



Portable Router Table

Over the past couple of decades I've noticed how home woodworking shops, including mine, have evolved. The roster of "must-have" tools and equipment changes from year to

year as our skills and habits shift. I've watched the table saw take flagship status from the radial arm, and have seen more weekend warriors outfit their shops with air compressors, dust collectors, and other stuff that used to be standard issue for professional shops only.

Manufacturers ushered in a lot of these changes with new tools like the portable thickness planer and sliding miter saw, that put big woodworking capabilities into smaller and more affordable packages.

I'll try to take advantage of improvements like these when I can, but since I'm always on speaking terms with the evil twins of small-shop woodworking — Not Enough Money, and Not Enough Space — I still have to invent home-spun solutions from time to time.

A while back it was a portable miter saw station (also available from PlansNOW). I don't travel to job sites the way contractors do, but the portable design of that workstation does make it easier to store and to haul around my house for a project. This router table shares a similar platform design (it's supported by the same pair of sawhorses), but I didn't want the portability to come at the expense of other features.

Happily, it didn't have to — I still ended up with a table big enough to support large workpieces, an

adjustable fence with a dust extraction port, a cutter guard, and aluminum T-slot tracks for mounting the fence and just about any jig I'd ever want to use (**Router Table Construction View**). I figured that's plenty in one package. If I don't limit my wish list of features, I can get carried away and over-engineer an otherwise simple project.

Keeping It Simple

I've seen my share of fancy router tables, some with elaborate joinery and base cabinets outfitted for storing bits and accessories. It's not that I don't like them, but the trade-offs — losing that floor space permanently, and giving up an awful lot of time to build one — make a simple design much more practical for me. For portability, basic is usually best.

