

carport MLC-series • MLC DX-series

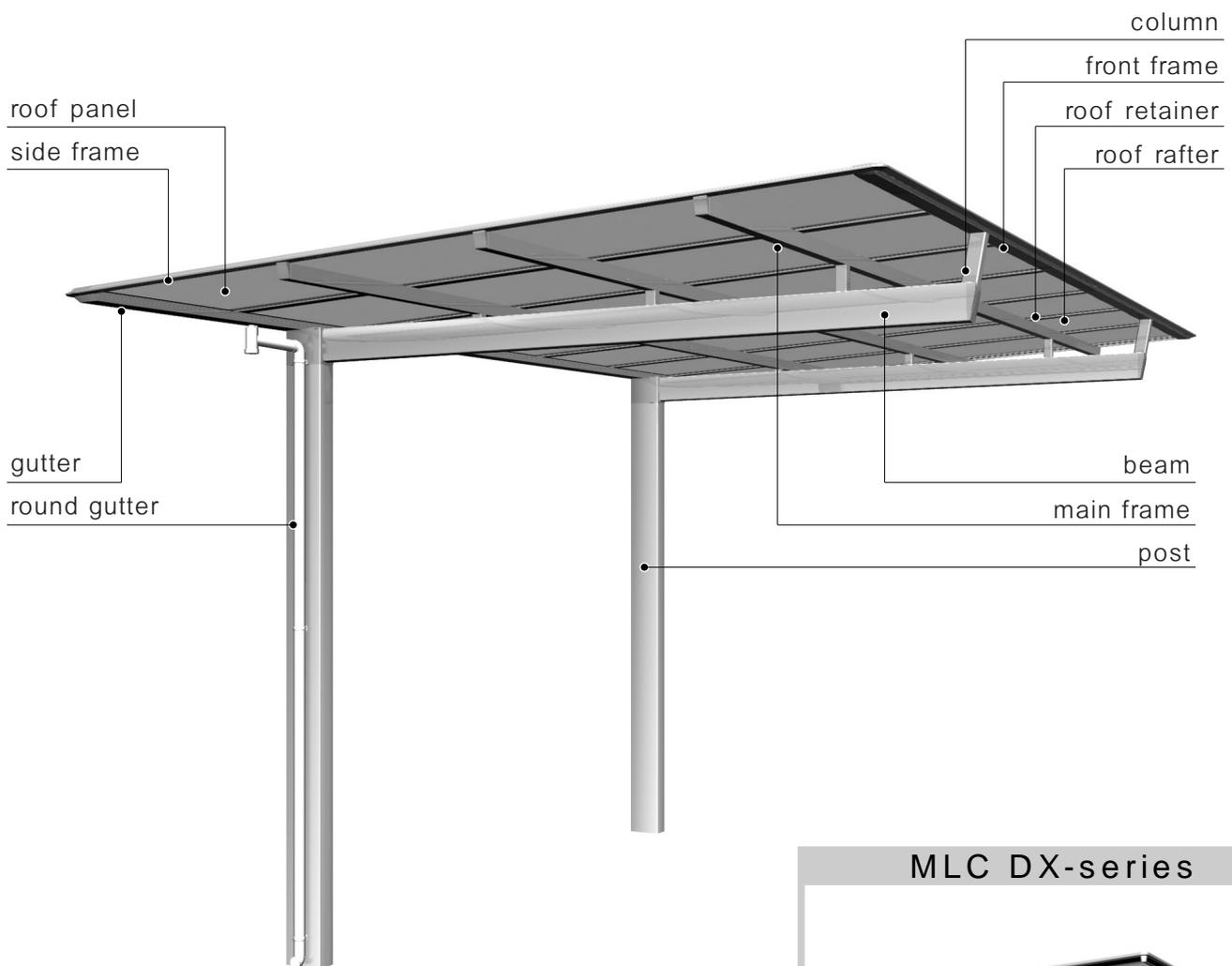
Assembling manual

Thank you very much for choosing our company's products.
Please be sure to thoroughly read these instructions for assembly in order to properly and smoothly assemble or attach this product.

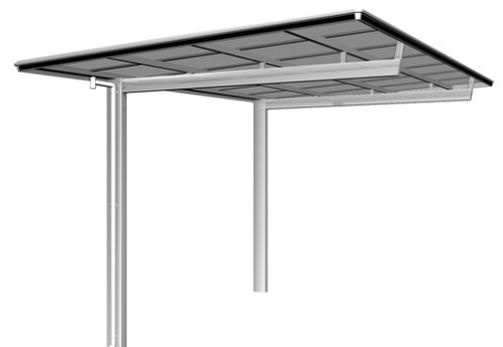
Construction shall be implemented by professionals. Problems may occur if the product is installed by someone without the proper knowledge.

Notice Please be sure to return the instruction manual in its original package to the owner after explaining product operation procedures, maintenance and inspection methods.

Name of part

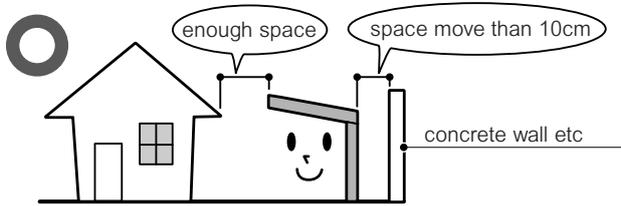


MLC DX-series

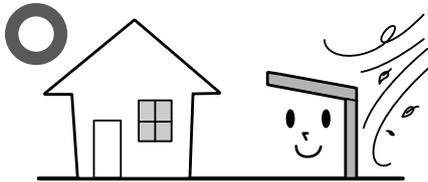


Precautions during installation

- The car port is a simple garage. Do not change or remodel it for storage, recreational or residential purposes.
- This product is for general areas. It has a snow accumulation strength of 600N/m²(61.2kg/m²), which corresponds to 20cm of snowfall. Do not install in heavy snow area.
- Do not install it in the place where snow slides down from the building roof directly.
When installing it besides concrete wall, etc., leave a 10 cm or larger gap between the post and the wall due to not clash each other during strong wind.



- Be sure to provide extra support post (optional) when installing it in strong wind area.
- When installing it with side panel, be sure to set up support post.
- When installing it with side panel, recommending to installing its front frame face to the building due to reduce the wind effect.

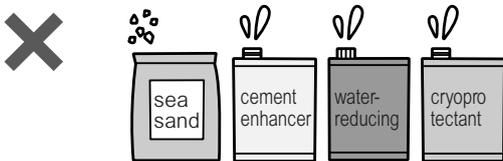


- Positioning the posts so that they do not affect underground objects (water supply, drain pipes, etc.).
- When moving the posts, please follow the company specifications.

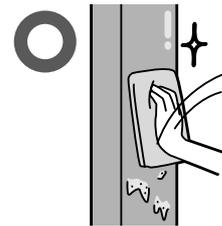
Precautions during construction

- Follow the instructions and be sure that all the specified screws and bolts for assembly are tightened securely.
- Do not use anything other than the specified parts or optional parts.
- The foundation should comply with or exceed dimension specifications.
- Allow sufficient curing time for the concrete (4 to 7 days) and do not place heavy objects on it or subject it to vibrations during the curing period.
- Be sure to keep the note below to prevent aluminum materials corrode.

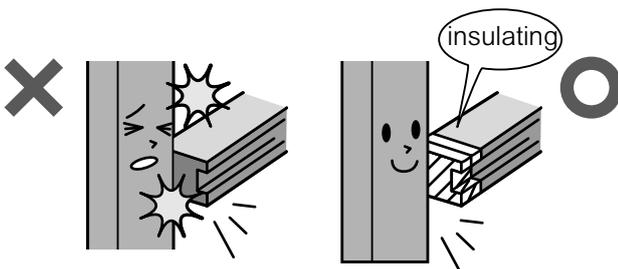
- (1) Do not use sea sand for the foundation since it contains salt and may cause corrosion. Do not use a cement enhancer, water-reducing agent or cryoprotectant. They may cause the posts to corrode.



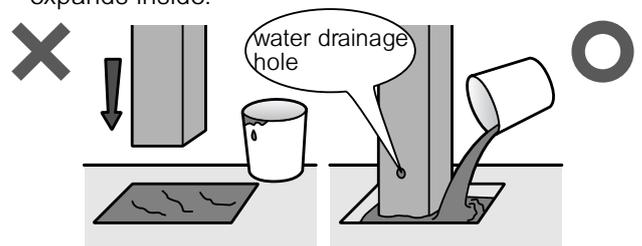
- (2) Immediately wipe off any mortar or stains from the surface of aluminum parts since they may cause corrosion.



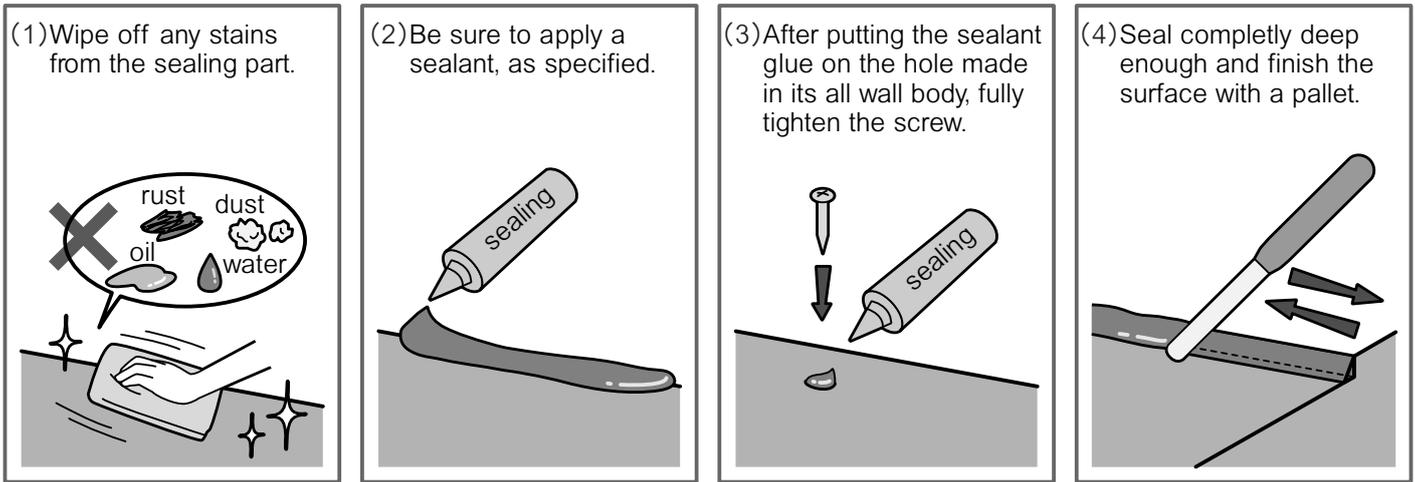
- (3) Do not let aluminum parts come in contact with other metals such as copper or iron. Provide insulation with vinyl tape, by painting, etc., if necessary. Otherwise the product may corrode.



- (4) Be sure to provide gravel for the foundation to allow drainage, insert water drainage holes (φ 5) at the base of the posts and foundation. Failure to do so may lead to water accumulation inside the posts and damage them if the water freezes and expands inside.



- Be sure to put the sealant glue as the following.



- When the G.L (Ground line) is steep, be sure to keep the depth of the post at the lowest level.
- After construction, check the products to see if the bolts, screws, nuts, etc. loosen or any dangerous places exist.
- Be sure to check if the product has scratches, dents or dirt.
- Be sure to explain product operation procedures, maintenance and inspection methods to the owner.

Necessary Tools and Materials For Installation

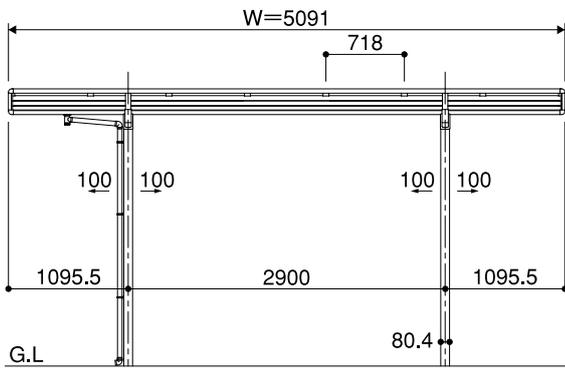
- Electric drill, Drill
- Ratchet wrench, Adjustable end wrench
- Electric Screwdriver
- Measure, Level, Plumb bob, Cutter, Pillar, Plastic hammer
- Foundation materials (Cement, Aggregate, etc)
- Sealant, Caulk gun, pallet
- Cropper or Saw
- Please prepare tools and materials as needed

Dimension, position of posts and base dimension

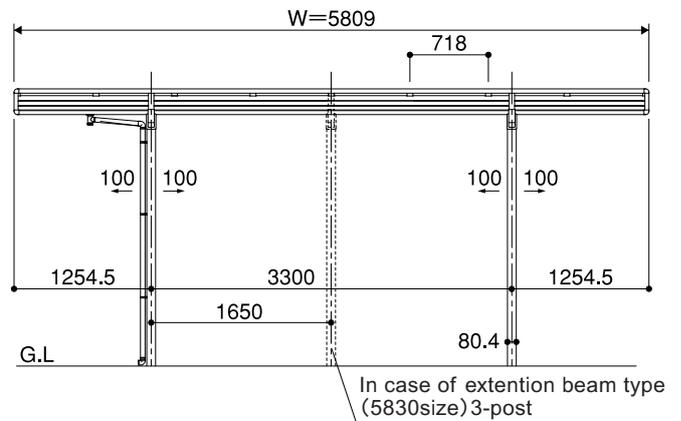
Dimension, position of post

length dimension (W) and post standard position (post could be changed as the dimension of)

● 51 size

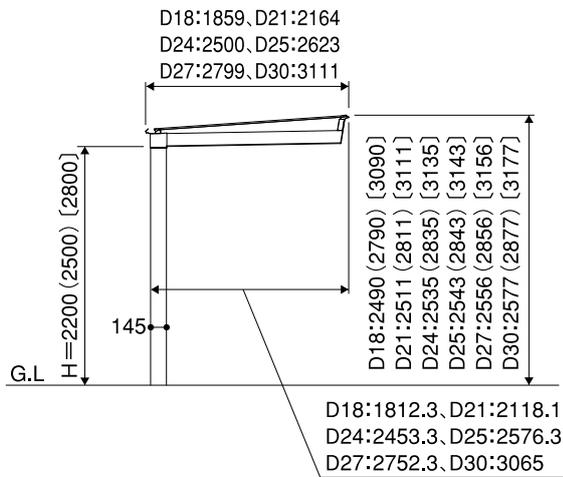


● 58 size

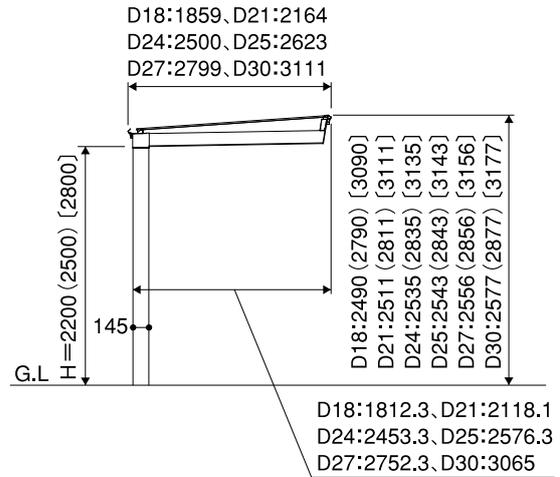


depth dimension (D), height dimension (H)
 [depth 18 · 21 · 24 · 25 · 27 · 30 size, height 22 size, () is height 25 size, [] is height 28 size]

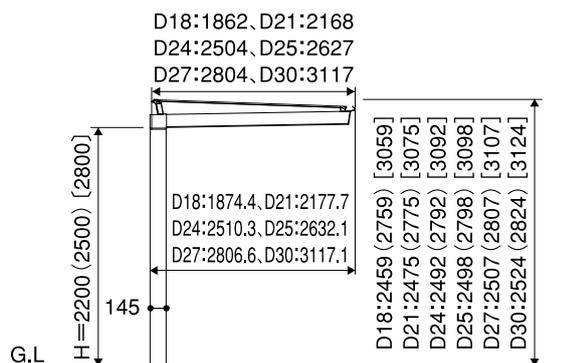
MLC-series



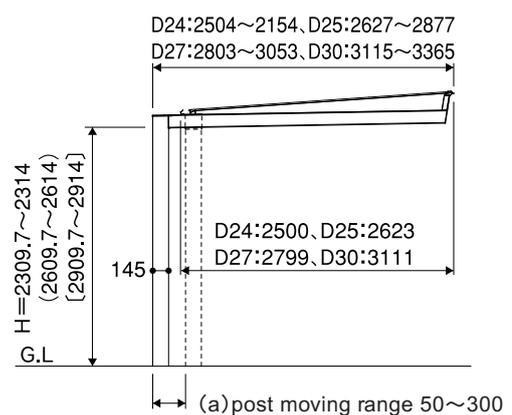
MLC DX-series



Front slope type

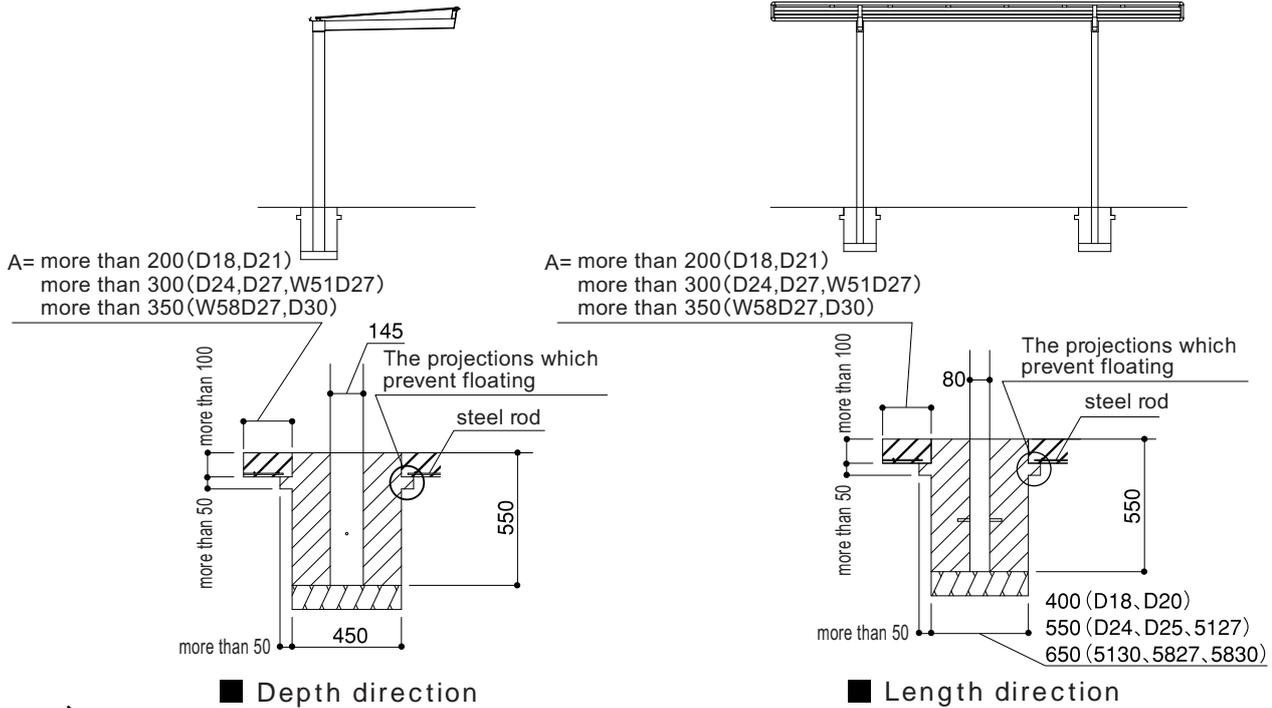


Extension beam type



Base Size

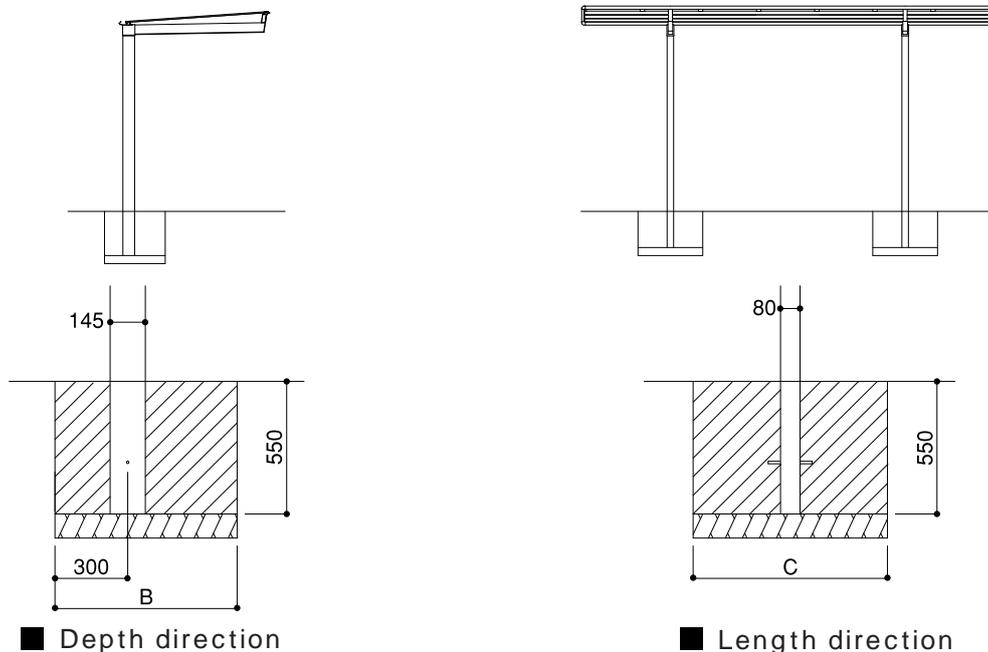
1 . In case of concrete floor



Notice Please install under below condition

- 1) Thickness of concrete floor is more than 100mm.
- 2) Steel rod and welding wire net are arranged in concrete floor.
- 3) Dimension of projection which prevents floating at 4 rounds is more than 50mm×50mm
- 4) Distance(A) from outside edge of base to around concrete floor is more than dimension specifications.

