**SPECIAL ISSUE:** 45-PAGE TOOL BUYING GUIDE PLUS BEST TOOL TECHNIQUES

OCTOBER 2002
ISSUE #130

# Popular Woodworking

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# Popular Woodworking TOOL BUYING GUIDE 2003

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## JIGS & FIXTURES







## TOOL TECHNIQUES & BUYING ADVICE



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# What Cell Phones Can Teach You About Woodworking

I think I must have been about the last person in the country to get a cell phone. Until I bought one last month I kept asking myself: If I had one, when would I use it? I must not be very creative because my list was pretty short. Those other folks must be modern-day Michelangelos.

But I finally got one when my wife spotted a great deal (buy one, get one free). That was the motivation I needed, and I admit there have been times when the phone has come in quite handy.

I could say the same thing about cordless tool technology. I know I was the last one in the country to own a cordless drill. Heck, I had a great corded drill, a workhorse Milwaukee Hole Shooter. It was all the power and all the torque I ever needed.

But then I got a nice 12-volt cordless drill and you know what? I just about never use the corded drill now. The cordless tool weighs less, I'm not dragging a cord around the shop or the house, the keyless chuck is terrific; dual speeds along with variable speed offer a complete range of drilling and screw-driving options, and the clutch settings take the guesswork out of countersinking screws.

Telling you about cell phones and cordless drills is a roundabout way of saying that in woodworking there are two camps when it comes to new tools and technologies. One group is content with the equipment in their shops and never thinks twice about it until it stops working. Then there's the other group that always has to have, or wishes for, or at least has to know about the latest new, new thing. I clearly fit into the first group. Fortunately for me, I have Senior Editor David Thiel on staff to keep track of the staggering array of new products that pass through our shop every year. He's in the other camp.

For me, woodworking is about working with wood, about making things, how to do it as easily and accurately as possible while ending up with quality results. The tools are simply a means to an end. My expectation is that my tools will work when I turn them on and they will perform as advertised. When my interest in tools gets deeper it usually involves a new or better way to use a tool, to get more out of it.

For those of you in my camp, the downside is that we miss out on some really stunning and worthwhile tool innovations. While we "don't miss what we don't know," we do short ourselves on tools or technologies that may not only make our woodworking easier or safer, but more enjoyable as well. For me, cordless drills are a perfect example. For some of you, biscuit joiners or dust collectors may be examples. New features on plunge routers are certainly worth looking into.

As we started planning this annual Tool Buying Guide issue, we wanted to make sure we were satisfying both camps of woodworkers, those whose shops are sufficiently equipped but may be missing out on some worthwhile innovations, and those who want to be in the know about the latest stuff.

We've included articles on some outstanding jigs. And each category of tools covers important aspects of tool setup or use that woodworkers in both camps will find helpful. And, of course, it wouldn't be a buying guide if we didn't give you comprehensive lists of equipment with their specs.

Importantly, we continue to make our recommendations about what tools you can expect reliable service from, regardless of what kind of woodworker you may be, from occasional light-duty user to everyday pro. We're sure you'll find this one of our most useful issues of the year.

Oops, I've got to go now, my cell phone is ringing.... **PW**

*Steve Shanesy*
*Editor and publisher*

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## SAFETY NOTE

Safety is your responsibility. Manufacturers place safety devices on their equipment for a reason. In many photos you see in *Popular Woodworking*, these have been removed to provide clarity. In some cases we'll use an awkward body position so you can better see what's being demonstrated. Don't copy us. Think about each procedure you're going to perform beforehand. Safety First!

# PANEL-CUTTING SLED

For less than the cost of a sawblade, you can build a precision crosscutting sled for your table saw that handles large panels with ease.

We recently moved our shop to a smaller location and had to get rid of several tools. One of the first casualties was a gargantuan sliding crosscut table attached to our table saw. Though it's a useful accessory, it has some serious drawbacks: It takes up more than its fair share of space and it needs to be recalibrated every time you attach it to the saw.

We already own a few nice jigs for crosscutting narrow stock, but for cutting wide panels – tabletops, cabinet sides and shelves for example – we needed to come up with another solution.

This jig is just the ticket. It can easily handle panels as large as 24" wide and 36" long, which should cover 99 percent of your crosscutting needs. It has a couple other useful features you don't find on most people's sleds: First, you can square it to the blade and recalibrate it when necessary (such as when you drop the jig or your saw's settings change). Most sleds don't have this feature and need to be trashed when they eventually become inaccurate.

Second, there's a replaceable zero-clearance face on the jig's fence that makes cutting to a line a snap. All you do is mark directly on your work where you want to make your cut. Then you line up that line with the edge of your zero-clearance fence face and make the cut.

Third, we've added a couple tricks to that replaceable fence face that will help hold your work in place as you make your crosscut. The fence face is covered in adhesive-backed sandpaper, plus there are a couple nail points sticking out 1/32" from the fence to grip your work. Don't get too worried about the freckle-sized dimples left by these nails. If you're crosscutting plywood (a common chore), the holes will be covered by your edge tape or banding. If you're using solid wood, you can simply plane or sand the holes away or, for example, make sure they end up on the back edge of your cabinet sides.

Finally, this jig is quick and cheap to make. We spent $22 on wood and hardware. (And, with the exception of the miter bar, we had enough stuff left over to build a second sled.) Construction time was three hours flat.

### Why MDF?

It's tempting to use workaday birch plywood for the sled's base, but I don't recommend it. We've built quite a few sleds here, and some of the plywood ones have warped and become unusable after a year or two of use. The plywood jigs that have survived well have been ones that are extra thick or have supplemental bracing to keep them flat.

Medium density fiberboard (MDF) is inexpensive, easy to work and stable (as long as you don't take it for a swim).

Begin by cutting your sled base to size and marking the line on the underside for attaching the miter bar. First measure the distance between your sawblade and your miter slot. Add 1/2" to that measurement and mark that line on the underside of your sled. Now drill 3/32" pilot holes on that line using your drill press. Make your first hole 1" from the end and then every 2" afterward.

Now drill corresponding 1/8" clearance holes and countersinks in the miter bar. Why so many screws? Two reasons: One, you

by Christopher Schwarz

*Comments or questions? Contact Chris at 513-531-2690 ext. 1407 or chris.schwarz@fwpubs.com.*

Photos by Tim Grondin

don't want any flex in your miter bar. And two, the screws compress the Ultra High Molecular Weight (UHMW) plastic bar slightly. This allows you to remove some slack in the miter bar when it is in your table saw's miter slot. Tighten a few screws for a tighter fit; loosen a few for a sloppier experience.

Screw the miter bar to your base using #8 x 1" screws. Put the jig in place on your saw, raise the blade and trim the left edge of the sled to a perfect fit.

### Precision Drilling

Next you want to install the T-nuts that will hold the fence in place. T-nuts have a barrel that requires a 5/16" hole and a flange that needs a 1/16"-deep by 3/4"-diameter hole. Begin by drilling the 3/4" stopped hole in the locations shown in the diagram using your drill press. Now chuck a 5/16" bit into your drill press and drill the three through-holes you need. Tap the T-nuts in with a hammer.

Use a fence on your drill press's table when drilling the holes and countersinks in the miter bar. Though I'm sure some of us could freehand this operation, a fence ensures your success.

### Easy Metalworking

Now you need to drill some corresponding holes in the aluminum fence. If you've never drilled in aluminum, you'll find it a lot easier than you expected (especially if you've ever drilled steel).

The holes in the fence are also 5/16" in diameter. This is a bit larger than the 1/4" shank on the capscrews, but it's this little bit of play that will allow you to square this jig to your sawblade.

Once those holes are drilled, drill a few 1/8" holes in the other wing of the aluminum-angle fence that will allow you to attach the replaceable zero-clearance fence with #8 x 5/8" screws.

The number of screws looks like overkill, but they help prevent the bar from flexing and they allow you to take out any side-to-side play in the plastic bar by tightening the screws slightly.

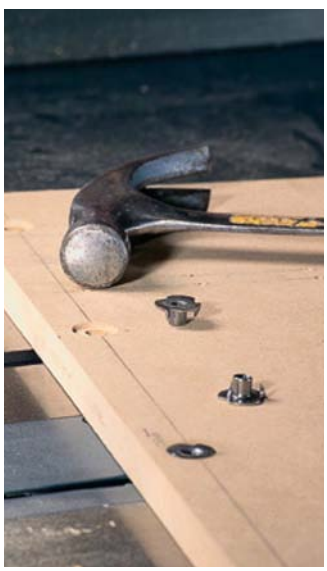
### Fence Face

The fence face needs to grip the work securely. Otherwise your cuts have little hope of being square. You can choose either of these following two options or use both together.

Cover the face of the fence with 120-grit adhesive-backed sandpaper. Or knock in a couple finishing nails into the backside of the fence until the tips point out about 1/32" or so. Clip off whatever remains on the other side

*continued on page 12*

If you followed the instructions carefully, you should trim only 1/8" off the sled base during its first pass on your table saw.



T-nuts are easy to install using a hammer if you drilled your holes correctly in your base. Drill the 3/4"-diameter hole for the flange using a Forstner bit. Then use the hole left by the bit's spur to center the 5/16" bit for the through-hole.

## SUPPLIES

Lee Valley Tools
800-871-8158
www.leevalley.com

- Miter bar: 3/8" x 3/4" x 24" Ultra High Molecular Weight plastic. Item # 46J90.15, $3.50.
- T-nuts: 3-prong 1/4-20 T-nuts. Item # 00N22.03, 55 cents for a bag of 10.
- Capscrews: 3/4" capscrews. Item # 00M40.11, $1.40 for a bag of 10.
- Nylon washers: Item # 00M40.23, $1.10 for a bag of 10.

Any home center store

- Medium Density Fiberboard (MDF): A half-sheet of MDF costs about $7.
- Aluminum angle: 1/8" x 1 1/2" x 36" aluminum angle, $8.

Here's the best way to square this jig. Hold the square's handle against the edge of the sled's base. Push the blade of the square against your fence and tighten the capscrews down against the nylon washers.

*continued from page 10*

and screw the fence to the aluminum angle.

### Squaring and Modifications

This jig is simple to square. First loosen the capscrews on your jig. Place the handle of an engineer's square against the edge of the sled's base that you trimmed earlier. Put the blade of the square against your fence and line things up. Tighten the capscrews. The nylon washers will allow you to snug them up really tight. Make a test cut and check your results with the square.

For me, it was square after the first time – a huge improvement compared to the fussing necessary with our sliding table.

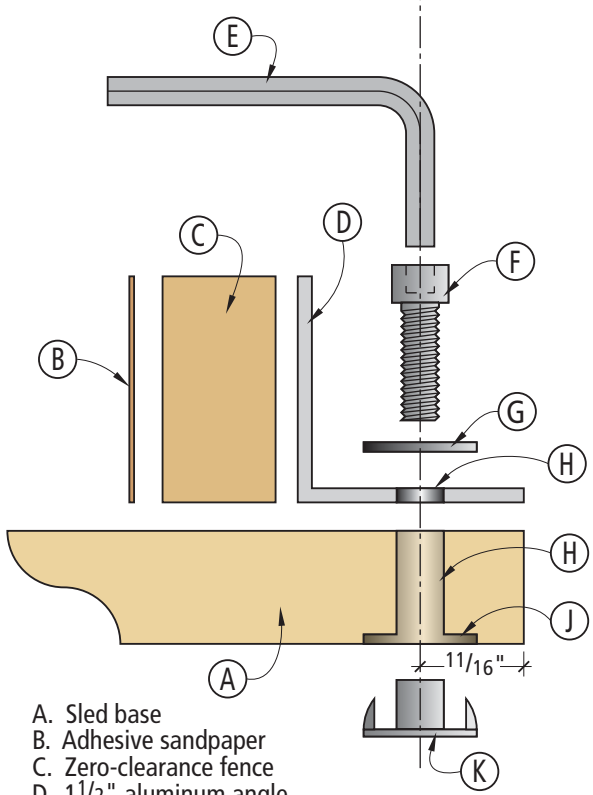
As built, this jig works great. One modification you might want to consider on down the road is adding a handle at the back. If your arms are short, a handle will help you push the jig through the last part of your crosscut while still keeping the work pressed against the jig's fence. The handle can be as simple as a 3/4"-diameter dowel screwed to the tail end of the miter bar.

If you need to hang this sled on the wall, be sure to drill a hole or two in the sled's base. Finally, it's a good idea to clamp an extra piece of 3/4" MDF on the other side of your blade (as shown in the photo at the beginning of the article). This will catch falloff pieces, preventing them from getting flung back at you.

This newest addition to our shop works surprisingly well. In fact, the only time I miss the sliding table system is when I need to miter big panels (an infrequent operation in our shop). Now if only we could just find some way to shrink the scrap pile in our shop; then we'd really have some room to move around. **PW**

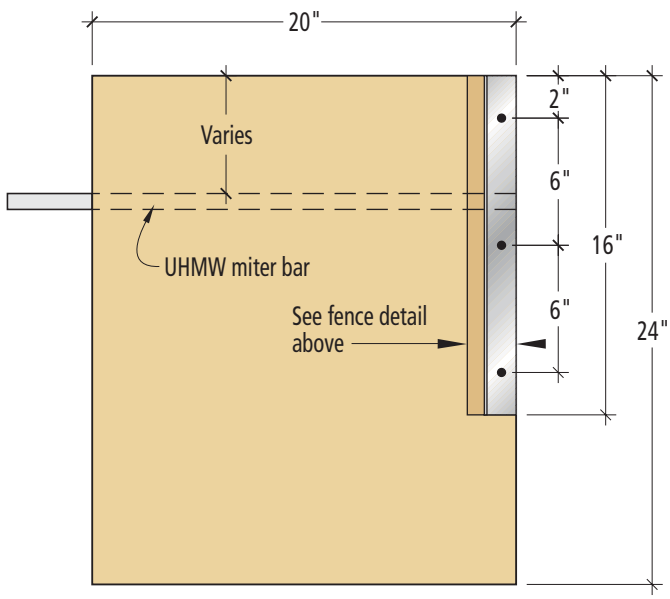
## PANEL-CUTTING SLED

| | NO. | ITEM | DIMENSIONS (INCHES) T | W | L | MATERIAL |
|---|---|---|---|---|---|---|
| ❑ | 1 | Sled base | 3/4 | 20 | 24 | MDF |
| ❑ | 1 | Miter bar | 3/8 | 3/4 | 24 | UHMW |
| ❑ | 1 | Fence | 1 1/2 | 1 1/2 | 16 | Aluminum angle |
| ❑ | 1 | Replaceable fence | 3/4 | 1 1/2 | 16 | Plywood |




A. Sled base
B. Adhesive sandpaper
C. Zero-clearance fence
D. 1 1/2" aluminum angle
E. Hex-head wrench
F. 3/4" capscrew
G. 3/4" nylon washer
H. 5/16" through-hole
J. 3/4" x 1/16" d. counterbore
K. 1/4" x 20 T-nut

Exploded fence detail




Sled plan


PORTER • CABLE

By swapping a few pieces of hardware, you can use this system as either a small (top left) or large (bottom left) circle-cutting jig, or simply as an edge guide.

Photos by Al Parrish

# SHOP-MADE ROUTER GUIDES

For a few dollars worth of acrylic and some hardware, you can add a versatile and valuable system to your router at a fraction of the cost of aftermarket guides.

The router is one of the most versatile tools in any shop. With the addition of this shop-made modular router base system, it will be even more valuable.

The router base system starts with a special offset base (a good thing by itself) that's designed to accept other accessories without having to remove your router from the base. It takes less than a minute to switch accessories, which include: a circle jig, edge guide and a flush trimming attachment. An extension increases the maximum size of both the circle-cutting jig and the edge guide.

## The Individual Pieces

The circle-cutting jig cuts circles from 2½" to 20" in diameter simply by sliding the aluminum circle guide along the channel in the offset base. With the extension added, you can expand the circle-cutting capacity up to a full 56" diameter.

The edge guide works with any router that has the offset base attached. With it, you can adjust the edge guide from 0" to 7" from the center of the bit. Using the countersunk wood screw holes, you can add a larger wooden fence that's flush and below the edge of the guide. With the auxiliary wooden fence in place, the extension increases the maximum width of the edge guide to up to 20" from center.

The flush trimming attachment added to the bottom of the offset base allows a straight bit to extend

by Michel Theriault

*Michel Theriault is a Canadian who writes and works wood for a hobby. He's published more than 130 articles in Australia, Britain, Canada and the United States. His full-time job is in facilities management, managing a portfolio of buildings.*

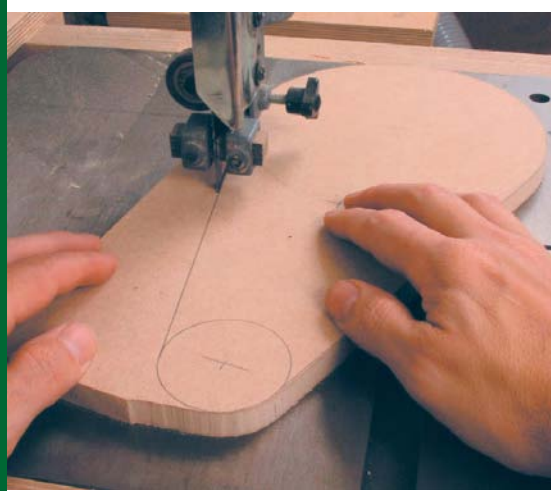
down (flush with the bottom of the attachment) to easily trim screw plugs, solid wood edging and joints flush to the surface. The 90° angle on the base allows you to reach into tight corners.

### Making the Templates

The key to making accurate parts is to make a template first out of ½" MDF, then cut out the ⅜"-thick acrylic pieces using the MDF template to guide your router. Even if you only make one set of guides, this method will give you a high quality shop-made jig.

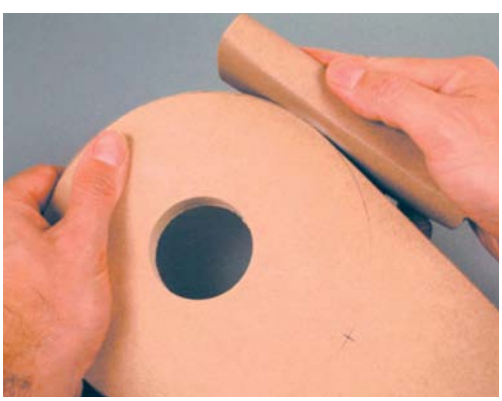
We used ½" MDF for the templates because it's stable and easy to work with. The ½" allows enough thickness for the bearing on your router bit to ride against.

Each base piece has its own template. The offset base is made to comfortably fit most routers with 6"-diameter bases. If your router is larger, simply increase the diameter of the large end and lengthen the offset base by the amount necessary.



After transferring the template pattern to the template material, it takes only a minute to rough-out the shape on the band saw. Cut as close to the line as you can to keep clean-up to a minimum.

For the interior holes in the template, hole cutting saws, Forstner bits or spade bits will do the job. Make sure you back up the template to avoid blowout on the backside of the workpiece.



With everything cut, holed and sized appropriately, the last step is to clean up the edge so that it's smooth. A block and sandpaper can do most of the work, but an edge sander (if available) will be much quicker.

Step photos by Michel Theriault

### Offset Base Template

The offset base template requires a piece of MDF approximately 7" x 13" to allow for waste.

Using the diagrams as a guide, find the center by measuring in 3½" from one long edge at each end and make a mark. Join these marks to give you the center line. Next, measure and make marks at 1", 6" and 9¼" in from one end. Using a protractor, draw a 1"-radius circle from the 1" mark to define the small end. Then make a 3¼"-radius circle from the 9¼" mark to define the other end.

Using a ruler, draw a straight line on both sides so that it touches the edge of both circles. This forms the basic shape of the base. Next, drill a ⅛" hole at the 1" and 6" marks you previously drew.

Using a jigsaw or band saw, cut out the template, keeping just outside the line. Once the template is cut out, you can smooth the cut edges with a sanding block.

To finish the offset base template, use a 2"-diameter hole saw to drill the 2" hole at the 9¼" mark, centered in the large end of the offset base. Save the plug that comes out of the hole – it will be useful for centering the offset base when mounting it to your router. If you don't have a hole saw, you can cut the hole out with either a jigsaw or a scroll saw.

### Flush Trimming Template

The flush trimming template is made using the offset base template. Attach the rectangular flush trimming template blank to the offset base template with double-sided tape so that it overhangs the small end and trim the blank to within ¼" of the template on your band saw. Use a ½" template router bit with a top mounted bearing in your table-mounted router to shape the outside edges of the template.

Next, drill ¼" holes through the flush trimming template at the 1" and 6" locations, using the holes in the offset base template as a guide. Find the center of the 2" hole and mark that location. Follow the diagrams to draw two lines at right angles to each other, meeting at the center of the 2" hole. At the intersection, drill a hole slightly larger than the size of bit you will be using for flush cutting. Finally, cut along the two lines with a band saw or jigsaw and smooth with a sanding block.

### Edge Guide Template

To make the edge guide template, first cut a rectangular piece of MDF 6" wide by 8" long. This is longer than needed so you can drill the 1" radius cutout. To make the cutout, measure 3" in from the long edge and 5" from the end and make a mark. Cut a 2"-diameter hole with a hole saw, or other appropriate saw, at the mark. To finish the template, use your table saw or chop saw to cut the scrap from the end through the center of the 2" hole you just cut.

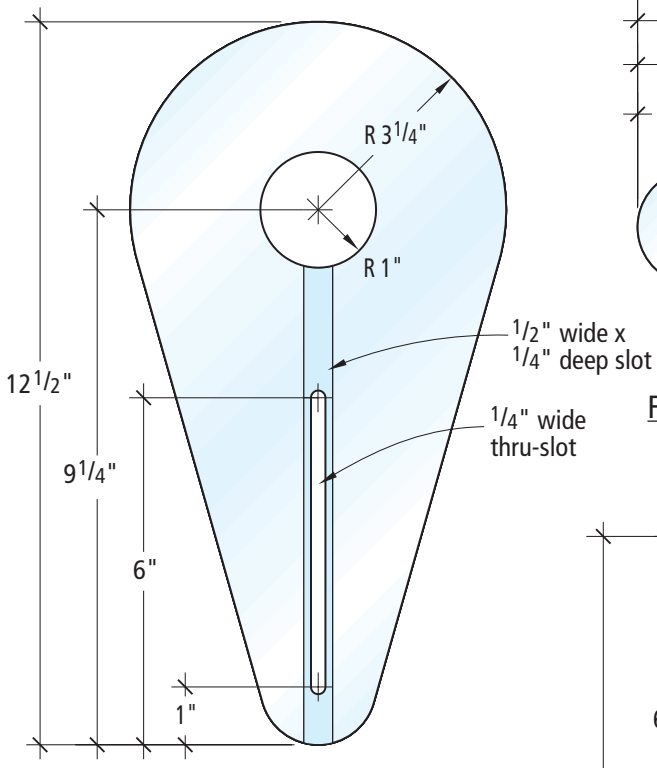
## SUPPLIES

Most items available from Lee Valley Tools, 800-871-8158 or www.leevalley.com.

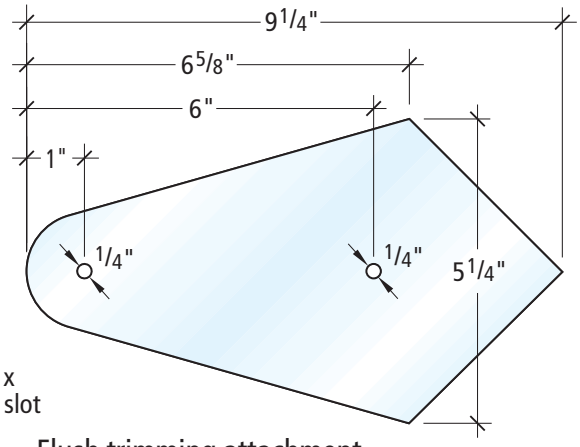
1 - Pkg of 10 plastic washers (00M40.23) - $1.10
1 - 2¼" Pentagon knob (00M50.01) - $.85
3 - 1⅛" Wing knob (00M51.01) - $1.10
1 - 1" Clamping knob (00M56.21) - $.95

Other necessary supplies:

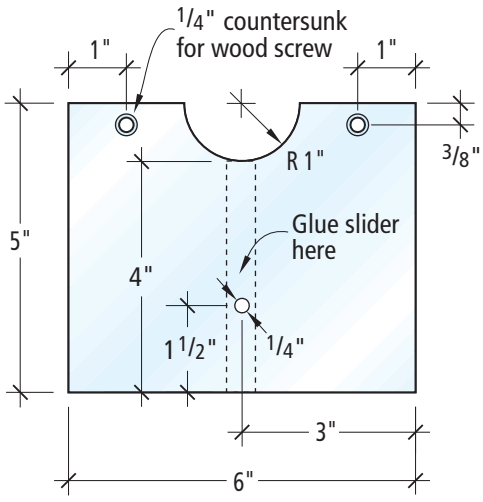
3 - 1" Hex-head bolts (¼"-20)
1 - 1¼" Hex-head bolt (¼"-20)
2 - 1" Flat head bolts (¼"-20)
1 - ⅛" x ⅜" Rolled steel pin



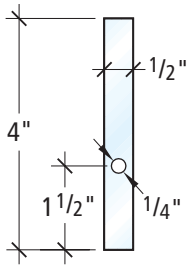

Offset base



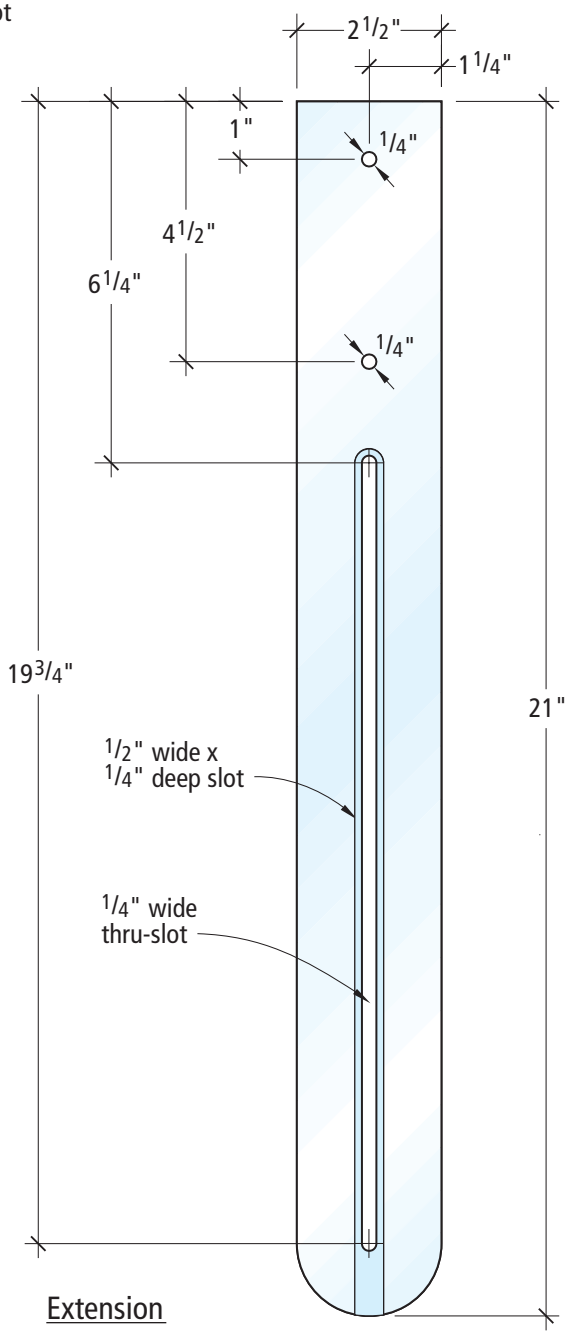

Flush trimming attachment




Edge guide




Slider




Extension

## WORKING WITH ACRYLIC

Acrylic (also sold as Lexan or Plexiglas) is very easy to cut with common woodworking machinery, such as table saws, scrollsaws, band saws and routers. The single biggest problem is melting from an overheated cutter, so be aware of the feed and the heat generated when you are cutting acrylic. As well, the shavings will be heavily static charged and can make quite a mess. Don't use a dust collector when cutting acrylic.

When routing acrylic, you should use carbide-tipped bits because acrylic is very abrasive. Keep the feed rates fast enough so the cut is smooth, without excessive build-up of heat. When routing the channels, such as those in the offset base and the extension, take light cuts and keep the feed rate fast, to reduce the possibility of melting.

Cut edges are very sharp, so ease or break them with fine sandpaper, a file or even a roundover bit. You can also improve the look of cut edges by running a butane torch over the edge quickly to melt the edge slightly and remove the fine sandpaper and cutter marks.

Gluing acrylic requires a special glue (available from a plastics supply company) that literally melts the acrylic pieces together.

Measure and mark for the three holes as shown in the diagrams and drill all three holes with a ¼" drill bit, then sand all the edges smooth with a sanding block.

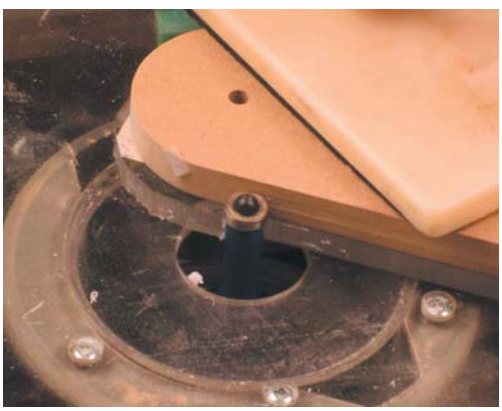
### Extension Template

For the extension template, start with a piece of MDF exactly 2½" x 21" long. Choose one of the ends as a reference and make a mark in the exact center at 1", 4 ½", 6¼" and 19¾" from the reference end. Using a protractor, draw a 2½"-diameter circle at the 19¾" mark shown on the drawing.

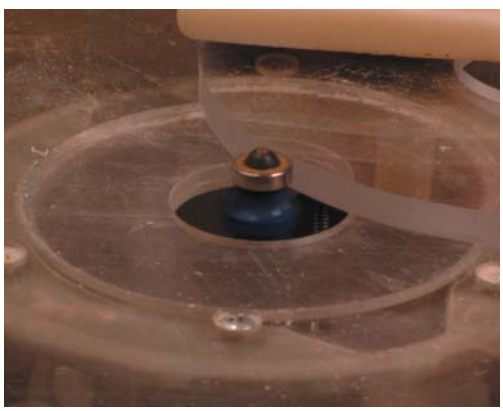
Cut out the round end of the template using a jigsaw or bandsaw. Drill a ¼" hole at each of the other marks as shown.

With the template carefully attached to the acrylic, use your band saw to rough-out the shape of the jig itself. Leave a little extra, but don't leave so much that the router won't be able to clean it up easily.

After cutting an adequately sized starter hole with a drill bit, a bearing-guided flush-cutting bit does a nice job of shaping the interior holes to match the template.



Using the same bearing-guided flush-cutting bit, the outside of the jig is trimmed neatly to the template.



I used a bearing-guided roundover bit to soften the bottom edges of the jigs to protect the wood from scratches and to protect the slightly fragile edges on the jig itself. For the rest of the edges, sandpaper works fine.

### Making the Offset Base

All of the bases are made from ⅜"-thick (except for the slider piece which is 3/16"-thick) acrylic, also sold as Lexan or Plexiglas. This can be commonly found at a local plastics store. Check the phone book in your area.

Before cutting the outer shape of the offset base, the slots need to be routed into the acrylic while it is still rectangular. Start by measuring 1", 6" and 9¼" from one end and make marks at the center of the piece. These are reference marks for routing the slots. The first slot is ½" wide and ¼" deep and goes from one edge to the 9¼" mark.

If you aren't able to find 3/16" acrylic for the slider piece, ¼" can be used, but you'll either need to make this ¼"-deep groove slightly deeper, or recess the slider strip into a corresponding groove in the edge guide.

Using a ½" router bit in your table-mounted router, set the fence 3¼" from the center of the bit. Run the groove in two ⅛" passes, feeding the blank into the bit until it reaches the 9¼" mark.

Without moving the fence, replace the ½" bit with a ¼" spiral carbide bit and set it ½" high. If you have to remove the fence to change the bit, mark its exact position and set the fence back to the mark after changing the bit. It's important that the ¼" slot is centered in the ½" slot.

Turn on the router and position the blank over the bit at the 1" mark. Slowly lower the blank onto the bit until it cuts all the way through, then carefully feed the blank into the bit until you reach the 6" mark.

With the slots cut, apply double-sided tape to one side of the template and, using ¼" bolts through the holes in the template, position the template onto the acrylic blank so that the two ¼"

*continued on page 20*

*continued from page 18*

holes in the template line up with the ¼" slot in the acrylic. Trim the acrylic on the band saw, then use the template bit to trim the base to the template.

Next, drill a ⅝" or larger hole through the acrylic inside the 2" hole in the template in order to rout the 2" hole with the template bit already set in your table.

Finally, round over the bottom edges of the offset base with a ⅛" roundover bit and sand the sharp edges with fine sandpaper.

### The Flush Trim Attachment

Use the same steps as used on the offset base to trim the flush trimming template to the acrylic blank. Using the ¼" holes in the template as a guide, drill ¼" holes through the flush trimming base. Knock off the sharp edges with fine sandpaper, then countersink the ¼" holes on one side to accommodate the flat head bolts.

### Making the Extension

Similar to the offset base, the slots need to be routed into the blank before you use the template. Choose a reference end and measure 6½" and 19¾" from the end, scribing a small mark centered on the blank to use as reference marks when you rout the slots. The first slot is ½" wide and ¼" deep and goes from the end opposite the reference end to the 6¼" mark. Then follow the offset base steps to cut the slots.

With the slots cut, mount the template to the base and trim the acrylic using first the band saw, the the template bit, breaking the edges with sandpaper afterward.

### Making the Edge Guide

Attach the edge guide template to the acrylic blank and follow the same procedures as before to trim the blank using the band saw and a template bit in your router. Using the ¼" holes in the template as a guide, drill ¼" holes through edge guide. Remove the template and break the sharp edges with fine sandpaper. Then countersink the two ¼" holes on the top of the guide to accommodate wood screws.

Cut a strip of 3⁄16" acrylic slightly under ½" wide on your table saw and then cut it 4" long. Place the strip in the slot on the extension or offset base and drill the ¼" hole using the ¼" slot as a guide to ensure it is centered. Using a square, carefully glue the strip to the top of the edge guide using acrylic glue. Make sure that the two holes line up by inserting a ¼"-20 bolt in the two holes.

Running the grooves for the mounting hardware in both the offset base and the extension is a two-step router table operation. The ¼- deep stopped groove is run first, using the router table fence to locate the slot in the center.

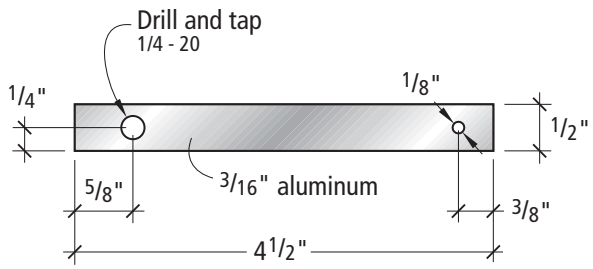
The through-groove is cut afterward, again using the fence as a guide. You may be able to switch bits in the router without moving the fence and keep everything perfectly centered. If not, double-check the through-groove's location.

### Making the Circle Guide

The circle guide is made from aluminum, brass, wood or acrylic. First, cut the bar to length. Test the fit in the slot on your offset base. It should slide easily, but not have too much play in it. File the width to fit, and test again.

Next, measure and mark for the two holes as shown. The hole ⅝" from one end will be tapped to accommodate a ¼-20 bolt. Drill the hole with a 15⁄32" drill bit, then use the ¼"-20 tap to make the threads. Drill the other hole with a ⅛" drill.

Carefully position a rolled steel pin over the ⅛" hole and hammer it into position until the top side is flush with the bar. When using the circle guide, a small brad nail can be slipped through the rolled steel pin, then tapped into the wood being cut at the center point. Or, you can drill an ⅛" hole and use the rolled pin itself for your pivot point. Instant router compass! **PW**




Circle guide

## ATTACHING YOUR ROUTER

It isn't critical that the offset base be positioned exactly centered over the router bit, however it should be as close as possible.

Because the hole pattern of each router is different, you will have to use your existing router plate to locate the holes for drilling. The simplest way is to remove your existing router plate and position it on top of the offset base. Keep track of the hole pattern in the router base relative to the handles and make sure they are lined up so that one handle is facing away from long end of the offset base, but ensure that the other handle will not get in the way of the circle jig's knob.

Center the offset base by eye and scribe the locations of the holes. If you saved the plug from the hole saw, you can wrap masking tape around the plug until it fits snugly into the hole in the offset base, and use the center hole for better accuracy when lining up the baseplate holes.

Next, drill the holes the required diameter and countersink them as necessary. Depending on the thickness of your original baseplate and the length of the original bolts, you may need to purchase longer bolts in order to attach the new offset base to your router.


5.0H.P.
WET/DRY VAC


CRAFTSMAN
5.0H.P.

# BLAST GATE FOR A SHOP VACUUM

Connect two machines to one vacuum with a time-saving switch that can be built in an afternoon using scraps.

I have a fairly small workshop and I typically use my shop vacuum to collect sawdust from my band saw and my disc/belt sander – in addition to the shop vacuum's role as a general sawdust steward.

I found that the chore of switching the hose from one machine to the other sometimes caused me to skip dust collection in favor of convenience. I was determined to solve the problem by using available materials and have produced the following "vacuum switch." It will instantly redirect the suction from one machine to the other, even without turning off the shop vacuum.

This little unit is easily fabricated from plywood and wood scraps, and it can be put together in an afternoon. The extra plastic vacuum hoses used to connect your machines are easily found discarded from broken vacuum cleaners, at most thrift shops for a dollar or from your local home center store. And if you must cut a hose in order to shorten it, a new end piece can be made using a 35mm film container with the bottom removed. The lip around the top of the canister will engage the corrugations of most plastic vacuum hoses after it is gently forced into the hose's end. This also forms a swiveling connector to attach to the switch.

The drawings are self-explanatory. Basically the jig is made up of a series of layers. Each layer has a hole or holes cut inside it and each hole is designed to do a specific job. The jig's outside shape is easily cut out on a band saw, and the holes are cut using a band saw (or scrollsaw) and drill press. The entire unit is glued and screwed together. Refer to the diagrams on the next page for the exact locations of all the holes.

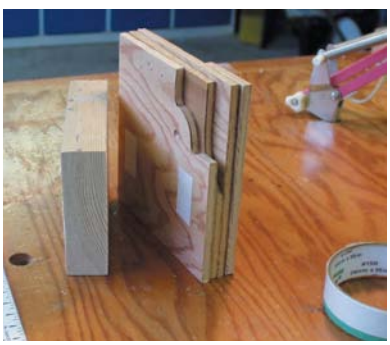
Jack Bowley

*Jack Bowley, a retired art director for a trade show company, now lives in Sidney, British Columbia. Woodworking is his hobby.*

### Cut Your Shapes

Use the diagrams to lay out the shapes on all your parts before making any cuts. The drawings are gridded so you can enlarge them to full size using graph paper. The first step is to cut parts B, C, D, E and F. Because these parts share a common outside contour, the rough-cut pieces should be taped together with double-sided tape before band sawing and sanding, after which they can be separated and processed as required.

Once you've separated the



A little double-sided tape allows you to cut out parts B, C, D, E and F all together, saving you time and creating perfectly matched pieces.

Here you can see parts B, C, D, E and F after they've been cut out using the band saw.

Place all your parts in the correct order before you begin the assembly process.

Photos by Tim Grondin

Step photos by the author

Here's what the unit should look like after assembly.

Note the "spring" saw cuts on part A. These cuts serve two purposes. First, they serve as lead cuts so the two inner holes on part A can be cut out using your band saw. Second, they provide natural spring action to allow for easy insertion of the hose ends and a tighter grip on the hose.

Here's what the unit looks like when installed on a shop vacuum.

parts, tape part B and part D together. With your drill press, drill two holes through both parts using a 1" Forstner bit.

The circular cuts in part C and the switch paddle should be cut carefully because one must rotate in the other. The better the parts fit, the less vacuum suction will be lost. Refer to the diagram below for the proper shape of the switch paddle and cut out the parts using your scrollsaw. Remember to sand a little off the face of the switch paddle to give it freedom of movement between parts B and D.

Now lay out the shape of the cutout on part E. Drill a starter hole with your drill press and then remove the waste on the inside using a scrollsaw or a jigsaw.

Now grab part F. With your drill press, drill a 1¾"-diameter hole in the location shown in the diagram below.

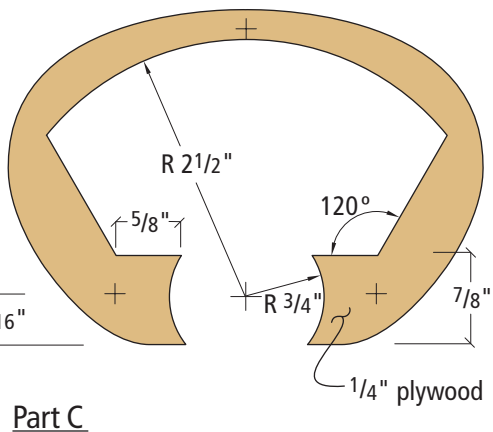
Cut out part A using your band saw and the diagram. Make two lead cuts from the outside profile and, still using your band saw, cut two holes sized to fit your vacuum hoses. Don't drill these holes.

Finally, with either your band saw or lathe, cut or turn part G so that it will fit your particular shop vacuum's opening. Be sure to cut or sand a slight taper on part G as shown on the diagram below. This taper will allow the part to fit firmly into the opening of the shop vacuum.

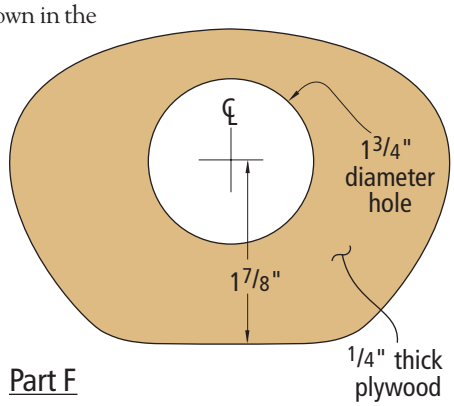
## Final Touches

Now it's time to glue and screw the jig together. First glue parts A and B together. Take care to only apply glue on part A as shown in the area shaded gray on the di-

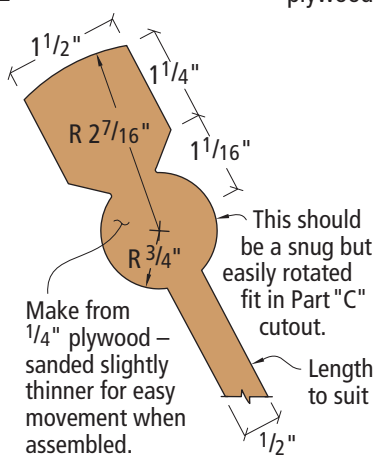
*continued on page 26*



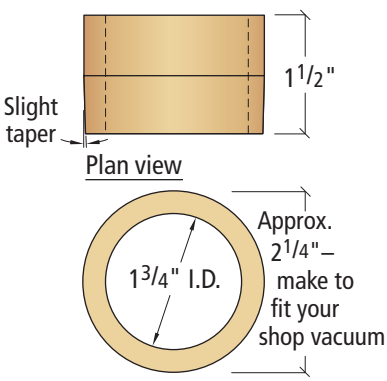

Part C




Part F




Switch paddle




Part G

Illustration by Mary Jane Favorite

## VACUUM SWITCH

| | NO. | ITEM | DIMENSIONS (INCHES) T | W | L | MATERIAL |
|---|---|---|---|---|---|---|
| ❑ | 1 | Part A | 1 | 2 1/4 | 4 1/8 | Hardwood |
| ❑ | 1 | Part B | 1/4 | 3 3/4 | 5 1/4 | Plywood |
| ❑ | 1 | Switch paddle* | 1/4 | 1 3/4 | 6 | Plywood |
| ❑ | 1 | Part C | 1/4 | 3 3/4 | 5 1/4 | Plywood |
| ❑ | 1 | Part D | 1/4 | 3 3/4 | 5 1/4 | Plywood |
| ❑ | 1 | Part E | 1 | 3 3/4 | 5 1/4 | Softwood |
| ❑ | 1 | Part F | 1/4 | 3 3/4 | 5 1/4 | Plywood |
| ❑ | 1 | Part G** | 1 1/2 | 2 3/4 | 2 3/4 | Softwood |

*Cut to fit; **Sand to fit

Note: Parts are slightly oversized to make the pattern work easier

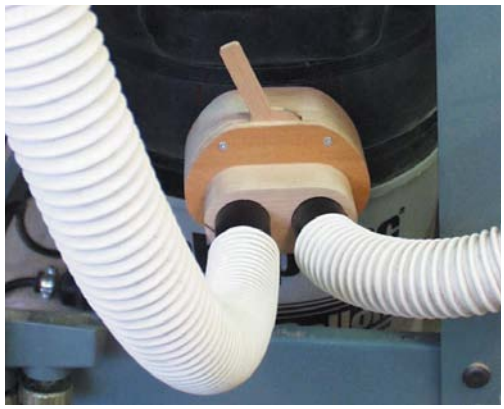
*continued from page 24*

agram. This allows for the jig's spring action.

