

# SMT Mounted Tenon Jig

By Mark "Black Walnut" Stripes

Since the Ryobi BT3 series of table saws does not have a miter slot users are forced to make their own tenon jigs. While building the first prototype I decided that the best way to make it move laterally was to attach it to the SMT using the front t-slot. This jig features micro-adjustment as well as adjustments for different angled tenons. All of the wood parts with the exception of the maple I used to make the adjustment wheels



were off cuts from other shop projects. As such I did not use any particular dimensions while building. Users can build a copy sized to suit their needs. To Make it glide smoothly back and forth along the SMT fence and the main table I used UHMW polyethylene available thru [Rockler](#); follow the links on the BT3Central home page. The star knobs are also from [Rockler](#). You will also need about one foot of 3/8"-18t.p.i. all thread, assorted wood screws and two Ryobi style t-nuts. <http://t-nuts.com/bt3c/index.shtml> is a link to a new site for t-nuts of apparent better quality than Ryobi supplied ones. For further details check the list of parts at the end of this document.

## Construction Details

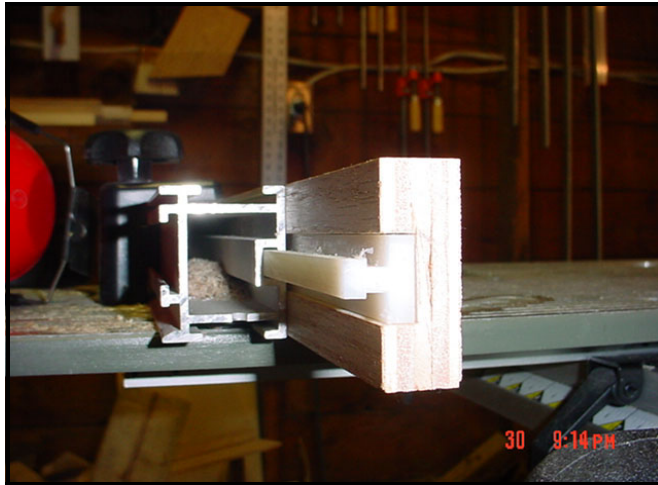
Mill a stick of any hard wood 7/8" thick by 1-3/4" wide by 19" long to make a fence. Joint one edge square to one side and straight. In this piece drill a 5/16" hole centered 3" from one end and a slot also centered 3" from the other end 5-1/2" long. Attach the toggle clamp 3-1/2" above the hole. Set this part aside.



Cut a piece of 1/2" plywood 10" by 18". With a router mill a slot 5/16" by 8" 4-1/2" from one edge leaving 1" on each edge. Centered on this slot mill another slot 1/2" wide 1/4" deep. This slot will hold the lower fence mounting bolt's head. This part will be your backer board. While making these cuts you will also want to cut a piece of 4/4 hardwood 4" by 2" to attach the threaded rod to the backer board later.

Cut a piece of 3/4" plywood 2" wide by 12" long for attachment to the SMT fence and a base piece 8" by 12", plus a piece 3" by 8" to join the base to the UHMW table slide.

Mill one edge of a piece of 3/4" UHMW plastic, 12" long to fit the t-slot on the front of the SMT, rip cut this piece off at about 9/16" wide. Install this plastic strip in the t-slot in the front of the SMT and carefully mark your 2" x 12" piece of plywood to make the following part.



Attach the plastic to the plywood using #4-3/4" flat head wood screws through the plywood into the plastic in pre-drilled counter sunk holes.

Set the backer board with the wider part of the slot facing up on your work bench. Place a piece of UHMW 3/4" x 2" x 10" on edge at the lower edge. Place the 3/4" x 3" x 10" plywood part on edge on top of the backer board. Clamp the two parts on edge together, drill countersunk screw holes through the plastic into the plywood. Attach your assembled fence part to the base with countersunk wood screws along the long edge. Check to make sure your SMT is adjusted correctly and set to 90° to the blade and make sure that the edge of the base is parallel to the saw blade. Also make sure that your rip-fence is adjusted properly. Lower your saw blade, slide fence over towards the SMT, place the assembled UHMW/2"x10" part next to the rip-fence, slide the base over to this and attach these two sub-assemblies to-

gether with 1-1/4" FH wood screws in counter sunk holes. Be careful to not drill too deep! your table saw is under these parts.

