Cordless Reciprocating Saws *Almost* Come of Age

While they're not up to the challenges of full-time demolition, cordless saws are a great option on a roof or in a crawlspace

BY ANDREW WORMER



Each of the eight saws tested cuts through a 2x10 header, but none runs longer than five minutes on a single battery charge.

Battery power gets you under the house or up on the roof without the hassle of extension cords. But batteries make these saws heavy, and replacement batteries are expensive.

A dozen years ago, my satisfaction with my first 9.6v Makita cordless drill convinced me that cordless tools were the wave of the future, and I plunked down nearly $300 to buy a 12v, 6½-in. cordless circular saw. But I can't think of one single job where that saw earned its keep. For the most part, it has remained in its box, a reminder of the limitations of technology and my own gullibility.

But like *The X-Files*' Fox Mulder, I want to believe, and I am convinced that eventually, the technology of cordless tools will catch up with the promise. As this new crop of cordless reciprocating saws demonstrates, that day is almost here.

Cordless saws don't keep up with their corded cousins

I like the idea of being able to take my reciprocating saw up on a roof or down into a crawlspace without having to drag a power cord behind me. What I don't like is the idea of having to crawl back out again with the job half-finished, looking for another battery. This problem is an issue with these saws; their run times are no more than five minutes. In general, cordless saws are heavy because of the battery, have shorter strokes and run more slowly than corded saws. Also, cordless reciprocating saws aren't available with orbital action, a feature that significantly increases a corded saw's cutting efficiency.

Except for the convenience of not having to be attached directly to an AC power supply, none of these cordless saws can compete



Toolless blade change is standard on all the saws, but none of them features orbital action.

MAKITA OFFERS A CHOICE OF BATTERIES

Makita offers a new type of battery, nickel metal hydride (NiMH), as opposed to the old standard nickel cadmium (NiCd). The cadmium in an NiCd battery is hazardous waste that must be recycled. NiMH batteries currently aren't required to be recycled (though the jury is still out on their toxicity) and have a higher amp-hour potential.

NiMH batteries are also more expensive and heavier, and they store less power at temperature extremes. Depending on which engineer you speak to, they are either longer lived because they do more work between charges or shorter lived because their cells are damaged by the greater heat that they produce. In practice, the one 18v NiMH battery I tested lasted a little longer between charges than the comparable DeWalt NiCd 18v battery.

—A. W.



Nickel metal hydride



Nickel cadmium



If you've ever shimmied 30 ft. into a crawlspace with a 25-ft. extension cord, you understand the advantage of cordless saws. If you've got one joist or a pipe to cut, stick in a fresh battery, and you've got the perfect tool for the job.

with even the most modest corded reciprocating saw. If pure cutting ability is your sole criterion and you can't conceive of ever needing to disassociate from a power cord, then stop right here, save yourself about $120, and buy an inexpensive Milwaukee or DeWalt corded saw (see *FHB* #133, pp. 80-85, for a survey of corded reciprocating saws).

For short runs, though, the difference in performance from corded saws isn't a huge one, and the convenience offered by cordless tools alone might sway you. These tools are real, all with wrenchless blade clamps, and when fully charged, they cut almost as quickly as 6-amp corded saws (the low end of the power range).

If the price for one of these saws doesn't scare you off; if you don't need to use the saw on a continuous basis; if the saw has enough speed and power to cut the material you're working with; and if the saw has enough durability to get you through the job at hand without requiring you to swap batteries constantly, one of these cordless reciprocating saws might be just the ticket. These are big ifs, so let's take a look at how the cordless saws measure up.

It all begins with the battery

I always thought that the discussion of whether you should run down a battery totally before recharging was an academic one—until I destroyed one of these saws. Trying to eke out every electron from a battery can have dire consequences, possibly shorting out the battery and, in the case of the first sample that Porter-Cable sent, zapping the motor as well. (After examining the saw, an engineer at Porter-Cable reported that an unusual manufacturing defect, under warranty, contributed to this saw's demise.) I now believe that it's better to run the tool until the power drop-off becomes troublesome but not extreme, then swap batteries.