Using a double layer of $\frac{3}{4}$ " ply-

Router Table Construction View

OVERALL SIZE: 5³/₄"H x 24"W x 32"L

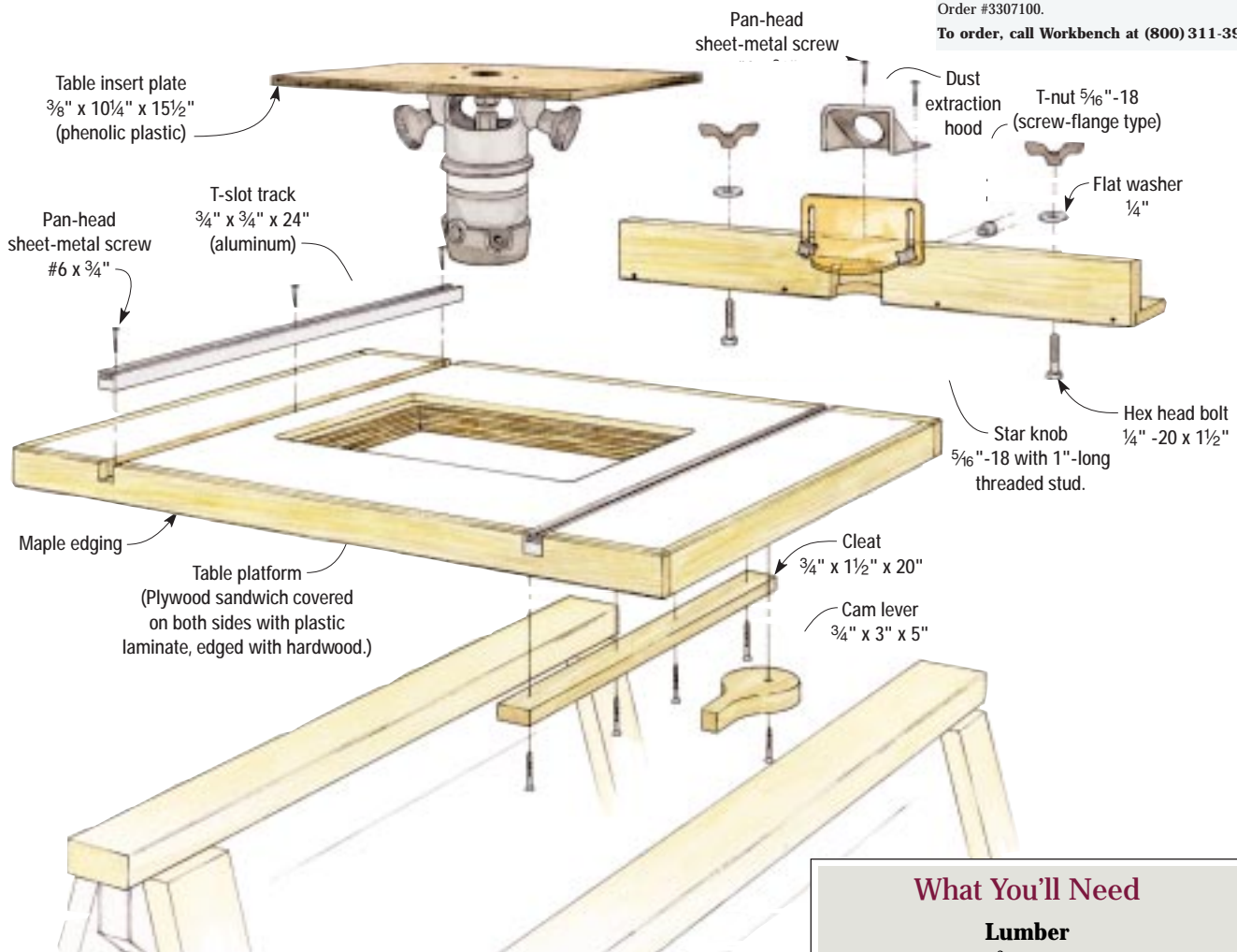
WORKBENCH PROJECT SUPPLIES

Portable router table

A kit has been assembled for this project that includes the accessories, hardware, and fasteners listed below.

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wood for the table might seem like overkill, but a layered top makes a lot of sense for a project like this.

First, it adds strength and weight but not bulk, so it helps dampen the router's vibration without sacrificing the table's portability. Second, it's more stable, especially since I covered it top and bottom with plastic laminate. The high-pressure laminate makes for a durable and low-friction work surface. Don't succumb to temptation and cover only the top of the table — an exposed underside will react a lot more to changes in humidity, making it almost impossible for the platform to stay flat over time.

Fix Yourself a Sandwich

As with most projects, the building process for this one flows easier if you start with the big stuff and end with the details. I began by cutting the plywood for the "sandwich" top. Normally I'd treat the assembly of the platform — cutting and gluing up the plywood, and covering it with laminate — as two separate procedures, but it actually works better to mix them up a bit in this case. Because I applied hardwood edging to the platform, I needed the two plywood panels to be exactly the same size and aligned with their edges perfectly flush. As it turns out, I used my laminate-trimming tools and techniques to do this.

What You'll Need

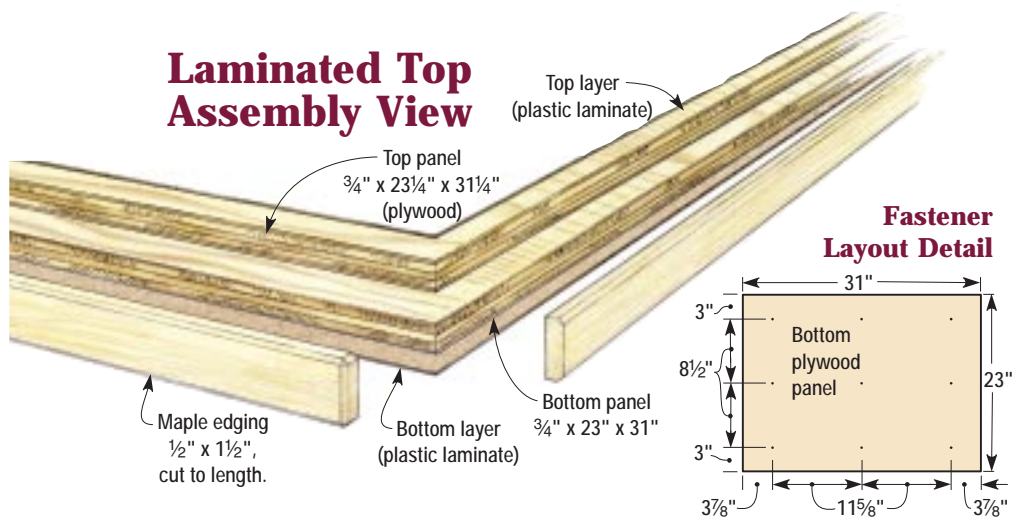
Lumber

- (1) Half-sheet of 3/4" plywood
- (1) Half-sheet of plastic laminate
- (10) lin. ft. of 1/2" x 1 1/2" maple
- (9) lin. ft. of 3/4" x 3 1/2" maple

