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Woodturning

KEYWORDS

bead
chuck
cove

faceplate
headstock
spigot

tailstock
template

People have been turning wood for many years. Woodturning is one of the oldest forms of wood machining. Woodturning combines design, skill in the use of tools and machining skills to produce beautiful and functional pieces in a cylindrical shape.

The old type of pole lathe is still used today by some woodturners. The wooden pole acts as a spring, and the rope is attached to the piece or blank in the lathe and connected to a foot pedal. The pole lathe uses foot power and the spring of the sapling to turn the piece.



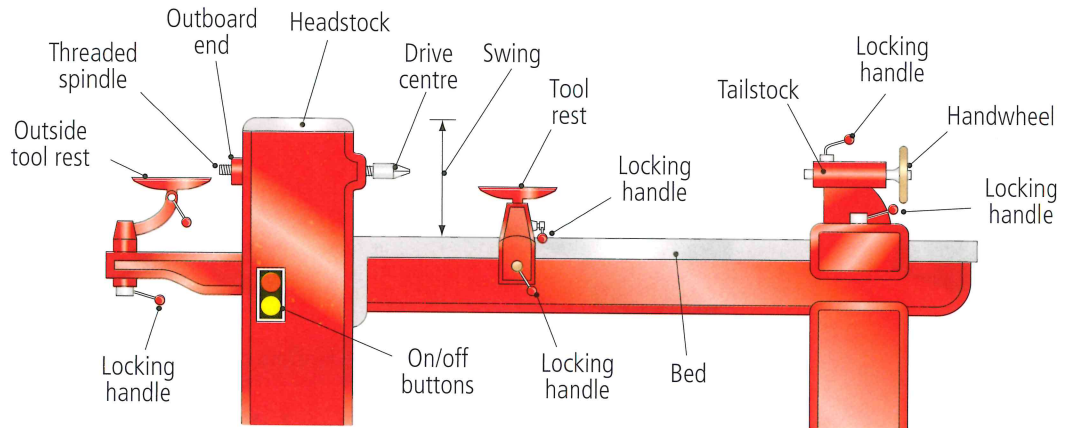
A pole lathe



Examples of woodturning

WOODTURNING LATHE

There are lots of different lathes: some freestanding, some are smaller and are mounted on a bench. The parts of the lathe are the same on most machines. You must become familiar with the lathe before you use it.



Parts of a lathe – the outboard end is used for bowl turning

The maximum diameter of a turned piece on the lathe is governed by the swing of the lathe. This is twice the distance between the centre of the spindle and the bed. The length of a lathe is important as it determines the maximum length of piece that can be accommodated between the centres.

Headstock

The headstock is where the motor is and has the on/off switch. It houses the driving mechanism, pulleys and drive belt. These can be adjusted to change the speed of the lathe. Larger pieces of work, such as wide bowls or plates, should be turned using a slower speed, while smaller narrow work should be turned with a faster speed to get a better finish.



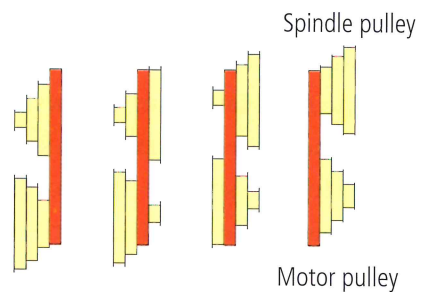
Spindle turning

Students shouldn't adjust the belts in the headstock as it could cause an accident.



Lathe drive belt

Slow → Fast



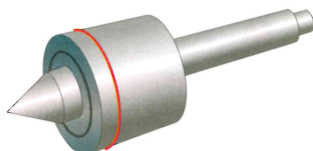
Drive speeds



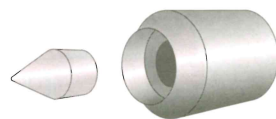
- **Drive centre:** This metal piece fits into the drive spindle and the work piece attaches to it. As the drive centre spins it turns the work piece.
- **Live centre:** This is in the tailstock end and it revolves as the work turns. It is tightened against the piece with the handwheel.



