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Bill Krier
Editor in Chief, WOOD magazine

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perfect-score marking gauge

With both single and paired marking points, this great-looking hand tool helps you lay out rabbets, tenons, and mortises with hairline precision.

WOOD MAGAZINE COLLECTOR'S SERIES HAND TOOLS

Woodworkers have been using sharp instruments to make layout lines on wood for centuries. In fact, the first marking and mortising gauges predate the development of mass-produced pencils. Even with the availability of pencils, craftsmen still scribe the most accurate layout lines on wood with the sharp points of a gauge. Now you can make your own version and experience the difference firsthand.

Laminate the body

1 To form the body (A), cut two ⅜×2⅝×4¼" faces (we used bubinga) and one ¼×2⅝×4¼" core (we used maple). Apply glue, and laminate the faces and core in the order shown on **Drawing 1**, keeping the ends and edges flush. With the glue dry, trim one edge of this blank flush on your tablesaw, and then flip the piece and trim the other edge, leaving a 2½"-wide blank. Then, trimming both ends, cut the blank to 4" in length.

2 Make a copy of the full-size body pattern on *page 13*, and adhere it to the blank with spray adhesive. Transfer the ⅜" hole centerline on the pattern to the top edge of the blank, and drill a 1⅛"-deep hole for a threaded insert, as shown in **Photo A**.

3 Chuck a ½" Forstner bit in your drill press, and position the fence to align the bit with the holes, shown on the pattern, that form the ends of the slot in the body (A). Drill the end holes, and then drill through the center to remove most of the material from the slot. Clean up the slot with a chisel.

4 Bandsaw and sand the body (A) to shape. Then rout ⅛" round-overs along its edges, where shown on the pattern and **Drawing 1**.

DRILL A HOLE FOR THE INSERT

Adhering a masking tape "flag" to a ⅜" Forstner bit to mark the depth, drill a 1⅛"-deep hole centered in the body (A).

