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WOODWORKER™



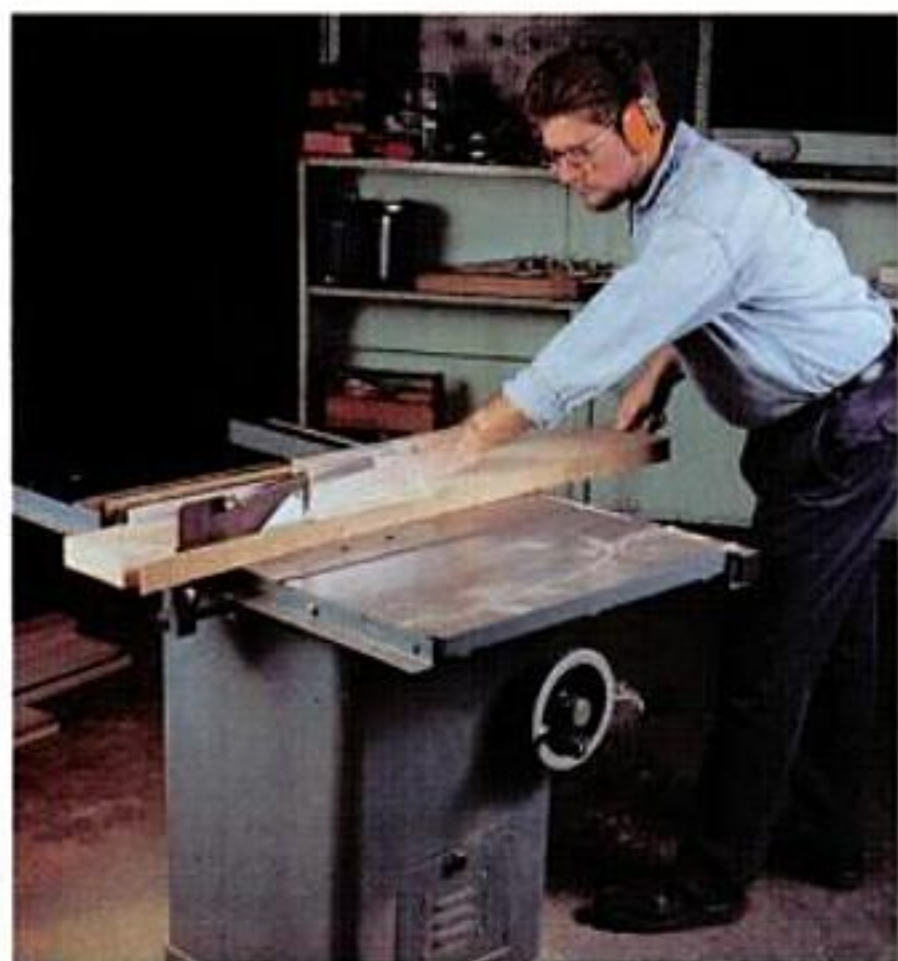
1996 TOOL BUYER'S GUIDE



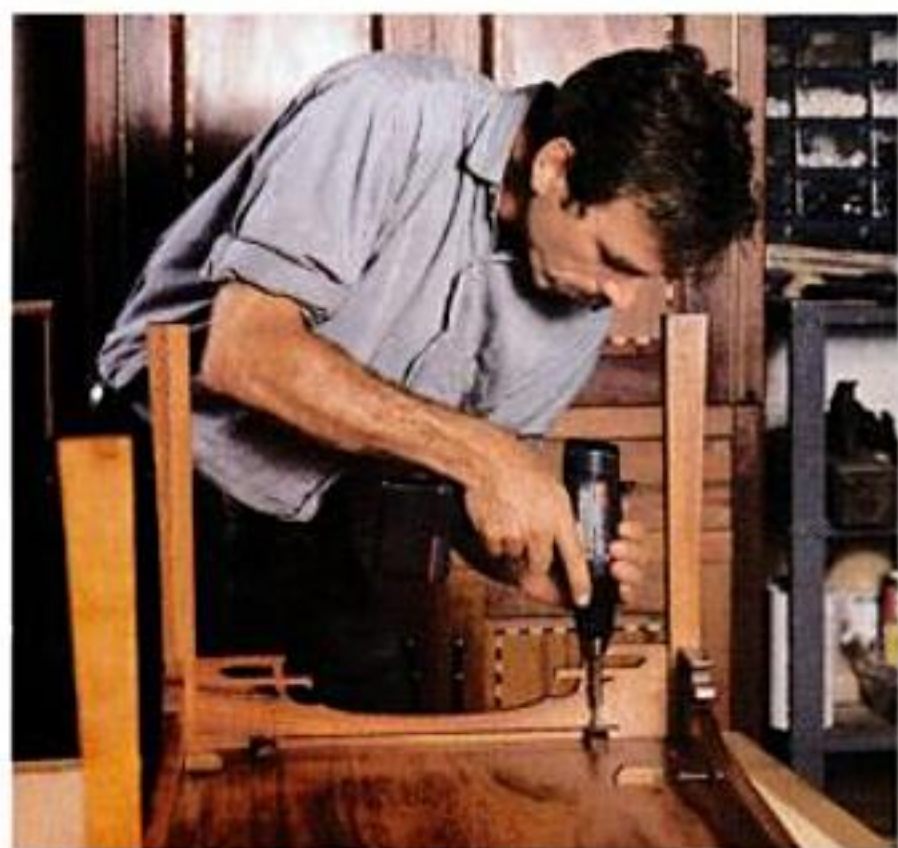
*A Must-Have Sourcebook
for All Woodworkers*



1996 TOOL BUYER'S GUIDE



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AMERICAN WOODWORKER

Issue No. 48



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A WORD FROM THE EDITOR

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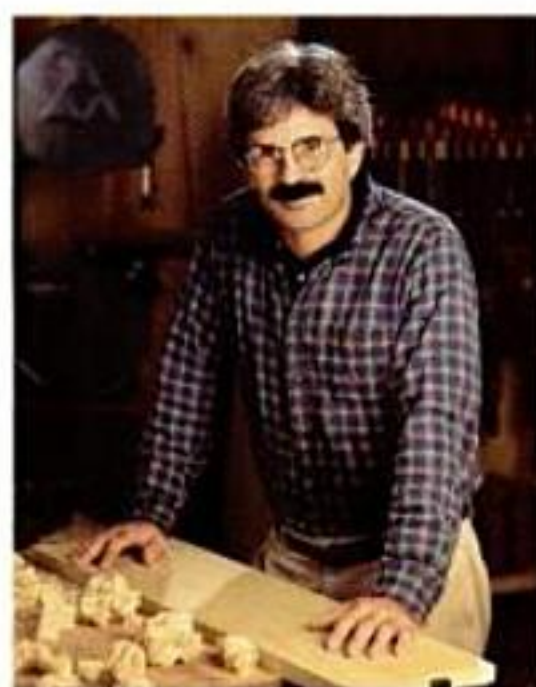
GROWING A WORKSHOP

Growing a workshop is one of the pleasures of woodworking. You start out small with just a handful of tools and expand your collection piece by piece as the years go by. Carefully chosen, each new tool adds a new capability, expanding your range as a craftsman. But there are so many tools on the market today that it's often hard to decide just what tool or brand name to buy.

That's why we bring you AMERICAN WOODWORKER's 1996 Tool Buyer's Guide—a special annual issue devoted entirely to woodworking machinery, tools and equipment. It's designed to help you through the complicated business of selecting a new tool or machine from the staggering number of models on the market. Whether you're a beginner or an expert, an amateur or a professional, the 1996 Tool Buyer's Guide will help you pick the right tools for your shop, your budget, and your kind of woodworking.

This 1996 Tool Buyer's Guide includes up-to-date articles and specifications for the 21 most popular types of power tools and equipment, including four new categories for 1996: air compressors, shapers, oscillating spindle sanders, and wet grinders.

When the "Editors' Choice" symbol appears with a



tool, that means we've tested that tool category in the AMERICAN WOODWORKER shop sometime within the last two years. The "Editors' Choice" symbol marks the tool that rated best in its class at the time of our test. The "Best Buy" symbol marks a tool that we felt offered the greatest value for the dollar at the time of our test.

In addition to power tools, we've included three feature articles that are important reading for any woodworker who's growing a shop. In "Edge Tools," master cabinetmaker Frank Klausz talks about this core group of essential hand tools no shop should be without. Next, in "Clamps for Woodworking," assistant editor Paul Anthony takes a look at woodworking clamps and their uses. Finally,

Bernie Maas's "Shop Safety" tells how to protect your most valuable workshop asset—yourself—based on his long experience as a shop instructor.

Good tools alone won't make you a better woodworker, but they sure do make woodworking easier. AMERICAN WOODWORKER hopes the 1996 Tool Buyer's Guide makes shopping for tools as much fun as using them.

Ellis Valentine
Executive editor



PLAY IT SAFE

Woodworking can be dangerous. Safety equipment such as guards, hold-downs, goggles, dust masks and hearing protection can greatly reduce your risk of injury. But even the best guard won't make up for poor judgment. Use common sense and caution in the workshop. If a procedure feels dangerous, don't try it, no matter how many other folks work that way. Figure out an alternative that feels safe. Your safety is your responsibility.

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Edge Tools

Essential Hand Tools that Every Shop Should Have

by Frank Klausz

In this age of power tools, woodworkers may be tempted to think that they can do everything with machines. Not so. Even in the most automated shops, hand tools are used every day to accomplish countless tasks that are too small or too involved for power tools.

Among the amazing variety of hand tools, none are used more frequently than those I call *edge tools*: planes, chisels, handsaws, scrapers and spokeshaves. In this article, I'll discuss the edge tools I think no shop should be without. I'll also tell you the principal uses of each tool. But first, here are some general observations about edge tools.

Properly tuned and sharpened, edge tools can produce some of the finest surfaces possible on wood. They are relatively inexpensive to buy and use. Compared to power tools, edge tools create precious little dust.

And they're quiet—I've never seen anyone wear ear plugs to use a block plane. Perhaps best of all, these tools are a pleasure to use. A favorite edge tool is like a trusted friend, its handles polished from years of use and care, its feel familiar, and its sharp edge a match for the gnarliest wood fibers.

Planes

If you go to a tool auction or page through an old Stanley catalog, you'll find a bewildering array of hand planes: jack, block, jointer, rabbet, chisel, dado and scores of molding planes. While these planes all have their uses in the shop, there are four basic planes any woodworker should have: the scrub plane, the smoothing plane, the block plane and the jointer plane.

Here are some general points to consider when shopping for planes. All four types mentioned above are available in wood or metal-bodied versions. The heavier metal planes, usually made

from cast iron, are less likely to chatter. And the extra heft imparts more momentum during planing, which helps to make a smooth pass without stops and starts. While wooden planes can be more finicky to adjust, some woodworkers prefer the feel of an all-wood plane. I recommend that you try both types before settling on one or the other.

Regardless of the type of plane you choose, it should have a flat sole and a razor-sharp blade. (For more on sharpening, see AW #16.) To reduce friction between the plane and your work, buff some paste wax onto the sole, or give the sole a coating of vegetable oil.

When planing, you also need a way to hold the workpiece. I recommend a good joiner's bench with a face vise for holding edge work and an end vise that works with bench dogs for securing work to the bench surface.

Scrub plane—When I need to remove a lot of material fast, as with roughsawn stock, I use the scrub plane. This plane is 8 to 10 in. long and has a thick blade held at 45° to the sole. A fairly large opening in the sole, combined with a slightly convex cutting edge, enables you to take thick shavings quickly. But the scrub plane leaves a rough and scalloped surface that will need subsequent smoothing.

Here are some tips on sharpening and using a scrub plane. First, grind and hone the blade to a slightly convex radius. When surfacing rough stock with a scrub plane, start by planing across the grain at an angle of 30° to 45°. This is also a good way to flatten stock that is cupped or bowed. (See AW #32, page 28.)

Smoothing plane—Of all the edge tools in my shop, this is the tool I rely on most. As its name suggests, a smoothing plane is used for smoothing the surface of wood. I use it to remove marks left by my machines, or to smooth the scalloped

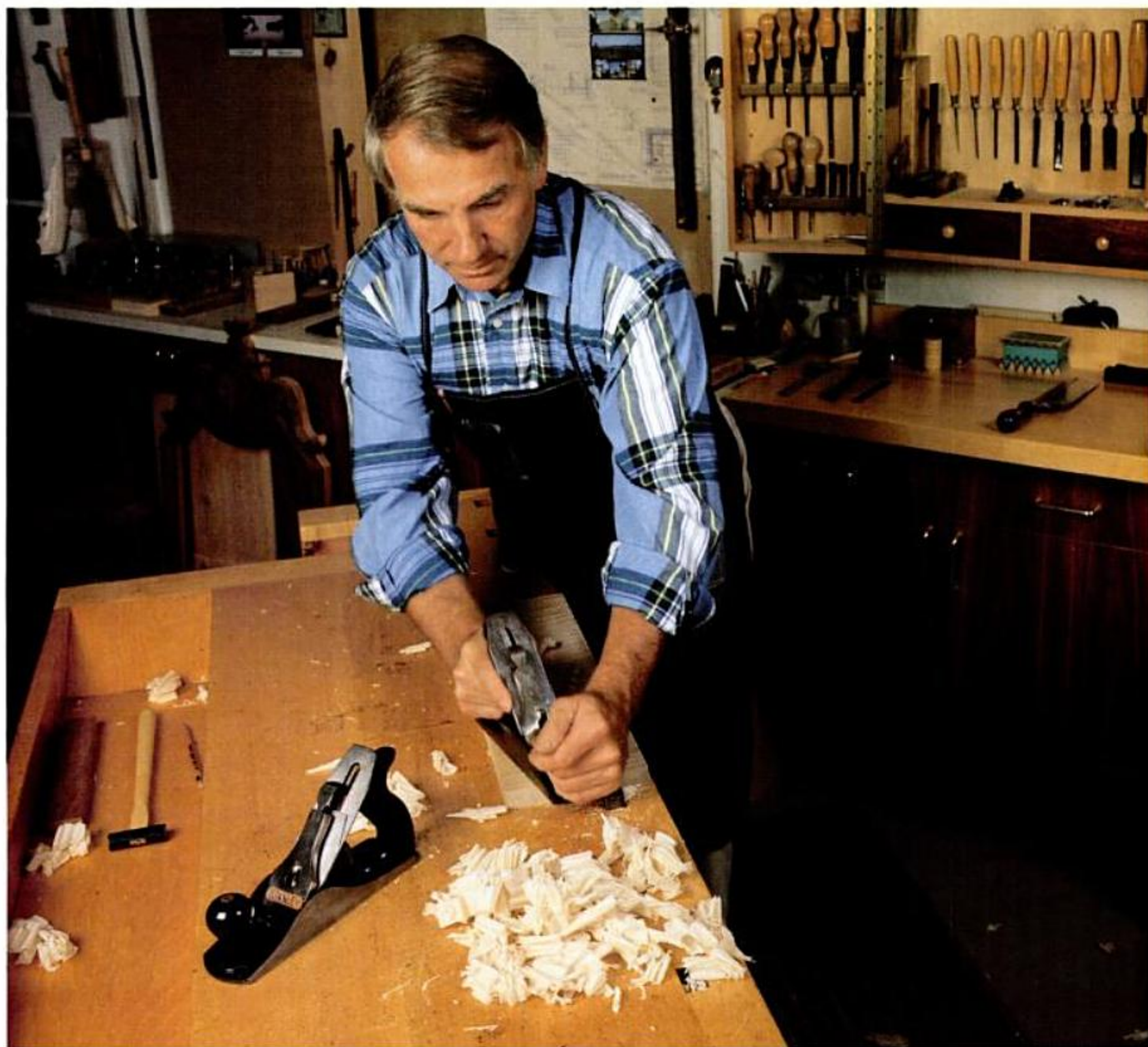
**"A favorite
edge tool
is like a
trusted
friend..."**

—Frank Klausz

Facing page: favorite planes.

A razor-sharp, properly adjusted plane produces a shimmering surface, even on many difficult woods, like this curly maple (top photo). Klausz's favorite planes include (bottom photo, from left): an Ulmia scrub plane, a Lie-Nielsen scrub plane, an Ulmia smoothing plane, a Stanley No. 4, a Lie-Nielsen low-angle block plane, a Stanley block plane, an ECE block plane, a Stanley No. 7 jointer, and an Ulmia jointer.

Planes



著作物



Scrapers

Smoothing difficult woods.

At right, Klausz uses a hand scraper to produce a tearout-free surface on a crotch walnut board. He controls the cut by bowing the blade and tilting it forward as he scrapes.

Below, types of scrapers include (from left): two curved hand scrapers, a straight hand scraper, a "gull-wing" cabinet scraper, and a Stanley No. 112 cabinet scraper.



surface left by the scrub plane. It also excels at small jobs such as final fitting of parts or leveling joints.

Smoothing planes come in a variety of sizes, but the most popular are 8 to 10 in. long. The blade is mounted at 45° to the sole. The smoothing plane has a narrow throat opening in the sole and a chip breaker attached to the iron for smoother cuts. Depending on how you adjust the plane, you can make relatively rough cuts or extremely fine shavings.

My favorite type of smoothing plane is the metal-bodied Stanley No. 4. (See [bottom photo, page 5.](#)) I actually use two No. 4s: one for rougher, thicker

shavings and one for fine cuts. On my "rough" plane, I grind and hone the cutting edge straight across, and I grind small 45° angles on the corners of the blade to prevent them from digging into the work and creating sharp ridges. I set the chip breaker about 1/32 in. back from the cutting edge, and adjust the depth of the blade for a relatively heavy cut. I cut with the grain to minimize tearout, and I smooth the surface by pushing the plane in the general direction of the grain, sometimes planing at a slight diagonal to remove marks or other irregularities quickly.

My "rough" plane leaves a small amount of tearout and shallow ridges, so

I create the final surface with my second plane. On my "fine" plane, I sharpen the blade as before, except I leave the corners sharp—no angles. I move the chip breaker to within 1/64 in. of the cutting edge and set the blade for a light cut. Shavings from this plane are so thin they're transparent. When using this plane, I generally keep the sole parallel to the grain. Sometimes I'll make a slicing cut by skewing the plane about 15° to 30° from the direction of the cut. My reward is full-width shavings that feather out on the edges and a shiny, silky-smooth surface on the wood.

Block plane—Just 5 in. to 6 in. long, these diminutive planes are indispensable for general-purpose trimming work such as leveling edges, planing chamfers and shaping small parts. The block plane's compact size is an advantage when working in tight spots, and this type of plane can also be used easily with one hand.

There are two types of block planes; I recommend having both on hand. The *standard block plane* has its blade mounted at 20° to the sole. My favorite is the *low-angle block plane*, which has its iron set at 12°. With such a low angle of attack, this specialized block plane can shave end grain.

Both types of block planes are excellent for all sorts of small-scale work, but because of their lower cutting angles, block planes have a tendency to tear wood fibers on face and edge grain. It's best to use them on mild, even-grained woods such as mahogany or poplar. Taking light cuts or skewing the plane to the direction of the cut helps to reduce tearout.

Jointer plane—The jointer plane is the great grandfather of planes—my Bailey No. 7 jointer measures 22 in. long. I use this plane for straightening (jointing) the edges of long boards or for leveling and flattening large surfaces. The jointer plane's length ensures that the blade will not follow bumps and valleys as a shorter plane would. The cutting angle of the blade is 45°—identical to the smoothing plane—but the plane iron is wider so that it can flatten a broader surface.

To flatten a large surface, set the iron for a fairly aggressive cut and plane the high spots, moving the plane at an angle of about 45° across the grain. Once the surface is flat, set the blade for a finer cut and clean up the cross-grain marks by planing with the grain.

Scrapers

When I'm faced with smoothing wild-grained wood that would be impossible to plane without tearing the fibers, I reach for my scraper. Made from a thin piece of hard steel, the scraper has a hooked edge that cuts transparent shavings with no tearout. With a scraper, you can even cut cleanly against the grain. This tool excels at leveling cross-grain surfaces such as where a stile meets a rail at 90°.

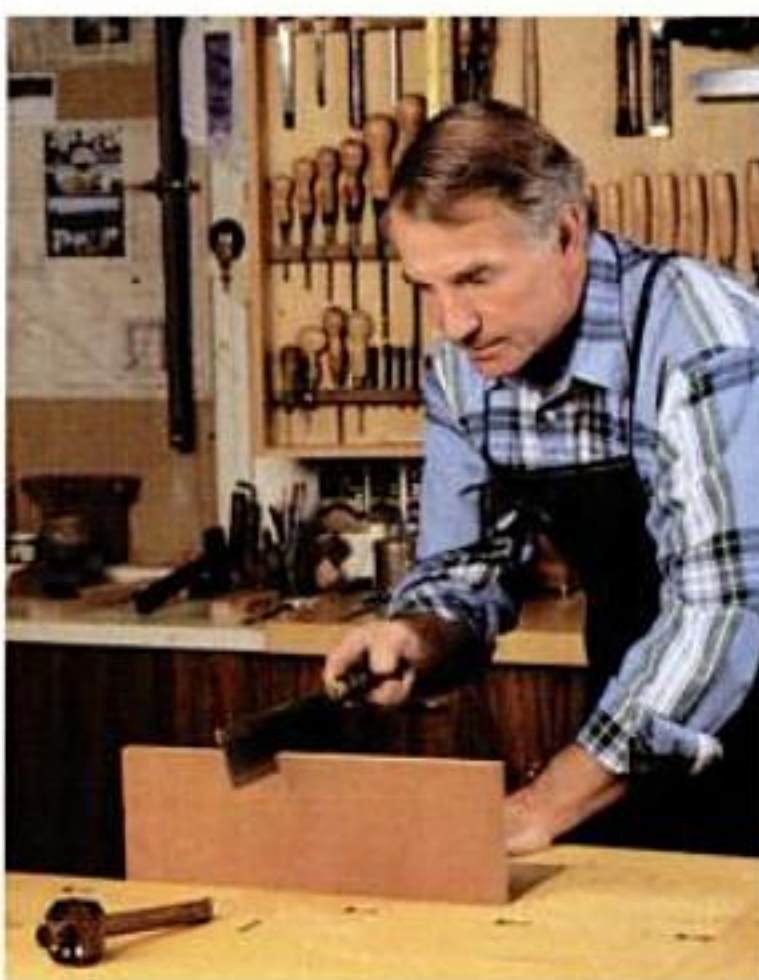
There are two basic types of scrapers: the *hand scraper*, which is simply a rectangular piece of steel with a straight or curved edge, and the *cabinet scraper*, a straight-edged piece of steel held in a metal body. (For detailed instructions on sharpening and using both hand and cabinet scrapers, see Peter Korn's article in AW #47.)

For a beginner, the "gull-wing" cabinet scraper (see bottom photo, opposite page) is a good choice because its flat sole prevents the blade from digging into the work. Also, the sole makes it easy to maintain a level surface. The cutting edge is held almost vertically to the sole, and you push the tool to make a cut. The antique Stanley No. 112 is used in the same manner as the gull-wing scraper. Its advantage is that you can adjust the blade a few degrees forward or backward depending on how aggressive a cut you need.

Practice your scraper technique on some scrap stock. Once you've gained confidence in using both types of scrapers, you'll find that the hand scraper produces a smoother surface than the cabinet scraper. The hand scraper is also more versatile than the cabinet scraper, because by changing the tilt of the blade, you have greater control over how aggressive a cut you make. And you can push or pull the blade, depending on the surface you're working on.

When using the hand or cabinet scraper, you'll usually get the best results by scraping with the grain. When this proves impossible—for example, when you're working with wild grain or difficult woods such as crotch walnut—you can even produce clean surfaces by scraping against the grain.

For curved surfaces like moldings, you can purchase a scraper with convex and concave edges, or grind your own profiles to match the curve of the work. Old handsaw blades will yield excellent scrapers; all you need to do is cut out the shape and size you need.



Saw work. At left, the author saws dovetails with a dovetail saw. The brass back keeps the blade rigid as the saw is pushed into the cut. Below, a good saw collection includes (clockwise from left): a tenon saw, a dovetail saw, a Japanese backsaw (*dōzuki*), a Japanese flush-cutting saw (*kugihiki*), a fretsaw, a coping saw, and two bow saws.



Handsaws

The handsaw is one of the oldest woodworking tools. Even today, in this age of power tools, a selection of handsaws remains vital to any modern shop. The saws that get used most in my shop are Western backsaws, which have a "spine" or strip of rigid metal opposite the cutting edge. There are two types of backsaws I recommend: the tenon saw and the dovetail saw.

The *tenon saw* has a relatively thick blade that cuts on the push stroke, and teeth that are sharpened for ripping (sawing with the grain). I use this tool for sawing the cheeks of tenons by hand. Look for a tenon saw about 12 in. long

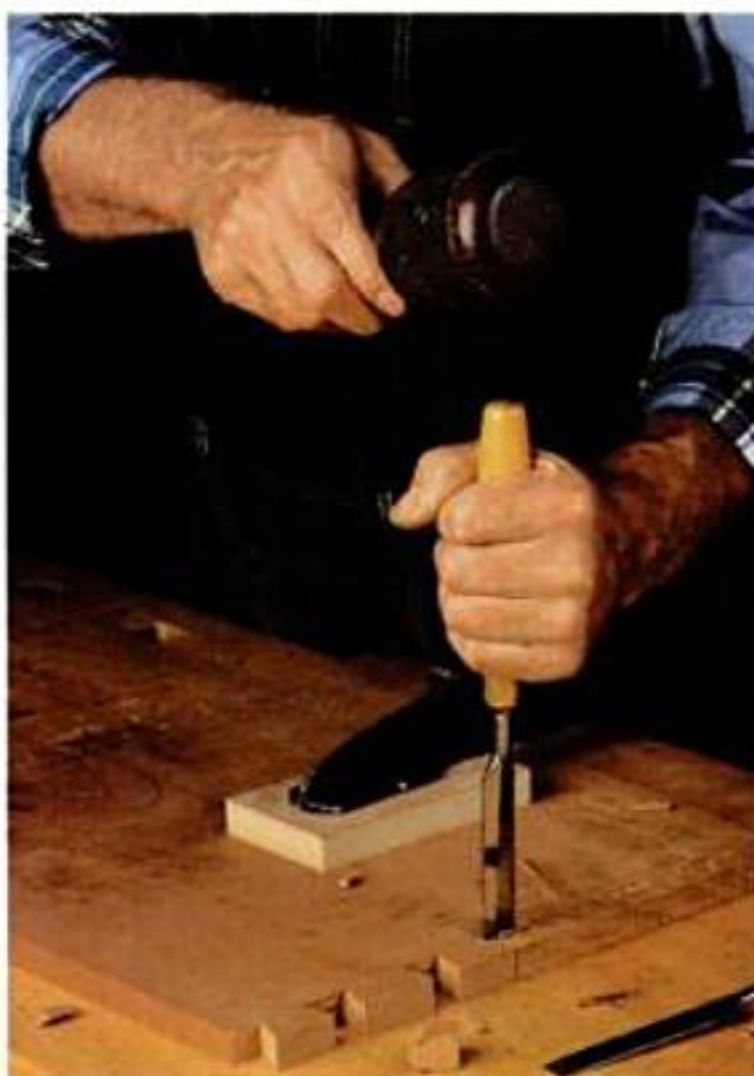
and with 12 tpi (teeth per in.). This type of backsaw has an enclosed grip. (See bottom photo, above.)

The Western *dovetail saw* is slightly smaller than the tenon saw—about 8 to 10 in. long—and has a narrower, thinner blade with 18 to 20 tpi. The handle is straight to help keep your hand in line with the cut, and the blade cuts on the push stroke.

I use my dovetail saw primarily for sawing the pins and tails of dovetails. It also makes a great crosscutting saw for small, precise work such as sawing the shoulders of tenons. The teeth of most dovetail saws are shaped for crosscutting, but I modify the teeth on my saw for a

Chisels

Chopping tails. At right, Klausz uses a bevel-edged chisel to chop dovetails. Below, a good chisel selection includes (from left): a set of six bevel-edged chisels, two mortising chisels, six gouges, a skew and a V-tool.



more aggressive rip cut. (See AW #35, page 12.) To sharpen my Western saws, I use a triangular saw file. This small, tapered file reshapes dulled teeth into sharp edges with a few strokes.

Another type of backsaw is the Japanese *dōzuki*. Like all Japanese saws, the *dōzuki* cuts on the pull stroke, so the blade can be made much thinner. The *dōzuki* is good for dovetail work and other precise cutting. Since Japanese saws can be difficult to sharpen, I recommend buying one with a handle that can accept replacement blades.

Even if you are a fan of Western saws, you should own a *kugihiki*: a Japanese flush-trim saw. The blade is very flexible and the teeth have no set, making this saw ideal for trimming pegs or other

protruding parts perfectly flush, without leaving scratches.

Two other useful saws in the shop are the *fretsaw* and the *coping saw*. Both these saws have in-line handles and metal frames that hold very narrow blades. The coping saw has a 16- to 18-tpi blade. I use it to cope the ends of trim and to make other delicate curved cuts. The fretsaw's blade is even finer, and it can make cuts in veneer or in pieces to be used for inlay work. When buying either type of saw, look for a throat at least 6 in. deep, so you can saw into the middle of wide work.

I recommend one other type of saw that you'll find in most European cabinet shops. Called a *bow saw*, or frame saw, this tool has a large wooden frame

that holds a thin blade, and it can make both straight and curved cuts depending on the width of the blade. Bow saws come in a variety of sizes, but I find that those with 20- to 24-in.-long blades are the most useful.

For curved cuts, you'll need a 3/16-in.-wide blade with 6 to 8 tpi. For fine, straight cuts, use a 2-in.-wide blade that has 8 to 10 tpi.

When using the bow saw, let the frame and the width of blade control the cut. The blade is angled about 10° from the frame's axis, which puts your hand in a comfortable position when the blade is vertical to the work. Cuts are made on the push stroke.

Chisels

There are several styles of chisels that I use daily in my work. The ones I reach for most often are my *bevel-edged chisels*, or cabinet chisels. A set, from 1/4 in. to 1 in. wide (see photo, bottom left), will do most jobs. I use these chisels for all sorts of paring tasks, from cleaning up corners to chiseling joints such as the cheeks or shoulders of tenons. The beveled edges of these tools also allow you to reach into the sloping sides of dovetails. And the sturdy handles and blades of cabinet chisels can withstand hits from a mallet for many chopping tasks, like cutting a hinge mortise.

The back of a chisel has to be flat. This makes the chisel easier to sharpen. And the flat back works effectively as a reference surface for precision work such as paring. I flatten the backs of my chisels and sharpen them by honing them on waterstones.

It's also good to have a few *mortising chisels*. With their thick, square-edged blades, these chisels can take the hard pounding needed for deep mortises. The width of the blade should correspond to the width of the mortise. I recommend starting with a pair of mortising chisels: 1/4 in. and 3/8 in.

To round out your chisel collection, invest in a set of *carving gouges*. (See photo, bottom left.) The curved edges of these chisels allow you to carve into curved areas and other sculptural surfaces. Gouges are numbered according to their degree of curvature, or *sweep*; the higher the number, the greater the curvature. A good set would include six chisels with a variety of sweeps from #3 to #11, in widths from 1/8 in. to 1/2 in., as well as a skew for slicing in tight spots like corners and a V-tool for carving sur-

faces like the shells found on blockfront chests. For small work, a palm-size set of carving chisels is handy.

Spokeshaves

There are many different types of spokeshaves on the market. I think of them as small planes because, like a plane, a spokeshave's blade projects through a sole that limits the depth-of-cut. Unlike a plane, the shorter sole of a spokeshave allows it to follow contours, making this edge tool great for curved work. I reach for a spokeshave when I need to clean up machine marks, and it's the perfect tool for trueing or fairing curved edges.

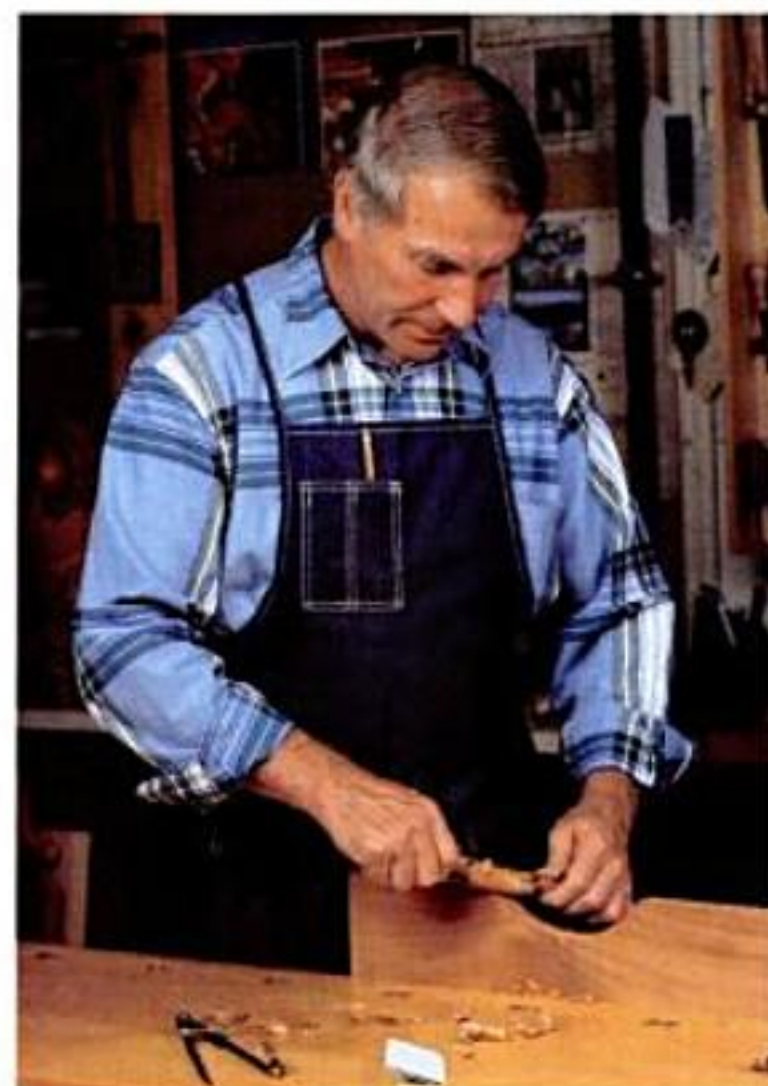
Spokeshaves are made in wood or metal-bodied versions. A metal spokeshave is generally easier to control because of its extra heft and the way its blade projects through the sole. I recommend it for the beginner.

Of all the types of spokeshaves on the market, there are two I find the most useful. A metal *flat-bottomed spokeshave* is great for most curved work as well as for occasional straight cuts such as chamfering the edges of a door. A metal *curved-bottomed spokeshave* lets you smooth tighter, concave curves, such as the tight radius behind the knee of a cabriole leg.

The blade in a metal spokeshave is sharpened like a plane blade. Some metal spokeshaves require you to adjust the depth-of-cut by loosening a blade-locking screw and sliding the blade up or down. More expensive models have thumbscrew control for depth adjustment.

On wooden spokeshaves, the blade's bevel faces upward and the bottom of the blade rests on the work. This arrangement produces a lower cutting angle, making wooden shaves better suited to end-grain work. Old shaves, commonly found at flea markets, have blades with metal tangs that fit into tapered holes in the shave's body, and you adjust blade depth by tapping on the tops of the tangs with a mallet. New wooden shaves have blades with threaded posts that fit into the body of the shave, and you adjust blade depth by turning knobs or screws. (See photo, bottom right.)

You can use a spokeshave on the pull or push stroke. Because of its relatively short sole, this edge tool is susceptible to chatter. To overcome this tendency, set the blade for a light cut and direct firm pressure on the sole as you cut. It also



Spokeshaves

Shaving curves. At left, Klausz uses a flat-bottomed spokeshave to fair and smooth a curved drawer front. Below, other types of spokeshaves include (from left): a curved-bottomed spokeshave, a flat-bottomed spokeshave, an old wooden spokeshave, a Harris wooden spokeshave, and a concave-blade spokeshave.



helps if you skew the spokeshave for a slicing cut, especially when you're working end grain.

Knives

Quiet and unassuming, a small knife will quickly become a favorite edge tool. I keep two types of knives handy when I'm working. I use a utility knife—the kind with a retractable razor-type blade—for small slicing tasks such as making string inlay, and for general marking out. My second knife is home-made from a Japanese knife blank. It has a 4-in., pointed blade, and I made a curved handle so I can use it with one hand or two. It's perfect for making small "V" grooves, cleaning inside corners, or touching up carved areas.

Final Thoughts

I want to mention one final and very important tool: a tool chest or cabinet for storing the numerous edge tools I've discussed in this article. Some woodworkers prefer to keep a low tool chest at the foot of their workbench. I have a tool cabinet hanging on the wall next to my workbench. Either way, a well-designed storage case keeps your edge tools organized, protected and accessible—which makes your woodworking more efficient and more pleasurable. ▲

FRANK KLAUSZ is a third-generation cabinetmaker from Hungary. He owns and operates a cabinet shop in New Jersey.

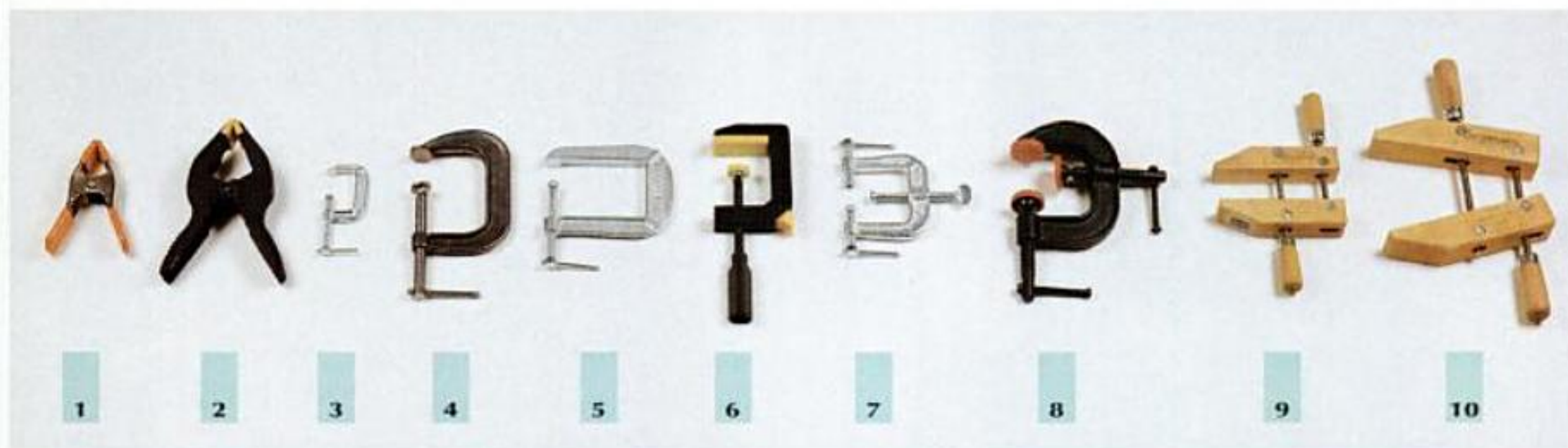
Woodworking Clamps

A Look at the Pressures of Woodworking

by Paul Anthony



Can't have too many. Many clamping projects, such as attaching a face frame, require an abundance of clamps.



Spring clamps, C-clamps and handscrews. 1 and 2: Spring clamps (Adjustable Clamp Co., American Tool). 3, 4 and 5: Standard C-clamps (Adjustable Clamp Co.). 6: Quick-release C-clamp (Wolfcraft). 7 and 8: Edge C-clamps (Adjustable Clamp Co., Gross Stabil). 9 and 10: Handscrews (Adjustable Clamp Co.).

Woodworking clamps have come a long way since wedges and ropes were used to draw workpieces together. Today, we use clamps not only for glue-ups but also for securing jigs, fixtures and fences and for holding workpieces while we work on them. Clamps hold hardware and fittings in place for screwing and will temporarily anchor a portable benchtop tool to your workbench. They'll also safely occupy your helpful 5-year-old in the shop. (Just explain that the workbench leg needs 10 C-clamps on it.)

Although it seems woodworkers are perpetually in the market for new clamps, it's sensible to acquire them only as specific needs arise. That way, your clamp collection will grow with the type and volume of work you do. It's a good idea to try out the different brands of similar clamps before investing in a large quantity of any certain type. (See Sources, page 136.) In general, it's also

wise to buy two (or better yet, four) matching clamps of any new type or size since you'll often use them in pairs.

Whichever clamps you get, it pays to buy quality. You can't afford to be struggling with poorly made clamps during a time-sensitive glue-up. And clamps that slip during machining are not worth the risk of ruining your project. Quality clamps adjust smoothly, lock positively and hold their shape under pressure. If you lubricate their threads and working mechanisms occasionally, your clamps should last beyond your lifetime.

Here's a look at most of the types of woodworking clamps available either at your local tool supplier or through common mail-order suppliers.

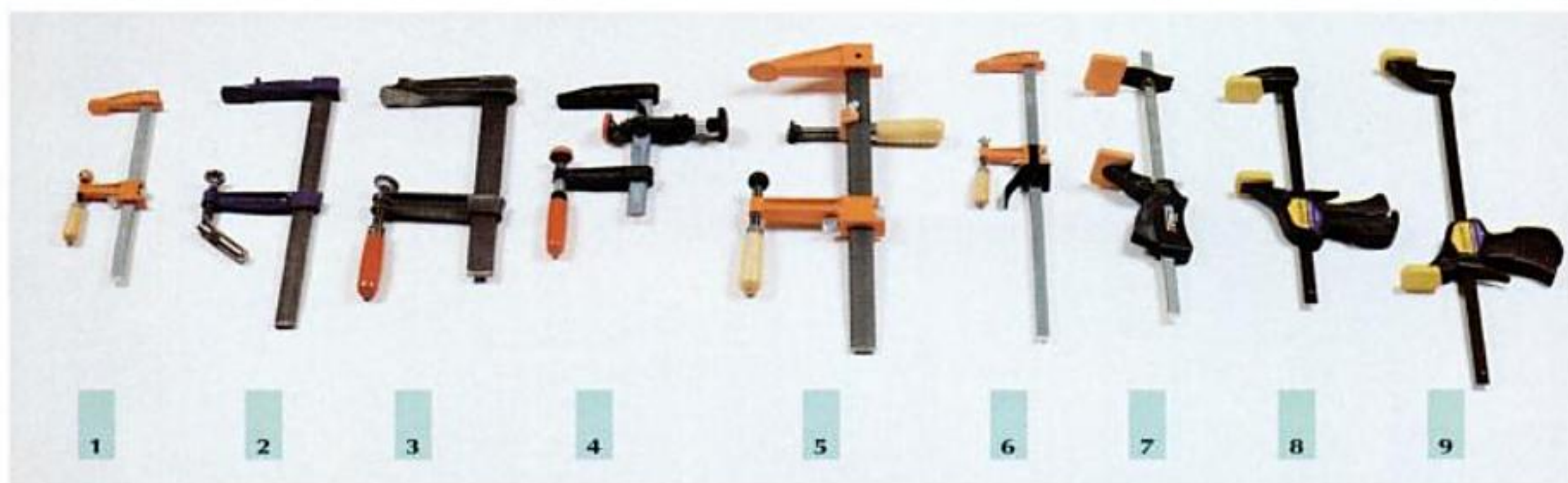
Spring clamps are inexpensive, quick and easy to use for light-duty gluing and clamping jobs. They'll hold work in place for screwing or other fastening. Spring clamps are available in many sizes

but they generally aren't strong enough to safely hold jigs and fixtures for machining operations. Unless you do a lot of small, hobby work, you probably won't need more than a few pairs of various sizes.

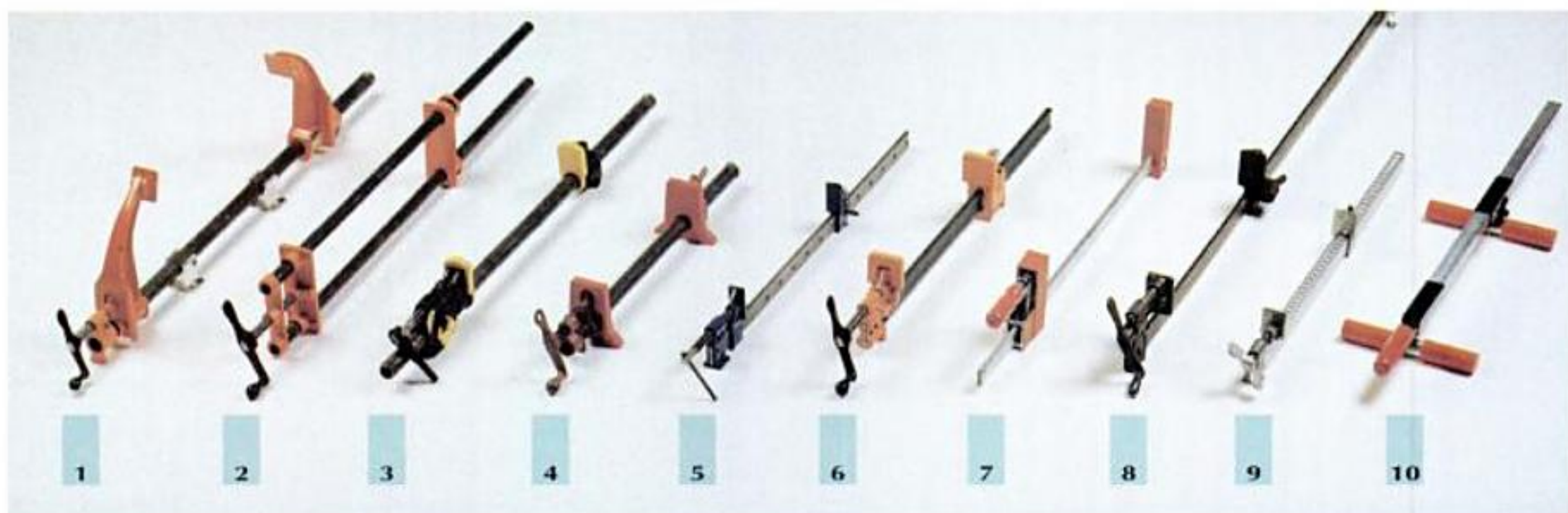
C-clamps are probably the most common clamps in woodworking. They secure workpieces, jigs, fixtures and fences safely and positively. Some C-clamps are available with an additional perpendicular screw for attaching edgings. (See photo, above.) Available in various lengths and throat depths, C-clamps apply more than enough pressure for glue-ups. Many shops have a full range of sizes up to 6 in.

Handscrews have deeper throats and larger bearing surfaces than C-clamps. The wooden jaws can be adjusted to grip angles and they won't mar workpieces like metal jaws.

Quick clamps owe their name to a lower jaw that can be adjusted quickly



Quick clamps. 1, 2 and 3: Standard quick clamps (Adjustable Clamp Co., Record, Wetzler). 4 and 5: with edge-gluing attachments (Gross Stabil, Adjustable Clamp Co.). 6, 7, 8 and 9: Trigger-action clamps: 6: E-Z Hold bar clamp, 7: E-Z Hold II bar/spreader (Adjustable Clamp Co.), 8: Quick-Grip bar clamp, 9: Quick-Grip spreader (American Tool).



Pipe clamps and bar clamps. 1: Pony pipe clamp and saddles (Adjustable Clamp Co.) with Mastadon jaw extensions (Wade Mfg. Co.). 2: Pony double pipe clamp (Adjustable Clamp Co.). 3: Power Press pipe clamps/spreaders (American Tool). 4: Pipe clamp with stand-up clamp pads (Warren). 5: T-bar clamp (Record). 6: Jorgensen I-bar clamp (Adjustable Clamp Co.). 7: Bessey K-body clamp (American Clamping). 8 and 9: Bar clamps (Wetzler, Universal). 10: Box clamp (Gross Stabil).

and easily. These clamps serve the same basic functions as C-clamps but generally offer greater opening capacity and throat depth. Quick clamps are available in many styles and sizes (see bottom photo, page 13) for different applications.

Standard quick clamps, with their strong, cast-iron jaws and substantial screws, provide plenty of pressure and are more useful than C-clamps for many glue-ups. They're also great for fastening jigs, fixtures and fences to machines. Some models have a quick-release feature that holds the movable jaw in one location until you change it. Attachments are also available for some brands to convert them into "edge clamps" for gluing on edgings. Soft, anti-marring pads are often optional.

Modern, trigger-action quick clamps come with ratcheting triggers that allow one-handed operation. Some models,

with reversed jaws, spread rather than clamp and are useful when disassembling projects for repair. Many of these modern clamps come with soft jaw pads.

Pipe clamps are the popular choice of many woodworkers for gluing up panels, carcasses, and other wide work. They're more economical than their sturdier cousins, the bar clamps. (See below.) A pipe clamp consists of a set of jaws that you mount on threaded black iron pipe of any length.

For spanning lengths over 3 ft., 3/4-in.-dia. pipes provide greater rigidity than 1/2-in.-dia. pipes. If you thread both pipe ends to accept couplings, you can connect the pipes to make clamps of any length you desire.

