

 **TOYO GUTTERS**

# NEO ARCADIA

## AC120

**DENKA**  
DENKI KAGAKU KOGYO KABUSHIKI KAISHA

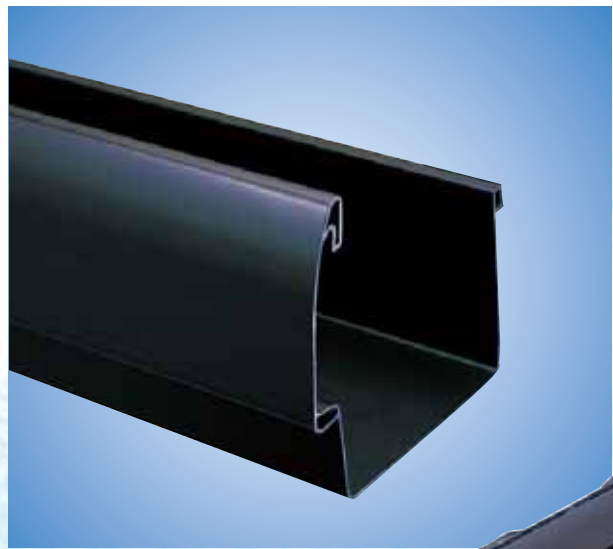
# NEO ARCADIA

**Accommodating every need.  
Neo Arcadia's outline integrates**

## NEO ARCADIA

Neo Arcadia is a gutter with a unique form that fulfils a role above and beyond that of simple rainwater drainage. Neo Arcadia's outline integrates with the house to make a beautiful building look even more beautiful, and it combines this new concept with functionality.

The front surface of the eaves trough is covered with a highly weather-resistant resin (acrylic resin), which dramatically increases its weathering performance. This means that its color lasts and lasts, maintaining the exterior of the house beautifully.



# AC120

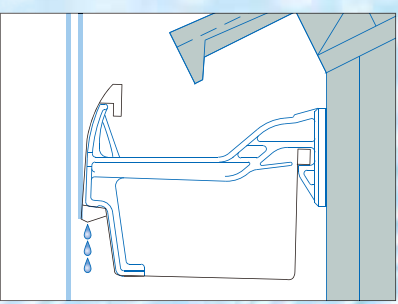




# with the building to complement its exterior.

## Point 1 Stylish and functional design

Harmonizes with the eaves by using a high-fronted R-shape that makes the eaves look bigger. Also, uses a shape that minimizes the amount of raindrops, which can cause staining, thereby maintaining the beauty of the house.



## Point 2 The ideal gutter for improving the durability of a house

A highly weather-resistant layer whose color does not fade is formed on the front surface of the eaves troughs and downspouts.

Eaves trough (AC120)

Downspout (K35)

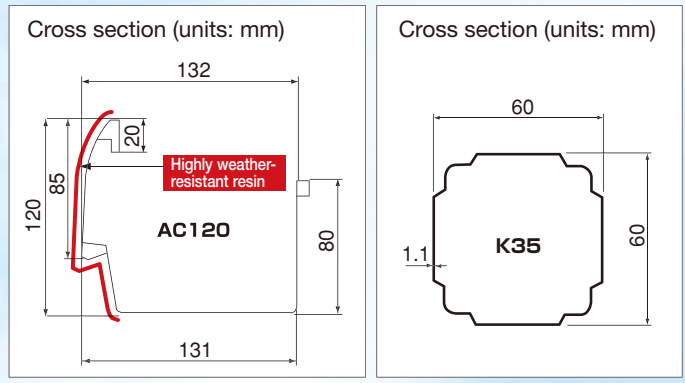
**Highly weather-resistant resin (acrylic resin)**

Weather resistance accelerated test using Super UV				
	Blank	80 hours	160 hours	240 hours
Highly weather-resistant type				
Rigid PVC				

※The table above shows data obtained in tests carried out by DENKA.  
 ※"80 hours" in the table above is equivalent to approximately 1 year. (Under actual exposure, results may differ slightly from the table above.)

## Point 3 Strength design

Neo Arcadia is a gutter that combines high drainability with strength. Also, the hidden hangers made from polycarbonate resin are designed for strength against strong winds and snow.



Neo Arcadia meets a wide range of housing requirements with sizes and designs that can accommodate a variety of buildings, as well as economic efficiency. With a fit that complements the building, Neo Arcadia creates diverse residential scenes.



Reddish Brown (SB)   Snow White (SW)   Black (K)   Eco Green (EG)   Autumn Brown (AG)   Alto Beige (UB)   Shining Grey (SH)

In keeping with the building's architectural style and design, you can select an eaves trough that makes the eaves look neat and simple, a funnel specification that gives the eaves a sleek appearance, and an advanced specification square downspout.



