

# Shaker Workbench

With a stout base, thick top,  
and abundant tool storage,  
this is one bench you'll never outgrow

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AND MATT KENNEY

The shop at *Fine Woodworking* gets a lot of use and a fair amount of abuse. This is especially true of the workbench. After years of steady and heavy use, the top and vises are just hanging on, and the tool cabinet in the base is barely functional. The time for a new bench has come.

You might think that a bench for a communal shop would need to be quite different from a bench used in a one-man shop. But the basic requirements are the same. It should have a thick, flat top that sits on a stout, rigid base, and it should offer plenty of options for holding work. The bench we designed has it all. Inspired by the one used in the workshop at Hancock Shaker Village in Pittsfield, Mass., the bench has a big, heavy base with drawers for all of your hand tools, and a beefy hard-maple top.

For holding work, we put a twin-screw vise on the front, with enough space between the screws to dovetail most furniture parts. We added a sliding board jack to support boards for edge planing, or for when you need to dovetail a part that's too big to fit in the vise. For planing work on the benchtop, we prefer using stops tailored for the job at hand. That's why there is no end vise. The top can also be drilled for holdfasts.

In general, benches are not complicated beasts. The most challenging part of building this one is handling the big parts as you cut joinery in them. By the way, even though two of us built the bench together, it's certainly possible for just one woodworker to get the job done.

## Begin with the base

There are two parts to the base: a stout frame and a cabinet with drawers. Construction begins with the frame, which is made of 8/4 cherry. The mortise-and-tenon joints connecting the legs to the rails and stretchers are drawbored, eliminating the need to clamp the base together as the glue dries. The back and sides of the frame are grooved to accept shiplapped panels, which are made of white pine and finished with blue milk paint.

After gluing up the blanks for the legs and the three stretchers, mill all of the frame parts to their final dimensions, then lay out the mortises, including the holes for the drawbore pegs. Drill those holes at the drill press before mortising.

We cut the mortises with a hollow-chisel mortiser. We used a 1/2-in. bit to cut the 1/2-in.-wide mortises in the short side rails. However, for the 1-in.-wide mortises in the stretchers, we used a 3/8-in. bit and cut





#### VIDEO WORKSHOP

Watch Pekovich and Kenney build this workbench from start to finish in a members-only video at [FineWoodworking.com/extras](http://FineWoodworking.com/extras).



# PROVEN DESIGN, MODERN HARDWARE

With a thick top, a beefy enclosed base, and drawers for your tools, this bench has Shaker bones. The twin-screw vise is a smart, modern update.

Vise jaw, 1 $\frac{3}{4}$  in. thick by 5 $\frac{1}{2}$  in. wide by 26 in. long

Rail,  $\frac{3}{4}$  in. thick by 2 $\frac{1}{2}$  in. wide by 12 in. long

Chain drive vise hardware, Lie Nielsen, 1-VH-CDV

Front apron, 1 $\frac{1}{2}$  in. thick by 5 $\frac{1}{2}$  in. wide by 84 in. long

Groove,  $\frac{1}{2}$  in. wide by  $\frac{3}{8}$  in. deep, inset  $\frac{3}{4}$  in. from front edge

Stile,  $\frac{3}{4}$  in. thick by 3 in. wide by 62 in. long

Drawer divider,  $\frac{3}{4}$  in. thick by 3 in. wide

Drawer front,  $\frac{3}{4}$  in. thick

Drawer bottom,  $\frac{1}{2}$  in. thick, rabbeted to fit in  $\frac{1}{4}$ -in.-wide groove

Rail,  $\frac{3}{4}$  in. thick by 2 $\frac{1}{2}$  in. wide by 12 in. long

Drawer runner,  $\frac{3}{4}$  in. thick by 1 in. wide by 15 in. long

Groove,  $\frac{3}{4}$  in. wide by  $\frac{1}{4}$  in. deep

Drawer pull, 1 $\frac{3}{4}$  in. dia.

