Your Next Random-Orbit Sander

We smooth out the gritty chore of choosing this indispensable tool

BY ANDY BEASLEY

PALM

PISTOL GRIP

RIGHT ANGLE

I knew random-orbit sanders could do a lot of things, but I hadn't anticipated their domestic benefits. As my wife and I labor to finish our new house, I install the doors, cabinets, and trim, and she follows up with paint and stain. If my work is a little rough, well, I figure my painting sub can tackle the drudgery of hand-sanding the imperfections. The mutinous muttering I'd been hearing subsided the minute this crowd of tools arrived for testing. Now, armed with her favorite sander, she fixes my mistakes with a smile.

So what makes random-orbit sanders so special? Quite simply, these tools combine orbital motion (like that of a quarter-sheet finishing sander) with rotation. When teamed with the right abrasive, this rotary-orbital action can produce a beautiful, swirl-free finish on almost any surface; it's especially good at cross-grain applications such as rail-and-stile joints. If aggressive performance is the goal, the most powerful of these tools can hold its own with any belt sander.

For this review, I grabbed nearly two dozen fully loaded models representing the three distinct styles of random-orbit sander: compact palm sanders, versatile pistol-grip sanders, and powerful right-

Which style is right for you?
These capable dual-motion machines come as small, light palm sanders; versatile pistol-grip versions; and heavy-duty right-angle sanders. They all create satiny, swirl-free surfaces, but the larger ones also can remove stock like a belt sander.

Photos above: Scott Phillips. Photo bottom right: Peggy Beasley.

PALM SANDERS

Light-duty finish work

PORTER-CABLE 333VS

www.porter-cable.com Price: $75

The hardest part about testing this sander was finding a time when my wife wasn't using it. It's not surprising we both rated it No. 1. The top and waist grips were excellent, and the power and variable-speed controls were readily accessible. The dust canister was reasonably effective and could be rotated around the tool body. Vibration was the least among the tools tested. The pad accepted both five- and eight-hole disks, but dust collection was best with the five hole.

Pros: Ergonomic grips, wide speed range, effective pad brake, minimal vibration.

Cons: Dust-canister fit was too tight, which made emptying a hassle.

DeWalt DW423K (www.dewalt.com, $90) My second favorite among the palm sanders (price notwithstanding). Above-average dust collection. Superb grips and controls. Case included.

Bosch 1295DVSK (www.boschtools.com, $85) A good machine with well-designed grips and controls. Dust canister performed well, but it was difficult to pry off the lid for thorough cleaning. More than average vibration. Case included.

Makita BO5012K (www.makitatools.com, $90) Solid and sturdy with excellent grip options. Significant noise and vibration. Effective dust bag rotated around tool body as needed. Case included.

angle sanders. Using generic sanding disks to level the playing field (no pun intended), I plowed through a variety of tests and applications that revealed a handful of favorites.

But choosing a random-orbit sander is complicated. First you have to decide which style (or styles) best suits your needs. Then you need to figure out if you require special features such as variable speed control and active dust collection. Also, if you're planning to do a lot of sanding with one of these tools, you need to consider ergonomics.

Get a grip, a comfortable one

Ergonomic issues are important with any power tool, but they're especially crucial because of the long hours that sanders typically are used. The potential health problems caused by such vibrating machines make the issue of grip options and switch locations critical. My strategy for minimizing fatigue is to change grip positions frequently and to switch hands whenever possible, but my arms were vibrating like a tuning fork long before the testing was over. As a result, I studied the ergonomic challenges presented by each of the three body styles.

Palm sanders are light, maneuverable, and usually easy to control. The best tools were grasped comfortably in two ways: with the

RIDGID R2600

www.ridgidwoodworking.com **Price: $70**

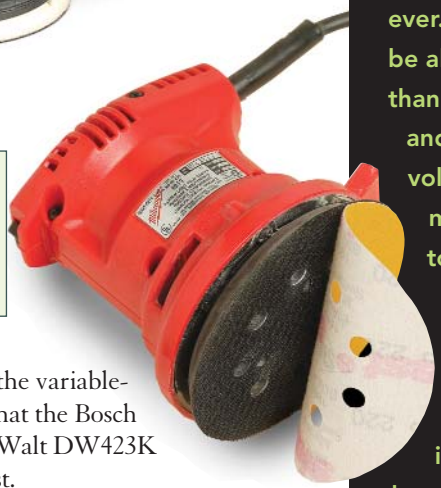
A solid, serviceable sander for a low price. Dust collection was about average. The dust port accepted either a vac hose or the easily removable bag. The top grip was excellent, but the waist was too squat and bulky for comfort. Controls were a weak area: The on/off slide was prone to accidental contact, and the variable-speed dial was recessed too deeply.

