Popular Woodworking

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EDITORS PICK THE BEST 107 FOR YOU!

Fall 2000 #118

TOOL BUYING GUIDE 2001

Plus

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Shop Smart
Online and By Phone

Horsepower or Horsepucky
HOW TO JUDGE **Motors**

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TOOL BUYING GUIDE 2001

It's a Tool World

This issue can save you hundreds of dollars and headaches.

Chances are you wouldn't be a woodworker if not for the amazing proliferation of machines and power hand tools available today. Before power tools, the emphasis in woodwork was *work*. Sawing out lumber by hand, flattening it with planes then gluing it up with foul smelling hide glue is definitely not the kind of activity many would choose for fun and relaxation, or even a job for that matter.

But our good fortune in having so many tools also presents a problem. All this affordable equipment can make your choices staggering.

It's against this backdrop that we've undertaken this, our first Tool Buying Guide.We've set out to make it a lot more than a reference filled with page after page of charts. Our goal was to make you an informed tool buyer who can, in the absence of a knowledgeable salesman or trusted friend, make the right decision when plunking down your cash for a new tool.

We've taken several steps to make you a savvy tool buyer. In each of the 15 tool categories, we walk you through the key features. And just as important, we tell you what features to, in a word, ignore. Some tool features have more to do with marketing hype than performance.

Next, we give you solid recommendations of tools to buy. Importantly, our recommendations are given for three categories of woodworker — the occasional woodworker/hobbyist; the serious home woodworker; and the advanced woodworker or professional. It seemed logical that each group would make different demands on their tools and have different price expectations as well.

We often make more than one recommendation. We concluded that within a category, a consumer could often expect more than one tool to provide good value relative to performance and price.

We also give you real, everyday street prices. The prices shown are an amalgam of prices taken from catalogs, internet retailing sites and retail stores, when they were available.

In addition to the 15 tool categories, we've included three other important articles. Because the motor is the heart of all power tools and a key component to evaluate, we give you the straight dope so you can make the call in our "What You Must Know About Motors" article. It's a must read for any power tool user. We also give you the dos and don'ts about shopping via catalogs or with on-line tool selling sites. After reading "Where to Buy Your Tools," you'll be much better equipped to shop long distance where real savings can be found.

The last thing you should know about our Tool Buying Guide is just who's behind it. With two exceptions where we felt our depth of knowledge was not sufficient, (scroll saws and lathes) this entire issue was researched by the editorial staff of *Popular Woodworking*.

So who are we? Most of the staff members of this magazine have been professional woodworkers far longer than they've been magazine editors. Three of us have a combined total of over 50 years professional experience. All of us build projects for the magazine in the 2,000-square-foot shop adjacent to our offices using many of the tools and machines we've recommended in this issue. Since joining the magazine we have logged thousands of miles (including journeys to Asia and Europe) to visit dozens of tool and machine manufacturing plants.

It's our sincere hope that you can benefit from our experience in not only making wise woodworking tool investments as a result of this special issue, but from the accumulated practical knowledge of our staff and highly respected contributors in our regular issues as well. **PW**

Steve Shanesy

Popular Woodworking®

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what you must know about MOTO

Learn to shop smart so you get the right motor for the way you work.

by Christopher Schwarz

If you're an electrical engineer, you can stop reading this article right now. This story isn't for the gear heads — it's for the rest of you woodworkers who use power tools every day but are occasionally stupefied by amps, volts, watts and horsepower. I'll warn you, there's just the tiniest bit of math to learn here. But if you can multiply and divide two numbers, you will open up a whole new world of understanding when it comes to the subject of motors.

The first thing to understand is that there are two kinds of motors that power almost all of the machinery in a home workshop: induction motors and universal motors. Each type has its strengths and weaknesses. The reason that you need to know the difference between the two is that some tools (table saws, planers and jointers, for example) can be powered by either type of motor. So you need to educate yourself so you'll choose the right motor for the kind of work you do.

In general, induction motors power stationary machinery that must run for hours on end, such as big table saws, planers, band saws and jointers. Universal motors power mostly hand-held stuff: routers, jigsaws and sanders. However, this is changing. These days you'll find more and more universal motors in benchtop table saws, small jointers, spindle sanders and portable planers.

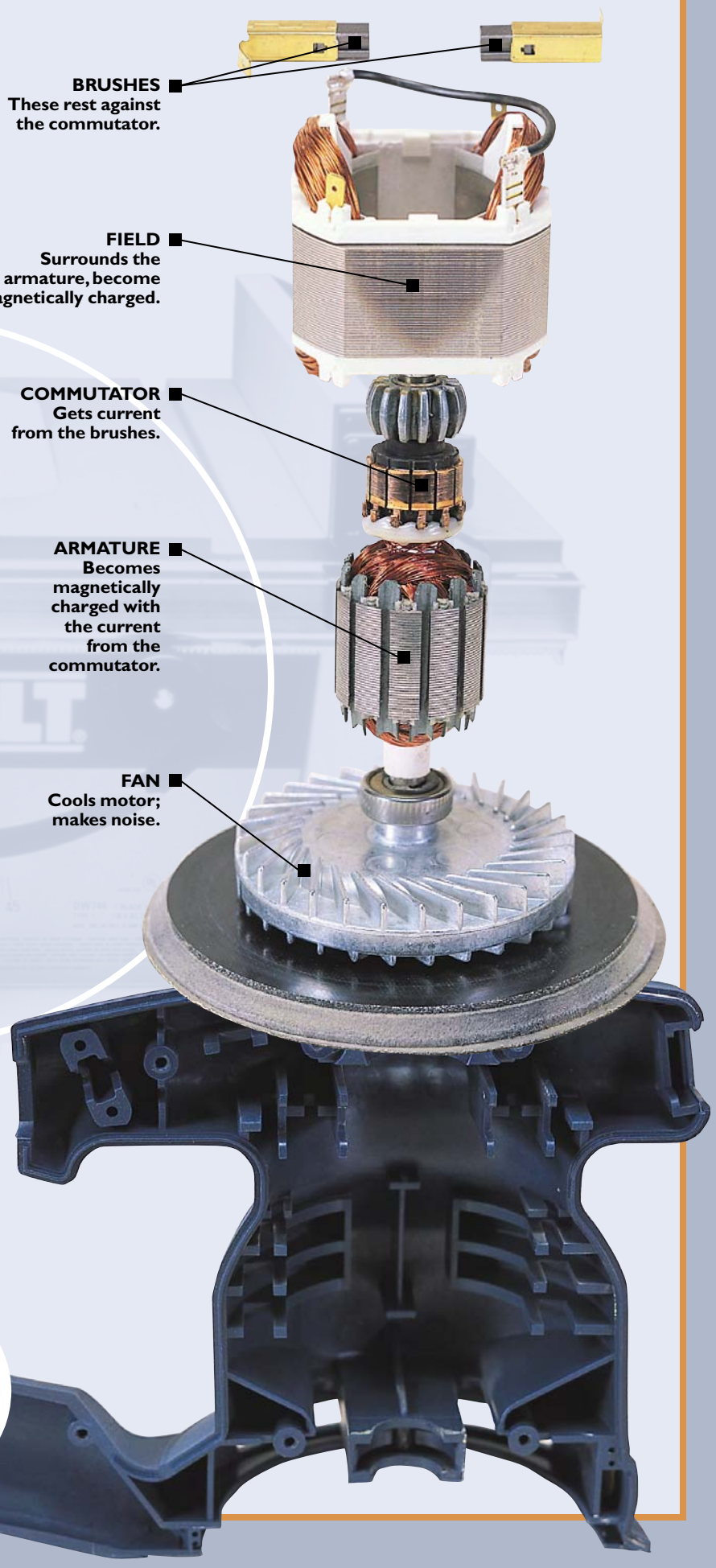
I like to think of the two motors as the tortoise and the hare. Induction motors are the tortoise of the pair. They're rugged, quiet, large, heavy, turn more slowly and can be stalled under heavy use. They are great for the long haul. Universal motors, on the other hand, have a shorter life span, they're smaller, they make more noise, they operate at very high speeds, they offer the most horsepower per pound of any alternating current motor, and they are very difficult to stall. Universal motors provide large amounts of power in quick bursts with constant torque and at variable speeds.

It might help to think about how you use tools with universal motors. If you've got a chop saw, you need a burst of power for three or four seconds to make your cut. You need torque and you need it fast. Same goes for biscuit joiners and routers. Unless you are running parts for 100 doors on your router table, chances are that these tools are on for five minutes and then off for a while. Now think about how you use a jointer or a planer with a hefty induction motor. You might have 100 board feet of lumber to surface. Each board might have to go through that machine five times. Your machine might be running for hours on end.

So each type of motor has a type of job that it's really good at. And it all has to do with the

the UNIVERSAL MOTOR

Universal motors are appearing in more tools, including benchtop table saws and portable planers.



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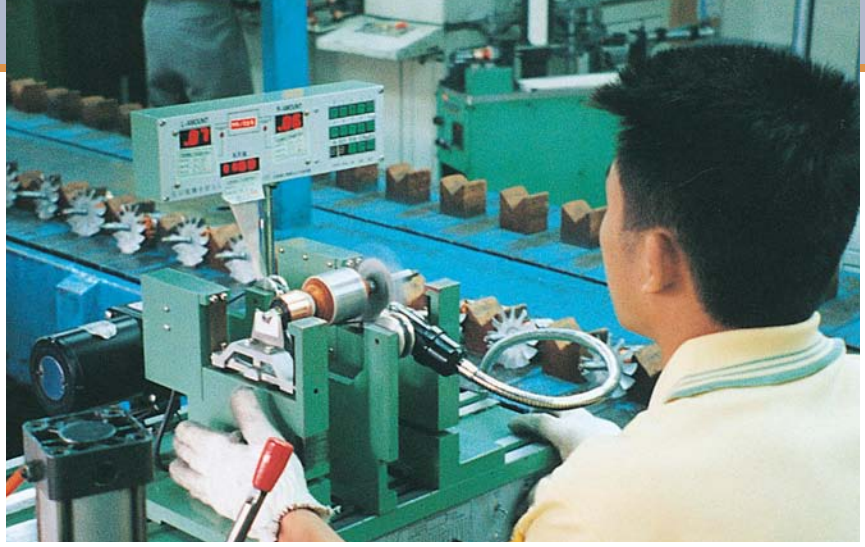


An employee at the Kosta Plant in Taiwan balances the armature on a universal motor. The plant assembles tools and tests motors for Delta Manufacturing.

way that the motor is built. Here's the inside story:

Induction Motors

The reason they are called "induction" motors is the way they convert electricity into a spinning rotor. To understand how induction motors work, let's say you've got one of these puppies in your table saw and you're about to turn it on. As you flip the switch, power flows into what's called the "stator" and magnetizes it. The stator is a mass of copper windings that surround the rotor in the center, which is what spins the saw's blade through a series of belts and pulleys. Inside the stator are two or four "poles" that become magnetically charged because of the electricity running through the wires. When the electricity changes direction or cycles, as it does 60 times a second in the United States (hence the term 60 cycles), each pole changes its magnetic strength, from a positive to a negative value or from a negative to a positive value.

The induced poles in the rotor are then attracted and repulsed by these ever-changing electromagnets in the surrounding stator. The motor isn't running, but the rotor is excited. What this hulk of iron and copper now needs is a shot of power from another copper winding (called a "starting winding") that is out of phase physically and electrically with the main winding. And that's where the capacitor comes in. In most modern tools a capacitor (which is in series with the "starting winding") helps with the starting torque. Then, when the motor reaches 85 percent of its speed, the capacitor and the starting winding drop out of the circuit and the motor runs on its main winding.

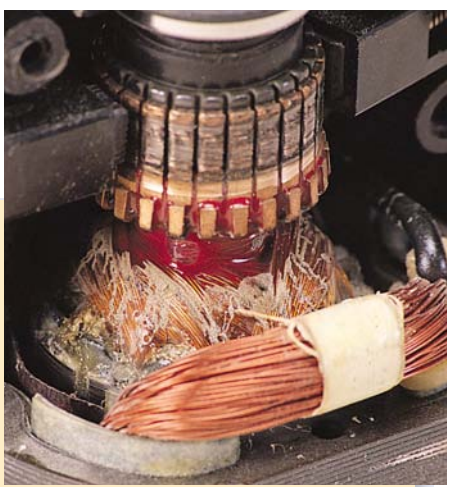
Whew. So, this is the long way to explain why these are called induction motors. As you can see, the rotor spins because it is "induced" by the electromagnets in the stator. Induction motors are large and heavy because the induction process takes a lot of iron and copper (a ½ hp induction motor weighs about 25 pounds; a ½ hp universal motor weighs 2½ pounds). Induction motors are reliable because they're simple, their parts are built for long life and they run at slow speeds (so they don't generate as much motor-damaging heat). In fact, a well-built induction motor won't heat up more than 40 degrees centigrade over room temperature. Induction motors are slow because the rotations per minute (rpms) are governed by how many poles are inside the stator and the number of times per second that your electricity cycles — which is standard at 60 cycles.

So now you can understand why you wouldn't want your router powered by an induction motor — you could barely lift it, and it probably would be too slow and not have enough torque.

Universal Motors

Universal motors get their name from the fact that many of them can operate on both alternating current (from an outlet) or direct current. The way that universal motors work is a little more complicated than their induction cousins, but there are similarities.

Instead of a rotor, universal motors have what's called an armature that spins in the center. Instead of a stator, universal motors have what's called a field, usually consisting of two coils surrounding the armature. Universal motors also have some parts that induction motors don't. On one end of the armature is a part called the commutator. This part is round like the armature, but it is usually smaller in diameter and is made of small bars of copper. It's through these bars that the armature winding is energized. Universal motors also have what are called "brushes." Brushes



Quick Tip: Motor Care

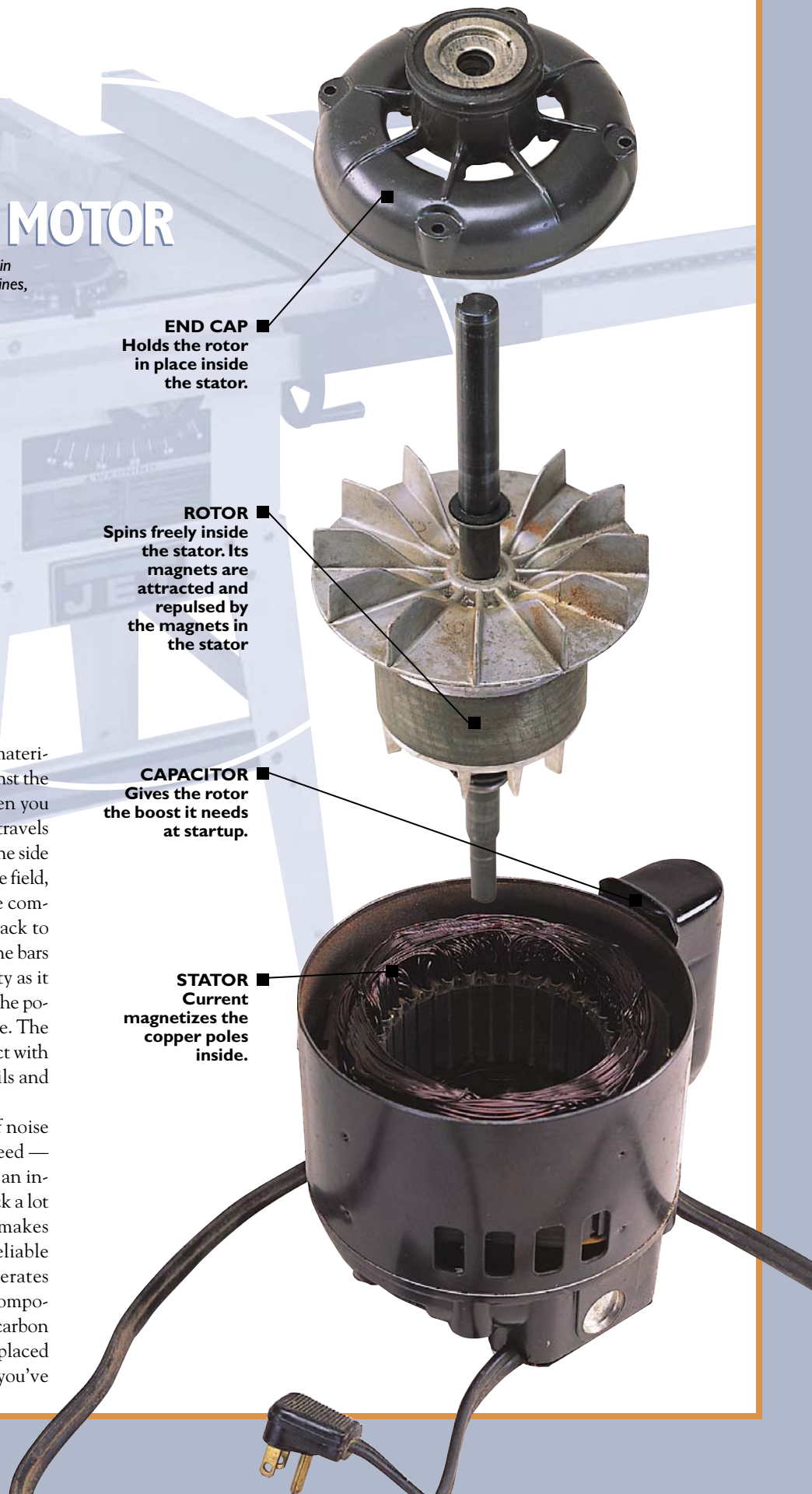
The universal motors in most of your hand power tools will live longer if you follow this simple tip: blow clean air through the motor regularly.

Universal motors suck a lot of air through them because the motors turn at a high speed and they have large fans to keep the motor from overheating. Think about your shop. Pretty dusty isn't it? That dust is being sucked through your router and is slamming into your armature like a meteor shower. This dust can also build up, cause the motor to run hotter and shorten the life span of the tool. If you regularly blow compressed air through the vents of the tool, you'll dislodge the dust and keep your motor healthy.

In addition to sawdust, the carbon-graphite material from the motor's brushes also builds up on the commutator. Blowing air through the tool also helps dislodge that stuff, too, and this also prolongs the life of your tool.

the INDUCTION MOTOR

Induction motors are found in heavy-duty stationary machines, such as this JET table saw.



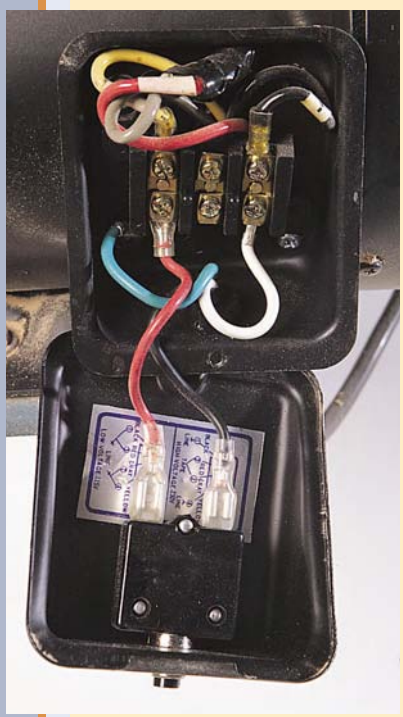
are made from a carbon-graphite material and are usually held in place against the commutator by small springs. When you turn on a universal motor, current travels in what's called a "series circuit." One side of the electrical line goes through the field, then through the brushes, into the commutator, then the armature, and back to the other side of the line. Each of the bars in the commutator changes polarity as it contacts a brush, and this changes the polarity in the magnets in the armature. The magnetic forces in the armature react with the electromagnets in the field coils and the motor develops torque.

Universal motors make a lot of noise because they spin at a dizzying speed — sometimes seven times faster than an induction motor — and their fans suck a lot of air through the motor, which makes noise. Universal motors are less reliable for three reasons. The motor generates more heat, which can cause the components to break down. Second, the carbon brushes wear out. If they can be replaced then it's a quick fix. If they can't, you've

Different Kinds of Power for Your Home Shop

You probably know that most of your house is wired for 110-120 volts. And you might know that certain appliances, such as your electric range, dryer and big air conditioners, are wired for 220-240 volts. And perhaps you've heard about three-phase power. What's the difference between these and which should you be using in your shop?

110-120 VOLTS • This is the standard current that most of your hand power tools run off of. And except for special circuits that power 240 appliances, this is the voltage to all the outlets in your house. Remember that voltage entering a house can vary. So some people get 110 volts, some people get 120. Tools and appliances can handle a 12-volt variation, so don't worry.



Here's the box on the motor for our Jet table saw. You simply move a couple leads and your saw is then ready to take 240 — as soon as you change the plug, that is.

220-240 VOLTS • This heavy-duty circuit uses two hot lines from the main panel that act as returns for one another. These heavy-duty circuits are good for a variety of reasons. First off, machines on these circuits use only half the amperage as they would on 120-volt circuits, so you are less likely to trip a breaker or blow a fuse on a well-wired 240 circuit. Plus, 240 circuits are much less prone to voltage drops than 120 circuits. This means you can have a table saw that's more than 20 feet from your service box. Operating a motor at low voltage causes the torque to drop and the motor to heat up (shortening the life of the motor). Many induction motors can easily be switched over for 240 power. In the box on the motor where the electric cord goes in there will be a diagram to show you how to reconnect the different leads. If you can afford the wiring change, do it. However, one myth about 240 power is that it is cheaper. Don't believe the myth. You buy power by the watt.

THREE-PHASE POWER • What's three-phase power? Well, the power coming into your house is single-phase power. This means that there's one electric pulse changing direction 60 times a second. Three-phase power has three of those pulses changing direction at slightly different times. The fluctuations are timed so that when one phase is at its lowest power, another phase is at its highest. The result is a very steady stream of energy. Three-phase power is typically used in factories, not homes. You need a special motor to run three-phase power, but three-phase motors are less expensive, extremely reliable and more efficient than single-phase motors. Three-phase power is not available to most residences. But you can purchase a "phase converter." Some manufacturers don't recommend static phase converters but say that rotary phase converters are OK. Bottom line, for the home shop, it's cheaper to buy a single-phase motor for a saw than it is to convert your juice to three-phase power.

got trouble. And third, the big fan that cools the motor brings in a lot of junk such as sawdust and foreign objects. This junk can damage the windings and insulation.

Learn to Shop

Now that you know the differences between induction and universal motors, you need to know how to compare motors when tool shopping. First consider how you will use the tool and whether it should be powered by an induction or universal motor. If you need your table saw to be portable or you're only turning it on for short times, a universal motor will do. But if you expect to sometimes run your saw for longer periods of time, get an induction motor.

Things become more complicated when you start comparing one motor to another. Motors are measured differently by different manufacturers. Should you use horsepower? Amperage? Wattage? Motor efficiency? All of the above? The answer is that all these factors are related and all play a part in judging whether a motor has got a lot of guts or is just a loafer on the job.

First off, let's clear the air about horsepower, which is the way you measure induction motors and some universal motors. It's almost a meaningless number, unfortunately. That's because there are several ways to measure horsepower, and this makes comparing two 1-hp motors almost impossible.

Some manufacturers measure horsepower with the motor under no load. Some measure horsepower as the saw almost reaches the point where it is about to stall — called the point of "breakdown torque." Some lock the motor in a dead stall, turn on the power and see how many amps the motor pulls from the outlet and calculate the horsepower from that. This is one way to measure "developed horsepower."

Developed horsepower is probably the least accurate measure of the motor's day-to-day abilities. When you lock the motor in a dead stall and turn it on, the motor will pull a lot more amps than normal because it's trying desperately to pull itself out of this stall.

Instead, try to find a "continuous-duty" horsepower rating, which is found on most high-quality induction motors. If the motor's nameplate doesn't state its horsepower rating is for continuous duty, ask the sales person. If they don't know, have them find out, or call the manufacturer yourself.

Why is this so complicated? Keep in mind that there are a couple different formulas to calculate horsepower. One way is to multiply the rpms of the motor by the amount of torque (which is in foot-pounds). Divide that number by 5,250 and you have a horsepower rating. Keep in mind that a universal motor's really high rpms skew this equation. The other horsepower formula involves the electricity going into the motor.

For this calculation you need to know how amperage, voltage and wattage are related (this is that math that I promised you). Almost every basic electricity textbook explains these different terms by com-

Assembled armatures and commutators at Makita's plant in Georgia. We were impressed with the rigorous tests Makita performed on its universal motors. Note the small bars on the commutators.

paring the electric lines in your house to a water hose. Voltage is like water pressure. The more voltage you have, the more force with which the electricity moves through your wires. Amperage is like the amount of water in a hose. You can have the faucet on low or high. Wattage is harder to explain. It is, in electric terms, the amount of energy that a device consumes. You can calculate wattage by multiplying the amperage of a tool (usually found on the information plate on the motor) by the voltage (which for home shop people in the United States is 120 volts or 240 volts). Why would you want to calculate wattage? Because 746 watts equals one horsepower.

So with that formula you can attempt to calculate the actual horsepower (as opposed to the advertised horsepower). This is one of the most important aspects of this whole article. Remember it. Here's an example of how you can estimate how much horsepower a tool has compared to how much horsepower a tool says it has on the box: Does a 9-amp router live up to the 2 horsepower rating on its box? Let's see: 9 amps multiplied by 120 volts equals 1,080 watts of power. To get horsepower, we divide 1,080 watts by 746. The answer is 1.44 horsepower. Hmmm. You can probably guess that either this router will develop 2 hp right as it's ready to crash and burn, or that the manufacturer used that other horsepower equation, which uses rpms and torque, to calculate horsepower. And as pointed out earlier, universal motors in routers have very high rpms, which can skew that equation. (My apologies to the gear heads here because I left out some of the other complicated factors in calculating power, such as the power factor and line losses).

So if horsepower is a bogus measure, what does that leave us with? Amps. Amps tell you how much power a tool consumes, and that's the simplest way to compare similar motors, especially universal motors. Unfortunately, a lot of manufacturers tell us that the amperage on the nameplate is not always the amperage you get. Three different 7-amp motors can all draw a different amount of current.

Even worse, amperage doesn't tell you how much of that energy is wasted. Here we're talking about the elusive "motor efficiency." Motor efficiency is not something advertised on many universal motors, but you can sometimes find it on the nameplate of induction motors. It is a percentage, usually between 50 percent and 80 percent, that explains how much of the amperage going into the motor is converted into work coming out. When you shop for an induction motor, look for a motor with the highest efficiency, highest amps and best horsepower for the job.

If you can't tell a motor's efficiency, there are other ways to judge it in the store. One expert told us to peer through the vent fans in a tool with a universal motor to see if you can see the bars on the commutator. The smaller the bars, the better the motor. Smaller bars mean there are more coils in the armature winding, and that makes a smoother-running motor. If you can't see the commutator bars, there's still one final way to choose a motor: buy a trusted brand name.

A couple years ago our editor toured several manufacturing plants in Taiwan. At one facility, his tour guide pointed to a pile of rusting commutators sitting outside. Those, the guide explained, would be cleaned up, repaired and put into motors for off-brand tools. Installing used parts isn't something that happens just in Taiwanese off-brands. And don't assume this is a typical practice of Taiwanese manufacturers because it isn't. Manufacturers of cheap motors anywhere can lower the cost of a tool by reducing the amount of iron and copper in a motor. This will lower the life span of the motor because all that metal acts as a heat sink to dissipate heat generated by the motor. They also can skimp on the brushes.

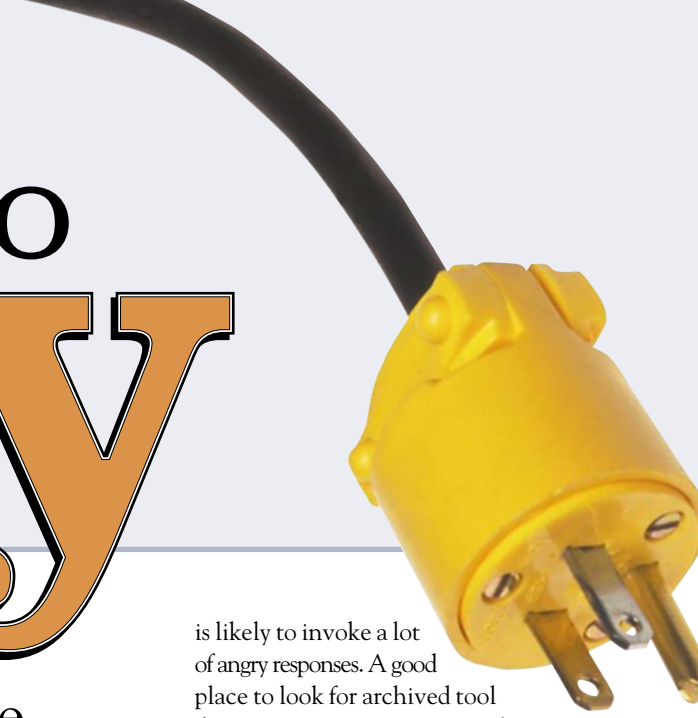
So do the math when you shop for motors. But even that can be misleading. One 14-amp chop saw can be $100 more than a similar-looking 14-amp chop saw. What's the difference? Probably the motor. Should that deter you from buying the cheap saw? No. If the tool won't get heavy use, a less expensive tool will allow you to spend that money somewhere else. But it should make you think twice about what you're buying and what to expect in the long run. **PW**

Induction vs. Universal? You Make the Call

In the old days, table saws, planers and jointers had induction motors. Small tools had universal motors. Alas, that line has blurred in the last decade. Some manufacturers, such as Ryobi, DeWalt and others, put universal motors in their table saws. The universal motors are much smaller and are much less likely to stall in a cut, but they are much noisier and their life expectancy is shorter. Universal motors have also become the mainstay in portable planers — a tool that would have been a lot harder to design with a huge induction motor driving it.

If you think you can run a table saw or planer for an extended period of time and it's powered by a universal motor, you'll be replacing the motor a lot sooner than you think. How can you determine if your tool has an induction or universal motor? Turn on the tool. A really noisy motor indicates it's probably a universal motor. If you're still not sure, look at the motor. Many universal motors have coin-opened hatches so you can easily change the brushes.

where to buy



These days your local hardware store might not be the cheapest place to buy your woodworking tools and machinery.

Not too long ago buying a woodworking power tool meant driving to Sears, the local hardware store or — if you were lucky — a woodworking machinery store. You could look at the Craftsman tools, or check out the two or three drills the store stocked and a couple of different drill presses.

There wasn't a huge decision to be made over price because your choices were limited. You could do some shopping by mail, but the depth of selection wasn't very impressive.

Today, I can compare prices on more than 100 different cordless drill models, find the best deal and buy the tool — without moving from my desk. And that goes for cabinet saws and 20" planers, as well.

The tool buying revolution through competitive catalog and mail-order sales, and more recently the advent of internet shopping, puts an enormous amount of tools at our fingertips. In most cases this is a good thing, but there are a few pieces of information that you should be armed with before picking up the phone so that you save yourself time and hassles.

Know What You Need

With so many tools and options available, having good information is especially critical. So, what's first? Figure out what type of tool you need, and start with this magazine. Let's carry the drill analogy a little further. If you're building a deck, you need to drive a lot of 3" deck screws. So turn to the section on cordless drills and determine which drill is designed to drill a lot of big screws, or offers the other features you need. There are likely to be a couple of tools from different manufacturers that will fit your needs, so take a look at the price ranges, and choose one or two that you prefer.

Another way to get specific tool advice is to reach out over the internet to other tool shoppers and owners. At internet discussion groups such as Badger Pond (www.wwforum.com) and usenet newsgroups (rec.woodworking) you can ask other woodworkers about specific brands and models. In many cases, these discussion groups archive their messages. That's a good place to start looking for tool advice. Simply asking everyone in the group, "Which table saw should I buy?" is likely to invoke a lot of angry responses. A good place to look for archived tool discussion is at Deja.com (www.deja.com). Research what has already been said about the tools you're interested in, then ask your question.

Other new internet sites are offering new ways to get tool shopping information as well. Productopia (www.productopia.com) offers product reviews and makes recommendations on purchases for a number of tool categories. They also include links to the manufacturers' sites as well as shopping sites.

Another twist can be found at www.mercata.com. This site offers tools (as well as a lot of other products) for sale in a group-buying deal for lower prices. The tool you're looking for isn't always for sale, but there are some bargains to be had.

Where to Shop For the Best Price

Next, dig out your catalogs or log on to the internet to check the prices on the drills you chose. You should be able to find a tool that fits in your price range — but don't buy it yet. Let's discuss where you can shop and what each location has to offer.

Most woodworkers have a love/hate relationship with home centers. They love the convenience, selection and price — but it can be difficult to find someone who can help you choose a tool intelligently.

Many smaller tool stores used by pro-

by David Thiel

your tools

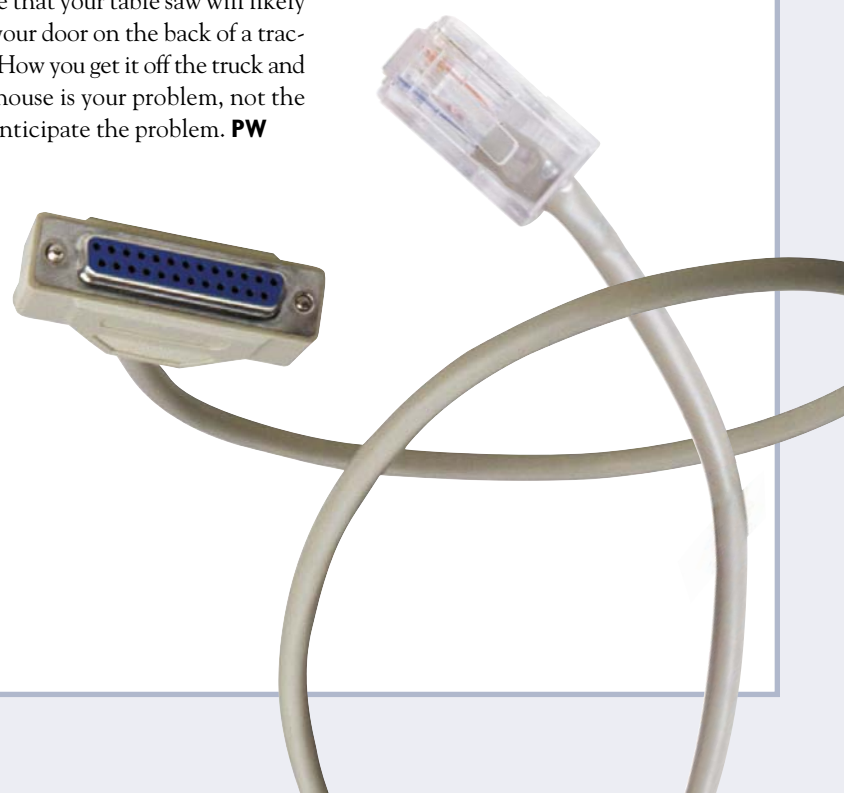
fessionals have a knowledgeable staff that can help you pick the right tool. And you can still take your purchase home immediately. Unfortunately, this personal touch and immediacy comes with a little higher price. If you choose to spend time with a knowledgeable tool salesman, don't abuse his or her livelihood by then heading to the internet for the cheapest price. If you use the information, pay for the privilege.

