

# Bench Operation See other side of book for Router Table Operation

**Dedicated Customer Support** 

1-800-663-8932



# Your New Leigh R9PLUS Dovetail Jig for Dovetails and Box Joints

**Note: There are two user guides in this book.** This user guide is for Bench Operation. Flip the book over for Router Table Operation.

The R9PLUS Dovetail Jig was designed to overcome the restrictions of fixed width jigs. Because of its unique "step over" feature, it is possible to rout Through Dovetails and Box Joints on boards of **ANY** width!

The R9PLUS can be used as a template jig with a hand-held router or as a router table template. In either mode, you will be able to rout multiple sizes of perfectly fitting through dovetails and box joints.

#### **Customer Support**

If you have any questions that are not answered in this user guide, please call Leigh Customer Support **1-800-663-8932** in North America or email **help@leighjigs.com**. For support contacts in your country of purchase see the Customer Support section of the Appendix.

Reminder: If at first you don't succeed, read the instructions!

#### **Important! Inches and Millimeters**

Text and illustrations in this English language user guide indicate dimensions in both inches and millimeters, with "inches" first, followed by "millimeters" in square brackets, i.e. ½"x 2"[12x50mm].

Do not be concerned that the inch/millimeter equivalents are not mathematically "correct." Just use the dimensions that apply to your guides and bits.

U.S. Patent No. 8,534,329

# What's in the Box:

	PART NO.	QUANTITY	PART DESCRIPTION
	2000	1	R9PLUS Template
	2090	1	User Guide
BA	G 1		
	2030	2	Latches
	2040	1	Glide for Router Table
	2080	1	Sidestop 2000
BA	G 2		
	2010	3	Pin Plates
BA	G 3		Le Grand Control of the Control of t
	2050	2	Beam Assembly Screws, 1/4"-20 x 23/4"
	2055	2	Beam Assembly Wing Nuts, 1/4"-20
	2060	2	Latch Screws, Phillips, 10-24 x ¾"
	2065	2	Latch Nuts, Nyloc
	2070	11	Wood Screws, Phillips Flat Head, No.8 x 11/4"
	2075	1	Sidestop Screw, Phillips Round Head, No.8 x 11/4"
BA	G 4		The state of the s
	e10	1	e10 eBush (Guide Bushing)
	80-8	1	Dovetail Bit, ½"- 8°
	160	1	Straight Bit, ½" Two Flute
	172-8	1	Collet Reducer, ½" to 8mm
	730V	1	Pin Wrench
BA	G 5		
	2020	2	Clamp Locators
	9505	2	F-Clamps
			·

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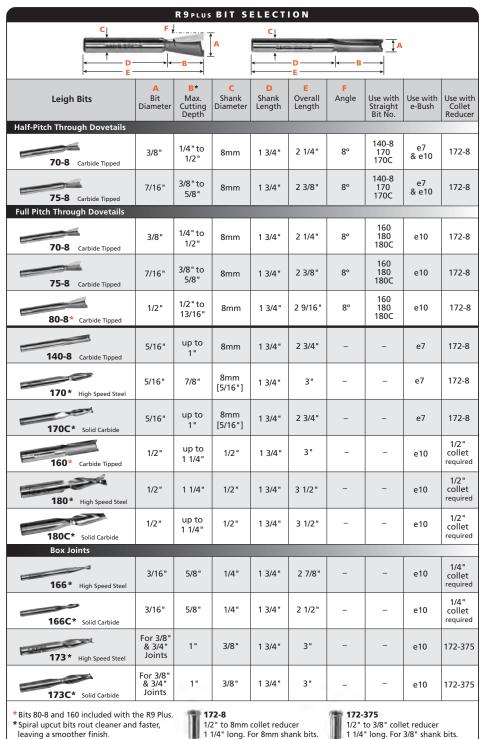


# You will need:

- A wooden beam 1½" x 3½" x 30". See jig assembly for optional beam sizes.
- 5/8" [15mm] MDF for sacrificial backer boards and clamp face boards. See jig assembly for optional sizes.
- A No.2 Phillips screwdriver
- An electric drill, preferably bench or pedestal, but hand-held will work
- 3/32" drill bit for pilot holes. **Note:** use 1/8" or 9/64" for hardwood.
- 3/4" [19mm] Forstner or similar bit for the clamp holes
- 5/16" drill bit for the back up board holes,
- A countersink bit
- A router with adaptor for the e10 guide bushing

#### **R9**PLUS Bit Selection

This chart shows all bits that can be used on the R9PLUS.



