

Katherine Kowalski

“Fine, *Refined* Turnery”

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Grinding, Sharpening, & Chips

Please see my web site www.KatherineKowalski.com for additional handouts, a supplier list, and more information.

Grinding vs. Sharpening

Grinding produces the “grind” or the shape of the tool. **Sharpening** is the light touch-up that makes the edge sharper, keeping the same grind. The shape of the tool is *critical* to making the desired cut. Always keep tools sharp. There is no “right/perfect grind” for everything: as you gain experience and discover your preferred style of working, you will discover your proclivities in grinds you use.

Grinding Setup

The Wolverine Setup is the most widely-used in the world. (This is an excellent system to learn, especially if you are turning at locations where the grinder setup is unknown – odds are that you’ll see a Wolverine in use). Learn to use the platform and you will be better able to control the shape of your tool, and have the freedom to modify it to your heart’s content.

High Speed Steel (HSS) tools may be ground on Aluminum Oxide wheels, but Powdered Metal (PM) tools are better ground on other types. All “blue” wheels are not the same. Use proven-quality wheels such as Norton SG or 3X (ceramic), or a diamond wheel to grind/sharpen PM tools.

If you sharpen frequently, use pre-set platforms for convenience and accuracy. (You can buy them separately from the various woodturning suppliers).

Bowl Gouges

Two main styles of grind – “fingernail grind,” named by Dennis White in the 1930s. (Sometimes referred to as the “Irish Grind,” and popularized by David Ellsworth). The bevel angle is variable and may be 40°-60°, and should be slightly convex. It has characteristic swept-back wings that are rounded on the edges.

The second, 40/40 straight grind, popularized by Stuart Batty, is drawn from grinds traditional through the history of woodturning. Forty-degree bevel, 40° angle on the straight-sided wings.

Tool Steels

Carbon steel is the softest of steels used for woodturning, and blunts VERY quickly. It is rarely used in modern woodturning.

High Speed Steel (HSS) (M2) is the most common type of steel used in turning tools today. Know the lineage of your steel: the tempering process is critical to the performance of the edge. Steel made in Sheffield, England, is known to be very high quality, and includes the Sorby, Henry Taylor, and Hamlet brands. Many “cheap” tools are now made in China, where quality control is lacking. These tools can be very poor performers, and you will spend more time grinding than turning! A knowledgeable supplier will be able to tell you about the quality of the steel and where it’s made.

Powdered metal tools have up to 15% carbides content (usually Tungsten or Vanadium), which makes them much harder, and the edge lasts up to 6 times as long as quality HSS. They make excellent negative-rake scrapers.

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Some suppliers of quality PM tools:

- Glaser HiTec: CPM-10V and CPM-15V (www.glaserhitec.com)
- Hamlet, (under the name Packard): ASP 2030, and ASP 2060 steel (www.packardwoodworks.com)
- Thompson Lathe Tools : CPM-10V, (Generic name: A-11). (www.thompsonlathetools.com)

Negative-rake scrapers

By definition, a negative-rake scraper has two bevels, neither of which is parallel to the bar. The top bevel is the “negative rake” and helps to cancel the cutting force. This makes the tool very gentle, completely different than handling a traditional scraper that tends to be “grabby”. It produces a very fine finish on *hard* woods, especially exotics. The burr is the cutter – sharpen often! (At least every 20 seconds).

“Natural” negative-rake scrapers include the skew, beading & parting tools, etc.

Grinding angles: common grinding angles include a 60° bevel on the bottom plus a 5° negative rake. (top bevel), or 40° bottom bevel plus a 25° negative rake. Optimal combined angle of 50°-65°.

Spindle Rouging Gouge

Never use a Spindle Roughing Gouge on face-plate work!!! Because the tool has a rectangular tang, (instead of round bar stock), it can be bent and broken by the force of the lathe and injure the turner! **ONLY** use a Spindle Roughing on defect-free **spindlework**. (Knot-free, crack-free wood where the grain runs parallel to the lathe bed.)

Use the flute-shape that works best for your needs.

Skew

You can make a skew virtually “catchless” by grinding a convex bevel. Always lead with the short point, and never cut above the center spot of the edge. The short point is **NOT** called the “heel” – the “heel” is on the bevel. (This is a common error).

A long concave bevel is leading cause of catches.

Pointy Spindle Gouge

This is a grind popularized by Cindy Drozda, and is extremely useful for creating small details on spindlework. The swept-back, straight wings allow for getting into tight spaces, and also for planing cuts. Cindy Drozda (www.cindydrozda.com) has online videos for sharpening her signature tool.

When sharpening, use a VERY light touch. I recommend a diamond grinding wheel, which takes off a minimum amount of steel. Make the tip as round as possible for the best cut – “corners” or angles will “scratch” the wood and leave tool marks.

Bevels

Relieve bevels to be able to get into tight places and traverse the bottoms of bowls. I use 1-2mm bevel on all tools, except on parting tools, rouging gouges, and scrapers of any description. Inexperienced turners may want a longer bevel to see/plan the cut better.