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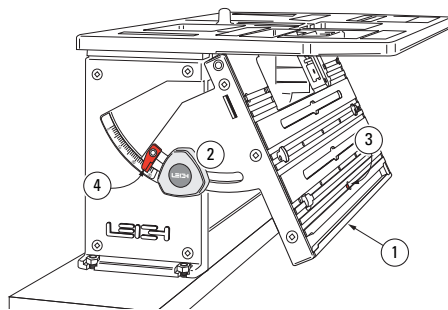


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FMT PRO CHAPTER 3 The FMT Pro Jig

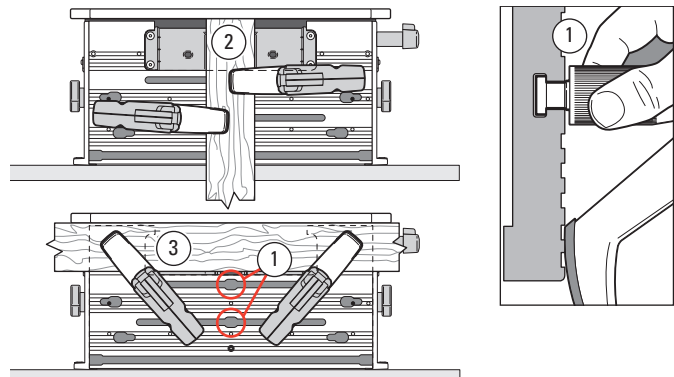
*The Clamp Plate and Clamping
The Table
Jig Operation Concept
Safety and Router Operation
Wood Preparation*

The Clamp Plate and Clamping

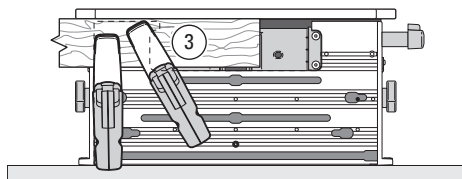


3-1 The clamp plate ① is adjustable up to 30° from vertical and is held securely by two quadrant knobs ②. A set-screw ③ allows for positive return to 90°. To ensure flush and in-plane joints, it may be necessary to adjust the clamp-plate angle. See Appendix II, Jig Adjustments. An angle scale is provided, with an indicator adjustable to zero ④.

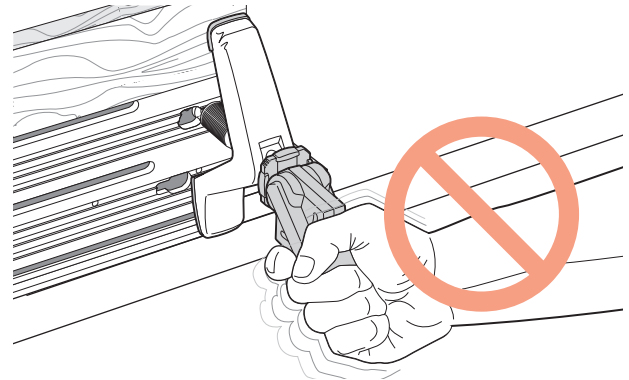
⚠ The clamp plate and cam-clamps are a self contained clamping area. Under no circumstances should any other jig component be used for clamping and no auxiliary clamping method used, other than as illustrated in this guide.



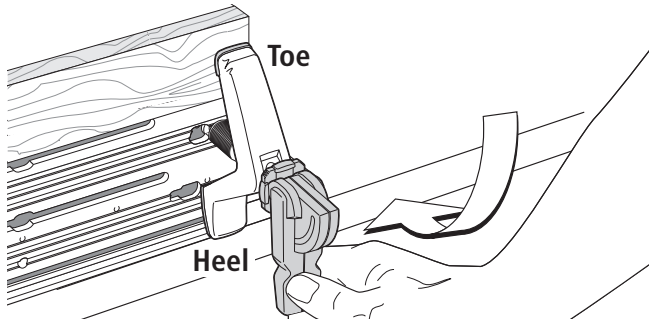
3-2 The two clamps are powerful cam-action rocking-arm clamps with capacity from zero to 3" [76mm]. The T-bolt is inserted directly into the T-slot opening ①, moved to desired position and brass thumb nut lightly tightened. Normally tenon workpieces will be clamped vertically ②, and mortise workpieces horizontally like this ③, or...



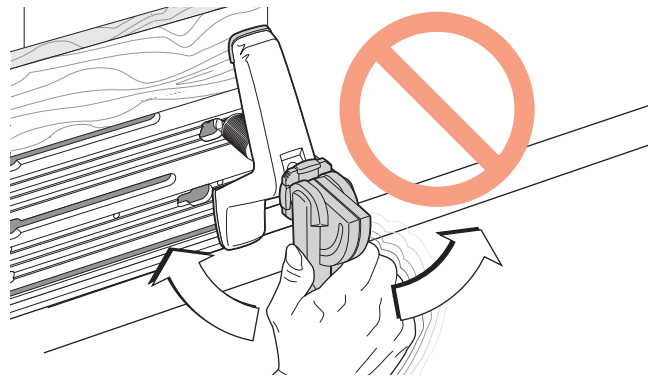
3-3 ...like this ③. For clamping very small workpieces see Chapter 4, Small Joints.



