WORKSHOP SAWS

This mobile revision pdf is based on detailed work found in the 'EQUIPMENT AND PROCESSES' section.
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WORKSHOP SAWS

1. COMMON BACK SAWS

2. THE FRAME SAW

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4. THE DEEP FRAME FRET SAW

5. THE PRECISION HAND MITRE SAW

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8. ELECTICALLY POWERED SAWS

9. COMPASS SAW AND PADSAW

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COMMON BACK SAWS

Back Saws get their name from the steel or brass back. The heavy back gives the saw its weight which is useful when sawing wood. The weight of the saw along with the forward sawing motion allows the saw to cut through woods relatively easily.

The two main types are the tenon saw and the dovetail saw.

TENON SAW : for general sawing and cutting mortise and tenon joints.
DOVETAIL SAW : for cutting joints such as dovetails

The number of teeth per inch (TPI) is the same as points per inch (PPI). Tenon saws have more teether per inch than dovetail saws.

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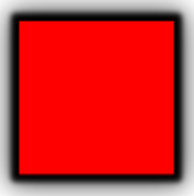

THE DOVETAIL SAW

Dovetail saws are usually 200mm in length and have 18 to 22 teeth per inch (TPI). This saw is a firm favourite with cabinet makers and joiners. They are used for precise sawing, especially for joints such as dovetail joints and even comb joints.

Dovetail joints produce a ‘finer’ cut than tenon saws and are preferred for cutting accurate joints.

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THE DOVETAIL SAW

The Dovetail saw is shown below, being used to accurately cut the pins of a dovetail joint

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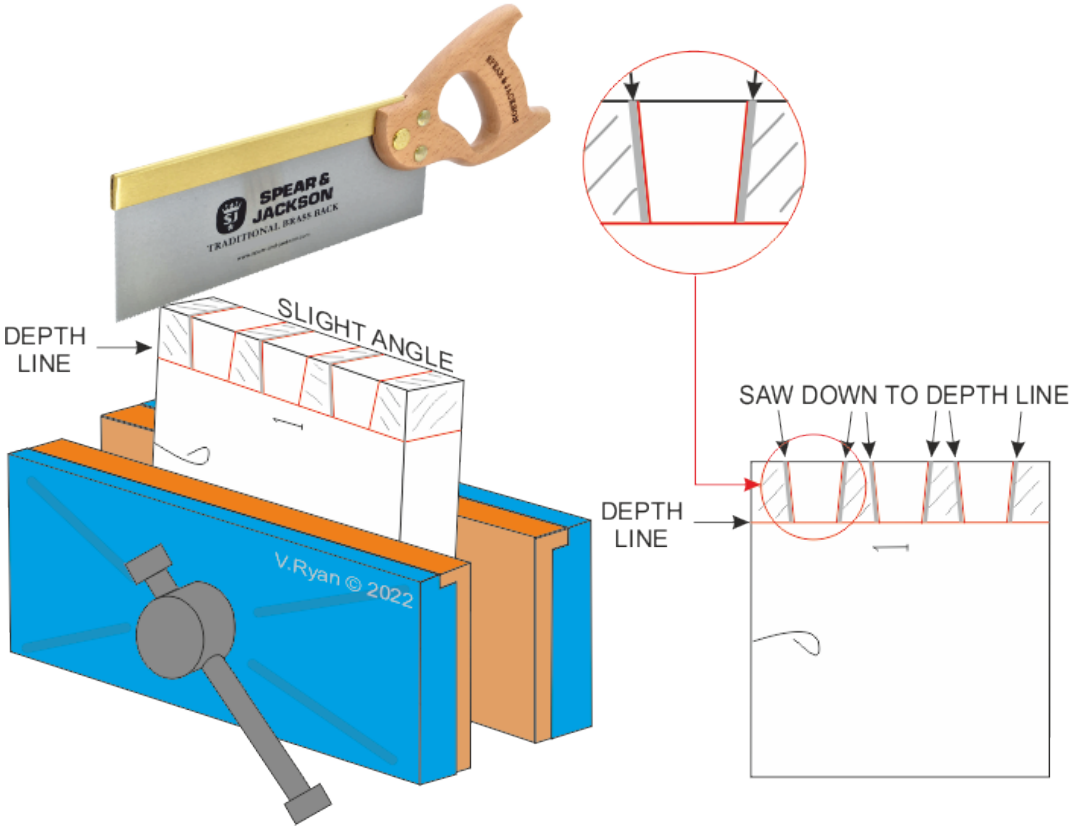

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THE TENON SAW

Tenon Saws are used to cut joints such as the tenons for mortise and tenon joints. They produce a slightly rougher cut than dovetail saws because they have fewer teeth per inch (10 to 15 TPI)

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Tenon saws are also suitable for cutting a range of joints. They are a really good general saw, used by cabinet makers and joiners.

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THE TENON SAW

The Tenon saw below, is being used to cut a cross halving joint. It is perfectly weighted for this type of work.

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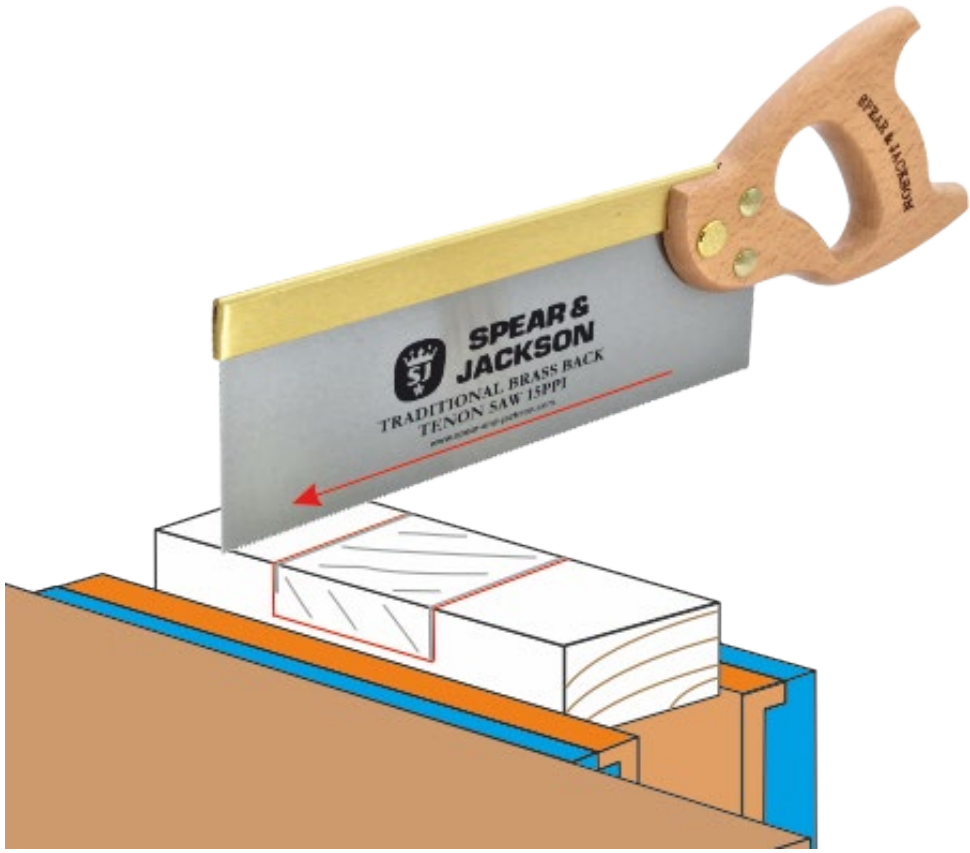

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THE RIPSAW AND RIPSAWING

The ripsaw is one of the largest saws found in a workshop. The saw is designed to 'saw' wood along the length of the grain and consequently it usually has six teeth per inch (6TPI). On appearance, it is a saw with a coarse set of teeth.

Quality ripsaws have an 's' shaped back, which serves to lightening the saw and improve it's visual appearance. This type of saw is usually 650mm in length.

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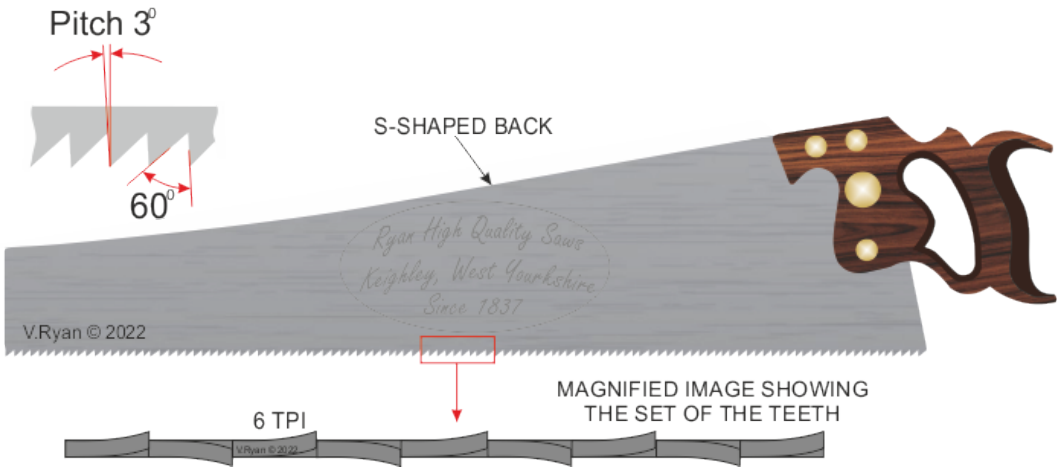

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RIPSAWING WITH A RIPSAW

Supporting long lengths of wood requires the use of at least two sawhorses (sometimes called trestles). The user places the wood across two sawhorses and applies pressure with one knee, whilst at the same time sawing along the grain. The free hand can be used to hold down the wood. As the wood is sawn along its length, the saw horses are moved to ensure the best support.

