NORDIC STEEL GUTTERS

Nordic Steel Gutters

Lindab Rainline™

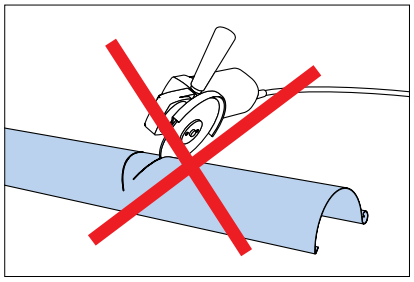
Installation Guide

Installation instructions

Transport, storage, unpacking
Make sure that the roof drainage components are handled with care during transport, storage and unpacking.
If not, the coating may be damaged or the downspouts and gutters dented. Store downspouts and gutters on a plane and stable surface.

Lindab products must be stored in a properly ventilated, dry environment to prevent condensation on metal surfaces. Materials that are stored in areas subject to temperature variations, outside storage or subjected to moisture damage are not returnable. Exposed surfaces are susceptible to humid storage stain or white rust. SMACNA guidelines for storage and handling of materials apply. Refer to SMACNA appendix E.7.

Cutting
Cut the gutters and downspouts with plate shears or a hacksaw on a firm underlay on the ground. Never use an angle grinder. It heats the steel up up and thus destroyes the galvanization. The coating may also be scorched by hot chips or filings.



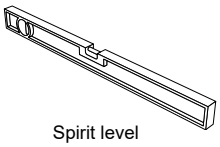
Never use an angle grinder

After-treatment
If the coating has been damaged, paint it with Lindab's repair paint to prolong the lifespan of the roof drainage system. Use a fine paint brush or Lindab's paint nib.

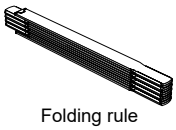
Maintenance
If you want to keep the roof drainage system in mint condition, give the system an overhaul a couple of times a year. Clean the gutter and downspouts from leaves and twigs. Wash with water and a mild detergent. Don't use a high pressure washing appliance.

Tools
Lindab's roof drainage system can be mounted with ordinary hand tools like pliers, hammer, hacksaw, screwdriver, folding rule and string. For bending hangers, you need a hanger bending tool.

Fastening
The fasteners you need are for fastening the hangers and the downspout holders. We always recommend that you use stainless screws and use the right screws intended for each material.
The downspout holders are mounted on the house façade. Check if it´s wood, concrete or bricks.

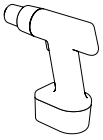


Spirit level

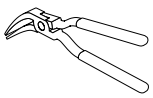


Folding rule

Pencil



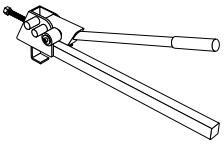
Screw driver



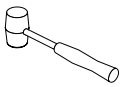
Seam plier

Steel scissors

Hack saw



Hanger bending tool



Rubber hammer

Proper gutter and downspout sizing

Design of roof drainage systems
The roof is one of the most essential parts of a building as it protects occupants, contents, and interior of the structure from the elements. Once an architect has determined the kind of roof he intends to use, he must give equal attention to the design of the roof drainage system.
Factors to be considered in the design of roof drainage systems are the area to be drained, size of gutters, downspouts, outlets, slope of roof, type of building, and appearance.

Roof area to be considered
The design capacity for a roof drainage system depends on the quantity of water to be handled. The quantity of water in turn depends on the roof area, slope, and rainfall intensity.

In considering the roof area, it must be remembered that rain does not necessarily fall vertically and that maximum conditions exist only when rain falls perpendicular to a surface. Since the roof area would increase as its pitch increases, then it would not be advisable to use the plan area of a pitched roof in the calculation of a drainage system. Experience has taught that use of the true area of a pitched roof often leads to oversizing of gutters, downspouts, and drains. To determine the design area for a pitched roof, Table 1-1 is used.

Table 1-1

PITCH		*B
in./ft.	mm/mm	
Level to 3	76/305	1.00
4 to 5	102-127/305	1.05
6 to 8	152-203/305	1.10
9 to 11	229-279/305	1.20
12	305/305	1.30

* To determine the design area multiply the plan area by the factor in B column

Rainfall intensity - downspout capacity
Rainfall intensity is usually given in inches per hour for a five minute duration or one hour duration based on U.S. Weather Bureau records. Table 1-2 based on records through 1978, gives five minute intensities for selected cities. New Orleans, Los Angeles, for example, may have 8 in./hr.(203 mm/hr) for a five minute duration yet record only 4.8 in. (121 mm) in an hour over a 100 year period. These rates correspond to 0.133 in./min.(3.4 mm/min.) and 0.08 in./min.(2 mm/min.). Local codes may require that drainage systems only be designed for the latter. It takes 96.15 square feet(8.93 square meters) of surface with 1 inch per hour(25 mm/hr) of water to correspond with 1 gpm (0.063 l/s) flow rate. Downspouts and gutters are sized in relation to rainfall on this basis.

Plumbing codes typically use the vertically projected roof area for drainage design and they often use a square foot allowance per square inch of downspout for 1 in./hr.(25 mm/hr) rainfall that varies with diameter, for example, 3 in.(76 mm): 911(85); 4 in. (102 mm): 1100 (102); 5 in.(127 mm): 1280 (119); 6 in.(152 mm): 1400 (130) and 8 in.(203 mm): 1750 (163) sq. ft.(sq. m). Net drainage capacity from using Table 1-1 and 1-2 should be compared with local code requirements.

These areas are then divided by the proper factor given in
Table 1-2, thus obtaining the required area in square inches
(square mm) for each downspout. From Table 1-3 select the downspout.

Downspout sizing
In sizing downspouts, the following considerations apply:

1. Downspouts of less than 7.00 sq in. (4515 sq mm) cross section should not be used except for small areas such as porches and canopies.

2. The size of the downspout should be constant throughout its length.

3. Downspouts should be constructed with conductor heads every 40 ft(12.2 m) to admit air and prevent vacuum.

4. Offset of more than 10 ft(3.0 m) can affect drainage capacity.

5. The gutter outlet capacity should suit the downspout capacity.

6. The downspout size must suit the bottom width of the gutter.

Proper gutter and downspout sizing

Table 1-2, Rainfall data and drainage factors

	A STORMS WHICH SHOULD BE EXCEEDED ONLY ONCE IN 10 YEARS				B STORMS WHICH SHOULD BE EXCEEDED ONLY ONCE IN 100 YEARS			
	Intensity lasting 5 minutes		Calculated roof area drained per downspout area		Intensity lasting 5 minutes		Calculated roof area drained per downspout area	
	in/hr	mm/hr	sq/ft sq in	sq m / 100 sq mm	in/hr	mm/hr	sq/ft sq in	sq m/ 100 sq mm
ALABAMA: Birmingham	7.5	191	160	2.30	10.1	256	120	1.7
Mobile	8.2	208	150	2.10	10.8	274	110	1.6
ALASKA: Fairbanks	2.1	53	570	8.30	3.8	97	310	4.5
Juneau	1.7	43	700	10.10	2.3	57	530	7.60
ARIZONA: Phoenix	5.6	141	220	3.10	8.8	224	140	2.00
Tucson	6.1	155	200	2.80	9.1	232	130	1.90
ARKANSAS: Bentonville	7.4	187	160	2.30	10.2	259	120	1.70
Little Rock	7.4	187	160	2.30	10.0	253	120	1.70
CALIFORNIA: Los Angeles	4.9	124	250	3.50	6.7	170	180	2.60
Sacramento	2.5	64	480	6.90	3.9	100	310	4.40
San Francisco	2.7	68	450	6.4	3.7	93	330	4.70
San Diego	2.2	57	540	7.80	3.1	78	390	5.60
COLORADO: Denver	5.7	146	210	3.00	9.1	232	130	1.90
Boulder	6.4	164	190	2.70	9.4	238	130	1.80
CONNECTICUT: Hartford	6.2	158	190	2.8	8.7	221	140	2.00
DISTRICT OF COLUMBIA	7.1	180	170	2.4	9.7	247	120	1.80
FLORIDA: Jacksonville	7.9	200	150	2.20	10.1	256	120	1.70
Miami	7.7	195	160	2.20	9.8	250	120	1.80
Tampa	8.3	212	140	2.10	10.8	274	110	1.60
GEORGIA: Atlanta	7.3	186	160	2.4	9.9	251	120	1.70
HAWAII: Honolulu	8.7	221	140	2.00	12.0	305	100	1.40
Kahului	7.0	177	170	2.50	12.0	305	100	1.40
Hilo	17.4	442	70	1.00	19.2	488	60	0.90
Lihue	10.4	265	110	1.70	14.4	366	80	1.20
IDAHO: Boise	1.8	46	660	9.50	3.3	84	360	5.20
ILLINOIS: Chicago	6.8	172	180	2.60	9.3	236	130	1.90
INDIANA: Indianapolis	6.8	173	180	2.50	9.4	239	130	1.80
IOWA: Des Moines	7.3	186	160	2.40	10.3	262	120	1.70
KANSAS: Wichita	7.5	191	160	2.30	10.5	267	110	1.60
KENTUCKY: Louisville	6.9	175	170	2.50	9.4	238	130	1.80
LOUISIANA: New Orleans	8.3	211	140	2.10	10.9	277	110	1.60
MAINE: Portland	5.4	136	220	3.20	7.6	192	160	2.30
MARYLAND: Baltimore	7.1	181	.170	2.40	9.7	247	120	1.80
MASSACHUSETTS: Boston	5.3	134	230	3.3	7.2	183	170	2.40
MICHIGAN: Detroit	6.4	162	190	2.70	8.9	226	140	1.90
MINNESOTA: Minneapolis	7.0	178	170	2.50	10.0	253	120	1.70

Proper gutter and downspout sizing

Table 1-2, Rainfall data and drainage factors (continued)

