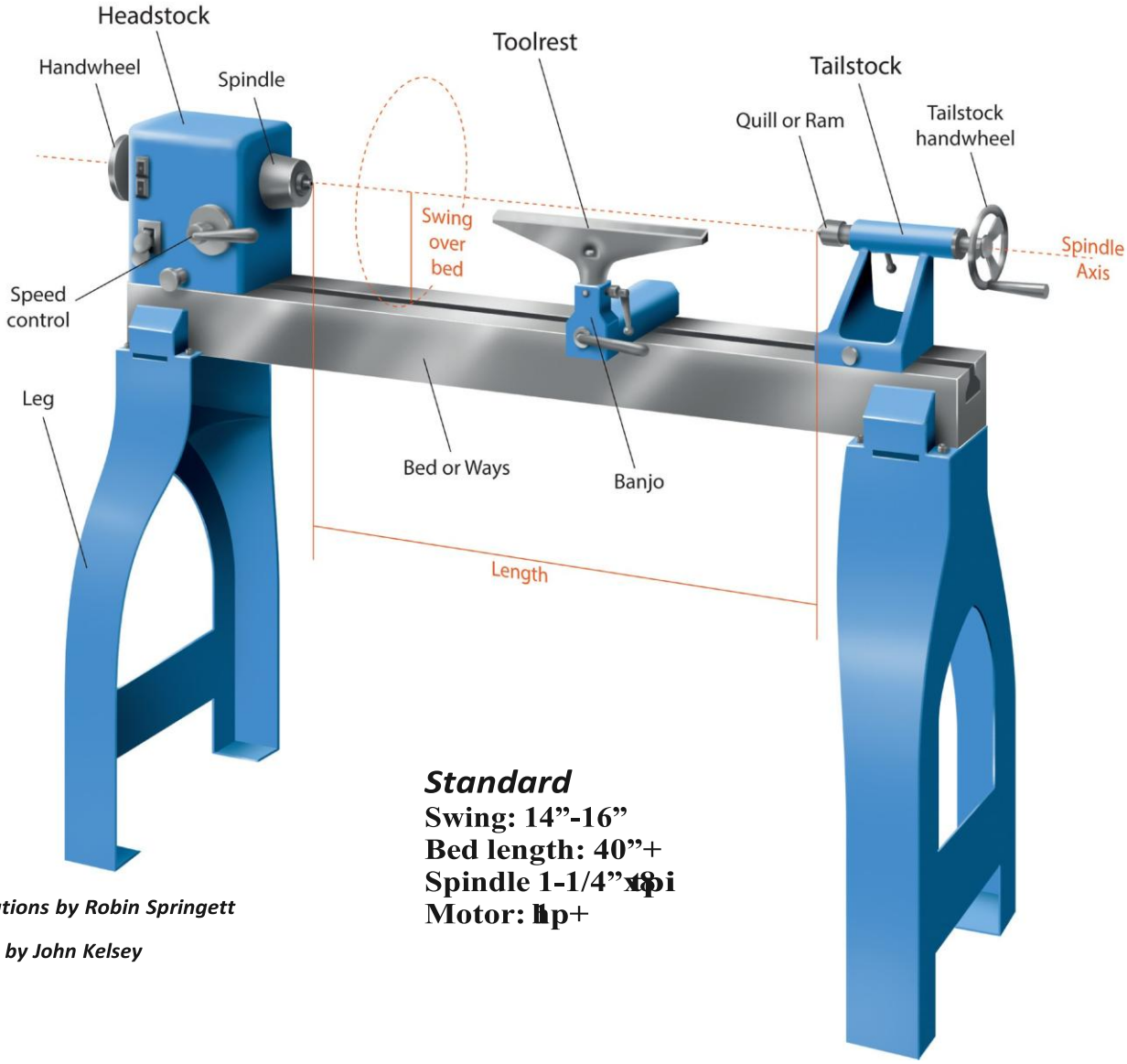
FUNdamental Overview

The Woodturning Lathe



Illustrations by Robin Springett

Photos by John Kelsey

Standard
Swing: 14”-16”
Bed length: 40”+
Spindle 1-1/4”x8tpi
Motor: 1hp+

Mini
Swing: 10”-12”
Bed length: 16”
Spindle: 1”x8tpi
Motor: 1/2hp

Midi
Swing 12”
Bed length: 20”+
Spindle: 1”x8tpi
Motor: 3/4hp

Full-Size
Swing: 20”+
Bed length: 36”+
Spindle 1-1/4”x8tpi
Motor: 2hp+

Bowl
Swing: 20”+
Bed length: 16”+
Spindle 1-1/4”x8tpi
Motor: 2hp+

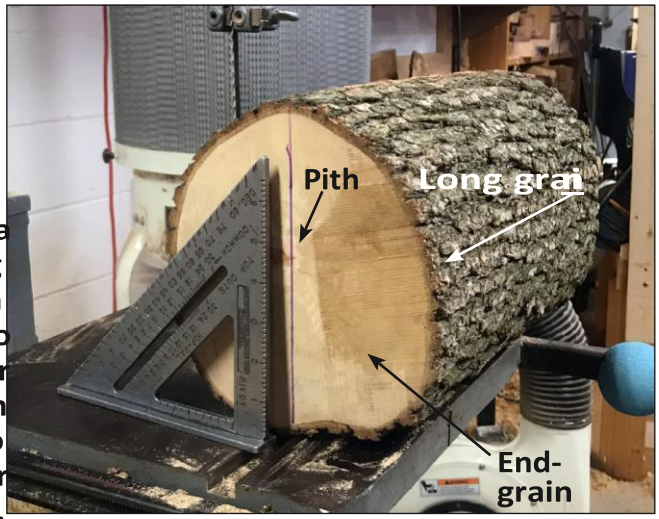
All specifications typical, your equipment may vary...

TOOLS

FUNdamental Overview

Grain Direction on the Lathe...

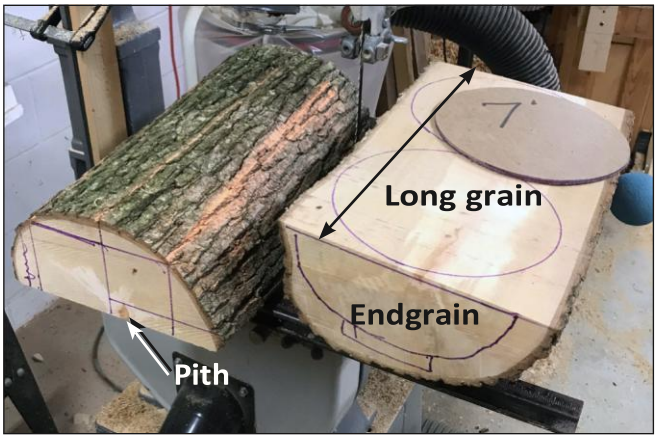
Firewood-sized hardwood log, 9" dia (24cm) by 16" long (40cm), sawn down the middle yields two long-grain blanks for spindles or endgrain turning, and two crossgrain blanks for bowls or platters.



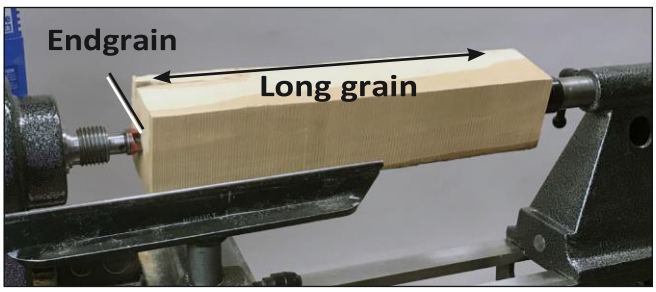
ExplorE!
Click the blue box or scan the QR code to find out more...

tiny.cc/sawlog

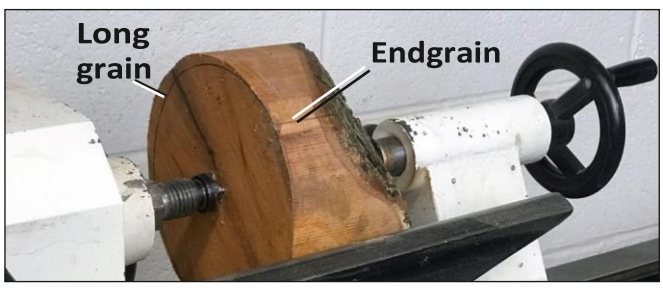
To bandsaw safely, stand the log on end or secure it on a sacrificial sled.



Long-grain blanks ***Crossgrain blanks***



Long grain parallel to lathe axis

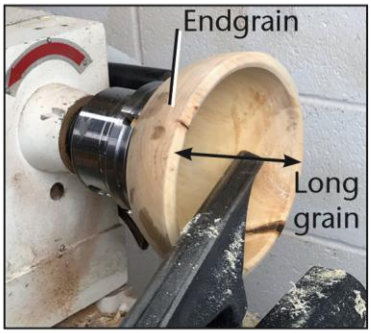


(spindle orientation)

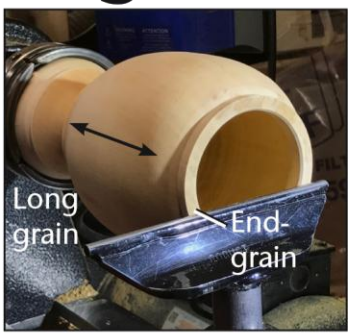
Long grain perpendicular to lathe axis (crossgrain, or faceplate, orientation)

...Grain Direction and Turning Tools

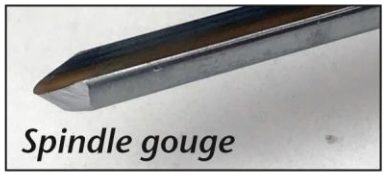
Long grain (spindles)

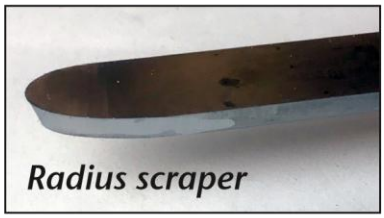


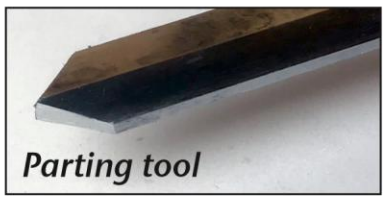
Crossgrain (bowls)

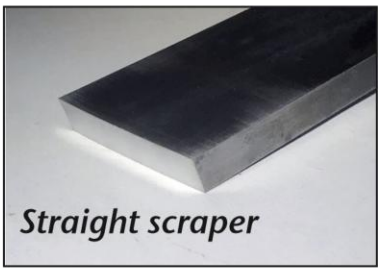


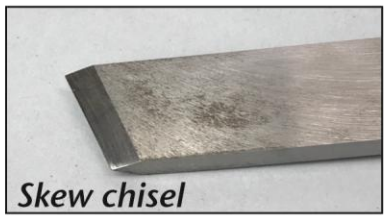
Endgrain (hollowing)...

