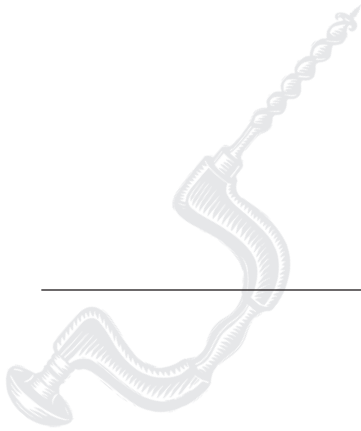


Half-Blind Dovetail Procedures



Chapter Foreword

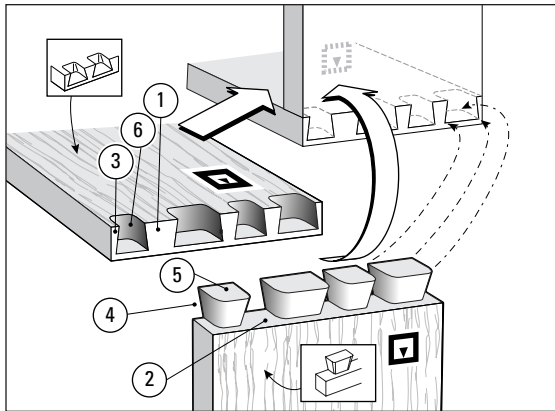
In these instructions for using the Leigh Dovetail Jig, we have recommended using certain cutters and board sizes just because they are easy to work with. When you have cut some practice joints and gained confidence in your ability to get the results you want, use the half-blind cutter selection chart on page 160 to plan the dovetail routing you need for your own projects.

Note: Only the $\frac{7}{16}$ " OD guidebushes and the four cutters listed opposite may be used for half-blind dovetails. See "Half Blind Cutter Selection" on page 160 for a full description on how to select the appropriate cutter.

IMPORTANT!

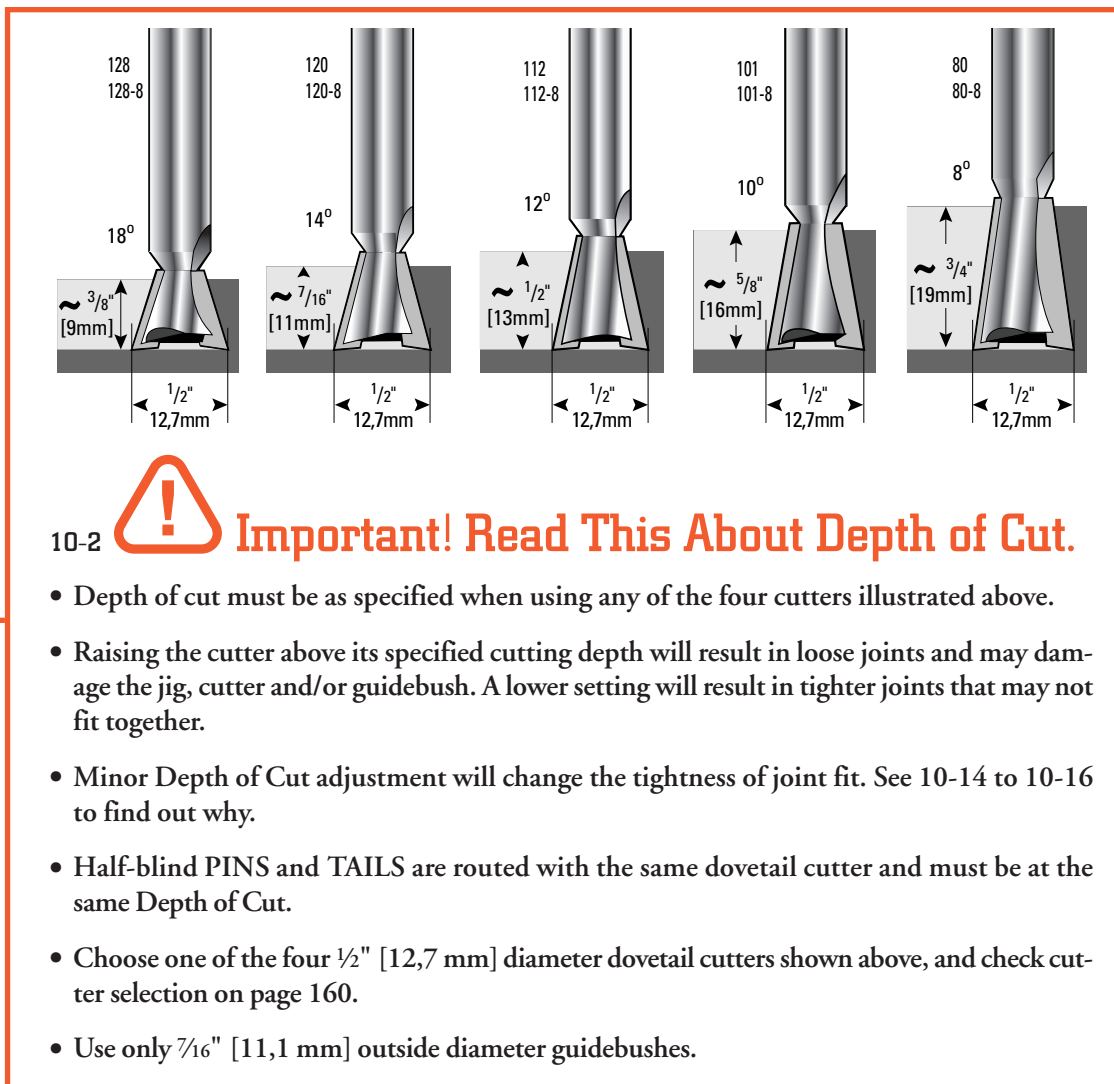
The most misunderstood aspect of routing half-blind dovetails is how the cutter angle affects the Depth of Cut setting. Theoretically, there is only one "perfect" depth of cut for a given cutter that will produce properly mating Pins and Sockets. Therefore, raising or lowering the cutter during test cuts is done only to achieve that one "perfect depth" that is determined by angle of the selected cutter. Any other depth will produce a joint that is too loose or too tight.

