Drum Sanders for the Small Shop

A review of seven thickness sanders priced from $500 to $2,500

BY ROLAND JOHNSON

To get a finished surfaces on wood, I use whatever it takes: handplanes, scrapers, sanding blocks, belt sanders or any combination thereof. But for really big jobs, I take a truckload of milled lumber down to the local cabinet shop and have it run through a wide-belt sander.

I'd love to own one of those machines, but they cost as much as a new car. So I've been looking closely at drum sanders, which are affordable. Besides sanding stock smooth, drum sanders can take stock down to thinner dimensions than thickness planers. And drum sanders, because they exert only gentle pressure on stock, will mill out cup from a board. Stock too short for a planer can be thickness-sanded. Wild figure and reversing grain don't present a problem. And because these machines must be hooked up to a dust collector, they produce a minimum of airborne dust.

Drum-style thickness sanders are available for as little as $500. They're called drum sanders because an abrasive strip is wrapped around a cylinder or drum. Compared to wide-belt sanders, with complex belt-tracking and tensioning devices, drum sanders don't have as many parts; hence their lower cost.

Changing abrasive strips on a drum sander takes longer than replacing the closed-loop belt on a wide-belt machine (see the photos on p. 50). But it's not a big deal and takes about as long as changing the blade on a bandsaw. Also, because there is less sanding material on the drum (compared to the surface area of a wide belt), sandpaper wears out sooner. Grits range from 36, for thicknessing, up to 220, for fine finish sanding.

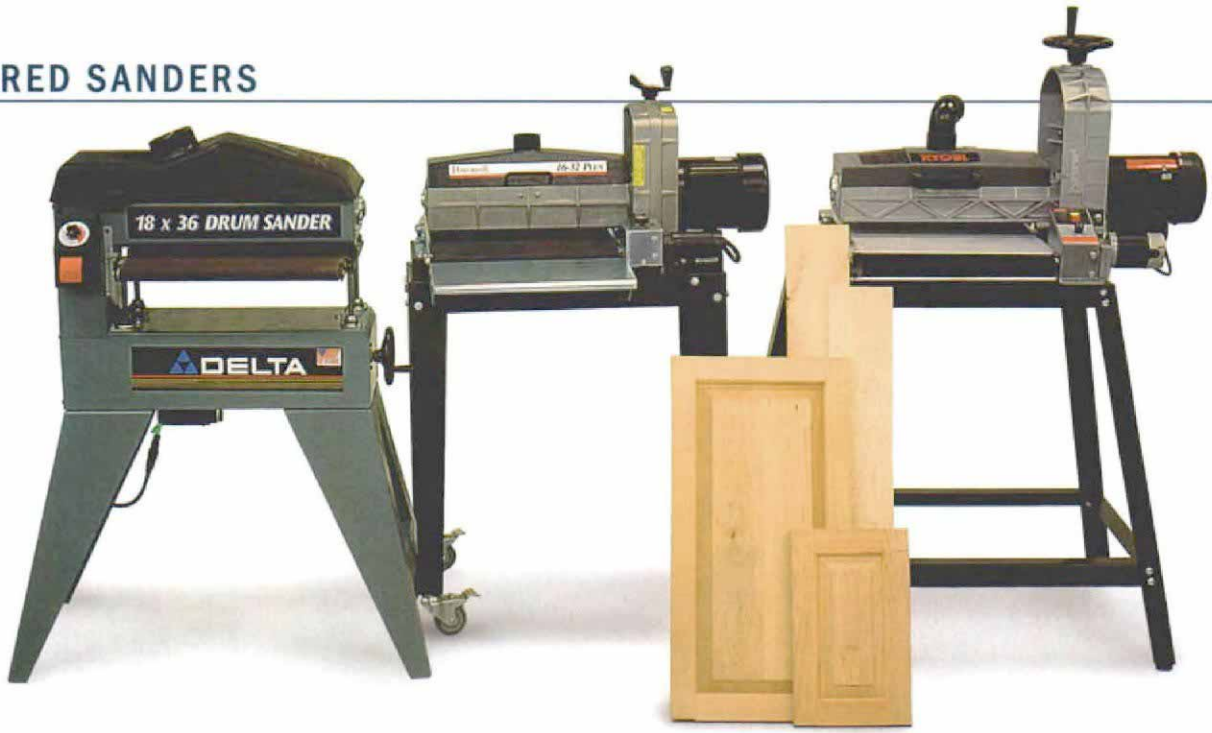
I recently spent a week in the *Fine Woodworking* shop using a number of drum sanders and comparing their features. The machines included units made by Delta, Grizzly, Performax, RB Industries (RBI), Ryobi and Woodmaster. Drum sanders are produced in two different styles: cantilevered (or open sided) and closed frame.