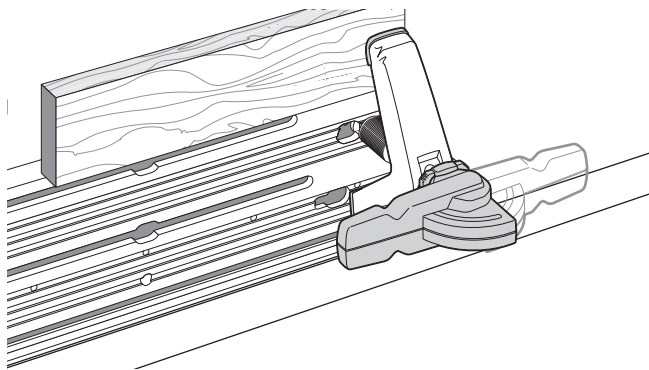
3-4 Never force a cam-action clamp. It has great leverage, and using excessive force may damage the workpiece. The powerful clamp, combined with a non-slip clamping surface, requires only moderate clamping pressure to hold the workpiece securely in place.



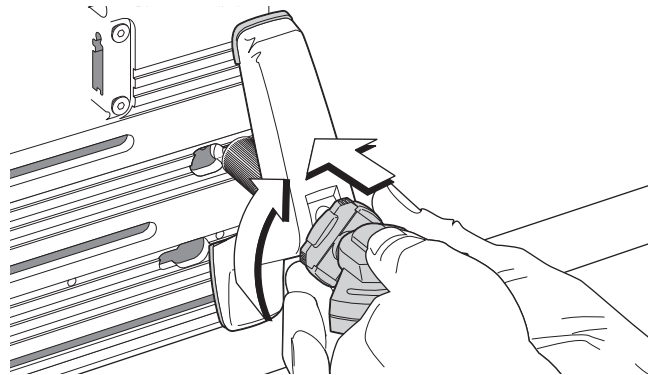
3-5 A smooth, firm action is enough to engage the clamp. If you can't throw the lever comfortably by strong thumb pressure, reduce the tension. A few minutes of trial and error testing will give you a feel for the correct clamp tension. **Note:** The clamp arm has a heel and toe. The heel always goes against the clamp plate and toe always against the wood. **Also note:** Rotate the cam-action speed clamp to change the engagement of the clamp arm for different board thicknesses.



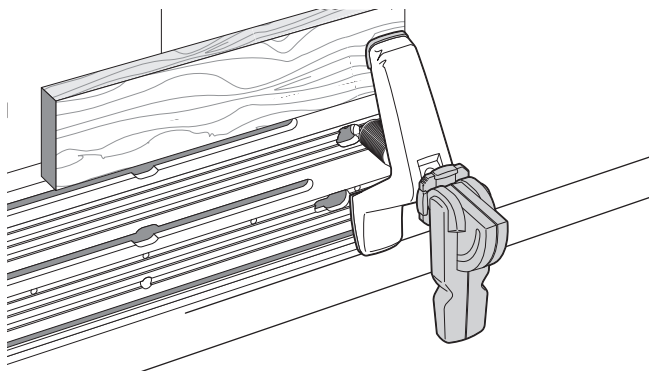
3-6 Do not use the lever as a torque arm! Adjust the clamp pressure only with the clamp disengaged.



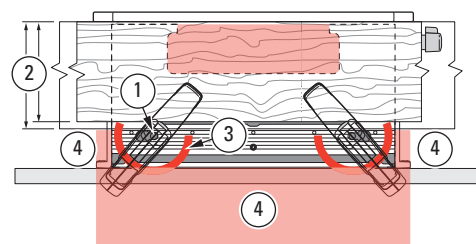
3-7 The clamping pressure is the same whichever of the two directions the lever is thrown. But if the lever is uncomfortably positioned at the correct clamping pressure...



3-8 ...release the clamp, remove the workpiece and turn the step-washer a quarter turn. The step height in the step-washer is one quarter of the thread pitch.

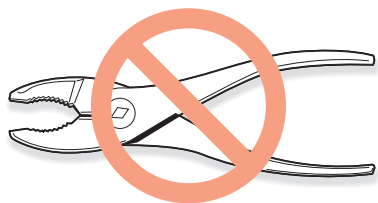


3-9 Then adjust the clamp until the lever is in the correct position at the required pressure.

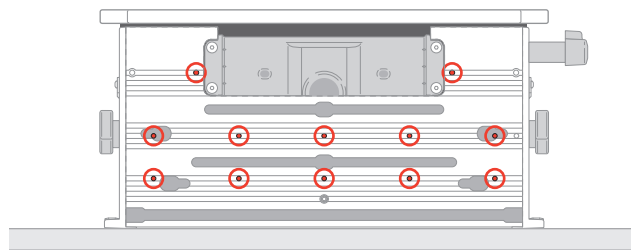


3-10 The clamp T-Bolt Slots and “keyholes” allow for full clamping coverage. The two lower keyholes ① are for the rare requirement to clamp mortise boards between 4¾" [120mm] and 5½" [140mm] wide ②. Always clamp with the heel and toe of the clamp over the surface area of the clamp plate ③.

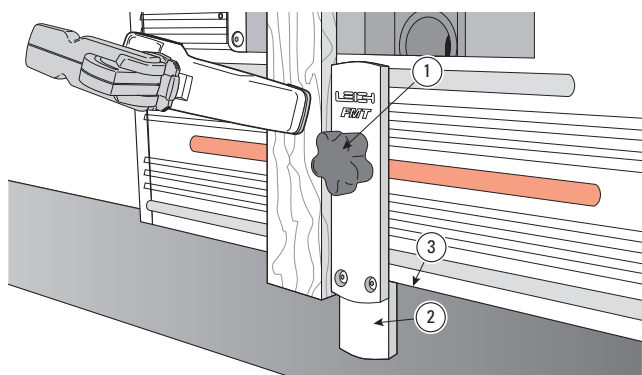
⚠ Never allow the clamp arm heel pad in these red shaded areas ④, even if (particularly if) the mounting board or bench is there.