Drawer sides and back,  $\frac{5}{8}$  in. thick

Rail,  $\frac{3}{4}$  in. thick by 3 $\frac{1}{2}$  in. wide by 12 in. long

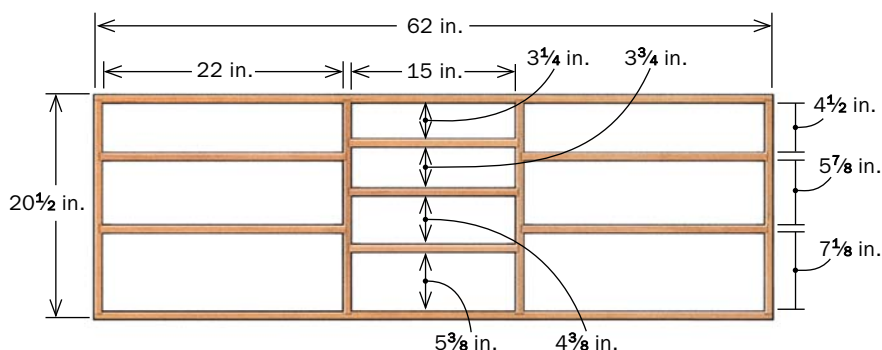
Groove,  $\frac{3}{4}$  in. wide by  $\frac{1}{4}$  in. deep

Rabbet,  $\frac{3}{4}$  in. wide by  $\frac{1}{4}$  in. deep

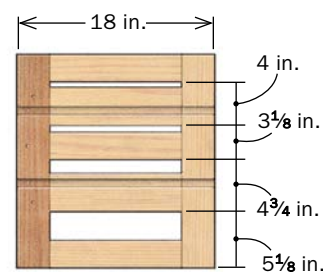
Rail,  $\frac{3}{4}$  in. thick by 2 $\frac{1}{2}$  in. wide by 12 in. long

To purchase expanded plans and a complete cutlist for this workbench and other projects, go to [FineWoodworking.com/PlanStore](http://FineWoodworking.com/PlanStore).

