

# Plunge-Cutting Circular Saws

by David Frane

These portable, versatile tools are ideal for breaking down sheet goods on site

At the beginning of my career as a finish carpenter, there were two common ways to accurately cut finish sheet goods in the field: with a full-size table saw or with a circular saw and a straightedge. The table saw was fine for ripping but not much good for crosscutting; the circular saw ripped and crosscut equally well, but the process was slow because you had to clamp a guide to the stock for every cut. Neither tool had dust collection, and both chipped and scratched delicate material.

When Festool introduced the plunge-cutting saw, it suddenly became a whole lot easier to make accurate cuts in expensive sheet goods on site. In case you're not familiar with this tool, it's a circular saw designed to ride on an aluminum guide rail and intended for use with a dust-collecting vacuum. Plunge-cutting saws make it possible to produce



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straight, chip-free cuts in a variety of finish materials. Flooring installers use them to cut borders and inlays into hardwood and laminate flooring, and countertop fabricators use them to cut solid surfacing material without sending clouds of dust into the air.

For a solo carpenter making site-built cabinets or a small-shop cabinetmaker working alone, a plunge-cutting saw is the ideal tool for crosscutting material that's too wide for a miter saw and too big to easily maneuver onto a table saw. Setting up the cut is simple: Place the edge of the rail against the cut marks and then run the saw along it. This can be done with or without clamping the rail to the work. In many cases the soft rubber friction strips on the bottom of the rail will "grip" the surface well enough that you can cut without clamping. But if the cut is critical or the rail doesn't feel secure — as on slippery prevarnished plywood or MDF — it's best to take the time to use the clamps.

The blade rides against a stiff rubber splinter strip that projects slightly beyond the edge of the rail. The splinter strip is designed to press against the face of the work, so you can cut delicate material like veneer plywood, melamine, and door bottoms with little or no chipping where the blade exits.

Until recently, if you wanted a plunge-cutting saw you probably bought a Festool (other brands were available in Europe and Canada). But that changed late last year when DeWalt and Makita introduced their plunge-cutting saws to the U.S. market.

For this article, I tested three similar-sized plunge-cutting models — DeWalt's DWS520, Festool's TS 55 EQ, and Makita's SP6000K — using them to cut melamine, unfinished and prefinished veneer plywood, and solid lumber (see spec table,

## Guide Rails

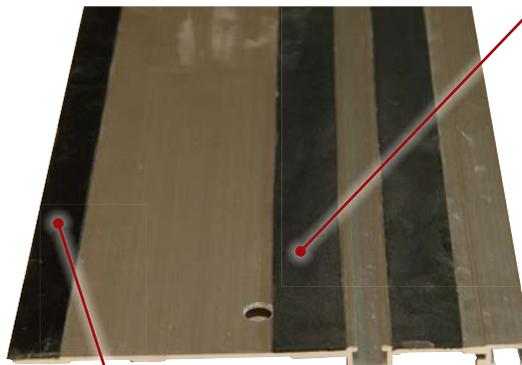
Rails, or tracks, are available in several lengths and can be joined with connecting hardware to make them longer.



Two adjustable cams allow the fit to be fine-tuned.

A slot in the base of the saw fits over a matching ridge on the rail.

Glide strips in the top of the rail help the saw slide.



Soft rubber friction strips on the bottom of the rail grip the surface of the workpiece and keep the rail from moving. For critical cuts, it's best to clamp the rail in place.

A stiff rubber splinter strip along the edge of the rail helps prevent tear-out by bearing down on the work at the edge of the cut. Because it lies on the cut line, the splinter strip also helps with rail placement. If it becomes worn or damaged, it can be peeled off and replaced.

Special F-style clamps slip into the slot on the bottom of the rail.



## Plunge Mechanism



The plunge mechanisms on the Festool and Makita are similar: The operator presses a plunge release with his thumb, then pivots the motor down until it bottoms out against the depth stop. It's easy to do one-handed, with a forward twist of the wrist.



The DeWalt's motor is connected to the base by a pair of parallel plates, so it pivots forward and down without changing the orientation of the grip. The action is more comfortable than plunging the Festool or Makita, but it's harder to do one-handed.

## Dust Collection



When connected to a vacuum, plunge-cutting saws do an excellent job of collecting dust. Any vac will do, as long as it's powerful. The hose connects to a rotating port on the back of the blade housing.

DeWalt's dust port resists being turned, which is good, because you can point the hose out of the way and it will stay there.

The Festool and Makita ports are looser and tend to rotate down under the weight of the hose.



page 51). Along the way I got some other finish carpenters to try out the tools and give me their impressions.

