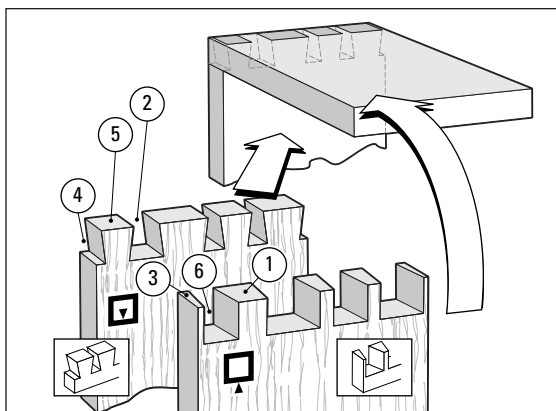

Through Dovetail Procedures

Chapter Foreword

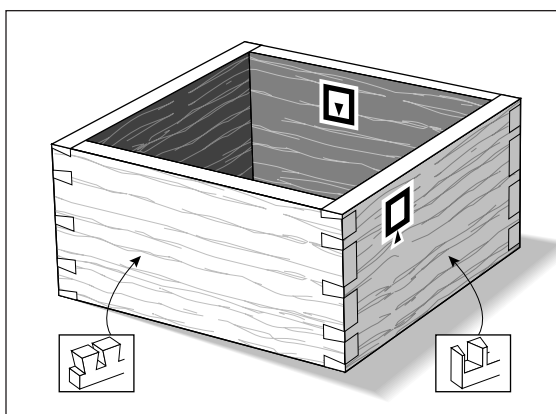
In these instructions for using the Leigh Dovetail Jig, we have recommended using certain cutters and board sizes just because they are easy to work with. When you have cut some practice joints and gained confidence in your ability to get the results you want, feel free to use the guidebush and cutter selection charts on pages 149 and 155 to plan whatever dovetail routing you need for your own projects.

**8-1**

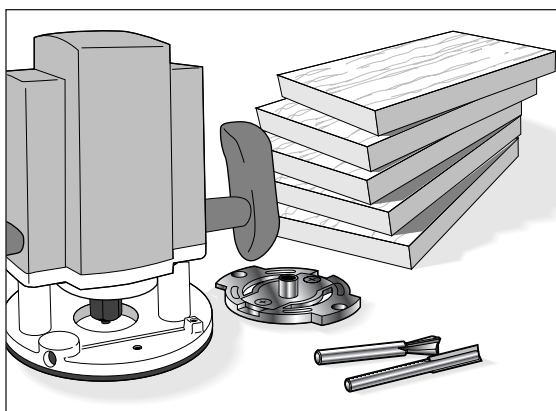
Through Dovetail Terminology:

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

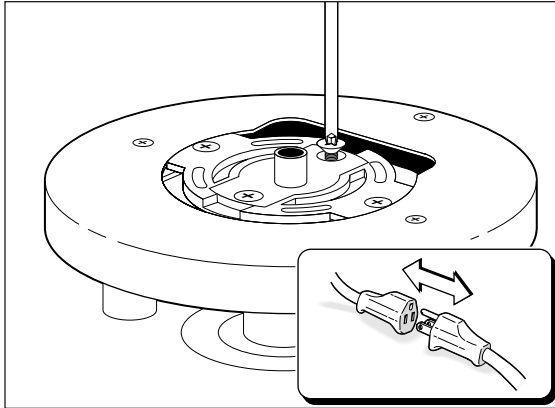
The pins fit in the pin sockets. Joints almost always end each side with half-pins.

**8-2**

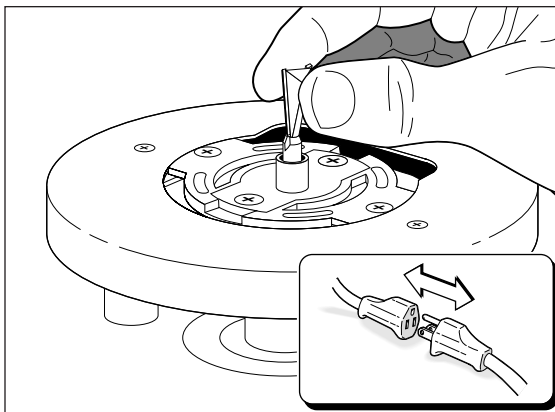
Let's look at how to make a simple square box.

**8-3**

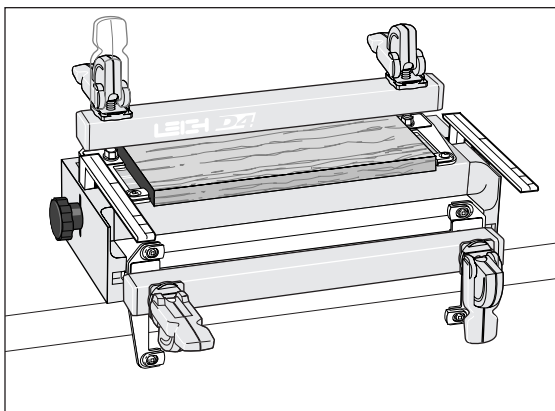
You will need five identical boards $\frac{3}{4}$ " x $5\frac{1}{2}$ " [20x140mm] x 8" [200mm] or so long (the fifth board may be used up doing the initial testing for fit). Mark the inside and outside faces of each board. For this trial use a router with a $\frac{7}{16}$ " [11,1mm] O.D. guidebush and a No. 80 or 80-8 $\frac{1}{2}$ " [12,7mm] x 8" dovetail cutter and a No. 140 or 140-8 $\frac{5}{16}$ " [7,9mm] straight cutter (see the cutter and guidebush selection charts in the appendix).

