

A Versatile Router Table

This economical design is capable of conventional, overhead, or horizontal routing

BY KEVIN McLAUGHLIN

Over the years I looked at a lot of router-table designs, but every one I came across lacked one feature or another. Shopmade router tables usually are limited to tabletop routing and fall short if you want to do anything more, like mount the router horizontally or use an overhead pin routing guide. The same is true for most store-bought tables.

My own router-table design combines all of the features I was after. The table I arrived at is easy to build, and it can be made with low-cost materials. Above all, because it accommodates the router in a variety of orientations, it can handle any cut that I could possibly think of making.

With the router mounted horizontally in an adjustable carriage, the table is set up ideally for cutting sliding dovetails or mortise-and-tenons. And shaping



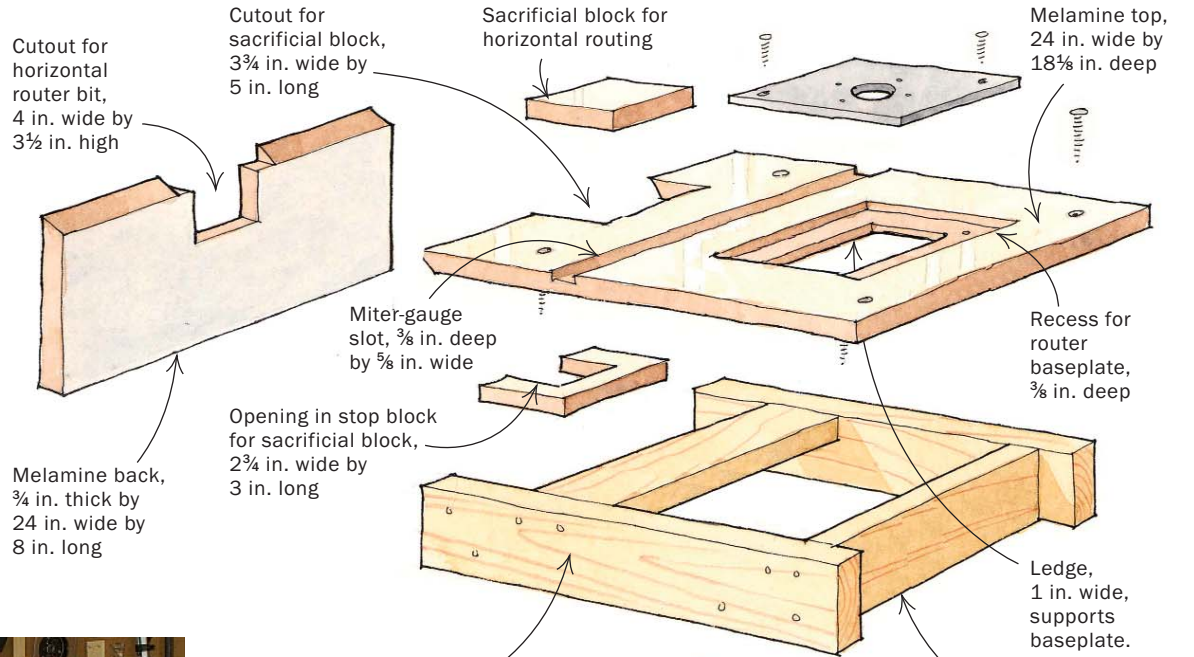
ADJUSTABLE CARRIAGE ADDS VERSATILITY



An adjustable carriage holds the router in its horizontal cutting position (left) and acts as a base to mount overhead attachments, such as a pin routing guide (right) for template-guided cuts.

