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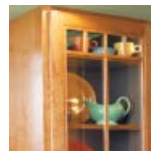
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June 2004



Workbench TOOL TEST

6" Random-Orbit SANDERS

I'm guessing that most woodworkers buy power sanders grudgingly. After all, I've never heard anyone wax poetic about the satisfaction and inner peace that comes from hours of sanding. So the experience of spending hard-earned money for a sander is, at best, unfulfilling.

But among the seven sanders we tested, some elevate these tools from a "necessary evil" to one you love to hate. Hardly auspicious, but hey, sanding will always be sanding.

Quite frankly, as we began testing these tools, we had no idea that they might have such attitude-shifting powers. But our tests revealed that many of these sanders have made significant strides toward alleviating the most obnoxious byproducts of sanding — noise and dust. Even more, some of these sanders have taken on dual personalities so that they are equally effective for aggressive stock removal and finish sanding.

The tests we conducted to uncover all this are described on the following pages. And the sometimes surprising results begin on page 3.



Why Every Shop Needs One

HOW WE TESTED

STOCK REMOVAL ▶

Lofty claims about belt-sander like performance prompted this test. Can a random-orbit sander really be expected to flatten an uneven, imperfect panel, as shown at right? Turns out a few of these sanders are up to the challenge.

To put the sanders on an equal footing, we sanded for 10 minutes with a 60-grit disc to remove as much stock as possible. We weighed the panels before and after to measure how much stock was removed (*Photo, left*). This was the first indication that these sanders have varying capabilities and usages.



▲ NOISE LEVEL

Sanding is dirty, hard work. Does it have to be loud, too? We measured and compared the loudness of the sanders.



▲ DUST COLLECTION

It can't be long before sanders will come with warnings from the Surgeon General about the health risks of dust. In the meantime, we need to look for sanders that swallow their own dust, so we don't have to. Our measure of this was to sand solid-surface material (which creates very fine dust) and see which sanders cleaned up after themselves.



▲ TOOL CONTROL

Your sander wants to go in a circle, but you want it to go in a straight line. The outcome of this contest will have a big impact on the quality of your project. We tested control by sanding narrow boards to see if an errant sander would round the edges.

▼ FINISH QUALITY



80-GRIT: At this grit, sanding swirls are obvious, and the finish is muddy. Quite a bit more sanding is necessary.



120-GRIT: Swirls are fewer, and the finish is clearer, but we wouldn't stop here if this were a project.



180-GRIT: By this point, all the sanders had achieved a satisfactory finish. Most made the grade at 150-grit.

6" Random-Orbit Sanders: SAME IN NAME ONLY

These are all 6" random-orbit sanders, and they all have electric motors. Those are the only truths that apply to all of these tools without exception. Beyond that, each tool distinguishes itself, for better or worse, in at least one of the following categories.

Sanding Action

Three types of sanding action are represented by these seven sanders. Namely, single action only, dual-random orbit, and eccentric/random orbit.

The single-action sanders (Porter-Cable, DeWalt, Fein) are those we have conventionally thought of as random-orbit sanders (ROS). The discs of these sanders spin while simultaneously moving in an elliptical pattern. There is no means of affecting the size or pattern of orbit on these tools.

One dual random-orbit sander (Ridgid) lets you toggle between different orbit sizes. And while the company claims that this gives the sander more aggressive stock removal characteristics, we feel it's more accurate to consider this a finish sander (like the conventional ROS) with an extra measure of versatility because of the two orbit settings.

For rapid stock removal, three sanders (Bosch, Makita, Festool) offer an eccentric, or direct-drive action, in addition to the conventional ROS pattern (*see page 4 for more on this*).

Dust Collection

Most of these sanders *require* a shop vacuum for dust control. The DeWalt and the Ridgid, however, come equipped with a dust collection bag. Although not as effective as a vacuum

connection, they both did a passable job of minimizing dust. And it's nice to have the option of a dust bag when a shop vacuum isn't convenient.

As to what's required to connect a sander to a vacuum, there are some telling differences:

- The Festool sander requires a Festool hose because of its oval port.
- It's hard to get the Makita to work with any hose, as most hoses tend to slip off the small dust port.
- The Fein, Bosch, and Porter-Cable sanders fit best with their own brand of hose, but can be adapted to others without much trouble.
- DeWalt requires you to purchase an accessory to connect its sander to a vacuum.
- Only the Ridgid comes ready to connect to any standard 1 1/4" or 2" vacuum hose.

Dual Random-Orbit Sanders



Bosch

Virtues: Perfectly balanced; Awesome stock removal; Excellent fine sanding; Flawless dust control.

