



Learn to Turn Spindles

With only four tools, you can turn cylinders, tapers, beads and coves

BY ERNIE CONOVER



ROUGHING-OUT GOUGE

SPINDLE GOUGE

V-PARTING TOOL

SKEW CHISEL

In many ways turning is the simplest branch of woodworking: All turning is a bead, a cove, a cylinder or a taper; if you can cut these four shapes, you can turn anything. Likewise, there is no need to begin with a rack full of tools: a roughing-out gouge, a spindle gouge, a V-parting tool and a skew chisel are sufficient for the novice.

Why is it, then, that the early enthusiasm of many beginners turns to frustration in the face of sustained difficulties? The answer can be summed up in two words—tool preparation. Few tools come from the factory with the correct grind, and none will be as sharp as it could be. I'll demonstrate how to put a correct grind on all of them and how to keep them sharp; then and only then can you start to make shavings.

Selecting and preparing your tools

I urge you to avoid sets of tools. They may or may not contain a good spindle gouge, they will likely have a skew chisel that is too narrow, and there will be too many scrapers. Buy high-speed steel (HSS) tools, which are only slightly more expensive than regular (high-carbon) steel tools and hold an edge longer; you cannot draw the temper during grinding, even if you overheat the tool.

Roughing-out gouge—I recommend a 1¼-in. gouge, but the ¾-in. version is a good, less-costly second choice. The roughing-out gouge can be ground with a blunt fingernail face, but I prefer it with a square face because it is easier to cut up to a shoulder. The

tool can be ground either with the handle resting in a pocket holder (see the top photo at right) or simply braced against your thigh.

Spindle gouge—A ½-in. spindle gouge will be your workhorse, so invest wisely. Check the shaft to make sure the steel is from a round bar rather than from a thin section of rolled steel. A spindle gouge operates best with a long fingernail grind but is usually delivered with a short blunt grind (see the photos at right). While it is possible to grind a fingernail by eye on a bench grinder, it is difficult to do. Oneway, Sorby and Tormek all make jigs to simplify this task. You can also find a shop-built jig on p. 97 of *The Lathe Book* (The Taunton Press, 2001) and at www.finewoodworking.com.

I tend to grind a very long fingernail, which I call a high-society grind, but other turners work successfully with a somewhat more blunt fingernail. Experiment to find what length suits your turning style, but always polish your fingernail to a razor-sharp edge. This can be done with slipstones, but with a buffing wheel it's far quicker and you are less likely to miss a section.

V-parting tool—Also called a cutoff tool, the V-parting tool is used for cutting off work in the lathe. It is also used with calipers to establish sizes for duplicate parts, to create shoulders next to a bead and to make tenons. The tool works fine with a hollow grind (see the top photo, below right), and the best cross section is the diamond shape, which has much less friction during a cut than cheaper, square cross-section tools. I suggest getting either a ¼-in. or ⅜-in. tool.

Skew chisel—The edge of this tool, in addition to being double beveled, is also skewed about 25° to 30° to its axis. The skew chisel is the one tool that should not be hollow-ground; it works much better with a flat (or even slightly convex) bevel. Luckily, all skews seem to be delivered with a flat bevel and can be honed on whetstones. If, however, your skew collides with a chuck or lands point-first on concrete, you will have to regrind it. The fastest way to do this and keep it flat is on the side of the wheel, which most grinding manuals advise against. I do it, but I use light pressure on a 1-in.-thick wheel. If you have a Tormek or other super-slow-speed wet grinder, you can use the side of this wheel with complete safety.

A skew slides more easily on the rest if you break the sharp edges of the shank. Touch the four corners of the shank to a grinder, then buff or stone them. The width of a 1-in. chisel allows much more time to judge when things are going awry and to make corrections before disaster strikes.

Mastering the basics of spindle turning

Now that the tools have been sorted out, it is time to start turning. The best way to practice is to cut a dozen hardwood billets 2 in. square by 8 in. long. Find the exact centers of the first billet using a center finder, and make a small indentation using a hole punch or a blunt nail. This aids alignment with the headstock and the tailstock centers. Set the tool rest about two-thirds of the way up the

Preparing the tools for use



Roughing-out gouge. Rest the handle in a pocket holder and rotate the tool against the grinding wheel.



