## LEIGH FINGER JOINT TEMPLATES

## User Guide

Using the F3, F18 and F24 Finger Joint Templates on Leigh D-Series \& SuperJigs


## Your new Leigh Finger Joint Template

You now own a superb finger jointing system. The Leigh Finger Joint template and adjustable e-Bush will help you rout finger or box joints with unique adjustment for precise tightness of fit.
"Finger" and "Box": Both words are used universally to title this simple but strong joint. As the first machine-made joint, it's old enough to be called antique, so we have been even-handed in using both terms throughout this guide.

We recommend that you first mount the template on your Leigh Jig, carefully following the instructions in the first section of the user guide. Then before you try to do any actual joinery routing, read the rest of the guide, following along with the basic functions. By all means, cut a few practice joints in scrap boards before you use the template to rout a precious hardwood workpiece.

If you have any questions that are not answered in this user guide, please call Leigh international customer support: 1-800-663-8932
or email: help@leighjigs.com.

For support contacts in your country of purchase see Appendix IV - Customer Support.

## LEIGH FINGER (BOX) JOINT SIZES

| Inch Templates | Full Size (Inches) |  |  | Half Size (Inches) |  |  | Quarter Size (Inches) |  | Half-Blind (Inches) |  |  | Double Sizes (Inches) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| F3 | 5/16 | 3/8 | 1/2 | 5/32 | 3/16 | 1/4 | 3/32 | 1/8 | 5/16 | 3/8 | 1/2 | 5/8 | 3/4 | 1 |
| F18 |  | 3/8 | 1/2 |  | 3/16 | 1/4 | 3/32 | 1/8 |  | 3/8 | 1/2 |  | 3/4 | 1 |
| F24 |  | 3/8 | 1/2 |  | 3/16 | 1/4 | 3/32 | 1/8 |  | 3/8 | 1/2 |  | 3/4 | 1 |
| Metric Templates | Full Size (mm) |  |  | Half Size (mm) |  |  | Quarter Size (mm) |  | Half-Blind (mm) |  |  | Double Sizes (mm) |  |  |
| F3M | 8 | 10 | 12 | 4 |  | 6 | 2 |  | 8 | 10 | 12 | 16 | 20 | 24 |
| F18M |  | 10 | 12 |  | 5 | 6 |  | 3 |  | 10 | 12 |  | 20 | 24 |
| F24M |  | 10 | 12 |  | 5 | 6 |  | 3 |  | 10 | 12 |  | 20 | 24 |

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## Are there operational differences between the F3 and F18/24?

No. While the F18 and F24 are illustrated for most of the procedures in this guide, the differences between the F3 and the F18/24 do not affect the operational instructions. Movements and settings
illustrated in each step are identical whether performed on the F3/F3M, F18/24, or F18M/24M. Icon types for template pin positions are the same on all templates.

## F18/F18M



F3/F3M



## Important: Inches and Millimetres

Because Leigh makes F3, F18 and F24 Templates in inch and metric models, measurements in this user guide are shown in both inches and millimetres. Dimensions are indicated with "inches" first, followed by "millimetres" in square parentheses.
Examples: $1 / 2$ " $[12 \mathrm{~mm}]$, or
$3 / 4$ " $\times 51 / 2$ "x8" or longer [ $20 \times 140 \times 200 \mathrm{~mm}$ ].
Do not be concerned if the inch/millimetre equivalents are not always exact. Just use the dimensions which apply to your jig.

## Reading the Settings Illustrations

The F Template scales have dual markings for inch and metric. Note: The scales on some templates may indicate a $1 / 4$ " $[6 \mathrm{~mm}]$ size. This comb size is only available on F1600 Templates.

The template scales are illustrated in a panel overlaying the main illustration (1) when settings are specified in an instruction. The inactive (upside down) part of the scale is not shown in the illustration.
Scale settings for instructions are shown with a red line (2).

When calibration marks on the support brackets (3) are highlighted, they are illustrated in red for clarity. On the jig, the lines are black.

## Scale Icons

The Leigh Finger Joint Template has two modes. Position the selected comb to the front (toward you, the operator). This places the
Inactive scale upside down.
and
Active scale right side up.


## Which Way Round Should the Board Go?

We devised these icons to indicate which side of a board faces out (toward you when it is clamped in the jig), and which faces are in or out when assembled.


Boards are clamped in the jig both "face in" and "face out" for alternate end cuts; e.g. all regular box joint ends are routed this way

Inside of board. All half-blind box joints are clamped in the jig with the inside $\square$ face away from the jig toward you, the operator.

Shaded icons are on the other side of the board.

## How to Read the Symbols



To help you understand the instructions and illustrations in this user guide, we have used a number of international symbols, plus a few special ones of our own. They are all explained below. You needn't worry about memorizing these symbols now because they are repeated frequently throughout the guide, and you will soon get used to them.

