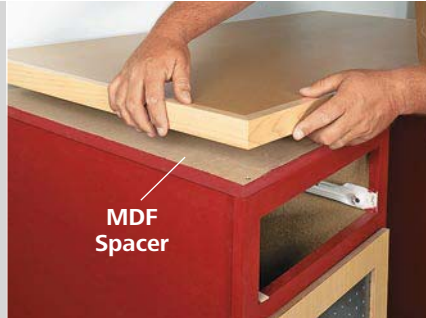




We used spacers to elevate the benchtops and provide clearance for the table saw (*Inset Photo*). After installing the benchtops, align the fence extensions to the miter saw fence by clamping a straightedge across them (*above*). Drill mounting holes in the benchtop, using the holes in the extensions as a guide.



## STATION ASSEMBLY

Whether you're setting up a shop like this in a garage, basement, or even a small shed, the process of installing the various components of this shop is the same.

**Plan the Layout** — The first step is to lay out the locations of each component. Start with the lower cabinets and end assemblies, since they establish the spacing of the tool nooks. Using the *Illustration* on page 44 as a guide for the spacing, mark their locations on the wall (*Illustration, below*). Also, marking a level line on the wall will make it easier to level the lower units.

Now you can lay out the location of the upper cabinets, as well as the two shelves that get sandwiched between them (*Photo, page 49*). The shelves are centered over the miter saw, and the cabinets simply butt against the shelves.

**Install Upper Cabinets** — It's easiest to install the upper cabinets first. These cabinets aren't heavy, but they are a bit awkward to handle, so it's a good idea to round up a friend to help. Also, to simplify installation, attach a temporary cleat to the wall, and use it to help support the cabinets.

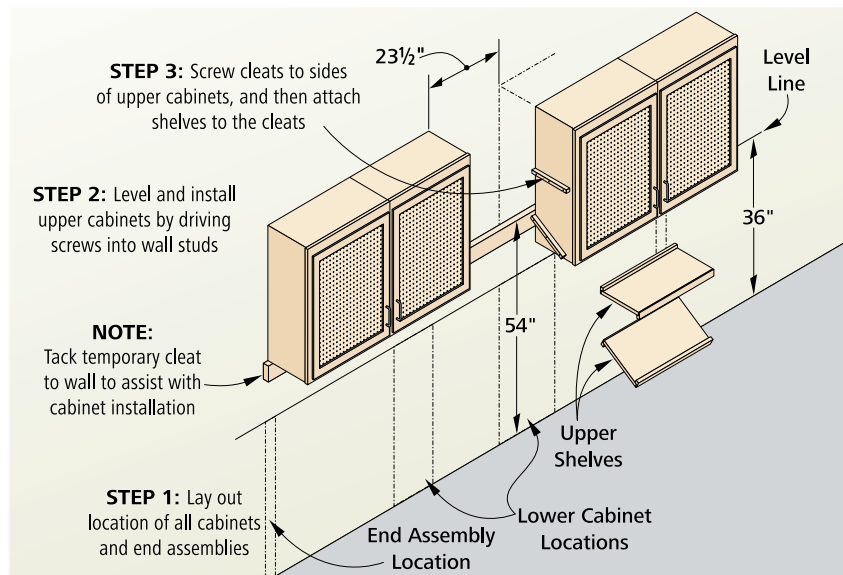
## 10 Simple Steps to Installing the Shop Components

There's nothing complicated about setting up the components for this space-saving shop. Just follow the 10 steps shown here, and your shop should be up and running in a day or less.

There are three distinct phases to this part of the project: mounting the upper cabinets to the wall (*Illustration, right*), installing the lower units and benchtops (*center Illustration*), and then adding the miter saw and fence extensions (*Illustration, far right*).

One thing to keep in mind is that the cabinets will be fairly heavy once they're loaded with tools and supplies. To support that weight, drive screws through mounting cleats in the cabinets and into the wall studs. Or, use hollow-wall anchors if you can't hit a stud.

Note: If your cabinets don't have mounting cleats, you can easily make your own from scrap wood.



