The gouge on the left has numerous facets and convex areas. The honable tool on the right has a slight hollow-ground surface and single facet. See page 50 for more details.

Turning tools and honing

by Alan Lacer

"Yes I honed my tool, and no apologies for it. It is faster than grinding, it gives a fineness no ground tool can offer. On occasion one can even tell by the finished product whether a person honed or not."

–Del Stubbs

Power-honing equipment above: In the background are MDF wheels, firm felt wheel, and cardboard wheel. Foreground: three types of buffing compounds and a rubber wheel with abrasive particles. Hand-honing equipment at right: flat diamond-coated steel, medium India slip stone (several radii available), tapered diamond rod or cone, and optional round silicone carbide rod for ring tools.

Photos by Alan Lacer

Rude Osolnik did it, so did Bob Stocksdale and Del Stubbs. Jerry Glaser recommends it, George Hatfield teaches it, and Japanese turners do it religiously. Peter Child and Frank Pain advocate it in their books. However, I think it is safe to say that those who hone their tools are in the minority of woodturners.

So why do so few turners take their tools to the last phase–that of honing? There are several reasons. Many hand-honing stones (Arkansas, Washita, Japanese water stones) simply don't cut the tougher tool steels well. Also some turners feel it is just easier to return to the grinder; others believe the refinement wastes time.

Honing terminology

Let's begin with some basic sharpening terms. **Profiling** or **shaping** the tool involves the form you or the manufacturer imposes upon the steel which includes bevel angles. Most people define **sharpening** as the attempt to put a sharp edge onto that shape **Honing** (or whetting) refers to the refinement and/or maintenance of a sharpened edge.

Why hone?

First, hone to achieve a keener edge when necessary. This step isn't required for every tool nor in every situation. For example, it is usually not necessary for a scraping tool where heavy stock removal is the order of the day. I find no reason to refine the edge just off the grinder on a cutting tool (skew, gouge, hook/ring tool, parting) when rough-cutting is the next step.

However, for clean cutting of end-grain, softer woods or just difficult wood–especially that last pass which will determine the degree of sanding–I refine the edge through honing. Honing for 30 to 45 seconds easily eliminates one or two grits in the sanding process. A skew chisel, for example, screams for a keen edge for improved control and clean-cutting.

Secondly, I hone to keep a sharpened edge sharp. This allows me to keep turning without running back to a grinder to achieve a keen edge. Just like the old-time barber honing or stropping their razor, the process was to refine and keep the edge sharp–not to take a dull tool and make it sharp. This is why many of us hone while turning–to keep the keenness within a range of sharpness. I call it the "sweet zone" that allows me to keep working efficiently, cutting cleanly when necessary, with more control or to reduce sanding time (see chart *above*). Cutting wood moves the edge to the right on the scale–with even the best of steels. With a honable edge, sharpness is pushed to the left on the same scale.

So, we should ask this question: Can you get an edge "too sharp?" Maybe the question should be, "too refined" an edge? No, we won't fuss and push to the same level as the carver or cabinet maker with a paring chisel, but we do need a sharp edge to work both efficiently, safely, and not to have a mess of things when we turn off the lathe.

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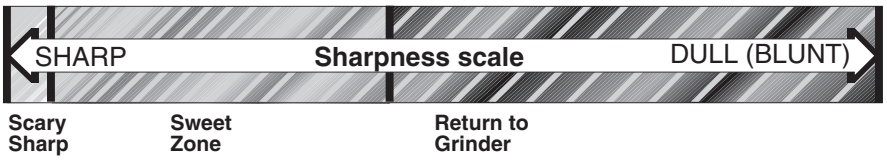
Find the Sweet Zone



Scary Sharp: Extreme keeness, highly refined–but alas, in woodturning these edges usually don't last very long and usually aren't worth the extra time to produce.

Sweet Zone: Life is good here. Tool is sharp, less effort to remove wood, minimal or reduced damage to surface of wood. This is the area that honing can be used to maintain the tool's sharpness.

Return to Grinder: There comes a time whether you hone or not that you must return to the power grinder–unless you are willing to invest a lot of time with hand sharpening. If an edge does not respond to honing in under a minute or so, I head for the grinder.