Eaves trough: AC120  
Square downspout: K35  
Drop outlet: Expansion funnel AC120

Colored asbestos cement tile



Black (K)



Reddish Brown (SB)



Shining Grey (SH)

Thick plain tile



Black (K)



Alto Beige (UB)



Autumn Brown (AG)

Thick Japanese tile



Black (K)



Autumn Brown (AG)



Shining Grey (SH)

Monier tile



Black (K)

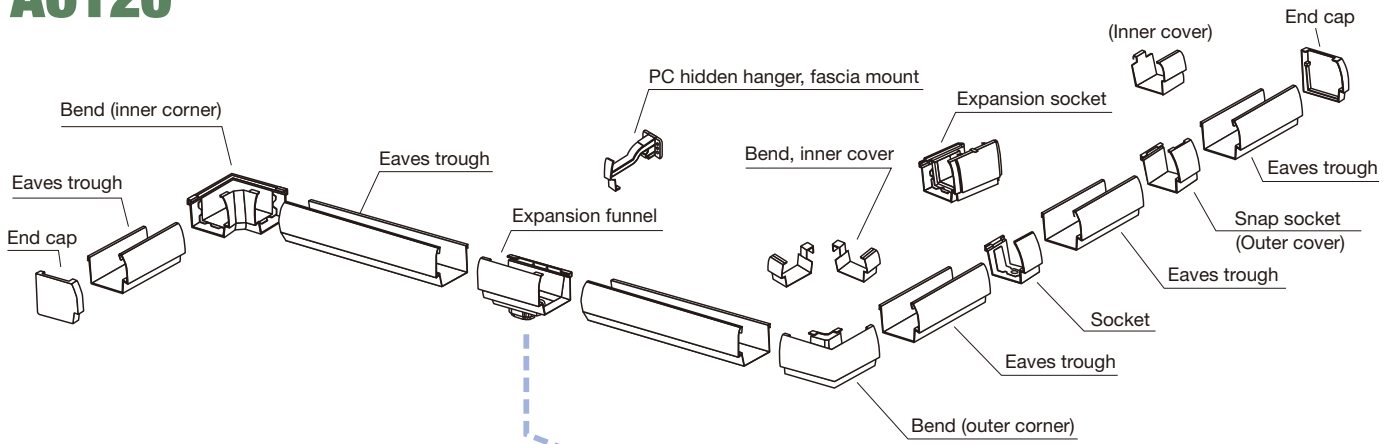


Reddish Brown (SB)

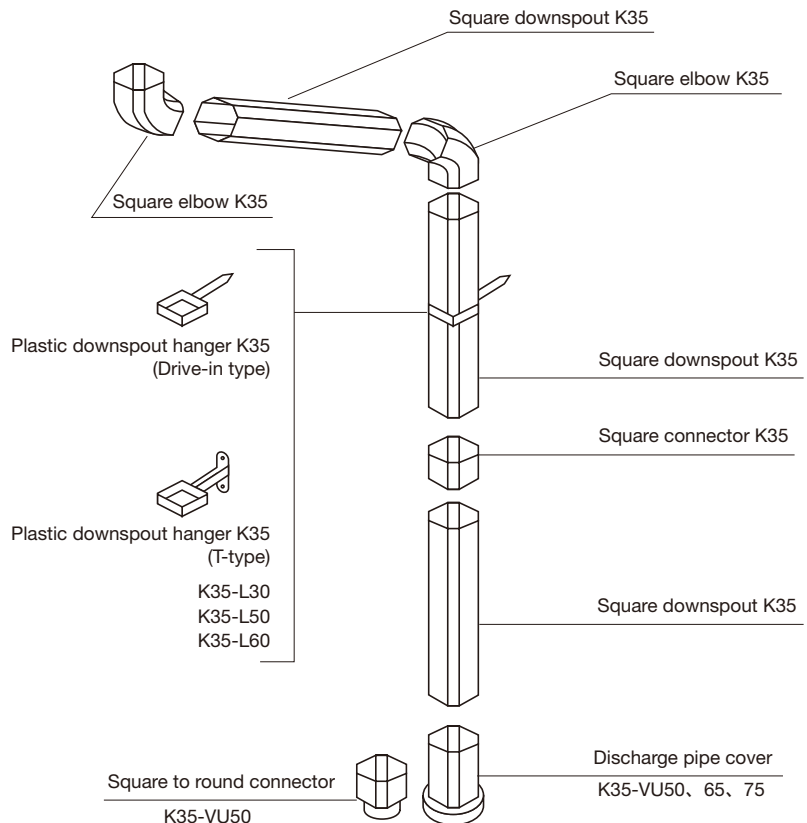


Shining Grey (SH)

