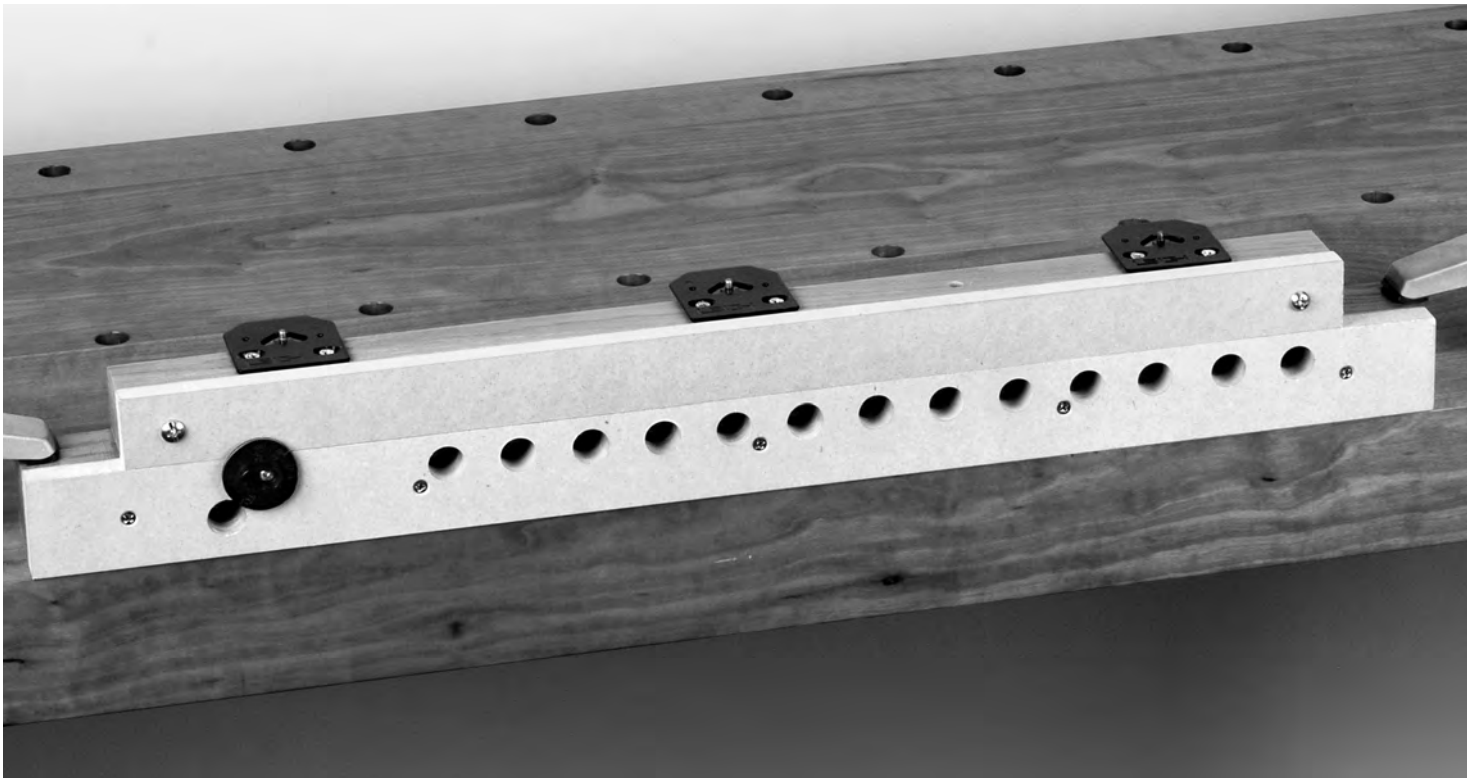
## CHAPTER 1
# Making the Beam

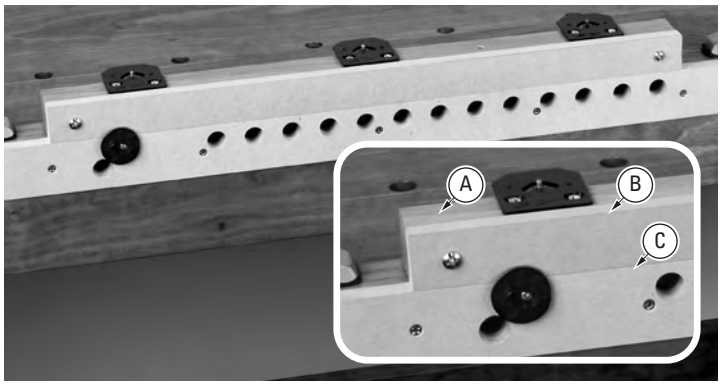
The heart of the R9PLUS Dovetail Jig is the beam. A typical beam, shown below, is 30"[762mm] long. A 30"[762mm] beam can accommodate board widths of up to 18"[457mm]. Beams can be made shorter (minimum 20"[508mm]) or longer, in 10"[254mm] increments. Because of the template's unique "step over" ability, beams can be made longer to suit any width project. The beam is equally suited to router table or bench operation.

The following instructions will guide you through the beam making process. Care in building the beam will ensure great joinery every time with the R9PLUS. In addition to these instructions, a two page drawing, complete with all dimension information, is provided at the end of the user guide.

