# Testing Worm-Drive Saws



Still powerful and durable, the newest models have lost weight and gained some useful features

### BY SCOTT GRICE

have used a worm-drive circular saw daily for the past 13 years and have become so comfortable with it that I hardly give it a second thought. I started out with the Skil HD77, then switched to the Skil Mag seven years ago. My worm-drive saw is essential for rough framing, but I also use it for finish work as well as for cutting concrete, rebar, cement siding, PVC pipe, or anything else that gets in my way.

Unlike a few years ago, when Skil saws were the standard for worm drives, today there are seven professional-quality saws that are widely available. They boast features like plugs that light up, rubberized levers, and blade wrenches that ride in the handle when not in use. All seven saws reviewed here use 7¼-in. blades and range in price from \$169 to \$189.

I used these saws on job sites and in my shop, where I checked them for their proficiency at making miter and bevel cuts and tested their ability to hog through beam stock. Versatility is the feature I prize most in these saws. Saws that were powerful but hard to maneuver didn't score as high as saws that bogged down when really pushed but were easy to use in a variety of ways. After I completed my testing, I also gathered together seven carpenters, ranging in discipline from rough framer to cabinetmaker, and let them try the saws. I incorporated their observations into this review, but you can go to FineHomebuilding.com to see more-detailed reviews from some of these other tradesmen.

# Worm-drive saws have more torque

The worm in worm-drive circular saw refers to the wormlike linear gear that transfers the motor's power to the larger gear that encircles the blade arbor. (DeWalt and Makita use a hypoid gear; see sidebar, facing page.) The gear defines three qualities of the saw. First, the mechanical advantage of the gear increases cutting torque while slowing the blade to 4400 rpm (as opposed to about 5800 for a sidewinder, or direct-drive saw). With a thinkerf carbide blade, these saws are almost unstoppable.

Second, the blade sits on the left side of the motor. For righthanded people or for lefties who cut with their right hand, this orientation makes the blade fully visible, without the motor

### WEIGHT: 14.25 LB. COST: \$169

Extra features ······ A
Baseplate ······B-
Bevel/depth ····· B+
Balance/handling · · · · · · · B+
Power ······ A

Ridgid has built a well-balanced saw with loads of power. The white-onblack bevel and depth numbers, onboard Allen wrench, and lighted plug (on a 9-ft. cord) are all smart features. My main complaints are that without rolled edges, the flatmetal baseplate is not as sturdy as those on other saws, and that the 51.5° bevel positive stop is hard to operate with one hand.

WWW.RIDGID.COM

### Ridgid R3210

RIDGID



The bevel stop is money wasted. You can't bevel beyond 45° without pressing down on a springloaded stop. Ridgid would have been better off developing a sturdier baseplate.



Easy-to-read numbers. The white-on-black numbers are easy to read and can be handy for rough adjustments. The plastic-coated levers were more comfortable than bare metal.

### Worm gear vs. hypoid gear

Traditionally, Skil and most other manufacturers have used a worm-drive mechanism to transfer the motor's power to the blade arbor. A worm drive's oil-filled gear chamber needs to be maintained. Bosch, Skil, and Ridgid recommend changing oil after the first 10 hours of operation. Checking oil level and changing dirty oil are regular maintenance tasks. Makita and DeWalt use

a hypoid gear similar to a car's differential. The benefit for DeWalt is that the hypoid gear enables the motor to be tilted up to shorten the overall length of the saw. Makita claims that a hypoid gear creates less heat, which enables a sealed gear box where the oil is never changed.



Worm-drive gear Inside saws like the Skil, the Ridgid, and the Milwaukee, the worm gear (A) carries the motor's power to the worm wheel (B) that surrounds the blade arbor.



