CHAPTER 14

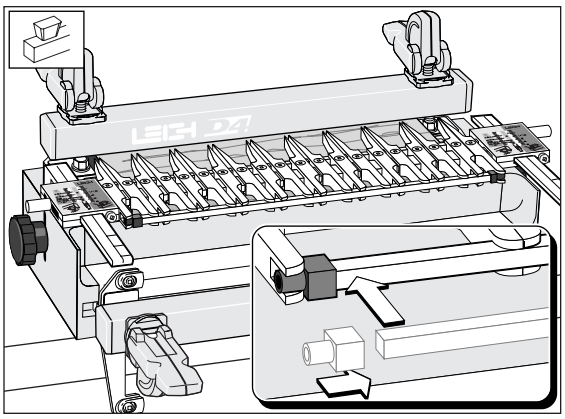
Sliding Dovetail Procedures

Chapter Foreword

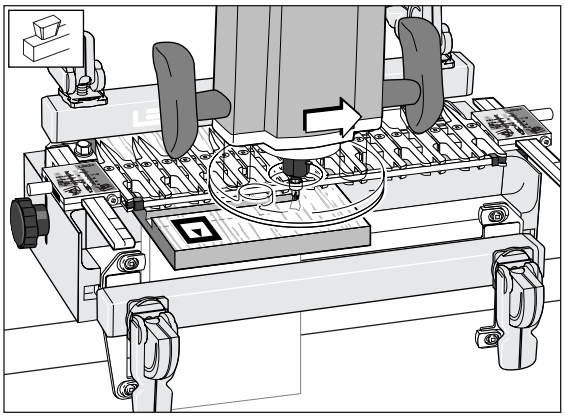
Routing sliding dovetail "slots" across the face grain of horizontal boards is very tough on dovetail cutters. **Always use the largest shank size available to you;** we recommend at least 8mm shanks, but ½" would be even better, with of course the appropriate guide-bush.

If you have to use ¼" shanks in hardwood, use a second router to rough out the slot centre with a straight cutter.

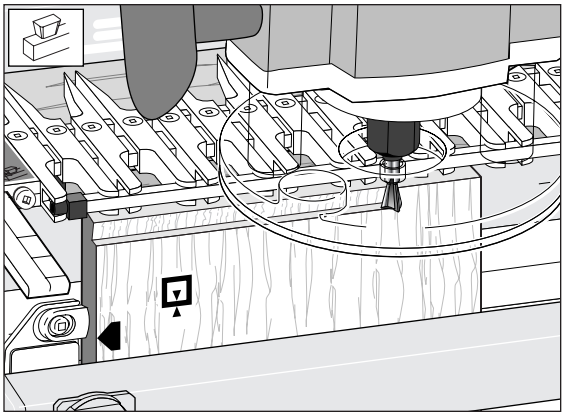
We recommend ⅝"[15,9mm] as the minimum size guidebush for sliding dovetails.



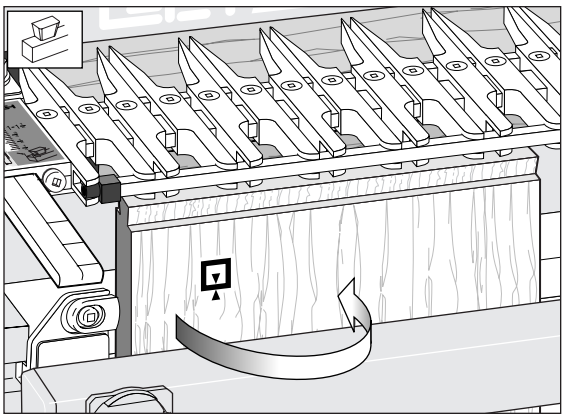
14-1
With the finger assembly in the HB TAILS mode, the cross cut bar fits into the recesses in the ends of the tail guides to allow routing of sliding dovetails.
Note: On some jigs the cross cut bar caps may interfere with the guidebush at the start of the cut. If so, simply space the workpieces away from the side stops with a spacer block.



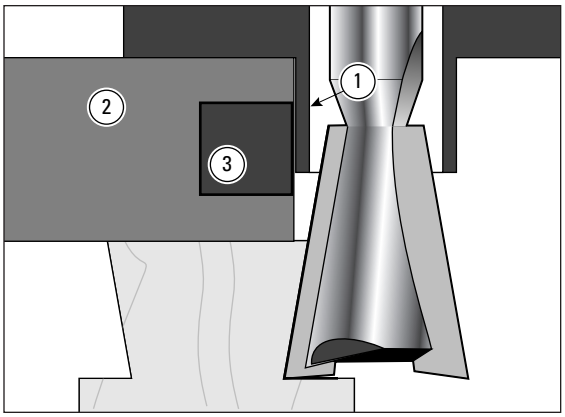
14-2
Using the cross cut bar as a guide surface for the guidebush, you can make lateral router cuts across the faces of horizontal boards (we call these dovetail *slots*), and...



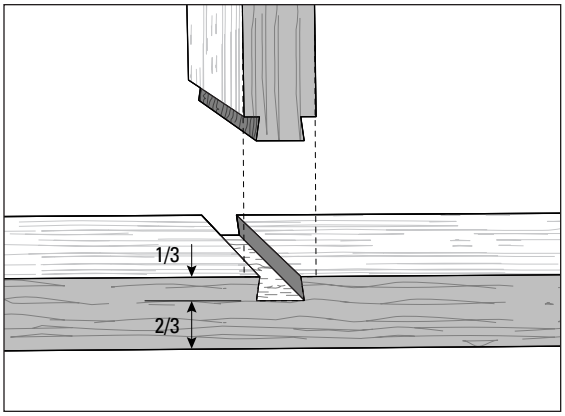
14-3
Across the top ends of vertical boards to cut the tail. First rout one side...



