

The Wired Workbench

Readers help us design the perfect power-tool workstation

BY JOHN WHITE

In a modern shop, a lot of work gets done with power tools such as routers, biscuit joiners, and random-orbit sanders. But most of us use them on benches designed around handplaning, which means everything from the height to the mass to the vises and benchdogs is geared toward hand-tool use. So the editors at *Fine Woodworking* decided to build a bench designed for power tools. They posted a blog on FineWoodworking.com, asking readers what they thought a “wired workbench” should be. A lot of great suggestions came in, and being a veteran of the *FWW* shop and an inveterate inventor (see my “New-Fangled Workbench,” *FWW* #139), I was given the task of distilling readers’ ideas into a user-friendly whole.

Power tools need electricity to run and they make dust by the fistful. So most people



Collect the dust, forget the fuss

Imagine locking down your workpieces quickly, and using your portable power tools without any dust or distractions.

CLEVER CLAMPING IS BUILT IN



Pipe clamps apply the pressure, and low-profile dogs stay out of the way of your tools.

SMART VALET FOR CORDS AND HOSES



A simple hanger system manages these necessary evils, so they don't drag and disrupt your work.

SHOP VAC AT THE READY



Put a small vacuum in the cabinet and leave it there, ready to work. That way you won't forget to hook it up or be tempted to do without.

HIGHER THAN A HAND-TOOL BENCH



Traditional benches are lower, so you can bear down on your bench planes. But power-tool tasks like routing and sanding are better at belly height.

DUST EMPTIES EASILY

The Dust Deputy grabs 99% of the chips and dust, dropping them into a box that's easy to empty and keeping the vacuum filter clean.



ONBOARD POWER

Plug your power tools into an automated vacuum switch that turns on the vacuum when you turn on the tool. It also runs the vacuum for a few seconds after the tool powers off.



