

The Fuss-free, Router-table, Box-joint Jig

Perfect box joints are just a step (and a cut and a repeat) away.



Nothing beats the elegant simplicity of the box joint. But because any inaccuracy multiplies with every finger, no joint tops a box joint for fussiness of construction. Until now. This jig provides fast setup with repeatable precision. What's more, a single jig can create a variety of joint sizes.

Top-notch precision starts with a bottom-dollar jig

This box-joint jig consists of three parts: a base that clamps to the router table, a sliding fence assembly, and interchangeable guides—one for each straight bit you want to use. We constructed all of the parts from scrap $\frac{3}{4}$ " Baltic-birch plywood and hardwood by simply gluing and clamping them together.

The length of the jig base depends on the depth of your router table. So start by measuring from the front edge of your router table to the center of the router's collet.

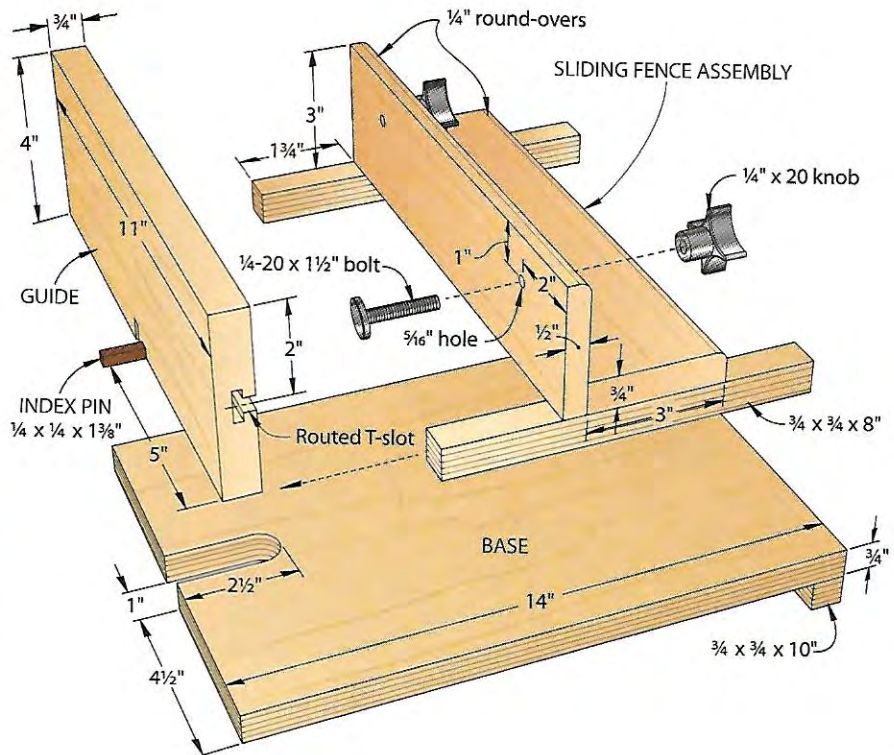
Quick tip: To find the center of your router's collet, chuck in a V-groove bit; the point of the bit marks the center.

Add $2\frac{3}{4}$ " to this measurement to find the length of the jig's base. (Ours was 14") Then construct the jig as shown in the drawing at right.

To ensure that the fence assembly slides easily on the base, slip a playing card between one of the runners and the jig base for spacing during assembly.

If you plan on using the jig to make a variety of box joints, machine multiple

guide blanks now for later use. You'll need a fresh blank for each box-joint size. To create the T-slot in the back of the guide, first hog away the center portion of the slot with a straight bit before switching to a T-slot bit to finish the cut.



