



Metal roofs offer a sleek, stylish look that adds to the home's curb appeal. The roof looks similar to slate, but it's actually much lighter—and less expensive.

Installing Metal Roofing

Contrary to popular myth, metal roofs are not any more noisy than other types of roofs. A metal roofing system operates in much the same fashion as other roofing products—it uses a series of overlapping materials that dispel water. Unlike roofing materials in which each row overlays the previous row, metal roofs have an interlocking system so each panel overlaps and locks in place with adjacent panels or trim. This system keeps the roof watertight and helps hold the materials in place.

The installation techniques for metal roofing vary by material and manufacturer. The steel roof shown on pages 92 to 95 features panels that mimic the look of slate. The panels have lips on all four sides that interlock with other panels and trim pieces. Each panel is fastened to the roof with clips that also lock on the panels' lips. The trim is pre-formed for easy installation and to allow panels and trim to conveniently interlock. For an overview of how the components fit together, see the detail drawings on the opposite page.

A different type of steel roofing is also shown on the opposite page. These panels interlock along the top and bottom lips, but the sides form an overlap by each panel sliding over the edges of the preceding panel. The panels are installed with screws, rather than with clips.

Another popular type of metal roofing—vertical roofing—is shown on pages 96 to 97. This roofing also uses an interlocking system, although the panels are installed vertically rather than

horizontally. Detail drawings on the opposite page show how the panels and trim fit together. To simplify the installation process, most manufacturers will size the panels to fit your roof. If you give the manufacturer the dimensions of your roof, you can get panels that span the length of your roof.

Before choosing a metal roofing, read manufacturer's recommendations for roofing requirements. Some products require a specific roof pitch, such as a minimum of a 15° slope. During installation, try to avoid walking on panels as much as possible. When it's necessary, walk on the flat part of the panels, not the locks or channels.

Everything You Need

Metal Roof

Tools: hammer, tape measure, cordless drill, hemming tool, aviation snips, pop rivet gun, caulk gun.

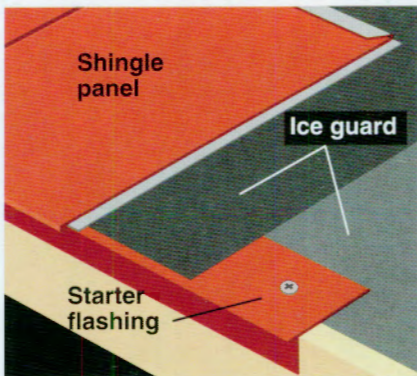
Materials: metal roofing system, ice and water shield, 30# felt paper, #10 pancake head wood screws, #8 truss head screws, tape sealant, $\frac{1}{8} \times \frac{3}{16}$ " rivets, tube sealant.

Vertical Metal Roof

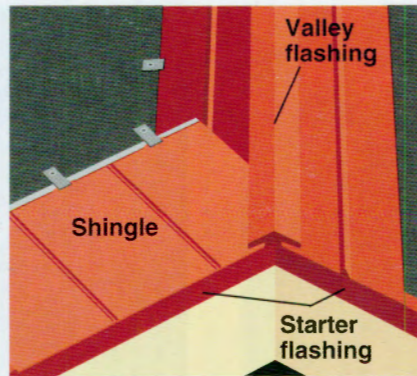
Tools: hammer, tape measure, tin snips, caulk gun, utility knife, locking sheet-metal tool, cordless drill.

Materials: metal roofing, 12-gauge galvanized roofing nails with $\frac{3}{8}$ " heads, caulk, roofing manufacturer's paint, ice and water shield, 30# felt paper, trim coil, silicone sealant, stainless steel screws.

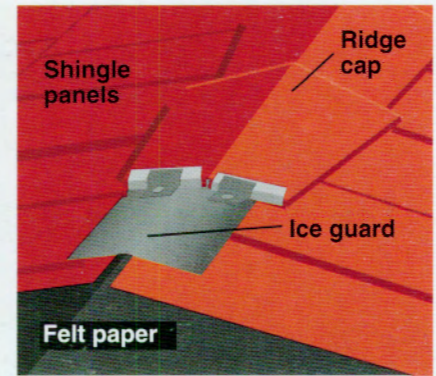
Anatomy of Metal Roofing Installation



Ice guard is placed under and then over the starter flashing. The first row of shingles interlocks with the starter flashing.

