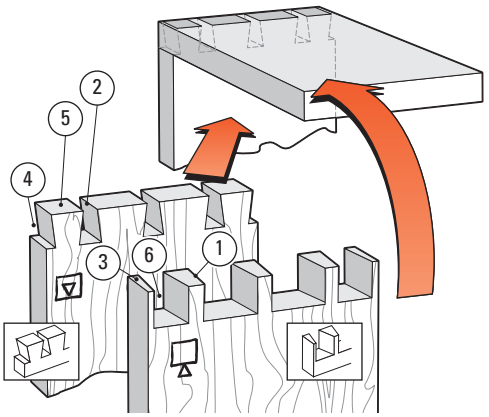
D1600 CHAPTER 8

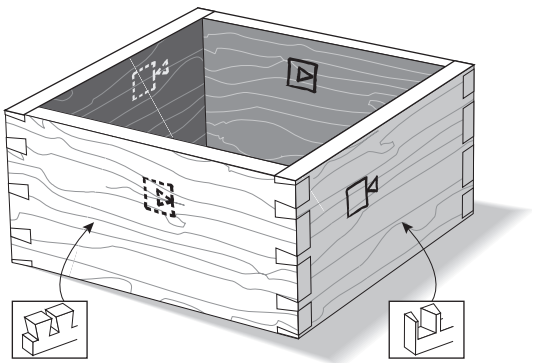
Through Dovetail Procedures

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 cutter selection charts in Appendix II to plan whatever dovetail routing you need for your own projects.



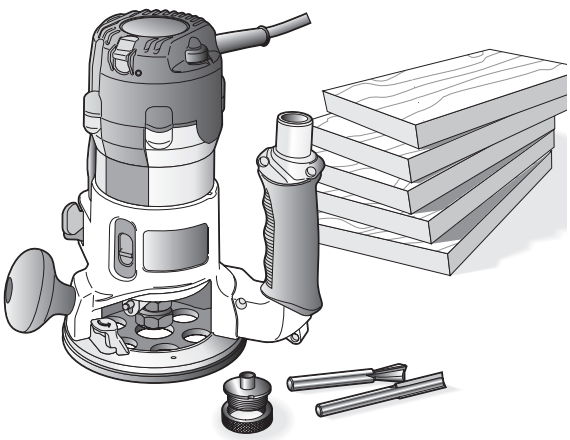
8-1

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 should almost always end each side with half-pins.



8-2

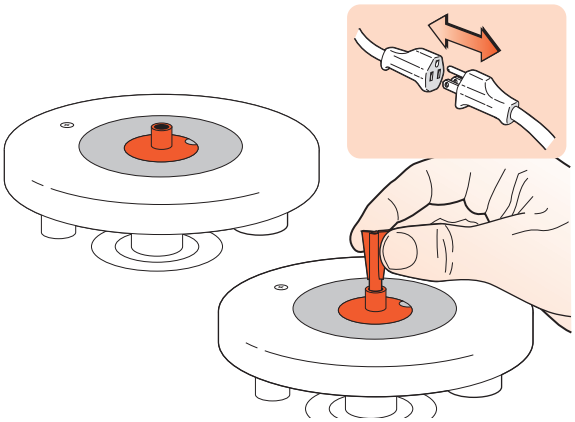
Let's look at how to make a simple square box. When you assemble the finished pieces with the faces properly oriented, then any one of the pin ends will fit any one of the tail ends. In fact, the box can be put together in eight different ways …each of the four corners will fit two ways!



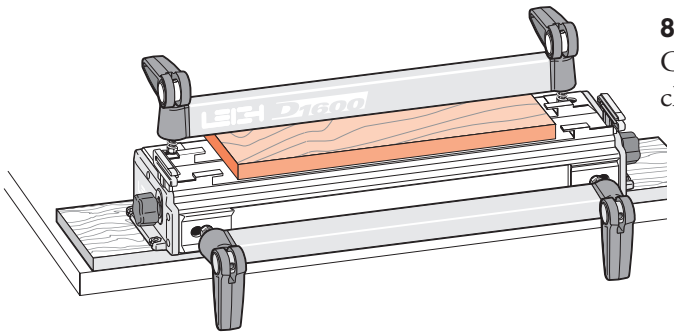
8-3

For this trial you will need five identical boards ¾"x 5-½"[20x140mm] x 8"[200mm] or so long. Make sure that you mark the inside faces of the two tailboards and the outside faces of the three pinboards (you may not need to use one of the pinboards). Use a router with a 7⁄16"[11,1mm] O.D. guidebush and a No. 80-8* or 80 ½"[12,7mm]x 8° dovetail cutter and a No.140-8* or 140 5⁄16"[7,9mm] straight cutter (see the cutter and guidebush selection charts in the appendices).