**8-4**

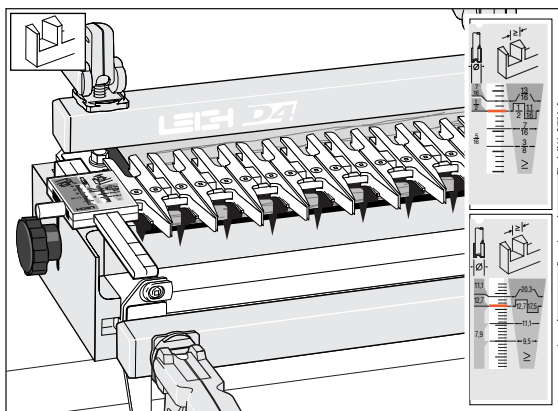
Fit the $\frac{7}{16}$ " [11,1mm] guidebush securely to the router.

**8-5**

Fit the 80 or 80-8 dovetail cutter to the router.

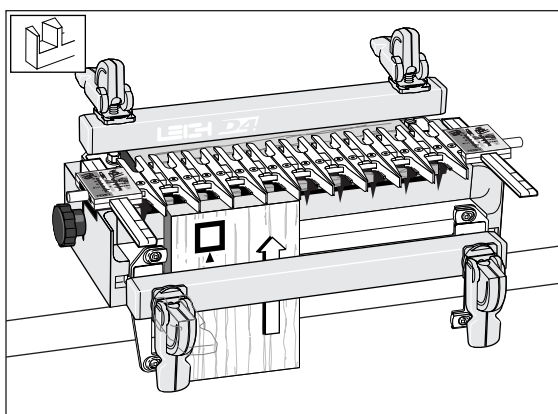
**8-6**

Clamp the spacer board in the rear clamp. To simplify the instructions, some illustrations will show a jig considerably shorter than the standard 24" [610mm] jig.



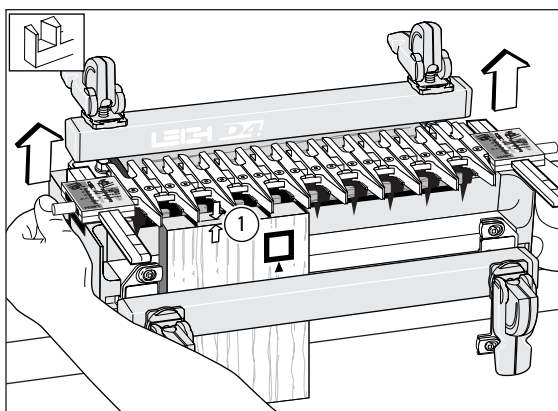
8-7

Place the finger assembly on the support brackets in the  TD PINS mode, flat on the spacer board, and with the scale set on the 1/2" [12,7mm] setting for now. Don't worry about the scale's specific meaning now. Each scale's use will be fully explained in the appropriate section.



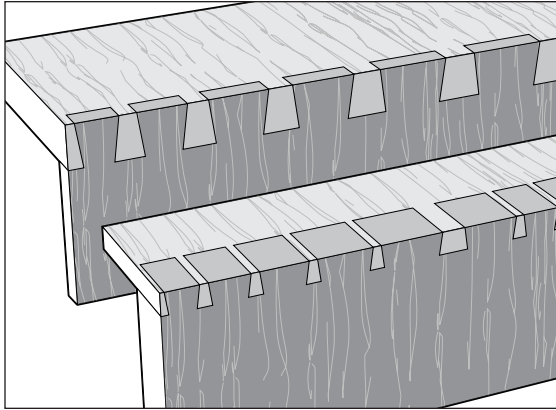
8-8

Although you will cut the tails first, adjust the guidefinger layout in the  TD PINS mode. The adjustment screws are on top in this mode, and it is easier to visualize the finished joint pattern. **Clamp one of the pin boards** in the left side of the front clamp, against the side stop, with the top edge flush under and touching the guidefingers, and the outside face  away from the jig body.