Catalogs and the internet offer a simple way to find the best price on a tool if you've already decided what to buy. If you need advice, you can be out of luck. Some newer sites and catalogs offer buying information, but at many sites it's superficial and spotty. Also, check to see how long it will take you to get your tool. If it's a cordless drill you stand a good chance of getting it within a week. Larger machinery can take around 10 days. And even though you saved gas, you're going to have to pay for someone's mileage. Only one cataloger that we're aware of delivers for free. A couple will ship any tool for less than $5, but depending on where you buy, shipping a 15" planer can cost you up to $100. Check the shipping charges and make sure you include them in your price comparison.

When remote shopping, make sure you check the return policy of the company. While most reputable merchandisers will take back a damaged or non-working tool without question, they may only be able to issue a store credit rather than return your money. If it's just not the tool you thought it would be, they may be a little more stringent on their return policy. They may also have a time limit on how long you have to send the tool back. There is also the possibility of a restocking charge of 15 to 20 percent. Don't expect trouble with a return, but make sure you are aware under what terms you're buying your tool.

Also be sure to factor in the hassle you may face with packing a mail-order return. Sending a jointer back across the country because its beds are warped is a lot harder than taking it across town to a local distributor.

When buying from any merchandiser that is shipping your product, check the delivery instructions. They may use a carrier that requires a signature to release the package. If you're not home — no package. In the case of larger items you need to be aware that your table saw will likely appear at your door on the back of a tractor trailer. How you get it off the truck and into your house is your problem, not the driver's. Anticipate the problem. **PW**



Shopping By Phone, Mail Or Computer

The following catalogs or web sites sell a variety of woodworking tools. We've included their range of products as well as delivery information, shipping prices and return policies.

The Bottom Line
800-411-5571
Handles a variety of portable and some stationary tools from the major manufacturers.
Shipping: Spend over $75, free shipping. Prior approval required for return. May be subject to restocking charge.

Buildscape.com
(www.buildscape.com) 877-871-8468
Sells tools individually and has auctions.
Shipping: $4.95 for less than 20 lbs. if bought from auction. Items bought from the store vary depending upon destination and weight.

Busy Bee Tools
(www.busybeetools.com) 800-461-2879
Canadian-only distributors of Craftex brand machinery and power tools, as well as a selection of portable power tools from a few major manufacturers.
Shipping: (All $C) Spend over $100, $10.25 charge. Over $200, $16.25 charge. Return for refund or replacement within 15 days, no questions.

Coastal Tools
(www.coastaltool.com)
Handles a variety of portable tools and limited machinery from most major manufacturers.
Shipping: Under $200, $5. Over $500, $10 charge.
They honor all manufacturers' guarantees.

Grizzly Industrial
(www.grizzly.com) 800-523-4777
Distributors of Grizzly brand machinery and power tools, as well as a selection of portable power tools from a few major manufacturers.
Shipping: Varies by weight.
Return for refund or replacement within 30 days. Shipping charges are not refundable. All returns are subject to a 10% restocking fee.

Harbor Freight
(www.harborfreight.com) 800-423-2567
Sole distributors of Chicago Electric and Central Machinery brand tools, as well as a selection of portable power tools from a few major manufacturers.
Shipping: Spend over $50, free shipping. Return for refund or replacement within 30 days, no questions.

Hardware.com
(www.coastaltool.com) 877-807-8737
Handles a variety of portable tools and limited machinery from most major manufacturers.
Shipping: Charges $3.95 plus fifty cents per pound.

Highland Hardware
(www.highlandhardware.com)
800-241-6748
Handles a select collection of portable and stationary power tools from a few major and specialty manufacturers. Great selection of hand tools.
Shipping: Spend over $100, $9.99 charge. Return for refund or replacement within 30 days, no questions.

Housemart
(www.housemart.com) 800-571-7571
Handles a selection of woodworking hand tools as well as a wide selection of home improvement items.
Shipping: Less than 10 lbs., $4.00. Less than 15 lbs., $8.50. Less than 25 lbs., $12.50. Less than 30 lbs., $15.00. Over 30 lbs., fifty cents per pound.

International Tool
(www.internationaltool.com)
800-338-3384
Handles a wide variety of portable tools and stationary machinery from most major manufacturers. A good selection.
Shipping: By weight, under $50, $5 charge. Return for refund or replacement within 30 days, After 30 days, 20% restocking charge.

MySimon.com
(www.MySimon.com)
A web site that compares prices from many web sites and helps you find the best price for your tool. My Simon does not offer sales directly.; it only compares prices.

OurHouse.com
(www.ourhouse.com) 877-202-2768
Handles items from hand tools up to heavy machinery.
Shipping: $4.95 for standard shipping. $9.95 for priority shipping, which is usually 2-3 days. Bulky items have added charges that vary.

Sears/Craftsman
(www.sears.com/craftsman) 800-377-7414
Sole distributors of Craftsman brand tools, as well as a good selection of portable and stationary power tools from many of the major manufacturers.
Shipping: Determined by weight.
Return for refund or replacement within a reasonable amount of time with no questions.

Tool Crib/Amazon
(www.toolcrib.amazon.com)
800-635-5140
Handles a wide variety of portable tools and stationary machinery from most major manufacturers. An excellent selection.
Shipping: $4.95 for all.
Return for refund or replacement, no questions. May be subject to restocking charge. Prior authorization required.

ToolsAmerica.com
(www.toolsamerica.com) 800-203-0554
Handles a broad selection of power tools, including power saws, routers and sanders.
Shipping: Under $100, $3.95 for standard UPS ground delivery. Over $100, free UPS ground delivery.

Toolsforless.com
(www.toolsforless.com) 800-660-8889
Handles tools from DeWalt, Makita, Porter-Cable, Hitachi, Milwaukee and Bosch.
Shipping: Varies depending upon destination and weight.

Tools On Sale
(www.7cornershdwe.com)
800-328-0457
Handles a wide variety of portable tools and stationary machinery from most major manufacturers. An excellent selection.
Shipping: Only retailer with free shipping. Return for refund or replacement, no questions, prior authorization required. No restocking fee.

Tools Plus
(www.tools-plus.com)
Handles a wide variety of portable tools and stationary machinery from most major manufacturers. A good selection.
Shipping: Over $100, $6.
Return for refund within 30 days, Freight charges not included.

Toolstoday.com
(www.toolstoday.com) 888-699-3939
Handles hand tools and smaller power tools.
Shipping: Over $250 is free shipping. Otherwise call.

Trend-Lines
(www.trend-lines.com) 800-877-7899
Handles a variety of portable tools and stationary machinery from the major manufacturers.
Shipping: Spend $70 and over, $9.95 charge. Over $200, $10.95 charge. Over $500, $11.50.
Will do everything reasonable to make things right.

Wilke Machinery/ Bridgewood
(www.wilkemach.com) 800-235-2100
Sole distributors of Bridgewood brand machinery, as well as General machinery.
Shipping: Determined by weight.
Return for refund, less freight charges, within 30 days, no questions barring abuse.

Woodcraft
(www.woodcraft.com) 800-225-1153
Handles nearly all the standard woodworking tools from hand tools to machinery.
Shipping: up to $20 = $5.99, $20.01 to $40 = $6.99
$40.01 to $60 = $7.99, $60.01 to $80 = $8.99
$80.01 to $100 = $9.99, $100.01 to $200 = $10.99
+$200 = $11.99.

Woodworkers Depot
(www.woodworkersdepot.com)
800-891-9003
Handles a good selection of hand tools and power tools. You must order through the phone number.
Shipping: Varies depending upon destination and weight.

Woodworker's Supply
800-645-9292
Handles a variety of portable and some stationary tools from the major manufacturers.
Shipping: Below $110, $9.95 charge. Spend over $110, $10.95 charge. Over $200, $11.95 charge. Over $500, $12.95. Tools are covered by manufacturers' warranties.

tools

Circle #154 on Resource Directory Coupon

air tools

Now that the price of air tools has plummeted, it's time to buy a compressor and a brad nailer.

Up until a few years ago, air nailers in a home woodworking shop were a luxury item because of price. While air tools are still not cheap, they are becoming affordable.

Buying air tools is more like purchasing a tool system than an individual tool. Compressors should be purchased by capacity according to what type of tools you will be using. We recommend your first air tool be a brad nailer. Air nailers speed assembly and can actually save you money because you won't need as many clamps — a few well-placed brads can hold everything together during a glue-up.

Compressors

If all you want to do is fire brads and fill a few tires, a small inexpensive compressor is all you need. If air finishing could be in your future, look for a big compressor.

Compressors are available in four basic sizes: 60- or 80-gallon tanks (for reliable, continuous air flow for all air tools); 20- to 30-gallon semi-portable models (for air fasteners and some finishing); four- to six-gallon models (for most air fastening tools, but not for finishing); and tankless models, which run continuously and are not really designed for use with air tools, except in very limited situations.

Closely linked to tank capacity is the cubic feet of air produced per minute (CFM) and the pressure produced, which is measured in pounds per square inch (PSI). In general, air nailers require 2 to 6 CFM at around 90 PSI, and finishing spray guns need from 5 to 8 CFM at 90 PSI. Related

Photo by Al Parrish

to the CFM/PSI feature is choosing a single-stage or two-stage compressor. A single-stage compressor uses one piston to raise the pressure to between 25 and 125psi. In a two-stage compressor, a second piston boosts the pressure to between 100 and 250 psi. Most air tools for woodworking need less than 125 PSI, so a two-stage model may be an expensive upgrade. If you are using a larger compressor to power a connected system in a shop, then a two-stage compressor may make good sense.

So before you buy a compressor, check out how much air your tools will gobble up. Then determine what size compressor will provide the needed CFM and check your electrical box. Even the smallest compressors demand 10 to 15 amps to operate, and many larger compressors need 220-volt power to run, pulling 20, and even up to 40 amps to operate.

Oilless vs. Oiled

Another decision is whether to purchase an oilless or oil-lubricated compressor. Oilless models have a permanent lubricating finish on the moving parts, while others need oil added every so often. Compressors that require oil are quieter, and require minor routine upkeep. Oilless compressors, on the other hand, need less routine maintenance, but you'll have to get them rebuilt after about 1,000 hours of operation. Oil-lubricated machines can go about 2,000 hours before a rebuild.

Air Nailers and Staplers

Air fastener capacities run the gamut from 23-gauge, ½"-long micro pinners to 16d 3½" framing nailers. Along the way are a wide variety of nailers and staplers ranging in use from trim and upholstery work to commercial cabinetry assembly.

For the average home woodworker, two tools will handle almost every application. A brad nailer (firing 18-gauge brads ranging in length from ¾" to 2") provides adequate fastening power for 90 percent of all woodworking tasks. A headless pinner or a larger 16-gauge finish nailer will likely provide for the other 10 percent.

A great deal of commercial furniture is held together by large staples. While they provide better holding power, staples also double the potential for splitting a piece of wood, and they leave a much larger crown visible on the surface of your project. For most home use we don't recommend staplers. Here are some of the features to look for in a brad nailer.

Depth of Drive

Depth adjustment allows you to vary how deep the fastener will sink into the wood. Optimally, a fastener should sink slightly below the surface, leaving enough of a depression to hold a dab of putty. Some air nailers offer a depth-of-drive adjustment on the tool itself. Some adjust the air flow, while others are mechanical in nature and change the distance of the gun's nose from the workpiece. While the first system is the one we prefer, it also adds to the price.

Oiled vs. Oilless Guns

Most light-duty fastening tools need a small amount of lubricating oil added to the tool before each use. This keeps the cylinder operating smoothly, but it can cause problems if the exhaust from the tool allows some of the lubricating oil to stain the wood. There are two ways to avoid this problem: higher-priced oilless models (quickly solving the problem), or a directed or directional exhaust port.

One Trigger or Two

There are two types of safetys on brad nailers: a restrictive nose safety or double-triggers. The restrictive nose mechanism requires the nose safety be depressed against the wood before the trigger can be pulled. A double trigger requires first one, then a second trigger be pulled to fire the gun. As an option to the restrictive nose mechanism, some guns offer bump (or sequential) firing which allows the user to hold the trigger in and fire repeatedly by depressing the nose safety against the material. This option is great for roofing or framing nailers, but isn't a good idea for furniture work. **PW**

PW Recommends

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

Occasional User

After much discussion our staff came to the conclusion that the expense involved in buying not only a brad nailer, but the compressor as well keeps most occasional users out of the air tool market. If you're ready to use a brad nailer, then class yourself as a serious woodworker and read on.

Serious Home Woodworker

As an entry level compressor we recommend the **Grizzly G8889.** For $120 the Grizzly offers a 2hp/12 amp rig with a four-gallon tank that offers 4.2 CFM @ 90PSI. For the woodworker who spends every weekend in the shop a higher capacity compressor is appropriate, and we recommend either the **Porter-Cable CPF4515** 4.5hp/15gallon compressor for $198, or the **Grizzly G8695** 2.5hp, 11gallon compressor for $150. As for brad nailers, there are many brands that would do well in most shops, but we recommend two models over the competition for value and reputation. **Porter-Cable's BN200A** at $138 and the **Accuset A200BN** for $129.

Advanced Woodworker or Professional

For the advanced woodworker we recommend the **Porter-Cable CPF2TV3525VP** for $389. This two-stage 3.5hp compressor offers a 25 gallon vertical tank, with 5.1CFM at 90 PSA, and a maximum pressure of 175. This is adequate for all brad nailer requirements (and perhaps some roofing) and will even handle some air finishing tasks. For the professional woodworker, we suggest a larger tank compressor with a good value being the **Craftsman 16780N**, 7hp, two-stage, 80 gal. compressor, offering 16.9 CFM at a maximum PSI of 175 for only $899 (not shown on charts). For both advanced hobbiests and professionals we recommend one of two (or both) **Senco** brad nailers. The **SLP 20** ($200) offers ⅝" to 1⅝" capacity, while the **FinishPro 25** ($200) offers a ⅝ to 2⅛" long brad range.

Brand & Model	Street Price	Motor (HP)	Wheels	Tank (gal. cpy.)	Max Air Press. (psi)	Cfm @90 psi	Volts	Amps	Weight (lb.)	Comments
Oilless										
Thomas Industries T-20HP	$280	.75	N	4.5	125	2.2	115	11.4	52	Pancake
Campbell Hausfeld WL5100	200	1	N	3	125	2	115	10	51	Hot dog tank
Coleman CP0100310	288	1	N	2.4	125	2.4	115	10.8	50	Hot dog tank.
DeVilbiss FA125	159	1	N	2.5	125	2.1	115	10	30	
Thomas Industries T-35HD	280	1	N	3	125	2.6	115	10	45	Hot dog tank
Bostitch CWH100WT	409	1.25	N	4	125	2.6 @ 100	115	NA	49	
Thomas Industries T-30HP	340	1.25	N	4.5	125	2.9	115	12	56	Single tank
Thomas Industries T-30ST	340	1.25	N	4	125	2.9	115	12	58	Twin stacked tanks
Thomas Industries T-30WT	340	1.25	N	4	125	2.9	115	12	60	Twin horizontal tanks
Campbell Hausfeld WL5041	250	1.5	N	4	125	3.1	115	13	62	Twin stacked tanks
Campbell Hausfeld WL5043	240	1.5	N	4	125	3.1	115	13	60	Pancake tank
Campbell Hausfeld WL5101	210	1.5	N	3	125	3.1	115	13	51	Hot dog tank
Coleman CN0150410	356	1.5	N	4	125	3.6	115	14.7	64	Pancake tank
Makita MAC3000	749	1.5	N	8	120	5.4	115	14.2	130	Twin horizontal tanks
Makita MAC500	239	1.5	N	3	125	2.9	115	14.2	25	Hot dog tank
Senco PC2002	290	1.5	N	4	125	4.3	115	12.4	49	Twin horizontal tanks
Coleman CS0170410	408	1.75	N	4	125	3.6	115	14	61	Twin stacked tanks
Accuset PC2061	200	2	N	2.5	125	4.1	115	10	40	Hot dog tank
Air-Mate AMDOL780-HC4V	320	2	N	4	120	3.7 @ 100	115	14.5	52	Twin tank
Air-Mate AMDOL780-HC2	300	2	N	1.5	120	3.7 @ 100	115	15	33	Single tank
Campbell Hausfeld WL5058	280	2	N	4	125	4.3	115	13	72	Twin stacked tanks
Campbell Hausfeld WL5059	250	2	N	4	125	4.3	115	13	81	Pancake tank
Craftsman 919-15234	100	2	N	-	125	2.6	120	10	14	Handheld
Craftsman 919-15204	180	2	N	4	125	2.6	120	10	37	Pancake tank
Craftsman 919-16714	200	2	Y	15	135	2.6	120	10	72	
Craftsman 919-16735	220	2	N	4	135	3.2	120	15	55	
Craftsman 919-16745	250	2	N	4	135	3.2	120	15	70	
DeVilbiss PFA2X4	199	2	N	4	125	2.5	115	15	34	Pancake tank
DeVilbiss PF22X4	249	2	N	4	125	5.3	115	15	60	
DeVilbiss FAC28	179	2	Y	8	125	2.5	120	15	50	
DeVilbiss HFA2X4	199	2	N	3	125	2.5	115	15	31	
DeVilbiss SF22X4	259	2	N	4	125	5.3	115	15	64	Twin stacked tanks
Makita MAC1200	379	2	N	4	125	6.1	115	14.2	61	Pancake tank
Makita MAC2200	389	2	N	4	125	6.1	115	14.2	59	Twin stacked tanks
Porter-Cable CPFAC2600P	199	2	N	6	150	2.6	120	15	34	Pancake tank
Thomas Industries T-150HP	350	2	N	4	125	5.3	115	12.5	75	Pancake tank
Thomas Industries T-150ST	350	2	N	4	125	5.3	115	12.5	74	Twin vertical tanks
Thomas Industries T-150WT	350	2	N	4	125	5.3	115	12.5	72	Twin horizontal tanks
Thomas Industries T-2820	495	2	Y	7	125	5.4	115	13.5	100	Twin horizontal tanks
Thomas Industries T-2820ST	495	2	N	4	125	5.4	115	13.5	70	Twin vertical tanks
Thomas Industries T-2820WT	470	2	N	4	125	5.4	115	13.5	72	Twin horizontal tanks
Porter-Cable CPF23400P	229	3	N	4	135	5.3	120	15	55	Pancake tank
Porter-Cable CPF23400S	269	3	N	4	135	5.3	120	15	68	Twin stacked tanks
Craftsman 919-16777	449	3.5	Y	20	175	5.1	120	15	142	Two-stage unit
Porter-Cable CPF2TV3525VP	389	3.5	Y	25	175	5.1	120	15	120	Two-stage unit, vertical tank
Porter-Cable CPF2TV3520W	499	3.5	Y	20	175	5.1	120	15	136	Two-stage unit
Coleman CP0401110	313	4	Y	11	125	5.1	115	15	105	Single tank
DeVilbiss FB412	229	4	Y	12	125	5.6	120	15	86	
Porter-Cable CPF4515	198	4.5	Y	15	135	5.7	120	15	NA	Horizontal tank
Campbell Hausfeld WL6502	230	5	Y	26	125	5.5	115	15	123	
Coleman CL0502710	433	5	Y	27	125	5.6	115	15	113	Vertical tank
Coleman CP0502010	370	5	Y	20	125	5.6	115	15	129	
Craftsman 919-16720	270	5	Y	20	135	6.2	120	15	114	
DeVilbiss FB5020	259	5	Y	20	125	5.8	120	15	113	Vertical tank
DeVilbiss FB5525VP	279	5.5	Y	25	125	5.8	120	15	133	Vertical tank
Porter-Cable CPF6020	249	6	Y	20	135	5.8	120	15	NA	Horizontal tank
Porter-Cable CPF6025VP	199	6	Y	25	135	5.8	120	15	NA	Vertical tank

KEY: N=no; Y=yes; NA=not available; ■ = PW Recommends

Brand & Model	Street Price	Motor (HP)	Wheels	Tank (gal. cpy.)	Max Air Press. (psi)	Cfm @90 psi	Volts	Amps	Weight (lb.)	Comments
Oil Lubricated										
Air-Mate AM390-HC4V	$300	1	N	4	125	2.6 @ 100	115	12.5	57	Twin tanks
Air-Mate AM390-HC2	285	1	N	1.5	125	2.6 @ 100	115	12.5	46	Single tank
Bostitch CWC100	315	1	N	4	125	2.8 @ 100	115	11	50	
Emglo M400-HC4V	313	1	N	4	125	2.6 @ 100	115	12.5	57	Twin stacked tanks
Bostitch CWW150	789	1.5	Y	8	125	5.6 @ 100	115	15.5	150	
Emglo MK15A-8P	645	1.5	Y	8	125	6.5 @ 100	115/230	16/7.8	185	Wheelbarrow design
Emglo K15A-8P	560	1.5	Y	8	125	6.5 @ 100	115/230	16/7.8	175	Wheelbarrow design
Emglo M790-HC4V	340	2	N	4	125	4.1 @ 100	115	14.1	62	Twin stacked tanks
Emglo MK2A-8P	700	2	Y	8	125	8.4 @ 100	115/230	20	195	Wheelbarrow design
Air-Mate AM700-HC4V	270	2	N	4	125	3.2 @ 100	115	15.5	60	Twin stacked tanks
Air-Mate AM780-HC2	305	2	N	1.5	125	4.1 @ 100	115	14.1	49	Single tank
Air-Mate AM780-HC4V	315	2	N	4	125	4.1 @ 100	115	14.1	60	Twin tanks
Campbell Hausfeld FP2000	300	2	N	4	125	4.2	115	13	62	Twin stacked tanks
Campbell Hausfeld VT6131	320	2	Y	8	125	4.5	115/230	15	175	Wheelbarrow tank
Grizzly G8889	120	2	N	4	125	4.2	115	12	58	Vertical tank
Grizzly G8694	130	2	Y	7	125	3.0	115	12	64	Vertical tank
Grizzly G8297	270	2	N	4.25	145	4.2	110	15	60	Twin horizontal tanks
Hitachi EC12	289	2	N	4.3	125	4	115	7	60	Twin stacked tanks
Thomas Industries T-150	420	2	Y	7	125	5.3	115	12.5	100	
Air-Mate AM990-HC4V	390	2.5	N	4	125	5.6 @ 100	115	18	69	Twin stacked tanks
Grizzly G8695	150	2.5	Y	11	125	3.5	120	17	75	Vertical tank
Grizzly G8298	300	2.5	N	4.25	150	5.8	110	17	75	Twin stacked tanks
Coleman CP0302013	465	3	Y	20	130	4.9	115/230	15	154	Wheelbarrow design
Emglo MG3A-8P	1,046	3	Y	8	125	13.8 @ 100	230	19.5	250	Wheelbarrow design
Campbell Hausfeld VT6196	341	4	Y	20	125	5.6	115/230	15	156	
Campbell Hausfeld VT6231	351	4.5	Y	20	125	5.7	115/230	15	156	
Campbell Hausfeld VT6233	375	4.5	Y	26	125	5.7	115/230	15	175	
Coleman CP0452513	518	4.5	Y	25	130	5.2	115/230	15	168	Wheelbarrow design
Grizzly G8299	500	4.5	Y	9	150	10	110	20	135	Wheelbarrow design
Campbell Hausfeld VS5006	336	5	Y	20	125	5.7	115	15	131	
Campbell Hausfeld VS5007	386	5	Y	30	125	5.7	115	15	215	
Campbell Hausfeld VT6290	350	5	Y	20	125	5.8	115	15	159	
Coleman CL0502713	543	5	Y	27	130	5.7	115/230	15	143	Vertical tank
Coleman CP0502013	501	5	Y	20	130	5.7	115/230	15	163	
Craftsman 919-18543	380	5	Y	20	125	7.1	120/240	15/7.5	137	
DeVilbiss L5020	359	5	Y	20	125	7.1	120/240	15/7.5	135	
Emglo G5A-8P	1,060	5	Y	8	125	18.3 @ 100	230	15	262	Wheelbarrow design
Porter-Cable CPL6025	249	6	Y	25	135	6.8	120	15	NA	Horizontal tank
Craftsman 919-18695	400	6.5	Y	20	125	10.5	240	15	140	
DeVilbiss L6520	429	6.5	Y	20	125	10.5	240	15	138	

KEY: N=no; Y=yes; NA=not available; ■ = PW Recommends

Larger compressors can handle spray finishing, though you need a really large capacity tank to get into air sanding.

Brand & Model	Street Price	Nail Length (in)	Safety System	Bump Firing	Rubber Tip	Quick Release	Drive Depth Adj.	Air Pressure (psi)	Weight (lb)	Comments
18 gauge brad nailers										
Accuset A125BN	$90	5/8-1 1/4	RN	N	Y	Y	N	70 - 100	2.3	
Accuset AN125	129	5/8-1	RN	N	Y	Y	N	70 - 100	2.4	Nailer/stapler
Accuset A200BN	129	5/8-2	RN	Y	Y	Y	Y	70 - 100	3.4	
Airy ADA 0251CFE	119	5/8-2	RN	Y	N	Y	Y	70 - 100	2.9	
Bostitch BT-35-KIT	130	5/8-1 3/8	RN	N	N	Y	N	70 - 100	2.4	
Bostitch BT-50-KIT	160	13/16-2	RN	N	N	Y	N	70 - 100	2.6	
Bostitch SB-1850BN	100	5/8-2	RN	N	N	Y	N	70 - 100	NA	
Bostitch SB-1842BN	90	5/8-1 5/8	RN	N	N	Y	N	70 - 100	NA	
Campbell Hausfeld NB003099	70	3/8-1 1/4	RN	N	N	N	N	50 - 100	2.6	
Campbell Hausfeld NB004099	100	5/8-2	RN	Y	N	Y	N	70-100	2.8	
Craftsman 18409	80	3/8-1 1/4	RN	Y	N	N	N	60 - 100	2.2	Oilless
Craftsman 18424	120	5/8-2	RN	Y	N	N	N	60 - 100	2.6	
Craftsman 18454	120	5/8-1 1/2	RN	Y	Y	N	N	60 - 100	2.6	Nailer/stapler
DeVilbiss NB1252X4	89	3/8-1 1/4	2T	Y	N	Y	N	70 - 125	NA	
DeVilbiss NB2002X4	129	3/8-2	2T	Y	N	Y	N	70 - 125	NA	
DeVilbiss NBSNC2X4	129	3/8-1 3/8	2T	Y	N	Y	N	70 - 125	NA	Nailer/stapler
Duo-Fast DBN-4450	299	5/8-1 5/8	2T	N	N	N	N	70 - 120	2	
Duo-Fast DBN-4440	260	1/2-1 1/4	2T	N	N	N	N	70 - 120	2	
Grizzly G6045	70	3/8-1 1/4	RN	Y	N	N	N	60 - 100	2.6	
Grizzly G6046	80	3/8-1 9/16	RN	Y	N	N	N	60 - 100	2.9	
Grizzly G6047	100	5/8-2	RN	Y	N	Y	N	70 - 110	3	
Grizzly G8126	100	3/8-1 1/4	RN	Y	Y	N	N	60 - 100	2.6	
Hitachi NT32AE	95	5/8-1 1/4	RN	Y	N	N	N	70 - 120	2.6	
Hitachi NT50AD	285	1-2	RN	N	Y	N	Y	70 - 120	2.5	
Hitachi NT50AE	120	3/4-2	RN	Y	N	N	N	70 - 120	3.2	
Jamerco JTBN1832	70	5/8-1 1/4	RN	Y	N	N	N	52 - 100	2.5	
Jamerco JTBN1832A	90	5/8-1 1/4	RN	Y	N	N	N	70 - 100	2	
Jamerco JTBN1850A	130	5/8-2	RN	Y	N	N	N	70 - 100	2.7	
Jamerco JT1838SB42	130	5/8-1 5/8	RN	Y	N	N	N	60 - 100	2.5	Nailer/stapler
Makita AF502	309	5/8-2	RN	Y	Y	N	Y	65 - 120	2.5	
Makita AF503	169	5/8-2	RN	Y	N	N	N	65 - 120	2.4	
Paslode 2138-F18II	350	5/8-1 3/8	RN	Y	N	Y	N	80 - 120	2.8	
Paslode 2125-F18	100	3/8-1 1/4	RN	Y	N	Y	N	80 - 120	2.8	
Porter-Cable BN125A	95	5/8-1 1/4	RN	N	Y	Y	Y	70 - 120	2.3	Performance/value:4.5
Porter-Cable BN200A	138	3/4-2	RN	N	Y	Y	Y	70 - 120	2.5	Performance/value:4.5
Senco SLP20	200	5/8-1 5/8	RN	N	N	Y	N	70 - 120	2.3	Oilless.
Senco FinishPro 25	200	5/8-2 1/8	RN	Y	Y	N	Y	70 - 120	2.7	Turbo option
Spotnails CB1820	70	3/16 -1 1/4	RN	Y	N	N	N	85 - 100	2.6	
Spotnails CB1825	150	5/8-1	RN	Y	N	N	N	85 - 100	3.1	
Spotnails GB1832	160	7/8-1 3/4	RN	Y	N	N	N	85 - 100	3.3	
Woodtek 832-371	120	5/8-1 1/2	2T	Y	N	N	Y	80 - 100	2.3	
Woodtek 832-378	147	3/4-2	2T	Y	N	N	Y	80 - 100	3.5	
Woodtek 882-371	80	5/8	2T	Y	N	N	Y	80 - 100	2.3	Nailer/stapler
Woodtek 914-547	140	5/8-1 3/16	2T	Y	N	N	Y	55 - 95	3	Nailer/stapler

Key:Safety - RN=restrictive nose, 2T=two triggers,Y=yes, N=no, ■ = PW Recommends

Brad nailers can be your best friend in the shop, and they come in a wide variety of prices, from $70 for this Campbell Hausfeld to the Makita AF502 at $309.

band saws

Though it seems like a simple machine (two wheels and a blade), there is a lot to consider when buying one.

The band saw is a versatile woodworking tool able to cut circles, curves, follow templates and even make cutting complex three-dimensional shapes such as a cabriole leg a simple task. The band saw is also the tool of choice for resawing and cutting thicker wood to size.

There are a wide variety of band saws available to fit almost every need. From two- or three-wheeled benchtop models, on up to 24" floor models designed to resaw wide boards like butter. To choose the best band saw for your needs, first determine what you want the tool to do, then decide how much space you have to do it in.

Benchtop Models

If you're in tight working conditions, or saving some money is important, benchtop models can be the answer.

Two-wheel benchtop models are usually 9" or 10" saws. The "size" of the saw is loosely determined by the diameter of the wheel. The throat depth (between the blade and the neck of the saw) is usually an inch or so less than the diameter. Two-wheel models can be as affordable as $170, but more capable models cost more. Larger benchtop models (up to 15") are available, but the prices are about the same as a floor model, so unless you just don't have the space it's not a great deal.

You also have the choice of a two- or three-wheel model. Though two-wheel models are by far more common, three-wheel models offer greater throat depth by using the third wheel to orient the blade in a triangular path. Drawbacks are that

Photo by Al Parrish

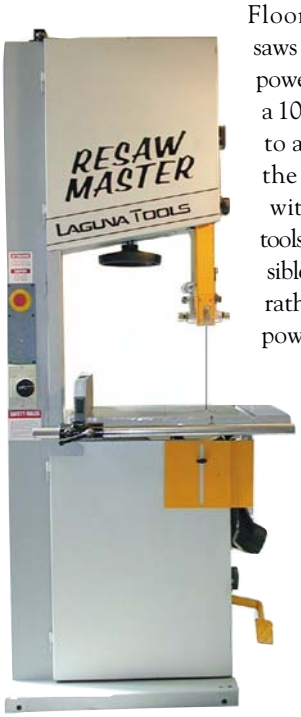
the sharper turns in the blade caused by the three wheels can sometimes mean reduced blade life and it can be harder to get the blade to track properly. Also, though the capacity is increased, the power is still that of a benchtop model.

Features to compare in benchtop saws include the type of guide bearings, resaw capacity, (though most benchtop saws don't have much power for this), and added features such as a rip fence, miter gauge, work light and wheel brushes.

Floor Model Band Saws

Floor model band saws are the model of choice for most home shops. While not as affordable as benchtop models, the additional resaw capacity, motor performance and features outweigh the price. Ranging from 10" up to 24", most floor model band saws cost between $300 and $3,000, with those over $700 designed for use in commercial shops.

Floor model band saws are made of steel or cast iron, with the extra weight proving useful to reduce vibration. The most common and versatile models are the 14" versions, offering good value for their performance. Most 14" saws offer a standard resaw capacity of about 6", and many 14" models offer an optional riser kit to increase the resaw capacity to 12".



Floor-model band saws range in motor power from ½ hp in a 10" or 12" model, to a ¾- or 1 hp in the 14" range. As with many power tools, whenever possible compare amps rather than horsepower for the most accurate power assessment.

The variety of floor model band saws is large, so you should be able to find a saw that meets your needs and your budget. Features to look at are the type of blade guides included, the option of adding a riser block, resaw and depth capacities, and features such as fences, wheel brushes, rack-and-pinion blade guards and brakes on larger models. By spending a little more, you'll get better fit and finish, more power, brand name reliability and other features worth considering.

Riser Kits

Some two-wheel band saws (mostly 14" models) let you add an optional riser kit to increase the resawing capacity. Riser kits cost from $60 to $100 and include a cast piece to extend the neck of the saw, extended blade guards and usually a longer blade. (Extending the depth of cut adds a dozen inches or so to the blade length.) If you think you may someday want to resaw a piece of wood wider than 6", check to see that the saw you are considering has this option.