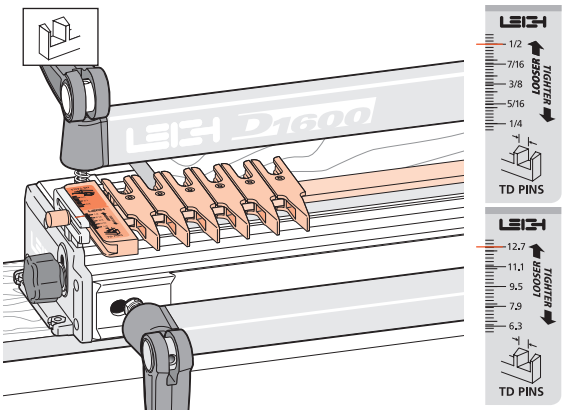
**included with the D1600*



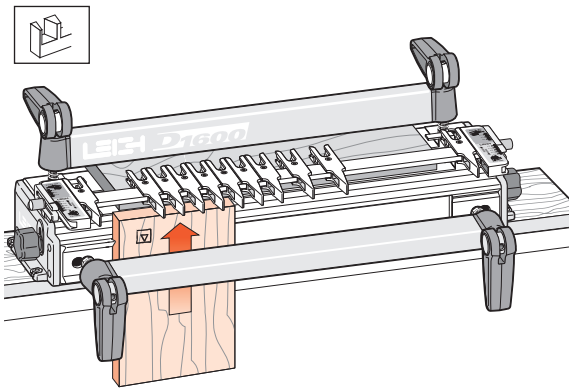
8-4
Fit the 7⁄16"[11,1mm] guidebush securely to the router.
Then fit the 80-8 or 80 dovetail cutter to the router.



8-5
Clamp the finger support board in the rear clamp.



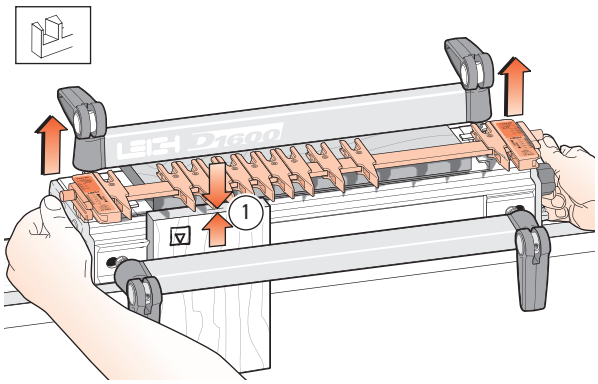
8-6
Place the finger assembly on the support brackets in the TD PINS mode, flat on the spacer board, and with the scale set on the ½"[12,7mm] setting for now. Don't worry about the scale's specific meaning now. Each scale's use will be fully explained in the appropriate section.



8-7

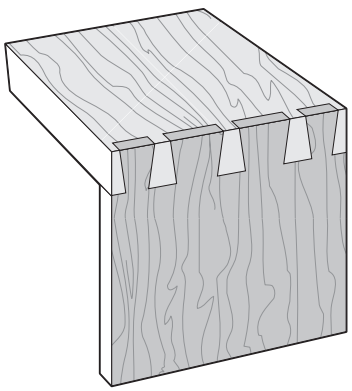
Clamp one of the tail boards in the left side of the front clamp, against the side stop, with the top edge flush under and touching the guidefingers, and the inside face ⊓ away from the jig body.

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.