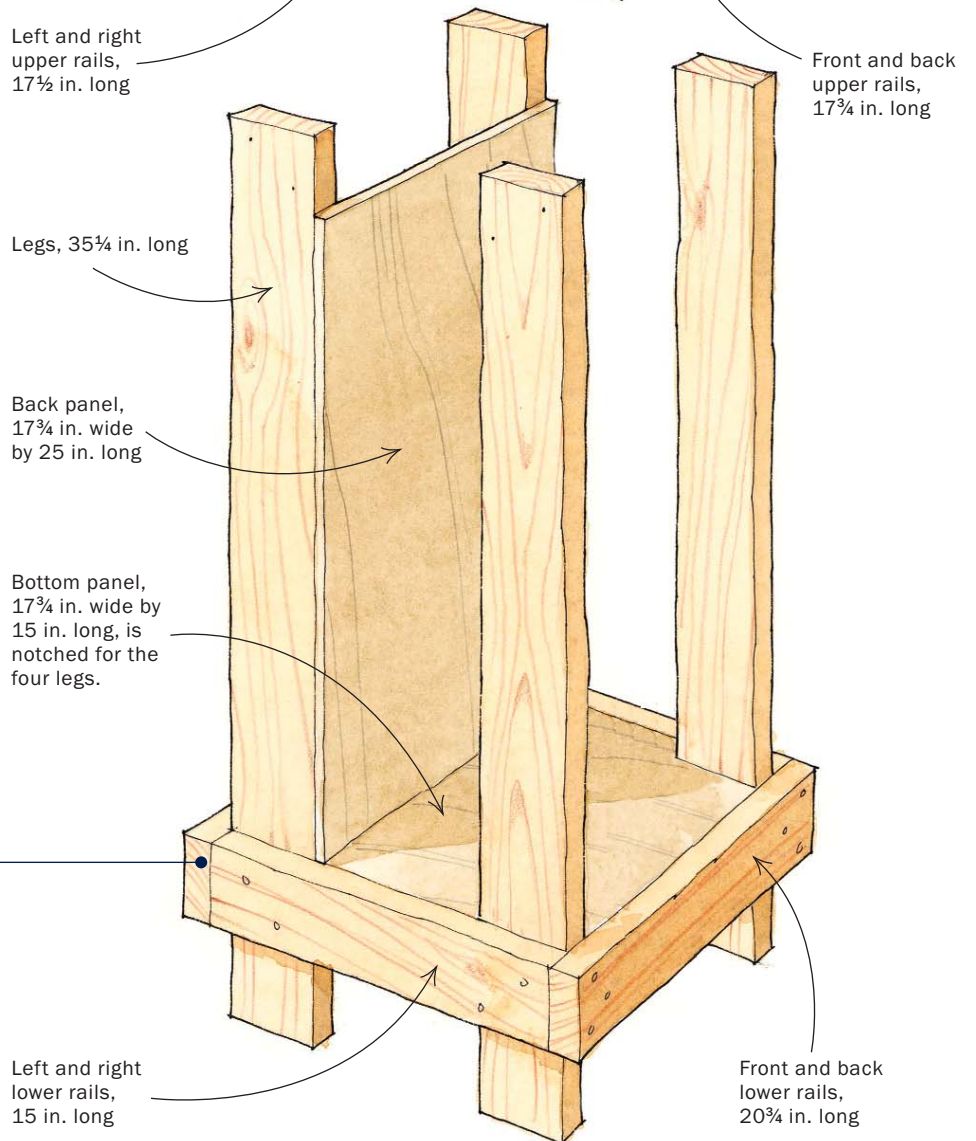
ROUTER-TABLE CONSTRUCTION

The tabletop and back are melamine and joined with a miter to provide a smooth, unobstructed surface for routing. The recess in the center of the table allows the router baseplate to sit flush with the tabletop. The measurements in the drawing may need to be modified should you use different hardware.



Framing squares ensure a 90° fit. Clamp the top and back to two Speed Squares, and then clamp the mitered joint.

