

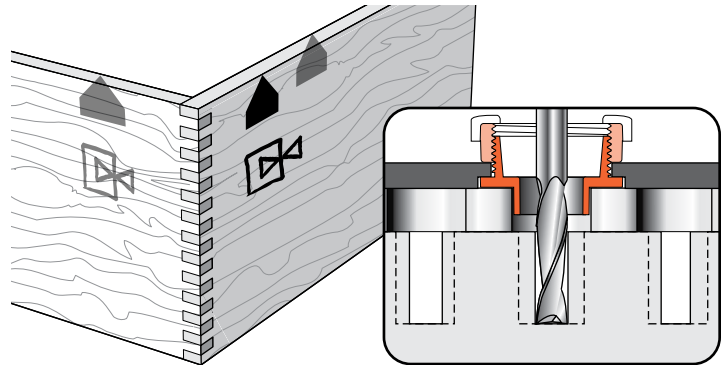
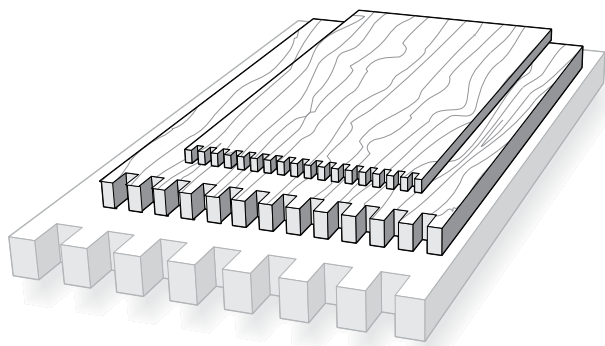
CHAPTER 8

Half, Quarter & Double Size Box Joints

This chapter covers procedures for routing 1/2 size and 1/4 size joints on the F3, F3M, F18, F18M, F24 and F24M Finger Joint Templates. Not all joint sizes are available on all templates. See the chart below for joint size information for each template. These instructions assume that you have mastered basic box joint routing, are thoroughly familiar with those procedures, and that you have read the Hints and Tips Chapter 9.

LEIGH FINGER (BOX) JOINT SIZES

Inch Templates	Full Size (Inches)			Half Size (Inches)			Quarter Size (Inches)		Half-Blind (Inches)			Double Sizes (Inches)		
	F3	5/16	3/8	1/2	5/32	3/16	1/4	3/32	1/8	5/16	3/8	1/2	5/8	3/4
F18		3/8	1/2		3/16	1/4	3/32	1/8		3/8	1/2		3/4	1
F24		3/8	1/2		3/16	1/4	3/32	1/8		3/8	1/2		3/4	1
Metric Templates	Full Size (mm)			Half Size (mm)			Quarter Size (mm)		Half-Blind (mm)			Double Sizes (mm)		
	F3M	8	10	12	4	6	2	3	8	10	12	16	20	24
F18M		10	12		5	6		3		10	12		20	24
F24M		10	12		5	6		3		10	12		20	24



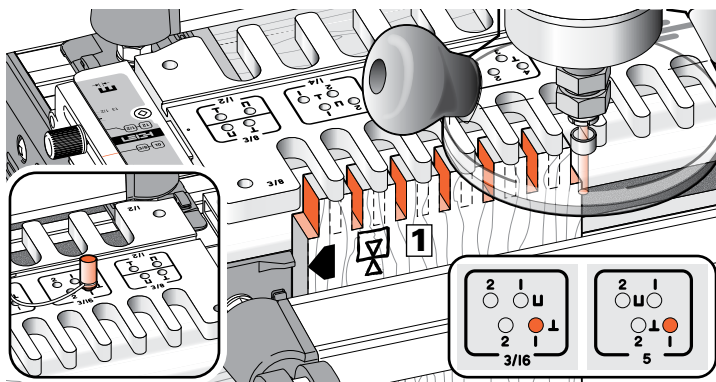
8-1 About Small Box Joints

The template pin positions for half and quarter size joints are clearly marked on the template. These allow routing of half-size, and even some quarter-size box joints using the same procedure.

