

Terrace roof TR/TF-series 600type Adjustable Post type 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. The precautions provided herein contain important information to ensure product performance, function, strength and safety. Please be sure to follow them during construction.

- 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 this manual to the owner after construction.

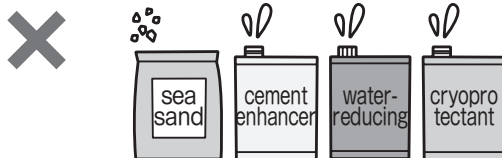
Precautions during installation

- Do not change or remodel it for another purpose except terrace roof.
- This product is for general areas. It has a snow accumulation strength of 600N/m²(61.2kg/m²), which corresponds to 20cm of fresh snowfall (specific weight 0.3). Do not install in heavy snow area.
- This product can be installed on three-story or less. Please do not install on more than three-story.
- Do not install it in the place where snow slides down from the building roof directly or strong wind blow up this terrace roof.
- Standard installation of this product is installing on wooden body. When installing on the reinforced concrete structure or steel structure except wooden house, please install by using optional parts and screws.
- Please check the house construction drawing and wall thickness before installation so that rear frame install firmly in the right position of the house structural reinforcing materials (reinforced post, crossbeam, etc.). Do not install on the mortar part by using plug anchors etc.
- Position the posts not to affect underground objects (water supply, drain pipes, etc.).
- When moving the posts, please follow the company specifications.
- Install it so that the exhaust of hot-water supply, heating and/or the car do not hit directly to the products and do not retain around products. There is a possibility that the surface abnormality occurs as the coating film stripping.

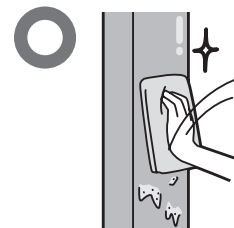
Precautions during construction

- Follow the instructions and be sure that all the specified screws and bolts for assembly are tightened securely. Please tighten the screws not to lean against the installation face.
- Tighten the M8 bolts at approx. 13Nm (130kgfcm) tightening torque.
- Do not use anything other than the specified parts or optional parts.
- The foundation should comply with or exceed dimension specifications.
- Please use the concrete and install the foundations.
- 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.

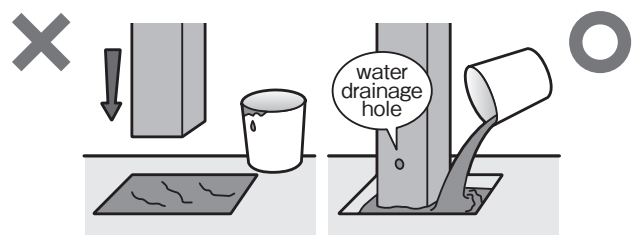
(1) Do not use sea sand for the foundation since it contains salt and may cause corrosion. Do not use a cement enhancer, water-reducing agent or cryoprotectant. They may cause the posts to corrode.



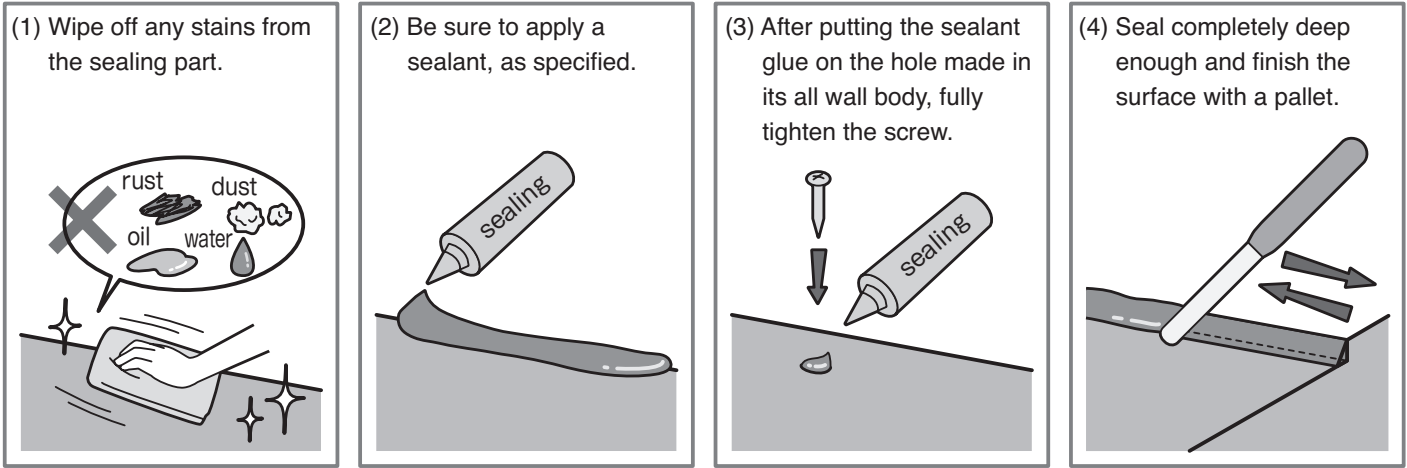
(2) Immediately wipe off any mortar or stains from the surface of aluminum parts since they may cause corrosion.



(3) Be sure to provide gravel for the foundation to allow drainage, insert water drainage holes (φ5) 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.



- 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 dint.
- Be sure to explain product operation procedures, maintenance and inspection methods to the owner.

Necessary tools and materials for installation

- Electric drill, Drill, Tapping drill (M5)
 - Cropper or Saw
 - Ratchet wrench, Adjustable end wrench
 - Foundation materials (Cement, Aggregate, etc)
 - Electric screwdriver
 - Sealant, Caulk gun, Pallet, Back-up materials, Glue
 - Measure, Level, Plumb bob, Cutter, Pillar, Plastic hammer
- Please prepare tools and materials as needed.

- marks indicate making holes on-site. Please make holes referring the manual.
- marks indicate doing sealing work. Please do sealing work referring the manual.

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




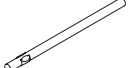

Drawings 34~36

Packaging detail

- Please open the captioned carton and check all contents in advance.
- Please check the parts defective or damage.
- After opening the carton box, please stock not to deface the products.
- We packed some extra screws in the parts box. (X) number is necessary quantity for installation.

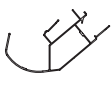


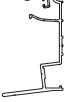

■ Post set

● part (M: Standard post, L: Long post)

Shape name	Materials		Parts					
								
Parts ID	post	post fixing part A (end) GB8631	post fixing part B (end) GB8633	post fixing part A (middle) GB8632	post fixing part B (middle) GB8634	small truss screw 5×10×10	anchor rod GA0073	round gutter GA4923
TRH●-2	2	2	—	—	—	9(8)	2	1
TRH●B-2	2	—	2	—	—	9(8)	2	1
TRH●-1	1	—	—	1	—	5(4)	1	1
TRH●B-1	1	—	—	—	1	7(6)	1	1

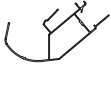




■ Width set (upside installation)

□ part (R: R type, F: F type)


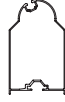





Shape name	Materials				Parts
					
Parts ID	R type front frame	F type front frame	rear frame A	rear frame B	coach screw (sems) 6×90 ES0445
T□MM-60A,-200A	1	—	1	—	3
T□MM-90A,-300A	1	—	1	—	4
T□MM-12A,-400A	1	—	1	—	5
T□MM-15A,-500A	1	—	1	—	6
T□MM-18A	1	—	1	—	7
T□MM-60BH,-200BH	1	—	—	1	5
T□MM-90BH,-300BH	1	—	—	1	7
T□MM-12BH,-400BH	1	—	—	1	9
T□MM-15BH,-500BH	1	—	—	1	11
T□MM-18BH	1	—	—	1	13

■ Width set (downside installation)

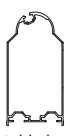

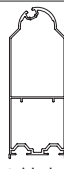




□ part (R: R type, F: F type)

Shape name	Materials		Parts		
					
Parts ID	R type front frame (downside roof panel installation)	F type front frame (downside roof panel installation)	rear frame A (downside roof panel installation)	coach screw (sems) 6×90 ES0445	Tight rubber GB4275
T□MU-60A,-200A	1	—	1	3	4
T□MU-90A,-300A	1	—	1	4	6
T□MU-12A,-400A	1	—	1	5	8
T□MU-15A,-500A	1	—	1	6	10

■ Adjustable beam set (depth 30 to 80)


Shape name Parts ID	Materials			Parts			
	 adjustable beam A	 adjustable beam B	 adjustable beam C	 rafter connecting parts GB8621	 side frame connecting parts GB8624	 drilling screw 4×13×8 ES0063	 hexagon bolt W sems M6×15
TRKM-60A, -200A	1	—	—	2	2	3(2)	5(4)
TRKM-60B, -200B	—	1	—	2	2	3(2)	5(4)
TRKM-60C, -200C	—	—	1	2	2	3(2)	5(4)
TRKM-90A, -300A	1	—	—	4	2	3(2)	7(6)
TRKM-90B, -300B	—	1	—	4	2	3(2)	7(6)
TRKM-90C, -300C	—	—	1	4	2	3(2)	7(6)
TRKM-12A, -400A	1	—	—	6	2	3(2)	9(8)
TRKM-12B, -400B	—	1	—	6	2	3(2)	9(8)
TRKM-12C, -400C	—	—	1	6	2	3(2)	9(8)
TRKM-15B, -500B	—	1	—	8	2	3(2)	11(10)
TRKM-15C, -500C	—	—	1	8	2	3(2)	11(10)
TRKM-18C	—	—	1	10	2	3(2)	13(12)

■ Adjustable beam set (R: depth 90 to 12, F: depth 90 to 15)

Shape name Parts ID	Materials			Parts			
	 adjustable beam C	 adjustable beam D	 adjustable beam E	 rafter connecting parts GB8621	 side frame connecting parts GB8624	 drilling screw 4×13×8 ES0063	 Hexagon bolt W sems M6×15
TRKM-60CH, -200CH	1	—	—	6	2	3(2)	9(8)
TRKM-60DH, -200DH	—	1	—	6	2	3(2)	9(8)
TRKM-60EH, -200EH	—	—	1	6	2	3(2)	9(8)
TRKM-90CH, -300CH	1	—	—	10	2	3(2)	13(12)
TRKM-90DH, -300DH	—	1	—	10	2	3(2)	13(12)
TRKM-90EH, -300EH	—	—	1	10	2	3(2)	13(12)
TRKM-12CH, -400CH	1	—	—	14	2	3(2)	18(16)
TRKM-12DH, -400DH	—	1	—	14	2	3(2)	18(16)
TRKM-12EH, -400EH	—	—	1	14	2	3(2)	18(16)
TRKM-15CH, -500CH	1	—	—	18	2	3(2)	22(20)
TRKM-15EH, -500EH	—	—	1	18	2	3(2)	22(20)
TRKM-18DH	—	1	—	22	2	3(2)	26(24)
TRKM-18EH	—	—	1	22	2	3(2)	26(24)


■ Furring strip set (depth 30 to 80)

○ part (E: rafter pitch 909mm type, M: rafter pitch 1000mm type)

Shape name	Materials
	
Parts ID	furring strip
TRN-○-1	1
TRN-○-2	2
TRN-○-3	3
TRN-○-4	4
TRN-○-5	5
TRN-○-6	6
TRN-○-8	8
TRN-○-9	9
TRN-○-10	10
TRN-○-12	12
TRN-○-15	15
TRN-E-18	18








■ Furring strip set (depth 90 to 15)

○ part (E: rafter pitch 909mm type, M: rafter pitch 1000mm type)

Shape name	Materials
	
Parts ID	furring strip
TRN-○H-2	2
TRN-○H-4	4
TRN-○H-6	6
TRN-○H-8	8
TRN-○H-10	10
TRN-○H-12	12
TRN-○H-16	16
TRN-○H-18	18
TRN-○H-20	20
TRN-○H-24	24
TRN-○H-30	30
TRN-EH-36	36
TRN-EH-40	40




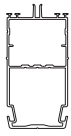



■ Side frame set

□ part (R: R type, F: F type), ■ part (R: R type, S: F type)