After laying out the location of all the components, the first step is to install the upper cabinets. A temporary cleat attached to the wall forms a handy ledge that helps support these units while you fine-tune their position. After leveling the cabinets, screw them to wall studs. Then mount the upper shelves to cleats attached to the cabinets.

Start by setting the first pair of cabinets in place. Level the cabinets, shimming as needed. You also want to align the front faces of the cabinets. Once that's done, screw the sides of the cabinets together through the face frames. Then screw the cabinets to the wall studs.

After mounting the second pair of cabinets, you can add the shelves (L). These are  $\frac{3}{4}$ " MDF panels with hardwood edging in front and back (*Upper Shelf Illustration*). Note that one piece of edging extends below the shelf and the other above it. This gives you two shelf-mounting options (*Photo, above*).

**Add Lower Units**— The lower cabinets and end assemblies are next. You've already marked their locations, so just move them into position (*Illustration, below*). Adjust the levelers, so all the units are even with the level line. Then screw them to the wall.

**Mount the Benchtops** — With the lower units in place, you're ready to mount the benchtops. Set the tops in place before attaching them permanently, and check to see if your table saw will fit underneath. Standard height for manufactured cabinets is

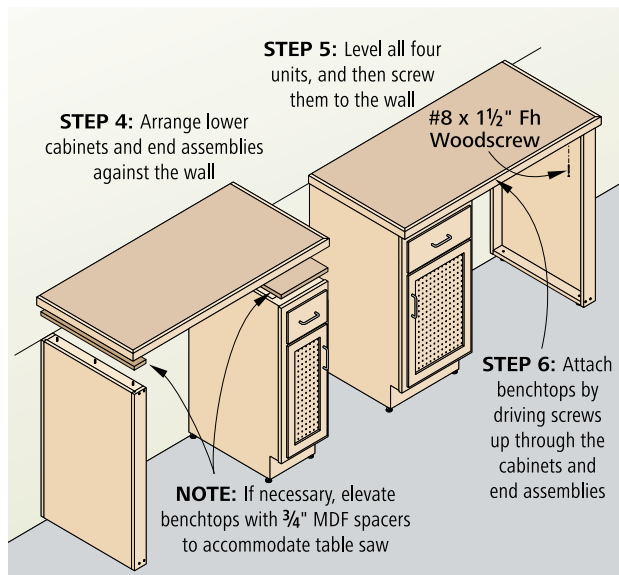
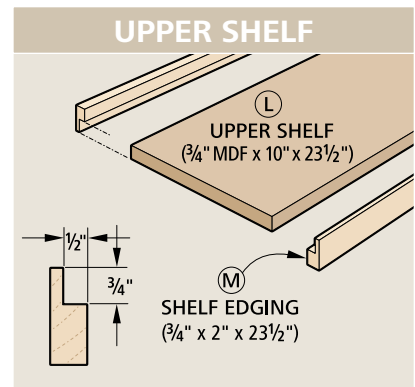
$34\frac{1}{2}$ " tall, which wasn't high enough for our saw (even with the adjustment provided by the levelers). So we raised the benchtops by adding spacers to the tops of the cabinets and end assemblies (*Inset Photo, page 48*).

**Mount Miter Saw** — After screwing the benchtops in place, the next step is to mount the miter saw. It gets bolted to the miter saw shelf (*Shelf End View, page 46*), and then the shelf is screwed to cleats that are attached to the lower cabinets. To locate these cleats, position the shelf so the miter saw table is flush with the benchtops. Then butt the cleats against the bottom of the shelf, and screw them in place.

