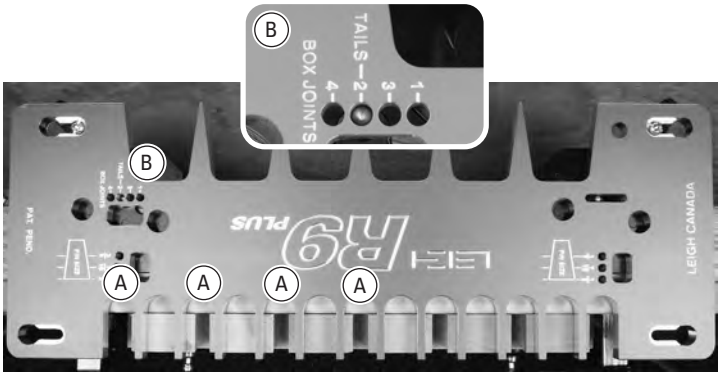
CHAPTER 6
Through Dovetail Joint Procedures

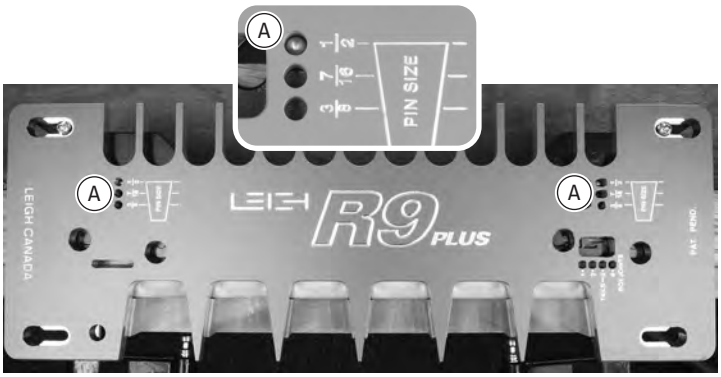
IMPORTANT SAFETY NOTE
Before using your Leigh R9PLUS you must have completed the preparatory steps listed in the previous pages, including reading the jig safety recommendations in Chapter 3.

Note: These instructions show a No.80-8 dovetail bit and 3/4"[19mm] thick boards. Instructions for No.70-8 and 75-8 bits and 3/8"[9,5mm] to 5/8"[15mm] thick boards are identical with the exception of depths of cut and template positions for pins.

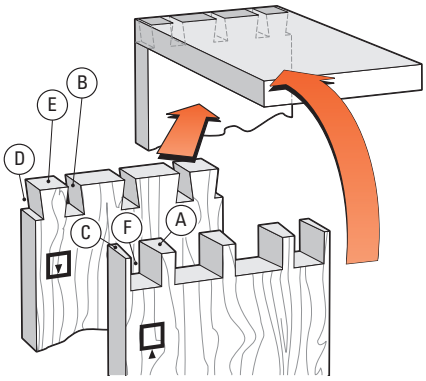
Concept of Operation



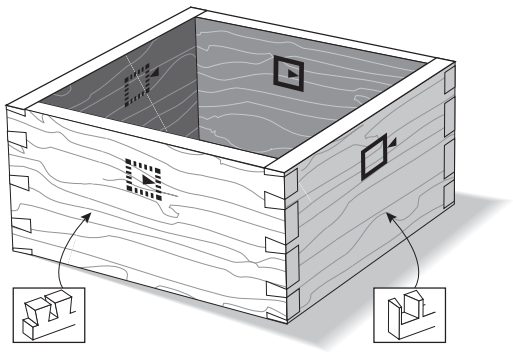
6-1 Dovetail tails are routed with the dovetail bit in the first comb opening and then every other opening Ⓐ. The template is always set in pin plate position 2, Tails Ⓑ.



6-2 Dovetail pins are routed with a ½"[12,5mm] straight bit. The template is set on the pair of pin holes matching the dovetail bit diameter used to rout the tails Ⓐ.



6-3 Terminology This diagram shows the Pins Ⓐ, Pin sockets Ⓑ, Half-pins Ⓒ, Half-pin sockets Ⓓ, Tails Ⓔ and Tail sockets Ⓕ. The pins fit in the pin sockets, and each side always ends with a half-pin.



