by Tom Brewer

To prepare an existing chimney for counterflashing, a mason cuts a 1 1/4-inch groove in the mortar joints using a gas-powered concrete saw.

Leakproof Flashings for Masonry Chimneys

Don't rely on mechanical fasteners and caulk: Embed the counterflashing in a groove in the masonry.

A properly flashed chimney is protected by the overlap between the base flashing and the counterflashing. This two-part system absorbs any building movement that may occur (when new house framing shrinks, for example). Base flashing is installed as the shingles are applied, and generally consists of the lower base pan, step flashing, and the upper pan or cricket. Most builders are comfortable installing the base flashing, because the roof sheathing provides a solid nailing base. But what about the counterflashing?

In the Groove

Many contractors make the mistake of fastening the counterflashing to the side of the chimney, using masonry screws to secure the flashing to the side of the chimney, then applying a bead of caulk at the top edge of the flashing (see Figure 1). As daily temperature changes cause the flashing to expand and contract, the adhesive bond of the caulk joint is constantly stressed. This type of flashing detail will fail — sometimes in less than a year. Roofing cement doesn't last any longer.

Properly installed counterflashing is "let in" to a groove in the chimney and overlaps the upturned sides of the base flashing, as shown in Figure 1. No fasteners are required. I've used these methods for both aluminum and copper flashing.

New construction. In the case of new construction, this groove should be about 1 1/4 inches deep and can easily be made by raking out a portion of the mortar joint before the mortar has set. To determine which joints get raked out and where, I choose a mortar joint that's at least 8 to 10 inches above the point where the chimney first penetrates the roof (Figure 2). On block chimneys, this is usually the joint just above the first full course on the down-slope face of the chimney. (For brick chimneys, this joint is above the third or fourth course.) I rake this joint out horizontally until the groove is within 3 inches (measured vertically) of the roof surface. Then I move up to the next mortar joint (one 8-inch course for block, three courses for brick), and rake it out until it comes within 3 inches of the roof surface. I repeat this process until I reach the back corner of the chimney and the joint is at least 3 inches above the roof. The first time you try this, don't worry about raking out more joint area than you think you'll need. The "excess" will get covered by the counterflashing or can be pointed after the flashing is installed.

Existing chimney. If you're working on an existing chimney, you've got no choice but to get out your goggles