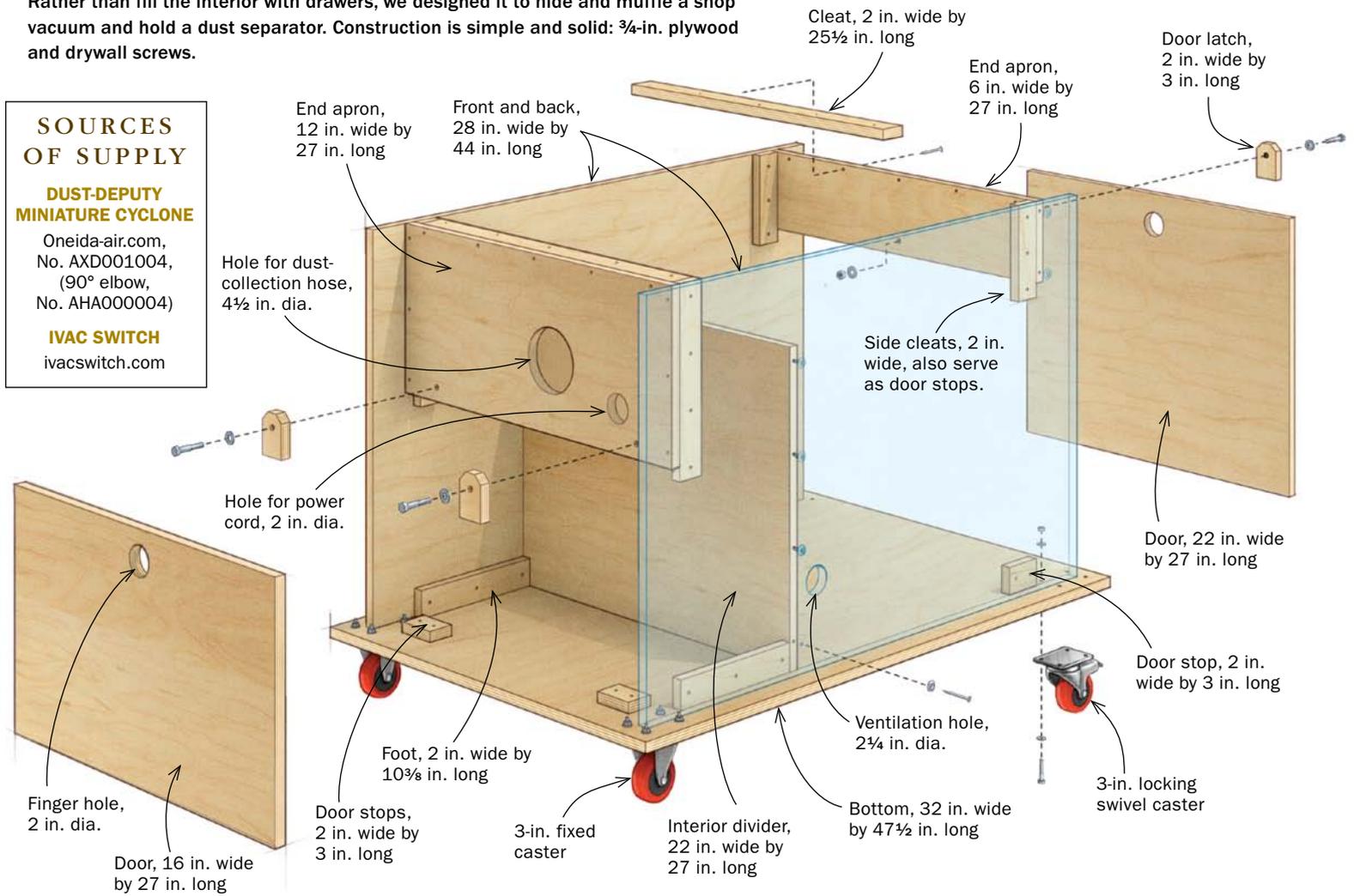
Build the base first

Rather than fill the interior with drawers, we designed it to hide and muffle a shop vacuum and hold a dust separator. Construction is simple and solid: $\frac{3}{4}$ -in. plywood and drywall screws.

SOURCES OF SUPPLY

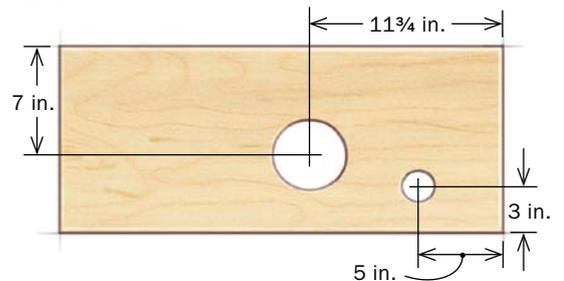
DUST-DEPUTY MINIATURE CYCLONE
 Oneida-air.com,
 No. AXD001004,
 (90° elbow,
 No. AHA000004)

IVAC SWITCH
 ivacswitch.com



Get a third hand for assembly. White used a simple plywood corner block to hold parts still and square to one another while he drove in screws.