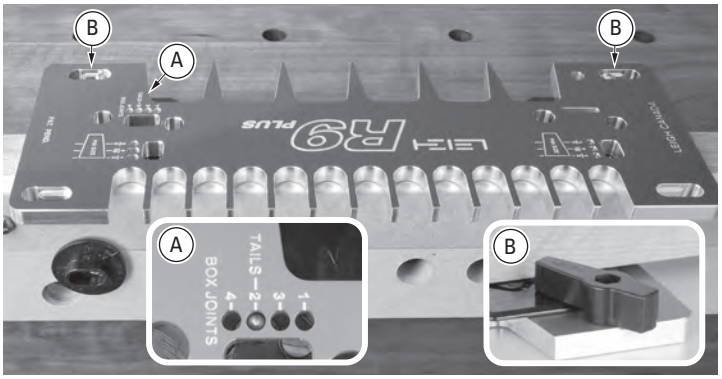
6-4 When you assemble the finished pieces with the faces properly oriented, any one of the pin ends will fit any one of the tail ends. Note the symbols indicating the inside or outside of the pin and tail boards. ■

Board Width Selection

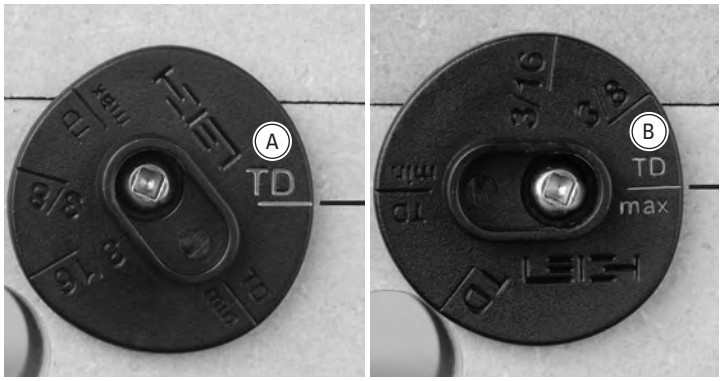
6-5 Board widths are determined by the number of full tails in your design. This chart makes it easy to determine board widths up to 27"[686mm] for the R9PLUS. See leighjigs.com for board widths greater than 27"[686mm].

Through Dovetail Joints

6-6 For this test you will need two identical boards ¾"x 4⅝" x about 8"[19mm x 116mm x 203mm] long. Mark the inside face of the tail board and outside face of the pin board. Fit the e10 eBush to the router, set on index mark 5, and insert the No.80-8 bit.



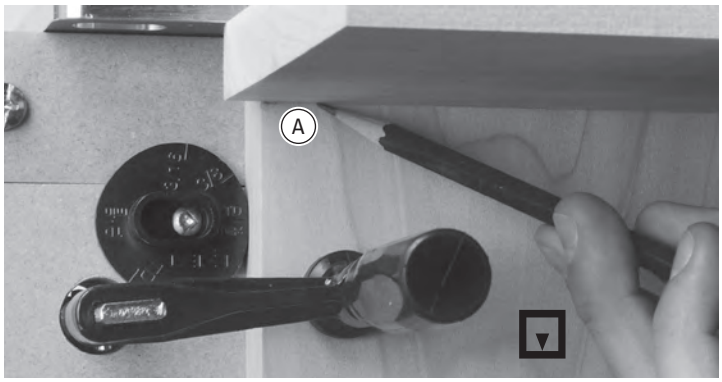
6-7 Position the template at the left hand (sidestop) end of the beam in pin position 2 Tails Ⓐ. **CAUTION: Always secure the template latches under the pin plates Ⓑ after relocating the template.**



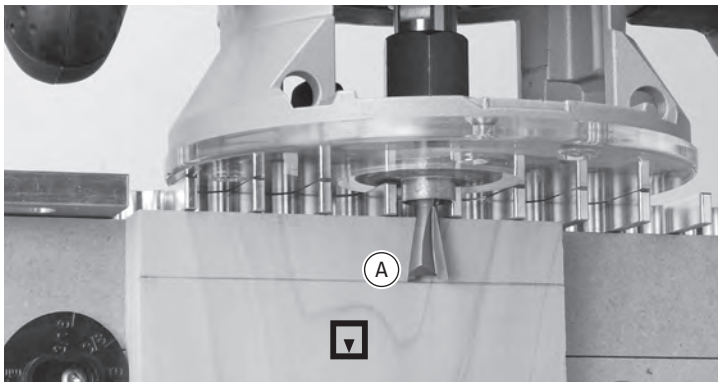
6-8 If your board width matches the dimension in the board width chart exactly, set the sidestop to the TD position Ⓐ place the board against the sidestop, flush under the template and clamp in place. If the board **does not** match the chart width, set the sidestop to the TD Max Ⓑ position and proceed to **6-9**.