BLUNT FACTORY GRIND



FINGERNAIL GRIND

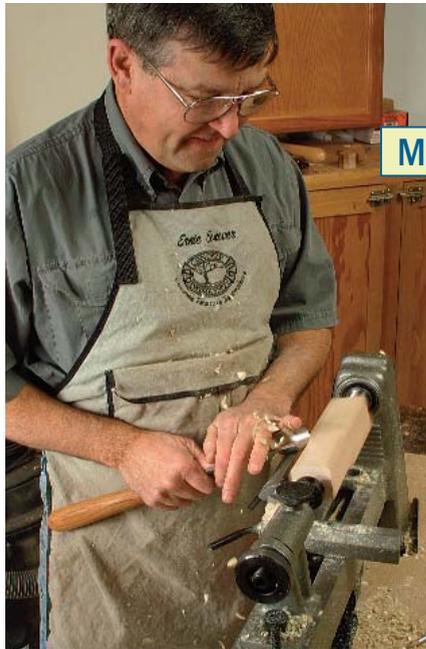
A nautical comparison. To reshape the blunt profile of a factory-ground spindle gouge, use a special jig mounted in the pocket holder. The fingernail profile will resemble the bow of a cruise ship.



V-parting tool works best with a hollow grind. To create the grind use either a 6-in. or 8-in. wheel.

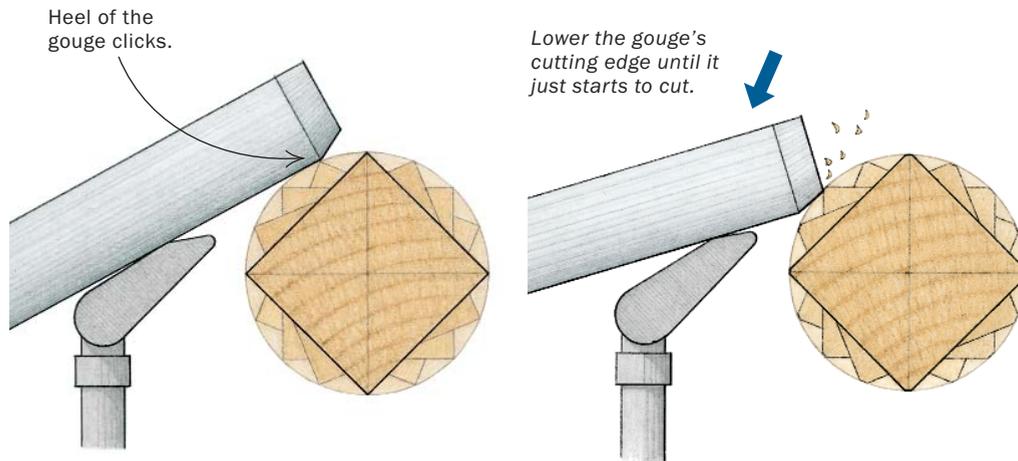


When necessary, regrind a skew chisel. Though it's not recommended in the manual, you can use the side of a 1-in.-thick wheel. Apply gentle pressure and wear eye protection.

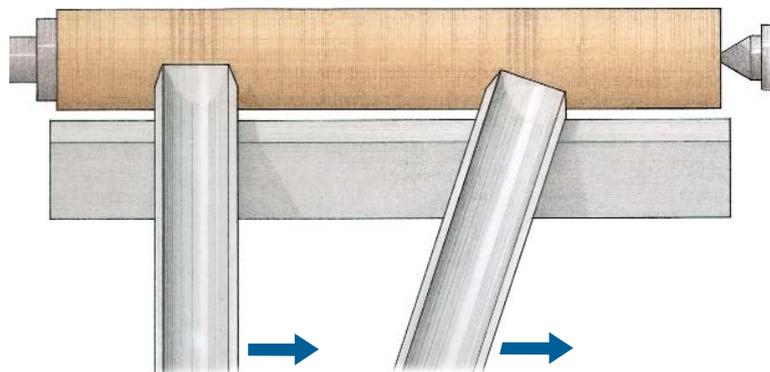


MASTER THE CYLINDER

Mount a square blank between centers and position the tool rest just above the centerline of the lathe. Raise the handle of the roughing-out gouge until the heel clicks on the blank.



