

The ABCs of Letter

A few key techniques handle every letter in the alphabet

BY CLARK KELLOGG



I love carving letters. There is something about the crispness of a well-cut letter that just feels like magic to me. Eight years ago, I was fortunate to be able to study with English woodcarver Chris Pye and I still carve letters using the technique he taught me. There are many other approaches to letter carving, but I like this method because you can learn the basics in about a day—the rest is just a matter of practice.

I'll explain the set of core techniques that, once mastered, can be used to create any letter in the alphabet. This type of carving works well with various styles of lettering (such as italic or Gothic/blackletter), but traditional Roman letters are the best place to start. Although typographical issues such as spacing and layout are essential elements of a successful carving, this article will focus on just the technique of carving the letters themselves.

All the letters are cut with double-beveled chisels and gouges. (I have had good luck with both Pfeil/"Swiss Made" tools and those made by Lie-Nielsen/Auriou.) Somewhat counterintuitively, a V-gouge is almost never used for this type of lettering.

There are three basic shapes you need to learn for letter carving: straights, curves, and intersections. All letters in the Roman alphabet comprise some combination of those three elements, and carving a letter is usually just a matter of arranging and connecting them. Straights are cut with (you guessed it) straight chisels, curves are cut with gouges, and intersections are cut with a combination of standard and fishtail gouges.

All letters are cut with the tool roughly 30° off vertical. Each side, or wall, of the letter is cut with a separate action and they should meet in the center of the trench, which is called the root.



Carving

Getting started

Most basic lettering is carved along the length of a board, and this is good way to start.

If you look carefully at a set of capital Roman letters, you will notice that each letter is made from a combination of thick and thin strokes. Generally, the width of a thick stroke is $\frac{1}{6}$ the total height of the letter. (So, a 24mm-tall *I* would be 4mm wide.) Most uprights are made of thick strokes. Thin strokes usually have a width $\frac{1}{8}$ the height of the letter, and are mostly used for horizontal strokes.

Wood selection

Generally, the harder the wood, the more difficult it is to carve; however, you tend to get a crisper result. Conversely, soft woods such as poplar and cedar are fairly easy to carve, but can be difficult to keep looking sharp. I would avoid pine, as the alternating hard and soft growth rings make it nearly impossible to get consistent cuts. Mahogany is generally considered the gold standard, combining ease of carving with the ability to take fine detail, but using it can present some sustainability issues. I have had good luck with walnut, white oak, pear, cherry, and Osage orange. Feel free to experiment with other woods as well.

Basic upright stroke

The basic upright is the most important stroke to learn, because it serves as the foundation for almost all of the different cuts you will make afterward. It is essentially an *I* minus the serifs at the top and bottom. Begin with a vertical cut. Place a double-bevel chisel vertically along the centerline of the trench, and make a heavy cut using a mallet. Don't be shy about it; the idea is to sever the fibers on either side of the trench.

Next, cut the walls of the stroke. Place the chisel on the right-hand line. Tilt the chisel 30° to your right, gripping the chisel in



FROM PAPER TO WOOD

Kellogg uses Adobe Illustrator, but almost any word-processing program will suffice to lay out the carving. Trajan is a good font to start with. Tape the printout to the workpiece with a sheet of blue transfer paper (saralpaper.com) underneath. Then trace the outlines of the letters with a sharp pencil (above). For large, curved letters, Kellogg sketches in a centerline (left) to guide his stop cuts. On straight sections he'll usually just eyeball it.

A SMALL KIT OF CARVING TOOLS

Traditionally, flat carving chisels are designated #1, with a second number referring to their width in millimeters. So, a 1/25 refers to a flat, double-beveled chisel 25mm wide. Gouges are also labeled with two numbers, with the first designating the degree of curvature, from #2, which is nearly flat, to #9, which is either a half-circle or a U-shape. Most curves can be cut with an assortment of 3s, 4s, and 5s, while 2s, 6s, and 7s are helpful to have on hand in a pinch. It may be useful to have a 150mm ruler handy, as nearly all carving tools are designated in millimeters. And at least to begin with, it is nice to carve letters that correspond to the size of your tools. For example, if you only have a 1/20 chisel, plan on making all your verticals 20mm long.

