

Box-Joint Jig

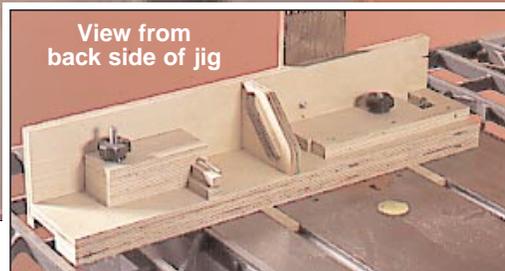
A
WOOD
MAGAZINE
EXCLUSIVE

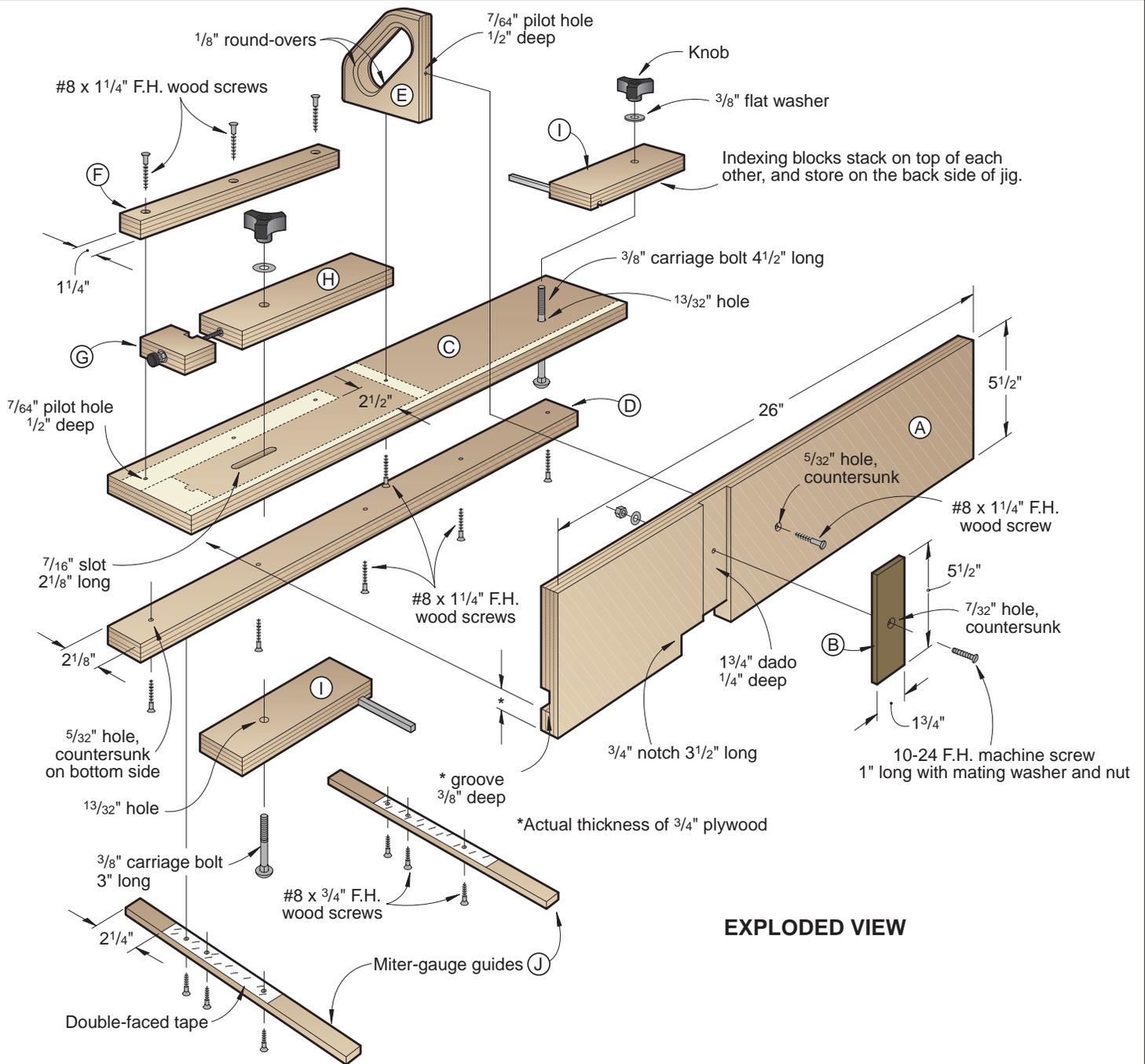
I've always liked box joints, and here's why. They offer both strength and unique good looks. Although not as refined as dovetail joints, they can be cut on a tablesaw or router table using a simple shop-built jig. Not only that, but I can use a box-joint jig on virtually any width or thickness of stock. Our jig combines simplicity of construction with micro-adjustability. Interchangeable indexing pins allow you to cut box joints of any size without having to build a different jig each time.

