



Assembly and Construction Manual








Carport Fly

Notations used in this manual

- In order to prevent personal injury and property damage when assembling and constructing products, the following warning notation is provided to protect the product. Please make sure you understand the contents carefully before assembling and installing the product.

Warning/Caution/Attention

	meanings
 Warning	The degree of harm that could result in death or serious injury to the user if handled incorrectly.
 Caution	The degree of harm/damage in which the user may be injured that requires medical treatment at the hospital or physical damage may be caused if mishandled.
Attention	If mishandled, it is assumed that the user will be injured to the extent that hospital treatment is not necessary, or the degree of harm and damage that is assumed to cause physical damage

list	meanings
	It indicates that the product or work has changed. Be sure to check the changes before performing the work.
	Indicates the contents to be noted in work.
	Indicates what you want to check.
	It shows the points of work when assembling and constructing products.
	Indicates work to be performed by a person who is a qualified electrician.
	Indicates that you should not use an electric screwdriver.
	It indicates the points that must be sealed.

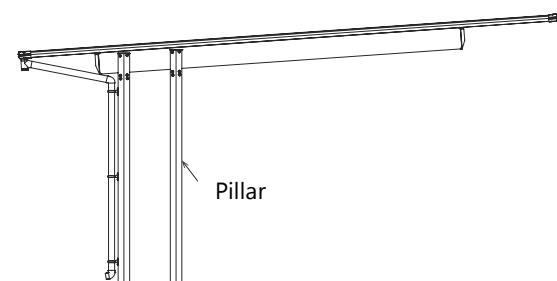
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For safe handling

Caution

- When assembling, use the specified screws and tighten to the end. Poor tightening may lead to water leakage or unexpected accidents.
- Handle the product with care so that it will not be damaged or deformed. Installing a damaged or deformed product may result in water leakage or an unexpected accident.
- This product is for snow to 20 cm area {snow load 600 N/m² (61.2 kgf/m²)}.
- Do not modify, assemble, process, etc., except as described in this manual. It may affect the performance and lead to an unexpected accident.
- Install this product with the rear frame side facing the building. The strong wind on the roof may damage the product and lead to an unexpected accident.
- When trimming, move the pillar to a position where the length ratio is roughly the standard size.



- Do not install the product in a place where heat exhaust from the water heater or heater is trapped inside the product. Exhaust gas may cause poisoning, deterioration of the paint, or peeling.
- If you install them next to each other such as a fence, leave a sufficient space between them. The product may come into contact with the wind and cause an unexpected accident.
- Do not install on a building where snow falls directly. The product may be damaged and cause an unexpected accident.
- Be sure to follow the instructions for sealing. Be sure to use a dealcohol type sealing material for sealing the polycarbonate plate. (Order separately)
It may lead to poor adhesion, cracking, or water leakage of the polycarbonate plate.
- If the coating applied to the screws gets on your skin, wash thoroughly with soap. Direct contact with skin may cause a rash. If it gets in your mouth, immediately seek medical advice from a vomiting doctor.

Attention

- If mortar or concrete adheres to the surface of the product, wipe it off immediately. It may lead to poor appearance (stains, dirt, gloss).
- Do not ride on the roof. Local load may cause damage or water leakage.
- Make a water gradient toward the front of the roof. (2 to 4 mm for 1000 mm) Inverse slope causes rain leaks and rain pools.

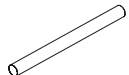



- When working, wear appropriate clothing and suitable protective equipment (protective cap, safety belt, eye/ear/hand/foot protection) to perform work safely.
- Organize your work area and secure a work environment where you can perform safe work such as illumination.
- When working in high places, take necessary measures for safety such as ensuring safety and preventing collapse.
- Have an appropriate number of people transport, assemble and install the product.
- Perform the work in consideration of each work process. Only qualified personnel should perform work that requires national qualifications, skill training, and special education.
- Workers should check each other's safety and health.
- If an accident occurs, interrupt your work to ensure safety and then take immediate action.
- When constructing pillars and beams, be sure to use an appropriate gearing machine such as a small mobile crane or chain block.
- Handle the product carefully so that it will not be scratched. Scratches can lead to product corrosion.
- If cleaning is required, use a neutral detergent solution (1-2%).
Acid/alkali/chlorine-based detergent solutions may lead to product corrosion.

Check before work

Banded list

■ Pillar unit

Figure		
Product name	Vertical gutter	Calling gutter
Part number	2K-38903	2K-38903
JCA-KA##AR	1	1
JCA-KA##BR	1	1
Remark	L=2500	L=1300

■ Roofing unit

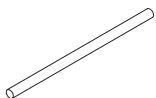
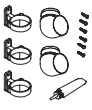
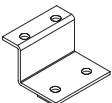



Unit symbol	Size		Quantity
	Length	Width	
DCD-WF5106-1※#	4999	585	1
DCD-WF5406-1※#	5348		
DCD-WF5706-1※#	5717		
DCD-WF5106-2※#	4999		
DCD-WF5406-2※#	5348	660	2
DCD-WF5706-2※#	5717		
DCD-WF5107-2※#	4999		
DCD-WF5407-2※#	5348		
DCD-WF5707-2※#	5717		

The symbol at the end of the roofing unit differs depending on the type of roofing material.

Roof material type	Color	Symbol
General poly-carbonate	Earth Blue	2A
	Smoke Brown	2C
	Clear Matt	2F
Heat ray blocking poly-carbonate	Earth Blue(Matt)	3B
	Clear Matt	3J

※# indicates the type of roofing material.

■ Parts unit

Figure						
Product name	Pillar anchor	Rain gutter set	Side frame connecting bracket	Pillar bracket	Girder bracket	Frame cap base (R)
Part number	K-11711	EA-F1	6K-17964	5K-18142	5K-18147	3K-31351 [3K-31370-H2]
JCA-KGA-##	12	1	4	4	4	1
JCA-KGB-##	12	1	4	4	4	1
JCA-KGC-##	12	1	4	4	4	1
JCA-KGD-##	12	1	4	4	4	1
JCA-KGE-##	12	1	4	4	4	1
JCA-KGF-##	12	1	4	4	4	1
JCA-KGG-##	12	1	4	4	4	1
JCA-KGH-##	12	1	4	4	4	1

*[] is for laminated

Figure						
Product name	Rear frame cap base (L)	Front frame cap base (R)	Front frame cap base (L)	Rear frame cap (R)	Rear frame cap (L)	Front frame cap (R)
Part number	3K-31352 [3K-31371-H2]	3K-31353 [3K-31372-H2]	3K-31354 [3K-31373-H2]	3K-31355 [3K-31374-H2]	3K-31356 [3K-31375-H2]	3K-31357 [3K-31376-H2]
JCA-KGA-##	1	1	1	1	1	1
JCA-KGB-##	1	1	1	1	1	1
JCA-KGC-##	1	1	1	1	1	1
JCA-KGD-##	1	1	1	1	1	1
JCA-KGE-##	1	1	1	1	1	1
JCA-KGF-##	1	1	1	1	1	1
JCA-KGG-##	1	1	1	1	1	1
JCA-KGH-##	1	1	1	1	1	1
Remark	—	—	—	—	—	—

Figure						
Product name (Unit: mm)	Front frame cap (L)	Pillar cap	Girder cap (R)	Girder cap (L)	Hex head bolt with washer (M10 x 20)	Hex head bolt with washer (M10 x 40)
Part number	3K-31358 [3K-31377-H2]	2K-38256	2K-38257	2K-38258	3K-18992	5K-18152
JCA-KGA-##	1	8	2	2	16	80
JCA-KGB-##	1	8	2	2	16	80
JCA-KGC-##	1	8	2	2	16	80
JCA-KGD-##	1	8	2	2	16	80
JCA-KGE-##	1	8	2	2	16	80
JCA-KGF-##	1	8	2	2	16	80
JCA-KGG-##	1	8	2	2	16	80
JCA-KGH-##	1	8	2	2	16	80
Remark	—	—	—	—	For beam mounting	Pillar/beam bracket For mounting

*【 】 is for laminated

Check before work


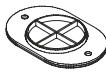




Figure						
Product name (Unit: mm)	drain	Hole hidden	Trash out elbow	Trastappin screw (Φ5×10)	Trastappin screw (Φ5×10)	Trastappin screw (Φ5×10)
Part number	K-36979	K-36980	2K-38866	ET-5010	ET-5010	ET-5010
JCA-KGA-##	1	1	1	20	16	129
JCA-KGB-##	1	1	1	24	20	154
JCA-KGC-##	1	1	1	20	16	148
JCA-KGD-##	1	1	1	24	20	176
JCA-KGE-##	1	1	1	36	32	229
JCA-KGF-##	1	1	1	44	40	279
JCA-KGG-##	1	1	1	36	32	260
JCA-KGH-##	1	1	1	44	40	316
Remark	—	—	—	Side frame/rafter For mounting	Front/back frame For mounting	Roofing foot For mounting