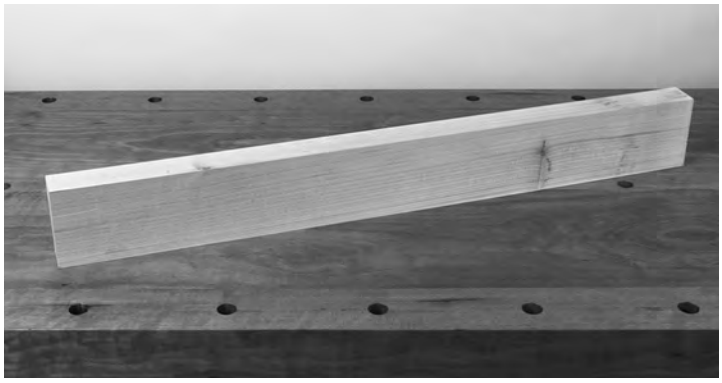
*Important: Please use this chapter's step-by-step instructions in conjunction with the technical drawing on pages 38-39 of the Appendix.*



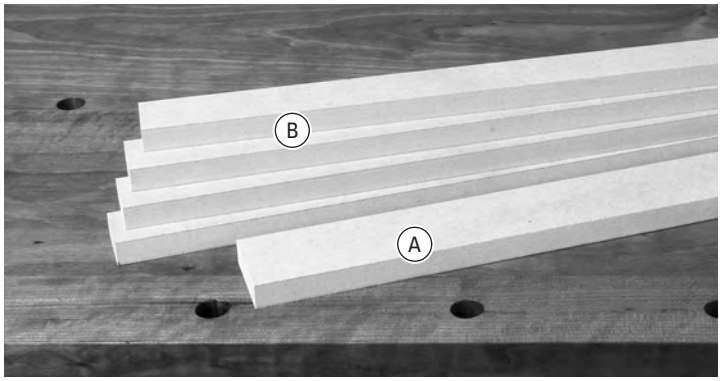
*Important: Please use these step-by-step instructions in conjunction with the technical drawing in the Appendix, pages 38-39.*



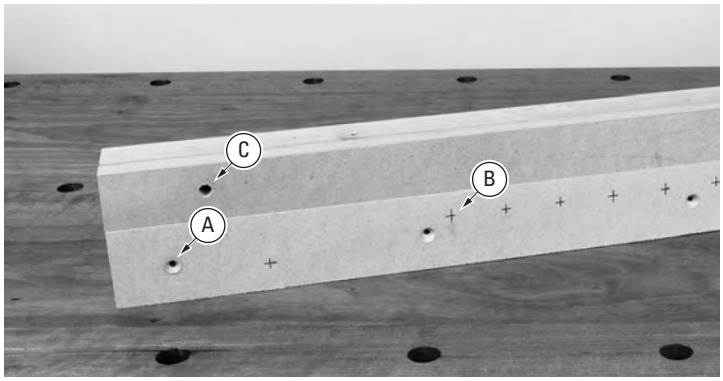

**1-1** The beam assembly consists of the main beam Ⓐ, the sacrificial backer board Ⓑ and the clamping surface Ⓒ. We recommend making the clamping surface and sacrificial board from MDF, 1/2" to 3/4"[12,7 to 19mm] thick. Hardwood or softwood may also be used.