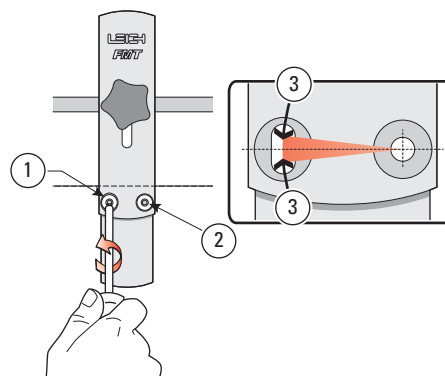
3-11 The clamp T-bolts nuts need only be lightly finger tightened to prevent accidental clamp movement. The nuts are knurled to provide a good finger grip. **Never use a tool to tighten these nuts!**



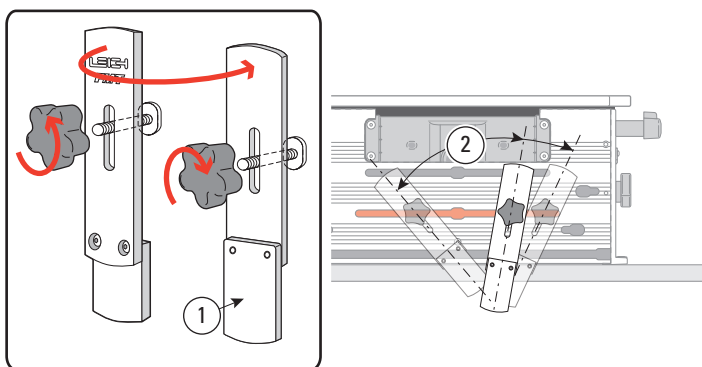
3-12 The clamp plate is provided with twelve through-holes. If for any reason a facing board is required to be attached to the clamp plate, No.8 or M4 wood screws (not supplied) may be used from the rear. See chapter 4, Small Joints.



3-13 The FMT Pro's sidestop fence is attached in all modes by a single knob and T-bolt inserted to the **center clamp plate slot** ①. Most tenon pieces are routed vertically, and for that purpose the short part of the fence ② acts as a T-square against the edge of the clamp plate ③. In this mode the Leigh logo faces toward you.

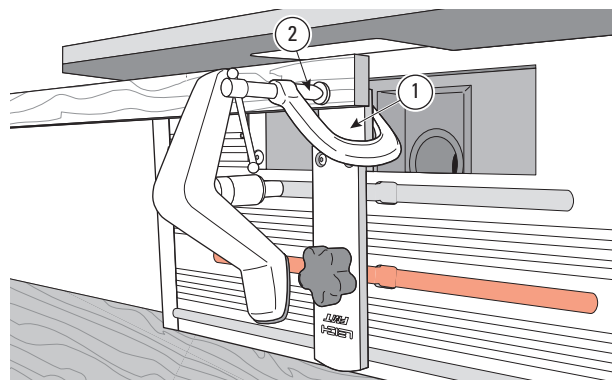


3-14 The sidestop fence is squared at the factory, but check your first test joints. If your router/bit is not perfectly perpendicular to the table adjust the sidestop fence: slightly loosen the 'pivot' screw ① and the 'lock' screw ②. Adjust the angle ③ to match the bit and retighten. Rout test joints to confirm correct setting. Once locked in this position it should never need adjusting when used with that same router.

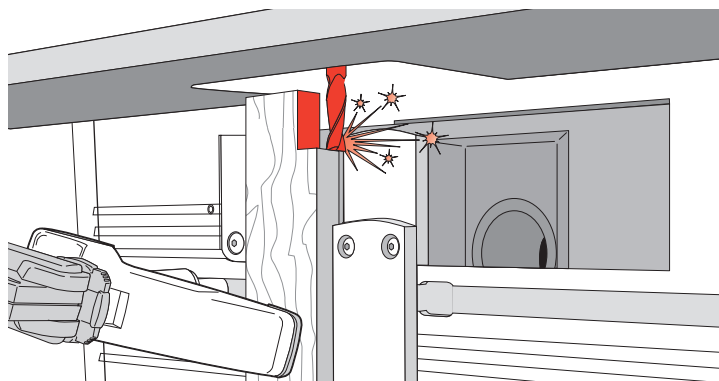


3-15 Angled Joints: Remove the knob and T-bolt. Reverse the fence so the short end faces toward you ①. The fence may now be set at any angle along the center clamp plate slot ② by tightening the knob.

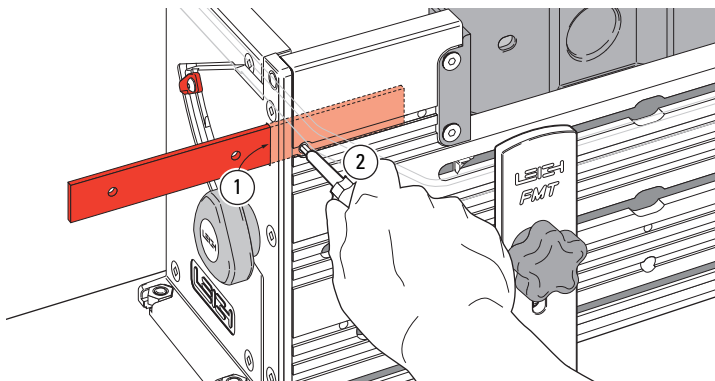
⚠ NOTE: *Never rout tenons with the short part of the fence to the top, in the bit opening.*



