

Bowl Turning 101 With Kirk DeHeer

There's something primordial about bowls. We get our sustenance from them, decorate with them, and when we add the fact that we crafted them in a collaboration with Mother Nature, it makes it even that much more special. After the blank has been prepared the first tool many of my blanks see is a hammer. I want to remove any bark that is on the blank for two reasons.

- 1) I don't want it to fly off and hit me or someone or something else.
- 2) Bark contains dirt and other abrasive materials that I don't want my tools to meet. (Fig 1)



Fig 1

I like to use a Woodworm screw with a large set of jaws as backers. With this set-up it is like attaching a 5 inch faceplate without putting in a bunch of

screws. This saves time. (Fig 2)



Fig 2

Many turners say that they have the screw come out of the chuck. I have a selection of screws shown (Fig 3) if properly installed the screws can not come out of the chuck.



Fig 3

Here is a Oneway screw in a Vicmarc chuck. Yes they can be used that way. The flats on the screw should be in line with the backing jaws. (Fig 4)



Fig 4
Next we want the jaws to be in the groove in the screw. (Fig 5)



Fig 5
With the screw installed in the chuck set a pair of dividers to the size of the jaws that are suited for the blank that you are using. A good rule of thumb is to have 40% of the diameter in the chuck. (Fig 6)



Fig 6
It's time to drill the appropriate drill hole. I use a hand drill with a collar on the bit. I don't want the hole deeper than needed for the screw because I core most of my bowl blanks. (Fig 7)



Fig 7
Mount the blank onto the screw. I do this with the lathe running at a speed **less than 350 rpm**. It's a bit like feeding a horse. Keep your hands open, don't **grip**

the blank. At the slow speed and with your hands open the lathe will just take the blank out of your hands. If you are uncomfortable mount the blank with the lathe off by locking the spindle and turning the blank by hand. Either way make sure that you have the blank tight against the chuck jaws. (fig 8)



Fig 8
Regardless of how you mount the blank to the lathe one of your best safety devices is your tailstock. It is the cheapest insurance policy that you have. **The lathe came with it.** (Fig 9)



Fig 9
Let's look at bowl gouges. The gouge doing the majority of the work is a 1/2" flute 5/8" bar parabolic flute bowl gouge with a 50 degree nose bevel and the

control leg set on the Veri-grind at 23 degrees the wings are pulled back 5/8" (Fig 10 and 11) notice that I have placed a red line in the bottom of the flute and green lines on the side. Remember when cutting with the bowl gouge you should not be able to see the red line.



Fig 10
The micro bevel helps in several ways(Fig 11) First the sharper secondary bevel is sharpened first with a coarse grinding wheel in order to remove material *fast!* And leave less material to grind with the finer wheel extending the life of the finer wheel. And perhaps the most important reason is that it doesn't leave as deep of compression marks on the inside of a bowl.
When sharpening any tool, keep your hands away from the wheel. (Fig 12) I choke up on the tool and jig, keeping my hands free of the wheel if the tool should slide off the wheel. I like to keep my elbows close to my side.



Fig 11

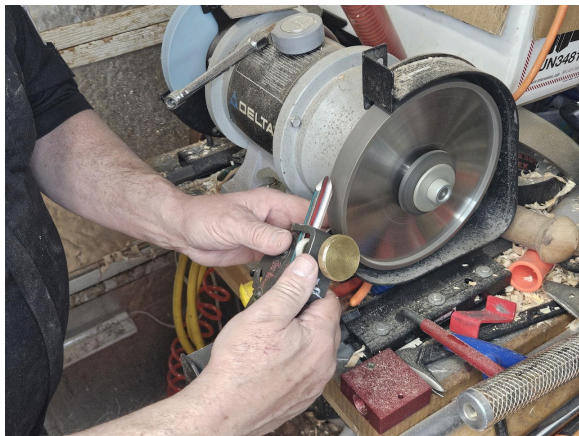


Fig 12

Now that we have a sharp tool lets consider what speed should we turn the blank at. We have already inspected the blank for loose bark or wood and also determined that the blank doesn't have cracks, checks, or defects, like bark inclusions. These things can get you seriously hurt! The emergency room costs more than a good piece of wood. Dale Nish taught that a good formula to set the lathe speed is the RPM X Diameter of the blank should be between 6000-9000

In this case we have a 12" diameter blank if we turn at 500 then $12 \times 500 = 6000$ and $12 \times 750 = 9000$ with that in mind our speed should be around 500 to

start. **If the lathe has the mass to run the blank and be stable.** With a max speed of 750 RPM. This is a good guideline. If your lathe vibrates or bounces at 500 you need to turn the speed down. It is not safe to have the lathe bouncing.

