Through Dovetails

In these instructions for the Leigh D4R Pro Dovetail Jig, we have recommended certain bits and board sizes because they are easy to work with. When you have routed some practice joints and gained confidence in your ability to get the results you want, free to use the guidebush and adaptor selection charts in Appendix I, pages 69-70, and bit options in Appendix II, pages 71-77, to plan whatever dovetail routing you need for your projects.

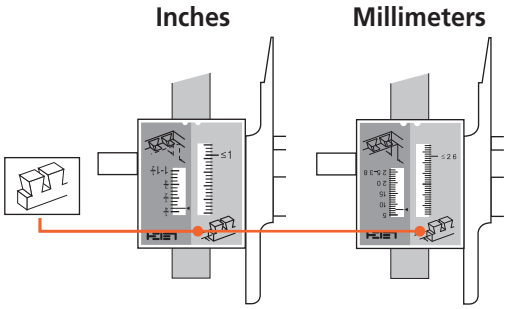
Concept of Jig Operation – THROUGH DOVETAILS

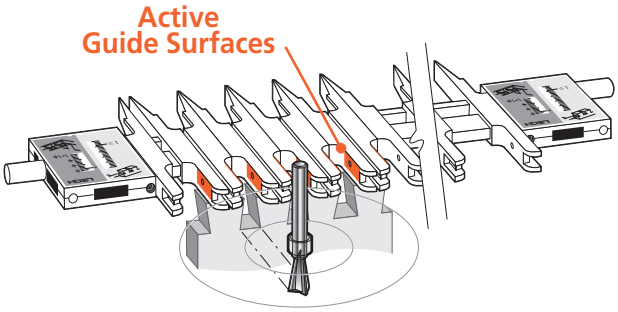
Start with the Finger Assembly in the TD TAIL mode and follow these steps on your jig. Grasping the simple basic concept of operation will now greatly assist you in understanding the instructions. *Note that the active guide surface (against which the guidebush runs) is indicated in red in these illustrations.*

1 Start in Through Dovetail Tails (TD TAILS) mode

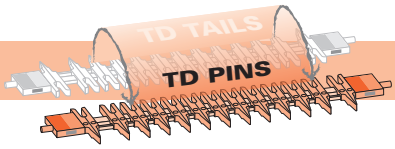
MODE ICONS

Illustrations in this user guide include the correct *mode* icon for the current instruction. The icons are also used in the instruction text.

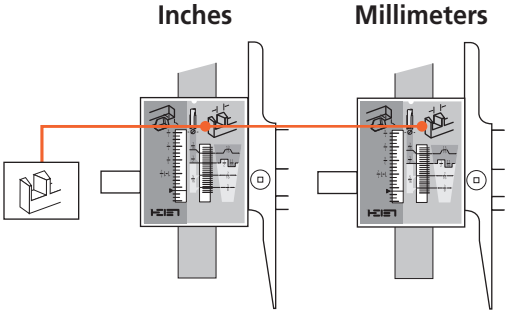


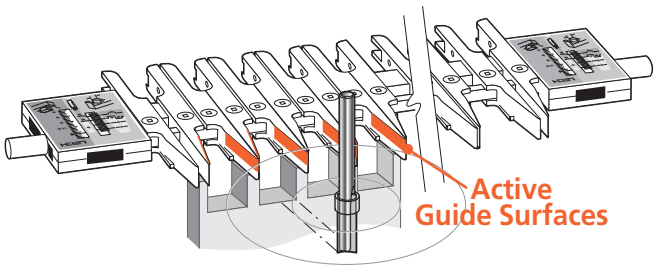


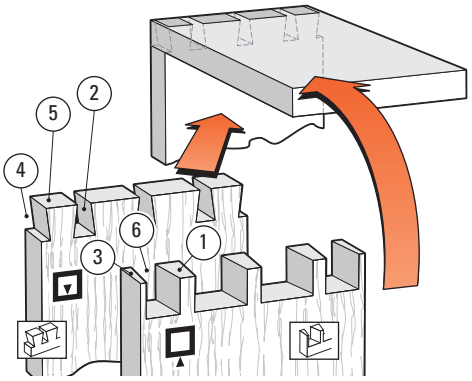
2 ROTATE the finger assembly toward you 180°



3 Now the Finger Assembly is in Through Dovetail Pins (TD PINS) mode



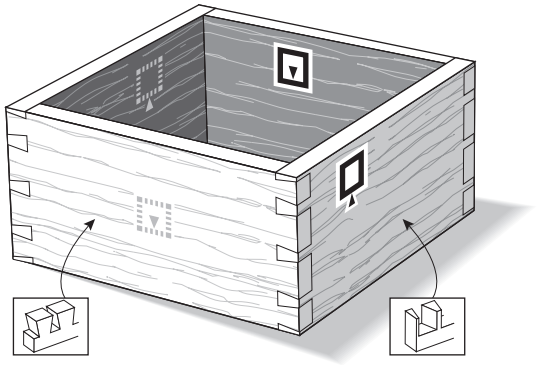




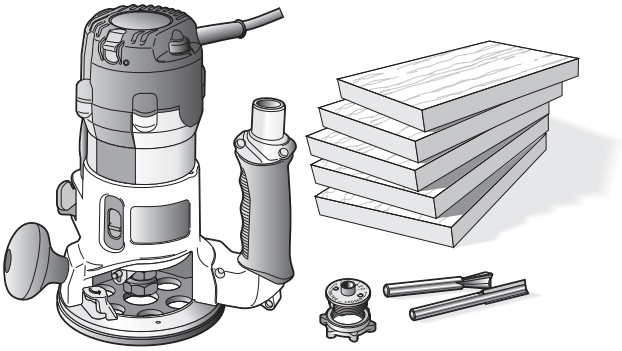
8-1 Through Dovetail Terminology:

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

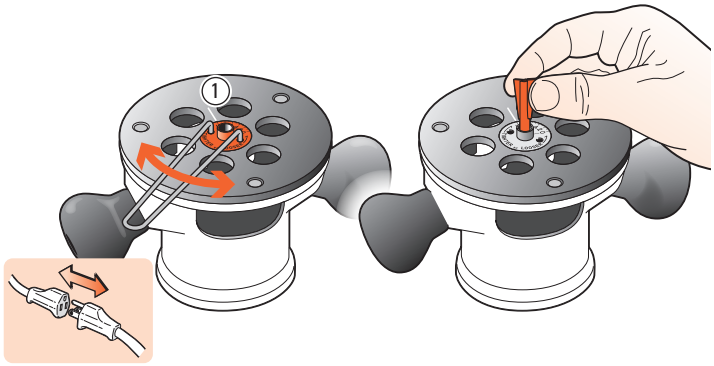
The pins fit in the pin sockets. Joints should almost always end each side with half-pins.



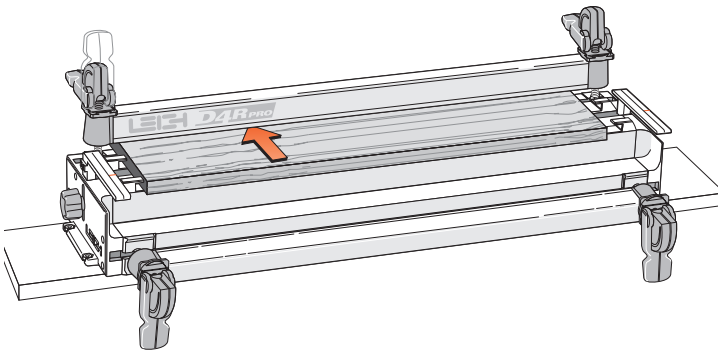
8-2 Let's look at how to make a simple square box. When you assemble the finished pieces with the faces properly oriented, any one of the pin ends will fit any one of the tail ends. In fact, the box can be put together in six different ways …each of the four corners will fit two ways!



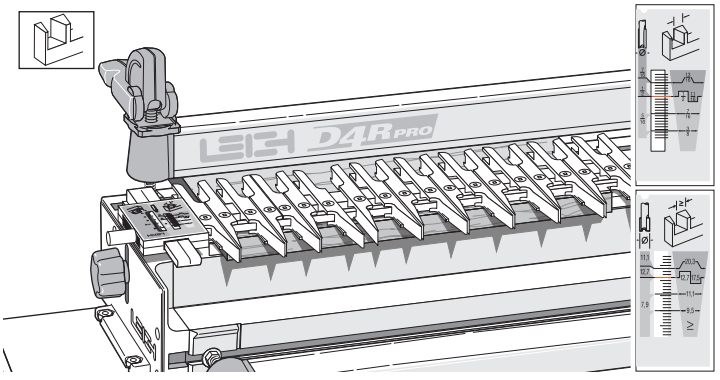
8-3 Make five identical boards ¾"x 5½"[20x140mm] about 8"[200mm] long. Mark the inside faces of the two tail boards and outside faces of the three pin boards (you may not need one of the pin boards). Use Leigh e7 or 7/16"[11,1mm] O.D. guidebush with:
- No. 80-8 ½"[12,7mm] x 8° dovetail bit and
- No.140-8 5/16"[7,9mm] straight bit.



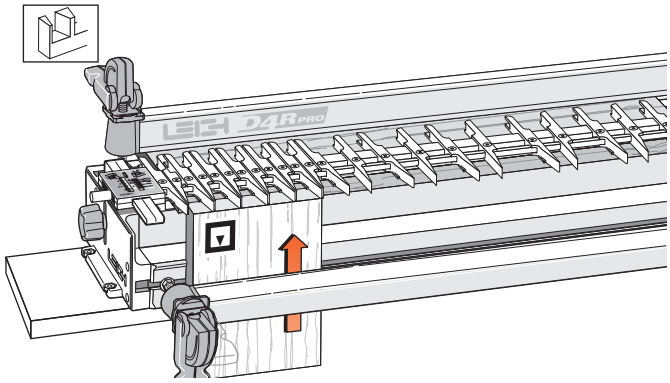
8-4 Fit the e7-Bush or 7/16"[11,1mm] securely to the router and set it to the No.10 index mark ①. Then fit the supplied 80-8 dovetail bit to the router. **Note:** The e7 guidebush is not used to adjust joint tightness with through dovetails.



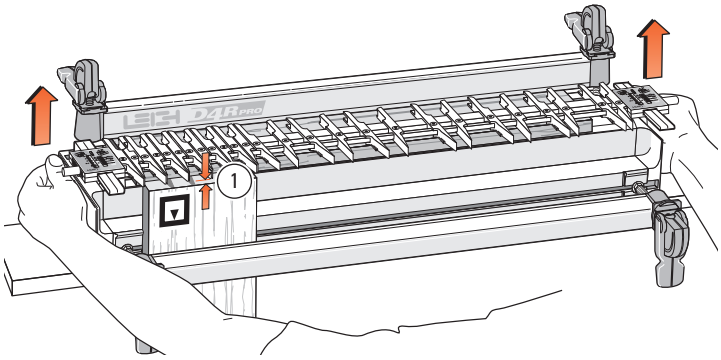
8-5 Clamp the spacer board in the rear clamp.



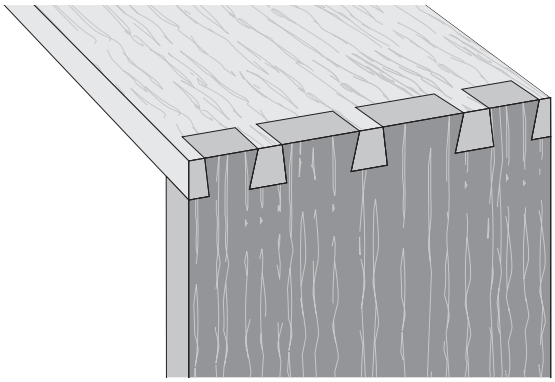
8-6 Place the finger assembly on the support brackets in the TD PINS mode, flat on the spacer board, and with the scale set on the ½"[12,7mm] setting for now. Don't worry about the scale's specific meaning now. Each scale's use will be fully explained in the appropriate section.



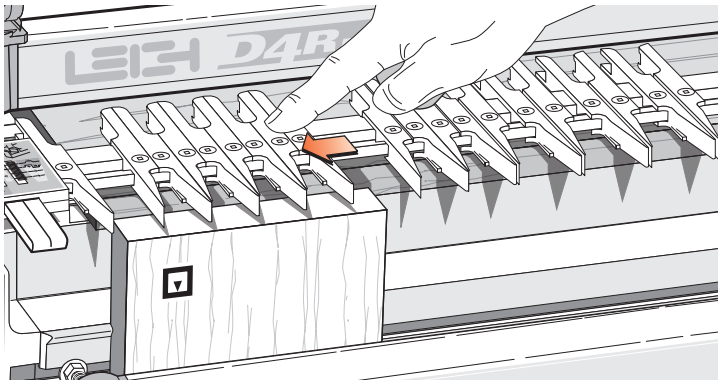
8-7 **Clamp a tail board** against the left front side stop, top edge touching flush under the guidefingers, inside face ⊡ away from the jig body. Although you will cut tails first, adjust the guidefinger layout in TD PINS mode. The adjustment screws are on top in this mode, and it's easier to visualize the final joint pattern.



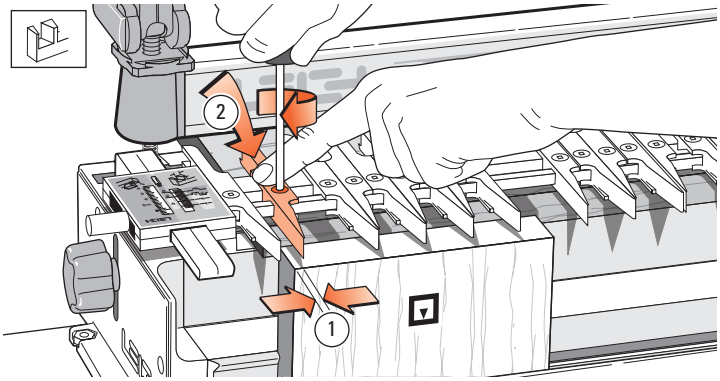
8-8 Loosen the support bracket knobs and raise the finger assembly about ⅛"[3mm] ① above the boards and retighten the knobs. This will allow easy and accurate guidefinger adjustment.