2 . In case of no concrete floor or no correspond to above condition.



■ In case of 100KN/m² Endurance strength of ground

size	D18 D21	D24, D25 5127	D30 5827
B	750	1100	1250

■ In case of 50KN/m² Endurance strength of ground

size	D18 D21	D24, D25 5127	D30 5827
B	850	1250	1350

■ In case of 100KN/m² Endurance strength of ground

size	D18 D21	D24, D25 5127, 5130	5827 5830
C	750	850	1000

■ In case of 50KN/m² Endurance strength of ground

size	D18 D21	D24, D25 D27, D30
C	750	1000

Post • Beam • Main frame list

post type	①	②	③	④	⑤	⑥
section						
parts ID	MLCH-22D MLCH-25D	MLCH-22F MLCH-22F-1 MLCH-28F-1	MLCH-22A MLCH-25A	MLCH-28B-1	MLCH-E22H-1 MLCH-E25H-1 MLCH-E28H-1	MLCH-25G MLCH-25G-1

beam type	①	②	③
section			
parts ID	MLCT-R18A-1 MLCT-R21A-1 MLCT-18A-2 MLCT-21A-2 MLCT-18A-1 MLCT-21A-1	MLCT-24C-2 MLCT-R24C-1 MLCT-25C-2 MLCT-R25C-1 MLCT-27C-2 MLCT-R27C-1 MLCT-24C-1 MLCT-25C-1 MLCT-27C-1	MLCT-27D-2 MLCT-E24E-1 MLCT-30D-2 MLCT-E25E-1 MLCT-27D-1 MLCT-E27E-1 MLCT-30D-1 MLCT-E30E-1 MLCT-R27D-1 MLCT-R30D-1

main frame type	①	②	③
section			
parts ID	MLCY□-W51B-2 (2parts) MLCY□-W51B-3 (3parts)	MLCY□-W51A-3 (3parts) MLCY□-W51A-4 (4parts)	MLCY□-W58D-3 (3parts) MLCY□-W58D-4 (4parts)

□·· Blank is MLC-series
··L is MLC DX-series

bracket type	①	②
section		
parts ID	MLC-CBA-1 MLC-CBA-2	MLC-CBB-1 MLC-CBB-2

■ Standard type

type		component parts								
size		post			beam	main frame	bracket			
Depth	Length	standard post	long post	extra long post						
18	51	③	③	④	①	①	①			
	58	—	—	—	—	—	—			
21	51	③	③	④	①	①	①			
	58	—	—	—	—	—	—			
24	51	①	①	②	②	②	①			
	58					③				
25	51					①		①	②	①
	58					③				
27	51					①		①	②	①
	58					③				
30	51	②	⑥	③	②					
	58	③	②							

■ Extention beam type

type		component parts					
size		post			beam	main frame	bracket
Depth	Length	standard post	long post	extra long post			
24	51	⑤	⑤	⑤	③	②	②
	58					③	
25	51					①	
	58					③	
27	51					①	
	58					③	
30	51	②					
	58	③					

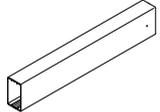
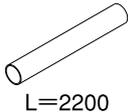
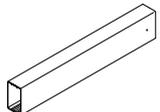
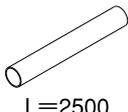
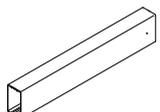
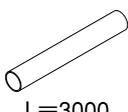
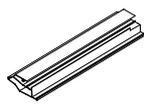
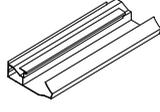
■ Front slope type

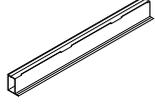
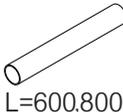
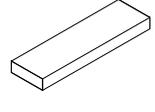
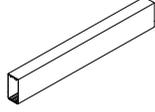
type		component parts					
size		post			beam	main frame	bracket
Depth	Length	standard post	long post	extra long post			
18	51	③	③	④	①	②	①
	58	—	—	—	—	—	—
21	51	③	③	④	①	②	①
	58	—	—	—	—	—	—
24	51	①	①	②	②	①	①
	58					③	
25	51					②	
	58					③	
27	51					②	
	58					③	
30	51	②	⑤	③	①		
	58	③	②				

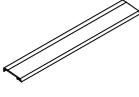
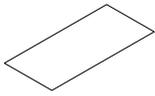
Parts contents

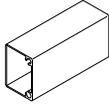
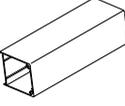
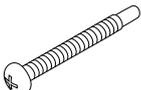
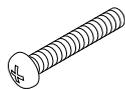
- Please open the captioned carton and check all contents in advance.
- Please check the parts defective or any damage.
- We packed some extra screw in the parts box. (x) number is necessary Q'ty for installation.

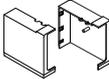
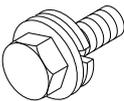
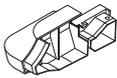
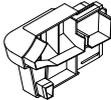
When □ mark is blank, it is MLC-series.
 When □ mark is L, it is MLC DX-series.
 When △ mark is F, it is the FRP panel.
 When △ mark is CF, it is the heat protection FRP panel.
 When △ mark is P, it is the polycarbonate panel.
 When △ mark is CP, it is the heat protection polycarbonate panel.
 When △ mark is M, it is the aluminum resin composite panel.

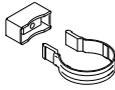
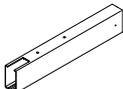
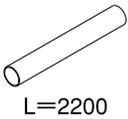
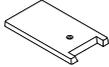
Parts ID	content		
	description	shape	quantity
post set (standard) MLCH-22D MLCH-22F MLCH-22A MLCH-E22H-1	post		MLCH-22○ 2
			MLCH-E22H-1 1
	round gutter GA4923	 L=2200	1
	instruction manual  be sure to return to the owner		1
post set (long post) MLCH-25D MLCH-25G MLCH-25A MLCH-E25H-1	post		MLCH-25○ 2
			MLCH-E25H-1 1
	round gutter GA4923	 L=2500	1
	instruction manual  be sure to return to the owner		1
post set (extra long post) MLCH-28B-1 MLCH-28F-1 MLCH-28D MLCH-E28H-1	post		1
			1
	round gutter GA4923	 L=3000	1
	instruction manual  be sure to return to the owner		1
length set MLCY□-W51B-2 MLCY□-W51A-3 MLCY□-W51B-3 MLCY□-W51A-4 MLCY□-W58D-3 MLCY□-W58D-4	front frame (front frame-1)		1
	front frame-2 (DX)		MLCY-W○○○-○ —
			MLCYL-W○○○-○ 1
gutter (gutter-1)		1	

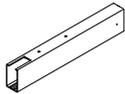
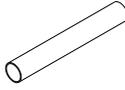
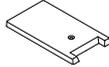
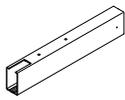
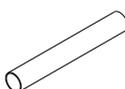
Parts ID	content			
	description	shape	quantity	
length set MLCY□-W51B-2 MLCY□-W51A-3 MLCY□-W51B-3 MLCY□-W51A-4 MLCY□-W58D-3 MLCY□-W58D-4	gutter-2 (DX)		MLCY-W○○○-○ —	
			MLCYL-W○○○-○ 1	
	main frame		MLCY□-W51B-2 2	
			MLCY□-W51A-3 3	
			MLCY□-W51B-3 3	
			MLCY□-W58D-3 4	
			MLCY□-W58D-4 4	
	round gutter GA4923	 L=600,800	MLCY□-W51○-○ (L=600) 1	
			MLCY□-W58○-○ (L=800) 1	
	roof panel cushion GB4084		MLCY□-W51B-2 14	
MLCY□-W51A-3 21				
MLCY□-W51B-3 21				
MLCY□-W51A-4 28				
MLCY□-W58D-3 24				
main frame cap GB3997		MLCY□-W○○○-2 Right Left each2pcs		
		MLCY□-W○○○-3 Right Left each3pcs		
		MLCY□-W○○○-4 Right Left each4pcs		
drilling screw 4×10×8		MLCY-W○○○-○ —		
		MLCYL-W○○○-○ 13 (12)		
beam set MLCT-18A-2 MLCT-21A-2 MLCT-24C-2 MLCT-25C-2 MLCT-27C-2 MLCT-27D-2 MLCT-30D-2 MLCT-18A-1 MLCT-21A-1 MLCT-24C-1 MLCT-25C-1 MLCT-27C-1 MLCT-27D-1 MLCT-30D-1	beam		MLCT-○○○-2 2	
			MLCT-○○○-1 1	
	side frame	 The picture below is MyLish	Right Left each1pc	
			roof rafter	
	MLCM□-58○○ 7			
	MLCM□-5118			
	MLCM□-5121			
	MLCM□-5124			
	MLCM□-5125			
	MLCM□-5127			
MLCM□-5130				
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MLCM□-5825				
MLCM□-5827				
MLCM□-5830				

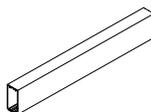
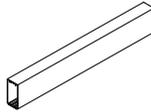
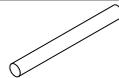
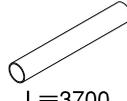
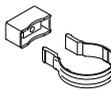
Parts ID	content		
	description	shape	quantity
depth set MLCM□-5118 MLCM□-5121 MLCM□-5124 MLCM□-5125 MLCM□-5127 MLCM□-5130 MLCM□-5824 MLCM□-5825 MLCM□-5827 MLCM□-5830	roof retainer (center)		MLCM□-5100 6
			MLCM□-5800 7
	roof retainer (end)		2
	small truss screw 4×10×7 ES0243		MLCM□-5118 69 (66)
			MLCM□-5121 82 (78)
			MLCM□-5124 95 (90)
			MLCM□-5125 101 (96)
			MLCM□-5127 107 (102)
			MLCM□-5130 113 (108)
			MLCM□-5824 95 (90)
			MLCM□-5825 101 (96)
			MLCM□-5827 107 (102)
			MLCM□-5830 113 (108)
	drilling screw 4×10×8		MLCM□-5118 63 (60)
			MLCM□-5121 67 (64)
			MLCM□-5124 80 (76)
			MLCM□-5125 82 (78)
			MLCM□-5127 84 (80)
MLCM□-5130 95 (90)			
MLCM□-5824 85 (81)			
MLCM□-5825 87 (83)			
MLCM□-5827 89 (85)			
MLCM□-5830 101 (96)			
corner parts set MLC-CBA-1 MLC-CBB-1 MLC-CBA-2 MLC-CBB-2	corner bracket GB3983A GB3984B		MLC-CB□-1 1
			MLC-CB□-2 2
roof panel set CPRY-M18-2 CPRY-M21-2 CPRY-M24-2 CPRY-M25-2 CPRY-M27-2 CPRY-M30-2 C□□Y-△18-3 C□□Y-△21-3 C□□Y-△24-3 C□□Y-△25-3 C□□Y-△27-3 C□□Y-△30-3 C□□Y-△18-4 C□□Y-△21-4 C□□Y-△24-4 C□□Y-△25-4 C□□Y-△27-4 C□□Y-△30-4	roof panel GA8667 (FRP) GB0709 (heat protection FRP) GB4107 (polycarbonate:AO) GA5762 (polycarbonate:SI) GB4575 (heat protection polycarbonate) GB4396 (aluminum resin composite plate)		CPRY-M□□-2 2
			C□□Y-△□□-3 3
			C□□Y-△□□-4 4

Parts ID	content		
	description	shape	quantity
column set MLCTK-18 MLCTK-21 MLCTK-24 MLCTK-25 MLCTK-27 MLCTK-30	column (center) GB3986		MLCTK-18, 24, 30 1 (L=18.3)
			MLCTK-21, 25, 27 1 (L=22.3)
			MLCTK-18, 24, 30 1 (L=48.9)
			MLCTK-21, 25, 27 1 (L=56.7)
			MLCTK-24, 30 1 (L=79.6)
			MLCTK-25, 27 1 (L=90.6)
			MLCTK-30 1 (L=110.2)
column set MLCTK-18 MLCTK-21 MLCTK-24 MLCTK-25 MLCTK-27 MLCTK-30	column (end) GB3985		1
	cover GB4099		1
	column fitting GB3927		1
	tapping screw 4×37×8G5		3 (2)
	small screw (pan-head) 5×30×9		2
	small truss screw 5×15×10		5 (4)
	small screw (pan-head) 5×65×9		2
	small screw (pan-head) 5×100×9		MLCTK-24 MLCTK-25 MLCTK-27 MLCTK-30 2
	small screw (pan-head) 5×120×9		MLCTK-30 2

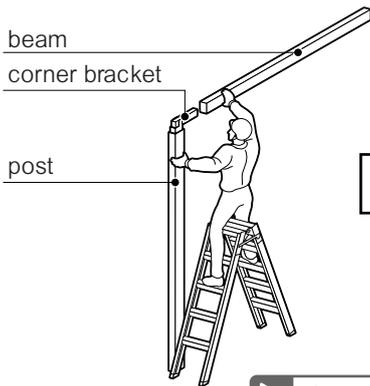
Parts ID	content		
	description	shape	quantity
parts box MLCB□	anchor rod GA0073		2
	beam cap GA3989		2
	corner cap GB4000		Right Left each 2 pcs
	hexagon bolt (with washer, spring washer) M8 × 25 ES0249		16
	front frame, gutter fitting bracket GB1734		2
	small truss screw 5 × 15 × 10		5 (4)
	front frame cap GB3991		MLCB Right Left each 1 pc
	gutter cap GB3990		MLCB Right Left each 1 pc
	front frame cap (DX) GB3992		MLCBL Right Left each 1 pc
	gutter cap (DX) GB3993		MLCBL Right Left each 1 pc
	hole seal φ 14 GA0150		22
	gutter attachment GA4929		1
	gasket GA4930		1
	elbow GA4932		2

Parts ID	content		
	description	shape	quantity
parts box MLCB□	drain elbow GA6461		1
	saddle GA4933		3
	drilling screw 4 × 19 × 8		3
	glue GA4934		1
	caution label GL-Z20C		1
	snow label HY0048		1
	assembling manual HZ0761		1
	post set (standard) (extension beam) MLCH-E22H-1	post	
round gutter GA4923		 L=2200	1
post cap GB4059			1
sealing cover GB4266			1
small screw (flat-head) 5 × 15 × 10			2 (1)
small truss screw 5 × 8 × 10			2
instruction manual Notice be sure to return to the owner			1

Parts ID	content		
	description	shape	quantity
post set (long post) (extension beam) MLCH-E25H-1	post		1
	round gutter GA4923	 L=2500	1
	post cap GA4059		1
	sealing cover GA4266		1
	small screw (flat-head) 5×15×10		2 (1)
	small truss screw 5×8×10		2
	instruction manual Notice be sure to return to the owner		1
post set (extra long post) (extension beam) MLCH-E28H-1	post		1
	round gutter GA4923	 L=3000	1
	post cap GB4059		1
	sealing cover GB4266		1
	small screw (flat-head) 5×15×10		2 (1)
	small truss screw 5×8×10		2
	instruction manual Notice be sure to return to the owner		1

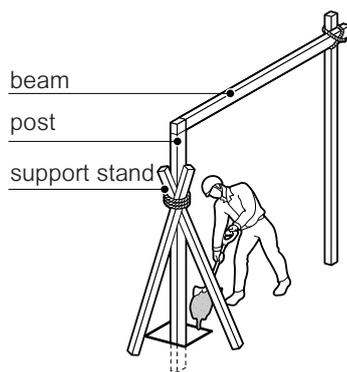
Parts ID	content				
	description	shape	quantity		
beam set (Front slope type) MLCT-R18A-1 MLCT-R21A-1 MLCT-R24C-1 MLCT-R25C-1 MLCT-R27C-1 MLCT-R27D-1 MLCT-R30D-1	beam		1		
	beam set (Extension beam type) MLCT-E24E-1 MLCT-E25E-1 MLCT-E27E-1 MLCT-E30E-1	beam		1	
		anchor rod GA0073	 only use for W58.D30 extension beam type	MLCT- E30E-1 only	1
		beam cap GA3989	 only use for W58.D30 extension beam type	MLCT- E30E-1 only	1
		hexagon bolt (with washer, spring washer) M8×25 ES0249	 only use for W58.D30 extension beam type	MLCT- E30E-1 only	8
		front frame, gutter attachment bracket GB1734	 only use for W58.D30 extension beam type	MLCT- E30E-1 only	1
small truss screw 5×15×10	 only use for W58.D30 extension beam type	MLCT- E30E-1 only	2 (1)		
round gutter set MLCA	round gutter GA4923 L=3700		1		
gutter parts set (Front slope type) MLCA-R	elbow GA4932		1		
	saddle GA4933		2		
	spacer GA4347		2		
	drilling screw 4×30×8		2		