	A STORMS WHICH SHOULD BE EXCEEDED ONLY ONCE IN 10 YEARS				B STORMS WHICH SHOULD BE EXCEEDED ONLY ONCE IN 100 YEARS			
	Intensity lasting 5 minutes		Calculated roof area drained per downspout area		Intensity lasting 5 minutes		Calculated roof area drained per downspout area	
	in/hr	mm/hr	sq/ft sq in	sq m/ 100 sqmm	in/h	mm/h	sq/ft sq in	sq m/ 100 sqmm
MISSOURI: Kansas City	7.4	187	160	2.30	10.4	265	110	1.70
Saint Louis	7.1	181	170	2.40	9.9	251	120	1.70
MONTANA: Helena	1.8	46	660	9.50	3.1	77	390	5.70
Missoula	1.8	46	660	9.50	2.4	61	500	7.20
NEBRASKA: Omaha	7.4	188	160	2.30	10.5	267	110	1.60
NEVADA: Reno	2.3	57	530	7.60	4.5	114	270	3.90
Las Vegas	2.1	53	570	8.3	5.2	133	230	3.30
NEW JERSEY: Trenton	6.7	170	180	2.60	9.3	236	130	1.90
NEW MEXICO: Albuquerque	4.0	102	300	4.30	6.7	171	180	2.60
Santa Fe	4.5	115	270	3.80	6.4	169	180	2.60
NEW YORK: Albany	6.5	165	190	2.70	9.1	232	130	1.90
Buffalo	6.0	152	200	2.90	8.4	213	140	2.10
New York City	6.7	169	180	2.60	9.2	235	130	1.90
NORTH CAROLINA: Raleigh	7.3	185	160	2.40	9.8	250	120	1.80
NORTH DAKOTA: Bismark	6.6	167	180	2.60	9.8	250	120	1.80
OHIO: Cincinnati	6.8	172	180	2.50	9.3	236	130	1.90
Cleveland	6.3	160	190	2.70	8.8	223	140	2.00
OKLAHOMA: Oklahoma City	7.6	193	160	2.30	10.5	267	110	1.60
OREGON: Baker	2.2	56	550	7.90	3.8	97	310	4.50
Portland	2.1	53	570	8.30	3.0	76	400	5.80
PENNSYLVANIA: Philadelphia	6.8	172	180	2.60	9.4	238	130	1.80
Pittsburgh	6.4	163	190	2.70	8.8	224	140	2.00
RHODE ISLAND: Providence	5.6	143	210	3.10	7.8	198	150	2.20
SOUTH CAROLINA: Charleston	7.2	184	170	2.40	9.4	238	130	1.80
TENNESSEE: Memphis	7.4	187	160	2.30	10.0	253	120	1.70
Knoxville	6.7	169	180	2.60	9.0	229	130	1.90
TEXAS: Fort Worth	7.6	193	193	160	10.5	267	110	1.60
Dallas	7.6	194	160	2.30	10.5	267	110	1.60
Houston	8.2	208	150	2.10	10.8	274	110	1.60
San Antonio	7.6	193	160	2.30	10.5	267	110	1.60
UTAH: Provo	3.0	75	410	5.80	5.2	131	230	3.30
Salt Lake City	2.8	71	430	6.20	4.3	108	280	4.10
VIRGINIA: Norfolk	7.1	181	170	2.40	9.5	242	130	1.80
WASHINGTON: Seattle	2.1	53	570	8.30	3.3	84	360	5.20
Spokane	2.1	53	570	8.30	3.5	90	340	4.90
WEST VIRGINIA: Parkersburg	6.6	168	180	2.60	9.1	230	130	1.90
WISCONSIN: Madison	6.8	172	180	2.50	9.5	241	130	1.80
Milwaukee	6.6	168	180	2.60	9.1	232	130	1.90
WYOMING: Cheyenne	5.7	146	210	3.00	9.9	252	120	1.70

Proper gutter and downspout sizing

Table 1-3, Dimension of standard downspouts

TYPE	AREA		"A" Size		Nominal Size		Actual	
Plain Round	sq.in.	sq.mm.	sq.in	sq.mm	in.	mm.	in.	mm.
	7.07	4560	5.94	3831	3	76	3	76
	12.57	810	11.04	7120	4	102	4	102
	19.63	12661	17.71	11422	5	127	5	127
	28.27	18234	25.95	16737	6	152	6	152
	50.24	32404	47.15	30411	8	203	8	203

"A" = area of 1/4 in.(6.4 mm) undersized inlet See Figures 1-31 and 1-32 for gage.

Downspout sizing (continued)

7. Assuming that using the fewest number of downspouts is desirable, their locations will be affected by:

a. gutter capacity and length. To limit the effects of thermal expansion in gutters 50 ft(15.3 m) is a practical maximum length of gutter to be served by a downspout. Unless special provisions are made for flexibility in downspouts, gutters and their support systems, gutters should expand away from downspouts and downspouts should not be located near gutter expansion joints. See expansion coefficients in Appendix A-1 and expansion allowances in Figures 1-5 to 1-10.

b. the capacity of the inlet tube. See Table 1-3 and Figure 1-33. Also, a sharp bend at the inlet may clog.

c. potential for water freezing in downspouts and gutters. Open, partially open or corrugated styles downspouts are suggested for areas subject to icing. Locating downspouts on the north side of buildings is not recommended for such areas.

d. the appearance of the downspout system and a potential need for concealment. See Figures 1-31 and 1-32.

e. the greater capacity of a pitched gutter.

f. the downspout discharge location. Water disposal at this location should be acceptable. See Figures 1-31 and 1-36.

g. the risk of gutter overflow from insufficient drainage capacity. See Figures 1-4, 1-21, and 1-23.

h. a scupper serving a designated roof area. See Figures 1-26 to 1-30.

After the number and location of downspouts have been determined, the areas to be drained by each downspout should be figured. In making this calculation for a pitched roof, the plan area should be adjusted according to recommendations given on Table 1-1.

Sample problem

Select downspouts for a building in Boston, Mass. The building is 100 x 85 ft.(30.5 x 26 m) with a double pitched roof having a slope of 6 in./ft.(152 m/m). The slope is toward the 100 ft.(30.5 m) side. Maximum rainfall conditions will be used to determine downspout size.

It is decided to drain the building with 4 downspouts located at each corner of the building. An expansion joint will be installed in each gutter between the downspouts.

The plan area of this building is 8500 sq ft.(790 sq m). Since the slope is 6 in./ft.(152 mm/m), factor 1.10 is used (Table1-1), making the design area 9350 sq ft.(868 sq m).
Thus each of the four downspouts will serve a 2338 sq ft.(217 sq m) area.
From column B, Table 1-2, opposite Boston, it is found that 1 sq in.(645 sq mm) of downspout will drain 170sq ft.(16 sq m) of roof area.
Divide 2338(217) by 170(16) to determine that each downspout should have a minimum area of 13.56 sq in.(8746 sq mm).

From Table 1-3, it is found that there is a choice of a 5 in.(127 mm) Plain Round downspout.

Proper gutter and downspout sizing

Gutter sizing

In sizing gutters, the following considerations apply for typical section lengths of 8 to 10 feet(2.41 to 3.0 m):

1. Spacing and size of outlet openings. (The gutter can never be any more effective than the outlet and downspout selected to drain it. Downspout sizes must not exceed the bottom width of the gutter.)

2. Slope of the roof. (The gutter must be of such a design and location that water from a steep pitched roof will not by its own velocity tend to overrun the front edge.)

3. Style of gutters to be used. (All gutters are not effective for their full depth and width, see Figures 1-1 and 1-4 for design data.)

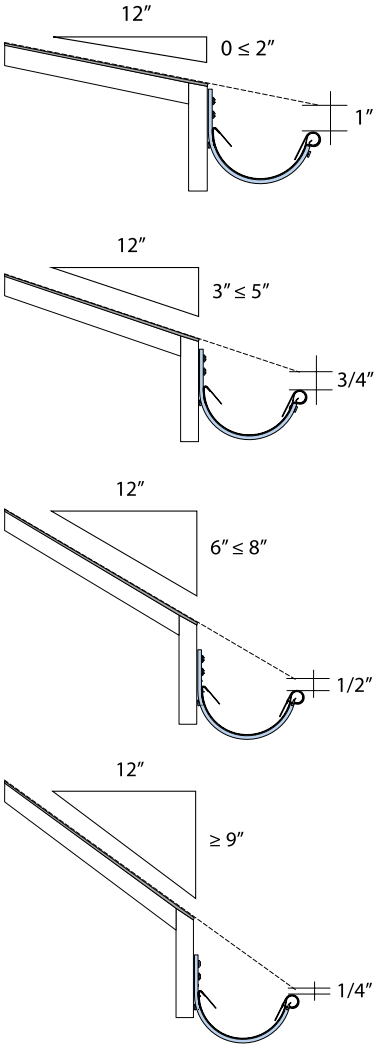
4. Maximum length of gutter. (50 ft.(15.2 m) between ends or expansion joints is the limit unless the system is especially designed to accommodate the greater expansion, the larger flow and the need for special supports.)

5. Gutter support capability. (Supports should be based on full capacity of the gutter. Ice load capacity also affect the size and strength of the system.)

Level gutters may be sized by Charts 1-1, 1-2, or 1-3.
Sloped gutters may be sized by Chart 1-3.
Formulae for flow in gutters with different pitch are not available.
The capacity of a gutter with 1/16 in./ft.(5.21 mm/m) or less pitch is taken as that of a level gutter even though it is somewhat greater.

Required clearance of gutter below extended roof line

Roof Pitch	Clearance below extended roof line
0 in 12 - 2 in 12	1”
3 in 12 - 5 in 12	3/4”
6 in 12 - 8 in 12	1/2”
9 in 12 or	1/4”



Gutter sizing (continued)

Chart 1-2 is based on level gutter capacity as determined by NIST. It is based on W = 0.0182 (IA)2/5. W is the width in in.(mm). I denotes rainfall intensity (Table 1-2) and A is the roof area in square feet(sq m) (Table 1-1).

Sample problem

To size a half round gutter for a building, located in Kansas City, Mo., with a flat roof 80 x 40 ft.(24.4 x 12.2 m). This building has a parapet wall on three sides and a gutter to be located on an 80 ft.(24.4 m) side.

Column A, Table 1-2, was used to determine rainfall conditions. Since the gutter run will exceed 50 ft.(15.2 m), two downspouts will be used with an expansion joint between. The area of the building is 3200 sq ft.(297 sq m). Thus each of the downspouts will serve an area of 1600 sq ft. (149 sq m). From column A, Table 1-2, opposite Kansas City, Mo., it is found that 1 sq in.(100 sq mm) of downspout will drain 160 sq ft.(2.3 sq m/100 sq mm) of roof area. Divide 1600 sq ft.(149 sq m) by 160 sq ft/sq in.(2.3 sq m/100 sq mm) to determine that each downspout should have a minimum area of 10 sq in.(6470 sq mm). From Table 1-3 it is found that a4 in.(102 mm) downspout is required. From Chart 1-2 it is determined that a 9.5 in.(241 mm) half round gutter should be used. Area and flow in Table 1-4 are based on 1 in.(25 mm) of rainfall per hour; divide these areas by the local rainfall rate in inches per hour to determine the actual roof area to be served by the gutter diameter. “The capacity of a sloped rectangular gutter may be approximated by using a gutter cross section area not less than that of a semicircular gutter and a depth to width ratio of at least 0.75.