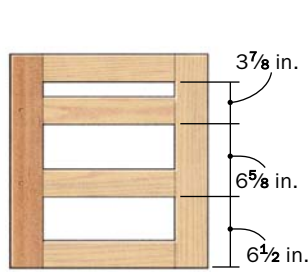
## DRAWER BOX

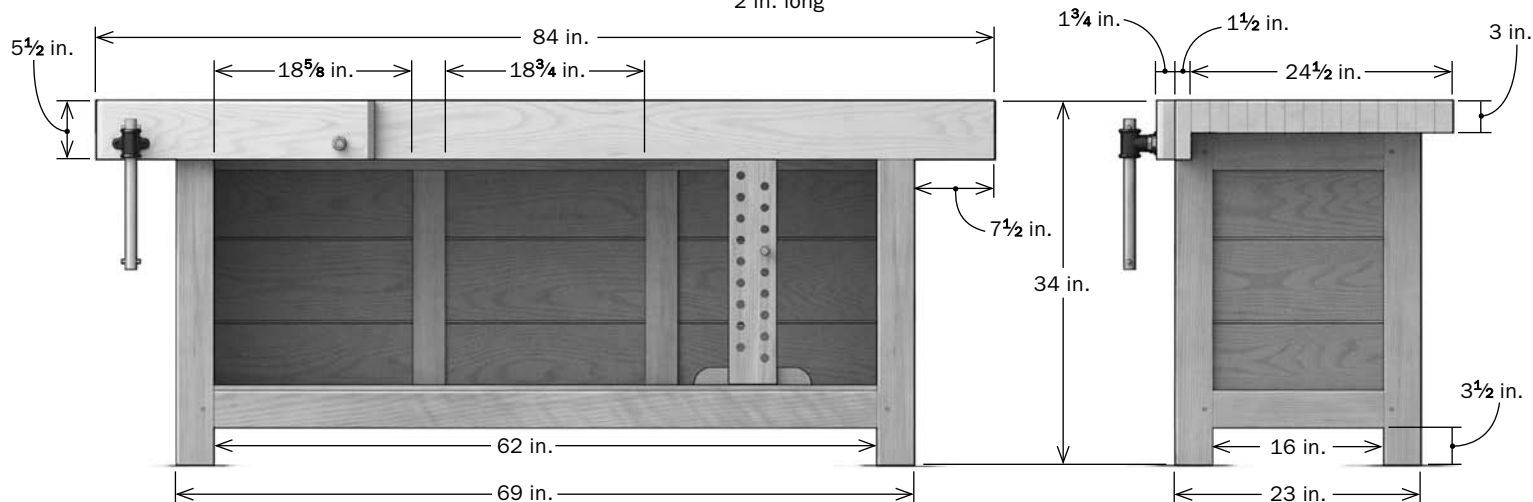
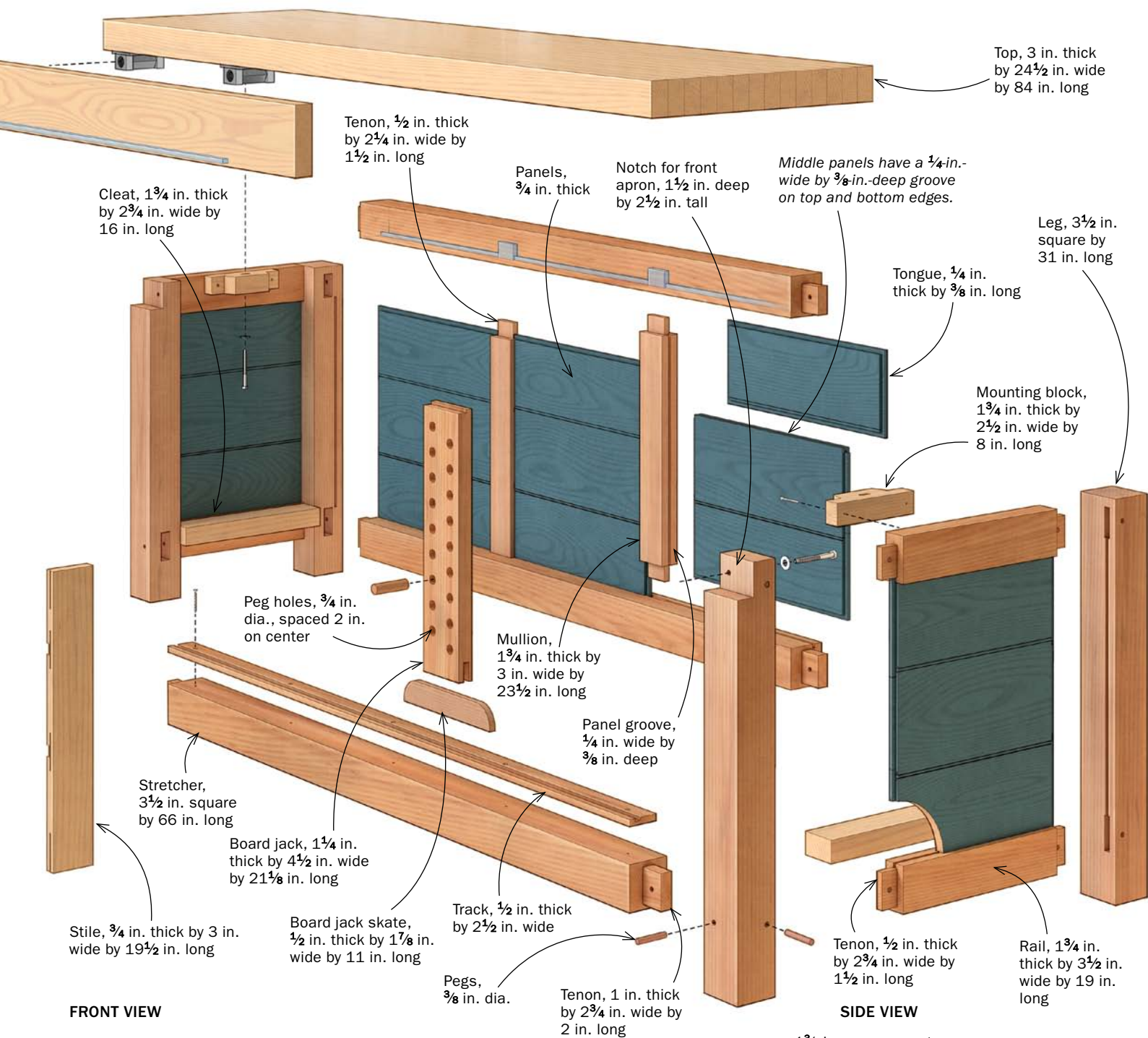


## MIDDLE WEB FRAME



## SIDE WEB FRAME







## MORTISE-AND-TENONS COME FIRST

When cutting the large mortises, size the bit to leave a thin bridge between the two outside cuts. Easily removed later, this bridge supports the bit and keeps it from deflecting during the second cut.