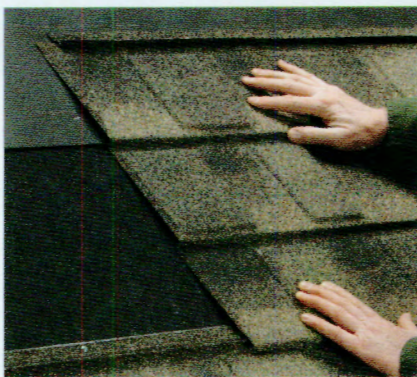


Valley flashing fits over the valley, and the front edge overlaps the starter flashing. Shingles are cut to fit along the valley.

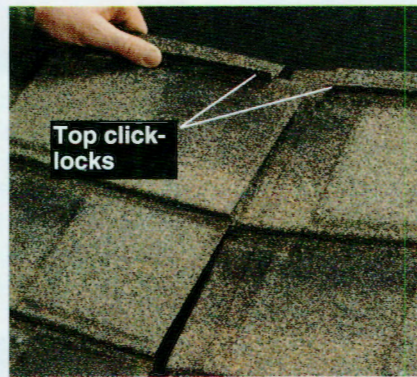


Strips of ice guard are set over the ridge, covering the tops of the last rows of shingles. Ridge caps are installed over the ice guard.

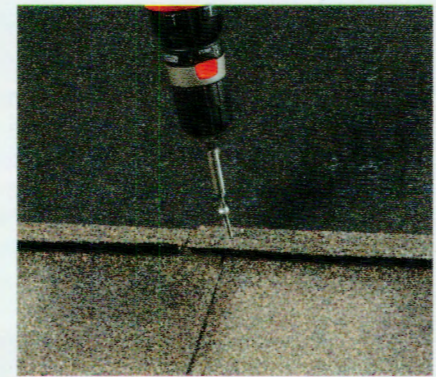
Variation for Installing Metal Roofing



1 Following the manufacturer's recommended offset, install the shingles one row at a time. Overlap shingles so the top panel clicks into the lock of the underlying panel.

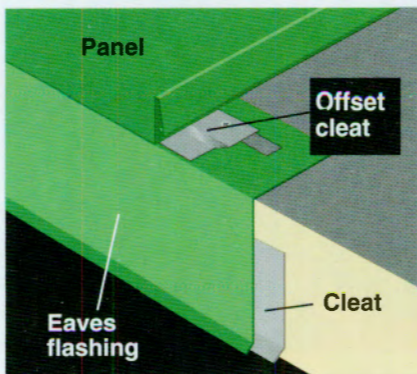


2 Keep the top edges of adjacent panels flush. Slide panels together so the gap between the top clip-locks is no more than $\frac{3}{16}$ ".

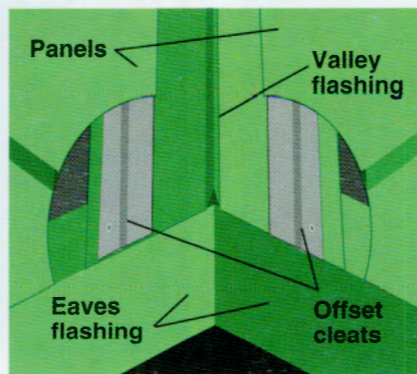


3 Drive a number 8 hex head, corrosion-resistant screw through the upper left corner of the shingle. Drive a screw in the top right-hand corner, and two screws in between the corners.

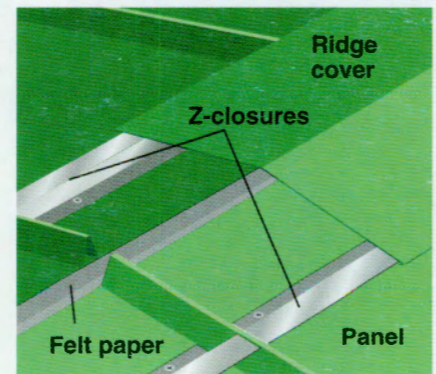
Anatomy of Vertical Metal Roofing Installation



A cleat is fastened to the fascia, then the eaves flashing is installed over the cleat. An offset cleat is placed over the eaves flashing to interlock with the lip of the panels.

