

Space-saving Flip-top Tool Bench



Overall dimensions:
63"L x 30"D x 34"H
Materials cost: \$200

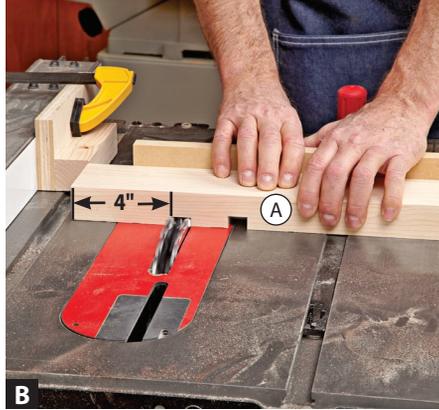
Like many others, I do my woodworking in the garage. But for some reason my wife expects to park her car in there, so keeping my benchtop tools readily accessible—yet quickly stowed away—had become a challenge. This bench keeps us both happy. It holds twice as many machines as I could pack on a typical worksurface, saves me from lifting and lugging them about, and rolls out of the way when the car rolls in.

Lucas

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Digital Content Manager

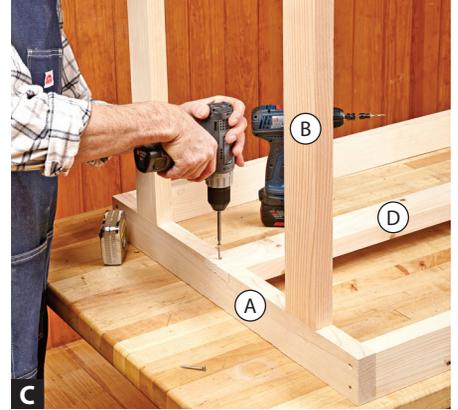


TWO CUTS ESTABLISH DADO WIDTH



Set your fence 7" from the blade's outside edge. Make the first cut with the end rail (A) butted against the fence. Because the cut doesn't go fully through the workpiece, it's safe to use the miter gauge and fence in tandem. Without moving the fence, butt the end rail against the spacer block and make the second cut.

MOUNT THE CENTER STRETCHER



Place the center stretcher (D) so it spans the two ends (A/B), its rabbeted ends in the end rails' (A) dadoes. Drill pilot holes and drive the screws.

First, make the sides

1 Purchase five 8'-long 2x4s that are dry and straight as you can find, and mostly free of defects. Cut the three straightest ones to 64" long, and save the cutoffs. Cut six more pieces 31" long. Joint, plane, and rip these 12 pieces to 1 3/8" thick and 3" wide. From this stock, cut the end rails (A), end stiles (B), side stretchers (C), center stretcher (D), and caster blocks (F) to length [Materials List]. Set the caster blocks aside for now.

2 Install a 3/4" dado set in your table-saw, and raise it to 1/16". Clamp a 2 1/4"-wide spacer block to your table-saw's

fence as shown in **Photo A**. To cut the dadoes in the end rails (A) where shown in **Drawing 1**, first cut their outside edges [Photos A and B]. Then, make additional passes to remove the waste material between the outside cuts.

3 Now, reposition the fence so the spacer block is 3" from the outside edge of the blade. Cut the rabbets in the ends of the end stiles (B) [Drawing 1].

4 Cut a centered 3"-wide dado in the top edge of the two bottom end rails (A) [Drawing 1]. Then, reposition the fence and spacer block and cut the rabbets on both ends of the center stretcher (D) [Drawing 2].

the center dado facing up on the bottom of the assembly. Repeat for the other end assembly and allow the glue to dry.

2 Bore the 3/4", 1/4", and 7/8" holes in the top end rails (A) where shown [Drawing 1]. Sand the end assemblies (A/B) to 150 grit.

3 Glue and screw the side stretchers (C) and center stretcher (D) [Photo C] to the ends (A/B) [Drawing 2].

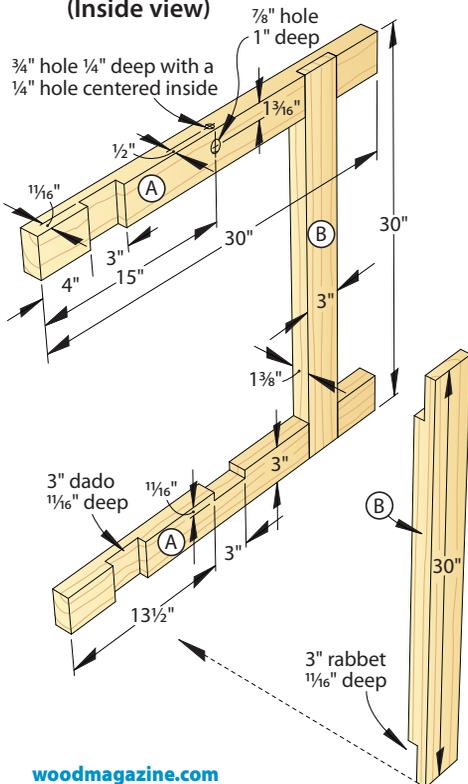
4 To get the best yield from two sheets of plywood, cut one base panel (E) to size from each sheet [Materials List, Cutting Diagram]. Lay out and cut 1 3/8"-long, 3"-wide notches where shown [Drawing 2].