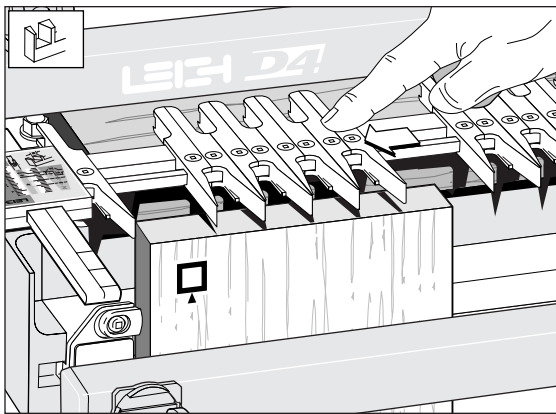


8-9

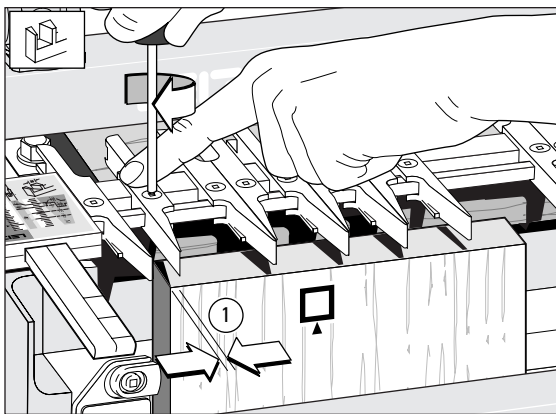
Loosen the support bracket knobs and raise the finger assembly about 1/16" [2mm] ① above the boards and retighten the knobs. This will allow easy and accurate guidefinger adjustment.

**8-10**

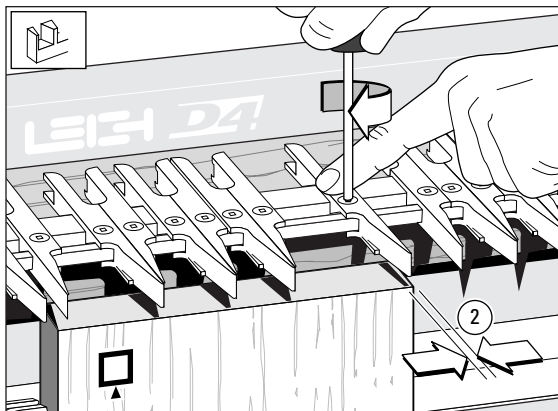
The following joint design is only a suggestion for this trial. It has a typical and traditional symmetrical layout of pins, with half-pins at each edge. The Leigh jig, however, allows for an infinite variety of joint designs, and boards of different thicknesses can also be joined to each other as shown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

**8-11**

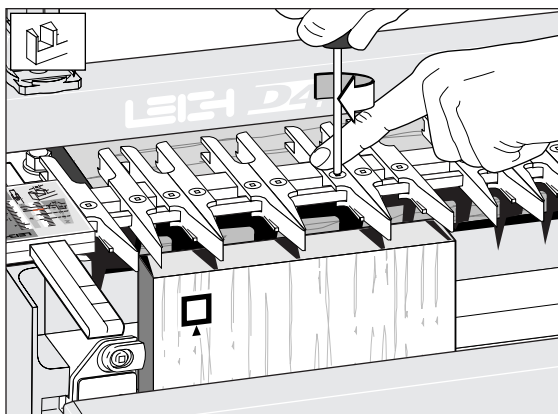
Ignoring the extreme outer guidefinger next to the scale (it just supports the router), loosen the next eight guidefingers and slide them over the top of the workpiece.

**8-12**

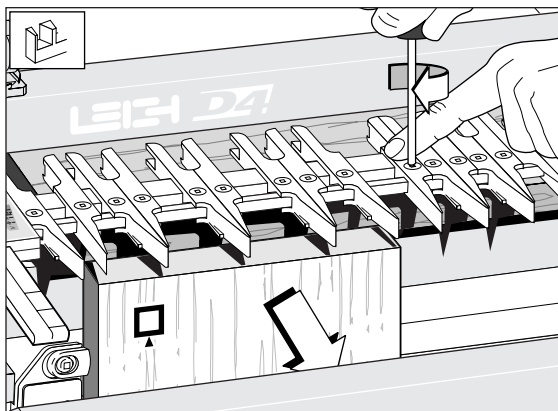
Lock the left-most half-pin guidefinger about $\frac{1}{8}$ " [3mm] ① in from the left edge of the board.

**8-13**

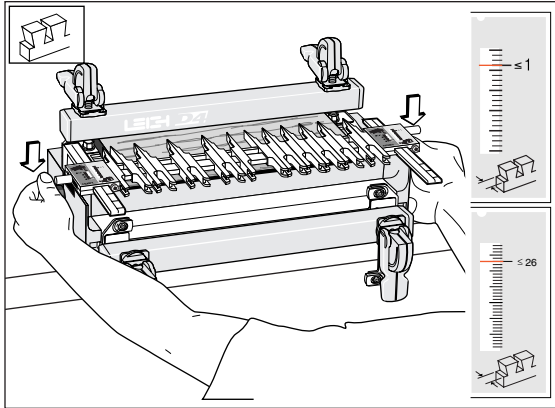
Leave three pairs of guidefingers over the board and lock the right-most half-pin guidefinger about $\frac{1}{8}$ " [3mm] ② in from the right edge of the board. Judge this distance by eye: it need not be exact. The sockets and pins will align automatically.

