A Look Into Cordless Combo Kits

Whichever one you buy, the circular saw, drill, and batteries are the guts of the system

BY ANDY BEASLEY

Are cordless kits a good deal?

Compared to buying the tools individually, you can save radically by buying a kit with high-quality tools. A two-piece DeWalt kit costs about $350. Individually, the parts are $450, and you'll end up with an unnecessary charger. Sometimes the savings keep piling up. For example, by spending an extra $10 to upgrade a Bosch five-piece kit to the six-piece kit, you get a cordless door planer. But some kits are diluted by packaging a good tool with a poor one. The price break is significant, but the added value is dubious.

Cordless convenience is unsurpassed, so it's no surprise that the cordless-tool market has mushroomed steadily. In fact, more than 100 million cordless tools have been sold in the past 20 years. And because you can't run a DeWalt saw on a Bosch battery, most buyers stick with a single brand. This built-in brand loyalty means that there's more at stake when selecting among the confusing array of combination kits, and yes, the array of combination kits can be confusing. There are two-piece kits and eight-piece kits. Some kits cost less than $200, and others could rival your mortgage payment. With all these choices, it's no wonder that using the tools is far easier than choosing them.

Focus on the saw, drill, and battery system

To limit this review to a manageable number of tools, I chose the smallest kits that contained a drill and saw, and pushed them through a series of standardized tests. For most contractors and do-it-yourselfers, drills and circular saws are the most useful tools. Plus, I figure that if a manufacturer can get those two right, chances are the other tools in the kit also will perform well.

Voltage systems range from the original 9.6v up to 28v. The most popular now are the 18v systems, which are what I focused on in this tool review. Two manufacturers (Porter-Cable and Craftsman) make 19.2v rather than 18v tools, but this extra volt and two-tenths doesn't mean more power or endurance.

Most of the saws have a 6½-in. blade, but a couple of models (Craftsman and Ryobi) have smaller blades (5½ in. and 6 in., respectively). A larger blade yields a deeper cut, allowing you to cut through more than a 1¾-in. LVL in a single pass, but costs a little bit more, too.

All the drills have variable-speed triggers and ½-in. keyless chucks that can be tightened with one hand. Nine of the drills have a hammer function for drilling holes in masonry and concrete. Although this feature can be extremely handy for remodeling, many carpenters won't need it. Plus, cordless hammer drills aren't fast and powerful enough to replace their corded cousins—at least not yet.

Finally, in the cordless-tool universe, the tools revolve around the battery and the charger, so battery technology merits a close look (sidebar, p. 63).

Hand tools should feel good in the hand

Grip comfort and overall tool balance determine whether a tool is a pleasure to use or a pain. The rear battery attachment makes most cordless circular saws feel a little aft heavy, but not enough to condemn the entire breed. All the saws that I tested have the blade on the left side, which seems to satisfy most users. The most significant ergonomic aspect of the saws is the angle of the handle: The Milwaukee, Ridgid, and Porter-Cable all feature a sloped grip that makes the saws easy to push without wrist strain. When saws with level grips are used at a shallow cutting depth, it feels as if the saw must be pulled through the cut rather than pushed.

Although most of the drills are well balanced, weight is an issue. The lighter drills, such as the Ryobi, are good for overhead work, while the more substantial drills have a better feel in

18v SYSTEMS: SOME BRANDS OFFER MORE TOOLS

Cordless-tool batteries aren't compatible across brands, so you're buying into more than just a saw or a drill when you choose a kit. The additional tools within a system are changing constantly, but here's a snapshot of who offers what right now.