Cantilevered machines offer wide capacity, low price

Cantilevered sanders, such as the Delta 31-250, Performax 16-32 Plus and Ryobi WDS 1600, are modestly priced and have a sanding capacity twice the width of their sanding drums.

CANTILEVERED SANDERS

Cantilevered drum sanders offer lots of capacity for a modest price. Stock up to twice the width of the drum may be sanded in two passes.



	Delta 31-250	Performax 16-32 Plus	Ryobi WDS 1600
Average price	$799	$920 (with casters shown, add $80)	$582 (includes stand)
Max. stock thickness	4 in.	3 in.	3 in.
Max. stock width	36 in.	32 in.	32 in.
Min. stock length	4 in.	2¼ in.	2¼ in.
Drum motor	Marathon, 1.5 hp	Leeson, 1 hp	1 hp
Conveyor speed	1 to 12 fpm (feet per minute)	0 to 10 fpm	2 to 10 fpm
Weight	190 lbs.	143 lbs. (with stand)	125 lbs. (with stand)
Phone	(800) 438-2486	(800) 334-4910	(800) 525-2579

With their small motors, cantilevered sanders are best suited for light dimensioning and finish sanding, fine for small shops or recreational woodworkers.

The Performax 16-32 Plus and the Ryobi WDS 1600 machines offer up to 32 in. of sanding width when wide stock is rotated and a second pass is taken. The Delta 31-250 handles 36-in.-wide stock.

All these machines live up to their promise. Sanding in two passes, however, requires a different drum-to-table alignment than when working narrow stock that fits under the drum in one pass. Realignment takes several minutes. All of the owners' manuals cover the procedure, and it's slightly different for each machine.

When sanding stock narrower than the drum, the drum should be kept parallel to the table. For two-pass sanding of wider stock, the drum or table is readjusted to increase the gap slightly between drum and table on the outboard side. If this isn't done, the outer edge of the drum leaves a noticeable (about 1/32 in. or less) groove on stock. Of course, gapping the drum will produce a small bulge in stock, but it is so slight that you don't even notice it.

One of the complaints regarding drum sanders is that the abrasive strips are prone to stretching and bunching. If the strip bunches up during aggressive sanding, it may tear. Most such problems, I believe, are the result of operator error. If you properly tension and align the abrasive and don't take overly aggressive passes, you will rarely have problems. It's important to check the abrasive strip regularly. If it gets loose, rewrap it. All of the cantilevered machines employ spring-loaded clips in both ends of the drum to secure the abrasive. Additionally, a spring attached to one of the clips keeps constant tension on the strip because it does stretch during use.

Delta's sander hit the market this year—The Delta 31-250 has a fixed sanding drum

Photos: Michael Pekovich

Setting sanding depth

Unlike small planers that can munch up to ⅛ in. of material in one pass, drum sanders take delicate nibbles of 1/32 in. or less. Don't rely on the depth scale to set up the first pass, or you risk jamming the machine and tearing the abrasive strip. Each company offers tips on how to set its machines, but there's a faster way. My method assumes that a board has been machined to a consistent thickness. If stock is of unknown uniformity, follow the manufacturer's instructions to avoid problems.