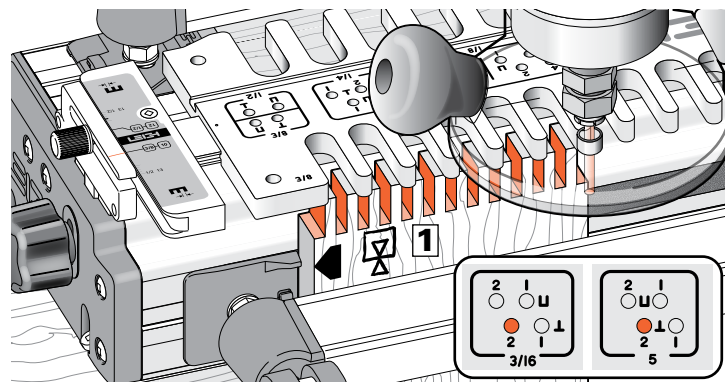
To calculate board widths for small box joints, see 8-19 to 8-21.

8-2 Routing Half-Size Joints

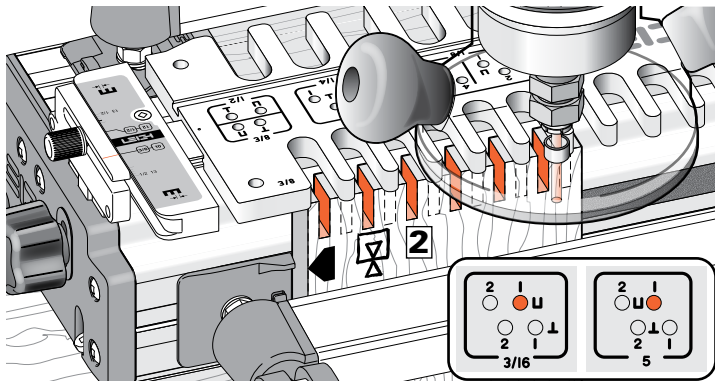
Use the same size guidebush for the selected comb, but use a bit half the nominal size. An example of a half size joint layout is routing 3/16" [5mm] joints on the 3/8" [10mm] comb. In this example, use the e8-Bush with a 3/16" [5mm] bit.



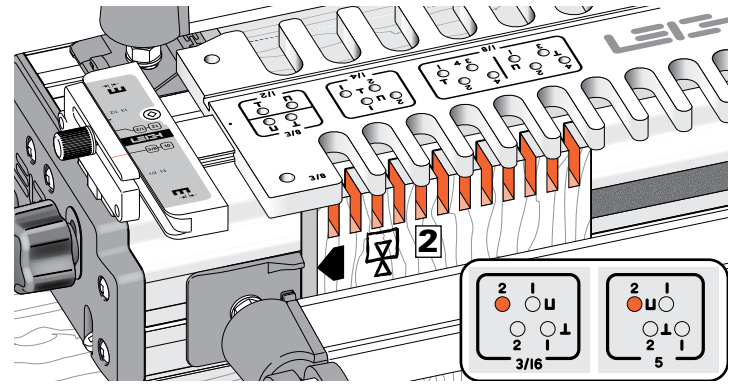
8-3 Clamp board **1** in the jig against the side stop. Using the 3/16" [5mm] pin-hole panel (right-hand end of the template), place the template pin in the **↓** No.1 hole. Rout the 3/16" [5mm] sockets and leave board **1** in the clamp.



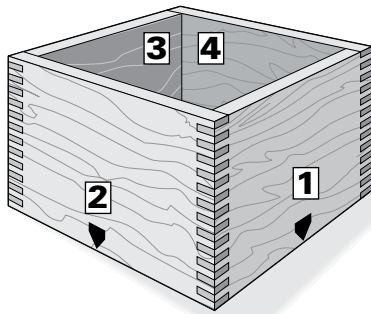
8-4 Move the template right. Put the template pin in the **↓** No.2 hole. Rout the remaining sockets and remove the board. Board **1** now has fingers and sockets half the nominal size. Repeat 8-3 and 8-4 on the other end of board **1**, and on both ends of board **3**, making sure at each step to keep the same side edge against the side stop.



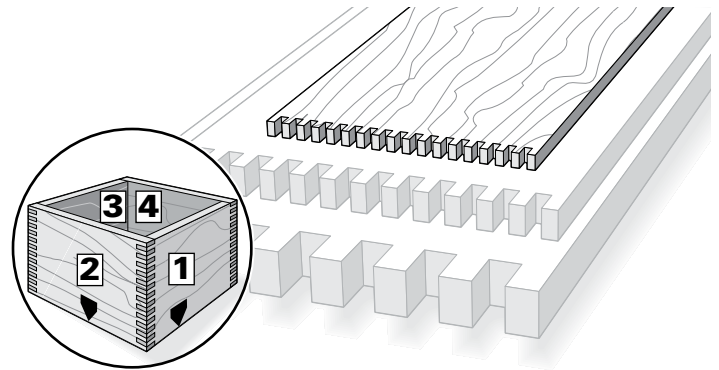
8-5 Mount the mating board **2**. Put the template pin in the **U** No.1 hole. Rout the first set of sockets and leave the board in the clamp.



