

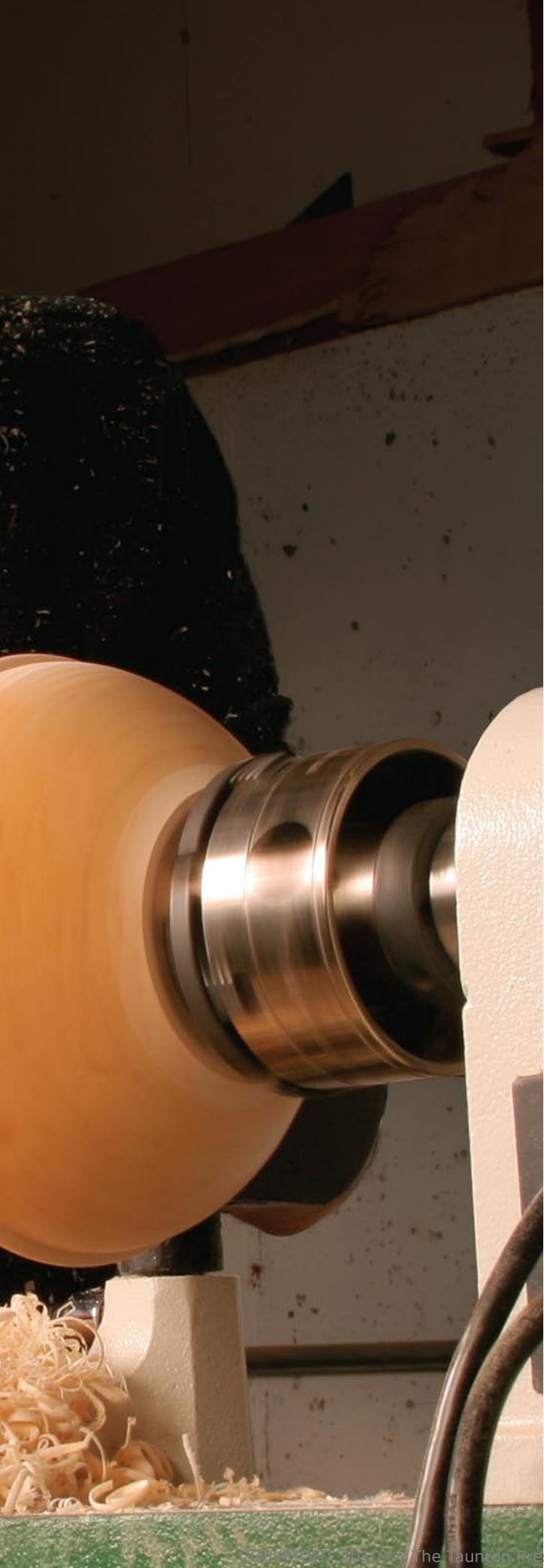


# The Lathe Accessory Everyone Needs

A 4-jaw chuck will change the way you turn

BY RALPH TURSINI





Since their introduction to woodworkers in the mid-1980s, four-jaw chucks have been steadily replacing faceplates as the preferred way to turn hollow forms, because they make the process faster and easier, especially for beginning turners.

But four-jaw chucks aren't just for bowls and vases. A chuck allows you to use a number of useful shopmade accessories for sanding, polishing, and turning small items.

In fact, a four-jaw chuck is such a valuable tool that I advise my students to make it their next big purchase once they have a decent set of turning tools and some experience at the lathe.

### Match the chuck to the lathe

While there are exceptions, chucks come in two basic body sizes (4½ in. and 3½ in.) that correspond to the two basic classes of lathe (see "Choosing a chuck," p. 62). You can put the smaller chuck on larger lathes with an adapter, but these can be difficult to remove and tend to amplify vibration, so I avoid them.

Since there are so many lathe models, chucks have a threaded insert that's specific to the lathe spindle, so you'll need to know the spindle diameter and thread pitch before you buy. If you have a modern lathe, knowing the manufacturer and model number will likely be enough, as most chuck



Installs easily



Grabs bowls tightly



Handles small parts



Sands and polishes





## Choosing a chuck

When buying a chuck, it's important to consider not only the size of your lathe but also the size of the work you do.



### A BIG CHUCK FOR BIG LATHES

Larger lathes (16-in. to 24-in. swing) are best matched to chucks with 4½-in. bodies. One downside: The bigger body gets in the way with small turnings, but a set of spigot jaws (below right) solves the problem.