Quick Tip! Use a 10-tpi wood-cutting blade in your jigsaw to minimize tear-out.

Mount the base panels [Photo D].

5 Retrieve the caster blocks (F) and glue them to the inside corners of the base [Drawing 2].

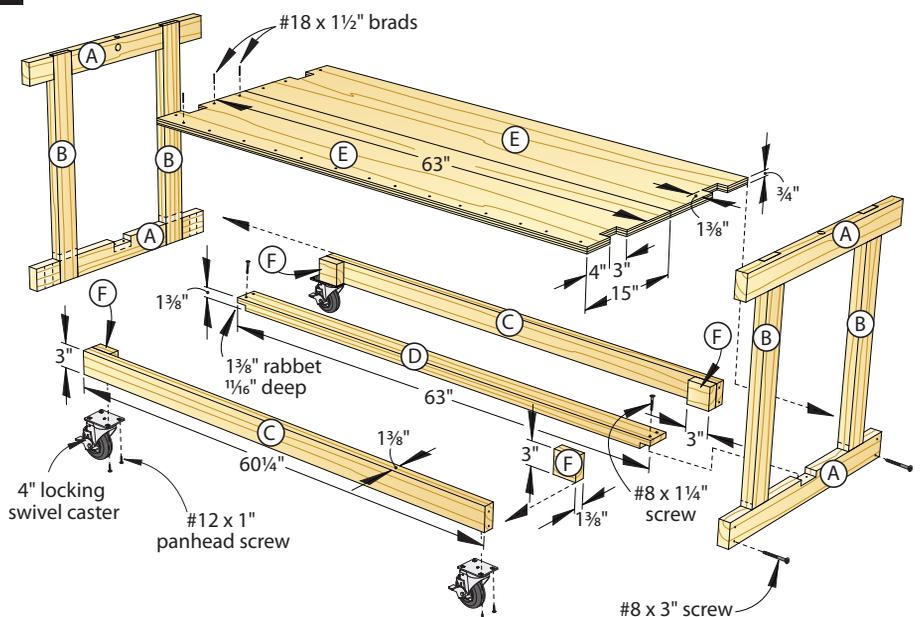
1 SIDE ASSEMBLY (Inside view)



Assemble the base

1 Glue and clamp two end rails (A) and two end stiles (B) [Drawing 1], remembering to place the end rails with

2 BASE ASSEMBLY



COVER UP THE BASE



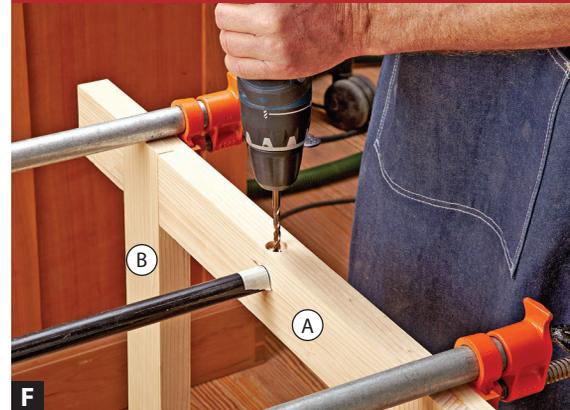
Check the base panels' (E) fit on the base stretchers (C, D) and rails (A) before running a bead of glue on their top edges and nailing the panels in place.

CAPTURE THE CENTER AXIS PIPE



Apply glue to the bottom of one of the spacers and nail it in place. Repeat for the other side, keeping the spacers tight to the pipe.

DRILL HOLES IN THE PIPE ENDS



Clamp the assembly together to keep the pipe bottomed in each $\frac{7}{8}$ " hole. Drill the pipe through the $\frac{1}{4}$ " hole in the end rails (A).

Build a spinning top

1 Cut the top panels (G), long spacers (H), and short spacers (I) to size [Materials List]. Lay out the location of the spacers on the inside face of a top panel [Drawing 3].

