

## Box Joint Jig

March/April 2016

There are four main parts to this jig: the base (piece 1), fixed fence (piece 2), adjustable fence (piece 3) and two miter slot guides (pieces 4). The advantage to this jig's design is that the adjustable fence enables you to fine-tune the spacing between the dado cuts for a perfect joint fit. By adding the combination finger guard and viewing box (pieces 7 through 9) you'll greatly improve its safety and still have full visibility of the cutting area during use.

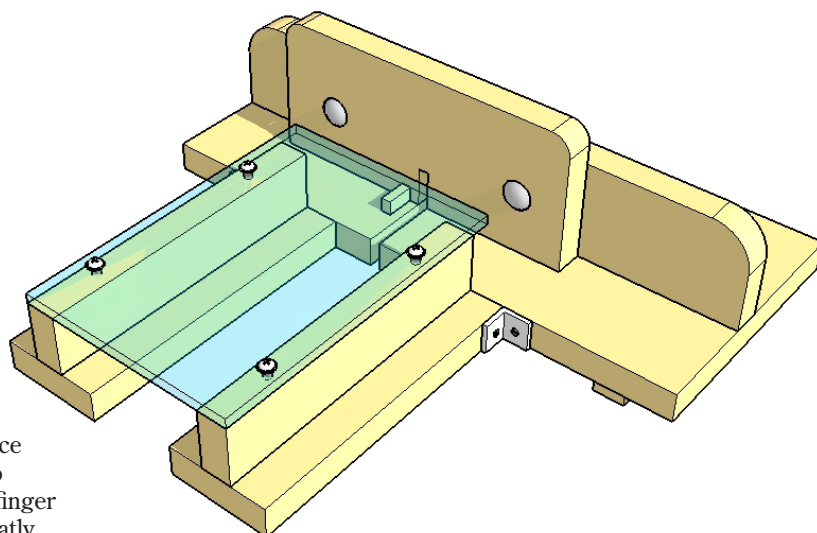
### Building the Jig

Cut the jig base to size. You can use any scrap for it, but plywood is a good choice because it's stable and flat. Adjust the length of the base to fit your table saw: make it about 4" longer than the outside width of your miter slots.

Now cut the miter slot guides to size from stable hardwood scrap, and fit them in your table saw's miter slots. Adhere a piece of double-sided tape to the top of each one, place the base on the guides and square the assembly up. Then press down on the base until the tape sticks. Remove the assembly, and drive two 1" countersunk flat-head wood screws through each guide and into the base to secure the parts.

Cut the fixed fence to shape, rounding over its top corners. Next, make horizontal slots in the fence by drilling two pairs of 1/4" holes 3/4" apart (see the *Drawings*). Chisel away the waste between the holes to complete the slots.

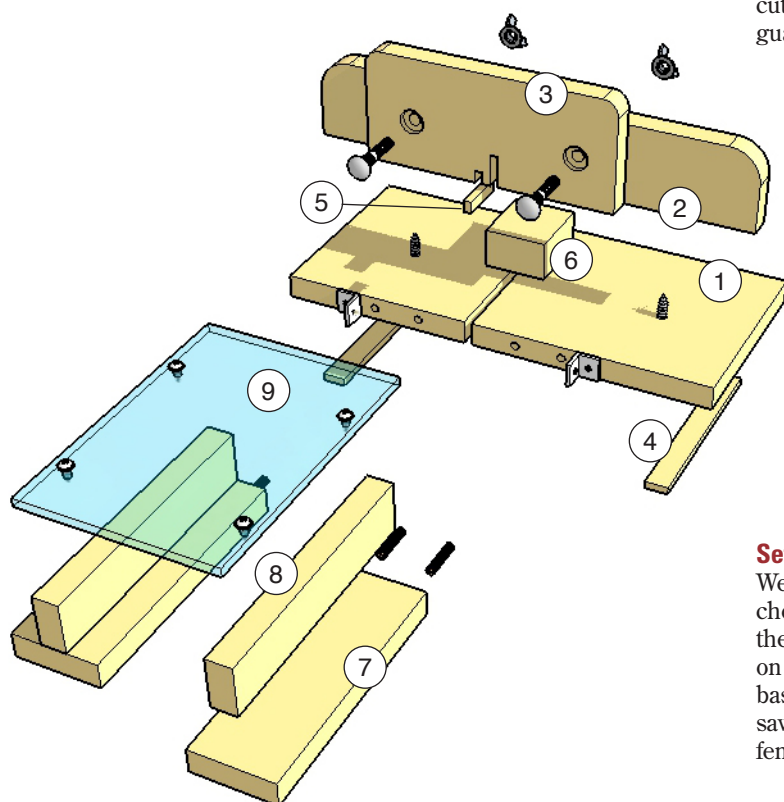
Cut the adjustable fence to shape and, holding the two fences together, transfer the position of the slots on the fixed fence to the