1 Installation of the posts and the beams



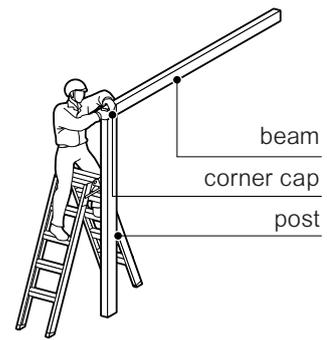
▶ P.14

2 Insert the post



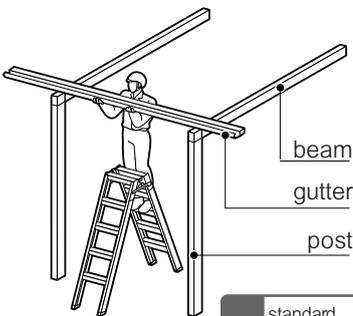
▶ P.14

3 Attaching the corner caps



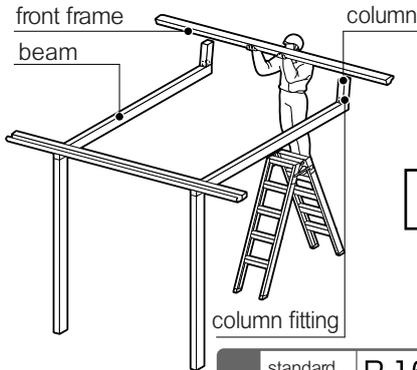
▶ P.14

4 Installation of the gutter



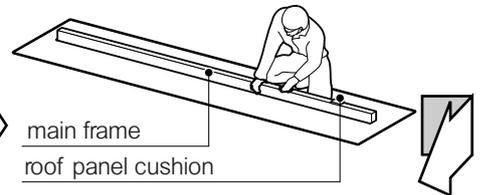
▶ standard	P.15
▶ front slope type	P.30

5 Installation of the front frame



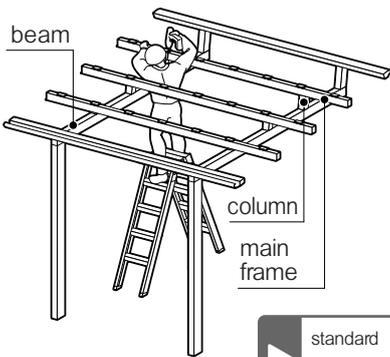
▶ standard	P.16
▶ front slope type	P.31

6 Attaching the roof panel cushions



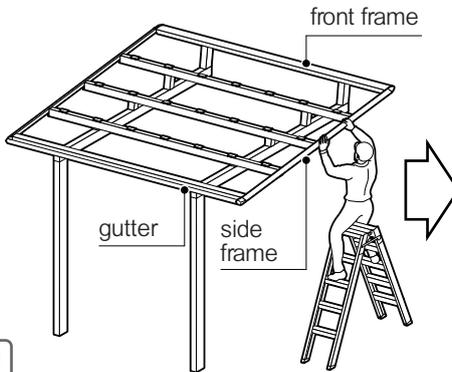
▶ standard	P.17
▶ front slope type	P.32

7 Installation of the main frame and the column



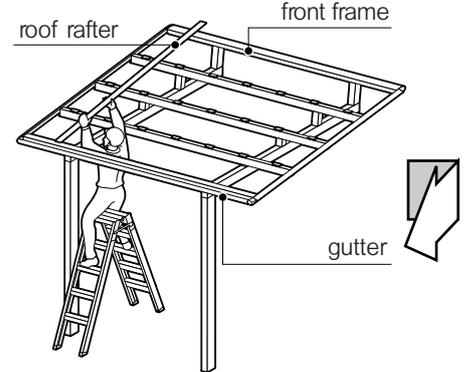
▶ standard	P.18
▶ front slope type	P.32

8 Installation of the side frame



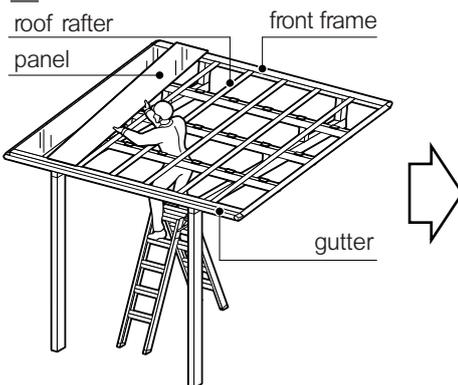
▶ P.21

9 Installation of the roof rafter



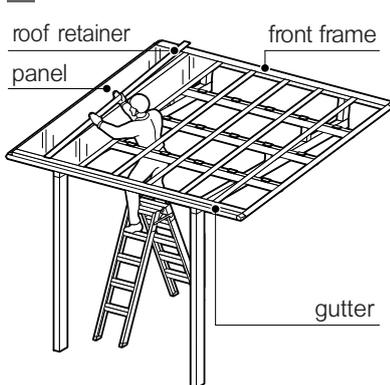
▶ P.24

10 Installation of the roof panels



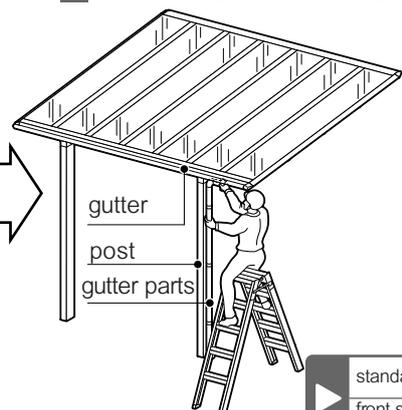
▶ P.25

11 Installation of the roof retainer



▶ P.26

12 Attaching the round gutter parts

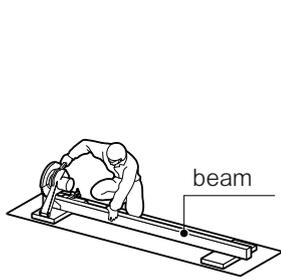


▶ standard	P.27
▶ front slope type	P.34

Installation procedures of extension beam type

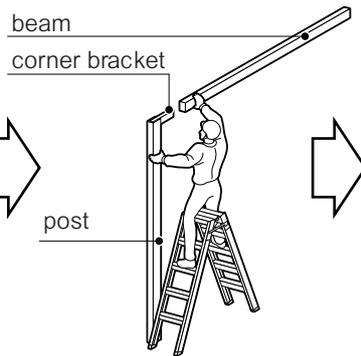
※ Refer P35 in case of cut process

1 Cut process of the beams



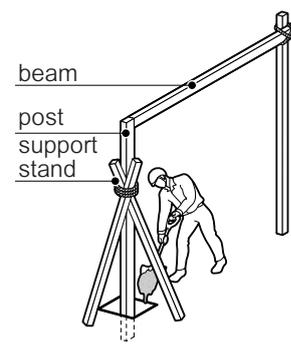
▶ P.28

2 Installation of the posts and the beams



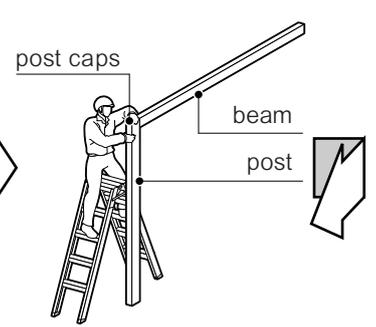
▶ P.28

3 Insert the post



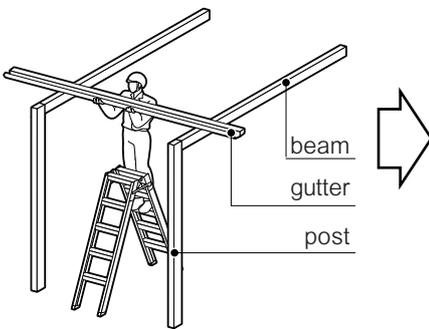
▶ P.28

4 Attaching the post caps



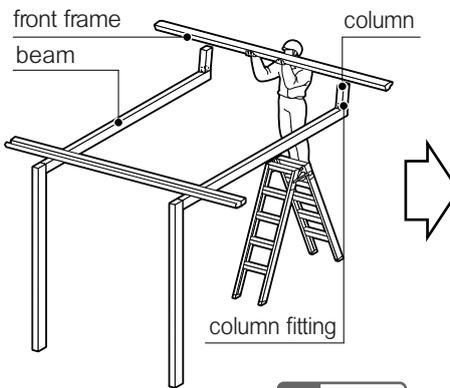
▶ P.29

5 Installation of the gutter



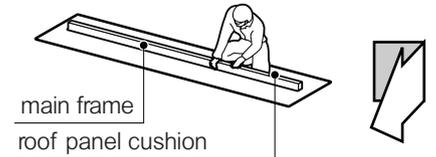
▶ P.29

6 Installation of the front frame



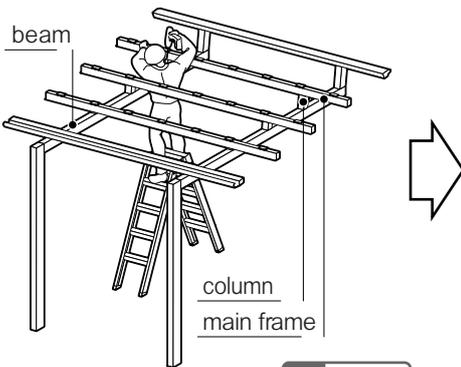
▶ P.16

7 Attaching the roof panel cashions



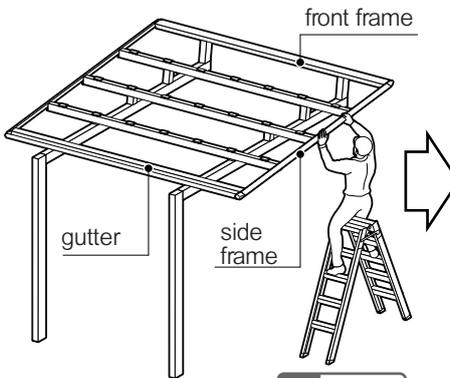
▶ P.17

8 Installation of the main frame and the column



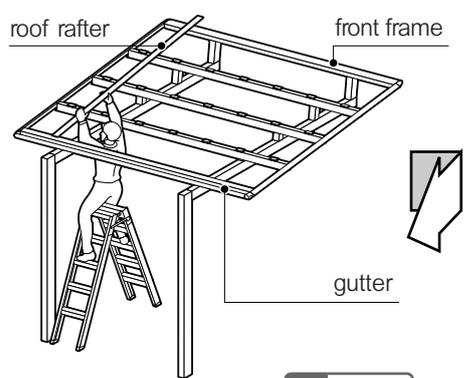
▶ P.18

9 Installation of the side frame



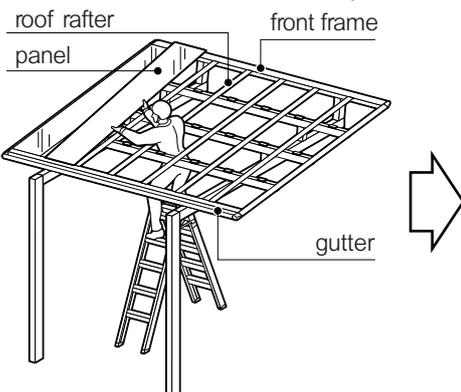
▶ P.21

10 Installation of the roof rafter



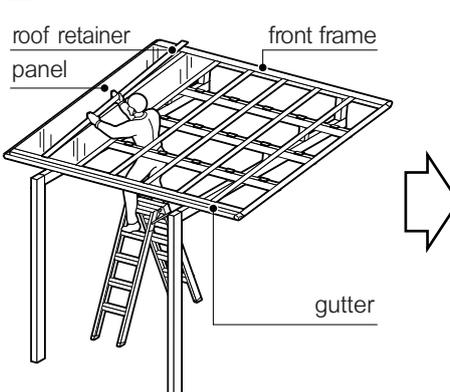
▶ P.24

11 Installation of the roof panels



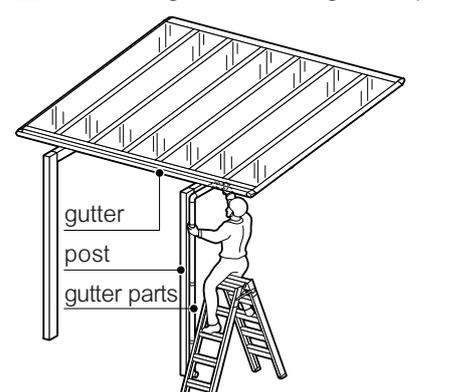
▶ P.25

12 Installation of the roof retainer



▶ P.26

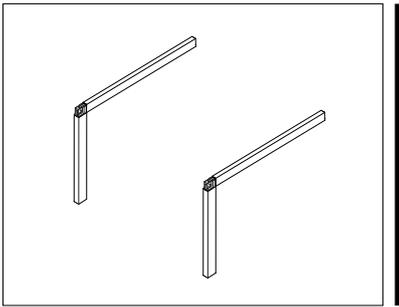
13 Attaching the round gutter parts



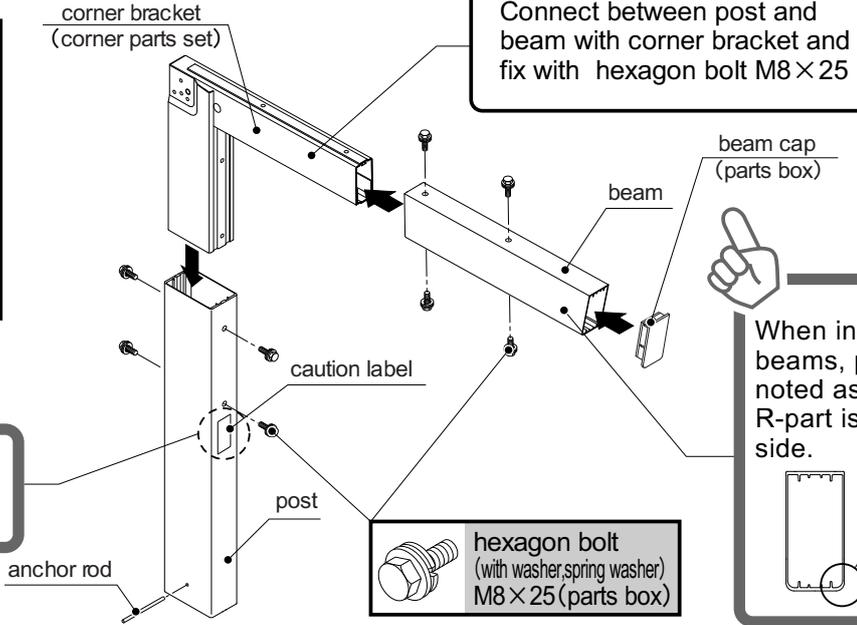
▶ P.27

Installation procedures of Standard type

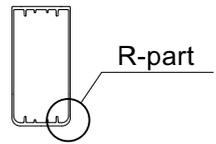
1 Installation of the posts and the beams



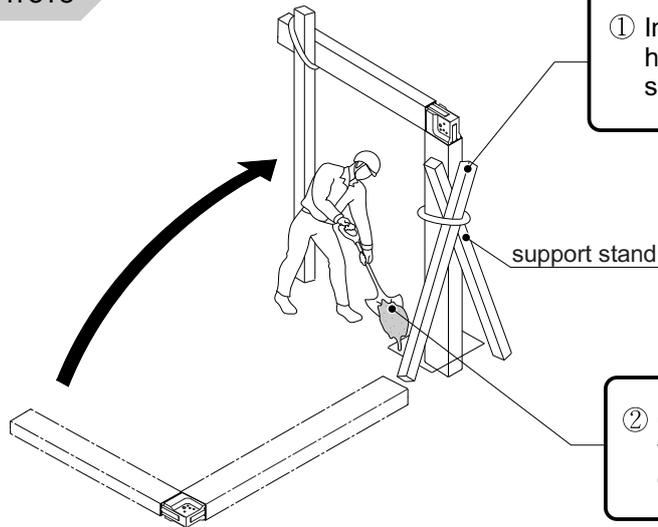
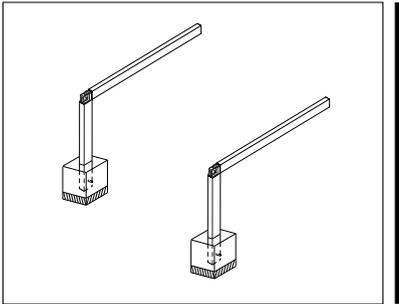
Install as the side which the caution label is attached comes inside



When installing the beams, please be noted as below. R-part is down side.



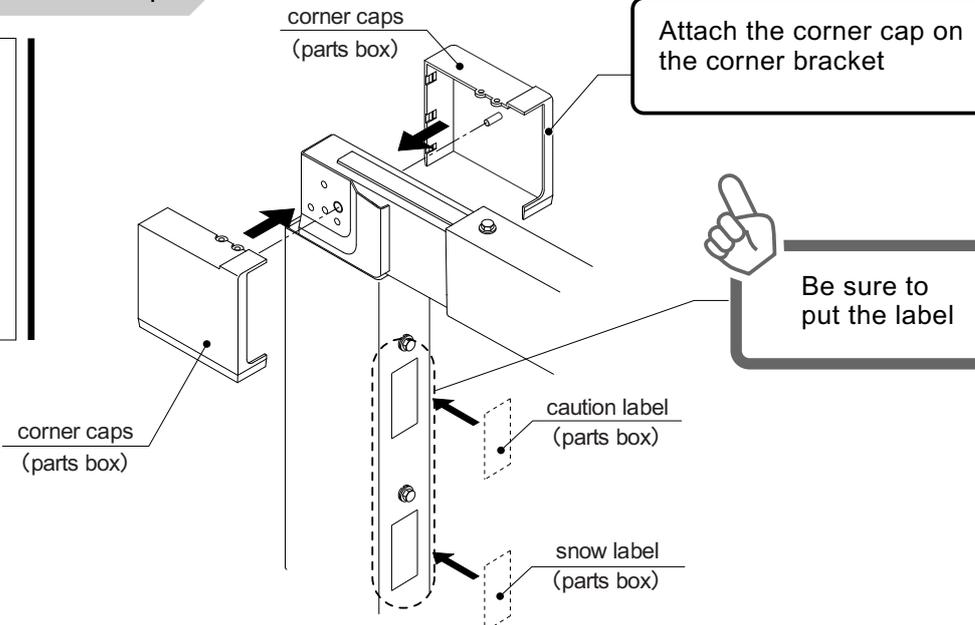
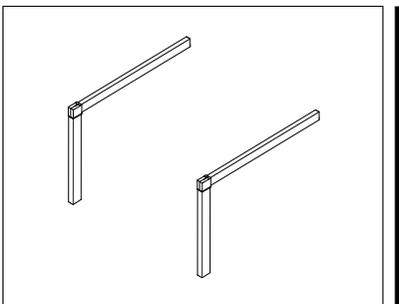
2 Installation to base hole



① Insert post into the base hole and fix with support stand not to fall down.

② Check if it is flat and vertical, and cast concrete.

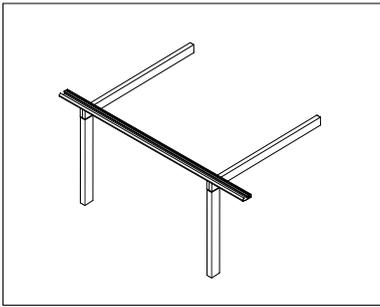
3 Attaching the corner caps



Be sure to put the label

4 Installation of the gutter

● The picture below is MLC-series. In case of MLC DX-series please refer to figure B before installation.



front frame,gutter attachment bracket
(parts box)

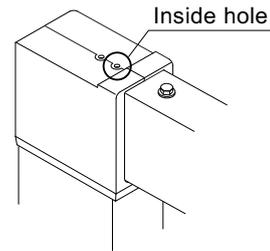
name label

gutter

corner caps

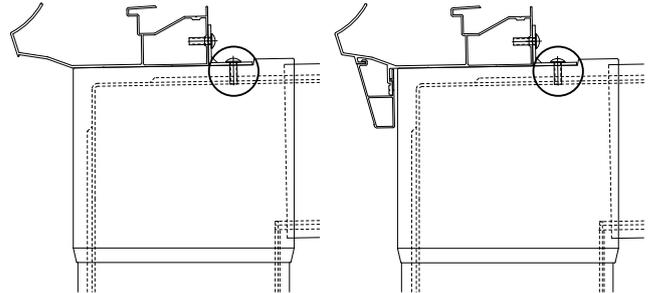
 small truss screw
5×15×10
(part box)

Attach the front frame gutter fitting on the corner bracket with screw (inside hole).



■ figure A

Be sure to screw the front frame gutter fitting to the corner bracket. Attach the gutter with front frame gutter fitting.



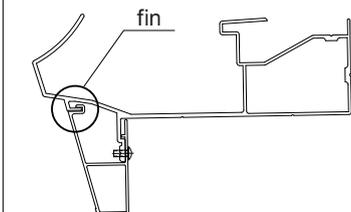
MLC-series

MLC DX-series

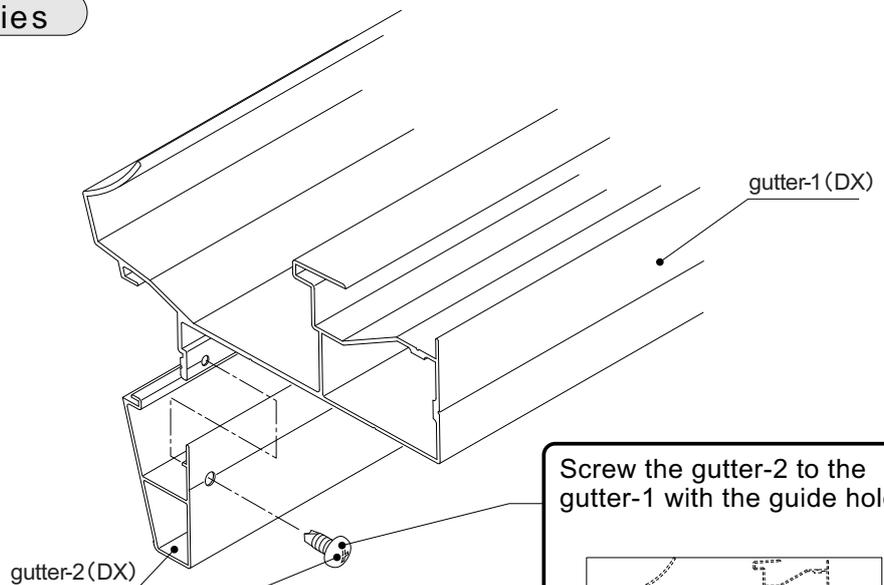
In case of MLC DX-series

■ figure B

Be sure to attach the gutter-2 as below figure

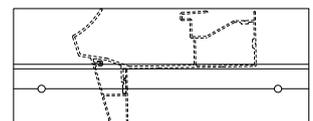


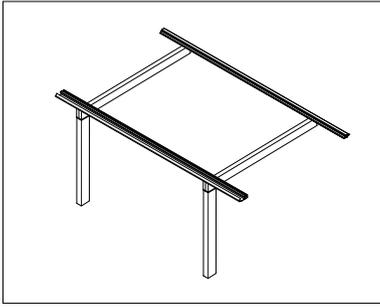
Before installing the gutter-1 on the corner cap,connect gutter-1 and gutter-2



 drilling screw
4×10×8
(depth set)

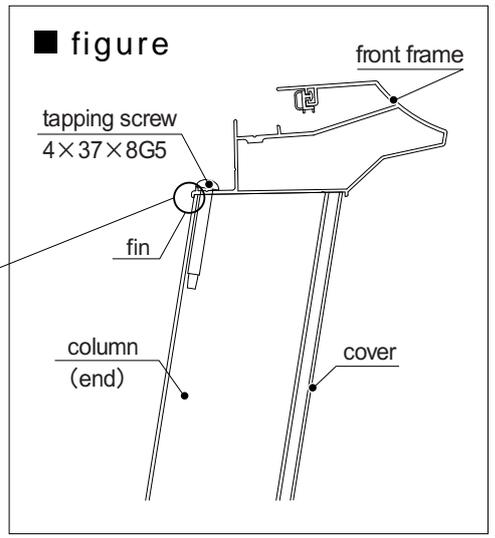
Screw the gutter-2 to the gutter-1 with the guide hole



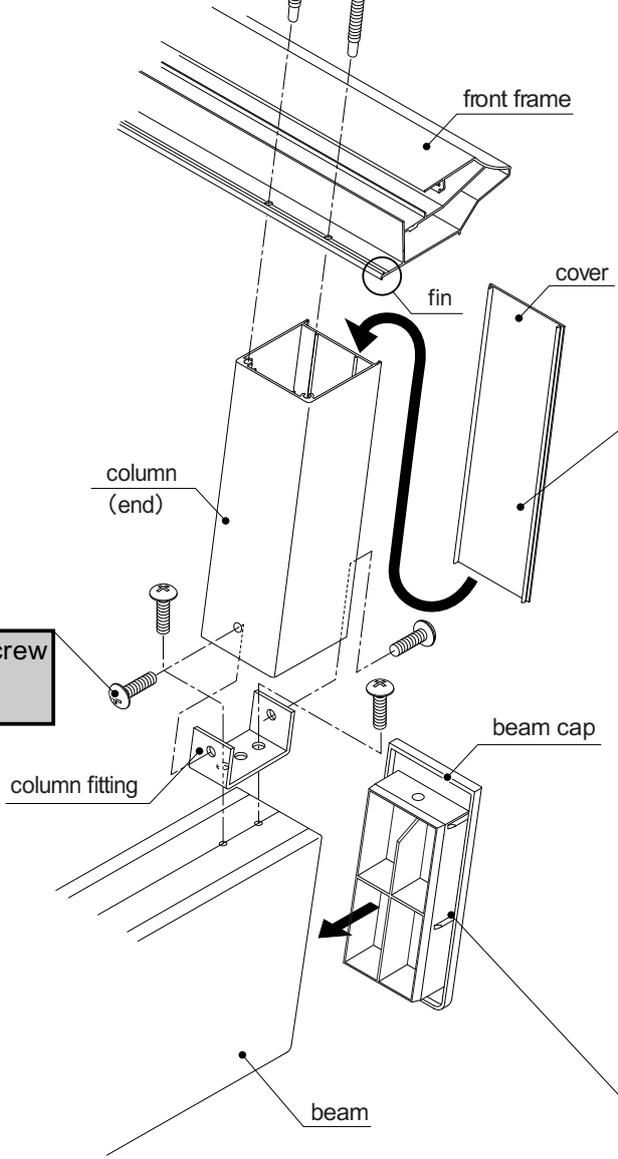


● The picture below is MLC-series. In case of MLC DX-series, please refer to P17 before installation.