6-9 Through dovetail board widths may be ⅛"[3mm] less or ⅜"[9,5mm] greater than the chart width. If the workpiece is greater or less than the chart width, first center the board under the template, with equal spacing on both edges of the board Ⓐ, then clamp the board in place.

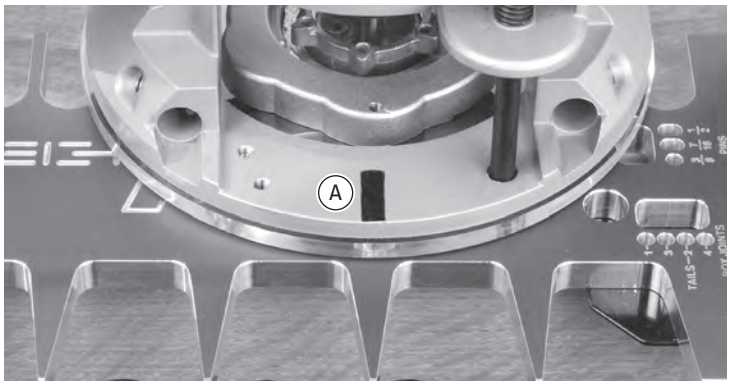
6-10 Next, rotate the sidestop counter clockwise until it touches the workpiece. All boards of the same width will be routed at this sidestop position.



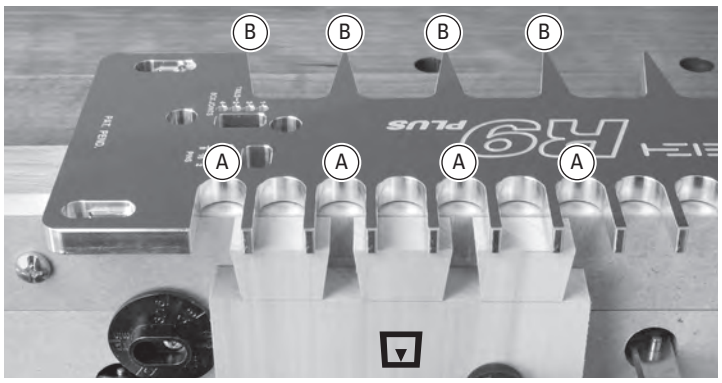
6-11 Place the edge of the pin board under the template and pencil a line on the workpiece Ⓐ.



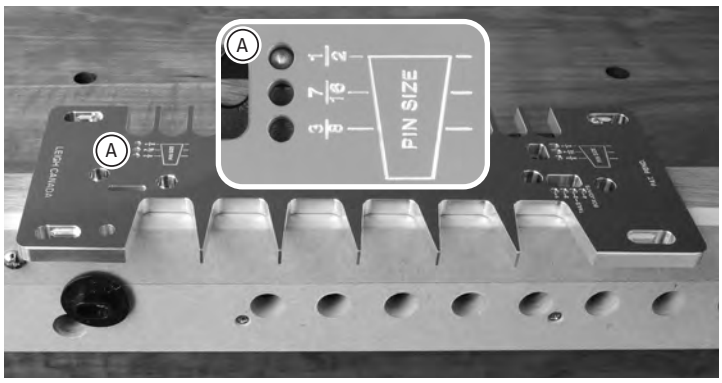
6-12 Place the router onto the template and lower the dovetail bit until the bit tip touches the center of the line Ⓐ.



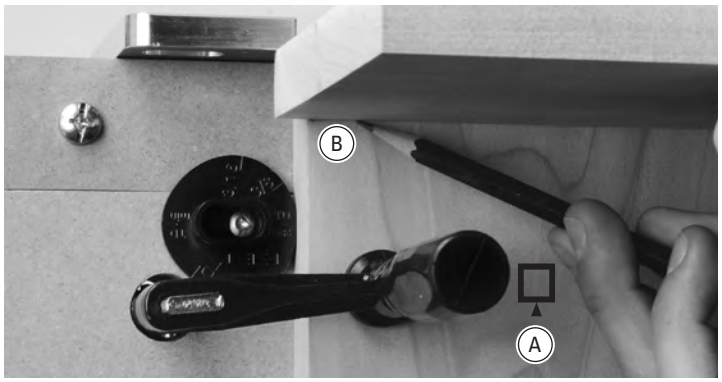
6-13 ⚠ You will be routing into "every other" opening. **Hint:** Mark a bold line at the 12 o'clock position on the router base Ⓐ, to help you with steering and alignment when looking over top of the router as you rout.