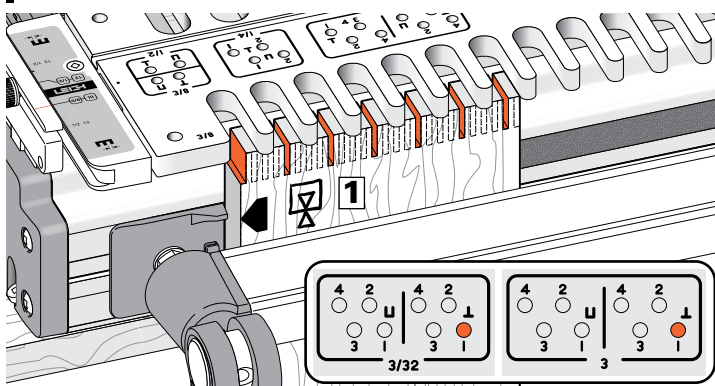
8-6 Move the template and put the template pin in the **U** No.2 hole. Rout the remaining sockets and remove the board. Repeat instructions 5 and 6 on the other end of board **2**, and on both ends of board **4**, again making sure to keep the same board side edge against the side stop.



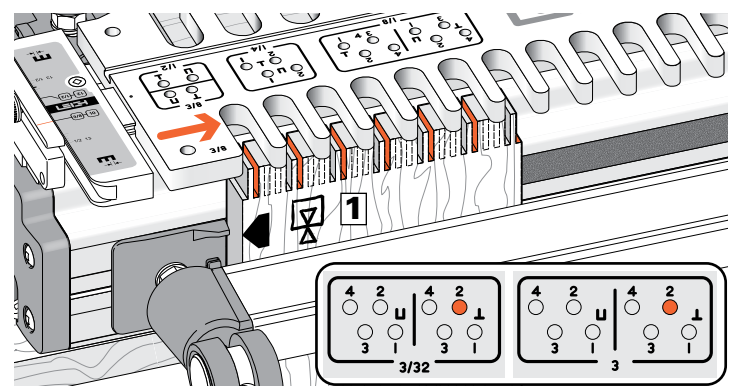
8-7 Keeping the marked side stop edges of all boards toward the top (or bottom) of the box, select the preferred outside faces before marking and routing the grooves **1** for the box bottom. Remember, box joint corners need clamping from both directions, or use strap clamps and blocks. The same method will produce square end-on-end joints.



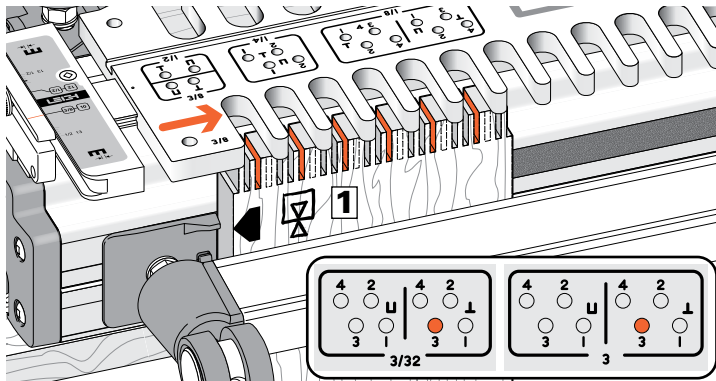
8-8 Quarter Size Joints Routing sequence is the same for all combs. Our example quarter size joint layout shows $\frac{3}{32}$ " joints on the $\frac{3}{8}$ " comb and e8-Bush. The metric templates only provide quarter size using the 12mm comb and e-10 Bush. This produces 3mm joints, so our example shows metric pin settings in the 3mm panel. Quarter size joints are not available on the F3 $\frac{5}{16}$ " comb