### DeWalt DWS520

The DeWalt saw has a unique dual-pivot mechanism that plunges the motor forward and down without changing the angle of the grip. This makes the tool harder to operate one-handed but more comfortable to use than the Festool and Makita saws, which require users to twist their wrists to bring the motor down.

The DWS520 cuts cleanly and has sufficient power to handle any sheet-good material. It worked fine when I used it to rip  $3/4$  and  $5/4$  hardwood. However, it's heavier than the Festool and Makita saws — a slight strike against it, in my opinion.

I like the nonmetric graduations on the depth scale and the built-in anti-kickback mechanism, which can be engaged to prevent the saw from sliding backward during plunge cuts. The stiff action of the rotating dust port makes it possible to point the hose in a particular direction and have it stay there. Festool's and Makita's ports are loose and tend to rotate down on their own.

**Crosscutting attachments.** DeWalt makes a couple of very handy crosscutting attachments: a T-square (DWS5027) for 90-degree cuts and an adjustable miter gauge (DWS5028) for angles. They connect to the slot in the bottom of the rail, and turn the rail into a sort of giant Speed Square for guiding crosscuts. I highly recommend both accessories, which will also fit the Festool and Makita rails.

**Rail problem.** The DeWalt rail is symmetrical in design, so that you can flip the saw around and cut from either side. While this might help in tight quarters, the design has unintended consequences:

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Because there are hard splinter strips on both edges, the friction strips in between don't compress quite far enough to get a good grip on the work surface. As a result, the DeWalt rail tends to slide forward during cuts. Except for when using the T-square or miter gauge, I found it necessary to clamp the rail. (Note that if you like this saw but not the rail, a secondary slot in the saw base allows it to be used with a Festool rail, though the anti-kick-back mechanism won't work.)

### Festool TS 55 EQ

The TS 55 EQ's motor plunges down from a single pivot at the rear of the base and is arrested by an adjustable depth stop on the front of the blade housing. The plunge action is very precise, though I don't care for the spring-loaded depth stop, which is not as easy to adjust as the screw-type stops on the DeWalt and the Makita. I would also prefer a nonmetric scale.

Everything about the Festool looks and feels well-made. Like all the plunge-cutting saws I tested, it runs smoothly and makes straight, clean cuts. It seemed slightly less powerful than the other two models, however: It had no trouble cutting sheet goods, but I had to slow down in  $\frac{5}{4}$  cherry.

**Accessories.** Festool offers more accessories than other manufacturers. It has one of the better rail systems — the friction strips are sticky, and I was able to cut melamine and prefinished maple plywood without any clamps. If you want to use clamps, there are three models to choose from. The company sells eight different lengths of rail and a limit stop to prevent the saw from kicking back during plunge cuts.

Festool's splinter guard is an inexpensive accessory that bolts to the side of the blade housing. It reduces chipping on the

## Scoring Stop



A preset secondary depth stop on the Makita saw allows the user to quickly set up a  $\frac{1}{16}$ -inch-deep scoring cut, which reduces tear-out on top of the workpiece where the blade exits the cut.

## Riving Knife

Every saw except Makita's has a riving knife, which helps prevent kickback when ripping solid lumber.

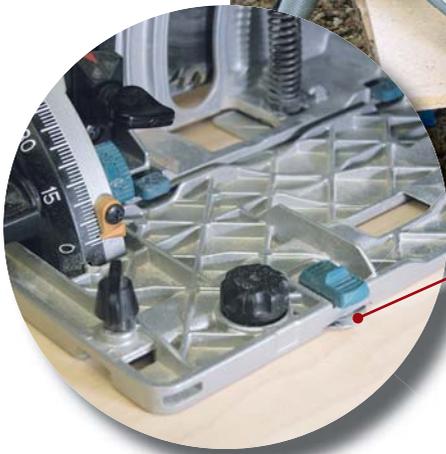
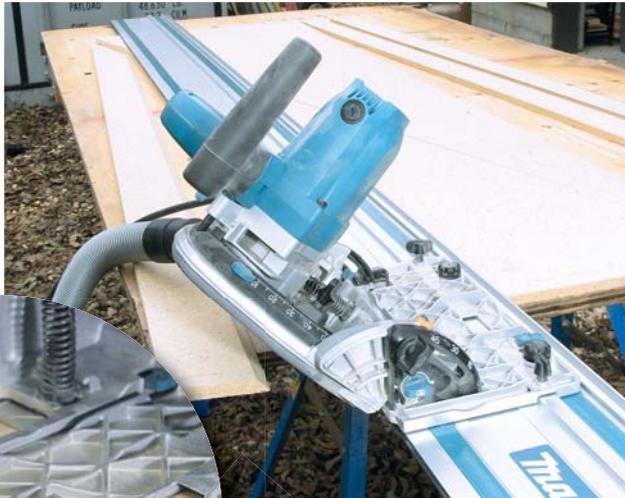


## Crosscutting Guides

DeWalt sells two useful crosscutting accessories: a T-square for 90-degree cuts (shown) and an adjustable miter gauge for angles. They attach to the slot in the bottom of the rail and will fit DeWalt, Festool, and Makita rails.