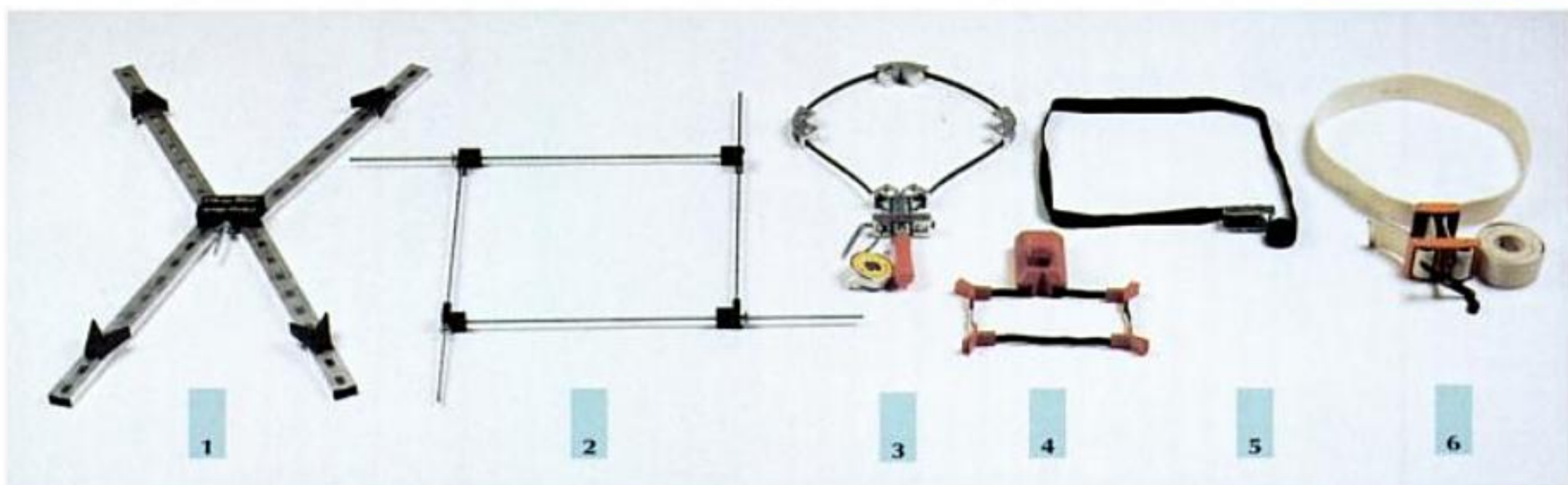
One downside to pipe clamps is that the pipes flex as you apply serious pressure, so you have to alternate clamps above and below your work to keep it

from buckling. Double pipe clamp fittings solve this problem by serving as both top and bottom clamps. The disadvantage of this two-in-one clamp is that you must slide your boards between the pipes. This prevents you from standing the boards on edge across a row of pipe clamps to apply glue to the boards' edges.

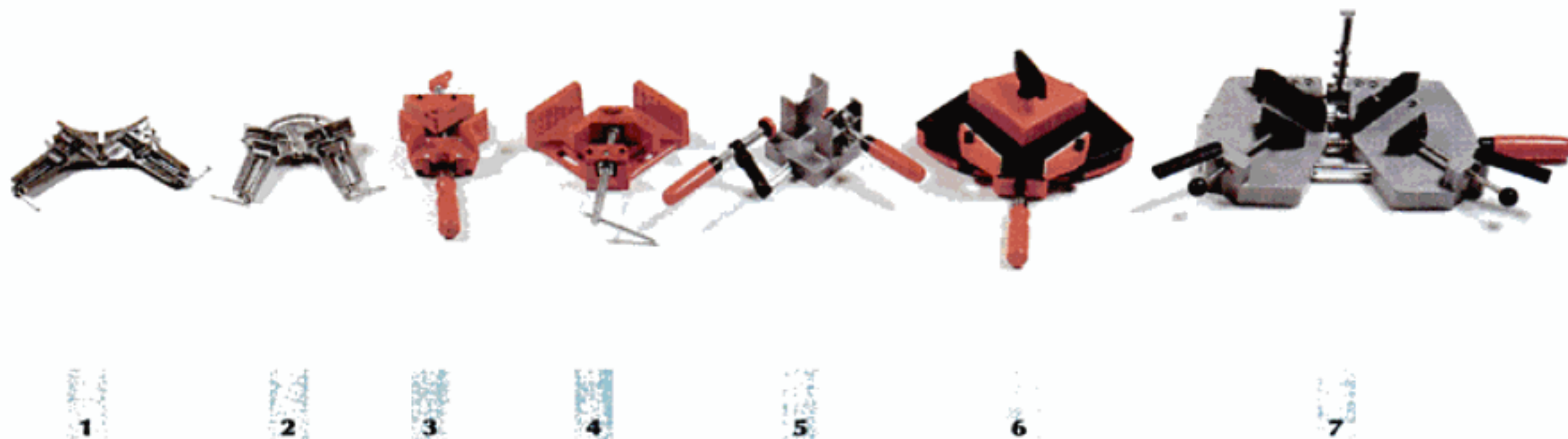
Worthwhile pipe-clamp accessories include soft pads that slip over the jaws, and pipe stands that aid clamp stability. You can also get aluminum jaw extensions that fit over the regular jaws to increase clamp throat depth.

Bar clamps, like pipe clamps, offer great opening capacity when you're edge-joining wide stock for tabletops and panels or when you're gluing up carcasses. But they're somewhat less versatile because the bar is an integral part of the clamp and determines the clamp's maximum

(continued on page 16)



Frame clamps and band clamps. 1: Frame clamp (Adjustable Clamp Co.). 2: Pony framing clamp (Adjustable Clamp Co.). 3: Merle frame/band clamp (MLCS). 4: Poly Angle Strap Clamp (American Clamping). 5 and 6: Band clamps (Stanley, Adjustable Clamp Co.).



Corner clamps. 1: 90° corner clamp (Adjustable Clamp Co.). 2: Adjustable corner clamp (Adjustable Clamp Co.). 3: Bessey 90° angle clamp (American Clamping). 4: Can-Do 90° corner clamp (MLCS). 5: Multi-Spanner 90° corner clamp (Gross Stabil). 6: Adjustable miter clamp (American Clamping). 7: Multi-Angle Clamp (Gross Stabil).

opening capacity. The bar—whether rectangular, I-shaped or square—provides great rigidity and resistance to bending under load so you can apply more pressure with less deflection than pipe clamps. A “box clamp” uses cushioned pipes for jaws, to distribute the clamping pressure more widely. It adjusts to accommodate angled workpieces.

Frame clamps pull all four corners of a frame together at once. One type pulls its frame corner blocks toward the center of the frame. Another type employs a series of L-shaped corner blocks that are connected and pulled together by threaded rods. A third type uses a metal belt which wraps around blocks located at the corners of the frame. The belt can also be used without the blocks to clamp rounded forms.

Band clamps can clamp many odd-shaped projects in addition to frames.

You can use them to clamp cylinders, mitered boxes and chairs, for instance. They come in various widths and lengths and provide strong, even pressure.

A **corner clamp**, often called a miter clamp, holds only one frame corner at a time, so you’ll need four clamps to assemble a square frame all at once. Some corner clamps are designed for clamping work only at 90°. Others will accommodate odd-degree corners. All will hold frame pieces of two different widths, although each type accomplishes this in its own way. Most corner clamps provide an opening for nailing or other mechanical fastening while the pieces are clamped together. Models with higher jaws provide a better grip on tall frame parts than those with low jaws.

Toggle clamps operate as hold-downs or hold-ins. They can be fastened to jigs and fixtures to hold workpieces in place.

Cam-action clamps apply pressure by means of a cam lever in the lower jaw. They hold gently and are especially popular with instrument makers.

Model-makers’ clamps have plastic jaws that lock in place on a rod when compressed. They are particularly well-suited to instrument making, where odd-shaped parts must be clamped gently together.

Right-angle clamps are available for perpendicular clamping of long frame pieces. Their lower jaws, which pinch one of the workpieces between them, eliminate the need for a long clamp.

Locking-jaw pliers with C-shaped jaws allow quick adjustment when holding small parts. The jaws on some types have pads that pivot. ▲

PAUL ANTHONY is an assistant editor of *AW*.



Specialty clamps. 1: Toggle clamp (DE-STA-CO). 2: Cam-action clamp (available from Garrett Wade). 3: Berna Assemblers model-maker’s clamp (Zona). 4 and 5: No Scuff right-angle clamp and Shelf and Corner right-angle clamp (Universal). 6 and 7: Locking-jaw plier clamps (American Tool).

THE SAFE SHOP

ADVICE AND
EQUIPMENT
TO KEEP
YOUR
WOODWORKING
SAFE AND
ENJOYABLE

BY BERNIE MAAS



Make it safe. The author practices what he preaches, keeping his eyes and ears protected while using a feather board and blade guard on his table saw.

PHOTO BY SUZANNE WINTERBERGER

"I didn't realize I'd cut myself until I looked down—

Okay gang, let's clean it up in five!" I've bellowed this out to my classes over the roar of planers and routers for some 30 years. Every semester, I face a fresh crew of students and wonder if I'm going to get them through the course with their body parts intact. Can I get them to understand that the tools and machines they see as a means of creative expression can also be devastatingly dangerous?

The importance of shop safety was magnified for me about two years ago, when I served as an expert witness in a court case involving a student who lost a finger in a tablesaw accident. The instructor had propped the blade guard up out of the way to facilitate ripping some small-dimension stock into even smaller pieces. Rigging up feather boards and an appropriate blade guard would have taken a few extra minutes, as I demonstrated. But this wasn't done, and when a piece kicked back the boy's finger was pulled into the blade.

I've since served as an expert witness or consultant in other accident cases, many with more severe consequences. All of them could have been prevented. Seeing the results of these lapses in safety helps me to keep my priorities straight as a woodworker and wood-working instructor.

The Safe Head

Where does one begin a discussion about safety in the workshop? The best place to start is with the most important

piece of safety equipment—the gray matter between your ears. The best safety equipment available won't be of much use if you're not working with a "safe head." The safe head philosophy is all-encompassing. It's about the way you think in the workshop, the way you move around, and the way you treat yourself and your equipment.

If you're constantly conscious of the dangers inherent in woodworking operations, you'll be less likely to take chances. Here are some rules every woodworker should heed:

- Get help.** If you're not familiar with an operation or a machine, get assistance and instruction from someone with more experience.
- Don't work with distractions.** Pets, children, and other non-woodworkers can spend time in your shop, but not when you're using tools.
- Avoid rushing.** Working too quickly causes accidents.
- Match the tool to the job.** Don't ask a tool to do what it wasn't designed to do.
- Don't take chances.** Remember: If it looks unsafe, it probably is!
- Don't risk losing a finger to save material.** As precious as it may be, some material is simply too small to work with. Dump it.
- When you feel tired, stop.**

To keep me on my toes, whenever I step into the shop, I remind myself of something a nine-fingered wood butcher said to me long ago, "The accident happened when I least expected it!"

Basic Protection:

Sight, Sound and Respiration

What constitutes the first line of defense in terms of shop safety? There's some basic equipment that every shop must have to achieve a minimum level of safety. There are also some basic procedures you can follow to help prevent accidents from happening.

Safety glasses—The goggle-type safety glasses may not look as stylish as the eyeglass type, but they are inherently safer because of the headband. The band prevents the goggles from slipping off—something you don't want to happen in the middle of a machining operation. If you wear eyeglasses or eyeglass-style safety glasses, equip them with a safety strap. Drugstores and optometrists stock these straps. (See photo, below left.)

Hearing protection—Hearing loss tends to creep up on you. I've worked with people who said, "The noise used to bother me, but I got used to it." Not so. They didn't "get used to it"—they incurred hearing loss. There are many types of hearing protection that can be used when woodworking, from earmuffs to disposable plugs. (See photo, below right.) The kind of protection you choose isn't as important as your dedication to its use. Keep your plugs or head-gear close at hand in the workshop, so you won't hesitate to use it whenever there will be machine noise. Also, be mindful of exposing children and pets to noise: Their ears may be more sensitive than yours to sound.



Safe eyes. Keep your eyes free of debris with protective goggles or safety glasses. If you wear prescription glasses or safety glasses instead of goggles, use a safety strap to make sure they don't fall off.



Say what? Ear protection is inexpensive; the important thing is to remember to use it. Many types of disposable earplugs are available. Earmuff-type protectors are used frequently in production shops.

that was just before I passed out!"—Shop accident victim

Dust and filter masks—Even if you're not sensitive to wood dust, it's important to use dust protection when sanding and machining wood. Disposable masks are inexpensive and widely available, and they don't take up much space. A resealable plastic bag makes a good storage case. For production woodworking (or any situation with prolonged exposure to sawdust) and finishing, more sophisticated filters are called for. Cartridge-type masks with disposable inserts offer good general dust protection. For finishing work and extra dust protection, a respirator is the ticket. You might want to invest in a whole-shop filtering unit.

Safe Surroundings

The actual condition of your workshop can have a definite effect on safety. The same is true of your attire. Here are some important environmental details that will make woodworking more safe.

Keep it clean. Shavings, scraps, screws and other debris cause slips and trips that can be disastrous around woodworking machinery. Cleanup should be an end-of-day ritual. But depending on the type of work being done, you may have to clean between operations. Protect your family members by keeping dust intrusion to the rest of your home at a minimum.

If you don't have a central dust-collection system, it's still possible to keep a shop clean with a shop vacuum, a good horsehair broom, a dust brush and a dustpan. But an item that most folks

overlook and I find critical is sweeping compound. Available at janitorial supply houses, it's formulated for either wood or concrete floors. It's just the ticket for picking up the fine dust that broom bristles only stir up.

Let there be light. Good, even lighting is a must—not just for accurate work, but to reduce eyestrain and its consequential stress. As we age, not only do we find ourselves in bifocals and trifocals, but we also need more illumination than we did as teenagers.

In my shop, I have six banks of evenly spaced, double 48-in. fluorescents for general illumination. Individual equipment is task-lit. My bandsaw, drill press and radial-arm saw are rigged with shaded goosenecks. With these, light can be aimed directly at the point of cut. You can find goosenecks at any good electrical supply house.

Dress for safety. Of course, you've heard some of this before, but it's important enough for me to repeat: No rings or wristwatches that can snag your hands and place them in harm's way. Be sure to tie back long hair; and avoid wearing loose clothing that might get drawn into a machine. We used to caution students about the danger of wearing ties in the shop. Today the problem is the hooded sweatshirt. If they get caught, those dangling cords can pull your face right into a cutter.

Working with young students, I'm constantly pointing out that the workshop isn't the place to promote your

fashion image. Long pants, rather than shorts, should be worn around machinery. And though they may not be as fashionable as famous-name sneakers, steel-toed shoes are the safest footwear for woodworking.

Finally, I feel more secure in the workshop when I'm wearing a sturdy leather or denim apron. It provides an extra layer of protection against anything sharp or swift-moving.

Safe Machines

Sharp tools are safe tools. When bits and blades are sharp, they run cooler; so do the motors that power them. Whether hand- or machine-powered, a good edge makes for easier feeding and cutting. The added pressure needed to drive dull planes, chisels and edge tools can cause fatigue and loss of control.

Dull bandsaw blades are particularly nasty. I remember watching a student slam her hand into a dull blade as her workpiece snapped from excessive feed pressure—another accident that didn't need to happen. Bandsaw blades aren't expensive and by the time they've gotten dull, chances are the metal has fatigued to the point where breakage is imminent. Give it the deep six, install a new blade, and get back to safer, more accurate cutting.

Find a reputable sharpening service to keep saw blades, router bits, and planer and jointer knives sharp. (See AW #45.) Drill bits can be sent out too, but these, like chisel and plane blades, aren't



Breathing easy. Disposable filter masks, shown in the foreground, are inexpensive, and they offer good general protection against airborne dust. A cartridge-type mask can trap finer dust.



The bandage box. A small first-aid kit like the one at right can serve a one- or two-person shop. Larger kits are also available. Items to add to a standard kit include latex gloves and a small plastic bag.

difficult to sharpen in the shop. Remember, a keen edge provides control, accuracy and smoothness of cut.

Use anti-kickback blades and cutters. Specially engineered profiles and shoulders on circular saw blades and router bits have made these cutters much safer in terms of kickback danger. If you have a choice between conventional blades or cutters and anti-kickback versions, choose the latter. (See photo, right.) Using these safety-engineered products doesn't guarantee against kickback, and it's not an excuse to work with less caution. But anti-kickback technology is effective—it's an extra margin of safety worth using.

Use blade and bit guards. Today there are some excellent aftermarket guards available, especially for tablesaws. The old excuse for removing the guard ("It's too clumsy," or "I can't see what I'm doing") no longer needs to apply. If the standard blade or bit guard on your machine doesn't cut it, invest in a good one. When I hear complaints about the \$200 or so price tag, I answer, "You'd be happy to shell out a couple hundred bucks to get a thumb back." Get the right guards and use them.

Use feather boards and push blocks. You can buy these or make them. Keep several around, and whenever a dicey operation comes up, spend a few moments rigging a feather-board/push-block setup. If your guard doesn't accommodate an odd cut, shroud the blade with some scrap stock. Learning to spend that extra minute or so is critical to the safe head mindset.

The Safe Body

Learning how to move and where to move, where to put your hands and how to move your hands is all part of the safe head approach. Most folks are aware of the obvious: Keep hands behind cutting edges, and keep your body out of the most likely path of kickback.

Here's some additional "safe body" advice: When starting a grinder, stand to one side. An invisible hairline fracture can cause the stone to explode with violent force as it accelerates. Use the same caution with abrasive discs.

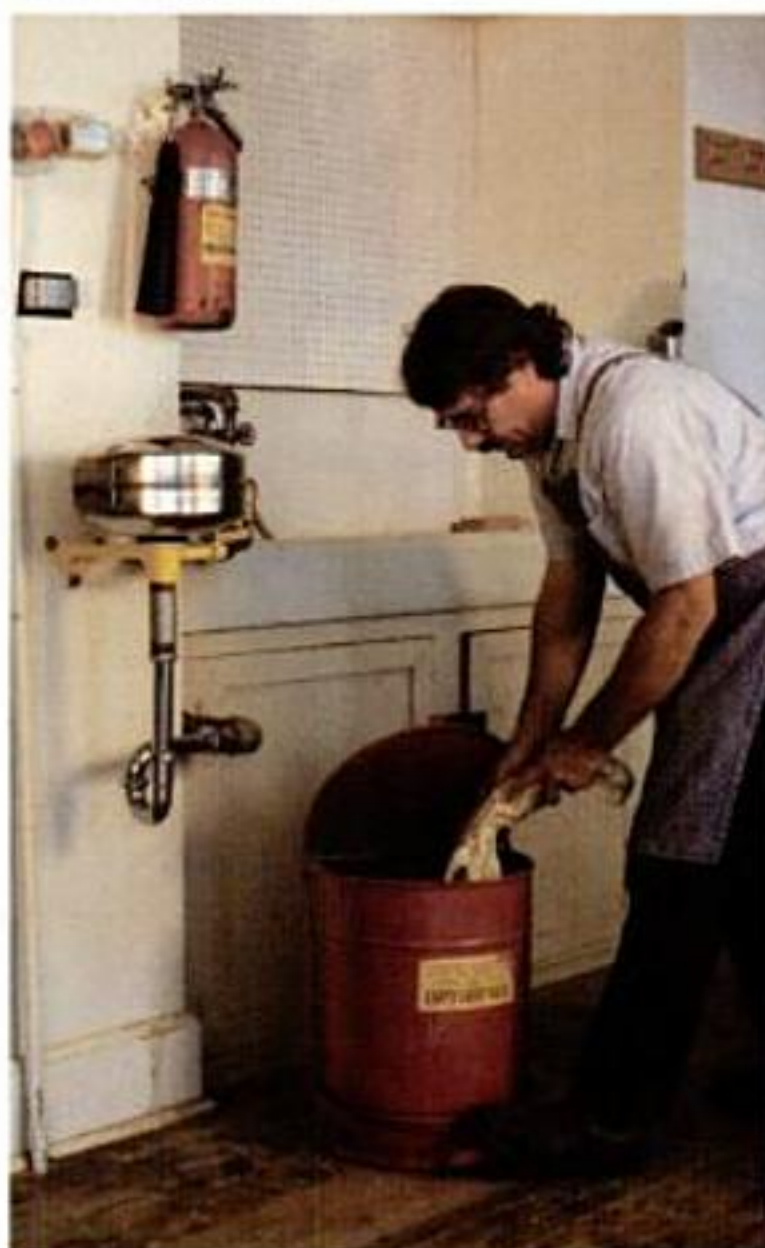
Watch your balance. Avoid leaning over machinery, and maintain good footing as you move the work through the blade or cutter. Cushioned nonskid mats (available from mail-order suppliers and at home centers and hardware stores) will reduce your chances of



Anti-kickback cutters. A conventional circular saw blade (left) is more prone to kickback than one engineered with kickback-limiting shoulders (right).

slipping at the jointer, tablesaw or other machine. They also make woodworking easier on your knees, feet and back.

Finally, pay attention to your hands. Don't "white knuckle" it! Use just enough pressure when feeding stock to bring the work through. Never place so much force behind your hands that you risk losing control and sending them into a blade or cutter. If stock kicks back, the workpiece should be thrown out of your hands while your hands stay where they were.



Fire protection. To prevent spontaneous combustion of oil-soaked rags, store them in an airtight container. Keep your fire extinguisher in an accessible spot.

Just in Case

As woodworkers, we all have to accept that accidents can happen, even when the safest procedures and attitudes are applied. Planning for emergencies is a crucial safety factor in any shop. It's the kind of planning you hope you'll never have to act on. But just in case, here are some important emergency measures.

Program the phone. Keep a programmable phone in your workshop and enter the code for 911. Also, code in the phone numbers of neighbors, friends—anyone who might come for assistance. Put your name, phone number, address and directions to your shop on the wall behind the phone. If an accident happens, you might be so rattled that you not only forget where you live, but who you are. I've seen it all!

Get fire protection. Install a smoke alarm and place a fire extinguisher in an accessible spot. The best type of extinguisher to buy is a "tri-class" type; it will handle ordinary combustibles as well as flammable liquids and electrical fires.

It's also crucial to have an airtight can for safe disposal of oily rags. (See photo, below left.) Without an airtight container, you run the risk of fire from spontaneous combustion if oil-soaked rags are left lying around the shop.

Keep a first-aid kit. Put one on a wall, in a place where access won't be blocked by stacked boards or other items. I recommend buying a box-type first-aid kit instead of trying to assemble your own. (See right photo, page 23.) Some home centers and several woodworking mail-order catalogs now have a limited selection of these kits. For a broader selection, contact a mail-order source for safety items. (See Sources, page 136.)

Apart from the standard tweezers, bandages, antiseptic, ammonia inhalant and aspirin you'll find in a basic first-aid kit, you should also have the following items on hand:

- **Latex gloves** protect you or your shopmates from blood-borne diseases should someone be injured.
- **Resealable plastic bags** will come in handy if you need to store a severed digit that might be reattached.
- **An ice pack**—the chemical type that gets cold when two compounds are mixed together inside the bag—is crucial for pain relief or for keeping severed digits cold. ▲

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Tablesaws

The tablesaw is the most important machine in the shop. It can rip, crosscut, rabbet, dado, miter, groove, mold and bevel, as well as cut tenons, lap joints, box joints and even dovetails. Because this tool is so versatile, it's important to pick one that will suit your present and future needs. Don't skimp on quality if you expect to do serious woodworking.

Two basic factors define a saw: size and type. A saw's size is designated by the diameter of the largest blade it will handle. The type of saw indicates its intended use. (See 3 Types of Tablesaws.)

Combination machines such as the Kity, Felder, Robland, Shopsmith and Total Shop incorporate tablesaws into their multifunction designs. (See AW #29 for a review of combination machines.)



Shop workhorse. A tablesaw is the primary woodworking tool in many shops. No other machine can do so many jobs, from sizing material to cutting joints.

3 Types of tablesaws

Cabinet saws



Designed for the professional cabinet shop, a cabinet saw has an enclosed base, a 2-, 3- or 5-HP motor, and multiple V-belts to minimize slippage between arbor and motor.

The 10-in. saw is the most popular, but 12-in. and 14-in. models are also available.

Contractors' saws

Offering a compromise between price and performance, these saws meet most shops' demands for accuracy and versatility.

The typical contractor's saw has a cast-iron or cast-aluminum top, bolt-on table extensions and a belt-driven induction motor that hangs out the back. (Some lower-priced models have direct-drive motors.) A better-quality model will feature a well-machined table, a solid rip fence and rail assembly, and a durable, accurate miter gauge.

On the minus side, the open base and back make dust collection difficult on a contractor's saw. And this type of saw doesn't usually have the power you'll find in a cabinet saw.



FEATURES *to consider*

The table

Cast iron remains the first choice for table material; cast aluminum is second. Use a straightedge to check for flatness. The table must be large enough to safely support the work.

Rip fence and rails

Look for a rip fence that slides smoothly, locks parallel to the blade, and adjusts easily if it goes out of square. A fence that locks at both ends is more rigid than one that locks at only one end. Guide rails should be rigid and straight.

Miter gauge

This should slide freely in the table slots without side-to-side play. A finely calibrated scale with stops at 90° and 45° is an asset. The gauge should also have holes for screwing on an auxiliary wooden fence.



Rip fence and miter gauge. *The fence should lock square to the blade and slide easily on sturdy rails. The miter gauge should be sturdy and slide easily without play.*

Controls and mechanisms

Handwheels, knobs and locking devices should be sturdy and operate easily. Cast or forged parts are better than stamped steel. The blade should adjust without any play, and there should be a lock to hold the blade setting. Degree scales should be easy to read, and there should be adjustable stops at 45° and 90°. Make sure the arbor is long enough to accept a dado head.



Sturdy, smooth-operating mechanisms. *Look for well-made controls that move easily and that lock adjustments firmly.*

Motor

Impressive power ratings on some home-shop tablesaws often misleadingly refer to "peak" HP. A more useful measurement is a motor's "rated" or "continuous" HP. Pick the most powerful motor you can afford—preferably one with built-in overload protection.

Safety features

You'll want to be able to hit the "off" switch in an emergency without having to look or grope around under the table. If you have small children, a lockable power switch is a must. The blade guard should swing out of the way during blade changing. Because the guard must be removed for some woodworking operations, look for one that's easy to remove and reinstall.

Benchtop saws

If you primarily work with small pieces of material, or if you need a portable jobsite saw for ripping, a benchtop saw may be just the ticket. These models are inexpensive, and they're also light enough to move around easily, whether you're at a jobsite or in a cramped shop.

But benchtop tablesaws



have serious limitations. The universal motor on a typical benchtop saw is disturbingly noisy, and most are underpowered for cutting thick hardwoods. Because the motor driveshaft is also the blade arbor, motor burnout is more of a problem. Small tops limit rip capacity, and a stable stand is a necessity to counteract vibration. And don't expect great precision from the rip fence or miter gauge. Notable exceptions in this tablesaw category include the Ryobi BT3000 and Makita 2711. Both of these saws have sliding tables; the BT3000 has a belt-driven arbor.

OPTIONS *worth having*

Dado-blade set. Multiple-blade, carbide-tipped dado sets are the best. (See AW #42 for a review of dado blades.)

Aftermarket rip fence. This is probably the best accessory you can buy for your saw. A good fence will boost your accuracy and efficiency.

Outfeed tables. If you don't have enough room in your shop for permanent outfeed tables, consider buying or making portable outfeed rollers.

Sliding tables. Available for some saws, sliding crosscut tables greatly increase cross-cutting ease and accuracy.

Tenoning jig. You can use this jig to cut tenons, lap joints, bridle joints and spline joints.

Dust collection. Connecting your saw to a dust collector will save cleanup time and improve shop air quality.

Aftermarket blade guards. These are a big improvement over most standard guards.

Tablesaws



Ryobi BT3000



Craftsman 29111



Delta 36-630



JET JWTS-10JF

	Brand & Model	List Price	Blade Diameter (in.)	Maximum Cutting Depth (in.)	Maximum Rip Cpy. (in.)	Table W x D (in.)	Table Material	HP	Volts	Amps	Dust Coll. Port	Weight (lbs.)	Comments & Features
BENCHTOP	Craftsman 22168	\$150	8	1 3/4	12 3/4	30 x 17	AL	1/2	115	7.8	N	41	Accepts dado heads.
	Delta Sidekick 36-275	344	8 1/4	2 1/4	12	26 x 20	AL	NA	115	13	N	49	T-slot miter gauge groove.
	Makita 2708W	637	8 1/4	2 1/2	11 7/8	26 x 14 3/4	AL	2	115	12	Y	38	Removable switch key.
	Black & Decker 9442	314	10	3	11 1/2	28 x 16	AL	2 1/2	115	13	Y	37	3/16-in. dado capacity.
	Craftsman 22174	180	10	3	10 1/2	26 x 17	AL	NA	115	13	Y	40	Accepts dado heads.
	Delta 36-540 Type 2	218	10	3	9 7/8	26 x 16	AL	NA	115	13	N	40	Removable safety switch.
	Lobo TS-750	279	10	12	16	30 x 20	AL	2 1/2	NA	13	Y	50	T-slot miter gauge.
	Makita 2711	1,189	10	3 9/16	24 1/4	28 1/8 x 18 1/2	AL	2	115	12	Y	72	Sliding crosscut table.
	Reliant DD65	130	10	3	12	26 x 17	AL	2	115	13	N	47	Removable safety switch.
	Ryobi BT3000	600	10	3 9/16	30	41 x 27	AL	2 3/4	115	15	Y	75	Sliding miter table.
CONTRACTOR TYPE	Skil 3400	367	10	3	12	26 5/8 x 17 5/8	AL	2 1/2	115	13	Y	36	
	AMT 4572	399	10	3 1/8	24	40 3/8 x 27	CI	1 1/2	115/230	18/9	N	225	Cast-iron table extensions.
	Belsaw MC-10CS	659	10	3 1/8	25	39 1/2 x 27	CI	1 1/2	115/230	20/10	N	242	Cast-iron table extensions.
	Bridgewood TSC-10C	639	10	3 1/4	40	40 x 27	CI	1 1/2	115/230	16	N	287	Vega or Biesemeyer fence.
	Craftsman 22690	330	10	2 1/2	24	40 x 20	CI	1	115	11.5	N	150	Cast-iron table extensions.
	Craftsman 29819	300	10	2 1/2	24	40 x 27	AL	1	115	11.5	N	135	Steel table extensions.
	Craftsman 29876	400	10	3 3/8	24	44 x 27	CI	1 1/2	115	13	N	220	Cast-iron table extensions.
	Craftsman 29886	500	10	3 3/8	24	44 x 27	CI	1 1/2	115/230	13/6.5	N	248	Casters.
	Craftsman 29111	750	10	3 3/8	30	44 x 27	CI	1 1/2	115/230	13/6.5	N	277	Same as 29886; improved fence.
	Delta 34-444	809	10	3 1/8	25	40 x 27	CI	1 1/2	115/230	20/10	N	251	Steel extension wings.
	Delta 34-670	470	10	3 1/8	24	38 3/8 x 22 1/4	CI	NA	115	15	N	153	T-slot miter gauge groove.
	Delta 36-630	700	10	3 1/8	24	20 x 27	CI	1 1/2	115/230	12.8/6.4	Y	210	T-slot miter gauge groove.
	Enlon EN-3201	370	10	3	25	41 x 27	CI	1 1/2	115/230	16/8	Y	300	Dado insert optional.
	Enlon EN-3205	525	10	3	36	41 x 27	CI	2	230	12	Y	350	Dado insert.
	Enlon EN-TB10N	285	10	3	25	30 x 23	CI	1 1/2	115/230	19/8	N	175	Dado insert, aluminum extensions.
	Grizzly G1022	375	10	3 1/8	25	40 5/8 x 27 1/8	CI	1 1/2	115/230	16/8	OPT	230	Cast-iron table extensions.
	Grizzly G1059	239	10	3 1/8	25	30 x 23	CI	1 1/2	115/230	12/6	OPT	175	Aluminum table extensions.
	JET JWTS-10JF	739	10	3 1/8	30	40 x 27	CI	1 1/2	115/230	18/9	Y	260	T-slot miter gauge groove.
	Lobo TS-0010	439	10	3 1/8	30	40 x 27	CI	1 1/2	115	12	N	245	Cast-iron table extensions.
	Powermatic 63	1,006	10	3 1/8	26	40 x 27	CI	1 1/2	115/230	18/9	Y	310	Vega fence.
	Sunhill MS-10L	475	10	3 1/8	30	40 x 27	CI	1 1/2	115/230	20/10	Y	280	Cast-iron table extensions.
	Transpower MS250	345	10	3 1/4	30	40 x 27	CI	2	115/230	24/12	N	255	
	Belsaw MC-12CS	793	12	4 1/8	25	39 1/2 x 27	CI	2	115/230	24/12	N	235	Cast-iron table extensions.
	Hitachi C12Y	3,922	12	4 1/8	25	36 x 27	CI	3	115/230	15/7.5	Y	330	Hand brake for blade.
	Lobo TS-0012	479	12	4 1/8	30	40 x 27	CI	2	115/230	20/10	N	265	Cast-iron table extensions.

Chart continued on page 32.

See page 136 for listing of manufacturers.

KEY: Table Material: AL = aluminum, CI = cast iron, MG = magnesium. NA = information not available. OPT = optional.

Tablesaws



Enlon EN-3202



Grizzly G1023



INCA 290



Powermatic 66

Brand & Model	List Price	Blade Diameter (in.)	Maximum Cutting Depth (in.)	Maximum Rip Cpy. (in.)	Table W x D (in.)	Table Material	HP	Volts	Amps	Dust Coll. Port	Weight (lbs.)	Comments & Features
Craftsman 22654	\$1,500	10	3	25	36 x 27	CI	2	230	9	Y	490	Dado insert.
Delta 36-755	1,294	10	3 1/8	25	36 x 27	CI	2	230	12	Y	288	T-slot miter gauge groove.
Delta 36-820	2,099	10	3 1/8	52	36 x 27	CI	3	230	17	Y	477	Delta Unifence.
Enlon EN-3202	795	10	3	36	36 x 27	CI	3	230	15	Y	425	Optional sliding table.
General 350-1	1,499	10	3 1/8	25	36 x 28	CI	3	230	12/24	OPT	450	Biesemeyer fence available.
Grizzly G1023	795	10	3 1/8	26	36 1/8 x 27	CI	3	230	18	OPT	420	Cast-iron table extensions.
INCA 290	2,295	10	3	34	27 x 31	AL	2 1/2	230	15	Y	145	Optional sliding table.
JET JTAS-10PF-1	1,929	10	3 1/8	30	40 x 27	CI	3	230	17	Y	469	Biesemeyer fence.
JET JTAS-10PF-3	2,009	10	3 1/8	30	40 x 27	CI	5	230/460	15/7.5	Y	469	Biesemeyer fence.
JET JTAS-10PFX-1	1,984	10	3 1/8	50	40 x 27	CI	3	230	17	Y	489	Biesemeyer fence.
JET JTAS-10PFX-3	2,064	10	3 1/8	50	40 x 27	CI	5	230/460	15/7.5	Y	489	Biesemeyer fence.
JET JWCS-10JF	1,249	10	3 1/8	30	40 x 27	CI	2	230	12	Y	359	Rail-mounted switch.
Kity 619	1,495	10	3 1/4	26	40 x 28	AL/MG	2 1/2	230	11	Y	200	Micro-adjusting rip fence.
Lobo TS-1010	1,299	10	3	30	36 x 27	CI	3	115/230	36/18	Y	364	Cast-iron extension wings.
Mini Max SC-3	3,795	10	4	54	22 x 33	CI	3	230	14	Y	616	Sliding table; overarm guard.
North State MBS 250	1,150	10	3 1/8	50	36 x 27	CI	3	230	16	Y	407	Ball-bearing rollers in fence.
Powermatic 66	2,456	10	3 1/8	50	38 x 28	CI	3	230	17	Y	605	Blade tilts to left.
Shopsmith Sawsmith 2000	1,000	10	2 1/2	24	40 x 27	AL	2 1/2	115	NA	Y	190	Pulls blade through wood.
Sunhill MBS-250	1,145	10	3	49	36 x 27	CI	3	230	NA	Y	485	5-HP motor available.
Sunhill MS-10TK	795	10	3 1/4	30	27 x 40	CI	2	230	12	Y	400	Magnetic controls.
Transpower TS200HA	790	10	4 1/4	30	40 x 27	CI	3	230	18	Y	450	
Transpower TS200HD	980	10	3	30	36 x 27	CI	3	230	18	Y	485	Fence has guide bearing.
Craftsman 22652	2,200	12	4	38	40 x 30	CI	3	230	16	Y	656	5/8-in. and 1-in. arbors.
INCA 2100SE	2,995	12	4 1/8	50	22 x 26	CI	3	230	18	Y	315	
Lobo HTS-0012	849	12	4 1/8	30	27 x 40	CI	3	230	18	Y	330	Scoring attachment available.
Lobo TS-1212	1,699	12	4	38	48 x 30	CI	5	230	19.6	Y	572	Cast-iron extension wings.
Mini Max S1	9,495	12	4	59	22 x 34	CI	9	230	25	Y	1,575	Sliding table; overarm guard.
Mini Max S300 Sliding	6,170	12	4	50	58 x 33	CI	6 1/2	230	17	Y	1,040	Sliding table; scoring blade.
Mini Max S300-W	7,995	12	4	54	34 x 23	CI	6 2/3	230	24	Y	1,280	Sliding table; overarm guard.
Mini Max SC-3 Sliding	2,995	12	4	50	58 x 33	CI	3	230	10	Y	620	Sliding table; scoring blade.
Sunhill MBS-350	2,750	12	4	49	48 x 38	CI	5	230	NA	Y	1,000	7 1/2-HP motor available.
General 550	3,895	14	4 7/8	50	48 x 38	CI	5	230	NA	Y	1,040	
General 550-1	4,600	14	4 7/8	30	48 x 38	CI	3	115/230	12/24	Y	1,040	Biesemeyer fence optional.
Lobo TS-1414	2,590	14	5	49	48 x 38	CI	5	230	19.6	Y	847	Cast-iron extension wings.

CABINET TYPE

See page 136 for listing of manufacturers.

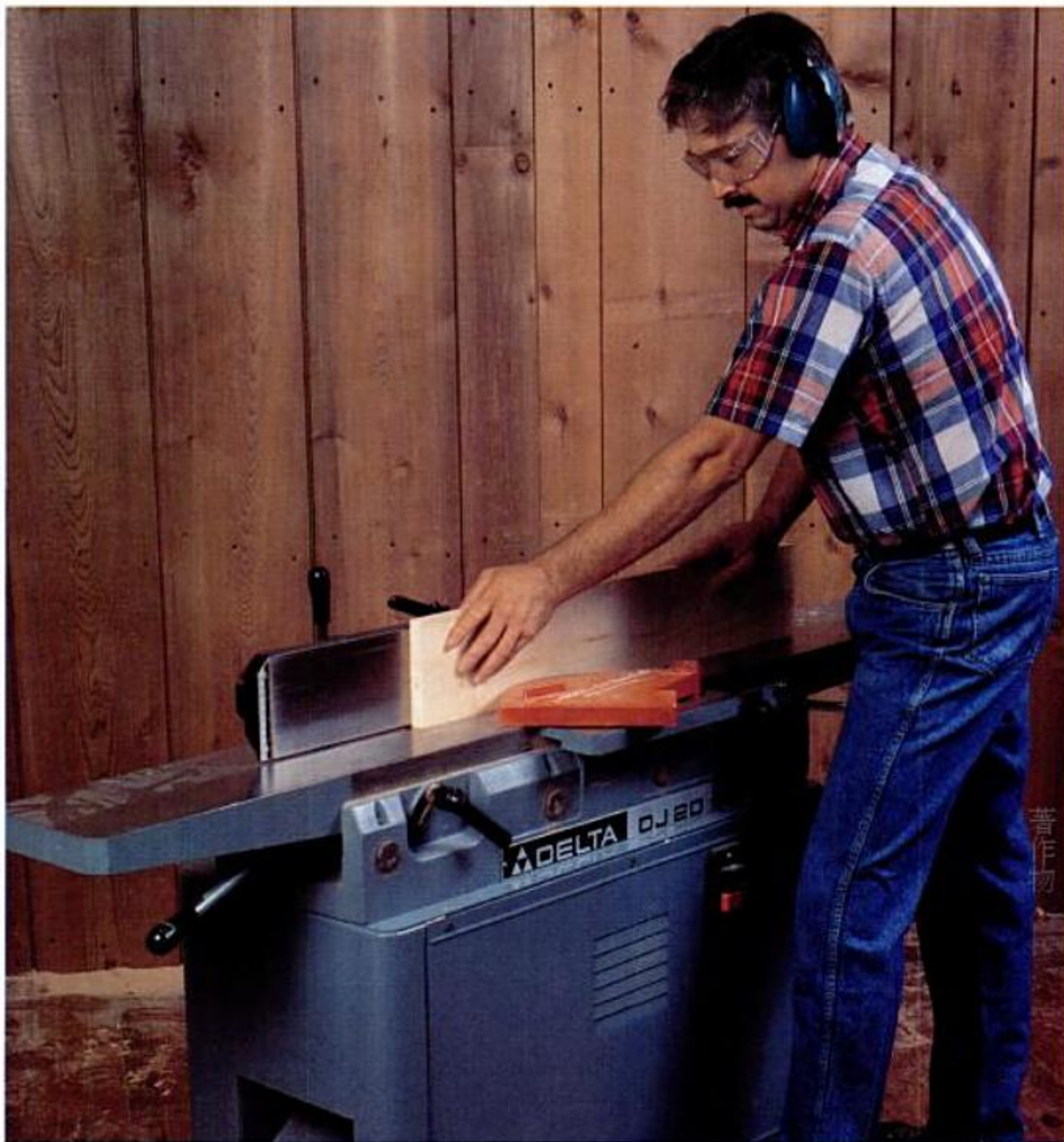
KEY: Table Material: AL = aluminum, CI = cast iron, MG = magnesium. NA = information not available. OPT = optional.

Jointers

To produce boards with square, straight edges, flattened faces and smooth bevels, nothing beats a jointer. With this machine, you can transform a rough-sawn surface into a smooth one, or plane a cupped board flat. When a board is a bit too wide or thick, the jointer can remove stock in tiny increments, yielding the final dimension or fit that you're after. If your jointer has a rabbeting ledge, you can use it to cut both rabbets and tongues.

The size of a jointer is based on its maximum width-of-cut. While jointers are made in sizes up to 24 in., 6- or 8-in. models are most popular.

When you're using a jointer (see lead photo), the workpiece runs against a fence and over a spinning cutterhead that is located between the infeed and outfeed tables.



Straight and flat. The jointer can transform boards that are rough or uneven, planing smooth, straight surfaces and square or beveled edges.

2 Types of jointers

Floor-model jointers

Stationary jointers are the true workhorses in this machine category. These floor models are the best jointers for handling longer and heavier boards. Professionals usually choose stationary jointers over benchtop models for the capacity, stability and durability of the larger machines. A stationary jointer is a smart investment for any wood-

worker who does a substantial amount of dimensioning, especially in hardwoods.



Benchtop jointers

These downscaled machines have width capacities between 4 in. and 6 in. and much shorter infeed and outfeed tables than stationary jointers. The universal motor on a benchtop jointer is louder than the induction motor on a typical floor model, and it's not suited for continuous or heavy-duty use.

However, benchtop jointers are good for light- to

FEATURES *to consider*

Size

Unless you specialize in small-scale work, a 6-in. or 8-in. jointer will probably serve you best. If you frequently joint or plane long boards, extra infeed and outfeed length (called "bed length") is a good idea. Check the "Bed Length" column in the chart.

Knives and rpm

It doesn't really matter whether your jointer has two, three or four knives. Although all the knives cut, they are never at precisely the same height, so only the highest knife produces the finished surface. As a result, higher cutterhead speeds generally produce finer surfaces. Two knives are more economical to buy and sharpen, while three- and four-knife heads stay sharp longer.

Good beds

Look for flat, well-machined surfaces on infeed and outfeed beds. An adjustable outfeed bed makes it easier to change and adjust knives. Bed-height adjustment is usually easier with handwheels than with levers or knobs.

The fence

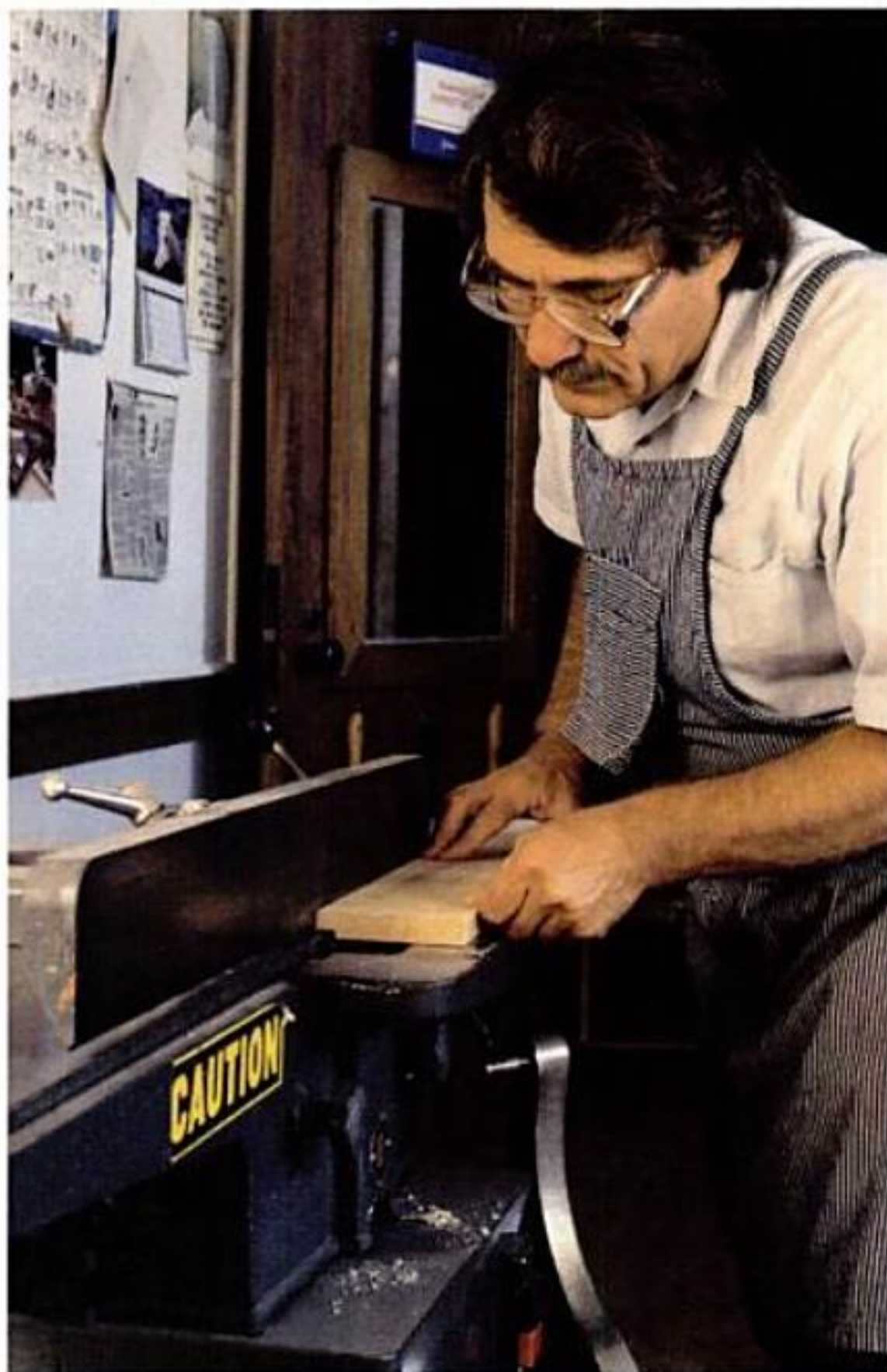
Like the beds, the fence should be machined flat, with a smooth finish that will allow the workpiece to slide easily against it. A center-mounted fence is usually more stable than an end-mounted fence.

The base

Except with benchtop models, a factory-made base should be included in the price of the jointer. Look for sturdy steel construction. The base should include a dust chute and/or dust collection port.

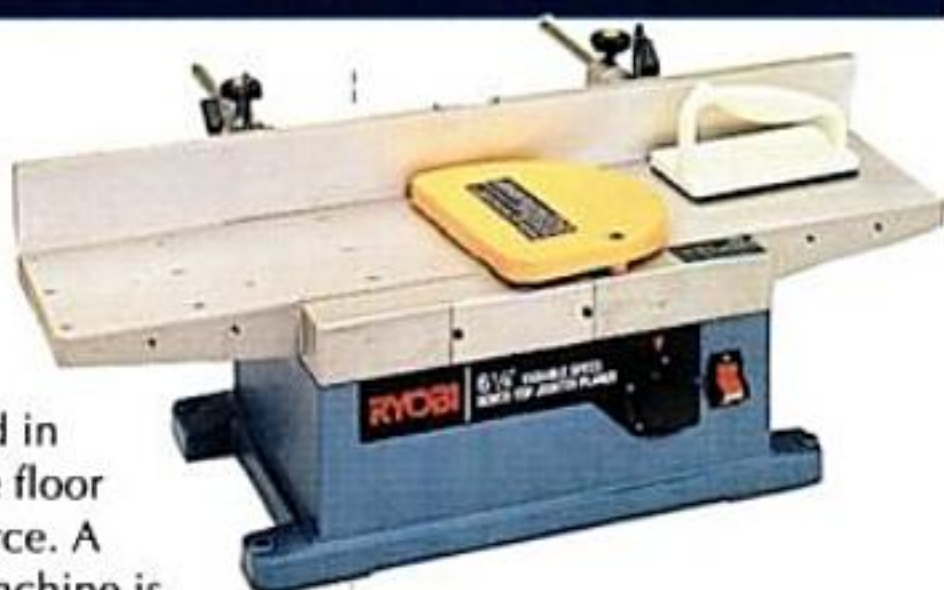
Rabbeting ledge

This feature, which is found on many stationary jointers, enables you to mill rabbets and tongues on your jointer. (See photo, right.)