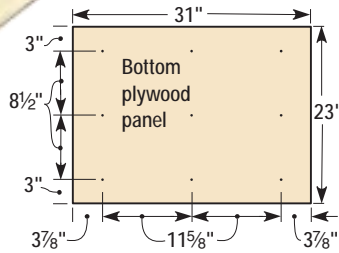
Hardware

- (1) Insert plate 3/8" x 10 1/4" x 15 1/2"
- (1) Cutter guard (polycarbonate)
- (1) Dust extraction hood
- (2) 3/4" x 3/4" x 24" T-slot tracks
- (2) 1/4"-20 wing knobs
- (2) 5/16"-18 star knobs w/ 1" stud
- (2) 1/4"-20 x 1 1/2" hex-head bolts
- (2) 5/16"-18 T-nuts with #4 screws
- (2) 1/4" flat washers
- (2) 5/16" flat washers
- (6) #6 x 3/4" pan-head sheet metal screws
- (2) #8 x 3/4" pan-head sheet metal screws
- (25) #8 x 1 1/4" flat-head wood screws
- (2) #8 x 1 1/2" flat-head wood screws

Laminated Top Assembly View



Fastener Layout Detail



Start by cutting one plywood panel to the required 23" x 31" size. Mark this as the bottom panel, then drill and countersink for the screws that attach it to the top panel (**Laminated Top Assembly View** and **Fastener Layout Detail**). Next, cut the top plywood panel to 23¹/₄" x 31¹/₄", so it will overhang the bottom panel by about ¹/₈" along each edge. Use a bench top or other flat surface as a base to glue and

clamp the assembly upside-down, then fasten the panels together with screws (**Figure 1**). Check to make sure all the screw heads are fully countersunk, and give the glue some time to set up — an hour should do it.

Bring on the Laminate

We recently detailed the basic steps involved in applying plastic laminates (see *Laying Laminates* at the

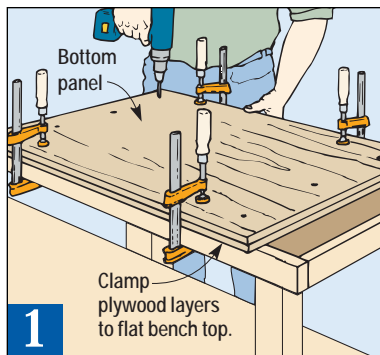
end of this article), but I can outline the process here.

First, cut two laminate pieces slightly larger than the plywood, say an extra inch along each edge. Then brush a couple of coats of contact cement on one piece of laminate and on one face of the plywood sandwich, and set each aside to dry.

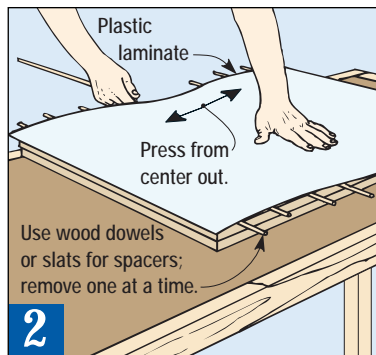
When the adhesive has dried to a slight tack, use wood spacers or dowels to separate the coated surfaces while you position the laminate. Then press the laminate down as you remove the spacers, working from the center of the panel out (**Figure 2**). Use pressure from a roller or a wooden block and hammer to seat the laminate. Then turn the platform over and apply contact cement to the other plywood face and the second piece of laminate. Allow drying time, then apply the other laminate piece the same way.

With the top and bottom surfaces laminated, you can use a router to do the trimming. This technique requires trimming the laminate and the oversize plywood piece at the same time, which will be too much for a typical ¹/₄"-shank laminate trim bit. You'll fare better here using a flush-trim bit with a ¹/₂" shank and 1"-long carbide flutes. Make the first pass with the platform top-side up (**Figure 3**). Then flip the sandwich over to trim the bottom laminate flush with the plywood.

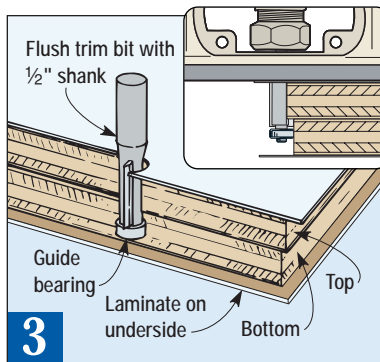
Done properly, this simple technique gives you an assembly of four layers, all perfectly sized and aligned with each other.



