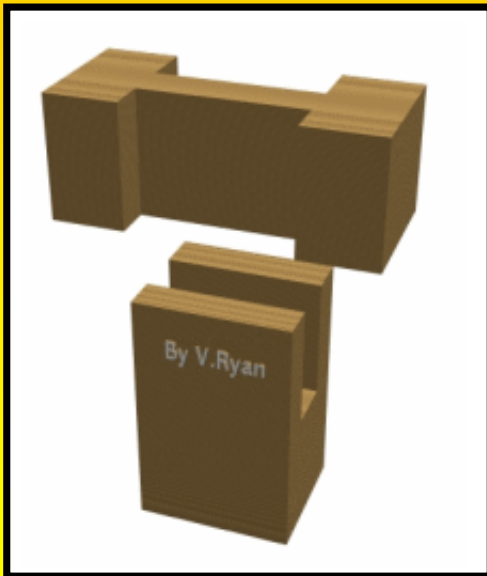


BRIDLE JOINTS

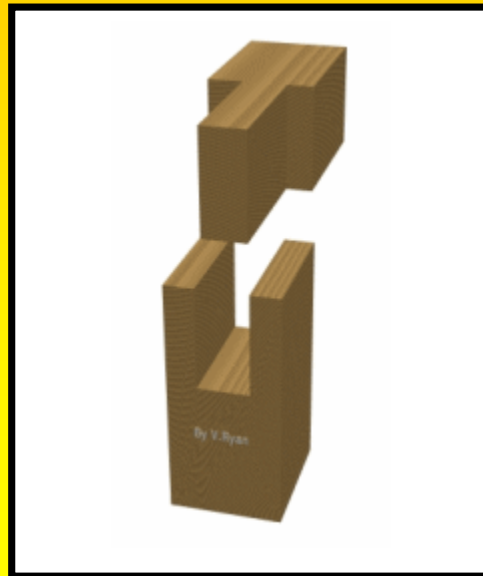
These joints are used when a light frame is needed and strength is not the main requirement. For example, a picture frame. One part of the joint fits into the other part and is glued permanently in position. The angled bridle joint can be used as a substitute for a mortise and tenon joint, again if strength is not important.

PLAIN BRIDLE JOINT



Using this joint would create a 'T' shape with two pieces of wood.

ANGLED BRIDLE JOINT

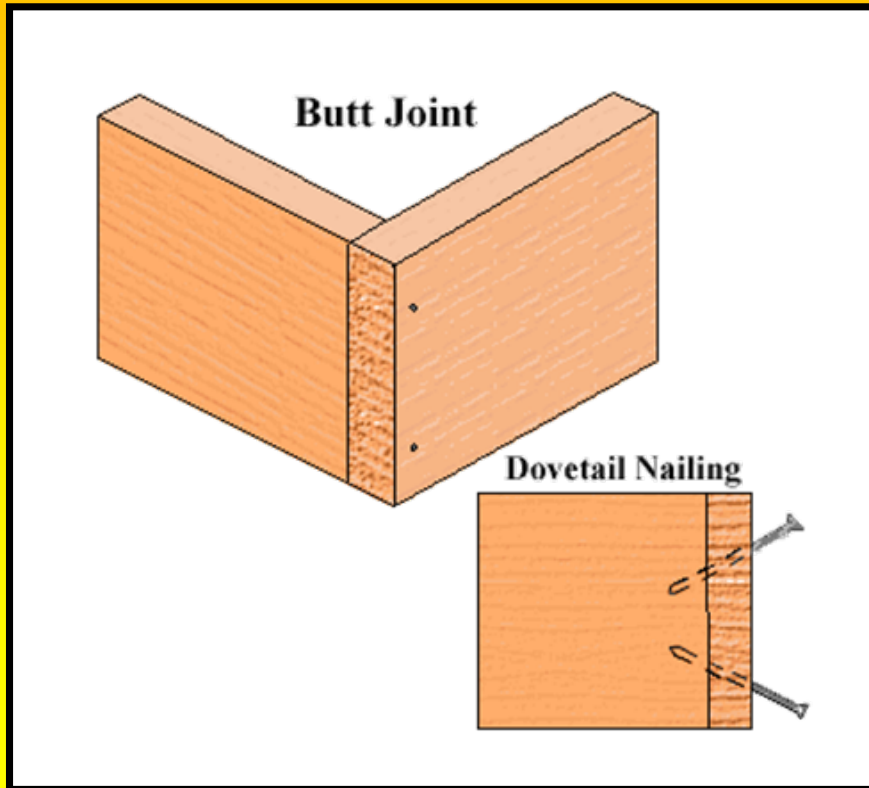


Using this joint would create an 'L' shape with two pieces of wood.

BUTT JOINTS

These joints are the most straightforward of all of the wood joints simply because they require no cutting out. All you need to do is ensure both ends are square and bring them up to each other at right angles as shown below and nail (and glue) the faces together.

BUTT JOINT

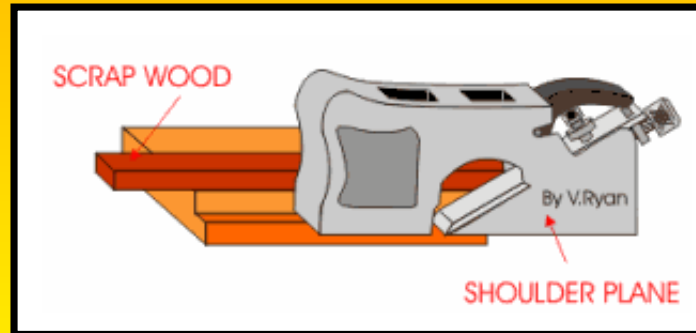
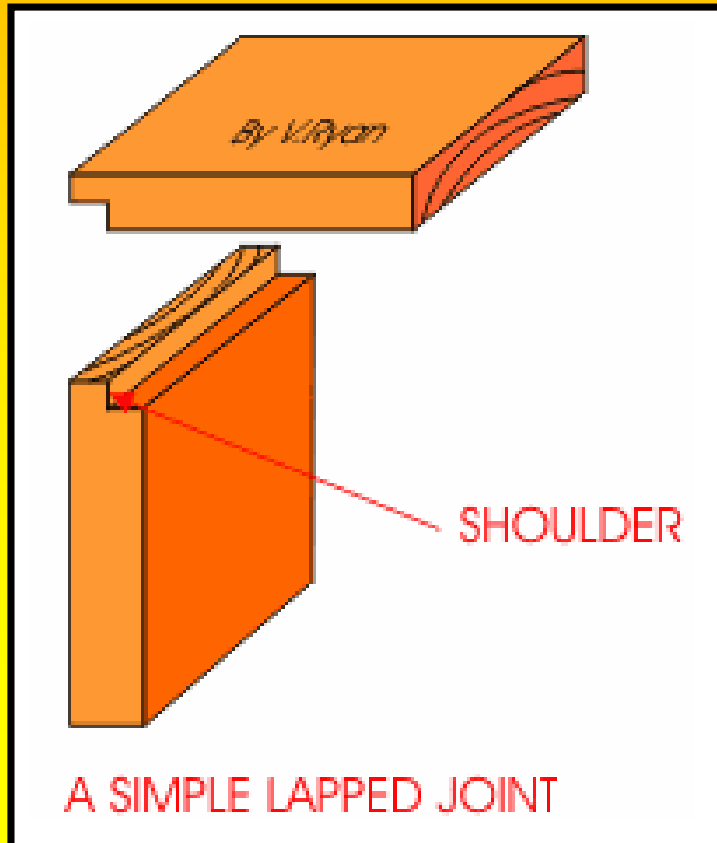


Notice that the nails have been driven in at an angle in a process called Dovetail Nailing. This is to give both parts more of a grip and help prevent the pieces from being pulled apart too easily.

