

# Yes, You Need a Cordless Impact Driver

There is no debate. These compact, high-torque tools leave cordless drills in the dust for most any drilling or driving application.

BY MICHAEL MAINES

I picked up my first cordless impact driver a few years ago. I had gotten into the habit of using two cordless drills for many carpentry and cabinetry tasks: one to drill, one to drive. For reasons that escape me now—maybe the batteries had died, maybe a friend had borrowed my drills—I grabbed a coworker’s 18v DeWalt impact driver. It seemed awfully small even with the large battery hanging off the handle. As I recall, the task involved driving a bunch of 3-in. screws into framing lumber, and I didn’t see how that little drill would be up to the job. But when the impact mechanism kicked in, the screws melted into the wood like a hot knife into butter.

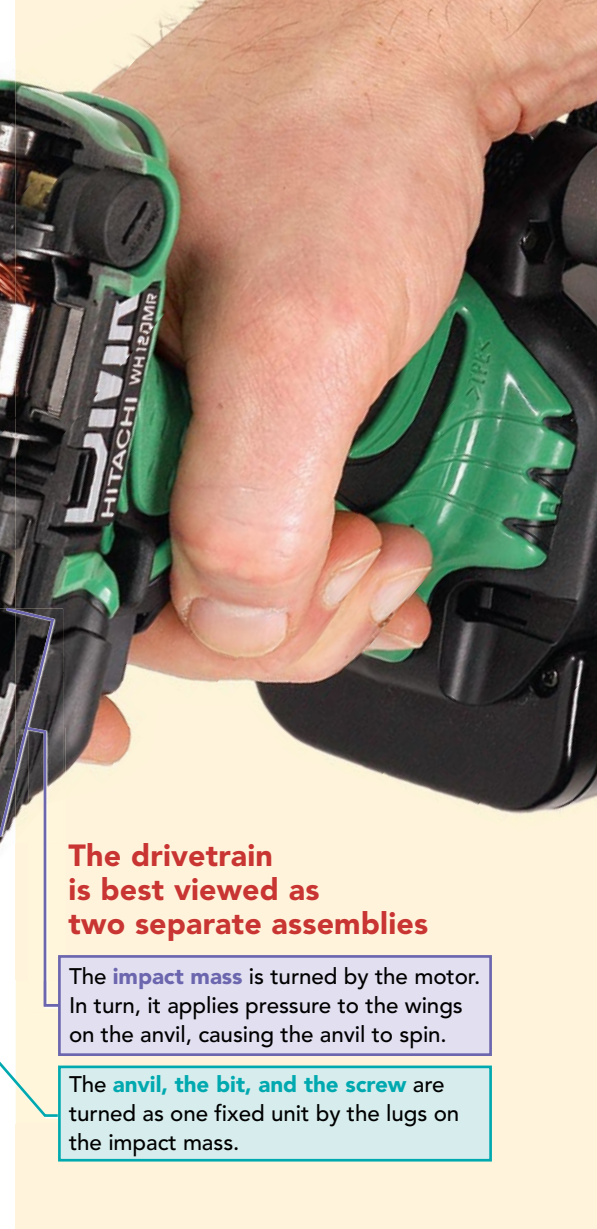
I’ve worked with several other impact drivers since then, and I spent a considerable amount of time trying out a broad sampling of drivers for this guide. All the impact driv-

ers I’ve worked with blow ordinary drills away from a performance standpoint, but there are key features that set great drivers apart from good ones.

## These drivers aren’t ordinary, although they can be

An impact driver allows you to apply a far greater amount of torque to a fastener or drill bit than any cordless drill-driver of any size. To achieve such a surge in twisting power, an impact driver uses a fairly complex mechanical system that operates on relatively basic principles (drawings, facing page).

The benefits of an impact driver’s mechanical design are significant, which is evident when on the job. A standard 18v lithium-ion drill-driver produces roughly 450 in.-lb. of torque. An impact driver powered by a comparable battery produces roughly 1400 in.-lb.



The drivetrain is best viewed as two separate assemblies

The impact mass is turned by the motor. In turn, it applies pressure to the wings on the anvil, causing the anvil to spin.

The anvil, the bit, and the screw are turned as one fixed unit by the lugs on the impact mass.

of torque. That translates into faster drilling and driving times with far less effort.