A ledge for rabbets. On a jointer equipped with a rabbeting ledge, you can quickly and easily mill rabbets and tongues. On a good-quality machine like the one shown above, the flat, finely machined tables and fence enhance precision and performance.

medium-duty work, for woodworkers who build small-scale projects, and in shops where floor space is scarce. A benchtop machine is also a smart choice if you need portability for jobsite work. Some benchtop models feature variable speed control, which lets you tailor



your cutting speed to the hardness of the material you're working and to the desired cutting smoothness. (See chart, page 36.)

OPTIONS *worth having*

Push blocks. Aftermarket blocks are available, or you can make your own. Either way, push blocks are a must for safe jointing and planing operations.

Extension rollers or supports. If you don't have a long-bed jointer, adjustable rollers or supports will give added stability when you're jointing or planing long stock.

Extra knives. With an extra set of knives, your downtime is minimized when knives get dull or nicked.

Knife-setting jig. If your jointer doesn't come with its own jig for changing knives, this magnet-based alignment tool will make it much easier to reinstall knives after they've been sharpened.

Jointers

For jointer-planers, see page 42.



Delta 37-070



Enlon EN-3100



Grizzly G1182



Bridgewood BW-8J



Powermatic 60

	Brand & Model	List Price	Max. Cutting Width (in.)	Bed Length (in.)	No. of Knives x Rpm	HP	Volts	Dust Coll. Port	Weight (lbs.)	Comments & Features
BENCHTOP	Craftsman 23624	\$159	4 1/8	22 5/8	2 x 9,000	5/8	115	Y	35	
	AMT 4800	199	5 1/8	25 1/8	2 x 9,000	7/8	115	Y	45	
	Craftsman 23628	299	6 1/8	31	2 x 10,000	1 1/2	115	Y	53	
	Delta 37-070	337	6 1/8	30	2 x 6,000 - 11,000	NA	115	N	35	Variable speed.
	Ryobi JP155	350	6 1/8	28	2 x 8,000 - 16,000	NA	115	Y	27	Variable speed.
FLOOR MODELS	Enlon EN-3100	250	4	31 1/2	3 x 5,000	1/2	115	Y	110	Center-mounted fence; table slide protector.
	AMT 4124	379	6	46	3 x 5,000	1	115/230	N	220	
	Belsaw MC-6JT	610	6	45 1/2	3 x 4,500	3/4	115/230	Y	251	Center-mounted fence.
	Bridgewood BW-6J	299	6	45 1/2	3 x 4,500	1	115/230	N	193	Handwheel adjusts table height.
	Bridgewood BW-6R	399	6	45 1/2	3 x 4,500	1	115/230	Y	239	Handwheel adjusts table height.
	Delta 37-190 Deluxe	554	6	46	3 x 4,800	3/4	115/230	Y	210	Center-mounted fence.
	Delta DJ-15 37-154	1,496	6	55 1/2	3 x 5,500	3/4	115/230	Y	328	Counterbalanced table support.
	Enlon EN-3101	365	6	47	3 x 5,000	1	115/230	Y	250	1-piece stand; table slide protector.
	Enlon EN-3104	380	6	47	3 x 5,000	1	115/230	Y	250	1-piece stand; table slide protector.
	General 1180-1	680	6	54	3 x 4,200	3/4	115/230	Y	210	Magnetic knife-adjusting gauge.
	General 1180-1-M1	959	6	42 1/2	3 x 4,200	3/4	115/230	OPT	210	
	Grizzly G1182	375	6	47	3 x 5,000	1	115/230	OPT	210	Center-mounted fence.
	Lobo JT-1006	269	6	42 1/2	3 x 4,500	1	115	N	194	Handwheel adjusts table height.
	Lobo JT-2206	359	6	42 1/2	3 x 4,500	1	115	Y	241	Cabinet stand.
	Powermatic 50	1,593	6	56	3 x 7,000	3/4	115/230	Y	434	Fence can be skewed for shear cuts.
	Powermatic 54	737	6	45 1/2	3 x 4,500	3/4	115/230	Y	215	Center-mounted cast-iron fence.
	Reliant DD39C	370	6	45 1/2	3 x 4,500	1	115/230	Y	214	Knife-setting gauge.
	Sunhill CT-60L	395	6	52	3 x 4,500	1	115	Y	220	Cast-iron table extensions.
	Sunhill CT-150E	379	6	46	3 x 5,000	1	115	Y	210	Center-mounted fence.
	Transpower JT650	250	6	42	3 x 4,500	1	115	Y	198	End-mounted fence.
	Transpower JT680	325	6	46	3 x 4,500	1	115	Y	225	Center-mounted fence.
	Woodtek 801589	395	6	42 1/2	3 x 6,000	1	115/230	Y	191	Front and rear guards.
	JET JJ-6CS	613	6 1/16	46	3 x 4,800	3/4	115/230	Y	258	Center-mounted fence.
	Craftsman 23221	400	6 1/8	36	3 x 4,300	1	115	N	150	Single knob adjusts table height.
	Lobo JT-1007	299	7	42 1/2	3 x 4,500	1	115	N	205	Wider table than 1006.
	Bridgewood BW-8J	950	8	66	4 x 4,500	1 1/2	115/230	Y	420	Handwheel adjusts table height.
	Craftsman 20651	1,580	8	66	3 x 4,500	1 1/2	230	Y	476	Rollers extend table to 86 in. long.
	Delta DJ-20 37-350	1,363	8	76 1/2	3 x 5,500	—	115/230	N	335	Stand and motor cost extra.
	Enlon EN-3102	640	8	65	3 x 5,000	1 1/2	230	Y	450	Center-mounted fence; table slide protector.
	Enlon EN-3105	660	8	65	3 x 5,000	1 1/2	230	Y	450	Center-mounted fence; table slide protector.
	Enlon EN-3106	675	8	65	3 x 5,000	2	230	Y	455	Center-mounted fence; table slide protector.
	Enlon EN-3107	690	8	65	3 x 5,000	2	230	Y	455	Center-mounted fence; table slide protector.
	General 480-1-M1	1,859	8	64	3 x 4,500	1 1/2	230	OPT	460	
	Grizzly G1018	650	8	65	3 x 5,000	1 1/2	230	OPT	445	Center-mounted fence.
	JET JJ-8CS	1,399	8	66	3 x 5,500	2	230	Y	398	Center-mounted fence.
	Lobo JT-0008	759	8	66	3 x 4,500	2	115/230	Y	410	Double V-belt drive.

See page 136 for listing of manufacturers.

KEY: NA = information not available. — = not applicable. OPT = optional.

Jointers

For jointer-planers, see page 42.



Reliant DD40

FLOOR MODELS

Brand & Model	List Price	Max. Cutting Width (in.)	Bed Length (in.)	No. of Knives x Rpm	HP	Volts	Dust Coll. Port	Weight (lbs.)	Comments & Features
Lobo JT-1008	\$649	8	66	3 x 4,500	2	115/230	Y	410	Double V-belt drive.
North State CT 200	795	8	68	3 x 4,500	2	230	Y	512	Knife-setting gauge.
Powermatic 60	2,064	8	72	3 x 7,000	1 1/2	115/230	Y	547	Fence can be skewed for shear cuts.
SECO SK-0008JT	920	8	66	3 x 4,500	2	230/460	Y	400	Double V-belt drive.
Sunhill CT-204L	859	8	72	4 x 4,500	2	230	Y	500	Cast-iron table extensions.
Transpower JT860	615	8	65	3 x 4,500	2	115/230	Y	475	Handwheel adjusts table height.
Transpower JT980	725	8	67	4 x 4,500	3	230	Y	485	Handwheel adjusts table height.
Reliant DD40	680	8 1/8	66	3 x 4,500	2	230	Y	400	Center-mounted fence.
General 780	4,100	12	84	4 x 4,500	3	220	OPT	1,500	
Mini Max F1	5,295	16	102	4 x 5,000	6 2/3	230	OPT	1,653	

KEY: NA = information not available. — = not applicable. OPT = optional.

See page 136 for listing of manufacturers.

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READER SERVICE NO. 41

JOINTER



NEW!

MODEL 54

Powermatic's NEW model 54 Jointer is the latest addition to the Artisan line. In a class by itself, the 54 jointer is mounted on a one piece solid stand for added strength and stability. The cast iron fence assembly provides rigid support for the workpiece with positive stops at ± 45 degrees. An adjustment knob allows precise setting of the outfeed table to the jointer knives. Powermatic's three knife cutterhead design eliminates grain pull out resulting in a superior edge finish. The enclosed stand has a built-in dust chute.

POWERMATIC

McMINNVILLE, TN 1-800-248-0144

READER SERVICE NO. 38

Thickness Planers

A thickness planer makes boards smooth and flat and can mill boards any thickness you like. It can turn roughsawn lumber into smooth, flat boards and true up the faces of a glued-up panel. A planer is an important machine in any serious woodworker's shop.

When you feed a board through a planer, rollers press the board down flat on the table as rotating knives remove wood from the top face of the board. The board comes out thinner with parallel faces top and bottom. A planer won't remove warp, twist or cup from a board unless one face is flattened first on a jointer or with a hand plane.

Thickness planers are sized by the maximum width of stock they can handle; a 12-in. planer will surface boards up to 12 in. wide.



Shaving it down to size. A thickness planer allows you to mill lumber to the exact thickness you want for your project.

3 Types of planers

Stationary planers

A stationary, or floor-model, thickness planer is a key machine in any serious woodworking shop. With



width capacities of 12 in. or more, these machines can surface wider boards and glued-up panels. They're also better at handling long boards, thanks to bed rollers and the infeed and outfeed rollers that are standard on some models.

Floor-model planers can also take a heavier bite—up to $\frac{5}{16}$ in. in some cases—so you'll save a lot of time when you've got large amounts of lumber to surface. If you don't have a dust-collection system, plan to get one if you're buying a big planer. These behemoths produce plenty of shavings.

Portable planers

Portable models offer good value for small-shop woodworkers. Intended for light- or medium-duty use, most of these machines cost under \$1,000 and will handle boards up to 6 in. thick and 12 in. wide. (See chart, page 40.) Many woodworkers treat their portable planers like stationary machines, building a stand and adding infeed and outfeed supports to create a permanent workstation.

A couple of things to note: The high-rpm universal motors on most portable planers make them very

FEATURES to consider

Number of knives

Three- or four-knife cutterheads don't need to turn as fast as those with only two knives to produce the same number of cuts per minute. Lower rpm means quieter operation and longer life for moving parts.

Maximum cutting depth

When evaluating a planer's power, maximum cutting depth is just as important as the horsepower rating. As shown in the chart on page 40, maximum cutting depth ranges from $\frac{1}{8}$ in. to $\frac{5}{16}$ in.

The bed

For handling heavy stock, nothing beats a cast-iron bed with bed rollers. (See top photo.) You'll find this type of bed on many floor models. If you won't be planing long, large-dimension stock, a polished-aluminum or steel bed (found on most portable models) will serve your needs.

Feed rollers

Many stationary planers have serrated or textured steel rollers to push the board into the cutterhead. (See photo, bottom right.) These can leave marks, which are usually planed off as the wood passes through the cutterhead. A light pass, however, may not remove them.

The rubber-coated infeed rollers found on most portable planers leave no marks on the wood, but they wear out sooner and don't usually grip as well as steel rollers, especially on long, heavy stock.

Extra ability

Some planers can be fitted with molding knives and sanding drums. Check the "Comments" column in the chart.



Entry-level. Bed rollers and a cast-iron bed can handle heavy use and large, long stock.



Infeed rollers. Serrated infeed rollers are effective in moving heavy boards through the machine.



Jointer-planers

Combination machines, which utilize one motor for both jointing and planing operations, take up less space than separate machines. They sacrifice little in the way of features, but can take a few moments to switch functions.



noisy, so don't forget to wear ear protection. Also, if you're looking for a planer for frequent jobsite use, or if you need one that's small enough to move around a crowded shop, check out the weight listed in the chart. The "portable" classification becomes dubious for machines over 60 lbs.

OPTIONS worth having

Extra knives. A spare set is important for anyone with an aversion to downtime. Carbide-tipped knives are expensive, but on the plus side, they don't need to be changed nearly as often as steel knives.

Knife-setting jig. If your thickness planer doesn't come with its own knife-setting jig, an aftermarket jig will pay off in accuracy and time savings.

Support stand. Aftermarket steel stands are available for portable planers. Add locking casters, and you'll be able to move the machine out of the way when you're not using it.

Outfeed rollers. If you're working by yourself—and especially if you're planing long or heavy boards—outfeed rollers will take the place of a helper on the other side of the machine.

Thickness Planers

For jointer-planers, see page 42.



Enlon EN-PN12



Ryobi AP12



Bridgewood BW-15P

	Brand & Model	List Price	Max. Stock T x W (in.)	Max. Cutting Depth (in.)	No. of Knives x Rpm	HP	Volts	Dust Coll. Port	Weight (lbs.)	Comments & Features
PORTABLE	Williams & Hussey W75	\$1,019	8 x 7	1/4	2 x 3,450	2	115/230	Y	85	Motor costs extra; molding capability.
	Reliant NN910	270	5 x 10	1/8	2 x 8,000	2	115	OPT	58	Top carrying handle.
	AMT 4651	355	6 x 12	1/8	2 x 8,000	2	115	N	65	Smooth top for easy stock return.
	Bridgewood BW-12P	399	6 x 12	1/16	2 x 8,000	NA	115	OPT	64	Extension table rollers.
	Delta 22-540	524	6 x 12	3/16	2 x 8,000	NA	115	N	68	4-column support for cutterhead.
	Enlon EN-PN12	385	6 x 12	1/8	2 x 8,000	2	115	OPT	65	Top carrying handle, extension table rollers.
	Grizzly G1017	395	6 x 12	3/32	2 x 8,500	2	115	OPT	84	4-column support for cutterhead.
	Makita 2012	959	6 x 12	3/32	2 x 8,000	2	115	OPT	53	Disposable double-edged blades.
	Reliant NN912	380	6 x 12	1/8	2 x 8,000	2	115	OPT	63	Top carrying handle.
	Lobo WP-0012	395	6 x 12 1/8	1/8	2 x 1,600	2	115	OPT	63	Top carrying handle.
	Hitachi P12R	1,529	6 5/8 x 12 9/32	3/32	2 x 1,040	2	115	N	83	4-column cutterhead support.
	Ryobi AP12	450	6 x 12 5/16	1/8	2 x 8,000	NA	115	OPT	63	Double-edged knives.
	Craftsman 23383	700	5 x 12 1/2	3/32	3 x 4,500	2 1/2	115	OPT	123	Molding capability.
	Craftsman 23373	499	6 x 12 1/2	3/32	2 x 8,000	2	115	OPT	73	Top rollers for easy stock return.
	JET JWP-12	606	6 x 12 1/2	3/32	2 x 8,000	2	115	OPT	61	Extension table rollers.
	Penn State Super 125	349	6 x 12 1/2	3/32	2 x 8,000	2	115	N	68	Extension table rollers.
	Sunhill CT-318	369	6 x 12 1/2	1/8	2 x 8,000	NA	115	OPT	70	Knife-setting gauge.
	Transpower AP150	345	6 x 12 1/2	1/8	2 x 8,000	2	115	OPT	75	Extension table rollers.
	Shopsmith Professional Planer	1,100	4 x 12	1/8	3 x 5,750	1 3/4	115	Y	151	Separate motors for feed and cutterhead.
	Powermatic 100	3,374	5 x 12	1/4	3 x 5,300	3	230	OPT	612	
FLOOR MODELS	RBI 812	1,099	8 x 12 1/8	3/16	3 x 5,500	3	230	OPT	254	Molding, sanding capabilities.
	Woodmaster 712	1,299	7 x 12 5/16	3/16	3 x 4,200	5	230	N	300	Molding, drum sanding capability.
	Belsaw VP-1	1,799	6 x 12 1/2	3/16	3 x 4,500	5	230	N	350	Molding, drum sanding optional.
	JET JPM-13	999	5 x 13	3/32	3 x 4,500	1 1/2	115/230	Y	204	Molding capability.
	Delta DC-33 22-661	1,544	6 x 13	3/32	3 x 6,100	2	230	N	320	Oil-bath gear-box drive system.
	General 130-1	3,900	6 x 14	1/8	3 x 4,500	3	115/230	N	610	Adjustable infeed and outfeed rollers.
	General 130-1-M1	3,200	8 x 14	1/8	3 x 4,500	3	230	OPT	650	
	AMT 4490	890	6 x 15	1/8	3 x 4,800	2	230	Y	446	Lever adjusts feed.
	Bridgewood BW-15P	949	6 x 15	1/8	3 x 4,500	3	230	Y	446	Top rollers for easy stock return.
	Craftsman 23374	1,500	6 x 15	1/4	3 x 5,000	2	230	Y	319	Top rollers for easy stock return.
	Enlon EN-PN15	899	6 x 15	1/8	3 x 5,000	3	230	Y	475	Adjustable table and extension rollers.
	Grizzly G1021	765	6 x 15	1/8	3 x 4,500	2	230	Y	480	Oil-bath gear-box drive system.
	JET JWP-15HO	1,699	6 x 15	1/8	3 x 4,500	3	230	Y	480	Adjustable extension table rollers.
	Lobo WP-0015	979	6 x 15	1/8	3 x 4,500	3	115/230	Y	480	Top rollers for easy stock return.
	Powermatic 15	1,759	6 x 15	1/8	3 x 4,500	3	230	Y	484	Top rollers for easy stock return.
	Reliant DD37	895	6 x 15	1/8	3 x 4,500	3	230	Y	529	Top rollers for easy stock return.
	Sunhill CT-38B	889	6 x 15	1/4	3 x 4,500	3	230	Y	506	Triple V-belt drive; magnetic controls.
	Sunhill CTM-16	799	6 x 15	1/4	3 x 4,500	2	230	Y	450	Adjustable head.
	Woodtek 875001	1,075	6 x 15	1/8	3 x 4,850	2	230	Y	470	Adjustable extension table and feed rollers.
	North State 315	859	6 1/2 x 15	3/16	3 x 5,000	3	230	Y	485	Triple V-belt drive.

Chart continued on page 42.

See page 136 for listing of manufacturers.

KEY: NA = information not available. OPT = optional.

Thickness Planers



Reliant DD37



Sunhill CTM-16

Brand & Model	List Price	Max. Stock T x W (in.)	Max. Cutting Depth (in.)	No. of Knives x Rpm	HP	Volts	Dust Coll. Port	Weight (lbs.)	Comments & Features
Lobo WP-1015	\$869	8 x 15	1/8	3 x 4,500	3	230	Y	480	
Transpower AP850	790	8 x 15	3/16	3 x 5,600	3	230	Y	500	Triple extension rollers.
Makita 2040	2,610	7 5/8 x 15 5/8	3/16	2 x 6,500	2	115	OPT	254	Ball-and-needle bearing construction.
Bridgewood BW-16PV	2,595	7 x 16	1/4	3 x 5,600	3	230	Y	748	Variable feed, sectional infeed roll.
Transpower AP800	740	8 x 16	3/16	3 x 5,600	3	230	Y	480	Triple extension rollers.
RBI 816	1,799	8 x 16 1/4	5/16	4 x 4,350	5	230	OPT	440	Molding, sanding, sawing optional.
Powermatic 180	7,226	6 x 18	1/2	3 x 4,800	5	230/460	OPT	1,523	Adjustable feed rollers, knife sharpening.
Woodmaster 718	1,695	7 x 18 1/8	3/16	3 x 4,200	5	230	OPT	420	Variable feed; molding, sanding, sawing opt.
Bridgewood BW-200P	2,550	6 1/2 x 20	1/4	3 x 5,000	5	230	Y	780	Anti-kickback fingers, sectional infeed roll.
Bridgewood BW-20PV	3,395	7 x 20	1/4	3 x 5,600	5	230	Y	857	Variable feed, sectional infeed roll.
JET JWP-20H-1	4,134	7 x 20	1/4	3 x 5,600	3	230	Y	1,058	Sectional infeed roll.
Woodtek 816427	2,199	7 x 20	3/16	3 x 6,000	3	230	Y	1,000	Top rollers for easy stock return.
Enlon EN-PN20	1,295	8 x 20	1/8	4 x 5,000	3	230	Y	810	Adjustable table and extension rollers.
Enlon EN-PN25	1,395	8 x 20	1/8	4 x 5,000	5	230	Y	850	Top return rollers for easy stock return.
Grizzly G1033	1,195	8 x 20	1/4	4 x 5,000	3	230	Y	700	Oil-bath gear-box drive system.
JET JWP-208-1	2,492	8 x 20	3/32	4 x 5,000	3	230	Y	770	Magnetic switches.
Lobo WP-0020	1,495	8 x 20	1/4	4 x 5,000	3	115/230	Y	780	Top rollers for easy stock return.
Lobo WP-1120	2,290	8 x 20	1/4	3 x 5,000	3	230	OPT	771	Solid cast-iron body.
Lobo WP-2000	2,890	8 x 20	1/4	3 x 5,500	3	230	OPT	850	30 FPM for mass production.
Sunhill CT-508	1,395	8 x 20	1/4	4 x 5,000	3	230	Y	925	Triple V-belt drive.
Transpower AP200	1,950	8 x 20	1/4	4 x 5,200	5	230	N	1,100	Top rollers for easy stock return.
Transpower AP200A	1,245	8 x 20	1/4	4 x 5,600	5	230	Y	882	Extension table rollers.
North State CT-508	1,360	8 1/2 x 20	1/4	4 x 5,000	5	230	Y	882	Feed pressure adjustment.
Bridgewood BW-508	4,395	9 x 20	1/4	3 x 5,200	5	230	Y	1,370	Separate motors for stock feed, cutterhead.
General 330	5,900	9 x 20	3/8	4 x 4,000	5	230	OPT	2,400	
Sunhill CM-510	3,675	9 x 20	5/16	3 x 5,000	5	230	Y	1,500	Quick-set bed rollers.
RBI 820	2,199	8 x 20 1/8	5/16	4 x 4,350	5	230	OPT	500	Opt. var. feed, molding, sanding, sawing.
Mini Max SP-1	6,995	9 3/4 x 20 1/2	5/16	4 x 4,500	9	230	Y	1,496	Very quiet machine.

FLOOR MODELS

Jointer-Planers

For jointers, see page 36.



INCA 570

Brand & Model	List Price	Maximum Stock T x W (in.)	Jointer Max. Cutting Width (in.)	Jointer Bed Length (in.)	No. of Knives x Rpm	HP	Volts	Dust Collection Port	Weight (lbs.)	Comments & Features
Kity Woodster III	\$795	4 x 6	6	28	2 x 6,000	1 1/2	115	Y	75	Hard anodized Al/Mg tables.
Hitachi P12RA	2,018	6 5/8 x 12 9/32	6 1/8	28 11/32	2 x 10,400	1 1/2	115	OPT	96.5	Jointer removable.
Makita 2030S	NA	6 5/16 x 12 9/32	6 1/8	19 11/16	2 x 9,000	2	115	OPT	100.1	Jointer removable.
Hitachi F1000A	4,600	6 9/32 x 12 5/32	6 9/32	63 1/32	2 x 10,400	2 7/10	115	OPT	320	Collapsible jointer bed extensions.
INCA 570	2,495	6 1/4 x 10 1/4	10 1/4	42	3 x 6,000	2	115/230	Y	180	Tersa type cutterhead.
Kity 637	1,495	7 7/8 x 10 1/2	10 1/4	48	2 x 7,320	2 1/2	230	Y	220	Hard anodized Al/Mg tables.
Makita 2030N	3,730	7 1/4 x 12 1/2	6 1/8	59	2 x 7,000	2	115	OPT	330	Electric brake.
Mini Max FS-30	2,995	8 x 11 1/4	11 1/4	58 1/2	3 x 5,000	3	230	OPT	530	Optional slot mortiser.
Robland XSD 31	2,575	9 x 12	12	55	3 x 6,000	3	230	Y	650	Variable feed available.
Mini Max FS-350	4,295	9 1/4 x 13 3/4	13 3/4	71	3 x 4,500	3	230	OPT	695	Optional slot mortiser.

PORTABLE

FLOOR MODELS

See page 136 for listing of manufacturers.

KEY: OPT = optional, NA = information not available.

Biscuit Joiners

Invented only a few decades ago, biscuit joiners provide a quick, efficient way to make joints in solid wood, plywood, and particleboard. To cut a biscuit joint, you simply plunge the tool's spinning cutter into the mating workpieces to make a pair of matching, arc-shaped slots. You assemble the joint by gluing flat, football-shaped "biscuits" into the slots. Made from compressed wood, the biscuits swell from the glue's moisture and create a tight, strong joint.

Biscuit joiners are great for joining case tops, sides and shelves. They're also useful for making butt, corner, and miter joints in framework and for aligning boards when edge gluing.



Redefining splining. Biscuit joiners cut arced slots that accept flat, football-shaped biscuits of compressed wood which swell when glued to make strong, accurate joints.

2 Types of biscuit joiners

Portable models

Just about all the biscuit joiners on the market are portable, hand-held models. Their versatility makes them much more popular than stationary biscuit joiners. Unlike a stationary model, a portable biscuit joiner can be placed on the work to cut joints in the middle of panel faces and other large workpieces.



Stationary models

Delta and CFW both make stationary biscuit joiners. Anchored to a benchtop, these machines allow you to handle the workpiece instead of the machine. This is advantageous when you're dealing with small workpieces in a production situation. However, feeding large stock onto these machines can be awkward.

To cut the biscuit slots with the cast-iron Delta machine, you register the workpiece against the fence and step on a foot pedal to drive the blade into the piece. The tabletop adjusts for height and tilt and also accommodates an included miter gauge.

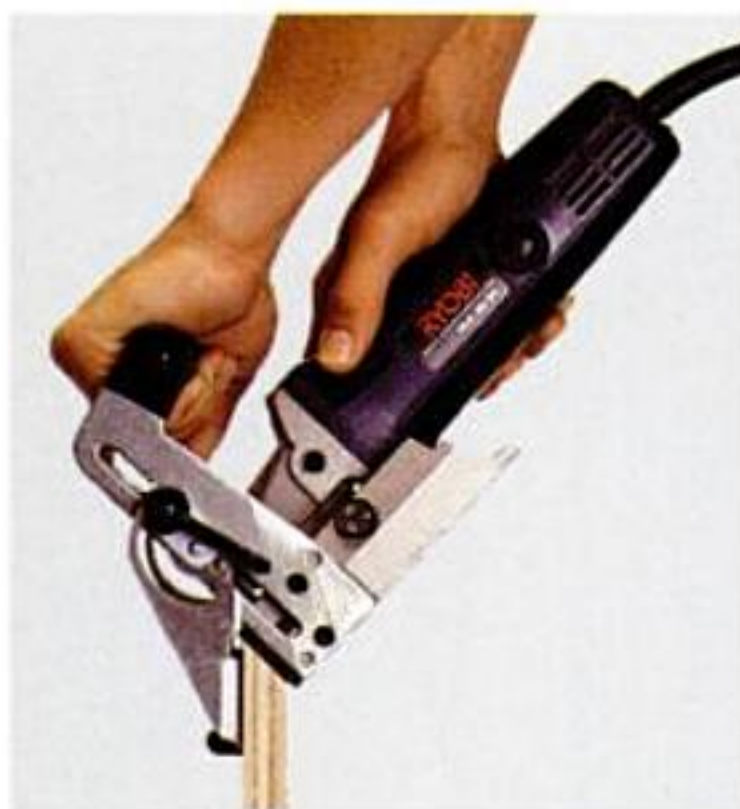


The CFW model is made of particleboard and aluminum and resembles a router table. It uses a router to make the biscuit slots, which are cut by pushing the workpiece against the machine's spring-loaded fence. The small cutter and biscuits allow the machine to join face frames with rails as narrow as 1 1/2 in.—a distinct advantage for cabinetmakers.

FEATURES to consider

Fence-angle adjustment

Fences are either fixed or adjustable to allow for cutting slots in angled joints. (See photos, below.) Fixed fences will work on 90°, 45°, and 135° angles. A biscuit joiner with a continuous protractor scale lets you set the fence to any angle within a given range. With this type of adjustable fence, you can join boards at odd angles. See the "Fence-Angle Adjustment" column in the chart on page 46.



Getting the angle. Biscuit-joiner fences work in different ways to align cuts in miter joints. At left, a fixed 45° fence registers against the inside face of the workpiece. Center and right, adjustable fences capture the beveled edge of the miter which will align the outside corners of the workpiece when assembled.

Fence-height adjustment

Fence height is most easily adjusted using lock levers like those you'll find on the AMT, Lamello, Ryobi and Virutex models. Mechanisms that rely on Allen screws can be frustrating to use. The DeWalt's double rack-and-pinion mechanism keeps the fence parallel during adjustment—a convenient feature.

Depth-of-cut adjustment

All biscuit joiners have a slot-cutting adjustment to accommodate the three common biscuit sizes: #0, #10 and #20. Some also cut deeper slots for oversized biscuits and special biscuit-shaped hardware and hinges.

Fence construction

Better fences are made of precision-machined steel or aluminum. Plastic fences can flex in use, thwarting accurate slot placement.

Switch placement

The big, bottom-mounted trigger switch on the DeWalt biscuit joiner makes it equally accessible to lefties or righties. Switches mounted on the left side may be awkward for southpaws. A trigger lock is useful for production slotting.

Anti-slip devices

Most biscuit joiners use small retractable pins or small rubber pads to prevent the machine from slipping sideways as its blade bites into the wood. The full-width rubber pad

on the Ryobi and the Makita works best, especially when gripping small workpieces. (See photo, below.)

Slip clutch

The slip clutch on the Lamello Standard 10 and Top 10 lets the blade stop if the cutter jams, reducing motor wear.

Dust collection

Most of these machines have a dust bag, but these tend to fill up quickly. Some models have a port to which you can connect an optional vacuum fitting—a good feature.



Pads and pins. Full-face rubber pads like the one on the Makita at left work best for gripping a workpiece. The DeWalt, at right, employs four-pronged, spring-loaded pins which press against the work.

FOR MORE INFO

Check out the detailed test results in our "Buyer's Guide to Biscuit Joiners," AW #34 (October 1993).

Biscuit Joiners



Practical Products CA-800



CFW 100

	Brand & Model	List Price	Fence-Angle Adjustment (°)	No. of Depth Stops	Anti-Slip Device	Amps	Dust Collection	Weight (lbs.)	Comments & Features
PORTABLE	AMT 4960	\$165	Fixed 90, 135	3	FP	6	DB	6.8	Fence locks with 2 levers.
	Craftsman 17501	100	Adj. 90 - 135	3	RU	6	DB	7	Fence locks with 2 knobs.
	DeWalt DW682K	438	Adj. 90 - 180, notch for 45	4	RP	6.5	DB, VP	6.6	Rack-and-pinion fence-height adjustment.
	Freud JS100	333	Fixed 90, 135	6	RU	5	DB, VP	6.2	Anti-kickback blade.
	Freud JS102	355	Fixed 90, 135, adj. 90 - 180	6	RU	5	DB, VP	6.3	Anti-kickback blade.
	Jepson 7204	230	Fixed 90, 135	3	RP	6	DB	4.5	
	Lamello Cobra 10	375	Adj. 0 - 90	6	RU	2.2	VP	6.5	High-rpm motor compensates for low torque.
	Lamello Standard 10	565	Fixed 90, notch for 45	6	RU	3.9	VP	6.6	Slip clutch. (See text.)
	Lamello Top 10	799	Adj. 0 - 90	6	RU	6.5	VP	7	Slip clutch. (See text.)
	Makita 3901	376	Adj. 0 - 90	6	RV	5.6	DB	6.2	Rack-and-pinion fence-height adjustment.
BENCH	Porter-Cable 555	320	Fixed 45, 90	3	FP	5	—	6	Vertical handle.
	Porter-Cable 556	240	Adj. 90 - 180	3	FP	5	—	6	Vertical handle.
	Practical Products CA-800	250	Adj. 90 - 180	6	RP	6	DB, VP	7	Tilt, height adjust independently.
	Ryobi JM-80K	100	Adj. 0 - 135	4	RU	6	DB	7	
	Ryobi JM-100K	250	Adj. 45 - 180	3	RU	5.3	DB	7.3	Wide fence-angle adjustment.
	Skil HD1605	172	Fixed 90, 135	3	RU	5	DB, VP	6.6	Fence adjusts with Allen wrench.
	Virutex AB-11C	285	Adj. 90 - 180	3	RU	6	VP	7	Tilt, height adjust independently.
	CFW 100	515	Fixed 90	1	SS	3.8	VP	35	Designed for face frames.
	Delta 32-100	330	Adj. 90 - 135	3	WC	10	VP	39.6	Foot pedal operates blade plunging mechanism.

See page 136 for listing of manufacturers.

KEY: Anti-Slip Device: FP = fixed pins, RP = retractable pins, RU = rubber, SS = stock stops, WC = work clamps. Dust Collection: DB = dust bag, VP = vacuum port. — = not applicable.

AW = Editors' Choice.

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Cordless Drills

Cordless electric drills are the hottest-selling power tools on the market today. Why? For one thing, they're "crossover" tools, used by woodworkers, tradesmen and homeowners alike. But the main reason is that they're cordless: You can drill holes or drive screws just about anywhere.

Today's cordless drills pack enough power for many demanding jobs. And innovations such as clutches, variable speed control and keyless chucks have made these tools even more versatile and convenient to use.

Choosing a cordless drill can be bewildering: There are more than 100 models available ([see chart, page 50](#)), with a variety of features and capabilities. As with most tool purchases, cost is a factor, but the most important considerations are power and ergonomics.



Unplugged power. Convenient and powerful, cordless drills have become a mainstay in the shop and on the jobsite for drilling holes and driving screws.

3 Types of cordless drills

Conventional models

The vast majority of cordless drills fall into this broad category but few have precisely the same features. They range in power from 7.2-volt lightweights to 14.4-volt powerhouses that perform most of the tasks you'd expect from a drill that runs on house current. Beyond that, you're buying conveniences and ergonomics. (See Features, opposite page.)



Impact drivers

Relatively new on the market, this type of cordless drill can apply almost four times the torque of a standard cordless drill in short, loud bursts. Impact drivers are engineered primarily for heavy, repetitive tasks such as driving long screws and bolts. Drill chucks, if they're available, must be purchased separately. Most models have electric brakes and 1/4-in., quick-disconnect hex chucks.



Right-angle drills

Tight quarters don't present a problem for these drills. Compact but still powerful, these cordless models will be well received by any woodworker who has struggled to drill holes or drive screws inside small cabinets or other tightly constrained spaces. A right-angle drill is not intended to serve as a primary cordless drill; it's more of a specialty tool.



FEATURES *to consider*

Power

A drill powered by a 7.2- or 9.6-volt battery will suffice for many shop purposes, but for heavy-duty or extended work, you'll want at least 12-volt battery power. Expect to pay \$160 or more for a good, heavy-duty drill, including charger and batteries.

Speed and torque

The higher a drill's rated speed, the less torque it will deliver, and vice versa. Most cordless drills offer two speeds, or two variable speed ranges, with greater torque in the lower range. Variable speed is especially valuable when driving screws because you can start the screw slowly and then speed up to drive it home.

Handle style

Conventional drills are available in two handle styles—*pistol-grip* and *T-handle*. The pistol-grip design places the handle at the back of the tool. (See bottom left photo, opposite page.) It lets you grip high on the handle and push directly in line with the bit, providing stability and allowing you to lean into the work. On the downside, a pistol-grip drill tends to be front-heavy; one-handed aim and bit placement can be more difficult than with a T-handle drill.

A T-handle model has its handle under the center of the drill's body. (See bottom center photo, opposite page.) T-handle drills are generally more compact than pistol-grips, so they're easier to maneuver for work in awkward spaces. But it's harder to apply one-handed force in line with the business end of the tool.

Ergonomics

Regardless of handle style, a drill should feel good in your hand, even after periods of extended use. Before you buy, visit a home center or building supply store to test several drills for weight, balance, handle size and convenience of controls.

Electronic brake

Electronic brakes stop the chuck from spinning as soon as you release the trigger. This way, you don't have to pause before driving the next screw or changing bits.

Clutch

Adjustable clutches let you select the desired torque for driving screws to a precise depth. Black & Decker and DeWalt offer a Versa-Clutch® that engages the chuck only when you push on the bit. Electronic clutches, which are quiet, simply cut power to the drill when a particular torque is reached.

Reversing switch

The reversing switch should be conveniently located and should lock positively. A lever located on the top of the trigger is often switched by accident. A better type is shown in the left photo below.

Chuck

Although keyless chucks won't generally apply as much tightening force as keyed chucks, keyless chucks are much more convenient. Consider getting a keyed chuck if you often use large-diameter drill bits with small shanks.



Reversing switch. The reversing switch should be accessible but not prone to accidental switching. This switch passes through the drill body above the trigger.



Keyless chuck. If you tend to lose your keys, you'll love this feature, which allows you to tighten and loosen the chuck by hand.

OPTIONS *worth having*

Extra battery. This is the first accessory to buy. It allows you to keep working when your first battery runs out of power.

Drill holster. You may look a little like a cowpoke, but you will always have your drill at your side and ready for action of any kind.

Fast charger. This type of charger, which comes standard on some drills, cuts charging time down to 10 or 15 minutes.

Carrying case. It's wise to invest in a case if your drill doesn't come with one. Many will accommodate the drill's charger and an extra battery.

FOR MORE INFO

Check out the detailed test results in our "Buyer's Guide to Cordless Drills," AW #35 (December 1993).

To learn more about the latest in cordless drill technology, see "What's New in Cordless Drills," AW #47 (October 1995).

Cordless Drills



Black & Decker PS330



DeWalt DW961K-2



Makita 6221DW



Panasonic EY6780EQK

Brand & Model	List Price	Battery Volts	Fast Charge	Max. Rpm* (Low Range, High Range)	Chuck Type	Chuck Capacity (in.)	No. of Clutch Settings**	Handle Type	Weight (lbs.)	Comments & Features
Black & Decker BD2300	\$89	9.6	N	300, 700	KL	3/8	6	PG	4	Built-in level.
Black & Decker BD2305	99	9.6	N	700	KL	3/8	6	PG	5	Built-in level.
Black & Decker PS320	69	9.6	N	700*	KL	3/8	6	PG	3	
Black & Decker PS330	79	9.6	N	700	KL	3/8	6	PG	3	
Bosch 3100K	309	9.6	OPT	350, 1,000	KL	3/8	42	PG	3.6	Electronic clutch.
Bosch 3110K	318	9.6	OPT	350, 1,000	KL	3/8	15	TH	3.5	Single-sleeve chuck.
Bosch B2100	261	9.6	OPT	400, 900	KL	3/8	42	PG	3.6	Electronic clutch.
Bosch B2100K	285	9.6	OPT	400, 900	KL	3/8	42	PG	3.6	Electronic clutch; extra battery.
Bosch B2110K	318	9.6	OPT	350, 1,000	KL	3/8	15	TH	3.5	Single-sleeve chuck.
Chicago Pneumatic ABSE 13	294	9.6	N	370, 1,000	KL	1/2	10	PG	3.1	Hex-bit adaptor, worklight.
Chicago Pneumatic ABSE 1310	265	9.6	N	285, 855	KL	3/8	6	PG	3	Hex-bit adaptor, extra battery, case.
Chicago Pneumatic PES 9.6	320	9.6	OPT	260, 1,000	KL	3/8	20	PG	3.3	Battery flips for clearance, extra batt., case.
Chicago Pneumatic PES 9.6T	320	9.6	OPT	380, 1,000	KL	3/8	20	TH	3.3	Battery flips for clearance, extra batt., case.
Craftsman 11189	120	9.6	N	600	KL	3/8	4	PG	NA	Built-in level.
Craftsman 27189	150	9.6	N	600	KY	3/8	4	PG	3.8	Built-in level, extra battery.
DeWalt DW944K-2	303	9.6	OPT	350, 1,200	KL	3/8	24	PG	4	Versa-Clutch®. (See text.)
DeWalt DW952K	280	9.6	OPT	400, 1,100	KL	3/8	16	TH	3.7	Fan-cooled motor.
DeWalt DW961K-2	324	9.6	OPT	400, 1,200	KL	3/8	16	PG	3.9	Anti-slip grip.
DeWalt DW962K-2	324	9.6	OPT	400, 1,200	KL	3/8	16	TH	3.9	Anti-slip grip.
DeWalt DW964K-2	324	9.6	OPT	400, 1,200	KL	3/8	24	TH	4.3	Versa-Clutch®. (See text.)
Fein DSSKE 315	410	9.6	N	320, 2,200	KL	3/8	5	PG	3.4	Pressure-operated clutch.
Freud EDS96	296	9.6	N	375, 1,300	KL	3/8	5	PG	3.9	Hex-shank adaptor.
Freud EDS96B	326	9.6	N	375, 1,300	KL	3/8	5	PG	3.9	Hex-shank adaptor.
Hitachi D10DF2K	295	9.6	N	400, 1,100	KL	3/8	5	TH	3.7	Electronic brake.
Hitachi D10DF2KBE	320	9.6	N	400, 1,100	KL	3/8	5	TH	4.1	Extra battery.
Hitachi D10DFKBE	325	9.6	N	400, 1,100	KL	3/8	5	TH	4.1	Extra battery.
Jepson 2416K	220	9.6	N	400, 1,100	KY	3/8	5	PG	2.7	Electronic brake.
Makita 6012HDW	255	9.6	OPT	400, 1,100*	KY	3/8	10	PG	3.5	Plastic case.
Makita 6093DL	362	9.6	OPT	400, 1,100	KY	3/8	12	PG	3.8	Battery-powered flashlight.
Makita 6093DW	301	9.6	OPT	400, 1,100	KY	3/8	12	PG	3.8	Plastic case.
Makita 6095DW	291	9.6	OPT	400, 1,100	KL	3/8	12	PG	3.8	Plastic case.
Makita 6095DWL	345	9.6	OPT	400, 1,100	KL	3/8	12	PG	3.8	Flashlight.
Makita 6200DW	283	9.6	OPT	400, 1,100	KL	3/8	12	TH	3.7	Plastic case.
Makita 6201DW	310	9.6	OPT	350, 1,100	KL	3/8	12	TH	3.7	Plastic case.
Makita 6201DWHE	351	9.6	OPT	350, 1,100	KL	3/8	6	TH	3.7	2 high-capacity batteries.
Makita 6202DWG	390	9.6	OPT	350, 1,100	KL	3/8	6	TH	3.7	High-capacity power-display battery.
Makita 6221DW	283	9.6	OPT	700	KL	3/8	6	TH	3.1	Plastic case.
Makita 6221DWE	322	9.6	OPT	700	KL	3/8	6	TH	3.1	Extra battery.
Makita 6400DW	320	9.6	OPT	450, 1,200	KL	3/8	12	DH	3.5	Plastic case.
Metabo 0096	259	9.6	OPT	300, 850	KL	3/8	6	PG	4	Rubber ring on chuck.
Metabo 0118	274	9.6	OPT	300, 850	KL	3/8	6	PG	4.2	Rubber ring on chuck.
Metabo BEA9.6/2 R+L	165	9.6	OPT	300, 900	KL	3/8	1	PG	3.6	Planetary gears, electronic brake.
Metabo BEAT9.6/2 R+L	189	9.6	OPT	300, 900	KL	3/8	5	PG	3.7	Planetary gears, electronic brake.

CONVENTIONAL DRILLS

Chart continued on page 52.

See page 136 for listing of manufacturers.

KEY: Chuck Type: HX = hex, KL = keyless, KY = keyed. Handle Type: DH = D-handle, PG = pistol-grip, TH = T-handle. — = not applicable. NA = information not available. OPT = optional. *Speed ranges variable unless starred. **May include drill.  = Editors' Choice.

Cordless Drills



Porter-Cable 9840



Bosch B2300K



Metabo BEAT112/2 R+L



Milwaukee 0431-1/6

Brand & Model	List Price	Battery Volts	Fast Charge	Max. Rpm* (Low Range, High Range)	Chuck Type	Chuck Capacity (in.)	No. of Clutch Settings**	Handle Type	Weight (lbs.)	Comments & Features
Metabo BEAT100/2 R+L	\$279	9.6	OPT	300, 1,100	KL	1/2	9	PG	4.1	Planetary gears, electronic brake.
Milwaukee 0396	279	9.6	N	350, 1,000	KL	3/8	6	PG	3.5	2-finger switch with brake.
Milwaukee 0396-1/6	223	9.6	N	350, 1,000	KL	3/8	5	PG	3.8	Planetary gears.
Milwaukee 0406-1/6	300	9.6	N	350, 1,000	KL	3/8	5	PG	3.5	Extra battery, case.
Panasonic EY6181CRKW	307	9.6	OPT	350, 1,000	KL	3/8	22	TH	3.3	Compact; extra battery.
Panasonic EY6282EQK	309	9.6	Y	350, 1,000	KL	3/8	6	TH	3.6	High-capacity battery.
Panasonic EY62821DKW	307	9.6	OPT	350, 1,000	KL	3/8	6	TH	3.6	Extra battery.
Panasonic EY6780EQK	373	9.6	Y	800	HX	1/4	22	TH	3.3	Special design fits in tight spaces.
Porter-Cable 9840	289	9.6	N	350, 1,000	KL	3/8	5	TH	3.8	Extra battery.
Ryobi CTH962K	130	9.6	Y	300, 1,000	KL	3/8	6	TH	3.6	Extra battery.
Ryobi TFD170VR	150	9.6	N	400, 1,200	KL	3/8	6	PG	3.8	Oversized reverse switch.
Skil 2375	121	9.6	N	700	KL	3/8	5	PG	3.5	
Skil 2375-44	137	9.6	N	700	KL	3/8	5	PG	3.5	Case, accessories.
Wen 497	50	9.6	N	300, 650	KL	3/8	—	PG	2.8	
Black & Decker PS350	89	12	N	700	KL	3/8	6	PG	3.3	Electronic brake.
AW Bosch 3054VSRK	323	12	OPT	500, 1,100	KL	3/8	38	PG	4	Electronic clutch.
Bosch 3300K	338	12	OPT	400, 1,100	KL	3/8	42	PG	3.8	Electronic clutch.
Bosch 3310K	345	12	OPT	400, 1,200	KL	3/8	15	TH	3.7	Single-sleeve chuck.
Bosch B2300K	286	12	OPT	450 - 1,000	KL	3/8	42	PG	3.8	Electronic clutch, extra battery.
Bosch B2310K	345	12	OPT	400, 1,200	KL	3/8	16	TH	3.7	Single-sleeve chuck.
Chicago Pneumatic ABSE 15	407	12	N	370, 1,100	KL	1/2	10	PG	3.5	Worklight, extra battery, case.
Chicago Pneumatic PES 12	350	12	OPT	360, 1,100	KL	1/2	20	PG	NA	Battery flips for clearance; extra battery.
Chicago Pneumatic PES 12T	372	12	OPT	360, 1,100	KL	3/8	20	TH	NA	Battery flips for clearance; extra battery.
Chicago Pneumatic PES 12TPP	386	12	OPT	360, 1,100	KL	3/8	19	TH	NA	Battery flips for clearance.
Craftsman 27139	160	12	N	350, 1,000	KL	3/8	6	PG	4.2	Extra battery.
DeWalt DW945K-2	333	12	OPT	400, 1,300	KL	3/8	24	PG	4.5	Versa-Clutch®. (See text.)
DeWalt DW953K	306	12	OPT	400, 1,200	KL	3/8	16	TH	4	Fan-cooled motor.
DeWalt DW971K-2	352	12	OPT	450, 1,400	KL	3/8	16	PG	4.2	Adjustable clutch.
DeWalt DW972K-2	358	12	OPT	450, 1,400	KL	3/8	16	TH	4.2	Anti-slip grip.
DeWalt DW973K-2	352	12	OPT	450, 1,400	KL	3/8	24	PG	4.6	Versa-Clutch®. (See text.)
DeWalt DW974KQ	378	12	Y	450, 1,400	KL	3/8	24	TH	4.6	Versa-Clutch®. (See text.)
Freud EDS120	349	12	N	375, 1,300	KL	3/8	5	PG	4.1	Hex-shank adaptor.
Freud EDS120B	379	12	N	375, 1,300	KL	3/8	5	PG	4.1	Hex-shank adaptor.
Hitachi DS10DVAK	360	12	N	400, 1,600	KL	3/8	5	TH	4	Case.
Hitachi DS10DVAKBE	417	12	N	400, 1,600	KL	3/8	5	TH	4.5	Extra battery.
Makita 6011DW	322	12	N	450, 1,350	KL	3/8	6	PG	4.2	Electronic brake.
Makita 6211DW	335	12	N	370, 1,150	KL	3/8	12	TH	4	High-capacity battery.
Makita 6211DWHE	368	12	N	370, 1,150	KL	3/8	6	TH	4	2 high-capacity batteries.
Makita 6212DWG	412	12	N	370, 1,150	KL	3/8	6	TH	4	High-capacity power-display battery.
Makita 6311DW	350	12	N	370, 1,150	KL	1/2	12	TH	4.3	High-capacity battery.
Makita 6311DWHE	399	12	N	370, 1,150	KL	1/2	6	TH	4.3	2 high-capacity batteries.

CONVENTIONAL DRILLS

Chart continued on page 54.

See page 136 for listing of manufacturers.

KEY: Chuck Type: HX = hex, KL = keyless, KY = keyed. Handle Type: DH = D-handle, PG = pistol-grip, TH = T-handle. — = not applicable. NA = information not available. OPT = optional. *Speed ranges variable unless starred. **May include drill. **AW** = Editors' Choice.

