

MECHANICAL FIXINGS FOR WOOD

Nails, pins and screws, used without glue, provide a semi-permanent method of jointing.

Nails and Pins

Panel Pin

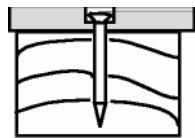


A pin is a small nail, made from rigid mild steel wire. Pins are normally used with adhesive, to hold the joint together while the adhesive is setting.

Pin Punch



A pin punch is used with a hammer to drive the head of the pin below the wood surface. The hole above the pin head can then be filled with a wood filler so that the pin cannot be seen.

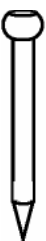


Round Wire Nail

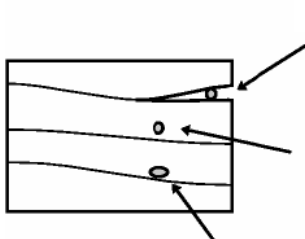
Made from galvanised mild steel the wire nail is used for exterior heavy construction. The nail head cannot be hidden. Nails are normally used without any adhesive and rely upon friction between the nail shaft and the surrounding wood to hold them in.



Oval Brad



The shaft is oval in shape so that when correctly used it is less likely to split the wood. The oval brad can be hidden by using the same method as hiding a pin.



Split caused by placing the nail too close to the end of the wood.

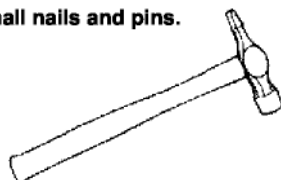
Nail placed at least nine times its diameter from the end of the wood to avoid splitting.

Oval Brad placed with the oval length in line with the grain of the wood to avoid splitting.



Claw Hammer
For general work and removing headed nails

Cross Peen Hammer
For small nails and pins.



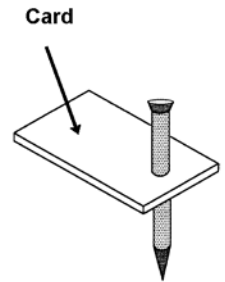
Dovetail Pinning



Pins and nails driven in at an angle are less likely to pull out in use. This is known as Dovetail pinning.

Safety hint

Small pins are difficult to hold without the danger of hitting your fingers with the hammer. Push the pin through a piece of card and hold the card well away from the pin. Once the pin is held in the wood the card can be torn away.



Screws

Countersunk Head Screw



Made from mild steel or brass. Used when the head needs to be flush with the surface of the wood. The screw can be slot-head for flat blade screwdrivers or crosshead for pozidrive screwdrivers.



Slot-head



Cross-head

Roundhead Screw

Commonly in brass or mild steel covered in black lacquer or chromium plate. Used for extra strength and when the head can stick out from the surface of the wood.



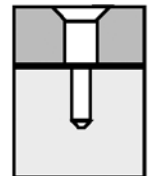
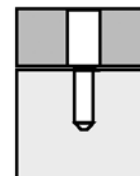
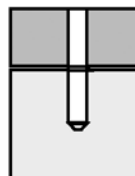
Chipboard Screw



Especially designed, with two spirals, for use on chipboard so that it does not pull out easily. It is now very popular for general use because it requires only half the number of turns of the screwdriver to tighten it.

Preparation for using a screw

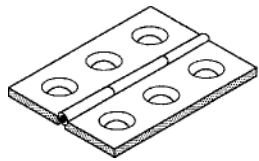
- A) Drill a pilot hole of smaller diameter than the thread
- B) drill a clearance hole of larger diameter than the thread in the joining wood only
- C) If required of larger diameter than the clearance hole.



Hinges

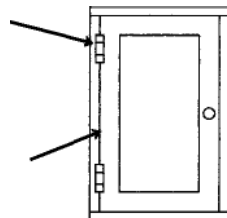
Hinges come in a large range of styles, sizes and materials.

Butt Hinge



The basic hinge, commonly made from mild steel, brass or nylon. Used for hinging doors and lids etc.

Butt hinges are positioned so only the spine of the hinge can be seen.

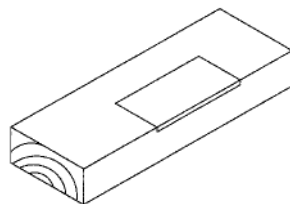
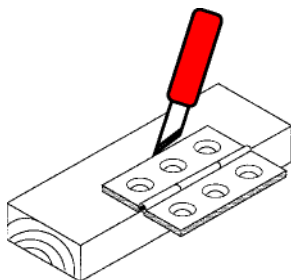


To avoid a gap between the door and the side, the hinge is 'let' into the wood on both sides.

Letting in a hinge

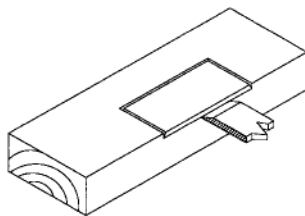
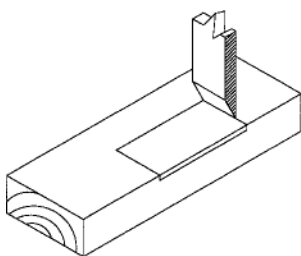
1. Place the hinge in position on the wood and mark around the edge.

2. Use a marking gauge to scratch a line showing the thickness of the hinge flap.

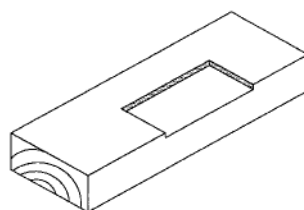


3. Using a firmer chisel and mallet chop around the outline to the depth of the flap

4. Chop out the waste and pare the bottom level.

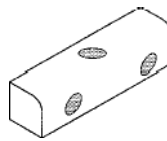


5. The hinge flap should now be flush with the surface when placed in the recess and screwed down.



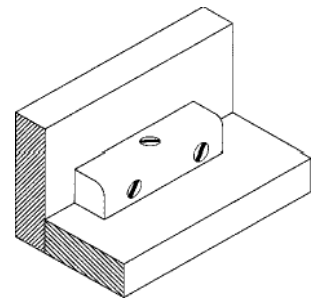
Knock Down Joints (KD Joints)

KD joints are non-permanent and are used for flat-pack furniture that is designed to be put together by the purchaser.



Plastic Modesty Block

The block is used without glue.

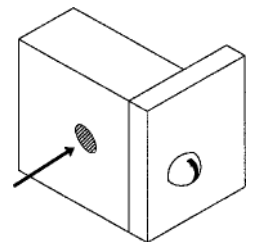


Brass or plastic dowel



Bolt & Cross Dowel

Cross dowel placed in drilled hole



KEY WORDS Oval Brad: Countersunk: Butt hinge

1. What holds a pin or nail in place?
2. What is a nail made from?
3. Describe how the heads of pins can be 'hidden'.
4. How can you prevent nailed wood from splitting?
5. Sketch a claw hammer. What are the two jobs it is designed for?
6. Show how you can hammer in small pins safely?
7. What is the difference between a chipboard screw and a conventional wood screw?
8. Illustrate the stages of preparing a screwed joint.
9. Show how you can prevent a hinged box lid from having a gap between itself and the box when it is shut.
10. What does the term KD joint stand for?
 - A KD joints are often used in flat-pack furniture. Design an information sheet to show how: i) A modesty block is used. ii) A bolt & cross dowel is used.
 - B Hunt down and sketch at least **four** different types of hinge.