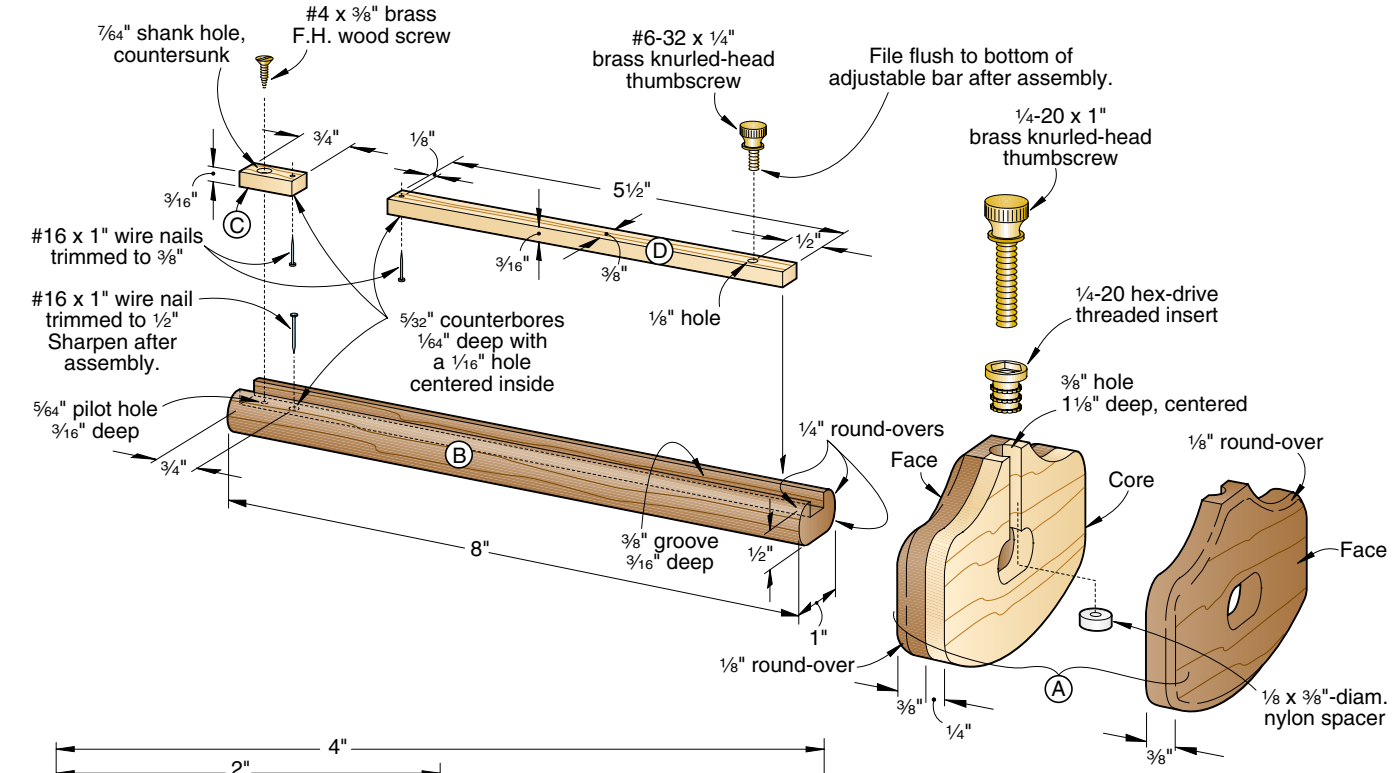
Add a beam and bar

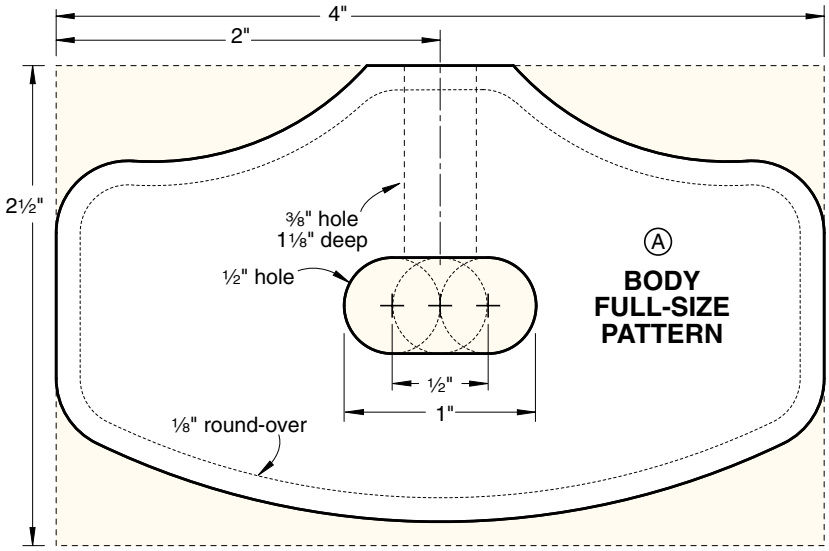
1 Cut the beam (B) to thickness and width but about 4" longer than the length listed in the **Materials List**. (The extra length will be used to test the fit of the beam in the body slot.) Then cut a groove for the bars (C, D) in one beam face, where shown on **Drawing 1** and as shown in **Photo B**.

2 Chuck a ¼" round-over bit in your table-mounted router, and rout 1"-long round-overs on all four edges of the beam (B). Test-fit the routed end of the beam in the body (A) slot, as shown in **Photo C**. Make any adjustments needed for a good fit. Mark the test end of the beam, and rout its entire length. Do not cut the beam to finished length.

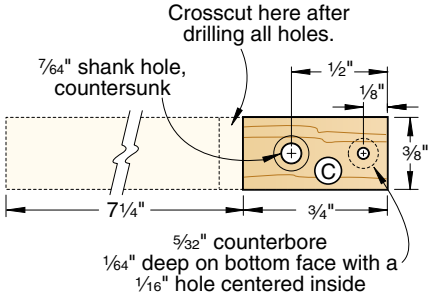
3 In the *unmarked* end of the beam, use a 5⁄32" brad-point bit to drill a 1⁄64"-deep counterbore centered in the beam groove, where shown on **Drawing 1**. (The counterbore must be deep enough to recess the head of a #16 wire nail slightly below the bottom surface of the groove.) Then drill a 1⁄16" hole centered in the counterbore.

