Scribing for a Perfect Fit

by David Frane

The first time I watched a carpenter scribe a countertop to the inside corner of an irregular plaster wall, I was impressed. With practice, I eventually got pretty good at scribing. But the more things I built, the more jobs I encountered where standard scribing techniques didn't work — situations like inside treads on winding stairways and countertops in three-sided alcoves with no backsplash (as with built-in desks).

In cases like these, many carpenters make either a wooden frame or a plywood template in the exact size and shape of the finished piece. I'm not a big fan of these methods, both of which are time-consuming. A wooden frame is flimsy, and if you take your eyes off of it for even a minute, there's a good chance that someone will bump it and knock it out of whack. Plywood templates tend to take a long time to get right. I've seen carpenters make single-piece plywood templates that fit perfectly into an opening. But anyone who is good enough to make a perfectly fitting template can make the finished piece without a template.

When there's no room for error, these two techniques will give you a tight fit every time

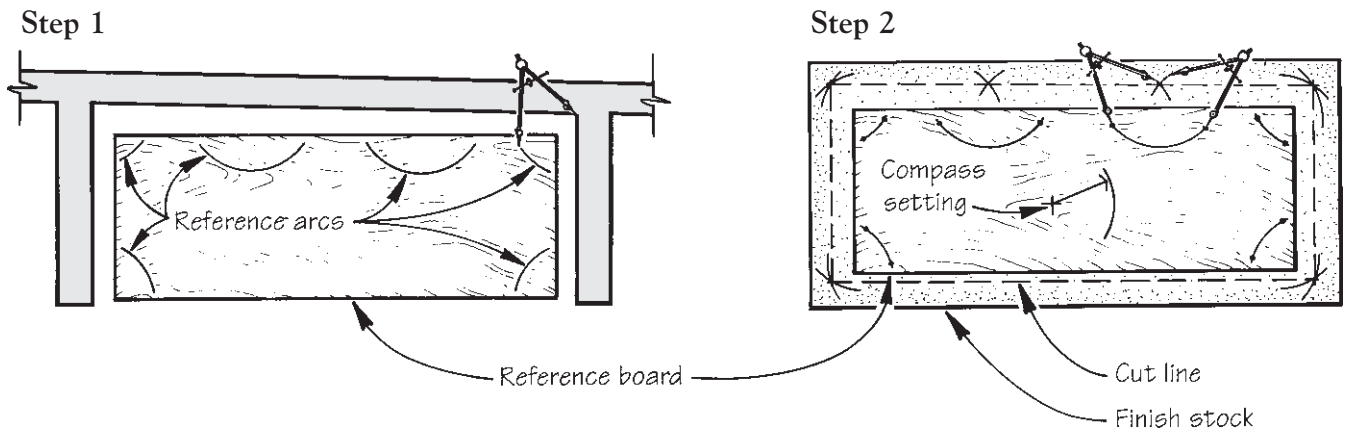
Instead of templates, I prefer two simple, yet versatile techniques that are quicker and more accurate. The first is a compass technique called *spiling*; the second uses a *joggle stick*. Both methods involve marking a reference board in such a way that the marks can be accurately transferred from the board to the finish stock. Neither technique requires any special equipment, and they're as close to foolproof as anything I know.

Spiling

I learned spiling as a boatbuilding apprentice and have continued to use it as a finish carpenter. The technique is based on the fact that the center of a circle is the same distance from all points on its circumference, and that a compass placed on the circumference and set to the circle's radius will always draw an arc through the circle's center.

Start by making a reference board from 1/4-inch plywood (see illustration below). It should be a few inches smaller than the opening into which you want to fit the finished piece. (Unlike plywood templates, reference boards can be used over and over again so they don't waste good plywood.) Center this board in the space for which you're making the finish piece, and clamp or tack it in place. Then set your compass so that when its point touches any point on the wall, the pencil lands a few inches onto the reference board.

Spiling With a Compass



Step 1: *To spile, place the point of the compass at each corner of the alcove, and swing arcs onto the reference board.*
Step 2: *Secure the reference board to the finish stock. Place the compass point at the ends of each of the arcs on the reference board, and swing a series of intersecting arcs onto the finish stock. Connect the intersection points to mark the cut line. Always record the compass setting on the reference board so that it can be rechecked before swinging the second set of arcs.*

Draw a series of arcs on the reference board, picking up as many points along the wall as you need to reproduce the shape of the space. These include inside corners, outside corners, and where the front edges of the countertop will hit the wall. The more points you transfer to the finish stock, the better it will fit the opening. The more irregular the space you're trying to fit, the more points you will need.

Now remove the reference board and clamp it to the top of the finish stock. Without changing the compass setting, place the point of the compass on one of the arcs you made on the reference board, and swing an arc onto the finish stock. Move the pointed end of the compass to a point on the same arc that's as far away from the first point as possible, and swing a second arc that intersects the one you just made. Repeat this process at each arc you drew on the reference board. When you're done, the finish stock will have a series of intersecting arcs on it. Each intersection will correspond to one of the original points on the wall. Connect the intersections with lines and cut to those lines. You should have a perfect fit.