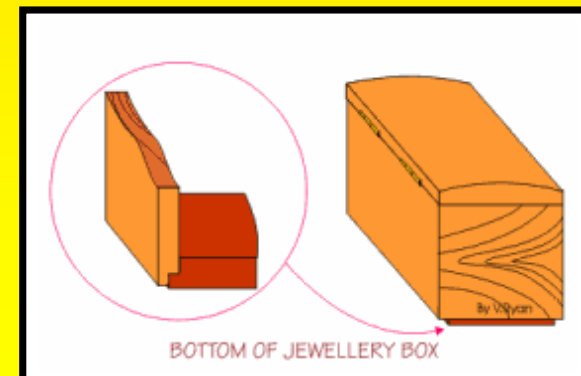
CORNER REBATE JOINTS

The shoulder or lapped joint is very common and is used for furniture and box constructions such as jewellery boxes. The joint below is a simple lapped joint. The shoulder can be seen clearly, this is usually planed using a rebate/shoulder plane or combination plane. This type of joint is often seen as a corner joint.

CORNER REBATE JOINT



Here is a shoulder plane taking the rebate out with the help of a piece of scrap wood clamped in place. There are a few other ways of creating a rebate.



CROSS HALVING JOINTS

Cross halving joints are probably the most simple of joints to mark out and cut. They are used whenever it is necessary to join two pieces of wood that cross over each other. Sometimes these joints can be seen on the strengthening rails of tables and chairs.

CROSS HALVING JOINT

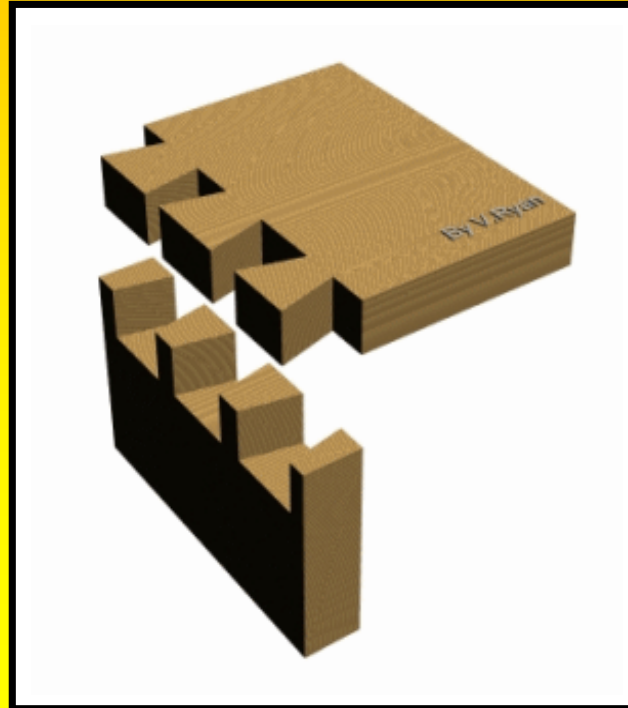
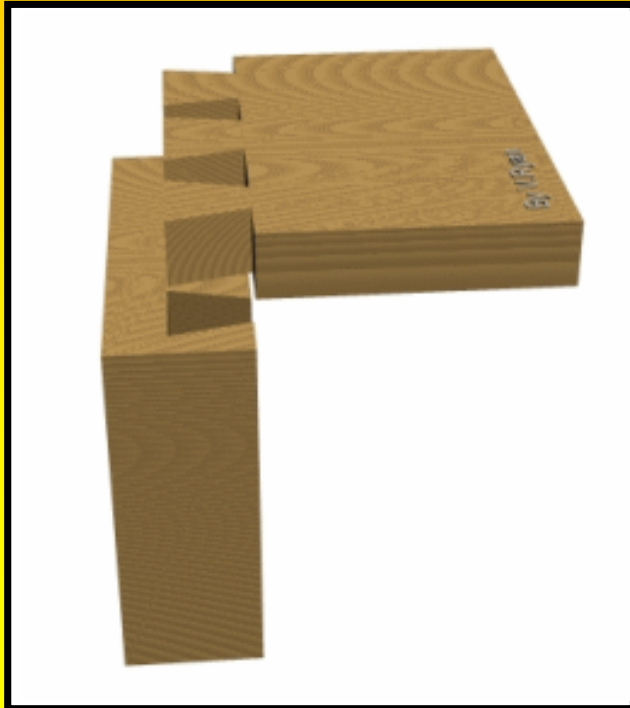


Using this joint would create a '+' or a 'X' shape with two pieces of wood.

DOVETAIL JOINT

The 'DOVETAIL JOINT' is very strong because of the way the 'tails' and 'pins' are shaped. This makes it difficult to pull the joint apart and virtually impossible when glue is added. This type of joint is used in box constructions such as drawers, jewellery boxes, cabinets and other pieces of furniture where strength is required. It is a difficult joint which requires practice. There are different types of dovetail joint and when cut accurately they can be very impressive.

DOVETAIL JOINT

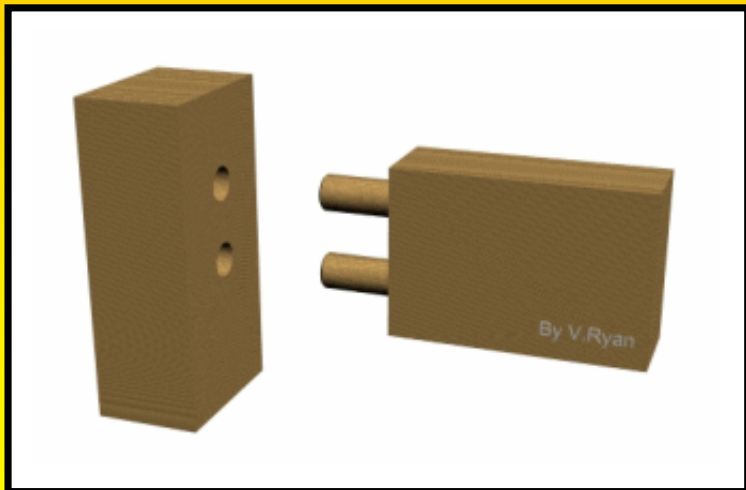


The box shown here is particularly strong due to the dovetail joints at its' sides.

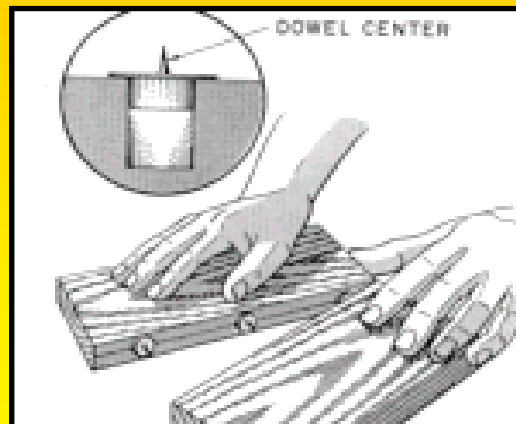
DOWEL JOINTS

Here is another way to create a joint in wood. It is a permanent method but it is not the strongest joint as the parts can eventually pull apart, especially as the joint becomes old. Modern glues that are very strong have meant that this joint is often used to quickly fix parts together.

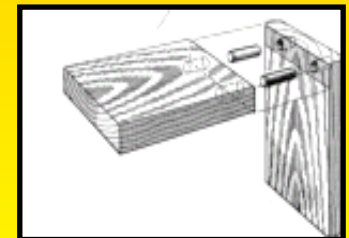
DOWEL JOINT



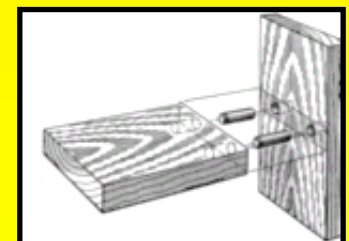
Obviously when using this jointing method, you have to make sure the distance between the holes is exactly the same as the distance between the dowels.



These dowel pins can be used to mark the wood to help ensure the distance between the holes is a good match.