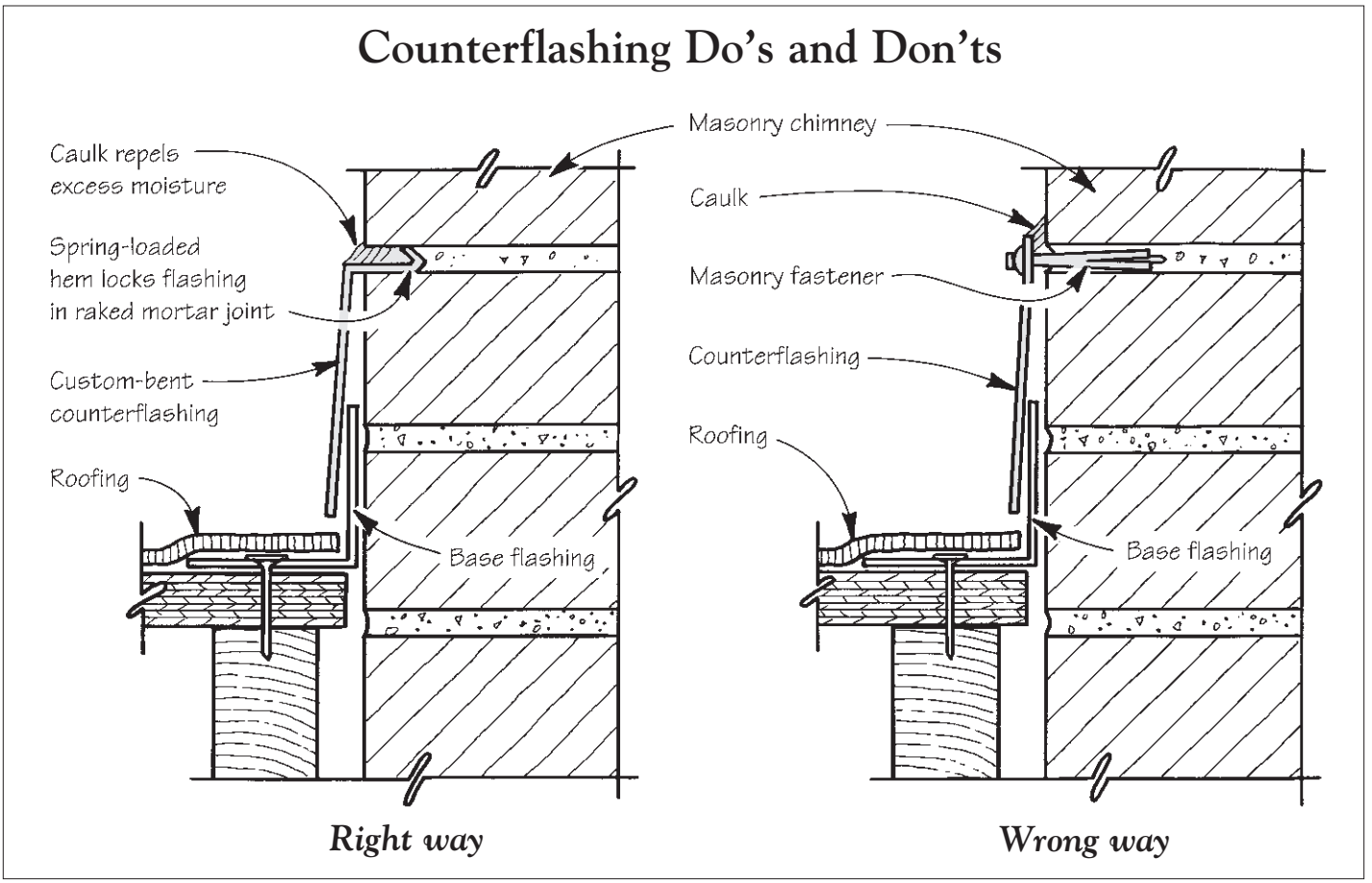

Figure 1. *The proper way to counter-flash a chimney is to insert the counterflashing into a raked joint (left). A small bend in the horizontal leg of the flashing ensures that no water can run behind the flashing. Caulk provides a secondary line of defense against moisture intrusion. Flashing fastened directly to the face of the chimney relies entirely on caulk to maintain a watertight joint (right); in time, the caulk will fail, allowing water to penetrate the house.*