Without going into a technical discussion of batteries (for that, see *FHB* #128, pp. 108-109), you should know that increased cordless power comes at a cost. Not only do 24v batteries cost more than $100, they generate more heat, which is a battery's worst enemy. Consequently, they can be recharged fewer times than smaller batteries. My old 9.6v Makita batteries lasted for years, and I still squawked when I had to pay $30 to replace them. Don't be surprised if you have to replace these far more expensive batteries after only a year.

One fact that clearly emerged in this test was the importance of temperature in battery performance. These batteries perform noticeably better at room temperature. When I first ran these saws through their paces, the temperature ranged from 40°F to 55°F, and the run times of the saws was typically about 15% shorter than during my last round of testing, which I did when the temperature was in the high 70s.

Most of the batteries won't even take a charge at much below 40°F. Where I live, the temperature is below 40°F for a good part of the year, and I've been on lots of job sites where there isn't heat. But the biggest surprise to me was that you can't charge these batteries when they're hot. The chargers have light displays to tell you the charging status of the battery. Besides indicating "charging" and "charged," these chargers also indicate "delayed charge," meaning that they're waiting for the battery to cool down before starting the charge (photo right, p. 77).

In practice, this means that you can't run the saw hard until it bogs down, pop the battery, drop it into the charger and expect to have a fresh battery in an hour. The delay varies with the battery's temperature and the ambient temperature, but it can be an hour or longer, meaning two to three hours before you can use the battery again. Combine this with the fact that most saws come with only one battery, add in the three- to five-minute run time of these saws, and you can see the potential for problems.

A fair, if subjective, test

I tested saws by cutting into a header made up of two lengths of 2x10 spruce with a ½-in. layer of CDX plywood between to simulate what I might find in the field. I clamped, rather than nailed, the header together to avoid occasionally sawing through steel, which would definitely skew the results.

I turned on the saw and crosscut the header as many times as I could at what seemed to

Cordless ... but with a cord

DeWalt now offers an AC/DC corded converter that can be used with its 24v cordless tools. Although this converter doesn't affect how the saw cuts, it gives users the flexibility of operating the same tool under either battery power or AC power. I've heard a variety of opinions on this idea, ranging from dumb ("If you're going to build a cordless tool, why make it dependent on AC power?") to genius ("Why don't they offer this option for all their tools?"). The $125 converter isn't cheap, about $20 more than an extra 24v battery. But if you are going to buy only one saw, this converter would give you a tool that can keep up with most corded saws.
—A. W.



AC/DC converter boosts cordless tools' endurance. While the saw cuts no faster, this $125 accessory clips in like a battery and powers the tool on 120v AC.



MINI-RECIP SAW

The Makita model 4390DW isn't a full-size reciprocating saw (it doesn't even use a regular reciprocating-saw blade), and it uses the old stick-style Makita 9.6v battery. But for odd jobs like cutting openings into plywood or drywall or trimming shims, the Makita 4390DW is a sweetheart. This little blue saw looks a little dated now, but if you're still using Makita's 9.6v system, the saw body can be had for $115.
—A. W.

be the saw's optimum feed rate before the saw bogged down unacceptably. In most cases, I could have gotten more seconds and perhaps an inch or two more of cut out of the saw. I timed and measured these cuts to come up with the figures on the chart (pp. 76-77). So while I tried to be fair, these results are more empirical than scientific.

All these saws have wrenchless blade clamps, though they all work slightly differently. The DeWalt design—a lever mounted on the side of the saw—keeps your fingers away from the blade and is favored by a lot of carpenters I spoke with. But compared with the old hex-wrench operated blade clamps, wrenchless blade clamps are a breeze to use and effectively hold the blade. Whether it's easier to twist a knob to release the blade or to press a button or lever is, I think, largely a matter of personal preference. So too with adjustable shoes: Some carpenters swear by them, some never use them.

How do they do on the job?

Plumber Mark Stone noted that these saws are great for the kind of work that his crew does. "We spend a lot of time in attics and basements cutting PVC vent pipe. It's nice not to have to worry about a cord." A lot of the guys in the company he works for have converted to cordless kits—mainly DeWalt 14.4v and 18v models. It makes a lot of sense to stick to a single voltage and brand when you're buying cordless tools so that you don't end up with a whole mess of chargers and orphan batteries.