Set the tool rest height Standard Tool rest height is defined as placing the tool level on the rest and having the cutting edge at centerline.(Fig 13)



Fig 13

For a bevel riding push cut. Set the rest at standard tool rest height. Point the bevel in the direction you want to travel (Fig 14) the bevel is pointing in the direction of travel at a 45 degree angle to the spindle. As this cut works toward the rim of the blank there is bevel pressure on the blank. And we might get a significant bounce on the tool. The cut I prefer shown in (Fig 15) is a Bevel riding slicing peel cut. In this cut the tool rest is raised just above center and the tool handle is lowered way down. When most turners think they have the tool handle lowered enough they are wrong. In the photo you see the handle is more forward than in (Fig 14)



Fig 14

This removes the nose bevel from the blank. You see the flute is more open and the shavings are coming off the blank nicely. You may notice that the right hand is not on the handle but on the blade driving the tool through the blank. The left hand is on the handle and as the blade comes up the blank the left hand drops to increase the slicing angle of the cutting edge on the wing.(Fig 15)



Fig 15

Closing the flute place the lower wing of the gouge on the bottom of the blank and levels off any uneven surface.



Fig 16

Using the dividers that you set in an earlier step hold one point at center, lift the back of the dividers and scribe a line for the tenon size. (Fig 17)



Fig 17

Using your bowl gouge cutting in toward the tenon by taking steps using the bevel riding slicing peel cut. (Fig 18)



Fig 18
This is the shaving that should be coming off your tool.



Fig 19
Size in the Tenon and add a step(Fig 20)

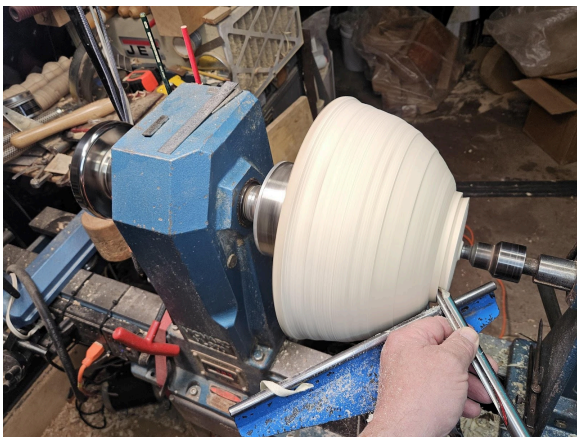


Fig 20
Cut the Tenon clean. I like to use a spindle gouge (most bowl gouges won't

cut the shape of a dovetail Tenon.) If you use a skew, come in from the tailstock end. So you are only scraping facegrain. (Fig 21) If using a scraper only makes contact on one surface at a time. I believe the scraper to be the most dangerous of the three techniques.



Fig 21
(Fig 22) shows pointing the skew in the wrong direction on a facegrain piece of wood.



Fig 22
The tail stock has done its job. You should have a good enough hold on the blank with the woodworm screw to remove the tailstock in order to make a bevel riding push cut in order to get a clean surface. (Fig 23)



Fig 23

Fig 24 shows an improper front hand placement. This puts too much bevel pressure on the wood and creates a spiral in the blank.



Fig 24

As we place the blank in the chuck we should have a small gap between the jaws and no gap on the shoulder of the jaws. If you have a gap you need to recut the Tenon. (Fig 25 and 26)



Fig 25

When cutting the tenon there should be a slight undercut on the shoulder. The shoulder gives stability to the blank; the length of the tenon gives security. If the shoulder of the chuck jaws don't touch the shoulder of the tenon the blank can move sideways and work its way out of the jaws or break. (Fig 26)



Fig 26



Fig 27

Get the rim right first using a slicing peel cut, then a shear scrape. Make sure you get rid of any cracks or "pith checks" (heart checks) in the wood. (Fig 27-28)



Fig 29

Move the tool rest and clean up the outside of the blank with a shear scrape (doesn't ride the bevel) or a shear cut (rides the bevel). (Fig 30)