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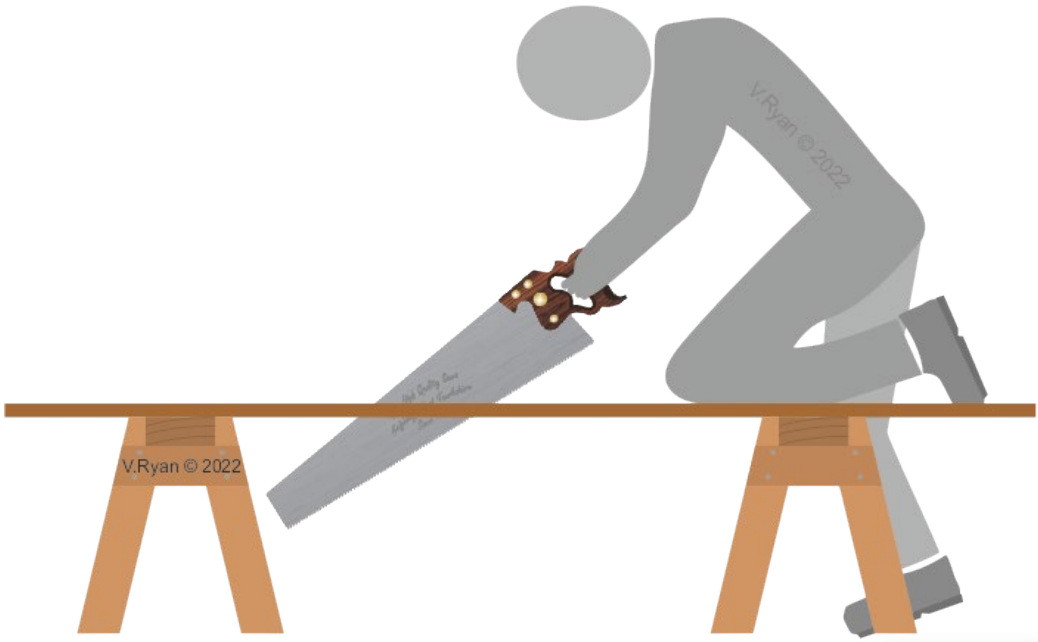

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THE CROSSCUT SAW

The crosscut saw is ideal for cutting ‘planks’ / ‘boards’, to the correct length. It has a relatively coarse blade with eight teeth per inch (8 TPI). The saw has an s-shaped back and is usually 600mm in length.

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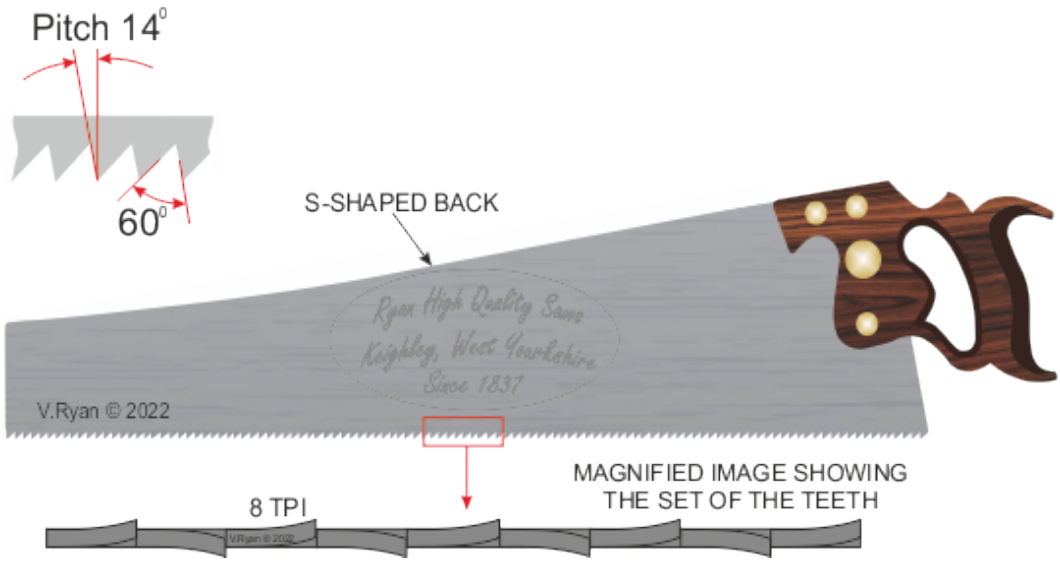

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CROSS CUTTING

When cross cutting a piece of wood, it should be supported by two sawhorses. The length of wood, can be clamped to the sawhorses, for extra support. Use the free hand to hold the wood being cut, down on the sawhorses. Sawing is made easier by rubbing a wax candle against the sides of the saw blade, before sawing commences. This ensures that the sawing action is smooth and the blade is much less likely to jam or stick.

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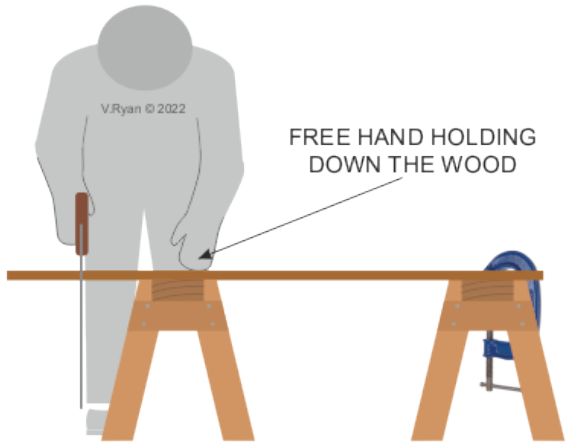

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THE PANEL SAW

The panel saw is ideal for cutting manufactured boards (also known as man-made boards). It is suitable for sheet material, such as MDF and chipboard. The panel saw is regarded as a requirement, of a typical woodworking / cabinet making workshop. These saws have a greater TPI (teeth per inch) than ripsaws and crosscut saws and are usually 500mm in length.

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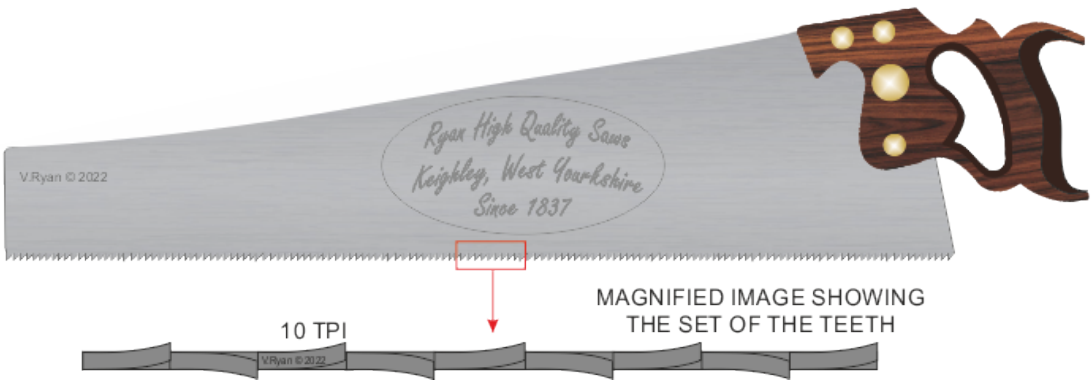

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CUTTING WITH THE PANEL SAW

When using a panel saw, the manufactured board is placed on two sawhorses. The board can be clamped down using a G-clamp, if required. The person sawing, kneels on the board, holding it down. The hand not holding the saw, also presses on the board, adding further pressure downwards.

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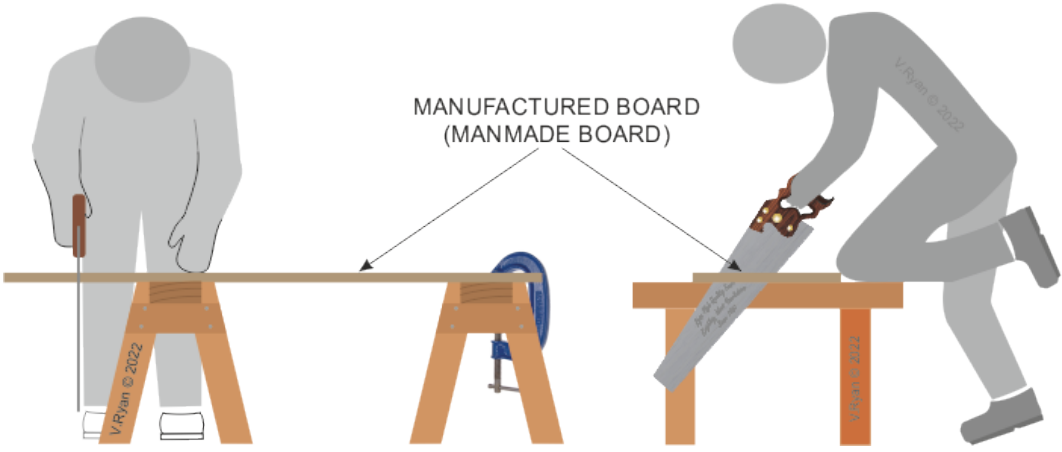

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THE FRAME SAW

A Frame Saw is a traditional saw, for ripping and crosscutting lengths of wood. The blade is held in tension by the tensioning bar. Tensioning screws at either end of the frame, are turned until the blade is tensioned sufficiently. The frame saw is ideal for crosscutting and ripsawing, especially in the absence of a circular saw or band saw.

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CROSS CUTTING WITH THE FRAME SAW

When crosscutting, the wood is clamped to the bench. One hand or an elbow is placed on the wood, which provides extra support. The other hand controls the frame saw.