I gave contractor Jeremy Grip a number of these saws for his crew to try during their recent tear-down of an aging sunroom. He

Cordless reciprocating saws: vital statistics



Bosch 1645K
(877) 267-2499
www.boschtools.com

Street price: $400
Battery: 24v nickel cadmium
Spare battery: $140
Length: 19 in.
Total run time: 4 min. 41 sec.
Cutting distance: 40¾ in.
Cutting rate (seconds/inch): 6.89
Shoe: Pivoting, wrenchless adjustable
Standard accessories: Two blades, plastic case, two batteries, charger

I like the unique dual-stroke range. Although longer strokes produce faster cuts, shorter strokes produce less vibration and a more controlled cut, useful when plunge-cutting, for instance. This smooth saw, at 19 in. the longest of the bunch, was second only to the DeWalt 24v in cutting speed, and one of the distance champions. Although it may seem expensive compared with other saws, it comes packaged with two batteries, a must as far as I'm concerned. One drawback to the saw was that the barrel became uncomfortably hot to grasp after about 30 seconds of cutting time.



DeWalt DW008K
(800) 433-9258
www.dewalt.com

Street price: $300
Battery: 24v nickel cadmium
Spare battery: $106
Length: 18 in.
Total run time: 3 min. 48 sec.
Cutting distance: 33¾ in.
Cutting rate (seconds/inch): 6.75
Shoe: Pivoting, wrenchless adjustable length
Standard accessories: Two blades, plastic case, one battery, charger
AC/DC converter: $125

Like the Bosch, the barrel of this saw became uncomfortably hot during extended cutting, enough so that I had to switch hands often. The wrenchless blade clamp mounted on the saw body is easy to use. An added feature of this saw is an AC/DC converter that allows you to run this saw on AC power. The saw also has onboard blade storage for one spare blade, a nifty feature, and a charger with a tune-up mode said to prolong battery life.



DeWalt DW938K
(800) 433-9258
www.dewalt.com

Street price: $270
Battery: 18v nickel cadmium
Spare battery: $67 or $77 (extended run)
Length: 17 in.
Total run time: 4 min. 35 sec.
Cutting distance: 23¾ in.
Cutting rate (seconds/inch): 11.5
Shoe: Pivoting, fixed length
Standard accessories: Two blades, plastic case, one battery, charger

Compared with other 18v saws, the DeWalt was neither the fastest nor ran the longest. I ran the saw with the XR+ battery pack, which gave me 4 min. 35 sec. of run time under load, the best of any of the DeWalt saws. The charger handles 9.6v to 18v DeWalt batteries and includes a tune-up mode.



DeWalt DW937K
(800) 433-9258
www.dewalt.com

Street price: $250
Battery: 14.4v nickel cadmium
Spare battery: $53 or $58 (extended run)
Length: 16 in.
Total run time: 3 min. 35 sec.
Cutting distance: 15 in.
Cutting rate (seconds/inch): 14
Shoe: Pivoting, fixed length
Standard accessories: Two blades, plastic case, one battery, charger

This saw's performance was comparable to the 14.4v Makita. The XR battery pack that I used gave the saw decent performance with a little more run time than the standard battery. The additional $5 for an XR battery seems like a small price to pay for this added run time. The charger is good for 9.6v to 14.4v DeWalt batteries.



Makita JR 180DWB
(800) 462-5482
www. makitausa.com

Street price: $320
Battery: 18v nickel metal hydride
Spare battery: $82 (NiMH) or $72 (NiCd)
Length: 17 in.
Total run time: 4 min. 28 sec.
Cutting distance: 20¼ in.
Cutting rate (seconds/inch): 13.25
Shoe: Pivoting, toolless adjustable length
Standard accessories: Three blades, plastic case, one battery, charger

This saw is compact and feels well balanced, has a smooth cut and ran a long time, but was not particularly fast-cutting. This saw was the only one I used with a nickel metal-hydride battery, and it was the only battery that didn't experience a significant charging delay. The charger takes 7.2v to 18v NiCd/NiMH Makita batteries.