1 1/4" long. For 3/8" shank bits.

### **R9**PLUS **Accessory Kit**

This kit offers great savings over individual prices.



#### **Item ACR9 Includes:**

70-8 3/8" dovetail bit (for through dovetails) 75-8 7/16" dovetail bit (for through dovetails)

140-8 5/16" straight bit (for half-pitch through dovetails) **e7** eBush (for 70-8, 75-8 for half-pitch through dovetails)

166 3/16" spiral upcut bit (for box joints)

173 3/8" spiral upcut bit (for box joints)

**172-375** 1/2" to 3/8" collet reducer

#### **R9**PLUS **Pin Plates**

2010PR Package of 2

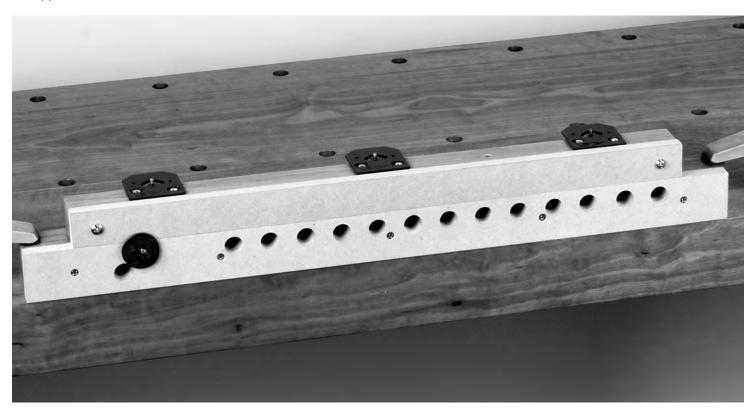


# CHAPTER 1 Making the Beam

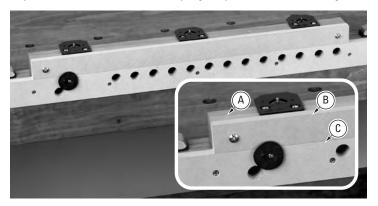
The heart of the R9PLUS Dovetail Jig is the beam. A typical beam, shown below, is 30"[762mm] long. A 30"[762mm] beam can accommodate board widths of up to 18"[457mm]. Beams can be made shorter (minimum 20"[508mm]) or longer, in 10"[254mm] increments. Because of the template's unique "step over" ability, beams can be made longer to suit any width project. The beam is equally suited to router table or bench operation.

The following instructions will guide you through the beam making process. Care in building the beam will ensure great joinery every time with the R9PLUS. In addition to these instructions, a two page drawing, complete with all dimension information, is provided at the end of the user guide.

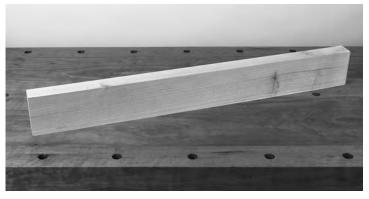
Important: Please use this chapter's step-by-step instructions in conjunction with the technical drawing on pages 38-39 of the Appendix.



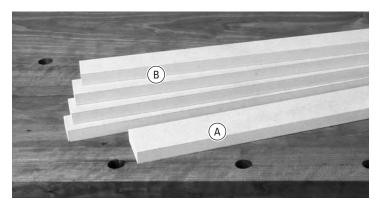
# Important: Please use these step-by-step instructions in conjunction with the technical drawing in the Appendix, pages 38-39.



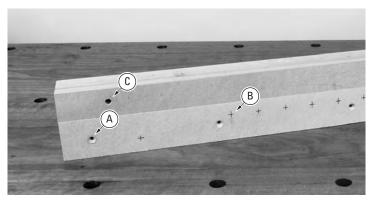
**1-1** The beam assembly consists of the main beam (a), the sacrificial backer board (b) and the clamping surface (c). We recommend making the clamping surface and sacrificial board from MDF, 1/2" to 3/4"[12,7 to 19mm] thick. Hardwood or softwood may also be used.



