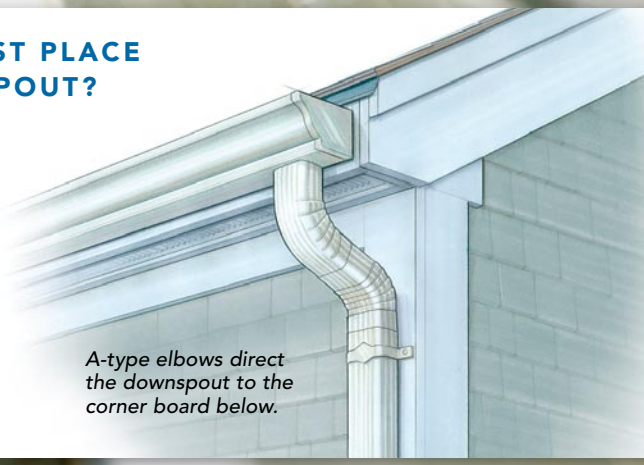
Install Your Own Seamless Gutters

Looking to save money? Have custom lengths of aluminum gutters rolled out on site, and get out the ladders.

BY MIKE GUERTIN

WHERE'S THE BEST PLACE FOR THE DOWNSPOUT?

Downspouts are typically located at the end of the gutter, directly above a corner board, and secured across the wide part of their profile. When the gutter outlet runs past the corner, the downspout can be diverted to the adjacent corner board.



A-type elbows direct the downspout to the corner board below.

Drawings: Bob La Pointe

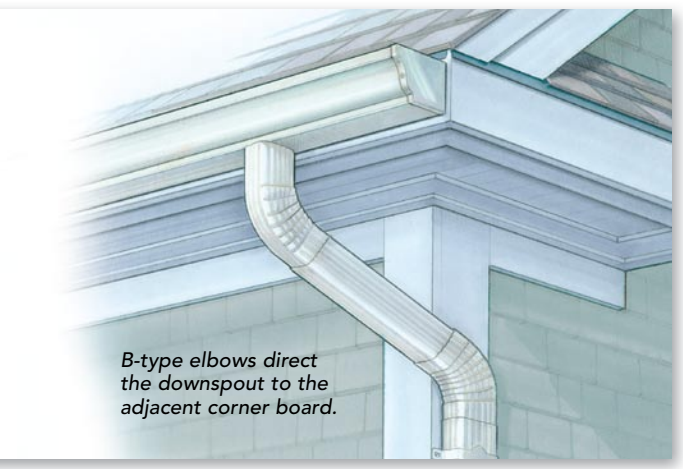
A house needs a roof and siding to keep the furniture dry. A house also needs rain gutters to keep slabs, basements, and crawlspaces drier by directing water away from the structure. Gutters reduce the moisture load on siding, windows, and doors, which in turn increases the life span of exterior finishes.

If you need gutters and want to save money by installing them yourself, you can buy stock sizes. Ten-ft. lengths are common at home centers or lumberyards. However, I prefer to have gutters roll-formed on site into the exact lengths I need. This way, I don't have to join several short lengths together. Splices have the potential to leak, and they take more time to hang than a single long gutter.

To find gutter fabricators who roll on site, check listings in your local phone book. Gutter fabricators arrive with coil stock and a forming machine that can roll out any length of gutter you want. They'll also sell you the parts for the gutter system for your house; it's a good idea to get everything you need from one source (sidebar right). Some companies sell gutters by the foot and discount for quantity orders, while others charge a base setup/delivery fee plus a per-foot price. (Figure on about $2 per running foot if you buy the parts; double that if you have someone else install them.)

I typically work with K-style gutters that have an ogee profile on the face that mimics traditional wood gutters, but the installation steps are common to other gutter styles, too. Have gutters cut a few inches longer than you need. The cutting shear on the roll-former sometimes puts a small kink near the end of the gutter, but this and other defects can be trimmed away when you cut the gutters to their final length. After that, the outlets and any miters can be attached, and you can hang the gutter sections.

Gutters not only drain water, but they also store it temporarily. A heavy rain can overwhelm even 3-in. by 4-in. downspouts, causing the gutter to overflow. For this reason, it is important to choose the right size (typically 5 in. or 6 in., measured across the top). Five-in. gutters hold about 1¼ gal. per ft., while 6-in. gutters hold about 2 gal. per ft.; obviously, the larger size can retain more



B-type elbows direct the downspout to the adjacent corner board.

A ONE-STOP SHOP FOR ALL YOUR GUTTER PARTS

I order my gutters and all the necessary hardware from the same fabricator. Even though gutter profiles look the same, slight differences in the color and shape of end caps, miters, expansion joints, and splices can make assembly frustrating when parts are purchased separately. Hangers are usually interchangeable, but proprietary gutter profiles could require unique hangers.