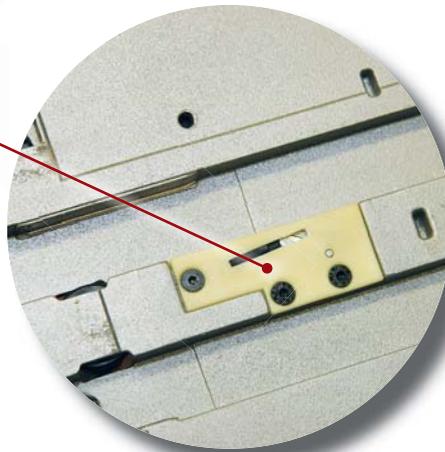


## Safety Features

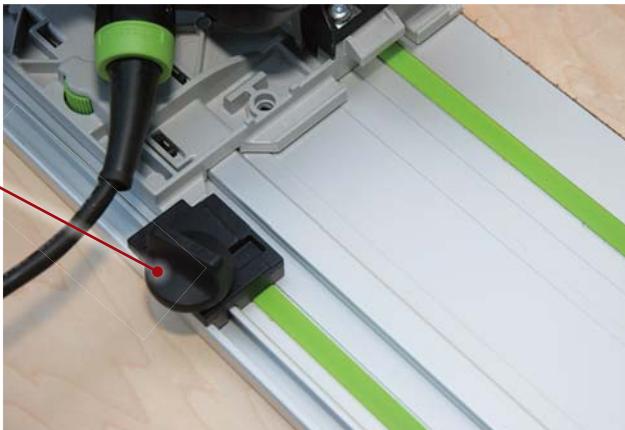


A dog in the base of the Makita engages with a slot in the rail to keep the saw from tipping during steep bevel cuts.

An anti-kickback mechanism built into the base of the DeWalt saw is activated by a knob on the base; it allows the saw to slide forward on the rail but not backward.



Festool offers an inexpensive stop that locks onto the rail behind the saw to keep it from kicking back during plunge cuts.



offcut by pressing down on the work to the right of the blade, making it possible to get two clean edges from a single cut.

**Larger option.** Festool also makes a bigger, more powerful saw. With its 8<sup>1</sup>/<sub>4</sub>-inch blade, the TS 75 EQ can cut up to 2<sup>3</sup>/<sub>4</sub> inches deep — enough to trim 2<sup>1</sup>/<sub>4</sub>-inch exterior doors, cut stacked sheet material, and straight-line-rip thick rough lumber. It's a fine tool for anyone who frequently hangs thick wood doors, or for a shop that fabricates solid-surfacing material. But at 13.6 pounds, it's more saw than the average carpenter needs or wants to handle. The TS 75 EQ uses the same rails and nearly all of the same accessories as the smaller version; it costs \$625, which includes a case and a 75-inch rail.

### Makita SP6000K

My first impression of the Makita was that it looked a lot like a Festool. It comes in an almost identical case and has a similar rear-pivot plunge mechanism, and the two saws' rails are enough alike that the brands are interchangeable. The Makita is lighter than the Festool, though it feels more powerful. Unlike the Festool and DeWalt saws, it has no riving knife, which is a problem only if you rip a lot of solid lumber. There are preset bevel stops at 22.5 and 45 degrees and an override that allows you to go from negative 1 degree to 48 degrees. A dog in the base can be engaged with a slot in the rail to prevent the tool from tipping during steep bevel cuts, a handy feature when you need it.