Vices: Not louder than other sanders, but quite shrill by comparison. Put the earplugs in for sure.

Verdict: Only the Festool matches this sander feature-for-feature and on all performance points. And this one costs about \$100 less.

www.BoschTools.com
877-267-2499



Festool

Virtues: Smooth, powerful, and perfectly balanced; Outstanding stock removal *and* fine sanding.

Vices: Requires a Festool hose for dust collection.

Verdict: This is as good as the Bosch in every way. Only money separate the two. And you'd never regret the extra expense.

www.Festool-USA.com
888-337-8600



Makita

Virtues: Accepts six-hole and nine-hole sanding discs; Dual modes for aggressive or fine sanding.

Vices: Our test model was poorly balanced and difficult to control. Dust collection was least effective.

Verdict: We were disappointed with our test tool because of average dust control and poor balance.

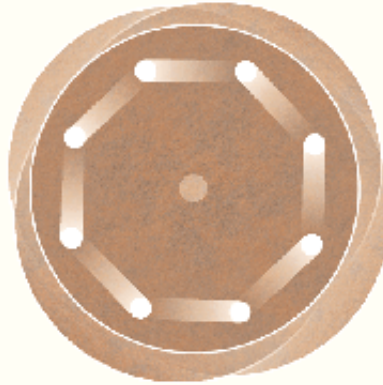
www.Makita.com
800-462-5482

Sanding Modes:

RANDOM-ORBIT vs. ECCENTRIC



▲ We prefer the lever-type (Bosch, Makita, Festool) changer to switch sanding modes (Photo, top) over Ridgid's button (Photo, bottom).



RANDOM ORBIT



ECCENTRIC

A relatively new wrinkle in random-orbit sanders is dual-mode functionality. The idea is to offer aggressive stock removal *and* fine-sanding abilities in the same sander. The Makita, Bosch, and Festool sanders all have this feature.

These sanders couple conventional orbit action in one mode with an eccentric action in the second mode.

In random-orbit mode, these three tools operate just like all the others in the test. That is, the sanding pad spins while also moving in an elliptical orbit (*above left*). This is the action that has earned random-orbit sanders a reputation for being excellent finishing sanders.

The eccentric mode is all about stock removal. The pad still spins, but the elliptical pattern is replaced by a lineal back-and-forth movement (*left*). This is a direct-drive mode, which simply means the pad won't stall under pressure. Thus, stock removal is more like that of a belt-sander.



Ridgid

Virtues: Good price; Dual orbits make it a versatile finish sander; Dust control is excellent with the bag and even better with a vacuum.

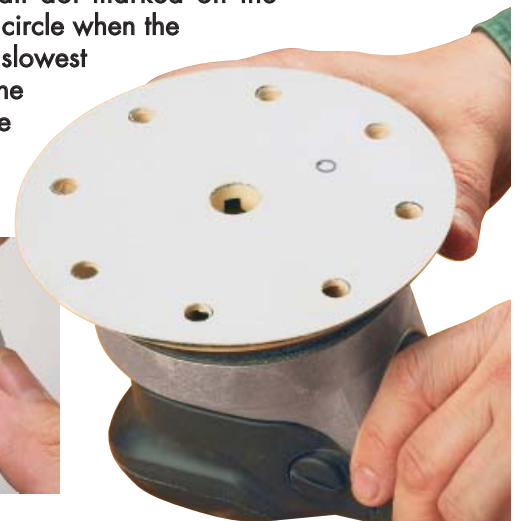
Vices: Slight wobble requires a firm grip at times.

Verdict: This is an affordable, complete package with versatility beyond single-mode finish sanders.

www.Ridgid.com
800-474-3443

SIZE OF ORBIT?

This simple experiment clearly shows the size of a sander's orbit. A small dot marked on the sanding disc becomes a circle when the sander is running at its slowest speed. The diameter of the circle equals the orbit size of the sander. Shown here is the 5mm Festool





▲ A molded palm grip directly over the sanding disc offers more comfort and better control than a side handle. The palm grip also dampens vibration from the sander.

Body Type

Most of these sanders evolved from right-angle grinders, and that heritage is clear in their barrel-grip style bodies.

The one exception in this group is the Ridgid, which is an inline-style sander, with the motor mounted directly above the sanding pad.

Beyond the aesthetic differences, inline sanders generally aren't as powerful as the right-angle variety, so they aren't well-suited to aggressive stock removal.

On the other hand, inline sanders usually offer up less vibration and noise than their right-angle brethren, making them excellent for extended fine sanding. Such was our experience in comparing the Ridgid to the right-angle sanders in this test.

