



The Versatile Disc Sander

Often overlooked, this machine has earned its spot in the shop

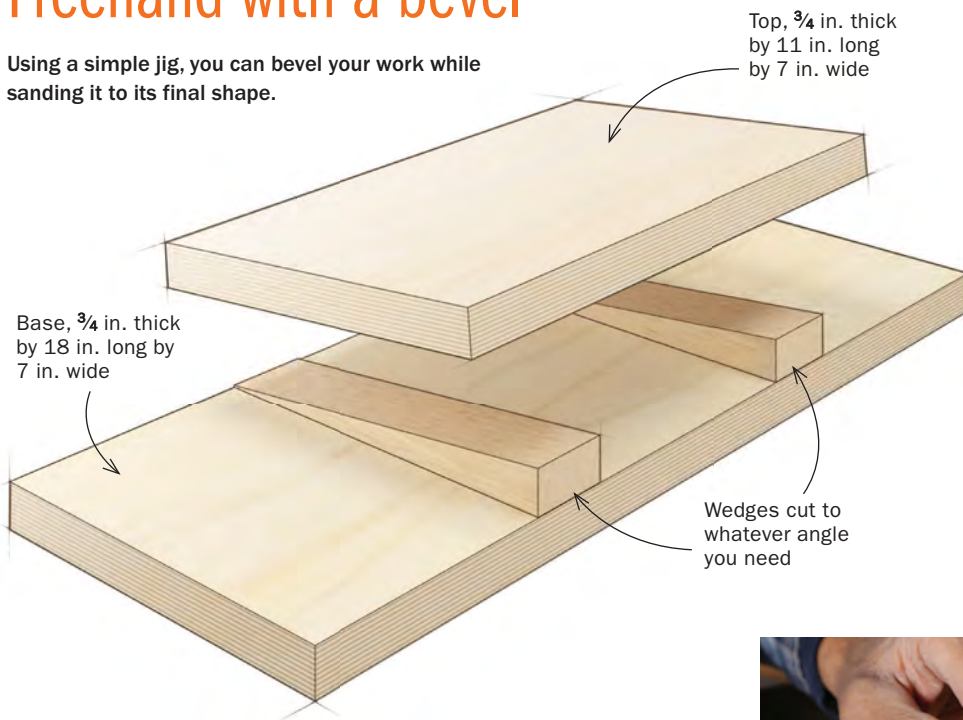
BY JEFF MILLER

FREEHAND SANDING

On his refurbished disc sander, Miller's simplest task is freehand sanding. Just walk up to the machine, turn it on, and smooth all kinds of shapes. The key is a very light touch. He marks his lines with a pen (a regular ball-point), which shows up well on almost all woods and is always the same width. He has no trouble planing or sanding it off.

Freehand with a bevel

Using a simple jig, you can bevel your work while sanding it to its final shape.



Bevel your curves. This jig allows you to present straight or curved edges to the sanding disc at an angle. Clamp the jig to the sander table, and work to your line.

I'm not sure why I bit when offered a free disc sander. It was an old cast-iron model in poor shape (I wasn't even sure if it worked), and I had never used a disc sander before. But the allure of old iron for free proved strong, and the tool has found a home in my shop, with some great uses.

Without any added accoutrements, the disc sander is my go-to tool for freehand-shaping many small, curved parts. After bandsawing close to a layout line, I'll work my way to it by first hitting the high spots, then sanding evenly and very lightly, in one smooth motion.

Add some shopmade jigs, and the disc sander becomes a surprisingly accurate and versatile tool for repeatably creating shapes that other machines can have trouble with.

The bevel jig (shown above) is a simple ramp that lets you do a complex thing: angle the edges of a convex curve. The circle-sanding jig will take a bandsawn blank from rough to perfectly round in a few minutes. My oval-shaping jig (see

Master Class, p. 76) works the same way, but generates all sorts of ovals. And the "shooting board" can square up the ends of workpieces and is especially useful for fine-tuning miters—on wooden components but also brass and aluminum ones.