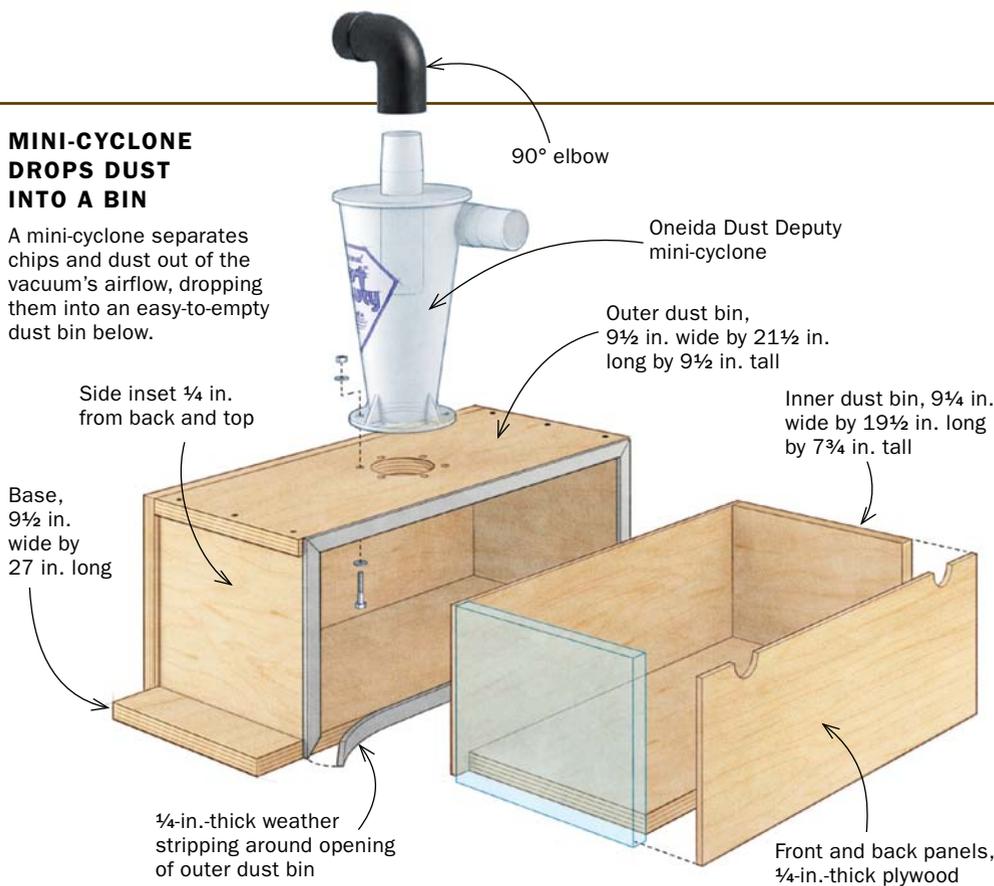
END APRON HOLE LOCATIONS



Add aprons for stiffness. Screw through the face into the cleats. On the cyclone end, pre-drill holes for the vacuum hose and power cords with a circle cutter.

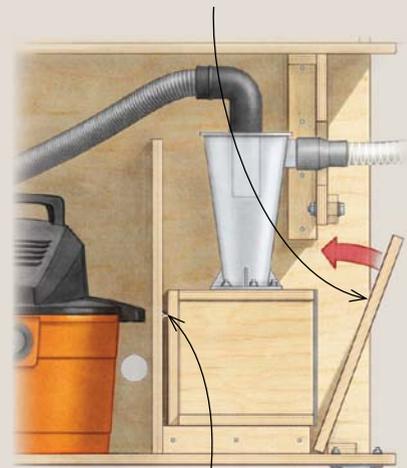
MINI-CYCLONE DROPS DUST INTO A BIN

A mini-cyclone separates chips and dust out of the vacuum's airflow, dropping them into an easy-to-empty dust bin below.



FINE-TUNE THE AIR SEAL

A door on the cabinet presses tightly against weather stripping on the dust bin, so the inner bin can be loose. Stops at the bottom and latches at the top of the door create even pressure.

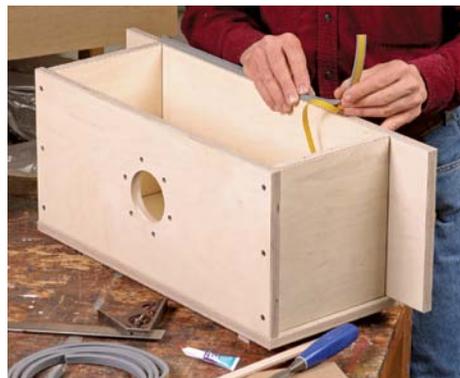


Use drywall screws on the back of the dust bin to push it back and forth to fine-tune how much the weather stripping is compressed by the door.

agreed that the first thing this bench needed was a built-in source of electricity and dust collection. I kept things simple by attaching a commercially available automated vacuum outlet, the iVAC switch box, that turns on the dust collection when you power up the tool. And I made room in the base for both a shop vacuum and an Oneida Dust Deputy, a miniature cyclone that has proven its value (see "A Revolution in Dust Collection," p. 52-59) trapping the fine dust (and all of the chips) before it gets to the vacuum and clogs the filter.

This wired workbench also is taller (38 in. total) than traditional benches, moving the tool and the workpiece up to a height where you have better vision and control. It's wider, too, but not as long. I got rid of the traditional front and tail vises, opting for a simple but effective clamping system made from two pipe clamps. The benchdogs have soft heads that hold workpieces firmly, but won't dent or mar them. And there are locking casters underneath to make the bench mobile.

Finally, the wired workbench is much easier to make than a big, heavy traditional bench. Because it won't take the forces a hand-tool bench does, the entire bench is made from plywood. And there is no complicated joinery, just butt joints held



Weather stripping makes an airtight seal. Miter the corners with a chisel after you apply the stripping, and glue the corners together with cyanoacrylate glue.



