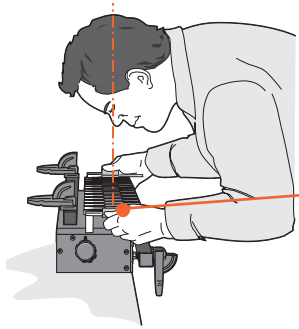


# Basic Jig Functions and Scale Modes

Here are the very basics for understanding the different D4R dovetail modes and settings.

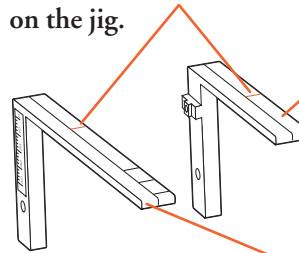
## THE FOUR SCALE MODES

The Finger Assembly attaches to the support brackets in four different modes to match the type of joint you are cutting.



Always read scales from directly overhead to avoid parallax problems.

This index line is used when setting the finger assembly scales. The line is illustrated in red for clarity, but is black on the jig.



All D4R jigs are shipped with "short" support brackets. Some illustrations in this guide show the longer support brackets used only with the M2 Multiple Mortise & Tenon Attachment.

*Note: Inch scales are shown here. Millimetre scales have identical layout.*

The active scale is always on the right of each scale assembly.

The inactive scale is always on the left of each scale assembly and is upside-down.

Each scale has its own mode icon (a drawing of the joint part made in that mode).

Scales are colour coded.  
Silver background for Through Dovetails.  
Green background for Half-Blind Dovetails.

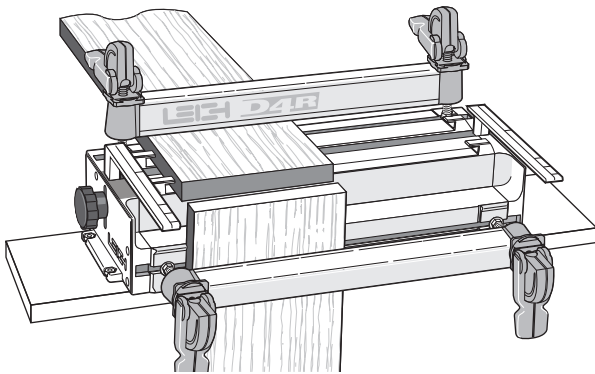
The specific settings for each scale are fully described in the appropriate chapters.

**1. TD TAILS**

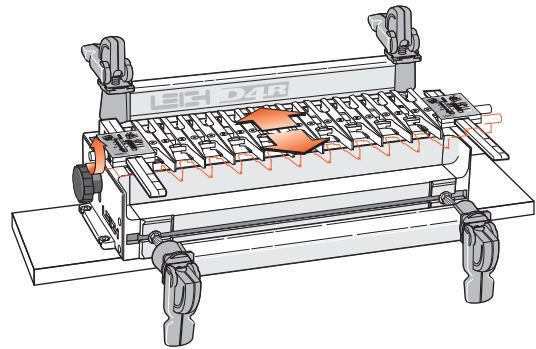
**3. HB TAILS**

**2. TD PINS**

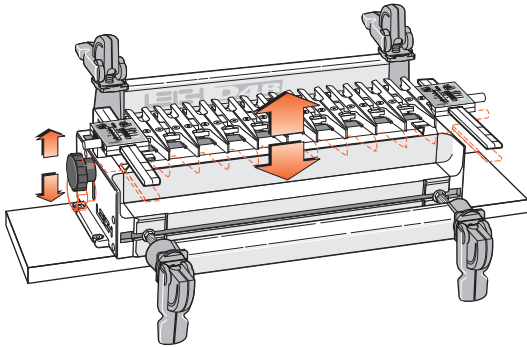
**4. HB PINS**



**4-1** The two clamp bars hold workpieces horizontally or vertically. The side stops align the boards in the correct position each time.



**4-2** The guidefinger assembly slides on to the support brackets above the workpiece. The finger assembly is adjusted in or out using calibrated scales on each end to suit different thicknesses of vertical boards. **Note:** The single rear indicator line on each support bracket is the only mark used in this guide. The front three lines are for the (optional) M2 Multiple Mortise & Tenon attachment.