Shape name	Materials				Parts					
										
	①	②	①	②	roof retainer (end)		small truss screw 5×10×10		upset bolt M5×12 ES0446	
Parts ID										
①	②	side frame A		side frame B		R type	F type	R type	F type	
T□SM-30	Y■SM-30	right left each 1pc		—		right left each 1pc	2	18(16)	15(14)	2
T□SM-40	Y■SM-40	right left each 1pc		—		right left each 1pc	2	20(18)	18(16)	2
T□SM-50	Y■SM-50	right left each 1pc		—		right left each 1pc	2	24(22)	22(20)	2
T□SM-60	Y■SM-60	right left each 1pc		—		right left each 1pc	2	26(24)	24(22)	2
T□SM-70	Y■SM-70	right left each 1pc		—		right left each 1pc	2	42(40)	40(38)	2
T□SM-80	Y■SM-80	right left each 1pc		—		right left each 1pc	2	46(44)	44(42)	2
T□SM-90	Y■SM-90	right left each 1pc		—		right left each 1pc	2	32(30)	32(30)	2
T□SM-10	Y■SM-10	right left each 1pc		—		right left each 1pc	2	34(32)	34(32)	2
T□SM-11	Y■SM-11	—		right left each 1pc		right left each 1pc	2	38(36)	34(32)	2
T□SM-12	Y■SM-12	—		right left each 1pc		right left each 1pc	2	40(38)	36(34)	2
TFSM-13	YFSM-13	—		right left each 1pc		—	2	—	38(36)	2
TFSM-14	YFSM-14	—		right left each 1pc		—	2	—	40(38)	2
TFSM-15	YFSM-15	—		right left each 1pc		—	2	—	42(40)	2




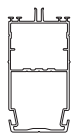



■ Rafter set

□ part (R: R type, F: F type)

Shape name Parts ID	Materials					Parts		
						 small truss screw 5x10x10		 upset bolt M5x12 ES0446
	rafter A	rafter B	rafter C	rafter D	roof retainer	R type	F type	
T□TM-30-3	3	—	—	—	3	29(27)	26(24)	3
T□TM-30-2	2	—	—	—	2	20(18)	18(16)	2
T□TM-30-1	1	—	—	—	1	10 (9)	9 (8)	1
T□TM-40-3	3	—	—	—	3	32(30)	29(27)	3
T□TM-40-2	2	—	—	—	2	22(20)	20(18)	2
T□TM-40-1	1	—	—	—	1	11(10)	10 (9)	1
T□TM-50-3	3	—	—	—	3	41(39)	38(36)	3
T□TM-50-2	2	—	—	—	2	28(26)	26(24)	2
T□TM-50-1	1	—	—	—	1	14(13)	13(12)	1
T□TM-60-3	3	—	—	—	3	44(42)	41(39)	3
T□TM-60-2	2	—	—	—	2	30(28)	28(26)	2
T□TM-60-1	1	—	—	—	1	15(14)	14(13)	1
T□TM-70-3	—	3	—	—	3	72(69)	69(66)	3
T□TM-70-2	—	2	—	—	2	48(46)	46(44)	2
T□TM-70-1	—	1	—	—	1	25(23)	24(22)	1
T□TM-80-3	—	—	3	—	3	79(75)	76(72)	3
T□TM-80-2	—	—	2	—	2	53(50)	50(48)	2
T□TM-80-1	—	—	1	—	1	27(25)	26(24)	1
T□TM-90-5	—	5	—	—	5	89(85)	89(85)	5
T□TM-90-4	—	4	—	—	4	71(68)	71(68)	4
T□TM-90-3	—	3	—	—	3	54(51)	54(51)	3
T□TM-10-5	—	5	—	—	5	95(90)	95(90)	5
T□TM-10-4	—	4	—	—	4	76(72)	76(72)	4
T□TM-10-3	—	3	—	—	3	57(54)	57(54)	3
T□TM-11-3	—	—	—	3	3	66(63)	60(57)	3
T□TM-11-2	—	—	—	2	2	44(42)	40(38)	2
T□TM-12-3	—	—	—	3	3	69(66)	63(60)	3
T□TM-12-2	—	—	—	2	2	46(44)	42(40)	2
TFTM-13-3	—	—	—	3	3	—	66(63)	3
TFTM-13-2	—	—	—	2	2	—	44(42)	2
TFTM-14-3	—	—	—	3	3	—	69(66)	3
TFTM-14-2	—	—	—	2	2	—	46(44)	2
TFTM-15-3	—	—	—	3	3	—	72(69)	3
TFTM-15-2	—	—	—	2	2	—	48(46)	2





■ Connecting rafter set

□ part (R: R type, F: F type)

Shape name Parts ID	Materials					Parts		
						 small truss screw 5x10x10		 upset bolt M5x12 ES0446
	connecting rafter A (upside)	connecting rafter B (upside)	connecting rafter C (upside)	connecting rafter D (upside)	roof retainer	R type	F type	
T□TM-30W	1	—	—	—	1	12(11)	11(10)	2
T□TM-40W	1	—	—	—	1	13(12)	12(11)	2
T□TM-50W	1	—	—	—	1	16(15)	15(14)	2
T□TM-60W	1	—	—	—	1	18(16)	16(15)	2
T□TM-70W	—	1	—	—	1	27(25)	26(24)	2
T□TM-80W	—	—	1	—	1	29(27)	28(26)	2
T□TM-90W	—	1	—	—	1	21(19)	21(19)	2
T□TM-10W	—	1	—	—	1	22(20)	22(20)	2
T□TM-11W	—	—	—	1	1	25(23)	23(21)	2
T□TM-12W	—	—	—	1	1	26(24)	24(22)	2
TFTM-13W	—	—	—	1	1	—	25(23)	2
TFTM-14W	—	—	—	1	1	—	26(24)	2
TFTM-15W	—	—	—	1	1	—	27(25)	2





■Side frame set (downside installation)

□part (R: R type, F: F type), ■part (R: R type, S: F type)

Shape name		Materials			Parts							
Parts ID	①	②	 side frame (downside installation)	 side frame (downside installation)	 roof retainer (end)	small truss screw 5×10×10		 upset bolt M5x12 ES0446	tight rubber (downside installation) GB9075			
						R type	F type		R type	F type	R type	F type
T□SMU-30	Y■SMU-30		right left each 1pc	right left each 1pc	right left each 1pc	2	18(16)	15(14)	2	2(L=562)	2(L= 340)	2(L= 810)
T□SMU-40	Y■SMU-40		right left each 1pc	right left each 1pc	right left each 1pc	2	20(18)	18(16)	2	2(L=562)	2(L= 643)	2(L=1112)
T□SMU-50	Y■SMU-50		right left each 1pc	right left each 1pc	right left each 1pc	2	42(40)	38(36)	2	2(L=562)	2(L= 945)	2(L=1415)
T□SMU-60	Y■SMU-60		right left each 1pc	right left each 1pc	right left each 1pc	2	48(46)	44(42)	2	2(L=562)	2(L=1247)	2(L=1717)
T□SMU-70	Y■SMU-70		right left each 1pc	right left each 1pc	right left each 1pc	2	57(54)	53(50)	2	2(L=562)	2(L=1549)	2(L=2019)






■Rafter set (downside installation)

□part (R: R type, F: F type)

Shape name		Materials			Parts						
Parts ID	rafter A (downside installation)	rafter C (downside installation)	 rafter A (downside installation)	 rafter C (downside installation)	 roof retainer	small truss screw 5×10×10		 upset bolt M5x12 ES0446	tight rubber (downside installation) GB9075		
						R type	F type		R type	F type	
T□TU-30-1	1	—	1	1	10 (9)	9 (8)	1	2(L=562)	2(L= 340)	2(L= 810)	
T□TU-40-1	1	—	1	1	11(10)	10 (9)	1	2(L=562)	2(L= 643)	2(L=1112)	
T□TU-50-1	1	—	1	1	19(17)	16(15)	1	2(L=562)	2(L= 945)	2(L=1415)	
T□TU-60-1	1	—	1	1	21(19)	19(17)	1	2(L=562)	2(L=1247)	2(L=1717)	
T□TU-70-1	—	1	1	1	25(23)	24(22)	1	2(L=562)	2(L=1549)	2(L=2019)	

■Connecting rafter set (downside installation)

□part (R: R type, F: F type)

Shape name		Materials			Parts					
Parts ID	 connecting rafter A (downside installation)	 connecting rafter C (downside installation)	 roof retainer	 connecting rafter A (downside installation)	small truss screw 5×10×10		 upset bolt M5x12 ES0446	tight rubber (downside installation) GB9075		
					R type	F type		R type	F type	
T□TU-30W	1	—	1	1	12(11)	11(10)	2	2(L=562)	2(L= 340)	2(L= 810)
T□TU-40W	1	—	1	1	13(12)	12(11)	2	2(L=562)	2(L= 643)	2(L=1112)
T□TU-50W	1	—	1	1	21(19)	19(17)	2	2(L=562)	2(L= 945)	2(L=1415)
T□TU-60W	1	—	1	1	23(21)	21(19)	2	2(L=562)	2(L=1247)	2(L=1717)
T□TU-70W	—	1	1	1	27(25)	26(24)	2	2(L=562)	2(L=1549)	2(L=2019)

■Parts box

□part (R: R type, F: F type)

Shape name	Parts									
Parts ID	R front frame cap GB8646	F front frame cap GB8647	adjustable beam cap A GB8648	adjustable beam cap B GB8649	adjustable beam cap C GB8650	adjustable beam cap D GB8651	adjustable beam cap E GB8652	rear frame cap GB8653	elbow GA4932	drain elbow GA6461
T□BM-AS	right left each 1pc		right left each 1pc	—	—	—	—	right left each 1pc	2	1
T□BM-BS	right left each 1pc		—	right left each 1pc	—	—	—	right left each 1pc	2	1
T□BM-CS	right left each 1pc		—	—	right left each 1pc	—	—	right left each 1pc	2	1
T□BM-DS	right left each 1pc		—	—	—	right left each 1pc	—	right left each 1pc	2	1
T□BM-ES	right left each 1pc		—	—	—	—	right left each 1pc	right left each 1pc	2	1

Packaging detail

Shape name	Parts							
Parts ID	saddle GB8077	drain gutter GA6456	gutter cap GA6455	gasket GS1651	drilling screw 4x13x8 ES0063	caution label 20cm GL-PCI	instruction manual GD-W40B	assembling manual HZ1880
T□BM-AS	3	1	1	1	8(7)	1	1	1
T□BM-BS	3	1	1	1	8(7)	1	1	1
T□BM-CS	3	1	1	1	8(7)	1	1	1
T□BM-DS	3	1	1	1	8(7)	1	1	1
T□BM-ES	3	1	1	1	8(7)	1	1	1

■Parts box (for connecting)

□part (R: R type, F: F type)

Shape name	Parts									
Parts ID	R front frame sleeve GB8663	F front frame sleeve GB8664	adjustable beam A sleeve GB8659	adjustable beam B sleeve GB8660	adjustable beam C sleeve GB8661	front frame connecting sleeve (W) GB8662	small truss screw 5x10x10	tapping truss screw 5x20x10	front frame connecting cover GB8665	elbow GA4932
T□BM-AW	1		1	—	—	—	18(16)	9(8)	1	2
T□BM-BW	1		—	1	—	—	18(16)	9(8)	1	2
T□BM-CW	1		—	—	1	—	18(16)	5(4)	1	2
T□BM-DW	1		1	—	—	1	18(16)	5(4)	1	2
T□BM-EW	1		—	1	—	1	18(16)	5(4)	1	2

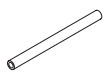
Shape name	Parts					
Parts ID	drain elbow GA6461	saddle GB8077	drain gutter GA6456	gutter cap GA6455	gasket GS1651	drilling screw 4x13x8 ES0063
T□BM-AW	1	3	1	1	1	10(9)
T□BM-BW	1	3	1	1	1	10(9)
T□BM-CW	1	3	1	1	1	10(9)
T□BM-DW	1	3	1	1	1	10(9)
T□BM-EW	1	3	1	1	1	10(9)


■Rain gutter parts set

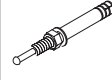
Shape name	Parts					
Parts ID	elbow GA4932	drain elbow GA6461	saddle GB8077	drain gutter GA6456	drilling screw 4x13x8 ES0063	round gutter GA4923
TRTAD	2	1	3	1	6(5)	1

