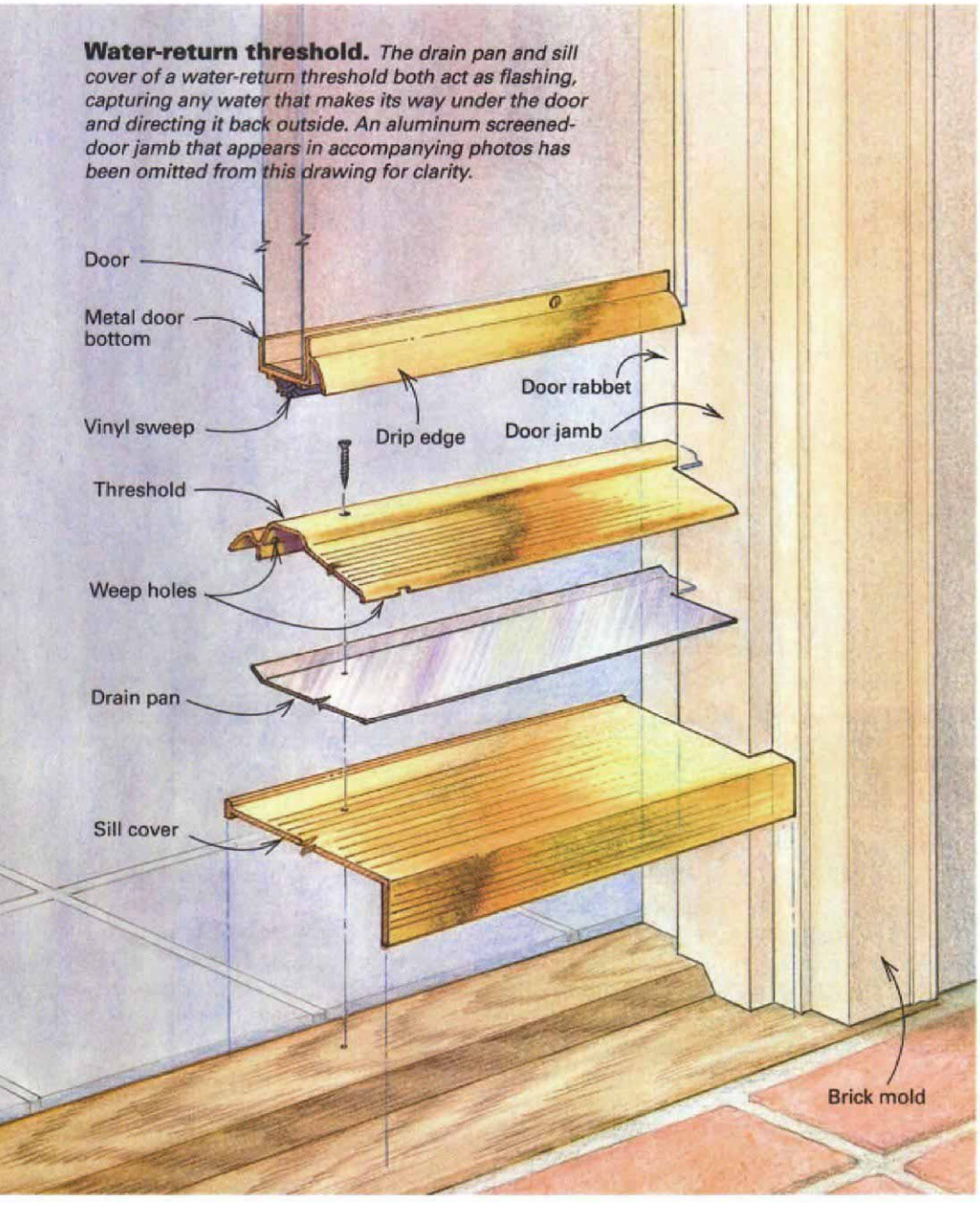
Retrofitting a Threshold

A three-piece threshold provides extra weather protection, especially in exposed locations

by Gary M.Katz



Water-return threshold. *The drain pan and sill cover of a water-return threshold both act as flashing, capturing any water that makes its way under the door and directing it back outside. An aluminum screened-door jamb that appears in accompanying photos has been omitted from this drawing for clarity.*

I used to install the ordinary type of metal thresholds available at hardware stores. Every time it rained, I'd worry. I'd worry about water sweeping in as the door swung open, water trickling in around the sides of the door or water entering through the screw holes. I'd worry about water warping a hardwood floor or staining a Persian rug.