1 EXPLODED VIEW





2 FIXED BAR (top face shown)

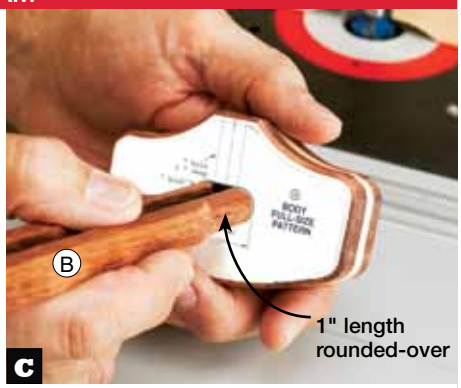


4 Resaw and plane a 3/16×3/8×8" blank for the fixed bar (C) and adjustable bar (D), testing it for a snug but moveable fit in the beam (B) groove.

5 To make the fixed bar (C), drill a 7/64" countersunk shank hole in one end of the bar blank, where shown on **Drawing 2**. Then on the face opposite the countersink, use a pilot-point bit to drill a 5/32" counterbore 1/64" deep, where shown. Centering a 1/16" bit in the counterbore, drill a hole. Place the bar blank countersunk face up in the beam (B) groove with the holes in the beam and bar at the same end. Align the bar and beam ends, and using the countersunk shank hole in the bar as a guide, drill a 5/64" pilot hole 3/16" deep into the beam.

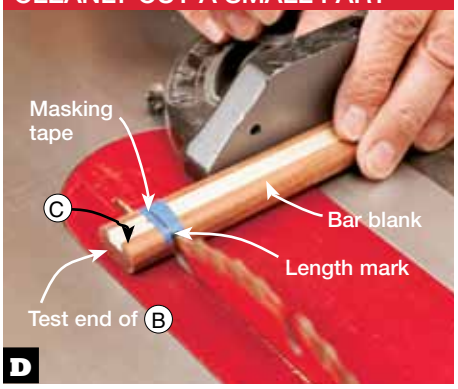
TWO KEY STEPS IN MAKING THE BEAM

Install a zero-clearance insert in your tablesaw, and cut a 3/8" groove 3/16" deep centered in one face of the beam (B).



With 1" of the edges of one end of the beam (B) rounded over, test-fit it in the body (A). The fit should be snug yet moveable.

CLEANLY CUT A SMALL PART



To prevent chipping, secure the bar blank in the marked (test) end of the beam (B) with masking tape, mark the length, and cut the fixed bar (C) to size.

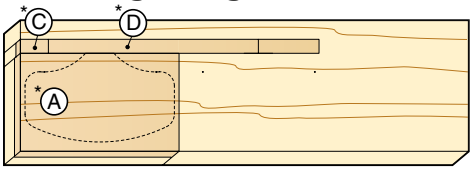
6 To prevent chipping or other damage to the fixed bar (C), cut it to finished length, as shown in **Photo D**.

7 In a manner similar to cutting the fixed bar (C) to length, house the remaining piece of the bar blank in the test end of the beam (B), and trim the adjustable bar (D) to length. Then drill a 5/32" counterbore 1/64" deep with a centered 1/16" hole near one end of the bar and a 1/8" hole near the other end, where shown on **Drawing 1**. Trimming off the test end, cut the beam to finished length.

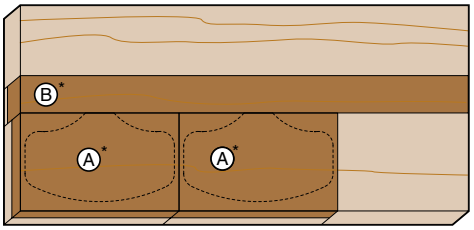
Finish and assemble

1 Finish-sand all the parts to 320 grit. Do not oversand the edges of the bars (C, D). Apply an oil finish. (We applied two coats of Minwax Antique Oil Finish.)

Cutting Diagram



¾ x 3½ x 12" Maple (.3 bd. ft.)
*Plane or resaw to the thicknesses listed in the Materials List.



¾ x 5½ x 12" Bubinga (.5 bd. ft.)