Drive centre

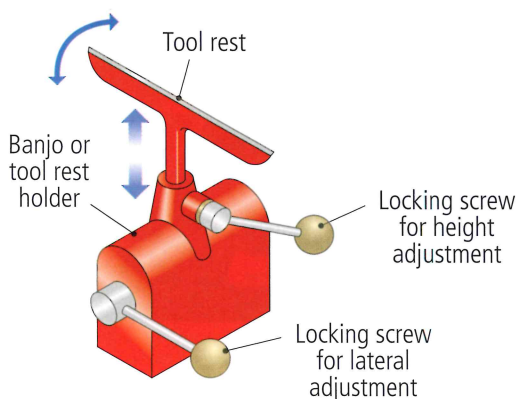


Live centre/revolving centre

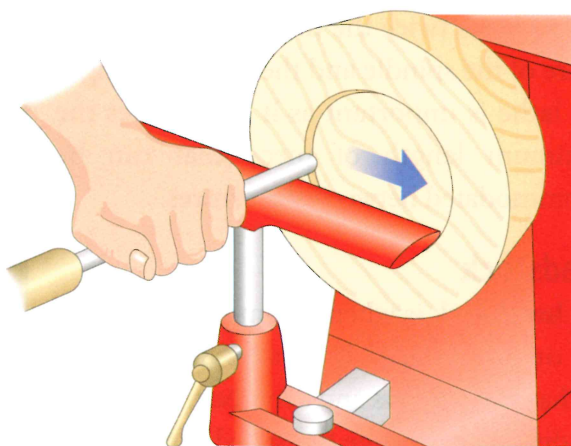


Hollow centre

- **Tool rest:** The tool rest is supported on the banjo and is moved along the bed of the lathe and secured to it with a locking clamp. The tool rest supports the turning tool during turning process. The height of the tool rest and its position towards the work are easily adjusted.

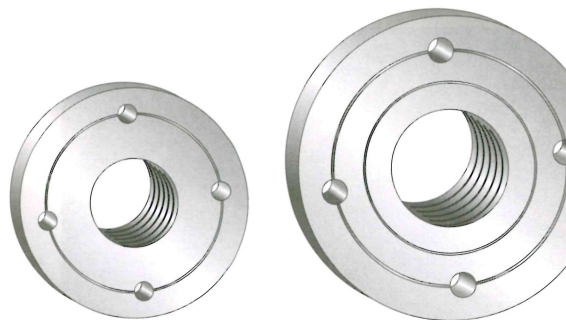


Tool rest and banjo

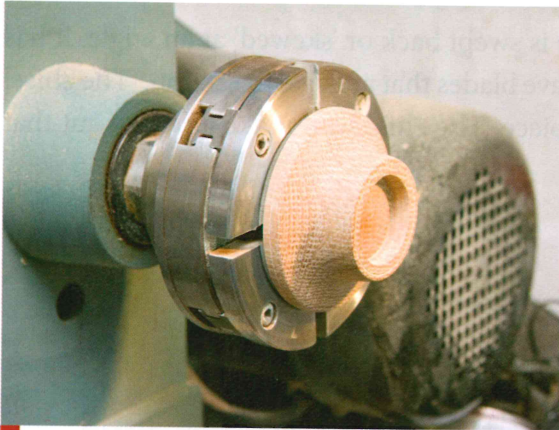


Tool rest is adjusted for bowl turning

- **Faceplates:** The drive centre can be removed and replaced with a metal faceplate. When turning a dish or bowl a faceplate can be used. The work is fixed to the faceplate using screws.
- **Chucks:** There are special chucks that screw on to the spindle of the lathe. They have jaws that grip the work piece tightly and can adjust to many diameters.



Face plates



Chucks screw on to the spindle

TURNING TOOLS

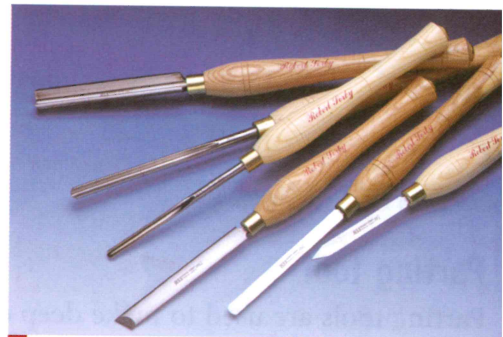
Tools used for woodturning are sturdy and longer than other tools. Their size makes them easy to hold while turning. Their blades are made from high-speed steel (HSS) and they have hardwood handles. There are different shapes and sizes of chisels and gouges. The basic types are:

