

# Ultimate Miter Saw Stand

*Turn your tool into a surgical instrument*

When I worked in professional shops, there was always a chop saw on some kind of cart. The less organized shops put the saw on the nearest work cart. It didn't take up much space, but it wasn't as useful as it should be. The better shops mounted the miter saw to a rolling cart and attached permanent wings to support long pieces and to hold a fence with stops for doing repetitive cuts. This setup was useful, but it took up a lot of space.

What I had in mind for Popular Woodworking's shop would have a dead-on stop system and collapsible wings so the stand would take up less space. The top of this stand adjusts up and down so you can line up the saw's table with the wings. (In fact, the adjustable table allows you to use a drill press or a mortiser on this stand.) It's got on-board dust collection that turns itself on and off. And the kicker to the whole thing is that the cart is made from one sheet each of  $\frac{3}{4}$ " and  $\frac{1}{2}$ " plywood, with some solid wood trim.

Begin construction by cutting the parts out according to the Schedule of Materials and using the optimization diagram. You'll notice that the case top is in two pieces on the optimization diagram. That's because you have to edge glue the plywood together, then cut it to size. There isn't much scrap on this project.

## One Quick Cabinet

Begin by building the cabinet. To join the sides to the top, first cut  $\frac{1}{2}$ " x  $\frac{3}{4}$ " rabbets in the top and bottom edges of the sides. To hold the back, cut  $\frac{1}{2}$ " x  $\frac{1}{2}$ " rabbets in the back edges of the sides, top and bottom pieces. Now assemble the case. An old trade secret is to assemble the case with it face down on your assembly bench. This way you can ensure the joint at the inside of the rabbet is flush all around. Set each joint with a couple nails, then screw the case together. Check your cabinet for square and make sure the back fits snugly. Attach the back with screws. Flush up the front edges of the cabinet with a plane and apply iron-on birch veneer tape. File the tape flush, sand the cabinet and mount the casters.

## An Adjustable Saw Platform

Now is a good time to mount the leveling riser (or platform) to your cabinet and get the miter saw set up. First cut a  $1\text{-}\frac{1}{2}$ " radius on the corners of the riser. Make sure this cut is square so that you can apply veneer tape without too much trouble. Ironing on veneer tape to the riser in one piece is a real challenge, but it looks great. When the riser is ready, center it on top of the case and clamp it in place. Place your miter saw in the center of the riser. With a pencil trace the locations of your saw's feet onto the riser. Also trace the holes in the machine's feet that you'll use to mount the saw to the riser. This is important because the riser floats over the case on four bolts, which allows you to adjust the saw up and down. Now mark locations for the bolts that attach the riser to the case. Be sure to keep the bolts as close as you can to the feet without them interfering with each other. When you've marked the locations for the riser bolts, drill your holes completely through the riser and the top of the case. Hold a piece of scrap inside the case where the drill will come out to minimize tearout. Ream out the holes a little to ease the riser adjustment



Open the front doors, and you can see there's plenty of room lots of other tools. The vacuum is behind the panel in the lower left.



Adjusting the height of the saw is as easy as loosening the wing nuts inside the cabinet and using the jam nuts on top of the cabinet to raise or lower the saw until it's flush with the wing assemblies.



The easiest way to assemble the wing is to attach the hinge to the upright assembly. Then remove it, and attach it to the wing. Clamp the upright in a vise and reattach everything. Make sure to mark each hinge's location. Otherwise you'll mess up how some parts go together.



There is a lot of aluminum channel out there these days, but I chose this kind because a 1/4"-20 bolt head will fit in the channel. It comes predrilled and countersunk from Woodcraft and machines nicely. You'll probably have to file down some screws that pop out from the other side.

Remove the riser from the case and drill the holes for mounting the saw. Now you can mount the riser to the case (see the list of hardware you need in the pdf). Put the bolt through the fender washer, then into the hole in the riser. Put another flat washer on the other side of the riser with a jam nut to set the bolt in place. Run a jam nut up the bolt, leaving a 2" gap between the riser and the loose jam nut. Place flat washers over the holes in the case and set the riser in place on the case.

On the underside of the case, put a flat washer on the bolt, followed by a lock washer and wing nut. When you want to adjust the riser height, simply loosen the wing nuts and adjust the jam nut against the case top to raise or lower the riser. To complete the case, build and hang the doors. Make the doors from plywood and nail a 13/16" solid maple edge with a bullnose profile to the edges.

Use European hinges on your doors. I'm fond of a \$30 jig that easily locates the holes for the hinges and the mounting plates (Jig-It System from Rockler item #31077). Drill the hinges' cup holes about 4" in from the top and bottom of the case.

### Automatic Vacuum



Here you can see how the stop works with the fence system. Note the thin guide strip that prevents your stop from wobbling as you set it.

Now mount the saw and outfit the cabinet with the vacuum and electrical parts. When the saw and vacuum are hooked up properly, the vacuum will come on automatically when you turn the saw on (thanks to Craftsman's "Automatic Power Switch" #24031, \$19.99), and it will turn off a few seconds after you finish your cut.

