Hone Your Hand-Tool Skills

A handful of exercises develops competence and confidence with chisels, planes, and saws

BY MICHAEL PEKOVICH

Hand tools intimidated me for a long time. I knew I could trust machinery to mill flat surfaces and make perfectly straight cuts, but hand tools didn't afford the same mindless accuracy.

I've since learned that for certain tasks, a properly wielded hand tool lends speed, precision, and a sense of joy to woodworking that no machine can match. A router and dovetail jig can turn out precise dovetails all day long, but the elegant, narrow pins that are the hallmark of craftsmanship come only from a backsaw and chisels. An edge rounded over with sandpaper is lifeless compared to the crisp chamfer cut by a sharp block plane. And while a power sander can remove planer snipe and machine marks on a board, only a handplane's long, flat sole can remove imperfections while leaving a truly flat surface.

Fortunately, acquiring competence and comfort with hand tools is not a long or grueling process. There are simple skill-building exercises for the tools I use most frequently: backsaws, chisels, block planes, and bench planes. To my mind, mastery of these four tools is the foundation for doing good work.

Cutting on a line

MASTER THE BACKSAW TO CUT PRECISE TENONS AND DOVETAILS

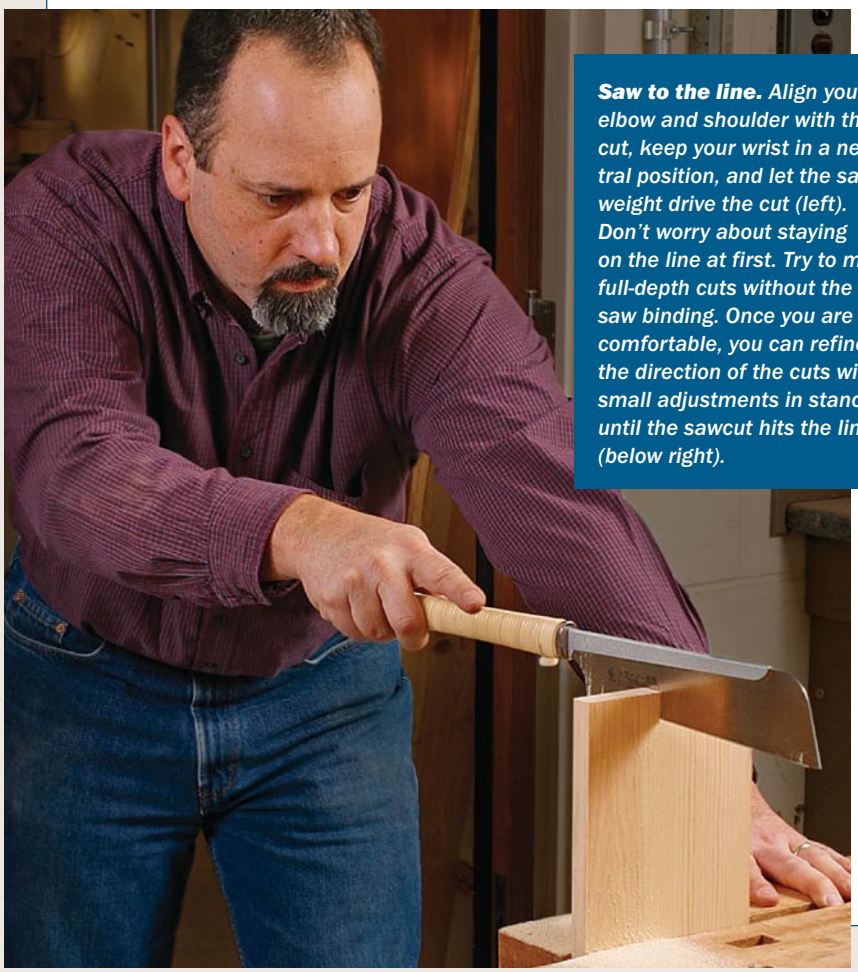
For square cuts, start with a square setup. *Clamp a board in the vise using a square for alignment. Then use the square to draw lines on the board's face. With plumb lines as a guide, you're ready to start sawing.*

With its top-mounted stiffener, a backsaw is designed to do one thing: cut straight lines for tenons and dovetails. The two types of backsaws are the Western saw, which cuts on the push stroke, and the Japanese saw, which cuts on the pull stroke. Because even an inexpensive Japanese saw comes razor sharp right out of the box, and beginners usually find it easier to start a cut on the pull stroke, I recommend it to those choosing a first backsaw.

