
# Connecting Receptacles

**Q.** *Many of the receptacles I use have push-in connectors on the back. Does a push-in connection perform as well as the side-mounted screw terminal connection?*

**A.** *Sean Kenney responds:* Whenever I go on a residential service call where the power is out in a receptacle or a portion of a room, 75% of the time the problem is caused by a failed push-in terminal on a receptacle or switch.

Push-in terminals are small copper spring clips that only make contact with a small portion of the wire. When a push-in terminal is subjected to a high-amperage draw, the terminal often overheats, eventually causing the connection to burn out. Another problem is that when the electrician pushes the receptacle or switch into the box, the wires twist and bend, putting a lot of stress on the relatively weak spring clips.

The *National Electric Code* (*NEC*) has restricted the use of push-in terminals to #14 AWG copper wire only. Even though the push-in connectors are quicker and easier to use than the screw terminals, I never use them, nor do I allow my employees to use them.

Some ground-fault circuit interrupter (GFCI) receptacles have clamp-style terminals that are almost as easy to use as push-in terminals. The wire is pushed into the back of the GFCI and a screw is tightened to secure the clamp. Many higher-grade receptacles and switches have a similar clamp terminal. These terminals make a good connection, but as with any terminal, the wire should be given a tug to make sure the connection is tight.

*Sean Kenney owns and operates Sean M. Kenney Electrical in Amesbury, Mass.*

## Joist Sizing Rule of Thumb

**Q.** *Is there a simple way to size floor joists?*

**A.** *Carl Hagstrom responds:* The rule of thumb that I like to use when sizing uniformly loaded residential floor joists is "half the span plus two." First, round the clear span of the floor joist up to the nearest foot, and divide by two. Then add two to the answer. This will give you the depth (in inches) of the required floor joist.

For example, assume the clear span is 15 feet 6 inches. Round up to 16 and divide this span by 2, giving you 8. Next, add 2 to get the required joist depth. In this example, 8 + 2 = 10, so a 2x12 floor joist will be required (it's important to use the *actual* lumber dimensions, not the nominal dimensions).

Typically, residential floor loads are assumed to be 50 pounds per square foot (40 pounds live plus 10 pounds dead), and this rule of thumb will work for loading conditions that don't exceed that value. If the floor system is to be tiled or there are any other unusual loading conditions, I'd recommend having an engineer review the conditions.

*Carl Hagstrom is an associate editor at the* Journal of Light Construction.

## No-Nails Approach to Aluminum Fascia

**Q.** *Last winter, our siding sub installed aluminum fascia in very cold temperatures. When the weather warmed up, the fascia expanded and buckled severely. What's the proper way to install aluminum fascia to prevent this from happening?*

**A.** *George Schambach responds:*

To prevent the buckling you describe (see Figure 1), fascia should be installed using a "nail-less" technique. By fastening F-channel to the bottom edge of the subfascia and utility trim under the drip-edge, the fascia material is held firmly in place but is still able to expand and contract with changes in temperature (Figure 2).

**Figure 1.** *This aluminum fascia, installed in cold temperatures with no allowance for movement, buckled when summer temperatures caused it to expand.*

Using a snaplock punch, form locking tabs in the top edge of preformed fascia, then press the fascia into the utility trim. The tabs prevent the fascia from pulling out of the utility trim, but don't restrict movement. Many contractors form their fascia on site using painted aluminum coil stock. Since coil stock is thinner than factory fascia (.019 vs. .024 inch thick), you should form a continuous locking hem on the top edge and insert this into the utility trim.

To prevent the rake fascia from creeping downhill, the bottom edge of the fascia should be slot punched, then held in place with three or four aluminum trim nails driven into the subfascia. These slots permit the fascia to expand and contract lengthwise without buckling.

Finally, aluminum fascia should never turn a corner. Instead, fit a small insert at all inside and outside corners and break the fascia at these points. The insert provides a background that prevents the wood subfascia from showing at the corner joint.

