A Supplement to August Home Publications

TOP 10 JIGS

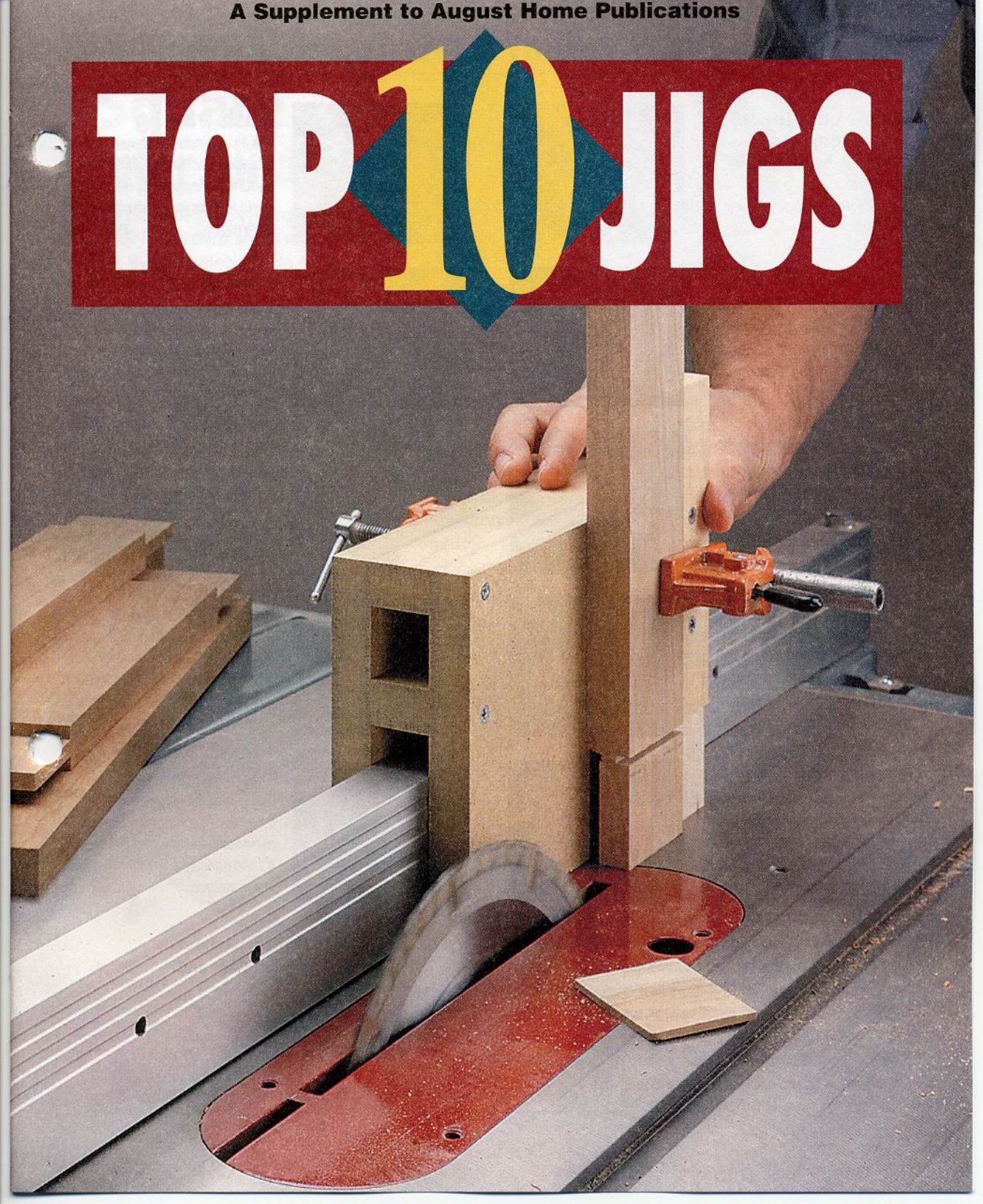
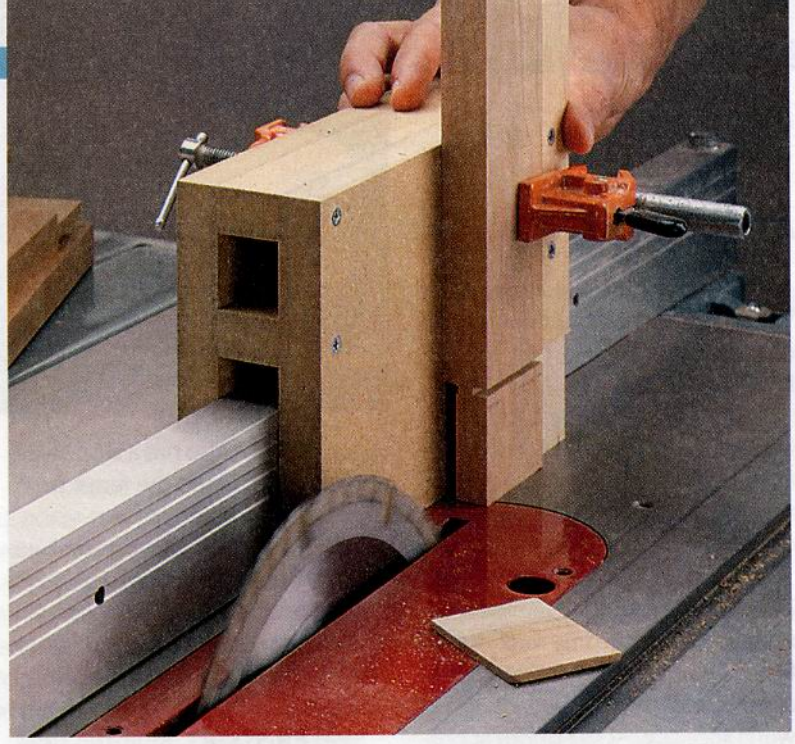


Table of Contents

A good jig can make a woodworker's life a lot easier. Whether you're cutting tenons on the table saw or dadoes with a router, a jig can transform tricky jobs into safe and easy ones. All it takes is a little ingenuity and a few scraps of wood. In this spirit, we've compiled ten of our favorite jigs for this booklet. All of these can be made in just a few simple steps, and they're guaranteed to relieve a few headaches around the shop.

Donald B. Peschke, Publisher

Tenon Cutting Jig



Cutting a tenon sometimes requires making a tricky cut on the table saw. But this jig simplifies things considerably. Its whole purpose is to hold the workpiece vertical as it crosses the blade.

I used to cut tenons by laying the workpieces flat on the table saw and making a series of passes over the dado blade. But that left score lines on the cheeks of the tenons. This jig is advantageous because it leaves you with a clean cut.

The jig is designed to straddle the rip fence. This holds it in place and provides a way to adjust its position in relation to the blade.

The tenon cutting jig consists of two faces held together with crosspieces. There's also a vertical stop screwed to the end of the jig. This stop keeps the workpiece vertically aligned as it passes through the saw blade, see photo.

CROSSPIECES. To make the jig, first rip two *crosspieces (A)* to width to match the thickness of your rip fence, see Fig. 1. This width is fairly critical because you want a good friction fit against the fence when the face pieces are added.