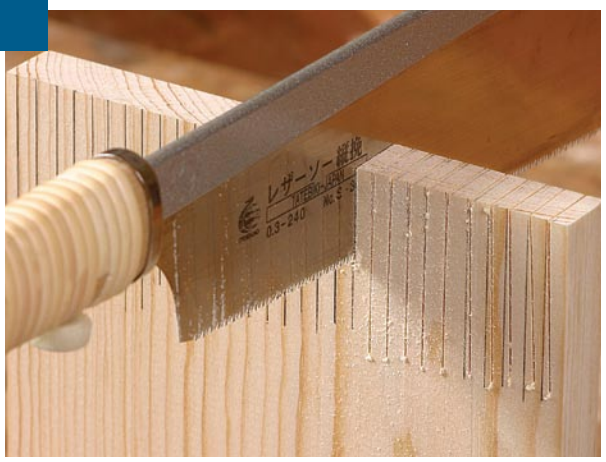
To cut accurate joinery, you must be able to saw to a line scribed or drawn on a board. The easiest way to become proficient at this is to learn to cut straight down. Then it is just a matter of orienting the workpiece so that the intended line of cut is perpendicular to the benchtop. Even dovetails can be cut in this fashion simply by angling the board in the vise.

This exercise will help you determine the proper grip and stance for straight cuts. Use a softwood board, roughly 6 in. wide by 18 in. long, with a square cut on both ends. Draw a series of lines about 2 in. long, spaced about ¼ in. apart, along the top edge of the board (see photo, left). Begin cutting, but don't worry where the saw is heading.

Sawing a straight line depends on setting up properly before you start the cut, then relaxing and letting the saw do the work. Once you start to cut, the saw will end up where you first aimed. Minor course corrections can be made, but blatant attempts at changing direction will wedge the blade in the kerf. Stop after a few cuts and check your progress. The kerfs probably will be off angle a bit. This drift may be due to your stance or to the way the saw was sharpened. Adjusting your stance is the best way to alter the line of cut. If the saw is cutting to the right, move slightly to the right; if it cuts to the left, move to the left. The point is to team up your body with the saw. Neither one of you is perfect, but together you can make perfect cuts.



Saw to the line. *Align your elbow and shoulder with the cut, keep your wrist in a neutral position, and let the saw's weight drive the cut (left). Don't worry about staying on the line at first. Try to make full-depth cuts without the saw binding. Once you are comfortable, you can refine the direction of the cuts with small adjustments in stance until the sawcut hits the line (below right).*



