

## SUPERJIG - CHAPTER 14

# Box Joints



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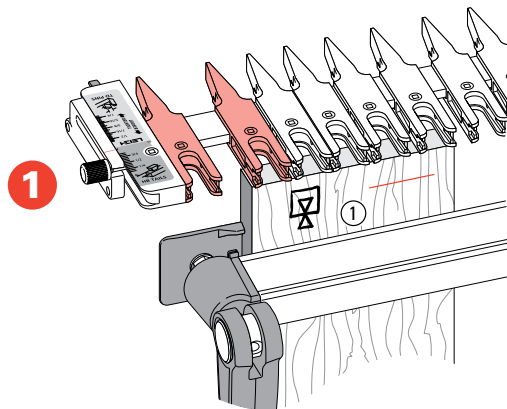
### Actual Joint Sizes

The Superjig finger assembly was originally designed solely for dovetailing. Adapting the assembly for box jointing was a serendipitous combination of luck (existing guides approximately the correct dimension) and clever design; the e7-Bush and Spacer.

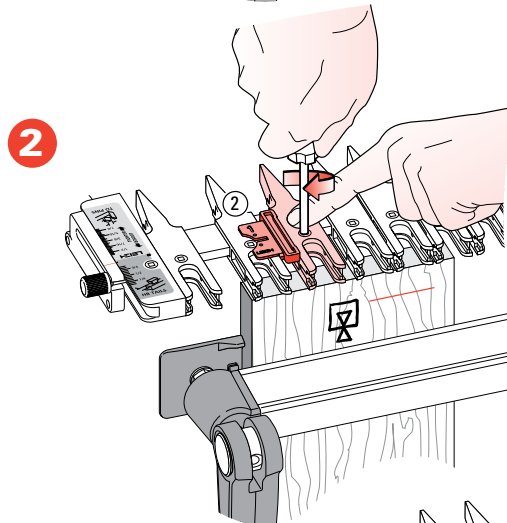
So the nominal  $\frac{5}{16}$ " and  $\frac{5}{8}$ " [8 and 16 mm] box joint sizes are actually  $\frac{21}{64}$ " and  $\frac{21}{32}$ " [8,30 and 16,66mm] respectively.

### Concept of Operation

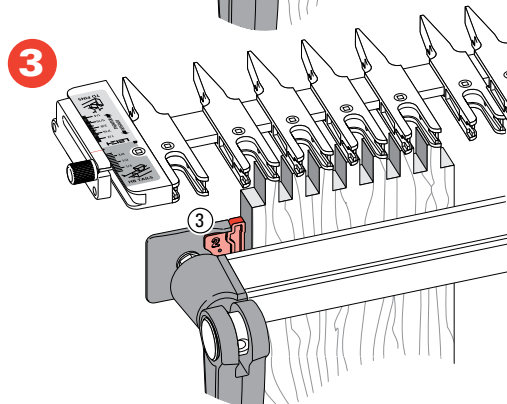
The first board is set against the side stop ①.



The Spacer is used to space the guide fingers ②.



The Spacer is also used on the side stop ③ to accurately offset mating work pieces for correct board to board joint alignment.



**Choose your Board Width:**

Choose a joint size from the chart below: 5/16" [8mm] or 5/8" [16mm].

For Symmetrical joint board widths: **Use the red column.**

For Asymmetrical joint board widths: **Use the grey column.**

The number in the first column (white) for each joint size equals the total number of pins and sockets for the board width in the **red** or **grey** columns.

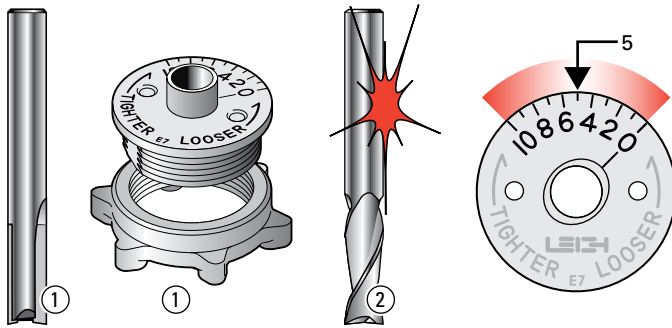
**Board Thickness**

Joints may be routed in any board thickness up to 1 3/16". Boards of different thicknesses may also be joined.