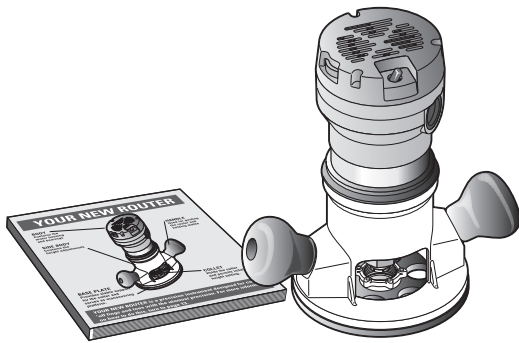


**4-3** The finger assembly is raised or lowered using the support brackets to suit different thicknesses of horizontal boards. ■

## Using Your Jig Safely

**Safety is not optional.**

*Read and follow the recommendations in this chapter.*




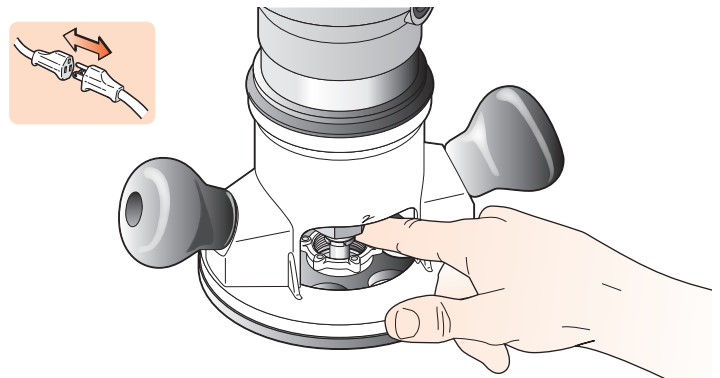
**5-1** Read the owner's manual that came with your router. It is essential to understand the router manufacturer's instructions completely. Always operate variable speed routers at the fastest possible speed.



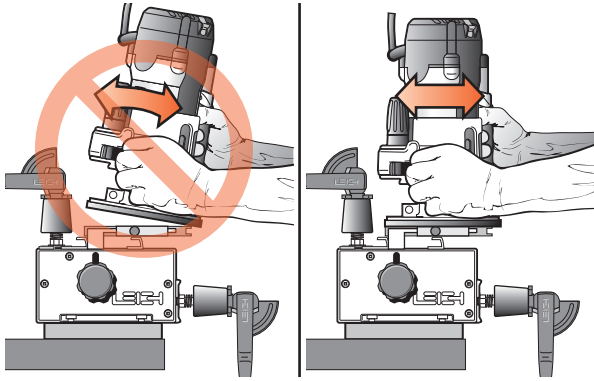
**5-2** Always wear approved safety glasses. Always wear hearing protection. Protect yourself from harmful dust with a face mask. For complete dust and waste collection, add a Leigh VRS (Vacuum & Router Support) to your jig.



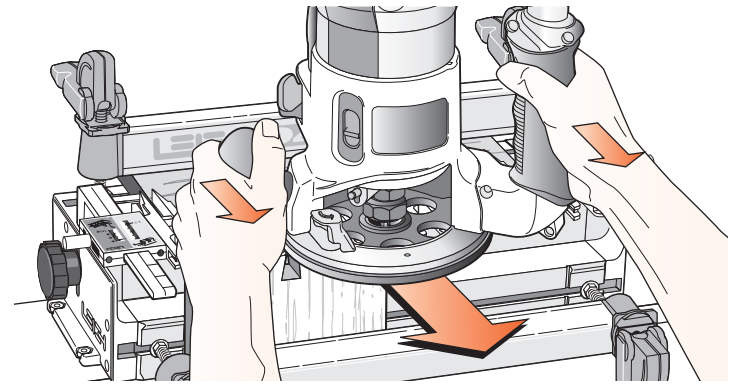
**5-3**  Never drink alcohol or take medications that may cause drowsiness when you will be operating a router.