Photos: Andy Engel; drawings: Michael Gellatly

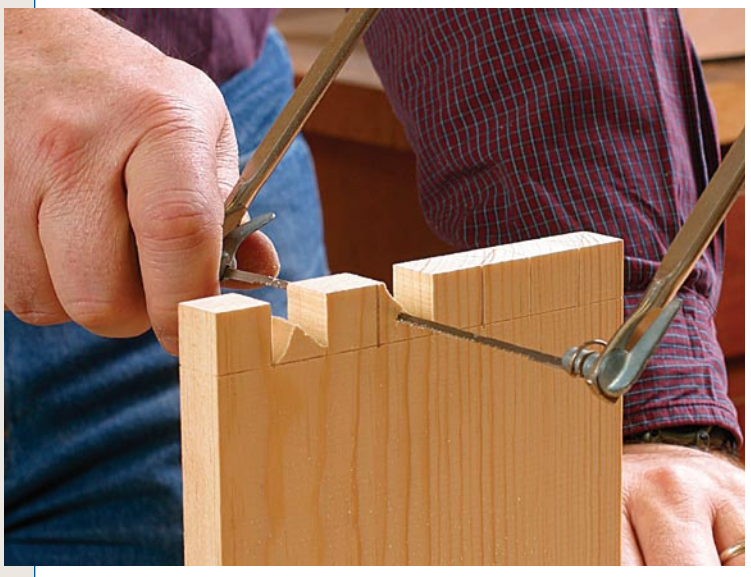
Paring clean, precise joints

CHISEL AWAY WASTE WITH FINESSE, NOT FORCE

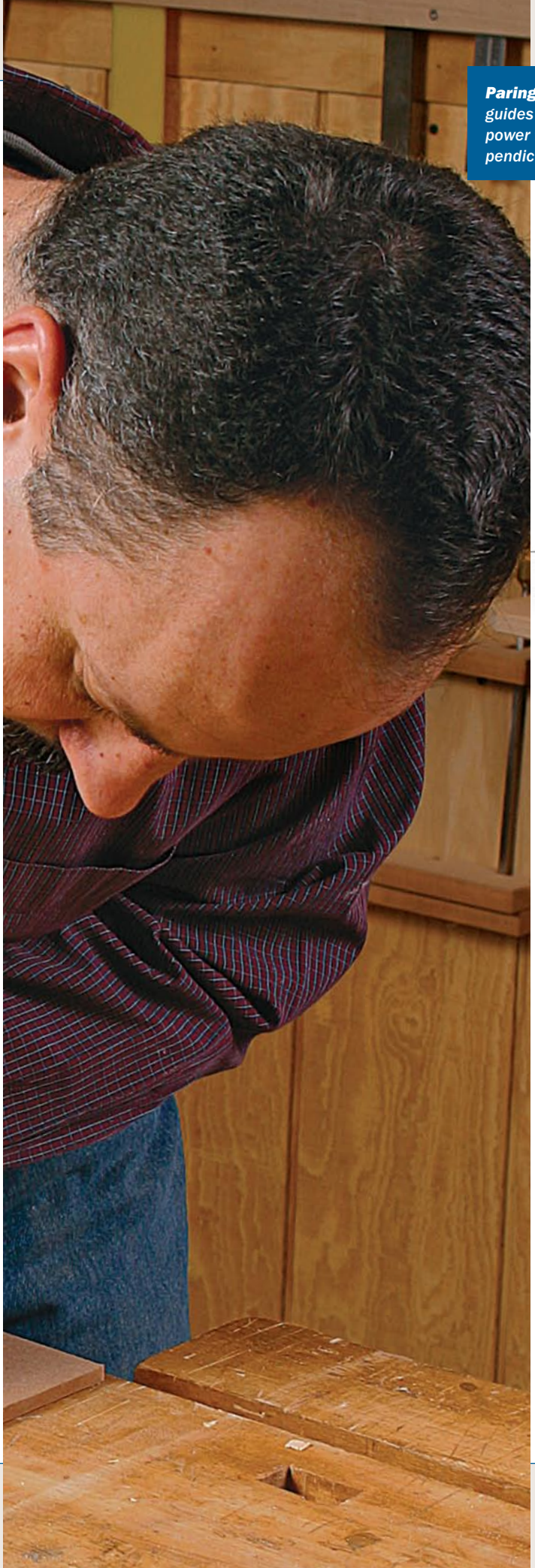
Chisels are straightforward tools, but there are techniques that can help you use them more precisely. I use chisels primarily to pare end grain and to clean out between dovetails or around tenons. For years, I chopped more than pared, pounding away on the chisels with a mallet to remove the waste. Then I discovered that by getting the chisels very sharp, I could pare paper-thin shavings, allowing me to sneak up on a scribed line with more precision and without the dulling force of a mallet.

On the end of a square-cut board, scribe a shoulder line and some 1-in.-wide tenons. Cut to the shoulder line with a backsaw. With a coping saw, remove the waste between every other kerf, leaving a rough triangle. With the board flat on the bench, start the chisel as close to the point of this triangle as possible. Holding the chisel perpendicular to the bench, push straight down.

