Cordless Impact Drivers

by Dave Crosby

Cordless impact drivers look a lot like driver-drills with 1/4-inch hex collets instead of three-jaw chucks, but appearance is where the similarity ends. These tools provide as much power as you'll ever need from a cordless tool — more than twice as much as a comparably sized driver-drill.

Unlike the continuous torque of a regular driver-drill, the output of a cordless impact driver is mechanically converted into an intermittent rotational force (see Figure 1). As a result, there is no noticeable torque reaction at the tool or at the workpiece and, even with all the extra power being delivered, there is little or no damage to the screw heads.

With the slightest forward pressure and an easy grip on the driver, you'll find that the bit stays engaged. You can drive light screws into cabinets or lag bolts into framing lumber without leaning into the tool to keep it from jumping off the fastener. With impact drivers, you never have to worry again about the embarrassing result of the bit slipping out of the fastener head and crashing into the finished surface, and you won't find yourself with a half-driven screw that's so badly damaged you can't go forward or backward without vise grips.

A wide selection of 1/4-inch-hex accessories is available these days, so paddle bits, twist bits, countersinks, screwdriver tips, 1/4-inch and 3/8-inch drive sockets, and hex-head drivers are all options. And because of the collet, they can all be interchanged quickly (Figure 2). You can even get a three-jaw chuck that fits the 1/4-inch hex drive.

I used several of the more popular cordless impact drivers (see "Cordless Impact Driver Specs," page 2) for as many tasks as I could think of and then put them out in the field for seven months with an electrician, a cabinetmaker, and a carpentry foreman. The uniform response from all three of these tradespeople who perform very different tasks all day was, "They're great — I don't know how I worked without them." Everyone who participated in this review wondered aloud after the first use why they hadn't heard about these lighter, more powerful, easier-to-use tools a long time ago.

Figure 1. The rotational force of the motor is converted into intermittent force by the hammer and anvil arrangement inside the nose of the tool (left). A spring allows the mechanism to release at a preset value (right). This intermittently resolved force is where the extra power comes from — just like hitting a wrench with a hammer to loosen a nut.

Figure 2. Any 1/4-inch hex-drive accessory will fit, so you have lots of choices.

Many Uses

We tried these tools out on everything: drilling and driving 3- and 4-inch wood screws into framing lumber, trim screws, masonry screws, the tiny screws on electrical boxes, concrete anchors, cabinet screws, and 8- to 12-inch-long by 1/2-inch-diameter lag bolts. The results were excellent in every case. You can use an impact driver anywhere you'd use a driver-drill, and that's just a start. You can also use impact sockets with these tools to tighten bolts or nuts. And you'll find that all of those hard-to-remove fasteners that would normally end up with stripped-out heads seem to come right off. Variable speed triggers and electric brakes only add to the convenience.

Minor drawbacks. The only two drawbacks the reviewers found were noise — these tools are loud — and that for some tasks, such as starting small screws without a pilot hole, the intermittent rotation was troublesome. Given the advantages, nobody seemed to mind. They are also slightly slower than the higher-voltage driver-drills in terms of the actual time it takes to sink a screw, but if you factor in efficiency and ease of use, the impact

Figure 3. Most of the Phillips bits used in testing were not up to the task, so make sure you have extras on hand.

drivers still come out ahead.

In heavy use you can easily snap the end off five bits per day, so we'd all like to see a bit specifically designed for impact use. Most of the Phillips bits we used were not up to the task (Figure 3). The bits from Bosch seemed to hold up the best, but there is still room for improvement.

Feedback From the Field

Electrician Cliff Thomas and cabinetmaker Dana Hummels both preferred the 9.6-volt tools over the 12-volt models for the light weight and compact size, and because the extra power of the 12-volt tools was not necessary for their work. Both were pleased by the power, ease of control, and lack of a torque reaction. In terms of performance, they agreed that there was no discernible difference between the Hitachi and Makita 9.6-volt tools, but they both preferred the Hitachi for balance, grip, and maneuverability in tight quarters. Dana pointed out that, after a long day of cabinet assembly using an impact driver, her wrist was not as sore as it is when she uses the usual driver-drill. Both reviewers felt that these tools were worth buying.

Cliff described the 9.6-volt impact driver as "a cordless drill plus the tool you don't have. It fits easily into tight spaces or a toolbelt pocket and runs small screws at high speed before the impact action begins, but when you need the extra torque for heavier work like attaching boxes, it's there. So for an electrician, it's the drill that does everything. I especially appreciate the way you can get a lot of usable power in tight spaces, and I really like the way that the driver bit locks into the screwhead with almost no forward pressure and it doesn't mess up screwheads."

Carpenter Daniel Nicholls used the 12-volt models for more than half a year, driving many thousand screws and different sizes of lag bolts, drilling holes through timbers, installing cabinets, and just about anything else you can imagine.

He said, "I've been as rough on these tools as I could be in good conscience, which is how I work, and you can't beat the Makita — it's one tough tool. I dropped it several times with no result, but a long fall to the concrete slab was too much for it and the plastic housing cracked. So I duct-taped it back together and it still runs fine. It has great battery life, and the battery recharges in about an hour. The stable base on the battery means it doesn't fall over when you set it down. I think the only drawback to the Makita is the battery release, which is too stiff. The Hitachi has a better battery release, but the battery on the Hitachi is a little too long and not shaped as well as the Makita for standing up (Figure 4).

