

# Workholding aids & chucking – part 7

In the next part of this series, **Kurt Hertzog** explores several different areas of turning and particularly focuses on the subject of speciality workholding and chucks

**T**he realm of speciality chucks is pretty diverse depending on what your particular end goal is. Remember, wonderful turned work has been done for hundreds of years before motorised lathes, high speed steel tools and the speciality engineering chucks. There was – and still is – a low-tech mounting solution allowing turners of yesteryear to create their works of art. However, taking advantage of the modern speciality chucks makes your turning easier to accomplish and speeds things up considerably.

Any brand mentioned is not a recommendation but only what I own. There are many manufacturers who

make these or similarly functioning chucks. Base your selection on your own particular shopping location, budget, and personal brand preference.

Remember that with all woodturning tool and equipment expenses, the price difference between the bargain version and the higher priced items often becomes negligible when amortised over many years.

This month we'll take a look at several different areas of turning and some of the great chucks that are available to you if that is your particular area of interest. The chucks I've selected are from the lowest level of use and simplicity to some of the

very exotic and sophisticated available on the market. I've chosen them because they illustrate the solution to a specific problem.

The method they use should be filed away for you to use in your workholding problem solutions.

## KURT HERTZOG



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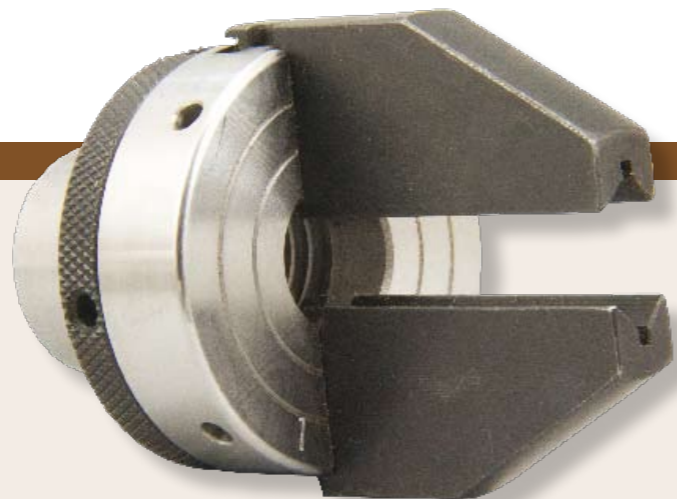
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**PEN AND BOTTLE STOPPER DRILLING CHUCKS**

While not quite a pen turning chuck, the Penn State drilling chuck certainly performs a valuable function allowing for drilling non-symmetrical blanks on the lathe. Spigot jaws on chucks work nicely when your blank is perfectly square or round. When you have anything irregular, the clamping for precise drilling on the lathe gets dicey. By clamping in two corners, square, rectangular, trapezoidal, round, or just plain irregular blanks can be safely mounted for drilling. The beauty of drilling on the lathe is that there isn't any depth limit based on quill travel. By sliding the tailstock as your drilling fixture, your only drilling limitation is the length of the drill.



This edge clamping chuck works wonderfully to clamp pen blanks regardless of shape to allow for drilling on the lathe. It also works well for bottle stoppers



Stabilised or dried blanks often aren't square any longer making them difficult to clamp in the traditional four-jaw chuck. Edge clamping can safely grip round to trapezoidal shapes



Even bent blanks can be drilled when corner clamped. There will be a material centre presented that can be drilled using the lathe. No quill travel issues here

**CLOCK BODY MOUNTING**

Whether you turn clock bodies or not, this example demonstrates the concept of a simple expansion chuck. This limited travel special purpose expansion chuck is designed for the standard mini-sized quartz clock mechanism. By drilling the correct size for the clock insert with a Forstner bit, you can now use the expansion chuck to grip the clock body to be turned by inserting and a quarter twist expanding to lock. The beauty is that you don't even need to be centred. Your grip will clamp on the inner diameter of the hole regardless of where it winds up. On the lathe, the tailcentre can be used with or without the pin. I usually drill a small hole right on through the wood block to facilitate removing the clock mechanism with a paper clip allowing the time or battery to be changed without prying on the rim of the clock face. With that small hole, the tailcentre point causes no problem. The tailcentre is taken out of play when needed and the back face can be cleaned up removing any tailcentre markings leaving only the access hole diameter.