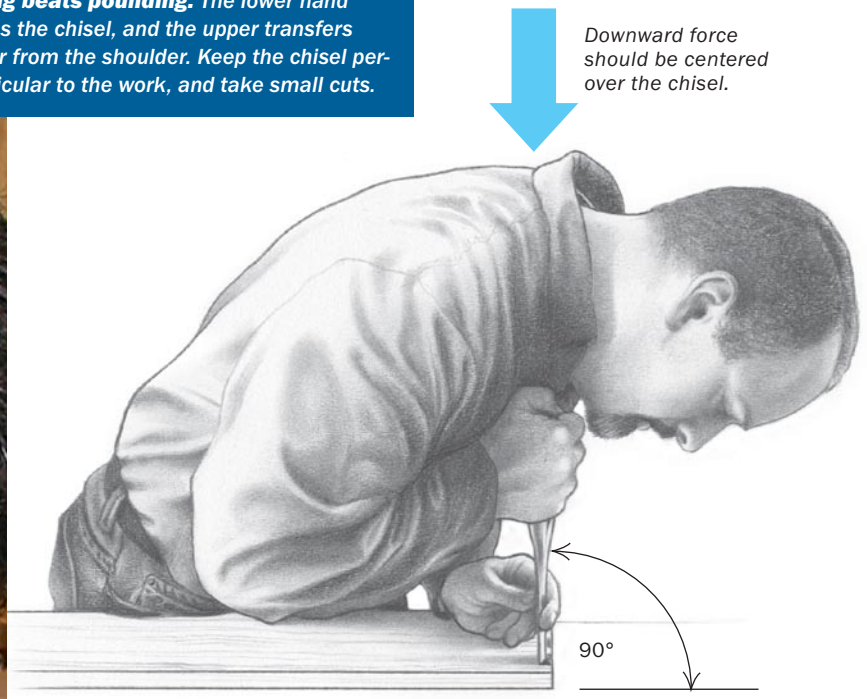
Pare away the waste until you reach the shoulder line, then flip over the board and check your progress on the other side. Ideally, you'll have pared right to the scribe line but not past it. It's better to leave a bit of waste than to overcut. You'll find it easy to pare to the line from the back. Be careful not to leave a hump in the middle that would prevent a joint from closing fully.



A coping saw removes waste quickly. *After backsawing a few tenons, cut the wood in between, leaving just a small triangle to be trimmed with a chisel.*



Paring beats pounding. *The lower hand guides the chisel, and the upper transfers power from the shoulder. Keep the chisel perpendicular to the work, and take small cuts.*



At first , the going is easy. *If the chisel skips out of the cut, it is angled away from the shoulder line. If it wedges in, it is angled too far into the workpiece.*

Take thinner parings as you approach the shoulder. *When you reach it, flip the board. If you're not to the opposite shoulder line, pare from that side. Be careful not to undercut either side, or leave a hump in the center of the cut.*

Planing perfect corners

USE GUIDELINES FOR CRISP, ACCURATE CHAMFERS

Guidelines on each face make a target. *Many woodworkers wouldn't draw lines for a chamfer. But these lines, ⅛ in. from the edge of the board, provide a valuable reference for this exercise.*

Start with the blade beyond the board. *Hold the plane at 45°, with its front fully contacting the board's edge (above). A common error is starting with the blade past the beginning of the board, which results in a tapered chamfer. Each cut should be one pass down the whole length of the board. Look for a chamfer of even depth along its length that approaches both scribe lines at the same rate (right).*

My 4-year-old daughter sometimes likes to work alongside me in the shop. Her activities usually are limited to nailing and gluing scraps together, but when she sees me pick up a block plane to knock an edge off a board, she runs over to tackle the task herself. Clearly, the block plane is not difficult to use, but you can get better performance from it by practicing a few maneuvers.

I use a block plane chiefly for chamfering the edges of boards. My aim is to cut a 45° chamfer of a consistent depth along the length of the board. To get the hang of this, scribe pencil lines ⅛ in. from both sides of a board's corner (see photo, above). Practice chamfering until you hit the lines. For wide chamfers, I still make it a habit to use layout lines, but for anything less than ¼ in. wide, I rely on technique and let my eye be the judge.