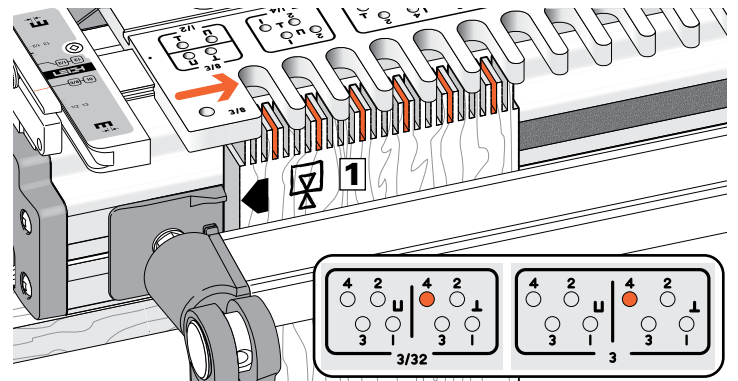
8-9 Clamp board **1** in the jig against the left-hand side stop. Using the $\frac{3}{32}$ " [3mm] pin-hole panel, place the template pin in the **L** No.1 hole and rout the quarter size $\frac{3}{32}$ " [3mm] sockets. Leave the board in the clamp until after step 8-12.



8-10 Move the template and put the template pin in the **L** No.2 hole. Rout again.

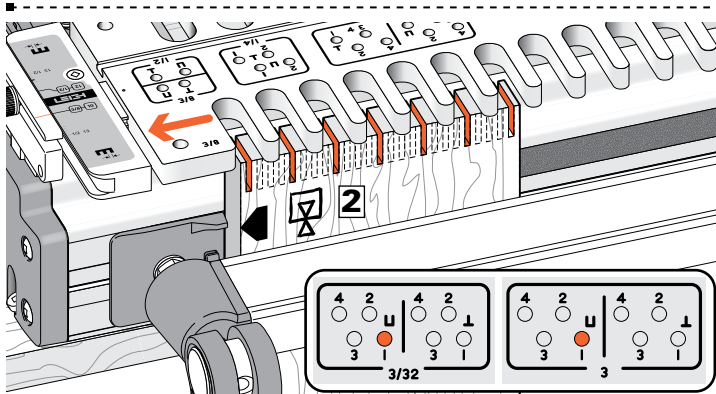


8-11 Move the template, put the template pin in the **L** No.3 hole and rout again.

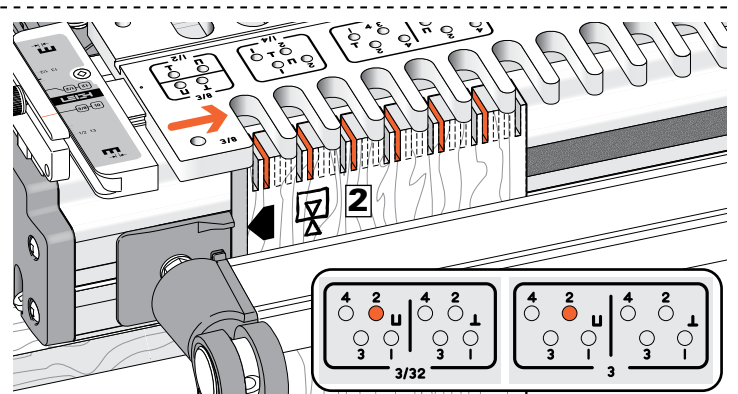


8-12 Finally, move the template and put the template pin in the **L** No.4 hole. Rout the last sockets and remove the board.

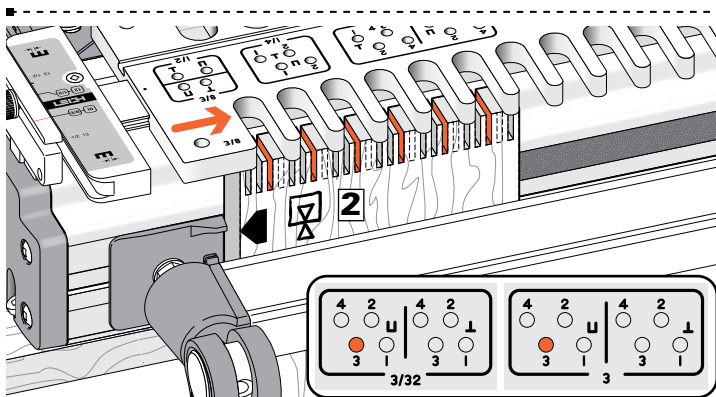
Repeat instructions 9 through 12 on the other end of board **1**, and on both ends of board **3**, making sure at each step to keep the same side edge against the side stop.