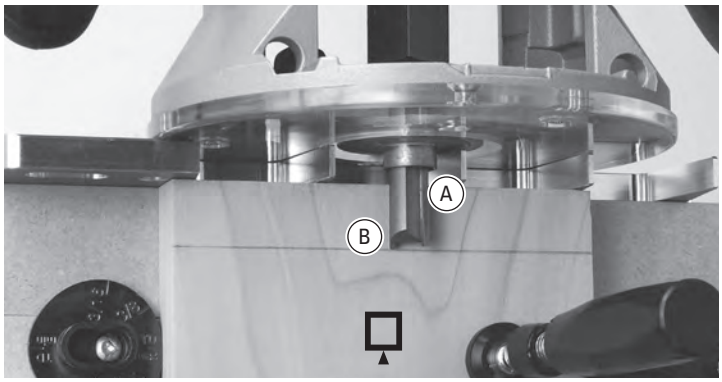
6-14 Rout in the first and every other opening (first, third, fifth openings and so on Ⓐ. **Hint:** When steering the router, it helps to visually align the bold line you marked on the router base with each of the TD pin guide "points" Ⓑ. Then remove the tail board.



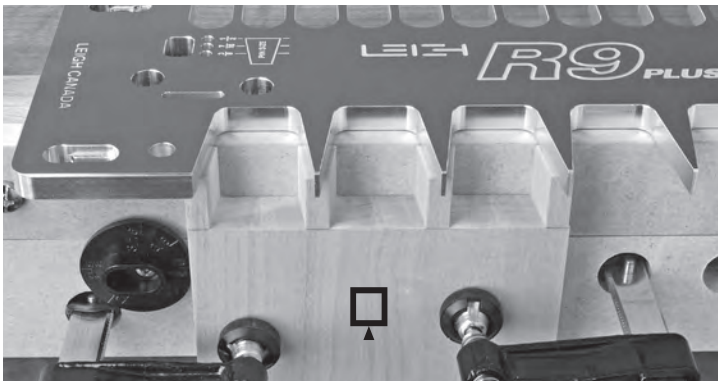
6-15 Turn the template to the TD pin mode and position the template in the ½"[12,7mm] pin position Ⓐ. The ½"[12,7mm] holes match the diameter of the No.80-8 bit that was used to rout the tails. If you had used the No.75-8 bit you would position the template on the 7⁄16"[11mm] holes. For the No.70-8 bit you would use the ⅜" holes.



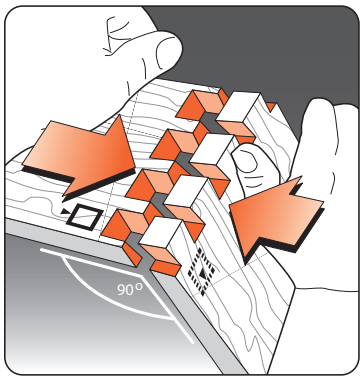
6-16 Clamp a pin board against the stop, marked outside face out Ⓐ. Place the edge of the tail board under the template and pencil a line on the pin board Ⓑ.



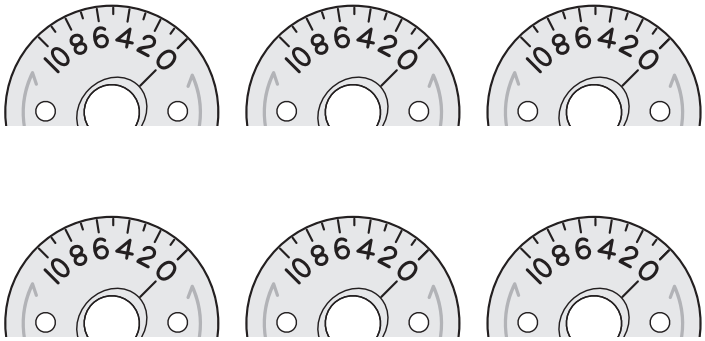
6-17 Replace the dovetail bit with the included ½"[12,7mm] Leigh 160 straight bit Ⓐ and leave the e10 eBush set to index mark 5. Place the router onto the template and lower the straight bit down until the bit tip is touching the center of the line Ⓑ.



