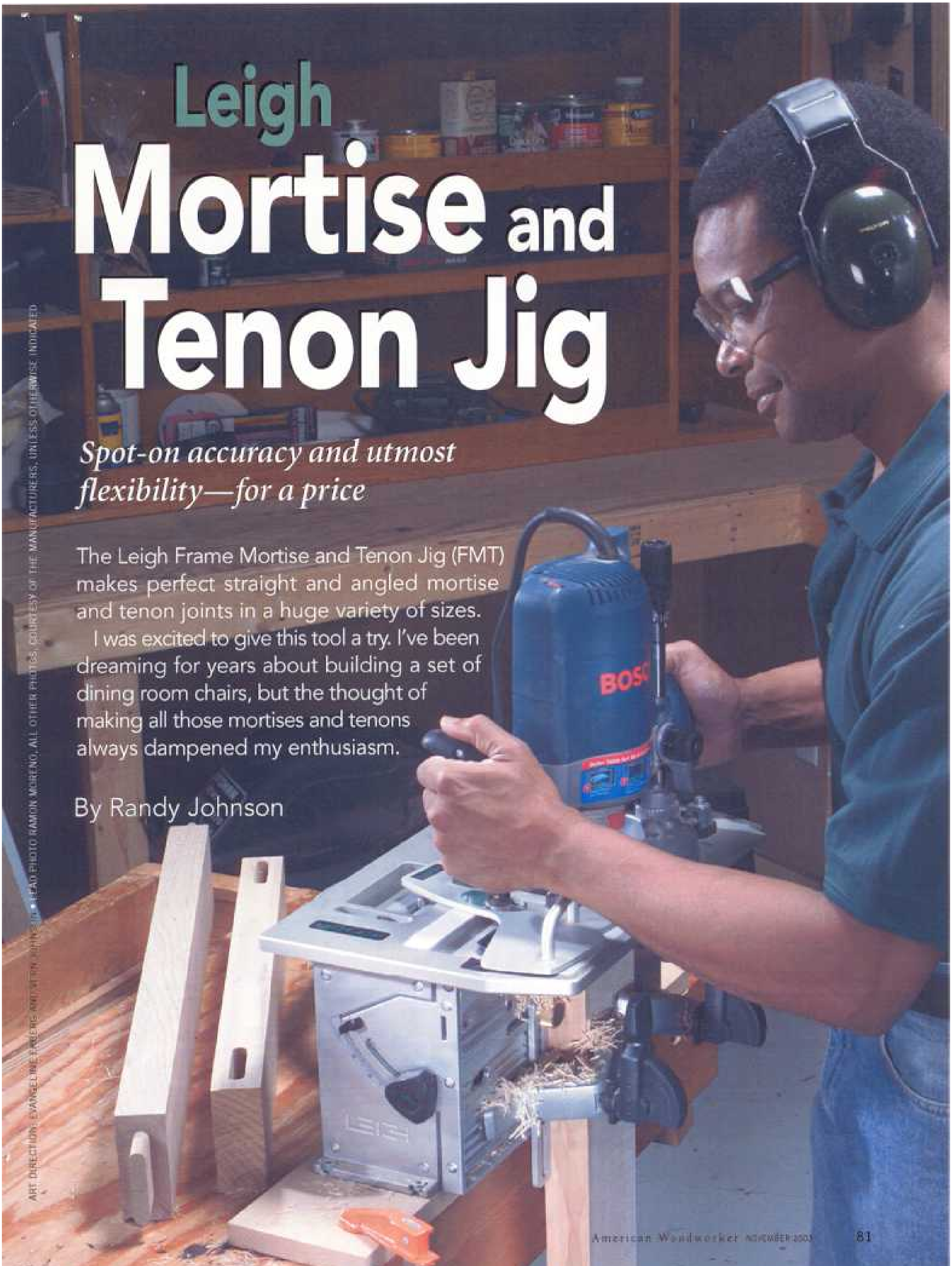


Leigh Mortise and Tenon Jig

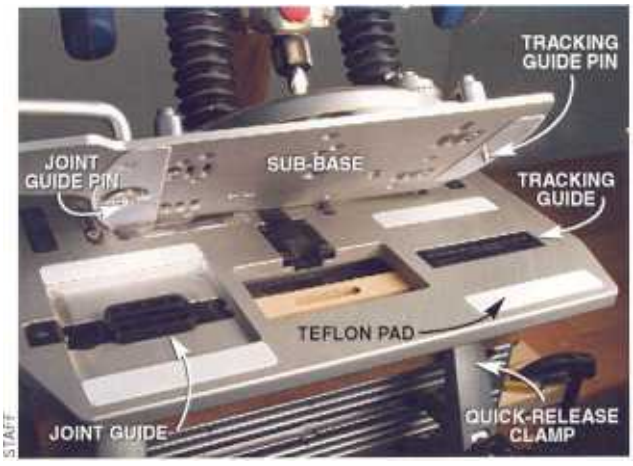
Spot-on accuracy and utmost flexibility—for a price

The Leigh Frame Mortise and Tenon Jig (FMT) makes perfect straight and angled mortise and tenon joints in a huge variety of sizes.