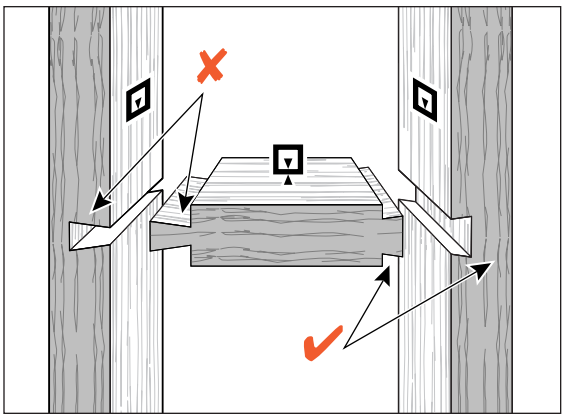
14-4
Then turn the board side-over-side to cut the other half of the tail.



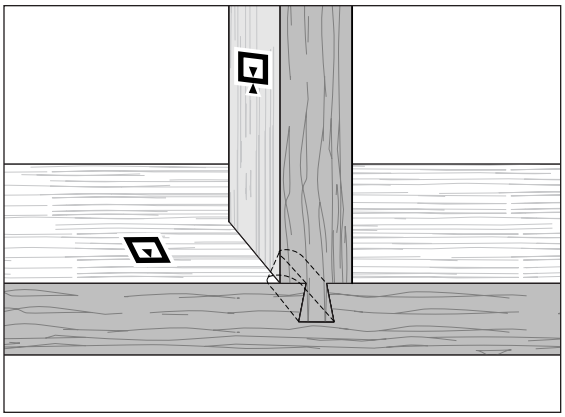
14-5
You can use virtually any guidebush/dovetail cutter combination for sliding dovetails, but the cutter angle should be not less than 10°. We do recommend ½" shank bits for sliding dovetails which would require ⅝" O.D. guidebush as minimum. Make sure the cutter can rotate without touching either the guidebush ① or the jig ②. The guidebush must project ¼" to 5/16" [6 to 8mm] from the router base to securely engage the cross cut bar ③.



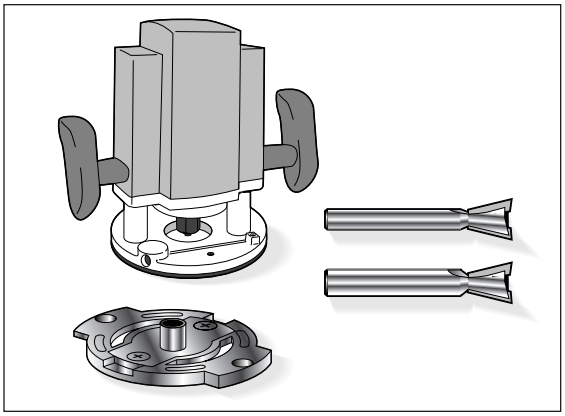
14-6
Sliding dovetail cutter selection:
If it is a full-width joint, *the slot depth-of-cut should be no more than ⅓ of the board thickness,* so as not to significantly weaken the board.



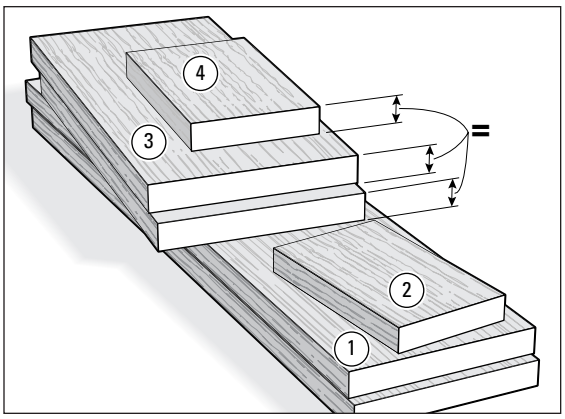
14-7
If the tail board is to be a load-bearing horizontal member (e.g., bookshelf or step), then make the tail fairly thick to ensure that the tail neck will be strong.



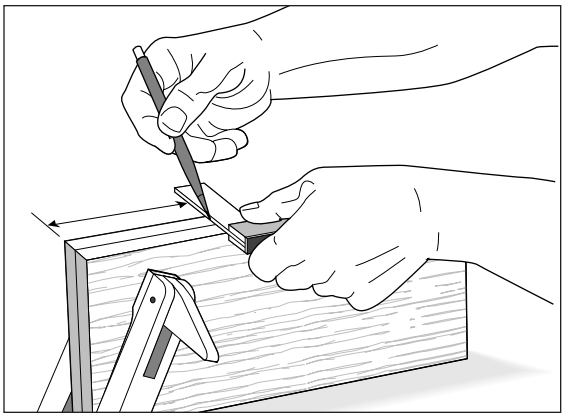
14-8
Shorter sliding dovetails with fewer structural demands on them may be slightly deeper, with narrower profiles, especially if appearance is important (e.g., where narrow rails join wider boards).