**1-2** Start with a straight, flat and square 30"[762mm] length of wood,  $1\frac{1}{2}" \times 3\frac{1}{2}" \times 30"[38mm \times 89mm \times 762mm]$ . **Note:** A 30" section of common  $2 \times 4$  can be used if it is straight, flat and square.



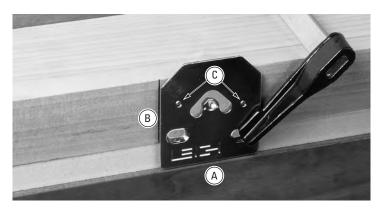
**1-3** Cut a piece of MDF 30" long and  $2\frac{1}{8}$ " wide [762mm x 54mm]. This will be your clamping surface ⓐ. Then cut your sacrificial boards  $1\frac{1}{2}$ " x 30"[38mm x 762mm]. You may want to cut a number of extra sacrificial boards now to use as replacements ⓐ.



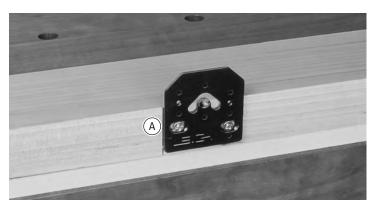
**1-4** Lay out the mounting screw holes (a) and clamp holes (b) as per the drawing on pages 38-39. Drill and countersink the screw holes on the clamping surface. Drill the 1/16" [8mm] holes (b) in the sacrificial board. This piece can be reversed and flipped four times to use up all four surfaces.



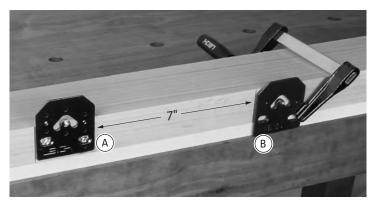
**1-5 This procedure is critical to the accuracy of the jig.** Before attaching the MDF boards to the beam, use each pin plate as a drill guide. First, mark a line  $4\frac{1}{2}$ "[114mm] in from the left end of the **top of the beam** and square it across (a). Next, stack the clamping surface (b), sacrificial board (c) and beam (d) near the edge of the workbench and clamp in place (c).



**1-6** Clamp a pin plate with its wide straight side flush to the flat bench surface (a) and its side edge on the line (b). Using the 2 small holes (c) in the pin plate as a drill guide, drill two <sup>3</sup>/<sub>3</sub>2"[2,5mm] pilot holes 1"[25,4mm] deep. These holes will correctly position the pin plate on the beam. **Note: If you are using hardwood, redrill these holes with a larger bit, <sup>1</sup>/<sub>8</sub>" or <sup>9</sup>/<sub>6</sub>4", to avoid breaking screws.** 



**1-7** Use two No.8 x  $1\frac{1}{4}$ " [38mm] wood screws (included) to *lightly* attach the first pin plate with its left edge flush to the line on the top of the beam. Note: The pin plate is moved up from the drilling position (see 1-6) to align the screw slots in the pin plate with the pre drilled holes



**1-8** Square a second line across the beam board exactly 7" [178mm] from the right edge of the first pin plate (a). Clamp the second pin plate (b) flat on the workbench and against the line. Repeat the drilling and attaching procedure as before.

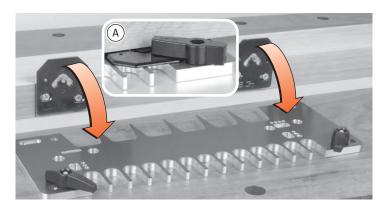
Repeat this procedure for each successive pin plate.



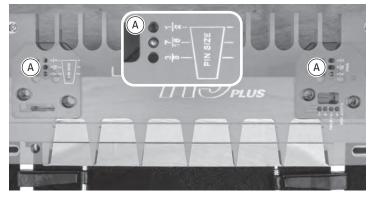
**1-9 Assemble the Latches** There are three parts to each latch assembly: the latch screw (a), the nyloc nut (b) and the plastic latch (c). Press the nyloc nut into the hexagon opening in the top of the plastic latch with the white nylon insert facing up. Next, screw in the latch screw from the bottom of the latch. Do not tighten the screw at this time.