Time to build some boxes

The bit size will determine the width of the joint's fingers; but since each guide is customizable, you can use the bit size of your choosing. For the best look, plan the box height in increments of the fin-

ger size to eliminate partial fingers at the box's top and bottom. Then, machine two test blanks to the same thickness and length as the box sides, ripping them about $\frac{1}{8}$ " wider than the box's finished height. (Any tiny errors could

accumulate along the multiple cuts of a box joint. So leave extra width now to save frustration later. You will rip away any excess once the joint is complete.) Then set up the box-joint jig, dial it in, and create boxes in 12 easy steps:



$\frac{1}{4}$ " box joints

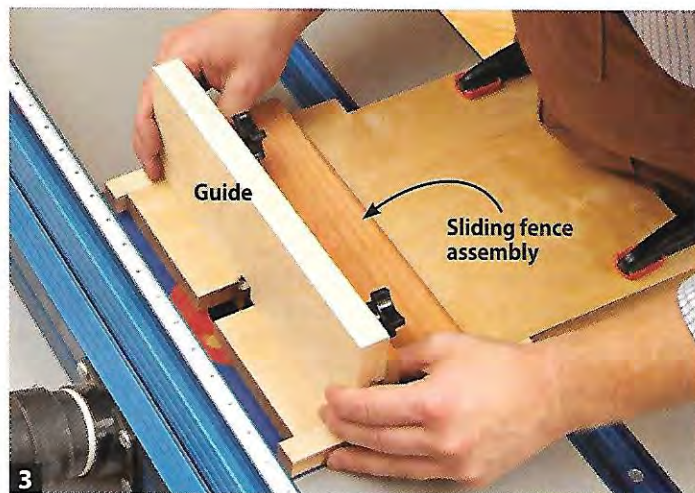
1

Choose a bit to match your box thickness to create an even joint like these $\frac{1}{4}$ " fingers in $\frac{1}{4}$ " stock. But don't be afraid of different bit sizes for larger joint fingers.



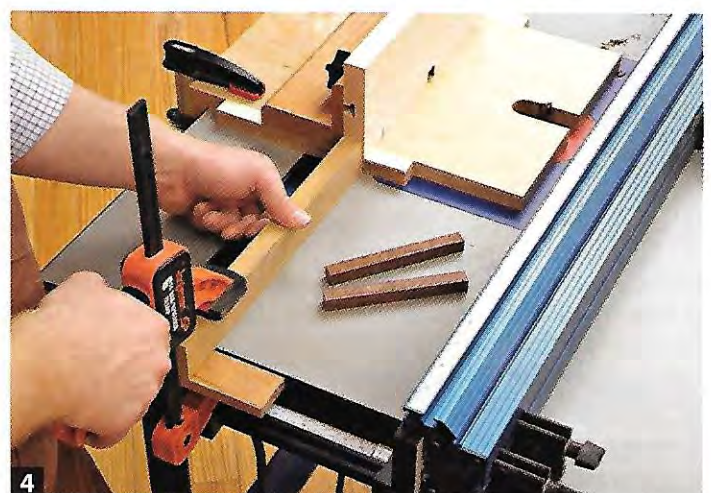
2

Clamp the jig base to your router table with the bit centered in its slot. With the box-side blank on the base, set the bit height just proud of the blank thickness.



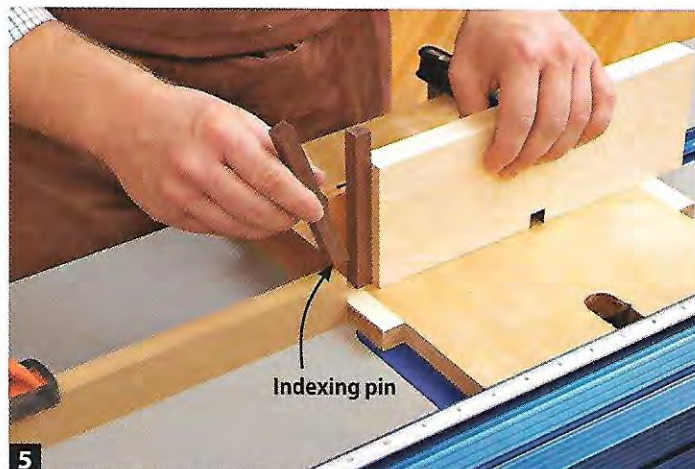
3

With the fence assembly on the base, lock a guide to it with the ends flush with the runners. Slide the fence forward to make a single notch through the guide.