③ Set the front frame on the column as right figure. Be noticed the fin position, and screw it with the holes.

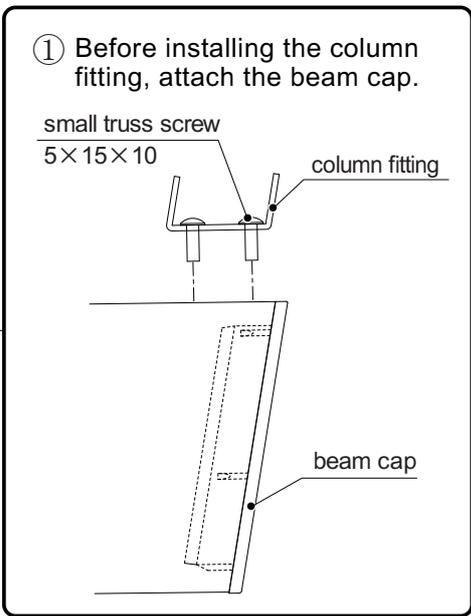


tapping screw
4×37×8G5
(column set)



small truss screw
5×15×10
(column set)

② Slide-in the cover into the column before installing the front frame



① Before installing the column fitting, attach the beam cap.

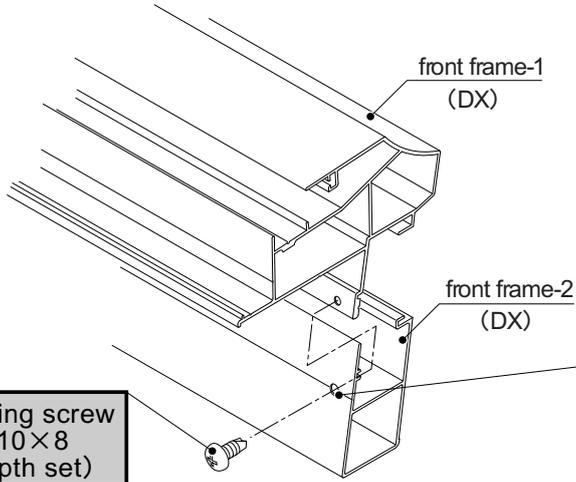
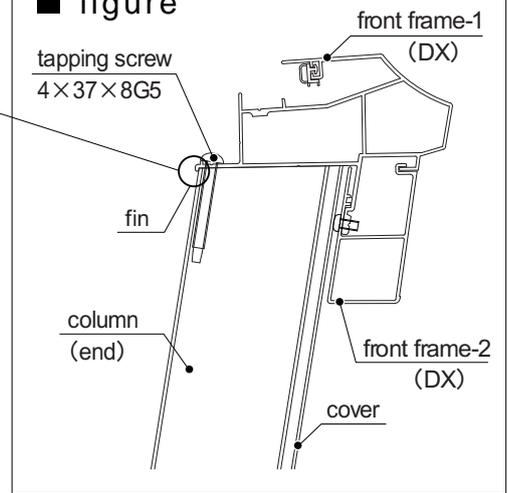
In case of MLC DX-series

Before installing the front frame-1 on the column, connect the front frame-1 and the front frame-2

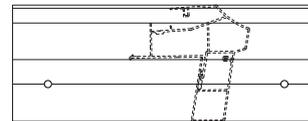
Set the front frame on the column as right figure. Be noticed the fin position, and screw it with the holes.

■ figure

tapping screw
4×37×8G5



Screw the front frame-1 to the front frame-2 with the guide hole.

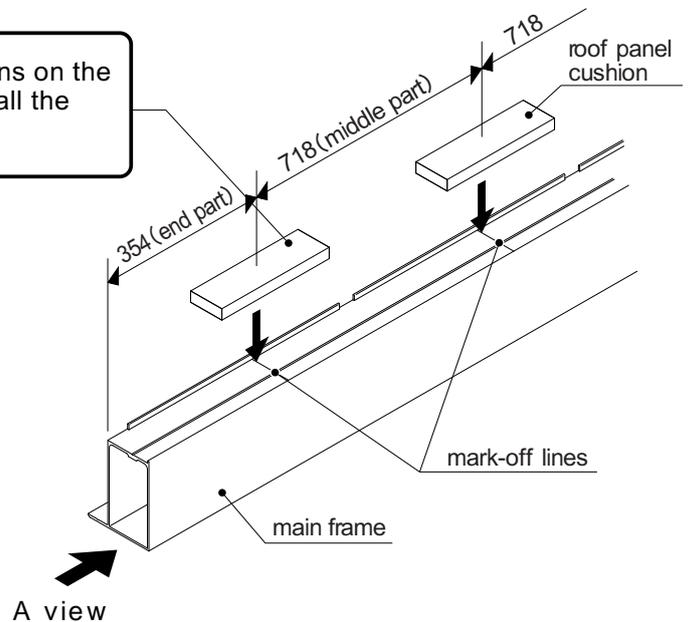
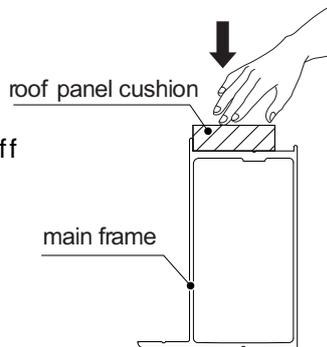


6 Attaching the roof panel cushions

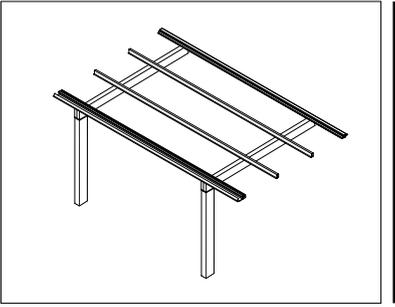
Attach the roof panel cushions on the mark-off lines of top side of all the main frame material

■ A view

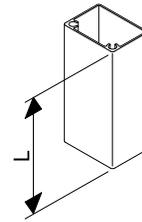
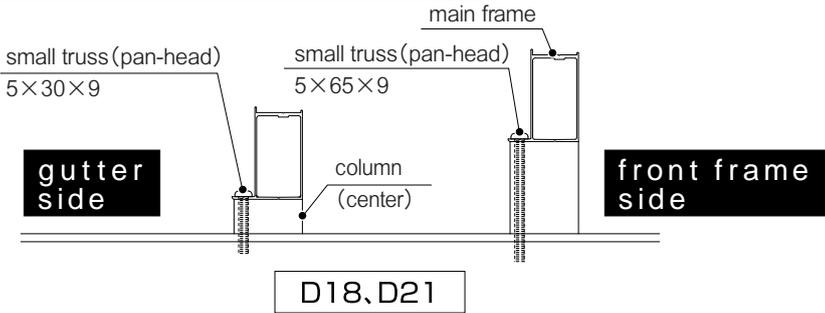
※ When attaching the roof panel cushion, be sure not to be come off



7 Installation of the main frame and the column

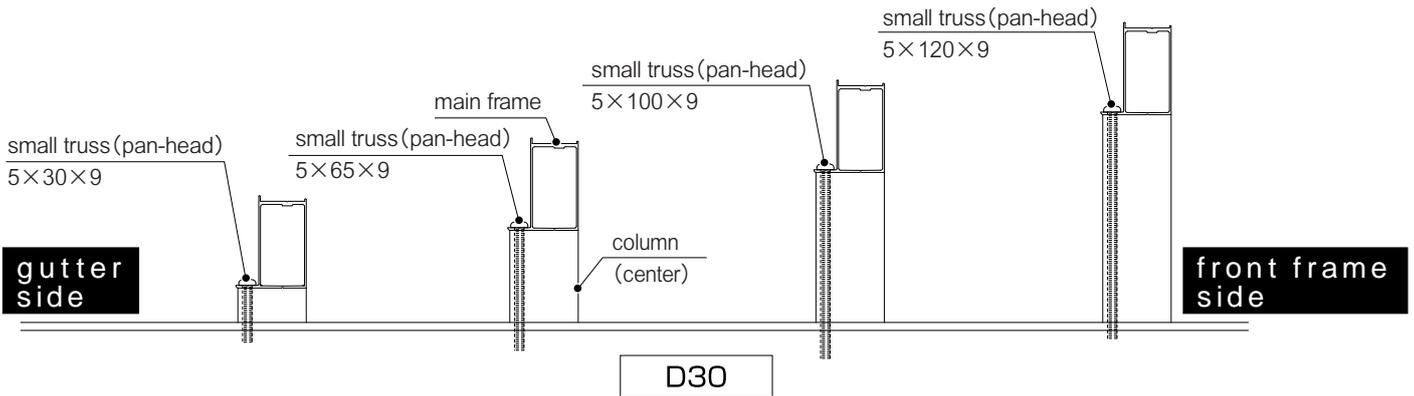
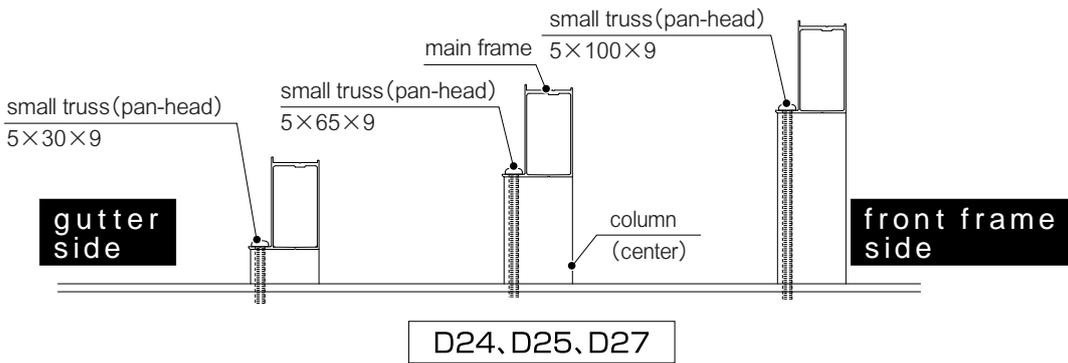


main frame • column figure

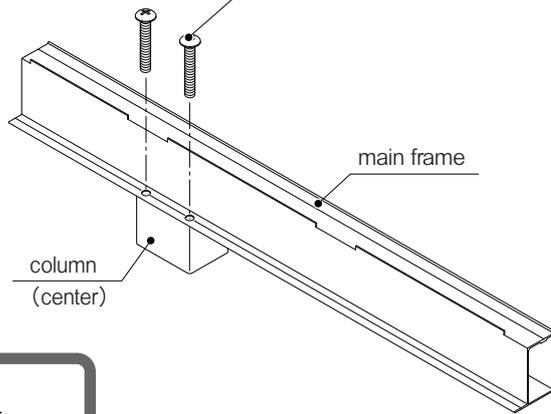


Column(center) dimension table

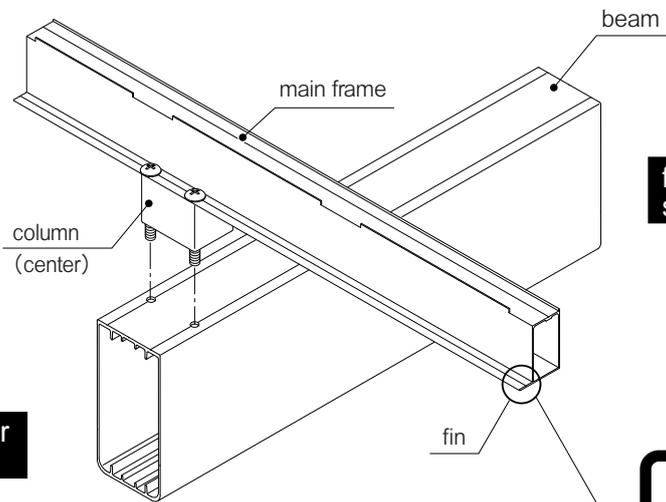
		L
1	D18, D24, D30	18.3
2	D21, D25, D27	22.3
3	D18, D24, D30	48.9
4	D21, D25, D27	56.7
5	D24, D30	79.6
6	D25, D27	90.6
7	D30	110.2



Fix the main frame to the beam with screws through the column.



If the column is fixed temporarily to the main frame with vinyl tape etc, it's easy to be installed.



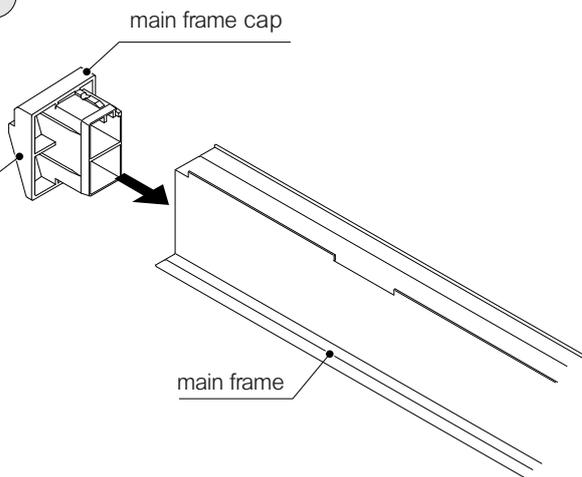
front frame side

gutter side

Be sure to install the main frame with the fin of it faced to the gutter.

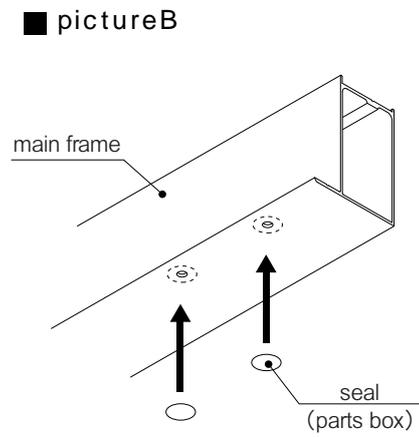
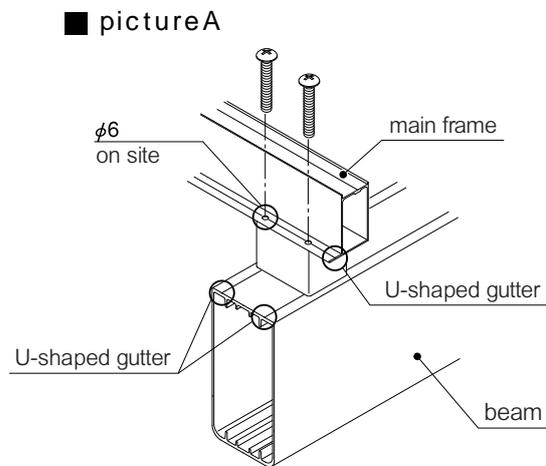
In case of MLC-series only

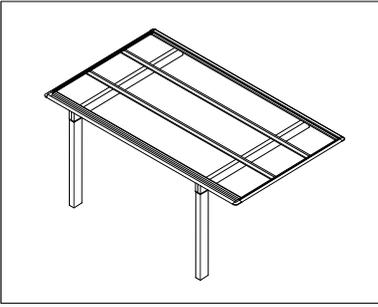
Attach the cap to the main frame on both sides



Installation of main frame in case post is moved

- See the U-shaped gutter of the beam and main frame and make holes on the main frame. Screw it on the beam (pictureA)
- In case of installing the main frame other than post standard position, put the seal on the unnecessary hole (pictureB)



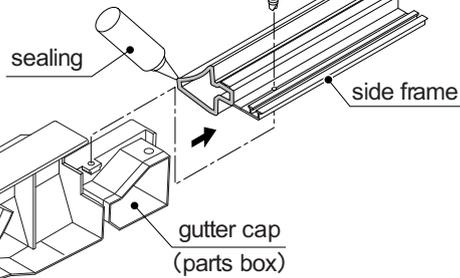


In case of MLC-series

step 1

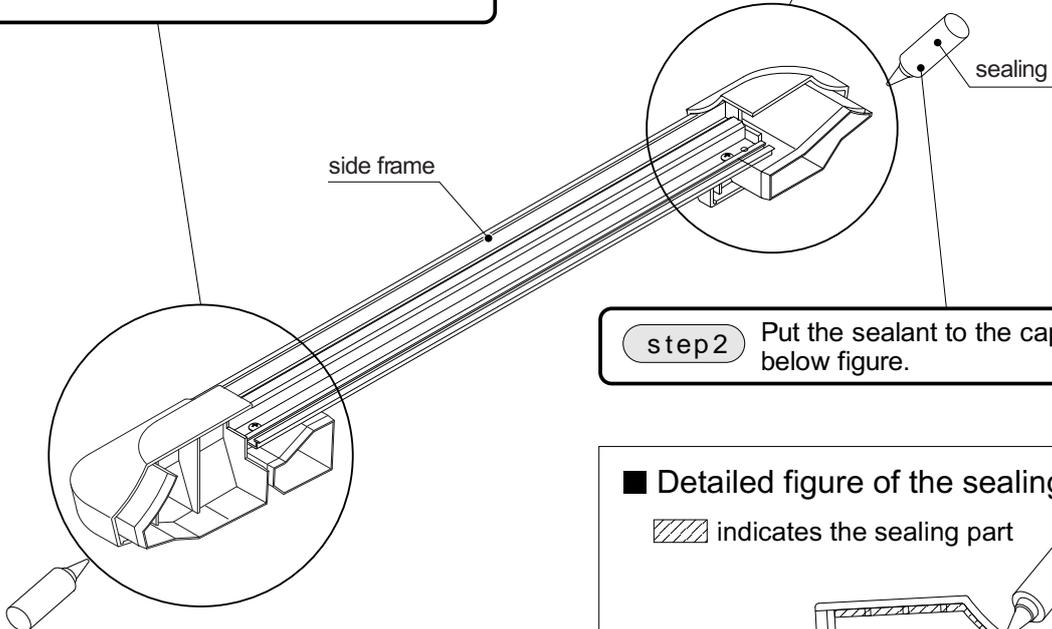
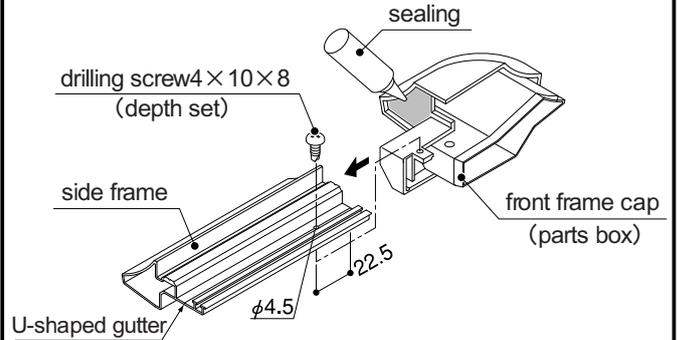
- Attach the gutter cap to the side frame.
- Put the sealant into the connection point between the gutter cap and the side frame and fix the gutter cap to the side frame

drilling screw $4 \times 10 \times 8$
(depth set)



step 1

- Make a hole $\phi 4.5$ to the front side of the side frame to attach the front frame cap.
- Put the sealant into the connection point between the side frame and the front frame cap.
- Attach the front frame cap to the side frame.