**8-14**

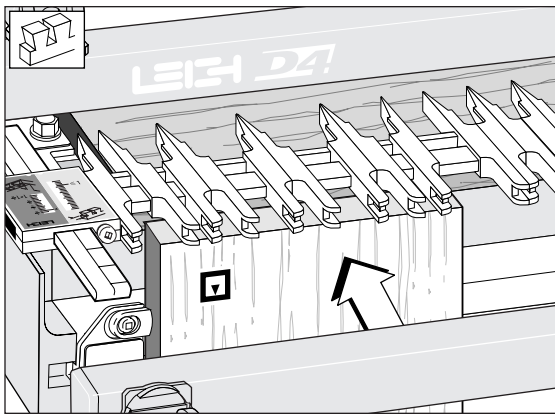
Space and lock the three remaining pairs as shown. Again, judge it by eye. If it looks right on the jig, the finished joint will look right.

**8-15**

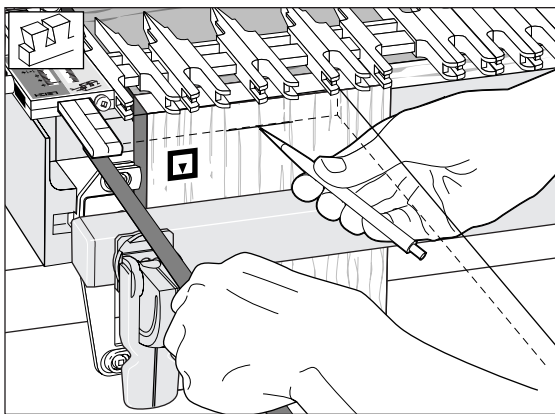
Tighten any other loose guidefingers and remove the pin board.

**8-16**

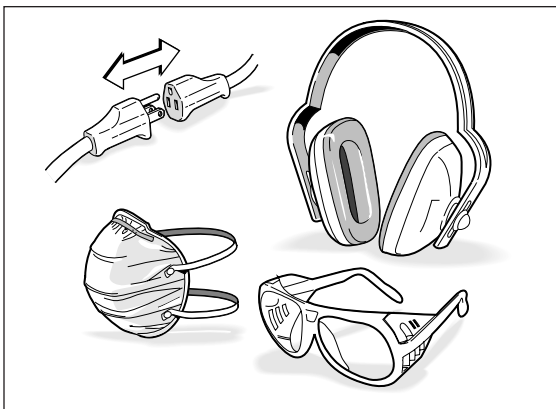
Rotate the finger assembly to the  TD TAILS mode, and set it to the $\leq 1"$ [$\leq 26\text{mm}$] position on the scale. Lower the finger assembly onto the spacer board. All TD tails are routed at this $\leq 1"$ [$\leq 26\text{mm}$] setting.

**8-17**

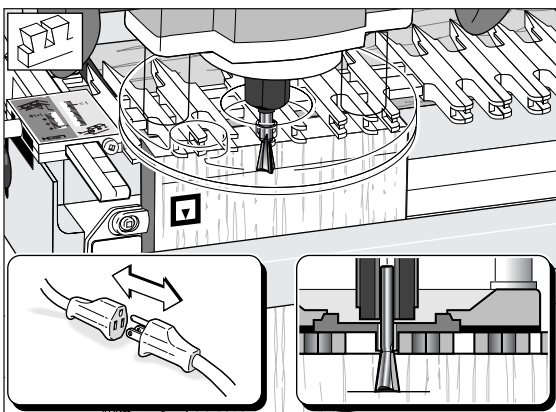
Clamp the **tail board** vertically, with the inside  face of the board away from the jig.

**8-18**

Place the end of a *pin board* horizontally flush under the guidefingers and mark a thin pencil line partly across the tail board.

**8-19**

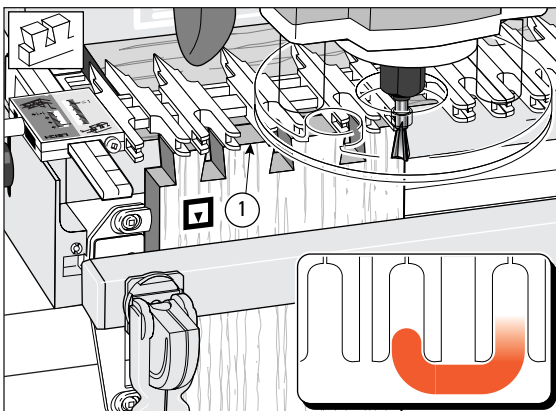
Remember to follow all safety precautions when routing.

**8-20**

Place the router on the finger assembly and adjust the router until the dovetail cutter tip is level with the centre of the pencil line.

Note: This means the pin socket will be half a thin pencil line deeper than the thickness of the pin board, leaving minimal clean-up after assembly.