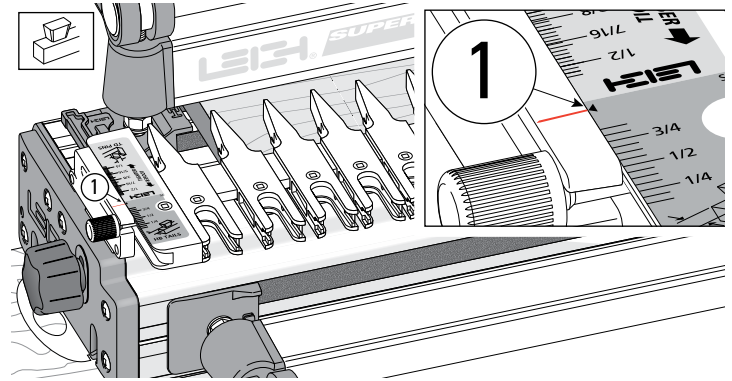
**Board Width - INCHES**

**Board Width - MILLIMETERS**

5/16" Pin/Socket width		5/8" Pin/Socket width		8mm Pin/Socket width		16mm Pin/Socket width	
Symmetrical	Asymmetrical	Symmetrical	Asymmetrical	Symmetrical	Asymmetrical	Symmetrical	Asymmetrical
1		1		1		1	
2		2		2		2	
3	29/32			3	1 29/32	3	48
4		1 1/4		4		4	
5	1 9/16			5	3 7/32	5	82
6		1 29/32		6		6	
7	2 7/32			7	4 1/2	7	114
8		2 9/16	2 9/16	8		8	
9	2 7/8			9	5 5/32	9	148
10		3 7/32		10	6 15/32	10	181
11	3 17/32			11	7 1/8	11	214
12		3 7/8	3 7/8	12		12	
13	4 3/16			13	8 7/16	13	281
14		4 1/2		14		14	
15	4 27/32			15	9 3/4	15	350
16		5 5/32		16	10 13/32	16	417
17	5 1/2			17	11 1/16	17	483
18		5 13/16		18	11 27/32	18	550
19	6 5/32			19	12 1/2	19	617
20		6 15/32		20	13 5/32	20	684
21	6 13/16			21	13 25/32	21	751
22		7 1/8		22		22	
23	7 15/32			23	15 3/32	23	818
24		7 25/32		24	14 7/16	24	885
25	8 1/8			25	16 13/32	25	952
26		8 7/16		26	17 1/16	26	1019
27	8 25/32			27	17 23/32	27	1086
28		9 3/32		28		28	
29	9 13/32			29	18 3/8	29	1153
30		9 3/4		30	19 1/32	30	1220
31	10 1/16			31	19 11/16	31	1287
32		10 13/32		32	20 11/32	32	1354
33	10 23/32						
34		11 1/16					
35	11 3/8						
36		11 27/32					
37	12 5/32						
38		12 1/2					
39	12 13/16						
40		13 5/32					
41	13 15/32						
42		13 25/32					
43	14 1/8						
44		14 7/16					
45	14 25/32						
46		15 3/32					
47	15 7/16						
48		15 3/4					
49	16 3/32						
50		16 13/32					
51	16 3/4						
52		17 1/16					
53	17 13/32						
54		17 23/32					
55	18 1/16						
56		18 3/8					
57	18 11/16						
58		19 1/32					
59	19 11/32						
60		19 11/16					
61	20						
62		20 11/32					
63	20 21/32						
64		21					
65	21 5/16						