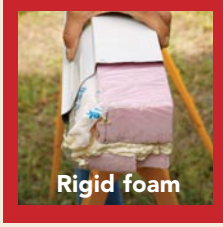
Product photos: Krysta S. Doerfler

CUT THE STOCK TO LENGTH AND CAP THE ENDS

To cut K-style gutters, I use a fine-tooth hacksaw blade for the front-face ogee profile **(1)** and metal snips on the flat bottom and back faces **(2)**. Before I cut, I like to set the gutter top-down into two kerfs cut in a 2x block, or stuff a block of rigid foam inside the gutter for additional support (see tip below).

For each run of gutter, you'll need a right-hand and left-hand end cap. I apply a thin bead of gutter sealant (SeamerMate, from Amerimax Home Products; www.amerimax.com) into the end-cap slot **(3)**, then press it over the gutter end and tap it with a wood block to seat it. After drilling ⅛-in. rivet holes through the rim of the end cap, I put at least two rivets **(4)** on each of the flat faces (back and bottom), three along the ogee face, and one at the top front edge. Later, after the outlet is installed, I put a second bead of sealant around the inside perimeter of each end cap.

CUTTING TIP: Rigid foam and kerfs cut in 2x blocking will support the gutter and keep it steady during cuts.



water from a downpour until it can drain. (For more information on gutters, see "All About Rain Gutters" in *FHB* #125, or online at FineHomebuilding.com.)

Lengths and downspouts drive the layout

Planning the layout of gutters and downspouts helps you to avoid misplaced outlets and miscut gutter lengths. Begin by establishing downspout locations. Corner boards are the natural place for downspouts; they're less obtrusive and are mounted more simply than over lap siding. On any longer length of gutter (20 ft. or more), two downspouts are always better than one. They can handle more water volume, and in the event that one clogs, the other can keep water moving.

In most cases, downspouts are easiest to mount to the same wall as the gutter (drawing p. 50). Sometimes, though, because of obstructions or other complications, it makes sense to extend the gutter beyond the corner and run the downspout on the adjacent wall. Where you decide to end the gutter is an aesthetic choice. I usually cut gutters even with the rake boards rather than leave them sticking out.

Use a level reference line to establish the pitch

I've watched installers hang gutters by eyeing their pitch against the fascia, a method that works provided that the fascia is level. I prefer to use a laser level to check the eaves on older homes so that I avoid low spots where water can puddle.

Visible-laser levels work well, provided the fascia is out of direct sun; receiver-type models work under any conditions. With a pole-mounted laser, I make level marks at 10-ft. to 15-ft. intervals along the fascia and snap a level chalkline for reference. You can also use a water level or a long spirit level.

There's no need to slope the gutter as much as you would a plumbing drain. A slight pitch drains most of the water, and the small amount that adheres to the metal dries when the weather changes. Rules of thumb for gutter slope range from ⅛ in. over 10 ft. to 1 in. over 10 ft. To balance the gutter's appearance and the need for some pitch, I target ¼ in. to ⅜ in. over 10 ft.

For gutters with an outlet at one end, I mark the highest point at the closed end. When

A CLEAN WAY TO CUT IN THE OUTLETS

To determine the position for the downspout outlet, I measure in from the edge of the rake board to the center of the corner board. After marking the centerpoint on the bottom of the inverted gutter, I use the outlet as a cutout pattern **(1)** by running a pencil around the inside of the opening.

Cutouts can be made one of three ways. The first and easiest is to stamp it out with a specialized tool that costs $175, but you have to pop a lot of holes to recoup the tool's cost. The second option is to drill the outlet with a hole saw. I first clamp a 2x block inside the gutter **(2)** to help pilot the bit through the cut. I set the drill speed for slow and cut gently **(3)**. (Oblong holes can be made by drilling two overlapping holes.) I flip the gutter upright and drop the outlet through the hole, drill rivet holes in the gutter to match the holes punched in the outlet **(4)**, and rivet them together **(5)**. A generous bead of gutter sealant waterproofs the outlet flange edge and rivets **(6)**.

The third alternative is to mark the outline, punch a slot in the aluminum with an old chisel or screwdriver, then use a pair of metal snips to cut the hole.

SIMPLIFY MITERS WITH FACTORY-FORMED CORNERS

Inside and outside corners can be mitered a couple of different ways, but the simplest is to use factory-formed box corners. These short, mechanically joined 90° miters are mounted to straight lengths of gutter with rivets. First, I fit the straight sections with any outlets they might need; then I put them up on sawhorses and dry-fit the miter assembly with clamps. After checking the squareness of the angle **(1)**, I pop-rivet the miter together and coat all joints with gutter sealant **(2)**. For inside miters mounted under a valley, I use a sheet-metal brake to bend coil stock into a splash guard that I then attach to the gutter with sheet-metal screws **(3)**.

INSTALLATION TIP

It's hard to handle two long gutters that come together at an inside or outside corner. In those cases, I fit, rivet, and seal the box miter to the longest gutter run; then I dry-fit the adjacent gutter. After mounting the long gutter with the miter to the house, I hang the mate and rivet the joint in place.