■ Non-wooden house parts box



(Aeration construction method (siding panel installation)) (RC structure)

Shape name	Parts
Parts ID	
	spacer (L=300) GS1040
BTB-B13	3


Shape name	Parts
Parts ID	
	coach screw (sems) 6x120 ES0445
BTB-B23	10

Shape name	Parts
Parts ID	
	Anchor bolt M6x60 ES0325
BTB-B11	10

(Light-gauge steel structure)

Shape name	Parts	
Parts ID		
	HEX screw 6x70 ES0326	washer
BTB-B12	10	10

■ Hexagon bolts set

Shape name	Parts
Parts ID	
	hexagon bolt (sems) M5x12
BTB-V14	50

■ Roof panel set

□ part (R: R type, F: F type)

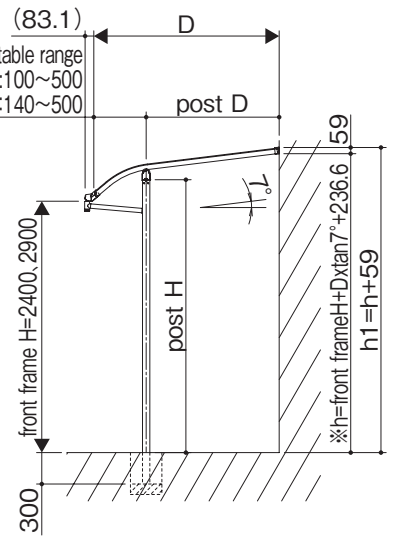
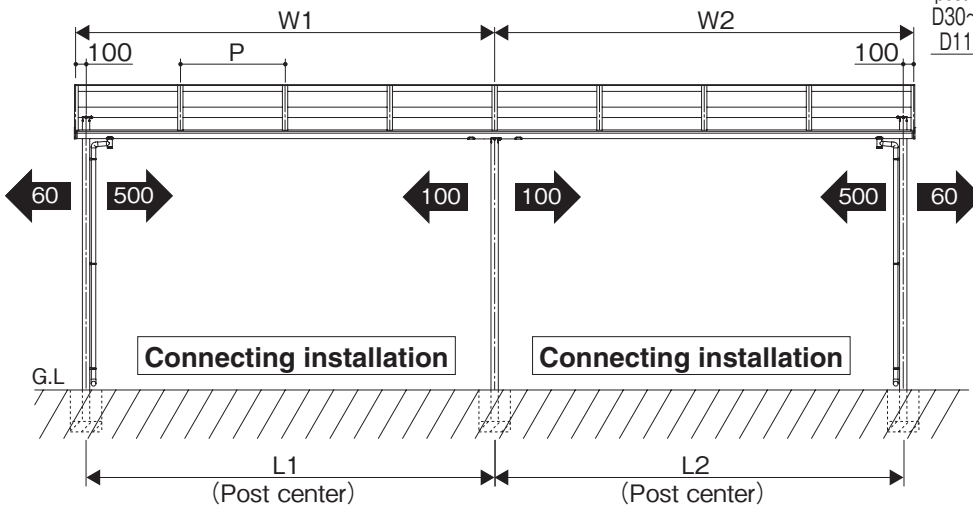
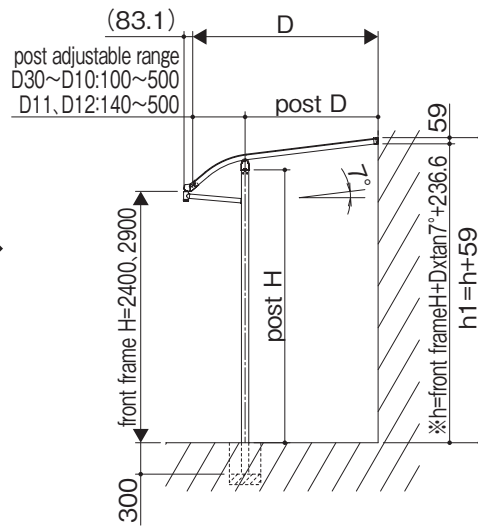
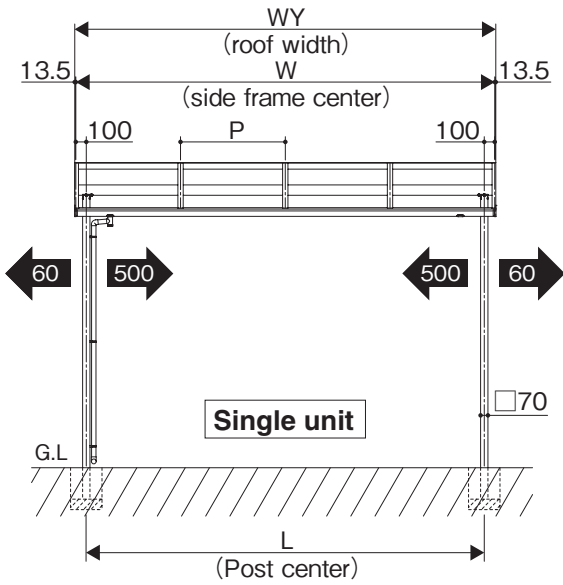
◆ part (P: polycarbonate, S: polycarbonate mat SI, CM: Heat protection polycarbonate mat SI, B: Stain proofing polycarbonate clear)

○ part (E: rafter pitch 909mm, M: rafter pitch 1000mm)

	Quantity
T□P◆-○30-2	2
T□P◆-○30-3	3
T□P◆-○30-4	4
T□P◆-○40-2	2
T□P◆-○40-3	3
T□P◆-○40-4	4
T□P◆-○50-2	2
T□P◆-○50-3	3
T□P◆-○50-4	4
T□P◆-○60-2	2
T□P◆-○60-3	3
T□P◆-○60-4	4
T□P◆-○70-2	2
T□P◆-○70-3	3
T□P◆-○70-4	4
T□P◆-○80-2	2
T□P◆-○80-3	3
T□P◆-○80-4	4

	Quantity
T□P◆-○90-4	4
T□P◆-○90-6	6
T□P◆-○10-4	4
T□P◆-○10-6	6
T□P◆-○11-2	2
T□P◆-○11-3	3
T□P◆-○12-2	2
T□P◆-○12-3	3
TFP◆-○13-2	2
TFP◆-○13-3	3
TFP◆-○14-2	2
TFP◆-○14-3	3
TFP◆-○15-2	2
TFP◆-○15-3	3

[R type]



■ Width dimension

Nominal width	Post center L(mm)	Side frame center W,W1,W2(mm)	Roof width WY(mm)
909 type	60	1618	1818
	90	2527	2727
	12	3436	3636
	15	4345	4545
	18	5254	5454
	1000 type	200	2000
	300	3000	3027
	400	4000	4027
	500	5000	5027

■ Depth dimension · Height

Nominal depth	D(mm)	front frame H(mm)	h(mm) ※
30	870	standard post 2400 (long post 2900)	2743.4
40	1170		2780.3
50	1470		2817.1
60	1770		2853.9
70	2070		2890.8
80	2370		2927.6
90	2670		2964.4
10	2970		3001.3
11	3270		3038.1
12	3570		3074.9

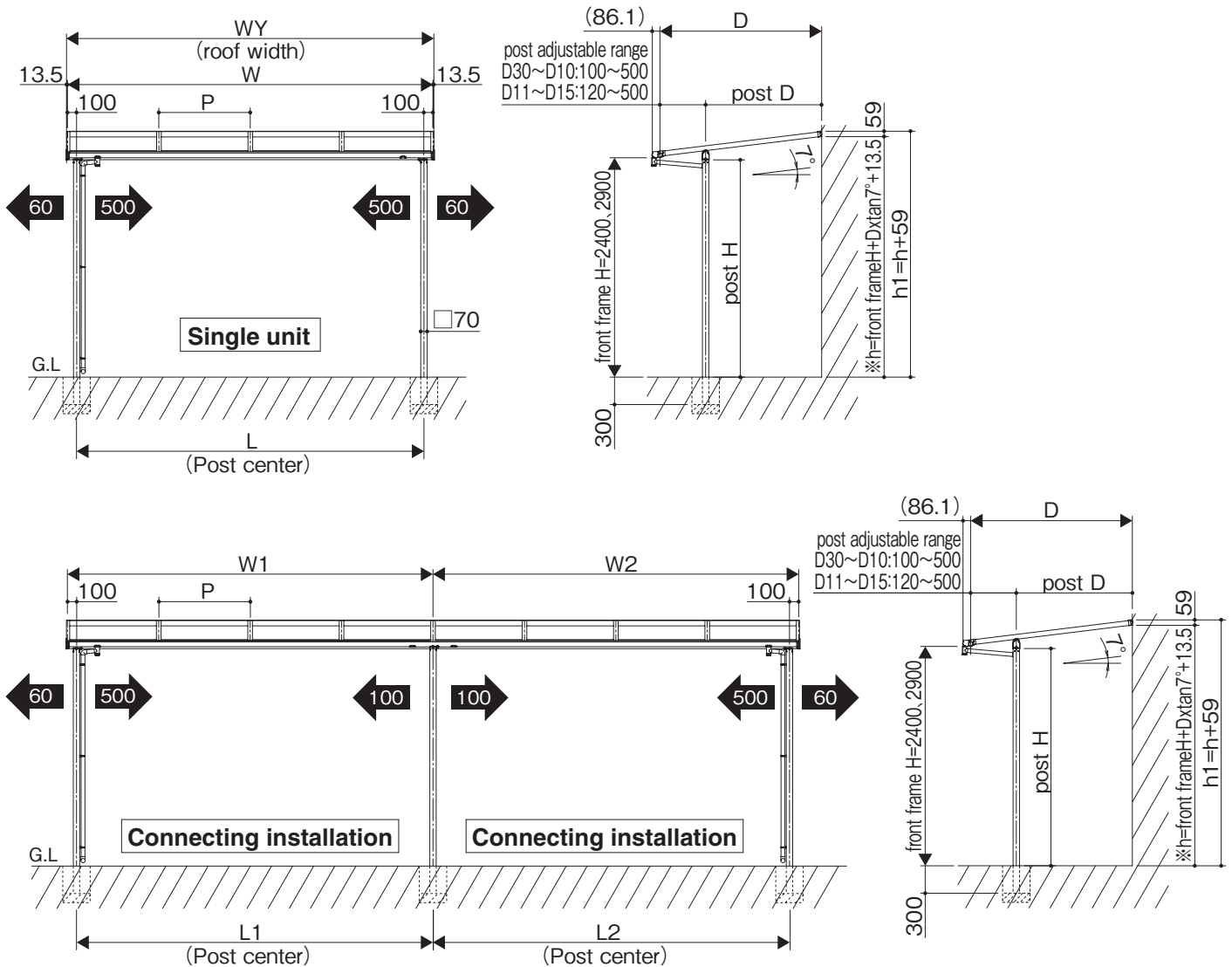
- ※ • h dimension formula
 $h = \text{front frame } H + D \times \tan 7^\circ + 236.6$
 ($\tan 7^\circ \approx 0.123$)
- In case of long post, add 500mm to h dimension.

In case of connecting installation

$$L1 = W1 - 100$$

$$L2 = W2 - 100$$

[F type]



■ Width dimension

Nominal width	Post center L(mm)	Side frame center W.W1.W2(mm)	Roof width WY(mm)
909 type	60	1618	1818
	90	2527	2727
	12	3436	3636
	15	4345	4572
	18	5254	5481
	200	1800	2000
1000 type	300	2800	3027
	400	3800	4027
	500	4800	5027

■ Depth dimension · Height

Nominal depth	D(mm)	front frame H(mm)	h(mm) ※
30	870	standard post 2400 (long post 2900)	2520.3
40	1170		2557.2
50	1470		2594
60	1770		2630.8
70	2070		2667.7
80	2370		2704.5
90	2670		2741.3
10	2970		2778.2
11	3270		2815
12	3570		2851.8
13	3870		2888.7
14	4170		2925.5
15	4470		2962.3

In case of connecting installation

$$L1 = W1 - 100$$

$$L2 = W2 - 100$$

- ※ • h dimension formula
 $h = \text{front frame } H + D \times \tan 7^\circ + 13.5$
 $(\tan 7^\circ \approx 0.123)$
- In case of long post, add 500mm to h dimension.

