

The Ultimate Router Table

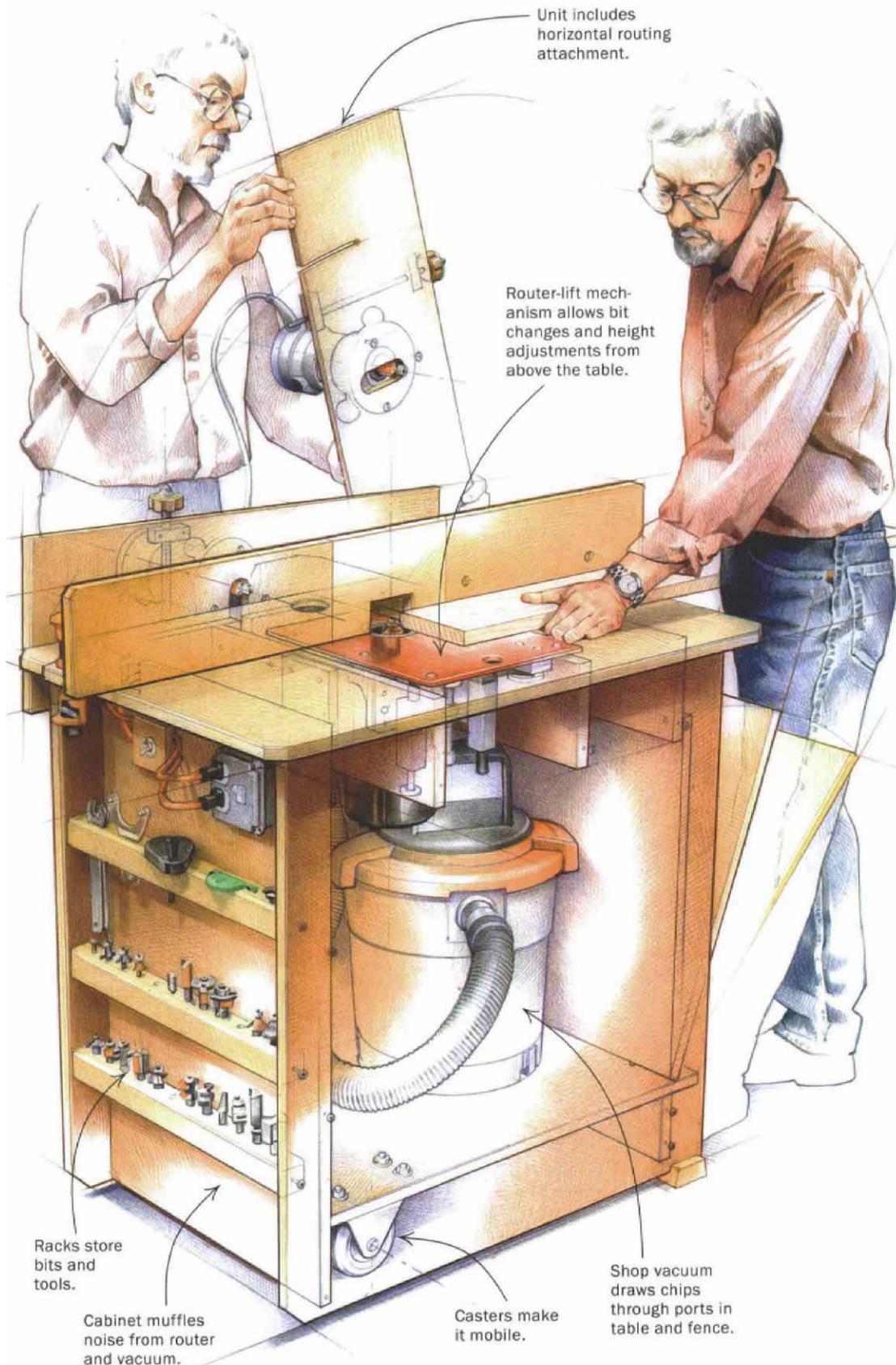
Cabinet-based unit devours dust and decibels and puts controls on the outside

BY JOHN WHITE

I have always been dissatisfied with the popular designs for router tables and the versions available on the market. In some way or another, they are all less convenient than standard woodworking machines. For one thing, you have to reach under the table a lot to adjust bit height, change bits or hit the power switch. The ultimate router table would be as convenient as a shaper or tablesaw—all of the common tasks and adjustments are done from above or outside the unit. It would also have the dust-collecting ability and vibration-dampening mass of a cabinet-mounted tool.