**Scoring stop.** Cabinet shops prevent chipping by using dual-blade saws: The first blade makes a shallow scoring cut and the second cuts through. You can do something similar by making two passes with a plunge-cutting saw, though you'd have to set the depth stop twice. Not so with the Makita, which has a secondary

## Flexible Option: The Mafell KSS 300

**A**lthough most American builders have never heard of Mafell (mafell.com), the German company has been making professional-quality wood-working tools since the '20s; among timber-framers, it's a well-known brand. Mafell now makes a number of plunge-cutting rail saws, though they're not widely distributed in the U.S. I tested the KSS 300, noteworthy because it's unusually small and light (7.1 pounds) and comes with a unique flexible steel

rail. The saw's 4<sup>3</sup>/<sub>4</sub>-inch blade can cut up to 1<sup>9</sup>/<sub>16</sub> inches deep — not enough to trim standard-thickness wood entry doors. (For that you would need the KSS 400, a similar model with a larger blade.) The KSS 300 has the power to cut sheet goods, but had a hard time ripping 1<sup>1</sup>/<sub>8</sub>-inch-thick cherry. I also found plunging to be somewhat awkward: You have to unlock one lever and use another to raise and lower the motor on a pair of posts. It works, but there is no way to preset the depth and you can't do it one-handed.

For me, the main point of interest is the 55-inch flexible steel rail (1,2) — the Flexi-Guide FX 140. It can be coiled and stored in the same case as the saw, making the kit easily portable. The Flexi-Guide works well, but it's somewhat fussier to use than a rigid rail. (The KSS 300 can also be used with Mafell's rigid aluminum guide rails.)

The KSS 300 comes standard with an unusual crosscutting attachment — essentially a short rail that clips to the base of the saw for making 90-degree and miter cuts. Cutting is simply a matter of placing the saw on the stock and sliding it forward on the rail (3). The saw automatically

springs back to the starting position at the end of each cut. It's a clever device, though it's easier to make these kinds of cuts with a sliding compound miter saw.

The KSS 300 with the crosscutting system costs \$650; add another \$163 for the case and flexible rail.



## Saw Specs

|   | <br>DeWalt DWS520<br>dewalt.com | <br>Festool TS 55 EQ<br>festoolusa.com | <br>Makita SP6000K<br>makita.com |
|---|--|--|---|
| Blade diameter (in inches; converted from metric)         | 6.5  | 6.25   | 6.25  |
| Maximum depth-of-cut on rail at 90/45 degrees (in inches) | 2 <sup>1</sup> / <sub>8</sub> , 1 <sup>5</sup> / <sub>8</sub>  | 1 <sup>15</sup> / <sub>16</sub> , 1 <sup>7</sup> / <sub>16</sub>   | 2 <sup>3</sup> / <sub>16</sub> , 1 <sup>9</sup> / <sub>16</sub>   |
| Bevel   | 0 to 47 degrees  | 0 to 45 degrees  | -1 to 48 degrees  |
| Motor   | 12 amps  | 10 amps  | 12 amps   |
| Speed (rpm)   | 1,750–4,000  | 2,000–5,200  | 2,000–5,200   |
| Weight (by manufacturer)                                  | 12 lb.   | 9.9 lb.  | 9.1 lb.   |
| Available rail lengths (in inches)                        | 46, 59, 102  | 32, 42, 55, 75, 95, 106, 118, 197  | 54, 117   |
| Street price  | \$499<br>(includes saw, case, and 59-inch rail)  | \$500<br>(includes saw, case, and 55-inch rail)  | \$386<br>(includes saw and case; 54-inch rail sold separately for \$89)   |
| Price for two clamps                                      | \$49   | \$33   | \$33  |
| Made in   | Czech Republic   | Germany  | United Kingdom  |

depth stop specifically for scoring: Engage this stop (by pushing a button) and the saw makes a 1/16-inch-deep cut; disengage it and the saw reverts to the main depth stop. In most cases, scoring is unnecessary, but for critical cuts in expensive material it's a precaution you might want to take.

**Drawbacks.** The SP6000K has a few minor shortcomings. The depth scale is

metric, there isn't an anti-kickback stop, and there are only two rails to choose from. It wouldn't bother me to cut a long rail into shorter pieces and make my own stop, but not every carpenter will want to do that.

One problem with this saw isn't so easy to dismiss: At 8 feet, its power cord is simply too short for cutting sheet goods. If I bought the Makita, the first thing I'd do is replace the cord.

### The Bottom Line

This is one of those rare instances where every model I tested works well and is solidly made. I'd be happy to own any of the three — but if I were to run out and

buy one today, it would be the Festool TS 55 EQ. This saw has been around long enough to have all of the bugs worked out of it. The rails stay put without clamps and there are many blades and accessories to choose from.

My second favorite is the Makita. It's light and powerful, and its rails do a good job of gripping the work. The preset stop for scoring cuts works great — a nice feature if you work with pricier veneers. The anti-tipping mechanism for bevel cuts is also a nice addition. The downside is that there's no anti-kickback stop and the cord is only 8 feet long.

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To learn more about plunge-cutting rail saws, go to [jlconline.com](http://jlconline.com) and click on the JLC Extra tab.