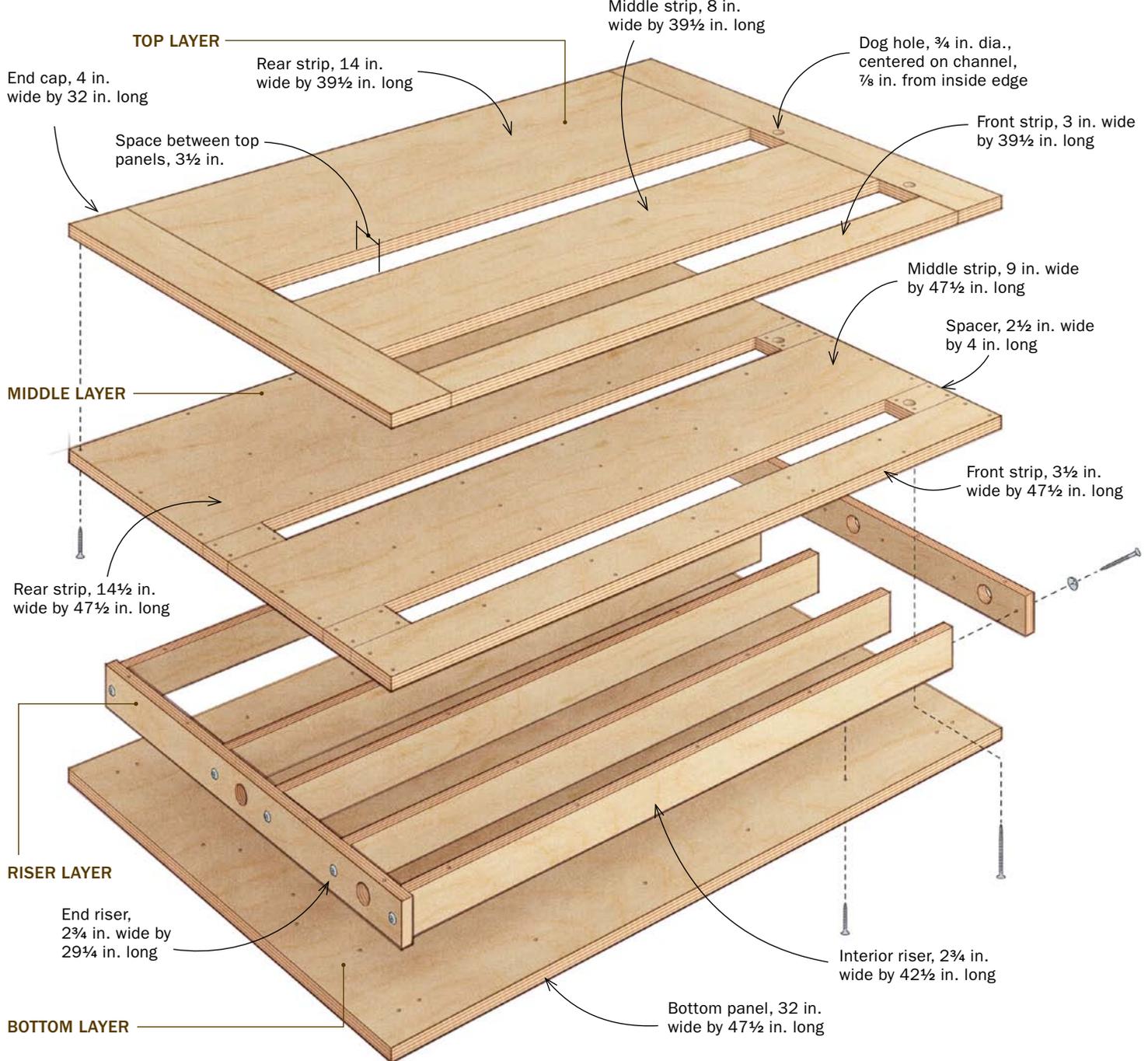
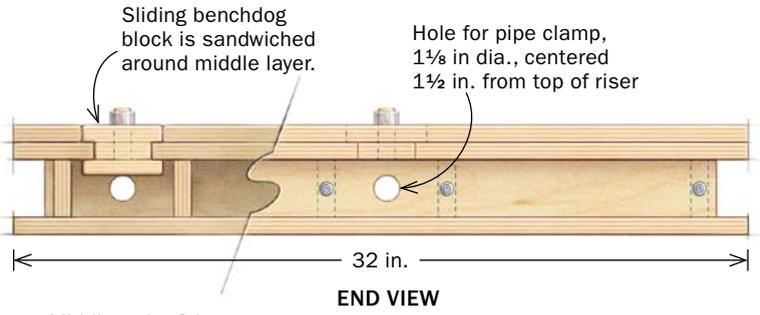
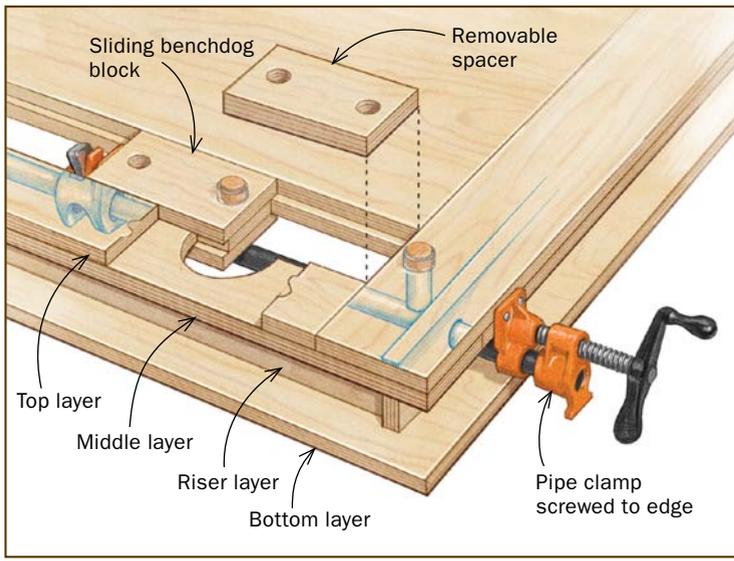
Put the Deputy on the case. To create an airtight seal, apply a bead of acrylic caulk to the mini-cyclone's flange before putting it on the bin.