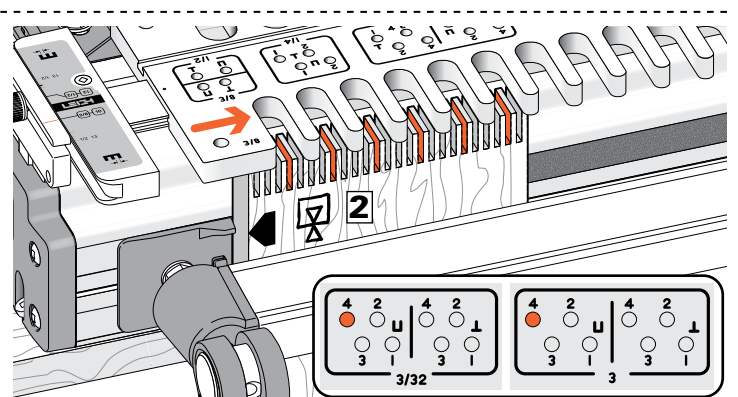
8-13 Mount the mating board **2**. Put the template pin in the **U** No.1 hole and rout the first set of sockets. Leave the board in the clamp until after step 8-16.



8-14 Move the template and put the pin in the **U** No.2 hole. Rout the second set of sockets.

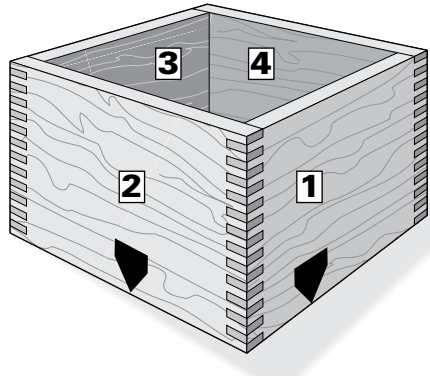


8-15 Rout again in pin position **U** No.3.

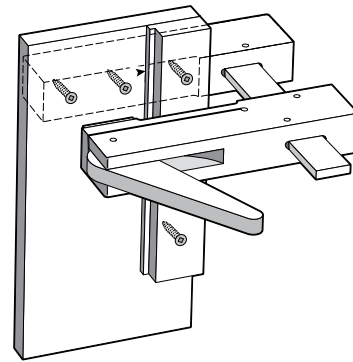


8-16 Then rout in pin position **U** No.4.

Repeat instructions 13 through 16 on the other end of board **2**, and on both ends of board **4** making sure at each step to keep the same side edge against the side stop.

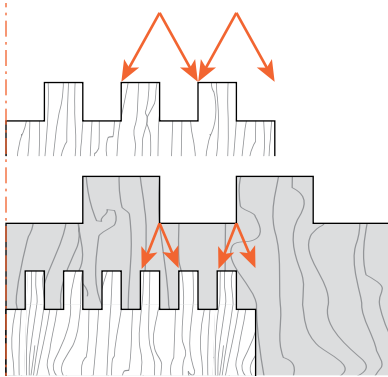


8-17 During assembly of the box, always keep the side stop edges of the boards either to the top or bottom of the box.



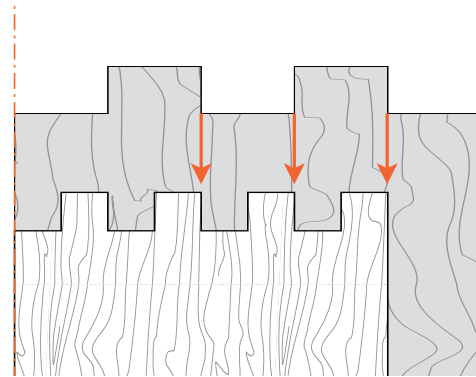
8-18 A Fixture for Routing Multiple Pieces

For very thin or short boards, make up an auxiliary clamp with its own *stepped* side stop by adapting a stock clamp. You can download instructions on how to make and use this fixture from: www.leighjigs.com/support.



8-19 Board Widths for Small Box Joints

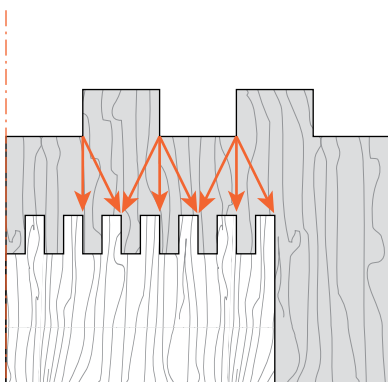
Small joint board widths are calculated from the board width charts, see page 12. e.g. for $\frac{3}{16}$ " [5mm] joints use the $\frac{3}{8}$ " [10mm] comb chart.



8-20 Asymmetrical Joints, Half Size Width as per chart.