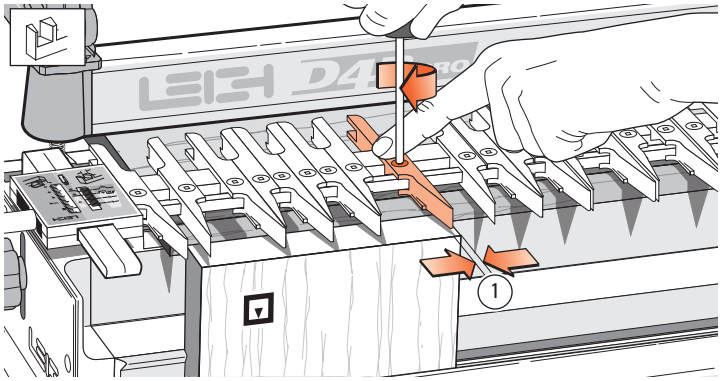
8-9 This joint layout is only a suggestion for this trial. It has a typical, traditional **symmetrical** layout of pins, with half-pins at each edge. The Leigh jig, however, allows for an infinite variety of joint designs, and boards of different thicknesses can also be joined to each other as shown in this illustration. Before attempting joints of **asymmetrical** layout, please see chapter 14.



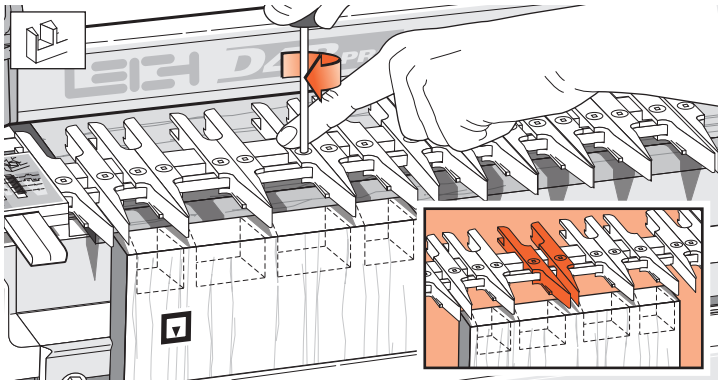
8-10 Ignoring the extreme outer guidefinger next to the scale (it just supports the router), loosen the next eight guidefingers and slide them over the workpiece. *NOTE: The first few times you use your jig, some fingers may "stick". This is normal. To "unstick", loosen the finger screw about 3/4 turn. Press down firmly on the screwdriver (in the screw) to loosen the finger locking wedge (you should feel a click).*



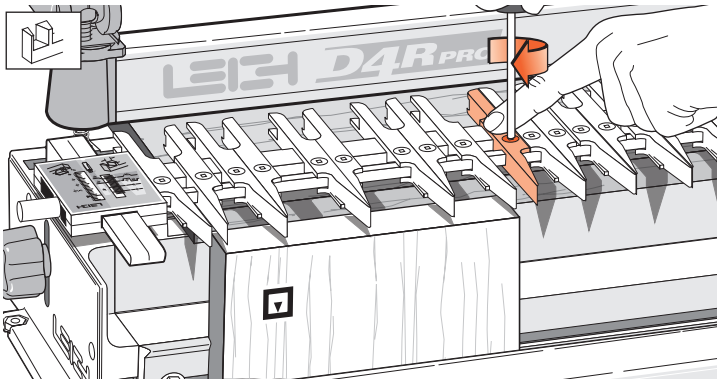
8-11 Lock the left-most half-pin guidefinger about ⅛"[3mm] ① in from the left edge of the board. Always apply light downward pressure to each guidefinger as the finger screws are tightened ②. This will ensure the fingers are flat and level on the bar.



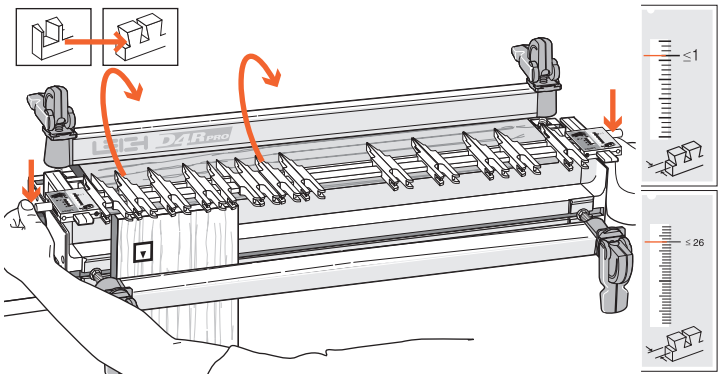
8-12 Leave three pairs of guidefingers over the board and lock the right-most half-pin guidefinger about ⅛"[3mm] ① in from the right edge of the board. Judge this distance by eye: it need not be exact. The sockets and pins will align automatically.



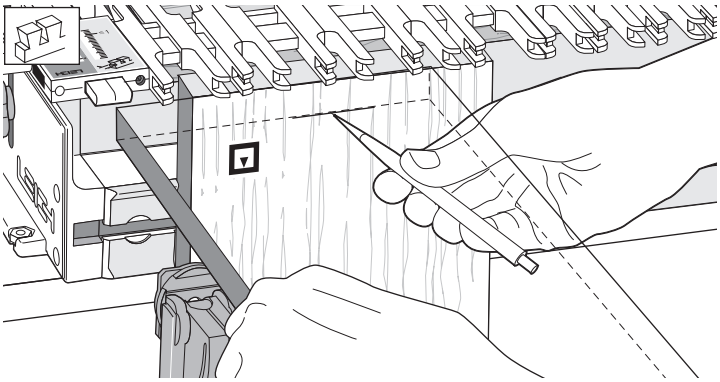
8-13 Space and lock the three remaining pairs as shown. Again, judge it by eye. If it looks right on the jig, the finished joint will look right. Note: Here we have shown pins of equal width, but with tails of increasing width. However, by opening up a pair of guides, the pin (and pin socket) can be widened for decorative or structural reasons as shown in the drawing inset.



8-14 Tighten any other loose guidefingers.

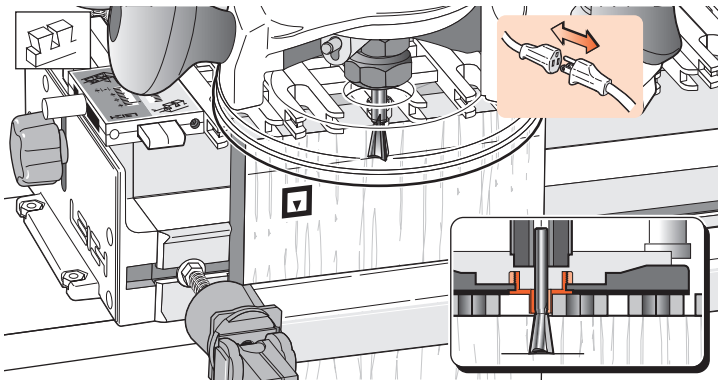


8-15 Rotate the finger assembly to the TD TAILS mode, and set it to the ≤1"[≤26mm] position on the scale. Lower the finger assembly onto the spacer board. **All TD tails are routed at this ≤1"[≤26mm] setting. (The ≤1" setting allows the dovetail bit to pass completely through all tail boards.)**

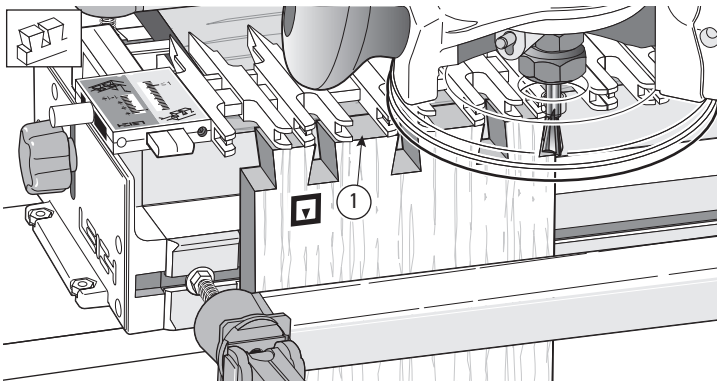


8-16 Place the end of a *pin board* horizontally flush under the guidefingers and mark a thin pencil line partly across the tail board.

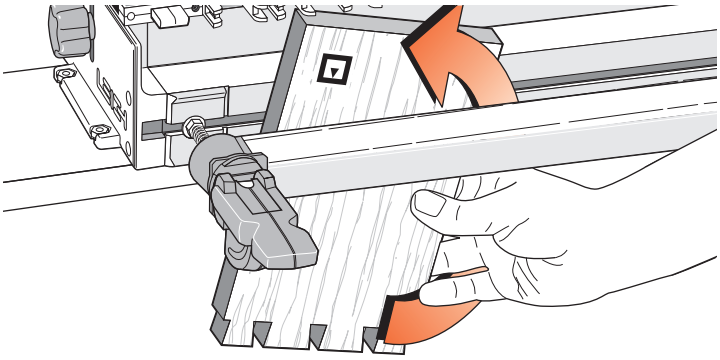
REMEMBER SAFETY!



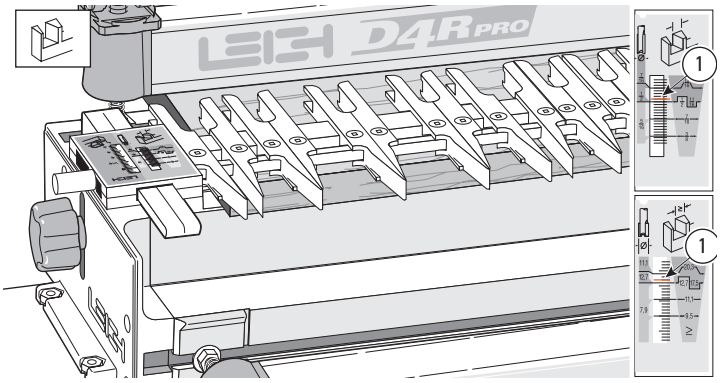
8-17 Place the router on the finger assembly and adjust the router until the dovetail bit tip is level with the center of the pencil line. *Note: This means the pin socket will be half a thin pencil line deeper than the thickness of the pin board, leaving minimal cleanup after assembly.* Check to make sure the bit rotates freely.



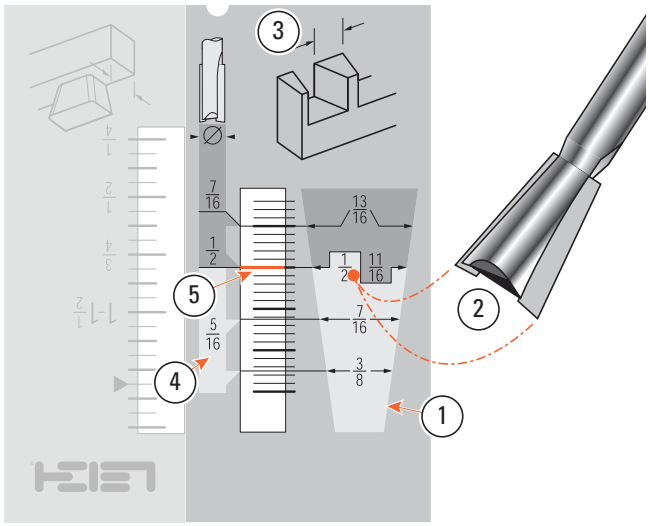
8-18 *Before routing the tails, read "Hints and Tips 17-10".* Plug in the router and rout out the half-pin and pin sockets. **Use only light side pressure on the guide fingers.** Take care not to rout unwanted sockets where there are gaps between the pairs of fingers ①. Rout only between the rounded guidefinger tips. *See Hints and Tips 17-20.*



8-19 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, then unclamp and put them aside.



8-20 Rotate the finger assembly to the TD PINS mode and set it one scale increment more than the ½"[12,7mm] mark ①. **Do not change the guidefinger layout.**

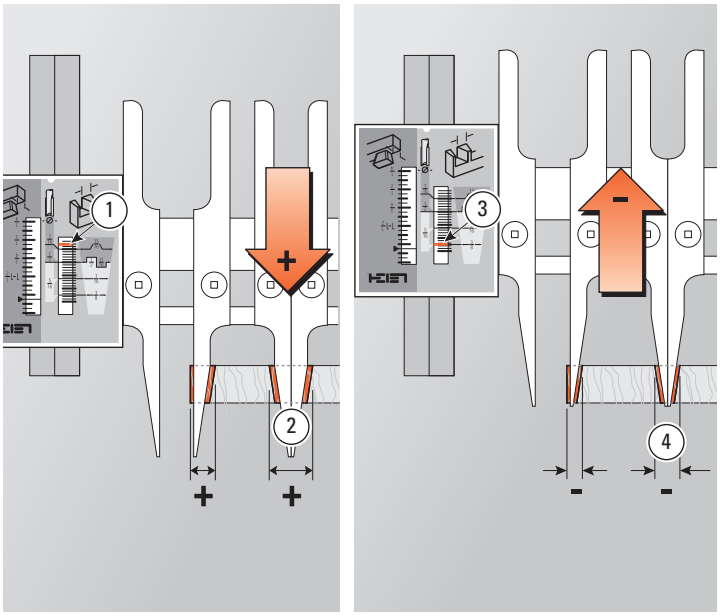


8-21 How the TD PIN Scales Work

Dimensions inside the pin shaped panel ① **correspond with the diameter of the dovetail bit chosen to rout the tails** ②. In this example the ½"[12,7mm] diameter of the #80-8 dovetail bit matches the ½"[12,7mm] setting on the scale. This also becomes the width of the pin ③.

Dimensions in the central panel ④ indicate which straight bit diameter is required with the selected dovetail bit, i.e. 5⁄16"[7,9mm] straight bit with the ½"[12,7mm], 7⁄16"[11,1mm] and 3⁄8"[9,5mm] diameter dovetail bits.

The increment lines in the scale window ⑤ are referenced to the index lines on the support brackets when making fit adjustments. Once the desired fit is achieved, settings can be recorded for precise setup next time.