Connect the vacuum to the mini-cyclone. A 90° elbow makes the tight turn under the bench's top without restricting airflow like a crimped hose would.

Layered top has room for clamps

This plywood top assembly has a clamping system built into it. The layered construction makes it easy to create tongued channels for the sliding benchdog blocks and a cavity for the pipe clamps.



BUILD THE TOP TWO LAYERS FIRST



Connect the top and middle layers. Pre-drill and countersink for the screws and use an offset from the plywood to keep the edges aligned as you drive the screws.



Use spacers to locate slots for clamps. Make sure they're dimensioned and placed accurately, because they determine where you drill holes for the stationary benchdogs.



Drill for the stationary benchdogs. Leave the spacers attached and drill through both pieces at once. Use scraps to support the far end of the assembly.

together by screws. Where they show, I've used stainless-steel deck screws and finish washers for a clean, modern look.

If you already have a heavy hand-tool workbench, this one will make a great, mobile, secondary workstation. And if you rely mostly on power tools, this might be the only bench you need.

The base is a dust collector

It's not too difficult to cut accurate parts from plywood. (For a few tips, see one of my recent articles: "Best-Ever Outfeed Table," *FWW* #202). I'll skip over that process now and just explain how the parts go together.

I put the vacuum and the mini-cyclone in the base for two reasons: First, enclosing the vacuum muffles it. Second, it makes the bench a self-contained unit. There's no vacuum trailing behind it like a baby elephant behind its mother.

Start assembling the base with the bottom panel, pre-drilling holes for the casters. Then attach the front panel to the bottom. Screw the interior divider to the base and then to the front panel. Next, attach the back panel to the base and divider, but before you do, drill the ventilation hole (the power cord for the iVac switch also passes through this hole).

An apron runs across the top of the door opening at both ends of the base. Each apron is screwed to plywood cleats. The top cleat attaches the top assembly. The side cleats serve as door stops. After assembling the aprons and cleats, screw them between the front and back panels.