If the crosspieces are too narrow, the jig will bind on the fence. If they're too wide, the jig will be loose.

How do you get it perfect? I try to get my crosspieces right on the money. But if I'm off, I try to err by making them narrow. Then I can use paper or playing cards as shims.

FACES. After cutting the crosspieces, cut the *faces (B)* to size. Then screw the faces and crosspieces together and test the fit.

VERTICAL STOP. When the jig slides easily without any slop, add a *vertical stop (C)* to the back end. As this stop is added, make sure it's perpendicular to the table. Safety Note: To avoid cutting into the screws, make sure they're above the maximum blade height.

Finally, to hold the workpiece tightly against the stop, I drilled holes in the jig and installed a ½" pipe clamp through both faces, see photo.

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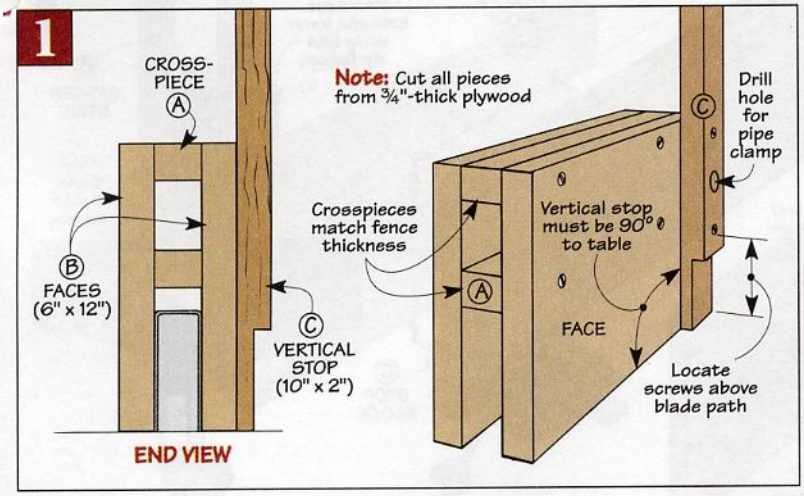


Slip-On Auxiliary Fence

One of the quickest and easiest ways to cut a rabbet on the end of a workpiece is to use a dado blade on the table saw.

To do this, part of the dado blade needs to be "buried" in a wood auxiliary fence. Clamping a wood fence to the rip fence is fast, but clamps get in the way of your cut.

To avoid this problem, I use an auxiliary fence that quickly slips over my rip fence, see photo. By making the fence 7" tall, I can turn it around and use the smooth face to support a tall workpiece as well, see photo at bottom of page 5.

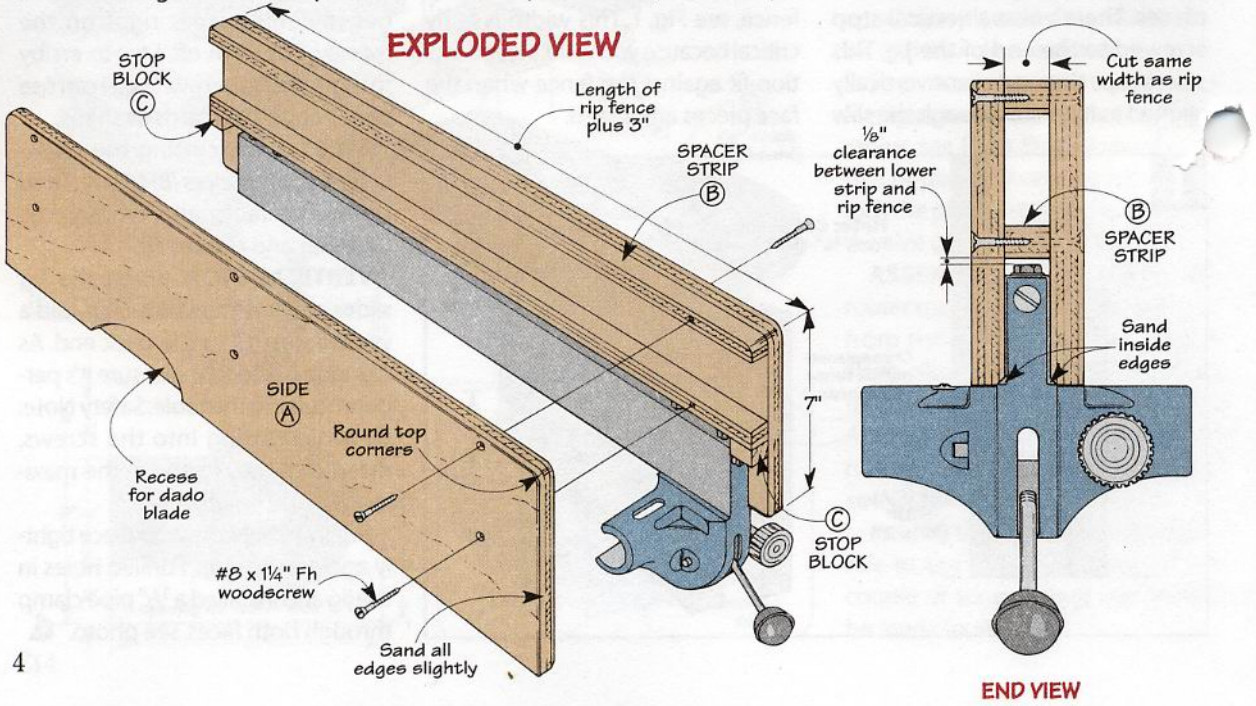
FENCE CONSTRUCTION. The slip-on auxiliary fence consists of two tall sides held together with a pair of spacer strips. It also has a stop block at each end to keep the fence from sliding during use.

SIDES. Start by cutting the two *sides (A)* from 3/4"-thick plywood. It's best to cut the sides 3" longer than your rip fence to allow for clearance (and for the two stop blocks added later), see Exploded View.

SPACER STRIPS. After the sides are cut, the next step is to make the *spacer strips (B).* (I used plywood for these strips since solid wood strips could warp and twist.) These strips are the same length as the sides, and exactly as wide as the rip fence, see End View below.

CHECK FIT. To check the fit of the strips, temporarily clamp the fence together so one strip is flush with the top, and the other is at least 1/8" above the rip fence. Then slip the auxiliary fence over the rip fence to see how it fits, see Fig. 1.

If it's too loose, carefully rip the strips a bit narrower. If the fence is too tight, you can use a strip of paper to shim out the sides.



Slip-On Auxilary Fence Cont.

Once you've got a snug fit, drill pilot holes, and screw the fence together, see Fig. 1.

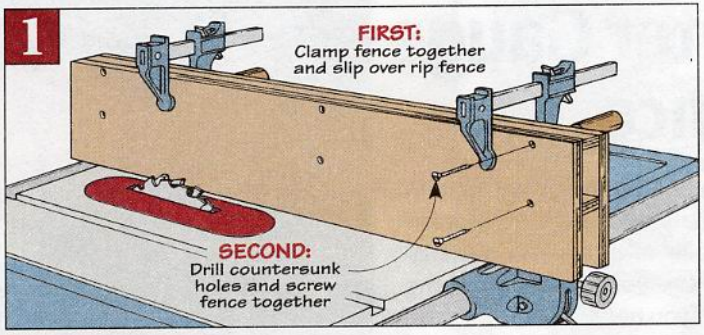
STOP BLOCKS. I needed something to prevent the slip-on fence from sliding forward during use. So I mounted wood stop blocks on both sides to "catch" the ends of the rip fence, see Exploded View on page 4.