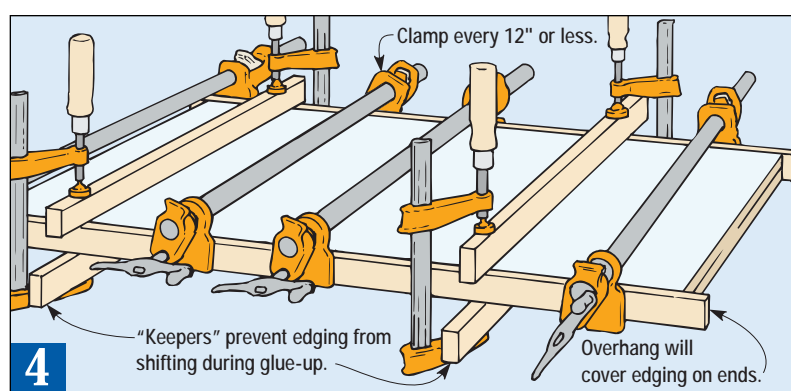
1 Using a flat bench top as a reference surface, glue and screw the two layers of ³/₄" plywood together for the platform.



2 When the contact cement on the laminate and plywood is dry, position them with spacers in between, then press into place.



3 Rout the upper laminate and top plywood layer flush with the lower plywood. Then flip the table to trim the bottom laminate.



4 Clamp some "keeper" boards in place to hold the hardwood edging flush with the laminate surfaces. Do the front and rear edges first, allowing a ⁹/₁₆" overhang at each end.

Banding the Edges

Now that you've managed to get all those crisp, square edges on your laminated assembly, you'll want to protect them with solid wood edging. I ripped some 1/2"-thick hard maple for this. When you cut this stock to length, the end pieces should be 23" (equal to the width of the plywood), and the front and back edging should be 32 1/8" (the plywood length plus 1 1/8"). The extra length is for the overlap where the ends of the edging pieces butt together, plus a margin to trim.

To make sure the edging didn't creep under clamping pressure, I clamped some 1x "keepers" on both the top and bottom of the platform (Figure 4). Apply the front and back edging first, leaving 9/16" exposed at each end. If you want to pull the clamps off sooner, you can drill and drive some screws to hold the edging in place, but glue alone will hold fine once it sets up.

If the wood edging sneaks above the laminate surface during glue-up, you can sand it flush with a rabbeted sanding block (Pro Tip). The vertical face of the block keeps the 90° angle intact while the narrow ledge automatically limits the sanding area. That way you can't overreach and scratch the laminate.

Adding the Insert Plate

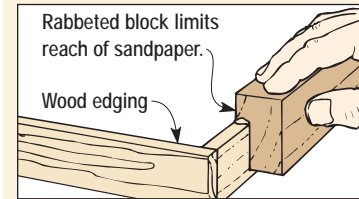
Once I'd cleaned up the edging, I routed an outline in the top for the 3/8"-thick phenolic plastic insert. I installed it toward the rear of the table to give me a larger support area in front of the cutter, though you can vary this to your preference (Insert Position Detail).

I've seen a lot of different methods for making the opening and ledge for the table insert, and you may have a favorite. If not, the technique shown below provides accurate results without much fuss (Insert Installation Procedure).

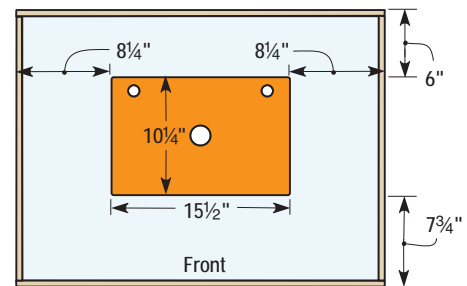
PRO TIP

Sanding Block for Edges

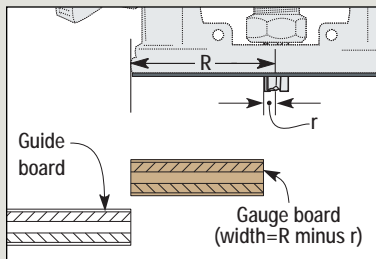
Cut a rabbeted block to sand the edging flush without scratching the laminate. Spray adhesive will bond sandpaper onto the ledge, and you can trim it with a knife.