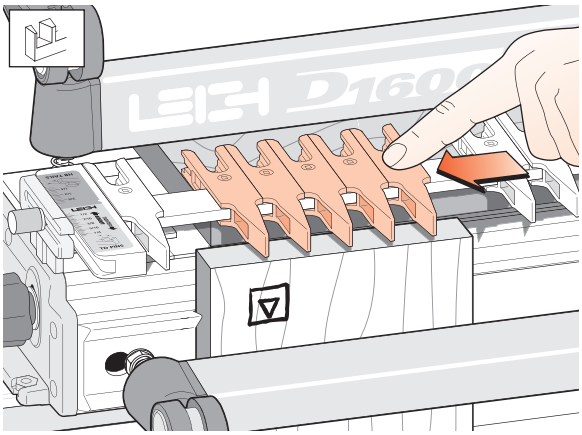
8-8

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

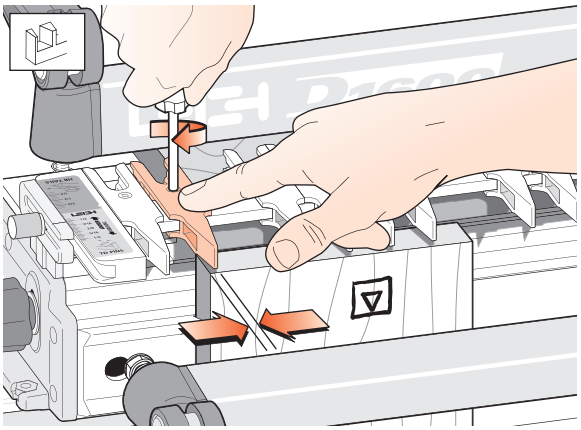


8-9

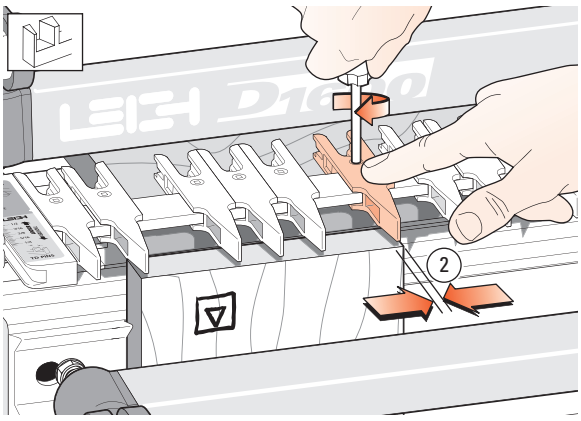
This joint layout is only a suggestion for this trial. It has a typical, traditional **symmetrical** layout of pins, with half-pins at each edge. The Leigh D1600 jig, however, allows for an infinite variety of dovetail spacing, and boards of different thicknesses can also be joined to each other as shown in this illustration. Before attempting joints of **asymmetrical** layout, please see chapter 11.



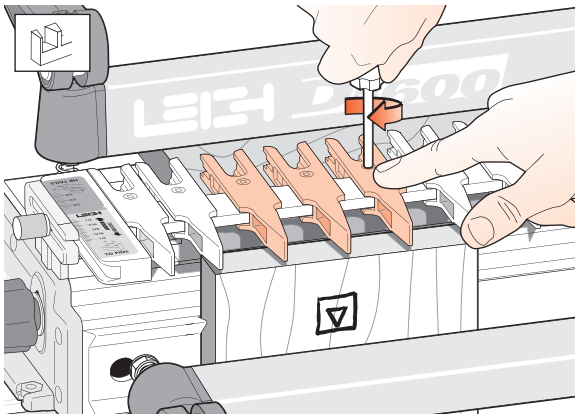
8-10
Ignoring the extreme outer guidefinger next to the scale (it just supports the router), loosen the next five guidefingers and slide them over the top of the workpiece.



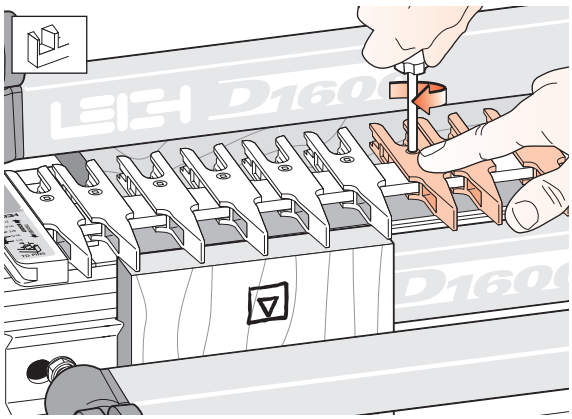
8-11
Lock the left-most guidefinger with its centreline about ⅛"[3mm] ① in from the left edge of the board to form a half-pin.