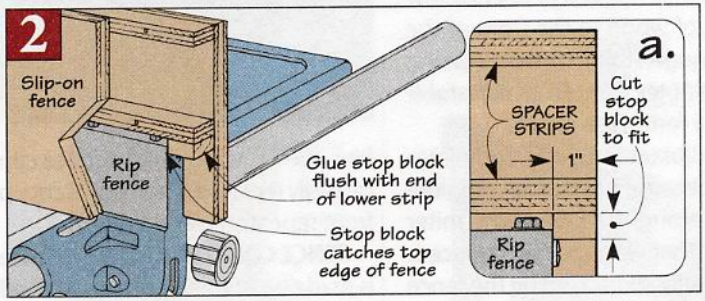
Cut a pair of *stop blocks (C)* to the same width as the spacer strips, and about 1" long. Then glue them to the bottom of the lower spacer strip so they just "catch" the end of the rip fence, see Figs. 2 and 2a.

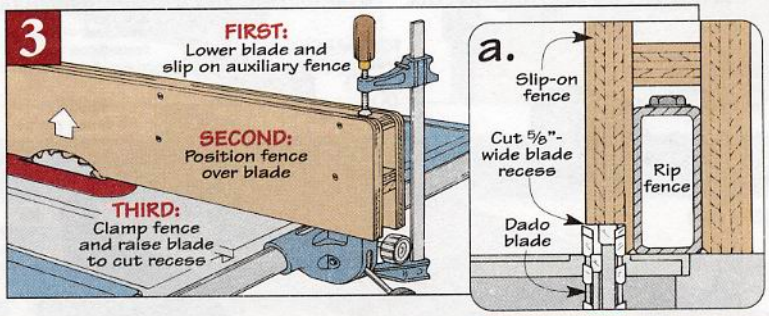
CUT RECESS. To use the fence to cut rabbets, you'll need to cut a recess for the dado blade. To do this, mount a dado blade in the saw and lower it all the way down. Then slip the auxiliary fence onto the metal rip fence.

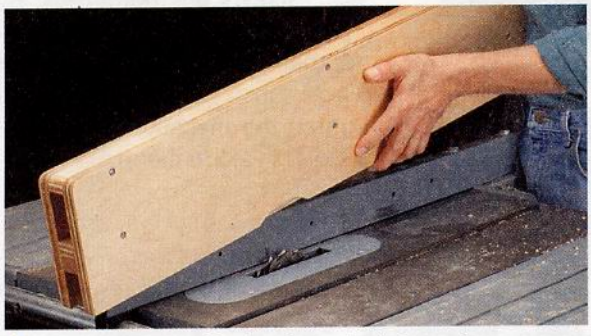
Now position the auxiliary fence so the side is over the dado blade. Then clamp it to the table saw.

After locking the rip fence in place, turn on the saw, and slowly raise the blade, see Figs. 3 and 3a. The recess should be about $\frac{1}{2}$" high since that's the maximum cut you'll need for most work with $\frac{3}{4}$"-thick stock.





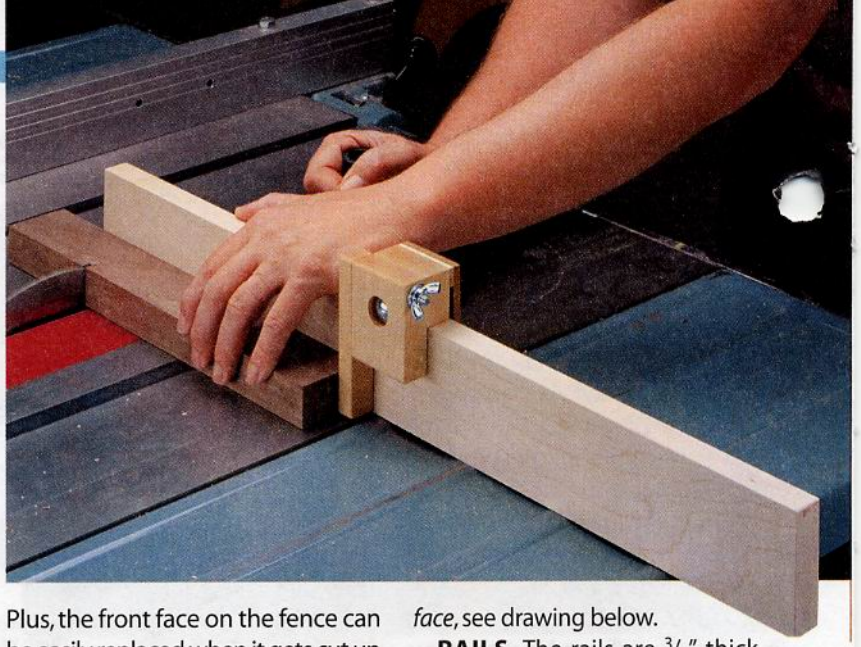




▲ ***Easy on and off.*** *This fence is designed so you can slip it on and off your metal rip fence. And you don't need clamps or screws to hold it in place.*

▲ ***Extra support.*** *One side of the slip-on auxiliary fence is left smooth to provide uniform support when cutting wide or tall workpieces.*

Miter Gauge Fence

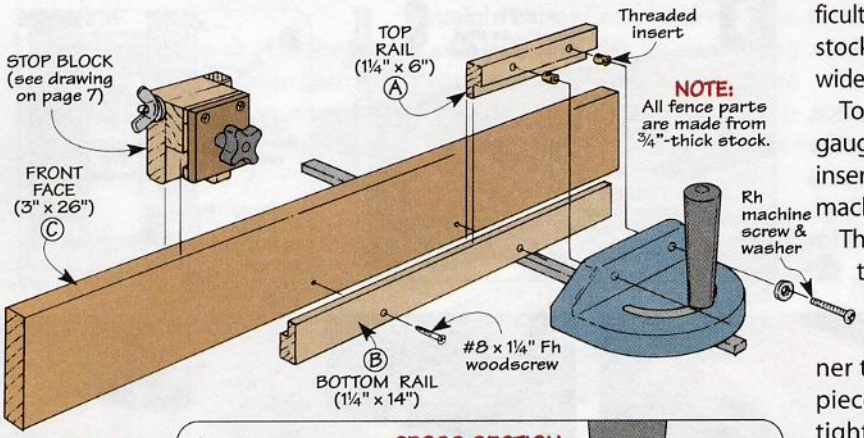


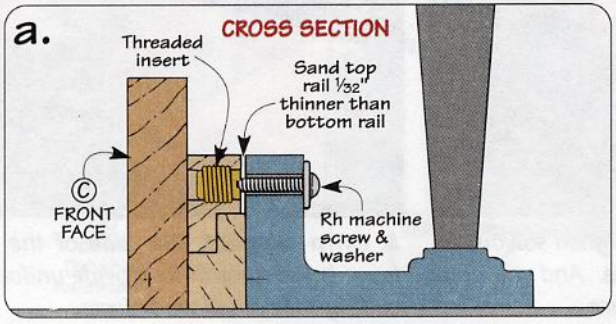
Using a miter gauge without an auxiliary fence is kind of like wearing a pair of pants without suspenders — you just don't get the support you need.