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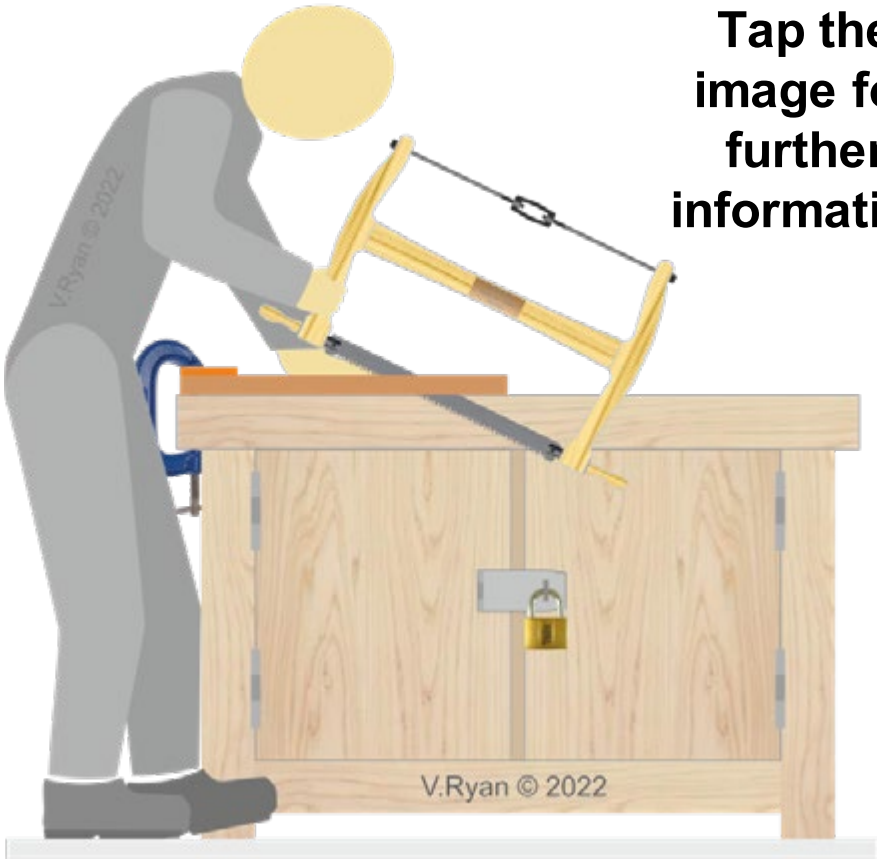

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RIPSAWING WITH THE FRAME SAW

Ripsawing is achieved by turning the blade ninety degrees in the frame. Both hands control the sawing motion of the frame saw (see below). The wood is G-clamped to the bench, so that the 'saw line' is 'off' the bench.

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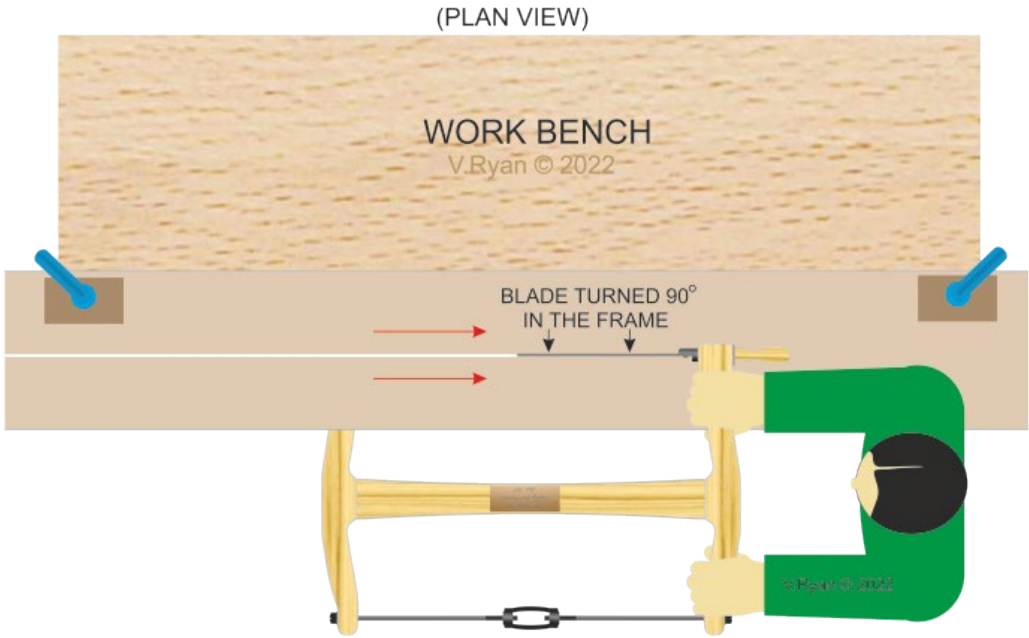

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THE COPING SAW

Coping saws are used for cutting a range of woods and are very useful for cutting unusual shapes or curves. In a modern workshop these shapes are normally cut using machine fretsaws. However, there are times when these machines are not available. Also, using a coping saw is a test of skill as it can be difficult to control and requires practice.

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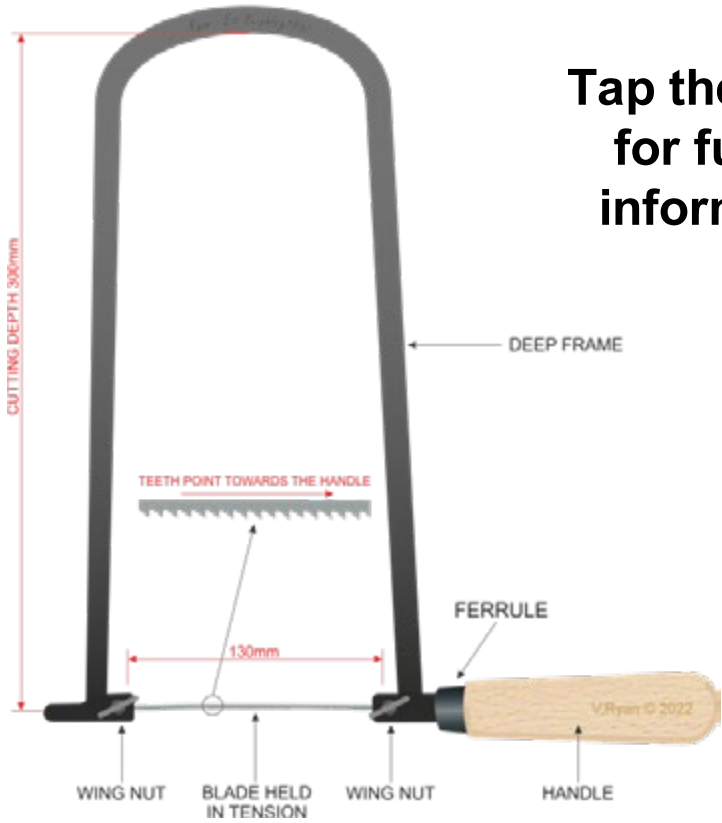
THE DEEP FRAME FRET SAW

The hand held ‘deep frame fret saw’, is used to cut and shape thin natural wood and boards. It is also used to shape veneers for marquetry and inlaying. The blade is clamped in position, by tightening the wing nuts. The teeth point towards the handle, which means cutting takes place, as the hand is pulled towards the user, or more usually, downwards.



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USING A DEEP FRAME FRET SAW

Support the material on the surface of a bench, with one hand. The material must be held down firmly. The second hand controls the movement of the saw. Cutting takes place as the saw is pulled downwards. When cutting curves, the supporting hand manoeuvres the material on the surface of the bench. The sawing motion, should always be in a straight and forward direction.

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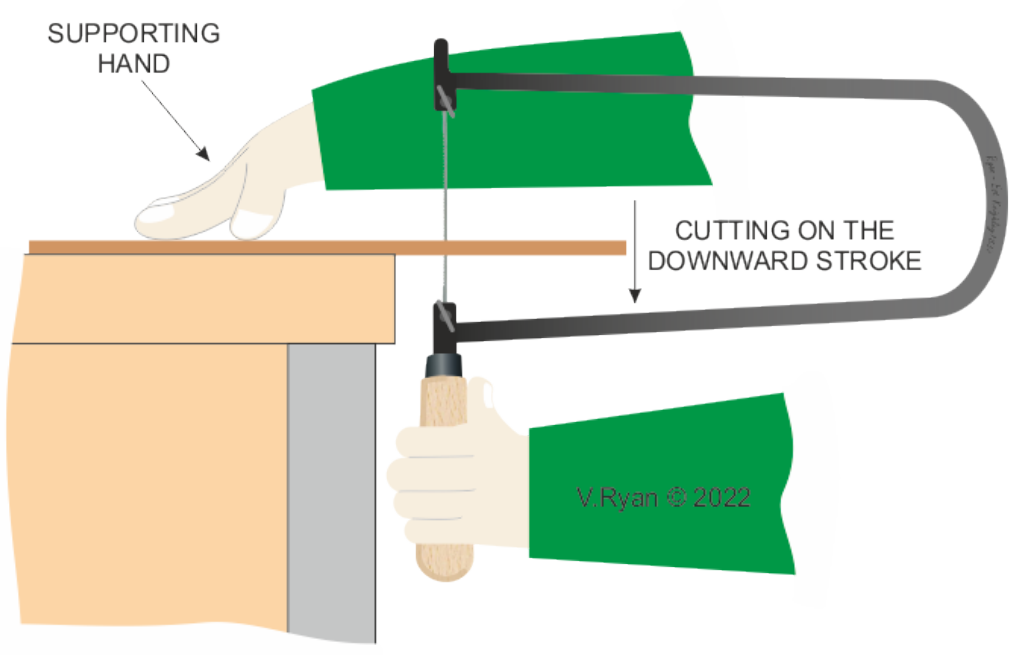

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THE PRECISION HAND MITRE SAW

The ‘precision hand mitre saw’ is extremely useful, when cutting angles. It is a lightweight adaptable saw, with a range of uses. It is ideal for cutting joints, such as the mitre corner joint. The most common type has a 550mm blade, with 14 TPI (teeth per inch). It also has an adjustable angle scale, that allows the blade to be set from -55 to +55 degrees.