With the switch paddle in place, screw parts B and C together. Don't use glue here in case it should ever become necessary to clear the switch paddle of debris in this area.

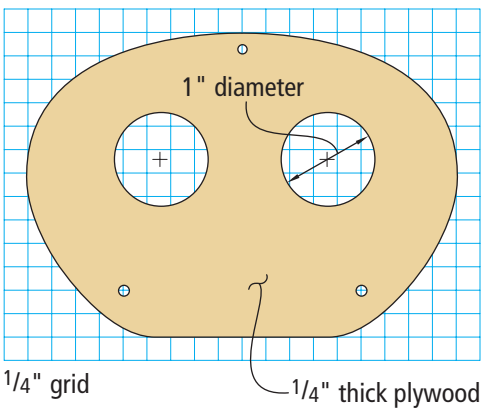
Now glue parts C, D, E, F and G together, making sure everything lines up properly.

When it's time to clean up the shop after a day's work, the unit can be easily popped out of the shop vacuum and the regular hose inserted. Now you can add permanent dust collection to your two favorite machines without the expense of an extensive piping and exhaust system. **PW**

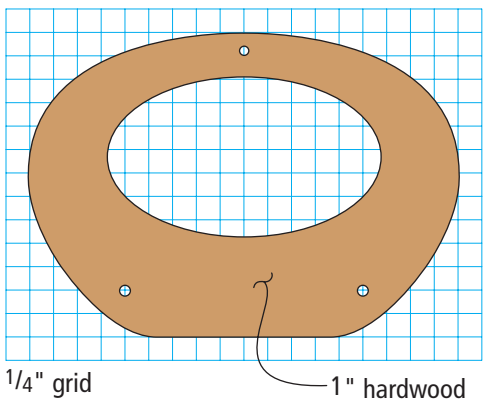


Cut out the bottoms of two 35mm film containers to connect the hose ends to the vacuum switch unit.

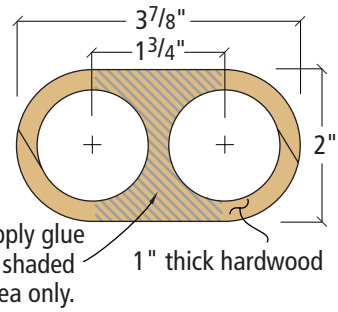
I've placed my shop vacuum under my band saw and next to my sander. A flip of the switch paddle and my dust is under control, no matter which machine I use.



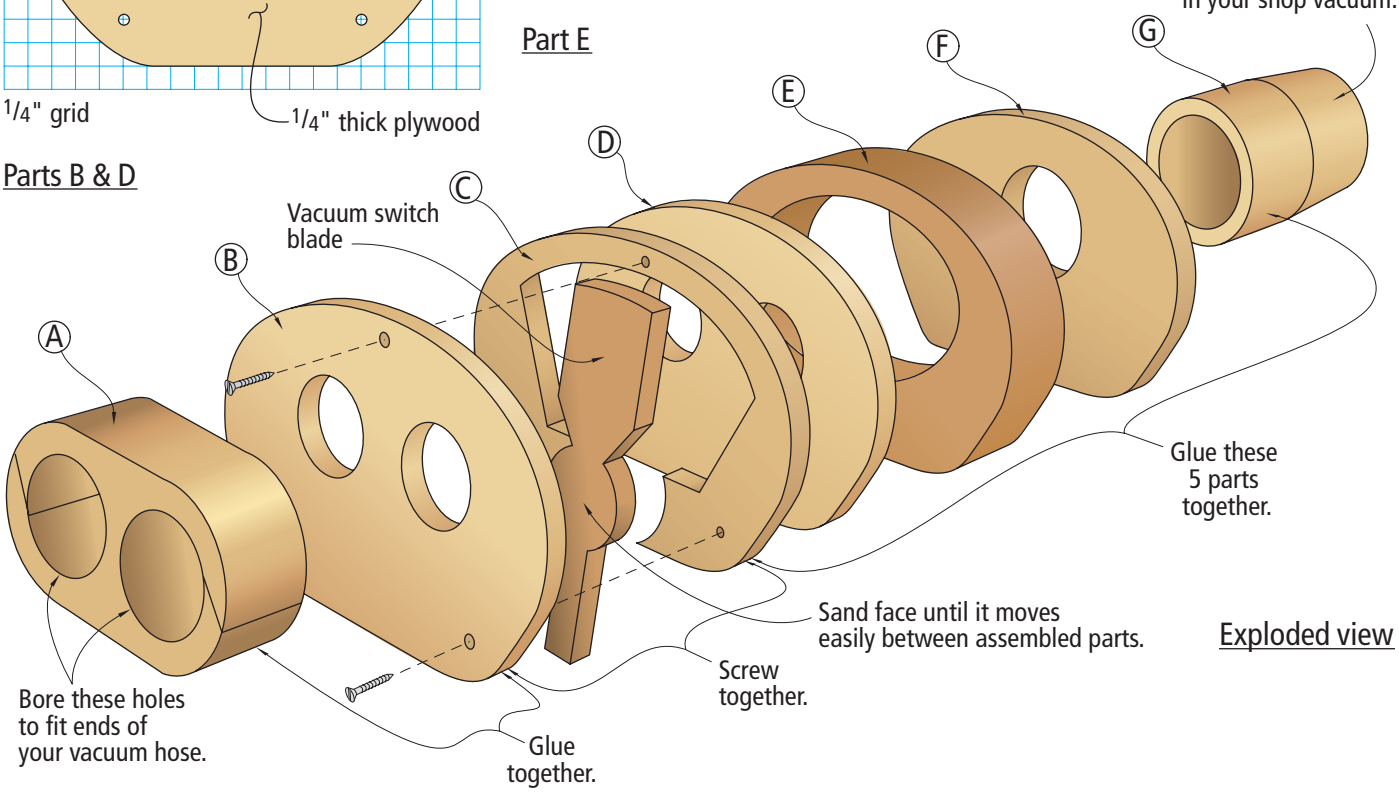

Parts B & D



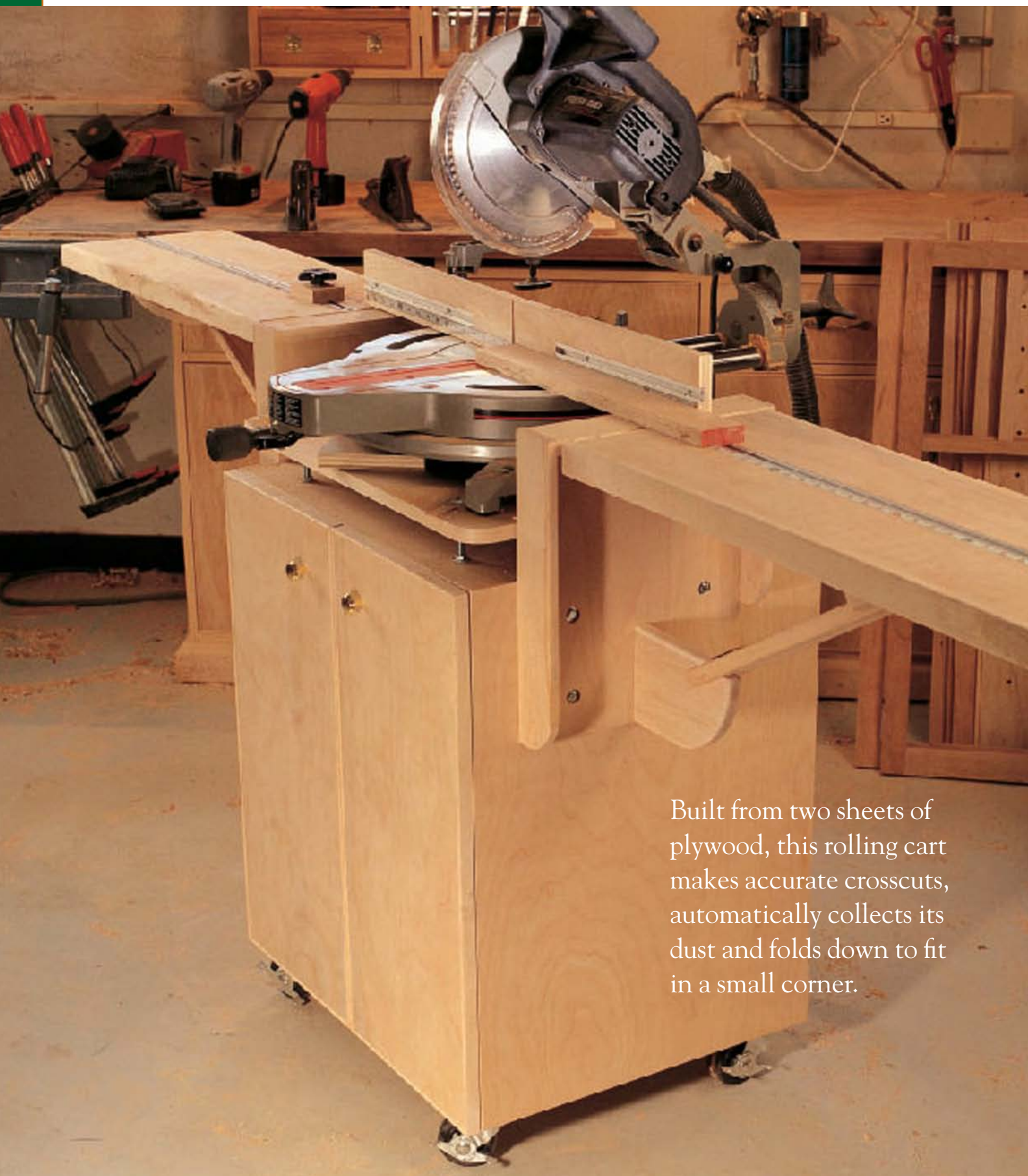

Part E




Part A

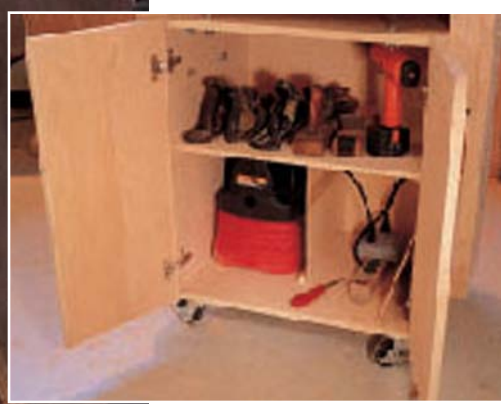



Exploded view



Built from two sheets of plywood, this rolling cart makes accurate crosscuts, automatically collects its dust and folds down to fit in a small corner.

# ULTIMATE MITER SAW STAND



Photos by Al Parrish

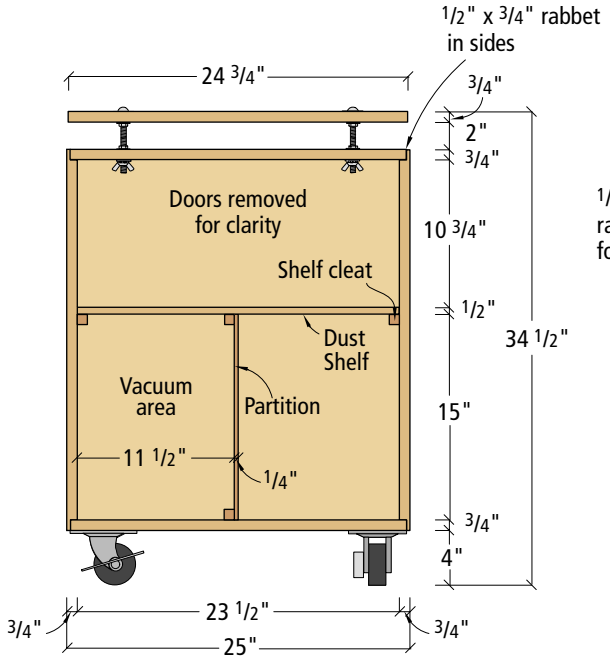
When I worked in professional shops, there was always a chop saw on some kind of cart. The less-organized shops put the saw on the nearest work cart. It didn't take up much space, but it wasn't as useful as it should be. The better shops mounted the miter saw to a rolling cart and attached permanent wings to support long pieces and to hold a fence with stops for doing repetitive cuts. This setup was useful, but it took up a lot of space.

What I had in mind for *Popular Woodworking*'s shop would have a dead-on stop system and folding wings so the stand would take up less space. The top of this stand adjusts up and down so you can line up the saw's table with the wings. (In fact, the adjustable table allows you to use a drill press or a mortiser on this stand.) It has on-board dust collection that turns itself on and off. And the kicker to the whole thing is that the cart is made from one sheet each of ¾" and ½" plywood, with some solid wood trim.

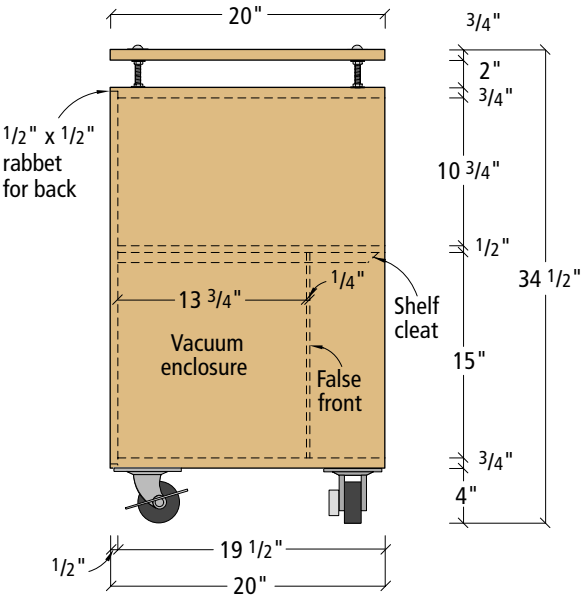
Begin construction by cutting the parts out according to the cutting list and using the optimization diagram. You'll notice that the case top is in two pieces on the optimization diagram. That's

by Jim Stuard

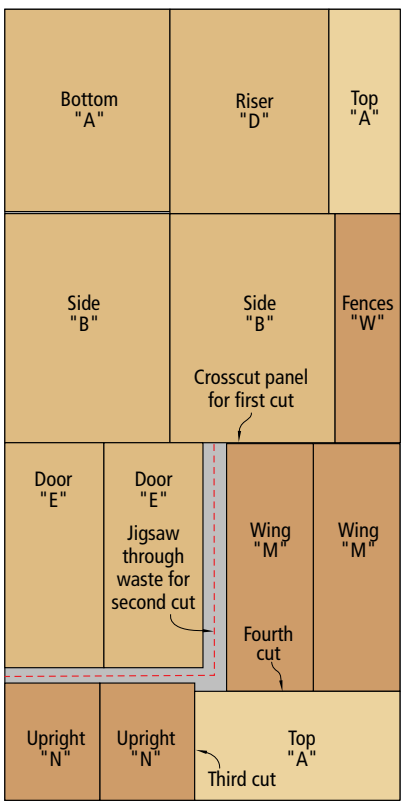
*Jim Stuard is a former associate editor at* Popular Woodworking *and now divides his time on the projects he is most proud of: his children, his writing and teaching woodworking.*



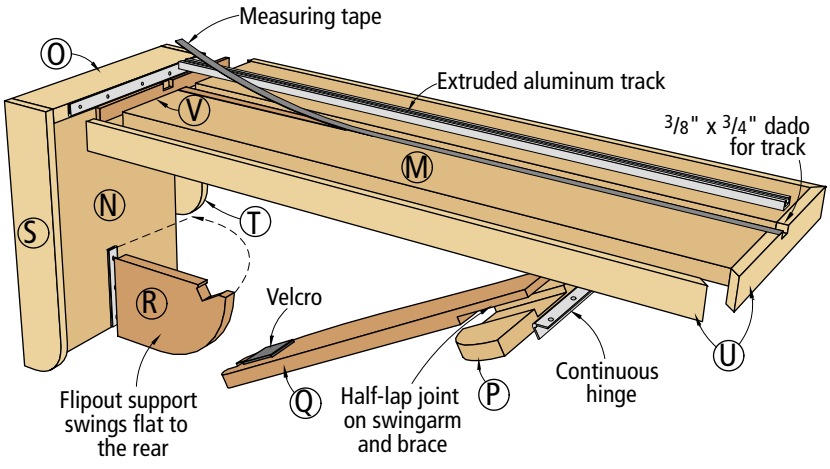

Elevation



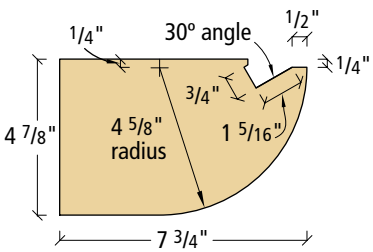

Profile



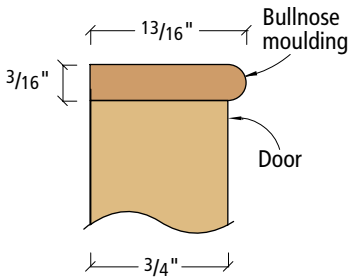

Optimization diagram




Detail of wing




Flip-out support




Detail of door trim

Illustration by Jim Stuard.

because you have to edge-glue the plywood together, then cut it to size. There isn't much scrap on this project.

### One Quick Cabinet

Begin by building the cabinet. To join the sides to the top and bottom, first cut ½" x ¾" rabbets in the top and bottom edges of the sides. To hold the back, cut ½" x ½" rabbets in the back edges of the sides, top and bottom pieces. Now assemble the case. An old trade secret is to lay the case face down on your assembly bench. This way you can ensure the joint at the inside of the rabbet is flush all around. Set each joint with a couple nails, then screw the case together. Check your cabinet for squareness and make sure the back fits snugly. Attach the back with screws. Flush up the front edges of the cabinet with a plane and apply iron-on birch veneer tape. File the tape flush, sand the cabinet and mount the casters.

### An Adjustable Saw Platform

Now is a good time to mount the leveling riser (or platform) to your cabinet and get the miter saw set up. First cut a 1½" radius on the corners of the riser. Make sure this cut is square so that you can apply veneer tape without too much trouble. Ironing on veneer tape to the riser in one piece is a real challenge, but it looks great.

When the riser is ready, center it on top of the case and clamp it in place. Place your miter saw in the center of the riser. With a pencil, trace the locations of your saw's feet onto the riser. Also

Adjusting the height of the saw is as easy as loosening the wing nuts inside the cabinet and using the jam nuts on top of the cabinet to raise or lower the saw until it's flush with the two wing assemblies.

## ULTIMATE MITER SAW STAND

| | NO. | LTR | ITEM | DIMENSIONS (INCHES) T | W | L | MATERIAL |
|---|---|---|---|---|---|---|---|
| **Cabinet** | | | | | | | |
| ❑ | 2 | A | Top & bottom | ¾ | 20 | 24½ | Plywood |
| ❑ | 2 | B | Sides | ¾ | 20 | 27¾ | Plywood |
| ❑ | 1 | C | Back | ½ | 24½ | 27¼ | Plywood |
| ❑ | 1 | D | Leveling riser | ¾ | 20 | 24¾ | Plywood |
| ❑ | 2 | E | Doors* | ¾ | 12 1/16 | 27⅜ | Plywood |
| ❑ | 1 | F | Door trim | 3/16 | 13/16 | 192 | Solid wood |
| ❑ | 1 | G | Shelf | ½ | 19½ | 23½ | Plywood |
| ❑ | 2 | H | Shelf cleats | ¾ | ¾ | 19 | Solid wood |
| ❑ | 1 | I | Partition | ¼ | 15 | 14 | Plywood |
| ❑ | 1 | J | False front | ¼ | 15 | 11½ | Plywood |
| ❑ | 2 | K | Cleats | ¾ | ¾ | 13¾ | Solid wood |
| ❑ | 1 | L | Cleat | ¾ | ¾ | 5 | Solid wood |
| **Wings** | | | | | | | |
| ❑ | 2 | M | Wings | ¾ | 10⅜ | 30 | Plywood |
| ❑ | 2 | N | Uprights | ¾ | 11½ | 14¼ | Plywood |
| ❑ | 2 | O | Upright ledges | ¾ | 2¾ | 11½ | Solid wood |
| ❑ | 2 | P | Swingarm braces | ¾ | 4 | 10½ | Solid wood |
| ❑ | 2 | Q | Swingarms | ¾ | 3 | 20 | Solid wood |
| ❑ | 2 | R | Flip-out supports | ¾ | 4⅞ | 7¾ | Solid wood |
| ❑ | 2 | S | Front brackets | ½ | 2¾ | 15 | Solid wood |
| ❑ | 2 | T | Rear brackets | ½ | 2¾ | 10 | Solid wood |
| ❑ | 1 | U | Wing trim | ½ | 1½ | 15' | Solid wood |
| ❑ | 1 | V | Edge trim | ¼ | 13/16 | 24 | Solid wood |
| ❑ | 2 | W | Fences | ¾ | 3 | 16¼ | Plywood |
| ❑ | 1 | X | Stop block | ¾ | 2 | 3 | Solid wood |

* Size before applying door trim.

## HARDWARE LIST

**Leveling riser**
4-4½" x ⅜" stove bolts (coarse thread)
4-½"x1½" fender washers
12-⅜" flat washers
4-⅜" lock washers
4-⅜" wing nuts (coarse thread)
8-⅜" jam nuts (coarse thread)

**Case**
4-4"casters w/locking wheels
16-½" x #10 panhead sheet-metal screws
16-¼" lock washers
1-six-outlet plug strip

**Doors**
4-130° European-style cup hinges

**Wing supports and fence**
8-2"x¼"-20 hex-head bolts
16-¼" flat washers
8-¼" lock washers
8-¼"-20 wing nuts
2-36" continuous hinge
3-36" sliding track
1-L to R reading tape (72")
1-R to L reading tape (72")
2-2" square sets of Velcro (hooks and loops)

**Stop**
1-¼"-20 star knob
1-1½"x¼"-20 hex-head bolt
1-¼" flat washer

**Saw (fastening to leveling support)**
4-2½"x¼"-20 hex-head bolts
8-¼" flat washers
4-¼" lock washers
4-¼"-20 wing nuts

The easiest way to assemble the wing is to attach the hinge to the upright assembly. Then remove it and attach it to the wing. Clamp the upright in a vise and reattach everything. Make sure to mark each hinge's location or you'll mess up how some parts go together.

trace the holes in the machine's feet that you'll use to mount the saw to the riser. This is important because the riser floats over the case on four bolts, which allows you to adjust the saw up and down. Now mark locations for the bolts that attach the riser to the case. Be sure to keep the bolts as close as you can to the feet without them interfering with each other.

When you've marked the locations for the riser bolts, drill your holes completely through the riser and the top of the case. Hold a piece of scrap inside the case where the drill will come out to minimize tearout. Now ream out the holes a little to ease the riser adjustment.

Remove the riser from the case and drill the holes for mounting the saw. Now you can mount the riser to the case (see the list of hardware you need on the previous page). Put the bolt through the fender washer, then into the hole in the riser. Put another flat washer on the other side of the riser with a jam nut to set the bolt in place. Run a jam nut up the bolt, leaving a 2" gap between the riser and the loose jam nut. Place washers over the holes in the case and set the riser in place.

On the underside of the case, put a flat washer on the bolt, followed by a lock washer and wing nut. When you want to adjust the riser height, simply loosen the wing nuts and adjust the jam nut against the case top to raise or lower the riser.

To complete the case, build and hang the plywood doors. Nail a $^{13}/_{16}$" solid maple edge with a bullnose profile to the edges.

Use European hinges (sometimes called concealed hinges) on your doors. I'm fond of a $30 jig that easily locates the holes for the hinges and the mounting plates (Euro-Eze, item #905-599, $29.99 from Woodworker's Supply, 800-645-9292 or www.woodworker.com). Drill the hinges' cup holes about 4" in from the top and bottom of the case.

## Automatic Vacuum

Now mount the saw and outfit the cabinet with the vacuum and electrical parts. When the saw and vacuum are hooked up properly, the vacuum will come on automatically when you turn the saw on (thanks to the "Automatic Power Switch" #24031, $19.99 from Craftsman, 800-377-7414 or www.craftsman.com), and it will turn off a few seconds after you finish your cut.

Start by drilling two 2" holes in the back near the bottom of the case. One hole is for the vacuum hose (locate it according to your vacuum). The other is for the wiring. I enclosed the vacuum in a partition made from two pieces of plywood and the shelf. The shelf height in the drawing works for the two-gallon Craftsman vacuum (model# 17711, $29.99). Lay out the height of the bottom edge of the shelf. Mount a pair of cleats to these lines. Screw the shelf in from the top.

Now screw cleats to the inside of the case to make the partition and false front that conceals the vacuum. Notch your plywood pieces to wrap around the shelf cleat and the power cord for the vacuum. Turn the vacuum's switch to "on," place it in the new cubby and hook up the vacuum's hose to the saw through a hole in the back.

Screw an outlet strip to the bottom of the case and run the strip's cord through a hole in the back. Plug Craftsman's Automatic Power Switch into the outlet strip and plug in the saw. Now screw the partition and false front in place to conceal the vacuum.

## Huge Wings

The wings are the last thing to do. Begin by gluing and nailing $^1/_4$"-thick solid wood edge trim to one end of the wings. This edging gives the piano hinge some meat to bite into. Finish the wings by applying the $^1/_2$" x $1^1/_2$" trim to the other three edges.

Study the diagram on the previous page to see how the wings are supported. First apply the upright ledges to the uprights. Cut the 2" radii on the brackets and then attach them in place.

Cut the swing arms, braces and flip-out supports. The swing arm and brace need a half-lap joint that makes a "T" shape. Attach the continuous hinge to the top of the "T." The best way to cut this joint is with a dado

*continued on page 34*

There is a lot of aluminum channel out there these days, but I chose this T-track because a $^1/_4$"-20 bolt head will fit in the channel. It comes predrilled and countersunk from Woodcraft (item #141961, $14.99, 800-225-1153 or www.woodcraft.com) and machines nicely. You'll probably have to file down some screws that pop out from the other side.

*continued from page 32*

head in a table saw. Cut a ¾" x ¾" notch on the end of the swing arms to mate with the flip-out support.

The last thing to do to the arms is to round off the corners: 1" on the ends and 3½" on the brackets. Now mount the swing-arm assemblies to the underside of the wings using a 10" piece of continuous hinge, with the notched end of the swing arm ¼" in from the point where the wing meets the case. To keep everything from flopping around when the arms are down, use adhesive-backed Velcro between the swing arms and wings. Reinforce the Velcro's adhesive with staples.

Finish the wings by cutting a ⅜" x ¾" dado down the middle of the wing for the extruded aluminum channel for the stop. Next to that dado, cut a second shallow dado that's ½" wide and as deep as your stick-on measuring tape is thick. Cut the aluminum channel to length and screw it in place.

Now concentrate on the flip-out supports. After cutting out the mating notches for the swing arms, cut a 3/16" x ⅝" rabbet into the end of the support to accept a 4¾"-long piece of continuous hinge. Lay out and mount the support to the upright, centered and flush to the bottom edge.

The last step on the wings is to attach the wing assembly to the upright. Do this carefully so that the surface of the wing is flush with the upright ledge. Now, if everything's OK, your wings should lock flush and square to the upright. If you didn't get it right the first time, add a flat-head screw to the inside of each notch and you will be able to adjust the height of the wing.

To attach the wing assemblies, temporarily remove the saw/riser assembly and remove the wing from the upright assembly. Cut a spacer that's 2¾" plus the height of the saw's table. Clamp the spacer flush to the upright ledge. Lay the wing assembly on the edge of the case. On the saw/riser assembly, measure from the front edge of the riser to the saw fence. Subtract 1¾" from that number and mark it on the case, measuring from the front. This is where the upright should be mounted. It accounts for the thickness of the ¾" saw fence and the distance from the center of the stop to the fence. Mount the upright with the hardware listed. Make sure to counterbore the bolt heads and washers. This allows the flip-out support to fold flat against

Here you can see how the stop works with the fence system. Note the thin guide strip that prevents your stop from wobbling as you set it.

the upright. Re-attach the wings and flush the saw table up to the wings by resting a straight piece of lumber across the wings. Adjust the saw's height and lock it down.

The last step is to make the fences and the stop, and to attach the tapes. First rip a couple of 3½"-wide sections of plywood from your scrap. Then cut them to 1" longer than the distance from the blade to the outside edge of the upright. That should be about 16¼", as long as your saw is centered correctly on the base.

Cut ⅜" x ¾" dados 1" to the center from one edge. The edge that the dado is closest to is the bottom edge. Repeat the ½" dado for the tape so it's above the dado. Glue in a 4"-long filler into the groove at the end next to the blade and attach a length of aluminum channel to fill the remaining length. Make a mirror part for the other side. This keeps your hands at least 4" away from the blade – a safe distance. Attach the fences by lowering the saw (as if you were making a cut) and butting each fence against the blade. Clamp the fence pieces there and screw them in place.

Cut the measuring tape to 16" and stick it in place. Use a square block to index off the 16" marks and, after cutting the tapes to length (around 46"), stick them in place, butting the end up against the block on each side of the saw blade.

Finally, make the stop that runs in the channel. The stop is a simple 2" x 3" block with a ¼" hole in it. Make a guide strip that's about 5⁄16" x 1⁄16". It's easier if you make the strip a little thick and plane it down to the 1⁄16" thickness. Drill the ¼" hole through and test it with a bolt and star knob. **PW**


# DRILL PRESS TABLE

Turn your metalworking drill press table into a woodworking table in just a few hours and with only a few dollars worth of materials.

Despite the fact that your drill press is designed mostly for poking holes in sheet metal, it has many uses in a woodshop. It's a mortiser, a spindle sander, it bores huge holes and – of course – drills holes at perfect right angles to the table. Because the table on most drill presses is designed for metalworking, it's hardly suited for these tasks. So I built this add-on table with features that will turn your drill press into a far friendlier machine:

• First, it has a fence that slides forwards and backwards as well as left and right on either side of the drill press's column. This last feature also uses the drill press's tilting table feature with the auxiliary table for angled drilling.

by David Thiel

*Comments or questions? Contact David at 513-531-2690 ext. 1255 or david.thiel@fwpubs.com.*

• Built-in stops (both left and right) that attach to the fence for procedures that need to be replicated, such as doweling or chain-drilling mortises.

• Hold-downs that can be used on the fence or on the table for any procedure.

The sizes given in the cutting list are for a 14" drill press, with the center falling 9" from the rear edge of the table, with a 2" notch in the back to straddle the column. Adjust the center location and overall size of the table to match your particular machine.

## Build the Base

The base platform for the table is made from ¾" plywood, which should be void-free. Again, adjust the size as necessary to fit your drill press. First you need to get the table ready for the T-track, which is what holds the fence and hold-downs in place. Start by locating the four recessed holes that allow the T-slot mechanism to slip into the track without disassembling the mechanism. Each hole is 1½" in diameter and ⅜" deep.

Next, locate the grooves in the center of the holes and use a router with a ¾"-wide straight bit to cut the grooves to a ⅜" depth. The T-slot track should fit into the grooves with the top surface just below that of the plywood table. The grooves should be as parallel as possible to one another to allow smooth movement of the fence.

Now cut the hole for the 4" x 4" replaceable insert plate. First mark its location on your table, then mark in from that line by ⅜" to locate your cutting line. Drill clearance holes in two corners of the inner square, then use a jigsaw to cut out the center piece. Next, determine the thickness of the material you will use for your insert plate (the ⅜"-thick Baltic birch we used is actually metric and shy of ⅜"). We used a ⅜" piloted rabbeting bit in a router set to a height to hold the insert flush to the top surface of the table.

While your jigsaw is still out, locate, mark and cut out the notch in the back of the table. This allows the table to move closer to the drill press' post and also to tilt without interference.

As a final friendly touch on the table, I used a ⅜" roundover bit in my router to soften all the edges on the table, both top and bottom. You'll get fewer splinters if you do this.

## A Flexible Fence

The fence is the heart of the table, and the wood should be chosen for durability and straightness. Quartersawn hardwood, carefully surfaced and planed, will do nicely. After cutting the fence to size, use a dado stack to mill two ⅜"-deep by ¾"-wide grooves in the fence. The first is centered on the top surface of the fence, and as in the grooves in the base platform, a piece of T-slot track should be used to confirm that the groove is deep enough to allow the track to fit just below the surface of the wood. The second groove is then cut centered on the face of the fence.

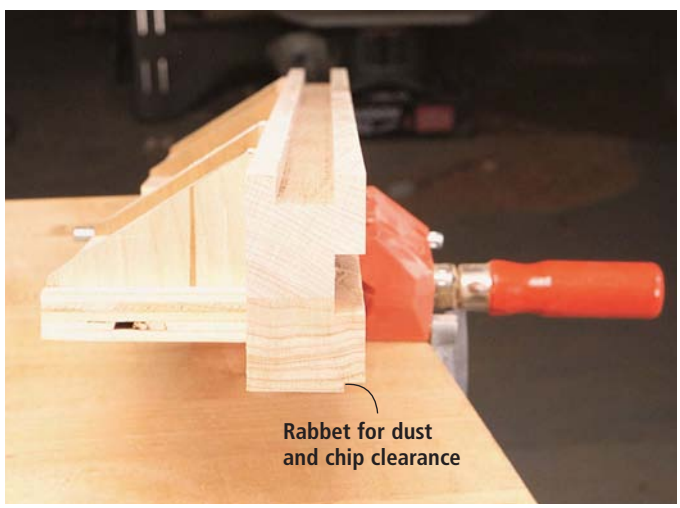
One other bit of table saw work is a ⅛" x ¼"-wide rabbet on the inside bottom edge of the fence. The rabbet keeps debris away from the fence, so your work will fit tightly against it.

One option that I considered was adding an indexing tape measure on the fence. Every time the table is moved, the tape would need to be readjusted to zero, and for the infrequent use the tape would see I decided against it. A stick-on tape can easily be added to the fence face if that's more to your personal taste and needs.

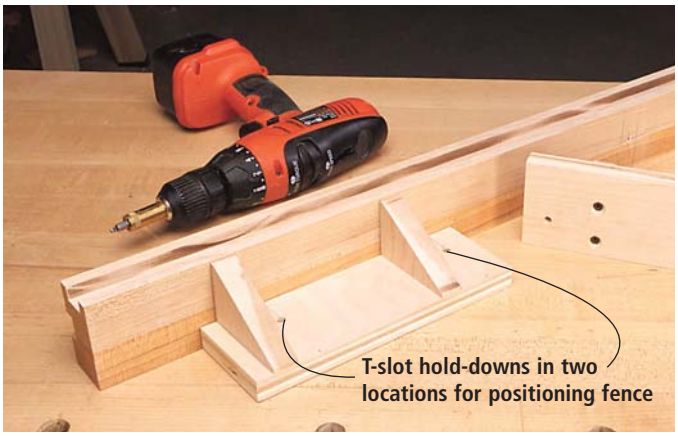
Unlike the fence on a router table, the fence on a drill press


The grooves for the T-slot track allow the fence to be used left-to-right and front-to-back on the table to take advantage of the tilting feature of the existing table.

After cutting the hole with a jigsaw, the opening is rabbeted using a bearing-piloted router bit. Then chisel the corners square and fit the replaceable insert plates tightly into the rabbet. Make a couple extra insert plates.

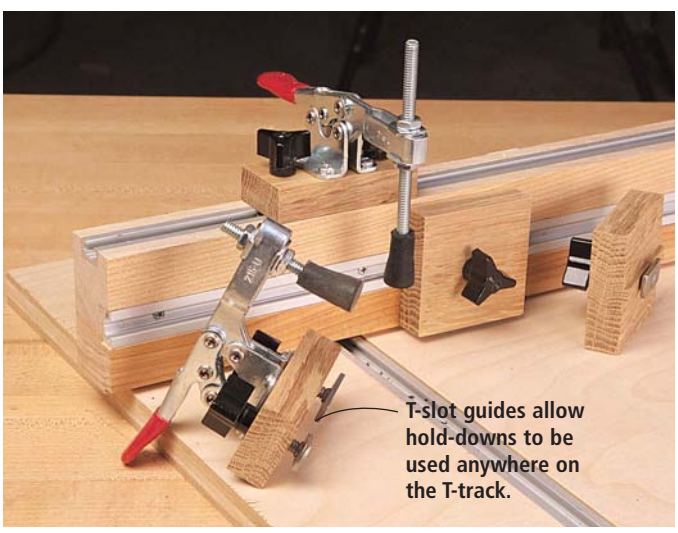



The fence is made of a sturdy, stable hardwood. Cut a groove the length of the top and face of the fence. The grooves hold T-slot tracks, which can be used for stops, hold-downs and other accessories.




The fence is supported by two simple brackets screwed to the rear of the fence. The location of the triangular braces is important to the track orientation, so follow the diagrams carefully for location.


Install the T-slot tracks in the grooves with flat head screws countersunk into the track. The braces are attached to the fence by screwing through the face groove prior to attaching the T-slot track.




The hold-downs and stops are made from ¾" hardwood. To make the guide that holds the stops squarely on the fence, cut a 1/16" x 1⅛" rabbet on both sides of the inside face using your table saw.

table won't see a lot of lateral pressure. So the main purpose of the braces is to hold the fence square to the table at the drilling point. In my case I've also given the braces the job of mounting the fence to the table.

Start by cutting the two base plates and the four braces to size. The braces are triangles with the bottom edge 3" long and the adjoining right angle edge 1⅞" long. The third side is determined by simply connecting the corners. Locate the braces on the base plates according to the diagrams and pre-drill and countersink 3/16"-diameter holes in the base plates to attach the braces to the plates.

To mount the support braces to the fence, again refer to the diagrams to locate the proper spacing on the fence. Then drill and countersink screw holes through the face groove in the fence. Clamp the brace to the fence and screw the brace in place.

With the braces attached to the fence, use the T-slot fastener locations on the diagrams as a starting point for drilling the holes in the base plates, but check the location against your table for the best fit. Two holes are drilled in each plate to allow the fence to be moved to the perpendicular position (either to the right or left of the quill), by simply relocating one of the T-slot fasteners. Check each hole in relationship to that position.

## Add the Track

Assuming you purchased the 24" lengths of track listed in the cutting list, you should be able to cut the tracks for the table first, leaving fall-off that can be added to the two remaining full length tracks to give you the necessary 30" lengths of track for the fence. When attaching the track, first pilot drill the hole in the center of the track (a groove is provided in the track to simplify that operation), then use a countersink to widen the hole to accommodate a #4 x 5/8" flat-head screw. Keeping the screw heads flush to the inner surface of the track will make the stops and hold-downs move much easier.

Stops and hold-downs designed for use in T-tracks make the drill press most useful. The stops are square blocks of wood with one face milled to leave an indexing strip that fits into the slot on the T-slot track. By using the saw to cut tall but shallow rabbets on two edges of each block, the stops are completed fairly easily. For safety, cut the rabbet on a longer 2½" wide piece of wood, then crosscut the stops afterward. The T-slot fasteners are simply inserted into a ¼" hole drilled in the center of each stop block.

The hold-downs are blocks of wood with DeStaCo clamps screwed to the top. Each block is drilled for two T-slot fasteners. While the DeStaCos are good for this application, they aren't as versatile as I wanted. I replaced the threaded-rod plunger with longer all-thread (¼" x 36) to provide maximum benefit from the clamps. The rubber tip of the plunger is important to the function of the clamp, and if you can manage to reuse the existing tip, do so. If not, I found rubber stoppers in a variety of sizes in the local Sears hardware store.

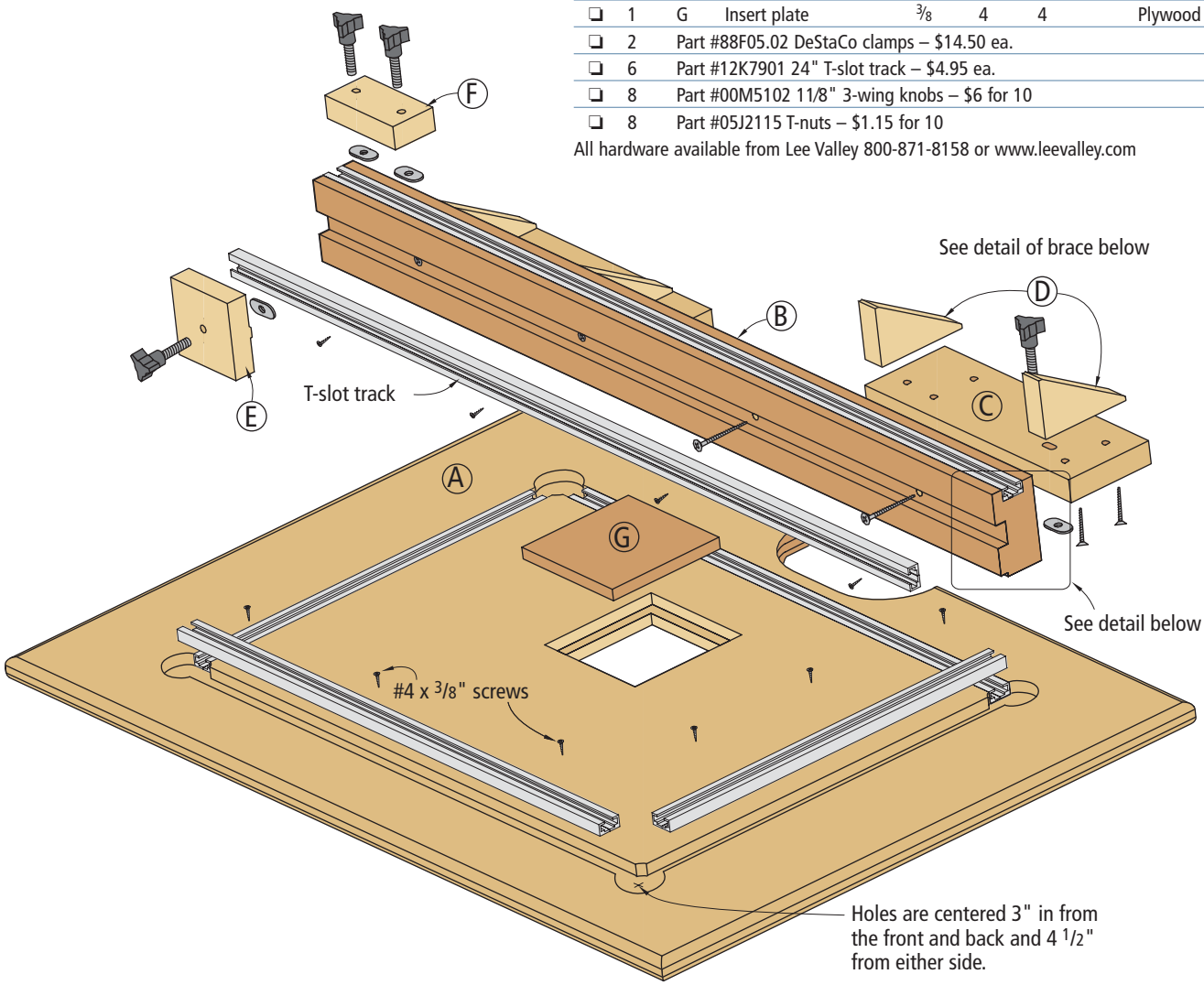
To install the stopper, carefully drill a ¼"-diameter hole two-thirds of the way into the stopper and then you should be able to screw it to the rod easily.