adjustable fence. Mark the centers of the slots on the adjustable fence. Drill two 1/4" holes at these centerpoints through the fence. Use a 5/8" Forstner bit to bore 1/4"-deep counterbores for these two holes, in order to recess the heads of two carriage bolts into the "show" face of the fence.

Attach the fixed fence to the base with 1 3/4" long flathead screws, driving the screws up through the base and into the fence. Then secure the adjustable fence to the fixed fence with two 2" long carriage bolts and wing nuts.

You're ready to add the protective viewing box. It consists of two bottom slides, two uprights and a clear plastic top. Cut the pairs of slides and uprights to size, and fasten them in two subassemblies with countersunk screws. To reinforce the connection between the slides and the base, I installed a pair of 1/4" x 1 1/2" dowels across these joints (see the Exploded View, below). I first drilled two dowel holes into the end of each slide, then transferred the centerpoints of those holes to the base using pointed dowel centers. Bore the base-side dowel holes. Then attach the slide assemblies to the front edge of the base with dowels and 1" metal corner brackets. Cut a piece of 1/4"-thick plastic to size for the front guard. Attach it to the uprights with four short pan-head screws driven into pilot holes. Finish up by cutting a key (piece 5), which will be installed shortly, and the rear guard (piece 6).



### MATERIAL LIST

	T x W x L
1 Base (1)	3/4" x 6 1/2" x 14"
2 Fixed Fence (1)	3/4" x 2 1/2" x 14"
3 Adjustable Fence (1)	3/4" x 3 1/2" x 8"
4 Miter Slot Guides (2)	1/4" x 3/4" x 6 1/2"
5 Key (1)	1/4" x 3/8" x 1 1/2"
6 Rear Guard (1)	1 1/4" x 2 1/4" x 2"
7 Slide Bottoms (2)	3/4" x 2 1/2" x 7 1/2"
8 Slide Uprights (2)	3/4" x 1 1/2" x 7 1/2"
9 Front Guard (1)	1/4" x 5 1/2" x 8"

### Setting Up the Jig for Use

We'll set up the jig for use with a 1/4"-wide dado blade, but you could choose another blade width for your box joints, if you prefer. Install the blade and raise it to about 1 1/2" high. Set the jig into place, turn on the saw and push the jig into the blade until you've cut across the base and through the adjustable fence. Stop the cut, and turn off the saw. Glue the rear guard to the base and to the back face of the fixed fence. Center it on the kerf cut made by the dado blade.

The jig needs to be fine-tuned so the space between the blade and the key is exactly the same width as the blade; this will make each finger of a box joint the same width as each slot, so the joint parts will mesh together. Slide the jig back to the starting position on the saw, and loosen the wing nuts. Move the adjustable fence about 1/4" to the right, and tighten the wing nuts. Glue the key into the slot in the adjustable fence.

### Making a Trial Joint

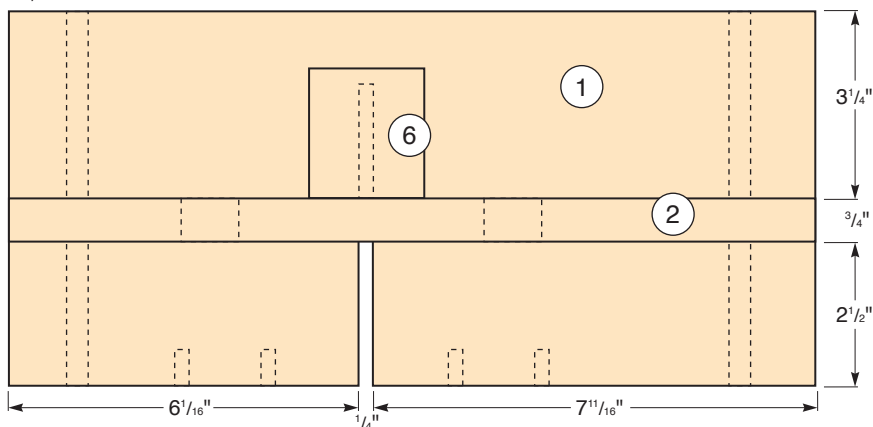
You're ready to make some test cuts! Prepare two matching workpieces from 3/4" stock. Stand one on end on the jig base and so its edge is against the side of the key. Make one slot cut through the test piece (which also forms the joint's first finger). Then, fit