Get the hang of the disc

With or without jigs, all disc-sanding operations should take place on the side of the disc rotating downward (my machine rotates clockwise), and the workpiece must be fully supported. When you sand near the center of the disc, there are fewer crossgrain scratches, but more push on the work.

Base camp

All the jigs I'll describe, except for the bevel jig, work off the same baseplate, which does two things. It provides a way to advance the work into the rotating disc, which is important for the function of the circle-shaping and oval-shaping jigs. And it provides a square reference to register the 90° and 45° fences for the shooting board.



Bottoms up. Miller uses the bevel jig for the tops and bottoms of Shaker boxes. After scribing the inside shape of the box onto the bottom blank and sanding to the line, he fits the bottom into the oval box. The narrow side goes in first and allows the bottom to wedge into place, sealing it perfectly without putting too much pressure on the delicate box.

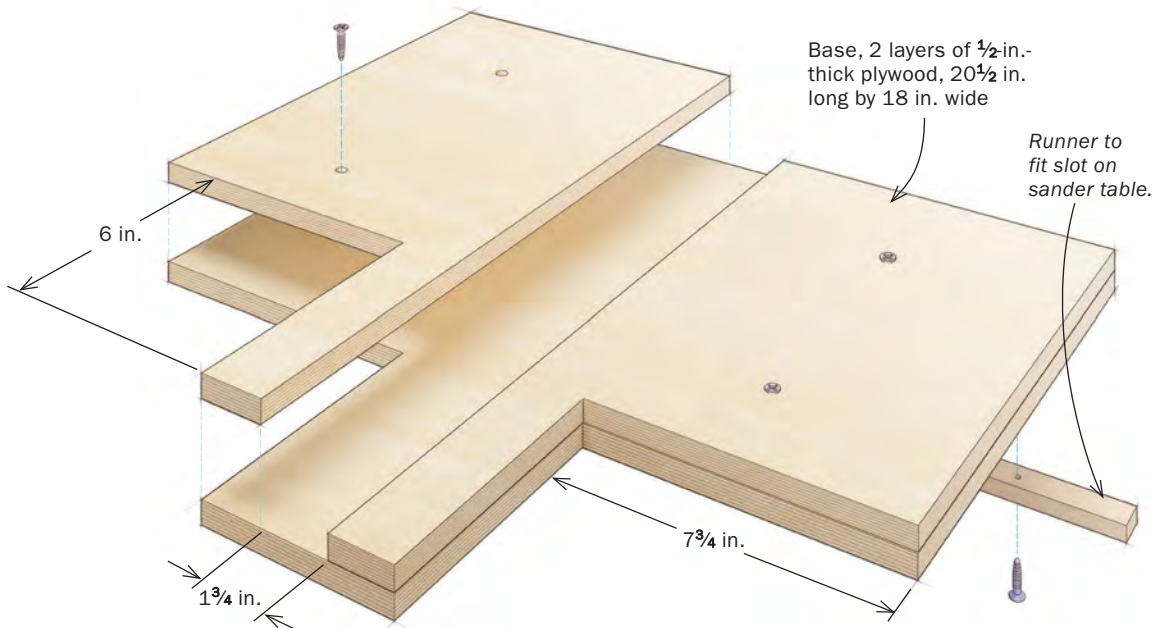


TIP HEAT THINGS UP

It's easy to remove the sandpaper from the disc. If it doesn't peel right off, heat it with a heat gun or hair dryer until the adhesive melts and the paper peels easily.

Universal base

Three of Miller's jigs work with this base (see p. 76 for the third). Three pieces of plywood come together in two layers with a slot built into the top.



The base, made of two layers of $\frac{1}{2}$ -in. plywood, is T-shaped and has a slot that fits a sliding bar. The T shape is important as it allows you to hold and control the workpiece when using the shaping jigs.