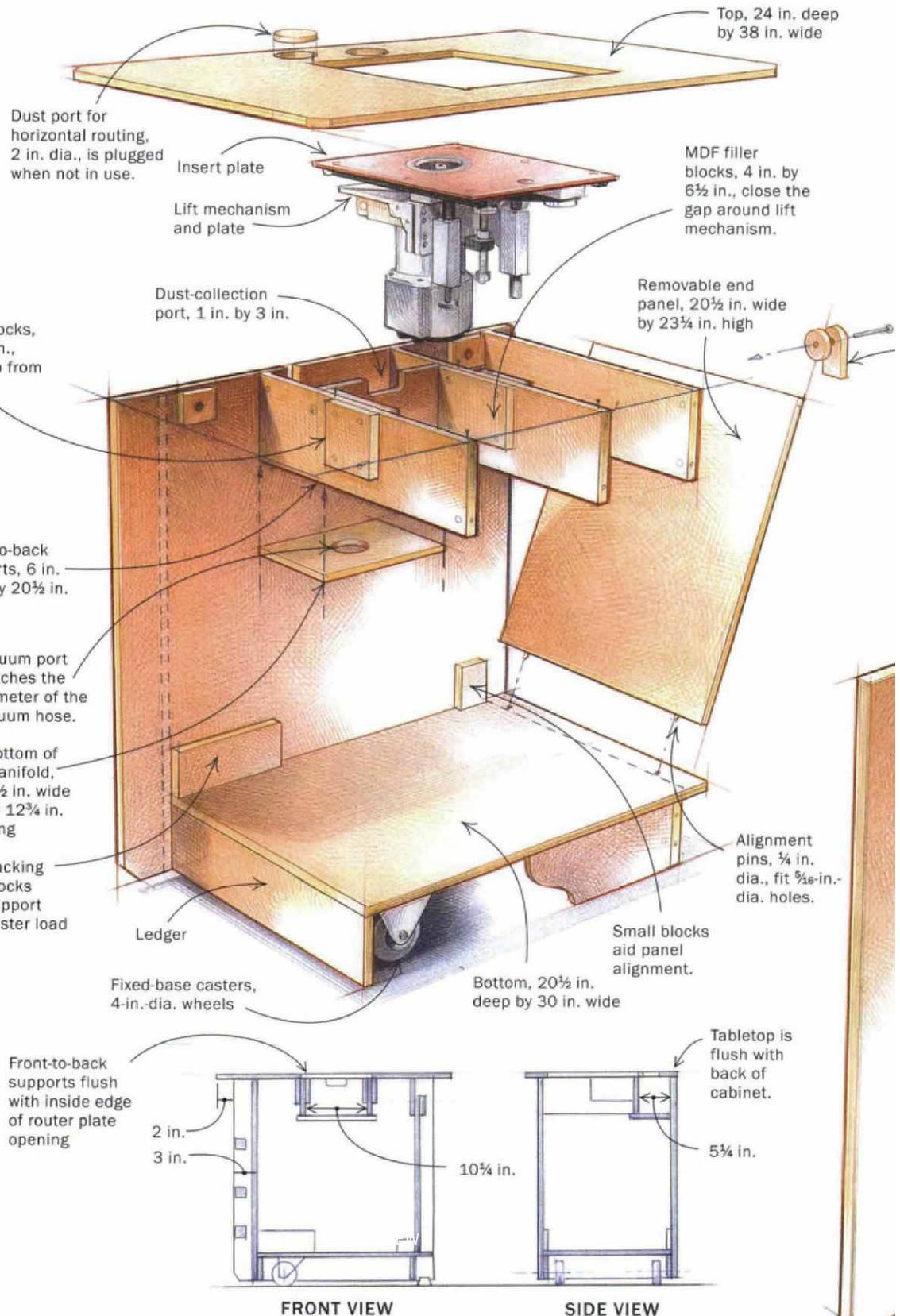
I came up with a router cabinet that meets all of the above criteria and is super-quiet to boot. The design relies on the JessEm Rout-R-Lift, a screw-driven mechanism that allows you to raise and lower the router and bit by cranking a handle inserted from above. The JessEm unit is also sold by Jet as the Xacta Lift, for the same price—around \$200 in many catalogs. By adding a shopmade mounting block to the lift, I was able to raise the router high enough to allow bit changes from above the table as well.