Cordless Drills



Ryobi CTH1202K



Skil 2475-02



Makita 6940DW

Brand & Model	List Price	Battery Volts	Fast Charge	Max. Rpm* (Low Range, High Range)	Chuck Type	Chuck Capacity (in.)	No. of Clutch Settings**	Handle Type	Weight (lbs.)	Comments & Features	
Makita 6312DWG	\$432	12	N	370, 1,150	KL	1/2	6	TH	4.3	High-capacity power-display battery.	
Metabo 0121	275	12	OPT	350, 1,000	KY	3/8	1	PG	4.5	Planetary gears, electronic brake.	
Metabo 0126	409	12	OPT	850, 3,000	KL	3/8	6	PG	4.5	Rubber ring on chuck.	
Metabo BEA12/2 R+L	229	12	OPT	300, 900	KL	3/8	5	PG	3.9	Planetary gears, electronic brake.	
Metabo BEA112/2 R+L	319	12	OPT	300, 1,100	KL	1/2	9	PG	4.6	Planetary gears, electronic brake.	
Milwaukee 0401	305	12	N	350, 1,000	KL	3/8	6	PG	3.8	2-finger switch with brake.	
Milwaukee 0401-1/6	258	12	N	350, 1,000	KL	3/8	5	PG	3.8	Electronic brake.	
Milwaukee 0407-1/6	354	12	N	350, 1,000	KL	3/8	5	PG	3.8	Extra battery, charger, steel case.	
Milwaukee 0431-1/6	385	12	N	600	KL	1/2	—	PG	5.6	Side handle.	
Milwaukee 0436-1/6	385	12	N	1,200	KL	3/8	—	PG	5.2	Side handle.	
Panasonic EY6100CQKW	421	12	Y	350, 1,300	KL	3/8	22	TH	3.5	Extra battery.	
Panasonic EY6100CRKW	361	12	OPT	350, 1,300	KL	3/8	22	TH	3.5	Compact; extra battery.	
 Panasonic EY6100EQK	378	12	Y	350, 1,300	KL	3/8	22	TH	3.8	Compact.	
Panasonic EY6101SQK	460	12	Y	350, 1,300	KL	1/2	22	TH	4.3	High-capacity battery.	
Panasonic EY6205EQK	372	12	Y	350, 1,000	KL	3/8	6	TH	4.1	High-capacity battery.	
Panasonic EY6207EQK	442	12	Y	350, 1,300	KL	1/2	6	TH	4.4	High-capacity battery.	
CONVENTIONAL DRILLS	Porter-Cable 9852	280	12	N	350, 1,000	KY	3/8	6	PG	4.5	Dust-sealed switch.
	Porter-Cable 9852S	260	12	N	350, 1,000	KY	3/8	6	PG	4.5	Extra battery.
	Porter-Cable 9853S	305	12	N	350, 1,000	KL	3/8	6	PG	4.5	Extra battery.
	Porter-Cable 9855	335	12	N	350, 1,000	KY	1/2	6	PG	4.8	
	Ryobi CTH1202K	150	12	Y	300, 1,000	KL	3/8	6	TH	3.8	Extra battery.
	Ryobi TFD220VR	150	12	N	400, 1,300	KL	3/8	6	PG	4.1	Oversized reverse switch.
	Skil 2475-02	156	12	N	700	KL	3/8	5	PG	3.5	Case.
	Skil 2475-04	195	12	N	700	KL	3/8	5	PG	3.5	Case, extra battery.
	Skil HD2735:02	230	12	N	500, 1,650	KY	3/8	5	PG	3.9	Case.
	Skil HD2735:04	260	12	N	500, 1,650	KY	3/8	5	PG	3.9	Extra battery.
Skil HD2736:02	237	12	N	500, 1,650	KL	3/8	5	PG	3.9	Case.	
Skil HD2736:04	269	12	N	500, 1,650	KL	3/8	5	PG	3.9	Extra battery.	
Wen 498	60	12	N	340, 720*	KL	3/8	—	PG	2.8		
Wen 498AC	110	12	N	340, 720*	KL	3/8	—	PG	2.7	Lightweight.	
 Freud EDS132	385	13.2	N	400, 1,400	KL	3/8	5	PG	4.2	Hex-shank adaptor.	
Freud EDS132B	415	13.2	N	400, 1,400	KL	3/8	5	PG	4.2	Extra battery.	
DeWalt DW991K	382	14.4	OPT	450, 1,400	KL	3/8	16	TH	4.9	High-capacity battery.	
DeWalt DW994KQ	430	14.4	Y	450, 1,400	KL	1/2	24	TH	5.4	High-capacity battery.	

Chart continued on page 56.

See page 136 for listing of manufacturers.

KEY: Chuck Type: HX = hex, KL = keyless, KY = keyed. Handle Type: DH = D-handle, PG = pistol-grip, TH = T-handle. — = not applicable. NA = information not available. OPT = optional. *Speed ranges variable unless starred. **May include drill.  = Editors' Choice.

Cordless Drills



Panasonic EY6588CQ



DeWalt DW977K

	Brand & Model	List Price	Battery Volts	Fast Charge	Max. Rpm* (Low Range, High Range)	Chuck Type	Chuck Capacity (in.)	No. of Clutch Settings**	Handle Type	Weight (lbs.)	Comments & Features
RIGHT-ANGLE	Hitachi DN10DYK	\$370	9.6	Y	800	KY	3/8	—	SG	2.9	Plastic case.
	Makita 6940DW	438	9.6	OPT	2,000	HX	1/4	—	SG	3.3	Right-angle impact driver.
	Makita DA391D/DW	341	9.6	OPT	800	KL	3/8	—	SG	2.9	Plastic case.
IMPACT DRIVERS	Bosch 3220K	320	9.6	OPT	2,200	HX	1/4	—	TH	NA	Impact driver.
	Bosch B2220	320	9.6	OPT	2,200	HX	1/4	—	TH	NA	Impact driver.
	DeWalt DW967K	322	9.6	OPT	2,000	HX	1/4	—	TH	3.9	Impact driver.
	Hitachi WH8DC	343	9.6	OPT	2,200	HX	1/4	—	TH	3.1	Impact driver.
	Makita 6940DW	438	9.6	OPT	2,000	HX	1/4	—	SG	3.3	Right-angle impact driver.
	Milwaukee 9055-1/6	330	9.6	N	1,500	HX	1/4	—	TH	4	Impact driver.
	Panasonic EY6588CQ	409	9.6	Y	2,200	HX	1/4	—	TH	3	Impact driver; compact.
	DeWalt DW977K	372	12	OPT	2,000	HX	1/4	—	TH	4.1	Impact driver; electronic clutch.
	Makita 6911DW	406	12	N	1,800	HX	1/4	—	TH	4	Impact driver.
	Milwaukee 9057-1/6	385	12	N	1,500	HX	1/4	—	TH	4	Impact driver; 3/8-in. square drive.

See page 136 for listing of manufacturers.

KEY: Chuck Type: HX = hex, KL = keyless, KY = keyed. Handle Type: DH = D-handle, PG = pistol-grip, SG = straight-grip, TH = T-handle. — = not applicable. NA = information not available. OPT = optional. *Speed ranges variable unless starred. **May include drill. = Editors' Choice.

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Cedar (Aromatic Red)	4/4	1C+Btr.	\$1.55	\$58.00
Cherry	4/4	Select	\$3.15	\$85.00
Cypress	4/4	Select	\$2.10	\$66.00
Hickory-Pecan	4/4	Select	\$1.80	\$63.00
Mahogany(Genuine)	4/4	Select	\$3.15	\$88.00
Maple (Hard)	4/4	Select	\$2.35	\$73.00
Maple (Soft)	4/4	Select	\$1.80	\$61.00
Poplar	4/4	Select	\$1.55	\$56.00
Red Oak	4/4	Select	\$2.35	\$72.00
Walnut	4/4	Select	\$3.00	\$87.00
White Oak	4/4	Select	\$2.30	\$71.00
White Pine	4/4	F.G.	\$1.10	\$47.00
Yellow Pine	4/4	Clear	\$1.55	\$57.00

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Shapers

For large moldings, cope-and-stick joinery and raised-panel work, the shaper is in a league of its own. A table-mounted router is no match for the shaper's sheer power and continuous cutting capacity. The shaper has a large work table with a vertical spindle that projects through a circular opening. Mount your cutters on the spindle, adjust the cutter height and the fence location, and you're ready to transform a flat, square edge into the profile of your choice.

A shaper is sized according to its spindle diameter. Shapers with 1/2-in.-dia. spindles accept small cutters for light molding work, and have lighter-duty 1/2- or 3/4-HP motors. Large shapers—with 3/4-in. or 1-in. spindles—can power larger cutters and take on a greater variety of shaping work.



Get in shape. Buying a shaper opens the door to architectural woodworking. This heavy-weight can handle large or intricate work like raised panels and cope-and-stick joinery.

2 Types of shapers

Benchtop shapers

Powered by universal-type motors and equipped with 1/2-in.-dia. spindles, these light-duty shapers have many of the characteristics of router tables. They're good for work that doesn't require a great deal of power or capacity, or when your space and budget are limited.



Floor-model shapers

You'll need a floor-model shaper if you plan on building doors, making cabinets or doing other production or heavy-duty shaping work.

These machines are the choice of professional woodworkers. They're larger, heavier and more powerful than benchtop models. They can run bigger cutters that remove more material. Larger floor models are sometimes equipped with sliding tables and power feed rollers. (See Options.)

Floor-model shapers have another advantage: They're powered by an induction motor, which will run quieter

and usually last longer than the universal-type motor you'll find on benchtop machines.



FEATURES *to consider*

Spindles

Most light-duty machines have solid 1/2-in.-dia. spindles. Larger shapers have either solid or interchangeable spindles—3/4-in.-dia. or larger. A selection of spindle diameters is a good feature; it allows you to use a greater variety of cutters. Some shapers also accept router-bit collets. (See Options.) If you already have a selection of router bits, it makes sense to look for a shaper that can accept a router-bit collet. You won't need to spend as much money on shaper cutters. A spindle lock makes installing and removing cutters easier.

Speeds

Speeds for heavy-duty shapers typically range from 6,000 to 10,000 rpm. Shapers with two or more speeds let you tailor spindle speed to the type of work and to the cutter you're using. This capability can add a measure of safety when shaping with large-diameter cutters like panel-raisers, which are best run at lower speeds.

Some of the smaller, light-duty shapers use universal-type motors (the kind used on routers) that run at higher speeds—typically 10,000 rpm. At this speed, it's not safe to use larger cutters.

The fence

Most shapers come with a two-piece fence that allows you to create the smallest possible opening around the bit, providing maximum support for the workpiece.

A two-piece fence—also referred to as a *split fence*—is the best kind of fence to

have. This type of fence actually contains two fences that can be adjusted independently of each other. You can offset the outfeed fence for full support when machining the entire edge of a workpiece, as when shaping a half round. (See photo, below left.) Look for hold-downs on the fence assembly so you can snug the workpiece against the fence and table for safer operation. Fence shrouds equipped with a dust collection port will connect to your dust collector for handling the large amount of chips created when shaping.

Reversing switch

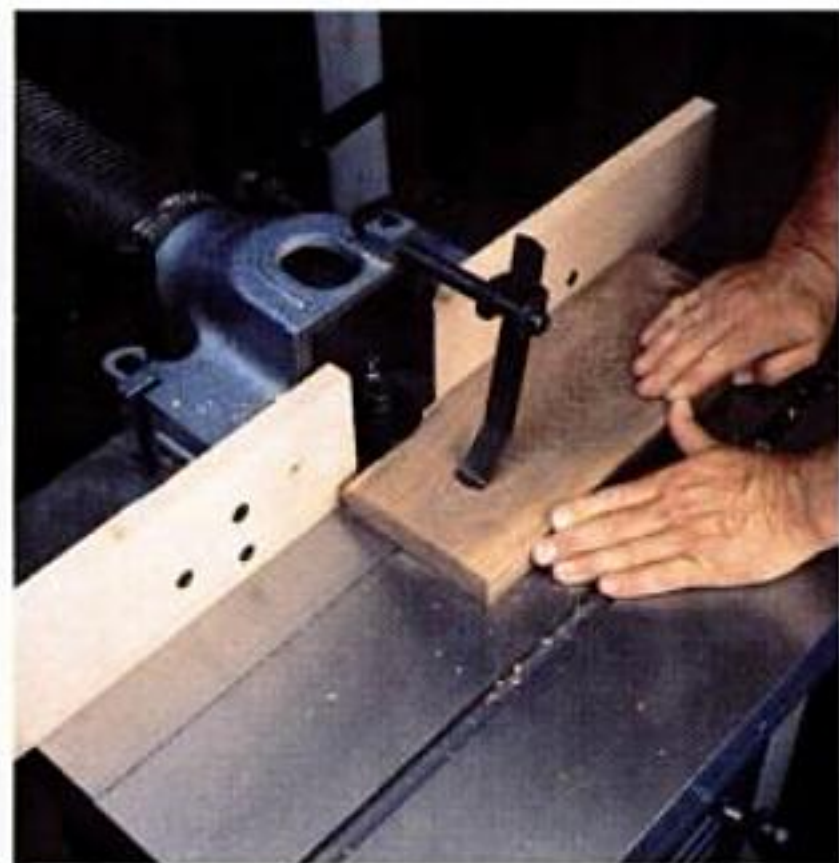
This manual switch turns the spindle in a reverse, or clockwise, rotation. Reversing spindle rotation allows you to invert the cutter and feed the stock from left to right—helpful when shaping long or large workpieces. Look for reversing switches that are separate from the on/off switch to prevent accidental starting.

Tilting spindle

On some higher-priced shapers, the machine's spindle can be tilted. On a tilting spindle shaper, you can adjust the cutter to different angles. This enables you to make a greater variety of cuts.

Ring inserts

Look for ring inserts that fit into the opening in the tabletop. Inserts of various diameters allow you to support the workpiece close to the cutter. This makes for safer, more accurate shaping.



Fence work. Offsetting the outfeed fence lets you fully support the workpiece while shaping the entire edge.



No-fence work. Shape curved parts without a fence by supporting the workpiece against a starting pin and rub collar.

OPTIONS *worth having*

Router-bit collet.

Mounted in your shaper, this allows you to use router bits on the shaper. Not all shapers can accept a router collet. (See chart, page 60.)

Starting pins and ball-bearing rub collars. When shaping without a fence, use a starting pin to pivot the work into the cutter, and equip the spindle with a rub collar to bear against the work. (See near left photo, below.)

Sliding table. Although an expensive (\$200 and up) accessory, a sliding table allows you to clamp the workpiece for safer cuts, especially on end grain.

Miter gauge with hold-downs. A less expensive alternative to a sliding table, this crosscutting device will hold the work safely for end-grain cuts.

Side extension tables. Attach these extension wings to create a larger, stable working surface for long work.

Power feeder. Bolted to the shaper, this machine has powered wheels that grip the work and feed it past the cutter for uniform, hands-free shaping.

FOR MORE INFO

Check out our "Introduction to the Shaper," AW #34 (October 1994).

Shapers



Craftsman 23910



Enlon EN-3304



INCA 660



Grizzly G1026

	Brand & Model	List Price	Motor HP	Spindle Dia. (in.)*	Spindle Speeds (rpm)**	Max. Cutter H, Dia.	Table W x D (in.)	Volts	Amps	Dust Coll. Port	Weight (lbs.)	Comments & Features
BENCHTOP	AMT 4750	\$189	7/8	1/2	9,000	1 3/4, 2 1/2	10 x 12	115	5.6	Y	36	Accepts 1/4-in. router bits.
	Craftsman 23910	250	7/8	1/2	9,000	1 3/4, 2 1/2	17 3/4 x 13 3/4	115	NA	Y	45	Accepts 1/4-in. router bits.
	Black & Decker SR650	199	2	1/2	10,000***	3, 3 1/4	18 x 15 7/8	115	9	Y	26	Storage bin.
	Bridgewood BW-1S	249	3/4	1/2	9,000***	2 5/8, 3	15 1/2 x 18	115	12	N	125	2-piece cast-iron fence.
	Grizzly G1024	295	3/4	1/2	10,000***	2 3/8, 2 7/8	15 x 18	115/230	10/5	N	145	Router-bit spindle optional.
	Craftsman 23942	500	1	1/2	9,000***	2 1/2, 2 1/2	27 x 19	115	13	N	145	
	JET JWS-18HO	656	1	1/2, 3/4	7,000, 9,000	2 3/16, 5 1/4	15 1/2 x 18	115/230	13/6.5	Y	170	1/4-in., 1/2-in. router-bit collets.
	Delta 43-355	951	1 1/2	1/2, 3/4	7,000, 10,000	3, 4	18 x 30	115/230	16.8/8.4	N	180	2-piece fence.
	Enlon EN-3302	395	1 1/2	1/2, 3/4	7,000, 10,000	2 3/4, 4 1/2	20 x 18	115/230	20/10	OPT	230	Quick-adjuster kit, hold-down rollers.
	Grizzly G1035	395	1 1/2	1/2, 3/4	7,000, 10,000***	2 3/4, 5	20 1/2 x 18	115/230	14/7	N	200	Wing, router-bit spindle optional.
FLOOR MODELS	Lobo SP-3400	489	1 1/2	1/2, 3/4	7,000, 10,000***	3, 6	20 x 24	115	12	Y	300	1/4, 1/2-in. router-bit collets avail.
	JET JWS-34L	1,519	2	3/4, 1	8,000, 10,000	3 3/16, 6 3/16	21 5/8 x 25	230	12	Y	317	1/4, 1/2-in. router-bit collets.
	Sunhill CT-01A	895	2	3/4, 1 1/2	8,000, 10,000***	4, 6 1/4	25 x 22	230	12	Y	400	Magnetic on-off switch.
	Sunhill CT-01AS	995	2	3/4, 1 1/2	8,000, 10,000***	4, 6 1/4	25 x 22	230	12	Y	400	Magnetic switch, sliding table.
	Woodtek 805986	935	2	1/2, 3/4	7,000, 11,000	3 1/2, 6	19 3/4 x 19 3/4	230	NA	Y	360	
	Woodtek 809051	1,299	2	1/2, 3/4	7,000, 11,000	3 1/2, 6	19 3/4 x 19 3/4	230	NA	Y	385	Sliding table travels 18 7/8 in.
	INCA 660	2,445	2 1/2	1 1/4	3 (4,000, 8,000)	3 1/4, 6 1/2	23 1/2 x 18 1/2	230	15	Y	230	
	Bridgewood BW-3S	1,595	3	1/2, 3/4, 1	7,500, 10,000***	3 1/8, 5 7/8	30 x 26	230	18	Y	485	Router-bit collet, miter gauge.
	Bridgewood BW-511TS	3,595	3	3/4, 1 1/4, 1 1/2, 1	4 (3,000, 10,000)***	4 3/4, 7 1/2	35 x 27	230	18	Y	848	Sliding table, tilting spindle.
	Delta 43-375	1,626	3	1/2, 3/4, 1	7,000, 10,000	3, 4	20 x 27	200/230	13.1/11.8	Y	424	SafeGuard II™.
	Enlon EN-3303	745	3	1/2, 3/4, 1	3 (7,000, 10,000)	2 3/4, 6	28 x 30	230	15	OPT	390	Quick-adjuster kit, hold-down rollers.
	Enlon EN-3304	950	3	1/2, 3/4, 1 1/4	3 (7,000, 10,000)	2 3/4, 6	28 x 24	230	15	OPT	450	Quick-adjuster kit, hold-down rollers.
	Grizzly G1026	745	3	1/2, 3/4, 1	7,000, 10,000	2 3/4, 5 1/2	21 1/2 x 28	230	18	N	400	Wing, router-bit spindle optional.
	JET SWSS-3-1	2,919	3	1/2, 3/4, 1	7,500, 10,000	2 1/2, 6 3/16	30 1/4 x 26 1/4	230	17	Y	550	Sliding table; hold-downs.
	Lobo SP-30	899	3	3/4, 1	8,000, 10,000***	3 1/4, 7	28 x 30	230	18	Y	360	Micro-adj. fence.
	Mini Max T40	2,295	3	3/4, 1	3 (4,000, 9,500)***	3 5/32, 7	22 x 34	230	14	Y	395	Micro-adj. fence.
	Mini Max T40-I	3,695	3	3/4	4 (1,700, 9,600)***	3 5/32, 7	22 x 34	230	14	Y	525	Tilting spindle, sliding table.
	Mini Max T40-T	2,795	3	3/4, 1	3 (4,000, 9,500)***	3 5/32, 7	22 x 34	230	14	Y	450	Sliding table.
	Powermatic 27	2,551	3	1/2, 3/4, 1, 1 1/4	7,000, 10,000***	4 7/8, 6	30 x 40	230	17	Y	470	5-HP available.
	SECO SK-28SP	899	3	3/4, 1 1/2	3 (3,000, 9,000)***	3 1/2, 5 5/8	27 x 23 1/2	230	16	Y	340	Tilting spindle.
	Sunhill SP-102	1,295	3	1/2, 3/4, 1, 1 1/4	7,000, 10,000***	4, 6 1/4	27 x 40	230	17	Y	500	
	Sunhill SP-102S	1,390	3	1/2, 3/4, 1, 1 1/4	7,000, 10,000***	4, 6 1/4	27 x 40	230	17	Y	500	Sliding table.
	Woodtek 803646	1,699	3	1/2, 3/4, 1 1/4	7,000, 11,000	3 1/2, 6	18 1/2 x 24 3/8	230	NA	Y	498	Sliding table travels 28 1/2 in.
	Mini Max T1	4,895	4 4/5	1 1/4, 1/2, 3/4, 1, 1 1/2	5 (3,000, 10,000)	5 3/8, 13 1/2	29 x 48	230	28	Y	1,278	

See page 136 for listing of manufacturers.

KEY: OPT = optional. — = not applicable. NA = information not available. *Standard spindle diameters are bold; optional diameters are plain type. **If more than 2 spindle speeds, listed thus: # of speeds (low speed, high speed). ***Spindles reverse direction.

Shapers

Brand & Model	List Price	Motor HP	Spindle Dia. (in.)*	Spindle Speeds (rpm)**	Max. Cutter H, Dia.	Table W x D (in.)	Volts	Amps	Dust Coll. Port	Weight (lbs.)	Comments & Features
Bridgewood BW-512TS	\$4,595	5	3/4, 1 1/4 1/2, 1	5 (3,000, 10,000)***	4 3/4, 9	39 1/2 x 31 1/2	230	12	Y	1,101	Tilting spindle, sliding table.
Delta 43-385	2,614	5	1/2, 3/4 1	7,000, 10,000	3, 4	20 x 27	230/460	13.4/6.7	Y	413	SafeGuard II™.
JET TWSS-3-3	4,619	5	3/4, 1, 1 1/4	5 (3,000, 10,000)	4 11/16, 8 15/16	35 1/2 x 27 5/8	230/460	15/7.5	Y	682	Tilting spindle.
JET WSS-3-3	1,999	5	1/2, 3/4, 1	7,500, 10,000	2 1/2, 6 3/16	29 1/4 x 25 1/2	230/460	15/7.5	Y	400	Magnetic switch; hold-downs.
Lobo SP-2250T	3,390	5	1, 1 1/4	4 (3,000, 10,000)***	5, 7	37 1/2 x 27 1/2	230	19.6	Y	950	Tilting spindle.
Lobo SP-2550	2,690	5	1, 1 1/4	4 (3,000, 10,000)***	5, 7	37 1/2 x 27 1/2	230	19.6	Y	950	
Powermatic Super 27	2,920	5	1/2, 3/4 1, 1 1/4	7,000, 10,000***	4 7/8, 6	30 x 40	230	28	Y	657	Accu Fence.
Woodtek 832280	3,525	5	3/4, 1 1/4	7,000, 11,000	4, 6	39 x NA	230	NA	Y	880	3-spindle shaper.
Delta 43-791	4,575	7 1/2	3/4, 1 1/4	5 (3,000, 10,000)	3 7/8, 4 7/8	31 3/4 x 39 5/8	230/460	NA	Y	876	



Delta 43-791

FLOOR MODELS

KEY: OPT = optional, — = not applicable. NA = information not available. *Standard spindle diameters are bold; optional diameters are plain type. **If more than 2 spindle speeds, listed thus: # of speeds (low speed, high speed). ***Spindles reverse direction.

See page 136 for listing of manufacturers.

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Routers

Few power tools can compete with the router when it comes to versatility. As a hand-held shaping tool, the router can do a remarkable variety of edging and template work. When mounted in a router table, this portable power tool performs like a shaper, giving you the capability to raise panels, create moldings and mill the cope and stick profiles required when you're building doors.

The impressive range of bits and router-based jigs that are available only adds to the possibilities offered by this valuable tool. It's no wonder that many woodworkers own several routers of different sizes—from tiny laminate trimmers (not included here) to 3-HP monsters—to accomplish the wide range of routing operations.



Plenty of possibilities. From edge treatments and joinery to pattern routing and panel raising, routers are packed with woodworking potential.

2 Types of routers

Fixed-base routers

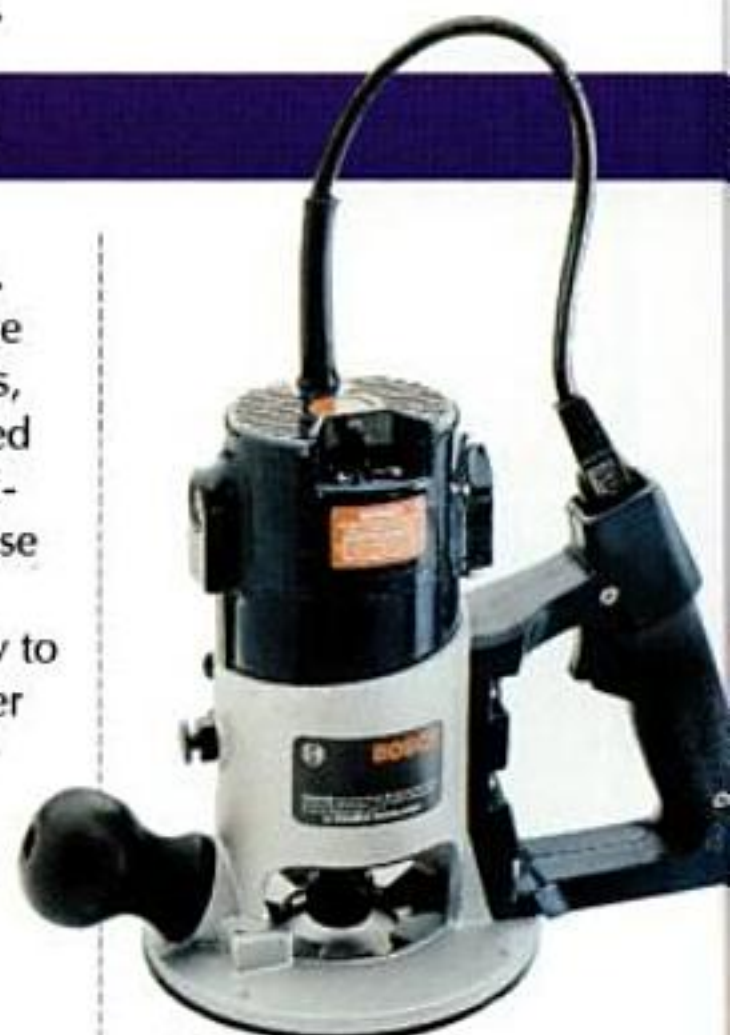
With a fixed-base router, you have to adjust cutting depth



Fixed-base router

before turning on the tool. Routers in this category are excellent for routing edges, for making template-guided cuts, and for general hand-held use. Smaller fixed-base routers—in the 1-HP to 1³/₄-HP range—are handy to use with dovetail and other jigs because they're fairly lightweight. A fixed-base router will also work well mounted in a router table.

For production router work such as edge forming and dadoing, many woodworkers prefer a D-handle router. The trigger-type switch in the handle lets



D-handle router

you turn the router on and off without removing your hand from the tool.

FEATURES *to consider*

Power

Whether you're interested in a plunge router or a fixed-base model, the same basic rule applies: More power means larger size. The smallest machines have motors rated at 1 HP to 1³/₄ HP and weigh between 6 and 11 lbs. The most powerful routers have 3-HP or 3¹/₂-HP motors, and weigh between 12 and 18 lbs.

For router-table work and for any cutting that involves large bits or dense material, you're better off with a powerful router—one rated at 2¹/₂ HP or more. These routers can hold hefty bits with ¹/₂-in.-dia. shanks, but with the proper collet, you'll also be able to chuck bits with ¹/₄-in.-dia. shanks.

Weight and bulk are the main disadvantages in a powerful router. These machines are unwieldy to use for certain hand-held operations, especially with dovetail jigs and templates. Many woodworkers end up buying at least two routers: a 1-HP or 1¹/₂-HP model that's easy to maneuver, and a larger, more powerful router that can take on heavier shaping and router-table assignments.

Switches and plunge locks

Handle-mounted trigger switches are more convenient and safer than body-mounted toggle or rocker switches. But things change when the router is mounted upside down in a table. In this position, a trigger switch may be more difficult to reach than a rocker switch mounted on the body. The Porter-Cable 7538 solves this problem—it has both trigger and rocker switches.

On Bosch and Porter-Cable plunge routers, the plunge lock levers are locked until you depress them. On other machines, the locking action is reversed. You'll have to choose which locking action is best for you.

"Zeroing" depth scale

Setting plunge depth is easier when a plunge router has a depth control rod that can be "zeroed" against a depth scale. Not all plunge routers have this feature. If extremely precise depth settings are important, look for a router with micro-positioning depth adjustment.



Little and big. For hand-held operations, a small router like the Bosch 1604A has the edge in maneuverability. More powerful routers like the Porter-Cable 7539 do their best work in a router table, for heavy-duty shaping.

Plunge routers

On this type of router, you can plunge the bit into the work and retract it after making the cut. The motor housing can move up and down on a pair of posts which are connected to the router base. Since the motor can lock at any point on its plunge range, you can use a plunge router to cut mortises, stopped grooves or incised letters.

Plunge routers can also work just like fixed-base routers. This dual-function capability explains why plunge routers have become

so popular. If you're only planning on buying one router, make it a "plunger."



OPTIONS *worth having*

Edge guide. This accessory attaches to the router base and acts as an adjustable fence. If your router doesn't come with an edge guide, buy one for it. Use it for all kinds of edging and straight-line work—even mortising, with a plunge router.

Router table. Get your router to work like a shaper. You can buy an aftermarket router table, or make your own. (See AW #44.)

Variable speed control. Some routers have variable speed control, which gives an extra measure of safety and control. For single-speed routers, a variable speed control unit is available from common mail-order catalogs.

Template bushings. A set of bushings enables you to do pattern routing. Many router jigs also use template bushings to guide the router.

FOR MORE INFO

Check out the detailed test results in our "Buyer's Guide to Plunge Routers," AW #33 (August 1993).

Plunge Routers

For fixed-base routers, see page 66.



DeWalt DW614



Hitachi M8V



Bosch B1450



Makita 3612 C

See page 136
for listing of manufacturers.

Brand & Model	List Price	HP	Amps	Speeds (rpm)	Collet Sizes (in.)	Max. Plunge Depth (in.)	Weight (lbs.)	Comments & Features
Bosch B1400K	\$259	1	7.5	27,000	1/4	2	7.8	Fine depth adj. at any plunge position; case.
Black & Decker Quantum BD6200	238	1 1/4	5.4	24,000	1/4	2	6.5	Turn handle for plunge lock.
Bosch 1614EVS	286	1 1/4	7.8	12,000 - 23,000*	1/4	2**	7.9	Fine depth adj. at any plunge position.
DeWalt DW614	250	1 1/4	6.6	24,000	1/4	1 15/16	6	Turn handle for plunge lock.
 DeWalt DW615	300	1 1/4	8	8,000 - 24,000*	1/4	1 15/16	6.2	Turn handle for plunge lock.
Makita 3621	250	1 1/4	7.8	24,000	1/4	1 3/8	5.3	3 plunge stops.
Makita 3621A	260	1 1/4	7.8	24,000	1/4	1 3/8	5.3	Electronic brake.
Black & Decker 7615	145	1 1/2	9	25,000	1/4	2	9	Worklight.
Hitachi M8V	317	1 1/2	7.3	10,000 - 25,000*	1/4	2	6.4	3-position adj. handles.
 Porter-Cable 693	328	1 1/2	10	23,000	1/4, 1/2	2 1/2	9.3	Plunge lever locks position when released.
Ryobi 160	65	1 1/2	8	25,000	1/4	1 1/2	7.5	Depth-adj. ring.
Bosch 1613	313	1 3/4	10.4	25,000	1/4, 1/2	2**	9.8	Fine depth adj. at any plunge position.
Ryobi 165	85	1 3/4	8.5	25,000	1/4	1 1/2	8	Worklight.
Ryobi R175	100	1 3/4	9	25,000	1/4	2**	8.1	Fine depth adj. at any plunge position.
Ryobi RE175	150	1 3/4	9	15,000 - 25,000*	1/4	2**	8.1	Fine depth adj. at any plunge position.
 Bosch 1613EVS	365	2	11	12,000 - 22,000*	1/4, 1/2	2**	10.1	Fine depth adj. at any plunge position.
Bosch B1450	365	2	11	12,000 - 22,000*	1/4, 1/2	2**	10.1	Fine depth adj. at any plunge position.
Craftsman 27505	190	2	12	22,000	1/4, 1/2	2 1/2**	11.5	Plunge lock lever in handle.
Skil HD1870	298	2 1/4	12	23,000	1/4, 1/2	2 1/2	9.5	Lock-on trigger switch.
Skil HD1875	374	2 1/4	11.5	10,000 - 23,000*	1/4, 1/2	2 1/2	9.5	Lock-on trigger switch.
Bosch 1615	433	3	14	25,000	1/4, 1/2	3	12	Template guide adaptor plate; 220V model avail.
Bosch B1550	433	3	14	25,000	1/4, 1/2	3	12	Template guide adaptor plate.
 DeWalt DW625	520	3	15	8,000 - 22,000*	1/4, 1/2	2 7/16**	11.3	Rack-and-pinion depth-stop adj.
Hitachi TR12	412	3	12.2	22,000	1/2	2 7/16	11	3 plunge stops.
Jepson 7412	321	3	14	23,000	1/2	1 1/2**	13	3 plunge stops.
Ryobi RE600	275	3	15	10,000 - 22,000*	1/4, 1/2	2 3/8**	13.6	Edge guide.
Bosch 1615EVS	520	3 1/4	15	12,000 - 19,000*	1/4, 3/8, 1/2	3**	12.3	Template guide adaptor plate; 220V model avail.
Freud FT2000E	410	3 1/4	15	8,000 - 22,000*	1/4, 1/2	2 3/4**	12.9	Vacuum attachment for dust and chip pickup.
Makita 3612	397	3 1/4	15	22,000	1/2, 1/4	2 23/64	13.2	Electronic brake.
Makita 3612 C	492	3 1/4	15	9,000	1/2, 1/4	2 23/64**	13.2	
Porter-Cable 7538	449	3 1/4	15	21,000	1/2	3	17.3	Plunge lever locks position when released.
 Porter-Cable 7539	514	3 1/4	15	10,000 - 21,000*	1/2	3	17.3	5 speeds.
Craftsman 27506	250	3 1/2	15	10,000 - 22,000*	1/4, 1/2	2 1/2**	13	Plunge lock lever in handle.
Hitachi M12V	505	3 1/2	15	8,000 - 20,000*	1/2	2 7/16	11.7	3-position adj. handles.

KEY:  = Editors' Choice. *Electronic variable speed control. **Has fine depth-adjustment knob.

Fixed-Base Routers

For plunge routers, see page 64.



DeWalt DW610

Brand & Model	List Price	HP	Amps	Speeds (rpm)	Collet Sizes (in.)	Depth Adjustment Range (in.)	Weight (lbs.)	Comments & Features
Jepson 7210	\$147	1/4	5	23,000	1/4, 3/8	1 1/8	5.3	
Porter-Cable 100	194	7/8	6.5	22,000	1/4	1 3/4	6.8	Calibrated depth-adj. ring.
Makita 3606	180	1	7	30,000	1/4	3	5.5	Calibrated depth-adj. ring.
Milwaukee 5620	367	1	8	23,000	1/4, 3/8, 1/2	2 1/4	8	
Porter-Cable 630	235	1	6.8	22,000	1/4	1 1/4	7.5	Calibrated depth-adj. ring.
Craftsman 17470	60	1 1/8	7	25,000	1/4	1 1/2	4.6	Calibrated depth-adj. ring.
Black & Decker 7613	128	1 1/2	9	25,000	1/4	1 1/2	9	Rack-and-pinion depth adj.
Craftsman 17471	70	1 1/2	8	25,000	1/4	1 1/2	7.5	Calibrated depth-adj. ring.
DeWalt DW610	260	1 1/2	9	25,000	1/4, 1/2	2 3/8	7.3	Rack-and-pinion depth adj.
Milwaukee 5660	357	1 1/2	10	24,500	1/4, 3/8, 1/2	2 1/4	8.5	Calibrated depth-adj. ring.
Porter-Cable 690	268	1 1/2	10	23,000	1/4, 1/2	1 1/4	8	Calibrated depth-adj. ring.
Porter-Cable 691	293	1 1/2	10	23,000	1/4, 1/2	1 3/4	9.3	Calibrated depth-adj. ring; D-handle.
Bosch 1604A	261	1 3/4	11	25,000	1/4, 1/2	1	7.8	Captive template guide system.
Bosch 1606A	300	1 3/4	11	25,000	1/4, 1/2	1	7.8	Captive template guide system; D-handle.
Bosch B1355	260	1 3/4	11	25,000	1/4, 1/2	1	7.8	Captive template guide system.
Craftsman 17472	90	1 3/4	8.5	15,000 - 25,000*	1/4	1 1/2	8.3	Worklight.
Craftsman 17473	110	2	9	15,000 - 25,000*	1/4	1 1/2	9.1	Depth-adj. ring; dust collection.
Jepson 7112	212	2	10	25,500	1/4, 3/8, 1/2	1 1/8	10.3	D-handle.
Milwaukee 5680	367	2	12	26,000	1/4, 3/8, 1/2	2 1/4	8.8	Calibrated depth-adj. ring.
Milwaukee 5681	367	2	12	26,000	1/4, 3/8, 1/2	2 1/4	8.8	
Milwaukee 5682	388	2	12	26,000	1/4, 3/8, 1/2	2 1/4	8.8	
Porter-Cable 7536	369	2 1/2	13	21,000	1/2	2 1/4	14.5	Calibrated depth-adj. ring.
Porter-Cable 7537	389	2 1/2	13	21,000	1/2	2 1/4	14.5	Calibrated depth-adj. ring.
Porter-Cable 7518	514	3 1/4	15	10,000 - 21,000*	1/2	2 1/4	14.5	5 speeds with soft-start.
Porter-Cable 7519	449	3 1/4	15	21,000	1/2	2 1/4	15	Calibrated depth-adj. ring.

KEY: * Electronic variable speed control.

See page 136 for listing of manufacturers.

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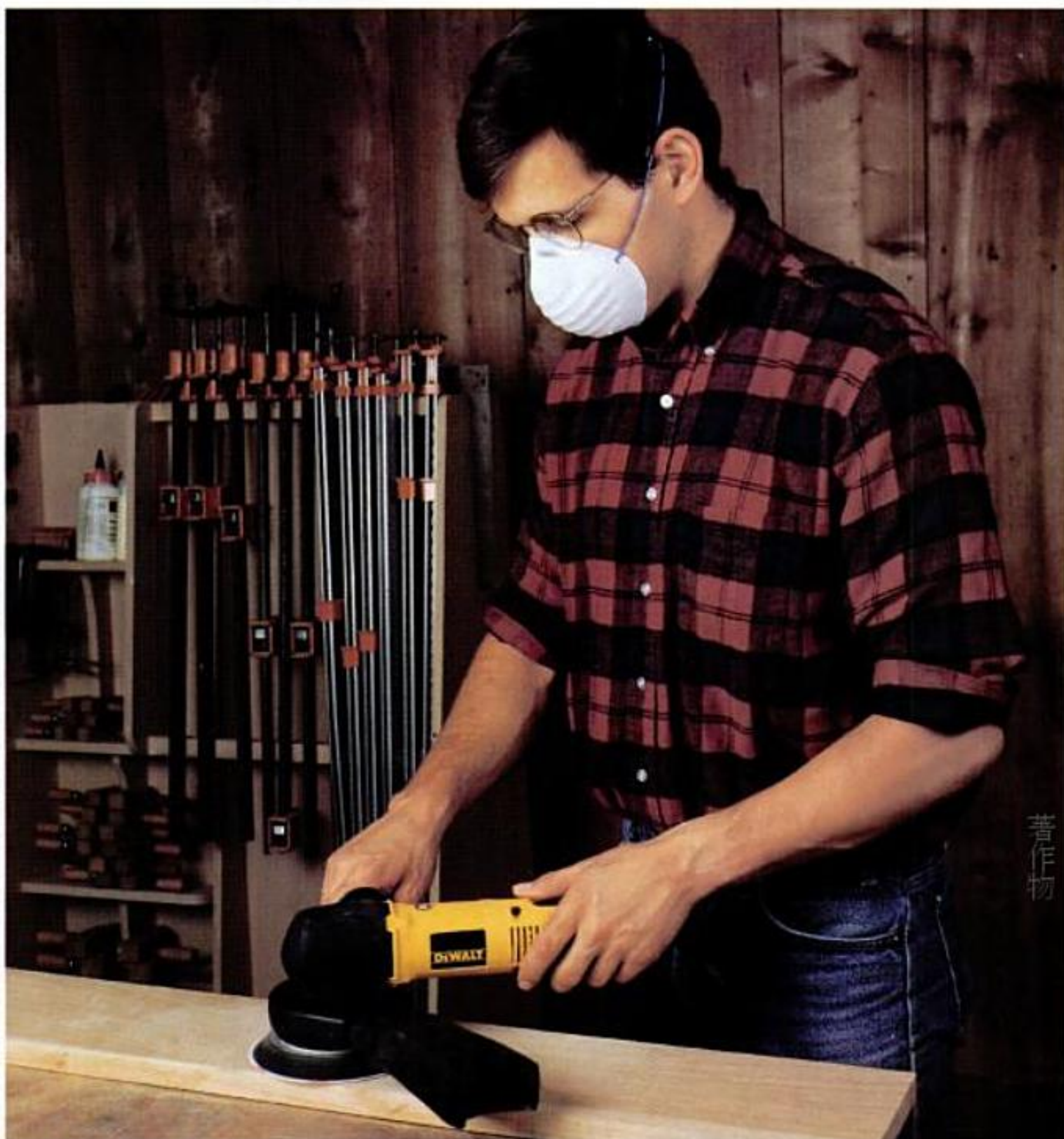
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Random-Orbit Sanders

The combined rotary and orbital action of a random-orbit sander produces a virtually scratch-free finish. Because of the random swirl pattern of the sanding pad, you can expect great results even when you're sanding across the grain, as when going over assembled face frames. These sanders perform so well, you may end up skipping some intermediate grits of sandpaper without affecting surface quality. Random-orbit sanders are aggressive enough for heavy-duty jobs, yet they have the finesse for finish work, even on delicate veneered surfaces.

These machines are sized according to the diameter of the abrasive disc they use. There are 4½-in., 5-in., and 6-in. models.



Finish faster. Random-orbit sanders work well for flat and contour sanding and leave a virtually scratch-free surface.

3 Types of sanders



Right-angle sanders

Like the angle grinders which they resemble, right-angle random-orbit sanders are designed for heavy-duty and

continuous use. This sander category is the most powerful, and also the loudest and the most prone to vibration.

As shown in the photo at left, the motor is offset from the sanding pad, and there's a handle that extends from the motor housing. With this configuration, the right-angle sander isn't as well balanced as other types. It takes two hands to use this tool, and a dust-collection hookup is a necessity.

In-line sanders

On this type of sander, the motor is positioned directly above the sanding pad, and there are usually two handles.



FEATURES to consider

Size

If you plan on doing a lot of sanding on large, flat surfaces, consider purchasing a 6-in. sander—one that takes 6-in.-dia. discs. For general-purpose sanding, 5-in. discs are the most convenient to use, and they are also the most commonly available.

Electric or pneumatic

Right-angle and palm-grip sanders are available in both electric and pneumatic (air-powered) models. (See top photo, right.) In general, pneumatic sanders run more smoothly than their electric counterparts, and they also tend to sand more aggressively. However, pneumatic sanders require a big (5-HP or larger) air compressor to run efficiently.

Variable speed control

Variable speed control allows you to slow down the sander's rpm for delicate work like buffing, polishing, or sanding lightly between finish coats. Variable speed control is also useful when sanding contours, edges and metal. On some models, there's a speed control dial, separate from the trigger switch. This feature makes it possible to change speed while sanding.

Pressure-sensitive adhesive (PSA) vs. hook-and-loop discs

Some random-orbit sanders are designed to use pressure-sensitive, adhesive-backed (PSA-type) discs, while others take hook-and-loop discs. Though they're more expensive than the PSA variety, hook-and-loop discs can be removed and reused many times. Hook-and-loop discs also make it easy to switch grits.

Pad brake

Setting a spinning pad on your workpiece can create swirl marks or even gouge the surface. A brake keeps the pad from freewheeling too quickly.



Smoother operators. If you own a large air compressor, consider buying a pneumatic sander. These air-powered models are more compact and sand more aggressively than their electrically powered cousins.



Discs, pads and dust extraction. On some sanders, dust is extracted via holes in the abrasive discs. Accessory pads let you use your sander for buffing and polishing. The plastic dust skirt fits around the sander to promote dust collection. For optimum dust control, connect your sander to a shop vacuum with a flexible hose.

The primary handle has a trigger-type switch.

These well-balanced units are designed so that you can use them with one or two hands. Beefier in-line models approach right-angle sanders in power; lightweight models can fall into the palm-grip league. Overall, their combination of power, balance and smooth operation makes in-line sanders the most versatile of the three random-orbit sander types.

Palm-grip sanders

This type of sander is essentially an in-line sander without the handles. These compact models provide moderate power and excellent balance for light-duty use.



OPTIONS worth having

Replacement backing pads.

For sanding contoured parts, you'll want to use a soft backing pad.

Abrasive and polishing pads.

Use woven abrasive discs for sanding between coats of finish. Sponge pads are available for polishing.

Suction hood and vacuum hose.

Adding a suction hood will increase your sander's dust-collection efficiency. For dust control during heavy-duty sanding, use a vacuum hose to connect your sander to a central dust collector or shop vacuum.

FOR MORE INFO

Check out the detailed test results in our "Buyer's Guide to Random-Orbit Sanders," AW #39 (August 1994).

Random-Orbit Sanders



Makita BO5001



Ryobi RS-200



Bosch 1370DEVS

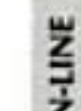


DeWalt DW443



Metabo 0125

	Brand & Model	List Price	Pad Dia. (in.)	Pad Type	Pad Brake	Orbits per Minute	Dust Collection	Amps	Weight (lbs.)	Comments & Features
RIGHT-ANGLE	Makita BO5001	\$125	5	HL	N	10,000	OPT	1.7	2.9	
	Milwaukee 6125	212	5	PSA	N	10,000	OPT	5.5	5	
	Milwaukee 6127	274	5	PSA	N	10,000	VP	5.5	5.5	6-ft. hose.
	Porter-Cable 7334	225	5	PSA	N	6,000	VP	3.7	5.5	Dust skirt optional.
	Porter-Cable 7335	254	5	HL	N	2,500 - 6,000	VP	3.7	8	Dust skirt optional.
	Porter-Cable 97335	274	5	HL	N	2,500 - 6,000	VP	3.7	8	
	Ryobi RS-200	80	5	PSA	Y	13,000	DC	3	3.6	
	Bosch 1370DEVS	433	6	HL	Y	4,800 - 12,000	DB, VP	5	5	2-way drive system.
	DeWalt DW441	240	6	PSA	Y	6,800	DC, VP	4.3	5.6	Rubber-covered gear case.
	DeWalt DW443	266	6	HL	Y	4,300 - 6,800	DC, VP	4.3	5.7	Rubber-covered gear case.
IN-LINE	DeWalt DW444	266	6	PSA	Y	4,300 - 6,800	DC, VP	4.3	5.7	Rubber-covered gear case.
	Fein MSF 636-1	745	6	HL	Y	7,500	VP	3.6	3.7	Dust extraction through and around pad.
	Milwaukee 6126	217	6	PSA	N	10,000	OPT	5.5	5	Paddle switch.
	Porter-Cable 7336	259	6	HL	N	2,500 - 6,000	VP	3.7	8.3	Dust skirt optional.
	Porter-Cable 97366	284	6	HL	N	2,500 - 6,000	VP	3.7	8.3	
	Craftsman 11604	60	4 1/2	PSA	N	11,000	DB	2	3	Removable front handle.
	Ryobi RS-115	70	4 1/2	HL	N	11,000	DB	2	3	Buffing pad optional.
	Black & Decker Quantum BD5100	140	5	HL	Y	10,000	DC	2.8	4.5	Padded trigger, textured handle.
	Black & Decker Quantum BD5200	160	5	HL	Y	7,500 - 10,000	DB, VP	2.8	4.5	Adjustable side handle.
	Bosch 3107DVS	165	5	HL	Y	4,500 - 13,000	DB, VP	3.3	5	Adjustable front handle.
	Bosch 3725DVS	255	5	HL	Y	4,500 - 12,000	DB, VP	3.3	4.4	Improved pad bearing reduces wobble.
	Bosch B7255	165	5	HL	Y	4,500 - 13,000	DB, VP	3.3	5	Adjustable front handle.
	Hitachi FSV13Y	195	5	HL	N	6,500 - 11,000	DB	2.5	3.7	
	Metabo 0125	229	5	HL	N	5,000 - 12,000	DB	1.8	5.2	Auto-stop brushes.
	Skil 7435	108	5	HL	Y	7,000 - 12,000	DB, VP	2.8	3.8	Adjustable front handle.
	Wen 18	60	5	HL	N	0 - 12,000	DC	2	3	Auxiliary handle.
	Bosch 3727DVS	266	6	HL	Y	4,500 - 12,000	DB, VP	3.3	4.6	Improved pad bearing reduces wobble.
	Bosch B7300	182	6	HL	Y	4,500 - 13,000	DB, VP	3.3	5.1	Adjustable front handle.
	Chicago Pneumatic TXE150	281	6	HL	Y	8,000 - 11,000	DB	3.5	5.5	Dust extraction through and around pad.
PALM-GRIP	Craftsman 27714	40	4 1/2	PSA	N	11,000	—	2.7	3.3	Sealed rocker switch.
	Ryobi RS112	50	4 1/2	HL	N	11,000	—	2	2.1	Sealed rocker switch.
	DeWalt DW420	120	5	PSA	Y	12,000	—	2	3	Sealed rocker switch.
	DeWalt DW421	138	5	HL	Y	12,000	DC, VP	2	3.2	Sealed rocker switch.
	DeWalt DW422	138	5	PSA	Y	12,000	DC, VP	2	3.2	
	DeWalt DW423	170	5	HL	Y	7,000 - 12,000	DC, VP	2	3.2	Sealed rocker switch.
	Jepson 6250	90	5	HL	Y	11,000	DB	1.9	3	
	Porter-Cable 332	129	5	PSA	Y	12,000	—	1.7	3.2	HL pad available.
	Porter-Cable 333	144	5	HL	Y	12,000	DC	1.7	3.5	
	Porter-Cable 334	144	5	PSA	Y	12,000	DC	1.7	3.5	
	Wen 15	70	6	PSA	N	3,000	—	2.5	3.5	Tall profile.



