

Queen Size Bed

Designed and constructed
 by Rene Kopelaar



This is a classical design of a queen size bed, complete with headboard and foot end, and would grace both traditional and modern bedrooms. With care you should be able to make a firm but comfortable bed that you will be proud to own. The construction is based on one of the cabinet maker's favourite joints — the mortice and tenon. The mortice and tenon made accurately is extremely strong and when glued doesn't require any other fastening hardware. The Triton workcentre enables this joint to be made quickly and accurately with the use of the accessory router table and in this case also the extension table.

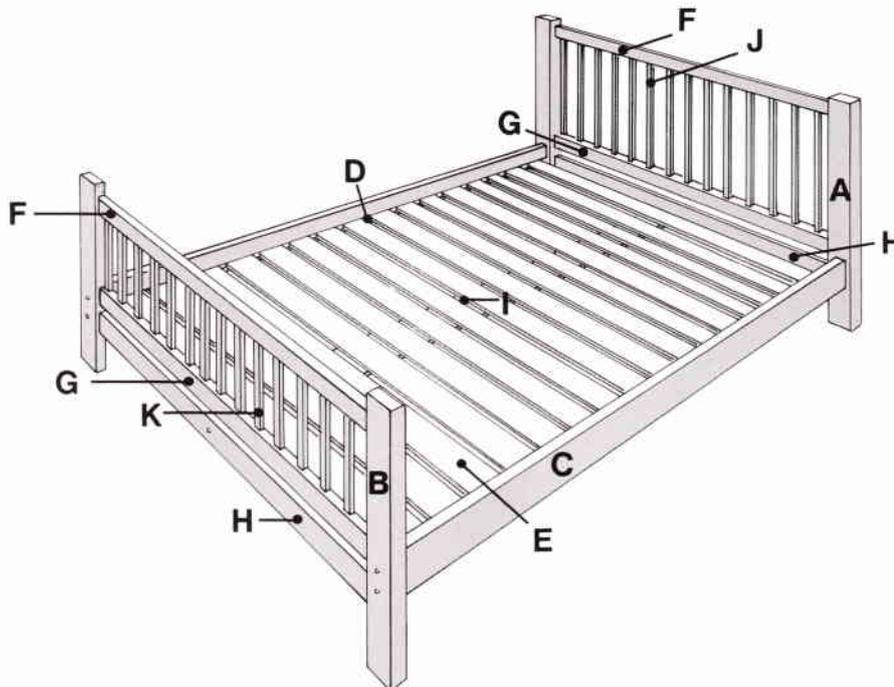
To enable the bed to be transported, knock-down fittings called "post-and-dowel" have been used. This makes it possible to easily disassemble the bed into three components — the headboard, foot end and base proper.

Component Specifications *All dimensions are in mm*

Part No.	Description	Quantity	Width	Thickness	Length	Part No.	Description	Quantity	Width	Thickness	Length
A	Head posts	2	92	× 45	× 920	G	Middle rails (head & foot)	2	67	× 32	× 1540
B	Foot posts	2	92	× 45	× 750	H	Bottom rails (head & foot)	2	92	× 32	× 1540
C	Side rails	2	143	× 32	× 2130	I	Middle support rail	1	67	× 32	× 2124
D	Battens	2	32	× 32	× 2060	J	Bars head end	14	19	× 19	× 490
E	Slats	16	92	× 14	× 1560*	K	Bars foot end	14	19	× 19	× 320
F	Top rails (head & foot)	2	42	× 32	1540						

Note: All dimensions are before tenons are cut.

* Cut to final size before final assembly.



Tool Requirements

1. ESSENTIAL Triton Workcentre and your power saw, preferably with a 60 tooth carbide-tipped blade.

Triton router table, fitted with ½" plunge router. 12mm and 15mm straight cut bits. (It is feasible to make this project using a ¼" router — but depending on which ¼" router — the project would require either substantial handwork, or alterations in the mortice and tenon sizes. Our instructions assume use of a ½" router.)

Triton extension table. Measuring tape, square or combination square, four bar or pipe clamps, wooden mallet or rubber hammer, G-clamps, electric drill (or drill press), 3.2mm, 8mm, 10mm, 10.5mm, 19mm or near equivalent sized drill bits; orbital sander, or hand sanding block with appropriate sandpapers, pencil and rubber.