Please read this carefully and note the specified Depth of Cut for the different cutter angles shown.

**10-1****Half-blind Dovetails:**

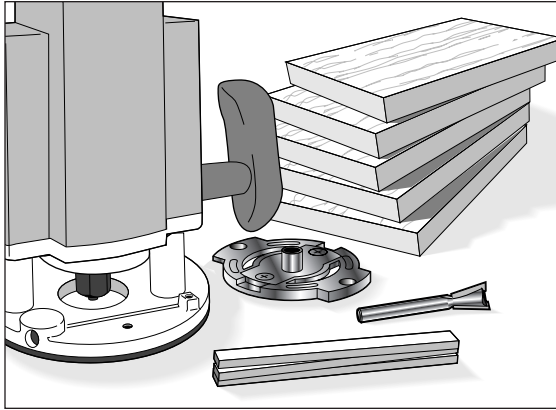
- ① Pins
- ② Pin sockets
- ③ Half-pins
- ④ Half-pin sockets
- ⑤ Tails
- ⑥ Tail Sockets

The pins fit in the pin sockets. Joints almost always end each side with half-pins.

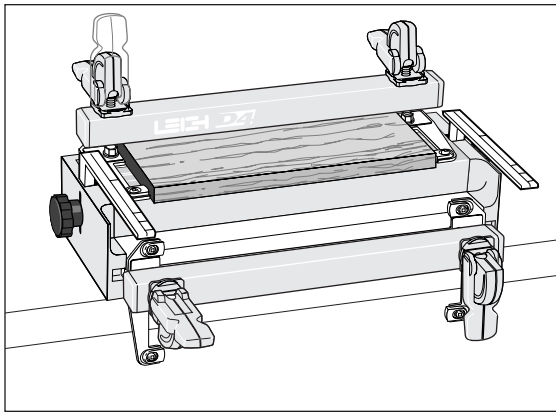
**10-2****Important! Read This About Depth of Cut.**

- Depth of cut must be as specified when using any of the four cutters illustrated above.
- Raising the cutter above its specified cutting depth will result in loose joints and may damage the jig, cutter and/or guidebush. A lower setting will result in tighter joints that may not fit together.
- Minor Depth of Cut adjustment will change the tightness of joint fit. See 10-14 to 10-16 to find out why.
- Half-blind PINS and TAILS are routed with the same dovetail cutter and must be at the same Depth of Cut.
- Choose one of the four 1/2" [12,7 mm] diameter dovetail cutters shown above, and check cutter selection on page 160.
- Use only 7/16" [11,1 mm] outside diameter guidebushes.

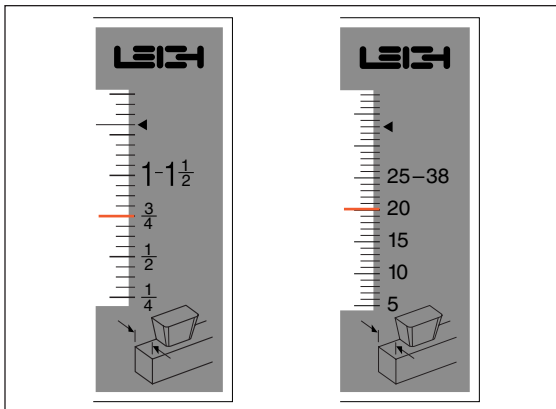
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**10-3**