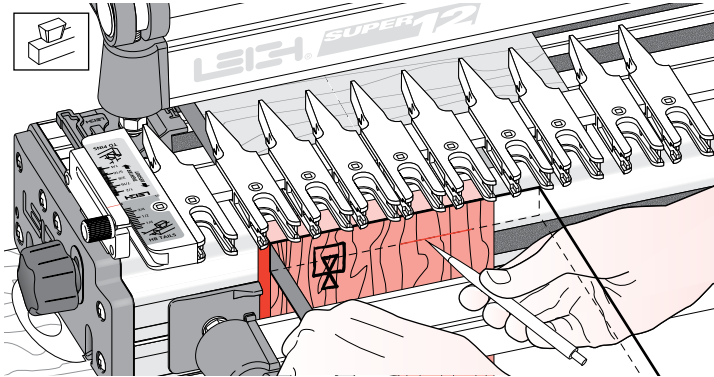


**14-1 Bit and Guidebush selection** Only the e7-Bush and  $\frac{5}{16}$ " bit that came with SUPERJIG ① are required for all SUPERJIG box joints. Note: Spiral upcut router bits ② will cut cleaner than straight flute. Where metric size bits are available an 8mm straight or spiral bit may be substituted for the  $\frac{5}{16}$ ". Always start test routing with the e7-Bush set on "5", the adjustment mid-range.

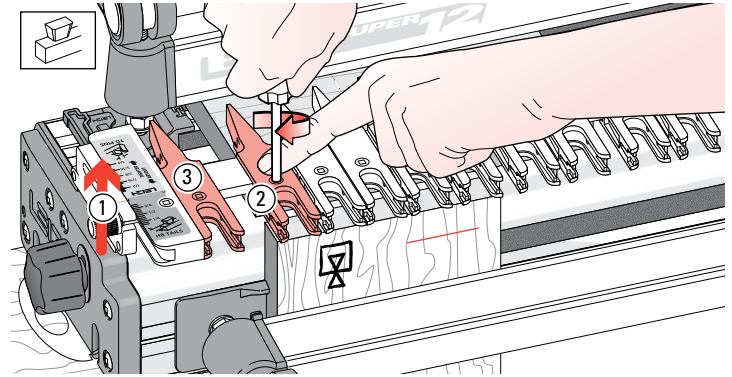


#### 14-2 $\frac{5}{16}$ " [8mm] Box Joints.

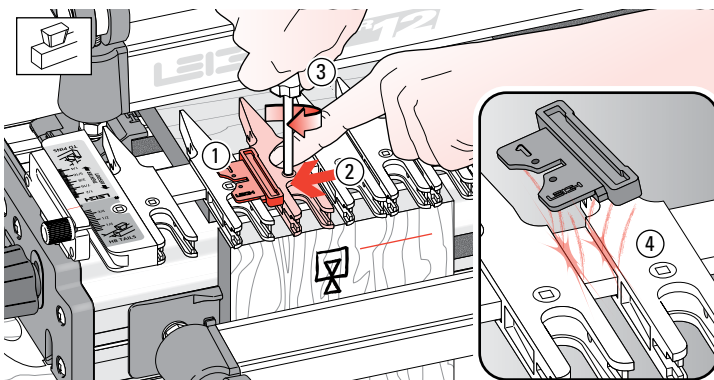
Place the finger assembly on the support brackets in the HB TAILS mode, set the scales on the **small triangular arrow** ① and lower the assembly onto the spacer board.



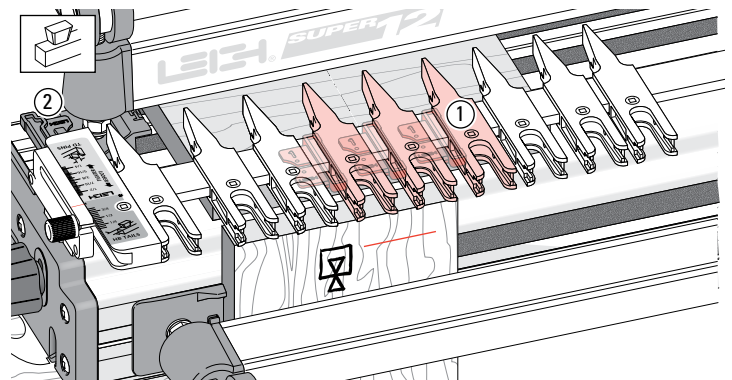
**14-3** Clamp a test board in the front left clamp, against the side stop with the top edge flush under the guidefingers. The board may be clamped face side in or out. Mark and adjust the depth of cut to suit the thickness of the mating boards ①.



