

# TAGE FRID'S MORTISING JIG

Umpteen years ago our favorite Great Dane invented a mortising jig for use with his favorite plunge router. It was a very simple jig, knocked together from scrap plywood, which allowed him to rout mortises of any length, any width, up to 3" deep (depending on the bit in use), in virtually any workpiece that might come to hand. It's faster, more precise, and cuts far cleaner mortises than a hollow-chisel mortiser on a drill press. We built our own Frid jig a dozen years ago and have used it steadily since; you'll find it lying about the store somewhere near the routers, looking a little rough around the edges but still willing. The design is so simple and effective that it deserves to be a standard accessory in every shop equipped with a plunge router.



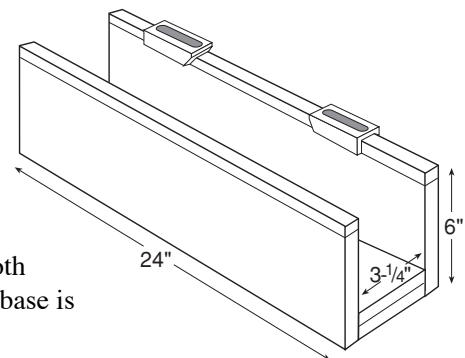
It will be worthwhile to install a square or rectangular sub-base on your router to work easily with the end stops on the jig. 1/8" or 1/4" phenolic resin board, clear plastic or plywood will work as long as your edge guide fence fits beneath the new sub-base. Remove the factory sub-base and use it to mark mounting screw holes and center hole on your shop-made replacement. All you need to go with the router is its straight edge guide and spiral end mill bits of suitable diameter. (Spiral end mills are listed with router bits in our catalog.)

Our Frid mortising jig was built to the dimensions shown because we had exactly that much scrap plywood on hand. The principle is what counts — your own jig may certainly be longer, deeper, or wider if that would better meet your needs. In general, however, you'll probably find, as we have, that this one will accommodate just about every mortising job you take on.

## Construction

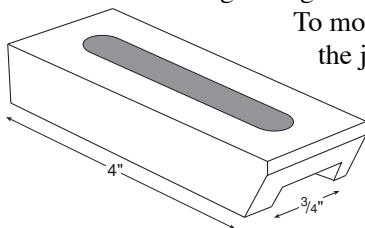
This jig is a good place to use some of your humblest leftover plywood. As long as the material is straight and flat it will serve the purpose. Make the base at least two layers thick, providing substantial edges which can be ripped or jointed straight and square, assuring that the side walls can be attached rigidly and reliably vertical. Before attaching the sides, glue a hardwood wear strip about 3/4" by 3/4" along the top edge of each piece, and trim it flush with the plywood on both sides. Now glue the sides onto the base, and check to be sure the opening width remains the same at the top as at the base.

The important dimensioning chore here is making the two top rails square to the front wall while keeping both parallel to the base. Any error will result in mortises that aren't perpendicular to the joint surface, yielding open joints and twisted assemblies. Set your tablesaw fence just a hair narrower than the jig's side wall height, then with the jig base against the fence trim one rail and then the other so both are in the same plane along their entire length, leaving the depth to the base is consistent as well.



## Stop Blocks

Make two stop blocks of wood at least 3/4" thick. Cut a piece about 8" long and 1-1/4" wide. Mill a 3/4" wide groove about 1/4" deep centered along its length. (You can construct the stops as 3-piece glue-ups just as well, if you choose.) Now cut the piece in half to make two blocks about 4" long. Next, cut a 1/4"-wide slot 3" long through the top of each block.



To mount the stop blocks on the jig, install your square sub-base and set the router on the jig midway along its length. Put the stop blocks on the rear rail and sandwich the router between them. Mark through each slot at the end farthest from the router. Drill a pilot hole and drive in a 3/16" hanger bolt, leaving about 3/4" of machine thread exposed. (Hanger bolts are double-ended screws with wood threads on one end and machine threads on the other. They're

standard hardware store stock.) A washer and wing nut will complete the assembly, and you'll be set up to cut mortises or slots from 0" to 6" long.

You may finish the jig if you wish, though this isn't functionally necessary. Finished or not, wax the rails and the front wall where the edge guide rides against it to minimize friction while you work.

### **Set-up**

Stock to be mortised should first be marked just as if you were about to chop the mortise by hand, with sharp gauge and knife lines showing clearly and precisely where the work is to be done (set your mortise gauge to the width of the flutes across the bottom of the end mill, of course). Clamp the workpiece inside the front wall of the jig, flush with or near the top edge and carefully parallel to it. Scrap lumber of uniform thickness can be used to shim the work to a suitable height while keeping it parallel to the rails. When you're mortising near the end of a piece, or if a piece is simply too short to be clamped at both ends of the jig, clamp a longer piece of scrap behind the work to hold it in place. For mortising identical pieces, clamp or bolt a stop block inside the front wall, or pencil reference lines across the front rail to assist in repeated set-ups.

Install the end mill bit in your unplugged router, and mount your edge guide in the router base. Set the router on the jig with the guide fence bearing against the front wall. Lower the motor until the bit just kisses the work, position the bit within the gauge lines and lock the edge guide in place. Move the bit to one end of the mortise and set the end stop against the router sub-base, then do the same at the other end of the mortise. While the bit is still touching the work, set the router's plunge stop rod for the depth of cut you've chosen.

### **Mortising**

Cutting a mortise is the simplest and fastest part of the exercise. Plan to cut about 1/4" deep with each pass until full depth is reached. There's rarely any need to pre-set your intermediate passes; just unlock the motor and push it down about 1/4" — then re-lock the plunge lock lever before moving the router. To insure straight and accurate milling, let the router control itself for you: always mill from left to right, increasing the depth only at the left end of the mortise. Newton's third law of motion, "any action yields an equal & opposite reaction" (see our article *Routers Go Left!*) explains why the clockwise rotation of the bit pulls the edge guide tight against the front of the jig as you work, so you'll have no trouble maintaining precise control. If you need to cut a mortise wider than your biggest end mill bit, first cut the near side to full depth, then reset your edge guide and start over to widen the mortise toward the back wall of the jig. Keep an eye on the end stops; if chips pile up against them they'll need to be blown clear during your last pass to be sure the mortise is cut to full length at full depth.

### **Tenons**

Despite the best efforts of many imaginative woodworkers (which have created some real humdinger gizmos), we have yet to see a reasonably simple and affordable jig or method that enables the router to cut tenons as efficiently and accurately as the tablesaw or bandsaw. For stock up to 3' or 5' long, a tablesaw tenon jig is hard to beat. (Check our Delta tenon jig , or download a copy of the shop-built tenon jig plan available on our website.) When the work is too long to stand vertically under good control, two other techniques work well. Set up your bandsaw rip fence and make the cheek cuts with a 6 TPI or finer blade, then do the shoulder cuts on the radial arm or cutoff saw or by hand. Also, check out the simple tenon jig described in Pat Spielman's *Router Jigs & Techniques*.

Round the tenon corners with a rasp until they match the radiused ends of the mortise. Precise fit and extremely smooth cheek to cheek mating surfaces within the joint ensure more than enough glue-bond and mechanical strength to compensate for the tiny loss of square corners. Only if you want to pretend that your through mortises are hand cut is it worth chiseling the mortise square.