Guides

The blade guides on a band saw are like railroad tracks for a train. If they don't perform correctly, the train may still run but it won't be very efficient and you're probably headed for an accident. Most band saws guides have a rear thrust bearing (to support the blade from the back side) and a set of metal blocks to keep the blade from moving side-to-side during a cut. There is a set of these guides above the table, and a similar set below.

While these guides are usually adequate to the task, an upgrade will improve the precision and performance of your saw. One such upgrade is to a synthetic-guide

In Europe, many home woodshops are based around the band saw, instead of the table saw. As a result, many European band saws are of excellent quality.

PW Recommends

The following **band saws** have been tested or used by the editors of *Popular Woodworking* and have earned their recommendation.

Occasional User

Benchtop: **Delta's 28-150** two-wheel saw offers ⅓ hp motor, 9" throat capacity and a 3¾" resaw capacity for $165. Or the **Grizzly G8976** three-wheel model offers a ¾ hp motor with 12" throat capacity, 4⅝" resaw capacity for only $139.

Floor model: **Grizzly G1019** band saw offers a ¾ hp motor, 14" throat capacity and a 6¼" resaw capacity, rip fence, circle cutting guide, miter gauge and enclosed base for $295. Add a 6" riser block kit for another $40.

Serious Home Woodworker

Benchtop: We don't really recommend a benchtop model for serious home woodworkers. But if space forces you into a benchtop, the **Inca model 205** offers a ⅜ hp motor, 8" throat capacity, 5½" resaw capacity and a quality rip fence for $365.

Floor model: **JET's JWBS-C14CS** with a 1 hp motor, 14" throat capacity, 6" resaw capacity, rip fence and enclosed stand can be found on sale for $580. Add a 6" riser block for $65 and you've got a heck of a machine.

Advanced Woodworker or Professional

If your 14" band saw doesn't cut it anymore and you're ready for the next step, look to **Laguna's LT 18** with a 3 hp motor, a 18" throat capacity and a 12" resaw capacity, foot brake, fence and more. It's a very well-made machine for the pro, selling for $2,095. We recently added a Laguna saw to our shop and have been most impressed. Or if the capacity interests you, but your wallet won't quite take it, check out **Grizzly's G1258** 3 hp band saw with a 20" throat capacity, 13⅞" resaw capacity and foot brake for $1,295.

block system such as Cool Blocks to replace the metal blocks. These "plastic" Cool Blocks and similar products ($15 as an aftermarket accessory) allow the blade to be held tighter without increasing heat on the blade.

Another option is a Carter conversion kit to replace the blocks and thrust bearing altogether. Carter guides use bearing guides at the sides of the blade which basically ride against the blade without adding heat. Carter Guides are almost an industry standard for a bearing guide upgrade. They are expensive though, running around $150. Carter now offers an economy guide ($65) for 1/4" or smaller blades called the Stabilizer. This guide replaces the thrust and side bearings with a single grooved bearing. The rear of the blade rides in the groove controlling left-to-right and rear movement. A variant on the Stabilizer is a set of roller guides from Iturra Design. These guides (around $60) replace the metal side guide blocks with blocks utilizing small bearings.

Blades

After all your careful research to buy the correct band saw, using the wrong blades will undo your good work. While entire articles have been written about choosing the correct band saw blades, for a quick reference remember this: the tighter the curve you want to cut, the narrower the blade should be. With a more dense wood, more teeth per inch are required; and when resawing, you should use a wider blade with fewer teeth per inch.

While blade widths range from 1/8" up to 3/4", a good general purpose blade is a 1/4" blade with six teeth per inch. **PW**

band saws

Model	Price	Size in.	Resaw Cap. in.	Table tilt Left, Right	Blade Guides	Max. Blade (in.)	HP	Volts	Weight (lbs.)	Comments
Benchtop										
Delta 28-185	$180	8	5	0, 45	BB	3/8	1/5	115	35	
Inca 205	365	8	5-1/2	45, 0	M	1/2	3/8	115	44	with rip fence
Craftsman 21459	170	9	3-1/2	0, 45	M	3/8	1/3	120	35	work light
Delta 28-150	165	9	3-3/4	3, 45	CB	3/8	1/3	120	33	work light
Grizzly G1052	170	9	4-1/8	15, 45	BB	1/2	1/2	110	100	with rip fence
Ryobi BS900	169	9	3-1/2	0, 45	BB	3/8	1/3	120	30	
Craftsman 21450	210	11	3	0, 45	M	3/8	1/3	120	32	three wheels
Tradesman 8160A	149	10	3-7/8	0, 45	BB	3/8	1/5	115	36	
Inca 340	695	10 1/2	6-1/2	0, 45	CB	1/2	3/4	115	80	
Grizzly 8976	139	12	4-5/8	0, 45	M	3/8	3/4	110	38	three wheels
Floor										
General 490	1,012	14 3/4	8	10, 45	M	3/4	—	—	210	
Tradesman 8175	499	15	6-1/4	0, 45	BB	1/2	3/4	115	100	
Delta 28-195	$330	10	7	3, 48	CB	1/2	1/2	120	75	
Craftsman 22412	350	12	6	—	M	1/2	5/8	115	103	open stand
Jet JWBS-120S	329	12	6	10, 45	M	1/2	1/2	115	138	open stand
Delta 28-190	400	12	6	3, 45	M	1/2	1/2	120	120	open stand
Bridgewood PBS-320	660	12.4	6-1/2	0, 45	M	1	1	115/230	143	
Laguna LT13	795	13	6-1/2	0, 45	CB	3/4	3/4	115	140	
Craftsman 22414	550	14	6	15, 45	NM	3/4	3/4	115	202	open stand
Delta 28-275	600	14	6-1/4	3, 45	M	3/4	3/4	115	201	open stand
Delta 28-280	830	14	6-1/4	3, 45	M	3/4	1	115/230	224	
Delta 28-263	850	14	6-1/4	3, 45	BB	3/4	3/4	115/230	224	Carter guides
Grizzly G1019	295	14	6-1/4	10, 45	M	3/4	3/4	110/220	210	with rip fence
Jet JWBS-14CS	580	14	6	10, 45	NM	3/4	1	115/230	200	
Jet JWBS-14MW	640	14	6	10, 45	NM	3/4	1	115/230	186	3-speed, open stand
Jet JWBS-140S	500	14	6	10, 45	NM	3/4	3/4	115/230	186	
Jet JWBS-C14CS	799	14	6	10, 45	BB	3/4	1	115/230	185	Carter guides
Jet JWBS-C14MW	979	14	6	10, 45	BB	3/4	1	115/230	209	Carter guides
Jet JWBS-C140S	829	14	6	10, 45	BB	3/4	3/4	115/230	172	Carter guides
Lobo BS-0143	329	14	6	10, 45	NM	1/2	3/4	115	176	
North State WA-14M	425	14	6-1/4	10, 45	M, BB	3/4	1	115/230	250	
Powermatic 141	1,700	14	6	15, 45	BB	3/4	3/4	115/230	375	
Reliant DD90	349	14	5-3/4	10, 45	M	3/4	1	110/220	168	
Ridgid BS1400	499	14	6	10, 45	M	3/4	3/4	115	186	
Tradesman 8157	399	14	6-1/4	10, 45	BB	1/2	1	115/230	162	
Transpower SB500	265	14	6	10, 45	NM	1/2	1	115	195	

Model	Price	Size	Resaw Cap.	Table tilt	Blade	Max.	HP	Volts	Weight	Comments
		in.	in.	Left, Right	Guides	Blade (in.)			(lbs.)	
Grizzly G1019Z	325	14	6-3/8	15, 45	M	3/4	1	110/220	165	open stand
Hitachi CB75F	2,500	14-1/2	11-13/16	0, 45	P, BB	3	2.8	115	309	
Bridgewood BW-15BS	295	15	6	10, 45	M	1	3/4	115	235	
Craftsman 24393	699	15	8-1/2	0, 45	M	3/4	3/4	115	234	3 speeds
General 490-1-M1	1,250	14-3/4	6-3/4	10, 45	M	3/4	3/4	115/230	320	
General 90-100M1	605	14	7	0, 45	M	3/4	1	115/230	210	
General 90-150M1	890	15	7-1/2	0, 45	M	1	1	115/230	286	
Grizzly G1148	445	15	7-1/2	10, 45	M	3/4	1	110/220	180	2 speeds
Star S3501	495	15	9	0, 45	NM	1	1	110/220	300	
Euroshop B-16	1,595	16	10	5, 45	ES	1	2	230	288	
Grizzly G1073	595	16	7-3/4	10, 45	M	1	2	110/220	456	with rip fence
Laguna LT 16	1,345	16	12	0, 45	ES	1	1-1/2	230	290	
Laguna LT 16 HD	1,895	16	12	5, 45	ES	1-3/8	3	230	350	
Laguna LT16 SEC	1,595	16	12	5, 45	BB/ES	1	2-1/2	230	305	
Lobo BS-0163	619	16	10	10, 45	ES	1	1-1/2	115	270	
Star S3502N	695	16	9-3/4	10, 45	BB	1	2	115/230	360	
Transpower SB600	560	16	6	10, 45	CB	1	1-1/2	110	270	
Bridgewood PBS-440	1,795	17	12	0, 45	ES	1-3/16	3	230	480	
Craftsman 24398	1,399	18	11	0, 45	M	1	1	115	330	3 speeds
Euroshop B-18	1,895	18	12	5, 45	ES	1	2-1/2	230	390	
General 90-200M1	1,295	16	10-1/4	0, 45	CB	1	1-1/2	115/230	363	
General 90-250M	1,725	18	10	0, 45	CB	1	2	230	495	
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-18	1,100	18	10-1/4	10, 45	ES	1-1/2	1-1/2	115/230	320	
Laguna LT18	2,095	18	12	5, 45	ES	1-3/8	3	230	420	
Laguna LT18RM	3,295	18	15-1/2	5, 45	ES	2	5	230	550	
Lobo BS-0183	779	18	9-1/2	10, 45	ES	1-1/2	2	115/230	360	
Mini Max S45	1,895	18	10	0, 45	ES	3/4	2-1/2	230	330	
North State WBS1803	795	18	10-1/2	10, 45	M	1-1/2	2	115/230	425	
Transpower SB800	635	18	9	10, 45	CB	1	2	220	390	
Delta 28-640	2,000	20	11	4, 45	BB	1	2	230	585	
Euroshop B-20	3,095	20	13	5, 45	ES	1-1/4	3	230	458	
General 390	3,200	20	12-1/2	12, 45	M	1	2	230	900	
General 90-350	2,200	20	11	10, 45	M	1	2	220	640	
Grizzly G1258	1,295	20	13-7/8	10, 45	BB	1-1/4	3	220	613	foot brake
Inca 710	1,395	20	8	45, 0	BB	1	1-1/2	115/230	175	
Jet JWBS-20-1*	2,659	20	13-3/8	10, 45	ES	1-1/2	2	230	702	
Laguna LT20	2,495	20	11	10, 45	ES	1-3/8	5	230	465	
Lobo BS-0202	1,599	20	11-3/4	10, 45	ES	1-3/4	3	115/230	620	
North State WBS-20	1,495	20	11	10, 45	BB	1-1/2	3	230	700	
Seco SK-20BS	1,546	20	10	10, 45	BB	1	3	230	816	
Star S3506	1,395	20	12	10, 45	BB	1-1/2	3	230	575	
Transpower SB1000	NA	20	11-1/2	10, 45	NA	1-3/4	3	220	650	
Woodtek 811709	1,815	20	12-1/2	0, 45	BB	1	2	230	506	
Bridgewood PBS-540	2,195	21	14	0, 45	ES	1-3/8	4.8	230	580	
General 90-600	3,800	24	13-3/4	0, 45	M	3	3/5	230	990	
General 90-450	2,795	24	13	10, 45	M	1-1/8	3	220	705	
Grizzly G7211	1,895	24	15-3/4	10, 45	BB	1-1/4	5	220	725	7-1/2 hp avail.
Jet JWBS-24*	3,699	24	15	10, 45	ES	1-1/2	3	230	820	
Laguna LT24	2,995	24	14	10, 45	ES	1-3/8	5	230	725	
North State WBS24	1,900	24	11	10, 45	BB	1-1/2	5	230	800	

Three-wheel benchtop band saws give you more capacity in a small package.

They can be fussy to adjust, however.

KEY: Blade Guide Type: BB = ball bearing, CB = Cool Blocks, ES = Euro-style ball bearing, M = metal blocks, P = plastic blocks. - = NA not applicable or available. Frame Material: A = aluminum, CI = cast iron, S = steel. * = will be sold under the Powermatic name in 2000 or 2001. ■ = PW Recommends,

biscuit joiners

The evolution of an angle grinder to a higher form, these tools can make short work of many joinery tasks.

There are two opinions on biscuit joiners. The naysayers state that a biscuit joint is a shortcut to get out of making an arguably stronger and more time-consuming joint: the mortise and tenon. Then there's the biscuit joiner users who are rolling on the floor laughing.

There's a little truth to both of these statements. The fact of the matter is that a good biscuit joint is almost as good as a traditional joint and it takes a fraction of the time. That's why these machines are so popular in commercial cabinet shops. Biscuit joiners became popular in European cabinet shops about 20 years ago when Lamello introduced its first model.

If you want to get into biscuit joinery, you'll have to consider a few features: the fence, the biscuit sizes you will use, dust collection, power and noise.

The Fence

The basic machine is an angle grinder with a blade and a fence. The fence is the key feature to evaluate. Its complexity can vary from the simple plastic job on the Ryobi DBJ50, to the sophisticated engineered fence on the Porter Cable 557. Fences on the basic models will let you cut a joint at 0 and 45 degrees. Move up the feature scale

Photo by Al Parrish

and you get continuous adjustment from 0 to 45 to 135 degrees. Look for a fence that's easy to adjust and accurate. It should stay put when locked down. The fence should lock parallel to the blade, otherwise the biscuit will not align across the joint.

The ease of adjustment to the fence and depth stop is a major consideration. Check the knobs to see if they're easy to turn. Make sure they stay set when tightened. If you can't get the fence and depth stop to adjust correctly, it might as well be a paperweight. Also check out the size of the fence. Large fences make it easy to make a perfect cut.

The last thing to consider on the fence is the way the blade opening is held firm against your work. Here are your options: two tiny pins that make small holes in your work, which are covered up when the joint is glued together. Or there are rubber nibs or a material like sandpaper to accomplish the same goal. We're partial to the rubber and abrasive faces.

Biscuit Sizes

The work you do determines the kind of biscuit you will use. If you build a lot of face frame cabinets, there is a special biscuit for you. If you do picture frames, you need a tool that cuts slots for "mini biscuits." For joining flat surfaces like table tops, almost any tool will do.

There are only three original sized biscuits: #0, #10, and #20. These range in size from 1¾" for the #0 to 2¼" for the #20. The face frame biscuits currently sold by Porter-Cable are smaller than the #0 at 1¼". Ryobi makes mini-biscuits for its small joiner. They are numbered #1, #2, and #3. Their sizes are ⅝", ¾" and 1".

Big biscuits are great for large, edge-to-edge applications, such as tables. Porter-Cable's mid-sized biscuit is made for face frames. Ryobi's small-sized joiner is great for craft projects or special applications.

The next feature to look at is dust collection. Most joiners have a bag to collect the chips flying out the side of the machine. Take a fitting from your shop vacuum and see if it fits the model you're looking at.

Don't get too worked up about amperage. There's less than a 2 amp difference between all the major brands.

Lastly, noise is a consideration. The motors can be loud. Repetitive sustained noise from any machinery can cause hearing damage if done for sustained periods. **PW**

PW Recommends

The following **biscuit joiners** have been tested or used by the editors of *Popular Woodworking* and have earned their recommendation.

Occasional User

The **Freud JS100** is a utilitarian joiner limited to 45 or 90 degree cuts, but is solid, easy to adjust and inexpensive.

Serious Home Woodworker

The **Freud JS102** is the economy leader in this category but the **DeWalt DW682K**, **Makita 3901** or **Craftsman 27730** offer an upgrade.

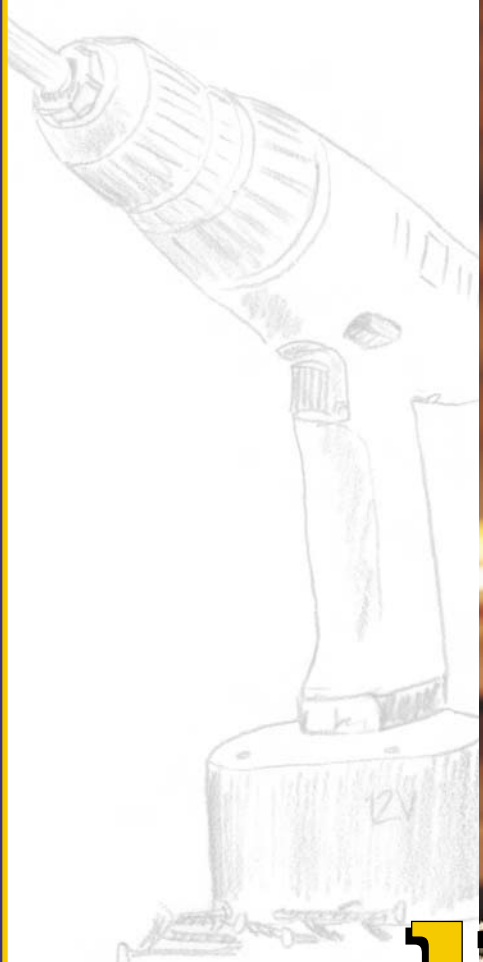
Advanced Woodworker or Professional

The Makita and DeWalt will do fine in a pro shop, however we think the **Porter-Cable 557K** is the most versatile tool today. Its ability to cut face frame-sized biscuits makes it a solid recommendation. For the Rolls Royce of biscuit joiners, look to the **Lamello Classic C2.** Honorable mention goes to the **Ryobi DBJ50** and **Craftsman 17550** mini-biscuit joiners for their affordable face-frame cutting option for a pro, or entry-level option for a beginner.

biscuit joiners

Brand & Model	Street Price	Biscuit size settings	Fence angle range	Cord length	Anti-slip device	Weight (lb)
Craftsman 17501	$100	0, 10, 20	0-90	10	RU	7
Craftsman 17550	80	R1, R2, R3	45, 90	10	RU	4.5
Craftsman 27730	170	0, 10, 20, max	0-90	10	RP	6.7
DeWalt DW682K	160	0, 10, 20, max	0-90	8	RP	6.7
DeWalt DW931K	230	0, 10, 20, max	0-90	cordless (14.4v)	RP	7.7
DeWalt DW932K	250	0, 10, 20, max	0-90	cordless (18v)	RP	8.4
Freud JS100	100	0, 10, 20, max	45, 90	8	RU	6.8
Freud JS102	125	0, 10, 20, max	0 - 90	8	RU	6.8
Lamello Top 20	629	0, 10, 20, max, others	0 - 90	9	RU	7.2
Lamello Classic C2	315	0, 10, 20, max, others	0 - 90	9	RU	6.8
Makita 3901	219	0,10, 20, max, others	0 - 90	9	RU	6.2
Porter-Cable 556	135	0, 10, 20	0 - 90	6.5	F	6.7
Porter-Cable 557K	243	0, 10, 20, FF, max, others	0 - 135	7	F	7.5
Ryobi JM80K	110	0, 10, 20	0 - 90	10	RU	6.5
Ryobi DBJ50	70	R1, R2, R3	45, 90	10	RU	4.5
Skil HD1605	134	0, 10, 20	45, 90	8	RU	6.0

KEY: Anti-slip device: RU: rubber facing; RP= retractable pins; F=abrasive facing, ■ = PW Recommends



cordless drills

Bigger is not always better in the world of cordless drills. Figure out how much power you need without breaking your wrist.

When we started discussing categories for this Tool Buying Guide, there was never a question whether cordless drill/drivers would be listed and discussed. What did come up was whether we should look at corded drills as well. We decided against it, but not because they aren't useful tools. Rather we decided that with the advancements in battery technology, cordless drills are now becoming the tool of choice for many woodworkers.

While corded drills are still the best choice for endless power (if you've paid your bills) and unparalleled torque for use with larger bits, more of these tools sit on the shelf waiting for a special task. In addition, while the face of cordless drill/drivers changes monthly, corded drills have remained basically the same for the last decade.

So while we wouldn't give up our corded drills, we're going to tell you how to shop for cordless drill/drivers.

Handle Design

Physically, cordless drills are very similar. One difference is the handle orientation, the rest is related to the features on the tool, which we'll talk about later. Handles on drills can be either pistol grip (where

Photo by Al Parrish

the handle extends down from the rearmost position of the motor housing) or center handle (also known as T-handle) with the handle mounted at the middle of the motor housing. There are benefits to each design, though the center handle design is more popular.

Pistol grip handles offer more concentrated pressure in line with the drill bit or driver. This allows more physical force to be brought to bear on demanding tasks such as drilling large holes, driving lag bolts or when using a hole saw. The center-mount handles provide better balance, which makes the drill feel easier to control and feel lighter. Variations on the center-handle, such as rear-angling and contoured grips, are making the difference in handle benefits less dramatic. Try both handles on for size and see which models appeal to your needs and grip.

Power

Cordless drills are available in many power configurations ranging from 7.2 volts to 24 volts with 1.4- to 2.6-amp hour (with 3.0 to come) capacities. Then there's the questions of Nickel Cadmium versus Nickel Metal Hydride batteries. So what does all this mean, and what do you need? We talked to our technical advisers from Makita and Bosch and distilled their explanations for you.

In simplistic terms, the higher the voltage the more torque you produce. The higher the amp-hour rating, the longer the run-time capability of the battery pack. Torque is the amount of force applied by the bit or driver to the work. The higher the torque, the easier you can drive 2" screws into wood and use a 1¼" Forstner bit without it bogging down.

The improvement gained through Nickel-Metal Hydride technology is the ability to put more run time into the same size battery cell. So without increasing the size or weight, the battery has a larger gas tank.

The other factor is that NiMH batteries are also more environmentally friendly, whereas the cadmium in NiCad batteries must be disposed of in a controlled manner.

OK, so you want to buy a 24-volt, 2.6-amp hour drill then, right? No. You trade off weight and balance for all the power and run-time. While you may need that kind of power for a cordless circular saw, a drill/driver is a different story. When it comes to the amp hours, get the most you can afford (and price is affected by that ability). As for voltage, we recommend 9.6 volt as a choice for lighter applications and 14.4 volt for heavier use, such as drilling a lot of holes with spade bits. But in most applications 12 volts is plenty for most woodshop applications. If you're on a jobsite, 14.4 and 18 volts makes better sense for use with hole saws and lag bolts.

Speeds

All but the least expensive (and lightest duty) drill/drivers offer a pretty impressive array of features to make work easier. Some features are more valuable than others, but you should understand why each one is available, nonetheless.

Many drills are available with both variable speed and two-speed capability. They're different features that work together. Variable speed is the ability to control infinitely the rotations per minute (rpm) of the chuck by increasing or decreasing the pressure on the trigger. This allows better control over your work, to keep a drill bit from wandering off the mark, or to start a screw in just the right spot. The two-speed capability allows the drill to be switched from one speed range to another, much like switching from first to second gear in your car. Torque in low speed is higher, but the top rpms are lower. This is best for large-diameter drill bits. In high speed the rpms are increased, but with less torque. This is best for small diameter drill bits. Having the option of variable speed and a high and low speed settings makes a drill more versatile and allows finesse.

Clutches

Another finesse feature is the clutch, some-

continued on page 40

PW Recommends

The **cordless drill** category is the easiest to make recommendations in because there are so many good choices. Rather than choose individual drills, we've recommended drills by brand. Those recommended have been tested or used by the editors of *Popular Woodworking*.

Occasional User

An occasional user has a number of good choices in the cordless drill category these days. Manufacturers are offering many of their best features on entry-level drills at great savings. We recommend a 9.6-volt drill for most uses, with 12- or 14.4-volt drill for more strenuous work. We have found that both **Black & Decker** and **Ryobi** are making good quality, low priced models that will perform well for the occasional user.

Serious Home Woodworker & Advanced Woodworker or Professional

We've broken the mold for this section, combining the serious and advanced categories. During our discussions we realized that the drills we would recommend for the serious home woodworker would likely see good duty in a professional setting as well. We recommend a 12-volt tool for everyday woodworking use for both categories, but recommend a 14.4-volt for the all-day applications and 18-volt for the high-torque needs of a professional shop. While there are a great number of quality drill/drivers available today, we feel a little more strongly about those available from **Porter-Cable, Makita, Metabo** or **Milwaukee**, and recommend their models for most pros and serious woodworkers alike.

We will take one step further and recommend drills from **Panasonic** slightly ahead of those previously mentioned for the professional. The engineering and reliablility found in these quality drills have made them a workplace favorite for years.

cordless drills

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
9.6 volt											
Black & Decker FS96	$79	110	700	3hr	1.3	24	3	2/NiCad	T	Y	Best New Tool 1998
Bosch 3105K	119	175	350/980	1hr	1.4	6	3.1	2 /NiCad	T	Y	Performance 4.5 stars
Craftsman 27120	119	250	350/1100	1hr	1.5	24	4	2/NiCad	T	Y	
DeWalt DW926K-2	109	200	300/1100	1hr	1.25	15	3.6	2/NiCad	T	Y	
Festo CDD 9.6 ES-Plus	295	221	380/1100	1hr	1.7	18	3.6	2/NiCad	P	Y	Compact design
Hitachi FDS9DVA	105	156	280/840	1hr	1.4	22	3.2	2/NiCad	T	Y	W/flashlight
Hitachi DS10DV2	170	174	350/1200	1hr	2.0	22	3.5	2/NiCad	T	Y	
Makita 6222DWE	139	108	700	1hr	1.3	6	3.1	2/NiCad	T	Y	
Makita 6096DWE	144	133	350/1100	1hr	1.3	18	2.9	2/NiCad	T	Y	
Makita 6095DWE	179	122	400/1100	1hr	1.3	6	3.7	2/NiCad	P	Y	
Makita 6095DWBE	189	122	400/1100	1hr	2.2	6	3.7	2/NiMH	P	Y	
Panasonic EY6181CRKW	292	156	350/1000	1hr	1.2/1.7	24	3.2	1/NiCad	T	Y	Opt. 15 min charger
Ryobi RY961K	89	90	550	5hr	1.3	24	3.2	2/NiCad	T	N	Nylon bag; Value 4.5
Skil 2380-02	48	70	700	3hr	1.3	6	3.5	1/NiCad	T	N	
Skil 2380-04	69	70	700	3hr	1.3	6	3.5	2/NiCad	T	N	
Skil 96VXT	69	75	850	3hr	1.0	6	2.8	1/NiCad	T	N	w/corded back-up
12 volt											
Black & Decker FS12	$99	115	800	3hr	1.3	24	3.5	2/NiCad	T	Y	Best New Tool 1998
Bosch 3305K	139	200	400/1200	1hr	1.4	6	3.4	2 /NiCad	T	Y	Performance 4.5 stars
Bosch 3315K	165	225	400/1200	1hr	1.7	16	4.3	2/NiCad	T	Y	15 min. charger
Craftsman 27121	159	350	350/1100	1hr	1.5	24	4.2	2/NiCad	T	Y	
Craftsman 27122	159	350	350/1100	1hr	1.7	24	4.3	2/NiCad	P	Y	
Craftsman 27491	155	110	600	1hr	1.7	Inf.Variable	5	2/NiCad	T	Y	Performance 4 stars
DeWalt DW953K-2	170	190	400/1200	1hr	1.25	17	3.8	2/NiCad	T	Y	
DeWalt DW970	179	NA	450/1400	1hr	1.7	17	2.7	2/NiCad	T	Y	
DeWalt DW971K-2	209	310	450/1400	1hr	1.7	17	4.2	2/NiCad	P	Y	
DeWalt DW972K-2	185	310	450/1400	1hr	1.7	17	4.2	2/NiCad	T	Y	
DeWalt DW972KQ-2	235	310	450/1400	15min	1.7	17	4.2	2/NiCad	T	Y	
Fein ABS12-2 EUQ	250	230	340/1200	50min	2.0	13	4.5	2/NiCad	T	Y	Best New Tool 1998
Festo CDD 12 ES-Plus	340	221	380/1100	15min	1.7	18	4	2/NiCad	P	Y	Also uses 9.6 batt.
Hitachi FDS12DVA	120	191	350/1050	1hr	1.4	22	3.4	2/NiCad	T	Y	
Hitachi DS13DV2	180	200	350/1200	1hr	2.0	22	4.2	2/NiCad	T	Y	1/2" chuck
Makita 6223DWE	149	115	700	1hr	1.3	6	3.3	2/NiCad	T	Y	
Makita 6213DWAE	209	287	450/1400	1hr	2.0	18	4.2	2/NiCad	T	Y	
Makita 6313DWAE	209	225	450/1400	1hr	2.0	18	4.4	2/NiCad	T	Y	1/2" chuck
Makita 6213DWBE	219	287	450/1400	1hr	2.2	18	4.2	2/NiMH	T	Y	
Makita 6213DWBLE	229	287	450/1400	1hr	2.2	18	4.2	2/NiMH	T	Y	w/flashlight
Makita 6011DWE-2	199	239	450/1350	1hr	1.3	12	4.2	2/NiCad	P	Y	Also uses 9.6 batt.
Makita 6216DWBE	249	320	400/1300	1hr	2.2	17	4.6	2/NiMH	T	Y	Met. gear housing
Metabo BS12 Impuls	188	282	450/1450	1hr	1.4	20	3.5	2/NiCad	P	Y	
Metabo BST12 Impuls	188	282	450/1450	1hr	1.4	20	3.5	2/NiCad	T	Y	
Metabo BST12 Impuls	188	282	450/1450	1hr	1.4	20	3.5	2/NiCad	T	Y	
Metabo BST12 Plus	203	466	450/1600	1hr	2.0	20	3.8	2/NiCad	T	Y	Performance 4.5 stars
Milwaukee 0502-20	129	220	360/1100	1hr	2.0	19	3.8	1/NiCad	T	Y	
Milwaukee 0502-25	179	220	360/1100	1hr	1.3	19	3.8	2/NiCad	T	Y	
Milwaukee 0502-23	149	220	360/1100	1hr	1.3	19	3.8	2/NiCad	T	Y	
Milwaukee 0501-20	129	220	360/1100	1hr	2.0	19	4.2	1/NiCad	P	Y	1/2" chuck
Milwaukee 0501-23	149	220	360/1100	1hr	1.3	19	4.2	2/NiCad	P	Y	1/2" chuck
Panasonic EY6406FQKW	165	293	350/1000	30min	2.0	18	3.8	2/NiCad	T	Y	Elec. feedback
Panasonic EY6407NQKW	180	293	350/1000	45min	3.0	18	4.0	2/NiMH	T	Y	1/2" chuck
Porter-Cable 9866	137	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
Ryobi HP1201K	79	105	550	5hr	1.3	24	3.5	2/NiCad	T	N	
Ryobi RY1201K	99	105	550	5hr	1.3	24	3.5	2/NiCad	T	N	Performance 3.5 stars
Ryobi R10510K	129	200	375/1350	1hr	1.5	24	4	2/NiCad	T	Y	Cushioned grips
Ryobi JS10511K	129	220	400/1400	1hr	1.5	24	4.2	2/NiCad	T	Y	One-handed chuck

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

cordless drills

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
Skil 2480-02	53	90	700	3hr	1.3	6	3.5	1/NiCad	T	N	
Skil 2480-04	76	90	700	3hr	1.3	6	3.5	2/NiCad	T	N	
Skil 2492-04	119	175	400/1200	1hr	1.3	16	3.5	2/NiCad	T	Y	Performance 3 stars
Skil 120VXT	79	100	850	3hr	1.0	6	3.9	1/NiCad	T	N	w/corded back-up
Wagner WB120K-2	90	NA	550	3hr	NA	6	3.3	2/NiCad	T	Y	
14.4 volt											
Black & Decker FS144	$129	220	300/1100	1hr	1.5	24	4	2/NiCad	T	Y	Best New Tool 1998
Bosch 3615K	189	250	400/1200	1hr	1.7	16	4.3	2/NiCad	T	Y	Opt. 15 min. charger
Bosch 3650K	209	400	500/1500	1hr	2.0	16	4.9	2/NiCad	T	Y	1/2", Opt.15min.
Bosch 3655K	209	370	400/1400	1hr	2.0	16	4.8	2/NiCad	P	Y	1/2", Opt.15min.
Craftsman 27123	189	380	400/1400	1hr	1.7	24	4.6	2/NiCad	T	Y	
DeWalt DW954K-2	192	280	400/1250	1hr	1.25	17	4	2/NiCad	T	Y	
DeWalt DW990K-2	245	334	450/1400	1hr	1.7	17	4.9	2/NiCad	T	Y	
DeWalt DW991K-2	210	334	450/1400	1hr	1.7	17	4.9	2/NiCad	T	Y	
DeWalt DW991KQ-2	259	334	450/1400	15min	1.7	17	4.9	2/NiCad	T	Y	
Grizzly G8595	55	NA	0-550	3hr	1.3	6	8.3	1/NiCad	T	N	
Hitachi DS14DV	210	304	350/1200	1hr	2.0	22	4.6	2/NiCad	T	Y	1/2" chuck
Makita 6233DWBLE	269	330	400/1300	1hr	2.2	18	4.4	2/NiMH	T	Y	w/flashlight
Makita 6333DWBE	269	330	400/1300	1hr	2.0	18	4.6	2/NiMH	T	Y	1/2" chuck
Makita 6333DWBLE	279	330	400/1300	1hr	2.2	18	4.6	2/NiMH	T	Y	1/2" chuck, light
Makita 6233DWAE	249	330	400/1300	1hr	2.2	18	4.4	2/NiCad	T	Y	
Makita 6233DWBE	259	330	400/1300	1hr	2.2	18	4.4	2/NiMH	T	Y	
Makita 6236DWBE	279	358	400/1300	1hr	2.2	17	4.9	2/NiMH	T	Y	
Makita 6336DWBE	279	358	400/1300	1hr	2.2	17	4.9	2/NiMH	T	Y	1/2" chuck
Metabo BST15.6 Plus	247	484	450/1600	1hr	2.4	20	4.2	2/NiCad	T	Y	1/2" chuck
Milwaukee ukee 0511-21	169	350	450/1250	1hr	1.7	19	4.7	2/NiCad	P	Y	1/2" chuck
Milwaukee 0512-21	169	280	450/1250	1hr	1.7	19	3.8	2/NiCad	T	Y	1/2" chuck
Milwaukee 0512-25	199	280	450/1250	1hr	1.7	19	3.8	2/NiCad	T	Y	1/2" chuck, w/light
Milwaukee 0516-22	209	390	450/1450	1hr	2.4	20	5.4	2/NiCad	T	Y	1/2" metal chuck
Porter-Cable 9876	155	360	475/1450	1hr	2.0	20	5.3	2/NiCad	T	Y	
Porter-Cable 9878	165	360	475/1450	1hr	2.0	20	5.3	2/NiCad	T	Y	1/2" chuck
Ryobi HP1441K	100	150	650	1hr	1.5	24	3.9	2/NiCad	T	Y	Rubberized housing
Ryobi R10520K	149	275	375/1350	1hr	1.7	24	5	2/NiCad	T	Y	1/2" chuck
Ryobi JS10521K	149	280	400/1400	1hr	1.7	24	4.6	2/NiCad	T	Y	One-handed chuck
Skil 2580-04	85	120	700	3hr	1.3	6	4	2/NiCad	T	Y	
Skil 2592-04	129	200	400/1200	1hr	1.3	16	3.7	2/NiCad	T	N	Performance 3 stars
Skil 144VXT	99	125	700	3hr	1.0	6	4.2	1/NiCad	T	N	w/corded back-up
Wagner WB144K-2	110	NA	650	3hr	NA	6	3.6	2/NiCad	T	N	
Panasonic EY6431FQKW	189	390	450/1450	1hr	2	18	4.4	2/NiCad	T	Y	15.6 volt, 1/2" chuck
Panasonic EY6431NQKW	205	390	450/1450	1hr	3	18	4.4	2/NiMH	T	Y	15.6 volt, 1/2" chuck
18 volt											
Black & Decker HP935K-2	$149	226	400/1300	1hr	1.5	24	4.2	2/NiCad	T	Y	
Bosch 3850K	220	425	500/1650	1hr	2.0	16	4.9	2/NiCad	T	Y	1/2" chuck
Craftsman 27124	225	525	400/1400	1hr	2.0	24	5.2	2/NiCad	T	Y	1/2" chuck
DeWalt DW995K-2	269	400	450/1450	1hr	2.4	17	5.6	2/NiCad	T	Y	1/2" chuck
Grizzly G8596	70	NA	400/1100	3hr	1.3	16	8.8	1/NiCad	T	N	
Grizzly G8597	90	NA	400/1100	1hr	1.3	16	10.1	1/NiCad	T	N	
Grizzly G8596	90	NA	400/1100	1hr	1.3	16	10.5	1/NiCad	P	N	
Makita 6343DWAE	339	404	450/1400	1hr	2.2	18	5.5	2/NiCad	T	Y	1/2" chuck
Metabo BS18 Plus	279	528	450/1650	1hr	1.25	20	4.4	2/NiCad	P	Y	1/2" chuck
Milwaukee 0521-22	259	400	450/1500	1hr	2.0	20	5.6	2/NiCad	P	Y	1/2" chuck
Milwaukee 0522-22	259	400	450/1500	1hr	2.0	20	5.6	2/NiCad	T	Y	1/2" chuck
Milwaukee 0522-24	269	400	450/1500	1hr	2.4	20	5.7	2/NiCad	T	Y	1/2" metal chuck
Milwaukee 0522-25	289	400	450/1500	1hr	2.0	20	5.6	2/NiCad	T	Y	1/2" chuck, w/light
Skil 2889-04	149	300	400/1200	1hr	1.3	21	4.9	2/NiCad	T	Y	1/2" chuck
Wagner WB180K-2	140	NA	680	3hr	NA	16	3.9	2/NiCad	T	Y	
Porter-Cable 9884	275	390	500/1500	1hr	2.0	20	5.5	2/NiCad	T	Y	19.2 volt, 1/2" chuck

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

cordless drills

continued from page 35

thing you don't find on corded drills. The clutch allows you to fine tune the torque of the drill. Why is this important? You can set the clutch to sink screws perfectly flush and then disengage the motor (it makes a clicking sound when it does this). The clutch also keeps you from ripping the head off that solid brass screw. Clutch settings range from none to 24, but we tend to think six settings is plenty for most work. Don't turn a tool down because it has too many settings, but don't buy one just because it has 24.