And while it's pretty easy to screw a piece of wood to the front of the miter gauge, I think it's worth taking a few minutes to make an *adjustable* auxiliary fence, see photo.

An adjustable fence is advantageous because it can slide from side-to-side along the face of the miter gauge. That way, your workpiece is always fully supported by the fence — even when making angled cuts. Plus, the front face on the fence can be easily replaced when it gets cut up from repeated use.

FENCE CONSTRUCTION. The fence is made up of three pieces: a *top* and a *bottom rail*, and a replaceable *front face*, see drawing below.





NOTE: Cut ⅜"-wide rabbet ½"-deep on extra long blank, then cut rails to length

RAILS. The rails are ¾"-thick hardwood pieces with interlocking rabbets. I rabbeted an extra-long workpiece, and then cut the *top rail (A)* and *bottom rail (B)* to length. (It may be difficult to cut a rabbet on such narrow stock, so you may want to rabbet a wider workpiece, then rip it to width.)

To secure the fence to the miter gauge, I installed a pair of threaded inserts in the top rail to accept two machine screws, see detail 'a.'

The bottom rail "floats" under the top one (until the two machine screws are tightened). By sanding the top rail 1/32" thinner than the bottom rail, the two pieces pinch together when you tighten the machine screws, see detail 'a.' This locks the auxiliary fence securely in place.

A replaceable *front face (C)* is screwed to the bottom rail. This face is secured by two screws, which makes it easy to remove from the fence. That way, when the face gets chewed up by the saw blade, you can make a new one.

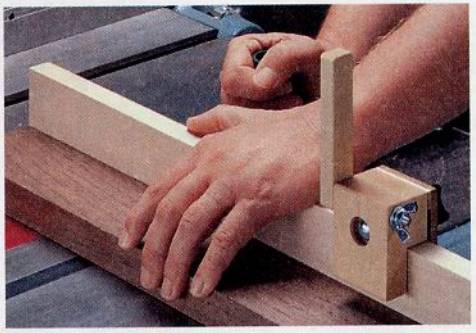
Miter Gauge Fence Cont.

STOP BLOCK. To make the miter gauge fence even more useful, you can add a *stop block*, see photo on page 6. This stop block is especially handy because it has a pivoting stop that flips up out of the way. With the stop flipped up, you can square up one end of a workpiece, see photo at right. Then you can just flip the stop back down to cut each piece to its final length.

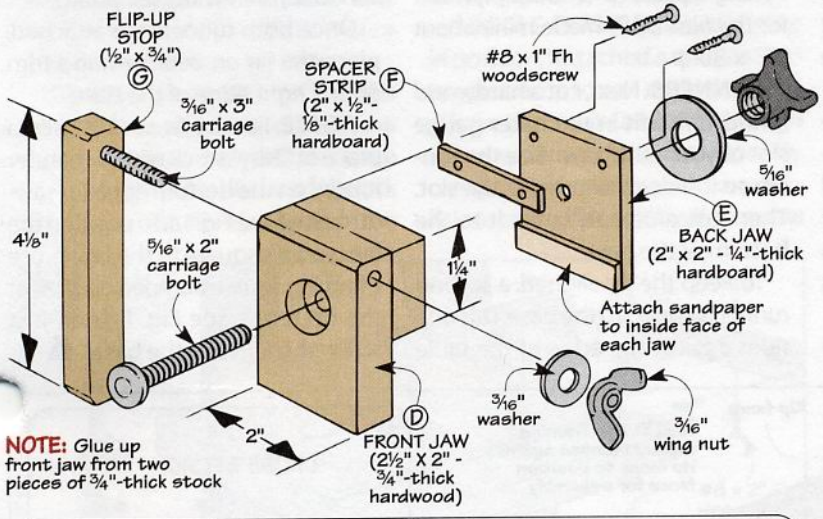
The stop block consists of two main parts. The first part is a U-shaped *clamp head* that fits over the miter gauge fence. And the second is a narrow hardwood strip that acts as the actual *stop*.

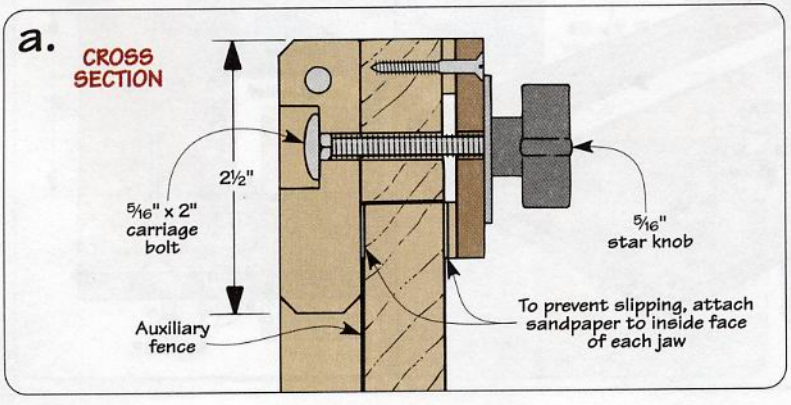
CLAMP HEAD. Basically, the clamp head consists of three pieces: an L-shaped *front jaw (D)*, a hardboard *back jaw (E)*, and a *spacer strip (F)*, see drawing below. (You can make the front jaw by gluing up two pieces of 3/4"-thick stock.) These parts work together to lock the stop block in place.

To produce this locking pressure, a carriage bolt passes through the two jaws. You'll need to drill a counterbored shank hole for this bolt through the front jaw and back jaw of the clamp head, see drawing below.



▲ ***Flip-Up Stop.*** *This stop allows you to square up the first end of your workpieces without having to move the stop.*





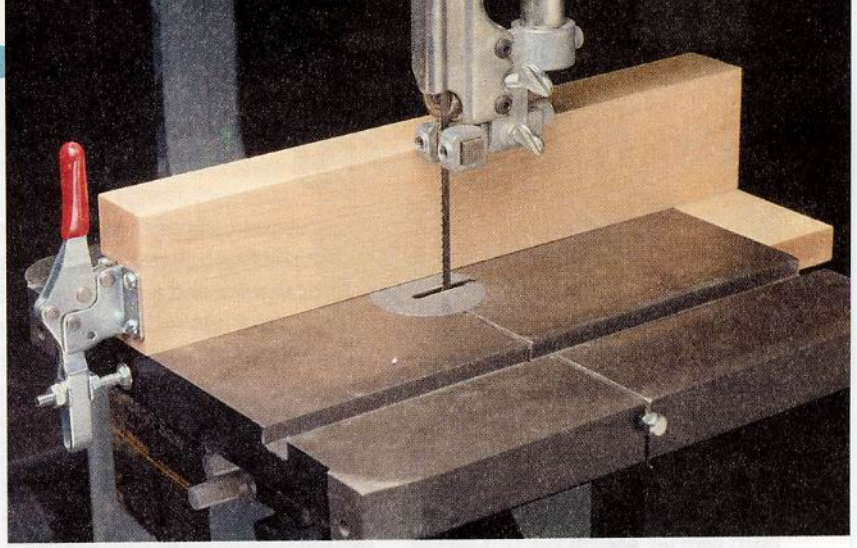
Next, I added the 1/8"-thick spacer strip to create a small gap between the jaws of the clamp head, see detail 'a.' This gap allows the clamp head to pinch against the fence as you tighten a knob on the end of the bolt. The spacer strip (and the back jaw) are simply screwed in place.