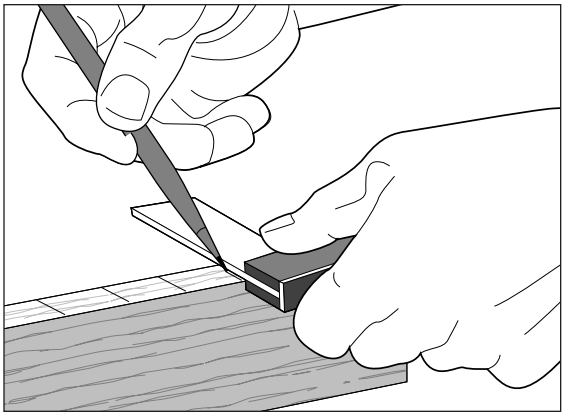
14-9
Now to cut sliding dovetails. Assuming you do not have a ½" shank cutter immediately available, mount a 7⁄16"[11,1mm] guidebush on your router and use a No. 120 x 14° dovetail cutter, or preferably, a No. 120-8 cutter.
Note: No. 80 x 8° dovetail cutter is not suitable for sliding dovetails. The 8° angle is not sufficient for these relatively shallow interlocking cuts.



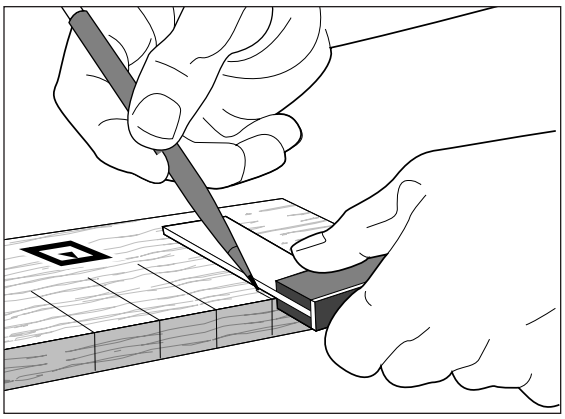
14-10
Use ¾" x 5 ½"[20x140mm] softwood to make two slot boards ①, plus one narrow test slot board ②, two tail boards ③ and one narrow test tail board ④. The tail boards ③ and test tail board ④ must be exactly the same thickness. This will make two uprights and two shelves.



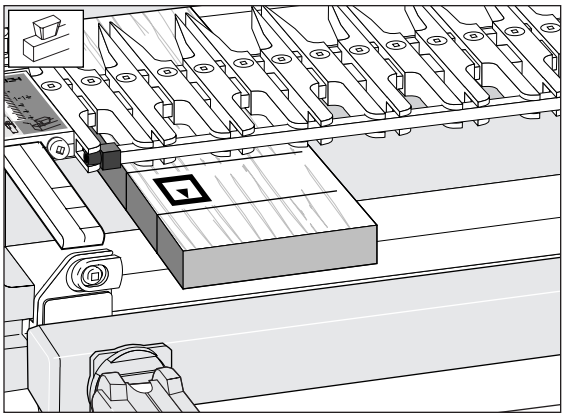
14-11
Marking Out: *Do not mark the slot positions on the board faces,* but mark the edges of both slot boards together for perfectly level shelves. Stay at least 7"[180mm] in from the ends to allow for clamping on this test project. (Instruction number 14-37 describes how to rout close to both ends.)



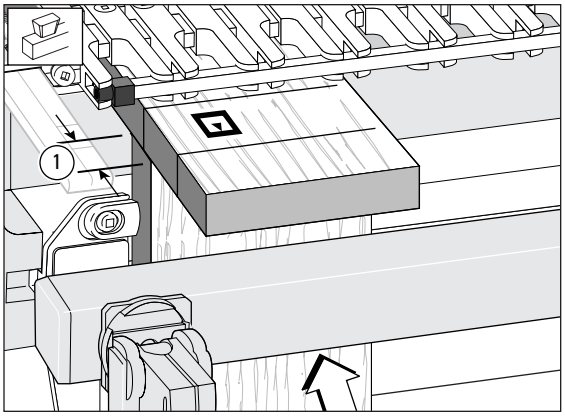
14-12
Mark the narrow test slot board in the same way at several closely spaced random spots. This board is used only for setup.



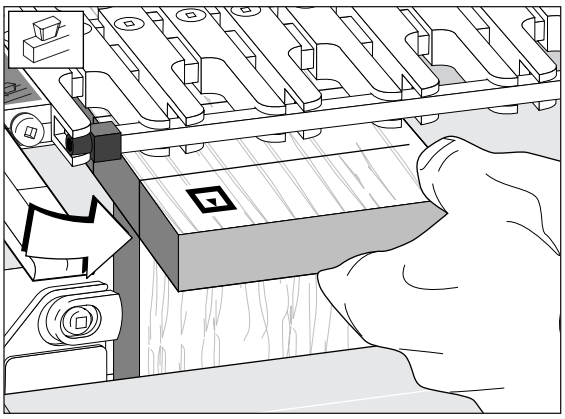
14-13
On the test slot board only, square the marks across the face.



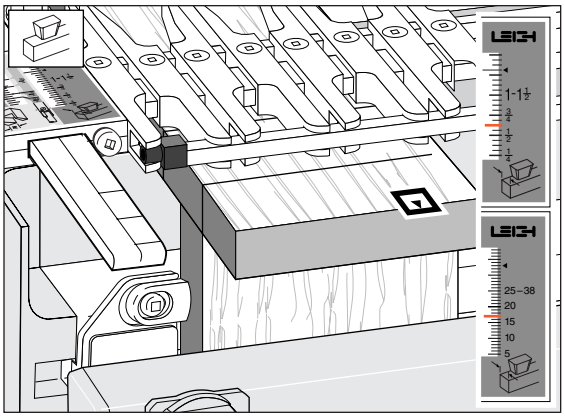
14-14
Mount the test slot board in the rear clamp, markings up.



