

Shop Vacs

Only the best vacuums can handle both fine dust and heavy pickup

BY PAUL JOHNSON

In the past several years, the lowly shop vac has transformed from the dull canister brought in to clean the floors after a day of work to an essential, often high-tech tool found on job sites and in shops. An increased understanding of the health benefits of keeping dust out of the air helped to spark this transformation. Nowadays, most tools are designed with dust ports to connect to vacuums, and adapters are commonplace for retrofitting older tools. Features such as tool activation and self-cleaning filters





HOW WE TESTED

We devised a set of tests and real-world situations to get a broad range of results. We didn't shy away from putting all eight vacs through some strenuous ordeals to see how well they would hold up.

All the vacuums tested have optional filter bags that can help to increase efficiency and to keep dust from getting back into the air, even when emptying the tank. It seemed important to test the vacuums both with and without these optional bags. In general, the bags barely cut down on suction power, and all of them increased efficiency by keeping the filters from becoming covered with dust—even on the vacuums with a self-cleaning filter system.

Aside from the Shop-Vac and Ridgid models, the vacuums had to be adapted up or down to fit the standard 2½-in. and 1¼-in. accessories and tool inlets/outlets that have been standard in the past. Except when vacuuming the floor with a standard 2½-in. hose and attachments, I used the hose that came with each vacuum to test suction and versatility as the manufacturer designed it.



Eating concrete

We began by using each machine to suck up entire 60-lb. bags of concrete mix, both with and without an optional filter bag. This showed us how quickly the filters clog with fine, abrasive concrete dust, and how the vacuums perform under that kind of weight and strain.



Digesting dust

The next test was vacuuming up 25-lb. bags of powdered drywall compound, again with and without filter bags, to see if the filters would clog, whether any particulate would make it past the filters, and how well the vacuums would function after the filters were completely clogged.



Chewing nails

Finally, we combined fine sawdust and planer shavings with various sizes of nails and screws, from 3d box nails up to 12d framing nails, to see how well the vacuums would work in general job-site and shop conditions when confronted with piles of "normal" debris.

GOOD

Ridgid 1m49s	Ridgid 1m00s	Milwaukee Sucked up all the nails
Festool 2m05s	Makita 1m32s	Makita, Ridgid Sucked the small nails into the tank and the big nails into the hose
Bosch 2m22s	Milwaukee 1m40s	
Makita 2m44s	Fein 1m45s	Bosch, Fein, Festool Sucked the small nails into the tank and a few big nails into the hose
Milwaukee 2m48s	DeWalt 1m50s	
DeWalt 4m30s	Shop-Vac 1m52s	DeWalt Sucked a few small nails into the tank
Fein 4m52s	Bosch 1m57s	
Shop-Vac 7m00s	Festool 2m38s	Shop-Vac Sucked a few small nails into the hose

NOT SO GOOD



Cleans while you work. Available on a few of the top-brand vacs, self-cleaning filters mean the difference between poor suction from caked filters (left) and suction that stays strong.



FOCUS ON FILTERS

EVEN IF THEY DON'T COME STANDARD, most vacuums now accommodate aftermarket HEPA filters. In order to support best practices (and to help level the playing field), we installed HEPA filters on all the vacs for this test. Note, however, that under its Renovation, Repair, and Painting (RRP) rule for lead-paint removal, the EPA mandates certain types of vacs and the way they are to be used. Just installing a HEPA filter doesn't cut it; the vacuum must be sealed so that dust won't pass outside the device and back into the air. Vacuums in this review that conform to the EPA's RRP rule are listed as such.

In recent years, the biggest innovation in shop vacs has been centered around

EPA compliance and self-cleaning filters. Sealing vacuums to meet the stringent EPA guidelines has helped to push vacuum makers to increase the efficacy and efficiency of their models, as has the advent of self-cleaning filters.

Keeping the filter clean is critical to the performance of a shop vac. For cleaning, most shop-vac filters are knocked against a hard surface to get most of the dust out, washed with water, or blown with compressed air. When a filter isn't kept clean, the vacuum can lose suction; more important, its motor can wear out prematurely from being forced to work extra hard. In addition to manual cleaning and self-cleaning filters, most manufacturers

offer filter bags that help to contain debris and also to keep the main filter clean. These bags are designed so that the efficiency and performance of the vacuum and the main filter aren't compromised.

