JIGSAWS

Toolless blade changing, easy controls, and smooth cutting have improved the new generation of jigsaws

by David Frane

A jigsaw isn't the first, or even the second, power tool most carpenters buy. But if you're going to do trim work or install cabinets, it's one you can't afford to be without. Over the years, I've owned and used a lot of different power tools, but few of them have changed as much as jigsaws. With features like dust blowers, orbital cutting action, and toolless blade and bevel clamps, today's saws are much easier to use than earlier models.

Applications

Jigsaws have the ability to make curved and irregular cuts with great speed and accuracy. You can make similar cuts with a band or coping saw, but coping saws are slow and bandsaws aren't portable. Circular saws will cut broad arcing curves, but not the tight radii that jigsaws can.

Curved cuts. When a carpenter needs to cut a scribe line on a cabinet, countertop, or piece of baseboard, odds are he'll do it with a jigsaw. The same goes for fitting siding around curved windows and doors or for making decorative trim items like shelf supports and exposed rafter tails. Some carpenters will put a scrolling blade in their jigsaw and use it to cope the ends of crown and other molded trim.

Stopped cuts. Carpenters frequently use jigsaws to make stopped cuts. You can use a circular saw or miter saw to notch items like deck boards, window stools, and door sills, but circular blades make arc-shaped cuts, so unless you're willing to cut beyond inside corners, you'll need to finish with a jigsaw.


Quick change. The ability to change blades without picking up an Allen wrench makes many of the new jigsaws easier to use. Shown here are the Milwaukee top-handle model (left) and the Metabo barrel-grip (right).

Cabinet installers use jigsaws to do sink cutouts and make openings for items like electrical boxes, plumbing pipes, and ventilating ducts.

Utility cutting. A jigsaw is also a good substitute for a hacksaw. With the right kind of blades, you can cut aluminum thresholds, threaded rod, angle iron, and most kinds of plastic and metal pipe. Hand-held grinders are better, but in a pinch you can use a jigsaw to cut fiberglass, cement board, and ceramic tile.

Getting a Grip

There are two kinds of jigsaws, ones that have handles and ones that don't. Saws without handles are known as barrel-grips because you hold them by their barrel-shaped motor housing. Top-handle models are just what they sound like, jigsaws with handles on top. Also known as overhand-grip or D-grip jigsaws, these tools are often barrel-grip models that have been modified by adding a handle and trigger switch. Many tool companies offer the same saw in either configuration.

The type of saw you choose is purely a matter of personal preference. In the U.S., top-handle models outsell barrel-grips by a factor of about ten to one. The opposite is true in Europe, where barrel-grips are much more popular. No one knows why this is; it's just one of those regional preferences like East Coast carpenters using sidewinders and West Coast carpenters using worm-drives.

Personally, I like barrel-grip saws because I think they're easier to control, especially on intricate cuts. Your hand is closer to the work and the tool feels more like an extension of your arm. Barrel-grip models aren't very tall, and that makes them easier to maneuver in tight spaces, like inside cabinets. But there are good reasons why you might prefer a top-handle saw. For example, they're simple to turn on and off in a hurry because the trigger switch is right there in your hand. And I think it's easier to plunge cut when there's a handle to grab onto.

Switches

When tradespeople talk about why they like a particular power tool, you rarely hear them mention the switch. I've heard carpenters get all excited about being able to replace brushes, even though it's the kind of thing they might do once every five years. But if you ask me, the switch is one of the most important parts of any power tool, because it's something you use every single time the tool comes out of the case.

Jigsaws are made with two different types of switches. Barrel-grip models rely on a slide switch mounted somewhere on the motor housing. Overhand-grip saws use a trigger switch mounted right up on the handle.

Slide switches. Slide switches are simple on/off mechanisms, so speed is always controlled by turning a separate thumb wheel. Simply put, the only way to change the speed during a cut with a barrel-grip saw is to have both hands on the saw. One hand operates the trigger, and the other turns the thumb wheel. I'd rather control the saw with one hand and have the other free to steady the workpiece.

The biggest issue with a slide switch is where it's located. Usually, it's on the top or left side of the motor housing. Being left-handed, I prefer a top-mounted switch because I can get at it with either thumb. A side-mounted switch is impossible to use when it's under the palm of your hand. That said, if you're exclusively right-handed, a side-mounted switch might be preferable because it's closer to where your thumb lies when you use the tool. DeWalt provides a third option and puts the switch on the bottom of the saw. This allows you to activate the switch with the fingers of either hand without having to shift your grip.

