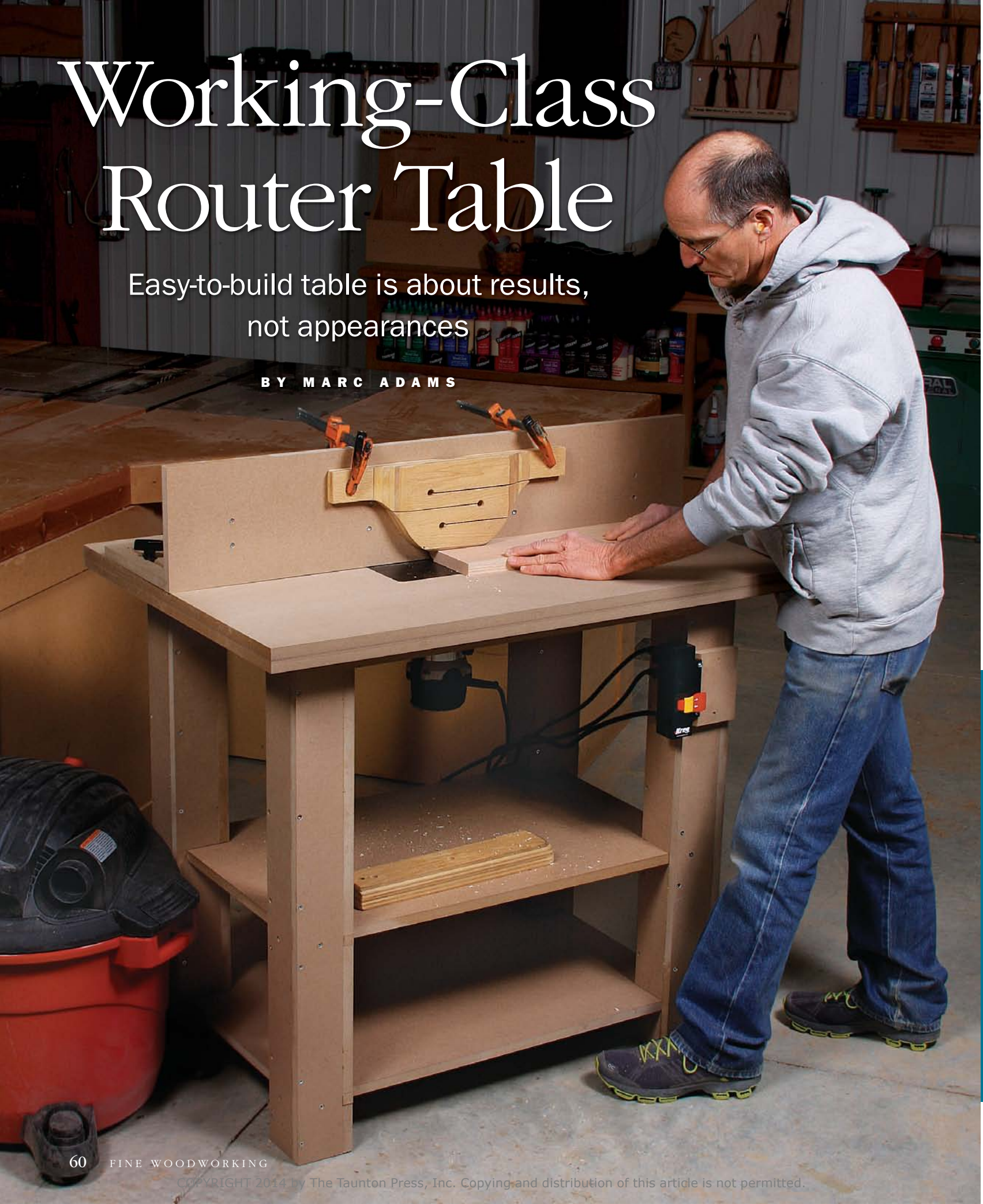# Working-Class Router Table

Easy-to-build table is about results, not appearances

BY MARC ADAMS

A router table is indispensable for a wide range of tasks. Armed with a big, solid fence, it can cut joinery, raise panels, produce moldings, and even edge-joint boards. Take off the fence and the table can be used for pattern routing.