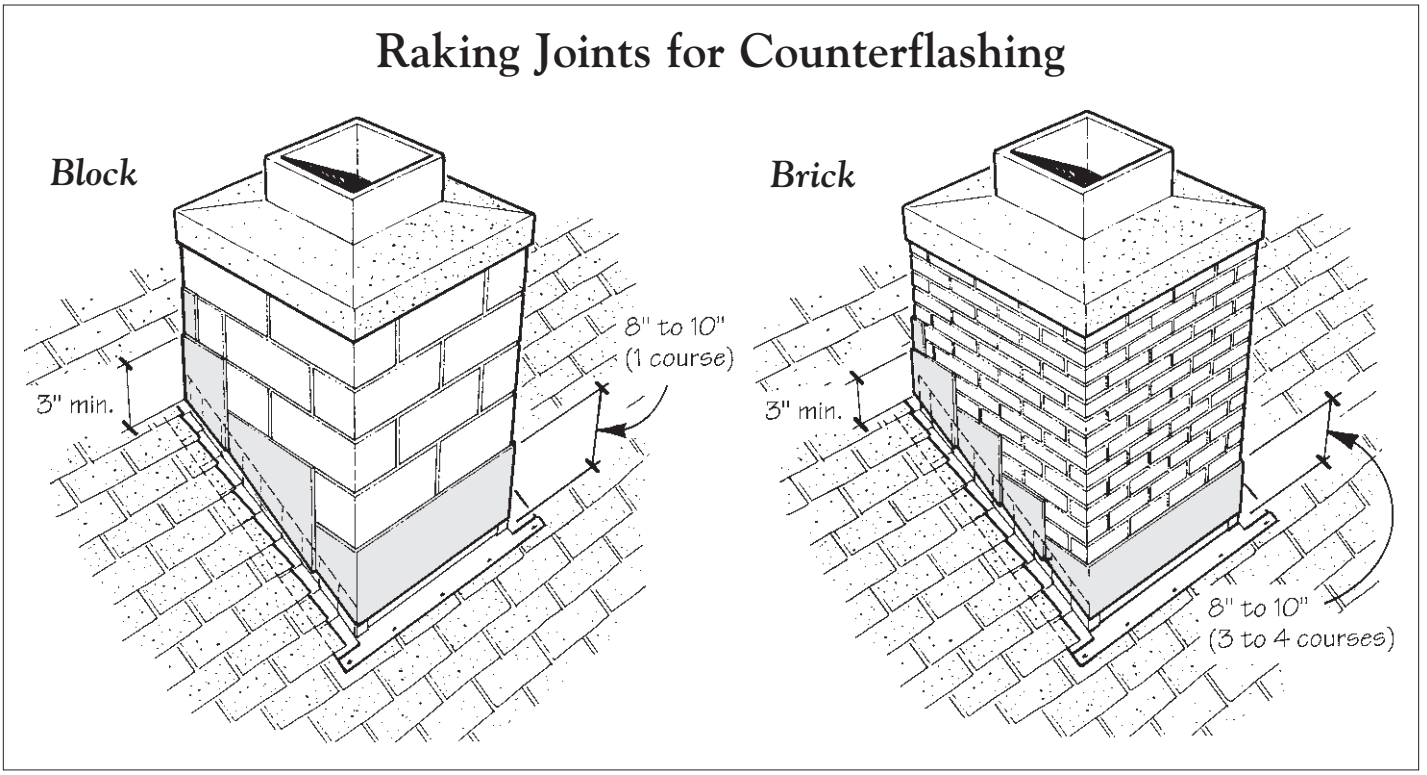

Figure 2. *Rake the mortar joints to leave a 1¼-inch-deep groove for the counterflashing. On the down-slope side of the chimney, choose a joint that is 8 to 10 inches above the roof deck (one course for block chimneys; three to four courses for brick). Rake the joint along the side of the chimney until the joint is about 3 inches above the roof deck.*

Figure 3. *The author cuts the upper and lower pieces of counterflashing from painted-aluminum coil stock (.019 inches thick). The tapered cuts match the roof pitch; layout lines mark the folds at the chimney corners.*

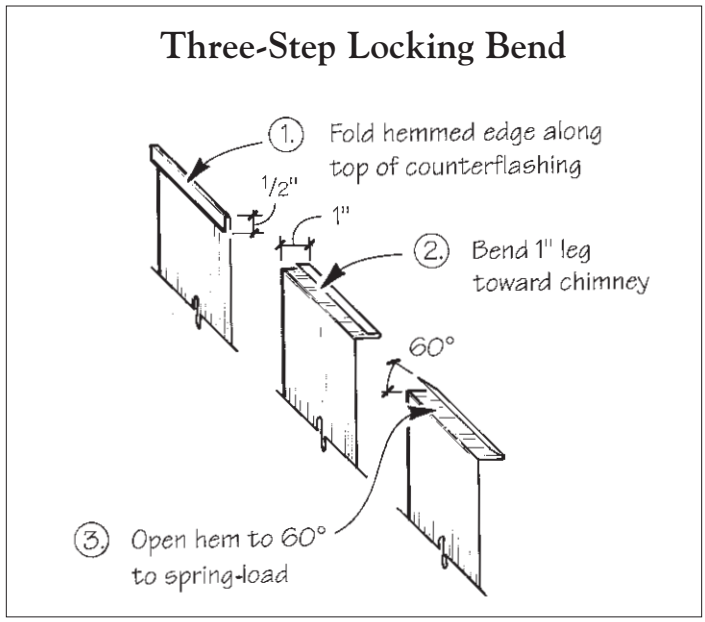

Figure 4. *First, make two simple bends along the top edge of the counterflashing, then pry open the hem to "spring-load" it: The V-shape will form a strong mechanical "lock" in the raked joint.*