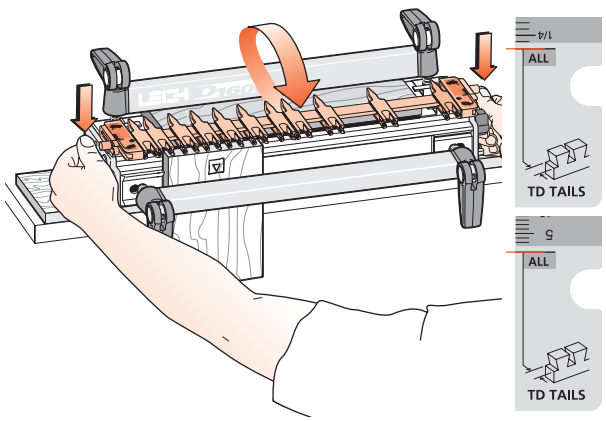
8-12
Leave three guidefingers over the board and lock the right-most guidefinger with its centreline about ⅛"[3mm] ② in from the right edge of the board to form the other half-pin. Judge this distance by eye: it need not be exact. The sockets and pins will align automatically.



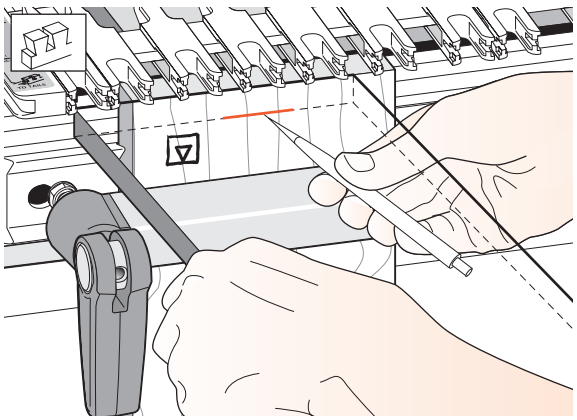
8-13
Space and lock the three remaining guidefingers as shown. Again, judge it by eye. If it looks right on the jig, the finished joint will look right.



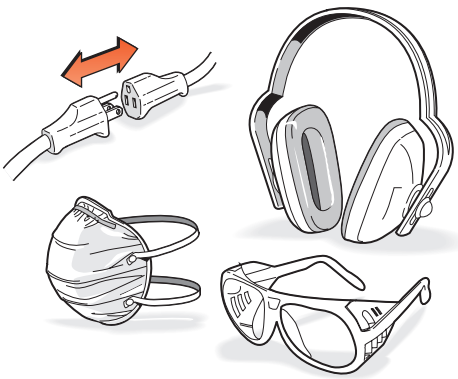
8-14
Tighten any other loose guidefingers.



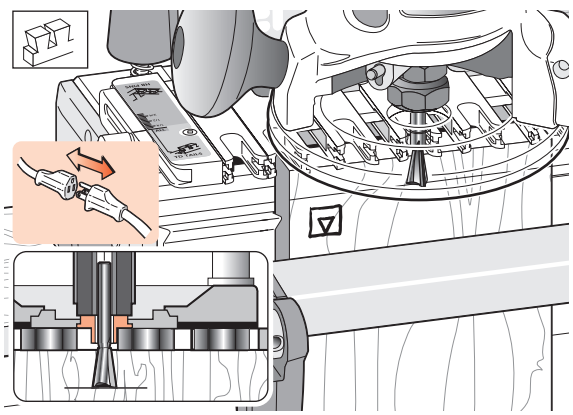
8-15
Rotate the finger assembly to the TD TAILS mode, and set it to the "ALL" position on the scale. Lower the finger assembly onto the spacer board. **All TD tails are routed at this** "ALL" **setting. (This setting allows the dovetail cutter to pass completely through all tail boards.)**



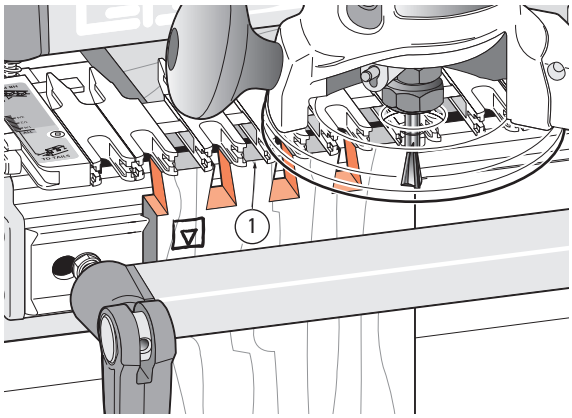
8-16
Place the end of a *pin board* horizontally flush under the guidefingers and mark a thin pencil line partly across the tail board.