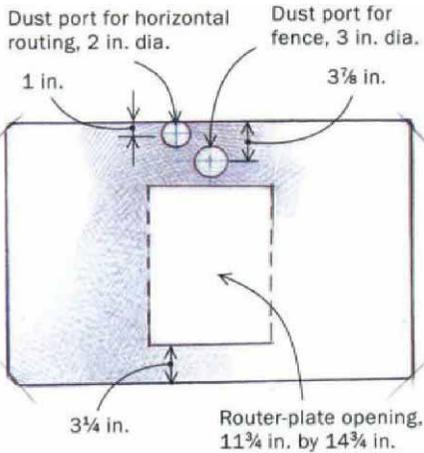
Eliminating the need to reach un-



SIMPLE PARTS, SMART FUNCTION

The cabinet is made entirely from $\frac{3}{4}$ -in.-thick MDF joined with knockdown fasteners. The front-to-back braces below the tabletop support the router plate and double as the sides of the dust manifold. Two filler blocks close the gap around the lift mechanism, which makes for efficient dust collection.



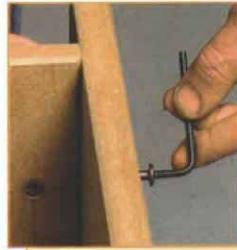


TABLETOP

Latch assembly, made of MDF, bolt, nut, washer and rubber O-ring

Cabinet front and back, 34 in. wide by 33 in. high

Hardwood support blocks level and protect base.

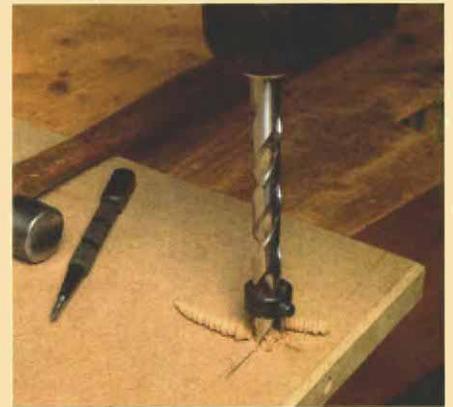


Cross-dowel fasteners require accurate holes. To hold the pieces at right angles for drilling the long holes, make a right-angle jig and clamp it to the workpieces at the top and bottom of the joint.

Knockdown fasteners make strong joints



Aluminum flashing makes a layout jig for the cross-dowel holes. With a drill bit in the bolt hole, use the jig to locate the centerpoint of the cross-dowel hole.



The cross dowels will be invisible if you don't break through the outside. Use a stop collar to control the depth.

derneath the top let me mount the table on a cabinet, which could enclose a shop vacuum and muffle its sound and the roar of the router itself. A dust-collection manifold fits under the tabletop and behind the lift unit. A fence system with a dust port ties into the system below.

I mounted a switched outlet for the router and vacuum unit outside the cabinet. Just for fun, I threw in racks for bit and tool storage. Casters under one end of the cabinet make it mobile—like a wheelbarrow—but still stable on the floor.

Materials cost just over \$300, including the shop vacuum and the router lift but not a fixed-base router (the more powerful, the better for use in a table). The investment in time and money was significant but reasonable, considering the performance and convenience I gained.

MDF and knockdown fasteners make a strong cabinet

The entire unit—cabinet, table and fence—is made of 3/4-in.-thick medium-density fiberboard (MDF), with two coats of Watco

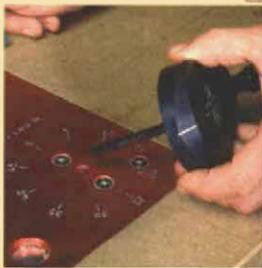


Router lift is the heart of the table

It all started with the JessEm Rout-R-Lift, which allowed White to design a cabinet-based unit that encloses dust-collection and muffles noise yet puts all controls and adjustments on the outside.