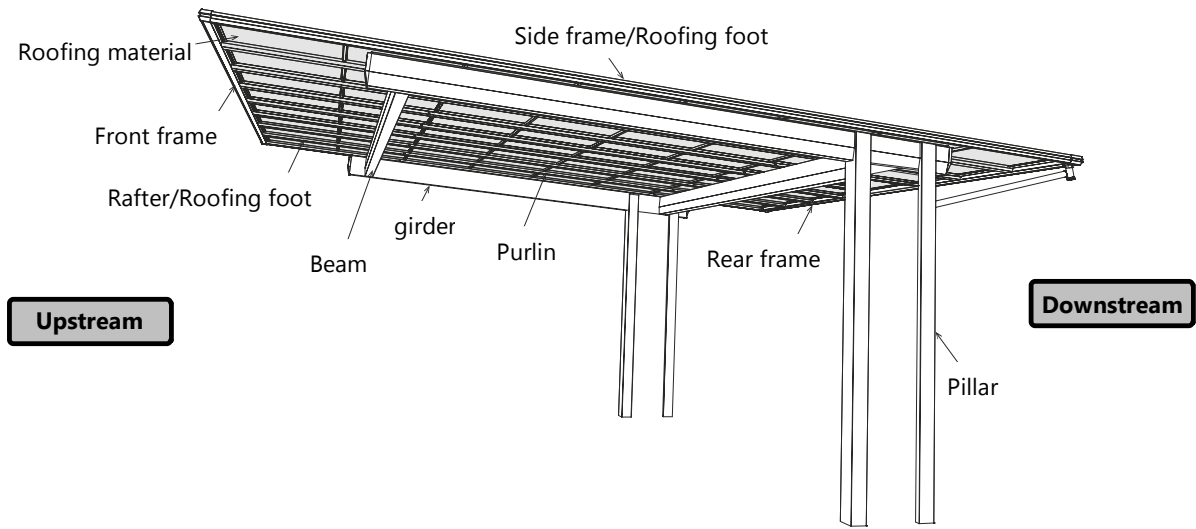
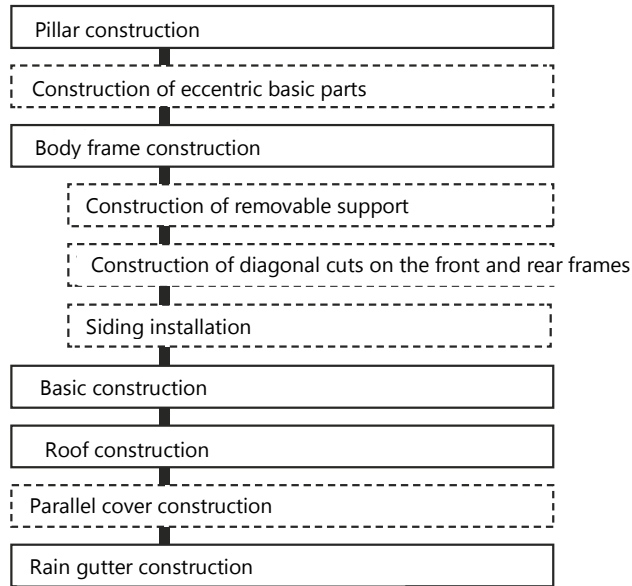
Figure						
Product name (Unit: mm)	Trastappin screw (Φ5×10)	Trastappin screw (Φ5×10)	Trastappin screw (Φ5×10)	Middle trastappin screw (Φ5×20)	Middle trastappin screw (Φ5×20)	Middle trastappin screw (Φ5×20)
Part number	ET-5010	ET-5010	ET-5010	EM-5020D10	EM-5020D10	EM-5020D10
JCA-KGA-##	8	48	2	8	24	2
JCA-KGB-##	8	60	2	8	24	2
JCA-KGC-##	8	56	2	8	24	2
JCA-KGD-##	8	70	2	8	24	2
JCA-KGE-##	8	96	2	8	24	2
JCA-KGF-##	8	120	2	8	24	2
JCA-KGG-##	8	112	2	8	24	2
JCA-KGH-##	8	140	2	8	24	2
Remark	Side frame connecting bracket For mounting	Purlin For mounting	Spare	Girder cap For mounting	Connecting material For mounting	Spare

Figure		with packing 	with packing 	with packing 	—
Product name (Unit: mm)	Hole closing seal (Φ14)	Waterproof screw (Φ5×10)	Waterproof screw (Φ5×10)	Waterproof screw (Φ5×10)	Assembly and construction instructions
Part number	K-40433	5K-14711	5K-14711	5K-14711	—
JCA-KGA-##	20	8	4	2	1
JCA-KGB-##	24	8	4	2	1
JCA-KGC-##	20	8	4	2	1
JCA-KGD-##	24	8	4	2	1
JCA-KGE-##	36	8	4	2	1
JCA-KGF-##	44	8	4	2	1
JCA-KGG-##	36	8	4	2	1
JCA-KGH-##	44	8	4	2	1
Remark	—	Front frame/ rear frame cap For mounting	drain/ hole hidden For mounting	Spare	—

Overall configuration diagram



Construction flow



For [dashed box], refer to the manual included in each package.

Preparation for foundation work

Caution

- Be careful when excavating so as not to interfere with underground buried objects such as water supply and drainage pipes and gas pipes.
- Make sure the basic dimensions are equal to or greater than the specified dimensions. If the ground is loose, make the foundation larger. The bearing capacity of the ground cannot be obtained, and the product may sink, resulting in an unexpected accident.
- Make the foundation depth deeper than the freezing depth. The product may be pushed up in the process of freezing the water on the ground, leading to an unexpected accident.
- When installing on a sloping ground, make sure to secure the embedded depth of the pillar in a low place. The product may be destroyed.
- Lay crushed stone, gravel or crushed stone on the bottom of the foundation so that the water and dew condensation that has entered the aluminum column penetrate into the ground. If water remains, it may lead to freezing damage of columns and abnormal corrosion.

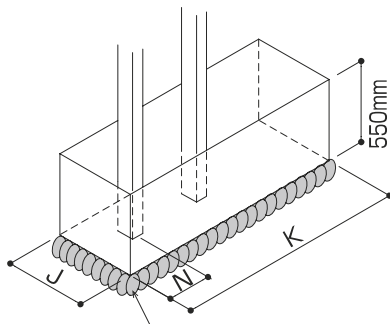
Inling the pillar

1. Refer to the dimension drawing (P.30) to mark the pillar.

Foundation excavation

Independent basis

1. See the dimensional drawing (P.30) and make a foundation hole for the column.
2. Spread crushed stone, gravel or crushed stone on the foundation, level it, and crush it.



Spread cracked stones, gravel or crushed stones

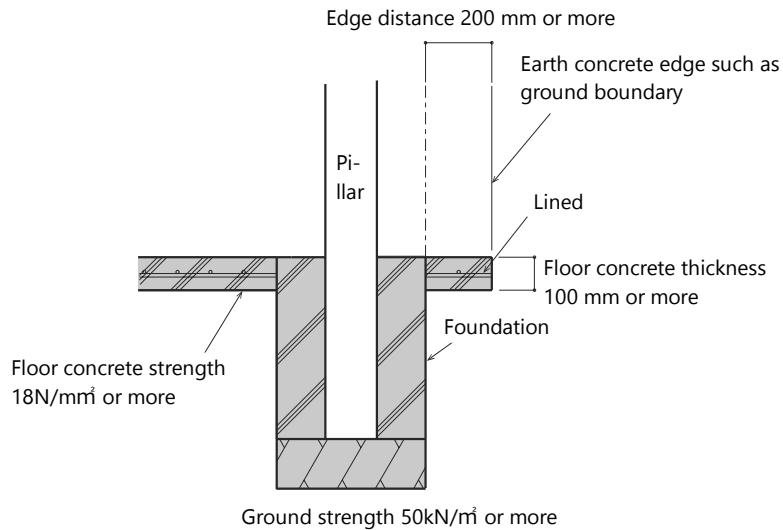
D \ L	5062			5410			5778		
	J	K	N	J	K	N	J	K	N
2428	700	890	165	700	890	165	730	980	165
2718	700	890	165	730	980	165	750	1180	165
3013	730	980	165	750	1180	165	750	1180	165

In case of foundation considering floor concrete

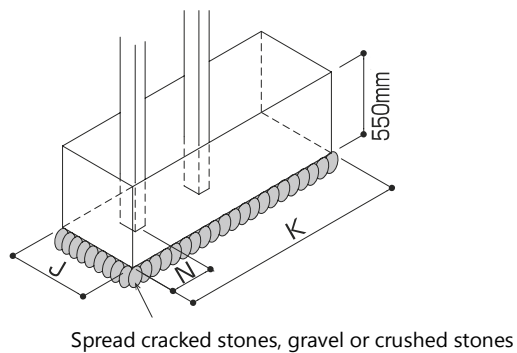


- If the basic conditions are not met, make the size of the "independent foundation".

1. Make sure that the floor concrete conditions are met.



2. Refer to the dimension drawing (P.30) and make a foundation hole for the column.



■ FLY

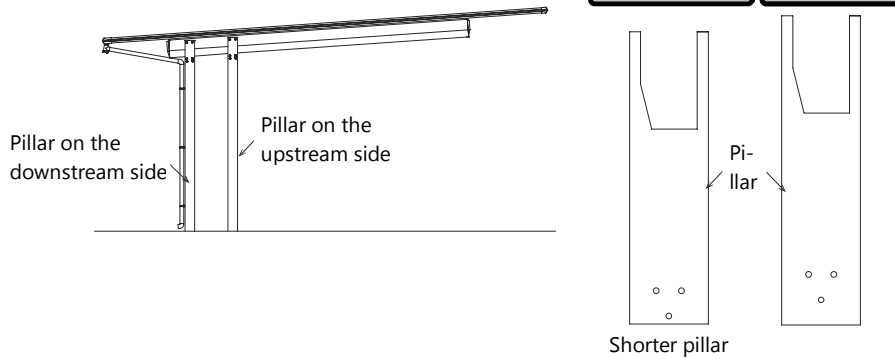
	J	K	N
SIZE [mm]	420	820	165

3. Spread crushed stone, gravel or crushed stone on the foundation and level it and squeeze it.

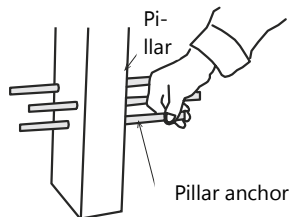
Pillar construction

Pillar installation/temporary fixing

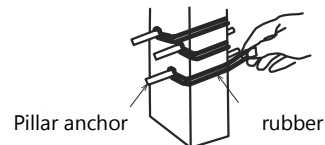
1. Check the positions of the downstream pillar and the upstream pillar. The shorter pillar is the pillar on the downstream side.



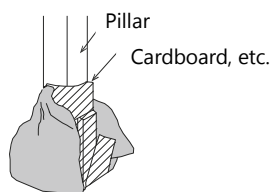
2. Attach the pillar anchor to the pillar.