1-10 Pin Plate "Pin" The template has positioning holes that allow it to sit perfectly on top of the raised pin (a) of each pin plate. The pin plate sits flat on the beam (b). Note: When the sacrifical board (c) is installed, the top of the pin plate will be level with the top of the sacrificial board.



**1-11** Attach the latches to the keyhole slots and turn to engage the pin plates (a). Adjust the latch screw tension so that the latches are stiff to turn onto the plates (seen from underside of the template).



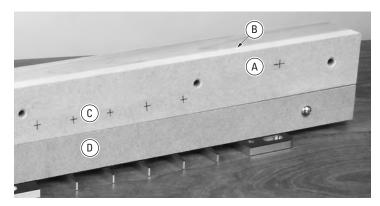
**1-12** Mount the template on the left pair of pin plates using the  $\frac{1}{16}$ " [11mm] pin position **(A)**.



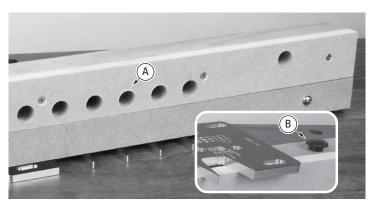
**1-13** Turn the assembly upside down. Take a piece of the predrilled sacrificial board and lay it flush on the template.



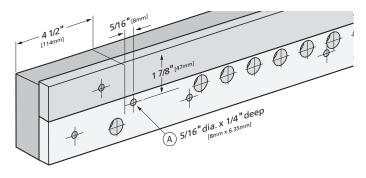
**1-14** Using the two ½16"[8mm] holes as drill guides, drill two ½16"[8mm] holes through the beam. Attach the sacrificial board at the left end with a ¼-20 machine screw and wing nut. Then move the template to its second position and install the second screw.



**1-15** Place the clamping surface (A) against the beam (B), flush against the sacrificial board. Be sure the clamp hole layout marks (C) are next to the sacrificial board (D). Screw the clamping surface to the beam through the countersunk holes. If screwing into a hardwood beam, first drill pilot holes in the beam.

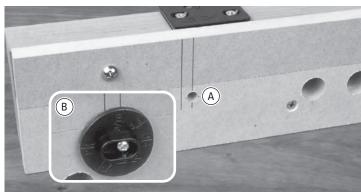


**1-16 Clamp Holes** Drill all ¾"[19mm] clamp holes ⓐ square to the beam, through the clamping surface and beam. Next, drill two holes (as per beam drawing), ¾6"[8mm] diameter and ¾16"[14mm] deep, for the table glide ⓐ (used for router table operation only).

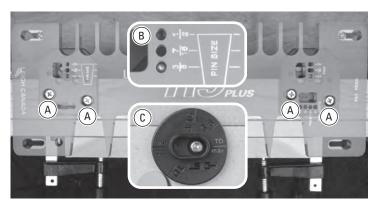


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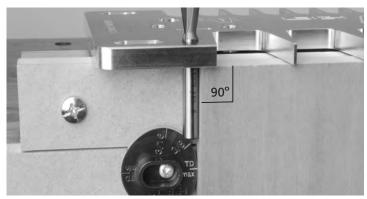
**1-17 Sidestop Positioning** Create layout lines as indicated above for the sidestop (a). **Note:** Be precise. Sidestop positioning is very important.



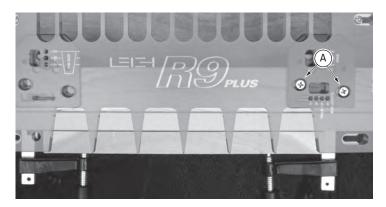
**1-18** Using a Brad Point or Forstner bit, counter bore a  $\frac{1}{6}$  [8mm] hole ⓐ,  $\frac{1}{4}$  [6,35mm] deep for the sidestop hub. Then, using a  $\frac{3}{32}$  [2,5mm] bit, drill a pilot hole for the sidestop mounting screw. Attach the sidestop to the beam with the provided No.8 x  $\frac{1}{4}$  [30mm] round head screw ⓐ.