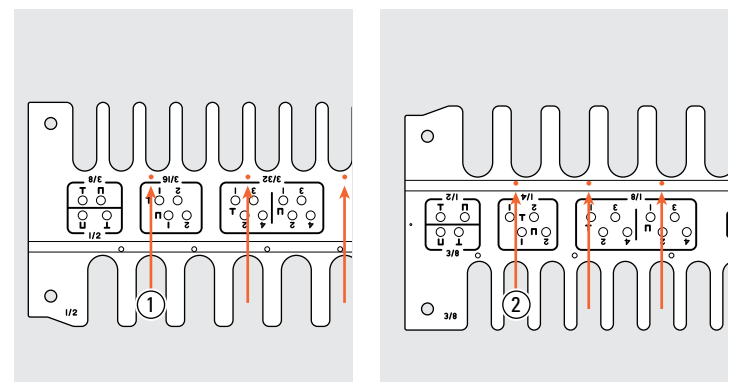
All Symmetrical Joints

Use chart width plus or minus the diameter of the small cutter used.



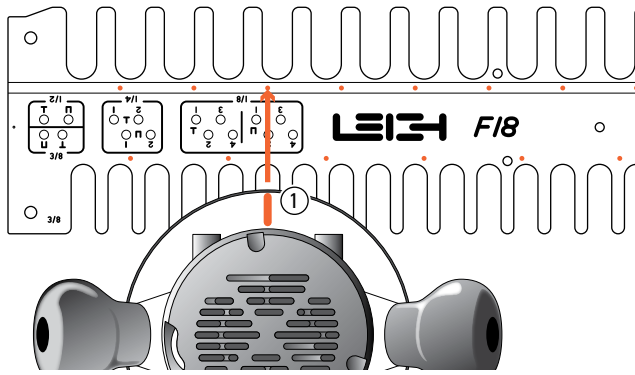
8-21 Asymmetrical Joints, Quarter Size

Chart width plus or minus 2 diameters of the small cutter used.

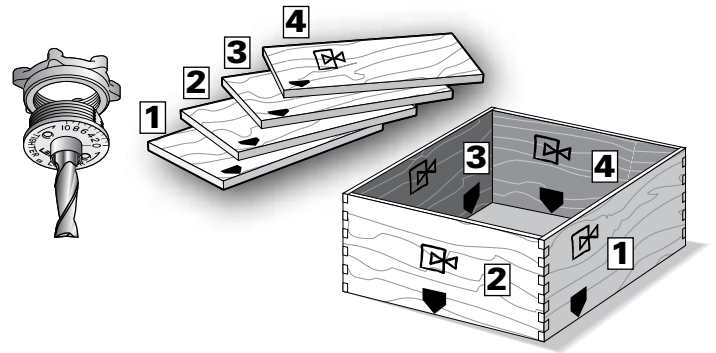


8-22 Double Size Box Joints e.g. $\frac{5}{8}$ ", $\frac{3}{4}$ " & 1" [16, 20 & 24mm]

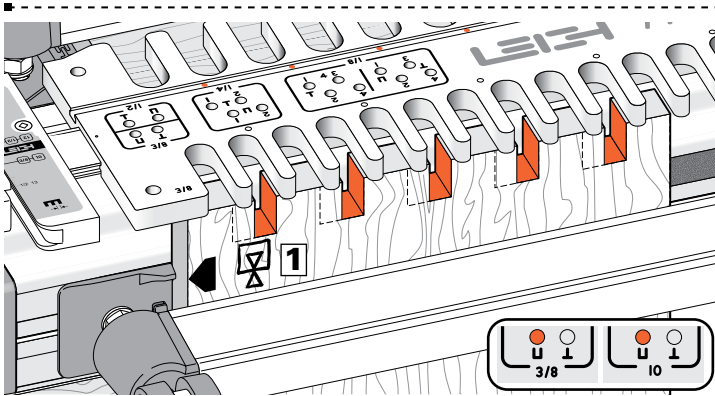
This procedure requires routing into every second comb opening. To aid in "steering" the router we have machined "dots" opposite the $\frac{1}{2}$ " [12mm] comb ① in the template surface, and opposite the $\frac{3}{8}$ " [10mm] and $\frac{5}{16}$ " [8mm] comb in the slot ②.