Remember these finer points of spiling:

- It's crucial that you use the same compass setting throughout the process. Save the original compass setting by swinging an arc on the reference board. Then, if you drop your compass or somehow lose the original setting, you can reset it.
- Use thin reference boards — I make mine from 1/4-inch plywood. When you transfer marks from the reference board to the finish stock, the compass has to reach down to the stock by an amount equal to the thickness of the reference board itself. The thicker the reference board, the more likely its thickness will introduce an error.
- A large number of arcs on the reference board can be confusing. I label each arc — "inside corner," "front edge," and so on — to indicate which point on the wall it refers to.

The Joggle Stick

My second method uses a reference board and a joggle stick. A joggle stick is nothing more than a narrow strip of 1/4-inch plywood or plastic that's cut roughly into the shape of a handsaw, with a point at one end and notches or teeth along one side. It's best if the teeth are randomly sized and spaced. This ensures that there's only one way to realign the joggle stick.

To use the joggle stick, you begin by fastening the reference board in place as you do for spiling. Then lay the joggle stick on top of the reference board. Place the joggle stick's pointed end on each point on the wall, and trace the outline of its toothed edge onto the reference board. (The more points, the better.) Record important locations like inside corners by labeling the zigzag lines.

Next, remove the reference board and temporarily secure it to the finish stock — same as for spiling. To transfer your points, lay the joggle stick on the reference board so that the notched edge aligns with the zigzag lines you just traced onto the board. The pointed end of the joggle stick will correspond to the original point you took off the wall. Mark this point on the stock. Repeat the procedure with each zigzag line you've made. Then connect the dots and cut to the lines.

If you're tacking the reference board onto the top of a cabinet, it's a good idea to align one of its edges with a side or an edge of the cabinet. That makes it easier to position the reference board on the stock in such a way that all of the layout marks land on the stock.

Which Method Is Better?

The joggle stick's main selling point is that it can be as long as you want, so it can reach farther than a compass. This lets you use a smaller reference board and makes it easier to scribe irregular shapes like inside winders.

On the other hand, it's easier to do an accurate job with a compass because the compass lets you make a series of precise points. Joggle strips tend to be less precise because they're usually cut from scrap lumber. That's why I always use a compass for fussy work, such as scribing a stair tread to a newel post. ■

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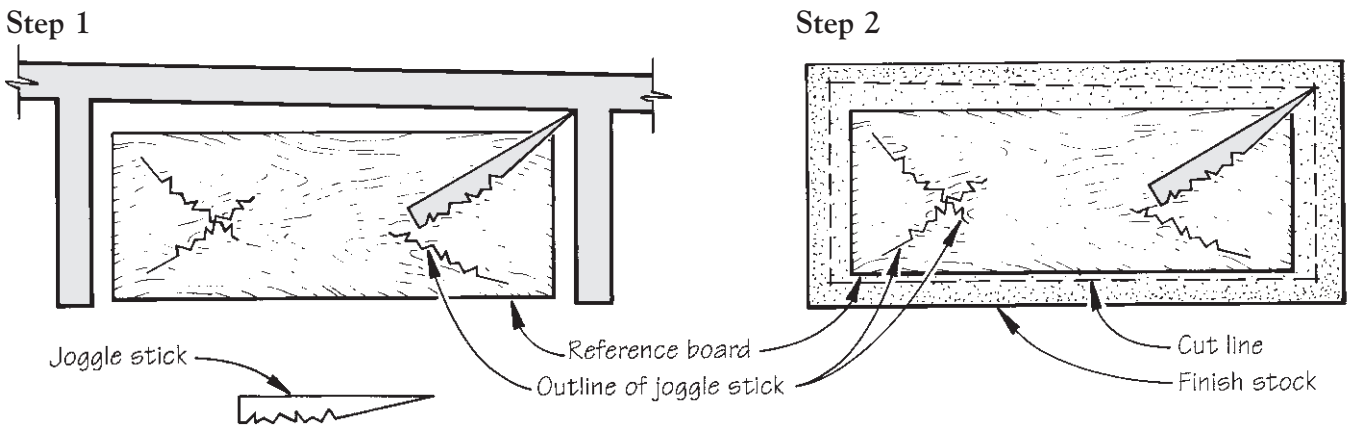
Scribing With a Joggle Stick



Step 1: *Make a joggle stick from 1/4-inch plywood. To pick up the outline of the alcove, place the pointed end of the joggle stick at various points along the wall, then trace the outline of the joggle stick onto the reference board.*

Step 2: *Fasten the reference board to the finish stock and transfer the points from the reference board to the finish stock by lining up the teeth of the joggle stick with the outline on the reference board. Connect the points to mark the cut line.*