See page 136 for listing of manufacturers.

KEY: Pad Type: HL = hook-and-loop, PSA = pressure-sensitive adhesive. Dust Collection: DB = dust bag, DC = dust canister, VP = vacuum port. OPT = optional. — = not applicable. = Editors' Choice.

Bandsaws

Nothing beats the stability and control of a bandsaw for cutting curves, and it's the woodworking machine of choice for *resawing*—sawing thick boards into thinner ones. Add in the bandsaw's ability to rip and crosscut a variety of work, and this machine becomes a cornerstone in any well-equipped workshop.

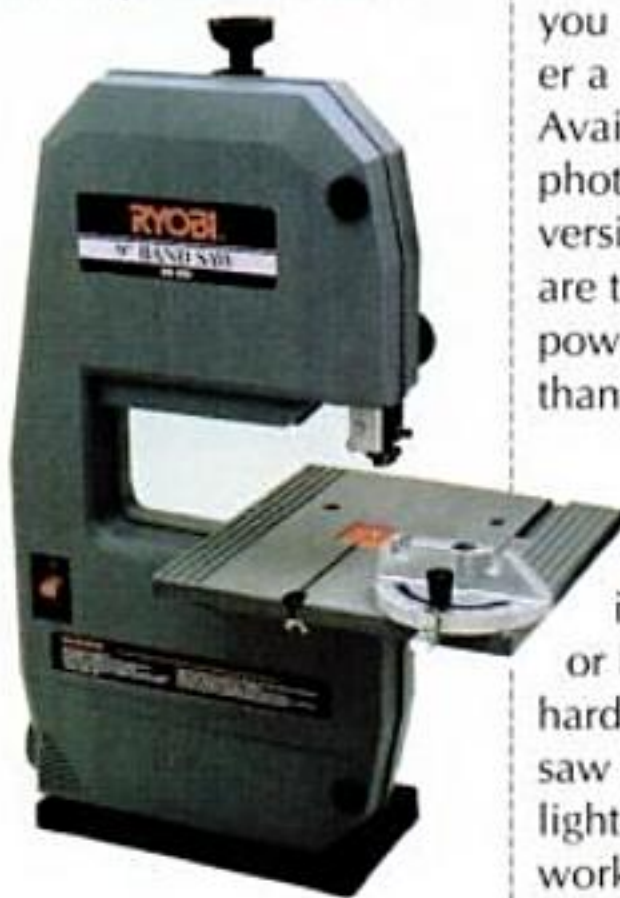
Bandsaws are sized according to the diameter of their wheels. *Throat capacity*, the distance between the blade and the post that connects the upper and lower wheels, is always somewhat less than wheel diameter. A saw's throat capacity is the maximum width-of-cut the saw will handle.



Curves, resawing and straight cuts. The bandsaw takes up where the tablesaw leaves off, performing general-purpose work and specialized cutting.

3 Types of bandsaws

Benchtop bandsaws



When budget or space limits you to a smaller saw, consider a benchtop model. Available in two-wheel (see photo, left) or three-wheel versions, benchtop bandsaws are typically lighter, less powerful and less expensive than floor models.

This isn't the type of saw to buy if you'll want to resaw wide boards, or if you'll be cutting large or long boards, especially hardwood. But a benchtop saw is a smart choice for light-duty cutting and scroll work—cutting intricate curves in thin material.



Three-wheel bandsaws

These models track the blade around a third wheel, which gives them greater throat capacity than you'll find on most two-wheel bandsaws. The third wheel enables

FEATURES *to consider*

Size and power

For general-purpose work—cutting curves in stock of different thicknesses and resawing occasionally—a medium-size (12-in. to 16-in.) floor model is a good choice. If you'll be doing production work or heavy resawing, you should consider a 16-in., 18-in. or 20-in. model.

Blade guides

Blade guides are important on a bandsaw because they keep the blade on track. Blade guides have guide blocks that lend side support, and thrust bearings behind the blade that stiffen the blade and keep it from shifting or jumping off the wheels.

Upper blade guides are connected to a guide post that adjusts up or down to accommodate different stock thicknesses; lower guides are fixed. Look for upper blade guides that remain parallel to the blade when locked in any position on the guide post.

There are two basic types of guide blocks: metal and ball bearing. (See photos, below.) Ball-bearing guides do a better job of supporting the blade than metal guides do,

and among ball-bearing guides, the "European-style" guides are easier to adjust than their "American-style" equivalents. (See right and center photos, below.)

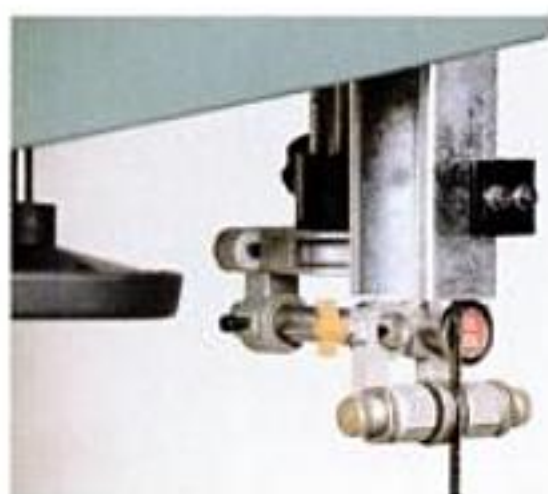
Metal guide blocks require more clearance on both sides of the blade, but they're inexpensive and easy to replace. Aftermarket Cool Blocks® will give more support than standard metal blocks, with less friction. (See Options.)

The frame

Look for rigid construction. Cast-iron frames or welded, heavy-gauge steel frames are more rigid than aluminum frames. Rigid frames reduce vibration and provide more support for blades.

The table

A large table will support oversized stock, and a table that tilts in two directions instead of just one allows you to handle a greater variety of angled cuts such as dovetails. Look for smooth table-tilt adjustment where the table engages the trunnions. Check that the table locks securely at any angle without flexing.



Types of blade guides. Solid metal guide blocks (left) are simple in design and inexpensive, but they don't provide the blade support that is possible with guides that run on ball bearings. European-style guide blocks (center) are easier to adjust than American-style guide blocks (right).

manufacturers to offer large throat capacity in a relatively small saw.

But there are some disadvantages to the three-wheel design. The small-diameter wheels put more strain on blades. Keeping the blade properly tracked can be more difficult than on two-wheel saws. And blades can break more frequently. With most three-wheel saws, maximum blade width is 1/4 in.

Three-wheel saws are best for light-duty woodworking, and for woodworkers who need to cut tight curves in wide stock.

Floor-model bandsaws

These stationary machines offer more stability than benchtop saws, and a larger throat—12 in. and up. With a heavier frame and a more powerful motor than you'll find on a benchtop saw, the typical floor-model bandsaw is well suited to resaw work. You can mount wider blades for cutting through thick or dense woods.

But these heavy-duty machines can also accept narrow blades and make delicate cuts. Floor models are the real workhorses among bandsaws.



OPTIONS *worth having*

Cool Blocks®. These aftermarket guide blocks reduce friction on both sides of the blade and provide more support for smoother cuts.

Riser block. This optional accessory bolts onto your saw and raises the upper frame on most 14-in. models to increase resaw capacity by 6 in.

FOR MORE INFO

Check out the detailed test results in our "Buyer's Guide to Bandsaws," AW #38 (June 1994).

Bandsaws



Skil HD3640



INCA 340



Delta 28-283

See page 136
for listing of manufacturers.

	Brand & Model	List Price	Size (in.)	Resaw Capacity (in.)	Table Tilt Left, Right (°)	Blade Guide Type	Maximum Blade Width (in.)	HP	Volts	Dust Collection Port	Weight (lbs.)	Comments & Features
BENCHTOP	Delta 28-180	\$216	8	5	0, 45	M	3/8	1/5	115	Y	35	Safety sliding blade guard.
	INCA 205	395	8	5 1/2	45	CB	1/2	1/2	115	Y	45	
	Grizzly G1052	170	9	4 1/4	15, 45	BB	1/2	1/2	115	N	100	Wheel brush.
	Lobo BS700	209	9	3 1/2	2, 50	BB	3/8	1/3	115	N	26	Worklight.
	Ryobi BS900	179	9	3 1/4	45, 45	M	3/8	1/3	115	Y	30	Wheel brush.
	Black & Decker 9443	305	10	3 7/8	0, 45	M	3/8	1/5	115	N	33	3-wheel saw.
	Craftsman 24453	200	10	3	0, 45	M	1/4	1/5	115	Y	28	3-wheel saw; variable speed.
	Craftsman 24460	150	10	3	0, 45	M	1/4	1/5	115	Y	43	3-wheel saw; cast-iron base.
	AW Dremel 1120	449	10	7	0, 45	P	1/2	1/2	115	Y	65	2 speeds.
	Enlon EN-BS10	165	10	5 1/2	0, 45	M	1/2	1/4	115	N	55	Hinged doors, alum. wheels.
FLOOR MODELS	Lobo BS-1000	169	10	5 1/2	0, 45	P	3/4	1/2	115	N	52	
	Skil HD3640	533	10	7	50, 6	P	1/2	1/2	115	Y	64	Cast-aluminum frame.
	INCA 340	795	10 1/2	6 1/2	45	CB	1/2	3/4	115	Y	75	
	INCA 350	995	12 1/2	8	45	CB	3/4	1	115	Y	95	
	Laguna Tools LT13	795	13	6 1/2	5, 45	CB	3/4	3/4	115	Y	140	Scroll and resaw capability.
	Craftsman 24835	330	12	6	NA	M	1/2	5/8	115	Y	130	Head tilts 45° instead of table.
	BB Delta 28-190	475	12	6	3, 45	M	1/2	1/2	115	Y	120	Worklight.
	AW Kity 613	995	12	8	0, 45	RB	1	1 1/2	115	Y	175	Micro-adjusting blade guides.
	AMT 4113	299	14	6	NA, 45	M	3/4	—	115	N	160	Motor not included.
	Belsaw MC-14BS-2	609	14	5 3/4	10, 45	M	3/4	3/4	115	N	190	Riser block kit optional.
	Bridgewood BW-14BS-3	349	14	6	10, 45	M	3/4	3/4	115	N	215	3 speeds.
	Craftsman 24834	500	14	6	0, 45	P	3/4	3/4	115	Y	195	Cast-iron frame and table.
	Delta 28-245	741	14	6 1/4	10, 45	M	3/4	1/2	115	Y	201	Micro-adjusting blade guides.
	Delta 28-283	996	14	6 1/4	10, 45	M	3/4	3/4	115	Y	224	Micro-adjusting blade guides.
	Enlon EN-BS14N	295	14	5 1/2	10, 45	M	3/4	3/4	115	N	190	Cool Blocks® optional.
	Grizzly G1019	295	14	6	10, 45	M	3/4	3/4	115/230	N	185	Riser block optional.
	Hitachi CB75F	4,500	14	11 13/16	0, 45	BB	3	2 7/10	115	Y	309	For resawing.
	JET JWBS-14CS	677	14	6	10, 45	P	3/4	1	115	Y	185	Micro-adjusting top blade guides.
	JET JWBS-14MW	739	14	6	10, 45	P	3/4	1	115	Y	194	3 speeds.
	JET JWBS-14OS	577	14	6	10, 45	P	3/4	3/4	115	Y	172	Micro-adjusting top blade guides.
	Lobo BS-0143	309	14	6	10, 45	P	1/2	3/4	115	N	167	3 speeds.
	Powermatic 043	873	14	7 1/2	15, 45	BB	3/4	3/4	115/230	Y	166	
	Powermatic 141	1,779	14	6 1/2	15, 45	BB	3/4	3/4	115/230	Y	375	1-piece cast-iron frame.
	Reliant DD90	280	14	5 3/4	10, 45	M	3/4	1	115/230	N	168	4 speeds.
	Sunhill VBS-14	359	14	6	15, 45	M	1/2	1	115	N	200	Open stand.
	Transpower SB500	250	14	6	10, 45	BB	3/4	1	115	N	195	3 speeds.
	Craftsman 24393	699	15	8 1/2	0, 45	M	3/4	3/4	115	Y	220	Wheel brush.
	AW General 490-1-M1	1,090	15	6 3/4	10, 45	M	3/4	3/4	115/230	OPT	315	Micro-adjusting blade guides.
	Grizzly G1148	425	15	7 7/8	10, 45	M	3/4	3/4	115/230	Y	164	2 speeds.
	Enlon EN-BS16N	515	16	9 1/2	10, 45	M	1	1 1/2	115/230	N	225	Micro-adjusting blade guides.

KEY: Blade Guide Type: BB = ball bearing, CB = Cool Blocks®, M = metal, P = plastic, RB = roller bearing, W = wood.
— = not applicable. NA = information not available. OPT = optional. AW = Editors' Choice. BB = Best Buy.

Bandsaws

Brand & Model	List Price	Size (in.)	Resaw Capacity (in.)	Table Tilt Left, Right (°)	Blade Guide Type	Maximum Blade Width (in.)	HP	Volts	Dust Collection Port	Weight (lbs.)	Comments & Features
BB Grizzly G1073	\$550	16	7 5/8	10, 45	M	1	1 1/2	115/230	Y	445	Micro-adjusting blade guides.
Laguna Tools LT16	1,345	16	9 1/4	5, 45	BB	1	1 4/5	230	Y	295	2 dust-collection ports.
Lobo BS-0163	559	16	10	10, 45	P	1	1 1/2	115	N	270	3 speeds.
Reliant EE166	450	16	10 1/2	5, 45	M	1	1 1/2	115/230	N	286	3 speeds.
Transpower SB600	475	16	10 1/2	10, 45	BB	1	1 1/2	115	N	325	3 speeds.
Mini Max S-45	1,745	17 1/2	10	45	RB	1	1 1/2	230	Y	330	Cast-iron wheels and table.
AW Bridgewood PBS-440B	1,595	18	9	5, 45	BB	1 3/16	2	230	Y	395	Rack-and-pinion guide post.
Craftsman 24396	1,299	18	11	0, 45	M	1	1	115	Y	270	Wheel brush.
Enlon EN-BS18S	670	18	9 1/2	10, 45	M	1 1/2	1 1/2	115/230	N	350	3 speeds.
Grizzly G1012	645	18	9 1/2	10, 45	M	1 1/2	2	230	N	320	3 speeds.
Laguna Tools LT18	1,795	18	12	5, 45	BB	1	3	230	Y	380	Micro-adjusting blade guides.
Lobo BS-0181	899	18	9 3/4	10, 45	RB	1 1/2	2	230	Y	420	Wheel brush.
Lobo BS-0183	699	18	9 1/2	10, 45	P	1	2	230	N	370	3 speeds.
Mini Max S45	1,590	18	10	0, 45	BB	1	1 1/2	230	Y	330	Quick-set top guides.
Reliant DD18	630	18	9 3/4	5, 45	M	1 1/2	2	115/230	N	366	3 speeds.
Sunhill VBS-18	795	18	12	15, 45	M	1 1/4	2	115/230	N	450	Open stand.
Transpower SB800	625	18	10 1/2	10, 45	BB	1 1/2	2	115/230	Y	425	3 speeds.
General 390	3,200	20	12 3/4	10, 45	M	1	2	220	Y	900	
INCA 710	1,695	20	8	45, 0	BB	1	1 1/2	115/230	Y	160	3-wheel saw.

KEY: Blade Guide Type: BB = ball bearing, CB = Cool Blocks®, M = metal, P = plastic, RB = roller bearing, W = wood.
— = not applicable. NA = information not available. OPT = optional. **AW** = Editors' Choice. **BB** = Best Buy.



JET JWBS-14CS

See page 136 for listing of manufacturers.

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PBS940	36"	\$6,995 \$5,395.

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9444	Same as above but with case & access.	\$114.
7499	"New" Cutout Tool-3.4 amp	\$ 69.
9352VS	3 x 21 Belt Sander, w/ dust bag & steel case	\$169.
410	Betterly™ Underscribe Trimmer	\$149.
447	7 1/4" Saw - 15 amp w/electric brake	\$138.
843	"New" #447 Saw w/blade on left side	\$138.
505	1/2 Sheet Sander	\$120.
550	Pocket Cutter Kit w/steel case	\$179.
556	Plate Joiner Kit, tilt fence, case	\$138.
691	1 1/2 hp D-handle Router - 10 amp	\$155.
5116	16" OMNIJIG® Dovetail Machine	\$259.
7116	24" OMNIJIG® Dovetail Machine	\$294.
7310	Laminate Trimmer 5.6 amp	\$ 95.
97335	5" HD Ran. Or. Sander - steel case	\$138.
97336	6" HD Ran. Or. Sander - steel case	\$138.
7536	2 1/2 hp Router - production base	\$203.
7549	Top Handle Bayonet Saw, 4.8 amp	\$134.
7700	10" Miter Saw w/ LASERLOC®	\$339.
7800	"New" Drywall Sanding Unit	\$307.
7910	"New" Professional Vacuum System	\$249.
9940	Cordless Drill Kit, 9.6 V, 2 Batteries	\$160.
99535	Cordless Drill Kit, 12V, 2 batt.	\$167.
97310	Trim Kit	\$197.
97751	1/2" VS Hammer Drill Kit, 2 opt. ranges	\$190.
Biscuits	Box of 1,000 - choose #10, #12, #20 or assorted	\$19.95

DEWALT

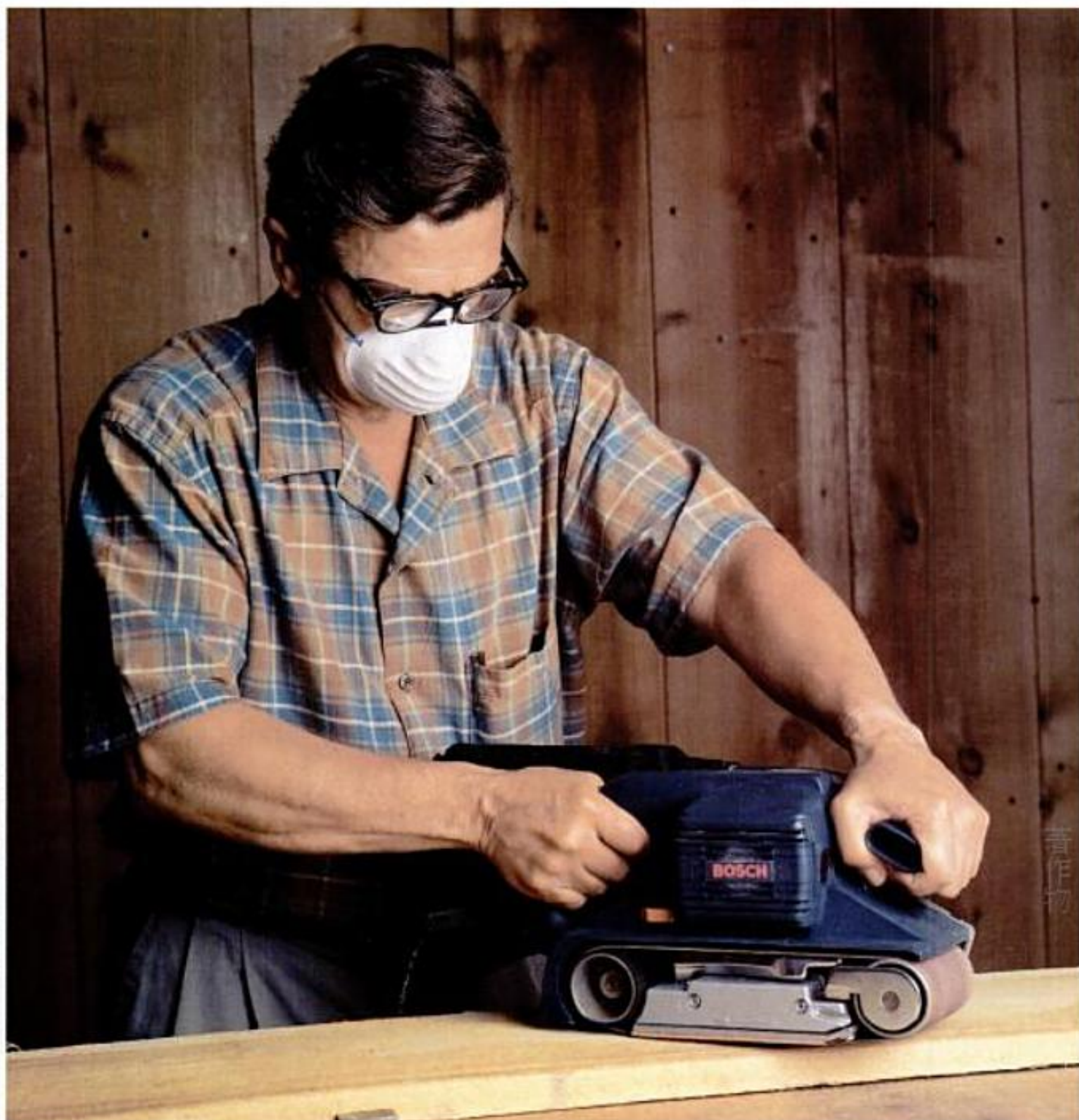
ITEM#	MODEL	DESCRIPTION	PRICE
1690	DW421	5" Palm R.O. Sander w/ dust	\$ 79.
1610	DW431	3" x 21" V/S Belt Sander	\$184.
1825	DW318K	Top Handle Jigsaw w/ case	\$151.
1826	DW306K	Recip. Saw V/S w/ case	\$159.
1550	DW610	1 1/2 HP Router	\$149.
1552	DW615	1 1/4 HP V/S Plunge Router	\$159.
1555	DW625	3 HP V/S Plunge Router	\$274.
1425	DW675K	3 1/8" Planer w/ case	\$199.
1264	DW682K	Biscuit Joiner Kit	\$219.
2480	DW705	12" Comp. Miter Saw	\$366.
1085	DW926K-2	9.6V Cordless V/S Kit, 2 batt.	\$179.
1088	DW972K-2	12V Cordless V/S Kit, 2 batt.	\$189.
1091	DW991K	14.4V Cordless, 1-batt.	\$199.

OTHER TOOLS AVAILABLE FROM STOCK

Portable Belt Sanders

Belt sanders remove stock quickly, clean up rough surfaces, and flatten glued-up assemblies. While they can't compete with hand planes, belt sanders can smooth troublesome figured woods without tearing the grain. In skilled hands, they're also useful for shaping curves. Keep in mind, however, that belt-sanded surfaces usually require additional smoothing before finishing. Portable belt sanders can also be mounted in accessory stands and used as benchtop sanders to shape small parts.

A belt sander's size is determined by the width and length of its belt. The most common belt sizes are 3 in. by 21 in., 3 in. by 24 in., and 4 in. by 24 in.



Belting out a finish. Workhorses in the shop or on the jobsite, belt sanders take out nicks and scratches and flatten stock.

2 Types of belt sanders

In-line belt sanders

On an in-line sander, the motor is mounted parallel to the length of the sanding belt. The in-line design typically has a low profile and a low center of gravity. This makes the tool less prone to tipping.



Transverse belt sanders

On this type of sander, the motor is mounted transversely—across the width of the machine and above the belt. Transverse sanders are somewhat easier to control than in-line models.



FEATURES *to consider*

Weight

Belt sanders weigh in at anywhere from 4 to 16 lbs. When sanding horizontal surfaces, a heavier machine will usually apply all the downward pressure that's necessary. If you need to do much vertical sanding, buy a sander light enough to control comfortably.

Platen size

The size of the platen determines how much sandpaper actually contacts the work surface. (See left photo, below.) Go for a large platen if you plan to use your sander for flattening wide boards or panels. Wider platens also make the sander less tippy.

Power

Once you decide on the size you want in a belt sander, it's smart to buy the tool with the most powerful motor. Look for a high amp rating, rather than high horsepower. More powerful machines won't necessarily run at a higher no-load speed, but they won't bog down on tough jobs.

Variable speed

Variable speed allows you to slow down the belt for better control when sanding plywood and other veneered stock. Slower speeds also prevent burning the workpiece when using fine-grit belts. Most tools with electronic variable speed have "smart" circuitry that maintains a constant belt speed under varying loads.

Dust collection

Belt sanders kick up a lot of dust. No sander should be without a dust bag. Narrow, low-profile bags won't obscure your view of the work or get in the way when you're sanding in tight spots. (See right photo, below.) Some sanders have dust ports for hookup to a shop vacuum.

Noise

All belt sanders are fairly noisy, so you should always use ear protection. If you have a chance, take the models you're interested in for a "test run." Less noise is often an indication of higher quality in the bearings and motor.



Sanding surface. Larger platens put more of the belt surface in contact with the wood, for faster stock removal.



Bag the dust. Front- or rear-mounted bags are generally less obtrusive than side-mounted bags.

OPTIONS *worth having*

Sanding frame. The frame works just like the sole of a hand plane, supporting the sanding belt above the low spots in a surface in order to remove the high ones. The frame helps to prevent gouging caused by tilting the sander. (See photo, near right.) Sanding frames aren't available for all models.

Bench-mount or inversion stand. Available for some models, this conversion



Frame it. Attached to the belt sander, a rectangular sanding frame promotes flat, even sanding on broad surfaces.

accessory turns a portable belt sander into a small stationary model for sanding small workpieces. (See photo, right.)

Belts and belt cleaner.

Finish faster by keeping a supply of different-grit belts to meet the job at hand. Abrasive cleaner sticks extend a belt's working life by lifting out the sawdust, resin and dirt that often clog the grit.



Stationary use. With an accessory stand, you can mount the sander horizontally or vertically on your workbench.

Portable Belt Sanders



Ryobi BE321



Skil 7313



DeWalt DW430



Porter-Cable 352



Milwaukee 5925

	Brand & Model	List Price	Belt Width x Length (in.)	Belt Speed (ft./min.)	Amps	Dust Collection	Weight (lbs.)	Comments & Features
IN-LINE	Bosch 3270DVS	\$292	3 x 21	550 - 1,100	5	DB, VP	7.1	Removable front handle; sanding frame, stand avail.
	Bosch B7350	291	3 x 21	550 - 1,100	5	DB, VP	7.9	Removable front handle; sanding frame, stand avail.
	Chicago Pneumatic HBSE75S	366	3 x 21	490 - 1,040	7.8	DB	8.4	Quick-release belt tension lever.
	Metabo 0775	329	3 x 21	1,300	5.5	DB	11.5	
	Ryobi BE321	160	3 x 21	775 - 1,150	5.4	DB	7.9	Single-lever belt release.
	Skil HD7625	292	3 x 21	550 - 1,100	5	DB, VP	7.1	Removable front handle; sanding frame, stand avail.
TRANSVERSE	Makita 9030	364	1 1/8 x 21	3,280	4.2	—	4	Designed for close, small work; adj. side handle.
	Skil 7313	121	3 x 18	700	4.5	DB	5.3	Auto-tracking belt control.
	Wen 3600	60	3 x 18	1,000	4	VP	6.5	Manual tracking control.
	Black & Decker Quantum BD5500	189	3 x 21	600 - 950	5.2	DB, VP	8	Quick-release belt tension lever, soft-grip trigger.
	Craftsman 11712	60	3 x 21	1,100	4.7	—	7.8	Front auxiliary grip.
	Craftsman 11713	80	3 x 21	1,300	7	—	11.4	Quick release belt tension lever.
	DeWalt DW430	300	3 x 21	1,100	5.2	DB	6.2	Automatic belt tensioning.
	DeWalt DW431	338	3 x 21	475 - 1,100	5.2	DB	6.2	Automatic belt tensioning.
	Hitachi SB75	297	3 x 21	1,475	8.7	DB	9.7	Quick-release belt tension lever.
	Makita 9900B	347	3 x 21	1,180	7.8	DB	10	Replaceable platen.
	Makita 9901	282	3 x 21	1,246	6.7	DB	7.7	Quick-release belt tension lever.
	Porter-Cable 351	292	3 x 21	1,300	7	—	10	Quick-release belt tension lever.
	Porter-Cable 352	302	3 x 21	1,300	7	DB	10.8	Quick-release belt tension lever.
	Porter-Cable 352VS	311	3 x 21	850 - 1,300	7	DB	10.8	Fingertip belt-tracking knob.
	Bosch 1275DVS	382	3 x 24	1,150 - 1,550	10.5	DB, VP	13	Adj. front handle.
	Bosch B7360	382	3 x 24	1,150 - 1,550	10.5	DB, VP	13	Adj. front handle.
	Makita 9924DB	360	3 x 24	1,300	7.8	DB	10.2	Quick-release belt tension lever.
	Milwaukee 5920	455	3 x 24	1,400	10	—	13.5	
	Milwaukee 5925	475	3 x 24	1,400	10	DB	13.8	Quick-release belt tension lever.
	Porter-Cable 360	377	3 x 24	1,500	10.5	DB	14.5	Fingertip belt tracking knob.
	Porter-Cable 361	357	3 x 24	1,550	10.5	—	13.8	Quick-release belt tension lever.
	Porter-Cable 503	682	3 x 24	1,500	9	DB	18.3	Quick-release belt tension lever.
	Porter-Cable 504	662	3 x 24	1,600	9	—	17	Fingertip belt-tracking knob.
	Craftsman 11792	110	4 x 21	1,300	7.5	DB	12.5	Quick-release belt tension lever.
	Bosch 1273DVS	415	4 x 24	1,150 - 1,550	10.5	DB, VP	14.8	Replaceable platen.
	Bosch 1276D	389	4 x 24	1,550	10.5	DB, VP	13.8	Adj. front handle; sanding frame, stand optional.
	Bosch 1276DVS	425	4 x 24	1,150 - 1,550	10.5	DB, VP	13.8	Adj. front handle; sanding frame, stand optional.
	Bosch B7455	425	4 x 24	1,550	10.5	DB, VP	13.8	Adj. front handle; sanding frame, stand optional.
	Hitachi SB10T	403	4 x 24	1,380	8.7	DB	11.7	Quick-release belt tension lever.
	Makita 9401	458	4 x 24	1,150	8.5	DB	16	Replaceable platen.
	Milwaukee 5931	460	4 x 24	1,400	10	—	14.3	
	Milwaukee 5936	480	4 x 24	1,400	10	DB	14.5	Quick-release belt tension lever.
	Porter-Cable 362	392	4 x 24	1,500	10.5	DB, VP	15.5	
	Porter-Cable 363	372	4 x 24	1,500	10.5	—	15	
	Ryobi BE424	200	4 x 24	755 - 1,150	5.4	DB	7.9	Quick-release belt tension lever.

See page 136 for listing of manufacturers.

KEY: Dust Collection: DB = dust bag, VP = vacuum port. — = not applicable.

Drill Presses

A drill press's principal function is precision drilling and boring or cutting accurately centered holes to precise angles and depths. But this machine is also adept at other tasks such as mortising, drum sanding, and powering cutters of all kinds, from plug cutters to rotary planers.

On most drill presses you'll find a work table that adjusts up and down on a support column, and multiple speeds for a variety of applications and materials. Most also have a mechanism that lets you set a positive depth stop at any point in the downward stroke.

The size of a drill press is typically expressed in terms of *throat capacity*, the distance between the column and the center of the chuck. A drill press with a throat capacity of 5 in. can drill to the center of a 10-in.-wide workpiece.



The hole story. No workshop would be complete without a drill press. This multipurpose tool drills holes, cuts plugs, chops mortises, and powers other accessories.

3 Types of drill presses

Benchtop drill presses

As shown in the chart on page 82, some of the larger benchtop models have throat capacities that match or exceed those of floor models. Yet benchtop drill presses stand only 22 in. to 46 in. high.

If low price is a primary consideration, a benchtop model is worth considering. But your capacity to handle large or tall work is limited. Also, while you might consider lifting the smaller machines on and off your workbench, larger benchtop models will require a more permanent location. And they'll take up the same space as a floor model.



Floor drill presses

A floor-model drill press offers two significant advantages over a benchtop machine: the ability to drill into tall workpieces and the built-in stability of a heavy cast-iron base.

Throat capacity for floor models ranges between 6 $\frac{1}{4}$ in. and 10 $\frac{1}{4}$ in. (See chart.) These machines stand between 52 in. and 76 in. high.

For the great variety of work it's capable of doing, a freestanding drill press demands very little in the way of floor space—less than most other stationary machines.

FEATURES *to consider*

Speed control

A standard five- or six-speed model is adequate for most woodworking operations. If you plan to do a lot of drum sanding, circle cutting, or rosette work, consider a model with more speeds. This will enable you to tailor your rpm to the material, minimizing burning and tearout. For metalworking, you'll want a low speed of about 250 to 300 rpm. Continuous variable speed control is more convenient than the standard procedure of changing the drive belts' positions on the pulleys.

Quill travel

Quill travel, or stroke length, describes just how deep a hole you can drill without changing the table elevation. This distance varies from 1⁷/₈ in. on the smallest benchtop model to 6 in. on the largest floor model. For drilling thick stock, you'll want a quill travel of 4 in. or more.

Work table

A large table will provide the needed support for oversized work and extra purchase for clamps and jigs. Many tables tilt by rotating on a pivot. To adjust table height, rack-and-pinion cranking mechanisms are preferable to raising a heavy cast table by hand. (See top right photo.)

Hollow-chisel mortising

With a hollow-chisel mortising attachment fitted on your drill press, you can make square-edged mortises quickly and accurately. (See bottom right photo.) Some drill presses—especially smaller ones—don't have the capacity to accept mortising attachments. Make sure yours can if you plan to do a lot of mortising.



Crank it up.

A rack-and-pinion mechanism makes it easier to adjust heavy cast tables. The gearing allows for finer adjustments and lessens the risk of a crushed toe.

Mortising made easy. Equipped with a hollow-chisel mortising attachment, a drill press makes quick work of chopping mortises.



Radial drill presses

Here's the drill press of choice for chairmakers and other woodworkers who drill a lot of angled or even compound-angled holes.

On a radial drill press, the *head*, which includes the motor, quill and pulleys, is mounted on a horizontal tube, called a *ram*, that can move in and out and rotate in both directions. This design feature enables you to adjust the bit to bore at any angle you desire.

Radial drill presses offer certain obvious advantages over standard models for angle boring. They can even be used for horizontal boring



work. Another advantage is that they have larger throat capacities than most standard models. Both floor and benchtop radial drill presses are available.

OPTIONS *worth having*

Sanding drums. A set of different-diameter drums will enable you to smooth all kinds of curved work.

Cross-slide vise. With its screw-controlled adjustments, this work-table accessory makes it easy to position your work or jig precisely. The vise is also the safest way to hold small work.

Mortising attachment. You'll like the speed and accuracy you can achieve with this accessory. (See photo, above.)

Drill Presses



Ryobi DP100



Skil HD3580



Powermatic 1140

	Brand & Model	List Price	Throat Capacity (in.)	Chuck Capacity (in.)	Quill Travel (in.)	Spindle Speed* (rpm)	HP	Volts	Amps	Weight (lbs.)	Comments & Features
BENCHTOP	Craftsman 21320	\$120	4	1/2	2	620 - 3,100	1/6	115	2.5	43	Table tilts.
	Delta 11-950	179	4	1/2	2	620 - 3,100	1/4	115	5.9	49	Table tilts.
	JET JDP-8	193	4	1/2	2	620 - 3,100	1/6	115	2.5	42	
	Ryobi DP80	130	4	1/2	2	540 - 3,600	1/4	115	5.9	44	Table tilts.
	Skil 3380	279	4	1/2	2	620 - 3,100	1/4	115	5.9	47	Bit, chuck key storage.
	Woodtek 829785	109	4	1/2	2	620 - 3,100	1/4	115	5.6	40	Table tilts.
	Reliant JDP3	100	4 3/32	1/2	1 7/8	700 - 3,000	1/4	115	3	53	
	Black & Decker 9400	266	4 3/8	1/2	2	620 - 3,100	1/6	115	2.2	47	Table tilts.
	Bridgewood BW-1012BA	129	5	1/2	2 3/8	690 - 3,000	1/3	115/230	8/4	67	Table tilts and adjusts with crank.
	Craftsman 21309	200	5	1/2	2 3/8	480 - 3,000	1/4	115	3.2	64	Table tilts and adjusts with crank.
	Delta 11-980	186	5	1/2	2 1/4	620 - 3,100	1/4	115	5	72	Table tilts.
	JET JDP-10	223	5	1/2	2 1/2	540 - 3,600	1/3	115	5	70	Table tilts.
	Ryobi DP100	160	5	1/2	2 3/8	620 - 3,100	1/4	115	5.9	68	Table tilts.
	Delta 11-990	260	6	1/2	2	620 - 3,100	1/3	115	7.2	71	Table tilts and adjusts with crank.
	AMT 4592	198	6 1/4	5/8	3 1/4	250 - 3,100	3/4	115	10	100	Worklight.
	Enlon EN-DP13	190	6 1/2	5/8	3	230 - 3,200	1/3	115	7.5	93	Table tilts and adjusts with crank.
	Reliant DD50	160	6 1/2	1/2	3	700 - 3,000	1/3	115	3.3	143	Table tilts and adjusts with crank.
	Skil HD3580	456	6 1/2	5/8	3 3/8	500 - 3,100	1/3	115	6	102	Fence; bit, chuck key storage.
	Transpower DP130	165	6 3/4	1/2	3 1/8	500 - 3,760	1/2	115	9.8	99	Table tilts and adjusts with crank.
	Bridgewood BW-1412BA	219	7	1/2	3 5/16	480 - 2,120	1/2	115/230	7/3.5	138	Table tilts, rotates, adjusts with crank.
	Grizzly G1199	235	7	5/8	3	250 - 3,100	1/2	115	9	125	Table tilts; worklight.
	JET JDP-14J	343	7	1/2	3 3/8	460 - 2,500	1/2	115/230	7.4/3.7	132	Table tilts; worklight.
	JET JDP-14M	399	7	5/8	3 1/4	200 - 3,630	1/2	115/230	7.4/3.7	132	Table tilts; worklight.
	General 34-02-M1	760	7 1/2	1/2	4 1/2	460 - 4,910	3/4	115/230	8	200	
FLOOR MODELS	Black & Decker DP600	199	8	1/2	4	620 - 3,100	1/4	NA	2.5	55	Worklight; bit storage.
	Ryobi WDP1850	550	9 1/4	1/2	3 1/3	500 - 3,000*	1/3	115	NA	NA	Table tilts; fence.
	AMT 4562	245	6 1/4	5/8	3 1/4	250 - 3,100	3/4	115	10	120	Worklight.
	Craftsman 21313	250	6 1/2	1/2	3 1/4	500 - 3,100	1/3	115	6	131	Table tilts and adjusts with crank.
	Enlon EN-DP13F	210	6 1/2	5/8	3	230 - 3,200	1/3	115	7.5	110	Table tilts and adjusts with crank.
	Transpower RX160	195	6 3/4	5/8	3 1/8	300 - 3,700	3/4	115	13.8	130	Table tilts and adjusts with crank.
	Delta 14-070	377	7	5/8	3 1/3	250 - 3,000	1/2	115	9.8	157	Table tilts and adjusts with crank.
	Grizzly G1200	295	7	5/8	3	250 - 3,100	1/2	115	9	150	Table tilts; worklight.
	JET JDP-14JF	412	7	1/2	3 3/8	460 - 2,500	1/2	115/230	7.4/3.7	156	Table tilts; worklight.
	JET JDP-14MF	455	7	1/2	3 1/4	200 - 3,630	3/4	115/230	10.2/5.1	167	Table tilts; worklight.
	Penn State DPF	220	7	5/8	3 1/8	600 - 3,720	1/2	115	7	128	Table adjusts with crank.
	Powermatic 1140	441	7	1/2	3 5/16	250 - 3,100	3/4	115/230	13	170	Table tilts and adjusts with crank.
	Craftsman 21315	300	7 1/2	5/8	3 1/4	250 - 3,100	1/2	115	8	132	Table tilts and adjusts with crank; worklight.
	General 34-01-M1	760	7 1/2	1/2	4 1/2	460 - 4,910	3/4	115/230	8	200	
	Powermatic 1150-A	2,578	7 1/2	1/2	6	475 - 4,800*	1	115/230	16	325	
	Lobo DP-016F	219	8	5/8	3 1/2	240 - 3,800	3/4	115	NA	135	T-slot in table.
	Delta 17-900	470	8 1/4	1/2	3 1/3	250 - 3,000	3/4	115	13.8	194	Table tilts and adjusts with crank.
	Woodtek 816805	369	8 1/4	5/8	3 1/4	250 - 3,000	3/4	115/230	10/5	165	Table tilts.
	Bridgewood BW-1758FA	329	8 1/2	5/8	3 1/8	350 - 3,900	3/4	115/230	11/5.5	172	Table tilts and adjusts with crank.

Chart continued on page 84

See page 136 for listing of manufacturers.

KEY: NA = information not available. * Starred models have continuous variable speed.

Drill Presses



Reliant DD55

	Brand & Model	List Price	Throat Capacity (in.)	Chuck Capacity (in.)	Quill Travel (in.)	Spindle Speed* (rpm)	HP	Volts	Amps	Weight (lbs.)	Comments & Features	
FLOOR MODELS	Craftsman 21317	\$400	8 1/2	5/8	3 1/4	200 - 3,630	3/4	115	10	165	Table tilts and adjusts with crank; worklight.	
	JET JDP-17MF	477	8 1/2	1/2	4 3/8	200 - 3,630	3/4	115/230	10.2/5.1	189	Worklight.	
	Reliant DD55	270	8 1/2	5/8	3 1/4	340 - 2,800	3/4	115	5.3	194	Table tilts and adjusts with crank.	
	Transpower RX180	225	8 1/2	5/8	3 5/16	240 - 3,800	1	115	16	178	Worklight.	
	Grizzly G1201	445	9	5/8	5	150 - 2,470	3/4	115/230	12/6	300	Table tilts; worklight.	
	Craftsman 21321	600	10	3/4	4 1/4	150 - 4,200	1	115	12.8	335		
	JET JDP-20 MF	871	10 1/4	3/4	4 5/8	150 - 4,200	1 1/2	115/230	18/9	288	Table tilts; worklight.	
	Brand & Model	List Price	Throat Capacity (in.)	Chuck Capacity (in.)	Quill Travel (in.)	Spindle Speed (rpm)	HP	Volts	Amps	Weight (lbs.)	Ram Travel (in.)	Head Tilt Left, Right (°)
RADIAL MODELS	Grizzly G1131	220	3 3/4	1/2	2 7/8	750 - 3,500	1/3	115	6	84	13	45, 90
	Delta 11-090	388	16	1/2	3 3/8	580 - 3,450	1/3	115	7.2	82	11 1/2	90, 45
	AMT 4910	324	17	1/2	3 5/16	540 - 3,600	1/3	115	4.5	90	12 3/4	90, 45
	AMT 5170	429	17 1/8	5/8	3 5/16	250 - 3,100	1/2	115	8	120	12 3/4	90, 45
	Craftsman 21333	499	17 1/8	5/8	3 5/16	250 - 3,100	1/2	115	8	161	12 3/4	90, 45
	Craftsman 21334	299	17 1/8	1/2	3 5/16	540 - 3,600	1/3	115	4.5	80	12 3/4	45, 90

See page 136 for listing of manufacturers.

KEY: NA = information not available. *Starred models have continuous variable speed.

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READER SERVICE NO. 57

Jigsaws

A jigsaw—also called a saber saw or bayonet saw—performs tasks that no bandsaw, scrollsaw, or coping saw can. It lets you take the saw to the work, so you can cut workpieces that are too bulky or heavy to handle on a stationary saw. Since you're not limited by throat depth, you can saw into workpieces of any width or length. Armed with an assortment of blades, a jigsaw can cut patterns in wood, plastic and metal.

Depending on the blade that's used, most jigsaws can make cuts in wood up to 2³/₄ in. thick. A 3.5-amp motor will provide enough juice for most cutting chores.



The jig is up... and down. Today's jigsaws make smooth, fast cuts in wood and other materials up to 2³/₄ in. thick.

3 Types of jigsaws



In-line jigsaws

This type of saw is a cross between a reciprocating saw and a jigsaw: The blade travels parallel to the armature. Since it can get into places that most other jigsaws can't,

the in-line saw is a favorite among remodelers. On the downside, this type of saw is less accurate than other types because its small baseplate doesn't provide as much support.

Top-handle jigsaws

Many woodworkers prefer these models—they feel that positioning the handle above the motor allows for more control when cutting thick or dense materials.



FEATURES *to consider*

Straight-line vs. orbital blade action

Straight-line cutting produces smoother cuts with less tearout, but for general cutting, you'll want a saw with orbital action that will chew through stock fast. Most jigsaws allow you to switch between cutting modes. Several offer different degrees of orbital action.

Speed control

Whether controlled by a trigger or separate dial, variable speed means more cutting control. Use high speeds for general cutting; slow speeds are good for thin materials, metals and plastics.

Baseplate

The baseplate provides support for the saw while keeping the blade at a fixed angle to the work. Look for a thick, sturdy cast plate that won't flex or loosen during operation. If the baseplate is adjustable, see if it has detents for positive stops at 45° and 90°. (See photo, near right.)



Cut at full tilt. Adjustable-angle baseplates allow you to cut angles up to 45°.

Blade guides

Better jigsaws have a blade guide just above the baseplate that supports the blade during cutting. Most guides consist of a grooved roller behind the blade that limits side-to-side and backward blade deflection. This feature promotes accuracy while also reducing blade breakage.

The "scrolling" head on some jigsaws lets you rotate the blade 360° without moving the saw body—instead, you

turn a knob at the front end of the saw. This feature enables you to perform some fairly intricate scrolling. However, you won't find roller guides on the saws with this mechanism.

Blade changing

If you plan on doing a lot of jigsaw work, consider a model that has a quick-release mechanism. If your jigsaw has this feature, changing blades is as simple as pulling a lever and clicking in a replacement blade.

On most jigsaws, you release the blade by loosening a setscrew. While most saws will accept universal blades, some models require other types of blades. (See photo, right.) When



Choose your weapon. Jigsaw blades come in many sizes, and there's a blade for cutting just about any material. However, some saws have blade-holding mechanisms that accept only a specific type of blade.

you're deciding which model to buy, it's wise to make sure that you'll have a local source for the type of blade it requires. Check the "Blade Mount Type" column in the chart on page 88.

The cordless option

Although it has less power, a cordless saw is great when you're working outside of the shop, or when you're making the kinds of cuts where a cord might get in the way.

Barrel-grip jigsaws

A barrel-grip saw is essentially a top-handle saw without a handle. To saw, you grip the barrel by its motor housing.

A barrel-grip saw shines when you need to cut curves or holes in thinner stock. The behind-the-blade hand position makes it easy to cut quickly and efficiently. Models with easy-to-reach, paddle-type switches are especially convenient for production-type work.



However, if you have small hands, you may find that it's difficult to get a good hold on some of the fatter barrel-grip models.

OPTIONS *worth having*

Extra blades. It makes sense to stock up on jigsaw blades, especially those that are used and/or break most frequently.

Stick with bimetal blades if you can. Though more expensive than high-speed-steel blades, bimetal blades cut better and last longer.

Bench-mounted saw table.

This steel or aluminum plate attaches to a workbench and holds a jigsaw upside down. It's a great setup for stationary sawing.

Edge guide with circle

cutter. Attached to your saw, this straightedge will guide straight cuts and can also be used as a trammel for circle cutting.