Set the blade, or iron, to take a fairly aggressive cut, and secure the board in a vise. Hold the plane at 45° to the board, and plane the entire length. If you get tearout, adjust the blade for a lighter cut or plane in the opposite direction. After a few strokes, check your progress. Ideally, the chamfer will be of consistent width, which means you're approaching both scribe lines at the same rate.

Chamfering end grain

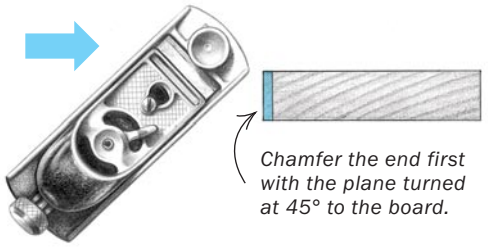
ACHIEVE CHIP-FREE CHAMFERS ON END GRAIN

Use a marking gauge to scribe a ⅛-in. shoulder around one end of a board and along each edge of the end grain. I wouldn't bother with this step on a piece of furniture because the cuts from the marking gauge will remain after the chamfer is complete. In this case, they're there to provide a target as you practice chamfering all four edges of the end of a board.

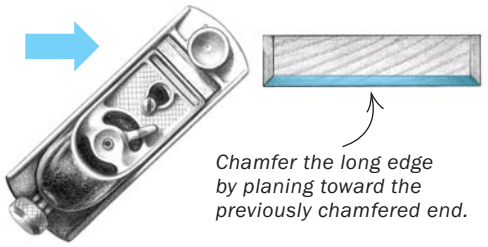
Clamp the board securely in a vise and chamfer the first end. Skew the block plane and cut from the base toward the top. The finished chamfer should be a single facet that hits each scribe line. Turn the board, and chamfer the other end. By chamfering the ends first, you'll avoid tearout as you plane the sides. When the ends are done, start chamfering the long edges, trying to hit the scribe lines evenly on the final pass. To prevent tearout, skew the plane as you move it parallel to the edge. As you finish the chamfer, don't let the side bevel become deeper than the end bevel, or you can end up with tearout. All the chamfers should meet exactly at the corners (see photo, right).

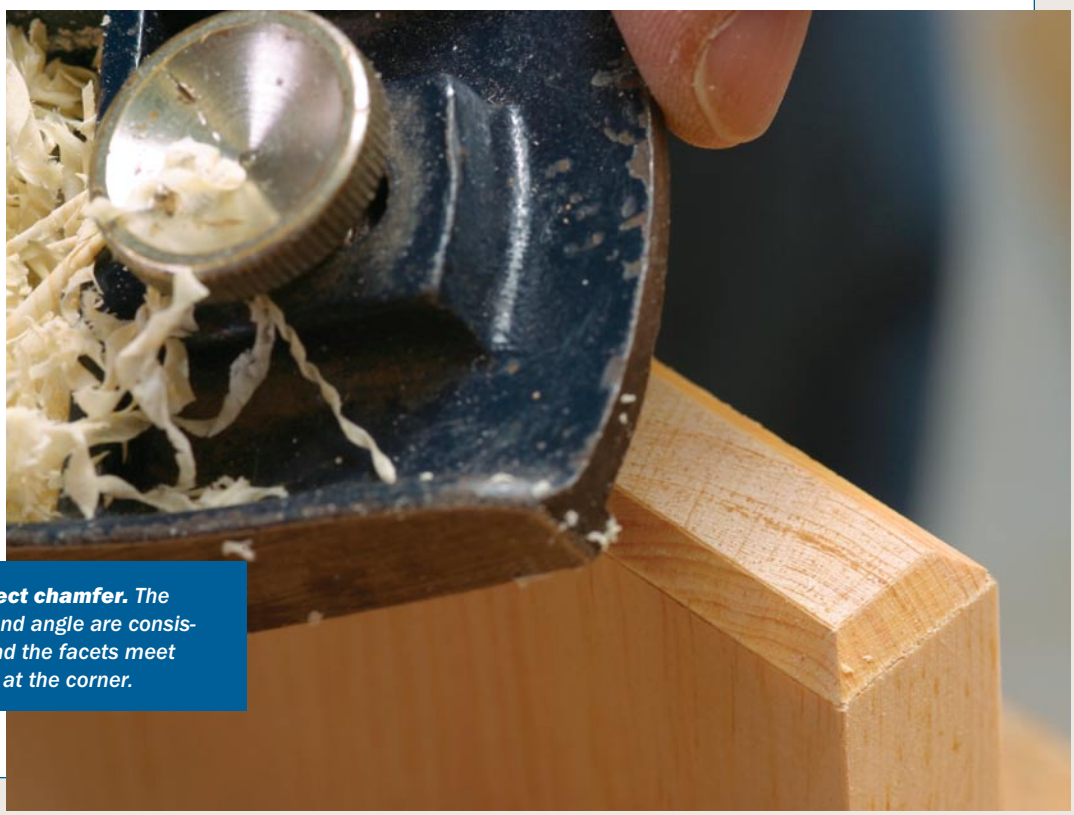
Now, flip the board and repeat the exercise on the other end, this time without the scribe lines. The result may not be perfect, but if you concentrate on clean bevels that align at the corners, it should look pretty nice without a lot of time spent scribing lines.