AC120



K35



Discharge pipe



VU75



VU65



VU50

Snow White (SW)

Snow White (SW)

Snow White (SW)

Eco Green (EG)

## Eaves trough series/ Drop outlet/ Eaves trough brackets (hidden hanger, fascia mount)

**Eaves trough**

Standard	Product number	Color	No. of packages
AC120 (Length:3,600)	A3060A315 A3060A310	SB·SW·K·EG·AB·UB·SH	4

**Snap socket**

Standard	Product number	Color	No. of packages
AC120	A30903002	SB·SW·K·EG·AB·UB·SH	12

**Socket**

Standard	Product number	Color	No. of packages
AC120	A30903003	SB·SW·K·EG·AB·UB·SH	12

**Expansion socket**

Standard	Product number	Color	No. of packages
AC120	A30903001	SB·SW·K·EG·AB·UB·SH	6

**Bend (outer corner)**

Standard	Product number	Color	No. of packages
AC120	A30901001	SB·SW·K·EG·AB·UB·SH	4

**Bend (inner corner)**

Standard	Product number	Color	No. of packages
AC120	A30901002	SB·SW·K·EG·AB·UB·SH	4

**End cap**

Standard	Product number	Color	No. of packages
AC120	A30904001	SB·SW·K·EG·AB·UB·SH	10
AC120 ( )	A30904002		20

**Expansion funnel**

Standard	Product number	Color	No. of packages
AC120 - K35-60	A30902002	SB·SW·K·EG·AB·UB·SH	4

**AC120 (PC)**  
Made of polycarbonate

5#	10#	15#
17	30	45

Standard	Product number	Color	No. of packages
AC120 - 5(17)	A5130 C105	C	50
AC120 - 10(30)	A5130 C110		
AC120 - 15(45)	A5130 C115		
K type AC120 - 5(17)	A5130 C106		

**color** SB=Reddish Brown, SW=Snow White, K=Black, EG=Eco Green, AB=Autumn Brown, UB=Alto Beige, SH=Shining Grey, C=Clear

## Downspout series

### Square downspout K35

Standard	Product number	Color	No. of packages
K35F (Length : 2,700)	A3060T002	SB·K·UB	20
K35 (Length : 2,700)	A3060T635	SW·EG·AB·SH	20

### Square elbow K35

Standard	Product number	Color	No. of packages
K35-92°	A3090L180	SB·SW·K·EG·AB·UB·SH	30
K35-105°	A3090L176	SB·SW·K·EG·AB·UB·SH	30

### Square connector

Standard	Product number	Color	No. of packages
K35	A3090J174	SB·SW·K·EG·AB·UB·SH	30

### Square reducing pipe

Standard	Product number	Color	No. of packages
K35×K35-K35	A3090Y350	SB·SW·K·EG·AB·UB·SH	20

### Square variable elbow

Standard	Product number	Color	No. of packages
K35	A3090L640	SB·SW·K·EG·AB·UB·SH	10

### Square swivel connector

Standard	Product number	Color	No. of packages
K35	A3090J535	SB·SW·K·EG·AB·UB·SH	10

### Decorative elbow

Standard	Product number	Color	No. of packages
K35	A3090L200	SB·SW·K·EG·AB·UB·SH	10

### Balcony drain

Standard	Product number	Color	No. of packages
K35	A3090G370	SB·SW·K·EG·AB·UB·SH	20

### Discharge pipe cover

Standard	Product number	Color	No. of packages
K35-VU50 · 65 · 75	A3090H135	SB·SW·K·EG·AB·UB·SH	10

### Plastic downspout hanger

Standard	Product number	Color	No. of packages
K35 · L80	A31404116	SB·SW·K·EG·AB·UB·SH	100
K35 · L30	A31404230	SB·SW·K·EG·AB·UB·SH	50
K35 · L50	A31404250	SB·SW·K·EG·AB·UB·SH	50
K35 · L60	A31404270	SB·SW·K·EG·AB·UB·SH	50

**color** SB=Reddish Brown, SW=Snow White, K=Black, EG=Eco Green, AB=Autumn Brown, UB=Alto Beige, SH=Shining Grey, C=Clear

**Drainage water quantity** (for rainfall intensity of 100 mm/h)

Effective area of drainage: 94.3 cm<sup>2</sup>

● Drainage water quantity in eaves trough (ℓ /sec.)