- Prevention of falling of column anchors
Example: Hook a rubber band on a column anchor



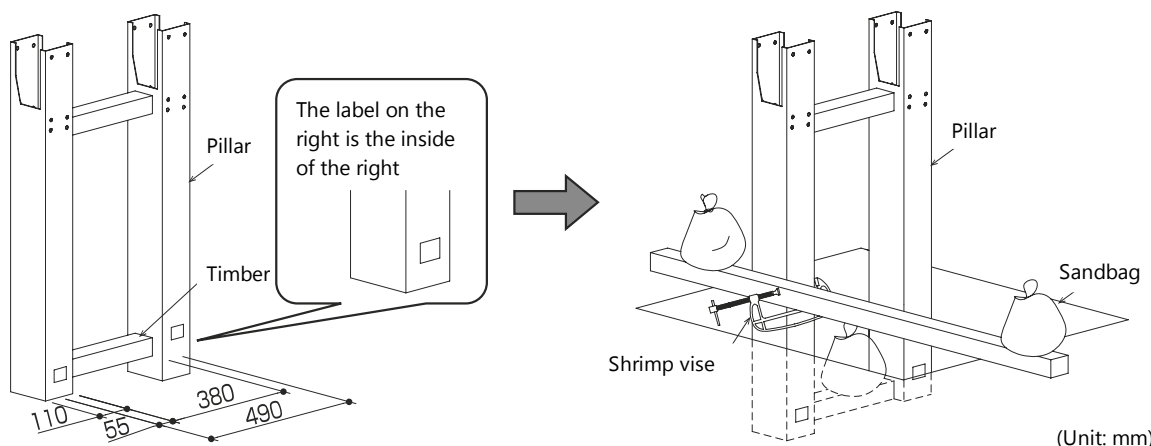
3. To prevent scratches, protect the pillars with cardboard.



4. Temporarily fix the pillars using timber and sandbags.



- Make sure that the right label at the bottom of the column is on the inside right side of the appearance.

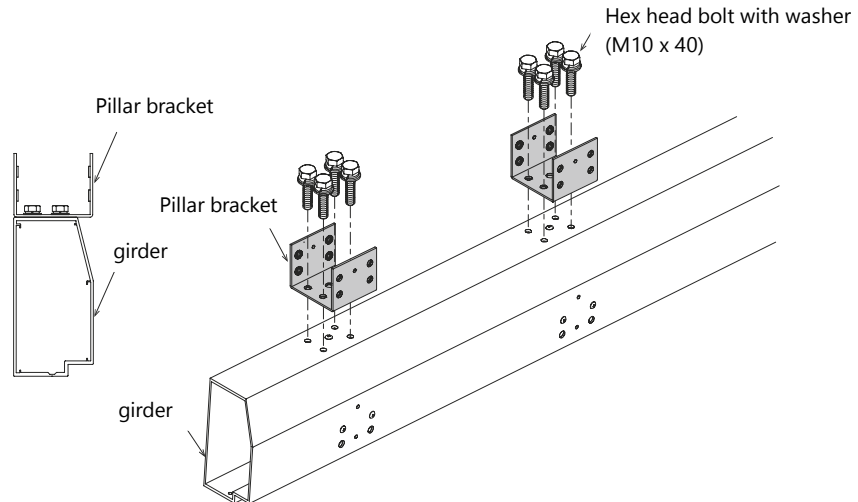


(Unit: mm)

Body frame construction

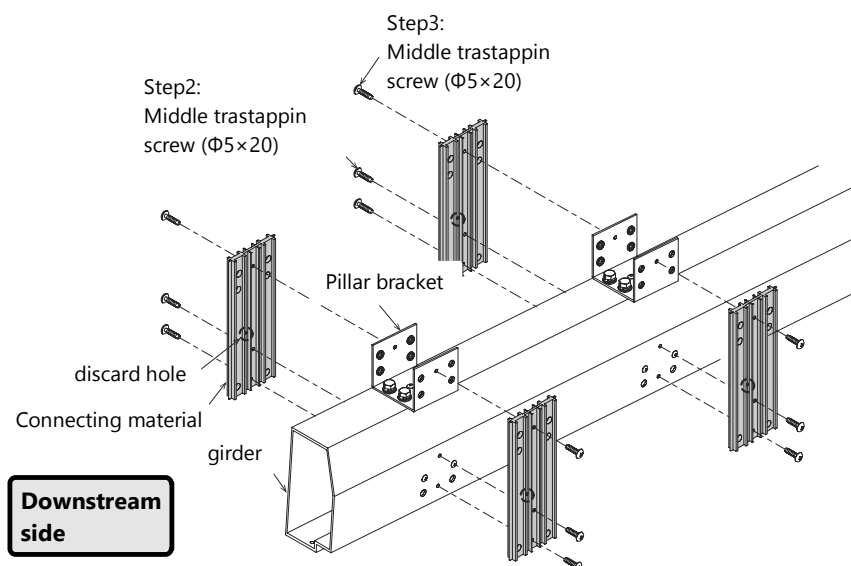
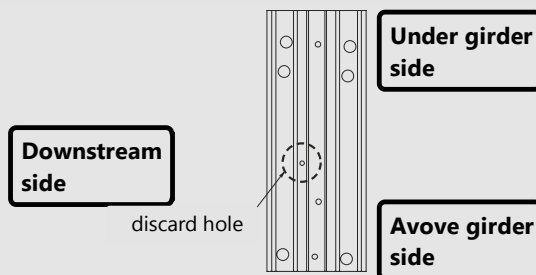
Installing girders and pillars

1. Temporarily secure the pillar bracket to the girder with the gutter groove side down.



2. Temporarily secure the connecting material to the spar with screws.
3. Attach the pillar bracket and connecting material, then temporarily fix them with screws.

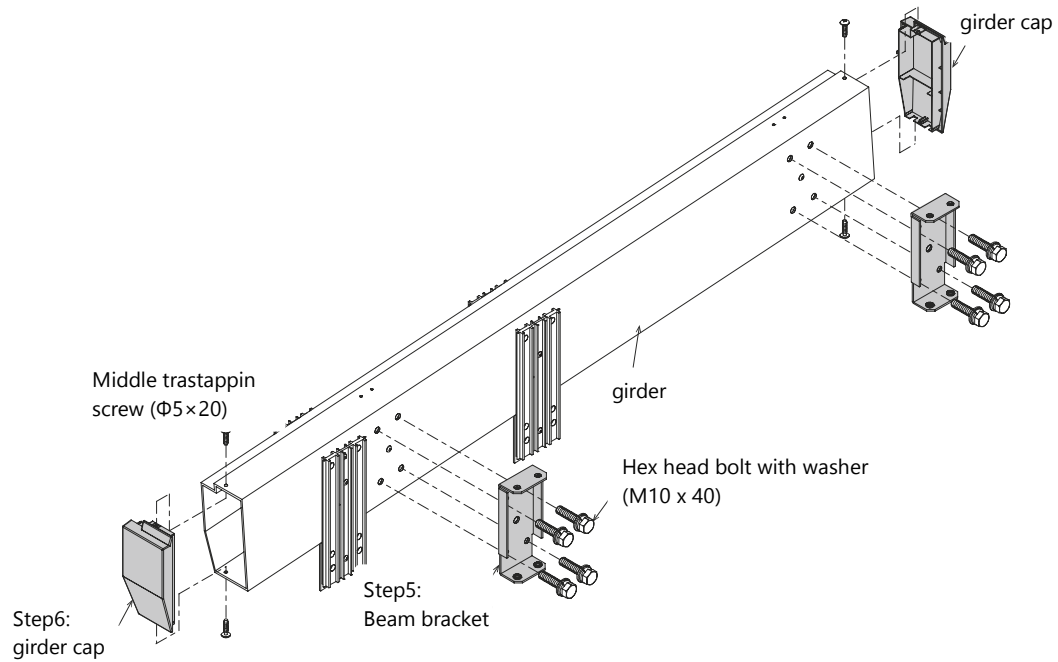
- Check** • Place the discard hole of the connecting material to the downstream side.



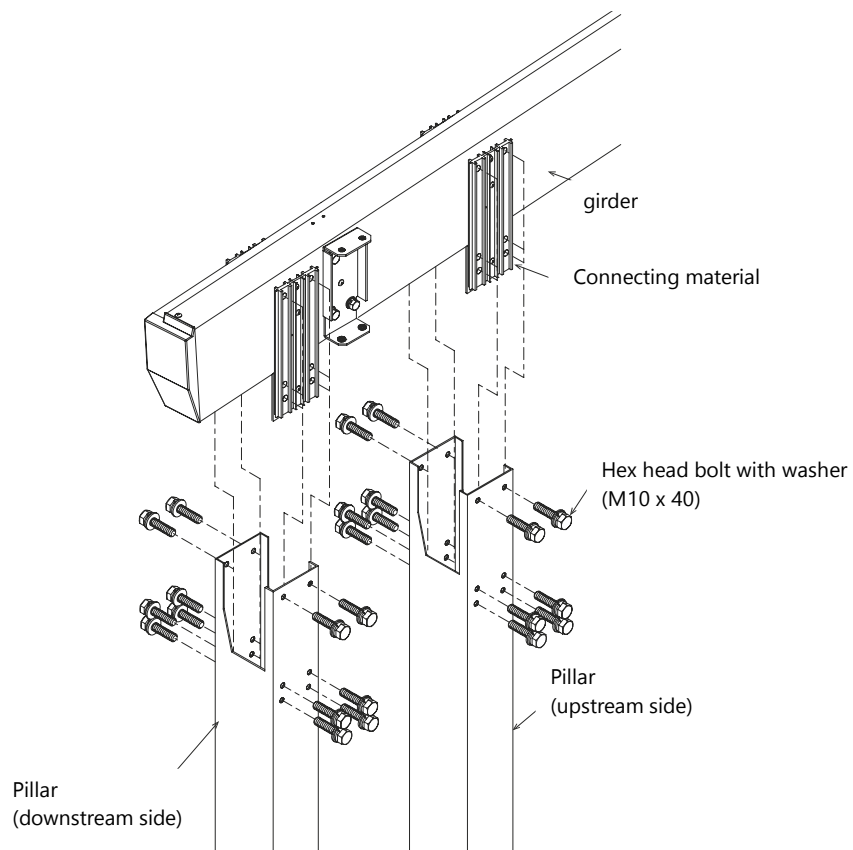
4. Fully tighten the temporarily fixed screws and bolts.