**1-2** Start with a straight, flat and square 30"[762mm] length of wood, 1½" x 3½" x 30"[38mm x 89mm x 762mm]. **Note:** A 30" section of common 2 × 4 can be used if it is straight, flat and square.

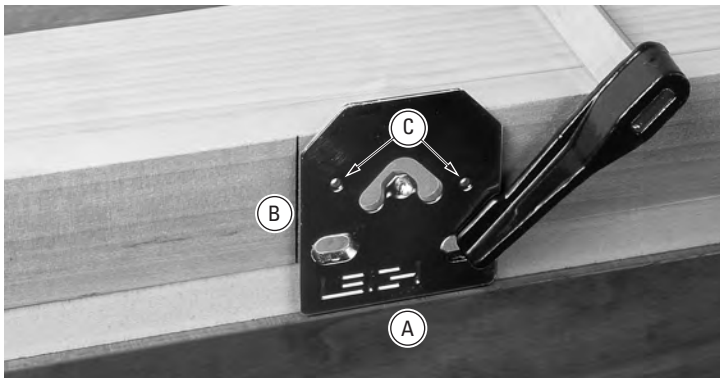



**1-3** Cut a piece of MDF 30" long and 2⅛" wide [762mm x 54mm]. This will be your clamping surface Ⓐ. Then cut your sacrificial boards 1½" x 30"[38mm x 762mm]. You may want to cut a number of extra sacrificial boards now to use as replacements Ⓑ.

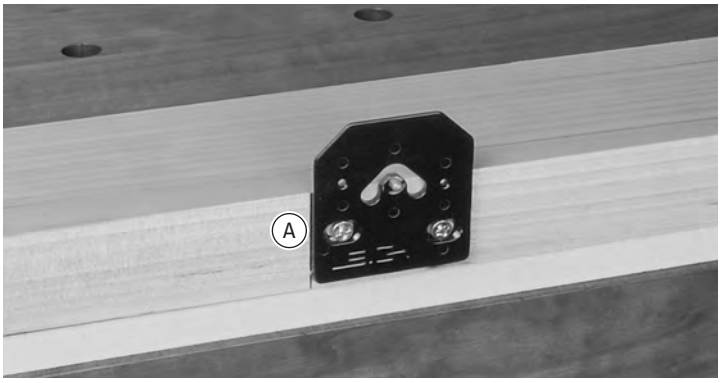



**1-4** Lay out the mounting screw holes Ⓐ and clamp holes Ⓑ as per the drawing on pages 38-39. Drill and countersink the screw holes on the clamping surface. Drill the 5⁄16"[8mm] holes Ⓒ in the sacrificial board. This piece can be reversed and flipped four times to use up all four surfaces.

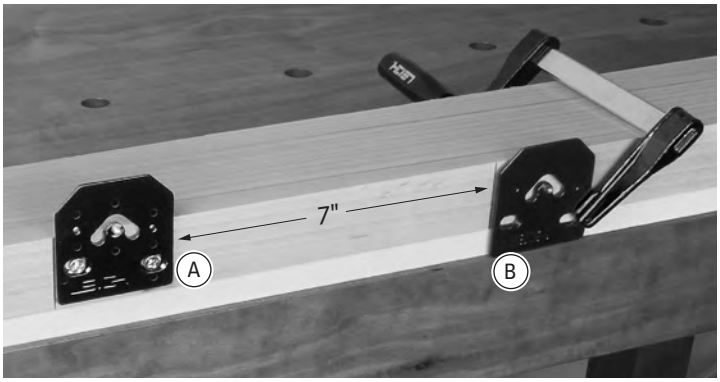

**1-5 This procedure is critical to the accuracy of the jig.** Before attaching the MDF boards to the beam, use each pin plate as a drill guide. First, mark a line 4½"[114mm] in from the left end of the **top of the beam** and square it across Ⓐ. Next, stack the clamping surface Ⓑ, sacrificial board Ⓒ and beam Ⓓ near the edge of the workbench and clamp in place Ⓔ.