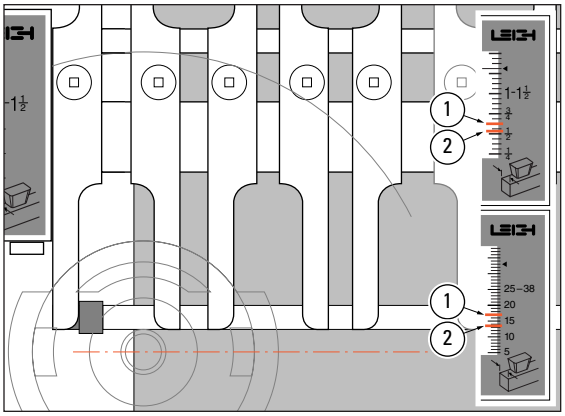
14-15
Mount a ¾"[20mm] thick ① *(yes, the ¾"[20mm] thickness is important)* square-ended board vertically in the front clamp against the side stop, with the top edge butting the underside of the test board.



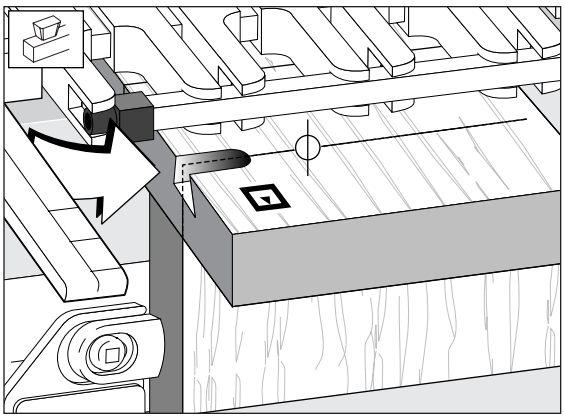
14-16
Position and clamp the test board so that one of the edge marks is in line with the *outside edge* of the vertical board.



14-17
With the finger assembly (including the cross cut bar) on the support brackets in the HB TAILS mode, set the scale to 5/8"[17mm]. *Make sure the finger assembly is level and sitting flush on top of the board.*

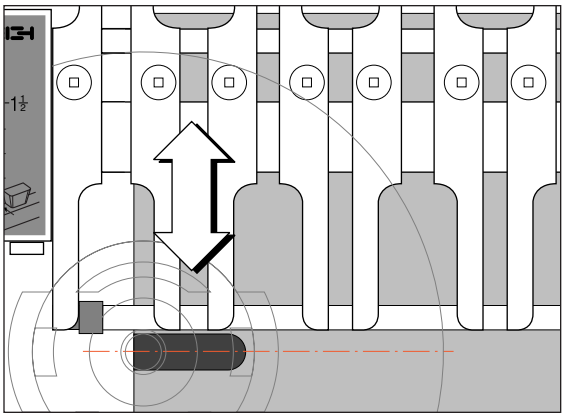


14-18
The HB TAILS scale was not designed for this operation, but with the 7/16"[11,1mm] guidebush and the scale set on 5/8"[17mm] ①, the routed slot will be close to centred on the slot line.
Note: If you use a larger guidebush than 7/16"[11,1mm], move the scale in by the difference of the two guidebush radii. E.g., the suggested scale reading for a 5/8" guidebush would be 17/32"[13,5mm] ②.

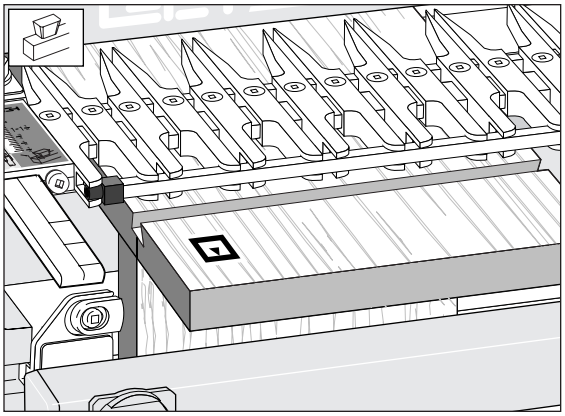


14-19
Adjust the cutter so the cut depth is about 5/16"[8mm]. Rout from left to right maintaining light inward pressure of the guidebush on the bar. Rout in only about 1"[25mm] and back out again.

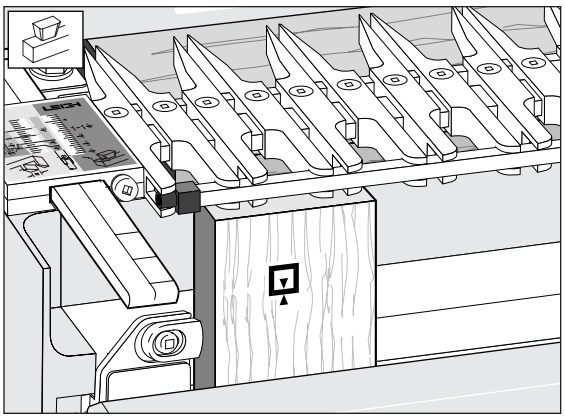
Do not lift the router.