(Unit: mm)

5. Flip the spar over and bolt the beam bracket to the spar.
6. Screw the girder cap onto the girder.

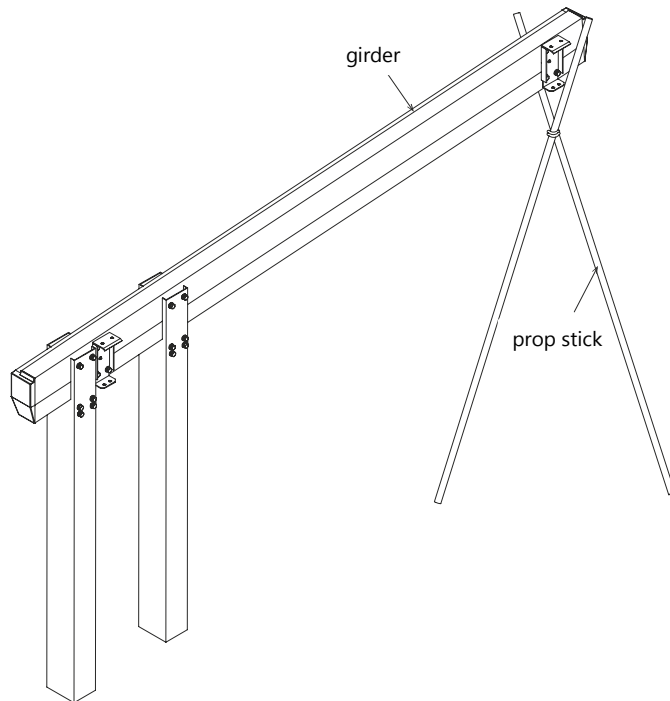


7. Insert the girder into the pillar and temporarily fix the connecting material and the pillar with bolts.



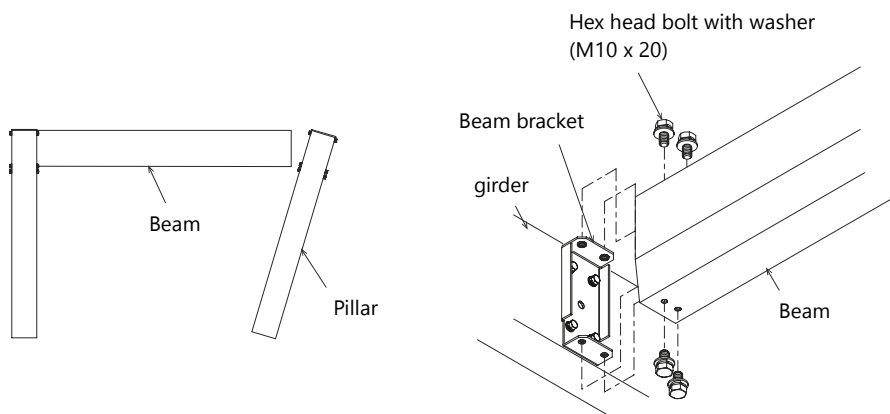
(Unit: mm)

8. Support the girder with a prop stick.



Beam installation

1. While tilting one pillar outward, insert the beam into the beam bracket and temporarily fix it with bolts.



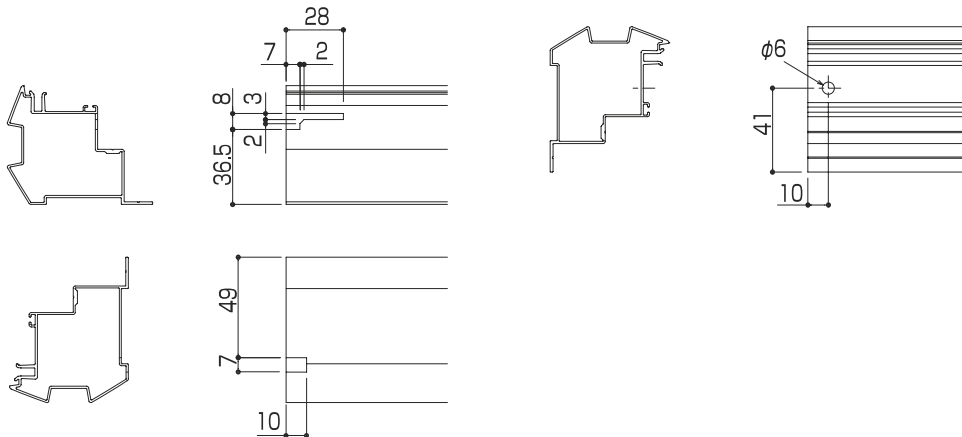
(Unit: mm)

Side frame installation

Side frame cutting and processing

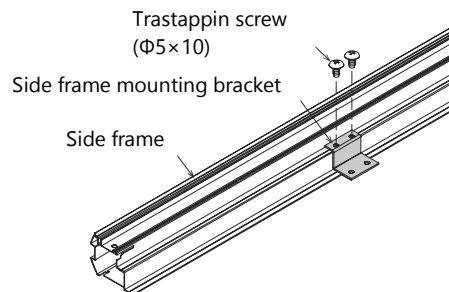
When cutting in the depth direction

1. Cut it to the desired length.
2. Make a notch in the side frame to make a hole.

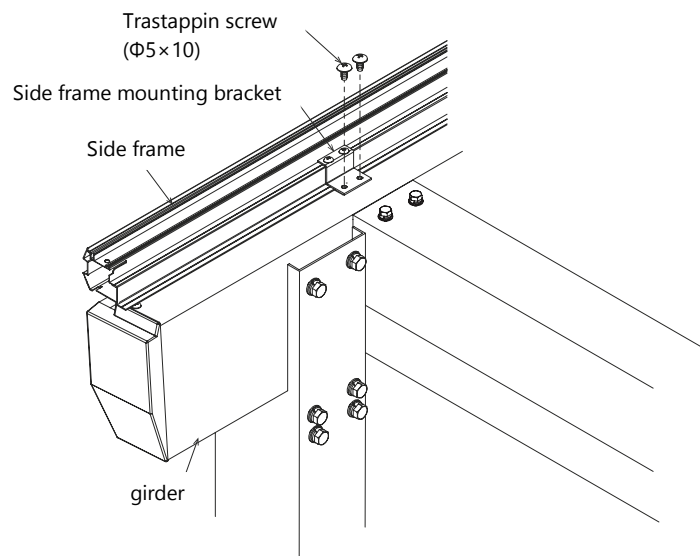


Side frame installation

1. Attach the side frame mounting bracket to the side frame with screws.



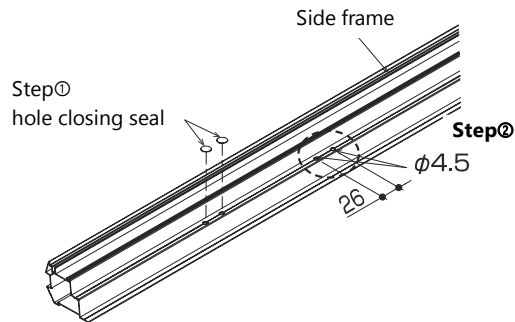
2. Attach the side frame to the girder.



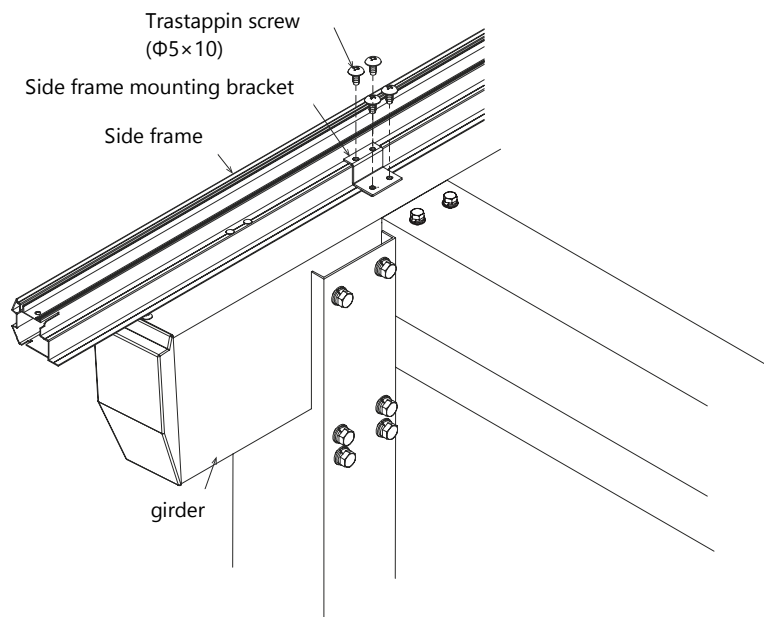
(Unit: mm)

If you move the pillar

- ① Make a hole (2- $\phi 4.5$) on the side frame according to the hole position of the side frame mounting bracket. At that time, make sure it does not interfere with the purlin mounting holes.
- ② Attach the included hole closing seal to the existing holes on the side frame.



- ③ Attach the side frame to the girder.

