

CUTTING TOOLS

Saws

There are many types of saw. Each one is designed to do a particular job.

As we will see later, machines and portable power tools are replacing some of the handsaws for doing repetitive work. Handsaws are still used because they are safe and you can take more time to be careful and accurate with them. Handsaws can be divided up into three groups according to use:

- 1 Cutting large sections and sheet materials
- 2 Cutting smaller sections and fine finished cuts
- 3 Cutting small curves

Large handsaws are used mainly by carpenters and joiners to cut large sheets or sections of wood. There are three different types. The difference between them is in the way the teeth cut the wood fibres.

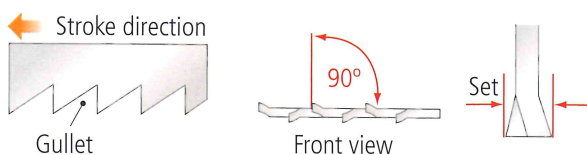
Teeth

The type and quality of cut are determined by the type, size and number of teeth on the blade of a saw. The number of teeth per 25 mm (inch) of blade is usually marked on the blade of the saw. Saw teeth must be sharpened regularly and protected against damage. Take care not to cut into nails hidden in old wood.

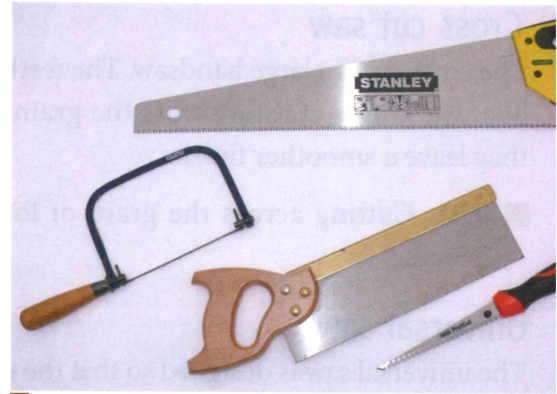
Ripsaw

The ripsaw, the cross cut saw and the universal saw are large saws. The ripsaw cuts along the grain with a chiselling action due to the shape of the teeth.

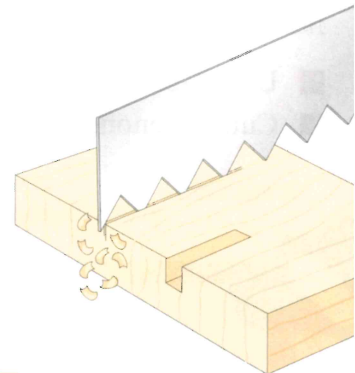
- Use: Cutting large sections of timber and sheet material



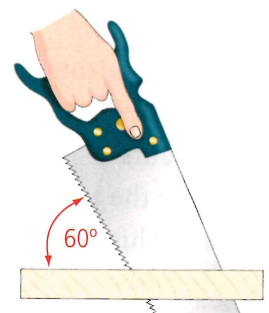
Ripsaw teeth are shaped like this, with 4–8 teeth per 25 mm



Selection of saws



Ripsaw teeth leave a flat-bottom cut



The angle of the blade to the work is 60° for ripsawing



Cross cut saw

The cross cut is a large handsaw. The teeth cut like two knives cutting across the grain and they leave a smoother finish.

- Use: Cutting across the grain of longer pieces

Universal saw

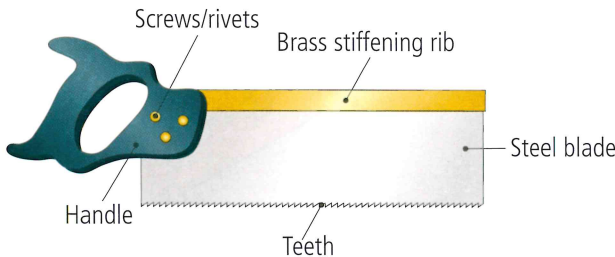
The universal saw is designed so that the teeth will cut both along and across the grain of the wood. Modern large handsaws are cheap to buy.

- Use: General purpose saw

Tenon saw

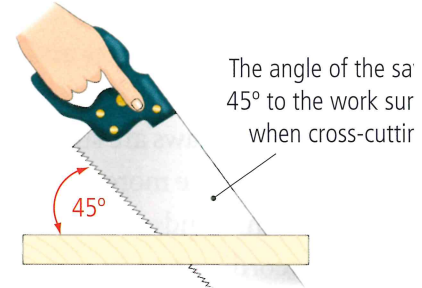
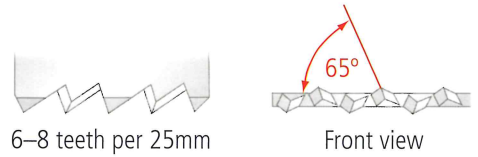
The tenon saw is widely used in the workshop. The handle is made of hardwood or plastic, the blade is of high-carbon steel. The brass rib stiffens and strengthens the blade. The tenon has 10–15 teeth per 25 mm.

