

What's that called?

# Lathe Parts and Accessories

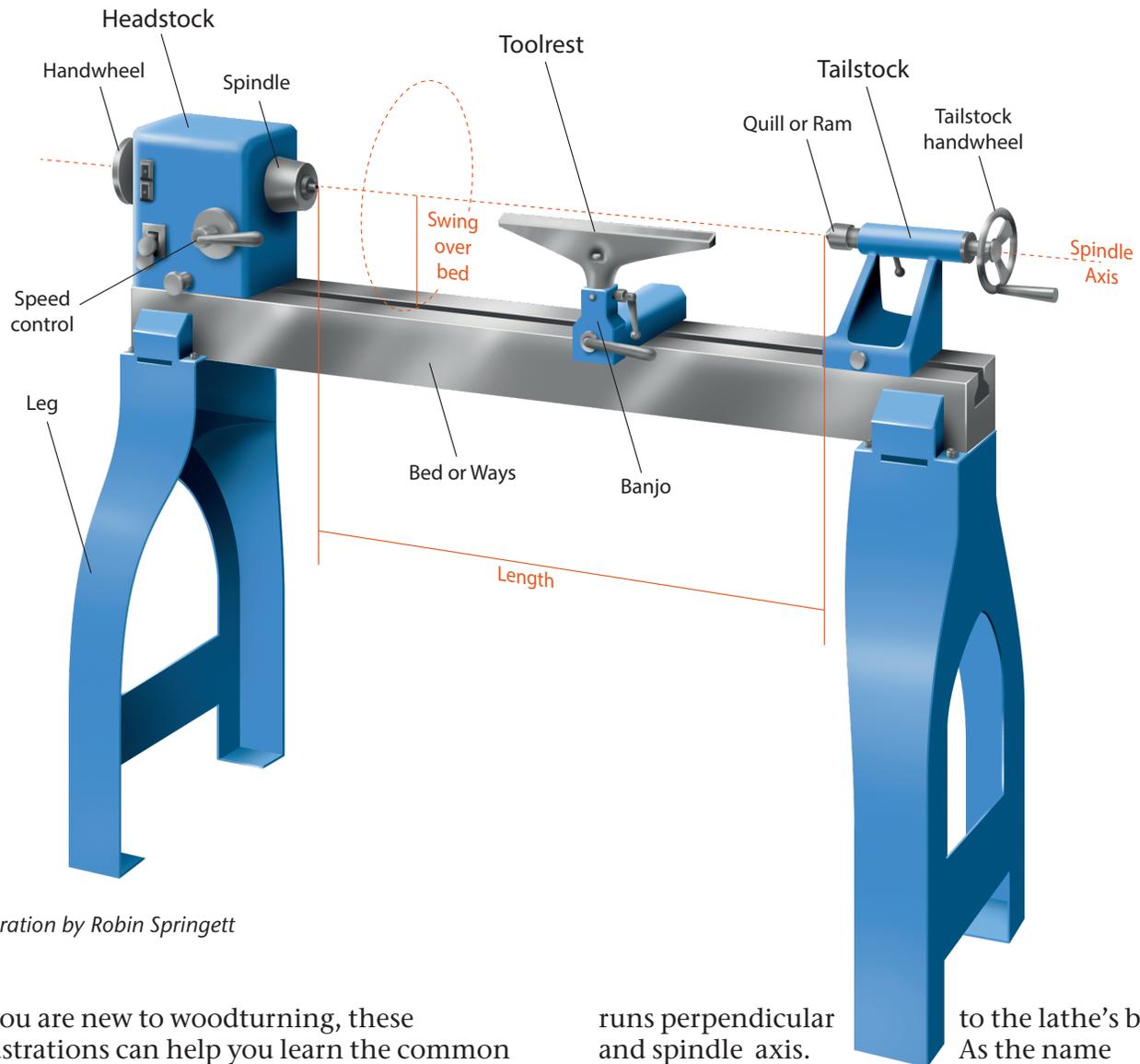


Illustration by Robin Springett

If you are new to woodturning, these illustrations can help you learn the common parts of a lathe, as well as important accessories specific to **spindle** and **faceplate** turning.

The terms spindle turning and faceplate turning refer to the orientation of the wood grain relative to the **axis** of the lathe. Spindle orientation means the wood grain runs parallel to the lathe's **bed**, or **ways**, and spindle axis. Faceplate orientation means the wood grain

runs perpendicular to the lathe's bed and spindle axis. As the name implies, spindle turning is how stair balusters, chair parts, and other furniture parts are made. Bowls and platters are generally turned in faceplate orientation.

Wood can be mounted in both grain orientations using the same methods and accessories.

## Lathe parts

Lathes from various manufacturers differ in some ways, such as motor systems, speed adjustments, size, and other features. But the basic premise and major components are common to all of them.