How to hone skews, gouges, parting tools, and ring/hook tools

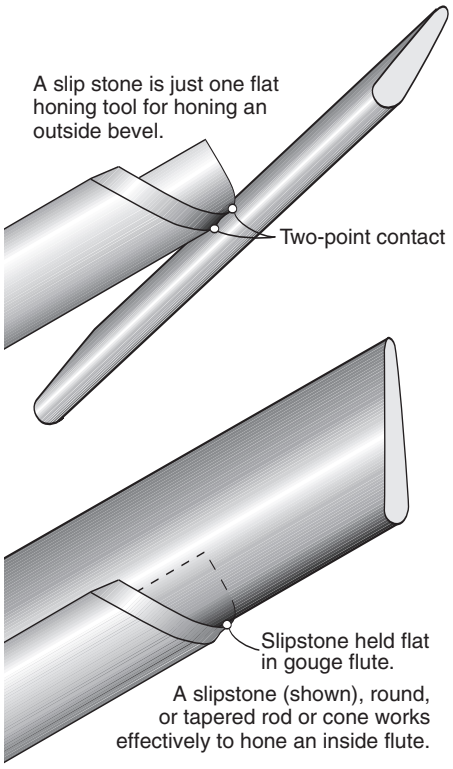
Shaping the tool and grinding properly are fundamental and are more critical than honing. You can't hone a poorly ground tool and it's a complete waste of time to hone unless you've performed these other steps well.

Assuming you have acquired a serviceable shape for the task, grind the tool to a level where honing will both be possible and beneficial to the turning process. Here's what works for me: Aim for slight hollow-ground bevels and minimal facets–especially facets above the concave face of the hollow-ground bevel.

Why hollow-ground bevels work best

Why a hollow-ground, why not a flat or convex bevel? The only reason I see for the hollow-ground bevel is that it provides me with a built-in honing guide. As long as I have a two point contact surface, I can better feel the honing process (see illustrations at right). However, there must be a balance between too much and too little hollow grinding. I prefer the concave profile a 6" to 8" diameter wheel produces. A smaller-diameter wheel produces such a deep hollow that it may weaken the edge; a larger diameter produces almost no hollow and is more difficult to hone.

Producing a ground surface with minimal facets is essential. If there are multi-facets that arise above the line from the heel of the bevel to the cutting edge, then you'll be honing only the high points points and not refining or improving your edge. Just as in grinding the edge, I train myself not to hone the edge–focus on the bevel. If you focus on the edge, invariably you'll grind a short bevel just behind the cutting edge. Or when honing, you'll "dub" or rollover the edge.



For me honing is like a cold swim--quickly in and quickly out. The honing process should be under 45 seconds in most situations–even with a large tool like a roughing gouge. If it takes longer, then either I have a poor honing technique or the edge is past the point of being honable. Then it's back to the grinder.

When we talk of honing there are usually two ways to understand it: hand-honing and power-honing. When hand-honing, you make use of a stone, rubberized abrasive or piece of leather. Among turners, some type of stone is most common.

Tips to select the proper stone

First, select a suitable stone. I've had the best luck honing contemporary tool steels with the man-made India slipstone in a medium grit and, of course, with diamond (fine and super fine). Technically the India stone is an oilstone, but I tend to use them dry and regularly clean the build-up of metal particles with WD-40. The India slip is fine for removing burrs from the inside of gouges and the flat side functions to hone the outside bevel of gouges. However, in a short time the flat side becomes concave and does not work so well for skews and parting tools. (It is still okay for gouges, but not for the flat tools.) For flat tools (and an occasional outside bevel of gouges and ring/hook type

tools) I prefer a diamond-coated stone (usually diamond applied to a mild steel plate). For gouge flutes, the diamond-tapered rod or cone works quite well. Be careful with diamond coated systems, as not all are of the same quality. Cheaper stones often incorporate fewer diamond particles or a type of industrial diamond that breaks down quickly. My caution: You get what you pay for.

Develop your honing technique

I have seen many variations of honing techniques:

1. fixing the honing stone to a flat surface and working the tool back and forth along the stone.

2. bracing the tool against the tail-stock lock and moving the stone along the edge (tool is stationary).

3. placing the butt end of the handle firmly upright on a bench or the lathe stand and again moving the stone along the tool.

When honing, support the turning tool handle solidly against the body when honing. The grip above keeps the tool stationary.

I prefer to stand solidly with the tool against my body, then, move the stone along the tool (see photo *above*).