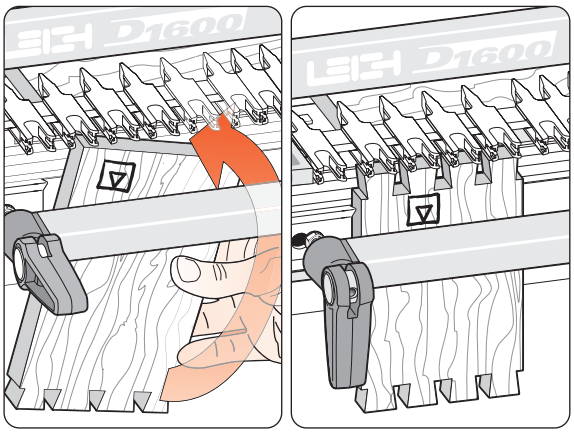
8-17
Remember to follow all safety precautions when routing.



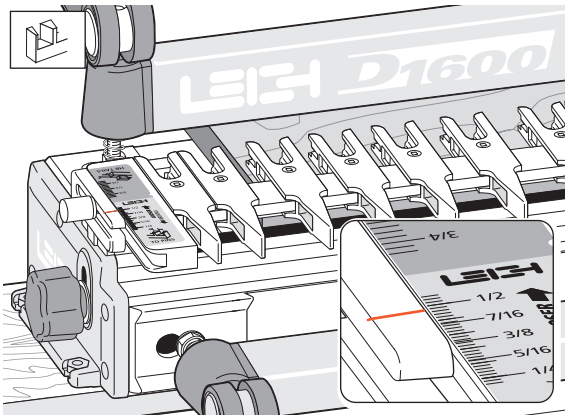
8-18
Place the router on the finger assembly and adjust the router until the dovetail cutter tip is level with the centre of the pencil line.
Note: This means the pin socket will be half a thin pencil line deeper than the thickness of the pin board, leaving minimal clean-up after assembly.
Check to make sure the cutter rotates freely.



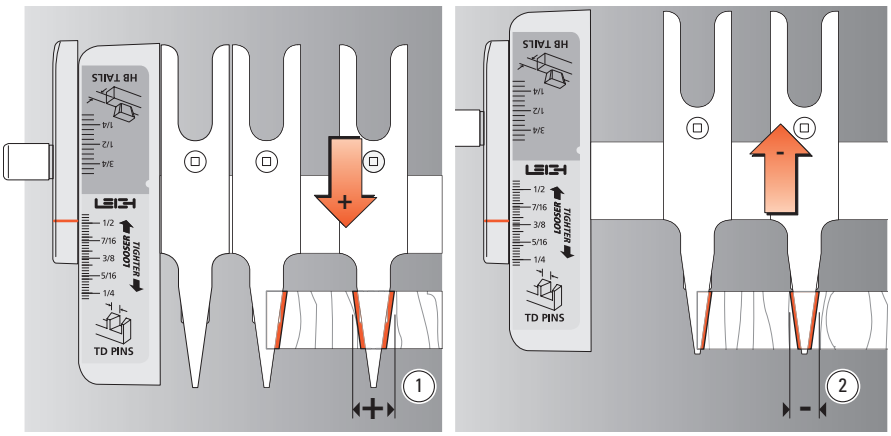
8-19
Plug in the router and rout out the half-pin and pin sockets. **Use only light side pressure on the guide fingers.** Go in against the right side of the finger opening and out on the left side. Take care not to rout unwanted sockets where there are gaps between the pairs of fingers ①. Rout only between the rounded guidefinger tips. *See Hints and Tips Chapter 15.*



8-20
Before removing the routed board from the jig, check by eye and touch to make sure no parts have been missed. Release the clamp and reverse the tail board in the jig, keeping the same inside face ⊡ away from the jig body.
Rout the other end of this tail board and both ends of the second tail board in the same fashion.

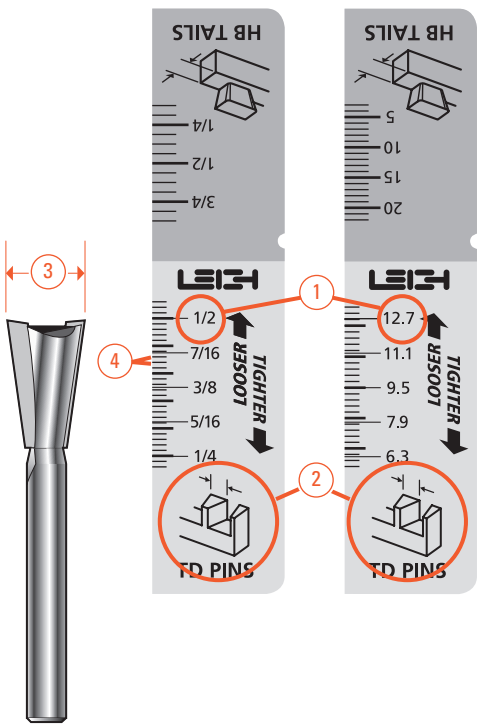


8-21
Rotate the finger assembly to the TD PINS mode and set it on the ½"[12,7mm] mark ①. **Do not change the guidefinger layout.**