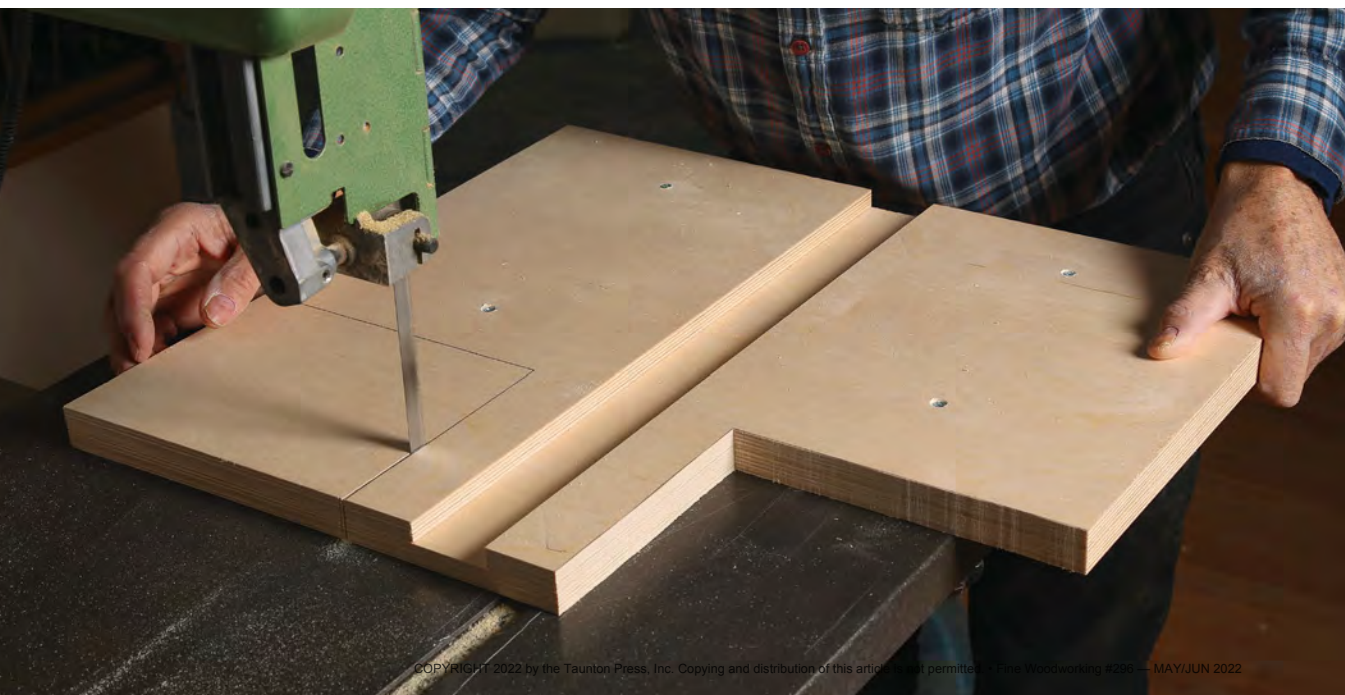
The slot must be squared up accurately to the sanding disc; the process is like squaring up a crosscut sled. Start by making a runner to fit the slot in the table of your sander. Make the runner a few inches longer than the base for now. Screw one side of the runner to the base, insert the runner into the sander table, and adjust the opposite side of the runner until you're satisfied that the slot in the jig base is perfectly square to the face of the sanding disc.



A plywood stack. The bottom layer of plywood is one sheet. Line up the first partial sheet on top of that. Glue and screw it to the bottom. Keep the glue away from the center slot so you don't glue your spacer in place.



Create a slot. Position a spacer up against the first sheet of plywood on the top layer, and glue and screw the other piece of plywood directly against the spacer.



T-bone. Use the bandsaw to cut out rectangles on two sides to form the T shape. The shape gives you more control holding and maneuvering the workpiece with the shaping jigs.

SQUARED AWAY

Much like squaring up a crosscut sled, you must square up the slot in the base to the disc for your work to be accurate.



Add a runner. To square up the base to the disc, you'll need to make a runner to fit the slot on the table of your sander. Make it a few inches longer than the base for now. Screw one side of the runner to the base.



Square the base to the disc. Insert the base into the slot, with only one side of the runner secured. Then adjust the opposite side until the slot is perfectly square to the disc face.