THE STOP. The *flip-up stop (G)* is nothing more than a narrow hardwood strip attached to the side of the clamp head, see drawing. The stop pivots up and down on a carriage bolt as needed.

The bolt passes through a hole drilled in the end of the stop and another hole in the clamp head, see drawing. Then the bolt is secured with a flat washer and wing nut on the side of the clamp head.

SANDPAPER. Finally, I added strips of sandpaper to the inside face of each jaw, see detail 'a.' The sandpaper acts as insurance for the stop block that prevents the clamp head from slipping around on the face of the miter gauge fence.

Band Saw Fence



When making a straight cut, an auxiliary fence is an essential part of your band saw. The only problem is my band saw didn't come with a fence, and a store-bought fence can be quite costly. So instead of buying an auxiliary fence, I decided to build my own.

This band saw fence is pretty straightforward. It's just two pieces of hardwood shaped into a "T," see photo. A toggle clamp is fastened to the fence to quickly secure it to the table.

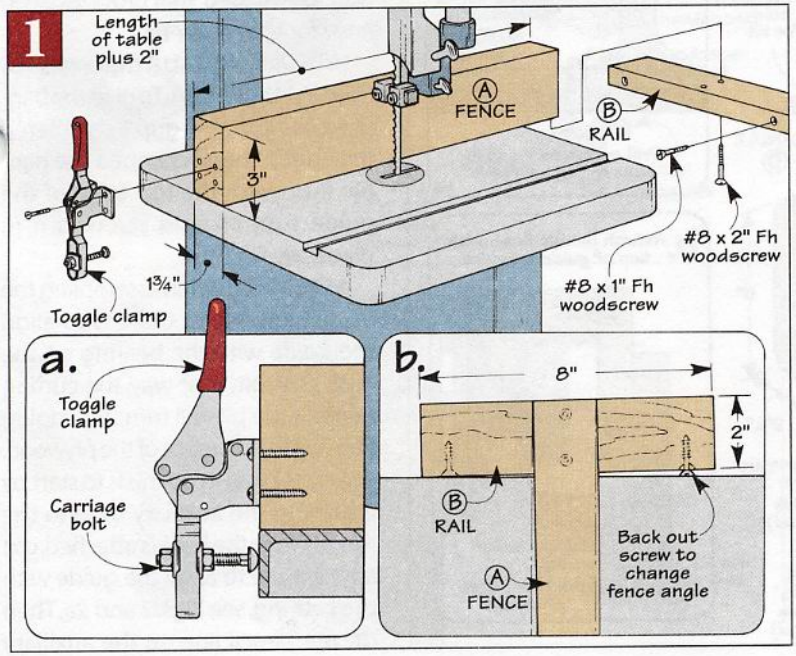
FENCE. The *fence (A)* is a 1¾"-thick piece of hardwood that rests on the table and guides the workpiece, see Fig. 1. (I used maple.) A short ¾"-thick hardwood *rail (B)* rides against the back edge of the table and keeps the fence aligned with the saw blade.

TOGGLE CLAMP. To lock the fence in position, I attached a quick-action toggle clamp to one end, see Fig. 1a. (These clamps are available through many woodworking catalogs.) By using a toggle clamp, you can quickly loosen the fence, slide it to a new location, and then lock it in place.

ADJUST FOR DRIFT. Another nice thing about this band saw fence is it can be adjusted to compensate for "drift." Drift is the tendency of the blade to "pull" one way or the other while cutting. This can be caused by a dull blade or a blade with an uneven set on the teeth.

An easy way to adjust for drift is to install two screws on the inside face of the rail. By backing out either of the screws, you can change the angle of the fence to match the drift caused by the blade, see Fig. 1b. This way, when you lock the toggle clamp against the table, it automatically aligns the fence with the blade to ensure a straight cut.

TEST CUT. All it takes to determine the angle of drift is to make a test cut. Start by standing a scrap piece on edge. Then position the fence to cut half its thickness and saw the scrap into two thin pieces. If the cut is straight, no further adjustment is necessary. If it isn't straight, turn the adjustment screws as needed until you get the fence set at the angle of drift.



Flush Trim Jig

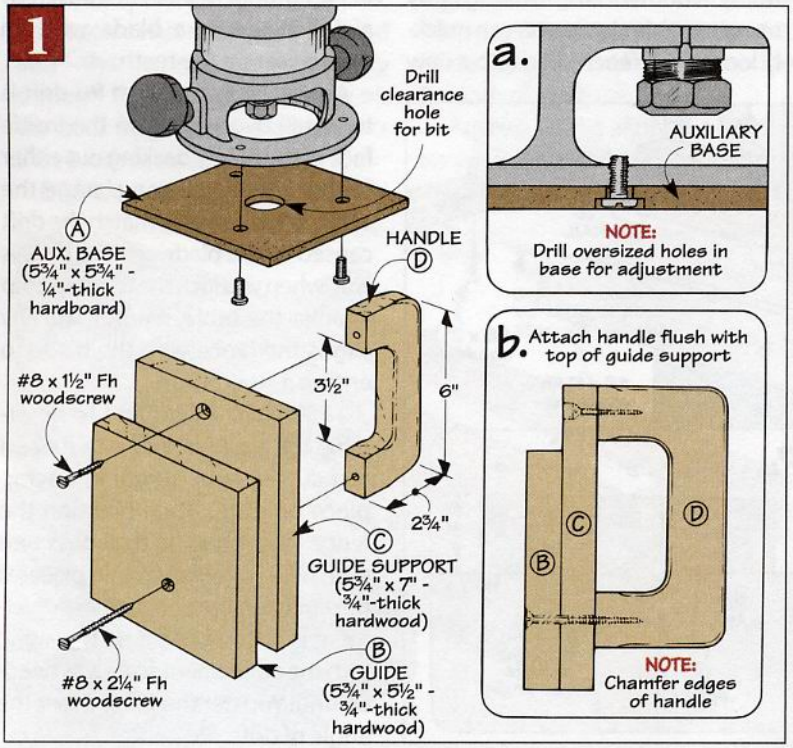
A quick way to trim solid wood edging flush on plywood is to use a router and a flush trim bit. But keeping the router steady as you're making a cut can be a challenge — there's not much of a surface for the base of the router to balance on. So if you're not careful, the bit might gouge the wood.

To help stabilize the router, I use a flush trim jig, see photo. This jig has a vertical guide that mounts *under* the router and prevents it from tipping. The guide also keeps the bit perpendicular to the edging.