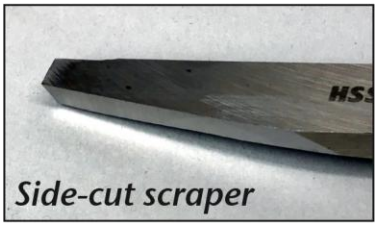




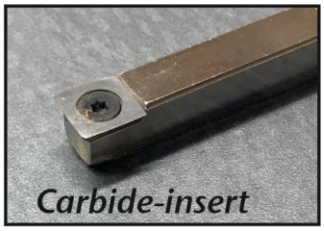


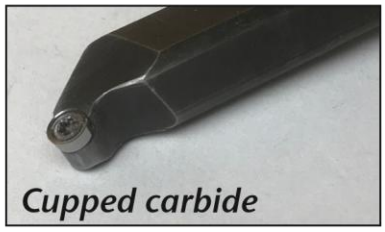






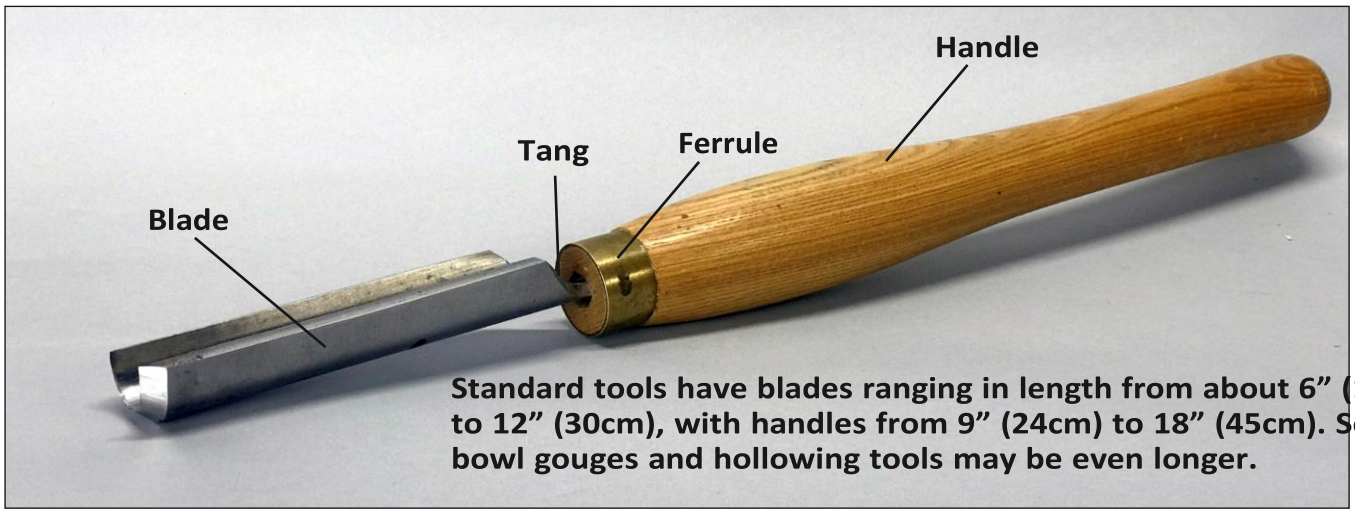
Any grain orientation



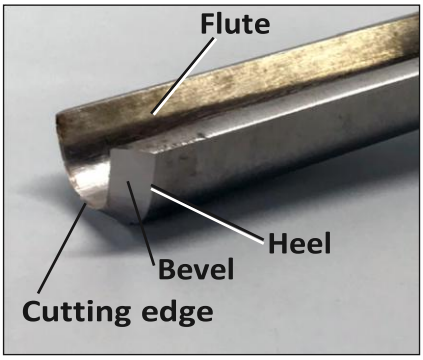


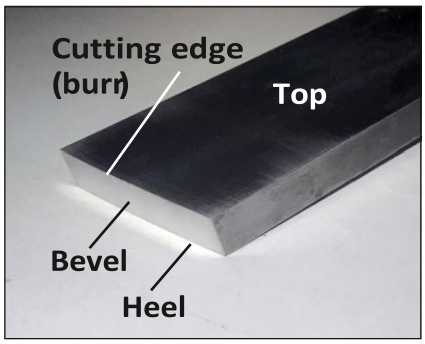
FUNdamental Definitions

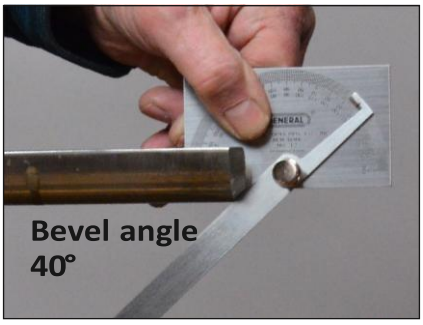
Parts of a Turning Tool.

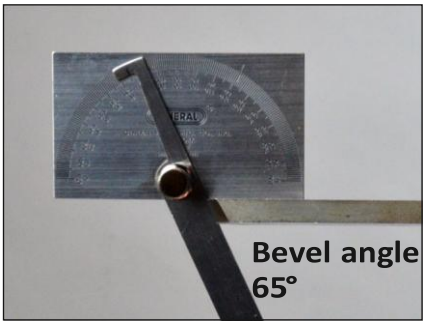


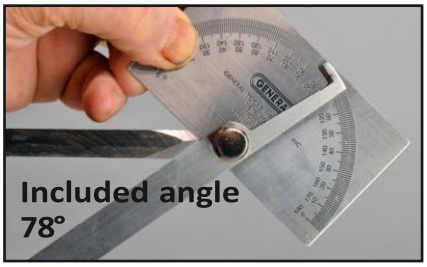
Gouges ***Scrapers***





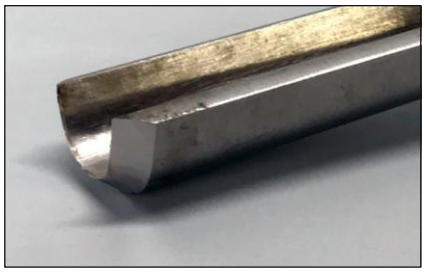


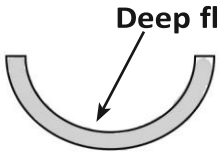


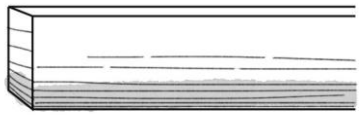


Spindle Gouge Shapes, Angles

Spindle roughing gouge



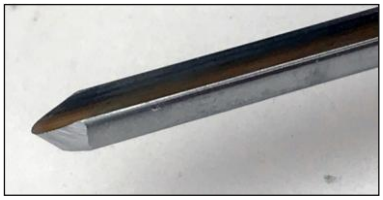




Bevel angle 40° to 45°

The spindle roughing gouge is only for cutting long grain in spindle orientation, anything else risks a dangerous catch. Size range: 3/4” (20mm) to 1-1/4” (32mm) in width.

Spindle gouge

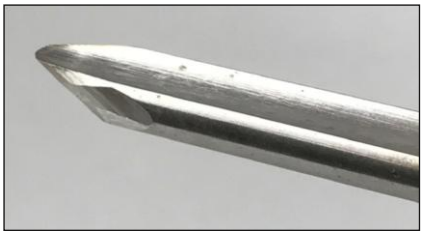


Flute

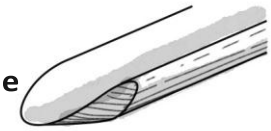
Bevel angle 35° to 50°

The versatile spindle gouge is useful in all types of turning and grain orientations. Gouges are measured by widest diameter from 1/4” (6mm) to 1/2” (12mm); 3/8” (9mm) is a good general-purpose tool.

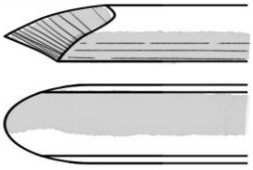
Detail gouge



Bevel angle 30° to 40°

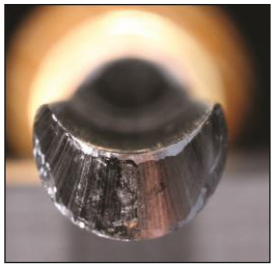


Shallow flute



Detail gouges have a long nose, shallow flute, thick body, and long bevel.

Gouge orientation



Open = flute faces up, 12 o’clock position

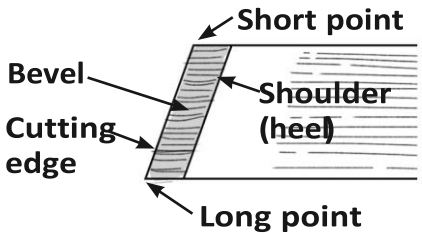
Closed = flute faces right (3 o’clock) or left (9 o’clock).