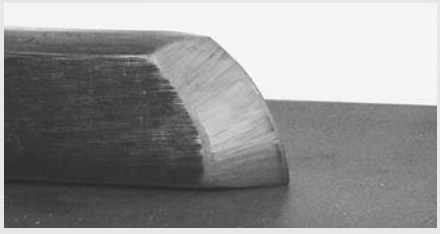
As for the actual honing process, I always begin at the heel of the ground bevel. Next, I start the action of honing with a back and forth motion from the heel towards the edge. When I feel the bevel adequately I lower this honing action towards the cutting edge until I feel that second point of contact. Always maintain this two-point contact, i.e. the hone bridges the slight concave region between the heel of the bevel and the area just below the cutting edge. Remember, you are honing the bevel and not the edge. If the tool is a gouge or hook/ring type of tool, I finish by honing the inside flute. The nicety of this last operation, at least with gouges, is that I have another built in honing guide: hold the slipstone or rounded rod flat in the flute–again, not touching the edge itself, but focusing on the two planes that trap the area we call the edge.

HONING STRATEGIES

Gouges: Hone the outside bevel. Then hone the inside flute with a slipstone, round rod, or cone.

Skews: Hone four faces on these tools: the two ground bevels (begin here), the top edge that will refine the long-point, and the bottom edge that will refine the short point (see photo *at right*).

Parting tools: Use a flat hone to work both ground sides. On thin kerf-parting tools, hone the flat sides to refine the corners.



Skews have four surfaces to hone: two ground bevels and two side edges that define he short and long points (shown above).

Ring/hook tools: These come two ways: ground bevel inside and ground bevel outside. On both styles, work the outside surface with a flat hone. If the ground bevel is outside, work the inside of a hook tool with a narrow slipstone. Choose a round honing rod for ring tools. If the inside is ground--a tapered or round stone in a drill are favorites--hand-hone the surface with the same stone for grinding.

Continued

Power-Honing skews and gouges

There is another approach that can be used in combination with hand-honing or a substitute for it: power-honing. This is most often done with a motorized wheel or even a wheel mounted on a lathe arbor. Wheel materials include felt, stitched cotton, leather, cardboard, rubberized abrasive, plywood, and MDF. For turning tools, I tend to stay away from the softer surfaces (felt, leather, cloth and cardboard). With our heavy-weight tools and too much pressure, I run the risk of rolling over my edge. My first choice is also a frugal one: medium density fiberboard (MDF) charged with a buffing compound that cuts high-speed steel.

Make your own MDF wheel

You can glue up the MDF wheel from discarded cutoff scraps from a nearby cabinet shop. I make the wheel diameter approximately the size of the grinding wheels in my shop so that the hollow ground area is simpler to feel. Since I grind on an 8" wheel grinder, my MDF flat wheels are 7" to 7 1/2" in diameter and 1 1/2" wide (two 3/4" pieces glued together). I mount the wheel on an arbor and turn the wheel to a round flat disc.

Here are some suggestions to mount your disc: arbor-mounted directly onto a 1/4 or 1/3 hp 1725 motor, pillow block and shaft, or left on an arbor that mounts on the lathe. It's best you avoid mounting the wheel on the lathe you'll be working on, as it is not practical to remove work from the lathe to hone.

> Power-honing is a quick process. If a little is good, more must be great is the wrong approach.

Watch for a "mud trail," shown above, when power-honing at an MDF wheel charged with honing compound.

Whatever system you choose, set up to hone with the **wheel turning away from you**. Remember, honing is quick operation. I find that high speed is not necessary–I prefer a 600 to 1,000 rpm.

Choose a buffing compound rated for stainless steel. I've had great luck with the Dico brand and Zam, a green honing compound. Whatever you use, watch for the honing compound to turn black as you hone; this indicates that you are removing some metal and not simply polishing the tool surface.

Honing techniques at the wheel

The actual technique is straightforward and similar to hand honing. With the wheel moving away from you, charge it with honing compound, place the heel of the bevel towards the top of the wheel–cutting edge up.

Gently lower the bevel onto the wheel until you have that same two point or full contact of the bevel on the wheel. Again, do not focus on the edge, as you will round it over in a nano second. When I see the blackened mud trail just coming under the edge, I stop (see photo *at left*).

