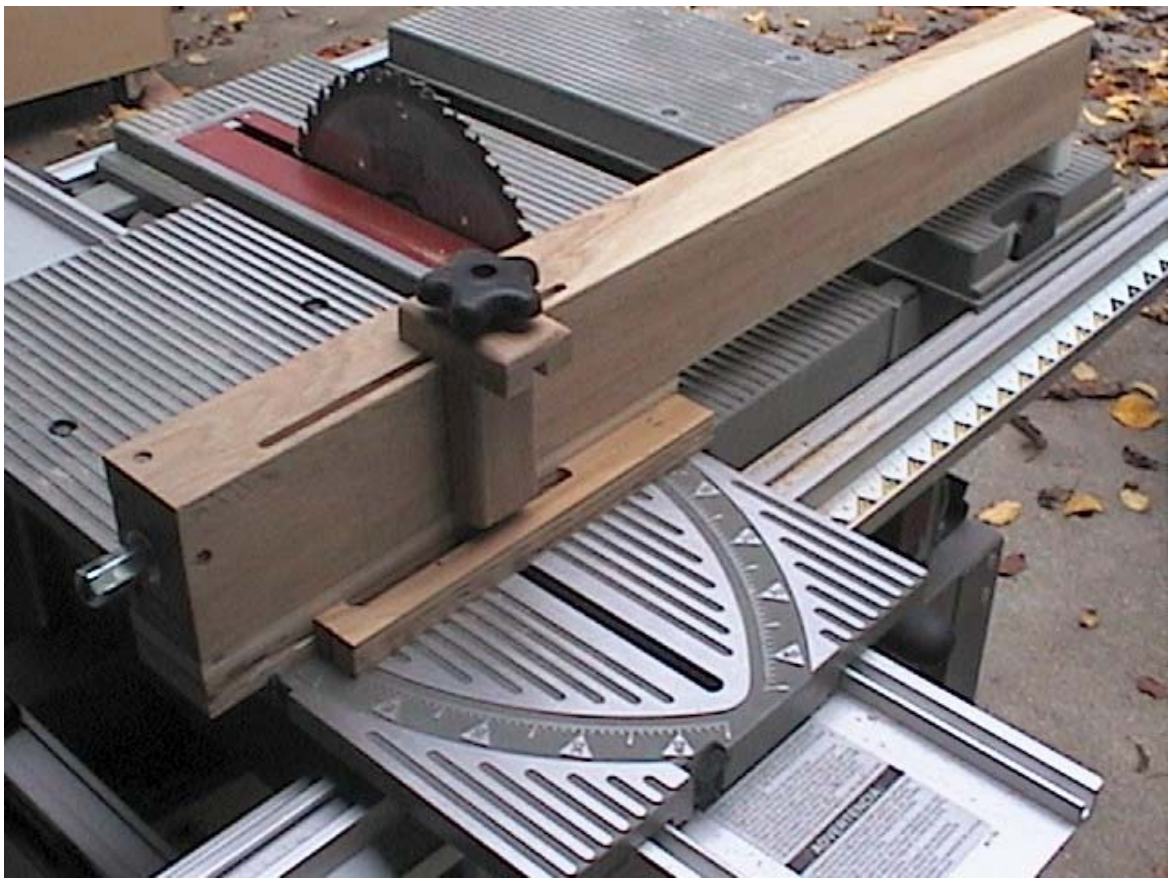
# Attaching jigs to the SMT

by Mike Stallard

One of my favorite features of the Ryobi BT3X00 table saw is the sliding miter table. I particularly like the abilities to quickly and accurately square the crosscut fence to the blade, and to securely attach the fence to the table so I don't have to worry about the fence slipping. I like to include both these features in jigs I build in the shop for the SMT, even jigs that do not attach to the crosscut fence. Below is a fairly simple method for attaching and aligning jigs to take advantage of these features. Of course, once the jig is mounted so that the flip-up squaring tab works, it can be rotated to different angles using the miter angle marks just like the crosscut fence.