■ Material instruction guide table

	Nominal depth	30	40	50	60	70	80	90	10	11	12	13	14	15			
Nominal width	W	D	870	1170	1470	1770	2070	2370	2670	2970	3270	3570	3870	4170	4470		
60	1818	adjustable beam A				adjustable beam B		adjustable beam C		adjustable beam D							
200	2000																
90	2727																
300	3000																
12	3636																
400	4000	adjustable beam B								adjustable beam E							
15	4545																
500	5000																
18	5454							adjustable beam D									
rear frame		A							B								
rafter(upside installation)		A				B		C		B			D				
rafter(downdside installation)		A				C											
side frame		A									B						
rafter pitch P		909(1000)							454.5(500)								
number of furring strips per panel		1		2			3		2			3					

■ Adjustable beam

A	B	C	D	E

■ Rear frame

A	B

■ Front frame

R type	F type

■ Side frame

A	B

■ Rear frame(downdside installation)

A	B

■ Front frame(downdside installation)

R type	F type

■ Side frame(downdside installation)

--

■ Rafter

A	for connecting	B	C	D

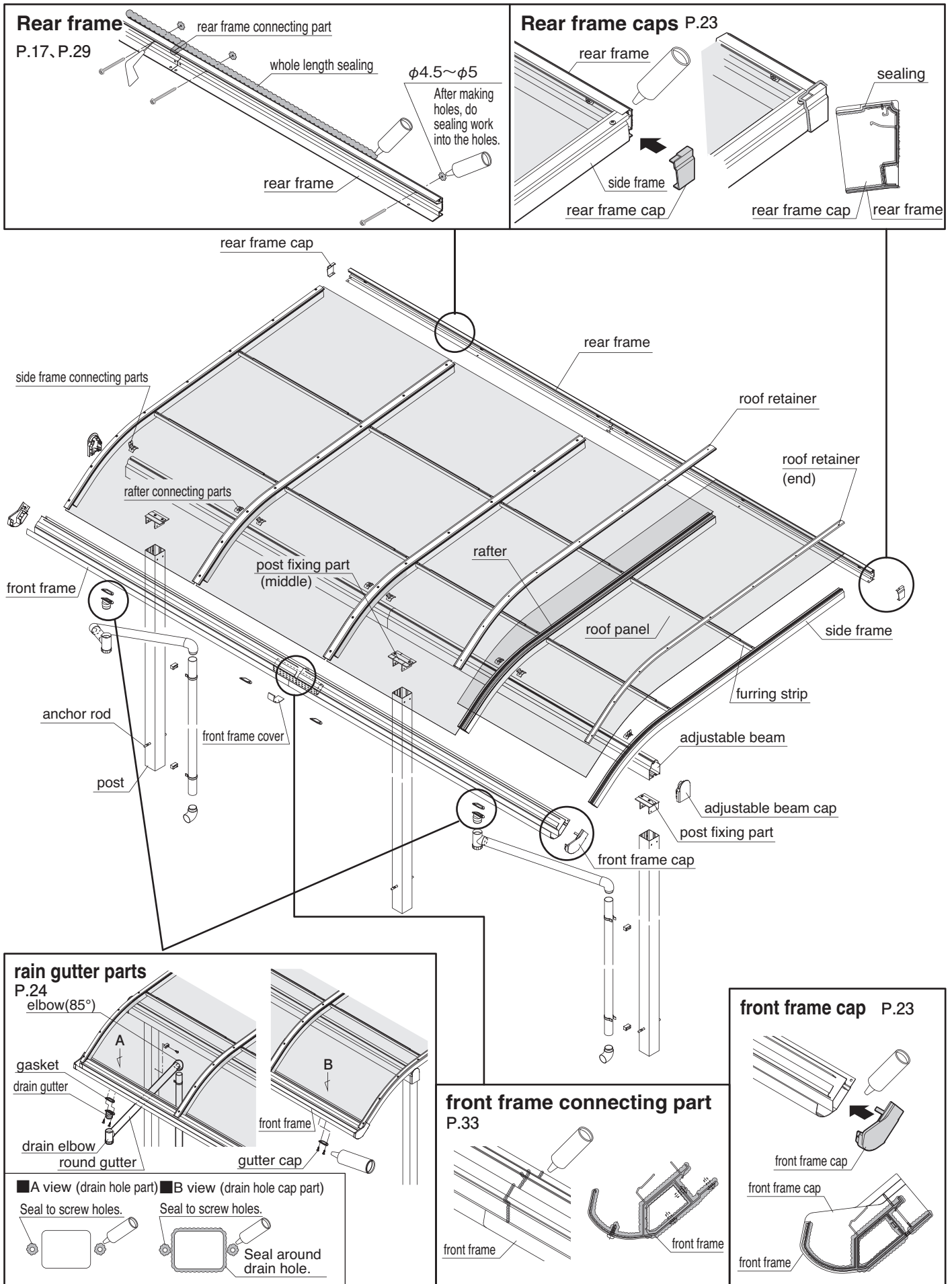
■ Rafter(downdside installation)

A	C

Installation procedure

This manual shows typical examples of R-type. F-type is same procedure, but the different points are indicated.

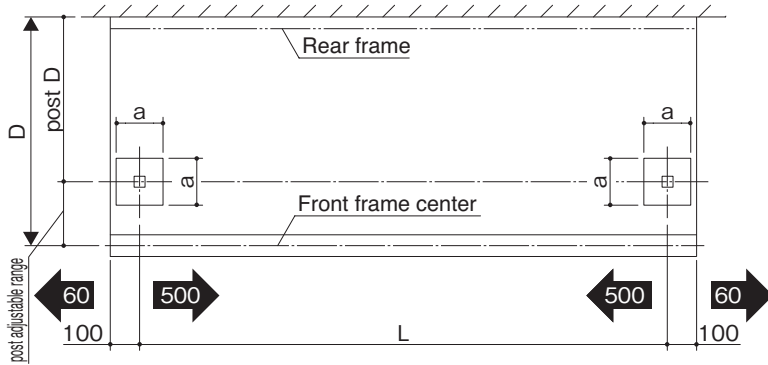
Configuration diagram • sealing point



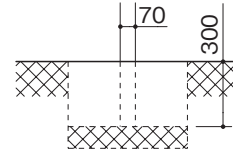
Embedding post

➔ indicates post movable range dimension.

Single unit



Depth of basement



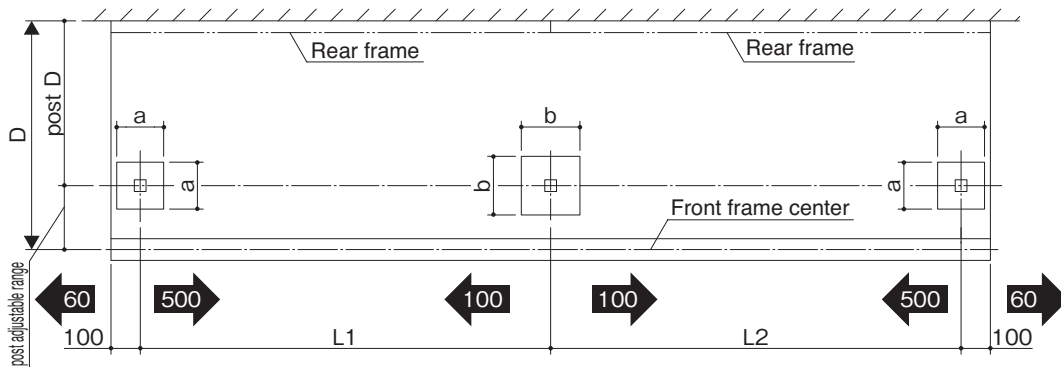
Installation procedure

Base dimension a

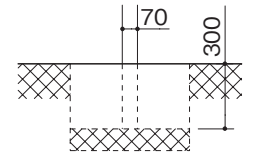
909 type	Width					
	Nominal width L (mm)	60	90	12	15	18
1000 type	Nominal width L (mm)	200	300	400	500	
	Nominal depth D (mm)	1800	2800	3800	4800	
Depth	30	870	□300		□400	
	40	1170				
	50	1470				
	60	1770				
	70	2070	□400		□500	
	80	2370				
	90	2670				
	10	2970				

909 type	Width					
	Nominal width L (mm)	60	90	12	15	18
1000 type	Nominal width L (mm)	200	300	400	500	
	Nominal depth D (mm)	1800	2800	3800	4800	
Depth	11	3270	□500		□600	
	12	3570				
	13	3870				
	14	4170	□650			
	15	4470				

Connecting installation



Depth of basement



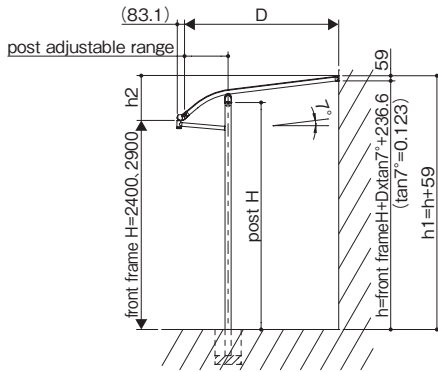
Base dimension b (connecting part) •• Base dimension a is indicated above table.

909 type	Width						
	Nominal width L (mm)	15	18	21	24	27	30
1000 type	Nominal width L (mm)	500	600	700	800	900	1000
	Nominal depth D (mm)	4800	5800	6800	7800	8800	9800
Depth	30	870	□500				
	40	1170					
	50	1470					
	60	1770					
	70	2070	□650		□850		
	80	2370					
	90	2670					
	10	2970					

909 type	Width							
	Nominal width L (mm)	15	18	21	24	27	30	
1000 type	Nominal width L (mm)	500	600	700	800	900	1000	
	Nominal depth D (mm)	4800	5800	6800	7800	8800	9800	
Depth	11	3270	□850				□950	
	12	3570						
	13	3870						
	14	4170	□950					
	15	4470						

Post cutting dimension

[R type]



Height dimension (In case of long post add 500mm to front frame H and h1.)

Nominal depth	30	40	50	60	70	80	90	10	11	12
front frame H(mm)	2400									
h1 (mm)	2802	2839	2876	2913	2950	2986	3023	3060	3097	3134
h2(mm)	402	439	476	513	550	586	623	660	697	734

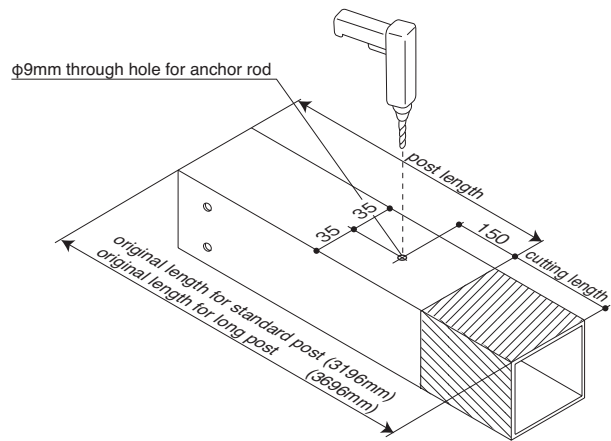
※Cut the post referring to “Post cutting figure”, ”Table I post H dimension” and “Table II post H subtraction value”.
Post H dimension differs depending on the width dimension and/or depth dimension.

Post length = Table I post H dimension – Table II post H subtraction value + 300mm(basement depth)

※In case of long post, add 500mm to above formula value.