Manufacturers are using a few different methods for self-cleaning. DeWalt and Makita, for example, have a system in which air is periodically diverted and blown back over or through the filter. Bosch uses an electromagnetic pulse that shakes the filter and loosens dust and debris. Festool has eschewed self-cleaning-filter technology in exchange for a self-cleaning filter bag that expands and collapses to loosen any particles coating the inside of the bag, thus increasing suction performance.

are becoming more common and have greatly increased the versatility of the traditional shop vac.

How we chose

There are a host of shop vacuums on the market, so choosing which to review was a challenge. Rather than focusing on any specific size or feature, we wanted to identify vacuums that would work well for general job-site and shop use. Beyond that, we looked at cost, avail-

ability, capacity, features, and functionality. In the end, we chose eight vacs that met our criteria and that we felt would be the most versatile.

All of these models can be fitted with HEPA filters if they don't already come with them, and all can be fitted with disposable filter bags. Likewise, all are on wheels and can be lifted or pulled around easily. The hoses range in length from 7 ft. all the way up to 16 ft.; the longer hoses are especially useful when used with Sanders or other tools that need a wide range of motion. All of the vacuums tested have



BOSCH 3931A-PBH

Price: \$600

Capacity: 13.3 gal.

Weight: 42 lb.

Noise level: 69 db.

EPA compliant: Yes

HEPA filter included: Yes

Filter cleaning: Yes

FEATURES Although the front wheels on this model get snagged occasionally, the larger rear wheels and rear handle make it easy to tip up the front end to roll the vac over cords and debris. This vacuum's Pulse-Clean system, which automatically triggers at periodic intervals to shake dust off the filter, restores almost full suction after about 10 seconds of self-cleaning. Should the filters need to be removed for further cleaning, they're accessible from the outside of the vac—a fantastic design. When used with an optional filter bag, the main filters stay very clean, and the shape of the body allows even fully filled bags to be removed easily.

FLAWS The low, wide, and heavy stature of this vac makes it hard to carry, and the lack of handholds on the body combined with the long rear handle make emptying the tank a feat unto itself. The latches that hold the top on the body felt very flimsy, and the hose gave me some pretty nasty shocks. The noise of the Pulse-Clean filter system on this vac is pretty alarming, especially in contrast to the normally quiet operation of the tool. The filters are contained in a hard plastic housing, which actually makes them harder to tap clean for fear of breaking the plastic. Also, at \$150 for a replacement set, you'll want to keep them in good shape.

BOTTOM LINE Squat, stable, and sturdy, this is a great vac, especially for shop-based work.



DeWALT DWV012

Price: \$529

Capacity: 10 gal.

Weight: 34 lb.

Noise level: 73 db.

EPA compliant: Yes

HEPA filter included: Yes

Filter cleaning: Yes

FEATURES This vac is built for portability and ease of use. Handles on the front, top, and rear, as well as the telescoping luggage-style rear handle, make this model easy to roll, pick up, and empty. With locking front casters, the vac's large wheels move well over obstacles and up and down stairs. The front suction-power dials and tool plug are easily accessible, and this vac has the best cord wrap and hose wrap of the group. The self-cleaning filter system works by periodically blowing air over the filters. This is similar to the Makita system, except that it doesn't change the set speed that's currently dialed in when the self-cleaning feature kicks on, which is preferable.

FLAWS In contrast to this vac's stellar exterior details, the guts are lacking. It lagged heavily in the speed testing, and using a filter bag decreased efficiency by a good 15%. Also, the internal design of the body means the bag can fill only about halfway before it butts up against the filters. The locking mechanism on the end of the hose is so bulky that it's hard to get adapters into place, a problem when attaching tools and accessories. Finally, even though the hose locks into place, the connection is loose enough that you actually can hear the resulting loss of suction.

BOTTOM LINE This vac has a spectacular fit and finish, but its good looks can't save it from coming up short on power and versatility.



FEIN TURBO II (9-20-25)

Price: \$560

Capacity: 15 gal.

Weight: 36 lb.

Noise level: 60 db.