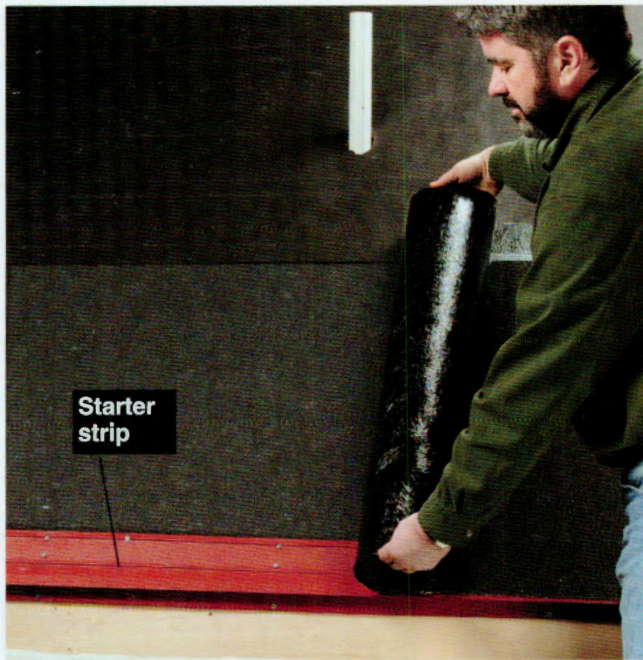


Valley flashing is set over the valley, overlapping the eaves flashing. Offset cleats are installed along the valley flashing. Panels are cut to fit along the valley, and interlock with the offset cleats.

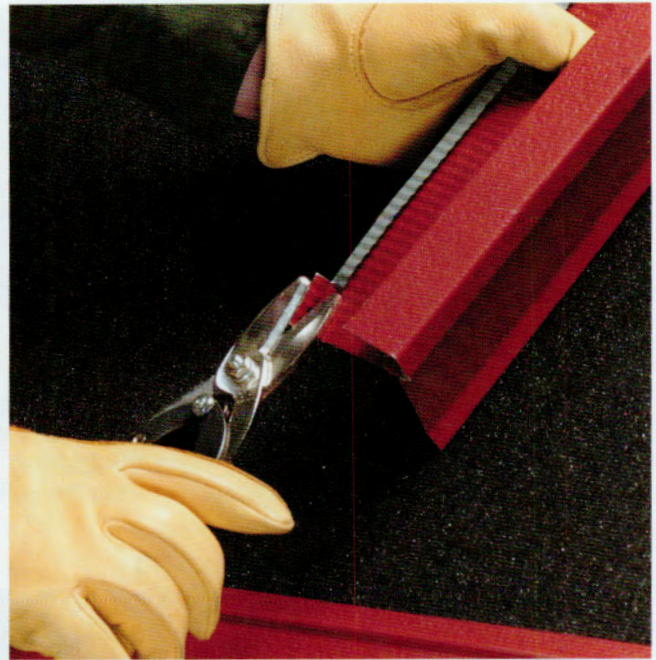


Z-closures are cut to fit between the ribs of the panels. Once they're installed, the ridge cover is placed over the z-closures and both sides of the roof.

How to Install a Metal Roof



1 Cover the roof with ice guard and felt paper (pages 62 to 63), then place the starter flashing tight against the fascia. Nail the starter strip to the roof deck and fascia every 18". Overlap starter strips by 2" if more than one is needed. Place a layer of ice and water shield over the starter strip.



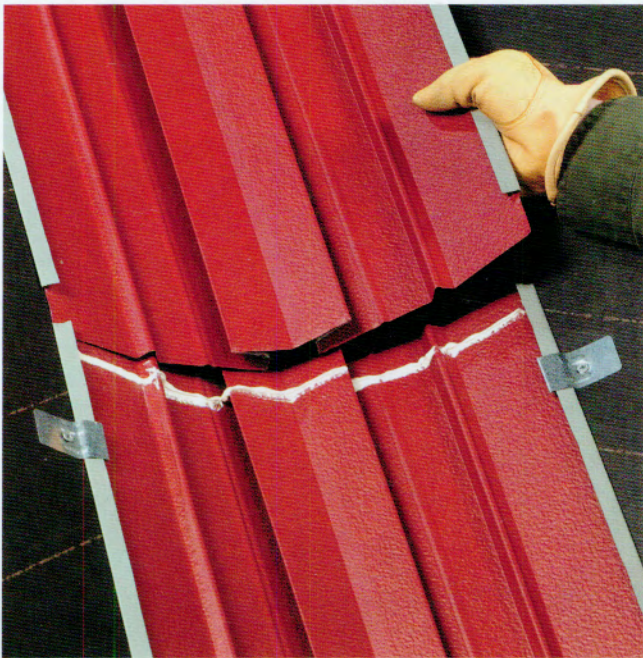
2 Cut a $\frac{3}{4}$ " notch in the locking lip at the bottom of the first gable trim flashing, $\frac{1}{4}$ " from the outside edge, to create a weep hole. Set the gable flashing tight against the rake, overlapping the starter flashing. Fasten the gable flashing in place by attaching a clip and nailing it to the roof decking every 18" and face nailing through the drip edge at 18" intervals.