Chucks

Chucks on drills appear very similar, but closer inspection will show some important differences. To start, a maximum 3/8" jaw opening is standard on most drills under 14.4 volt size. If you are using bits or tooling with larger diameter shafts, make sure your drill offers a 1/2" chuck. Next, check the construction of the chuck. They can be mostly plastic with metal jaws, half metal and half plastic, or all metal. In most cases the half-and-half chuck is sufficient, but for more durability, an all-metal chuck is best. Finally, take a look at the jaws themselves. Do they close to allow no opening whatsoever, or do they close with a small gap? The jaws should close to hold at least a 1/16" drill bit. The face of the jaws can also be significant. They can be smooth or ridged; the ridged variety offers greater holding power.

One feature we recommend highly is a keyless chuck. Nearly universal now on cordless drills, the keyless chuck makes changing from bit to driver a simple and toolless job. Keyless chucks are now available in two-sleeve or single-sleeve designs. The two-sleeve variant requires both hands to loosen or tighten the chuck jaws. Single-sleeve mechanisms allow one-hand operation. A built-in shaft lock provides the opposing force. One application where we recommend a keyed chuck over the keyless variety is when using hole saws, auger bits and other larger tooling. A keyed chuck allows you to close the jaws more tightly on a bit, reducing the chance of slippage.

One last feature worthy of comment is an electronic brake. While hardly a deal-breaking feature if not provided, a brake can speed up your work because you don't have to wait for the bit to spin down after each hole.

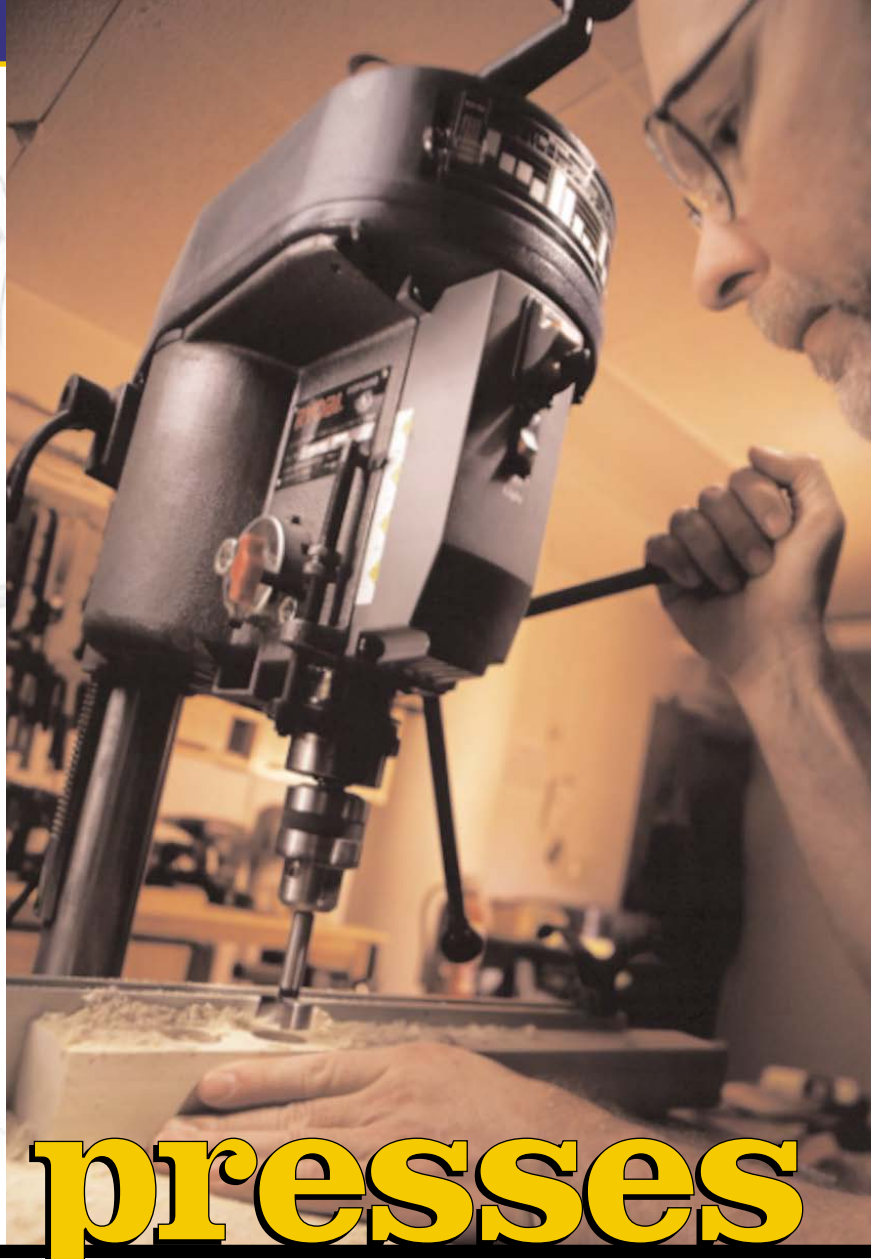
Chargers

A quick word about chargers. The industry standard is a one-hour charger, which for most applications is quick enough. With most drills being sold with two batteries, it's pretty easy to always have a fresh battery even with a one-hour charger. Fifteen-minute chargers are available as an option on many models, and as a standard item on some. On the opposite end of the scale, some lower cost drill/drivers are sold with a three-hour charger. While this seems a deficit compared to a one-hour charger, if your use of the tool requires less frequent use, a three-hour charger can save you money. Also check on the type of charge being provided. Some chargers require the battery be removed after charging, while others can remain in the charger with a continuous "trickle" charge to maintain full charge. Better charger technology can improve the life of your batteries, and keep your drill ready to use for years to come.

Kits

Last but not least are the cordless kits. While this article is about the drills themselves, many manufacturers offer their drills in kits with at least two batteries, a case and the charger. Many will also add another cordless tool such as a trim saw or jigsaw. These are great deals — if you're looking for a cordless jigsaw. If not, you're still better off just buying the drill. Do hold out for two batteries whenever possible. They come in handy. **PW**

Pistol-grip drills allow you to put more of your weight in line with the chuck.



drill presses

Make precise holes with this metalworking machine that has been adopted by woodworkers.

Drill presses are oddly used tools in most shops. They may sit for weeks and months without being used, and then one project will come along that will require constant use. If you use your drill press with a mortising or sanding attachment you'll use it even more.

By design, a drill press allows you to drill straight holes in material with accurate, repeatable control of the hole's location and depth. This is useful in mortising, drilling screw clearance holes, shelf pin holes and other applications.

Available in either benchtop or floor models, drill presses are categorized by the distance from the quill (or the center of the chuck) to the post. An 8" benchtop drill press has a 4" throat capacity from the post to the quill, allowing you to drill to the center of an 8" piece. Benchtop units range from 4" to 9¼" capacity, and average about $180, while floor models will range from 6½" to 11" capacity and cost between $180 and $1,000.

Many of the features are the same on benchtop and floor models, with the main difference being the height limitation and quill travel on the benchtop models. This is a problem if you want to bore a hole in the bottom of a table leg, or drill out the center of a lamp base, but in most cases the increased throat capacity in a floor model is the reason to buy bigger. The height limitation can actually be worked around on benchtop models by mounting the press to a work surface and swinging the base to allow the head to extend over the edge of the table. Now you have a floor

Photo by Al Parrish

model press.

The quill travel difference is not so easily overcome. Benchtop models (with a couple of exceptions) will be limited to around 3" maximum travel, while floor models will usually come closer to 4".

Features

The first feature that is pretty standard on most drill presses is the availability of variable speeds. Bits of different sizes operate better at specific speeds. Larger bits (such as Forstners) perform better at slower speeds. Smaller bits work well at higher speeds. Because of this, almost all drill presses offer between 12 and 16 speeds, which you adjust by changing the orientation of the drive belts on stepped pulleys. In a couple of cases the speed is adjusted by a crank and offers a continuous change of speed.

Connected with speed on a drill press is the motor size. The drill press' lot in life is to usually do the work of a corded drill, but more accurately. Because of this the motor doesn't need to be powerful. Horsepower will range from 1/6 to 3/4 hp in benchtop models, and from 1/2 to 1 1/2 hp in floor models.

The other part of drill presses' billed capabilities is the adjustable depth stop. Most units use one of two types of depth stops. The simplest is a threaded shaft attached to the quill that has two threaded stop nuts. By moving the stop nuts, you limit how far the quill can travel.

The other type is an internal limiter. It is attached to the handle of the press and works as a stop-collar, basically keeping the handle from turning past a certain spot. Both designs work, but most woodworkers prefer one over the other. Some drill press models will offer both types.

Every drill press has a work table, and it usually tilts for drilling at an angle. The drill press was born as a metalworking machine and was adopted by woodworkers. Because of this, many drill presses offer tables designed more for metalworking, with oil-catching grooves. These tables aren't convenient for woodworking, so it's necessary to make an auxiliary table. More woodworking-friendly tables are designed with slots to accommodate bolt-on tables and jigs. Don't assume your table will be set up for woodworking. One benchtop model from Ryobi is actually designed for woodworking, with a table designed to tilt front-to-back, unlike most drill press tables, which will tilt left-to-right. In addition, the Ryobi table swivels, and has a pretty nice adjustable fence.

Tables can be moved up and down using either a rack-and-pinion system operated by a crank or a simple friction sleeve. We prefer the rack and pinion.

The chuck on a drill press varies from model to model. Benchtop models offer either a 1/2" or 5/8" chuck capacity. Floor models will also offer 1/2" or 5/8" capacities, with one or two 3/4" models available.

Radial Drill Presses

One solution to the capacity versus price dilemma is a radial drill presses. By mounting the head on a horizontal sliding post, the throat capacity approaches 18", almost double the capacity of most floor models. And this capacity is available in benchtop models costing as low as $150. Furthermore, the addition of the horizontal bar allows for a wide variety of angled-drilling possibilities. With the head extended out this far there is the possibility of deflection in the posts, affecting the "straight and square" of your drilling capabilities, but again, your use will determine the benefit of these tools.

Attachments

Add attachments to your drill press and you'll use it more. The drill press can quickly become a spindle sander (or oscillating spindle sander with another attachment) by chucking a simple sanding drum into the machine.

Your drill press can also double as a hollow chisel mortiser by adding a mortising attachment that is usually priced below $50. While this isn't exactly the same as a dedicated mortiser, it's less expensive, and for occasional mortising increases the benefits of your drill press. **PW**

PW Recommends

The following **drill presses** have been tested or used by the editors of *Popular Woodworking* and have earned their recommendation.

Occasional User

For the weekend woodworker, a benchtop model should meet most of your needs. For the absolute best bang for the buck we recommend a **Grizzly G7945** 34" benchtop radial drill press for $150. If a floor model better suits your needs, we recommend nothing smaller than a 14" model and prefer the value of **Grizzly's G7944** 14" model for $200, though the **Grizzly G7946** floor model radial drill press offers 34" capacity for $180.

Serious Home Woodworker

The serious home woodworker will be better served with a floor model drill press, but if a benchtop model is required due to space concerns we recommend the **Grizzly G7943** 14" model for $180. Our recommendation for floor models is the **Delta** model **17-965**, 16 1/2" unit for about $390.

Advanced Woodworker or Professional

For this category we can recommend a very good drill press that happens to be a benchtop model. Most pros shy away from benchtop tools, but the **Ryobi WDP 1850** is a serious professional machine. It sells for around $500, has an 18 1/2" capacity and woodworker-friendly features, including no-belt speed adjustment and a versatile table with fence designed for woodworking. For a floor model drill press we recommend the 1 1/2 hp **Grizzly G7948** 20" model, selling for $425.

drill presses

Model	Street Price	Throat cap. (in.)	Chuck cap. (in.)	Quill travel (in.)	Spindle speed rpms	Rack & Pinion Table	HP	Weight lbs.	Comments
Benchtop									
Grizzly G7942	$80	4	1/2	2	620 - 3,100	Y	1/3	50	
Craftsman 21908	115	4	1/2	2	620 - 3,100	N	1/3	48	5 speeds
Delta 11-950	100	4	1/2	2	620 - 3,100	N	1/4	49	5 speeds
Jet JDP-8	249	4	1/2	2	620 - 3,100	N	1/6	42	
Tradesman 8050S	99	4	1/2	2	620 - 3,100	N	1/4	50	5 speeds
Woodtek 829785	99	4	1/2	2	620 - 3,100	N	1/4	40	
Craftsman 21910	170	5	1/2	2-3/8	540 - 3,600	Y	1/2	73	5 speeds
Delta 11-980	155	5	1/2	2-1/4	620 - 3,100	Y	1/4	70	5 speeds
Jet JDP-10	279	5	1/2	2-1/2	540 - 3,600	N	1/2	70	5 speeds
Ryobi DP100	160	5	1/2	2-3/8	540 - 3,600	Y	1/4	68	
Tradesman 8062S	119	5	1/2	2	620 - 3,100	N	1/4	59	
Delta 11-990	170	6	1/2	2-3/8	620 - 3,100	Y	1/3	78	5 speeds
Tradesman 8065S	169	6	1/2	2-1/4	620 - 3,100	Y	1/3	80	
Reliant DD50	170	6-1/2	1/2	3	580 - 3,890	Y	1/3	143	
Star S4016	195	6-1/2	5/8	3	195 - 3,500	Y	1/2	95	
Grizzly G7943	180	7	5/8	3-1/4	140 - 3,050	Y	3/4	160	12 speeds
Jet JDP-14J	399	7	1/2	3-3/8	460 - 2,500	Y	1/2	132	5 speeds
Jet JDP-14M	376	7	5/8	3-1/4	195 - 3,630	Y	1/2	132	16 speeds
Tradesman 8075S	199	7	5/8	3-3/8	195 - 3,630	Y	3/4	121	
General 34-02	760	7-1/2	1/2	4-1/2	460 - 4,910	N	NA	110	
General 34-02-M1	989	7-1/2	1/2	4-1/2	460 - 4,910	N	3/4	200	
General Int'l 75-100	470	8-1/2	5/8	3-1/4	340 - 2,800	Y	3/4	180	
Ryobi WDP1850	500	9-1/4	1/2	3-1/3	500 - 3,000*	N	1/3	134	
Floor									
Star S4017	$255	6-1/2	5/8	3	195 - 3,500	Y	1/2	125	
Delta 14-070	370	7	5/8	3-3/8	250 - 3,000	Y	1/2	157	12 speeds
Grizzly G7944	200	7	5/8	3-1/4	140-3,050	Y	3/4	172	work light
Jet JDP-14JF	499	7	1/2	3-3/8	460 - 2,500	Y	1/2	156	5 speeds
Jet JDP-14MF	549	7	5/8	3-1/4	200 - 3,630	Y	3/4	167	16 speeds
Tradesman 8100S	300	7	5/8	3-3/8	195 - 3,630	Y	3/4	156	
YorkcraftYC-19FDP	259	7	5/8	3-5/16	140-3,050	Y	3/4	176	from Bridgewood
Transpower DP16	195	7-1/4	5/8	3-1/2	250 - 3,000	Y	3/4	130	
Craftsman 22915	300	7-1/2	5/8	3-1/8	250 - 3,100	Y	1/2	154	12 speeds
Craftsman 22935	1,199	7-1/2	5/8	4-13/16	300 - 3,000	Y	1	440	
General 34-01	880	7-1/2	1/2	4-1/2	460 - 4,910	N	3/4	198	
General 34-01-M1	760	7-1/2	1/2	4-1/2	460 - 4,910	N	3/4	200	
Powermatic 1150-A	1,650	7-1/2	1/2	6	475 - 4,800*	Y	3/4 or 1	323	
Ridgid DP1500	299	7-1/2	5/8	3-1/4	250 - 3,100	Y	1/2	159	
Lobo DP-016F	249	8	5/8	3-1/2	240 - 3,800	Y	1/2	135	
Delta 17-900	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	390	8-1/4	5/8	4-7/8	215 - 2,720	Y	3/4	195	16 speeds
Jet JDP-17MF	430	8-1/4	5/8	3-3/8	200 - 3,000	Y	3/4	168	16 speeds
Jet JDP-17FSE	449	8-1/4	5/8	4-3/8	200 - 3,630	Y	3/4	178	16 speeds
Tradesman 8105S	349	8-1/4	5/8	3-1/2	250 - 3,000	Y	3/4	183	
Woodtek 816-805	379	8-1/4	5/8	3-1/4	250 - 3,000	Y	3/4	165	
Grizzly G7947	375	8-1/2	5/8	4-3/4	150 - 2,700	Y	1-1/2	275	work light
Bridgewood BW1758F	299	8-1/2	5/8	3-5/16	250 - 3,900	Y	3/4	172	
Craftsman 22917	400	8-1/2	5/8	3-1/4	200 - 3,630	Y	3/4	195	16 speeds
General 75-200	505	8-1/2	5/8	3-1/4	340 - 2,800	Y	3/4	200	
Lobo DP-186F	349	8-1/2	5/8	3-5/16	190 - 2,640	Y	3/4	170	
Powermatic 1170	481	8-1/2	5/8	3-1/4	190 - 3,500	Y	1	180	
Transpower DP17	225	8-1/2	5/8	3-1/2	250 - 3,000	Y	1	178	
Grizzly G7948	425	10	5/8	5	150 - 2,700	Y	1-1/2	312	12 speeds/ light
Grizzly G7108	1,495	10	5/8	6-1/4	300 - 2,000	Y	2	717	variable speed

Model	Price	Throat cap. (in.)	Chuck cap. (in.)	Quill travel (in.)	Spindle speed (rpms)	Rack & Pinion Table	HP	Weight lbs.	Comments
Craftsman 22920	600	10	3/4	4-11/16	150 - 4,200	Y	1	319	work light
Bridgewood BW2501F	499	10-1/4	5/8	4-5/8	150 - 4,200	Y	3/4	298	
Jet JDP-20MF	850	10 1/4	3/4	4-5/8	150 - 4,200	Y	1-1/2	288	
Woodtek 816-812	689	10 1/2	5/8	4-13/16	180 - 4,200	Y	1	346	
Powermatic 2000	815	11	5/8	4-1/2	130 - 2,770	Y	1-1/2	328	
General Int'l 75-500	878	11	3/4	4-1/2	130 - 2,770	Y	1	340	
Lobo 222F	639	11	1 1/4	4-3/4	190 - 4,300	Y	1	360	
Radial									
Tradesman 8090S	179	13	1/2	4	620 - 3,100	N	1/4	62	
Delta 11-090	300	16	1/2	3-3/8	580 - 3,450	N	1/3	120	5 speeds
Craftsman 22934	500	17	5/8	3-5/16	250 - 3,100	Y	1/2	161	12 speeds
Craftsman 21934	290	17	1/2	3-5/16	540 - 3,600	Y	1/3	89	5 speeds
Lobo DP-36RL	399	18	5/8	3-1/2	250 - 3,600	Y	1/2	105	
Woodtek 907-071	449	18-1/2	5/8	3	310 - 3,640	Y	1/2	152	
Grizzly G7946	180	16-3/4	5/8	3-1/4	550 - 3,470	Y	1/2	156	5 speeds
Grizzly G7945	150	17	5/8	3-1/4	550 - 3,470	Y	1/2	100	5 speeds
YorkcraftYC-16RDP	189	17-1/4	5/8	4-5/8	550-3,470	Y	1/2	81	5 speeds

Portable KEY:Y = yes. N = no. NA: information not available. ■ =PW Recommends,

Huge floor model drill presses are packed with power and features, such as infinitely variable speed.

Note the threaded rod on the left side of this Jet drill press. This rod and two stop nuts act as a depth stop.

dust collectors

Rescue your shop and your lungs from mounds of unhealthy dust.

Let's be honest, it's hard to get excited about dust collection. But once you get a dust collection system, you'll honestly wonder what the heck you were doing before you had it.

Dust collectors and air cleaners vastly improve your work environment, and we're not just talking about making your shop tidy. Fine sawdust is a health hazard. Even the least irritable dust can clog your nasal passages. Some woods — especially exotics and spalted woods — can pose serious health risks. So now that you know you need dust collection, you need to figure how much is enough.

There are two kinds of collectors that are important to home woodworkers. The first is the single-stage dust collector, the least expensive system outside of a shop vacuum. In a single-stage dust collector an induction motor turns an impeller (basically a fan) that sucks in big chips. The chips go into a cloth bag, which you'll have to empty periodically. There are more expensive two-stage collectors that suck the chips into a barrel and the fine dust into a bag. And there are very expensive cyclone collectors that also separate fine dust from the big chips. We recommend most woodworkers buy a single-stage collector and add a cyclone lid for $35.

The other key element to a home dust

Photo by Al Parrish

collection system is an air cleaner. It plucks from the air the fine dust that a dust collector can't get. While most dust collectors trap dust as small as 10 microns, air cleaners remove dust as small as half a micron. For a truly healthy shop, get both.

Single-Stage Collectors

When buying a dust collector, ignore the horsepower rating. Instead, check the cfm (cubic feet per minute) rating. While this rating is stretched by some manufacturers, the exaggeration is nothing like what takes place with shop vacuums.

If you're not ready to set up a fixed dust collection system of pipes and blast gates, then buy a 1-hp collector and roll it around from machine to machine. If you want a permanent setup, add up the cfm needs of all the machines you could have running simultaneously, then buy a dust collector that sucks a little harder than that.

Another key factor in selecting a single-stage collector is how efficient the bags are. The least efficient bags trap dust up to 30 microns in size. The best will trap as small as .5 microns. Buy the best you can afford, or plan to buy better bags later.

All dust collectors are noisy, but some are less so than others. Check the decibel ratings on the machine, but then con the salesperson into turning a couple units on so you can get an earful yourself.

Finally, check out the clamp that holds the bag to the collector. Releasing the clamp can be as easy as flicking a lever or as painful as turning a screw 40 or 50 times. Get a quick-release clamp.

Air Cleaners

These machines are not connected to tools, but rather extract dust from the ambient air in your shop. They pull dust through a series of filters at the front of the unit.

Like dust collectors, air cleaners are rated by cfm, but you need to do some math to figure out which unit is right for you. As a rule of thumb, the air cleaner should circulate the air in your shop every six minutes. First figure out the square footage of your shop. That means a typical 15' x 20' shop will have 300 square feet. Multiply this by the ceiling height to get the total volume of the room (300 x 8 = 2,400). Divide that volume by six minutes, and that will give you the cfm rating you need for your shop (2,400/6 = 400 cfm). Also, consider how much dust the finest filter can remove. Get the best you can. Filters that remove 95 percent of the dust will serve you well. **PW**

How Much CFM Do I Need?

Planer	400-500
Jointer	350
Table saw	350
Lathe	350-600
Band saw	300
Router table/Shaper	350+

The Best $35 You'll Spend in Dust Collection

Most home woodworkers can't afford a cyclone system, which separates out the big chips and then sends the fine dust into the bags. But you can convert your single-stage dust collection system to a cyclone for the cost of a $35 cyclone lid and a garbage can. The cyclone lid fits on top of the garbage can and has ports for two hoses. One goes to your dust collector, the other goes to the machine.

The debris from your machine is forced into the garbage can where the heavy chips swirl down to the bottom and the fine dust is sucked up to your dust collector. When the garbage can is full, you simply set it at the curb. You'll empty the bags on the dust collector far less frequently as a result.

Where to buy one:

- **Veritas Cyclone Lid, $29.95, item # 05J30.02, phone 800-871-8158**
- **Grizzly Cyclone Separator, $29.95, item # G3376, phone 800-523-4777**
- **Two-stage Collector Lid, Woodworker's Supply, $36.95, item # 881-860, phone 800-645-9292**

PW Recommends

The following **dust collectors** and **air cleaners** have been tested or used by the editors of *Popular Woodworking* and have earned their recommendation.

Occasional User

If you're on a budget and don't make your living at woodworking, you're going to be hard-pressed to find a better deal than the **Grizzly G8027** dust collector. This 1 hp collector is rated for 500 cfm, has the inconvenient screw-type clamps for its bags but has the great price of $130 plus $20 shipping. The G8027 was named one of the Best New Tools of 1999 by *Popular Woodworking*.

Serious Home Woodworker

If you can spend a little more, we recommend the **Penn State DCIB-XL** dust collector for $210. It pulls 850 cfm, has 5-micron bags, two 4" inlets and a quick-release clamp. Also highly recommended is the **Grizzly G1029** 2 hp dust collector for $250. This 230-volt machine pulls 1,550 cfm, has 30-micron bags and includes a free cyclone lid.

If you're a serious woodworker, it's time to buy an air cleaner. We recommend **Delta's 50-860.** Though it's pricier than some of the other entry-level cleaners, it also performs better.

Advanced Woodworker or Professional

The **Powermatic 75** 3-hp dust collector ($650) is a workhorse in professional shops. Rated for 1,900 cfm, it should solve the dust collection needs of a small commercial shop. The Powermatic 75 comes standard with 5-micron bags, one 6" dust inlet and three 4" inlets and weighs a whopping 215 pounds. If you're on a tight budget, we also recommend the **RBI 1900,** a 3 hp model. It also is rated for 1,900 cfm, but comes with 20-micron bags. Check it out for $500.

In air cleaners, we recommend the **Air-Tech 2000 model 750** from **JDS**. This variable-speed model allows you to control the cfm it pulls between 200 and 750 cfm. The filters remove 99 percent of the dust as small as 5 microns and 80 percent of the dust as small as one micron. The machines are highly reliable — we have three in our 2,000-square-foot shop.

dust collectors

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)
Single Stage										
RBI 821	295	1/2	680	4.4	7.4	1,4	115	75	NA	NA
Shopsmith DC3300	500	1/2	330	NA	4	3,2-1/2	115	64	NA	NA
Woodmaster 820	295	1/2	680	4.4	*	1,4	115/230	50	NA	NA
Jet DC-610	190	3/4	610	6.9	1.8	1,4	115	64	55-60	30
Tradesman 9992	199	3/4	453	6.5	1.5	1,4	120	62	NA	NA
Woodtek 911047	160	3/4	250	NA	20 gal.	1,4	115	18	70-80	10
Belsaw MC-CT-50S	149	1	700	5.5	2	1,4	115	46	62-82	30
Belsaw MC-CT-80A	149	1	700	5	2.2	1,4	115/230	70	52-74	30
Belsaw MC-CT-90C	179	1	700	5.5	2.2	1,4	115/230	73	62-80	30
Bridgewood BW-015A	159	1	700	5.5	2.4	1,4	115/230	75	NA	1
Craftsman 29978	300	1	650	8.5	1.5	1,4	120	72	55-65	30
Delta 50-840	240	1	650	8.5	5.4	1,4	115/230	57	63-73	30
Grizzly G1028	240	1	1,150	10.3	5.4	1,4	115/230	116	60-80	30
Grizzly G1163	150	1	450	2.8	2	1,4	115/230	52	NA	30
Grizzly G8027	130	1	500	2.8	2	1,4	115	79	NA	30
General 10-010	435	1	750	5.5	20 gal.	1,4	120	76	52-62	NA
Jet DC-650	200	1	650	7.8	2.1	1,4	115/230	84	60-70	30
Jet DC-650 SB	234	1	650	7.8	3.1	1,4	115/230	58	55-65	30
Lobo DC-1190	219	1	790	8.5	2.5	1,4	115/230	86	60-70	NA
North State CT-50S	200	1	700	5.5	3.5	2,4	115	80	NA	15
Penn State DC1B-XL	210	1	850	6.5	3.5	2,4;1,6	115/230	66	62-82	5
Reliant NN720	179	1	655	5.5	2.5	1,4	115	67	55	20
Ridgid DC2000	249	1	650	8.5	21.5 gal	1,4	120	97	NA	30
Seco UFO-40	199	1	500	4.5	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	278	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	219	1	655	5.5	2.5	1,4	115	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	115/230	70	55	20
Woodtek 802124	229	1	400	5.5	2.5	2,4	115	85	74	10
Woodtek 864367	209	1	380	5.5	3.5	2,4	115	47	64	10
Delta 50-850	300	1-1/2	1,200	11.4	6	2,4	115/230	100	69-79	30
Jet DC-1100	300	1-1/2	1,100	11.5	5.1	1,6;2,4	115/230	103	70-80	30
Jet DC-1200FS	545	1-1/2	1,200	11.5	3.5	1,6;2,4	115/230	125	70-80	30
Penn State DC2-5	299	1-1/2	1,100	8.5	5.8	2,4; 1,6	115/230	130	67-87	5
Penn State DC3-5	205	1-1/2	760	8.5	1.5	1,4	115/230	46	62-82	5
Transpower DC747	175	1-1/2	740	5.5	2	1,4	115	65	NA	NA
Belsaw MC-1DC	279	2	1,059	8.3	5.2	1,5;2,4	230	123	67-87	30
Bridgewood BW-002A	259	2	1,059	9.1	5.8	1,6;2,4	115/230	128	NA	1
Delta 50-851	475	2	1,500	13.7	6.5	3,4	230	175	62-82	30
General 10-110	695	2	1,600	8.3	42 gal.	1,5;2,4	230	132	66-77	NA
Grizzly G1029	250	2	1,550	12.3	5.4	2,4	230	125	65-85	30
Jet DC-1200-1	380	2	1,200	11	5.3	1,6;2,4	230	143	65-80	30
Jet DC-1200-3	400	2	1,200	11	5.3	1,6;2,4	230/460	153	65-80	30
Lobo DC-101	379	2	1,290	9.5	5.2	2,4	115/230	155	65-70	NA
Makita 410	449	2	307	20	7	1,2 7/8	115	20.4	NA	NA
North State UFO-101	295	2	1,182	9.5	5.4	3,4 & 5	115/230	140	NA	15
Reliant NN820	279	2	1,185	7.6	5.2	2,4	115/230	140	69	20
Seco UFO-101	288	2	1,182	7.5	5.2	2,4; 1,5	115/230/460	139	65-80	20
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	115/230	143	69	20
Transpower DC2000	285	2	1,200	5.6	4	2,4	115/230	143	NA	NA

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)
Woodtek 805930	399	2	790	8.3	4.4	2, 5	230	123	76	10
Penn State DC250	335	2-1/2	1,350	9.5	5.8	2, 4; 1, 6	230	145	65-90	5
Belsaw MC-2DC	449	3	1,836	8.7	10	1, 6; 3, 4	230	150	75-95	30
Belsaw MC-CT-201H	449	3	1,836	8.7	10	1, 6; 3, 4	230	156	75-95	30
Bridgewood BW-003A	495	3	1,836	5.8	13.5	1, 8; 4, 4	230	235	NA	1
Delta 50-852	650	3	2,100	18.1	12.5	4, 4	200/220	200	77-91	30
General 10-210	1,200	3	2,300	8.7	83 gal.	1, 6; 3, 4	230	165	75-85	NA
Grizzly G1030	449	3	2,300	16.7	10.8	3, 4	230	170	75-90	30
Jet DC-1900**	650	3	1,900	12.4	10.7	1, 8; 3, 4	230	198	75-90	30
Jet DC-1900-3**	625	3	1,900	12.4	10.7	1, 8; 3, 4	230/460	208	75-90	30
Lobo DC-102	519	3	2,800	11.5	10.5	1, 6; 3, 4	115/230	198	75-90	NA
Lobo DC-103	339	3	1,700	10.5	5.2	1, 5; 2, 4	115/230	160	75-85	NA
North State UFO-102B	485	3	1,883	9.5	5.4	4, 5 & 6	230	NA	NA	15
Penn State DC4-5	499	3	1,900	10.2	11.6	3, 4; 1, 7	230	200	75-95	5
Powermatic 75	650	3	1,900	8	10	1, 8; 1; 6, 3, 4	230	215	80-90	5
RBI 1900	499	3	1,900	9.2	7.4	1, 6	230	110	NA	20
Reliant NN830	399	3	1,883	9.1	10.5	3, 4	230	170	78	20
Seco UFO-102B	598	3	1,883	9.1	10.5	3, 4	115/230/460	196	75-95	20
Star S3830	475	3	1,850	5.8	10.4	1, 6; 3, 4	230	165	75-95	35
Sunhill UFO-102B	459	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	499	3	2,688	9.2	*	1, 7	230	140	NA	NA
Woodtek 864381	489	3	1,180	8.6	8.8	2, 6	230	194	78	10
Bridgewood BW-005A	949	5	3,500	9.7	NA	1, 9; 5, 4	220/440	246	NA	NA
General 10-510	1,630	5	5,100	16	144 gal.	4, 4	240	370	78-85	NA
Grizzly G5954	1,000	5	4,820	17	26	4, 4	230	375	NA	1
Lobo DC805	1,490	5	3,600	13	18.7	4, 4	230/460	450	NA	NA

Brand & Model	Price	cfm	# Filters	Dust Removal Efficiency	Weight (lb.)	Decibels
Air Cleaners						
Craftsman 16995	140	200	2	93% @ 5 micron	10	NA
Craftsman 29972	260	300	2	95% @ 5 mic.	45	NA
Delta 50-860	250	850	2	98% @ 5 mic.	50	45
Grizzly G5955	180	510	2	98% @ 3 mic.	42	NA
Woodtek 923-838	200	340	2	98% @ 0.5 mic.	35	55
Woodtek 923-859	250	510	2	98% @ 0.5 mic.	30	55
Jet AFS-1000	220	450 - 650	2	98 % @ 5 mic.	54	NA
Reliant DD450	200	450	2	98% @ 3 mic.	40	55
General 10-600 M1	275	1,400	3	98% @ 0.5 mic.	50	64
Penn State AC465	219	465	2	98% @ 3 mic.	40	65
Penn State AC930	299	930	2	98% @ 3 mic.	51	67
Penn State AC2500	999	2,500	2	98% @ 3 mic.	160	67
Ridgid AF2000	149	200	2	93% @ 5 mic.	14.5	61
Ridgid AF3000	249	300	2	97% @ 5 mic.	45	63
JDS Air-Tech 10-16	695	1,000 or 1,600	3	99% @ 5 mic.	92	NA
JDS Air-Tech 750	259	200 to 750	3	99% @ 5 mic.	62	NA
JDS Air-Tech 8-12	495	800 or 1,250	3	99% @ 5 mic.	86	NA
JDS Air-Tech 2400	1,095	2,400	3	99% @ 5 mic.	203	NA
Jet AFS-2000	568	800-1,700	3	98 % @ 5 mic.	110	NA

KEY: NA: information not available. cfm= cubic feet per minute, * User supplies waste drum.
**Will be sold under the Powermatic name in 2000 or 2001, ■ = PW Recommends

jigsaws

Though not a finesse tool, the jigsaw is a great pinch-hitter when cutting curves or in difficult situations.