Personally, the only tool I routinely power-hone is the skew chisel–its long edge benefits from this treatment. Occasionally I power-hone the outside bevel of gouges when I have a particularly difficult piece of wood. In that case I either use the slipstone to hone the inside flute, or I have MDF wheels with turned beads that fit the inside flute of my gouges .

Other uses for honing equipment

Several areas of tool refinement also respond well to honing tools.

Honing scrapers

With turning scrapers, you can hone to flatten or refine the top of the scraper, remove milling marks, and remove either a worn burr or grinder burr.

Why flatten the top? The topside of the scraper--the unground side--becomes one of the planes forming the edge. If it is uneven, pitted, or textured with milling marks from the manufacturing process, you will produce an uneven burr. This makes a huge difference for fine work.

If the top edge is severely afflicted with pits and milling marks, you may need to resort to a belt sander/grinder with a flat platen to clean up the surface. If the tool is in reasonably good condition, hone that surface with a flat hone (diamond is my first choice). Most of this is basic tool refinement.

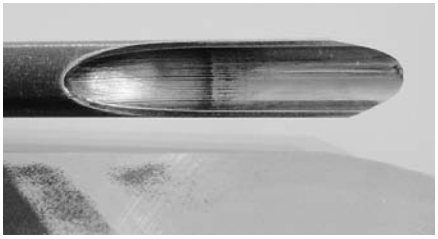
But in actual use, I also rely on a flat stone (face of the India slip or flat diamond stone) to do two operations. First, remove the old burr before pulling up a new one or for removing the heavy burr that is almost always produced by the grinder. I remove the heavy burr if my objective is to use the scraper as a finishing tool and not for heavy stock removal. Just a few passes with the stone held flat on the top of the scraper removes the old burr. Next, I use either a cabinet maker's burnisher or the flat face of an India slip stone to raise a burr--often a light burr for finish work. This is critical to producing different burrs for different situations.

Personally I use the scraper much in the same way the cabinetmaker does with their scraper: with a burr 90 percent of the time, and most often as a finishing tool.

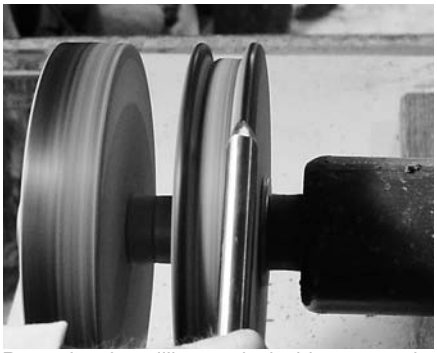
Power-hone gouges

I've found another use for power-honing: to remove the milling marks from the inside of a gouge's flute. Today, just about all bowl and detail gouges are ground from round bars of high-speed steel. This positive development comes with one drawback: Virtually all of these tools show milling-process signs that forms one of the faces which produce a sharp edge. By removing or reducing these milling marks, you improve the tool's edge.

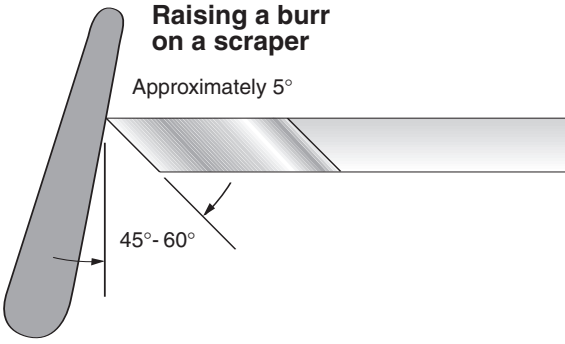
With an MDF wheel, you can remove or greatly reduce those milling marks (see top photo). I normally turn the beads from 3/4" MDF, making several different widths for the beads (see photo *above right*). Concentrate on the last 1" of the tool. Repeat the process when you have worn down the tool to the area you polished. Some specialty high-speed tools require more time and effort and even an aggressive buffing compound (gray or emery) to begin the process.



Milling marks in the flute of a gouge, above, and pits or milling marks on scrapers impact edge quality.



Removing the milling marks inside a gouge is a simple process with MDF wheels.



Final thoughts

Any technique that reduces grinding and sanding and improves the detail of my work has my vote. Whether it's chippy grain, ornery end grain, or the desire for clean, crisp work, I'm a true believer in the benefits honing brings to turning.

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