Jan Hale Svec

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Assistant Design Editor

View from
back side of jig





EXPLODED VIEW

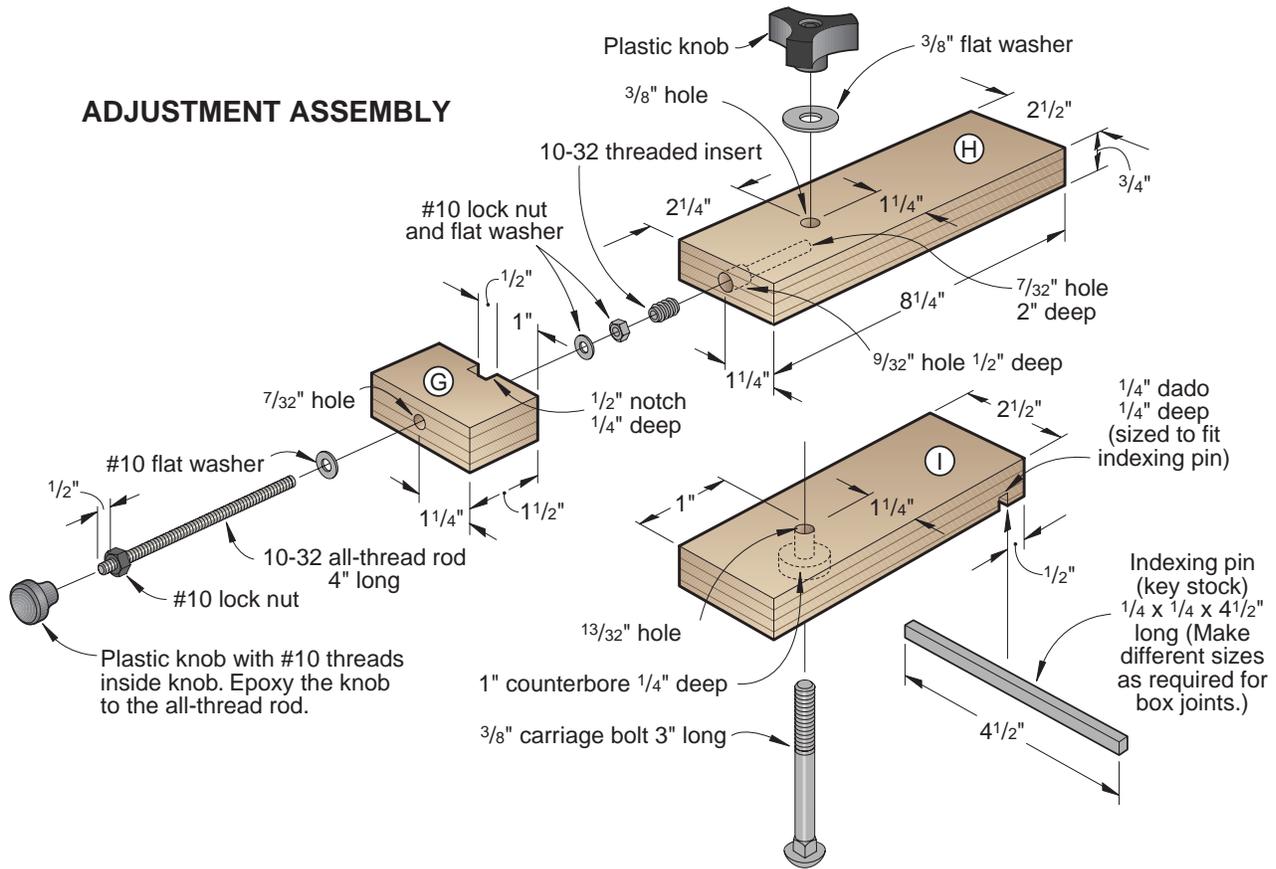
Let's start with the fence assembly

- 1 Cut the jig fence (A) to the size listed in the Bill of Materials and shown on the Parts View drawing on *page 9*. (Due to its stability, strength, and lack of voids we used 3/4" [18mm actual] Baltic birch plywood.)
- 2 Mark the location, and cut the 3/4"x3 1/2" notch along the bottom of the fence (A) where dimensioned on the Parts View drawing. Then, mark the location, and cut the 1 3/4" dado 1/4" deep in the front face of the fence.

- 3 Measure the exact thickness of your plywood, and cut a groove along the back side of the fence (A) where shown on the Parts View and Exploded View drawings. The groove should be as wide as your plywood is thick. And, the groove should be up from the bottom edge of your plywood a distance equal to the thickness of your plywood.
- 4 Mark the centerpoint, and drill and countersink a 5/32" hole through the fence for attaching the handle (E) later. Mark light

- lines on the back side of the fence for positioning the handle onto the fence later.
- 5 Cut the backing plate (B) to size. The backing plate is used to minimize chipout when using the jig. You'll need one backing plate for each size of finger joint you'll be cutting. The plate should fit snug, yet slide in the 1 3/4" dado in the front face of the fence. Drill a 7/32" mounting hole through the backing plate and into the fence. Screw the plate to the fence.

ADJUSTMENT ASSEMBLY



Add the base assembly for stability

1 Cut the plywood jig base (C) to the size listed in the Bill of Materials and dimensioned on the Parts View drawing.

2 Mark the location and cut the $\frac{7}{16}$ " slot in the base where shown on the Parts View. Then, mark the centerpoint, and drill the $1\frac{3}{32}$ " hole through the base.

3 Cut the base support (D) to size. Using the dimensions on the Parts View, locate the hole centerpoints, and drill the five countersunk holes in the support. With the back edges and ends flush, glue and screw D to C. Make sure the screwheads don't protrude below the support and scratch your tablesaw top later.

4 Glue the fence (A) to the front edge of the base (C), keeping the ends flush. Check that the fence is square to the base. This is important for accurate cuts later.

5 Transfer the full-size handle (E)

pattern on *page 10* to your stock, and cut the handle to shape. Rout $\frac{1}{8}$ " round-overs on the handle where noted on the Exploded View drawing. Drill a mounting hole through the bottom of the base (C), and glue and screw the handle to parts A and C.

For perfectly placed fingers, add the adjustment block

Note: The distance between the dado blade and the indexing pin has to be equal to the width of the slot the dado blade will cut. This will ensure that the fingers and notches are exactly the same size and that the mating pieces fit together correctly. The adjustment block assembly allows you to adjust the distance between the blade and indexing pin to achieve a perfect fit of the box joints.