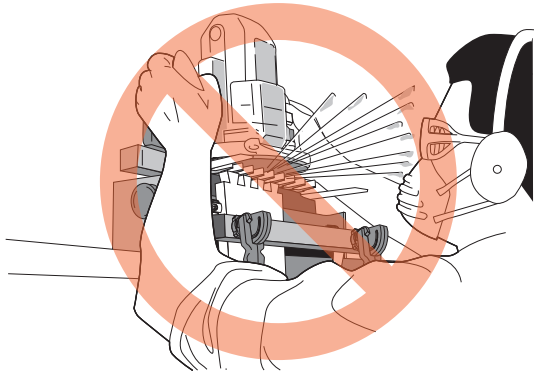
**5-4** Always disconnect the power source from the router when fitting bits or guidebushes, or making adjustments. Before connecting the router to the power source, make sure the bit and collet revolve freely in all the areas you plan to rout, and the bit does not touch the guidebush or jig.



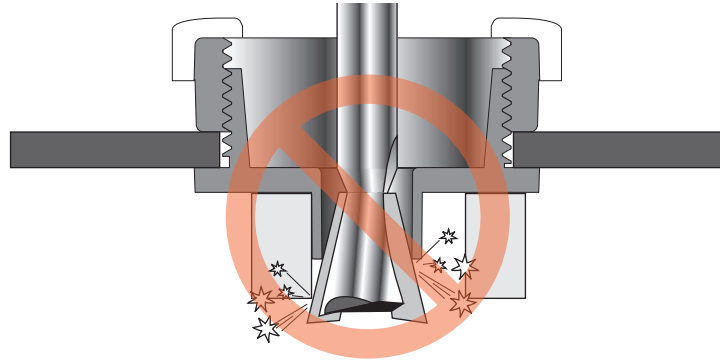
**5-5** Do not tilt the router on the jig. Keep the router flat on the jig assembly.  
*Note: The optional Leigh VRS attachment prevents router tilting.*



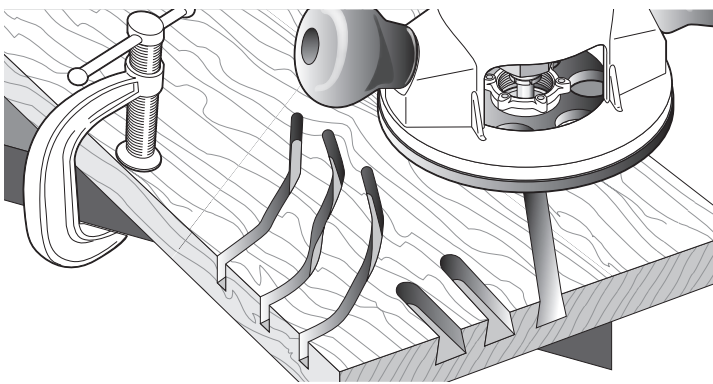
**5-6** If you insist on removing the router from the jig while it is still revolving, always pull it straight off the jig horizontally, and do not raise or lower the router until it is completely clear of the jig. With the Leigh VRS fitted to your jig you can simply park your router to one side.



**5-7** Do not rout at face level.



**5-8** Never release the router plunge mechanism when using dovetail bits. Check if your plunge router has a stop nut to prevent this from happening accidentally.

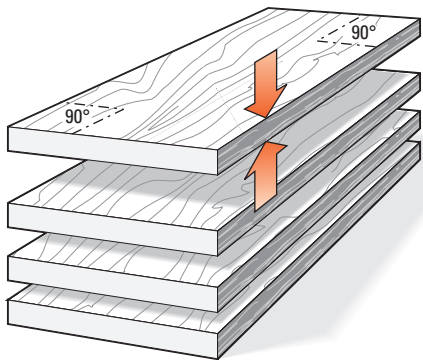


**5-9** If you have never used your router before, be sure to follow the router manufacturer's instructions for its use. Make plenty of simple open-face practice cuts *without a guidebush* before you try to use the router on the Leigh jig. You must, of course, always use a guidebush when routing on the Leigh Jig. ■

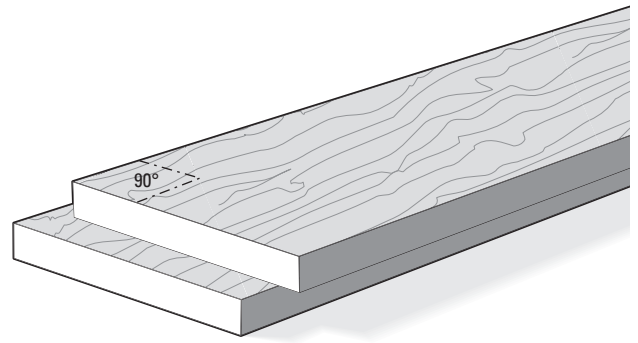
## Wood Preparation

"Garbage In - Garbage Out"...