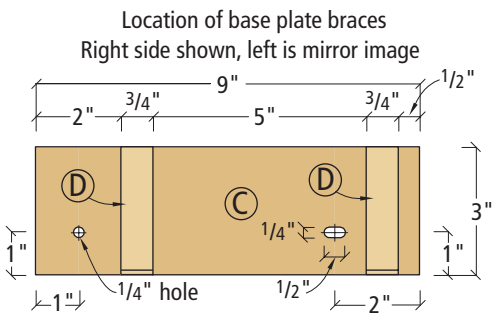
The table should attach easily to your existing drill press table using four lag bolts countersunk flush into the surface of the auxiliary table. Once attached, you should find that the auxiliary table gives you more support and versatility than the metal one. **PW**

# DRILL PRESS TABLE

| | NO. | LET | ITEM | DIMENSIONS (INCHES) T | W | L | MATERIAL |
|---|---|---|---|---|---|---|---|
| ❑ | 1 | A | Platform | 3/4 | 20 | 29 | Plywood |
| ❑ | 1 | B | Fence | 1 1/2 | 2 3/4 | 30 | Hardwood |
| ❑ | 2 | C | Fence base plates | 3/4 | 3 | 9 | Plywood |
| ❑ | 4 | D | Base plate braces | 3/4 | 3 | 1 7/8 | Hardwood |
| ❑ | 2 | E | Stops | 3/4 | 2 1/2 | 2 1/2 | Hardwood |
| ❑ | 2 | F | Hold-down plates | 3/4 | 1 1/2 | 3 | Hardwood |
| ❑ | 1 | G | Insert plate | 3/8 | 4 | 4 | Plywood |
| ❑ | 2 | Part #88F05.02 DeStaCo clamps – $14.50 ea. | | | | | |
| ❑ | 6 | Part #12K7901 24" T-slot track – $4.95 ea. | | | | | |
| ❑ | 8 | Part #00M5102 11/8" 3-wing knobs – $6 for 10 | | | | | |
| ❑ | 8 | Part #05J2115 T-nuts – $1.15 for 10 | | | | | |

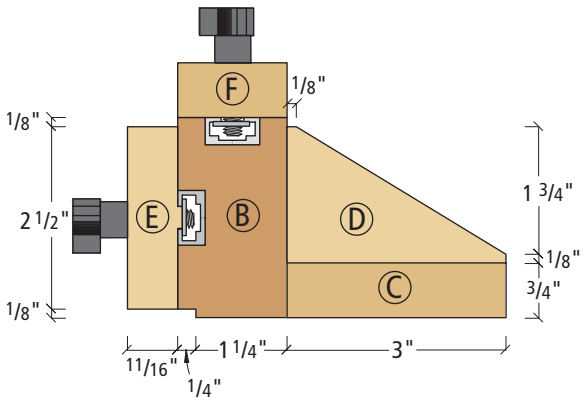
All hardware available from Lee Valley 800-871-8158 or www.leevalley.com




Hole locations

Plan detail of hole locations for base plate




Detail of fence profile

Illustration by Jim Stuard

# 12-VOLT DRILLS


Cordless drills are now a ubiquitous part of most workshops. Offering good performance for a vast number of drilling and screwing tasks, they also offer maximum freedom and flexibility. We consider 12-volt models to be the best balance of weight, size and performance for a home shop. Certainly there are applications for smaller and larger voltage units; but in general, 12 volts is just right. If you have a job requiring extraordinary torque, an 18- or 24-volt tool will handle the task, but it'll cost you in the wallet and the wrist.

## SETUP & USE

### Basic Use

A cordless drill is an easy tool to master. Most offer two speed settings, with the lower speed providing greater torque and better control for driving screws. The higher speed setting is better for drilling holes, where torque is not as critical.

First, a tip on how to hold a cordless drill: Don't use your trigger finger to pull the drill's trigger. Use your middle finger to squeeze the trigger and your index finger to point where you are drilling. When you start to drill a hole, pay attention to the drill bit's angle to the wood in both the front-to-back and left-to-right orientation. If you learn to align the drill correctly in these two axes, it's easy to drill a straight hole. If you buy a drill with a bubble level, it can help drill a straight hole, but you may end up spending all your time staring at the level, and not getting very far with your project.

When drilling completely through a piece of wood, the force of the bit exiting the back of the wood will push the wood fibers out of the way rather than cut them. This is blow-out. To avoid it, place a scrap piece of wood directly beneath or behind your good piece. The bit will continue to cut into the scrap piece, leaving a clean exit hole.

Phillips screws (with the "+" head) are easier to install than slotted, but square-drive or the similar Robertson-drive screws are even easier, locking the bit into the screw head so it can't slip out unless really forced.

When choosing the type of drill bits to use, consider what you're drilling into. Brad point, or bullet-point drill bits have a smaller diameter "starter" tip that keeps the bit from wandering and are easier to align dead-center on a mark. Twist bits don't have the starter tip and will work well in wood also, but they're less efficient and user friendly. For larger holes (over ½" in diameter), spade or Forstner bits provide better cutting performance. **PW**

## BEFORE YOU BUY

- **HANDLES** T-shaped handles offer better balance (the drill will stand upright on your bench), while pistol-grip handles let you to apply more pressure behind the tool.
- **TORQUE** Torque is force, not speed. Higher torque occurs at lower speeds. The higher the torque rating, the better.
- **BATTERIES** Batteries are rated in amp-hours, with more amp hours equivalent to longer time between charges. Nickel Cadmium (NiCad) batteries are most common. Nickel Metal Hydride (NiMH) batteries are reported to offer longer run-time, but not all manufacturers agree to their benefit. Get two batteries whenever possible.
- **SPEEDS** A two- or three-speed gearbox improves the balance between torque and speed, offering better performance options. Variable speed is a benefit in addition to multiple speeds, allowing the user to control the speed of the drill for delicate operations.
- **CLUTCHES** Clutches disengage the motor when a set torque resistance is achieved, keeping you from stripping the heads off screws. Clutches are useful, but 24 settings aren't necessary. If the tool has more than 10, you're fine.
- **CHUCKS** Keyless chucks make bit changing an easy, tool-free operation. Single-sleeve keyless chucks operate with a shaft brake that allows true one-hand operation. The best chucks offer metal jaws that close tight enough to hold a 1/16" drill bit.
- **CHARGERS** One-hour chargers are standard, but some faster chargers are included as an upgrade. Three-hour chargers still exist but only on economy models. Look for the trickle charge feature; it keeps the battery fresh.

## PW *Recommends*

### OCCASIONAL USER

- **Hitachi FDS12DVA** A bargain 12-volt drill ($130) that provides lots of features with a little less torque – and they throw in a useful flashlight!
- **Ryobi HP1202MK2** Ryobi's drill offers all the features an occasional user will need, and more, at a good value ($60).

### SERIOUS, ADVANCED OR PROFESSIONAL WOODWORKER

Competition is tough in this category so most manufacturers have to offer quality tools, meaning it's hard to go wrong with any brand name tool. Any of those listed below will give you years of quality service.

- **Bosch 32612** ($130)
- **DeWalt DW980K-2XRP** ($180)
- **Metabo BST12 Impuls** ($170)
- **Milwaukee 0502-23** ($145)
- **Makita 6217DWDE** ($170)
- **Panasonic EY6407NQKW** ($180)
- **Porter-Cable 9866** ($140)

The DeWalt drill offers a third gear speed for better torque-to-speed ratio, while the Metabo offers a pulsing setting that improves torque control in short bursts. The Panasonic deserves mention for its quality, durability and top-rate battery technology.

*These tools have been tested or used by the editors of **Popular Woodworking** and have earned their recommendation.*

## STATS

| BRAND & MODEL | STREET PRICE | TORQUE IN./LBS | MAX. SPEED(L/H) | BATT. CHARGER | AMP HOUR | # CLUTCH SETTINGS | WEIGHT (LBS.) | #/TYPE BATTERIES | HANDLE TYPE | BRAKE | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **12 Volt** | | | | | | | | | | | |
| Black & Decker PS3525K | $50 | 105 | 400/800 | 2hr | 1.0 | 6 | 3.2 | 2/NiCad | T | Y | |
| Black & Decker PS3550K | 60 | 105 | 0-800 | 3hr | 1.0 | 6 | 3.2 | 2/NiCad | T | Y | |
| Black & Decker FSD122K-2 | 80 | 125 | 0-800 | 3hr | 1.2 | 36 | 3.5 | 2/NiCad | T | Y | Quick connect chuck |
| Black & Decker CD431K | 70 | 115 | 0-800 | 3hr | 1.5 | 24 | 3.5 | 2/NiCad | T | Y | |
| **Bosch 32612** | 130 | 280 | 400/1400 | 1hr | 1.4 | 6 | 4 | 2 /NiCad | T | Y | single slve., rat. chuck |
| Craftsman 26926 | 150 | 292 | 320/11000 | 1hr | 1.7 | 24 | 4.25 | 2/NiCad | T | Y | ½" chuck spindle lck. |
| Craftsman 11332 | 70 | 210 | 300/1000 | 3hr | 1.3 | 24 | 4 | 2/NiCad | T | Y | |
| Delta CL120 | 60 | NA | 315/1050 | 3-6hr | 1.3 | 20 | NA | 2/NiCad | T | N | bubble level, case |
| DeWalt DW927K-2 | 140 | 300 | 400/1400 | 1hr | 1.7 | 20 | 3.9 | 2/NiCad | T | Y | ratcheting chuck |
| **DeWalt DW980K-2XRP** | 180 | 350 | 450,1.4k, 1.8k | 1hr | 1.7 | 23 | 4.9 | 2/NiCad | T | Y | 3 speeds, ½"chuck |
| Fein ABS12-2 EUQ | 250 | 230 | 340/1200 | 50min | 2.0 | 13 | 4.5 | 2/NiCad | T | Y | Best New Tool 1998 |
| Festool CDD 12 fx | 395 | 221 | 380/1100 | 15min | 2.0 | 18 | 4 | 2/NiCad | P | Y | offset, R angle chuck |
| Festool TDD 12 fx | 395 | 221 | 380/1100 | 15min | 2.0 | 18 | 4 | 2/NiCad | P | Y | offset, R angle chuck |
| **Hitachi FDS12DVA** | 130 | 195 | 350/1100 | 1hr | 1.4 | 22 | 3.4 | 2/NiCad | T | Y | w/flashlight, ⅜"chuck |
| Hitachi DS13DV2 | 170 | 200 | 350/1200 | 1hr | 2.0 | 22 | 4.2 | 2/NiCad | T | Y | ½" chuck |
| Makita 6227DWE | 140 | 200 | 350/1100 | 1hr | 1.3 | 16 | 3.3 | 2/NiCad | T | Y | |
| Makita 6216DWDE | 200 | 320 | 400/1300 | 1hr | 2.6 | 17 | 4.6 | 2/NiMH | T | Y | Met. gear housing |
| **Makita 6217DWDE** | 170 | 310 | 400/1300 | 1hr | 2.6 | 17 | 4.4 | 2/NiMH | T | Y | |
| Makita 6217DWDLE | 180 | 310 | 400/1300 | 1hr | 2.6 | 17 | 4.4 | 2/NiMH | T | Y | w/flashlight |
| Makita 6317DWDE | 180 | 310 | 400/1300 | 1hr | 2.6 | 17 | 4.4 | 2/NiMH | T | Y | ½" chuck |
| **Metabo BST12 Impuls** | 170 | 282 | 450/1450 | 1hr | 1.4 | 20 | 3.5 | 2/NiCad | T | Y | Perf. 4.5 stars,½" chuck |
| Metabo BST12 Plus | 170 | 466 | 450/1600 | 1hr | 2.0 | 20 | 3.8 | 2/NiCad | T | Y | |
| **Milwaukee 0502-23** | 145 | 220 | 360/1100 | 1hr | 1.4 | 19 | 3.8 | 2/NiCad | T | Y | Reversible battery |
| Milwaukee 0501-23 | 150 | 220 | 360/1100 | 1hr | 1.4 | 19 | 4.75 | 2/NiCad | P | Y | ½" chuck, revers. batt |
| Panasonic EY6406FQKW | 150 | 293 | 350/1300 | 30min | 2.0 | 18 | 3.8 | 2/NiCad | T | Y | Elec. feedback |
| **Panasonic EY6407NQKW** | 180 | 293 | 350/1300 | 45min | 3.0 | 18 | 4.4 | 2/NiMH | T | Y | ½" chuck |
| Porter-Cable 9822 | 130 | 200 | 400/1200 | 1 hr | 1.3 | 20 | 4 | 2/NiCad | T | Y | soft pulse charger |
| **Porter-Cable 9866** | 140 | 330 | 400/1200 | 1hr | 2.0 | 20 | 5 | 2/NiCad | T | Y | Performance 4.5 stars |
| Porter-Cable 9866F | 175 | 330 | 400/1200 | 1hr | 2.0 | 20 | 5 | 2/NiCad | T | Y | w/flashlight |
| Porter-Cable 9966 | NA | 360 | 450/1300 | 1hr | 2 | 20 | 5 | 2/NiCad | T | Y | adj. handle size, case |
| **Ryobi HP1202MK2** | 60 | NA | 0 - 550 | 5hr | 1.5 | 24 | 3.5 | 2/NiCad | T | N | Mag tray |
| Skil 2467-02 | 40 | 110 | 700 | 3hr. | 1.2 | 6 | 3.2 | 1/NiCad | T | Y | incld. bit index |
| Skil 2467-03 | 50 | 110 | 700 | 3hr. | 1.2 | 6 | 3.2 | 1/NiCad | T | Y | incld. stud finder |
| Skil 2484-04 | 70 | 175 | 350/1450 | 3 hr. | 1.2 | 6 | 3.8 | 2/NiCad | T | Y | |

## KEY

Handle type:
T= T-handle;
P=Pistol grip;
NA=Not available,
■ = PW Recommends

# BAND SAWS

Band saws are versatile and easy-to-use machines that every shop should include. With very little instruction, you can perform rips, crosscuts, scroll work and even resaw lumber. And they don't take up a lot of space in your work area.

## SETUP & USE

### Mounting a Blade

When you buy a band saw, it will likely come supplied with a 3/8" steel blade that will handle many ordinary tasks, but it might not be the blade you'll choose to purchase again when it becomes dull. Check the box below for our preferences on a couple of top-notch aftermarket blades.

When choosing a blade, remember that more teeth per inch (tpi) is best for fine (but less aggressive) cuts. Fewer tpi produces faster, rougher cuts.

With either your standard blade or an upgraded choice, the important thing is to get the blade in the right location on the wheels and tensioned properly. Most blades are designed to ride on the center of the "tire" on the wheels. With the power off and the blade lightly tensioned around the wheels, you can spin the wheels and see where on the wheels the blade tracks. By adjusting the pitch of the upper wheel (follow your band saw's instructions for this) you can move the blade until it tracks in the center.

To tension the blade appropriately, most band saws have a scale near the tension knob that will show you where to tension the blade according to the width of the blade.

### Guide Setup

There are two types of guides on a band saw. The thrust bearing, which supports the blade from behind, and the side guides, which keep the blade from shifting left or right during a cut. There are two sets of these guides, one above the table and one below.

With the blade tracking correctly in the center of the wheels, the thrust bearing should be ad-


## BEFORE YOU BUY

- **BENCHTOP VS. STATIONARY** Prices for benchtops range from $100 to $210, but average about $175. Stationary models average in the $500 to $800 range. Benchtop saws tend to run on universal or smaller horsepower motors and also offer smaller capacity in throat depth, resaw and blade width. If cash and space allow, buy a stationary model.
- **MOTOR** As mentioned above, an induction motor is preferable. The most common 14" stationary model will offer a 3/4 or 1hp motor. This is sufficient for most band saw work. If you will be doing more resawing, try for a larger (1½hp) motor.
- **GUIDES** Guides are critical to performance. All band saws use a ball bearing rear thrust (guiding the back of the blade), but the side supports can be guide blocks or bearing guides. The blocks can be metal, synthetic or ceramic. In most cases, guide blocks are adequate to the task, though replacing standard metal guides with synthetic or ceramic will allow tighter tolerances.
- **BLADES** Don't skimp on your blades, and use the right blade for the task. For resawing on a 14" saw, a quality 3/8" or 1/2" blade is recommended. We like a 3/8" 3/4 variable-pitch carbide blade from Lenox. Though pricey, it does an amazing job. If you have a larger (18") saw, a wider blade (3/4" to 1") can be tensioned appropriately for resaw work. For tight turns, a thinner 1/8" or 1/4" blade is preferable. For general band saw use, we're fond of a 3/8" Timberwolf blade from Suffolk Machinery (www.suffolkmachinery.com or 800-234-7297).

## PW *Recommends*

### OCCASIONAL USER

- **Delta BS200.** A compact, easy-to-use benchtop machine, with nice features, that's only $170.
- **Grizzly G1052.** Similar benefits to the above Delta, this model replaces plastic with metal, making a stouter tool ($180).
- **Grizzly G0555.** This machine makes it affordable ($375) to move off the benchtop to a 14" band saw with lots of features and the option of a 6" riser block for resawing.

### SERIOUS HOME WOODWORKER

- **Delta 28-206.** This $600 band saw has a 1hp motor, a quick tension release, an improved 4" dust port and more. A solid buy.
- **Jet JWBS-14CS.** For $680, this band saw has all the features a woodworker should have.

### ADVANCED WOODWORKER OR PROFESSIONAL

- **Delta 28-241.** A new version of a reliable predecessor, this one adds a 1½ hp motor, improved tensioning spring to support wider blades and more for $800.
- **Jet JWBS-16 and JWBS-18B.** Two well-appointed one-piece band saws that offer strength, stability and increased capacity; they price at $890 and $1,240.
- **Laguna LT18.** Unquestionably a professional-quality saw that's worth the $1,995.

*These tools have been tested or used by the editors of **Popular Woodworking** and have earned their recommendation.*

justed to the distance of one folded dollar bill away from the blade. Set this way the bearing will only contact the blade during a cut.

The side guides, if of the block design, should also be set to the width of a folded bill on either side of the blade. This way the guides will support the blade without pinching. If you have roller guides on the sides, these can be adjusted to actually touch the blade. Either type of side guides should be set at the back of the gullet behind the teeth on the blade to avoid damage.

## Making the Cut

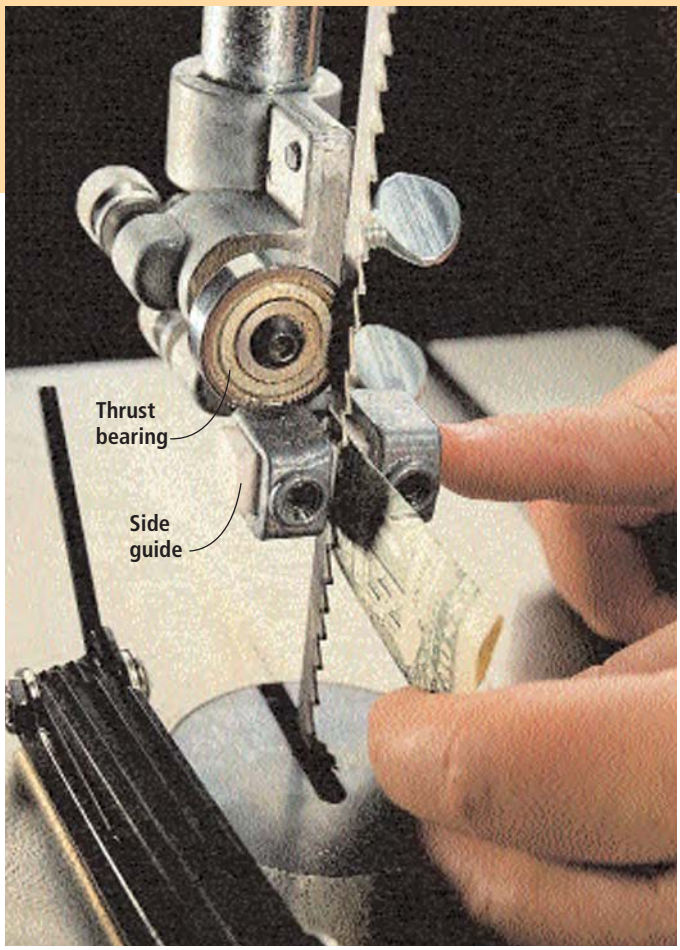
Making any type of cut on a band saw is fairly simple. You want to cut to the waste side of your cut line, not down the center, unless your line isn't that critical.

Adjust the upper guides to just above the work to keep less blade exposed and allow the guides to properly support the blade.

One thing that will happen on a band saw, unlike other saws, is drift. A band saw blade (nearly all of them) will want to pull to one side of the cut or the other. This means you have to adjust how you feed the wood into the blade to compensate for this drift. Even if you're cutting a straight line, you may have to angle the wood into the blade to cut straight. Once you've made a few cuts on the band saw, you'll start to compensate automatically.

If you use your fence with your band saw you also will need to angle it to compensate for drift when ripping or resawing.

Once you get comfortable with the band saw, it will become one of the most valuable machines in your shop. **PW**




When using "block"-style guides, the proper distance from the blade is easily gauged by simply folding a $1 bill and pushing the guides against the blade with the bill as a spacer. And yes, a $20 bill also will work.

## STATS

| MODEL | PRICE | SIZE IN. | RESAW CAP. IN. | TABLE TILT LEFT, RIGHT | BLADE GUIDES | MAX. BLADE (IN.) | HP | VOLTS | WEIGHT (LBS.) | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|
| BENCHTOP | | | | | | | | | | |
| Craftsman 21409 | 140 | 9 | 3 3/4 | 3, 45 | M | 3/8 | 1/3 | 120 | 40 | table extension |
| Craftsman 21459 | 180 | 9 | 3 1/2 | 0, 45 | M | 3/8 | 1/3 | 120 | 35 | work light |
| **Delta BS200** | 170 | 9 | 3 3/4 | 3, 45 | CB | 3/8 | 1/3 | 120 | 33 | work light |
| **Grizzly G1052** | 180 | 9 | 4 1/8 | 15, 45 | BB | 3/8 | 1/2 | 110 | 100 | with rip fence |
| Ryobi BS901 | 100 | 9 | 3 1/2 | 0, 45 | BB | 3/8 | 1/3 | 120 | 30 | |
| Tradesman 8166 | 120 | 9 | 3 1/2 | 0, 45 | BB | 3/8 | 1/3 | 115 | 40 | T-slot, miter gauge |
| Wilton 99162 | 120 | 9 | 3 1/8 | 0, 45 | CB | 3/8 | 1/3 | 120 | 43 | work light |
| Tradesman 8168 | 190 | 10 | 4 | 0, 45 | BB | 3/8 | 1/3 | 115 | 45 | T-slot, miter gauge |
| Craftsman 21450 | 210 | 11 | 3 | 0, 45 | M | 3/8 | 1/3 | 120 | 32 | three wheels |
| Grizzly G8976 | 140 | 12 | 3 7/8 | 0, 45 | BB | 3/8 | 3/4 | 110 | 38 | three wheels |

## KEY

M= metal, BB=ball bearing, CB=Cool Blocks, NM=non-metal, P=plastic, ES=European-style ball bearing

■ PW Recommends

## STATS

| MODEL | PRICE | SIZE IN. | RESAW CAP. IN. | TABLE TILT LEFT, RIGHT | BLADE GUIDES | MAX. BLADE (IN.) | HP | VOLTS | WEIGHT (LBS.) | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|
| FLOOR | | | | | | | | | | |
| Delta 28-195 | $300 | 10 | 7 | 3, 48 | CB | 1/2 | 1/2 | 120 | 75 | |
| Craftsman 22432N | 350 | 12 | 5 | 10,45 | M | 1/2 | 5/8 | 120 | 154 | open stand |
| Jet JWBS-120S | 390 | 12 | 6 | 10, 45 | M | 1/2 | 1/2 | 115 | 138 | open stand |
| Craftsman 22424 | 500 | 14 | 6 | 15, 45 | NA | 3/4 | 1 1/2 | NA | 154 | |
| Delta 28-276 | 400 | 14 | 6 1/2 | 3, 45 | M | 3/4 | 3/4 | 115 | 220 | quick tension release |
| **Delta 28-206** | 600 | 14 | 6 1/2 | 3, 45 | M | 3/4 | 1 | 115 | 245 | quick tension release |
| Delta 28-231 | 550 | 14 | 6 1/4 | 3, 45 | M | 3/4 | 1 1/2 | 115 | 205 | open stand, 14" x 14" table |
| **Delta 28-241** | 800 | 14 | 6 1/4 | 3, 45 | M | 3/4 | 1 1/2 | 115/230 | 230 | closed stand, 14" x 14" table |
| General 90-100M1 | 550 | 14 | 7 | 0, 45 | M | 3/4 | 1 | 115/230 | 210 | 2 speed with fence |
| General 90-125M1 | 520 | 14 | 6 | 0, 45 | M | 3/4 | 1 | 115/230 | 230 | 2 speed with fence |
| Grizzly 1019 | 315 | 14 | 6 1/4 | 10, 45 | M | 3/4 | 3/4 | 110/220 | 203 | with rip fence |
| Grizzly G1019Z | 335 | 14 | 6 3/8 | 15, 45 | M | 3/4 | 1 | 110/220 | 165 | open stand |
| **Grizzly G0555** | 375 | 14 | 6 1/2 | 15, 45 | BB | 3/4 | 1 | 110/220 | 210 | w/tension lever & fence |
| Jet JWBS-140S | 582 | 14 | 6 | 10, 45 | P | 3/4 | 3/4 | 115/230 | 183 | micro.-adj. top guides |
| **Jet JWBS-14CS** | 680 | 14 | 6 | 10, 45 | P | 3/4 | 1 | 115/230 | 197 | micro-adj. top guides |
| Jet JWBS-14MW | 730 | 14 | 6 | 10, 45 | P | 3/4 | 1 | 115/230 | 206 | 3-speed |
| Jet JWBS-C140S | 740 | 14 | 6 | 10, 45 | BB | 3/4 | 3/4 | 115/230 | 186 | Carter guides |
| Jet JWBS-C14CS | 815 | 14 | 6 | 10, 45 | BB | 3/4 | 1 | 115/230 | 200 | Carter guides |
| Jet JWBS-C14MW | 870 | 14 | 6 | 10, 45 | BB | 3/4 | 1 | 115/230 | 209 | Carter guides, 3-speed |
| Laguna LT14 | 895 | 14 | 8 5/8 | 15,45 | CB | 1 | 1 1/2 | 220 | 230 | |
| Lobo BS-0143 | 330 | 14 | 6 | 10, 45 | NM | 1/2 | 3/4 | 115 | 167 | |
| North State WA-14M | 425 | 14 | 6 1/4 | 10, 45 | M, BB | 3/4 | 1 | 115/230 | 250 | |
| Powermatic 44 | 650 | 14 | 9 | 15, 45 | BB | 3/4 | 1 | 115/230 | 212 | |
| Ridgid BS1400 | 500 | 14 | 6 | 10, 45 | M | 3/4 | 3/4 | 115/230 | 195 | Lifetime warranty |
| Shop Fox W1672 | 595 | 14 | 7 3/16 | 0, 45 | NM | 1 | 1 | 110/220 | 215 | with fence |
| Star WBS14 | 325 | 14 | 6 | 10, 45 | NA | 3/14 | 3/4 | 115/230 | 188 | |
| Star WBS143 | 375 | 14 | 6 3/4 | 10, 45 | NA | 5/8 | 3/4 | 115/230 | 195 | 3 speeds |
| Tradesman 8157 | 580 | 14 | 6 1/4 | 10, 45 | BB | 1/2 | 1 | 115/230 | 162 | |
| Transpower SB500 | 265 | 14 | 6 | 10, 45 | NM | 3/4 | 1 | 110 | 180 | |
| Bridgewood BW-15BS | 319 | 15 | 6 | -10, 45 | M | 1 | 3/4 | 115 | 151 | |
| Craftsman 24393 | 700 | 15 | 8 1/2 | 0, 45 | M | 3/4 | 3/4 | 115 | 234 | 3 speeds |
| General 490-1 | 1,335 | 15 | 6 3/4 | -10, 45 | M | 3/4 | 1 | 115 | 320 | |
| Grizzly G1148 | 410 | 15 | 7 1/2 | 10, 45 | M | 3/4 | 1 | 110/220 | 164 | 2 speeds |
| Agazzani B-16 | 1,795 | 16 | 10 | 5, 45 | ES | 1 | 2 | 230 | 288 | |
| Grizzly G1073 | 625 | 16 | 7 3/4 | 10, 45 | M | 1 | 2 | 110/220 | 456 | with rip fence |
| Grizzly G1073Z | 650 | 16 | 7 3/4 | 10, 45 | M | 1 | 2 | 110/220 | 408 | |
| Hitachi CB75F | 2,550 | 16 | 11 13/16 | 0, 45 | P, BB | 3 | 2.8 | 115 | 309 | |
| **Jet JWBS-16** | 890 | 16 | 10 1/4 | 10, 45 | ES | 1 1/4 | 1.5 | NA | 310 | |
| Laguna LT 16 | 1,095 | 16 | 12 | 0, 45 | ES | 1 | 1 1/2 | 220 | 320 | |
| Laguna LT 16 HD | 1,795 | 16 | 12 | 5, 45 | ES | 1 3/8 | 3 | 220 | 385 | |
| Laguna LT16 SEC | 1,395 | 16 | 12 | 5, 45 | BB/ES | 1 | 2 1/2 | 220 | 320 | |
| Lobo BS-0163 | 620 | 16 | 10 | 10, 45 | ES | 1 | 1 1/2 | 115 | 270 | |
| Mini Max MM16 | 1,695 | 16 | 13 | NA | ES | 1 1/4 | 3 1/2 | 230 | 450 | |
| Shop Fox W1673 | 895 | 16 | 8 5/8 | 10, 45 | NM | 1 1/4 | 1 1/2 | 110/220 | 265 | |
| Transpower SB600 | 560 | 16 | 10 | 10, 45 | CB | 1 | 1 1/2 | 110 | 270 | |
| Bridgewood PBS-440 | 1,795 | 17 | 12 | 0, 45 | ES | 13/16 | 3 | 230 | 480 | fence; foot brake; USA motor |
| Craftsman 24396N | 1,200 | 18 | 11 | 0, 45 | M | 1 | 1 | 115 | 330 | 2 speeds |
| Agazzani B-18 | 1,995 | 18 | 12 | 5, 45 | ES | 1 3/8 | 2 1/2 | 230 | 370 | |
| General 90-260M1 | 1,200 | 18 | 9 3/8 | 10, 45 | CB | 1 1/4 | 1 1/2 | 115/230 | 495 | 2 speed with fence |
| Grizzly G1012 | 695 | 18 | 10 | 5, 45 | M | 1 1/4 | 2 | 220 | 350 | 3 speeds |
| Grizzly G4186Z | 895 | 18 | 9 3/8 | 10, 45 | M | 1 1/4 | 2 | 110/220 | 345 | with rip fence |
| **Jet JWBS-18B** | 1,240 | 18 | 10 1/4 | 10, 45 | ES | 1 1/2 | 1 1/2 | 115/230 | 346 | with rip fence |
| **Laguna LT18** | 1,995 | 18 | 12 | 5, 45 | ES | 1 3/8 | 3 | 220 | 451 | |
| Laguna LT18SE | 2,695 | 18 | 16 | 5, 45 | ES | 1 3/8 | 5 | 220 | 473 | |
| Lobo BS-0181 | 900 | 18 | 9 3/4 | 10, 45 | ES | 1 1/2 | 1 1/2 | 230 | 350 | |
| Lobo BS-0183 | 800 | 18 | 9 1/2 | 10, 45 | ES | 1 1/2 | 2 | 230 | 360 | |
| Mini Max S45 | 1,295 | 18 | 10 1/4 | 0, 45 | ES | 3/4 | 2 1/2 | 230 | 320 | |
| North State WBS1803 | 795 | 18 | 10 1/2 | 10, 45 | M | 1 1/2 | 2 | 115/230 | 425 | |
| North State WBS18L | 975 | 18 | 10 | 0,45 | M | 1 | 2 | 115/230 | 330 | |

*continued on page 48*

*continued from page 46*

## STATS

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Transpower SB800 | 635 | 18 | 9 | 10, 45 | CB | 1 | 2 | 220 | 390 | |
| Delta 28-640 | 1,975 | 20 | 11 | 4, 45 | BB | 1 | 2 | 230 | 585 | |
| Agazzani B-20 | 2,395 | 20 | 13 | 5, 45 | ES | 1 1/2 | 3 | 230 | 458 | |
| General 390 | 3,200 | 20 | 12 1/2 | 12, 45 | M | 1 | 2 | 230 | 865 | |
| General 90-360 | 2,200 | 20 | 11 3/8 | 0, 45 | M/BB | 1 3/8 | 2 | 220 | 836 | |
| Grizzly G1258 | 1,395 | 20 | 13 7/8 | 10, 45 | BB | 1 1/4 | 3 | 220 | 640 | foot brake |
| Jet JWBS-20 | 1,820 | 20 | 12 | 10, 45 | ES | 1 1/2 | 2 | NA | 500 | w/ rip fence, foot brake |
| Laguna LT20 | 2,295 | 20 | 14 | 10, 45 | ES | 1 3/8 | 5 | 220 | 545 | |
| Lobo BS-0202 | 1,600 | 20 | 11 3/4 | 10, 45 | ES | 1 3/4 | 3 | 230 | 620 | |
| Mini Max MM20 | 2,395 | 20 | 15 3/4 | NA | ES | 1 1/2 | 5 | 230 | 523 | |
| North State WBS-20 | 1,495 | 20 | 11 | 10, 45 | BB | 1 1/2 | 3 | 230 | 700 | foot brake |
| Powermatic 2013 | 3,190 | 20 | 12 3/8 | 15, 45 | BB | 1 1/2 | 2 | 230 | 950 | fence, worklight, brake |
| Seco SK-20BS | 1,545 | 20 | 11 | 10, 45 | BB | 1 | 3 | 220 | 620 | |
| Star WBS20L | 1,900 | 20 | 12 | 10, 45 | BB | 1 1/2 | 3 | 230 | 575 | |
| Transpower SB1000 | 1,220 | 20 | 11 1/2 | 10, 45 | NA | 1 3/4 | 3 | 220 | 650 | |
| Woodtek 959571 | 1,500 | 20 | 12 1/2 | 0, 45 | BB | 1 | 2 | 230 | 551 | |
| Bridgewood PBS-540 | 2,195 | 21 | 14 | 0, 45 | ES | 1 3/8 | 5 | 220 | 595 | fence; foot brake; USA motor |
| Agazzani B-24 | 2,995 | 24 | 15 3/4 | 5, 45 | ES | 1 1/2 | 4 | 230 | 600 | |
| General 90-600 | 3,800 | 24 | 13 3/4 | 0, 45 | M/BB | 3 | 3 or 5 | 230 | 990 | |
| General 90-460 | 2,795 | 24 | 13 3/8 | 10, 45 | M/BB | 1 3/8 | 3 | 220 | 705 | |
| Grizzly G3619 | 1,895 | 24 | 13 3/4 | 10, 45 | BB | 2 | 5 | 220 | 748 | |
| Grizzly G3620 | 2,195 | 24 | 15 3/4 | 10, 45 | BB | 2 | 7 1/2 | 220 | 748 | |
| Laguna LT24 | 2,995 | 24 | 15 1/4 | 10, 45 | ES | 1 1/2 | 5 | 220 | 725 | |
| Lobo BS-0242 | 2,090 | 24 | 11 3/4 | 10, 45 | ES | 1 5/8 | 3 | 230 | 728 | |
| Mini Max MM24 | 2,795 | 24 | 15 | NA | ES | 1 1/2 | 5 | 230 | 748 | |
| North State WBS24 | 1,900 | 24 | 11 | 10, 45 | BB | 1 1/2 | 5 | 230 | 800 | |
| Powermatic 2415 | 3,525 | 24 | 14 | 15, 45 | BB | 1 1/2 | 3 | 230 | 1,050 | fence, worklight, brake |
| Grizzly G9963 | 3,250 | 26 1/2 | 18 | 0, 45 | NM | 3 | 7 1/2 | 220 | 1,100 | |
| Grizzly G9966 | 3,250 | 26 1/2 | 18 | 0, 45 | NM | 3 | 7 1/2 | 220 | 1,100 | |
| Powermatic BW-900 | 7,989 | 36 | 20 | 3, 45 | BB | 1 3/4 | 7 1/2 | 230/460 | 2,200 | |

# BISCUIT JOINERS

Biscuit joiners are easy tools to learn to use. If it takes you more than 5 minutes to cut your first joint, you probably took a coffee break between opening the box and firing up the tool. That said, there are some finer points of the tool that will make it even more fast and accurate. (For more information on choosing and using a biscuit joiner, get the June 2001 issue, #122.)

## SETUP & USE

### Joint Layout

The less measuring you do, the less likely you are to cut slots that don't match up. For that reason, we recommend that you put the two parts you're joining together and mark lines for the biscuit slots across the joint. You'll never miss this way. When joining panels, a good rule of thumb is to place your first biscuit 2" from each edge and then put one every 5" to 7" between. Use the largest-size biscuit your material and your joint will allow.

### Fence Setup

If the fence isn't parallel to the cutter, your joint will be cockeyed. Make sure your fence is locked down securely and parallel to the slot that the cutter emerges from. Double-check the angle your fence is locked at. If the fence doesn't fit your joint like a glove, the angle of your slot will be a bit off.

### Cutting the Slot

Biscuit joiners are such quick tools, it's easy to get sloppy. First clamp your work to your bench. If you're using the fence, use one hand to hold the fence tightly against the work and the other to plunge the barrel of the tool. Injuries are rare with this tool; but when they do occur, it's usually because the tool wasn't held down adequately and the blade races up your arm.

### Gluing and Clamping

You can put glue in the slots or paint glue on the biscuits – it's your choice. Either way, be sure to go easy on the clamping pressure. It's easy to contort a frame made with biscuits. If you're using polyurethane glue in your biscuit joints, you should quickly dip the biscuits in a cup of water before inserting them into the slots. Polyurethane glue needs moisture to cure, and the biscuits need moisture to swell up and lock the joint tight.

### When to Use Biscuits

One of the biggest questions facing woodworkers is when biscuits are appropriate. Here are the facts:

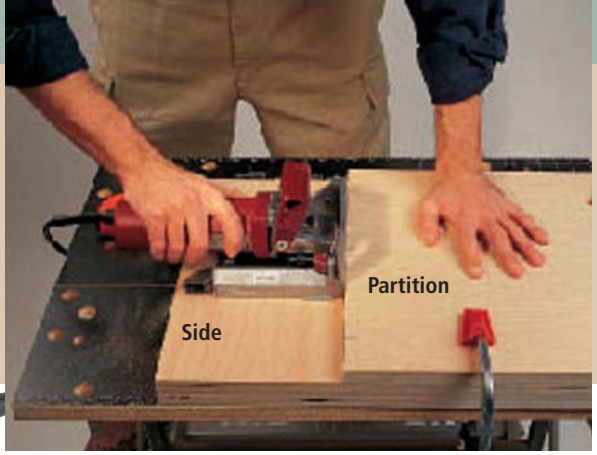
- Long-grain joints: Some woodworkers use biscuits to align boards being glued up for a tabletop. Biscuits will help align the boards, but they will not offer additional strength. The long-grain-

## BEFORE YOU BUY

- **Fence** Most biscuiting tasks don't need a complicated fence: The two most basic angle settings (0° and 45°) will handle most biscuiting tasks – 135° comes in handy, too. What's critical is that you want to make sure the fence will lock parallel to the cutter easily. Adjust the fence up and down to check the ease of its movement. Make sure that when it locks down, it stays down. And don't forget to examine how the fence grips the work. Some prefer rubber; some prefer pins. Neither works great so don't sweat it.
- **Motor** Don't sweat the motor either. We've used all these machines, and the motors have enough power to handle all standard biscuiting tasks.
- **Blades** Check out the amount of blade runout we detected in the chart on the following page. Less runout means slots that aren't sloppy. If you have a choice, buy a tool that has anti-kickback technology on the blades. Check how easy it is to change the blade. It's not a frequent operation, but it shouldn't require major tool surgery. We found the Makita to be the easiest for this operation.
- **Slots Sizes** Every standard biscuit joiner can cut slots for #0, #10 and #20 biscuits. But some machines, such as the Porter-Cable and Lamello, offer smaller cutters for making face-frame joints. If you make face frames, you should be considering one of these two machines.
- **Switch** Some people like locking triggers and others like a thumb toggle. Determine your favorite and buy accordingly.

## STATS

| | CRAFTSMAN 17501 |
|---|---|
| Street price | $100 |
| **FENCE** | |
| # of detents | 6 |
| Material | Plastic |
| Angle capacity | 0°-135° |
| Size in inches | 3¾ x 5¼ |
| **MOTOR** | |
| Amps/no load | 3.5 |
| Amps/load | 6.7 |
| Amps variance | 3.2 |
| dB/no load | 102 |
| **BLADE** | |
| # of teeth | 8 |
| Anti-kickback | Yes |
| Blade kerf | 0.159 |
| Hole kerf | 0.165 |
| Variance | 0.006 |
| **OTHER STATS** | |
| Cord length | 10' |
| Weight in lbs. | 6.3 |
| Body style | In-line |
| Size biscuits | 0,10,20 |
| Non-skid material | R/face |
| Dust collection | Box |
| **PW RATINGS** | |
| Blade change | 2 |
| Ergonomics | 2 |
| Overall performance | 2 |




To biscuit a partition in the middle of a panel, lay the partition flat on its mate at the location where they will be joined. Cut the slots in the partition.

Using the lines you marked on the partition, cut the slots in the cabinet side using the partition as a fence.

to-long-grain joint is stronger than the wood itself.

• Face frames: Biscuits are great for face frames – as long as your stock is wider than 2 3/8". Otherwise, you'll need to use smaller specialty biscuits, dowels or a mortise and tenon.

• Continuous-stress joints: Don't use biscuit joints on chairs.

• Tables: If you're joining a leg to an apron, use two biscuits in each joint to add strength.

• In 1/2" plywood: In thin material, biscuits can "telegraph" their shape through the surface of the plywood.