Jigsaws are great because they can fill in for tools you don't have. If you need a tool to cut curves, but you don't have $500 for a band saw, the jigsaw can get the job done. Or if you need to cut a plywood sheet down to a manageable size but you don't have a circular saw or a panel saw, the jigsaw is a great pinch hitter. Or if the piece of wood you're working on is too big to cut on your band saw, the jigsaw will save your bacon.

So now that you know you should have one, how much should you spend? There are a stunning array of models that range in price from $30 to $600, though you can buy a jigsaw that will last a lifetime for $150 or less. There are also a lot of features to consider when buying one of these tools. Here are the important ones.

Cutting Power

The cutting power of jigsaws is measured in amps, though that's not the only factor to determine how aggressive the tool is. If the tool has 4 or 5 amps, it's going to handle just about everything except the thickest and densest hardwoods. Also critical to the equation is the tool's "stroke," which is a measure of how far the blade moves up and down. The longer the stroke, the more aggressive the cut (and the cut will be cleaner and chips will be removed faster). Bargain jigsaws have a stroke length of $\frac{5}{8}$". More expensive models have a stroke of $\frac{3}{4}$", 1" or more.

When evaluating how powerful a jig-

Photo by Al Parrish

saw is, also check to see if it has "orbital action." With the orbital action engaged, the blade moves slightly forward on the upstroke and slightly back on the downstroke. This makes the saw cut more aggressively, but produces a rougher cut. On better jigsaws, the orbital action is adjustable and can be turned off.

The maximum cuts per minute isn't terribly important. Just make sure the jigsaw has variable speed so you can slow down in thin material or in tight turns.

Blades

Look carefully at how easy (or nearly impossible) it is to change a blade. Less expensive jigsaws need a screwdriver or allen wrench to change the blade. More expensive models will have a lever or handle that twists or turns to loosen the blade. And a few models have a lever that almost spits the blade out of the tool.

Another important feature is the blade guide. This is a small grooved wheel or notched metal guide behind the blade that keeps your cut on track and prevents the blade from deflecting or breaking.

Body Features

Jigsaws come in three body styles: top handle, barrel grip and in-line. Top handle jigsaws are the norm in this country, though the European-style barrel-grip tools are getting more popular every day, especially among professionals. The in-line jigsaw is like a miniature reciprocating saw, which is great for getting into tight spaces.

Also check out the base of the saw to see if it bevels. This allows you to make angle cuts. Make sure the beveling mechanism has detents (or stops) at 0 and 45 degrees. And check out how easy it is to change the angle. Some need a screwdriver, others an allen wrench and the easiest need only the flick of a lever.

Finally, see if the saw has dust collection. Some require you to buy an aftermarket accessory to connect the jigsaw to your shop vacuum. Dust collection is a real plus because even though these tools don't throw up a lot of sawdust, there's enough to obscure your cutting line.

Should You Buy Cordless?

In the last few years, more manufacturers have started offering cordless versions of these corded tools. The models we've tried have more than enough power and features to handle the needs of a kitchen installer or deck builder. But if you use your saw only in your shop, we recommend you instead spend your money on a corded saw with more features or power. But if you need to work where the power supply is questionable, these are great tools. **PW**

Blade Shanks: The Final Word

If you've been shopping for a jigsaw, you've probably been mystified by the number of types of blade shanks listed in the advertising copy: universal style, T-style, bayonet style, Bosch style, U-style, not to mention a few proprietary shanks particular to one manufacturer.

Here's the straight dope on jigsaw blade shanks: there are two predominant styles, the T-style and the U-style. Most of the other descriptions are just different names for the same kind of blade shank.

T-STYLE • Also known as Bosch style or bayonet style, these blades have a notch on each edge of the shank. When you insert the blade into a blade holder that accepts this blade, some sort of clamp will usually fasten itself around those notches. We say "usually" because some jigsaws — particularly those that accept all types of blades — use only a friction clamp or some other friction device to hold the blade in place. While the friction clamps will hold the blade fine, it's not as tight a lock as those that have a clamp that closes around the notches.

U-STYLE • Also known as universal style, these blades have a small U-shaped cutaway on the shank. Some have holes in the shank. These blades are grabbed by a screw or friction.

PW Recommends

The following **jigsaws** have been tested or used by the editors of *Popular Woodworking* and have earned their recommendation.

Occasional User

If you spend less than $50 for a jigsaw, you're going to get a tool with just a few features and a short lifespan. That's why for the occasional user, we recommend the **Grizzly G8994**. Modeled after an old Bosch jigsaw, the Grizzly is an outstanding deal at $60 plus shipping. And it's got variable speed, orbital action and a footplate that bevels. Also highly recommended is the **Freud FJ85** (about $110), which has a dust collection hookup — a feature you usually find only on higher priced tools.

Serious Home Woodworker

The undisputed leader in jigsaws is Bosch. You'll find one of these tools in nearly every cabinetshop in America. They're powerful, give you a clean and straight cut and are designed to last through a lot of jobs. We prefer the **1584AVS**, which is Bosch's barrel-grip model ($155). Though the top-handle model, **1587AVS**, is just as nice. Also recommended is the **Milwaukee 6266-21** ($150) which has the easiest toolless blade-changing feature available. The motor draws slightly more power than the Bosch model, though they both feel equally powerful. Milwaukee also makes this jigsaw in a barrel-grip model for $30 more (the **6276-6**).

Advanced Woodworker or Professional

Many advanced and professional shops will also use the **Milwaukee** and **Bosch** saws mentioned above. Their engineering and design allow them to perform well in the most demanding of situations. If you make your living with a jigsaw, these are still the tools you need, and we recommend.

jigsaws

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	$30	TH	U	Y	1 1/16	800 - 3,200	3.2	CB	4
Black & Decker JS300K	45	TH	U	Y	1 1/16	800 - 3,200	3.5	CB	4
Black & Decker JS350	50	TH	U*	Y	1 1/16	800 - 3,200	3.7	CB,VP	4
Bosch 1581AVSK	149	TH	T	Y	1	500 - 3,100**	5	CB	5.5
Bosch 1584AVS	155	BG	T*	Y	1	500 - 3,100**	5	CB, Opt.VP	5.5
Bosch 1584AVSK	165	BG	T*	Y	1	500 - 3,100**	5	CB, Opt.VP	5.5
Bosch 1587AVS	150	TH	T*	Y	1	500 - 3,100**	5	CB, Opt.VP	5.5
Bosch 1587AVSK	155	TH	T*	Y	1	500 - 3,100**	5	CB, Opt.VP	5.5
Bosch 1587 AVSP	160	TH	T*	Y	1	500 - 3,100**	5	CB	5.5
Craftsman 17228	80	TH	U	Y	3/4	0 - 3,000**	4	CB,VP	3.4
Craftsman 17230	30	TH	U	N	5/8	2,600 - 3,000**	3	CB	4.4
Craftsman 17231	50	TH	U	Y	5/8	0 - 3,000**	3.5	CB,VP	4.4
Craftsman 17232	70	TH	U	N	5/8	0 - 3,000**	3.5	CB,VP	5
Craftsman 17228	80	TH	U	Y	3/4	0 - 3,000	4	CB,VP	3.4
Craftsman 27251	120	TH	U	Y	1	0 - 3,100**	4.5	-	6.2
DeWalt DW313	115	TH	U	Y	1	3,100**	4.5	-	6.2
DeWalt DW318K	119	TH	U	Y	1	0 - 3,100**	4.5	-	6.2
DeWalt DW321K	165	TH	T, U*	Y	1	500 - 3,100**	5.8	CB	6.4
DeWalt DW323K	165	BG	T,U*	Y	1	500 - 3,100**	5.8	CB	6.4
DeWalt DW933K	280	TH	T,U*	Y	1	2,000**	18v cordless	-	8.1
Fein Aste 638	508	BG	U	N	13/16	1,050 - 2,600	3.9	VP	4.8
Festo PS2E+	292	BG	T	Y	1	1,200 - 3,100**	4	CB,VP	4.9
Freud FJ65	69	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 G8994	60	TH	U	Y	1	0 - 3100**	5	CB	5.5
Hitachi CJ65V2K	180	TH	T,U	Y	1	700 - 3,200**	5.2	CB	5.5
Hitachi CJ65VA2K	190	BG	T,U	Y	1	700 - 3,200**	5.2	CB	5.3
Makita 4304	189	TH	U	Y	1	500 - 3,000**	5.5	-	5.1
Makita 4304T	209	TH	T, U*	Y	1	500 - 3,000**	5.5	CB	5.1
Makita 4305T	209	BG	T, U*	Y	1	500 - 3,000**	5.5	CB	5.1
Makita 4323	99	TH	U	Y	1 1/16	500 - 3,100**	3.7	VP	4
Makita 4324	109	TH	U	Y	1 1/16	500 - 3,100**	3.7	VP	4
Metabo STE70	135	TH	T, U	Y	3/4	1,000 - 3,000**	4.8	CB	4.9
Metabo STE105Plus	251	BG	T,U*	Y	3/4	1,000 - 3,000**	5.2	CB,VP	5.7
Metabo STEB105Plus	199	TH	T,U*	Y	1	1,000 - 3,000**	6	CB,VP	6.2
Milwaukee 6256-6	175	TH	U	Y	1	0 - 3,100	3.8	CB	5.8
Milwaukee 6266-21	165	TH	T*	Y	1	450 - 3,100**	5.7	CB,VP	5.3
Milwaukee 6267-21	319	BG	T*	Y	1	1,700**	12v cordless	VP	5.8
Milwaukee 6276-6	200	BG	T*	Y	1	450 - 3,100**	5.7	CB,VP	5.3
Porter-Cable 548	291	TH	U	N	7/16	0 - 4,500**	3.5	-	6.5
Porter-Cable 9543	183	TH	T*	Y	1	500 - 3,100**	6	CB,VP	6.5
Porter-Cable 97549	154	TH	U	Y	1	500 - 3,200**	4.8	CB	6.5
Ryobi JS45	49	TH	U	N	5/8	0-3000	2.5	CB	3.1
Ryobi JSO48K	89	TH	U	Y	3/4	0 - 3,000**	4	CB	3.4
Skil 4225	25	TH	U	N	5/8	3,200	3.2	CB	3.1
Skil 4235	29	TH	U	N	5/8	0 - 3,200	3.2	CB	3.1
Skil 4340	35	TH	U	Y	5/8	800 - 3,200	4	CB,VP	4
Skil 4339-02	39	TH	U	Y	5/8	800 - 3,200	4	CB,VP	4
Skil 4445	45	TH	U*	Y	5/8	800 - 3,200**	4	CB,VP	4
Skil 4470	55	TH	U*	N	5/8	800 - 3,200**	4	CB,VP	4.1
Skil 4470-44	59	TH	U*	N	5/8	800 - 3,200**	4	CB,VP	4.1

*KEY: -= not available; Blade Mount Type: TH=top handle. BG=barrel grip. T = T-style; U = universal. Dust Control: CB = chip blower, VP = vacuum port. *Toolless blade change. **Orbital action.* ■ = PW Recommends

jointers

If you want to ensure your wood is flat and square, you absolutely must buy a jointer to go with your planer.

To be a self-sufficient woodworker you need three tools: a table saw for ripping and crosscutting, a planer to get the wood the right thickness, and a jointer to get a single face and edge straight and square before you can do anything else. It's possible to work without a jointer, but you won't get the best results. Beyond basic surfacing, a jointer is a useful tool for rabbeting, tapering, beveling and chamfering lumber.

Jointers are available in benchtop models with 4" and 6" widths, and floor models are available in 6", 8", 12" and 16" capacities. Almost across the board, the length of the bed (the combined length of the infeed and outfeed tables) increases with the width capacity. The longer the bed, the easier it is to straighten and flatten a board.

Benchtop Jointers

In general, we're not crazy about benchtop jointers. They tend to be underpowered (utilizing universal motors for what is usually an induction motor job), the fences are not as accurate, and the limitations on width and length don't allow you to joint long or wide boards efficiently. If you absolutely have no space for anything but a benchtop machine, then purchase a 6" model with the longest bed possible. If your woodworking has you primarily working with smaller pieces of wood (if you spend much of your time building decorative boxes) then a benchtop

Photo by Al Parrish

jointer may offer what you need for less than $300.

Floor Model Jointers

Most woodworkers will opt for a floor model jointer, with 6" widths being the most popular models, though we recommend 8" for woodworkers who work with solid lumber.

Six inch jointers cost between $325 and $1,300, with motor sizes mostly ¾ or 1 hp, and bed lengths ranging from 35½" to 56" . They are available as open-frame units or with enclosed bases. Open frame models are less expensive, but enclosed bases add extra weight to help the machine operate more smoothly.

Eight inch jointers cost between $675 and $2,400, with motor sizes between 1½ and 2 hp, and bed lengths ranging from 64" to 76½". They all have enclosed stands, which offer better dust collection, usually with the addition of a dust port cover.

Table Adjustment

To adjust the infeed table height, you have the option of either hand wheels or levers. Though there is a certain amount of personal preference involved in this selection, in general hand wheels are the more precise method of adjustment. A hand wheel can be turned a half-turn for a 1/64" increase in depth, while a lever doesn't have the referencing ability, making adjustment more arbitrary. While all jointers include a scale to measure table adjustment, they are useful only for getting you in the ballpark. But to many woodworkers a jointer isn't required to be precise — at least in depth of cut — and a lever action provides smoother control of heavier infeed tables.

Knives

One way to gauge the performance of a jointer is the smoothness of the cut, with the least noticeable knife marks on the board. Some of this is a function of the knife height adjustment in the cutterhead, but a larger part is the number of knives used and the rpms at which the cutterhead spins. The higher the rpms and number of knives, the more efficient the performance of the machine, and the smoother the cut.

Benchtop models routinely offer two knives in the cutterhead, giving a ratio of around 16,000 cuts per minute. All 6" jointers have three knives offering between 12,000 to 21,000 cuts per minute, depending on the rpm. Some 8" jointers and all 12" and 16" jointers have four knives with an rpm of 4,500 or 5,000. Most machines come with high speed steel knives, but many commercial shops opt to spend some extra money on carbide-tipped knives for their jointers. This isn't a cheap upgrade (in the $110 range for 6" and $250 for 12") but one of the many complaints about jointers is the time necessary to get the knives set correctly. Carbide-tipped knives hold an edge much longer.

Knife Setting

There are a few types of knife-setting jigs available to ease this task. The higher-priced jointers provide a high-quality jig with the machine. In particular, look for a magnetic knife-setting jig. This jig pulls the knife out of the cutterhead to the correct depth, and holds it there while the knife is tightened down.

The other option is to purchase

6" jointers are affordable entry-level machines, however most woodworkers who use primarily solid lumber eventually upgrade to an 8" machine.

PW Recommends

The following **jointers** have been tested or used by the editors of *Popular Woodworking* and have earned their recommendation.

Occasional User

While many occasional users gravitate toward the affordable benchtop models, we don't recommend them because (with a few exceptions) they will likely lead to disappointment over time. Instead we recommend an entry level 6" jointer such as the **Grizzly G1182** for $325. Available with either handwheel or lever adjustment, this jointer offers many quality features at an affordable price.

Serious Home Woodworker

For the serious home woodworker, our recommendation is an 8" jointer. While price may sway you toward a 6" jointer (prices can more than double for an 8" model), in the end you may regret the loss of that 2" when you want to face that special piece of 7¾" curly maple. Many woodworkers end up buying an 8" jointer after a few years anyway, so it's cheaper to buy the the larger machine in the beginning. A proven performer that's competitively priced in its class is the **Delta 37-380** for $1,100. For the more economy-minded woodworker who still wants the capacity, we recommend the **Grizzly G1018** for $675.

Advanced Woodworker or Professional

When it comes to ultimate precision and performance in a jointer, nothing less than an 8" model will do, and when possible a 12" is a great investment for the future. In an 8" model we recommend the **Powermatic Model 60**, selling for around $1,900. For another $1,000 move up to the 12" **Bridgewood BW-12JD**.

a jointer that offers jackscrew adjustment of the knife settings. These make a magnetic jig unnecessary, as the knife can be slowly lifted to the correct height by adjusting the jackscrew. Another added benefit to the jackscrew is that your depth setting is maintained. If you need to simply slide the knife a little to the left or right to avoid a nick you won't have to reset the depth. However, if you sharpen or change the knives, the depth should be reset.

Fence

Until recently jointer fences tended to be fairly simple mechanisms that bolted to the jointer and could be slid across the width of the table to expose the amount of knife needed. The fence also could be angled (usually 45 degrees) to the back of the machine for beveling. Newer fences are adding rack and pinion horizontal adjustment, and inward and outward beveling. It is important that the fence is machined flat and straight, and that it is easy to move and adjust for your needs.

Rabbeting Ledge

Depending on your tastes, the addition of a rabbeting ledge on your jointer may or may not be important. With the proliferation of routers, the benefit to rabbeting ledges has been somewhat diluted, though many woodworkers still find it a fast, efficient and comfortable operation. Again, the benefit will be determined by your work methodology. **PW**

jointers

Model	Price	Width x Length (in.)	# of Knives x Rpm	HP	Volts	Type of Height Adj.	Dust Port	Weight (lb)	Comments & Features
Benchtop									
Craftsman 21724	$120	4-1/8 x 23-1/4	2 x 8,000	5/8	115	K	Y	20	
Craftsman 21768	250	6-1/8 x 28-1/2	2 x 8,000	1-1/2	115	K	Y	52	
Delta 37-070	260	6-3/16 x 30	2 x 6k-11k	10 amp	115	K	Y	35	
Star S3100	250	5 x 31-1/4	3 x 5,000	1/2	115/220	K	Y	110	

Model	Price	Width x Length (in.)	#/Knives x Rpm	HP	Volts	Type of Height Adj.	Dust Port	Jack Screws	Weight (lb)	Comments & Features
Floor										
Jet JJ-60S	$429	6-1/16 x 46	3 x 4,850	3/4	115/230	W	Y	Y	192	
Tradesman 8202A	349	6 x 42	3 x 4,000	1	115/230	W	OPT	Y	169	
General 1180-1-MI	1,217	6 x 42-1/2	3 x 4,200	3/4	115/230	W	OPT	Y	210	
Lobo JT-2206	379	6 x 42-1/2	3 x 5,000	1	115/230	W	Y	NA	205	
Bridgewood BW-6R	399	6 x 45-1/2	3 x 4,500	1	115/230	W	Y	Y	239	
Powermatic 54	500	6 x 45-1/2	3 x 4,500	3/4	115/230	W	Y	N	215	
Reliant DD39C	400	6 x 45-1/2	3 x 4,500	1	115/230	W	Y	N	214	springs/gib screws
Delta 37-190	450	6 x 46	3 x 4,800	3/4	115/230	L	Y	Y	210	open stand
Seco SK-0006JT	495	6 x 46	3 x 5,000	1	115	W	Y	NA	210	
Transpower JT700	325	6 x 46	3 x 4,500	1	115	W	Y	NA	210	
Woodtek 924-028	429	6 x 46	3 x 3,450	3/4	115/230	L	Y	Y	210	
Grizzly G1182	325	6 x 47	3 x 5,000	1	115/230	L	OPT	Y	215	
Grizzly G1182HW	325	6 x 47	3 x 5,000	1	115/230	W	OPT	Y	215	
Grizzly G1182Z	375	6 x 47	3 x 5,000	1	115/230	L	OPT	Y	225	
Grizzly G1182ZX	445	6 x 47	3 x 5,000	1	115/230	L	Y	Y	225	R&P fence, top switch
Star S3104N	525	6 x 47	3 x 5,000	1-1/2	115/230	NA	Y	Y	250	
Delta DJ-15 37-154	1,315	6 x 55-1/2	3 x 5,500	3/4	115/230	L	Y	Y	328	
General 80-100 LM 1	620	6 x 56	3 x 4,800	1	115/230	W	Y	Y	285	
Jet JJ-6CSX	500	6-1/16 x 46	3 x 4,800	1	115/230	W	Y	Y	258	
Ridgid JP0600	399	6-1/8 x 45	3 x 5,000	3/4	115/230	W	Y	N	208	
Craftsman 22724N	379	6-1/8 x 45-3/4	3 x 5,000	1	115	W	N	NA	204	
Delta 37-195	550	6-1/8 x 46	3 x 4,800	1	115/230	L	Y	Y	225	R & P fence
General 80-200 HC MI	2,035	8 x 66-1/2	hel. x 4,500	1-1/2	230	W	Y	Y	516	Helical cutter head
Star S3104	410	7 x 47	3 x 5,000	1	115/230	NA	Y	NA	250	
Sunhill CT-60L	425	7 x 52	3 x 4,500	1	115/230	W	Y	NA	220	
General 480-1-MI	2,417	8 x 64	3 x 4,500	1-1/2	230	W	Y	Y	440	
Grizzly G1018	675	8 x 65	3 x 5,000	1-1/2	230	L	OPT	Y	439	
Star S3107N	825	8 x 65	3 x 5,000	2	230	NA	Y	Y	450	
Bridgewood BW-8J	895	8 x 66	4 x 4,500	1-1/2	115/230	W	Y	Y	420	

Model	Price	Width x Length (in.)	#/Knives x Rpm	HP	Volts	Type of Height Adj.	Dust Port	Jack Screws	Weight (lb)	Comments & Features
Jet JJ-8CS	1,200	8 x 66-1/2	3 x 5,500	2	230	W	Y	Y	398	
Seco SK-0008JT	1,000	8 x 66	4 x 4,500	2	230	W	Y	NA	512	
Woodtek 907-064	789	8 x 66	3 x 4,500	1-1/2	115/230	W	Y	NA	445	
General 80-200 M1	1,305	8 x 66-1/2	3 x 4,500	1-1/2	230	W	Y	Y	515	
Transpower JT980	735	8 x 67	4 x 4,500	2	230	W	Y	NA	490	
North State CT 200	795	8 x 68	3 x 4,500	2	115/230	NA	Y	NA	500	
Delta 37-380	1,100	8 x 72	3 x 5,600	1-1/2	115/230	L	Y	Y	414	R & P fence
Powermatic 60	1,900	8 x 72	3 x 7,000	1-1/2	115/230	L	Y	Y	547	Fence skews
Sunhill CT-204L	885	8 x 72	4 x 4,500	2	230	NA	Y	NA	500	
Delta DJ-20 37-350A	1,500	8 x 76-1/2	3 x 5,500	1-1/2	115/230	L	Y	Y	480	
Craftsman 20651N	1,500	9 x 86	3 x 3,450	1-1/2	230	W	Y	NA	476	
Lobo JT-1008	689	8-1/2 x 66	3 x 5,200	2	115/230	W	OPT	NA	520	
Lobo JT-0012	2,390	12 x 72	4 x 5,250	3	230	W	Y	NA	836	
Star S3103	1,795	12 x 72	3 x 5,200	3	230	NA	Y	NA	1,200	
Seco SK-512JT	2,494	12 x 74	3 x 5,200	3	230	W	Y	NA	1,060	
Grizzly G4178	1,995	12 x 76	3 x 5,200	2	230	W	OPT	Y	840	Rack & pinion fence.
Bridgewood BW-12JD	2,995	12 x 79	4 x 5,000	3 or 5	230	W	Y	Y	968	
General 80-300	3,700	12 x 80	3 x 5,000	3	230	W	Y	Y	1,080	
Delta DJ-30 37-360	3,800	12 x 84	3 x 5,000	3	230/460	L	Y	Y	706	
General 780	4,100	12 x 84	4 x 4,500	3	230	W	OPT	Y	1,500	
Sunhill J-127L	2,950	12 x 84	3 x 4,500	3	230	L	Y	NA	900	
North State CCA512	2,475	12 x 87	3 x 5,200	3	230	NA	Y	NA	1,450	
Jet JJ-12*	4,899	12-5/8 x 84-1/2	3 x 5,000	1/3	230	W	Y	Y	726	
Lobo JT-0016	2,990	16 x 80	3 x 5,250	5	230	W	Y	NA	1,100	
Seco SK-516JT	3,950	16 x 86	3 x 5,200	5	230	W	Y	NA	1,377	
Bridgewood BW-16JD	4,295	16 x 98	4 x 5,000	5/7.5	230	W	Y	Y	1,329	
General 80-400	4,970	16 x 98	4 x 5,000	5	230	W	Y	Y	1,390	
General 80-400 HC	6,570	16 x 98	4 x 5,000	5	230	W	Y	Y	1,390	Helical cutter head.
Mini Max F1	5,995	16 x 102	4 x 5,000	4	230/460	W	OPT	NA	1,653	
North State CCA516	3,195	16 x 111	3 x 5,200	5	230	NA	Y	NA	1,600	

Type of height adjustment: K=knob, W=wheel, L=lever, NA=not available, * = will be sold under the Powermatic name in 2000 or 2001. ■=PW Recommends

For the ultimate experience in flattening solid lumber, professionals demand nothing less than a 12" jointer.

lathes

Add some turnings to your woodworking with this fun and easy-to-use machine.

When you get right down to it, lathes are great fun. There's something satisfying about reducing a spinning chunk of raw wood into something useful or pretty. Lathes require little training and practice to get started, but to be really good on the lathe, training and lots of practice are required.

From a practical perspective, lathes help you make any cylindrical object, from a pen barrel to bowls to spindle legs for furniture. Fluting (decorative grooves the length or leg of a column) can also be done on a lathe, even thread cutting.

There are four types available: mini-lathes, benchtops, floor models and specialized bowl-turning lathes, which are so specialized we won't discuss them here.

Mini-Lathes

Mini-lathes fit on your workbench or come with a small stand. They're actually an evolution of benchtop lathes, but smaller. Mini-lathes are used for turning small items, such as pens, knife handles and other lightweight projects. Generally, mini-lathes offer capacities from 5" over the bed and 12" between centers, to about 10" x 18" between centers. These are not cheap lathes, with prices ranging from $150 to over $1,350, but there is a good mid-range cluster between $200 and $300 that offers superb value.

Photo by Al Parrish

Benchtop Lathes

Benchtop lathes also are designed to be bolted to a workbench and come close to the abilities and capacities of floor models. Benchtop lathes may offer up to 30" swing (roughly the largest diameter turning it can accommodate) and 38" between centers, only a bit behind floor models in capacity. These lathes typically weigh less than 200 pounds, compared to 250 or more for stationary models. Of course, a lot of that weight difference comes from the lack of a stand, which you supply. Prices vary widely, starting around $150, with the top-priced benchtop lathe at almost $2,000.

Floor Model Lathes

Stationary floor model lathes are the big boys of this bunch, designed to turn out massive projects as long as 50" and as large as 24" in diameter. The smallest floor model lathes have capacities of 12" diameter by 35", 36" or 37" in length, while the bigger ones turn up to 24" by 50". The work done is the same, but you can do more of it, more quickly, than with lighter-duty tools. Prices also tend to be higher. The cheapest floor model lathe is going to cost about $300, while the most costly slips past $4,500.

Weight is highly variable, with lightweight stationary lathes under 150 pounds, but most are in the 250 plus pound area, rising to a high of 850 pounds.

It is in the floor model category that many custom features are found. Horsepower can go up. Types of drive can change. One model has a headstock that slides the full length of the bed when most headstocks are either locked in place or only swivel. Several brands have reversible motors (said to be good for sanding some projects), while another offers an optional reverse. At least one lathe can be completely built to customer specifications.

Beds and Bed Materials

A lathe starts with a bed made of cast iron, steel tubing or wood, with cast iron usually considered the better choice because the more solid the bed, the more accurate the lathe will be. As with most floor model woodworking tools, heavy is better because the weight absorbs vibration.

The Headstock

The headstock is the business end of the lathe. It contains pulleys attaching the motor to the drive center. The drive center fits in a conical hole called a Morse taper, and has a pencil-point center with four chisel-like knives that hold the turning material as you work. Lathe speed is controlled at the headstock by a series of pulleys and adjustable belts or a variable speed motor that you set with a dial. Lathe speeds typically range from 500 to 3,000 rpm. Some lathes offer headstocks that swivel 90 and 180 degrees to allow you to turn larger pieces by working away from the bed. This is called "outboard" turning.

The Tailstock

At the right end of the lathe is the tailstock. You move the tailstock to accept different length material between the centers. Mounted on the tailstock is the "live center," which is a pencil-type point fitted to a free-spinning bearing.

The Tool Rest

Between the tailstock and the headstock is the tool rest. Tool rests come in various shapes (straight, long, short and S) to match specific tasks. It's where the tool rests as it shaves away material. Adjustable for height and distance from the work, it's got to lock solidly in place on the tool bed, yet adjust easily along the bed's length.

Power

Rated power on lathes jumps all over the lot, as do speed ranges. The actual and rated power may differ widely but, for most work, starting at ½ hp is fine. Mini-lathes are lighter, smaller, designed to work with smaller stock, and may have as little as ⅛ hp, enough power to do what it's supposed to do. Benchtop and a number of floor models start around ½ hp (about as low as things get). Most are in the ¾ and 1 hp category, until you hit the high-end

PW Recommends

The following **lathes** have been tested or used by the editors of *Popular Woodworking* and have earned their recommendation.

Occasional User

For the occasional user, there are a couple of ways to go for recommendations. For the most versatile lathe we recommend **Delta's 46-701** lathe for around $550 with stand. The ¾ hp, 12" variable speed lathe offers 36" between centers and a pivoting headstock with a 16" diameter swing over the bed. If this is a little too expensive for your occasional use, we recommend the **Grizzly G1067Z**, with a ½ hp motor, 40" between centers, a spindle indexed at every 15- degrees and a pivoting head with a 14"-diameter swing over the bed for $400. Also worthy of mention are two specialty lathes which have a little less capacity, but can be nice introductions to turning. The **Jet JML-1014 Mini-Lathe** for $300 with 14" between centers, and 10" diameter swing, powered by a ½ hp motor, or the **Delta 46-250 Midi-Lathe** ($320) with a ½ hp motor, 10" swing and 14¼" between centers which can be extended to 37" with an accessory bed.