Rounding the billet. Take light passes with the roughing-out gouge to gradually turn the blank round.



For fast rough cuts, move the gouge laterally. Maintain the same cutting angle and keep the tool 90° to the blank.

For smooth cuts, angle the roughing-out gouge in the direction of the cut and move slowly.

CUTTING TAPERS



To cut a smooth and gentle taper, angle the roughing-out gouge in the direction you are cutting (above) and increase the pressure slightly. Use the skew in the same manner (inset).

blank just above the centerline of the lathe. Make sure the blank can turn freely.

Turning a cylinder—To make a billet round, use a roughing-out gouge. Present the gouge high (the handle low) so that just the heel of the bevel touches the work and clicks. Your right hand should be on the forward part of the handle with your thumb and forefinger on the ferrule. (Holding farther back on the handle gives you less feel for the bevel on the work.) Lower the cutting edge by raising the handle until the gouge just starts to cut. Ride the bevel in a shear cut, moving the tool laterally. Maintain the angle you have established until the work just starts to become round.

Turning a taper—The traditional tool for cutting a taper is the skew. Place the corner of

the tool on the rest and present the tool high (handle low) and as square as possible to the work. Now raise the handle until the bevel rubs in a shear cut. The cut should take place over no more than half the length of the cutting edge but biased toward the heel. Once the cut has been established, slide the tool laterally, maintaining the same angle to the work. Move it with the heel leading and the toe following behind the cut. To cut in the opposite direction, turn over the tool.

The roughing-out gouge and the spindle gouge can also cut tapers. Angling the gouge slightly in the direction you wish to cut will make it easy to produce cylinders and gentle tapers.

Cutting coves—The only way to cut a cove is with a spindle gouge. Start by drawing a series of pencil lines ½ in. apart on a freshly

Watch it on the web

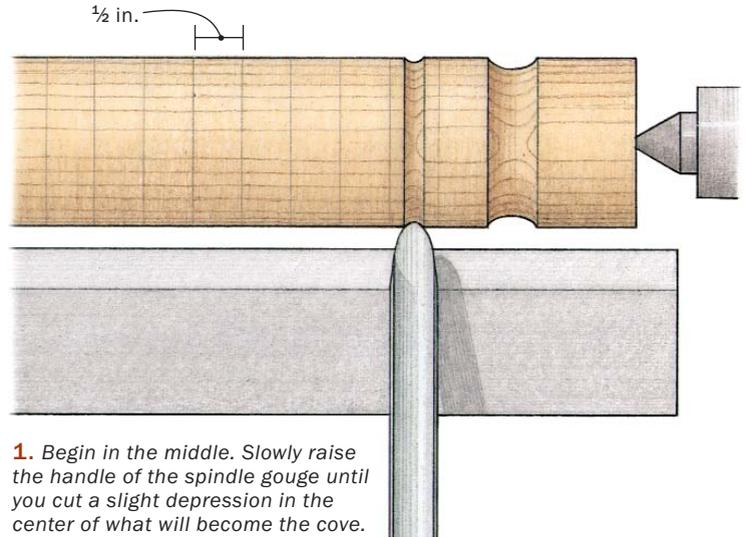
To see a video clip of Ernie Conover turning beads and coves, go to www.finewoodworking.com.

USE A SPINDLE GOUGE TO CUT COVES

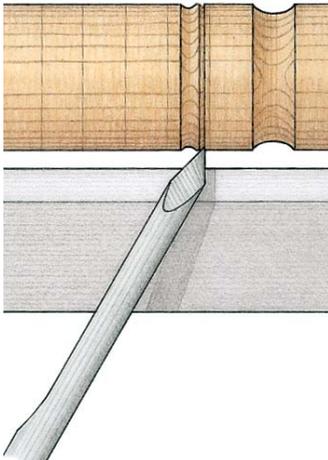


Stay in touch. Keep your left hand near the tip of the tool, and always keep the tool in contact with the tool rest.