### TWO OPTIONS FOR SMALLER LATHES

Mid-size and smaller lathes work best with 3½-in. chucks (left). Another option for these lathes is a mini-chuck (above). Its 2½-in. body provides additional access near the chuck face.

### ONE WRENCH IS EASIER THAN TWO

Chucks tightened with a pair of tommy bars (top) cost less than chucks operated with a single wrench, but holding and tightening a workpiece can be a challenge. Chucks with a single wrench (bottom) allow you to hold the workpiece with one hand and tighten the jaws with the other.



### Accessory jaws worth having

You can easily swap the standard jaws with accessory jaws. Spigot jaws are great for turning small projects like pulls and ornaments. Adding deep jaws gives the chuck a firm grip on larger vases and boxes.



**Deep jaws** provide a better grip for large and long vessels.

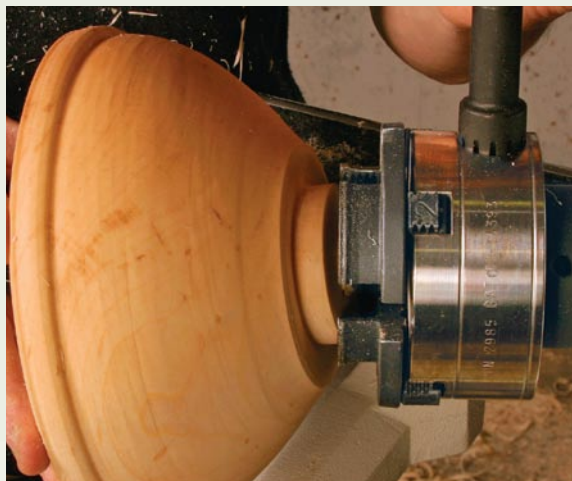
**Spigot jaws** offer a tight radius for small work. The long jaws also provide clearance from the chuck for turning and sanding small parts.



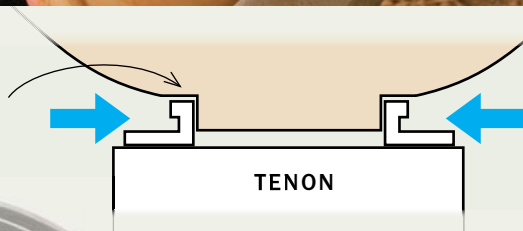
# How jaws work

## BETTER TO GRIP THAN EXPAND

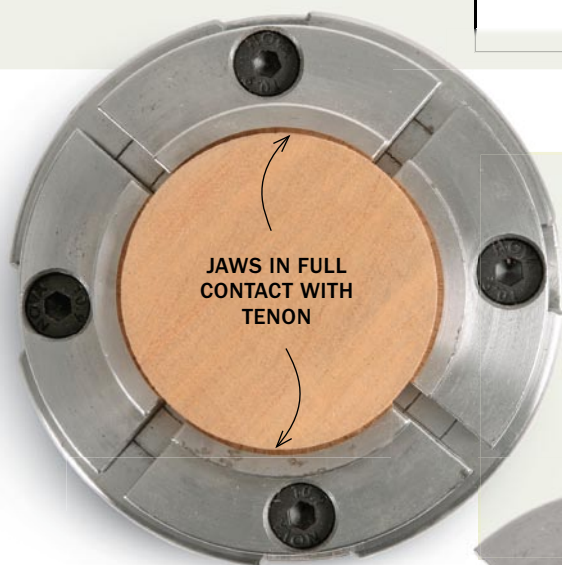
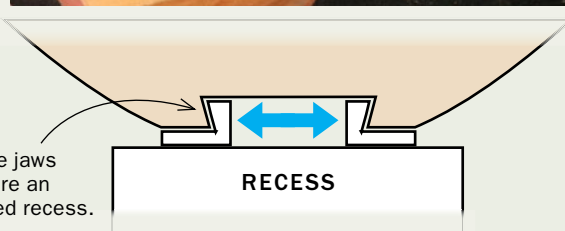
Chuck jaws can either grip a tenon (right) or expand into a recess (far right), but it's best to grip a tenon whenever possible because wood has more compressive strength than tensile strength. The owner's manual is the best place to look for information on shaping a tenon or recess that matches an individual chuck's jaw profile. Accessory jaws will have different requirements than standard jaws.



Tenons need a square or slightly undercut shoulder for solid seating.



Some jaws require an angled recess.



## MATCH THE TENON TO THE JAWS

Even though most chucks can grip through a 2-in.-dia. range, there is a sweet spot where they make full contact with the workpiece (top). Outside the sweet spot, the grip is compromised (bottom).



manufacturers have an application chart to help you get the right insert.