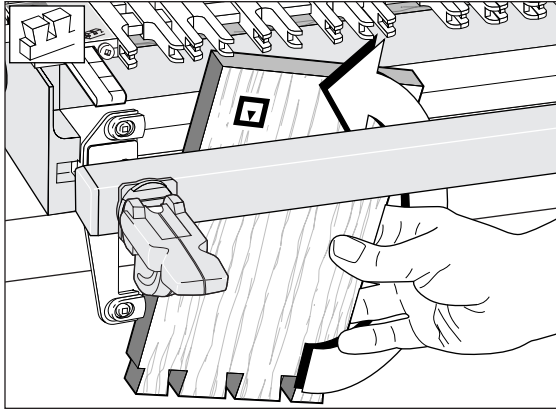
Check to make sure the cutter rotates freely.

**8-21**

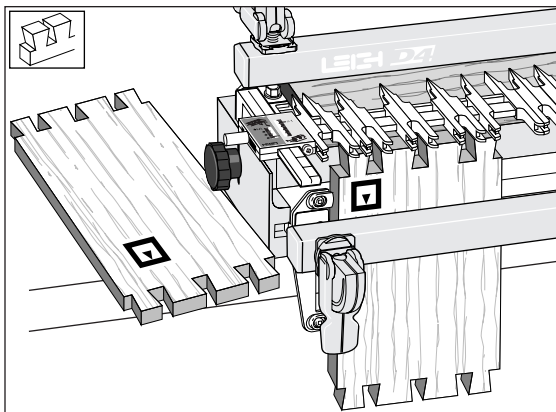
Plug in the router and rout out the half-pin and pin sockets. **Use only light side pressure on the guide fingers.** Take care not to rout unwanted sockets where there are gaps between the pairs of fingers ①. Rout only between the rounded guidefinger tips. See 17-19 in *Hints and Tips*.

Before removing the routed board from the jig, check by eye and touch to make sure no parts have been missed. See page 143 for *Hints and Tips* on how to minimize tearout.

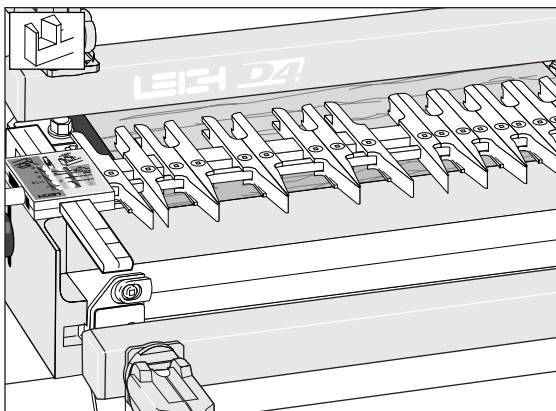
Chapter 8 D4 User Guide

**8-22**

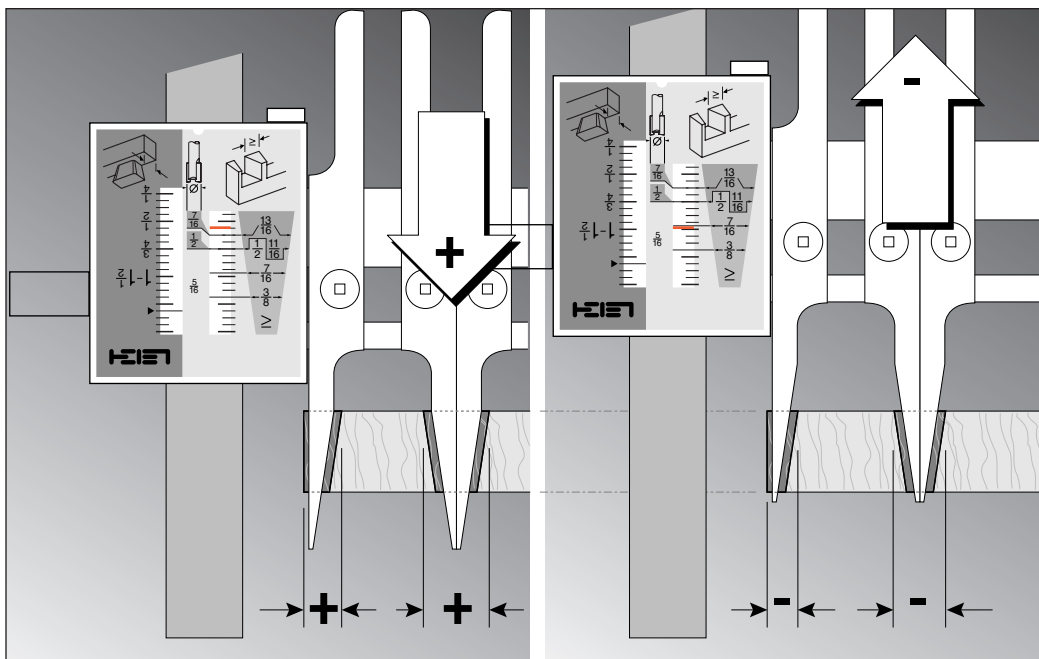
Release the clamp and reverse the tail board in the jig, keeping the same inside face  away from the jig body.

**8-23**

Rout the other end of this tail board and both ends of the second tail board in the same fashion.