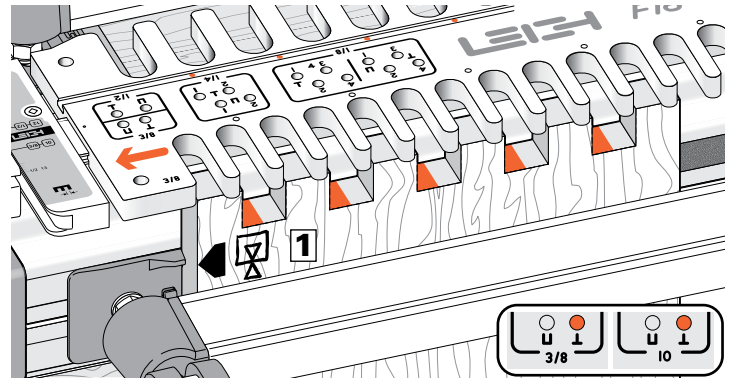
8-23 Mark the top of the router base at the 12 o'clock position ①. This will simplify steering the router relative to the “dots”.



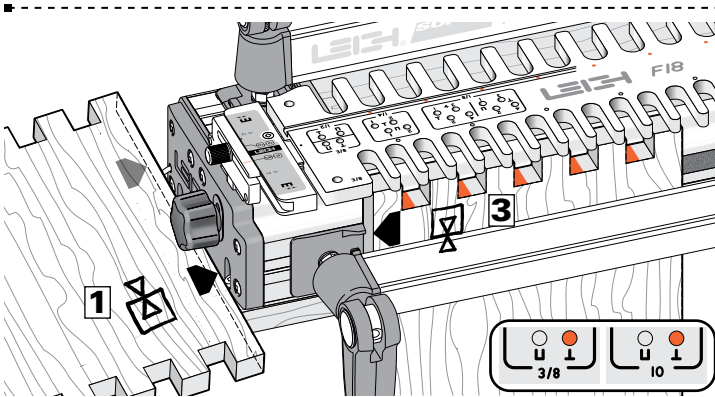
8-24 Select the bit and e-Bush size, and referring to the Board Width chart, see page 12, prepare four boards. Number them **1** to **4** around the box, with the common edges marked. This example shows $\frac{3}{4}$ " [20mm] joints on the $\frac{3}{8}$ " [10mm] comb.



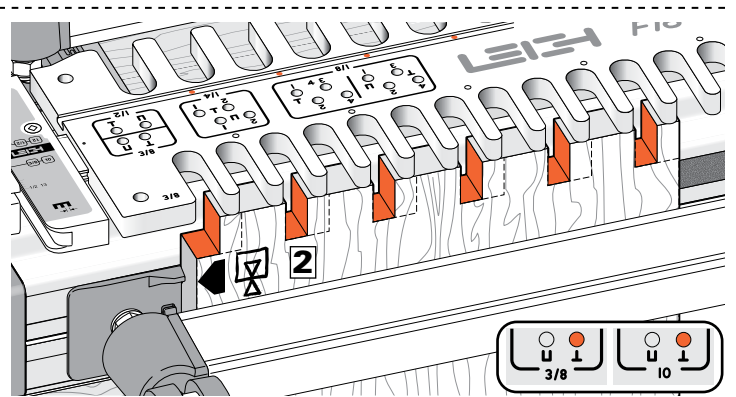
8-25 Clamp Board **1** against the left side stop. Position the template in the **U** pin position. Rout into every second opening by steering the mark you made on the router toward the “dots” in the extruded slot ①. Leave the board clamped in position.



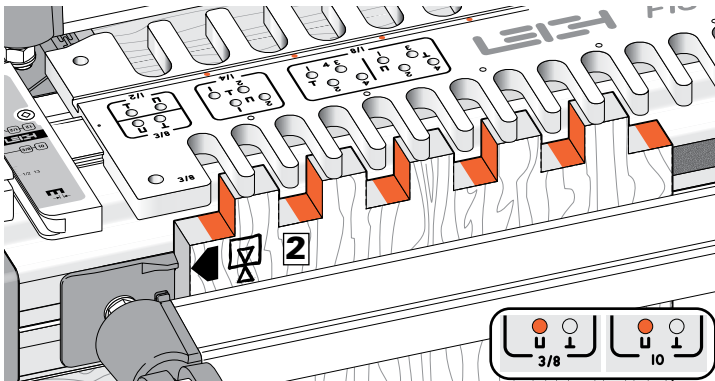
8-26 Move the template to the **↓** pin position and again rout into every second opening i.e. steering the base arrow toward the “dots”.