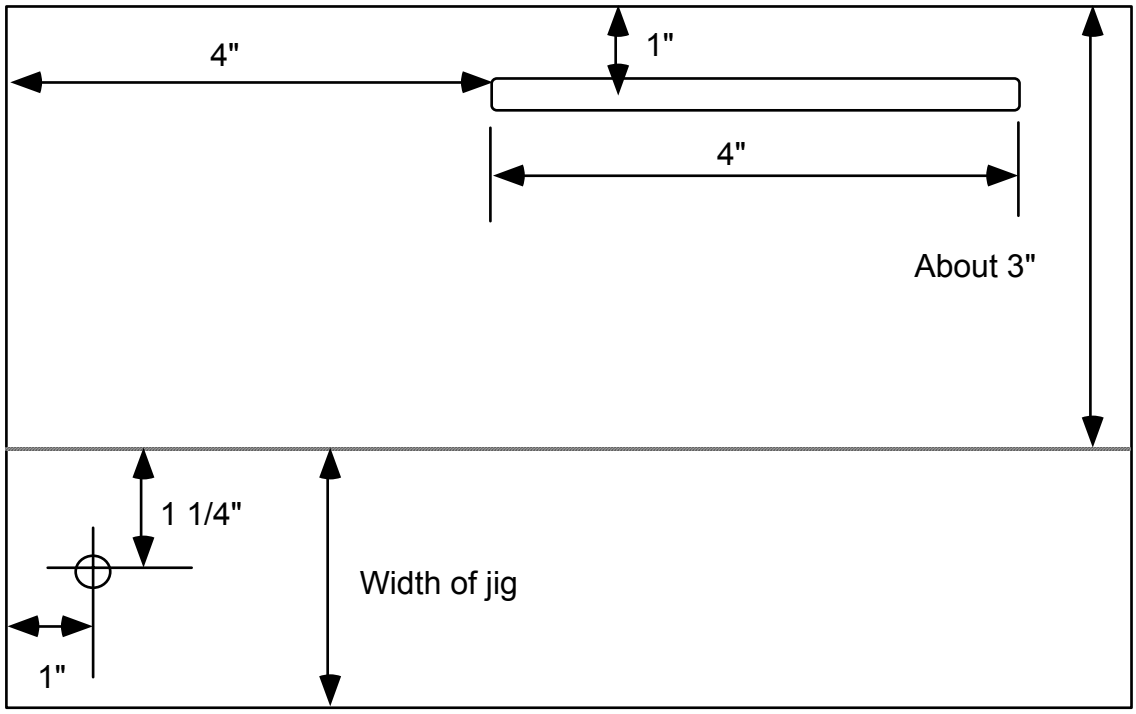


The crosscut fence attaches to the miter table by a simple pivot and clamp system. A plastic pivot pin on the bottom of the crosscut fence is inserted into one of two 10 mm diameter positioning holes in the miter table. The fence also is clamped into a slot at the center of the miter table by a 5/16-18 hex head bolt and threaded knob. This two point attachment is what makes the fence so secure on the miter table, and allows the fence to

resist the strong twisting force that the blade exerts as the work is cut. The crosscut fence mount is designed to allow the fence to rotate relative to the blade and to move in and out on the table. To make these movements possible, both the pin and the clamp can independently slide along the length of the fence.

I use a similar attachment method for my jigs. An attachment block is fixed to the bottom of the jig. The block consists of a piece of plywood with a wooden dowel glued into it to serve as a pivot pin. There is a hole for a hex head bolt to pass through as a clamp.

I don't usually require that the jigs that I attach to the table be moved in and out. In fact often I want to prevent that movement of the jigs. The pin on my attachment block is fixed, so that the block and therefore the jig cannot move in and out. I would like the jigs to rotate, however. Rather than drilling a simple hole for the clamp bolt, I route a slot along the attachment block to allow the rotation. A sketch of a typical attachment block is shown below.




Making the Attachment Block.

1. The first thing to do is determine the rough dimensions of the attachment block. Measure the width of the jig you'll be attaching. You'll need a piece of 1/2" or 3/4" plywood about 10" long, and wide enough to accommodate the jig plus room to turn a clamp handle (say about another 3"). Cut a rectangular piece of plywood this size, identify the front edge, and mark the approximate jig location on it.