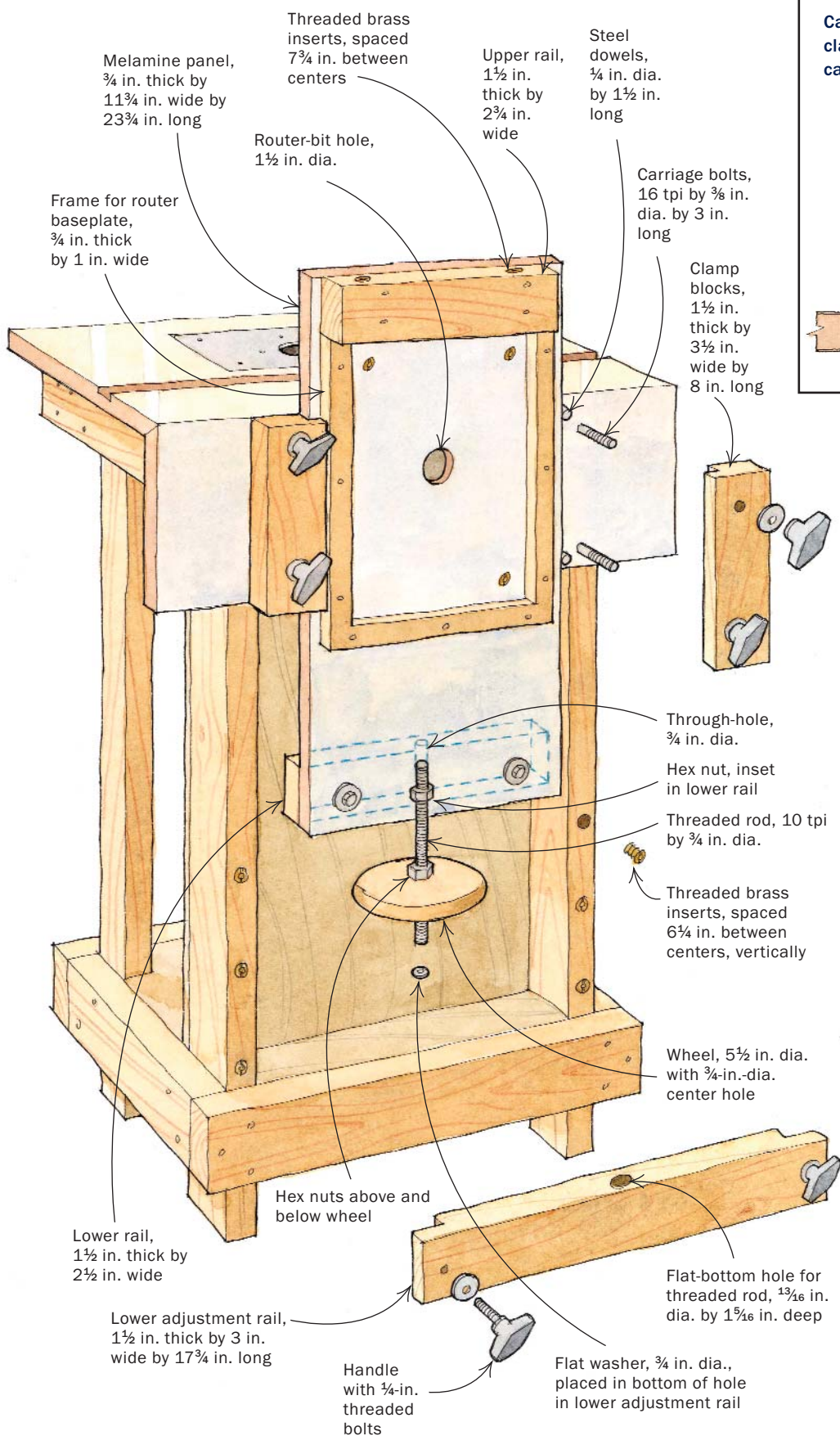
Route the inset in the top. Clamp router guides in place, then route a ledge into the top. The router baseplate should sit flush with the top.



NO-FRILLS STAND

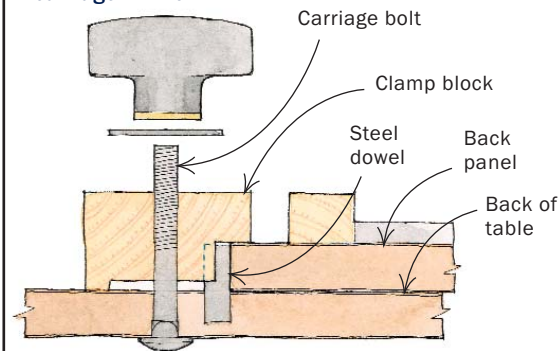
To keep down costs, the stand is constructed with 2x4s milled flat on a jointer and planer. The top part of the stand is screwed to the tabletop with 1 5/8-in. drywall screws; the legs and bottom frame require longer screws. McLaughlin added a 25-lb. weight housed in the lower frame to anchor the router table.

THE ADJUSTABLE CARRIAGE



CLAMP-BLOCK DETAIL

Carriage bolts and threaded knobs keep the clamps in place. The steel dowels keep the carriage in line.