**1-6** Clamp a pin plate with its wide straight side flush to the flat bench surface Ⓐ and its side edge on the line Ⓑ. Using the 2 small holes Ⓒ in the pin plate as a drill guide, drill two 3⁄32"[2,5mm] pilot holes 1"[25,4mm] deep. These holes will correctly position the pin plate on the beam. **Note: If you are using hardwood, redrill these holes with a larger bit, 1/8" or 9/64", to avoid breaking screws.**

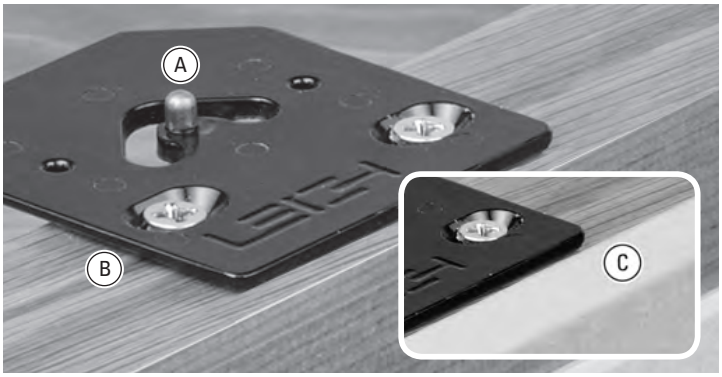



**1-7** Use two No.8 x 1¼" [38mm] wood screws (included) to ***lightly*** attach the first pin plate with its left edge flush to the line on the top of the beam Ⓐ. **Note: The pin plate is moved up from the drilling position (see 1-6) to align the screw slots in the pin plate with the pre drilled holes**

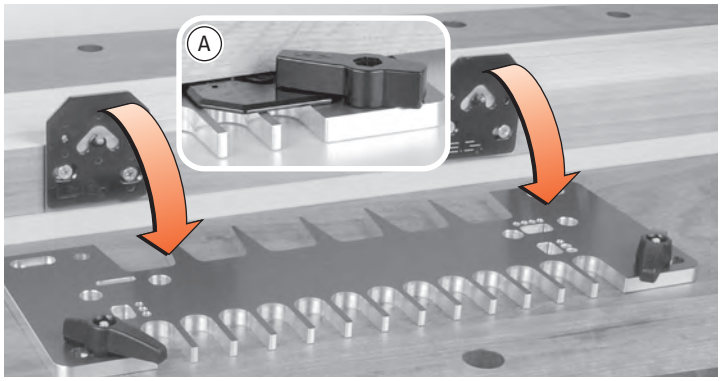



**1-8** Square a second line across the beam board exactly 7" [178mm] from the right edge of the first pin plate Ⓐ. Clamp the second pin plate Ⓑ flat on the workbench and against the line. Repeat the drilling and attaching procedure as before. ***Repeat this procedure for each successive pin plate.***