2. USEFUL Carpenter's marking or mortice gauge.

Construction Details

Material Shopping List

1. WOOD Any furniture grade timber would be suitable. Radiata pine could be used, but an Australian hardwood such as Tasmanian Oak (as used in our construction) or Western Australian Jarrah will provide a combination of strength, appearance and durability that may be preferred.

Shop for (dressed sizing):

- 92mm × 45mm — 2 @ 1.8m (posts)
- 143mm × 32mm — 2 @ 2.4m (side rails)
- 92mm × 32mm — 2 @ 1.8m (bottom rails)
- 67mm × 32mm — 1 @ 3.3m, 1 @ 2.4m (middle rails and middle support rail)
- 42mm × 32mm — 1 @ 3.3m (top rails)
- 19mm × 19mm — 1 @ 0.9m, 4 @ 3.3m (bars)
- 32mm × 32mm — 2 @ 2.1m (battens)
- 92mm × 14mm — 8 @ 3.3m (slats)

2. FASTENING PVA or equivalent. "Post-and-dowel" knock-down fittings. These are available from better hardware stores. (64) woodscrews, 25mm long, countersunk heads.

3. FINISHING It's very much the maker's decision in this case. Clear lacquered timber is always an attractive option, but a well applied high gloss paint can also look very good.

General Points

1. We assume that you are familiar with the operation of the Triton workcentre and its accessories. Operational procedures will not be covered in detail.
2. You will find it helpful to lay out the components on the floor after cutting to length — before proceeding to cut the mortice and tenons — and mark adjoining faces and edges for later identification.
3. Accurate marking out is necessary. Take the time to mark out each joint, and clearly designate the waste areas.
4. The shoulders of the tenons are rounded to suit the mortices (don't chisel mortices square).
5. The mortice/tenon dimensions given here are size-for-size. For glue clearance and error tolerance you may prefer to trim tenon ends 1–3mm short, so they don't contact the bottom of the mortice.

(Typical all figure 1 mortices)