Fig 28

Checking to make sure the rim is cut below all the pith checks. (Fig 29)

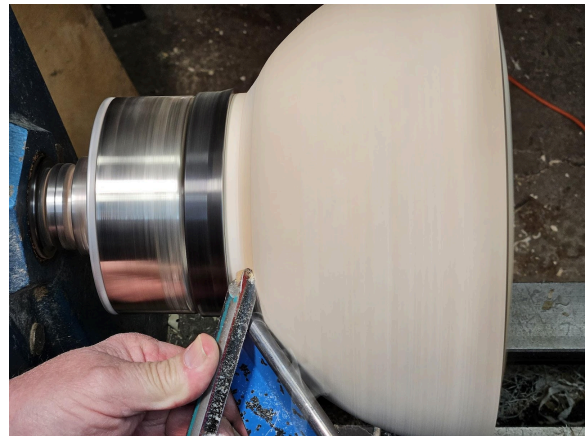


Fig 30

With both the shear scrape and shear cut the tool rest is raised $\frac{1}{2}$ " to $\frac{3}{4}$ " above the center line. The handle of the tool is held low. Note: If the tool handle is held level the tool goes into a full scrape. It might be helpful to remove ridges but will leave you with tearout. Not a fair trade.

As you true up the bowl and work from the bottom toward the rim you find that the tool handle wants to lift in order to keep the blade in contact with the bowl.

This is how you know it is time to stop the lathe and move the tool rest. (fig 31)



Fig 31

Continue the shear scrape or shear cut up to the rim of the bowl. (Fig 32)



Fig 32

The shavings that come off the tool should be nice and fine. (fig 33)



Fig 33

As we set-up to hollow the inside. Set the tool rest to standard tool rest height. Where the tip of the tool is at the centerline when the tool handle is level. (Fig 34) (camera angle makes it look as if the tool handle is down but it should be level.)



Fig 34

With the bevel pointed toward the headstock and the flute closed starting just to the left of center enter the tip of the tool into the blank. (Fig 35)



Fig 35

Working from the center to the outside continues to open up the inside of the bowl. Working the top 1/3rd of the bowl depth. In this bowl we are leaving the rim thick so that it can be undercut in a later step. Leave the ridges left from the gouge. They give you a place to start the next deeper cut. (Fig 36)



Fig 37

Continue hollowing from the center. Until you are about 2/3rd the way in. It is time to undercut the rim. Adjust the tool rest into the inside of the bowl so that the rest is parallel to the wall of the bowl. It should also be close to the wall in order to eliminate tool vibration. (fig 38)



Fig 36

Lower the tool rest below center for the next series of cuts. Set the tool on the rest and hold it at the centerline; the tip of the tool should be at a 45 degree angle when held at center. (Fig 37)



Fig 38

With the tool rest at standard tool rest height and the tool closed, enter the tip of the tool into the rim and then push the handle toward the headstock pointing the bevel toward the outside of the bowl rim. Lower the handle slightly, opening the flute. Arc the tip of the tool around the inside of the bowl.(Fig 39)



Fig 39

Removing the last 3rd of the wood in the inside of the bowl lower the rest more if possible repeating the steps for the 2nd 3rd

Many turners adjust the rest into the center thinking that this gets them closer. In fact if the tool is on the bevel the blade is out toward the rim and unstable on the rest. (Fig 40)



Fig 40

The tool is more stable if the rest is not tucked in. (Fig 41)



Fig 41

This might have tool vibration with the tool reaching this far over the rest. A simple hack is to use the other side of the rest tucked into the bowl shortening the reach that the gouge has. (Fig 42)



Fig 42

Note the front hand is pulled back on the tool so that it does not make contact with the rim. The tool has a much shorter reach with the tool rest in this

position and less vibration.(Fig 43)



Fig 44

This is where the tool runs into endgrain fibers. We could continue with the fingernail gouge that we have been using. I am going to switch to a "Traditional grind" on the bowl gouge often nicknamed the bottom feeder or bottom gouge. It can cut the flat grain wood better than the fingernail grind. The traditional grind gouge has a 50 degree angle just like the fingernail gouge but it might get changed if the tool hits the rim of the bowl when the bevel of the tool is cutting the deepest part of the bowl. (Fig 44)

This where many turners use a heavy bowl scraper to refine the curve. Be careful not to trade ridges for torn grain. It's not a fair trade.

