Sanding on the Drill Press

Custom-made sanding drums let you smooth any curve

BY MICHAEL FORTUNE

Bang out the drum

Cut and stack a few plywood circles to make any size sanding drum. Large drums work well for smoother curves, while smaller drums get into tighter spaces.

Cut a stack of circles. *To make disks (vs. holes), use a circle cutter, turning the tip of the cutter inward. Set the radius, measure from the bit to the cutter, and add ⅛ in., half the diameter of the bit. Clamp down the plywood each time, and sand the tearout off the edges of each circle.*

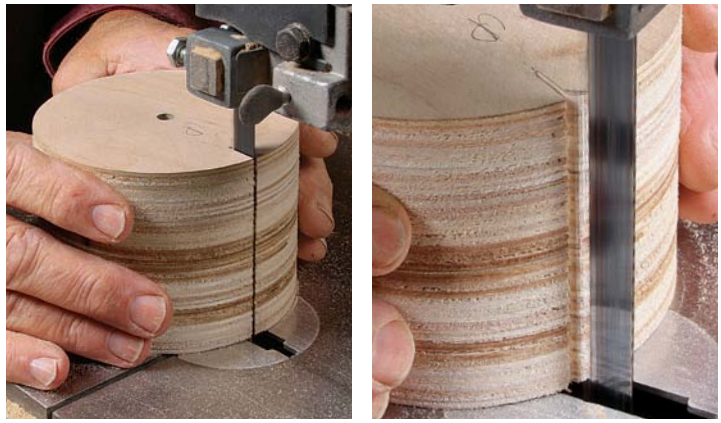
Glue the stack. *Use a ¼-in.-dia. rod or drill bit to align the circles as you glue them together. Wax the rod or bit to resist glue, and try chucking it in a drill to help you insert it. With the rod or bit in place, clamp the circles into a stack.*

When I bought my first drill press, I discovered that those sanding drums that go in the chuck and accept abrasive sleeves let me sand all sorts of inside curves, whether on templates or actual workpieces. But the sleeves were available in a limited range of grits, the abrasive wore out quickly, and they weren't cheap. And the drums were too small in diameter for a lot of my needs.

So I make my own drums out of plywood disks and wrap high-quality cloth-backed sandpaper around them, attaching it with spray adhesive. I can make them any size and they work beautifully.

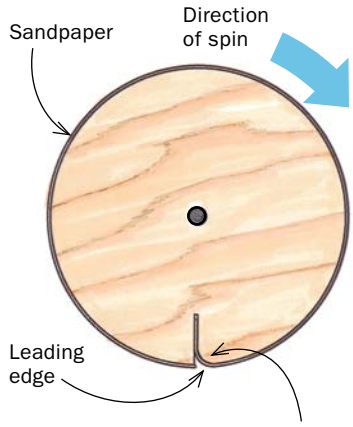
The larger the drum, the more surface area, and the longer the sandpaper lasts. Larger drums also leave a less bumpy surface. I've made drums up to 8 in. dia., though most are closer to 4 in., fitting a wider variety of curves while still leaving a relatively smooth surface.

By the way, while the bearings in a drill press are not designed for heavy sideways



Slot it. *Cut a shallow slot on the bandsaw (left), to accommodate the end of the sandpaper. The outside of the slot gets a small roundover on one corner (right).*

LEADING EDGE NEEDS A CURVE



Curve lets the sandpaper turn the corner without creating a bump.

Add a shank. *Fortune mounts a 5/16-in.-dia. lag screw in the drill press, rotating the chuck by hand so the lag screw enters the wood straight. Then he cuts off the head with a hacksaw.*

Sand and seal. *Chuck the drum in the drill press and smooth it using a sanding block and 80-grit paper. Add varnish to make the adhesive easy to remove later. Don't use lacquer; the adhesive will dissolve it.*

Get set to sand

ATTACH THE SANDPAPER

Fortune uses 60- and 80-grit cloth-backed sandpaper, harvested from sanding belts and attached with spray-on adhesive.