EPA compliant: Yes

HEPA filter included: Yes

Filter cleaning: No

FEATURES This is a very quiet, no-nonsense vacuum with a small stature that belies its midsize capacity. Even though it's only 1¼ in. dia., the 16-ft.-long hose is the best of the bunch, sliding easily over every surface without getting caught. When used as part of a tool-activated setup, this vac was able to keep a significant amount of fine dust out of the air. There also was only a small amount of air exhausted from the rear of the vacuum, which helped to keep existing dust from being blown around the job site.

FLAWS I found that this vac's filter clogged quickly compared to the other HEPA filters in this test, which gave it a significant handicap in my timed vacuuming tests. Even when used with a filter bag, the Fein took almost twice as long as the Festool (the fastest of the bunch) to perform the same task. Although Fein recently added a couple of extra wheels to its vacuum design, the wheels are still small and also get caught up in cords, hoses, and debris. The lack of a cord or hose wrap also made this a frustrating vacuum to transport between job sites.

BOTTOM LINE The Turbo II is quiet, rugged, and well made, and if the one that I already own is any indication, it will run for years and years with no problems. That said, this vac lacks the user-friendly features that you won't know you're missing until you try one of its newer competitors.



MAKITA VC4710

Price: \$530 **Capacity:** 12 gal. **Weight:** 27 lb. **Noise level:** 59 db.
EPA compliant: Yes **HEPA filter included:** Yes **Filter cleaning:** Yes

FEATURES Judging from the advertising, the Xtract Vac is meant to be used with many of Makita's concrete tools; as such, it needs to be able to work well in extreme conditions. Sure enough, the vac easily handled concrete, drywall mix, sawdust, and other debris during my tests. I periodically checked the filters during testing and was pleased to find that the self-cleaning action—which kicks on every 15 to 20 seconds—does a great job of keeping the filters clear and the suction high. The front wheels are prone to snags, but this vac is light and easy to lift when necessary. It's also stable, despite its relatively tall, narrow shape. Filter bags were easy to remove, even when filled with 60 lb. of concrete. It's a minor detail, but I appreciate that this vac came with a cuff adapter to connect my tools and other accessories right out of the gate.

FLAWS There are a few things I don't like about this vac. The first is the noise and operation of the filter-cleaning function. No matter what speed the vacuum is set at, it ramps back up to full speed for a number of seconds to reverse the airflow over the filters. Plus, the noise of the airflow sounds like a tennis ball being sucked up and whacked into the vacuum. That's a bit unnerving when you're using a tablesaw or other tool that requires focused attention. Also, the water-level sensor hangs down from the motor inside the body of the vacuum and, invariably, got caught every time I tried to put the top back on after emptying the container.

BOTTOM LINE This vac performed toward the top of all the tests and was versatile enough to be used in any situation I could place it in. Even though it's not as powerful as the Festool, its versatility and ease of use, along with its self-cleaning filter features, made it my choice for best overall.

RIDGID WD1450

Price: \$125 **Capacity:** 14 gal. **Weight:** 27 lb. **Noise level:** 90 db.
EPA compliant: No **HEPA filter included:** No **Filter cleaning:** No

FEATURES Primarily geared toward cleanup rather than connecting to tools, this is one of only two vacuums in the test that includes wands and accessories but has no tool-activated mode. The vacuum powered through all the tests without losing much suction, but a few shakes were necessary to keep heavier debris from settling in the larger-diameter hose. The canister of the vac incorporates handholds to help with tipping and emptying the contents, a feature I'm surprised to find lacking on many other models.

FLAWS Although pleasantly throaty, this vacuum can't be called quiet when compared to the other models tested. Its relatively short 7-ft. hose made it necessary to drag the vacuum around—not so easy considering that the small casters got caught up on even the smallest debris. I also got static shocks from the hose, especially when collecting large quantities of material. The powerful exhaust on the vacuum is useful as a blower when needed, but otherwise, it's an annoying drawback when dust and loose materials are in the room. A warning: The first use after cleaning the filter on this vac will give you a burst of residual dust.

BOTTOM LINE This inexpensive tool held up surprisingly well against the more expensive vacs I tested. Fitted with a HEPA filter, it's a solid choice for all-around cleanup.



power cords at least 15 ft. long, a welcome change from the standard short power cords of yesteryear.

All but two of the vacuums are tool-activated; we included two that aren't because they're economical choices and still can be attached to most tools and turned on separately. We chose vacuums that were as close in capacity as possible, in the medium-to-large range.

