

# Random-Orbit Palm Sanders

The best are both smooth and aggressive

BY ANDY ENGEL



AUTHOR'S  
BEST OVERALL  
CHOICE

AUTHOR'S  
BEST VALUE  
CHOICE



**BOSCH 1295DVS**

[www.boschtools.com](http://www.boschtools.com)  
Street price: \$70



**CRAFTSMAN 27989**

[www.sears.com](http://www.sears.com)  
Street price: \$70



**DEWALT D26453**

[www.dewalt.com](http://www.dewalt.com)  
Street price: \$86

Sanding is as dull as dirt. I don't find even a Zen satisfaction in it, just tedium followed by finer grits, numb fingers, and dust in what's left of my hair. The best sander for me is the one that most quickly produces a good surface without making my fingers tingly or making me breathe fine dust.

Although woodworkers today hold vibration and dust collection to be crucial, the central question hasn't changed in years: Can a sander produce a good finish?

So that's where I started when I tried out nine 5-in., hook-and-loop base, variable-speed random-orbit sanders—the type most commonly found in woodworking shops. Production shops might use 6-in. sanders, but most hobbyists end up with the lighter, less expensive 5-in. models.

Starting with P100-grit pads and ending with P220-grit, I sanded a sample cherry board with each machine until I was satisfied with the surface. I did no hand-sanding afterward, wanting each sander to show its worst. Nonetheless, once stained (using a pigment stain, which tends to accentuate scratches) and shellacked, the boards were indistinguishable. The difference was that some sanders took longer than others to achieve that result. Also, dust collection and comfort varied widely.

### Uniform scratch pattern is key

Although an evenly distributed scratch pattern may seem like a contradiction in terms for “random”-orbit sanders, it means

that no particular area is abraded more than any other. Random-orbit sanders create a uniform scratch pattern by combining a spinning motion with an orbital motion that generally distributes the scratches as evenly as possible. Although the various scratch patterns didn't show up on the boards once finish was applied, the sanders with the most uniform patterns tended to be the most aggressive.

### Aggression and dust collection

For each test run, I equipped the sanders with fresh P100-grit Norton 3X abrasive pads, which remove wood more quickly than common aluminum-oxide pads.

To figure out which machines removed the most material, I used a digital timer and a scale that was sensitive to 1 gram (28 of which, more or less, equal an ounce). I tested each sander several times on a chunk of poplar cut from the same plank. I weighed the wood, sanded for five minutes, then weighed the wood again. The difference showed how much wood the sander had removed. While testing aggressiveness, I also measured dust collection. To see how well the sanders' integral dust collectors performed, I weighed each dust collector before and after sanding. The difference between how much wood the sander removed and how much dust it collected was floating in the air.

To measure how well each sander accommodated powered dust extraction, I attached the sanders to a Festool vacuum



### Features to look for

Hook-and-loop is the most common method to attach paper. Changing the paper is fast and easy, and a partially used sanding disk can be reinstalled.

Variable speed is useful on resinous woods. Because pads run cooler when they run slower, low speeds slow the clogging of paper on woods such as pine.



### FESTOOL ES125 EQ-PLUS

www.festoolusa.com  
Street price: \$165



### KLINGSPOR 1893 DVS

www.woodworkingshop.com  
Street price: \$80



### MAKITA B05012K

www.makita.com  
Street price: \$80



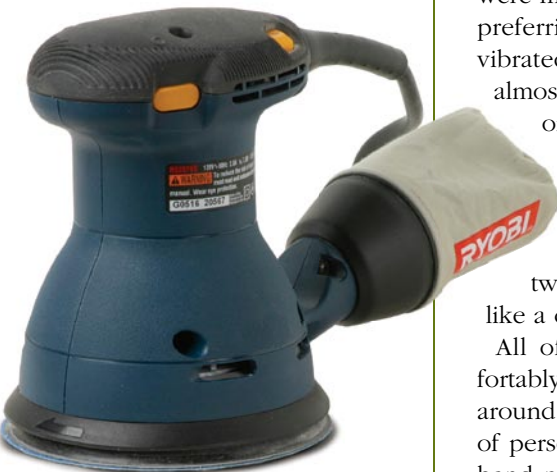
## PORTER-CABLE 333VSK

www.porter-cable.com  
Street price: \$80



## RIDGID R2600

www.ridgid.com  
Street price: \$80



## RYOBI RS281VS

www.ryobitools.com  
Street price: \$50

equipped with paper bags. Here, I weighed the wood and a fresh bag before and after sanding for five minutes. One surprise was that many of the sanders removed noticeably more stock when attached to the vacuum. So, if you don't bother to collect dust for the sake of your health, you might consider doing so for the sake of efficiency. The notable exception in this test was the Craftsman. I tested it three times to make sure, and each time this sander removed less stock when attached to the vacuum. Hard to explain.

While buying the sanding pads, I also cleaned out the local hardware store of clear Plexiglass. Again using P100-grit pads, I sanded the plastic. By making one pass at what felt like a uniform speed, I got a pretty clear idea of which machines produced the most uniform scratch patterns. The differences between the best were fairly subtle, but the difference between the best and the worst was striking. The most aggressive sander also had the most even scratch pattern.