**1-19** The template will now be used to precisely position the pin plates. Slightly loosen all pin plate screws (a) just enough so that the pin plates can move side to side. Position the template on the pin plates in the 3/8"[9,5mm] position (b). Set the sidestop to the TD Max position (c).



**1-20** Clamp a square board against the sidestop and flush under the template. Insert the shank of the No.80-8 bit into the 1/16" [8mm] hole in the template. Move the template and pin plates laterally until the shank of the bit just touches the edge of the board. Now tighten the first pin plate.



**1-21** Gradually tighten the second pin plate screws (A) making sure the template is not binding on the pins. Move the template to the second position and repeat the procedure with the third pin plate.



**1-22 Optional Hold-down for Bench Use** Notch out the ends of the beam in order to clamp beam assembly to a bench and use in hand-held router mode.

Important: The beam may expand or contract with humidity changes. Use the 3/8" [9,5mm] holes to adjust the pin plates as required.

# CHAPTER 2 Glossary of Symbols

### Which Way Around Should the Board Go?

The following symbols/icons are used throughout this user guide. They indicate which side of a board faces out (toward you, the operator, when clamped in jig), which faces are in or out when assembled, and which edge goes against the sidestop. Dashed line icons indicate the other side of the board.

"Outside" of board

▼ "Inside" of board

"Either side" of board

"Outside" of board (on other side of board)

"Inside" of board (on other side of board)

"Either side" of board (on other side of board)

This edge" against side stop

"This edge" against side stop

"This edge" against side stop (on other side of board)

"This edge" against side stop (on other side of board)



**2-1** Icons such as the one above indicate which side of the board faces out (toward you, the operator) when clamped in jig, and which faces are in or out when assembled.



**2-2** Box joint boards are clamped against the beam both "face in" and "face out" for alternate end cuts. With box joints, the same side edge always goes against the sidestop.

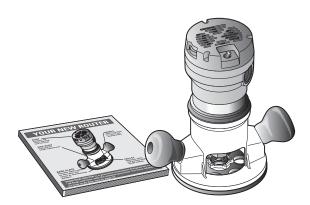


**2-3 Note:** Because through dovetail pin and tail boards face only one way, both side edges are (alternately) used against the sidestop.

# CHAPTER 3 Using Your Jig Safely

## Safety is not optional.

Read and follow the recommendations in this chapter.



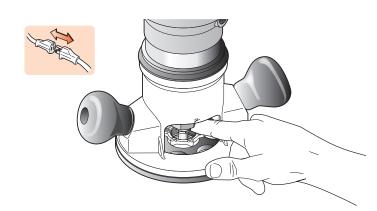
**3-1** Read the owner's manual that came with your router. It is essential to understand the router manufacturer's instructions completely.



- **3-2** Always wear:
- approved safety glasses;
- a face mask to protect yourself from harmful dust;
- hearing protection.



**3-3** • Never drink alcohol or take medications that can cause drowsiness while operating a router.



**3-4** Always disconnect the power source from the router when fitting bits or guide bushings, 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, not touching the guidebush or jig.





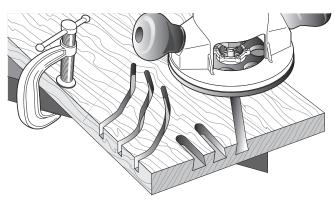
**3-5** Do not tilt the router on the jig. Keep the router flat on the jig assembly.



**3-6** 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.



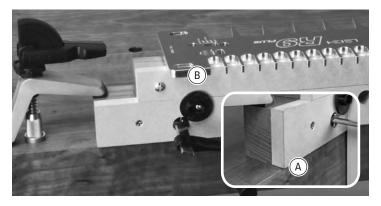
**3-7** Do not rout at face level.



**3-8** If you haven't used a router before, be sure to follow the router manufacturer's instructions. Make plenty of simple openface practice cuts without a guide bushing before trying to rout with an eBush on the R9PLUS. **You must always use an eBush with the R9PLUS.** 

# CHAPTER 4 Basic Jig Functions

Beam Positioning Clamping Procedure Template Positioning



# **Beam Positioning**

**4-1** The beam assembly is clamped in position with the front edge (A) slightly overhanging the bench front and the active comb of the template (B) facing the operator.