Portable Jigsaws



Bosch B4300



DeWalt DW318K



Makita 4303C



Milwaukee 6266/6

Brand & Model	List Price	Blade Mount Type	Roller Guide	Orbital Action	Stroke Length (in.)	Cuts per Minute	Amps	Dust Collection	Weight (lbs.)	Comments & Features
Black & Decker 7568	\$81	U	Y	N	1 1/16	800 - 3,200	3.5	—	4	Chip deflector.
Black & Decker 7588	102	U	N	N	1 1/16	800 - 3,200	3.5	—	4	Scrolling head.
Black & Decker JS400	72	U	Y	Y	1 1/16	800 - 3,200	3	VP	7.9	Chip shield.
Black & Decker Quantum BD4200	176	U	Y	Y	3/4	800 - 3,200	3.5	DB, VP	6	Optional anti-splinter insert.
Bosch 1584DVS	306	B*	Y	Y	1	500 - 3,100	5	CB, VP	5.5	Base cover; anti-splinter insert.
Bosch 1584VS	285	B*	Y	Y	1	500 - 3,100	5	CB	5.5	Anti-splinter insert.
Bosch 1587DVS	317	B*	Y	Y	1	500 - 3,100	5	CB, VP	5.8	Base cover; anti-splinter insert.
Bosch 1587VS	288	B*	Y	Y	1	500 - 3,100	5	CB	5.8	Anti-splinter insert.
Bosch B4050	196	B*	Y	Y	5/8	300 - 3,000	3.6	—	2	
Bosch B4100	204	B*	Y	Y	5/8	300 - 3,000	4.8	VP	5.3	Anti-splinter insert.
Bosch B4200	280	B	Y	Y	1	500 - 3,100	4.8	CB	5.5	Opt. anti-splinter insert.
Bosch B4201	288	B*	Y	Y	1	500 - 3,100	5.8	CB	5.8	Anti-splinter insert.
Bosch B4300	276	B	Y	Y	1	500 - 3,100	4.8	CB	5.5	Opt. anti-splinter insert.
Bosch B4301	286	B*	Y	Y	1	500 - 3,100	5	CB	5.8	Anti-splinter insert.
Chicago Pneumatic BSPE 100 X	331	B*	Y	Y	1	450 - 3,100	5.7	VP	5.1	Side blade guides.
Chicago Pneumatic BSPE 100 XL	296	B*	Y	Y	1	450 - 3,100	5.7	VP	5.1	Opt. base cover.
Chicago Pneumatic FSPE 100 X	331	B*	Y	Y	1	450 - 3,100	5.7	VP	5.1	Side blade guides.
Chicago Pneumatic FSPE 100 XL	296	B*	Y	Y	1	450 - 3,100	5.7	VP	5.1	Opt. base cover.
Craftsman 1714	25	U	N	N	1/2	2,600/3,000	2.5	—	3.8	
Craftsman 17204	40	U	N	N	5/8	0 - 3,000	2.5	—	4.5	Revers. dual-throat base.
Craftsman 17207	50	U	N	N	5/8	0 - 3,000	2.5	—	5	Scrolling head; revers. dual-throat base.
Craftsman 17211	80	U	N	N	5/8	0 - 3,000	2.5	—	5.4	Scrolling head.
Craftsman 27251	140	U	Y	Y	1	0 - 3,100	4.5	—	6.2	
DeWalt DW313	250	U	Y	N	1	0 - 3,100	4.5	—	6.2	Revers. dual-throat base.
DeWalt DW318K	286	U	Y	Y	1	0 - 3,100	4.5	—	6.2	Revers. dual-throat base.
Fein Aste 638	549	U	N	N	13/16	1,050 - 2,600	4.3	VP	4.8	Adj. base for close work.
Hitachi CJ65V2K	374	B, WU	Y	Y	1	700 - 3,200	5.2	DB	5.5	Opt. anti-splinter insert.
Hitachi CJ65VA2K	374	B, WU	Y	Y	1	700 - 3,200	5.2	DB	5.3	Opt. anti-splinter insert.
Makita 4301BV	292	B, WU	Y	Y	1	0 - 3,100	3.5	CB	6	Steel case.
Makita 4303C	391	B, WU	Y	Y	1	1,000 - 3,000	6	CB	5.5	
Makita 4320	182	WU	Y	N	1 1/16	0 - 3,200	2.9	CB	2.9	
Metabo E452	195	B, U	Y	N	3/4	500 - 3,000	4	CB	5	Shoe cover; anti-splinter insert.
Metabo EP455	223	B, U	Y	Y	3/4	500 - 3,000	4	CB	5.9	Shoe cover; anti-splinter insert.
Metabo EP564	295	B, U	Y	Y	1	500 - 3,000	5	CB	6.4	Shoe cover; anti-splinter insert.
Metabo EP565	295	B, U	Y	Y	1	500 - 3,000	5	CB	6.2	Shoe cover; anti-splinter insert.
Milwaukee 6246	268	U	Y	N	1	3,100	3.8	CB	5.5	
Milwaukee 6256	264	U	Y	N	1	0 - 3,100	3.8	—	5.7	
Milwaukee 6256/6	278	U	Y	N	1	0 - 3,100	3.8	CB	5.8	
Milwaukee 6266	305	B*	Y	Y	1	450 - 3,100	5.7	VP	5.3	Base cover; anti-splinter insert.
Milwaukee 6266/6	315	B	Y	Y	1	450 - 3,100	5.7	CB, VP	5.3	
Porter-Cable 548	359	H	Y	Y	7/16	0 - 4,500	3.5	—	6.5	Fixed base.
Porter-Cable 7349	196	H, U	Y	N	1	0 - 3,200	4	—	6	Side blade guides.
Porter-Cable 7549	246	H, U	Y	Y	1	0 - 3,200	4.8	—	6.5	Side blade guides.
Porter-Cable 7649	246	H, U	Y	Y	1	500 - 3,200	4.8	—	6	Side blade guides.
Ryobi JSO45	90	WU	Y	Y	5/8	0 - 3,000	3	—	3.5	Revers. dual-throat base.
Skil 4235	75	U	N	N	5/8	0 - 3,200	3	—	3.6	Blade storage.

See page 136 for listing of manufacturers.

KEY: Blade Mount Type: B = bayonet, H = hook, U = universal, WU = wide universal. Dust Collection: CB = chip blower, DB = dust bag, VP = vacuum port. — = not applicable. NA = information not available. *Has quick-change feature.

Brand & Model	List Price	Blade Mount Type	Roller Guide	Orbital Action	Stroke Length (in.)	Cuts per Minute	Amps	Dust Collection	Weight (lbs.)	Comments & Features
Skil 4345	\$77	U	N	Y	5/8	0 - 3,200	3	CB	3.7	Blade storage.
Skil 4355	98	U	N	N	5/8	0 - 3,200	3	—	3.9	Scrolling head.
Skil 4395	108	U	N	Y	5/8	0 - 3,200	3.2	—	4	Scrolling head.
Skil HD4560	161	U	N	N	13/16	0 - 3,200	3.5	CB	5.5	Scrolling head.
Skil HD4580	172	U	N	Y	13/16	0 - 3,200	3.5	CB	5.6	
Wen 3701	60	U	N	N	1	NA	4	—	5.5	
Black & Decker PS610T	59	U	Y	N	3/5	NA	9.6V	VP	2.6	Cordless.
Makita 4307DW	194	WU	Y	N	9/16	0 - 2,200	7.2V	—	3.1	Cordless.
Metabo EP140	339	B, U	Y	Y	5/8	700 - 2,500	9.6V	—	3.9	Cordless.

Portable Jigsaws



Ryobi JSO45



Skil 4345

KEY: Blade Mount Type: B = bayonet, H = hook, U = universal, WU = wide universal. Dust Collection: CB = chip blower, DB = dust bag, VP = vacuum port. — = not applicable. NA = information not available. *Has quick-change feature.

See page 136 for listing of manufacturers.

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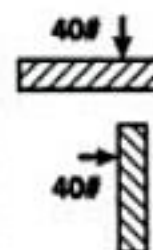
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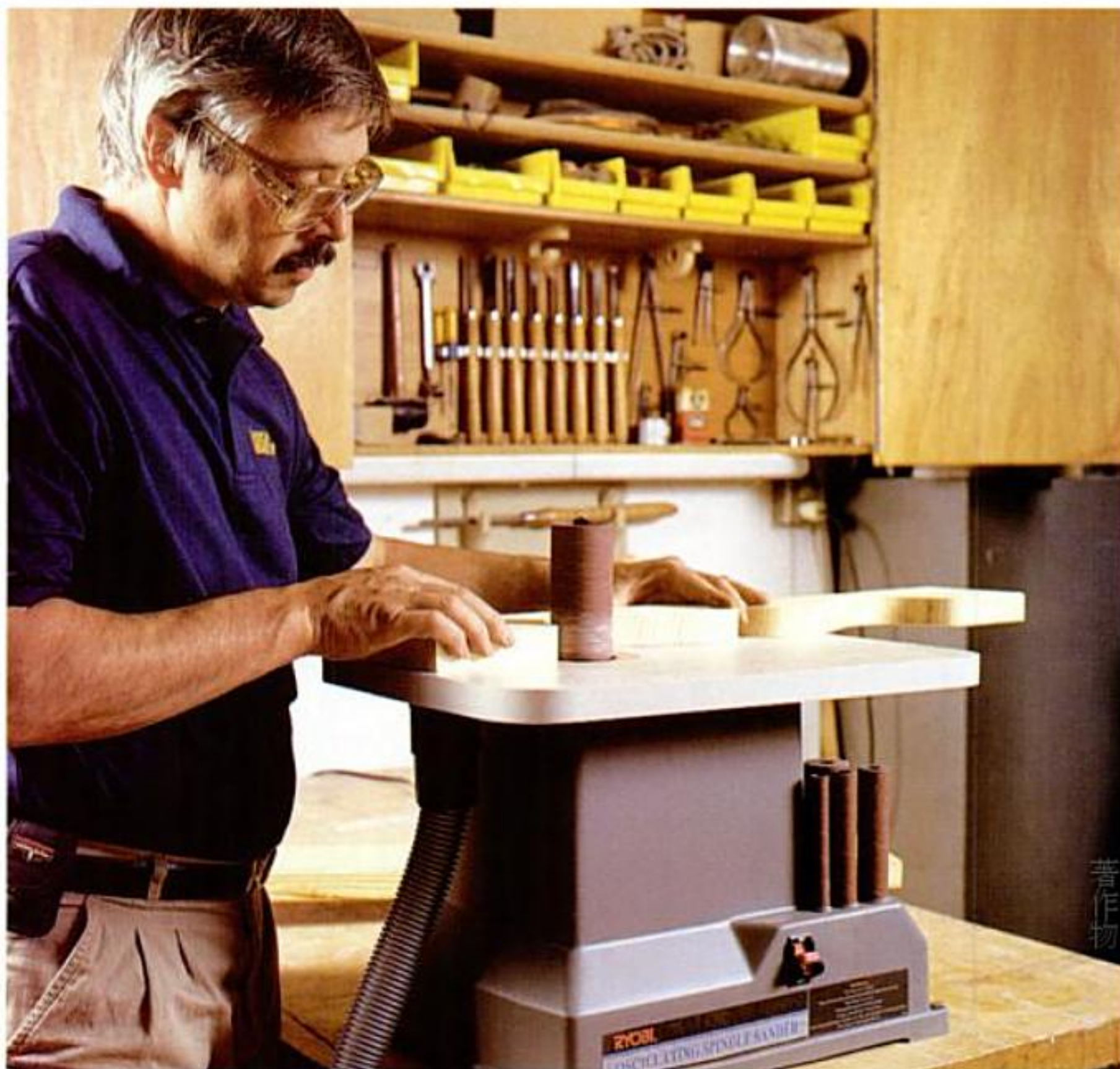
READER SERVICE NO. 67

Oscillating Spindle Sanders

Nothing beats an oscillating spindle sander (OSS) for sanding curves and contoured shapes. The secret is dual motion: The sanding drum moves up and down as it spins. Compared to a sanding drum in your drill press, an OSS removes stock faster and produces a scratch-free finish with much less clogging.

An OSS consists of a work table, a motor, a vertical sanding drum, and a mechanism that produces the up-and-down motion. Included are rubber drums of various diameters that hold matching sanding sleeves. Most machines have table inserts to support the workpiece close to the drum.

While the size and cost of these sanders once relegated them to commercial shops, a new generation of machines has been designed and priced for any size workshop.



Up, down and around. These dual-motion sanding machines have what it takes to handle all kinds of curves.

3 Types of sanders



Benchtop sanders

Although these models are designed to be stowed out of the way when they're not needed, some of the larger units will need permanent spots in your shop. Benchtop sanders have more than enough power to tackle most sanding chores.

Floor-model sanders

These heavy-duty units are designed for the rigors of everyday use. Their advantages are their power, large tables and sturdiness.



Conversion jigs

These add oscillating action to your drill press without taking up additional shop space. An advantage to these models is that they can change sanding speeds and stroke lengths to match different sanding jobs.



FEATURES *to consider*



Tilt-top table. To smooth beveled edges, you'll have a much easier time on an oscillating spindle sander that's equipped with a tilting table.

Work table

There are two table features to consider: size and tilting capability. If you need to sand large work, you'll appreciate a larger top that can support the stock while you maneuver it around the drum. As a work surface, cast iron is still tops for durability and stability.

If you frequently sand curves that are also beveled, consider buying an oscillating spindle sander with a tilting table. The Enlon, Grizzly, Powermatic and Vega machines all have tilting tables, which make it much easier to sand bevels and chamfers. (See photo, above left.)



So long, sawdust. Hook up your shop vacuum to the built-in dust collection port. Larger machines have ports sized for dust-collector fittings.

Motor type

Although all of the oscillating spindle sanders have sufficient power for most sanding operations, you can expect longer life and quieter operation from induction-type motors than from universal motors.

Dust collection

These sanders produce a lot of sawdust, but you can capture most of it with a shop vacuum or dust collector. Larger machines have dust ports sized for dust-collector hookup. The Vega is the only machine not equipped with a dust port.

Spindles, drums and sleeves

All oscillating spindle sanders come with different sizes of drums and matching abrasive sleeves. Check the "Drum Dia." column in the chart on page 92. The wider your selection of drum diameters, the easier it is to sand a variety of curves.

The ability to switch drum sizes and sanding sleeves easily is important. Sanding drums are generally easier to change than spindles. (See photo, below.)

Drum length is also a consideration. If you plan on sanding thick stock, choose a machine with longer drum length. Otherwise, drum length in the 2½-in. to 5-in. range should be fine.



Different drums. Mounting schemes vary for different machines. Sanding drums are the easiest to change (top and bottom at left). The Enlon and Vega machines have separate spindles for each drum size (top and bottom at right). The Powermatic has a mix of spindles and drums (bottom center).

FOR MORE INFO

Check out the detailed test results in our "Buyer's Guide to Oscillating Spindle Sanders," AW #40 (October 1994).

Oscillating Spindle Sanders



Powermatic 14



Ryobi OSS450



Clayton 106



Enlon EN-3407

Brand & Model	List Price	Motor HP	Drum Length (in.)	Stroke Length (in.)	Drum Dia. (in.)*	Table Size & Tilt (in. x in., ° up, ° down)	Table Material	Volts	Amps	Weight (lbs.)	Comments & Features
Clayton 140-X	\$540	—	4 1/2	3/4	1/2, 3/4, 2, 3 1, 1 1/4, 1 1/2, 2 1/4, 2 1/2	14 x 21, 0	ST	—	—	60	No motor included.
Clayton 146-X	600	—	9	3/4	3/4, 1, 2, 3 1 1/4, 1 1/2, 2 1/4, 2 1/2	14 x 21, 0	ST	—	—	60	No motor included; pneum. drums avail.
Vega OS-3	349	1/4	3	3/4	1/2, 1, 2	12 x 16, 45, 10	PL	115	5.5	44	
Clayton 140	625	1/2	4 1/2	3/4	1/2, 3/4, 2, 3 1, 1 1/4, 1 1/2, 2 1/4, 2 1/2	14 x 21, 0	ST	115	7.6	75	
Clayton 140-H	637	1/2	4 1/2	3/4	1/2, 3/4, 2, 3 1, 1 1/4, 1 1/2, 2 1/4, 2 1/2	14 x 21, 0	ST	230	3.8	75	
Clayton 140-HP	718	1/2	4 1/2	3/4	1/2, 3/4, 2, 3 1, 1 1/4, 1 1/2, 2 1/4, 2 1/2	14 x 21, 0	ST	230	3.8	75	Power interrupt.
Clayton 140-P	706	1/2	4 1/2	3/4	1/2, 3/4, 2, 3 1, 1 1/4, 1 1/2, 2 1/4, 2 1/2	14 x 21, 0	ST	115	7.6	75	Power interrupt.
Clayton 146	685	1/2	9	3/4	3/4, 1, 2, 3 1 1/4, 1 1/2, 2 1/4, 2 1/2	14 x 21, 0	ST	115	7.6	75	Pneumatic drums available.
Clayton 146-H	697	1/2	9	3/4	3/4, 1, 2, 3 1 1/4, 1 1/2, 2 1/4, 2 1/2	14 x 21, 0	ST	230	3.8	75	Pneumatic drums available.
Clayton 146-HP	778	1/2	9	3/4	3/4, 1, 2, 3 1 1/4, 1 1/2, 2 1/4, 2 1/2	14 x 21, 0	ST	230	3.8	75	Power interrupt; pneum. drums avail.
Clayton 146-P	766	1/2	9	3/4	3/4, 1, 2, 3 1 1/4, 1 1/2, 2 1/4, 2 1/2	14 x 21, 0	ST	115	7.6	75	Power interrupt; pneum. drums avail.
Craftsman 22590	150	1/2	4 1/2	3/4	1/2, 2 3/4, 1, 1 1/2, 3	20 x 20, 0	PL	115	3.2	40	Dust port, drum rack.
Powermatic 14	398	1/2	5 1/2	7/8	1/4, 1/2, 5/8, 1 1/2, 2 3	14 3/4 x 14 3/4, 0, 45	CI	115	5	77	Dust-collection shroud.
Ryobi OSS450	200	1/2	4 1/2	5/8	1/2, 1 3/4, 1 1/2, 2, 3	14 x 20, 0	PL	115	3.5	26	Drum rack.
Clayton 100-X	700	—	4 1/2	3/4	1/2, 3/4, 2, 3 1, 1 1/4, 1 1/2, 2 1/4, 2 1/2	17 x 21, 0	ST	—	—	85	No motor included.
Clayton 106-X	760	—	9	3/4	3/4, 1, 2, 3 1 1/4, 1 1/2, 2 1/4, 2 1/2	17 x 21, 0	ST	—	—	85	No motor included; pneum. drums avail.
Clayton 100	785	1/2	4 1/2	3/4	1/2, 3/4, 2, 3 1, 1 1/4, 1 1/2, 2 1/4, 2 1/2	17 x 21, 0	ST	115	7.6	100	
Clayton 100-H	797	1/2	4 1/2	3/4	1/2, 3/4, 2, 3 1, 1 1/4, 1 1/2, 2 1/4, 2 1/2	17 x 21, 0	ST	230	3.8	100	
Clayton 100-HP	878	1/2	4 1/2	3/4	1/2, 3/4, 2, 3 1, 1 1/4, 1 1/2, 2 1/4, 2 1/2	17 x 21, 0	ST	230	3.8	100	Power interrupt.
Clayton 100-P	866	1/2	4 1/2	3/4	1/2, 3/4, 2, 3 1, 1 1/4, 1 1/2, 2 1/4, 2 1/2	17 x 21, 0	ST	115	7.6	100	Power interrupt.
Clayton 106	845	1/2	9	3/4	3/4, 1, 2, 3 1 1/4, 1 1/2, 2 1/4, 2 1/2	17 x 21, 0	ST	115	7.6	100	Pneumatic drums available.
Clayton 106-H	857	1/2	9	3/4	3/4, 1, 2, 3 1 1/4, 1 1/2, 2 1/4, 2 1/2	17 x 21, 0	ST	230	3.8	100	Pneumatic drums available.
Clayton 106-HP	938	1/2	9	3/4	3/4, 1, 2, 3 1 1/4, 1 1/2, 2 1/4, 2 1/2	17 x 21, 0	ST	230	3.8	100	Power interrupt; pneum. drums avail.
Clayton 106-P	926	1/2	9	3/4	3/4, 1, 2, 3 1 1/4, 1 1/2, 2 1/4, 2 1/2	17 x 21, 0	ST	115	7.6	100	Power interrupt; pneum. drums avail.
Crouch 290-4.5	845	1/2	4 1/2	3/4	3/4, 1, 2, 3	21 x 17, 0	ST	115	9	98	Drum rack, 16 sanding sleeves.
Crouch 290-9	895	1/2	9	3/4	3/4, 1, 2, 3	21 x 17, 0	ST	115	9	100	Drum rack, 16 sanding sleeves.
Enlon EN-3407	565	1	5, 6, 9	1 1/2	1/4, 3/8, 1/2, 5/8, 3/4, 1, 1 1/2, 2, 3, 4	24 x 24, 30, 45	CI	115/ 230	14/ 7	340	4-in. dust port; drum rack.
Grizzly G1071	495	1	5, 6, 9	1 1/2	1/4, 3/8, 1/2, 5/8, 3/4, 1, 1 1/2, 2, 3, 4	24 1/2 x 24 1/2, 45, 20	CI	115/ 230	12.6	325	10 spindles.
Delta 17-960	109	—	2 1/2	3/4	1/2, 3/4, 1, 1 1/2	8 1/2 x 8 1/2, 0	PL	—	—	5.5	Conversion jig for drill press.
G.P. Designs	169	—	Adj. 1/8 - 3/4	Adj.	—	—	ST	115	1	10	Conversion jig for drill press.

BENCHTOP

FLOOR MODELS

JIGS

See page 136 for listing of manufacturers.

KEY: Table Material: CI = cast iron, PL = plastic laminate, ST = steel, — = not applicable, NA = information not available. *Standard drum diameters are listed in bold; optional drum diameters are in plain type.



Radial-Arm Saws

A mainstay machine in many a shop, the radial-arm saw can do the same work as the tablesaw; it just does it in a different way. The radial-arm saw excels at crosscutting or mitering long or unwieldy stock, since the stock rests on the table while the blade is pulled through it.

When used to rip boards, the blade of the saw remains stationary, fixed parallel to the fence that guides the workpiece. Depending on the cutters chucked on its arbor, a radial-arm saw can also cut dadoes, rabbets, and various molding profiles.

The size of a radial-arm saw denotes the largest diameter blade it can use. With larger blades, you get greater depth-of-cut. Radial-arm saws vary in size from 8¼-in. benchtop models to 14-in. industrial saws that weigh a quarter-ton. But 10-in. saws are the most popular.



Radial revolution. The radial-arm saw is ideal for crosscutting or mitering large stock. With the right accessories, it can be a versatile tool for dimensioning and shaping wood.

3 Types of radial-arm saws

Single-arm saws

This type of radial-arm saw has a single long arm that pivots and adjusts up and



down from the back column. All benchtop radial-arm saws qualify as single-arm saws. (See Features.) Among stationary radial-arm saws, single-arm models are more common than double-arm or "turret" saws. They're also less expensive than double-arm models.

Simpler in design and usually easier to tune and align than double-arm models, single-arm saws have one important limitation. When the arm is pivoted in order to make a left-hand miter cut, the motor often overreaches the table. If you don't make a lot of miter cuts in wide stock, you should do fine with a single-arm saw.



Double-arm saws

If you plan to make a lot of miter cuts, you'll want a double-arm or "turret" saw. The saw's lower arm rotates 360° above the work table, so you have full table capacity for both left- and right-hand miters. Delta offers several double-arm models.

FEATURES *to consider*

Safety

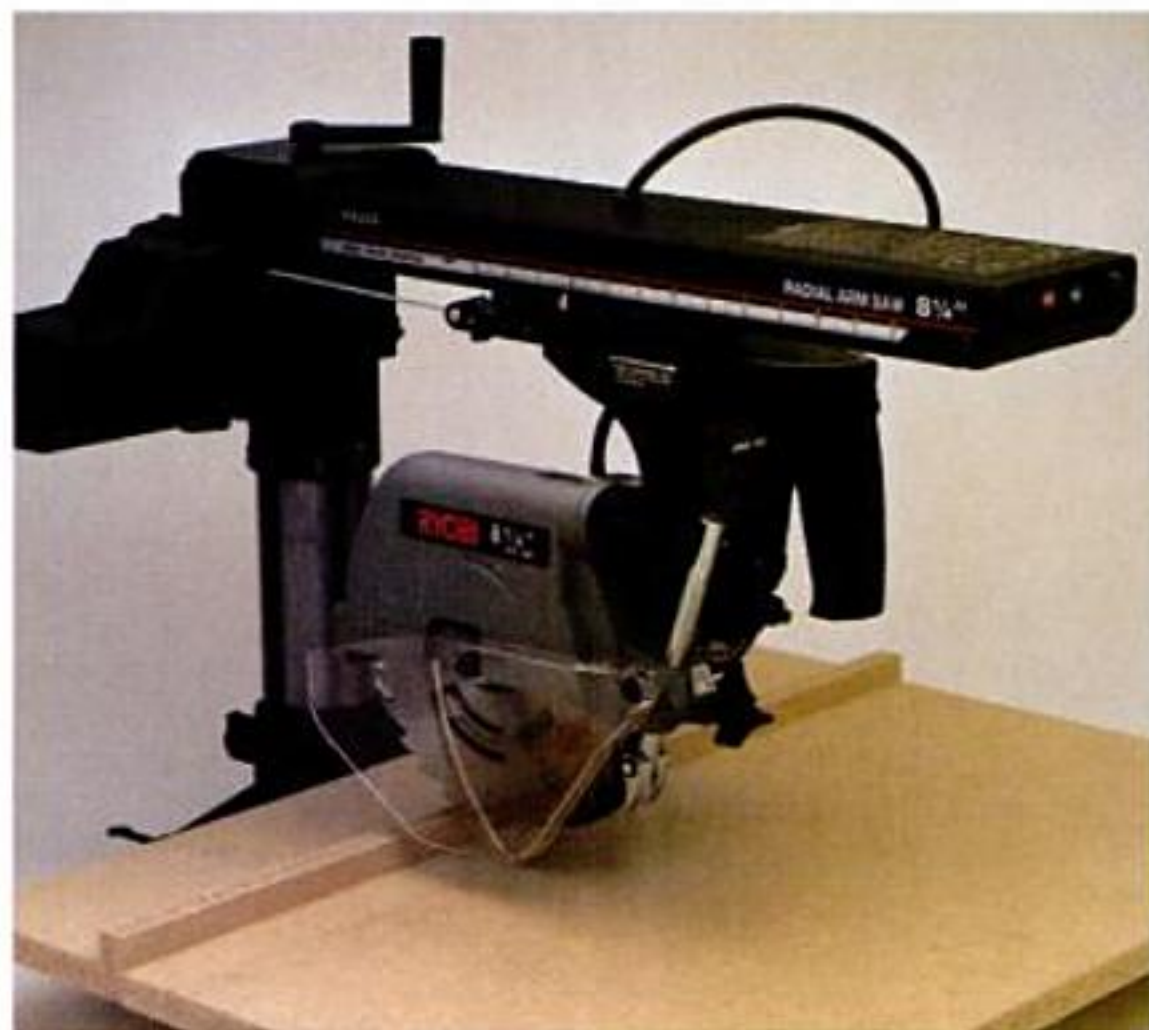
Safety features are important on any radial-arm saw because of the saw blade's tendency to pull itself into the work during crosscutting operations. When you're shopping for a radial-arm saw, look for anti-kickback pawls, a magnetic switch and a blade brake. Some manufacturers have incorporated additional safety features. (See photos, below.)

Size

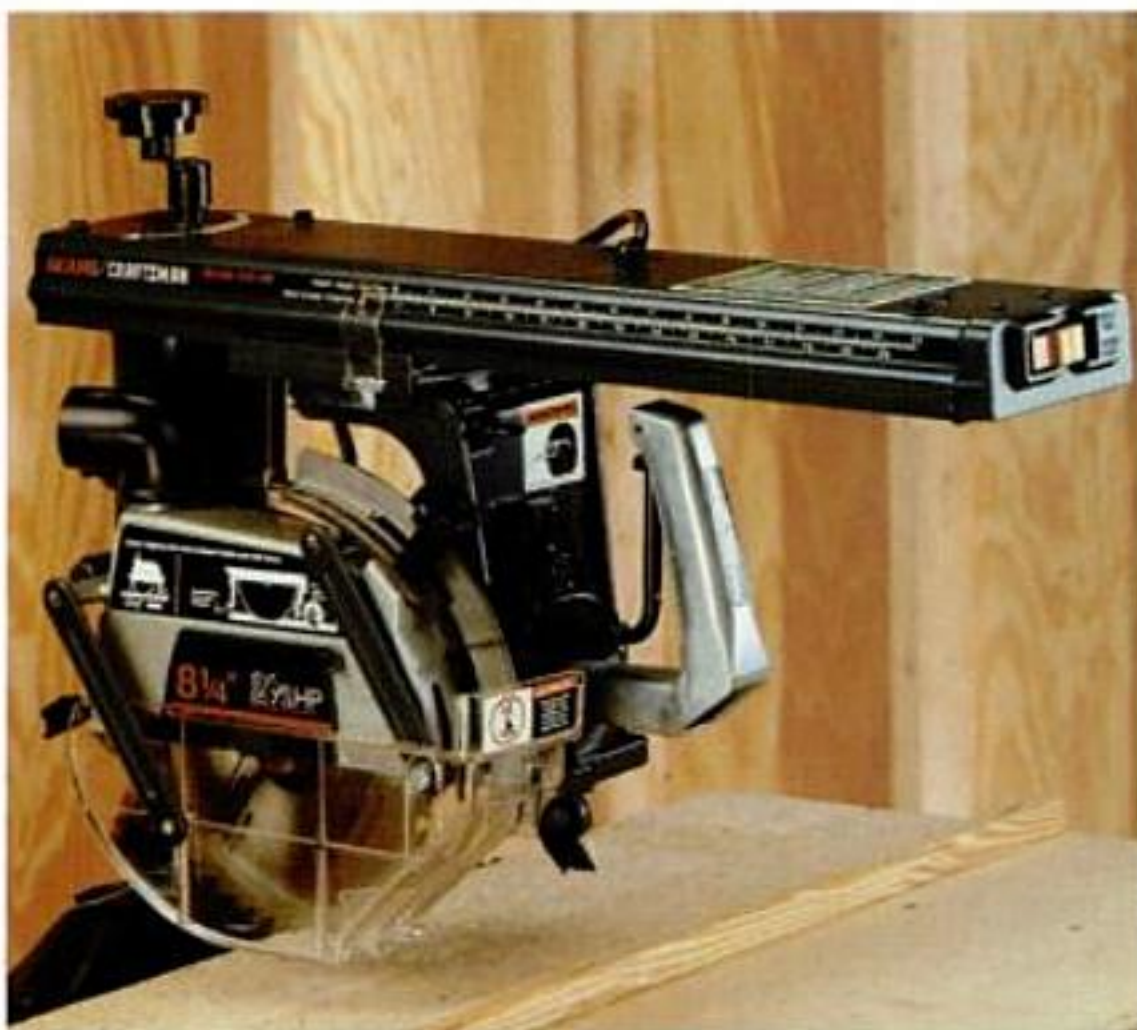
Specifications for crosscut capacity and cutting depth are listed in the chart on page 96. A 10-in. or 12-in. saw will suffice for general-purpose use.

The benchtop option

Lighter and more compact than a floor model, a benchtop saw makes sense if you have limited shop space.



Climb-cut control. Ryobi's RA202 benchtop saw has a carriage advance control that helps prevent self-feeding and also retracts the motor and blade after each cut.



Safety lock. The guard mechanism on this Craftsman saw locks the blade behind the fence until you trigger the release lever on the handle.

OPTIONS *worth having*

Low-hook-angle blades.

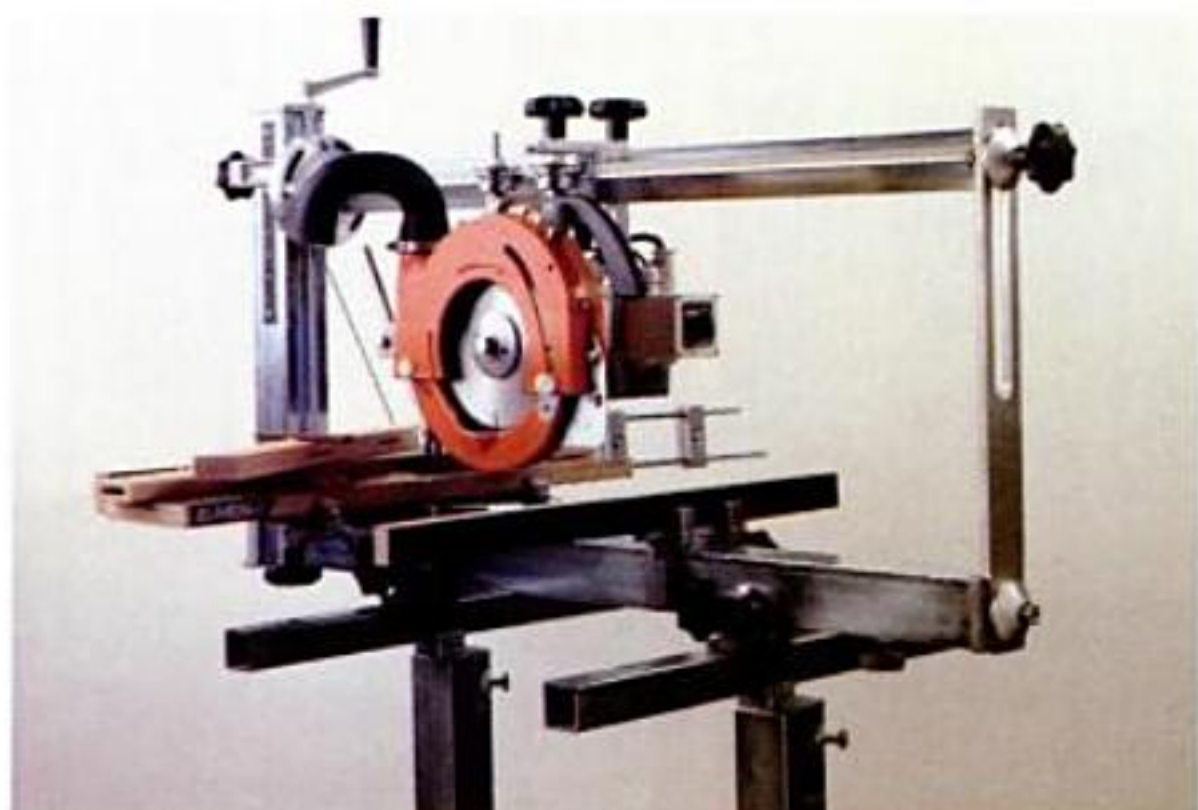
Blade manufacturers offer safety-engineered blades specifically for radial-arm saws. These low-hook or negative-hook blades are not only less prone to self-feeding; they also produce very clean cuts.

Dado head. With this accessory, you can cut tenons, rabbets and grooves in addition to dados.

Molding head and guard. With a molding head and a selection of molding knives, you'll be able to mill a variety of profiles.

Fence stops. Fence stops are a must for repetitive cutting jobs. They enable you to make multiple cuts without having to remeasure. You can buy aftermarket fence stops or make your own.

Sanding discs and spindles. Replace the blade with a sanding disc and you have an effective disc sander. Use sanding spindles to smooth curves and contours. Depending on your saw, spindles mount either onto the blade arbor, or onto an auxiliary arbor opposite the blade arbor.



Closed-frame saws

Rigidity is the main advantage of a closed-frame saw. The arm holding the motor is supported by the column at the back of the saw and by a

vertical bar on the front. Also, the table pivots instead of the arm. This design is a better choice for production operations than for general use. Eumonia makes two models.

Radial-Arm Saws



Craftsman 23480



General V-154

See page 136
for listing of manufacturers.

	Brand & Model	List Price	Blade Dia. (in.)	Saw Type	Crosscut Cpy. (in.)	Cutting Depth (in.) @ 90°	Table W x D (in.)	HP	Volts	Amps	Dust Coll. Port	Weight (lbs.)	Comments & Features
BENCHTOP	Craftsman 23480	\$350	8 1/4	SA	12 1/2	2 3/4	30 x 21 1/2	NA	115	13	Y	76	
	Ryobi RA202	450	8 1/4	SA	10 13/16	2 1/8	21 3/8 x 27 1/2	NA	115	12.5	Y	65	Carriage advance control.
	Eumenia 810	625	8 1/2	CF	12	2	—	3/4	115	9	Y	68	Plunging router attachment.
	Eumenia 811	765	8 1/2	CF	24	2	—	3/4	115	9	Y	70	Plunging router attachment.
FLOOR MODELS	Craftsman 19633	500	10	SA	15 1/2	3	40 x 27	1 1/2	115/230	12/6	N	181	Replaceable carriage tracks.
	Craftsman 19642	600	10	SA	15 1/2	3	40 x 27	1 1/2	115/230	13/6.5	N	192	Replaceable carriage tracks.
	Delta 33-990 Deluxe	885	10	DA	12 3/4	3	42 x 24 3/4	1 1/2	115/230	16/8	Y	178	Blade brake.
	Delta 33-890	1,903	12	DA	14 3/8	4	25 1/2 x 30	2	230	20/10	Y	300	Unique turret arm rotates 360°.
	Lobo RS-612	1,290	12	SA	13 1/2	3 1/2	32 1/2 x 23	2	115	20	Y	176	1-piece cast-iron arm.
	Transpower RS415	1,200	12	SA	20 1/8	4	31 7/8 x 26	3	230	18	Y	385	
	Mini Max RS-25	3,670	13 3/4	SA	25 1/4	4	45 x 30 1/2	3	230	15	Y	482	Replaceable guide ways.
	Delta 33-400	4,502	14	DA	29	4	44 x 36 1/2	3	230	17	Y	725	Unique turret arm.
	Delta 33-401	4,340	14	DA	29	4	44 x 36 1/2	5	230/460	13.2/6.6	Y	725	Unique turret arm.
	General V-154	3,400	14	SA	25	4 5/8	28 1/2 x 41 1/2	3	230	12	OPT	550	Replaceable carriage tracks.
	Lobo RS-640	1,990	14	SA	21 1/2	4 3/4	44 x 33 3/4	4	230	12	Y	374	Automatic carriage return.
	North State RS420	2,300	14	SA	27 3/4	4 1/2	46 x 35	5	230	20	Y	500	Replaceable carriage tracks.
	The Original 3531	3,968	14	SA	16	4 1/8	46 x 33	3	230	18	Y	475	Automatic brake and carriage return.
	The Original 3531-03	4,100	14	SA	16	4 1/8	46 x 33	5	230/460	13/6.5	Y	475	Automatic brake and carriage return.
	The Original 3536	4,174	14	SA	24	4 1/8	46 x 33	3	230	18	Y	495	Automatic brake and carriage return.
	The Original 3536-03	4,305	14	SA	24	4 1/8	46 x 33	5	230/460	13/6.5	Y	495	Automatic brake and carriage return.

KEY: Saw Type: SA = single-arm, DA = double-arm, CF = closed-frame. — = not applicable. OPT = optional.



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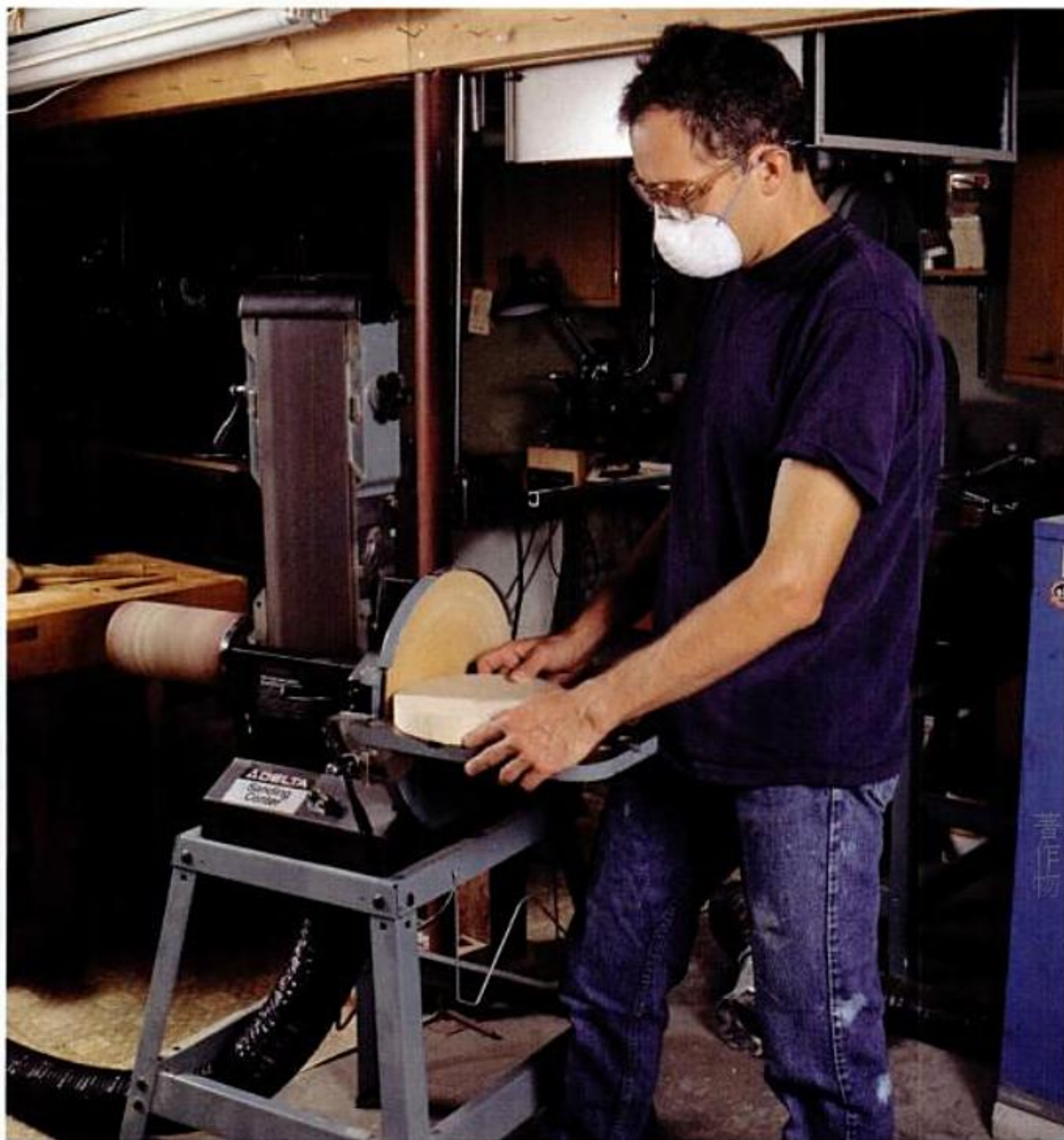
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READER SERVICE NO. 60

6" x 48" Belt-Disc Sanders

It's difficult to appreciate the usefulness of a combination belt-disc sander until you've put one to work. The abrasive belt does a great job of sanding flat and convex surfaces. Hold the workpiece against the belt where it passes over the roller and you can even sand concave forms. In addition to shaping wood on the abrasive belt, many woodworkers use it to grind chisels, plane irons and turning tools. *(Fire hazard: Before grinding metal, always vacuum up nearby sawdust and disconnect the machine from any dust-collection system.)*

With the abrasive disc, you can square up edges and sand angles quickly and precisely. Tilting the table allows you to sand compound angles. You can even sand circles on the disc sander if you fix a pivot point on the table.



Abrasive power. Belt-disc sanders can take on a multitude of shaping and smoothing tasks. Above, Delta's Sanding Center (31-280) features circle- and drum-sanding attachments.

2 Types of belt-disc sanders

Benchtop sanders

Some 6-in. by 48-in. belt-disc sanders are sold without a stand. However, they don't



qualify as *true* benchtop tools—lightweight, inexpensive and portable. Most “benchtop” belt sanders weigh, cost and perform the same as floor-model machines. The primary difference with these tools is the lack of a metal stand and the need to bolt the sander firmly to a secure surface.

With both benchtop and floor-model belt-disc sanders, dust collection is a must.

Floor-model sanders

Models with 1-HP or larger motors are the best choice for heavy-duty production work. Disc sizes range from 9 in. to 16 in. dia. Abrasive belts can be used either horizontally or vertically.



FEATURES *to consider*

Size

With the exception of the General 100-5, all the machines listed in the chart on page 100 have sanding belts that are 6 in. wide by 48 in. long. Disc diameters vary from 6 in. to 16 in. Larger discs allow you to sand greater surface areas; but even on a large (12-in.-dia.) disc, the effective sanding area will be slightly less than half the total disc area.

Speed

Faster isn't necessarily better with these machines. With higher disc or belt speed, there's greater risk of leaving burn marks on the wood.

Tables

Some of the less expensive belt-disc sanders have a single table that must be switched back and forth to serve either the belt or the disc. It's much more convenient to have a table dedicated to each sander. Look for cast-iron tables that are machined flat. (See photos, below.) The disc sander's table should have a miter groove.

The semicircular under-table supports, called *trunnions*, are just as important as the tables themselves. Trunnions allow you to tilt the table for sanding at an angle to the belt

or disc. Cast trunnions usually offer more solid support than sheet-metal trunnions. A pair of trunnions is better than a single trunnion.

Belt tracking

Every belt-disc sander has an adjustment knob to keep the sanding belt tracking accurately. Not all models have a tracking lock mechanism, however. The track lock feature helps to keep the belt from drifting off track as the sander is being used.

Dust collection

Belt-disc sanders generate plenty of dust. However, not all machines have dust-collection ports. If you plan on doing a lot of sanding, buy a sander with a dust port and hook the tool up to a central dust collector.

Belt position

On some models, it's possible to adjust the belt sander's orientation from horizontal to vertical, or to different angles in between. (See right photo, below.) This adjustment capability can be an advantage if you're working on large or odd-shaped pieces.



Table manners. On a good-quality belt-disc sander, well-machined cast tables and trunnions provide solid support for sanding at a variety of angles.



Casting call. A look at the underside of a good-quality disc-sander table reveals reinforcing ribs that provide extra strength and durability.



Angling the belt. With some belt-disc sanders, you can work with the belt adjusted between horizontal and vertical positions.

6" x 48" Belt-Disc Sanders



Enlon EN-SN69



Penn State S69-Q

See page 136 for listing of manufacturers.

	Brand & Model	List Price	Disc Diameter (in.)	Disc Speed (rpm)	Belt Speed (ft./min.)	HP	Volts	Dust Collection Port	Weight (lbs.)	Comments & Features
BENCHTOP	Craftsman 22653	\$120	6	3,200	2,000	1/3	115	Y	44	Cast-iron base.
	Powermatic 83	585	10	2,000	2,500	3/4	115/230	Y	120	
	Grizzly G1183	395	12	3,450	5,000	1	115/230	Y	160	
	Sunhill SB-12	449	12	1,750	2,925	1	115/230	N	160	
	Transpower VH120	450	12	2,800	2,800	2	115/230	N	275	
FLOOR MODELS	Belsaw MC-6/98D	451	9	1,725	2,100	3/4	115/230	N	106	
	Bridgewood BW-SB9	329	9	1,725	1,356	3/4	115	Y	130	1 work table for belt or disc.
	Craftsman 22594	350	9	2,760	2,700	3/4	115	Y	133	
	Enlon EN-SN69	190	9	1,975	2,100	3/4	115	N	110	1 work table for belt or disc.
	Grizzly G1014	195	9	1,720	2,323	3/4	115/230	N	114	
	JET JSG-96	459	9	1,725	1,525	3/4	115/230	Y	119	
	Lobo SD-0069	229	9	1,725	1,356	3/4	115	OPT	130	Micro-adjustment for tracking belt.
	Penn State S69-Q	230	9	1,720	1,800	3/4	115/230	Y	110	
	Reliant DD79	180	9	3,450	2,100	3/4	115/230	N	115	1 work table for belt or disc.
	Transpower SD650	185	9	2,700	1,750	1	115	N	135	
	Woodtek 814253	269	9	1,725	2,100	3/4	115/230	Y	131	Fence stop.
	Delta 31-280	923	12	2,500	1,971	1 1/2	115/230	Y	182	Many optional accessories.
	Delta 31-730	1,049	12	2,100	3,030	1 1/2	115/230	N	158	Enclosed stand optional.
	JET JSG-6	809	12	1,725	2,500	1 1/2	115/230	Y	150	
	Lobo SD-0612	469	12	1,800	2,323	1 1/2	115/230	Y	170	Enclosed stand.
	Powermatic 31	1,603	12	2,400	2,850	1 1/2	115/230	Y	308	Belt adjusts to 4 positions.
	Reliant DD126	399	12	2,000	1,576	1 1/2	115	Y	145	2 tables, miter gauge.
	General 100-5*	1,965	16	1,800	3,700	2	230	Y	640	Drum sanding optional.

KEY: OPT = optional. *60-in. belt.