## Securing your work

You can use the chuck's jaws to grip a tenon or you can expand them into a recess, but it's best to grip the work because wood has greater compressive strength than tensile strength, especially perpendicular to the grain. This makes using a recess a delicate balance: Expand the jaws too much and your work will split; expand them too little and the workpiece could loosen. Rather than using a recess, it often makes sense to turn the work with a tenon (for gripping) that can be removed later (see "Turning a bowl," pp. 64-65).

The jaws that come with chucks have either a smooth, serrated, or dovetailed profile. I prefer the serrated profile, as it provides the best grip with the least amount of pressure. Dovetail jaws also hold well, especially inside a recess, but matching a tenon to their exact shape can be tedious.

## Jaw sizes and profiles

The most versatile jaws grip tenons that are roughly one-half to three-quarters of the chuck's body diameter. Not surprisingly, this is the set



# Turning a bowl is easier with a 4-jaw chuck

## 1 SHAPE THE OUTSIDE



TWO WAYS  
TO MOUNT  
THE BLANK

SPUR CENTER

SCREW CENTER



**Flat blanks.** Relatively uniform blanks with a flat side can be rough-profiled with a screw center. The blank should make even contact with the chuck jaws to minimize vibration. Screw centers usually come with the chuck.



**Irregular blanks.** Burls and other irregular-shaped blanks require a chuck spur center (top) and the tailstock for initial profiling. A  $\frac{3}{8}$ -in.-deep hole the same diameter as the spur prevents the blank from sliding as it's secured to the lathe.

**Shape the outside of the bowl and turn a tenon.** With the outside of the blank roughed out, turn a tenon that fits the chuck. The finished tenon should have straight sides and a square shoulder for the best grip.



that is generally included with the chuck body. Accessory jaws will vary with the kinds of turnings you're doing. For instance, spigot jaws are great for holding small parts (down to about  $\frac{3}{8}$  in. dia.) like knobs and pulls. If you want to make vases and other longer hollow forms, deeper jaws like Oneway's Tower Jaws will get a very firm grip on a long tenon (see "Accessory jaws worth having," p. 62).

### Must-have accessories

You'll find both a screw center and a chuck spur center invaluable for initial shaping of the blank

## 2 HOLLOW THE INSIDE



**Flip and hollow.** Clamp the bowl's tenon in the chuck making sure it is fully seated (above). With the bowl secured, hollow the interior (right). Keeping the sides and bottom a uniform thickness makes cracks less likely.

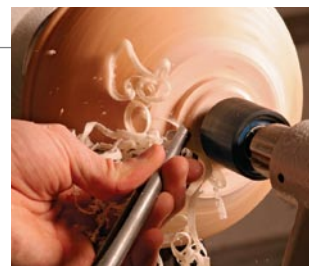




### 3 TURN THE FOOT



**Reverse it.** To finish the foot, you have to flip the bowl one last time. Tursini slips it over a chucked mandrel (above), protecting the bowl with a piece of “fun foam.” Then he moves the tailstock into place (right).



**Finish the foot.** Using a gouge, turn away most of the tenon and form the bowl's foot.



**Break off the nub.** The goal is to leave only a small button of stock.



**Trim with a chisel.** Use a chisel to pare any remaining stock flush with the bowl's bottom.

and preparing a tenon that can be clamped inside the chuck jaws (see photos, this spread). Most chucks come with a screw center, which is the fastest way to mount a blank for initial profiling and for shaping the tenon. Screw centers hold better in face grain than in end grain, and they are not all equal. I've found that the screw centers made by Oneway and Vicmarc hold the best.

Unlike a screw center, which requires a flat face on the blank, spur centers can be used with burls and other irregular-shaped blanks. Chuck-mounted versions save time and handling because you don't have to remove the chuck to

use them. Despite their utility, chuck spurs aren't included with most chucks. You'll have to buy one. My favorite is from Oneway and sells for about \$35.

In my experience, when it comes to purchasing, chucks are definitely one of those items where you get what you pay for. High-quality chucks have precise machining for smooth operation and a good grip. Conversely, I've had blanks loosen on low-priced chucks even when I thought I had really cranked them down.

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**Faceplates are the traditional way to turn hollow forms and they're still a viable method—especially for extremely heavy blanks. But they have a few drawbacks.**

### Why a chuck beats a faceplate



**Working around the plate is cumbersome.** Even the smallest faceplate will hamper access to the stock surrounding it.



**Faceplates leave deep screw holes.** Overzealous hollowing can expose the screws that mount the blank to the faceplate, ruining the turning.