Let's cut a single test joint. You will need one router, a $\frac{7}{16}$ " [11,1mm] guidebush, either a No.120- $\frac{1}{2}$ " [12,7mm] 14° dovetail cutter or a No.101- $\frac{1}{2}$ " [12,7mm] 10° dovetail cutter or the 8mm shank equivalent. **The 80 series cutters cut too deep for $\frac{3}{4}$ " [20mm] boards** (see the HB cutter selection charts on page 161). You will also need several pieces of $\frac{3}{4}$ " x $5\frac{1}{2}$ " [20x140mm] x 8" [200mm] or so long, *and some $\frac{1}{4}$ " [6,35mm] x $\frac{1}{2}$ " [12,7mm] hardwood strip for bridge pieces.*

**10-4**

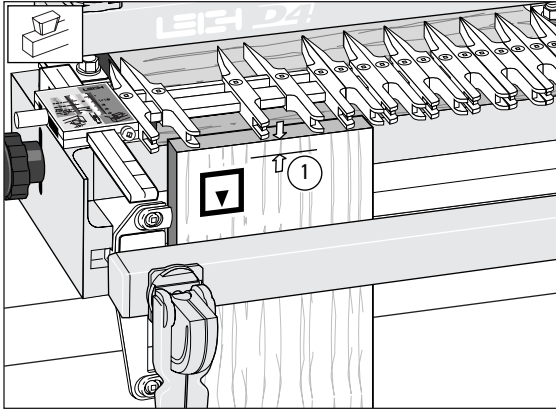
Clamp the spacer board in the rear clamp.

**10-5**

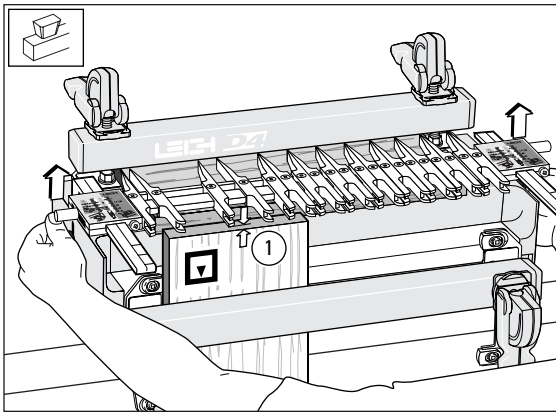
Mount the finger assembly on the support brackets in the  HB TAILS mode, flat on the spacer board, *scales set on the thickness of the tail board ($\frac{3}{4}$ " [20mm] in this instance).*

The  HB TAILS scale is always set at the tail board thickness.

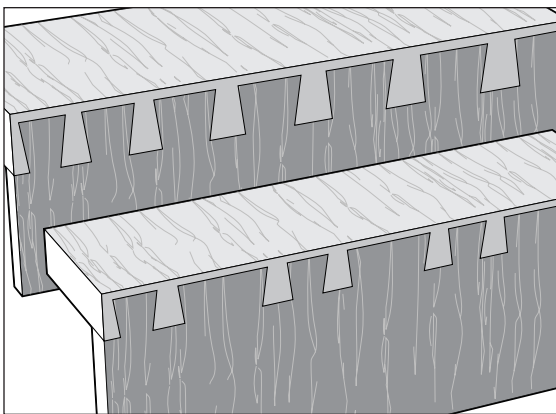
(The scale increments above 1-1 $\frac{1}{2}$ " [25-38mm] are for use on sliding dovetails - see chapter 14.)

**10-6**

Measure and mark a line on the inside face of the tail board ① to the working depth of the cutter to be used as per 10-2 this chapter. Clamp this test tail board in the left front clamp, against the side stop with the top edge flush under the guidefingers, and the inside face □ of the drawer side away from the jig.

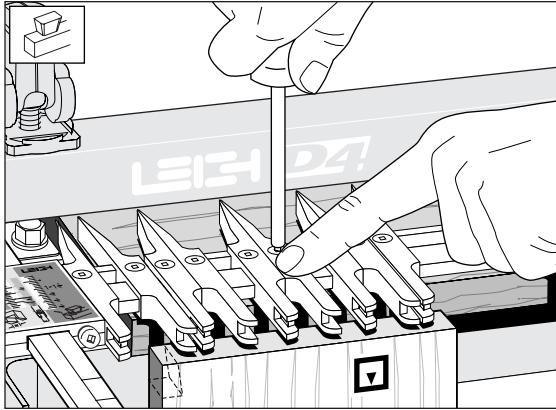
**10-7**

Unlock and raise the finger assembly support brackets slightly so that the finger assembly is about $\frac{1}{16}$ " [2mm] ① above the boards. This will allow easy movement of the guidefingers.