■ Table I post H dimension (in case of front frame H=2400) ■ Post cutting figure

	Nominal depth			Nominal depth		
	30~10	11~12		30~10	11~12	
post adjustable range (mm)	100	2394	—	310	2542.5	2486.5
	110	2402.4	—	320	2547.2	2491.7
	120	2410.8	—	330	2551.7	2496.7
	130	2419.2	—	340	2556	2501.4
	140	2427.6	2362.3	350	2560.1	2505.9
	150	2436	2370.7	360	2564.1	2510.2
	160	2444.4	2379.1	370	2567.8	2514.3
	170	2452.6	2387.4	380	2571.4	2518.2
	180	2460.8	2395.8	390	2574.8	2521.9
	190	2468.7	2404.2	400	2578	2525.4
	200	2476.2	2412.6	410	2581	2528.7
	210	2483.5	2420.8	420	2583.9	2531.8
	220	2490.5	2428.6	430	2586.6	2534.8
	230	2497.2	2436.2	440	2589.2	2537.6
	240	2503.7	2443.5	450	2591.6	2540.2
	250	2509.9	2450.4	460	2593.8	2542.6
	260	2515.9	2457.1	470	2595.9	2544.8
	270	2521.7	2463.5	480	2597.8	2546.9
	280	2527.2	2469.6	490	2599.6	2548.8
	290	2532.5	2475.5	500	2601.2	2550.5
300	2537.6	2481.1				

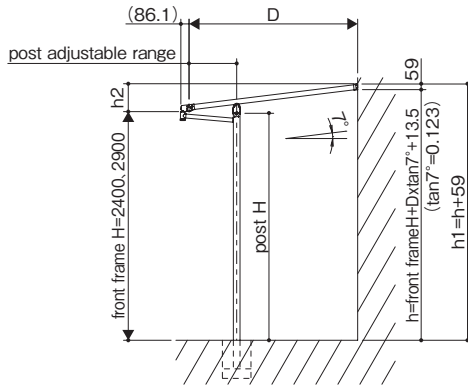


■ Table II post H subtraction value

		Nominal depth									
		30	40	50	60	70	80	90	10	11	12
rafter		A				B	C	B		D	
Nominal width	60.200	adjustable beam A (post H subtraction value 0mm)				adjustable beam B (post H subtraction value 25mm)		adjustable beam C (post H subtraction value 50mm)		adjustable beam D (post H subtraction value 0mm)	
	90.300										
	12.400										
	15.500	adjustable beam B (post H subtraction value 25mm)						adjustable beam E (post H subtraction value 25mm)			
	18			adjustable beam D (post H subtraction value 75mm)							

Post cutting dimension

[F type]



Height dimension (In case of long post add 500mm to front frame H and h1.)

Nominal depth	30	40	50	60	70	80	90	10	11	12	13	14	15
front frame H(mm)	2400												
h1 (mm)	2579	2616	2653	2690	2727	2764	2800	2837	2874	2911	2948	2985	3021
h2(mm)	179	216	253	290	327	364	400	437	474	511	548	585	621

※Cut the post referring to “Post cutting figure”, ”Table I post H dimension” and “Table II post H subtraction value”.
Post H dimension differs depending on the width dimension and/or depth dimension.

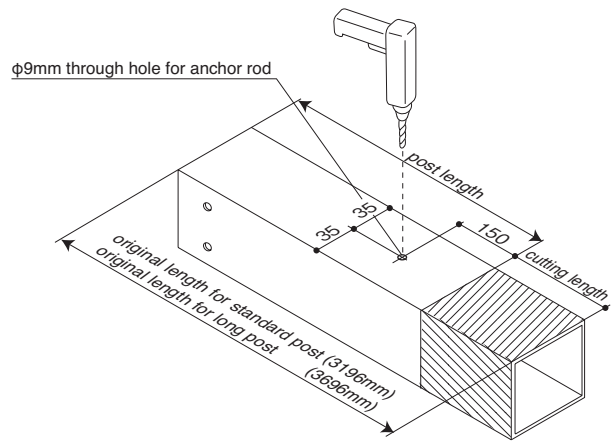
Post length = Table I post H dimension – Table II post H subtraction value + 300mm(basement depth)

※In case of long post, add 500mm to above formula value.

■ Table I post H dimension (in case of front frame H=2400) ■ Post cutting figure

	Nominal depth	
	30~10	11~15
100	2329.3	—
110	2330.5	—
120	2331.7	2281.4
130	2333	2282.7
140	2334.2	2283.9
150	2335.4	2285.1
160	2336.6	2286.3
170	2337.9	2287.6
180	2339.1	2288.8
190	2340.3	2290
200	2341.6	2291.3
210	2342.8	2292.5
220	2344	2293.7
230	2345.2	2294.9
240	2346.5	2296.2
250	2347.7	2297.4
260	2348.9	2298.6
270	2350.2	2299.9
280	2351.4	2301.1
290	2352.6	2302.3
300	2353.8	2303.5

	Nominal depth	
	30~10	11~15
310	2355.1	2304.8
320	2356.3	2306
330	2357.5	2307.2
340	2358.7	2308.4
350	2360	2309.7
360	2361.2	2310.9
370	2362.4	2312.1
380	2363.7	2313.4
390	2364.9	2314.6
400	2366.1	2315.8
410	2367.3	2317
420	2368.6	2318.3
430	2369.8	2319.5
440	2371	2320.7
450	2372.3	2322
460	2373.5	2323.2
470	2374.7	2324.4
480	2375.9	2325.6
490	2377.2	2326.9
500	2378.4	2328.1

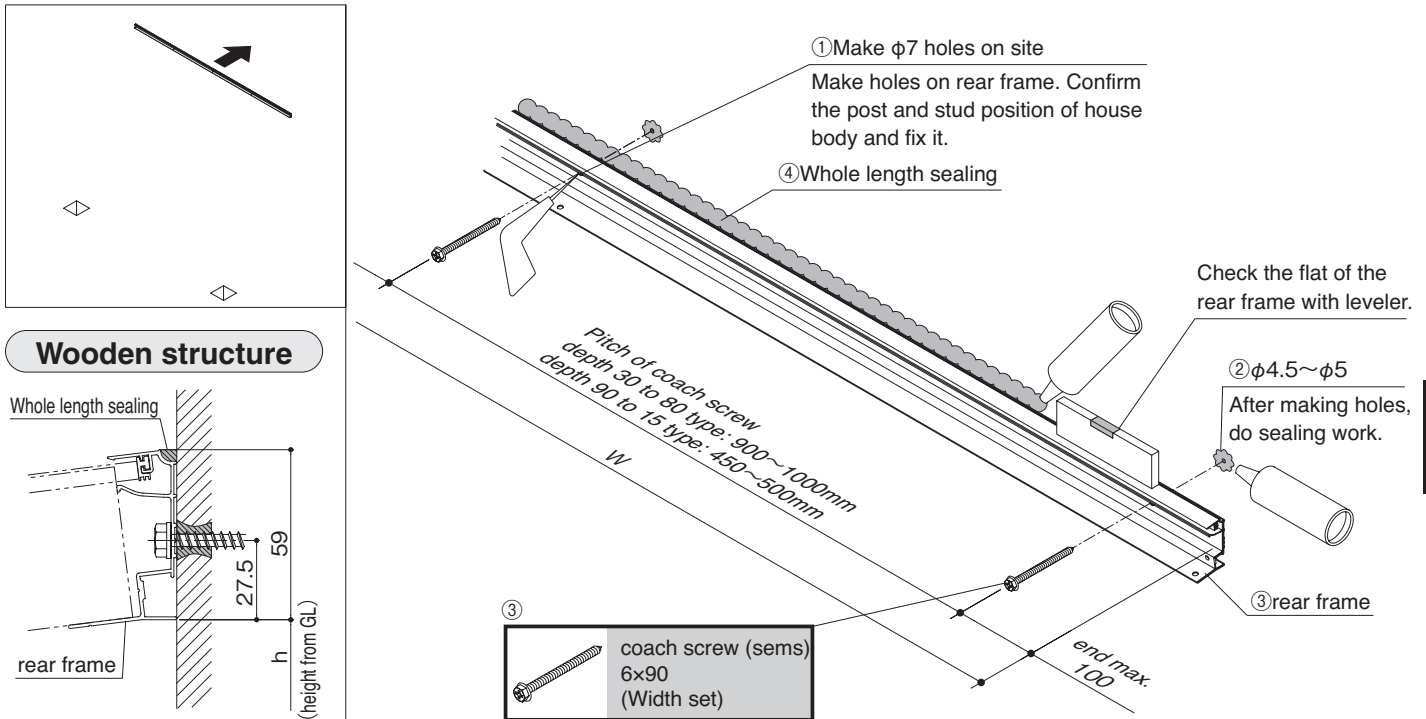


■ Table II post H subtraction value

		Nominal depth													
		30	40	50	60	70	80	90	10	11	12	13	14	15	
rafter		A				B	C	B			D				
Nominal width	60.200	adjustable beam A (post H subtraction value 0mm)				adjustable beam B (post H subtraction value 25mm)		adjustable beam C (post H subtraction value 50mm)			adjustable beam D (post H subtraction value 0mm)				
	90.300														
	12.400	adjustable beam B (post H subtraction value 25mm)				adjustable beam D (post H subtraction value 75mm)			adjustable beam E (post H subtraction value 25mm)						
	15.500														
	18	adjustable beam B (post H subtraction value 25mm)				adjustable beam D (post H subtraction value 75mm)			adjustable beam E (post H subtraction value 25mm)						

1. Single unit installation procedure

1 Rear frame installation



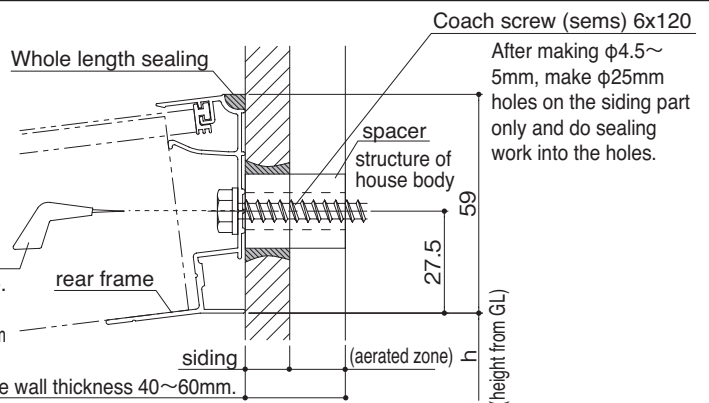
Aeration construction method

- Before installation, confirm the wall thickness (included the aerated zone).
- ※ Available wall thickness (included the aerated zone) is 40~60mm.

Do sealing work around the spacer and the holes of wall to prevent the rain water seeping.

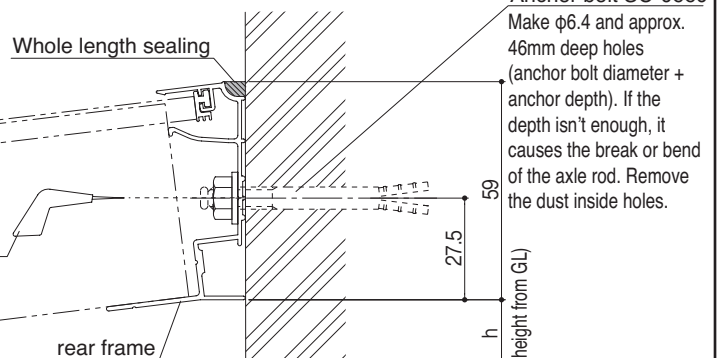


Make $\phi 7$ holes
Make holes on rear frame.
Coach screw pitch is
depth 30 to 80 type: 900~1000mm
depth 90 to 15 type: 450~500mm
Available wall thickness 40~60mm.



RC structure

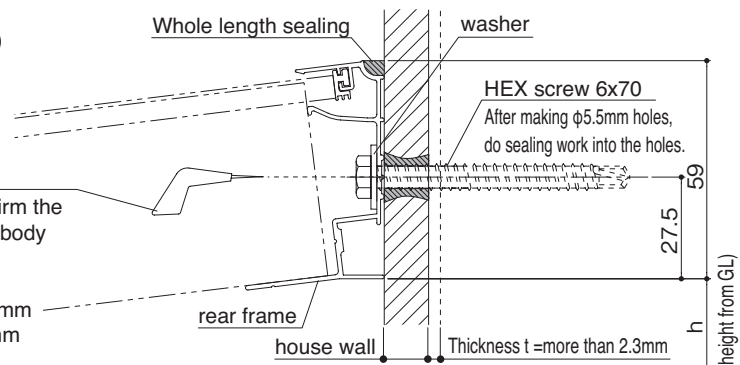
Make $\phi 7$ holes on site
Make holes on rear frame.
Coach screw pitch is
depth 30 to 80 type: 900~1000mm
depth 90 to 15 type: 450~500mm



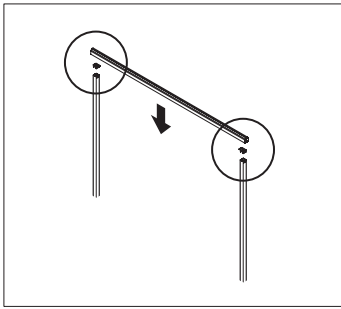
Light-gauge steel construction

- Before installation confirm the thickness of the steel frame is more than 2.3mm.