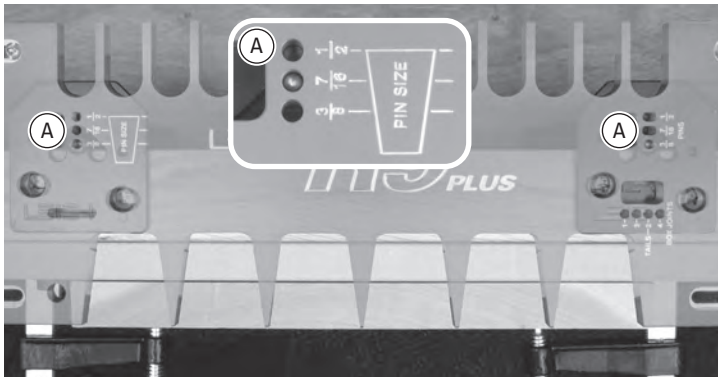

**1-9 Assemble the Latches** There are three parts to each latch assembly: the latch screw Ⓐ, the nyloc nut Ⓑ and the plastic latch Ⓒ. Press the nyloc nut into the hexagon opening in the top of the plastic latch with the white nylon insert facing up. Next, screw in the latch screw from the bottom of the latch. Do not tighten the screw at this time.




**1-10 Pin Plate "Pin"** The template has positioning holes that allow it to sit perfectly on top of the raised pin Ⓐ of each pin plate. The pin plate sits flat on the beam Ⓑ. **Note: When the sacrifical board Ⓒ is installed, the top of the pin plate will be level with the top of the sacrificial board.**

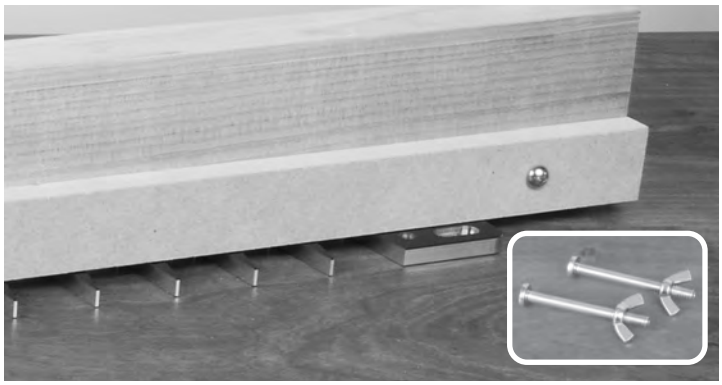



**1-11** Attach the latches to the keyhole slots and turn to engage the pin plates Ⓐ. Adjust the latch screw tension so that the latches are stiff to turn onto the plates (seen from underside of the template).

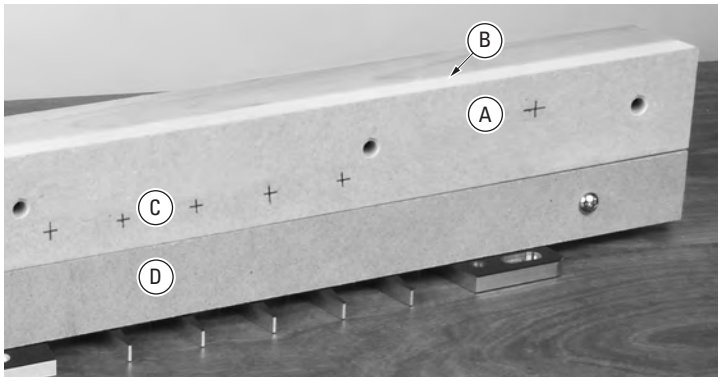



**1-12** Mount the template on the left pair of pin plates using the 7/16"[11mm] pin position Ⓐ.

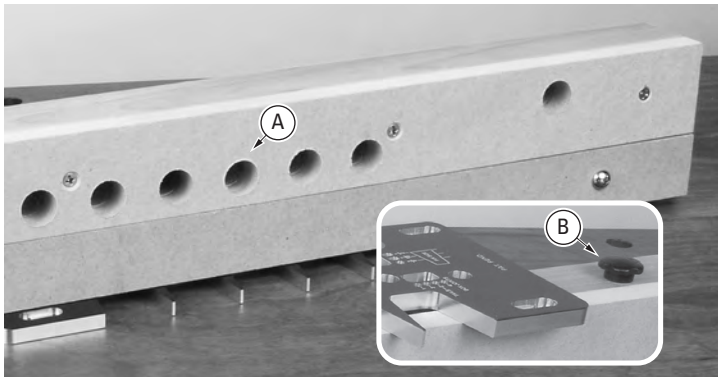
**1-13** Turn the assembly upside down. Take a piece of the predrilled sacrificial board and lay it flush on the template.