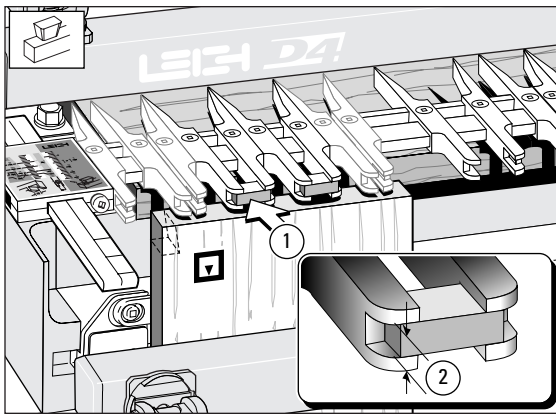
**10-8**

The following joint design is only a suggestion for this trial. It has a typical and traditional even layout of pins, with half-pins at each edge. The Leigh jig, however, allows for an infinite variety of joint designs, and boards of different thicknesses can be joined to each other as shown in this illustration. Before attempting joints of asymmetrical design, please see chapter 13.

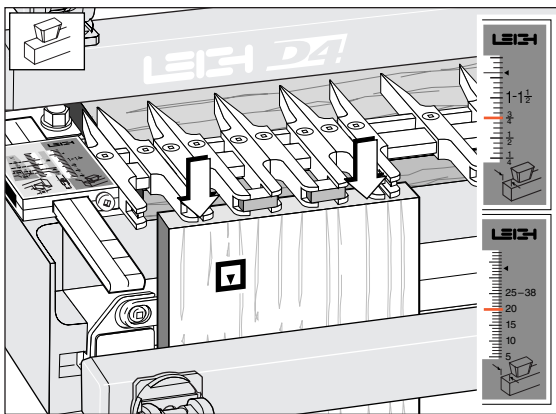
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**10-9**

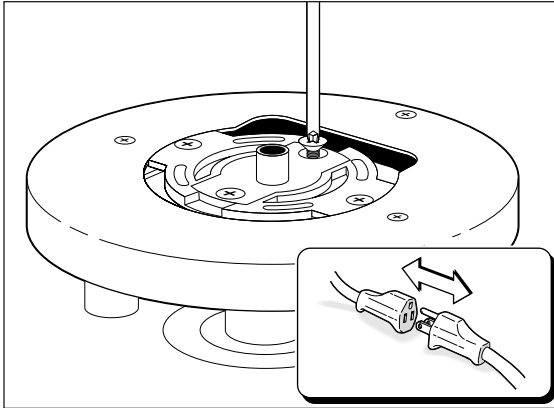
Ignoring the extreme outer guidefinger next to the scale (which just supports the router), loosen enough of the adjacent guides to give the required tail layout. The half-pin guidefinger position illustrated will give a half-pin socket profile like that shown (dotted lines).

**10-10**

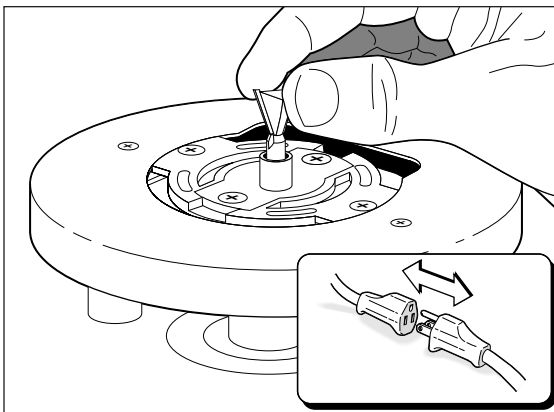
If the gaps between the guidefinger tails are wider than about $\frac{1}{8}$ " [3mm], mark off and cut some pieces of hardwood bridge strip ① to fit into the slots in the ends of the guidefinger tails. *Make sure the $\frac{1}{4}$ " [6,35mm] dimension ② on the strip is snug*, so the bridge pieces will not fall out. Be sure to make them slightly shorter than the distance between the guidefinger shoulders, so the guidefingers will not be forced apart when you put in the bridge pieces.

**10-11**

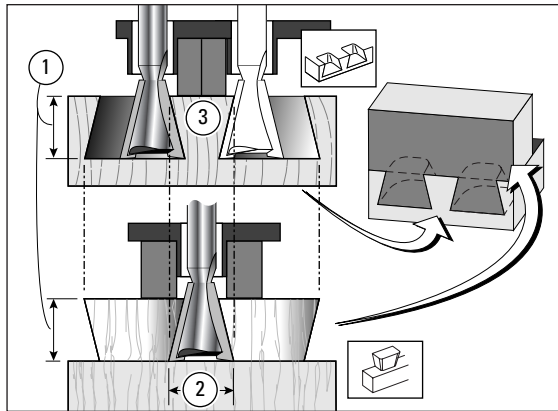
Remember to tighten any loose guidefingers. Lower the finger assembly back onto the spacer board and workpiece. **It must touch the workpiece or the depth of cut will vary and the joint won't fit.** The scale should be set on the tailboard thickness, in this case $\frac{3}{4}$ " [20mm].