Serious Home Woodworker

For the serious home turner we recommend the **Nova 3000** lathe with the 1hp variable speed reversing DC motor for $1,225. The Nova offers a sectional cast iron bed that allows the length to be increased by 21" sections, and a 16" diameter swing over the bed. This is a well-designed lathe with lots of performance for the price.

Advanced Woodworker or Professional

For the advanced turner we have one strong recommendation: the **Oneway Model 2436**. This is a solid, well machined and designed lathe that offers a 24" diameter swing over the bed, and 36" between centers. Powered by either a 1½, 2 or 3 hp motor, the Oneway offers speed ranges from 0-3,000 rpm and a 48-position indexing plate. Priced at $4,550 this is an expensive machine, and the accessories can kick the price to $6,000 if you're not paying attention. But it is the pro lathe of choice.

stuff where 1½ hp to 2 hp dominates.

Power Transfer

Power transfer is a feature that can be troublesome, because some types force you to change belts on step pulleys (SP) every time you change speeds. This isn't a critical factor, and was the only way to go on small lathes for a great many years. It does, though, force an extra action and take time. Today, numerous benchtop lathes offer electronic drive (ED) that changes speeds with the turn of a knob. The Reeves drive (RD) is another animal, and is fairly complex. It is a shifting cone-belt arrangement that works with a shaft handle that the turner moves to change speeds.

Speed Ranges

Speed ranges determine how well you can do most kinds of work. The lower speeds are great for roughing out stock. The higher speeds allow fast cutting and finishing. And the speed ranges are not within a few rpm of each other like drill speed ranges. One lathe has a lower speed of 24 and a top speed of 4,000 rpm (both very low and fairly high). Another may offer 5 to 3,000, exceptionally low (beaten only by the machine that turns 0-2,750) and moderately high. The average lathe, whether ED or SPD or RD, tends to run in the 400 to 2,700 range, which is more than adequate for most turning. Speed ranges don't differ a whole lot from benchtops, with a low of zero and a high of 3,500 rpm. **PW**

lathes

Brand & Model	Price	Swing x Length (in.)	Spindle Dia. (in.) x tpi	Bed Type	Outboard Turning	Drive Type	Rpm	HP	Weight (lb.)
Benchtop									
Grizzly G5967	$150	6 x 12	3/4 x 16	CI	N	ED	300 - 4,750	1/4	46
Record DML/24X	464	9 x 24	3/4 x 16	CI	Y	SP-3	450 - 2,000	1/3	88
Oneway 1018	1,350	10 x 18	1 x 8	ST	N	ED	24 - 4,000	1	140
Jet JML-1014	499	10 x 14	1 x 8	CI	N	SP-6	500 - 3,950	1/2	72
Delta 46-250	300	10 x 14-1/4	1 x 8	CI	N	ED	500 - 3,000	1/2	85
Grizzly G8690	140	6 x 17-3/4	3/4 x 10	TS	N	ED	0 - 3,250	1/2	48
Delta 46-700	470	12 x 36	1 x 8	CI	Y	RD	500 - 2,000	3/4	125
Bridgewood BW-1240	199	12 x 37	3/4 x 16	TS	Y	SP-5	575 - 3,580	3/4	78
Tradesman 8235	209	12 x 37	3/4 x 16	CI	Y	SP-5	575 - 3,580	3/4	69
Vega 1240	695	12 x 40	1 x 8	TS	Y	SP-4	300 - 2,265	3/4	115
Craftsman 21717	399	15 x 38	1 x 8	CI	Y	ED	400 - 2,000	1	165
Woodfast M408-B	1,795	16 x 16	1-1/4 x 8	CI	Y	SP-5	370 - 2,700	-	250
Nova 3000	1,225	16 x 24	1-1/4 x 8	CI	Y	SP-8	215 - 3,600	-	150
Hegner 200S	1,999	16 x 36	33 mm x -	ST	Y	SP-5	400 - 2,800	3/4	125
Woodfast M908-B	1,895	16 x 39	1-1/4 x 8	CI	Y	SP-5	370 - 2,700	-	300
Woodfast M410-B	1,895	20 x 16	1-1/4 x 8	CI	Y	SP-5	370 - 2,700	-	250
Record CL3/36X30C	1,786	30 x 36	3/4 x 16	ST	Y	SP-5	450 - 2,000	3/4	190
Woodfast M910-B	1,995	20 x 39	1-1/4 x 8	CI	Y	SP-5	370 - 2,700	-	300
Record CL3/48X30C	1,961	30 x 48	3/4 x 16	ST	Y	SP-5	450 - 2,000	3/4	200
Floor									
Jet JWL-1236	570	12 x 34-1/2	1 x 8	CI	Y	RD	550 - 3,000	3/4	183
Grizzly G5979	295	12 x 35	1 x 8	CI	Y	RD	580 - 2,850	1/2	190
Yorkcraft YC-900WL	249	12 x 35	1 x 8	CI	NA	NA	800-2,400	1/2	176
Delta 46-701	540	12 x 36	1 x 8	CI	Y	RD	500 - 2,000	3/4	148
Ridgid WL1200	299	12 x 36	3/4 x 16	TS	N	SP-4	875 - 3,450	1/2	149
Woodtek 829806	1,040	12 x 37-1/2	1 x 8	CI	Y	RD	360 - 2,100	3/4	285
Delta 46-612	4,012	12 x 38	1 x 8	CI	Y	RD	340 - 3,200	1	588
General 160-1-M1	1,530	12 x 38	1 x 8	CI	Y	SP-4	850 - 3,500	3/4	290
General 160-2-M2	1,815	12 x 38	1 x 8	CI	Y	RD	500 - 3,000	3/4	350
General 260	2,734	12 x 38	1-1/4 x 8	CI	Y	SP-4	600 - 2,800	1	560
General 260-1	2,948	12 x 38	1-1/4 x 8	CI	Y	RD	375 - 3,300	1	610
General 260VD	3,399	12 x 38	1-1/4 x 8	CI	Y	ED	5 - 3,000	1	630
Delta 46-221	2,143	12 x 39	1 x 8	CI	Y	SP-4	915 - 3,260	3/4	305
Delta 46-541	2,000	12 x 39	1 x 8	CI	Y	RD	340 - 3,600	3/4	410
Robert Sorby RS2F	2,150	13 x 24	1 x 8	ST	Y	SP-5	265 - 2,400	1	205
Robert Sorby RS3F	2,200	13 x 36	1 x 8	ST	Y	SP-5	265 - 2,400	1	220
Robert Sorby RS4F	2,250	13 x 48	1 x 8	ST	Y	SP-5	265 - 2,400	1	235

Brand & Model	Price	Swing x Length (in.)	Spindle Dia. (in.) x tpi	Bed Type	Outboard Turning	Drive Type	Rpm	HP	Weight (lb.)
Robert Sorby RS6F	2,350	13 x 72	1 x 8	ST	Y	SP-5	265 - 2,400	1	265
Grizzly G1067Z	399	14 x 40	1 x 12	CI	Y	RD	510 - 2,800	1/2	190
Grizzly G1495	695	14 x 40	1 x 12	CI	Y	RD	500 - 3,070	3/4	265
Grizzly G8691	150	14 x 40	1 x 8	CI	N	ED	0 - 3,000	1/2	76
Vega 1446	1,295	14 x 46	1 x 8	TS	Y	RD	320 - 3,400	1	375
Vega 1553	1,765	15 x 53	30 mm/no thrd*	TS	Y	RD	320 - 3,400	1	285
Vega 1596	2,700	15 x 96	30 mm/no thrd*	TS	Y	RD	320 - 3,400	1-1/2	388
Woodfast M408-5	2,895	16 x 16	1-1/4 x 8	CI	Y	SP-5	370 - 2,700	1-1/2	385
Woodfast M408-V	3,295	16 x 16	1-1/4 x 8	CI	Y	ED	0 - 2,750	1	385
Hegner HDB200S	2,000	16 x 39	33 mm	ST	N	SP-4	400 - 2,800	3/4	126
Hegner HDB200	2,500	16 x 40	33 mm	ST	N	SP-4	800 - 2,800	3/4	250
Hegner HDB200/1200	3,295	16 x 49	33 mm	NA	NA	SP-4	NA	3/4	290
Nova3000	1,225	16 x 24	1 1/4 x 8	CI	NA	SP-8	215 - 3,600	1	143
Laguna L1200	3,495	17-1/2 x 50	33 mm	TS	N	SP-4	500 - 2,800	2	500
Vicmark VL200	1,095	16 x 15	1-1/4 x 8	CI	N	SP-6	232 - 2,880	1.5	NA
Woodfast M908-5	2,995	16 x 39	1-1/4 x 8	CI	Y	SP-5	370 - 2,700	1-1/2	520
Woodfast M908-V	3,395	16 x 39	1-1/4 x 8	CI	Y	ED	0 - 2,750	1-1/2	520
Hegner 200/1250	3,299	16 x 49	33 mm	ST	N	SP-4	800 - 2,800	3/4	290
MVMT-1 500	3,490	16 x 59	#4 MT on OD	ST	Y	SP-4	720 - 3,100	2	495
Conover Deluxe	2,600	16 x unlim.	1-1/2 x 8	WO	Y	SP-4	600 - 2,600	1-1/2	405
Conover Master Turner	3,100	16 x unlim.	1-1/2 x 8	WO	Y	ED	0 - 2,600	1-1/2	405
Oneway 2016	4,150	20 x 16	33 mm x 3.5**	ST	OPT	ED	0 - 3,000	1-1/2, 3	600
Woodfast M410-V	3,395	20 x 16	1-1/4 x 8	CI	Y	ED	0 - 2,750	1-1/2	475
Powermatic 3520	4,317	20 x 34 1/2	1-1/4 x 8	CI	Y	ED	0 - 3,200	2	650
Oneway 2036	4,300	20 x 36	33 mm x 3.5**	ST	OPT	ED	0 - 3,000	1-1/2, 3	850
Woodfast M910-V	3,495	20 x 39	1-1/4 x 8	CI	Y	ED	0 - 2,750	1-1/2	575
Oneway 2416	4,400	24 x 16	33 mm x 3.5**	ST	OPT	ED	0 - 3,000	1-1/2, 3	800
Vicmarc VL316	3,395	24 x 21	1-1/4 x 8	CI	Y	ED	0 - 2,500	1-1/2	600
Oneway 2436	4,550	24 x 36	33 mm x 3.5**	ST	OPT	ED	0 - 3,000	1-1/2, 2, 3	850
Vicmarc VL348	3,695	24 x 50	1-1/4 x 8	CI	Y	ED	10 - 2,700	1-1/2	700

Brand & Model	Price	Swing x Length (in.)	Spindle Dia. (in.) x tpi	Bed Type	Outboard Turning	Drive Type	Rpm	HP	Weight (lb.)
Mini									
Sherline Pen Lathe	400	3-1/2 x 8	3/4 x 16	ST	Y	ED	70 - 3,000	1/2	30
Klein Mini Lathe	349	5 x 10-1/2	3/4 x 16	AL	N	SP-6	500 - 5,200	-	8
WoodWrite 462	3,990	5-1/2 x 16-1/2	3/4 x 16	ST	N	SP-6	450-5,700	1/3	38
Carba-Tec	200	6 x 12	3/4 x 16	CI	N	SP-4	860 - 3,475	-	36
Carba-Tec ED	270	6 x 12	3/4 x 16	CI	N	ED	860 - 4,500	1/6	36
Grizzly G5967	150	5-5/16 x 12	3/4 x 16	CI	N	ED	300 - 4,750	1/4	46
PSI CML3XL	275	6 x 12-1/2	3/4 x 16	CI	N	ED	400 - 4,500	1/4	37
Ryobi ML618	250	6-1/4 x 18	3/4 x 16	TS	Y	ED	500 - 2,500	1/3	29
Record RPML 300CL	652	8-1/2 x 12	3/4 x 16	CI	Y	SP-3	540 - 2,400	1/3	77
Zyliss Torno	150	8-3/4 x 23-3/4	NA	TS	N	NA	NA	NA	10
Vicmarc VL100	300	9 x 12	1 x 8	CI	N	SP-6	685 - 4,280	-	57
Jet JML-1014	320	10 x 14	1 x 8	CI	N	SP-6	500 - 3,975	1/2	59
Oneway 1018	1,350	10 x 18	1 x 8	ST	N	ED	24 - 4,000	1	14
WoodWrite 360	945	5-1/2 x 16-1/2	3/4 x 16	ST	N	SP-6	450-5,700	1/3	35

MT= morse taper, AL = aluminum, ST = steel, CI = cast iron, TS = tube steel, WO = wood, ED = electronic drive, RD = reeves drive, SP-X = stepped pulleys and- number of steps. Y = yes. N = no. NA = information not available.
* = setscrew secures faceplate and chuck, ** = between threads ■= PW Recommends,

miter saws

Make crosscuts, miters and bevels with this powerful and accurate machine.

A generation ago, most well-equipped woodworking shops had a radial arm saw to crosscut and miter lumber. These days, the miter saw has replaced the radial arm in most shops because it's less expensive, portable and more accurate.

In fact, the miter saw is capable of both rough work and finesse. You can crosscut rough stock before jointing and planing, trim studs to size, crosscut moulding or make picture frames with tight miters.

There are three types of miter saws:

• **Standard miter saws.** These saws basically combine the old wooden miter box and a circular saw. You can make crosscuts and miters anywhere between 45 degrees (or more) and 0 degrees to the left and right. These saws are available with a blade between 8¼" and 15" in diameter.

• **Compound miter saws.** For just a few dollars more, you get a saw that makes crosscuts and miters — plus the head bevels to 45 degrees or more to the left, right or in both directions. If you've ever cut crown moulding, you know how necessary this function is. These saws are available with a blade between 8¼" and 12" in diameter.

• **Sliding compound miter saws.** At the top of the line is this saw, which has the saw head mounted on a sliding carriage so you can crosscut and miter wide boards, up to 12" wide on many models. These saws are available with a blade between 7½" and 12" in diameter.

For home woodworkers, we recommend either a 10" or 12" compound miter saw or a 10" sliding model. Some woodworkers use the standard miter saws with a 15"

Photo by Al Parrish

blade, but we think there's more blade deflection and for that price ($650) you might as well buy a sliding compound miter saw. When buying, here are the important features to look for.

Cut Capacity

Buy as much cutting capacity as you can afford. In general, a 10" compound saw will crosscut a board that's up to 2¾" thick and 5¾" wide with the blade set to 0 degrees. With the blade set to 45 degrees, its capacity is somewhat diminished. A 12" compound miter saw will handle boards up to 8" wide at 0 degrees and 5¾" when set at 45 degrees.

Sliding compound miter saws, on the other hand, will handle stock up to 12" wide at 0 degrees and 8¾" at 45 degrees, but that capacity comes at a price, usually about $500.

Miter Range

All miter saws swing 45 degrees to the left and right, but some go a couple degrees further. This helps you get tight miters when you're working in a corner or on a case that isn't square. Look for saws that swing at least a couple degrees more.

As important as the miter capacity are the controls that change your settings. Some saws make it easy, some don't. Make sure the saw has stops at the common miter settings, such as 0, 22½ and 45 degrees.

Bevel Range

When you buy a compound saw, look for a saw that will tilt right at least 45 degrees. Some of the better saws also tilt to the left.

Make sure it's easy to lock and unlock the bevel and that there's a stop at 0 degrees.

Motor Power

Believe it or not, the motor isn't a big issue with miter saws. All the saws on the market in the United States use universal motors, the same sort of powerplant in your router. We have yet to test a miter saw that lagged in a crosscut. Don't let a couple amps on the motor's information plate be a deciding factor.

Stock Blade

You should demand a carbide tooth blade for your chop saw. High speed steel blades make ragged cuts that are fine for framing, but not for finesse work. If the saw doesn't come with a carbide blade, buy one with either a 0 degree or -5 degree hook to the teeth. This will make a cleaner cut.

Dust Collection

Dust collection is all over the map with miter saws. Most of the dust bags work poorly on these tools. Your best bet is to hook yours up to a vacuum, and to add dust collection down by the fence, too.

Balance, Weight, Ergonomics

With sliding compound miter saws, you need to pay attention to the way the tool balances on your bench. Some saws are designed so you don't even need to clamp them to your bench. Others will tip over with the saw carriage all the way back.

If you plan to use your saw on a job site, pay particular attention to the weight. Unlike with table saws, lightweight miter saws are a good thing. Also check out the handle you pull to make the cut. A horizontal handle is more comfortable than a vertical one. **PW**

Compound miter saws are a trim carpenter's best friend. If you ever plan on cutting crown moulding, get a compound model.

PW Recommends

The following **miter saws** have been tested or used by the editors of *Popular Woodworking* and have earned their recommendation.

Occasional User

There are two outstanding saws that are perfect for the occasional woodworker. **The Delta 36-225** 10" compound miter saw is priced less than $200 in most markets and comes with a carbide blade, useful table extensions and a front-mounted work clamp. Also recommended is the **Hitachi C10FC2** (also about $200), which also comes with a 10" carbide blade and top-mounted work vise. While the Hitachi doesn't come with the table extensions included on the Delta, it does miter to 60 degrees to the left, whereas the Delta miters only to 47 degrees.

Serious Home Woodworker

The serious home woodworker should consider buying a 12" compound miter saw. We recommend the **Bosch 3912** 12" compound miter saw. It has an excellent fence and is capable of cutting a 4 x 8 and can be bought for $350 or less. We also recommend **Porter-Cable**'s new **model 3802** 12" compound miter saw, which has the same cutting capacity, and we recommend **Ridgid**'s **MS1250**, which is a bargain at $297.

Advanced Woodworker or Professional

Many contractors prefer the **Hitachi C8FB2** 8½" sliding compound miter saw, and we also recommend it. This saw will set you back about $450, but it can crosscut a 12"-wide board at 0 degrees, which is enough for almost all woodworking applications. However, the crown prince of miter saws is the **Makita LS1013**, which has won every tool award this magazine gives out. It is the perfect combination of engineering and design, and is the saw we use every day in our shop.

miter saws

Model	Price	Blade dia. (in.)	Max Crosscut T x W (in.)	Miter Range (L, R)	Bevel Range (R, L)	Depth Stop	Amps	Dust Collection	Weight (lbs)	Comments
Straight Miter										
Delta 36-040	$149	8-1/4	2-1/8 x 5-1/8	47, 47	N/A	N	9	DB/VP	16	9 miter stops
Tradesman 8325	129	8-1/4	2-1/8 x 5-1/4	45, 60	N/A	Y	9	DB/VP	28	
Black & Decker BT1000	150	10	2 x 6	47, 47	N/A	N	15	VP	29	
Craftsman 21240	140	10	2-5/8 x 5-3/4	45, 45	N/A	Y	13	DB/VP	31	
Delta 36-070	145	10	2-1/4 x 5-3/4	48, 50	N/A	N	13	DB/VP	28	5 miter stops
Makita LS1030N	179	10	2-3/4 x 5-1/8	45, 52	N/A	N	15	DB/VP	24	9 miter stops
Milwaukee 6490-6	279	10	2-1/2 x 5-9/16	51, 59	N/A	Y	15	VP	32	steel blade
Ryobi TS1330DX	140	10	3-9/16 x 5-9/16	46, 46	N/A	Y	14	VP	36	electric brake
Hitachi C15FB	660	15	4-3/4x 7-9/32	52, 52	N/A	Y	15	DB/VP	55	table extensions
Makita LS1440	699	14	4-3/4 x 6	45, 45	N/A	N	12	DB/VP	66	
Compound										
Black & Decker BT1500	200	10	2 x 6	47/47	-2/47	N	15	DB/VP	30	
Delta 36-075	170	10	5-3/4 x 2-3/8	47, 47	48, -3	N	13	DB/VP	28	5 miter stops
Delta 36-220	150	10	2-3/4 x 5-1/8	47, 47	47, 2	N	15	DB/VP	49	table extensions
Delta 36-225	200	10	2-3/4 x 5-5/8	47, 47	48, 3	N	15	DB/VP	33	table extensions
Hitachi C10FC2	200	10	2-5/8 x 5-3/4	60, 45	45, 0	Y	15	DB/VP	32	10 miter stops
Hitachi C10FCD	270	10	2-27/32 x 5-5/8	45, 45	45, 45	Y	13	DB	33	10 miter stops
Makita LS1040	279	10	2-3/4 x 5-1/8	45, 52	45, 0	N	15	DB/VP	24	pivoting fence
Makita LS1045	279	10	2-3/4 x 5-1/8	45,52	45,0	N	15	DB/VP	42	
Milwaukee 6494-6	329	10	2-1/2 x 5-9/16	51, 59	50, 3	Y	15	VP	38	tall fence
Craftsman 21211	210	10	2-5/8 x 5-3/4	45, 45	45, 0	Y	15	VP	34	alum. base
Craftsman 21230	210	10	2-5/8 x 5-3/4	45, 45	45, 0	Y	15	VP	48	cast iron base
Ridgid MS1050	199	10	2-5/8 x 5-3/4	45, 45	0,45	Y	15	DB/VP	42	table extensions
Ryobi TS230	215	10	3-9/16 x 5-9/16	46, 46	45, 0	Y	13	VP	32	table extensions
Tradesman 8328	189	10	2-5/8 x 5-3/4	45, 45	45, 0	Y	12	DB	34	
Bosch 3912	320	12	3-7/8 x 5-7/8	52, 50	47, -3	Y	15	DB/VP	43	
Craftsman 21212	310	12	2-1/2 x 7-7/8	45, 45	45, 0	Y	15	DB/VP	51	table extensions
Delta 36-235	310	12	2-1/2 x 8	48, 48	47, 2	N	15	DB/VP	50	sliding fence
DeWalt DW705	320	12	2-1/2 x 7-7/8	48, 48	0, 48	N	15	VP	40	
Makita LS1220	359	12	3-7/8 x 6	48, 48	45, 0	N	15	DB/VP	38	soft start
Porter-Cable 3802	350	12	2-1/2x 8	48, 48	47, 2	N	15	DB/VP	50	
Ridgid MS1250	297	12	2 x 8	48, 48	0, 48	Y	15	DB/VP	57	
Tradesman 8338	279	12	3-7/8 x 5-7/8	45, 45	34, 45	Y	15	DB/VP	58	
Sliding Compound										
Makita LS0711Z	399	7½	2 x 7-1/8	47, 55	45, 0	Y	10	DB/VP	23	
Makita LS711DWBEK	480	7½	2 x 5-7/8	47, 57	45, 0	Y	18V	DB/VP	24	Cordless
Craftsman 21294	450	8½	2-5/8 x 12	45, 60	45, 0	Y	10	DB/VP	44	2 dust ports
Freud TR215	270	8½	2-3/4 x 11-3/4	45, 45	45, 0	N	9.7	DB/VP	55	dual pole
Hitachi C8FB2	450	8½	2-9/16 x 12	45, 57	47, 0	Y	9.5	DB/VP	39	3 bevel stops
Ryobi TSS200	409	8½	2-5/8 x 12	45, 60	45, 0	Y	10	DB/VP	43	table extensions
Tradesman 8336	349	8½	2-9/16 x 12	45, 60	45, 0	Y	10	DB/VP	50	
Bosch 3915	500	10	3-1/2 x 12	52, 62	47, -2	Y	13	DB/VP	47	table extension
Delta 36-240	449	10	3-5/8 x 11-1/2	57, 47	45, 0	Y	15	DB/VP	51	work clamp
Hitachi C10FS	550	10	3-17/32 x 12-9/32	45, 57	45, 45	Y	12	DB/VP	44	soft start
Makita LS1011	410	10	2-5/16 x 12	45, 57	45, 0	Y	12	DB/VP	35	single pole
Makita LS1013	520	10	3-5/8 x 12	47, 52	45, 45	Y	13	DB/VP	47	dual pole
Milwaukee 6496-6	589	10	3-7/16 x 12-3/8	51, 59	48, 3	Y	15	VP	52	
Milwaukee 6497-6	649	10	3-7/16 x 12-3/8	51, 59	48, 3	Y	15	DB/VP	56	table extensions
Porter-Cable 3807	500	10	3-5/8 x 11-1/2	57, 47	45, 0	Y	15	DB/VP	51	dual pole
DeWalt DW708	620	12	4-1/2 x 12	50, 60	48, 48	Y	13	VP	57	sliding fence
Makita LS1212	700	12	3-7/8 x 12-1/4	47, 60	45, 45	Y	15	DB/VP	48	dual pole

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

routers

One of your first tools should be a router. Choose the right type and it will serve you unerringly for years to come.

For as simple a machine as the router is, it has an amazing number of applications in woodworking. Basically a universal motor with a clamping mechanism attached, the router can create hundreds of edge profiles, cut dadoes, rabbets, finger joints, dovetails, do inlay work and template work. And that's just scratching the surface. Routers are amazing tools, and I wouldn't want to have a shop without at least one of them.

Routers break into three distinct categories: trimmers, fixed-base and plunge routers. They all essentially function the same way, but some routers perform specific tasks better than others.

Trim Routers

Trim routers are designed specifically for work with laminates (such as Formica), but they're also great for veneer work and jobs that require precision. With motors ranging from 3.3 amps to 5.6 amps and producing up to 30,000 rpms, these diminutive tools are capable of great finesse. All trim routers use a ¼" collet and come standard with a height-adjustable flat base. Many are sold in kits that offer a tilting base to make angled cuts, an offset base to allow the bit to reach within ½" of a corner, and underscribe bases to match veneer or laminate seams. These routers range in price from $100 to $160, with multi-base kits costing $200 or more.

Fixed-Base Routers

The standard in routers for many years was the fixed-base router, named because of

Photo by Al Parrish

its simple, flat base that mounts to the motor and is adjustable in height to raise or lower the bit in relation to the workpiece. With motor ratings ranging from 6.5 to 15 amps, these routers operate at top speeds of around 25,000 rpm, and some offer variable speed control. Usually affixed with interchangeable ¼" and ½" collets, these routers are capable of the great majority of routing applications, including use in router tables. Prices range from $70 to more than $300, but with the most common 10- and 12-amp models in the $170 range.

Fixed-base routers come in two different designs. There's a two-knob design (that could have large or small handles) or you can purchase a design commonly called a D-handle router. The D-handle also has two handles, but one is a full-grip handle, usually with a built-in trigger. This allows you to operate the router without moving your hands from the handle, making the operation safer and more convenient. A D-handle base also changes the balance and feel of the tool. Some say it's for the better; some prefer a standard base. Check the feel for yourself.

Plunge Routers

Designed to extend the capabilities of the standard fixed-base router, plunge routers allow you to easily raise and lower the bit while the motor is running, which is great for stopped grooves, mortising or template work. With the motor mounted on spring-loaded posts, these routers also offer more precise depth control than most fixed-base models. Plunge routers are available in much the same amperage and price ranges as fixed base routers, with a couple of high-end models going a little higher in price.

Some woodworkers do all their work with a plunge router. In fact, in Europe it's almost impossible to buy a fixed-base router.

Features: Collets

Collets are very similar to the chuck on a drill in function, though they're a lot more simple. A router collet has an inner conical sleeve with divided fingers on one end, and an outer sleeve (or nut) that threads over the inner sleeve. The outer

How To Buy Router Bits

It's a good time to shop for router bits. A few years back you had the option of spending a lot of money for quality bits, or saving a lot of money and buying bits that were, well... disposable. Competition and improved construction techniques have widened the selection range and brought down prices.

It also wasn't too long ago that I would have steered most first-time users away from buying a big set of inexpensive router bits. The low quality usually negated any savings, but today's sets are worth considering.

First, I hope you purchased your router wisely and it has both a ¼" and ½" collet. If the bit itself is ½" in diameter or smaller, a ¼" shank is fine. This is good news because ¼"-shank bits are sometimes cheaper. Larger diameter bits you buy should have ½" shanks (even if they're offered with ¼" shanks).

Bits are sometimes sold in single flute (one cutting surface) design. Though a bargain, their performance is greatly reduced, along with their life span. Two-flute bits are the best choice.

Also look for anti-kickback features. In most bits this is evident from more of the bit's body material being left in place to produce as small a gullet as possible. The smaller the gullet, the less chance a scrap or your workpiece will get caught and thrown.

Another choice is between high speed steel or carbide bits. It's somewhat of a personal choice, and I choose carbide. Carbide bits hold an edge longer, but sharpening needs to be done by a professional. If you feel like sharpening your own bits, high speed steel can provide a very nice quality cut.

So what bits do you need to start? It's not the 20-piece set, unless you've got money burning a hole in your pocket. Start with a ¼", and ½" straight bit, a ⅜" rabbeting bit (with a bearing guide), a 45-degree chamfer bit, a ⅜" roundover bit and a Roman ogee bit. Add dovetail, flush-cutting and other specialty bits as you find the need.

PW Recommends

The following **routers** have been tested or used by the editors of *Popular Woodworking* and have earned their recommendation.

Occasional User

For the woodworker on a tight budget or who wants to test the waters first, the new **Black & Decker RP400K** plunge router offers a 10 amp motor, electronic variable speed, integral dust extraction, rack-and-pinion height adjustment and a spindle lock. Though limited to a ¼" collet, at $99 this is a very good introductory router value. If you prefer to own both fixed and plunge base routers but still feel restrained by price, The **Porter-Cable 693PK** is a 10-amp 690 router that has interchangeable fixed and plunge bases. Selling for a little over $200 this is a great all-purpose router for the occasional or serious woodworker.

Serious Home Woodworker

We recommend the **Makita RD1101**, 11-amp, variable speed, D-handle router, selling for around $289. While new to the market, we feel that the user-friendly base release, and high power with low vibration, linked with Makita's reputation for building great motors, will make this a strong player in the fixed-base arena.

For a plunge router we recommend the **DeWalt DW 621** ($220). This 10-amp tool offers just the right size for convenient handling, integral dust collection (that is efficient and non-intrusive) and a well-designed depth adjustment. Overall, it's a superb machine and has passed *Popular Woodworking*'s Endurance Test.

Advanced Woodworker or Professional

Most woodworkers in this category will do well to use the Makita and DeWalt routers listed in the previous category and add a couple of specialty routers to their inventory. The **Bosch 1608** trim router in the four-base configuration (**1609AKX** for around $245) is a fine addition. Also a larger plunge router for more demanding tasks is appropriate. We suggest either the **Hitachi M12V** or the **Porter-Cable 7529** to fill this bill. Both are priced at around $245.

The DeWalt 621 is one of only a handful of routers that offers built-in dust collection. And it works well.

sleeve compresses the inner sleeve, which then grasps the bit. If a router is provided with two collet sizes, either just the inner sleeve or both the sleeve and nut assembly are simply switched to hold the appropriately sized shank.

The tightening mechanism may be two wrenches turned in opposite directions. We're partial to spindle locks, which use a single wrench to loosen or tighten the collet nut. That's because there's one less wrench to lose, and we find spindle locks faster and easier to loosen and tighten. However, not everyone feels this way.

Available just recently as an after-market accessory is Jacob's PowerCollet which requires no wrenches. While offering a certain amount of convenience, these wrenchless collets still haven't become standard equipment on many tools.

In any fixed-base or plunge router, look for both a 1/4" and 1/2" collet, except for on the largest of routers, which are 1/2" collet only.

Variable Speed

In any router packing more than 8 amps, variable speed control can help the router perform better with larger bits. Big bits, such as panel raising or large profile bits, cut better at lower rpms. Smaller bits cut better at higher speeds.

Soft-Start

A number of routers now offer what is known as a "soft-start" motor that starts the rpms at a lower speed and then ramps up to full speed. The benefit to this feature is safety. Often a router will jerk when started at full power. If the router is touching the workpiece the wood can be damaged, or the router can "walk" and be pulled from your grasp.

Depth Controls

There are almost as many ways to adjust the depth on routers as there are manufacturers. Most have managed to do away with extra tools, but many still use a wing-nut arrangement to loosen and tighten the base for adjustment. Some of the newest models use a tension buckle that's fast and secure. In general, you adjust the height of the bit in a fixed-base router by sliding or rotating the motor in a threaded sleeve, which is attached to the base. There are usually indicator marks of some type to help determine the depth, but fine adjustment still comes down to loosening the base and messing with it until it's right.

In plunge routers, the motor sits on springs in the base. These springs allow you to plunge, and they also push the motor back up when you're done plunging. Height adjustment is frequently controlled by adjustable stops that limit the up-and-down travel of the motor. The better plunge routers offer fine-adjustment features that allow you to fix the depth roughly and then easily fine-tune the height.

Without knowing your specific needs, we recommend you take a moment during shopping to adjust and set the height on the routers you're interested in to see how convenient the process is for you.

Other Options

Another thing to consider is how easily the base plate can be replaced, and if it will easily accept template guides and edge guides. Though you may not be planning on using these guides when you buy the router, you don't want to limit yourself. Template guides reduce the size of the opening in the base, and some bits will not fit through that opening, so buy an extra base plate with a larger hole.

Dust Collection

Only a few routers are designed with built-in dust collection as a feature, and only a few of them have figured it out so that it isn't in the way. There are a couple of after-market collectors that can be added to a router to provide dust collection, but again, these are more of a hindrance to operation than a health benefit. Dust collection on a router is a great idea, but it can be complicated and intrusive to your cut.