To prevent this, we recommend you use #0 or #10 biscuits and go easy on the glue. **PW**

KEY

* Angles past 90° (including 135°) can easily be achieved by attaching the 90° fence and adjusting the angle of the adjustable fence.
** Blade geometry for the Top 20S is different than all the other blades. The scoring teeth are offset. As a result, the variance is not a measure of runout.
Pl. = plastic, Al. = aluminum, R=rubber, FF=face frame
Ratings on a scale of 1 to 5 with 5 being outstanding and 1 being unacceptable.
■ = PW Recommends

| CRAFTSMAN 27730 | DEWALT DW682K | FREUD JS100 | FREUD JS102 | LAMELLO CLASSIC C2 | LAMELLO TOP 20S | MAKITA 3901 | PORTER-CABLE 557 | RYOBI JM80K |
|---|---|---|---|---|---|---|---|---|
| 170 | 150 | 100 | 125 | 330 | 630 | 170 | 205 | 100 |
| 2 | 2 | 3 | 3 | 5 | 5 | 3 | 7 | 4 |
| Aluminum | Aluminum | Aluminum | Aluminum | Aluminum | Aluminum | Aluminum | Aluminum | Steel |
| 0°-90° | 0°-90° | 0°-135° | 0°-135° | 0°-90°* | 0°-90°* | 0°-90° | 0°-135° | 0°-135° |
| 2 1/2 x 4 3/4 | 2 1/2 x 4 5/8 | 2 x 4 3/4 | 2 x 4 3/4 | 2 1/2 x 5 | 2 1/2 x 5 | 2 3/8 x 5 | 3 3/4 x 5 1/4 | 3 3/4 x 5 1/4 |
| 2.8 | 2.7 | 2.8 | 2.7 | 2.64 | 4.0 | 2.47 | 3.08 | 3.55 |
| 6.75 | 5.89 | 3.89 | 4.49 | 4.07 | 5.89 | 4.93 | 5.29 | 6.08 |
| 3.95 | 3.19 | 1.09 | 1.79 | 1.43 | 1.89 | 2.46 | 2.21 | 2.53 |
| 104 | 103 | 103 | 104 | 105 | 101 | 102 | 98 | 101 |
| 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6/4 | 8 |
| No | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 0.155 | 0.150 | 0.155 | 0.154 | 0.154 | 0.133 | 0.153 | 0.159 | 0.191 |
| 0.166 | 0.154 | 0.164 | 0.157 | 0.159 | 0.159 | 0.156 | 0.159 | 0.191 |
| 0.011 | 0.004 | 0.009 | 0.003 | 0.005 | ** | 0.003 | 0.000 | 0.003 |
| 8' | 8' | 7'8" | 7'8" | 8' | 8' | 8' | 8' | 10' |
| 6.7 | 6.9 | 6.8 | 6.8 | 6.6 | 6.6 | 6.2 | 7.5 | 6.8 |
| Right angle | Right angle | Right angle | Right angle | Right angle | Right angle | Right angle | Right angle | In-line |
| 0,10,20, max | 0,10,20, max | 0,10,20, A,B,max | 0,10,20, A,B,max | 0,10,20, S,D, max | 0,10,20, S,D, max | 0,10,20, S,D, max | 0,10,20, S,D, max,FF | 0,10,20 |
| Pins | Pins | R/pads | R/pads | R/pads | R/pads | R/face | Grit face | R/face |
| Bag/VP | Bag/VP | Bag/VP | Bag/VP | Bag/VP | Bag/VP | Bag/VP | Bag/VP | Bag/VP |
| 3 | 3 | 3 | 4 | 4 | 4 | 5 | 4 | 2 |
| 3 | 4 | 3 | 3.5 | 4 | 4 | 4 | 4 | 2 |
| 4 | 4 | 3 | 4 | 5 | 5 | 4 | 5 | 2 |

# PW *Recommends*

## OCCASIONAL USER

- **Freud JS100.** This $100 tool will handle 90 percent of your biscuiting tasks – especially if you build cabinets. For the money, you can't buy a better entry-level tool.

## SERIOUS HOME WOODWORKER

- **Freud JS102.** For a few dollars more than the JS100 ($125), you get a more adjustable fence, a blade that's easier to change and a price that still beats most tools.
- **Makita 3901.** Though an older design, this $170 tool is accurate and totally reliable, as you would expect with a Makita tool. It's also lighter in weight than some newer tools, which makes a difference if you use it all day.

## ADVANCED WOODWORKER OR PROFESSIONAL

- **Porter-Cable 557.** Hands down, the 557 at $205 is the most versatile biscuit joiner on the market today. The fence is capable of almost any sort of gymnastics. The tool also comes with a smaller cutter for face-frame biscuits. We also recommend the Porter-Cable brand of biscuit. In our tests, they were extremely consistent in thickness and few were unusable.
- **Lamello Classic C2.** Lamello invented biscuit joinery, and the company's European-made tools are precision instruments in every way. The price of the tool is high ($330), but many professionals are glad to pay it. Lamello also makes a wide range of specialty biscuits, from knockdown hardware biscuits to hinges that can be installed with a biscuit joiner. Check it out at www.csaw.com.

*These tools have been tested or used by the editors of **Popular Woodworking** and have earned their recommendation.*

# BLOCK PLANES

Try as you might, it's tough to get by without a block plane. These small-scale planes are great for trimming joints flush, cleaning up edges and dozens of other chores in the workshop. We recommend you buy a low-angle block plane with an adjustable throat – the most versatile version of this common tool.

## SETUP & USE

### Fettling

All planes require some setup. Block planes can usually be set up in less than an hour. Here are the basics: First flatten the sole by rubbing it on a flat sharpening stone or on sandpaper glued to a hard, flat surface.

Second, flatten the cutting face, commonly called the "back" of the iron. Rub the iron on the same surface you used to flatten the sole. Finally, sharpen the cutting bevel. (See "Sharpening for Dullards" in our *Woodshop Essentials* special issue, available at www.popwood.com.)

### Making the Cut

Extend the iron out of the mouth about 1/32" and look at the plane head on. Adjust the iron until it is square to the sole. Retract the iron into the plane's body. Make a test cut and advance the iron just a bit. You can use one hand or two when pushing the plane, whatever is more comfortable for you. When you get wispy shavings the full width of the iron, you've arrived. Close up the adjustable throat so it's tight on the iron and get busy. **PW**

## BEFORE YOU BUY

- **FETTLING** Even the most expensive block plane requires some setup, often called fettling. This entails flattening the sole, truing the cutting face and sharpening the cutting bevel. The more money you spend, the less fettling you have to do.
- **LATERAL ADJUSTMENT** This feature allows you to make the iron parallel to the mouth – usually necessary if you aren't a perfect sharpener. If you are careful, then lateral adjustment isn't necessary. Plus, it's one less thing to go out of wack.
- **IRON THICKNESS** Without a doubt, the thicker the iron, the less chance your plane will chatter across your work. Thicker irons are usually better made, too.
- **DEPTH ADJUSTER** In general, we think that fine control of the iron is best. The difference between a perfect cut and something unpleasant is a few thousandths of an inch. Look for a block plane that requires more turns to move the iron 1/16".

## PW Recommends

### OCCASIONAL USER

- **Record 60½ low-angle block plane.** This reasonably priced ($50) English-made tool is a good first block plane. Its fit and finish generally exceed that of its main rival, the Stanley 60½.

### SERIOUS HOME WOODWORKER

- **Veritas 05P22.01 low-angle block plane.** This is a well-made plane and an excellent design ($90). Perfect for end-grain jobs. The plane body is made of indestructible ductile iron and the iron is A2 steel.

### ADVANCED WOODWORKER OR PROFESSIONAL

- **Lie-Nielsen 60½ plane.** Quite simply the best that money can buy ($150), and worth it. The body is made of indestructible ductile iron and the iron is cryogenically treated A2 steel.

*These tools have been tested or used by the editors of **Popular Woodworking** and have earned their recommendation.*

## STATS

| | STREET PRICE | SETUP REQUIRED† | FIT & FINISH† | PERFOR-MANCE† | LATERAL ADJ. | DEPTH KNOB SLOP | WEIGHT (OZ.) | TURNS TO MOVE 1/16" | IRON WIDTH/THICK |
|---|---|---|---|---|---|---|---|---|---|
| Bridge City HP-1 | $600 | 4.75 | 5 | 4 | no | 1/2 turn | 25.1 | 2 1/2 | 1 3/16"/.115" |
| **Lie-Nielsen 60½** | 150 | 4.5 | 4.75 | 5 | no | 1/4 turn | 25.4 | 2 1/4 | 1 3/8"/.120" |
| **Record 60½** | 50 | 3 | 3 | 3 | no | 1 turn | 22.2 | 2 | 1 5/8"/.080" |
| Stanley 60½ | 45 | 2 | 3 | 2 | yes | 2/3 turn | 23.2 | 2 1/4 | 1 3/8"/.081" |
| **Veritas 05P22.01** | 90 | 3.5 | 4 | 4 | yes | 1/16 turn | 28.4 | 1 | 1 5/8"/.120" |

## KEY

† Ratings are on a basis of 1 to 5 with "one" being "unacceptable" and "five" being " outstanding"
NOTE: "Turns to move 1/16"" indicates how many full turns of the depth-adjustment knob were necessary to move the iron forward 1/16". "Depth knob slop" indicates how much we needed to turn the depth knob before the iron would move either in or out. And "throat/blade variance" indicates how much wider the plane's throat is compared to the iron.
■ = PW Recommends

# CHISELS


From paring dovetails to opening paint cans (not recommended), bevel-edge chisels have earned a spot in the pantheon of must-have hand tools. And unless you like sharpening your chisels every weekend, you should choose a set that's durable.

### Buy Right

It's easy to spend too much on chisels. What you really need is a handle that feels good in your hand and steel that stands up to lots of abuse. Finding the best handle is up to you. We've tested the edge of 20 popular brands and the results are below. We rated each tool by whether it needed to be rehoned after chopping a series of half-blind dovetail pins (see the last column in the chart).

## SETUP & USE

### Fettling

Like planes, chisels require some setup. First you must flatten the cutting face, commonly called the "back" of the blade. Rub the iron on a coarse sharpening stone until the scratches are even across the cutting edge. Then move up to finer-grit stones until the face looks like a mirror. Then sharpen the cutting bevel. (See "Sharpening for Dullards" in our *Woodshop Essentials* special issue, available at www.popwood.com.)

### Controlling the Cut

In most cases, chisels are best used with two hands: one on the handle to exert the force and a second hand near the cutting edge to steer the cut. (For a complete discussion of technique, see "Chisel Use" in our February 2001 issue, #120.) Bevel-edge chisels, the tools discussed here, are best for paring and light chopping. Buy a mortising chisel for heavy work – and a screwdriver for opening your paint cans. **PW**

## PW *Recommends*

### OCCASIONAL USER

- **Craftsman 36857 chisels.** These tough chisels ($20 for a set of three) look clunky but feel good in large hands.
- **Marples Blue Chip chisels.** Inexpensive ($40 for five), tough and versatile chisels.

### SERIOUS HOME WOODWORKER

- **Marples Blue Chip chisels.**
- **Ashley Isles chisels.** One of the most comfortable and durable chisels. Highly recommended ($80 for six).

### ADVANCED WOODWORKER OR PROFESSIONAL

- **Two Cherries/Hirsch chisels**
- **ECE chisels**
- **Marples Blue Chip chisels**

Editor's note: This fall, look for chisels from Lie-Nielsen Toolworks, too.

*These tools have been tested or used by the editors of **Popular Woodworking** and have earned their recommendation.*

## STATS

| | SET PRICE | NO. OF CHISELS | FIT AND FINISH† | INITIAL FLATNESS† | EASE OF SETUP† | TYPE OF HANDLE | ERGONOMICS | HARDNESS OF BLADE* | NEED TO BE REHONED? |
|---|---|---|---|---|---|---|---|---|---|
| **BEVEL-EDGE CHISEL SETS** | | | | | | | | | |
| **Ashley Isles** | $80 | 6 | 4.25 | 4 | 3 | W | 4.75 | 59/58 | No |
| Buck Brothers | 10 | 3 | 3.5 | 3 | 2 | P | 2.5 | 59/58 | Yes |
| **Craftsman 36857** | 20 | 3 | 2.5 | 2 | 2 | P | 3 | 56/55 | No |
| Crown/Woodworker's Supply | 55 | 4 | 4 | 5 | 3 | W | 4 | 51/48 | Yes |
| **E.C.E.**** | 70 | 4 | 3.75 | 3 | 3 | W | 3.25 | 59/60 | No |
| Footprint | 80 | 9 | 2.5 | 4 | 2 | P | 3.25 | 58/59 | Soon |
| Freud WC-104 | 45 | 4 | 3.25 | 5 | 3 | W | 3 | 59/57 | Yes |
| Garrett Wade 10T15.01 | 70 | 6 | 3.25 | 2 | 3 | W | 3 | 60/60 | Soon |
| Grizzly G5836 | 30 | 4 | 2.75 | 4 | 3 | W | 3.25 | 61/60 | Yes |
| Lee Valley Butyrate | 50 | 5 | 3.75 | 3 | 2 | P | 2.5 | 59/60 | Yes |
| Marples Butyrate Handle | 80 | 6 | 3.75 | 3 | 4 | P | 4.25 | 60/59 | Yes |
| **Marples Blue Chip** | 40 | 5 | 3.25 | 3 | 4 | P | 4 | 60/61 | No |
| Pfeil Swiss Made | 145 | 8 | 2.5 | 4 | 3 | W | 3.25 | 60/60 | Yes |
| Sandvik | 120 | 6 | 4 | 3 | 3 | W | 4 | 59/60 | Yes |
| Sorby Boxwood | 160 | 5 | 4.5 | 2 | 2 | W | 3.5 | 58/59 | Soon |
| Sorby Gilt Edge | 135 | 4 | 4 | 4 | 4 | W | 4 | 57/58 | Yes |
| Stanley 16-180 | 15 | 3 | 2.75 | 4 | 2 | P | 2.5 | 59/59 | No |
| Stanley 16-2683 | 30 | 3 | not included in initial review | | | | | | |
| **Two Cherries/Hirsch** | 110 | 4 | 3.75 | 2 | 2 | W | 4.25 | 56/56 | No |
| Woodworker's Supply Hornbeam | 35 | 4 | 3 | 4 | 3 | W | 2.75 | 61/59 | No |

## KEY

* All hardness numbers are on the Rockwell "C" scale. The first number is the hardness of the metal measured 3/4" up from the cutting edge. The second number is the hardness 1 1/2" up from the cutting edge.
** Chisels not sold as set. Price is for 6mm, 12mm, 20mm and 24mm chisels.
† Ratings are on a basis of 1 to 5 with "one" being "unacceptable" and "five" being "outstanding"; W=wood; P=plastic
■ = PW Recommends

# DRILL PRESSES

The drill press is a somewhat under-appreciated machine in most shops. While it doesn't see constant use, when you need one they're invaluable. To drill a quantity of consistent, accurate and similar holes (like about 200 shelf pin holes in a bookcase) the drill press is your best buddy. And they serve as nice spindle sanders if you add a simple attachment.

Drill presses are probably one of the least expensive machines in a shop, pound-for-pound and feature-for-feature. Whether you opt for a smaller benchtop model, a well-appointed benchtop model, or one of the beefy floor models, it's going to be a good deal.

## SETUP & USE

### Setting the Speeds

There aren't a lot of things to know about using a drill press. Probably the most important thing is using it at the proper speed. To get the best performance (and life span) out of a bit, it should be used at a particular speed. In general, smaller twists or brad point bits (under 3/8" in diameter) should be run faster, anywhere from 2,000 to 3,000 rpm. Mid-size bits (1/2" to 3/4") in the 1,500 rpm range, and anything larger should spin at 1,000 rpm or slower.

Spade and Forstner bits fall into a slightly different category, with smaller bits (1/4" to 5/8") operating best around 2,000 to 2,400 rpm, and larger bits (up to 1 1/2") running around 1,500. Larger Forstner bits (1 1/2" to 2") should be operated in the 500 rpm range.

### Other Helpful Thoughts

Most drill press operations are similar to using a corded or cordless drill. If you are drilling all the way through a piece, use a backing board to keep the hole from tearing out on the backside. Go slow and let the bit do the cutting. Make sure the bit is perfectly perpendicular to your work before drilling.

One thing that is peculiar to a drill press is the tendency with the higher torque to catch a piece and spin it out of your hand. Whenever possible, attach a fence to the table to keep the piece from spinning, or clamp the wood to the table. The torque can be impressive, so don't underestimate it.

Speaking of fences, most drill presses include tables that were actually designed for metalworking. One upgrade to improve drill press use for woodworkers is an auxiliary table with attached, adjustable fences. We've included plans for one that we've used happily in the *Popular Woodworking* shop for years on page 36. **PW**

## BEFORE YOU BUY

- **BENCHTOP VS. STATIONARY** Interestingly enough, this is one category where you can get almost the same exact machine features in either a benchtop or a floor design, though the capacity is often greater on floor-model machines. The added benefit of stationary machines is the increased height from table to quill, but that isn't something that every woodworker needs. You might benefit more by using the area under the benchtop drill press for storage.
- **MOTOR** Essentially an accurate drill, it doesn't take a very large motor to make a competent drill press. One-half horsepower is adequate, though if it's affordable, larger motors will offer more torque for the bigger bits.
- **VARIABLE SPEED** Using bits at their proper rated speeds will improve performance as well as tooling life span. Most drill presses require moving the belts manually to change the speed. The easier the belts are to reconfigure, the more likely you'll take the time to change the speed.
- **STOPS** There are two types of depth stops normally used on drill presses. Either a threaded shaft with jam nuts or an internal limiter that stops the handle motion are available. Both work and are more of a personal preference. Some models will offer both systems for even more options and flexibility.
- **OSCILLATING MOTION** Each year, new oscillating models are added to the drill press lines. These add a valuable feature to any drill press, making it a more versatile machine.

## PW *Recommends*

### OCCASIONAL USER

- **Grizzly G7943.** For the basic benchtop drill press, this model answers all the needs for a very low $180.
- **Grizzly G7945 or G7946.** Either the benchtop or floor model of this radial drill press offers greater capacity than a standard drill press and still only runs $150 and $180.
- **Delta DP250 & DP350.** The only benchtop drill presses offering variable speed without changing belts. Well worth the $130 or $200.

### SERIOUS HOME WOODWORKER

- **Grizzly G7944.** This is a great price ($200) for a 14" floor-model drill press, and it's a good machine, too.
- **Delta 17-965.** A step up in size to this 16 1/2" unit makes it a pro-shop option at a good price ($400).

### ADVANCED WOODWORKER OR PROFESSIONAL

- **Grizzly G7948.** We say "pro" here because of the capacity. At 20", this baby can handle all your needs for a still unbelievable $425.

*These tools have been tested or used by the editors of **Popular Woodworking** and have earned their recommendation.*

# STATS

| MODEL | STREET PRICE | THROAT CAP. (IN.) | CHUCK CAP. (IN.) | QUILL TRAVEL (IN.) | SPINDLE SPEED RPMS | RACK & PINION TABLE | HP | WEIGHT LBS. | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|
| **BENCHTOP** | | | | | | | | | |
| Delta DP115 | $90 | 4 | 1/2 | 2 | 660 - 3,235 | N | 1/4 | 39 | 5 speeds |
| Grizzly G7942 | 80 | 4 | 1/2 | 2 | 620 - 3,100 | Y | 1/3 | 50 | 5 speeds |
| Jet JDP-8 | 180 | 4 | 1/2 | 2 | 620 - 3,100 | N | 1/6 | 42 | square table, front switch |
| Tradesman 8055S | 70 | 4 | 1/2 | 2 | 620 - 3,100 | N | 1/4 | 42 | 5 speeds, also avail. w/3" vise |
| Woodtek 829785 | 100 | 4 | 1/2 | 2 | 620 - 3,100 | N | 1/4 | 40 | 5 speeds |
| Shop Fox W1667 | 125 | 4 1/4 | 1/2 | 1 5/8 | 620 - 3,100 | N | 1/2 | 49 | oscillating, 5 spd |
| Craftsman 24809 | 100 | 4 1/2 | 1/2 | 2 | 620 - 3,100 | N | 1/3 | 48 | 5 speeds, w/fence, vise |
| Craftsman 21909 | 120 | 4 1/2 | 1/2 | 2 | 620 - 3,100 | N | 1/3 | 48 | 5 speeds, w/fence |
| Delta DP200 | 130 | 5 | 1/2 | 2 1/4 | 620 - 3,100 | Y | 1/4 | 70 | 5 speeds |
| **Delta DP250** | 130 | 5 | 1/2 | 3 1/4 | 500 - 3,100 | Y | NA | NA | Continuous variable speed |
| Jet JDP-10 | 210 | 5 | 1/2 | 2 1/2 | 540 - 3,600 | N | 1/3 | 70 | 5 speeds |
| Ryobi DP101 | 100 | 5 | 1/2 | 2 1/4 | 570 - 3,050 | Y | 1/4 | 68 | 5 speeds |
| Tradesman 8062S | 100 | 5 | 1/2 | 2 1/4 | 620 - 3,100 | N | 1/4 | 59 | 5 speeds, 3" vise |
| Delta DP300 | 175 | 6 | 1/2 | 2 3/8 | 620 - 3,100 | Y | 1/3 | 78 | 5 speeds |
| **Delta DP350** | 200 | 6 | 1/2 | 3 1/4 | 500 - 3,100 | Y | NA | NA | Continuous variable speed |
| Fisch DP2000 | 230 | 6 | 1/2 | 2 1/2 | 500 - 3,100 | Y | 1/3 | 80 | 6 speeds |
| Shop Fox W1668 | 240 | 6 5/8 | 5/8 | 3 1/4 | 250 - 3,050 | Y | 3/4 | 115 | oscillating, 12 spd |
| **Grizzly G7943** | 180 | 7 | 5/8 | 3 1/4 | 140 - 3,050 | Y | 3/4 | 160 | 12 speeds |
| Jet JDP-14J | 305 | 7 | 1/2 | 3 1/4 | 195 - 3,630 | Y | 1/2 | 132 | work light |
| Jet JDP-14M | 360 | 7 | 5/8 | 3 3/8 | 460 - 2,500 | Y | 1/2 | 132 | MT-2 taper, work light, ind. PB switch |
| General 34-02-M-1 | 760 | 7 1/2 | 1/2 | 4 1/2 | 460 - 4,910 | N | 3/4 | 174 | 6 speeds |
| General 75-100-M-1 | 350 | 8 1/2 | 5/8 | 3 1/4 | 340 - 2,800 | Y | 3/4 | 180 | 12 speeds |
| **FLOOR** | | | | | | | | | |
| Tradesman 8080S | 200 | 6 1/2 | 5/8 | 3 3/8 | 250 - 3,100 | Y | 1/2 | 156 | 12 speeds |
| **Grizzly G7944** | 200 | 7 | 5/8 | 3 1/4 | 140-3,050 | Y | 3/4 | 172 | work light, vise |
| Jet JDP-14JF | 370 | 7 | 1/2 | 3 3/8 | 195 - 3,630 | Y | 1/2 | 156 | taper, work light, ind. |
| Jet JDP-14MF | 400 | 7 | 5/8 | 3 1/4 | 460 - 2,500 | Y | 3/4 | 167 | MT-2 taper, work light |
| Lobo DP-016F | 280 | 7 | 5/8 | 3 1/2 | 240 - 3,800 | Y | 1/2 | 135 | 16 speeds |
| Yorkcraft YC-19FDP | 260 | 7 | 5/8 | 3 5/16 | 140 - 3,050 | Y | 3/4 | 176 | 12 speeds,work light |
| Powermatic 1150HD | 2,435 | 7 1/4 | 1/2 | 6 | 150 - 4,200 | Y/N | 1 | 432 | Variable speed |
| Craftsman 22915 | 300 | 7 1/2 | 5/8 | 3 1/8 | 250 - 3,100 | Y | 2/3 | 166 | 12 speeds |
| Craftsman 22935 | 1,250 | 7 1/2 | 5/8 | 4 13/16 | 300 - 3,300 | Y | 1 | 440 | Variable speed |
| General 34-01-M1 | 760 | 7 1/2 | 1/2 | 4 1/2 | 460 - 4,910 | N | 3/4 | 196 | 6 speeds |
| Powermatic 1150-A | 1,860 | 7 1/2 | 1/2 | 6 | 400 - 5,300 | N | 3/4 | 323 | 5 speeds |
| Ridgid DP1550 | 300 | 7 1/2 | 5/8 | 3 3/4 | 250 - 3,100 | Y | 1/2 | 162 | ambidextrous handle |
| Lobo DP-186F | 350 | 8 | 5/8 | 3 5/16 | 190 - 2,640 | Y | 3/4 | 170 | 16 spd,w/foot pedal |
| Delta DP400 | 340 | 8 1/4 | 5/8 | 3 3/8 | 250 - 3,000 | Y | 3/4 | 194 | 12 speeds |
| Delta 17-925 | 870 | 8 1/4 | 1/2 | 6 | 150 - 3,200 | Y | 3/4 | 230 | variable speeds |
| **Delta 17-965** | 400 | 8 1/4 | 5/8 | 4 7/8 | 215 - 2,720 | Y | 3/4 | 195 | 16 speeds |
| Jet JDP-17FSE | 360 | 8 1/4 | 5/8 | 3 3/8 | 200 - 3,000 | Y | 3/4 | 168 | MT-2 taper, also avail. w/work light |
| Woodtek 816-805 | 379 | 8 1/4 | 5/8 | 3 1/4 | 250 - 3,000 | Y | 3/4 | 165 | 12 speeds |
| Grizzly G7947 | 375 | 8 1/2 | 5/8 | 4 3/4 | 210 - 3,300 | Y | 1 | 275 | 12 speeds,work light |
| Bridgewood BW1758F | 330 | 8 1/2 | 5/8 | 3 5/16 | 250 - 3,900 | Y | 3/4 | 150 | work light |
| Craftsman 22917 | 430 | 8 1/2 | 5/8 | 3 1/4 | 200 - 3,630 | Y | 3/4 | 195 | 16 speeds |
| General 75-200-M-1 | 350 | 8 1/2 | 5/8 | 3 1/4 | 340 - 2,800 | Y | 3/4 | 200 | 12 speeds |
| Powermatic 1170 | 480 | 8 1/2 | 5/8 | 3 1/4 | 190 - 3,500 | Y | 1 | 188 | 16 speeds |
| Shop Fox W1680 | 350 | 8 1/2 | 5/8 | 3 1/4 | 150 - 3,050 | Y | 1 | 200 | 12 speeds |
| Tradesman 8106S | 300 | 8 1/2 | 5/8 | 3 3/8 | 200 - 3,630 | Y | 1 | 183 | 16 speeds |
| Grizzly G9749 | 1,550 | 9 5/8 | 5/8 | 6 7/16 | 300 - 2,000 | Y | 1 1/2 | 685 | |
| Craftsman 22920 | 650 | 10 | 3/4 | 4 22/32 | 150 - 4,200 | Y | 3/4 | 282 | 12 speeds,work light |
| Jet JDP-20MF | 1,000 | 10 1/4 | 3/4 | 4 3/8 | 150 - 4,200 | Y | 1 1/2 | 288 | MT-3, square table, work light |

## KEY

Y=yes, N=no
■ = PW Recommends

# STATS

| MODEL | STREET PRICE | THROAT CAP. (IN.) | CHUCK CAP. (IN.) | QUILL TRAVEL (IN.) | SPINDLE SPEED RPMS | RACK & PINION TABLE | HP | WEIGHT LBS. | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|
| **Grizzly G7948** | 425 | 10 | 5/8 | 4 3/4 | 210 - 3,300 | Y | 1 1/2 | 312 | 12 speeds/ light |
| Powermatic 2000 | 815 | 10 | 5/8 | 4 1/2 | 130 - 2,770 | Y | 1 1/2 | 340 | 12 speeds |
| Powermatic 2000HD | NA | 10 | 1/2 | 6 | 200 - 1,820 | Y | 2 | 606 | variable speed |
| Bridgewood BW2501F | 550 | 10 1/4 | 5/8 | 4 5/8 | 150 - 4,200 | Y | 3/4 | 266 | work light |
| Grizzly 9746 | 2,495 | 10 1/4 | 5/8 | 5 1/8 | 60 - 2,900 | Y | 1 | 682 | 12 speeds |
| Jet JDP-20MF | 835 | 10 1/4 | 3/4 | 4 5/8 | 150 - 4,200 | Y | 1 1/2 | 288 | 12 speeds |
| Woodtek 816-812 | 690 | 10 1/2 | 5/8 | 4 13/16 | 180 - 4,200 | Y | 1 | 346 | 12 speeds |
| Grizzly G9747 | 3,695 | 10 3/4 | 5/8 | 5 | 60 - 2,900 | Y | 1 1/2 | 682 | 12 speeds |
| General 75-500-M-1 | 880 | 11 | 3/4 | 4 1/2 | 130 - 2,770 | Y | 1 | 340 | |
| Lobo 222F | 680 | 11 | 5/8 | 4 3/4 | 190 - 4,300 | Y | 1 | 360 | 12 speeds |
| **RADIAL** | | | | | | | | | |
| Delta 11-090 | NA | 16 | 1/2 | 3 3/8 | 580 - 3,450 | Y | 1/3 | 120 | 5 speeds |
| Shop Fox W1669 | NA | 16 | 5/8 | 3 1/4 | 550 - 3,470 | Y | 1/2 | 100 | 5 spd,benchtop |
| Shop Fox W1669 | NA | 16 | 5/8 | 3 1/4 | 550 - 3,470 | Y | 1/2 | 150 | 5 speeds |
| **Grizzly G7945** | 150 | 17 | 5/8 | 3 1/4 | 550 - 3,470 | Y | 1/2 | 100 | benchtop |
| **Grizzly G7946** | 180 | 17 | 5/8 | 3 1/4 | 550 - 3,470 | Y | 1/2 | 150 | 5 speeds |
| Grizzly G9986 | 495 | 22 1/2 | 5/8 | 3 1/4 | 200 - 3,000 | Y | 1/2 | 400 | |
| Yorkcraft YC-16RDP | 190 | 17 1/4 | 5/8 | 3 1/4 | 550 - 3,470 | Y | 1/2 | 81 | 5 speeds |

# DUST COLLECTORS

Dust collectors are rapidly gaining popularity with many home woodworkers for three reasons: We're more aware of the health dangers posed by fine dust, we're trying to reduce the risk of a fire and the dust collection machines themselves are becoming more affordable every year. This category is the fastest growing in our guide.

In fact, there's so much to know about this topic that you should read the revised edition of Sandor Nagyszalanczy's "Woodshop Dust Control" (Taunton Press).

## The Basics

These simple machines have a fan pulling dust from a machine through a flexible or metal duct into a collection container. What sets the machines apart from one another is the wide variety of sizes, how they filter the chips and how they hold the waste.

The basic dust collector is a hose connected to the motor/fan housing, with two cloth bags attached. The dust is pulled through the fan, or impeller, then into the bag section. The smaller particles of dust are forced into the upper bag and trapped against the material; the heavier chips drop into the lower bag to await dumping later. This style is a good collector for most home-shop needs.


For more efficient dust collection, purchase better filter bags; better yet, add an air cleaner. These units scrub the ambient air to remove fine dust particles.

Some new dust collectors on the market have replaced the filter bag with a paper filter canister. These units are rated at about 2-micron efficiency.

For the ultimate, we're pleased that cyclone collectors (once only a commercial machine) are now becoming quite affordable.

Similar to a dust collector, a cyclone adds another separating stage, using centrifugal force to spin the debris. This action more efficiently divides the medium to lighter particles, trapping them in a filter canister or in dust bags. The heavier particles drop into a lower container. **PW**

## BEFORE YOU BUY

- **DUST COLLECTOR** Available in a variety of capacities, these machines are hooked to one or more machines to collect wood chips and dust. They can employ a bag or canister filter to collect much of the fine airborne dust.
- **AIR CLEANER** These box-like units are designed to pull very fine dust particles from the air. They're used in addition to a dust collector or collection system in a shop. An air cleaner is a true benefit, but it's possibly a luxury.
- **CYCLONE COLLECTOR** Similar in purpose to a standard collector, cyclones add a collection stage to separate out larger chips and provide more efficient dust collection. Benefits include easier waste disposal and less need for ambient air cleaners.
- **CFM AND PRESSURE – NOT HP** CFM (cubic feet of air moved per minute) and the static pressure (the strength of air suction) of a collector are statistics to watch for when evaluating dust collection systems, not horsepower. In general a 12" planer should be hooked to a collector with 500 cfm capability. With two machines being used simultaneously, 1,200 cfm is suggested.
- **BLAST GATES AND DUCTING** To maximize efficiency, collectors can be connected to multiple machines using ductwork or hoses. Blast gates direct the air flow from one machine at a time to improve efficiency.
- **FILTER EFFICIENCY** Collector efficiency is rated by the micron efficiency of the filters. A dot measuring approximately 1/64" wide equals 615 microns. Dust smaller than two microns can remain in the lungs and cause health problems. In our opinion, a filter rated at 30 microns isn't efficient enough. Spend the extra money for 1-micron bags.

## PW *Recommends*

If health is your driving influence in choosing dust collection, we strongly recommend you shop for, or upgrade to 1, or at least 5-micron efficiency bags.

### OCCASIONAL USER

- **Grizzly G8027.** A great price ($130) for a basic dust collector for the small shop.

### SERIOUS HOME WOODWORKER

- **Penn State DC1B-XL.** A quality machine with upgrades that make it a bargain at $230.
- **Grizzly G1029.** For a few dollars more ($250) you can add a lot more power to your dust collection with this unit.
- **Delta AP200.** For better efficiency, this rugged air cleaner ($250) makes a nice partner for your dust collector.

### ADVANCED WOODWORKER OR PROFESSIONAL

- **Powermatic 75.** Quiet, efficient and powerful, this is a good choice in a busy shop. ($650).
- **Penn State DC4-5.** For $550 this model offers more power and upgrades at a great price.
- **JDS Air-Tech 750.** At $260 these are premium air cleaners are designed for pro use.
- **Cyclones.** We've just started testing cyclones in our shop, but we feel they offer an affordable alternative for the busy woodshop.

*These tools have been tested or used by the editors of **Popular Woodworking** and have earned their recommendation.*

# STATS

| BRAND & MODEL | STREET PRICE | HP | MAX. CFM | MAX. STATIC PRESSURE (IN. OF WATER) | SAWDUST CAPACITY (CU. FT.) | NO. OF PORTS, PORT DIA. (IN.) | VOLTS | WEIGHT (LB.) | DECIBEL LEVEL | BAG EFFICIENCY (MICRONS) | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **SINGLE STAGE** | | | | | | | | | | | |
| Shopsmith DC3300 | $500 | 1/2 | 330 | NA | 4 | 3, 2 1/2 | 115 | 64 | NA | NA | |
| Woodmaster 820 | 295 | 1/2 | 680 | 4.4 | NA | 1, 4 | 115/230 | 50 | NA | NA | |
| Delta AP300 | NA | 3/4 | 550 | NA | NA | 1, 4 | 115/230 | NA | NA | 30 | |
| Jet DC-610 | 175 | 3/4 | 610 | 6.9 | 1.8 | 1, 4 | 115 | 64 | 55-60 | 30 | |
| Woodtek 911-047 | 160 | 3/4 | 250 | NA | 20 gal. | 1, 4 | 115 | 18 | 70-80 | 10 | |
| Belsaw MC-CT-50S | 150 | 1 | 700 | 5.5 | 2 | 1, 4 | 115 | 46 | 62-82 | 30 | |
| Belsaw MC-CT-80A | 190 | 1 | 700 | 5 | 2.2 | 1, 4 | 115/230 | 70 | 52-74 | 30 | |
| Belsaw MC-CT-90C | 180 | 1 | 700 | 5.5 | 2.2 | 1, 4 | 115/230 | 73 | 62-80 | 30 | |
| Craftsman 29979 | 200 | 1 | 650 | 8.5 | 1.5 | 1, 4 | 120 | 68 | 55-65 | 30 | |
| Delta AP400 | 215 | 1 | 650 | 8.5 | 2.6 | 1, 4 | 115/230 | 57 | 63-73 | 30 | |
| General 10-005 M1 | 210 | 1 | 750 | 5.5 | 20 gal. | 1,4 | 120 | 76 | 52-62 | 2 | |
| Grizzly G1163 | 150 | 1 | 450 | 2.8 | 2 | 1, 4 | 110/220 | 52 | NA | 30 | |
| **Grizzly G8027** | 130 | 1 | 500 | 2.8 | 2 | 1, 4 | 110/220 | 79 | NA | 30 | |
| Jet DC-650 | 200 | 1 | 650 | 7.8 | 2.7 | 1, 4 | 115 | 84 | 60-70 | 30 | |
| Jet DC-650SB | 190 | 1 | 650 | 7.8 | 3.1 | 1, 4 | 115 | 58 | 55-65 | 30 | |
| Jet DC-650TS 2 Stage | 295 | 1 | 650 | 7.8 | 44 gal. | 1, 4 | 115 | 38 | 60-70 | 5 | |
| Lobo DC-1190 | 200 | 1 | 730 | 8.5 | 2.5 | 1, 4 | 115/230 | 78 | 60-70 | 30 | |
| North State CT-50S | 200 | 1 | 700 | 5.5 | 3.5 | 2, 4 | 115/230 | 80 | 55-66 | 15 | |
| Penn State DC 5 | 180 | 1 | 914 | 9.4 | 1.5 | 1, 4 | 110 | 18 | 75 | 30 | avail. w/ 5 mic. bag |
| **Penn State DC1B-XL** | 230 | 1 | 850 | 6 | 3.5 | 2, 4 | 110 | 66 | 62 | 5 | avail. w/ 1 mic. bag |
| Seco UFO-40 | 200 | 1 | 500 | 5.5 | 2.5 | 1, 4 | 115/230 | 40 | 55-65 | 20 | |
| Seco UFO-70 | 265 | 1 | 655 | 5.5 | 2.5 | 1, 4 | 115/230 | 71 | 60-70 | 20 | |
| Seco UFO-70F | 280 | 1 | 655 | 5.5 | 2.5 | 1, 4 | 115/230 | 88 | 60-70 | 20 | |
| Seco UFO-80 | 285 | 1 | 655 | 5.5 | 2.5 | 1, 4 | 115/230 | 88 | 60-70 | 20 | |
| Seco UFO-90 | 220 | 1 | 655 | 5.5 | 2.5 | 1, 4 | 110 | 68 | 60-70 | 20 | |
| Star S3810 | 185 | 1 | 700 | 4.5 | 2.2 | 1, 4 | 115/230 | 70 | 70-80 | 35 | |
| Star S3811 | 185 | 1 | 700 | 4.5 | 1.5 | 1, 4 | 115/230 | 70 | 70-80 | 35 | |
| Sunhill UFO-90 | 195 | 1 | 610 | 5.5 | 2.5 | 1, 4 | 110/220 | 70 | 55 | 20 | |
| Transpower DC747 | 175 | 1 | 700 | 6.5 | 2 | 1, 4 | 115 | 65 | NA | NA | |
| Woodtek 802-124 | 230 | 1 | 400 | 5.5 | 2.5 | 2, 4 | 115/230 | 85 | 74 | 5 | |
| Woodtek 864-367 | 210 | 1 | 380 | 5.5 | 3.5 | 2, 4 | 115/230 | 47 | 64 | 5 | |
| Yorkcraft YC-015A | 140 | 1 | 500 | 2.76 | 17.8 gal. | 1, 4 | 110/220 | 63 | NA | 15 | |
| Delta 50-850 | 280 | 1 1/2 | 1,200 | 11.4 | 6 | 2, 4 | 115/230 | 100 | 69-79 | 30 | |
| General 10-105 M1 | 350 | 1 1/2 | 1,250 | 6.5 | 42 gal. | 1,5 | 115/230 | 110 | 80-90 | 2 | |
| Grizzly G1028z | 240 | 1 1/2 | 1,300 | 10.3 | 5.4 | 2, 4 | 110/220 | 115 | 60-80 | 30 | |
| JDS DUST FORCE | 300 | 1 1/2 | 1,280 | 12 | 42 gal. | 1, 5/2, 4 | 110/220 | 106 | 67 | 30 | |
| Jet DC-1100 | 300 | 1 1/2 | 1,100 | 11.5 | 7.4 | 1, 6; 2, 4 | 115/230 | 103 | 70-80 | 30 | avail. w/ canister filter |
| Jet DC-1200FS | 425 | 1 1/2 | 1,200 | 10.5 | 3.5 | 2,4 | 115/230 | 125 | 70-80 | 30 | |
| Penn State DC2-5 | 300 | 1 1/2 | 1,100 | 8.5 | 5.8 | 2, 4; 1,6 | 110/220 | 130 | 67 | 5 | avail. w/ 1 mic. bag |
| Penn State DC3-5XL | 200 | 1 1/2 | 850 | 8.5 | 5.4 | 1, 4 | 110 | 46 | 62 | 5 | avail. w/ 1 mic. bag |
| Belsaw MC-1DC | 280 | 2 | 1,059 | 8.3 | 5.2 | 1,5; 2, 4 | 230 | 123 | 67-87 | 30 | |
| Bridgewood BW-002A | 280 | 2 | 1,059 | 9.1 | 5.8 | 1, 5; 2, 4 | 110/220 | 117 | NA | 1 | |
| Delta 50-851 | 495 | 2 | 1,500 | 13.7 | 6.5 | 3, 4 | 230 | 175 | 62-82 | 30 | |
| General 10-110 | 490 | 2 | 1,600 | 8.3 | 42 gal. | 1,5; 2, 4 | 240 | 132 | 66-77 | 2 | |
| **Grizzly G1029** | 250 | 2 | 1,550 | 12.3 | 5.4 | 2, 4 | 220 | 130 | 65-85 | 30 | |
| Jet DC-1200-1 | 400 | 2 | 1,200 | 10.5 | 3.5 | 2, 4 | 230 | 143 | 65-80 | 30 | 1 or 3 phase, avail. w/ CF |
| Lobo DC-101 | 360 | 2 | 1,290 | 9.5 | 5.2 | 2, 4 | 115/230 | 155 | 65-80 | 30 | |
| North State UFO-101 | 295 | 2 | 1,182 | 9.5 | 5.4 | 3, 4 & 5 | 115/230 | 140 | NA | 15 | |
| Seco UFO-101 | 290 | 2 | 1,182 | 7.5 | 5.2 | 2, 4; 1,5 | 115/230/460 | 139 | 65-80 | 20 | |
| Shop Fox W1666 | 275 | 2 | 1,550 | 12.3 | 5.4 | 2,4 | 110/220 | 130 | NA | 30 | |
| Star S3820 | 275 | 2 | 1,182 | 8.3 | 5.2 | 1, 5; 2, 4 | 230 | 135 | 67-87 | 35 | |
| Sunhill UFO-101 | 325 | 2 | 1,182 | 7.5 | 5.2 | 2, 4 | 110/220 | 143 | 69 | 20 | |
| Transpower DC2000 | 285 | 2 | 1,200 | 6.5 | 4 | 2, 4 | 115/230 | 143 | NA | NA | |
| Woodtek 805-930 | 400 | 2 | 790 | 8.3 | 4.4 | 2, 5 | 230 | 123 | 76 | 5 | |
| Penn State DC250SE | 345 | 2 | 1,350 | 9.5 | 5.8 | 2, 4;1,6 | 110/220 | 145 | 65 | 5 | avail. w/ 1 mic. bag |
| Belsaw MC-2DC | 450 | 3 | 1,836 | 8.7 | 10 | 1,6; 3,4 | 230 | 150 | 75-95 | 30 | |