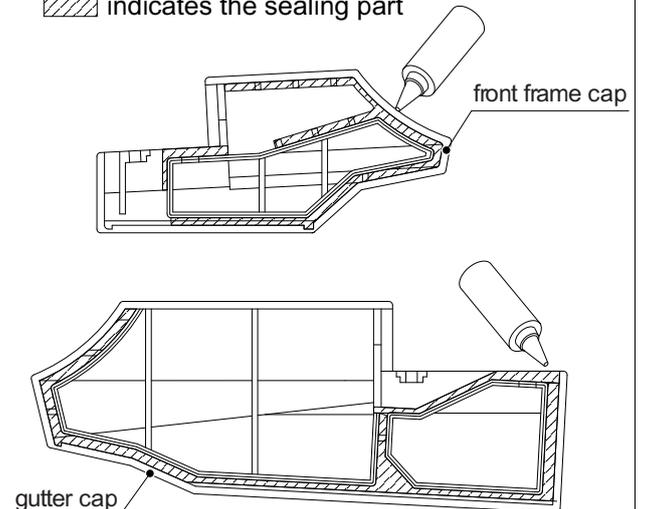


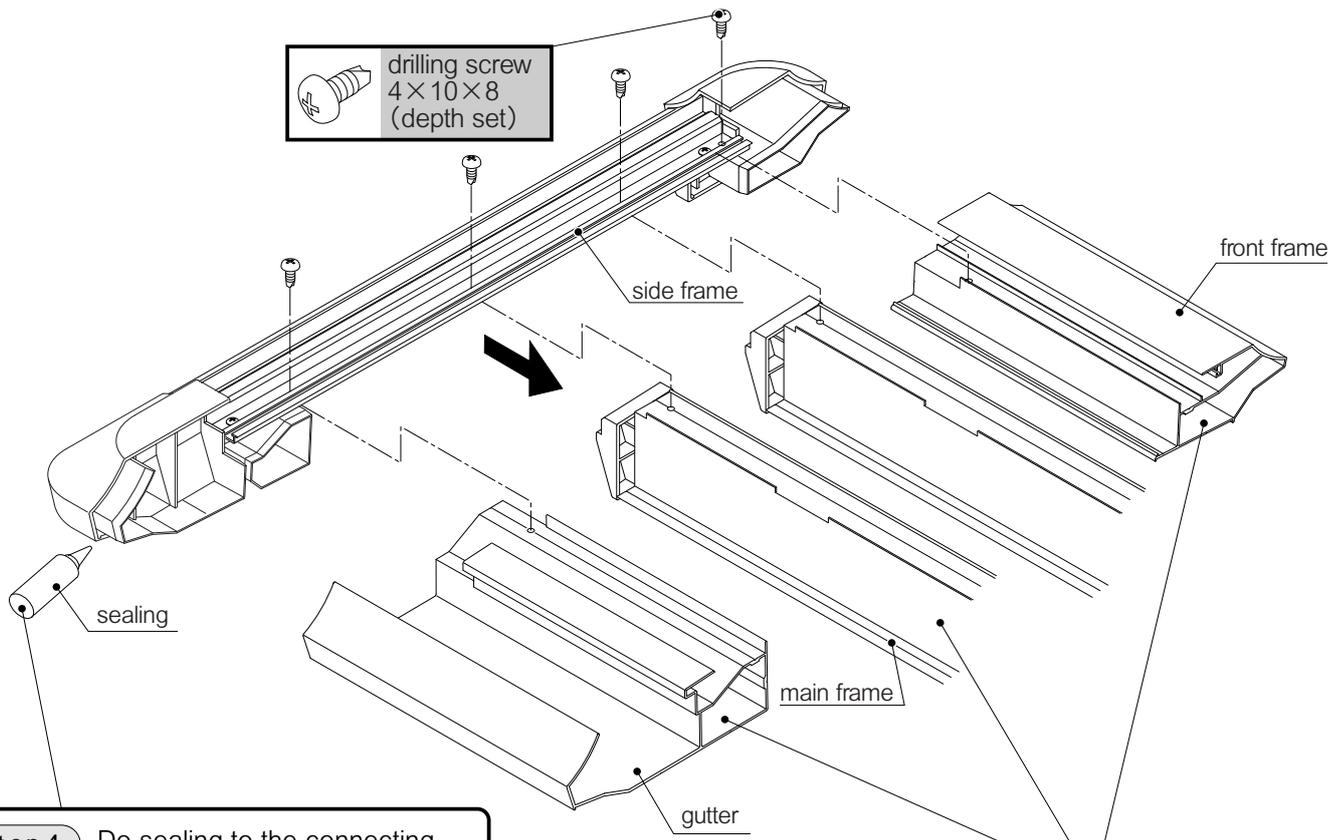
step 2

- Put the sealant to the caps as below figure.

■ Detailed figure of the sealing part

 indicates the sealing part





step 4 Do sealing to the connecting part again.

gutter cap

gutter

Put the sealant to the inside fin

※ In case of MLC DX-series, please do the same things.

step 3

- After attaching the caps fix the side frame to the main frames and the gutter.
- Screw it to the guide hole.

Distinguish between the front side and the gutter side of the side frame by the pitch of holes.

front frame side

side frame

gutter side

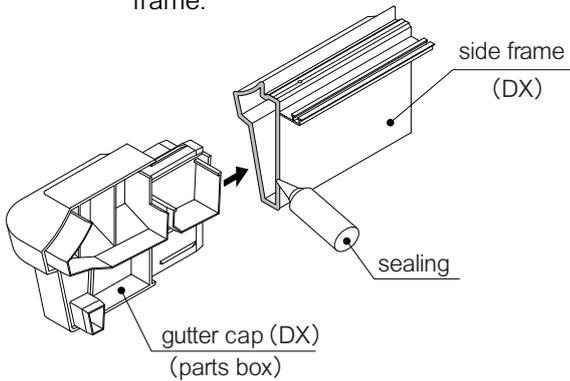
side frame

8

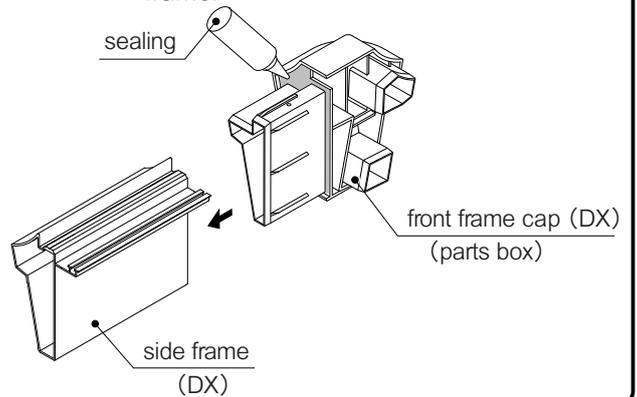
38.5

In case of MLC DX-series

- step 1**
- Put the sealant into the connection point between the side frame and the gutter cap.
 - Attach the gutter cap to the side frame.



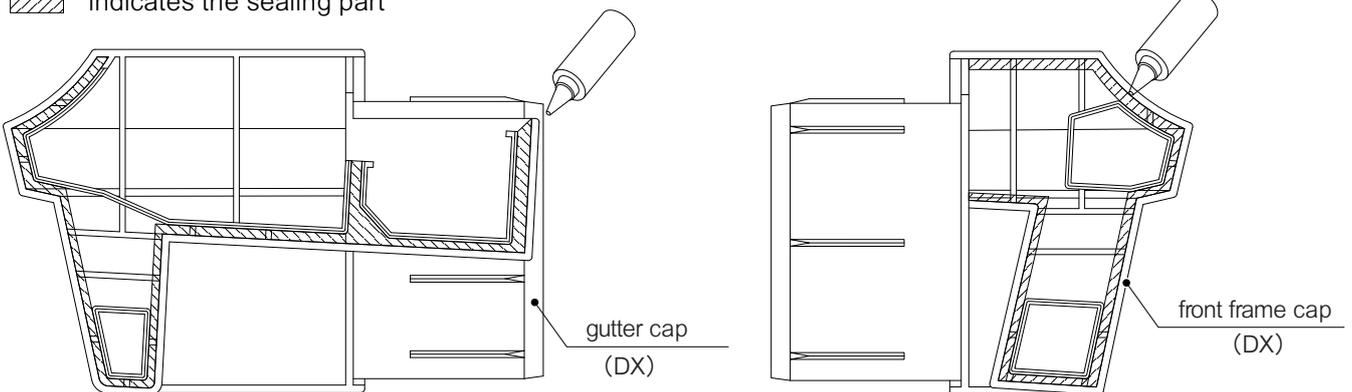
- step 1**
- Put the sealant into the connection point between the side frame and the front frame cap.
 - Attach the front frame cap to the side frame.



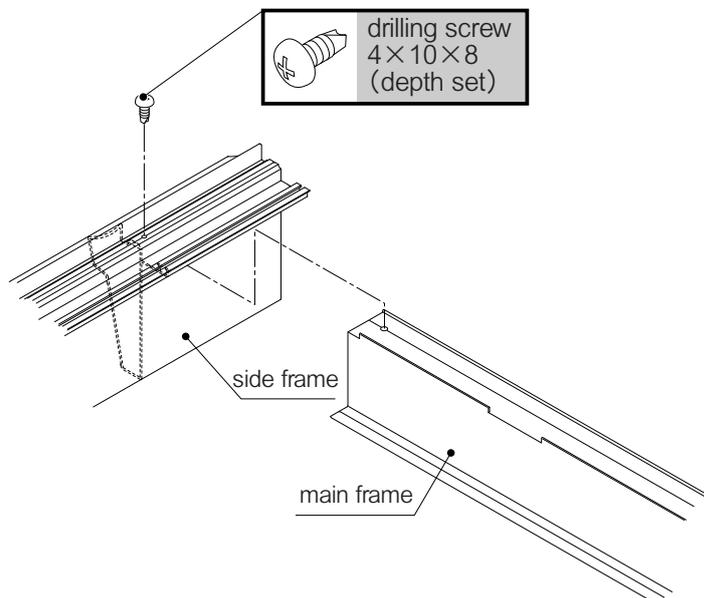
- step 2** Put the sealant to the caps as below figure.

■ Detailed figure of the sealing part

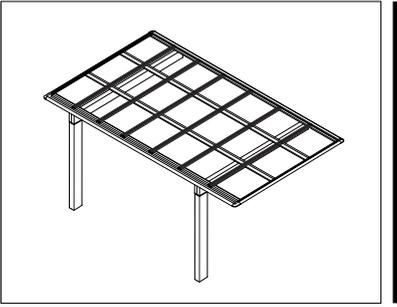
▨ indicates the sealing part



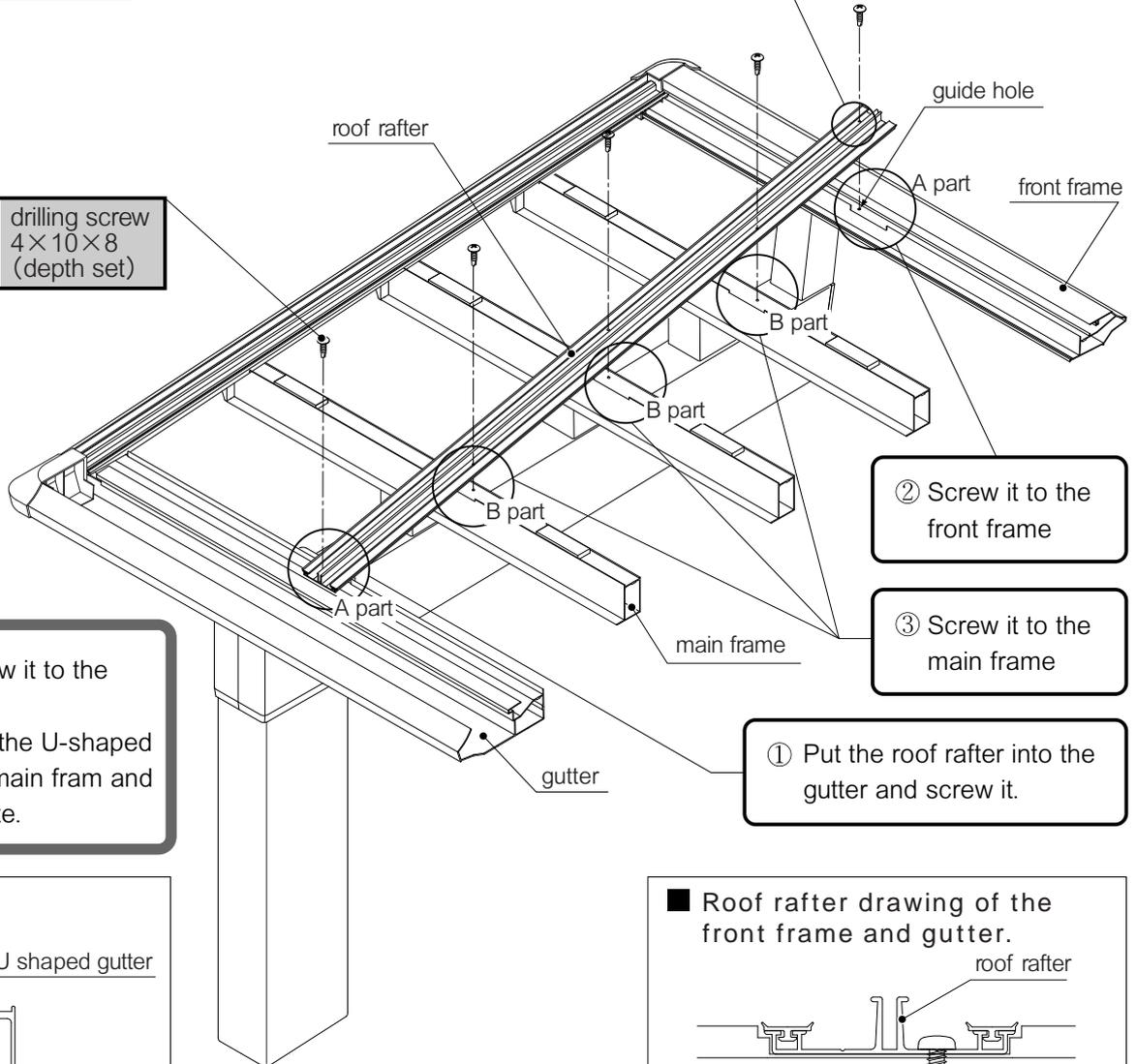
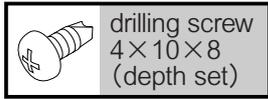
- step 3**
- After attaching the caps fix the side frame to the main frames and the gutter.
 - Screw it to the guide hole.



9 Installation of the roof rafter

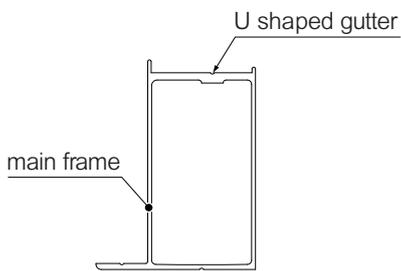


The roof rafter has the direction.

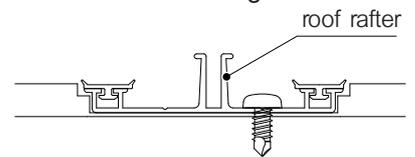


- In A part screw it to the guide hole.
- In B part see the U-shaped gutter of the main frame and screw it on site.

■ B part detail



■ Roof rafter drawing of the front frame and gutter.



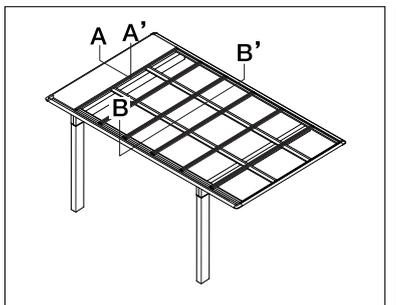
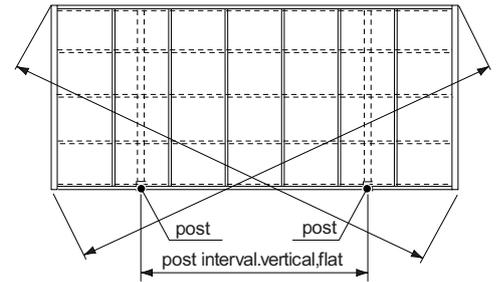
※ Be sure to position the roof rafter into the processing part.

10 Installation of the roof panels

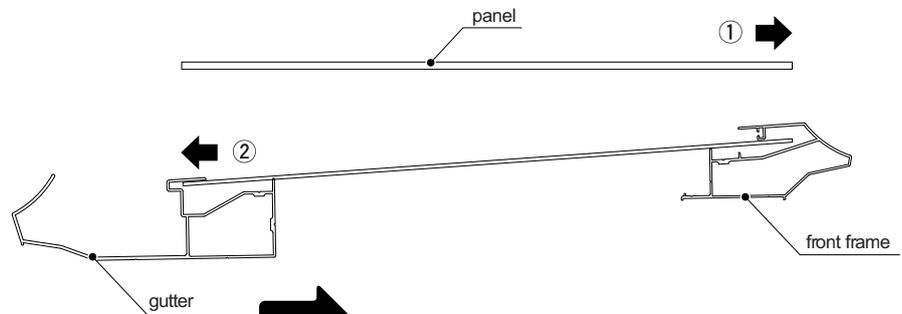
Before installing panel

※ Check post interval, flat, and diagonal dimension of roof
(Regarding M-connect type, adjust after connected)

※ In case diagonal dimension of roof does not come out, loose the screw which fix gutter, main frame, front frame and beam and adjust them.



Insert the panel into the front frame and then into the gutter



note!
When using the polycarbonate mat (SI) and FRP panel, attach the unevenness side down.
Otherwise the panel color is changed by sunlight.

※ When installing panel, please be noted as below

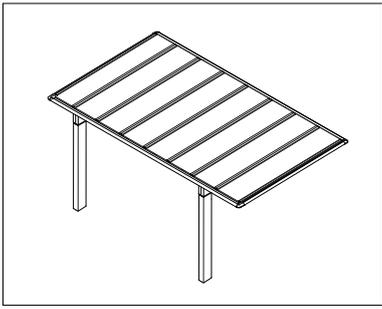
■ A - A' cross-section

■ B - B' cross-section

○ attach to the end by pushing panels

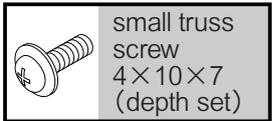
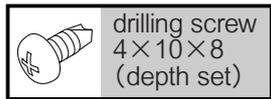
※ Sort the panel equally

11 Installation of the roof retainer



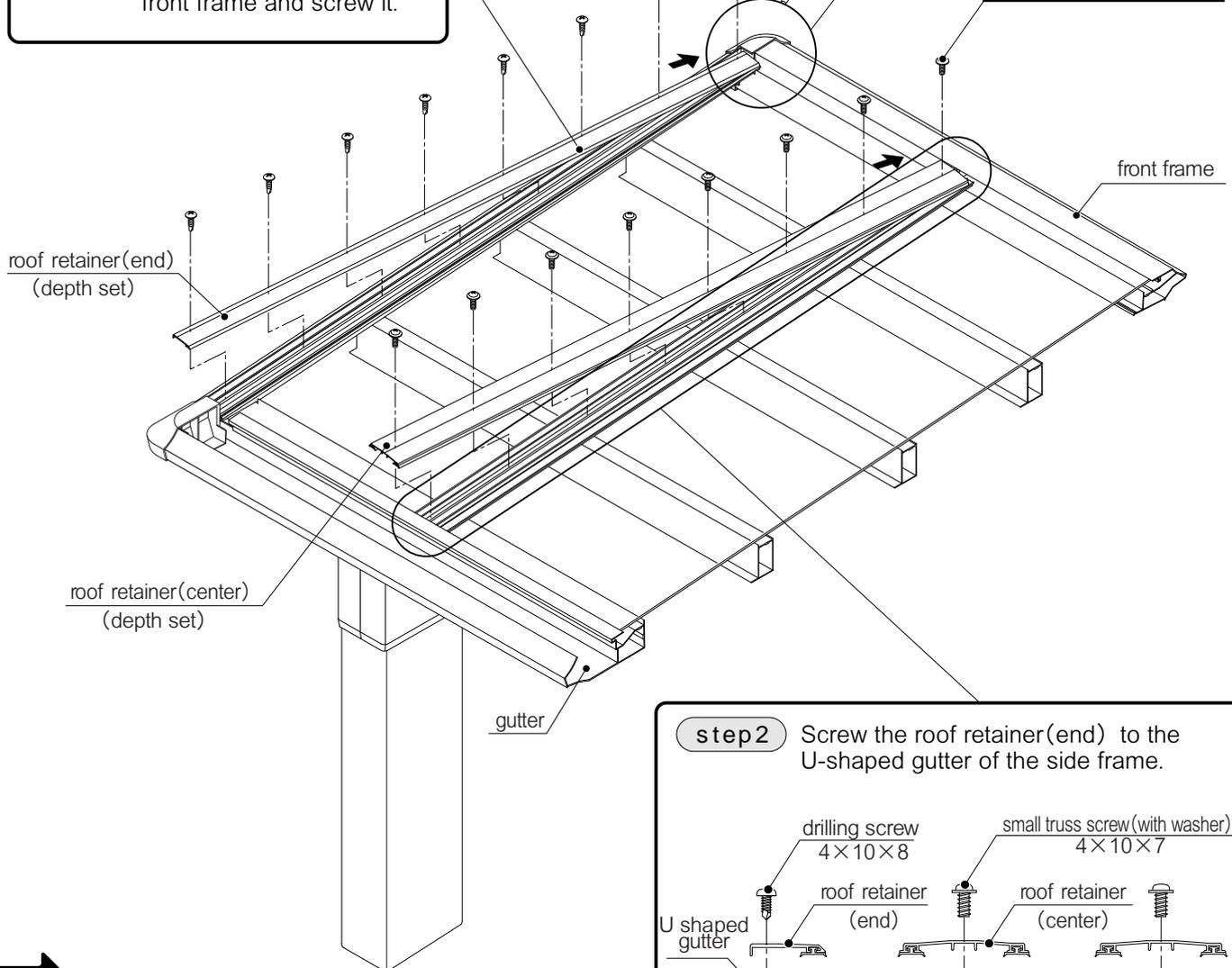
step3 Put the sealant into the connection point between the roof retainer (end) and the front frame as below figure.