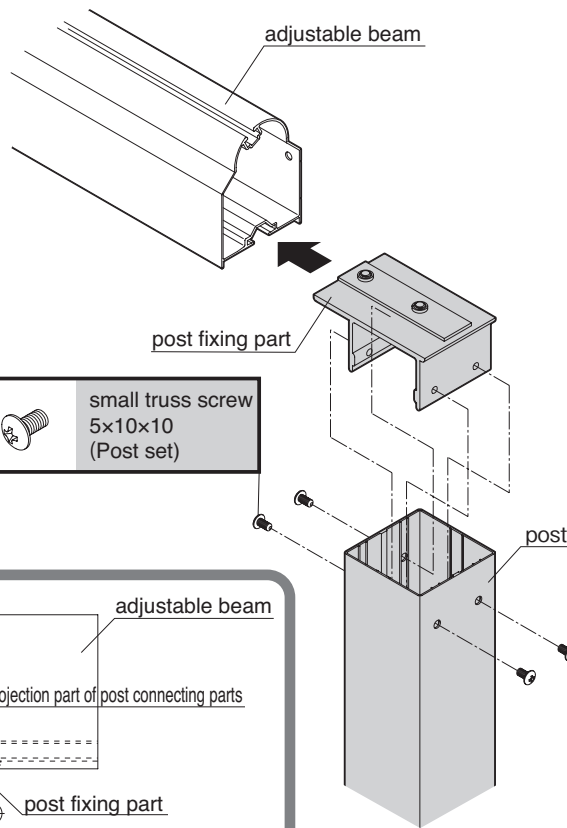
Make $\phi 7$ holes on site
Make holes on rear frame. Confirm the position of steel frame of house body and install the rear frame.
Screw pitch is
depth 30 to 80 type: 900~1000mm
depth 90 to 15 type: 450~500mm



2 Adjustable beam and post assembling

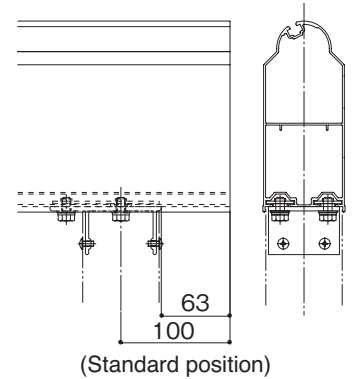
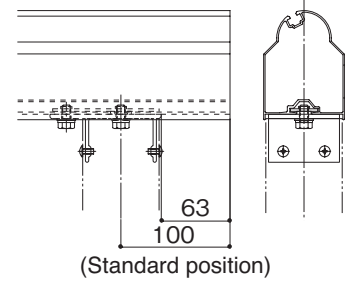


※When installing the support post of the front panel, insert the back plate to the adjustable beam in advance for easy installation.



small truss screw
5×10×10
(Post set)

Standard position of post connecting parts



Single unit installation procedure



adjustable beam

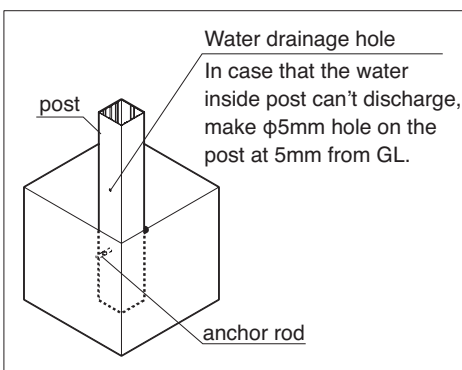
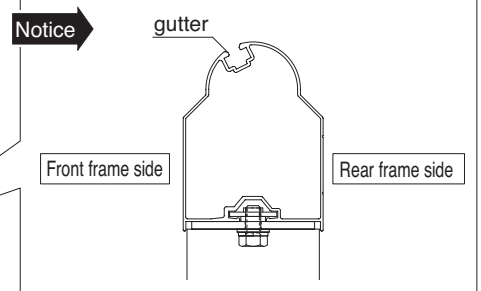
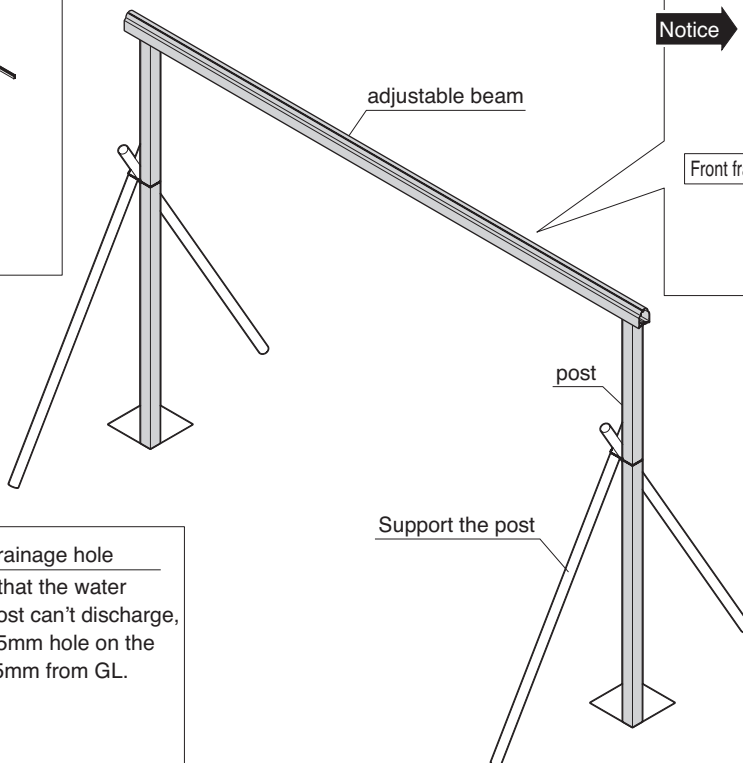
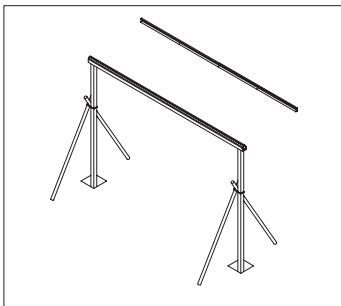
Projection part of post connecting parts

post fixing part

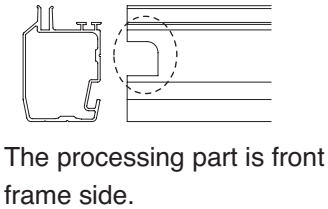
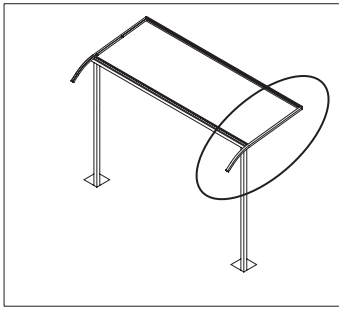
② Temporal fixing
Hexagon bolt M8×16
After adjusting the post position, fix completely

① Complete fixing
Hexagon bolt M8×16
Even if the bolt is tightened completely, the post connecting parts aren't fixed completely because of the effect of projection on post connecting parts.

3 Temporal fixing of adjustable beam and posts

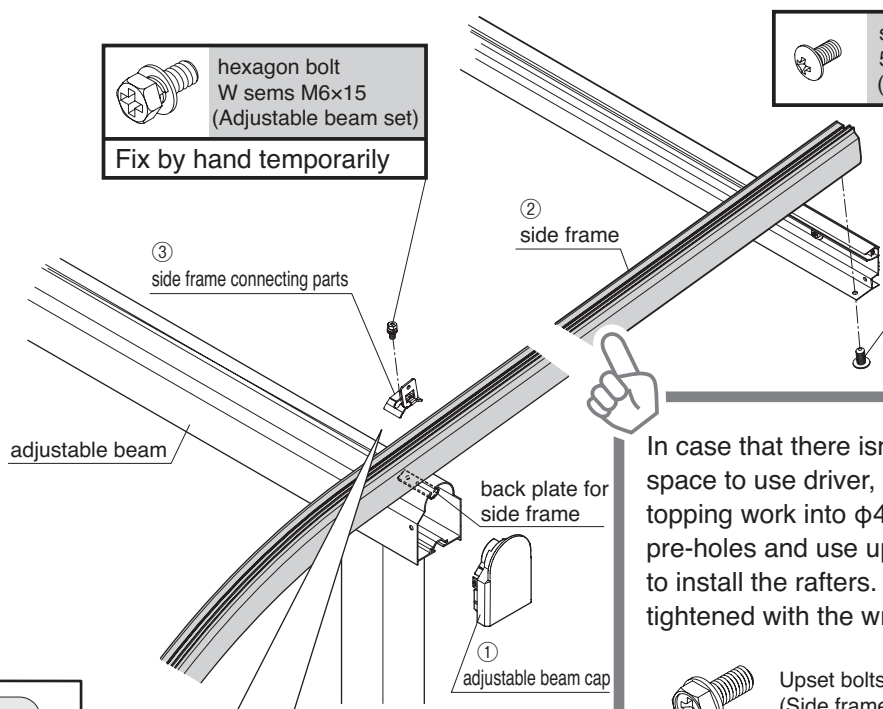


4 Adjustable beam cap and side frame installation



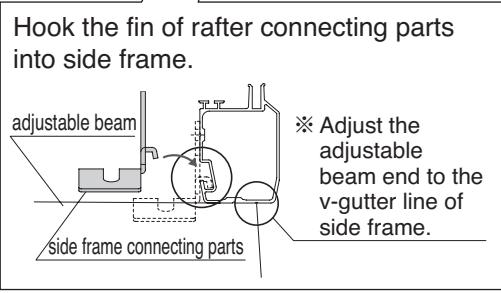
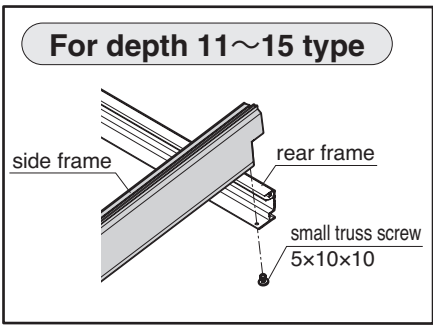
hexagon bolt
W sems M6×15
(Adjustable beam set)
Fix by hand temporarily

small truss screw
5×10×10
(Side frame set)



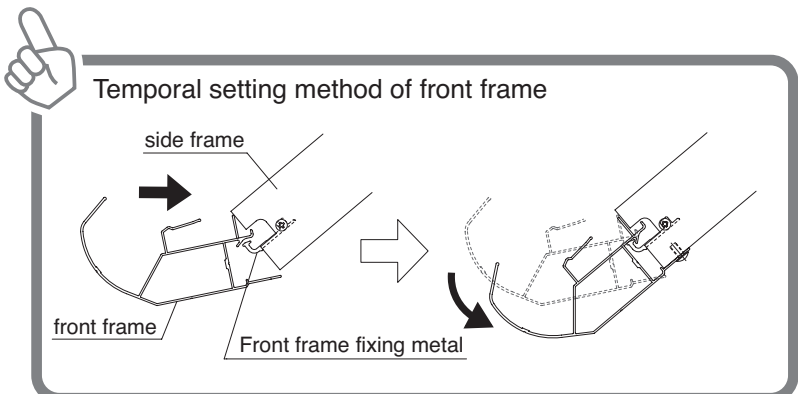
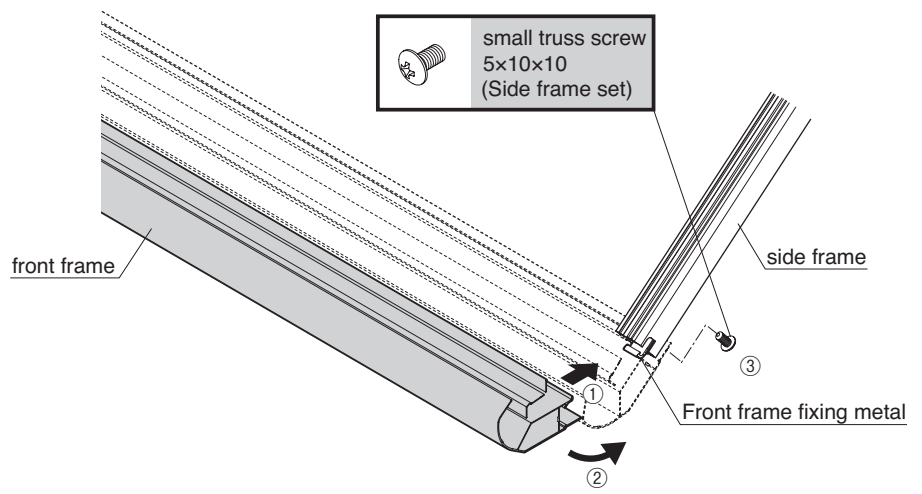
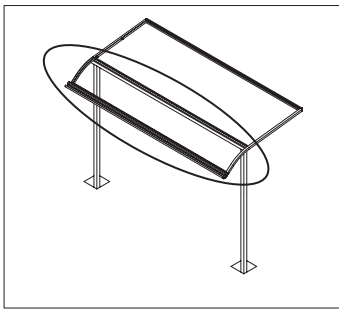
In case that there isn't enough space to use driver, do M5 topping work into $\phi 4.5$ pre-holes and use upset bolts to install the rafters. It can be tightened with the wrench.