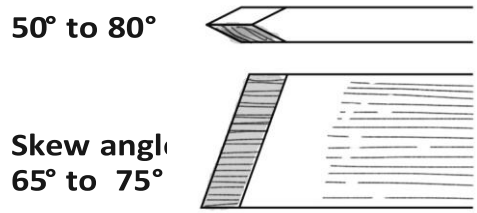
TOOLS

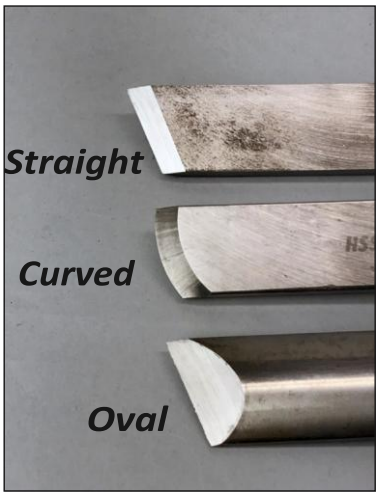
Skew Chisels and Parting Tools

Skew chisel

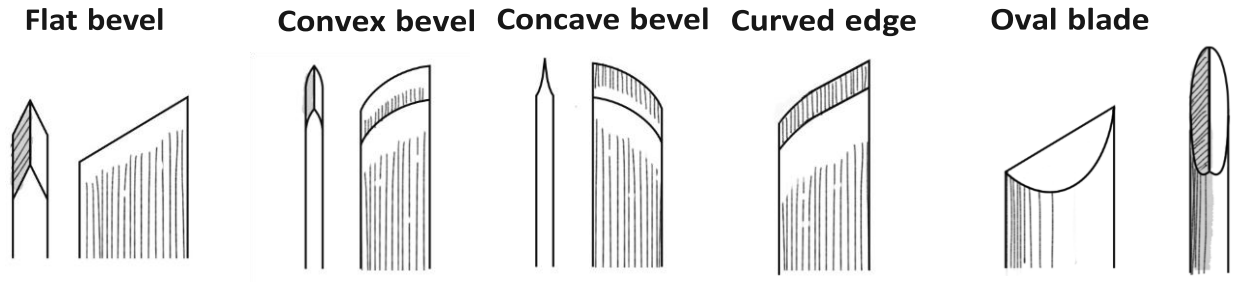
Included angle



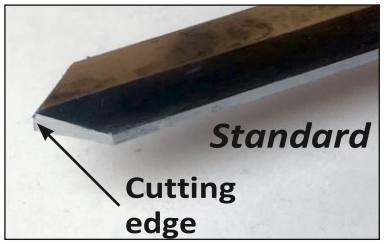


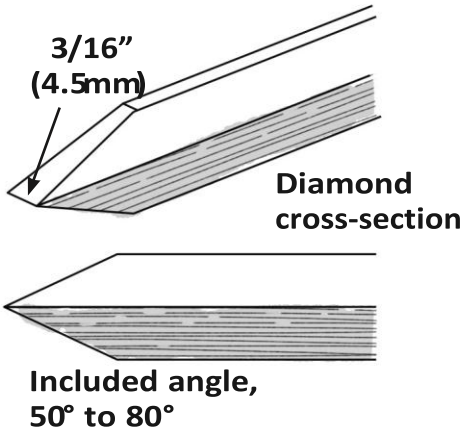


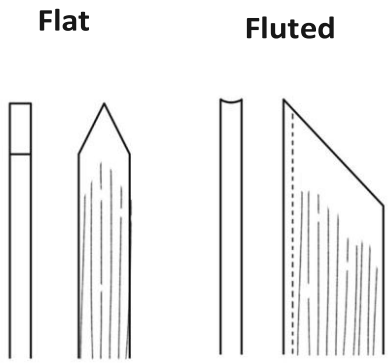
The bevel may be ground flat, concave, or convex.



Parting tool







The cutting edge of a standard parting tool is about 3/16” (4.5mm) wide with the blade about 3/4” (2cm) across. The included bevel angle ranges from 50° to 80°. Thin parting tools are about 3/32” (2mm) wide. Some parting tools have a sharp flute ground into the blade’s bottom edge.

Skew chisels range in width from 1/4” (6mm) to 1” (25mm), with 3/4”

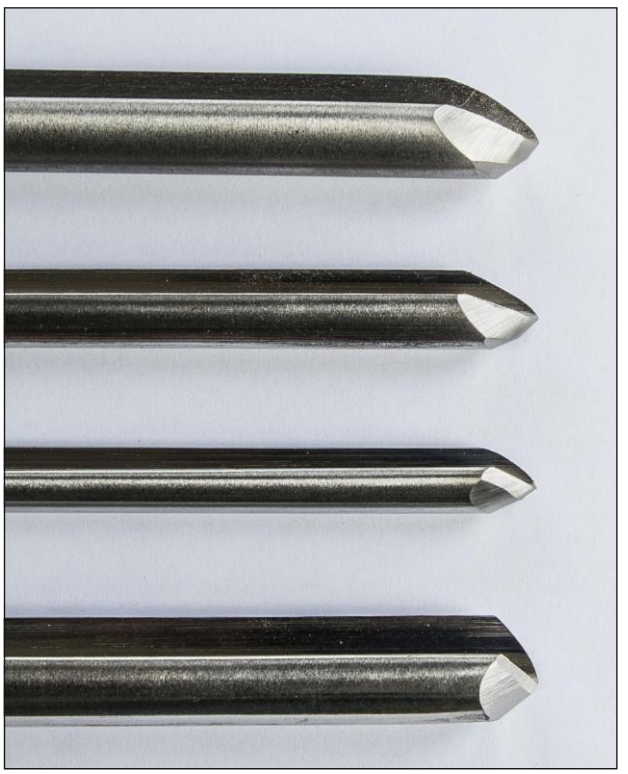
(20mm) a good starter size. Skews can make precise cuts and leave clean surfaces on spindles. Skews are various:

The blade may be rectangular in section, or oval.

Some turners prefer a curved cutting edge.

Bowl Gouge Shapes and Angles

Bowl gouge



PhotobyGlennLucas

Fingernail grinds

Traditional grind

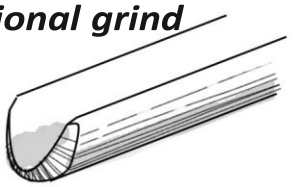
V-shaped flute

U-shaped flute

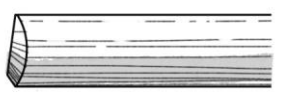
Bowl gouges, ranging from 1/4" (6mm) to 1/2" (12mm) in width, have deeper flutes than spindle gouges. Flute profiles may be V- or U-shaped.

Bevel angles affect what shapes the gouge edge can reach. Long wings can remove a lot of wood quickly.

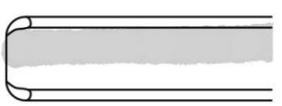
Traditional grind



Bevel angle 50° to 60°

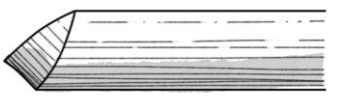


Rake angle 0° to 25°

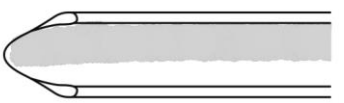


Fingernail grind

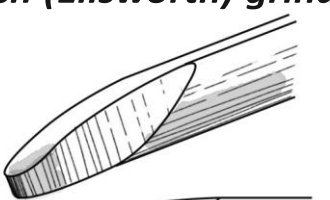
Bevel angle 35° to 45°



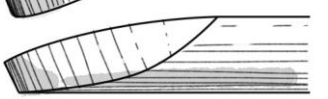
Rake angle 40° to 50°



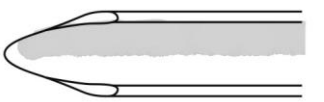
Irish (Ellsworth) grind



Bevel angle 55° to 65°

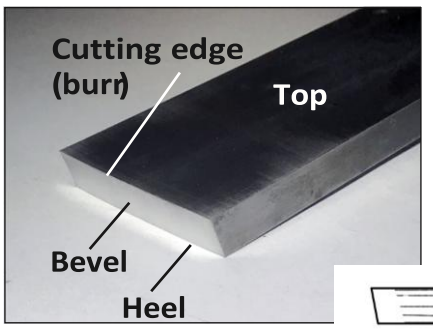


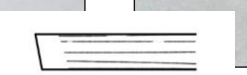
Long wings swept back



Scrapers Scrapers Scrapers

Straight



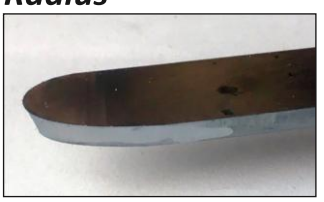


Bevel angle 65° to 80°

Curved

Negative rake

Radius



Hollowing

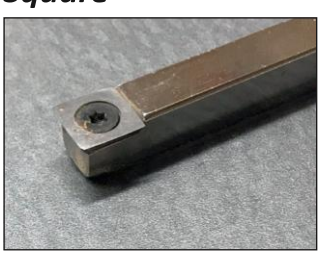
Adjustable hollowing

Side-cut box

Scrapers are made in myriad shapes and range from miniature size up to about 1-1/2” (38mm) wide and 1/2” (12mm) thick. The cutting edge is a raised burr at the top of the bevel. Scrapers can cut in all wood grain orientations. They cut best held flat on the toolrest or angled slightly downward, with the cutting edge at center height. Negative rake scrapers make light finishing cuts.

Carbide-Insert Tools

Square



Round

Point

Cupped

Carbide tools have a steel shank carrying a carbide cutting bit held in place by a small Torx screw. Flat bits scrape while cup-shaped bits cut.

Carbide tools stay sharp a long time; dull bits can be honed on a diamond plate but ultimately must be replaced.

❒

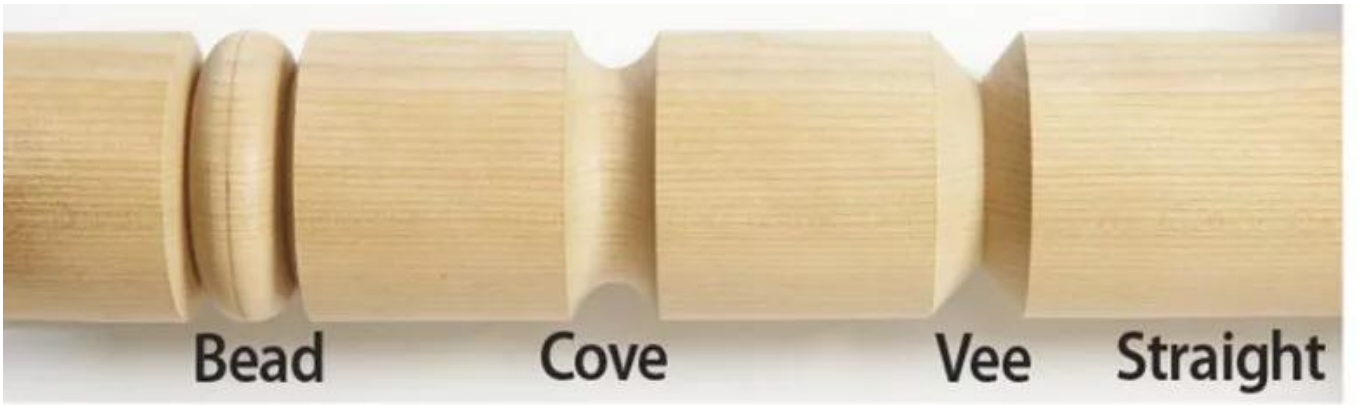
Tips for better spindle turning

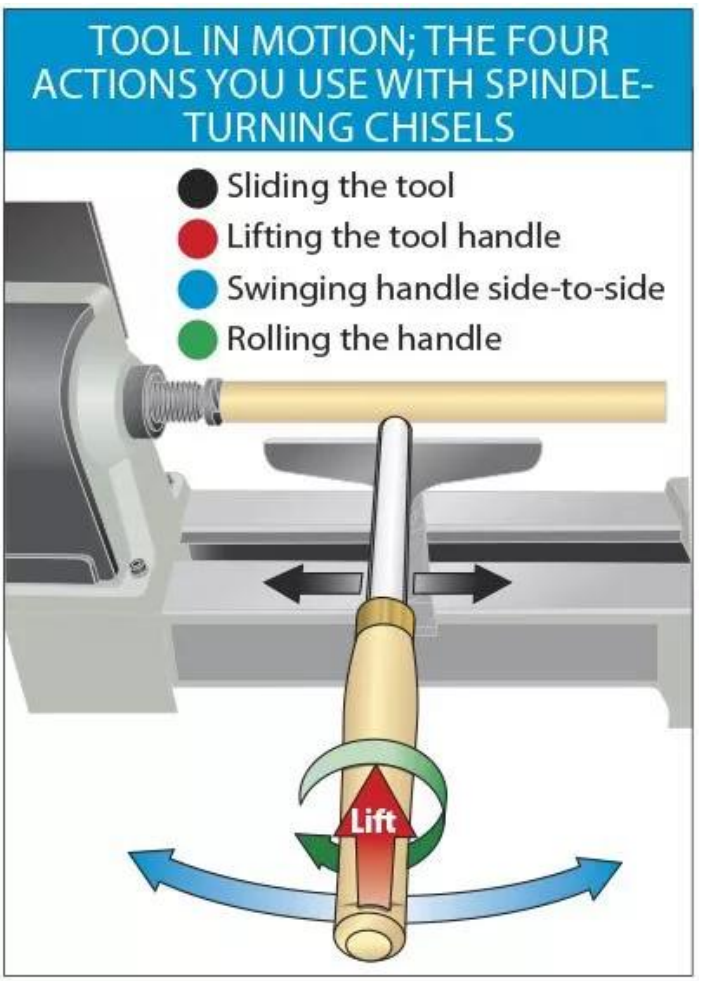
Even if you use the lathe only occasionally, you can quickly and easily learn to turn out shapely spindles—anything turned between centers—with these essential guidelines to lead you.