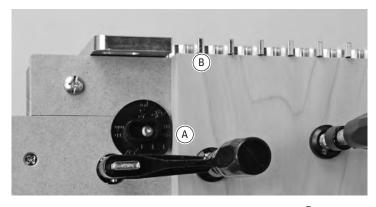


### **Clamping Procedure**

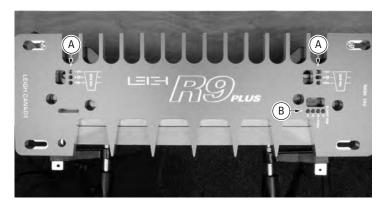
**4-2** Each of the F-Clamps included with the R9PLUS is fitted with a clamp locator ⓐ. The clamp locators are pressed onto the clamp arm and should not be removed.

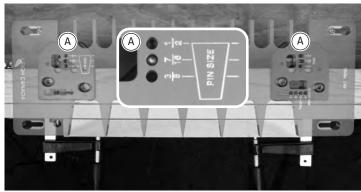


**4-3** Squeeze the tips of the clamp locator (a) and insert through a clamp hole in the beam. Clamp locators hold the clamp arm firmly in place while the clamp's screw arm is attached from the opposite side of the beam.



**4-4** Boards are always clamped against the sidestop (and flush under the template (B).





# **Template Positioning**

**4-5** The engraved side of the template is always up. Template holes (a) are for through dovetail pins. Template holes (b) are for through dovetail tails and box joints.

**4-6** The template holes are for positioning the template on the pin plates ⓐ. Most illustrations have an inset showing the correct pin position for the procedure. ■

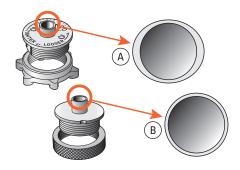
# CHAPTER 5 The Leigh eBush

Joint Fit Adjustment eBushes and Adaptors eBush Adaptor Selection

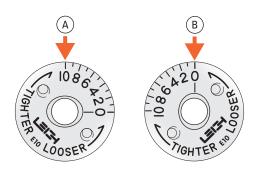
Note: Normal tolerances with bits, guide bushings and router runout will generally produce poor fitting joints. Leigh elliptical guide bushings (e7 and e10) solve this problem.

Patents for all Leigh elliptical guide bushings: U.S. 8,256,475 UK GB2443974

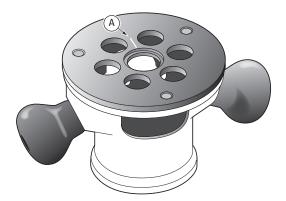
## Joint Fit Adjustment



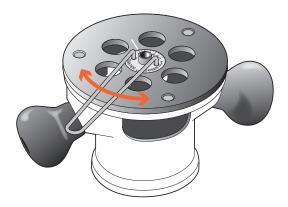
**5-1** The Leigh eBush barrel is elliptical (a), unlike plain circular template guidebushes (b). When rotated, the effective diameter of the barrel changes, allowing fit adjustments as small as .001"[0.025mm]. The e10 eBush is included with the R9plus.



**5-2** With the eBush turned to "10" (a) in the base the active "diameter" is increased, allowing less side-to-side movement, resulting in smaller sockets and larger pins. Turning the eBush to "0" (b) allows more side-to-side router/bit movement and more wood removal, producing larger sockets and smaller pins, and thus a looser fit.

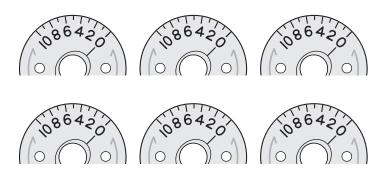


**5-3** Make a small scratch line or permanent ink mark on the router baseplate (a) or guidebush adaptor at the 12 o'clock position.



**5-4** All settings for the eBush will be aligned to the scratch or ink marks on the router. The eBush will always be set on index mark 5 as a starting point for dovetails and box joints.