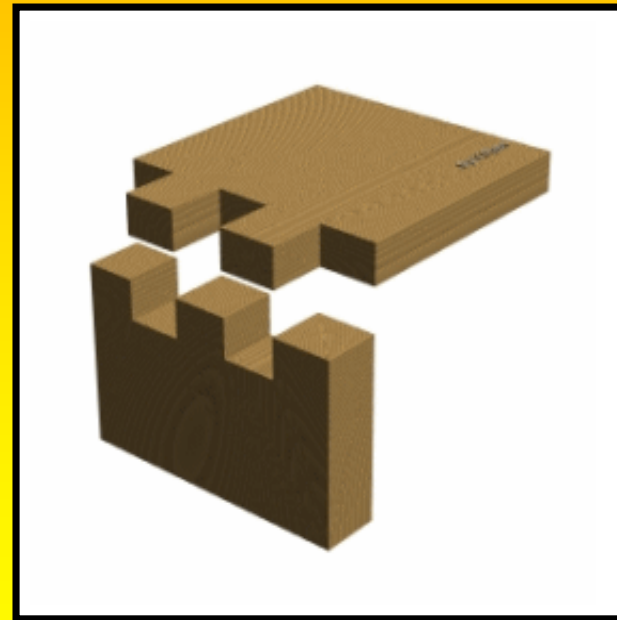
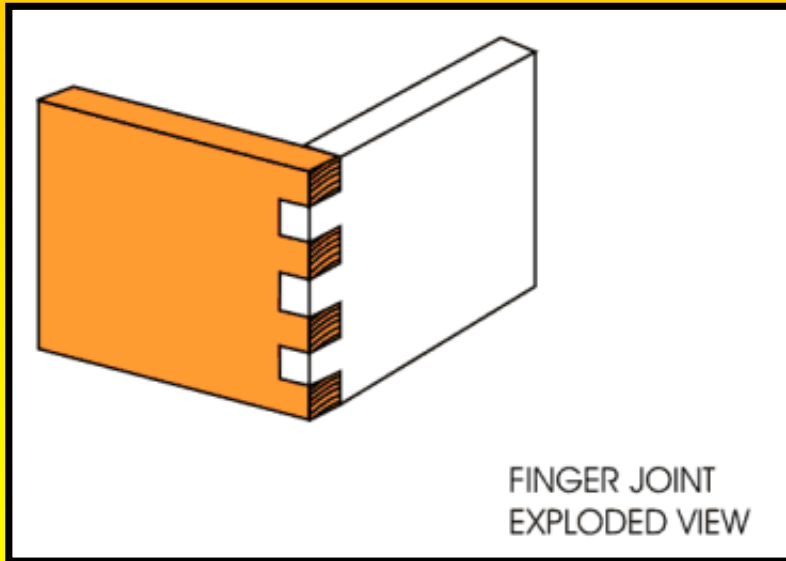
Some other dowelled joints in use.



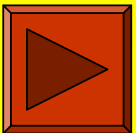
FINGER JOINT

This a good example of a 'finger' or 'comb' joint. It is ideal for box construction and is suitable for use with natural woods such as pine and mahogany or even manufactured boards such as plywood and MDF. The joint is strong especially when used with a good quality glue such as PVA (woodworkers adhesive) or cascamite.

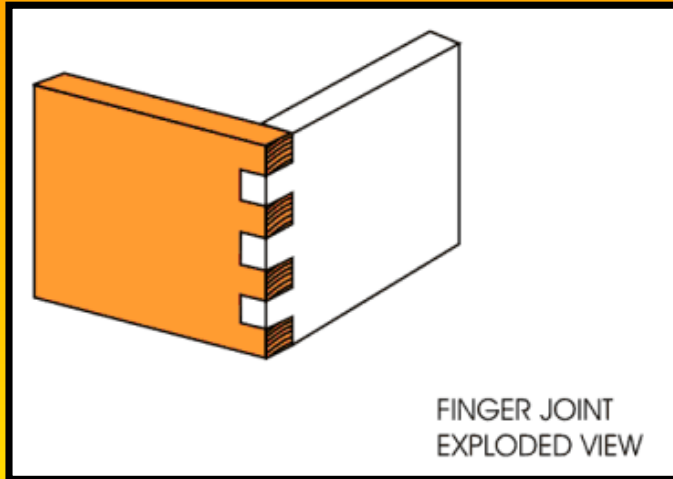
FINGER JOINT



The number of fingers on each end will vary depending on the size of the box being made.



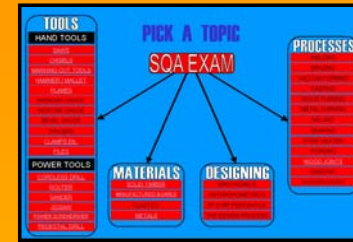
FINGER JOINT



A Finger Joint (sometimes called a comb joint), is created by accurately cutting out a series of steps on the ends of two pieces of wood. Alternate sections are then removed so that the two pieces fit together as shown here.

The number of fingers and the size of the fingers can vary greatly in any joint. The following slides will take you through the steps required to construct a simple, basic finger joint.

[click here](#)

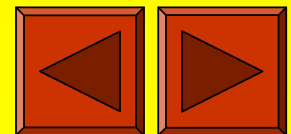


[for main menu](#)

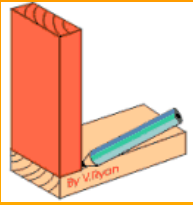
[click here for](#)



[more wood joints](#)

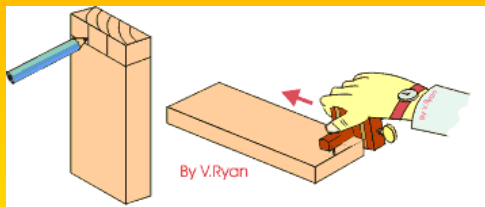
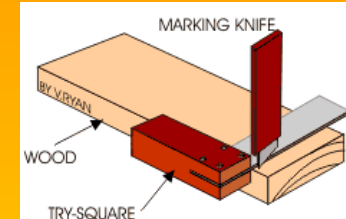


MARKING OUT A FINGER JOINT – on the first piece of wood



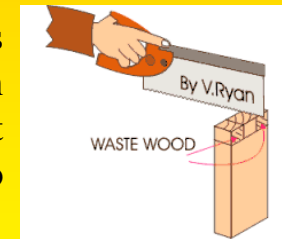
1. The two sides to be jointed are arranged as shown in the diagram. A pencil is used to mark the thickness of the material.

2. A marking knife and a tri square are used to mark all the way round the material. It is possible to use only a pencil but a marking knife is more precise and it has the advantage of cutting the wood fibres. This means when a saw is used to cut the joint the surface of the wood is less likely to split.

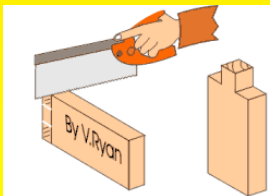


3. The fingers of the first joint are marked out using a pencil and a tri square/steel rule. The traditional way of marking the fingers involves the use of a marking gauge. Using a [marking gauge](#) to mark the fingers is difficult especially if you have not used this type of tool before. The waste wood should be shaded with a pencil. This will help you avoid cutting away the wrong part of the joint.

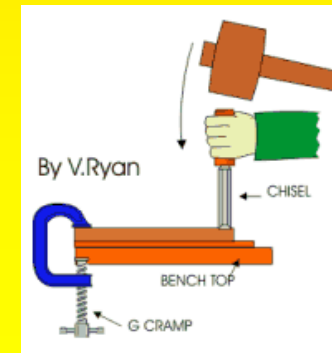
4. The wood is placed in a vice. It must be vertical so that the tenon saw is always cutting down in a straight line. Avoid putting the wood in the vice at an angle as it will be virtually impossible to use the saw accurately. When cutting, it is important to cut on the waste wood side of the line. It should still be possible to see the marking out lines after the saw has been used.



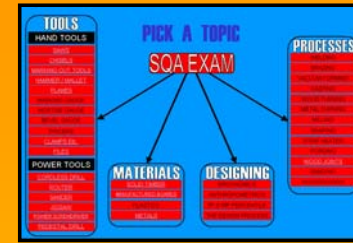
5. The wood is then turned sideways in a vice and the waste material is finally removed using a [tenon saw](#).