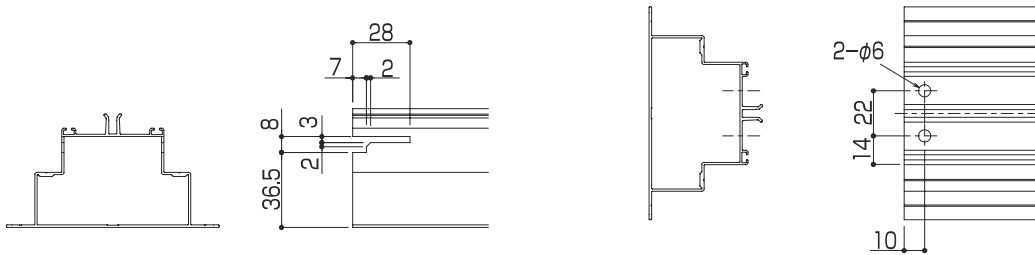


Installation of rafters

Cutting and processing rafters

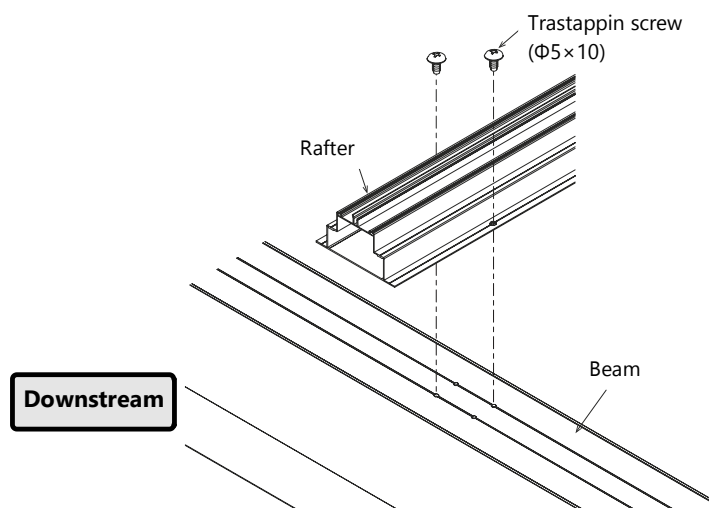
When cutting in the depth direction

1. Cut it to the desired length.
2. Make a hole in the rafter by cutting it out.



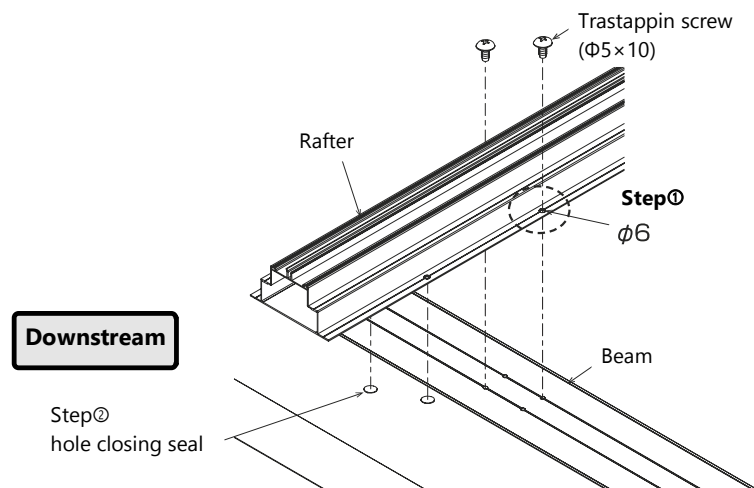
Installation of rafters

1. Attach the rafter to the beam.



If you move the pillar

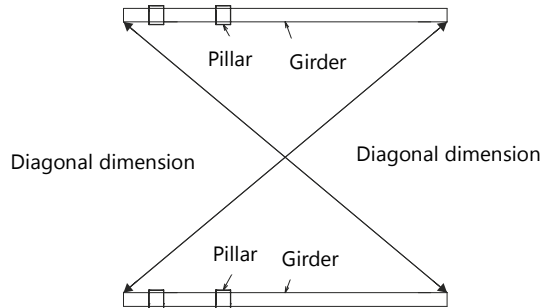
- ① Make a hole (2-φ6) in the rafter according to the hole position of the beam.
- ② Attach the included hole closing seal to the existing holes in the rafter.



(Unit: mm)

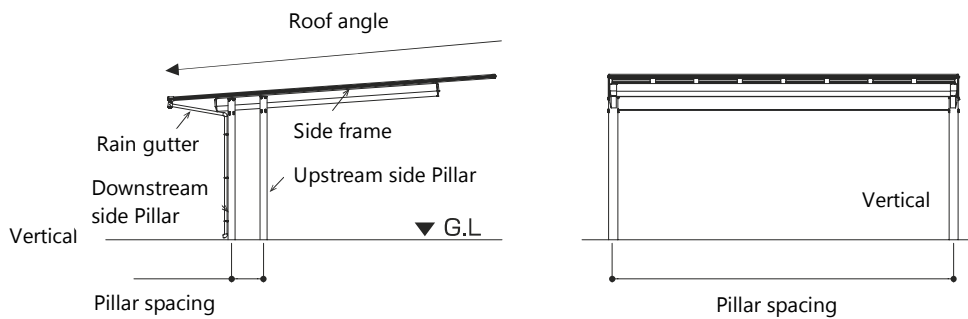
Dimension check/adjustment

1. Check the pillar spacing, vertical, and diagonal dimensions of the girder.



■ Diagonal dimension of girder

	L51	L54	L57
D24	4049	4219	4392
D27	4218	4382	4548
D30	4398	4555	4715
D48	5695	5817	5943
D51	5937	6055	6176
D54	6185	6298	6415
D60	6685	6790	6898



2. If the dimensions and angle do not match, move the member to adjust.

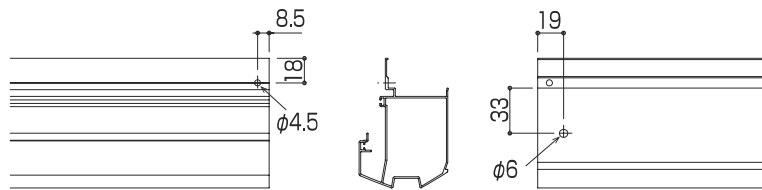
Installation of front and rear frame

Cutting and processing the front and rear frames

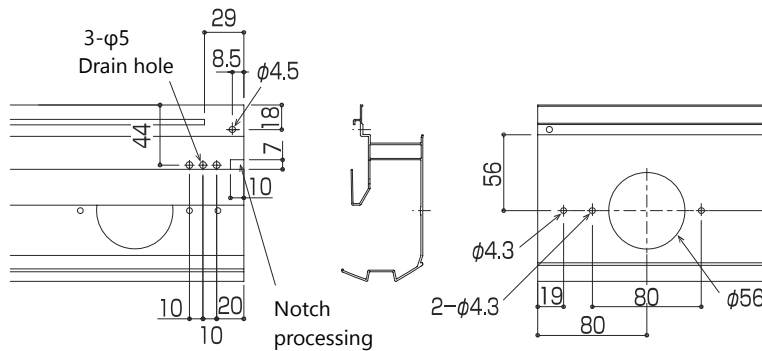
When cutting in the frontage direction

1. Cut it to the desired length.
2. Make holes in the front and rear frames.

«Front frame»

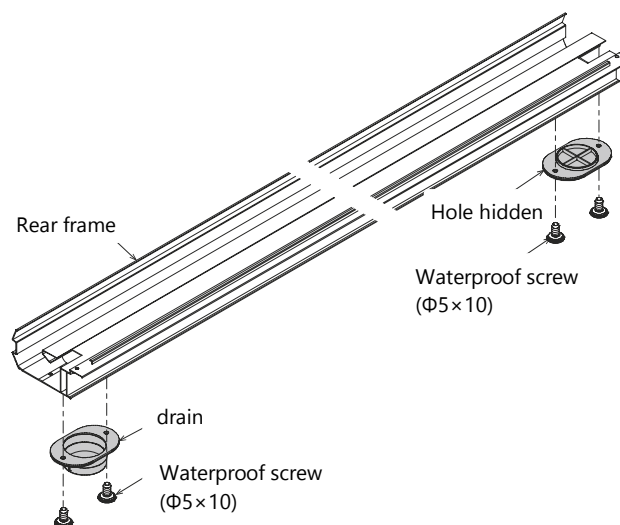


«Rear frame»



Installation of front and rear frame

1. Attach the drain and hole concealer to the rear frame with waterproof screws.



2. Press the cap base onto the front and rear frames without tilting.



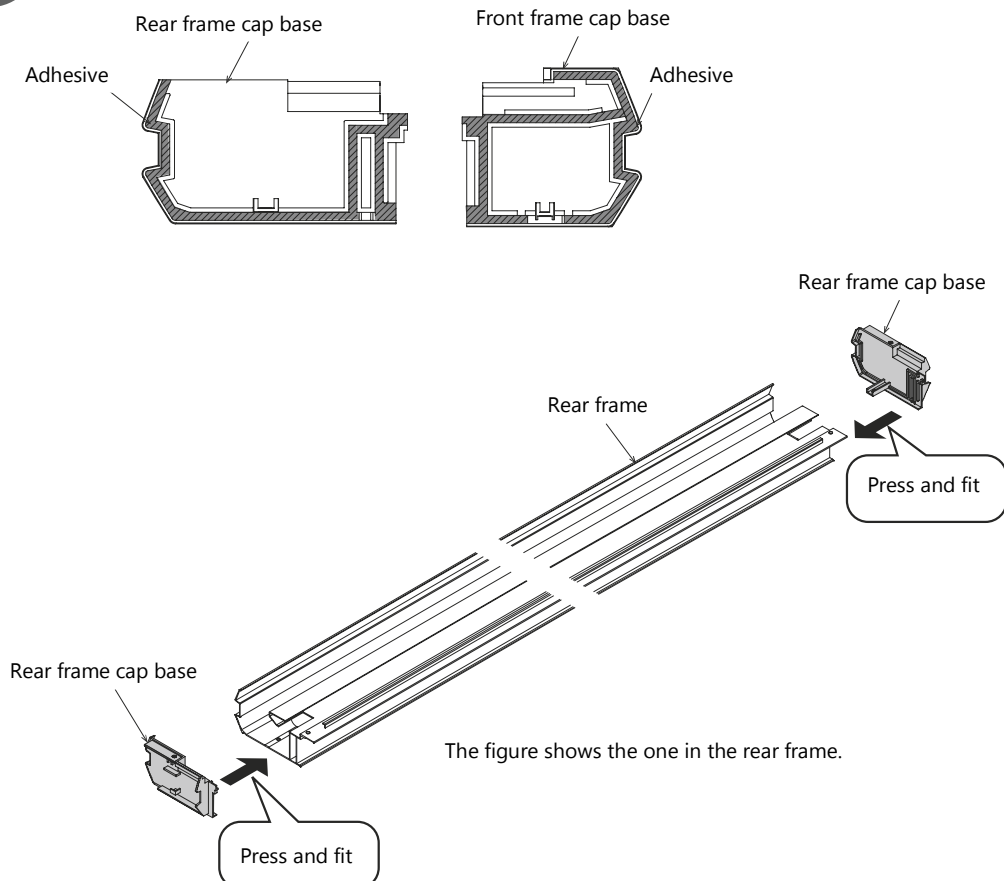
- The front and rear frame cap bases cannot be attached after the front and rear frames are attached to the side frames and rafters.

Attention

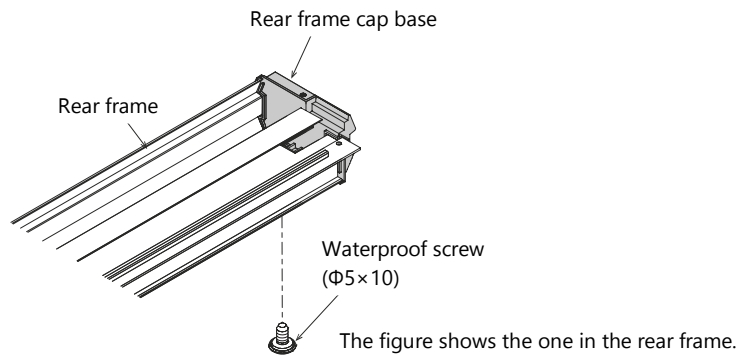
- Do not leave the front and rear frame cap bases in direct sunlight or high temperature.
- Wipe the mounting surface free of sand, dust, oil and water.
- Do not touch the adhesive.
- If the adhesive gets sand, dust, oil, etc., seal it on the adhesive.
- When re-installing parts, seal on top of the adhesive.