Eaves trough drainage slope	1/1000	2/1000	3/1000
Drainage water quantity	1.97	2.82	3.46

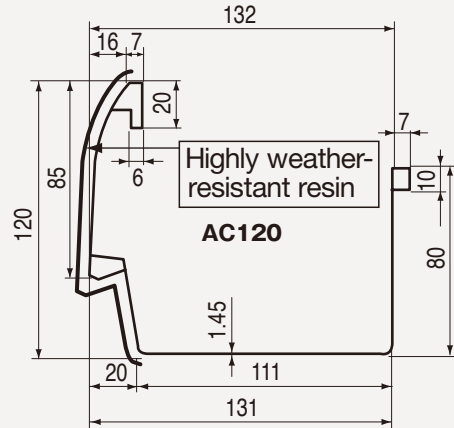
● Drainage water quantity in downspout (ℓ /sec.)

Downspout	K35
Drainage water quantity	2.26

● Drainage capacity of each drop outlet (ℓ /sec.)

Eaves trough drainage slope	1/1000	2/1000	3/1000
K35	1.97	2.26	2.26

● Dimensions of eaves trough (mm)



**Compatible size chart**

Drainage slope 1/1000 Rainfall intensity 100 mm/h

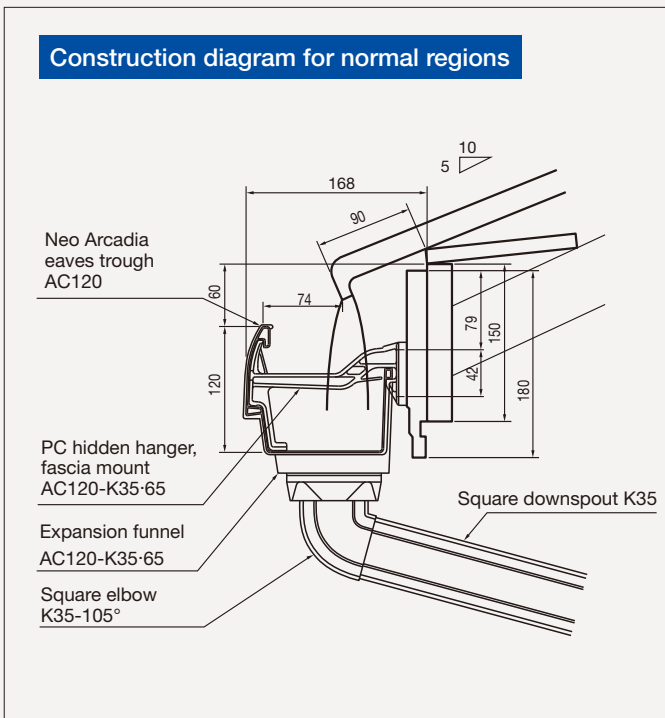
Eaves trough	Downspout	Projected roof area for each drop outlet (m <sup>2</sup> )	Projected roof area (m <sup>2</sup> )									
			~20	~40	~60	~80	~100	~120	~140	~160	~180	~200
AC120	K35	70.8	1	1	1	2	2	2	2	3	3	3

Drainage slope 3/1000 Rainfall intensity 160 mm/h

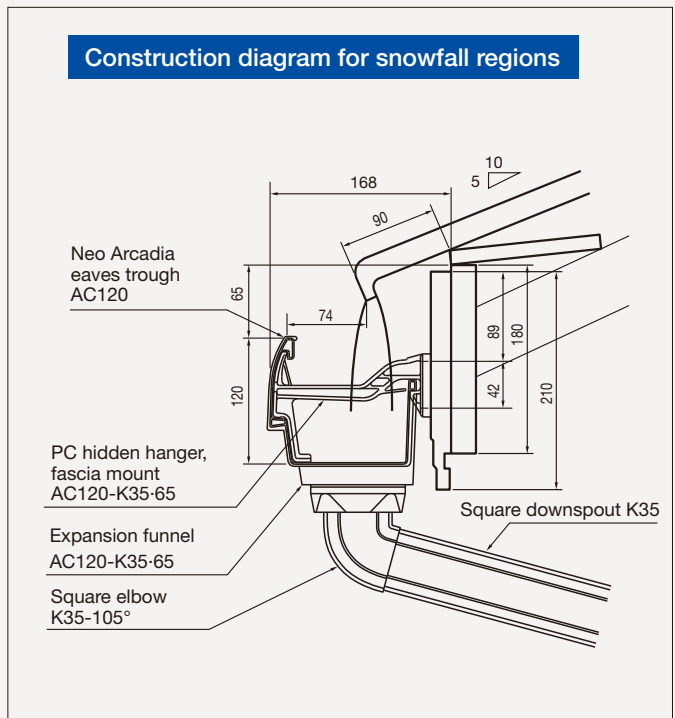
Eaves trough	Downspout	Projected roof area for each drop outlet (m <sup>2</sup> )	Projected roof area (m <sup>2</sup> )									
			~20	~40	~60	~80	~100	~120	~140	~160	~180	~200
AC120	K35	50.8	1	1	2	2	2	3	3	4	4	4