Then turn over the base and bolt the casters to it. Flip the cabinet back over and

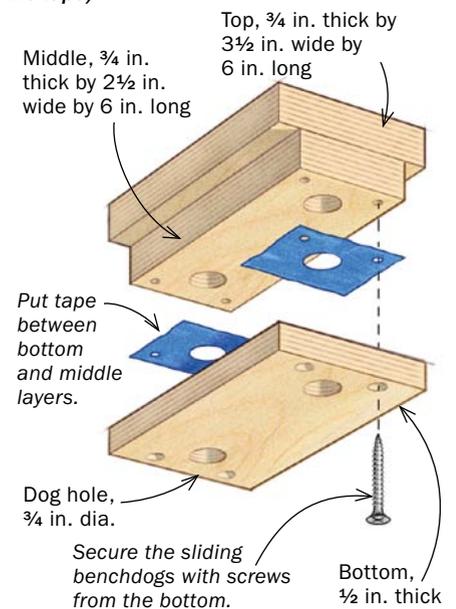


ADD THE RISER FRAME AND SLIDING DOGS

Long screws. Screw down through the frame pieces and into the top.



Make the sliding benchdog blocks. After drilling dog holes through the assembled blocks, take off the bottom layer and put the blocks in place. Three stacked pieces of blue tape, added after the dog holes are drilled, create enough play for the block to slide easily (use a knife to cut openings in the tape).



Install the low-cost clamping system

Whether you're sanding or routing, the workpiece needs to be held still. White's ingenious "vise" is nothing more than $\frac{3}{4}$ -in. pipe clamps and a clever system of sliding blocks and dogs, but it gets the job done and applies pressure close to the bench's surface—without sticking up and getting in the way.



Put the top on the base. It's heavier than it looks, but one person can do it. Screw through the cleats in the base, into the top.



Install the pipe clamps. Put the bare end in and through the adjustable clamp head. Tighten it completely, and mark it where it's flush with the top's edge. Take it out, cut it to length, and put it back. Screw the fixed head to the bench through pre-drilled holes (inset), so you can open and close it without holding the head.



Low-tech benchdogs. A sharp knife is all you need to cut the plastic tubing that fits over the dowels (above) so they won't mar or dent workpieces. Use filler blocks to cover the slot (right). You need several of different lengths for complete coverage no matter where the benchdog block and clamp head are.



install the doors. Attach the lower door stops to the sides of the cabinet and to the bottom panel. Then screw the pivoting door "locks" to the apron.

Collect the dust in an airtight box—The Dust Deputy is a plastic cyclone typically attached to the lid of a 5-gallon bucket, which collects the chips and dust when they fall out of the cyclone. But such an assembly is too tall to fit inside the base cabinet, so I came up with another way to collect the debris. Of course, that meant overcoming a big challenge, because for

the cyclone to work properly, the box needs to be airtight. Fortunately, I found an easy way to do that, because—and this is the cool part—you don't need any special tools or materials to make it.

The cyclone sits on top of a box, and inside the box is a removable drawer that catches the dust and chips. When it is full, you just open the box, pull out the drawer, dump it in a trash can, and put it back in.

The butt joints in the box are tight enough to prevent airflow and the door

can be used to create a tight seal around the opening. Just apply foam gasket—the kind used for weather stripping on entry doors—around the opening for the door, mitering the corners and gluing them together using cyanoacrylate glue. When the door closes against the gasket, it creates an airtight seal.

To fine-tune how much the door compresses the gasket, I drove two drywall screws into the back of the outer dust bin. Adjusting the screws in and out moves the box farther from and closer to

the door and compresses the gasket less or more.

Finally, to complete the airtight box, apply a bead of acrylic caulk around the opening for the cyclone before bolting it in place.

The top is a vise

The cool thing about this top is that, like my new-fangled workbench, it has a clamping system built into it. All you need are two $\frac{3}{4}$ -in. pipe clamps—this bench is designed for Jorgensen No. 50 Pony clamps—some $\frac{3}{4}$ -in.-dia. dowel, and $\frac{3}{4}$ -in.-internal-dia. vinyl tubing. The dowel is cut into short lengths to make benchdogs and the tubing slides over the dogs to keep them from marring or denting your work, something you don't want to have happen when you're sanding a door just before applying a finish.

Here's how it works. A block of plywood with a dog hole drilled in it is pushed against the sliding jaw of the pipe clamp. The other jaw is fixed to the apron. You can move the sliding jaw wherever you need it, and the dog hole moves along with it.

The top is made from layers of plywood strips, but it is plenty rigid for power-tool work (and some hand-tool work like light planing). Screw the top and middle layers together. Mark the locations of the stationary benchdogs, partially disassemble the parts, and drill the holes.