2 Situate two long spacers (H) on the layout lines found near the center of the top panel (G), and $\frac{3}{4}$ " from both ends of the panel to leave room for the ends (J). Place a $62\frac{1}{4}$ " length of $\frac{1}{2}$ " black pipe between the long spacers; then, glue and nail the spacers in place [Photo E].

3 Glue and nail the remaining two long spacers (H) flush with the outside edges of the top panel (G). Then, glue and nail the short spacers (I) in place [Drawing 3].

4 From $1\frac{1}{2}$ "-thick stock, cut the ends (J) to size [Materials List]. Rip the $\frac{3}{4}$ " rabbets in two long edges of each end [Drawing 3]; then, drill centered $\frac{7}{8}$ " through holes where shown. Glue and nail the ends to the top assembly (G/H/I). Use the pipe ends to align the holes with the centered long spacers (H).

5 Remove the pipe. Apply glue to the top edges of the spacers (H, I) and ends (J). Lay the remaining top panel (G) on the spacers and nail it in place.

Now, put it all together

1 Slide the $\frac{1}{2}$ " black pipe into the $\frac{7}{8}$ " holes in the top end rails (A). (You may need to push the ends away from each other slightly to accomplish this.) Drill $\frac{1}{64}$ " holes through the pipe to accept a $\frac{1}{4}$ " bolt [Photo F].

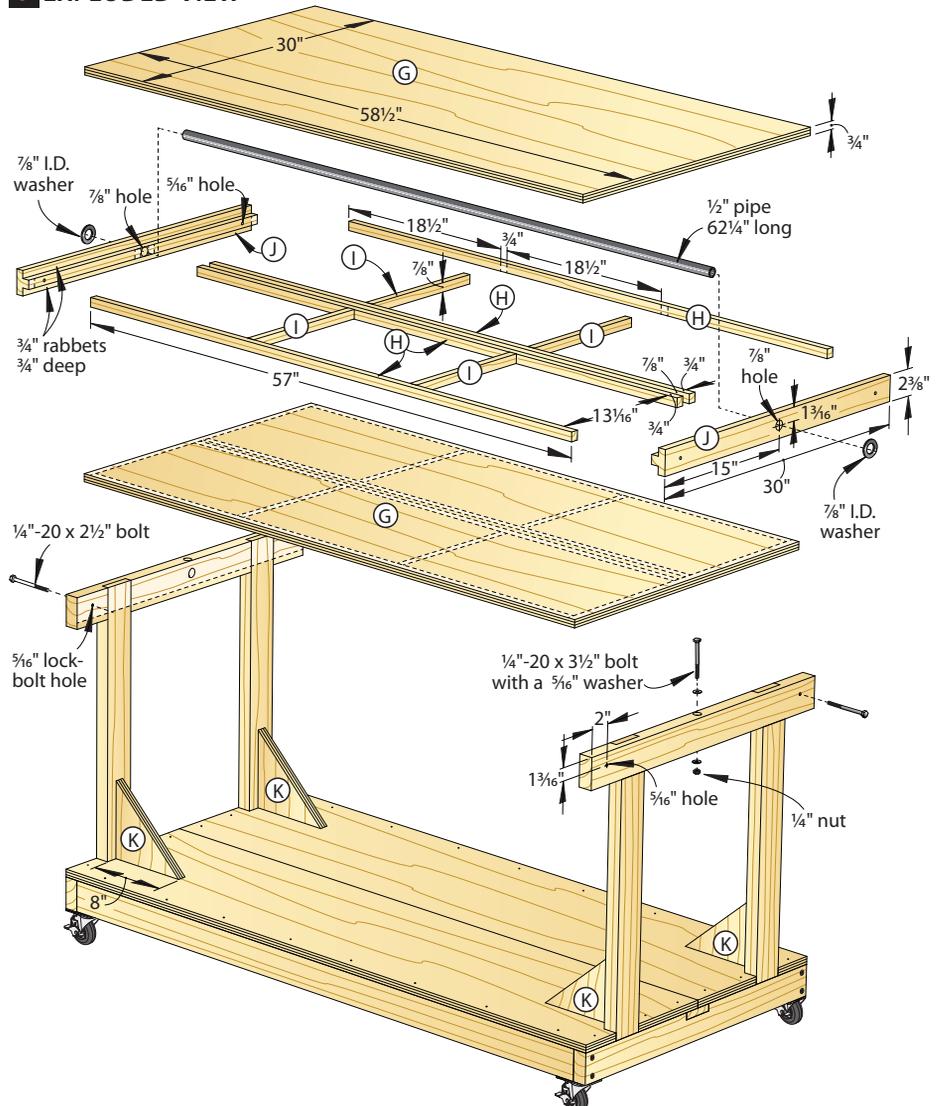
Quick Tip! Drill the first hole and drop in a bolt before drilling the pipe's other end. This ensures bolt-hole alignment.