- Uses: General light work
- Cutting tenons (from where it gets its name)

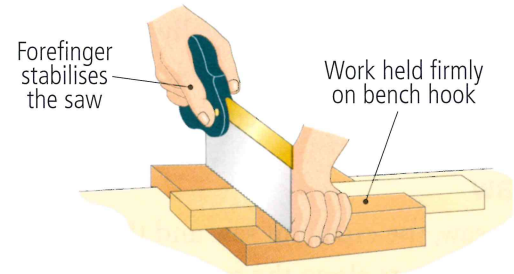


Parts of the tenon saw

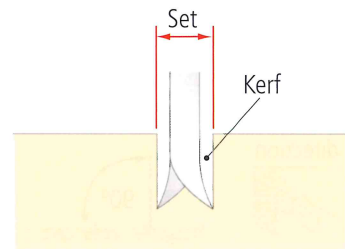
When cutting, you saw on the waste side of the line (drawn in pencil). The blade cuts a groove wider than itself because the teeth are set wider than the blade. This allows the blade to move freely in the cut. The groove cut into the wood is called the **kerf**.



Cross cut saw



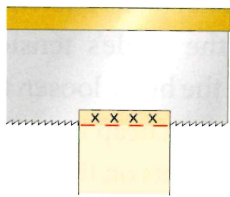
Using the tenon saw



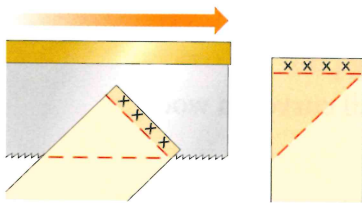
The saw kerf (groove) is slightly wider than the blade

Cutting a tenon

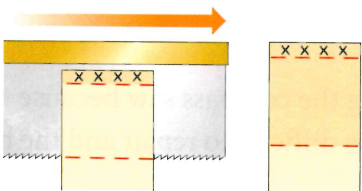
When cutting a tenon, accuracy is important. Follow the process below for best results:



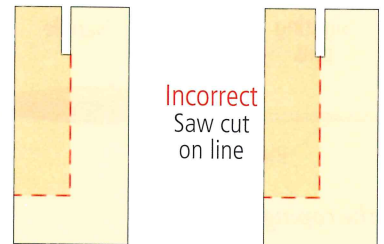
- 1 Firstly, place the piece vertically in the vice and make a vertical cut down of 5 mm–6 mm.



- 3 Tilt the piece forward and fix it in the vice again. Continue the cut down along the gauge line, keeping the edge of the saw in the full kerf (groove) as the sawing continues.



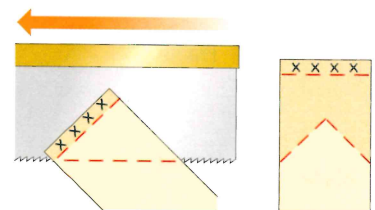
- 5 Fix the piece in a vertical position once more and cut down to the line, sawing through the triangular piece.



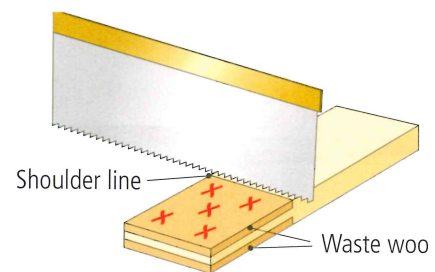
Correct
Saw cut on waste side of line

Incorrect
Saw cut on line

- 2 Make the saw cut on the waste side of the line is marked on the timber.



- 4 Reverse the piece and repeat the saw cut on the other side. This leaves a small triangular piece unsawn inside the tenon.

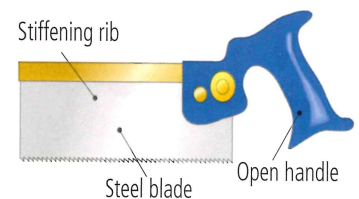


- 6 Finally, remove the shoulders.

