Using a Spindle Tap

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Part of

The SegMaster Series

The SegMaster Series is a set of short articles provided for woodworkers interested in Segmented Wood Turning. They are short, concise, and filled with tips and techniques that readers may or may not have thought of themselves. They maximize photos and illustrations and can be skimmed quickly or read slowly and studied. They can be printed, taken to the shop, and used as tutorials. Please enjoy them and let me know how they can be improved.

Written By

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Using a Spindle Tap

Face plates work great for holding bowls to the drive spindle of a lathe. However, sometimes I have some work that is in process for an extended period and I do not want to tie up a face plate for a long time. For these, I use a Spindle Tap to put threads directly into the base plate.

I have spindle taps for both 1" x 8tpi and 1 ¼" x 8tpi since I have both my original lathe and my new bigger lathe. The procedure for using both taps is the same.

TBD Photos of taps

My instructions provide a better method

The reason I am talking about this when there are instructions for using these on the Internet is that I have a method that is better and easier than what the manufacturer recommends. I'll show you.

Prepare the Block to be Tapped

My most common reason for tapping is to make the base for a waste block. I start with 2 pieces of ¾" high quality plywood or other flat hardwood. Since my drive spindles are 1 ¼" long, this gives me enough depth that the drive spindle is not poking out through the waste block. It also allows me to cut through the waste block without hitting the drive spindle.

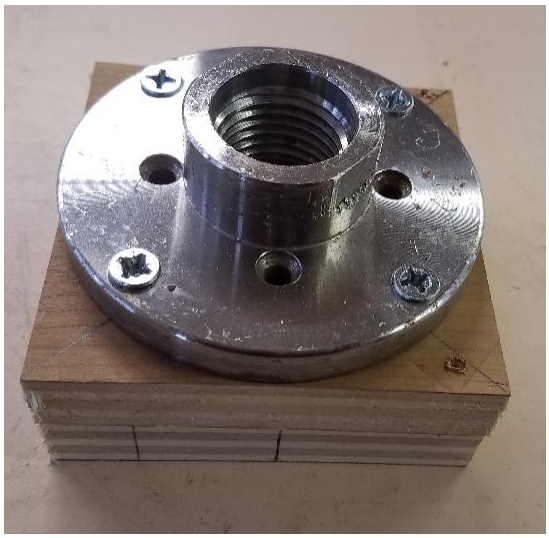
Sometimes, I use a *waste ring*. In other words, I glue a segmented ring to a single ¾" piece and it is this piece that I tap. I like the width of the waste ring to be between ½" and a 1" depending on the weight of the bowl I am contemplating. I often reuse these tapped blocks by attaching new waste rings as they are needed.

In any case, we are starting off with a block of wood that is to be tapped. It is best for this block to be square. Do NOT round the corners at this point.

Secure the Block to the Spindle

The first step is to securely attach the block to the spindle. I use two different approaches.

My original approach was to do this with a face plate. Later, I found that it was much easier to use Nova Chuck. If you have jaws for the Nova Chuck that are large enough to grab the block of wood, use them. If your block is too large, use Cole Jaws on the Nova Chuck. Replace the rubber bumpers that come with the Cole Jaws with 6mm x 20 mm flat head screws.



TPD Photo: Block held by Jaws

TBD Photo: Block held by Cole Jaws

If the block being tapped is large, it is best to use a large faceplate.

Drill the Block

Once the block is secured to the drive spindle, drill it. Do this in two stages.

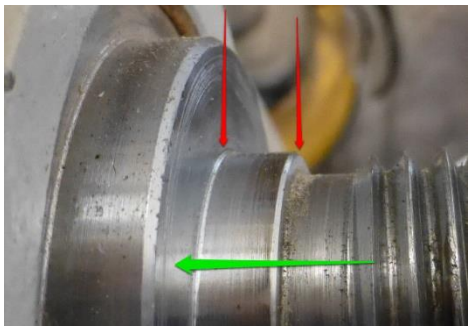
For the 1" tap you will need a Forstner bit that is ⅞" in diameter and another that is 1" in diameter. For the 1¼" tap, you will need a Forstner bit that is 1⅛" and another that is 1 ¼". In other words, we need two bits for each type of tap. One is the full size of the spindle and the other is ⅛" smaller.