THE PARTS. The design of this jig is quite simple. An *auxiliary base* replaces the ordinary base on your router, see Fig. 1. Attached to this is a vertical *guide* and a *guide support*. There's also a *handle* for holding the jig flat against the surface of the plywood, see Fig. 1.

AUXILIARY BASE. The *auxiliary base (A)* is just a piece of $\frac{1}{4}$"-thick hardboard. I used my existing router base as a template for marking the mounting holes on the auxiliary base. Drill and counterbore these holes a little oversized, see Fig. 1 and 1a. This way, you can shift the router on the base if you need to make adjustments later.

GUIDE & GUIDE SUPPORT. The next step is to add the *guide (B)* and the *guide support (C)*. I cut both of these pieces from the same board. But the guide is $1\frac{1}{2}$" shorter than the guide support. This way when the two pieces are glued together, they form a "step" that provides clearance for the router bit.



HANDLE. Next, I cut the *handle (D)* from $\frac{3}{4}$"-thick stock. To give the handle a comfortable grip, I chamfered the edges. Then, I clamped the handle flush with the top edge of the guide support and screwed it in place, see Fig. 1b.

ASSEMBLY. When assembling the jig, the important thing is to align the guide with the bearing on the flush trim bit. That way, the cutting edge of the bit will trim the edging flush with the surface of the plywood.

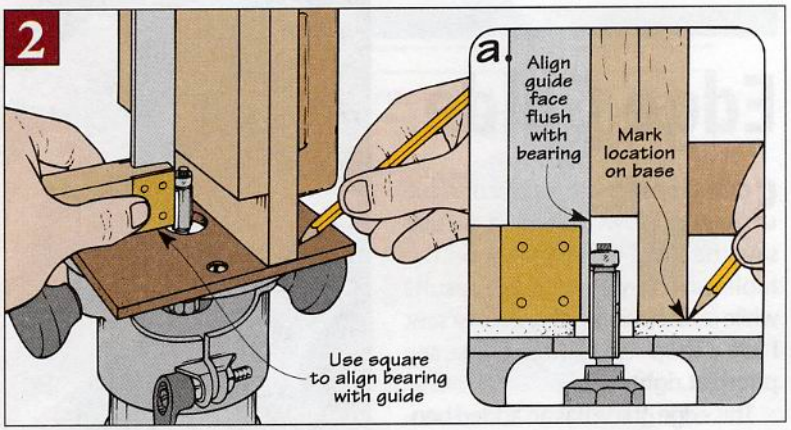
An easy way to do this is to start by attaching the auxiliary base to the router. Once the base is attached, use a try square to align the guide with the bearing, see Figs. 2 and 2a. Then draw a pencil line on the auxiliary

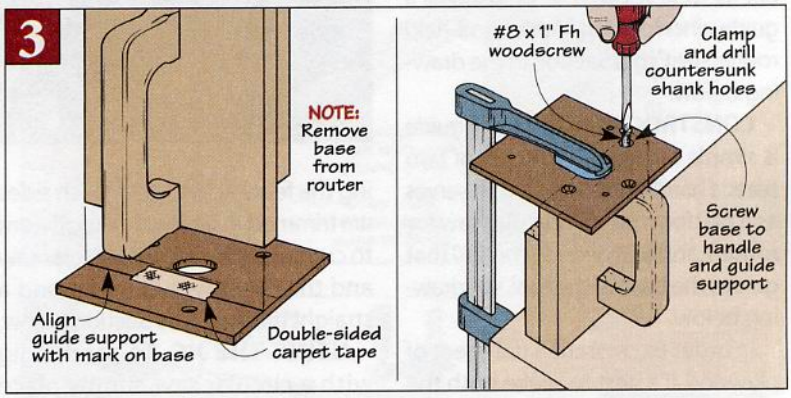
base to mark the location of the guide support.

To attach the guide support, you'll need to remove the router from the auxiliary base and turn over the jig. An easy way to keep the guide support aligned with the marks on the auxiliary base is to use a piece of double-sided carpet tape to keep it from shifting, see Fig. 3. Then just screw the guide support and handle to the auxiliary base, see Fig. 3.

At this point, you can reattach your router to the auxiliary base. Check once more to make sure the bearing and guide are perfectly aligned. Then, you should be ready to trim the edging.

If you need to make an adjustment to the jig, loosen the mounting screws that hold the auxiliary base to the router. Shift the base in the oversized holes until the bit is realigned with the guide, and tighten the screws. The bit should cut the edging flush with the plywood.





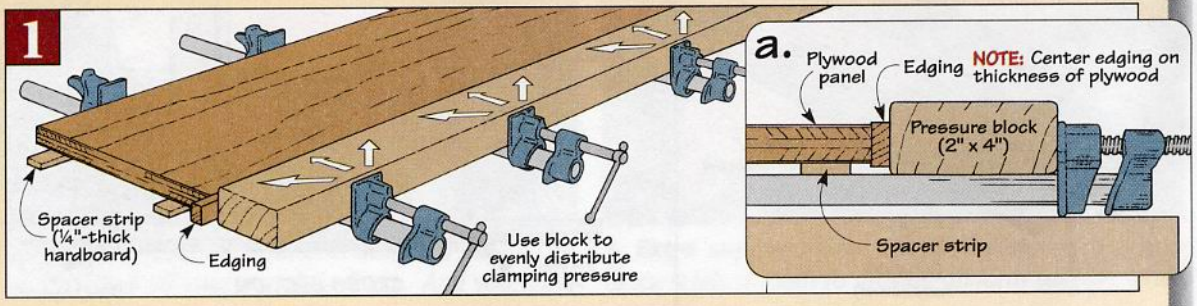
Edging Plywood

Whenever I'm edging plywood, my edging strips never seem to stay where I want them.

To avoid this problem, I'll use edging that's wider than the thickness of the plywood, see Fig. 1a. That way, alignment with the plywood isn't critical. It will be trimmed flush later.

SPACERS. I also use spacer strips under the plywood when gluing on the edging, see Fig. 1. They raise the plywood off the clamps to keep the edging centered, see Fig. 1a.

PRESSURE BLOCK. I like using a pressure block between the clamp head and the edging. It helps distribute the clamping pressure, so fewer clamps are needed, see Fig. 1.



Edge Guide

Sometimes it's easier to cut a full sheet of plywood with a circular saw than it is to balance it on the table saw. To get accurate results while crosscutting with a circular saw, I use a shop-made edge guide, see photo at right.