The **headstock** is the drive end of the lathe, and the **tailstock** supports the workpiece at the other end. The **banjo**, which holds the **toolrest**, slides along the ways and locks into position. The position of the toolrest can be adjusted up and down or rotated at any angle to the workpiece.

You can determine the size (or capacity) of a lathe by knowing some key dimensions. The **swing** (or swing over bed) refers to the maximum diameter workpiece that can be turned on that machine. Doubling the measurement from bed to spindle will give you the swing. **Length** refers to the maximum distance between points in the headstock and tailstock, the longest piece you can turn between centers.

Some lathes allow for outboard turning, with the workpiece mounted on the outside (**handwheel** end) of the headstock. This allows larger diameter pieces to be turned, since the limitation of swing over bed does not apply; lathes that don't allow the toolrest to swing outboard will need a floor stand for the tool rest. While workpiece diameter can be larger with outboard mounting, it should not exceed the lathe's ability to handle the extra mass.

## Spindle and accessories

The **spindle** is located in the headstock and varies in size, depending on the model. The lathe **motor** drives (or turns) the spindle, typically via belts on pulleys. Spindle speed (rpm) may be controlled by mechanical pulley changes or by electronic controls. Most lathes have a spindle lock to prevent rotation while you mount wood or accessories. "Forward" means the top of the spinning wood comes toward the operator (counter-clockwise when

viewed from the tailstock). Most modern lathes (but few older designs) can switch to "Reverse" for sanding and finishing.

The spindle has a female Morse taper on the inside and male threads on the outside. These two features, which vary in size by make and model, allow you to mount accessories and turn wood. If a lathe spindle is noted as 1" x 8 tpi (or 1x8), that means its diameter is 1" and it has eight threads per inch. Any screw-on or Morse taper accessories will have to be compatible with this sizing.

### Drive centers

Drive centers commonly have a male **Morse taper** that fits the opening in the headstock spindle, but some varieties are made to be mounted in a **four-jaw scroll chuck**. The Morse taper or chuck keeps the drive center firmly in place, along with workpiece pressure applied from the tailstock. The motor drives the spindle, which rotates the drive center, which turns the wood.

### Four-prong drive center (spur drive)

Versatile drive providing positive grip in the wood; use with dry or wet wood, for turning spindles and roughing bowls and vessels.



### Steb center

Characterized by its teeth, which bite into the wood; use with dry wood, turning spindles.



### Safety center/dead center

Also called a cup (or ring) center; use with dry wood, turning spindles. Bite in wood is determined by tailstock pressure—lighter pressure between centers allows the wood to stop turning in the event of a catch.



## Faceplate



Faceplates have female threads so they can be screwed onto the male threads of the spindle. Holes in the surface of the faceplate allow you to screw the wood to the faceplate from the back. Faceplates come in a variety of sizes to accommodate larger or

smaller workpieces; they are mostly used to mount bowls and platters in transverse, or “faceplate,” orientation, and also for purpose-made chucks and jigs.

## Scroll chuck



Four-jaw chucks have female threads so they can be screwed onto the threads on the spindle. When you tighten a four-jaw chuck using its key, its jaws close

concentrically, so you can grip a round tenon (or spigot) as a way of mounting wood. When you loosen a four-jaw chuck, the jaws expand concentrically, so you can open the jaws into a recess in the wood as an alternate way of mounting wood. Most scroll chucks have interchangeable jaw sets for increasing their size range. Some chucks have interchangeable inserts to fit different lathes.



### Scroll chuck with woodworm screw

Most scroll chucks are designed to grip a woodworm

screw. A hole drilled in the turning blank can be threaded onto the screw to mount the wood on the lathe. Especially useful for roughing bowls in green or dry wood.

## Tailstock and accessories

The **tailstock** slides and locks along the bed to suit the workpiece; for safety, it should be engaged whenever possible. The **handwheel** moves the **quill** (or ram) over a range of several inches and also locks in place, to adjust the holding pressure on the workpiece. The quill has a female Morse taper into which tailstock accessories, notably chucks for drill bits, can be inserted and held.

### Revolving live center

In the early days of modern turning, a dead center (or cup or ring center) was used in the tailstock. Since it does not rotate, wax had to be applied to lubricate the spinning wood. This tailstock accessory has been supplanted by the revolving live center, which spins freely on steel bearings; some models have interchangeable points in various styles and sizes. Today the tailstock dead center is obsolete, but it is still used in the headstock as a safety drive.

### Revolving live center with ring and point



### Revolving live center with cone (or cone center)



### Drill chuck

A drill chuck (sometimes referred to by the brand name Jacobs chuck) is the same type of chuck you’ll find on any drill press.



Mounted in the tailstock of a lathe, it holds drill bits horizontally for boring into wood that is mounted on the headstock. The wood rotates while the drill bit, which does not rotate, is advanced by the tailstock handwheel. Some chucks tighten with a key, while others tighten by twisting a ring. □