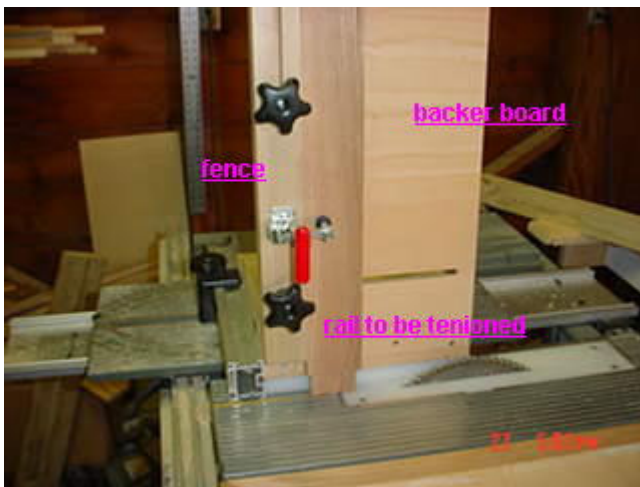
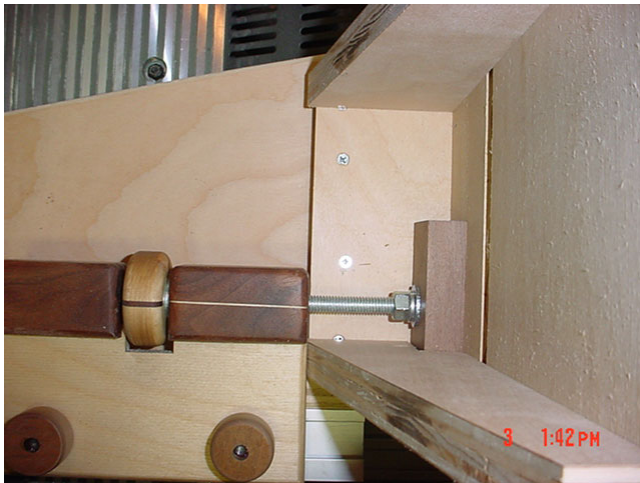
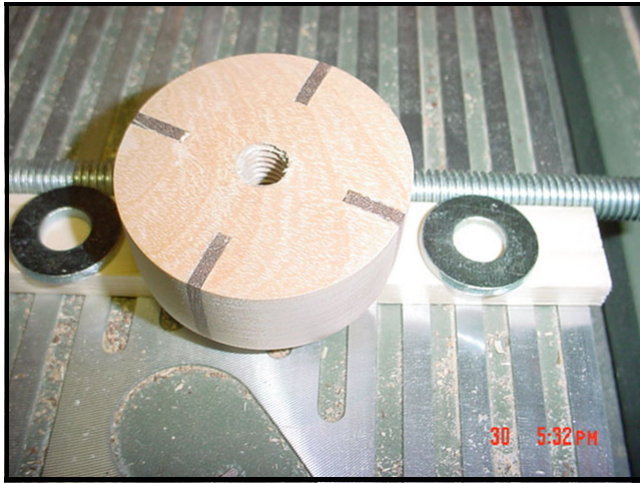
Attach the backer board to this sub-assembly with a couple of wood screws. Cut two support brackets and set these aside until final assembly.