Proper gutter and downspout sizing

Chart 1-2, Half round gutter selection, width required for given roof areas and rainfall intensities

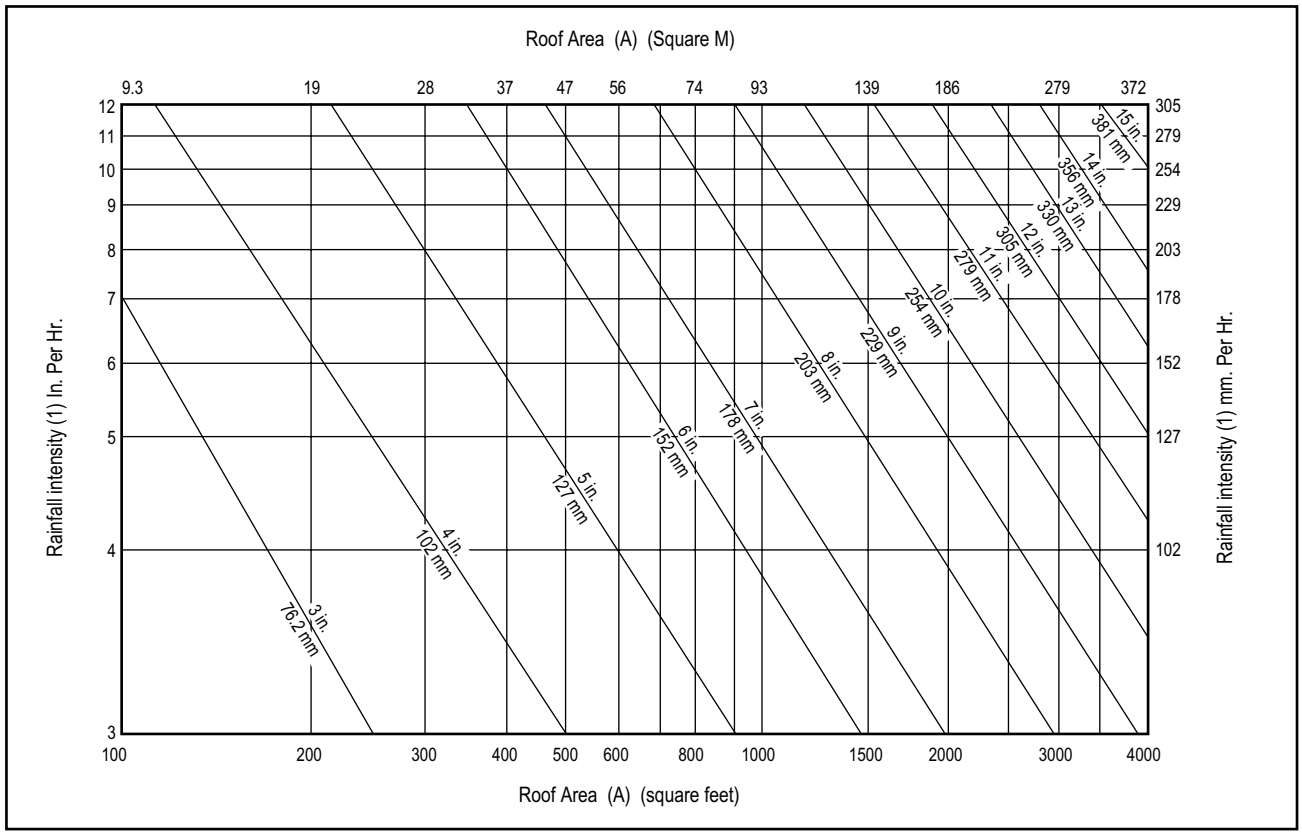
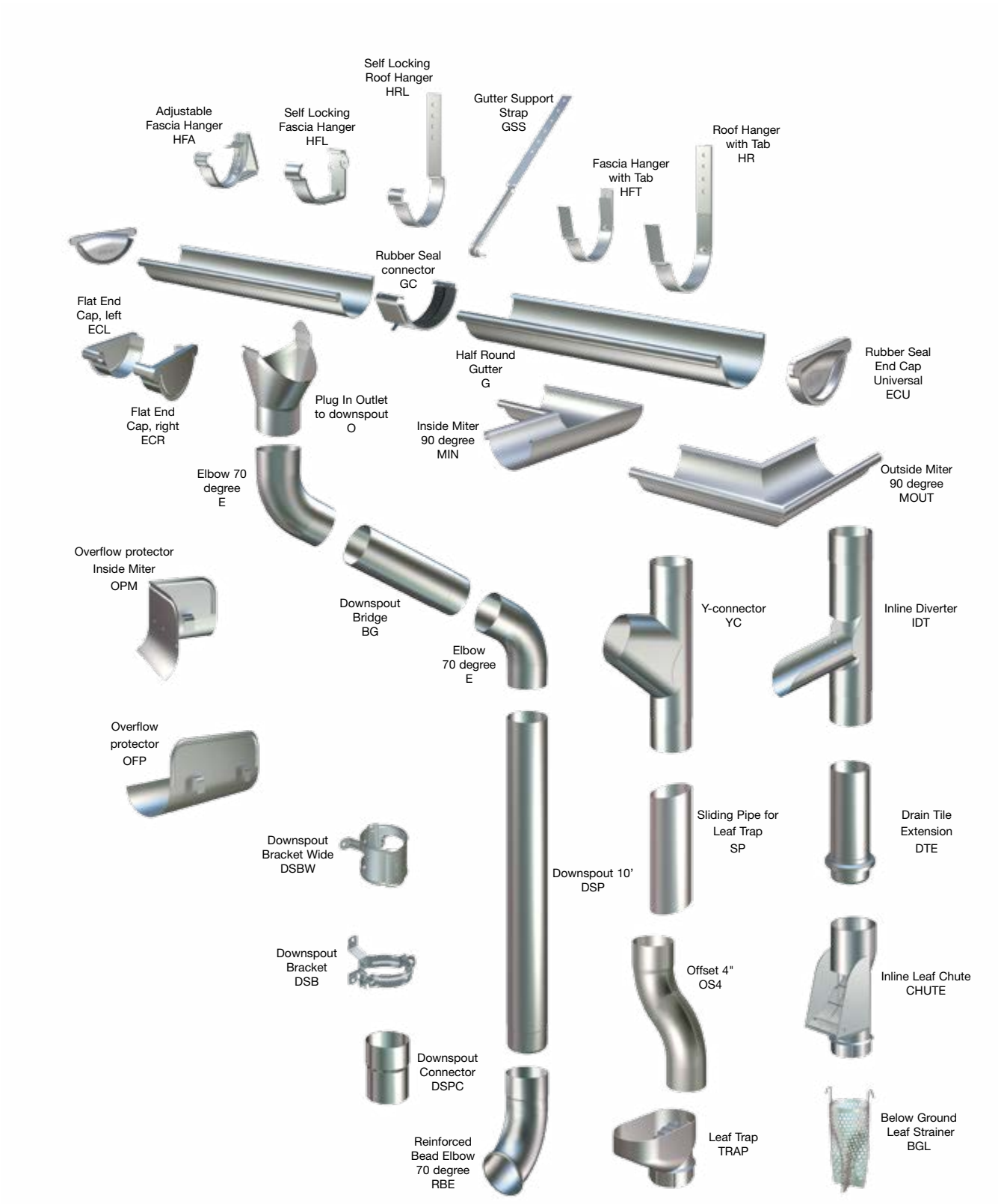


Table 1-4, Sloped roof gutters, maximum roof area for gutters

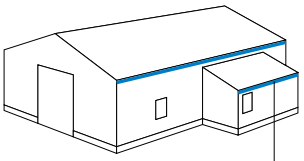
Diameter of gutter		C.S. Area		Level		Level		1/8 in per ft slope (3.2 mm/.3m)				1/4 in per ft slope (6.4 mm/.3m)			
in	mm	sq in	sq mm	sq ft	sq m	gpm	l/s	sq ft	sq m	gpm	l/s	sq ft	sq m	gpm	l/s
3	76	3.5	2258	680	63	7	0.44	960	89	10	0.63	1360	126	14	0.88
4	102	6.3	4064	1440	134	15	0.95	2040	190	21	1.33	2880	268	30	2.08
5	127	9.8	6321	2500	232	26	1.64	3520	327	37	2.33	5000	465	52	3.28
6	152	14.1	9095	3840	357	40	2.52	5440	505	57	3.60	7680	713	80	5.05
7	178			5520	513	57	3.60	7800	725	81	5.11	11040	1030	115	7.26
8	203	25.1	16190	7960	739	83	5.24	11200	1040	116	7.32	14400	1338	165	10.4
10	254	39.1	25220	14400	1338	150	9.47	20400	1895	212	13.4	28800	2676	299	18.9

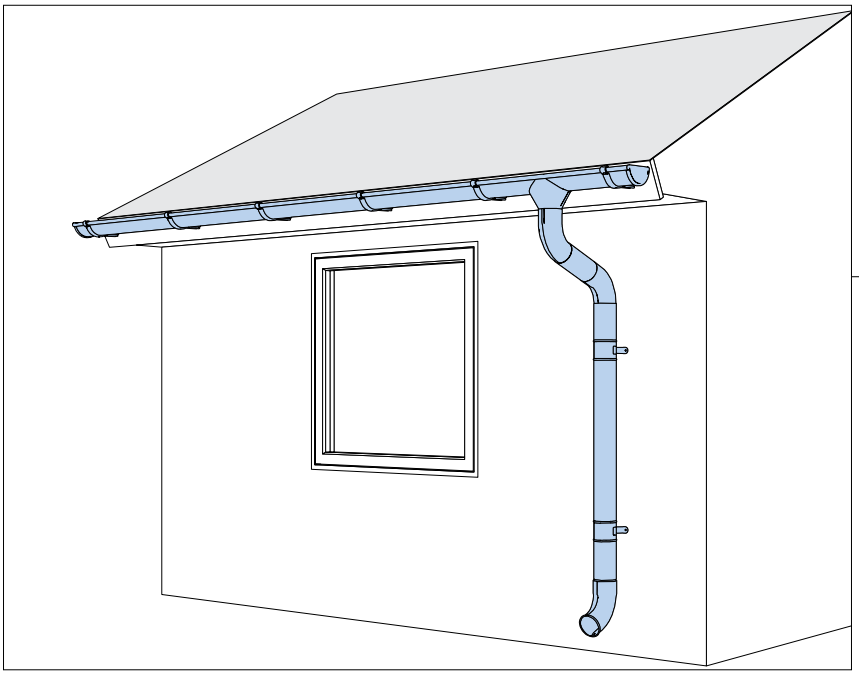
Installation instructions

Rainwater system components

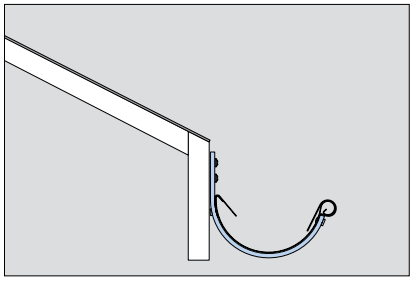


Installation instructions

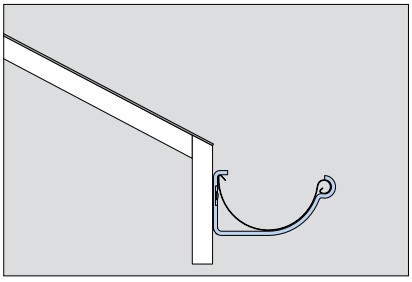




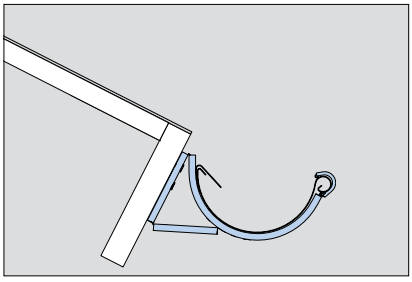
Roof base
Depending on the roof construction of the building different types of brackets can be used. The brackets that can be used are:



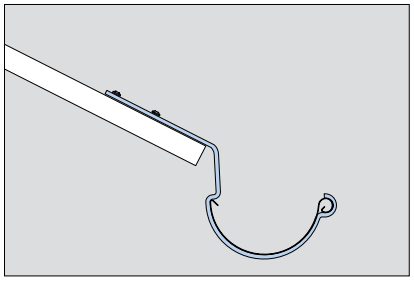
HFT hanger



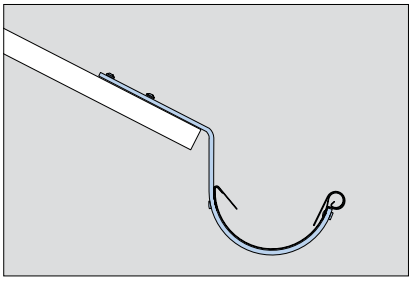
HFL hanger



HFA hanger

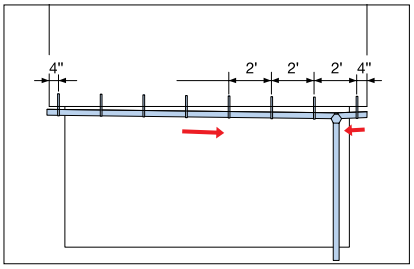


HRL hanger



HR hanger

Installation instructions

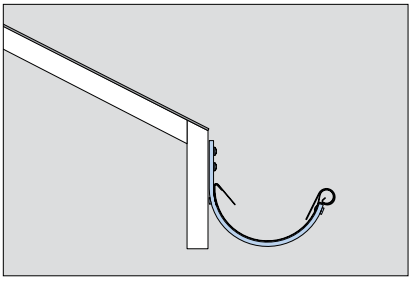


General information Gutter Hanger HFT

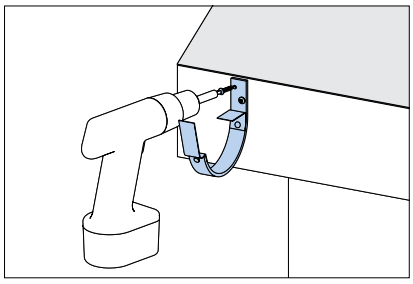
Gutter Hangers should be mounted at 2’ c/c, and 4” from the start of the fasciaboard.

Incline. 1” per 32’.

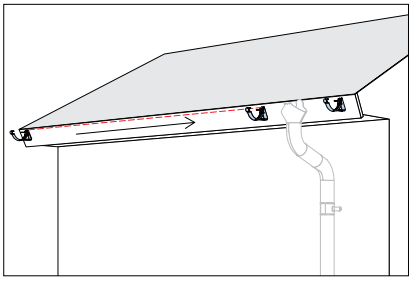
Gutter Hanger HFT



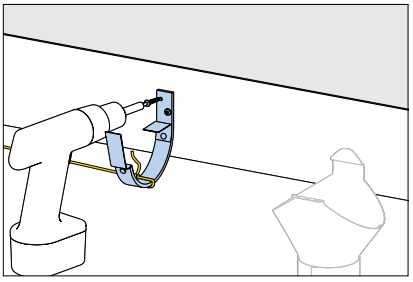
HFT hanger



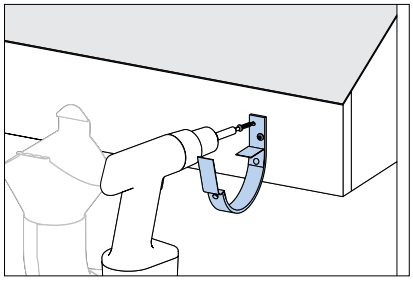
Mount the highest hanger first, 4” from the start of the fasciaboard.



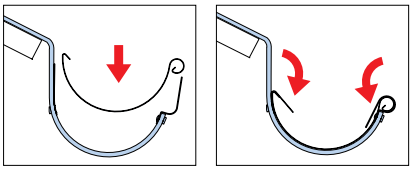
The inclination to the downspout should be 1” per 32’.



Fasten the lowest hanger as the last one before the downspout. Tie a cord for lining up.

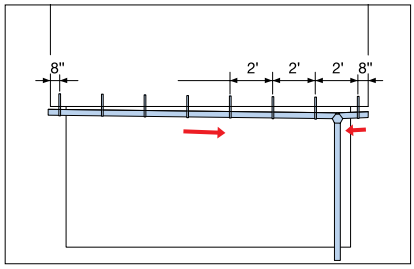


Mount the end hanger 4” from the end of the fasciaboard. Make sure the final hanger is slightly higher to create a flow from both ends to the downspout.



Place the gutter into the hangers and secure it by folding down the fixing strips. Frontside first.

Installation instructions

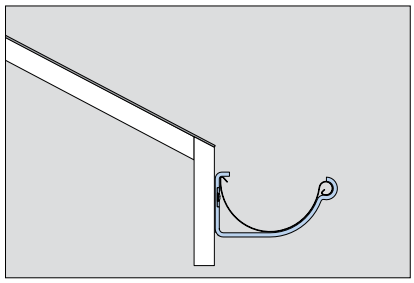


General information Gutter Hanger HFL

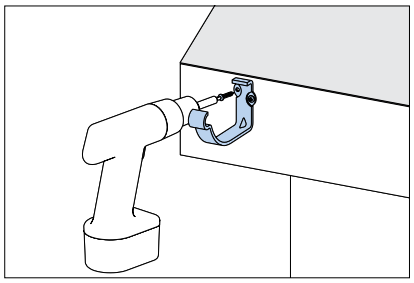
Gutter Hangers should be mounted at 2’ c/c, and 8” from the start of the fasciaboard.

Incline. 1” per 32’.

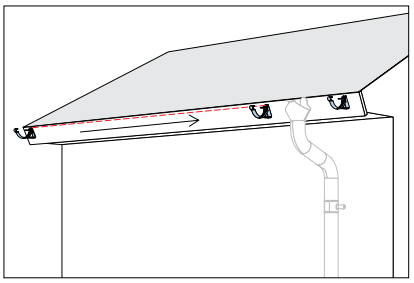
Gutter Hanger HFL



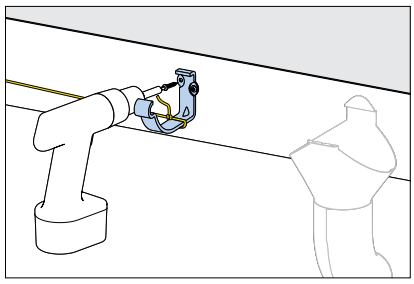
HFL hanger



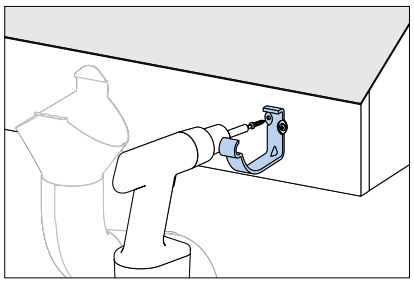
Mount the highest hanger first, 8” from the start of the fasciaboard.



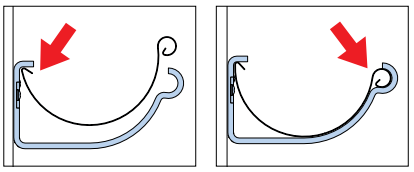
The inclination to the downspout should be 1” per 32’.



Fasten the lowest hanger as the last one before the downspout. Tie a cord for lining up.

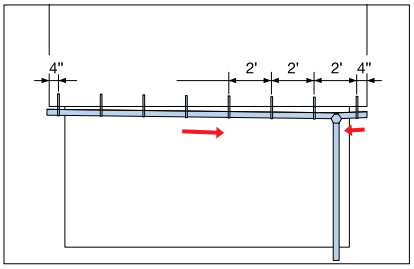


Mount the end hanger 8” from the end of the fasciaboard. Make sure the final hanger is slightly higher to create a flow from both ends to the downspout.



Place the gutter into the hangers. Backside first, then push the bead in place.

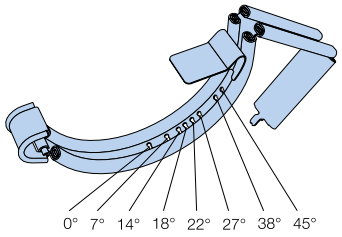
Installation instructions



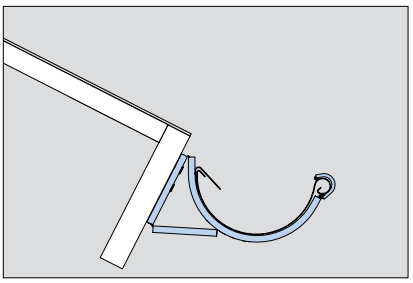
General information Gutter Hanger HFA

Gutter Hangers should be mounted at 2’ c/c, and 4” from the start of the fasciaboard.

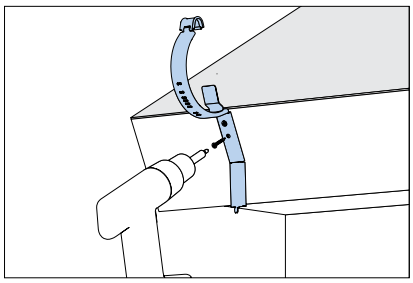
Incline. 1” per 32’.