We also considered availability and cost. There are several brands of worthy shop vacs that could have been included in this review, but

ordering the vacs themselves, let alone finding parts or accessories, was often restricted to specialty shops and online outlets. Regarding cost: While there are some excellent vacs on the market that cost over \$1000, we decided to stay under \$700 or so—not an outrageous price for a well-made tool that is used nearly every day. □

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Photos by Nina Johnson.



FESTOOL CT-36

Price: \$645

Capacity: 9.5 gal.

Weight: 30 lb.

Noise level: 71 db.

EPA compliant: Yes

HEPA filter included: Yes

Filter cleaning: No (available on non-HEPA model CT-36A)

FEATURES The Festool is considered by some to be the ultimate shop vac. Its size and shape make it next to impossible to tip over, and its top is easily used as a work surface or for storage of tools and accessories. The large wheels roll over cords and job-site debris better than those on any of the other vacuums tested. With an optional filter bag installed, almost no dust ever reaches the main filter, and the vacuum can power through any task, either tool-activated or manual. The design includes a great cord wrap and hose storage.

FLAWS Unlike earlier versions of this vac, this model has no way to clean the filter without opening the whole unit and removing the filter to shake it out. When vacuuming a mix of fine and heavy debris (concrete mix, for instance) the debris helped to keep the filter unclogged by knocking against it. Unless you use a bag when collecting fine dust, though, the filter fills quickly and loses a lot of suction. The 1¼-in.-dia. hose seemed to get snagged more often than the hoses of the other vacs I tested, and it clogged when vacuuming planer shavings, nails, and other heavier debris. A larger hose is available and works well, but it costs an additional \$150.

BOTTOM LINE If this vac didn't require a bag to maintain adequate suction, I would pick it as my top choice. Aside from that, the quality and functionality of this tool are without equal.



MILWAUKEE 8936-20

Price: \$285

Capacity: 7.5 gal.

Weight: 21 lb.

Noise level: 75 db.

EPA compliant: No

HEPA filter included: No

Filter cleaning: No

FEATURES This little machine has some guts. It didn't slow down while vacuuming up the concrete mix, it still had decent suction after vacuuming up a whole bag of drywall mix, and it's the only model I tested that sucked up all the 12d framing nails. While the shorter hose made it awkward to use this as a tool-activated vacuum, the Milwaukee did an admirable job of keeping most dust out of the air, and adding a filter bag increased that efficiency slightly. I appreciated this vac's small body every time I went up and down stairs or through doorways, and when I needed to empty the canister.

FLAWS Like the Ridgid, the Milwaukee has a powerful rear exhaust, but it forces the air in two directions rather than one, making it even harder to keep dust and debris from blowing around. I received a few static shocks when vacuuming up large quantities of debris that were strong enough to cause me to hold the hose with my sleeve instead of my bare hand. The tapered body of the vacuum made removing filter bags difficult, at least without tearing them. Its small wheels and narrow body mean that the Milwaukee is the tippiest of the contenders; I resorted to carrying it rather than rolling it.

BOTTOM LINE Although its size, shape, and hose length will limit its use in high-demand situations, this is a competent little vac for its cost and size.



SHOP-VAC 966-16-11

Price: \$120

Capacity: 16 gal.

Weight: N/L

Noise level: N/L

EPA compliant: No

HEPA filter included: No

Filter cleaning: No

FEATURES This vac has the largest capacity of the bunch, and its 2½-in.-dia. hose just about eliminates any worry of clogs. When the machine was vacuuming up fine dust, its optional filter bags more than doubled its efficiency. A generous 20-ft. cord gives the vac a great working range, and the large amount of onboard storage includes room for the wands and accessories that come with the vacuum.

FLAWS Unfortunately, this vac has more cons than pros. At the bottom of the heap in testing, it took a staggering 7 minutes to vacuum up a 60-lb. bag of concrete mix, and several minutes to suck up a bag of drywall mix. This doesn't include the time it took to stop and shake the hose to unclog the dust and debris that built up inside during use. Even with a clean filter installed, this vac couldn't pick up any of the nails directly into the tank; they had to be shaken down from where they had collected in the hose.

BOTTOM LINE Louder and bulkier than any of the other vacuums in the review, and with less suction power, the Shop-Vac might do in a pinch or where you wouldn't want to bring another vacuum. For just a few dollars more, however, the Ridgid outperforms it by a wide margin.