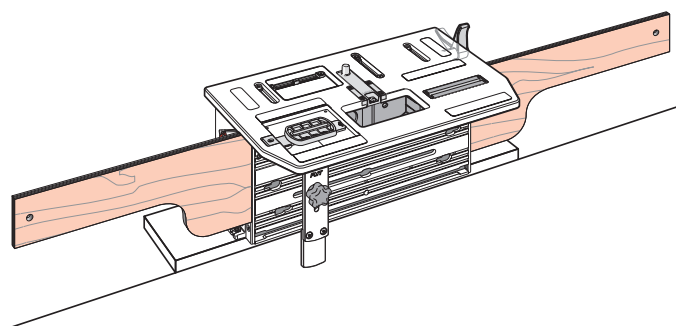
3-16 'Mortise steady': When routing mortises in small stock the piece may 'flutter' causing poor joint fit. Invert the fence with the short end up in the bit opening ①. Clamp the mortise piece against the face of the short fence ② which is perfectly flush with the clamp plate face ①. When routing mortises at the end of a board, always move the table as far as possible left or right to minimize the length of unsupported workpiece.



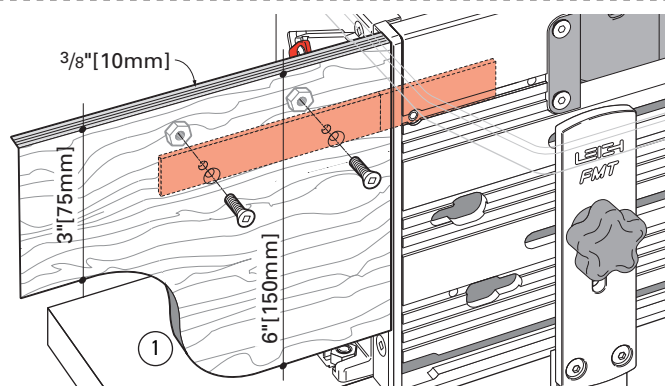
3-17 ⚠ **WARNING:** Never rout tenons with the sidestop fence in the inverted position (with the short end up in the bit opening). The inverted fence mode is only used to support small mortise stock.



3-18 The jig clamp plate has an opening on each outer edge in which to fit the included “outrigger bars” ①. The bars are retained by set-screws ② tightened with the hex driver.

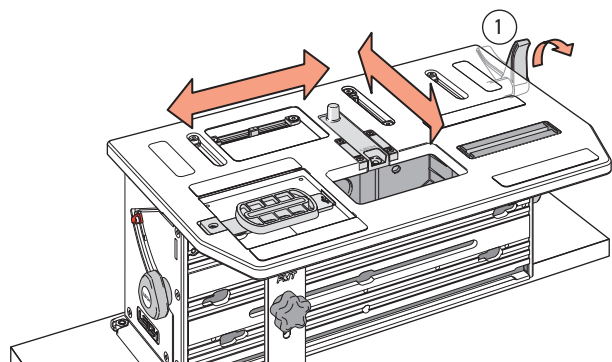


3-19 The outrigger bars allow for attachment of shop-made outrigger beams on which to mount sidestops or add pencil marks. This makes for efficient routing of multiple mortises. See Chapter 4, Production Procedures.

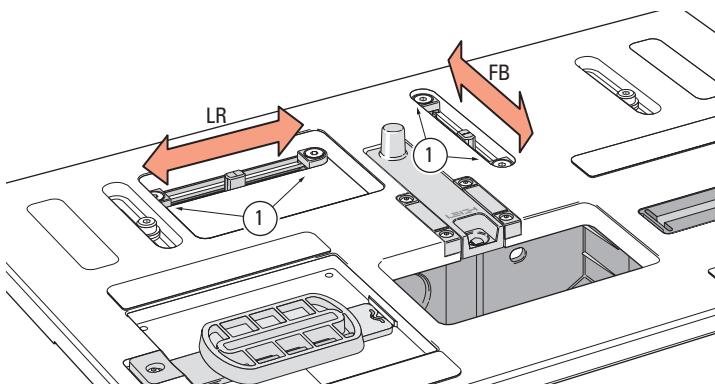


3-20 The outrigger beams should be $\frac{3}{8}$ " [10mm] plywood, shaped as suggested to minimize weight. Drill as shown and attach with the small nuts and bolts provided. The top edge should just clear the underside of the locked table. Store the outriggers on a wall hanger when not in use. The deep shoulder ① provides cantilever support against the end of the clamp plate assembly. ■

The Table



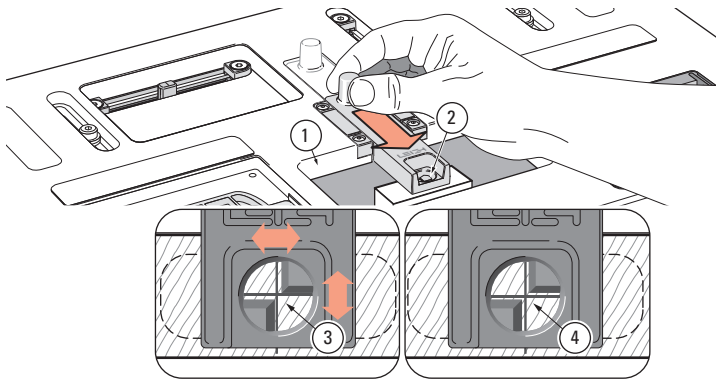
3-21 The table is clamped in any desired position by the Table Clamp ①. Turning the clamp lever up 90° releases the table, which can then be moved in any direction to any position within its range. Clamp tension is factory preset. See Appendix II, Jig Adjustments.