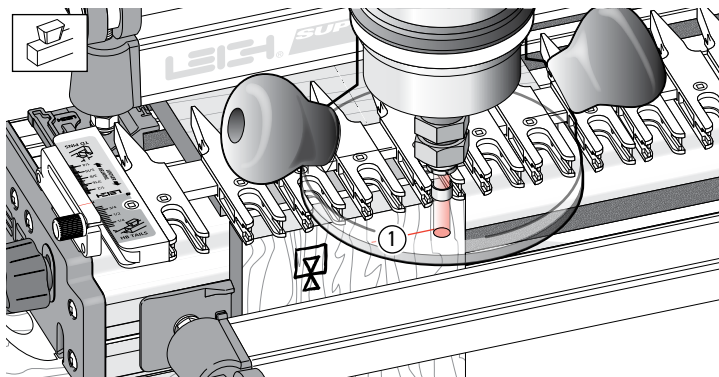
**14-4** Raise the finger assembly about  $\frac{1}{16}$ " [2mm] to allow ease of guide finger adjustment ①. Position the second guidefinger  $\frac{1}{32}$ " [1,0mm] in from the board edge ② and tighten the finger. The first finger stays against the scale block as a router support ③. *Note: Square ended boards are essential to achieve flush joint alignment.*



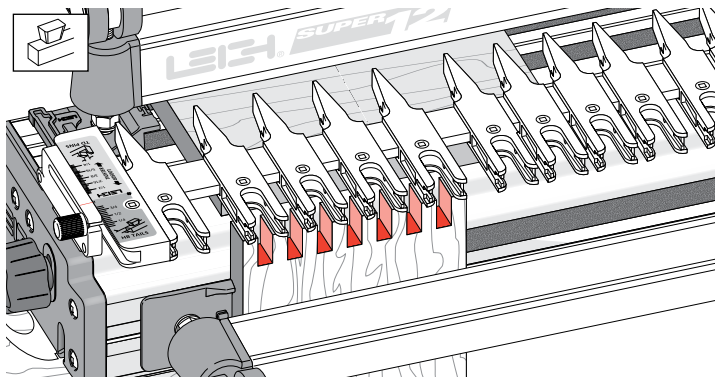
**14-5** Place the Spacer on the finger bar to the right of the second finger, numeral 1 on top overlapping the locked finger ①. Move the next finger in to touch the Spacer ②. Hold the guidefinger firmly against the Spacer and tighten the second finger screw ③. As you remove the Spacer you should feel some friction; this indicates that the guidefinger is correctly spaced ④.



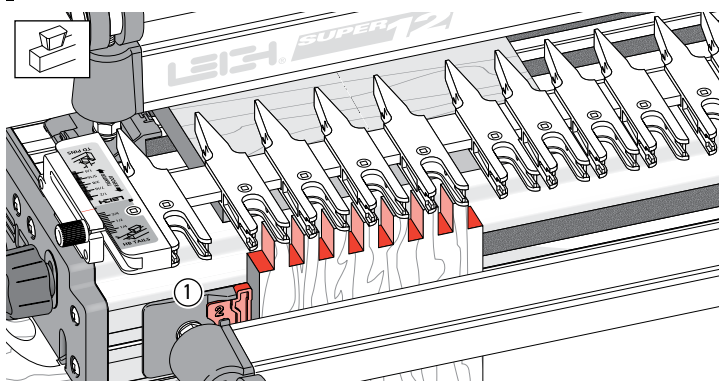
**14-6** Repeat this procedure across the jig until there is at least one guidefinger spaced past the right side of the work piece ①. Tighten the unused guides. Store the Spacer on the outside of a rear side stop ②.