Double-bevel chisel

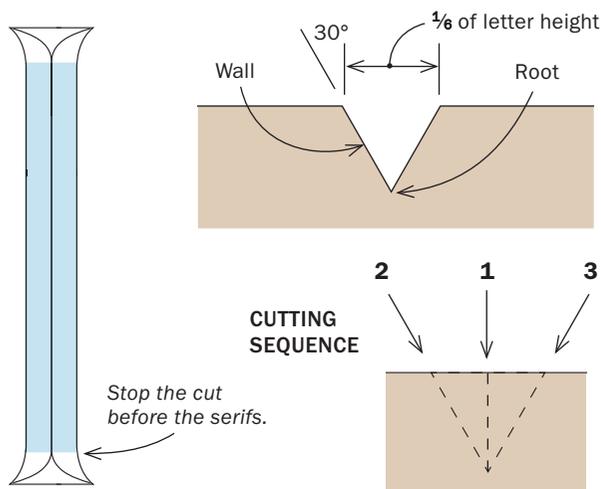
Gouge

Fishtail chisel and gouge



Vertical strokes

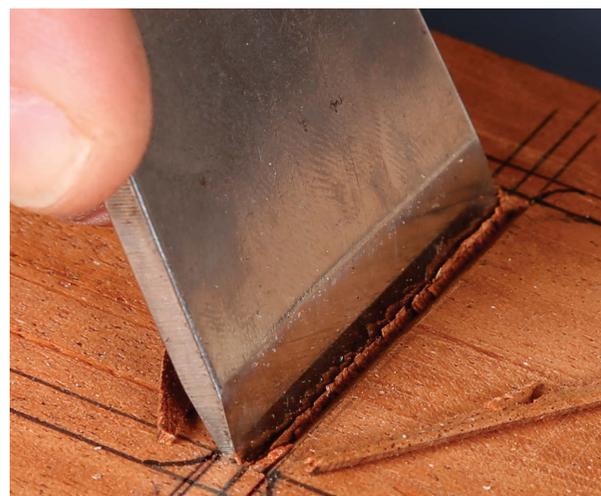
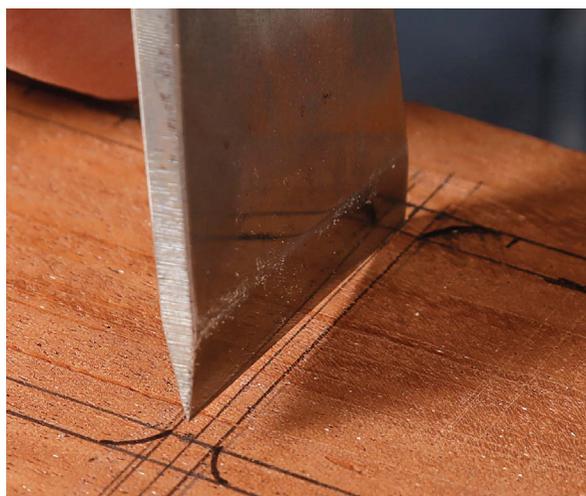
One of the most common elements in letter carving, the vertical stroke is simple to cut and a good place to start practicing.



your left hand, and the mallet in your right. (You don't want to work with your arms crossed.) An easy way to find a roughly 30° angle is to tilt the chisel to 45° (or, halfway between upright and lying down), then tilt the chisel up about halfway between 45° and upright. The edge of the chisel should now be aiming toward the root. With one or two quick mallet strikes, chop down into the trench. It's tricky at first, but try to maintain the 30° angle all the way through the cut.

Next, mirror the cut you just made by switching hands (the chisel should now be in your right hand, and the mallet in your left), and placing the chisel on the left-hand line. The idea is for the two sides of the trench to meet neatly in the center, at the root of the trench. A small, triangular chip should pop out if you have done things just right. Switching hands to carve either side of the trench can take a little getting used to, but learning the skill is well worth the practice. Where many people seem to run into trouble is maintaining the 30° angle on either side of the trench: Either the chisel is held too low (too flat) to the surface, producing a

Start with the centerline. Place the chisel on the centerline and make a heavy vertical cut (right). Then follow with a pair of angled cuts (far right) to complete the trench. Maintain a consistent angle when chopping so that all strokes of the same width will be the same depth.



