

Methods of Work - Or How I Turn - Fred Williamson -

There are many ways of turning bowls. Over the years I've made numerous tools to help me in my turning. Here are some of the details. Perhaps they will be of some interest if not use to you.

I've been working on a homemade lathe since 1972, first as a secondary part of my woodworking, now as the sole focus of my woodworking. My lathe has evolved over the years with various improvements and additions until I finally replaced the last original part in 1997. I now have a 2 HP variable speed three phase AC motor driving a 1 3/4" dia. shaft in heavy duty spherical roller pillow block bearings. A home-cast concrete block serves as a riser from the 4" x 8" oak wooden ways to the 2" of plate steel that the bearings bolt to. The tool rest posts are 1 1/2" inserted into a 4" diameter column welded onto two 1" x 2" bars that make up the banjo. Parts of an ancient square head planer are bolted to the headstock and the tail of the lathe to provide a 36" wide base at the floor. The bed length is only 32", to allow easy access to the insides of bowls (I do not use a tailstock). All this mass greatly minimizing vibration and gives me a very stable platform to work from. I can swing 25" diameter maximum, but usually stick to 22" and smaller. That's more than enough weight to deal with. Photos of my lathe and other tools mentions here may be seen on my website: fredwilliamson.com.

Bowl blanks are trimmed and cut octagonal in the lathe room with an electric chainsaw. After using up 3 or 4 Craftsman saws that always leaked bar oil, I bought the Makita UC4000 that is very satisfactory, though the clutch tends to slip too easily I think.

Faceplates are mostly 4" diameter made up from 1/2" plate steel welded to a 1"x 8 tpi nut, with two concentric rings of six 1/4" dia holes. I usually use 1"x #12 pan head sheet metal screws in the inner ring of 6 screws, then 1-1/4" x #12 in the outer ring, all angled 15-20 deg. towards the center toenail fashion. On bowls over 120 pounds I may switch to #14 screws. For the biggest globes I switch to a 5" Dia. faceplate threaded 1 1/2"x8 tpi, and 1-1/2"#14 screws.

I do the bulk of my turning with a deep bowl gouge 1/2" in diameter. I like the Glaser, but am very satisfied with the Packard ASP 2060 (3/8" nominal, 1/2" actual) Deep Flute Bowl Gouge. I use a long fingernail grind. The Side Grind Bowl Gouge they sell has a wider flute which is great for final cuts but is less rigid and tends to chatter under heavy stock removal or over long extensions. These powered metal tools hold an edge way better than the old HSS, and we won't talk about the carbon steel gouges of the 70's and before.

I have made extensions for my gouges to get more use out of the flute. I take 3/4" cold rolled steel about 7-8" long, drill a hole 1/2" diameter hole 1 1/2" deep into one end, and superglue the 1/2" gouge into this. The other end goes into an old 5/8" gouge handle. For 5/8" diameter gouges I use 7/8" stock. All handles are covered with 4 to 6 mm black textured neoprene using 3M 90 spray adhesive. This neoprene cushions the hand and allows you to use a much lighter grip, all ergonomically good for less arm fatigue.

Source: <http://www.foamorder.com/neoprene.html?gclid=CO7o8obIyZQCFQrFQodsbnb5kw>

Final cuts around the base are with a Crown Pro-PM 3/8" gouge, actual 3/8" diameter, ground to a fairly sharp point. It can provide a fine shearing cut across the bottom and up the first part of the sides. I use a simple round post beveled on one side of the top as a very small tool rest. This provides support at right angles to the chisel, right at the base, and is especially good for the parting tool.

My parting tool is made from a 1/8" thick planer blade, with the cutting bevel painstakingly ground away, 1-1/8" wide by 12" long to begin with. This thing is nice and bulky, holds an edge pretty well, but there are times a parting tool 1/16" thick is needed to slip between the bottom and the screws. An old heavy duty hacksaw blade works well for this, with just the cutting tip hardened with Mapp gas and water quenching.

I sharpen freehand on 80 or 100 grit wheels. I now prefer the Norton 3X wheels over the white wheels. The Oneway balancers sure can make a difference on a grinder, for no matter what brand wheel I have tried, many are out of balance even when trued up. I sharpen at the slow speed until the wheel gets to a smaller diameter. A light touch and a smooth rotation of the wrist is the ticket.

I have used a scraper for bottom cuts on open bowls made from a planer blade 8" long x 3/4" wide welded to 3/8" x 3/4" mild steel stock, fitted with wood handle. I seldom used this now, preferring a light shearing to scraping cut with the gouge across the bottom.

Thickness calipers are made from 3/16" cherry or maple for the smaller ones, 1/4" plywood for the big ones. The newest one has a 9" throat, with a 3 3/4" wide inside the curves, lightly spring-loaded and with the reading gauge about 7" from the pivot point. I aim for about 3/16+" thickness which will sand and dry down to about 1/8+" thick. Big calipers have 13" throat, small ones 6". Extra large custom shapes reach around globes.