## KEY

NA=not available; CF=canister filter; mic=micron
■ PW Recommends

## STATS

| BRAND & MODEL | PRICE | HP | MAX. CFM | MAX. STATIC PRESSURE (IN. OF WATER) | SAWDUST CAPACITY (CU. FT.) | NO. OF PORTS, PORT DIA. (IN.) | VOLTS | WEIGHT (LB.) | DECIBEL LEVEL | BAG EFFICIENCY (MICRONS) | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Belsaw MC-CT-201H | 450 | 3 | 1,836 | 8.7 | 10 | 1,6; 3,4 | 230 | 156 | 75-95 | 30 | |
| Bridgewood BW-003A | 530 | 3 | 1,836 | 5.8 | 13.5 | 1, 7; 4, 4 | 220 | 184 | NA | 1 | |
| Delta 50-852 | 700 | 3 | 2,100 | 18.1 | 12.5 | 4, 4 | 200/220 | 200 | 77-91 | 30 | |
| General 10-210 | 800 | 3 | 2,300 | 8.7 | 83 gal. | 1,6; 3, 4 | 240 | 165 | 75-85 | 2 | |
| Grizzly G1030 | 450 | 3 | 2,300 | 16.7 | 10.8 | 3, 4 | 220 | 170 | 75-90 | 30 | |
| Jet DC-1900-1 | 770 | 3 | 1,900 | 10.2 | 10.7 | 1, 6; 2, 4 | 230 | 198 | 75-90 | NA | 1 or 3 phase, |
| Lobo DC-102 | 540 | 3 | 2,600 | 11.5 | 10.5 | 1,6; 3,4 | 115/230 | 178 | 75-90 | 30 | |
| Lobo DC-103 | 400 | 3 | 1,700 | 10.5 | 8.2 | 1,5; 2, 4 | 115/230 | 145 | 70-85 | 30 | |
| North State UFO-102B | 485 | 3 | 1,883 | 9.5 | 5.4 | 4, 5 & 6 | 230 | 181 | 75 | 15 | |
| **Penn State DC4-5** | 550 | 3 | 2,300 | 10.2 | 11.6 | 3, 4;1,7¾ | 220 | 200 | 75 | 5 | |
| **Powermatic 75** | 650 | 3 | 1,900 | 12.4 | 10 | 1, 8 or 6; 3, 4 | 230 | 215 | 80-90 | 5 | 1-mic bags avail. |
| Seco UFO-102A | NA | 3 | 1,883 | NA | 5.3 | 1,6; 3,4 | NA | 179 | NA | NA | |
| Seco UFO-102B | 600 | 3 | 1,883 | 9.1 | 10.4 | 1,6; 3, 4 | 115/230/460 | 179 | 70-80 | 20 | |
| Star S3830 | 475 | 3 | 1,850 | 5.8 | 10.4 | 1, 6; 3, 4 | 230 | 165 | 75-95 | 35 | |
| Sunhill UFO-102B | 460 | 3 | 1,883 | 9.1 | 10.5 | 3, 4 | 230 | 181 | 78 | 20 | |
| Sunhill UFO-103 | 795 | 3 | 2,683 | 10.4 | 17.7 | 4, 4 | 230 | 363 | NA | 20 | |
| Transpower DC3000 | 335 | 3 | 1,850 | 5.6 | 5.3 | 3, 4 | 115/230 | 178 | NA | NA | |
| Transpower DC4000 | 445 | 3 | 1,968 | 5.8 | 6.7 | 4, 4 | 115/230 | 250 | NA | NA | |
| Woodmaster 1033 | 500 | 3 | 2,688 | 9.2 | NA | 1, 7 | 220 | 140 | NA | NA | |
| Woodtek 864-381 | 490 | 3 | 1,180 | 8.6 | 8.8 | 1, 6 | 230 | 194 | 78 | 5 | |
| Grizzly 9958 | 900 | 4 | 3,560 | 16.8 | 26 | 4,4 | 220 | 320 | NA | 1 | |
| Bridgewood BW-005A | 995 | 5 | 3,500 | 9.7 | 196 gal. | 1, 9; 4,4 | 220 | 227 | NA | 1 | |
| General 10-510 | 1,570 | 5 | 5,100 | 16 | 144 gal. | 4, 4 | 240 | 370 | 75-85 | 2 | |
| Grizzly G5954 | 1,000 | 5 | 4,820 | 17 | 26 | 4, 4 | 220 | 375 | NA | 1 | |
| Lobo DC805 | 1,490 | 5 | 3,800 | 13 | 18.7 | 4, 4 | 220/440 | 310 | 70-85 | 30 | |
| North State | 995 | 5 | 4,850 | 17 | NA | 1,8; 4,4 | 220/440 | 380 | 75 | NA | |
| Seco UFO-103B | NA | 5 | 2,683 | NA | 21 | 1,7; 4,4 | NA | 254 | NA | NA | |
| Sunhill UFO-535DS | 1,395 | 5 | 3,200 | 11 | 18 | 1,8 | 220/440 | 400 | NA | 20 | |
| Powermatic 5000 | 3,465 | 7½ | 5,000 | 16.5 | 21.36 | 1, 10; 5,4 | 230 | 534 | 75-90 | 30 | |
| Powermatic 5600 | 3,685 | 10 | 5,600 | 17.8 | 21.36 | 1,10; 5,4 | 230 | 563 | 75-90 | 30 | |
| Seco UFO-104D | NA | 10 | 4,167 | NA | 58 | 1,9; 6,4 | NA | 728 | NA | NA | |

### AIR CLEANERS

| BRAND & MODEL | PRICE | CFM | # FILTERS | DUST REMOVAL EFFICIENCY | WEIGHT (LB.) | DECIBELS |
|---|---|---|---|---|---|---|
| Bridgewood CTP-500-2 | 160 | 500 | 1 | 97% @ 5 micron | 21 | NA |
| Bridgewood CTI-1400 | 395 | 1,400 | 2 | 99% @ 5 mic. | 72 | NA |
| Craftsman 16995 | 100 | 200 | 2 | 93% @ 5 mic. | 14 | NA |
| Craftsman 29972 | 260 | 300 | 2 | 95% @ 5 mic. | 45 | NA |
| **Delta AP200** | 250 | 850 | 2 | 98% @ 5 mic. | 50 | NA |
| Delta 50-875 | NA | 1,000 | 2 | NA | 55 | NA |
| Delta 50-870 | 450 | 1,900 | 2 | 98% @ 5 mic. | 85 | 50 |
| General 10-600 M1 | 275 | 1,400 | 3 | 98% @ 5 mic. | 86 | 64 |
| Grizzly G9954 | 100 | 220 | 1 | 99.7% @ 5 mic. | 15.5 | NA |
| Grizzly G9955 | 130 | 400 | 2 | 99.7% @ 5 mic. | 18.75 | NA |
| Grizzly G5955 | 180 | 510 | 2 | 98% @ 3 mic. | 40 | NA |
| Grizzly G9956 | 325 | 1,400 | 3 | 99.7% @ 5 mic. | 79 | NA |
| JDS Air-Tech 10-16 | 695 | 1,000 or 1,600 | 3 | 99% @ 5 mic. | 92 | 65 |
| **JDS Air-Tech 750** | 260 | 200 to 750 | 3 | 99% @ 5 mic. | 62 | 61 |
| JDS Air-Tech 8-12 | 495 | 800 or 1,250 | 3 | 99% @ 5 mic. | 86 | 63 |
| JDS Air-Tech 2400 | 1,095 | 2,410 | 3 | 99% @ 5 mic. | 203 | 67 |
| Jet AFS-1000 | 230 | 500; 70; 1,044 | 2 | 99% @ 5 mic. | 54 | NA |
| Jet AFS-1500 | 330 | 750; 900; 1,300 | 3 | 99% @ 5 mic. | 75 | NA |
| Jet AFS-2000 | 500 | 800; 1,200; 1,700 | 3 | 99% @ 5 mic. | 110 | NA |
| Penn State AC465 cfm KIT | 105 | 465 | 2 | 85% @ 1 mic. | 40 | 60 |
| Penn State AC930 cfm KIT | 185 | 930 | 2 | 85% @ 1 mic. | 45 | 65 |
| Penn State AC620 | 240 | 620 | 2 | 85% @ 1 mic. | 42 | 60 |

## KEY

NA=not available
*Max CFM taken with cyclone and filters in place.
+3 phase available.
■ PW Recommends

| BRAND & MODEL | PRICE | CFM EFFICIENCY | # FILTERS (LB.) | DUST REMOVAL | WEIGHT | DECIBELS |
|---|---|---|---|---|---|---|
| Penn State AC 930 | 290 | 930 | 2 | 85% @ 1 mic. | 51 | 67 |
| Penn State AC2500-s | 1,125 | 2,500 | 2 | 85% @ 1 mic. | 130 | 67 |
| Woodtek 923-838 | 200 | 340 | 2 | 98% @ 0.5 mic. | 35 | 55 |
| Woodtek 923-859 | 250 | 510 | 2 | 98% @ 0.5 mic. | 30 | 55 |

## CYCLONE

| BRAND & MODEL | STREET PRICE | HP | MAX. CFM | MAX. STATIC PRESSURE (IN. OF WATER) | SAWDUST CAPACITY (CU. FT.) | NO. OF PORTS, PORT DIA. (IN.) | VOLTS | WEIGHT (LB.) | DECIBEL LEVEL | BAG EFFICIENCY (MICRONS) | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Blue Tornado 102 | $1,325 | 2 | 1,350 | 10.5 | | 1, 6 | 115/230 | | | | |
| Blue Tornado 103 | 1,750 | 3 | 2,170 | 11.2 | | 1, 7 | 230 | | | | |
| Bridgewood BW-CDC2 | 495 | 2 | 1,500 | 13 | 15 gal. | 1, 6 or 2, 4 | 220 | 160 | NA | 15 mic. | |
| Bridgewood BW-CDC3 | 595 | 3 | 2,400 | 16 | 15 gal. | 1, 8 or 3, 4 | 220 | 175 | NA | 15 mic. | |
| Oneida 1.5 Component | 599-904 | 1.5 | 800* | 9 | 5, 8, & larger | 1, 6 | 115/208-240+ | 115-145 | 72-78 | 99% @ 2 mic. | |
| Oneida 2 Component | 699-943 | 2 | 1,100* | 9 | 5, 8 & larger | 1, 7 | 115/208-240+ | 125-195 | 72-78 | 99% @ 2 mic. | |
| Oneida 2 Commercial | 913-1,540 | 2 | 1,220* | 10.2 | 5, 8 & larger | 1, 7 | 115/208-240+ | 140-300 | 75-81 | 99% @ 2 mic. | |
| Oneida 3 Commercial | 1,168-1,999 | 3 | 1,800* | 11 | 5, 8 & larger | 1, 8 | 208-240+ | 175-400 | 75-83 | 99% @ 2 mic. | |
| Penn State Tempest 2 | 540 | 1½ | 750 | 5 | 35 gal. | 1, 5 | 110/220 | 118 | 63 | 100% @ 5 mic. | avail. w/.5 mic. cart. |
| Penn State Tempest | 600 | 2 | 1,000 | 6 | 35 gal. | 1, 5 | 110/220 | 125 | 65 | 100% @ 5 mic. | avail. w/ .5 mic. cart. |
| Penn State Tempest 4 | 730 | 3 | 1,350 | 6.8 | 35 gal. | 1, 5 | 220 | 154 | 73 | 100% @ 5 mic. | avail. w/ .5 mic. cart. |
| Woodsucker | 750 | 2 | 925 | 8.75 | | 1, 6 | 220 | | | | |

# JIGSAWS


If you're starting woodworking with just a few tools, the jigsaw should be at the top of your list. It is capable of cutting curves and straight lines. Plus it can work on large pieces that cannot be cut on a band saw.

## SETUP & USE

### Getting Ready

Jigsaws require little setup when you buy them. Just make sure the blade is square to the baseplate and set the saw for the type of work you're planning to do. Here are the basics:

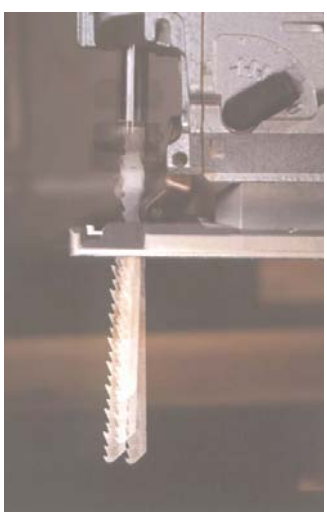
- Blade speed: Most jigsaws have variable speed with a dial on or near the trigger that will allow you to limit the saw's top speed. In general, use slower speeds for dense materials; faster speeds for soft woods.
- Orbital action: Turn the orbital action off when working in hard materials such as metal, or when using reverse-tooth or carbide blades. The lowest orbital setting is generally for getting a fine cut in soft woods. The middle setting is for hard woods or particle board. And the highest setting is for ripping through softwoods really quickly.
- Baseplate: If you're concerned about marring your workpiece, most jigsaws can be fitted with a plastic shoe that slips over the metal baseplate.

### Making the Cut

The teeth of a jigsaw blade point upward. As a result, the cleanest cut will be on the underside. So, when laying out your cut, make your marks on the backside of your wood so the front will have the least splintering.

When making the cut, some people prefer to cut to one side of the line and then clean up the sawn edge to the line. Try this once or twice: When making your cut, try cutting right on the line. Some people find it easier to follow the line this way.

Never force the saw during a cut. Use minimal forward pressure; let the saw do most of the work. The motor should not bog down during the cut. **PW**



"Orbital action" moves the blade forward during the cut. Here you can see the blade in an aggressive orbit.

## BEFORE YOU BUY

- **TOP-HANDLE VS. BARREL-GRIP** In this country, top-handle saws are the norm. Too bad. We really like the extra control you get from a barrel grip. Check one out before you buy.
- **AMPS** Unless you cut ironwood or ipe for a living, the 4- or 5-amp tools will handle most work-a-day tasks. So don't sweat the amperage, it's not an accurate measure of power anyway.
- **STROKE** Simply put, the stroke is how far up and down the blade moves. Longer strokes (1" and up) cut faster and cleaner. Bargain jigsaws have shorter stokes, 5/8" to 3/4".
- **ORBITAL ACTION** If your saw has this function, it can make the blade move slightly forward on the upstroke and back on the downstroke. The more aggressive the orbital action, the rougher (but faster) the cut.
- **BLADE CHANGING** The ease of changing blades is all over the map, from needing a screwdriver to simply pulling a lever and the blade falling from the tool. We like toolless blade changing, but check out the saw before you buy; some toolless blade systems are as finicky as those needing screwdrivers.
- **BLADE TYPES** A few jigsaws take only a proprietary blade, which can be a pain. Others take T-style blades (also called bayonet or Bosch-style). These blades have tangs that the tool's blade vise can grip – the best system in our opinion. Universal blades are held in place using friction or screws. Some jigsaws take both T-style and universal blades, though these tend to use only friction to grip the blade.

## PW Recommends

### OCCASIONAL USER

- **Freud FJ85.** Freud's top-of-the line jigsaw ($110) has features found on expensive saws: electronic feedback, a big stroke and orbital action.
- **Grizzly G8994Z.** This $60 jigsaw is similar to Bosch's older jigsaws. For the occasional user, it's hard to beat.

### SERIOUS HOME WOODWORKER

- **Bosch 1584AVS, 1587AVS.** These two tools are identical except the 1584AVS ($165) is a barrel-grip and the 1587AVS ($160) is a top-handle tool. Bosch's jigsaws are what all others are measured against.
- **Milwaukee 6276-21.** The best toolless blade-changing mechanism on the market and a solid performer ($170).

### ADVANCED WOODWORKER OR PROFESSIONAL

The two tools above are also excellent choices for the professional.

- **Metabo STE105 Plus, STEB105 Plus.** Metabo's line of jigsaws ($190) are rock-solid performers that give Bosch a real run for its money. A shop favorite.

*These tools have been tested or used by the editors of **Popular Woodworking** and have earned their recommendation.*

## STATS

| BRAND & MODEL | STREET PRICE | BODY TYPE | BLADE MOUNT TYPE | BLADE GUIDE | STROKE LENGTH (IN.) | CUTS PER MINUTE | AMPS | DUST CONTROL | WEIGHT (LB.) |
|---|---|---|---|---|---|---|---|---|---|
| Black & Decker JS200 | $35 | TH | U | Y | 1 | 800 - 3,200 | 3.2 | NA | 3.6 |
| Black & Decker JS300K | 50 | TH | U* | Y | 1 | 800 - 3,200 | 3.5 | CB | 5 |
| Black & Decker JS350 | 50 | TH | U* | Y | 1 | 800 - 3,200 | 4 | CB, VP | 5 |
| Bosch 1581AVSK | 150 | TH | T | Y | 1 | 500 - 3,100** | 5 | CB | 5.5 |
| **Bosch 1584AVS** | 165 | BG | T* | Y | 1 | 500 - 3,100** | 5 | CB, Opt.VP | 5.5 |
| Bosch 1584AVSK | 170 | BG | T* | Y | 1 | 500 - 3,100** | 5 | CB, Opt.VP | 5.5 |
| **Bosch 1587AVS** | 160 | TH | T* | Y | 1 | 500 - 3,100** | 5 | CB, Opt.VP | 5.5 |
| Bosch 1587AVSK | 165 | TH | T* | Y | 1 | 500 - 3,100** | 5 | CB, Opt.VP | 5.5 |
| Bosch 1587 AVSP | 165 | TH | T* | Y | 1 | 500 - 3,100** | 5 | CB, Opt. VP | 5.5 |
| Craftsman 17228 | 80 | TH | U | Y | 3/4 | 0 - 3,000** | 4 | CB, VP | 4.5 |
| Craftsman 17240 | 30 | TH | T,U* | Y | 5/8 | 3,250 | 3.5 | CB | 3.5 |
| Craftsman 17241 | 40 | TH | T,U | Y | 5/8 | 3,250 | 3.9 | CB | 3.7 |
| Craftsman 17242 | 60 | TH | T,U | Y | 13/16 | 3,200 | 5 | CB, VP | 6.8 |
| Craftsman 27719 | 150 | TH | T, U* | Y | 1 | 500 - 3,000** | 5 | CB, Opt. VP | 7 |
| DeWalt DW313 | 125 | TH | U | Y | 1 | 500 - 3,100** | 4.5 | NA | 6.2 |
| DeWalt DW318G | 110 | TH | T | Y | 1 | 0 - 3,100*** | 4.5 | NA | 6.2 |
| DeWalt DW318K | 100 | TH | U | Y | 1 | 0 - 3,100** | 4.5 | NA | 6.2 |
| DeWalt DW321K | 150 | TH | T, U* | Y | 1 | 500 - 3,100** | 5.8 | CB | 6.4 |
| DeWalt DW323K | 160 | BG | T,U* | Y | 1 | 500 - 3,100** | 5.8 | CB, VP | 6.4 |
| DeWalt DW933K | 280 | TH | T,U* | Y | 1 | 0 - 2,000** | 18v cordless | CB | 8.1 |
| Fein Aste 638 | 450 | BG | U | N | 13/16 | 1,050 - 2,600 | 3.9 | VP | 4.8 |
| Festool PS2E | 250 | BG | T | Y | 1 | 1,200 - 3,100** | 3.75 | CB, VP | 4.9 |
| Freud FJ65 | 65 | TH | T, U | Y | 3/4 | 0 - 3,000** | 3.2 | VP | 3.4 |
| **Freud FJ85** | 110 | TH | T, U* | Y | 1 | 0 - 3,000** | 4.8 | VP | 5.4 |
| **Grizzly G8994Z** | 60 | TH | T | Y | 1 | 0 - 3100** | 5 | CB | 5.5 |
| Hitachi CJ65V2K | 180 | TH | T,U | Y | 1 | 700 - 3,200** | 5.2 | CB | 5.5 |
| Makita 4304 | 160 | TH | T, U | Y | 1 | 500 - 3,000** | 5.5 | VP | 5.1 |
| Makita 4304T | 170 | TH | T, U* | Y | 1 | 500 - 3,000** | 5.5 | VP | 5.3 |
| Makita 4323 | 75 | TH | T | Y | 11/16 | 500 - 3,100 | 3.7 | VP | 4 |
| Makita 4324 | 90 | TH | T | Y | 11/16 | 500 - 3,100** | 3.7 | VP | 4 |
| Makita 4300DW | 125 | TH | Special | Y | 9/16 | 2,700 | 9.6v cordless | NA | 3.3 |
| Makita 4331DWD | 260 | TH | T, U | Y | 1 | 500-2,800** | 12v cordless | VP | 5.7 |
| Makita 4333DWD | 280 | TH | T, U | Y | 1 | 500 - 2,800** | 14v cordless | VP | 6.3 |
| Makita 4334DWD | 320 | TH | T, U* | Y | 1 | 500 - 2,800** | 18v cordless | VP | 7.3 |
| Makita 4340T | NA | TH | T, U* | Y | 1 | 2,800 | 6.3 | VP | 5.3 |
| Makita 4340CT | NA | TH | T, U* | Y | 1 | 800 - 2,800 | 6.3 | VP | 5.3 |
| Makita 4340FCT | NA | TH | T, U* | Y | 1 | 800 - 2,800 | 6.3 | VP | 5.3 |
| Makita 4341FCT | NA | BG | T, U* | Y | 1 | 800 - 2,800 | 6.3 | VP | 5.3 |
| Metabo STE70 | 135 | TH | T, U | Y | 3/4 | 1,000 - 3,000** | 4.8 | CB | 4.9 |
| **Metabo STE105Plus** | 190 | BG | T, U* | Y | 1 | 1,000 - 3,000** | 6 | CB, VP | 5.5 |
| **Metabo STEB105Plus** | 190 | TH | T,U* | Y | 1 | 1,000 - 3,000** | 6 | CB, VP | 5.7 |
| Milwaukee 6256-6 | 165 | TH | U | Y | 1 | 0 - 3,100 | 3.8 | CB | 5.8 |
| Milwaukee 6266-22 | 140 | TH | T* | Y | 1 | 500 - 3,000** | 5.7 | CB, VP | 6.2 |
| Milwaukee 6267-21 | 290 | BG | T* | Y | 1 | 1,700** | 12v cordless | VP | 5.8 |
| **Milwaukee 6276-21** | 170 | BG | T* | Y | 1 | 500 - 3,000** | 5.7 | CB, VP | 6.2 |
| Porter-Cable 548 | 295 | TH | U | Y | 7/16 | 0 - 4,500** | 3.5 | - | 6.5 |
| Porter-Cable 9543 | 170 | TH | T* | Y | 1 | 500 - 3,100** | 6 | CB, VP | 6.5 |
| Porter-Cable 97549 | 145 | TH | U | Y | 1 | 500 - 3,200** | 4.8 | CB | 6.5 |
| Porter-Cable 643 | 250 | TH | T* | Y | 1 | 0 - 2,200** | 19.2v cordless | CB, VP | 5.25 |
| Skil 4240 | 25 | TH | T, U | Y | 5/8 | 3,250 | 3.3 | CB | 3.5 |
| Skil 4280 | 30 | TH | T, U | Y | 5/8 | 800 - 3,250 | 3.5 | CB | 3.5 |
| Skil 4380 | 40 | TH | T, U* | Y | 5/8 | 800 - 3,250** | 3.7 | CB | 3.7 |
| Skil 4445 | 50 | TH | U* | N | 5/8 | 800 - 3,250** | 4 | CB | 4 |
| Skil 4470 | 60 | TH | U* | N | 5/8 | 800 - 3,200** | 4 | CB, VP | 4.1 |
| Skil 4470-44 | 65 | TH | U* | N | 5/8 | 800 - 3,200** | 4 | CB, VP | 4.1 |
| Skil 4480 | 60 | TH | T, U | Y | 13/16 | 800 - 3,200** | 5 | CB, VP | 5 |
| Skil 4540 | 60 | TH | T, U | Y | 13/16 | 800 - 3,200 | 4.5 | CB, VP | 5 |
| Skil 4580 | 70 | TH | T, U | Y | 13/16 | 800 - 3,200** | 5 | CB, VP | 5 |

## KEY

C=chip blower, VP=vacuum port, TH=top handle, BG=barrel grip, T=T-style blade, U=universal blade
* Toolless blade changing
** Has orbital action
NA=not available
■ = PW Recommends

# JOINTERS


Marketing and misconceptions have led a lot of woodworkers to think that as long as they own a planer, they don't need a jointer. Nothing is farther from the truth. In fact, if you own a planer, you should definitely own a jointer.

While a planer is great for smoothing a board and reducing the thickness, you really need to start with a board that's flat and square to allow the planer to produce the results you want. And that's what jointers are all about.

## SETUP & USE

### Boards Aren't Flat?

In a woodworker's fantasy, every board bought from the lumber yard is perfectly flat and straight and at least 12" wide. Reality is quite different. Wood is often crooked, bowed, twisted and cupped – see the drawing at right. If you're lucky that's only one board in your stack! To build something with those boards, they need some time on a jointer.

### Start With Some Face Time

The face of a board (as opposed to the edge) is the first part to run over a jointer. But first let's make sure things are set up correctly.

If you've followed the jointer's directions, the outfeed table (the one to the left of the machine as you face it) and the knives are set at exactly the same height. In most cases, this is how the jointer arrives from the factory. For the first rough pass, the infeed table should be set about $\frac{1}{16}$" lower than the outfeed table.

## BEFORE YOU BUY

- **BENCHTOP VS. STATIONARY** Benchtop jointers are only recommended if your shop is small or you build only chairs or small boxes. Many are powered by universal motors, limiting their performance, and most have shorter beds than needed for adequately flattening boards. If you must go benchtop, go 6" and look for a decent motor size. Floor models range from 6" on up, but we don't recommend anything larger than a 12" jointer unless you're running a good-sized production shop. In general, an 8" jointer is a great option for most home woodworkers. A 6" will suffice but limits you somewhat.
- **HAND WHEELS VS. LEVERS** The infeed table on a jointer can be adjusted by either a hand wheel or a lever. Hand wheels are more precise, with each turn or quarter-turn producing a measurable height adjustment. While levers are more subjective, all jointers offer a scale to measure the height change, and it can be argued that jointers aren't used to remove exact amounts of material very often. Chalk it up to personal preference.
- **KNIVES** Knives will number two, three or four, depending on the size of the machine. Machines with two knives are exclusive to benchtop machines. Four blades will usually only occur on the largest of jointers. The more knives that cut the wood, the better the finish. So three is better than two. Stock jointer knives are almost exclusively high-speed steel, and only production shops are likely to spend the money to replace them with carbide knives. This is more for durability, as steel knives still offer a better cut, but will dull and nick more easily Currently, few jointers use two-sided or disposable knives, but the trend that is sweeping planers may hit the jointers soon.
- **SETTING KNIVES** Setting jointer knives is accomplished with either a magnetic knife-setting jig (using a magnet to lift the knife out of the cutterhead to the proper height), or jackscrew adjustment (lifting the knives to proper height by adjusting a set of jackscrews under the blade). Both methods are accurate, though we find jackscrews to be easier to adjust.
- **FENCES** The longer the fence, the better. More importantly, the flatter the better. Due to internal stresses in cast iron, jointer fences can arrive warped or twisted. Whenever possible, check the fence prior to purchasing to make sure it is flat and straight. If you don't have the option to check it before it's delivered, make sure it is the first thing you do check. If it's not correct, contact the company and make arrangements to have it replaced. Fence movement also is important. It should slide easily across the table, and you should be able to move the fence to an angled setting with a minimum of fuss. Some jointers offer a rack-and-pinion mechanism for moving the fence, making it easier to quickly adjust the fence location.

The fence should be set square to the tables, and slid over the tables enough to expose about 1" more than the width of the board. This keeps the knives covered by the board during the cut.

Inspect your board. Most likely it will be bowed to one face or the other. If not, you're in pretty good shape and won't have to remove much material to prepare the board for the planer. If it is bowed, the concave side should be run over the jointer.

Use the photos on the next page to learn the optimal stance to use when feeding a board over the jointer. These steps are repeated until the majority of the board's face is clean and flat.

Once one face is flat, repeat the basic steps to square one edge of the board to the now-flat face. You will need to run the recently jointed face against the fence for this step. The stance and motions are similar.

Overall, flattening a face, then squaring an edge to that face is what a jointer does, and it does it well. The flat face allows your planer to then reduce the thickness of the board while still maintaining the flatness of the board. Without the jointer work, a planer will just make a thinner bowed or twisted board. Jointing the edge gives you a straight surface so you can rip the board to width on your table saw and fence.

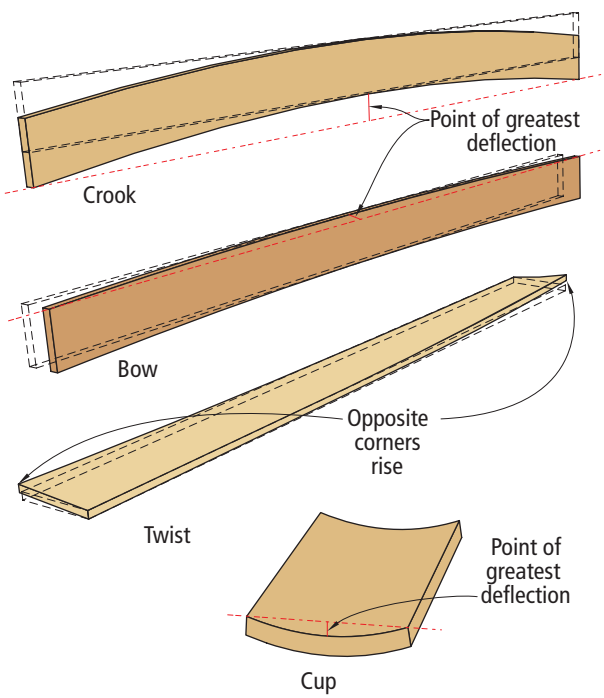
There are a couple other things a jointer can be used for, rabbeting being an efficient option on almost all machines. By removing the guard and setting the infeed table height and fence depth to the proper dimensions, a board can be rabbeted easily in one or two passes with little difficulty.

Other jointer operations include tapering a board lengthwise, and by setting the fence at an angle you can cut bevels on the edges of boards. If you have a smaller-width jointer than your material, don't fret. With a simple tip in the section on planers, you can safely flatten stock that's nearly twice the width of your jointer's maximum capacity.

### Some Safety Tips

Jointers are safe machines to operate if all the guidelines are followed. If you get sloppy on this machine, it can bite you in a hurry with a kickback or a slipped finger. Here are some basic guidelines that will help you operate your jointer in a safe manner:

- Check your board prior to running the face or edge for knots or defects that could separate from the board and cause the board to jump during planing.
- Always use a push block when jointing a thin piece of stock, or when face jointing.
- Never run stock shorter than 12" in length over the jointer.
- The safety guard should always be in place unless you are cutting rabbets or face jointing stock wider than the capacity of the machine. **PW**




Straight boards shown dashed for context

## PW Recommends

### OCCASIONAL USER

- **Grizzly 1182HW.** For a few dollars more than the price of a benchtop jointer, we recommend the 1182HW ($325) with handwheel bed adjustment.

### SERIOUS HOME WOODWORKER

- **Jet JJ-6CSX.** For $600, this 6" jointer is a proven bargain.
- **Delta 37-195.** The convenience of the rack-and-pinion fence and top-mounted switch strongly recommend this 6" model ($550).
- **Delta 37-380.** At ($1,060) the 8" version of the 37-195 is also a recommended machine.
- **Jet JJ-8CS.** This 8" jointer offers a magnetic switch, handwheel adjustment and a long bed for $1,520.
- **Grizzly G1018.** Without sacrificing features, this Grizzly 8" is a significant bargain at $695.

### ADVANCED WOODWORKER OR PROFESSIONAL

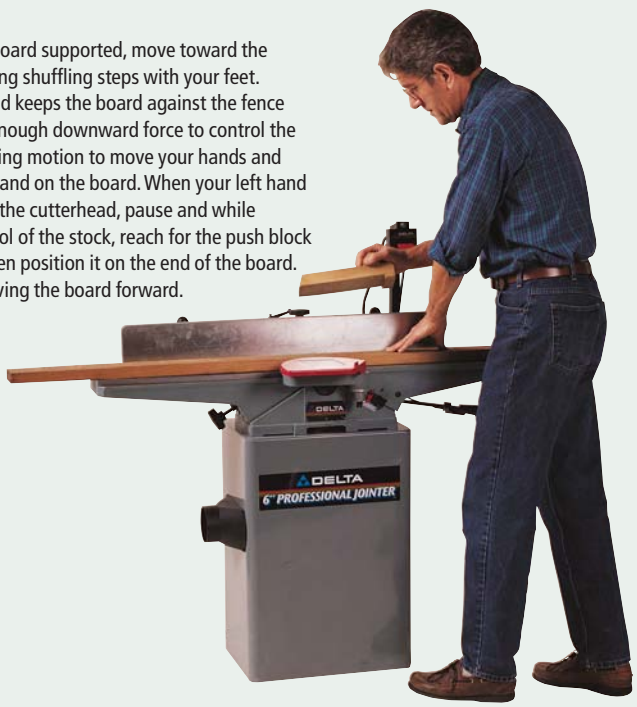
- **Powermatic 60.** This 8" Powermatic ($1,710) is a pro-quality, accurate and reliable machine that will likely be handed down to your children.
- **Bridgewood BW-12J.** If you want to move up to a 12" machine without emptying your wallet, check out this strong performer priced at a reasonable $2,495.

*These tools have been tested or used by the editors of **Popular Woodworking** and have earned their recommendation.*

## FACE JOINTING: HOW TO DO IT

**1** Rock the board on the jointer table across its width to find the flattest area, then maintain this plane as you begin the cut. Stand near the back of the board and do not use any downward pressure on the board. Use your left hand to keep the board against the fence and your right hand to move the board forward and in the correct plane. Let the force of the cutterhead in the wood keep the board down on the outfeed table. Keep your body positioned as shown until the board is supported on the jointer tables.


**2** With the board supported, move toward the cutterhead by taking shuffling steps with your feet. Again, the left hand keeps the board against the fence and applies only enough downward force to control the stock. Use a shuffling motion to move your hands and always keep one hand on the board. When your left hand is about 18" from the cutterhead, pause and while keeping firm control of the stock, reach for the push block with your right, then position it on the end of the board. Now continue moving the board forward.




**3** To complete the cut, continue forward progress until the end of the board and push block have cleared the cutterhead and the safety guard has closed to the fence. Remember to keep firm downward pressure during the final phase of the cut if you have a long board extending off the end of the outfeed table.

# STATS

| MODEL | PRICE | WIDTH X LENGTH (IN.) | # OF KNIVES X RPM | HP | VOLTS | TYPE OF HEIGHT ADJ. | DUST PORT | WEIGHT (LB) | COMMENTS & FEATURES |
|---|---|---|---|---|---|---|---|---|---|
| **BENCHTOP** | | | | | | | | | |
| Grizzly H2801 | $180 | 4 x 23 | 2 x 8,000 | 1/2 | 110 | K | Y | 28 | |
| Craftsman 21788 | 230 | 6 1/8 x 29 | 2 x 8,000 | 1 1/2 | 115 | K | Y | 68 | |
| Delta JT160 | 200 | 6 3/16 x 30 | 2 x 6k-11k | 10 amp | 120 | K | Y | 35 | 2-speed |
| Hitachi P12RA | 1,250 | 6 5/8 x 12 1/4 | 2 x 10,400 | 15 amp | 115 | K | Y | 83.5 | jointer/planer |

| MODEL | PRICE | WIDTH X LENGTH (IN.) | #/KNIVES X RPM | HP | VOLTS | TYPE OF HEIGHT ADJ. | DUST PORT | JACK SCREWS | WEIGHT (LB) | COMMENTS & FEATURES |
|---|---|---|---|---|---|---|---|---|---|---|
| **FLOOR** | | | | | | | | | | |
| Bridgewood BW-6R | $400 | 6 x 45 1/2 | 3 x 4,500 | 1 | 110/220 | W | Y | Y | 210 | enclosed stand |
| Delta JT360 | 415 | 6 x 46 | 3 x 4,800 | 3/4 | 115/230 | L | Y | Y | 210 | open stand |
| **Grizzly G1182HW** | 325 | 6 x 47 | 3 x 5,000 | 1 | 110/220 | W | OPT | Y | 215 | |
| Grizzly G1182Z | 395 | 6 x 47 | 3 x 5,000 | 1 | 110/220 | L | Y | Y | 225 | |
| Grizzly G1182ZHW | 425 | 6 x 47 | 3 x 5,000 | 1 | 110/220 | W | Y | Y | 225 | handwheel |
| Grizzly G1182ZX | 475 | 6 x 47 | 3 x 5,000 | 1 | 110/220 | L | Y | Y | 235 | R&P fence, top switch |
| Jet JJ-60S | 480 | 6 x 46 | 3 x 4,800 | 3/4 | 115/230 | W | Y | Y | 192 | |
| **Jet JJ-6CSX** | 600 | 6 x 46 | 3 x 4,800 | 1 | 115/230 | W | Y | Y | 258 | |
| Lobo JT-2206 | 370 | 6 x 42 1/2 | 3 x 5,000 | 1 | 115/230 | W | Y | NA | 194 | |
| North State | 395 | 6 x 42 | 3 x 5,000 | 1 | 110/220 | W | Y | N | 250 | |
| Powermatic 54A | 720 | 6 x 66 | 3 x 4,500 | 1 | 115/230 | L | Y | Y | 287 | quick & fine adjust |
| Shop Fox W1679 | NA | 6 x 47 | 3 x 5,000 | 1 | 115 | W | Y | Y | 255 | magnetic top switch |
| Star WJ6 | 395 | 6 x 43 | 3 x 4,600 | 3/4 | 115 | L | NA | NA | 218 | open stand |
| Woodtek 924-028 | 430 | 6 x 46 | 3 x 3,450 | 3/4 | 115/230 | L/W | Y | Y | 210 | |
| Yorkcraft YC-6J | 330 | 6 x 46 | 3 x 4,800 | 1 | 110/220 | L | Y | Y | 214 | R&P fence |
| Craftsman 21706 | 360 | 6 1/8 x 46 | 3 x 5,000 | 1 | 115/230 | L | Y | Y | 230 | enclosed base |
| **Delta 37-195** | 550 | 6 1/8 x 46 | 3 x 4,800 | 1 | 115/230 | L | Y | Y | 225 | R & P fence |
| Ridgid JP0610 | 450 | 6 1/8 x 45 | 3 x 5,000 | 1 | 115/230 | W | Y | Y | 213 | dual bevel fence |
| Sunhill CT-60L | 329 | 7 x 52 | 3 x 4,500 | 1 | 110/220 | W | N | N | 220 | |
| Transpower JT700 | 325 | 7 x 46 | 3 x 4,500 | 1 | 115 | W | Y | NA | 170 | |
| General 80-100M1 | 520 | 7 1/4 x 45 1/4 | 3 x 4,800 | 1 | 115/230 | W | Y | Y | 275 | |
| General 80-100LM1 | 520 | 7 1/4 x 55 1/4 | 3 x 4,800 | 1 | 115/230 | W | Y | Y | 297 | |
| General 80-150LM1 | 520 | 7 1/4 x 55 1/4 | 3 x 4,800 | 1 | 115/230 | L | Y | Y | 297 | |
| Bridgewood BW-8J | 895 | 8 x 66 | 4 x 4,500 | 1 1/2 | 110/220 | W | Y | Y | 412 | USA motor |
| Craftsman 20651 | 1,350 | 8 x 66 | 3 x 3,450 | 1 1/2 | 230 | W | Y | NA | 420 | 2 speed |
| **Delta 37-380** | 1,060 | 8 x 72 | 3 x 5,600 | 1 1/2 | 115/230 | L | Y | Y | 414 | R & P fence |
| Delta DJ-20 | 1,450 | 8 x 76 1/2 | 3 x 5,500 | 1 1/2 | 115/230 | L | Y | Y | 480 | |
| General 480-1-M2 | 1,840 | 8 x 64 | 3 x 4,500 | 1 1/2 | 230 | W | Y | Y | 440 | |
| **Grizzly G1018** | 695 | 8 x 65 | 3 x 5,000 | 1 1/2 | 220 | L | Y | Y | 440 | |
| Grizzly G1018HW | 695 | 8 x 65 | 3 x 5,000 | 1 1/2 | 220 | W | Y | Y | 440 | handwheel |
| **Jet JJ-8CS** | 1,520 | 8 x 66 1/2 | 3 x 5,500 | 2 | 230 | W | Y | Y | 398 | magnetic controls |
| North State CT 200 | 795 | 8 x 68 | 3 x 4,500 | 2 | 115/230 | NA | Y | NA | 500 | magnetic controls |
| **Powermatic 60** | 1,710 | 8 x 72 | 3 x 7,000 | 1 1/2 | 115/230 | L/W | Y | Y | 584 | quick & fine adjust |
| Seco SK-0008JT | 1,000 | 8 x 66 | 3 x 4,500 | 2 | 220 | W | Y | NA | 397 | |
| Shop Fox W1684 | NA | 8 x 70 3/4 | 3 x 5,500 | 2 | 220 | W | Y | Y | 400 | magnetic top switch |
| Star WJ8 | 650 | 8 x 66 | 3 x 4,500 | 1 1/2 | 220 | L | Y | Y | 430 | |
| Sunhill CT-204L | 740 | 8 x 72 | 4 x 4,500 | 2 | 220 | W | N | N | 510 | |
| Woodtek 907-064 | 800 | 8 x 67 | 3 x 4,500 | 1 1/2 | 115/230 | W | Y | NA | 455 | |
| Yorkcraft YC-8J | 650 | 8 x 72 | 3 x 4,800 | 1 1/2 | 110/220 | L | Y | Y | 406 | R&P fence |
| Grizzly G9859 | 1,895 | 8 1/2 x 73 3/8 | 3 x 5,900 | 3 | 220 | W | Y | Y | 900 | single phase |
| Lobo JT-1008 | 770 | 8 1/2 x 66 | 3 x 5,200 | 2 | 230 | W | OPT | NA | 400 | |
| Transpower JT980 | 735 | 9 x 67 | 4 x 4,500 | 2 | 220 | W | Y | NA | 430 | |
| **Bridgewood BW-12J** | 2,495 | 13 x 85 | 4 x 5,000 | 3 or 5 | 220 | W | Y | Y | 980 | jackscrews, USA motor |
| Delta DJ-30 37-360 | 3,800 | 12 x 84 | 3 x 5,000 | 3 | 230/460 | L | Y | Y | 706 | |
| General 80-300 HC M1 | 5,000 | 12 x 80 | hel. x 5,000 | 3 | 230 | W | Y | Y | 1,080 | Helical cutterhead |
| Grizzly G4178 | 1,995 | 12 x 76 | 3 x 5,200 | 2 | 220 | W | Y | Y | 840 | Rack & pinion fence. |
| Lobo JT-0012 | 2,490 | 12 x 72 | 3 x 5,250 | 3 | 230 | W | Y | NA | 836 | |
| North State CCA512 | 2,475 | 12 x 87 | 3 x 5,200 | 3 | 230 | W | Y | NA | 1,450 | |
| Powermatic 1285 | 3,630 | 12 x 84 | 3 x 5,000 | 3 | 230 | L | Y | Y | 880 | |
| Sunhill J-127L | 2,950 | 12 x 84 | 3 x 4,500 | 3 | 230 | L | Y | NA | 900 | avail. w/spiral cttrhed |
| Grizzly G9860 | 2,495 | 12 1/2 x 80 | 3 x 5,900 | 3 | 220 | W | Y | Y | 1,080 | avail. w/helical head |

# KEY

Type of height adjustment: K=knob, W=wheel, L=lever, L/W=both lever and wheel, Y=yes, N=no, NA=not available, ■=PW Recommends

# MORTISERS

Mortisers seem like simple machines to use. Heck, they're just a drill press with an extra bushing that holds a square chisel, right? Well, if they were so simple, we wouldn't hear about all the problems readers have setting up and using them without stalling, burning and cutting mismatched joints.

Mortisers require a little finesse. But once you know the tricks, you'll blaze through your work. (For a more detailed discussion of this topic, see "A New Manual for Mortisers" in the August 2001 issue, #123.)

## SETUP & USE

### Start With the Chisel

Mortiser tooling comes in two parts: a square, hollow chisel and a round auger bit that spins in the center of the chisel. Before you install the chisel in the mortiser, check to see if it's square by measuring its width both ways using a dial caliper. Choose the dimension that is closest to the dimension the chisel is supposed to be and use those two sides to determine the thickness of your mortise. Mark the chisel so you always install it this way.

To install the tooling with the proper amount of space between the chisel and bit, first put the chisel in place and let it drop down 1/8" from the bushing and secure it in place. Thread the auger through the chisel and into the chuck. Push its tip up against the chisel and tighten the chuck. Now loosen the screw that holds the chisel in place and push it all the way up to the bushing. You now have a 1/8" gap between the chisel and the bit. This is a good place to start. If you reduce this gap to 1/16", you'll make smaller chips, which are less likely to stall a slow-speed mortiser. Different woods require different gaps, so don't be afraid to experiment a bit with different gaps.

### Set the Table and Fence

Most people assume that their table is a perfect 90° to the chisel. Don't make this mistake. Check this angle using a square and then shim the underside of the table using masking tape until you get a perfect 90°. This will prevent all sorts of problems.

Now set your chisel so it is parallel to your fence. You'll have to rotate the chisel slightly, make a test cut and readjust your chisel until you get it right. Once the chisel is square to the fence, make a sample cut in some scrap and set it aside. That scrap will help you set up your mortiser even faster next time.

### Set the Depth

The depth of the mortise shouldn't be the length of the tenon. It should be a little deeper. About 1/16" or so will be fine. The deeper mortise prevents your tenons from ever hitting the bottom of your mortise. It also gives any excess glue in your joint a place to collect – instead of squeezing out.