Things to know before turning on the lathe

- No matter how complex it might look, every turned spindle consists of four basic shapes, shown below—bead, cove, vee, and straight—used alone or in various combinations. In this article, you'll learn to make each shape individually; then you can begin blending them to create more complex profiles.
- After roughing a blank round, define each shape's width with top and bottom limits (side-to-side when mounted on the lathe) by making pencil marks on the turned cylinder.

- When shaping a profile, always work from the greater diameter to the smaller. So divide each shape in half, and cut each segment with a "downhill" motion to prevent catches and tear-out.
- Regardless of the tool, you use one or more of four tool motions, shown right, for making shapes. Lifting the tool handle makes the tool cut deeper, reducing the spindle diameter; swinging the tool handle side-to-side creates curved profiles; rolling the tool in a circular motion optimizes the cutting edge to the task and fine-tunes shapes; and sliding the tool on the tool rest cuts shapes laterally.
- And remember, practicing on scrap stock helps hone your skills, saves your good wood, and proves just as much fun as turning the final project.





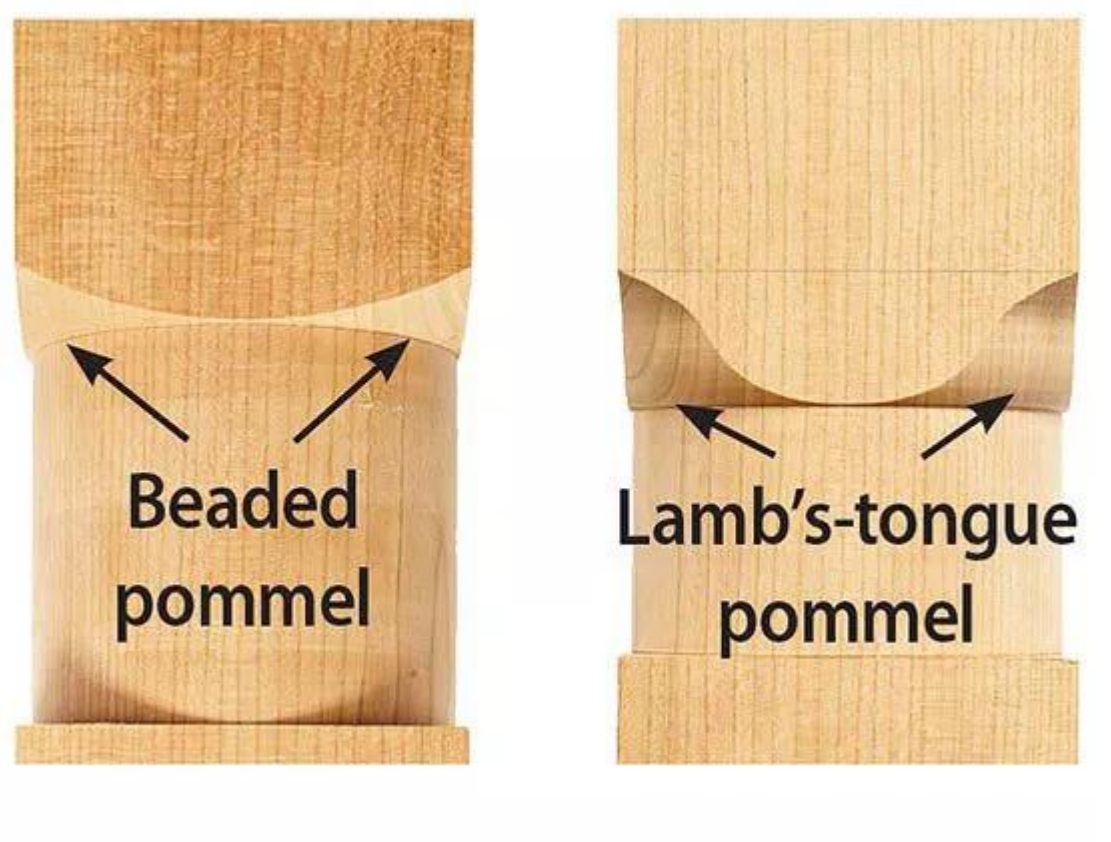
Starting from square one: Turning a pommel

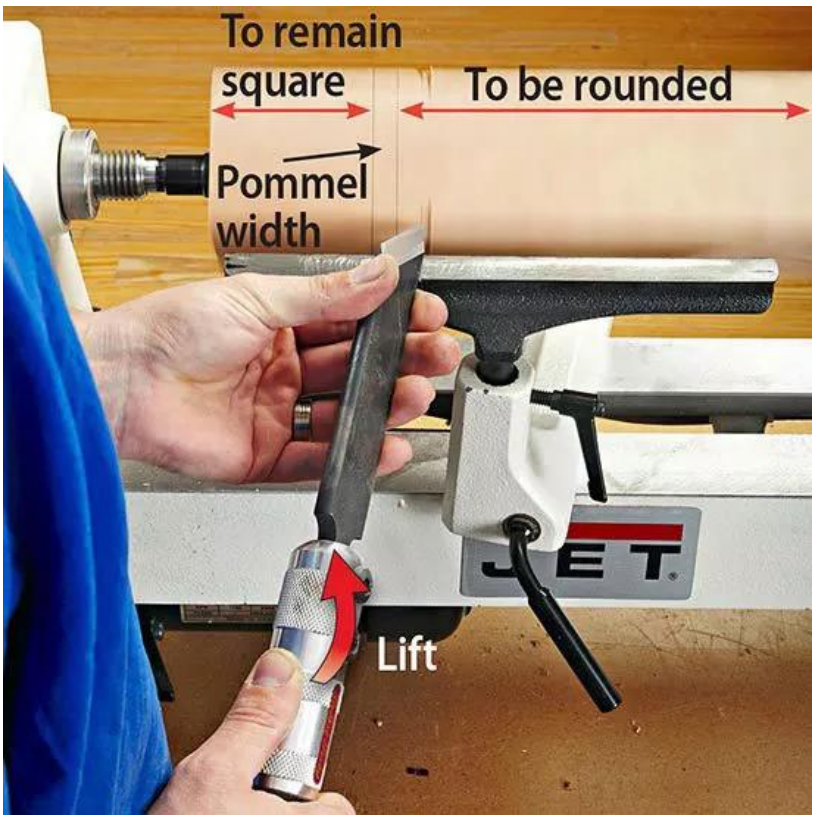
Most spindles start out as square blanks. To make the blank round, mount it on the lathe between the headstock and tailstock, and use the roughing gouge to reduce it to a cylinder.

If the finished spindle will retain a square segment, you'll need to first turn a pommel, the transition from square to round. Typically, pommels have either a beaded or lamb's-tongue (cove-and-bead combination) profile, shown at right. You can turn either profile with a spindle gouge, but we prefer a 1⅜ " skew chisel for beaded pommels because, when used correctly, it cuts cleanly with no tear-out.

Cutting pommels first gives you a safety net: Should you have a catch that damages the square portion, you can stop and flip the spindle end for end and start fresh. The torn-out miscue will disappear when you later turn that end into a cylinder. Begin by marking the top and bottom of the pommel with a pencil and square on all four faces. With your lathe running at about 1,350 rpm for a 3"-square blank, cut the pommel (ours is a bead) as shown right.

With the pommel finished, use the roughing gouge to turn the remaining spindle to the largest profile diameter.





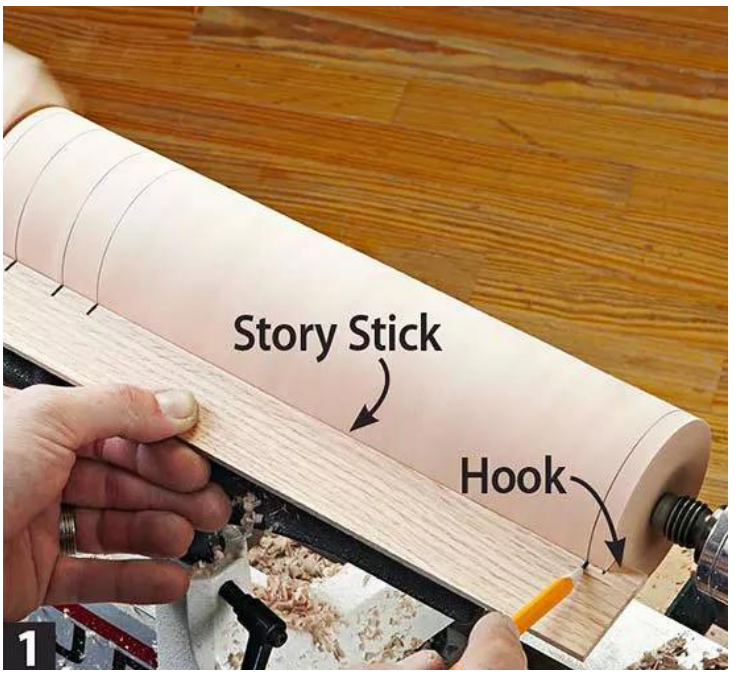
1. With the skew's toe pointed down, touch the cutting edge lightly to the wood 1/2" or so to the right of the bottom mark, and cut about 1/16" deep.

2. Make a series of gradually deeper cuts, repositioning the skew about 1/16" closer to the pommel's bottom mark each time.