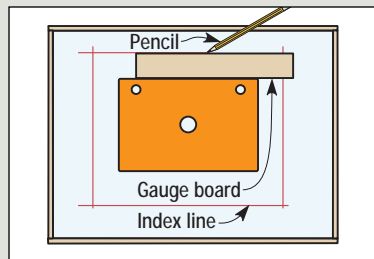
Insert Position Detail



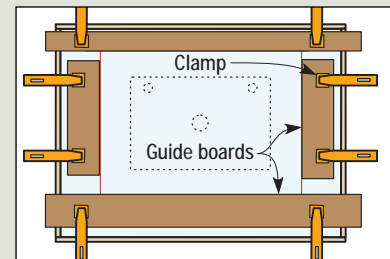
Insert Installation Procedure



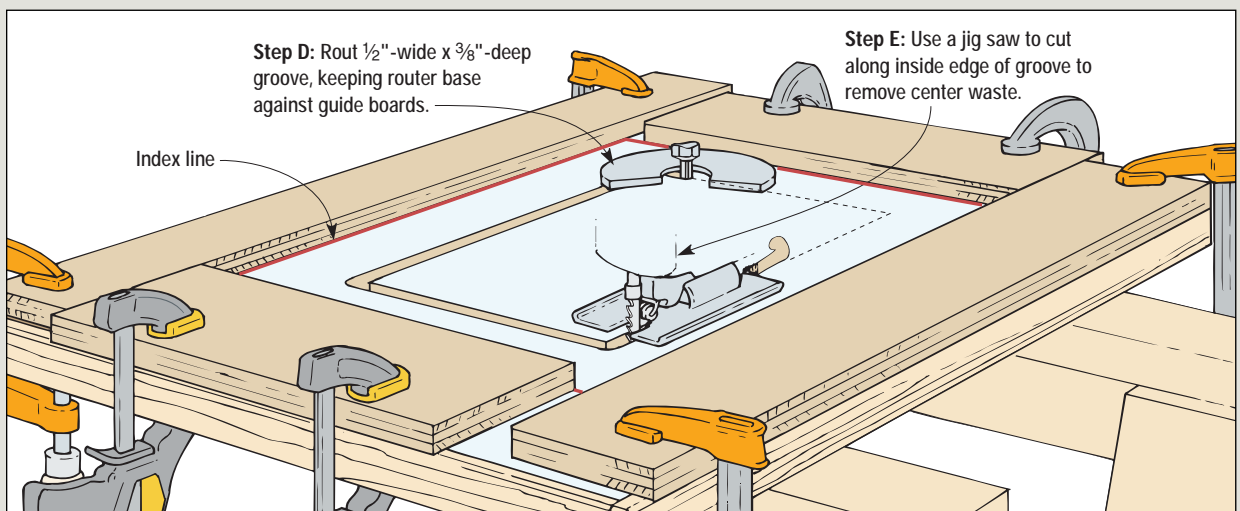
Step A: Subtract the bit radius (r) from the router base radius (R) to get the width of your gauge board.



Step B: Position the insert on the table with double-sided tape and use the gauge board to mark index lines around it.

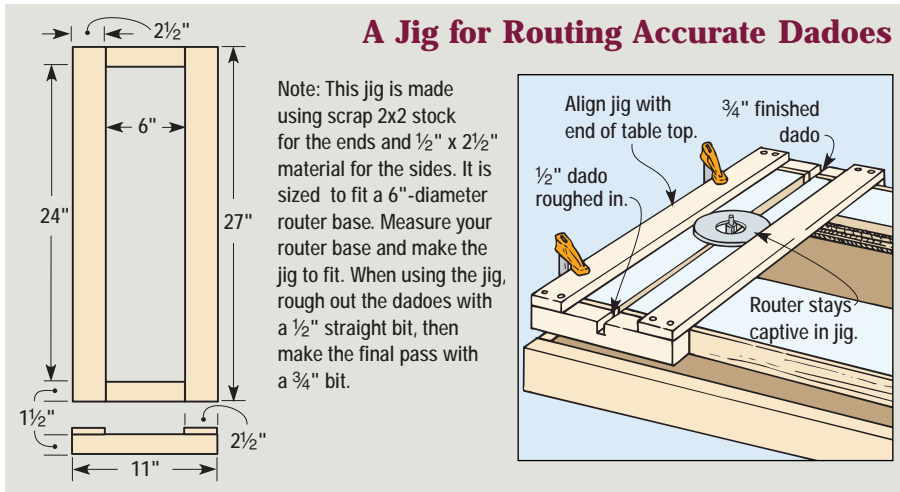


Step C: Clamp guide boards in place along the index lines. Small gaps at the corners won't affect router travel.



Step D: Rout 1/2"-wide x 3/8"-deep groove, keeping router base against guide boards.

Step E: Use a jig saw to cut along inside edge of groove to remove center waste.