Mark and cut the paper. *Dry-fit the paper and mark its length. Then tear or cut it to size.*

pressure, as they would be in a true milling machine, they handle light to medium lateral pressure just fine.

For the sandpaper, I buy 80-grit sanding belts, made for belt sanders, from my hardware store and cut them as required. I sometimes use a lower grit to remove stock more quickly or a higher one for a smoother finish.

Sanding curves is just the beginning for these shopmade drums. I'll show you how I turn the drum into a thickness sander for thin strips, and a pattern sander for flawless curved parts. But let's start with the drum itself.

Make your own drums

To make the drums, I cut a series of disks from ¾-in.-thick plywood. I've had good luck with a circle-cutter made by General Tools. Be sure to turn the tip the right way for cutting disks (vs. cutting holes) and use a very slow speed, under 500 rpm, if possible.

The circle-cutter leaves a ¼-in.-dia. hole through the center of each disk. To align the disks as you glue them into a stack, insert a ¼-in.-dia. rod or drill bit through the hole. Wax the rod to make it easier to remove once the glue is set.

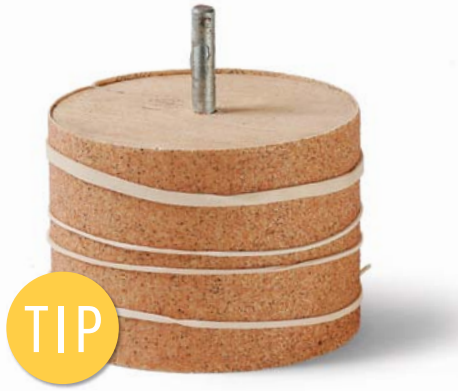
The sandpaper goes into a small bandsawn slot. You need to slightly round the leading edge of the slot, so the sandpaper rolls smoothly into the leading edge without a bump.

Add the shank and smooth the outside of the drum as shown in the photos on p. 39. Last, varnish the outside of the drum, making it easier to clean off the spray adhesive that will attach the sandpaper.

Sandpaper goes on easily

Cut a strip of cloth-backed sandpaper the same width as the drum. Always turn sandpaper upside down to cut it with a knife. Slip one end of the paper in the slot, wrap it

Spray and wrap. *Spray a thin coat of adhesive onto the drum and paper (left), let it get tacky for a few minutes, and then wrap on the paper, starting in the groove (top) and continuing to the end (above).*



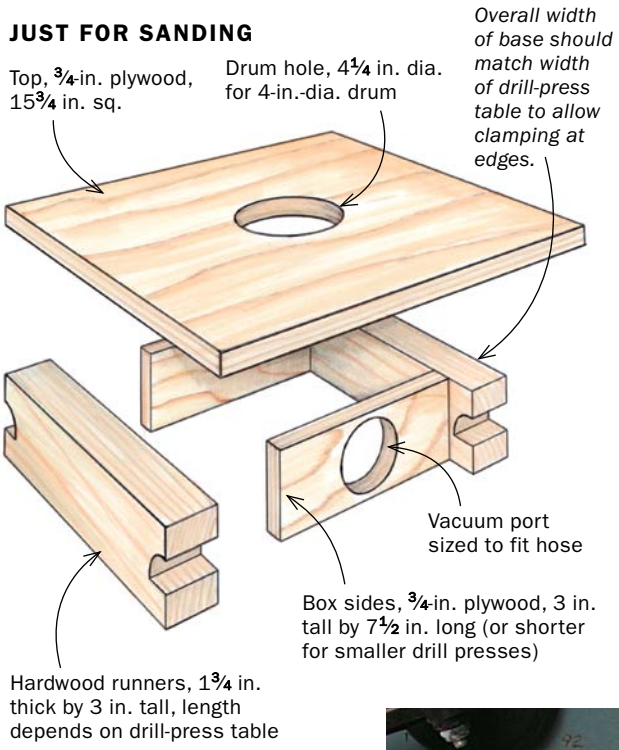
When you are not using the drum, a few rubber bands keep the sandpaper attached until next time.