6. If the joint is slightly inaccurate a [firmer or bevel edged chisel](#) can be used to correct it. A G clamp is used to hold the wood firmly. Scrap wood is placed underneath to protect the surface of the bench from the chisel. The first side of the joint should now be complete.



[click here](#)

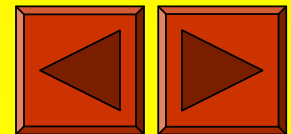


[for main menu](#)

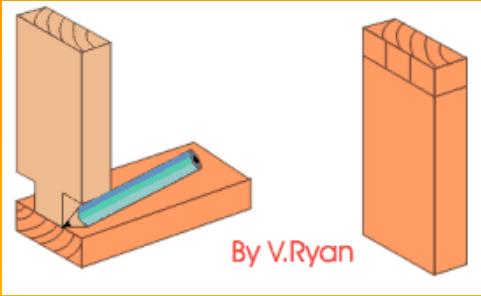
[click here for](#)



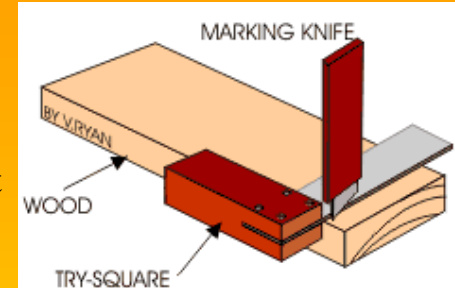
[more wood joints](#)



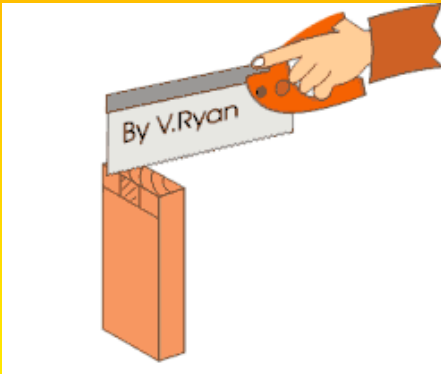
MARKING OUT A FINGER JOINT – on the second piece of wood



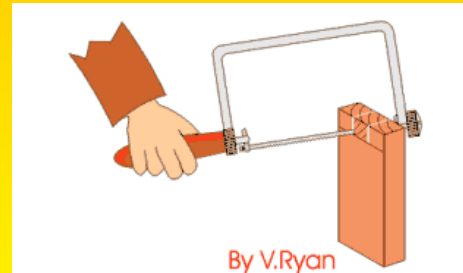
7. The first side is placed above the second side of the joint and the joint is marked out. Again a pencil is used although the traditional tool would be a marking knife.



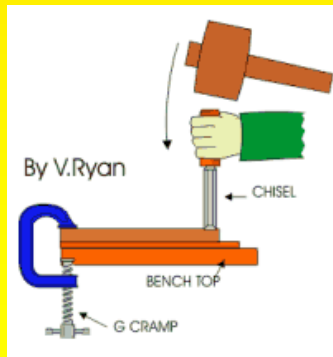
8. Marking out the joint when both pieces are together can be difficult but a steel rule or a tri square can be used to straighten any lines. Again, the waste wood must be clearly identified.



9. The tenon saw is used to cut down the lines marking the middle section of the joint. The wood must be secured in the vice in the same way as before. Remember, the saw is used to cut straight down the joint, on the waste side of the pencil line.

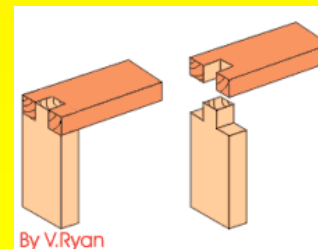


10. A coping saw is used to remove the waste wood. Again the wood is secured in the vice.

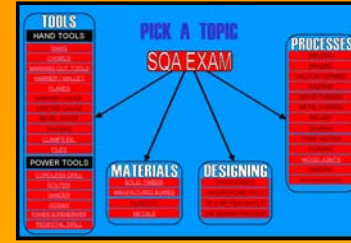


11. If the joint is slightly inaccurate a [firmer or bevel edged chisel](#) can be used to correct it. A G clamp is used to hold the wood firmly. Scrap wood is placed underneath to protect the surface of the bench from the chisel. The second side of the joint should now be complete.

12. The joint should fit together accurately. If the stages outlined above have been carried out carefully.



[click here](#)

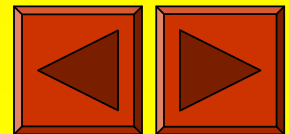


[for main menu](#)

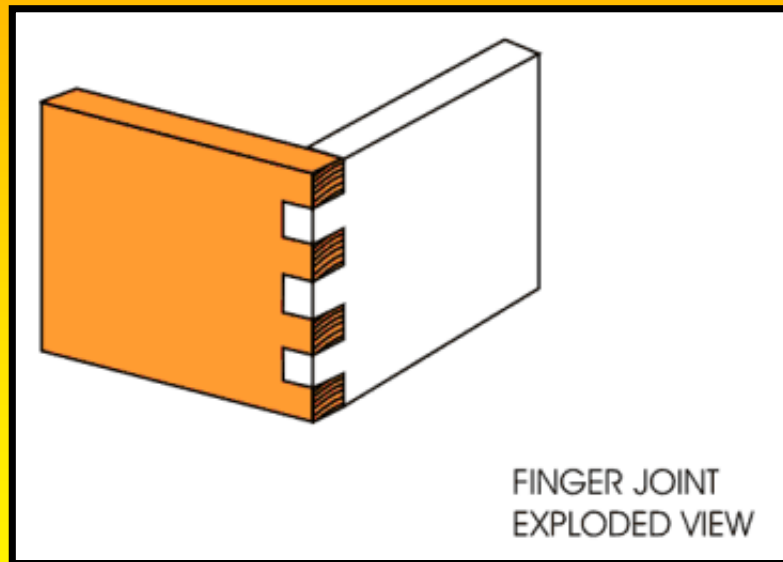
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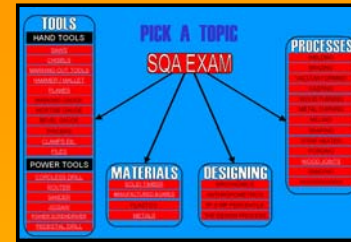
[more wood joints](#)



FINGER JOINT finished



[click here](#)

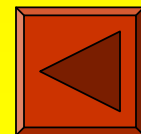


[for main menu](#)

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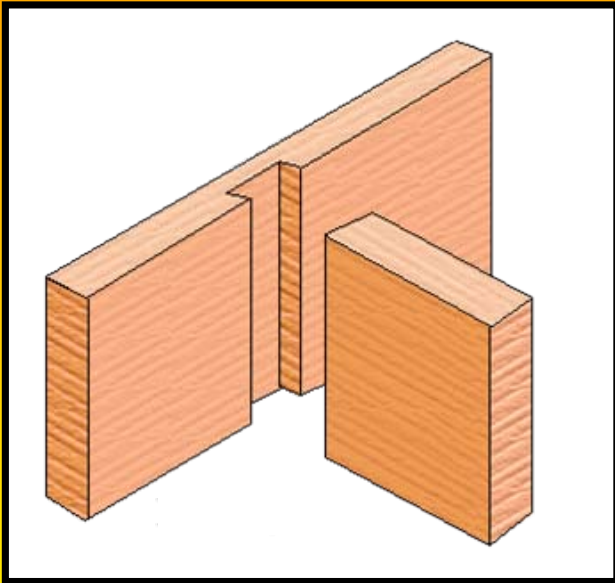


[more wood joints](#)



HOUSING JOINT

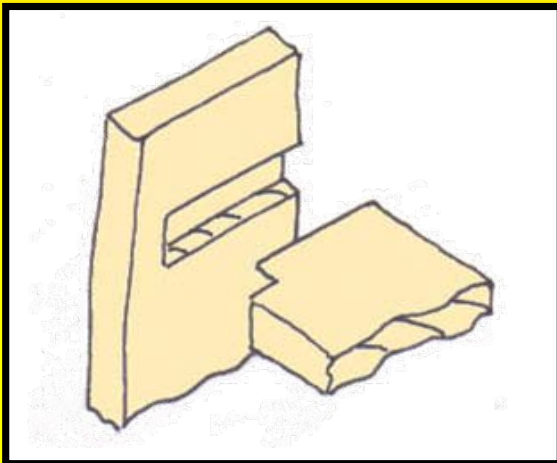
HOUSING JOINT



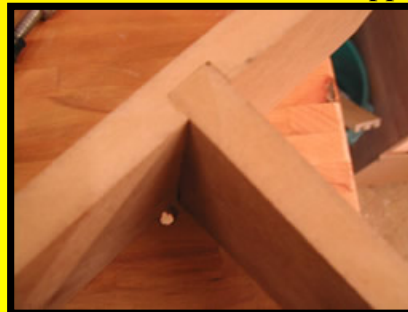
Housing Joints are most commonly used when a shelf is being fitted within a model. A groove is cut out of the side pieces at a certain height, wide enough for the shelf material to fit into. The shelf can then be glued and/or nailed in place.