There are a couple of different kinds of slide switches. The older style slides straight forward for on and straight back for off. No harm's done if you occasionally fumble to turn a saw on, but in an emergency you've got to be able to turn it off quickly.

About half of the barrel-grip models have a newer type of switch that slides forward for on, but rocks back for off. It's easier to turn the tool off because all you have to do is tap the rear end of the switch and it pops backward.

Trigger switches. Nothing is easier to use than a trigger switch. Squeeze the

Bevel angle. Many of the new jigsaws come with no Allen wrench at all; even the bevel angle is adjustable without a tool. The DeWalt 321 (left) uses a pivoting lever on the base; the Porter-Cable 9543 has a rotating knob that folds down from the back of the saw (right).

trigger and the saw turns on, release it and the saw turns off. It's even better if the switch is true variable-speed, because then you can control speed by finger pressure alone. About half the top-handle saws I tested have this feature. The rest have a type of trigger switch that only turns the saw on or off. Like a slide-switch on a barrel-grip saw, speed is controlled by turning a separate thumb wheel somewhere on the handle or motor housing. Personally, if I were going to buy a top-handle saw, I couldn't imagine settling for one without a true variable-speed switch. Otherwise, you have to put both hands on the saw if you want to change speed in the middle of a cut.

Another thing to consider when buying an overhand-grip saw is the location of the trigger lock. Some manufacturers put it on the left side of the handle, which is fine as long as you use the tool right-handed. But if you're left-handed, this can be a dangerous location because it's easy to accidentally activate the lock with the palm of your hand. Many tool companies have recognized this and put the lock where you can't accidentally trip it.

Blade Clamps

In recent years, toolless blade clamps have become popular features on jigsaws. They're mostly a matter of convenience, because they don't hold blades any better than old style clamps. And some of them aren't even any faster to use than an Allen key. But most toolless clamps make it less annoying to change blades because you never have to search for lost wrenches.

About two-thirds of the saws I tested had toolless blade clamps. The mechanisms vary quite a bit in terms of design and ease of use. Most are activated by turning a knob or pulling a lever on the gear housing. The rest rely on mechanisms that are attached to the end of the blade spindle.

Bosch, Makita, and DeWalt have clamps that are activated by rotating a knob or lever on top of the saw. The Bosch mechanism is a little slower to use because you have to rotate the blade so that the teeth face forward after you place it in the clamp. It's no great hardship but is not the sort of thing you want to do when the blade is hot. The Makita and DeWalt mechanisms are slightly easier to operate, but neither one is significantly faster than using an Allen key.

Freud, Metabo, and Porter-Cable have clamps that are activated by retracting a spring-loaded lever on the end of the blade spindle. I prefer Metabo's mechanism because it's as fast and easy to use as Milwaukee's. I also like Porter-Cable's clamp, although it's a little harder to operate because the retaining spring is very stiff. It's also hard to get at the lever when the spindle stops at the top of the upstroke because the blade guard gets in the way. The Freud mechanism was also easy to use, but the saw I received threw blades with alarming frequency.

Milwaukee's toolless blade clamp is one of the best I've ever used. To install a blade, you pull back a lever on the nose of the saw, insert the blade, and then release the lever. To remove blades, just reverse the process. This is about as fast and easy as it gets. In addition, if you pull back on the lever and shake the tool, you can frequently get the blade to fall right out of the machine. It beats the heck out of burning your fingers on a hot piece of metal.

Bevel Mechanism

Most jigsaws still require Allen wrenches to adjust the angle of the base. But three companies now make saws with toolless bevel clamps. DeWalt and Makita saws have lever-activated mechanisms that are much faster to use than Allen wrenches. Porter-Cable also makes a toolless bevel clamp, but it's not as fast as a lever because it rotates rather than pivots. As far as I'm concerned, any toolless bevel lock is preferable to using an Allen wrench.

All but one of the tools I tested had bases that tilt 45 degrees left or right for bevel cuts. Usually, some kind of detent slot is milled into the base at common angles such as 0, 15, 30, and 45 degrees. More settings aren't necessarily better, because carpenters normally change angles only when they need to back-cut scribed pieces, so the exact angle hardly matters.