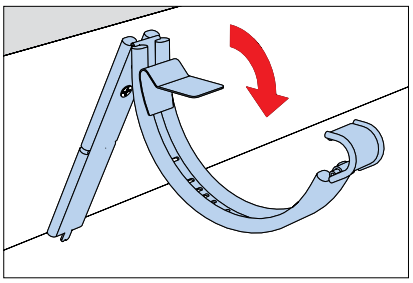
Gutter Hanger HFA



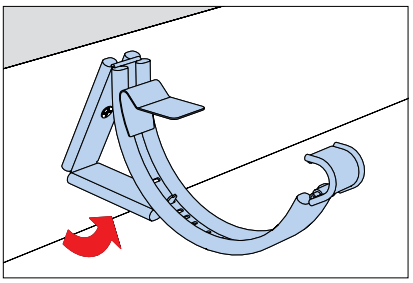
HFA hanger



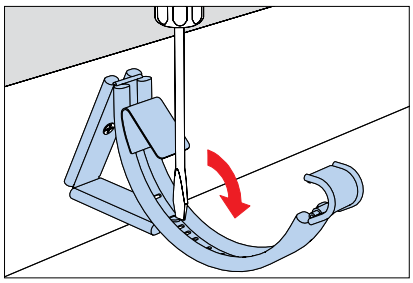
Mount the highest hanger first, 4” from the start of the fasciaboard.



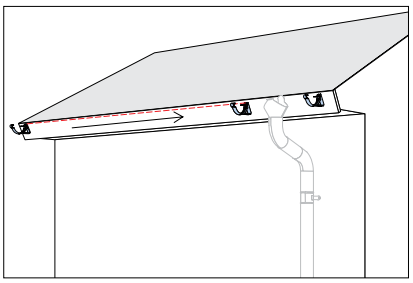
Press the gutter bow down.



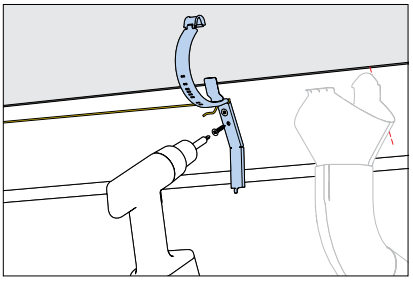
Fold the lower part up and insert in the gap for the right angle.



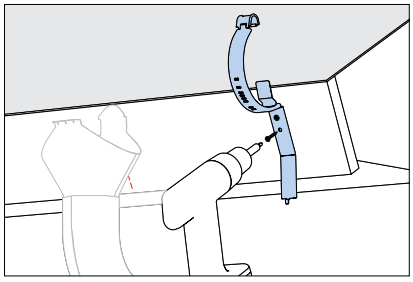
Push the flap towards the front of the hanger.



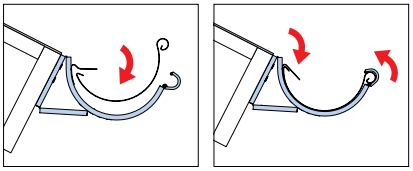
The inclination to the downspout should be 1” per 32’.



Fasten the lowest hanger as the last one before the downspout. Tie a cord for lining up.

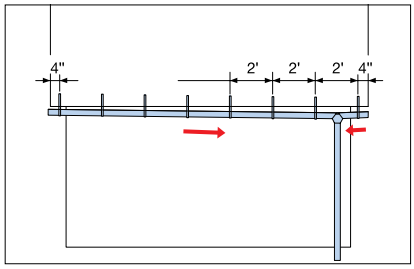


Mount the end hanger 4” from the end of the fasciaboard. Make sure the final hanger is slightly higher to create a flow from both ends to the downspout.



Place the gutter into the hangers. Backside first then use the snap lock on the front end.

Installation instructions

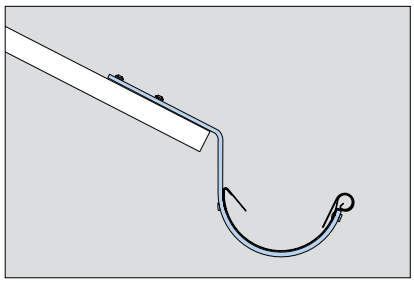


General information Gutter Hanger HR

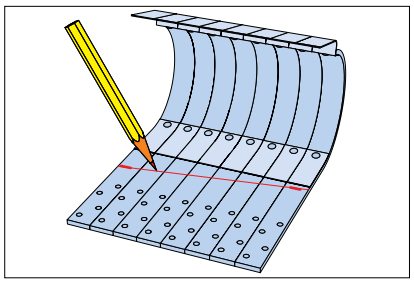
Gutter Hangers should be mounted at 2’ c/c, and 4” from the start of the fasciaboard.

Incline. 1” per 32’.

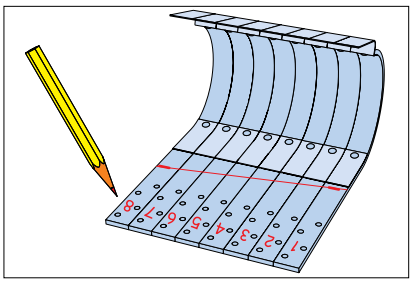
Gutter Hanger HR



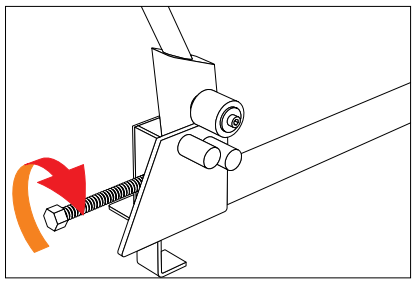
HR hanger



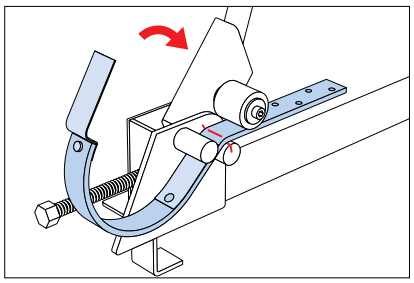
Mark out on the hangers for the gutter incline. 1” per 32’.



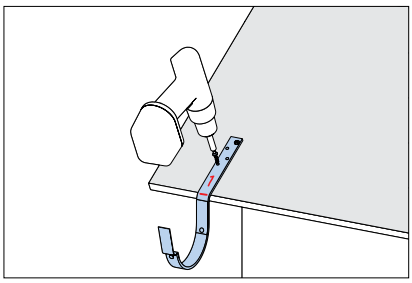
Number the hangers. 1 is for “High hanger”. Last hanger is ”Low hanger”.



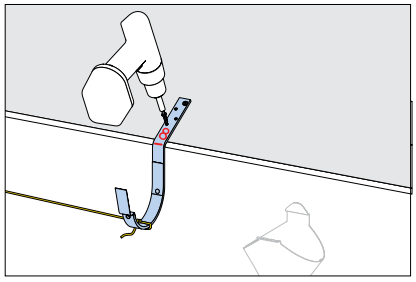
Adjust the stop srew for correct angle.



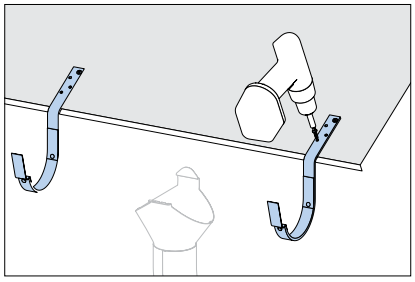
Bend the hangers at the marking.



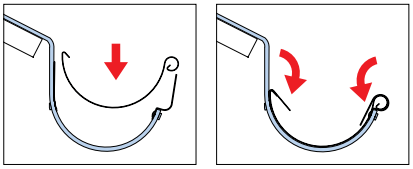
Mount hanger no.1 “High hanger”, 4” from the start of the fasciaboard, and fasten the other hangers accordingly.



Fasten the lowest hanger as the last one before the downspout. Tie a cord for lining up.

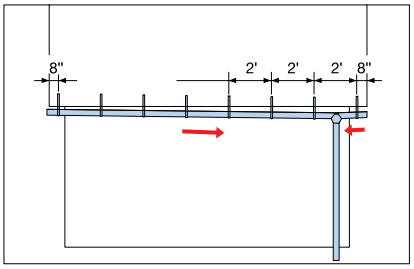


Mount the end hanger 4” from the end of the fasciaboard. Should be bent the same way as the second lowest hanger.Make sure the final hanger is slightly higher to create a flow from both ends to the downspout.



Place the gutter into the hangers and secure it by folding down the fixing strips. Frontside first.

Installation instructions

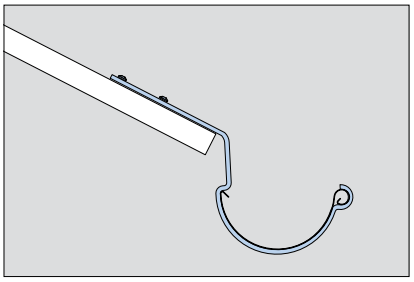


General information Gutter Hanger HRL

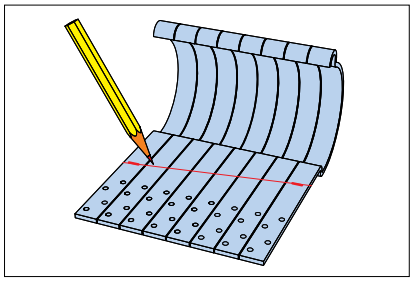
Gutter Hangers should be mounted at 2’ c/c, and 8” from the start of the fasciaboard.

Incline. 1” per 32’.

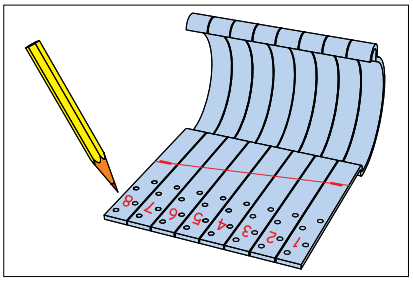
Gutter Hanger HRL



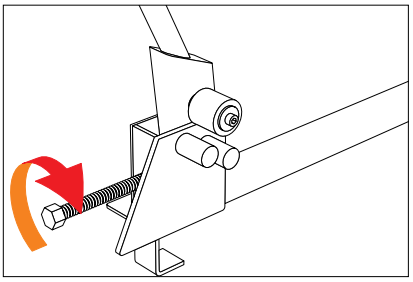
HR hanger



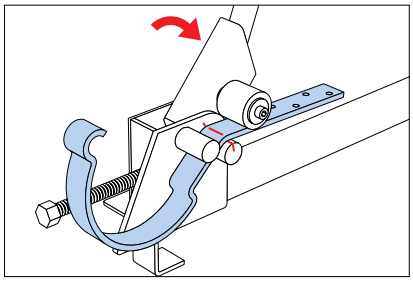
Mark out on the hangers for the gutter incline. 1” per 32’.