A neater finish can be achieved by using a Stopped Housing Joint, as shown. You could imagine that this joint would be slightly trickier to cut out neatly although the joint will look better from the front of the model.

STOPPED HOUSING JOINT

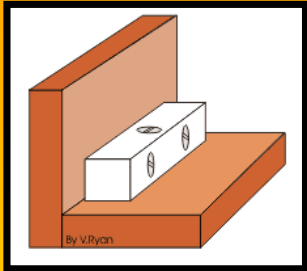


Notice how the photo on the left of the Housing Joint shows the cut out in the end piece but the photo on the right shows a neater finish because a Stopped Housing was used.



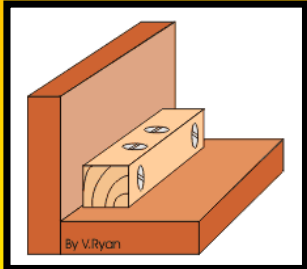
KNOCK DOWN FITTINGS

Knock-down fittings are those that can be put together easily, normally using only a screw driver, a drill, a mallet/hammer and other basic tools. They are temporary joints although many are used to permanently join together items such as cabinets and other pieces of furniture that are purchased in a flat pack.



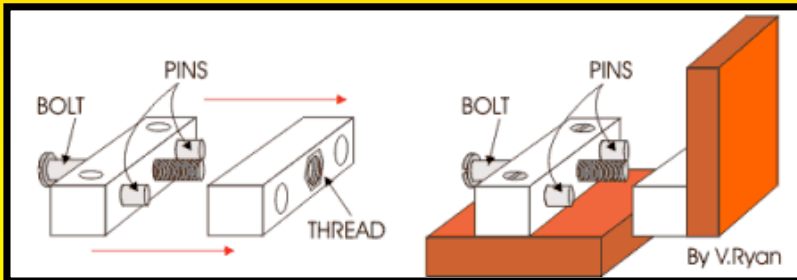
PLASTIC CORNER BLOCK (FIXIT BLOCKS)

The corner block is pressed against the two pieces of material (normally wood based). Screws are used to fix the block into position. This type of joint is used to fit modern cabinets such as those found in a kitchen. It is a relatively strong joint although it has the advantage that it can be dismantled using a screwdriver.



NATURAL WOOD FITTING (SQUARE SECTION BATTEN)

A piece of material such as pine can be drilled and screws can be passed through these holes. This gives a cheap and effective knock-down joint. The screws are normally countersunk into the knock-down fitting.



TWO BLOCK FITTING (LOK-JOINTS)

These are made from plastic. A bolt passes through the first fitting into the thread of the second. As the bolt is tightened it draws the two fittings together. The pins help keep the fitting straight. This gives a very strong joint and it can be dismantled using a screwdriver.



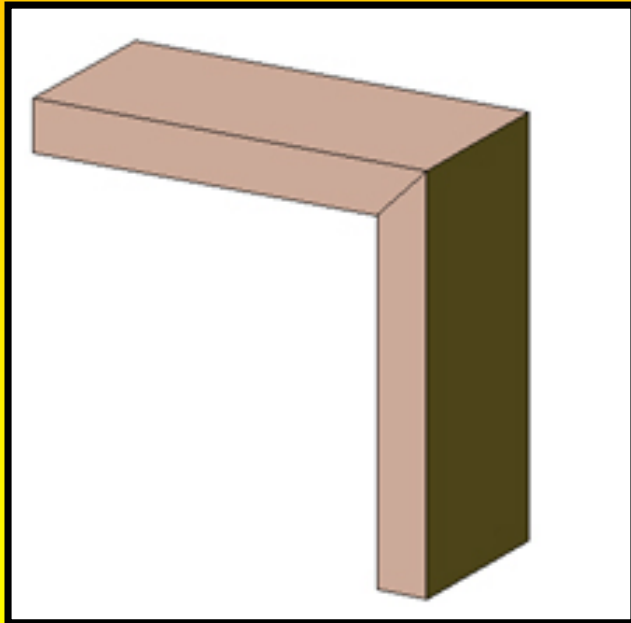
RIGID JOINT

These are normally moulded in plastic which makes them strong. Screws pass through the four holes which hold the sides at each corner firmly together.

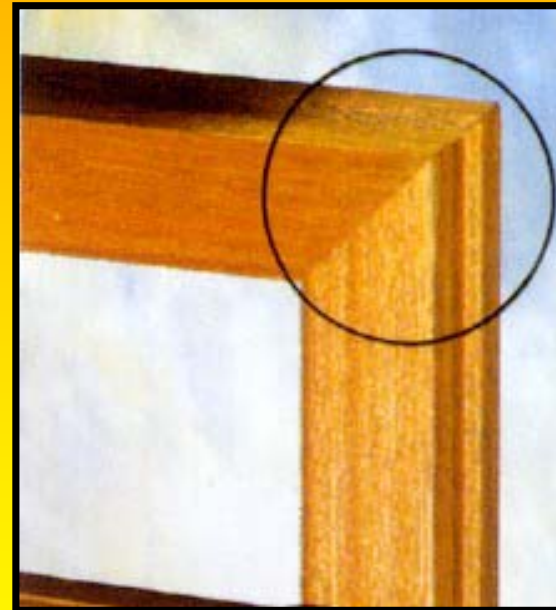
MITRE JOINTS

A Mitre Joint is used where two pieces of wood need to be positioned next to each other at exactly 90°. A 45° cut is made on either end and when they are placed against each other, a 90° corner is achieved.

MITRE JOINT

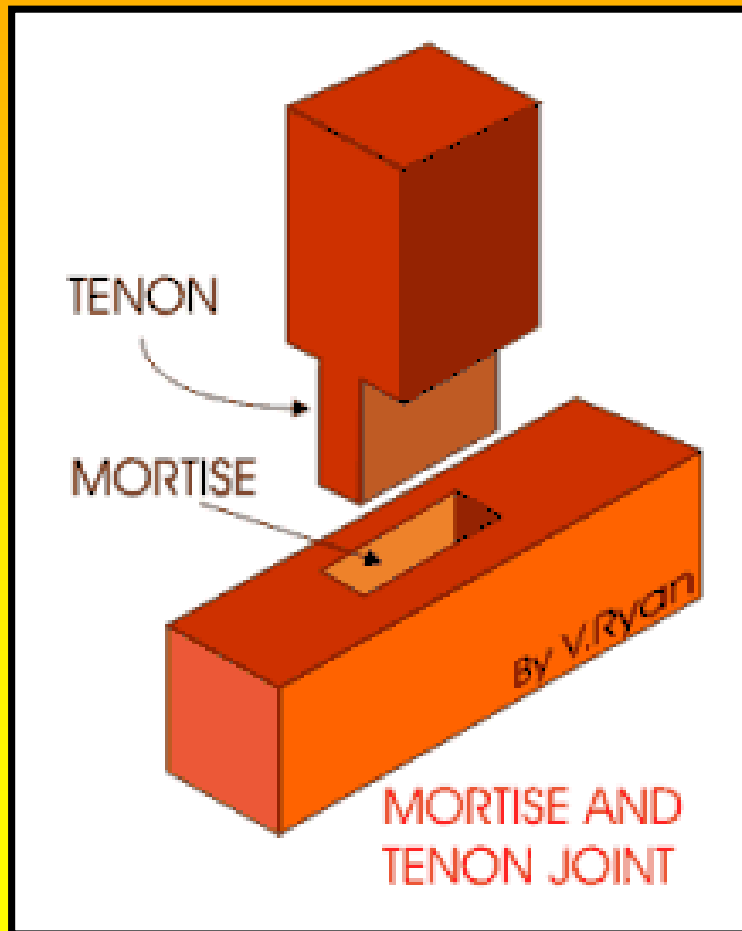


Using this joint would create an 'L' shape with two pieces of wood.