Leveling screws offer precise adjustment. The weight of the router lift is carried by the two front-to-back braces, instead of the tabletop as is the case with most router tables.



No reaching below to adjust height. The adjustment crank is inserted from above.



A CUSTOM ROUTER MOUNT FOR EASY BIT CHANGES



Replacing the router's base with a shopmade mounting bracket allows the nose of the router to be raised high enough for wrenches to reach it.



oil for added durability. I used MDF because it offers flatness, mass and stability at a very low cost. To make sure the cabinet would remain sturdy, I opted for cross-dowel knockdown fasteners over glue and screws. Casters and wood blocks keep the MDF edges off the floor, where they might soak up moisture and then fracture.

Cutting out the MDF parts should be straightforward, but be sure to wear a dust mask, and don't count on the factory edges of the panels being square. Squareness and accuracy are very important with such a large cabinet, especially with interior parts that must fit tightly. Chamfer the edges of the tabletop to prevent chipping. This isn't a bad idea for the other MDF parts, as well. I used a laminate trimmer with a 45° router bit to zip quickly along the many edges.

I have a few tricks for drilling accurate holes for knockdown fasteners (see p. 57). On the back side and tabletop, counter-bore the heads of the fasteners to maintain a flat surface.

To support the casters, install backing blocks inside the cabinet. Assembled, this unit weighs more than 100 lbs.

Installing the access panel—One end panel is removable so that you can open the cabinet and empty the shop vacuum. Size this panel to fit the cabinet walls snugly, but overlap the support strip at the top of the opening. Drill two 1/4-in.-dia. holes in the bottom edge of the panel for the pins or cutoff bolts that will keep the panel in position. Press the pins into the panel, then drill 5/16-in.-dia. holes in the base of the cabinet to receive the pins. Glue the two stop blocks to the walls of the cabinet, which will make it easier to put the panel quickly back in position.

Add the latch assembly. I recommend placing a rubber O-ring under the rear washer to regulate the action of the latch.

Router lift requires an exact cutout

The only tricky procedure on the tabletop is making a precise cutout to fit the router-lift insert plate. Start by flipping over the top. Lay out the front edge of the cutout 3 in. from the front edge of the tabletop. Then lay the lift-plate assembly on the tabletop, locating its front edge along the layout line. Next, screw MDF strips around the edges of the insert plate, being careful not to punch through on the top side. Additionally, to avoid too snug a fit (MDF

MAKE AN ACCURATE CUTOUT FOR THE INSERT PLATE



MDF guide strips ensure accuracy. Lay the insert plate on the underside of the tabletop and screw on the strips. A layer of tape leaves room for seasonal movement of the MDF.



The strips guide the jigsaw. Make the rough cutout about $\frac{3}{4}$ in. from the MDF strips.



Then they guide the router bit. Remove the tape, and use a bearing-guided bit to cut the opening flush with the strips. A $\frac{3}{4}$ -in.-dia. bit will leave a $\frac{3}{8}$ -in. radius at the corners.

swells in high humidity), add a layer of masking tape along the edges of the guide strips before attaching them to the underside. These strips will guide your jigsaw and router cuts.

Keep the jigsaw cut about $\frac{1}{4}$ in. away from the strips; the router will handle the rest. Then remove the masking tape, and rout the finished opening. A $\frac{3}{4}$ -in.-dia. pat-

tern-cutting bit will leave the correct $\frac{3}{8}$ -in. radius at the corners to match the lift plate.