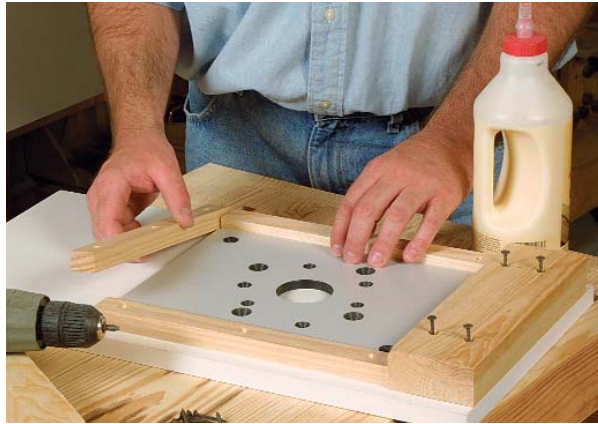
the edge of a wide board doesn't require balancing unwieldy material on end.

The adjustable carriage also doubles as a base to mount several overhead attachments. A pin routing guide makes the table useful for template-routing. A fence guard is easy to set up for safety. Finally, a horizontal carriage attachment allows the router to be mounted upright above the table surface and the workpiece. In this orientation, you can reference the flat side of the workpiece on the tabletop, which is helpful when removing wide areas of material or when cutting irregular moldings. With such a simple system for mounting attachments, I can build new ones to tackle any tasks I think of down the road.

The adjustable carriage moves in a true vertical line perpendicular to the tabletop, so overhead attachments can rest on top and be moved up and down while remaining parallel to the tabletop, a design that's critical to using the overhead attachments effectively. This construction method differs from most horizontal router tables on which the router height is adjusted on a single pivot point, and the router moves up and down in an arc when it's raised and lowered.

The table is built with inexpensive materials

The construction of the router table is relatively simple. The stand is made of 2x4s held together with drywall screws. This is a sturdy and inexpensive method that can be modified easily if you want to add drawers or make an enclosed cabinet. Allow the



A frame on the back of the adjustable carriage holds a router baseplate. The frame supports a horizontally mounted router. The upper rail also supports overhead attachments.



Mount the adjustable carriage to the table. Clamp the carriage in place so that it sits perpendicular to the tabletop. Drill holes for carriage bolts and steel dowels and are tightened in place with threaded handles.



Clamp blocks secure the adjustable carriage. The clamp blocks fit over the carriage bolts and steel dowels and are tightened in place with threaded handles.

2x4s to acclimate in your shop so that they don't move significantly after the table has been constructed, and mill them on a jointer and planer to help the parts fit together squarely.

For the tabletop and adjustable carriage I used 3/4-in.-thick melamine. I purchased pre-cut shelving material from a local home center. The pre-cut material is easier to handle, but a 4-ft. by 8-ft. sheet also will do. I chose melamine because it has a slick finish and is extremely flat. The various attachments are constructed with melamine and 3/4-in.-thick birch plywood.

Start with a flat tabletop

Begin by choosing a router-table baseplate, and build the tabletop to accommodate it. I chose the Bench Dog ProPlate, available from Woodcraft for \$30. It has a simple design with openings that can accommodate several bit diameters.

The router-table top consists of a horizontal surface and a vertical back piece that are joined with a mitered edge. Care must be taken to ensure the top and back join at a perfect 90°.

Rough-cut the pieces 1/8-in. oversize, and trim them to exact dimensions using a router and a flush-trimming bit. This method will leave a clean edge on the melamine, unlike a tablesaw blade, which tends to chip the edges. Before assembling the two pieces, cut an opening in the back edge of the tabletop where the bit will be exposed when the router is mounted in its horizontal cutting position. This opening will hold a sacrificial block that can be replaced pe-



Two ways to set the adjustable-carriage height. The position of the carriage can be finely adjusted with a wheel. Gross adjustments are made by moving the lower adjustment rail to different positions on the table legs.