I designed and built this router table years go, when I needed something fast and simple. I always figured I'd replace it some day with something nicer. But nearly 30 years later, the original table is still in use at my school, and we have built seven more just like it. That's because the materials are affordable, the joinery is straightforward, the table is accurate, and it has all the features we require.

First of all, it is large enough for all sorts of work and has a strong bracing underneath so it won't sag. The base is heavy and solid, with two big shelves for storing bits and accessories. And a big switch, mounted on a front leg, turns on the router and a shop vacuum at the same time.

But my favorite feature is the fence, which is tall, square, and strong, with a box built in for attaching a shop-vac hose for dust collection.

Materials are affordable

The key to this table's low price tag—around $200 for everything but the router—is MDF (medium-density fiberboard). Every part and piece is made from it. MDF is flat, durable, and somewhat heavy, which makes the table more stable. Its slick, hard surface is especially good for the tabletop; put a coat of wax on it and friction will be practically nonexistent. You'll need roughly 1½ (4x8) sheets of ¾-in.-thick material for this project.

How you attach the router is up to you. There are two main options: a router lift, with a router motor in it; or a simple table-insert plate with a router screwed to it. Whatever you choose, the plate should be ⅜ in. to ½ in. thick and made from a material like aluminum or phenolic that won't sag from the weight of a big router. I went with the insert plate, attaching a router I already own, a more affordable approach than buying a lift.

You'll also need a simple plastic dust port designed for router fences, and some ¼–20 threaded knobs and T-nuts for attaching the fence. If you don't have a tool-triggered shop vacuum, I also recommend a double switch made for router tables, like the one we used (Kreg Multi-Purpose Router Table Switch, $35).

Start with the base

The key to the base is how the legs are built. The fact that they are hollow, square columns allows you to chop up the inner sections to create notches for the shelves and support the internal bracing that prevents the top from sagging. It's a very straightforward way

All the features that matter most

BIG TABLE

TALL FENCE

The tall fence offers plenty of room for attaching featherboards (opposite), and ample support for vertical work, like routing sliding dovetails. The large table easily handles big sleds and large workpieces. A Kreg router-table switch turns on the router and a shop vacuum at the same time, and a dust port on the fence keeps the tabletop clear and clean.
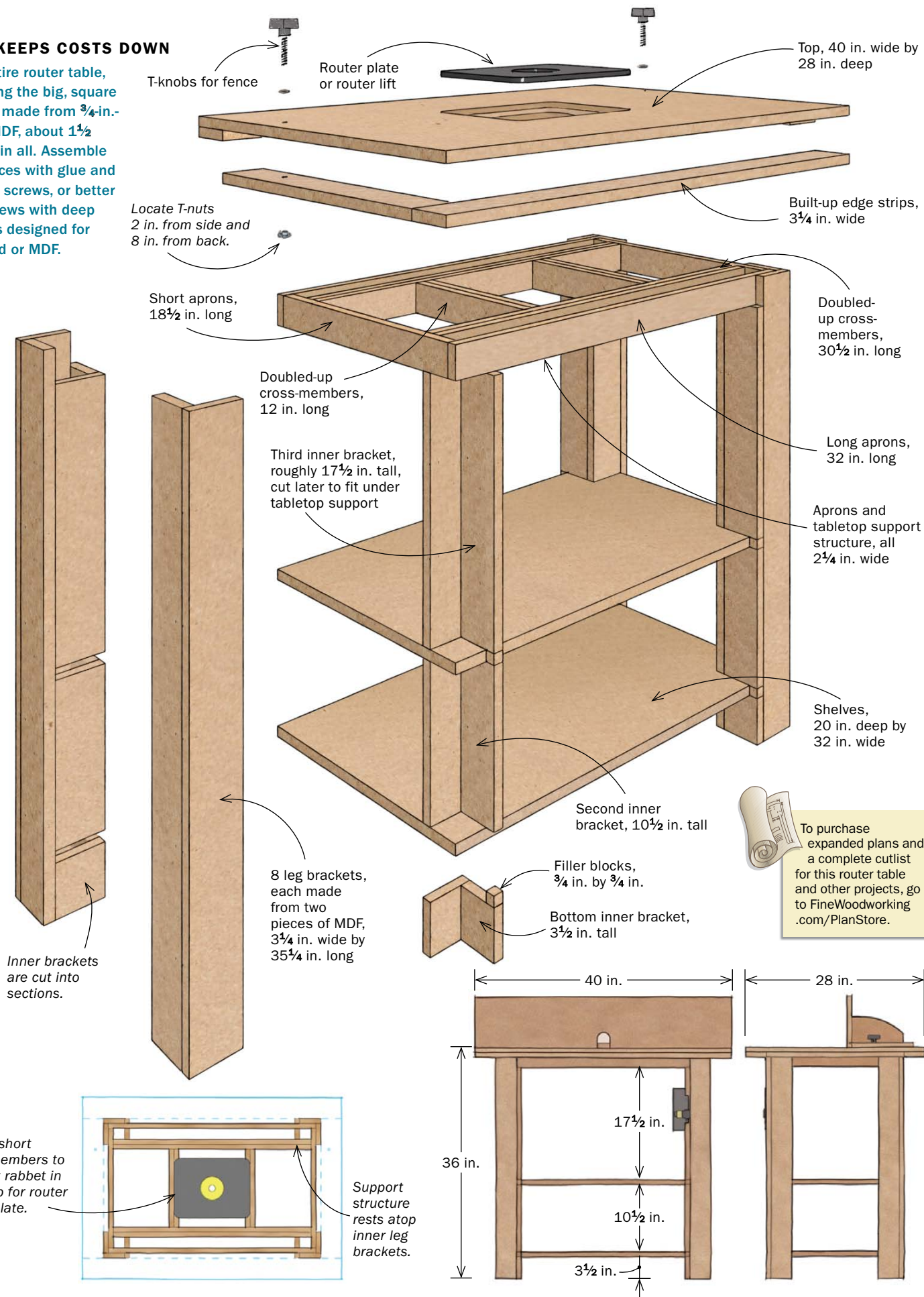
EASY-ACCESS SWITCH