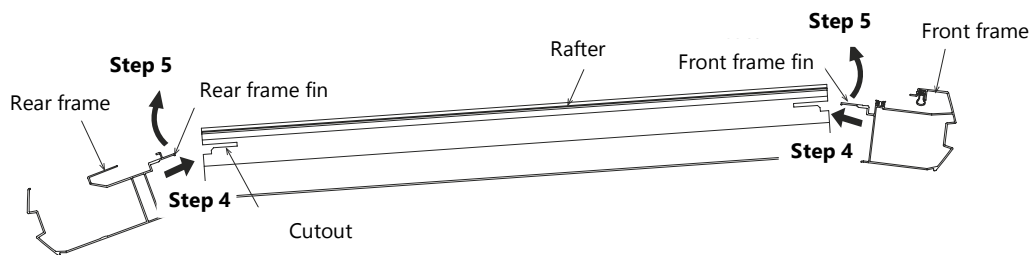
- Press evenly on the part with the adhesive in the figure.



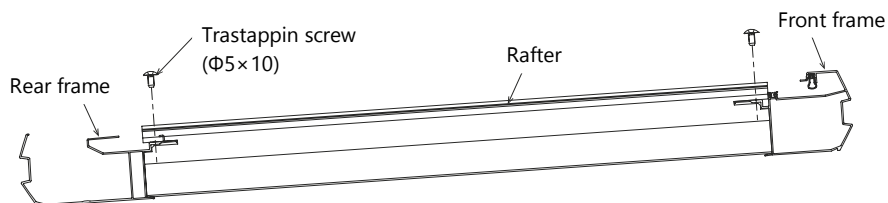
3. Attach the cap base to the front and rear frames with waterproof screws.



4. Insert the fins on the front and rear frames into the notches on the side frames and rafters.
5. Lift the front frame and rear frame, then push them into the side frame and rafters.



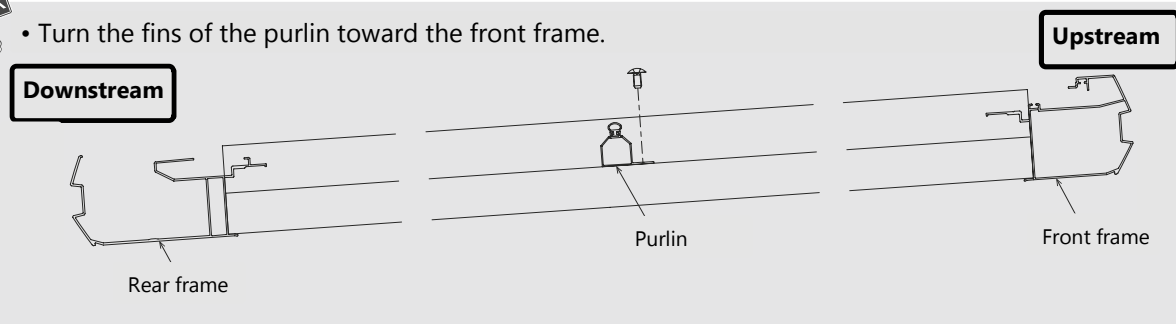
6. Secure the front and rear frames with the side frames and rafters with screws.



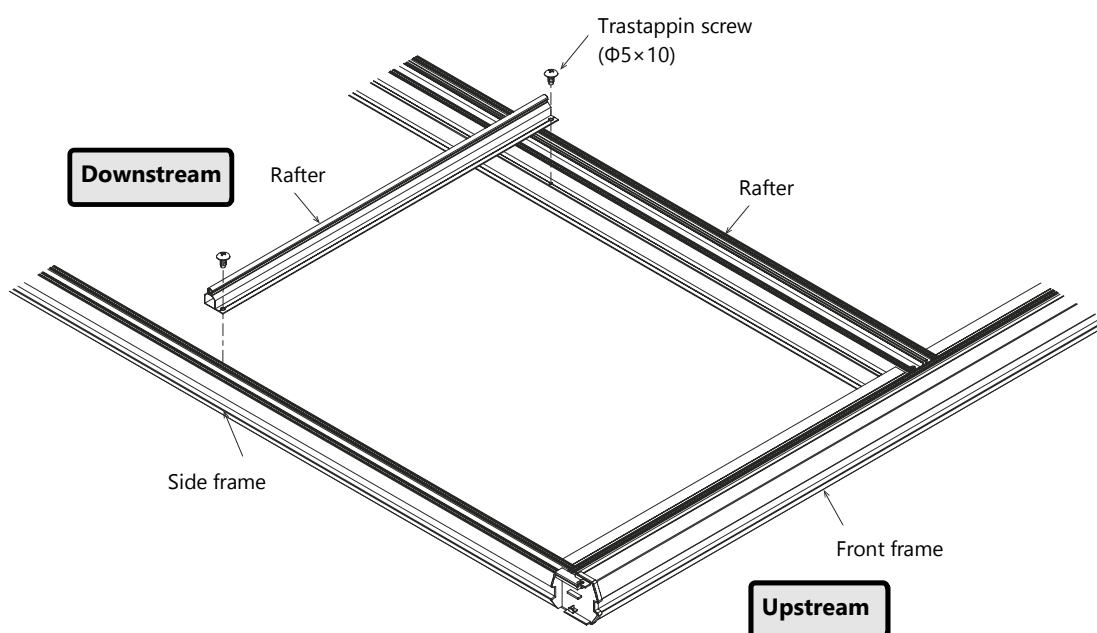
Purlin installation



- Turn the fins of the purlin toward the front frame.



1. Attach the purlin to the side frame and rafters.



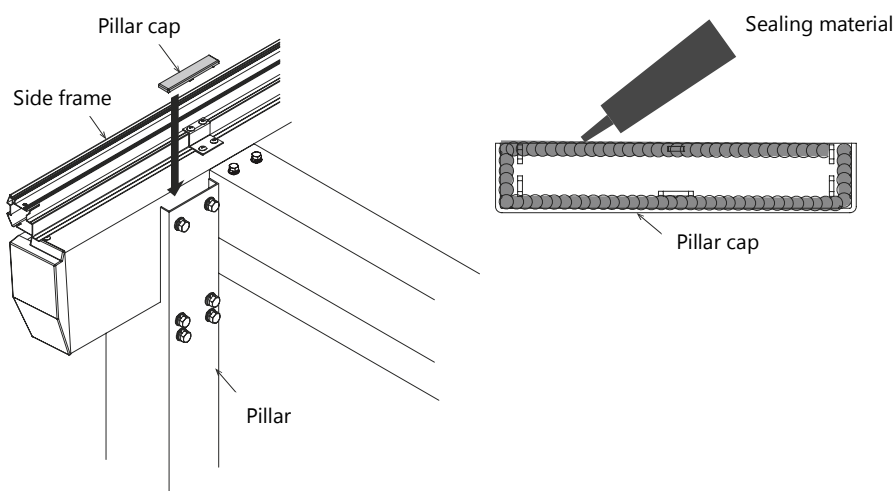
(Unit: mm)

Full tightening of pillar/beam mounting bolts

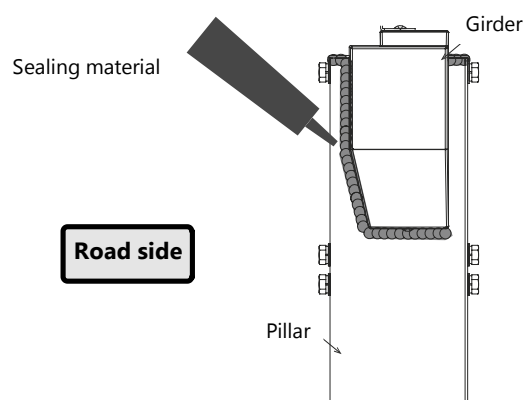
1. Refer to "Dimension check/adjustment" P.18 and check the dimensions again.
2. Fully tighten the column and beam mounting bolts.

Installing the pillar cap

1. Apply sealing material to the pillar cap and attach it to the pillar.



2. Seal the pillar cap and the connection between the girder and pillar.



Foundation construction

Fixing the foundation

⚠ Caution

- Do not use highly corrosive chlorine-based admixtures (such as quick-setting agents), strong alkali-based hardening accelerators, or sea sand for basic concrete. It may lead to abnormal corrosion of the pillars or damage to the product.
- Until the concrete is strong enough, do not subject it to excessive shock or load and protect it against rain, frost, freezing, sunlight, etc. (Approximate: 4 to 7 days)
- Please stand up the pillars before filling with concrete. If you set up a pillar after adding concrete, water may accumulate inside the pillar, causing freezing damage and abnormal corrosion.

Attention

- If mortar or concrete adheres to the surface of the product, wipe it off immediately. It may lead to poor appearance (stains, dirt, gloss).

Check pillar dimensions

1. Refer to "Dimension check/adjustment" P.18 and check the dimensions again.

Placing foundation concrete

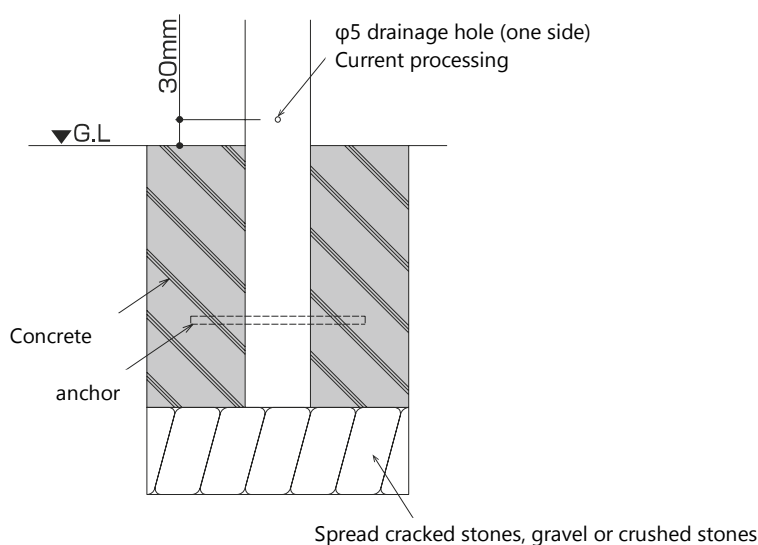
1. Make a drain hole in the pillar. (See the figure for hole positions)
2. Drive foundation concrete into the foundation holes.