6-18 Rout out the waste between the pins. Check to make sure no parts have been missed.



6-19 Remove the pin board and test it for fit in the tail board sockets. Make sure the outside faces face outward on both pieces. A firm push fit is perfect. Having to use a mallet means the joint is too tight for gluing.

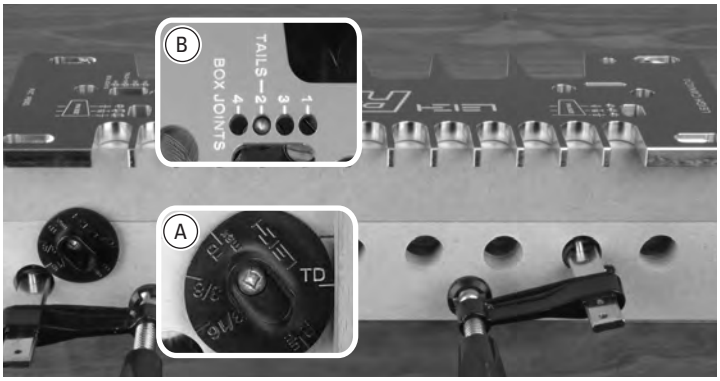


6-20 If necessary, adjust the eBush as required for a looser or tighter fit and rout a new pin board and a new tail board. Record the eBush setting for future use. ■

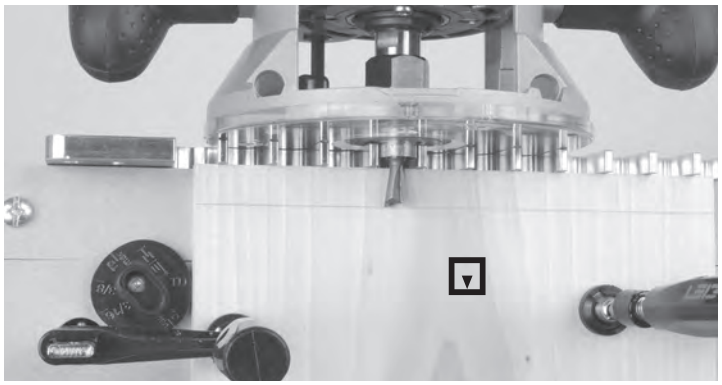
Half-pitch Through Dovetail Joints

6-21 The pitch of the R9PLUS Template (distance between the pin centers) is 1½"[38mm] (1.555 to be precise [39,5mm]). Some projects may benefit from closer pin centers. The following procedure details how to use the R9PLUS to rout through dovetails with ¾"[19mm] pin centers. ***Note: This procedure is only possible with the 7/16"[11,1mm] (75-8) and 3/8"[9,5mm] (70-8) router bits. An e7 eBush and 5/16"[8mm] straight bit are also required. A shop made spacer, 0.777"[19,685mm] wide, is used to offset the pin board. See page 4 for bit and guide bushing options.***

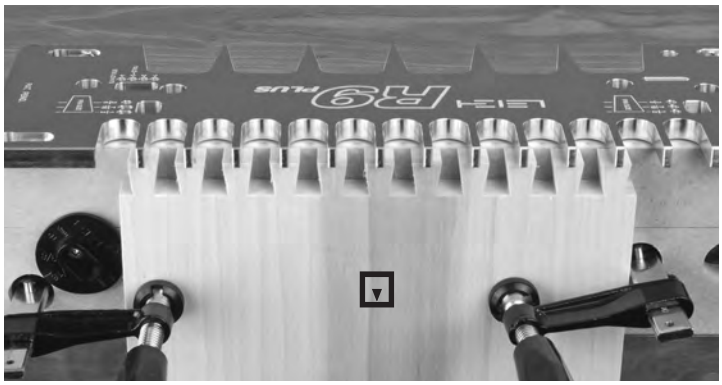
This example uses a 7/16"[11mm] (75-8) Dovetail Bit and the 5/16"[8mm] (140-8) straight bit with 5/8"[15mm] thick stock.