**Standard eaves construction diagram/standard construction position**

Construction diagram for normal regions

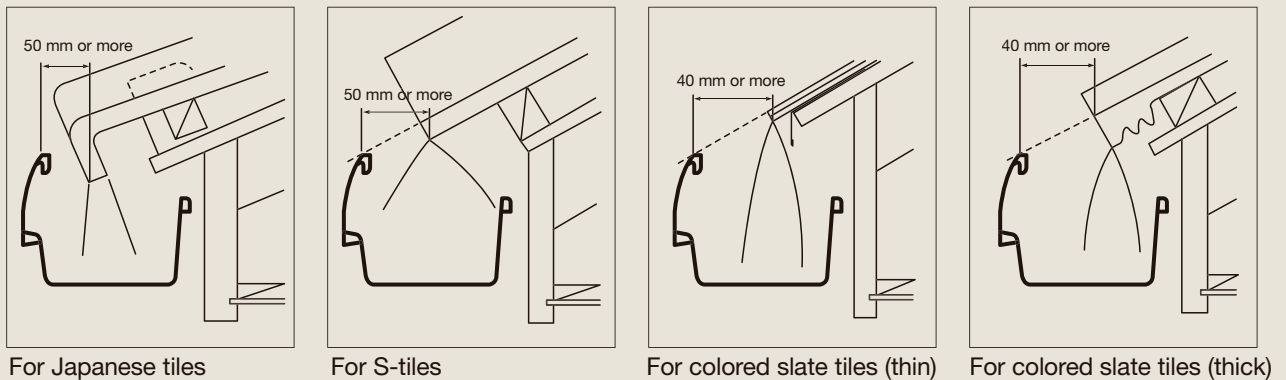


Construction diagram for snowfall regions





## Standard construction position of eaves trough – Rainfall trajectory



- Note 1. Construct the eaves trough so that the rainfall trajectory does not go outside the eaves trough.
- 2. In snowfall regions, always install snow brackets.

## Important points for design of “measures against wind”

Important points regarding measures against wind for residential gutters are “distance between the brackets” and “installation position of the eaves trough”.

Classification of strong wind regions is indicated by (Ministry of Construction Notification) regional coefficients (figure below). Even within the same region, the strength of the wind will be different close to the coast and inland or at the top and base of cliffs. It will also vary depending on the shape of the building.

Measures against wind are also necessary in regions that are located in the route of yearly typhoons.

In order to prevent problems caused by the wind such as displacement of gutters or twisting of brackets, the “distance between the brackets” and the “installation position of the eaves trough” must be considered according to the region and building height.

### [Wind pressure calculation for eaves trough]

■Formula for finding wind pressure (Article 87 of the Enforcement Order of the Building Standards Law)

$$W = C \times d \times A$$

- W : Load on eaves trough (kg)
- C : Coefficient (assumed to be 1.5 for eaves)
- d : Wind pressure per unit area (kg/m<sup>2</sup>)
- A : Area of base of eaves trough (m<sup>2</sup>) taking wind load = Width of base of eaves trough(m) x Distance between brackets (m)

■Difference in wind pressure calculation due to building height

- If under 16 m  $d = 60\sqrt{H}$
- If over 16 m  $d = 120\sqrt{H}$
- (H: Height from ground surface (m))

■ (E.g.) For eaves trough AC120

$$W = 60\sqrt{16} \times 1.5 \times 0.131 \times 0.6 = 28.29 \text{ Kg}$$

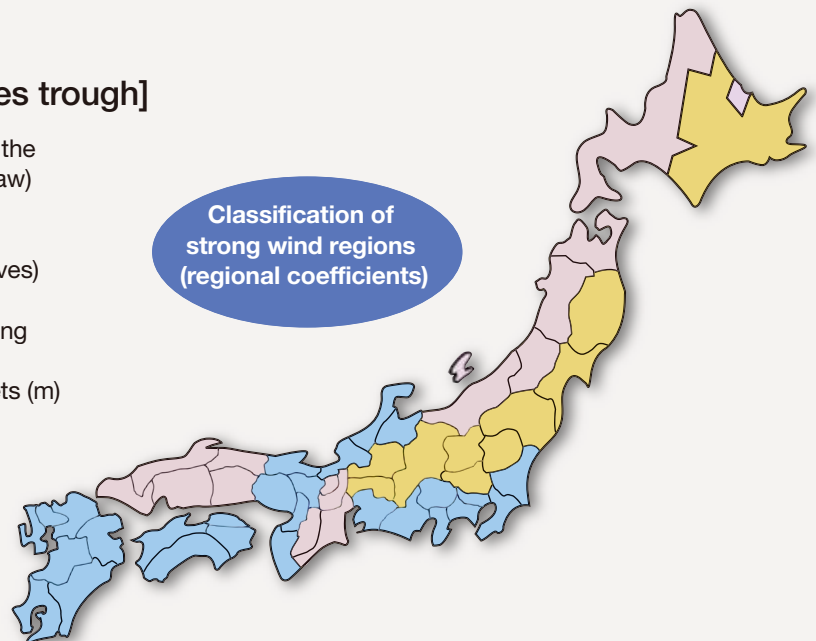
«Rounded up to 28.3 kg»