Depth gauges vary. The medium one is made from 3/16" maple, 5/8" wide for the main shaft, and 8" long lower bar, 18" long upper bar. All are assembled with superglue for a snug slide. A seamstress's gauge helps set the depth. I aim for 3/8" thick for the bottom, which translates to closer to 3/16" with the undercut. Better too thick than too thin, or the bottom of the bowl will wrinkle and be fragile.

My cutoff saw made from 1/4" bandsaw blade 18" long, set in an old-fashioned bow saw with 8" throat, tensioned with tie wire. One blade has lasted 25 years or more.

The sanders are made from the Makita GV5000 sander/polisher. A hard rubber disc may be 2" in diameter is attached to the drive stub, with a 1/2" disk of dense foam glued to that, and then a 3 3/4" disc of a softer foam glued to that, all with 3M 90 adhesive. I use the DuraFlex D44 from FoamOrder.com. Thin but tough leather is glued to that, smooth side up, to attach the sandpaper to. The leather is primed with 3M Feathering Disc Adhesive. One priming will last months if you keep the dust off. I used to use standard A weight sandpaper and could get 5 discs from a single sheet of sandpaper, using the feathering disc adhesive to glue it on by smearing a thin coat of feathering disc adhesive on the whole sheet before cutting out the discs. But they tended to spin off when they got hot. I now use 3M gold PSA disks from 80 to 500 grit, which stay on great. It's better to start with 80 grit if possible, to avoid unwanted scratches showing up later. The Econ-Abrasives 5" PSA Disc Gold 60 grit works OK too, and seems to quickly become more like an 80 grit with use.

A standard wall dimmer switch wired to a duplex outlet, placed in a square steel box, makes the speed control. I sand a bit over half speed. Since I usually spend more time sanding than turning a standard open bowl, I'm always on the lookout for better ways, and am open to suggestions. These sanders are so useful that I became paranoid that the Makita GV5000 would be discontinued, and bought a third one last year. It works well to keep different grits on each, especially toward the end of a sanding.

After 500 grit on the Makita I go to a Grex random orbital sander to which I have some blue foam attached by hook and loop, again with leather for the upper surface. I put 500 grit on this, and find it does an excellent job of taking out swirl marks.

After stationary sanding to finest grit I go to ScotchBrite. On a round bowl this is easy with the bowl spinning, but on a natural edge bowl you have to rub some parts by hand. Then I tried sticking some to a hook and loop disc and found it a great improvement. The soft foam 3" dia disc sold by The Sanding Glove mounted on a high speed Sioux 45 deg. angle head drill makes a fine final polisher for any kind of bowl. I start with 3M grey-green fine #7448, then go to the gold very fine #7745, and end up with the white ultra fine #7445 than buffs. This sequence almost polishes the bowl at the end, and can be effectively used to buff out blemishes and scratches later on. It seems to blend the Behlen's Salad Bowl Finish right over the offending area. For more aggressive buffing at the start use the maroon 7447, but it leaves visible scratches.

For flattening the bottom of a dried bowl I use a homemade rig which is an 8 ½" dia. disk of plywood glued to a pulley locked to the end of a shaft set on pillow block bearings. A cheap motor runs it at 1750 rpm. The whole thing is mounted to piece of ¾" plywood with blocking such that I can easily affix it to the end of my workbench with the disk spinning horizontally at table level. I glue 120 grit garnet paper on top. Sitting on a low stool, I can lower the bowls down and flatten the bottoms. The sanding marks are removed with 320 grit on the foam-backed sander.

I use Behlen's Salad Bowl Finish on all open salad bowls. I use Waterlox on all globes, vases, and other art bowls that won't be used for salads. Usually 2 coats is enough, except on light porous woods that I have to build up coats on. I used to use worn cloth, but now find the Scott paper rags to be acceptably smooth and texture-free, and certainly more consistent.

After the first coat is on, the bowl is set aside to dry, first in the back room, and then out in the attached greenhouse spring to fall or a board suspended above the wood stove during winter. Drying raises the grain some, so it is necessary to sand a second time. This is hard to do without leaving marks, and was hard on my arms with the Makita disk sanders. What I use now is a small modified random orbital sander, a DeWalt DW423, with the disk cut down to 3 ¾" dia. I sanded the grit off a velcro sanding disk, glued on foam, and then the thin leather, to make a soft padded random orbital sander that with 600 grit paper will remove the fuzz with no visible marks. It is wonderfully easy on the elbows.

The Colwood Cub woodburner with a fine tip sanded round like a pencil allows me to carefully sign in cursive. It is essential to set the right heat, just barely hot enough.

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