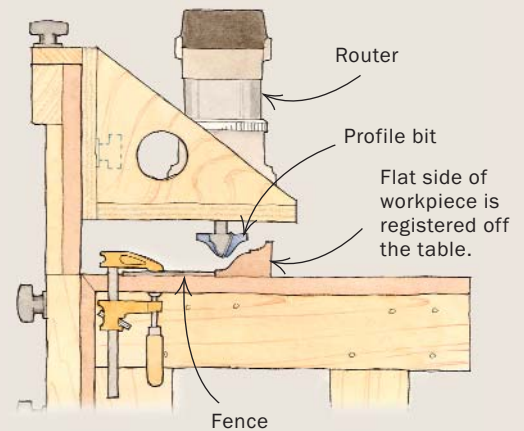
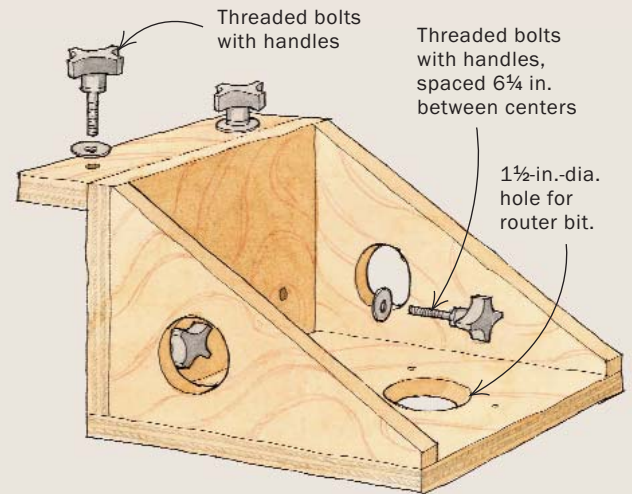
USEFUL ACCESSORIES

This router table can be modified easily to accommodate various routing tasks. With the router mounted upside down in the table, you can make use of several overhead attachments. For example, a pin guide allows for easy template-routing. McLaughlin built four attachments for his router table, shown here. They follow only one standard requirement: They must attach to the top of the adjustable carriage with two threaded bolts with handles that are placed $7\frac{3}{4}$ in. apart from center to center.

OVERHEAD ROUTER CARRIAGE



An overhead router carriage holds the router upright above the table, allowing the flat side of a workpiece to be referenced on the tabletop.



riodically. Once the opening has been cut, the top and back can be glued together.

Next, make a 2x4 frame to reinforce the tabletop. When building the frame, mill the 2x4s on the jointer and planer to get flat surfaces and right angles. This will prevent the top from warping when it is mounted on the frame. Assemble the pieces on a flat surface, and glue and screw them together. Then mount the tabletop to the frame with drywall screws and attach it to the stand.

Build the tabletop—With the top of the table assembled, make the remaining cuts on its worksurface to accommodate the

baseplate and miter gauge. First, cut a recess into the tabletop for the baseplate. The baseplate must sit flush with the table, so the depth of cut is determined by the thickness of the baseplate. Cut the opening to match the baseplate. To do that, make a guide for the router to follow by clamping a straight-edge and two right-angle squares onto the tabletop (see the bottom photo on p. 59).

Within the area that has been recessed, use a jigsaw to cut the opening for the router housing. I have a dedicated router that I use with this table, and I find it's easiest to just drop it into the table from above with the baseplate attached. This requires that the router opening be cut with enough

clearance to accept the machine. You should leave at least a 1-in. ledge at the narrowest spot to support the baseplate.

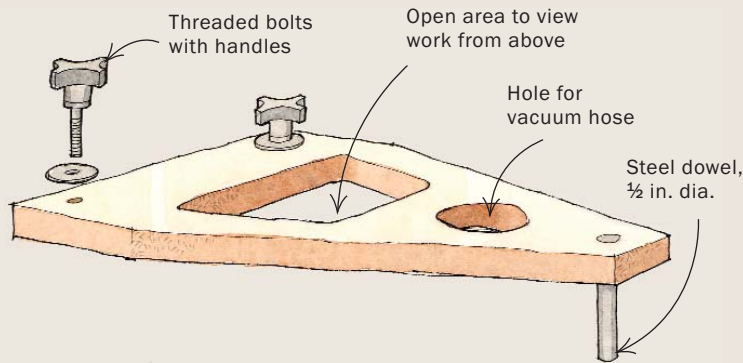
Finally, cut a slot along the width of the table surface for the miter gauge. Then attach the top and frame to the stand.