Pros: Price, dust collection, pad brake, case with both hook-and-loop and PSA disks included, 12-ft. cord.

Cons: On/off switch, variable-speed dial placement.

Ryobi RS280VS (www.ryobitools.com, $50) Jerky operation required more effort to control than any other palm sander. Below-average dust collection. A PSA disk with a one-time hook-and-loop conversion disk included.

Festool ES 125 EQ (www.festool-usa.com, $150) Expensive but well-made. Little vibration, wide speed range, and a 13-ft. detachable cord. Dust collection proved mediocre with bag attached, but outstanding with vacuum. Case included.



Milwaukee 6019-6 (www.milwaukeetool.com, $75) No frills, single-speed machine, no pad brake. Dust bag collected almost nothing through the tiny dust port.

palm of either hand resting on top of the sander, or with a hand wrapped around the "waist" of the body. All the tools accommodated the top grip, but some ruined the second option with squat, chunky bodies or with dust bags that got in the way. The on/off switches were accessed easily, although the Ridgid R2600 and the Ryobi RS280VS employed slide-through controls that were too easy to turn on accidentally. I grew addicted to fiddling with the variable-speed dials and found that the Bosch 1295DVSK and the DeWalt DW423K were the easiest to adjust.

As a group, the pistol-grip sanders were the most comfortable to use for long periods of time. Exceptionally stable on vertical as well as on horizontal surfaces, they could be controlled by their main handle alone, or in combination with the top or front grips. I generally

Hook and loop is the standard

When random-orbit sanders first appeared, pressure-sensitive adhesive (PSA) sanding disks were the norm. These days, hook-and-loop abrasives have become the industry standard, and for good reason. Unlike PSA, a used hook-and-loop disk can be removed and re-attached later. Hook-and-loop disks also can be left on a sander forever with no ill effects; PSA disks should be removed after work, or the heat generated by sanding will melt the glue to the sander pad.

Pressure-sensitive adhesive disk (PSA)

PSA still enjoys a significant cost advantage, however. The stick-on disks can be almost 25% cheaper than comparable hook-and-loop disks. For high-volume applications, PSA might still be the way to go.

If you choose hook-and-loop disks, though, be sure to select a brand that imprints the grit number on the back of each disk. When switching between disks, it's no fun to have to guess the disk's grit.

Hook-and-loop disk

PISTOL-GRIP SANDERS

Finish carpentry and woodworking

FESTOOL ETS 150/3 EQ

www.festool-usa.com Price: $225

Although pricey, this tool was my favorite among all the sanders tested. With a 6-in. pad and a potent motor, it was capable of tackling rough jobs, while its light weight and superb feel made it ideal for fine finishing. Perhaps due to the central airflow hole in the pad, dust collection was outstanding with a vacuum, and slightly above average with its dust bag. All controls were easy to access during operation.

Pros: Balance, dust collection, excellent case, numerous accessories available.

Cons: Cost, on/off locking switch could be pressed accidentally.

Makita BO5021K (www.makitatools.com, $100) Essentially a 5-in. palm sander with handles. Wide speed range, excellent controls. Dust bag was effective, but difficult to remove. Case included.

Makita BO6030 (www.makitatools.com, $170) One of my favorites. Superb balance and feel. Access to controls among the best in this review. The 6-in. pad accepts either six- or eight-hole disks. Dust bag fairly effective, but tool lacks a vacuum adapter.

preferred the 6-in. models because the 5-inchers were comparatively tall and easy to tip; choose a 5-incher if you're simply looking for a palm sander with better grip options.

All the pistol-grip tools employed an accessible trigger under the handle for on/off control, but the locking button was prejudiced in favor of right-handers. Bosch and Makita had the best speed-control dials, placed within reach of either thumb.

The most powerful sanders of the lot, the right-angle models, were the most tiring to use. Inherently unbalanced, they required a constant, firm grip to control. Typically, the tool bodies were bulky and not easy to hold. Most accepted screw-in side handles for a leveraged grip, and some offered rubberized heads directly above the pad. The on/off switches were generally locking slides, and the models from Fein and Porter-Cable were the easiest to manipulate. With such a two-handed tool, I was surprised that none of the machines had an easily accessible variable-speed dial.

Extra features are (mostly) worth the cost

Almost all the sanders I tested include variable-speed control. Most also have some sort of dust-collection apparatus. A lesser number feature a brake designed to stop the pad from spinning as it's being lifted off the worksurface. A few of the high-power machines offer a dual-mode option that boosts the power to permit extremely aggressive stock removal. The model you choose will depend on which features are most important to you.