Baseplates

It used to be that most jigsaws had stamped-steel baseplates. The problem with steel plates was that they were

Jigsaw Specs

Manufacturer	Model	Grip	Street Price *	Weight ** in lbs.	Cord Length	Motor Rating	Toolless Bevel Mechanism	Toolless Blade Clamp
Bosch	1584AVS	barrel	$155	5.5	8′	5.0 amp	no	yes
Bosch	1587AVS	top	$155	5.7	8′	5.0 amp	no	yes
DeWalt	DW323	barrel	$164	5.8	9′ 6″	5.8 amp	yes	yes
DeWalt	DW933	top	$279	8.0	n/a	18v cordless	yes	yes
DeWalt	DW321	top	$164	6.0	9′ 6″	5.8 amp	yes	yes
DeWalt	DW318	top	$103	6.1	8′	4.5 amp	no	no
Fein	ASTe 638	barrel	$475	5.3	9′ 9″	4.7 amp	no	no
Festo	PS2E	barrel	$292	5.0	13′	450 watt	no	no
Freud	FJ85	top	$109	5.4	7′ 3″	4.8 amp	no	yes
Hitachi	CJ65V2	top	$159	5.6	8′	5.2 amp	no	no
Makita	4305T	barrel	$159	5.4	9′	5.5 amp	yes	yes
Makita	4304T	top	$159	5.6	9′	5.5 amp	yes	yes
Metabo	STEB 105 Plus	top	$199	6.0	14′	6.0 amp	no	yes
Metabo	STE 105 Plus	barrel	$199	5.8	14′	6.0 amp	no	yes
Milwaukee	6267-20	barrel	$299	5.8	n/a	12v cordless	no	yes
Milwaukee	6266-6	top	$149	5.5	9′ 6″	5.7 amp	no	yes
Porter-Cable	9543	top	$159	6.4	10′	6.0 amp	yes	yes

Manufacturer	Model	Switch Type	Speed Control	Speed (spm)	Vibration ***	Place of Manufacture
Bosch	1584AVS	slide	wheel	500-3100	less than average	USA
Bosch	1587AVS	trigger	trigger	500-3100	less than average	USA
DeWalt	DW323	slide	wheel	500-3100	less than average	Italy
DeWalt	DW933	trigger	trigger	0-2000	n/a	Assembled in USA
DeWalt	DW321	trigger	trigger	500-3100	average	Assembled in USA
DeWalt	DW318	trigger	trigger	0-3100	average	European Union
Fein	ASTe 638	slide	wheel	1050-2600	much less than average	Germany
Festo	PS2E	slide	wheel	1200-3300	much less than average	Germany
Freud	FJ85	trigger	trigger	500-2800	average	Spain
Hitachi	CJ65V2	trigger	wheel	700-3200	more than average	Ireland
Makita	4305T	slide	wheel	700-3000	more than average	England
Makita	4304T	trigger	wheel	500-3000	more than average	England
Metabo	STEB 105 Plus	trigger	wheel	1000-3000	average	Germany
Metabo	STE 105 Plus	slide	wheel	1000-3000	average	Germany
Milwaukee	6267-20	slide	single speed	1700	n/a	Germany
Milwaukee	6266-6	trigger	wheel	450-3100	average	Germany
Porter-Cable	9543	trigger	trigger	500-3100	average	USA

* Price includes case (except Freud, Fein, Milwaukee's cordless).

** May differ from manufacturers' specs; does not include weight of cord, which was supported while tool was being weighed.

*** Ratings reflect author's judgment of how the tools felt running at full speed with no orbital action; cordless models were not rated because their top speeds are so low compared with corded models.

likely to bend if you dropped the tool. These days, it's much more common to see a cast-metal plate with a steel or plastic insert. A number of saws come with plastic covers that fit in or over the base to prevent it from scratching delicate surfaces. I appreciate the added rigidity of a cast base but wouldn't go out of my way to get a plastic cover or insert because it's easy to protect delicate surfaces by covering the bottom of the saw with masking tape.

Blade Action

Orbital cutting action used to be an exotic feature on jigsaws. But nowadays, it's nearly impossible to find a professional grade tool without it. If your current saw doesn't orbit, that's reason enough to replace it.

Orbital cutting. Jigsaws cut a whole lot faster with orbital action because the blade swings forward and back as it goes up and down. This aggressive motion is great for cutting wood, provided you don't mind increased splintering and rougher cuts. A lever on the gear housing controls the amount of orbit. If you need to make cleaner cuts, set the lever to straight-line cutting. You should always do this when you cut metal because the orbiting action will ruin the blade.