"The DeWalt feels heavier and bulkier, and it behaves more like a drill than the others. But with a control for variable torque setting, it was also the only one of these tools really suitable for fine work, such as drawer slides. It also has better bit speed for drilling. The rubber grip helps with comfort in cold or hot weather, and I like the bit storage on the side. You might think it's some kind of homeowner-hokey touch until you snap what you thought was your last bit, and there's another one right on the side of the tool.

Figure 4. The flat bottom on the Makita battery makes it stable when standing up.

"The Milwaukee is not a tool I could recommend. It's underpowered and has nowhere near the battery life of the others. It is also the only driver that would release the bit all by itself if you bumped the collet while working in tight quarters (Figure 5). That alone is enough for me to leave it in the truck.

"The DeWalt, Hitachi, and Makita are good tools. If I was only doing heavy work I'd buy the Makita; if I was primarily doing fine work or more drilling I'd buy the DeWalt. On a recent job that involved 1/2-inch lags and thousands of 4-inch screws in rough-sawn lumber — which was all visible as finished surface — I set the DeWalt up for drilling and the Makita up for driving. The combination was great."

Cordless Impact Driver Specs

Mfr.	Model	Voltage	Torque (inch-pounds)	No-Load RPM	Full-Load Impact Rate/Min.	Weight	Street Price
Hitachi	WH8DC2S	9.6	696	0 to 2,200	N/A	3.1	$208 to $253
Makita	6908DWA	9.6	700	0 to 2,200	0 to 2,800	3.1	$294
Makita	6940DWE	9.6	260	0 to 2,000	0 to 2,700	3.3	$277
DeWalt	DW977K	12	850	0 to 2,000	0 to 3,000	N/A	$209
Hitachi	WH12DH	12	868	0 to 2,200	0 to 3,000	3.7	$253 to $308
Makita	6914DWAE	12	870	0 to 2,200	0 to 3,000	3.7	$289
Milwaukee	9057-6	12	600	0 to 1,500	0 to 2,200	4	$200 to $280

Figure 5. The collet on the Milwaukee will sometimes release if you bump it.

Figure 6. The Torq-Mate converts your electric drill motor into an impact driver. Impact sockets should always be used with any impact driver because regular sockets can break and cause injury.

The Jacobs Torq-Mate

The Jacobs Torq-Mate is an attachment that converts your 3/8-inch or 1/2-inch drill into a 3/8-inch-drive impact driver (Figure 6). The manufacturer, Danaher Tool Group, recommends low speeds up to 450 rpm for 1/4-inch-diameter or smaller fasteners and 850 rpm to 1,450 rpm for fasteners up to 1/2-inch-diameter. Torque output depends upon rpm with this tool, and the rating ranges from approximately 30 foot-pounds at 500 rpm to 80 foot-pounds at 1,400 rpm, which is plenty of torque for most tasks.

I used the Torq-Mate with a 3/8-inch 1,200-rpm AC drill and drove a 3/8-inch by 3 1/2-inch lag through two 2x4s both with and without a pilot hole. I also tried this tool out with a 14.4-volt 1/2-inch cordless drill and an AC 1/2-inch drill, and it worked, but slower. Like the other impact drivers, there was no torque reaction at either the tool or the 2-foot-long blocks of 2x4, which I easily held in place by hand as the lag was driven. On the average, it took just under 30 seconds to drive the lag with a pilot hole and about twice that without

9.6-Volt Models

Hitachi WH8DC2

Makita 6908DWAE

These are the first choice for the sub-trades. Light, compact, and enough power to do the job with less operator fatigue.

Makita 6940DWE 90-degree impact driver
This is an unusual tool, and everybody who used it considered its application limited to work in tight spaces, but they also agreed that if you needed it, there was no better tool for the job. If you spend a lot of time driving fasteners in close quarters it's worth a look.

12-Volt Models

Makita 6914DWAE

Right now, these are the big guns of the cordless impact-driver world, but don't be surprised when higher-voltage tools show up. For plenty of power in a light, convenient package, these are the all-around carpenter's tool of choice.

Hitachi WH12DH

Milwaukee 9057-6

one. With no pilot hole, the tool would drive the lag but seemed to be working beyond its optimum capability. For the sake of comparison, a 9.6-volt Makita impact driver consistently sunk the same 3 1/2-inch lag in about 15 seconds, with or without a 1/4-inch pilot hole. There was no apparent strain on the cordless tool either way.

I also used this tool on some previously damaged and painted Phillips screws that normally would have been difficult to remove. The screws came right out, just like with any other impact driver. The combination of a drill and the Torq-Mate won't take the place of the cordless impact drivers reviewed here because the assembly is larger, heavier, slower, and not as easy to control. But if you find yourself wishing for an impact driver and reluctant to spend the money, this tool works as advertised. Suggested retail price is $30, and for $35 you can get a "project kit" that includes the Torq-Mate, three impact sockets, and a Phillips screwdriver tip. Note that the manufacturer recommends using impact sockets only. This is a good idea for all impact drivers, because regular sockets can break or their chrome plating can shatter, increasing the risk of injury.

Sources of Supply

DeWalt
P.O. Box 158
Hampstead, MD 21074
800/433-9258
www.dewalt.com

Makita U.S.A.
14930 Northam St.
La Mirada, CA 90638
800/462-5482
www.makitatools.com

Hitachi Power Tools
3950 Steve Reynolds Blvd.
Norcross, GA 30093
800/829-4752
www.hitachi.com/powertools

Milwaukee Electric Tool
13135 W. Lisbon Rd.
Brookfield, WI 53005
800/729-3878
www.mil-electric-tool.com

Jacobs/Danaher Tool Group
1101 McCormick Rd., Suite 150
Hunt Valley, MD 21031
800/866-5753
www.danaher.com