H: Height to eaves trough, 16 m

C: 1.5

Width of base of eaves trough: 0.131 m

Distance between brackets: 0.6 m

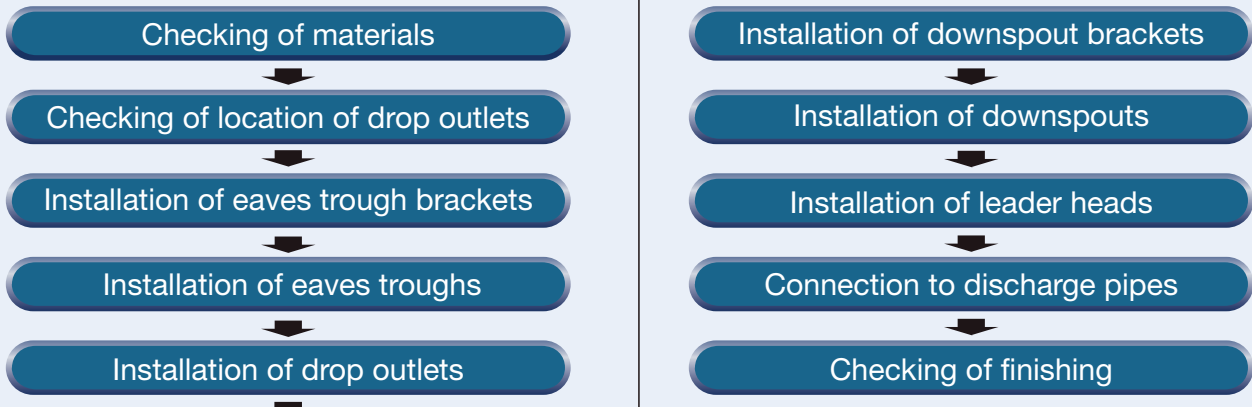


Classification	Display	Regions up to 8 km from coast	Regions more than 8 km from coast
1		1.0	0.8
2		0.8	0.65
3		0.6	0.6

※Roof tiles will start to be blown off at wind speeds of approximately 40 m.

# Construction procedure

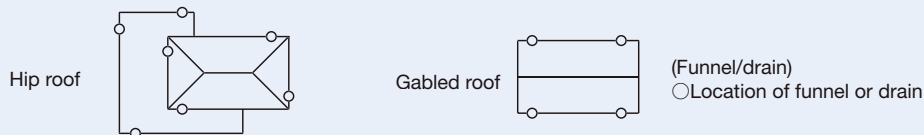
## Construction flowchart



## Construction procedure and instructions

Use genuine DENKA adhesive (600ZT) in order to prevent water leakage.

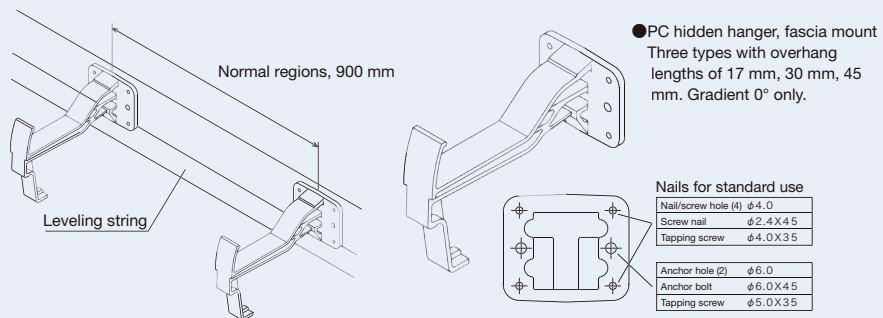
### 1. Determining location of drop outlets



### 2. Procedure for installing eaves trough brackets

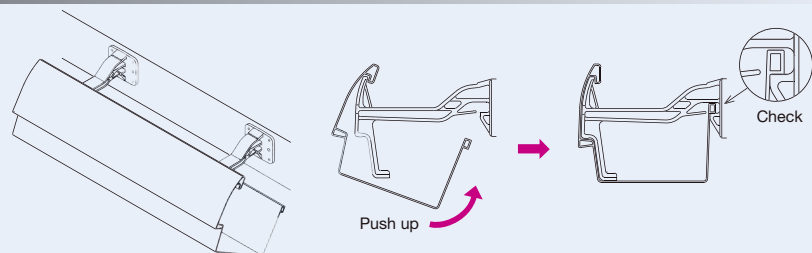
- Install brackets on both sides of the eaves.
- Stretch a leveling string along the brackets on both sides.
- The distance between brackets in normal regions is 900 mm. Install brackets at intervals of 450 mm or less in snowfall regions. In snowfall regions, install snow brackets on the roof.