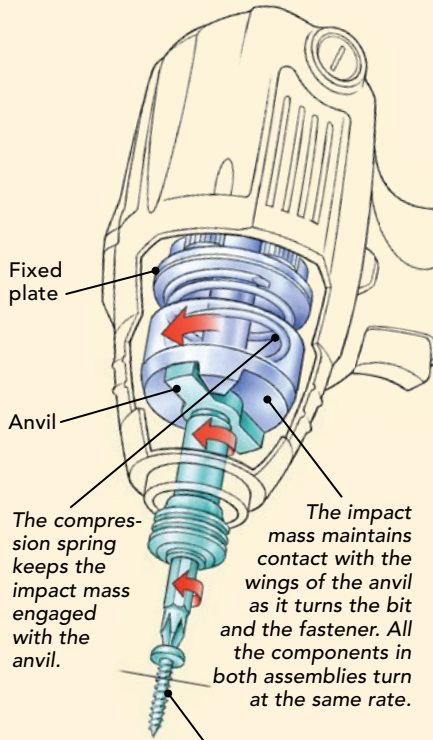
## A tool for general and specialty use

I use an impact driver in just about every task where I previously used a drill-driver and in many tasks where I used a socket wrench.

Because of their torque-to-size ratio, impact drivers are particularly handy for jobs that require great amounts of power in areas of limited space or accessibility. Installing lag screws through a ledger board, for instance, is a breeze, and if you have a drill bit with a hex shank and ball detent, you can drill pilot holes for the lag screws in no time. This is a good idea—not because the driver will bog down while driving the bolt, but because you’ll decrease the chances of snapping the shank of your socket adapter (sidebar, facing page). The increased torque of even the

## Light-duty work keeps moving parts in constant contact

In applications that don't demand a lot of power, like installing a switch plate, the impact mass easily turns the anvil-to-screw assembly. The driver behaves much like an ordinary drill-driver.

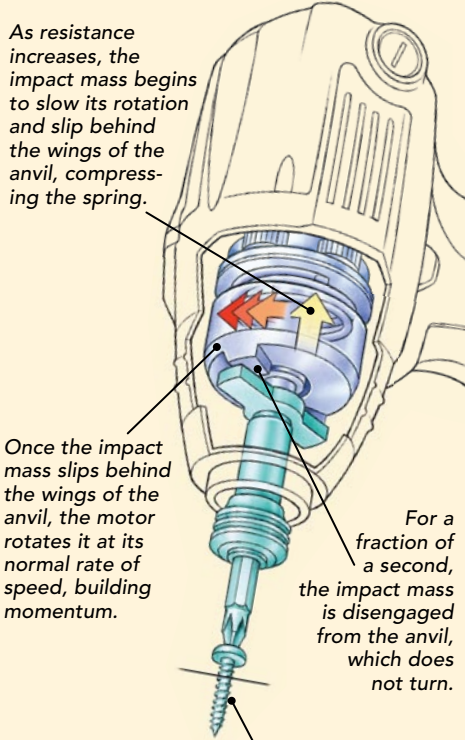


Screws rotate easily when driven into soft materials or pilot holes.

## Dense material causes rotational resistance

When screwing or drilling into material like hardwood decking or concrete, screws want to stop rotating, while a driver's motor wants to keep turning the impact mass.

As resistance increases, the impact mass begins to slow its rotation and slip behind the wings of the anvil, compressing the spring.



The increased resistance of hard or dense materials triggers the impact mechanism.

## Impact increases torque

The increased torque of an impact driver comes from a series of blows by the impact mass against the wings of the anvil. The hammering action takes place at roughly 50 impacts per second to amplify torque.

When the lugs of the impact mass clear the wings of the anvil, the compression spring decompresses, forcing the impact mass to engage the anvil.

For a split second, the impact mass spins freely while engaged with the anvil until it comes in contact with its wings.

Lugs on the impact mass hammer the wings of the anvil, causing it to turn.

The screw turns in a pulsing manner with each blow by the impact mass. To the user, it feels like the screw is turning seamlessly.