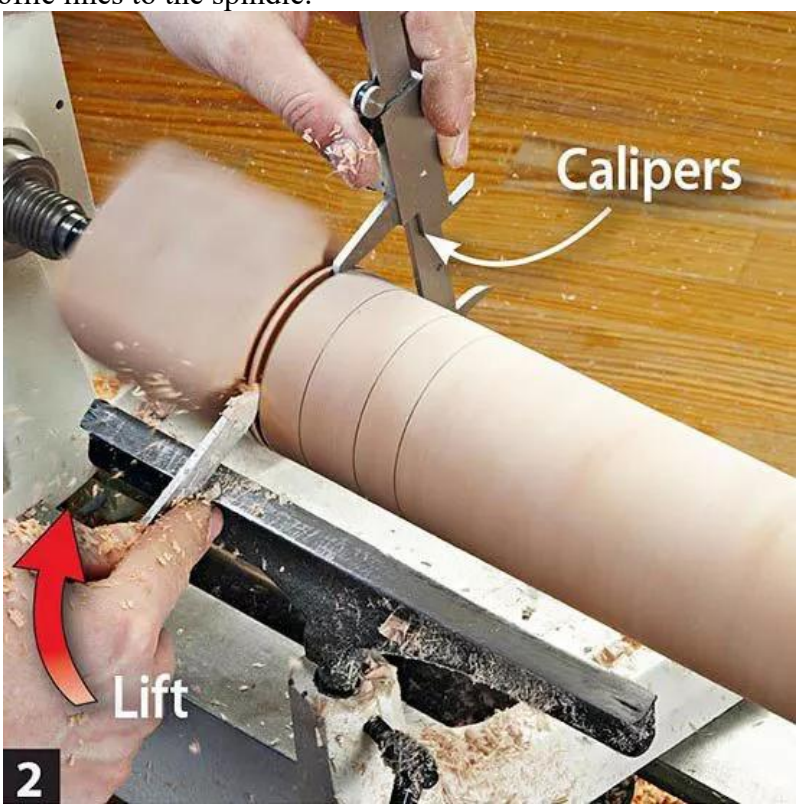
3. When you reach the bottom mark, begin rolling the tool slightly as you cut, using a clockwise rotation,and ending with the tool at 90°

Now set critical diameters with a parting tool

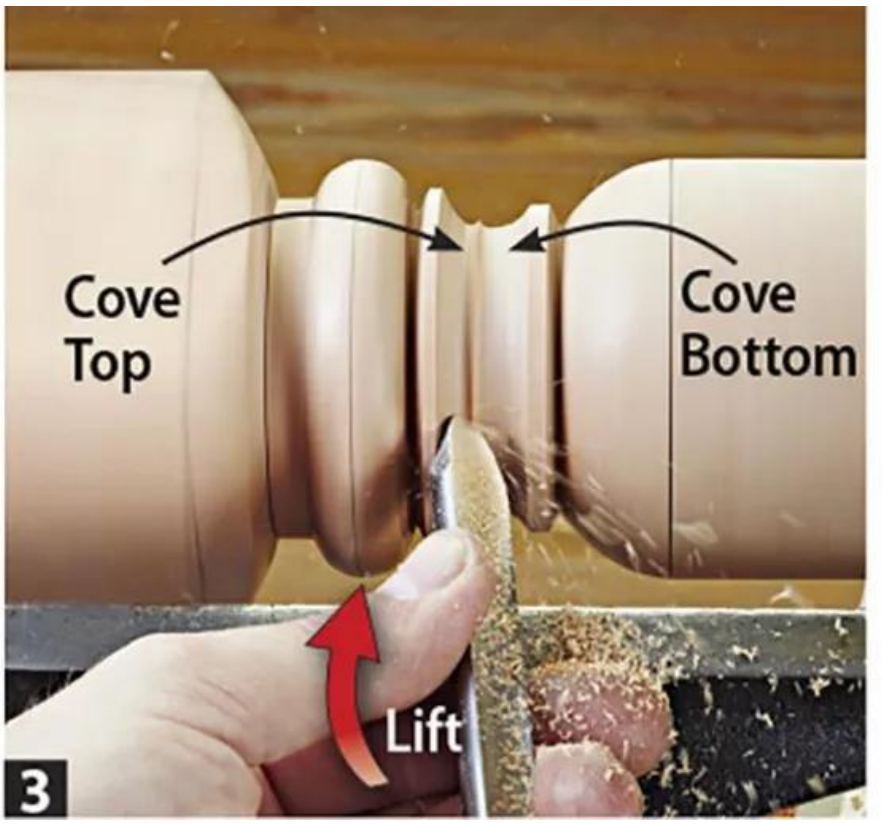
Make a story stick with a hook at the bottom end, with dividing lines indicating the locations for different shapes. Transfer the lines to the spindle, as shown *below* right. Then use a parting tool and calipers to turn each diameter.



With the spindle turning and the story stick lying on the tool rest and hooked around the tailstock end, transfer the profile lines to the spindle.



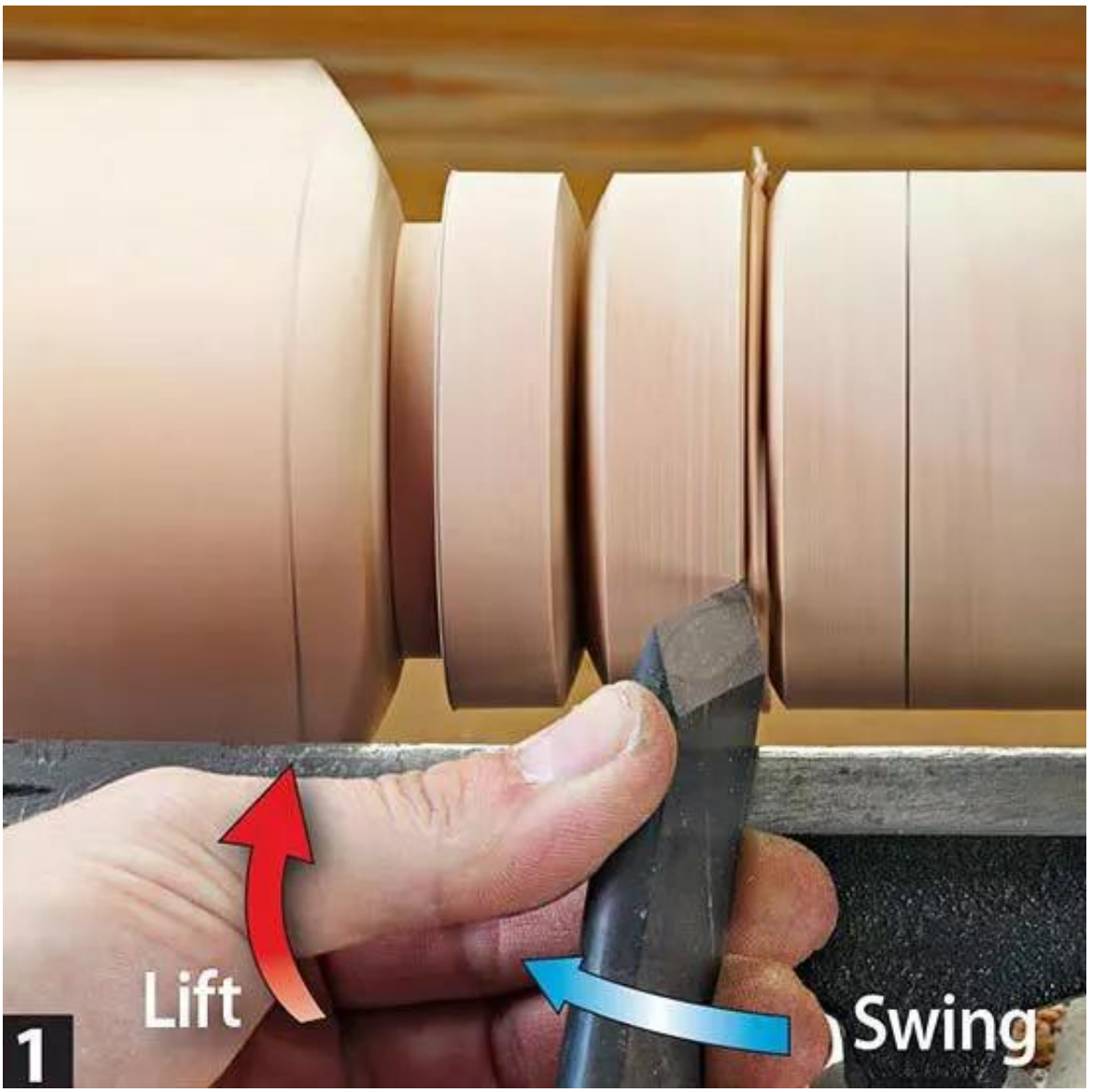
Rest calipers set to the desired diameter in a straight segment as you turn it down. When the calipers slip over the center, stop cutting.



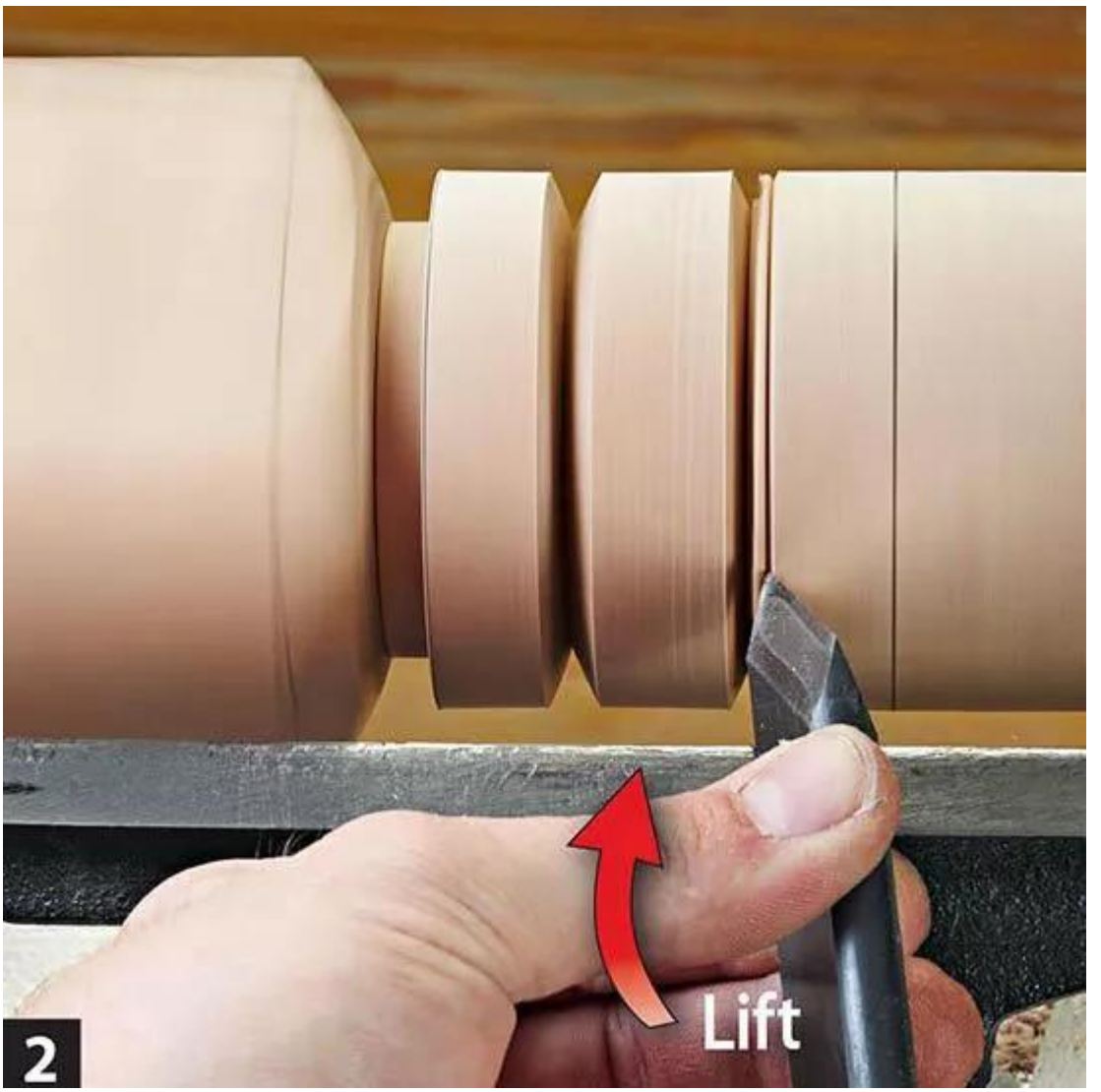
With the toe pointed down, swing the handle while orienting the bevel with the vee angle. Then touch the toe to the workpiece and lift the handle.