Once you have the shape on the inside it is time to sand the inside and the outside of the bowl. Once that is done it is time to remove the foot. A simple friction drive will work. The one in (Fig 45 and 46) is made from an extra piece of wood and covered with self adhesive EVA foam. It has two grooves cut into

the back so it can be used with two different sets of chuck jaws.

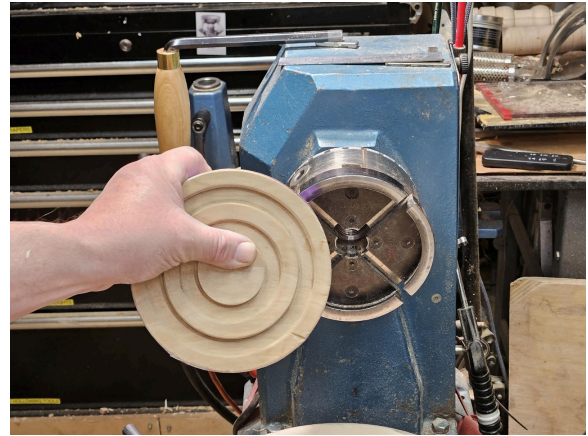


Fig 45

The covered side is domed and hollowed so that it drives at the outer edge of the disc. Pie shaped wedges have been cut out of the foam so that it lays smooth on the disc.



Fig 46

To use this place the bowl over the friction drive and place the tailstock into the original hole placed in the bowl when the outside was roughed out. (Fig 47)

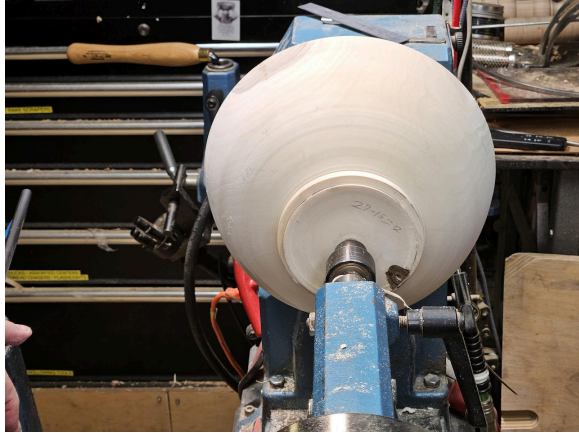


Fig 47

Some of the drawbacks of this method are that heavy cuts can damage the foam. Note: I used paper towels between my friction drive and my bowl for years. Another drawback is that you don't have access to the entire bottom of the bowl.

Another way is a Jam chuck for this we will be using a bowl blank that is the same size as the original. (Fig 48)



Fig 48

Start by cutting a taper. (Fig 49)

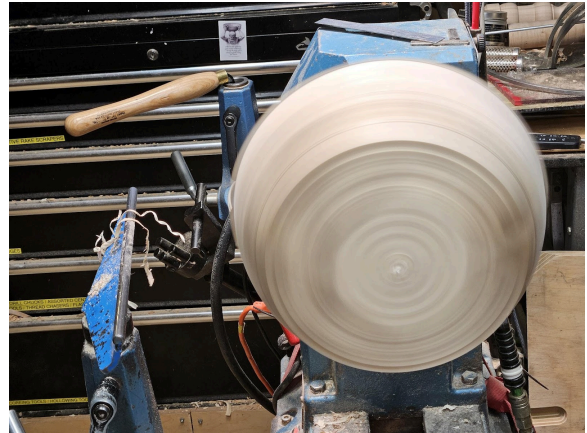


Fig 49

Hold the completed bowl on the taper softly (We are not trying to burn it on to the jam chuck) Just get a light burnish mark. (Fig 50)



Fig 50

Once you have an idea where the fit is use a spindle gouge to cut the taper to a cylinder (Fig 51)



Fig 51
Test fit the bowl and trim the cylinder until the bowl fits. It should fit tight. (Fig 52)



Fig 52
Use the tailstock as an insurance policy as long as you can. Removing it to have full access to the bottom of the bowl. (Fig 53)



Fig 53
A close up of the cylinder cut into the jam chuck (Fig 54)



Fig 54
Tap the bowl off the chuck. Stand back and admire your work. (Fig 55)



Fig 55
Using the jamb chuck Start your next project or reuse the jamb chuck on other bowls.