Start planing at an end. *Set the plane to take a light cut. Hold the plane at 45° to the direction of cut to create a shearing action, and make continuous passes.*



Plane toward a chamfered end. *By planing in this direction, the wood fibers at the end are supported, and won't tear out.*



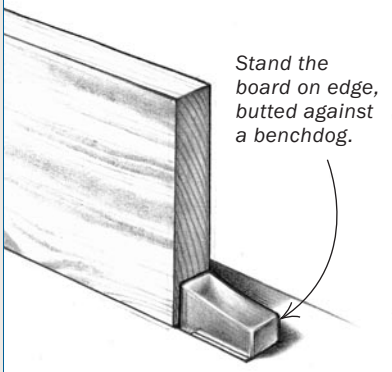


A perfect chamfer. *The width and angle are consistent, and the facets meet exactly at the corner.*

Jointing edges

WEIGHT SHIFT IS THE KEY TO CONSISTENT EDGE-PLANING

Recess the blade, then run it back out. *Use two fingers to gauge the depth of cut and whether the blade is parallel to the sole while making adjustments with the other hand.*

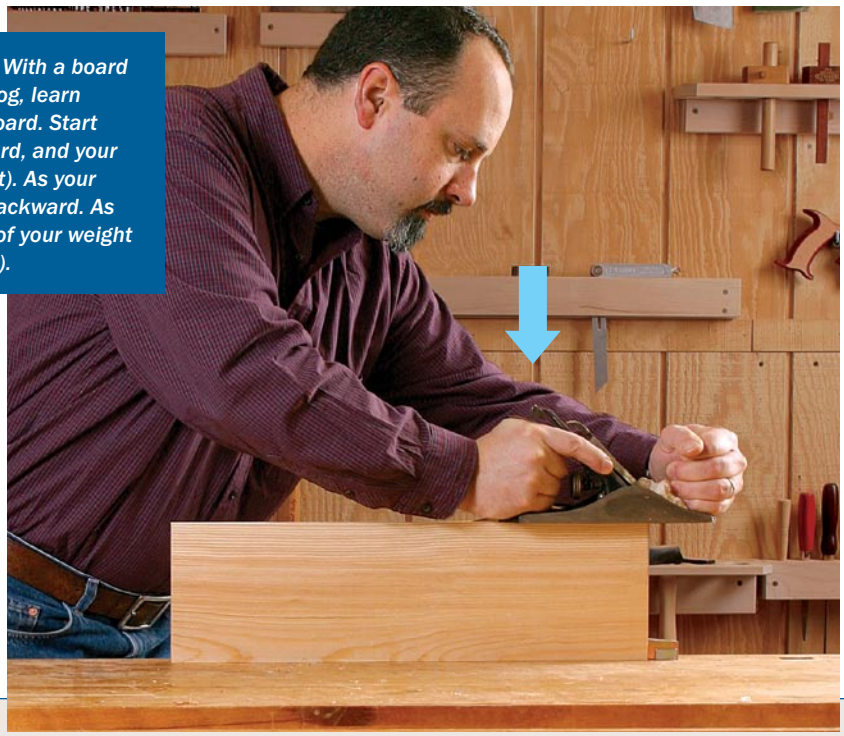


Most woodworkers I know have had a bad experience with a handplane, and I'm no exception. In the middle of one of my first projects, I grabbed a dull, rusty plane from my dad's toolbox and promptly ruined a nice walnut board. The plane went back in the toolbox and never came out again. It wasn't until years later when I was handed a sharp, well-tuned plane that I finally discovered the joy of taking a paper-thin shaving off the edge of a board. A bench plane isn't absolutely necessary for woodworking. But nothing beats one for quickly removing machine marks, leaving a surface ready for finishing (or just a few swipes of fine sandpaper away from it).

Of all the tools mentioned so far, sharpness is most critical to the performance of a handplane. The sharper the blade, the thinner the shaving you can take, and the better the resulting surface. For more on tuning and sharpening a handplane, see *FWW* #172, pp. 36-41.

The two basic jobs of a bench plane are jointing (making the edge of a board straight and square to its sides) and smoothing the face of a board. In both cases, start by setting the plane's blade, or iron, for a fairly light cut. The best way to gauge how far the blade protrudes from the plane's sole is by feel (see photo, top left). Square the iron to the sole using the lateral adjusting lever, found below the iron.

Effective edge-jointing involves a gradual weight shift from front to back during a pass while keeping the plane's sole flat on the board (see photos, below). There is a quick exercise that lets you get a feel for this concept. Take a 6-in.-wide by 18-in.-long board whose edges are ripped square, and stand it on edge. Place the front end of the board against a benchdog or stop. Take some full-length passes on the top edge of the board. Taking these passes without the board tipping over or lifting off the bench requires that you shift your weight as described. After a while this weight shift will become second nature.