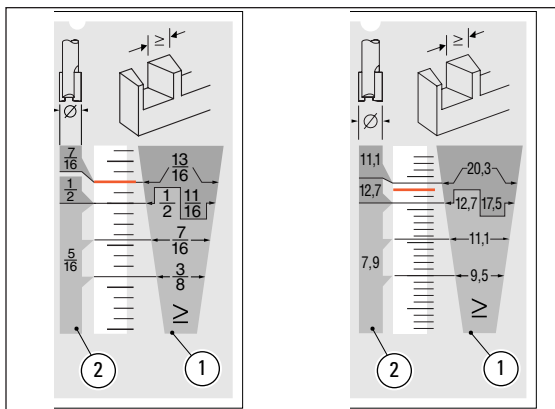
**8-24**

Rotate the finger assembly to the  TD PINS mode. **Do not change the guidefinger layout.**



8-25

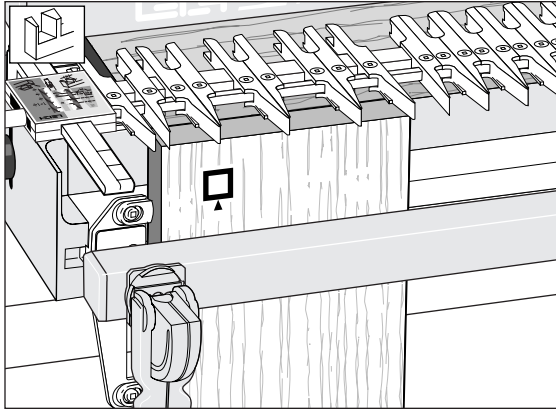
The tightness of the finished joint is determined in the TD PINS mode. The farther out toward the operator the finger assembly is set, the larger the pins will be. Setting the finger assembly farther in will make the pins smaller. (The outer, non active support finger is not shown in this illustration).



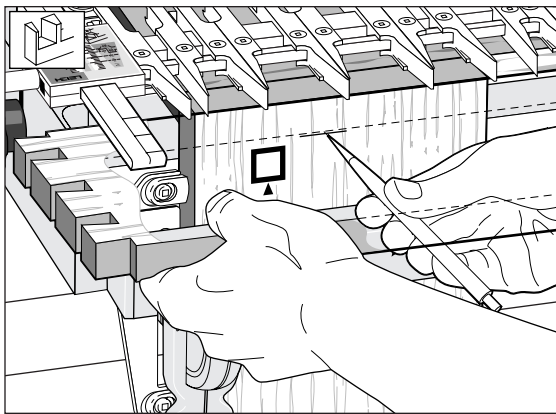
8-26

The TD Pin scale ① looks like a pin. The dimensions in this pin-shaped panel indicate the width of pin to be routed. These dimensions match the size of dovetail cutter used to rout the tails. Manufacturing tolerances of routers, cutters and guide-bushes make it impossible to predict exact settings. So set the scale two divisions above the required setting (two divisions above the 1/2" [12,7mm] setting in this example). This should result in oversize pins for the first test. (The narrow central panel ② is simply a reminder of the straight cutter diameter required for various pin widths.)

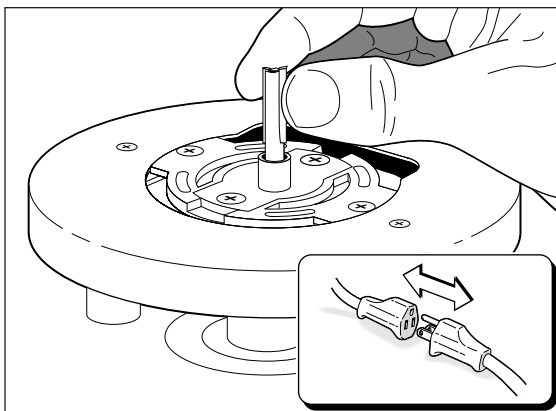
Chapter 8 D4 User Guide

**8-27**

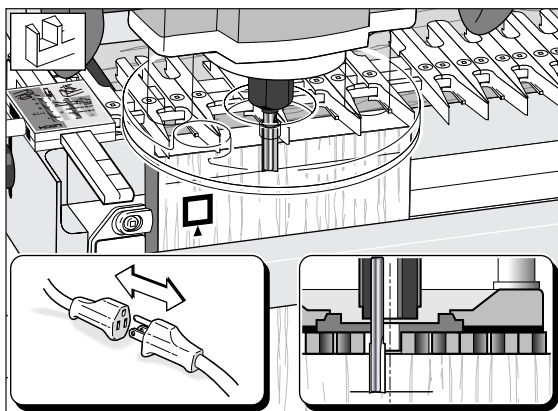
Clamp a test pin board against the left hand side stop, outside face  away from the jig, with the top end flush under the guides.

**8-28**

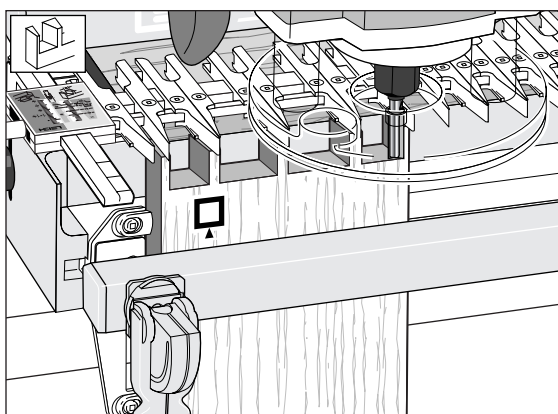
Place the side edge of one of the *tail boards* horizontally flush under the guidefingers and mark a thin pencil line part way across the pin board.

