

Forget What You Know About Workbenches

Simple system of
beams and bases does
everything a traditional
bench can, and more

BY JOSHUA FINN



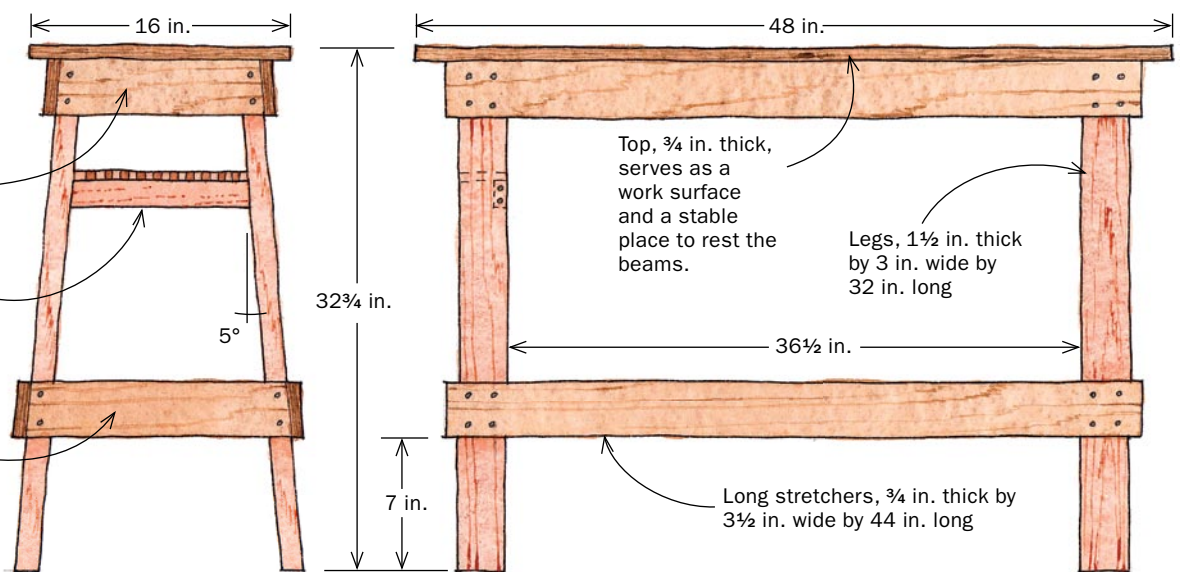
Make the bases first

The bases are easy to build using plywood and 2x4s. You can make them in a jiffy, then use them to assemble the torsion-box beams.

Upper short stretchers, $\frac{3}{4}$ in. thick by $3\frac{1}{2}$ in. wide by 13 in. long

L-shaped clamp rack, screwed between legs

Lower short stretchers, $\frac{3}{4}$ in. thick by $3\frac{1}{2}$ in. wide by $16\frac{1}{2}$ in. long



When I opened my first shop 12 years ago after years of apprenticing with other woodworkers, one of my first decisions was about my bench. I needed something that could accommodate the usual handwork for furniture making—planing, chiseling, and sawing—but I also wanted a bench that could serve as a work station for machine setups and for glue-ups. This versatile bench was the solution.

The design is a combination of a couple bench systems I had seen over the years. I worked in one cabinet shop in Brooklyn, N.Y., where the central assembly area was a set of fairly low benches with Homasote 440 fiberboard tops. The soft Homasote protected the casework from dings, and the nonslip surface was ideal for sanding. I found the other piece of the puzzle in a friend's upstate New York shop: two torsion boxes held up by sawhorses, a space-saving idea that also offered flexibility and strength.

I took the important details from those shops, added a few ideas of my own, and incorporated them all into this system. It features two long, narrow torsion-box beams with Homasote tops and melamine bottoms that rest across two wide, sawhorse-type bases.

Although I have my father's classic bench, an old Hammacher Schlemmer solid-maple workhorse with a face vise and a shoulder vise, it remains in my shop primarily for sentimental reasons. I now use this system for 98% of my benchwork. Even



Angle the legs and side pieces. Cut a 5° bevel on the ends of the legs and a 5° angle on the ends of the short stretchers.



Two drills speed assembly. Start with the short stretchers and legs. Use the first to predrill with a countersink, the second to drive screws.