MORE HANDS LIGHTEN THE LOAD

When putting up long lengths or long mitered sections, it makes sense to have a helper **(1)**. Having marked the rafter-tail locations on the fascia, I snap the hangers to the gutter's top and drive in the screws **(2)**. I prefer to keep the hanger intervals to a minimum of one per tail if spaced on 24-in. centers or every other tail if spaced on 16-in. centers.

Downspouts are usually mounted on corner boards **(3)**; you need two elbows and, depending on the depth of the soffit, a custom-cut length of downspout to connect them. To keep joints from leaking, the smaller ends of the connections should be upstream. A crimping tool **(4)** modifies a cut end to fit inside the mating piece.


Crimping tool

Gutters on the move

A 50-ft.-long aluminum gutter can expand or contract up to 1 in. along its length over a 100°F temperature range. While your region's temperature range might not swing to such extremes, the roofline sun exposure on a summer day can easily bring the gutter temperature well above 100°F. Runs longer than 50 ft. are best done in two sections with an expansion joint in the middle. Alternatively, two gutters can be mounted along a fascia, pitched outward with an inch of space between their end caps. Either option gives the gutter room to move. A gutter 20 ft. or longer that runs between two inside corners can have expansion problems. Between inside corners up to 30 ft. apart, I usually cut the gutter short of a tight fit; on longer lengths, I install expansion joints.

INSTALLATION TIP: When alone and hanging short (less than 20 ft.) lengths of gutter, I screw a couple of garage-wall hooks onto the fascia to hold the gutter in place until I can install permanent hangers. Rags or old socks keep the hooks from scratching the gutter's finish.

Photo right, facing page: Courtesy of www.ne-design.net

both ends of the gutter have outlets, I mark the highest point that the gutter can be raised at the fascia's center. At the outlet ends, I gauge the drop from the level reference line, then snap new chalklines as a guide.

Fasten the gutters to rafter tails

A 5-in. gutter filled with water weighs about 10 lb. per running foot, so it needs to be fastened securely. Merely nailed to a 1x fascia board, gutters might seem stable, but they won't handle the load for long. I prefer to screw gutters into rafter (or truss) tails.

To ensure precise hanger attachment, I mark each rafter position on the fascia board just above the sloped chalkline. If the rafters are spaced on 2-ft. centers, I fasten the gutters to each one. If the spacing is 16 in., I skip every other rafter. The rafter locations can be transferred to the gutter, and the hangers can be located prior to lifting the gutter to the fascia. The hangers also can be snapped in once the gutter is up.

Hang long gutters with extra help

It can be done, but it's not worth struggling alone with gutters longer than 20 ft., especially on breezy days or two stories aboveground. With my helper, I set a couple of hangers inside the gutter at the lift points that match rafter tails, usually 6 ft. to 8 ft. in from the ends. We lift the gutter onto the fascia, orient it to the slope line, position it at the ends, and drive in a couple of hanger screws with cordless drivers. The rest of the hangers can be snapped into the gutter where a solid rafter/truss tail is marked and screwed to the line as we work our way along the length.

I hang runs less than 20 ft. by myself. I mark the centers of the gutter and the fascia, and I snap in a couple of hangers near the middle for quick mounting. Then it's just a matter of matching the centerlines and driving in the screws.

Once the gutters are in place, the next step is connecting them to the downspouts. There are two types of downspout elbows, A and B (sidebar p. 51). Two elbows transition the gutter outlet from the eave to the wall. Depending on the depth of the soffits, I might need to insert a piece of downspout between the elbows.

The vertical downspout is secured to the wall or the corner board with either factory-mounted clips or face-mounted pipe bands or straps. Although clips take a little longer to mount, I prefer their cleaner look. I also like the ¼-in. distance that they hold the downspout off the wall; pipe bands hold the downspout in direct contact with the house. □

Keep water away from the house

You've engineered a drainage system from the roof to the ground. Great. Now you should find a way to keep the water from draining back into your basement.

Low-tech options include splash tiles, which are plastic, stone, or concrete slabs that you place on the ground at the end of a downspout to reduce erosion. A small trench of crushed stone placed at the end of the downspout is also simple and inexpensive, but neither gets water far enough away from the house.

Don't let that water go to waste. *A rain barrel connected to a downspout collects water for use in the garden.*

A better option is to run the downspout underground and connect it to a drainpipe that carries water farther from the house. Theoretically, the drain should lead to daylight, but that's not always possible; the alternative is to drain it into a dry well. (Check out FineHomebuilding.com's Magazine Extras for links to articles on curtain drains.)

A third option is a rainwater-harvesting system. Modern rain barrels work nicely. Their sealed tops keep the barrel from becoming a breeding farm for mosquitoes, and integrated fixtures make easy connections to gravity-fed drip-irrigation systems for gardens.

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