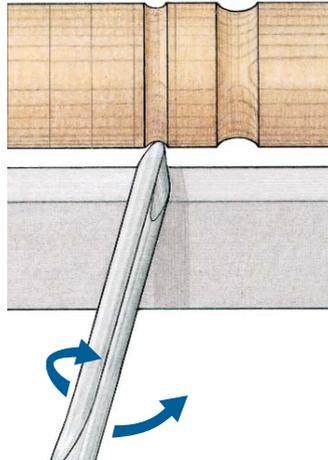
Once you have turned a few 8-in. blanks to cylinders, mark them with a series of lines $\frac{1}{2}$ in. apart. Then start cutting coves.



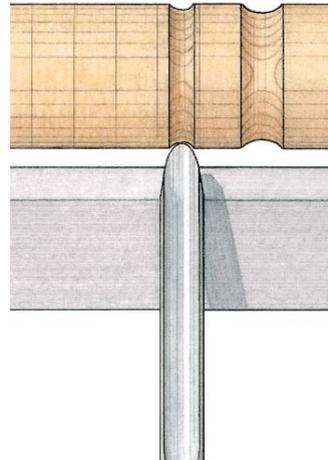
1. Begin in the middle. Slowly raise the handle of the spindle gouge until you cut a slight depression in the center of what will become the cove.



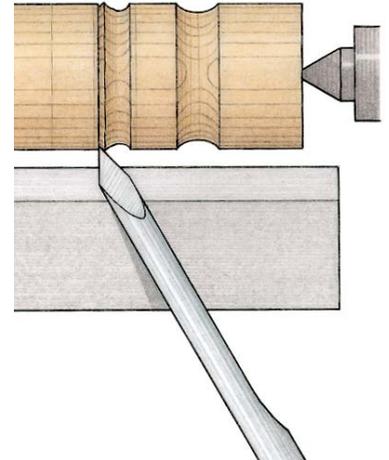
2. Next, cut at the top of the right-hand side of the cove and work downward.



3. Sweep the handle back toward the tailstock while rotating the tool clockwise.



4. Keep sweeping until the flute is at 12 o'clock at the bottom of the arc.



5. Repeat the cutting process starting from the other side and moving the handle to the left.

turned cylinder. Use only the very tip of the gouge during the entire process and keep the bevel parallel to the surface. Think of it as if you were mowing a ditch. If you mow along the ditch, the mower is level, but the mower increasingly leans as you move up the sides. Your gouge should roll in the same way, but think of the bevel and not the flute (shank) of the gouge as the mower. The bevel should always be perpendicular to the grain as you cut.

Your grip on the spindle gouge should be relaxed, and your hand placement should be the same as with the roughing-out gouge. Most beginners try to lock the handle against their hip; however, this holding method results in more catches because the user is trying to overpower the physics of the lathe rather than letting the machine and the tool cut as they are designed to. You cannot overcome physics—at least for very long.

Present the tool high with the heel of the bevel rubbing and the tool square to the axis of the spindle. Lower the cutting edge by