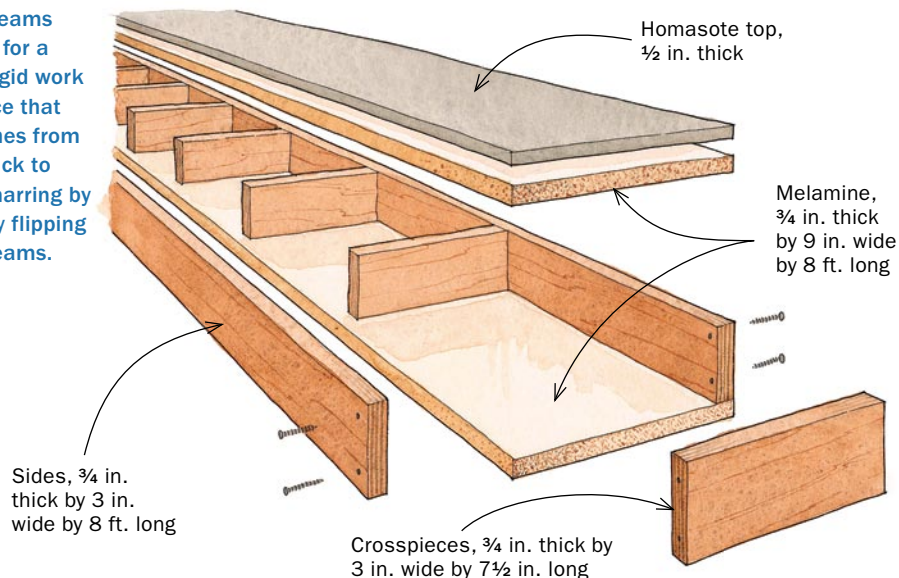
Glue and screw parts together. Finn sinks only one of the four screws, then adds the others once he squares the long stretchers to the leg assembly.



Add the top and a clamp rack. The broad top supports the beams but also adds a handy work surface to the shop. The built-in rack keeps clamps close at hand.

Build the beams

Two beams make for a flat, rigid work surface that switches from nonstick to non-marring by simply flipping the beams.



Assemble the nine crosspieces and two sides. Finn uses clamps, moving them along the length as he works, to hold pieces flush and tight as he screws everything together.



Attach and smooth the melamine. Apply the melamine faces to both sides of the torsion box (left), and soften the sharp edges with a file (above).

without vises and benchdogs, my bench design can accommodate any task that can be done on a traditional bench. It offers more flexibility, allowing me to set it up in different configurations for any job, and it can be broken down and stored out of the way. Plus the materials (2x4s, melamine, plywood, Homasote 440) are inexpensive (less than \$150).

You can build this bench in less than a day, and you don't need a bench to make it (the usual conundrum when a beginner tries to make a big, traditional hardwood workbench).

Construction couldn't be easier

It makes sense to build the bases first, so you can assemble the beams on them. As you decide on a height for the bases, keep in mind the possibilities for multiple uses. Mine sometimes double as outfeed tables for my tablesaw. That height turns out to be a very comfortable working height for me. If your bases aren't going to do double duty as mine do, you should tailor their height to your own working preferences. In your calculations, don't forget to account for the extra 5 in. of the beams.

The bases are simple to build using glue and screws. The tops and stretchers are ¾-in.-thick plywood. The legs are made of 2x4s. But you can use solid furniture-grade lumber and mortise-and-tenon joinery if you wish.

Because this bench system relies on clamps for certain tasks, I added a simple L-shaped clamp rack to the side of each base. It's made from ¾-in. Baltic-birch



Add the Homasote top. The inexpensive Homasote creates a non-marring work surface over the rigid ¾-in. melamine. The core of the melamine will grab screws when you need serious holding power.

Hold your work with cleats and clamps

Use a cleat. Finn screws scrapwood into the beams (right) to act as a stop, allowing him to handplane the surface of a board (see p. 74) or belt-sand a newel post (below).



Lock it down for heavy planing. A clamp holds the beam and base together, stabilizing the whole system and preventing the beam from getting pushed off the base during handplaning. A second clamp holds the board (also resting across the bases for extra support) to the beam.

plywood with $\frac{3}{8}$ -in.-wide slots for the clamps. The sides of the rack are angled 5° to fit between the legs of the base (see drawing, p. 75).