**8-29**

Unplug the router and remove the dovetail cutter. Mount the No. 140 or 140-8 straight cutter to the router.

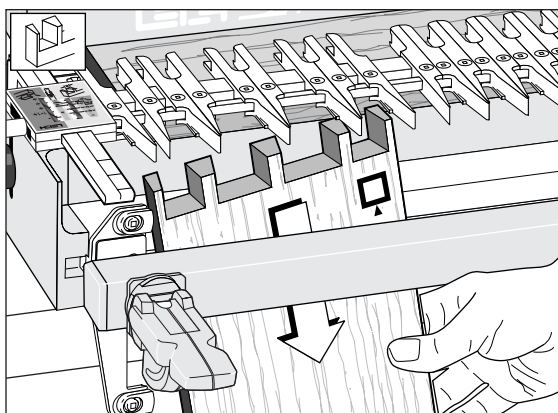
**8-30**

Place the router on the finger assembly and adjust the router until the cutter tip is level with the centre of the pencil line. Check to make sure the cutter rotates freely.

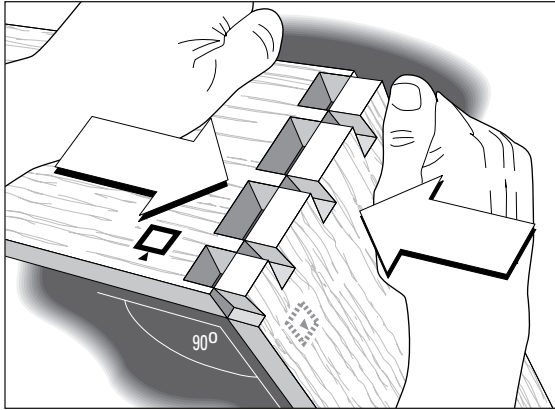
**8-31**

Rout out the waste between the pins. Check to make sure no parts have been missed. (See page 141 for hints and tips on how to minimize tearout.)

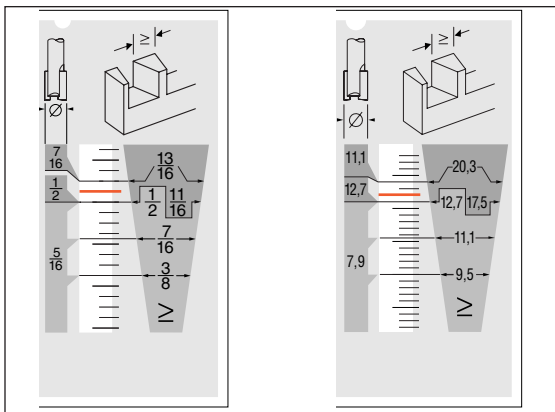
Use only light side pressure on the guide fingers.

**8-32**

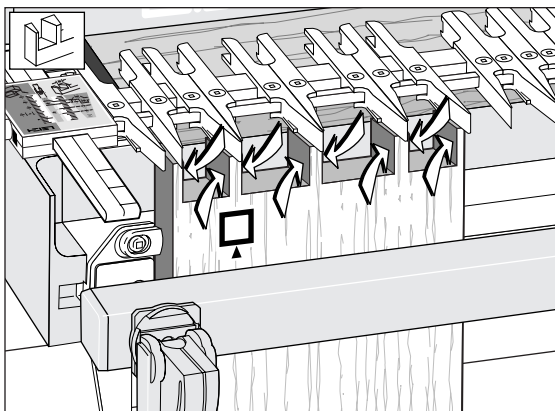
Remove the test pin board from the jig and test it for fit in one of the tail boards.

**8-33**

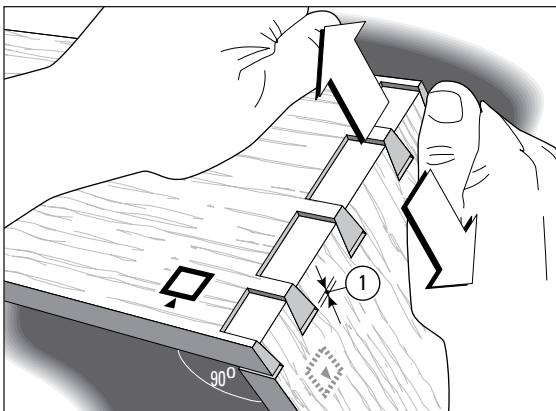
Make sure the outside faces $\square$ face outward on both pieces. The joint will probably be too tight. A firm push fit is perfect, perhaps a tap with the heel of your hand. But having to use a mallet means the joint is too tight to take glue.

**8-34**

If it is much too tight, move the finger assembly in (away from you) by one division on the scale. If it is only a little tight, adjust the scale by only half a division.