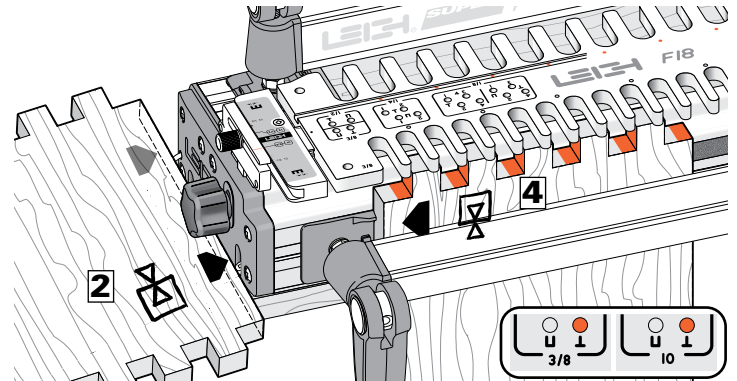
8-27 Turn board **1** end for end (same side edge to the side stop and opposite face against the jig each time). Repeat steps 25 and 26 on this end of board **1** and on both ends of board **3**.



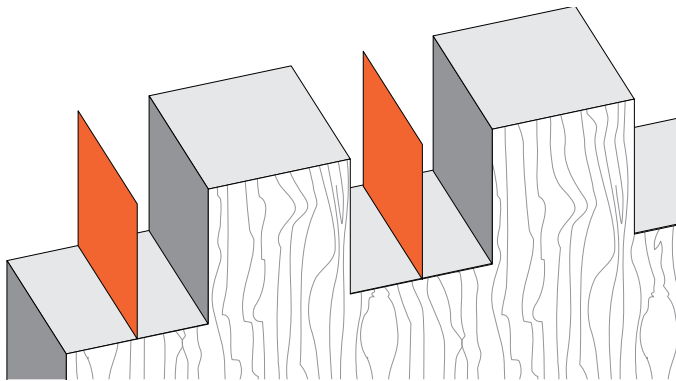
8-28 Clamp Board **2**. Leave the template in the **↓** pin position but this time rout into the first comb opening and every odd numbered opening. Steer the base arrow between the “dots”. Leave the board clamped in position.



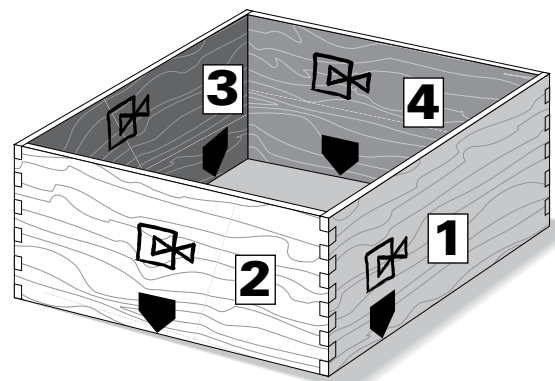
8-29 Move the template to the **u** pin position and again rout into every odd opening, i.e. steering the base arrow between the “dots”.



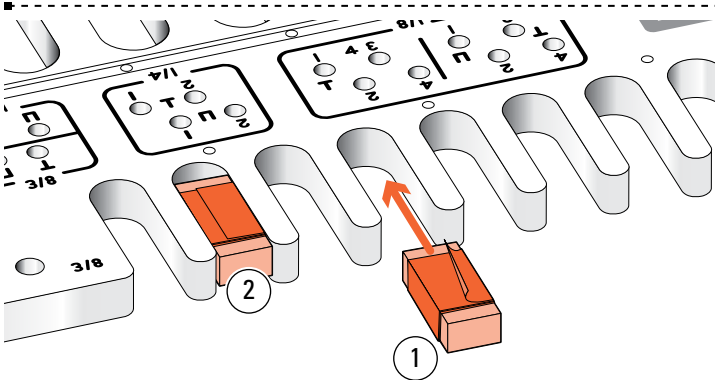
8-30 Turn board **2** end for end (same side edge to the side stop and opposite face against the jig each time). Repeat steps 28 and 29 on this end of board **2** and on both ends of board **4**.



8-31 Theoretically, there will be nothing in the sockets, literally a zero thickness wall, where the bit has passed by twice. However, routing tolerances can leave a very thin “wall” uncleared by routing. This can be quickly removed with a chisel or sandpaper.



8-32 Assemble the box with all four “side stop edges” either at the top, or at the bottom.



8-33 Hint: If you are not very confident with the router, here is a foolproof way to rout the correct sockets. Cut some $\frac{1}{4}$ " [6mm] thick wood strips, slightly narrower than the comb openings ①. Wrap with sufficient masking tape to create a snug friction-fit in the template ②. Fit them in openings you don't want to rout. ■