Now I use ordinary thresholds only in protected openings. Experience has taught me that three-piece water-return thresholds are the safest bet. I often use thresholds made by Pemko Manufacturing (P. 0. Box 3780, Ventura, Calif. 93006; 800-283-9988). A water-return threshold (drawing left) consists of a threshold, a drain pan and an interlocking sill cover. Although a water-return threshold is a little tough to install, the techniques I use make it simple enough, and the extra effort is worthwhile because it saves all of that worrying when it rains.

This example involves a door and frame already in place. While new, prehung-door units typically come with serviceable thresholds, the techniques discussed here could be used to add water-return thresholds to new doors.

Start with the sill cover—Sill covers are lifesavers. They are essentially the flashing for the threshold and cover the rough edge of a concrete slab or the exposed grain of a wood floor. They are also the perfect cure for elevation problems that can be created when, for example, a tile floor is laid right up to an original oak threshold and oak sill. This problem was the case in the door opening featured here.

I start by deciding how the sill cover should be notched around the jamb and exterior trim. Usually the sill cover butts against the door jamb or the brick mold (drawing left). On this job, a screened-door jamb had been added, and the sill cover had to remain behind that jamb so that the screened door would shut (photo 1).

Drawing: Dan Thornton

First, I cut the sill cover off square at the longest dimension needed, in this case from brick mold to brick mold. To cut the sill cover, I use a small circular saw equipped with a metal-cutting blade. (For more on cutting aluminum, see sidebar p. 73.) With the sill cover cut off square, I tip it into the opening and align it with the back of the screened-door jamb and with the rabbet for the main door. Using a pencil or a utility knife (scratch marks made by a knife are easy to see on most aluminum products), I scribe marks for the notch (photo 2). I repeat the process for the opposite side of the jamb. I'm using the jamb in place of a tape measure and square.

Notch the sill cover around the door frames. First, the broad, flat sill cover is held in place to mark the location and depth of the notch (1 and 2) that will allow the sill cover to fit around the jambs of the exterior door and the screened door.

Slope the sill cover to drain—After cutting the notches, I set the sill cover in place and prepare to trim the front, or vertical, edge of the cover. On some openings this step isn't necessary. But if there's a concrete porch or wooden step just beneath the sill of the door, then the sill cover has to be scribed in. The cover must fit tight to the original sill, and it must have some slope so that water will drain outside, not inside.

I tip the sill cover and check the slope with a torpedo level; between ⅛ in. and 3/16 in. of pitch across the width of the sill cover is usually enough (photo 3). Using anything handy, I shim the sill cover in place. Then, on the inside of the opening, 1 use my square to measure the distance between the sill cover and the floor beneath. I spread my scribes accordingly and scribe a line across the front of the sill cover (photo 4). Sometimes 1 attach a clean piece of masking tape to the sill cover to make the line easier to see. I put on my goggles and earplugs and, holding the sill cover as far from my face as possible, I cut to the line with my circular saw.

The sill cover slopes to the outside. The sill cover must be canted so that water can drain to the outside (3). Consequently, the front edge must be lowered by scribing it to the existing threshold, which is left in place (4). Masking tape makes the scribe line easier to see.

Start with the longest dimension—I start fitting the threshold the same way I fit the sill cover, by measuring the widest dimension of the

Scribe the threshold to the door frame. Rather than taking measurements and then transferring them to the threshold, the author holds the threshold itself against the jamb and carefully marks the locations of notches with either a pencil (5) or a knife (6).

Door height is transferred from the jamb to the door itself. Once the sill cover and threshold have been notched and set in place, the height at which the bottom of the door will be cut off can be determined (7). The mark made on the jamb takes into account the thickness of the metal-door bottom (8). The author then scribes the bottom of the door (9) to the new sill cover. Masking tape on the bottom of the door makes the pencil line easier to see.

door opening, the rabbet for the main door. After making the first cut for overall length, I slide the threshold into the opening to mark the notch (photo 5).

Normally, the threshold aligns with the face of the door, but for this opening I wanted to pull the threshold inside the house ¼ in. so that it would cover the raw edge of the tile. I tip the threshold, hold it against the jamb and mark the notches (photo 6). I repeat these steps for the opposite end and cut the notches.

Once the threshold is cut, I temporarily set it in place on top of the sill cover. I mark the spot where the front edge of the threshold rests on the sill cover. This mark will determine the location of the drain pan, which is installed between the threshold and the sill cover. It's important to locate the drain pan carefully so that it catches water seeping through weep holes in the threshold but at the same time remains hidden from view.

I set the drain pan in position just behind the mark on the sill cover, then scribe a line for the notch I need to make around the jamb. The thin drain pan is easy to cut with tin snips.