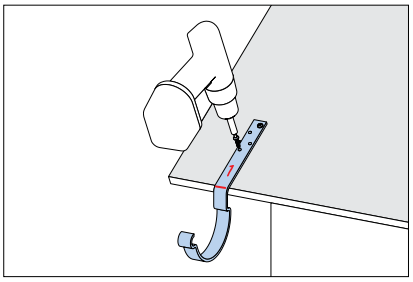
Number the hangers. 1 is for “High hanger”. Last hanger is ”Low hanger”.



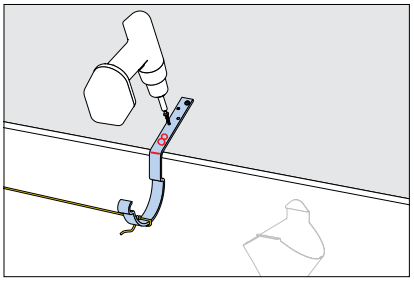
Adjust the stop srew for correct angle.



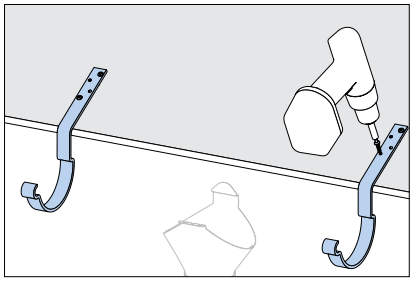
Bend the hangers at the marking.



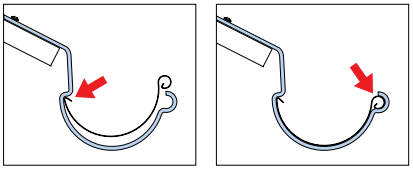
Mount hanger no.1 “High hanger”, 4” from the start of the fasciaboard, and fasten the other hangers accordingly.



Fasten the lowest hanger as the last one before the downspout. Tie a cord for lining up.



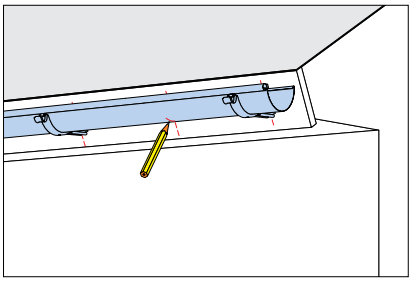
Mount the end hanger 4” from the end of the fasciaboard. Should be bent the same way as the second lowest hanger. Make sure the final hanger is slightly higher to create a flow from both ends to the downspout.



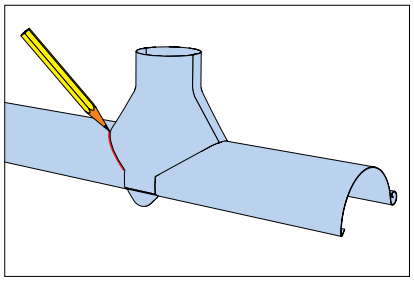
Place the gutter into the hangers and secure it by folding down the fixing strips. Frontside first.

Installation instructions

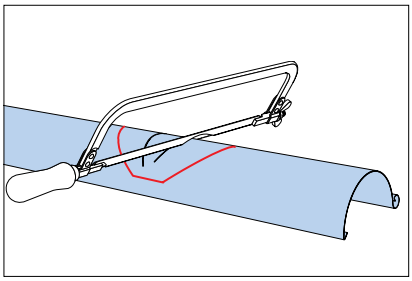
Outlet O



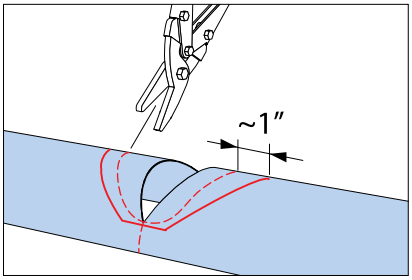
Place the gutter in the hangers and mark out for the plug in outlet O on the gutter.



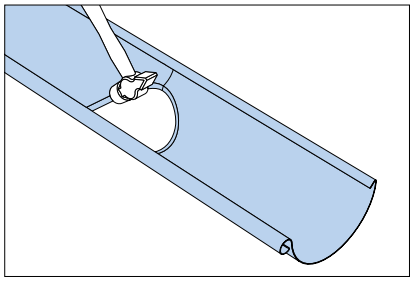
Use the outlet as template on the gutter.



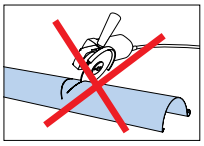
Use a hacksaw to make a hole in the gutter.

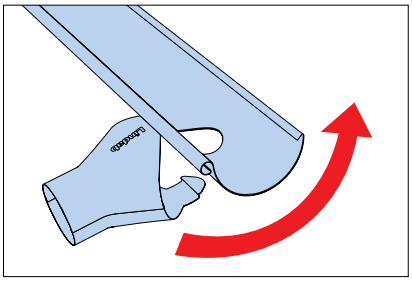


Finish by cutting up to the bead and backside as shown in picture.

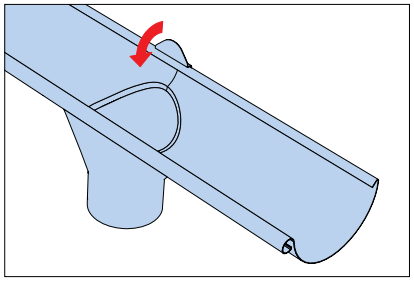


To get a smooth water fall, use a hammer to bend down the edges.

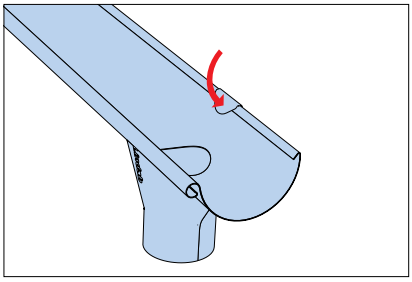




The gutter outlet snaps easily on the gutter.

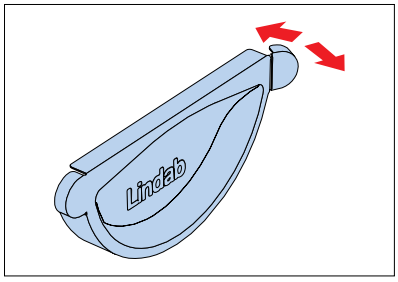


Fit the outlet and turn and push it upwards towards the gutter until the tab snaps into place over the back of the gutter.

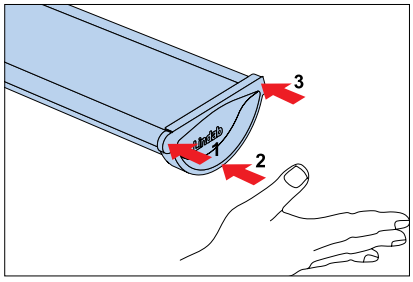


Keep the outlet firmly in place against the gutter whilst pushing the tab down to lock the outlet in place.

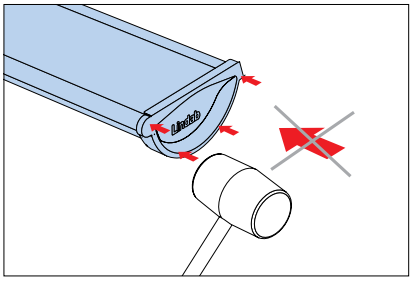
End Cap ECU



Cut or fold the ear not used.



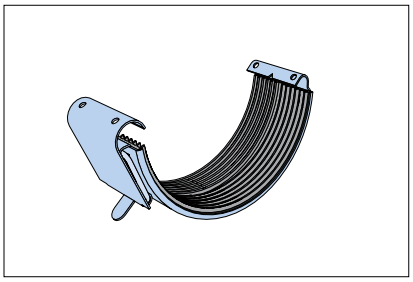
Hold the gutter with one hand and put the End Cap in position with the other. Slap it firmly with your hand to push it into position.



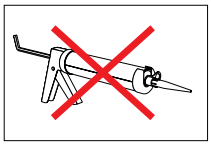
The end cap ECU is self sealing. Use a rubber hammer to fix it to the gutter.

Installation instructions

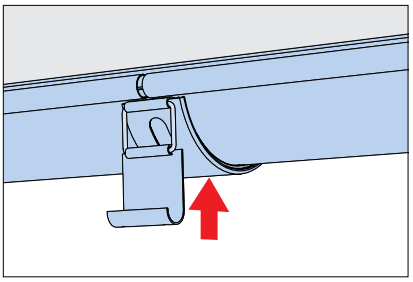
Gutter connector GC



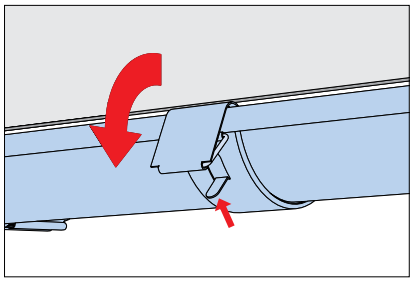
Use self sealing gutter connector GC.



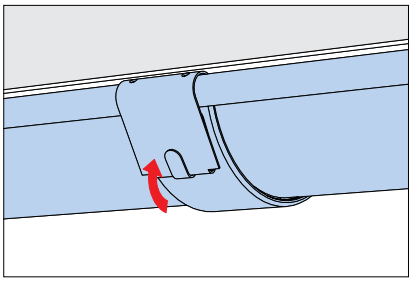
Silicone should not be used.



Press the sealing to the gutter.
Leave a distance of 1/8” between the gutters.



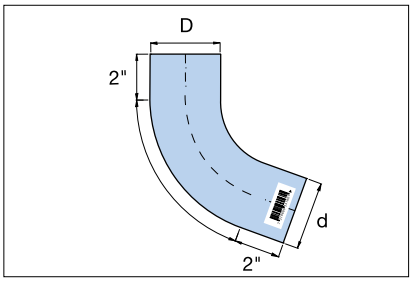
Snap on the gutter connector



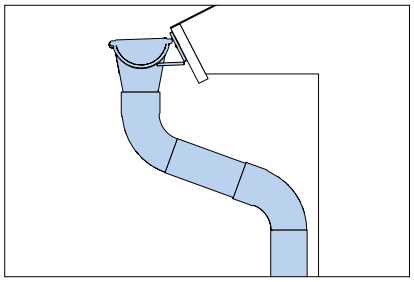
and lock.

Installation instructions

Elbow E

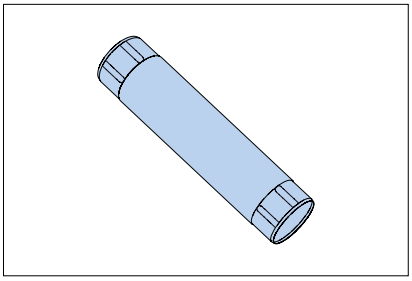


Always mount the elbow with the wide opening upwards (D) and the narrow one downwards (d).