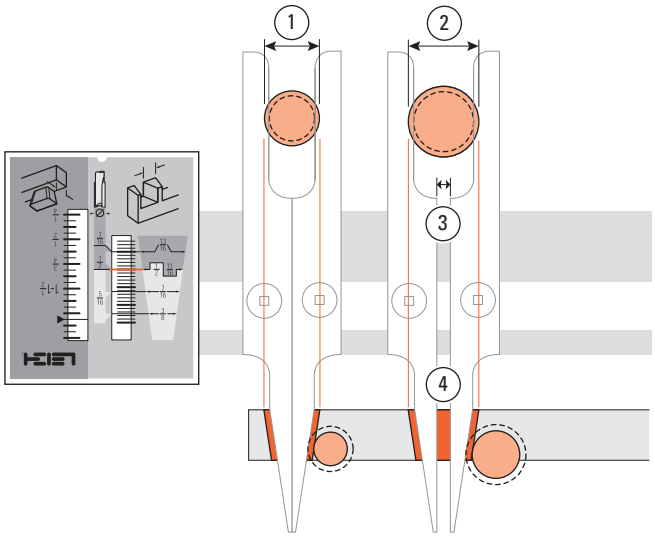


8-22 Finished Joint Tightness

The fit of the finished joint is determined in the TD PINS mode. Moving the finger assembly outward ① increases the width of the pins ②, giving a tighter fit. Moving the finger assembly backwards ③ allows more wood to be routed, making the pins smaller ④, and the joint looser. A one increment movement changes joint fit by 0.005"[0,125mm]. A one quarter increment movement changes fit by a tiny 0.00125"[0,03mm]. Most importantly, when that fine fit is achieved, it allows recordable and repeatable settings for future joints using the same router and bits *(see page 28)*.

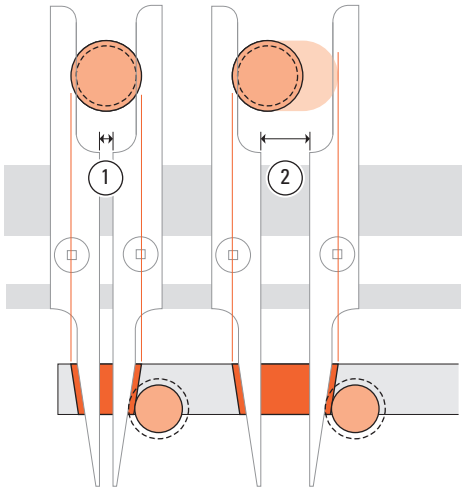
Why can't there be specific, preset scale settings for each bit combination?

Cumulative tolerances in routers, bits, guidebushes and the dovetail jig, make it impossible to give exact jig settings for a precision glue joint. A fine fitting joint can only be attained by trial and error test cuts, and takes only minutes for each bit combination. Dimension lines on the TD PIN scale provides the starting point for testing.



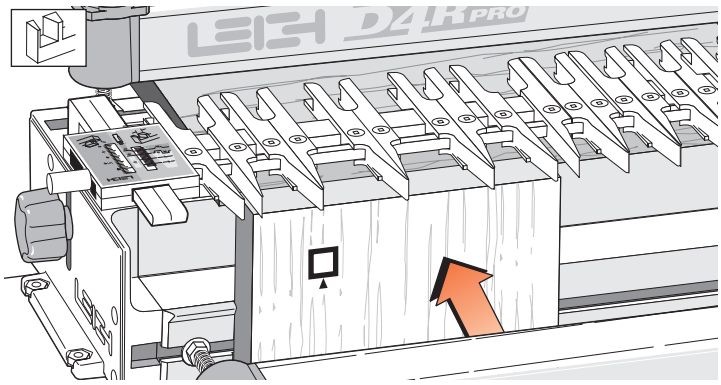
8-23 Why are the 1/2" and 11/16"[12,7&17,5mm] pin widths on the same scale line?

½" through dovetails are routed using a 7/16" guidebush ①
11/16" through dovetails are routed with a 5/8" guidebush ②.
That's a 3/16" difference in size between the two bits …and between the two guidebushes.
The 5/8" diameter guidebush for 11/16" joints requires that the guide fingers be opened up by 3/16" ③.
This automatically makes the pins 3/16" wider ④ but on the same scale setting.

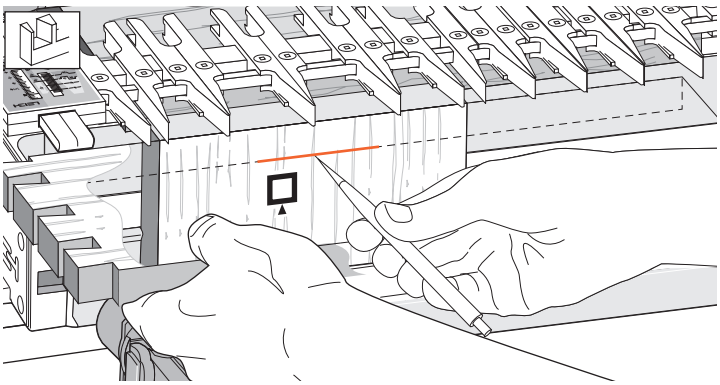


8-24 Do the guide fingers have to be opened up precisely 3/16"[4,75mm] for larger combinations?

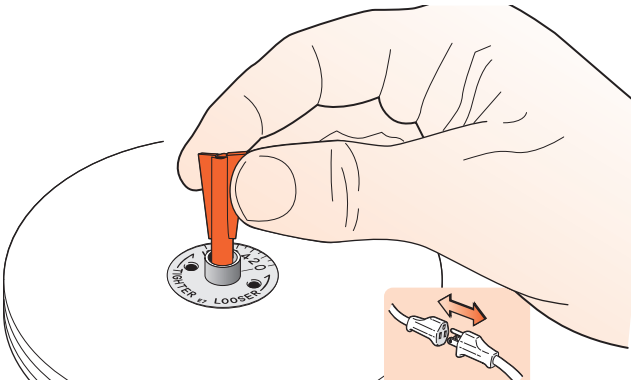
No, just so long as they are opened up by at least 3/16"(4,75mm) ① to allow the larger guidebush to enter the tail guides. Anything more than this minimum is fine ②; both the pin and matching pin socket widths will be automatically increased by exactly the same amount, whatever the spacing. Varying the pin width does not affect the joint fit or the scale setting. In fact, the pin width can be varied with all bit combinations, not just the larger bits



8-25 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.

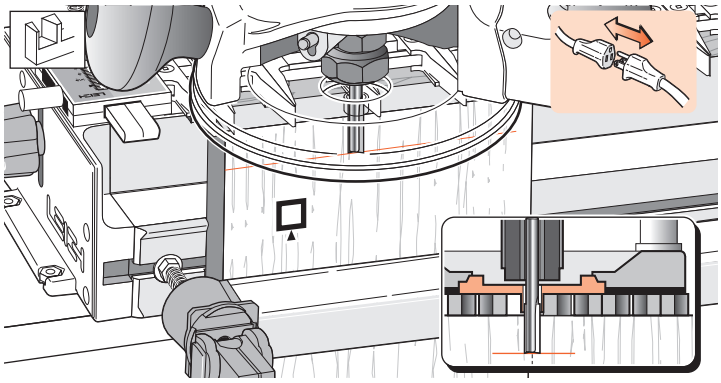


8-26 Place the side edge of one of the finished *tail boards* horizontally flush under the guidefingers and mark a thin pencil line part way across the pin board.

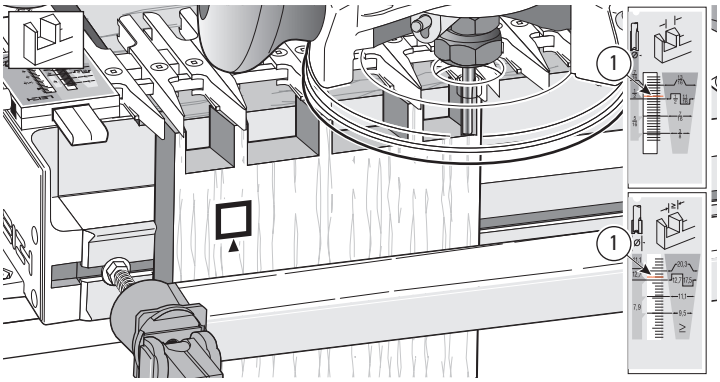


8-27 Unplug the router and remove the dovetail bit. Mount the No. 140-8 straight bit to the router. *If you are using two routers, see concentricity concerns, Figures 7-6 thru 7-8.*

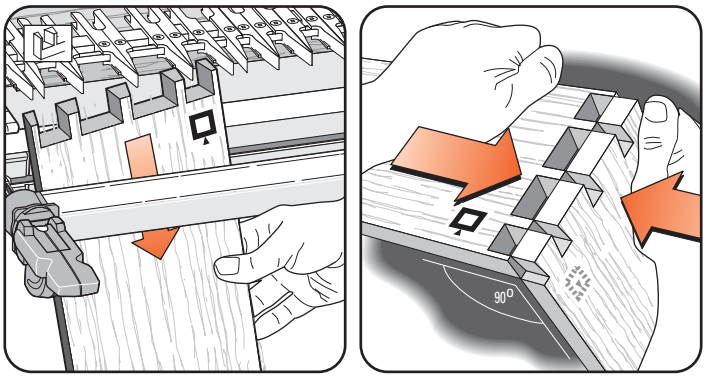
REMEMBER SAFETY!



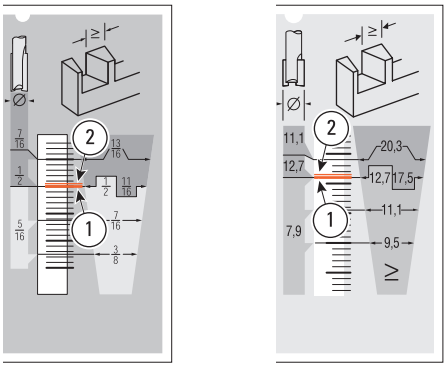
8-28 Place the router on the finger assembly and adjust the router until the tip of the bit is level with the center of the pencil line. Check to make sure the bit rotates freely.



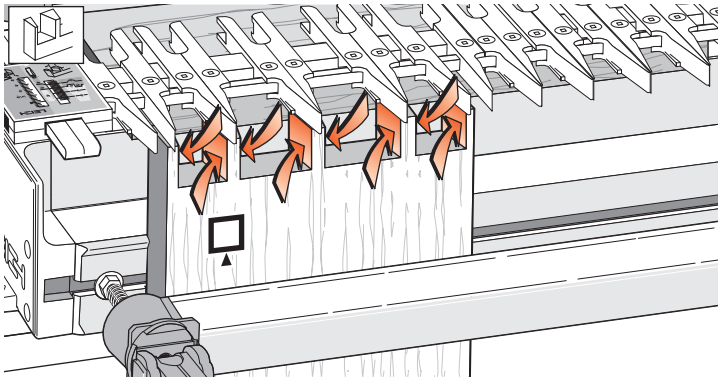
8-29 Check that the scales are set one increment above the ½"[12,7mm] mark ①. Rout out the waste between the pins. Check to make sure no parts have been missed. *See 17-1 to 17-5, "Hints and Tips" on how to minimize tearout.*
Use only light side pressure on the guide fingers.



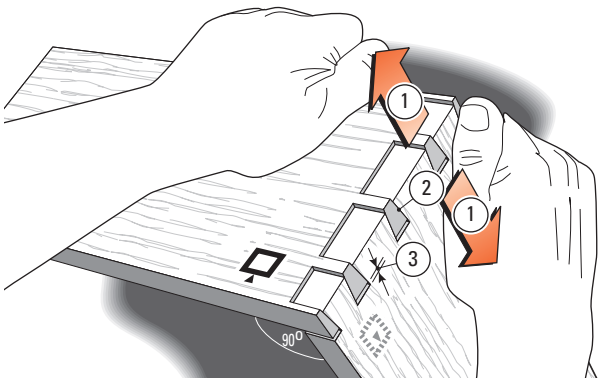
8-30 Remove the test pin board from the jig and test it for fit in one of the tail boards. *Make sure the outside faces ☐ face outward on both pieces.* The joint will probably be too tight. A firm push fit is perfect, perhaps a tap with the heel of your hand. But having to use a mallet means the joint is too tight to take glue.



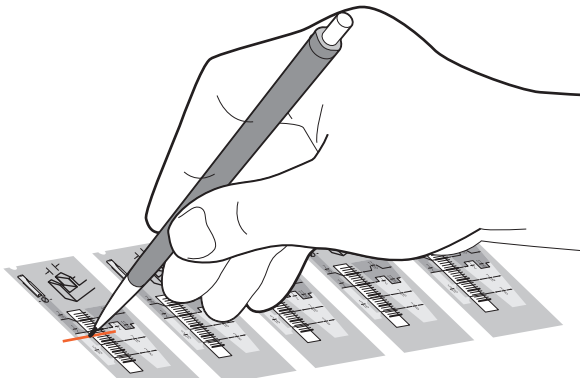
8-31 If it is much too tight, move the finger assembly in (away from you) by one division on the scale. If it is only a little tight, adjust the scale by only half a division. If it is too loose, go to 8-33.



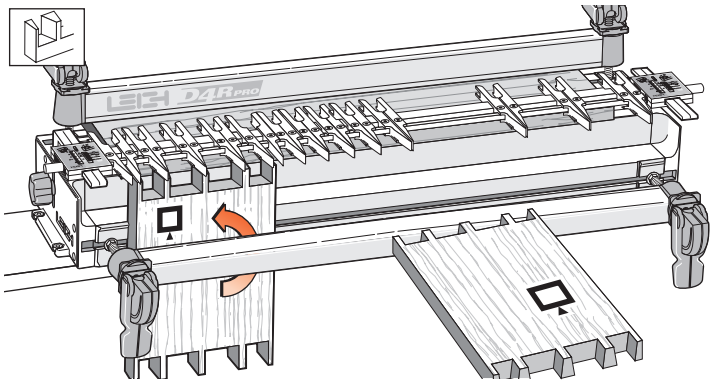
8-32 Replace the same pin board back in the jig, carefully aligned against the same side stop. Rout off the sides of the pins and test it again for fit.