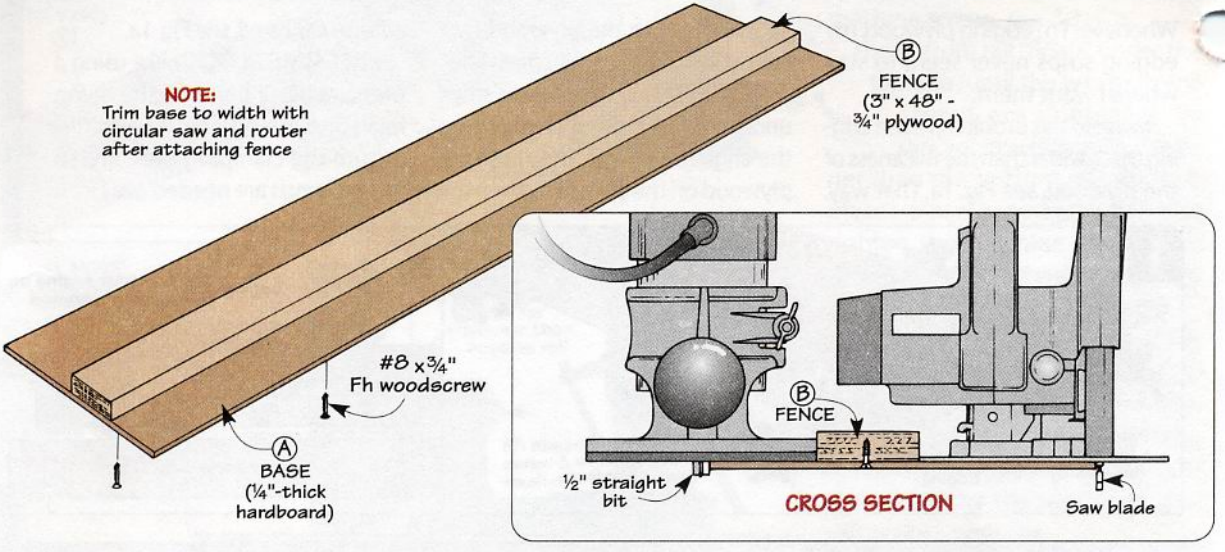
This edge guide has an added benefit as well. It can also be used as a guide when cutting with a hand-held router, see Cross Section in the drawing below.

CONSTRUCTION. The edge guide is simple to build. It consists of two parts: a hardboard *base (A)* that serves as a platform for the circular saw (or router), and a plywood *fence (B)* that guides the base of the tool, see drawing below.

In order to crosscut a full sheet of plywood, it's best to make both the base and fence 48" long. Also, start with an extra-wide base. After screwing the fence to the base, both sides are trimmed to final width. You'll want to cut one side with the circular saw and the other with a router and a straight bit, see Cross Section below.

USING THE JIG. To use the jig with a circular saw, simply place the edge of the base on the layout line and clamp the jig securely in place. Then run the metal base of the saw against the fence to make a cut.

If you're using a router to make a crosscut, the idea is basically the same as using a circular saw. Just make sure that you use the same diameter bit that was used to trim the edge of the jig.



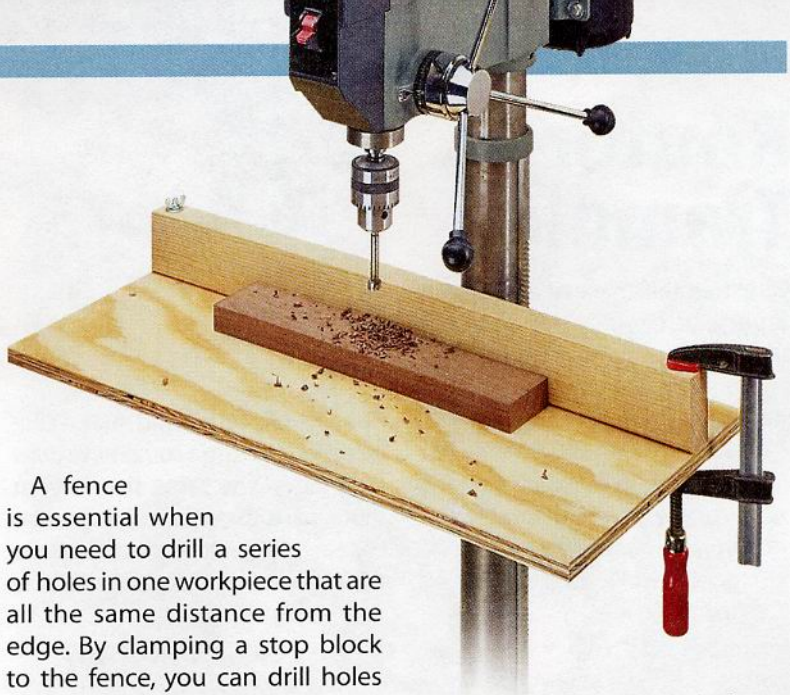
Drill Press Table

Most drill presses seem to be designed more for metalworking than for woodworking. They're equipped with tiny tables that lack any fences or guides. Fortunately, it doesn't take much to transform an ordinary drill press into a "real" woodworking tool.

TABLE. To increase the surface area of the drill press, you can add an auxiliary table. This "table" is just a *base (A)* made of 3/4"-thick plywood that's bolted to the drill press through the slots in the metal table.

When determining the size of the auxiliary table, be careful not to make it so large that the drill press becomes wobbly or unstable. (I made mine 16" x 30".)

FENCE. The larger worksurface is a plus, but what really makes this table useful is the *fence (B)*, see photo.



A fence is essential when you need to drill a series of holes in one workpiece that are all the same distance from the edge. By clamping a stop block to the fence, you can drill holes at the same place in several pieces.

The fence is just a scrap 2 x 4 that's attached to one end of the table with a carriage bolt and a wing nut, see Fig. 1a. A chamfer routed along the bottom edge of the fence provides a relief for sawdust.

The carriage bolt allows the fence to pivot back and forth in relationship to the drill bit. When the fence is positioned where you want it, a clamp can be used to secure the "free" end to the auxiliary table.

To make the fence even more useful, you can drill a couple extra holes along the end of the table so the fence can be moved for wider or narrower workpieces, see Fig. 1.

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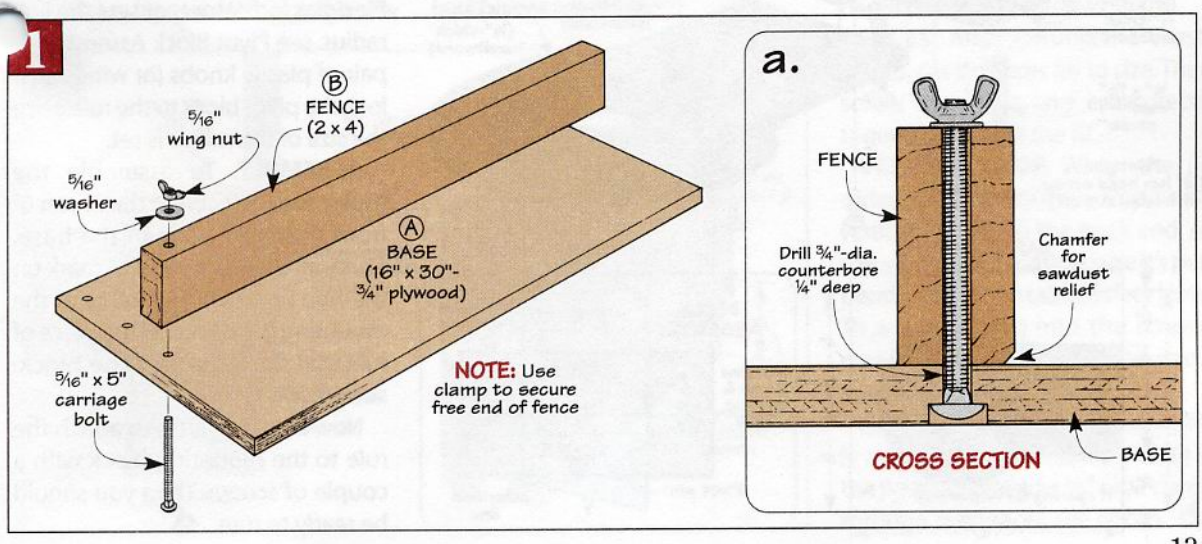
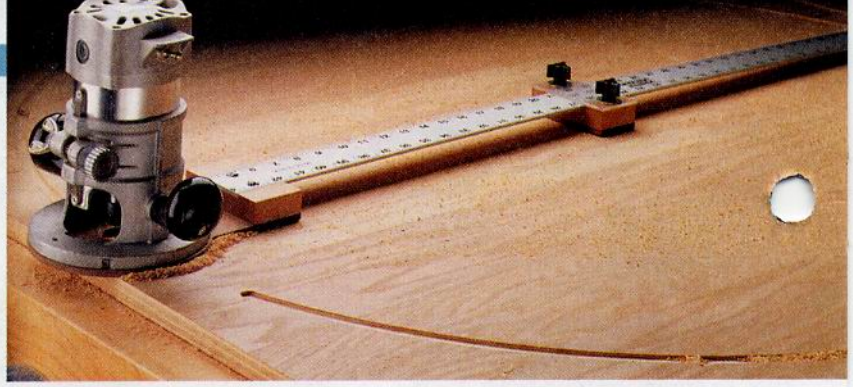