TIP

SWITCH HANDS FOR OPPOSITE WALLS



It might seem awkward at first, but switching hands to cut opposite sides of the trench will help you cut more consistent angles. With a little practice, it will become a habit.

shallow trench, or it is held too upright, and the trench becomes too deep. Don't worry if the ends of the trench look broken-off for now—the serifs we add later will take care of that.

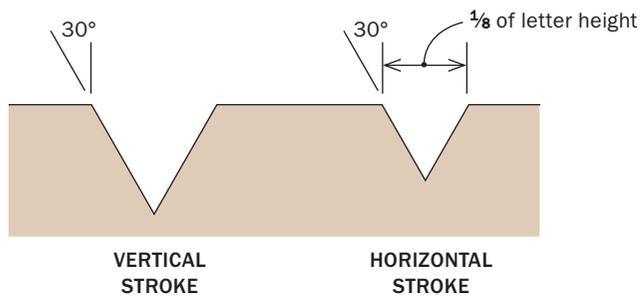
Angled strokes, such as the uprights of an *A*, are cut in essentially the same manner as vertical strokes, with a few minor differences. The first, of course, is that the layout lines are angled relative to your base lines. The second is that we'll make angled strokes a little bit shorter, so as not to cut into any intersections.

Horizontal strokes

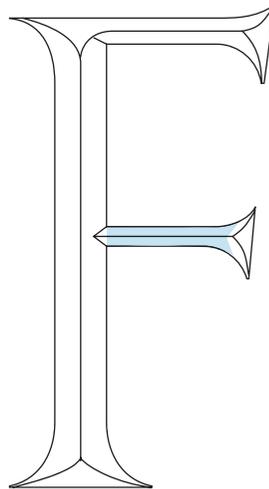
The geometry of the horizontal stroke is essentially the same as a vertical stroke; however, because horizontals generally run with the grain, instead of across it, the technique for cutting them is different. The important thing is to create stop cuts at both ends before making the horizontal stroke. On letters such as *A* or *H*, carving the vertical strokes first will create natural stops for the horizontal stroke. On letters like *E* and *F*, where the center stroke ends with a serif, you'll make a pair of stop cuts on the serif end.

Horizontal strokes

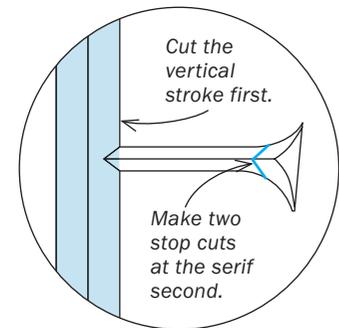
These cuts are typically narrower than vertical strokes, so the trench will be shallower.



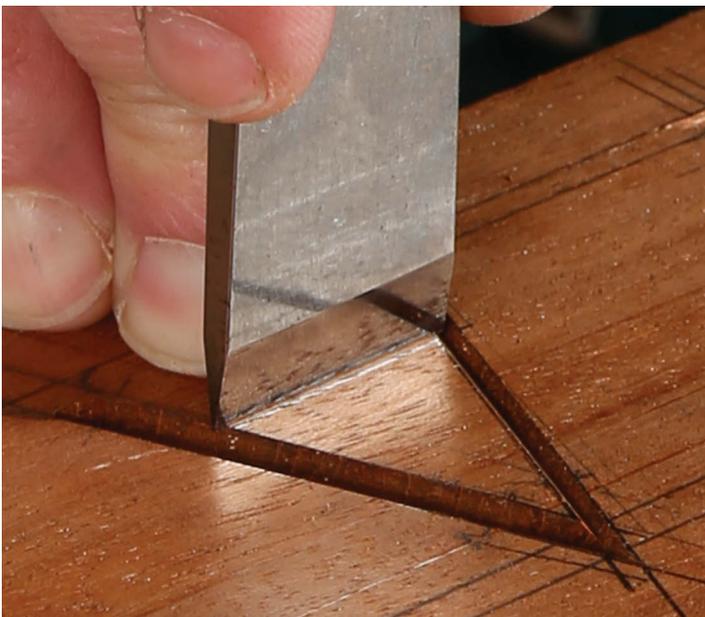
Maintain the same chisel angle for thin strokes as thick strokes. The trench will be roughly half as deep as the thicker stroke.



