

NEW
SERIES:
HAND VS
MACHINE

1: The Mortise and Tenon Joint

MACHINE MORTISE AND TENON JOINT USING THE TREND MORTISE AND TENON JIG

Cutting mortise and tenon joints by hand can be tedious. Invariably there are lots of them, usually all the same size and shape. Even on a small project such as a simple table there can be eight mortise and tenon joints to be cut and fitted.

Using a router for the sake of it is a nonsense. There are times when it is easier to get the hand tools out and do it by hand. However when repetitive operations are required the use of a machine comes into its own. When two parts need to fit each other, then the addition of a common reference from which each part can be made makes even more sense. The 'common reference' is a jig. In this case the jig in the spotlight is the Trend mortise and tenon jig.

The Trend jig is ideal for illustrating this kind of joint. The tenon and or the mortise can be cut on the centreline or to one side or the other in order to create an offset as

would be the case when joining the rail of a table to the leg, for example.

As with all of these types of jig the mortise and tenon created will produce a rounded end to the mortise. This is fine if the mortise is blind. It took me a while to accept a round end to the tenon but if it is a blind joint it cannot be seen anyway. If you want to make a through joint, that shows a square end, then the tenon can be cut over-length avoiding the rounding. If the joint has 'cosmetic' shoulders, the rounded ends can be trimmed square to fit a square mortise. The mortise has to be cut undersize and then opened out by hand to form square ends.

It is at this point that you must ask yourself if there is an easier way. Maybe use a bench mortiser to cut the mortise and use the Trend jig to cut the tenons. This really illustrates what we are trying to show here. Use whatever method makes the most



1 The bushes supplied with the jig are imperial sizes



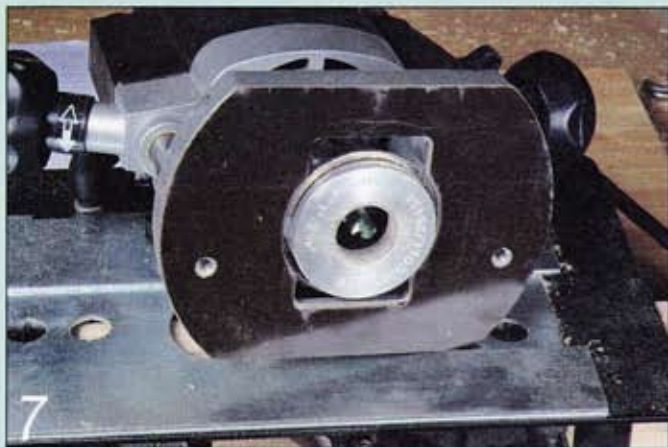
2 American and European guide bushes will fit most routers either directly or by using an adapter base



3 Marking the end of the timber to be tenoned



4 clamping the wood in the jig..



7 The mortise is cut using the larger guide bush



8 Several shallow cuts will soon have the mortise cut to depth



11 The perfect fit every time

sense. Just because you have just spent good money on a jig or a tool it does not mean that it will tackle every job in the workshop. The art of this is to use the correct tool (jig) for the job in hand.

Back to the Trend jig...

The jig is supplied with a selection of plastic guide bushes and a special metal bush and collar which is used for all the mortising. As this jig has its ancestry on the other side of the pond, all the bushes are imperial. Trend sell a full range of imperial guide bushes in both European and American styles. These bushes will fit either the standard Trend, DeWalt, and numerous clones of the old Elu 96 series router or the American standard 1 1/4 inch shouldered hole found on many American tools and lots of adapter bases, sold under many different names, but that all have common ancestry.

Cutting the joint

If you are reading this before you have purchased a Trend jig you can download a set of instructions from the Trend website.



5 ...and adjusting the top plate



6 Several shallow passes will produce a nice clean tenon time after time



9 A very light chamfer on the edges of the tenon will ease the assembly



10 Assembling the joint

Lets start with the tenon

Yes, we know, the rules say always cut the mortise first but with machine woodworking the rules don't always apply. Here's the broken record bit...

To quote from the Trend instructions, "It is essential that the timber is square all round". An oxymoron, but I think we know what they mean. The timber must be prepared so that the face is square to the edge otherwise the joint will not sit flat when it is put together.

Next, mark the centre, length and depth of the tenon. Mount the piece of wood in the jig following Trend's instructions. Always work with the face side of the wood in contact with the jig. Again following the instructions, align the top plate of the jig.

Install the guide bush and cutter into the router and, without powering up, lower the cutter onto the top of the wood and lock it in that position. Adjust the depth stop to the required depth of the tenon and you are ready to start mass-producing tenons.

Rout the tenon, working in a clockwise direction, in progressive steps of about

5mm ($\frac{1}{8}$ inch) at a time until the full depth is reached.

Now the mortise

The timber to be mortised is clamped up to the underside of the top plate. Additional timber off-cuts can be used to support it if necessary.

Set the depth of plunge as before. Remember to make the mortise very slightly deeper than the length of the tenon. This will ensure that the shoulders of the tenon will be in contact with the mortised piece and the tongue will not bottom out in the mortise itself.

Rout the mortise, working backwards and forwards in progressive steps of about 5mm ($\frac{1}{8}$ inch) at a time until the full depth is reached. And that's it. Job done.

This method is ideally suited to batch production. We would use this to rout the mortise and tenons on a table, for example.

Four legs and rails equal at least eight tenons. But by far the most time saving example we can think of was routing the slats and rails in the back of a garden

bench – the whole lot took under half an hour and that included setting up the jig!

Other than the straight joints the Trend jig will perform all sorts of bent tenons in either plane.

Like all of these jigs, the Trend MT/JIG tries to be all things to all people, there is even a section in the instruction book referring to dowelling using the jig to guide a router...

There are dedicated dowelling jigs out there for that use and we could never see us using this jig for that purpose. Having said that, when used for cutting lots of similar tenons then it wins hands down over using hand tools. Remember it pays dividends to consider the job before committing yourself to using a particular tool whether it be hand or power.

Right tool, right job!

FURTHER INFORMATION

- Trend Machinery
- 0800 487363
- www.trendmachinery.co.uk