Turn vees with a skew

You create vees much like a beaded pommel, but without rolling the tool. Because the vee comes to a point, you cannot use a parting tool to establish the bottom diameter. Instead, alternate cutting each side of the vee with the skew, shown *below*.



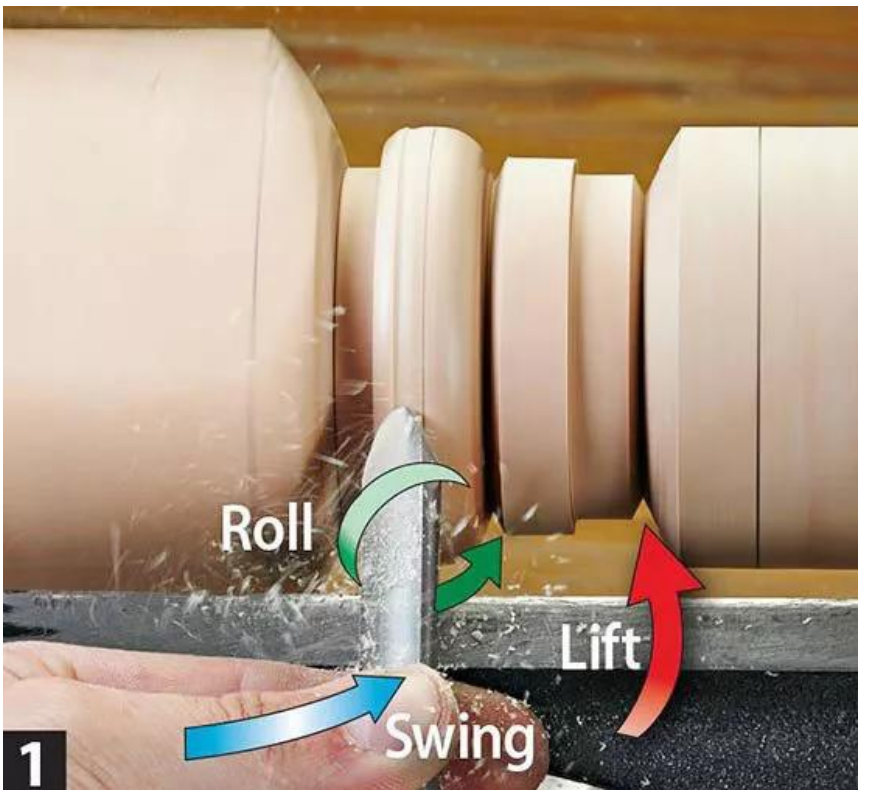
With the toe pointed down, swing the handle while orienting the bevel with the vee angle. Then touch the toe to the workpiece and lift the handle.



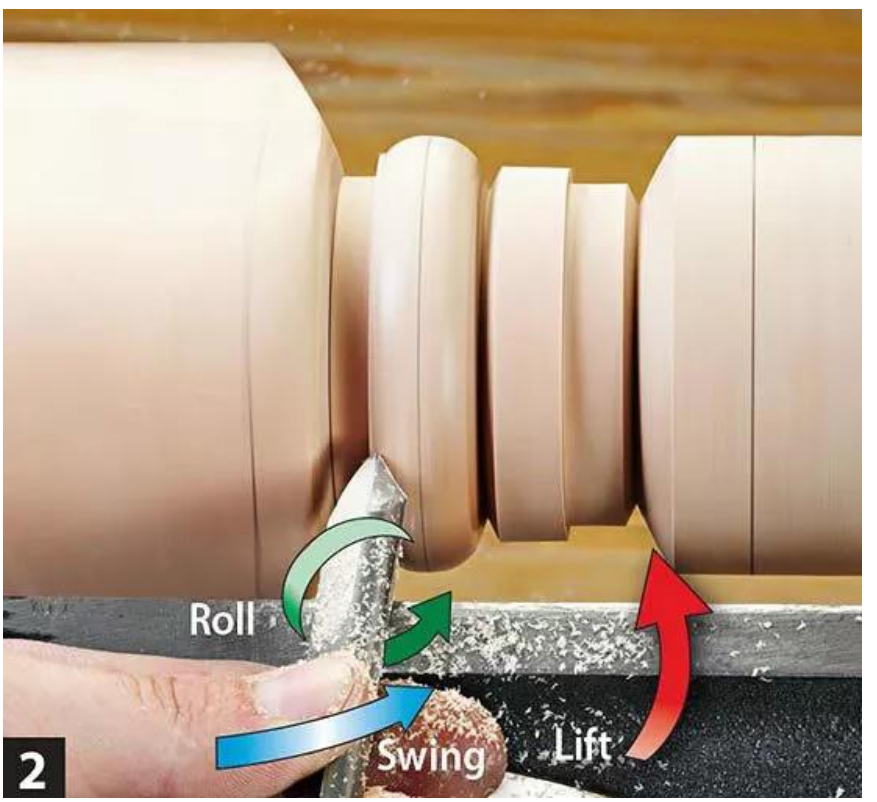
Take a similar light cut from the opposite side of the vee, chasing the shaved-away waste material toward the bottom.

Make beads with a spindle gouge

Spindle gouges have rounded tips and shallow flutes (by comparison, bowl gouges have deep flutes), and work perfectly to make the rounded cuts that form beads. Begin by marking a dividing line in the center of the bead (defined in the earlier step with the story stick). Then, as you round off each side, start each pass closer to the pencil line and cut away from it, as shown at right. Ultimately, you should cut right up to the pencil mark on each side but not remove the line until the sanding stage. Reverse the tool actions for left and right halves.



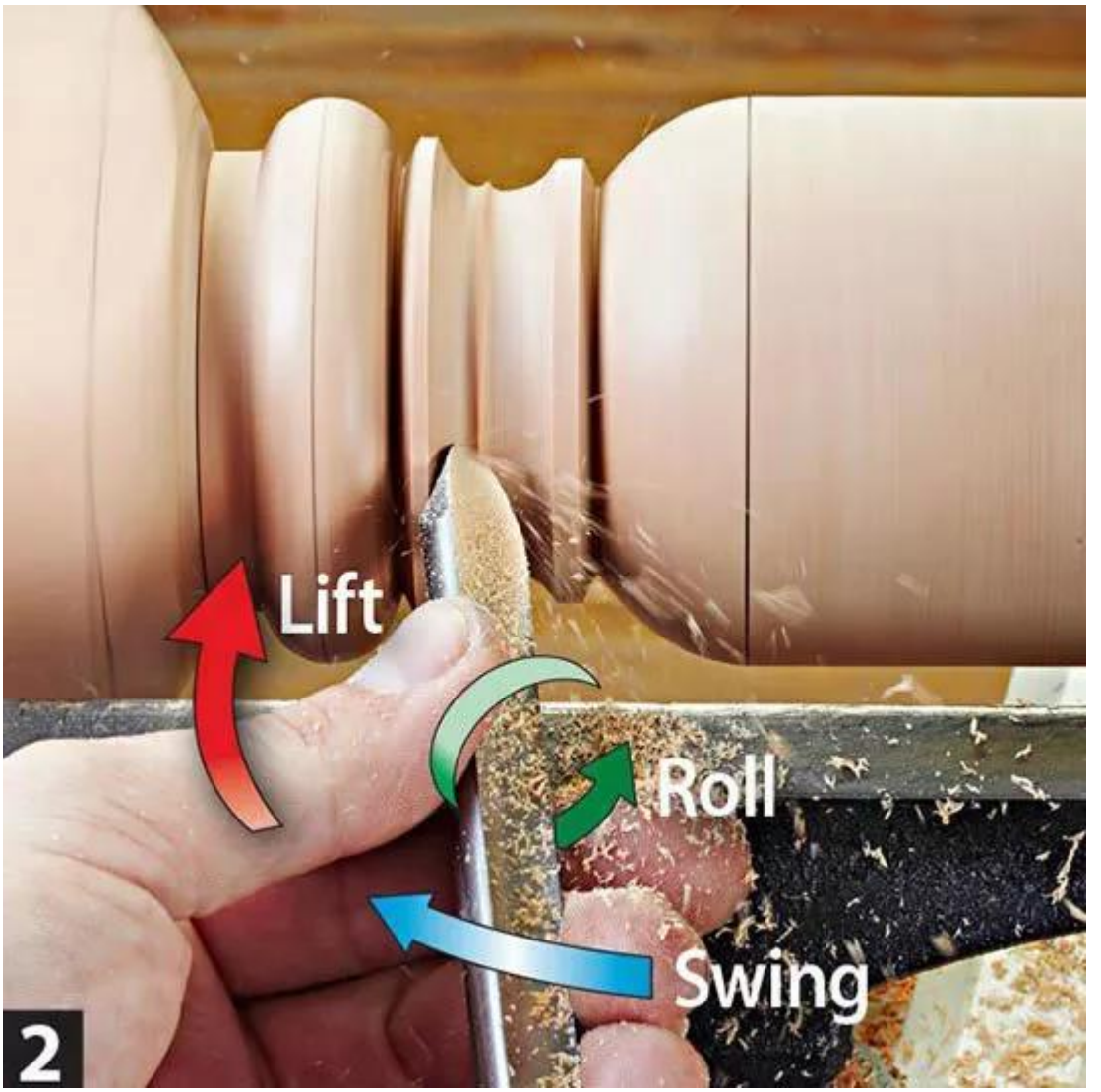
With the tool's bevel riding against the spindle and the flute at 12 o'clock, start "pushing" a shallow cut away from the center mark, rolling a quarter-turn.



