



Basic bench chisels—Bevel-edge chisel (left), firmer chisel and mortise chisel all have different tasks in the workshop.

Three Everyday Chisels

Bevel-edge, firmer and mortise chisels take care of most chopping and paring needs

by Sven Hanson

The number one cleanup device in my shop isn't a broom or a vacuum, as any visitor can tell you. It's a chisel. Every ragged rabbet, gloppy glue-line or oversized tenon can be improved by the touch of a sharp chisel. When fine joinery is required, it's a sure thing chisels will be part of creating the perfect fit. You need chisels to chop out hand-cut dovetails, to square the corners of router-cut rabbets and to trim countersunk plugs.

The bench chisel family tree has three main branches: bevel-edge chisels for a variety of trimming and paring work, mortise chisels for serious chopping, and the catchall category of firmer chisels for light-duty mortising or heavy-duty paring (see the photo above).

There are other, more specialized types of chisels. But your workshop will be well-equipped if you carefully choose a few chisels from each of the three main groups.

The main thing to consider when shopping for chisels is your needs. If you plan to do a lot of heavy chopping in hardwoods, the money invested in tools with reinforced handles and properly tempered steel will be well worth it. But if you use chisels infrequently or if you use them for light-duty work, you could get by with moderately priced tools. And if you need chisels to do some rough work, like chopping away at interior trim where there's the likelihood

of hitting nails, buy inexpensive chisels.

Chisels demand proper striking tools. Handles with metal striking caps or ferrules at both ends can be whacked with a hammer; unreinforced handles require a mallet. Wooden mallets, which come in a variety of weights and shapes, give you the most control and are friendly to a chisel's handle.

Choose the chisels for your shop

I have collected a pretty full set of each style of chisel, but they're not all necessary. Bevel-edge chisels, so called because they have three bevels on their faces, fit easily inside dadoes and dovetails. I use my 1/2-in. and 3/4-in. chisels all the time and chop out dovetails with 3/8-in., 1/2-in. or 5/8-in. chisels.

When picking out mortising chisels, select ones based on the size mortises you plan to chop. These are costly; there's no value in owning a whole set if you routinely chop out only 1/4-in. mortises. I find 1/8-in., 1/4-in., 3/8-in. and 1/2-in. mortise chisels serve most of my needs.

My firmer chisels play the utility infielder position, doing the work that might damage a thin-blade bevel-edge chisel or chopping small mortises on more delicate projects. You might need a few, ranging in size from 1/4 in. to 3/4 in.

Bevel-edge chisels are used in tight quarters

Along one leg of my Bermuda work triangle formed by bench, tablesaw and jointer, I've mounted a kitchen-style magnetic knife holder. It holds a handful of bevel-edge chisels, which I use more frequently than either my firmer or mortise chisels.

Bevel-edge chisels are sometimes called paring chisels, and there are two subcategories. Short, sturdy paring chisels are called butt or carpenter's chisels, and long-blade ones are known as dovetail chisels.

Butt chisels get into tight quarters—

You'll find some version of the short, sturdy chisel in every carpenter's tool belt. You don't need a long, delicate chisel for chopping out a 1/8-in.-deep door hinge mortise. And if you're working inside a cabinet, the short butt chisel allows you room enough to swing a hammer without striking the other side of the case. This chisel is easy to hold and maneuver across a glued-up panel when scraping squeeze-out.

Dovetail chisels have long blades—A

dovetail chisel's long blade makes it easier to see your work and gauge whether you're



Bevel-edge chisel

Cleaning out a dovetail—Beveled sides allow a dovetail chisel to squeeze into tight quarters,



Firmer chisel

Paring a tight tenon—Instead of heading back to the tablesaw to narrow a tenon, use a razor-sharp firmer chisel. Its square edge rides along a tenon's shoulder and makes paper-thin shavings.

holding the tool perpendicular to the workpiece. Dovetail chisels have blades that are sharply beveled on the sides to allow you to work right into the triangular bottom of a dovetail joint (see the top photo).

I rely on countersunk and plugged screws to hold a lot of things together. Dovetail chisels are great for paring off the screw plug flush to the frame, because I can approach the cut with the long blade nearly flat on the wood. I take a careful trial cut across the top of the plug to find the paring

direction that goes with the grain. I take roughly 1/16-in. slices off the plug to pare it flush to the surrounding surface. It's not as fast as beltsanding but if done carefully, you get better results with less noise and less risk to the surrounding surface.