Photos: Asa Christiana; drawings: Kelly J. Dunton

MAKE A NEW TABLE

An auxiliary table with a hole for the drum allows you raise and lower the drum to use the entire width of abrasive.

JUST FOR SANDING



around the drum, mark it, and cut it to length.

Use spray adhesive, or contact cement, following the manufacturer's directions, to affix the paper snugly to the drum. When the paper wears out, just peel it off and remove the old adhesive with lacquer thinner.

Add a simple sanding table

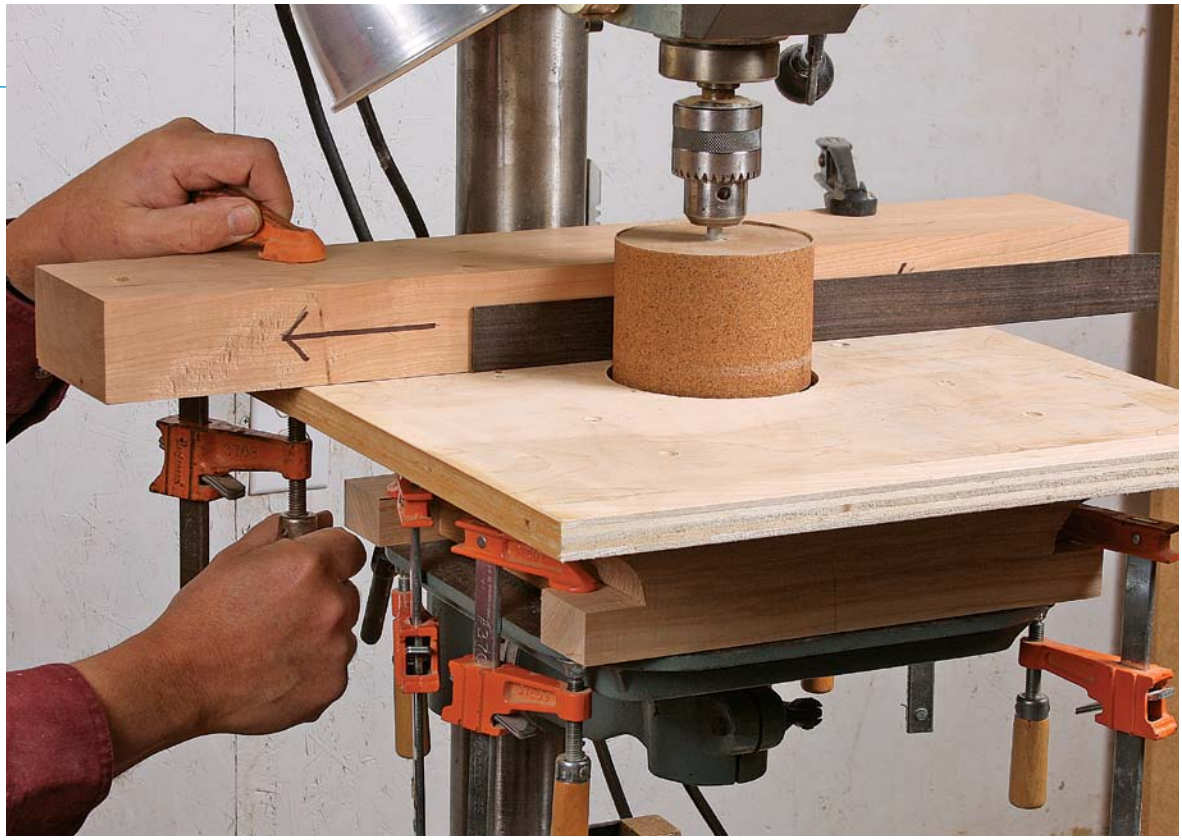
Some drill-press tables have room for a drum to drop below the surface, but usually not far. My auxiliary table allows the sanding drum to be positioned at a variety of heights so the entire surface can be used, extending the life of the abrasive.