ESTABLISHING THE ENDS OF A HORIZONTAL STROKE



It's important to sever the grain at each end before making a horizontal cut. Where it meets a vertical, start with that cut first. Where it meets a serif, make a pair of cuts.



Vertical strokes before horizontals. Cuts parallel to the grain require stop cuts at the ends to prevent the grain from splitting. On letters like A, where the horizontal cut falls between two verticals, carving the verticals first creates natural stops for the horizontal stroke.



A pair of cuts at a serif. When a horizontal stroke ends at a serif such as the middle bar of an F, make a pair of cuts in a V-shape just before the serif to sever the end grain. Then carve the trench. Make the vertical and angled chops (below) and the chips should pop out cleanly.

These cuts will prevent the fibers from splitting along the board. Next you can cut the trench, starting with a vertical cut, then making the two 30° angle cuts. This can usually be done without a mallet, since there is less resistance in cutting with the grain. With some “stringy” woods, such as poplar or white oak, you may find that the fibers tend to “roll” down the cut instead of paring off cleanly. If that is the case, try re-honing your chisel, and use a slicing motion to work down and across the fibers as you move toward the bottom of the trench.

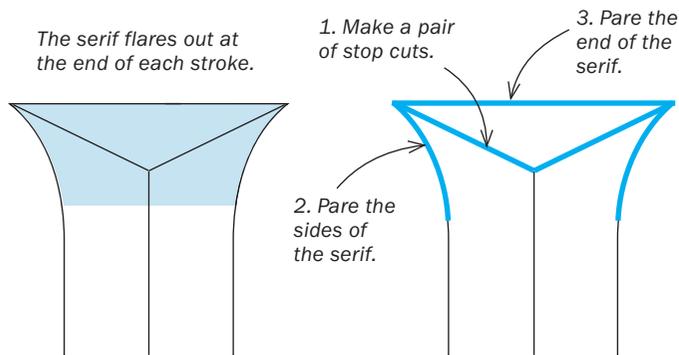
Serifs

In Roman lettering, serifs terminate nearly all strokes that don't end in an intersection (C, J, and R are the exceptions.) I like cutting them because they give a finished look to straight-cut trenches, and can tie a carving together visually. To make a serif, begin by using a fishtail chisel to make two stop cuts that angle from the



Serifs

The serif caps the stroke and gives the font its distinctive character. You'll need to make a series of cuts to create it.



Make a pair of stop cuts. Start by planting the corner of the fishtail chisel at the centerline of the trench, then pressing forward at a 45° angle until the cut reaches the corner of the serif.

Pare the sides of the serif. The flare is created with a #5 fishtail gouge. Plant the corner in the root at the base of the serif, then swing and rotate the handle of the gouge upward, until the edge of the tool just traces the serif. The goal is a smooth transition from the straight stroke to the curved serif.



center line to the points of the serif. Then use a #5 fishtail gouge to cut the flaring side walls. The idea is for the letter to transition smoothly from a straight stroke to a curved serif. Next, cut the end of the serif using the #3 fishtail gouge, starting at the top of one corner and slicing down diagonally toward the other. If all has gone well, a little triangular chip should pop out, and the three faces of the serif should join in a point in the middle.

Tying everything together

Intersections are a major component of almost any letter. And while they aren't as fussy as curves can be, the order of operations to cut them can be a little bit tricky. Generally, there are two types of intersections: those in the middle of a segment (such as the crossbar of an *A*), and those at the end (such as the apex of an *A*).