1 Cut the adjustment block guide (F), adjustment block (G), and index slide (H) to size.

2 Cut the $\frac{1}{2}$ " notch in the

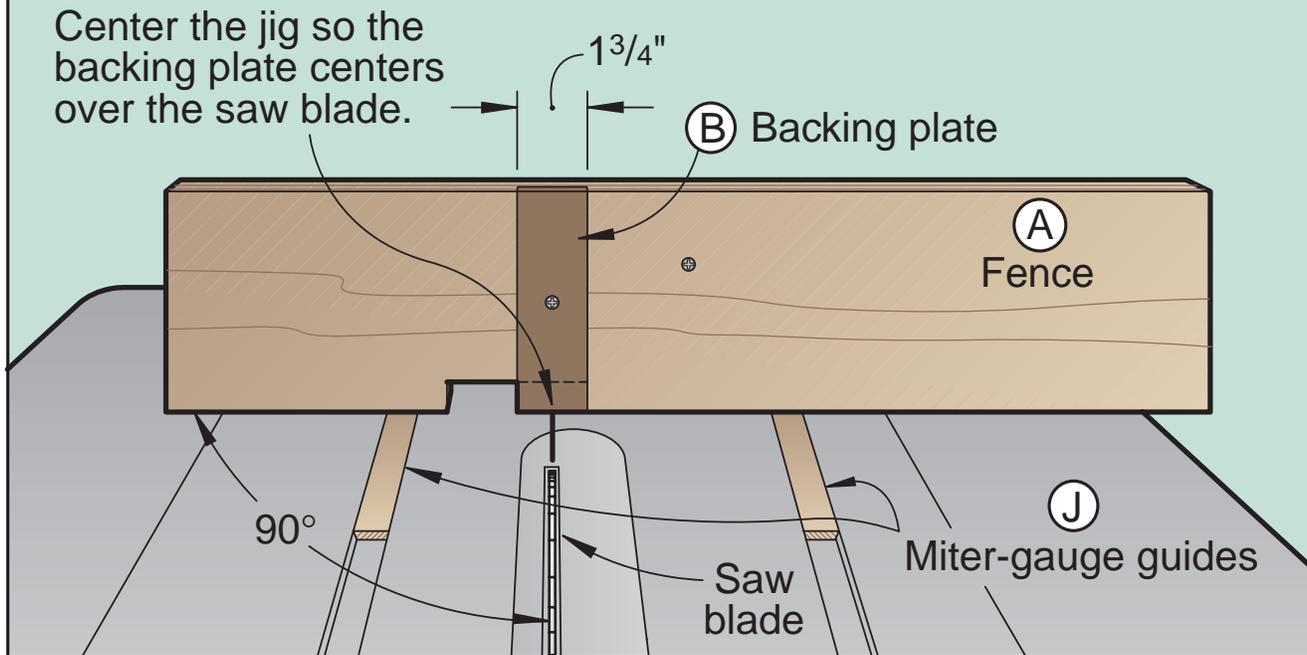
adjustment block (G) where shown on the Parts View drawing. Then, drill a $\frac{7}{32}$ " hole through the center of the notch. Glue the block to the base (C), flush with the back face of the fence (A) and flush with the end of the base where shown on the pattern.

3 Drill the holes in the index slide (H) where shown on the Adjustment Assembly drawing and pattern insert. Drive a 10-32 threaded into the $\frac{9}{32}$ " counterbore, centered in the end of the index slide.

4 Using the index slide (H) and adjustment block (G) as spacers, screw the adjustment block guide (F) in place. The index slide should slide between the guide and fence (A) without slop.

5 Secure the adjustment block (G) and index slide (H) together with a 10-32 all-thread rod 4" long, locknuts, washers, and a plastic knob in the configuration shown on the Adjustment Assembly and Parts View drawings.

POSITIONING THE MITER-GAUGE GUIDES



Let's form the indexing blocks for different sized fingers

1 Cut the indexing blocks (I) to size. Cut extras depending on how many sizes of box joints you wish to cut. We recommend four ($\frac{1}{8}$ ", $\frac{1}{4}$ ", $\frac{1}{2}$ ", and $\frac{3}{4}$ "). Drill a $1\frac{1}{32}$ " hole with a 1" counterbore $\frac{1}{4}$ " deep on the bottom side of each block where located on the Adjustment Assembly drawing.

2 For a $\frac{1}{4}$ "-wide index pin, fit your tablesaw with a $\frac{1}{4}$ "-wide dado blade, and cut a $\frac{1}{4}$ " dado $\frac{1}{4}$ " deep located $\frac{1}{2}$ " in from the end of the index block. Be careful to keep the dado perpendicular to the front edge of the indexing block, where shown on the Adjustment Assembly drawing.

