

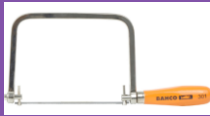
Practical skills

Practical

Hand tools



Tenon saw
This tool is used to cut straight line cuts through piece of timber and manufactured boards.



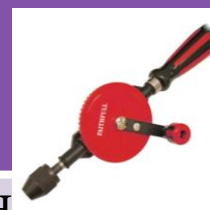
Coping saw
This tool is used to cut curves or holes in piece of timber or manufactured boards.



Hack saw
This tool is used to cut metal or plastic materials to size.



Turret drill
This tool is used to drill holes in a variety of materials. Its height is and speed is adjustable and the drill accuracy is very good.

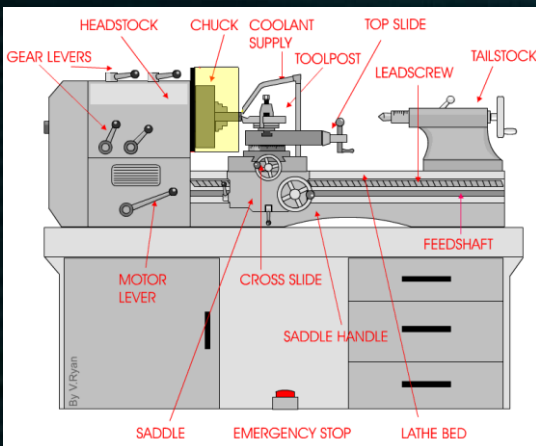


Hand drill
This tool is used to drill holes in timber by hand. One hand holds the top of the drill and the other turns the handle to spin the drill and cut through material.



Electric drill
This tool is used to drill holes in a variety of materials. The battery on the drill makes it portable but more powerful than a hand drill.

Centre Lathe



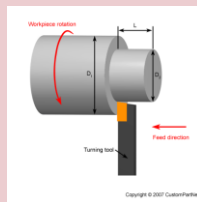
Facing off

This process involves the cutter moving across the end of the material at 90 degrees making it flat.



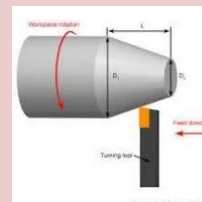
Cylindrical turning

This process involves cutting down the length of the material reducing the diameter of the material.



Taper turning

This process involves cutting the material down the length but at an angle.



Parting

This process involves cutting through the material to separate it from the rest.



Drilling and boring

This process involves drilling a hole in the end of the faced off material or cutting from the hole outwards to make a larger hole.



Laser cutting



Laser cutting involves a beam of light that vaporises through a piece of material to cut a shape to the desired shape.

Advantage

- Faster at cutting
- Accurate cutting
- Automatic – leave it to cut
- Can cut a variety of materials, paper, card, fabrics, plastics, timbers and metals.

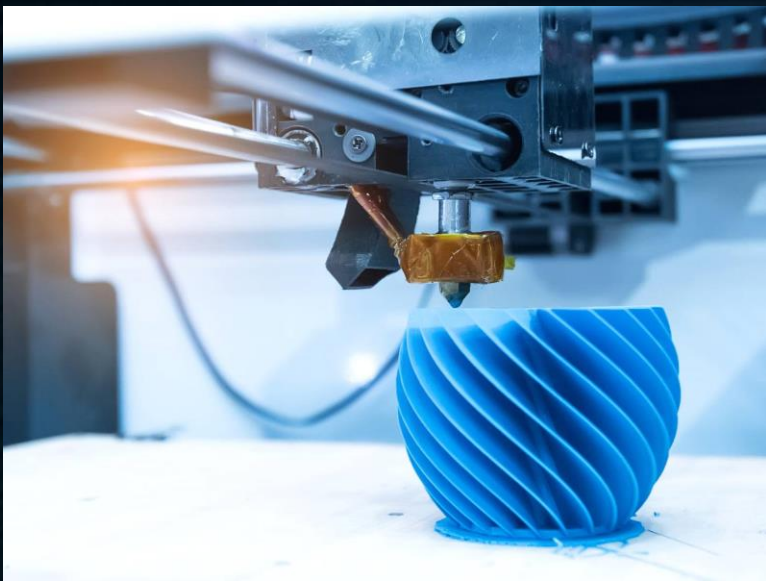
Disadvantage

- Cost of equipment
- Training needed
- Maintenance
- Does leave a burnt edge
- Need to have a 2D drawing

Practical skills

Practical

3D printing OR Fused deposition modelling



This process involves modelling an object in 3D on the computer.

The sending this file as a STL file, the 3D printer software will then split the model into thin layers.

The 3D printer will then deposit each layer onto the 3D printer bed and begin to build the 3D model layer by layer.

The advantage of this is that you can get very complex models made by machine that would be difficult by hand. Also you don't get any waste as the 3D printer is adding material layer by layer. Another advantage is that you don't need to pay a craftsman as the machine will make it for you.

Fixings



Nuts and bolts are a good fixing because they can be undone allowing pieces to be separated when needed. Also they are good because you can get them in many different sizes, thickness and types depending on what they are needed for.

Screws are another good fixing which can hold two pieces of timber together well and can be undone but only a limited number of times before the thread on the screw wears away the material. As with Bolts you can get them in many different sizes and thicknesses as well as in different shaped heads.

Simple Rivets are a way of joining two piece of metal, plastic or leather together permanently. You need access to both sides where the rivet needs to be cut to length and then the smaller end hammered into a dome shape using a plug.

Pop rivets are another way of joining two piece of material permanently together. With these you only need access to one side where you use a rivet gun to pull the pin out compressing the other end together clamping the two pieces of material together.

Finishes

Painting	Dip coating	Electroplating	Galvanising	polishing
This method involves using a brush or a spray can to add a coloured pigment onto the material. This has the advantage of adding aesthetic appeal and protection to the material.	This method is only used on ferrous metal where the ferrous metal is heated and then dipped in plastic granulate which melt to the surface protecting the metal from oxidisation.	This method involves coating a base metal with a thin layer of another method by using an electronic current to attract particles from one metal (the anode) to the other (the Cathode).	This method involves coating a steel with Zinc to make is corrosion resistant so the steel can be used externally (outside).	This method involves getting a piece of metal or plastic and placing up against a polishing pad that rotates round until the material has a nice shine like a mirror.