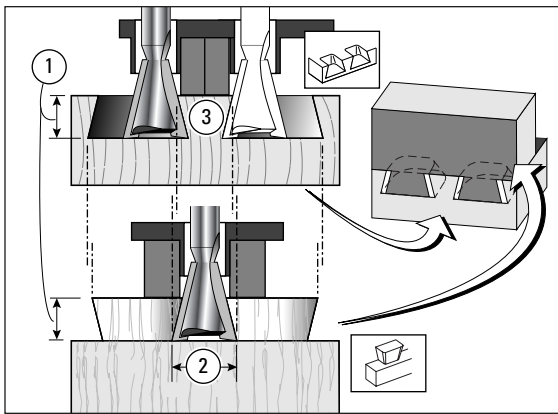
10-12
Attach the $\frac{7}{16}$ " [11,1mm] guidebush to the router securely.



10-13
Mount either the No.120 or No.101 (or the 8mm shank equivalent) cutter to the router.

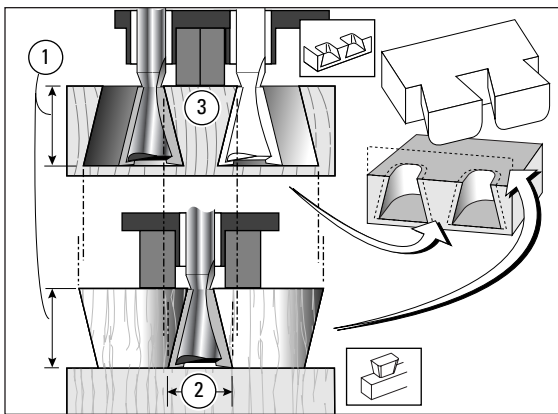
**10-14 Adjusting Joint Tightness**

Here's why the depth of cut ① changes the fit in half-blind dovetails. Increasing or decreasing the depth of cut does not affect the pin socket width ②, but does affect the width of the pin ③ that goes into the socket ②.

**10-15**

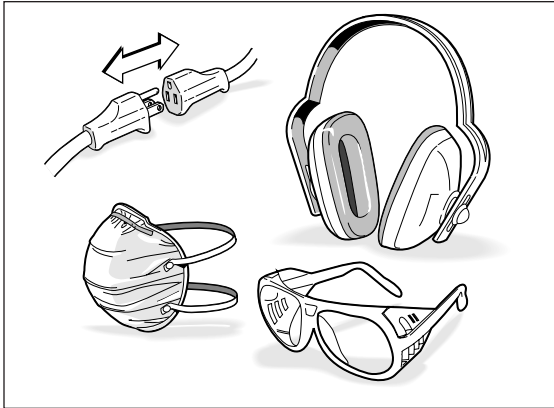
Note that decreasing the cutter depth ① makes the pin ③ narrower while the pin socket ② stays the same width, producing a loose fit.

Decreasing the cutter depth (i.e. raise the cutter into the router) produces a looser fit.

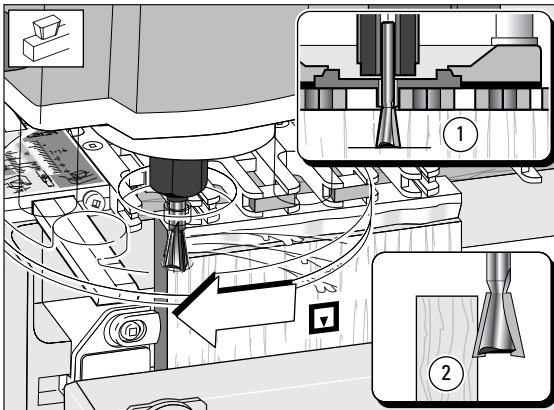
**10-16**

Increasing the cutter depth ① makes the pin ③ larger while the pin socket ② stays the same width, producing too tight a fit.

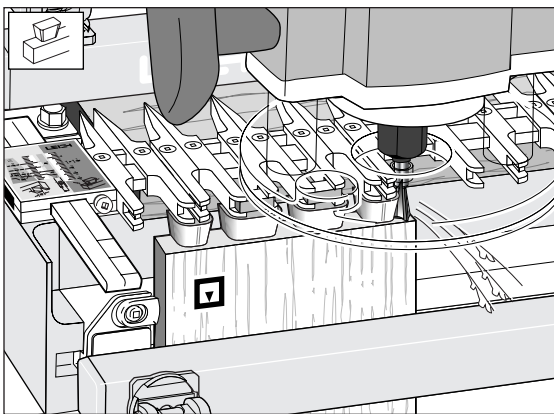
Increasing the cutter depth (i.e. lower the cutter) produces a tighter fit.