MDF KEEPS COSTS DOWN

The entire router table, including the big, square legs, is made from ¾-in.-thick MDF, about 1½ sheets in all. Assemble the pieces with glue and drywall screws, or better yet, screws with deep threads designed for plywood or MDF.

T-knobs for fence

Router plate or router lift

Top, 40 in. wide by 28 in. deep

Locate T-nuts 2 in. from side and 8 in. from back.

Built-up edge strips, 3¼ in. wide

Short aprons, 18½ in. long

Doubled-up cross-members, 12 in. long

Doubled-up cross-members, 30½ in. long

Third inner bracket, roughly 17½ in. tall, cut later to fit under tabletop support

Long aprons, 32 in. long

Aprons and tabletop support structure, all 2¼ in. wide

Shelves, 20 in. deep by 32 in. wide

Second inner bracket, 10½ in. tall

Inner brackets are cut into sections.

8 leg brackets, each made from two pieces of MDF, 3¼ in. wide by 35¼ in. long

Filler blocks, ¾ in. by ¾ in.

Bottom inner bracket, 3½ in. tall

To purchase expanded plans and a complete cutlist for this router table and other projects, go to FineWoodworking.com/PlanStore.

Locate short cross-members to support rabbet in tabletop for router insert plate.

Support structure rests atop inner leg brackets.

40 in.

28 in.

36 in.

17½ in.

10½ in.

3½ in.

Drawings: Dave Richards

Hollow legs are the foundation

The legs are square columns, each made from two L-shaped brackets. The inner brackets are chopped into sections, so lay out those cuts before building the brackets, to avoid putting fasteners there.

Glue and screw the L-brackets. After applying glue, Adams uses a pin or brad nailer (far left) to hold the parts in position. He then drills deep pilot holes, then clearance holes and countersinks in the top piece, before driving screws (left).

Inner brackets get chopped before assembly. Chop only the first two sections of each bracket now (left), leaving the third for later. Attach the first inner bracket section to begin forming the legs (below). Be sure to orient the seams so the parts form a square.

to make a big, stable unit. Because MDF is so close to a perfect ¾ in. thick, the project will come together predictably, and most of the pieces can be cut ahead of time. The only exceptions are filler strips at the top of the base, and the upper section of the legs (see drawing, opposite), which should be fitted as you build.