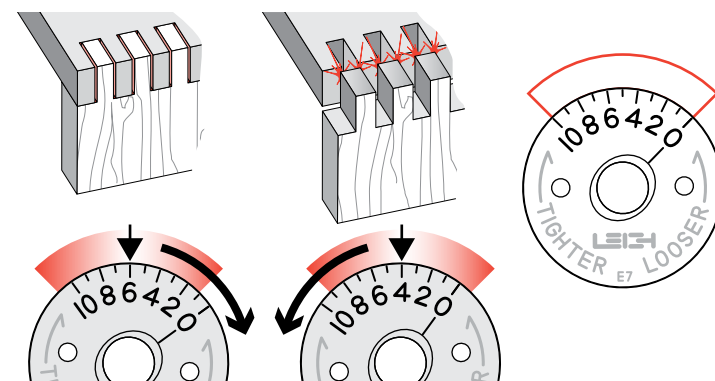
**14-7** Lower the finger assembly onto the spacer board and double-check that the bit depth is down to the center of the pencil line ①. Make sure the collet does not rub on the guidebush.



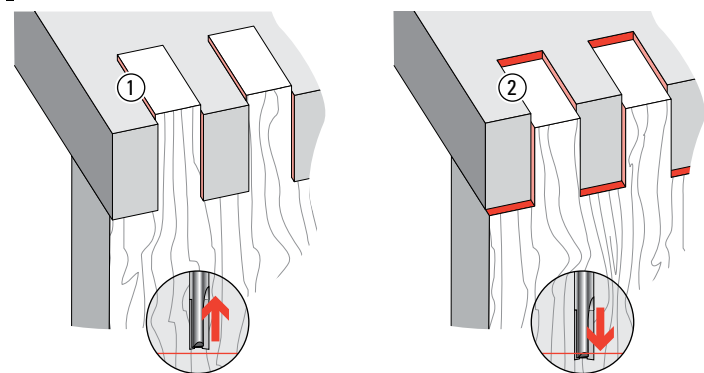
**14-8** Rout one end of the scrap board. Rout into each finger opening and between each finger. Make sure to run the guidebush on both sides of each opening.



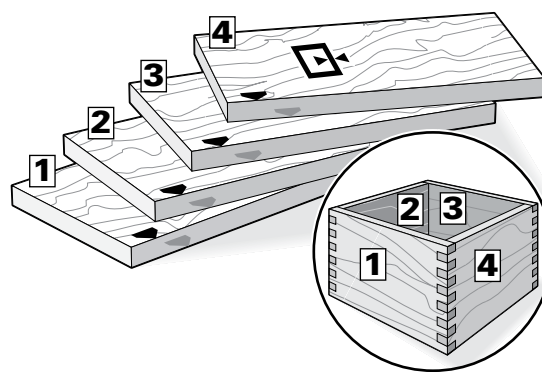
**14-9** Remove the board and fit the SPACER to the front side stop with the **number 2 showing** ①. Make sure it is fully home. Clamp the second test board with its side edge against the Spacer and its top edge touching the guidefingers. Rout this board.  
*Note: Square ended boards are essential to achieve flush joint alignment.*



**14-10** Test the two boards for fit and flushness. If the joint is loose, turn the e7-Bush to a higher number, say “6” and rout two more board ends. If the joint is too tight, turn the e7-Bush to a lower number, say “4”. Trial and error establish the best e7-Bush setting and record this in the space provided here, and/or on the pull-out. Next time this setting will get a good first-time result