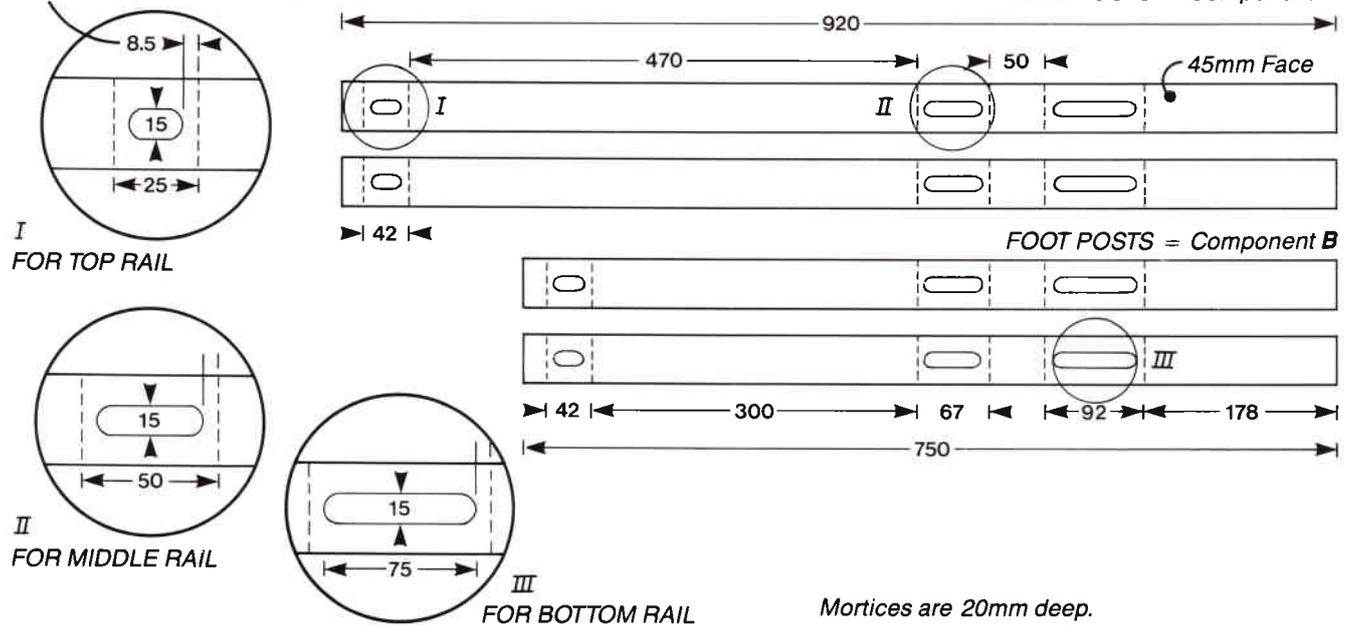


FIGURE 1

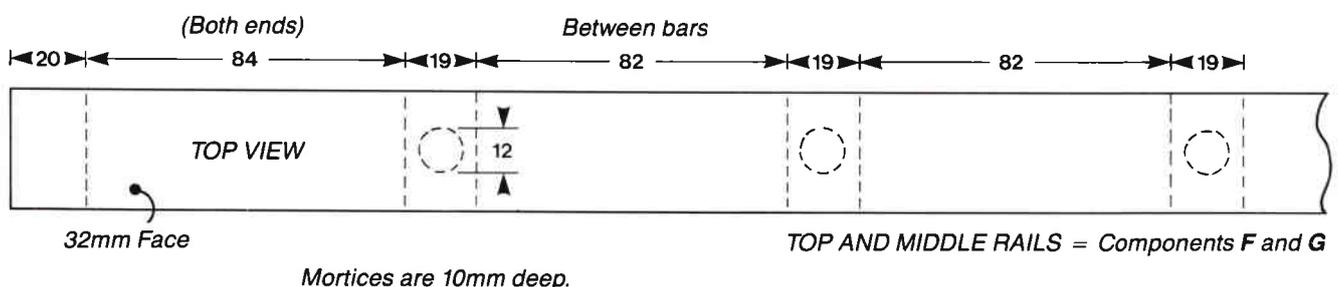


FIGURE 2

1 Begin by cutting your material to length. As usual, like components should be cut together to ensure identical lengths. (You may prefer not to cut the slats **E** at this stage, waiting till the basic frame is complete and then measuring and cutting).

2 It is best to completely make the two ends of the bed first. It's both the most time consuming and the most rewarding part of the project.

Begin by marking out carefully the positions of all the joints. In each case:

- Mark on both faces and edges where components join,
- Mark out the centreline of each surface to be joined,
- Mark out the exact mortice position and the tenon location on each (see steps 3&4),
- Shade-in the waste areas, using a carpenter's pencil.

This marking out stage is time consuming but crucial. Patience at this point will result in accurately made and joined components.

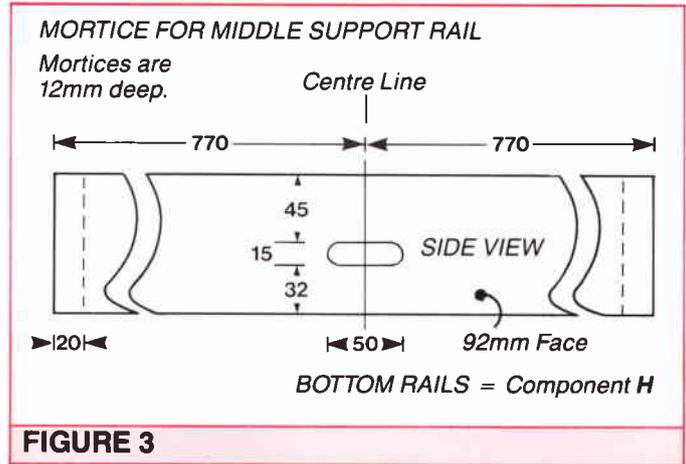


FIGURE 3

3 Set out the mortices first, in the following sequence.

Mark out the posts **A, B** as per **Figure 1**.

Mark out the top and middle rails **F, G** for the bars **J, K**, both head and foot. If your wood is perfectly straight it is possible to do all four together. Alternatively, mark out one and separately transfer the lines to the other three. The gaps between the posts and first bars is 84mm; the gap between subsequent bars is 82mm. See **Figure 2**.