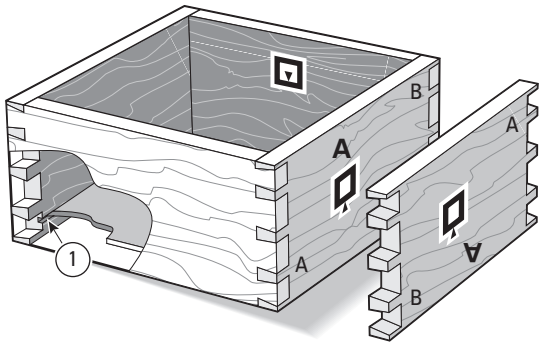
8-33 Test and repeat as required to achieve the desired fit. *Note: If you overdo it and make a loose joint, do this test. Pull the tail board "away" from the pins ① so that the angled sides of the pins and tails jam together ②. The gap between the bottom of the pins and the pin sockets ③, is the amount to move the finger assembly out, (toward you). Reset the finger assembly and test again on the other end of this (fifth) board.*



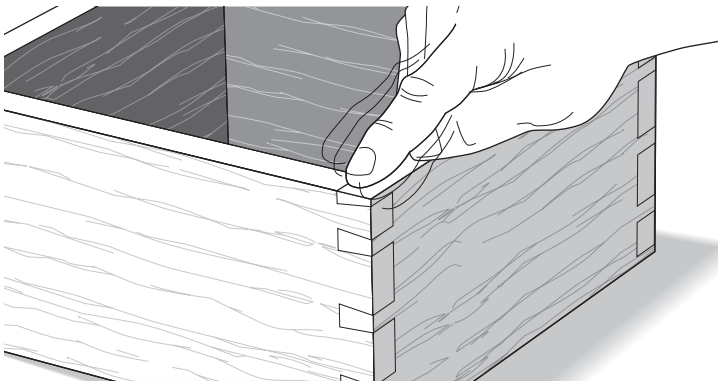
8-34 Once the correct fit is achieved, mark the final TD PINS scale setting on one of the scale prints (see page 28) for future reference. Very slight variations to the scale setting may be necessary with different wood species or hardness.



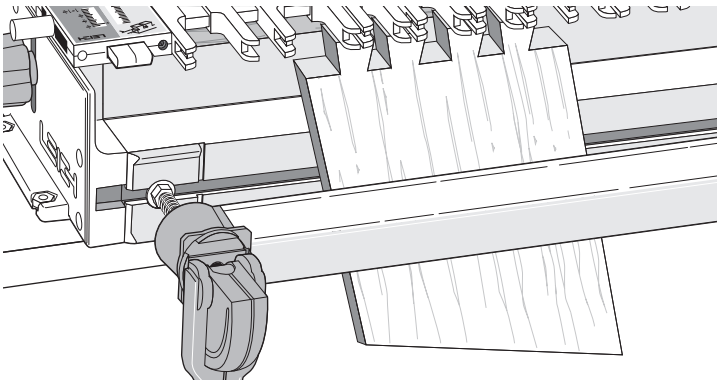
8-35 Rout all four ends of the pin boards, keeping the outside face ⊓ outwards. (With luck you may not have used the fifth board.)



8-36 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.

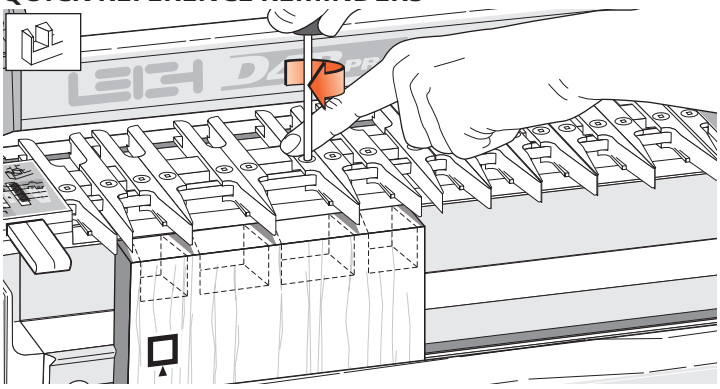


8-37 The box should be square and in plane. If it is not in plane (i.e., the side edges of each board are not in line), then either the ends of the boards are not square, the board widths are not exactly equal, or there is a concentricity problem (see 7-6 to 7-8).

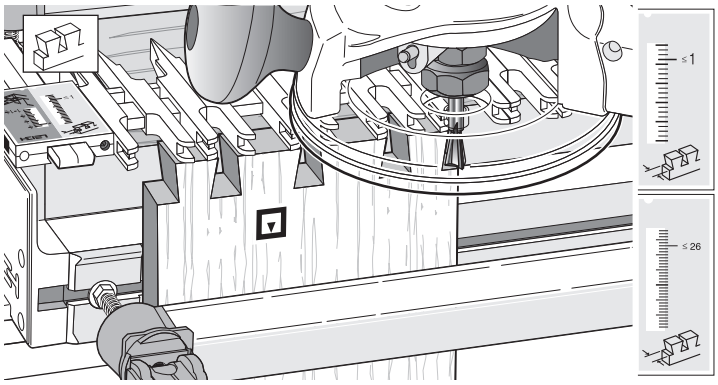


8-38 To form angled dovetails, refer to the Technical Bulletin "How to Rout Angled Through Dovetails on your Leigh Jig". You can download this bulletin from the support page of our website: http://www.leighjigs.com/support.php. ■

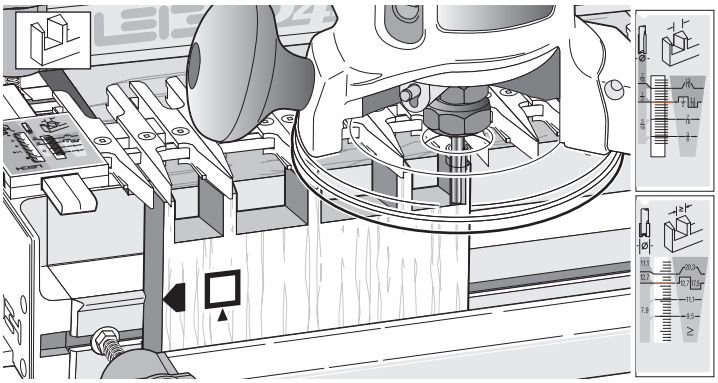
QUICK REFERENCE REMINDERS



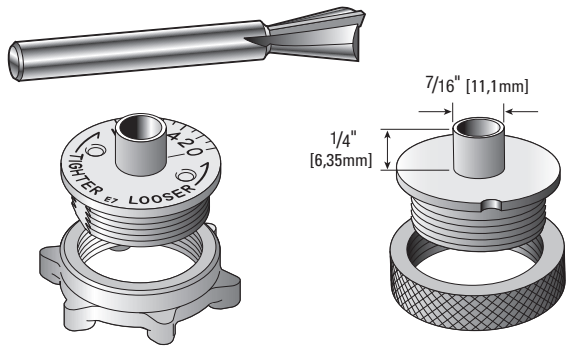
8-39 Through dovetails are laid out in the TD PINS mode with the finger assembly slightly raised above the spacer board. The outside face of the TD pins is away from the jig body.



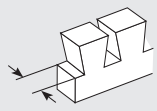
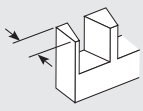
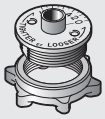
8-40 TD tail boards are clamped vertically in the jig. The inside face of the TD tails is away from the jig body. The finger assembly is in the TD TAILS mode, set on the single ≤1"[≤26mm] setting. There is only one setting in this mode.



8-41 Clamp TD pin boards vertically in the jig. **This is the only one of the four main modes that puts the outside face of the board away from the jig body.** The finger assembly is in TD PINS mode, with the scale set to a recorded setting (see detailed fit instructions 8-21 to 8-34). TD pins are cut with a straight bit; **the only time a straight bit is used in dovetailing.**



8-42 Through dovetail tails are always routed with an 8° dovetail bit to match the 8° guide finger. All through dovetail routing on the D4R Pro is done with the Leigh e7-Bush, or any 7/16" [11,1mm] diameter bush (min. barrel length ¼"[6,35mm]). *See page 70 for more on routers and guide bushings.* The 716C or a ⅝"[15,9]O.D. guidebush is used for ½" shank TD bits. See Chapter 9.

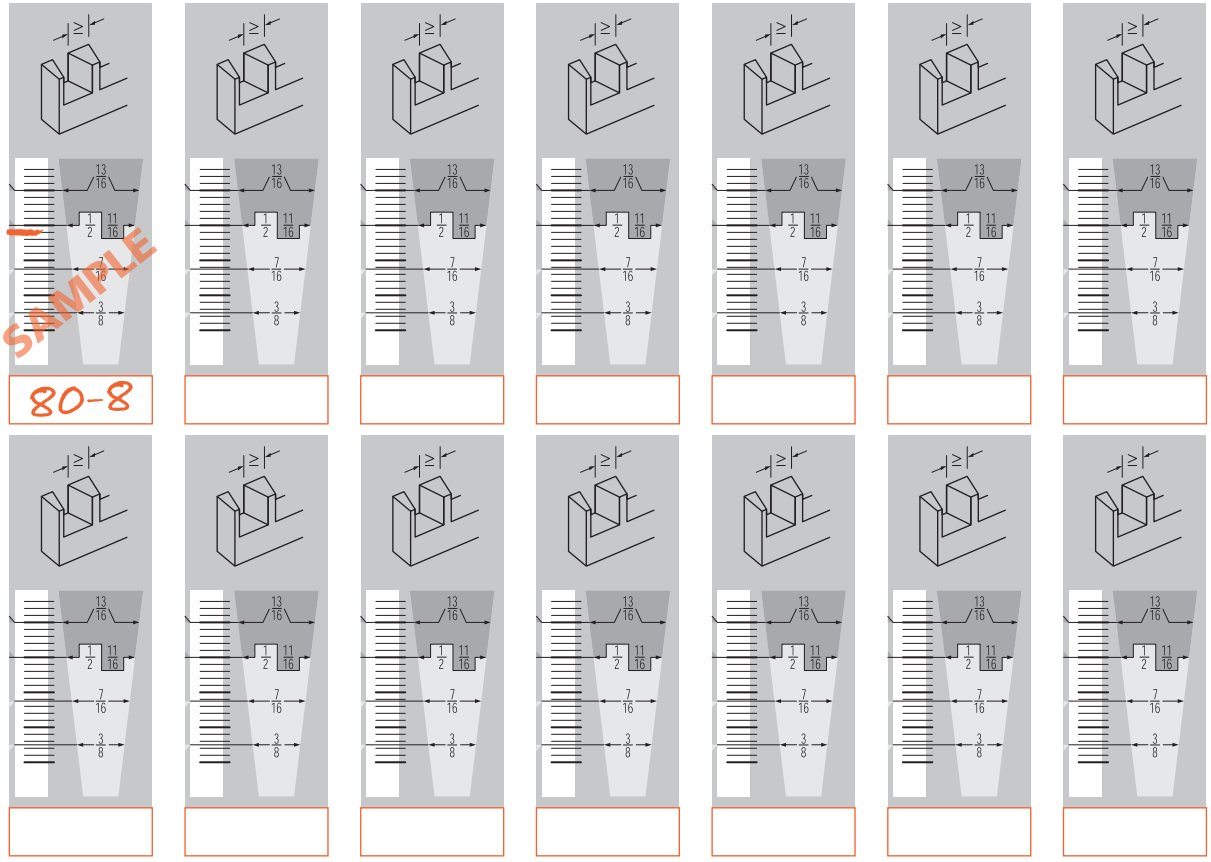
				
Thickness of Tail Board	**Thickness of Pin Board**	**Dovetail Bit**	**Straight Bit**	**Guidebush Diameter**
1/8" - 1" [3-26]	1" - 1 1/4" [26-32]	No.100	No.150	Leigh 716C or 5/8" [15,9]
	5/8" - 1" [16-26]	No.90	No.160	
	1/2" - 13/16" [12-20]	No.80-8	No.140-8	Leigh e7 or 7/16" [11,1]
	3/8" - 5/8" [10-16]	No.75-8		
	1/4" - 1/2" [6-13]	No.70-8		
	1/8" - 3/8" [3-10]	No.60-8		
	1/8" - 1/4" [3-6]	No.50-8		

Numbers in brackets are millimeters

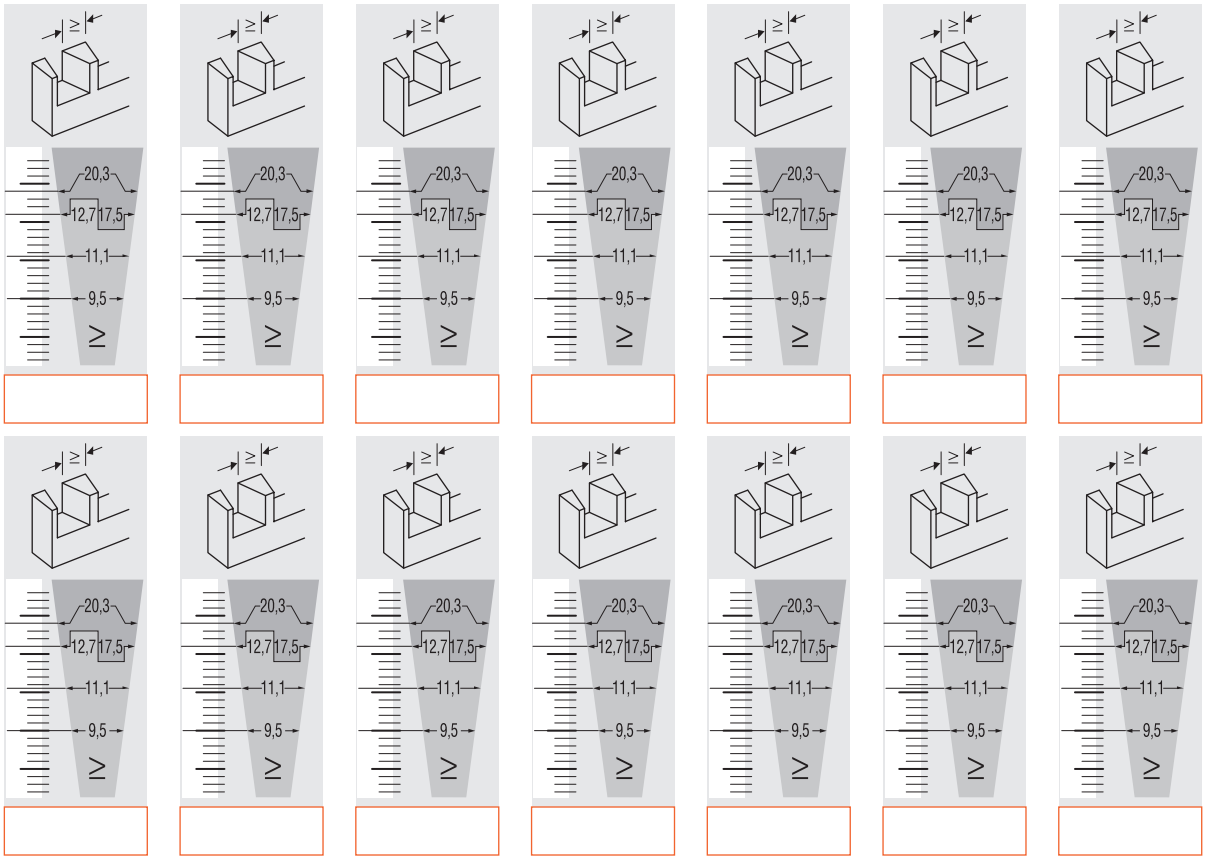
8-43 Here is a quick reference selection chart for through dovetail bits and guidebushes. Please study the bit and guidebush selection appendixes for a full explanation. ■

