

What's the BEST IMPACT DRIVER?

FEATURES

Chuck Instead of the three-jaw chucks found on drill/drivers, impact drivers have spring-loaded hex chucks. They're faster to operate and more compact, but only work with hex-shank driver bits and drill bits. On some models, it's necessary to pull a ring to install or release bits, but the DeWalt, Hilti, Milwaukee, Makita, Porter-Cable, Ridgid, and Ryobi models can be loaded one-handed by pushing bits in without pulling the ring—a welcome convenience.



Ten brushless impact drivers put through their paces

BY DAVID FRANE

Few power tools have risen so far so fast as the cordless impact driver. A once obscure tool that's now an indispensable part of most tool kits, impact drivers sink screws, tighten bolts, and, with the right bits, drill holes. For this article, I tested 10 impact drivers: eight 18v models and two 21.6v models. I included the higher-voltage tools because they are roughly the same size and price as the 18v models, differing only in the number of cells inside their battery packs. All of the drivers have brushless motors, which boost runtime and allow for a more compact design. I found that all the tools I tested can sink ordinary screws, but the best performers can drive large lags and structural screws quickly. The better tools are also smaller and lighter, so they can fit in tight spaces and result in less user fatigue.

How I tested

I used these tools during a remodeling project and ran them through a series of tests to gauge speed and power. Tests were performed in the knot-free portions of a dense Douglas-fir beam. I didn't time-test short fasteners such as drywall screws because they drive too quickly to test with a stopwatch, and in everyday use I was unable to detect any difference in speed. The shortest fasteners I time-tested were #10 by 3-in. star-drive deck screws. After that, I drove 3/8-in. by 3-in. lags. In the final test, I drove 10-in. Timberlok structural screws. With all timed tests, I used fully charged high-

capacity batteries, driving seven screws with each tool, throwing out the high and low numbers and averaging the rest.

I chose not to measure run time, because with modern batteries and brushless motors it's easy to charge depleted batteries before a second battery is dead. I also didn't measure loudness with a decibel meter, because to my ear all these tools generated about the same level of noise.

Top picks

The DeWalt, Hitachi, Makita, and Milwaukee impact drivers were at or near the top of every driving test, and you can't go wrong with any of those tools. I give the Best Overall rating to the Hitachi: it's small, light, and impressively powerful. The other three are a very close second; they perform nearly as well as the Hitachi, and they come from cordless systems with a larger range of pro-accepted tools.

For those on tight budgets, the Best Value winner is the Ridgid. In the middle of the pack in terms of performance, it's part of a system that offers high-capacity batteries and most other cordless tools a contractor or serious DIYer would want to own. □

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Lights Each tool has one or more LED lights that come on when you squeeze the trigger—a handy feature when working inside cabinets or in poorly lit work areas. The placement of the lights varies; they are either mounted in the base, just above the trigger, or around the nose. Nose-mounted lights are best because if one is obstructed, there are two or three more to illuminate the work. It's possible to turn off the lights on some of these tools, though there's rarely an advantage to doing so.

AT A GLANCE

Torque The distinctive sound and action of an impact driver come from the hammers and anvils (usually a pair of each) that replace the gears and clutch found in a drill/driver. The hammers strike the anvils thousands of times per minute, converting the continuous torque of the motor to an intermittent rotational force that exerts more power than a drill and eliminates wrist-wrenching kickback.

Power Manufacturers often tout rpm and ipm (impacts per minute) specs, but I find them largely irrelevant. For intermittent use or when driving smaller screws, it hardly matters which impact driver you use; they can all do the job. The differences start to appear when driving lag and structural screws. I think it makes sense to pay more attention to size, weight, and speed-test rankings. How fast these tools can drive fasteners is the best gauge of performance.

Power mode All but one of the tools have multiple modes of operation, combinations of rpm and ipm that produce the necessary torque for light, medium, and heavy-duty fastening. The lowest torque modes are used to install and remove small, easily stripped fasteners. A few models also have modes for driving self-tapping sheet-metal screws. In this mode, the motor starts fast and then slows when the screw pierces the metal to prevent stripping.

Battery packs Manufacturers offer high-capacity and compact battery packs. The larger packs tested are all 4.0 amp/hr (Ah) or greater; the small packs are all 3.0 Ah or less. The Ah rating is determined by the energy density of the cells in the pack and the way they are wired. 18v compact packs have five 3.6v cells wired end to end in series ($5 \times 3.6v = 18v$). High-capacity packs have two series of five cells wired to each other in parallel. This doubles the Ah rating while retaining the 18v output. (If the same 10 cells were wired in series, it would result in a 36v pack, but without increasing the Ah rating). The Hilti and Kobalt tools are 21.6v models, with one extra 3.6v cell per compact pack and two extra per high-capacity pack. The size difference between these and the 18v packs is minimal.