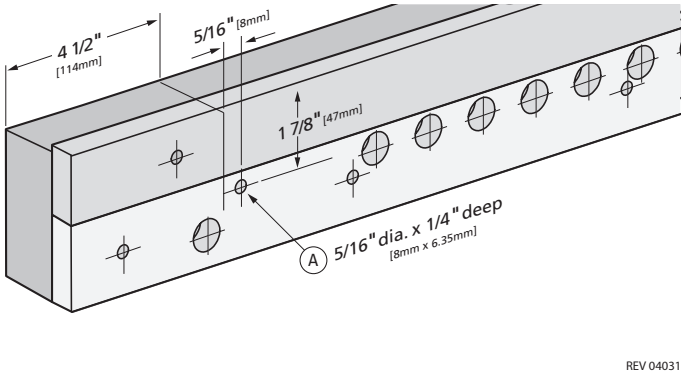
**1-14** Using the two 5⁄16"[8mm] holes as drill guides, drill two 5⁄16"[8mm] holes through the beam. Attach the sacrificial board at the left end with a ¼-20 machine screw and wing nut. Then move the template to its second position and install the second screw.



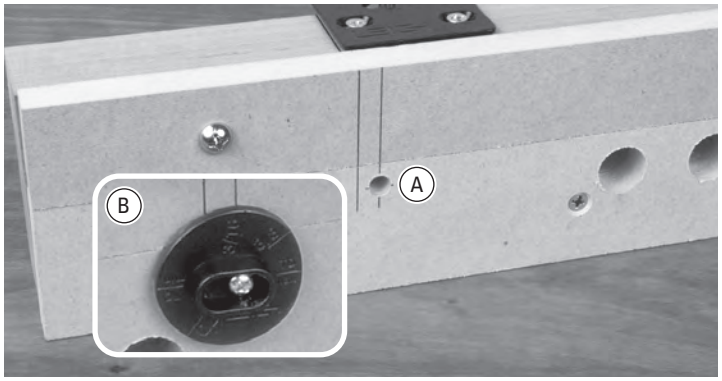

**1-15** Place the clamping surface Ⓐ against the beam Ⓑ, flush against the sacrificial board. Be sure the clamp hole layout marks Ⓒ are next to the sacrificial board Ⓓ. Screw the clamping surface to the beam through the countersunk holes. If screwing into a hardwood beam, first drill pilot holes in the beam.



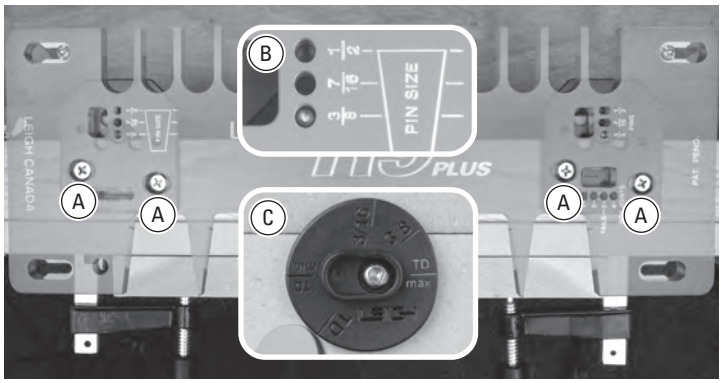

**1-16 Clamp Holes** Drill all ¾"[19mm] clamp holes Ⓐ square to the beam, through the clamping surface and beam. Next, drill two holes (as per beam drawing), 5⁄16"[8mm] diameter and 9⁄16"[14mm] deep, for the table glide Ⓑ (used for router table operation only).