※ Use genuine DENKA brackets.



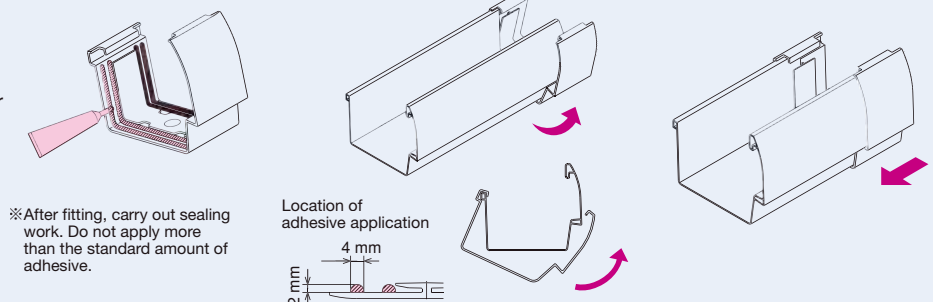
### 3. Procedure for installing eaves trough

- Cutting eaves trough  
Use a hacksaw to cut the eaves trough at a right angle. Remove all burrs from the cut surface.
- Hook the eaves trough's hidden hanger lip securely onto the edge of the brackets. Then, push the base of the eaves trough up and fit the rear mounting ear.
- Check that all of the brackets are fitted into the eaves trough.



### 4. Procedure for installing socket

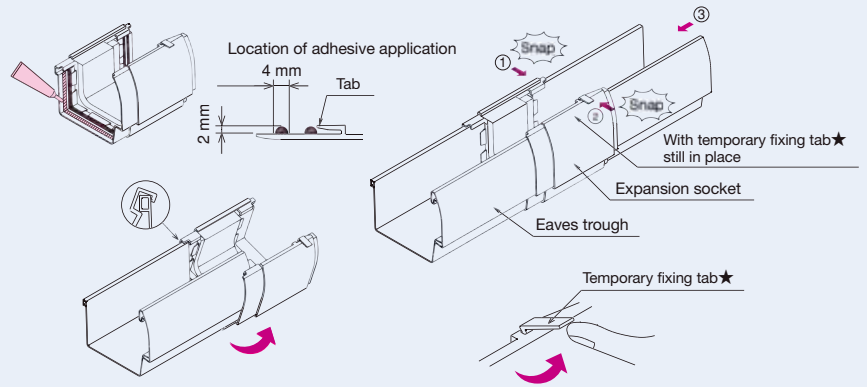
- ① Apply two rows of adhesive evenly around the entire circumference of the inside of the socket. Apply up to below the mounting ears ensuring that there are no gaps, particularly at the corners.
- ② Hook the socket onto the eaves trough's rear mounting ear and fit it onto the front mounting ear by rotating it forwards.
- ③ Slide the socket all the way on.
- ④ Set the other eaves trough and, after inserting it all the way on, carry out sealing work.



## 5. Procedure for installing expansion socket

- ① Apply rows of adhesive around the entire circumference of the eaves trough insertion section of the expansion socket (slider, cover), ensuring that there are no gaps.
- ② Install the expansion socket by snapping it onto the rear side and front side of the eaves trough. Push the eaves trough all the way into the insertion section.
- ③ The temporary fixing tab★ is easily removed by picking its inside surface with the tip of one's finger and rotating it upwards.

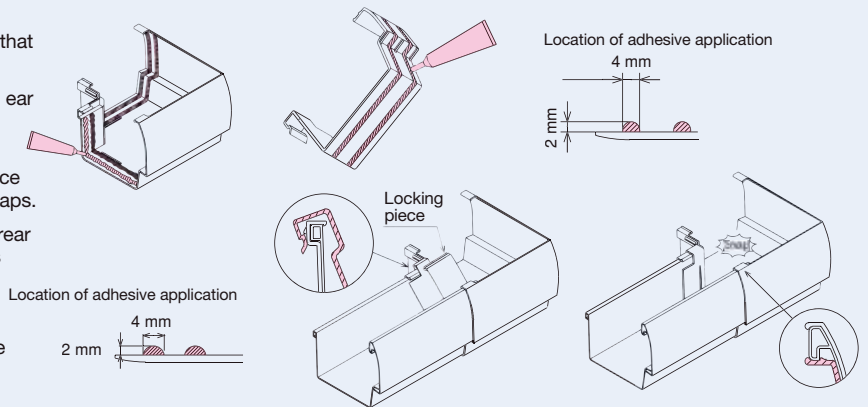
※ The efficiency of the expansion socket cannot be maximized unless the eaves trough is connected in the correct position. Therefore, carry out the connection work without removing the temporary fixing tab★. (Be sure to remove the tab after construction).