- Gouges – for both bowl and spindle turning
- Skew chisels
- Parting tools
- Scrapers

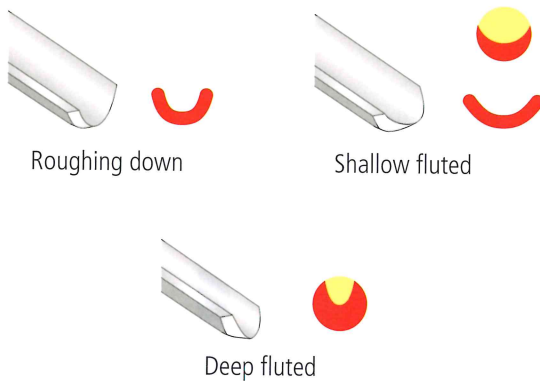
Gouges

There are two types of woodturning gouge. One type is used mainly for spindle turning (between centres) and has a shallow flute or hollow to its blade. The other type has a deep flute and is used mainly for bowl turning and faceplate work.

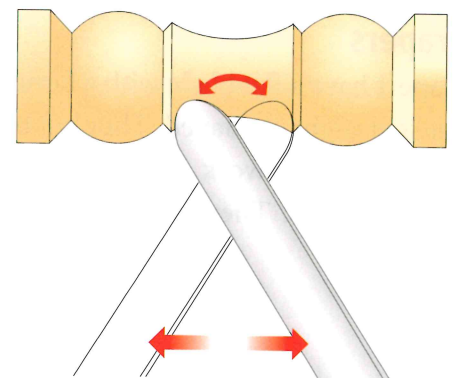
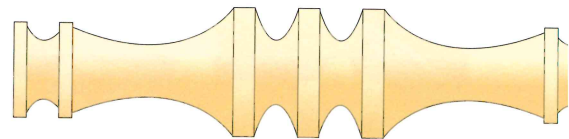
Gouges are very common and are used for roughing down a **blank** (initial unturned piece) into a cylinder. They are also used for forming coves and grooves in the wood.



Woodturning tools: chisels, gouges and parting tools



Woodturning gouges – roughing down, shallow fluted and deep fluted

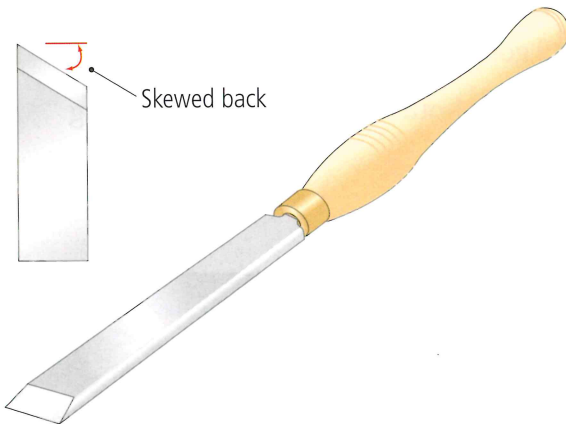


Show cuts – coves

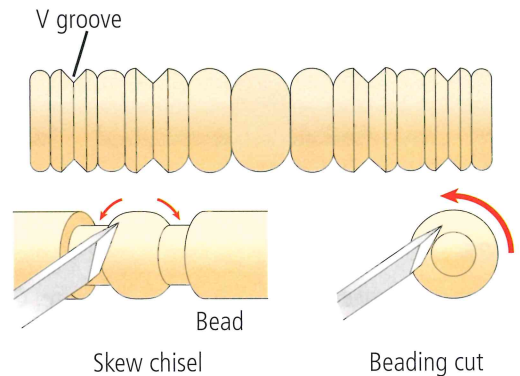


Skew chisel

The skew chisel is named because the cutting edge is swept back or 'skewed' at an angle. It has two bevels that form the edge. Some skew chisels have blades that are oval in section. The chisel is used to cut 'V' grooves and beads in the work piece. The chisel can make a paring cut and leaves a very smooth finish to the wood.