Blade guides. Orbital action is transferred to the blade by a small cam-activated roller behind the spindle. The roller is usually grooved to house the back of the blade, which prevents it from bowing from side to side as it cuts. Porter-Cable and Festo use smooth wheels to push the blade and slotted guide rods to stabilize it. The guides help but won't absolutely prevent blades from wandering, especially in thick stock.

Speed. All things being equal, cutting speed is a function of blade speed, which is measured in strokes per minute (spm). As far as I'm concerned, the faster the saw, the better. Most corded models have a top speed in the range of 3,000 spm. The fastest cordless model topped out at 2,000 spm, significantly slower than the corded saws.

Vibration. One thing to consider when you evaluate power tools is how much they vibrate. I think it's reasonable to conclude that a tool that runs smoothly is of better quality than one that shakes and clatters. It's not just a matter of how long the tool will last; it's also relevant to safety. When tools vibrate, your natural response is to grasp them more tightly. This contributes to fatigue and, over time, to injuries like carpal tunnel syndrome. The spec table below contains my opinion about how much or how little each jigsaw vibrates.

Dust Blowers and Other Features

Most of the saws I tested were equipped with dust blowers, which is a fancy way of saying that some of the cooling air exhausts through the front of the tool. It's hard not to appreciate this feature when you've spent as many years as I have using lung power to blow dust off cut lines. Some of these tools have an on/off switch for the blower, and the rest are on all the time, which is fine by me because I can't imagine ever wanting to turn it off.

Some of the saws come with dust collection ports, and a few more can be equipped with them. In most cases, this option for dust collection has become available because similar models are being sold in Europe, where there are very strict safety standards concerning dust control. The clear plastic shield on the front of the saw is there to aid dust collection. But if the saw isn't connected to a vacuum hose, the shield gets coated with sawdust, which makes it hard to see where you're cutting. Luckily, the shields pop right off.

Cord length. The saws I tested had cords that were anywhere from 7 to 14 feet long. It's not a make-or-break issue, but other things being equal, I'd rather have a long cord than a short one. Having an extra couple of feet sometimes makes the difference between finishing a job quickly or wandering around the job site trying to locate an extension cord.

Cordless models. A number of companies, including Makita and Metabo, have tried selling cordless jigsaws in the past. These tools didn't catch on, however, because the batteries of the day weren't up to the task. But recent advances in technology have made it possible to build a greater variety of cordless tools. Two of the more interesting saws I tried for this article were a 12-volt barrel-grip model from Milwaukee and an 18-volt top-handle from DeWalt.

The first thing you notice about these saws is how much slower they cut than corded tools. Milwaukee's saw has a single speed of 1,700 spm. DeWalt's saw is variable-speed and tops out at 2,000 spm. Also, these saws differ a lot in weight. Milwaukee's saw weighs 5.8 pounds, so it feels like you're using a regular jigsaw. DeWalt's tool weighs 8 pounds, so it's noticeably heavier than any jigsaw I've ever used. Weight and extra cost aside, I'd be a lot more interested in buying a cordless saw if someone made one that cut as fast as a corded model.

See following pages for jigsaw descriptions.

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Bosch 1584AVS

Bosch owns the company that invented the jigsaw back in the 1940s, so it's not surprising that until recently, their saws were the standard for judging all other jigsaws. They still make great tools, but other manufacturers have caught up. The 1584AVS was one of the first jigsaws with a toolless blade clamp. To install a blade, you put it in the slot in the end of the spindle, twist it 90 degrees so the teeth point forward, and rotate a knob on top of the saw. It's easy to spin the knob quickly, but twisting blades in and out of the clamp is not as easy as shoving them straight in. This saw is smooth running and comfortable to use, but it can be frustrating for lefties because the switch is on the left side of the motor housing.

Bosch 1587AVS

This top-handle saw is identical to the 1584AVS except for the handle, trigger, and speed control. The toolless blade clamp is tightened by turning a small knob that pops up from the top of the machine. It's not quite as easy to use as the knob on the barrel-grip version because it's smaller and engages only in the up position. Like the other Bosch saw, this one has a dust blower and orbital cutting action. I particularly like the switch because it's true variable-speed, but being left-handed, I wish the lock-on button was located somewhere other than the left side of the handle.