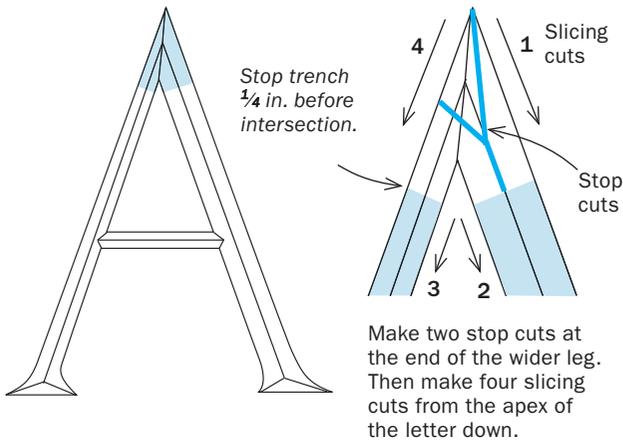
Intersections in the middle of a stroke happen automatically, since all you do is cut into one side of the main stroke's trench. Keep in mind, however, that if the



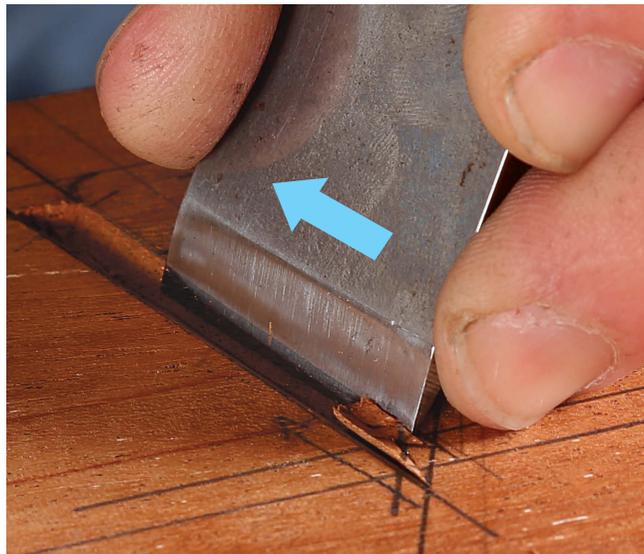
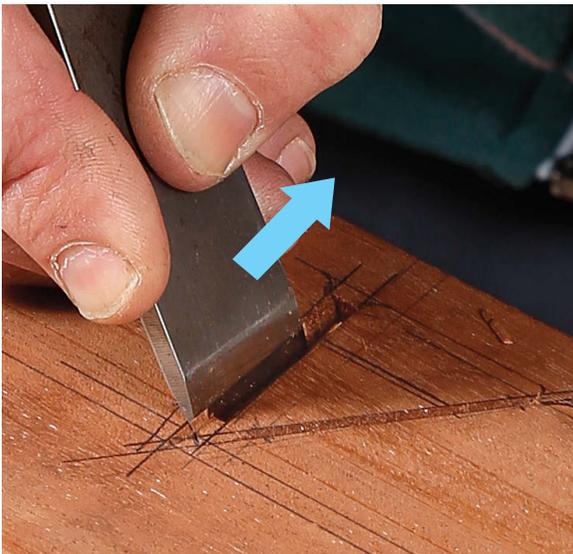
Finish with the end of the serif. Using a #3 fishtail gouge, start at one corner of the serif, angle it, and push down. You should end with the gouge's leading corner at the root of the serif, and its edge along the opposite corner of the serif. The gouge gives the serif its slightly incurved end wall.

Intersections

For everything to look good where strokes meet, it's important to work cleanly and carefully to create the proper geometry.