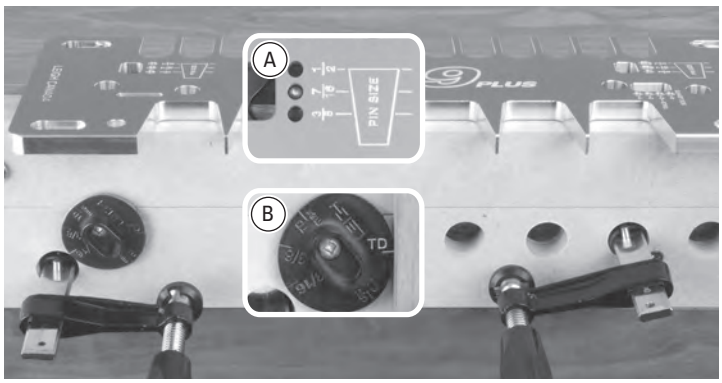
6-22 Set the sidestop to the TD position Ⓐ and place the template in pin position 2 Tails Ⓑ. Secure the pin plate latches.



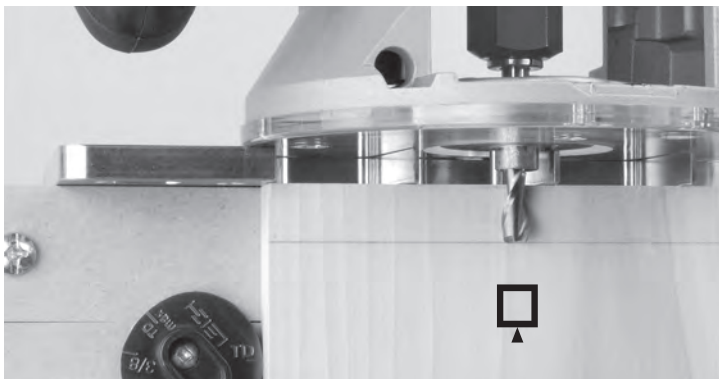
6-23 Clamp a tail board flush under the template and against the sidestop. Mark the depth of cut and set the router bit.



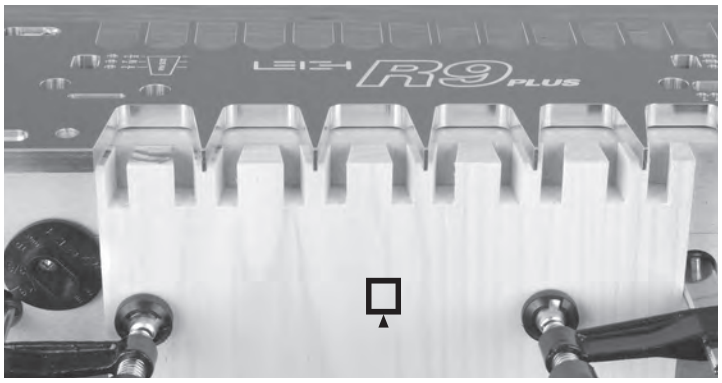
6-24 Rout the tails, being sure to rout in every template opening.



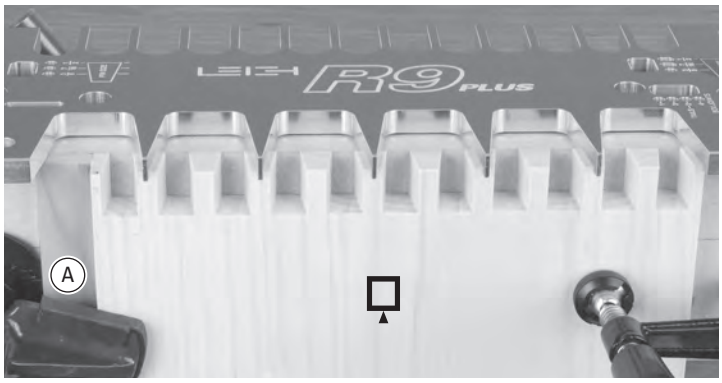
6-25 Place the template in the 7⁄16"[11mm] pin plate position Ⓐ and secure the latches. Leave the sidestop set on the TD position Ⓑ. Remove the 75-8 dovetail bit and e10 guide bushing and install the e7 bushing and a 5⁄16"[8mm] straight bit.



6-26 Insert the pin board and set the bit depth.

