an inexpensive dedicated drill chuck, starter holes are quick and easy **2** Any location where drill starting position is important or drill size is small, a starting hole will improve your process **3** Depending on your needs, starter drills are available in sizes for even very small drills. My starter drills for holes 1mm and smaller sizes **4** Drilling dense woods, such as African blackwood, with small diameter drills can be easily done with a starter location and good technique

I'm breaking many of my small drills when drilling in my lathe. I know you do small holes. Some recommendations on drilling small holes please?

Small is relative so the advice I'll give here applies to drilling any hole using any piece of equipment. It is just good practice. First and most important is sharp drills. The most overlooked tools in the shop are drills. It is as important to keep them sharp as your turning tools. If you don't know how to sharpen drills, learn. One of my best shop investments many years ago was a Drill Doctor. If you don't want to learn, be wise enough to throw away drills that aren't sharp and replace them as needed with new sharp drills. Even sharp drills benefit from a good starting point. With larger diameters and just blasting in a hole, you can get away without creating a good starting point. If there is no flex in your system or drill, you just drill it and, for the most part, it's pretty easy to get it where you want it. The problem comes when you have a smaller diameter drill that will flex or break with any application of force to start the drilling or you need a hole in a precise location. You also run into the problem of 'wander' with any drill that is small enough in diameter to flex easily. Good practice with small drills or any drill location that is at an angle to the drilling axis is to create a drill starting location. Any work clamped at an angle in a vice in a drill press, mill, or even freehand, especially needs a starting location for the drill. On a free-floating machine such as a drill press, you might use a prick punch for a perpendicular flat surface. On your lathe, you have several methods. It can be as simple as running your tail centre up, locking it, and using the revolving centre point. Driving the point forward into the material will create a small indented location for a small diameter drill to locate and start drilling. You can also use the corner of your skew

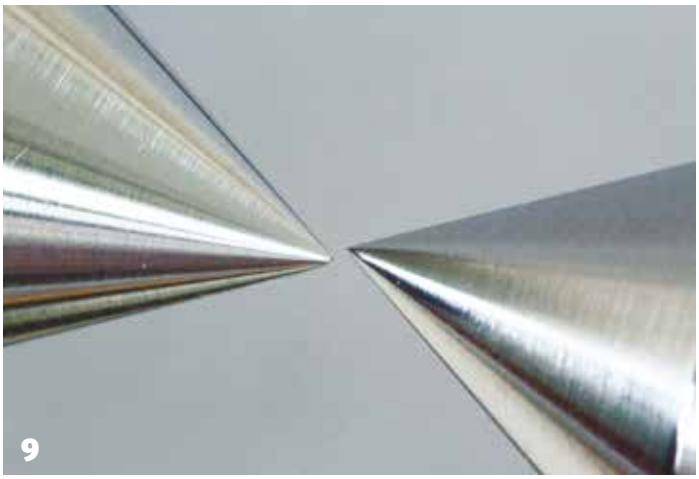
5 It is key that a starter location be created for any off-perpendicular drilling. A starter location is critical for safety and success **6** Holes for a double strand of 2 or 4lb. test fish line are in the .038in arena. You can break a lot of small drills if you don't work carefully **7** Even a perpendicular, flat surface benefits from a starter drill location. Only taking moments, this ⅛in drill will have no location or starting issues **8** With a good starter drill location, a sharp drill allowed to do the work can be hand held to drill small holes quickly.

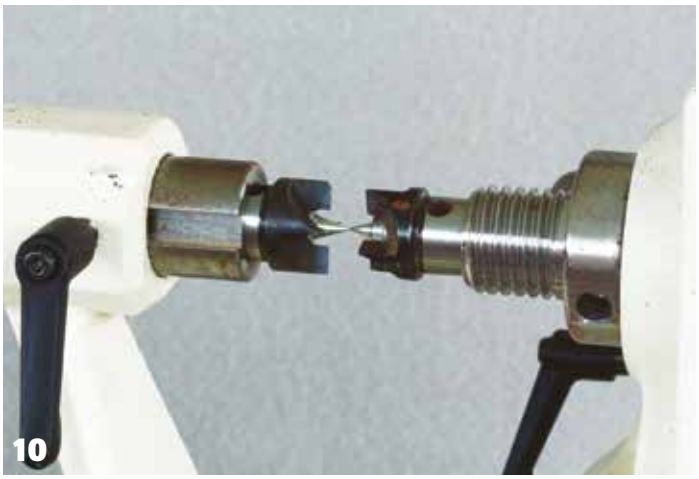
or parting tool to cut a small V-pocket at the centre of rotation. I recommend using a starter drill. These drills, from the machining industry, are stubby tools designed specifically for this purpose. By design, they are virtually impervious to flexing. Use one of these to drill a starting hole, giving your following drill the desired dimension to have a precise and no-wander place to start its process. With an effective starting location cut in one of those three manners, you can drill your hole without wander. Regardless of your starting location technique, good practices of drilling techniques, speeds, and feeds will be needed to drill a quality hole with minimal drill breakage. Obviously, small diameter drills need to be handled gingerly. Advance carefully, slip into the starting location, and let the drill do the work. Breaking the chip and retracting to clear the flutes is often necessary. Any muscling of the process usually breaks drills, often partway through the process. Then you'll have a broken drill to remove too.