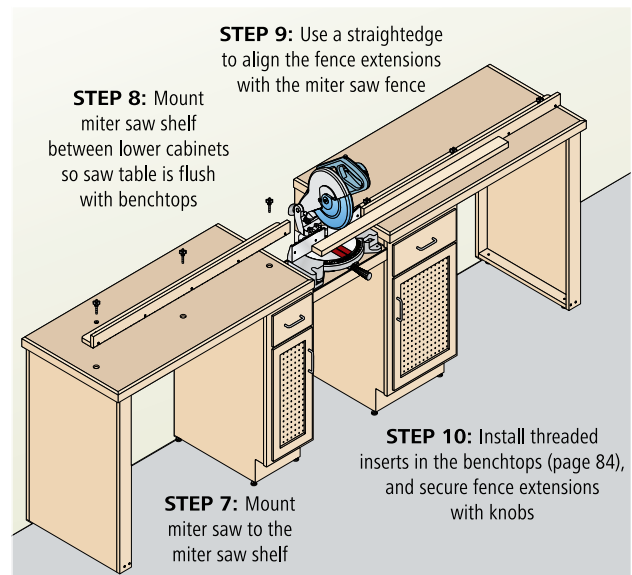
**Fence Extensions** — All that's left to complete the miter saw station is to install the fence extensions. They're held in place with knobs that thread into inserts in the benchtops. To locate the threaded inserts, align the fence extensions with the miter saw fence (*Photo, page 48*). Then use the mounting holes in the base of the fence extensions as a guide to drill holes for the inserts. (For a tip on installing inserts, see page 84.)



The upper shelves can be mounted level (with the front edging facing down) or at an angle (edging up).



Next, arrange the lower cabinets and end assemblies against the wall. Adjust the levelers to compensate for uneven floors, and then screw each unit in place. Add spacers (if needed) to elevate the benchtops. Then screw the benchtops in place.



To set up the miter saw station, bolt the miter saw to the shelf (*see page 46*). Then attach cleats to the lower cabinets to support the shelf. Position the cleats so the miter saw table is flush with the benchtops. Finally, install the fence extensions.

**STEP 10:** Install threaded inserts in the benchtops (page 84), and secure fence extensions with knobs

# Flip-Top Planer Cart

Another space-saving strategy in this shop is to mount your planer to a cart with a “flip-top.” To plane stock to thickness, simply roll out the cart, and rotate the top so the planer is right-side up. When you’re done, spin the top around so the planer is upside down, and roll the cart into its nook.

**Sizing the Cart** — The most obvious thing to consider when sizing the cart is that it has to fit inside its design-

The cart consists of two side assemblies connected by a bottom panel and two wide rails (*Construction View*, page 51). The flip-top, in addition to its main job, strengthens the upper part of the cart.

**Side Assemblies** — The first step is to build the two side assemblies. Each one starts out as a plywood side panel (N) with hardwood edging (O) covering the front and back edges. A cap piece (P) covers the top of the side

hardwood rails (S) that are, once again, joined with tongue-and-groove joints.

One thing to note is that the rails will end up shorter than the bottom panel. This is necessary because of the side edging, which sticks out past the inside face of the side panels (*Bottom Corner Detail*). The shorter rails will allow the parts to fit tightly together.

Having said that, though, it’s best to start with rail pieces that are an inch or two longer than needed. That way, when it’s time to assemble the cart, you can cut them for an exact fit.

But first, rout the tongue-and-groove joints just as before (*Bottom Corner Detail*). Then trim a short section of the tongue off the bottom panel, so it will fit around the side edging.

Now you can dry-clamp the bottom panel between the side panels. This is when you cut the bottom rails to final length. Cut them to fit between the side edging, and then glue and clamp them to the bottom panel. Then drive long screws through the pre-drilled mounting holes in the edging and into pilot holes in the rails. Use shorter screws to fasten the side and bottom panels together.

**Flip-Top** — The final part of this cart to build is the flip-top. To prevent it from sagging under the weight of the planer, it’s a  $\frac{3}{4}$ " plywood top panel (T) that’s wrapped with wide hardwood rails (U,V) on all four sides. Once again, we used tongue-and-groove joints to assemble the rails and the top panel.

After routing the joinery, it’s just a matter of cutting rabbets in the ends of the front and back rails to accept the side rails (*Flip-Top Detail*). Then glue and screw the top together.

**Install Top** — The flip-top is suspended between the side panels on two pivot pins. (We used carriage bolts for the pins.) The bolts pass through holes in the side panels and cleats, and through the side rails of the top (*Mounting Detail*). Nylon sleeves prevent the threads of the bolts from chewing up the wood. And lock nuts tightened on the ends of the bolts hold everything together.