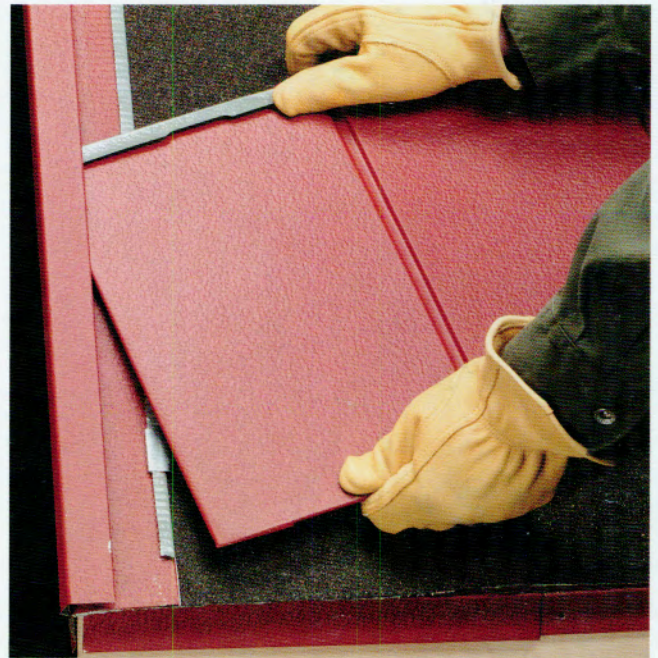
3 Where more than one gable trim flashing is needed, cut $1\frac{1}{2}$ " notch from the bottom of the channel of the overlapping piece, then overlap the trim flashings $1\frac{1}{2}$ ".



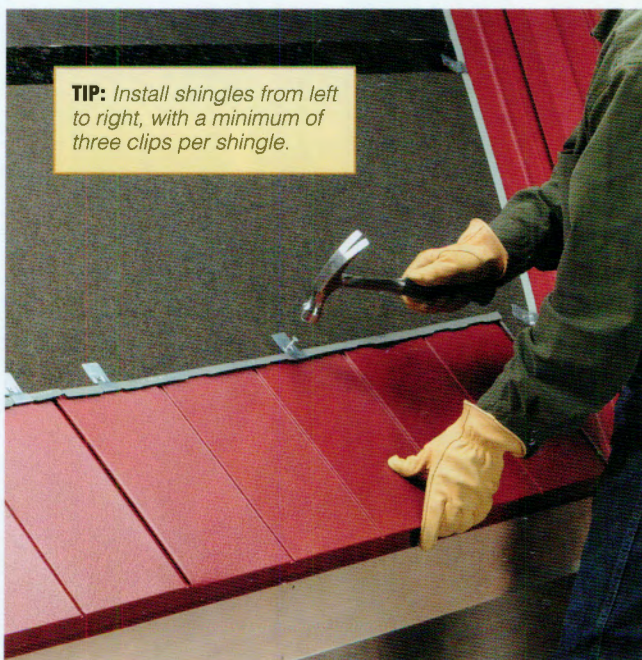
4 Center the valley pan over the valley and cut to fit so the end slightly overlaps the starter flashing. Fasten the valley pan to the decking with clips every 18". Fold the end of the valley pan over the starter flashing, using a locking sheet-metal tool.



5 To overlap valley pans, cut the locking lips 1½" from the bottom edge on the overlapping piece. Apply sealant to the end of the first valley pan, then overlap it 1½" with the second piece. Fasten a clip over both valley pans at the seam.



6 Cut a 2" notch for a weep hole in the lip at the bottom left corner of the first shingle. Place the shingle in the bottom left corner of the roof. Interlock the outside edge with the gable trim, and tightly lock the bottom lip to the starter flashing. Fasten to the decking with a minimum of three clips.



TIP: Install shingles from left to right, with a minimum of three clips per shingle.