DeWalt DW321

The DW321 was introduced about three years ago and was the first jigsaw to come without an Allen wrench. Other saws already had toolless blade clamps, but this was the first with a toolless bevel clamp. The clamp is operated by pivoting a lever that projects from the rear of the base, making it faster and easier to change bevel settings. The trigger switch is true variable-speed and has a lock-on button that's impossible to activate by mistake. I particularly like the design of the handle, which is in keeping with DeWalt's emphasis on ergonomic design and is especially comfortable to grip.

DeWalt DW323

This is the barrel-grip version of DeWalt's DW321. The tools have the same blade clamp, motor, and gear housing. They also share the same bevel lock mechanism, though this saw has a smaller base and added metal blade guards. I particularly like the switch, which slides forward for on, but rocks back for off. This makes it impossible to turn on by accident and easy to turn off in a hurry. The switch is located on the bottom of the motor housing, so you can reach it with the fingers of either hand. Unlike using top- and side-mounted switches, you almost never have to shift your grip to get at it. If you like barrel-grip saws, this is one you should try.

DeWalt DW933

The DW933 is the newest professional-grade cordless jigsaw. The motor and plastic housing are unique to this tool, but the base, blade assembly, and gear housing are the same ones used on the DW321. According to the manufacturer, this saw will cut 50 feet of 3/4-inch material on a single charge. I tried it myself and managed to cut 80 feet of 3/4-inch plywood before the battery ran down. That might not sound like much, but it's the equivalent of eight or nine sink cutouts, and more cutting than I've ever done at one time. Overall, I think this is a very nice tool, though it's 30% slower and noticeably heavier than corded models. Whether or not these are reasonable trade-offs depends on how inconvenient it is for you to use a cord.

DeWalt DW318

Like the other DeWalt saws I tested, the DW318 has a dust blower, orbital cutting action, and a true variable-speed trigger switch. But it's an old model that lacks many of the features found on newer saws. For example, the blade and bevel clamps are both activated by Allen wrenches. What's worse, they take different size wrenches, so there are two to keep track of. The saw comes with a stamped steel base and a handle that's less comfortable to grip than those on more current models.

Fein ASTe 638

If you're familiar with Fein at all, it's probably because you've seen their triangle sander. (This is also the company that invented portable power tools when they built the first electric drill over 100 years ago.) The ASTe 638 is a compact and extremely smooth running jigsaw. But it was designed to cut metal rather than wood, so the base doesn't tilt and there's no orbital cutting action. One of the more unusual things about this tool is that the wrench for the blade clamp is connected to the knob on top of the saw. You get at it by unthreading the knob. Considering the high price and limited features, it's not the best choice for the typical residential job site.

Festo PS2E

It's clear that a lot of thought went into designing this saw. For example, the dust collection port comes off the back end of the motor housing because the duct is built right into it. And it has an exceptionally nice switch that curves out on front to give you something to push against. Tap the back end of the switch, and it pops to off. The PS2E runs smoothly and is comfortable to grip. The most interesting thing about this saw is that you can get it with Festo's optional guide rail system (inset). By snapping the tool into an adaptor plate, you can run it along the guide rail to make cuts that look like they came off a table saw. There may not be a lot of value in doing this with a jigsaw, but I'm a big fan of the guide system, which also works with Festo's circular saws and routers.

Freud FJ85

This was one of the least expensive saws I tested and also the one with the most serious problems. It has most of the latest features: orbital action, a true variable-speed trigger switch, and a toolless blade clamp. The blade clamp was very easy to operate, but it did a poor job of holding the blades. This saw kept throwing the blade that came with it, so I tried Bosch-style blades from other manufacturers. The only one it would hold was a metal-cutting blade from Milwaukee. Freud's saw does a fine job cutting metal, but it has an especially short cord and a handle that's not very comfortable to grasp.

Hitachi CJ65V2

The best thing about the CJ65V2 is that it's exceptionally compact, which makes it easier to use in cramped quarters, such as the inside of cabinets. Hitachi shaved off a couple of inches of length by moving the speed control wheel from the back of the motor housing to an area near the front of the tool. This saw has modern features like a dust blower and orbital cutting action, but the blade and bevel lock still require an Allen wrench. However, the wrench is easy to get at because it stores in a slot in the base. Unfortunately, this saw vibrates more than most.

Makita 4304T

There are a lot of things to like about this jigsaw, like the dust blower, orbital action, and toolless blade and bevel clamps. The blade clamp is activated by turning a knob on top of the tool, and is faster and simpler to use than most. I especially like the way the base slides smoothly between bevel settings and is locked in place by a quick acting lever. What I don't like about this saw is that speed is not controlled by trigger pressure and that it vibrates more than most of the tools I tested.