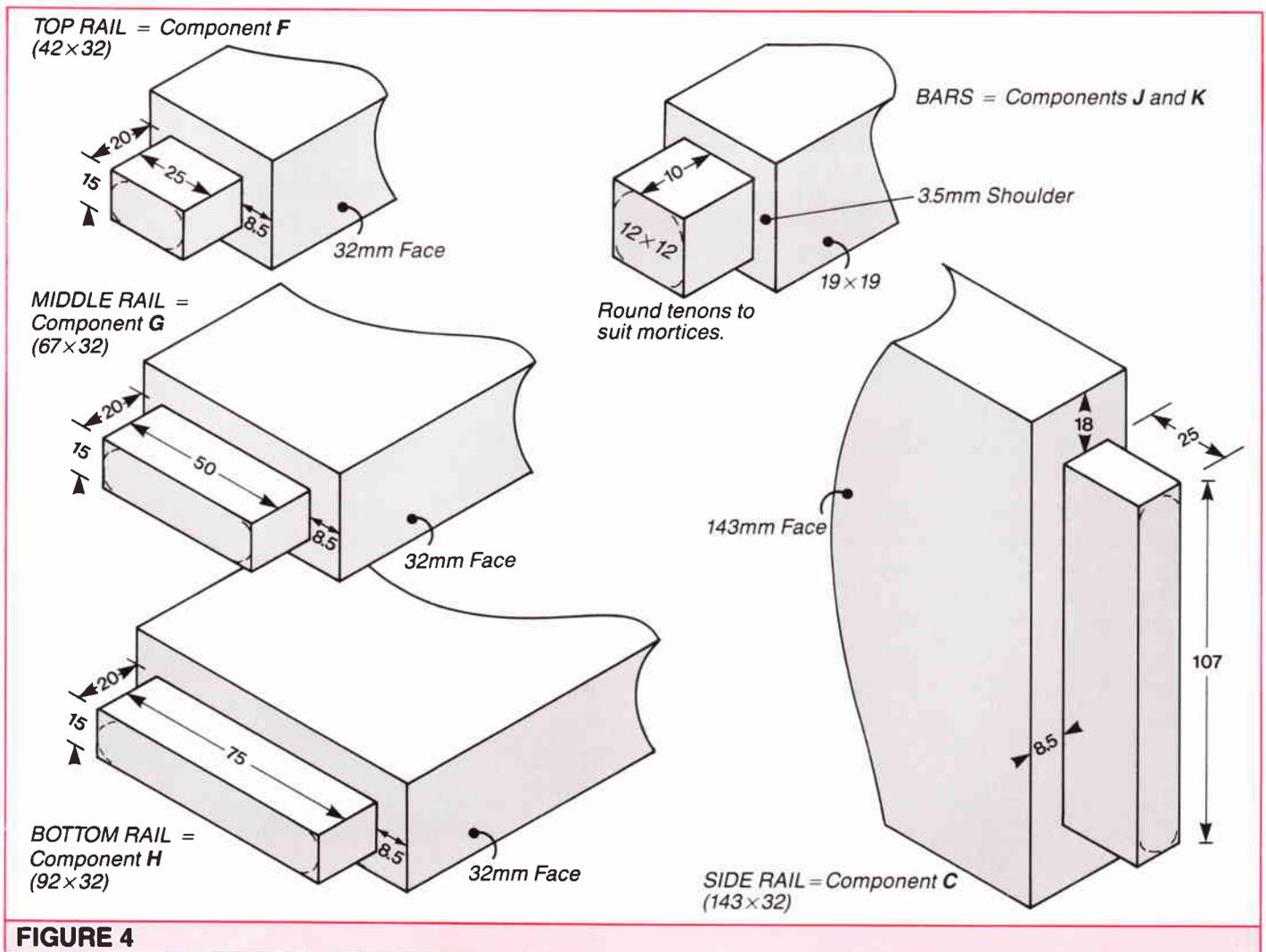


FIGURE 4

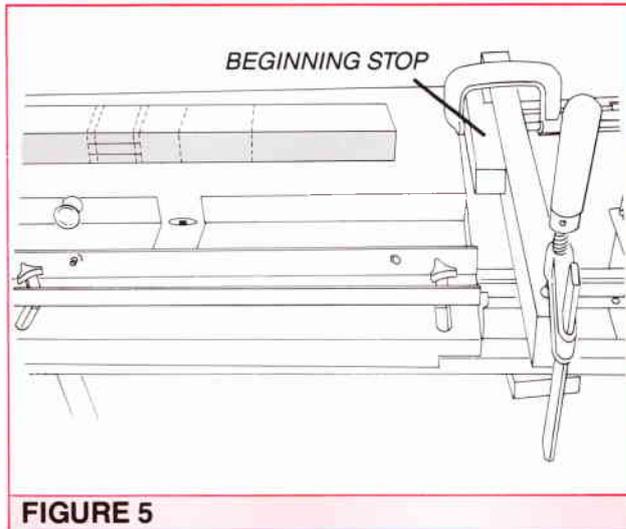


FIGURE 5

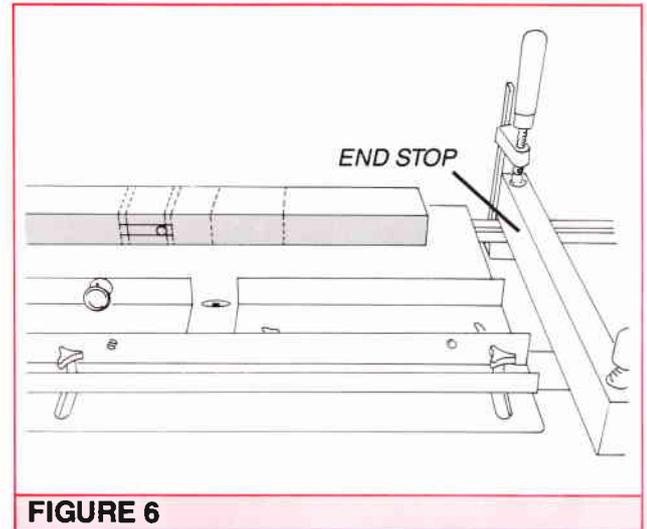


FIGURE 6

Mark out the mortice required in each of the two bottom rails (H), needed to take the middle support rail I, **Figure 3**.

4 Next, mark out the tenons. This doesn't need to be done with great accuracy — the workcentre will ensure that the cuts are accurate if your saw and rip fence settings are correct.

Mark out the tenons at the ends of the top, middle and bottom rails **F, G, H**. **Figure 4**.

Mark out a tenon on one of the vertical bars for the head or foot **J or K**. Again see **Figure 4**.

5 The cutting sequence will be as follows. Cut the mortices required in the narrow face of the head and foot posts **A, B** first.

(Figure 1) These are the mortices needed for the top, middle and bottom rails **F, G, H**. Set up your router in the shaper table mode, with the fence set so that your router bit makes its cut through the centreline of your workpieces.