I was excited to give this tool a try. I've been dreaming for years about building a set of dining room chairs, but the thought of making all those mortises and tenons always dampened my enthusiasm.

By Randy Johnson

ART DIRECTION: EVANGELINE FARRERO AND VERN JOHNSON • LEAD PHOTO RAMON MORENO, ALL OTHER PHOTOS COURTESY OF THE MANUFACTURERS, UNLESS OTHERWISE INDICATED



1 With two micro-adjust guide pins and interchangeable joint guides this jig offers great accuracy and ease of use. Several other adjustments and features, such as Teflon pads and quick-release clamps, give this tool a very focused goal—quick and accurate mortises and tenons. It's a goal at which it succeeds with flying colors.

After giving the FMT a thorough workout on a couple of practice chairs my enthusiasm has returned. It takes a few hours and some patience to master the numerous adjustments, but once you do, the jig becomes a real pleasure to use.

The FMT base unit retails for around $700 (see Sources, page 83). That's a lot of cash, but we found the quality and performance of the jig are truly exceptional. It's a tool that small professional shops or those who want a dedicated mortise and tenon machine will find well worth the investment.

The FMT base package includes the main jig, a router sub-base, five joint guides, a 5/16-in. spiral router bit and a thick, well-written owner's manual (Photo 1). The sub-base comes with mounting hardware and can be attached to any currently available plunge router.

This basic setup enables you to cut 5/16-in.-thick tenons that are 1/2-in. to 1-1/2-in. wide, plus the corresponding mortises. Additional joint guides and router bits are available as options. With them you can make 17 additional standard-size joints as large as 1/2-in. thick by 2-1/2-in. wide and as small as 1/4-in. thick by 5/16-in. wide. By combining different router bits and guide templates you can make joints as small as 1/16 in. by 1/8 in. Now that's a tiny joint! With all the options, the price of the FMT is over $900.

How it Works

The basic principle behind the jig is that the router sub-base has two guide pins that follow corresponding guides in the top of the main jig (Photo 1 and Fig. A).

The joint guide is interchangeable and width and

2 The FMT produces round-ended mortises and tenons. It can machine to the middle of a 5-in.-thick board with no limit on the width.

3 Making angled tenons is a breeze with the FMT. The front plate pivots up to 30 degrees which makes holding the workpiece at an angle very simple. An easy-to-read angle gauge is conveniently located on both ends of the jig.

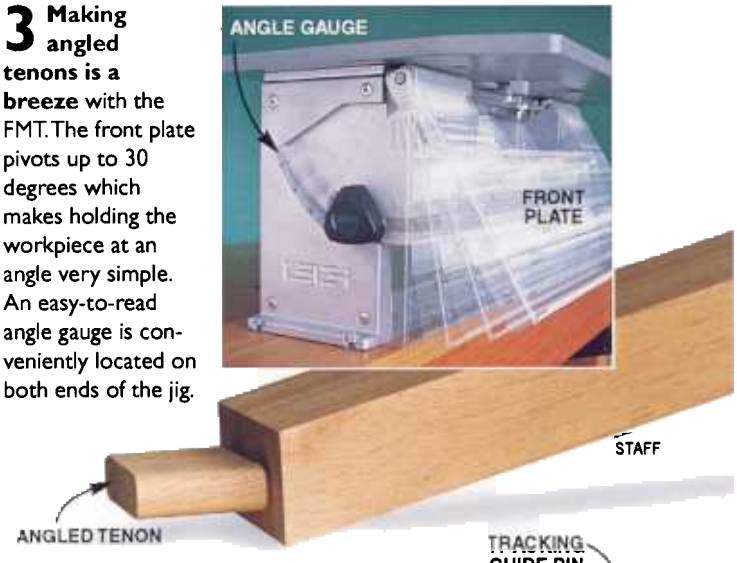
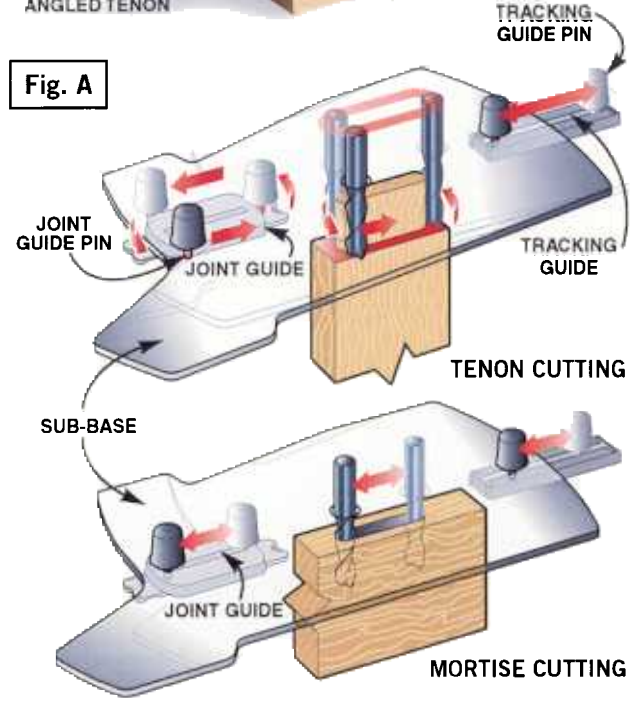