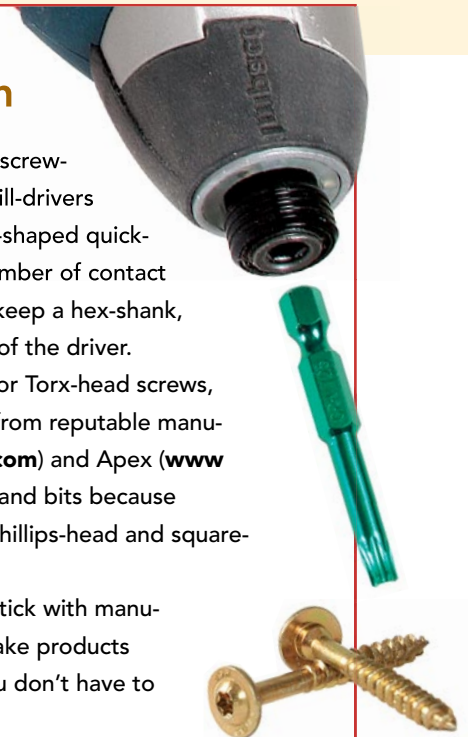


## Beef up your bit and screw selection

Impact drivers place a lot more stress on drill and screw-driver bits, fasteners, and socket adapters than drill-drivers do. Most cordless impact drivers have a 1/4-in. hex-shaped quick-release chuck. This style of chuck has a greater number of contact points than a standard drill chuck, which helps to keep a hex-shank, ball-detent bit in place under the extreme torque of the driver.

When I have a choice of fasteners, I always opt for Torx-head screws, also known as star head, and hardened-steel bits from reputable manufacturers like GRK Fasteners ([www.grkfasteners.com](http://www.grkfasteners.com)) and Apex ([www.cooperpowertools.com](http://www.cooperpowertools.com)). I like Torx-head screws and bits because there's far less cam-out than you encounter with Phillips-head and square-drive products.

When selecting socket adapters and drill bits, I stick with manufacturers like DeWalt ([www.dewalt.com](http://www.dewalt.com)). They make products specifically designed for impact drivers so that you don't have to worry about shanks shearing off, as shown above.



smallest of these tools allows them to power through the hardest materials, whether it's driving self-tapping screws through sill plates into concrete, installing hardwood and synthetic decking, or using spade bits to drill big holes through treated lumber.

These tools also have a gentler side and can be used for interior work as well, just as long as there are no sleeping babies around. One of the few drawbacks of an impact driver is that it's much louder than a standard drill.

The impact action of the driver engages under only a certain amount of resistance, so for lighter-duty work like installing switch plates and drawer slides or assembling cabinets, an impact driver works perfectly well.

## Size and power affect versatility

For a few months, I used more than a dozen different drivers in a wide range of drilling

## SIX STANDOUT DRIVERS

Determining which driver is best depends on the jobs you do most often and the features you find most valuable. I tested more than a dozen drivers that represent what's available on the market in terms of power, size, and features. The six drivers featured here are the ones that stood above the rest.

and driving tasks. So did the four guys on my crew. We were all eager to work with the new lithium-ion-powered models, having heard the hype about them for some time. We weren't disappointed. Long run-times and boatloads of power harnessed in light-weight batteries pay dividends in the overall comfort and performance of each tool.

While lithium-ion technology makes it possible to pack substantial power into a compact, lightweight battery pack, we noticed that the smaller 18v Makita (model BTD142HW) didn't absorb nearly as much vibration as its bigger brother, the BTD141, or other larger drivers. It's worth noting, though, that the BTD141 was the only midsize driver with a noticeably shorter run-time.

What's even more important than the size of the battery is its power capacity. For most carpentry tasks, a 12v, 14.4v, or compact 18v impact driver works great. These drivers are powerful, but small enough to carry around without weighing you down.

The larger 18v drivers from Milwaukee and Ryobi as well as the big 24v Ridgid offer more power, but at a cost. These drivers are heavy, and I personally wouldn't enjoy wielding one of them for any significant length of time. However, plumbers, electricians, and carpenters who drill through a lot of studs and joists or build a lot of decks might find the weight-to-power ratio less significant.

### Extra features can make or break the decision to buy a driver

There are only a few extra features that come with impact drivers, but the ones that are available are worth paying attention to.

LED lights come standard on most drivers. My first impression of this feature was that the lights were gadgets thought up by someone in marketing rather than engineering. In the end, though, I've found them to be useful. I often grab a driver if I quickly need a closer look inside a dark cabinet or closet. In several cases, I've found myself installing ductwork in dark attics and crawlspaces and have relied on my driver's LED light.



### A cabinetmaker's best friend



**Bosch PS40-2** As one of the smaller impact drivers on the market, the 10.8v Bosch has plenty of power to handle most any shop or light-remodeling work. Its unobtrusive battery fits nicely inside its handle, which increases its usefulness in tight driving or drilling conditions. Its sleek design also allows it to be easily stowed in an apron pocket or tool pouch.

[www.boschtools.com](http://www.boschtools.com)

Cost: \$150



### When mobility matters

**Hitachi WH14DL** Does a tool belt without a hammer loop make sense? Neither does an impact driver without a belt hook. I work off a ladder hanging exterior trim just as often as I'm on the ground hanging cabinets. In either case, I like the 14.4v Hitachi's five-position belt hook best because it keeps the driver comfortably and securely attached to my hip wherever I go.