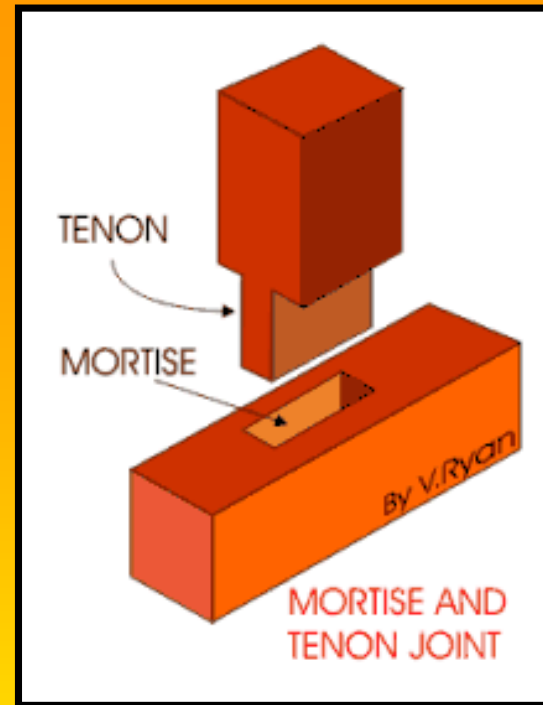
The most common use for Mitre Joints is in the construction of wooden picture frames. They are often made up of four pieces of wood with Mitres cut on both ends of each.

MORTISE AND TENON JOINT

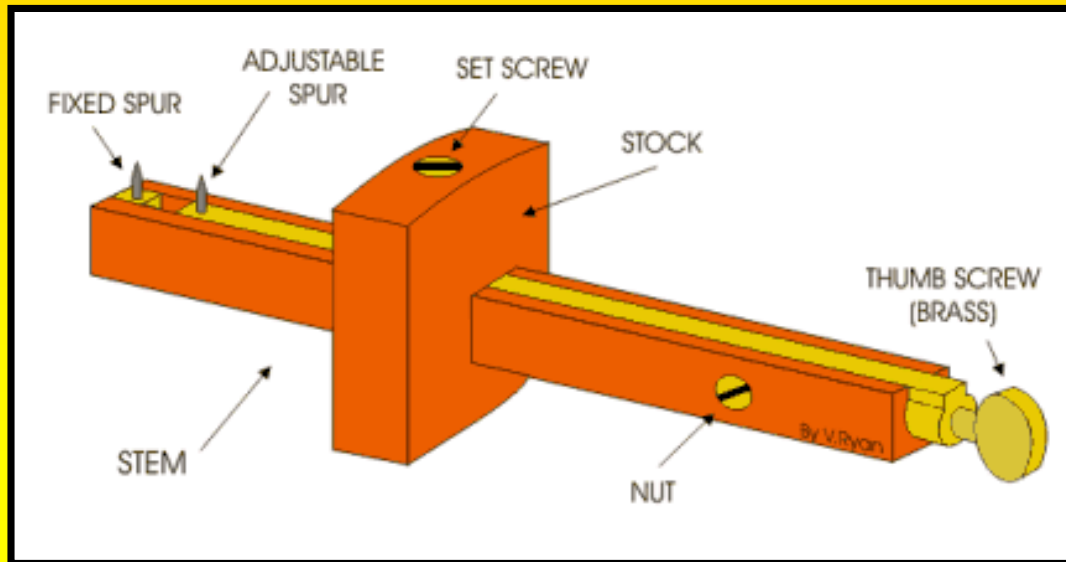


MORTISE & TENON JOINT

An animation of a Mortise and Tenon joint is shown opposite. This type of joint has a wide range of uses and is particularly useful when manufacturing furniture. The marking out and cutting of Mortise and Tenon joints are described in this presentation.



INTRODUCING THE MORTISE GAUGE

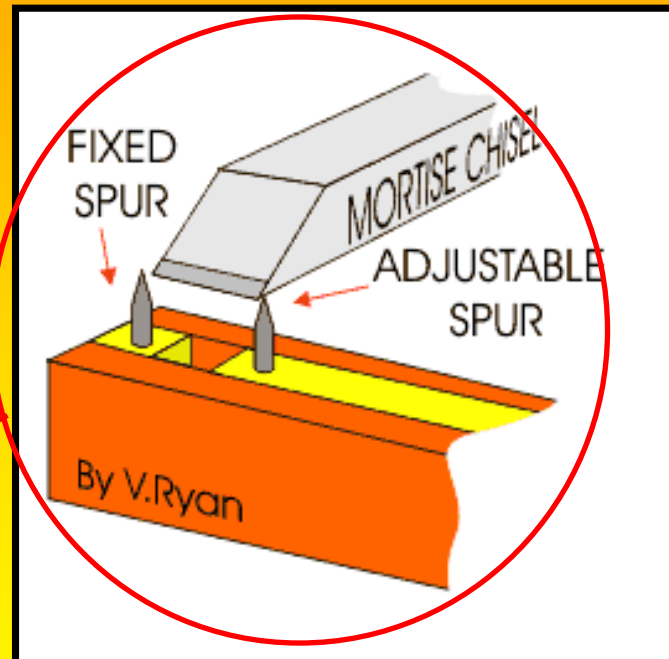
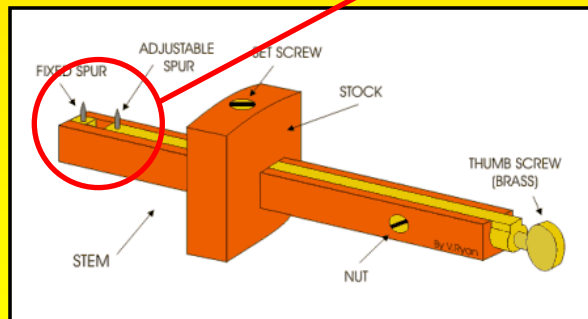


The mortise gauge is a special type of marking gauge. It is used to mark wood so that a mortise can be cut into it. It is crucial that it is set to the correct size of mortise chisel. The mortise chisel is then used to remove the waste wood.

The mortise gauge is normally made from a hardwood such as Rosewood with Brass being used for the parts that slide along the stem.

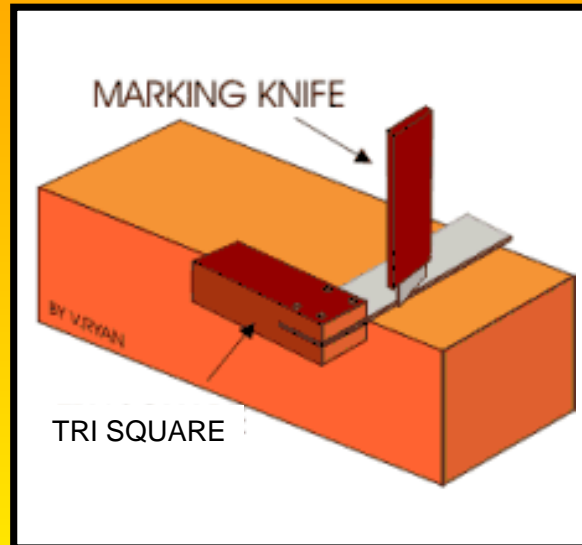
SETTING THE MORTISE GAUGE

1. The distance between the fixed spur and the adjustable spur is set so that it matches the width of the [mortise chisel](#). The width of the mortise chisel should match the width of the mortise to be cut in the wood.