■ A part detail



step1 Put the roof retainer into the front frame and screw it.

step3 sealing



step2 Screw the roof retainer (end) to the U-shaped gutter of the side frame.

drilling screw 4×10×8

small truss screw (with washer) 4×10×7

U shaped gutter

roof retainer (end)

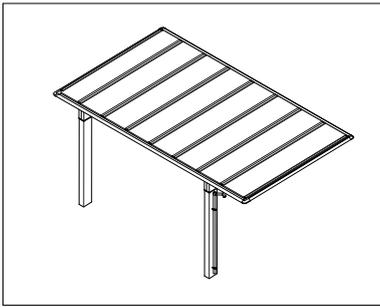
roof retainer (center)

side frame

note!

- If the screw of installing the roof retainer (middle part) is tightened too much, the screw will run idle. (tightening torque less than 15kgf.cm)
- If the screw head leans when installing the roof retainer, it will cause water leakage (water will enter from the screw head clearance), So install it not to make clearance.

12 Attaching the round gutter parts



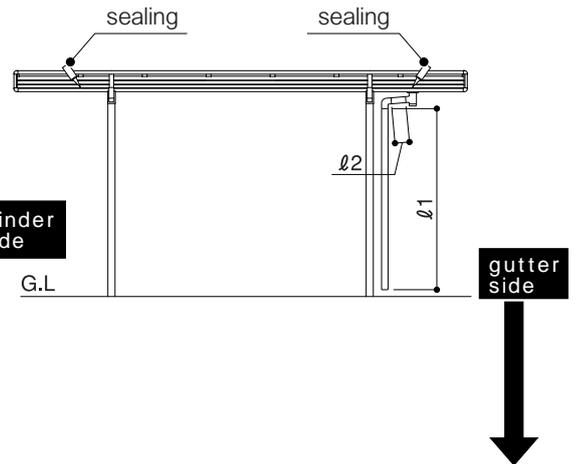
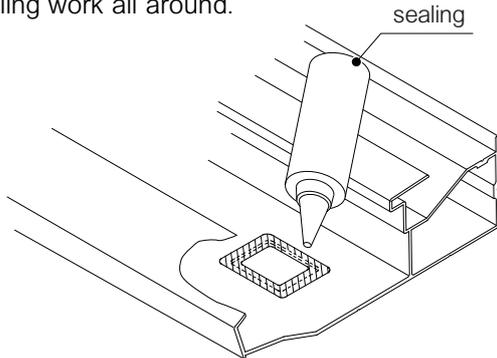
- The length of the round gutter $\varnothing 2$ is different according to the post position. Cut to the proper length onsite.

■ $\varnothing 2$ at the standard post position

W51type : $\varnothing 2=433$
W58type : $\varnothing 2=592$

Blinder side

- Do sealing work all around.

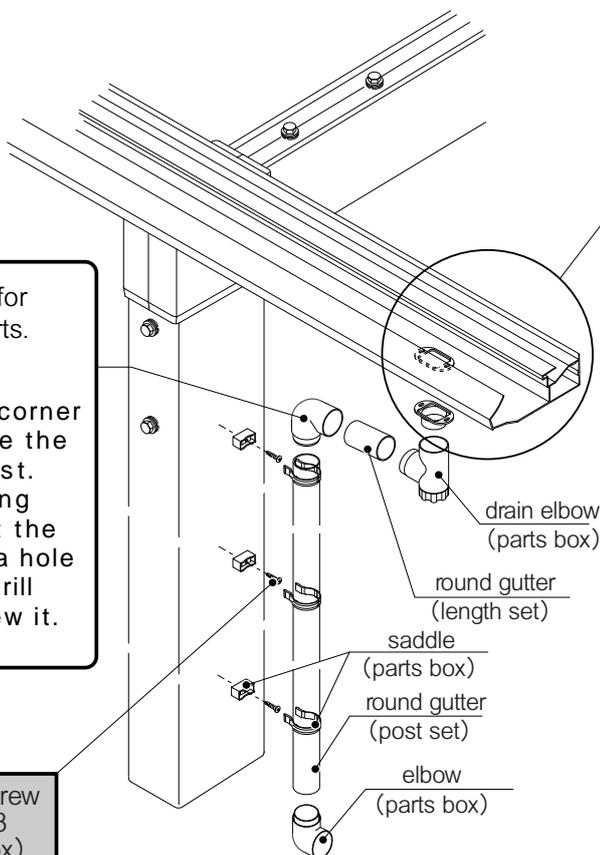


Gutter side

- ③ Use the glue for rain gutter parts.

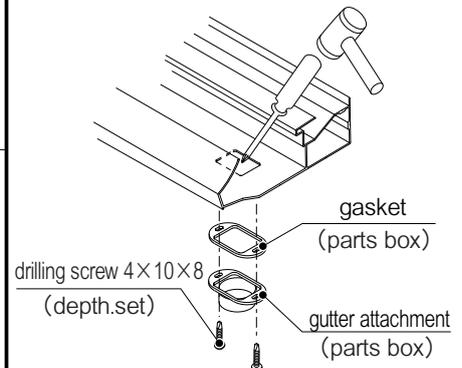
※ There is the corner bracket inside the top of the post. When installing the saddle at the place, make a hole ($\varnothing 3.5$) with drill first, and screw it.

drilling screw
4×19×8
(parts box)

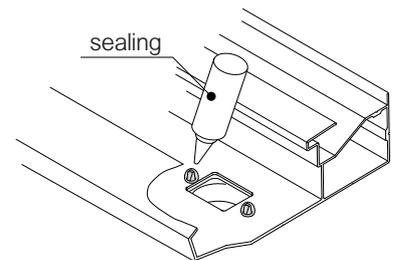


- ① Crush with wood hammer and driver only at the place for installing gasket.

※ In case it could not crush, Use electric drill.



- ② Screw the gasket on the gutter and do sealing work at the screw part.

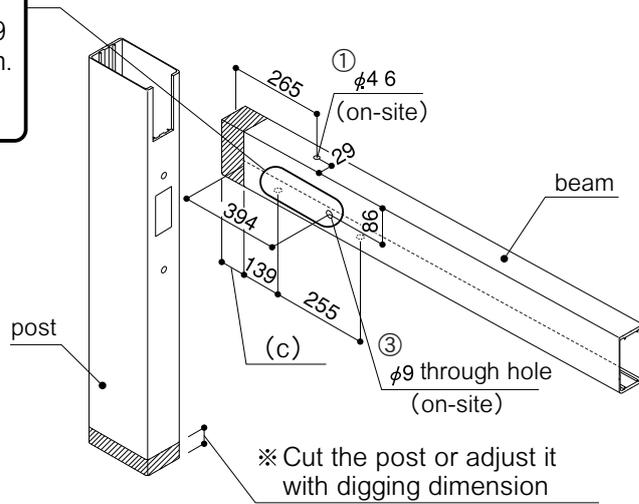
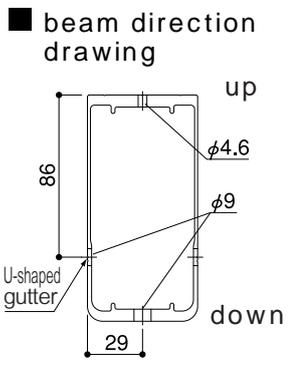


※ Be sure to do sealing work around screws in order to prevent danger when cleaning as well as for water proof

Installation procedures of extension beam type

1 Cut process of the posts and the beams

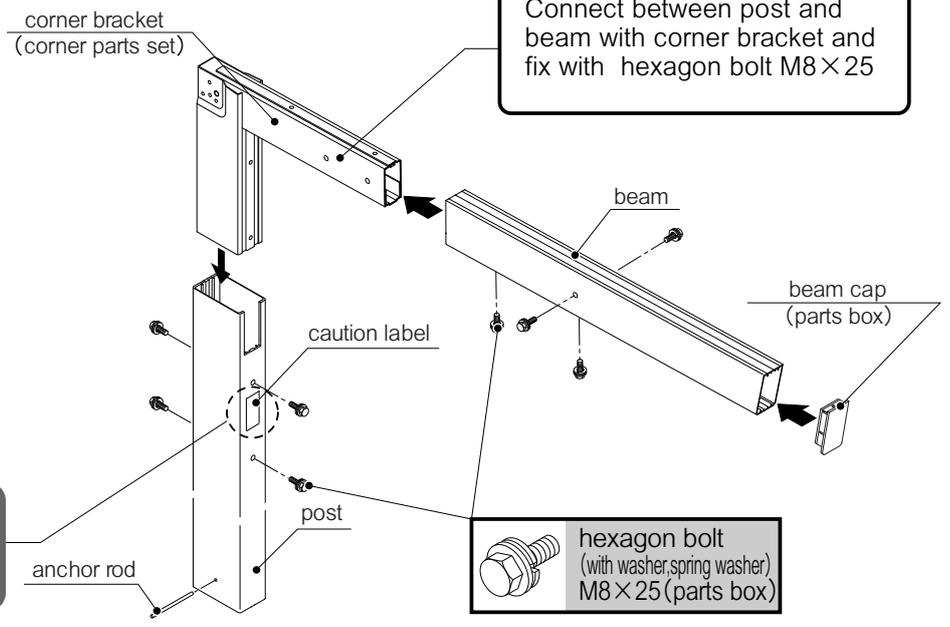
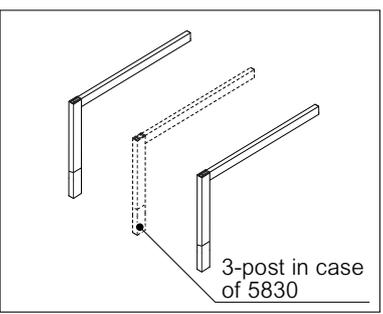
- ① Make a hole $\phi 4.6$ on the beam.
- ③ Make a through hole $\phi 9$ on the side of the beam. Make a hole $\phi 9$ on the down side of the beam.



- ② Cut the posts and the beams to proper length as table below indicates.

post moving dimension (mm) (a)	cutting dimension (mm)	
	post (b)	beam (c)
50 (min)	0	250□
100	1	200□
150	2	150□
200	3	100□
250	3	50□
300 (max)	4	0□
formula	$(a-50) \tan 1^\circ$	$300-a$

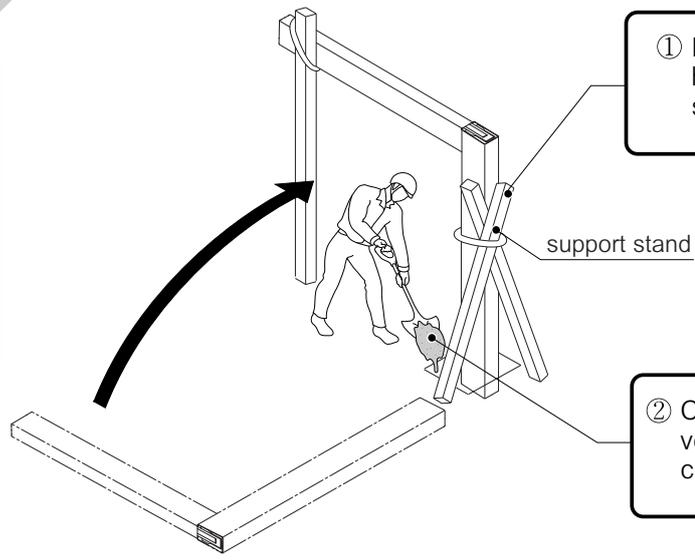
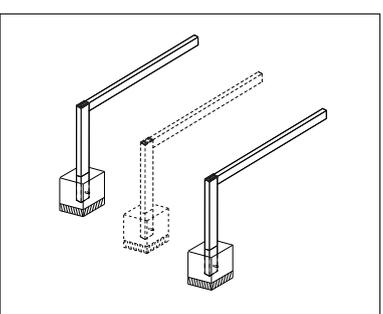
2 Installation of the posts and the beams



Install as the side which the caution label is attached comes inside

hexagon bolt (with washer, spring washer) M8 x 25 (parts box)

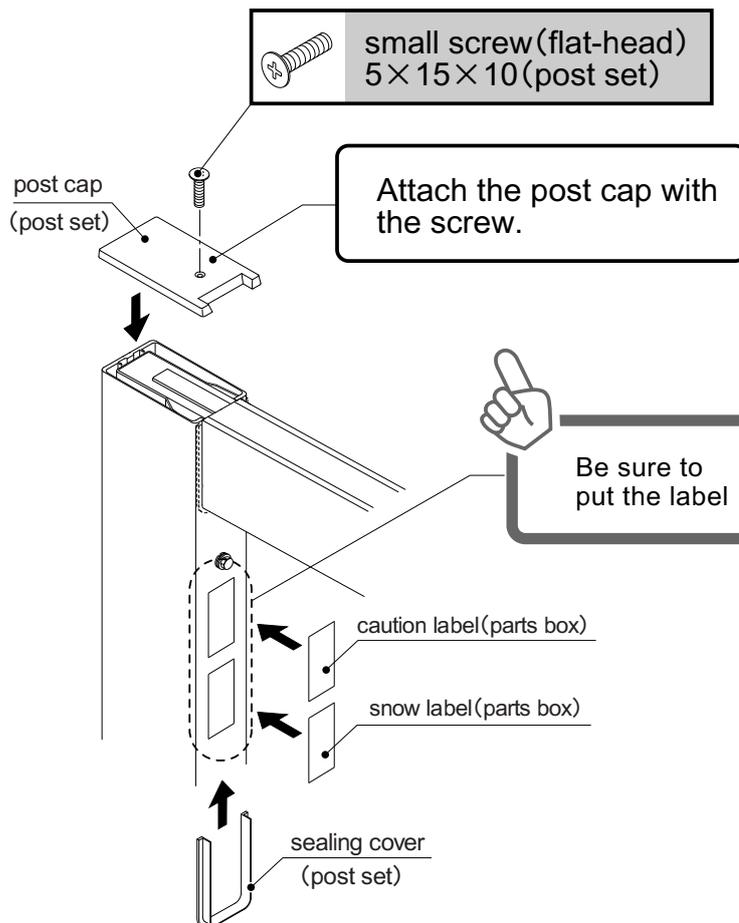
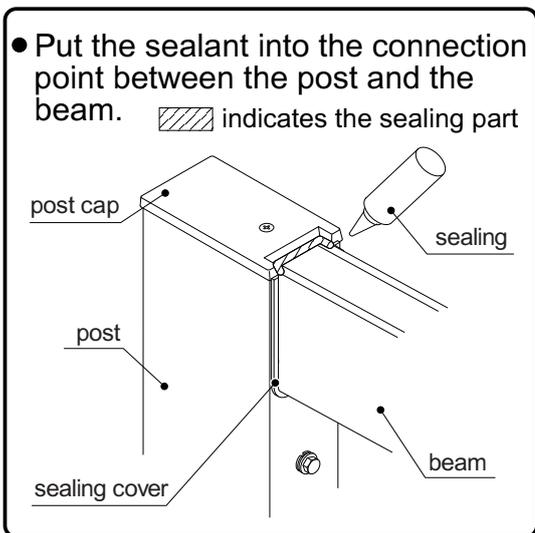
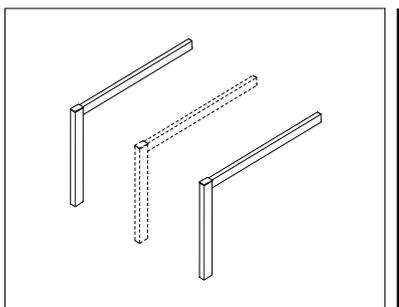
3 Insert the post



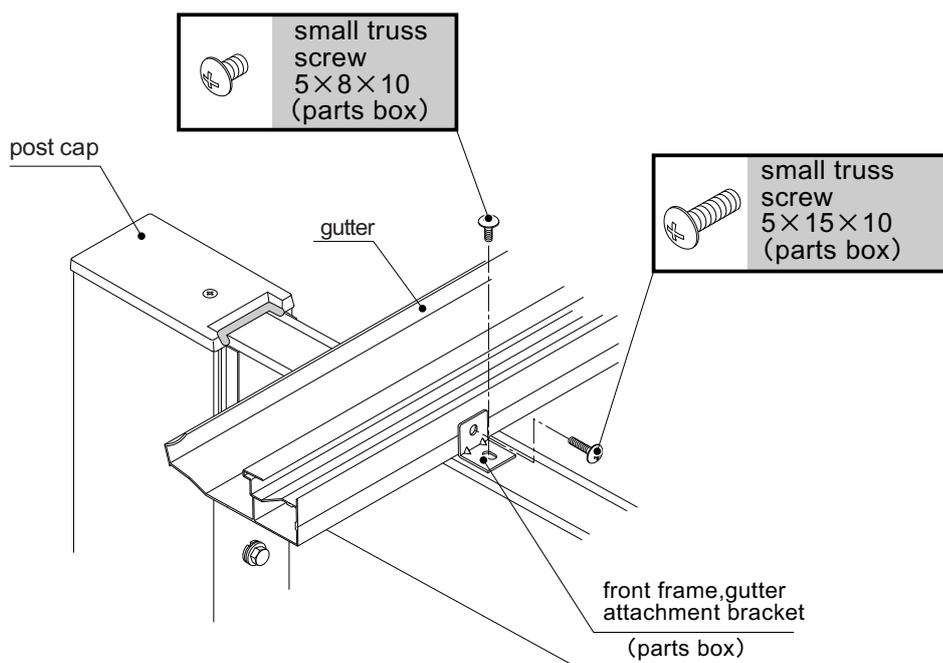
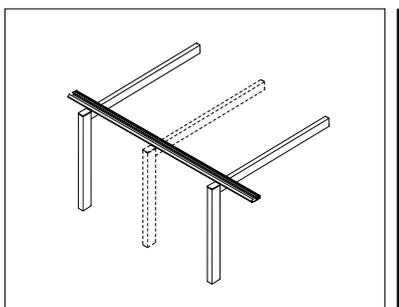
① Insert post into the base hole and fix with support stand not to fall down.

② Check if it is flat and vertical, and cast concrete.