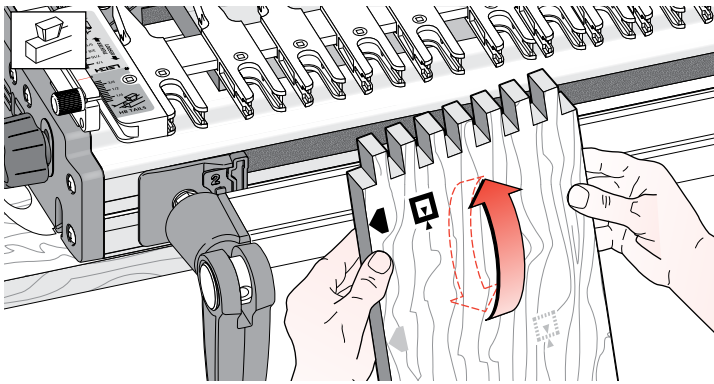


**14-11** If the joint is over-flush ①, raise the bit slightly. If it is under-flush ②, lower the bit.

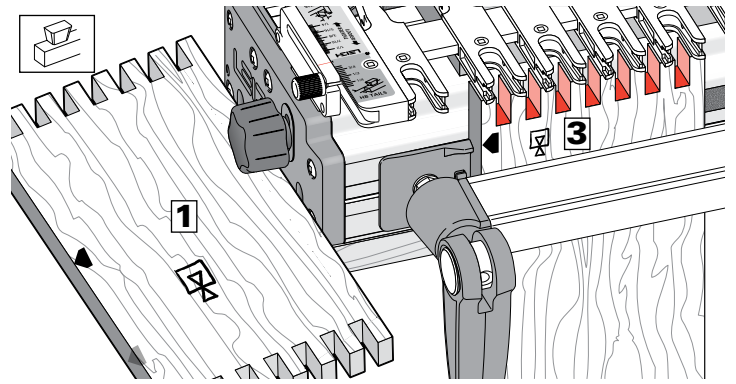


**14-12 Let's make a box.**

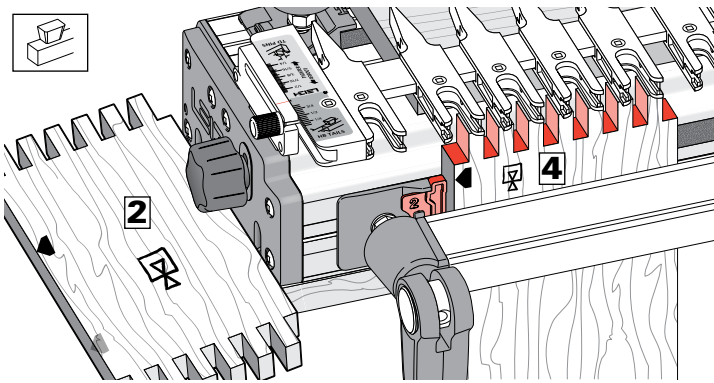
Prepare four boards and number them **1** to **4**. Then select the grain alignment and mark the common top (or bottom) edge. Don't worry about face side selection; this can be done after routing.



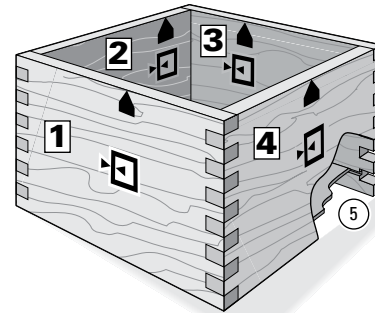
**14-13** All box joint boards are clamped alternating face side in and face side out [icon] always with the same side edge against the side stop (or Spacer).



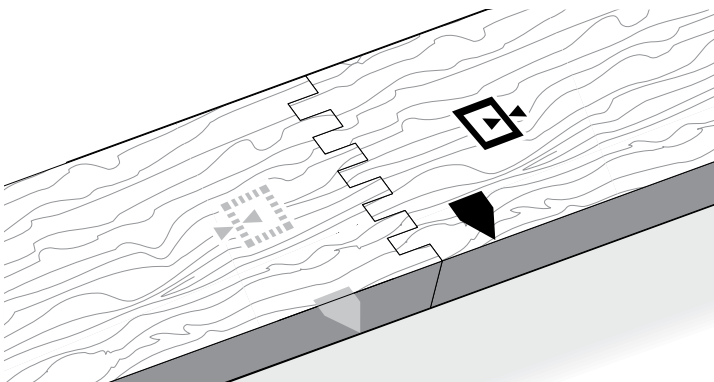
**14-14** Rout both ends of boards **1** and **3** with their edges against the side stop. Be sure to keep the same edge to the stop.