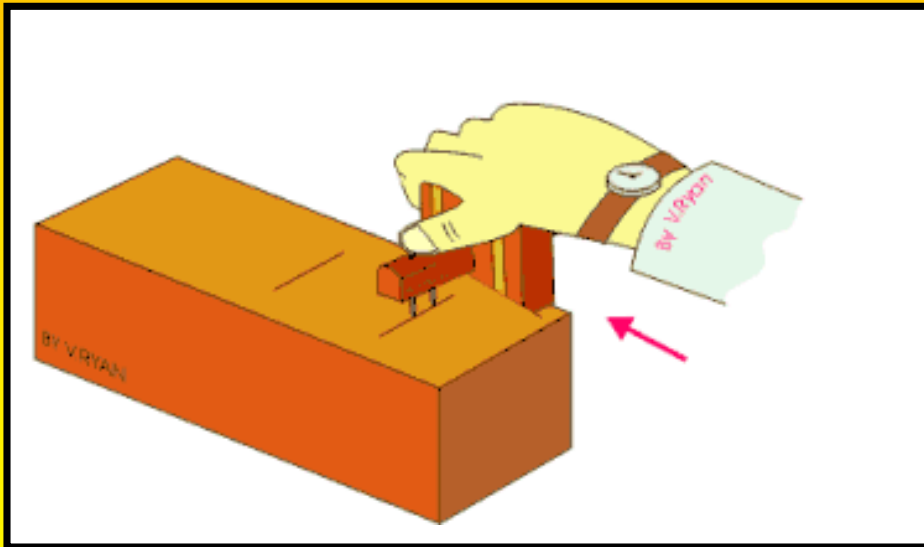
MARKING OUT THE MORTISE

2. A TRI SQUARE and a marking knife are used to mark the lines at the ends of the mortise.



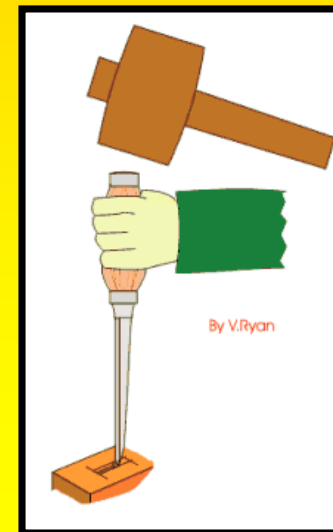
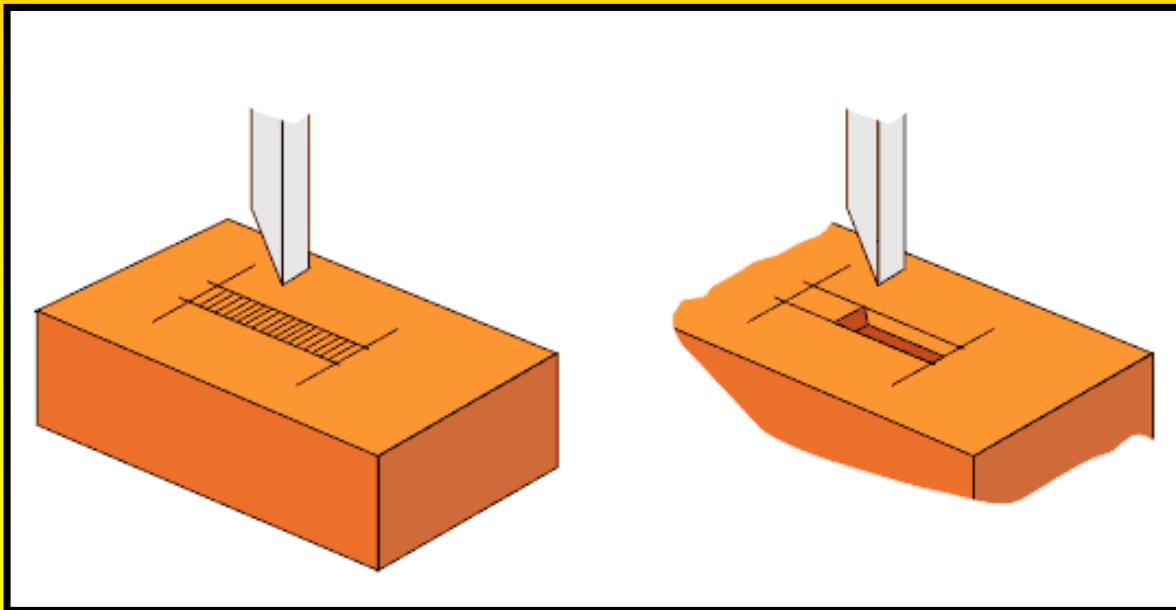
MARKING OUT THE MORTISE – cont.

3. The stock of the mortise gauge is pressed against the side of the wood. It is then pushed along the wood until the mortise is marked out correctly.



CUTTING OUT THE MORTISE – cont.

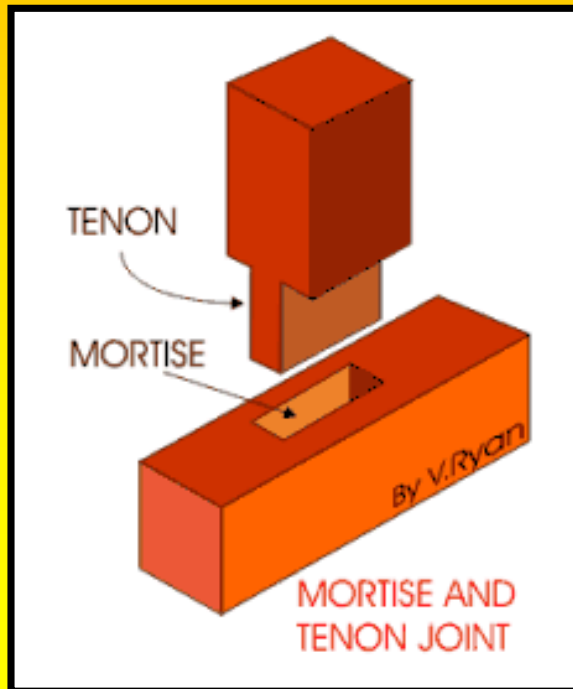
4. The Mortise Chisel is then used to break the surface of the waste wood by gently tapping the handle with a Mallet.
5. The waste wood is then slowly removed, this time, by applying more force to the handle of the Chisel with the Mallet. The waste is removed until the entire Mortise hole has been cut to the correct depth.



MARKING OUT THE TENON

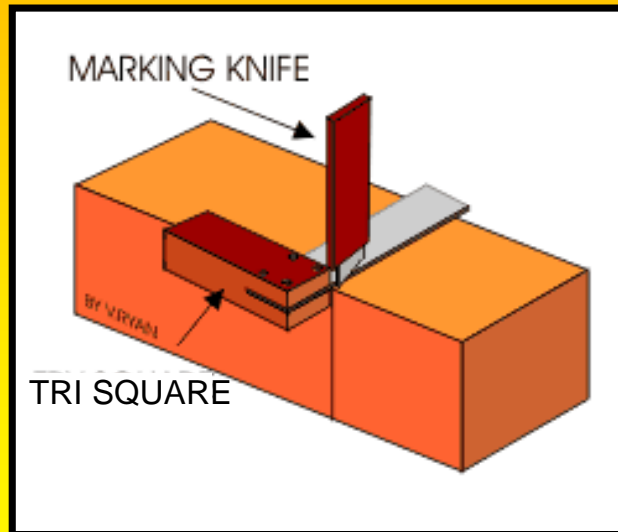
The Tenon part of a Mortise and Tenon joint is marked out and cut with the same tools as are used for the Mortise part of the joint.