With the machine off, adjust the opening between the conveyor and the drum until the workpiece just passes under the pinch roller. Then start the drum and the conveyor, adjusted to the slowest feed rate. Feed the stock and crank the height-adjustment knob until the sandpaper just touches the workpiece.

On the next pass, set the depth to take off a little more, and speedup the feed rate. Make depth settings in small increments and listen to the motor. Obviously, the bigger machines will handle bigger cuts. Slower feed rates result in more stock removal. Faster feed rates prevent burning on dense woods when sanding with finer grits. Don't change the feed rate midway through the pass; otherwise, the stock won't be sanded evenly.

mounted in a formed and welded steel frame. Four jackscrews synchronized by a toothed belt raise and lower the cast-iron table. Turning a pair of adjustable nuts at the top of the jackscrews on the open end of the machine changes the drum-to-table alignment.

The Delta also has the unique feature of a two-speed drum. By loosening the motor-mount bolts, the belt can be moved to a different set of pulleys, dropping the drum speed by approximately 30% and providing more power for stock removal when using coarse abrasives.

A 120-grit abrasive belt used for the conveyor holds stock securely, without slippage. I did find that carelessness on my part led to inadvertent scratch marks on stock. Sliding a finely sanded piece sideways on any of the abrasive-type conveyors can mar the workpiece.

Changing abrasive strips on the Delta is simple. The clips are accessible and easy to operate with your fingers. An abrasive change takes only a couple of minutes.

Performax popularized the cantilevered sander—Performax first appeared in the mid-1980s and offered a drum-sander conversion for radial-arm saws, a unit that's still in production. The success of that first sander has led to the development of a whole group of drum sanders—both cantilevered and closed frame—and continual improvements.

The Performax 16-32 Plus has a fixed table. The drum moves in a cast framework that is substantial and fully adjustable for wear. To tilt the drum (actually, the entire upper portion of the machine) for sanding of extra-wide stock, four bolts are loosened; then a fine-tune adjusting knob, which tensions the framework, is turned to raise or lower the outboard end of the drum. The power-feed conveyor on the Performax is 120-grit abrasive and does a good job.

The Performax comes with a cleverly designed tool that grips the clip on the motor side of the drum, which, because of a tight fit, is difficult to reach. With the tool, changing abrasive strips is easy.

Ryobi followed in the footsteps of Performax—The Ryobi WDS 1600 emulates the Performax in design but doesn't have all the features of the original. The Ryobi uses a nonabrasive conveyor that does a good job of gripping stock. However, the conveyor moves only when the drum is running, which makes setting the initial depth a bit awkward (for more on setting the sanding depth, see the story at left).

Adjusting the drum to accommodate wide or narrow stock points out the major difference between the Ryobi and the Performax. Instead of a fine adjustment knob, the Ryobi relies on shims (two 0.010-in. shims are provided) to reset the gap between the drum and conveyor at the open end. The table can be shimmed at the open end of the sander and then brought to parallel with the drum. To achieve a wider gap, remove one or two of the shims and

CLOSED-FRAME SANDERS

A closed-frame machine is inherently stiffer than a cantilevered tool and will suit the heavier demands of a small, professional shop.

	Grizzly G1066
Average price	$1,095
Max. stock thickness	4¼ in.
Max. stock width	23½ in.
Min. stock length	9 in.
Drum motor	5 hp
Conveyor speed	11 fpm (fixed)
Weight	430 lbs.
Phone	(800) 523-4777

Performax ShopPro 25	RB Industries 426	Woodmaster 2675
$2,049 (with casters shown, add $80)	$2,399	$2,344
4 in.	4 in.	5¼ in.
25 in.	26 in.	26 in.
2¼ in.	4 in.	7 in.
Leeson, 1.5 hp	Baldor, 3 hp	Leeson, 5 hp
0 to 10 fpm	2 to 20 fpm	0 to 16 fpm
275 lbs.	650 lbs.	590 lbs.
(800) 334-4910	(800) 487-2623	(800) 821-6651

retighten the Allen-head screws. To return the drum and table to parallel, the process is reversed.