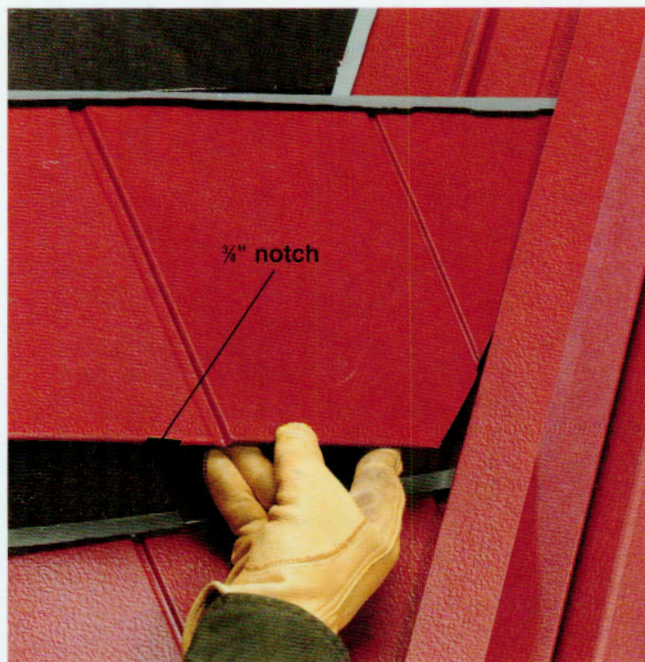
7 Cut a 2" weep hole in the second shingle and set it in place so it interlocks with both the first shingle and the starter flashing. Fasten with clips. Install the remaining shingles in the first course the same way, interlocking the edges. Note: Remaining courses of shingles do not have weep holes.



8 To begin the second row, cut a shingle at the number 2 marked at the top of the panel. Install the cut shingle. Complete the second course, then move on to the next rows, cutting the first shingle in row three at the number 3 marked on the panel, and at the number 4 for the fourth panel. On the fifth row, start over with a full shingle.

(continued next page)

How to Install a Metal Roof (continued)



9 Cut panels to fit against the valley flashing. Cut a $\frac{3}{4}$ " notch for a weep hole in the bottom lip of each shingle that abuts the valley. Keep the notch 6" from the center of valley, making sure it falls within the valley pan. Do this for each row of shingles along the valley, except the first row.



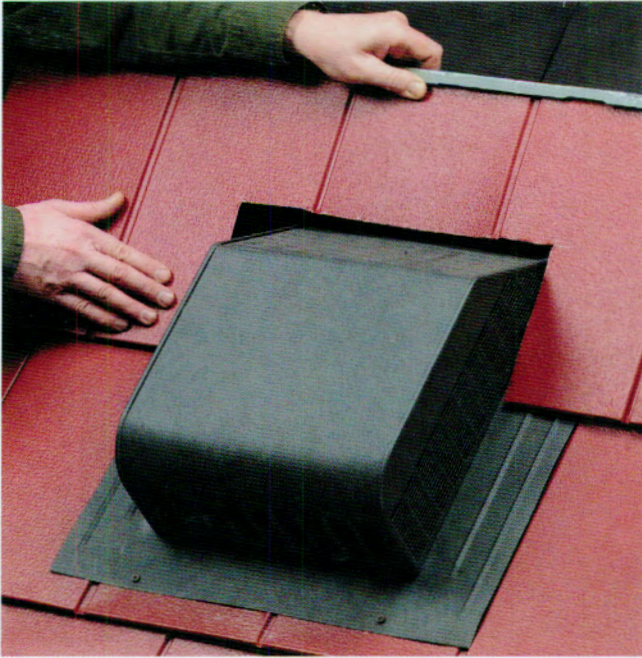
10 If your roof has a dormer, install shingles as close to the front of the dormer as possible. Cut and bend trim coil to fit under the siding or flashing and overlap the last row of shingles. Nail the flashing to the dormer and caulk the nail heads.



11 To complete the dormer, place the sidewall flashing against the dormer, overlapping the trim coil installed in step 10. If the dormer is sided, slide the flashing under the siding. Nail to the dormer. Cut shingles to fit in the sidewall flashing.