The “flip” top on this cart makes it easy to set up the planer for use (left) or stow it underneath for compact storage (right).

nated nook. We allowed 3" of clearance above the cart and  $\frac{7}{8}$ " on each side.

Another consideration is to allow at least 1" of clearance between a board feeding out of the planer and the top of the table saw. This means you need to make the cart tall enough so the planer’s outfeed table clears your table saw.

One last thing to take into account is that the compartment under the flip-top has to be large enough to accommodate your planer. There’s plenty of room for the Delta planer shown here. (It’s 18½" tall, 21½" wide, and 10" deep). For larger planers, you may have to modify the dimensions.

panel. And a cleat (Q) helps to beef up the panel where the pivot pins for the flip-top go through.

Here again, we routed tongue-and-groove joints to join the edging to the side panels (*Side Panel Detail*). Before gluing on the edging, pre-drill mounting holes near the bottom end of each piece. Once the edging is attached, cut the caps and cleats to size, and glue them in place.

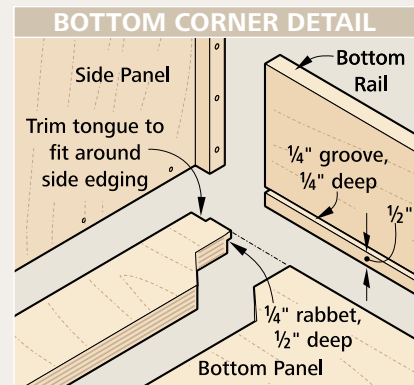
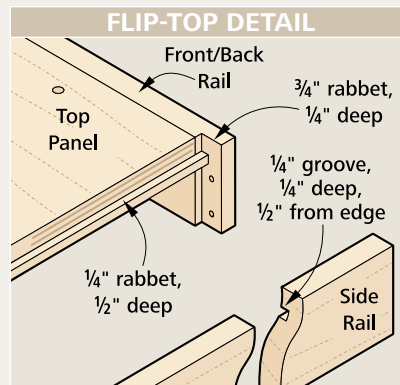
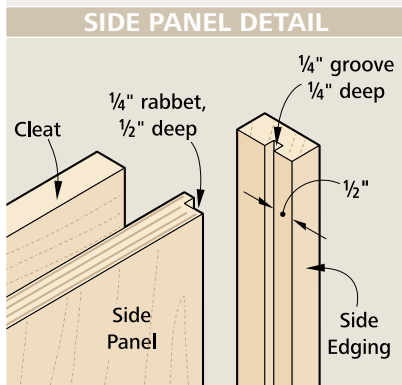
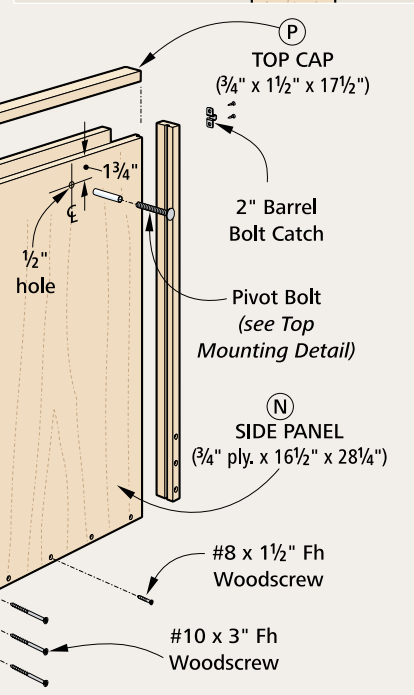
