

Cutting wood by hand

A saw uses a row of teeth that act as a succession of cutting edges. The size and shape of the teeth vary in different saws. This means that a saw may be suitable for one type of work but unsuitable for another.

A good saw needs accurate set as well as sharpness. Set allows the saw to cut without clogging, due to the teeth being bent out from the blade, with alternate teeth in opposite directions. It is this facility which allows the line of cut to be adjusted as you work along the wood.

The handle of the saw is important for both strength and comfort. Wooden handles are useful when the saw is going to be used for long periods of time as it absorbs perspiration. Plastic handles may not be as comfortable to hold as wooden ones, but they are often stronger.

Take care of the saw when it is not being used. It should be kept out of reach of children - hang them up in an upright position. Oil the blades before storing to prolong the life of the blade and prevent rust forming.

Types of wood saw

There are three categories that can be used to group saws suitable for any job:

- **Large saws to cut long lengths of wood or sheets of timber**
- panel saws, cross-cut saws, rip saws.

It is important to mark the wood at various points across the width to be removed. Mark the points with a pencil on the right side and join them with a straight edge, to give the line to be cut. You need to support the board at knee height as you will be using your knee as well as your hand when you begin cutting. Use of a workbench, tressles or something to steady the length is essential before starting.

The first cut must be positioned correctly. Keep to the wasted side of the pencil line and pull the saw back towards you to give a starting point. The pressure should be applied in the forward direction only and the whole length of the blade should be used. Take it steady and always correct any slight deviation on a cut with the next forward stroke.

- **Saws for more exact work and for cutting joints**
- dovetail saw, tenon saw.

It is important to mark the wood at various points across the width to be removed. Mark the points with a pencil on the right side and join them with a straight edge, to give the line to be cut. You need to support the wood in a vice, clamps or bench before starting to cut. Keep to the wasted side of the pencil line and pull the saw back towards you to give a starting point.

The pressure should be applied in the forward direction only and the whole length of the blade should be used. Take it steady and always correct any slight deviation on a cut with the next forward stroke. If the wood is

coated with melamine extra care must be taken to avoid chipping the surface. Once the cutting line is marked on the right side, use a craft knife and score the surface along the pencil line using the straight edge. When you are ready to start cutting keep the saw as horizontal as possible, because the greater angle to the more prone to surface chipping. For extra safety, try covering the scored section with clear adhesive tape and saw through that along the cutting line.

- **Saws for more detailed cuts on shapes and curves.**

These saws will have more teeth (per section) to cut finer - bow saws, coping saws, fretsaws, padsaws.

It is important to mark the wood at various points across the width to be removed. Mark the points with a pencil on the right side and join them with a straight edge, to give the line or shape to be cut out. You need to support the wood in a vice, clamps or bench before starting to cut.

Use a drill to make a hole on the waste side of the wood. The hole must be large enough to use the blade of the saw. If you are making a longer straight cut, perhaps cutting out the sink section on a work surface, drill holes on the waste side at each corner. Use a padsaw to start the cut off. When the gap is wide enough you might prefer to change to using a panel saw, which will give more accurate cutting and it will also make the job quicker to complete.

If you are cutting a curved edge, continue cutting with the padsaw. Once the section has been sawn out, the edges can be smartened with a half round file. When cutting a keyhole, drill one hole at the top and a smaller hole at the bottom, remembering to keep on the waste side. Then use a padsaw to cut between the two holes. Once the section has been cut out, finish with a file for a smoother edge.

Power tools

Power saws allow you to cut through wood faster and more accurately than cutting with a handsaw. Power saws will allow different blades to be fitted for a variety of jobs. There are a number of power saws on the market and it is important to choose the correct tool for the job in hand.

It is important to remember that using power saws will do much of the work for you. Do not treat it like a handsaw when cutting through the wood, allow the blade action to move at its own speed, guiding it along the line of cut rather than forcing it along. These tools are also available for hire if you do not want to purchase one.