PROJECT SETTINGS

INCHES

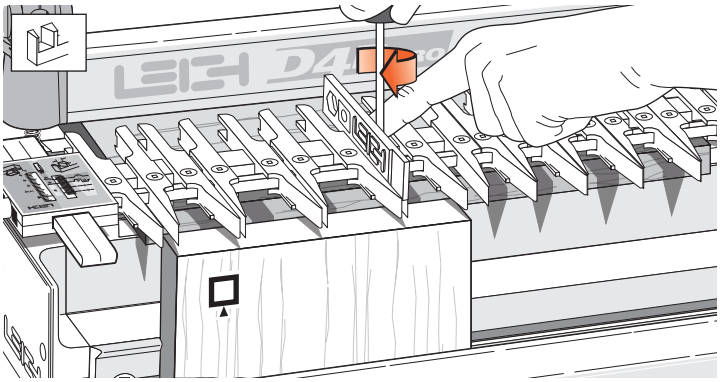


METRIC



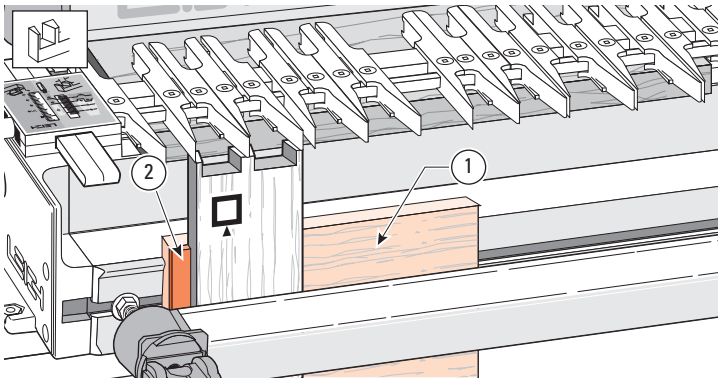
Large and Small Through Dovetails

The following procedures considerably expand the D4R Pro jig's versatility. However, before attempting them, thoroughly master the techniques of Through Dovetails in Chapter 8.



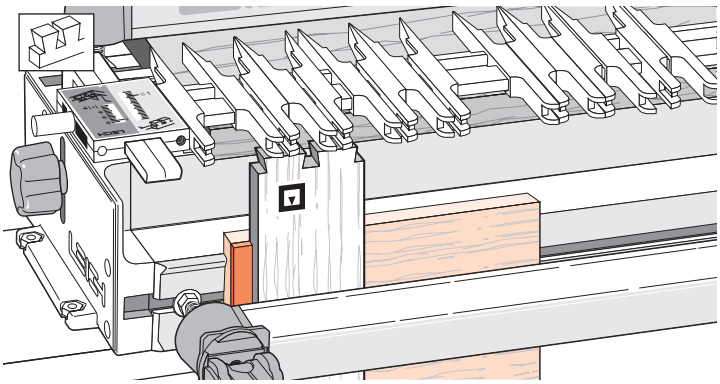
9-1 LARGE THROUGH DOVETAILS

The procedures for using bits 90 and 160 or 100 and 150 are identical to the previous figures, except that a Leigh 716C or ⅝"[15,9mm] OD guidebush is used, and *each guidefinger must be at least 3⁄16"[5mm] apart.* Use the Leigh wrench gauge (3⁄16"[5mm] thick) to make sure there is enough separation. Note: Because the 716C or ⅝"[15,9mm] guidebush is used, the closest possible pin centers using these bit combinations is 1⅜"[35mm], instead of 1"[25,4mm].

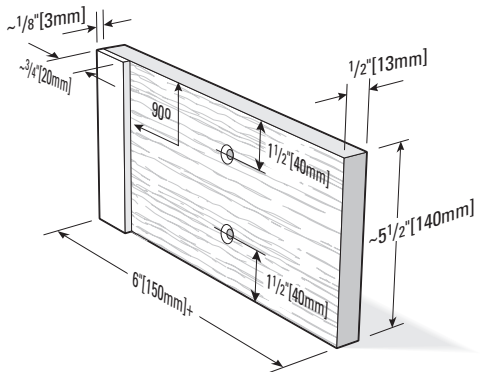


9-2 SMALL THROUGH DOVETAILS

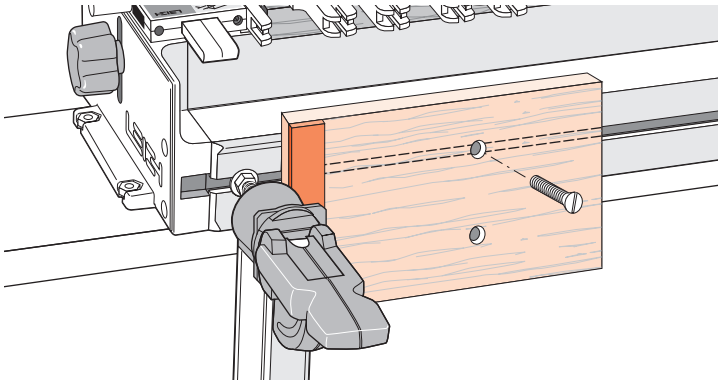
Bits 50-8 and 60-8 allow you to create tiny through dovetails in material ⅜"[10mm] or less in thickness. This procedure is an extra bonus: the Leigh jig was not originally designed for it. The TD PINS scale does not go down far enough, so you have to space the boards away from the jig face with a shop-made block ① fitted with its own side stop ② (see 9-4). Use the **e7** or a 7⁄16"[11,1mm] O.D. guidebush for these small joints.



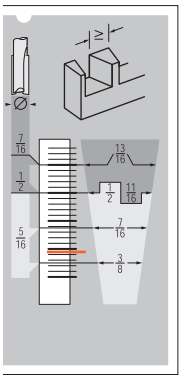
9-3 Use the same block with side stop when cutting the tails to ensure correct alignment of the pin and tail boards.

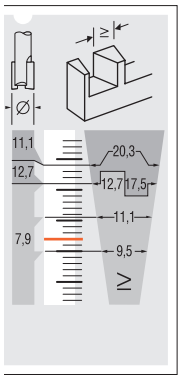


9-4 Make the block with its side stop out of ½"[13mm] stock as shown. Bore two ¼"[6mm] holes, countersunk for a flat head screw (part no. 287) to allow the blocks to be used at either end of the jig.

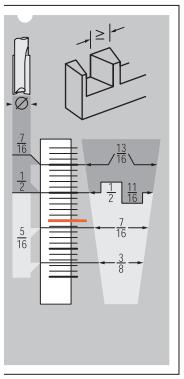


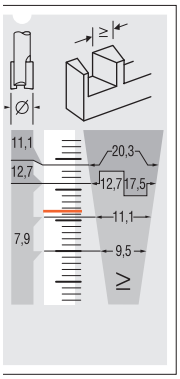
9-5 Remove one front cam clamp, lower the clamp bar and attach the block to the jig face using the screw (No. 287) into the entrapped square nut. Replace the clamp bar and cam clamp.





9-6 For boards up to ¼"[6mm] thick use dovetail bit 50-8 and pin bit 140-8 with the **e7** or a 7⁄16"[11,1mm] guidebush. To cut pins matching the sockets made with bit 50-8, begin with the setting shown here. Cut test pins in scrap stock and test for fit. Adjust as necessary.



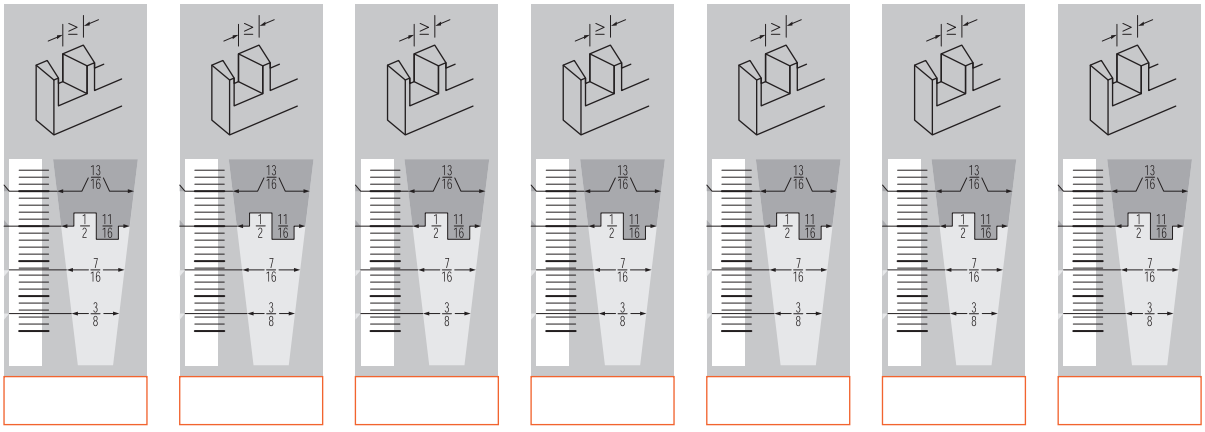


9-7 For boards up to ⅜"[9,5mm] thick use dovetail bit 60-8 and pin bit 140-8 with the **e7** or a 7⁄16"[11,1mm] guidebush. To cut pins matching the sockets made with bit 60-8, begin with the setting shown here. Cut test pieces in some scrap stock and test for fit, then adjust as necessary. Record the actual settings for bits 50-8 and 60-8 on these scale reproductions below.

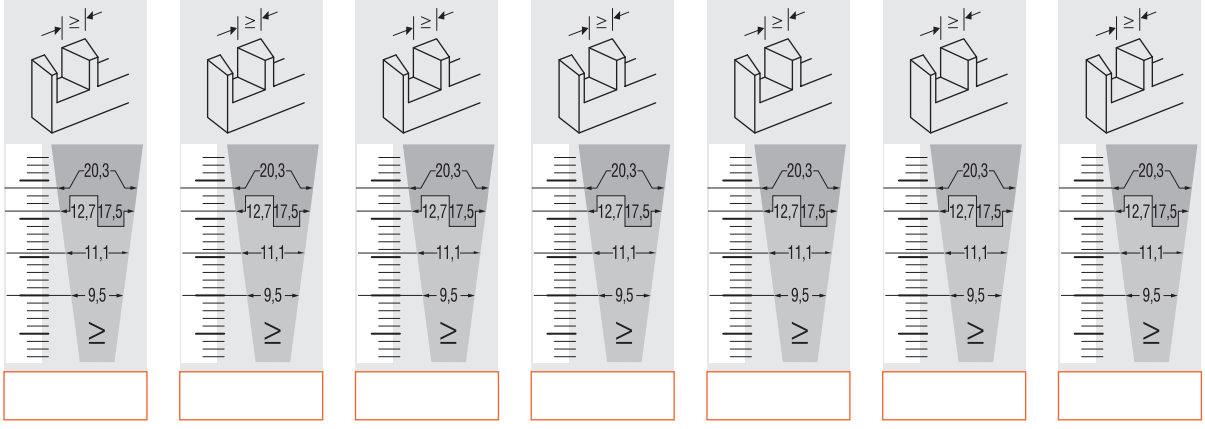
Note: You may also rout joints in boards 5⁄16" to 3⁄8"[8,0 to 9,5mm] with bits No. 70-8 and 140-8 without the use of the shop-made block.

PROJECT SETTINGS

INCHES



METRIC



Variably Spaced Half-Blind Dovetails

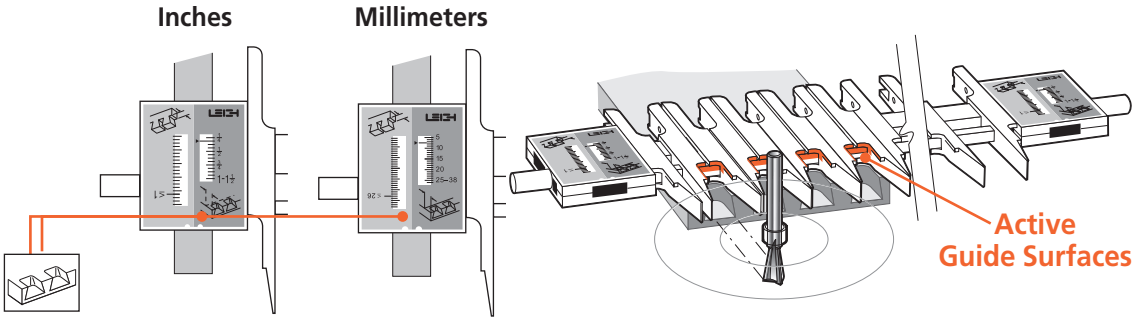
IMPORTANT! *The most commonly misunderstood aspect of routing half-blind dovetails is how the dovetail bit's depth of cut is used to adjust the joint fit, and how the angle of the bit affects that depth of cut. Review this chapter for a clear understanding of this concept.*

Note: The Leigh e7-Bush or any 7/16"[11,1mm] guidebush with a min. barrel length of 1/4"[6,35mm] (see page 70), and any one of the bits listed on the next page may be used for half-blind dovetails. See Appendix II, Half-Blind Bit Selection, Page 75, for a full description on how to select an appropriate bit.