Construct the adjustable carriage

Cut the melamine back panel to size, then attach a frame to its back side. The frame not only holds the router in a horizontal position, ensuring that the router does not shift during use, but it also strengthens the back panel. Install two threaded brass inserts inside the frame for mounting the baseplate. Finally, drill a hole with a

PIN ROUTING GUIDE

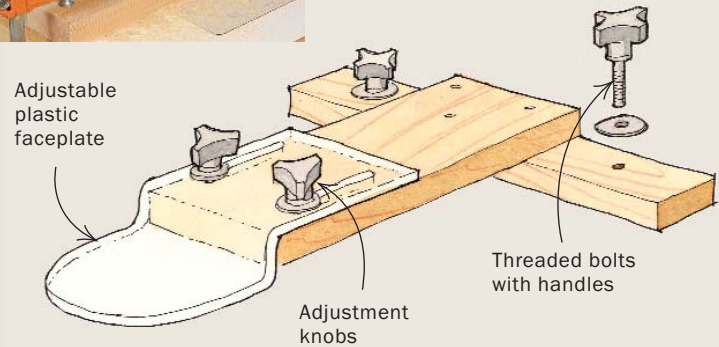
A steel dowel, positioned in-line with a non-bearing straight router bit, is used for template-routing. The template is guided along the pin while the router bit cuts the workpiece to match. The pin guide is attached to the adjustable carriage. First, locate the hole for the pin by lowering the carriage while the router is running. When the bit hits the attachment, the dimple left behind pinpoint the location of the pin.



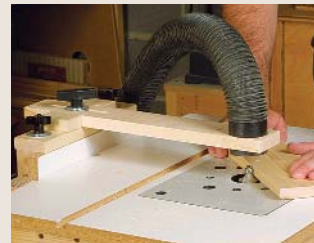
FENCE GUARD



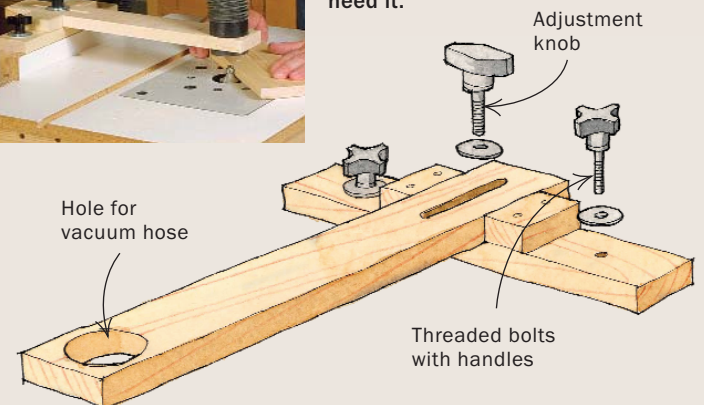
A clear plastic shield keeps fingers away from the bit when the router is mounted upside down in the table. A flattened 2x4 clamped to the table makes an adequate fence.



VACUUM-HOSE ATTACHMENT



This adjustable overhead attachment places a shop-vacuum hose right where you need it.



Forstner bit through the back panel where the router bit will be exposed.

The carriage has an upper rail to support overhead attachments. A lower rail is attached to the bottom edge of the carriage to house one end of the system for finely adjusting the height of the carriage.

Set up the adjustable carriage to slide vertically—The carriage is held in place with four steel $\frac{1}{4}$ -in.-dia. dowels and two L-shaped wood clamp blocks, which secure it to the table.

To make the sliding assembly, drill and drive the steel dowels into the back of the tabletop. The back panel of the carriage

should be snug between the pins to prevent it from moving from side to side. The clamp blocks fit over the dowels and are further secured to the back with threaded bolts with handles. Loosening the bolts allows the carriage to slide up and down. Tightening the bolts secures the carriage in place.

Build the system for making fine height adjustments—Fine adjustments are made by turning a wooden wheel that's attached to a threaded rod. The lower rail on the adjustable carriage accepts one end of the threaded rod. Another rail is bolted to the legs to accept the other end of the threaded rod.

When constructing the adjustment system, use a $\frac{3}{4}$ -in.-dia. 10-tpi threaded rod. One full turn of the wheel will move the carriage up or down $\frac{1}{10}$ in. For large adjustments, pairs of brass inserts in three positions along the legs allow the rail to be unbolted and repositioned manually. Set in the lowest position, the top edge of the carriage should sit flush with the tabletop. The other positions will raise the carriage enough to mount the overhead attachments. The brass inserts can be set in various positions to accommodate attachments of your own design. □

Kevin McLaughlin is a mechanical designer and machinist by trade living in Helena, Ala.