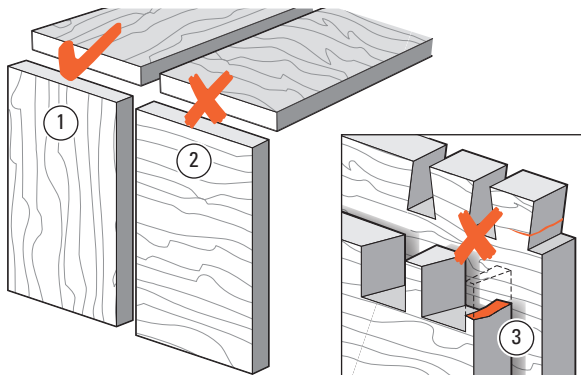
This adage of the computer age stands equally true for dovetail jigs.




**6-1** It is vital for accurately aligned joints that stock used on the Leigh jig must be prepared straight, flat, of even thickness and equal widths, with square ends and edges. *Note that plywood is generally unsuitable for routing because of tearout problems.*



**6-2** You will want to test the jig, so prepare some  $\frac{3}{4}$ " x  $5\frac{1}{2}$ " [20x140mm] boards. Cut them to length as you need them for the jig tests you want to perform. Use them for practice with the jig's various joint modes so you can see how the different modes work. **Remember, though, that two boards of different thicknesses can be joined just as easily.**

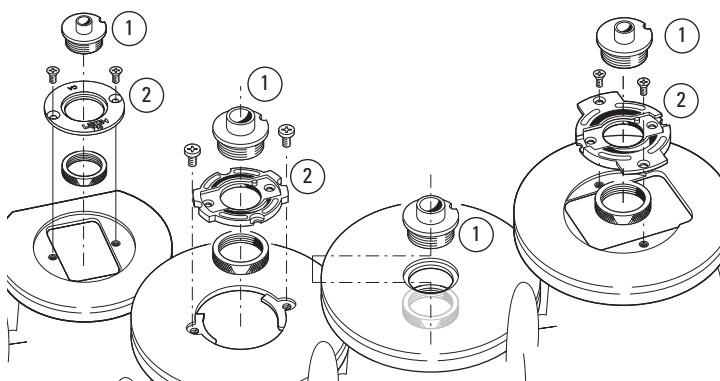


**6-3**  Dovetail joints are intended for joining end-grain to end-grain ①. Attempting to cut dovetails in side-grain ② does not work because:

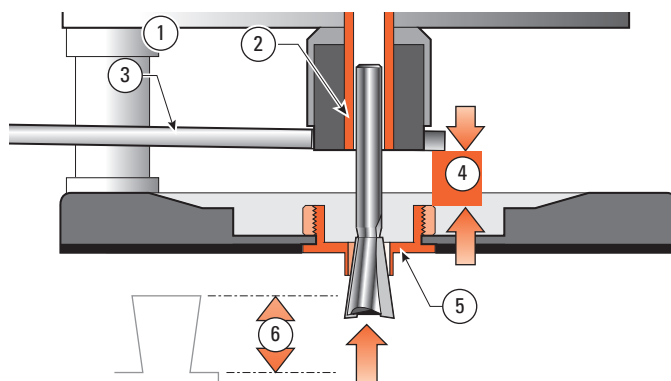
- A. The wood will tear out badly when routing.
- B. Even if you could rout them, the pins and tails would easily break off across the short grain ③, either during or soon after the assembly when the boards start expanding or contracting at different rates. ■