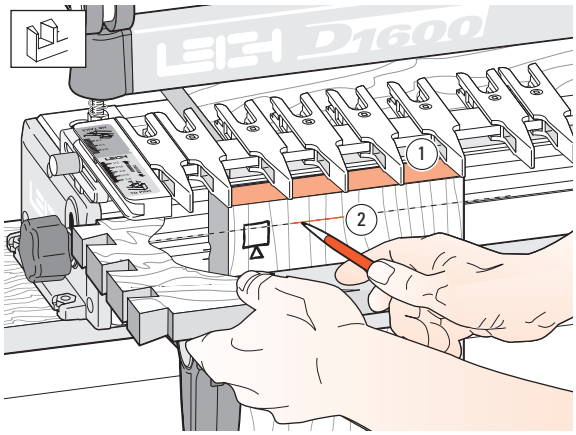
8-22 Finished Joint Tightness

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 ①. Moving the finger assembly in will make the pins smaller ②.

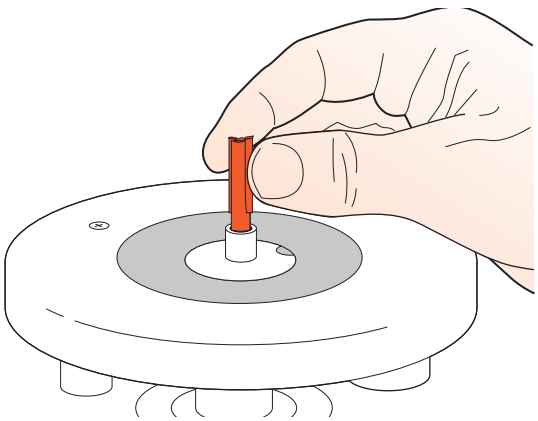


8-23 How the TD PIN Scales Work

The dimensions on the TD Pin scale ① indicate the major width of the pin to be routed ②. This matches the size of dovetail cutter just used to rout the tails ③. The increment lines on the scale ④ have two important functions. First, the lines are spaced so that moving the finger assembly by one increment changes the joint glue-line gap by just 0.005"[0,125mm]. Even better, a one quarter division movement changes the fit by 0.00125"[0,03mm], a tiny one and a quarter thousandth of an inch! Second, once you achieve the desired joint fit, simply record the setting using the illustrations at the end of this chapter.

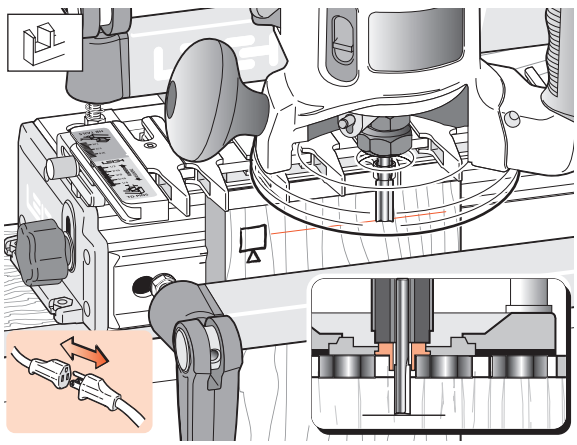


8-24
Clamp a test pin board against the left hand side stop, outside face ⊓ away from the jig, with the top end flush under the guides ①.
Place the side edge of one of the finished *tail boards* horizontally flush under the guidefingers and mark a thin pencil line part way across the pin board ②.

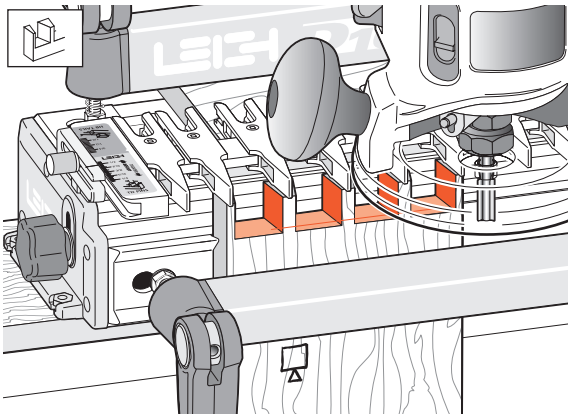


8-25
Unplug the router and remove the dovetail cutter. Mount the No.140-8* or 140 straight cutter to the router.