Variable-speed control. If you sand only oak or medium-density fiberboard, a single-speed tool is fine. But variable speed provides the flexibility to handle diverse tasks. For example, lower speeds are good for smoothing plastic fillers and epoxies, the midrange does well for feathering paint, and the higher speeds are effective for most wood products.

Dual-mode option. If you've always envied the secret agents who can flip a switch to convert a car into an airplane, dual-mode sanders

RIDGID R2610

www.ridgidwoodworking.com
Price: $150

A powerful 6-in. machine with two modes: a ⅛-in. orbit for fine finishing and a ¼-in. orbit for aggressive but controllable material removal. Changing modes was awkward, requiring the user to rotate the pad by hand. The dust bag worked well; when connected to a vac, the sander ran best with reduced suction. The front handle was instantly removable for getting into restricted areas. Less than average vibration. A bit heavy for extended vertical use.

Pros: Dual mode, well-designed grips, dust collection, 12-ft. cord.
Cons: Awkward mode changes; mode indicator was obscured easily by dust.

Bosch 3727DEVS (www.boschtools.com, $150) Comfortable grips, accessible controls, but more than average vibration. Effective, wide-mouth dust canister, but lid was difficult to pry open. Large speed range. Can be ordered with 5-in. pad (model 3725DEVS).

Metabo SXE 450 (www.metabo.com, $180) Except for minor differences, this is the same dual-mode sander as the Ridgid R2610. The standard paper dust bag was below average; the accessory cloth bag was far better. A solid, well-made tool. A single-mode version with a 5-in. pad is available (model SXE 425).

are for you. In a matter of seconds, these tools can morph from fine finishers to aggressive stock removers.

The Metabo SXE 450 and Ridgid R2610 (which are made in the same factory) accomplish this feat by switching the orbit diameter from ⅛ in. (for finish work) to ¼ in. (for aggressive work).

The Bosch 1250DEVS, Festool RO 150 E, and Makita BO6040 employ a different dual-mode technology. The orbit size remains the same, but in the aggressive mode, the sanders' drive system forces the pad into a powerful spin—more like that of a right-angle grinder—which dramatically increases the rate of material removal. It also makes for a wild ride that can be harder to control than the in-line force of a belt sander.

Pad brake. If you're not careful, a random-orbit sander can leave scratches (or swirl marks) as the rotating pad is lifted off the work. To prevent this undesirable occurrence, a number of manufacturers offer a pad brake that inhibits the ability of the sanding pad to rotate freely when the tool is not under load.

Is the pad brake a must-have gadget that should sway your choice of sanders? I don't think so. Swirls caused by lifting the tool are prevented easily by making your last pass with an appropriately fine grit, and by removing the sander smoothly and positively. Alternatively, place a piece of scrap next to the

Photo bottom right: Peggy Beasley

Smarter sanding

Anyone with a sanding assignment has two goals: excellent results and a speedy way to achieve them. These tips will help you to get the most and the best from your random-orbit sander.

- **Life is short; abrasives are cheap.** Don't waste time sanding with worn or clogged disks. Change disks before you think you need to.
- **Don't press harder; use a coarser grit.** Bearing down on the tool only interferes with the sander's random rotation.
- **Keep the sander level.** Tipping the tool even a small amount diminishes dust collection and could allow the disk to dig into (or "dish") the worksurface.
- **Empty dust bags frequently.** A clogged bag allows more dust to escape and can shorten the life of the motor.
- **Keep the pad flat.** Don't store sanders in positions where their pads will become deformed.
- **Secure the workpiece.** This is especially important when operating a right-angle (or pistol-grip) sander.
- **Keep a spare pad on hand.** If you destroy a pad accidentally, or if it just wears out to the point where the hook-and-loop disk has nothing to grab hold of, you're likely to find that its replacement has to be special-ordered.
- **Clean the surface frequently.** Use compressed air (photo right) or a vacuum to remove sawdust and abrasive particles as they accumulate.

Compressed air keeps the wood bare.

RIGHT-ANGLE SANDERS

Rough applications and smoothing large surfaces

AUTHOR'S BEST OVERALL CHOICE

BOSCH 1250DEVS

www.boschtools.com Price: $300

This dual-mode machine featured a powerful soft-start motor. Finish results were excellent in the "Normal" mode, and stock removal was dramatic in "Turbo" (the variable-speed feature was essential for best control in Turbo mode). Mode-changing—which should be done only with the pad stopped—was a snap. The tool body was easy to hold, and the padded top grip was a plus. Access to controls was adequate.