**10-17**

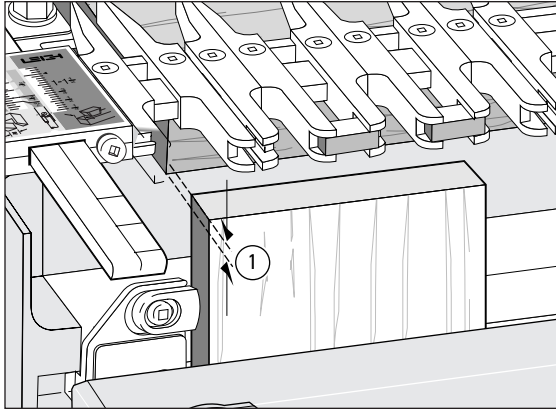
Remember to follow all safety precautions when routing.

**10-18** 

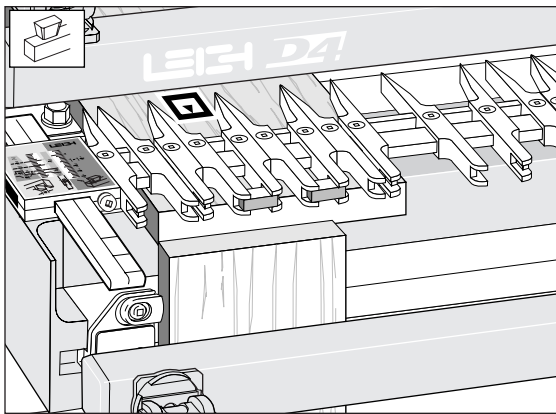
Adjust the cutter height until the cutter tip is level with the marked line ①. For the first light cut move the router from right to left. Make sure you control it firmly, because it is driven in this direction by the cutter. Only the tip of the cutter should be cutting on the first cut ②. This *back* or *climb* routing leaves a very clean shoulder in side grain.


**10-19**

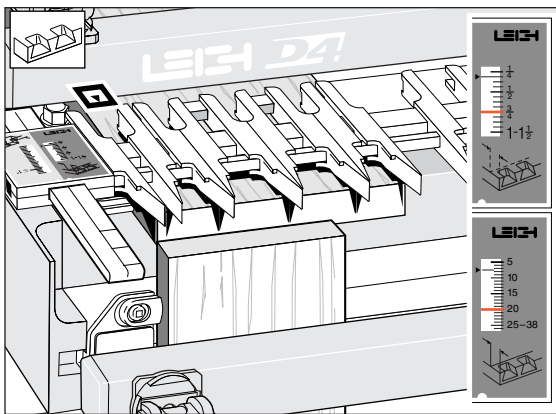
Now rout in and out from left to right following the guides and bridge pieces to rout out the pin sockets, leaving the tails.


**10-20**

Remove the test tail board, then clamp a scrap board in the front of the jig so that the top edge projects above the top face of the jig by about $\frac{1}{8}$ " [3mm] ①. This will keep the scrap piece below the path of the cutter when routing the pin board.

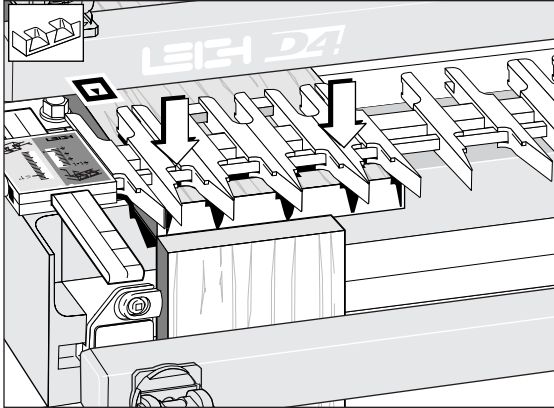
**10-21**

Remove the spacer board from the rear clamp. Place a test pin board in the left rear clamp against the side stop, fitting its front end edge flush against the vertical scrap piece, with the inside face  of the drawer front away from the jig body. The pin board is now positioned with the edge to be routed flush with the jig's front face, correctly registered for the scale readings.

**10-22**

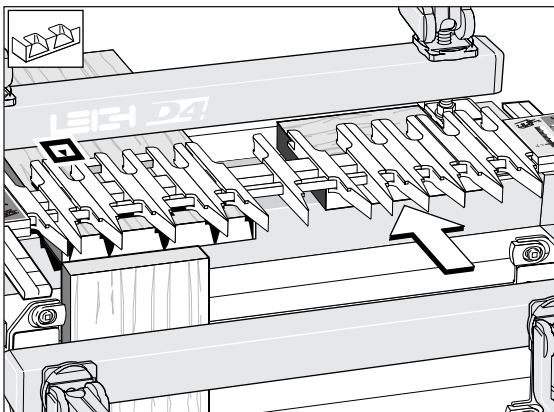
Rotate the finger assembly to the  HB PINS mode and set the HB PINS scale equal to the tail board thickness (i.e., the same setting as for the tails: in this example, $\frac{3}{4}$ " [20mm]).

Both HB pins and HB tail scales are always set to the tail board thickness.