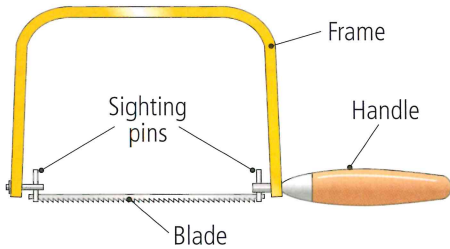
Dovetail saw

The dovetail saw is a smaller saw with finer teeth than the tenon saw. It has 18–20 teeth per 25 mm.

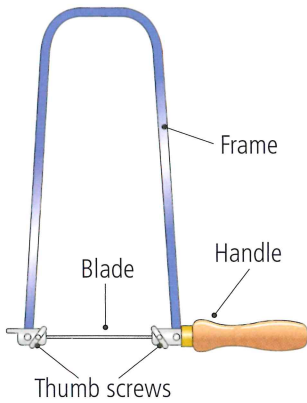
- **Use:** Cutting dovetails and other very fine work



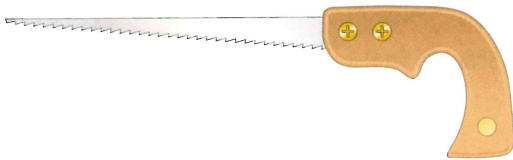
Dovetail saw



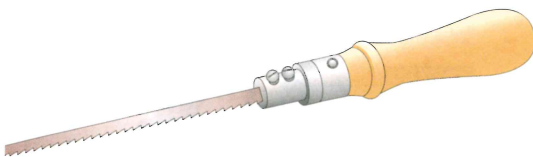
Parts of the coping saw



Fret saw



Compass saw



Pad saw

Saws for curved work

Coping saw

The coping saw has a fine metal blade stretched between slotted pins. To increase the blade's tension tighten the handle. To adjust or replace the blade loosen the handle. Blades are easily broken but are cheap to replace.

The saw is unusual in that it cuts on the return stroke – you pull it back towards you. To replace the blade:

- Slot the new blade into the pins
- The teeth point back towards the handle
- Retighten the handle
- Align the sighting pins
- Use: Cutting small curves in wood

Fret saw

The fret saw is very like the coping saw except the frame is higher and the blade is finer. The teeth of the blade point towards the handle like the coping saw.

- Uses: Cutting tight curves in thin sheets of wood, metal and plastic (jigsaw puzzles)
- Other light curved work

The compass saw

Take care when using the compass saw because the blade is easily bent. Damage is difficult to repair and the blade may need to be replaced.

- Use: Cutting difficult to reach curves, where other saws are unsuitable because of their frames

The pad saw

The pad saw is also called the keyhole saw. The blade is bent and damaged. It is adjusted by retracting it into the handle.

- Use: Cutting out small holes (keyholes)

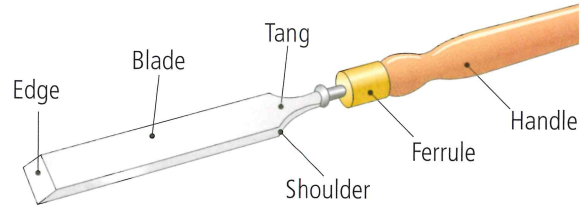
CHISELS

The chisel is a very important tool. The blade of the chisel is made from high-carbon steel, hardened and tempered. The shoulder prevents the tang being driven into the handle. A ferrule – a brass collar – prevents the hardwood handle from splitting. Modern chisels have moulded plastic handles that are more durable.

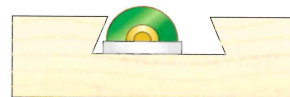
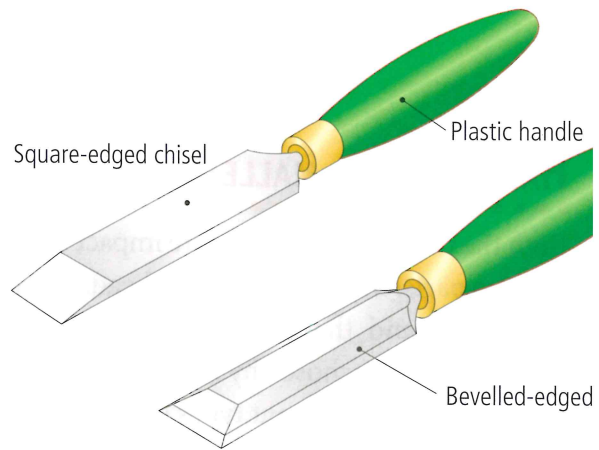
The chisels in your locker are mainly for paring to straight lines as in the sketches below, but there are special chisels available for carving work and also a special type for woodturning.