Cut the mortices required in the bottom rails **H** to take the middle support rails **I**. These mortice positions require special setting up. Refer again to **Figure 3**. And note that the depth of this mortice is only 12cm.

Set up each case by testing on scrap. Procedural hints follow in Step 6.

6 The basic procedure is to use a "beginning" stop and an end stop to reference your cutting. **Figure 5&6** demonstrate the procedure. Use the 15mm straight-cut router bit. Don't attempt to cut the full depth of the mortice in one cut — take the

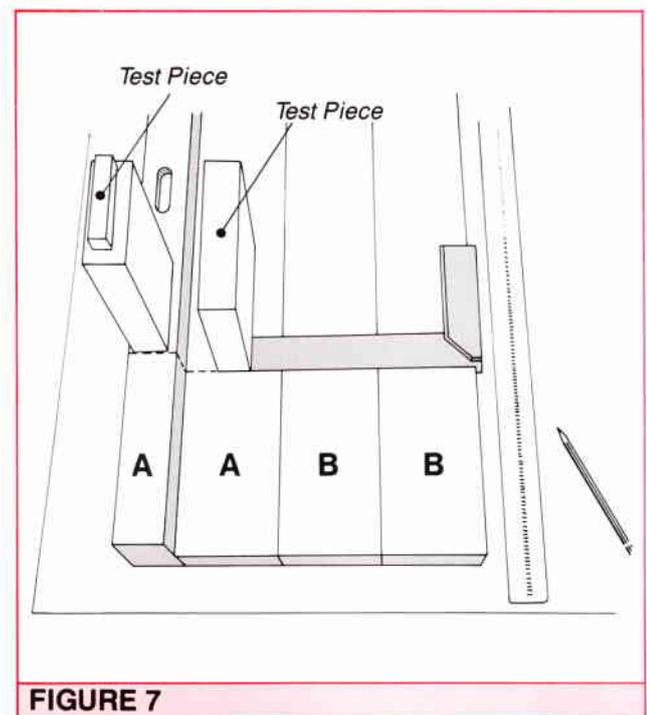


FIGURE 7

time to reset your router 3–4 times. Once you have removed the "beginning" stop block, a penciled reference mark on the table is useful to define the start of your long cut to the end stop. Do each set of two or four mortices at one time.