3 From $\frac{1}{4}$ " key stock, crosscut an index bar $4\frac{1}{2}$ " long, and epoxy it into the $\frac{1}{4}$ "-wide dado, keeping the back end of the key stock flush with the back edge of the indexing block.

4 Repeat steps 2 and 3, keeping the dados $\frac{1}{2}$ " from the end for the other sizes of indexing pins. We used metal key stock (used to secure pulleys to spindles) for the

$\frac{1}{8}$ " and $\frac{1}{4}$ " pins and Baltic birch plywood for the $\frac{1}{2}$ " and $\frac{3}{4}$ " pins.

5 Secure an indexing block (I) to the bottom side of the base with a 3"-long carriage bolt as shown on the Exploded View drawing. When the index blocks are not being used, you can secure them to the top side of the base where shown on the same drawing.

Attach the miter-gauge guides, and add the finish

1 Cut the miter-gauge guides (J) to size according to the width and depth of the miter-gauge slots in your tablesaw. The thickness should be $\frac{1}{16}$ " less than the depth of your miter-gauge slots. Test-fit the miter-gauge guides in the tablesaw slots. Then, using thin strips of plastic or wood, shim the guides in the miter-gauge slots so the top surface of each guide protrudes just above the surface of your tablesaw. Doing this keeps the bottom surface of the jig from rubbing on the tablesaw top.

2 Mark a line on each guide $2\frac{1}{4}$ " from the back end. Then, adhere a 5"-long piece of double-faced tape

to each guide starting at the line just marked. See the Exploded View drawing for reference.