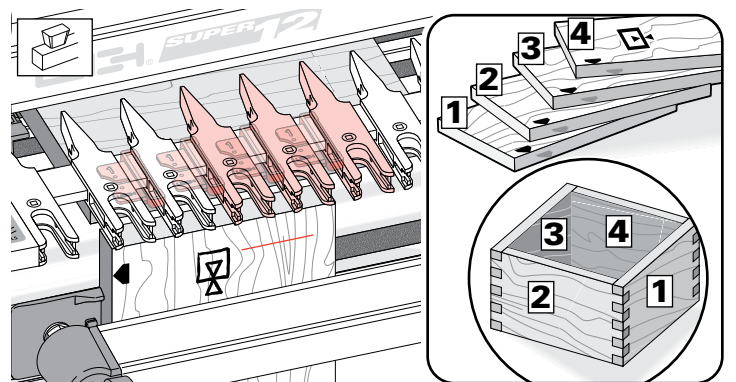
**14-15** Rout both ends of boards **2** and **4** with their edges against the Spacer and the Spacer in the No.2 position. Keep the same edges to the Spacer.



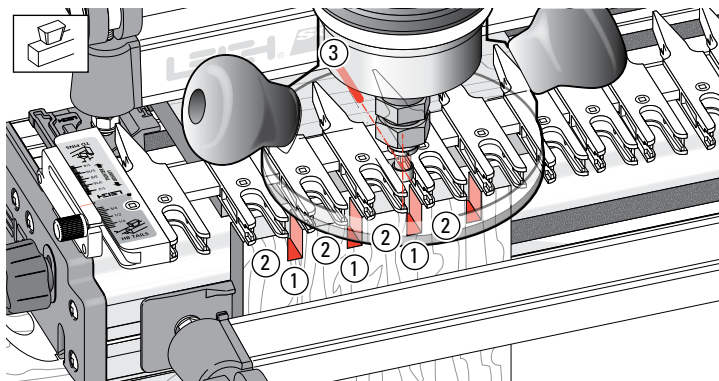
**14-16** Keeping the marked side stop edges of all boards toward the top (or all to the bottom) of the box, select the preferred outside faces before routing the grooves ⑤ for the bottom.



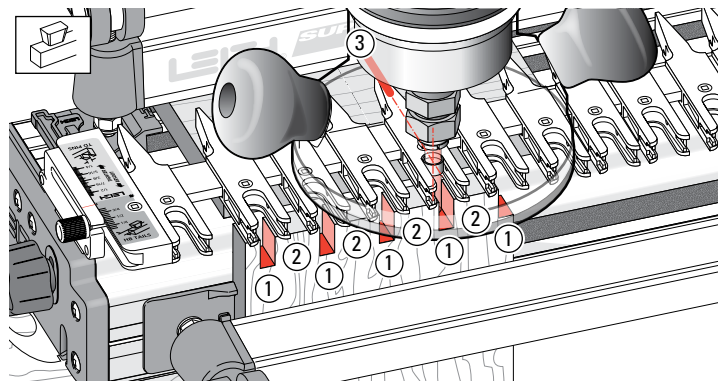
**14-17** The same method will produce end-on-end joints.



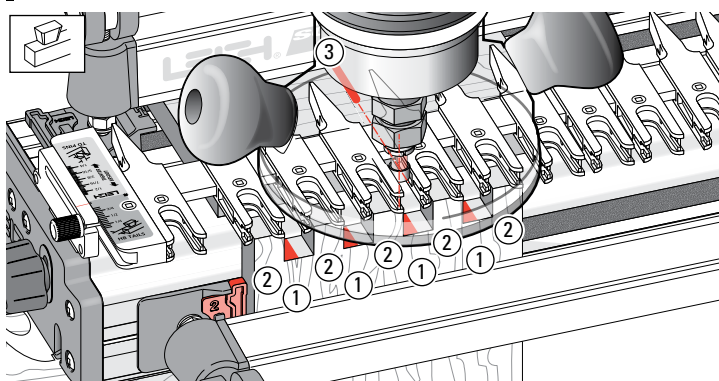
**14-18 5/8" [16mm] Box Joints** Set up and space the guide fingers exactly as for 5/16" [8mm] joints. Start with the same e7-Bush setting. See 14-4 thru 14-10. Prepare four boards using the board width chart for 5/8" [16mm] joints and number them **1** to **4** around the box ① with the common edges marked.