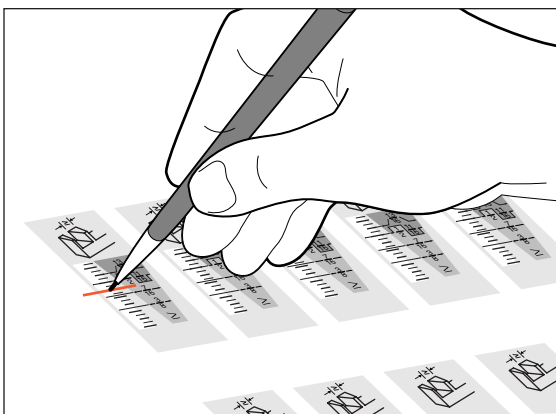
**8-35**

Replace the same pin board back in the jig, carefully aligned against the same side stop. Rout off the sides of the pins and test it again for fit.

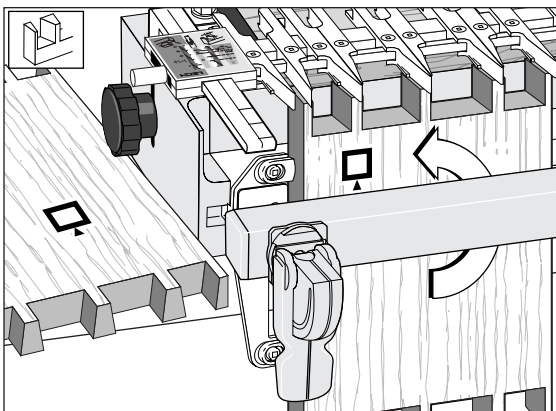
**8-36**

Test and repeat as required to achieve the desired fit.

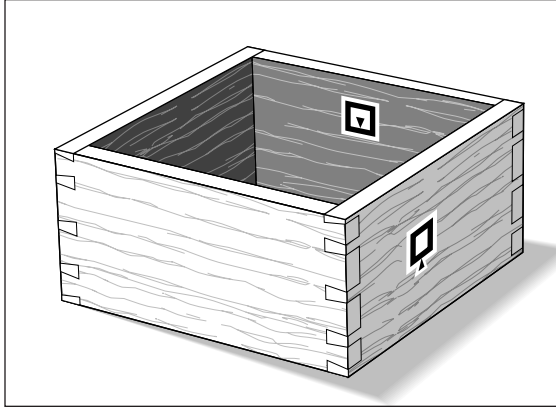
Note: if you overdo it and make a loose joint, you need to move the finger assembly toward you by the same amount as the gap at the bottom of the pins ① (when the pins are pulled against the socket sides). Test again on the other end of this (fifth) board.

**8-37**

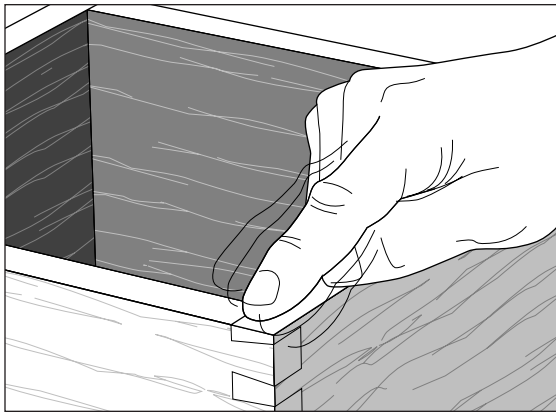
Once the correct fit is achieved, mark the final  TD PINS scale setting on one of the scale prints on page 67 for future reference. Very slight variations to the scale setting may be necessary with different wood species or hardness.

**8-38**

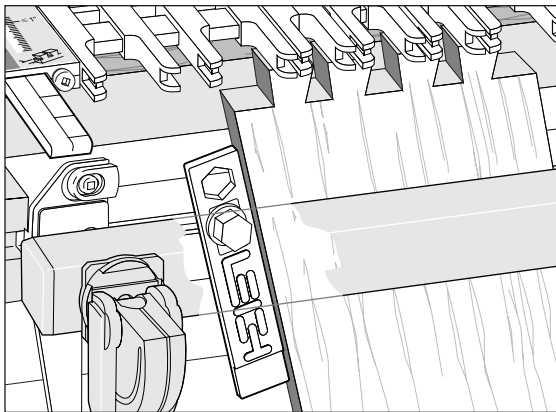
Rout all four ends of the pin boards, keeping the outside face  outwards. (With luck you may not have used the fifth board.)

Chapter 8 D4 User Guide**8-39**

Assemble the box, making sure the tail boards face the proper way, inside faces in.

**8-40**

The box should be square and in plane. If it is not in plane (i.e., the side edges of each board are not in line), then either the ends of the boards are not square or the boards are not of equal widths.

**8-41**

To form angled dovetails, refer to the Tips & Techniques bulletin “How to Rout Angled Through Dovetails on your Leigh Jig”, supplied with the jig. The Leigh wrench may help in this procedure. Attach it to the captive nut in the front extrusion using the hex bolt and washer provided.

Chapter 8 D4 User Guide