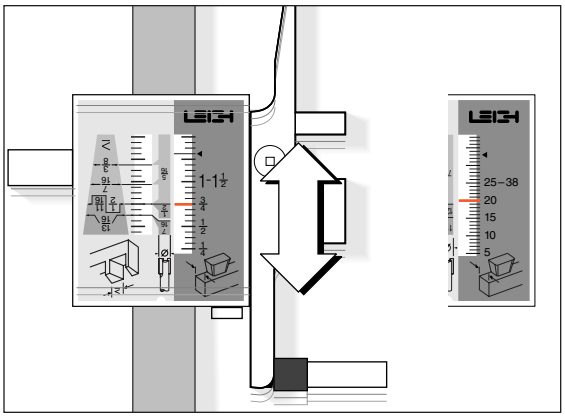
14-20
Check to see if this short slot is centred on the pencil line. If not, adjust the finger assembly in or out and retest on the other lines as necessary until the slot is centred. Lock the finger assembly in this position and record the setting for future reference.



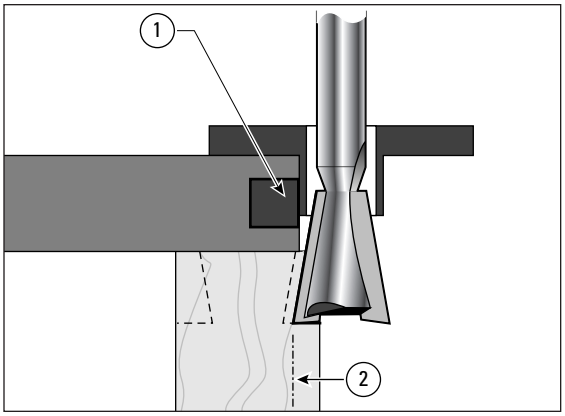
14-21
Now rout sliding dovetail slots in the two main slot boards with the boards in the horizontal position in the rear clamp, slot side, that is inside face ⊡ up.
The guidefingers must be flush on the board.



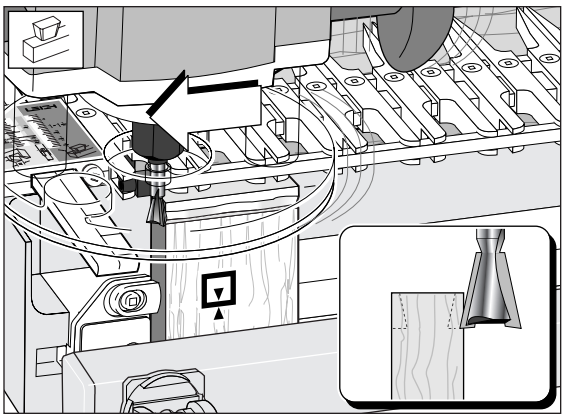
14-22
Replace the spacer board in the rear clamp, and with the finger assembly on the spacer board, mount a test tail board vertically in the front clamp, **flush under the guidefingers**. Either side can face out ⊡.



14-23
The HB TAILS scale is not designed specifically for this mode, but it does allow you to make precise adjustments for tail size and tightness of fit on sliding dovetails.

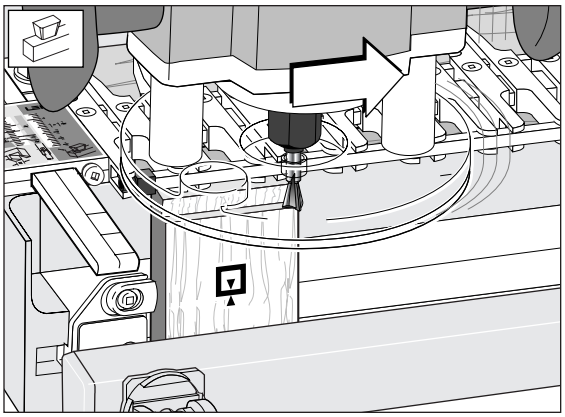


14-24
Adjust and set the finger assembly ① so it is clear that the routed tail ② will be too large for the slot.



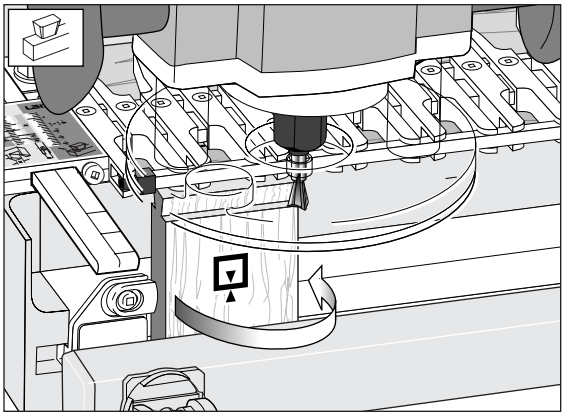
14-25

Rout one side of the test tail board. **Make one light pass from right to left (climb routing). Make sure you control it firmly, because it is driven in this direction by the cutter. Only the tip of the cutter should be cutting on the first cut (see inset).** This *back* or *climb* routing leaves a very clean shoulder in side grain.



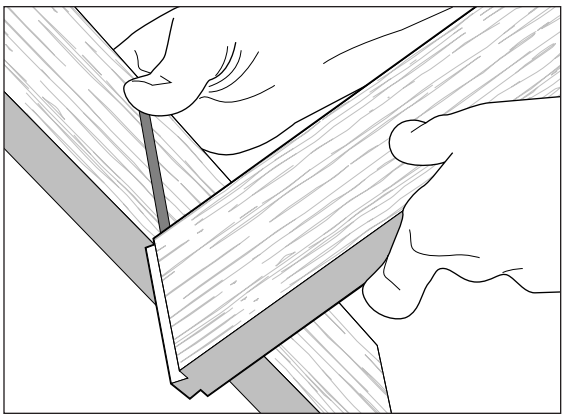
14-26

Finish left to right, with the guidebush touching the bar.