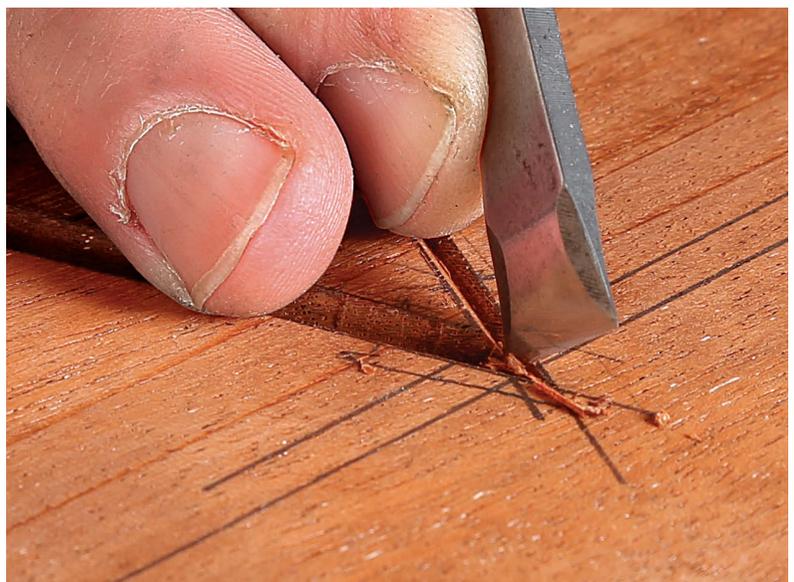
Use a fishtail chisel to make a pair of stop cuts. The stop cuts begin at the top center of the thicker trench, with one pointing up to the apex of the junction, and the other roughly perpendicular to the thinner stroke (left). Continue the center line of the stroke to the stop cuts (right).



Continue the walls. Make a series of slicing cuts with a chisel, starting at the top of the apex and working down. To make these cuts, grip the chisel near the cutting edge and pull toward you.

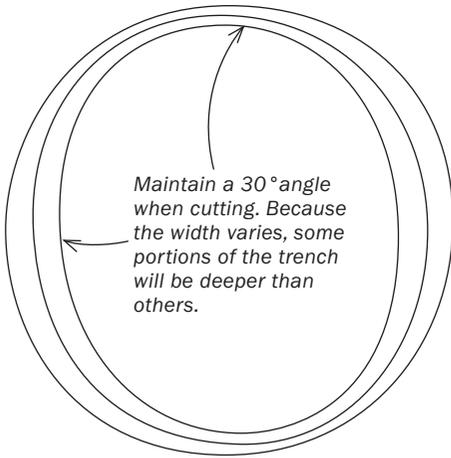
intersecting stroke is thinner (as with most crossbars), it will also be shallower; its trench should “exit” about halfway up the wall of the thicker stroke.

Junctions at the end of two or more strokes are a little more complicated, and you must be careful to maintain the correct geometry inside the trenches. As always, it is critical to keep the angle of the trench walls consistent. To join the trenches, cut them as you would normally, but ending about $\frac{1}{4}$ in. away from the junction. Then use a fishtail chisel to make a pair of stop cuts (as you did with the serifs). Next, make a series of slicing cuts with a chisel, starting at the top of the apex and working across the junction. (It should be four cuts total, one for each wall of the two trenches coming together.) You may have to make several passes. Work slowly, and avoid putting too much pressure on the grain. Finally, use a fishtail chisel to remove the chip left at the bottom of the intersection.

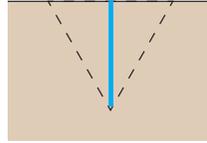


Clear out the waste. Finally, use a fishtail chisel to chop and remove the small chip left at the top of the larger trench.

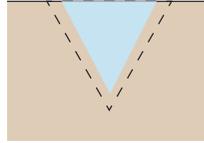
Curves



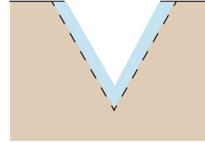
You'll need gouges of different sweeps to handle the changing curve on a letter such as an O. The final cuts are made without a mallet, so it helps to remove most of the waste before slicing to the lines.



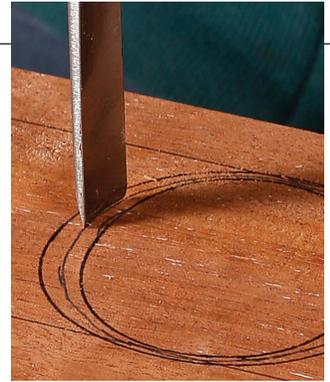
1. Start with a vertical cut at the center line.