Upset bolts M5×12
(Side frame set)



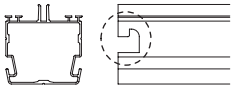
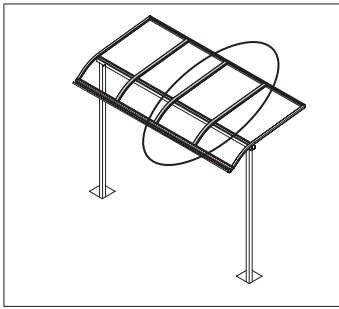
Single unit installation procedure

5 Front frame installation

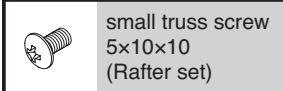
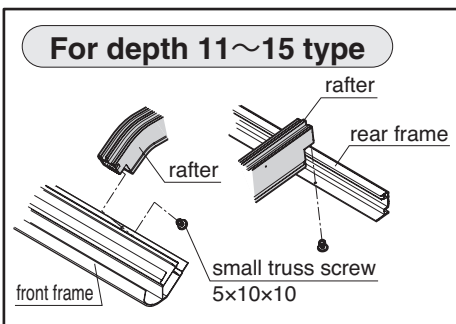
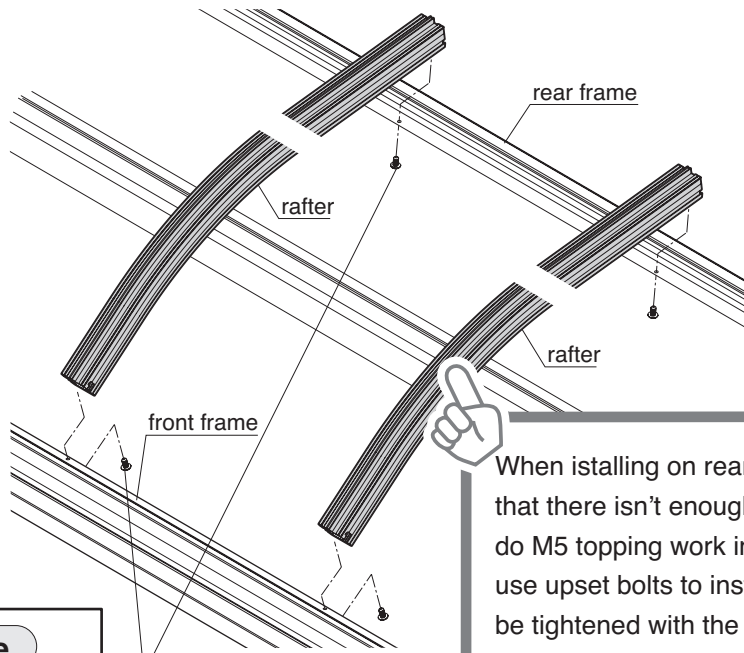


Notice Hook the fin firmly not to misalign the front frame to right and left. If the hook of front frame fin and fixing metal is depthless, the front frame may fall down.

6 Rafter installation



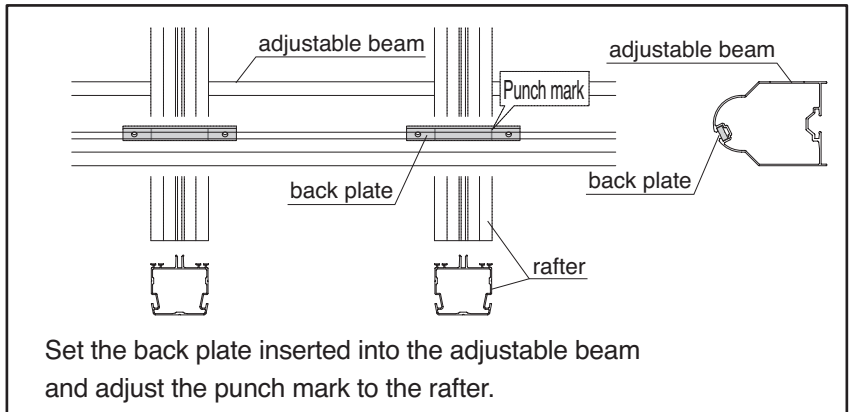
The processing part is front frame side.



When installing on rear frame side, in case that there isn't enough space to use driver, do M5 topping work into $\phi 4.5$ pre-holes and use upset bolts to install the rafters. It can be tightened with the wrench.

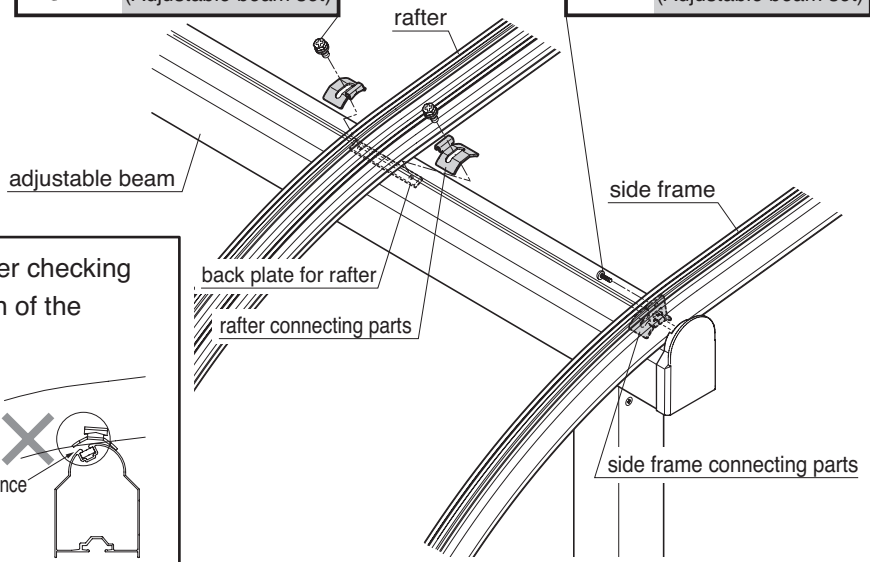
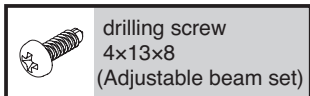
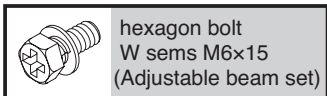
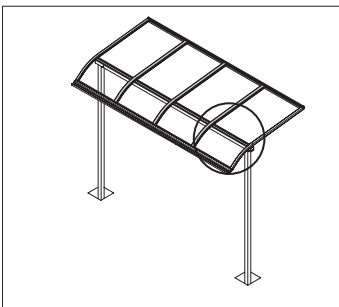


Upset bolts M5×12 (Rafter set)

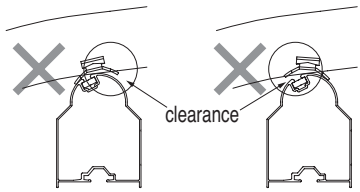
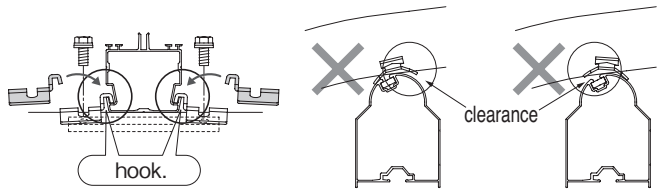


Single unit installation procedure

7 Rafter fixing parts installation

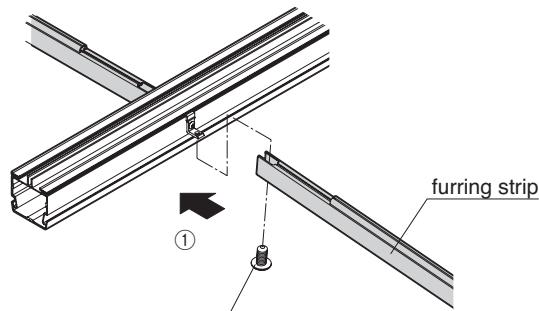
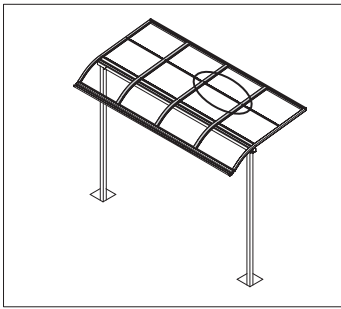



Hook the fin of fixing metal to the rafter. After checking horizontal, vertical and overhang dimension of the adjustable beam, fix the all bolts firmly.

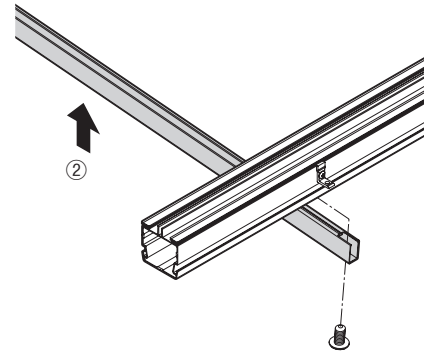


※ Don't make clearance and fix the bolts as above figure.

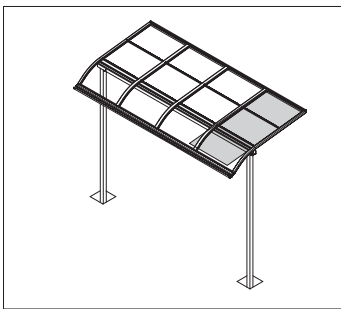
8 Furring strips installation



 small truss screw
5×10×10
(Side frame set, Rafter set)

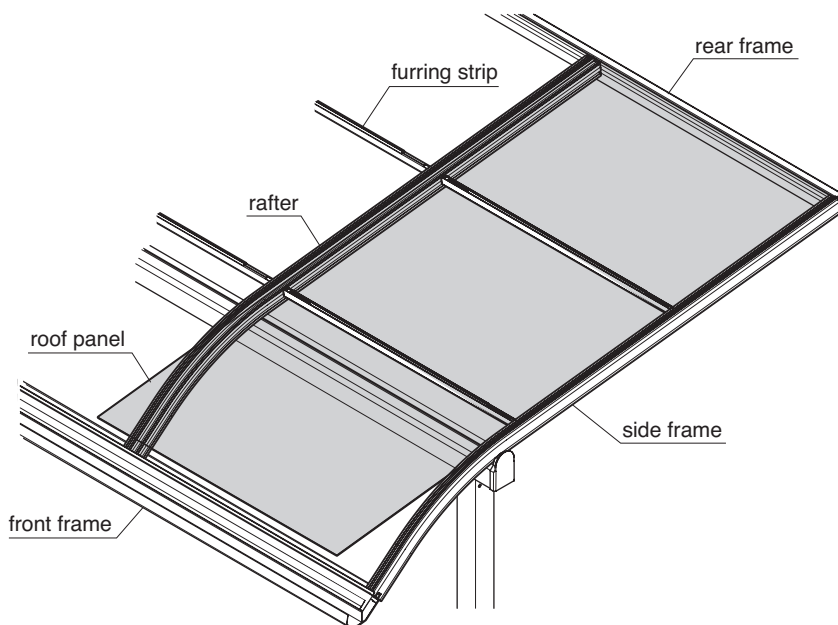


9 Roof panel installation

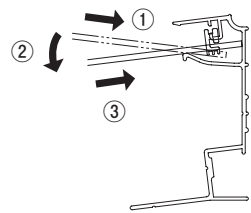


Be careful not to scratch the roof panels.