Shift weight from front to back. *With a board on edge against a block or benchdog, learn to plane without tipping over the board. Start with the plane centered on the board, and your weight on the fore of the plane (left). As your cut progresses, shift your weight backward. As the plane moves off the board, all of your weight should be on the rear handle (right).*

Smoothing face grain

A SHARP BLADE AND LIGHT CUTS LEAVE A BOARD READY TO FINISH

Planing the face of a board requires the same weight shift as planing the edge of a board, but because the entire width of the blade makes contact with the surface, more force and a lighter cut are necessary. Sometimes, especially at the beginning of a cut, the plane will leave a scalloped surface as it cuts. This is known as chattering. To avoid it, get the blade sharp and set it for the lightest cut possible. Begin the cut with your weight at the front of the plane, and move slowly across the board. Skewing the plane as you move forward also can minimize chattering.

To practice smoothing, secure the board on the benchtop. Pencil some lines across the face along the length of the board. Set the blade for a very light cut. I like to back the blade into the sole, then slowly lower it.

Start at the left edge and take a full-length pass with the plane. If the board's surface is uneven, the plane may take a sporadic shaving. This is fine. If the plane doesn't cut at all, set the blade for a deeper cut. By making a habit of gradually increasing the depth of cut, you should avoid gouging your work. Continue planing, moving from left to right with slightly overlapping strokes. Resist the urge to take multiple passes when you come to an area where the plane doesn't shave. The way to remove a low area is to plane the entire board to that level. Finally, if the plane leaves ridges across the face of the board, its blade is not parallel with the sole. Adjust the blade, and plane on to a perfect finish.

Pencil marks gauge your progress. *To minimize tearout, set the blade for a light cut. Shift your weight from front to back, and skew the plane to make a shearing cut (above). Make a series of passes, moving from one side to the other. Pencil marks will show the low spots (right). Keep planing the entire board until it's flat and the pencil marks are gone. The sharper the blade, the thinner the cut you can take, and the less tearout you'll have (below).*