The cutting edge of the chisel has two very different angles (bevels). The first bevel, between 20° and 25°, is achieved by grinding on a grinding stone. The second bevel, about 30°, is achieved by sharpening on an oilstone. This sharpening is also known as honing. Firmer chisels range in size from 3 mm to 50 mm wide. The bevelled-edge chisel is not as strong as the square-edged chisel, but it is useful for chiselling tight corners.

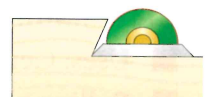
- Uses: Paring trenches
- Paring vertically
- Paring curves
- Chamfering



Parts of the firmer chisel



Square-edged chisel will not fit into difficult corners

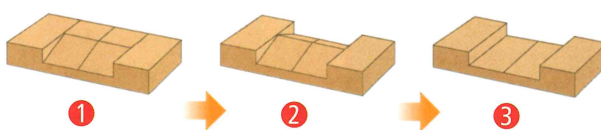
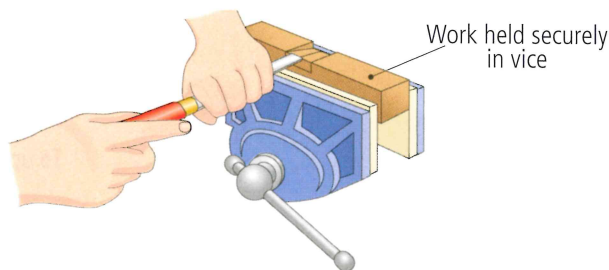


Bevelled-edged chisel fits into acute corners

Square-edged chisel and bevelled-edged chisel

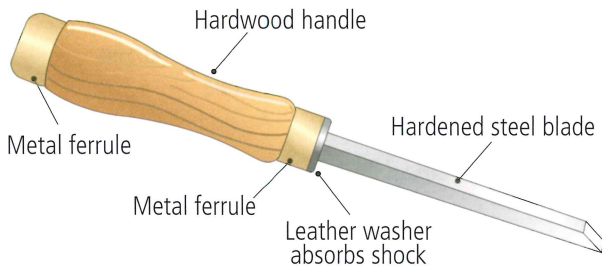


Vertical paring



Paring a trench

Always keep both hands behind the cutting edge of chisel and work from the body.



Mortise chisel

The chisel is used for paring trenches mostly but also used for paring vertically to a curve or other

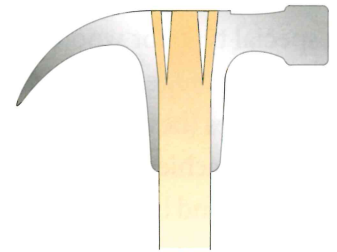
Mortise chisel

The mortise chisel is a heavy duty chisel with a st handle and blade. It is designed to withstand impact of the mallet during mortising. The handle is made of plastic or durable hardwood strength with a metal ring (ferrule).

- Use: Cutting out mortises

HAMMERS AND MALLETS

Both the mallet and hammer are impact tools. The hammer has two parts: the handle and the head. The head is held on by wedges and these prevent it from becoming loose. Hammers can be chosen by weight (18 oz, 21oz, etc.). There are a number of different types of hammer:



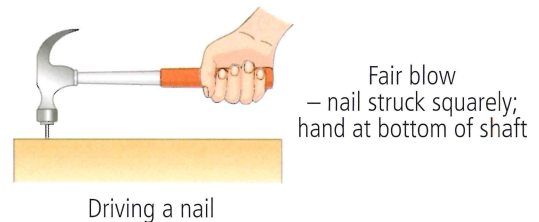
The head of a hammer is held on with wedges

Claw hammer

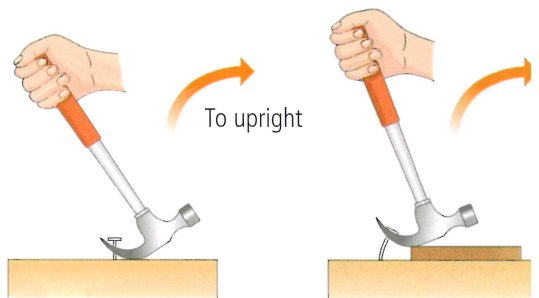
- Uses: General and heavier work
- Pulling nails and pins from wood

Warrington hammer

- Uses: Light work, panel pins and light nails
- Upholsterers use a light Warrington hammer called a pin hammer



Driving a nail



Pack and pull to upright

A claw hammer is used to pull out nails



Warrington hammers and smaller pin hammer (top)