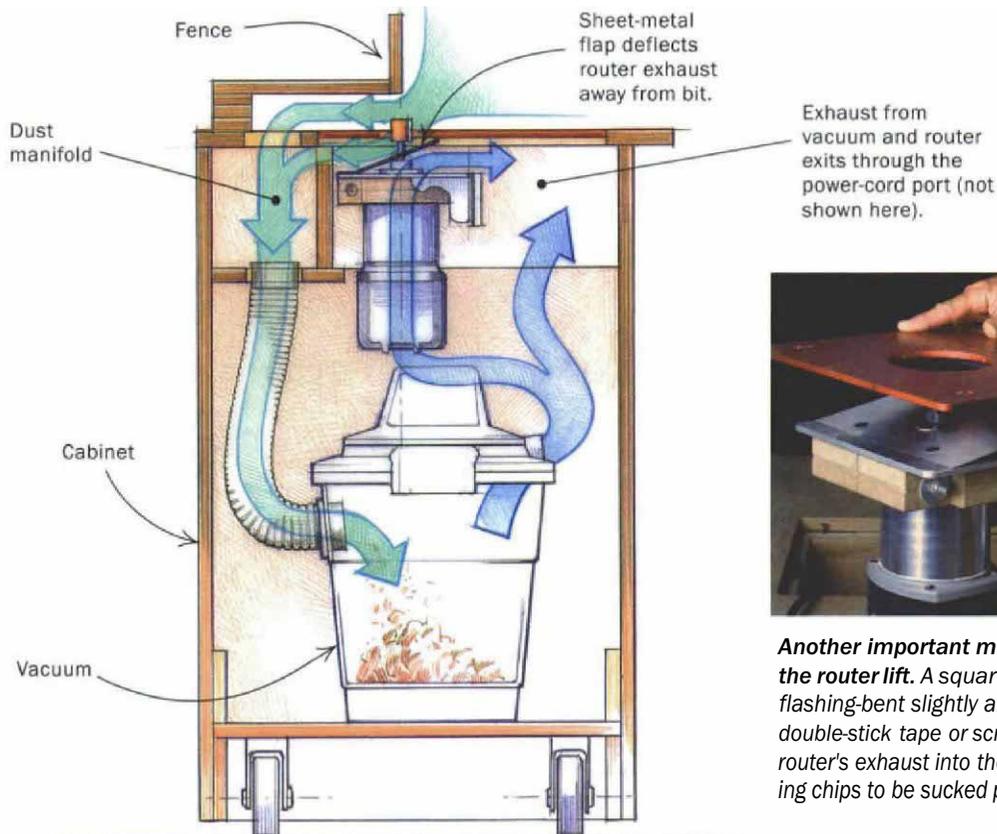
Drilling vacuum-port holes—There are a number of large holes in this unit. I use an adjustable-wing circle cutter (or fly cutter) for all of these. (For a video clip on using this tool, go to finewoodworking.com.) A wing cutter must be used in a drill press.

Proceed slowly and with caution, keeping your hands and clothing well clear of this whirling dervish of a bit.

The large hole in the tabletop connects the fence's dust port with the dust-collection system below. Another one is necessary if you opt for the horizontal router attachment. In that case, one of these holes should always be plugged when the other