Here is how it is done ...



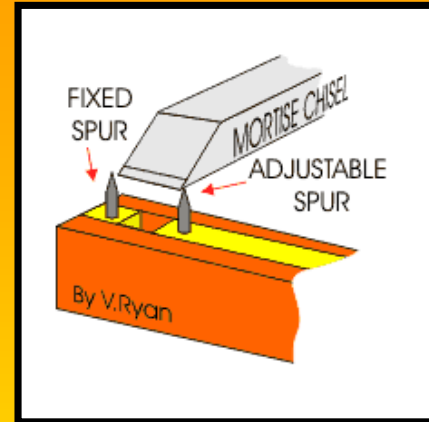
MARKING OUT THE TENON cont.

The width of the Tenon is marked all the way round the wood. Normally a marking knife is used to produce a precise line, with the aid of a TRI SQUARE. A pencil can then be used make the line stand out.

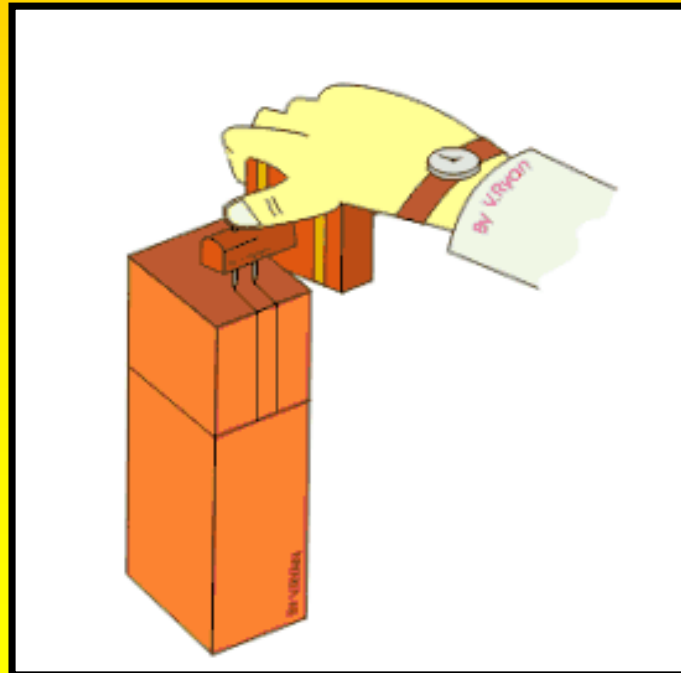


SETTING THE MORTISE GAUGE - again

The MORTISE GAUGE is now used to mark out the width of the tenon. It should be the same width as the mortise which has just been cut into the wood. The fixed spur and the adjustable spur of the gauge are set to the width of the mortise chisel.

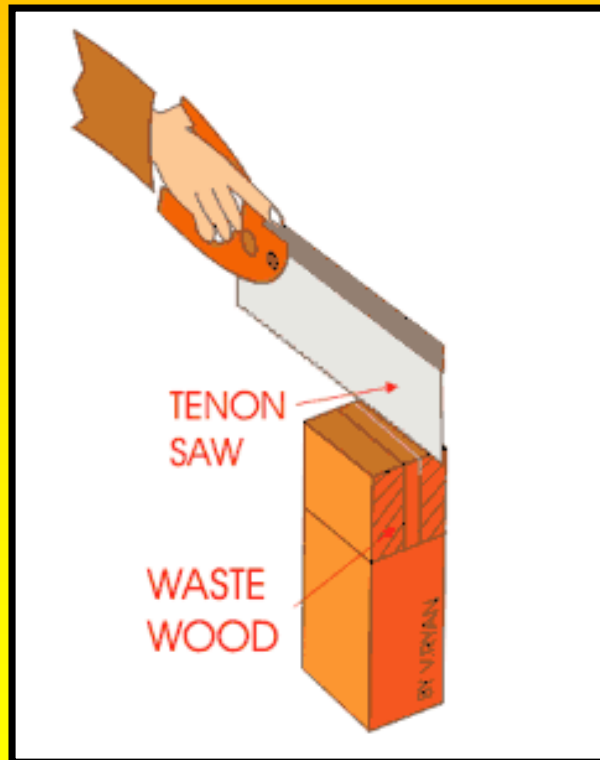


The MORTISE GAUGE is used to mark the size of the Tenon. The stock of the marking gauge must be held firmly against the side of the wood as it will have a tendency to follow the grain of the wood rather than a straight line.



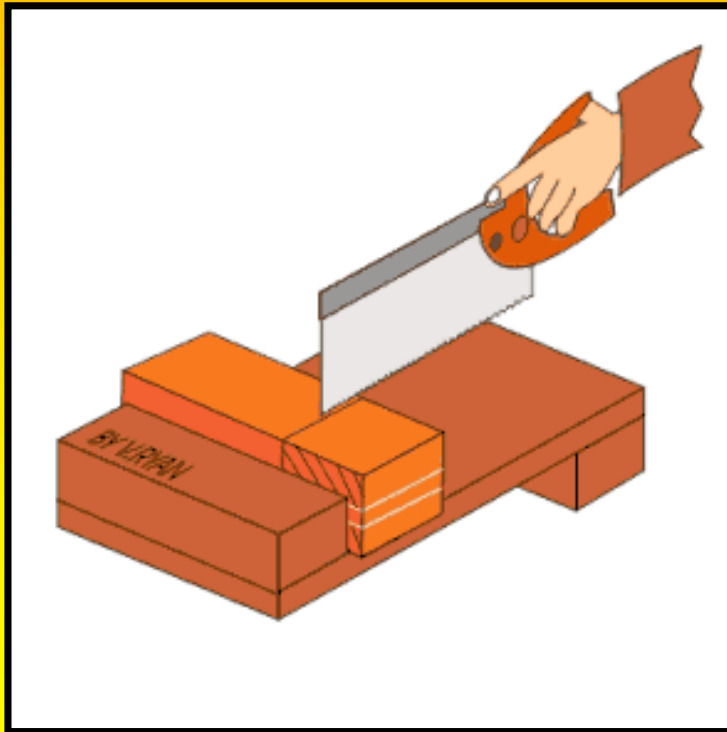
CUTTING THE TENON

A TENON SAW is used to saw down the gauged lines of the Tenon. The wood is normally held firmly in a woodworkers VICE. When sawing, take time to check that the saw is cutting straight down and that it is on the waste wood side of the Tenon.



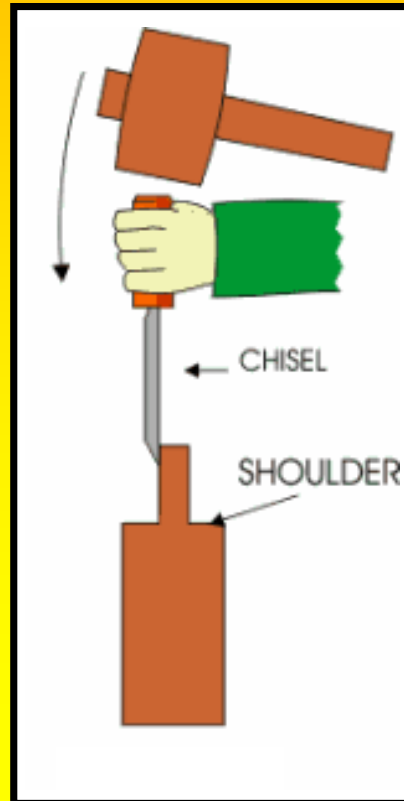
CUTTING THE TENON – cont.

The wood is then supported by a Bench Hook and a TENON SAW is used to finally remove the waste wood. This leaves the shoulder of the joint.



CUTTING THE TENON – cont.

A FIRMER CHISEL or BEVEL EDGED CHISEL can be used to remove rough edges and to straighten the Tenon. The wood must always be held in a woodworking VICE as a chisel may slip if the wood moves. If the marking out and cutting have been carried out accurately the Mortise and Tenon should fit together forming a firm joint.



MORTISE & TENON JOINT

finished