Fig. A



Following the outside of the joint guide with the joint-guide pin produces a tenon. Following the inside slot of the joint guide with the joint-guide pin produces a mortise. The joint guides are interchangeable for different size joints. During operation, the tracking-guide pin follows the straight slot in the tracking-guide track and directs the right side of the router side to side.

length of the joint. The tracking guide is fixed. Its function is simply to direct the right side of the router side to side. The guide pins are tapered and can be adjusted up and down, which makes them ride tighter or looser against the joint and tracking guides. You control the fit of the joint by adjusting the pins. Turning the pins one-eighth turn will change the joint fit by .001 in. Getting good-fitting joints is a cinch considering that a mortise and tenon joint should have about .005 in. of clearance for glue.

The FMT produces only round-ended mortises and tenons (Photo 2). If you want a square joint you'll have to trim the parts by hand or with another power tool. This machine also makes angle tenons, thanks to a pivoting front plate (Photo 3). This feature came in really handy when I cut the angled joinery on my dining room chairs.

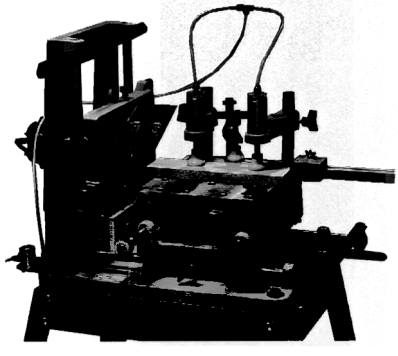
The FMT has a dust port that attaches to a vacuum hose. It's not perfect, but it does catch the lion's share of the chips. Most importantly it draws the chips away from the cutting area and prevents them from getting packed in around the joint during routing.

Improvement Wish List

Having run the FMT through its paces and having successfully made several dozen perfect joints, I came up with only two gripes. The first one is that the hole in the sub-base for the router bit is only 1 in. in diameter. This makes it tough to see where you're routing when cutting a joint. Second, I wish there were a few more template sizes for 3/8-in. and 1/2-in. router bits. The owner's manual shows how to make custom stops for the existing templates to get in-between sizes, but I found those stops a hassle to make and use. *AW*

Other Joint Machines

For the cost of the Leigh FMT you can buy a very good chisel-mortising machine and use your tablesaw to cut the tenons. You can also cut mortises and tenons with one of these other joinery machines:



Multi-Router

The Multi-Router can cut 15 different sizes of round-ended mortise and tenon joints plus several styles of dovetail and box joints. The $2,600 Multi-Router is a robustly built machine that can be outfitted with optional pneumatic hold-downs. The router is mounted perpendicular to a plate that moves up and down. The workpiece mounts to the feed table that moves left and right and in and out. (See Sources, below.)

The Matchmaker

The Matchmaker is capable of cutting several different kinds of joints. The basic model costs $700. Mortises and tenons can be cut by using the manual stops on the machine, or with one of the 12 optional templates. The mortise and tenon templates cost $15 each and make joints ranging in size from 1/4 in. by 1 in. to 3/4 in. by 3 in. (See Sources, below.)

WoodRat WR5

The WoodRat WR5 ($545) is a wall-mounted jig that can rout a joint up to 30-in. wide. It cuts several different styles of joints. The router's sub-base rides freely on a table while the workpiece is secured to a moveable rail below. Cranking a handle moves the rail. A unique PlungeBar device simplifies plunging and requires only one hand to operate. It can be purchased separately (see Sources, below). Optional guide rails with adjustable stops ($40) are also available. The guide rails allow you to set up the WR5 for repeat production work. The WoodRat produces a square tenon and a round-end mortise so you need to modify one of them for the joint to fit. The WoodRat also comes in a smaller version (18-in.-wide capacity) called the LittleRat LR1 ($340). (See Sources, below.)

Sources

Lee Valley Tools
(800) 871-8158 (USA)
(800) 267-8767 (Canada)
www.leevalley.com
Leigh FMT, #17N11.01; $750.

Highland Hardware
(800) 241-6748
www.tools-for-woodworking.com
Multi-Router, model 101L, #085201; $2,600.

WoodRat
(877) 966-3728
www.woodrat.com
30-in. WoodRat WR5; $545
18-in. WoodRat LR1; $340
PlungeBar, $40.

Woodworker's Supply
(800) 645-9292
www.woodworker.com
Matchmaker; $700.