FOLLOW THE AIRFLOW

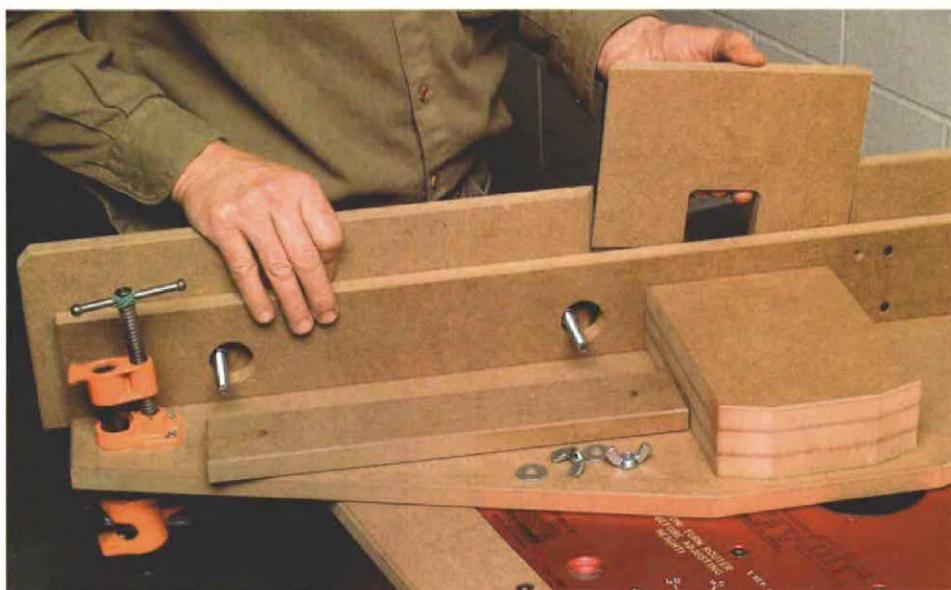
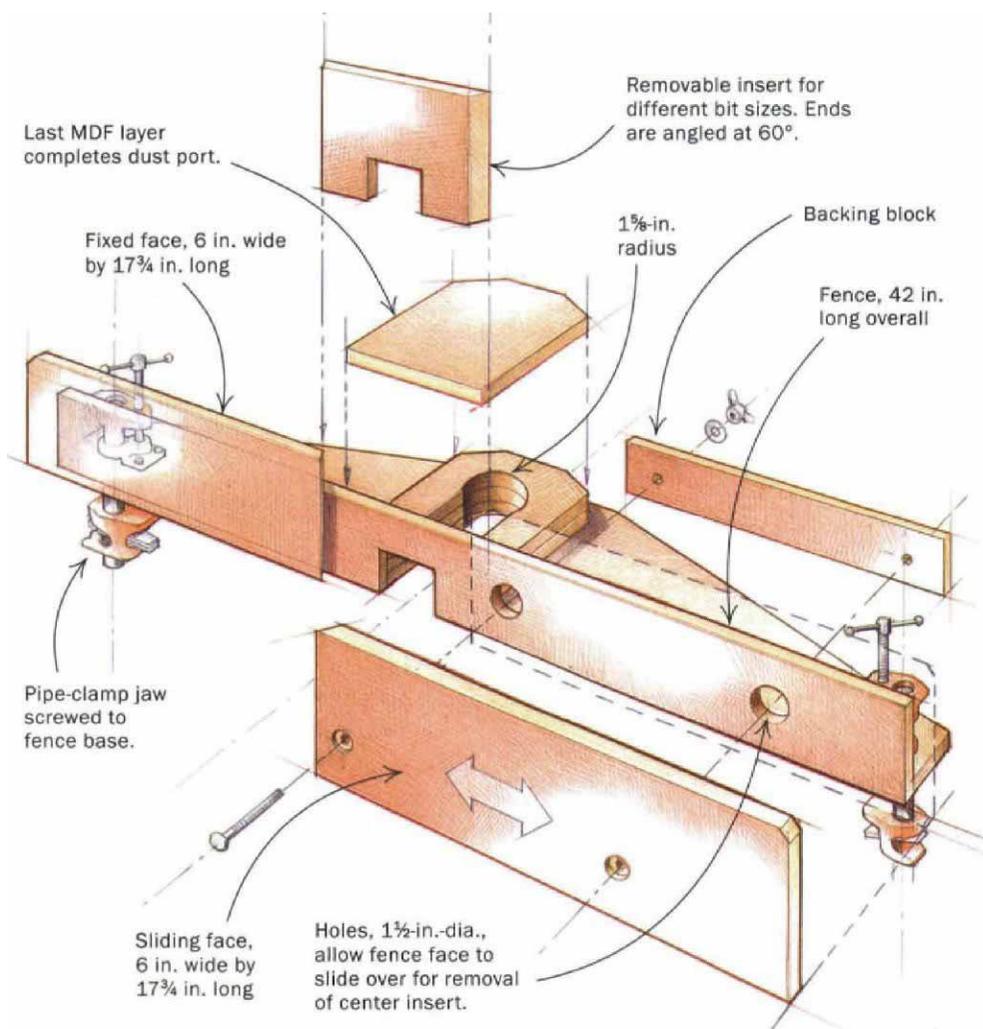
The vacuum draws air and chips through the bit openings in the table and fence, into the dust manifold and down the hose into the vacuum, where the dust and chips are filtered out. An angled flap of sheet metal deflects the router's exhaust blast away from the bit opening and into the cabinet.



Another important modification to the router lift. A square of aluminum flashing—bent slightly and attached with double-stick tape or screws—deflects the router's exhaust into the cabinet, allowing chips to be sucked past the bit.

SIMPLE BUT EFFECTIVE FENCE

The fence features a removable insert, a dust manifold that ties into the one below the table and modified pipe clamps that grab the table edges.



A removable fence insert. One half of the fence slides sideways, allowing for interchangeable inserts that fit various bit sizes. The edges of the fence faces and insert are angled to hold the insert in place, but a few brads with the heads clipped off also help.

is in use. Attach fender washers on the underside of the table around each hole to support the plugs.