Continue making light cuts untilyou've rolled a continuous curvefrom the pencil line to the bottomdiameter or connection to the next shape.

Shape coves similarly to forming beads

Use the same techniques to make coves as you did with beads. You roll the tool counterclockwise for left-side cuts while swinging the tool handle to the left. Do the opposite to shape the right side of a cove profile.

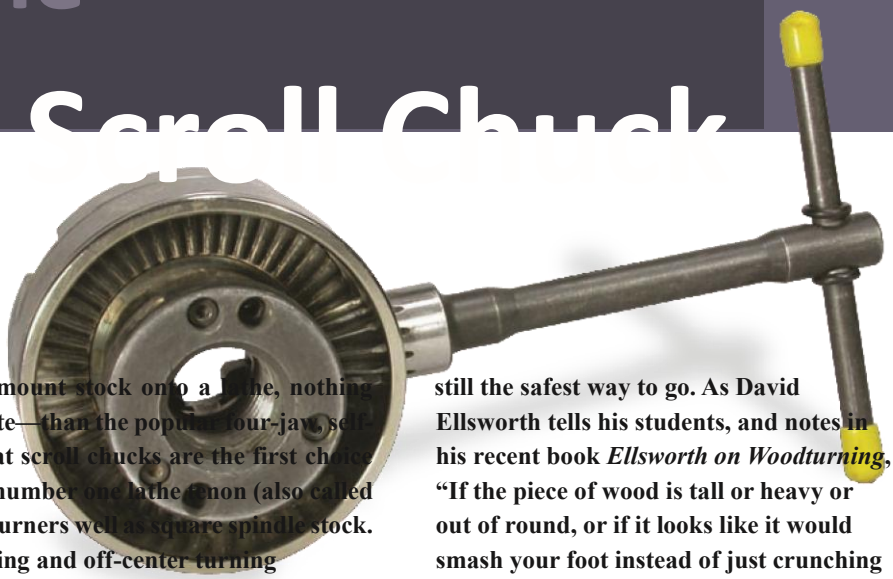


Push the cut toward the bottom ofthe cove by lifting the handle, pivoting,and rolling it counterclockwisesimultaneously.

Mastering the Four-Jaw Scroll Chuck

A Primer

Dick Gerard and Stan Wellborn



Of the many ways that woodturners can mount stock onto a lathe, nothing seems to generate more interest—or debate—than the popular four-jaw, self-centering scroll chuck. It's fair to say that scroll chucks are the first choice to secure wood for turning as well as the number one lathe fenon (also called *spigot* or *foot*) as accessory, in large part because turners well as square spindle stock. appreciate their convenience, versatility, • Indexing and off-center turning and time-saving qualities.

This handy and practical device came into widespread use on wood lathes in the mid 1970s, derived from the gear-driven chucks that had been used in metalworking for many years. After its introduction, woodturners quickly shelved their faceplates and jam chucks to enthusiastically adopt the scroll chuck—and the turning craft hasn't been the same since.

Properly used, scroll chucks offer significant advantages over traditional methods:

- Screw holes are eliminated from the bottom of turned items, making more creative designs possible.
- Chuck jaws can grasp both a round

can be enhanced through the use of some scroll chucks.

- Production turners find scroll chucks a boon because changing out stock takes much less time than with traditional means.

This article explores the uses of the four-jaw scroll chuck for the beginner (and perhaps intermediate) woodturner. It is not an endorsement or ranking of any particular make, model, or manufacturer, but rather an overview of what is available, and the pros and cons of various designs.

Limitations of chucks

Scroll chucks have their limitations. Perhaps chief among them is the potential for mishaps that can result in injury to the turner or damage to the turning. For larger work, and when the absolute best holding power is required, using a faceplate is still the safest way to go. As David Ellsworth tells his students, and notes in his recent book *Ellsworth on Woodturning*, "If the piece of wood is tall or heavy or out of round, or if it looks like it would smash your foot instead of just crunching a toe, don't even think twice—just stick it on a faceplate. The bottom line is that nothing holds a piece of wood to the lathe stronger and with less vibration than a faceplate."

Screw chuck attached in a talon chuck showing safety slots and pin in jaws. Open-back talon chuck with key.

Varieties of chucks

A plethora of chucks and chuck accessories is available in today's market. This is evident by opening any woodturning catalog or by perusing online woodworking forums where no one is shy about expressing blunt and candid opinions about chucks. Turners are enticed by various brands of scroll chucks—with a wide range of prices—as well as vacuum chucks, donut and jam chucks, collet and Jacobs chucks, eccentric chucks, and more. In addition, four-jaw chucks have an array of extensions and attachments of every configuration, including screw chucks, Stebcenter and spur drives, and jumbo jaws of various sizes. The world of chucks

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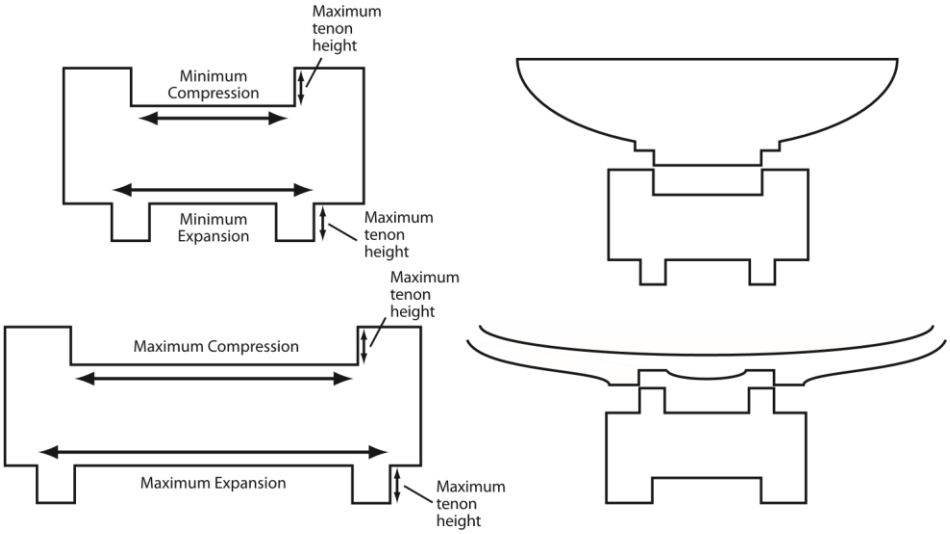
Template guides for turning safe tenons and recesses



can be a confusing place to navigate, even for experienced woodturners.

That world has expanded considerably in recent years. The leading industry manufacturers include Oneway, the Canadian company that produces the Stronghold and Talon models; Vicmarc, a manufacturer in Australia of the VM 100, 120, and 150 series; Robert Sorby, the English lathe tool producer that makes the Patriot brand; New Zealand-based Teknatool, maker of the Nova and Titan chucks; and Axminster, the British toolmaker that offers the Clubman and Super Precision chucks.

Increasingly, manufacturers in China and other Asian nations are bringing to the market less expensive scroll chucks that are gaining admirers for their rugged qualities, high performance standards, and their interchangeability with more established brands. These include several models made by Grizzly Industrial, the Barracuda line from Penn State Industries, and Pinnacle and WoodRiver chucks sold by Woodcraft, among many others. For lighter duty applications and for beginning turners, these chucks afford commendable quality and are certainly less demanding on the wallet.

What is a chuck and how does it work?

A *chuck* is a mechanical device that holds material during various stages of processing. Applied to woodturning, this primarily means a four-jaw scroll chuck. This design allows the four centering jaws to work in unison—unlike metalworking chucks in which the jaws may operate independently to accommodate off-center work.

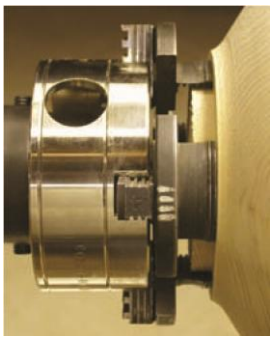
Axminster engineering workshop and Axminster chuck.

Four sliding base jaws, or *travelers*, are engaged by matching channels that are grooved into the chuck body. The chuck's top jaws that grip the wood attach to these slides. At the opposite end of the chuck is a threaded insert, cut to match the thread of the lathe's headstock spindle nose. The centering results from a machined spiral, or *scroll,* that rotates inside the body of the chuck and shifts the jaws in and out as the lathe operator tightens the grasp on the work.

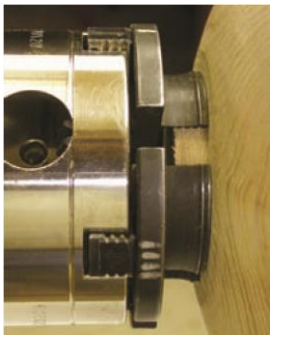
A turner activates the rotational movement using a geared chuck key, hex T-wrench, or dual tommy bars, rodlike levers that are pulled counter to each other to encircle and secure the work. While lever-operated chucks are generally faster than key-operated chucks, and lower in price, they are less convenient and not as intuitive to use. Opening and closing mix-ups can easily occur if the user is not paying close enough attention because achieving a reliable hold takes more effort. Thus, the majority of chucks sold today use a single key, which allows a major advantage: one-handed operation.

Quality control

While manufacturers take care to produce accurate products, any affordable chuck that has moving parts will exhibit some wobble or *slop,* which is built-in tolerance that results in a slight amount of run-out that is especially noticeable in largerdiameter pieces. The only way to completely remove this tolerance would be to engineer chucks to such a high degree of precision that few people could afford to purchase one. Metalworking chucks, for example, can cost thousands of dollars and weigh hundreds of pounds to eliminate tolerances in performance. Many turners insist that some run-out is inevitable in wood lathe work anyway, because of spindle misalignment and the nature of wood itself. If a chuck shows signs of run-out that is noticeable to the naked eye, the first thing to check is whether the spindle adapter is improperly aligned



the diameter of this tenon is too large, causing the jaws of the chuck to stick out so far that they become a safety hazard. additionally, if the tenon were slightly longer, the jaw would have more surface on which to grip.



the diameter and height of this tenon will hold the bowl blank securely and safely. the jaws are not protruding too far; the tenon is not touching the bottom of the chuck; and there is a flat shoulder on the bottom of the bowl that rests evenly on the top of the jaws.

or loose. Even the slightest run-out at the spindle will be magnified considerably in the turning itself. And, taking a blank out of the chuck and remounting it will almost always produce noticeable run-out. Some turners place a mark on the chuck's edge and a corresponding mark on the tenon so that they can remount the work exactly where it was originally. *Repeatability* is important in chuck performance, so that when pieces are reversed in the lathe they will require a minimum of reshaping to eliminate wobble.