Hypoid gear The Makita and the DeWalt use an offset-spiral gear (A) to transmit the motor's power to a secondary gear (B) connected to the blade arbor.

www.finehomebuilding.com

### DeWalt DW378G

### WEIGHT: 12.75 LB. COST: \$169

Power · · · · · · · · · · · · · · · · · · ·	В
Balance/handling	С
Bevel/depth	B+
Baseplate	B-
Extra features	В

#### Overall ······B

DeWalt has strayed from the classic elongated shape of a worm drive, but if you are used to a sidewinder, this tool is a moreapproachable saw. The tilted motor allows the handle to be closer to the blade arbor. This design helps when you're lifting the saw with one hand. The lower blade guard works great and never bound up. I found the top handle awkward and never got used to the balance. WWW.DEWALT.COM

Blade guards are better. The

DEWAL

new guard design has a tongue that helps to get the guard moving when it first touches the work. It also has a flange that comes up the side of the blade to help the guard ride over 2x stock as the blade continues forward.



Numbers in the right place. When adjusting the bevel on the Milwaukee, there is no lifting or turning the saw around. The bevel setting can be read from behind, where you typically are when operating the saw.

From the oversize handles to the long composite baseplate, everything about this saw says it's big, burly, and ready for work. It has a long-handled onboard Allen wrench, a view window to check oil, and well-placed, easy-to-read bevel and depth markings. At almost 15 lb., the saw's weight is the only thing holding it back from being a contender for best overall. WWW.MILWAUKEETOOL.COM

# Milwaukee 6377-6

### WEIGHT: 14.75 LB. COST: \$179

Overall ······B+	
Extra features ····· A	
Baseplate ······B+	4
Bevel/depth · · · · · · · · A	ę
Balance/handling · · · · · · · B+	4
Power ····· A+	

### THE RIGHT BLADE WILL **CUT ANYTHING**

Circular saws aren't just for cutting wood. Given the proper blade, the extra power of a worm drive enables it to hog through just about any material. These blades can be found at your local hardware center.

Metal cutoff blade can wear down almost as fast as it cuts (\$3).



Cement-siding blade has only four teeth and is not designed for cutting anything but cementitious building products (\$45).





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housing obstructing the view. Third, the motor's body is parallel to the direction of the cut, making the saw longer rather than wider, which improves the saw's reach. Of course, it also makes the saw nose-heavy, which can be a benefit if you know how to handle it.

The extra torque of a worm drive causes a kick when the trigger is pulled. The Skil saws had about the greatest kick. The

### DeWalt had the least; it's almost unnoticeable. The Makita also had very little. Kick is easy to account for, but every once in a while, it surprises you. Zero kick is a nice benefit.

The saws that kick the most also had the most power. That said, all these saws had sufficient power and easily made every cut I threw at them. The mostchallenging setup probably was ripping through 4x beam stock with the saws beveled to the maximum setting. Each saw could make this cut, but the Makita and the DeWalt could be pushed so hard that the blade bound. At a less-aggressive pace, these saws did fine. The Bosch, the Skil, and the Ridgid all made it through without their blades stopping, but their motors sounded stressed. The Milwaukee impressed me the most in this test because it could handle as much pressure as I could put on it without any noticeable strain.

#### Worm drives are heavier

Besides giving the saw more power, the worm-drive gear adds weight. The Skil SHD77 weighs 16 lb. By using lighter materials to construct the baseplate and the housing, other manufacturers have significantly reduced the weight of their saws. DeWalt's saw weighs 12.75 lb. and is the lightest of the bunch. (The average sidewinder weighs around 11 lb.)

If you know how to use it, the worm drives' weight has several advantages. One, these saws don't dance or feel lightfooted. My worm drive tracks like a Cadillac on cruise control. Two, the saw's weight can help to do some of the work. When cutting 2x stock, I tip the piece so that the saw runs downhill as it cuts, and gravity carries the saw through the wood. Three, if you experience kickback (when the sawblade binds in the cut and tries to drive the saw backward), the saw's weight and its position behind the blade help to counteract this potentially hazardous movement.

