

TIPS

Drill perpendicular holes in a disc

In order to drill a hole on the centerline of a disc and have the hole straight and perpendicular to the center of the disc, try this: With the disc mounted onto the lathe, mark the disc. In this case, mark six places evenly spaced. Lock the lathe spindle with a mark at top-dead-center (TDC). Clamp a self-centering doweling jig to the disc with the drill hole lined up with your TDC mark. Use a small level to level the doweling jig. Drill the centered, straight and perpendicular hole. Repeat. ■

—Bob Gerenser, California



Woodworm Screws

Mike Peace

Many turners do not take advantage of one of the easiest and quickest ways to mount some projects on a lathe—the woodworm screw. This is basically a large screw chuck.

While you can buy a dedicated screw chuck, most scroll chucks come with a woodworm screw. This is a machined screw held within the jaws (*Photo 1*). A woodworm screw is cylindrical rather than tapered like a typical wood screw and has sharp, deep threads. These threads are designed to bite into the workpiece with a minimum of damage to wood fibers. The screw has a base that fits beneath and against the underside of the jaws to prevent it from being pulled from the chuck.

Woodworm screws also have four grooves or flat areas for the jaw slides or chuck jaws (or both) to fit against, to prevent the screw from twisting and coming loose. Some, like the one that came with my Super Nova 2, have a channel that the jaws close around.

The woodworm can speed up the process of getting the exterior of small bowls formed and a tenon turned for a chuck to grab onto. Another advantage is that you can remove and remount the piece with a good chance of it running true.

How to use

Insert the screw into the #2 jaws and start to tighten the jaws. Pull the screw forward so the base fits against the

Small projects

Sometimes a woodworm screw is just too big or long for your project. You can easily make a screw chuck for small projects of a production nature. Mount a scrap of wood onto a faceplate (or use a threaded glue block screwed onto a woodworm screw).

A #10 machine screw will hold well for small projects where you are only taking light cuts. With the faceplate and wood scrap mounted onto the lathe, drill a center hole for the screw. The hole should be small enough in diameter for the threads to hold the screw firmly in place. Remove from the lathe and screw the screw in from the back.

Remount and turn a taper to match the bottom of the project. You can use this taper as a visual reference to size your project without the need for calipers. This is a great

technique for small production-style projects like knobs or chessmen.

A small amount of thin CA glue applied to the screw threads before screwing the workpiece onto the screw will provide additional holding, yet the piece can still be removed easily.



Smaller-size shopmade screw chucks provide fast and easy mounting of small projects such as chessmen (right). Use a lag bolt if more support is needed, as shown in the example on the left that uses a faceplate and a scrap of plywood.

**1**

The screw on the left projects $\frac{3}{4}$ " (20mm) beyond the jaws. The one on the right projects $\frac{5}{8}$ " (16mm).

**2**

A large hardwood washer greatly strengthens the hold.

**3**

Use a plywood spacer when a smaller-depth hole is required.

back of the jaws, and then finish tightening. This will prevent any tendency for the screw to creep forward when it is being used.

Ensure that the workpiece has a flat surface where it will touch the top of the chuck jaws. Pre-drill a hole into your workpiece slightly smaller in diameter than the screw size, and about $\frac{3}{4}$ " (20mm) deep. Teknatool says drill a $\frac{5}{16}$ "- (8mm-) diameter hole for their woodworm screws. Oneway specifies a 9mm- or $\frac{11}{32}$ "-diameter hole for their Stronghold and Talon chucks. Check the instructions that came with your chuck for hole diameter.

A woodworm screw has its best hold in face-work such as a platter or small bowl, but can do well with small endgrain projects. Most of the holding strength comes from the large jaw surface that is pulled against the wood. One way to strengthen the grip even more is to make a large-diameter hardwood washer of side-grain flat stock that fits around the jaws when closed and is even with the top of the jaws (*Photo 2*).

Woodworm screws are not suitable for hollowing projects or other work where the workpiece tends to project out from the chuck toward

the tailstock more than about 4" (100mm). Longer projects tend to cause leverage problems that require a stronger holding method than a screw chuck.

Tips

- Use tailstock support as long as possible.
- Keep the rpm at a safe speed for the size of the piece, but probably no more than 600 rpm.
- Do not use this chucking technique with punky or otherwise unsound wood.
- When using on softer woods or green wood, you can strengthen the wood fibers by adding thin CA glue to the walls of the drilled hole.
- Do not leave green wood on a screw chuck overnight. Rust can make it extremely difficult to remove.
- If you cannot remove the piece with two hands, remove the screw from the chuck with the piece attached and try unthreading the screw with a wrench.
- After threading on the blank, try rocking it side to side to ensure there is no movement.
- Rub a little candle wax on the screw threads to make it easier to remove

the work. Keep in mind that when turning, the workpiece can actually get tighter.

- Sometimes the standard hole is too deep for the wood. An example would be when turning a plate from $\frac{3}{4}$ " (20mm) stock. Simply add a spacer made of MDF or plywood, $\frac{1}{8}$ " to $\frac{1}{4}$ " (3mm to 6mm) thick, to shorten the amount of screw that is exposed (*Photo 3*). The woodworm for the Super Nova2 or Nova G3 projects about $\frac{5}{8}$ " (16mm) while the one for the larger Titan chuck projects $\frac{3}{4}$ " (20mm) beyond the jaw surface. A hole only $\frac{3}{8}$ " (10mm) deep can securely hold a 12"- (300mm-) diameter platter. ■

Mike Peace started turning shortly after retiring and enjoys a wide variety of turning from ornaments to hollow forms. He is active in three woodturning chapters in the Atlanta area. You can see pictures of Mike's work and read his published articles on his website, mikepeacewoodturning.blogspot.com.