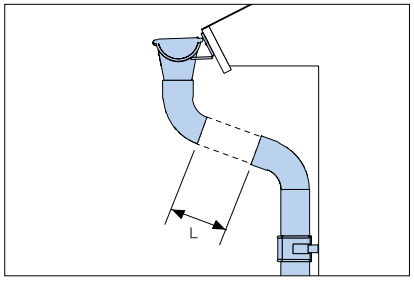


The EAN label is always placed on the narrow end of the elbow.

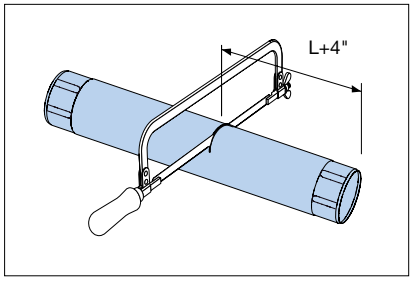
Intermediate downspout BG



Intermediate downspout BG.

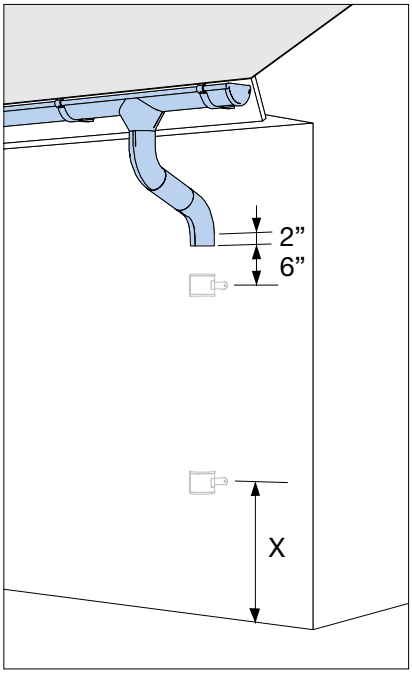


Check the measures to get the length of the intermediate downspout BG.

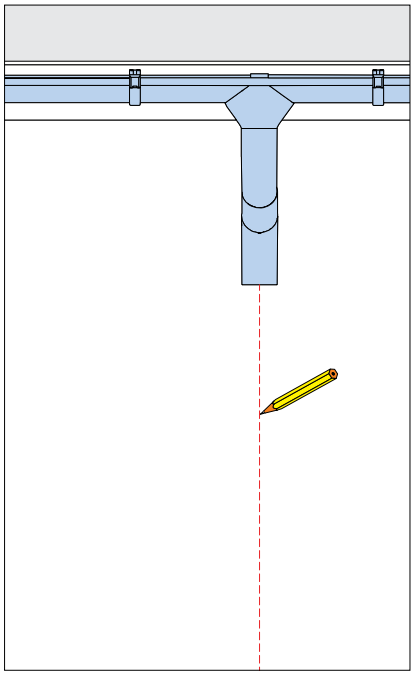


Use a hack saw to cut the intermediate downspout BG. Remove sharp metal filings with a knife.

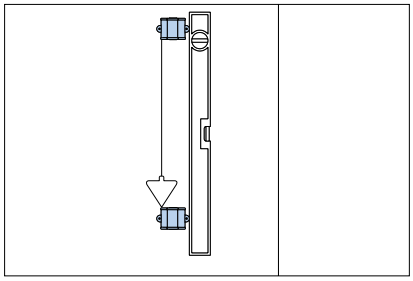
Downspout brackets DSBW



Measure the length of the downspout.
Mark out for the downspout brackets.
Measurement X is depending on type of outlet.



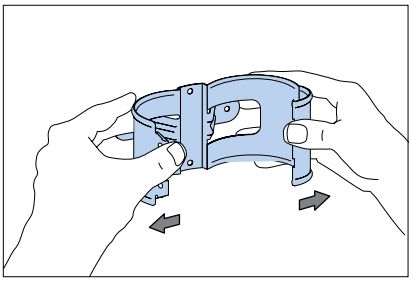
Mark the centerline on the wall behind where the downspout brackets will be placed



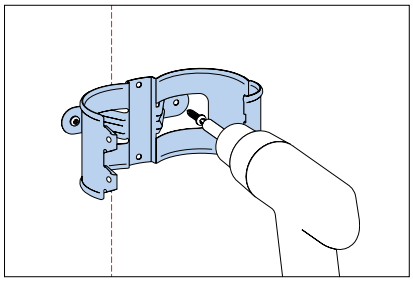
Level the downspout brackets with spirit level or plump-bob.

Installation instructions

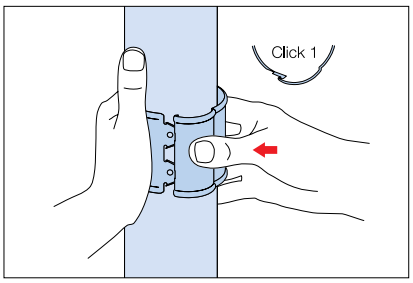
Downspout brackets DSBW



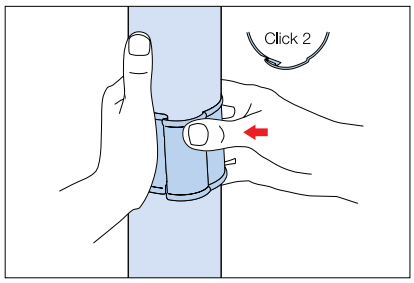
When using the wide downspout bracket grab and bend the flanges outward to simplify the fastening to the wall as in the picture beside.



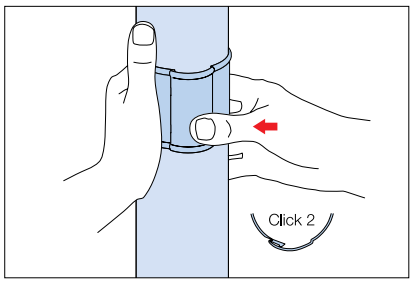
Fasten the downspout brackets on the wall.



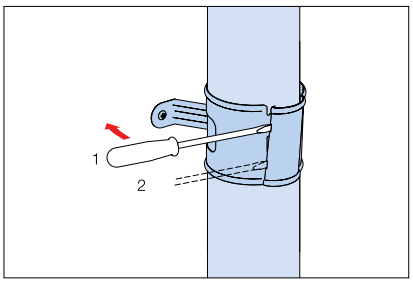
Press and push the bracket sideways to the first half-closed position.



Press firmly sideways to close the bracket fully in the final upper locking position.



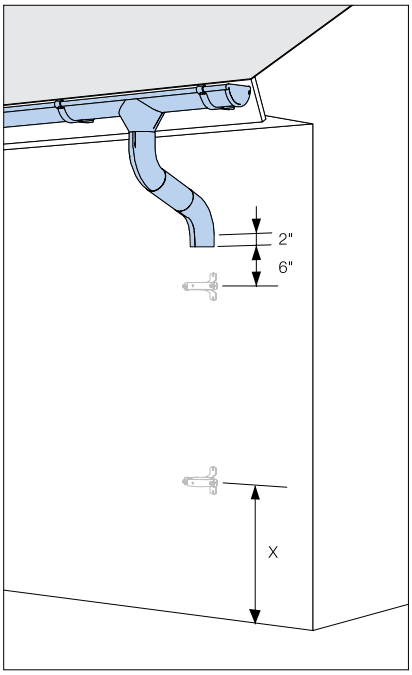
Press firmly sideways to close the bracket fully in the final lower locking position.



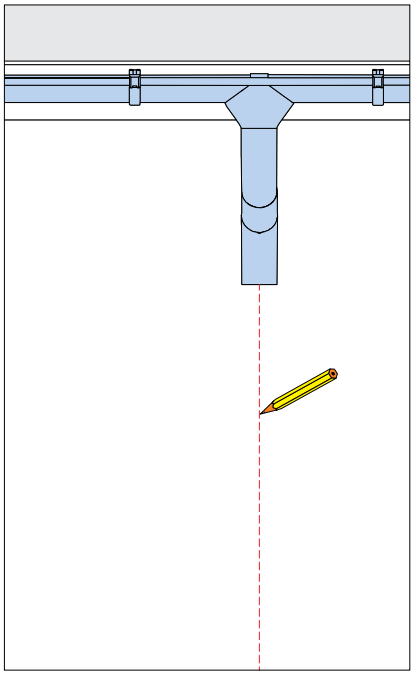
To open the wide downspout bracket, insert a flat screwdriver and bend lightly pushing back while lifting the material out of the final locking position.

Installation instructions

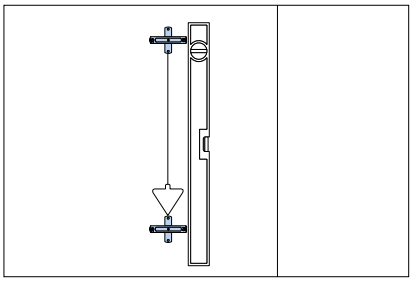
Downspout brackets DSB



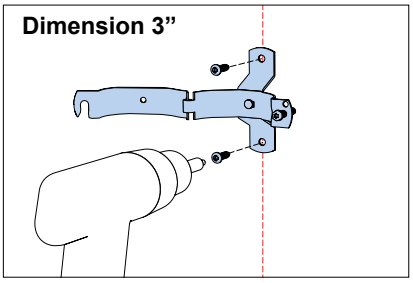
Measure the length of the downspout.
Mark out for the downspout brackets.
Measurement X is depending on type of outlet.



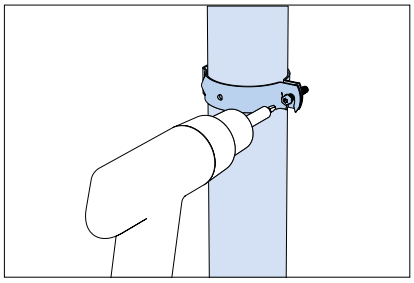
Mark the centerline on the wall behind where the downspout bracket will be placed



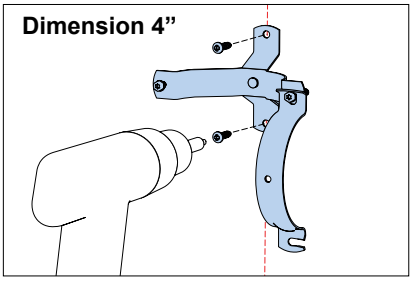
Level the downspout brackets with spirit level or plump-bob.