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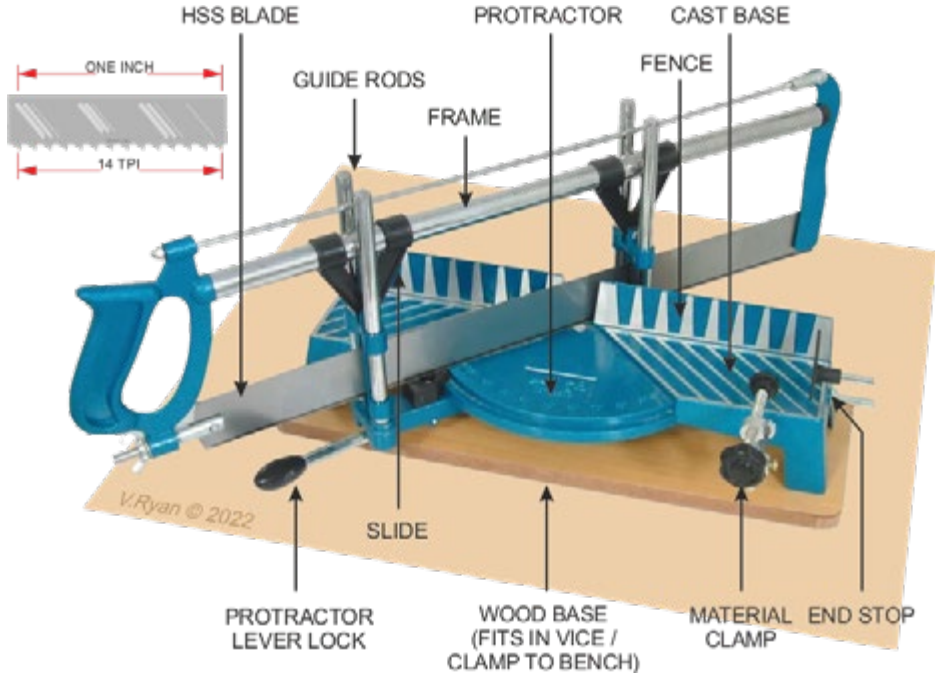

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USING THE PRECISION HAND MITRE SAW

A block has been bolted to the mitre saw's base and it is secured in the vice. This means that the mitre saw is not likely to work loose, during the sawing procedure. The index finger should point down the frame, 'pointing' in the direction of the cutting action. Smooth cutting strokes, provide the most efficient sawing.

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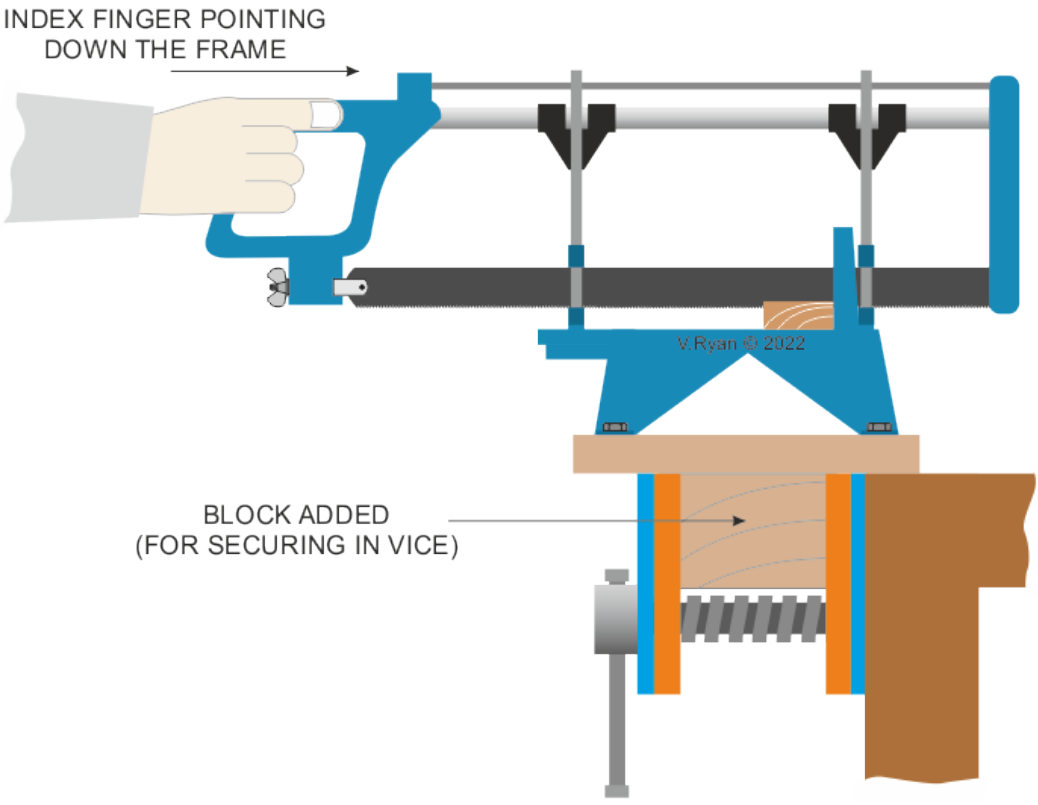

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JAPANESE SAWS

Japanese saws are not only beautifully designed, but they are also extremely useful and practical. These saws cut on the back stroke, unlike European tenon and dovetail saws, which cut when pushed forward. They have a major advantage, in that the teeth have a fine set, which leaves a thin kerf (saw groove).
The blades are usually taper ground. This means that the blade is thicker along its cutting edge, compared to its back edge. A blade that is taper ground, needs less 'set' to its teeth, hence a finer cut. Taper ground also means that there is less friction when sawing.

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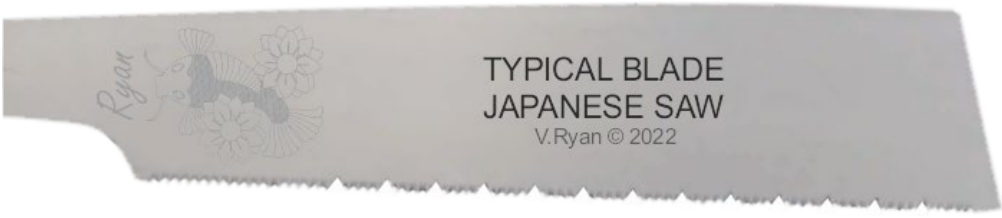

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KATABA

The Kataba saw has a range of general uses, similar to the western panel saw. It does not have a supporting ‘back’ (as seen with a tenon saw or dovetail saw) and has a single cutting side. The saw will have either, teeth for crosscutting or ripping along the grain, producing a sharp, rapid cut. The blades are from 250mm to 330mm in length. Cabinet makers tend to prefer the smaller length blades, whilst general carpenters tend towards the longer blade.

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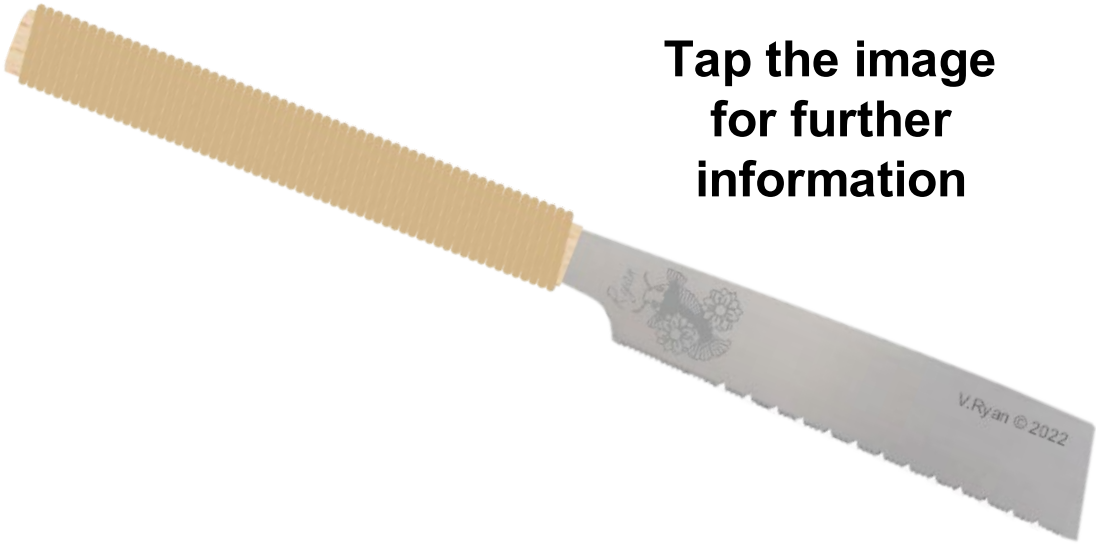

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RYOBA

One side of the blade is for ‘ripping’ and the other for crosscutting. The larger teeth are the ripping teeth. The teeth point towards the handle, due to the saw being called a ‘pull saw’. The blade is quite flexible, because it does not have a back / support. A ‘back’ on this saw would interfere with ripping and crosscutting. This saw is also good for ‘flush cutting’.