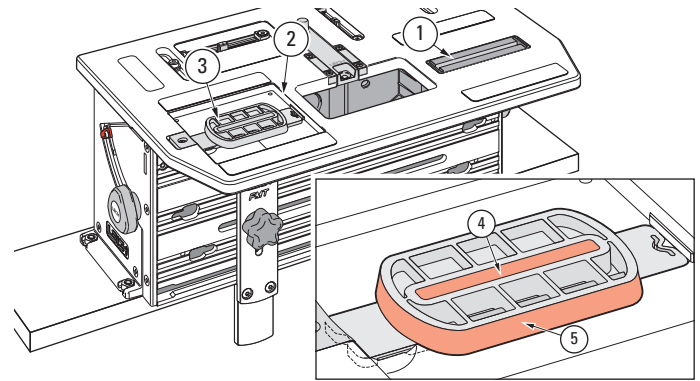
3-22 Adjustable Limit Stops ① are used to limit or prevent table movement left to right (X-axis) and front to back (Y-axis), and to precisely align double and quadruple mortises and tenons (see Chapter 4). Use Limit stops when you see these icons:

◀▶ **LR** for left-to-right table movement

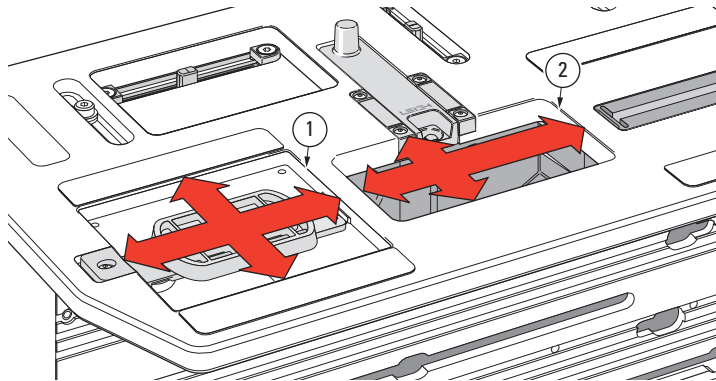
⏪⏩ **FB** for front-to-back table movement.



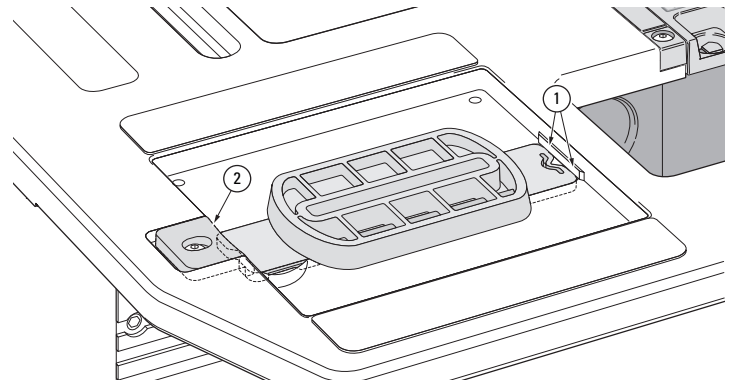
3-23 The table has a bit opening ① and Joint Aligning Sight ②. Pulling the sight fully forward to its detent provides precise table positioning over joint cross-marks ③. Because the human eye excels at comparisons, we can perceive differences as small as 0.004" in the space between the edges of the line and the triangles ③. That's 0.002" off center! You can readily center the sight using slight table movements until the spaces appear the same ④.



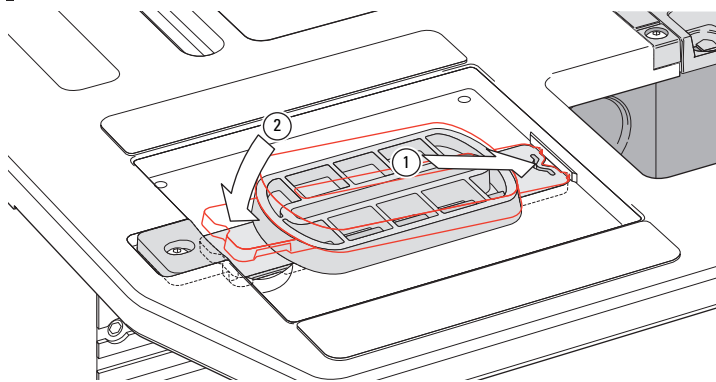
3-24 To the right front is the right-hand "Pin Track" ①. The right-hand router sub-base Guide Pin runs in this track in **all** routing operations. To the left front is the Guide Recess ②, in which all Joint Guides ③ are placed. The left hand router sub-base Guide Pin runs in the guide slot ④ for cutting mortises or around the outside of the Guides ⑤, for cutting tenons.



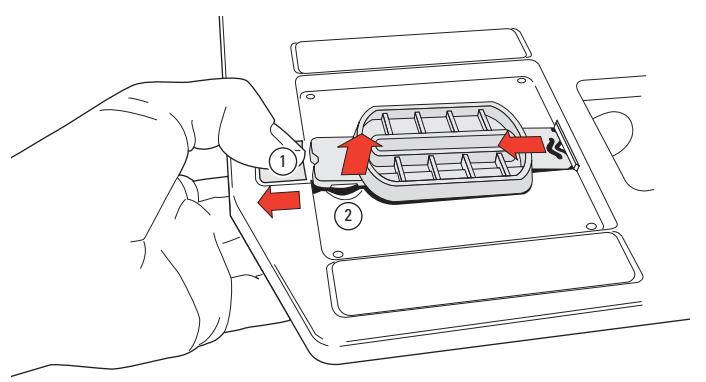
3-25 The Guide Pin cannot move horizontally outside the recess ①, and prevents the bit from touching the sides of the bit opening ②.