Manufacturer	Smallest kit (the ones tested)	Additional tools available
Metabo **$399**	Drill/driver, circular saw	Light
Panasonic **$450**	Hammer drill/driver, circular saw	Light, reciprocating saw, metal-cutting circular saw
Hitachi **$480**	Hammer drill/driver, circular saw, reciprocating saw, light	Impact wrench, impact driver
Porter-Cable **$545**	Hammer drill/driver, circular saw, reciprocating saw, light	Jigsaw, drill/driver, router
Bosch **$469**	Hammer drill/driver, circular saw, reciprocating saw, light	Planer, battery charger with AM/FM/CD stereo, standard drill/driver, compact drill/driver
Ridgid **$249**	Hammer drill/driver, circular saw, light	Reciprocating saw, planer, jigsaw, caulk gun, drill/driver
Makita **$530**	Hammer drill/driver, circular saw, reciprocating saw, light	Metal-cutting circular saw, jigsaw, fluorescent automotive light, rebar cutter, blower
Milwaukee **$370**	Hammer drill/driver, circular saw	Reciprocating saw, hatchet reciprocating saw, right-angle drill, rotary hammer, metal-cutting circular saw, impact wrench, vehicle-charger kit, D-handle drill, job-site radio
Craftsman **$190**	Drill/driver, circular saw, reciprocating saw, light	Jigsaw, right-angle drill, hammer drill, spiral cutout saw, planer, nailer, impact driver, sander, vacuum
Ryobi **$169**	Hammer drill/driver, circular saw, reciprocating saw, light, wet/dry hand vacuum	Jigsaw, chainsaw, drill/driver, right-angle drill, impact driver, laminate trimmer, rotary cutout saw, caulking gun, sander, nailer
DeWalt **$349**	Hammer drill/driver, circular saw	Rotary hammer, compact drill/driver, cordless right-angle drill/driver, trim saw, metal-cutting circular saw, two lights, impact wrench, impact driver, metal-framing screwdriver, cutout tool, drywall screwdriver, swivel-head shear, cutoff tool (angle grinder), reciprocating saw, jigsaw, vehicle charger, two finish nailers, two rotary lasers, battery charger/radio, two wet/dry vacuums

other positions. The Milwaukee drill really stands out here: The grip is outstanding, and the battery can be attached two different ways for better balance and work access.

Controls should be accessible

Once the battery is attached, cordless tools always are powered up, so every saw incorporates a spring-loaded safety lever or button that must be depressed before the trigger can start the tool. This lock-off control is accessible from both sides of the grip on all the tools, making them convenient for right- or left-handed users. The Makita and Metabo saws were about the best (detail photos, p. 65), while the Panasonic's control was irritatingly hard to depress with my thumb. Similarly, the best drills have forward/reverse buttons immediately above the triggers, speed-range slides with large detents for easy actuation, and large, easy-to-grip clutches with well-marked settings. Most of the drills received high marks for their controls and adjustments.

The saws feature various knobs and levers to adjust bevel and depth of cut; the best are large controls that can be used while you're wearing gloves. The Porter-Cable and Milwaukee were great, and the easy-to-read depth control on the Bosch was exceptionally useful.

Blades and bits should be easy to change

Blade-changing is simple on almost all the saws. All feature a push-button lock to freeze the arbor, and a single wrench is all that's needed to release the blade. Blade alignment with the baseplate (which is important when the saw is run along a straight guide for accuracy) is quite good; all saws are perfect or nearly so. Similarly, bit-changing among the drills is simple. The keyless chucks have great holding power, and the one-hand design makes hand-tightening a breeze. Say goodbye to the friction burns that come from holding the chuck in one hand while spinning the drill motor to lock bits in place.

More power is better

When it comes to brute strength, corded equipment has the edge, but cordless tools are gaining ground. A fully charged battery should allow a cordless tool to compete with a corded one, at least in the short run. To evaluate each machine's capacity to perform heavy work without stalling or bogging down, I ran the saws and drills through a series of power tests. Saws were judged on their ability to cut through 1¾-in. LVL, and drills were timed boring a 1½-in. hole through a 1¾-in. LVL with a new spade bit. Most of the saws and drills finished in a tight pack with a couple of outliers. The lesser-powered saws were the Hitachi and Craftsman. The drills bored the holes between 8 seconds and 14 seconds, while the Metabo (27 seconds) and Ryobi (41 seconds) were significantly slower.

Batteries should be on the tool, not the charger

If you'd rather be working than hanging around the charger checking your watch, battery run time is critical. All saws and drills were scored in an endurance exam (see "The best kits," pp. 64-65) until the battery showed significant deterioration (running a battery completely dry can destroy the battery, so I stopped the test at an obvious drop in power).

A couple of timing issues became apparent through my testing. Unless a significant number of batteries are used, no charging system can keep up with a saw in continuous operation. But a carpenter who's cutting and nailing roof sheathing will be able to work quite a while before climbing down to replace batteries. I also found that it took an hour or more of hectic work to drive enough screws to deplete a battery, so few users will exhaust the one on the drill before the charger can juice up its replacement.