Connectivity DeWalt and Milwaukee offer Bluetooth tools and packs for connecting to phone apps. DeWalt's is called Tool Connect and Milwaukee's is One-Key. These systems can be used to customize operating modes, perform diagnostics, track location, and prevent unauthorized use—helpful features for tool cribs and industrial users, but less so for ordinary users.

For a members-only Tool Tech video review of these impact drivers, visit FineHomebuilding.com/ToolTech.



TEN TOOLS

**BEST
OVERALL**



HITACHI WH18DBDL2

Weight: w/ battery (high-capacity/compact): 3.5 lb./2.9 lb.

Length: 5.0 in.

Modes: 3 speed/power ranges + self-drilling-screw mode

RPM: 0-900/2900

IPM: 0-4000

Chuck: standard

Price: kit w/ two 3.0-Ah batteries: \$360; one 6.0-Ah battery: \$140; bare tool: \$200

A close second when it comes to the smallest and lightest impact driver, this feature-packed tool is surprisingly powerful, finishing near the top of every driving test. It has three hammers and anvils instead of the usual two, which may account for its speed and notably smooth operation. There are four modes—three speed/power ranges plus one for self-drilling metal screws—and the kit contains 3.0-Ah compact batteries, which is a lot of juice for packs of that size. The redesigned charger has a USB port, which I like for keeping my phone charged. The only way this tool could be better is if it had a one-handed chuck and LEDs on the nose instead of over the trigger.



BOSCH IDH182

Weight: w/ battery (high-capacity/compact): 3.8 lb./3.2 lb. **Length:** 6.3 in.

Modes: 3 speed/power ranges **RPM:** 0-1300/2000/2800 **IPM:** 0-3200

Chuck: standard **Price:** kit w/ two 4.0-Ah batteries: \$300; kit w/ two 2.0-Ah batteries: \$260; Bare tool: \$160

The IDH182 has a slim, comfortable grip and an unusual chuck that takes 1/2-in. sockets as well as standard hex bits. The convenience of the socket connector is partially offset by the tool's relative lack of power; it came in at or near the bottom of every timed test. One of the longer-length tools I tested, it vibrates less than average when driving lags and other large fasteners. The three LEDs at the nose project forward and a bit to the sides, so they provide good illumination in dark work areas.

DEWALT DCF888

Weight: w/ battery (high-capacity/compact): 3.5 lb./3.0 lb.

Length: 5.3 in. **Modes:** 3 speed/power ranges **RPM:** 0-1000/2800/3250 **IPM:** 0-3800

Chuck: one-handed **Price:** kit w/ two 5.0-Ah batteries: \$315; kit w/ two 2.0-Ah batteries: \$220; bare tool: \$150

The DCF888 performed at or near the top of every timed driving test, with average vibration under heavy load. This tool and the batteries it comes with are equipped with Tool Connect, which uses Bluetooth and a phone app to customize driving modes, provide diagnostics, and enable or disable tools and batteries to prevent unauthorized use (a nearly identical model—DCF887—is available without Tool Connect). The DCF888 is an 18v tool and can be used with any DeWalt 20V Max battery. It has a comfortable grip and is light and compact. The three LEDs at the nose provide better-than-average illumination.



HILTI SID 4-A22

Weight: w/ battery (high-capacity/compact): 3.9 lb./3.2 lb. **Length:** 5.8 in.

Modes: 3 speed/power ranges **RPM:** 0-1000/1500/2700 **IPM:** 0-3500

Chuck: one-handed **Price:** kit w/ 5.2-Ah batteries: \$370; kit w/ two 2.6-Ah batteries: \$290; bare tool: \$160

This tool is a 21.6v model because the batteries contain one or two extra cells. Still, it's about the same size as the 18v models it's intended to compete with. Driving speed is about average and vibration is less than average during heavy driving. The housing is sleek, smooth, and comfortable to grip. Though the battery fit was tight at first, it loosened up with time. The four LEDs surrounding the nose provide excellent illumination. The 2.6-Ah compact packs and 5.2-Ah high-capacity packs that come with the kits are among the highest-capacity batteries included in a kit.

KOBALT KID 324B-03

Weight: w/ battery (high-capacity/compact): 4.3 lb./3.6 lb. **Length:** 5.6 in.

Modes: 3 speed/power ranges + intermittent mode for delicate work

RPM: 0-850/2000/2700 **IPM:** 0-3500 **Chuck:** standard

Price: kit w/ one 2.0-Ah battery: \$190; one 5.0-Ah battery: \$80; not available as bare tool

The Kobalt drives lags and long structural screws surprisingly fast for such an inexpensive tool. Vibration and driving speed for 3-in. deck screws is about average. Referred to as 24v Max, this is a 21.6v model, with 6 or 12 cells per battery pack instead of the usual 5 or 10. The LED above the trigger projects a narrower beam than most. The most unusual feature is the finish mode, which causes the motor to spin for an instant each time you squeeze the trigger—a handy feature for bringing fasteners just flush. Kobalt's greatest shortcoming is the limited number of tools in their battery platform.