Cut a hole in the center of a plywood panel, just larger than the largest drum you'll use. Next, screw on two runners that have cutouts for clamp heads. Adding two more plywood pieces, one with a large hole

Quick setup. *Raise the drill-press table so the drum drops into the hole. Then clamp the sanding table in place (above) and attach a shop vacuum (left). Cut very close to the line on the bandsaw, then feed the workpiece into the drum's rotation (below) for heavy removal. You can sand the piece very lightly with the rotation to smooth small bumps.*

PLANE THIN STRIPS

Clamping a simple fence to your sanding table lets you drum-sand material that is too thin for the thickness planer. Glue sandpaper to the bottom of the fence to keep it from shifting under pressure.



Setup is simple. *Bandsaw the material close to size, and position the fence to press a piece against the drum as shown. Then remove the material, loosen one clamp, and bump that end of the fence toward the drum.*

Against the spin. *Feed the stock against the drum's rotation. Otherwise it will become a tiny missile.*

for a shop-vac hose, creates an efficient dust-collection system.

Add a fence for thin strips

Not long after I began using the sanding drum, I realized I could put a fence behind it to create smooth inlay material. Thin strips are fed into the space between the drum and the fence, always against the rotation of the drum.

The parts should be bandsawn very close to the finished thickness, say just 1/64 in. thicker, or the sandpaper will clog or burn. Use the lowest speed and 100-grit paper. After the inlay is glued in, take a first pass with a paint scraper to remove a layer of wood and any sanding grit along with it.

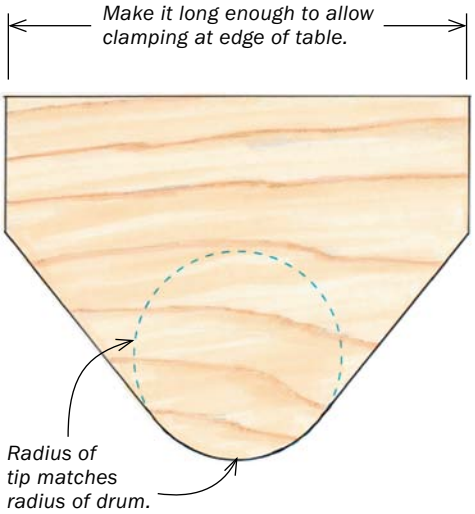
Turn the drum into a pattern sander

Before I owned a shaper, this is how I did all of my curved

SAND TO A PATTERN

Add a template guide under the drum, and it becomes a pattern sander, helping you duplicate curved parts the way a shaper would.

PATTERN GUIDE



Set the tip. *If you have bandsawn the workpiece close to the line, set the tip of the pattern guide flush with the drum. If you have big bumps or lots of waste to remove, set the tip a bit proud for the first pass or two.*

parts. Just cut the curve close on the bandsaw and then finish the job on this simple jig, which registers against a pattern. If you set it up carefully, the jig will also finish-sand a routed surface.

The pattern is attached to the workpiece in any number of ways, from toggle clamps to double-sided tape. The pattern guide is clamped to the table. Its nose has the same diameter as the drum, and it can be moved in or out to adjust the amount of wood removed.

For the smoothest surface, always choose the largest possible sanding drum (and pattern guide) that will follow the shape of your workpiece. The plywood drum will create a square, accurate edge. □

Michael Fortune is a contributing editor.

Attach a pattern and sand. *There are a number of ways to attach a pattern to your workpiece, from double-sided tape to toggle clamps to this jig that captures the round tenons on the ends of chair parts. Feed the workpiece against the direction of the drum.*