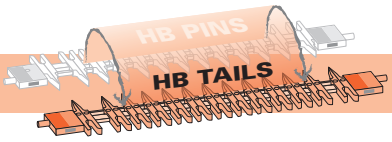
1 Start in Half-Blind Dovetail Pins (HB PINS) mode

MODE ICONS

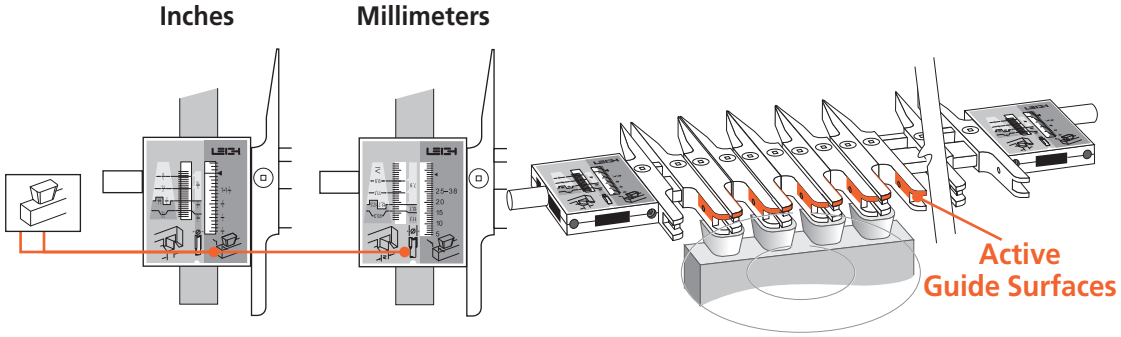
Illustrations in this user guide include the correct *mode* icon for the current instruction. The icons are also used in the instruction text.

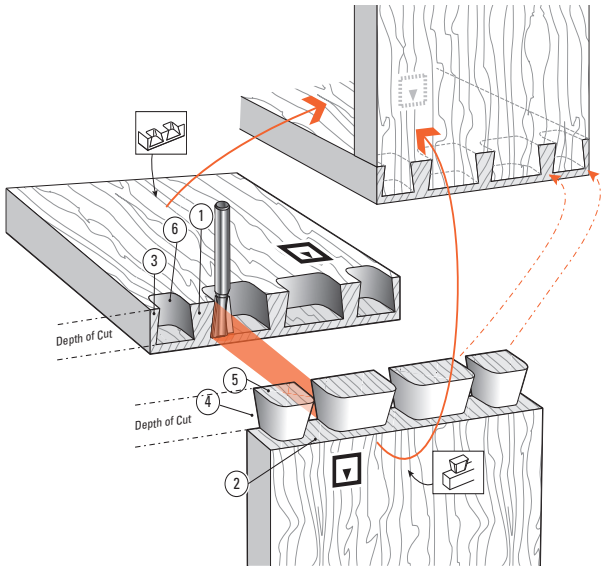


2 ROTATE the finger assembly toward you 180°



3 Now the Finger Assembly is in Half-Blind Dovetail Tails (HB TAILS) mode



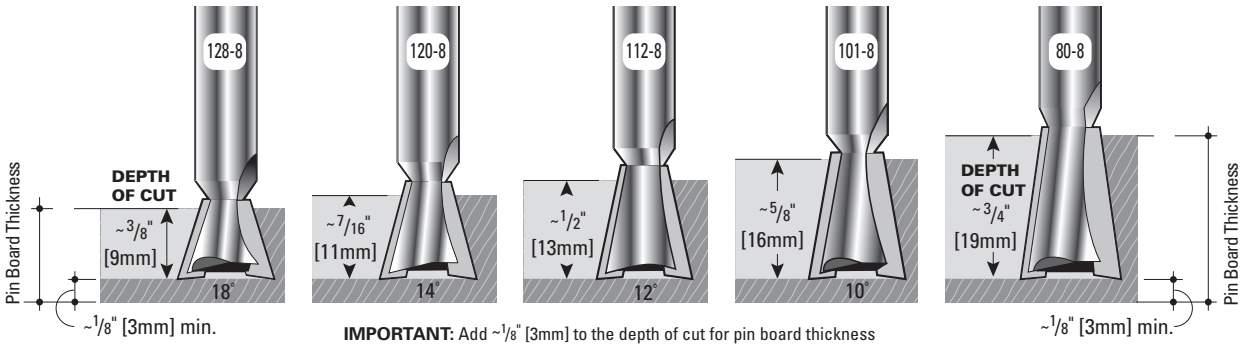


10-1 Half-Blind Dovetail Terminology:

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.

10-2 Cutting Depth for Variably Spaced Half-Blind Dovetails

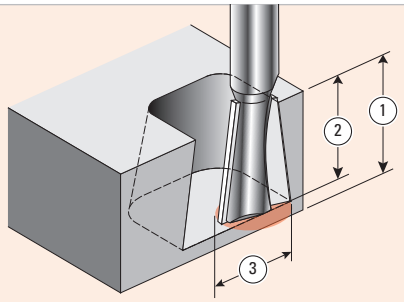


IMPORTANT: Add ~1/8" [3mm] to the depth of cut for pin board thickness
NOTE: See 10-35 chart on p.38 for range of tail board thickness
~ Symbol for approximately

⚠ Important! Read This About HB Depth of Cut

Bit selection is critical. You need to select a specific dovetail bit for your half-blind dovetail project, depending on the pin board (drawer front) thickness you are using.

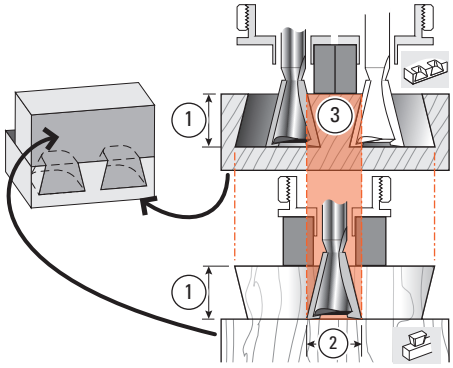
- **Choose one of the five 1/2" [12,7mm] diameter dovetail bits shown above. Check bit selection in Appendix II.**
- **Depth of cut must be as specified for each of the five bits illustrated above.** *Note: Leigh bits 101-8, 112-8 and 128-8 are optional.*
- **Raising the bit above its specified cutting depth will result in loose joints and may damage the jig, bit and/or guidebush. A lower setting will result in tighter joints that may not fit together.**
- **Small Depth of Cut adjustments will change joint fit tightness. See 10-3 to 10-5 for why.**
- **Half-blind PINS and TAILS are routed with the same dovetail bit and must be at the same Depth of Cut.**
- **All half-blind dovetail bits work with the Leigh e7-Bush supplied with your Leigh jig or standard 7/16"[11,1mm] outside diameter guidebush.**



PIN BOARD THICKNESS ① determines the **maximum depth of cut** ② you can use. Select a bit with a specified cutting depth that is at about 1/8" [3mm] **less** than the pin board thickness.

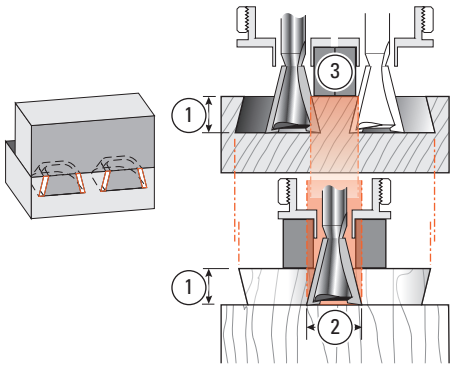
A dovetail bit will produce **only one specific cutting depth**.

Only 1/2"[12,7mm] ③ cutting diameter bits can be used for half-blind dovetails.

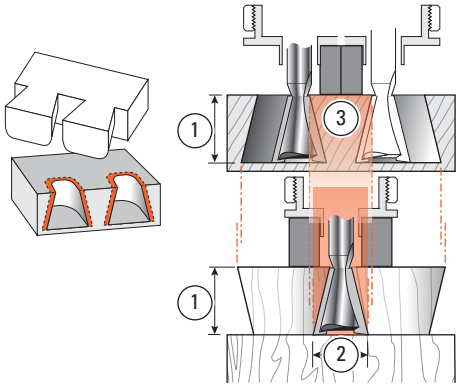


10-3 Joint Fit and Depth of Cut

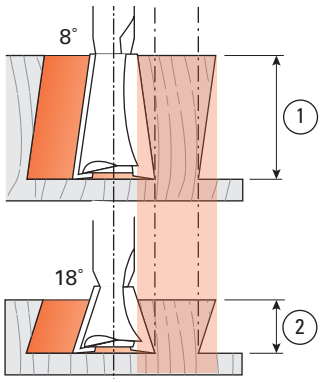
Here's why the depth of cut ① changes the fit in half-blind dovetails. Increasing or decreasing the depth of cut does not affect the pin socket width ②, but does affect the width of the pin ③ that goes into the socket ②.



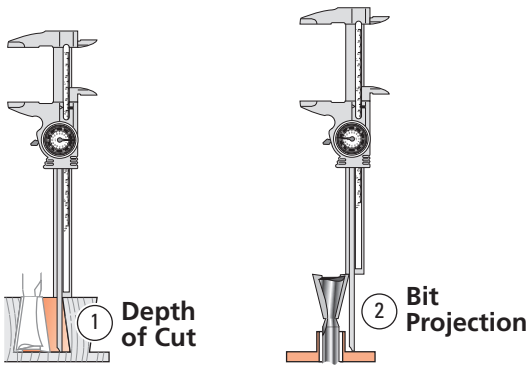
10-4 Note that decreasing the bit depth ① makes the pin ③ narrower while the pin socket ② stays the same width, producing a loose fit.
Decreasing the bit depth (i.e. raise the bit into the router) produces a looser fit.



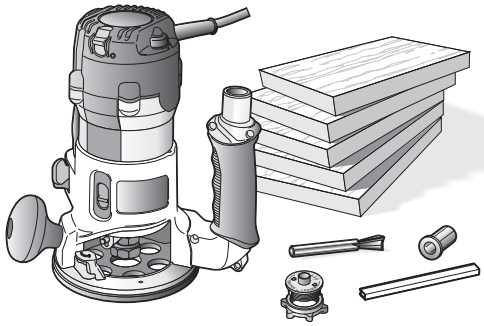
10-5 Increasing the bit depth ① makes the pin ③ larger while the pin socket ② stays the same width, producing too tight a fit.
Increasing the bit depth (i.e. lower the bit) produces a tighter fit.



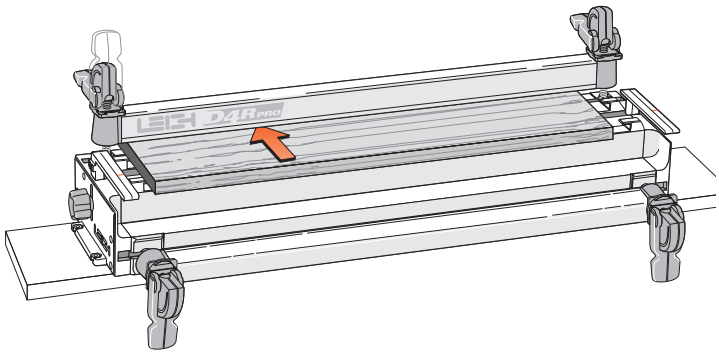
10-6 Bit Angle and Depth of Cut. Half-blind pins and tails are routed with the **same** dovetail bit, the **same** guidebush, and the **same** depth of cut. A different depth of cut requires a different angled bit. Leigh offers five different angled dovetail bits for a range of cut depths. A lesser angle, say 8°, for a deeper cut ①; a greater angle, say 18°, for a shallower cut ②.



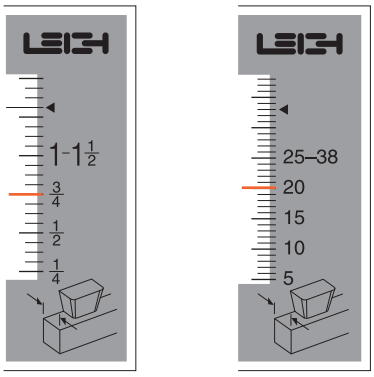
10-7 Cumulative plus/minus tolerances in routers, bits and guidebushes, make it impossible to state exact bit depth for first-time precision fit. All dovetail jigs require trial and error tests to attain fine fitting joints. The good news; we give a starting depth for each bit. Test and measure the successful 'Best fit' depth of cut ① or bit projection ②. Record for future first-time fits.



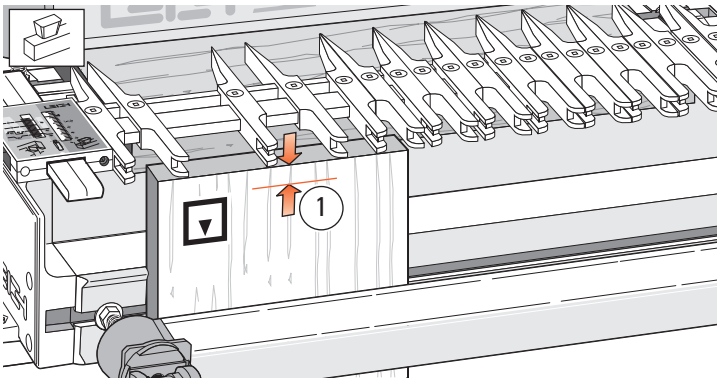
10-8 Routing a Test Joint Use the Leigh e7-Bush, and No.120-8, ½"[12,7mm] 14° dovetail bit. Select several pieces of ¾"x 5½"[20 x 140mm] x about 8"[200mm], and the plastic bridge extrusion. *Note: Half-blind pin boards must be minimum ½"(13mm) thick to clamp. For thinner boards see fig.10-21.*



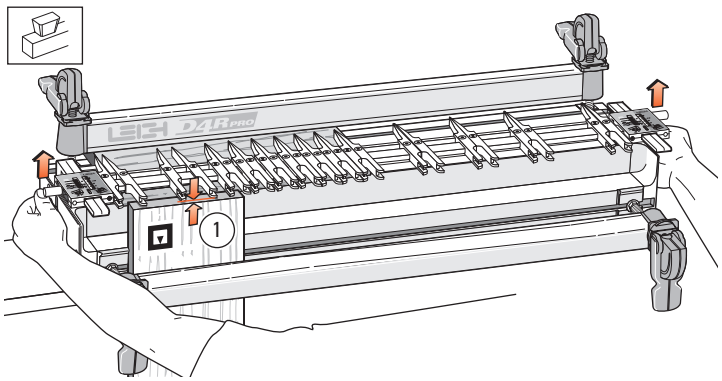
10-9 Clamp the spacer board in the rear clamp.