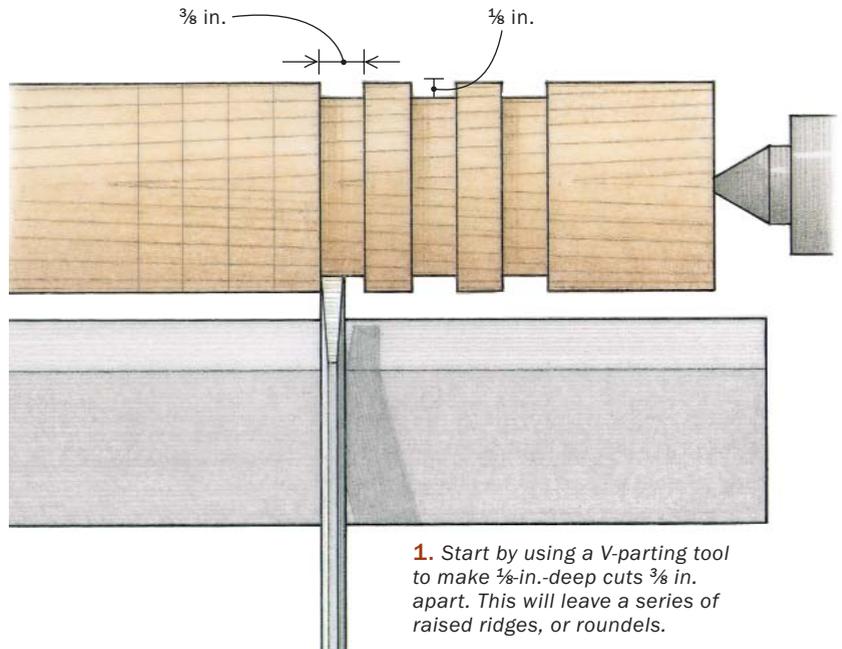
Cutting a cove is like chopping a log with an ax. Gradually deepen the cut, working alternately from both sides.

USE A SPINDLE GOUGE TO CUT CONSISTENT BEADS

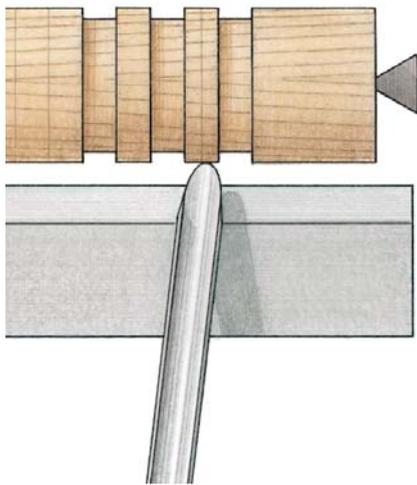


Cutting a bead. A good-looking bead is elliptical, not a half circle. Remove the wood in a series of light cuts.

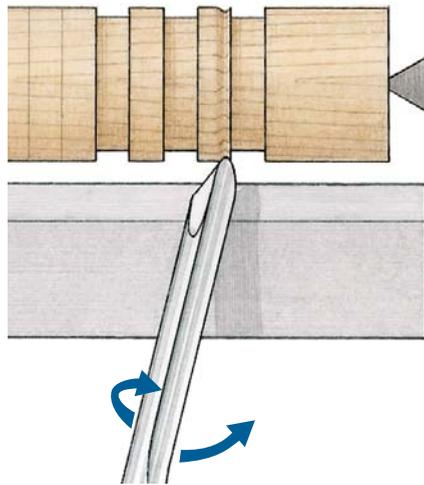
Before you can cut a bead, first remove the waste in every alternate section to leave a series of ridges, called roundels.



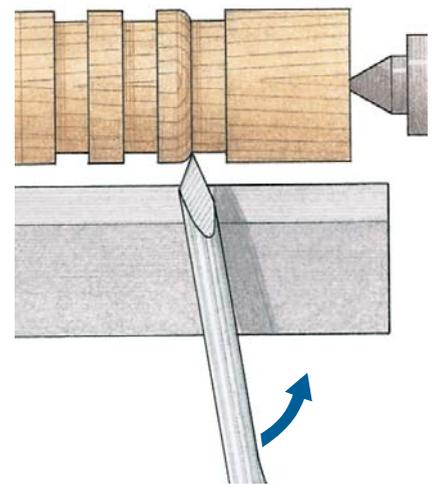
1. Start by using a V-parting tool to make $\frac{1}{8}$ -in.-deep cuts $\frac{3}{8}$ in. apart. This will leave a series of raised ridges, or roundels.



2. Next, place the gouge just to the right of the center, with the tip of the tool angled slightly to the right.



3. As you cut down the right-hand side, move the handle to the right and roll the tool clockwise, keeping the bevel perpendicular to the grain.