this slot over the key and make another slot cut. Repeat all the way across the first board. To cut the mating board, fit the first slot you made over the key again. Rest the second workpiece against the first — this will set the second workpiece up for making a slot cut along its edge, instead of a finger. Make the first slot cut, then repeat the cutting procedure all across the second workpiece.

Once all the cuts are completed, try to fit the test joint together. If the fit is too tight or loose, loosen and shift the fence a minuscule amount to the left or right, as needed, to refine the widths and positions of the fingers until they match the slot cuts perfectly. Make more test cuts. When the joint fits together well, drive a 1" countersunk screw through the fixed fence and into the adjustable fence to lock them together. Your jig is now set for all the joint-cutting ahead.

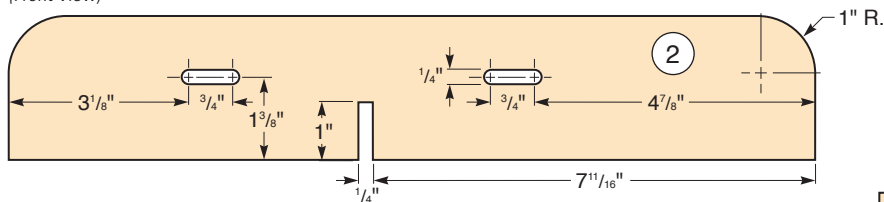
### Base Subassembly

(Top View)



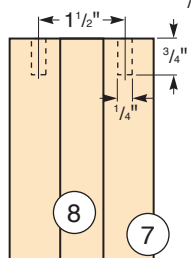
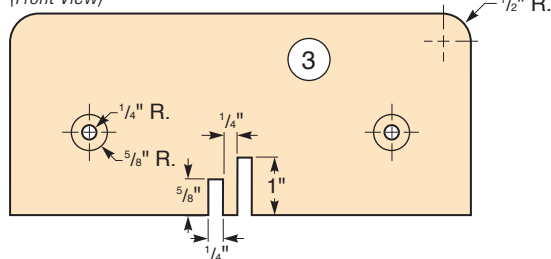
### Fixed Fence

(Front View)



### Adjustable Fence

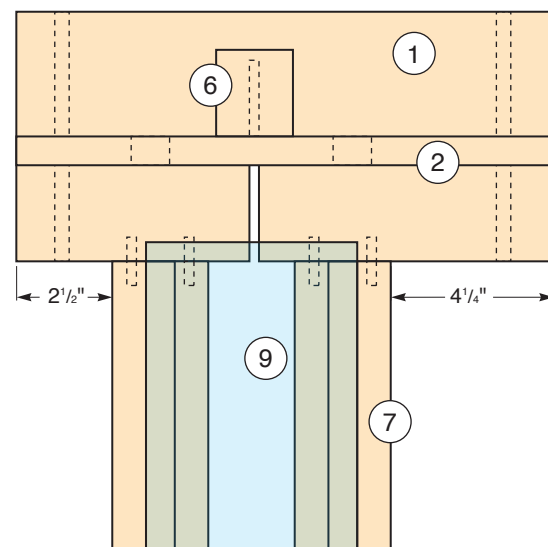
(Front View)



**Slide Bottom and  
Slide Upright**  
Top View)

### Box Joint Jig

(Top View)



### Box Joint Jig Hard-to-Find Hardware

Spiral Dowel Pins 1/4" x 1 1/2" (1 pack.) #21113 ... \$2.99 pk.  
1/4" Dowel Centers (1 pack) #42341 ..... \$6.99 pk.

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