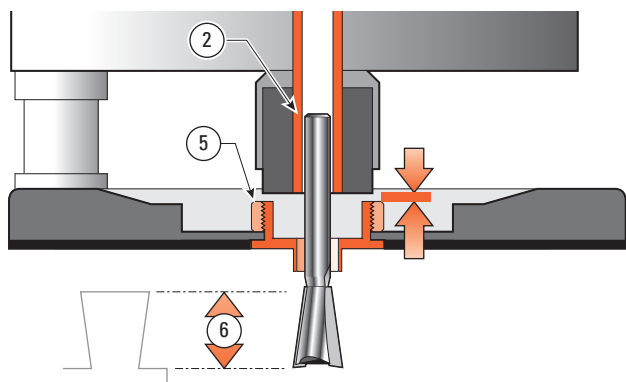
# Router Preparation



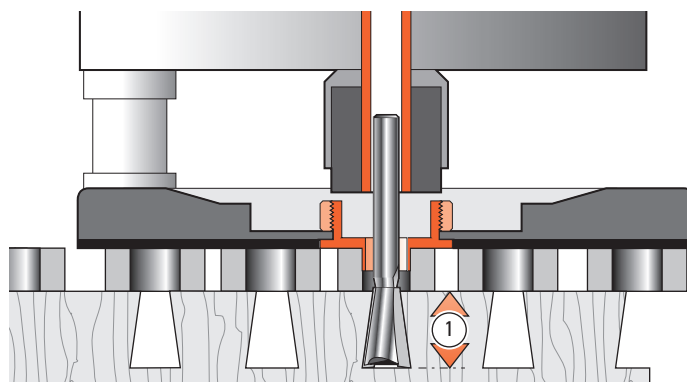
**7-1** The router of course, must always have the correct size of Guidebush fitted ①. Only two sizes are used for dovetailing, 7/16" [11,1mm] O.D. for all halfblind and smaller through dovetails, and 5/8" [15,9mm] O.D. for the largest through dovetail joints. Your router base may also require a guidebush adapter ②. Please see Appendix I "Guidebush Selection".



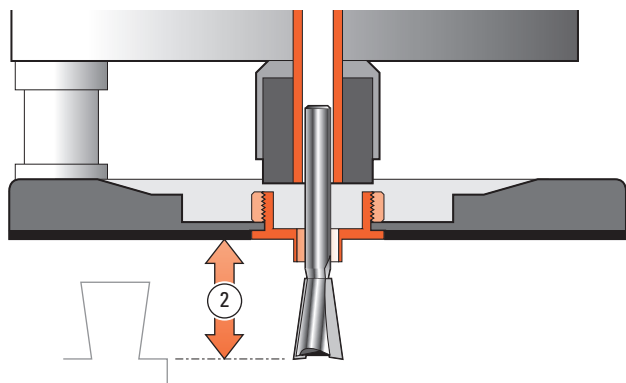
**7-2** When fitting a bit to the router ①, fit the shank as far into the collet ② as possible. Always rout with the collet as close to the guidebush as possible. Usually you can't securely grip the collet nut with a wrench ③ if the collet is at its optimum low position. Fit the bit so that the remaining travel ④ between collet and guidebush ⑤ will let the bit reach the required depth of cut ⑥.



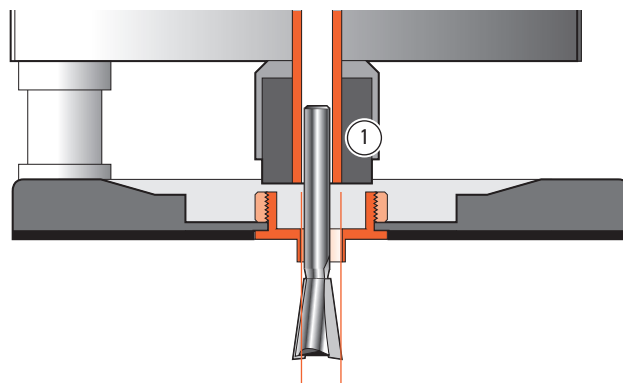
**7-3** Tighten the collet ② securely and lower the collet to adjust the depth of cut ⑥, but make sure the collet does not contact the guidebush ⑤. Some smaller collets can go down into the inside of the guide bush. Take advantage of this.