4 Attaching the post caps

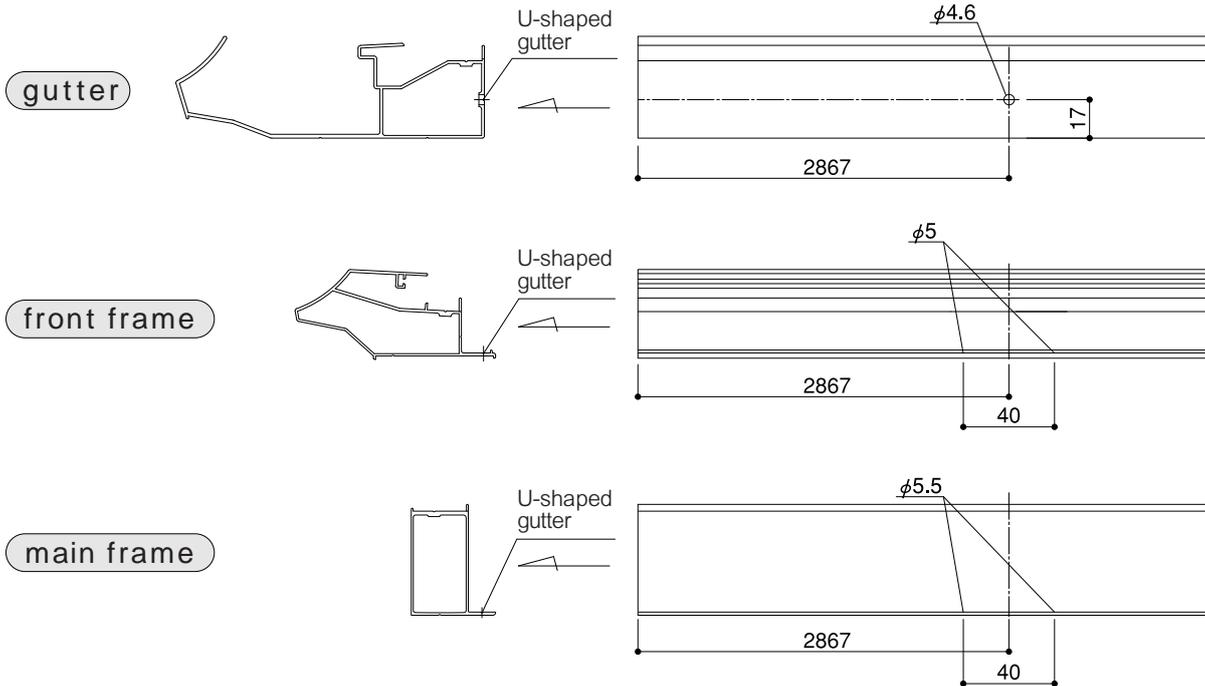


5 Installation of the gutter



In case of Extension beam type 5830

※ In case of Extension beam type 5830, make holes on the gutter, the front frame and the main frame as below figure to fix with the center post.

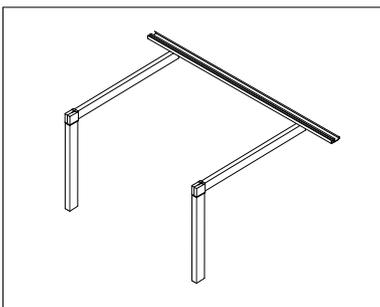


※ After this procedure, refer to "from 5 the installation of the front frame to 12 the installation of the round gutter parts."

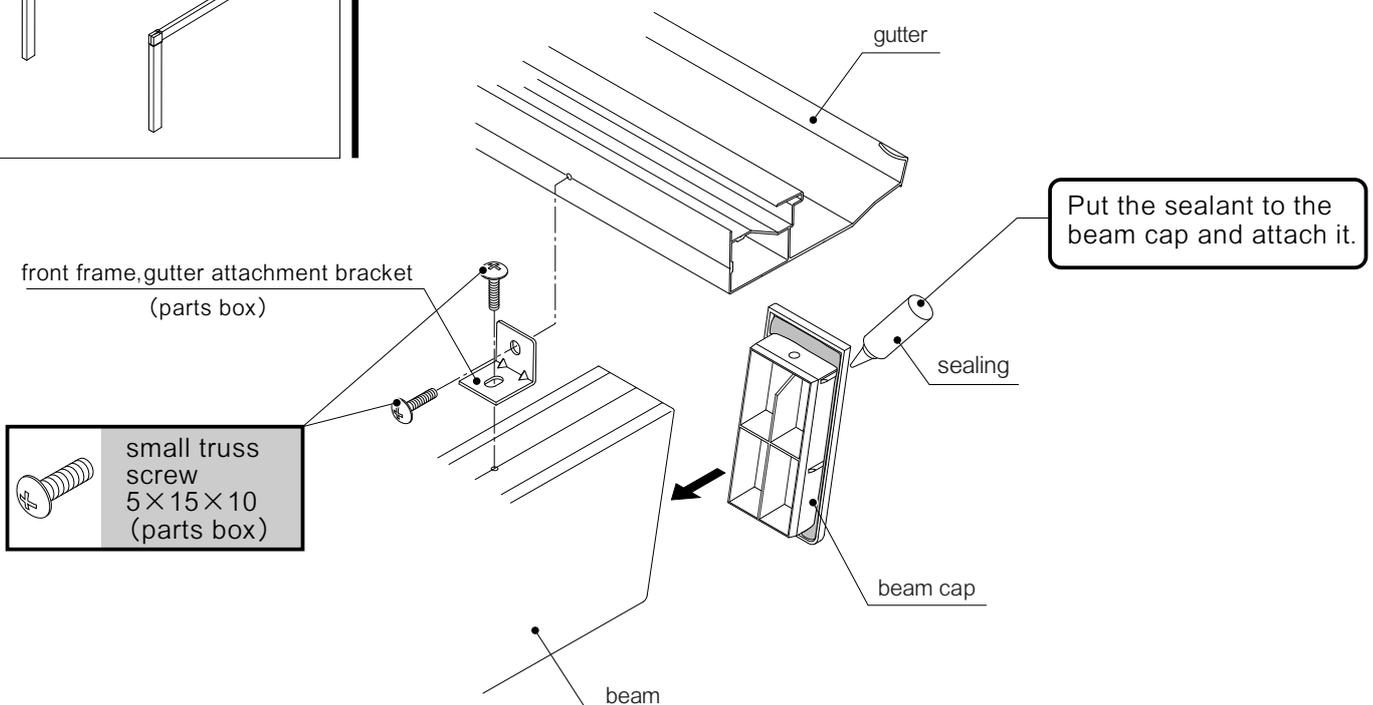
Installation procedures of Front slope type

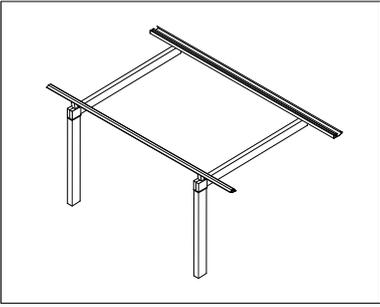
※ Refer to "from 1 the installation of the posts and the beams to 3 Attach the corner caps."

4 Installation of the gutter



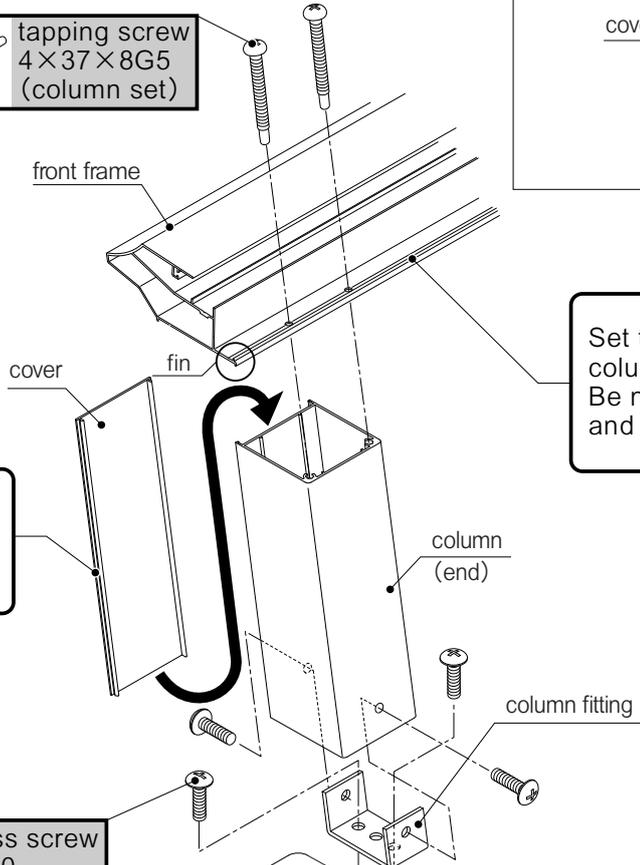
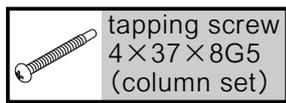
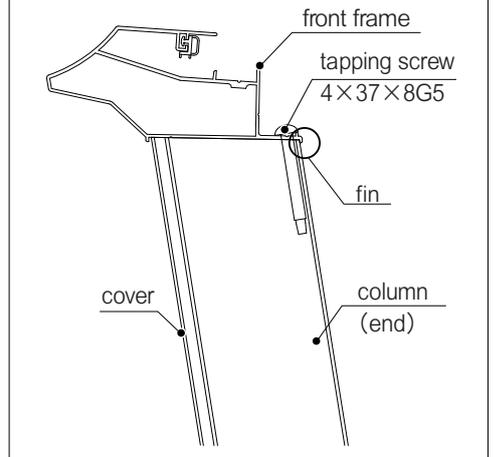
● The picture below is MLC-series. In case of MLC DX-series, refer to figure B(P15) before fixing the gutter.





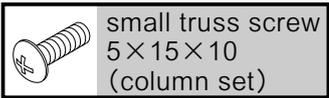
- The picture below is MLC-series. The installation of MLC DX-series, is as same as MLC-series.

■ Detail drawing(MLC-series)

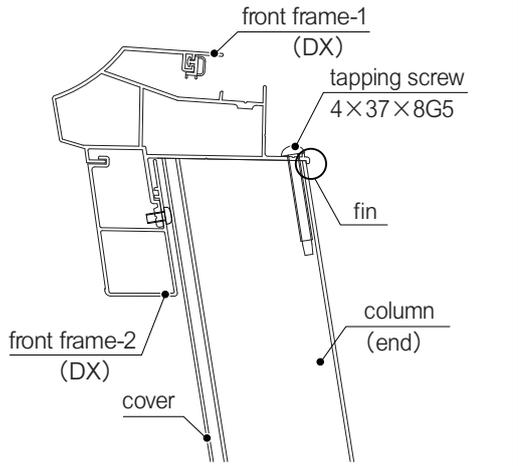


Slide-in the cover into the column before installing the front frame

Set the front frame on the column as above figure. Be noticed the fin position, and screw it with the holes.



■ Detail drawing(MLC DX-series)

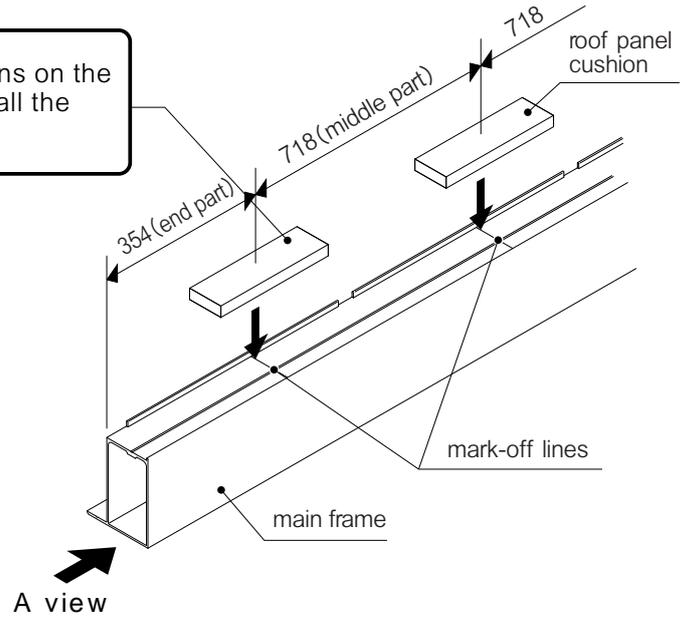
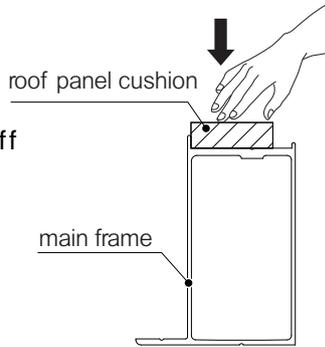


6 Attaching the roof panel cushions

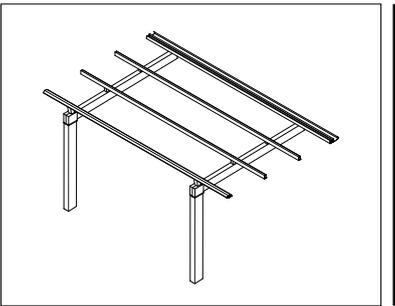
Attach the roof panel cushions on the mark-off lines of top side of all the main frame material

■ A view

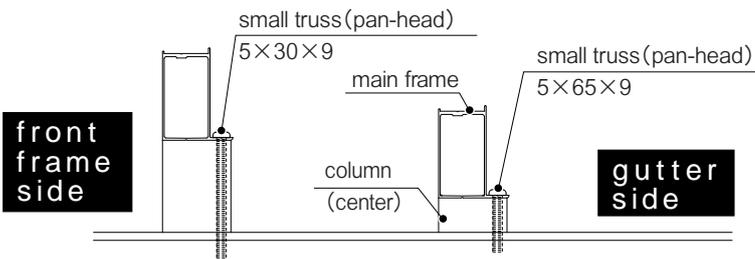
※ When attaching the roof panel cushion, be sure not to be come off



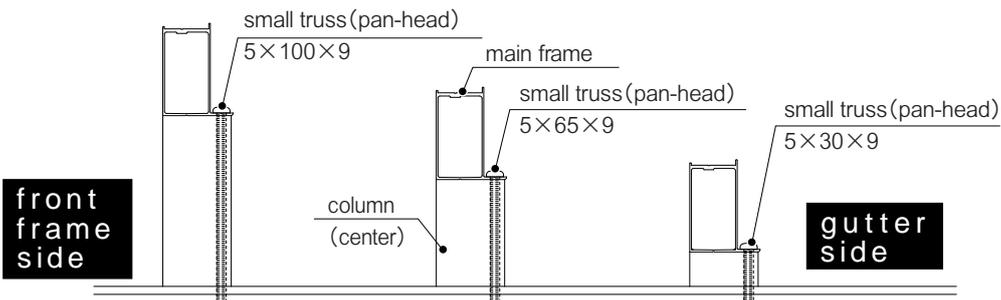
7 Installation of the main frame and the column



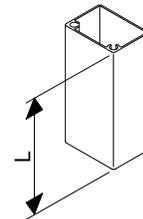
main frame • column figure



D18, D21

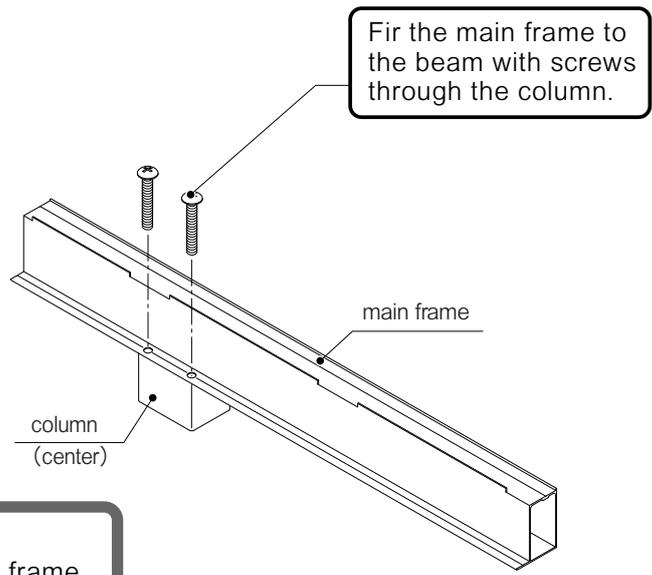
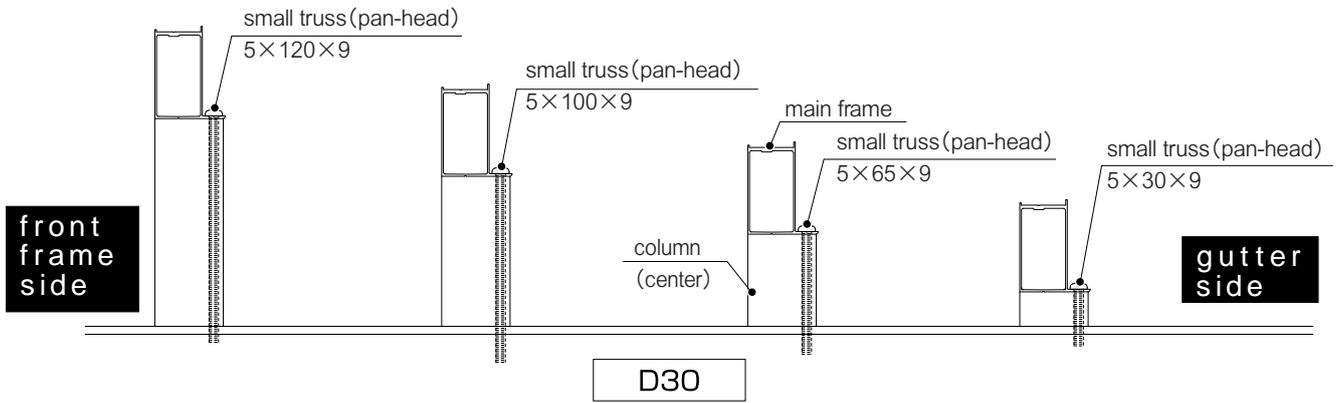


D24, D25, D27

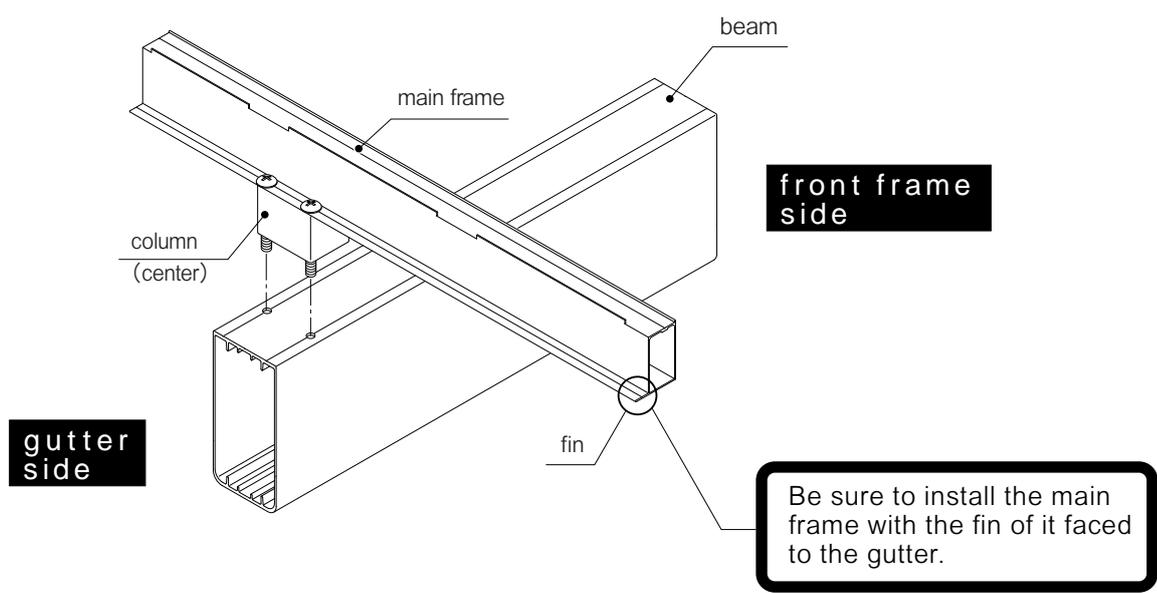


■ Column (center) dimension table

		L
1	D18, D24, D30	18.3
2	D21, D25, D27	22.3
3	D18, D24, D30	48.9
4	D21, D25, D27	56.7
5	D24, D30	79.6
6	D25, D27	90.6
7	D30	110.2

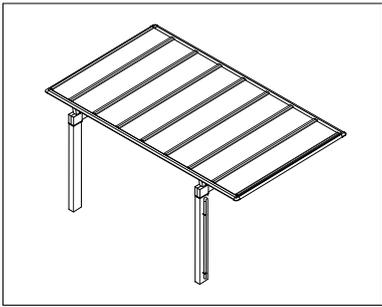


☝ If the column is fixed temporarily to the main frame with vinyl tape etc, it's easy to be installed.



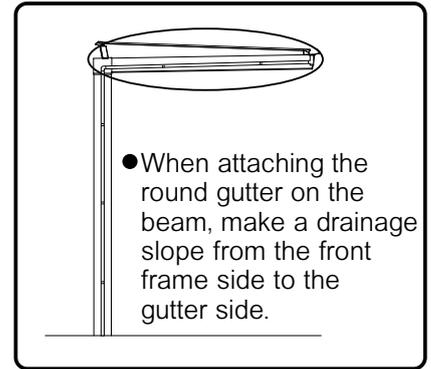
※ After this procedure, refer to "from 8 the installation of the side frame to 11 the installation of the roof retainer."