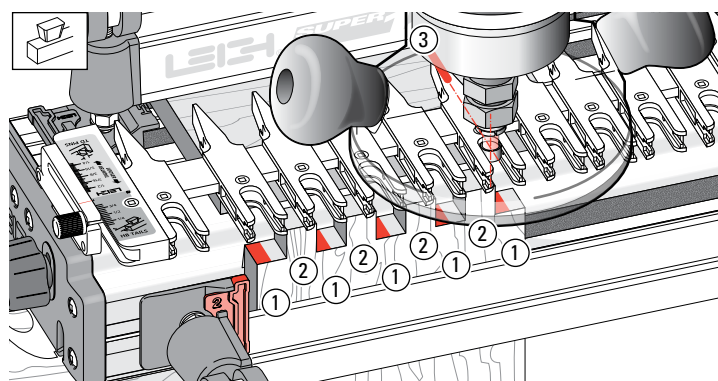
**14-19** Rout both ends of boards 1 and 3 but **only rout between the guide finger sides ① not between the finger openings ②**. Keep the common edge against the side stop  
*Hint:* Mark the router base at the 12 o'clock position ③ and steer this mark between the **pointed ends of the fingers** at the rear of the assembly.



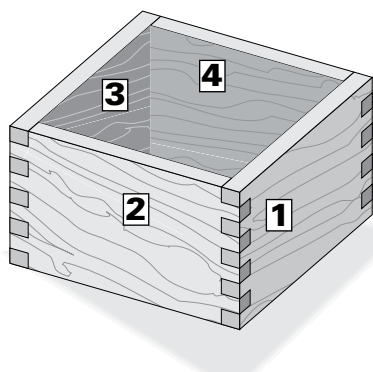
**14-20** Now rout both ends of boards 2 and 4, with the common edge against the side stop but **only rout between the finger openings ① not between the finger sides ②**.  
*Hint:* Now steer the base 12 o'clock mark **along the finger points ③**.



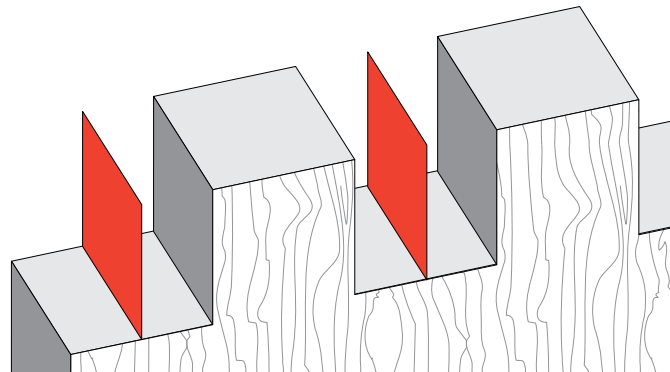
**14-21** Fit the Spacer to the side stop with number 2 showing. Now rout both ends of boards 1 and 3 again, with the common edge against the Spacer and **again ... only rout between the guide finger sides ①, not between the finger openings ②**, steering the router mark between the finger points ③.



**14-22** With the Spacer still in position rout both ends of boards 2 and 4, with the common edge against the Spacer and **again, only rout between the finger openings ①**, steering the router mark along the finger points ③.



**14-23 Joint fit** Check for joint fit as usual, and repeat testing if required.



**14-24** Theoretically, there will be nothing in the  $\frac{5}{8}$ " [16mm] 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. ■