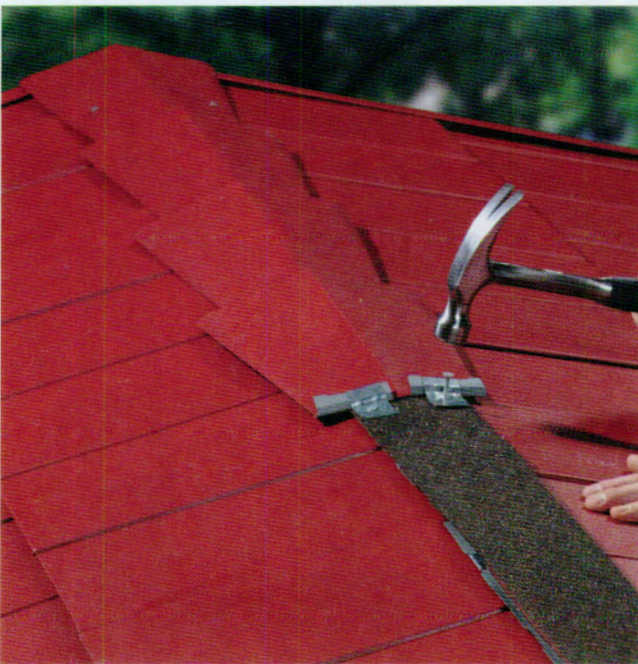
12 Cut shingles to fit snugly around pipes. Install a panel over the pipe, folding back the top locking edge on the shingle above the pipe where the flashing will sit. Place the pipe flashing over the pipe and fasten with screws that are long enough to penetrate the roof decking. Caulk around the flashing. Set the next row of shingles over the flashing.



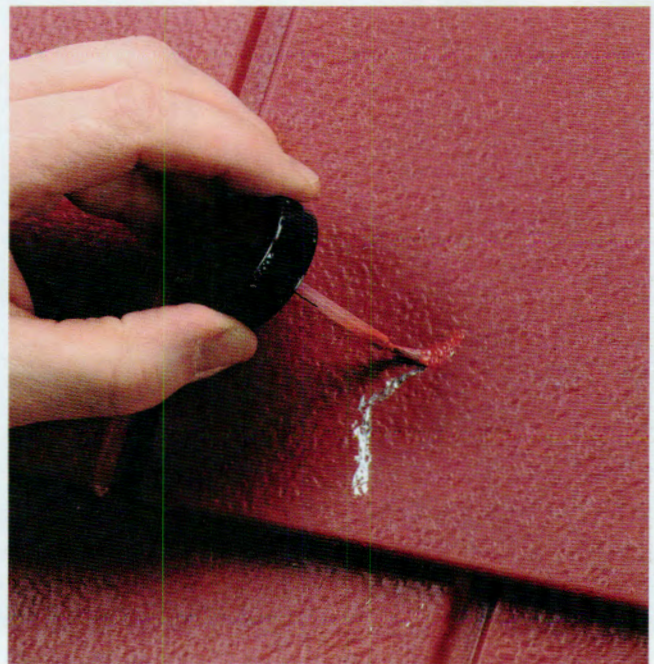
13 Cut shingles to match the roof holes for each louver. Install the shingles over the holes. Fold back the top lock on the shingle where the louver will sit. Install the roof louver over the shingles, fasten with screws that penetrate the roof decking, and caulk around the louver flashing. Place the next row of shingles over the back edge of the louver flashing.



14 Cut shingles flush with hips and ridges. Cut 4"-wide strips of ice guard and place them over hips and ridges. Set the first ridge cap over the ice guard at one end of the roof, overlapping the gable flashing. Face nail the ridge cap in place, then caulk the nail heads.

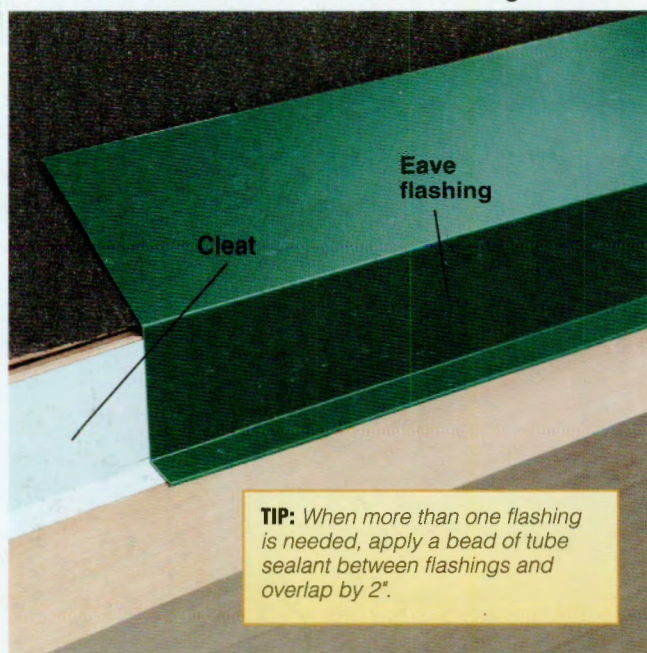


15 Fasten the remaining ridge caps in place using clips. Face nail the last ridge cap and caulk the heads. Install ridge caps on remaining hips and ridges the same way.