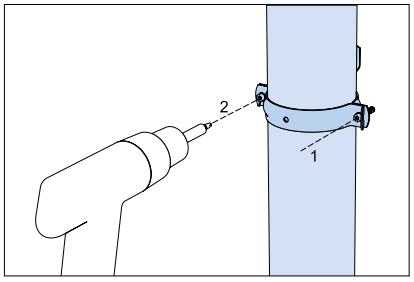
Fasten the downspout bracket on the wall.



To fasten the 3” downspout bracket simply fold the hinge over and close and tighten the single screw.



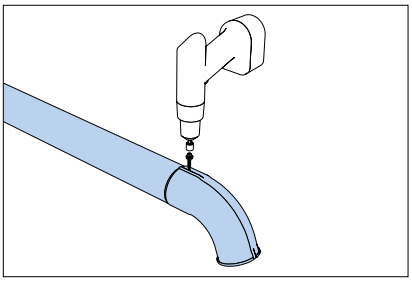
Fasten the downspout bracket on the wall.



To fasten the 4” downspout bracket, fold the hinge over and close and tighten the two screws equally much, in order 1-2.

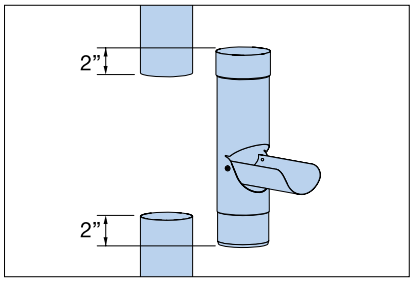
Installation instructions

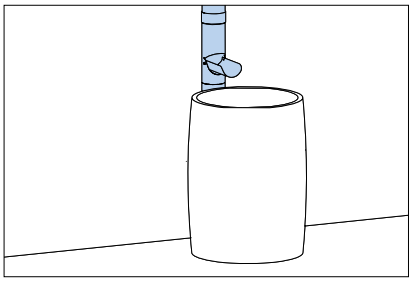
Reinforced Bead Elbow 70° RBE



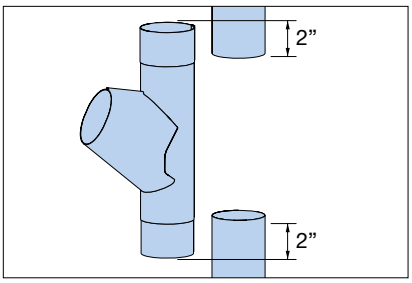
Assemble the RBE Use a self tapping screw on the back side.

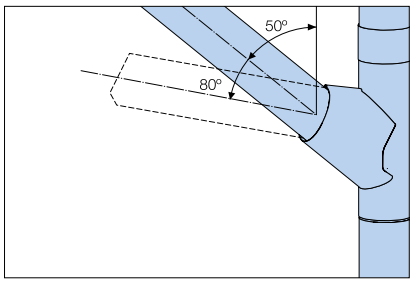
Inline Diverter IDT





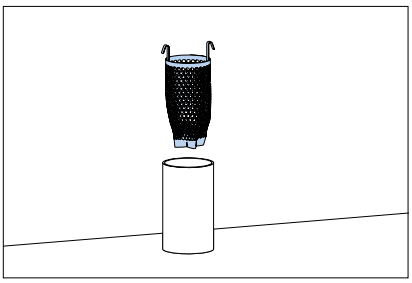
Y-connector YC

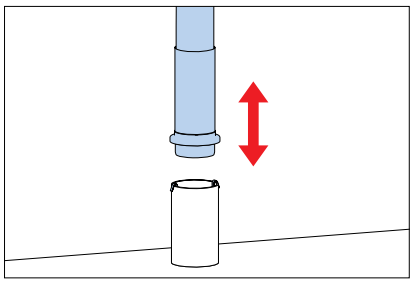




Connect a branch downspout. Can be installed at angles between 50-80 degrees.

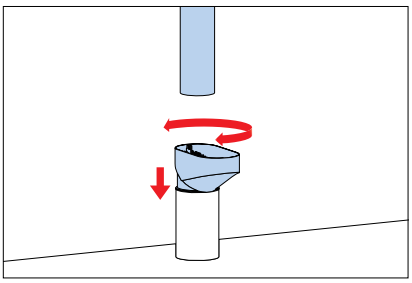
Below Ground Leaf Strainer BGL



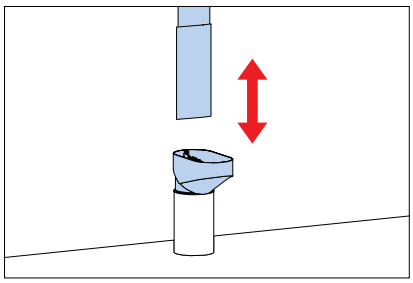


Connect the Drain Tile Extension DTE.

Leaf Trap TRAP

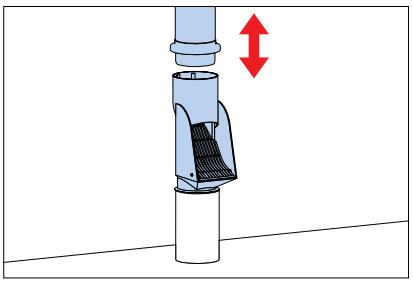


Place the leaf trap in the ground downspout.



Connect the Sliding Pipe for Leaf Trap SP.

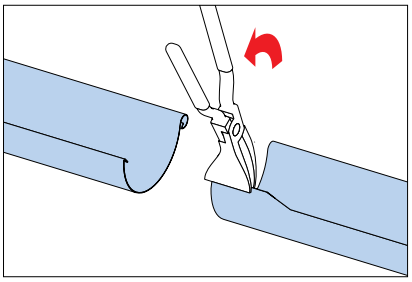
Inline Leaf Chute CHUTE



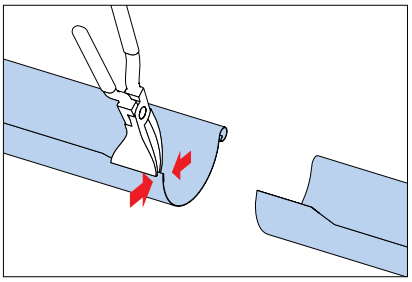
You can also use a self cleaning Inline Leaf Chute CHUTE. Use DTE to connect.

Installation instructions

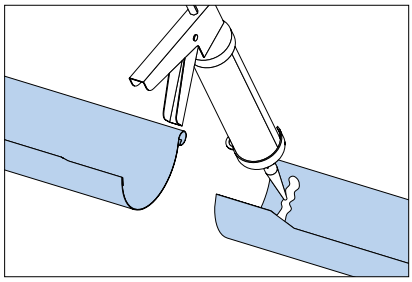
7.5” commercial size system.



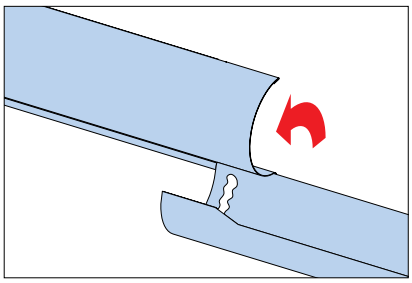
Use the seamer or tongs to straighten the backside of the lower gutter about 4”.



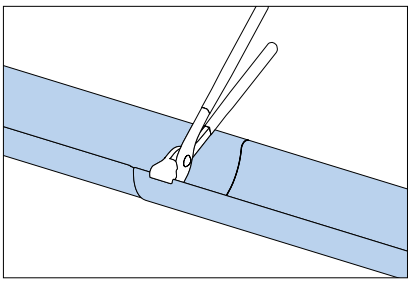
Use the seamer or tongs to close the backside of the upper gutter about 4”.



Apply non-hardening caulk 2” from the lower gutters edge.

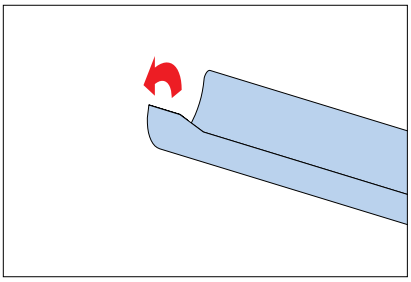


Insert the upper gutters front bead in the lower gutters bead and fold back and press down firmly into the lower gutter.

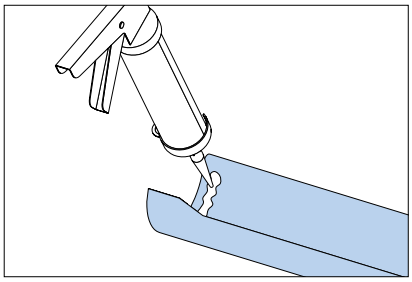


Use the seamer or tongs to fold down and close the backside of the gutters firmly together.

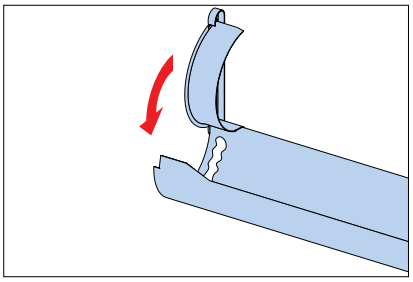
7.5” Flat End Cap left and right ECL/ECR



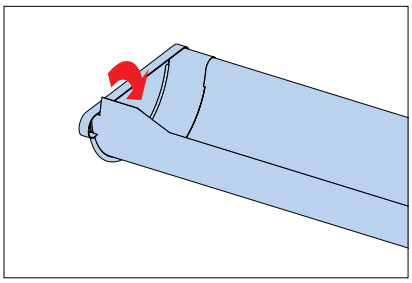
Use the seamer or tongs to straighten about 2” of the the gutters backside.



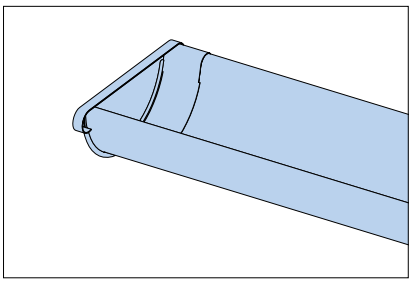
Apply non-hardening caulk 1” from the gutters edge.

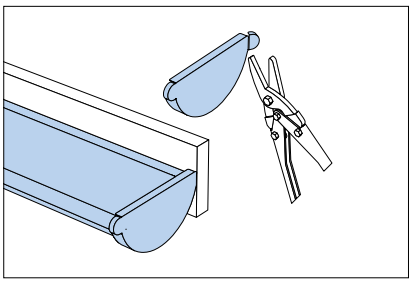


Insert the flat end caps bead in the gutters bead and fold back and press down firmly into the gutter.



Use the seamer or tongs to fold down and close the backside firmly over the flat end cap.





If necessary cut away the ear closest to the fascia board.

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