### Use Your Machine Correctly

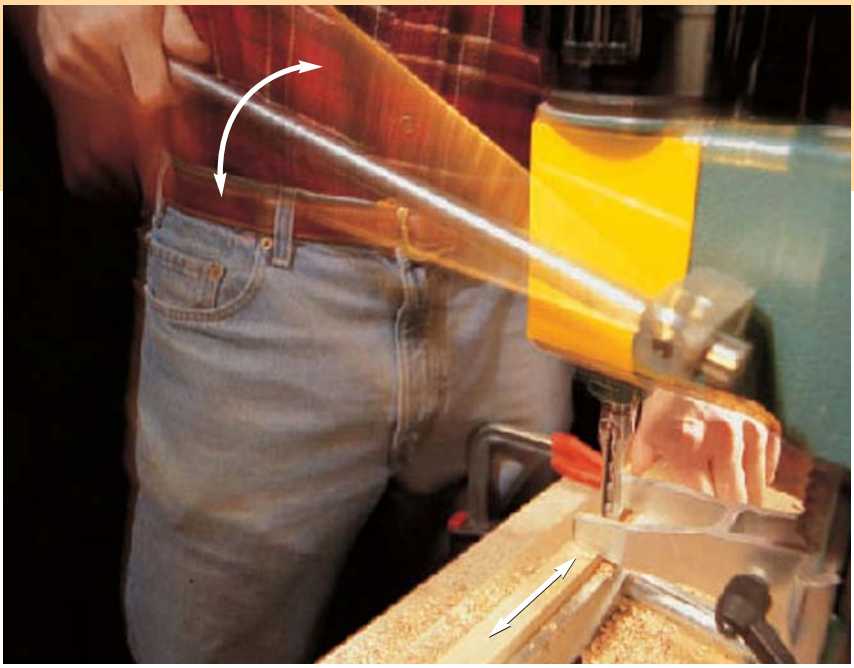
Many beginning mortiser users will break a chisel in tough woods or after a long session of mortising. Usually this is a problem with their technique.

Here's how to avoid this problem: When making a hole with your mortiser, make your first

You can control precisely how much clearance there is between the auger bit and chisel bit by first mounting the chisel bit and backing it out of the bushing by the amount of clearance you want. Next install the auger bit pushed all the way up into the chisel bit. Then loosen the screw in the chisel bit and push it all the way into the bushing.

## BEFORE YOU BUY

- **MOTOR** We've used every benchtop machine on the market. With the smaller motor, the fast-speed mortisers are best. There's less stalling and we found little heat buildup if the chisel and auger bit were set up correctly. With the floor-model mortisers, the bigger motor works well at slow speeds.
- **HOLDDOWNS** Next to stalling, the No. 1 complaint of most benchtop mortiser users is that the holddown slips during use. On the benchtop machines, the Multico is the best. Other mortisers' holddowns could use some improvement. On the floor-model mortisers, the holddowns are generally excellent and have a sliding table to boot.
- **CHISELS** We've heard complaints that the chisels that come with the machines are of lesser quality. We haven't found this to be the case. If you sharpen your tooling and take care of it, it will serve you well for years to come.
- **CAPACITY** Many people overlook two important statistics with mortisers: the maximum height under the chisel and the maximum distance between the fence and chisel. There are some significant differences here and they can be the difference between a simple setup and getting out your mortising chisel to cut a few that your machine just can't reach.



The secret to cleaning out the bottom of your mortise is to go back over your work once you've cut the shape of the entire mortise. I repeatedly raise and lower the head of the mortiser about ½" while moving the workpiece in small increments side-to-side.

plunge cut, then move your work (or your sliding table) so that you skip a space that's nearly equal to the width of the chisel. Then make another plunge. Now go back and clean up the waste between the holes.

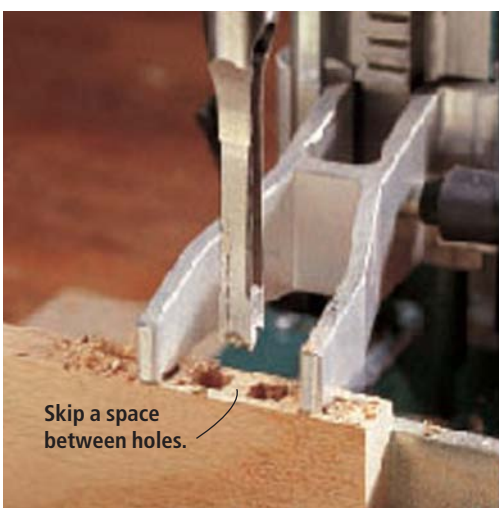
If you made one hole right after another, the chisel will tend to bend toward one side. After a certain amount of stress, your tooling will break.

After you've completed a mortise, you want to go back and clean up the gunk at the bottom. See the photo above that shows the fastest way to do this.

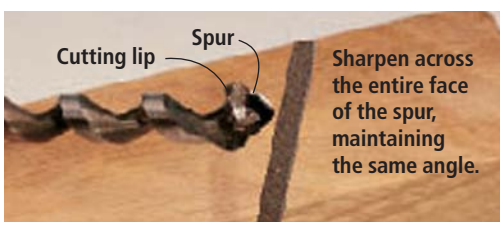
### Sharpening Your Tooling

Dull tooling is another source of woe. A simple auger bit file (available from Highland Hardware, 800-241-6748) is the best tool to touch up the auger bit. Always remove as little metal as possible and try to keep the cutting angles the same.

To sharpen the chisel, you can use a conical sharpening stone. Touch up the inside four edges and then remove the resulting burr on the outside with one pass on a fine-grit sharpening stone. Again, remove as little metal as possible to avoid changing the width of your chisel. **PW**




Cut one hole, skip a space, then cut another. If you cut one right next to the other, you are heading for a bad bend or break in the chisel or auger bit.





When you sharpen the cutting spur of your auger bit, try not to touch the cutting lip (above). When you sharpen the cutting lip, stroke the file upwards into the bit and try not to change the cutting angle.

## PW Recommends

### OCCASIONAL USER

The occasional user can get by with an inexpensive mortising attachment to a drill press, chain drilling or using a router to cut mortises.

### SERIOUS HOME WOODWORKER

- **Bridgewood HM-11.** Low on frills, but its motor grinds through anything ($230).
- **Grizzly G3183.** Virtually the same as the Bridgewood, the G3183 is inexpensive ($225) and powerful.
- **Shop Fox W1671.** This machine has the capacity of a floor-model mortiser. It's hard to beat at $245.

### ADVANCED WOODWORKER OR PROFESSIONAL

- **Multico PM-12.** The top-of-the-line benchtop machine at $450. The holddown is the best of all the benchtops and the motor is gutsy.
- **Powermatic 719A.** This floor-model mortiser ($800) has sliding tables and a front-mounted clamp to hold your work securely. We use this machine in our shop, and it's now a common sight in small professional shops.

*These tools have been tested or used by the editors of **Popular Woodworking** and have earned their recommendation.*

# STATS

| MODEL | STREET PRICE | MOTOR HORSE POWER | SPEED/ RPM | LENGTH | HEIGHT | FENCE MAX." FENCE TO CHISEL* | FENCE MAX DEPTH UNDER HOLDDOWN | MIN. DEPTH UNDER HOLDDOWN | MAX SPINDLE TRAVEL | CHISEL BUSHINGS INCLUDED | CHISELS INCLUDED |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **BENCHTOP MACHINES** | | | | | | | | | | | |
| **Bridgewood HM-11** | $230 | 1/2 | 3,400 | 13 3/4" | 1 9/16" | 2 5/8" | 3 1/4" | 1 5/8" | 4 5/16" | 5/8", 3/4" | none |
| Craftsman 21906 | 200 | 1/2 | 1,725 | 13 5/8 | 1 5/8 | 2 3/8 | 4 3/4 | 1 3/4 | 3 7/8 | 5/8 | 3/8 |
| Delta MM300 | 240 | 1/2 | 1,725 | 13 3/4 | 1 9/16 | 2 1/8 | 3 3/4*** | 1 15/16 | 3 5/8 | 5/8 | 1/4", 5/16", 3/8", 1/2" |
| Delta 14-651 | 250 | 1/2 | 1,725 | 13 5/8 | 2 15/16 | 2 1/8† | 3 3/4† | 1 15/16† | 5† | 5/8 | 1/4", 5/16", 3/8", 1/2" |
| Fisch BTM99-44252 | 240 | 1/2 | 1,725 | 13 9/16 | 1 5/8 | 2 9/16 | 3 1/4 | 1 5/8 | 3 3/4 | 5/8 | 1/4", 3/8", 1/2" |
| General 75-050 M1 | 300 | 1/2 | 1,720 | 11 1/16 | 2 | 3 1/8 | 5 1/4 | 1 | 5 1/4 | 5/8, 3/4 | 1/4", 5/16", 3/8", 1/2" |
| **Grizzly G3183** | 225 | 1/2 | 3,450 | 13 3/4 | 1 9/16 | 2 5/8 | 3 1/4 | 1 5/8 | 4 5/16 | 5/8, 3/4 | none |
| Jet JBM-5 | 240 | 1/2 | 1,725 | 14 | 1 9/16 | 2 5/8 | 3 5/8 | 1 3/4 | 4 5/16 | 5/8, 3/4 | 1/4, 3/8, 1/2 |
| **Multico PM12** | 450 | 1/2 | 3,470 | 13 3/4 | 1 9/16 | 3 1/2 | 3 3/8 | 1 1/2 | 4 | 5/8 | 3/8 |
| Record RPM75 | 290 | 1/2 | 3,400 | 6 | 1 | 3 3/4† | 6† | 1 | 3 1/8 | none | none |
| **Shop Fox W1671** | 245 | 3/4 | 3,450 | 16 | 2 1/8 | 2 1/4 | 8 1/16 | 2 1/8 | 9 1/4 | 5/8, 3/4 | 1/2 |
| Woodtek 876-775 | 240 | 1/2 | 1,725 | 13 3/4 | 1 9/16 | 2 5/8 | 3 1/4 | 1 5/8 | 4 3/4 | 5/8, 3/4 | none |
| Woodtek 900-881 | 390 | 1 | 1,725 | 18 3/4 | 1 9/16 | 3 3/4† | 4 1/4 | 1 5/8 | 5 1/4† | 5/8, 3/4, 1 1/8 | none |
| **FLOOR MODEL MACHINES** | | | | | | | | | | | |
| Bridgewood MS-10 | 895 | 1 | 3,600 | 20 | 3 5/8 | 3 1/4† | NA | NA | 5 1/4† | 5/8, 3/4 | none |
| Fisch FM99-66252 | 800 | 1 | 1,140 | 26 | 3 5/8 | 2 7/8† | 6 | 3 5/8 | 7 1/2† | 1/4, 5/8, 3/4, 1 | 1/4, 5/16, 3/8, 1/2 |
| General 75-075 M1 | 800 | 1 | 1,720 | 19 | 3 1/2 | 3† | NA | NA | 6† | 5/8, 3/4 | 1/4, 3/8, 1/2, 3/4 |
| Grizzly G8620 | 800 | 1 | 3,450 | 20 1/2 | 3 3/4 | NA | NA | NA | 5† | NA | none |
| Grizzly G4814 | 1,700 | 2 | 1,725/3,450 | 21 1/4 | 2 7/8 | 4 5/8 | 10 1/2 | 1 | 4 | 5/8, 3/4 | 1/4, 3/8, 1/2 |
| **Powermatic 719A** | 800 | 1 | 1,720 | 20 | 4 1/4 | 3 7/8 | NA | NA | 7 1/4 | 5/8, 3/4, 1 1/8 | none |
| Woodtek 924-020 | 995 | 1 | 1,725 | 20 5/8 | 8 3/4 | 3 1/2† | NA | NA | 5† | 5/8, 3/4, 1 1/8 | none |

# KEY

* All measurements were taken with a 3/8" chisel and bit installed, which is why these measurements will sometimes disagree with those supplied by the manufacturer.
†= as reported by manufacturer.
*** Add Delta's 14-611 height adjuster ($14) to this machine and it will increase the capacity to 5 3/4".
NA = not applicable or not available.
■ = PW recommends

# MITER SAWS

We've been hearing a lot of discussions about the value of expensive aftermarket miter gauges for your table saw to ensure accurate and simple crosscuts. Then just the other day we all realized we tend to use our miter saws for crosscuts, hardly even setting up our miter gauges – they're that accurate and simple to use.

Many woodworkers use miter saws in place of a radial arm saw for rough-cutting lumber as well. There are lots of good reasons to include a miter saw in your shop.

Miter saws aren't difficult to use, but there are a few things you can do to get better use out of them. Let's start with outboard supports for long pieces of wood.

Most of the work done on a miter saw is crosscutting long, and often thin, pieces. The base of the saw is usually not big enough to adequately support the work. Most manufacturers include outrigger supports of some type that add another foot or so of support to either side of the tool.


## BEFORE YOU BUY

- **MITER, COMPOUND OR SLIDING?** In increasingly more pricey categories, you can purchase a miter saw (capable of straight and miter cuts up to 45°), a compound miter saw (to cut straight, miter and compound angles) and a sliding compound saw (all of the above capabilities, with increased capacity). But what do you need realistically? Most woodworkers don't need the capacity of a sliding miter saw, and a 12" compound saw can cost hundreds of dollars less.
- **MOTORS** While there is some variety in the amperage for the universal motors used to power all the miter saws on the market, you'll be within 12 and 15 amps in most cases, and that will be plenty of power to handle your needs. More importantly, look for replaceable brushes, indicating anticipated longevity on the motor.
- **THE BASE** Important features to consider are the clarity and adjustability of the miter settings on the base, as well as the smoothness of operation, and how well the miter setting locks in place. This is where many of the differences between manufacturers can be found. The height and convenience of the fence are important as well. A higher fence offers better support, but it should be able to easily move out of the way on compound saws for bevel cuts.
- **THE HANDLE** Manufacturers are now offering a few different handle styles: horizontal, vertical or pistol style. Sears even offers a miter saw with a handle that can be changed for your preference. It's a personal choice, but take a look at the options before you decide.
- **BLADES** Simple. Don't buy it unless it's carbide.
- **DUST COLLECTION** In most cases, the provided dust bag does an adequate job for quick work. But if you'll be using the saw often, hook it to a shop vacuum and it'll stay very clean.

Our suggestion is to go one better and use either roller stands to either side of the saw to support the material, or build a stand that will do the same job. We've included plans for a miter saw stand in this issue on page 28 that provides excellent side support, portability, a small footprint and built-in dust collection.

## SETUP & USE

### Setting Up For the Cut

Before making your first cut, it's a good idea to check a few things on the saw to ensure accuracy.

Start by checking the fence. Check it for both squareness to the saw table, and also for flatness across the width of the entire fence. Unfortunately there usually aren't many options if everything isn't right except sending the tool (or just the fence) back. The fence may be able to be shimmed to improve the squareness to the table. Even if you can't fix it, you'll know it's a problem and be able to compensate for it.

Next, check the blade's angle to the table; it should be a 90° angle. If it's not, check your manual for changing the set screw (usually set to 0° on the scale) on a compound miter saw. Also check the 45° setting while you're at it. If you're using a straight miter saw with no beveling adjustment, there may not be an obvious adjustment for the blade, but check the manual to be sure.

One last setting to check is the depth of cut. This is usually set at the factory, but on many saws it's adjustable to best match your needs. In fact, some saws can be set to cut dados.

### Making the Cut

On 98 percent of the miter saws on the market, you're going to use the blade itself to gauge where the cut will happen. A couple manufacturers (and some aftermarket companies) have started adding laser indicators to their saws. These are useful, but they take a little getting used to. In

any case, chances are you'll be using the blade to set up your cut.

Make a mark on the piece of wood where you want to make the cut. Without turning on the saw, lower the blade assembly until the guard retracts and the carbide teeth touch the wood. Adjust your piece so the blade aligns with the waste side of your pencil line. Raise the blade until the guard is again in place, while firmly holding (or clamping) the work piece in place. Start the saw and lower the blade into the wood.

When the cut is complete, it's safest to leave the blade in the lowered position and release the switch to stop the blade. When stopped, raise the blade out of the way. This is safest because the waste piece can come in contact with the rising, still spinning, blade and be kicked into harm's way or destroyed.

Mitered cuts use the same process, but beveled cuts (with the blade beveled to one side) will need to be more carefully aligned with your pencil mark. And make sure your fence is clear of the blade when making bevel cuts. Saw manufacturers sell more replacement fences that way!

If you're using a sliding miter saw, the process is basically the same, though when using the sliding feature, the blade should be pulled, fully extended toward you, before starting the saw. Then slowly push the blade assembly toward the rear, through the cut.

One other crosscut worth talking about is used for fitting pieces. You may make a cut at what you expect to be the correct length, then find out it's still a little long. The easy way to take off a little at a time to get the right fit is to lower the stopped blade all the way to the table, then slide the piece against the left side of the blade. This will tell you where the cut will occur, and you can either lift the blade and scoot the piece over a bit, or you can push against the blade a bit (there's usually just enough "give" in the blade to equal about 1/32") then raise the blade and make your cut.

A quick word about choosing blades is appropriate here as well. Depending on the brand and model saw you purchase, the equipped blade could be great, or just good enough to get you through your first project.

For use in a miter saw, your blade should be carbide-tipped for extended life and sharpness. A 60-tooth blade will provide a smooth, clean crosscut edge. For sliding miter saws, buy a blade with the teeth ground with a negative 5° hook angle – this will prevent overfeeding and climb-cutting during slide cuts. **PW**

One benefit of a high fence on a miter saw is cutting crown moulding. With a compound miter saw, the blade can be set for miter and bevel and the piece can be cut flat on the table. But with a basic miter saw (or if you hate math) the setup at right will get you there with just the miter setting. The piece is positioned as it would be in place against the ceiling and wall, then held on the saw's table using a support board. Set the miter for 45° and you're on your way.

# PW *Recommends*

## OCCASIONAL USER

- **Delta MS275.** Not the cheapest miter saw, but it has great features and power for $170.
- **Hitachi C10FCB.** Hitachi has a great reputation in miter saws and this well-priced 10" saw ($240) is a great basic choice.
- **Craftsman 21250.** Offered just last year, this 10" miter saw with laser sighting was hard to keep in the stores. At $200 it's a solid saw with a nice extra feature for a good price.

## SERIOUS HOME WOODWORKER

- **Bosch 3912.** For increased capacity, we recommend moving to a 12" saw, and this model from Bosch is a good choice at $300.
- **DeWalt DW705s.** Another 12" model that's proven itself durable on many job sites. Also at $300, it's another larger capacity option.

## ADVANCED WOODWORKER OR PROFESSIONAL

- **Makita LS1011N or LS1013.** When recommending a sliding compound saw, we think first of Makita. Both of these 10" models are reliable, accurate saws that are a pleasure to use. The LS1013's features have made it a favorite in our shop. ($450 and $530).
- **Hitachi C8FB2.** This 8½" model is very popular at job sites. It's a lightweight portable tool, and its quality performance is only slightly offset by its reduced capacity ($460).

*These tools have been tested or used by the editors of **Popular Woodworking** and have earned their recommendation.*

## STATS

| MODEL | PRICE | BLADE DIA. (IN.) | MAX CROSSCUT T X W (IN.) | MITER RANGE (L, R) | BEVEL RANGE (L,R) | DEPTH STOP | AMPS | DUST COLLECTION | WEIGHT (LBS) | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|
| **STRAIGHT MITER** | | | | | | | | | | |
| Black & Decker BT1000 | 150 | 10 | 2 x 6 | 47, 47 | N/A | N | 15 | VP | 28 | |
| Craftsman 21240 | 130 | 10 | 2 5/8 x 5 3/4 | 45, 45 | N/A | Y | 13 | DB/VP | 31 | |
| Delta MS210 | 90 | 10 | 2 1/4 x 5 3/4 | 48, 50 | N/A | N | 13 | VP | 28 | 5 miter stops |
| Hitachi C10FM | 170 | 10 | 3 1/8 x 4 1/4 | 47, 47 | N/A | Y | 13 | DB/VP | 27 | 9 miter stops |
| Makita LS1030N | 180 | 10 | 2 3/4 x 5 1/8 | 45, 52 | N/A | N | 15 | DB/VP | 24 | 9 miter stops |
| Milwaukee 6490-6 | 285 | 10 | 2 1/2 x 5 9/16 | 51, 59 | N/A | Y | 15 | DB/VP | 32 | steel blade |
| Ryobi TS1301DX | 100 | 10 | 3 9/16 x 5 9/16 | 46, 46 | N/A | Y | 14 | DB/VP | 34 | electric brake |
| Tradesman 8323 | 100 | 10 | 2 5/8 x 5 3/4 | 45, 45 | N/A | Y | 13 | DB | 32 | electric brake |
| Makita LS1440 | 750 | 14 | 4 3/4 x 6 | 45, 45 | N/A | N | 12 | DB/VP | 66 | |
| Hitachi C15FB | 600 | 15 | 4 3/4 x 7 9/32 | 52, 52 | N/A | Y | 15 | DB/VP | 55 | table extensions |
| **COMPOUND** | | | | | | | | | | |
| Craftsman 21218 | $200 | 8 1/4 | 2 x 6 | 45, 45 | 0, 45 | N | NA | DB/VP | 21 | 18v cordless |
| Delta MS150 | 120 | 8 1/4 | 2 1/8 x 5 1/8 | 45, 45 | N/A | N | 9 | DB/VP | 16 | 9 miter stops |
| Tradesman 8326 | 90 | 8 1/2 | 2 1/8 x 5 1/4 | 45, 45 | 0, 45 | Y | 9 | DB/VP | 28 | electric brake |
| Black & Decker BT1500 | 200 | 10 | 2 x 6 | 47, 47 | -2, 47 | N | 15 | DB/VP | 30 | |
| Bosch 3924 | 465 | 10 | 3 1/2 x 5 1/2 | 45, 45 | -2, 47 | Y | 24v | DB/VP | 30 | w/2 batteries |
| Craftsman 21200 | 170 | 10 | 2 5/8 x 5 1/2 | 45, 45 | 0, 45 | Y | 15 | DB/VP | 29 | |
| Craftsman 21213 | 220 | 10 | 2 5/8 x 5 3/4 | 45, 45 | 45, 0 | Y | 15 | VP | 34 | sliding fence |
| **Craftsman 21250** | 200 | 10 | 2 5/8 x 5 3/4 | 45, 45 | 45, 0 | Y | 15 | VP | 34 | laser guided |
| Delta MS250 | 100 | 10 | 2 3/8 x 5 3/4 | 47, 47 | 48, -3 | N | 13 | DB/VP | 28 | 5 miter stops |
| Delta MS350 | 200 | 10 | 2 3/8 x 5 3/4 | 47, 47 | 48, -3 | N | 15 | DB/VP | 34 | |
| **Delta MS275** | 170 | 10 | 2 3/4 x 5 5/8 | 47, 47 | 48, -3 | N | 15 | DB/VP | 33 | table extensions |
| DeWalt DW703 | 230 | 10 | 2 x 6 | 50, 50 | 0, 48 | N | 15 | DB/VP | 33 | 11 miter stops |
| **Hitachi C10FCB** | 240 | 10 | 2 5/8 x 5 3/4 | 60, 45 | 45, 0 | Y | 15 | DB/VP | 31 | pivoting fence |
| Hitachi C10FCD | 285 | 10 | 2 27/32 x 5 5/8 | 45, 45 | 45, 45 | Y | 13 | DB | 33 | 10 miter stops |
| Makita LS1040 | 310 | 10 | 2 3/4 x 5 1/8 | 45, 52 | 45, 0 | N | 15 | DB/VP | 24 | pivoting fence |
| Milwaukee 6494-6 | 330 | 10 | 2 1/2 x 5 9/16 | 51, 59 | 50, 3 | Y | 15 | DB/VP | 38 | tall flip fence |
| Ridgid MS1060 | 190 | 10 | 2 1/2 x 5 5/8 | 48, 48 | -3, 48 | Y | 15 | DB/VP | 34 | extensions, stop block |
| Ryobi TS1350DX | 150 | 10 | 2 x 6 | 47, 47 | -2, 47 | N | 15 | DB/VP | 30 | |
| Tradesman 8329N | 120 | 10 | 2 5/8 x 5 3/4 | 45, 45 | 0, 45 | Y | 13 | DB/VP | 38 | electric brake |
| Wilton 99164 | 120 | 10 | 2 3/4 x 5 1/8 | 0, 45 | 0, 45 | Y | 13 | DB/VP | 38 | |
| **Bosch 3912** | 300 | 12 | 3 7/8 x 7 5/8 | 52, 52 | 47, -3 | Y | 15 | DB/VP | 43 | sliding fence |
| Craftsman 21224 | 300 | 12 | 5 7/8 x 7 7/8 | 45, 45 | 45, 0 | Y | 15 | DB/VP | 41 | laser guided |
| Delta 36-255 | 300 | 12 | 2 1/2 x 8 | 47, 47 | 48, -3 | N | 15 | DB/VP | 63 | |
| Delta 36-255L | 350 | 12 | 2 1/2 x 8 | 47, 47 | 48, -3 | N | 15 | DB/VP | 65 | twin laser guided |
| **DeWalt DW705S** | 300 | 12 | 2 x 8 | 48, 48 | 0, 48 | N | 15 | DB/VP | 40 | tall sliding fence |
| DeWalt DW706 | 450 | 12 | 2 x 8 | 50, 50 | 48, 48 | N | 15 | DB/VP | 44 | double bevel |
| Hitachi C12FSA | 800 | 12 | 4 7/32 x 12 | 57, 57 | 45, 45 | Y | 12 | DB | 55 | |
| Makita LS1220 | 330 | 12 | 3 7/8 x 6 | 48, 48 | 45, 0 | N | 15 | DB/VP | 38 | soft start |
| Porter-Cable 3802 | 300 | 12 | 2 1/2 x 8 | 48, 48 | 47, 2 | N | 15 | DB/VP | 63 | |
| Ridgid MS1250LS | 300 | 12 | 2 3/4 x 7 | 48, 48 | 3, 48 | Y | 15 | DB/VP | 45 | includes leg stand |
| Ryobi TS1550DX | 200 | 12 | 2 x 8 | 47, 47 | 0, 45 | N | 15 | DB/VP | 51 | |
| **SLIDING COMPOUND** | | | | | | | | | | |
| Makita LS0711Z | 400 | 7 1/2 | 2 x 7 1/8 | 47, 57 | 45, 0 | Y | 10 | DB/VP | 23 | |
| Makita LS711DWBEK | 380 | 7 1/2 | 2 x 7 1/8 | 47, 57 | 45, 0 | | 18 v | DB/VP | 23 | w/2 batteries |
| **Hitachi C8FB2** | 460 | 8 1/2 | 2 9/16 x 12 | 45, 57 | 47, 0 | Y | 9.5 | DB/VP | 39 | 3 bevel stops |
| Tradesman 8336 | 400 | 8 1/2 | 2 9/16 x 12 | 45, 60 | 45, 0 | Y | 10 | DB/VP | 50 | extension wings |
| Bosch 3915 | 420 | 10 | 3 1/2 x 12 | 52, 62 | 47, -2 | Y | 13 | DB/VP | 47 | table extension |
| Delta 36-240 | 430 | 10 | 3 5/8 x 11 1/2 | 57, 47 | 45, 0 | Y | 15 | DB/VP | 51 | work clamp |
| Delta 36-250 | 480 | 10 | 3 5/8 x 11 1/2 | 57, 47 | 45, 0 | Y | 15 | DB/VP | 56 | folding stand |
| Hitachi C10FS | 620 | 10 | 3 17/32 x 12 9/32 | 45, 60 | 45, 45 | Y | 12 | DB/VP | 44 | soft start |
| **Makita LS1011N** | 450 | 10 | 2 5/16 x 12 | 45, 57 | 45, 0 | Y | 13 | DB/VP | 35 | single pole |
| **Makita LS1013** | 530 | 10 | 3 5/8 x 12 | 47, 52 | 45, 45 | Y | 13 | DB/VP | 47 | dual pole |
| Milwaukee 6496-6 | 590 | 10 | 3 1/2 x 12 | 51, 59 | 48, 3 | Y | 15 | DB/VP | 52 | dual pole |
| Milwaukee 6497-6 | 605 | 10 | 3 1/2 x 12 | 51, 59 | 48, 3 | Y | 15 | DB/VP | 56 | table extensions; |
| Porter-Cable 3807 | 490 | 10 | 3 5/8 x 11 1/2 | 57, 47 | 45, 0 | Y | 15 | DB/VP | 57 | dual pole |
| Bosch 4412 | 700 | 12 | 4 x 12 | 50, 60 | 47, 47 | Y | 15 | DB/VP | 59 | up front controls |
| Craftsman 21292 | 590 | 12 | 4 x 12 5/8 | 45, 45 | NA | Y | 15 | DB/VP | 74 | 2 dust ports |
| DeWalt DW708 | 600 | 12 | 4 1/2 x 12 | 50, 60 | 48, 48 | Y | 15 | DB/VP | 57 | tall sliding fences |
| Makita LS1212 | 800 | 12 | 3 7/8 x 12 1/4 | 47, 60 | 45, 45 | Y | 15 | DB/VP | 49 | dual pole |
| Ridgid MS1290 | 600 | 12 | 3 x 13 1/2 | 60, 60 | 47, 47 | Y | 15 | DB/VP | 64 | 11 miter stops |

## KEY

N/A= not applicable, DB = dust bag, VP = vacuum port, DB/VP = both, ■=PW Recommends

# MOBILE BASES

Anyone who shares their shop with a vehicle or boxed holiday decorations understands that mobile bases aren't just an accessory, but a necessity. Built for table saws, band saws, jointers and planers, these heavy-duty devices allow you to safely and easily move your otherwise stationary machines around your shop, making room for new operations or other things.

While some mobile bases sport lifting mechanisms to get things rolling, others are always rolling and use locking mechanisms to put on the brakes. The location and design of these lifting and locking mechanisms determine how easy the base is to use and how stable it is when employed. While ease of mobility is important, stability is key. When positioned, you want it to rest on the floor without any movement.

## SETUP & USE

### Lifting vs. Locking

Before you buy, consider how you plan to use your base. Typically, those who are space-challenged value ease of mobility; those who are, well, lucky value ease of stability. If you work in a crowded garage or basement and plan to move your machines a lot, consider a mobile base that features an easy-to-use lifting mechanism such as the single foot-operated control lever. While you'll occasionally have to shim the base or reposition the rubber feet to compensate for uneven floors, in the long run you'll appreciate the base's overall ease of use.

If you have a designated spot for each of your machines (i.e. lucky) and you only plan to move them occasionally, consider a base with a solid lock-down mechanism – even if that base is more difficult to mobilize. Retractable feet can easily compensate for floor deviations, and the base serves more as a stand than as a utility to mobilize.

Finally, some mobile bases require stooping down to operate. If this is an act better performed in your younger years, choose a base that needs more footwork than handwork. **PW**

## PW *Recommends*

### OCCASIONAL USER AND SERIOUS HOME WOODWORKER

- **Delta 50-345.** Built using self-supplied hardwood stock and rated for lighter machines, this base is an inexpensive ($50) alternative to all-metal mobile bases.

### ADVANCED WOODWORKER OR PROFESSIONAL

- **Shop Fox D2057.** This heavy-duty, easy-to-stabilize mobile base ($70) doubles as a great stand for those who have a permanent place for all their machinery.

*These tools have been tested or used by the editors of **Popular Woodworking** and have earned their recommendation.*

## BEFORE YOU BUY

- **LIFTING MECHANISMS** Single foot levers, actuator cams and detachable handles that function as levers, when employed, allow one side of a base to be lifted, accomplishing mobilization.
- **LOCKING MECHANISMS** Lock knobs, brake knobs, retractable feet and locking casters, when employed, serve as brakes that stop mobilization.
- **VERSATILITY** Some bases are specific to a particular machine's footprint while others can be built to size by using sleeved stretchers, angle irons or hardwood stock. All the bases in this chart can be adjusted in size.
- **KIT MODELS** Some manufacturers such as Delta and Harbor Freight offer mobile bases that you build with self-supplied hardwood stock. These inexpensive bases can be built to size but are rated to hold only 300 pounds.

## STATS

| | STREET PRICE | CAPACITY (LBS) | CAPACITY (INCHES) | TYPE OF LIFT/LOCK MECHANISM |
|---|---|---|---|---|
| ■ Delta 50-345 | 50 | 300 | NA | single foot lever |
| HTC1000 | 50 | 400 | 14 x 14 to 31 x 31 | actuator cams |
| HTC2000 | 53 | 400 | 12 x 12 to 34 x 34 | actuator cams |
| Harbor Freight 41915 OVGA | 30 | 300 | up to 30 x 30 | single foot lever |
| Jet 708120 4 pc. caster set | 60 | 1,200 | fits any closed stand | locking casters |
| Jet 708115 4 pc. caster set | 70 | 1,200 | fits any closed stand | locking casters |
| Jet 708118 | 70 | 600 | 18 x 18 to 24 x 24 | locking casters |
| Jet 708119 | 90 | 1,200 | 24 x 24 to 34 x 34 | locking casters |
| Ridgid AC9950 | 100 | 300 | 24 x 24 to 32 x 32 | integral foot lever |
| ■ Shop Fox D2057 | 70 | 600 | 19 x 20½ to 29½ x 29½ | retractable feet |
| Shop Fox D2058 | 90 | 1,200 | 18 x 24½ to 28½ x 33½ | retractable feet |
| Vega MMK-1 | 100 | 800 | 13 x 17 to 28 x 29 | detachable handle |

■ = PW Recommends

# RANDOM-ORBIT SANDERS

Throw away your old pad sanders and get yourself a random-orbit tool. For less than $50 you can reduce your sanding time dramatically with these high-tech wonders.


## SETUP & USE

### A Light Touch and Slow Hand

Many woodworkers are under the impression that if they work harder and faster, the work will get done more quickly. This is not so with random-orbit sanders. Don't use a lot of downward pressure when sanding. The engineers who design these tools say that this actually reduces the sanding effectiveness. Also, resist the urge to move the sander quickly over the surface of your wood. Slow and steady results in a more consistent scratch pattern. How slow? Aim for moving the sander about one foot every five seconds or so.

As you move the sander, don't use the same pattern again and again on the same workpiece. Sand horizontally across the work, then vertically, then at 45° to the grain (first one way, then the other). This will ensure you don't miss any spots. Most of all, sand all areas consistently.

Sometimes it's tempting to work in one area more than others or to lift one edge of the pad to sand some tearout. Resist this as much as you can. It's easy to produce depressions that you can feel and (even worse) see after you've applied a finish. So keep the sander's pad flat to the work.

### Changing Grits

Many woodworkers are also bemused at what sanding grits they should use when sanding projects. Here are some basic guidelines in our shop. With solid wood, begin with 100 grit, then go to 120, 150 and finish at 180. With plywood, begin with 150 and finish with 180.

If your project is going to get a clear finish, you usually can stop sanding at 150 grit because there will be no pigment to collect in the scratches. For outdoor furniture, you can usually stop sanding at 120 grit. **PW**

## BEFORE YOU BUY

- **BODY STYLE** Electric random-orbit sanders come in three body styles: palm grip, dual grip and right angle. The palm-grip sanders are inexpensive, easy to maneuver and are good for most woodworking tasks. The right-angle sanders are generally bulky, powerful and well suited for large flat surfaces. The dual-grip sanders are somewhere in between. Most home woodworkers purchase the palm-grip variety.
- **POWER** The aggressiveness of a random-orbit sander is determined by three things: the amperage (though this can be misleading), the orbits per minute and the "offset" (also called the "orbit" or "pad movement"). Essentially the offset is the size of the sanding swirls left on the work. Big offsets remove material faster but leave more sanding scratches than tools with smaller offsets.
- **HOOK-AND-LOOP OR STICKY STUFF?** The sandpaper attaches to the tool's pad using one of two methods: hook-and-loop (essentially Velcro) or PSA (pressure-sensitive adhesive). We prefer the hook-and-loop because you can swap grits back and forth during a job. With the PSA sandpaper, once you remove it from the pad, it won't stick again. Many pros (who may have a sander for each grit) prefer the PSA.
- **DUST COLLECTION** Except for quick jobs, it's a good idea to attach your sander to dust collection. Not only is it healthier, but it will speed your sanding by removing dust between the paper and wood. Sanding the dust is no fun.

## PW *Recommends*

### OCCASIONAL USER

- **Ryobi RS240.** If money is tight, check out the Ryobi RS240. For about $40 you get a machine that is powerful and versatile.

### SERIOUS HOME WOODWORKER

- **Makita BO5010.** Among all the palm-grip sanders we use, this one feels the most aggressive ($70). As an added bonus, the dust collection is superb.
- **Makita BO6030.** This professional 6" sander is tough and aggressive ($180). It is our favorite dual-grip sander.
- **Porter-Cable 333.** This line of palm sanders ($75 to $90) is hard-working and available two configurations.
- **Bosch 1295D.** Bosch upgraded this sander with excellent dust collection. At $70, this is a good tool for the shop.

### ADVANCED WOODWORKER OR PROFESSIONAL

- **Fein MSF 636-1.** In our book, the Fein MSF 636-1 ($450) is as good as a sander gets. It's aggressive as anything out there and is capable of great finesse. Add a Fein vacuum, and you will keep your shop dust-free. It's an excellent system.
- **Makita BO6040.** For $100 less, the Makita BO6040 ($355) is an excellent option. A high-quality sanding machine.

If you're a pro, you also should take a look at pneumatic sanders. You'll need a big compressor, but they are capable of many hours of continual use.

*These tools have been tested or used by the editors of **Popular Woodworking** and have earned their recommendation.*

## STATS

| BRAND & MODEL | STREET PRICE | PAD DIA. (IN.) | PAD TYPE | PAD BRAKE | ORBITS PER MINUTE | DUST COLLECTION | ORBIT/ OFFSET | AMPS | WEIGHT (LB.) |
|---|---|---|---|---|---|---|---|---|---|
| **PALM GRIP** | | | | | | | | | |
| Black & Decker RO100 | $40 | 5 | HL | Y | 12,000 | DB | 3/32 | 2 | 3.5 |
| **Bosch 1295D** | 70 | 5 | HL | Y | 12,000 | DC | 1/16 | 2 | 3.5 |
| Bosch 1295DK | 75 | 5 | HL | Y | 12,000 | DC, VP | 1/16 | 2 | 3.5 |
| Bosch 1295DVS | 80 | 5 | HL | Y | 7,000 - 12,000 | DC, VP | 1/16 | 2.2 | 3.5 |
| Bosch 1295DVSK | 90 | 5 | HL | Y | 7,000 - 12,000 | DC, VP | 1/16 | 2.2 | 3.5 |
| Craftsman 11621 | 40 | 5 | PSA | Y | 12,500 | DB | 5/32 | 2.4 | 2.75 |
| Craftsman 11636 | 50 | 5 | PSA | Y | 13,000 | Box | 5/32 | 3 | 3.5 |
| Craftsman 27987 | 60 | 5 | HL/PSA | NA | 12,000 | DB | 3/32 | 2.6 | 3.6 |
| Craftsman 27957 | 80 | 5 | HL/PSA | Y | 7,000 - 12,000 | DB | 5/32 | 3 | 3.8 |
| DeWalt DW420 | 65 | 5 | PSA | Y | 12,000 | - | 3/32 | 2 | 3 |
| DeWalt DW421 | 70 | 5 | HL | Y | 12,000 | DB, VP | 3/32 | 2 | 3 |
| DeWalt DW423 | 85 | 5 | HL | Y | 7,000 - 12,000 | DB, VP | 3/32 | 2 | 3.2 |
| Festool ES 125 | 150 | 5 | NA | Y | 6,000 - 13,000 | DB, VP | 3/16 | 2 | 2.4 |
| **Makita BO5010** | 70 | 5 | HL | Y | 12,000 | DB, VP | 1/8 | 2 | 2.6 |
| Makita BO5001 | 65 | 5 | HL | N | 10,000 | VP | 5/32 | 1.7 | 2.9 |
| Makita BO5012 | 100 | 5 | HL | Y | 4,000 - 12,000 | DB, VP | 1/8 | 2 | 2.9 |
| Milwaukee 6018-6 | 70 | 5 | PSA | N | 12,000 | DB, VP | 3/32 | 1.8 | 2.9 |
| Milwaukee 6019-6 | 70 | 5 | HL | N | 12,000 | DB, VP | 3/32 | 1.8 | 2.9 |
| Porter-Cable 332 | 70 | 5 | PSA | Y | 12,000 | - | 3/32 | 1.7 | 3.2 |
| **Porter-Cable 333** | 75 | 5 | HL | Y | 12,000 | DC, VP | 3/32 | 2.4 | 3.5 |
| **Porter-Cable 333VS** | 90 | 5 | HL | Y | 5,000 -12,000 | DC, VP | 3/32 | 2.4 | 3.5 |
| Porter-Cable 334 | 75 | 5 | PSA | Y | 12,000 | DC, VP | 3/32 | 2.4 | 3.5 |
| Porter-Cable 335 | 90 | 6 | PSA/HL | Y | 9,000 | DC,VP | 3/32 | 1.7 | 3.5 |
| **Ryobi RS240** | 40 | 5 | HL/PSA | Y | 12,500 | DB | 5/32 | 2.4 | 2.75 |
| Ryobi RS280VS | 50 | 5 | HL/PSA | Y | 7,000 - 12,000 | DB, VP | 3/32 | 2.8 | 3.5 |

| BRAND & MODEL | STREET PRICE | PAD DIA. (IN.) | PAD TYPE | PAD BRAKE | ORBITS PER MINUTE | DUST COLLECTION | ORBIT/ OFFSET | AMPS | WEIGHT (LB.) |
|---|---|---|---|---|---|---|---|---|---|
| **DUAL-GRIP SANDERS** | | | | | | | | | |
| Black & Decker MS700K | $65 | 5 | HL | Y | 10,500 | DB, VP | 2.2mm | 1.4 | 5 |
| Bosch 3107DVS | 95 | 5 | HL | Y | 4,500 - 13,000 | DB, VP | 3/32 | 3.3 | 5 |
| Bosch 3107DVSK | 120 | 5 | HL | Y | 4,500 - 13,000 | DB, VP | 3/32 | 3.3 | 5 |
| Bosch 3725DVS | 140 | 5 | HL | Y | 4,500 - 12,000 | DB, VP | 3/32 | 3.3 | 5.1 |
| Bosch 3727DVS | 150 | 6 | HL | Y | 4,500 - 12,000 | DB, VP | 5/64 | 3.3 | 5.2 |
| Festool ES 150/3 EQ | 225 | 5 | HL | Y | 4,000 - 9,500 | DB, VP | 1/8 | 2.6 | 3.9 |
| Festool ES 150/5 EQ | 225 | 5 | HL | Y | 4,000 - 9,500 | DB, VP | 3/16 | 2.6 | 3.9 |
| Grizzly G9910 | 25 | 5 | HL | N | 10,000 | DB, VP | 1/8 | 3 | 4.7 |
| **Makita BO6030** | 180 | 6 | HL | Y | 4,000 - 10,000 | DB, VP | 1/8 | 2.7 | 5.1 |
| Makita BO5021K | 110 | 5 | HL | Y | 4,000 - 12,000 | DB, VP | 1/8 | 2 | 3.1 |
| Metabo SXE425 | 145 | 5 | HL | Y | 5,000 - 12,000 | DB | 3/16 | 3.6 | 5.2 |
| Metabo SXE450 | 190 | 6 | HL | Y | 4,000 - 10,000 | DB | 1/8 or 1/4 | 3.8 | 6.5 |

| BRAND & MODEL | STREET PRICE | PAD DIA. (IN.) | PAD TYPE | PAD BRAKE | ORBITS PER MINUTE | DUST COLLECTION | ORBIT/ OFFSET | AMPS | WEIGHT (LB.) |
|---|---|---|---|---|---|---|---|---|---|
| **RIGHT ANGLE** | | | | | | | | | |
| Porter-Cable 7335 | $125 | 5 | PSA | N | 2,500 - 6,000 | OPT | 11/32 | 3.7 | 5.5 |
| Bosch 1370DEVS | 275 | 6 | HL | Y | 4,800 - 12,000 | DB, VP | 11/64 | 5 | 5 |
| DeWalt DW443 | 150 | 6 | HL | Y | 4,300 - 6,800 | DB, VP | 3/16 | 4.3 | 5.7 |
| **Fein MSF 636-1** | 450 | 6 | HL | Y | 7,500 | VP | 5/16 | 4.7 | 3.7 |
| Festool Rotex 150 E | 395 | 6 | HL | Y | 4,000 - 11,200 | VP | 3/16 | 4.2 | 5 |
| **Makita BO6040** | 355 | 6 | HL | Y | 1,600 - 5,800 | VP | 7/32 | 6.6 | 5.9 |
| Milwaukee 6125 | 230 | 5 or 6 | PSA | N | 10,000 | NA | 5/32 | 5.5 | 5 |
| Porter-Cable 7336 | 130 | 6 | PSA | N | 2,500 - 6,000 | OPT | 11/32 | 3.7 | 5.75 |

## KEY

HL= hook and loop
PSA= pressure-sensitive adhesive
DB= dust bag
VP=vacuum port
DC=dust canister
Y=yes, N=no
NA=not available
■= PW Recommends

# TABLE SAWS


Entire books have been written on how to use a table saw, and it's a good idea to get one if you've never used this machine. We recommend "Jim Tolpin's Table Saw Magic" (Popular Woodworking Books) and "The Table Saw Book" by Kelly Mehler (The Taunton Press). Each brand of saw is a little different to set up, but the following tips will help you get your machine tuned for precision woodworking.

