

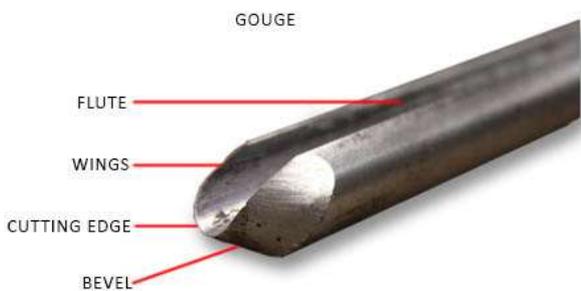
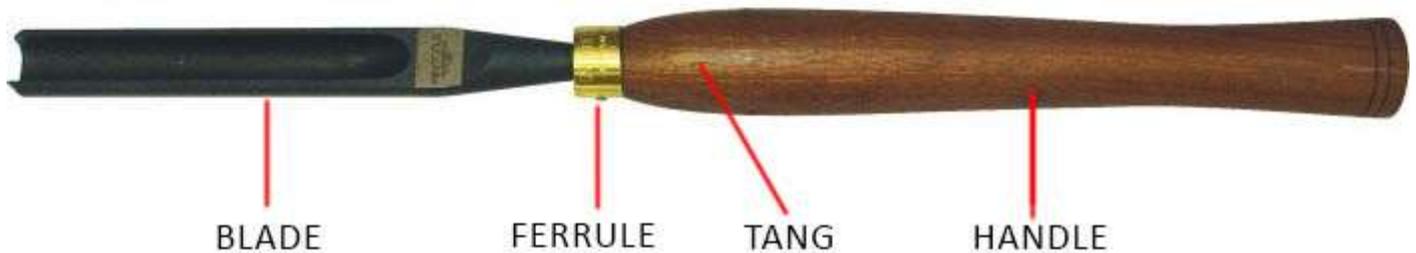


SOUTHERN TURNERS

BEGINNERS GUIDE TO WOODTURNING CHISELS

Tool companies and professional woodturners have created a massive range of turning tools to try to part you from your money. With a huge range of shapes and sizes and terminology used it can become very confusing when starting out. This document will attempt to explain the different basic types of turning tools and their uses.

Parts of a turning chisel



Blade: metal part of the tool

Ferrule: Metal band that prevents the timber handle splitting when knocking the tang into the handle.

Tang: The continuation of the blade that is inserted into the handle

Handle: Woodturning chisels have much longer handles than regular chisels, usually between 200mm -500mm long, but sometimes longer. The long handle gives the turner greater mechanical advantage when turning. Normally made of timber, however sometimes metal handles are used with interchangeable blades.

Flute: the 'U' shape of a gouge

Bevel: the cutting angle of the tool

Wings: the side cutting edge of a gouge. Gouges can be shaped to have longer or shorter wings [see bevels and grinds]

Metals used

Not all chisels are created equally, there are numerous different types of steel used to make chisel blades. Early on, chisel blades were made from high carbon steel, which failed to hold a sharp edge for long and required frequent sharpening. Often you may find cheap sets of turning tools for sale, while the price may be inviting, you should be aware that they could be made of high carbon steel and ultimately may not be worth the investment.

Modern chisels are usually made from High-Speed Steel (HSS) which is far superior to high-carbon steel. HSS can withstand higher temperatures and not lose its hardness and cut at higher speeds, hence its name. Slightly newer still is the M2 HSS which is a tungsten-molybdenum-HSS alloy, and has been found to be even more were resistant and longer lasting.

Some manufacturers offer variants of these with 'cryogenic' hardening processes, titanium coatings, powdered metal construction and numerous other processes reputed to increase the quality of the tool.

With woodturning tools the old adage of 'you get what you pay for' is exceptionally true, when starting out it is often best to purchase a reasonable 'starters' set and slowly build your collection as needed with quality tools.

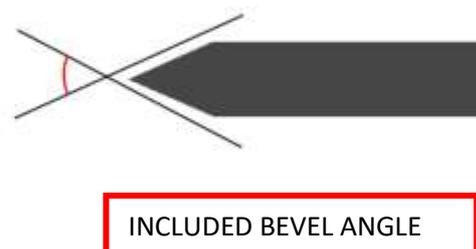
A new addition to the market are tools with replaceable carbide tips. These tools are basically a steel shaft with a small tungsten carbide cutter screwed onto the end, which can be removed, rotated or swapped for a different shaped cutter as needed.



Bevels and Grinds

Bevels

The bevel angle of a chisel is the angle that it has been sharpened to. If you were to ask 10 wood turners what angle they sharpen their chisels to, you would probably get 10 different answers. There is no such thing as a 'standard' bevel angle. There is, however a range of angles considered standard for that type of chisel. Some wood turners will have several of the same chisel (usually gouges) with different bevels to enable them to reach different points in their turning projects.



Grinds

Irish grind, Elsworth grind, Fingernail grind, square grind and the list goes on, but what does it mean? Simply put, the grind of a chisel is the shape or profile which it has been sharpened into. As with bevels there is no standard, grinds will be whatever the turner is most comfortable using.

The picture to the right shows the same bowl gouge with different bevels and grinds. Notice how the length of the wings are different. Different grinds will change the chisel way that the turner presents the tool to the wood and thereby changes the way wood is removed from the blank.