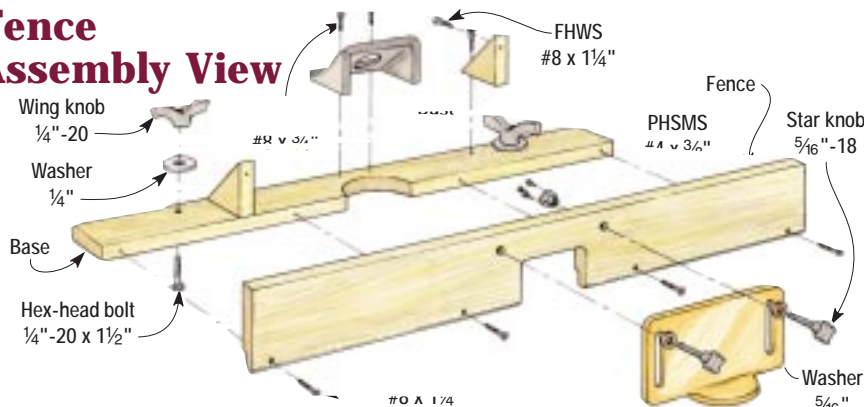


Installing the T-tracks

Before you set your router aside you can cut the dadoes for the aluminum T-tracks. This hardware makes the fence adjustment easy and reliable, plus it lets you mount featherboards and other accessories with a minimum of setup.

A single board clamped in place would do for a guide, but I wanted a method that prevented the router from moving off the intended cut. To do this, I built a simple jig that keeps the router base captive on two sides (**A Jig for Routing Accurate Dadoes**). Using a 1/2 inch bit for the first passes, and then a 3/4 inch bit for the final pass, reduces the chance of chipping out the laminate. When both dadoes are routed, screw the T-tracks in place.

Fence Assembly View

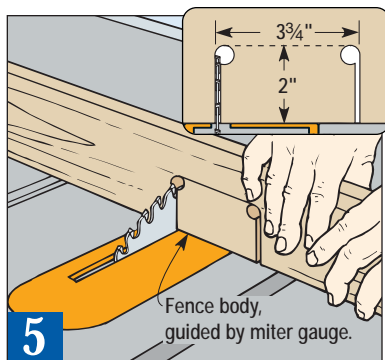
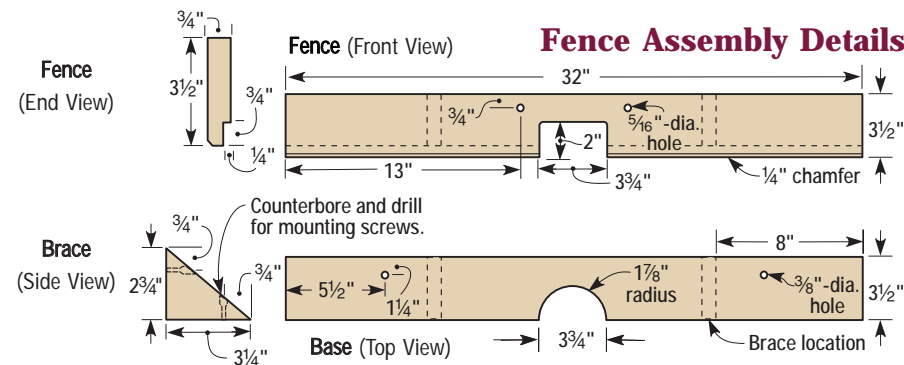


Adding a Versatile Fence

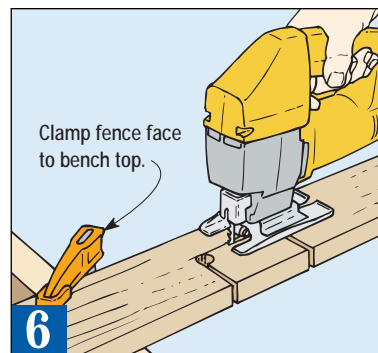
Like the rest of this project, the fence I designed is textbook simple but has the features I wanted (**Fence Assembly View, Fence Assembly Details**). I found off-the-shelf components for the guard and dust-extraction hood, so the fence body itself, the base, and two corner braces are the only wood components I needed to fabricate.

Aside from cutting the pieces to size and drilling for hardware, the only real machining for the fence involves making the opening (called the throat) that provides clearance for the router bits. I made layout marks on the fence, drilled a 1/2 inch hole inside each corner of the throat opening, and made the vertical cuts on the table saw (**Figure 5**). Then I used a jig saw to remove the waste piece (**Figure 6**). I also used the jig saw to cut the half-round opening in the fence base.