13 Attaching the round gutter parts



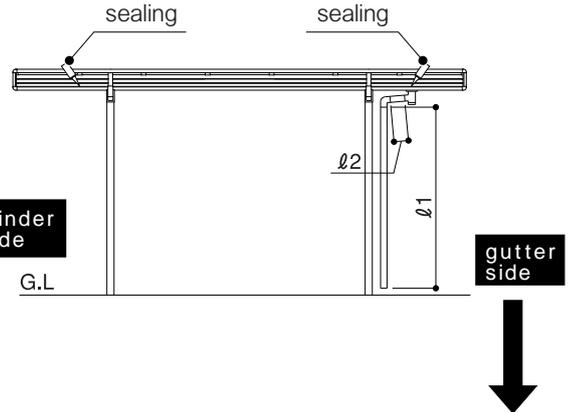
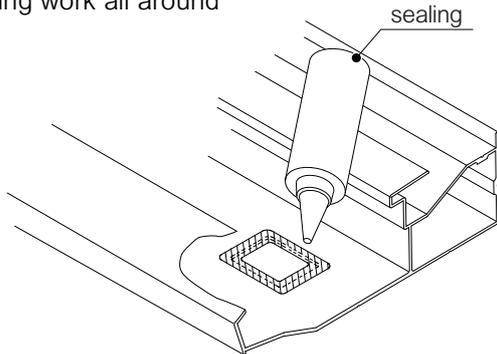
The length of the round gutter $\varnothing 2$ is different according to the post position. Cut to the proper length onsite.

- $\varnothing 2$ at the standard post position
- W51type : $\varnothing 2=433$
- W58type : $\varnothing 2=592$



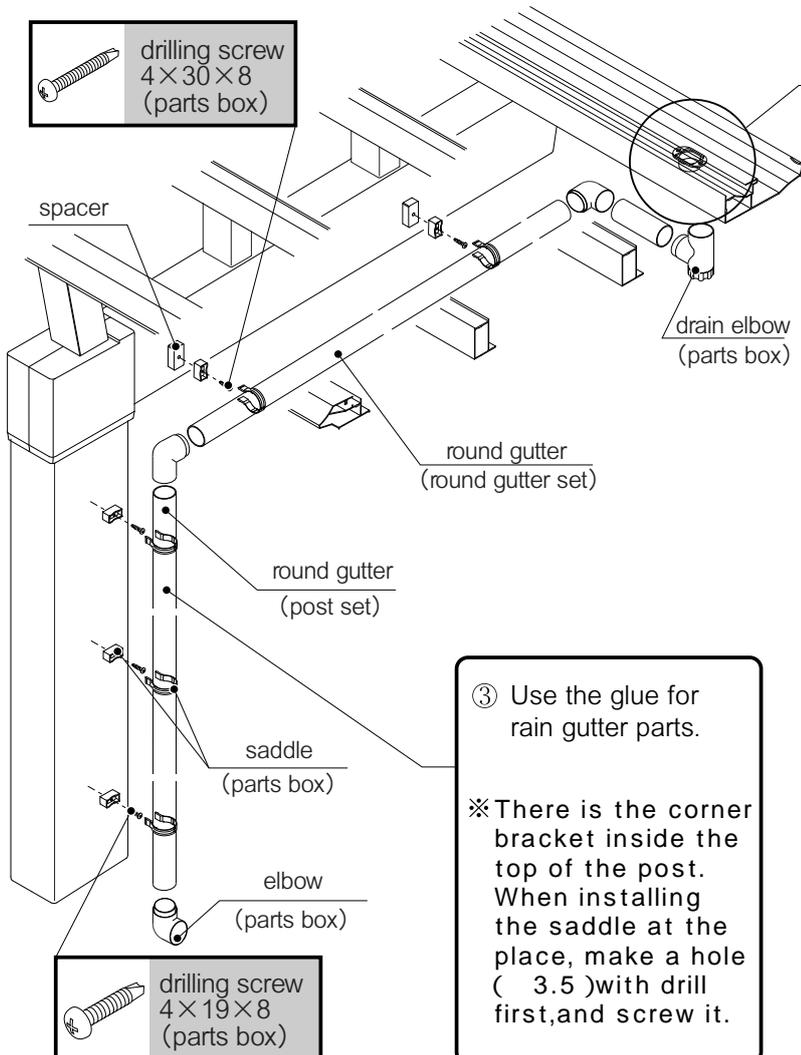
Blinder side

- do sealing work all around



Gutter side

- drilling screw
4×30×8
(parts box)



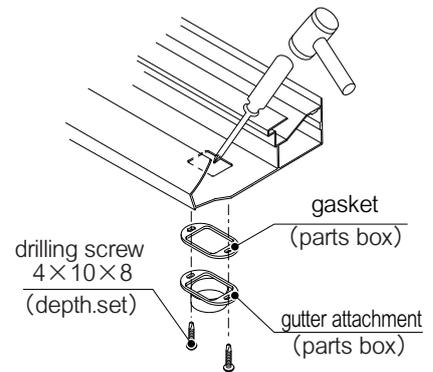
- drilling screw
4×19×8
(parts box)

- ③ Use the glue for rain gutter parts.

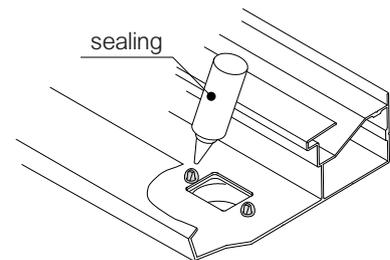
※ There is the corner bracket inside the top of the post. When installing the saddle at the place, make a hole (3.5)with drill first, and screw it.

- ① Crush with wood hammer and driver only at the place for installing gasket.

※ In case it could not crush, Use electric drill.



- ② Screw the gasket on the gutter and do sealing work at the screw part.

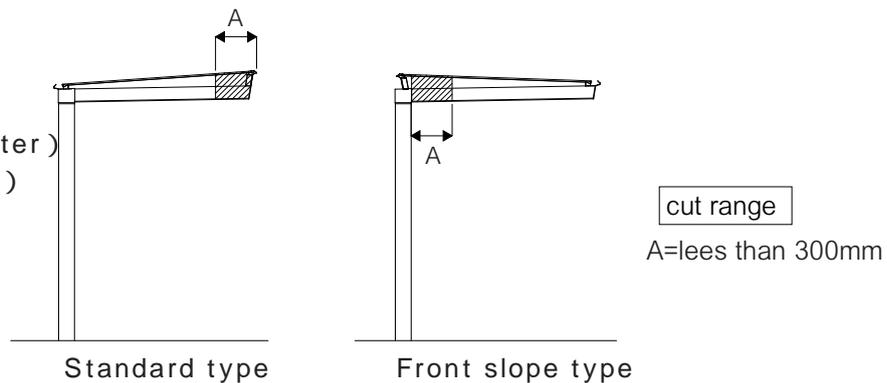


※ Be sure to do sealing work around screws in order to prevent danger when cleaning as well as for water proof

14 Cutting procedures of Depth direction

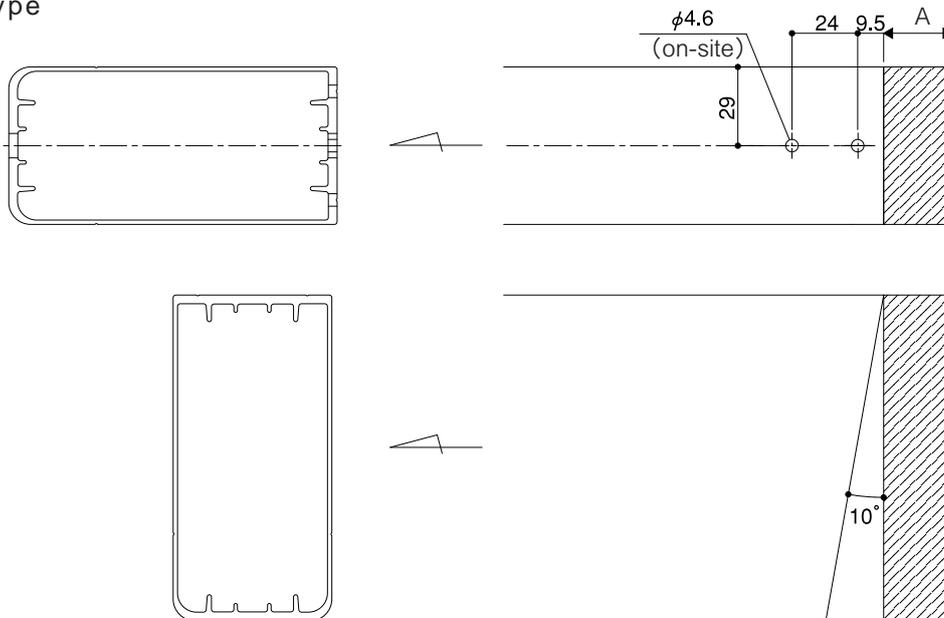
- In case of cutting depth direction, be sure to cut from the front frame side.
According to the cutting length of the roof, cut and process each materials and panels.

1. Cutting the beams
2. Cutting the side frames
3. Cutting the roof rafters
4. Cutting the roof retainers(center)
5. Cutting the roof retainers(end)
6. Cutting the roof panels

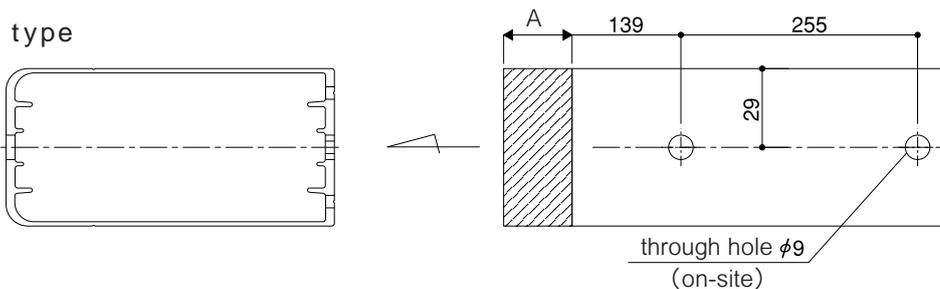


1. Beam processing

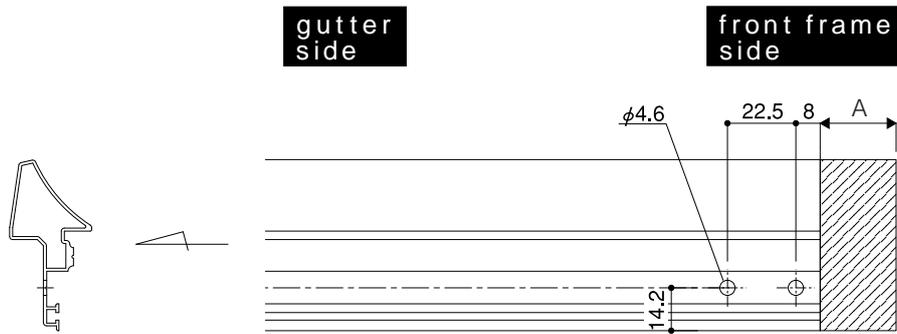
■ Standard type



■ Front slope type



2.Side frame processing



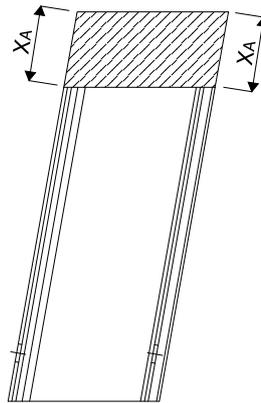
3.Column processing

Reference

Roof cutting dimension A	Column cutting dimension X_A
100	5.3

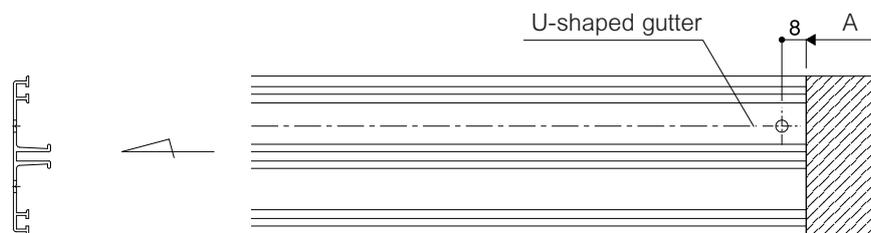
Cutting dimension formula

$$X_A = \frac{A}{100} \times 5.3$$



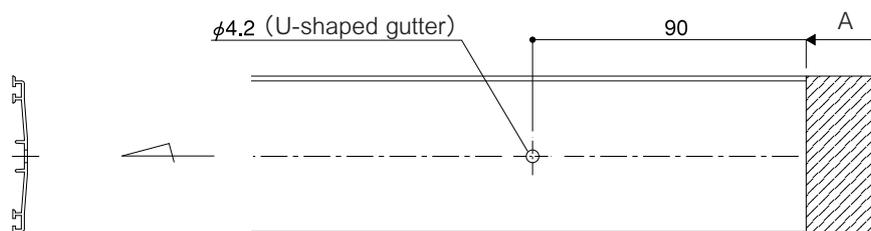
4.Roof rafter processing

- Cut the materials as the same length as the cutting length of the roof (A) .



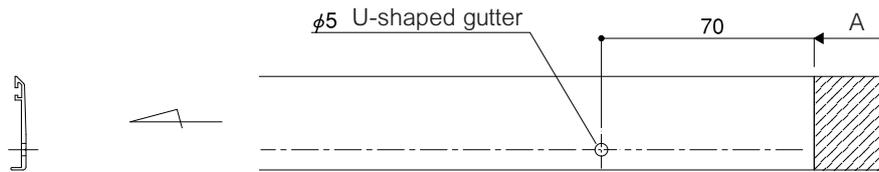
5.Roof retainer(center) processing

- Cut the materials as the same length as the cutting length of the roof (A) .



6. Roof retainer (end) processing

- Cut the materials as the same length as the cutting length of the roof (A) .



7. Roof panel cutting

- Cut the panels as the same length as the cutting length of the roof (A) .

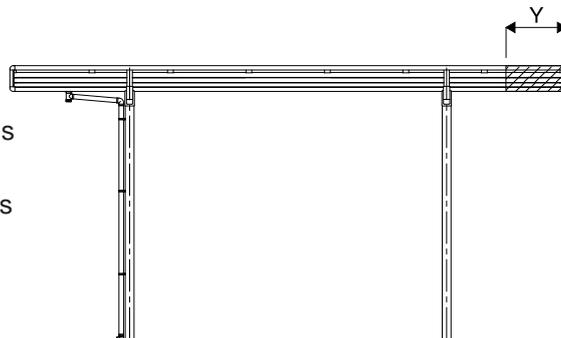


※ After processing, refer to "from **1** the installation of the post and the beam to **12** Attach the round gutter parts"

15 Cutting procedures of Length direction

- The panel span is 718mm. In case of cutting length direction, cutting length of the roof(Y) in multiples of 718mm is recommended.
Cut the materials from opposite side of the round gutter installation.

1. Cutting of the front frames
2. Cutting of the gutter
3. Cutting of the main frames
4. Cutting of the panels



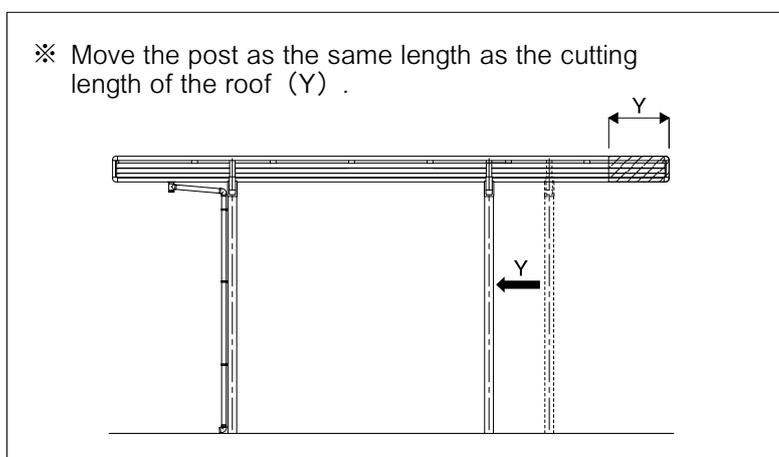
cut range

B=less than 650mm
It can't be cut from 465mm to 535mm for installing gasket.

reference

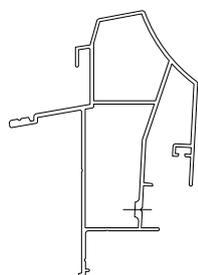
$$Y=718xn + B$$

(n=number of panel pitch)

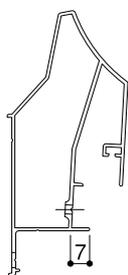


1. Front frame processing

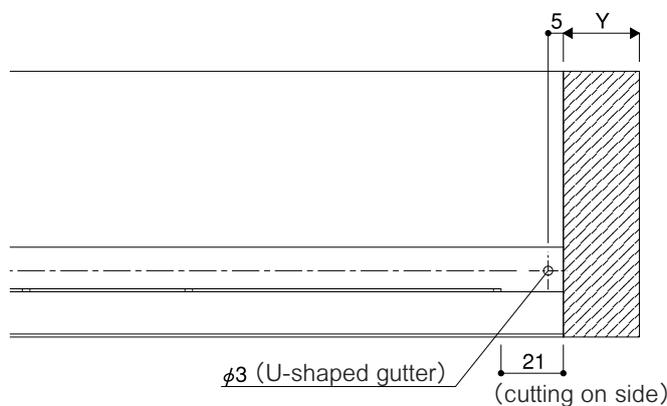
- Cut the materials as the same length as the cutting length of the roof (Y) .



MLC DX-series

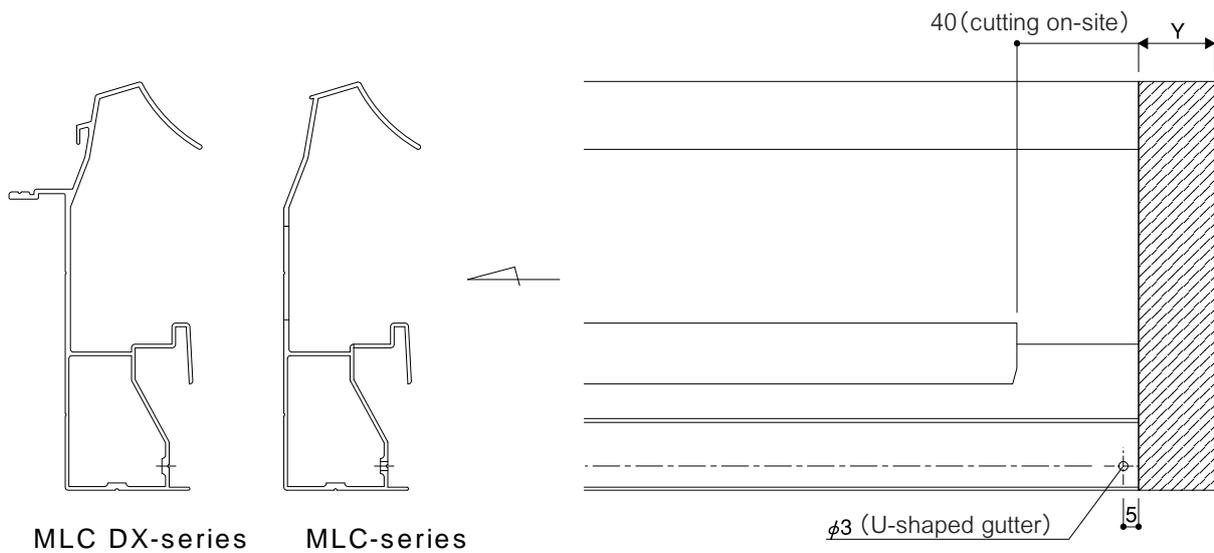


MLC-series



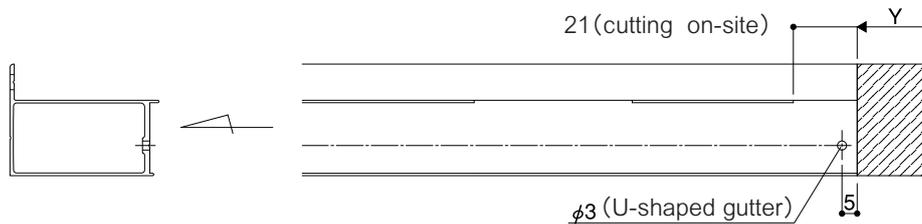
2. Gutter processing

- Cut the materials as the same length as the cutting length of the roof (Y) .
- ※ MLC DX-series is as same as MLC-series.

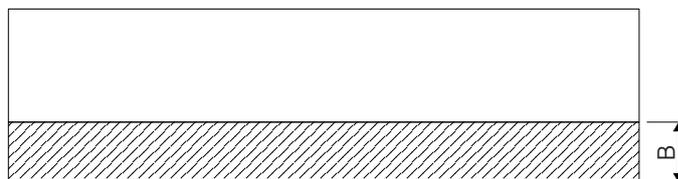


3. Main frame processing

- Cut the materials as the same length as the cutting length of the roof (Y) .



4. Roof panel processing



※ After processing, refer to "from **1** the installation of the post and the beam to **12** Attach the round gutter parts"