In any case, make sure that you have a shop vacuum or dust collector capable of keeping up with the volume of dust created by your router. **PW**

routers

Brand & Model	Street Price	Amps	Speeds (rpm)	Spindle Lock	Depth Adj. (in)	Decibel Rating	Weight (lb)	Comments
Trim Routers								
Bosch 1608	$110	5.6	30,000	N	1/2	70	3.6	Four bases avail.
Craftsman 27512	100	3.8	23,000	N	1 1/8	68	2.7	
DeWalt DW670	110	5.6	30,000	Y	7/8	70	3.7	
Hitachi TR6	120	4	30,000	N	1 1/16	68	3.4	Beveling base
Makita 3700B	149	3.3	28,000	N	1 5/8	68	3.4	
Porter-Cable 309	117	3.8	28,000	N	1	70	3.3	
Porter-Cable 310	154	4	27,500	N	7/8	70	3.4	
Porter-Cable 7310	112	5.6	30,000	Y	1	72	3.4	Three bases avail.
Ryobi TR30U	95	3.8	23,000	N	1 1/8	68	3.0	

routers

Fixed Routers

Brand & Model	Street Price	Amps	Speeds (rpm/k)	Collet Sizes (in)	Trigger Location	Depth Adj. (in)	Decibel Rating	Weight (lb)	Comments
Bosch 1617	$165	11	25	1/4, 3/8, 1/2	B	1 7/8	95	7.5	BNT '98
Bosch 1617EVS	185	12	8-25	1/4, 3/8, 1/2	H	1 7/8	85	7.7	Soft start, BNT '98
Bosch 1618	175	11	25	1/4, 3/8, 1/2	H	1 7/8	95	8	D-handle, BNT '98
Bosch 1618EVS	210	12	8-25	1/4, 3/8, 1/2	H	1 7/8	95	7.7	D-handle, soft start, BNT '98
Craftsman 17506	100	9	15-25	1/4	H	1 1/2	98	9.1	Worklight, spindle lock
Craftsman 27500	130	9	25	1/4, 1/2	H	1 1/2	NA	11	Worklight, spindle lock
Craftsman 17505	80	7.5	15-25	1/4	H	1 1/2	NA	8.3	Worklight, spindle lock
Craftsman 17504	70	8	25	1/4	H	1 1/2	98	8	Worklight, spindle lock.
DeWalt DW610	160	9	25	1/4, 1/2	B	2 3/8	109	7.3	Rack & pinion depth adj.
Makita 3601B	249	8.5	23	1/4, 1/2	H	2	81	8	D-handle.
Makita 3606	129	7	30	1/4	B	3	81	5.5	
Makita RD1100	259	11	24	1/4, 1/2	H	2 3/8	81	7.9	D-handle. Performance: 5 stars
Makita RF1000	239	11	24	1/4, 1/2	B	2 3/8	81	7.1	Performance: 5 stars
Makita RD1101	289	11	8-24	1/4, 1/2	H	2 3/8	81	7.9	D-handle, soft start
Makita RF1001	259	11	8-24	1/4, 1/2	B	2 3/8	81	7.1	Performance: 5 stars
Milwaukee 5660	220	10	24.5	1/4, 3/8, 1/2	B	2 1/4	100	8.5	Depth-adj. ring
Milwaukee 5680	367	12	26	1/4, 3/8, 1/2	B	2 1/4	104	8.8	
Milwaukee 5682	240	12	26	1/4, 3/8, 1/2	B	2 1/4	NA	8.8	
Porter-Cable 100	140	6.5	22	1/4	B	1 1/2	NA	6.8	
Porter-Cable 690*	173	10	23	1/4, 3/8, 1/2	B	1 1/2	103	8	Optional bases avail.
Porter-Cable 691	190	10	23	1/4, 3/8, 1/2	H	1 1/2	103	9.3	D-handle
Porter-Cable 7518	315	15	10-21	1/4, 3/8, 1/2	B	2 1/2	NA	14.5	Soft start
Porter-Cable 7519	351	15	21	1/4, 3/8, 1/2	B	2 1/2	NA	15	Soft start
Ryobi R160K	75	8	25	1/4	H	1 1/2	NA	7.5	Designed for BT3000 table saw
Ryobi R165K	75	8.5	25	1/4	H	1 1/2	104	7.5	Worklight, spindle lock
Ryobi RE170VS	119	8.5	15-25	1/4, 1/2	H	1 1/2	NA	9	Worklight
Ryobi R180	145	9	25	1/4, 1/2	H	1 1/2	100	8.8	Worklight, soft start
Ryobi RE185	150	9.5	15-25	1/4, 1/2	H	1 1/2	NA	8.5	Worklight, soft start

Plunge Routers

Brand & Model	Street Price	Amps	Speeds (rpm/k)	Collet Sizes (in)	Trigger Location	Depth Adj. (in)	Decibel Rating	Weight (lb)	Comments
Black & Decker RP200	$69	9.5	25	1/4	H	2	NA	NA	Soft start
Black & Decker RP400K	99	10	0-25	1/4	H	2		NA	NASoft start, dust collection
Bosch 1613EVS	199	11	12 -22	1/4, 3/8, 1/2	H	2	97	10	Soft start, electronic feedback
Craftsman 17507	120	9	15-25	1/4	H	2	NA	8.4	Spindle lock
Craftsman 27510	190	12	22	1/4, 1/2	H	2 1/2	105	11.5	Spindle lock
Craftsman 27511	250	15	10-22	1/4, 1/2	H	2 1/2	NA	13	Soft start
DeWalt DW621	220	10	8-24	1/4, 1/2	H	2 1/8	99	10	Dust collection, Endurance Tested
DeWalt DW625	300	15	8-22	1/4, 1/2	H	2 7/16	NA	11.3	Soft start, electronic feedback
Fein RT1800	349	15	8-22	1/2	H	3	100	12	Soft start, 1/4" collet opt.
Festo OF1000E Plus	330	7.5	10-20	1/4	H	2 3/16	78	6	Soft start
Freud FT2000E	210	15	8-22	1/4, 1/2	B	2 3/4	NA	12.9	Soft start
Hitachi M8V	206	7.3	10-25	1/4	B	17/8	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	245	15	8-20	1/4, 3/8, 1/2	B	2 7/16	NA	11.7	Soft start, template guide includ.
Makita 3621	160	7.8	24	1/4	B	1 3/8	81	5.3	
Makita 3612	259	15	22	1/4, 1/2	B	2 3/8	102	13.2	Spindle lock
Makita 3612 C	349	15	9-23	1/4, 1/2	B	2 3/8	102	13.2	Spindle lock, electric brake
Porter-Cable 693*	208	10	23	1/4, 3/8, 1/2	B	2 1/2	103	11.5	Two-bases provided
Porter-Cable 7529	245	12	10-23	1/4, 3/8, 1/2	H & B	2 1/2	NA	11	BNT '98, Performance: 4.5
Porter-Cable 7538	315	15	21	1/4, 3/8, 1/2	H	3	NA	17.3	Soft start
Porter-Cable 7539	351	15	10-21	1/4, 3/8, 1/2	H	3	NA	17.3	Soft start
Ryobi R175	115	9	25	1/4	H	2	NA	8.1	Spindle lock
Ryobi RE175	145	9	15-25	1/4	H	2	106	9.4	Spindle lock
Ryobi RE601	250	13.6	10-22	1/4, 1/2	H	2 3/8	NA	13.6	Soft start
Skil 1823	56	8.5	25	1/4	H	2	100	7	
Skil 1840	79	9	25	1/4	H	2	97	7	
Skil 1845-02	99	10	8-25	1/4	H	2	97	7.3	Soft start, toolless collet

KEY: Trigger Location: B = body, H = handle; BNT=Best New Tool rating; * as part of 693PK kit; ■ = PW Recommends,

sanders

Reduce your sanding time by picking a tool that is aggressive and easy to handle.

There are many types of sanders on the market, but if you're going to own only one kind, it should be a random orbit model.

These high-tech marvels excel at smoothing flat surfaces for finishing. The sanding pad both rotates and moves in an orbital fashion. The result is that you remove material quickly, and the scratches (or swirls) left behind are often smaller than those left by other types of sanders and less noticeable because of the randomness of the scratches.

There are four types of random orbit sanders:

- **Palm Grip**: These sanders are small, lightweight and inexpensive. The motor is mounted directly over the pad and you grip the top of the motor (as above).
- **Inline:** These sanders look like the palm-grip models, but they have extra handles on the front, back or both to make them easier to grip.
- **Right Angle:** These resemble an angle grinder and are the most powerful random orbits on the market. They excel at flattening tabletops and leveling joints. You'll wear yourself out if you use these on a lot of vertical surfaces, however, because they are heavy.
- **Pneumatic:** These small sanders are powerful. The only downside is that you need a big compressor to run them and they aren't made with pad brakes, which slow down the pad as it comes into contact with the wood. Without a pad brake, you have to be careful not to gouge or severely scratch the wood. These sanders

Photo by Al Parrish

are rarely found in home shops, so we won't cover them in this year's guide.

Power

When buying a random orbit sander, determine how aggressive it is by checking three things: the amperage, the offset and the number of orbits per minute.

The amperage is a rough measure of how much juice the motor uses. This statistic can be misleading, however, because efficient high-power motors might not draw as much amperage as less powerful, less efficient motors.

Check out the pad's "offset" or "orbit size." This is the measure of the size of the swirls made by the sander. Big offsets remove lots of material but leave a more visible pattern. Smaller offsets aren't as aggressive, but leave less visible scratches.

The number of orbits per minute is also a measure of the aggressiveness of the sander. A variable speed model can help slow down a sander when you want to make sure you don't sand through a veneer surface.

Another critical choice is the way the sanding pad attaches to the sandpaper. You have two choices: pressure-sensitive adhesive (PSA) or hook and loop. PSA is less expensive, but once you remove a sanding disk from the pad, it won't ever stick to the pad again. Hook-and-loop disks can be removed and replaced repeatedly. We recommend hook and loop for all home woodworkers because you'll waste far less sandpaper.

Many sanders today have what is called a "pad brake." This feature slows down the spinning pad as it comes in contact with the wood. It further prevents you from easily gouging the surface you're sanding.

If the sander doesn't have a pad break, it's a good idea to place the sander on your project before you turn it on.

Dust Collection

Also critical is dust collection. Some sanders have great dust collection; on other sanders the bag or canister is only for show. Find out how difficult it is to hook up the sander to your shop vacuum because that's the best way to suck up the dust.

Also be sure to check out how many holes the sanding pad has, either five or eight. Does eight-hole sandpaper actually remove more dust? We're not sure, but it stands to reason that more openings will allow for more dust collected.

Some of Porter-Cable's sanders deftly sidestep this problem with a novel sanding pad. The pad has five holes, but there's also a narrow trench connecting the holes so your eight-hole sandpaper will work just as well. **PW**

Do You Need A Detail Sander?

Detail sanders seem like a great idea, especially when you don't own one and you need to sand something in a tight place. However, over the years we've read hundreds of complaints from woodworkers who say these little tools just aren't up to the job.

We've tested a lot of these tools in our shop, and we understand the complaints. Detail sanders will never be as aggressive as a random orbit sander. But there are a couple models that stand out and have become favorites in our shop.

The Fein Multimaster (MSXE 636-2) is the undisputed king of the heap. At about $175, it is the most expensive detail sander on the market. But you get what you pay for. In addition to aggressively sanding wood in tight spaces, the tool has a variety of accessories that stretch its usefulness. There's a paint-scraping blade, a grout removal blade, a tile-cutting blade, and even a wood-cutting blade that has the same teeth as those on a Japanese pull saw.

The Bosch 1294VSK is a less expensive alternative to the Fein. Costing about $135, the Bosch detail sander is not as aggressive as the Fein, in our opinion, but it can really get the job done.

Also worthy of note is the Metabo SXE400, which is a random orbit detail sander. It's got a 3⅛" round pad, which will get you between spindles, but not into corners. We have yet to test one of these models, but we've always been pleased with the quality of Metabo's German tools.

PW Recommends

The following **sanders** have been tested or used by the editors of *Popular Woodworking* and have earned their recommendation.

Occasional User

We recommend either the **Ryobi RS240** or **Craftsman 11621** palm grip random orbit sanders for the occasional woodworker. For $40 you get a tool that is lightweight, aggressive and has some nice features. The RS240 gives you the option of using either PSA or hook-and-loop sanding disks, while the 11621 is only PSA. These tools are plenty aggressive and fared well in our shop test.

Serious Home Woodworker

There are a lot of really great random orbit sanders on the market today, though a handful stand out. The palm grip **Makita BO5010** and its inline cousins the **BO5020** and **BO5021K** are simply fantastic sanders. Lightweight, ergonomic and aggressive, the 5010 is also noteworthy because of its unequalled dust collection. The price is about $70, and the tool is worth every penny. We also recommend **Porter-Cable's 333** sanders, which are available in either a variable speed or single-speed palm grip model for $70 to $90.

Advanced Woodworker or Professional

For many of the woodworkers in this category the same recommendations as in the previous category still apply. Many professional woodworkers will likely be using air-powered sanders for their ability to work all day long without heavy wear on the machine. We haven't covered air sanders here, but there are electric sanders that will take nearly the same abuse with equally professional results. The **Fein MSF 636-1** random orbit sander is our personal choice. The sander is as aggressive as any on the market, and when coupled with a shop vacuum, you can say goodbye to dust forever. The MSF 636-1 can hog off material with 40-grit sandpaper or polish a finish with 30-micron micromesh paper with equally impressive results.

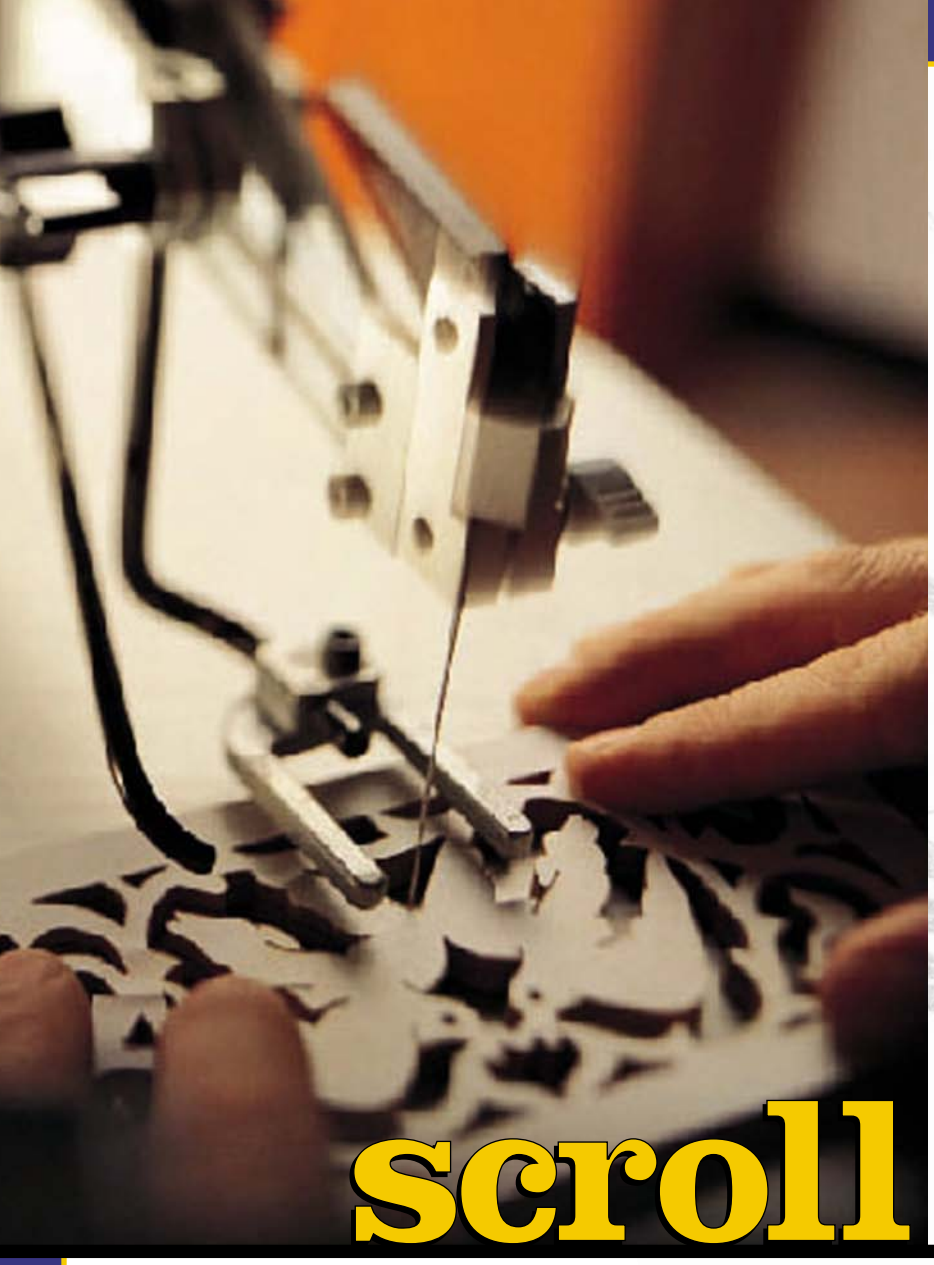
sanders

Brand & Model	Street price	Pad Dia. (in.)	Pad Type	Pad Brake	Orbits per Minute	Dust Collection	Orbit/ Offset	Amps	Weight (lb.)
Palm Grip									
Ryobi RS240	$40	5	HL/PSA	Y	12,500	DB	5/32	2.4	3.6
Black & Decker RO100	39	5	HL	Y	12,000	DB	3/32	2	3.5
Bosch 1295D	72	5	HL	Y	12,000	DC,VP	1/16	2.2	3.5
Craftsman 11621	40	5	PSA	Y	12,500	DB	5/32	2.4	3
DeWalt DW420	66	5	PSA	Y	12,000	-	3/32	2	3
DeWalt DW421	70	5	HL	Y	12,000	DB,VP	3/32	2	3
DeWalt DW422	70	5	PSA	Y	12,000	DB,VP	3/32	2	3
DeWalt DW423	86	5	HL	Y	7,000 - 12,000	DB,VP	3/32	2	3.2
Makita BO5010*†	70	5	HL	Y	12,000	DB	1/8	2	2.6
Makita BO5001	65	5	HL	N	10,000	VP	5/32	1.7	2.9
Makita BO5011	70	5	PSA	Y	12,000	DB	1/8	2	2.6
Milwaukee 6018-6	68	5	PSA	N	12,000	DB,VP	3/32	1.8	2.9
Milwaukee 6019-6	68	5	HL	N	12,000	DB,VP	3/32	1.8	2.9
Porter-Cable 332	62	5	PSA	Y	12,000	-	3/32	1.7	3.2
Porter-Cable 333†	72	5	HL	Y	12,000	DC,VP	3/32	2.4	3.5
Porter-Cable 333VS†	89	5	HL	Y	5,000 -12,000	DC,VP	3/32	2.4	3.5
Porter-Cable 334	72	5	PSA	Y	12,000	DC,VP	3/32	2.4	3.5
Porter-Cable 335	91	6	PSA/HL	Y	9,000	DC,VP	3/32	1.7	3.5

Brand & Model	Street price	Pad Dia. (in.)	Pad Type	Pad Brake	Orbits per Minute	Dust Collection	Orbit/ Offset	Amps	Weight (lb.)
Inline Sanders									
Black & Decker RO600	59	5	HL	Y	10,500	DB	3/32	1.4	5
Bosch 3107DVS	98	5	HL	Y	4,500 - 13,000	DB,VP	3/32	3.3	5
Bosch 3107DVSK	119	5	HL	Y	4,500 - 13,000	DB,VP	3/32	3.3	5
Bosch 3725DVS	150	5	HL	Y	4,500 - 12,000	DB,VP	3/32	3.3	5.1
Bosch 3727DVS	155	6	HL	Y	4,500 - 12,000	DB,VP	5/64	3.3	5.2
Craftsman 27717	60	5	PSA	Y	13,000	DC	5/32	3	3.75
Festo Tooltechnic ET-2E	268	6	HL	Y	8,000 - 20,000	DB,VP	1/8	2	4.6
Makita BO5020	80	5	HL	Y	12,000	DB	1/8	2	3.1
Makita BO5021K	109	5	HL	Y	4,000 - 12,000	DB	1/8	2	3.1
Metabo SXE425	145	5	PSA	Y	5,000 - 12,000	DB	3/16	3.6	5.2
Metabo SXE450	189	6	PSA	Y	4,000 - 10,000	DB	1/8 or 1/4	3.8	8
Ryobi RS280	60	5	HL/PSA	Y	0 - 12,000	DB	5/32	2.8	3.3

Brand & Model	Street price	Pad Dia. (in.)	Pad Type	Pad Brake	Orbits per Minute	Dust Collection	Orbit/ Offset	Amps	Weight (lb.)
Right Angle									
Dynabrade Dynorbital	329	5	PSA	N	10,000	OPT	3/32	5.5	4.8
Milwaukee 6125	230	6	PSA	N	10,000	OPT	5/32	5.5	5
Porter-Cable 7335	113	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	155	6	HL	Y	4,300 - 6,800	DB,VP	3/16	4.3	5.7
Fein MSF 636-1**	525	6	HL	Y	7,500	VP	5/16	4.7	3.7
Porter-Cable 7336	154	6	PSA	N	2,500 - 6,000	OPT	11/32	3.7	5.75
Festo Tooltechnic RO150E	512	6	HL, PSA	Y	4,000 - 11,200	VP	3/16	4.2	5

KEY: -: information not available. HL= hook and loop, PSA=pressure sensitive adhesive, DC=dust canister, DB=dust bag,VP=vacuum port, OPT=optional,*Best New Tool '98; ** Passed PW Endurance Test; †=Performance 4 stars; ■ = PW Recommends



scroll saws

Scrollsaws have features and prices to match the needs of the amateur hobbyist or the scrollin' pro.

The scroll saw is one of the most popular woodworking machines available on the market. It is safe, inexpensive, compact and quiet. Most of all, the scroll saw is fun to use.

There are major magazines in the United States devoted entirely to the scroll saw and a worldwide organization (Scroll Saw Association of the World) that promotes scrolling. Added to all of this, there are also three or four scroll saw newsletters and thousands of books of patterns. But before you can get started in the scrolling community, you need to buy a scroll saw.

Scroll sawing can be fun, relaxing and rewarding. It also can be frustrating and if you do not buy the right saw. There are four major designs of scroll saws available today:

- **Rigid Arm.** This is the Delta jigsaw of the 1930's and 1940's. Today, Powermatic is the only company offering such a saw.
- **Parallel Arm.** The original design of the parallel arm saw actually goes back to before 1860. Two arms run parallel to each other with the blade attached to one end of each arm. There are two pivot points in this design and the blade moves in a nearly true up and down motion.
- **Double Parallel Link Arm.** This is the

By John A. Nelson

John Nelson is a highly regarded scroller and author. His latest book, The Scroll Saw Workbook, *is available from Fox Chapel Publishing in East Petersburg, Pennsylvania.*

Photo by Al Parrish

latest design. It relies on two parallel arms that go back and forth and convert this motion at the very tips of each arm into an up and down motion.

• **"C" Arm Type.** This design simply is an arm shaped like a "C" with the blade attached to the ends of the "C". The "C" arm has only one pivot point and creates a cut that is aggressive and in an arc.

Safety Point

The safest of all designs is the parallel arm saw, because if the blade breaks, the top arm will swing up and out of the way and stop immediately. The "C" arm is the most dangerous to use because if the blade breaks, the top portion of the blade continues up and down until you shut the saw off.

For Fun or Profit?

In addition to the design of the saw, you should consider what you will be doing with your saw. That is, will it be a weekend hobby or a serious, 40-hour-a-week effort? Prices for saws run from as little as $80 to more than $2,000 ($400 is an average price). You can find a "lemon" or a "gem" in all the price ranges, so be aware and shop carefully. If you will be an occasional user, such as a hobbyist, a saw in the $180 range will do. If you plan on going into craft business, look for a saw in the $400 to $1,000 price range. For very high quality and high production you might have to spend $2,400 or more.

Other Features

Because the scroll saw is a little different from most woodworking tools there are a few terms you should be familiar with before shopping.

• **Thickness of cut.** This is the maximum cutting thickness you can cut with the saw. Two inches is about what most saws will cut, most cuts will not be over ¾" thick.

• **Throat length.** This is the distance between the saw blade and the back of the saw. It is the maximum depth of cut you can make. Fourteen inches is the smallest throat available, 30" is the largest. Sixteen inches to 20" is about enough for 95 percent of all projects. So unless you have some unusual need, the extra throat length isn't necessary.

• **Table Tilt.** The ability to cut on an angle is important to some people. Some saws tilt only one way, usually to the left, up to 45 degrees. Some saws tilt both ways. Unless you plan to do some special work that needs the tilt, this may not be particularly important to you.

• **Blades.** There are two major kinds of blades: pin-end and plain-end. Pin-end blades, as the name implies, have a pin at each of the blade in order to hold it in place. Plain-end blades don't have a pin and require a clamp to hold the ends in place. If you want to do true scrolling, don't purchase a pin-end saw. The pin-end blades are too large and cannot make sharp delicate interior cuts.

• **Variable speed.** The speed of a scroll saw is measured in strokes per minute. Some saws have variable speed; some have two speeds, and others have a pulley set up where you have to adjust the belt to get the desired speed. It is a good idea to have at least two speeds, but variable speed is best. The variable speed scroll saw can cut almost anything, including paper, cloth, brass, aluminum and, of course, wood.

• **Stand.** Don't skimp on a stand. Lightweight stands add vibration and noise.

• **Foot Switch.** This handy accessory frees up both hands, makes the saw safer to use and speeds your work.

Blade Changing: the Most Critical Feature

By far the most important feature is how the blade is changed. Nothing will take away from the fun, enjoyment and relaxation of the scroll saw than a saw that requires special tools to change the blade. Be sure to consider only saws that feature a toolless, quick blade disconnect and tensioning system. Have the salesperson show you how the blade is changed. Then change the blade yourself. If the salesperson takes out a special tool for the operation, pass on the saw. **PW**

PW Recommends

The following **scroll saws** have been tested or used by the editors of *Popular Woodworking* and have earned their recommendation.

Occasional User

We recommend **Delta** 16" variable speed **40-540** parallel arm design saw. A quick-release mechanism at the top of the blade allow for simple blade adjustment for fretwork, but a special tool is required to attach the lower part of the blade. We consider this tool a good value for the price, usually on sale for $170. **Dremel's 1680** scroll saw is a bit more expensive at $230 but blade changing is toolless, and the controls are conveniently located at the front of the machine.

Serious Home Woodworker

By far the best value for the weekend hobbyist is the **DeWalt DW788** scroll saw. (It is a double parallel link arm design.) It has the easiest blade disconnect of all scroll saws in all price ranges. It sells for $400 on sale. A heavy duty stand is available and recommended for $90 extra. As of this writing it is the most popular saw available today.

Advanced Woodworker or Professional

If you plan to use your saw 40 hours a week, week in, week out, you should consider buying a saw from one of the top three companies. (Listed below in alphabetical order.) These machines are very evenly matched in quality and performance, with slight differences in specialty features.

- **Excalibur** model **EX 30**
- **Hegner** model **M18V**
- **RBI** model **226**

Selling in the $1,100 and higher price range (or somewhat less at woodworking shows around the country) these are not inexpensive tools. So when possible, try to use each tool a little before you buy and choose the one that best fits your needs.

scroll saws

Brand & Model	Price	Throat Cpy. x Max. Stock Thick (in.)	Arm Type	Quick-Release Blade Tension	Quick-Change Blade Holders	Speed Control	Speed Strokes per Minute*	Table Tilt Range L-R(°)	Weight (lb.)
Benchtop									
Delta 40-530	$120	16 x 2	PA	Y	N	RS	1,750	45 - 0	40
Delta 40-540	160	16 x 2	PA	Y	Y	EVS	2 (400-1,800)	45 - 0	47
Delta 40-560 Type 2	130	16 x 2	PA	Y	Y	RS	2 (850, 1,725)	45 - 0	47
Dremel 1680	229	16 x 2	PA	Y	Y	EVS	500 - 1,600	45 - 45	40
Grizzly G7949	80	15-7/8 x 2-1/4	PA	N	N	RS	2(1,290, 1,720)	0 - 45	40
Grizzly G1257	170	16-1/16 x 2	PA	N	N	EVS	400 - 1,800	0 - 45	40
Grizzly G5776	120	15-7/8 x-1/4	PA	N	N	EVS	400 - 1,400	0 - 45	40
Craftsman 21636	170	16 x 2	PA	Y	Y	EVS	500 - 1,700	47 - 12	32
Craftsman 21623	300	24 x 2	PA	Y	Y	RS	825, 1,725	45 - 0	98
Makita SJ401	175	16 x 2	PA	Y	Y	EVS	400 - 1,600	45 - 15	31
Ridgid SS1650	169	16 x 2	PA	N	Y	EVS	500 - 1,700	5 - 47	39
Ryobi SC155	105	16 x 2	PA	Y	N	-	1,750	45 - 0	30
Ryobi SC162VS	130	16 x 2	PA	Y	Y	EVS	400 - 1,600	45 - 0	25
Ryobi SC165VS	130	16 x 2	PA	Y	Y	EVS	500 - 1,700	10, 45	27
Tradesman 8354SL	120	16 x 2	PA	Y	Y		1,725	45 - 0	46
Tradesman 8368SL	189	16 x 2	PA	Y	Y	EVS	400 - 1,800	45 - 45	45
DeWalt DW788	400	20 x 2	PL	Y	Y	EVS	400 - 1,750	45 - 45	56
Grizzly G1060	160	21 x 1-7/8	CA	N	N	-	1,720	0 - 30	61
Lobo JS-0022	159	22x2	CA	Y	N	-	1,720	15 - 45	65
Floor									
Hegner Multimax 14e	649	14 x 2	PA	N	Y	-	1,700	45 - 0	30
Hegner Multimax 14v	999	14 x 2	PA	N	Y	EVS	400 - 1,700	45 - 0	35
PS Wood 14	459	14 x 2-1/2	PA	Y	Y	SP	3 (1,060, 1,575)	45 - 35	65
RBI Hawk 216 Ultra	899	16 x 2-1/8	PA	N	Y	EVS	300 - 1,450	45 - 45	69
Delta Q3 40-650	390	18 x 2	CA	Y	Y	EVS	(300-2,000)	9 - 45	90
Hegner Multimax 18s	999	18 x 2-5/8	PA	Y	Y	-	1,700	45 - 12	51
Hegner Multimax 18v	1,199	18 x 2-5/8	PA	Y	Y	EVS	400 - 1,700	45 - 12	51
Excalibur EX19VS	1,349	19 x 2	PL	Y	Y	EVS	0 - 1,650	45 - 30	55
Delta 40-680	480	20 x 2	PA	Y	Y	SP	6 (400 - 2,000)	15 - 47	115
Hegner Polymax	2,499	20 x 2	PA	N	Y	SP	700 - 1,600	45 - 0	100
RBI Hawk 220 Ultra	1,099	20 x 2-5/8	PA	Y	Y	EVS	300 - 1,725	45 - 45	93
Shopsmith 555685	850	20 x 2	PA	Y	Y	EVS	500 - 1,450	45 - 45	85
PS Wood 21	600	21 x 2-1/2	PA	Y	Y	SP	5 (170, 1,370)	45 - 35	90
Star S4700	625	21 x 2-1/2	PA	Y	OPT	RS	5 (170, 1,370)	45 - 35	45
Hegner Multimax 22v	1,399	22 x 2-5/8	PA	Y	Y	EVS	400 - 1,700	45 - 12	66
Powermatic 95	1,965	24 x 1-3/4	FA	N	N	EVS	807 - 1,653	15 - 45	220
RBI Hawk 226 Ultra	1,350	26 x 2-5/8	PA	Y	Y	EVS	300 - 1,725	45 - 45	97
Excalibur EX30VS	1,579	30 x 2	PL	Y	Y	EVS	0 - 1,650	45 - 30	65

The Dremel 1680 has most of its controls conveniently located up front.

KEY: Arm Type: CA = C-arm. FA = fixed arm. PA = parallel arm. PL = parallel link. Y = yes. N = no. OPT = optional. - = not applicable. Speed Control: EVS = electronic variable speed. RS = rocker switch. SP = step pulleys. * Saws with 2 or more fixed speeds listed with number of speeds (low speed, high speed). ■ = PW Recommends

table saws

Almost every woodworker needs a table saw; here's how to choose the right one for your shop.

Be careful when choosing a table saw — it's the single most important tool in the American woodshop. If you buy the wrong saw now, you will either end up paying hundreds of dollars later to get the right saw or you will abandon woodworking out of sheer frustration.

First you have to choose which type of saw to buy: a benchtop saw, contractor saw or cabinet saw. Then you have to decide which fence system you can live with and afford. Make the right decisions and your saw will give you years of enjoyment.

Benchtop Saws

Beginning woodworkers are often tempted to buy a $200 benchtop saw to see if they like woodworking and then upgrade later. For the most part, this is a bad idea.

Benchtop saws (priced $200 to $500) are designed for job-site carpenters so the saws are portable and good for rough cuts. The saws' rip fences are less adjustable and accurate than those on bigger saws, and there's almost no way to upgrade your fence.

All benchtop saws are powered by universal motors, which are noisy and not nearly as reliable as the induction motors on contractor and cabinet saws. Because the motors are bolted to the underside of the table saw's top there's a tendency for the motor and blade to flex.

The only reasons to buy a benchtop saw today is if you absolutely don't have the space for a contractor or cabinet saw. And while the top-of-the-line benchtop saws get better every year, they are as expensive as entry-level contractor saws.

Photo by Al Parrish

Contractor Saws

For most beginning woodworkers, contractor saws are the entry-level machine. The fence is more accurate, the motor is quiet, reliable and powerful, and you can add hundreds of accessories to it.

Most contractor saws (priced between $300 and $900) are powered by a 1½ hp induction motor that hangs outside the rear of the machine on a belt and pulleys (a few are direct drive). Unless you rip 3"-thick maple every week, you'll find this motor is up to the task and should last you for 40 years. Almost all of these motors can be easily rewired to run on 220 volt power, which can improve the performance and longevity of your motor. Check the information plate or spec sheet on the saw and see if it's "TEFC," which means it's a totally enclosed fan-cooled motor . That's a good thing in a dusty shop.

When you get your saw home, replace the standard belt. It will get stiff with time and make your machine vibrate annoyingly. Replace it with a link belt.

Make sure the controls of your saw operate smoothly and can lock down easily. Also, if you can swing the extra cash, we recommend you buy your saw with cast extension wings instead of the stamped steel ones. The extra weight will make your saw more stable, and your top will be flatter, which will allow your jigs to ride more smoothly and increase the reliability of their cuts.

Here are other things to look for while in the store:

- Which way does the blade tilt, left or right? This is a personal preference, but people with left-tilt saws swear they are safer because the blade tilts away from the fence.
- How long are the bars for the fence? Most brands let you choose between a 30" rip capacity or 50". Take the 50" if you have the space so you can crosscut to the center of a full sheet of plywood.