2. The next step is to drill a hole for the pivot pin. The pivot pin should be located about 1 1/4" in front of the back edge of the jig, and at least 1" from the side of the attachment block. Drill a through hole at this location. If you have a 10 mm drill bit, that is fine. I don't, so I drill the hole with a 25/64" bit. Cut a 3/8" wide slot about 1" from the back edge of the block and parallel to it. Begin the slot 4" from the side of the block with the pivot pin, and make it 4" long.

3. For the pivot pin itself, some 10 mm aluminum rod should work fine. Avoid harder metals, like steel, which may gall the aluminum miter table. I usually use a wooden dowel for the pivot pin. Of course, finding a 25/64" dowel commercially is nearly impossible. Rather than turning my own dowels, I resize a 1/2" dowel using an ancient device called a dowel sizing plate. I drill a 25/64" hole in a piece of 1/8" or 1/4" mild steel, about 2" X 6". I sharpen one end of a 2" or 3" long 1/2" dowel enough to start in the hole. Using a mallet, I drive the dowel through the hole in the plate. If what emerges isn't exactly right, I drive another. I only need about 1 1/4" to 1 1/2" of dowel for the pivot pin.

4. Glue the dowel (yellow glue is fine) or aluminum rod (polyurethane glue or epoxy) into the hole so that it protrudes about 1/2".

Mounting the Jig on the Block

5. Now, you need to mount and align the jig on the attachment block. Begin by screwing one or two runners to the end(s) of the bottom of the jig. If the jig is short and will be adequately supported by the attachment block, one runner will do. If the jig is long, use two runners. The runners can be made of any scrap that is the same thickness as the attachment block. The runner on the end of the jig that will be attached to the miter table must be placed so that when the jig is installed, the runner butts against the flip-up squaring tab that is on the miter table. The back of that runner should be aligned with the back of the jig, and it should not be so long that it interferes with the attachment block.

6. Check the alignment of the sliding miter table to the saw blade. Remove the crosscut fence, and place your new attachment block on the saw with the pivot pin and a 5/16-18 X 2" clamp bolt in the proper holes. Rotate the attachment block until its front edge is square to the saw blade, checking with a square. Tighten a 5/16-18 knob or a nut and washer on the bolt to lock the attachment block to the table.

7. Place the jig, bottom side down, over the attachment block. Butt the back edge of the runner against the flip-up squaring tab. Holding the runner against the squaring tab, rotate the jig until the front face (or whichever edge on the jig must be aligned) is square to the saw blade. Mark the location and alignment of the jig on the attachment block.

8. Remove the jig and the attachment block from the table saw. Adjust the attachment block size so that it does not interfere with the operation of the jig. For example, saw off the front if it sticks out and would interfere with the jig. Place the attachment block on the jig at the location marked, and screw it to the bottom of the jig.

9. Return the assembly to the saw, butt it against the squaring tab, and check the alignment to the saw blade. Shim or shave the back of the runner to adjust. You may want to drive a large flat-head screw into the runner at the tab location to protect the back of the runner from the tab.

10. Place a permanent mark on the edge of the attachment block at the zero point of the angle gauge. Use this mark to locate other angles you may wish to operate the jig at.

You now have your jig set up to align to the miter table and to operate at different angles to the saw blade. It should be adequate if your jig is intended to operate square to the blade or at only shallow angles.

Making an Adjustable Clamp

A weakness of the design is that the depth of the attachment block and clamp bolt prevents the jig from being moved back to a forty-five degree angle. You'll have to do a little more work to give your jig that full range of movement.

I need to give a little explanation of my photo on page 1 at this point. If you compare it carefully to the descriptions and sketches below, you'll note that there is a gap between the bottom of the handle assembly and the attachment block in the photo. That is because I disassembled the jig to take the photos. Since I had it apart, I decided to provide a little thicker runners. Before I could complete the modification, it started to rain. My saw was outside for the light, so I had to take the photo and get it in. I hadn't redone the handle assembly to fit the thicker runners. Sorry. Do as I say, not as I had done.