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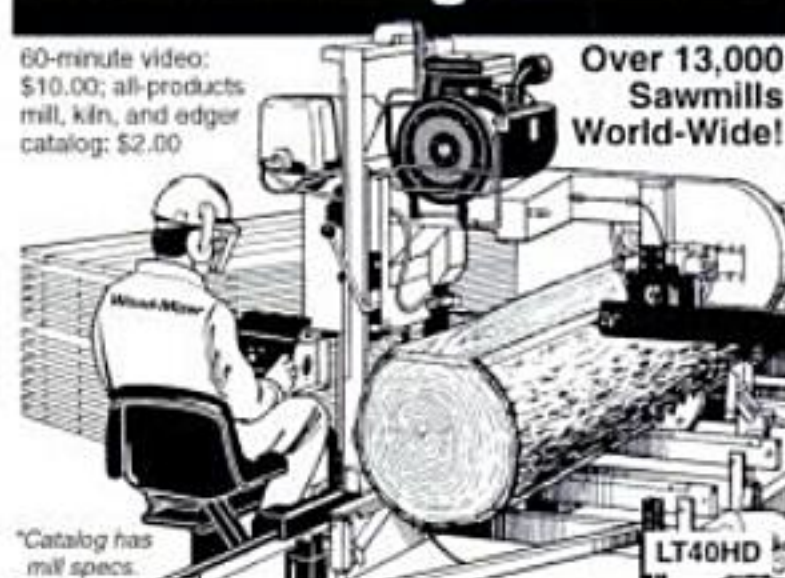
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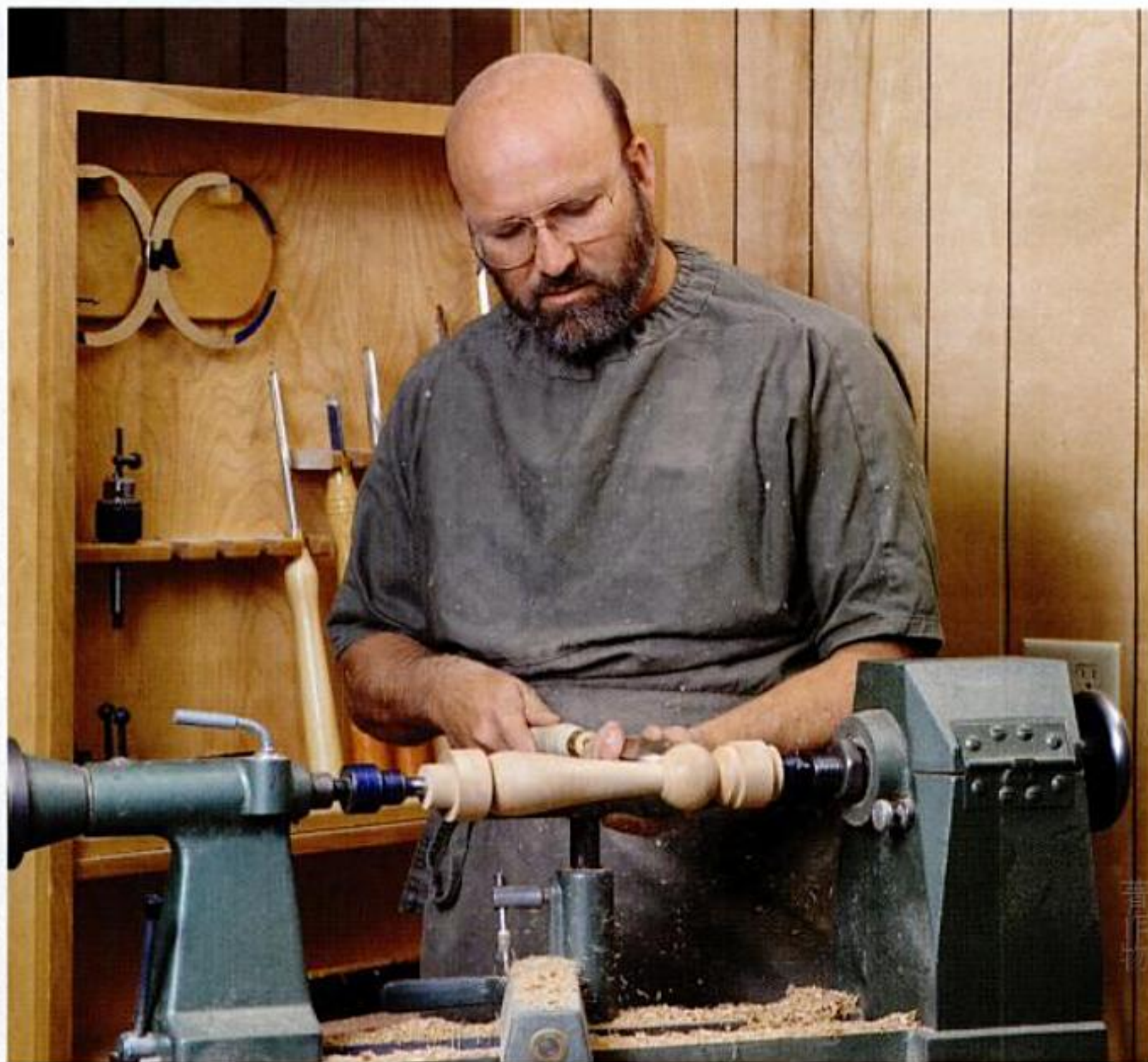
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Lathes

Spin some wood on a lathe, hold a sharp chisel to the wood, and a form develops in seconds. This simplicity and speed draws many woodworkers to the wood lathe. With a lathe, you can create three-dimensional shapes not possible with other machines—from turned table legs to bowls and candlesticks.

The lathe is a fairly simple machine. The workpiece spins between a motor-driven *headstock* and (for spindle turning) a *tailstock*. The headstock is fixed on the lathe bed; the tailstock can be adjusted along the bed according to the length of the work.

A lathe's size is designated by the *swing*, the maximum diameter of work it will handle. *Length* refers to the distance between centers, the longest stock the tool will hold between the headstock and the tailstock.



Fast and fun. With a lathe you can quickly turn out an array of round wooden objects, from bowls to table legs and chair parts.

3 Types of lathes

Benchtop lathes

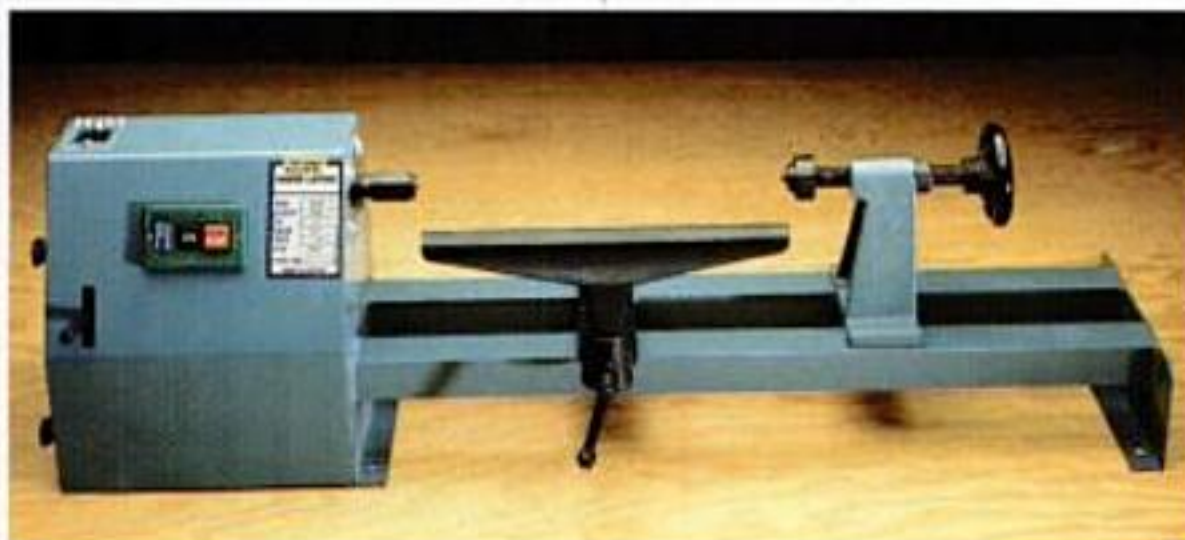
Less expensive than stationary models, benchtop lathes have smaller capacities and less stability than their big brothers. This makes them a good choice for light spindle work and other small jobs. Because of their lighter

weight, benchtop lathes should be bolted securely to a sturdy workbench or base to dampen vibration. If you plan to do turning work only occasionally, and if limited space and lower cost are important, a benchtop lathe could be the right choice.



Floor-model lathes

These lathes are favored by serious turners. The key advantages here are stability and increased capacity. Sturdier than their benchtop counterparts, floor models reduce or eliminate the vibration that makes clean cutting impossible.



FEATURES *to consider*

Spindles

Tapered spindles are best for durability and versatility. These tapers are hollow to accept various centers that hold the workpiece. Look for a headstock and tailstock with a No. 2 Morse taper. In most cases, you're better off with a standard headstock spindle size—either 1 in. dia. by 8 threads per in. (tpi), 1 in. dia. by 12 tpi, or 1 1/4 in. dia. by 8 tpi. These common spindle sizes accept the widest range of accessories, such as drive centers, live centers and chucks.

Weight

Weight is an advantage in a lathe because it dampens vibration and promotes stability. Look for cast-iron components and (in floor models) a stand of heavy-gauge steel.

Speed and drive systems

For general turning, get a machine with a range of speeds from 400 rpm or slower (for large work such as bowls) to 2,500 rpm (for spindle work).

Drive systems are available in three versions: step-pulleys, mechanical variable speed, and electronic variable speed. Step-pulleys are simple and foolproof. To change speeds, you stop the motor and reposition the belt to fit around a different pair of pulleys. With step-pulley drive, you're limited to a few fixed speeds. These drives are best for spindle turning and small faceplate work.

Mechanical variable speed systems, or *Reeves drives*, have infinite speeds within the tool's range. To vary the speed, you turn a crank or lever while the lathe is running. While variable speed is an advantage with a Reeves drive, the low speeds can still be too fast for turning large work like bowls. And changing speeds only when the machine is running can present safety problems.

Electronic variable speed (EVS) offers the most control and convenience for all kinds of turning work. EVS control allows infinite speed adjustment within the tool's range, at the simple turn of a knob. These direct-current or "DC" drives are expensive, but low-speed torque is excellent—a great advantage when turning large objects. And some models offer reversible spindle direction. (For more information on DC drives, see AW #34.)

Power

A 1-HP motor will do well for general-purpose use; for large work, look for a motor in the 1 1/2-HP to 2-HP range.

Swiveling headstocks

Some lathes have headstocks that swivel for outboard turning while still using the standard tool-rest system, allowing you to turn larger-diameter work.

Spindle locks and indexing features

Lathes with locking spindles make it easier to remove faceplates and chucks. Indexing heads let you lock the headstock in graduated increments for laying out flutes, spirals and other decorative work.



Indexing head. An indexing pin (on left end of housing) allows you to lay out turnings in equal increments for decorative work.

Specialty lathes

Bowl lathes are no-bed or short-bed models designed for faceplate turning of large-diameter work. Since they can't handle long spindles, bowl lathes aren't good for general-purpose work.



Miniature lathes are bench-top machines designed to hold small-scale work. Better models offer the precision and stability necessary for exacting miniature work.

Copy or "duplicator" lathes are designed for pro-

duction work where many duplicates of a part need to be produced as quickly and efficiently as possible. While copy lathes are excellent for their designed function, they usually fall short for general-purpose turning.

OPTIONS *worth having*

Live center for tailstock.

This spinning center prevents burning the tailstock end of your workpiece.

Jacobs-type drill chuck.

This three-jaw chuck can hold drill bits for horizontal boring.

Screw chuck.

The deep threads on this chuck secure faceplate work.

Three- or four-jaw chuck.

Adjustable jaws grip a variety of diameters for faceplate work.

Lathes



Grizzly G1025



Delta Top-Turn 46-860



Klein Mini-Lathe

	Brand & Model	List Price	Capacity, Swing x Length (in.)	Spindle Dia. (in.) x tpi	Bed Type	Outboard Turning	Drive Type	Rpm	HP	Weight (lbs.)	Comments & Features
BENCHTOP	Reliant DD70	\$170	10 x 20	3/4 x 10	TS	N	SP-4	980 - 3,010	1/2	64	
	AMT 4370	246	12 x 36	3/4 x 16	CI	N	SP-5	275 - 3,065	—	100	Motor not included.
	Craftsman 22816	250	12 x 36	3/4 x 16	TS	N	SP-4	875 - 3,450	1/2	84	
	Craftsman 22836	200	12 x 36	3/4 x 16	CI	N	SP-4	875 - 3,450	1/2	50	
	Delta 46-700	534	12 x 36	1 x 8	CI	Y	RD	500 - 2,000	3/4	125	Swiveling headstock.
	Record CL1/36X15C	672	12 x 36	3/4 x 16	ST	Y	SP	1,700	1/3	152	Swiveling headstock.
	Record CL3/36	1,140	12 x 36	3/4 x 16	ST	Y	SP-5	510 - 2,400	3/4	190	Swiveling headstock.
	Bridgewood BW-1240	209	12 x 37	3/4 x 16	TS	Y	SP-5	575 - 3,580	3/4	80	
	Vega 1200	550	12 x 37	3/4 x no threads*	TS	N	SP-8	275 - 3,900	1/2	115	Reverses for sanding.
	AMT 373	94	12 x 41	3/4 x 16	TS	N	SP-3	862 - 3,450	—	40	Motor not included.
	Record CL3/48	1,252	12 x 48	3/4 x 16	ST	Y	SP-5	510 - 2,400	3/4	200	Swiveling headstock.
	Enlon EN-WL01	155	14 x 40	3/4 x 10	TS	N	SP-3	980 - 3,010	1/2	70	Tool rest/faceplate.
	Grizzly G1025	155	15 x 40	1 x 8	TS	N	SP-4	850 - 2,510	1/2	105	
	Myford Mystro	1,575	11 x 40	1 1/8 x 12	TS	Y	SP-5	420 - 2,880	3/4	210	Swiveling headstock.
	JET JWL-1236	734	12 x 34 1/2	1 x 8	CI	Y	RD	550 - 3,000	3/4	183	Swiveling headstock.
FLOOR	Woodtek 829806	999	12 x 37 1/2	1 x 8	CI	Y	RD	360 - 2,100	3/4	285	
	Delta 46-612	3,302	12 x 38	1 x 8	CI	Y	RD	340 - 3,200	1	588	
	General 160-1-M1	1,130	12 x 38	1 x 8	CI	Y	SP-4	850 - 3,500	3/4	310	
	General 160-2	1,450	12 x 38	1 x 8	CI	Y	RD	500 - 3,000	3/4	310	4-sp. pulleys available.
	General 160-2-M2	1,339	12 x 38	1 x 8	CI	Y	RD	500 - 3,000	3/4	370	
	General 260	2,025	12 x 38	1 1/4 x 8	CI	Y	SP-4	600 - 2,800	5	580	5-ft. extension bed optional.
	General 260-1	2,189	12 x 38	1 1/4 x 8	CI	Y	RD	375 - 3,300	1	630	5-ft. extension bed optional.
	General 260VD	2,519	12 x 38	1 1/4 x 8	CI	Y	ED	5 - 3,000	1	630	5-ft. extension bed optional.
	Delta 46-221	1,815	12 x 39	1 x 8	CI	Y	SP-4	915 - 3,260	3/4	305	
	Delta 46-541	2,041	12 x 39	1 x 8	CI	Y	RD	340 - 3,600	3/4	410	
	Powermatic 45	3,468	12 x 39	1 x 8	CI	Y	RD	330 - 2,100	3/4	553	4-sp. pulleys available.
	Transpower HD1500	625	14 x 39	1 x 12	CI	Y	SP-6	560 - 3,500	1	480	Sanding disc.
	Bridgewood BW-14-WL	895	14 x 40	1 x 8	CI	Y	RD	810 - 3,690	1	300	Sanding disc and table.
	Enlon EN-WL10	610	14 x 40	1 x 12	CI	Y	RD	810 - 3,690	3/4	255	Sanding disc and table.
	Grizzly G1495	625	14 x 40	1 x 12	CI	Y	RD	500 - 3,000	3/4	300	Disc and drum sander.
	Lobo CL-1140	639	14 x 40	1 x 12	CI	Y	RD	560 - 3,600	3/4	280	Sanding disc.
	Transpower CP1000	320	14 x 40	1 1/8 x 12	CI	Y	SP-3	860 - 3,096	3/4	180	Sanding disc.
	Vega 1553	1,625	15 x 53	30mm x no threads*	TS	Y	RD	320 - 3,400	1	285	Reverses for sanding.
	Vega 1596	2,500	15 x 96	30mm x no threads*	TS	Y	RD	320 - 3,400	1 1/2	380	
	Woodfast M908-V	2,575	16 x 39	1 1/4 x 8	CI	Y	ED	200 - 2,700	1	520	
	Delta Top-Turn 46-860	3,687	16 x 40	1 x 8	CI	Y	SP-5	350 - 3,000	1 1/2	410	Modular bed sections.
	Colonial Saw MVM T-1500	4,300	16 x 59	61.35mm x 2mm	ST	Y	SP-4	720 - 3,100	2	495	Manual, with reverse.
	Conover Deluxe	2,394	16 x unlim.	1 1/2 x 8	WO	Y	SP-4	600 - 2,600	1 1/2	350	Wood bed, any length.
	Conover Master Turner	2,894	16 x unlim.	1 1/2 x 8	WO	Y	ED	0 - 2,600	1 1/2	350	Wood bed, DC drive.
	Cobra	1,250	18 x 40	1 1/4 x 8	ST	N	SP-6	300 - 3,000	1	209	
	Woodfast M910-V	2,895	20 x 39	1 1/4 x 8	CI	Y	ED	250 - 2,750	1 1/2	540	
MINI	Klein Mini-Lathe	349	5 x 12	3/4 x 16	AL	N	SP-6	500 - 5,200	—	8	Motor not incl.; threading jig, duplicator available.
	Carbatec Mini-Lathe	230	6 x 12	3/4 x 16	CI	N	SP-4	800 - 3,475	—	28	Motor not included.
	Carbatec II Mini-Lathe	299	6 x 12	3/4 x 16	CI	N	ED	300 - 3,500	1/6	34	Electronic variable speed.
	Ryobi ML618	250	6 1/4 x 18	3/4 x 16	TS	Y	ED	500 - 2,500	1/6	29	Electronic variable speed.
	Record RPML300C	596	8 1/2 x 12	3/4 x 16	CI	Y	SP-3	540 - 2,400	1/3	77	Swiveling headstock.
	Vicmarc	350	9 x 12	1 x 8	CI	N	SP-5	500 - 3,600	—	48	Motor not included.

See page 136 for listing of manufacturers.

KEY: MT = Morse taper. OD = outside diameter. Bed Type: AL = aluminum, CI = cast iron, ST = steel, TS = tubular steel, WO = wood. Drive Type: ED = electronic drive, RD = Reeves drive, SP-# = step pulleys - # of speeds. — = not applicable. *Setscrew secures faceplates and chucks.

	Brand & Model	List Price	Capacity, Swing x Length (in.)	Spindle Dia. (in.) x tpi	Bed Type	Outboard Turning	Drive Type	Rpm	HP	Weight (lbs.)	Comments & Features
COPY	Colonial Saw MVM T-1500C	\$5,900	8 x 39 1/8	#4 MT on OD	ST	Y	SP-4	720 - 3,100	2	595	Manual, with reverse.
	Colonial Saw MVM T-1500CA	7,900	8 x 39 1/8	#4 MT on OD	ST	Y	SP-4	720 - 3,100	2	625	Semiautomatic, with reverse.
	Grizzly G1174	395	14 x 40	1 1/8 x 12	ST	Y	SP-3	860 - 3,096	1/2	180	Sanding disc.
	Mini Max T124	2,995	16 x 47	1 x #2 MT	TS	Y	SP-4	680 - 3,000	1	375	Copier, cutters.
BOWL	Woodfast M408-5	2,050	16 x 16	1 1/4 x 8	CI	Y	SP-5	370 - 2,700	1 1/2	385	
	Woodfast M408-V	2,365	16 x 16	1 1/4 x 8	CI	Y	ED	250 - 2,750	1	450	5-sp. pulleys available.
	Vega 24 Bowl Lathe	450	24 x none	3/4 x no threads*	ST	N	SP-8	200 - 2,900	1/2	105	



Woodfast M408-5

KEY: MT = Morse taper. OD = outside diameter. Bed Type: AL = aluminum, CI = cast iron, ST = steel, TS = tubular steel, WO = wood. Drive Type: ED = electronic drive, RD = Reeves drive, SP-# = step pulleys - # of speeds. — = not applicable. *Setscrew secures faceplates and chucks.

See page 136 for listing of manufacturers.

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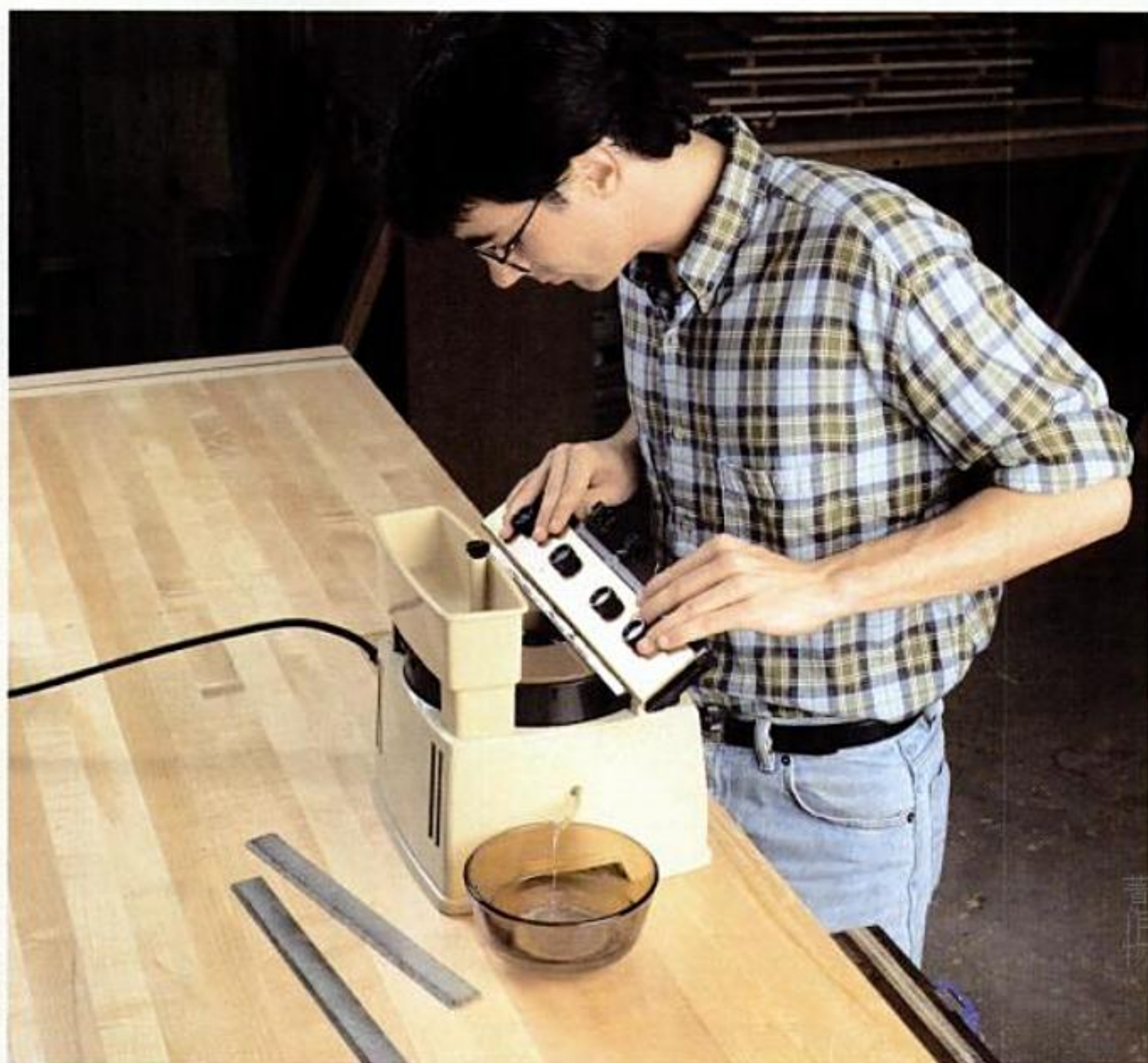
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READER SERVICE NO. 201

Water-Cooled Grinders

For chisels, plane irons, turning tools, spoke-shaves, knives and other edge tools, many woodworkers prefer water-cooled grinders, also called “wet” grinders. Unlike conventional high-speed bench grinders, the abrasive wheels on water-cooled grinders are continuously bathed in water, and they spin slowly—from 60 rpm to about 500 rpm. As a result, the wheels stay clean and tool edges don’t overheat. And water-cooled grinders are safer as well, since there’s less chance of grabbing the tool or shattering the wheel.

Water-cooled grinders are sized according to wheel diameter. The wheels’ grit sizes vary, from coarse 220 grit up to finer 1,000 grit.



Cool wheels. Water-cooled grinders won’t overheat your tool edges, and their slow speed makes them safer to use than conventional high-speed bench grinders.

2 Types of grinders

Vertical grinders



Most of these sharpening stations have two vertical wheels. The larger wheel is the “wet” one; it typically spins through a water-filled trough at around 70 rpm.

The wet stones on these grinders are made from 220-grit aluminum oxide, a fast-cutting abrasive. Finer wheels are also available for most models. (See Options.)

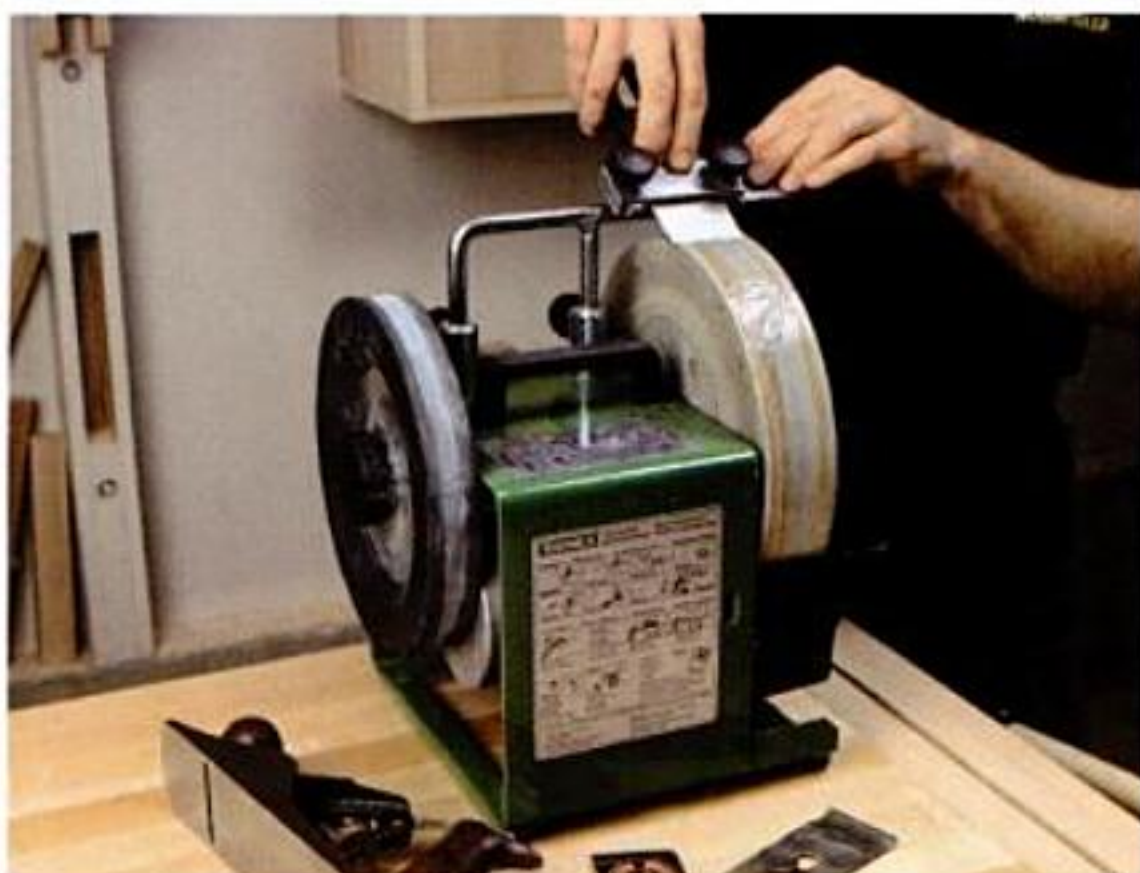
Vertical grinders produce a hollow-ground bevel on tool edges. Some woodworkers prefer to hollow-grind their edge tools.

A hollow grind produces a bevel with a concave shape; the edge is easy to hone later on because there’s less metal to remove.

The dry wheel on most vertical grinders is coarser (usually 100 grit) and smaller than the wet wheel. It also spins faster: in the 3,000-rpm range. This is the wheel to use for more aggressive metal removal—for instance, when you need to regrind a nicked tool edge quickly.

The Tormek design is unusual. This grinder has a leather stropping wheel for final polishing. (See above left photo, opposite page.)

FEATURES *to consider*



Versatile rest. The tool rest on the Tormek Super Grind 2004 accepts various sharpening jigs for tools such as planer knives, scissors and turning tools.



Flat back. The flat wheels on horizontal water-cooled grinders make it easy to flatten the backs of your chisels and plane irons.

Tool rest

Look for an adjustable tool rest that can be locked firmly at a variety of bevel angles. For accurate grinding, the tool rest and its supports should be solid and stable at all angle settings. Supports that are made from lightweight stamped steel won't be as stable as cast or forged parts.

Splash guards

On horizontal grinders, splash guards should prevent water from wetting your bench. If you plan on grinding tools that have edges longer than the wheel diameter, such as planer knives, you'll want to look for guards that remove or adjust downward.

Vibration

Smooth-running machines with concentric wheels give you greater control over the sharpening process. They will also produce a more uniform grind.

Water removal

Vertical grinders with removable water troughs are easier to clean and fill than models with fixed troughs.

Grinding jig

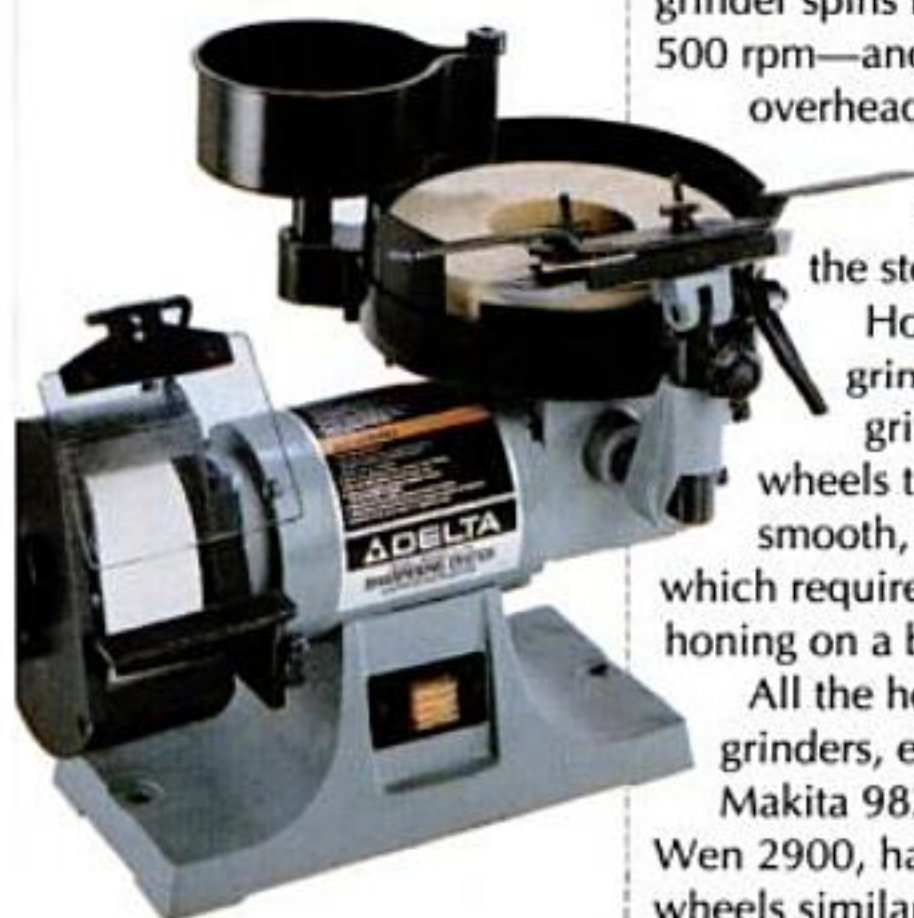
Attached to the tool rest on vertical grinders, this device holds plane irons and chisels square to the stone and at the desired bevel angle.

Horizontal grinders

The wheel on a horizontal grinder spins faster—around 500 rpm—and it has an overhead reservoir that drips water down onto the stone.

Horizontal grinders have 800-grit to 1,000-grit wheels that produce a smooth, flat bevel which requires only final honing on a bench stone.

All the horizontal grinders, except the Makita 9820-2 and the Wen 2900, have dry vertical wheels similar to those found on vertical-type grinders.



OPTIONS *worth having*

Dressing stone or wheel.

As grinding stones wear, they need to be dressed flat to work correctly. With a wheel dresser or dressing stone, you'll be able to restore a worn stone to like-new condition.

Jointer- and planer-knife grinding jig. Attach this device to your tool rest to hold planer and jointer knives for grinding.

Extra wheels. With a selection of wheels in grits from coarse to fine, you can move from rough grinding

to very fine grinding—even polishing on some machines.

Finishing stone and/or abrasives. Though they're very effective for sharpening, most wet grinders can't give you a final edge. Honing is required to achieve a polished, razor-sharp cutting edge. Some woodworkers hone with 6,000-grit or 8,000-grit waterstones. Others use a hard Arkansas oilstone. Still others prefer buffing with rouge or fine abrasive paste on a leather strop or hard felt wheel.

Water-Cooled Grinders



Penn State SSG-ACCU



AMT 5260

	Brand & Model	List Price	Motor HP	Type of Grinder	Wet Wheel Dia. (in.), Speed (rpm)	Wet Wheel Std. Grit Size(s)	Dry Wheel Dia. (in.), Speed (rpm)	Dry Wheel Std. Grit Size(s)	Amps	Weight (lbs.)	Comments & Features
VERTICAL	Wen 2908	\$50	NA	SV	3, 1,100	180	—	—	0.5	5.9	Angle guide.
	Delta 23-700	240	1/5	TV	10, 70	220	5, 3,450	100	2	34	
	Grizzly G1036	100	1/4	TV	10, 60	220	4 1/2, 3,450	110	4	36	Eye shield.
	Lobo BG-102	119	1/4	TV	10, 60	220	5, 3,450	100	4.2	34	Eye shield.
	Penn State SSG-ACCU	160	1/4	TV	10, 60	220	5, 3,450	100	4.2	35	Accu-Sharp grinding jig.
	Tormek Super Grind 2004	390	1/4	VS	10, 90	220	—	—	1.5	35	2 jigs, honing compound; many jigs avail.
HORIZONTAL	Wen 2900	60	1/15	SH	4, 3,500	180	—	—	2	10.7	Automatic water pump.
	Delta 23-710	210	1/5	VH	8, 400	1,000	5, 3,600	120	3.5	47	
	AMT 5260	120	1/4	VH	8, 400	800	5, 3,450	80	2	24	
	Garrett Wade 37-K1801	150	1/4	VH	10, 400	1,000	5, 3,450	100	NA	15	Vertical wheel 2 in. wide.
	Woodtek 878	463	1/4	VH	8, 400	800	5, 3,450	80	2	24	
	Makita 9820-2	433	1	SH	7 7/8, 560	1,000	—	—	1.1	24.3	Sharpens blades up to 15 3/4 in. long.

See page 136 for listing of manufacturers.

KEY: Grinder Type: SH = single horizontal wet wheel, SV = single vertical wet wheel, TV = 1 vertical dry wheel & 1 vertical wet wheel, VH = 1 vertical dry & 1 horizontal wet wheel, VS = vertical wet wheel & leather stropping wheel. — = not applicable. NA = information not available.

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READER SERVICE NO. 54

Power Miter Saws

For smooth, exact cuts at various angles, no tool can match a power miter saw, also called a "chop saw." This portable saw is great for trim carpentry, from mitering moldings to fitting baseboards. It also does well for routine mitering and picture-frame work. Chop saws are designed for crosscuts in relatively narrow stock (under 6 in. on saws with 10-in. blades), but the new generation of sliding miter saws can handle work up to 12 in. wide.

The size of a miter saw is based on its blade diameter. While saws come in sizes up to 15 in., 10-in. models are the most popular. For miter cuts, you set the cutting angle by rotating the motor/blade assembly, or *head*, and the turntable to which it is attached; then you pivot the blade down into the work in a chopping motion—hence the term "chop saw."



Fast and precise. Miter saws make glass-smooth miter cuts in moldings and narrow stock. The sliding compound saw shown above can crosscut wider stock and also make compound-angle cuts.

3 Types of miter saws

Conventional saws

These machines make vertical cuts at angles from 0° to 45° (or more on some machines). Most 10-in. models can cut a 2x6 or 4x4 at 90° and a 2x4 at 45°.



Compound saws

These saws take conventional mitering one step further. A compound miter saw has a head that tilts 45° (or more) to one side for bevel cuts. By combining a bevel cut with a miter cut, this type of saw can make compound miters. Mitering capacities are similar to those of conventional miter saws, although you can bevel-cut wider stock by positioning the stock flat on the work table, rather than on edge.

Compound miter saws are especially useful for cutting

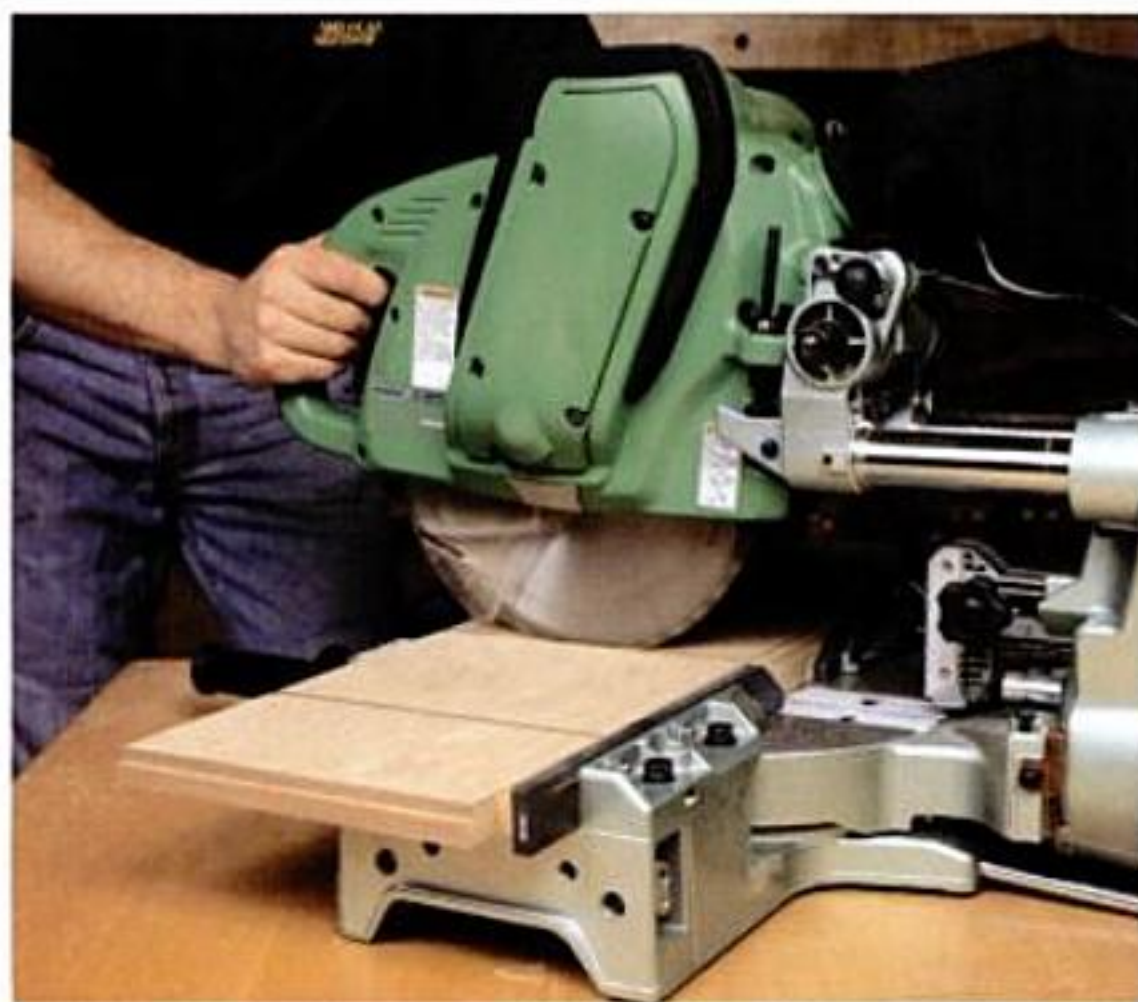


wide baseboard trim, crown molding and other cornice treatments that require compound cuts.

FEATURES *to consider*

Adjustments

Look for smooth-working, easy-to-use miter and bevel adjustments and sliding carriages (on sliding saws) that move smoothly without play. Good miter saws have stops, or detents, that click firmly into place at common angles such as 0°, 22½° and 45°. Compound-type saws that have detents at 31.6° (left and right) and a mark on the bevel scale at 33.9° allow easy setting for compound cuts on standard crown moldings. Other useful features include a spindle lock (for one-wrench blade changing) and lock-downs for securing the head assembly during transport. On sliding compound saws, look for a depth-stop mechanism for cuts to a precise depth.



Chop-saw dados. A depth-stop mechanism on sliding compound saws is handy for precise cuts to a desired depth, as when dadoing.

Fences

All miter saws have a two-piece fence design with a gap in the middle for the blade. On some saws, this gap is too wide to support short stock. Look for adjustable fences that can be moved closer together as needed, or wooden or plastic fence attachments that slide along fixed fences to close the gap.

Blades

Some saws come with a carbide-tipped, finish-cutting crosscut blade, which is preferable to a steel blade for smooth cuts. A 10-in. blade with 60 or more teeth and a low hook angle makes glass-smooth cuts in moldings and thin stock. For sliding saws, get a blade with a 0° or 5° negative hook. (For more on blades, see AW #32.)

Power

On most miter saws, motor power is well matched to blade size. If you plan to cut thick or dense stock, look for a saw with a high amp rating.

Dust busting

Although most saws come with a dust bag, it doesn't take much cutting before the dust is on the floor instead of in the bag. Models that can be hooked up to a shop vacuum will be less dusty.

Safety features

Look for a blade guard that retracts smoothly as the blade is pivoted into the work. Also, look for an electric brake that stops the blade when you release the on-off switch or press a button. To prevent accidental starting, some saws have a safety button that must be depressed before you can turn on the saw. Models with top-mounted safety buttons are equally convenient for left- or right-handed use.

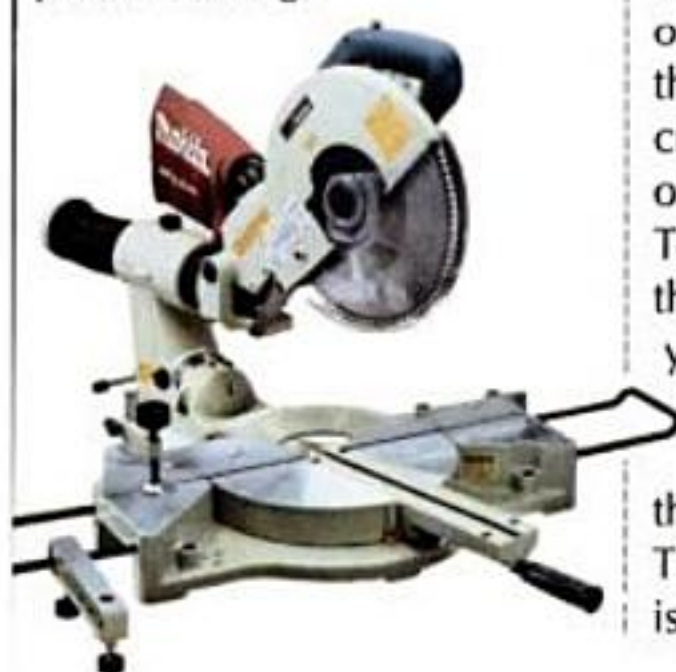
OPTIONS *worth having*

Sliding compound saws

Like the compound miter saw, this newest type of miter saw has a head assembly that rotates and tilts for compound cutting.

Two of these saws, the Makita LS1211 and Hitachi C10FS, tilt both left and right.

The head on a sliding saw is mounted on a sturdy sliding carriage (single rail on the Makita saws, twin on the others). This increases crosscutting capacity to just over 12 in. on some models. To operate the saw, you pull the elevated blade toward you, pivot it down into the front edge of the stock, then push it back toward the fence to complete the cut. This "chop and push" motion is safer than a radial-arm saw.



Workstation. No machine benefits more from a dedicated stand than the chop saw. A well-designed chop-saw station will include extension tables and fences. Aftermarket stands are available, or you can make your own. (See AW #31.)

Table extensions and adjustable stops. Factory-made extension rails and stops are the way to go if you don't plan on a shop-made work table.

Work clamps. These accessory clamps secure your work against the table and the fence for safe, precise cuts.

Auxiliary fences. These fence attachments close the gap where the blade cuts, supporting your workpiece more firmly.

Table inserts. Replaceable plastic inserts fit in the turntable to help prevent tearout on the underside of the cut.

Power Miter Saws



Skilsaw 3810



Craftsman 23520



Ryobi TSS200



Delta Sidekick 36-250

	Brand & Model	List Price	Blade Dia. (in.)	Maximum Crosscut T x W (in.)	Maximum Miter Cut T x W (in.)	Maximum Bevel Cut T x W (in.)	Amps	Dust Collection	Weight (lbs.)	Comments & Features
MITER	Black & Decker 1710	\$316	10	3 3/8 x 4 3/4	3 1/8 x 3 3/8	—	10	—	26	Adjustable miter detents.
	Craftsman 23510	180	10	2 5/8 x 5 3/4	2 5/8 x 4 1/4	—	12	VP	32	Yoke-style pivot.
	Delta 34-080	272	10	2 1/2 x 5 3/4	3 1/2 x 2 7/8	—	13	VP	55	Replaceable table insert.
	Delta 36-070	215	10	2 3/4 x 5 3/4	2 1/4 x 4 1/8	—	13	DB	28	Electronic blade brake; carry handle.
	Delta Sidekick 36-090	292	10	2 1/2 x 5 1/2	2 1/2 x 3 7/8	—	12	DB	30	Adjustable handle.
	Jepson 9211	378	10	3 1/8 x 4 5/16	3 1/8 x 3 1/8	—	15	VP	59	Table insert.
	Makita LS1030	428	10	2 3/4 x 4 61/64	2 3/4 x 3 1/2	—	12	DB	23	Quick-release work clamp.
	Milwaukee 6490	486	10	3 1/2 x 3 7/8	3 1/2 x 2 3/4	—	15	DB, VP	31.5	Extra-tall fence.
	Milwaukee 6491	584	10	3 1/2 x 3 7/8	3 1/2 x 2 3/4	—	15	DB, VP	32.3	Same as 6490, plus dust bag, 80-tooth CT blade.
	Milwaukee 6492	649	10	3 1/2 x 3 7/8	3 1/2 x 2 3/4	—	15	DB, VP	35.6	6491, plus extension with stop gauge, vise.
	Porter-Cable 7700	646	10	3 1/2 x 5 1/2	3 1/2 x 3 1/2	—	13	DB	36	Laser line-of-cut indicator.
	Ryobi TS254	200	10	3 9/16 x 5 9/16	3 9/16 x 3 7/8	—	12.5	VP	34	Carbide blade.
	Skilsaw 3810	386	10	3 1/2 x 4 1/4	3 1/2 x 3 1/2	—	15	DB	37	Cast-iron base.
	DeWalt DW704	570	12	2 1/2 x 7 7/8	2 1/2 x 5 1/2	—	13	DB	36	Extra-tall fence.
	Hitachi C15FB	1,320	15	4 3/4 x 7 9/32	4 3/4 x 5 15/32	—	15	DB	55	Extra-tall fence; gear case; center work support.
COMPOUND MITER	Craftsman 23468	160	8 1/4	2 1/16 x 5 1/2	2 1/16 x 3 3/4	1 3/4 x 5 1/2	9	VP	38	Cast-iron base.
	Delta 36-040	190	8 1/4	2 1/8 x 5 1/8	2 1/8 x 3 1/2	1 1/2 x 5 1/8	9	DB	16	Table insert.
	Craftsman 23520	220	10	2 5/8 x 5 3/4	2 5/8 x 4 1/4	1 7/8 x 5 3/4	15	VP	35	Yoke-style pivot, arbor lock.
	Delta 36-220	304	10	2 3/4 x 5 1/8	2 3/4 x 3 1/2	1 3/4 x 5 1/8	15	DB	60	Work clamp.
	Delta Sidekick 36-210	330	10	2 1/2 x 5 5/8	2 1/2 x 4	1 5/8 x 5 5/8	13	DB	30	Adjustable handle.
	Hitachi C10FC	480	10	2 5/8 x 5 3/4	2 3/4 x 3 1/2	1 3/4 x 5 1/8	15	DB	32	
	Milwaukee 6494	575	10	3 1/2 x 3 7/8	3 1/2 x 2 3/4	2 3/4 x 2 1/4	15	DB, VP	37.5	Extra-tall flip fence; 40-tooth CT blade.
	Milwaukee 6494-6	550	10	3 1/2 x 3 7/8	3 1/2 x 2 3/4	2 1/4 x 4 3/4	15	DB, VP	39	Adjustable fence.
	Milwaukee 6495	700	10	3 1/2 x 3 7/8	3 1/2 x 2 3/4	2 3/4 x 2 1/4	15	DB, VP	37.5	Same as 6494, plus dust bag, stop gauge, vise.
	Ryobi TS260	250	10	3 9/16 x 5 3/16	3 9/16 x 3 11/16	2 3/16 x 3 11/16	15	DB	52	Adjustable fence; work clamp.
	Craftsman 23512	320	12	3 7/8 x 5 7/8	3 7/8 x 4 1/8	2 3/4 x 5 7/8	15	VP	45	Vernier on miter scale.
	Delta Sidekick 36-230	455	12	2 1/2 x 8	2 1/2 x 5 3/4	2 1/2 x 6 1/2	13	DB	47	Work clamp, carbide blade.
	DeWalt DW705	734	12	2 1/2 x 7 7/8	2 1/2 x 5 1/2	1 3/4 x 7 7/8	13	DB	38	Extra-tall fence.
	Delta Sidekick 33-060	526	6 1/2	1 3/4 x 12	1 3/4 x 9 1/2	1 5/8 x 9 1/2	12	—	42	Frame-and-trim saw.
	Delta Sawbuck 33-055	790	8	2 3/4 x 16	1 3/4 x 12	1 3/4 x 16	15	—	96	Frame-and-trim saw.
SLIDING COMPOUND-MITER	Craftsman 23488	450	8 1/4	2 1/2 x 12	2 1/2 x 8 5/8	1 3/4 x 12	10	VP	70	Cast-iron base, work clamp.
	Freud TR215	689	8 1/2	2 3/4 x 11 3/4	2 3/4 x 8 1/4	2 x 11 3/4	9.7	DB, VP	37	Electronic blade brake, carbide blade.
	Hitachi C8FB2	1,250	8 1/2	2 9/16 x 12	2 9/16 x 8 21/32	1 25/32 x 12	9.5	DB	38.6	Adjustable fence; work clamp.
	Ryobi TSS200	400	8 1/2	2 5/8 x 12	2 5/8 x 8 1/2	1 3/4 x 12	10	DB	44	External brushes.
	Chicago Pneumatic SKS 300	1,119	10	2 1/16 x 11 3/4	2 1/8 x 8 5/16	2 1/16 x 11 3/4	9.5	VP	46	Induction motor.
	Delta Sidekick 36-250	690	10	3 5/8 x 11 1/2	3 5/8 x 8	2 x 8	13	DB	55	Stand has stock supports, work clamp.
	Hitachi C10FS	1,580	10	3 11/32 x 12 9/32	3 11/32 x 12 9/32	3 11/32 x 8 21/32	10	DB	44	Tilts left and right; soft start.
	Makita LS1011	995	10	2 15/16 x 12	2 15/16 x 8 15/32	1 9/16 x 12	12	DB	35	Single sliding rail.
	Makita LS1211	1,620	12	3 11/16 x 12 3/16	3 11/16 x 8 5/8	2 1/4 x 11 7/16	15	DB	51	Tilts left and right; single sliding rail.