Support structure aids dust collection

With the top completed, you are ready to assemble the support structure below. The two main braces for the router-lift insert plate also serve as the sides of the dust-collection manifold at the back of the cabinet. Locate and attach these pieces first,

Secure these front-to-back braces so that their outside faces are just even with the edges of the insert-plate cutout. Then attach the notched crosspiece, positioning it to miss the lift mechanism by 1/16 in. or less. The smaller the gap here, the less suction lost around the lift plate. The notch in the crosspiece is a dust port that draws air through the bit opening into what will be the dust manifold. Now cut out the piece for the bottom of the manifold and use the wing cutter to drill a hole for the vacuum hose. Only a cutoff section of the vacuum hose will fit into the cabinet, so size the hole in the box for the hose diameter, not an end coupling. Lock the hose in place with two fender washers positioned to catch the spiral grooves in the hose. Screw the bottom piece to the manifold.

A few steps remain to create good air suction through the bit opening. Attach another layer of 3/4-in.-thick MDF to each support brace, along its inner face, to create a close fit around the sides of the insert plate. Then, using double-sided tape and/or screws, attach a thin metal flap (I made mine from aluminum flashing, about 0.020 in. thick) to the insert plate as shown in the drawing on p. 59, to deflect the exhaust blast from the router motor and to allow air and chips to be drawn into the dust manifold.

Last, screw two blocks to the outside of the large front-to-back braces to prevent the tabletop from sagging near the opening in the middle of the plate.