Firmer chisels look like skinny mortise chisels

The firmer chisel is a compromise tool that is often too light for heavy-duty mortising but too thick to work inside the confines of

Mortise chisel

Chopping a mortise—Mortise chisels are as thick as they are wide and are built to withstand the heavy forces inherent in chopping and prying out waste.



furniture joints. This chisel is also called a sash mortise chisel, named by American makers of window sashes, or a registered mortise chisel. Firmer chisels have only one bevel on the face, like mortise chisels, and the blades are thinner than they are wide.

I own a set of ash-handled Greenlee firmers. They reside in their own drawer away from the squalor of everyday working-class tools. As a result, they're usually the sharpest of the bunch. These chisels come in handy when you have to pare down a tight tenon (see the bottom photo on p. 43). For good control when taking off a thin shaving, you can use their square sides to ride along the tenon's shoulder.

If you want to do some serious chopping, the double-hooped handle with leather shock ring at the blade's shoulder can take a hard shot with a 22-oz. framing hammer. The only maintenance besides sharpening is grinding off the mushroom edge that forms on the hoop that protects the butt end from splitting. I round it back by rolling the edge against the belt sander.

Mortise chisels need to be strong

Mortise chisels are the big brutes of the chisel world. They have rectangular blades

that can be thicker than they are wide. You need this heft when prying out a chip that's wedged deep inside a mortise.

Quality mortise chisels have a very hefty tang, a steel extension of the blade that fits up into the handle. The sturdiest have reinforcing ferrules, also called hoops, at the tang and at the butt of the handle to prevent splitting when the chisel is struck with a hammer or mallet. If a mortising chisel does not have a ferrule at the striking end of the handle, it's meant to be used with a non-metal mallet.

To reduce the chance of splitting a workpiece when chopping mortises, I clamp a hand screw to the sides of the stock where the waste will be removed (see the photo above). A second clamp holds the whole piece firmly to the workbench. Besides preventing splitting, this clamp system lets you cut faster and with more control while keeping chips from creeping under the workpiece and dinging it.

Anatomy of chisels

There are two main components to chisels: the steel and the handle. Determining what kind of steel and how well a tool has been tempered can't be done by eye. You can

get an idea about the strength of the handle by looking for reinforcing ferrules or striking caps and examining how it's fastened to the steel, whether by a socket (strongest) or a skinny tang (weakest).

I'm not obsessed with finding just the right hardness rating for my chisels. If you order tools from big mail-order outlets, you can usually find out about the type of tool steel and hardness of the chisels they carry. But if you pick up a set at the local hardware store, that information may not be available to you.

Michael Burke, technical advisor at Garrett Wade, a mail-order tool supplier, told me that "most chisels range around Rc58 to Rc61 (Rockwell C hardness scale) with Japanese chisels running about three points higher. The precise hardness doesn't really matter because a difference of a point or two is like the difference between 600-grit and 700-grit sandpaper."

I have noticed that the most inexpensive chisels on the market are often on the soft side, although I have seen a few that were quite hard and brittle. Hardness is both a function of the metal's carbon content (and other additives) and how the tool was hardened and tempered.

Good tool steel has enough additives to allow hardening, which is accomplished by heating the metal to cherry red and then quickly cooling the tool. It is then reheated to a lower temperature, which reduces or tempers the hardness, making it less brittle and easier to sharpen. A chisel with a very hard tip is prone to chipping.

Conversely, poor steel that has not been hardened properly or steel that has been tempered too soft will bend at the thin cutting edge when pounded into hardwood. It will, however, be easy to grind and sharpen. Toolmakers aim for a balance between these two qualities.

Good steel, quality control in hardening and tempering, and strong handles add to the price of a chisel. Medium- and high-quality chisels will cost about \$10 to \$30, sometimes more, apiece.

Sockets are found on the best chisels—

Top-of-the-line older chisels were hand-forged with sockets. The blacksmith would pound one end of the metal around an anvil and create a conical section for the handle to fit inside. Modern socket chisels have their sockets machine-forged or welded on.

Sockets are available on all three types of chisels. When you strike a socket chisel,

the wooden handle compresses into the tapered socket, which keeps everything firmly united.

Look for a sturdy handle—The handle, not the blade, is the Achilles heel of most chisels. When chopping mortises, all the force of a hard-swung mallet strikes a spot that's 1 in. in diameter or less. Chisel handles made of wood come with and without reinforcing ferrules, which increase their strength. A lot of chisels are made with plastic handles, and I've found these to be very sturdy even though they don't have that traditional look and warm feel of wood. If you plan to use a hammer to strike them, buy ones with metal striking caps.