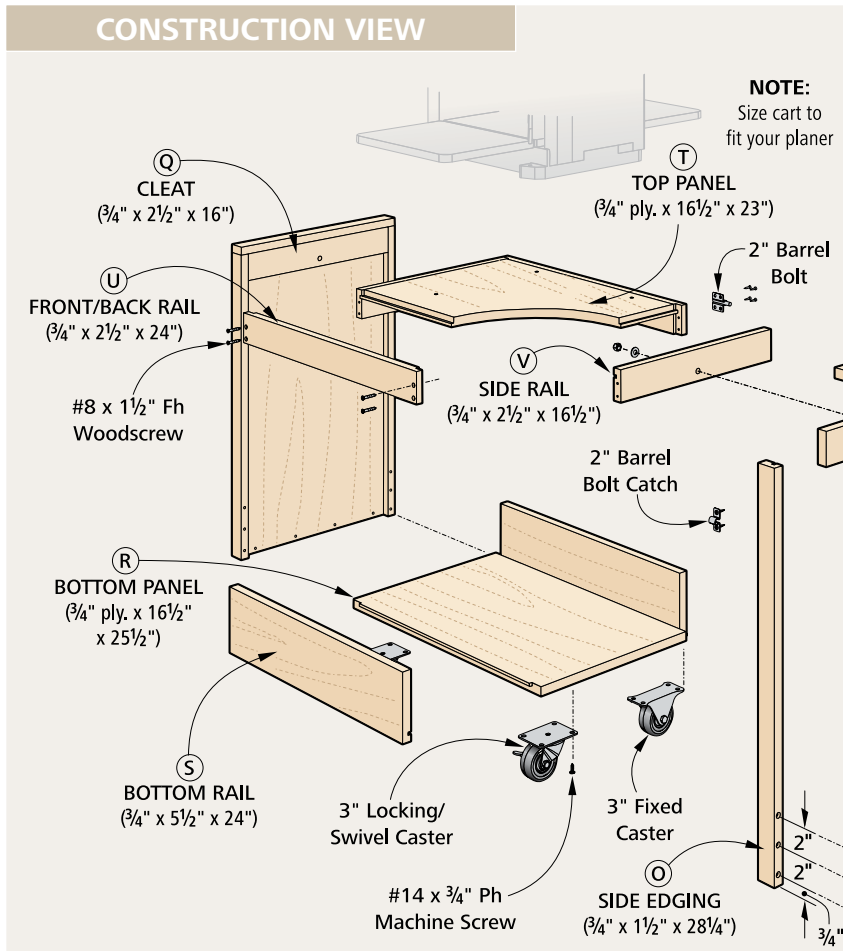
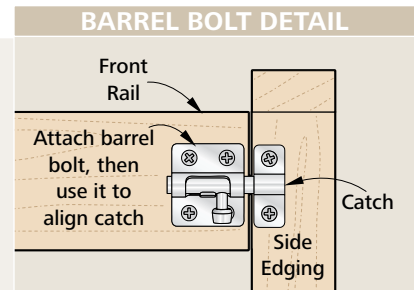
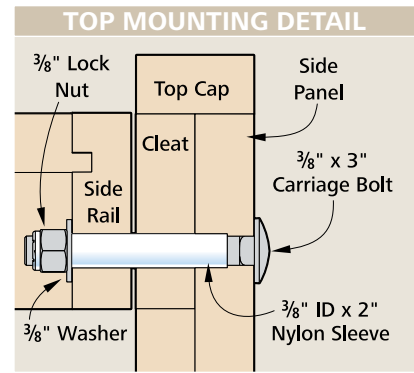
**Add the Bottom** — With the side assemblies complete, turn your attention to the bottom of the cart. It’s a U-shaped assembly that consists of a plywood bottom panel (R) and two

For smooth operation, all the holes, on both sides of the cart, must align. To do that, clamp the top in position, carefully lay out the hole locations, and then drill all the holes.

**Install Barrel Bolts**— Although the top is intended to rotate, you also have to be able to “lock” it in place. That’s accomplished by mounting a barrel bolt to the front edge of the flip-top (*Barrel Bolt Detail*). The bolt slides

into a catch attached to the side edging. You’ll need to attach a second catch on the other side for when the planer is upside down. Note: You’ll have to buy two barrel bolts (even though you only use one) because catches aren’t available separately.

**Final Details** — All that’s left is to mount the casters and the planer. Position the planer so its weight is balanced on the top. Then bolt it in place.





The bin's sturdy construction allows you to roll it around easily, yet it's still light-weight enough to pick up and empty.