The legs come first. Start by joining pairs of the 16 long leg pieces to make eight L-shaped brackets.

The easiest way to assemble these brackets, and most of the other parts of the table, is to apply glue to the joints and use a brad or finish nailer to hold them together temporarily while you drill for screws. But if you don't have a nail gun, you can just clamp the pieces in place. Make sure to flush up all the edges, including the tops and bottoms, as you join the leg parts.

Pilot holes are critical when screwing into the edges of MDF. Size these precisely: Too large and the threads won't grip well enough; too small or too shallow and the MDF will split. The outer pieces at each joint need clearance holes to accommodate the shank of the screw plus a countersink for a clean look.

When making these L-brackets, locate the nails and screws so that they won't interfere with the next step—cutting up four of the brackets to create the interior parts of the leg columns. Start by cutting a 3½-in. piece off each of these brackets, and then a 10½-in. section. Leave the last piece long for now.

Now you can start assembling the base, including its storage shelves, from the ground up.

Fit the upper leg section carefully—The last inner leg bracket goes on top of the second shelf and supports the internal tabletop structure above it, which should end up flush with the tops of the legs. To make

Assemble the base

Part of the genius of this table is how easily it goes together, and how the inner leg sections go on one by one to support the shelves.

The first shelf connects the legs. *Attach it by screwing in from the outside of the legs first, then down through the shelf as shown into the bracket section below.*

Stage two. *Add the next bracket section as before, with glue on every joint, and then attach the second shelf.*

Measure for the final bracket section. *To ensure that the tabletop support structure ends up flush with the tops of the legs, Adams puts one piece of that structure on top of the second shelf, stacking the final bracket section on top of it to mark its exact length (above). Do that for each corner of the table individually, in case there are differences, and then cut and attach the final bracket sections.*

EXTRA BRACING FOR THE TOP

The central cross-members are double layers of MDF, which rest on the inner leg sections and prevent the top from sagging.

Screw in the aprons first. *Use clamps to hold everything together while you drive screws from the outside in.*

Build a ladder. *After gluing and pinning the layers together to form the short parts, it's easier to screw on just a single layer of the longer cross-members before attaching the outer layer with glue and nails.*

sure that happens, take a piece of that tabletop support structure and use it is as shown on the opposite page to size the third set of L-brackets.

Top needs rigid support

The router and its insert plate will hang permanently from the center of the table, so the top needs serious support to keep it from sagging over time and making your cuts inaccurate. That's why I built a strong web of cross-members underneath it.

Start by gluing and either nailing or screwing together the four short cross-member pieces to build two thick beams, making sure the ends and edges are flush. These will be attached to two longer beams that are just as thick, but it's easier to screw on just a single layer of these long pieces at this point.

The top has a rabbeted opening for the router insert plate. Locate the short beams to support the thin lip of the rabbet. You'll need to do some measuring and drawing, based on your router insert plate, to make sure that happens. Laying out the locations of the short pieces also ensures that the ladder goes together square, with even ends.

After you attach the outer pieces to the thick inner pieces, you can glue and screw the additional pieces to the outside to complete the thick, strong assembly.

This ladder structure actually attaches to apron pieces around the top of the base, so those have to be attached to the legs first. Then you can drop in the big center section.

The tabletop has a built-up lower edge that fits around the base. It also needs T-nuts on the underside, but I waited to locate these until after I had made the fence.

I built up the lower edge for a few reasons: to attach the top, to provide a better clamping surface, and also to make the top look more substantial. The strips fit snugly around the legs, working with gravity to keep

the top from shifting. No fasteners are needed. I routed a ¼-in. roundover on all edges of the top.

Easy way to install the insert plate

The most exacting step of the project is cutting a precise, rabbeted opening for the plate that holds the router. You must have the insert plate first because it will be used as a pattern, but whether the plate is part of a router lift or not, the technique is the same.

Start by locating the center of the top, and then center the insert on that spot and trace around it. Draw another line ½ in. inside the plate outline. This will be the lip of the rabbet. I drilled a small access hole and used a jigsaw to cut a hole in the tabletop, following that inner layout line. Now put the insert plate back in place,

Drop in the ladder. *It should sit at least partially on the inner leg brackets. As usual, add glue to every joint, and drill deep pilot holes to avoid splitting the MDF.*

Make the tabletop

Adams attaches filler strips to the bottom edge to keep the top in place on the base. The only tricky step is routing a precise rabbet to hold the router insert plate.