7 Having completed the mortices into the narrower face of the posts **A, B**, turn to the wide face to mark out and cut the mortices for the side rails **C**. Remember that there are two left hand and two right hand legs. Align the bottom edge of **C** with the bottom edge of **H** (Side rails and bottom rails) as per **Figure 7**. **Figure 8** shows the dimensions of the mortice and tenon. Note that while the side shoulders of these tenons remain at 8.5mm, the top and bottom shoulders are 18mm. The cutting procedures are as above.

Construction Details

8 The next operation is to cut the mortises in the top and middle rails **F, G** for the bars **J, K**. It is possible to do this in the shaper table mode (as per above) but it is more convenient to set up your router in the overhead mode. Your router must be able to plunge for this next step. Clamp on a parallel sided piece of scrap timber in front of the workstops — this forms a guiding channel for your workpiece to slide between. Also clamp two stopblocks, either side of your router, onto your left hand bearing channel, positioning your router so that it can plunge down onto the centre of your workpiece to cut the needed mortises. A reference mark on the timber scrap (your guide channel) is useful. See **Figure 9**.

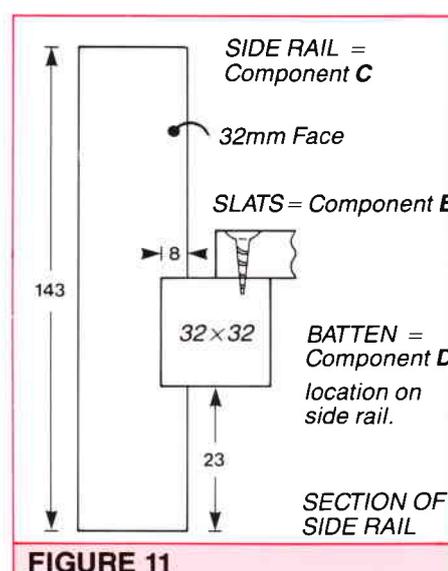
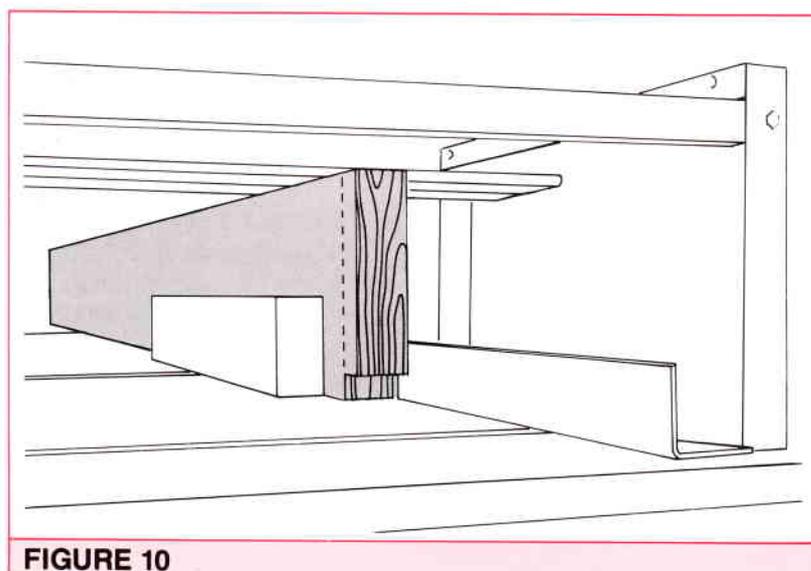
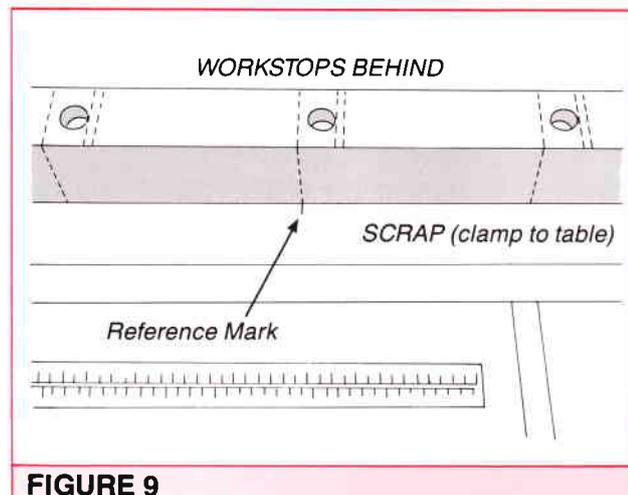
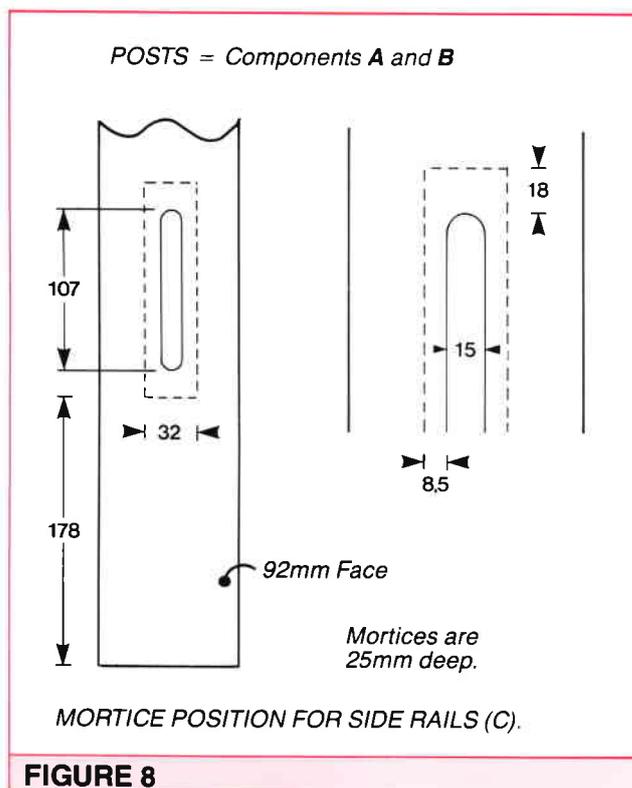
9 You should be able to hold the workpiece with one hand, and plunge down the router with the other. Again, don't attempt to cut the required 10mm deep mortice at one time, make 3–4 cuts. If you can, use the calibrated stops on your router.