Some small drills really can't be easily sharpened at home. Get new ones rather than breaking dull ones off in your work. The biggest mistake I've seen with small drills is working with the same techniques as larger drills. The solution is always easy does it, let the drill do the work, and clear the flutes often. My challenging holes are the No.62 drill (0.038in dia.) ones. I often drill up to 1in deep into African blackwood for my 2lb monofilament ornament hanging loops and the ⅛in holes that I drill 5in deep in my desk pen blanks. A problem with deep holes using smallish drills is that they will follow the path of least resistance far more readily than larger drills. If the grain orientation is running off axis to your desired path of travel, even a ⅛in drill tends to drift off path doing deep drillings. This can become a problem with an ⅛in hole drilled 5in or more deep that needs to stay within a ¼in window of the centreline at the bottom.

I see people join two pieces together with CA and then spray the glue line with accelerator. Does it really penetrate the joint, or are they just kidding themselves?

'Penetrating the joint' really isn't the issue. Accelerator helps the cross-linking process CA adhesive goes through. While the CA curing process is driven by water vapour, accelerator (usually an acetone of sorts and perhaps some magic sprinkles) will speed things along, hence the name accelerator. To function properly, accelerator needs only contact the CA adhesive and the process will be assisted for all the CA in contiguous chemical contact, even well inside the joint. Perhaps my question to your question is would they bond, or did they bond, without the accelerator? Many times, folks use accelerator to try to bond a joint that didn't bond properly initially. Sometimes successful and sometimes not. If the joint failed for good reason, accelerator really can't fix poor joints properly. Another very helpful and effective technique for using accelerator is applying the accelerator to one surface and applying Ca to the other. When brought into contact, they bond. Obviously, you can't dawdle when using this technique once contact is made.





9 Dead centres are modestly priced and work nicely to check alignment. Rarely does a lathe endure its travels from maker to you without needing some adjustment. This one needs some attention **10** You can also use a couple of spur centres to do your alignment. It is important that the tips not only meet but that the axis of both headstock and tailstock tapers are in line **11** Nearly all of the common lathes available today are held in alignment with the headstock mounting bolts. The days of pinning equipment in alignment are long gone **12** The gap in the bed usually allows sufficient adjustment for the alignment in that plane. If you need more, a file judiciously applied to the casting of the base of the headstock may help

I'm moving my lathe to a new location and I have a chance to set it up correctly. What should I plan on doing to do things properly?

My suggestions are to not lag it to the floor but rather leave it free standing. It should be set at the correct height for the main user since every user may have a different preferred height. A good starting point is having the centreline of the spindle at elbow height as you stand on any anti-fatigue mat you'll be using. Hang your arms by your side and use elbow height as your spindle centreline height as a beginning. You can tune this height up and down as you find any issues with back fatigue after extended use. Space behind the lathe for cleaning is wise from a positioning point of view. Levelling is wise but not as critical as a metal lathe would be. Metal lathes need precise levelling to remove any potential twist in the ways.

The most common problem is the lathe headstock to tailstock alignment. Using a couple of dead centres, if you have them, or a couple of spur centres with sharp points will let you quickly determine how well things align. Looking from the front and from the top should give you a feel for how things align when you bring the points in close proximity. Since the tailstock moves and needs some clearance, it will lock up slightly differently each time. Your adjustment point is the headstock mounting. Rarely pinned in location, you can loosen the mounting bolts and insert shim material underneath the appropriate corners to align things. Use whatever you have that will provide the necessary dimensional shim when clamped in place. A piece of bond paper or currency is around 0.1mm. If axis alignment is required, take a look at how the headstock casting is positioned in the lathe bed ways. You can often shim the gap as needed to adjust axis rotation issues. Also, you might have to file the machined surface of the headstock base to provide enough shift to correct things.

You can also find comprehensive five page article on lathe setup in Woodturning Knowhow Part 4 in *WT254* – June 2013. It covers tips and tricks for lathe location, setup, lighting, storage, and much more.