## SETUP & USE

### Everything Parallel

When you get your saw in place in your new shop, it's real tempting to fire it up and rip a few boards. Resist this temptation for a few minutes. There are several critical adjustments that should be checked to prevent your first cut from being a dangerous one.

The first thing to do is make sure the blade is parallel with at least one miter slot. You can check this with a ruler by measuring at the front of the blade and the back. If it's off by even a little, you're going to need to make this adjustment first. On contractor saws you generally loosen the bolts that attach the trunnions to the top and knock the trunnions with a wooden block (your manual will show you how). On cabinet saws, you loosen three or four bolts and then shift the top (the trunnions are attached to the cabinet instead of the top). Take your time and get it right or your other adjustments will be more difficult.

If you have a contractor saw, you'll want to ensure the pulley on the motor is lined up with the pulley on the arbor. Lay a straightedge across the two pulleys and check for gaps between the yardstick and pulley. Adjust the pulley on the motor until the straightedge lays perfectly flat across the two pulleys. Tighten everything.

Next you want to adjust the fence so it's parallel to your miter slots and the blade. You can measure it (see photo) or go by "feel." Lock the fence so it's flush to the edge of one of the miter slots and feel along the slot to see if the fence toes in or out.

### Everything Else at 90°

Now get out your most accurate square and make sure your fence face is 90° to the table. If it's not, you're going to have zero luck cutting joints on your saw. Better fences allow you to make this adjustment by turning a screw or two. Other fences may need to be shimmed with tape between the fence and its rails.

Now get out your miter gauge and adjust it so it cuts at 90° to the blade. Make a cut and check it with your try square. Adjust the gauge and its stops when everything is perfect.

### Other Adjustments

Attach the guard and splitter and fuss with those until the splitter is directly in line with the blade. Insert the throat plate and adjust the leveling screws until it is perfectly flush with your table. Finally, get out a straightedge and check your saw's wings and table board (on the right-hand side of many saws). Make sure these tables are as flush as possible with the top.

Now take a look at the motor. If you have a contractor saw, you should be able to switch it between 220- and 110-volt power. If you have 220 service in your shop, we recommend you switch your saw to use this higher voltage. Though some electrical experts say it doesn't matter, we've found that with the wiring in home shops, 220 is the right choice to avoid voltage drops.

You're almost done. If you have a contractor saw, you really should consider upgrading the V-belt that runs between the motor and arbor. We recommend Powertwist belts (also called link belts), which

## BEFORE YOU BUY

- **BENCHTOP VS. STATIONARY** Unless your shop is in a closet, we don't recommend benchtop saws. Though the premium benchtop models get better each year, they're as expensive as entry-level contractor saws – which are far more powerful and expandable. Start your hobby right by purchasing a contractor or cabinet saw.
- **FENCE** The heart of the table saw is its fence. We prefer front-locking fences such as the Biesemeyer, Unifence, Xacta and their clones. These commercial-style fences are stout and accurate. If you can't afford this premium fence, you can always upgrade later to one if you own a contractor or cabinet saw. Most fences have 30"-long rails. If you have the room in your shop, spend the little extra to get the 50" rails.
- **MOTOR** The motors on contractor saws (generally a 1½ or 2 horsepower) are fine for most day-to-day woodworking tasks. If you regularly rip 3" maple, you're going to need at least a 3 hp motor in a cabinet saw. TEFC (totally enclosed, fan-cooled) motors are preferable to standard motors.
- **WINGS AND WEIGHT** The heavier a table saw, the smoother it is going to run. So heavy saws with cast-iron wings (instead of stamped steel ones) are preferable.
- **ACCESSORIES** Most table-saw users end up replacing the stock blade, throat plate and miter gauge. So don't be disappointed if these items seem less than perfect on the models you are considering buying.

One of the first steps in making sure your table saw is safe is to make sure the blade and fence are parallel to one another. (We'll assume you've already aligned the blade to the miter slot as instructed by your owner's manual.) Simply set the fence to any reasonable distance (9" in our photo above) and check the distance between the fence and blade both at the front and rear of the blade. If the measurements are not equal, adjust your fence until correct. If this setup isn't done correctly, your material can become pinched between the fence and blade (or splitter guard) and either violently be kicked back at you, or make it too hard to push the piece all the way through. If you have to force a piece through a cut, you're doing something wrong. If the fence is out of parallel in the other direction, you may not get hurt, but you'll have a hard time making square cuts.

When crosscutting narrow pieces on the table saw, you will eventually encounter the situation where the falloff pieces are small enough to not move out of the way on each cut, and they will begin to accumulate to the outfeed side of the blade. This doesn't automatically create a dangerous situation, but one of the pieces could be pushed against the outfeed side of the blade and be thrown back at you. Even with the guard in place, a piece can be small enough to be kicked around between the guard and blade, or tossed back. Optimally, you should stop the saw and wait until the blade has stopped spinning, then remove the offending chunks. More likely than not, it will be inconvenient to keep turning off the saw. In that case, stand out of the kickback line of fire and use a scrap piece of wood or your push stick to nudge the pieces out of the way. Don't use your fingers! You can always make a new push stick.

are available from almost any woodworking supplier. These adjustable belts reduce vibration dramatically during operation.

### Power On

You are ready to cut some wood. But as you reach for that switch, remember that saws with a circular blade (table saws, radial arm saws and circular saws) are the No. 1 cause of injuries in workshops in this country. No. 2, by the way, is the jointer.

So the safety rules for saws are particularly important. Here's a list of the most important ones:

- Set the sawblade so it's ⅛" higher than the wood to be cut.
- Never stand directly behind the blade while cutting. Always stand slightly to one side.
- Keep your fingers clear of the throat plate. Consider this area the danger zone.
- Unplug the saw every time you change the blade.
- Use a push stick when ripping stock less than 4" wide.
- Keep your saw free of scraps and debris. Use a push stick or scrap to move them if the saw is running (or winding down).
- Always wear eye and ear protection when working.
- If you get into trouble during a cut, hold the stock down with one hand and turn off the saw or quickly lower the blade below the table with the other.
- Never crosscut narrow stock using your fence. Use your miter gauge. Never make a cut "freehand" without a miter gauge or the fence to guide the work.
- Never work on the saw without someone else within earshot.
- Roll up your sleeves. Take off any jewelry (watches, too). Pull back your hair if it's long.

Many first-time users are jittery about making their first rips and crosscuts. They mostly worry about where to put their hands and where to apply pressure. You can get a primer on how to rip and crosscut in our February 2002 issue, available for sale at www.popularwoodworking.com.

Once you master these operations, you're ready to find out how versatile the table saw really is: You can cut tenons, rabbets, grooves, dados, cove moulding, you name it. On the next two pages, we show you two good ways to make tenons, a safe way to make long and accurate crosscuts and a trick to making useful wedges using your saw. For even more table saw tricks, you really should check out the wide variety of books available about this machine. **PW**

# PW *Recommends*

## OCCASIONAL USER

- **Grizzly 1022SM.** Why buy an premium benchtop saw when you can get this good entry-level contractor saw for $325?
- **Delta TS300**
- **Jet JWTS-10JF** ($625)
- **Bridgewood TCS-10CL.** This bargain saw ($550) has a nice fence system and one cast wing.

## SERIOUS HOME WOODWORKER

- **Delta Series 2000 saws.** The contractor saw to beat, and the reputation is well-deserved.
- **Jet JWTS-10CW2-PF.** A challenger to Delta's saws ($925), this saw features a world-class fence.
- **Powermatic 64A.** Another serious contender ($750), this left-tilt contractor saw also sports an excellent front-locking fence.
- **Grizzly 1022PROZ.** New to the Grizzly line, this saw has two solid cast wings, a 2 hp motor and an excellent front-locking fence.
- **Grizzly 1023S.** An excellent cabinet saw at a contractor saw price ($795). We flat-out love this saw. The company also makes a 110-volt version and a left-tilt version that are worth checking out.

## ADVANCED WOODWORKER OR PROFESSIONAL

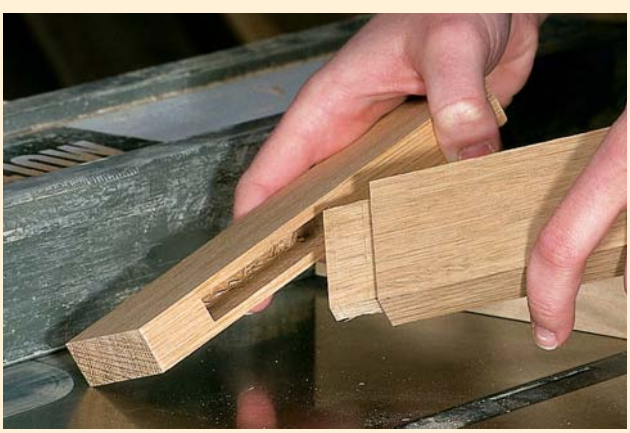
- **Powermatic 66.** The Cadillac of 10" saws that's famous for its three-point yoke and mirror finish ($2,100).
- **General 50-200L M1.** $1,050
- **Jet JTAS-10XL50-1.** $1,700
- **Delta Unisaw 36-R31-BC50 or left-tilt version.** $1,600

*These tools have been tested or used by the editors of **Popular Woodworking** and have earned their recommendation.*

## Tenons with a Dado Stack

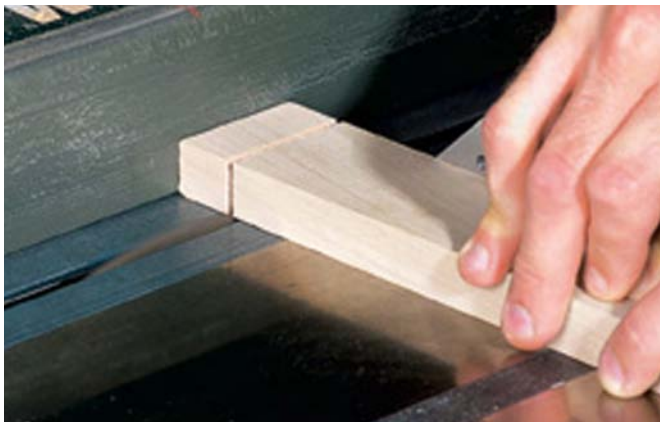
**1** Set the height of your dado stack equal to the depth of your shoulder ($^{3}/_{16}$" in this case). Set the fence to equal the length of the tenon you want (1" here). The backup block reduces tearout. Make the face cheek cuts first.


**2** Cut the edge shoulders and cheeks in the same way. If you want a bigger shoulder, increase the height of the dado stack after cutting all the face cheeks and shoulders.



**3** It's a good idea to check the fit of every tenon in a test mortise. The thickness of your tenon will vary slightly if you put less downward pressure on the tenon during the cut. If the tenon is a shade too thick, try making a couple more passes using more pressure.

## Tenons with a Crosscut Blade



**1** First define the shoulders on the face and cheek sides. Set the height of the blade to $^{3}/_{16}$" and the fence to the length of your tenon (don't forget to count the thickness of the blade).

**2** Now set your fence and blade height to remove the waste from the face cheeks. Be careful to keep the work tightly against the fence and your fingers away from the blade. Using a higher subfence is a good idea.

**3** Using your miter gauge and a backing board for support, remove the waste from the edge cheeks. Keep your blade at the same height from the last step.

# Cutting Wedges

Wedges are essential in every workshop. They shim machinery so it sits flat on the floor, will shim your cabinets as you install them in your house and even can be used to shim inset doors and drawers for the proper reveal. Making them on your table saw is easy with this simple jig.

**1** The jig essentially is a push block. One layer of the push block has an angled notch cut into it. The top layer holds the work to the saw's table. The notch on the bottom layer measures 6" long and is ½" deep at the back. This jig cuts wedges that have a 4° slope.

**2** Cutting wedges is a ripping operation. Place your stock into the push block and run it through the blade. Use your left hand to support the stock on the left during the pass. After you cut one wedge, flip the board over and cut the next wedge from the other side. Continue this way until you run out of wood.

# Crosscutting with a Stop Block

**1** Making long crosscuts on your table saw is easy with your fence and a stop or gauge block. First clamp the block to the fence of your saw. We use a 3"-wide stop block. Wider is better. If something goes awry during the cut, you don't want the work to get wedged between your blade and the fence. Be sure to clamp your block back far enough so that your work will clear the block before entering the cut. This removes a lot of potential kickback problems.

**2** Set your fence to the length of the crosscut you want to make (don't forget to add the width of your stop block). Put the work against your miter gauge between the fence and blade. Push the work forward into the blade. When your work clears the blade, shift it right an inch or so before lifting it off the saw's table.

# STATS

| BRAND | PRICE | BLADE DIAMETER (IN.) | MAX CUT DEPTH (IN.) | MAX RIP (IN.) | TABLE SIZE (IN.) | TABLE MATERIAL | DRIVE TYPE | VOLTS | AMPS | DUST PORT | WEIGHT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **BENCHTOP** | | | | | | | | | | | |
| Makita 2702 | $300 | 8 1/4 | 2 11/16 | 12 | 27 x 22 | AL | D | 115 | 15 | Y | 40 |
| Bosch 4000 | 490 | 10 | 3 1/8 | 25 | 29 x 21 1/2 | AL | D | 120 | 15 | Y | 60 |
| Craftsman 21825 | 230 | 10 | 3 | 24 | 26 7/64 x 19 3/32 | AL | D | 120 | 15 | N | 44 |
| Craftsman 24810 | 130 | 10 | 3 | 24 | 26 7/64 x 19 3/32 | AL | D | 120 | 15 | N | 50 |
| Craftsman 21810 | 140 | 10 | 3 | 24 | 26 7/64 x 19 3/32 | AL | D | 120 | 15 | N | 40 |
| Craftsman 24888 | 200 | 10 | 3 | 24 1/12 | 22 7/64 x 19 3/32 | AL | D | 120 | 15 | Y | 80 |
| Craftsman 21830 | 430 | 10 | 3 1/8 | 24 1/12 | 24 x 21 | AL | G | 120 | 15 | Y | 110 |
| Delta TS200 | 100 | 10 | 3 | 9 7/8 | 17 1/4 x 26 | AL | D | 115 | 13 | N | 40 |
| Delta TS220LS | 180 | 10 | 3 | 20 | 17 1/2 x 34 | AL | D | 115 | 15 | N | 60 |
| Delta TS300LS | 190 | 10 | 3 | 9 7/8 | 17 1/4 x 26 | AL | D | 115 | 13 | N | 50 |
| DeWalt DW744S | 500 | 10 | 3 1/8 | 24 1/2 | 26 1/2 x 19 1/4 | AL | D | 115 | 13 | Y | 64 |
| Hitachi C10RA2 | 330 | 10 | 3 | 15 3/4 | 34 x 19 5/8 | AL | D | 115 | 15 | Y | 56 |
| Makita 2703 | 320 | 10 | 3 9/16 | 12 | 27 x 22 | AL | D | 115 | 15 | Y | 40 |
| Porter-Cable 3812 | 395 | 10 | 3 1/8 | 24 1/2 | 26 x 20 | AL | D | 115 | 15 | Y | 60 |
| Ridgid TS2400LS | 580 | 10 | 3 1/8 | 25 | 39 1/2 x 21 | AL | D | 120 | 15 | Y | 75 |
| Ryobi BTS10 | 100 | 10 | 3 | 9 1/2 | 16 x 25 3/4 | AL | D | 115 | 13 | N | 40 |
| Ryobi BT3100 | 300 | 10 | 3 9/16 | 31 | 27 x 40 | AL | B | 115 | 15 | Y | 107 |
| Skil 3400 | 190 | 10 | 3 | 12 | 26 5/8 x 17 5/8 | AL | D | 120 | 15 | Y | 38 |
| Skil 3400-08 | 195 | 10 | 3 | 12 | 26 5/8 x 17 5/8 | AL | D | 120 | 15 | Y | 38 |
| Tradesman 8032 | 120 | 10 | 3 1/8 | 9 7/8 | 26 1/2 x 17 1/2 | AL | D | 115 | 13 | N | 56 |
| Wilton 99168 | 120 | 10 | 3 | 13 | 17 x 26 | AL | D | 120 | 13 | Y | 46 |

| BRAND | PRICE | BLADE DIAMETER (IN.) | MAX CUT DEPTH (IN.) | MAX RIP (IN.) | TABLE SIZE (IN.) | TABLE MATERIAL | FENCE TYPE | DRIVE TYPE | VOLTS | HP-AMPS | DUST PORT | WEIGHT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CONTRACTOR** | | | | | | | | | | | | |
| **Bridgewood TSC-10CL** | 550 | 10 | 3 1/8 | 30 | 30 x 27 | CI | Front lock | B | 110/220 | 1.5/16-8 | Y | 297 |
| Craftsman 22839 | 500 | 10 | 3 7/16 | 24 | 44 x 27 | CI/S | F & R | B | 120 | 1.5-13 | OPT | 218 |
| Craftsman 24820 | 500 | 10 | 3 3/8 | 24 | 44 x 27 | CI/S | F & R | B | 120 | 1.5/13 | OPT | 254 |
| Craftsman 22849 | 600 | 10 | 3 3/8 | 24 | 44 x 27 | CI | F & R | B | 120/240 | 1.5-6.5 | OPT | 236 |
| Craftsman 22859 | 800 | 10 | 3 3/8 | 30 | 54 x 27 | CI | F & R | B | 120/240 | 1.5-13 | Y | 265 |
| **Delta TS300** | 300 | 10 | 3 1/8 | 27 | 22 1/4 x 38 3/8 | CI | F & R | B | 115 | NA | NA | 145 |
| **Delta 36-445†** | 775 | 10 | 3 1/8 | 30 | 62 x 27 | CI | Front lock | B | 115/230 | 1.5-12.8/6.4 | N | 248 |
| **Delta 36-460††** | 830 | 10 | 3 1/8 | 28 | 76 x 27 | CI | Front lock | B | 115/230 | 1.5-12.8/6.4 | N | 267 |
| **Delta 36-426†††** | 900 | 10 | 3 1/8 | 30 | 62 x 27 | CI | Front lock | B | 115/230 | 1.5-12.8/6.4 | N | 295 |
| **Delta 36-650** | 600 | 10 | 3 1/8 | 30 | 40 1/2 x 27 | CI | F & R | B | 115/230 | 1.5-12.8/6.4 | N | 234 |
| DeWalt DW746 | 900 | 10 | 3 1/8 | 30 | 27 x 40 3/4 | CI | F & R | B | 120/240 | 1.75-15/7.5 | Y | 254 |
| General 50-175 | 650 | 10 | 3 1/8 | 52 | 27 x 40 1/2 | CI | Front lock | B | 115/230 | 2-18/9 | N | 300 |
| General 50-185 | 650 | 10 | 3 1/8 | 52 | 27 x 40 1/2 | CI | Front lock | B | 115/230 | 2-18/9 | N | 300 |
| **Grizzly G1022SM** | 325 | 10 | 3 1/8 | 24 | 40 5/8 x 27 1/8 | CI | F & R | B | 110/220 | 1.5-16/8 | OPT | 220 |
| Grizzly G1022Z | 425 | 10 | 3 1/8 | 24 | 40 5/8 x 27 1/8 | CI | F & R | B | 110/220 | 1.5-16/8 | OPT | 250 |
| Grizzly G1022PRO | 550 | 10 | 3 1/8 | 25 | 27 1/8 x 40 5/8 | CI | Front lock | B | 110/220 | 2-26/13 | Y | 325 |
| **Grizzly G1022PROZ** | 625 | 10 | 3 1/8 | 25 | 27 1/8 x 40 1/8 | CI | Front lock | B | 110/220 | 2-26/13 | Y | 345 |
| Grizzly G1022ZF | 575 | 10 | 3 1/8 | 25 | 40 5/8 x 27 1/8 | CI | F & R | B | 115/230 | 1.5-18/9 | Y | 290 |
| Grizzly G1022zfx | 625 | 10 | 3 1/8 | 25 | 40 5/8 x 27 1/8 | CI | F & R | B | 110/220 | 2-26/13 | Y | 290 |
| **Jet JWTS-10JF** | 625 | 10 | 3 1/8 | 30 | 40 x 27 | CI/S | Front lock | B | 115/230 | 1.5-18/9 | Y | 279 |
| Jet JWTS-10CW2-JF | 700 | 10 | 3 1/8 | 30 | 40 x 27 | CI | Front lock | B | 115/230 | 1.5-18/9 | Y | 317 |
| Jet JWSS-10PF | 950 | 10 | 3 1/8 | 32 | 41 3/4 x 27 | CI | F & R | B | 115/230 | 1 3/4-6/12 | Y | 320 |
| **Jet JWTS-10CW2-PF** | 925 | 10 | 3 1/8 | 30 | 40 x 27 | CI | Front lock | B | 115/230 | 1.5-18/9 | Y | 375 |
| Jet JWTS-10CW2-PFX | 975 | 10 | 3 1/8 | 52 | 40 x 27 | CI | Front lock | B | 115/230 | 1.5-18/9 | Y | 397 |
| Lobo TS-0010 | 490 | 10 | 3 1/8 | 30 | 40 1/4 x 27 | CI | F & R | B | 115/230 | 1.5-20/10 | OPT | 245 |
| North State TSL-10L | 485 | 10 | 3 1/4 | 30 | 27 x 40 1/2 | CI | Front lock | B | 115/230 | 2/NA | N | 310 |
| **Powermatic 64A** | 750 | 10 | 3 1/8 | 50 | 40 x 27 | CI | Front lock | B | 115/230 | 1.5-18/9 | Y | 400 |
| Ridgid TS2412 | 470 | 10 | 3 3/8 | 24 | 44 x 27 | CI | F & R | B | 120 | 1.5-13 | OPT | 217 |
| Ridgid TS3612 | 600 | 10 | 3 3/8 | 36 | 44 x 27 | CI | F & R | B | 120/240 | 1.5-13/6.5 | OPT | 242 |
| Star WTS10 | 385 | 10 | 3 1/8 | 25 | 40 x 27 | CI | F & R | B | 115 | 1.5-16/8 | Y | 225 |
| Transpower MS10 | 395 | 10 | 3 | 30 | 40 x 27 | CI | F & R | B | 115/230 | 2-24/12 | N | 260 |

# KEY

CI = cast iron; S=steel; B=belt; D=direct drive; F&R= front and rear locking
†Avail. w/ 52" fence system
†Avail.w/basic fence system
††† Available w/Biesemeyer fence system
■=PW Recommends

*continued on page 86*

*continued from page 84*

| BRAND | PRICE | BLADE DIAMETER | MAX CUT DEPTH | MAX RIP | TABLE SIZE | TABLE MATERIAL | DRIVE TYPE | VOLTS | HP-AMPS | DUST PORT | WEIGHT | FENCE TYPE | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CABINET** | | | | | | | | | | | | | |
| Bridgewood BW-10TS | $995 | 10 | 3 1/4 | 50 | 27 x 40 | CI | B | 230 | 3-18 | Y | 409 | Front lock | |
| Bridgewood BW-10LTS | 1,299 | 10 | 3 1/8 | 50 | 77 x 47 | Ci | NA | 230 | NA | Y | 473 | Front lock | L tilt, boxed trunnion |
| Craftsman 22694 | 1,300 | 10 | 3 | 50 | 36 x 27 | CI | B | 230 | 3-17 | Y | 537 | Front lock | |
| Delta 36-R31-U52 | 1,600 | 10 | 3 1/8 | 52 | 76 x 27 | CI | B | 230 | 3-17 | Y | 450 | Front lock | left or right tilt |
| **Delta 36-R31-BC50** | 1,600 | 10 | 3 1/8 | 50 | 76 x 27 | CI | B | 230 | 3-12.4 | Y | 457 | Front lock, | also in left tilt |
| Delta 36-R-31-U30 | 1,500 | 10 | 3 1/8 | 30 | 76 x 27 | CI | B | 230 | 3-17 | Y | 450 | Front lock | |
| General 50-200 MI | 1,000 | 10 | 3 1/8 | 30 | 27 x 40 | CI | B | 115/230 | 2-24/12 | Y | 360 | Front lock | dual voltage |
| **General 50-200L MI** | 1,050 | 10 | 3 1/8 | 52 | 27 x 40 | CI | B | 115/230 | 2-24/12 | Y | 375 | Front lock | dual voltage |
| General 50-250 MI | 950 | 10 | 3 | 50 | 40 1/2 x 27 | CI | B | 220 | 4-12/7 | Y | 409 | Front lock | right tilt |
| General 50-260 MI | 950 | 10 | 3 | 50 | 40 1/2 x 27 | CI | B | 220 | 3-12/7 | Y | 409 | Front lock | left tilt |
| General 350 | 1,900 | 10 | 3 1/8 | 52 | 28 x 36 | CI | B | 220 | 3-18 | Y | 540 | Front lock | right tilt |
| General 650 | 1,900 | 10 | 3 1/8 | 52 | 28 x 36 | CI | B | 220 | 3-18 | Y | 540 | Front lock | left tilt |
| **Grizzly G1023S** | 795 | 10 | 3 1/8 | 25 | 40 1/8 x 27 1/8 | CI | B | 220 | 3-18 | OPT | 360 | Front lock | |
| Grizzly G1023S110 | 795 | 10 | 3 1/8 | 25 | 40 1/8 x 27 1/8 | CI | B | 110 | 2-24 | Y | 360 | Front lock | |
| Grizzly G1023SL | 900 | 10 | 3 | 26 | 40 1/8 x 27 | CI | B | 220 | 3-18 | Y | 430 | Front lock | left tilt |
| Grizzly G1023Z | 995 | 10 | 3 1/8 | 25 | 36 3/4 x 27 | CI | B | 220 | 3-18 | Y | 460 | F & R | |
| Grizzly G1023ZX | 1,095 | 10 | 3 1/8 | 25 | 36 3/4 x 27 | CI | B | 220 | 5-25 | Y | 475 | F & R | |
| Grizzly G1023ZX3 | 1,095 | 10 | 3 1/8 | 25 | 36 3/4 x 27 | CI | B | 220/3ph | 5-15 | Y | 475 | Front lock | |
| Jet JTAS-10X50-1 | 1,700 | 10 | 3 1/8 | 50 | 40 x 27 | CI | B | 230 | 3-17 | Y | 574 | Front lock | |
| **Jet JTAS-10XL50-1** | 1,700 | 10 | 3 1/8 | 50 | 40 x 27 | CI | B | 230 | 3-17 | Y | 594 | Front lock | |
| Jet JTAS-10X50-1D | 1,770 | 10 | 3 1/8 | 50 | 40 x 27 | CI | B | 230 | 3-17 | Y | 578 | F & R | |
| Jet JTAS-10XL50-1D | 1,770 | 10 | 3 1/8 | 50 | 40 x 27 | CI | B | 230 | 3-17 | Y | 598 | F & R | |
| Lobo TS-1010 | 1,290 | 10 | 3 | 49 | 36 x 27 | CI | B | 230 | 3-36/18 | Y | 410 | F & R | |
| Mini Max SC-2 | 2,995 | 10 | 3 | 51 | 22 x 33 | CI | B | 230 | 3-3/5-14 | Y | 616 | NA | |
| North State TSC-10HK | 995 | 10 | 3 1/4 | 50 | 40 1/2 x 27 | CI | B | 230 | 3-16 | Y | 450 | Front lock | left or right tilt |
| **Powermatic 66** | 2,100 | 10 | 3 1/8 | 50 | 38 x 28 | CI | B | 230 | 3-17 | Y | 605 | Front lock | left tilt |
| Powermatic 66-5 | 2,200 | 10 | 3 1/8 | 50 | 38 x 28 | CI | B | 230 | 5-24 | Y | 605 | Front lock | left tilt |
| Robland XZ | 2,695 | 10 | 3 1/4 | 50 | 36 x 48 | CI | B | 230 | 3-25 | Y | 600 | Front lock | |
| Seco SK-1010TS | 1,460 | 10 | 3 | 49 | 36 x 27 | CI | B | 230 | 3-NA | Y | 410 | F & R | |
| Shop Fox W1677 | 1,150 | 10 | 3 | 26 | 40 1/8 x 27 | CI | B | 220 | 3-17 | Y | 500 | Front lock | left tilt |
| Shop Fox W1677Ext1 | 1,400 | 10 | 3 | 54 | 40 1/8 x 27 | CI | B | 220 | 3-17 | Y | 600 | Front lock | left tilt |
| Shop Fox W1677Ext2 | 1,450 | 10 | 3 | 50 | 40 1/8 x 27 | CI | B | 220 | 3-17 | Y | 575 | F&R | left tilt |
| Star S3202 | 1,095 | 10 | 3 | 36 | 36 x 27 | CI | B | 230 | 3-15 | Y | 425 | NA | |
| Star S3204 | 1,295 | 10 | 3 | 36 | 36 x 27 | CI | B | 230 | 5-35 | Y | 425 | NA | |
| Transpower TSC-10HK | 845 | 10 | 3 | 48 | 27 x 40 | CI | B | 220 | 3-NA | Y | 360 | F & R | |
| Transpower MBS-250 | 1,175 | 10 | 3 | 25 | 36 x 27 | CI | B | 220 | 3-18 | Y | 407 | NA | |
| Bridgewood BW-12LTS | 1,700 | 10 | 4 | 50 | 29 x 44 | CI | B | 230 | 3-18 | Y | 460 | Front lock | left tilt |
| Craftsman 22692 | 1,600 | 12 | 4 | 50 | 48 x 30 | CI | B | 230 | 3-15 | Y | 717 | Front lock | |
| General 50-375 | 2,070 | 12 | 4 | 50 | 48 x 30 | CI | B | 230 | 3-12 | Y | 690 | Front lock | |
| Grizzly G5959 | 1,495 | 12 | 4 | 50 | 30 1/4 x 48 | CI | B | 220 | 5-27 | Y | 615 | Front lock | |
| Grizzly G9957 | 1,595 | 12 | 4 | 50 | 30 1/4 x 48 | CI | B | 220/3ph | 7 1/2-27 | Y | 615 | Front lock | |
| Laguna TS | 2,295 | 12 | NA | 48 | NA | CI | B | 220 | NA | Y | NA | NA | |
| Laguna TSS | 3,995 | 12 | NA | 48 | NA | CI | B | 220 | NA | Y | NA | NA | |
| Lobo HTS-0012 | 970 | 10 & 12 | 4 1/8 | 30 | 27 x 37 | CI | B | 230 | 3-36/18 | Y | 330 | F & R | |
| Lobo TS-1212 | 1,890 | 12 | 4 | 49 | 48 x 30 | CI | B | 230 | 5-19.6 | Y | 572 | F & R | |
| Mini Max SC3W | 3,695 | 12 | 4 | 50 | 34 x 23 | CI | B | 230 | 4.8-NA | Y | 649 | F & R | |
| Mini Max SC4W | 4,795 | 12 | 4 | 50 | 34 x 23 | CI | B | 230 | 4.8-NA | Y | 950 | F & R | |
| Mini Max S315WS | 3,695 | 12 | 4 | 50 | 34 x 23 | CI | B | 230 | 4.8-NA | Y | 1,500 | F & R | |
| North State MBS-300 | 1,975 | 12 | 4 | 50 | 30 x 48 | CI | B | 230 | 5-NA | Y | 750 | Front lock | |
| Seco SK-1212TS | 1,840 | 12 | 4 | 78 | 48 x 30 | CI | B | 230 | 5-25 | Y | 570 | F & R | |
| Star WTST10 | 1,650 | 12 | 4 | 36 | 40 x 29 | CI | B | 230 | 5-35 | Y | 600 | NA | |
| Sunhill TAS-12 | 1,895 | 12 | 3 3/4 | NA | 40 x 30 | CI | B | 220 | 3/5-17/14 | Y | 570 | F & R | |
| Sunhill TAS-16 | 3,450 | 12 - 16 | 4 to 6 | NA | 48 x 38 | CI | B | 230 | 7.5-23 | Y | 1,150 | F & R | |
| Transpower MBS-300 | NA | 12 | 4 | 38 | 30 x 48 | CI | NA | 220 | 5-NA | NA | 572 | NA | |
| Transpower TSC-12HK | 970 | 12 | 4 | 30 | 40 x 27 | CI | B | 230 | 3-18 | Y | 410 | Front lock | |
| Grizzly G7209 | 2,195 | 14 | 5 | 50 3/4 | 48 1/2 x 38 | CI | B | 220 | 5-26 | Y | 825 | NA | |
| Grizzly G7210 | 2,395 | 14 | 5 | 50 3/4 | 48 x 38 | CI | B | 220/3ph | 7.5-26 | Y | 825 | Front lock | |

# THICKNESS PLANERS


Few machines are as magical as thickness planers. Put a rough-as-a-cob board in one end and something beautiful comes out the other. With prices on these machines dropping like a rock, they're a must-have machine in the home workshop. But before you start turning that cherry into chips, read this tutorial to ensure you get flat and flawless boards.

### Planer Needs a Partner

One of the biggest mistakes beginners make is that they buy a planer and don't buy a jointer to go with it. By itself, a planer has a difficult time producing a dressed piece of wood that's true. That's because the planer is designed to make a finished surface that's parallel to the surface that runs against the bed of the machine. If the board is bowed on both sides when it goes in, it likely will be bowed when it comes out.

Another complication with planers is that the feed rollers that move the wood under the knives will press most wood flat for planing. Put a board with a cup or a twist through a planer, and the feed rollers will likely press it flat during the cut. But when the board comes out the other side, it will spring back to its original cupped or twisted shape. So you need one flat face on each board.

By first running one face of the board over the jointer (called "face jointing"), you'll remove the cup, bow or twist from one face. Then the planer will take it off the other side.

You can get around owning a jointer by feeding your wood on top of a piece of plywood and shimming the high spots to prevent the feed rollers from pressing the board flat. Do this a few times, and you'll want a jointer.

## SETUP & USE

### Setup is Simple

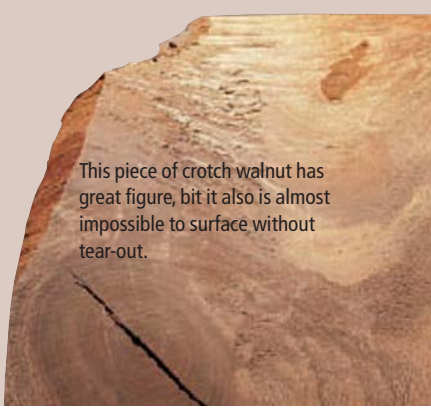
Planers are generally easy to set up, adjust and use. You want to make sure the cutterhead is parallel to the bed. Do this by checking the distance between the two using a dial indicator or even a plain old block of wood. Once you get the head parallel, plane a board and check the thickness

## BEFORE YOU BUY

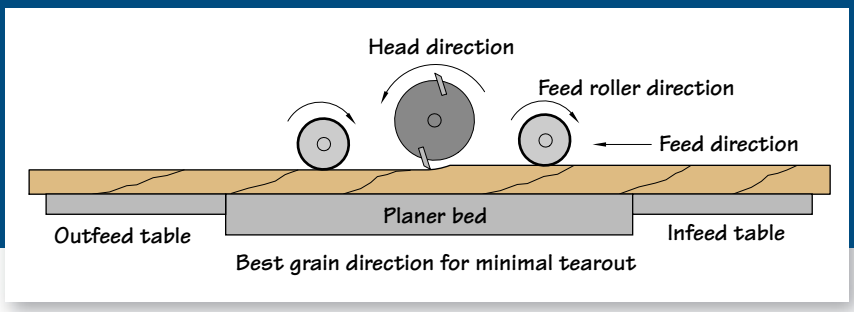
- **BENCHTOP VS. STATIONARY** Most home woodworkers opt for a benchtop planer because they're inexpensive, don't take up a lot of space and produce a finished surface that's equal to most stationary models. Stationary planers excel when it comes to dealing with rough lumber and when you need to plane for hours on end. In the end, buy as much raw power as you can afford.
- **KNIVES** The most annoying maintenance chore on a planer is changing the knives. On many (but not all) portable planers, this operation is a snap. If you buy a portable planer, make sure the knives are easy to change. On stationary machines, changing the knives is as much fun as going to the dentist. We recommend machines that come with springs installed in the cutterhead or at least jackscrews.
- **ROLLERS** On portable planers, the infeed and outfeed rollers are generally rubber, so there's not much choice here. On stationary models, insist on a machine with a serrated steel infeed roller. Adjustable bed rollers will help you move rough stock through the machine more easily.
- **SNIPE** Don't get worked up about snipe. All planers snipe to some degree. (Snipe is when the ends of the board are planed slightly thinner.) And all the models we've tested can be adjusted to produce boards with acceptable snipe.
- **SPEEDS** If you can afford a machine that has two feed speeds, get it. This handy feature slows down the feed rate to get a better finished surface. This means less sanding.

## PLANING FIGURED STOCK

To overcome tear-out in figured wood try this trick. Take a rag that is wet (but not dripping wet) with clean water. Thoroughly wipe the face of the board to be planed, adding more water to the rag as needed. Repeat, then give the water a minute to soak in and soften the wood fibers. I usually wet a board, then run another one while waiting. Each pass will require wetting. I've had excellent results using this technique.



This piece of crotch walnut has great figure, bit it also is almost impossible to surface without tear-out.



Best grain direction for minimal tearout

on the left and right edge with a dial caliper. They should be the same thickness.

With portable planers, there's not much else to do: Adjust the infeed and outfeed tables so they are in the same plane as the bed and you're ready to go.

If you own a stationary machine, you likely will need to adjust the height of the feed rollers, the chip breaker, the bed rollers and the pressure bar. All of these adjustments will be covered in your machine's manual. If you don't get all these elements working together, you'll find your wood stalling under the cutterhead, refusing to go into the planer or tearing out like a woodchuck has been feasting upon it.

One more suggestion before you get started: Buy a dust collector for your planer. Planers are the messiest machines on the planet. And without dust collection, the chips are also likely to get embedded in your work, adding to your sanding chores.

### Tricks to Better Boards

Jointing and planing your wood are the first critical steps in any project. Any problems you have there will multiply as you proceed into the job. Follow these simple procedures and you'll produce flat boards that need little sanding.

After jointing one face, get ready to feed the boards through the planer. You want to take light cuts, usually about 1/16" or less with a portable planer. Be sure to stand to one side of the planer as you feed the boards – never directly in front. Kickbacks are rare, but they do happen.

Feed the boards through the planer with the grain on the edges running downhill. This is commonly known as cutting "with the grain." See the illustration above for details. This will greatly reduce tearout. If a board is tearing out, turn it around and try it the other way.

After a board is planed completely on one side, flip the board to plane the other face after each pass. You want to remove equal amounts of wood from each face of the board. This will keep you from introducing warp into the board as it is planed. You see, there are internal stresses in many pieces of wood (have you ever seen the kerf close on your table saw's blade?). If you remove material from only one side of a board, there's a chance it will bow during planing.

If your stock is long or you are working alone, use a roller stand or some other outfeed table to support the stock as it comes out of the machine. This will reduce snipe (as well as keep your boards from crashing to the ground).

Here are some other tips for special situations:

- Making Legs: If you've got


To help reduce tear-out, wipe the board with a wet rag before planing and allow the water to soak into the fibers.

With any luck, your next pass will result in a board that is virtually free of tear-out.

## PW Recommends

### OCCASIONAL USER

- **Delta TP400LS.** This 12½" portable planer has a good price ($300) and knife-changing is easy.
- **DeWalt DW733.** Rugged and powerful, this 12" planer is an excellent machine ($390).
- **Ridgid TP1300LS.** This well-made machine has many refinements and a lifetime warranty to boot ($400).
- **Craftsman 21743.** The first planer with on-board dust collection. The dust system works, and we're impressed ($440).

### SERIOUS HOME WOODWORKER

- **Delta 22-580.** This new 13" benchtop machine has two feed speeds and a lot of high-end features for $420.
- **Yorkcraft YC-15P.** You'll be hard pressed to find another 15" planer for $700 with all these features, including two speeds, a cabinet base and bed rollers. Shipping is expensive out West.
- **Grizzly G1021Z.** At $995, this deluxe $15 planer has all the features you want: steel rollers, two speeds and lots of power.
- **JET JPM-13 & 13CS.** These 13" induction-motor planers give you many features of floor-model planers and the ability to cut hundreds of moulding profiles ($910 and $980, depending on the stand).

### ADVANCED WOODWORKER OR PROFESSIONAL

- **Grizzly G1033.** Hands down the best deal in the 20" planer market ($1,295). The G1033 has many of the features found on its competitors – except for the price.

*These tools have been tested or used by the editors of **Popular Woodworking** and have earned their recommendation.*

parts that are square (such as table legs), your best bet is to plane them to square instead of ripping them square on the table saw. This will produce the most consistent results.

• Planing Panels: If you are planing down a glued up slab, first remove all the glue that you can. Choose the face that seems flattest and run it face-down. Take light passes until the top face is flat. Then turn the slab over and plane the other side.

• Tricky Boards: Wildly figured woods are tricky to plane without tearout. Here are a couple tricks to reduce your difficulties with problem woods. When you feed the stock through the planer, try feeding it at an angle, effectively creating a shearing cut. Through the power of geometry, this effectively lowers the cutting angle of your planer's knives, producing a cleaner cut.

Another trick is to wet the boards before feeding them through the planer. See the photos on the previous page for more details on this.

• Thin Stock: If you need to plane stock down to ¼" thick or slightly less, you'll need to make a bed board for your planer – essentially an accessory planer bed. Planing thin stock can be tricky. If there's a slight bow, we've seen entire boards disappear into the cutterhead, never to be seen again (until we empty the dust collector, that is). So always make a little extra stock for this operation and make certain it as flat as possible. **PW**


Once both sides of your board have all the rough milling marks removed, you need to flip the board every time it goes through the planer. The object is to remove equal amounts of wood from each side to reduce any warping in the board because of stresses being released in the wood as you plane. To keep the grain direction running the same way, here's how we flip a board: Hold the board in your left hand as if you are going to feed it that way into the planer. With your right hand, slap the front edge of the board downward. Allow the board to twirl in your left hand until the other face is facing up. Feed the board through the planer this way. This method allows you to work fast and reduces the effort needed to flip each board.

## PLANING 8"-WIDE BOARDS WITH A 6" JOINTER

One of the thorniest problems in preparing stock is how to deal with boards that are too wide for your jointer to joint. This trick works with boards that are as wide as 9". A reader showed us this trick and it has become a shop favorite.

First remove the guard from your jointer. Surface as much of one side of the board as you can. Make several passes and go to a depth of less than ¼".

Now get a piece of ¼"-thick plywood that is as long as the board you are preparing to plane and 6" wide. Place the plywood in the notch you just jointed and run the two through the planer together with the plywood running against the bed of the planer. Make several passes until the face has been completely planed.


Now turn the board over and plane the opposite face. After the rough strip has been removed, continue planing normally until you get to your finished thickness.