Circular Saws

If you are cutting lengths of wood, sheets or boards use a combination blade. There are other attachments available to cut masonry, ceramic tiles and metal. Circular saws are suitable for cutting timber, plywood, MDF and blockboard. It is the ideal tool for accurate and quick straight line cuts. It is possible to buy a saw attachment to fit an electric drill.

Check the manufacturer's guidelines, as often you can only fit attachments to the

same brand named tool. Circular saws are competitively priced and can include varying cutting capacities, varying speeds, adjustable line of cut indicator, depth and angle adjustment, adjustable rip fence, remote lower guard lift lever, dust extraction facility, safety switch and saw blades.

If the wood is coated with melamine extra care must be taken to avoid chipping the surface. The cutting line should be marked on the right and wrong side, use a craft knife and score the melamine surface along the pencil line using the straight edge. For extra safety, try covering the scored melamine section with clear adhesive tape and saw through that along the cutting line.

The circular saw cutting is made as the blade rises under the wood, therefore the cleanest side of the cut is underneath. When using a circular saw, melamine and coated surfaces should be cut on the wrong side. Lay the coated surface on a bench and make sure that the area underneath the cutting section is clear, to avoid cutting anything supporting the wood. Always make sure the cable is out of the cutting region and wear a mask and safety goggles to prevent the fine dust entering the nose and eyes.

Jigsaws

If the space is restricted when cutting is required, a jigsaw is a quick, easy and versatile tool to use. It can be used for straight or curved cutting and there are different blades available making the saw suitable for cutting wood, chipboard, blockboard, plywood, hardboard, metal and plastic. They are competitively priced and can include varying speed, pendulum action for faster cutting, dust extraction facility and adjustable base plate angles.

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Always make sure the cable is out of the cutting region and wear a mask and safety goggles to prevent the fine dust entering the nose and eyes.

Other Saws

There are other power saws available which are also suitable for woodwork:

- **Alligator saw** - a general purpose saw, cutting various materials from wood to thermal blocks.
- **Chain saw** - used for cutting trees and logs.
- **Door trimming saw** - used for trimming a door without unhinging it.
- **Mitre saw** - used for accurate cutting of picture frames, architrave, skirting and any wooden moulding.
- **Reciprocating saw** - a two bladed saw with an action similar to an electric carving knife.
- **Laminate trimmer** - makes bevel and patterned cuts or grooves in boards with a laminate surface.

Chisels

There are different kinds of chisels available for different jobs. The main purpose of using a chisel is for cutting out small sections of wood, paring or cutting joints. Chisels are very efficient and effective, but only when they are sharp. Use a sharpening stone and honing guide to rub the blade and gain the correct sharpened angles. It is wise to start using the chisel in the waste area and gradually work to the marked cutting line.

- **The bevel edged chisel**
There are bevel edged chisels in different sizes, which will do most jobs and have the advantage of being able to get into narrow corners.
- **The firmer chisel**
This is a chisel with a rectangular shaped cross section, which is stronger and more suited to heavier work.
- **The mortise chisel**
The mortise chisel is a heavy-duty chisel built to withstand constant striking with a mallet. It should always be used at right angles to the surface of the wood, for maximum effect and deep cutting of mortises.
- **The paring chisel**
The paring chisel is used for paring out long housing in stairs or bookcases.
- **The firmer gouge**
The firmer gouge is used less often than any other type of chisel. It is used to cut shallow curved grooves and indents.
- **The scribing gouge**
The scribing gouge is used to trim curves to match the existing surface or fitting.