## Pull-Out Cutoff Bin

Regardless of the many space-saving tips employed in this shop, they won't make it more efficient if scrap pieces litter the floor and benchtop.

To keep the shop neat and tidy, we built this roll-out bin to fit under the miter saw. It holds cutoffs from the miter saw and table saw. And it collects dust and chips from the miter saw, which is one of those tools that seems to defy dust collection.

This bin is designed with two things in mind. First, it has to be sturdy enough to hold a heavy load. And second, it has to be light enough that you can empty it easily.

To reduce the weight of the bin, the sides are made from lightweight  $\frac{1}{4}$ " Baltic birch plywood (*Construction View, below*). For strength, we used  $\frac{3}{4}$ " plywood panels for the front and back panels, and then rabbeted them to hold the sides and bottom. Gluing and screwing these parts together creates a sturdy bin that will stand up to years of use.

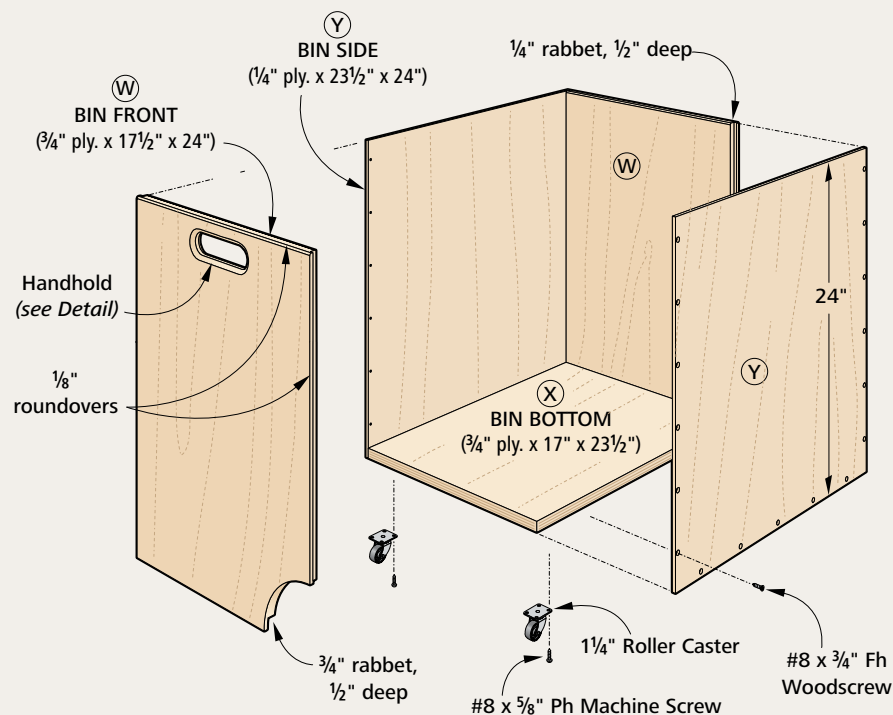
**Sizing the Bin**—You'll want to make the bin about  $1\frac{1}{2}$ " narrower than its opening to make it easy to roll in and out. As for the depth of the bin, it matches the depth of the lower cabinets (24"). Finally, the bin is about 8" shorter than the height of the opening so you can toss in scraps. It also allows room for dust "baffles" that get added later.

**Bin Basics**—This bin has such a simple, straightforward design that you can cut all the parts to size in minutes. Cut the front, back (W), and bottom (X) from  $\frac{3}{4}$ " plywood. Then cut the  $\frac{1}{4}$ " plywood sides (Y) to size.

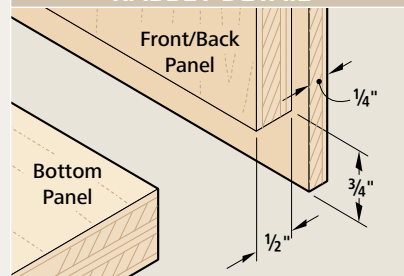
**Ready for Rabbits**—Before you can turn that stack of parts into a bin, you'll need to cut the rabbet joints in the front and back panels. There are two sizes of rabbets. A narrow rabbet in each edge accepts the sides of the bin (*Rabbet Detail*). And a wide rabbet in the bottom edge holds the bin bottom.