⚠ Caution

- Be sure to make a drain hole at the specified position. It may cause freeze damage or abnormal corrosion.

Attention

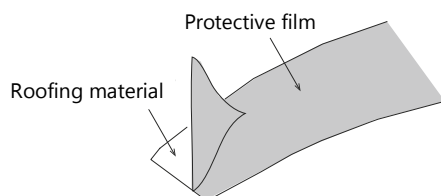
- Fully compact the concrete.
The quality of the concrete will deteriorate due to the occurrence of junkers and voids.



Roof construction

Roofing installation

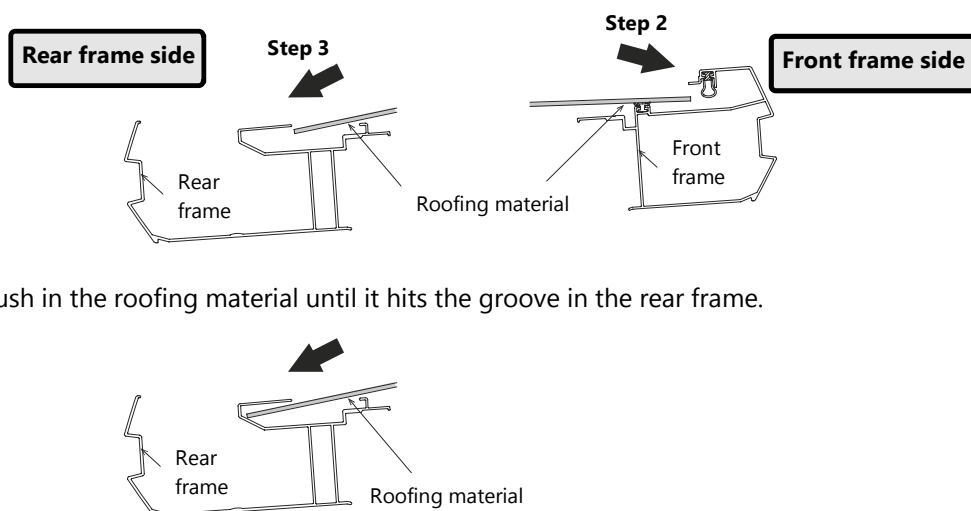
1. Remove the roofing protective film.



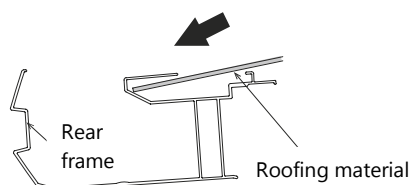
2. Insert the roofing material into the front frame side.
3. Insert the roofing material into the rear frame side.



- If the roofing material is matte, make the matte surface (uneven surface) the underside of the roof.



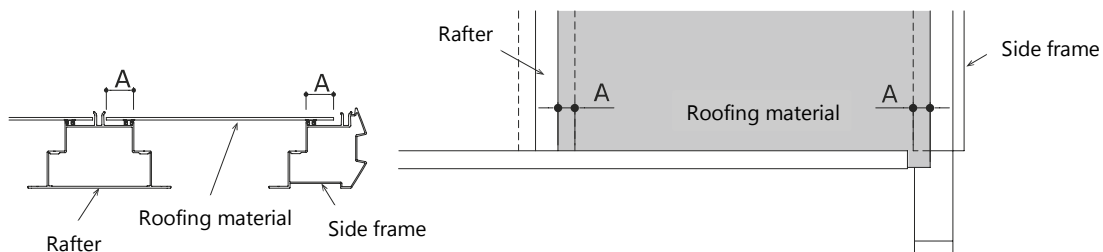
4. Push in the roofing material until it hits the groove in the rear frame.



5. Align the left and right sides of the roofing material.

Caution

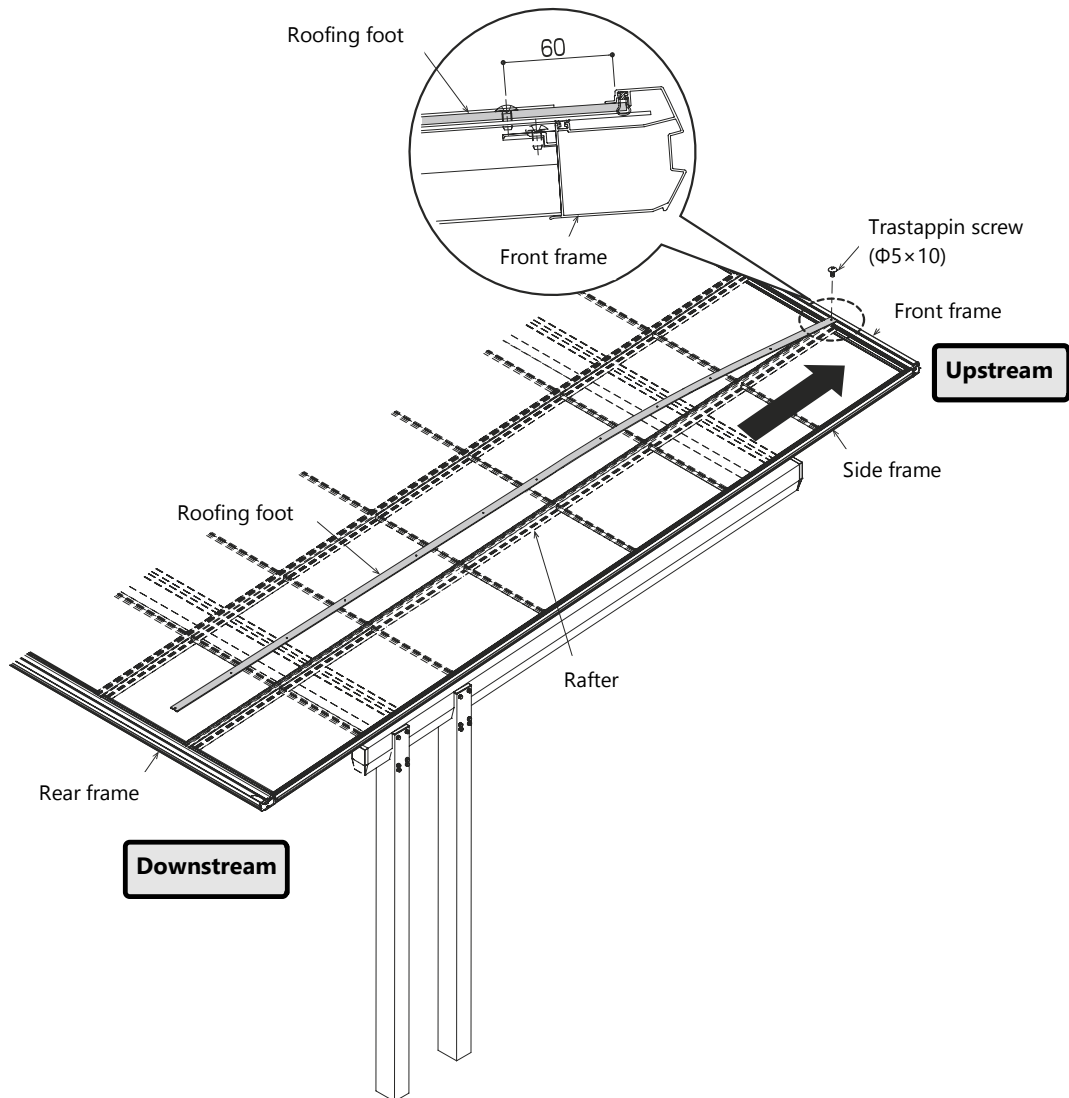
- Adjust so that the swallowing dimension A of the roofing material is the same on the left and right. The product may be damaged due to a reduction in wind pressure resistance and may lead to an unexpected accident.



6. Attach the following roofing materials in the same manner as steps 1 to 5.

Installation of roofing foot

1. Insert the roofing foot into the front frame so that the screw hole position is 60 mm from the front frame
2. From the front frame side, attach the roofing foot to the rafter.



Repeat installation of roofing material and roofing foot

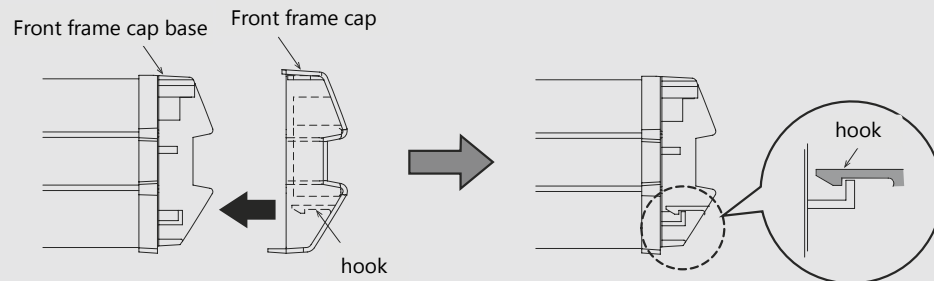
1. Repeat installation of roofing material and installation of roofing foot.

(Unit: mm)

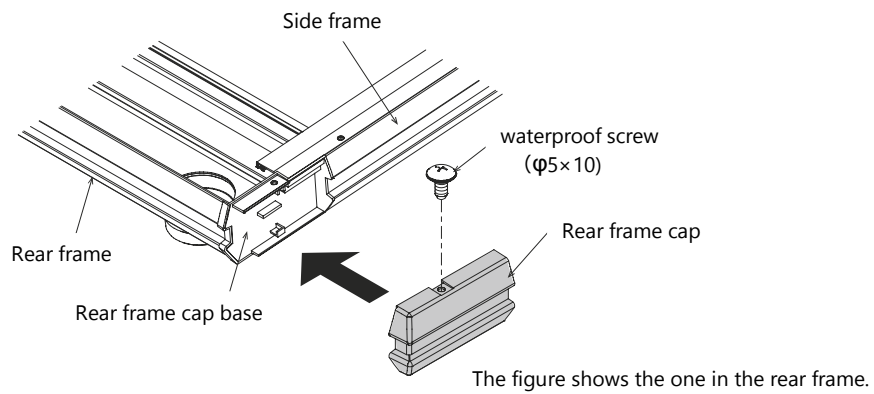
Attaching the cap



- Attach the cap by hooking it on the tab on the cap base.