I begin construction by squaring up the 2x4 legs with light passes on the jointer and planer, just to take the framing lumber look from them. Next, use a miter saw to cut a 5° bevel on the tops and bottoms of the legs. The short stretchers also have the 5° angle cut on each end.

Start assembly by gluing and screwing the short stretchers flush to the outside of the leg. Then attach the long stretchers flush with the face of the side stretchers. Once the bases are assembled, screw on the tops, which add weight and stability. Finally, slide the clamp rack into position and secure it with screws.

After the bases are constructed, move on to the two beams that make up the top of the bench. The beams are plywood torsion boxes with $\frac{3}{4}$ -in. melamine faces



Handwork on smaller pieces. A hand screw clamped to the beam holds a smaller board on edge for planing (left). Drawer parts are clamped to the beam for sawing (above) or chopping.

Perfect for power tools

No clamps to get in the way. Finn screws benchtop machines and tools through the cheap Homasote and into the melamine below to temporarily hold them in place, eliminating the need for clamps that could get in the way or loosen with vibration.



top and bottom, and Homasote over one of those faces. After cutting the parts to size, lay out the positions of the internal crosspieces, placing a crosspiece every 12 in. and at the end. Attach the crosspieces to one long side first, then the other. Keep all the edges flush (important when you attach the tops) by pinching them tight with a small bar clamp while predrilling and screwing. When the frame is finished, I screw melamine to the top and the bottom, and apply the Homasote on one side.

Made from recycled paper, Homasote is a cheap, easy-to-find material that's non-marring and grippy enough that an orbital sander can be used on a workpiece without router pads or stops. And when the surface gets worn from use, a quick sanding with 60-grit paper using the orbital sander refreshes it, or you can quickly remove it altogether and put on a fresh piece. The exposed melamine on the opposite side is an easy-to-clean surface for glue-ups.

This bench does it all

From hand-cutting dovetails to assembling kitchen-cabinet boxes, this bench is up to any task. It is totally portable and easily stored on end if you work in a small area and need the floor space. It can be easily reconfigured to accommodate any task. For example, the two beams can be pushed together to create an 8-ft. by 18-in. tabletop, or moved apart to any width when constructing cabinets. I can put the beams end-to-end to create a 16-ft.-long surface that is useful for shaping long handrails or other pieces of unusual length. Even with-



Sanding is a snap. Homasote is ideal as a sanding surface. It's soft enough that it won't mar workpieces, and it grips enough to hold your work without clamping it down whether you are hand-sanding or using a random-orbit sander.

out the beams resting on them, the 16-in.-wide by 48-in.-long tops on the bases can be used as a lower work surface, individually or together.

For most tasks, the weight of the beams and the bases (plus the wide tops of the bases) is enough to keep the system stable and in place. But for some jobs, such as handplaning the face or edge of a board, I clamp the workpiece to the beams and

then clamp the beams to the bases. This locks everything in place so the forces I am applying don't move the workpiece or the bench.

To perform all the jobs possible that a traditional bench can handle, my bench system relies on clamps, screws, and cleats to hold the work in place. I hand-cut dovetails by clamping the pieces lengthwise to one of the beams. I handplane and scrape

Separate them for glue-ups



Clamping versatility is unequalled. The beams can be moved apart to fit different widths. Access to all sides and the top and bottom of work makes clamping easy. Flipping the beams melamine side up for gluing makes cleanup easy, too.



he faces of boards with the aid of a stop screwed into the beams. I use the same stop setup for beltsanding.

With this bench, it isn't necessary to devote permanent table space to benchtop machines and tools. I stow them until I need them and temporarily attach the tools to the beams when it's time to use them. I screw my dovetail jig down through the top for stability and to eliminate the need for clamps, which get in the way and tend to loosen with vibration. My mortiser gets attached the same way.

Clamping is easier than on a flat table or a traditional bench. You have the benefit of access all around and under the workpiece. There is no need for risers to get underneath the piece with clamps; the beams spread apart to accommodate different sizes.

What's more, cleaning around and under the bench is simple because it's open and easily moved, and I haven't found a workbench out there that makes a better lunch table. □

Joshua Finn owns a woodworking shop in High Falls, N.Y.

Line them up for long work



A 16-ft. bench. Arranging the bases and beams end-to-end gives long work, like this stair rail, a stable place to rest while it's being sanded.