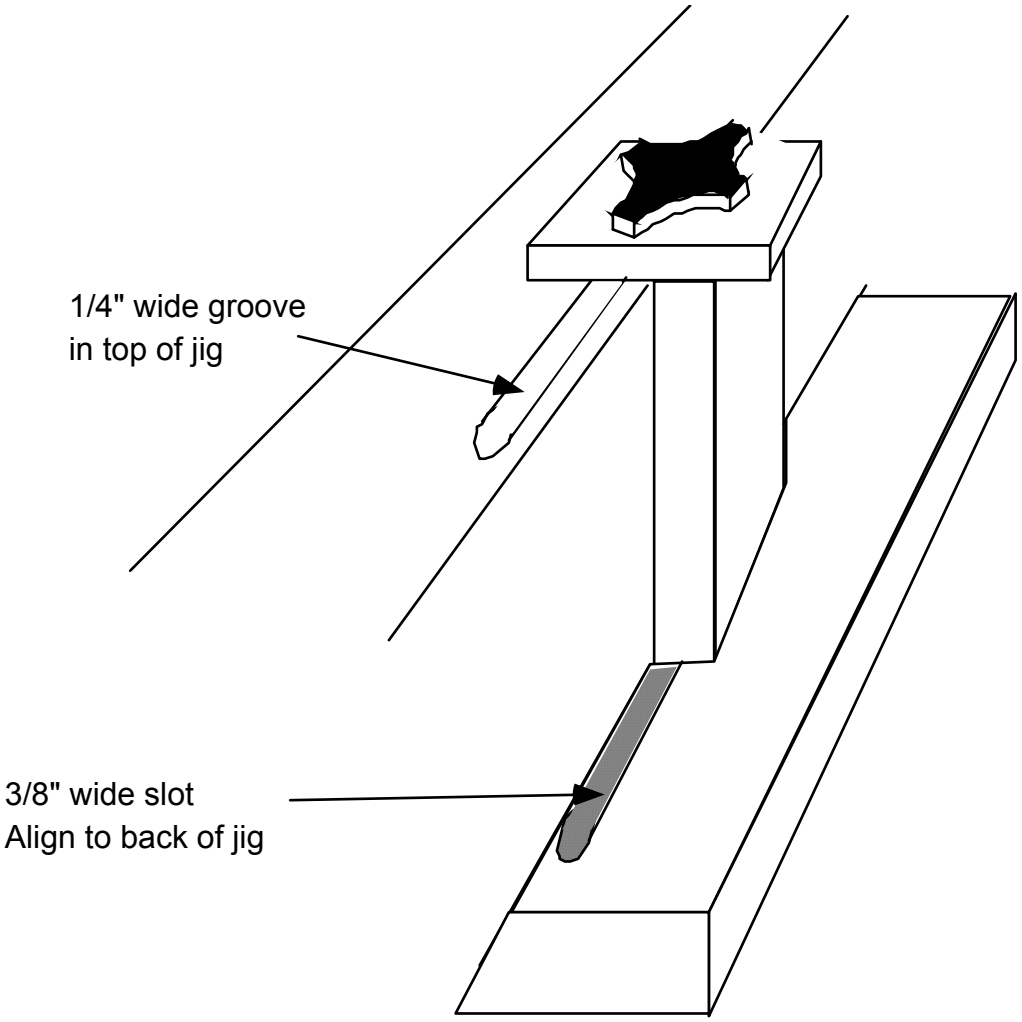
11. Mark the back of the jig on the attachment block. You may already have done this when you aligned the jig. Remove the attachment block from the jig, and route a new 3/8" wide slot with its forward edge just along that mark. The slot should begin 3 1/2" in from the pin side of the block, and should be 5 1/2" long. Saw off the back of the attachment block to about 3/4" behind that new slot.

12. From 1 1/2" wide 4/4 hardwood, cut one piece as long as the jig is high plus 1/4" (vertical piece) and another piece about 2" long (horizontal piece).