All chargers are not created equal

A good charger should be able to accept hot (fresh off the tool) battery packs so that you don't have to remember to come back in a half-hour after the battery has cooled to insert it into the charger. Even better, the charger should feature an internal fan to help cool the pack faster. The charger should be able to diagnose hot or cold packs and internal battery faults, and to display current pack status by means of colored and/or flash-

A case for cases

If you work in the field—or even in a dusty shop—a good case or bag is a real plus. A hard-shell case is great in wet environments or in places where tools might be subjected to rough treatment. The strength of the soft bag is its flexibility: If you leave out the tools you don't want to lug to a particular job (or up four flights of stairs), you can cram in something else. And loading the bag, which doesn't have to be zipped shut, is easier than packing your lunch.

Flexibility meets organization. *Interior pockets in the Milwaukee bag help to organize the tools while leaving plenty of room for other things.*

A hard case that's easy to load. *Loading a hard case can be like solving a puzzle with a hundred wrong answers and a single right one. But the molded recesses within the Makita case are marked clearly, and the plastic case seems durable.*

Batteries: the power behind the tool

by Christopher Ermides

Nickel cadmium (NiCd) and nickel metal hydride (NiMH) batteries make up most of the market, but lithium ion promises to take the technology to the next level: heavy-duty tools that are lighter than their predecessors. While the two nickel-based batteries are interchangeable on tools, lithium-ion batteries most likely will require a new tool set.

Recycle info is on the pack. *If your battery pack has this Rechargeable Battery Recycling Corp. (RBRC) seal on it, then it should be recycled. Call the toll-free number, or visit the RBRC's Web site (www.rbrc.com) to find a retail drop-off store near you.*

NICKEL CADMIUM: The old standard

Nickel cadmium has been the core battery technology since Makita's first cordless drill hit the market in 1978. With the broadest working temperature range (down to -20°F), NiCds are the most versatile outdoor battery type. Typically, NiCds don't last as long between charges as NiMHs but have a longer life, and they're often cheaper to replace. NiCd cells have reached their full power potential; you can't get more power without adding more cells, which would make the batteries bigger. Bigger means heavier, and that gets impractical for handheld tools. Because cadmium is a toxic heavy metal, NiCds must be recycled, not pitched in the trash.

NICKEL METAL HYDRIDE: An eco-friendlier choice

Because NiMH is lighter than NiCd, manufacturers can get nearly twice as much power from the same-size cells. With a narrower outdoor temperature range than NiCds, NiMH batteries may be sluggish in the cold, but they'll warm up with use. This chemistry has a shorter overall life when compared to NiCd, but it holds a charge longer. NiMH batteries are generally more expensive to replace than NiCds. This chemistry will not harm the environment and does not need to be recycled, but because NiMH batteries are made with plastic, they should be. Consequently, some parts of the world are limiting cordless tools to this chemistry.

LITHIUM ION (LI-ION): The power-filled future

Capable of packing much more power in a smaller cell means Li-ion batteries eventually will be lighter, more compact, and longer-running. The extra power will cost extra dollars as well (Milwaukee's 28v cordless circular saw costs $420) because the technology is still in its infancy. In North America, lithium batteries are available only from Milwaukee and Makita. Hitachi is selling a 14.4v lithium battery in Japan, and nearly all other manufacturers are developing this chemistry. Lithium-ion batteries do not need to be recycled for environmental reasons, but to conserve the raw material, manufacturers encourage it.

—Christopher Ermides is an assistant editor at Fine Homebuilding.

HOW TO GET THE MOST LIFE OUT OF YOUR BATTERIES

The best investment you can make after buying into a cordless-tool system is to spend time reading the owner's manual (most manufacturers have them on their Web sites). The life of a battery depends primarily on how you charge it. While all manufacturers have slightly different guidelines, most agree on some basics:

Do replace battery packs as soon as you notice a power drop. Draining the battery completely can damage battery cells.

Don't charge the battery when it's hot or cold; this will damage the cells. Charge it at room temperature.

Do top off the battery overnight every three charges. Each cell comprising the battery charges and discharges at a different rate; trickle-charging will maintain the integrity of the cells within.

Don't store batteries in your truck during the winter or summer. Extreme hot or cold will shorten the life of the cells. Rather, store them in a cool, dry place above 40°F and below 90°F.

ing lights. Finally, the charger unit should be able to serve up a fully charged battery within an hour. Less time, of course, is better. Ridgid and Bosch can do it in 30 minutes.

