

Appendix C Supplement: Using Other Tools

Tool-Tech 0.1: Router and Finbox Guides

For those that would like to use a router for plowing the fin-box mortise, the information in this section is applied during Chapter 7 Glassing & Finishing, Step 19.2. If you have never used a router before, this may be a rotten time to learn as your board is nearly done at this point and routers can do a lot of damage quickly. If you don't have a router, you could borrow one from a friend - and maybe the friend with it to do the job for you.



If you are at all uneasy about using the router, consider using chisels, or get an experienced friend to help you. Or practice on some scrap for a while before doing it on a nearly completed board for the first time! Perform Steps 19.2.2 through 19.2.6 *first* to remove most of the mortise waste, then run the router through the cut as described below.

C.0.2

Mount in the router a bit that will cut to a depth of about an inch, with straight sides.

A pattern bit (with a bearing at the top, Figure C-1) will work, but only with a plywood template (whose cutout is the *exact shape* of the mortise you intend to cut) clamped over the marks you made in Step 19.1. This template would be similar to that shown at left in Figure C-2, only with a smaller cut-out. The bearing rides on the edges of the pattern. It is also a good idea to pre-drill the mortise if you will be using this bit so that the bit can cut to full depth on a single pass, or devise a jig that allows multiple passes.

You have created a template or other guide system solidly mounted to the board to keep the router bit running straight under side-loading stresses.



FIGURE C-1. (right) Pattern Bit



FIGURE C-3. (left) Mortising Bit

If you don't have a pattern bit, you can use any straight router bit (a.k.a. "mortising bit", Figure C-3) with a jig or guides that register to the base-plate of the router. Two methods are shown below. The preferred method (at left) takes a little longer to set up, but is more likely to deliver a successful result.

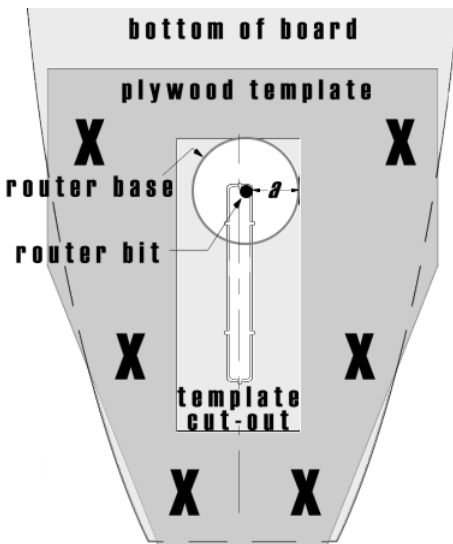


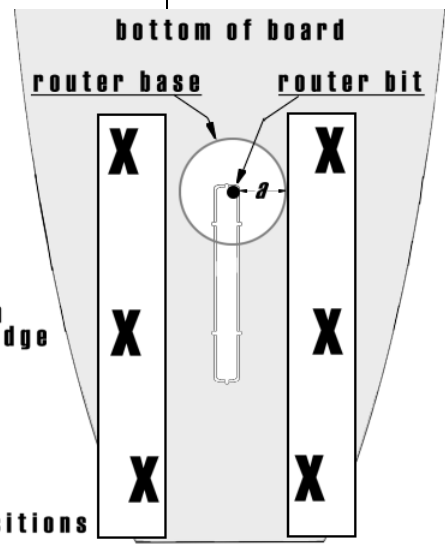
FIGURE C-2. Router base template method (left) and router guide method (right).




See warnings below.

a = distance from router base edge to cutter

a = distance from edge of groove to guide

clamp at 'X' positions



	<p>Any plan that relies on the router base plate or a pattern bit bearing riding inside the cut-out of a pattern has to be carefully executed. The “template cut-out” has to have perfectly straight sides, because any wobbles in the cut-out will be transferred to the bit and will show up on your mortise, making a messy looking job.</p> <p>If simple guides are used (as shown at right of Figure C-2) both guides should be in place during cutting, because the router can drift away from a single guide in such a way that it gouges the opposite side of the mortise. Care must also be used not to run beyond the ends of the mortise.</p> <p>In both cases, templates or guides must be well clamped as there are surprising side loads generated as the torque of the router works against the material being removed. Guides can easily shift.</p> <p>Whether you use guides or a template, it is prudent to pre-drill the mortise before starting (see Steps 19.2.2 through 19.2.6).</p>	
<p>C.0.3</p>	<p>Unless you have pre-drilled the mortise to remove the bulk of the material, you SHOULD NOT try to cut the mortise at full depth in one pass. It will be too much for many routers, and the forces generated are almost sure to shift your template and ruin the cut. Set the initial depth to about a quarter of an inch, increasing about a quarter of an inch of depth with every pass.</p> <p>Successively increasing the depth of cut will NEVER work with a template bit, because the bearing is at the top and you need it to always ride on the template cut-out. You can either stack templates and remove them one at a time to increase the depth of cut (this is the way the jig at the shop works), or you will need to pre-drill the mortise (without chiselling) so that you can cut to full depth immediately.</p>	<p>The router depth of cut is set to about 1/4” or the mortise is pre-drilled.</p>
<p>C.0.4</p>  	<p>As always, you should be wearing appropriate safety equipment during use of power tools. Grip the router firmly and turn it on.</p> <p>It needs to be on during this step so that it will begin cutting as it is lowered.</p> <p>If you are using a “plunge” router, your base-plate is spring loaded on guides and you can position the router in the approximate center of the mortise marks, and just push down. Be ready for the router to want to move to one side or another.</p> <p>If your router doesn’t plunge, then you should rest the baseplate on one edge at an angle to the board so that you can pivot the router down (with the edge of the baseplate like a hinge) and into the center of the slot without the bit nicking the sides of the template, or cutting into the marks that define the sides of the mortise.</p>	<p>The bit is cutting in the middle of the mortise.</p>
<p>C.0.5</p>	<p>Now steer the router to one edge of your template or guide, and when it comes in contact, start moving it along the guide. One direction will make the router seem like it wants to jump ahead, and the other will feel better - like you are in control. You want the latter way! You are moving the router in a direction that is <i>against</i> the rotation of the bit. When you get to the other side, you will prefer to move in the opposite direction because the other side of the bit will be doing the work on that side.</p>	<p>You are cutting a straight line along the length of the mortise.</p>
<p>C.0.6</p>	<p>If you are using guides with no stop at the end, approach the end slowly and stop within an 1/8” of the mark, otherwise, cut until the router comes up against the end of the cut-out. Shift the router to the other side so that you can cut the opposite edge.</p>	<p>The bit does not overcut the length, and in some cases, leaves some material to be trimmed in the final pass.</p>

C.0.7	Move the router to the <i>center of the mortise</i> , and turn the router off, holding it in place until the bit stops spinning <i>entirely</i> .	The sides of the mortise are not nicked by the router and you can now readjust the depth. The router cut right to the side line of the mortise.
C.0.8	Set the router to cut another 1/4" deeper and check that the bit is still tight in the collet, and repeat Steps C.0.4 through C.0.7, and keep doing that until you are about to do the last pass (which you will need to get the mortise to its full depth.)	The mortise is getting deeper, and each cut lines up perfectly with the ones before.
C.0.9	On the last pass, the router bit should be set to no more than 1-1/16". Be absolutely sure that you won't cut into the top planks accidentally. This will be the last pass, in which we will finish cutting the depth, and also complete the ends if you had stopped cutting just short of the end. Start the cut as before and use special care at the ends not to let the bit go too far. Wait for the cutter to stop before drawing it from the mortise.	The mortise is complete.