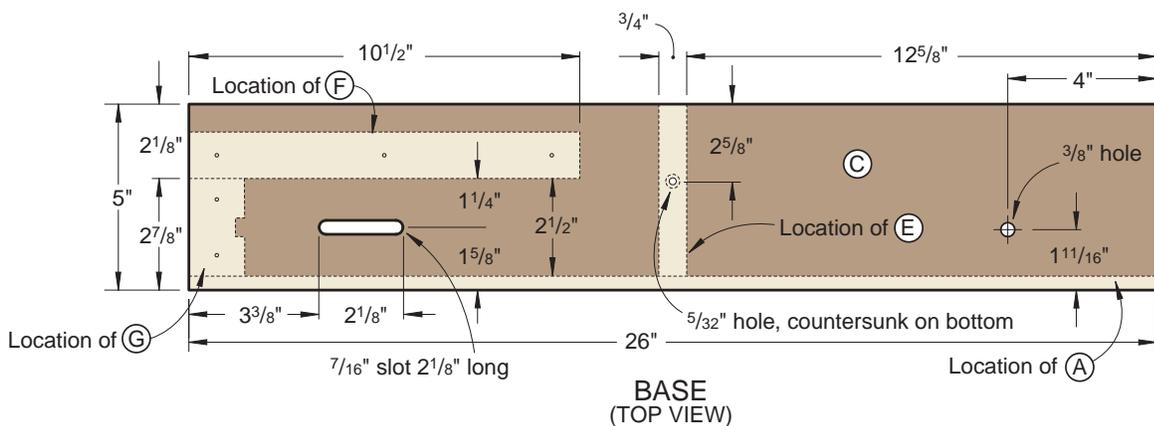
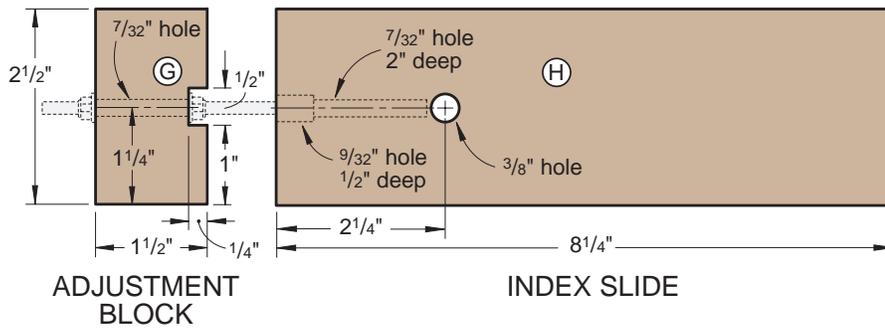
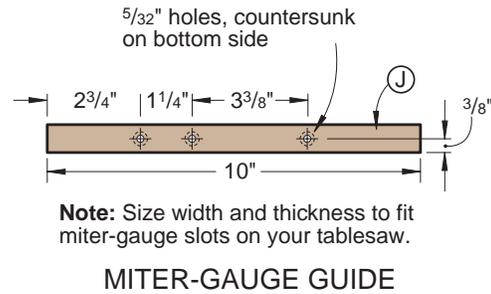
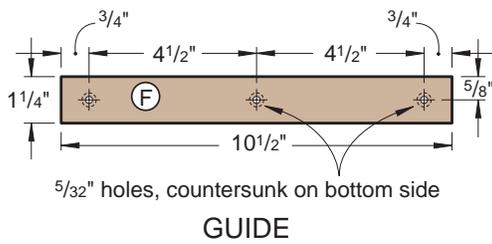
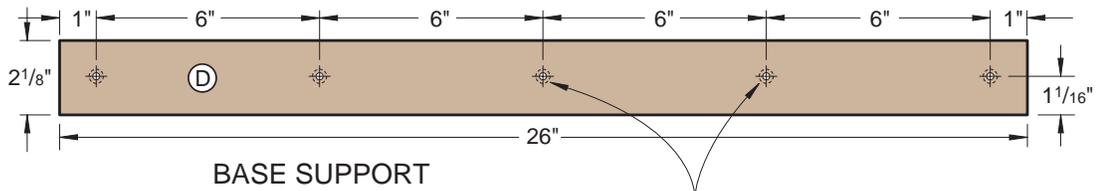
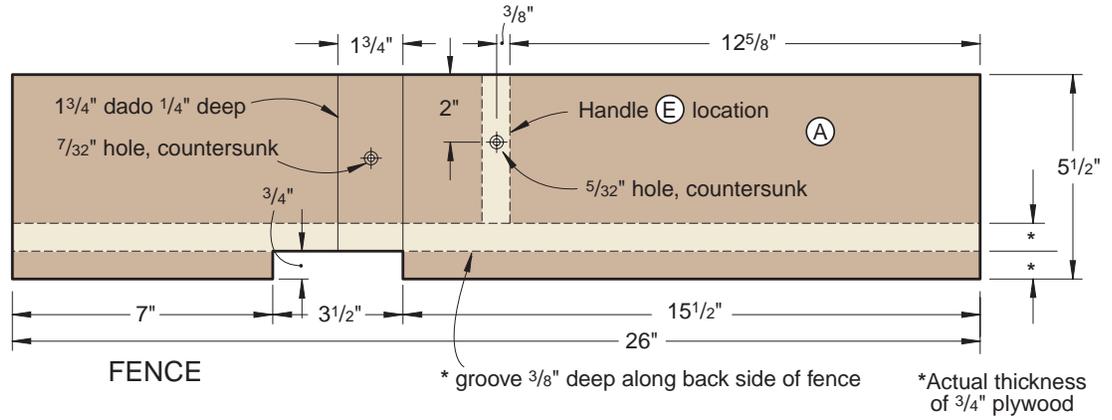
3 As shown in the drawing above, position the jig assembly onto the guides, being careful to keep the jig square to the blade. Press down firmly to adhere the tape-covered guides to the bottom of the jig assembly.

4 Turn the base assembly over, and drill and countersink six mounting holes through the guides and into the bottom of the jig base (C). Leaving the double-faced tape between the guides and base, screw the guides to the base bottom with #8x $\frac{3}{4}$ " flathead wood screws.

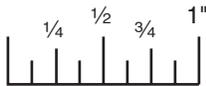
5 Remove the hardware, then finish-sand all the wood pieces. Apply a clear finish to the parts to seal the parts and keep them clean over time. Reattach the hardware and reassemble the jig.

6 If you used solid stock for the miter-gauge guides (J), apply a bit of paraffin wax to the sides and bottom of the two guides for easier sliding of the guides in the tablesaw miter-gauge grooves.