Handhold

Another throwback to the right-angle genesis of these sanders are their side handles. Quite frankly, these have little worth in a woodworking shop.

An integral palm grip on top of the sander is a much better place for that "other" hand. Of the right-angle sanders, all but the Fein have this comfort feature.

An even better design is Ridgid's sander, which has a molded palm grip and a *front-mounted* handle. The palm grip, just as with those on the right-angle sanders, offers a comfortable, effective hold directly over the sanding disc. This hand position helps you apply consistent pressure over the full area of the sanding disc.

Where Ridgid went one step further is with their front-mounted handle. This simple variation on the side handle makes a lot of sense.

First, the shape of the handle is much more ergonomic than the cylindrical types on other sanders. Second, its location — directly inline with the main grip — keeps the downward pressure centered on the sanding disc, instead of to one side or the other as with the side handles.

Single-Action Sanders



Porter-Cable

Virtues: Competitive price; Effective dust control; Not much quieter than others, but less "whiny."

Vices: Moderate wobble that's difficult to control at lower speeds; Dust hose interferes with barrel grip.

Verdict: This is a basic sander that's quite capable of a fine finish. Partner this with a good belt sander if you also want fast stock removal.

www.Porter-Cable.com
800-487-8665

DeWalt

Virtues: Low price; Well-balanced (no wobble); Excellent dust control with the bag, flawless dust control with a vacuum connection.

Vices: Hose connector is sold as an accessory.

Verdict: This is the best single-mode finish sander in the group. It's effective, affordable, and a pleasure to use. Don't expect much for stock removal.

www.DeWalt.com
800-433-9258

Fein

Virtues: Well-balanced; Powerful; Dust free.

Vices: Relatively expensive compared to the dual-mode, variable-speed sanders it competes against.

Verdict: Once an industry standard, this sander is now a little behind the curve in terms of performance and features. A lower price or more bells and whistles are in order.

www.FeinUS.com
800-441-9878

This made a noticeable difference in the way this sander performed on narrow stock when the tools were prone to some sideways tipping anyway.

Speed Control

Although there seems to be no agreement about where to locate the variable-speed switch on a sander — some models have it on the side of the barrel, others have it way on the back, while one has it mounted up front — it's clear that most manufacturers consider speed control to be a worthwhile feature. And we agree, particularly during aggressive sanding with coarse grits. Being able to slow the tool down adds a great deal of control and lessens the likelihood of careening off line and damaging a surface. In this group, only the Fein lacks variable-speed control.

▼ It's all about the paperwork. With the Festool sander, only their paper will work. Makita, on the other hand, accepts standard six-hole paper or the proprietary nine-hole variety invented by Festool.



Final Recommendations

Editor's Choice

BOSCH

Bosch takes top honors with a sander that's aggressive enough for flattening uneven panels but still delicate enough for final sanding.

A fairly reasonable price, better vacuum compatibility, and greater availability give the Bosch a slight advantage over its only equal in this test, the Festool.



Top Value

RIDGID

We can't agree with Ridgid's claim that aggressive stock removal is a benefit of their dual-orbit sander. But we wholeheartedly endorse this as an affordable, effective, dust-free finish sander with an extra bit of versatility. And the near-perfect ergonomics make it all the more attractive.



RANDOM-ORBIT SANDER REPORT CARD

Model	PERFORMANCE						SPECIFICATIONS							
	Stock Removal	Finish Grit	Dust Control	Noise (in dbs)	Vibration	Balance	Amperage	Orbits per Minute	Orbit Size	Paper Type	Weight in Lbs.	Warranty	Model	Price
PORTER-CABLE	C	150	B	97	B	B	3.7	2500-6,000	3/16"	6h	5.75	1yr	97366	\$180
DEWALT	C	150	A	99	A	A	4.3	4,300-6,800	3/16"	6h	5.75	1yr	DW44	\$160
RIDGID	C	150	A	95	A	B	3.8	4,000-10,000	1/4", 1/8"	6h	6	3yr	R2610	\$170
MAKITA	A	180	C	99	A	C	6.6	1,600-5,000	7/32"	6h	5.9	1yr	B06040	\$260
BOSCH	A	150	A	97	A	A	6.5	3,100-6,650	3/32"	6h	5.3	1yr	1250DEV5	\$300
FEIN	B	150	A	99	B	A	6.5	7,500	5/16"	8h	3.7	1yr	MSF-636-1	\$379
FESTOOL	A	150	A	99	B	A	3.8	4,000-11,200	5/16"	9h	5	3yr	R0150	\$395