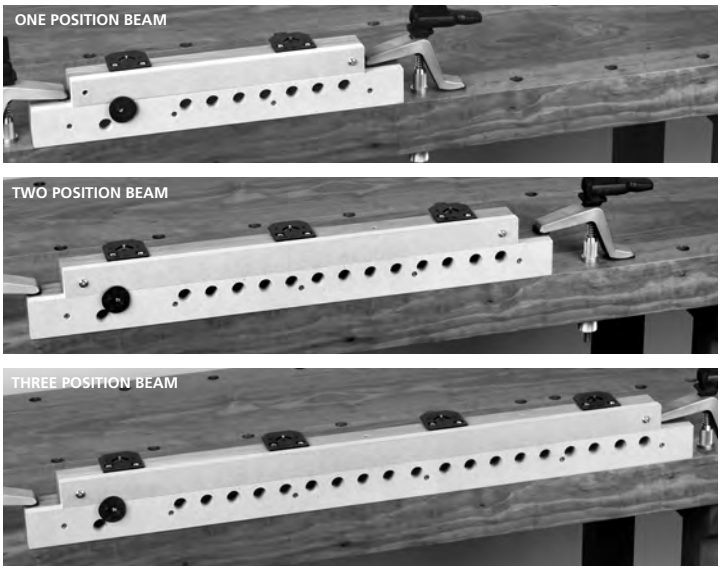


6-27 Rout the first pass of the pins. ⚠ ***Half-pitch pins are routed in two passes. When routing the first pass, the guide bushing must remain in contact with the guide pin at all times. DO NOT rout away the waste between the pins.***



6-28 Now, remove the pin board, add the shop made spacer Ⓐ against the sidestop. Reinstall the pin board against the spacer and flush against the template above. Rout the second pass again being careful to keep the guide bushing against the guide pins at all times. ■

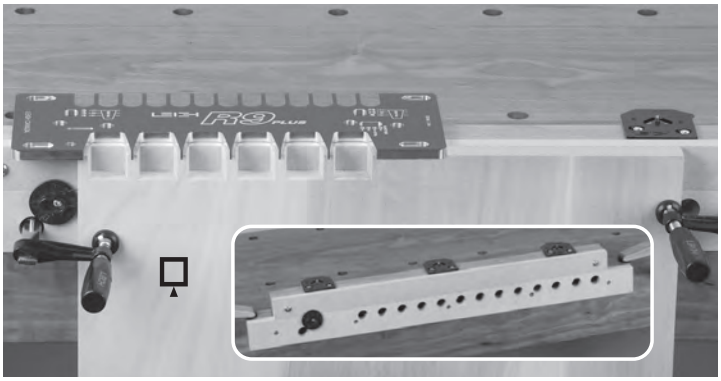
Wide Boards



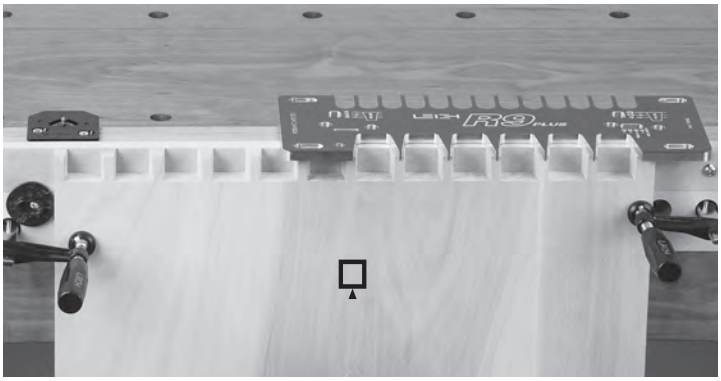
6-29 ***Routing boards of any width is simple with the R9PLUS.*** The unique pin plate positioning holes on the template, and the pin plates mounted on the beam, accurately index the template each time it is "stepped over".

Each template position will allow 9"[229mm] of joint pattern, therefore, on a one position beam (1 template) the maximum board width will be 9"[229mm]. A two position beam (2 templates) will accommodate boards up to 18"[457mm]. Increasing the beam length to three template positions will allow dovetails or box joints on boards up to 27"[686mm]. There is no limit to the length of a beam.

A one position beam is 20"[508mm] in length. Each additional template position requires 10"[254mm] of beam length.



6-30 This beam has two template positions. Position the template on the sidestop end of the beam (operator's left side), secure the pin plate latches and clamp the board against the sidestop. Rout the first half of the joint.



6-31 Leave the board clamped on the beam, release the pin plate latches and shift the beam to the next position. Secure the pin plate latches. Now rout the second half of the joint. ■