The Ryobi has a difficult-to-reach clip on the motor side of the drum, which makes changing abrasive strips difficult. By jamming a wedge under the drum, I was able to keep it from turning while attaching the strip to the second clip. (By the way, the Performax tool won't work on the Ryobi unless you modify Ryobi's spring clip.)

The closed-frame machines are workhorses

For busy shops, closed-frame sanders, such as the Grizzly G1066 (23½-in. capacity), Performax ShopPro 25 (25 in.), RBI 426 (26 in.) and Woodmaster 2675 (26 in.), may make more sense than the lighter-duty cantilevered machines. Closed-frame machines are stiffer and can handle more powerful motors, and that translates to more aggressive and faster sanding.

The Performax is well designed—The Performax ShopPro 25 has a smaller motor than the other closed-frame machines I tested, so it's not going to remove stock as quickly as the others. But because the Performax plugs into an ordinary 120-volt circuit, and the machine is designed with mobility in mind, it's well suited for a small shop. The Performax also comes with extension tables for additional infeed and outfeed support, something the other machines don't have.

The closed-frame Performax uses a pair of thick, threaded rods and gears to raise and lower the table. The machine has the best access to both of the abrasive-strip clips. Using a special tool, changing abrasive strips is very easy.

RBI and Woodmaster share many good features—The RBI 426 and Woodmaster 2675 are smooth-running sanders with plenty of power. They're heavy and would do fine as stationary machines, although mobile bases are available for them. They both require a 220-volt power supply.

The RBI has a ⅝-in.-thick Blanchard ground steel table. The Woodmaster uses a 10-gauge steel platen. The tables on both machines are supported by four jackscrews that are synchronized by sprockets and chain. Although both machines were delivered properly tuned, adjustments can be made, if necessary, by fiddling with the chain and jackscrew sprockets.

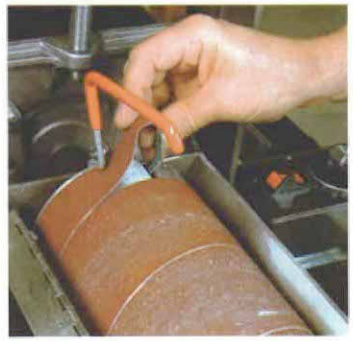
Both machines have two-ply monofilament, rough-top conveyor belts, the same belts used

Changing abrasive strips: It's not always a simple task

All drum sanders use spiral-wound abrasive strips. Attaching the strips can range in difficulty from easy to awkward, depending on the machine.

CANTILEVERED MACHINES

Cantilevered machines use *clips to hold the spiral-wound abrasive strip in place.* *One end of the drum has a clip under spring tension to take up slack should the abrasive strip stretch.*



Performax supplies a special tool to hold the clip in place while the abrasive strip is installed. *The Delta doesn't need a tool; the Ryobi could use one.*

CLOSED-FRAME MACHINES

Tap a spring clip in place to start the abrasive strip on the Grizzly. *When wrapping the drum, the abrasive strip must be held under tension. The task requires two people.*

Access is good inside the Woodmaster, and that makes *abrasive-strip changes easy. A* *hook-and-loop system keeps the strip in place.*

The RBI has less working room under the hood. *Hook and-loop abrasive strips are also used.*

on wide-belt sanders. Conveyor speed is adjustable, from a crawl up to 16 fpm (feet per minute) on the Woodmaster and 20 fpm on the RBI. The Woodmaster has a reversing switch for the conveyor motor, a useful feature when setting up initial depth of cut or if stock gets jammed because the depth of cut was set too deep.

Both the RBI and the Woodmaster use hook-and-loop systems for fastening the abrasive strip to the drum. An adhesive-backed hook strip is attached to the drum, and the abrasive strip is loop-backed.