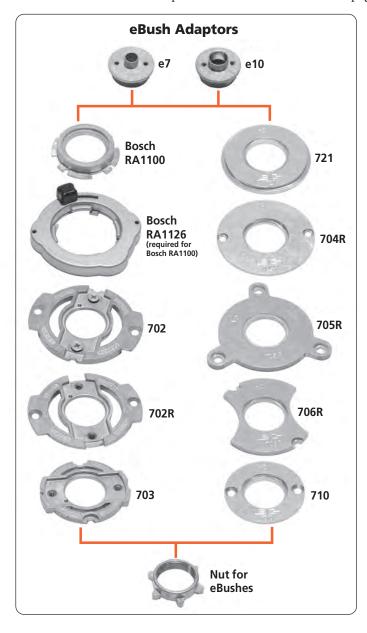


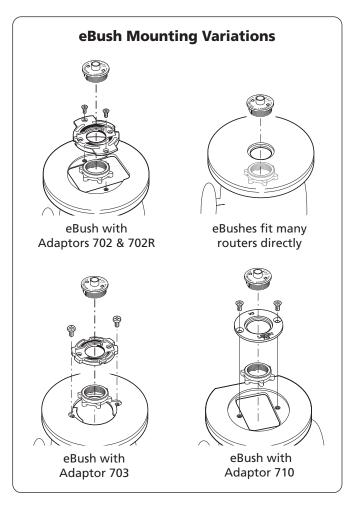
**5-5** One division of the eBush changes the joint glue line by 0.002" [0.050mm]. A perfect fit will be established with one or two test cuts.

**5-6** Record the eBush setting here for a quick setup the next time you use this bit/guide bushing combination. ■

# eBushes and Adaptors

The Leigh eBush guide bushing fits directly to most popular router models such as Porter Cable, Black & Decker and Dewalt. Many other makes, e.g., Bosch, Fein, Festool, Milwaukee, etc. either offer or come complete with base adaptors that accept the eBush. In addition Leigh offers the nine adaptors below to allow the use of over one hundred other router models, new and old. For the complete list of routers, see the eBush Adaptor Selection chart on the next page.





# eBush Adaptor Selection

In order to fit your Leigh eBush to your router, you may need an adaptor. Find out in the chart below. See www.leighjigs.com for the complete list of routers.

#### **DIRECTIONS**

- **A.** Locate name of router maker in Column 1.
- **B.** Locate router model in Column 2. If your router is not listed visit leighjigs.com for a complete, up-to-date list of routers.
- **C.** Locate adaptor required for your router in Column 3.
  - Order Leigh adaptors (part no's in red) in Column 3 from Leigh.
  - Order Bosch adaptors RA1100 and RA1126 in Column 3 from Leigh or your Bosch dealer.
  - Order all other adaptors in Column 3 from the router manufacturer's dealer.
- MAFELL Rework adaptor slightly.

#### **Router not listed?**

If your router is not listed in this chart, you may be able to fit a "universal baseplate" to your router. Please contact Leigh for assistance.

#### **Adaptor Mounting Screws**

Screws are included with router.

#### **Adaptors for Router Tables**

Leigh guide bushings and eBushes are based on the industry standard 1-3/8" 2-piece design. Most router tables have adaptors that accept these standard guide bushings. If your router table does not have a suitable adaptor, please check with the router table manufacturer.

#### **Guide Bushings**

All 8mm shank through dovetail bits listed in this chart work with either the e7 bushing (7/16" OD) supplied with your Leigh jig, or with any 7/16" OD guidebush. The optional Leigh e10 bushing or standard 5/8" OD guidebush is used with 1/2" shank bits. No other guidebush sizes can be used for through dovetails.