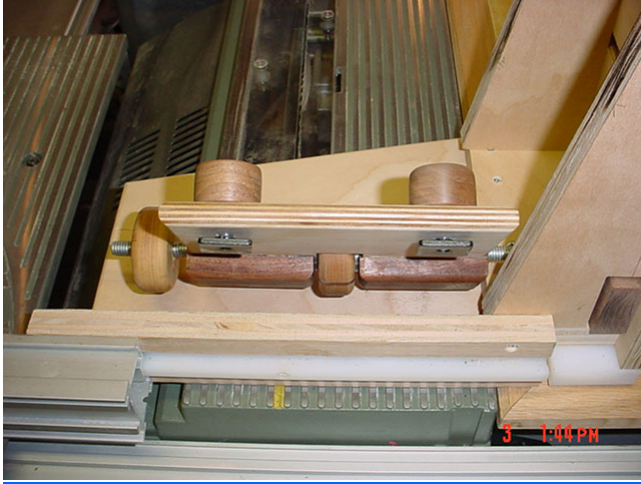
## **Making the Micro-adjuster**

Cut two wheel blanks out of 4/4 hard maple to 3" square. Cut a kerf centered between each corner on each edge to a depth of about 1", in only one of these blanks. Rip-cut a thin strip of black walnut just thick enough to fit in these kerfs and glue in place, trim flush and sand smooth. Mark the center of each blank. With a 2-1/8" hole saw mounted in your drill press cut out the two wheels. Round over the edges and sand smooth. Either tap the center hole to 3/8"x16 or install a t-nut or threaded insert. Mill two pieces of walnut to 1-1/2" square x 3" long. Drill a 3/8" hole lengthwise centered through these. In one of these blocks cut a kerf length wise and inlay a thin strip of maple. Cut a dado the length of each walnut block 3/8" deep as wide as your 1/2" plywood. Cut a piece of 1/2" plywood 3-3/8" wide by 6"+the thickness of your adjustment wheel +two flat washers. 3" from one end cut a notch wide enough for the wheel and washers about 7/8" deep. Drill two 5/16" holes 15/16" from two corners along one long edge, opposite the notch. Attach the walnut blocks with glue, set aside to dry. Once Dry apply a coat of clear finish to this piece and the two wheels.

Install micro-adjustment plate on top of your SMT fence, attach with threaded knobs or bolts, washers and Ryobi style t-nuts. Slide the other sub-assembly along the front of the fence. push the threaded rod through one walnut block plus one washer, install the lined wheel, one more washer and thread rod until it is about 1" from the inside of the backer board. Place the attaching block of hardwood milled earlier, up against the backer-board and mark the location where the threaded rod will attach to it. Drill a 3/8" hole through the attachment block and attach the rod with either two nuts or one nut and a t-nut recessed into the inside or just epoxy the rod in place. Any of these methods will work. I used two nuts recessing the inner one. After attaching the rod to the attachment block fasten it to the backer board with some fh wood screws. Cut a notch out of one of your support brackets to fit over the attachment block and glue or screw the support brackets in place. Install the fence onto the backer board and the lock wheel on the left side of the micro-adjustment assembly.

## More Pictures





For use instructions go to [this post on the BT3Central Forum.](#)

## List of materials

- 3/8" by 16t.p.i. all-thread 12" long
- 3" x 10" x 3/4" UHMW-PE plastic jig stock
- 7" 8/4 walnut
- 2 3"x3" blocks 4/4 hard maple
- 4"x2" block of 4/4 hardwood
- 3 or 5 5/16" flat washers
- 1/2" plywood, 10"x18" and 3-3/8"x7-1/2"
- 3/4" plywood, 2"x12", 8"x12", 3"x8", 2 3"x12"
- 2 Ryobi style t-nuts
- 30 #6x1-1/4" flat head wood screws
- 8 #4x3/4" flat head wood screws
- 2 5/16x2" bolts
- 2 5-star 5/16" knobs (Rockler's #23812)
- toggle clamp (Rockler's #20752)
- 2 either 5/16" threaded knobs or 3/4" long 5/16" bolts (for attaching the micro-adjustment sub-assembly to SMT)
- About 8 hours shop time depending on work habits