Changing abrasive strips on the Woodmaster is a snap. Once the machine's large top cover is off, there's plenty of maneuvering room. It takes practice to get the strip started because the hook-and-loop material doesn't allow minor changes in the angle of the strip as it is wrapped around the drum. Woodmaster recommends a wrap or two of filament packing tape on the lead end of the abrasive to keep it tight to the drum.

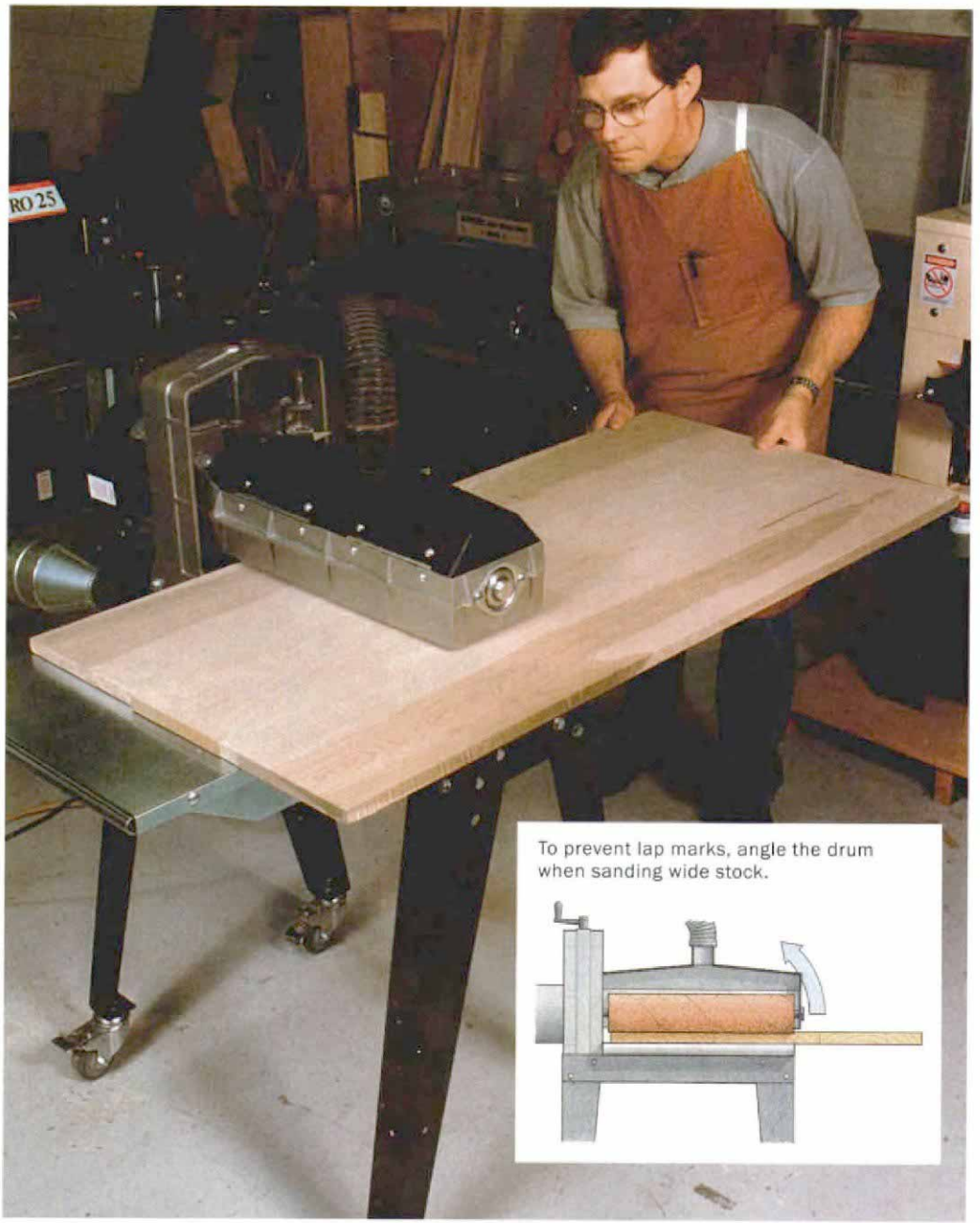
Abrasive-strip changes are a bit more difficult with the RBI because the working space is constricted. I ended up pinching my fingers between the drum and the dust-pickup chute a few times. The machine also uses a narrower abrasive strip, which means more revolutions around the drum. RBI recommends the use of filament packing tape on both ends of the drum. In general, the hook-and-loop systems seem to work very well.