**Outside walls first.** After cutting along the first wall, rotate the leg so that the opposite face is against the fence, then cut along the second edge (top). To remove the waste between cuts, insert a spacer between the fence and the workpiece (above), and remove the bridge in the center (right).



them in two passes. Cut one side of the mortise, flip the board around (the mortise is centered on the leg), and cut the other side. To remove the  $\frac{1}{4}$ -in. bridge of waste in the middle, just plunge the bit into the waste, working from one end to the other.

Before moving on to the tenons, cut notches in the top of the front legs for the apron. These notches allow the apron to be flush with the front of the legs, giving you more bearing surface when clamping in the vise. (Don't worry about the apron interfering with the top front stretcher—there is none.) We cut the shoulder of the notch at the tablesaw, and the cheek at the bandsaw, cleaning up the surfaces with a handplane. Drill a clearance hole in the notch for the lag screw that you will use later to secure the apron to the base.

Cut the tenons on the rails of the end assemblies at the tablesaw, using a miter gauge and dado set. The stretchers are too long for the tenons to be cut the same way. For these, the best approach is to cut the shoulders at the tablesaw and the cheeks at the bandsaw. Leave the tenon just a bit thick, and trim it to fit.

Next, mark the tenons for drawboring. To learn how this is done, take a look at



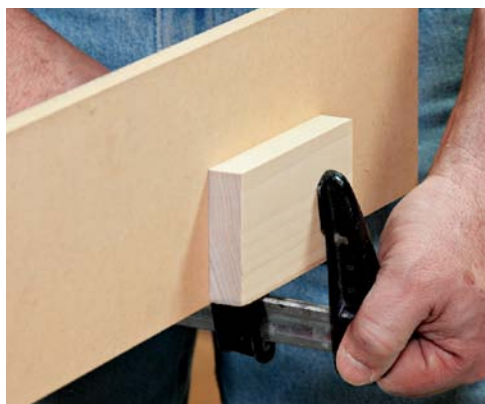
**Two tools for stretcher tenons.** Cut the shoulders at the tablesaw first. On the bandsaw, set the fence for the first cheek, cut it, then flip the stretcher to cut the second cheek.



## CUT GROOVES FOR BACK AND SIDE PANELS

The frame of the base forms a nearly indestructible foundation for woodworking, and it also holds the panels that turn the base into a cabinet.

**Through-grooves are straightforward.** Add an auxiliary face to the rip fence. Rip the groove in line with the tenon.



**Stopped grooves need stop blocks.** Clamp a block to the auxiliary fence (above). Place the trailing end of the leg against the stop, then carefully lower the leg onto the spinning dado set (right). Screwed to the outfeed table, a piece of MDF terminates the cut (below right). Turn off the saw before removing the leg.



Steve Latta's article "Drawbore Your Tenons," *FWW* #241, p. 38.

With the mortise-and-tenon joinery complete, turn to the grooves for the panels. On the stretchers and rails, these are through-grooves, but on the legs they are stopped. Still, you can cut them all at the tablesaw with a dado set. The through-grooves are no problem, but use stop blocks to help start and stop the cut for the stopped grooves (see photos, above).

For the tongue-and-groove panels, begin by cutting the boards to their final dimensions. Cut all of the 1/4-in.-wide grooves with a dado set, then cut the tongues. The tongues are centered on the boards, and the same dado and fence setup is used to





## ASSEMBLE THE BASE

This is a big base, but you don't need long clamps to assemble it because the drawbore pegs will lock the joints tight.



**Two coats of paint.** Because it's mixed with water, milk paint raises the grain, so sand with 320-grit paper after each coat.

**Assemble the ends first.** Add the rails to one of the legs, then slide the panels in place. The second leg completes the assembly.



**Bead the top and bottom panels.** On the top panel, the bottom edge gets the bead. On the bottom panel, the top edge gets beaded.

cut the tongues that fit into the grooves in the base frame. To cut the small bead on the groove side of the joints, we used a router bit. Paint all the panels before assembly. Two coats should do the job (sand between coats with 320-grit paper).

The last thing to do before assembling the base is to make the pegs. We used white oak and made the pegs with a dowel plate. If you don't have a dowel plate, just buy white oak dowel stock at a wood-working-supply store, and cut it to length.