[www.hitachipowertools.com](http://www.hitachipowertools.com)

Cost: \$260



### A big driver for big holes

**Ridgid R8823** The 24v Ridgid has more power than any other driver I tested. It performs really well for short-term, heavy-duty jobs like driving big lags into deck assemblies or boring large holes through studs and joists. For lighter-duty work or all-day drilling and driving tasks, this big driver is simply overkill.

[www.ridgid.com](http://www.ridgid.com)

Cost: \$117



## A little weight improves comfort



3 lb.  
or under  
too light

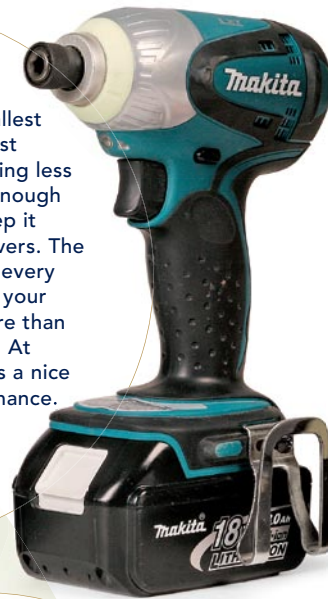
3¼ lb.  
ideal  
weight

3½ lb.  
or over  
too heavy

**Makita BTD141** The smallest drivers aren't always the most comfortable. A driver weighing less than 3 lb. doesn't dampen enough of the tool's vibration or keep it nearly as stable as other drivers. The consequences can be felt in every joint from your fingertips to your elbow. Drivers weighing more than 3½ lb. are too cumbersome. At 3¼ lb., the 18v Makita offers a nice blend of weight and performance.

[www.makita.com](http://www.makita.com)

Cost: \$280



## Fit for the spotlight

**Makita BTD142HW** Most all trigger-activated lights are useful, but the light on this Makita, which can be found on other Makita drivers as well, really shines. Located high on the tool, this bright LED stays on for several seconds after the trigger is released, providing illumination in dark spaces even after driving tasks are complete.

[www.makita.com](http://www.makita.com)

Cost: \$210

## One driver for multiple jobs

### Panasonic EY7540LN2S

This is my favorite driver. Not overweight or underpowered, the Panasonic is the most well-rounded, well-equipped driver of the bunch. It performed flawlessly in every aspect of home construction, from the mudsill to the ridge, from rough construction to finish carpentry.

[www.panasonic.com](http://www.panasonic.com)

Cost: \$300



Lights near the driver's chuck (found on the DeWalt, Makita, Ridgid, and some Milwaukee and Bosch drivers) tend to be more useful than lights near the driver's battery (like on the Hitachi and Panasonic drivers). In either case, I don't like having to push a button to turn on the light. LEDs draw so little power that there's no real reason not to have them trigger-actuated.

Of the extras that come with these tools, bit storage is the least important in my book. I like to use magnetic bit holders most of the time, which none of the drivers can accommodate. The most-important extra feature by far, though, is a belt hook. Unfortunately, not a lot of drivers come with them. Of the drivers I reviewed, only the 12v Bosch, the 14.4v Panasonic, the 18v Makita BTD141, and the Hitachi drivers had hooks.

## The one I want

As a designer/builder, I tackle virtually every aspect of home construction. If I'm going to spend money on a tool, it has to handle a broad range of tasks because one moment I'll be pocket-screwing a cabinet face frame together, and the next I'll be boring a 1-in. hole through a pressure-treated mudsill. With those tasks in mind, I'd most like to add the 14.4v Panasonic to my arsenal of tools, with the 14.4v Hitachi as a close second.

At \$300 and \$260, the Panasonic and the Hitachi are slightly more expensive than most of the other drivers, but not by much. And although their LED lights must be switched on by pushing a button, they come with unobtrusive belt hooks and moderately sensitive triggers, which I like. Both drivers' 14.4v batteries have the perfect balance of power and weight and come with a feature that only a few other drivers have: a variable speed-adjustment switch. Their speed settings allow me to fine-tune the drivers' power output, which gives me more control of the tool, especially during delicate applications. In the end, I prefer the Panasonic because of its slightly smaller overall size. □

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[FineHomebuilding.com](http://FineHomebuilding.com)

Look for the Magazine Extras section on our home page to see video highlights of these drivers as well as others the author has tested, their best features, and how an impact mechanism works.