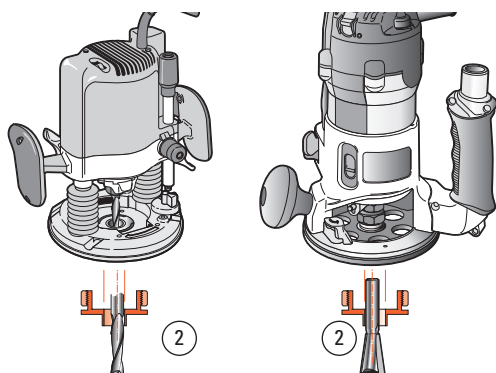
**7-4 Depth of Cut:** The depth of cut always refers to the actual depth of the cut into the wood beneath the guidefingers ①.



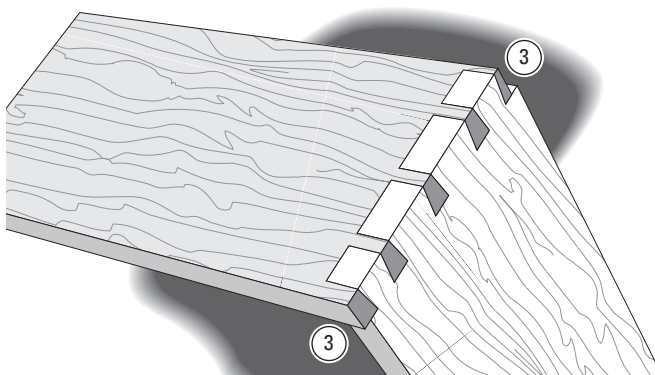
**7-5** Depth of cut is **not** the distance the bit projects from the router base. This is **bit projection** ②. This guide generally refers to depth of cut. Bit projection ② is always .450" [11,5mm] more than depth of cut.



**7-6** Ideally, the router collet (and bit) should be concentric (centred) to the guidebush as in figure 7-5. Regrettably, this is often not the case; the bit can be off centre (eccentric to) the guidebush ①. The illustration shows the problem highly exaggerated. The good news: bit to bush alignment doesn't affect joint fit or flushness; both are "adjusted out" in normal jig setup.

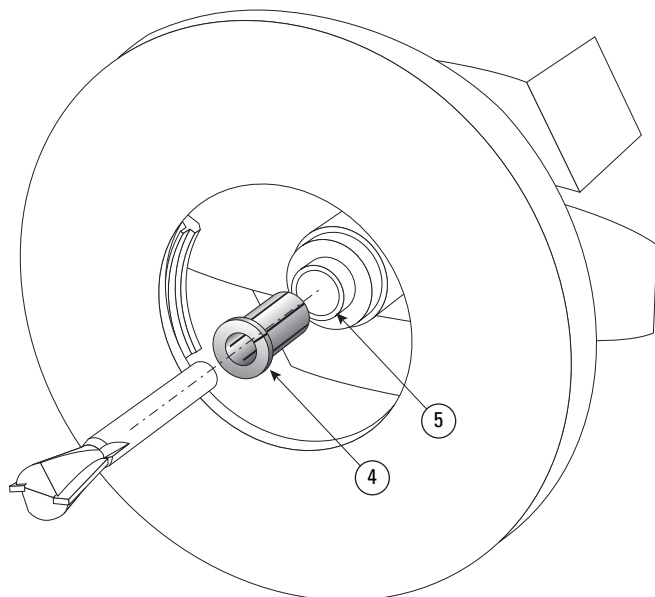


**7-7** Concentricity problems can only arise if two routers are used for through dovetails, (one for pins; one for tails). Routers with different bit to guidebush offsets ② (misalignment shown highly exaggerated)...



**7-8** ...will cause pin to tailboard ③ misalignment (again, shown highly exaggerated).

Fortunately, some newer routers have sub-bases that can adjust for concentricity. If you don't have this type, it might pay to stick to a single router for through dovetails.



**7-9 Shank Selection/Collet Reducer**

All Leigh Dovetail jigs are shipped with superior strength 8mm shank dovetail bits and a 1/2" to 8mm collet reducer. The reducer simply slides into the 1/2" collet of your router and the 8mm shank bit is inserted into the collet reducer. The collet is tightened as normal. The collet reducer is not required with 1/2" shank bits. ■