2 Remove the pipe from the base and slide it back through the top assem-

bly (G–J). Place a $\frac{7}{8}$ " I.D. washer on each end of the pipe before inserting the top assembly between the top end rails (A).

Secure the pipe with bolts through the top end rails. Mark and drill the lock-bolt holes [Drawing 3, Photo G].

3 EXPLODED VIEW



DRILL HOLES TO LOCK THE TOP



Drill four $\frac{3}{16}$ " holes through the upper end rails (A) for the lock bolts. Use a clamp and spacer block to keep the top (G-J) aligned with the end rails.

3 Cut the braces (K) to size and glue them in place [Drawing 3]. To keep them from moving as they dry, shoot a few brads or pins through them into the end stiles (B) and base panels (E). Mount a 4" locking caster on all four corners of the workbench. Then, secure benchtop tools to the bench as desired using through bolts for heavier tools and lag screws for lighter ones. 🌲

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Project design: **Lucas Peters**

Illustrations: **Lorna Johnson**

Materials List

Part	FINISHED SIZE				Matl.	Qty.
	T	W	L			
A end rails	$1\frac{3}{8}$ "	3"	30"	P	4	
B end stiles	$1\frac{3}{8}$ "	3"	30"	P	4	
C side stretchers	$1\frac{3}{8}$ "	3"	60 $\frac{1}{4}$ "	P	2	
D center stretcher	$1\frac{3}{8}$ "	3"	63"	P	1	
E base panels	$\frac{3}{4}$ "	15"	63"	PLY	2	
F caster blocks	$1\frac{3}{8}$ "	3"	3"	P	4	
G top panels	$\frac{3}{4}$ "	30"	58 $\frac{1}{2}$ "	PLY	2	
H long spacers	$\frac{3}{4}$ "	$\frac{7}{8}$ "	57"	P	4	
I short spacers	$\frac{3}{4}$ "	$\frac{7}{8}$ "	13 $\frac{1}{16}$ "	P	4	
J ends	$1\frac{1}{2}$ "	2 $\frac{3}{8}$ "	30"	P	2	
K braces	$\frac{3}{4}$ "	8"	8"	PLY	4	

Materials key: P-pine, PLY-plywood.

Supplies: $\frac{1}{2}$ " black pipe 62 $\frac{1}{4}$ " long, $\frac{1}{4}$ "-20x2 $\frac{1}{2}$ " lock bolts (4), $\frac{1}{4}$ "-20x3 $\frac{1}{2}$ " bolts (2), $\frac{7}{8}$ " I.D. washers (2), $\frac{3}{16}$ " washers (4), 4" locking swivel casters (4), $\frac{1}{4}$ " nuts (2), #8x3" screws (8), #8x1 $\frac{1}{4}$ " screws (4), #12x1" panhead screws (16), #18x1 $\frac{1}{2}$ " brads.

Blade and bits: Dado blade; $\frac{1}{4}$ ", $\frac{1}{16}$ ", $\frac{5}{16}$ ", $\frac{3}{4}$ ", $\frac{7}{8}$ " drill bits.

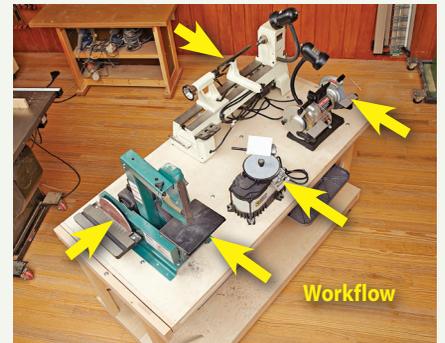
More Resources

- ▶ Learn to select benchtop tools that work as hard as full-size ones here: woodmagazine.com/benchtoptools
- ▶ For more space-saving shop plans, visit woodmagazine.com/foldflat

When setting up your bench, consider workflow

It's easy to get carried away when mounting tools to your flip-top tool bench: The more tools you can fit, the less clutter you'll have around your shop, right? But attaching too many tools may not leave adequate working room around each of them. Instead, lay your tools out on the bench, keeping workflow and spacing in mind. Some tools, such as jointers and planers, require additional space on both the infeed and

outfeed side of the tool. Others, such as sanding wheels or sharpeners, can function near each other. Also consider weight distribution and balance; too many heavy tools on one side can make rotating the tabletop difficult. For instance, we mounted only a portable planer and oscillating spindle sander on one side because those two tools weigh about as much as the four tools on the opposite side.



Cutting Diagram