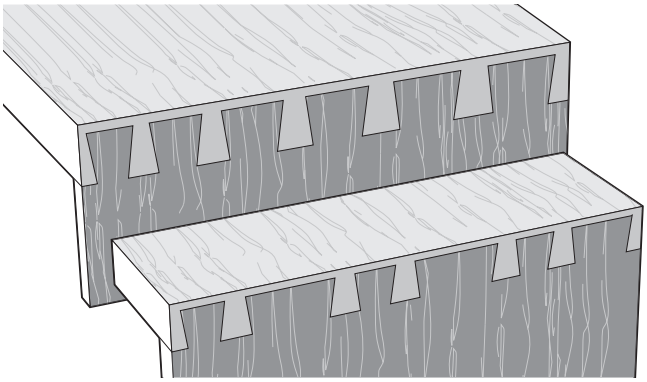
10-10 Mount the finger assembly on the support brackets in the HB TAILS mode, flat on the spacer board, *scales set on the thickness of the tail board* (¾"[20mm] in this instance).
The HB TAILS scale is always set at the tail board thickness. The scale increments above 1-1½"[25- 38mm] are for use on sliding dovetails (see Chapter 16).



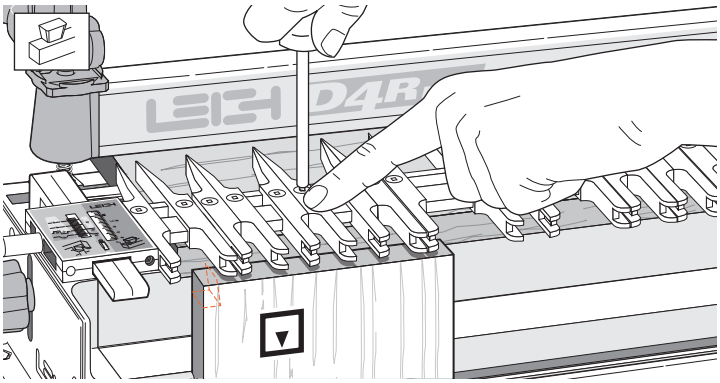
10-11 Measure and mark a line on the inside face of the tail board ① to the working depth of the bit to be used as per 10-2 of this chapter. Clamp this test tail board in the left front clamp, against the side stop with the top edge flush under the guidefingers, and the inside face ⊡ of the drawer side away from the jig.



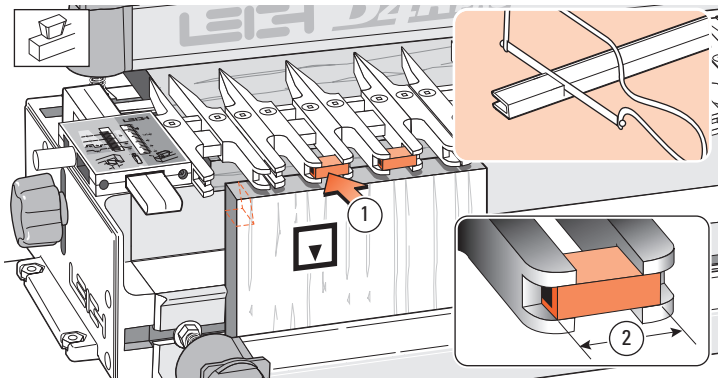
10-12 Unlock and raise the finger assembly support brackets slightly so that the finger assembly is about ⅛"[2mm] ① above the boards. This will allow easy movement of the guidefingers.



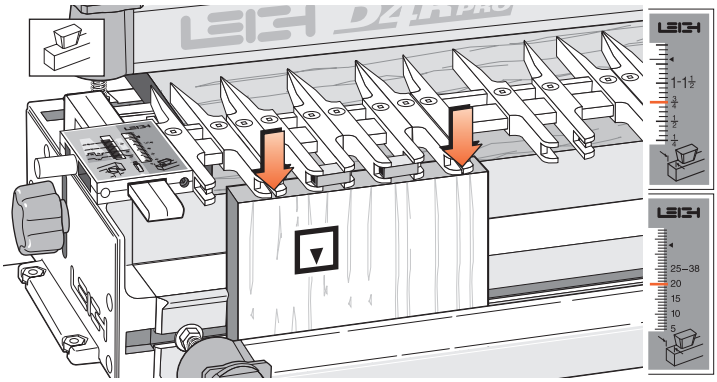
10-13 While typical traditional layouts have symmetrical pins and spacing with half-pins at each edge, the Leigh jig allows infinitely variable joint designs. Different thickness boards can be easily joined together. Pins can be various sizes and randomly spaced to suit just about any design you create. *Before attempting joints of asymmetrical design, see Chapter 14.*



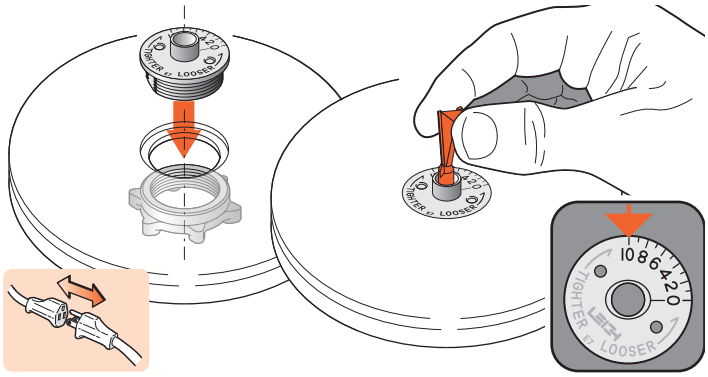
10-14 Ignoring the outer guidefinger (router support) at the scale, loosen enough guides for the desired tail layout. The illustrated half-pin guidefinger position gives a half-pin socket profile as shown (dotted lines). *NOTE: The first few uses, some fingers may "stick". This is normal. To "unstick", loosen the finger screw ¾ turn. Press down firmly on the screwdriver (in the screw) to loosen the finger locking wedge.*



10-15 If gaps between the guidefinger tails are wider than about ⅛"[3mm], mark and cut pieces of bridge extrusion ① to fit the guidefinger tail slots. Cut slightly shorter than the space between the guidefinger shoulders ②, so guidefingers won't force apart with the bridge pieces. Squeeze the open side of the pieces and push into place for a friction fit.

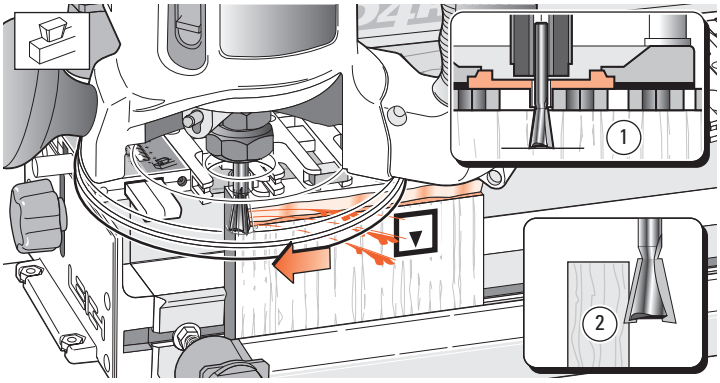


10-16 Remember to tighten any loose guidefingers. Lower the finger assembly back onto the spacer board and workpiece. **It must touch the workpiece or the depth of cut will vary and the joint won't fit.** The scale should be set on the tailboard thickness, in this case ¾"[20mm].

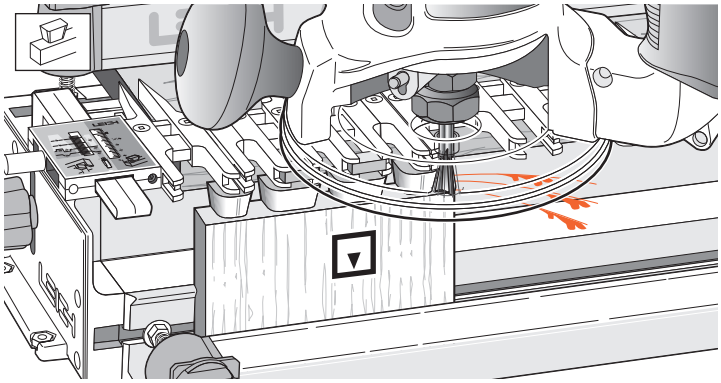


10-17 Attach the e7-Bush securely to the router and mount the supplied No.120-8 bit to the router. Set the e7-Bush to No.10.

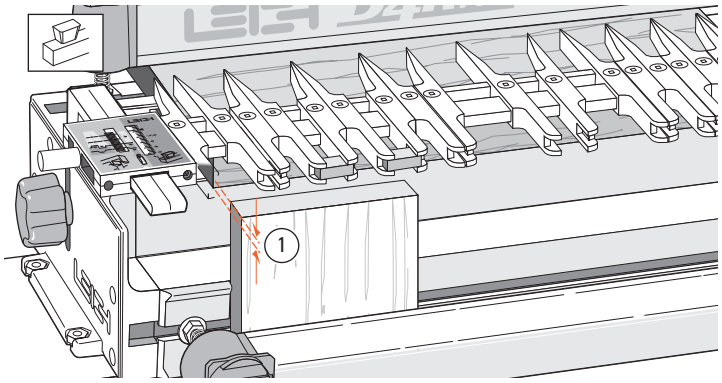
REMEMBER SAFETY!



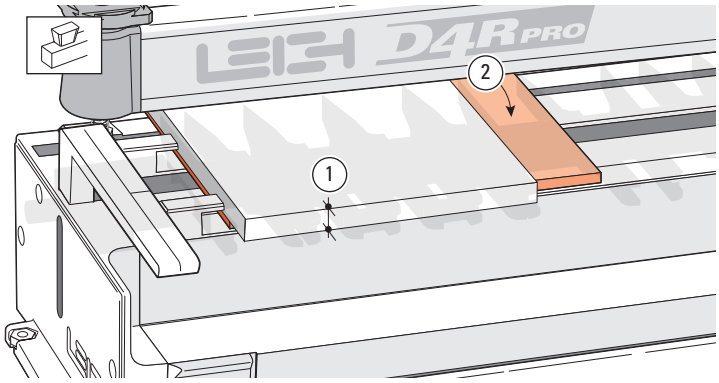
10-18 ⚠ Adjust the bit height until the bit tip is level with the marked line ①. For the first light cut move the router from right to left. **Make sure you control it firmly, because it is driven in this direction by the bit. Only the tip of the bit should be cutting on the first cut** ②. This *back* or *climb* routing leaves a very clean shoulder in face grain.



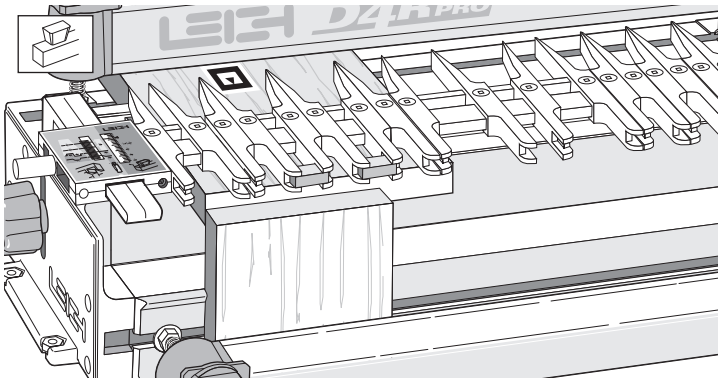
10-19 Now rout in and out from left to right following the guides and bridge pieces to rout out the pin sockets, leaving the tails. *See fig. 17-10 "Hints and Tips".*



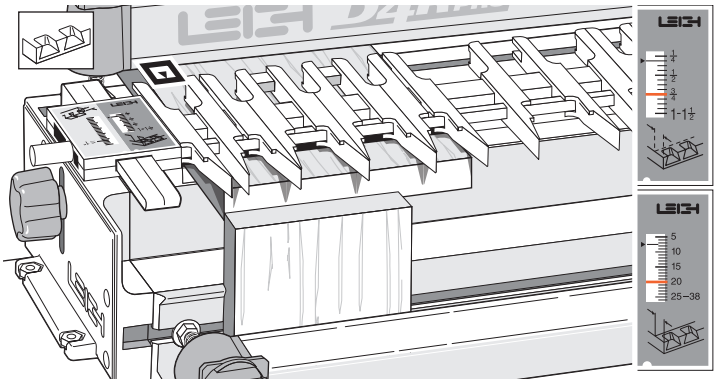
10-20 Remove the test tail board, then clamp a scrap board in the front of the jig so that the top edge projects above the top face of the jig by about ⅛"[3mm]①. This will keep the scrap piece below the path of the bit when routing the pin board.
Remove the spacer board from the rear clamp.



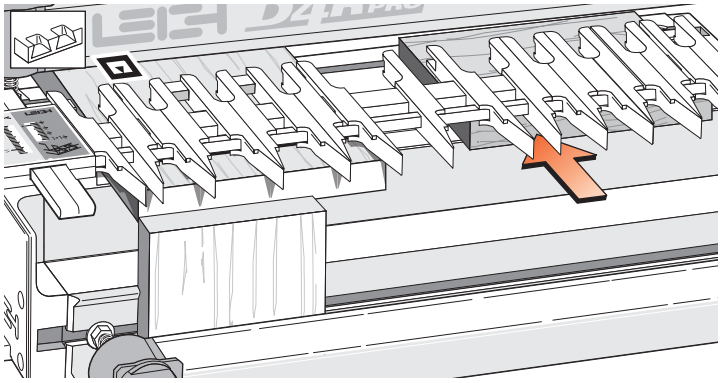
10-21 If you're mounting Thin Pin Boards:
The minimum recommended pin board thickness is ½"[13mm]. If you wish to rout a pin board less than the minimum thickness ①, it will be necessary to pack the board up from the jig body. We suggest using a piece of ¼" to ⅜"[6 to 9mm] plywood for this purpose ②.