With the drain pan cut and in place, I set the threshold on top of it and drill pilot holes for the screws that hold the assembly to the floor. If I'm working on a concrete slab, I run my masonry bit through the threshold, drain pan and sill cover, down into the concrete. That's the surest method I know of getting concrete anchors in the right spots.

Cutting off the door— With the threshold and the sill cover in position, I'm ready to determine how much to cut off the bottom of the door. In order to get a weather-tight seal, this type of threshold requires a separate U-shaped metal door bottom with a vinyl sweep and drip edge (drawing p. 70); in this case I used one made by Pemko Manufacturing. In some installations, there is enough room for the metal door bottom between the bottom of the door and the new threshold. In this case, though, the door is too close to the threshold and has to be trimmed slightly. First, I measure up from the top of the threshold in. and make marks on both jamb legs (photo 7). Then I remove the threshold and drain pan, but I leave the sill cover. The cover provides a smooth surface for me to run my scribes along.

I spread my scribes from the sill cover up to the line I've made on the jamb (photo 8), then shut the door and scribe a line across the bottom of the door (photo 9). Again, masking tape makes it easier to see the line.

I use different methods for cutting off doors. On veneered doors I sometimes use a "shooting

stick" straightedge made of thin plywood (photo 10). The shooting stick allows me to cut doors quickly without worrying about tearout. If I don't have my shooting stick with me, I use a metal straightedge and a knife to score a line on the door before I cut it. Either way, it's my circular saw that does the hard work.

Seal the threshold with plenty of silicone— Before I install anything, I sweep out all of the dust and dirt, especially under the sill cover. I run a bead of silicone under the sill cover to help secure it, though the screws that pass through the threshold really do that job. I press the sill cover into the silicone and then run another bead of silicone on top of the sill cover and beneath the drain pan. I take care to keep the silicone away from the front edge of the drain pan so that it doesn't squeeze out. Then 1 press the drain pan down into the silicone and apply more silicone at the joint of the jamb and drain pan. I also squirt silicone into the screw holes. Finally, 1 set the threshold and screw it down snug.

It's better to notch the metal door bottom around the weatherstripping on the door jamb, so I install the weatherstripping first if there isn't any already. The door bottom has to be cut to fit the overall width of the door and then notched to fit around the weatherstripping on the door jambs (photos 11,12).

Not too tight, not too loose— After cutting the door bottom, I slip it on again and swing the door shut to make sure everything fits. The door bottom shouldn't be too long and squeeze or rub against the weatherstripping, but it should come close. I press the door bottom down against the threshold, but not too hard. The vinyl sweep needs to contact the threshold, but shouldn't be forced against it. Otherwise, the sweep will compress over time, and the seal will be lost.

I drive one screw at each end of the door bottom to hold it in place. Then 1 check the action of the door to be sure that it's sealing but that it's not rubbing too hard. Then I drive in the rest of the screws.

All that's left then is to apply silicone to the threshold and sill cover at the joint of the jamb, and maybe a little caulking between the door bottom and the door to seal out moisture. Before 1 leave, I check the swing of the door one more time. When it's right, the door closes just like a refrigerator, and with that whoosh of air, I'm gone. □

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A site-built tool speeds the cut. The author cuts doors with a "shooting stick," a plywood straightedge that has a fence against which he registers the table of his circular saw (10).


11


12

First the weatherstripping, then the door bottom. Weatherstripping is installed on the side jambs first. The drip cap on the door bottom then is scribed and notched to fit around the weatherstripping (11 and 12).

Take care when cutting aluminum

Cutting aluminum thresholds is not my idea of fun, so I like to do it as quickly and as safely as possible. Many people use hacksaws. Some professional weatherstrippers use portable table saws with aluminum-cutting blades.

I use a 4⅜-in. Makita model 4200N trim saw (Makita U. S. A., 14930 Northam St., La Mirada, Calif. 90638; 800-462-5482) that cuts at a fast 11,000 rpm and a fine-toothed, combination metal blade, also by Makita (model 792334-2). I've used carbide-tipped blades to cut aluminum, but they are expensive, especially when the teeth begin to break off. (Makita no longer makes the 4200N, although some distributors still have a few of these saws. It was replaced with the model 5005 trim saw, which has a larger and slower-turning 5½-in. blade.)

Wearing eye protection is important when cutting aluminum, not only to guard against bits of flying metal but also because teeth on the combination blade can chip. In my work box I carry plastic goggles wrapped in a sock to prevent scratches. Years ago a bungee-cord accident took most of the vision in my left eye, so I'm careful with my right one. I also wear earplugs.—*G. M. K.*