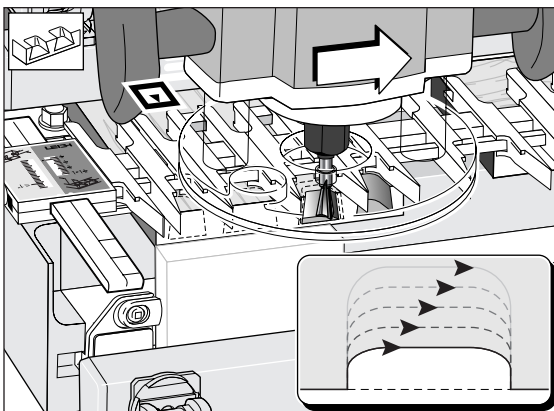
**10-23**

Make sure the finger assembly is flush and level on top of the pin board.

The guidefingers must be touching the pin boards or the depth of cut will vary and cause poor joint fit.

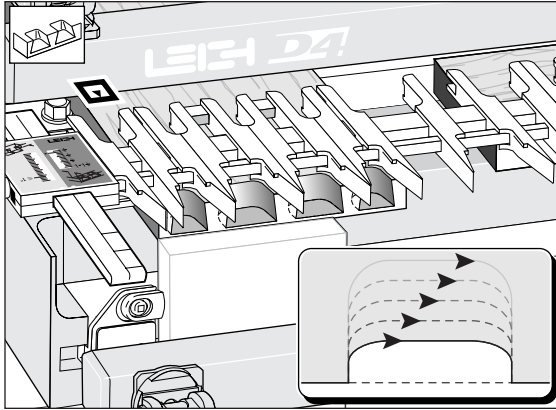
**10-24**

If you have difficulty leveling the finger assembly on a narrow workpiece, place a board the same thickness as the pin board under the other end of the finger assembly, *but not in the rear clamp.*

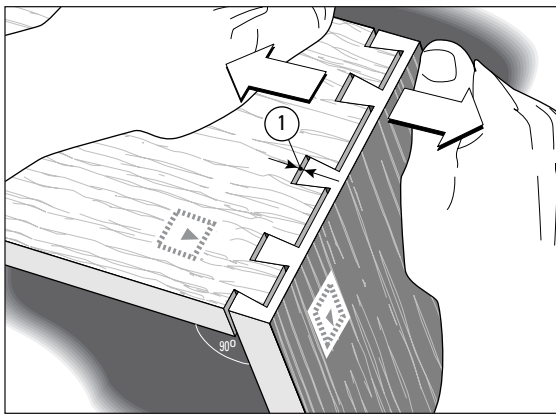
**10-25**

Rout out the waste between the pins. Rout each space from left to right. Do not back rout on end grain. If the cutter enters on the right side of the opening there will be a very strong pull to the left, so...

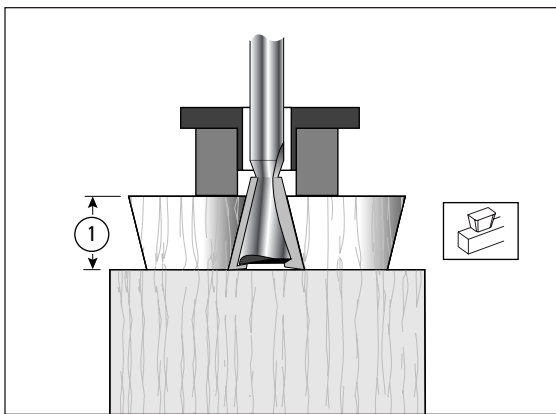
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**10-26**

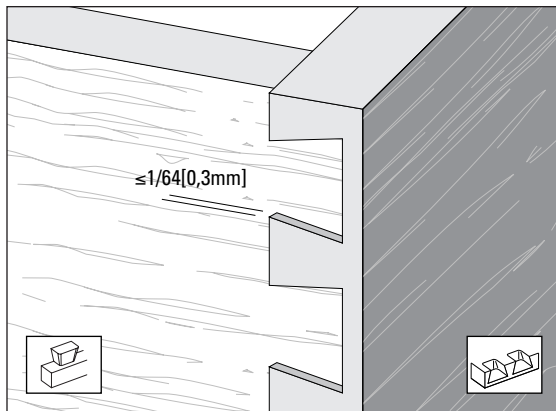
Rout each opening in at least three or four passes, **left to right**.

**10-27**

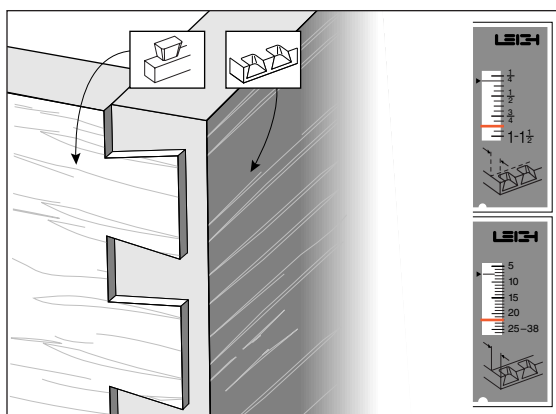
Remove the pin board and test the joint for fit. If the joint is loose, as shown here, you need to lower the cutter by the same amount as the gap at the bottom of the pins ① (when the pins are pulled against the socket sides). If the joint is too tight, raise the cutter slightly. Test again. You cannot rout the same board twice with a dovetail cutter, so use two fresh board ends for each test.