Rip Fence: The Most Important Part of Your Table Saw

Trying to make a piece of furniture with a fussy or inaccurate rip fence is asking for trouble. If your rip fence won't lock parallel to the blade, your wood is going to bind or kick back. If you cannot adjust your fence so it is exactly 90 degrees to your saw's table, you're not going to be able to cut joints with your machine. And if you have to check your rip fence with a tape measure every time you set it, you're eventually going to take up golfing or something more relaxing. Get the most accurate fence you can. Here's a list of the most common types of fences listed from least accurate to most accurate.

BENCHTOP FENCES: These are designed for carpenters to cut 2 x 4s and plywood to size for construction. Most lock at the front of the saw and at the back, which in our opinion makes them more difficult to align to the blade. Only a few of the benchtop fences can be adjusted so they sit at 90 degrees to the blade. The fences on the high-end benchtops are better on average, but they're not as good as your average fence on a contractor saw.

FRONT & REAR LOCKING OR INDEXING FENCE: You'll find these fences on entry-level contractor saws. They ride on rails or tubes at the front and the back of the saw. When you set the fence for a cut, this type of fence locks at the front of the saw. It also has a mechanism at the rear of the saw. A little stub will either lock the fence down at the back, or the stub will push against the rear rail to align the fence as it locks. All these fences can be tuned to be accurate, but it takes some work. These fences are good for beginners, but once you try a fence that locks at the front only, you'll never want to go back.

FRONT-LOCKING T- SQUARE FENCE: These fences, which Biesemeyer made famous, lock only at the front of the saw, usually on a big steel beam. They are dead-on accurate, easy to align and set up, and if you want to remove the fence you merely lift it off the table. Most professional shops use a Biesemeyer or a clone of this excellent fence system. Delta's respected Unifence, which looks a lot different than a Biesemeyer, also qualifies as a front-locking fence.

PW Recommends

The following **table saws** have been tested or used by the editors of Popular Woodworking and have earned their recommendation.

Occasional User

We don't recommend benchtop saws for most woodworkers. We recommend you purchase the **Grizzly G1022SM**, a contractor saw with a front-and-rear locking fence, stamped extension wings and a 1½ hp motor for $299 plus $42 shipping. That's less than some benchtop saws, plus you can upgrade this saw later with a better fence and cast-iron extension wings. The **Delta 36-444** and **Jet JWTS-10JF** offer similar features to the Grizzly, but they come at a higher price.

Serious Home Woodworker

Competition is really tight in this category because several manufacturers make outstanding saws, and prices are competitive. There are three machines that really stand out. **Delta's Series 2000** contractor saws (with a Biesemeyer or Unifence, priced around $850 to $880) are great saws that passed our magazine's Endurance Test. **Jet's JWTS-10CW2-PF** ($800) also passed our Endurance Test and offers the XACTA fence on this model, which is an excellent Biesemeyer clone. And **Powermatic's Model 64-A** ($780) won our Best New Tool of 1998 award and also offers a Biesemeyer clone fence. We also recommend the **Grizzly G1023S,** a 3 hp cabinet saw with a Biesemeyer-clone fence for only $775. Wow. You cannot go wrong with any of these saws.

Advanced Woodworker or Professional

The Cadillac of cabinet saws is the **Powermatic Model 66**, which is famous for its top's mirror-like finish, its three-point yoke system and its $2,100 price tag. However, you cannot go wrong with the **General S350-T50, Jet JTAS-10X50** and **Delta 36-821L Unisaw**. All are excellent cabinet saws with world-class reputations that feature Biesemeyer-clone fences, 50" rip capacity and a smaller price tag than Powermatic's warhorse.

table saws

Benchtop

Brand	Price	Blade Diameter (in.)	Max Cut Depth (in.)	Max Rip (in.)	Table Size (in.)	Table Material	Drive Type	Volts	Amps	Dust Port	Weight
Bosch 4000	$500	10	3-1/8	24-1/2	29 x 21-1/2	AL	D	115	15	Y	60
Delta Sidekick 36-275	279	8-1/4	2-1/4	12	26 x 20	AL	D	115	15	N	49
Makita 2702	319	8-1/4	2-11/16	12	27 x 22	AL	D	115	15	Y	40
Delta 36-540	150	10	3	9-7/8	17-1/4 x 26	AL	D	115	13	N	40
Delta 36-550	190	10	3	9-7/8	17-1/2 x 34	AL	D	115	15	N	40
Delta 36-560	230	10	3	9-7/8	17-1/2 x 34	AL	D	115	15	N	60
DeWalt DW744	500	10	3-1/8	24-1/2	26-1/2 x 19-1/4	AL	D	115	13	Y	64
Grizzly G5045	180	10	3-1/16	17-5/8	34-3/8 x 26-1/8	AL	D	115	13	N	60
Hitachi C10RA2	330	10	3	15-3/4	34 x 19-5/8	AL	D	115	15	Y	56
Makita 2703	310	10	3-9/16	12	27 x 22	AL	D	115	15	Y	40
Craftsman 22811	430	10	3-9/16	30	41 x 27	AL	B	115	15	Y	125
Ryobi BT3000SX	390	10	3-9/16	30	41 x 27	AL	B	115	15	Y	107
Skil 3400	189	10	3	12	26-5/8 x 17-5/8	AL	D	115	15	Y	38
Skil 3400-08	199	10	3	12	26-5/8 x 17-5/8	AL	D	115	15	Y	38
Tradesman 8030B	139	10	3-1/8	9-7/8	26 x 17	AL	D	115	13	Y	38
Ridgid TS2400	500	10	3-1/8	25	30-1/2 x 21	AL	D	120	15	Y	75
Tradesman 8035B	189	10	3-1/8	9-7/8	26 x 17	AL	D	115	13	Y	59

Contractor

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
Bridgewood TSC-10CL	595	10	3-1/4	30	40 x 27	CI	Front lock	B	115/230	16-8	N	287
Bridgewood TSC-10C	685	10	3-1/4	26	40 x 27	CI	Front lock	B	115/230	16-8	N	287
Craftsman 22831	500	10	3-3/8	24	44 x 27	CI/S	F & R	B	120	1.5-13	OPT	218
Craftsman 22841	600	10	3-3/8	24	44 x 27	CI	F & R	B	120/240	1.5-13	OPT	236
Craftsman 22851	800	10	3-3/8	30	44 x 27	CI	F & R	B	120/240	1.5-13	Y	265
Delta 36-444	600	10	3-1/8	25	40 x 27	CI	F & R	B	115/230	1.5-12.8/6.4	N	223
Delta 36-445	850	10	3-1/8	25	62 x 27	CI	Front lock	B	115/230	1.5-12.8/6.4	N	248
Delta 36-460	720	10	3-1/8	28	52 x 27	CI	Front lock	B	115/230	1.5-12.8/6.4	N	267
Delta 36-470	850	10	3-1/8	40	64 x 27	CI	Front lock	B	115/230	1.5-12.8/6.4	N	275
Delta 36-480	880	10	3-1/8	52	74 x 27	CI	Front lock	B	115/230	1.5-12.8/6.4	N	286
Delta 36-477	850	10	3-1/8	30	54 x 27	CI	Front lock	B	115/230	1.5-12.8/6.4	N	286
Delta 36-485	850	10	3-1/8	30	62 x 27	CI	Front lock	B	115/230	1.5-12.8/6.4	N	145
Delta 36-600	300	10	3-1/8	27	22-1/4 x 38-3/8	CI	F & R	B	115	15	N	145
Delta 36-650	580	10	3-1/8	30	4-1/2 x 27	CI	F & R	B	115/230	1.5-12.8/6.4	N	286
DeWalt DW746	900	10	3-1/8	30-1/2	27 x 40-1/4	CI	F & R	B	115/230	1.75-15/7.5	Y	254
General 50-175	815	10	3	28	40 x 27	CI		B	230	2-9	N	300
General 50-175L	850	10	3	52	40 x 27	CI		B	230	2-9	OPT	320
General 50-185	1,060	10	3	28	40 x 27	CI		B	230	2-9	N	300
General 50-185L	1,095	10	3	52	40 x 27	CI		B	230	2-9	OPT	220
Grizzly G1022SM	300	10	3-1/8	23	40-5/8 x 27-1/8	CI	F & R	B	115/230	1.5-16/8	OPT	250
Grizzly G1022Z	425	10	3-1/8	24	40-5/8 x 27-1/8	CI	F & R	B	115/230	1.5-16/8	OPT	250
Grizzly G1022ZF	555	10	3-1/8	25	40-5/8 x 27-1/8	CI	F & R	B	115/230	1.5-18/9	Y	285
Grizzly G1022ZFX	600	10	3-1/8	25	40-5/8 x 27-1/8	CI	F & R	B	115	2-20/10	Y	290
Jet JTS-10DD	499	10	3-1/8	27	22-1/4 x 381/2	CI	F & R	D	115	15	N	NA
Jet JWTS-10CW2-PF	800	10	3-1/8	30	40 x 27	CI	Front lock	B	115/230	1.5-18/9	Y	310
Jet JWTS-10CW2-PFX	850	10	3-1/8	52	40 x 27	CI	Front lock	B	115/230	1.5-18/9	Y	325
Jet JWTS-10JF	550	10	3-1/8	30	40 x 27	CI	F & R	B	115/230	1.5-18/9	Y	260
Jet JWTS-10CW2-JF	650	10	3-1/8	30	40 x 27	CI	F & R	B	115/230	1.5-18/9	Y	319
Lobo TS-0010L	489	10	3-1/8	30	40-1/4 x 27	CI	F & R	B	115/230	1.5-20/10	OPT	255
North State TSL-10L	485	10	3-1/4	26	27 x 40	CI	Front lock	B	115/230	2/NA	N	NA
Powermatic 64-A	780	10	3-1/8	50	40 x 27	CI	Front lock	B	115/230	1.5-18/9	Y	320
Ridgid TS2412	469	10	3-3/8	24	44 x 27	CI	F & R	B	115	1.5-13	OPT	254
Ridgid TS2424	649	10	3-3/8	24	44 x 27	CI	F & R	B	115/230	1.5-13/6.5	OPT	220

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
Star S3201	385	10	3	30	40 x 27	CI	F & R	B	115/230	1.5-16/8	Y	285
Star S3205	575	10	3	36	40 x 27	CI	F & R	B	115/230	2-24/12	Y	350
Tradesman 8000T	449	10	3-1/4	24	40-1/2 x 27	CI	F & R	B	115/230	1.5-18/9	N	262
Transpower MS10	385	10	3	30	40 x 27	CI	F & R	B	115/230	2-24/12	N	255
Belsaw MC-12CS-T	902	12	4-1/8	25	39-1/2 x 27	CI		B	115/230	2-20/10	N	260
Lobo TS-0012	519	12	4-1/8	30	40-1/4 x 27	CI	Front lock	B	115/230	2-24/12	OPT	260

Brand	Price	Blade Diameter	Max Cut Depth	Max Rip	Table Size	Table Material	Drive Type	Volts	HP-Amps	Dust Port	Weight	Fence Type	Comm.
Cabinet													
Bridgewood BW-10TS	995	10	3	50	27 x 40	CI	B	230	3-18	Y	472	Front lock	
Craftsman 22694	1,299	10	3	50	36 x 37	CI	B	230	3-17	Y	537	Front lock	
Delta 34-782	1,700	10	3-1/8	52	36 x 27	CI	B	230	3-NA	Y	428	Front lock	L or R tilt
Delta 34-783	2,397	10	3-1/8	52	36 x 27	CI	B	230/460	5-12.6/6.3	Y	447	Front lock	L or R tilt
Delta 36-820	1,600	10	3-1/8	52	36 x 27	CI	B	230	3-17	Y	435	Front lock	L or R tilt
Delta 36-821L	1,600	10	3-1/8	50	36 x 27	CI	B	230	3-12.4	Y	457	Front lock	
Delta 36-830	1,500	10	3-1/8	30	36 x 27	CI	B	230	3-17	Y	419	Front lock	
General 350-1-MI	2,244	10	3-1/8	25	36 x 28	CI	B	230	3-12	OPT	415	Front lock	
General S350-T50	1,995	10	3-1/8	50	28 x 72	CI,AL	B	230	3-12	Y	460	Front lock	
General 50-200	1,220	10	3	28	27 x 40	CI	B	230	2-24	Y	360		
General 50-200L	1,260	10	3	52	27 x 40	CI	B	230	2-24	Y	360		
General 50-275	1,640	10	3	52	36 x 27	CI	B	230	3-12	Y	450		
Grizzly G1023S	775	10	3-1/8	25	36-1/4 x 27-1/8	CI	B	230	3-18	OPT	360	Front lock	
Grizzly G1023Z	995	10	3-1/8	25	36-5/8 x 27	CI	B	230	3-18	Y	425	F & R	
Grizzly G1023ZX	1,095	10	3-1/8	25	36-5/8 x 27	CI	B	230	5-25	Y	425	F & R	
Jet JTAS-10X50-1	1,300	10	3-1/8	50	40 x 27	CI	B	230	3-17	Y	489	Front lock	L or R tilt
Jet JTAS-10X50-3	1,500	10	3-1/8	50	40 x 27	CI	B	230/460	5-15/7.5	Y	562	Front lock	L or R tilt
Jet JTAS-10X50-5/1	1,400	10	3-1/8	50	40 x 27	CI	B	230/460	5-15/7.5	Y	572	Front lock	L or R tilt
Lobo TS-1010	1,129	10	3	49	36 x 27	CI	B	115/230	3-36/18	Y	395	F & R	
Mini Max SC-2	2,995	10	3	51	22 x 33	CI	B	230	3-3/5-14	Y	616		
North State MBS 250	1,150	10	3-1/8	50	36 x 27	CI	B	230	3-16	Y	450	no fence	
North State TSC-10HK	995	10	3-1/4	50	40-1/2 x 27	CI	B	230	3-16	Y	450	Front lock	
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	5-17	Y	605	Front lock	
Robland XZ	2,695	10	3-1/4	50	36 x 48	CI	B	230	3-25	Y	600	Front lock	
Seco SK-1010TS	1,456	10	3	49	36 x 27	CI	B	230	3-NA	Y	495	F & R	
Star S3202	1,095	10	3	36	36 x 27	CI	B	230	3-15	Y	425		
Star S3204	1,295	10	3	36	36 x 27	CI	B	230	5-35	Y	425		
Transpower MBS-250	1,150	10	3	30	36 x 27	CI	B	230	3-18	Y	495		
Bridgewood BW-12CS	1,595	10 & 12	4	50	29 x 44	CI	B	230	3-18	Y	530	Front lock	
Craftsman 22692	1,599	12	4	50	48 x 30	CI	B	230	3-17	Y	717	Front lock	
General 50-375	2,070	12	4	52	48 x 30	CI	B	230	3-12	Y	625		
Grizzly G5959	1,495	12	4	50	48 x 30	CI	B	230	5-27	Y	620	Front lock	
Inca 2200	2,995	12	4	25	27 x 31	CI	B	230	3-18	Y	400	Front lock	
Lobo HTS-0012	929	12	4-1/8	30	27 x 37	CI	B	115/230	3-36/18	Y	385	F & R	
Lobo TS-1212	1,890	12	4	49	48 x 30	CI	B	230	5-19.6	Y	704	F & R	
Mini Max S300W	7,995	12	4	54	34 x 23	CI	B	230	7.25-24	Y	1,280	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	1,841	12	4	78	48 x 30	CI	B	230	5-25	Y	704	F & R	
Star S3206	1,650	12	4	36	40 x 29	CI	B	230	5-35	Y	600		
Sunhill TAS-12	1,895	12	3-3/4		40 x 30	CI	B	230	3/5-17/14	Y	570	F & R	
Sunhill TAS-16	3,350	12 - 16	4 to 6		48 x 38	CI	B	230	7.5-23	Y	1,150	F & R	
Transpower TSC-12HK	950	12	4	30	40 x 27	CI	B	230	3-18	Y	425	Front lock	

KEY: Table Material: AL = aluminum. CI = cast iron. S = steel. Drive Type: B = belt. D = direct drive. NA = information not available. Y = yes. N = no. OPT = optional. Fence type: F & R = front & rear ■ = PW Recommends,

• Is the switch easy to reach or a pain?

• Is the miter gauge worthless, or does it feel heavy-duty and have preset stops at 0 and 45 degrees?

• Can you remove the guard easily? If it's a pain to take off, you'll likely leave it off all the time and compromise your safety in the name of convenience.

Finally, check the fence. It is the most important (and sometimes most expensive part on the saw). Buy the best fence you can, but rest assured you can always upgrade for about $300.

That aside, for the home woodworker on a budget, the contractor saw is the best combination of value and performance.

Cabinet Saws

Cabinet saws are a lot like contractor saws, except everything is bigger, beefier and generally better. Most of the features that are important on contractor's saws are important on cabinet saws as well.

They are built to industrial standards, which means they can be used all day, everyday and provide years of service. Instead of an open stand, cabinet saws are mounted on a steel cabinet (hence the name). This greatly improves dust collection. The motor is bigger (usually 3 hp or 5 hp) and is enclosed inside the cabinet and turns the blade using three v-belts, so cabinet saws actually can take up less space than a similarly equipped contractor saw. The trunnions are beefier and mounted to the top of the cabinet instead of being bolted to the underside of the top, as is the case with contractor saws. Also, the blade adjustment wheels are bigger and easier to turn and the standard fence is usually pretty good.

All this comes at a price. An entry-level cabinet saw starts at $800, and you could spend $2,000 in a heartbeat. However, this is a saw that will last through a lifetime of woodworking, and you'll probably be able to pass it down to the next generation. **PW**

thickness planers

Choose the right planer and it will help you through thick and thin.

The price of thickness planers has been dropping like a rock, so now there's no reason your shop shouldn't have one of these puppies. For less than $300, you can buy a universal-motor benchtop planer that's no bigger than a suitcase. These are capable of giving you a sweet finish, though they're not designed to thickness 100 board feet of oak every day.

For that job you need an induction-motor stationary planer with cast-iron beds and heavy-duty feed rollers. You're going to pay $800 or more for a floor model planer like this, but that's hundreds less than they used to be priced, and the machines are worth every penny. So which machine is for you? A closer look will make things clear.

Benchtop Planers

Ryobi's 10" planer revolutionized home woodworking by making thickness planers affordable. Since the introduction of the AP-10, nearly every manufacturer of power tools has come out with a similar model. As a result, portable planers are cheaper and better than ever before.

Benchtop planers are powered by a uni-

Photo by Al Parrish

versal motor, so these machines are noisy and require more maintenance than an induction motor tool. The rollers that feed the wood under the cutterhead are almost always rubber, which doesn't grip as tightly as the serrated metal rollers in big planers. The rubber also tends to wear out.

All planers have a tendency to "snipe" a board. Snipe is when the last two or three inches of a board gets cut deeper than the rest of the board. We've found it's trickier to adjust out the snipe on a portable planer than it is for a floor model.

Benchtop planers do have some real advantages. The blades are generally easier to change than those in stationary machines. The machines can be stored under a bench when not in use, and the price is reasonable for the home woodworker.

Be aware, however, that you cannot treat a benchtop machine like you would a stationary one. These machines aren't as good at handling rough stock. So if you're bringing home a lot of rough-sawn boards from the lumberyard, you'll find that the boards can bog down the motor. However, portables are perfect for people who buy only a few rough-sawn boards and are willing to patiently coax the machine.

When shopping, look for a machine with a high number of cuts per minute. The higher the number, the better the finish. Check out how easy it is to adjust the infeed and outfeed tables. These will help you reduce snipe. And be sure to open up the machine and see how easy it is to change the blades. This varies from unbelievably simple to a task requiring three hands. Look for portable models that come with two-sided disposable blades that will give you twice the life of single-edge blades. Also see if you can adjust the blades side-to-side slightly so you can cancel out any nicks in your blades.

Cutterhead locks are another feature that's appearing on portable planers. These hold the cutterhead in place on your final pass. They reduce, but do not eliminate, sniping. And finally, some manufacturers tout their turret depth stop, which allows you to return to the same thickness again and again. Some work OK, some don't work so well.

Stationary Planers

These heavy-duty workhorses are powered by an induction motor and built using cast iron. As a result, they are heavier, more reliable and need less coaxing than their smaller cousins. Stationary planers start at 12" wide and go up. Most home woodworkers buying a stationary planer will shop for a 15" model, which is about $1,000.

When shopping for a 15" machine, check out the horsepower (usually 2 or 3 hp) and cuts per minute (between 13,500 and 15,000). But a better measure of the guts of the machine is the maximum cut the manufacturer recommends you take in one pass — most 15" planers can take between ⅛" and ¼".

Check out the feed rate, which is how quickly boards move under the cutterhead. Some floor models have variable feed rates that can be changed with a lever or by adjusting a chain inside the machine.

Another important feature is the knife-changing method. Most use springs or jackscrews to hold the knife in position as you lock it to the cutterhead. If your planer doesn't have one of these, buy a jig for setting your knives.

Rollers are critical in stationary planers. Most quality models use serrated steel feed rollers to grab and drive your wood under the cutterhead. Most have an adjustable chip breaker that will improve the final finish of your board. And be sure your stationary planer has adjustable bed rollers. These rollers are opposite the cutterhead and move stock more smoothly.

Finally, don't forget to add up the niceties that come with some planers. You'll probably want to buy infeed and outfeed rollers for your planer. These come packaged with some planers and are expensive accessories on others. Some planers come with knife-setting jigs, some don't. Some planers come with a dust hood, others don't. When included with the purchase price, these accessories can quickly turn an expensive machine into a reasonably priced one. **PW**

PW Recommends

The following **planers** have been tested or used by the editors of *Popular Woodworking* and have earned their recommendation.

Occasional User

For the woodworker on a budget, we highly recommend the **Delta 22-560** 12½" portable planer. You're not going to find an easier knife-changing system. The 22-560 is truly a portable machine at 65 pounds, and the price keeps falling all the time. We've seen it as low as $300. **Ridgid** entered the thickness planer market a little late. But when the company designed the **TP1300** 13" planer the company's engineers combined many of the best features of their competitors and came up with a great machine. We were impressed by the attention to detail. There's on-board tool storage for everything you need to adjust the machine, including a nifty knife-changing tool. The planer's depth stop is particularly ingenious, and the fit and finish are excellent. We awarded the TP1300 a Best New Tool award in 1999.

Serious Home Woodworker

If you are serious about woodworking, you need a stationary planer. They're more accurate, durable and powerful. Many of the 15" planers on the market today are remarkably similar. In fact, some look like the only difference is the paint job. Among the 15" clones out there we recommend the **Bridgewood BW-15P** planer for its combination of features and price. This planer has the motor mounted underneath the machine in a cabinet to reduce vibration and make knife-changing much easier. The 3 hp motor is rated to take a ¼" cut in one pass. It comes with jackscrews, a dust hood and infeed/outfeed rollers. The price: $850. What a deal.

Advanced Woodworker or Professional

For the pro, it's hard to ignore the price of the **Grizzly 1033** 20" planer: $1,295 plus shipping. Grizzly has been selling this planer for 13 years, which features a 3 hp motor, two speeds, extension rollers and a dust hood. We see them in shops all over the country.

thickness planers

Brand/model	Price	Max stock	Max cut	Knives	Bed	Bed	Feed	HP	Volts	Weight	Comments
Benchtop		(t x w in.)	depth (in.)	# x RPM	material	Rollers	Rollers			(lbs.)	
Grizzly G1017	$369	6 x 12	1/16	2 x 8,500	S	N	R	2	115	85	4 columns
Grizzly G8794	280	6 x 12-1/2	1/16	2 x 8,500	S	N	R	2	115	85	jackscrews
Delta 22-540 Type 2	259	6 x 12	3/16	2 x 8,000	S	N	R	NA	115	62	reversible knives
Makita 2012NB	499	6 x 12	1/8	2 x 8,500	S	N	R	NA	115	60	tools on board
Woodtek 900-853	349	6 x 12-1/8	1/4	2 x 8,000	S	Y	S	NA	115/230	67	adj. bed rollers
Lobo WP-0012	359	6 x 12-1/8	1/8	2 x 8,000	A	Y	S, R	2	115	63	
Ridgid TP1300	399	6 x 13	1/8	2 x 9,500	S	N	R	3	120	96	tools on board
Hitachi P12R	1,049	6-5/8 x 12	3/32	2 x 10,400	S	N	R	2-2/5	115	74	
Ryobi AP12	349	6 x 12-5/16	1/8	2 x 8,000	S	N	R	NA	115	63	
Craftsman 21713	389	6 x 13	3/32	2 x 8,000	S	N	R	2-1/2	115	85	revers. knives
Craftsman 23383	639	5 x 12-1/2	3/32	3 x 4,500	CI	N	R	2-1/2	115	123	moulder
Delta 22-560	320	6 x 12-1/2	1/8	2 x 8,000	S	N	R	NA	115	65	cutterhead lock
DeWalt DW733	399	6 x 12-1/2	1/8	2 x 10,000	S	N	R	3	115	80	
Jet JWP-12-4P	399	6 x 12-1/2	3/16	2 x 8,000	S	Y	R	2	115	67	
Seco SK-0012WP	409	6 x 12-1/2	1/8	2 x 5,000	CI	Y	R	2	115	69	
Star S3712	345	6 x 12-1/2	1/8	2 x 8,000	S	N	R	2	110	70	
Tradesman 8312	349	6 x 12	1/8	2 x 16,000	S	Y	R	2-1/2	115	78	
Floor											
Williams & Hussey	$1,968	8 x 7	1/4	2 x 3,450	CI	N	U	2	115/230	220	moulder
Shopsmith Pro Planer	1,200	4 x 12	1/8	3 x 5,750	CI	N	S, R	1-3/4	115	151	variable speed
RBI 812	949	8 x 12-1/8	3/16	3 x 5,500	S	N	R	3	230	254	moulder/sander
Belsaw 1120002	1,699	6 x 12-1/2	3/16	3 x 4,500	CI	N	R	5	230	350	moulder
Woodmaster 712	1,363	7 x 12-1/2	3/16	3 x 4,200	CI	N	R;S OPT	5	230	300	
Makita 2030SZ	1,199	6-5/16 x 12-9/32	1/8	2 x 9,000	S	N	R	15 amp	115	75	
General 30-100	1,115	6 x 13	1/8	3 x 4,500	CI	N	R	1-1/2	115/230	275	
Grizzly G1037	695	6 x 13	1/8	3 x 5,000	CI	N	R	1-1/2	110/220	233	moulder
Jet JPM-13	800	6-1/8 x 13	1/16	3 x 4,500	CI	N	R	1-1/2	115/230	202	moulder
Jet JPM-13CS	870	6-1/8 x 13	1/16	3 x 4,500	CI	N	R	1-1/2	115/230	242	moulder
General 130-1	3,900	6 x 14	1/16	3 x 4,500	CI	Y	S	3	230	520	jackscrews
General 130-1-M1	3,200	8 x 14	1/8	3 x 4,500	CI	Y	S	3	230	650	
Bridgewood BW-15P	849	6 x 15	1/8	3 x 4,500	CI	Y	S, R	3	230	465	
Craftsman 23374	1,299	6 x 15	1/8	3 x 5,000	CI	Y	R	2	230	548	2 speeds
Grizzly G1021	765	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	2	220	440	
Jet JWP-15CS	1,539	6 x 15	1/8	3 x 4,500	CI	Y	S	3	230	502	closed stand
Lobo WP-0015	999	6 x 15	3/16	3 x 4,500	CI	Y	S, R	3	230	520	2 speeds
Powermatic 15	1,325	6 x 15	1/8	3 x 4,500	CI	Y	S	3	230	484	
Seco SK-0015WP	1,136	6 x 15	1/4	3 x 5,000	CI	Y	R	3	230	488	
Star S3715	925	6 x 15	1/8	3 x 5,000	CI	Y	S	3	220	510	
Sunhill CT-38B	925	6 x 15	1/4	3 x 4,500	CI	Y	S	3	230	506	
Sunhill CT-400D	2,500	6 x 16	1/4 top 1/8 bottom	3 x 15,000	CI	N	S, R	3/top, 2/bottom	230	700	
Transpower AP900	850	6 x 15	1/4	3 x 5,600	CI	Y	S	3	230	500	
Woodtek 875-001	1,075	6 x 15	1/8	3 x 3,450	CI	Y	S	2	230	470	knife tool inc.
Delta DC 380	1,543	6-1/2 x 15	1/8	3 x 5,000	CI	Y	S	3	230	355	jackscrews
North State 315	889	6-1/2 x 15	3/16	3 x 5,000	CI	Y	S	3	230	500	2 speeds
General 30-125	1,600	7 x 15	1/8	3 x 5,000	CI	Y	S	3	230	539	
General 30-300 MI	2,200	8 x 20	3/32	3 x 5,000	CI	Y	S	3	230	880	
Lobo WP-1015	869	8 x 15	1/8	3 x 4,500	CI	Y	S, R	3	230	480	
Makita 2040	2,610	7-5/8 x 15-5/8	3/16	2 x 6,500	CI	Y	R	2	115	254	fast feeding
Bridgewood BW-16PV	2,795	7 x 16	1/4	3 x 5,600	CI	Y	S	3	230	748	variable speed
Transpower AP800	750	8 x 16	1/4	3 x 5,600	CI	Y	S, R	3	220	485	
RBI 816	1,524	8 x 16-1/4	5/16	4 x 4,600	S	N	R	5	230	440	
Powermatic 180	6,299	6 x 18	1/2	3 x 4,800	CI	Y	S	5	230/460	1,523	jackscrews
Woodmaster 718	1,777	7 x 18-1/2	3/16	3 x 4,200	CI	N	R;S OPT	5	220	480	
Seco SK-824WP	4,495	6 x 20	1/4	3 x 5,400	CI	N	S	7 1/2	230	1,606	
Bridgewood BW-200P	2,495	6-1/2 x 20	1/4	3 x 5,000	CI	Y	S	5	230	780	

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
Grizzly G5850	2,495	7-3/4 x 20	1/8	3 x 5,200	CI	Y	S	5	220	900	24 ft. per min.
Seco SK-A720SP	2,676	6-1/2 x 20	1/4	3 x 5,200	CI	N	S	5	230	891	
Bridgewood BW-20PV	3,195	7 x 20	1/4	3 x 5,000	CI	Y	S	3	220	857	jackscrews
Grizzly G1033	1,295	7-3/4 x 20	1/8	4 x 4,833	CI	Y	S	3	220	785	2 speeds
Jet JWP-20H-1*	4,819	7 x 20	1/4	3 x 5,600	CI	Y	S	3	230	1,058	return rollers
Seco SK-0020WP	1,739	7 x 20	1/4	4 x 5,000	CI	Y	R	3	230	882	
Woodtek 816-427	2,479	7 x 20	3/16	3 x 5,000	CI	Y	S	3	230	981	
Woodtek 816-434	2,479	7 x 20	3/16	3 x 6,000	CI	Y	S	5	230	981	3 phase
Woodtek 924-083	1,495	8 x 20	1/8	4 x 5,000	CI	Y	S	3	220	771	5" dust port
Jet JWP-208-1*	2,859	8 x 20	3/32	4 x 5,000	CI	Y	S	3	230	640	opt. 5 hp
Lobo WP-0020	1,590	8 x 20	1/4	4 x 5,000	CI	Y	S, R	3	230	920	
Lobo WP-1120	2,390	8 x 20	1/4	3 x 5,000	CI	Y	S, R	3	230	770	
Lobo WP-2000	2,990	7 x 20	1/4	3 x 5,500	CI	Y	S, R	3	230	850	
North State CT-508	1,395	8 x 20	1/4	4 x 5,000	CI	Y	S	5	230	950	
Star S3720	1,295	8 x 20	1/8	4 x 5,000	CI	Y	S	3	220	885	
Star S3725	1,475	8 x 20	1/8	4 x 5,000	CI	Y	S	5	220	885	
Sunhill CT-508	1,395	8 x 20	1/4	4 x 5,000	CI	Y	S	3	230	925	
Transpower AP200A	1,275	8 x 20	1/4	4 x 5,600	CI	Y	S, R	5	220	860	
Transpower AP720	2,100	8 x 20	1/4	3 x 5,200	CI	Y	S	5	230	770	
Delta DC 580	3,759	8-5/8 x 20	3/16	3 x 5,000	CI	Y	S	5	230/460	840	controls in front
Delta 22-470	4,300	9 x 24	1/4	3 x 5,000	CI	Y	S	7-1/2	230/460	985	2 speeds
Bridgewood BW-508	4,195	9 x 20	1/4	3 x 5,000	CI	Y	S	7-1/2	220	1,370	
Bridgewood BW-240P	3,395	6-1/2 x 24	1/4	3 x 5,000	CI	Y	S	7-1/2	220	880	safety switch
General 330	8,500	9 x 20	1/8	4 x 4,500	CI	Y	S	5	230	2,000	
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	
Seco SK-20WP5	2,014	7 x 20	1/4	4 x 5,000	CI	Y	R	5	230	882	
Laguna P24	14,995	12 x 24	5/16	4 x 4,500	CI	Y	S	12	230	2,000	
RBI 820	1,849	8 x 20-1/4	5/16	4 x 4,600	S	N	R	5	230	500	
Mini Max SP-1	7,255	9-3/4 x 20-1/2	5/16	4 x 4,500	CI	Y	S	9	230/460	1,496	
Delta RC-63	NA	9 3/8 x 24	10 mm	4 x 5,000	CI	Y	S	10	220	1,675	3ph available
Seco SK-820-WP	3,517	6 x 24	1/4	3 x 5,400	CI	N	S	5	230	1,507	
Grizzly G5851	3,295	8-1/4 x 24	1/8	3 x 5,200	CI	Y	S	5	220	1,030	
Grizzly G7213	3,295	8-1/4 x 24	1/8	3 x 5,200	CI	Y	S	7-1/2	230	1,030	3 phase
Seco SK-A724WP	3,278	6-1/2 x 24	1/4	3 x 5,200	CI	N	S	7-1/2	230	1,144	
Seco SK-A724WP5	2,950	6-1/2 x 24	1/4	3 x 5,200	CI	N	S	5	230	1,144	
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
Woodmaster 725	2,898	6-3/4 x 25	3/16	3 x 4,200	CI	N	S	7-1/2	220	808	

Some floor model planers, such as the Jet JPM-13, also allow you to make mouldings by changing the knives to cut various moulding profiles.

Portable KEY: : A = aluminum. CI = cast iron. S = steel. Feed Rollers: R = rubber coated.
S = serrated steel, U=urethane. Y = yes. N = no. OPT = optional. NA = information not available
* = will be sold under the Powermatic name in 2000 or 2001
■ = PW Recommends,