Makita JR 140DWA
(800) 462-5482
www. makitausa.com

Street price: $270
Battery: 14.4v nickel cadmium
Spare battery: $77 (NiMH) or $58 (NiCd)
Length: 17 in.
Total run time: 3 min.
Cutting distance: 12¾ in.
Cutting rate (seconds/inch): 14.11
Shoe: Pivoting, toolless adjustable length
Standard accessories: Three blades, plastic case, one battery, charger

I used the NiCd battery with this saw, though an NiMH battery is available. I was impressed by the run time achieved by the 18v NiMH battery used with this saw's bigger brother and suspect that an NiMH would also bolster this saw's run time and cutting distance. Otherwise, this saw looks, feels and cuts a lot like the 18v model. The charger handles 7.2v to 14.4v NiCd/NiMH Makita batteries.

What the ratings mean
Run time: How long a battery charge lasts
Cutting distance: How much 2x10 header the saw cut with a fresh battery
Cutting rate: The average time to cut 1 in. of 2x10 header



Milwaukee 6515-21
(800) 414-6527
www.mil-electric-tool.com

Street price:	**$250**
Battery:	**18v nickel cadmium**
Spare battery:	**$72**
Length:	**17½ in.**
Total run time:	**5 min.**
Cutting distance:	**35 in.**
Cutting rate (seconds/inch):	**8.6**

Shoe: Pivoting, adjustable length
Standard accessories: Two blades, plastic case, one battery, charger, hex wrench

The plastic case has a cool lidded compartment that will accommodate spare blades up to 9 in. long. Inexplicably, this 18v saw ran longer and cut the second farthest of any of the saws. It didn't fare too badly in cutting speed, either. It had a nice, smooth cut and was moderately sized. The charger will handle 9.6v to 18v Milwaukee batteries. The combination of price and performance makes this saw a winner.



Porter-Cable 837
(800) 487-8665
www.porter-cable.com

Street price:	**$280**
Battery:	**19.2v nickel cadmium**
Spare battery:	**$80**
Length:	**15 in.**
Total run time:	**3 min. 24 sec.**
Cutting distance:	**19 in.**
Cutting rate (seconds/inch):	**10.75**

Shoe: Pivoting, adjustable with hex wrench
Standard accessories: One blade, plastic case, one battery, charger, hex wrench

The Porter-Cable has an unusual design that results in a short (15 in.) saw. This saw won't quite get you between studs 16 in. o. c., but it may make a difference in tight quarters. This saw ran smoothly but felt heavy and bulky despite its short length. According to Jim Patton, engineering director for cordless tools at Porter-Cable, this saw uses an internal scotch yoke rather than the typical wobble plate found in other reciprocating saws. In addition to a counterbalance and a vertically mounted motor, this feature accounts for the unusual shape, short length and smooth performance of the saw.



Smart chargers that sense when a battery is too hot or cold to charge without harm come with all these saws.

found that the Porter-Cable's unique shape and compact size really made a difference when trying to squeeze into tight spaces, though he pointed out to me that the saw "sounded like a bucket of bolts," which Porter-Cable assured me was due to the counterbalance mechanism. He also found that even though the saws with longer strokes probably cut faster, he considered it a bit of a liability for certain types of work, such as plunge-cutting. The Bosch's unique dual-stroke range made the saw a popular choice, though Jeremy also really liked the smoothness of the Milwaukee.

When I asked Jeremy whether he'd consider replacing a corded saw with one of these cordless models, he said, "No. They just don't have the stamina." He claimed that he could easily have used at least three batteries to keep up with the logs, headers and bolts that he was trying to deconstruct. The only saw that could keep up with that kind of work was the 24v DeWalt with the 110v AC/DC converter—basically, of course, a corded saw (sidebar p. 75).

If I were going to buy one

If you're willing to live with the limitations I've noted, any of these saws could make you happy, particularly if you are already equipped with cordless tools and spare batteries of the same voltage from the same manufacturer. If you already have the batteries and charger, you can usually buy just the saw body for a fairly reasonable price.

In general, the 24v saws provide the most horsepower. I think the corded AC option tips the scales in favor of the DeWalt. But despite its modest specs, the 18v Milwaukee is also a contender. It ran smoothly and powerfully, ran longer, cut almost as fast as the big 24v saws and is a relative bargain at $250. □

Andrew Wormer is a contributing editor to *Fine Homebuilding* and a carpenter in Ferrisburgh, VT. Photos by Roe A. Osborn.