Pros: Dual mode with excellent changeover switch, great grips, powerful motor, 13-ft. cord.

Cons: Large size hampers fine work, no vac hose or adapter included as standard equipment.

Makita BO6040 (www.makitatools.com, $300) Dual mode with huge, soft-start motor. The 6-in. pad accepts six- or eight-hole disks. Variable-speed dial inconveniently hidden under cord at rear of tool. Case included, but no side handle or vac adapter.

Festool RO 150 E (www.festool-usa.com, $395) Dual-mode sander with a soft-start motor. Fast mode change. Dust collection with vacuum was outstanding. Great feel. Case included. The only downside is the price.

work and simply run the sander off the edge of the work and onto the scrap.

Dust collection. The dust created by power sanders is like secondhand smoke: not much of a problem outside on a breezy day, but a real nuisance in a closed environment. Most sanders feature some type of active dust-collection system to alleviate this problem. Active collection relies on a blower within the tool to drive dust into an attached canister or bag. Some collection systems worked better than others, but even the best ones allowed a large amount of dust to escape.

If you're serious about dust control, a vacuum attachment is the answer. Most of the sanders were vacuum compatible, although some required an accessory adapter. I used three different vacuums and several brands of hoses with each tool, and the results were always better than the tool could achieve on its own. That goes for performance as well as cleanliness: When no longer wallowing in their own dust, the sanders worked faster, and the disks seemed to last longer.

I was relieved to find that the vacuum hoses never got in the way; all were flexible enough

Vacuum attachments improve a sander. *Hooking up the sander to a vacuum is the best method of collecting dust. It also allows the sander to work faster, and disks seem to last longer.*

Photo bottom right: Peggy Beasley

PORTER-CABLE 97366

www.porter-cable.com Price: $145

There was nothing fancy about this tool, but it had a lot of smart features. The chunky body was surprisingly easy to grasp, and the on/off switch was positioned perfectly for the thumb of either hand. Stability was above average. Dust collection—with the included 10-ft. hose—was excellent regardless of speed, grit, or material. The dust shroud could be loosened and rotated, which made it easier to get into tight spaces. Can be ordered with 5-in. pad (model 97355).

Pros: Stability, switch access, dust collection with included hose, case.

Cons: Tool motor discharges annoying airstream.

Milwaukee 6125 (www.milwaukeetool.com, $170) A powerful 5-in. sander that can accept a 6-in. pad. Uses PSA disks. Single speed, no dust collection. Tiring to hold paddle switch in "on" position. Motor discharges air straight into user's face. No shroud or housing to protect fingers from spinning sander head, shaft, and pad.

DeWalt DW443 (www.dewalt.com, $140) An aggressive sander at a great price. Dust bag was good, but it crowded the body grip. The on/off switch was difficult to actuate while I was wearing gloves. The accessory vac adapter worked well.

Fein MSf 636-1 (www.fein.com, $400) Costly but well-made tool. Well-balanced, but lacks variable-speed feature. What was the early gold standard of random-orbit sanders is now a bit long in the tooth. Fein plans to introduce an updated version in the future.

to permit sanding in tight quarters. In some instances, however, the powerful suction of the single-speed vacs caused a tool to jerk and drag. If you're in the market for a vacuum, I'd suggest the Festool CT 22 E, which features variable suction control; as a low-cost alternative, Bosch offers an accessory hose for its sanders that has a built-in adjustable vent to serve as suction control.

Can one tool do it all?

Even though this is an election year, I'll say it straight out: no. But if you (or your significant other) want to smooth things out, here's some help deciding which tool (or tools) to choose.

For small-scale tasks, for work in confined areas, and for finishing prep, a lightweight 5-in. palm sander might be all you need. My favorite was the Porter-Cable 333VS.

For larger surfaces and finish-carpentry tasks, a 6-in. pistol grip is the best choice. Although less nimble than the palm style and less powerful than the right-angle variety, this type probably comes closest to being the best all-around performer. The Festool ETS 150/3 EQ stood out in this excellent field.

For aggressive stock removal, grab a right-angle sander. Although these machines are capable of fine results, I would tackle their significant size, power, and price tag only for heavy-duty work. Among these tools, I preferred the Bosch 1250DEVS.

Whichever sander you choose, team it up with a high-quality tool-actuated vacuum. It can improve a wearisome job dramatically. □

Andy Beasley works on his house near Hillside, Colo. Photos by Joseph Kugielsky, except where noted.