# Top handles control the saw

The weight and elongated shape of worm drives means that some cuts, like cutting wall or roof sheathing in place, require two hands. This is why all these saws are equipped with a top handle. More important than helping to lift the saw is the handle's ability to help the user control the front of the saw.

I liked the Skil saws' top handle best. It's skewed to the line of the body and fits comfortably in

### Makita 5377MG WEIGHT: 13.5 LB. COST: \$179

Overall ······B+
Extra features ······ A
Baseplate ······ B-
Bevel/depth · · · · · · · · · · · · · · · · · · ·
Balance/handling · · · · · · · B+
Power ····· B

The Makita is a nice saw, and if I did more finish carpentry than framing, I would buy one. The motor is relatively quiet, with hardly any startup kick. The handle and especially the bevel and depth lever locks are easy on the hands. On the downside, the hypoid setup is underpowered (about equal to the DeWalt), and the baseplate bent with even a mild impact. Blade wrench rides in the handle. Makita's onboard Allen wrench is stored in the top handle. This is a big improvement over the flat-blade wrench that is never around when needed. Also, this wrench tucks in completely, so it's unlikely to get hung up on cords or clothes.

#### WWW.MAKITA.COM

**Concrete diamond blade** can be used for anything from sidewalks to countertops (\$20).



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Standard **wood blade** is for general framing. Replace it with a **finish blade** for smoother cuts (both \$10 to \$20).

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### Bosch 1677M

### WEIGHT: 13.5 LB. COST: \$179

Power ·····	В
Balance/handling	B+
Bevel/depth	B+
Baseplate	A-
Extra features ······	В

#### Overall ······B+

The Bosch is a lot like the Skil Mag, but it's ½ lb. lighter. If you like the top handle more than the SHD77M design, I would say there is no rea-

son not to buy the Bosch. This saw lacks special features like an onboard Allen wrench or rubberized levers. However, for \$10 more, you can get the direct-connect model, which allows you to plug an extension cord directly into the saw.

#### WWW.BOSCHTOOLS.COM

You supply the cord. Bosch says the logic behind its direct-connect model is twofold. First, the saw can safely be lowered by the cord without damaging the saw or disconnecting the cord. Second, Bosch claims that an extension cord is easier to repair on the job site.

either hand. Bosch, Makita, and Ridgid placed their top handle perpendicular to the saw's body, a configuration not as ergonomic as the top handle on the Skil saws. I found DeWalt's hammerhead top handle awkward and could never find a way to control the saw comfortably during twohanded cuts except for vertical cuts above head height. Granted, because of its light weight and short profile, this saw was the best at overhead cuts.

Makita uses a comfortable material for its trigger handle;

however, the Skil saws have the best-feeling grip. The Milwaukee has the most finger room around the trigger. If you have to wear gloves in the winter, I think this would be a big benefit.

# A built-in rafter hook is the best new feature

Built-in rafter hooks now come standard with every saw. Beyond that, saw manufacturers have added a host of other features in the hopes of distinguishing their models in a competitive marketplace. Some of these features are frivolous, like a dipstick for checking gear oil or measuring marks on the baseplate. However, some of the additions are significant.



A waffle baseplate. Bosch uses a molded magnesium baseplate. The waffle pattern is designed to add strength where it is needed without adding much weight.

Ridgid, Makita, and Milwaukee all have added an Allen slot in the blade-arbor bolt and incorporate a matching onboard Allen wrench in the handle. Other saws require the traditional stamped-metal wrench, which is always somewhere else when a blade needs changing. I like the way Makita stores the wrench inside the top handle. Milwaukee and Ridgid store the wrench on the bottom side of the trigger handle, which seems to increase the chance of catching the wrench on something.

The new blade guards are an improvement over the old, which were sometimes pinned back out of the way (an incredibly dangerous practice). All the guards worked well, and although they look similar, there are nuanced differences. The two Skil saws got hung up more than the rest. On the other hand, the DeWalt guard was hardly noticeable at all.