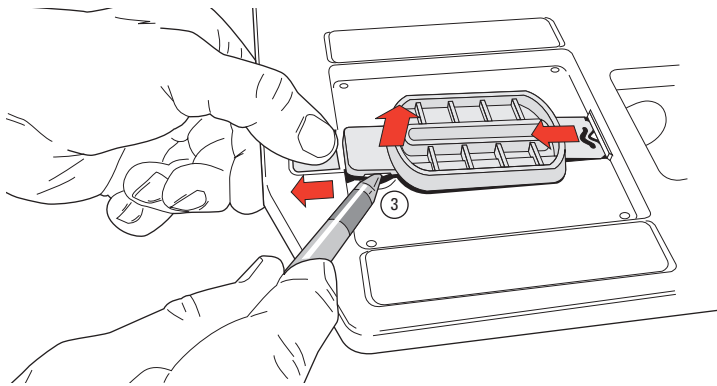
3-26 Two small projections on the Guide fit into undercuts on the right side of the guide recess ①. The left end of the Guide is pushed down and retained by the spring-loaded Guide Latch ②. **⚠ Note: the guide end shapes are not identical. Guides can only be installed one way as shown here.**



3-27 Snap the Guides in like this. Use firm pressure just next to the guide latch. Note: The guides are injection molded acetal and the guide bases may vary slightly in tolerance. **Some may require more pressure to insert.** The tighter guides will become easier after a few insertions.

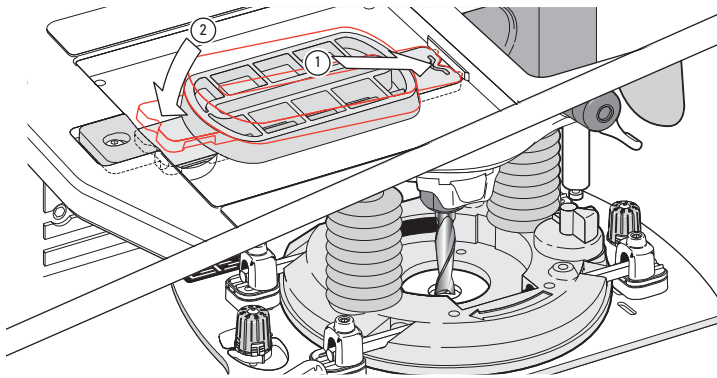


3-28 To remove a Guide, pull back the latch ① and push through the finger-hole from below with your fingertip ②.

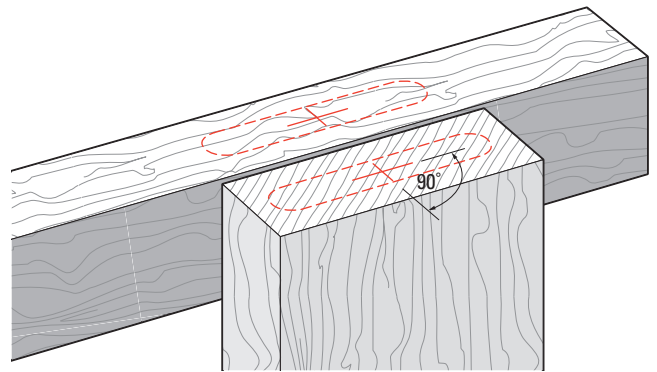


3-29 If the finger-hole is not accessible from below, use your fingernail or a small **non-metallic** pry to lift the Guide up ③. ■

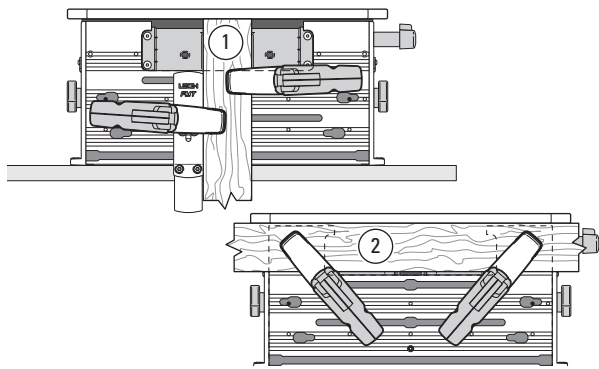
Jig Operation Concept



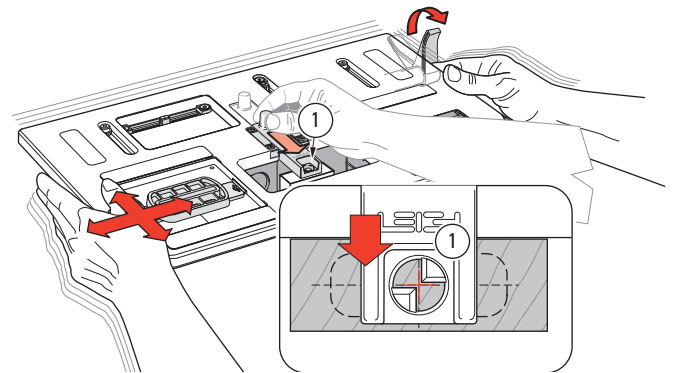
3-30 The selected guide is placed into the guide recess and the matching bit fitted to the router.