A drill press and a speed-bore/spade bit can do this work as well.

10 Now turn to cutting the tenons, done initially with your power saw in the tablesaw mode. The procedure is as described in your Operating Manual, and the dimensions can be obtained from **Figure 4**. For the tenons for the top, middle, and bottom rails **F, G, H**, set your rip fence as a stop at 17mm (plus 3mm kerf = 20mm), and blade height at 8.5mm (start at 8mm and check for fit).

The tenons on the bars require a fence setting of 7mm, saw blade height is just 3.5mm.

Don't cut the tenons for the side rails or the middle support rail at this time.



Construction Details

11 Because of the length and weight of the side rails **C**, it is preferable to cut their tenons in the crosscut mode. You will need to lower the table to cut the top and bottom shoulders of the tenons — how far will depend upon your saw size (for 9¼" saws, 155mm setting is satisfactory). Use a marker pen to identify the normal table position, and then lower the table equally at all four corners. A 32mm × 42mm or similar piece of scrap to hold against the workpiece, forming a tunnel to slide the side rail along, is helpful. **(Figure 10)** If your timber has a slight bow or twist you may find it better to clamp your workpiece at each cut.

The top and bottom shoulders of the tenon are 18mm deep; sides are 8.5mm. See **Figure 4**.

12 The next operation is to cut the long trench in the side rails for the battens **D**. Convert back to the table saw mode to perform these trenching cuts. A trench 8mm deep is required, 32mm wide, and 23mm from the bottom of the side rails. Start with your rip fence at 52mm, saw blade height at 8mm, and make a trench cut along the inside of both side rails, widening this trench to the required 32mm width by progressively reducing the rip fence setting. **(Figure 11)**

The battens should fit firmly into these trenches. When satisfied with the fit, glue the battens in place, leaving about 15mm clearance at each end.