### Big differences in baseplates

Baseplates are usually the weak link for a worm-drive saw. If they are bent, they no longer run parallel with the sawblade, making it hard to cut straight. Sometimes the plate itself bends, or sometimes the baseplate deptharm attachment is tweaked.

The Skil Mag has a magnesium plate with rolled edges that resist bending with impact. It also has the sturdiest base/depth-arm attachment of all the saws. To test this, I extended the depth adjustment to the shallowest setting and wrenched the baseplate from side to side. Skil has added guide notches for the blade on the plate's edges in front of and behind the blade.

The Milwaukee's composite baseplate is sturdy, but there is some play at the connection. The Ridgid has an inherently weak flat plate. The Skil Mag used to have this type of plate, but has returned to a more-rigid rolled edge. During the test, Makita's plate bent from a blow on the front corner. I was disconcerted by how easily I could bend it back into shape.

#### Bevel and depth adjustments are a mixed bag

All the saws except the Skil models bevel beyond 45°. Many employ a positive-stop system so that the saw automatically stops at 45°; the stop must be manipulated so that the saw can bevel farther. Makita went farthest with this idea and has positive stops at 22.5°, 45°, and 51.5°. These stops seem extraneous; I always visually check the bevel setting regardless of the stop. Milwaukee's bevel and depth adjustments are the easiest to read because the numbers are printed in white on a black background and can be seen when looking from behind the saw body.

Makita's rubber-coated steel levers are definitely the most comfortable. They are sturdy and easy on the hands, especially on a cold, rainy morning. The other saws use standard bent metal, which can be uncomfortable or hard to operate in the cold. None of the saws' depth gauges are very precise.

## The Skil Mag is still my choice

If you buy one of these saws, you'll probably own it for the next 10 years. A \$20 price difference between the least-expensive and the most-expensive models isn't significant, so I didn't pick a best value. My vote for best overall is a different story.

If I had to buy a saw tomorrow, I would get the Skil Mag. I use my saw every day, and this saw is rock solid with versatility that no other saw can match. While the design is streamlined, I appreciate details like the design of the top handle, the sturdy baseplate, and the light weight. That said, I wouldn't hesitate to get the Bosch 1677. I liked some features on the other saws. If I used my saw only once a week, I might consider the Ridgid or the Makita because of the extra features. If I were looking at a big stack of studs I had to reduce to sawdust, I would consider the Milwaukee just for its pure power.  $\square$ 

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FineHomebuilding.com

Go to our Web site for techniques on using a worm-drive saw's weight to your advantage.



This saw is light, yet has lots of power and great balance. It performs well in every situation from tricky finish work to the demands of rough framing. The rolled-edge magnesium base-plate is sturdy and light. As with the SHD77, I found the handles to be more comfortable than those of the other saws. Also, the durability track record is something I value. For those who want an all-around saw, this is it.

enough so that the

baseplate can travel to

the maximum bevel.

WWW.SKILTOOLS.COM

Extra features · · · · · · · B

Overall ······ A



### Iconic worm drive remains the same

### WEIGHT: 16 LB. COST: \$169

Skil is synonymous with worm-drive design. Apparently, the company doesn't think it should mess much with a good thing. The only changes on the latest model are that the amps have been boosted to 15 from 13 and that a rafter hook now is standard. The top handle and trigger handle are both exactly the same as on the Skil Mag, and I found them more comfortable than the handles on any other brand. This saw enjoys the reputation of being an indestructible powerhouse. Unfortunately, at 16 lb., it's the heaviest of the bunch.

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Power ······ A Balance/handling ······ B+

Overall ······B	
Extra features ······ n	one
Baseplate ······B	+
Bevel/depth · · · · · · · B	i.
Balance/handling · · · · · · · B	+