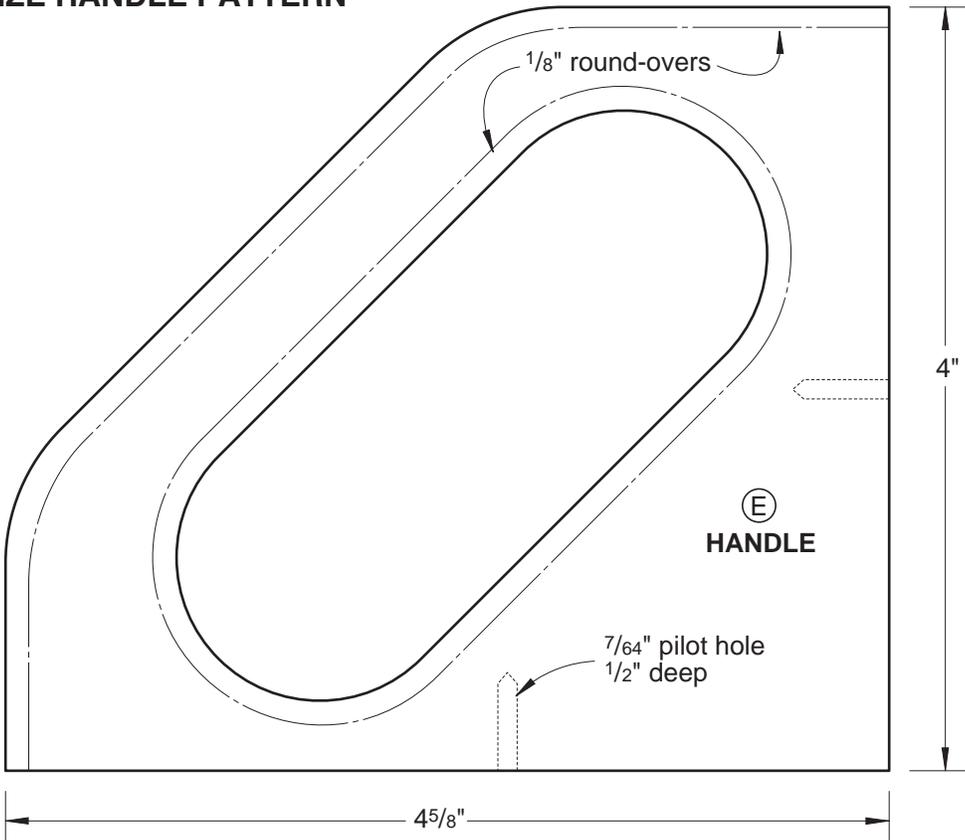
PARTS VIEW



To ensure full-size patterns are correct size, your printer should be set to print at 100% (not fit to page). Measure full-size patterns to verify size.



FULL-SIZE HANDLE PATTERN



Bill of Materials

Part	Finished Size			Matl.	Qty.
	T	W	L		
A fence	3/4"	5 1/2"	26"	BP	1
B backing plates	1/4"	1 3/4"	5 1/2"	HB	4
C base	3/4"	5"	26"	BP	1
D support	3/4"	2 1/8"	26"	BP	1
E handle	3/4"	4"	4 5/8"	BP	1
F guide	3/4"	1 1/4"	10 1/2"	BP	1
G adjustment block	3/4"	2 1/2"	1 1/2"	BP	1
H index slide	3/4"	2 1/2"	8 1/4"	BP	1
I indexing blocks	3/4"	2 1/2"	5 3/4"	BP	4
J miter-gauge guides	3/8"	3/4"	10"	B	2