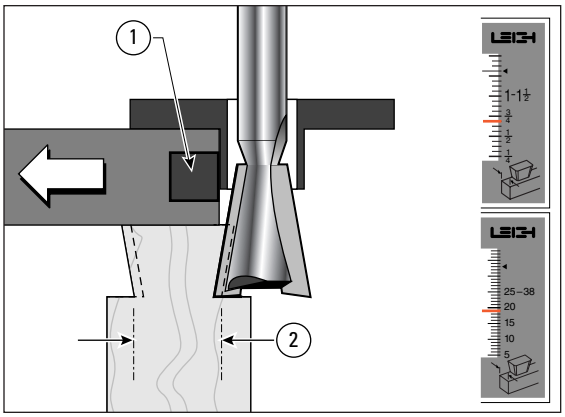


14-27

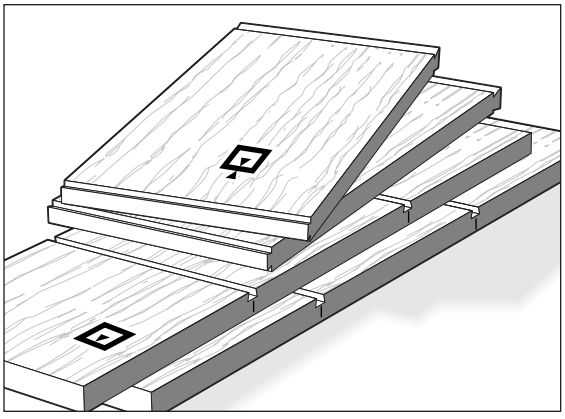
Turn the test tail board around in the jig and rout the other side as above.



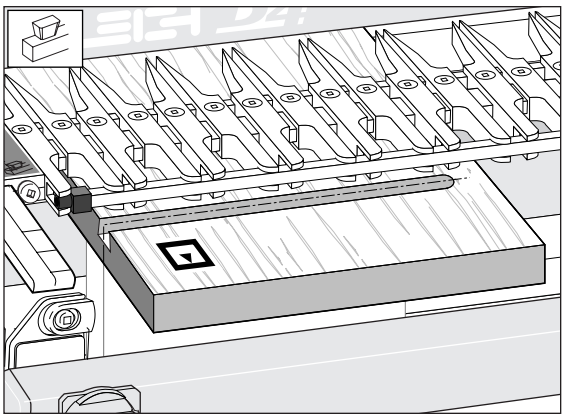
14-28
Test the joint for fit. The tail should be too big. If it is too small, adjust the finger assembly outward by at least half the difference and rout another test tail on the other end of this test board.



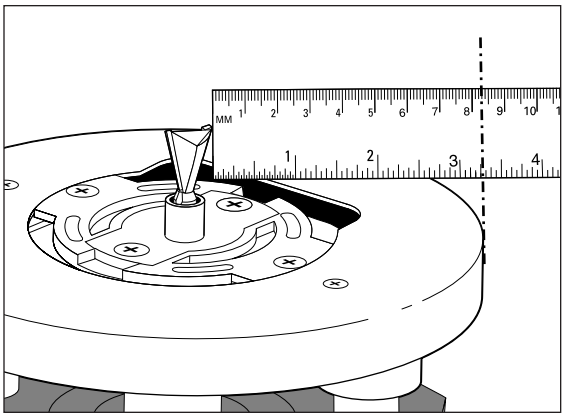
14-29
If the tail ② is too big, move the finger assembly ① in toward the jig by half the amount the tail is too big. Rout the same test board again and keep adjusting and testing until you have a good fit. Note: Variations in board thickness, guidebush diameter, cutter depth, angle, diameter and concentricity, make it impractical to record or chart scale settings for sliding tail size. Use trial and error each time. It doesn't take long, and you get a good fit.



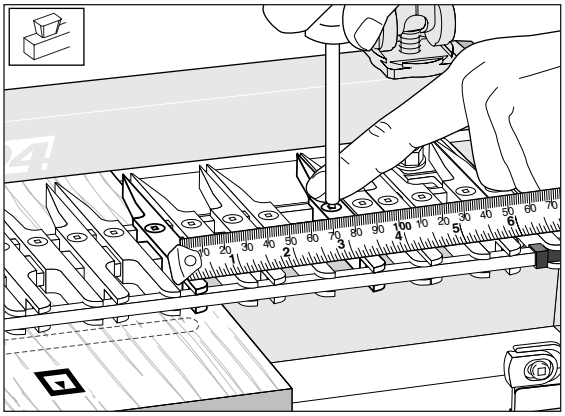
14-30
When the fit is satisfactory, rout one end of a project tail board and test again. If the fit is good, rout all the other ends.



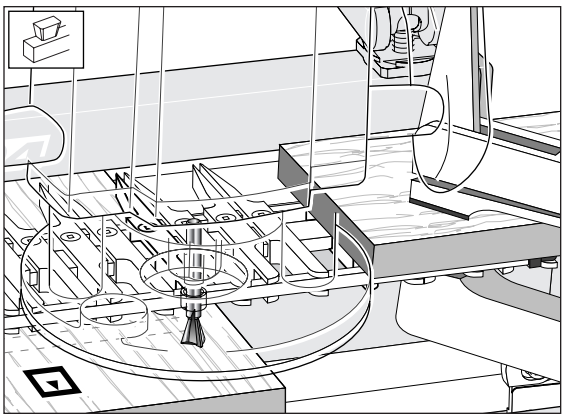
14-31
Stopped Sliding Dovetails
If a stopped sliding dovetail is called for...