After adding those details, a couple of passes on the table saw will cut the rabbet along the bottom rear edge of the fence, and you can drill and countersink for the assembly screws. You'll also need holes in the fence base (for the T-track bolts) and near the throat opening for the two studded knobs that

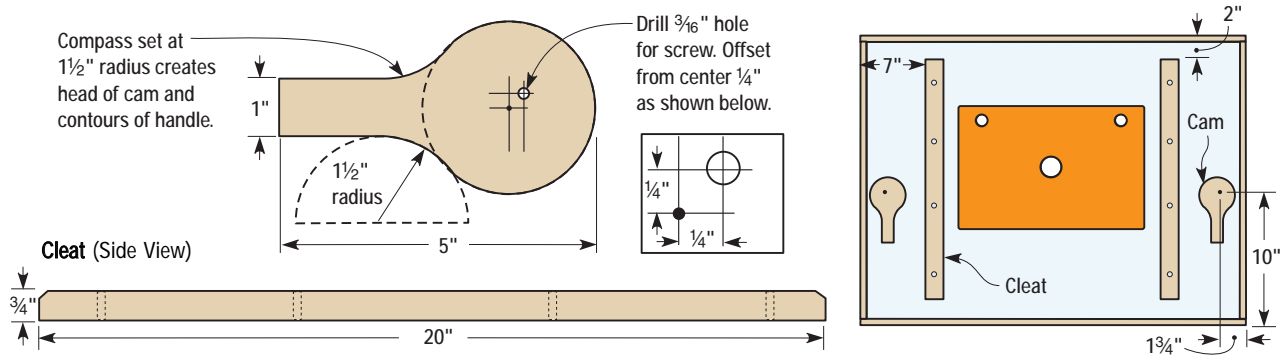


5 After drilling holes to mark the corners of the fence's throat opening, make the vertical cuts on the table saw.



6 A jig saw will make short work of the last cut for the throat opening in front of the fence, and of the cutout in the base.

Cleat and Cam Lever Details



secure the guard. To accommodate those threaded studs, I used $\frac{5}{16}$ " T-nuts installed through the back of the fence. I built my fence using hard maple, so instead of trying to pound in a pronged T-nut I used the screw-flange type, which installs more easily in really dense woods.

To get the small triangular braces, I used a miter saw and cut them off the end of a longer board. After drilling them for screws, I glued up the fence assembly and fastened everything together.

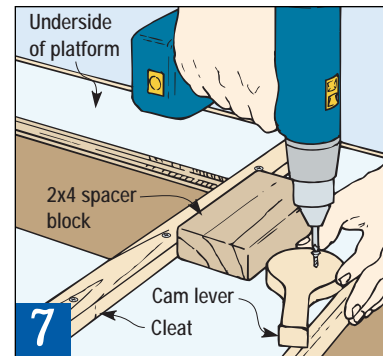
Before I mounted the fence and got ready to use the table, I still had a couple of details to take care of. First, I had to make and install the cleats and cam levers on the underside of the table (**Cleat and Cam Lever Details**). The cleats help establish the placement of the sawhorses under the table, and the cam levers provide pressure against the sides of the sawhorse top plates to keep the table from sliding around. I placed the cleats

near the insert opening, spaced far enough apart to keep the sawhorse legs from interfering with each other. Then I used a scrap 2x4 block as a spacer and fastened each cam lever with a screw (**Figure 7**). Keeping the cam levers to the outside makes them easy to reach, and by pivoting under the table edge they remain out of harm's way when locked. When they're unlocked, the protruding handles let me know the platform isn't secured to the sawhorses.

Mounting the Router

Though a truly concentric router mount isn't critical for most work, I still aimed for precision when I mounted the router base. Rather than eyeball it, I borrowed a technique from a friend who'd used the same type of table insert before (**Mounting the Router Base**).

Thinking ahead, my buddy took time to measure the diameter of the clearance hole in the insert. It mea-

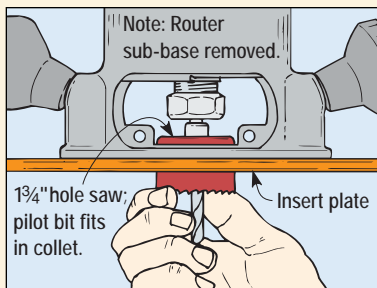


Screw the cam levers to the underside of the platform. When locked, the levers swing under the ends of the router table.

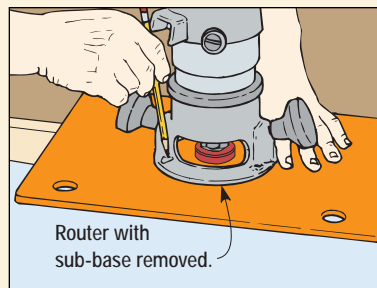
sured $1\frac{3}{4}$ ", so he maneuvered a hole saw of that size up through the phenolic plate and inserted the $\frac{1}{4}$ " pilot bit into the collet of a router on the other side. Then it was a simple matter of tracing around the router's base (minus the sub-base), marking the screw locations, and drilling the holes in the insert plate.