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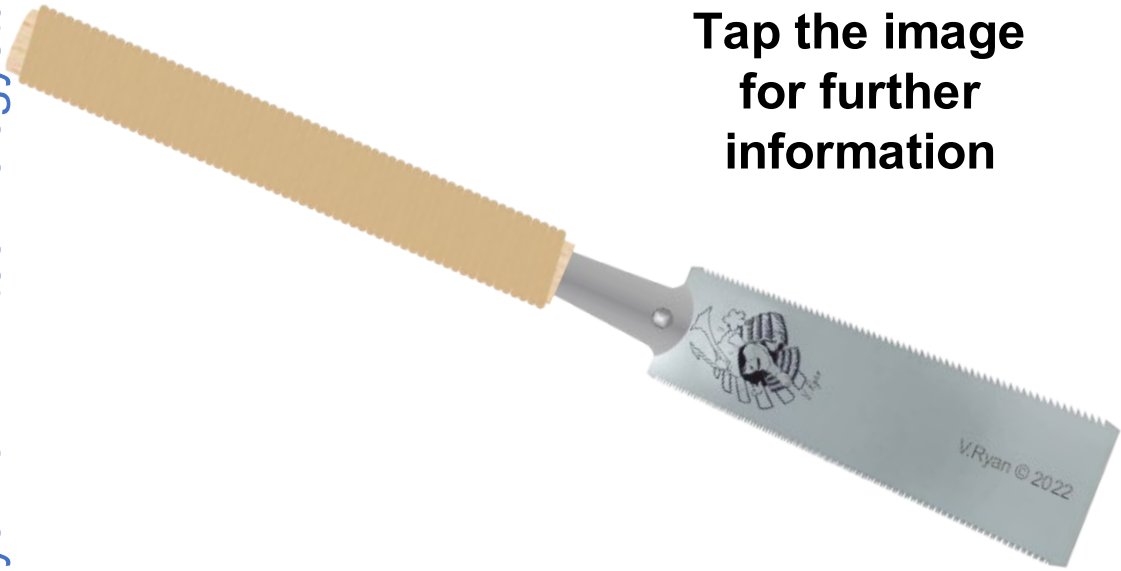

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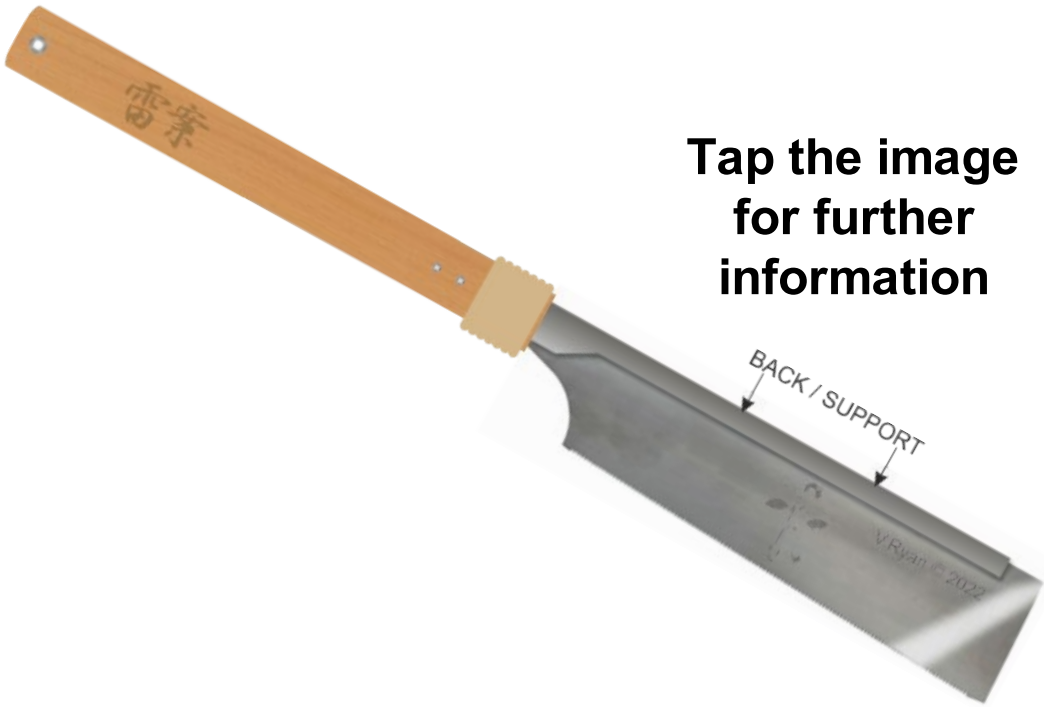
DOZUKI

The support / back of the saw blade, prevents it from bending. The blade is usually thinner than the blade of the Ryoba saw and the teeth are finer. This saw is ideal for accurate joint work, such as dovetails.



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MOWASHIBIKI

The mowashibiki saw is similar to a Western / European pad saw. It is used to cut awkward shapes, as seen opposite. It has a thin tapering blade, ideal for difficult curves.

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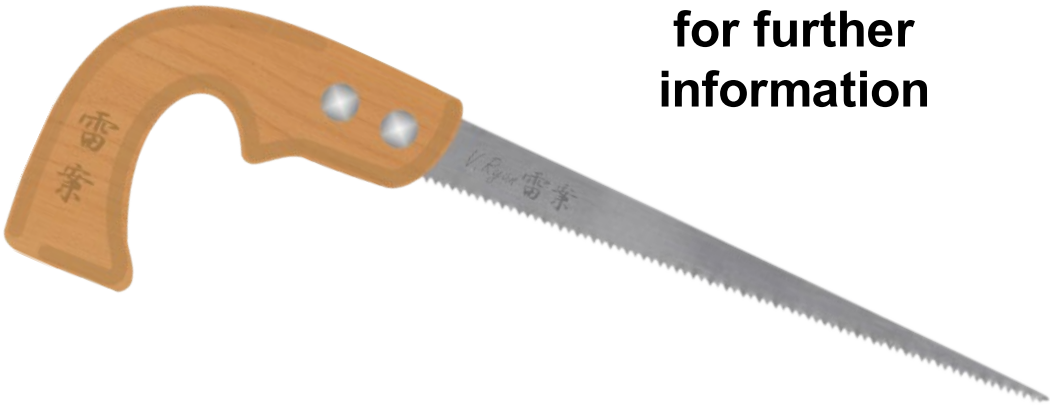

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THE HACKSAW

The hacksaw is used to cut steel and other metals. It is sometimes called an adjustable hacksaw because the length of the frame can be altered to hold blades of different sizes. Blades are supplied in two lengths, 250mm and 300mm.

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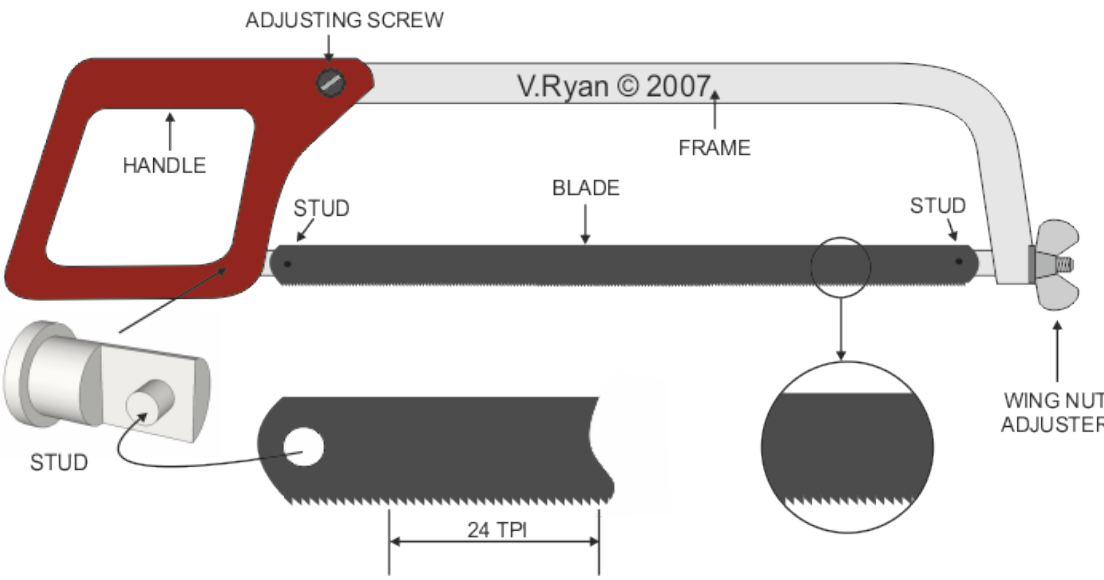

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HOW TO USE A HACKSAW

One hand holds the hacksaw handle. Notice how the index finger is used to support the handle and also points in the direction of cutting. The other hand holds the frame, near the wing nut. Cutting/sawing should be carried out close to the jaws of the vice. This ensures that the metal does not flex or bend under the force of the hacksaw and the sawing motion.

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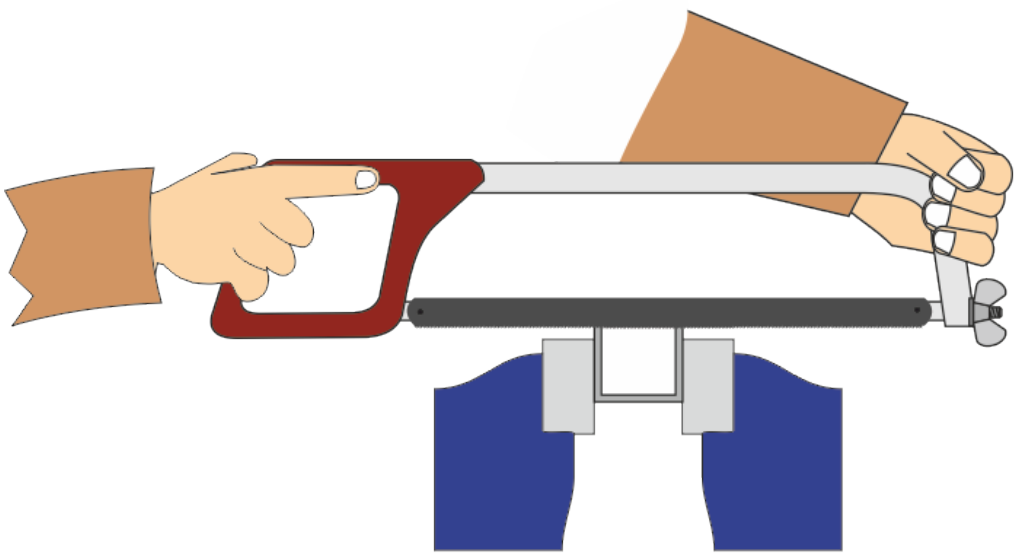

SIDE VIEW

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THE JUNIOR HACKSAW

The Junior hacksaw is a small scale version of a full size hacksaw. Two hands are required to use the full size hacksaw, whilst one hand is needed for the junior hacksaw. The junior hacksaw is used to cut and shape metals, tube and some plastics.