Wood tends to split if struck hard. To counter that, the makers of wooden tool handles taper them. The small-diameter end helps center the mallet's blow to the tool and reduces splitting. Toolmakers often add metal ferrules to the handle to keep the wood fibers squeezed tightly together. If the grain is straight and you avoid metal hammers, single-ferrule chisels are durable enough.

Many crafts people prefer a heftier handle. A chisel handle made of wood with ferrules at both ends can take a lot of force. These chisels can be used with metal hammers or large mallets.

There's another way to strengthen a handle. Some chisels are made with a thick leather washer pressed over a tenon round left projecting from the end of the turned handle. This evens the blow around the edge of the handle and prevents splitting. These are medium-duty chisels meant to be used by hand or with a light mallet.

Mallets deliver a little or a lot of power

You can use a hammer when striking chisels, but it's best to use a wooden or hard plastic mallet. They're much kinder on handles. Mallets, with their large faces, also make it easier to deliver the force of the blow to the chisel instead of, say, the hand holding the chisel. Good mallets run from \$12 to \$50.

Mallets come in various weights. I find that 16-oz. to 22-oz. mallets are suitable for chopping dovetails. For heavier work, such as chopping mortises, 22-oz. to 32-oz. mallets work well. There are some woodworkers who favor 3-lb. mallets, but it certainly takes a lot of strength to handle one of these behemoths for hours on end.

Mallets also come in different shapes.

Angling for precision cuts

Not all bevels are created equal. If you cut hardwoods, a steeper bevel on your chisel will stay sharp longer. If you cut softwoods, you will need a shallow bevel angle to shear the wood fibers, not crush them. I use secondary, or microbevels, on all my chisels. The bevel-edge and firmer chisels get a very short microbevel at the cutting edge, which is created when I'm doing my final honing on a superfine stone. I lift the chisel up just slightly to create that microbevel. That way, when I resharpen, I only have to hone a very narrow edge, not the entire bevel.

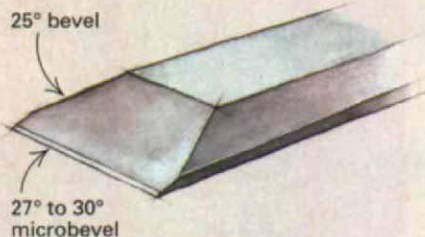
For softwoods, a microbevel of 27° or so allows easier entry into the wood (see the drawing at left below). For hardwoods, a microbevel of 30° to 35° cuts cleanly enough and stays sharp longer than a more acute bevel. If you plan to do a lot of hand-paring, you'll want microbevels in the 27° to 30° range. But if you plan to use a heavy mallet, microbevels of 30° or more will hold an edge longer.

For fine work on delicate projects no matter what the wood, I use a 27° to 30° microbevel, especially when using the chisel without a mallet. This angle decreases the force necessary to cut. I pay for it with more frequent sharpening.

I modify the bevels on my mortise chisels by grinding the long bevel about 28° and honing a secondary bevel of about 35° to 40° at the tip (see the drawing at right). The long bevel permits easy passage of the chisel body into the nether regions of a cut. The blunt tip leaves more metal where it counts. —S.H.

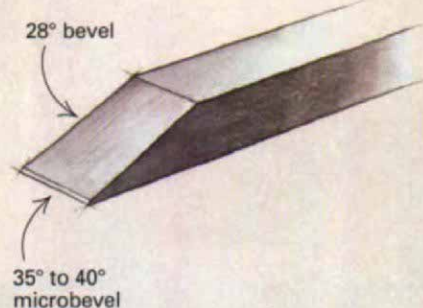


Sharpening angles for bevel-edge and firmer chisels



For chiseling softwoods or hand-paring, grind a shallow microbevel of 27° to 30°. When working in hardwoods, a tip ground 30° to 35° will hold up longer.

Regrind mortise chisels with a long bevel



The big square mallets, called joiner's mallets, are usually the heaviest of the bunch and great for use with mortise chisels. For tight quarters or for chopping at odd angles, a round carver's mallet works well. You can also use a rubber mallet or a dead-blow hammer.

Safety glasses protect your eyes from flying chips

Experience has taught me three rules for safe chisel use. First, keep all your body parts behind the tip of the chisel, well out of its path. Second, clamp down the work-

piece unless it's so heavy that it won't move while chopping. And third, always wear safety glasses. Ordinary eyeglasses will do for paring on the benchtop, but when I use a hammer or work overhead, I'm partial to goggles.

One time, when I took a chisel to the underside of a teak handrail while wearing ordinary eyeglasses—not safety glasses—a tiny boulder rolled past my glasses into my eye, and it stuck. I learned my lesson. D

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