Materials Key: BP—birch plywood, HB—hardboard, B—birch

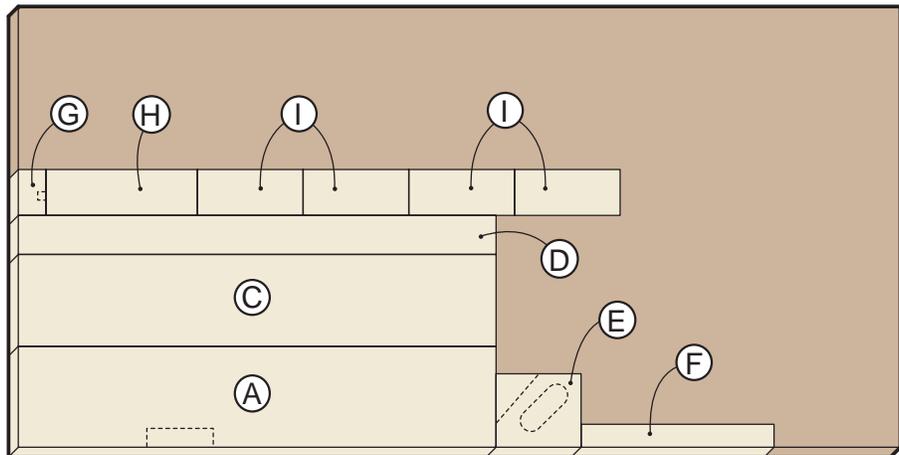
Supplies: #8x3/4" flathead wood screws, #8x1 1/4" flathead wood screws, 3/8" carriage bolt 3" long with a flat washer and plastic knob; 10-32 all-thread rod 4" long with two locknuts, two flat washers, 10-32 threaded insert, and mating knob; 3/8" carriage bolt 4 1/2" long with a flat washer and plastic knob; 10-24 flathead machine screw 1" long with mating flat washer and nut; key stock; clear finish.

Sources

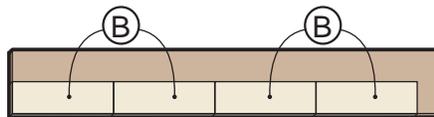
Hardware kit. All the hardware listed in the Supplies listing above. WOOD KIT BJJ1, \$17.95 plus \$3.95 shipping. Schlabaugh and Sons Woodworking, 720 14th Street, Kalona, IA 52247 or call 800/346-9663 to order.

Easy-to-assemble kit. All the pieces listed in the hardware kit above, plus all the Baltic birch plywood and solid-birch pieces cut to the size listed in the Bill of Materials. WOOD KIT BJJ2, \$79.95, plus \$8.50 shipping. Schlabaugh and Sons Woodworking, 720 14th Street, Kalona, IA 52247 or call 800/346-9663 to order. Or e-mail at schsons@kctc.net

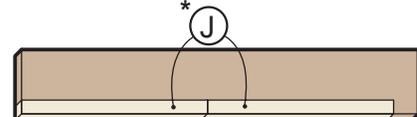
CUTTING DIAGRAM



3/4 x 24 x 48" Baltic birch plywood



1/4 x 3 1/2 x 24" Hardboard



1/2 x 3 1/2 x 24" Birch

*Plane or resaw to thickness listed in the Bill of Materials.

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 Illustrations: Kim Downing
 Photographs: John Hetherington
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How to make your box-joint jig do its thing

Adjust or shim the dado blade to the same thickness as the wood being box-jointed. Raise the blade to the same height as the thickness of the material being cut *plus* $\frac{1}{32}$ ". As shown in *photo A*, adjust the distance between the blade and indexing pin so the distance is equal to the width of the blade. It may be necessary to remove the backing plate (B), and notch it to get the pin close enough to the blade. As shown in *photo B*, slide

your stock against the pin, and make the first cut. Position the notch just cut onto the index pin, and make the second cut as shown in *photo C*. Repeat until the piece is completely cut across one end. For the mating piece, place the first test piece on the index pin so just one finger is on the blade side of the pin. Position the second piece firmly against the first piece, and make the cut as shown in *photo D*. Remove the first piece, and make the cuts along the end of the second piece.

Test-fit the two pieces together. Chances are you'll need to adjust the distance between the blade and pin. If the fit is too loose, turn the knob clockwise to increase the distance between the pin and blade. If the fit is too tight, turn the knob counterclockwise to decrease the distance.

Test-cut scrap material until the joints fit perfectly. With the index pin properly located, lock the index slide in place with the large plastic knob. ♣