**10-28**

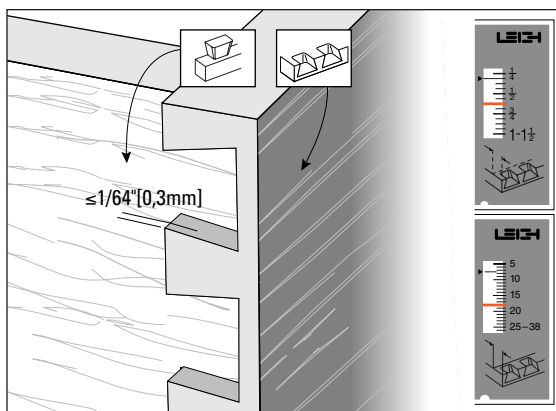
Keep the test tail board that fits well, and mark it with the number of the cutter you used to rout it. For quick set-up next time, clamp this tail board in the jig as a *depth-of-cut gauge* ① to show how far to lower the cutter.

**10-29**

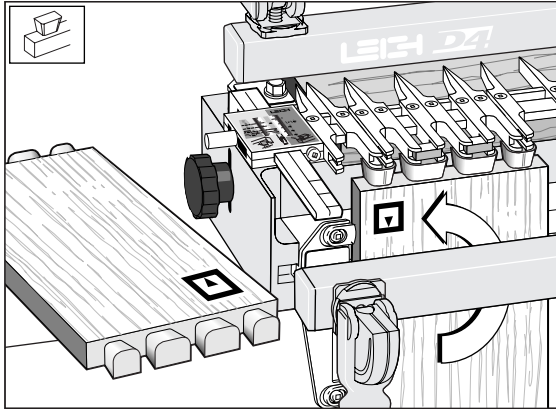
When you have the proper tightness of fit, check the flushness. The tails should be under flush to the pins by *no more than* $\frac{1}{64}$ [0,3mm] to allow for cleanup. The concentricity of the collet and guidebush on different routers will affect this tolerance.

**10-30**

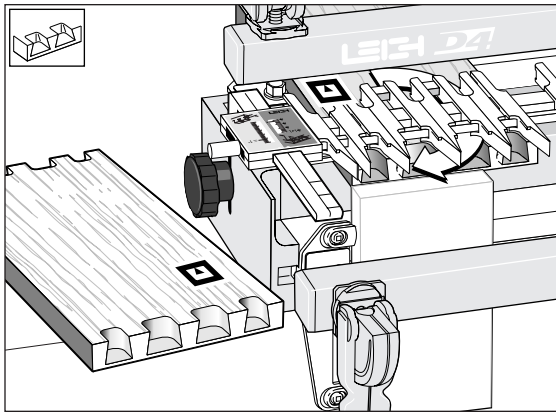
If the tails stand out from the pins, set the HB PINS scale **away from the operator** by the amount required.

**10-31**

If the tails fit in too far past the pins ends, set the HB PINS scale **toward the operator** by the amount required. These adjustments for “flushness” are made only in the HB PINS mode.

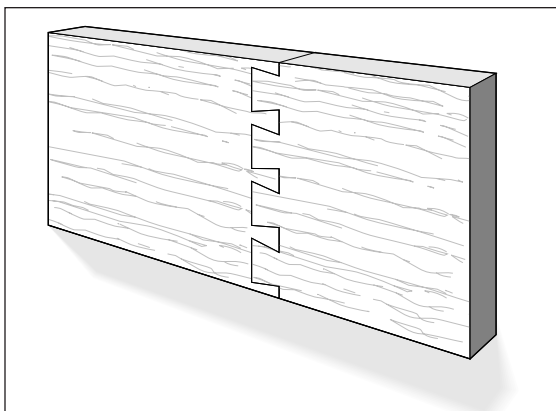
**10-32**

To make a box, rout all four ends of the tail boards, keeping the inside face ▢ of the tail boards away from the jig.

**10-33**

Rout all four ends of the pin boards keeping the inside face ▢ of the boards away from the jig.

Note: When making drawers you may prefer to use through dovetails on the rear corners.

**10-34 End-on-End Dovetails**

While you have the router set up and the cut depth correctly adjusted for half-blind dovetails, it is a good time to try end-on-end dovetails. These are made in the same modes as half-blind joints, but the boards are both routed vertically in the front clamp. End-on-end joints may be up to $\frac{3}{4}$ " [20mm] thick. (See page 95 for end-on-end dovetail procedures.)