and dust mask and saw the joint. You can use a circular saw equipped with a masonry blade, a heavy-duty concrete saw (see photo), or a hand-held grinder equipped with a diamond blade. The groove should be 1¼ inches deep and the width of a saw kerf. Make sure you do your cutting before the new shingles are installed. Otherwise, you'll be cleaning masonry dust off the newly installed roof — a tough chore when working with dark-colored shingles.

Custom Counterflashing

For counterflashing, I like to use painted aluminum coil stock (.019 inches thick). If you have access to a break, forming the metal will be easier, but I've shaped flashing for more than one chimney using a 2x6 and a brick hammer.

To prepare the flashing, follow these steps:

- ***Lay out the dimensions on the flashing stock and cut to size*** before making any bends (Figure 3). Be sure to mark the fold lines where the counterflashing will turn the corner of the chimney.
- ***Fold a ½-inch hem, then a 1-inch leg,*** along the top edge of the counterflashing (Figure 4). Cut away a pie-shaped piece where the flashing must wrap around a corner of the chimney (Figure 5).
- ***Pry open the hem to "spring-load" it.*** This creates both a water stop and a mechanical "lock" that holds the flashing in place. Test-fit the flashing before opening the hem; removing the flashing once it's locked in place can be difficult.

Before inserting the counterflashing, make sure the groove is free of debris, and is cut or raked out at least ¼ inch deeper then the length of the angled leg. Then insert the V-shaped edge formed by the leg and the open hem into the groove (Figure 6) and seal the joint with caulk. I use Sikaflex-1a, a high-quality one-component polyurethane sealant available from Resource Conservation Technology (2633 N. Calvert St., Baltimore, MD 21218; 410/366-1146). It's gummy stuff, but forms a tenacious bond with masonry. Since the joint is watertight, the caulk serves to keep out excess moisture and wind-driven rain. ■

Tom Brewer lives and works in northeast Pennsylvania, and has been a member of the roofers union for more than 15 years.

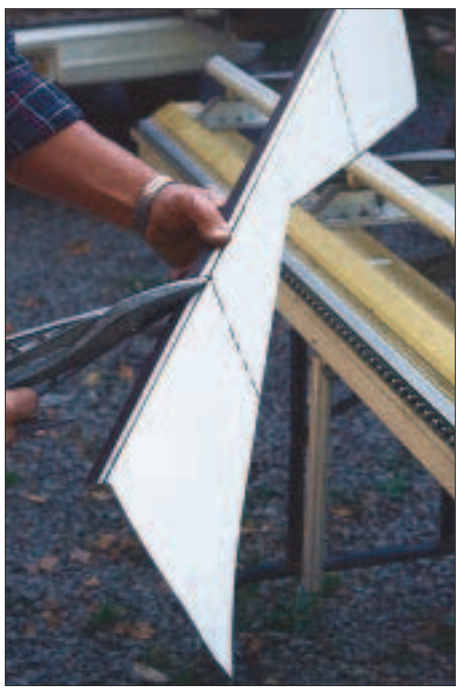

Figure 5. *The author cuts pie-shaped pieces in the folded hem so that the counterflashing can be bent around the chimney corner.*

Figure 6. *In this mock-up, the V-shaped leg of both the upper and lower pieces of counterflashing is locked into the joint between chimney blocks. A bead of caulk in the joint will keep out excess water and wind-driven rain.*