Sharp words for cutting edges

Understanding how these sharpeners work starts with knowing the terms used to define the difference between a chisel that’s sharper than a razor and one suited only for prying open paint cans.

Lapping—A sharp chisel requires a back that’s as flat and highly polished as the bevel. Removing the mill marks, scratches, or rust pits is called lapping. After the initial lapping, you will need to lightly lap the back to remove the wire edge produced when grinding the bevel.

Grinding—More aggressive metal removal, usually reserved for changing the bevel or repairing a chipped edge.

Honing—Minor metal removal. You can rehone an edge several times before regrinding.

Hollow grind—Slight concavity caused by grinding a flat face on a round wheel. A severe hollow can make a weak edge, but this isn’t an issue with 8" and 10" diameter wheels. Removing steel from the middle of the bevel makes honing faster and easier.

Micro-bevel—An extra degree or two added to the primary bevel. Micro-bevels are used to strengthen the edge and speed up the honing process.

Power Sharpeners
Comparing convenience, edge quality, and cost.

By Joe Hurst-Wajszczuk

It may not top the list, but in terms of inevitability and unpleasantness, sharpening ranks up there with death and taxes. Most of us try to avoid it for as long as possible. The end result? Tools that aren’t as sharp as they should be, work that may not look as crisp as it could, and more time spent resuscitating a stack of dull, ragged cutting edges.

Enter the power sharpeners. For a price, these plug-in problem solvers produce razor-sharp tools in short order. But are they really worth it? And does one edge out the rest? To find out, we picked machines representing each power sharpening subgroup and then tested them using every chisel and plane iron in our shop.

More specifically, we focused on each system’s ability to establish and refresh an edge. Then we weighed that against the cost of a complete system (basic machine, plus needed accessories). What you’ll see here then is the shop-tested results and other data to help you select the tool that best fits your needs and budget.
Bench grinders started out as all-purpose metal grinders. Out of necessity they made their way into woodworking shops many years ago. If you already own one, it can be outfitted to become the powered part of an affordable sharpening system. With a good wheel and rest, turners can go straight from the grinder to their lathes. Woodworkers will need to do additional handwork.

Lapping—You’ll need to look elsewhere. Initial lapping can be done by sticking sandpaper onto glass, granite or use a diamond stone. Post-hone lapping is done on your finest sharpening stone.

Grinding—Excellent, after a few upgrades. Getting the needed precision and adjustability will cost you about $50 (turners may want to spend a little more). While you’re at it, treat yourself to a grinding jig to hold chisels and blades at a consistent angle and perpendicular to the wheel. Grinding wheels grind quickly, but are also quick to burn an edge. When the steel turns blue or black, it’s lost its temper. You’ll need to remove that section to regain hardness. Investing in a better wheel, especially if your grinder still sports gray (silicon carbide) ones, can make a big improvement.

To prevent burning, rest your fingers on the steel as shown above left, and dip the tool in water when you feel the heat. Also, train yourself to stop sooner—grind less and hone more—rather than risk scorching a wire-thin edge.

Honing—A 1000-6000 grit combination waterstone is an inexpensive way to get a shaving-sharp edge. Honing is fairly easy to do freehand, but an entry-level honing guide guarantees consistent results. To add a micro-bevel, simply reposition the jig on the blade and lightly hone with your finest stone.

Wheels matter
Gray wheels grind quickly, but aren’t kind to tempered tools. The problem is that as they load up on metal particles, they rub more than cut. When that happens, they create temper-losing heat.

White aluminum oxide wheels are friable. This means that the wheel sloughs off abrasive to provide a fresh grinding surface. Harder (but still friable) pink or blue wheels are useful for A2 and other hard steels. Regardless of your color, you’ll need a wheel dresser to keep your wheels clean and round.

For a smoother grind and cooler steel, go diamond. WoodRiver’s new 120-grit diamond wheel (Woodcraft #149479) grinds slightly slower than my 60-grit white, but more cleanly than my 120-grit—a perfect finish for turning tools. The biggest perk is the aluminum body that works as a heat sink, making it difficult to burn an edge. The $150 wheel isn’t cheap, but it can be a smart way to supercharge your old grinder.
I used my first Tormek a decade ago when sharpening a bench-load of plane blades for another tool test. Since then, I’ve been a big fan of slow-speed, wet-sharpening systems. The constant water bath not only makes it impossible to overheat a tool, even when grinding down to a wire edge, but eliminates sparks and catches the debris thrown by dry grinders. Just be careful during the winter months. Like other waterstones, the wheel will crack if it freezes, and you’ll be out $200.

What sets the Tormek apart from the other sharpening systems is the way it works as a complete sharpening system. Using the stone grader, the single wheel works like a two-wheeled grinder; simply touch the stone to the wheel to change it from coarse to fine. Touch the bevel and back against the leather honing wheel, and you’re ready for surgery. Chip a plane blade, and you can grind, hone and return to work in about five minutes.

Aside from the machine itself, Tormek’s success rests in the micro-adjustable steel rest and a collection of jigs designed to sharpen almost every cutting edge in the shop. The jigs range in price from $16 to $160, so you probably won’t want to buy them all at once, but when you do purchase a new tool, you’ll know there’s a jig that will enable you to sharpen it better than new.

Despite this sharpener’s ability, the sticker price can come as a shock. At $600, the
Attack of the clones

If imitation is the sincerest form of flattery, then it’s an indication that Tormek was on the right track when they unveiled the Supergrind. Several manufacturers now offer slow-speed wet grinders that bear a remarkable resemblance to the original.