2. Make relief cuts staying safely inside the line.



3. Use a slicing cut to finish the inner and outer walls.



Make a vertical cut along the centerline. Work your way along the line with a gouge, fitting the shape of the gouge to the curve as you go.



Make a series of relief cuts. Using a #4-12mm gouge, work along the outer rim of the O, pushing in toward the centerline (left). These cuts don't have to be super precise, just be sure to stay inside the outer line. Repeat the process along the inside rim, this time using a #3-12mm gouge (right).



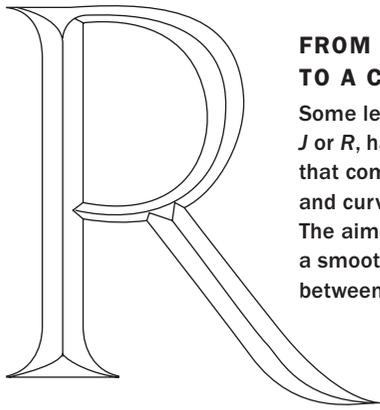
Curved strokes

The majority of the letters in the Roman alphabet have at least one curved element, so there is no getting around learning how to cut them. It takes a little while to master, but the results are well worth it—your first well-cut O will be as exciting as cutting a nice set of dovetails for the first time. The thing to remember with curves is that the geometry of the trench is the exact same as it is for straight trenches—two sides running down at an angle and meeting neatly in the middle.

Curved strokes are cut by matching the right-shaped gouge to the curve at hand. Generally, the walls are not cut with a mallet; rather, after the trench is roughed out the walls are “sliced” by skating the gouge along the curve. For these cuts, the gouge is held near the cutting edge like a pencil, and pushed along and into the wood, with the “heel” (the corner of the cutting edge) cutting into the fibers. The handle is usually held in the less-dominant hand and serves as a brake for the gouge, to keep it from slipping and cutting beyond the confines of the letter and



Pare to the line. With a sharp #4-16mm gouge, make a slicing cut all the way around the outside rim of the letter (above). Use a pencil grip and twist the gouge as needed to keep it on track. Keep the gouge tilted back toward you and remember to maintain the 30° angle. You may need to switch hands or body positions to work all the way around the letter. Finally, make a slicing pass on the inside trench wall, switching between a #3-12mm and a #4-12mm to adjust for the curve (left).



FROM A STRAIGHT TO A CURVE

Some letters, such as *J* or *R*, have strokes that combine straight and curved sections. The aim is to create a smooth transition between the two.



Begin with the straight section. As you would with any other straight section, begin with a vertical cut at the centerline and follow with angled cuts. Be sure to stop the trench short of the curved section.



Continue with the curve. Use a gouge with a sweep that matches the curve to make a vertical cut along the centerline (far left). Then use a fishtail gouge to slice the curved walls (left).

out into the great unknown. The gouge will naturally want to follow its own curve; and although you can usually steer a gouge to make a tighter turn, it is nearly impossible to steer it to make a wider turn. Most curved strokes will require a flatter gouge to cut the inside wall and a curvier gouge to cut the outside wall at any given point. Therefore, it is useful to have a range of gouges on hand; #3-16mm, #4-12mm, #4-16mm, and #6-12mm are good ones to start with.

With a gouge held vertically, cut along the centerline, just as you did for the straight strokes, using a mallet. Then rough out the walls with relief cuts along the outer and inner rim of the *O*, pushing the gouge in by hand toward the root. At this point you should have a rough *O*. Don't worry if the trench is a bit funky, or if there are still little chips stuck to the root.



Next make a paring or slicing cut all the way around the outside rim of the letter, tracing the outside line of the *O*, using a pencil grip and twisting the gouge as needed to keep it on track. Keep the gouge tilted back toward you so one corner of the cutting edge is pointed down toward the root, and the other is clear up above the work surface. Remember to maintain the 30° angle off vertical just as you did before. You may need to switch hands or body positions to work all the way around the letter.

With the outside trench wall complete, make a slicing pass on the inside wall. Ideally, you should be left with two curving trench walls that, as before, meet at the root in the middle of the stroke. Just remember that the depth of the cut will vary according to the width of the trench. □

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