Start by drilling two 2" holes in the back near the bottom of the case. One hole is for the vacuum hose (locate it according to your vacuum). The other is for the wiring. I enclosed the vacuum in a partition made from two pieces of plywood and the shelf. The shelf height in the drawing works for the Craftsman vacuum (model# 17711, \$29.99). Lay out the height of the bottom edge of the shelf. Mount a pair of cleats to these lines. Screw the shelf in from the top.

Now screw cleats to the inside of the case to make the partition and false front that conceals the vacuum. Notch your plywood pieces to wrap around the shelf cleat and the power cord for the vacuum. Turn the vacuum's switch to "on," place it in the new cubby and hook up the hose going through the back. Screw an outlet strip to the bottom of the case and run its cord through a hole in the back. Plug Craftsman's Automatic Power Switch into the outlet strip. Screw the partition and false front in place.

### Huge Wings

The wings are the last thing to do. Begin by gluing and nailing a 1/4"-thick solid wood edge to one end of the wings. This edging gives the piano hinge some meat to bite into. Finish the wings by applying the 1/2" x 1-1/2" trim to the other three edges.

Study the diagram to see how the wings are supported. First apply the upright ledges to the uprights. Cut the 2" radii on the brackets and then attach them.

Cut the swing arms, braces and flip-out supports. The swing arm and brace need a half lap joint that makes a "T" shape. Attach the continuous hinge to the top of the "T." The best way to cut this joint is with a dado head in a table saw. Cut a 3/4" x 3/4" notch on the end of the swing arms to mate with the flip-out support.

The last thing to do to the arms is to round off the corners: 1" on the ends and 3-1/2" on the brackets. Now mount the swing arm assemblies to the underside of the wings using a 10" piece of continuous hinge, with the notched end of the swing arm 1/4" in from the point where the wing meets the case. To keep everything from flopping around when the arms

are down, use adhesive-backed Velcro between the swing arms and wings. Reinforce the Velcro's adhesive with staples.

Finish the wings by cutting a  $3/8$ " x  $3/4$ " dado down the middle of the wing for the extruded aluminum channel for the stop. Next to that dado, cut a second shallow dado that's  $1/2$ " wide and as deep as your tape is thick. Cut the channel to length and screw it in place. Now concentrate on the flip-out supports. After cutting out the mating notches for the swing arms, cut a  $3/16$ " x  $5/8$ " rabbet into the end of the support to accept a  $4-3/4$ "-long piece of continuous hinge. Lay out and mount the support to the upright, centered and flush to the bottom edge.

The last step on the wings is to attach the wing assembly to the upright. Do this carefully so that the surface of the wing is flush with the upright ledge. Now, if everything's OK, your wings should lock flush and square to the upright. If you didn't get it right the first time, add a flat-head screw to the inside of each notch to adjust the height of the wing.

To attach the wing assemblies, temporarily remove the saw/riser assembly and remove the wing from the upright assembly. Cut a spacer that's  $2-3/4$ " plus the height of the saw's table. Clamp the spacer flush to the upright ledge. Lay the wing assembly on the edge of the case. On the saw/riser assembly, measure from the front edge of the riser to the saw fence. Subtract  $1-3/4$ " from that number and mark it on the case, measuring from the front. This is where the upright should be mounted. It accounts for the thickness of the  $3/4$ " saw fence and the distance from the center of the stop to the fence. Mount the upright with the hardware listed. Make sure to counterbore the bolt heads and washers. This allows the flip-out support to fold flat against the upright. Re-attach the wings and flush the saw table up to the wings using a straight piece of lumber. The last step is to make the fences and the stop and to attach the tapes. Rip a couple of  $3-1/2$ "-wide sections of plywood from your scrap. Cut them to 1" longer than the distance from the blade to the outside edge of the upright. That should be about  $16-1/4$ " if everything was centered correctly. Cut  $3/8$ " x  $3/4$ " dados 1" to the center from one edge. The edge that the dado is closest to is the bottom edge. Repeat the  $1/2$ " dado for the tape so it's above the dado. Glue in a 4"-long filler into the groove at the end next to the blade and attach a length of aluminum channel to fill the remaining length. Make a mirror part for the other side. This keeps your hands at least 4" away from the blade. Attach the fences by lowering the saw (as if you were making a cut) and butting each fence against the blade.

Clamp the fence pieces there and screw them in place. Cut the measuring tape to 16" and stick it in place. Use a square block to index off the 16" marks and, after cutting the tapes to length (around 46"), stick them in place, butting the end up against the block on each side. The stop is a simple 2" x 3" block with a  $1/4$ " hole in it. Make a guide strip that's about  $5/16$ " x  $1/16$ ". It's easier if you make the strip a little thick and plane it down to the  $1/16$ " thickness. Drill the  $1/4$ " hole through and test it with a bolt and star knob. **PW**

Jim Stuard is a former associate editor for Popular Woodworking