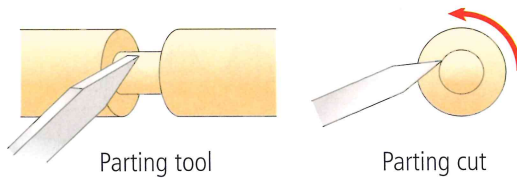
Skew chisel with edge swept back



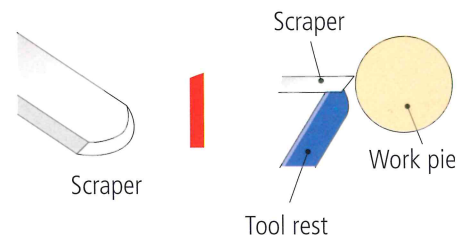
Beads and 'V' grooves

Parting tool

Parting tools are used to make deep cuts straight into the piece. These parting cuts have the same thickness as the blade. Parting tools can be found in different sizes.

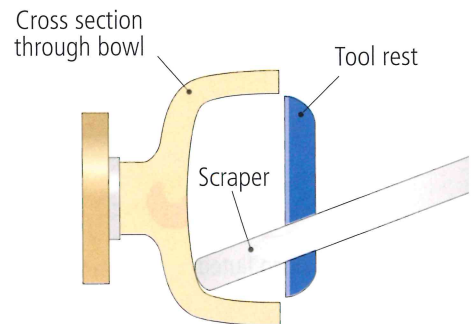


Parting cuts



Scrapers

Scrapers have a flat blade with a bevelled edge. The edge is straight or shaped. They cut by pressing the edge against the work. The edge scrapes away the desired shapes. They leave a very rough surface finish.

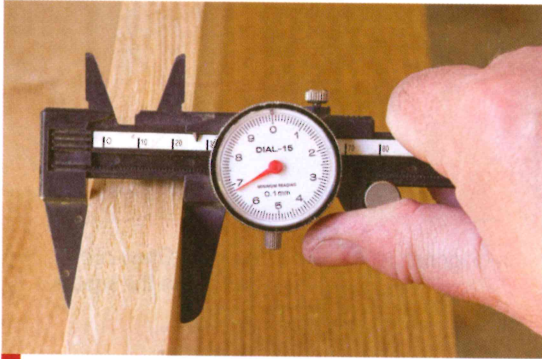


Scraper in use

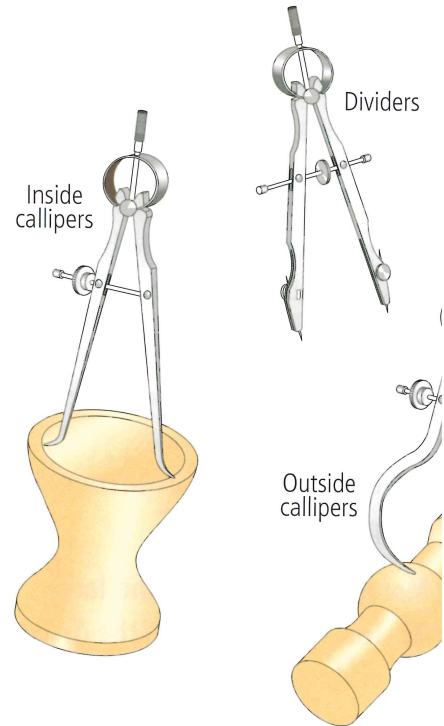
Measuring and checking

Taking measurements and checking dimensions of rounded pieces is difficult. Dividers and callipers are used by woodturners to ensure accuracy.

Dividers can be used to transfer distances from a drawing to a piece. They look like a compass but have two steel points.



Vernier callipers



The dividers and inside and outside c

The outside callipers are used to check the diameters of turned work. They are useful to check that the measurements of one piece match that of others. Inside callipers are used mainly to check the inside diameter of holes.

The Vernier callipers has both inside and outside jaws and it has a very accurate measurement scale. It also has a depth stop to measure the depth of holes. There are Vernier callipers with digital readouts available.

Lathe safety

Using machinery can be hazardous so it is important that you follow the safety guidelines when using the lathe (see also Chapter 2).

- Always wear full-face protection – face shield
- Always tie up long hair and loose clothing and remove jewellery
- Work only with the permission and guidance of the teacher
- Always follow the teacher's instructions when using the lathe
- Secure the work on the lathe and get it checked before you start
- Put tool rest as close as possible to the wood
- Always spin the wood by hand before switching on the machine
- Don't touch the rotating wood with your hand