Grizzly's machine sports two drums—The Grizzly G1066 is unique in that it has two drums, which allow the use of two different grits of abrasive. It's a big machine and has plenty of power. It's also half the price of the other large machines tested. To keep the price so low, however, certain choices had to be made in the engineering and use of materials. The chain-and-sprocket system of raising and lowering the table uses lighter-duty components than the competition. The table on the Grizzly consists of a welded steel frame with a particleboard platen. The feed rate is not adjustable; it runs at a constant 11 fpm. The Grizzly is not as refined as the others machines, but stock came out of the machine flat.

Changing abrasive strips on the Grizzly is awkward. A loose spring clip must be hammered in place over the end of the abrasive strip to lock it to the drum. If the hammer blow is not dead on, the clip may fly across the shop. If you hit it too hard, it snaps. (Extras are provided.) To wrap the drum, a second person is needed to keep tension on the strip (there's a spring-loaded mechanism at work) while the first person turns the drum. For a one-man shop, this could pose a problem. Once the abrasive is wrapped, a strip of filament tape holds it in place. There is no hook-and-loop backup. The second drum (outfeed side) comes wrapped with felt to make up for the difference in stock thickness after it passes by the first (coarser-grit) drum. Abrasive installation is the same.

I tore the filament tape on the Grizzly's drum while I was sanding wide stock. When the filament tears, the sanding strips unravel and self-destruct. But I think this problem can be mitigated. The instructions have you place the tape a few inches in from the edge of the drums, where the abrasive strips end. But with the tape located right above the edge of the conveyor, it's all too easy for stock to make contact with the tape. By cutting slightly longer abrasive strips and taping them to the very edge of the drums, contact with stock may be avoided.

ADJUSTING DRUM ALIGNMENT FOR WIDE STOCK



On a cantilevered machine, the drum is set parallel to the table when sanding stock up to the width of the drum. For wider stock, the drum is tilted slightly to increase the gap on the open side.

Performax provides a threaded knob to adjust the drum alignment.

By turning a pair of jackscrews, Delta's table may be realigned to the drum.

Ryobi employs shims to change the angle of the drum to the table.

That's how the Woodmaster and RBI are set up.

There are many good machines to choose from

I came away from this review surprised at how well *all* of the machines sanded. Some of the drum sanders had better features than others, such as more power, greater ease in changing the abrasive strips or more sturdy overall construction. But there seems to be a machine for shops (and budgets) large and small.

Of the closed-frame machines, the Woodmaster 2675 gets my top vote. It is robustly built, smooth and quiet in operation, offers easy abrasive-strip changing and includes a reversing conveyor. I would, however, replace the dust-chute bolts with threaded knobs for quicker access.

The RBI is every bit as industrial as the Woodmaster and has the advantage of a ground, cast-iron table. My only complaint is that changing abrasive strips in the confined space is awkward. And for smaller shops, the Performax does everything well.

Of the cantilevered machines, I think Delta's 31-250 stands out. I like the ease of table adjustment and the heavy weight of the tool. Performax machines, however, have a proven track record and are available in many different sizes, to suit many budgets. For the price, the Ryobi WDS 1600 seems to be a good value. □

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Editor's note: General has a new 24-in. dual-headed drum sander, model No. 15-250 Ml, which sells for $1,359. We learned about it too late to include in this review, but we will be looking at it in a future issue.

Drawing: Vince Babak