## 6. Procedure for installing bend (outer corner) (inner corner)

- ① Apply rows of adhesive evenly around the entire circumference of the bend's joining surface, ensuring that there are no gaps.
- ② Hook the bend onto the eaves trough's rear mounting ear and hook it onto the front mounting ear by rotating it forwards.
- ③ Apply rows of adhesive around the entire circumference of the bend's inner cover, ensuring that there are no gaps.
- ④ Hook the inner cover's locking piece onto the bend's rear side locking rib, and fit the inner cover onto the eaves trough's front mounting ear.

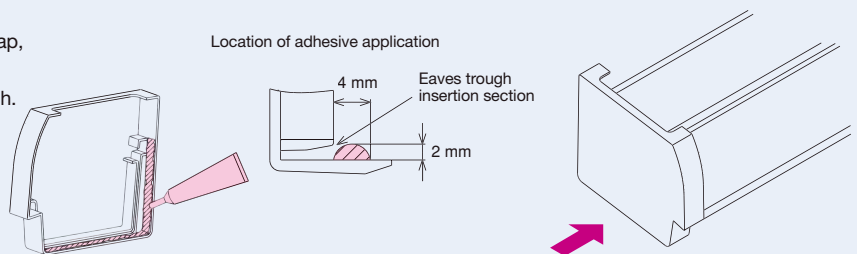
※ After fitting, carry out sealing work. Do not apply more than the standard amount of adhesive.



## 7. Procedure for installing end cap

- ① Apply a row of adhesive evenly around the entire circumference of the insertion section of the end cap, ensuring that there are no gaps.
- ② Insert the end cap all the way onto the eaves trough.

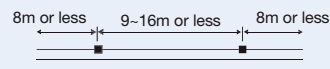
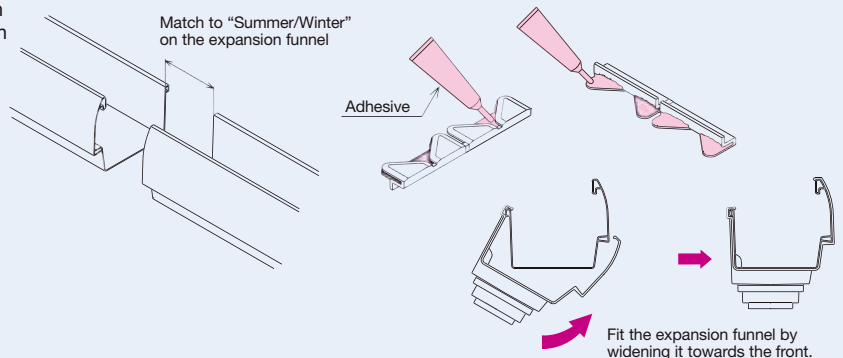
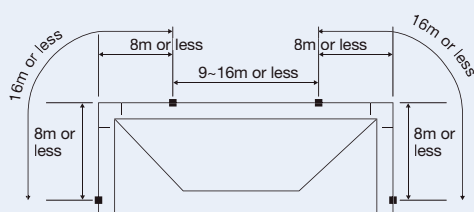
※ After fitting, carry out sealing work. Do not apply more than the standard amount of adhesive.



## 8. Procedure for installing expansion funnel

- ① Adjust the distance between the eaves troughs to match the construction season (summer, winter) as indicated on the expansion funnel.
- ② Apply sufficient adhesive to the front and back of the eaves trough stoppers.
- ③ Glue an eaves trough stopper to the end of each eaves trough, and hold it down lightly.
- ④ Check that the edges of the eaves troughs are correctly aligned to the position of the expansion funnel for the construction season (summer, winter), and set the expansion funnel.

### ● Important points for installation



- Ensure that the distance between two funnels on the same level is 16 m or less.
- Ensure that the distance from bend to funnel is 8 m or less.
- For gabled roofs, ensure that the edges of funnels are at 8 m or less.
- If a drop outlet cannot be inserted for 8 m or more, use an expansion socket.

※ For the procedure for installing a downspout, please contact DENKA.

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