Clamp the loose side of the runner to the plywood base. Lift the whole assembly out and screw the runner in place.

Sanded circles

The circle-sanding jig is based on one I made years ago to sand the edge of a large, round kitchen table. It attached to my edge sander, and proved so useful I returned to the technique over and over. My edge sander was the victim of down-sizing my shop, but a run of small round tables led me to consider using my disc sander in the same way.

The bar that fits in the slot in the base needs to have a sliding fit. If it's tight, a thin shaving or two with a finely set handplane should do the trick.

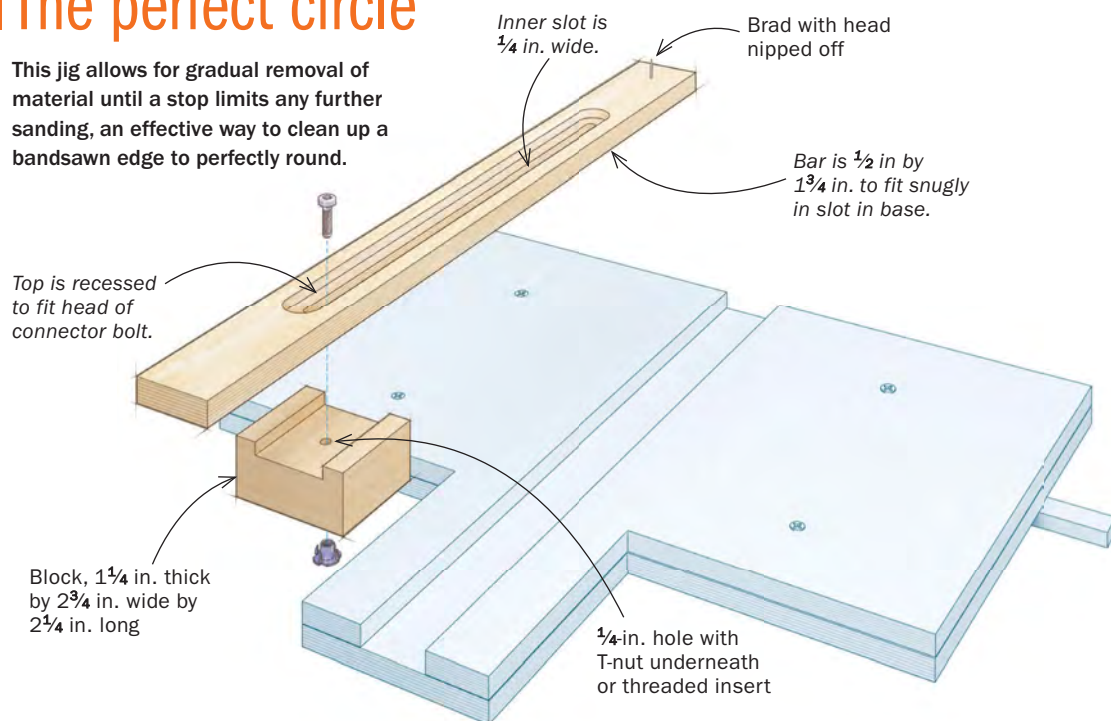
The bar gets a stepped slot for the bolt on the adjustable stop. Rout a slot down the center of the bar for the bolt's shank and a shallow slot counterbore for its head. Near one end of the bar, drill a slightly undersize hole for the brad that will be your pivot point. Pound the brad into the hole, nip off the head of the brad about $\frac{3}{8}$ in. above the bar, then file the end to a point.



Secure the runner. Once square and still in place at the disc sander, carefully clamp the unsecured end of the runner to the base. Now you can take the base off the sander and screw the clamped end to the base.

The perfect circle

This jig allows for gradual removal of material until a stop limits any further sanding, an effective way to clean up a bandsawn edge to perfectly round.