Weigh the options

Although I tested only drills and circular saws, there are a few more things a buyer can compare before choosing a cordless combo kit. Aside from the tools that you need the most, there is a wide variation in the number of extra tools that can be run on these battery packs. Some manufacturers offer a couple; others offer up to 26. DeWalt and Milwaukee lead the way (chart, p. 61), while Metabo (so far) offers only a light in addition to a saw and drill.

Warranties are important, too. If a manufacturer is willing to stand behind its product

THE BEST KITS (BASED ON THE SAWS AND DRILLS)

Power: Saws crosscut a 1¾-in. LVL. Drills bored a 1½-in. hole in the LVL, and hammer drills bored 3-in. by ½-in. holes into concrete.
Endurance: Saws: number of feet cut through ¾-in. plywood. Drills: total screws driven through synthetic decking into an LVL.
Controls/adjustments: Grip comfort and balance, switch placement, bevel/depth/clutch adjustments, and clarity of markings.
Batteries/charger: Battery removal/replacement, charge speed, and status display. Extra credit was given for a cooling fan in the charger.

MILWAUKEE **The best tools for serious work.** Both the hammer drill and saw have the most comfortable grips and are the easiest to use for long periods. The hammer drill has adequate power and exceptional endurance, with an innovative battery pack that can be attached from either the front or rear of the base. A weak area is the mode selector: The hammer mode can be selected accidentally when the clutch setting is changed. The saw looks, feels, and performs like the best of circular saws, with excellent power and endurance. The one-hour charger is adequate, although it doesn't diagnose pack faults. The carrying bag, with its interior pockets, is the best.

Power: A-
Endurance: A
Controls/adjustments: A+
Battery/charger: B+

DEWALT **No frills, just heavy-duty performance.** There's a lot to like about this kit. The hammer drill is a brute; it won the concrete drilling race. It's one of only two drills with three speed ranges. The saw is powerful with excellent endurance. Controls are excellent, although the knob holding the rip fence is difficult to access. The one-hour charger works well, but the five different messages displayed by a single red LED are confusing.

Power: A+
Endurance: B+
Controls/adjustments: B+
Battery/charger: C+

BOSCH **A good saw with real dust collection.** The saw's housing has two great features: a flip-up port for attaching a Bosch vacuum hose and a superb depth-adjustment knob and scale that's the easiest to read. Unfortunately, the saw's rip fence wiggles during use, and the arbor lock is the hardest to access. The hammer drill is a solid, no-frills tool. The quick 30-minute dual-port charger is capable of trickle-charging hot batteries until they cool enough to permit fast-charging.

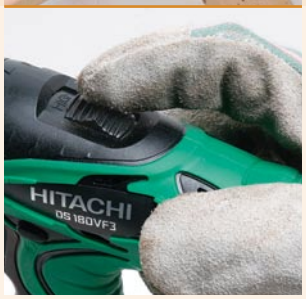
Power: B+
Endurance: B-
Controls/adjustments: B-
Battery/charger: A

CRAFTSMAN **A far better drill than saw.** The drill is a light tool with great balance and easily accessible controls. Unique features include integral plumb and level vials, and an LED in the base that illuminates the work area. The saw may have a laser-cutting guide, but there's not much else going for it. Cutting endurance was the lowest in this survey. And the simple task of blade replacement is a chore because the arbor lock frequently slips. The one-hour charger is good, although hot battery packs must cool before being placed in the unit.

Power: D
Endurance: D
Controls/adjustments: C-
Battery/charger: C

HITACHI **Tools that look more ergonomic than they feel.** The poor grip and raised plastic ridges make the drill uncomfortable to use. Controls are adequate, but the small clutch and variable-speed switch are difficult to adjust while wearing heavy gloves. The saw, which is uncomfortable to grip, bogged down in the power test and displayed little endurance. It's the only saw that doesn't have onboard wrench storage for blade-changing. The one-hour charger gets the job done, but doesn't accept hot packs and needs a 15-minute charger cooldown between batteries.

Power: C
Endurance: C+
Controls/adjustments: D
Battery/charger: D



MAKITA **Average power and endurance.** Like the DeWalt, the hammer drill has three speed ranges. Unfortunately, both the speed and mode-selector switches get stuck easily and require an annoying amount of fiddling to set correctly. The large, clearly marked clutch is a pleasure to use. The saw bogged slightly in the power test, and its chubby grip isn't very comfortable. The saw's top-mounted lock-off button, however, is extremely convenient. The 45-minute charger offers good diagnostic capability, and the case is the best hard shell for ease of packing.