Now that the basic structure of the top has been assembled, make and attach the riser layer. The two end risers need holes for the pipes to pass through. Drill them at the drill press.

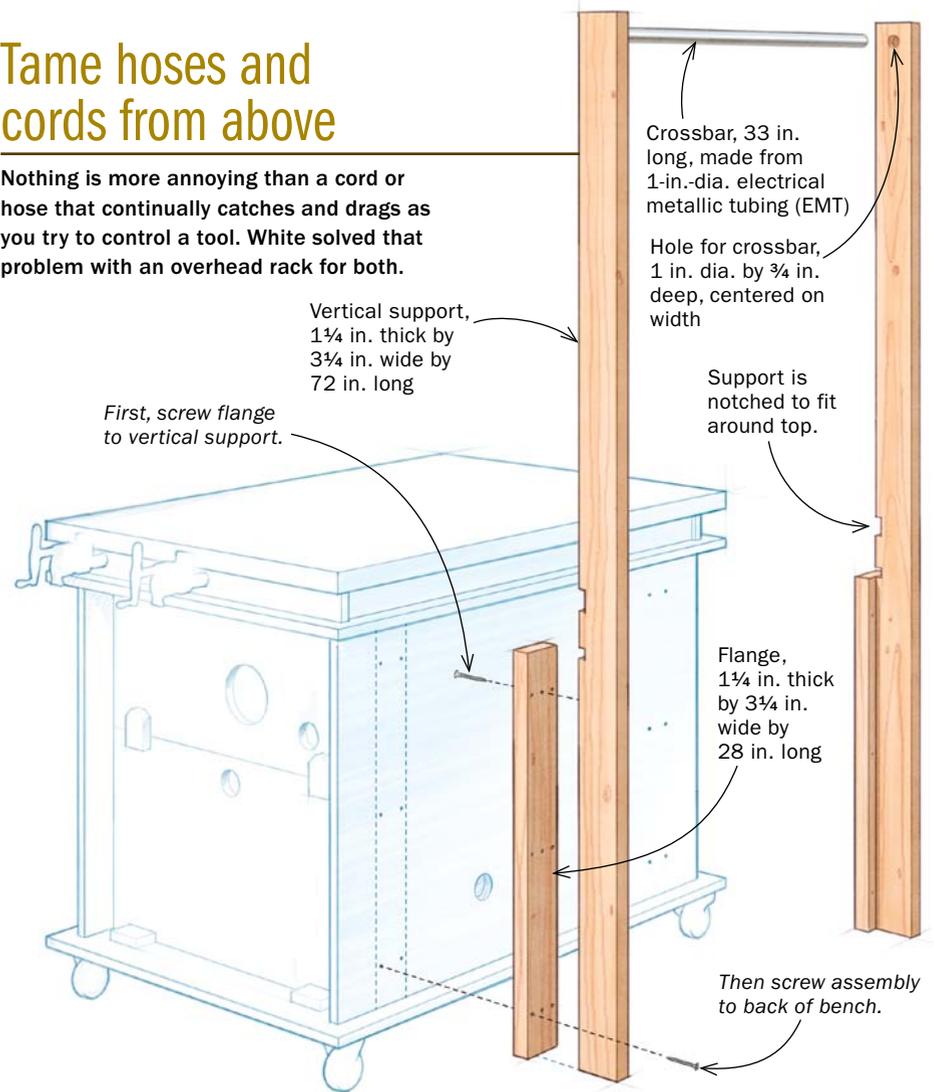
Next, make and install the sliding benchdog blocks. Assemble the layers and drill a hole for the benchdog. Take off the bottom layer, add some tape to make the groove a bit wider than the tongue on the top, and install the blocks. Now attach the bottom panel to the risers. Then set the entire assembly onto the base and attach it by screwing through the cleats and into the bottom panel.

Make filler blocks for the slots. Then make some benchdogs from a length of dowel and slip some vinyl tubing over one end. Finally, install the pipe clamps. □

John White is a former shop manager at Fine Woodworking.

Tame hoses and cords from above

Nothing is more annoying than a cord or hose that continually catches and drags as you try to control a tool. White solved that problem with an overhead rack for both.



Elegantly simple. White used a key ring and O-ring bought at a local hardware store to suspend the hose. Another one holds the cord. They slide easily over the electrical tubing used for the crossbar.