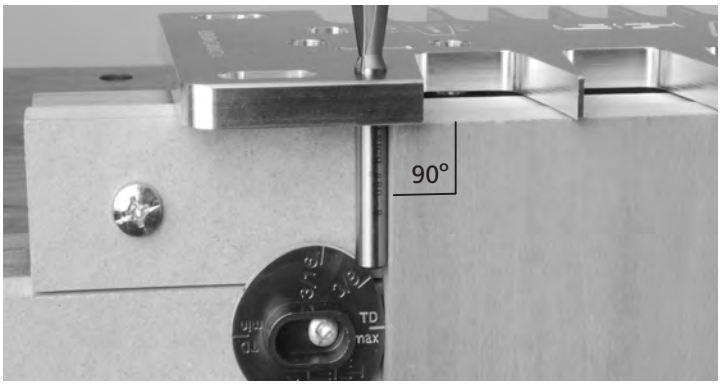

**1-17 Sidestop Positioning** Create layout lines as indicated above for the sidestop Ⓐ. **Note:** Be precise. Sidestop positioning is very important.



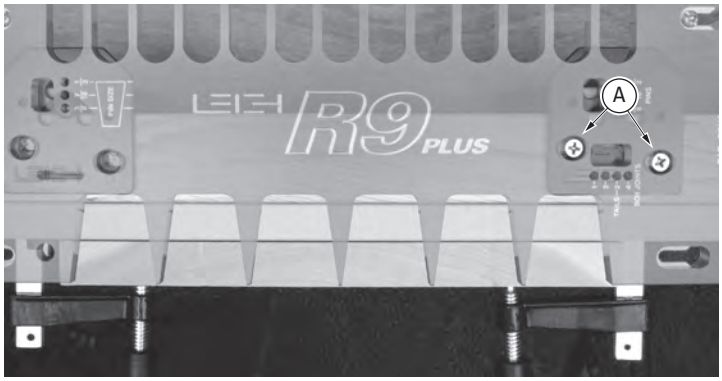

**1-18** Using a Brad Point or Forstner bit, counter bore a 5⁄16"[8mm] hole Ⓐ, ¼"[6,35mm] deep for the sidestop hub. Then, using a 3⁄32"[2,5mm] bit, drill a pilot hole for the sidestop mounting screw. Attach the sidestop to the beam with the provided No.8 x 1¼"[30mm] round head screw Ⓑ.



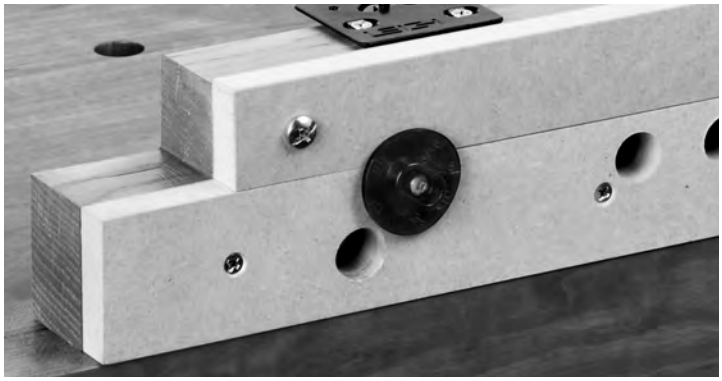

**1-19** The template will now be used to precisely position the pin plates. Slightly loosen all pin plate screws Ⓐ just enough so that the pin plates can move side to side. Position the template on the pin plates in the ⅜"[9,5mm] position Ⓑ. Set the sidestop to the TD Max position Ⓒ.




**1-20** Clamp a square board against the sidestop and flush under the template. Insert the shank of the No.80-8 bit into the 5⁄16"[8mm] hole in the template. Move the template and pin plates laterally until the shank of the bit just touches the edge of the board. Now tighten the first pin plate.




**1-21** Gradually tighten the second pin plate screws Ⓐ making sure the template is not binding on the pins. Move the template to the second position and repeat the procedure with the third pin plate.



**1-22 Optional Hold-down for Bench Use** Notch out the ends of the beam in order to clamp beam assembly to a bench and use in hand-held router mode. ■

*Important:* ***The beam may expand or contract with humidity changes. Use the ⅜"[9,5mm] holes to adjust the pin plates as required.***