2 For the marking points, snip two #16x1" wire nails to 3/8" long and one to 1/2" long, and press them into the counterbored holes in the beam (B), fixed bar (C), and adjustable bar (D), where shown on **Drawing 1**. (See *page 15* for instructions on sharpening the points.)

3 Thread a #6-32x1/4" brass knurled-head thumbscrew into the 1/8" hole in the adjustable bar (D). (The thumbscrew will cut its own threads in the wood.) File the threaded stud of the thumbscrew flush with the bottom of the bar. (See **Sources** for a kit that includes all the hardware for the marking gauge.)

4 Drive the threaded insert into the 3/8" hole in the body (A). (Use a 6mm hex wrench to install the insert that comes with the kit.)

5 Referring to **Drawing 1**, screw the fixed bar (C) to the beam. (For help with successfully driving brass screws into hardwood, see the **Shop Tip**, *right*.) Holding the body (A) with the threaded insert down, place a 1/8"-thick 3/8"-diameter nylon spacer in the 3/8" hole where it intersects the slot for the beam. (The spacer protects the adjustable bar (D) from thumbscrew damage.) Next insert the adjustable bar in the slot. Capturing the bar in the beam groove, slide the beam into place. Finally thread a 1/4-20x1" brass knurled-head thumbscrew into the threaded insert. For tips on using your marking gauge, see *page 15*.

Written by **Jan Svec** with **Chuck Hedlund**
Project design: **Jeff Mertz**
Illustrations: **Roxanne LeMoine; Lorna Johnson**

Materials List

Part	FINISHED SIZE T	W	L	Matl.	Qty.
A* body	1"	2⅜"	4"	LMB	1
B* beam	½"	1"	8"	B	1
C* fixed bar	3/16"	⅜"	¾"	M	1
D* adjustable bar	3/16"	⅜"	5½"	M	1

*Parts initially cut oversize. See the instructions.

Materials key: LMB–laminated maple and bubinga, B–bubinga, M–maple.

Supplies: Spray adhesive.

Blades and bits: ⅜" and ½" Forstner bits, stack dado set, ⅛" and ¼" round-over router bits.

Sources

Hardware kit. #16x1" wire nails (3), #4x⅜" brass flat-head wood screw (1), #6-32x¼" and ¼-20x1" brass knurled-head thumbscrews (1 ea.), ¼-20 hex-drive threaded insert (1), ⅛x⅜"-diameter nylon spacer (1). Kit no. MG-2. Schlabaugh and Sons Woodworking. Call 800-346-9663, or go to schsons.com.

Wood and hardware kit. The hardware listed *above* plus wood of the required thickness to make one gauge. Kit no. MG-2W. Schlabaugh and Sons Woodworking, see *above*.

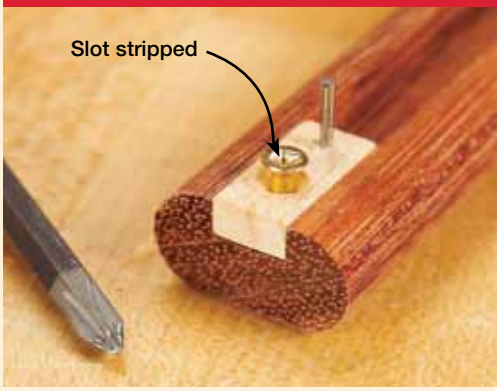
SHOP TIP

A foolproof way to avoid screw disasters

It's easy to twist off a soft brass screw, as shown *below top*, or strip its slot, as shown *below center*, when driving it into a hardwood part like the beam (B). And the smaller the screw, the greater the chance of disaster. To avoid these annoyances, pick up a few same-size steel wood screws when you buy brass ones. Then, after drilling shank and pilot holes, drive in one of the steel screws. The stronger steel screw cuts threads into the wood with less chance of breaking. Now remove the steel screw and drive the brass one. Store the steel screws with the brass ones and you'll always have the right size steel screw on hand.

AVOID BREAKING A BRASS SCREW…

OR STRIPPING THE SLOT…



BY FIRST DRIVING A STEEL SCREW.

how to put a marking/mortising gauge to work

Whether it's the Collector's Edition marking/mortising gauge, or a commercially made one, here's how to make good use of this traditional layout tool.