# STATS

| BRAND/MODEL | PRICE | MAX STOCK (T X W IN.) | MAX CUT DEPTH (IN.) | KNIVES # X RPM | BED MATERIAL | BED ROLLERS | FEED ROLLERS | HP | VOLTS | WEIGHT (LBS.) | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **BENCHTOP** | | | | | | | | | | | |
| Craftsman 21722 | $300 | 4 1/2 x 12 | 3/32 | 2 x 9,400 | S | N | R | 2 1/2 | 115 | 69 | dust collector w/1/2 bag |
| Craftsman 21733 | 600 | 5 x 13 | 3/32 | 3 x 4,500 | CI | N | R | 2 1/2 | 115 | 135 | planer/moulder |
| Delta TP300 | NA | 6 x 12 | 3/16 | 2 x 8,000 | S | N | R | 15 amp | 120 | 62 | |
| Grizzly G1017 | 370 | 6 x 12 | 1/16 | 2 x 8,500 | S | N | R | 2 | 115 | 85 | 4 columns/ w/knife setting jig |
| Makita 2012NB | 500 | 6 x 12 | 1/8 | 2 x 8,500 | S | N | R | 15 amp | 115 | 62 | reversible knives |
| Hitachi P12RA | 1,250 | 6 5/8 x 12 1/4 | 3/32 | 2 x 10,400 | S | N | R | 2 2/5 | 115 | 83.5 | jointer/planer |
| **Delta TP400LS** | 300 | 6 x 12 1/2 | 1/8 | 2 x 8,000 | S | N | R | 15 amp | 120 | 68 | includes leg set |
| **DeWalt DW733** | 390 | 6 x 12 1/2 | 1/8 | 2 x 10,000 | S | N | R | 3 | 115 | 80 | resharpenable knives |
| Grizzly G8794 | 280 | 6 x 12 1/2 | 1/16 | 2 x 8,500 | S | N | R | 2 | 115 | 85 | jackscrews, reversible knives |
| Jet JWP-12DX | 440 | 6 x 12 1/2 | 3/32 | 2 x 8,000 | CI | N | R | 2 | 115 | 69 | depth gauge, hed. lock, double-edged knives |
| Seco SK-0012WP | 410 | 6 x 12 1/2 | 1/8 | 2 x 8,000 | CI | Y | R | 2 | 115 | 67 | |
| Sunhill CT-345 | 425 | 6 x 12 1/2 | 1/8 | 2 x NA | NA | NA | NA | 2 | NA | 67 | |
| **Craftsman 21743** | 440 | 6 x 13 | 3/32 | 2 x 8,000 | S | N | R | 2 1/2 | 115 | 105 | dust collector w/1/2 bag |
| **Delta 22-580** | 420 | 6 1/2 x 13 | 1/16 | 2 x 10,000 | S | N | R | 15 amp | 120 | 97 | two feed speeds |
| **Ridgid TP1300LS** | 400 | 6 x 13 | 1/8 | 2 x 9,500 | S | N | R | 3 | 120 | 82 | stand, chute, ex. knives inc. |
| Ryobi AP1300 | 280 | 6 x 13 | 1/8 | 2 x 8,000 | S | N | R | NA | 115 | 74 | reversible knives |

| BRAND/MODEL | PRICE | MAX STOCK (T X W IN.) | MAX CUT DEPTH (IN.) | KNIVES # X RPM | BED MATERIAL | BED ROLLERS | FEED ROLLERS | HP | VOLTS | WEIGHT (LBS.) | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **FLOOR** | | | | | | | | | | | |
| Williams & Hussey | $1,970 | 8 x 7 | 3/4 | 2 x 3,450 | CI | N | U | 2 | 110/220 | 200 | moulder |
| Shopsmith Pro Planer | 1,100 | 4 x 12 | 1/8 | 3 x 5,750 | CI | N | S, R | 1 3/4 | 115 | 151 | variable speed |
| Belsaw 1120002 | 1,700 | 6 1/4 x 12 3/8 | 3/16 | 3 x 4,500 | CI | N | R | 5 | 220 | 350 | moulder |
| Woodmaster 712 | 1,295 | 6 3/4 x 12 1/2 | 3/16 | 3 x 4,200 | CI | N | R;S OPT | 5 | 230 | 300 | |
| General 30-100 M1 | 1,115 | 6 x 13 | 1/8 | 3 x 4,500 | CI | N | R | 1 1/2 | 230 | 275 | |
| Grizzly G1037 | 795 | 6 x 13 | 1/8 | 3 x 5,000 | CI | N | R | 1 1/2 | 110/220 | 240 | moulder |
| **Jet JPM-13** | 910 | 6 x 13 | 1/16 | 3 x 4,500 | CI | N | R | 1 1/2 | 115/230 | 209 | moulder |
| **Jet JPM-13CS** | 980 | 6 x 13 | 1/16 | 3 x 4,500 | CI | N | R | 1 1/2 | 115/230 | 269 | moulder |
| General 130-1 | 2,795 | 6 x 14 | 1/8 | 3 x 4,500 | CI | Y | S | 3 | 230 | 520 | jackscrews |
| Grizzly G1021 | 795 | 6 1/8 x 14 7/8 | 1/8 | 3 x 5,000 | CI | Y | S | 2 | 220 | 440 | roller extnsns |
| **Grizzly G1021Z** | 995 | 6 1/8 x 14 7/8 | 1/8 | 3 x 5,000 | CI | Y | S | 3 | 220 | 540 | closed stand |
| Jet JWP-15CS | 1,300 | 6 x 15 | 1/8 | 3 x 4,500 | CI | Y | S | 3 | 230 | 502 | closed stand |
| Powermatic 15 | 1,325 | 6 x 14 7/8 | 1/8 | 3 x 4,500 | CI | Y | S | 3 | 230 | 484 | |
| Bridgewood BW-15P | 995 | 6 x 15 | 1/8 | 3 x 4,500 | CI | Y | S | 3 | 220 | 465 | jackscrews, closed stand |
| Craftsman 22615 | 1,250 | 6 x 15 | 1/8 | 3 x 5,000 | CI | Y | S, R | 3 | 230 | 560 | 2 speeds, roller extnsns |
| Lobo WP-0015 | 1,000 | 6 x 15 | 3/16 | 3 x 4,500 | CI | Y | S, R | 3 | 230 | 480 | 2 speeds |
| Seco SK-0015WP | 1,135 | 6 x 15 | 1/8 | 3 x 4,500 | CI | Y | R | 3 | 230 | 480 | |
| Star WPL15 | 925 | 6 x 15 | 1/8 | 3 x 5,000 | CI | Y | S | 3 | 220 | 480 | |
| Sunhill CT-38B | 925 | 6 x 15 | 1/4 | 3 x 5,000 | CI | Y | S | 3 | 220 | 500 | |
| Sunhill CT-345 | 1,395 | 6 x 15 | 1/4 | 3 x 5,000 | NA | NA | NA | 3 | NA | 500 | |
| Transpower AP900 | 850 | 6 x 15 | 1/4 | 3 x 5,600 | CI | Y | S | 3 | 220 | 485 | |
| Woodtek 875-001 | 1,000 | 6 x 15 | 1/8 | 3 x 3,450 | CI | Y | S | 2 | 230 | 470 | knife tool inc. |
| **Yorkcraft YC-15P** | 700 | 6 x 15 | 1/8 | 3 x 5,000 | CI | Y | S, R | 3 | 230 | 427 | jackscrews |
| Delta 22-680 | 1,545 | 6 1/2 x 15 | 1/8 | 3 x 5,000 | CI | Y | S | 3 | 230 | 340 | jackscrews |
| North State 315 | 890 | 6 1/2 x 15 | 3/16 | 3 x 5,000 | CI | Y | S | 3 | 230 | 500 | 2 speeds |
| General 30-125 MI | 1,350 | 7 x 15 | 1/8 | 3 x 5,000 | CI | Y | S | 3 | 230 | 539 | |
| Sunhill CT-400D | 2,500 | 6 x 16 | 1/4 | 3 x 5,000 | CI | N | S, R | 3 | 220 | 700 | |
| Transpower AP800 | 750 | 8 x 16 | 1/4 | 3 x 5,600 | CI | Y | S, R | 3 | 220 | 485 | |
| RBI 816 | 2,000 | 8 x 16 1/4 | 5/16 | 4 x 4,600 | S | N | U | 5 | 230 | 440 | |
| Powermatic 180 | 8,400 | 6 x 18 | 1/4 | 3 x 4,800 | CI | Y | S | 5 | 230/460 | 1,523 | quick change cttrhed, var. feed rate |

## KEY

R=rubber, CI= cast iron, S=steel, U=urethane, OPT=optional, FPM=feet per minute
■ = PW Recommends

## STATS

| BRAND/MODEL | PRICE | MAX STOCK (T X W IN.) | MAX CUT DEPTH (IN.) | KNIVES # X RPM | BED MATERIAL | BED ROLLERS | FEED ROLLERS | HP | VOLTS | WEIGHT (LBS.) | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Woodmaster 718 | 1,470 | 6 3/4 x 18 1/2 | 3/16 | 3 x 4,200 | CI | N | R; S OPT | 5 | 220 | 480 | |
| Seco SK-820WP | 3,520 | 6 x 20 | 3/8 | 3 x 5,400 | CI | N | S | 5 | 220 | 1,300 | |
| Bridgewood BW-200P | 2,495 | 6 1/2 x 20 | 1/4 | 3 x 5,000 | CI | Y | S | 5 | 230 | 780 | jackscrews, USA motor |
| Seco SK-720-WP | 2,680 | 6 1/2 x 20 | 1/4 | 3 x 5,200 | CI | N | S | 5 | 220 | 770 | |
| Lobo WP-2000 | 3,490 | 7 x 20 | 1/4 | 3 x 5,500 | CI | Y | S, R | 3 | 230 | 850 | |
| Woodtek 816-427 | 2,480 | 7 x 20 | 3/16 | 3 x 5,000 | CI | Y | S | 3 | 230 | 981 | |
| Woodtek 816-434 | 2,480 | 7 x 20 | 3/16 | 3 x 6,000 | CI | Y | S | 5 | 230 | 981 | 3 phase |
| Grizzly G5850Z | 2,495 | 7 3/4 x 20 | 1/8 | 4 x 5,200 | CI | Y | S | 5 | 220 | 900 | 17-26 ft. per min. |
| Lobo WP-1120 | 2,490 | 7 7/8 x 20 | 1/4 | 3 x 5,000 | CI | Y | S, R | 3 | 230 | 770 | |
| Bridgewood BW-120P | 3,795 | 8 x 20 | 1/4 | 3 x 5,200 | CI | Y | S, U | 5 or 7 1/2 | 220 | 1,320 | jackscrews, spiral cttrhed |
| Craftsman 22622 | 2,050 | 8 x 20 | 1/8 | 4 x 5,000 | CI | Y | S | 3 | 230 | 792 | 2 speeds, extns rollers |
| General 30-300 MI | 1,900 | 8 x 20 | 3/32 | 3 x 5,000 | CI | Y | S | 3 | 230 | 880 | |
| General 330 | 10,000 | 8 x 20 | 1/8 | 4 x 4,000 | CI | Y | S | 5 | 230 | 2,100 | |
| Lobo WP-0020 | 1,590 | 8 x 20 | 1/4 | 4 x 5,000 | CI | Y | S, R | 3 | 230 | 770 | |
| North State CT-508 | 1,395 | 8 x 20 | 1/4 | 4 x 5,000 | CI | Y | S | 5 | 230 | 950 | |
| Powermatic 208 | 2,860 | 8 x 20 | 3/32 | 4 x 5,000 | CI | Y | S | 3 | 230 | 640 | opt. 5 hp, 3ph |
| Seco SK-0020WP | 1,740 | 8 x 20 | 1/4 | 4 x 5,000 | CI | Y | R | 3 | 230 | 771 | |
| Star WPL20 | 1,295 | 8 x 20 | 1/8 | 4 x 5,000 | CI | Y | S | 3 | 220 | 780 | |
| Sunhill CT-508 | 1,395 | 8 x 20 | 1/4 | 4 x 5,000 | CI | Y | S | 3 | 220 | 925 | |
| Sunhill P-20 | 3,180 | 8 x 20 | 1/4 | 3 x NA | NA | NA | NA | 5 | 220 | 1,150 | |
| Transpower AP200A | 1,275 | 8 x 20 | 1/4 | 4 x 5,600 | CI | Y | S, R | 3 | 220 | 860 | |
| Transpower AP720 | 2,100 | 8 x 20 | 1/4 | 3 x 5,200 | CI | Y | S | 7 1/2 | 230 | 891 | |
| Woodtek 924-083 | 1,600 | 8 x 20 | 1/8 | 4 x 5,000 | CI | Y | S | 3 | 220 | 771 | 5" dust port |
| **Grizzly G1033** | 1,295 | 8 5/8 x 20 | 1/8 | 4 x 4,833 | CI | Y | S | 3 | 220 | 785 | 2 speeds/16 & 20 FPM |
| Delta 22-450 | 3,760 | 8 5/8 x 20 | 3/16 | 3 x 5,000 | CI | Y | S | 5 | 220/440 | 840 | controls in fro |
| Grizzly G9740 | 4,750 | 9 x 20 | 5/16 | 4 x 5,000 | CI | Y | S | 7 1/2 | 220 | 1,700 | 3 phase |
| Grizzly G9967 | 4,850 | 9 x 20 | 5/16 | 4 x 5,000 | CI | Y | S | 5 | 220 | 1,678 | 1 phase, opt spiral cttrhed |
| Sunhill P-508V | 4,695 | 11 x 20 | 1/4 | 4 x NA | NA | NA | NA | 7 1/2 | 220 | 1,800 | |
| Lobo WP-508 | 5,790 | 11 3/4 x 20 | 5/16 | 4 x 4,800 | CI | Y | S | 7 1/2 | 230 | 1,580 | |
| Laguna P20 | 10,995 | 12 x 20 | 5/16 | 4 x 4,500 | CI | Y | S | 9 | 230 | 2,100 | |
| RBI 820 | 2,400 | 8 x 20 1/4 | 5/16 | 4 x 4,600 | S | N | U | 5 | 230 | 500 | |
| Mini Max SP-1 | 6,995 | 9 3/4 x 20 1/2 | 5/16 | 4 x 4,500 | CI | Y | S | 4.8/9 | 230/460 | 1,496 | single or 3ph option |
| Powermatic 201 | 4,135 | 9 1/2 x 22 | 3/16 | 4 x 4,800 | CI | Y | S | 7 1/2 | 230 | 1,350 | 3ph, 2 sp., adj. rollers |
| Seco SK-824WP | 4,495 | 6 x 24 | 3/8 | 3 x 5,400 | CI | N | S | 7 1/2 | 220 | 1,390 | |
| Bridgewood BW-240P | 3,595 | 6 1/2 x 24 | 1/4 | 3 x 5,000 | CI | Y | S | 5 or 7 1/2 | 220 | 880 | jackscrews |
| Seco SK-724WP | 3,280 | 6 1/2 x 24 | 1/4 | 3 x 5,200 | CI | N | S | 7 1/2 | 220 | 990 | |
| North State WJ-24 | 2,900 | 7 x 24 | 1/4 | 3 x 5,300 | CI | Y | S | 7 1/2 | 230 | 1,450 | variable speed |
| Star WPL 24 | NA | 7 x 24 | 3/8 | 3 x 5,400 | CI | NA | NA | 7 1/2 | 230 | NA | |
| Bridgewood BW-124P | 4,495 | 8 x 24 | 1/4 | 4 x 5,200 | CI | Y | S, U | 10 | 220 | 1,496 | jackscrews, spiral cttrhed |
| General 30-460 | 7,000 | 8 x 24 | 5/16 | 3 x 5,000 | CI | Y | S | 10 | 220 | 1,015 | |
| Transpower AP724 | NA | 8 x 24 | 1/4 | 3 x 5,200 | NA | NA | NA | 5 | NA | 990 | |
| Grizzly G5851Z | 3,295 | 8 1/4 x 24 | 1/8 | 4 x 5,200 | CI | Y | S | 5 | 220 | 1,030 | 17-26 variable feed |
| Grizzly G7213Z | 3,295 | 8 1/4 x 24 | 1/8 | 4 x 5,200 | CI | Y | S | 7 1/2 | 230 | 1,030 | 3 phase |
| Delta 22-470 | 4,300 | 8 5/8 x 24 | 1/4 | 3 x 5,000 | CI | Y | S | 7 1/2 | 230/460 | 980 | 2 speeds |
| Grizzly G9741 | 5,550 | 9 x 24 | 5/16 | 4 x 5,000 | CI | Y | S | 10 | 220 | 1,950 | 3 phase |
| Grizzly G9961 | 6,995 | 9 x 24 | 5/16 | variable speed | CI | Y | S | 10 | 220 | 1,950 | spiral cttrhed |
| Delta 22-610 | 9,700 | 9 3/8 x 24 | 10 mm | 4 x 5,000 | CI | Y | S | 10 | 220 | 1,675 | 3ph available |
| Laguna P24 | 14,995 | 12 x 24 | 5/16 | 4 x 4,500 | CI | Y | S | 12 | 230 | 2,000 | |
| Woodmaster 725 | 2,395 | 6 3/4 x 25 | 3/16 | 3 x 4,200 | CI | N | S | 7 1/2 | 220 | 808 | |
| Sunhill P-630 | 7,500 | 11 x 25 | 1/4 | 4 x NA | NA | NA | NA | 10 | 220 | 2,025 | |

# ROUTERS


A router is a very cool tool and is probably my favorite in the woodshop. You can do so many things with it: make grooves, dados, rabbets, cut hinge mortises, make tenons, large and small edge profiles, raised-panel doors, cut circles…. The list goes on and on. And router technology keeps improving.

## SETUP & USE

### Router Satisfaction

Using a router is probably one of the more satisfying machining processes in woodworking. When you make the cut, whether a groove or profile, you've completed the task (except for all the sanding). Routers seem to bring the finesse and finish to a piece. Another satisfying feature is that by simply changing bits, it becomes a multi-function tool.

### Setup

Setup on a router is simple. They're almost ready to use out of the box. But you should take a few minutes to familiarize yourself with all the features. Adjust the height up and down. Fiddle with the fine-height adjustment (if the tool has it) and put a bit in the collet. If it's an option, change the collets to get familiar with the tool.

Some routers have a self-releasing collet that is a benefit, but you might think something is wrong if you're not familiar with it. The self-releasing feature keeps bits from being jammed in the collet after use. When you release the nut on the collet it will spin freely at first. But as you continue to loosen the nut it will again offer resistance. When you pass this point, the bit will release.

Once you've secured a bit in the router, you need to adjust the bit height. This can be a trial-and-error process, but it doesn't have to require a scrap piece. If you set the depth to be obviously less than the full cut, you can slowly creep the bit out, making short passes on your piece until the depth is just right.

### Ready to Cut

With everything set, it's time to make some dust. But first you need to decide which direction you're going to rout. Because of the direction of the spinning bit (it's clockwise when hand-held; counterclockwise when mounted in a router table) the router has to be moved through the cut in a certain direction to keep the tool from running out of your hands. Essentially, you want the feed direction to pull the tooling against the wood during the cut.

Here's how: When using a router in a hand-held manner on the outside edge of a panel, you should move around the wood in a counterclockwise direction. When routing the inside edge of a piece (such as the inside edge of a door), the direction is reversed. The pictures at right explain this a little better, but even after years of woodworking, I have to stop and think about which way I'm headed before routing.

But now that I've told you to run the router the right direction, I'm going to tell you about the benefit of running it the wrong direction sometimes. It's a process called "climb-cutting."

When climb-cutting, you're changing the angle of rake on the bit to the wood – making the bit scrape instead of cut. This if beneficial when routing highly figured wood or woods prone to splinter and tearout. But climb-cutting should be done carefully and with very light passes. In fact, the best method is to remove most of the material by routing in the proper direction, then make a final finishing pass with a climb cut. Also, be aware that when climb-cutting, the bit is rotating in the direction you are moving the router, so keep a firm grip to prevent the router from running away from you.

### Making the Cut

Before you make your cut, take a look at the bit you're using and

## BEFORE YOU BUY

- **FIXED BASE** Available in two general sizes (6.5 and 15 amps) the height of the bit is adjusted by sliding or twisting the motor in the housing, then locking it in place for the cut. Useful for freehand and router table use.
- **PLUNGE BASE** Also available in two general sizes, the height of the bit is adjusted by sliding the motor up or down on spring-loaded posts, setting the depth, then locking the motor in place. Plunge routers excel at precision depth routing, making stopped cuts, such as mortises and stopped grooves. They can be used in router tables or freehand.
- **TRIM ROUTER** These smaller (4 to 6 amp) routers offer great maneuverability and comfort in your hand for many small profile and detail routing tasks. They're limited to ¼" shank bits, but they offer multiple bases for specialty applications.
- **MULTI-BASE KITS** Four major manufacturers offer router motors sold with interchangeable plunge and fixed bases. These kits can be a great bargain as a first or third router.
- **VARIABLE SPEED** Variable speed allows you to optimize the cutting performance of larger bits by slowing down the speed. As a side benefit, most variable-speed routers offer soft start, which keeps the router from jerking to full speed at startup. Also, look for electronic feedback on these models, which maintains torque under load, again improving performance.
- **DEPTH CONTROLS** Take a few minutes to investigate the variety of depth controls on routers. All are different, and some are significantly easier to use than others.
- **DUST COLLECTION** Many routers do not offer integral or easily attached dust collection. While some systems are very effective, most are better than nothing.

decide whether you're taking too big a cut in one pass. While most small profiles can be cut in one pass, large roundovers and many cove cuts, grooves, rabbets or dados would be better made in one or two passes with increasing depths. As a rule, cutting any more than ¼" is better done in multiple passes.

OK, the router is set correctly and you know which way you're going. To be safe, set the router in place on the wood before turning it on. Also, make sure that the bit isn't resting against the wood. Otherwise, when you turn the motor on, the bit can kick the router away from the work.

If you're routing a smaller piece, it should be clamped to a bench to keep it from moving during routing. With the router running, slowly move the router bit into the cut, then begin moving the router along the piece.

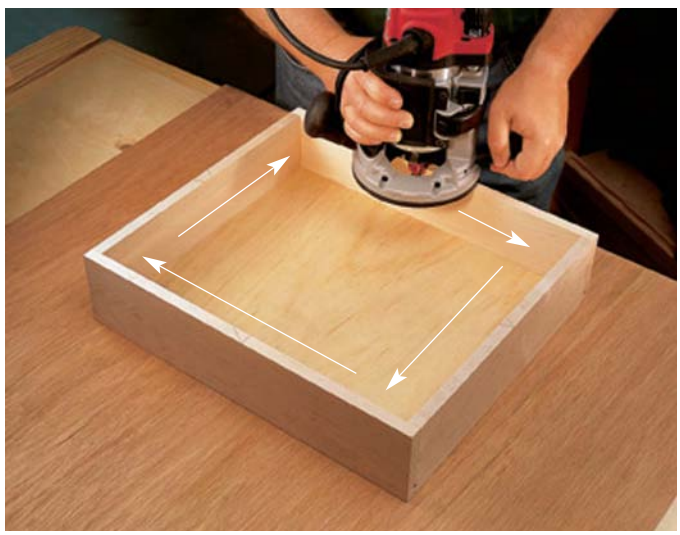
Two important comments here: Starting at the edge of a piece takes some practice. Knowing where the corner is without getting a face full of shavings is a learned skill, so the first few times you should start in from the corner and slowly climb-cut to the corner. Also, how fast you move the router is important. Move too fast and the cut will be poor, with chatter and ripple marks. A second pass usually fixes the problem. If you move too slowly, the bit can burn the wood's edge, and then you're in for a lot of sanding. About three-seconds-a-foot is a safe speed. Gauge your speed by the sound of the motor. When the sound shifts from a high-pitched wine to a lower one as the bit goes into the cut, you've found the right speed.

Always wear eye and ear protection when using a router, and a dust mask is a good idea, too (especially if your router isn't hooked to a shop vacuum).

If you want more instruction on using routers, we recommend you check out Patrick Spielman's "The New Router Handbook, (Sterling Publications).

We've also included an article on page 14 with a simple system of shop-made jigs that will add lots of benefits to your router, including cutting circles, grooves and dados. **PW**

For most routing operation, counterclockwise is the correct direction. As shown here, that is with the bit on the outside of the box, following the arrows around the box. If this were a solid door or panel, instead of a drawer, the motion would still be the same - counterclockwise.



For an interior cut, whether on a drawer edge, or on the inside of a door frame, the router direction is reversed to clockwise. The operation we're showing here is a good challenge of router control. It requires carefully balancing the router base on the edge. If not for illustrating router direction, it would probably be easier to make this cut with the router in a router table.

# PW *Recommends*

## OCCASIONAL USER

- **Two-base Kits.** Four manufacturers now offer kits with a plunge and fixed base. These are great versatile first (or next) routers.
- **Bosch 1617EVSPK** $240
- **DeWalt DW618PK** $250
- **Makita RF1101KIT** $290
- **Porter-Cable 693VSPK** $250

## SERIOUS HOME WOODWORKER

- **Milwaukee 5615-20.** For $145, this fixed-base, single-speed router offers good power, good ergonomics and easy router-table operation.
- **Makita RD1101.** This 11-amp, variable-speed D-handled router offers quiet, powerful performance and easy height adjustment ($230).
- **DeWalt DW621**. This is still our shop-favorite plunge router. For $200 it offers excellent dust collection and very good depth controls.

## ADVANCED WOODWORKER OR PROFESSIONAL

If you're looking for a beefy plunge router to use in a router table, or heavy-use situations, one of the following three will fit the bill nicely.

- **Hitachi M12V.** At $200, this large plunge is very popular in shops.
- **Fein RT1800.** Priced higher than the Hitachi ($290), but it's got a lot of power and it's built to last.
- **Porter-Cable 7539.** Used in cabinet shops for decades, this monster plunge is a deal at $370.

If you've got all the routers you'll ever need, or have a special application, trim routers fill a luxury niche.

- **Bosch 1609 AKX.** At $250, in our opinion this router is the best of the trim router kits, with four bases to offer lots of options.

*These tools have been tested or used by the editors of **Popular Woodworking** and have earned their recommendation.*

## STATS

| BRAND & MODEL | STREET PRICE | AMPS | SPEEDS (RPM) | SPINDLE LOCK | DEPTH ADJ. (IN) | DECIBEL RATING | WEIGHT (LB) | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| **TRIM ROUTERS** | | | | | | | | |
| Bosch1608 | $105 | 5.6 | 30,000 | N | 1/2 | 70 | 3.5 | Four bases available |
| Bosch1608K | 130 | 5.6 | 30,000 | N | 1/2 | 70 | 3.5 | Std. base, dlxe. guide |
| **Bosch1609 AKX** | 250 | 5.6 | 30,000 | N | 1/2 | 70 | 3.5 | Installers kit, w/4 bases |
| Craftsman 27512 | 100 | 3.8 | 23,000 | Y | 1 1/4 | 68 | 3 | |
| DeWalt DW670 | 100 | 5.6 | 30,000 | Y | 7/8 | 70 | 3.7 | 4 bases available |
| DeWalt DW673K | 180 | 5.6 | 30,000 | Y | 7/8 | 70 | 3.7 | w/4 bases |
| Freud FT1000ET | 150 | 7.5 | 20-30K | N | 1 | 83 | 4.4 | w/3 bases, soft start |
| Freud FT1000EK | 160 | 7.5 | 20-30K | Y | 2 1/4 | 83 | 6.9 | w/3 bases, soft start |
| Hitachi TR6 | 110 | 4 | 30,000 | N | 1 1/16 | 68 | 3.4 | Beveling base |
| Makita 3700B | 135 | 3.3 | 28,000 | N | 1 5/8 | 68 | 3.4 | |
| Makita 3707FC | NA | 4.8 | 26,000 | N | 1 3/8 | NA | 2.6 | w/ light |
| Makita 3708FC | NA | 4.8 | 26,000 | N | 1 3/8 | NA | 2.9 | bevel base, w/ light |
| Porter-Cable 309 | 125 | 3.8 | 28,000 | N | 1 | 70 | 3.3 | |
| Porter-Cable 310 | 170 | 4 | 27,500 | N | 7/8 | 70 | 3.4 | |
| Porter-Cable 7310 | 115 | 5.6 | 30,000 | Y | 1 | 72 | 3.4 | Three bases available |
| Porter-Cable 7312 | 160 | 5.6 | 30,000 | Y | 1 | 72 | 4.25 | offset trimmer |
| Ryobi TR31 | 80 | 3.8 | 23,000 | N | 1 1/8 | 68 | 3 | w/ 2 bases |

| BRAND & MODEL | STREET PRICE | AMPS | SPEEDS (RPM/K) | COLLET SIZES (IN) | TRIGGER LOCATION | DEPTH ADJ. (IN) | DECIBEL RATING | WEIGHT (LB) | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|
| **FIXED ROUTERS** | | | | | | | | | |
| Bosch 1617 | $170 | 11 | 25 | 1/4, 3/8, 1/2 | B | 1 7/8 | 95 | 7.5 | BNT '98 |
| Bosch 1618 | 185 | 11 | 25 | 1/4, 3/8, 1/2 | H | 1 7/8 | 95 | 8 | D-handle, BNT '98 |
| Bosch 1617EVS | 190 | 12 | 8-25 | 1/4, 3/8, 1/2 | B | 1 7/8 | 95 | 7.7 | Soft start, BNT '98 |
| Bosch 1617EVSK | 200 | 12 | 8-25 | 1/4, 3/8, 1/2 | B | 1 7/8 | 95 | 7.7 | w/ case |
| Bosch 1618EVS | 210 | 12 | 8-25 | 1/4, 3/8, 1/2 | H | 1 7/8 | 95 | 8.2 | D-handle, soft start, BNT '98 |
| Craftsman 17574 | 60 | 8 | 25 | 1/4 | H | 1 1/2 | 98 | 7.5 | Light, spindle lock, w/case, bit |
| Craftsman 17505 | 80 | 8.5 | 15-25 | 1/4 | H | 1 1/2 | NA | 8.1 | Light, spindle lock |
| Craftsman 17506 | 100 | 9 | 15-25 | 1/4 | H | 1 1/2 | 98 | 8.6 | Light, spindle lock |
| Craftsman 27500 | 130 | 9 | 25 | 1/4, 1/2 | H | 1 1/2 | NA | 9.3 | Spindle lock |
| DeWalt DW616 | 160 | 11 | 24.5 | 1/4, 1/2 | B | 1 5/8 | NA | 7.1 | Detachable cord |
| DeWalt DW616D | 180 | 11 | 24.5 | 1/4, 1/2 | B/H | 1 1/2 | NA | 7.1 | Detachable cord, D-handle |
| DeWalt DW618 | 190 | 12 | 8-24 | 1/4, 1/2 | B | 1 5/8 | NA | 7.21 | Soft start, detachable cord |
| DeWalt DW618D | 210 | 12 | 8-24 | 1/4, 1/2 | B/H | 1 1/2 | NA | 7.21 | Soft start, detachable cord, D-handle |
| Makita 3606 | 115 | 7 | 30 | 1/4 | B | 3 | 81 | 5.5 | |
| Makita RD1100 | 210 | 11 | 24 | 1/4, 1/2 | H | 2 3/8 | 81 | 7.9 | D-handle; performance: 5 stars |
| Makita RF1100 | 190 | 11 | 24 | 1/4, 1/2 | B | 2 3/8 | 81 | 7.1 | Performance: 5 stars |
| **Makita RD1101** | 230 | 11 | 8-24 | 1/4, 1/2 | H | 2 3/8 | 81 | 7.9 | D-handle, soft start |
| Makita RF1101 | 210 | 11 | 8-24 | 1/4, 1/2 | B | 2 3/8 | 81 | 7.1 | Performance: 5 stars |
| Milwaukee 5660 | 200 | 10 | 24.5 | 1/4, 1/2 | B | 2 1/4 | 100 | 8.5 | Depth-adj. ring |
| **Milwaukee 5615-20** | 145 | 11 | 24 | 1/4, 1/2 | B | 1 21/32 | 87 | 8.2 | Built-in table height adj. |
| Milwaukee 5619-20 | 150 | 11 | 24 | 1/4, 1/2 | B | 1 21/32 | 87 | 8.2 | As above, with D-handle |
| Milwaukee 5680 | 250 | 12 | 26 | 1/2 | B | 2 1/4 | 104 | 8.8 | |
| Milwaukee 5682 | 240 | 12 | 26 | 1/4, 1/2 | B | 2 1/4 | NA | 8.8 | |
| Porter-Cable 100 | 160 | 6.5 | 22 | 1/4 | B | 1 1/2 | NA | 6.8 | |
| Porter-Cable 690 | 150 | 10 | 23 | 1/4, 3/8, 1/2 | B | 1 1/2 | 103 | 8 | Optional bases avail. |
| Porter-Cable 690LR | 160 | 10 | 23 | 1/4, 3/8, 1/2 | B | 1 1/2 | 103 | 8 | As above, with latch rls. |
| Porter-Cable 690LRVS | 180 | 10 | 10-24 | 1/4, 3/8, 1/2 | B | 1 1/2 | 103 | 8 | Latch release, variable spd. |
| Porter-Cable 691 | 190 | 10 | 23 | 1/4, 3/8, 1/2 | H | 1 1/2 | 103 | 9.3 | D-handle |
| Porter-Cable 7518 | 365 | 15 | 10-21 | 1/4, 3/8, 1/2 | B | 2 1/2 | NA | 14.5 | Soft start |
| Porter-Cable 7519 | 335 | 15 | 21 | 1/4, 3/8, 1/2 | B | 2 1/2 | NA | 15 | Soft start |
| Porter-Cable 9290 | 300 | 19.2v | 23 | 1/4, 1/2 | B | 1 1/2 | NA | 7.8 | Cordless, opt. bases avail. |
| Ryobi R161K | 60 | 8 | 25 | 1/4 | H | 1 1/2 | NA | 7.5 | For BT3000 table saw |

## KEY

Y=yes, N=no, B=base, H=handle, NA=not available, ■ = PW Recommends

*continued on page 102*

*continued from page 100*

# STATS

| ND & MODEL | STREET PRICE | AMPS | SPEEDS (RPM/K) | COLLET SIZES (IN) | TRIGGER LOCATION | DEPTH ADJ. (IN) | DECIBEL RATING | WEIGHT (LB) | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|
| **PLUNGE ROUTERS** | | | | | | | | | |
| Black & Decker RP200 | $75 | 9.5 | 25 | 1/4 | H | 2 | NA | NA | Soft start |
| Black & Decker RP400K | 105 | 10 | 0-25 | 1/4 | H | 2 | NA | NA | Soft start, dust collection |
| Bosch 1613AEVS | 210 | 12 | 11-22 | 1/4, 1/2, 3/8 | H | 2 1/4 | 97 | 9.7 | Soft start, precis. centering |
| Bosch 1613AEVSK | 220 | 12 | 11-22 | 1/4, 1/2, 3/8 | H | 2 1/4 | 97 | 9.7 | w/ case |
| Bosch 1619EVS | 320 | 15 | 8 -21 | 1/4, 1/2, 3/8 | H | 2 9/16 | 99 | 13.2 | Soft start, electronic feedback |
| Craftsman 17509 | 100 | 9 | 15-25 | 1/4 | H | 2 | NA | 7 | Spindle lock |
| Craftsman 26835 | 250 | 15 | 10-22 | 1/4, 1/2 | H | 2 1/2 | NA | 13 | Soft start |
| **DeWalt DW621** | 200 | 10 | 8-24 | 1/4, 1/2 | H | 2 1/8 | 99 | 10 | Dust collection, Endurance Tested |
| DeWalt DW625 | 260 | 15 | 8-22 | 1/4, 1/2 | H | 2 7/16 | NA | 11.3 | Soft start, electronic feedback |
| **Fein RT1800** | 290 | 15 | 8-22 | 1/2 | H | 3 | 100 | 12 | Soft start, 1/4" collet opt. |
| Festool OF1000E | 295 | 7.5 | 10-20 | 1/4 | H | 2 3/16 | 78 | 6 | Soft start |
| Freud FT2000E | 190 | 15 | 8-22 | 1/4, 1/2 | B | 2 3/4 | NA | 12.9 | Soft start |
| Hitachi M8V | 185 | 7.3 | 10-25 | 1/4 | B | 1 7/8 | NA | 6.4 | Soft start |
| Hitachi TR12 | 235 | 12.2 | 22 | 1/4, 3/8, 1/2 | B | 2 7/16 | 104 | 11 | Template guide includ. |
| **Hitachi M12V** | 200 | 15 | 8-20 | 1/4, 3/8, 1/2 | B | 2 7/16 | NA | 11.7 | Soft start, template guide includ. |
| Makita 3621 | 130 | 7.8 | 24 | 1/4 | B | 1 3/8 | 81 | 5.3 | |
| Makita 3612 | 230 | 15 | 22 | 1/4, 1/2 | B | 2 3/8 | 102 | 13.2 | Spindle lock |
| Makita 3612 C | 280 | 15 | 9-23 | 1/4, 1/2 | B | 2 3/8 | 102 | 13.2 | Spindle lock, electric brake |
| Makita RP1101 | 240 | 11 | 8-24 | 1/4, 1/2 | B | 2 19/32 | 81 | 9.3 | Soft start, speed control |
| Porter-Cable 8529 | 220 | 12 | 10-23 | 1/4, 1/2 | B | 2 1/2 | NA | 11 | above-the-table bit adjustment knob avl. |
| Porter-Cable 7538 | 340 | 15 | 21 | 1/4, 3/8, 1/2 | H | 3 | NA | 17.3 | Soft start |
| **Porter-Cable 7539** | 370 | 15 | 10-21 | 1/4, 3/8, 1/2 | H | 3 | NA | 17.3 | Soft start, 5 speeds |
| Ryobi RE175 | 100 | 9 | 15-25 | 1/4 | H | 2 | 106 | 9.4 | Spindle lock |
| Ryobi RE180PL | 100 | 10 | 15-23 | 1/2, 1/4 | B | 2 | NA | 8.4 | |
| Skil 1823 | 60 | 8.5 | 25 | 1/4 | H | 2 | 100 | 7 | |
| Skil 1840 | 85 | 9 | 25 | 1/4 | H | 2 | 97 | 7 | |
| Skil 1845-02 | 120 | 10 | 8-25 | 1/4 | H | 2 | 97 | 7.3 | Soft start, fine adjustment |
| Skil 1845-44 | 120 | 10 | 8-20 | 1/4 | H | 2 | 97 | 7.3 | Soft start, fine adjustment |
| Triton TRC001 | 330 | 15 | 8-21 | 1/4, 1/2 | H&B | 2 21/32 | NA | 13.5 | Through-base collet access |

| BRAND & MODEL | STREET PRICE | AMPS | SPEEDS (RPM/K) | COLLET SIZES (IN) | TRIGGER LOCATION | DEPTH ADJ. (IN) | DECIBEL RATING | WEIGHT (LB) | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|
| **PLUNGE/FIXED BASE ROUTER KITS** | | | | | | | | | |
| Bosch 1617PK | $225 | 11 | 25 | 1/4, 1/2, 3/8 | B | 2 | 95 | 9 | precise cntring/quick clamp system |
| **Bosch 1617EVSPK** | 240 | 12 | 8-25 | 1/4, 1/2, 3/8 | B | 2 | 95 | 9 | Soft start, variable speed |
| DeWalt DW616PK | 200 | 11 | 24.5 | 1/4, 1/2 | B | 2 1/4 | NA | 7.1 | Detachable cord |
| **DeWalt DW618PK** | 250 | 12 | 8-24 | 1/4, 1/2 | B | 2 1/4 | NA | 7.2 | Detachable cord |
| **Makita RF1101KIT** | 290 | 11 | 8-24 | 1/4, 1/2 | B | 2 19/32 | 81 | 9.3 | dust collection, edge guide |
| Porter-Cable 693 PK | 185 | 10 | 23 | 1/4, 3/8, 1/2 | B | 2 1/2 | 103 | 11.5 | |
| Porter-Cable 9690 VSK | 190 | 10 | 10-24 | 1/4, 3/8, 1/2 | B | 2 1/2 | 103 | 9 | case, edge guide |
| Porter-Cable 693LR PK | 200 | 10 | 23 | 1/4, 3/8, 1/2 | B | 2 1/2 | 103 | 11.5 | Latch release |
| **Porter-Cable 693VS PK** | 250 | 10 | 10-24 | 1/4, 3/8, 1/2 | B | 2 1/2 | 103 | 11.5 | Variable speed |

# SOURCE GUIDE

How to contact tool manufacturers.

**Ashley Isles**
**Jesada Tools**
800-531-5559
www.jesada.com

**Belsaw**
800-468-4449
www.belsaw.com

**Black & Decker**
800-544-6986
www.blackanddecker.com

**Bosch**
S-B Power Tool
877-267-2499
www.boschtools.com

**Bridge City Tool Works**
800-253-3332
www.bridgecitytools.com

**Bridgewood**
**Wilke Machinery**
800-235-2100
www.wilkemach.com

**Craftsman**
800-377-7414
www.craftsman.com

**Delta Machinery**
800-438-2486
www.deltawoodworking.com

**DeWalt**
800-433-9258
www.dewalt.com

**E.C.E.**
800-724-7758
www.ecemmerich.com

**Eagle Tools/Agazzani**
800-203-0023
www.eagletoolsonline.com

**Fein Power Tools**
800-441-9878
www.feinus.com

**Festool**
888-337-8600
www.festool-usa.com

**Fisch Precision Tools**
724-663-9072
www.fisch-woodworking.com

**Footprint Tools**
www.footprint-tools.com

**Freud USA**
800-334-4107
www.freud-tools.com

**General Mfg.**
819-472-1161
www.general.ca

**Grizzly Industrial**
800-523-4777
www.grizzly.com

**HTC**
800-624-2027

**Harbor Freight**
800-423-2567
www.harborfreight.com

**Hitachi**
**Power Tools**
800-706-7337
www.hitachi.com

**JDS Company**
800-480-7269
www.thejdscompany.com

**Jet**
800-274-6848
www.jettools.com

**Laguna Tools/Robland**
800-234-1976
www.lagunatools.com

**Lamello**
**Colonial Saw**
800-252-6355
www.csaw.com

**Lie-Nielsen Toolworks**
800-327-2520
www.lie-nielsen.com

**Lobo**
800-786-5626
www.lobomachine.com

**Makita**
800-462-5482
www.makita.com

**Metabo**
800-638-2264
www.metabousa.com

**Milwaukee**
877-279-7819
www.mil-electric-tool.com

**Mini Max USA**
866-975-9663
www.minimax-usa.com

**Multico**
**Garrett Wade**
800-221-2942
www.garrettwade.com

**North State**
**Leneave Machinery**
800-442-2302

**Oneida Air Systems**
800-732-4065
www.oneida-air.com

**Panasonic**
**Power Tools**
800-338-0552
www.panasonic.com

**Penn State Industries**
800-377-7297
www.pennstateind.com

**Porter-Cable**
800-487-8665
www.porter-cable.com

**Powermatic**
800-627-4538
www.powermatic.com

**RBI**
**RB Industries**
800-487-2623
www.rbiwoodtools.com

**Record Power Tools**
**Promax Tool Corp.**
707-575-7583
www.promaxtool.com

**Record/Marples Hand Tools**
937-382-3811
www.recordtool.com

**Ridgid**
**Emerson Tool**
800-474-3443
www.ridgidwoodworking.com

**Ryobi**
800-323-4615
www.ryobi.com

**Seco Woodworking**
**Machinery**
888-558-4628
www.seco-usa.com

**Senco**
800-543-4596
www.senco.com

**Shop Fox**
360-734-3482
www.shopfox.biz

**Shopsmith**
800-543-7586
www.shopsmith.com

**Skil**
S-B Power Tools
877-754-5999
www.skiltools.com

**Stanley**
800-262-2161
www.stanleyworks.com

**Star Machine Tool**
253-572-5000
www.starmachinery.com

**Sunhill Machinery**
800-929-4321
www.sunhillnic.com

**Tradesman**
800-243-5114
www.tradesman-rexon.com

**Transpower**
**C.P. Tools**
800-654-7702
www.cptools.com

**Triton Woodworking**
888-874-8661
www.tritonwoodworking.com

**Two Cherries/Clifton**
**Robert Larson Co.**
800-356-2195
www.rlarson.com

**Vega Enterprises**
800-222-8342
www.vegawoodworking.com

**Veritas/Lee Valley Tools**
800-871-8158
www.leevalley.com

**Williams & Hussey**
800-258-1380
www.williamsnhussey.com

**Wilton Machinery**
800-274-6848
www.wiltonmachinery.com

**Woodmaster/Timberking**
800-821-6651
www.woodmastertools.com

**Woodtek**
**Woodworker's Supply**
800-645-9292
www.woodworker.com

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**Wilke Machinery**
800-235-2100
www.wilkemach.com