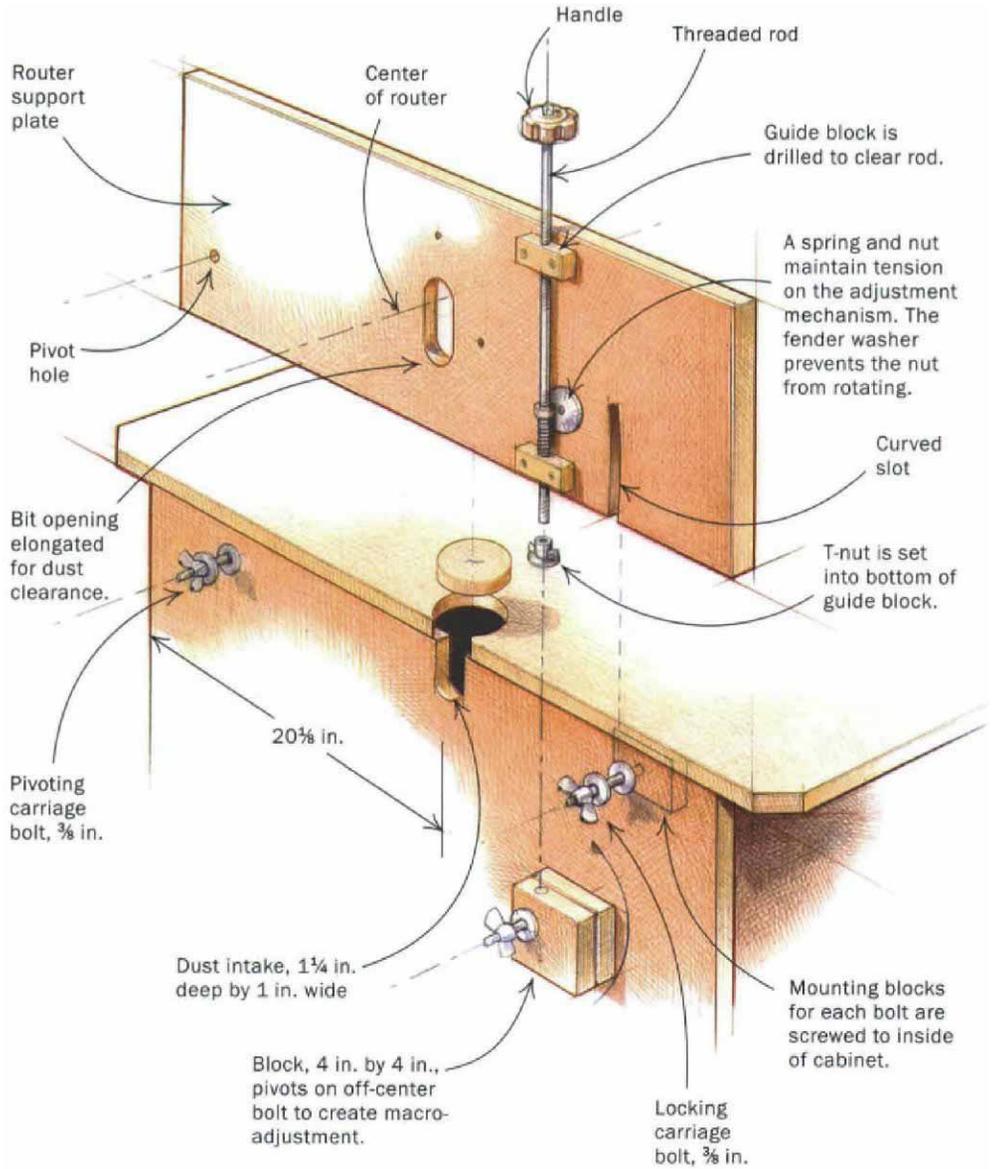
Mount the router in a shopmade base

Fine-threaded drywall screws in the support braces act as levelers for the four corners of the insert plate. MDF loves to split at its edges, so drill pilot holes for any screws, making them slightly larger than usual. I typically go with drywall screws that are at least 2 in. long. Normally, coarse-threaded screws are better for MDF, but these levelers are for fine adjustment.



HORIZONTAL ROUTING ATTACHMENT

The back of the table is flush with the cabinet so that White could include a horizontal routing attachment—useful for making tenons, raised panels and sliding dovetails, among other operations.



You'll have to mount the router body in a shopmade base to position it high enough in the table to allow bit changes to be made from above. (The router's original base can be mounted and left on the horizontal routing attachment on the back of the table.) But you can skip this step if you don't mind removing the router-lift mechanism from the table to change bits.

Use a wing cutter to drill a large hole, exactly the size of your router body, through a block made of two thicknesses of MDF. Then cut a thin kerf through the edge of the block to allow for tightening, and drill the long hole for the tightening bolt. Attach the mounting block to the lift plate with coarse-threaded drywall screws.

Install the switch box and fence

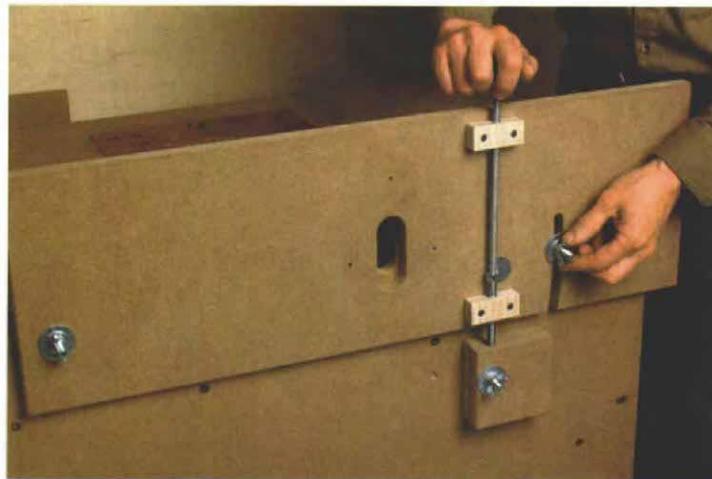
I mounted a 20-amp switch and outlet box on the end of the cabinet to connect the vacuum and router to one easily accessible on/off switch. I also mounted a small block next to the box to act as a cord manager.

The fence is joined with long drywall screws but incorporates a dust box that ties into the dust-collection manifold through a hole in the tabletop. Also, a sliding face allows the fence to have an interchangeable center insert. Carriage bolts and wing nuts lock the sliding face in position.

Pipe clamps make a simple clamping system, gripping the edges of the table but also sliding freely. Drill small holes through the adjustable jaws of the pipe clamps, and screw them permanently into place.

Creating this "ultimate router table" takes some time and money, but the added precision and ease of use will reward you many times over. □

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Adjust the bit height. The fine-adjustment screw moves the router up and down, and the clamping bolt locks everything in place. A coil spring keeps tension on the screw, preventing it from drifting as a result of vibration.