Attach two strips. *Glue and nail these on with the tabletop upside down. Line up their edges flush with the top.*

Flip the top and fit the last two strips. *Push the first two strips against the base before clamping on the last two, making sure they are touching the base too. If their outside edges don't line up perfectly, just hit them with a flush-trimming router bit afterward.*

Ready to rout the rabbet. *Place the insert plate in the center of the table and trace around it. Then trace another line ½ in. inside the plate outline and cut along it with a jigsaw (above). Now put the plate back in place, and use carpet tape to attach guide strips around it (right).*

and arrange MDF strips around it to guide a pattern-routing straight bit (bearing on top).

Fence is square and solid

To be sure the face of the fence is connected securely to the base, I use a tongue-and-groove joint. Start by cutting a ¼-in.-wide groove, ⅜ in. deep, on the back side of the fence face, near the bottom. The leading edge of the base then gets a rabbet, which creates a tongue that fits into the back of the face.

Before joining the two main parts of the fence, make the other cuts in them. Both the base and face need an opening for the bit to sit in, which doubles as access for dust collection. To cut these cleanly, I drilled first with a big Forstner bit and then made the side cuts with a jigsaw. I cut the adjustment grooves in the base in a similar way, drilling ⅜-in. holes at the ends, and then connecting them with jigsaw cuts.

Now you can cut out the four support braces. Their two primary edges must be perfectly square to each other. I cut a slight curve on the back side for looks. When attaching them, be sure to leave room for the dust chute as well as the clamp knobs.

Before moving on, use the adjustment slots in the base of the fence to line up the T-nuts in the tabletop. They get centered on the slots and placed about 8 in. from the back edge of the tabletop. Mark the tabletop and then drill very small holes through to the bottom side.

Setup trick. *To be sure he gets the rabbet depth exactly right, Adams sets the insert plate and the router onto one of the guide strips, with the bit just touching the table.*

Rout away. *A top-bearing pattern-cutting bit rides the guide strips, ensuring that the edges of the rabbet fit the plate. Brush off the router base and guide strips and make a second pass to be sure you've cut to full depth.*

Now flip over the top, and do the two-step drilling process for the T-nuts: a ¼-in.-deep hole with a ¾-in. Forstner bit, and then the ⁵⁄₁₆-in.-dia. hole that goes all the way through. To make sure the T-nuts go in squarely, I use the clamp knob to pull them down while giving the occasional tap on top with a hammer and a ¾-in. socket to set the little prongs that keep the nut from spinning.

Dust collection is the final step

You already have the access holes cut in the fence; all that's left to complete your dust-collection system is screwing on an inexpensive plastic port made for router-table fences. If you are adding the double switch that powers up the router and vacuum at once, attach that now. To mount the Kreg switch, you'll need to attach a beveled piece of MDF to one of the front legs.

Now you can enjoy your great new router table. My students, staff, and I have been using ours for decades, and I wouldn't change a thing. □

Marc Adams runs the one of the country's largest woodworking schools (MarcAdams.com).

Smart way to check the depth. *Before removing the guide strips, blow out the rabbet, drop in the insert plate, and check to see if a piece of MDF comes up flush to the strips.*

Fence is big and stable, like the table

Support braces and a rabbet-and-groove joint ensure that the fence goes together square and straight, and stays that way.

Start by gluing and clamping the fence and base. *Adjust your clamps if necessary to be sure the two pieces are square. Then add the support braces. Adams holds those in place with small sticks as shown, as he drills holes and drives screws.*

T-knobs

Fence face, 8 in. tall by 40 in. long

Braces, two on each end, 8 in. wide by 4 in. tall

4 in. to outer braces

14 in. to inner braces

Dust port/bit openings, 2 in. wide by 2½ in. tall/deep

Groove, ¼ in. wide by ⅜ in. deep

Adjustment slots, ⅜ in. wide, 2 in. from end of fence, ending 1¼ in. from back of base and back of fence face

Fence base, 10 in. deep by 40 in. long

T-nuts installed in underside of router table top.