*George Schambach is a former siding contractor and a sales representative for Norandex Corporation in Deposit, N.Y.* ■

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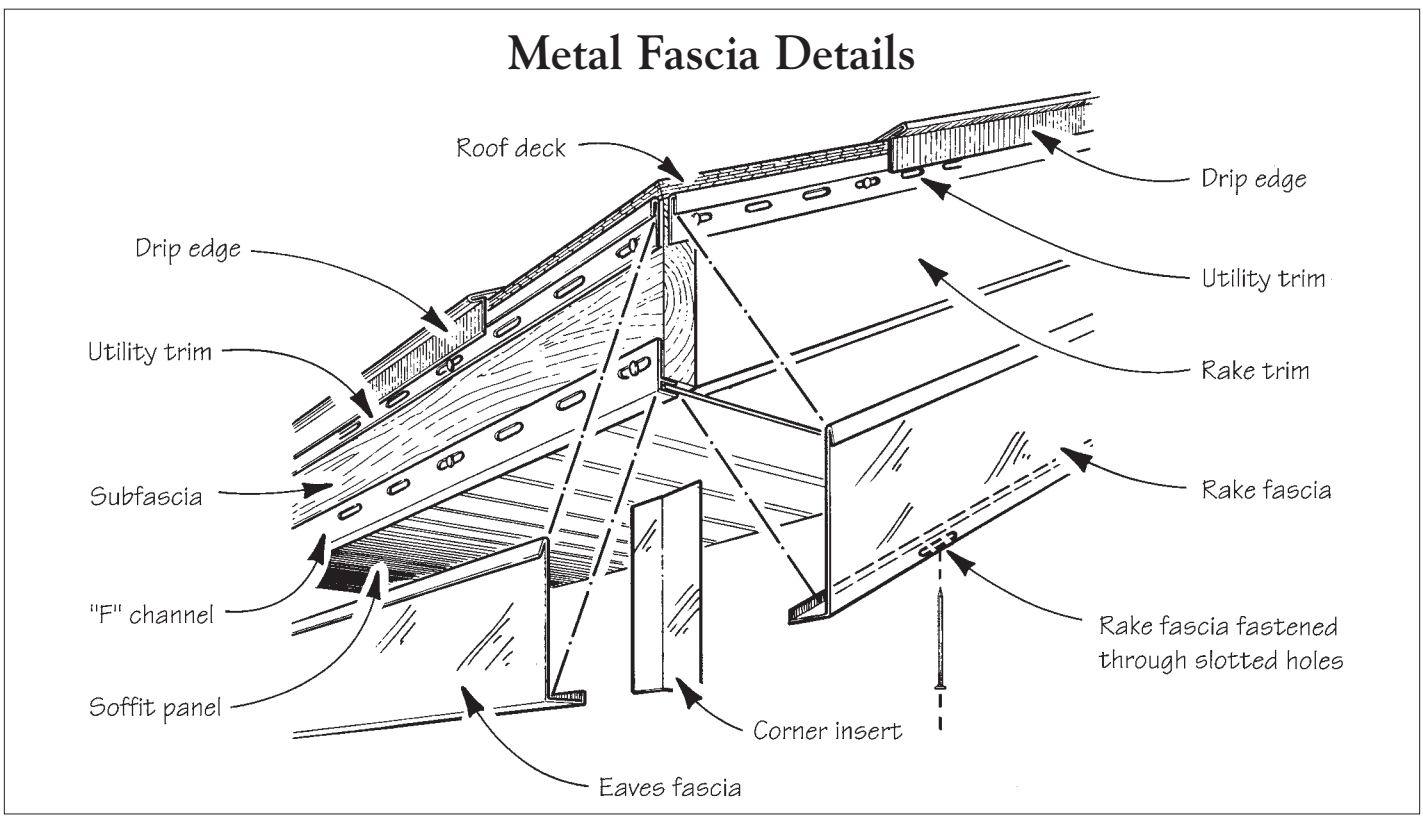


**Figure 2.** *Using stock profiles like F-channel and utility trim, aluminum fascia can be held in place without nails. When using aluminum coil stock, which is thinner than premanufactured fascia, site-bend a continuous locking hem on the top edge to help hold it snug in the utility trim. To keep rake fascia from sliding downhill, use aluminum trim nails driven through slotted holes in the bottom edge. The elongated holes allow the fascia to expand without buckling. Fascia should break at all inside and outside corners. A corner insert (center) prevents the framing from showing at the joint.*