4. When you reach the base of the bead, the bevel of the gouge will be nearly 90° to the cylinder, and the tool handle will be to your right.

raising the handle until you cut a very small depression at the exact center of one of your $\frac{1}{2}$ -in. layouts.

To cut the right-hand side of the cove, roll the gouge so that the top of the flute moves from the 12 o'clock position to approximately 11 o'clock. Touch down the tip of the gouge just beyond where the right-hand side of the cove begins and sweep down to the bottom of the cove, rolling the flute back to the 12 o'clock position. This roll has to be controlled and uniform, and the handle must have room to move, so don't lock it against your hip.

Now repeat the process to cut the left-hand side of the cove, rolling the flute to about 1 o'clock and touching down just beyond the left-hand side. At the bottom of the cove, the tool will have to slide very slightly forward on the rest to get to the bottom of the

cove and still have the bevel rubbing because it is a farther reach to the smaller diameter. Now go to the other side of the cove and repeat a mirror image of what you have just done, alternating between left and right but always ending up at the exact center.

You cannot cut a cove that is a lot narrower than your gouge. Smaller coves get a narrower gouge. The process is much like chopping a log in two with an ax. The cut has to be wider than the ax. You need to cut from each edge to the exact center, cutting downhill on the grain. Cutting the wrong way will likely result in a fuzzy cut or a catch. Think of it as stroking a furry animal.

Cutting beads—The opposite of a cove is a bead, and in my opinion is a more difficult task to master. It is my very strong opinion

NOW TURN SOME DRAWER PULLS



Matching knobs. Turning a pair of drawer pulls from the same blank not only saves time but also yields a matching pair of pulls.

that the only way to turn beads consistently is to use a spindle gouge. Using the skew for this task has its partisans (*FWW* #145, pp. 84-87), but for the small beads normally encountered in spindle turning, it is a risky business.

A good-looking bead (at least in most furniture turning) is not a half circle but rather an ellipse. Therefore, it is not as high as it is wide. To get ready for this exercise, use the V-parting tool to make $\frac{1}{8}$ -in. cuts into a cylinder; space the cuts $\frac{3}{8}$ in. apart. This will yield a row of $\frac{3}{8}$ -in.-wide ridges that are called roundels.

Like the cove, the bead is cut in two stages, one half at a time and always downhill. To cut the right-hand side of the bead, start at the center of the roundel with the gouge angled slightly to the right. This allows you to pick up the major diameter of the roundel without cutting into it. Cut to the right while sweeping the handle around to the left until you are cutting toward the tailstock. This also requires rolling the flute from a little past 12 o'clock until nearly 2 o'clock, sliding the tool slightly backward on the tool rest and raising the handle to keep cutting on the very point. At this point you will be about halfway to the base of the bead.

To cut the elliptical shape of the bead, you must move the handle to the right. Once you reach the base of the bead, the bevel of the gouge should be almost perpendicular to the main axis of the workpiece, with the flute facing 3 o'clock. If you were to continue pushing (very hard), you would cut right through the center of the billet. Simply trying to push the gouge forward once you reach the halfway point will result in a 45° flank to the bead.

Now repeat a mirror image of what you have just done to the left. It is quite normal for the beginner to cut asymmetrical beads, as we all have a bit of left-right bias. Practice will cure this problem. On larger beads you have to start closer to the edge of the roundel and just round the corner on the first pass. Successive passes enhance the shape. Don't try to take too much material with one pass.

The visual impact of a bead is greatly enhanced by inscribing the edges with the toe of a skew. I think this sets apart the bead from the surrounding, your mind completing the shape of the bead inside the turning on a subliminal level. □

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The skills learned while turning beads and coves can be put to good use by turning drawer pulls.



The tenon is cut first. Make a series of cuts with the V-parting tool using a wrench as a guide.



Cut a small cove. Center the spindle gouge and gradually raise the handle to increase the depth.



Worry-free beads. With the depth of the bead already defined on both sides by the V-parting tool, round over the sides of the bead with a series of light cuts.



Don't be ashamed to sand your work. Particularly with curly wood, some tearout is inevitable and is easily removed by sanding.