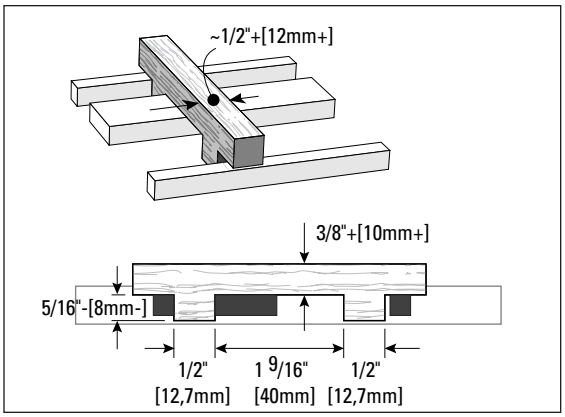
14-32
Measure from the outside tip of the dovetail cutter to the edge of the router base.



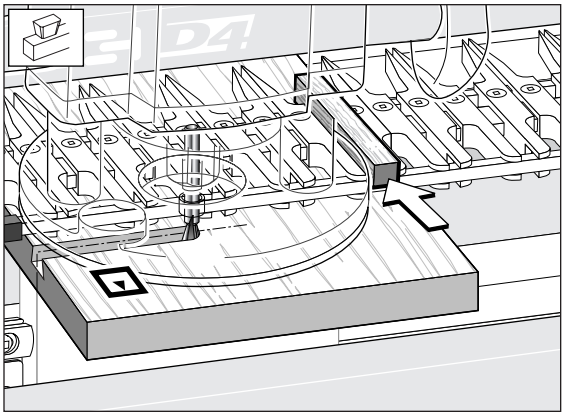
14-33
Measure the same distance from where you want the slot stopped to a position on the finger assembly. Move a guidefinger to that point and mark the guidefinger with a felt pen as a visual router stop mark...



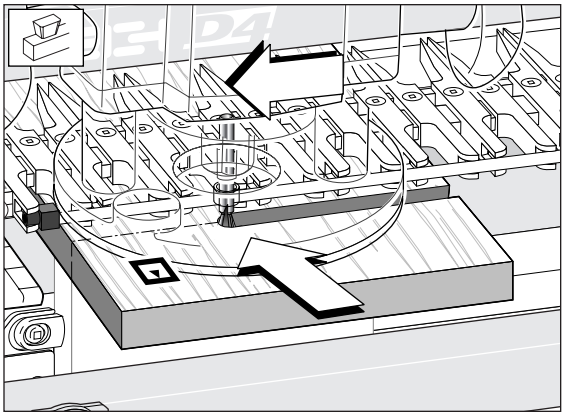
14-34
Or lightly clamp (**with a soft-jawed clamp**) a short board to the finger assembly to act as a router stop.



14-35
To cut numerous short stopped sliding dovetails in wide boards, make up this simple router stop.

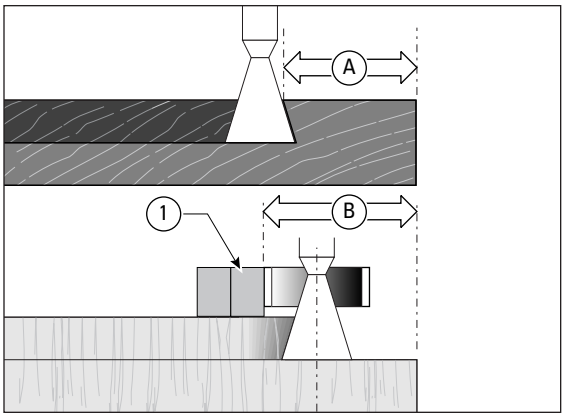


14-36
Trap the stop between a convenient pair of guidefingers and position them to suit.



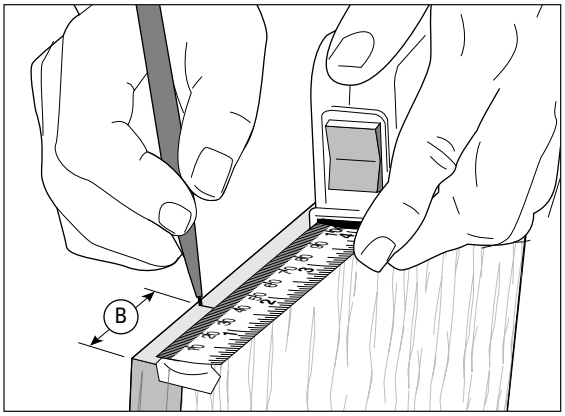
14-37

Dovetail slots are preferably routed from left to right because cutter rotation tends to keep the guidebush against the bar. However, when routing stopped slots in handed boards, or to rout close to both ends of a board, it is sometimes necessary to rout slots from right to left. **Use a slower feed rate and maintain constant pressure of the guidebush on the bar for good results. But remember, the cutter rotation will tend to pull the router away from the bar.**