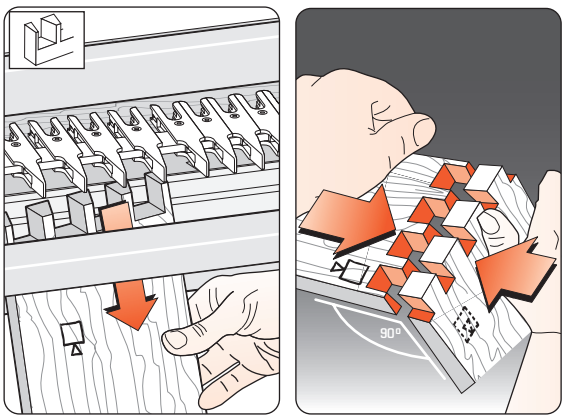
**included with the D1600.*



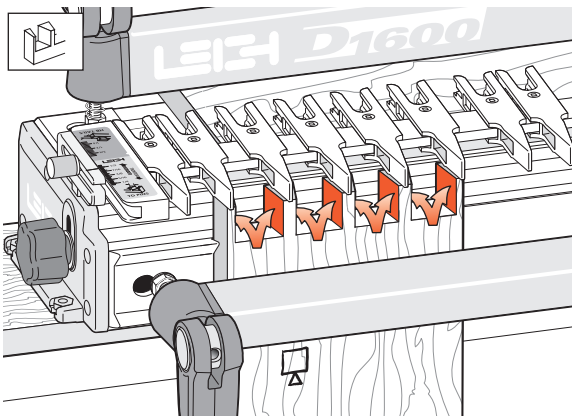
8-26
Place the router on the finger assembly and adjust the router until the cutter tip is level with the centre of the pencil line. Check to make sure the cutter rotates freely.



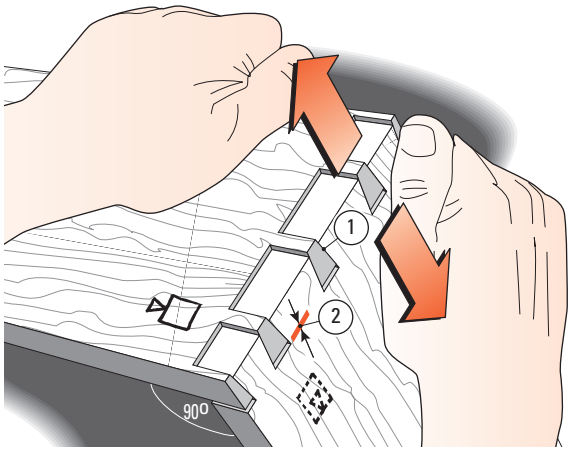
8-27
Rout out the waste between the pins. Check to make sure no parts have been missed. *See Chapter 15 "Hints and Tips" on how to minimize tearout.*



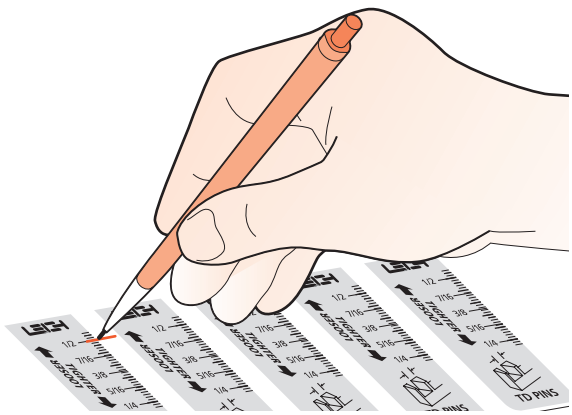
8-28
Remove the test pin board from the jig and test it for fit in one of the tail boards. *Make sure the outside faces ⊓ face outward on both pieces.* A firm push fit is perfect, perhaps a tap with the heel of your hand. Having to use a mallet means the joint is too tight to take glue.