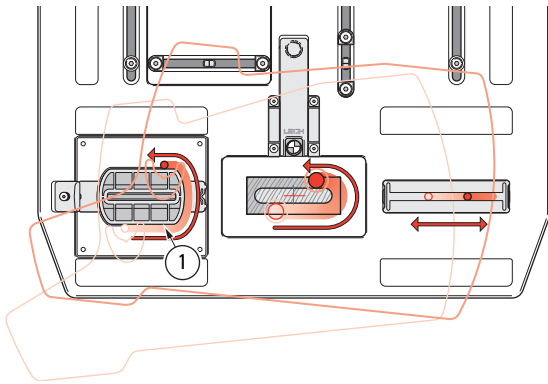
3-31 The centers of a mortise and tenon are marked with a cross.



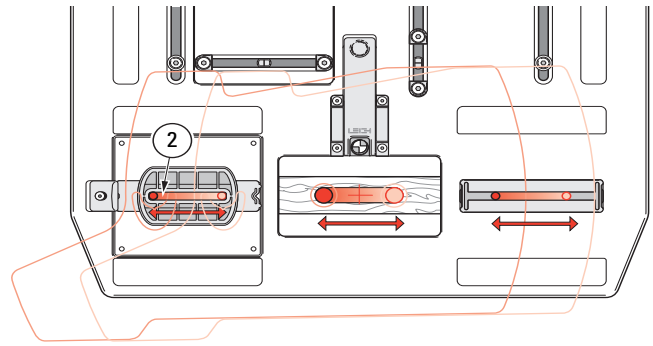
3-32 Tenon workpieces are usually clamped vertically ①. Mortise workpieces are always clamped horizontally ②.



3-33 The jig table is centered over the marked workpiece with the extended sight ①.



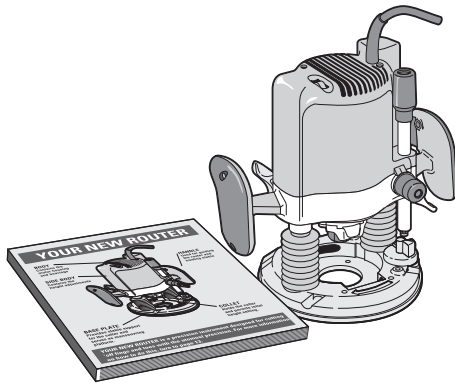
3-34 Tenons are routed with the guide pin running around the outside (tenon) part of the guide ①. See Chapter 4 for routing techniques.



3-35 Mortises are routed with the guide pin running in the inside mortise part of the guide ②. Always rout the mortise slightly deeper than the tenon length.

Note: Only one tenon and perhaps two mortises need to be marked and sighted. Please read all procedural chapters to get the utmost efficiency from your FMT Pro. ■

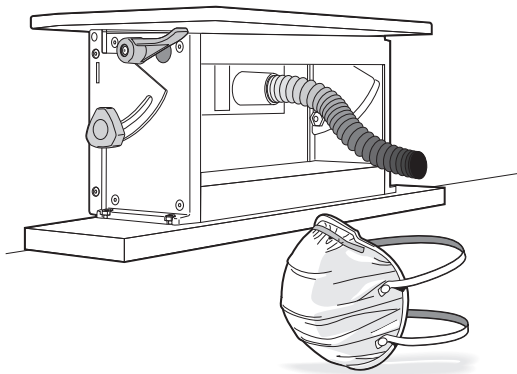
Safety and Router Operation



3-36 Read the owner's manual that came with your router. It is essential to understand the router manufacturer's instructions completely.




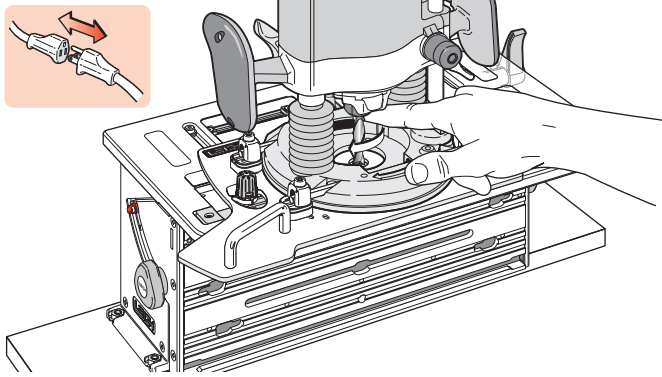
3-37 Always wear approved safety glasses. Always wear hearing protection.



3-38 Protect yourself from harmful dust by wearing a face mask. Connect your shop vacuum or dust collection system to the FMT Pro whenever possible.

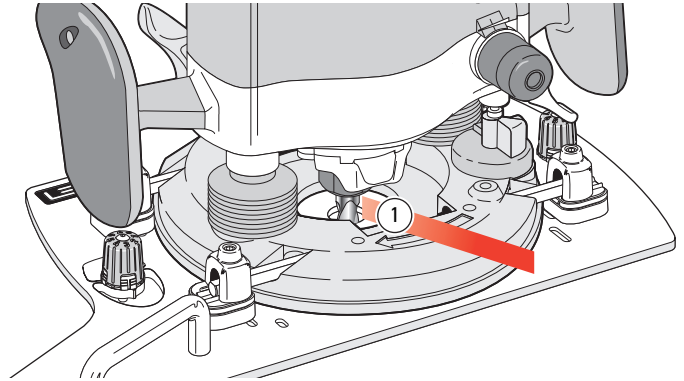


3-39  Never drink alcohol or take medications that may cause drowsiness when you will be operating a router.