Manufacturers compensate for these quality control issues by working to perfect a chuck's fit and finish so that the device will provide a lifetime of consistent service. External surface coating is applied to improve smoothness of operation and reduce chances of rust and corrosion. Materials are chosen for compatibility, balance, and resistance to wear. The scroll, base jaws, and top jaws use different metals that have surfaces tempered by heat and tough electroplating. Chucks come in both open- and closed-back designs, which may affect their operation somewhat. An open-back chuck leaves the gears exposed, which may allow grit and grime to impede the tightening of the jaws, but also facilitates cleaning. Oneway claims that after producing the Talon and Stronghold chucks for many years, no chuck was ever returned because of its open-back design. Vicmarc chucks, which have closed backs, have convenient indexing holes drilled around the outer edge of its chucks. The back can be removed for inspection and cleaning of the gears.

cover a range of diameters.

Chucks should have set screws of hardened steel to securely attach them to the lathe's spindle. Moreover, because many turners increasingly use reverse, or clock-wise, turning, it is *critical* that the chuck attach tightly to the head-stock spindle to prevent the work from unwinding right off the spindle.

Vicmarc chucks and accessories.

Safety considerations and gripping power

Various safety measures have been built in to prevent the jaws from loosening or flying off the chuck. For instance, Oneway has added grooves that are cut in the face of the chuck in which a pin rides as the jaws move. A shorter groove keeps the jaws from extending beyond the body of the chuck—a benefit in schools or beginner classes to protect knuckles from the spinning steel. A longer groove allows maximum travel while not interfering with easy disassembly if required. Nova and Vicmarc employ a pin in the jaw travel slot. These designs usually reduce jaw travel and, as a result, more top jaw sets are required to In addition, to mitigate the prospects of a failure, experienced turners seldom rotate chuck-mounted stock at high speeds, especially in the roughing-out stage. So long as one is getting a good clean cut, slower is safer. And, prudent users know to crank in the live center from the tailstock to provide additional support when turning a bowl blank.

When a bowl is properly mounted in a chuck by its tenon and the turner experiences a catch or dig-in, the tenon must stay attached in the chuck (even if the bowl itself breaks off). To reduce the chances of a failure, chuck designers have created several innovations that have been adopted by most manufacturers. The most crucial aspects of these are the gripping powers of the top jaws— the ones that clamp the wood. No matter how good, smooth, expensive, cheap, large, or small—if the top jaws are not capable of holding the blank securely, then the chuck is essentially useless.

Types of jaws and mounting the stock

Perhaps the most contentious issue among veteran turners is which of the two main types of jaws on the market has superior

Using a parting tool to turn a tenon works well to create a 90° shoulder and a flat base surface. If dovetailstyle jaws are used, the sides of the tenon should match the jaw shape.

Place marks on the bowl blank that relate to the jaws of the chuck so the bowl blank can be remounted in the same position. Doing so will help keep the bowl blank in alignment for "repeatability" and will minimize wobble.

A platter or bowl blank also can be expansion-mounted; the jaws of the chuck are placed inside a turned recess.

Jaws are made to clamp externally on a round tenon (or glue block) in what is known as a *compression* hold, or to extend internally into a hollowed recess, known as *expansion* or *tension*. How well a jaw grips depends on the fit between the jaws and the tenon (or the dovetail shape in the event you are using the chuck in expansion mode), the jaw diameter, and the diameter of the wood. Every jaw, with the exception of Oneway's patented top jaws, is designed to fit only one size and one dovetail shape. Any other size or shape will compromise holding power to some degree.

Wood is held more strongly in compression than in tension. For turning bowls and vessels, most turners use a jaws tenon to hold the piece in compression mode. For grip, which arguably should occur when using a scroll chuck. Many turners, however, insist that the best way to ensure a concentric grip is to hold the tenon in the jaws and tighten the chuck just enough to hold the piece snugly. Then, rotate the chuck to the opposite side opening and then tighten a bit further, repeating the process on each side. Progressively tightening in this manner makes it more likely that all the jaws will compress equally and will be concentric on the tenon.

Nova chuck

Don't apply too much force when tightening the jaws in either expansion or compression mode. Many turners tighten the chuck so much that they split the recess or they crush the fibers of the tenon, thus decreasing the holding power of the chuck and jaws. Crushing the fibers of the tenon is also a prime culprit for introducing unwanted vibration and chatter into the turning process. With that said, however, when holding green wood, it is necessary to periodically tighten the jaws as turning progresses. The tenon will loosen as sink deeper into the wet fibers as the wood dries during the turning process. Wood should be held in a concentric mode. For grip, which arguably should occur when using a scroll chuck. Many turners, however, insist that the best way to ensure a concentric grip is to hold the tenon in the jaws and tighten the chuck just enough to hold the piece snugly. Then, rotate the chuck to the opposite side opening and then tighten a bit further, repeating the process on each side. Progressively tightening in this manner makes it more likely that all the jaws will compress equally and will be concentric on the tenon.

holding power. The most common style is the dovetail shape used by Vicmarc and other makers. The other is the patented Oneway grooved cam-milled design and the various adaptations of Oneway's design.

Tenon size and recess

The size of the tenon or recess should be proportional to the intended finished size of the object and the size of the jaws being used. Most chuck jaws are manufactured in such a way that maximum gripping power is achieved at only one diameter: when the jaws are nearly closed. At this point the maximum amount of jaw surface is holding the tenon. At larger openings, less and less of the jaws' surface is gripping the stock.

A useful rule of thumb is to make the tenon about 30%–40% as wide as the largest diameter of the stock. Large bowls 12"–20" (30cm–50cm) in diameter, for example, require a tenon 3½"–6½" (9cm–16cm) in diameter. Bowls that are 4"–12" (10cm–30cm) in diameter can be held on a tenon that is 1¾"–4" (45mm–100mm) in diameter. Tenon height should be a maximum of 3⁄16"–7⁄16" (5mm–11mm). In general, the better the fit of the wood blank to the design of the chuck, the better it will hold. Experienced turners make a template out of cardboard or plywood with a semicircular cutout of the minimum and maximum distances that their chuck will accommodate to facilitate a proper fit.

Tenon or recess profile

The walls of the tenon or recess must match the profile of the jaws. On chucks with a dovetail design, the tenon or recess must correspond to that shape. Other manufacturers machine the profile of the jaws such that a straightsided tenon or recess must be used.

The bottom of the tenon should not rest on the inside bottom of the chuck. **Rather, the shoulder around the bowl's tenon should sit in solid contact with the top of the chuck's jaws. Since the exposed**

surfaces of the jaws are machined flat, a corresponding flat area must exist on the wood immediately surrounding the tenon. This ensures maximum holding power and safety by providing sideways support for the bowl blank during turning.

Design diameter is the size that the jaw was machined to before separation into the four quadrants. The simplest way to check design diameter is to open the chuck to ⅛" (3mm) between the sides of the top jaws. Measure across the circumference and you have design diameter. When the owner's manual claims that a certain jaw has a range of 2"–3" (50mm– 75mm) you can be sure only of one thing: design diameter is somewhere in between, probably 2¼" (60mm).

The Oneway jaws are a radically different design in two areas. For external gripping, the milled, serrated profile will grip any diameter within its capacity (not just design diameter) with eight nearly form-fitting contacts. For internal chucking, the jaw shape is a 10° dovetail. Additionally, Oneway mills a small circular ridge on the outside of the jaws that bites deep in the dovetail recess for extreme holding power in the least visible area of a recess.

Process for mounting and turning a bowl

It is commonly accepted in today's turning world that the bottoms of bowls be finished in such a way that the method of holding the blank is no longer a visible feature. Usually, this means that a tenon is removed after hollowing or is incorporated into the design.

At the start of the turning process, a bowl blank also can be held with a large screw, upon which the blank is threaded using a predrilled hole. Screw

Oneway Stronghold chuck and key.

chucks are usually provided as accessories and, when used, are held in the chuck's jaws. Alternatively, the blank can be mounted on a faceplate, using screws. Held either way, and with the tailstock brought up for extra security, a tenon can be turned on the bottom of the bowl. The outside of the bowl can be completely finish-turned before the blank is reversed and attached by its tenon to the scroll chuck for hollowing.

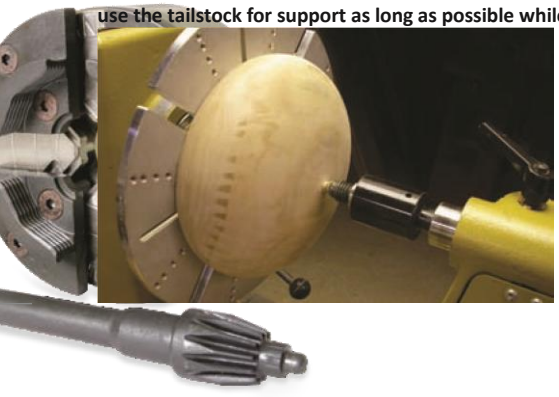
When the bowl is complete, the tenon is removed, either by turning or by sawing it off. If a lathe is equipped with a vacuum chuck, that is often the fastest and easiest approach. Other options are the jumbo or mega jaws marketed by several chuck manufacturers. These jaws hold the rim of the bowl with rubber buttons. Last but not least, the bowl can be remounted onto a jam-fit chuck, then secured with the revolving tailstock center for removal of the tenon. The small nub left in the center can be carved off.

Chuck maintenance

Modern-day chucks can take years of daily use, and even abuse, and still perform admirably. But over time, plus exposure to the normal abrasion of metal on metal, compounded by the introduction of dust or rust, moving parts will show wear; safety will be compromised. To minimize this, one can periodically disassemble the chuck, remove all dust, dirt, and grime and administer a dry lubricant to moving parts. Manufacturers usually offer detailed instructions on taking a chuck apart and reassembling it, and it is a very instructive process. Any novice taking on this job would be wise to have on hand someone who has done it before.

Some turners clean their particularly dirty chucks by submerging them in

use the tailstock for support as long as possible while roughing out a bowl blank to provide maximum safety.



the bottom of a bowl can be turned by mounting the bowl in jumbo jaws in expansion or compression modes. Whenever possible, use the tailstock for added support and safety.

mineral spirits or acetone for a half hour to loosen accumulated residue, then using an air hose to blow them out. At a minimum, experienced users recommend periodic spraying with a dry, Teflon-based lubricant rather than using oils or greases.

When maintaining the chuck, remember to inspect the screws that hold the jaws to the slides. These should be checked with every use to ensure that they are tight and fully seated. Also, examine the grooves and dovetails as well as the heads of the screws that join the jaws to the slides. If they are packed w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ith sawdust, clean them with a short blast of compressed air or a scratch awl. If care is