Power: B- | **Controls/adjustments: C**
Endurance: B- | **Battery/charger: B+**

METABO **Good tools with the worst battery attachments.** Releasing the drill battery is an inconvenient process, but removing the saw's pack is downright cumbersome. The unique forward/reverse rocker switch takes some getting used to. The saw, however, features an outstanding lock-off switch, and a sturdy metal base and blade guard. The swiveling dust port promises good things but tends to clog during heavy cutting. Although powerful, the saw was below average in endurance. The 30-minute fan-cooled charger is excellent.

Power: C- | **Controls/adjustments: B**
Endurance: C | **Battery/charger: C**

PANASONIC **These endurance champions just won't quit.** Both the hammer drill and the saw won their respective endurance tests. The drill has a great grip. The light-duty circular saw's adjustment knobs are too small, the depth-adjustment lever interferes with the shoe, and the trigger-switch lock is stiff and often prevents the tool from being turned on. Blade-changing is marginal because the blade guard interferes with the new blade as it's installed. The 65-minute charging system is good.

Power: C+ | **Controls/adjustments: D**
Endurance: A+ | **Battery/charger: B**

PORTER-CABLE **Good tools that scored above average in every test.** Besides its performance, the hammer drill's strength is its controls and adjustments. The innovative grip features an insert system to accommodate hands of various sizes, and the large clutch is easy to adjust. Battery attachment could be better, though. The saw is good: The metal blade guard stands up to rough work, the large adjustment levers are easy to move, and the dust-exhaust nozzle is a terrific feature even without a vacuum attached. The one-hour charger offers good diagnostic capability.

Power: A | **Controls/adjustments: A**
Endurance: B | **Battery/charger: C+**

RIDGID **Heavyweight contenders that lack stamina.** Both the hammer drill and saw displayed exceptional power, but neither showed much endurance. The drill has a comfortable grip and an excellent clutch. The sturdy saw has a metal blade guard, a well-marked shoe, and an exceptional sloped grip that's easy to push. The 30-minute dual-port charger is the best of the bunch, with a fan to cool hot battery packs before beginning the fast-charge cycle. The comprehensive indicator lights are the easiest to understand.

Power: B | **Controls/adjustments: B**
Endurance: C- | **Battery/charger: A+**

RYOBI **Light tools that are comfortable to use.** The drill has an excellent grip and great balance. The saw spins a 5½-in. blade, which enables it to cut through 2x material but not a 1¾-in LVL. Like the Craftsman, this saw includes a laser-cutting guide mounted on the blade housing. The one-hour charger offers good diagnostic capability, but hot packs must be set aside to cool before being placed in the unit.

Power: D | **Controls/adjustments: C+**
Endurance: C | **Battery/charger: C**

for a long time, the odds are the tools will last. Milwaukee's five-year warranty on its line of tools is second only to Ridgid's lifetime warranty. (You need to register online to get the lifetime deal with Ridgid, or you get the standard three-year warranty.)

If you work in the field, a good case or bag is a real plus. Choose a hard-shell case to keep things dry or to protect the tools in a rough environment. A soft bag, on the other hand, offers more versatility. Soft cases allow you to slip in a couple of extra tools to avoid making an extra trip up the stairs.

The pick of a healthy litter

The kit that I'd most like to swipe while my editor wasn't looking—in other words, the best overall—was the Milwaukee. The tools are comfortable, heavy-duty workhorses that should provide years of excellent service. The DeWalt, Ridgid, Porter-Cable, and Bosch are very good kits that I would recommend to anyone. The choice among these brands primarily comes down to the price, the additional tools available, and whether you already own the manufacturer's charger and batteries. I selected the DeWalt as this survey's best value because of its combination of excellent quality, good price, and wide range of available add-on tools. Both Metabo and Makita offer good, respectable kits, but I rank them behind my first group. Although some of them might be inexpensive, I don't think that the other four kits offer much in the way of value. Some of their tools could be useful, however, as individual components doing light-duty tasks. □

Andy Beasley lives in Colorado and is a frequent contributor to *Fine Homebuilding*. Photos by Daniel S. Morrison.