13 Round over the corners of all tenons to suit their respective mortices (a chisel or sandpaper can be used). Preliminary assembly can now begin.

The foot and head boards can now be assembled, glued and clamped.

The side rails can be stepped into their mortices in the head and foot posts.

Check the measurements of the middle support rail **I**, and cut the tenons to fit the mortices. How accurately you have cut and fitted the side rails will determine the exact length. The tenon sizing can be determined from study of the mortice detail drawing **(Figure 3)** . . . shoulders are 8.5mm.

Now fit the middle support rail.

14 The knock-down fittings should now be added. Refer to **Figure 12** for the setting out, drilling specifications and assembly. Both side rails and the middle support rail are attached to the head and foot boards by means of these post-and-dowel fittings.

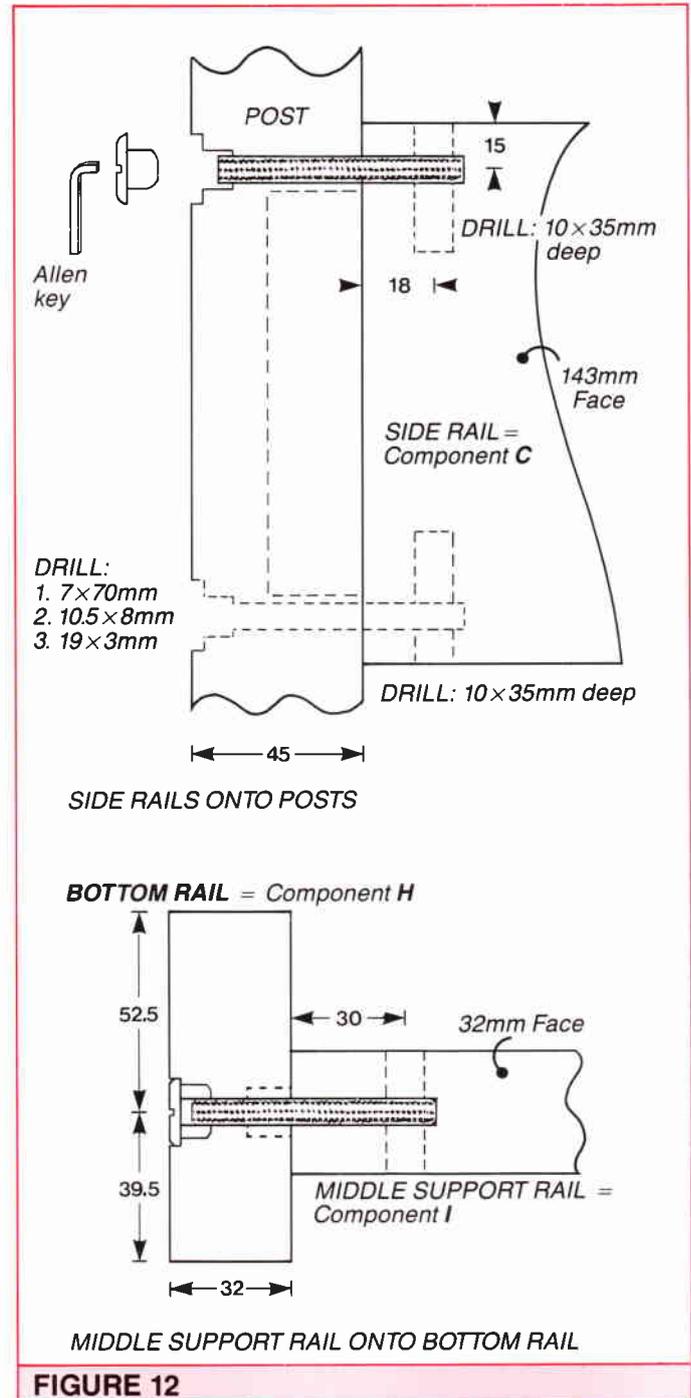


FIGURE 12

15 Check the size of the slats, and cut to length (leave 5mm clearance each end). The crosscut mode is preferable for this. They are attached to the battens fixed into the side rails by two 25mm countersunk wood screws at each end. The slats are spaced 35mm apart.

16 Sand or plane a bevel on the top corners of each post, round all the sharp edges, sand all over and apply the finish of your choice.

Add the mattress (options are inner spring, foam rubber, or cotton futon) and bedding, stand back and admire your elegant queen size bed.