The blades tend to be ‘fine’, potentially giving a precise cut and fit the junior hacksaw frame, with the aid of ‘pins’, at each end. The pins lodge firmly into ‘slots’, in the frame of the saw.

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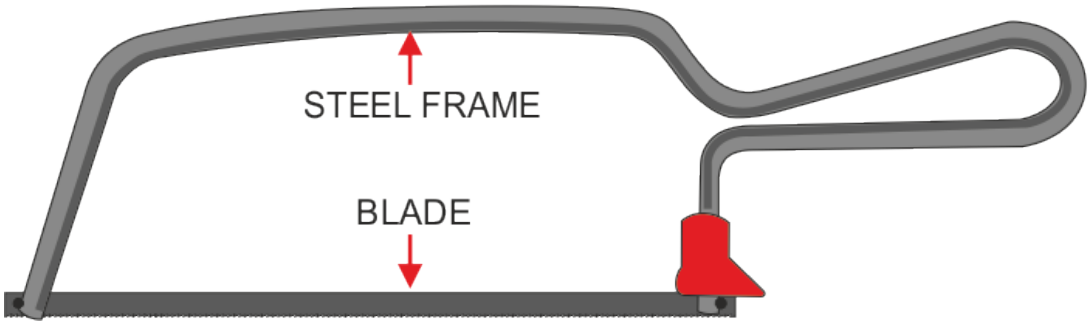

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HOW TO USE A JUNIOR HACKSAW

Place the material in an engineers vice. The junior hacksaw is held in one hand and then pushed forward (the teeth of the blade face forward, away from the handle). The 'cut' only takes place on the forward stroke. The first few 'cuts' should be taken with care, until a grove is cut in the metal, which guides the saw blade and then more rapid sawing can take place.

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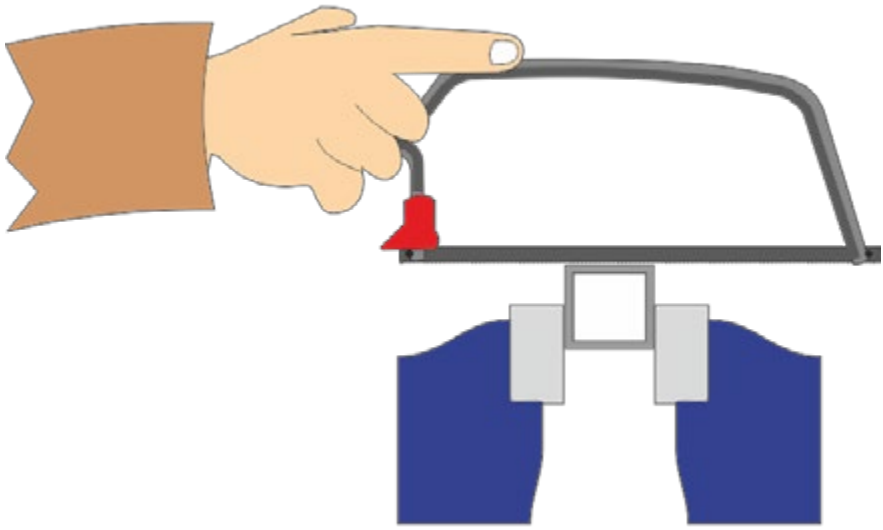

SIDE VIEW

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THE PIERCING SAW
(Jeweller's Saw)

The Piercing Saw is normally used to cut and shape non-ferrous sheet metal, such as brass, copper and nickel silver. It holds a very fine blade and is capable of very accurate work, depending on the skill and experience of the user.
The fine blade is held in position by fastenings, at each end of the frame, tightened by wing nuts.

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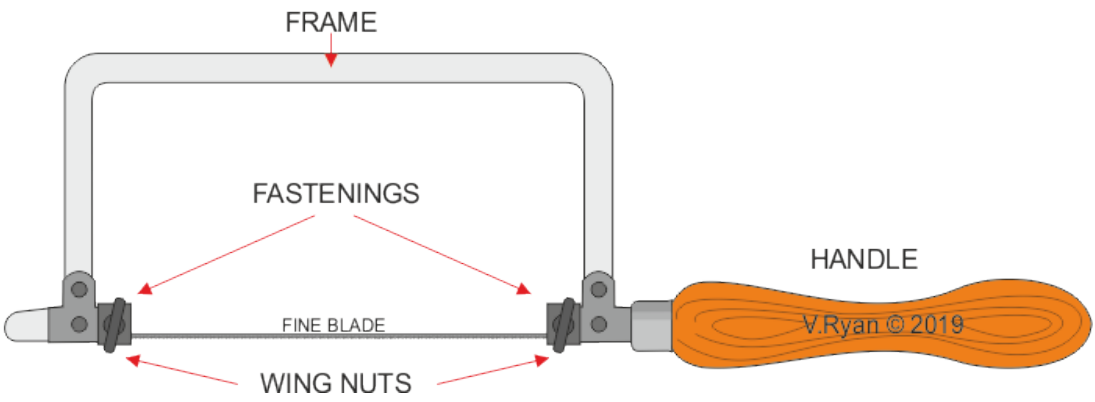

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HOW TO USE THE PIERCING SAW

When using a piercing saw, sit at a comfortable height to a workbench. The sheet metal being cut, is placed on a jeweller's bench pin (sometimes called a V-board or bird's mouth board). The metal is held down firmly, whilst the saw is held almost vertically and sawing begins. Sawing should be even and constant, using the full length of the blade.

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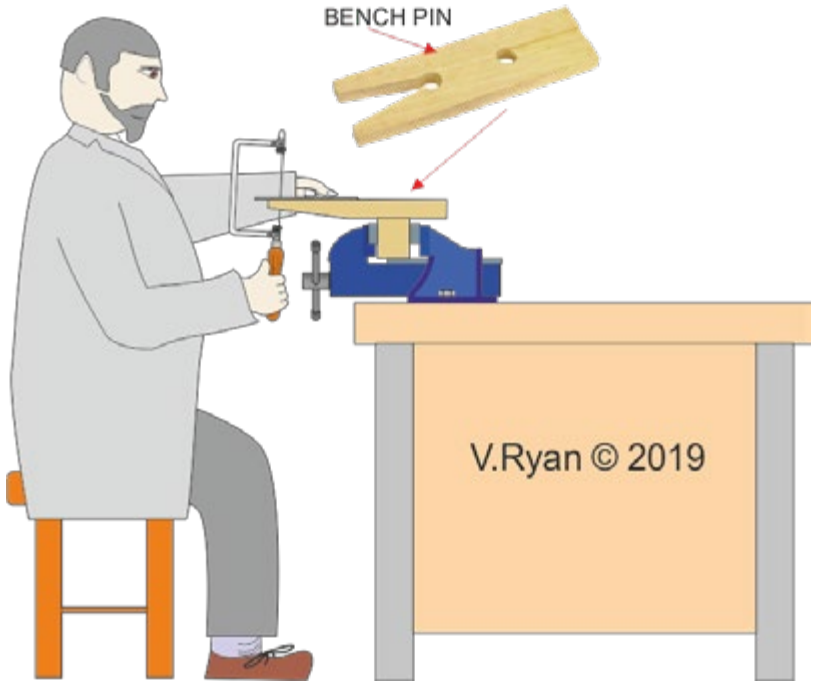

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THE FRETSAW

The fretsaw is a general workshop machine. It is used to cut and shape light materials such as perspex, MDF and plywood. Fretsaws can be used to cut very detailed shapes and they are supplied with different types of blade according to the material that is to be cut.

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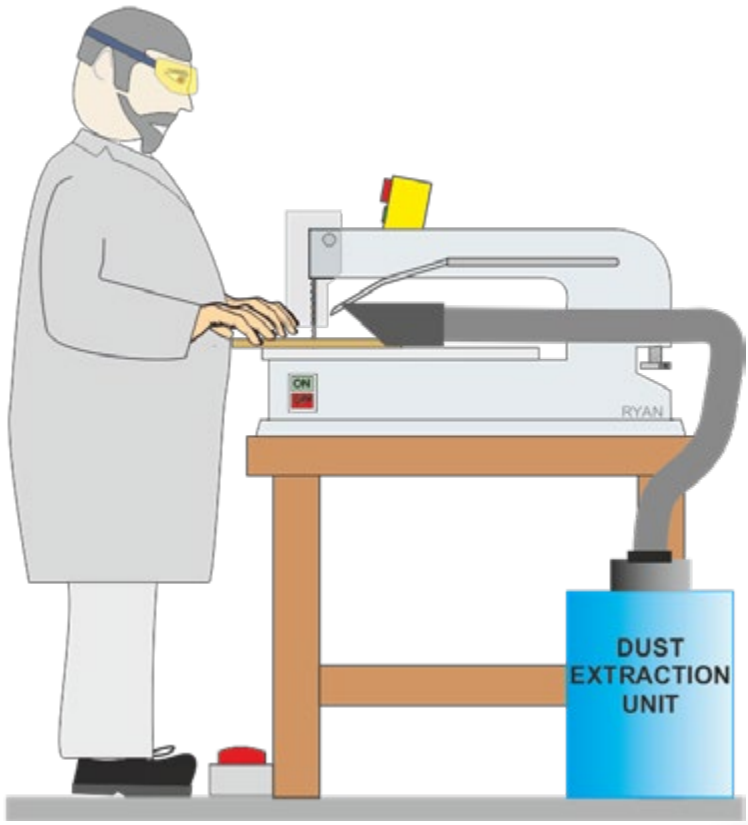

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THE BAND SAW

The band saw is used for preparing materials, cutting and shaping (BY THE TEACHER ONLY). The blade is in the form of a continuous loop that runs around two wheels. The teeth of the blade face downwards, towards the saw table. Special training is required for the use of band saws.