13. From one end of the vertical piece, remove material to leave a tenon as shown. Route a 3/8" X 3/8" groove down the center of the vertical piece

14. Drill the horizontal piece for 1/4" dowels and a 3/8" through hole as shown in the sketch.

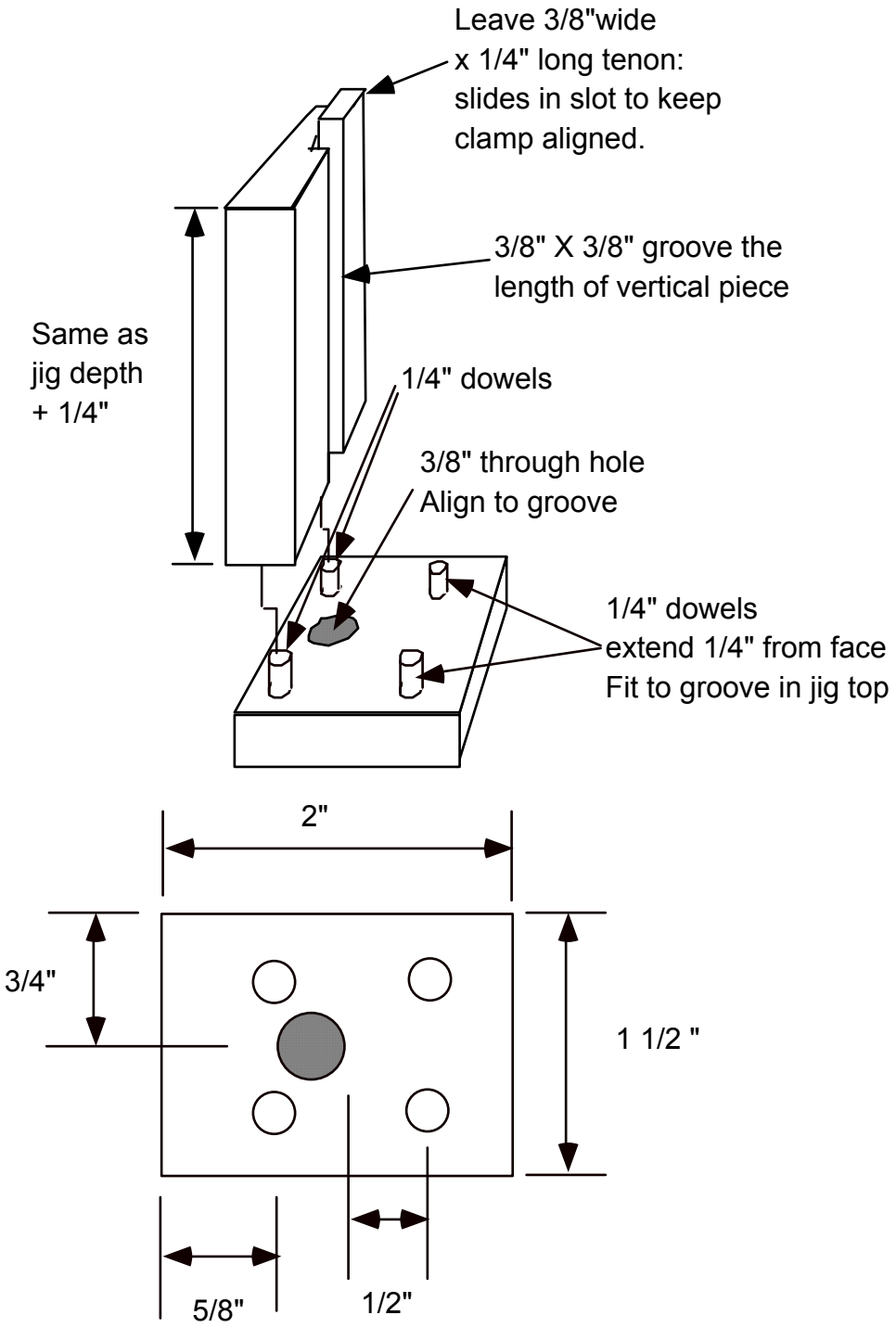
15. Dowel the two pieces together at right angles as shown in the sketch.




.

16. Route a 1/4" X 1/4" groove in the top of the jig, centered 1/2" in from the back of the jig. The groove should be directly above and as long as the 3/8" slot in the attachment block.

17. Reattach the modified attachment block to the jig. Run a 5/16-18 bolt through the attachment block, long enough to extend at least 1 1/2" above the top of the jig. Assemble the clamp on the jig as shown, with the tenon in the 3/8" slot. Place the two dowels in the groove in the jig. Add a washer and knob to the end of the bolt.



Congratulations! You have completed the jig attachment.