

# MITREPLAN PROJECT PLANNER

Create professional timber joins



- An easy-to-follow guide to achieving a perfect result.
- Outlines all the tools you will need for the job.
- Includes a materials checklist.

**PLEASE NOTE:**

Before starting this project or buying any materials, it is worth your time to read all steps thoroughly first to be sure you understand what is required.

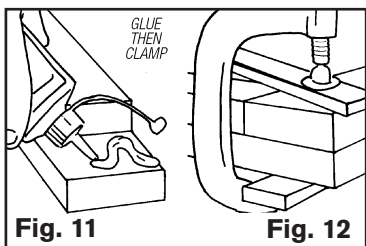
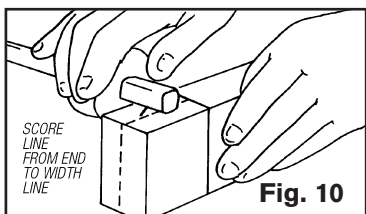
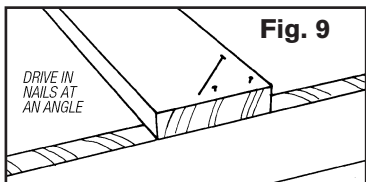
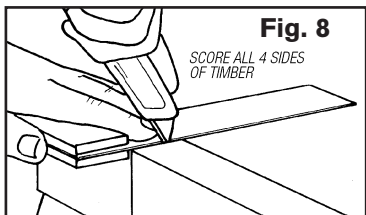
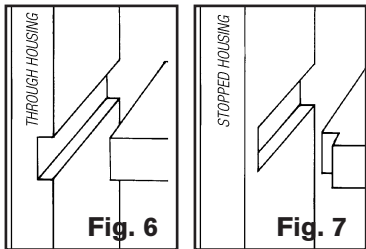
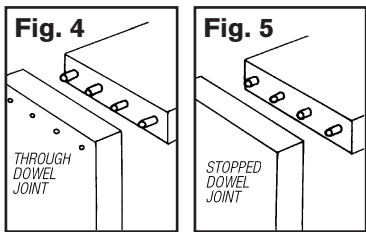
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**MIGHTY HELPFUL™ MITRE 10**





## End Halving

Cut the ends of the two pieces of timber to be joined perfectly square. Then place one on top of the other and mark the width of the top piece on the bottom one using a carpenter's square and utility knife. Draw the width line right around all three visible faces. Repeat with the bottom piece.

Now set your marking gauge to half the thickness of the timber, and score a line from the end down to the width mark on each piece (Fig. 10). Score an identical line on the other side of the timber and the end. Shade waste areas with a pencil – the top of one piece, the bottom of the other.

Place the pieces upright in a bench vice and, using a tenon saw, cut down as far as the width line. Take it out of the vice and cut along the width line to remove the waste. Always cut on the waste side of the lines. Apply adhesive and nail or screw as required and clamp together (Fig. 11, 12).

## Cross Halving

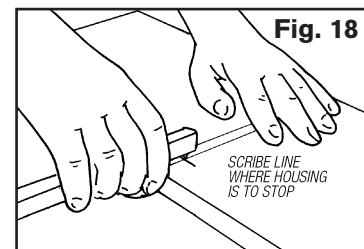
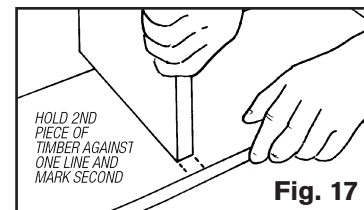
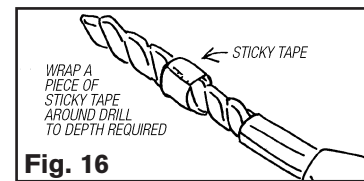
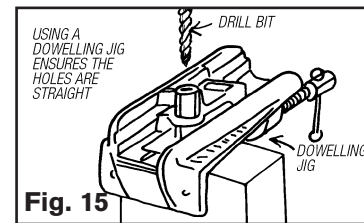
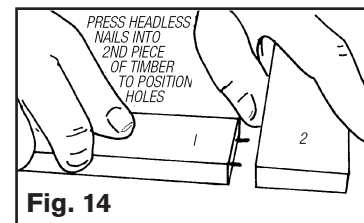
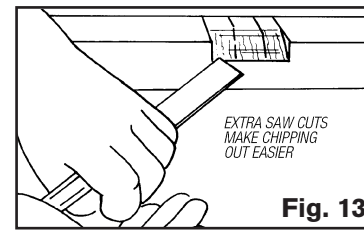
Cross Halving joints are made much the same way as end halving joints, except here you need a chisel to remove waste. First, mark width lines on both pieces of timber where they are to join, and mark the depth of the cut with a marking gauge on both sides of the timber. Then saw down the lines with a tenon saw. Make extra saw cuts in between – about the same width as the chisel blade to make chipping out easier (Fig. 13). Hold the timber in a vice to remove the waste. You'll achieve the best results by removing waste from one side to nearly halfway across the timber, and then chiselling the rest out from the other side. This will prevent the accidental tear out of timber on the other side. When you've chiselled out both pieces, fit them together but don't force them. If they don't quite fit, chisel off a bit more until they do.