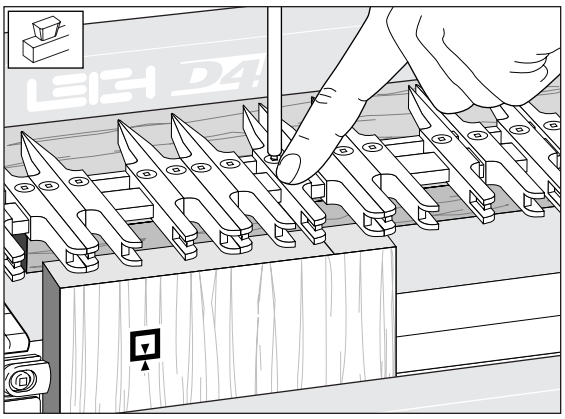
14-38

To rout a stopped tail to match a stopped slot, measure **A** from the end of the slot to the board edge. Calculate **B** this way:
B = A + guidebush radius – cutter radius.
B is how far the guidefinger ① will be from the edge of the tail board. Note: If the tail board edge is to be inset from the edge of the slot board (as when a shelf is inset from the front of a cabinet side) you must also subtract the size of the inset to get the correct value for **B**.

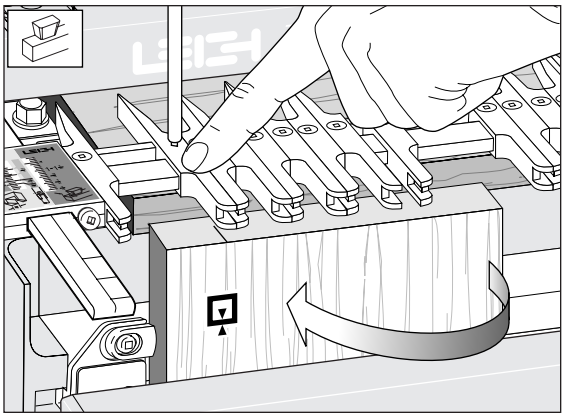


14-39

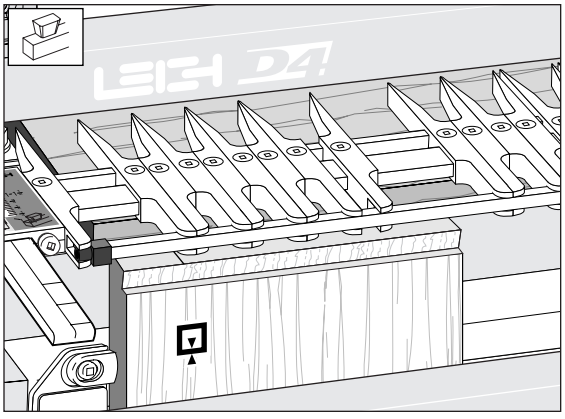
Measure and mark dimension **B** on the end of the tail board.



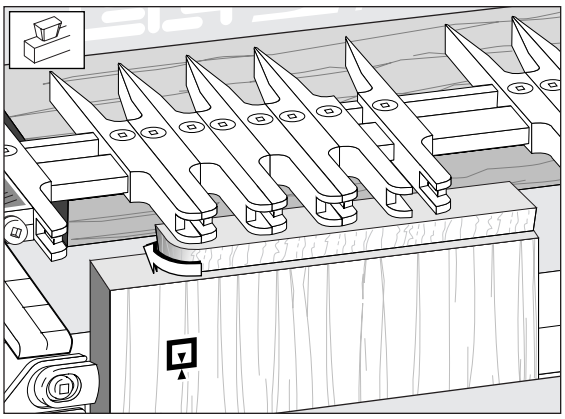
14-40
Position a (radiussed) guidefinger at this mark on the tail board end. **Do not leave a guidefinger in the area to be wasted.**



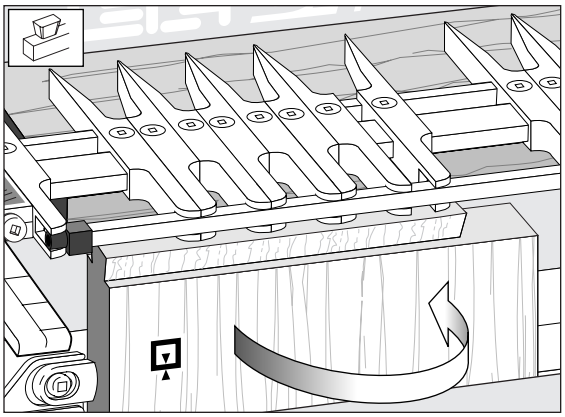
14-41
Turn the board side-for-side in the jig, and set another guidefinger on the mark. **Remember to move other guidefingers from the area to be wasted.**



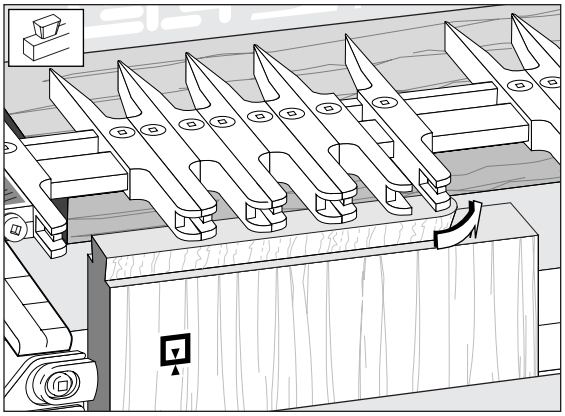
14-42
Establish the correct scale setting for the tail-to-slot fit (see pages 122 and 124). Then put on the cross cut bar, and after routing one side of the tail, remove the cross cut bar.



14-43
Then carefully rout around the guidefinger radius to form the shoulder.



14-44
Repeat on the other side and...



14-45
Remove the cross cut bar and rout the last corner of the shoulder.