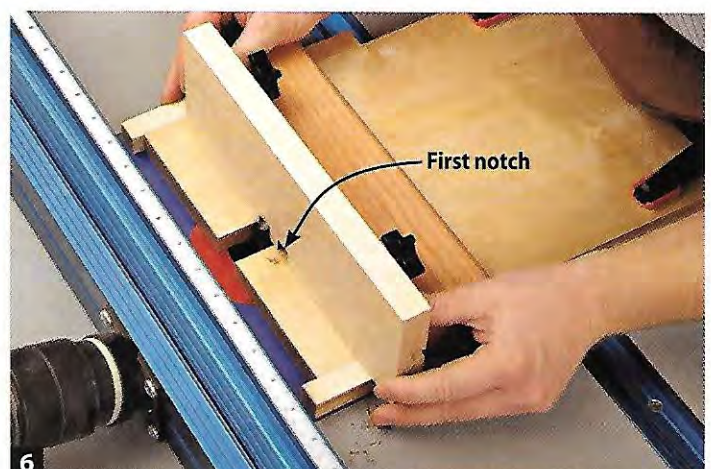
4

Create a scrapwood T-square to fix the distance from the table edge to the guide. The T-square should be tall enough to clamp in place against the guide.



5

Machine a 10" length of hardwood into a square indexing pin that fits snugly in the notch. Cut the pin in half, and stack the halves to reposition the guide.



6

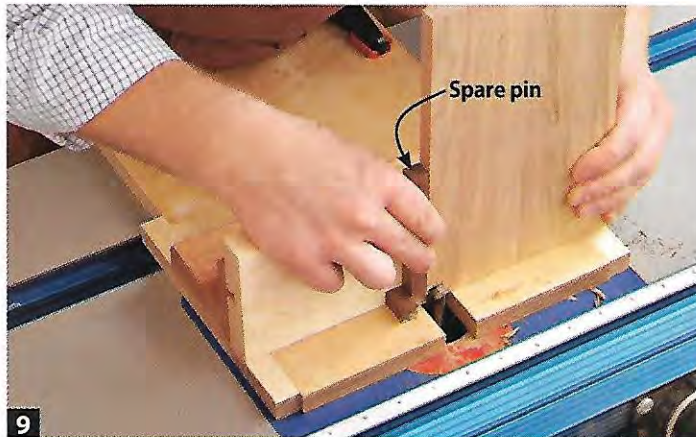
Remove the T-square and pins, and cut a second notch. Cut one indexing pin to 2" long and glue it into the new notch, flush with the back of the guide.



7 Test the setup by standing one test blank against the indexing pin. Slide the fence assembly forward to rout a socket through the blank.



8 Fit the first socket over the pin and cut the second socket. Continue cutting, placing each newly cut socket onto the indexing pin, to complete the joint.



9 On the mating test side, cut the first socket while holding a spare pin between the guide's indexing pin and the box side. Then set the spare pin aside.



10 Fit the socket on the pin to make the next cut. Step, cut, and repeat to complete the joint. Rip the box sides to final width, trimming away partial fingers.



11 Test-fit the joint. It should be easily hand-assembled, but snug enough that it doesn't fall apart under its own weight. Adjust the jig if necessary, as shown.



12 Rockler's box-joint-jig clamping cauls (item no. 42784, \$30, rockler.com) allow you to clamp proud box joints while placing pressure squarely on the joint.

Skip the screw-ups by following these pointers for perfect boxes

- ▶ Before cutting any joints, arrange the box sides as they will appear in the box and number the sides. Mark the face and tops to remind you of their orientation. Then, make sure opposing sides have matching finger patterns.
- ▶ An upcut spiral bit provides the most tear-out-free cut. Plus the geometry of the bit pulls the box down to the table rather than lifting it.
- ▶ For tear-out-prone wood, tape a sacrificial layer of scrapwood to the front of the box side, creating a tear-out-eliminating sandwich.
- ▶ Always leave fingers $\frac{1}{32}$ "– $\frac{1}{16}$ " proud; then trim them with a flush-cut bit in your router table. Use a backer board to support the final finger to avoid tear out.
- ▶ If the box design calls for a captured bottom, dry-assemble and clamp the

box, and use a bearing-guided box-slotted bit to cut the grooves for the bottom. Then radius the corners of the box bottom to match the bit radius.

▶ Glue up the box within 24 hours of cutting the joints. If the pieces sit for several days, the fingers could shrink or swell, altering the fit.

▶ With four corners and dozens of fingers to glue up, your glue's open time comes into play. Beat the clock by spreading glue only on the top of each finger before assembly. 🌲

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