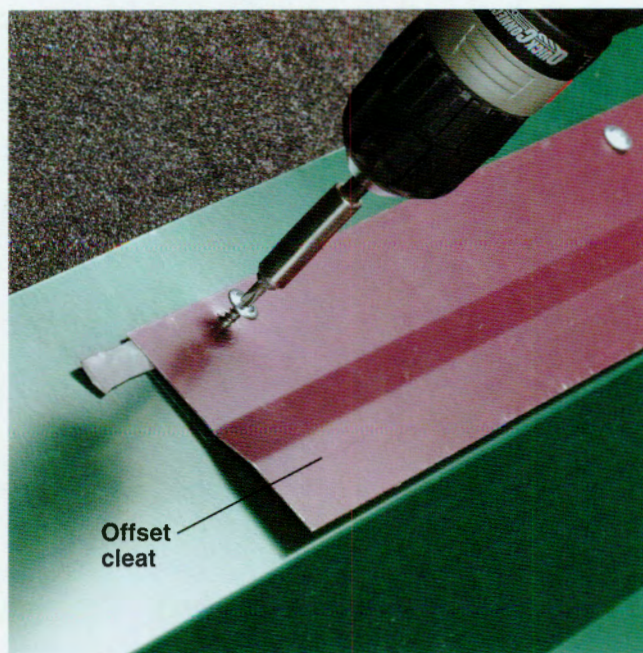


16 Using the paint supplied by the manufacturer, touch up any shingles that have been scratched.

How to Install Vertical Metal Roofing



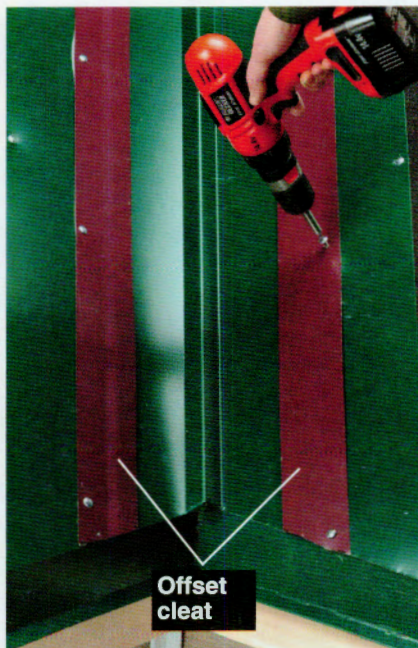
1 Cover the roof with ice guard and felt paper (pages 62 to 63). Fasten a cleat to the fascia at a height that will allow the eave flashing to lie flat on the roof. Drive pancake head wood screws every 12". Slide the hem of the eave flashing over the cleat and fasten with wood screws through the top edge every 48".



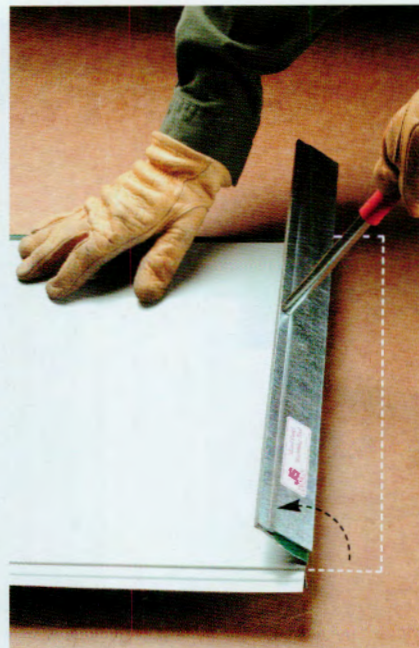
2 Apply tape sealant along the underside top edge of the offset cleat. Place the cleat over the top of the eave flashing so the outer edges are aligned. Fasten the cleat with wood screws driven through the tape sealant every 12".



3 Center the valley flashing over the valley and tack it in place with screws every 48". Fasten tape sealant along both sides of the valley, 5" from the center.



4 Align offset cleats 3" from the valley center. Fasten in place with screws every 12". Drive the screws through the tape on the valley flashing.