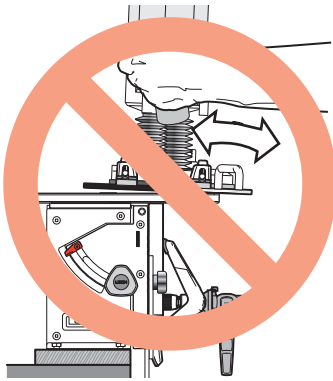


3-40 Always disconnect the power source from the router when fitting bits, or making adjustments.

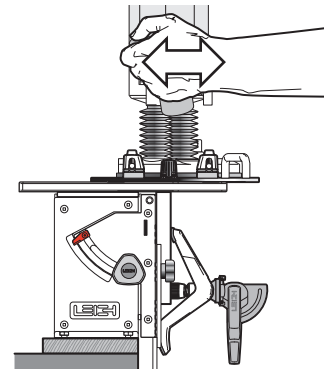
Before connecting the router to the power source, make sure the bit revolves freely through the Sub-Base bit hole, and table and clamp plate bit openings in all extreme guide pin positions and preset bit depths.



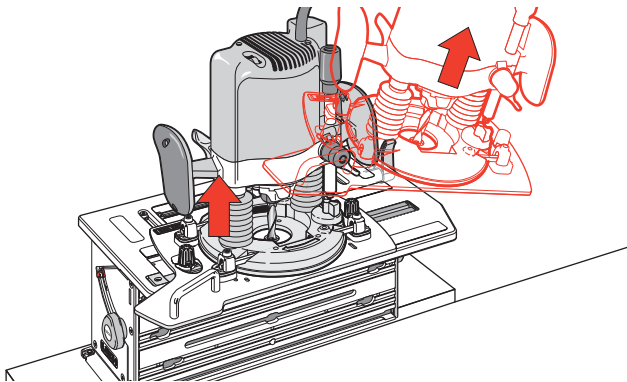
3-41 Make sure the router collet does not contact the FMT Pro Sub-Base at full plunge cuts. Set the router plunge stop rod as necessary to prevent this ①.



3-42 Do not tilt the router on the jig.



3-43 Keep the router flat on the jig assembly.



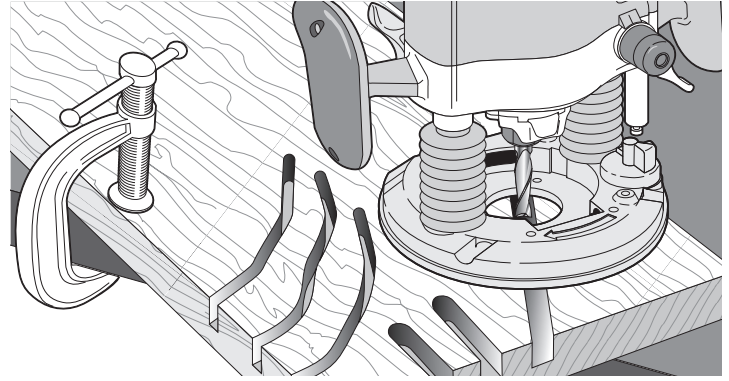
3-44 Always raise the plunge router mechanism before removing the router assembly from the jig.



3-45 Never, never, use a non-plunge fixed base router on the FMT Pro.

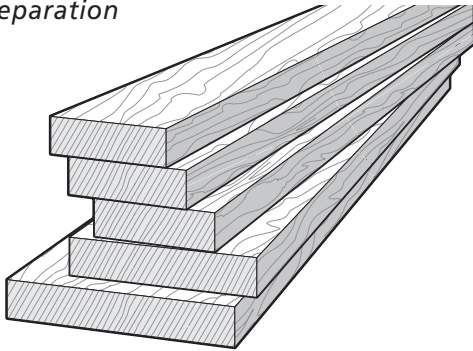


3-46 Do not rout at face level.



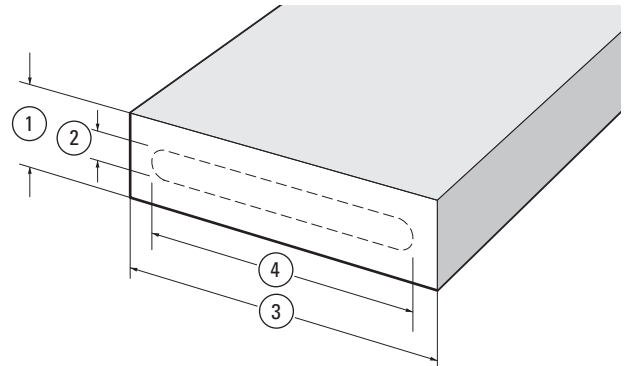
3-47 If you have never used your router before, be sure to follow the router manufacturer's instructions for its use. Make plenty of simple open-face practice cuts before you try to use the router on the Leigh FMT Pro. ■

Wood Preparation



3-48 Stock for use on the Leigh FMT Pro should generally be straight, flat, of even thickness and width with square ends and edges, except where design issues dictate otherwise.

Please note that even small ridges (caused by damaged planer blades) can cause noticeable misalignment of "flush" joint faces.



3-49 You will want to test the jig, so prepare some stock with a thickness ① of about 2½ to 3 times the bit diameter ②,

For example:

¼" [6mm] bit ⅝" to ¾" [15-19mm]

⅝" [8mm] bit ¾" to 1⅝" [20-24mm]

⅜" [10mm] bit 1⅝" to 1⅞" [25-30mm]

½" [12mm] bit 1¼" to 1½" [30-36mm]

and a stock width ③ of say, 1½ bit diameters greater than the selected guide length ④. ■