ROUTER MAKER	2 ROUTER MODEL	3 ROUTER ADAPTOR
BLACK & DECKER	All Professional, HD1250, RP400K,7614	Not Required
	6200	720673-00
	SR100, 7AEE, KW780 series, KW 800, KW850	710
	1600, 90085, 90088, 90098, 90140, 90150, 90300, 90303, 90305, 91264	Aftermarket base plate required
	1601, 1602, 1603, 1604, 1606, B1350	RA1110
	North American ROUTERS PRODUCED AFTER mid-2010: 1613EVS, 1613AEVS, 1617, 1617EVS, 1618, 1618EVS, 1619EVS, MR23EVS, MR223EVS, MRF23EVS, MRP23EVS	RA1126 quick change adaptor and RA1100 bushing adaptor required
BOSCH	North American ROUTERS PRODUCED BEFORE mid-2010 and others available worldwide that include the RA1126 adaptor: 1613, 1613EVS, 1613EVS, 1614, 1614EVS, 1617EVS, 1618EVS, 1619EVS, B1450, G0F900, G0F9000CE, G0F900ACE, G0F1200, G0F1300CE, G0F1300ACE, G0F1600CE, G0F2000CE, GMF1400, GMF1600CE, P0F800ACE, P0F1100AE, P0F1200AE, P0F1400ACE	RA1100
	1611, 1611EVS, 1615, 1615EVS, B1550, G0F1600, G0F1700ACE	702
CMT	1E	702R
	All non-plunge models	Aftermarket base plate required
RAFTSMAN (SEARS)	135275070 Plunge	See Skil 1823 or 1835
## TON## (02 #10)	Other plunge models	702
	MD11 Plunge & Fixed Base. MD9.5 Fixed Base	Not Required
	DW610, DW616, DW618	Not Required
	DW613, DW615(UK)	710
DEWALT	DW614, DW615, DW621, DW624, DW625, DW626	N. America Only, Supplied w/router
	DW621K & DW626 outside N. America	706R
	DW625 Type 1,2,3,5 outside N. America	702
	DW624 & DW625 Type 4 outside N.America, DW625EK	702R
	0F15, 0F15E, 0F97, 0F97E	706R
	M0F68, M0F69, M0F96, M0F96E	710
	M0F131, M0F177 Type 1,2, & 3	702
ELU	MOF177 Type 4, MOF177EK	702R
	2720, 2721, 3328	Not Required
	3303, 3304	E09600 or 761 270-00
	3337, 3338, 3339	702
FEIN	RT1800	Supplied w/router
	OF1E , 0F2E, 0F650, 0F900E ,0F1000, 0F1010E	704R
	0F2000, 0F2000E	705R
FESTOOL	OF1400 and OF2200 North America Only	Supplied w/router
	OF1400 Outside North America	493566
	0F2200 Outside North America	494627 O-Ring may be required to keep bushing centered
FREUD	FT700(2), FT2000, FT2200, FT3000	721
	TR8, TR12, FM8, M8, M12 Series	325211 OR 703
HITACHI	M12VC, KM12SC, KM12VC	Not Required
	M12SA2, M12V2	325224
MAFELL	L065E	702 ■
	RP1801, RP2301, 3612C Europe Qk Fit Base	721
	3600, 3606, 3608, 3612, 3612B, 3612BR, 3612C N. America, 3620, 3621, RP900K	703
MAKITA	3601B	321 493-1
	RP0910, RP1110C	706R
	RF1100, RF1101, RD1100, RD1101, RP1101	Not Required
MASTERCRAFT	Please contact Leigh for assistance	
METAB0	OF1612, OFE1812 (for all others, please contact Leigh for assistance)	704R
	5615, 5616, 5619	49-54-1040
MILWAUKEE	5625	49-54-1026
	5670	Not Required
PERLES	0F808 Series, 0FE6990	710
PORTER CABLE (ROCKWELL)	All	Not Required or Supplied w/router
RIDGID	R2930 (for all others, please contact Leigh for assistance)	704R
	R30, R50, R150, R151, RE155, R500, R501, R502	703
RYOBI	R600, R601, RE600, RE601 R160, R161, R162, R163K, R165, R170,	702 706R
	R175, RE175, R180, R180PL, R181, R185, ERT1150	
	1823 or 1835	91803
SKIL	SK1810, 1815, 1820, 1825	RAS140
	All others	Aftermarket base plate required
TREND	T3, T4, T5, T9, T10, T11 – UniBase required	710
	TRC001	TGA006 or 704R
TRITON	J0F001, M0F001, TRA001	Accessory Kit (includes adaptor) TGA001 or TGA150