## The following symbols indicate:

This edge against side stop
This edge against side stopAs above, other side of board

1
Caution: use special care for this operation
(1)(2)(3) Numbered References in text

## $\pm \quad$ Plus/Minus

$=\quad$ Equals

## Assembly, Mounting and Template Alignment

## Assembly and Mounting

Before you begin mounting the Leigh Finger Joint Template to your Leigh Jig, make sure you have received the model ordered (Inch or Metric), and all the necessary parts.

1. 1 e7-Bush incl nut (F3 only)

1 e8-Bush incl nut
1 e10-Bush incl nut
1 Pin Wrench
1 User Guide
2. 1 Template "inch" assembly, or:
1 Template "metric" assembly

If any of these items are missing, please notify your supplier or Leigh Industries immediately.

Except for the scale thumbscrews (packed in a bag attached to the template), your Leigh F-Template comes fully assembled and requires only mounting and indexing to your Leigh jig. This procedure is critical to the accuracy of the finished joinery, so please follow the mounting instructions carefully.



1-1 Super18 \& Super24 Jig Owners D-Series jig owners go straight to 1-6.
Raise both end support brackets and tighten the support bracket knobs (1).


1-2 Install the two thumbscrews a few turns into the scales (1). Loosen the scale lock screw (2) at both ends (by one turn only).


1-3 Slide the template onto the support brackets, with the $3 / 8 "[10 \mathrm{~mm}]$ comb toward you (1) and set on the $3 / 8$ " $[10 \mathrm{~mm}]$ setting.
Tighten both thumbscrews (2).
Do not lower the assembly onto the finger support board.


1-5 ...pull up on the template bar (1) while pushing down on the scale (2) to ensure the bar is touching the two registration pads (3) inside the scale. Maintain pressure and tighten the scale lock-screw (4). Repeat at the other end. Remove the block and your template is ready to use. To maintain correct template alignment, follow this procedure whenever you remove the scales from the finger assembly.


1-4 Align the template so that its centre hole aligns with the hole in the bar and firmly insert the template pin (1). Angle trim the end of a straight block and clamp it tight against the left stop; the top protruding into the last $3 / 8$ "[10mm] opening (2). Move the combined assembly to the right until the left side of the opening touches the block (3). Taking care to not move the template assembly...


## 1-6 Mounting F3/F3M to D-Series Jigs

Procedure is the same for Inch and Metric 24" templates.
Make sure your jig is mounted as per its User Guide, and the spacer board is clamped into position.


1-7 D1258, D1258R and D3 jig owners: If you already own the Leigh Mortise and Tenon Attachment, fit its extended support brackets (1) and use for all finger joint and dovetail procedures. If not, mark the arrow pointers on the standard support brackets (2) with a dark felt pen. Some D4 and D4R Jig owners already have extended brackets. Late model D4R brackets are shorter.

## Centring Template on Jig All 24" D series jigs



1-9 Loosen the scale bar set screw (1), at each end of the template.

1-11 Centring the F3 Align the template so that its centre hole (1) aligns with the hole in the bar. Insert the template pin (2) with a gentle twist to seat it. Angle trim the end of a straight block; clamp tight against the left stop and into the first opening (3). Move the combined assembly so the left side of the opening touches the block (4). Taking care to not move the template assembly...



1-8 Before installing the F3/F3M on any $24^{\prime \prime}$ D series jig with adjustable side stops, set and index the stops according to the jig's user guide. Are the stops $1^{1 / 2 "}$ " $[38 \mathrm{~mm}]$ in from each end of the jig body extrusion (1) and $24^{1 / 8 "}$ " 613 mm$]$ apart (2)? If not, do it now.
D4Rjigs have fixed side stops.


1-10 Slide the template assembly onto the jig support brackets with the $3 / 8$ " $\& 5 / 16^{"}[10 \& 8 \mathrm{~mm}]$ combs toward you and lower it gently onto the jig's spacer board (4). Make sure the scale reading is the same on both scales, then tighten the thumb screws (3).


1-12 ...tighten both scale set screws (1) and (2). Remove the block and your Leigh F3 is ready to use.

CHAPTER 2

## Using Your Template Safely

## Safety is not optional.

Read and follow the recommendations in this chapter.


2-1 Read the owner's manual that came with your router. It is essential to understand the router manufacturer's instructions completely.


2-2 Always wear approved safety glasses.
Protect yourself from harmful dust with a face mask.
Always wear hearing protection.
For complete comfort and convenience, get yourself a Leigh VRS
(Vacuum Router Support) to match your jig model.


2-3
Never drink alcohol or take medications that may cause drowsiness when you will be operating a router.


2-4 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.


2-5 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.


2-6 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.


2-8 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.

# Operation Concept and Basic Template Functions 

## Template Modes

Template pin hole icons denote the type of joint and edge finish from each position.


Throughout the manual, the proper pin location for each step is highlighted with red in an inset. Only the front (active) pinholes will be shown.

## Scale Modes



Reading scales from directly overhead improves setting accuracy.