Set the larger Forstner bit into a chuck secured to the tailstock and lock the tailstock down. Start the lathe running at an appropriate speed (I use about 200 RPM) and drill a quarter inch into the wood.

Replace the larger bit with the smaller one and with this, drill all the way through. Be careful as you get toward the end. I can usually feel the end coming and I slow down the drilling. I always worry that I will damage my Forstner against the metal that is holding the block, but that does not seem to be a problem.

Are you wondering why you want to use two sizes of drill? There are two reasons. First, when you are done with the tapping and trying to attach your new tapped hole to the drive spindle, it is easier if there is a larger un-tapped place. The second reason is that if you look carefully at the drive spindle on your lathe, you will most likely see that there is an unthreaded place on the lathe. When you tighten the block onto the lathe, it is important that the block goes all the way onto the lathe.

Look carefully at the photo to the right. The red arrows point to the place on the drive spindle that is a full 1" on the smaller drives and a full 1 ¼" on the larger ones. Your tapped hole must go over this area. The green arrow points to a flat surface on the drive spindle. Your block must rest firmly against this surface. The threads will not hold your work straight on the spindle; there is too much play. The job of the threads is to hold you bowl firmly against that perfectly flat place.



Tapping

Next step is the tapping.

Place the drilled block to be tapped onto the lathe. If you have a Pointed Live Tailstock Center, put that into the tailstock. If you do not, cut the head from a long nail and put that into a chuck and put the chuck into the tailstock.

You will see that the tapping tool has an indent in the end. Hold the tap so that the point on the tailstock goes into this indent and move the tailstock so that the tap threads are positioned inside the hole in the block being tapped.

Lock the lathe so that the spindle will not move. Notice that the tap has a square cut into the end. Us a wrench to grip this and position the wrench onto the lathe tool rest so that I will not move.

What you will now do is to manually “unwind” the block of wood off of the spindle drive of your lathe and onto the tap. You are using the lathe to hold the entire arrangement perfectly straight and square. Grip the wooden block to turn it. This is why we did NOT remove the corners earlier. If I am using the Nova Chuck (rather than a Faceplate), I sometimes insert the wrench into the Nova Chuck to give me some mechanical advantage while turning it.

After about 3 or 4 complete turns, you will need to reposition the block. Remove the wrench and wind the block back onto the spindle. Move the tailstock to re-engage the end of the tap. Reposition the wrench and unwind another 3 – 4 turns. Keep doing this until the tap begins to poke out the bottom of the block. You will have to feel this.

If you are tapping a block that is attached using a face plate, be careful as you get to the end. You can damage the faceplate or the tap or both. The tap could try to re-tap the faceplate.

Finalize the Tap

At this point, your tap is secure inside the block. Do not try to unwind it. Instead, remove everything from the lathe. Place the square end of the tap into the jaws of a bench vise. Grab the block and turn it to drive the tap the rest of the way through the block.

Just for fun, try to back the tap out of the block. I found that it will not go backwards; hence the reason for continuing through the block.

If you are tapping something where you cannot go all the way through (such as a salt shaker), Do the tapping a bit at a time, backing out after every couple of turns. If you wait until the end, you tap will be trapped inside the wood, but if you back it out after each couple of turns and then proceed, you should be OK. “Two steps forward; one step back.”

Test the Block

You might want to test that the block fits well onto the drive spindle. So, put it on. Be sure that you install it with the side with the larger diameter place going onto the spindle first.

Look closely at your lathe. At the base of the spindle there is a very flat place. It is important that your block rest against this are. This is what holds the block perpendicular to the axis of the lathe. I have

found that the threads themselves will not hold the lathe perpendicular, but if I manage to get it all the way to that flat place, the block will be fine.

Unlock your lathe and turn it on. Make sure the block does not wobble.

At this point, it is a good idea to round the corners. If you touch the spinning block while the corners are in place, it will ***hurt***.