The stop is a block of wood with a $\frac{1}{4}$ -in.-deep dado, $1\frac{3}{4}$ in. wide (to fit the bar), and a $\frac{1}{4}$ -in. hole centered on the dado. For your safety, mill up a much longer piece of wood, and crosscut off the block once the dado has been cut and fitted to the bar. This will also give you more than one shot at getting the hole drilled on center. I counterbored the non-dadoed side of the block for a T-nut, then pounded that into place. A connector bolt, with its flat, wide head, works well for securing the stop block and won't be in the way of the workpiece when you're sanding.

To use the jig, insert the pivot point into the center of your bandsawn circle. Because the bar lifts right out of the slot,



Get centered. After bandsawing close to the line of the final shape, place the sharpened brad into the workpiece at the circle's center point. Then flip that assembly so the workpiece is on top, and fit the bar into the baseplate.



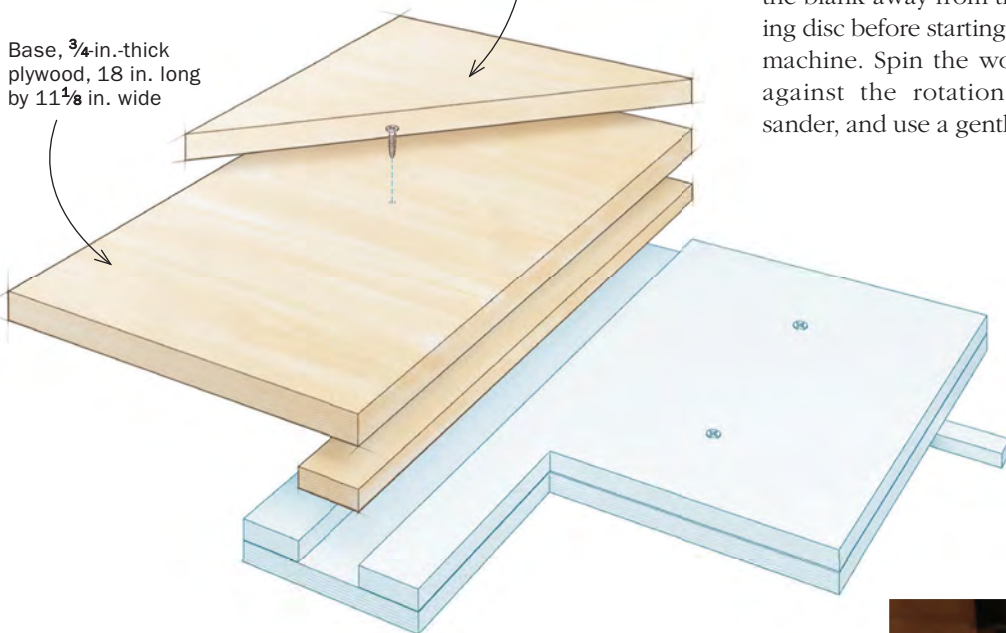
Adjust your stop and go. Set the stop so that you can skim off a little at a time, and reset it until the edge is as smooth as you desire.

Perfect ending

With this shooting jig, it's easy to zip ends to 45° or 90°. Add a different top piece for any other angle.

Base, ¾-in.-thick plywood, 18 in. long by 11¼ in. wide

Top, ¾-in.-thick plywood, 11¼ in. square, cut at 45° angle



this is an easy process. Then invert the blank and bar, fitting the bar back into the slot. Adjust the stop as needed to get to the size you're after. Back the blank away from the sanding disc before starting up your machine. Spin the workpiece against the rotation of the sander, and use a gentle touch.

Shooting jig

To make a shooting jig for the same base, screw a 1¾-in.-wide strip flush with the edge of a piece of ¾-in. plywood. For shooting 90° ends, the edge of this plywood will be the fence, and the strip will register it square to the sanding disc.

You can add a miter fence by screwing a second layer of plywood, cut to 45°, on top of the first layer. Once you've gotten your fences aligned, screw them down to the base. I didn't glue the plywood, so I could adjust it later if needed. □

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2:1 shooting jig. This jig is simply a piece of plywood with another 45° triangular piece of plywood screwed to it. Set the base in place, lay the jig on top, square it to the disc, and then screw it in place to keep it from shifting while you sand the ends of your work.