1. Attach the cap to the cap base with the waterproof screw.



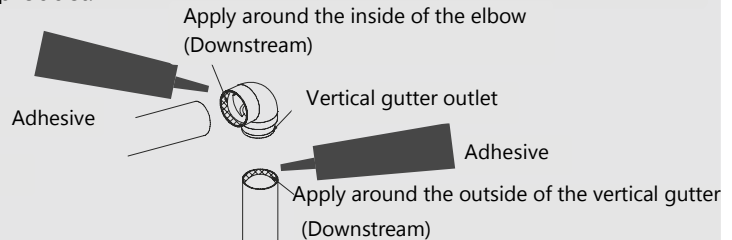
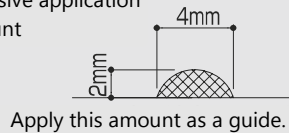
Rain gutter construction

Installation of rain gutter

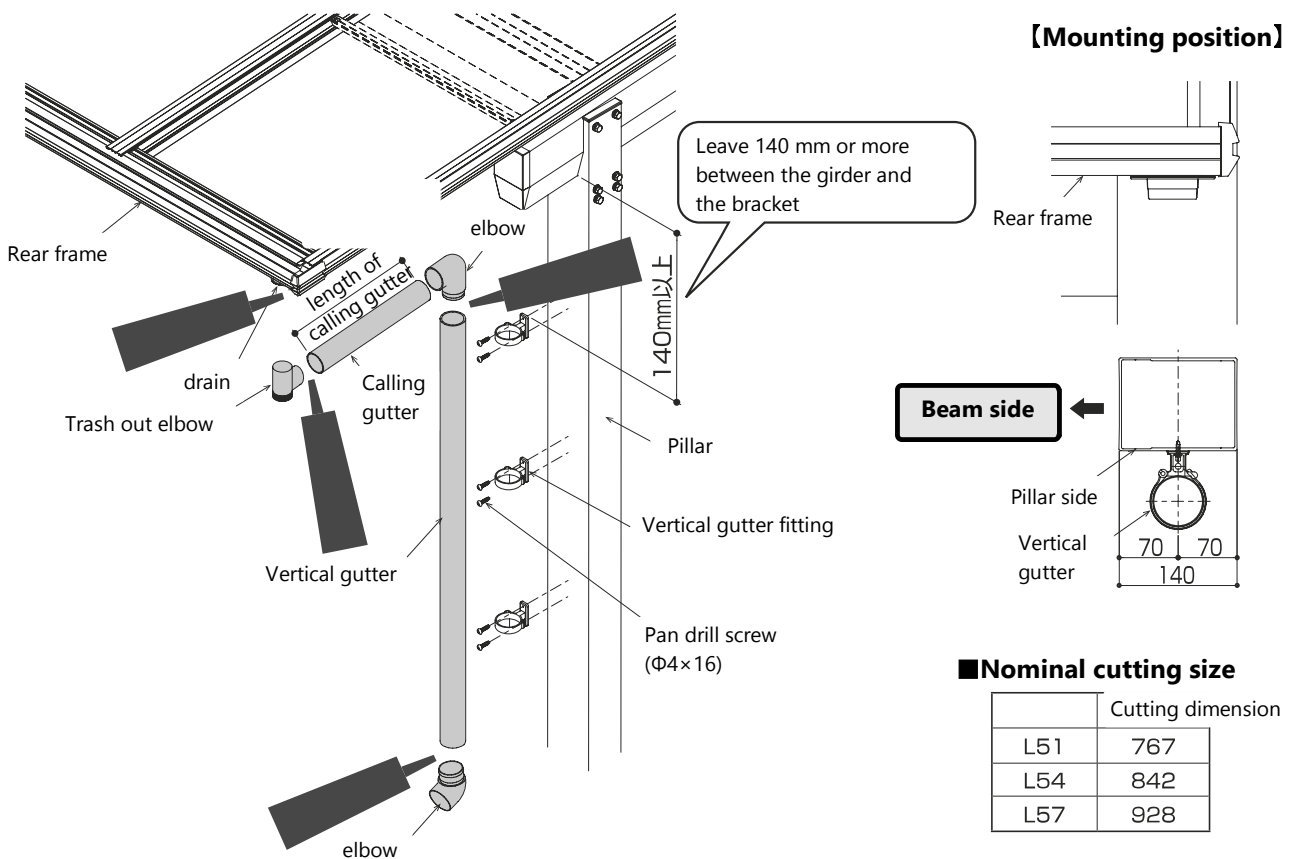


- To prevent water leakage from rain gutter parts, apply the adhesive as described below. Be sure to use the adhesive included with the product.

Adhesive application amount



1. Attach the vertical gutter mount to the pillar.
2. Cut the calling gutter according to the installation length. (See table)
3. Insert the trash out elbow into the drain.
4. Insert the calling gutter into the elbow to remove dust.
5. Insert the elbow into the flume.
6. Cut the vertical gutter according to the installation length.
7. Insert the vertical gutter into the elbow.
8. Insert the elbow into the vertical gutter.
9. Attach the vertical gutter to the vertical gutter fitting.



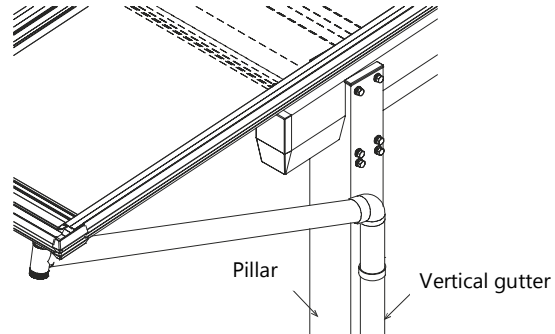
■ Nominal cutting size

	Cutting dimension
L51	767
L54	842
L57	928

(Unit: mm)

When moving the roof to the water side in L51 size

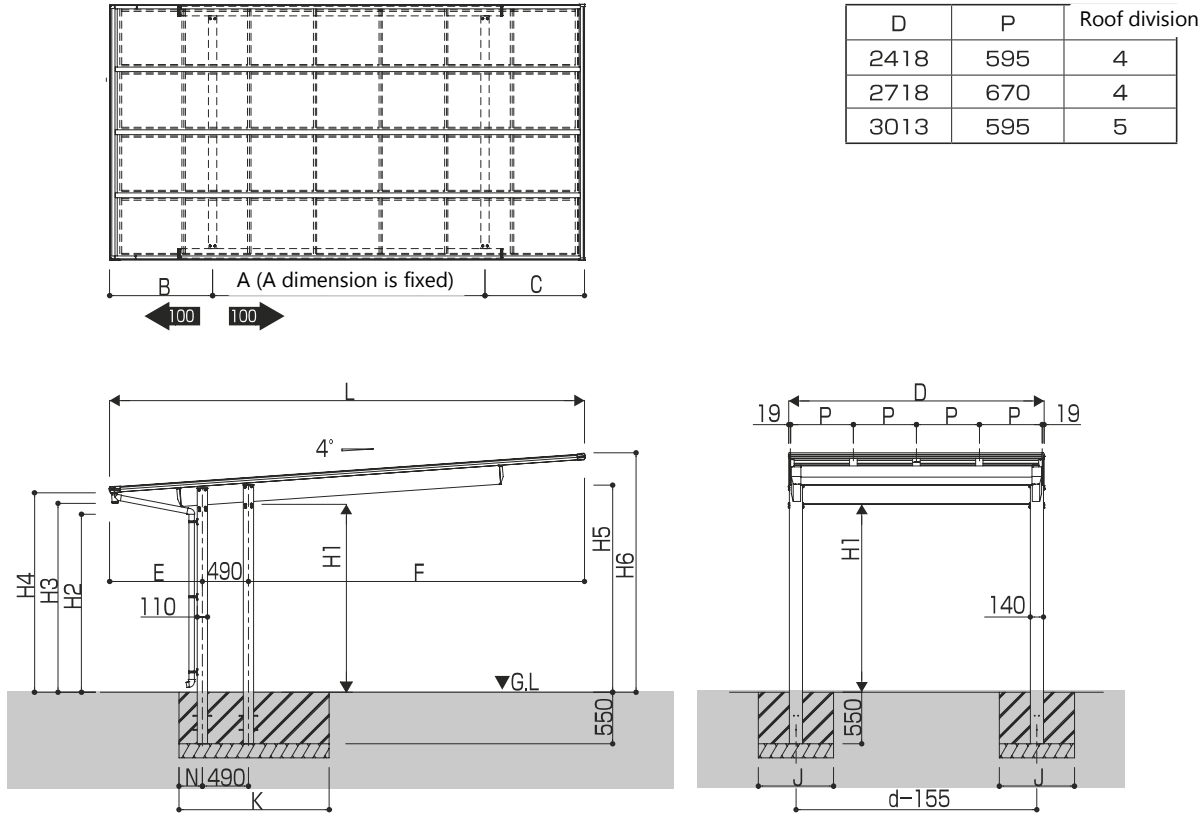
1. Attach the vertical gutter to the expected side of the pillar.



Dimensional drawing

Dimensional drawing

Carport FLY



Height (H1)	Length	L	A	B	C	E	F	H2	H3	H4	H5	H6
2000	L51	5062	2900	1100	1062	990	3582	1893	2010	2123	2203	2540
	L54	5410	3100	1174	1136	1064	3856	1874	2005	2118	2217	2559
	L57	5778	3300	1258	1220	1148	4140	1851	1999	2112	2231	2579
2300	L51	5062	2900	1100	1062	990	3582	2193	2310	2423	2503	2840
	L54	5410	3100	1174	1136	1064	3856	2174	2305	2418	2517	2859
	L57	5778	3300	1258	1220	1148	4140	2151	2299	2412	2531	2879

■Independent basis

D \ L	5052			5400			5768		
	J	K	N	J	K	N	J	K	N
2418	700	890	165	700	890	165	730	980	165
2718	700	890	165	730	980	165	750	1180	165
3013	730	980	165	750	1180	165	750	1180	165

■When considering floor concrete

Carport size	All sizes		
	J	K	N
Basic dimensions	420	820	165

(Unit: mm)