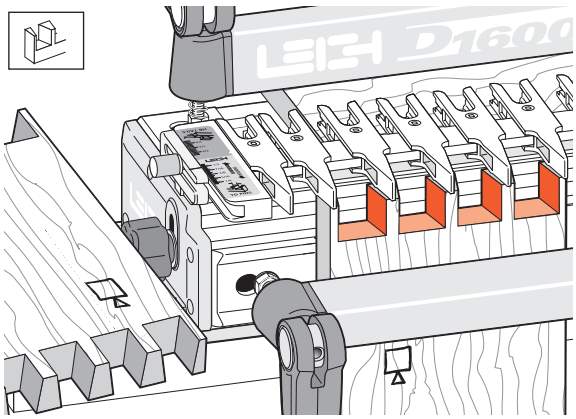
8-29
If it is too tight, move the finger assembly in (away from you) by one division on the scale. If it is only a little tight, adjust the scale by only half a division. Replace the same pin board back in the jig, carefully aligned against the same side stop. Rout off the sides of the pins and test it again for fit. Repeat as necessary to get a good fit.



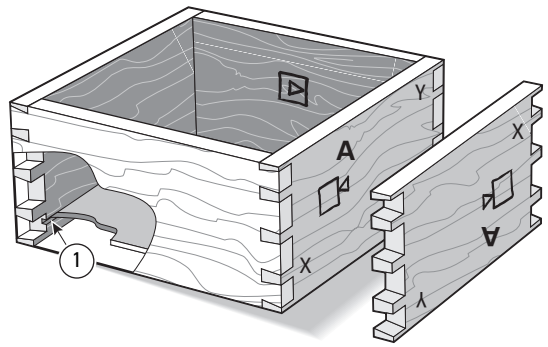
8-30
If the joint is loose or you routed too much off the pins (in 8-29), pull the pin board so that the angled sides of the pins and sockets jam tight together ①. The gap at the bottom of the pins ② is the amount you will have to move the finger assembly out (toward you). Reset the finger assembly and test again on the other end of this (fifth) board.



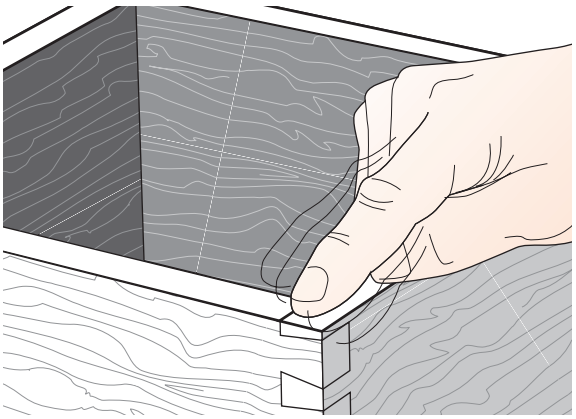
8-31
Once the correct fit is achieved, mark the final TD PINS scale setting on one of the scale prints (at the end of this chapter) for future reference. Very slight variations to the scale setting may be necessary with different wood species or hardness.



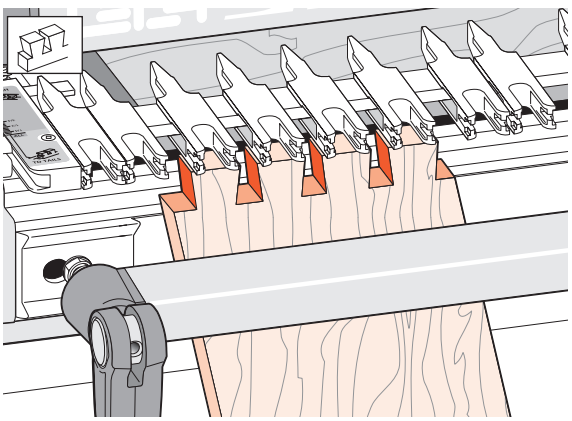
8-32
Rout all four ends of the pin boards, keeping the outside face ⊓ outwards. (With luck you may not have used the fifth board.)



8-33
Assemble the box, making sure the tail boards face the proper way, i.e. tail boards inside face **in** ⊡; pin boards outside face **out** ⊔. Provided you haven't already routed out the drawer bottom grooves ①, it doesn't matter which edge of any of the boards are at the top or bottom, the box will still fit together i.e. pin board "A" can be up either way.



8-34
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, the board widths are not exactly equal, or there is a concentricity problem (see 7-6 to 7-7).



8-35
To form angled dovetails, refer to the Tips & Techniques bulletin "How to Rout Angled Through Dovetails on your Leigh Jig". You can download a printable file of the bulletin from our website: www.leighjigs.com. ■

Project Settings - Inch Scales