## Dowel Joints

This is one of the most common joints for making furniture, with no intricate cutting or other reinforcement needed. Dowels need a shallow groove cut in their sides to allow excess glue to squeeze out as the joints are fitted. You can buy smooth or grooved dowels. If you get smooth ones, cut a groove in them with a tenon saw. The ends should also be slightly tapered to avoid splitting the timber as you force them home into the holes.

## Marking hole positions

First, ensure the ends to be joined are square. Then use a marking gauge to scribe a line down the exact middle of the ends. On one piece, decide where on this middle line the centre of the holes will be. Use a carpenter's square and pencil to draw lines across the middle gauge line to mark the centre of the holes. Then accurately mark matching hole positions in the second piece of timber. Simply hammer two small nails about halfway into the first piece at the points marking the hole centres and snip off their heads with pliers. Lay the two pieces of timber in the position they are to be joined and press them together to mark where the holes are to go in the second piece (Fig. 14). Then pull out the nails with pliers before drilling. Alternatively mark the location carefully with a sharp pencil and use a dowelling jig.



## Drilling the holes

Now make holes exactly over the nail marks using a drill or a dowelling jig (Fig. 15). The jig helps to ensure that the holes you drill are straight and square in each piece of timber and give a snug, accurate joint. Choose a drill bit that's the same diameter as the dowels. Drill holes so the dowels will penetrate each piece of timber by between one-half and two-thirds of the timber's thickness. To make sure you don't drill too deep, wrap a bit of sticky tape around the drill to the depth required, allowing a little extra at both ends for glue (Fig. 16).

## Fixing the dowels

Glue the dowels and the surfaces to be joined and gently tap the pieces together with a mallet. Wipe off excess glue and clamp the joint overnight to ensure a firm fit.

## Housing Joints

These joints are made using much the same techniques as for halving joints. They are usually cut to a depth of about one-quarter of the thickness of the timber you are using. If you have an electric router, you can make these housing joints quickly and accurately without sawing and chiselling. Or you can use a circular power saw with the blade set to the correct depth and make several overlapping cuts across the timber to remove the waste. But, by hand or power, take care in your marking out, and always cut carefully on the waste side of the lines.

## Through Housing

Using your sharp knife and carpenter's square, mark a line across the inner face of the upright where the housing is to be cut. Hold the cross piece of timber against this line and mark a second line against it to give the exact width of the housing (Fig. 17). Set your marking gauge to the depth of the housing and mark the depth line from the inner face side on both edges. Use a tenon saw to carefully cut to the right depth on both sides of the housing. Remove the centre waste with a chisel working from both ends. Finish with a rebate plane or a sharp chisel, checking often with a straight-edge for depth and evenness.

## Stopped Housing

Follow the same procedure as for a Through Housing Joint and square the positional and cross member thickness lines on the upright piece. Then, using a marking gauge, scribe a line where the housing is to stop – about 19 – 25mm in from the front edge (Fig. 18). Set the gauge to about one-quarter the thickness of the upright, and mark the housing depth on the upright's back edge only. Then, chisel out a 25mm or so recess at the stopped end of the housing. Place the toe of the tenon saw in the recess and cut the sides of the housing using short strokes to avoid banging against the stopped end. Remove the bulk of the waste with a chisel and mallet and finish off with a rebate plane or a sharp chisel for a smooth and even result.

## Fixing it together

Housing Joints are usually glued and nailed together. But before you apply the glue, check first that the cross members fit. If you think that the joints are too tight, you may have to shave away a little from the housing or the cross member. If it's a bit loose, and you think it necessary, you can make it more solid with countersunk screws, filling the holes with matching wood filler.



## MIGHTY HELPFUL HINTS TO MAKE THE JOB EASIER

■ Use a sharp utility knife for marking out – it gives a thinner, more accurate line than even the sharpest pencil and cuts the surface of the timber to help the saw leave a clean, sharp edge.

■ Smooth cut ends on small pieces without rounding off the corners by rubbing in a circular motion with sandpaper fastened flat to the workbench. On larger pieces, use a sanding block and rub across the cut end.

■ If cutting your own dowels, rub the cut ends with medium grade sandpaper to give a gentle taper – it will help the dowel go in more easily and prevent the timber from splitting.

■ When gluing dowel joints, apply adhesive to the meeting faces of the timber as well as squirting it into the holes.

■ Avoid mixing up the pairs of joints by giving the two parts to be joined a letter and number as soon as you cut them, e.g. A1, A2, and so on.

■ When hand sawing the end of a halving joint, angle the tenon saw and cut down to your mark, then move it to a horizontal position to finish it off – you'll achieve a much straighter cut this way.

■ When cutting housings, a third saw-cut down the centre will help with chiselling out the waste.

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