Specifically sized as an expansion chuck for the mini quartz clock mechanisms, this modest priced chuck speeds production by clamping with a fractional rotation to lock



**CLOCK BODY MOUNTING (CONT)**



With the face prepped as flat stock, the clock chuck allows great access around the clock body for turning, sanding, and finishing



Workholding isn't just on the lathe. After turning decoration and finishing often require workholding. This chuck works very nicely to hold the clock body while buffing

**MULTI-CENTRE TURNING (CONT.)**

Moving from the simpler specialty mountings to the more complex, we'll explore multi-centre turning mounting. There are many artists who use multi-centre turning to distinguish their work. Multi-centre is simply turning that centre point once or more times to interact with the original turning. I have a Vermec multi-centre chuck which performs this function easily. There are others available that work on the same principle. The chuck is actually clamped on your own chuck. There is a recess in the back for you to expand your chuck jaws into, fastening the Vermec in place. It has a screw mount

for you to affix your blank. Once mounted, you have a choice of dead centre and offcentre increments of 4mm (5/32in) through to 32mm (1 1/4in). The 4mm (5/32in) increments are set and fastened by machined pockets with grub screws. This provides for precise positioning and repeatable positioning should you wish to revisit any certain position. While I only have experience with the Vermec multi-centre chuck, I'm certain that other manufacturers have similar functioning devices. If you haven't experimented with multi-centre turning, give it a try. It will open new horizons for your bowls, platters, and other turnings.



My multi-centre chuck is fastened to the lathe by expanding the jaws of another chuck into the pocket on the back. It then has dead centre and then eight different off-centre selections



The 'o' marking indicates that it is on true centre. Depending on your design, you can use any or all of the other eight offcentre positions available



After truing on dead centre, the chuck is adjusted to the 16mm (5/8in) offcentre position for the next portion of the turning. There are precise positioning features for each position



Working with offcentre turning takes a bit of getting used to. The shadow line of the material extremes is where you are typically working with the solid lines showing the constant material area



### ECENTRIC TURNING CHUCKING

**M**oving further into sophisticated mounting is eccentric mounting. I have one of the very old Escoulen eccentric chucks. Designed by Jean-François Escoulen, it is a clever way to mount spindles to turn eccentrically. The chuck has three different diameter tapers that will accept your blank. That taper ring is held captive in the massive body

of the chuck, locked into place with grub screws. To mount your work, you cut a taper on the wood to fit the inner diameter of the taper ring you've selected. Once sized, the wood is wetted and pounded gently into the taper. The compression of pounding the wood in and the swelling of the wet wood secures the blank in place. You now have a choice of eccentricity based on how you adjust the clamp

ring. The lines on the taper ring are indicators. You'll see that the length and the angle of change creates some interesting turning opportunities. Again, the shadow is your friend. You need to find the outer extremes carefully and begin your cutting there. The adjustments on my chuck are not fixed stop so repositioning accurately is difficult should you try to go back later on.



There are three different diameter tapers for you to mount your work in my Escoulen chuck. They are held totally captive by design with the amount of eccentricity locked by grub screws



With the work pounded into the taper, the amount of eccentricity is denoted by the number and amount of rings difference between sides. There is both a pivot point screw and lock screw to fasten adjustment

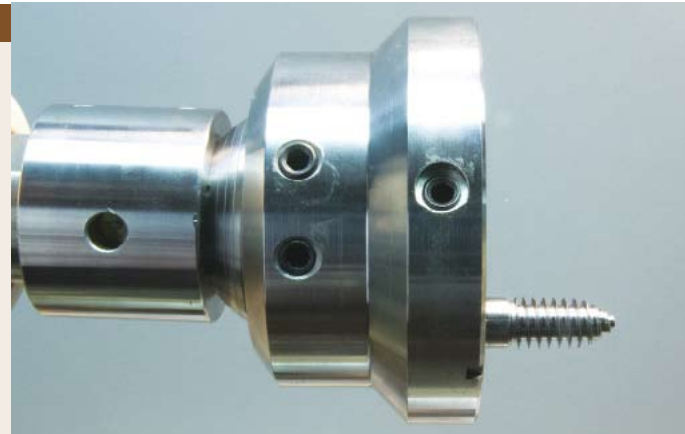


The length of your material interacts with the amount of angle adjusted in the chuck creating your eccentricity. Turning to a shadow line is an interesting experience for those new to it

### THE MARRIAGE OF MULTI-CENTRE AND ECCENTRICITY

**F**or the more adventuresome, you can marry both multi-centre and eccentricity. I can't explain the possibilities. You'll have to imagine them as best you can. The master is Jean-François Escoulen. The chuck that I own was designed by him. Mine is a design level or two behind the latest but you'll get the idea. The chuck threads on to your spindle and has both a

screw for mounting or a faceplate. Either can be used on dead centre or rotated to a new centre point. There are 12 positional rotation points that are available and accurately repositionable via three grub screws. Should you only wish multi-centre, you are done. Now let's mix in the eccentricity via the ball adjustment like above and your entire turning world has massively new horizons.



ABOVE: The Escoulen Chuck shown with the screw mount. It has an available faceplate to mount work. Shown with the screw mount in an off-centre adjustment along with an eccentric off axis position



LEFT: The shadow lines on the chuck and bowl blank will tell you how far from the norm this blank is rotating. Imagine the possibilities

### CONCLUSION

**T**here are many, many more examples of speciality workholding devices available. Those presented here were just to whet your appetite. Not to send you off spending but to see the methodologies used to solve a particular problem. Depending on your needs, you certainly can find commercial solutions but also can envision solutions you can create much like the turners in the centuries before us. ●