See page 136 for listing of manufacturers.

KEY: Dust Collection: DB = dust bag, VP = vacuum port. — = not applicable.

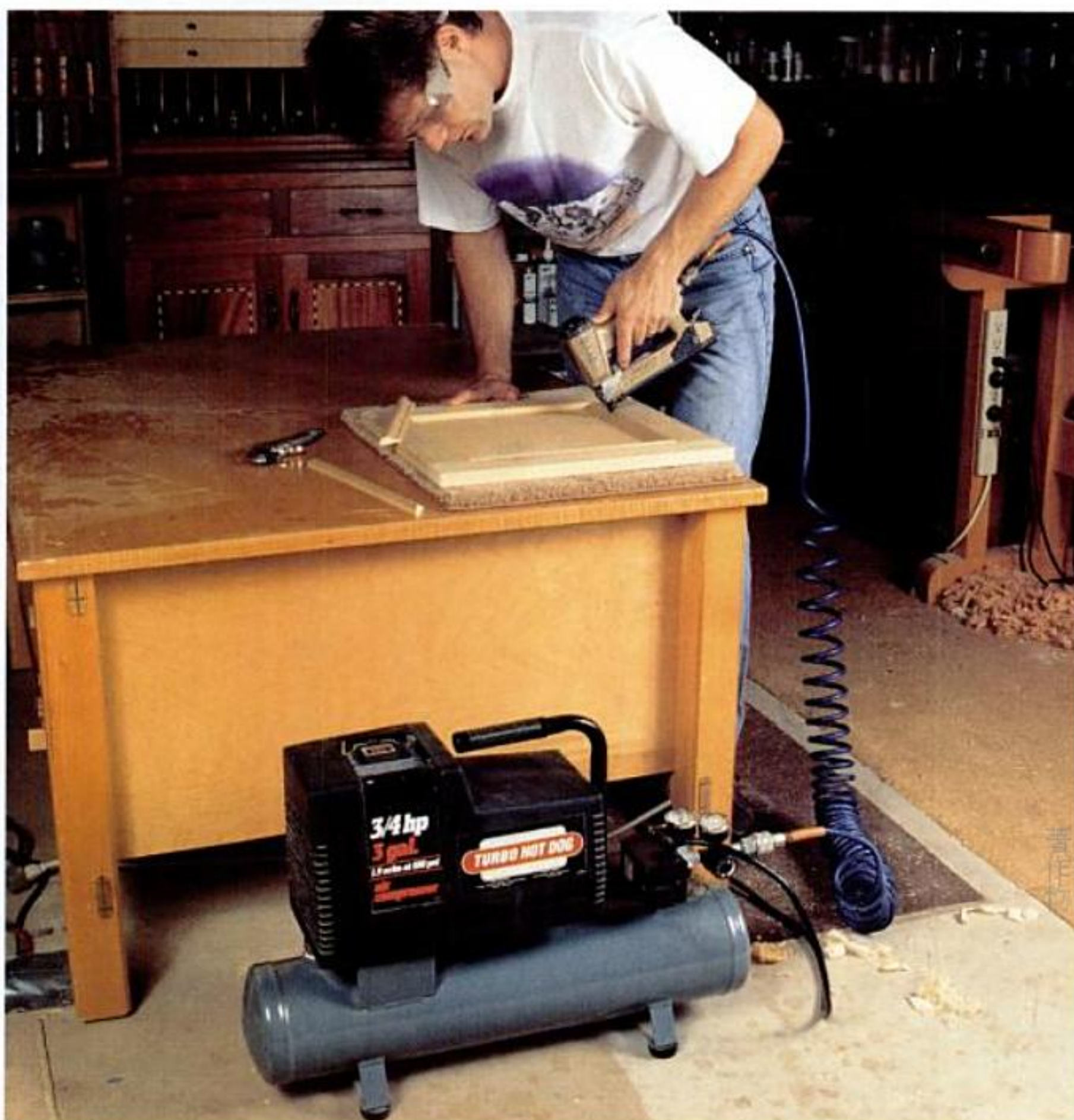
Air Compressors

Many woodworkers buy an air compressor for spraying finishes. But a compressor will also power an array of other tools, from routers and nail guns to sanders, drills and even venturi vacuum pumps.

Models range in size from small 3/4-HP units to industrial models of more than 20 HP. While 3/4- or 1-HP units provide enough power for touch-up finish spraying or light-duty nailing, you'll need at least a 2-HP compressor for intermittent spraying or nailing using professional guns. Most air-powered sanders, drills and routers require at least a 3-HP unit; a 5-HP unit is better yet.

(See "Constant air delivery rate," under Features.)

Gas-powered compressors are available for remote, on-site work, but here we'll focus on electric models, which are more appropriate for the shop.



Pressing air into service. An air compressor will power tools ranging from simple air nozzles to spray-finishing guns, nail guns and sanders.

2 Types of air compressors

Oil-lubricated models

The pistons on this type of compressor slide inside an oil-filled crankcase. The oil lubricates the moving parts and makes for much quieter operation than an oil-less compressor.

Most professionals prefer oil-lubricated compressors over oil-less units. Oil-lubricated models require oil and filter changes, but they generally last much longer than oil-less models before requiring a pump rebuild.

For spray finishing, it's wise to install an in-line oil filter, which prevents contamination of the finish.



Oil-less models

These compressors have Du Pont TEFLON®-coated moving parts. The coating eliminates the need for lubricating oil (and hence oil and filter changes). With oil-less models, there's no danger of contaminating finishes with ambient oil in the air line. Small models are particularly useful for work on roofs where the tilt would affect an oil bath, hindering oil lubrication.

An oil-less compressor—

FEATURES *to consider*

Constant air delivery rate

Constant air delivery rate is a more important criterion than horsepower when you're choosing a compressor. It's defined as cfm (cubic ft. per minute) of air delivered at a stated pressure—often 90 psi (lbs. per square in.).

(See chart, page 116.)

Before buying a compressor, contact pneumatic-tool manufacturers to find out the cfm requirements of the tools you plan to use. Here's a rough guideline: Nailers use from 2 to 6 cfm at 90 psi. Most sanders, drills and routers use from 7 to 25 cfm, depending on the model and whether it's under continuous use. Commercial-duty spray guns need 7 or 8 cfm at about 40 psi—roughly the equivalent of 6 or 7 cfm at 90 psi.

Tank size

Compressor tank sizes are rated in gallons. The larger the tank, the less often the motor has to restart in order to replace used air. This reduces wear on the pump, which automatically stops when maximum tank pressure is reached during compressor use.

Portability

If you plan to bring an air compressor to jobsites or move it around the shop frequently, make sure that it has wheels or isn't too heavy to carry. A low-profile model—which is easier to store underneath a workbench—has a lower center of gravity, so you can also haul it in a truck with less danger of it tipping over.

Motor voltage

A 230-volt compressor operates more efficiently than one running on 115 volts. If your compressor use will be limited to your shop, consider a 230-volt model. If you want to use your compressor at a jobsite, you'll want to be able to plug into a 115-volt circuit. Some models will adapt to either 115 or 230 volts. (See chart.)



Tank size. A larger tank reduces wear on the compressor pump.



Portability. Low-profile tanks with wheels are easy to move around the shop and bring to the jobsite.

which lacks a drive belt and has an enclosure to protect you from a hot pump—can be safer than an oil-lubricated model. Oil-less units are noisier, though.

Oil-less units tend to be initially less expensive than their oil-lubricated counterparts with similar cfm ratings, but oil-less pumps require new piston rings, bearings etc. about every 1,000 to 2,000 working hours.



If you're somewhat mechanically savvy, it's not hard to do the rebuild yourself.

OPTIONS *worth having*

Air regulators. An air regulator allows you to adjust the line pressure to your tool. Some compressors include one.

In-line filters. If you're planning on spraying finishes, get an in-line water filter and an in-line oil filter to prevent contamination of the finish.

Oiler. Mechanical air tools such as sanders require frequent lubrication. An in-line oiler dispenses small amounts of lubricant to the tool during use.

Air nozzle. These are inexpensive and allow you to blow dust off your work and out of your tools at the pull of a trigger.

Air Compressors



DeVilbiss SDS100E4D



Campbell Hausfeld WL5041



Craftsman 919-15034



Air-Mate AM78-HC4V

Brand & Model	List Price	Motor HP	No. of Cylinders	Tank Cpy. (gal.)	Max. Air Pressure (psi)	Constant Air Delivery Rate (cfm @ 90 psi)	Volts	Amps	Weight (lbs.)	Comments & Features
Campbell Hausfeld MT4110	\$119	3/4	2	—	100	2	115	8	21	Tankless; 15-ft. air hose.
Campbell Hausfeld MT5001	189	3/4	2	7.5	100	2	115	8	59	Portable tank.
Campbell Hausfeld WL5000	229	3/4	1	3	125	1.8	115	10	48	Low amp draw, "hot dog" tank design.
Campbell Hausfeld WL5006	269	3/4	1	4	125	1.8	115	10	46	Low amp draw, "pancake" tank design.
DeVilbiss FA750	129	3/4	1	—	125	2.1	115	15	14	Constant run, hand-held.
DeVilbiss FA752	179	3/4	1	2	125	2.1	115	15	27	Constant run, hand-held.
Campbell Hausfeld MT6001	199	1	2	7.5	100	3	115	10	62	Portable tank.
Campbell Hausfeld WL5010	279	1	1	4	125	2.5	115	10	53	Low amp draw, twin stack tank design.
DeVilbiss F18	229	1	1	8	100	3	115	15	66	Portable tank.
DeVilbiss SDS100E3D	239	1	1	3	125	3	115	15	49	Hot dog design.
DeVilbiss SDS100E4D	279	1	1	4	125	3	115	15	56	Pancake tank design.
Air-Mate AMDOL78-HC4V	529	1 1/2	1	4	125	3.7	115	16	46	Auto start/stop.
Campbell Hausfeld WL5041	299	1 1/2	1	4	125	4.4	115	13	62	Low amp draw, twin stack tank design.
Campbell Hausfeld WL5043	299	1 1/2	1	4	125	4.4	115	13	60	Low amp draw, pancake tank design.
Craftsman 919-15034	130	1 1/2	1	—	125	2.9	115	15	14	Low-profile design.
Craftsman 919-15345	230	1 1/2	1	4	120	3.3	115	15	53	4 feet for stability.
Craftsman 919-15346	230	1 1/2	1	3	120	3.3	115	15	47	Compact design.
Craftsman 919-15561	200	1 1/2	1	12	125	3.3	115	15	95	
DeVilbiss SD150E4TTD	349	1 1/2	1	4	125	3.3	115	15	60	Twin 2-gallon tanks.
Makair MAC1000	425	1 1/2	1	3.5	120	4	115	14.2	61	
Makair MAC2000	499	2	1	4	120	6.1	115	14.2	59	
Campbell Hausfeld WL6003	269	2 1/2	1	11	125	4.5	115	15	79	Portable tank.
DeVilbiss F312	279	3	1	12	125	6.4	115/230	15/7.5	91	Portable tank.
Makair MAC4000	879	3	1	5	120	9.5	115	11.5	82	
Craftsman 919-15291	260	3 1/2	1	15	125	6.8	115/230	15	110	
Campbell Hausfeld WL6021	299	4	1	20	125	6.3	115	15	114	Portable tank.
Campbell Hausfeld WL6023	319	4	1	26	125	6.3	115	15	175	Portable tank.
DeVilbiss F420	349	4	1	20	125	6.9	115/230	15/7.5	104	Portable tank.
Craftsman 919-15294	300	5	1	25	125	7.1	115/230	15	130	
DeVilbiss FTV560V	429	5	2	60	125	10.3	230	15	230	
Craftsman 919-15281	430	6	2	60	125	11.5	230	20	220	
Craftsman 919-15293	400	6	2	33	125	11.5	230	15	155	V-cylinder pump.
Air-Mate AM39-HC4V	487	3/4	1	4	125	2.6	115	11	51	Auto start/stop.
Air-Mate AM78-HC4V	529	1 1/2	1	4	125	4.1	115	17	54	Auto start/stop.
Emglo K15A-8P	782	1 1/2	2	8	125	6.5	115/230	15.5/7.8	165	Constant run control.
Emglo K15A-30V	862	1 1/2	2	30	125	6.5	115/230	15.5/7.8	205	Auto start/stop.
JET DHC15T3	450	1 1/2	1	3	125	4.5	115	14	55	Electric direct drive.
JET DHC15T4	465	1 1/2	1	4	125	4.5	115	14	55	Electric direct drive.
JET EPC15T8	780	1 1/2	2	8	125	6.1	115/230	15/7.5	110	Electric belt drive.
JET EPC15T17	837	1 1/2	2	17	125	6.1	115/230	15/7.5	126	Electric belt drive.
Lobo N-AC-1508	299	1 1/2	1	8	115	3.3	115	12	60	Portable tank.
Makair MAC3000	750	1 1/2	1	8	120	5.4	115	14.2	130	
Quincy A15CTEB	956	1 1/2	2	8	125	6.2	115	15	150	Dual-control.

OIL-LESS MODELS

OIL-LUBRICATED

See page 136 for listing of manufacturers.

KEY: NA = information not available. — = not applicable.

Chart continued on page 118.

Air Compressors



Makair MAC3000



Quincy A15CTEB



DeVilbiss L420

Brand & Model	List Price	Motor HP	No. of Cylinders	Tank Cpy. (gal.)	Max. Air Pressure (psi)	Constant Air Delivery Rate (cfm @ 90 psi)	Volts	Amps	Weight (lbs.)	Comments & Features
Quincy A15CTEC	\$979	1 1/2	2	8	125	6.2	115/230	15	155	Dual-control.
Air-Mate AM99-HC4V	614	2	1	4	125	5.6	115	19	61	Runs on 20-amp breaker.
Air-Mate AMK2A8P	860	2	2	8	125	8.4	115/230	19.8/9.9	180	Constant run control.
Campbell Hausfeld VS4011	299	2	1	11	125	4.6	115/230	15	104	Portable tank.
Campbell Hausfeld VT6131	499	2	2	8	125	5.6	115/230	15	175	Hot dog tank design.
DeVilbiss SDS2E8DCD	579	2	2	8	125	5.6	115	15	114	
Emglo K2A-8P	860	2	2	8	125	8.4	115/230	19.8/9.9	180	Constant run control.
Quincy Air Master 121A20PN3	583	2	2	20	120	5.8	115	15	140	
DeVilbiss L320	399	3	2	20	125	6.6	115/230	15/7.5	135	Portable tank.
Emglo GC3E-30V	1,429	3	4	30	150	14.2	230	17	288	Cast-iron construction.
Quincy Air Master 131A20PN3	596	3	2	20	120	6.7	115	15	150	
Quincy Air Master 131A30VC3	755	3	2	30	120	6.7	115	15	260	
Craftsman 919-17643	400	3 1/2	2	15	125	7	115/230	15	125	
Campbell Hausfeld VT6196	339	4	2	20	125	6.4	115/230	15	156	Portable tank.
DeVilbiss L420	419	4	2	20	125	7.1	115/230	15/7.5	135	Portable tank.
Campbell Hausfeld VT6231	399	4 1/2	2	20	125	6.5	115/230	15	156	Portable tank.
Campbell Hausfeld VT6233	419	4 1/2	2	26	125	6.5	115/230	15	175	Portable tank.
Campbell Hausfeld VT5587	429	5	2	60	125	9	230	15	290	Vertical tank.
Campbell Hausfeld VT6182	399	5	2	20	125	9	230	15	156	Portable tank.
Craftsman 919-17695	500	5	2	30	125	10	230	15	161	
DeVilbiss L520	449	5	2	20	125	10.2	230	15	134	Portable tank.
Emglo GT5B-60V	1,908	5	4	60	175	17	230	23	400	2-stage pump.
Emglo W5B-80	2,348	5	4	80	175	19	230	23	610	Low rpm for long life.
Quincy 151C20PN3	639	5	2	20	120	9.6	230	15	130	
Quincy 151C30VC3	768	5	2	30	120	9.6	230	15	170	
Quincy 151C60VC3	792	5	2	60	120	9.6	230	15	260	
Quincy 241C60VC	1,653	5	2	60	175	17.61 @ 175*	230	22	495	2-stage pump.
Quincy 251C80VC	2,154	5	2	80	175	17.61 @ 175*	230	26	575	2-stage pump.
Campbell Hausfeld VT6235	429	5 1/2	2	26	125	9	230	15	175	Portable tank.
Campbell Hausfeld VT6195	449	6	2	60	125	9.1	230	15	290	Vertical tank.
DeVilbiss L660V	499	6	2	60	125	10.4	230	15	240	Vertical tank.
DeVilbiss LK6580V2	999	6 1/2	2	80	175	16 @ 175*	230	15	442	Vertical tank, 2-stage.
DeVilbiss LM7580V2M	1,599	7 1/2	2	80	175	23 @ 175*	230	15	493	2-stage pump.
Quincy 271C80VC	3,203	7 1/2	2	80	175	23.8 @ 175*	230	40	665	2-stage pump.
Emglo 2(W5B) 120-1-230	4,424	5 + 5	8	120	175	38	230	23	1,045	Duplex unit, 10 HP-worth of air, single phase.
Emglo U10B-120	3,783	10	4	120	175	39.5	230/460	27/13.6	965	Low rpm for long life.

See page 136 for listing of manufacturers.

KEY: NA = information not available. — = not applicable. *175 psi is standard rating for 2-stage air compressors.

Dust Collectors

Wood dust is more than a nuisance, it's a health hazard. Studies have linked long-term exposure to wood dust to respiratory problems such as sinusitis, asthma and emphysema. A good dust collector will make your shop a cleaner, more pleasant and healthier place to work in.

Dust collectors vary widely in cost and capacity, from shop vacuums, which inhale dust from one small machine at a time, to dedicated collector units that can handle large quantities of dust and chips from several machines at once.

A dedicated collector may be used as a portable, roll-around unit or as the center of a more permanent system of ductwork connected to all the major machines in your shop.



Keeping it clean. Sawdust and chips stay off the floor and out of the air, thanks to this centrally located single-stage dust collector.

4 Types of dust collectors



Shop vacuums

Shop vacuums work well for light-duty dust collection from a router or electric sander, but with their modest airflows and small hose diameters, they can be overwhelmed by planer or jointer debris. Further, their universal motors are less powerful and shorter-lived than the induction motors used on dedicated dust collectors.

Single-stage collectors

Single-stage blower-and-bag units are the next step up in price and performance. These units have the power to handle large quantities of dust and chips, and the more powerful among them can be used to run a central dust-collection system.

A single-stage dust collector typically uses a pair of bags. The bag on the bottom gathers large debris before the airstream exits through the upper filter bag. (See drawing, opposite page.)

The chief drawback to a single-stage collector is that dust and chips pass directly through the impeller, causing wear and tear on the parts. It's possible to effectively

change a single-stage collector into a two-stage collector by adding an in-line debris collector, available through many mail-order catalogs.



FEATURES to consider

Portability

If you aren't planning to set up a permanent network of PVC or metal ducts, you'll want a roll-around collector that you can attach to each machine with a flexible hose as needed. Many portable models may be used as central dust collectors when you're ready to run the ductwork. (For more on designing a central dust-collection system, see AW #37.)

Airflow

Dust collectors are rated by the volume of air (cubic ft. per minute, or cfm) they can move at a given static pressure (sp)—the resistance to airflow measured in inches of water. The key to a realistic rating is the symbol "@." If a collector is rated "500 cfm @ 8 in. sp.," that's what it will deliver under real load conditions. Buy a unit with enough cfm to handle

your biggest dust-producing machine. (See chart, below.) If you'll use more than one machine at a time, buy a collector with enough cfm to handle these machines simultaneously.

Filter-bag efficiency

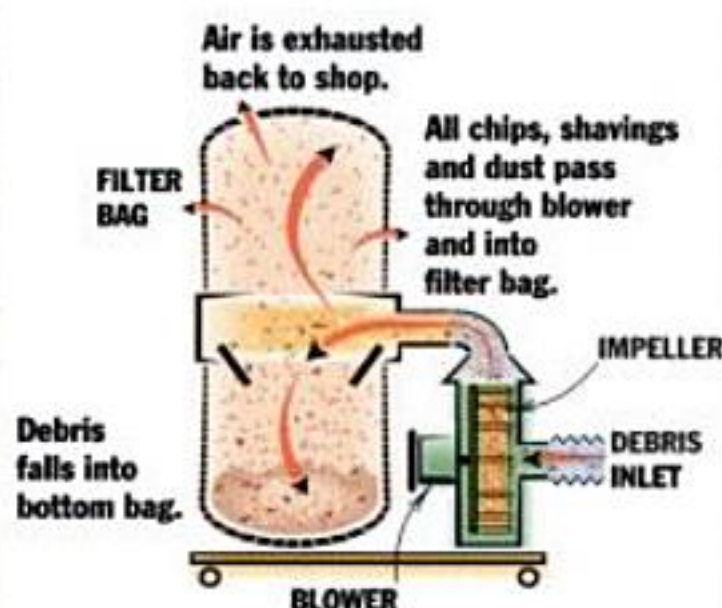
Filter bags vary in their ability to capture the tiniest, most dangerous dust particles—those under 10 microns in size. Typical bags trap particles down to about 50 microns, while super-efficient bags with a very fine weave can capture particles as small as 1 micron in size.

Filter-bag capacity

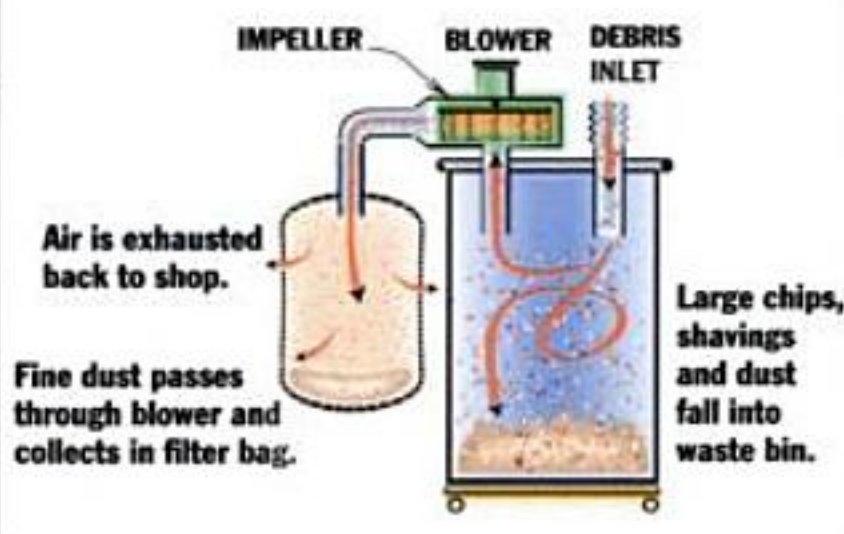
For your collector to work most effectively, the surface area of the bag(s) should equal the blower's cfm rating divided by 10. Smaller bags may constrict airflow.

HOW DIFFERENT DUST COLLECTORS WORK

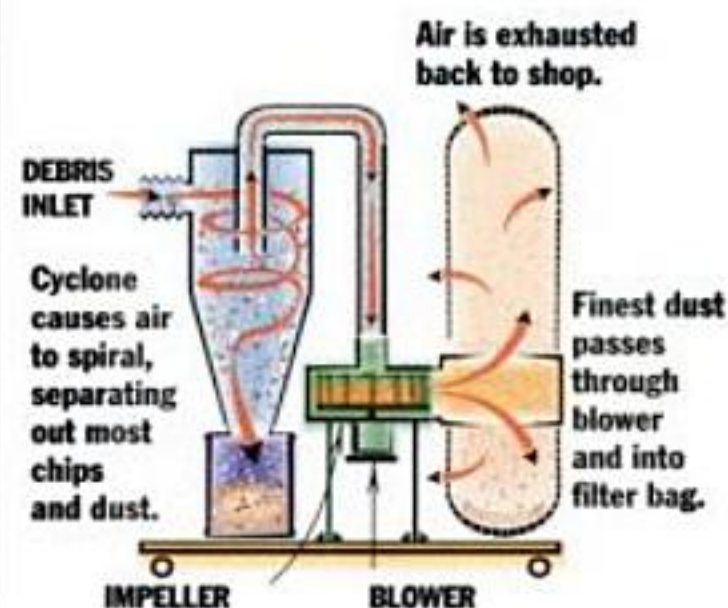
SINGLE-STAGE COLLECTOR



TWO-STAGE COLLECTOR



CYCLONE PRE-COLLECTOR



Two-stage collectors

On these units, the blower is usually mounted on top of a collection drum. Large chips fall into the drum before they reach the impeller, reducing wear on the blower. Fine dust collects in the filter bag.

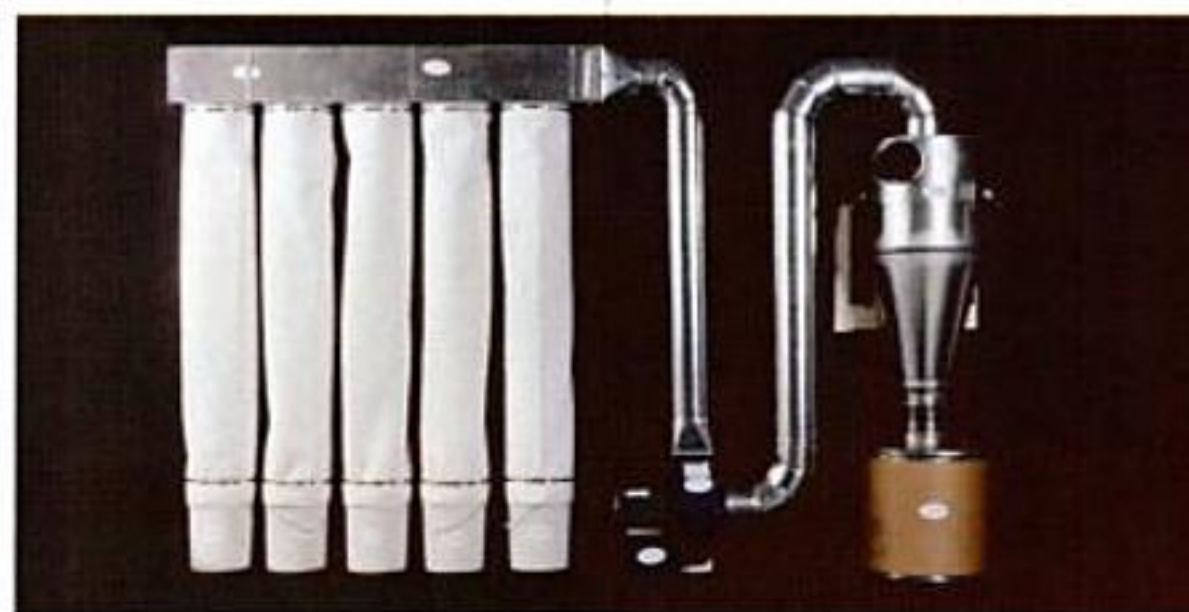
One drawback to two-stage collectors is that you have to lift the heavy blower housing to empty the waste drum.

Cyclone pre-collectors

In this type of dust collector, the airstream first enters a tall, cone-shaped metal "cyclone" housing where the debris spins around in a vortex as it drops down the sides. (See drawing, above right.) This separates most of the debris and deposits it in the waste container below.

Then the airstream reverses direction to exit through the top of the cyclone. Only the finest dust passes through the blower and into the filter bag.

Professionals favor cyclone pre-collectors because they can handle large volumes of debris. They're ideal for central dust-collection systems in medium to large shops.



SIZING YOUR COLLECTOR

CFM requirements

Machine	Required cfm
Planer, up to 12 in.	400
Planer, 13 to 20 in.	500
Spindle shaper	400
Bandsaw	300
Radial-arm saw	350
Tablesaw	350
Jointer, 4 to 12 in.	350
Belt-disc sander	300
Floor sweep	350
Lathe	500
Drill press	300
Jigsaw	300

Dust Collectors



Reliant NN620



Powermatic 73



Enlon EN-DC20



Bridgewood BW-003A

See page 136
for listing of manufacturers.

Brand & Model	List Price	HP	Max. Cfm	Max. sp* (in. of water)	Sawdust Capacity (cu. ft.)	No. of Inlet Ports	Inlet Port Dia. (in.)	Volts	Weight (lbs.)
Kity 695	\$695	1/2	600	4	3.2	1	4	115	75
RBI 821	345	1/2	680	4.4	7.4	1	4	115	75
Shopsmith DC3300	500	1/2	330	NA	4	3	2 1/2	115	64
Torit & Day 64	1,275	3/4	500	4.5	0.3	4	4	115/230	170
Bridgewood BW-015	255	1	750	6	3	2	4	115/230	110
Bridgewood BW-015A	195	1	700	5.5	2.4	1	4	115/230	95
Craftsman 29978	300	1	650	8.5	1.5	1	4	115	72
Enlon EN-DC10	189	1	700	5.5	2.2	1	4	115/230	70
Enlon EN-DC11	149	1	900	9.4	1.8	1	4	115	20
Grizzly G1028	265	1	610	5.5	4.5	1	4	115/230	116
Grizzly G1032	189	1	450	2.8	2.2	1	4	115/230	78
Grizzly G1163	150	1	450	2.8	2	1	4	115/230	58
Hitachi RW200	1,908	1	700	NA	1.1	1	4	115	66
JET DC-650	294	1	650	8.5	2.1	1	4	115	84
Laguna Tools Dust Collector	545	1	880	NA	3.5	1	4	115	105
Lobo DC-1190	199	1	710	2.8	5.5	1	4	115	80
Makita 410	692	1	307	NA	7	1	4	115	20.4
Reliant NN620	150	1	500	NA	1.5	1	4	115	45
Reliant NN720	180	1	610	5.5	2.5	1	4	115	67
SECO UFO-40	132	1	500	4.5	1.5	1	4	115/230	45
SECO UFO-70F	225	1	655	5.5	2.5	1	4	115/230	88
SECO UFO-90	167	1	610	5.5	2.5	1	4	115/230	75
Sunhill UFO-90	189	1	610	5.5	2.5	1	4	115/230	70
Woodtek 802124	229	1	650	5.5	2.5	2	4	115/230	85
Woodtek 864367	199	1	650	8.7	4	2	4	115	47
Penn State DC2-5	325	1 1/2	900	8.5	2.9	2	4	115/230	130
Powermatic 73	457	1 1/2	900	8	3.5	2	4	115	125
Transpower DC747	175	1 1/2	740	5.5	2	1	4	115	65
Bridgewood BW-002A	295	2	1,059	9.1	5.8	2	4	115/230	123
Enlon EN-DC20	289	2	1,182	8.3	5	2	4	115/230	235
Grizzly G1029	275	2	1,182	9.1	4.5	2	4	230	124
JET DC-1200	539	2	1,200	9.5	5.3	2	4	230	143
Lobo DC-101	330	2	1,300	9.1	5.2	2	4	115/230	150
Murphy Rodgers MRT-5B	1,030	2	908	8	7	1	5	115/230	1,240
North State UFO-101	295	2	1,182	9.5	5.4	3	4 & 5	115/230	140
Reliant NN820	300	2	1,182	7.6	5.2	2	4	115/230	140
SECO UFO-101	255	2	1,182	7.5	5.2	2	4	115/230	140
Sunhill UFO-101	299	2	1,182	7.5	5.2	2	4	115/230	143
Transpower DC2000	275	2	1,200	9.1	4	3	8	115/230	128
Woodtek 805930	399	2	1,200	8.3	5.2	2	5	115/230	150
Bridgewood BW-003	795	3	1,950	5.8	19.3	4	4	230	242
Bridgewood BW-003A	479	3	1,836	5.8	13.5	4	4	230	202
Enlon EN-DC30	445	3	1,850	8.7	10	3	4	230	160
Grizzly G1030	445	3	1,883	5.8	9	3	4	230	160
JET DC-1900	819	3	1,900	10.2	10.6	3	4	230	198
Lobo DC-102	479	3	1,883	9.5	10.5	3	4	115/230	178
Lobo DC-103	369	3	1,560	9.5	10.5	2	4	115/230	145
North State UFO-1023	485	3	1,883	9.5	5.4	4	5 & 6	230	180
Powermatic 75	774	3	1,900	8	10.5	3	4	230	215

SINGLE-STAGE

KEY: NA = information not available. * Static pressure. (See text.)

	Brand & Model	List Price	HP	Max. Cfm	Max. sp* (in. of water)	Sawdust Capacity (cu. ft.)	No. of Inlet Ports	Inlet Port Dia. (in.)	Volts	Weight (lbs.)
SINGLE-STAGE	RBI 1900	\$599	3	1,900	9.2	7.4	1	6	230	110
	Reliant NN830	440	3	1,883	9.1	10.5	3	4	230	170
	SECO UFO-102B	429	3	1,883	9.1	10.5	3	4	115/230	180
	Sunhill UFO-102B	439	3	1,883	9.1	10.5	3	4	230	181
	Transpower DC3000	345	3	1,850	5.6	5.3	3	8	230	178
	Transpower DC4000	450	3	1,968	5.8	6.7	4	6	230	250
	Woodmaster 1033	499	3	1,900	8.5	**	1	6	230	140
	Woodtek 864381	499	3	1,900	8.6	10.5	3	6	115/230	194
TWO-STAGE	Delta 50-179	462	3/4	580	7	4.7	1	4	115/230	53
	Delta 50-180	605	1	700	4.5	7.4	1	5	115/230	72
	AGET Dustkop 11SC51-D1	2,156	2	1,200	6.6	7.4	1	6	230	400
	Delta 50-181	869	2	1,100	8.5	7.4	1	6	230	97
	Dust Boy	495	2	1,100	8.5	4.7	1	6	115/230	75
	Delta 50-182	1,020	3	1,300	10	7.3	1	6	230/460	113
CYCLONE	Torit & Day Model 13	2,000	3/4	540	5.6	4.8	1	4 - 6	230	255
	Dustvent 12T1 1/2	1,700	1 1/2	1,000	8	7.3	To suit	6 - 8	115/230	225
	Oneida 1 1/2 HP	694	1 1/2	800	10	5	1	6	115/230	150
	AGET Dustkop 11SN51-D1	1,746	2	1,200	6.6	7.4	1	6	230	400
	Oneida 2 HP Industrial	945	2	950	10	**	1	7	115/230	200
	Torit & Day Model 19	2,400	2	1,200	7.9	4.8	1	6 - 8	230	340
	Dustvent 15T3	2,400	3	1,600	12	7.3	To suit	8 - 9	230	375
	Dustvent 19T3	2,100	3	1,600	12	7.3	To suit	9 - 11	230	680
	Oneida 3 HP Industrial	1,095	3	1,400	11	**	1	8	115/230	250

KEY: NA = information not available. *Static pressure. (See text.) **User supplies waste drum.

Dust Collectors



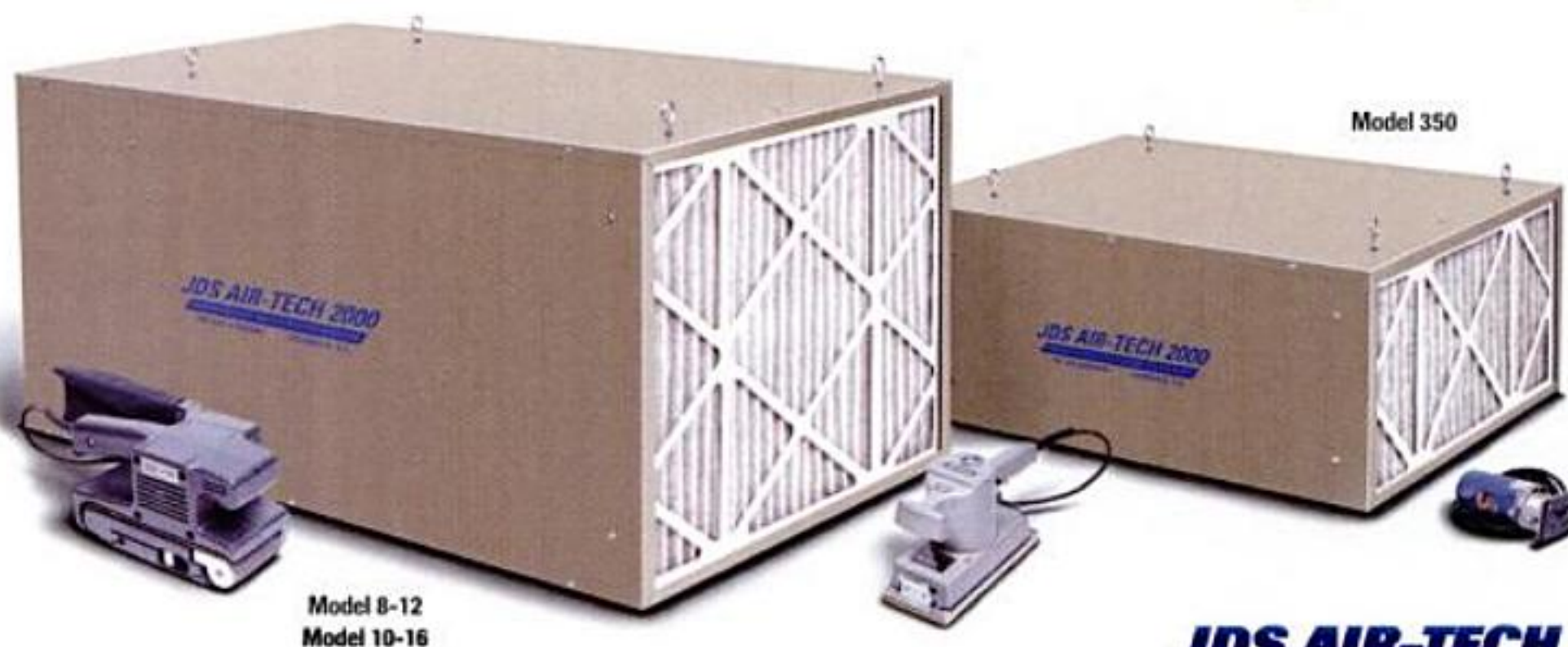
Dust Boy



AGET Dustkop 11SN51-D1

See page 136 for listing of manufacturers.

Give Yourself Some Breathing Room.



Recent medical studies show that breathing wood dust can be hazardous to your health. The JDS AIR-TECH 2000 will dramatically improve the quality of the air in your workshop.

Our model 350 delivers 350 CFM of filtered air. This will clean the air in a 20 x 20 x 8 foot shop six and a half times per hour. For larger areas, our dual speed model 8-12 will deliver 800 or 1,250 CFM of filtered air for only \$495. Our model 10-16 will deliver 1,000 or 1,600 CFM of filtered air for \$695.

The JDS AIR-TECH 2000 systems will remove 99% of dust particles as small as five micron and 80% of the particles as small as one micron.

Our unique design makes both ceiling installation and filter changing quick and easy.

For the removal of odors, fumes and smoke, our optional charcoal filter is available.

Another quality product from
Manufactured in the U.S.A.

To place an order or for the dealer nearest you call us toll-free. And give yourself some breathing room.

\$259.00
Model 350

JDS
COMPANY
1-800-382-2637

READER SERVICE NO. 23

Scrollsaws

When you get tired of cutting straight lines, there's no better place to be than in front of a scrollsaw. Nothing beats a scrollsaw when it comes to cutting intricate curves. Thanks to its delicate blade and reciprocating cutting action, this machine enables you to make hairpin turns and inside cuts in wood and other materials.

Power isn't important when selecting a scrollsaw—the delicate blade will most likely break before the machine's modest motor bogs down. By selecting the right type of blade, tailoring the cutting speed to the material, and controlling the feed rate, you can cut wood up to 2 in. thick. But many woodworkers love this machine for the fine fretwork and marquetry they can create in thinner stock.



Intricate curves. For fretwork, marquetry, puzzlemaking and inside cuts, no tool does it better than the scrollsaw.

3 Types of scrollsaws

Parallel-arm saws

On these models, the arms are connected at their back ends by a threaded rod; but they pivot separately on the saw frame, moving the blade straight up and down. This vertical cutting action is good for extra-fine work, where a fast, aggressive cut isn't important.



C-frame saws

On these saws, blades are held between two ends of a single C-shaped casting that moves up and down. Since the C-frame saw blade moves in a slight arc, the cutting action is more aggressive. But it also tends to be slightly rougher than the cutting action of a parallel-arm saw.



Parallel-link saws

This variation on the parallel-arm design is available in Excalibur's scrollsaws. These models also have vertical cutting action, but it's achieved by small, pivoting levers at the ends of the arms.

FEATURES *to consider*

Benchtop vs. floor models

A benchtop scrollsaw is worth considering if you plan to install it on a bench or if you need to stow it frequently. Keep in mind, however, that it should be bolted down in use, because scrollsaws are inherently prone to vibration.

If you'll be doing a lot of scrollsaw work, consider a floor model. Many of these are simply benchtop models attached to sheet-metal stands for increased stability.

Throat depth

Scrollsaw sizes are designated by *throat depth*—the distance from the blade to the back arm of the saw. Your choice of size depends on the scale of your work. The smallest saws have throat depths of 13 in. or 14 in. The largest saw is 30 in. deep.

Cutting depth

Most saws can handle stock up to 2 in. thick. Saws with longer stroke lengths cut thick stock more efficiently because they clear more sawdust out of the cut.

Cutting speed

With scrollsaws, speed is measured in strokes per minute (spm), and there are several speed choices. Scrollsaws are available in single-, multiple-, and variable-speed models. Lower speeds—200 spm, for example—are good for cutting plastics and

metals, and for making intricate cuts in very thin stock. Higher speeds (up to 2,000 spm) are good for quick cutting in wood.

Speed changes can be made by rocker switch (as with many two-speed models), by manually repositioning the drive belt on a step pulley, or by electronic variable speed (EVS) control. Despite the added expense, many serious scrollsaw users favor EVS control. This electronic circuitry enables the motor to maintain constant speed under varying loads, and provides infinite adjustment within the tool's speed range.

Table tilt

Nearly all tables tilt at least 45° in one direction. On a table that tilts both ways, you can cut dovetails.

Blade changing

On all scrollsaws, the blade is held between blade clamps that pivot on the end of the saw arm. Wear and breakage make blade changing a regular activity, so easy blade changing is an important feature.

Many less expensive scrollsaws are designed to hold pin-end blades. Though easier to mount and less prone to slippage than plain-end blades, the variety of pin-end blades is limited. On a saw that takes plain-end blades, you'll appreciate quick-release blade holders, which make blade changing much easier. (See photos, below.)

Easy blade changes. Quick-release blade holders make for easier blade changes—a welcome advantage when cutting fretwork or other interior holes. Make sure the blade holder will fit your saw.



Delta Quickset II



Hegner Quick Clamp



Ryobi Rapidset

OPTIONS *worth having*

Electronic variable speed (EVS) control.

You can transform a single-speed saw into one with EVS with this aftermarket accessory, available from many mail-order tool suppliers.

Foot switch. Free up both hands to maneuver the workpiece with this remote switch.

Tool-less blade clamps.

Make blade changes quickly with these blade holders. (See photos, left.) Aftermarket Quick Clamp blade clamps are available from Seyco Sales (800-462-3353).

Plain-end blade adaptors.

These adaptors enable you to use plain-end blades on a saw designed to mount pin-end blades.

Magnifier lamps. These use a magnifying lens and a fluorescent "circline" bulb to let you see tiny details better.

Sources

For more information on the tools in this issue, contact the companies listed below.

AGET Manufacturing Co.
(517) 263-5781
Circle #601

Air-Mate
Emglo Air Compressors
(814) 269-1000
Circle #602

AMT
American Machine & Tool Co.
(800) 435-8665
Circle #603

Belsaw Co.
(800) 468-4449
Circle #604

Black & Decker
(800) 762-6672
Circle #605

Bosch
S-B Power Tool Co.
(312) 286-7330
Circle #606

Bridgewood
Wilke Machinery Co.
(800) 235-2100
Circle #607

Campbell Hausfeld
(513) 367-4811
Circle #608

Carbatec Lathes
Craft Supplies USA
(801) 373-0917
Circle #609

CFW
(619) 723-7586
Circle #610

Chicago Pneumatic
(315) 792-2600
Circle #611

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(800) 971-5050
Circle #612

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Craft Supplies USA
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Colonial Saw Co. Inc.
(617) 585-4364
Circle #613

Conover Lathe
Alpha Fabrication
(216) 350-4545
Circle #614

Craftsman
Sears Roebuck and Co.
See your nearest Sears store.

Crouch Machinery Inc.
(910) 673-0611
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Circle #616

DeVilbiss Air Power Co.
(800) 888-2468
Circle #617

DeWalt Industrial Tools
(800) 433-9258
Circle #618

Dremel
(800) 437-3635
Circle #619

Dust Boy Inc.
(800) 232-3878
Circle #620

Dustvent Inc.
(708) 543-9007
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Emglo Air Compressors
(814) 269-1000
Circle #602

Enlon Import Corp.
(800) 935-8888
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Circle #623

Excalibur Machine & Tool Co.
(416) 291-8190
Circle #624

Fein Power Tools Inc.
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Freud Inc.
(910) 434-3171
Circle #626

Garrett Wade Co.
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General Mfg. Co. Ltd.
(819) 472-1161
Circle #627

G.P. Designs
(203) 929-8158
Circle #628

Grizzly Imports Inc.
(800) 541-5537
Circle #629

Hegner
Advanced Machinery Imports
(800) 322-2226
Circle #630

Hitachi Power Tools
(404) 925-1774
Circle #631

INCA
Garrett Wade Co.
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Circle #623

Jepson Power Tools
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Circle #632

JET Equipment & Tools
(800) 274-6848
Circle #633

Kity
Farris Machinery Co. Inc.
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Klein Lathes
Klein Design Inc.
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Circle #635

Laguna Tools
(800) 234-1976
Circle #636

Lamello
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Lobo Power Tools
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Makita, Makair
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Circle #638

Metabo Corp.
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Milwaukee Electric Tool
(414) 781-3600
Circle #640

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SCMI
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(213) 587-4118
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Oneida Air Systems Inc.
(315) 476-5151
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Panasonic Power Tools
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Practical Products Co.
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Amana Tool Corp.
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Sunhill Machinery
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Transpower
C.P. Tools Inc.
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Craft Supplies USA
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Virutex
Practical Products Co.
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Wen Products Inc.
(708) 955-0006
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Williams & Hussey Machine Co. Inc.
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Woodfast Lathes
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Woodmaster Tools
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Woodtek
Woodworkers Supply
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Circle #666

EDGE TOOLS

See article on page 4.

Wm. Alden Co.
(800) 249-8665
Circle #667

Constantine's
(800) 223-8087
Circle #668

The Japan Woodworker
(800) 537-7820
Circle #669

Stanley Tools
(800) 262-2161
Circle #670

Tashiro's
(206) 621-0199
Circle #671

Tool Traditions
(800) 860-8396
Circle #672

Woodcraft
(800) 225-1153
Circle #673

CLAMPS

See article on page 12.

Adjustable Clamp Co.
(312) 666-0640
Circle #674

American Clamping Corp.
(800) 828-1004
Circle #675

American Tool Co.
(800) 767-6297
Circle #676

DE-STA-CO
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Circle #677

Gross Stabil Corp.
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Circle #678

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Circle #679

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Warren Tool Group
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Circle #683

Wetzler Clamp Co.
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Circle #684

Wolfcraft
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Circle #685

Zona
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Circle #686

SAFETY EQUIPMENT

See article on page 21.

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Lab Safety Supply Inc.
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Masuen
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Circle #689