Hand Drills

- **A swing brace**
A swing brace can use different bits and is fast and accurate to use. The tool works by firmly pressing down and using a full circular action. The bits should be square ended to fit. They are inserted into the jaws of the chuck. The chuck is held in one hand while the brace is turned in a clockwise direction tightening the jaws.
- **A ratchet brace**
A ratchet brace is useful when drilling a hole in a confined space, as the tool only has to work in an arc rather than in a complete circle. Different sized square ended bits can be used, which are also suitable for the swing brace. The bit is inserted into the jaws of the chuck. The chuck is held in one hand while the brace is turned in a clockwise direction tightening the jaws.
- **A wheelbrace**
A wheelbrace uses twisted drills and is easy to control. They need very little maintenance - occasional oil on the gears and above the chuck. Different sized round-shanked bits, dowel bits or countersinks can be

used. The wheelbrace is useful for drilling in confined spaces where an electric drill cannot be used. If the drilling is vertically down, use your chest to press down on your fist holding the handle to apply more pressure to the point of contact.

Power Drills

- **Cordless drill**
The cordless drill is ideal for jobs away from a power supply. There are various types available using different voltage, differing variable speeds, chuck sizes, torque settings and recharge times. Some also incorporate the hammer action facility, mechanical gears and a quick stop brake. Many are also supplied with cable for mains operation.
- **2-speed Percussion drill**
The 2-speed percussion drill is light, compact and easy to use. It switches easily from hammer to rotary action and incorporates adjustable depth stop and side handle.
- **Right-angle drill**
The right-angle drill allows easy drilling of joists and awkward tight corners.
- **Heavy-duty Rotary drill**
The heavy-duty rotary drill is suitable for heavier drilling jobs, requiring larger chucks.

Using a router

A router can be used for cutting grooves and rebates, shaping, inlaying, beveling, profile and decorative cutting. It has variable depth adjustment and controllable plunge action that produces accurate, clean results fairly quickly. It can be fitted with extension arms and a straight edge for parallel cutting.

Introduction

If you are working on a big project, it may be necessary to join two pieces of timber together to gain a longer length. Smaller projects also often require a section of wood grafting. There are several methods of joining timber, dependent on the strength and finish required.

Bolted joint

For a strong face to face joint use coach bolts in conjunction with timber connectors (metal washers with toothed edges). Drill three holes along the centre of the sides of both timbers, aligning with the adjoining timber. Use the timber connectors between the two pieces of timber to be joined. Insert the bolts making sure the timber connectors are on the bolts when pushed between the two

timbers. Use washers and nuts at the other end to tighten the joint. The timber connectors bite into the wood as the joint is tightened, increasing the strength of the union.

Joining plates

If the two timbers to be joined are meeting end on end, use two wooden plates to hold the union together like a sandwich. The two wooden plates must be strong enough to support the join. Measure the width of the timber to be joined. Use timber plates that are 4 times longer than that width. The timber plates should be the same width as the timber but half its thickness. Glue all the surfaces together before drilling holes in the construction and either screw or coach bolt the whole section together in strategic points staggered across the surface of the plates.

Lapped joint

This type of joint is more suitable for lengthening lighter structures and is the easiest method of joining two timbers. Measure the timbers and mark the halfway positions on each. The laps should be cut to half the thickness of the timber, one cut reflecting the other in the second timber. The two shoulders made must butt exactly against the end of the joining pieces. Glue all the surfaces together before drilling holes in the construction and screw the sections together in strategic points staggered across the surface grain to avoid splitting.

Scarf joint

This type of joint is only suitable for lengthening lighter structures such as in cabinet making. For the greatest strength, make the scarf length 8 times longer than the width of the timber. Measure the timbers and mark the scarf positions on each. The splayed faces must be measured, cut and planed accurately to perfect the bond. The faces must butt exactly together. Glue all the surfaces together and screw the sections together for added strength.