Use the single point to scribe the shoulders of a tenon…

When you want a fast and accurate way to lay out guidelines for cutting joints, reach for a marking/mortising gauge. The three photos, *right*, show typical applications for a marking gauge.

Available in variations from ordinary to ornate, all marking gauges work the same way. A beam holding a single sharp marking point (marking gauge), a pair of points (mortising gauge), or both single and paired points (combination gauge) slides through the body. The body has a device for locking the beam in place, fixing the point or points a set distance from the body.

Why use a gauge instead of a pencil? The line created by a wood pencil changes thickness along its length as the pencil point dulls. The point on a gauge scribes a much thinner and consistent line, eliminating "thickness of line" errors. It also provides an accurately placed groove for the tip of your chisel. The main disadvantage of scribed layout lines is that you can't erase them, although in most cases, the lines are eliminated or covered up when cutting or assembling the joint.

Sharp points cut fine lines

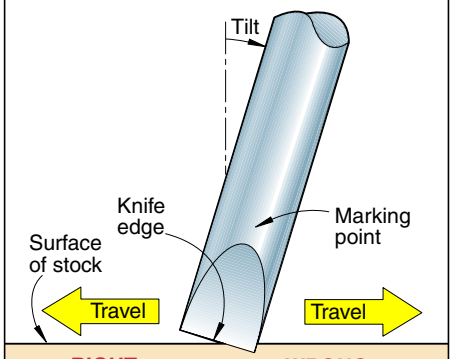
To scribe narrow, consistent lines, you need sharp points. Most commercial gauges have conical, nail-like points, which scratch the surface instead of cutting it. These points leave fuzzy lines when marking across the grain and are likely to follow the grain when marking parallel to it. For best results, file the points to form a two-sided knife edge, as shown *below*, *left*. Make sure the point edge is parallel to the gauge body. Sharpen paired points to the same length.

… or scribe plywood to prevent chipping when cutting rabbets.

FILE THE POINT FOR TOP-NOTCH RESULTS

Remove the beam from the body, and clamp it to your workbench. Protect the beam with a couple layers of masking tape, and use a fine flat file to form a two-sided knife point.

HOW POINT ORIENTATION AFFECTS LINE QUALITY

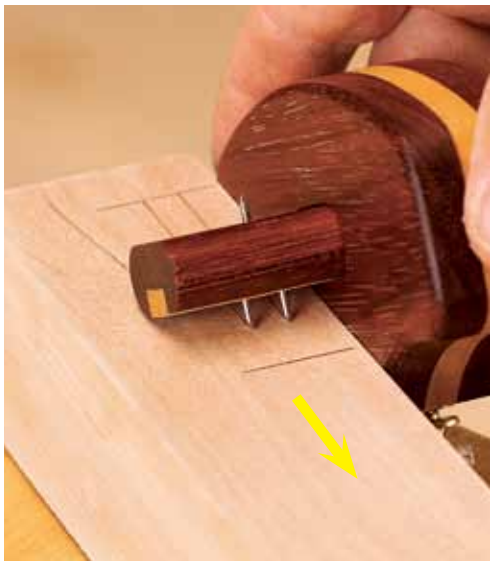


RIGHT

Tilting the marking point away from the direction of travel presents its knife edge to the stock. The point cuts a clean line.

WRONG

Tilting the marking point toward the direction of travel presents its blunt side to the stock. The point scratches a fuzzy line.



Set the paired points to the width of a tenon, and scribe mortises on your stock.

Engaging the gauge

To use a marking gauge, set the point the desired distance from the body using a steel ruler or the actual stock that will fit the joint, as shown *below top*, and lock the beam in place by tightening the knurled-head thumbscrew. To set the distance between the twin points of a mortising gauge, use the bit or tool you'll use to cut the mortise, as shown *below center* and *bottom*. Then hold the body tightly against the edge of the workpiece, tilt the gauge slightly away from you to present the cutting edge of the point or points to the wood, as shown in the drawing on *page 15*, and pull the gauge toward you. Use this method to scribe lines parallel to the grain, across the grain, or on end grain.

3 WAYS TO POSITION GAUGE POINTS FOR ACCURATE RESULTS

Position the points with the stock…

…or the tool…

…or the bit you'll use.

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