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

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


## F18 and F24




3-1 The active comb (the one you wish to use) is positioned toward you at the front of the jig. Depending on the Template model and comb size selected, the active comb may start at either the right, or left-hand side of the jig. Combs that are the full width of the template always start at the left side.


3-2 Clamp your work pieces against the front side stop or...


3-3 ...the mating rear side stop, depending on which procedure is to be used.


3-4 The template control pin engages the template to the template bar using precisely positioned holes (1). The active template pin holes are always at the opposite end of the template, out of the way of the router. Most illustrations will have an inset showing the correct template pin hole position for the procedure.


3-5 Mating joints routed under the same comb have to be offset to achieve correct joint alignment. On Leigh templates the offset is achieved by moving the template left or right by half the pitch of the comb. This movement is controlled by the template pin, at the other end of the template (1). Note that the template is close to the scale (2).


3-6 In this illustration, the template is moved to the right by half the comb pitch and positioned by the template pin (1) to rout the mating half of the joint in 3-5. Note the increased gap between the scale and template (2).

# Guidebushes and the Unique Leigh e-Bush 



4-1 Unlike plain circular template guidebushes (1), the e-Bush is elliptical (2). This innovation effectively changes the guidebush "active diameter" when it's rotated, and provides benefits not possible with a plain round guidebush. The F18 \& F24 Templates include two Leigh e-Bushes*: e-8 for $3 / 8^{"}$ [ 10 mm ] combs, and e-10 for $1 / 2 "[12 \mathrm{~mm}]$ comb; the F3 includes those plus the e-7 for $5 / 16$ " $[8 \mathrm{~mm}]$ comb.


4-3 The e-Bush (e-8 illustrated) fits to the router base or to a guidebush adaptor in the base. See Appendix $I$. The ellipse or oval shape major axis (1) is $-.500^{\prime \prime}$, and minor axis (2) $-.480^{\prime \prime}[12,7 \times 12,2 \mathrm{~mm}]$. Turning the e-Bush 90 degrees in the router base changes the active guide size by $.020 "[50 \mathrm{~mm}]$ providing infinite adjustment and recordable settings for perfectly fitting box joints.


4-2 Joint Fit and Joint Pitch Box joints routed with standard sized straight bits (1) and standard sized guidebushes (2) against straight guide surfaces (3) on pitch centres exactly two times the bit diameter (4) will guarantee a loose fitting joint. Bits, guidebushes and templates are manufactured with necessary plus/minus tolerances and the router will have some degree of run-out, or "wobble".


4-4 Here's how it works. In normal use, the operator does not rotate the router more than a few degrees either way (1). In fact, because of potential bit-to-bush eccentricity problems it is advisable to minimize router rotation on jigs (2).


4-5 Establish the orientation in which you normally hold and operate the router on the jig. Now, up-end the router in the same orientation. Make a small scratch line or permanent ink mark on the router base or e-Bush adaptor at the 12 o'clock position (1).


4-6 With the e-Bush (1) turned to " 10 " in the base (2) the active "diameter" is increased, allowing less side-to-side movement, and resulting in smaller sockets and larger pins. A tight fit! Scale and movement are exaggerated in this sequence of illustrations.


4-7 Turning the e-Bush to zero allows more side-to-side router/ bit movement, and more wood removal, producing larger sockets and smaller pins, and thus a loose fit.


4-8 A few trial-and-error test cuts and e-Bush adjustments will allow you to establish the correct pin and socket sizes for a perfect fit. Note: One division of the e-Bush changes the joint glueline interface by two thousandths of an inch, that is, $0.002^{\prime \prime}$ or $0,050 \mathrm{~mm}$.


4-9 When you have the best joint fit, mark the setting in pencil here. Different wood hardness may require slightly different settings, so also note the wood species. Use the same bit next time.

## Board Width Selection

Board widths are determined by the number of fingers you want in your design and whether the joint is symmetrical or asymmetrical. This chapter makes it easy to determine appropriate widths for the Leigh Finger Joint Templates.


## 5-1 Board Widths and Joint Symmetry

Unlike the infinitely variable Leigh Dovetail Jig, a fixed template cannot accommodate any width of board and still produce a neat and even finish on both side edges of a joint. The boards must be cut to specific widths, depending on the pitch of the comb.


5-2 Symmetrical joints have pins (1) on both side edges of one board and sockets (2) on both side edges of the mating board. Asymmetrical joints have a pin (3) on one side edge and a socket (4) on the other side edge of each board.


5-3 Symmetrical joints are essential for half-blind corners (1). However, ordinary box joints may be asymmetrical and look okay (2).


5-4
The comb pitches on the Leigh Finger Joint Templates are all 2 times the bit diameter plus $1 / 32 "[0,75 \mathrm{~mm}]$, so you cannot simply use bit diameter to calculate board widths. See the board width charts on Page 12. For symmetrical square joints use board widths in red column. For asymmetrical square joints use widths in grey column.