Skew chisels and scrapers can also have different grinds depending on their desired use. The picture below shows 2 different skew chisel grinds.



Scraping and Cutting

Throughout your woodturning life you will hear the terms scraping and cutting, both have their place in wood turning, one may be preferable and achieve better results on different timbers than the other, but ultimately it is up to you which style you prefer and are happier using.

Most turning tools can both scrape and cut depending on the way they are presented to the wood. Imagine a razor blade laid flat on your tool rest and pushed into the rotating timber. This is scraping, it will remove wood by 'tearing' the fibres out of the wood. Now if we take the same razor blade and raise the cutting edge so that it is slicing the timber we are now cutting.

Generally cutting will produce a finer finish than scraping and therefore require less sanding to achieve a smooth surface on your completed project, but there are occasions where certain timbers or areas on certain timbers, such as end grain will not readily allow you to cut them and so scraping may be the better option.

The picture below left shows a spindle gouge cutting. Notice how the bevel of the tool is rubbing on the wood and a small curled shaving is being cut from the wood. The picture below right shows a scraper being used on the outside of a bowl, again notice the how the tool is being presented to the wood.



Through practice and experience, you will be able to easily determine whether you are scraping or cutting, just by the types of shavings being removed.

Sizing

With gouges it is important to note that there are 2 different methods of sizing them. The English method is to measure the width of the flute, while the American method is to measure the entire diameter of the blade. So an English 12mm bowl gouge will be referred to as a 16mm bowl gouge in America.

In Australia we tend to follow the American method, but it is worth remembering when ordering tools from overseas or reading books or magazines which method they are talking about when describing gouges.

Other chisels such as scrapers and skew chisels are sized by their width e.g. a 25mm skew chisel is 25mm wide.

Basic Turning Tools

As described earlier there are a huge range of different woodturning tools available, described below are the more common ones that you will find. There will be a vast number of tools which are simply variations of what is described below, but as mentioned there are simply too many different tool types to cover them all.

Gouges

Spindle Roughing Gouge:

- Used only on cross grain when spindle turning
- Rapid stock removal for truing up a spindle
- Size range 19mm – 40mm
- Bevel angle 40°-45°



Spindle Gouge

- Used on any grain orientation
- General finished shaping
- Size range 6mm-16mm
- Bevel angle 35°-50°



Detail Gouge

- Used for fine shaping and detail work
- Very shallow flute
- Long bevel
- Size range 8mm-12mm



Bowl Gouge

- Used on cross grain turning
- Deeper flute than a spindle gouge
- Flutes may be 'U' shaped or more 'V' shaped
- Bevel angle affects what section of a bowl it will effectively reach
- Size range 6mm to 16mm
- Bevel angle 35°-60°



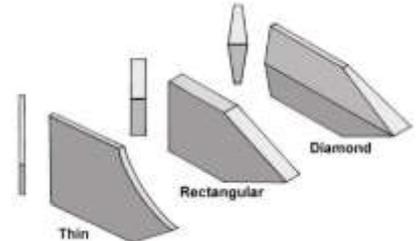
Skew Chisels

- Used to make clean shaving cuts and leave clean surfaces on spindles
- Can have rectangular or oval cross section
- May have straight or curved cutting edge
- Cutting angle 65° - 75°
- Included bevel angle 50° - 80°



Parting Tool

- Used to separate a work piece from its support,
- May have rectangular or diamond cross section
- May have a flute ground into blade's bottom edge
- Thickness range 1.5mm-5mm
- Included bevel angle 50° - 80°
- Range of grinds depending on the turner



Scrapers - Traditional

- Used on any grain direction
- Huge range of shapes and sizes
- Can be shaped for specific purpose e.g. Undercutting or box making.
- Cutting edge can have a raised burr at the top of the bevel
- Bevel angle 65° - 80°



Scrapers – Negative Rake

A negative rake scraper is a traditional scraper with a second bevel across the top edge. Now this is where things may get a little confusing. A skew chisel, held flat on the tool rest is a negative rake scraper – it is a scraper with a second bevel. Earlier we discussed how most chisels could both cut and scrape depending on how they are presented to the wood, and this is a perfect example. Not all negative rake scrapers have equal bevels. The purpose of the second bevel is to achieve an included bevel angle of less than 90° . This prevents the formation of a burr on the top of the bevel when grinding, resulting in a far less aggressive cutting edge.

- Used on any grain direction
- Particularly good gently refining shapes
- Large range of grinds
- Far less aggressive than traditional scrapers
- Hard to achieve a catch
- Included bevel angle $<90^{\circ}$



Hollowing Tools

There are a large range of what are described hollowing tools on the market, with weird and wonderful bends and curves to allow the turner to reach hard to get at areas deep within their projects. Quite often these tools are made up of a steel shaft with a replaceable HSS or carbide cutter at the end. The majority of these tools, however exotic they may appear, are simply scrapers. They have a cutting bevel the same as a traditional scraper and are presented to the wood in the same manner, although almost exclusively on the inside of a vessel. The exceptions to these scrapers are the tools that use a cup shaped cutter (the picture below right is an example of these), which can cut the wood similar to a gouge when used correctly.