Router Trammel



This trammel makes it easy to rout perfect circles. The router is attached to a hardboard base that's connected to a pivot block with a 48" metal rule, see photo.

BASE. To build the trammel, start with a piece of 1/4" hardboard for the *base (A)*, see drawing. Center the router on the base, 6" from the back.

To do this, you'll need to measure from the back edge and mark a center point. Then use a compass to draw a diameter the same size as your router base. Using the existing router base as a template, mark and drill the mounting holes and clearance hole for the bit. Finally, cut the base to its finished shape, see Base Layout.

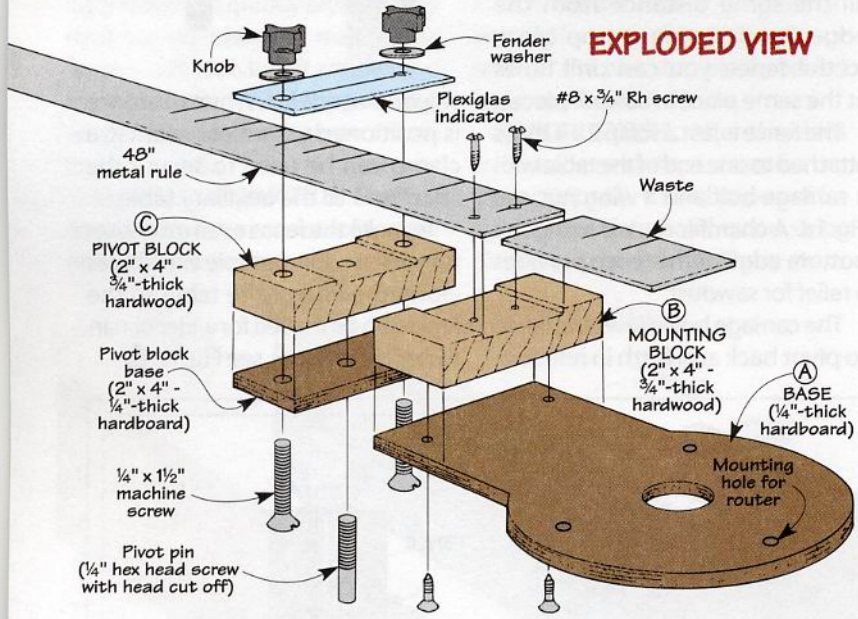
MOUNTING BLOCK. To complete the trammel, I made two identical hardwood blocks with dadoes cut in the top to accept the metal rule. One of these blocks is screwed to the back of the base and serves as the *mounting block (B)*, see drawing.

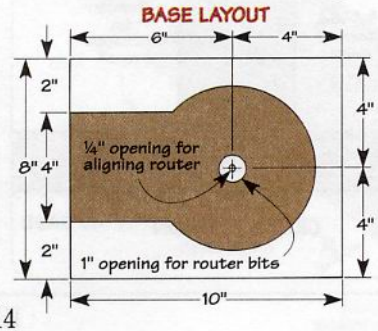
PIVOT BLOCK. The other block serves as the *pivot block (C)*. You'll want to drill three holes in the pivot block. Two holes accept machine screws, and the other is centered to accept a pivot pin. The pivot pin is epoxied in place and marks the center of the circle, see drawing.

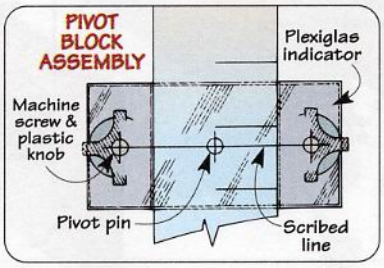
The machine screws hold a Plexiglas indicator that sets the jig's radius, see Pivot Block Assembly. A pair of plastic knobs (or wing nuts) lock the pivot block to the rule once the size of the radius is set.

ASSEMBLY. To assemble the router trammel, center the router 6" from the back edge of the base. Then, after aligning the 6" mark on the rule with the back edge of the mounting block, cut off the piece of rule that sticks out past the block, see drawing.

Now all that's left is to attach the rule to the mounting block with a couple of screws. Then you should be ready to rout.







T-Square Router Guide

When crosscutting plywood, you usually don't think about using a router. But a straight bit in the router can produce a clean edge. This T-square router guide will help you do just that. And not only is it an ideal jig for crosscutting plywood, it's great for cutting dadoes as well.

The router guide is made up of two pieces of $^3/_4$"-thick stock, see drawing below. A *head (A)* squares the guide to the edge of the workpiece. And a *fence (B)* guides the base of the router. I made the fence 54" long, which allows me to cut a dado across a full sheet of plywood.

BUILDING THE GUIDE. Once the two pieces are cut to size, use a square to position them so they're exactly perpendicular with one another. Then simply screw the two pieces together. Don't glue the pieces together— you might have to adjust for square later on.

ALIGNMENT NOTCH. The thing that makes this guide such a handy jig is the alignment notch. It's a notch routed into the head that allows you to quickly position the T-square on the layout line, see Fig. 1a.

To rout the notch, first clamp the T-square to a piece of scrap plywood. Then rout across the plywood and continue into the head to cut the notch. Use the same straight bit for the notch that you plan to cut plywood with.

USING THE GUIDE. To use the guide, first mark a layout line on the plywood. Then, position the notch on the line, see Fig. 1a. Now clamp the fence at the other side of the plywood, making sure the head is tight against the edge of the plywood.

To rout across the plywood, hold the base of the router tightly against the fence. Start your cut on the side opposite the head and release the router's power switch just as the bit enters the notch on the head piece. Note: When crosscutting a thick sheet of stock, you may need to make multiple passes with your router.