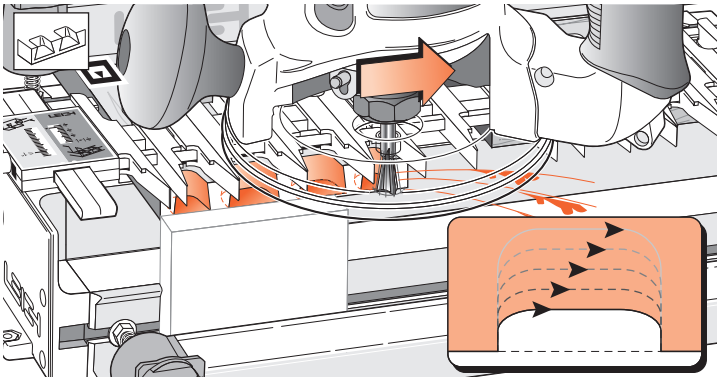
10-22 Flush Drawers Place a test pin board in the left rear clamp against the side stop, fitting its front end edge flush against the vertical scrap piece, inside face ⊡ of the drawer front away from the jig body. The pin board is now positioned with the edge to be routed flush with the jig's front face, correctly registered for the scale readings. **For drawers with rabbeted fronts, see Chapter 12.**



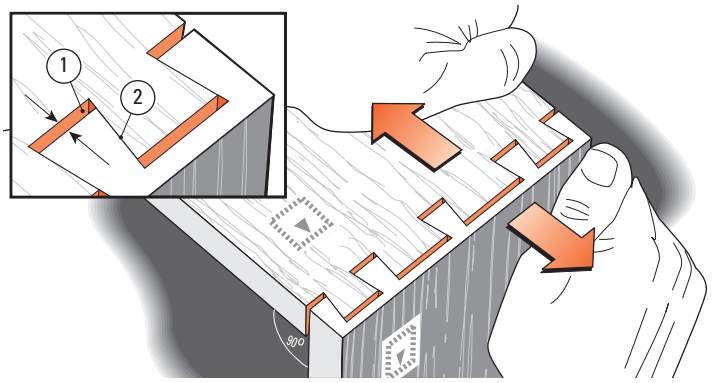
10-23 Rotate the finger assembly to the HB PINS mode. Set the HB PINS scale *equal to tail board thickness* (i.e., same setting as tails: this example, ¾"[20mm]). **HB pins and HB tail scales are always set to tail board thickness. Make sure the finger assembly is flush and level on the pin board.** The guidefingers must touch the pin board or depth of cut will vary, causing poor joint fit.



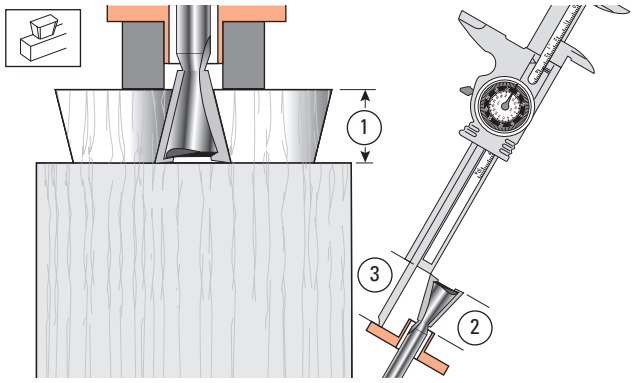
10-24 If you have difficulty leveling the finger assembly on a narrow workpiece, place a board the same thickness as the pin board under the other end of the finger assembly, ***but not under the rear clamp.***



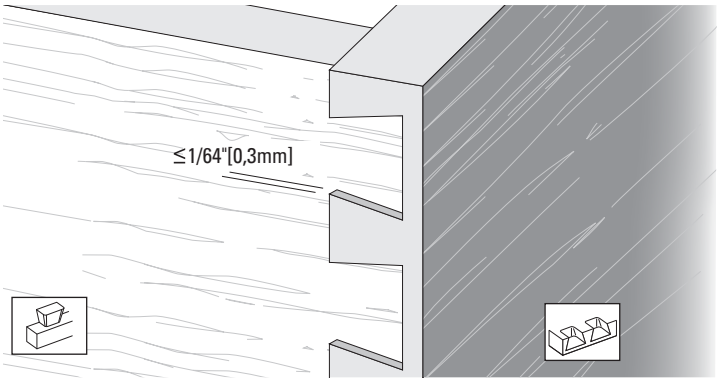
10-25 ⚠ Rout out the waste between the pins. Rout each space from **left to right. Do not back rout on end grain. If the bit enters on the right side of the opening there will be a very strong pull to the left, so...** Rout each opening in at least three or four passes, **left to right.**



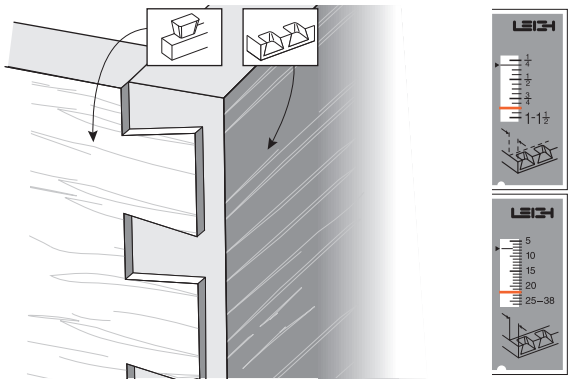
10-26 Remove the pin board and test the joint for fit. If the joint is loose, as shown here, you need to lower the bit by the same amount as the gap at the bottom of the pins ① (when the pins are pulled against the socket sides ②). If the joint is too tight, raise the bit slightly. Test again. You cannot rout the same board twice with a dovetail bit, so use two fresh board ends for each test.



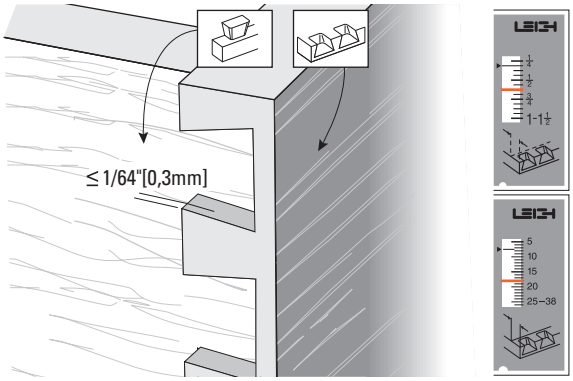
10-27 Keep the test tail board that fits well, and mark it with the number of the bit you used to rout it. For quick set-up next time, clamp this tail board in the jig as a *depth-of-cut gauge* ① to show how far to lower the bit. Better yet, measure the bit projection from the end of the guidebush ② or guidebush flange ③ and record this for fast set-ups in future.



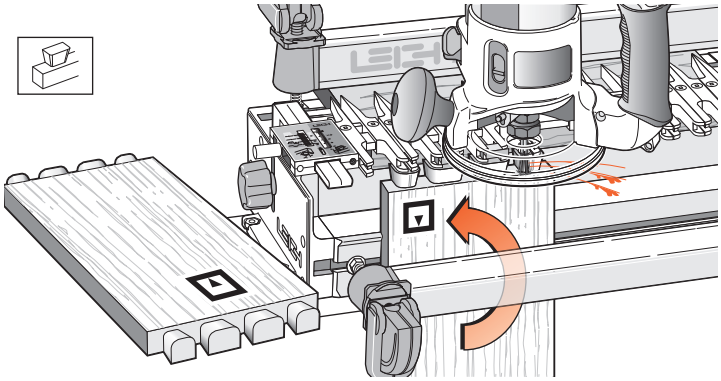
10-28 When you have the proper tightness of fit, check the flushness. The tails should be under flush to the pins by *no more than 1/64"[0,3mm] to allow for cleanup (exaggerated here)*. The concentricity of the collet and guidebush on different routers will affect this tolerance.



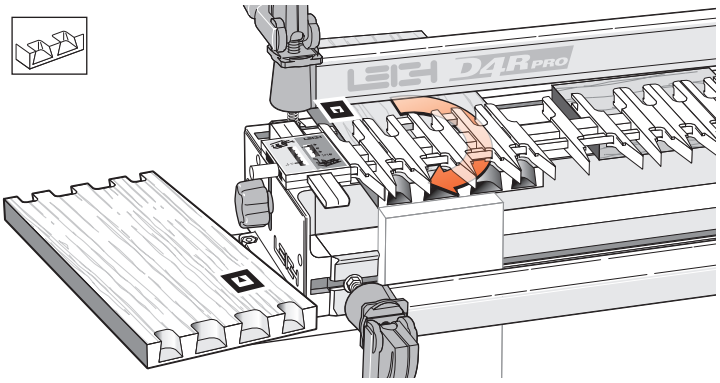
10-29 If the tails stand out from the pins, set the HB PINS scale **away from the operator** by the amount required.



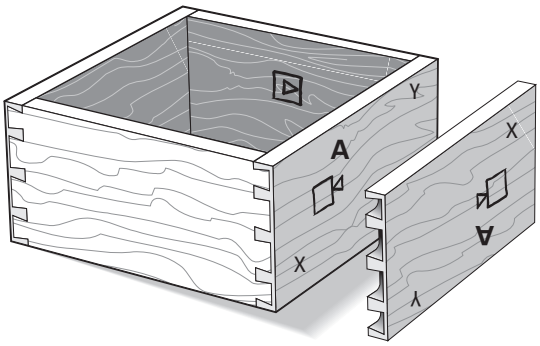
10-30 If the tails fit in too far past the pins ends, set the HB PINS scale **toward the operator** by the amount required. These adjustments for "flushness" are made only in the HB PINS mode.



10-31 To make a box, rout all four ends of the tail boards, keeping the inside face ⊡ of the tail boards away from the jig.

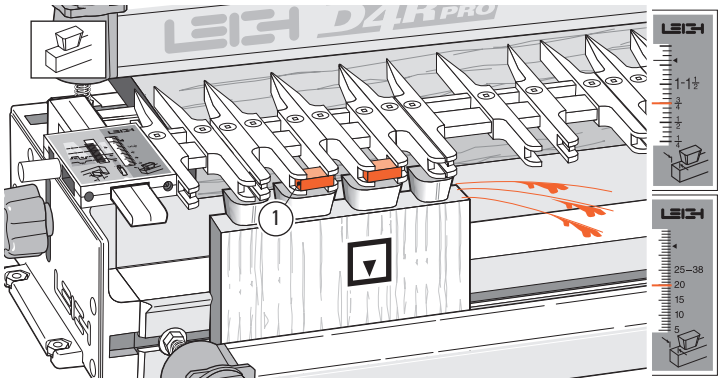


10-32 Rout all four ends of the pin boards keeping the inside face ⊡ of the boards away from the jig.
Note: When making drawers you may prefer to use through dovetails on the rear corners.

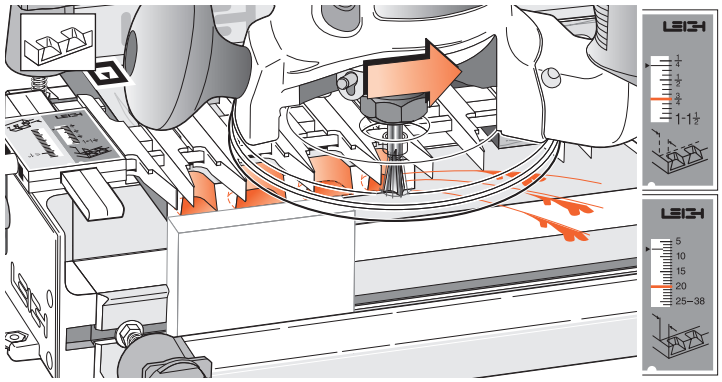


10-33 Assemble the box. As with through dovetails, it doesn't matter which edge of any of the boards are at the top or bottom, the box will still fit together e.g. pin board "A" can be up either way.

QUICK REFERENCE REMINDERS



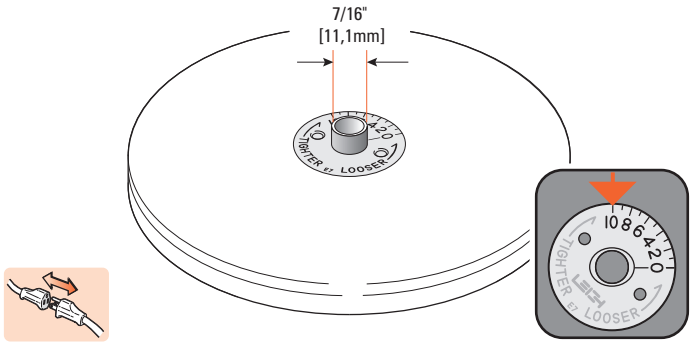
10-34 Half-blind (HB) tails: Drawer sides (tailboards) are clamped vertically in the jig. The inside face ⊡ of the drawer side goes away from the jig body. The finger assembly is in the HB TAILS mode, set to the thickness of the drawer side. Use bridge pieces where required ①.



10-35 Half-blind (HB) pins: Drawer fronts (pinboards) are cut with the board clamped horizontally in the jig. The inside face ⊡ of the drawer front faces away from the jig body. The finger assembly is in the HB PINS mode, and again **set on the thickness of the drawer side** (but adjusted for a flush fit, see 10-28 to 10-30).

Thickness of Tail Board	Thickness of Pin Board	Depth of Cut	Dovetail Bit	Guidebush Diameter
1/4" - 1 1/2" [6-40]	min. 7/8" [22]	~ 3/4" [19]	No.80-8	Leigh e7 or 7/16" [11,1]
	min. 3/4" [20]	~ 5/8" [16]	No.101-8	
	min. 5/8" [16]	~ 1/2" [13]	No.112-8	
	min. 9/16" [14]	~ 7/16" [11]	No.120-8	
	min. 1/2" [12]	~ 3/8" [9]	No.128-8	

Numbers in brackets are millimeters



10-36 On the Leigh D4R Pro, all half-blind dovetails are routed using the Leigh e7-Bush set at No.10 or standard 7/16"[11,1mm] diameter bush (min. depth 1/4" [6,35mm] *see Appendix I*). **For instructions to rout end-on-end dovetails see Chapter 13.** ■