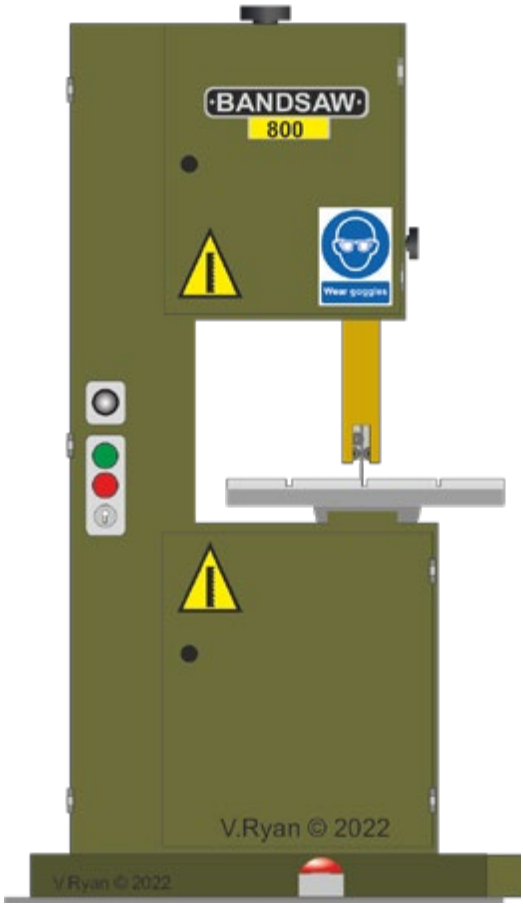

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TABLE CIRCULAR SAW

Table circular saws are used for cutting woods to size and are extremely powerful (USED BY THE TEACHER ONLY). They are ideal for preparing wood for workshop use. A table circular saw is normally supplied with a floor stand and this lifts the saw up to a safe working height. Saws of this type are a necessary piece of equipment for heavy joinery work.

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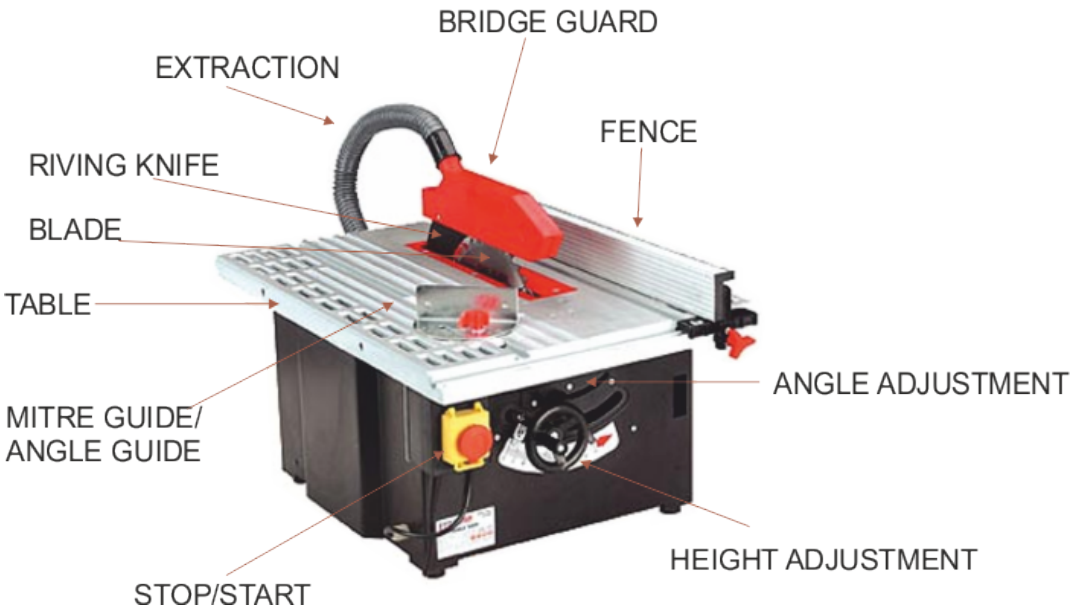

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HAND HELD CIRCULAR SAWS

Hand held circular saws are used for cutting woods to size . They are extremely powerful and dangerous if used incorrectly (USED BY THE TEACHER ONLY). They are ideal for cutting manmade boards such as plywood and MDF and natural woods up to a size of approximately 30mm thickness.

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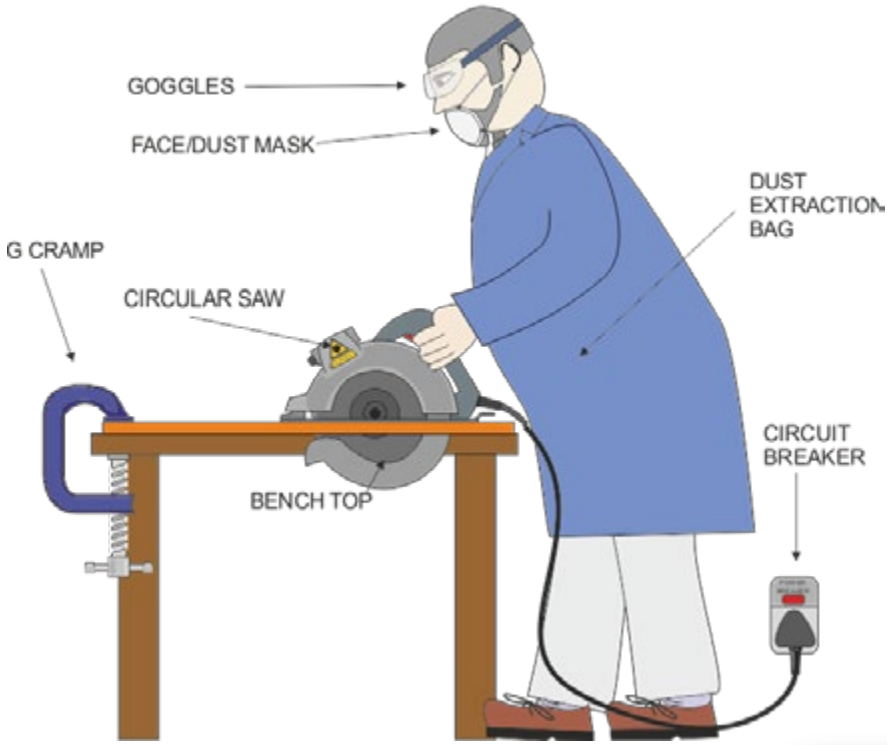

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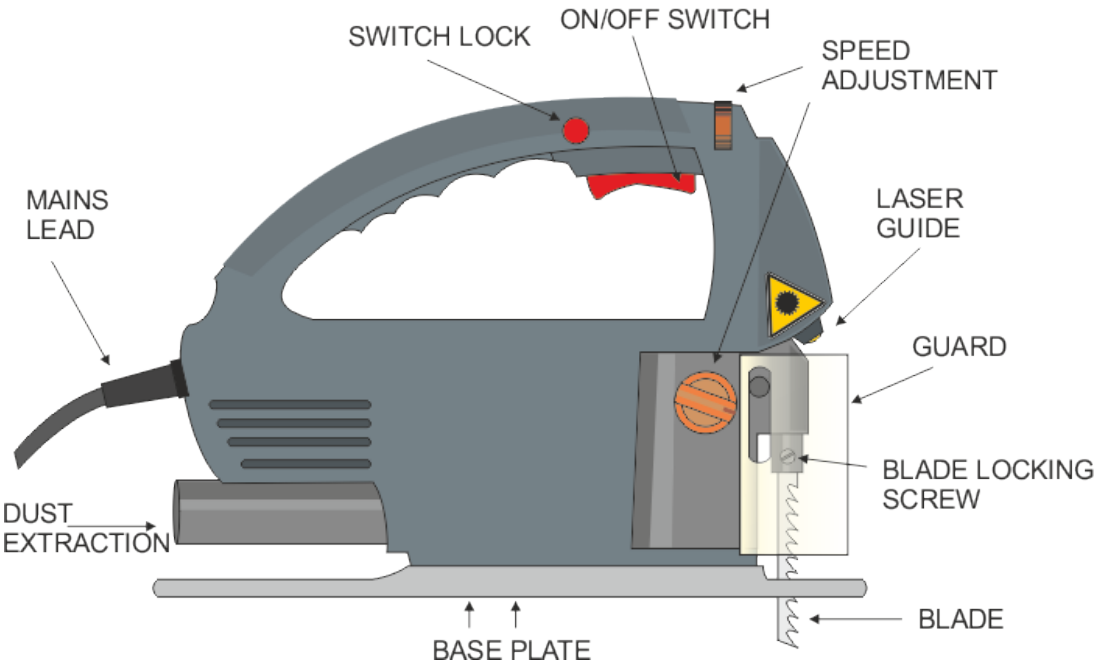
THE JIGSAW

Jigsaws are general cutting and shaping tools. They are provided with a selection of blades suitable for cutting and shaping a range of materials. They are ideal for cutting thin manmade boards such as plywood and MDF and they are capable of cutting detailed curves.

Tap the image for further information



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USING A JIGSAW

If the wood to be cut and a wood guide is G Cramped to a work bench it will be possible to cut in a straight and accurate line. The jigsaw is pressed against the guide whilst been pushed in the direction of the cut. Wood guides are very useful and they are safe if used properly.