It turned out to be a fitting technique to end the project — direct, accurate, and simple. 📺

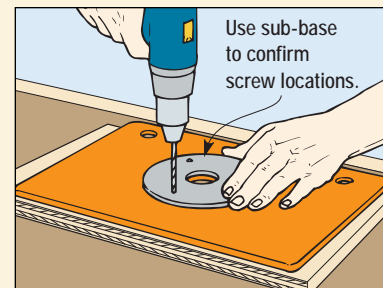
Mounting the Router Base



Feeding a hole saw up through the insert provides a pilot to center the router base. No hole saw? Just measure carefully.



With the router positioned where you want it, trace around the base and mark the locations for the mounting screws.



Drill and countersink holes for the mounting screws. Drilling and installing one at a time will ensure correct alignment.



Laying Laminates

Wood always ranks among my top material choices when it comes to projects, but I often add other ingredients — steel or brass hardware, maybe even ceramic tile, glass, or some nice

granite or marble. Working with most of these alternative materials requires tools and techniques that depart far from my normal wood-working routine, but plastics and high-pressure decorative laminates are an exception. They can be machined with normal carbide blades and cutters. The differences? Laminates are thinner and more brittle than wood. Cutting takes some care, and adhesives and gluing methods also vary.

Learning the Basics

The first hurdle you'll encounter with decorative laminate is cutting the material to size. For most projects, you'll want to cut the piece oversize and trim it with a router once it's glued to the substrate (the panel you use as a gluing base). I like to leave the laminate at least 1" oversize along each edge to give me a comfortable margin for trimming.

You can cut the rough laminate blank freehand with a router, as long as you provide support to keep the laminate flat (**Figure 1**). The table saw also works fine, but you'll need a kerfed wood guide to keep the laminate from sliding under your rip fence (**Figure 2**).

Your next challenge will be making the stuff stick where you want.

Even though the core of "plastic" laminate is really layers of kraft paper (similar to brown shopping bags, and also made from wood fiber), conventional gluing methods don't work very well. That's because the kraft paper is impreg-



1 With the rough size marked on the face of the laminate, support the material near the line and rout it with a straight bit.

nated with phenolic plastic resin. Large furniture and cabinet shops with full-sheet presses can use ordinary white or yellow glue, but for the rest of us, contact cement works best.

Glue-up: One Shot

You'll find contact cements with either solvent-based or waterborne formulas, and application methods include brushing, rolling, and spraying. On really porous materials you may need two coats to provide adequate coverage.

The best substrates are engineered wood panels, such as particleboard, plywood, or medium-density fiberboard (MDF), that don't move as much as solid wood.

Apply the adhesive to both surfaces to be joined, but don't put them together right away. Allow the cement time to air-dry (the sheen will change from glossy to matte) and to develop a slight tack. Don't be fooled by the weak grab on your finger, though — contact cement is designed to cling tenaciously to itself, bonding instantly when the two coated surfaces make contact (hence the name). You don't need clamps, but you have to get it right the first time.

After the cement has set up on both the laminate and the panel, you can put the pieces together. I use thin wood strips as spacers to hold the material apart until I position the laminate (**Figure 3**). (Venetian blind slats and wood dowels are alternatives.)



4 Starting at the center of the panel, remove the spacers and press the laminate down. The contact cement will bond instantly.

Once the positioning is correct, remove the center spacers and press the laminate down, working toward each end and removing the spacers as you go (**Figure 4**). To ensure a good bond, I also use light hammer blows on a wood block, or pressure from a J-roller, to seat the laminate completely (**Figure 5**). Be careful not to crack the overhanging laminate at the edges — you want a clean trim.

Trimming and Edging

With most laminated panels, you'll want to trim the excess laminate flush with the edges of the substrate. A bearing-guided flush-trim router bit is the surest way to get a clean edge (**Figure 6**). The bit's carbide flutes shear the laminate from the edge so there's none of the tearout common with sawing through the face.

There's another technique I use when I don't have a flush-trim bit handy. I bond an oversize laminate




3 After you apply contact cement to both the laminate and substrate and let it dry, set clean spacers onto the substrate. Then position the laminate roughly in place.



5 A J-roller helps ensure a strong cement bond. A double-wheel roller (in background) can do the edges after trimming.

blank to an oversize substrate, then cut the panel to size on the table saw (always with the laminate side up to avoid chipping).

High pressure laminates offer a durable and easy-to-clean surface for a lot of projects, not to mention a wild variety of colors and textures. They're easy to apply, and you can opt for different edge treatments, including wood molding that matches your project. 



2 Laminates slide under most fences, so if you cut the material on the table saw, use a kerfed wood fence to guide the edge.



6 A flush-trim router bit, guided by a bearing, will shear the laminate off along the edges. Watch for voids in the substrate.