You can cut both rabbets with a  $\frac{3}{4}$ " dado blade mounted in the table saw. This requires attaching an auxiliary

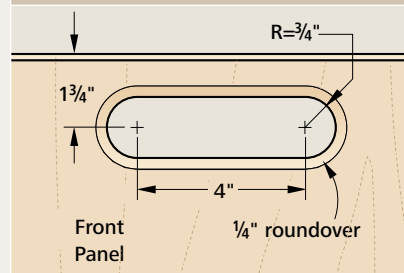
### CONSTRUCTION VIEW



### RABBET DETAIL



### HANDHOLD DETAIL



fence to your rip fence. For the narrow rabbet, “bury” a portion of the dado blade in the auxiliary fence so that only 1/4" is exposed. Then cut the rabbets, making a single pass for each one.

As for the wide dado in the bottom edge of the front and back panels, all that's needed is to move the fence away from the blade until the entire 3/4" width of the blade is exposed. Here again, you can cut these rabbets in a single pass.

**Make the Handhold**—The last step before assembling the bin is to cut an opening for a handhold in the front panel. After laying out the handhold, drill holes to form the ends of the opening with a 1 1/2" Forstner bit. Then use a jig saw to cut between the holes. A little filing and sanding will clean up any rough edges that are left. Then to create a comfortable grip, round the edges, inside and out, with a handheld router and a 1/4" roundover bit.

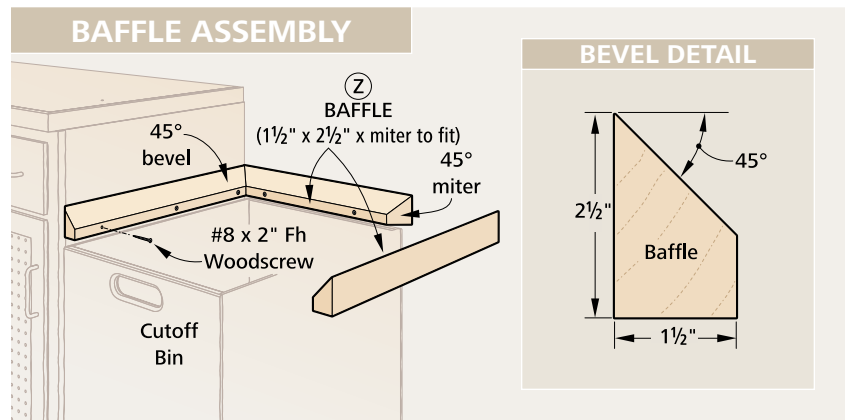
**Assemble the Bin**—Now you can glue and screw the bin together.

Then finish up by screwing casters to the bottom of the bin.

When you roll the bin into its opening, you'll notice a generous amount of space between the bin and the lower cabinets. That's the clearance you planned in at the beginning of this project. That space makes it easy to park the bin, but it allows dust and chips from the miter saw to fall down around the bin.

**Baffles**—That's where the baffles (Z) come in. These are scrap pieces of wood with a bevel on the top edge that funnels dust into the bin. To make the baffles, rip a 45° bevel on a long 2x4 (*Bevel Detail*). Then miter the baffles to length, and screw them in place.

—Written by Wyatt Myers, project designed by James R. Downing, illustrated by Erich Lage