TO CONSIDER



MAKITA XDT12

Weight: w/ battery (high-capacity/compact): 3.4 lb./2.8 lb. **Length:** 4.6 in.

Modes: 3 speed/power ranges + self-drilling-screw mode + assist mode

RPM: 0-1100/2100/3200/3600 **IPM:** 0-3800 **Chuck:** one-handed

Price: kit w/ two 5.0-Ah batteries: \$350; kit w/ two 2.0-Ah batteries: \$310; bare tool: \$160

The smallest, lightest tool I tested, the XDT12 came in close to the top in the driving tests for deck screws and lags. This feature-packed impact driver has five drilling modes: three speed/power ranges, a mode for self-drilling metal screws, and an assist mode for added control when driving fasteners in wood. In assist mode, the bit spins slowly at first and speeds up as the tool begins to impact. It has a slim, comfortable grip and produces little vibration under heavy load. The LED is above the trigger, and the nose of the tool glows in the dark—presumably so you can find it in dim workspaces. The feature proved useful for finding the tool in a dark attic.

MILWAUKEE 2753

Weight: w/ battery (high-capacity/compact): 3.8 lb./3.2 lb. **Length:** 5.3 in.

Modes: 3 speed/power ranges + self-drilling-screw mode

RPM: 0-850/2100/3000 **IPM:** 0-3700 **Chuck:** one-handed

Price: kit w/ two 5.0-Ah batteries: \$300; kit w/ two 2.0-Ah batteries: \$230; bare tool: \$130

This impact driver performed at or near the top of all driving tests and ran smoothly under heavy load. Lighter and shorter than average, it has a sleek housing, comfortable midsize grip, and an LED light above the trigger. In addition to the three speed/power modes, it includes a mode for driving self-drilling screws in metal. The tool is mechanically identical to Milwaukee's model 2757 (\$180 bare tool), which has the One-Key feature and uses Bluetooth and a smartphone app to customize functions, perform diagnostics, and track the location of the tool.



PORTER-CABLE PCC647

Weight: w/ battery (high-capacity/compact): 3.6 lb./3.0 lb. **Length:** 5.8 in.

Modes: 1 speed/power range **RPM:** 0-2700 **IPM:** 0-3100 **Chuck:** one-handed

Price: kit w/ two 1.5-Ah batteries: \$119; two 4.0-Ah batteries: \$115; not available as bare tool

This is the least capable tool I tested; it could not drive 10-in. Timberloks and performed at or near the bottom of the less arduous tests. It has a single-speed range and vibrates more than average under heavy load. The best available battery is rated 4.0 Ah and it relies on a charger that consists of an AC adapter that connects to the battery by cord. It's not very powerful, so charging is slow. The only reason to recommend this tool is the very low price; it's clearly not aimed at pros.

RYOBI P238

Weight: w/ battery (high-capacity/compact): 4.3 lb./3.7 lb. **Length:** 6.4 in.

Modes: 3 speed/power ranges **RPM:** 0-1050/2200/3200 **IPM:** 0-4000 **Chuck:** one-handed

Price: bare tool: \$100; charger: \$40; two 4.0-Ah batteries: \$100; two 1.5-Ah batteries: \$70

This budget model drives with average speed and vibrates more than most under heavy load. Heavier than average, it's the longest tool I tested. The three speed/power ranges are controlled by a mechanical switch instead of the electronic toggles found on pricier models. The tool has a comfortable grip, a magnetic screw/bit holder on the base, and three LED lights on the nose. Ryobi's batteries have less capacity than those of most of the competitors, topping out at 4.0 Ah for high-capacity and 1.5 Ah for compact. Part of the company's extensive One+ line (with over 100 tools), it is only available as a bare tool.



RIDGID R86037

Weight: w/ battery (high-capacity/compact): 4.2 lb./3.5 lb.

Length: 5.8 in.

Modes: 3 speed/power ranges

RPM: 0-750/2000/2750

IPM: 0-3500

Chuck: one-handed

Price: bare tool \$120; charger: \$50; two 2.0-Ah batteries: \$80; two 5.0-Ah batteries: \$130

The R86037 drives deck screws and lags with average speed, but vibrates noticeably under heavy load. It's heavier than most other models and slightly longer than average. The three LEDs on the nose provide good illumination and can be turned on by trigger or by using a separate switch on the grip. The speed/power ranges are controlled by a mechanical switch on the top of the motor. This is the best of the "budget" models; what sets it apart is Ridgid's battery platform, which offers high-capacity batteries and most of the 18v tools a contractor might want to own.