The Jet JSSG-10 ($349.99) is one of the closest copies. Although they appear similar, Jet’s sharpener offers torque adjustment and variable speed control, intended to enable the user to compensate for wheel diameter loss. Tormek claims its sharpener doesn’t need these controls, and after a decade or so of using one, I agree.

The most noticeable difference is the quality of the accessories and wheels. Based on those I’ve seen, non-Tormek jigs cost less but seem chintzy. Even when used with a stone grader, the competitors’ wheels left a rougher finish. I found myself resorting to my waterstones for touch-ups.

If price is an issue (and when is it not?) these systems are worth consideration. Unlike a grinder, they won’t burn tools or throw sparks, but it seems unlikely that they’ll match the performance or proven reliability of the original. You get what you pay for.

larger T-7 is a class by itself, but the smaller T-3 offers the same benefits at a price comparable to other sharpening systems. Just bear in mind that you will need to purchase a few accessories to make full use of the machine.

Lapping—Good. Initial lapping can be done on the side of the wheel as shown above left, but I prefer doing coarse lapping using sandpaper on glass. Final lapping on the leather wheel was another story; when charged with the honing compound, you simply touch the steel to the wheel and get a mirrored surface.

Grinding—Excellent. You can grind freehand, but the strength of the system rests in the jigs. Clamp the plane blade, chisel (or with the right accessory, anything else) into the appropriate jig, and you’re off. The included Angle Master, shown above right, makes angle setting foolproof. Of all the optional tool holders, I find the Multi Jig most useful for skew chisels and gouges.

Wet grinding is a lot less messy than you might think. Because of its low rotation speed, water simply flows onto the blade then falls back into the well. The well neatly catches the stone slurry and metal filings created by the sharpening process.

Honing—Excellent. Strops have the potential of rounding over an edge, but you shouldn’t have a problem provided that you maintain a light touch. The strop can also refresh an edge several times before regrinding.

The side of the wheel works for initial lapping, but is trickier than sandpaper or stones.

The setting gauge makes it easy to set edges to specific angles.

Regular light honings are good for extending edge life.
There are other horizontal disc sharpeners, but in terms of versatility, simplicity, and price, the Work Sharp leads the pack. Based simply on sales figures, this tool has encouraged more woodworkers to feel the joy of working with sharp tools than any other system.

The Work Sharp uses glass plates and sandpaper, much like basic hand-powered sharpening, but adds a motorized base so that all you need to do is hold the tool in place. The aluminum base, slow grinding speed, and the advance-and-retract sharpening method reduces the risk of burnt edges to a minimum.

The company offers a smaller Work Sharp 2000, but don't skimp. The smaller unit won't accept the wide blade attachment. This optional accessory is a must for sharpening plane blades.

**Lapping**—Excellent. The discs work almost as quickly as the 2'-long piece of sandpapered glass I keep stashed behind my bench. To make the process even better, I outfitted my sharpener with a footswitch.

Using both hands to control the chisel or blade on the disc not only safeguards your tool but also your toes should the tool slip from your grip.

**Grinding**—Excellent. Out of the box, the Work Sharp provides three options for edge grinding. (Add the Wide Blade Attachment, and you'll get one more.)

The sharpening port is my favorite. Simply adjust the port's sharpening angle (photo below right) and stick in the steel (photo at top left). It is possible to introduce a slight skew to an edge, but before messing with the skew adjustment lever, make sure your sandpaper's fresh and that you're not pressing too hard.

**Lapping**
(I found that the convenience of instant-honing more than offsets the hassle of occasionally regrinding a bevel.)

The slotted disc does what you'll never get from a standard wheel. The slotted edge view, as shown on the facing page, top left, allows you see a disc-side view of the edge you're shaping. An easy way to gauge your progress is to blacken the cutting edge with a permanent marker and touch the tool against the disc to erase the ink.

The tool rest is the last, and, perhaps, my least favorite feature because it's the most difficult to control. The process

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**System Summary**

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**Suggested Accessories**

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Free-hand grinding involves positioning the tool on the rest, and then lowering the bevel on the disc, as shown above center. After you install the wide-blade table, you won’t miss the rest.

Sharpening with the Work Sharp eliminates the hassle of water (it won’t freeze when the temp drops) and it isn’t as messy as a bench grinder. However, after a good grinding session, the wheel will create a sling ring of honing compound and metal filings, so you’ll want to use it safely away from your work.

Unless you change discs frequently, sandpaper grinding can be slow-going. The paper wears out quickly when grinding a bevel angle, or fixing a major nick. I preferred my slow-speed grinder for doing the grunt work.

Honing—Excellent. The speed and simplicity make touch-up sharpening almost addictive. I found myself sticking the chisel into the bottom-feed port much more frequently than I’d ever think of using my waterstones. The end result is a consistently sharper edge. (Forget the microbevel. Sticking with the primary angle, rather than ratcheting up 5°, will save you from a lengthy regrind.)

Wide Blade Attachment is worth its weight in gold

Initially, the Work Sharp only handled planes and chisels up to 2” wide and provided bevel presets at 20°, 25°, 30°, and 35°. The Wide Blade Attachment, a platform that replaces the top tool rest, more than doubles this system’s versatility by providing an easy way to sharpen wider blades and offering the option of adding a microbevel.

The included alignment scale and wheeled honing guide are almost as easy to use as the chisel port. To use, simply match the colors on the guide with the scale and clamp in a blade. Once set, unhook the scale, rest the guide on the plate, and touch the blade to the wheel. The jig can also set 1° microbevels to speed the honing process. Set the guide in the scale as before, but reposition the metal stop on the scale so that the arrow points toward the blade. Tighten the guide on the blade and you’re ready to hone.
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