### MATERIAL LIST

Part	Qty	Size	Material	Part	Qty	Size	Material		
<b>PEGBOARD PANELS &amp; END ASSEMBLIES</b>				<b>CUTOFF BIN</b>					
A	PEGBOARD PANELS	6	1/4" x cut to fit	Perforated Hardboard	W	BIN FRONT/BACK	2	3/4" x 17 1/2" x 24"	Baltic Birch Plywood
B	END PANELS	2	3/4" x 23" x 34 1/2"	Baltic Birch Plywood	X	BIN BOTTOM	1	3/4" x 17" x 23 1/2"	Baltic Birch Plywood
C	SIDE FRAMES	4	3/4" x 3" x 34 1/2"	Maple	Y	BIN SIDES	2	1/4" x 23 1/2" x 24"	Baltic Birch Plywood
D	TOP/BTM FRAMES	4	3/4" x 2 1/4" x 22 1/2"	Maple	Z	DUST BAFFLE	3	1 1/2" x 2 1/2" x cut to fit	Pine
<b>BENCHTOPS, SHELVES, &amp; FENCE EXTENSIONS</b>				<b>HARDWARE &amp; PRE-ASSEMBLED ITEMS:</b>					
E	BENCHTOPS	4	3/4" x 24" x 49"	MDF	<ul style="list-style-type: none"> <li>(6) Continental Birch Cabinets* - Four 24" Uppers, One 18" Lower, One 12" Lower</li> <li>(32) #8 x 1 1/2" Fh Woodscrews</li> <li>(12) 1 1/16" Leveling Furniture Glides*</li> <li>(8) 3" Chrome Wire Door Pulls*</li> <li>(10) #8 x 1 1/4" Fh Woodscrews</li> <li>(1) Kreg Precision Measuring Systems Kit (#KMS8000)**</li> <li>(6) 1/4" Threaded Inserts</li> <li>(8) 1/4" Washers</li> <li>(6) 1 1/4" Star Knobs w/ 1/4" x 1 1/2" studs</li> <li>(62) #10 x 3" Fh Screws</li> <li>(2) 3/8" Carriage Bolts, 3" long</li> <li>(2) 3/8" ID Nylon Sleeves, 2" long</li> <li>(2) 3/8" Washers</li> <li>(2) 3/8" Nuts</li> <li>(2) 2" Barrel Bolts*</li> <li>(2) 3" Swivel-Locking Casters*</li> <li>(2) 3" Fixed Casters*</li> <li>(16) #14 x 3/4" Ph Machine Screws</li> <li>(34) #8 x 3/4" Fh Woodscrews</li> <li>(4) 1 1/4" Roller Casters*</li> <li>(16) #8 x 5/8" Ph Machine Screws</li> </ul>				
F	FRONT EDGING	2	3/4" x 1 1/2" x 50 1/2"	Maple	* (Items available at Lowe's stores. To find a store in your area, visit <a href="http://Lowe.com">Lowe.com</a> , or call 800-445-6937)				
G	END EDGING	4	3/4" x 1 1/2" x 24 3/4"	Maple	** (Item available at <a href="http://KregTools.com">KregTools.com</a> or 800-447-8638)				
H	FENCE FACES	2	3/4" x 2 1/4" x 50 1/2"	Maple					
I	FENCE BASES	2	3/4" x 2 1/2" x 50 1/2"	Maple					
J	SAW SHELF	1	3/4" x 10" x 19"	MDF					
K	SHELF EDGING	2	3/4" x 2" x 19"	Maple					
L	UPPER SHELVES	2	3/4" x 10" x 23 1/2"	MDF					
M	SHELF EDGING	4	3/4" x 2" x 23 1/2"	Maple					
<b>PLANER CART</b>									
N	SIDE PANELS	2	3/4" x 16 1/2" x 28 1/4"	Baltic Birch Plywood					
O	SIDE EDGING	4	3/4" x 1 1/2" x 28 1/4"	Maple					
P	TOP CAPS	2	3/4" x 1 1/2" x 17 1/2"	Maple					
Q	CLEATS	2	3/4" x 2 1/2" x 16"	Maple					
R	BOTTOM PANEL	1	3/4" x 16 1/2" x 25 1/2"	Baltic Birch Plywood					
S	BOTTOM RAILS	2	3/4" x 5 1/2" x 24"	Maple					
T	TOP PANEL	1	3/4" x 16 1/2" x 23"	Baltic Birch Plywood					
U	FRONT/BACK RAILS	2	3/4" x 2 1/2" x 24"	Maple					
V	SIDE RAILS	2	3/4" x 2 1/2" x 16 1/2"	Maple					