But I never make one pass with a sander and call it good, so I cut a bunch of Plexiglass squares and did some timed sanding. After 30 seconds, all the machines had completely etched the Plexiglass. Sanding for just 15 seconds, though, showed some differences. Again, the most aggressive machines in terms of stock removal also had etched the plastic more uniformly.

### Comfort: Smoothness and steering

I expected comfort to be subjective and difficult to rate. I was wrong. The differences were marked, and I have no hesitation in preferring some machines because they vibrated less. Some of the sanders were almost uncontrollable, and keeping them on the board was tiresome. Others steered like a dream, and I hardly knew I was holding a sander. Still others steered OK, but caused the board to spin on the table, twisting the nonskid pad underneath like a crumpled-up bath towel.

All of the sanders can be held comfortably either with your hand on top or around the sander's waist. That's a matter of personal preference. I find that I vary hand position on long sanding jobs, but whether I do it to improve my comfort or to alleviate my boredom is hard to say.

Weight is a factor with most handheld power tools. But unless you're planning to

use a random-orbit sander for a vertical job like sanding existing interior trim, weight is not a big deal here. Most woodworkers only pick up a sander long enough to move it from the shelf to the board that's about to be sanded.

Noise is the final comfort factor, and it varies considerably. The quietest sander produced 82 db.; the loudest 90 db. An 8-db. difference may not sound like a lot, but the decibel scale is logarithmic, not additive. When you add a shop vacuum, which I feel is essential to collect the finest, most dangerous dust, the noise level will be well over 90 db. Anything over 90 db. is hearing-protection territory (conservative sources say 85 db.).

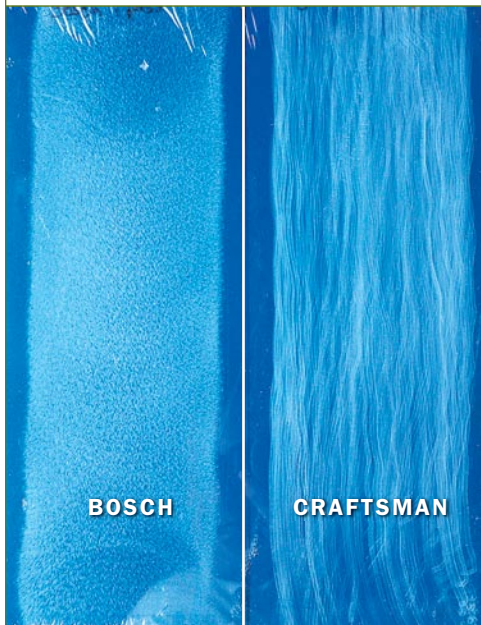
After sanding off more than a pound of wood and spoiling more than 30 sq. ft. of Plexiglass, I have clear favorites. Because they produce outstanding scratch patterns, remove material quickly, perform well with dust extraction, and are relatively comfortable to use, I'd buy either the Bosch or the Klingspor, which actually appear to be the same machine. I made the Bosch my best overall pick, as it had the lower street price. □

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FESTOOL ES125 EQ-PLUS	\$165
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MAKITA B05012K	\$80
PORTER-CABLE 333VSK	\$80
RIDGID R2600	\$80
RYOBI RS281VS	\$50

## The testing process: Scratch patterns and stock removal

Engel tested the sanders for aggressiveness by sanding a poplar board for five minutes and measuring how much wood was removed. Then he measured the amount of dust each sander collected. Finally, he sanded Plexiglass to compare scratch patterns.



**Plexiglass shows off scratch patterns.** In theory, random-orbit sanders uniformly abrade the workpiece because they move randomly and don't make discernible scratch patterns. But some work better than others. Compare the scratch pattern from the Bosch with that from the Craftsman.



**Five minutes' sanding yielded measurable dust samples.** Each machine was tested several times for aggressiveness and effective dust collection by sanding sample boards for five timed minutes.



**The scale doesn't lie.** Before and after weights show the amount of wood removed.



**What isn't collected goes in the air.** Comparing the before and after weights of the sander and its dust bag (or the vacuum's dust bag) shows how much dust was collected.



Stock removal test	Stock removal test with vacuum	Scratch pattern	Built-in dust collection	External dust collection	Vibration	Noise	Comments
10g	13g	Excellent	60%	90%	Very good	85 db.	Easy to control but moves workpiece. May be difficult for those with weak hands to attach vacuum adapter. Adapter not included.
9g	5g	Poor	67%	88%	Poor	90 db.	Very hard to control. Aggression dropped off with vacuum, retested twice to confirm.
8g	12g	Good	75%	75%	Fair	87 db.	Fair control but moves workpiece.
6g	11g	Good	83%	100%	Excellent	86 db.	Very easy to control. Nine-hole paper required with included base. Standard 8-hole base available, tested both.
8g	11g	Excellent	75%	100%	Very good	86 db.	Appears to be the same machine as the Bosch. Performance is nearly identical.
8g	7g	Very good	88%	100%	Excellent	85 db.	Easiest sander to control, and did not move work. Light and wieldy, a good choice for jobs off the bench. Odd, whiny noise.
8g	10g	Fair	88%	100%	Very good	82 db.	Light, smooth, good control. Moves work a bit.
8g	8g	Good	63%	73%	Good	88 db.	Easy to control. Moves work a bit.
8g	7g	Good	63%	86%	Poor	85 db.	Very hard to control. Comes ready for PSA paper; hook-and-loop base is user installed.