5 Cut a 1½" notch in the end of the ribs of the first roofing panel. Bend the flat part of the panel back 180° to create a hem, using a hemming tool. Apply sealant in the panel hem.



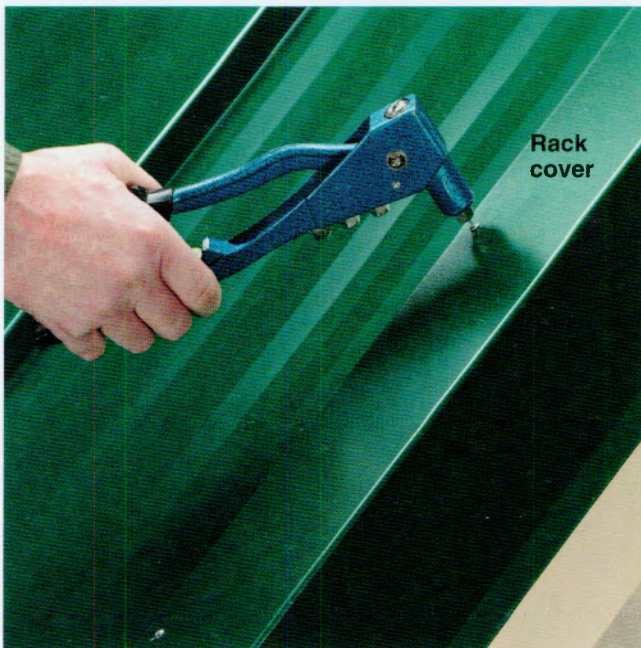
6 Set the panel over the offset cleat, starting at the rake edge. Square the panel to the eave flashing. Drive truss head screws in the center of the fastening groove on the panel's male (right) side.



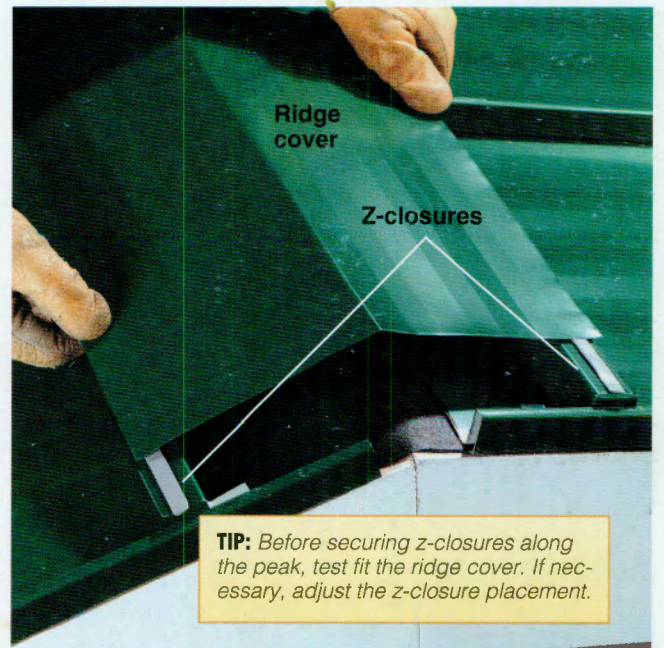
7 Notch and hem the second panel, following step 5. Apply sealant in the hem. Snap the second panel over the first and place against the offset cleat. Fasten in place with screws. Install remaining panels the same way.



8 Cut panels parallel to the valley, using aviation snips. Notch and hem panels to fit the offset cleats along the valley, using the hemming tool. Fill the hem with a bead of sealant, then install over the offset cleat.



9 Place tape sealant next to the rib along the rake end. Set a z-closure over the tape and install with wood screws every 12". Place tape sealant over the top leg of the z-closure. Fasten a cleat to the rake of the house at a height that allows the rake cover to fit over the cleat and lie flat over the z-closure. Slide the rack cover over the cleat and fasten to the z-closure, using a rivet gun with pop rivets every 12".



TIP: Before securing z-closures along the peak, test fit the ridge cover. If necessary, adjust the z-closure placement.

10 Place a row of tape sealant across the panels and ribs, 4" from the top edge. Cut z-closures 2" longer than panel widths, then cut the top and bottom legs 1" from the edge. Cut off the top legs 1" from each end, then fold the ends back. Install z-closures on the tape between ribs, using four screws each. Place tape sealant over the z-closures. Set the ridge cover over the z-closures and install with pop rivets.