Splayed lap joint

This type of joint is a variation on the lapped joint. The difference is that the lap is cut in the thickness of the timber instead of the width of the timber. The splayed lap joint is suitable for joining timber directly onto a joist or timber wall, giving it extra support. It is suitable for use when the timbers need to keep a straight edge in order to be used to support hardboard or chipboard sheeting. The length of the joint should be equal to the width of the timber. To help resist the chance of the joint being pulled apart, cut the splays along the grain of the wood. Check that they butt together exactly before securing. Nail the lower section of timber diagonally through to the joist or timber wall. Butt the joining length of timber into position and nail it diagonally through the top.

Spliced joint

This type of joint is used when appearance is of prime importance, particularly in furniture repairs. Use a fine tooth saw to cut a 'V' shape in one section of wood. The joining section must be cut and planed to make a perfect fit if the repair is to be successful. It is worth spending time getting the exact fit before fixing the two pieces together. When ready glue and clamp the pieces together until the glue sets. If the join is in a vulnerable location, screws can be used to add extra

strength.

Nailed T joints

The T joint is the simplest joint to make, where a side meets a cross piece. The cross piece must be cut exactly to form a perfect flat, square base. Place the piece onto the flat piece and nail together. Try to nail from the surface of the flat piece into the cross piece. For extra strength, slant the nails to form a dovetail.

If you have to nail the cross piece down onto the flat piece, more care is needed when hammering to avoid moving the cross piece out of line. Hammer from both sides of the cross piece into the flat piece to avoid the structure slipping.

L shaped brackets

L shaped brackets are available to help make a T joint. The metal strips have holes drilled in them so that once correctly positioned, they can be screwed securely. The L shaped brackets fit into both the corners joining the face piece to the cross piece. Use a bradawl or drill pilot holes into the wood in the bracket hole positions to help prevent any splitting.

T shaped brackets

T shaped brackets are available to help make a T joint. The metal strip has holes drilled in it to screw the two pieces into position. The T shaped bracket screws directly on top of the pieces once they are positioned correctly. Use a bradawl or drill pilot holes into the wood in the bracket hole positions to help prevent any splitting.

Metal Fasteners

This type of metal fastener is suitable for softwood indoor joining. Corrugated metal fasteners are sharpened on one end. Position the two pieces of wood together to form a T joint. Use a clamp or block to push the joint tightly into position before using the fasteners.

The fasteners should then be positioned parallel to the cross piece length and well in from its edge. Two should be positioned side by side to cover half the flat timber and half the cross piece. When in the correct position, tap the fasteners evenly into the wood. Hammer them from the middle until they are flush with the surface of the two woods.

Using L brackets

L shaped brackets are available to help make a corner joint. The metal strips have holes drilled in them so that once correctly positioned, they can be screwed securely. Mark where the L shaped bracket fits into the corner. Cut recesses in the wood on the top and the bottom. Glue the two pieces of wood together and at the same time screw the L shaped bracket into the recesses made on top. Then repeat the process in the recesses made at the bottom.

Using angle brackets

Use angle brackets to make a corner by screwing to the inside of the corner. Glue the two pieces of wood together and then use two brackets, one near the top and the other nearer the bottom to make and strengthen the corner.

Using triangular plywood brackets

Use will need two plywood brackets to secure the top and bottom of the corner. Glue the two pieces of wood together and then glue and pin the triangular wooden bracket to the top of the corner. Repeat with the second bracket on the bottom of the corner.

A wooden block with a triangular cross section

The triangular block should have a right edge, where two of its sides form a 90° angle. Position the block inside the two pieces of wood forming a corner. Use glue to bond the sections together as well as screws, nails or doweling.

A square wooden block inside the corner

The square cross section block should have right edges, where its sides form 90° angles. Position the block inside the two pieces of wood forming a corner. Use glue to bond the sections together as well as screws, nails or doweling.

A square wooden block on the outside of the corner

Use glue and screws to fix the block in line with one edge of the one piece of wood being used to form the corner. Use glue and position the second section of wood, leaving the wooden block on the outside of the corner joint. Screw the second section of wood to the block forming a corner where the wooden block remains on the outside.