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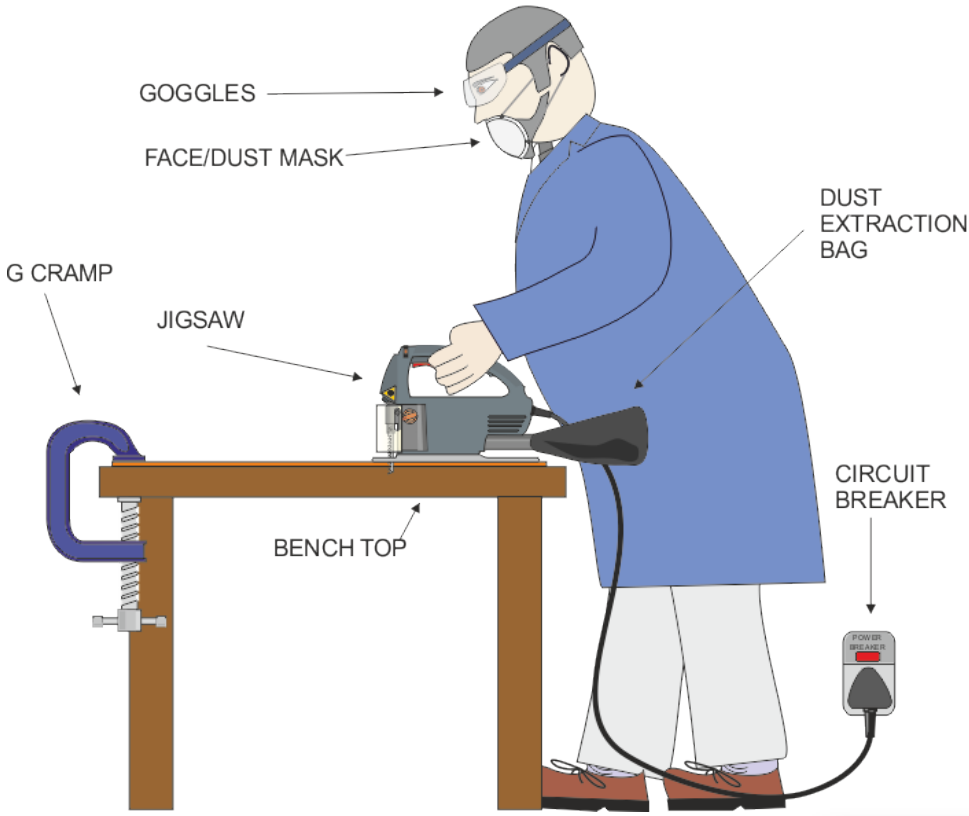

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THE POWER HACKSAW

Power hacksaws are used to cut large sizes (sections) of metals such as steel. Cutting diameters of more than 10/15mm is very hard work with a normal hand-held hacksaw. Therefore, power hacksaws have been developed to carry out the difficult and time consuming work.

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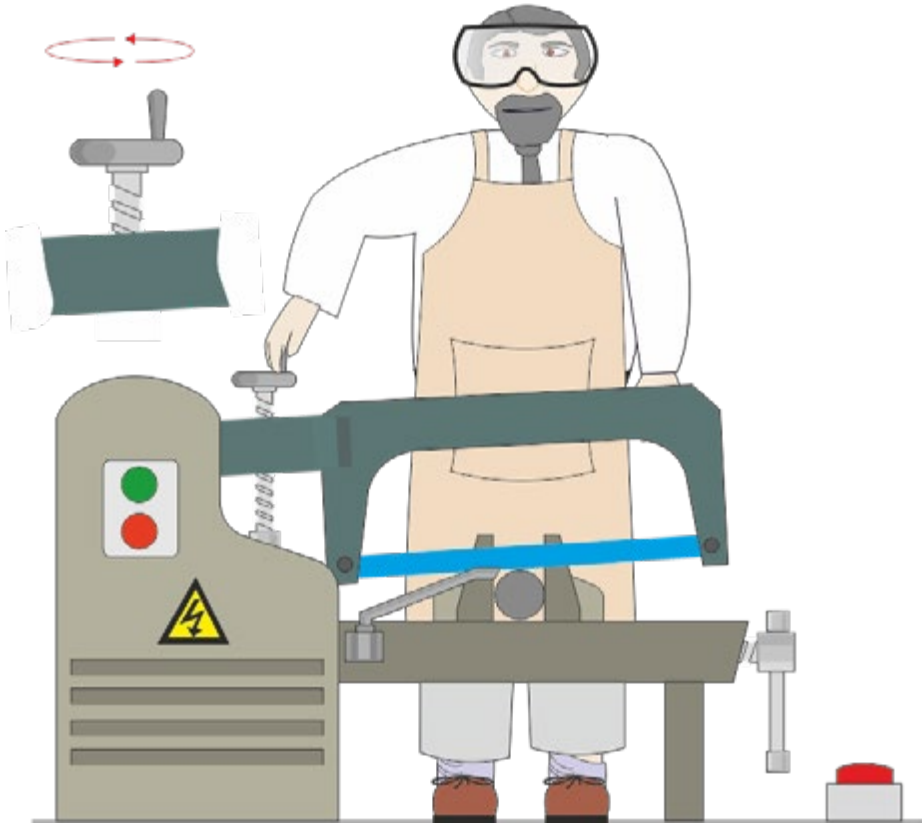

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COMPASS SAW

The compass saw has a narrow blade with fine teeth (TPI 20 - teeth per inch) and is typically between 150mm to 300mm in length. It is used for cutting curves and irregular holes, when access is restricted, or when working in a confined area. The blade of most compass saws, can be replaced by loosening the screws in the ferrule, and removing the old blade

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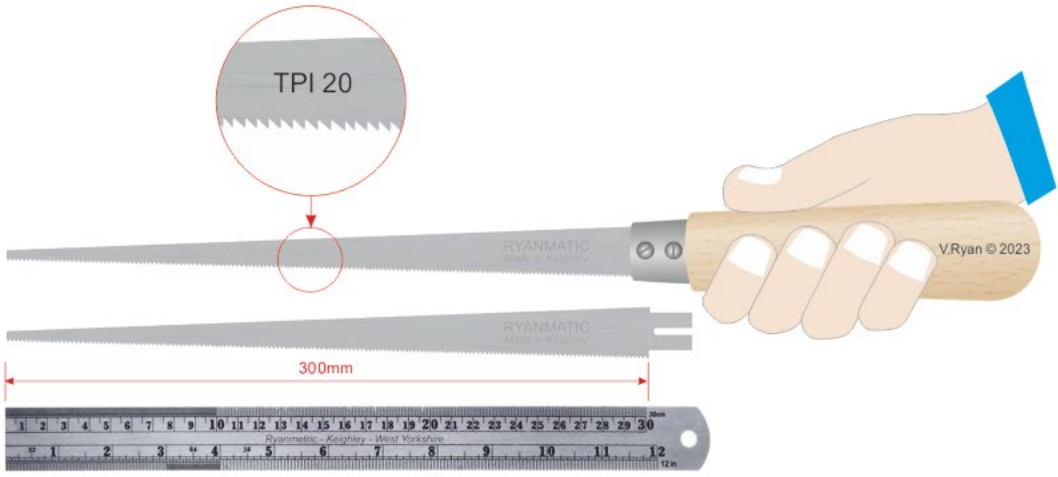

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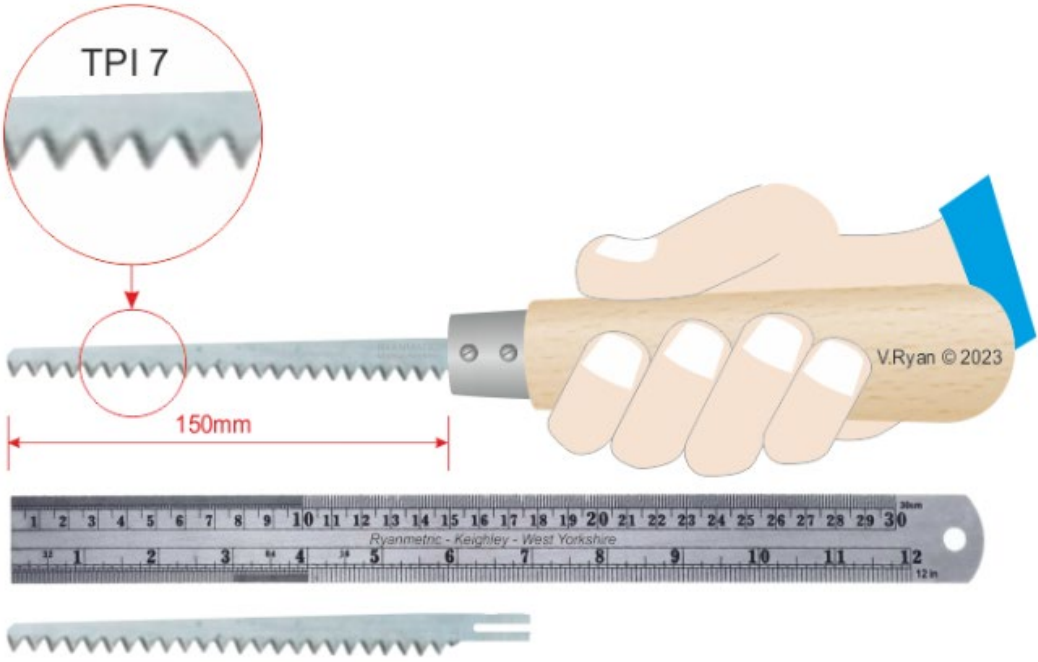
PADSAW

Padsaws usually have a short, robust, coarse blade. This type of saw has similar characteristics to the compass saw, but produces a ‘rougher’ finish. It is used for less refined / less delicate work, compared to the compass saw. The blade can be replaced by loosening the screws in the ferrule and removing the old blade.

Tap the image for further information



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