Makita 4305T

This is the barrel-grip version of Makita's 4304T, so it has the same toolless blade and bevel clamp, dust blower, and orbital action. It's especially easy to change blades because the clamp is activated by spinning a knob that folds out of the top of the saw. You can use this tool with either hand because the switch is mounted on top of the motor housing. Like the 4304T, this saw seems to vibrate more than most of the tools I tested.

Metabo STEß 105 Plus

You probably haven't seen this saw, because it has been out for less than a year and is made by a company that's better known in Europe. The best thing about Metabo's saw is the toolless blade clamp, which is very fast and easy to use. It consists of a spring-loaded lever on the end of the drive spindle. The tensioning spring looks like it would be easy to damage, but that's unlikely because the only time it's exposed is when you're changing blades. The saw comes with orbital cutting action, a dust blower, and a removable dust-collection manifold. I like the long 14-foot cord, but would have liked the saw more if it had a variable-speed trigger.

Metabo STE 105 Plus

Except for a handle and trigger switch, this barrel-grip model has the same features as the other Metabo saw I tested. That includes a dust blower, orbital cutting action, and a superior toolless blade clamp. I appreciate the way the wire guard in front of the blade folds up and out of the way to give you better access for changing blades. Like all barrel-grip saws, speed is controlled by turning a thumb wheel. The switch, which is on top of the motor housing, is the type that slides forward for on and rocks backwards for off. The motor housing is kind of boxy, so it's not as comfortable to grasp as some of the other barrel-grip models. That said, this is still one of my favorite barrel-grip jigsaws.

Milwaukee 6266-6

This tool has been on the market for over three years, but it still has the best toolless blade clamp I've ever used. To change blades you pull back a lever on the nose of the saw, remove or insert a blade, then release the lever. No other clamp is faster or easier to use. Like most professional duty saws, it runs smoothly and cuts powerfully. An Allen wrench that stores on top of the base is used to change bevel settings. Detents in the bevel mechanism make it easy to set angles of 0, 15, 30, and 45 degrees. My only complaint about this saw is that the trigger is a simple on/off switch and the lock-on button is located where you can accidentally activate it if you use the tool left-handed.

Milwaukee 6267-20

This jigsaw has the same base, blade clamp, and gear housing as the other Milwaukee saw I tested. What it doesn't have is a cord, because it's powered by a 12-volt battery. At 5.75 pounds, it's lighter and easier to handle than many corded models. With so few cordless jigsaws on the market, it's hard to evaluate run time. I managed to cut 40 feet of 3/4-inch plywood on a single charge, which is not bad when you consider the short cuts people usually make with jigsaws. On the downside, the saw lacks a dust blower and has a single speed of 1,700 spm, which is much slower than a corded model.

Porter-Cable 9543

This jigsaw has more features than any other. In addition to the usual dust blower, orbital action, and toolless blade clamp, it has a toolless bevel clamp and a unique spring-loaded detent system for setting common angles. Unlike with other saws, you don't have to jiggle the base onto a fixed pin, but simply tilt it sideways until a dog clicks into one of the detents. The bevel lock is operated by rotating a lever that folds down from the back of the base. To use the blade clamp; you engage a spring-loaded lever on the end of the spindle. However, the spring is very stiff and can be hard to get to if the blade stops on the upstroke. But overall this is a very nice saw and worth considering if you're going to buy a D-grip model.

Sources of Supply

Bosch Power Tools
4300 W. Peterson Ave.
Chicago, IL 60646
877/267-2499
www.boschtools.com

DeWalt Industrial Tool
626 Hanover Pike
Hampstead, MD 21074
800/433-9258
www.dewalt.com

Fein Power Tools
1030 Alcon Street
Pittsburgh, PA 15220
800/441-9878
www.fein.com

Festo
ToolGuide Corporation
1187 Coast Village Rd.
Suite 1215
Santa Barbara, CA 93108
888/337-8600
www.toolguide.net

Freud U.S.A.
P.O. Box 7187
High Point, NC 27264
800/472-7307

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

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

Metabo
1231 Wilson Dr.
Westchester, PA 19380
800/638-2264
www.metabousa.com

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

Porter-Cable
4825 Hwy. 45 North
P.O. Box 2468
Jackson, TN 38302
800/321-9443
www.porter-cable.com