With pegs made, you're ready to assemble the base. Begin with the ends. Glue two rails into one leg, then slide the panels into the grooves (no glue). Spread glue on the two remaining joints and add the second leg. Finally, drive in the drawbore pegs for all four joints.

After the two end assemblies are together, glue and drawbore the three stretch-



**Drawbore the joints.** Use straight-grained white oak for the pegs. The drawboring action eliminates the need for clamps. The pegs are trimmed flush later.

ers to one of the end assemblies. Slide the back panels in place. Finally, glue and drawbore the stretchers to the other end assembly.

### Glue up the top and add the vise

The next job is the top. It's not hard to make, but it does require some serious muscle. The best way to tackle the top is to glue it up in sections that are narrow enough to run across your jointer and

through the planer after the glue has dried. After you have milled the sections to their final thickness, glue them together.

While the top dries, cut the apron to size. Then use the drill press to drill holes in it for the vise. Next, rout the groove for the sliding board jack on the bottom edge of the apron using a spiral upcut bit. To prevent the router from wandering, we attached two edge guides to it, one on each side of the apron. With that





**Some help required.** After putting the front stretcher and assembled back into one of the ends, lower the second end into place. It's heavy, so ask a friend for help.



done, glue the apron to the top and install the vise.

There are two more things to do before you put the top on the base. Glue the mounting blocks to the top rails of the end assemblies. These are drilled with a clearance hole and counterbore for the lag screws that attach the top. Also, attach the drawer-box cleats.

### Build the drawer cabinet

We could have built the structure for the drawers into the base, but that approach is unnecessarily complicated. Instead, we built a frame "box" to create the drawer pockets and then slid that into the base.

The frame is constructed from two horizontal and four vertical web frames. The two middle frames fit into dadoes cut into the horizontal dividers. The two end frames fit into rabbets.

This drawer box will not shoulder any significant weight, so you don't need mortise-and-tenon joints to hold it together. We used biscuits and screws. After the frames have been assembled, cut the grooves and rabbets in the top and bottom frames to accept the vertical frames. Use the same dado setup to cut the drawer-runner grooves in the vertical frames.

Assemble the drawer box with screws and then slide it into the bench base. Screw the bottom frame to the lower stretchers.

Now make and install the dividers and runners/kickers. The dividers are screwed into the frame, but the runners/kickers are glued in place.



**Attach the apron with the top in place.** Resting the apron on the notches in the legs keeps it level, and makes it easier to get the first few clamps on. You'll need a lot of clamps. Plane it flush after the glue dries.



## BUILD AND INSTALL THE DRAWER BOX

Because the base is enclosed, there is no need to make a heavy solid wood or plywood cabinet for the drawers. A skeletal box made from six frames held together by biscuits and screws is all you need.

**Screw the frame together.** The frame is screwed to, and reinforced by, the bench's base. After cutting the grooves for the drawer runners in the vertical frames, screw them to the horizontal frames.

**Add the dividers.** These slide in from the front (right), and are held in place by screws driven through the vertical dividers. Then glue the runners in place (far right). They also serve as kickers for the drawers beneath them.



**Slide the box in.** Screw it to the lower stretchers and cleats attached to the lower rails.



## BOARD JACK IS A HELPING HAND

Panels too wide to fit between the screws of the vise, or boards so long that they are more outside than inside the jaws, need extra support to keep them steady. This board jack is the perfect assistant.



**Board jack rides in a track.** After cutting the groove in the track, screw it to the bottom stretcher.



**Big foot prevents racking.** The long skate at the bottom of the jack allows it to slide more smoothly. Attach it with screws.

With the drawer box complete, you can make and install the drawers. After that, it's time for the board jack. The bottom edge of the apron is already grooved for it. Make and install the grooved track that sits on the bottom stretcher. The jack has two parts. There's a vertical piece with two rows of holes. It's rabbeted on top to fit into the apron's groove and notched on the bottom to take the second part of the jack: a skate that fits into the track.

You're almost done. Use a straightedge and winding sticks to check if the top is flat. If it's not, plane it flat. Finally, apply a penetrating oil finish to the bench, including the milk-painted surfaces. After the oil dries, get to work on your next piece of furniture, and have some fun. □

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