- Notice**
- In case of mat panel, attach the unevenness side down. Otherwise the panel is easy to get dirty.
 - In case of stain proofing polycarbonate, the stain proof layer is only one side. Attach the face attached label down.



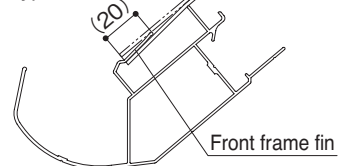
● Rear frame side



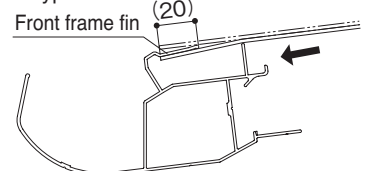
Strike the roof panel end to the rear frame.

● Front frame side

R type

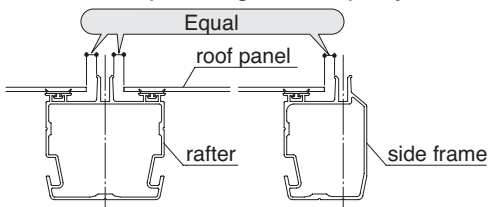


F type



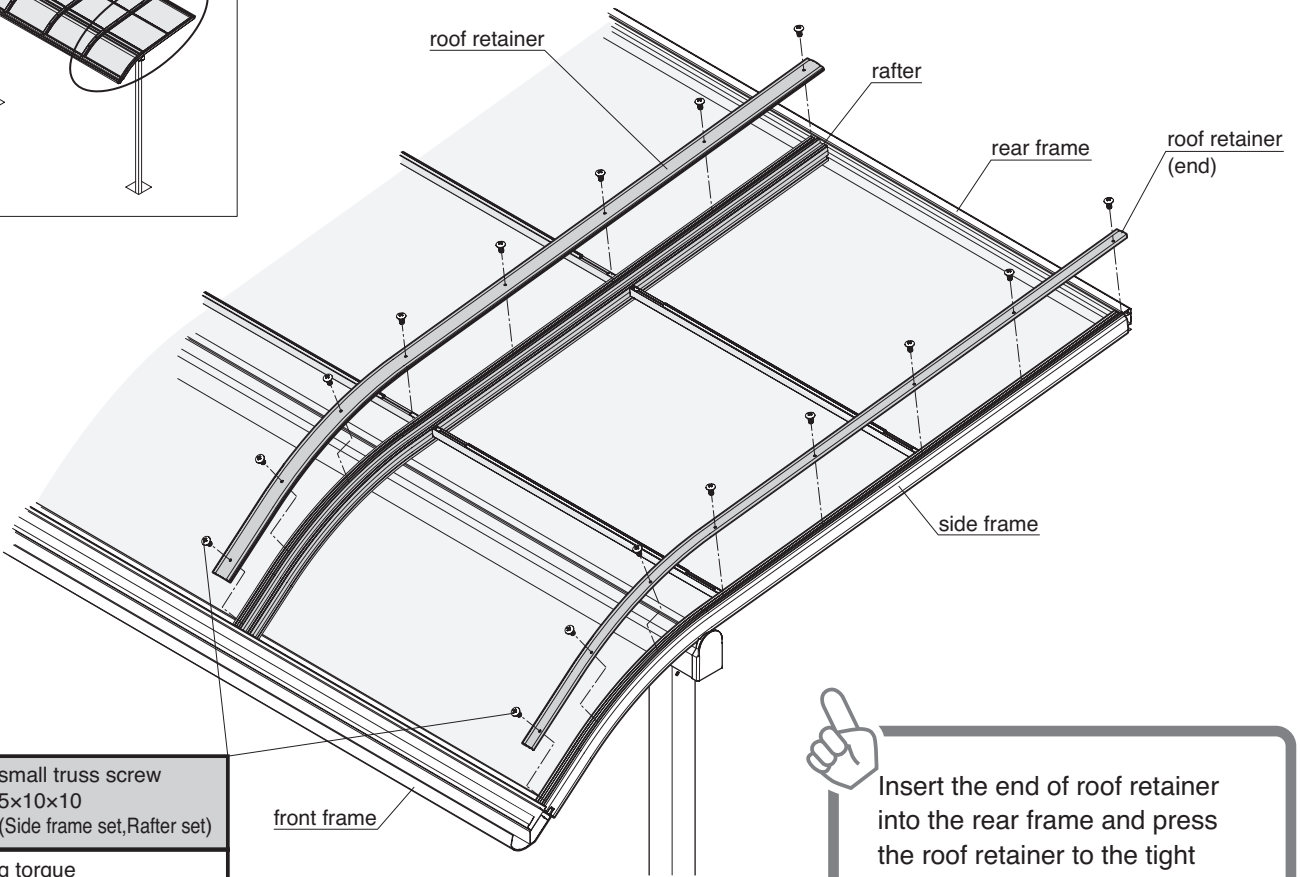
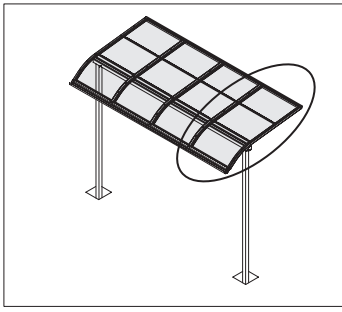
Insert the roof panel end into front frame fin part about 20mm.


Sort the roof panel right-left equally.




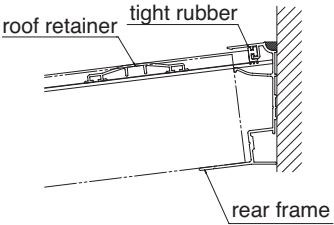
10 Roof retainer installation


Single unit installation procedure

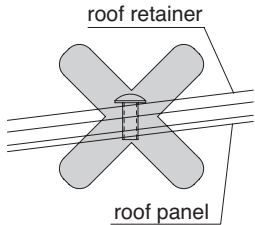



	small truss screw 5x10x10 (Side frame set, Rafter set)
Tightening torque Approx. 1.5Nm (15kgfcm)	


 Insert the end of roof retainer into the rear frame and press the roof retainer to the tight rubber of rear frame not to make a clearance. Screw from the rear frame side in order and fix the panels. In case the pressing is not enough, it may cause leakage of rain.



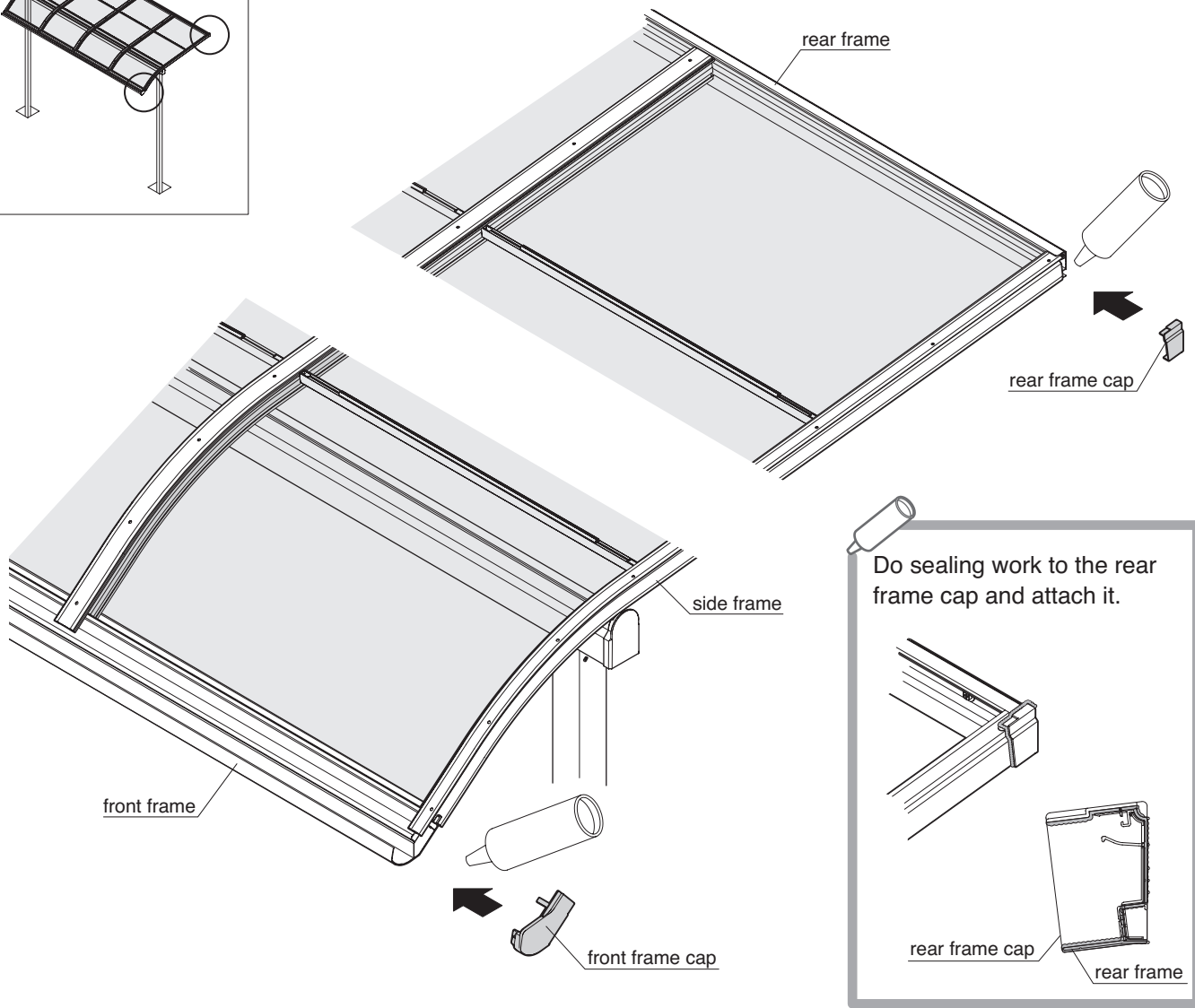
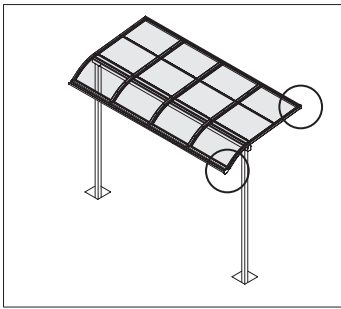
 If the screw head leans when installing the roof retainers, it will cause water leakage (the rain water enters from the screw head clearance), so install it not to make clearance.



 Use the hexagon bolts (sems) when it's difficult to use the driver. It can be tightened with the wrench.

 hexagon bolt sems M5x12 (option)

11 Attaching caps



Do sealing work to the rear frame cap and attach it.

rear frame cap

rear frame

Do sealing work to front frame cap and attach it.

■ R type

front frame cap

Water drainage hole
Do not seal.

front frame

■ F type

front frame cap

Water drainage hole
Do not seal.

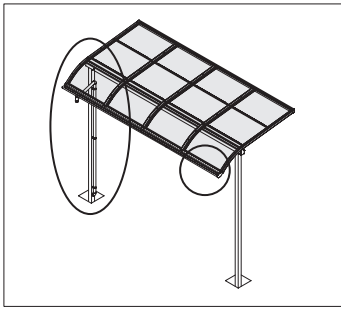
front frame

front frame

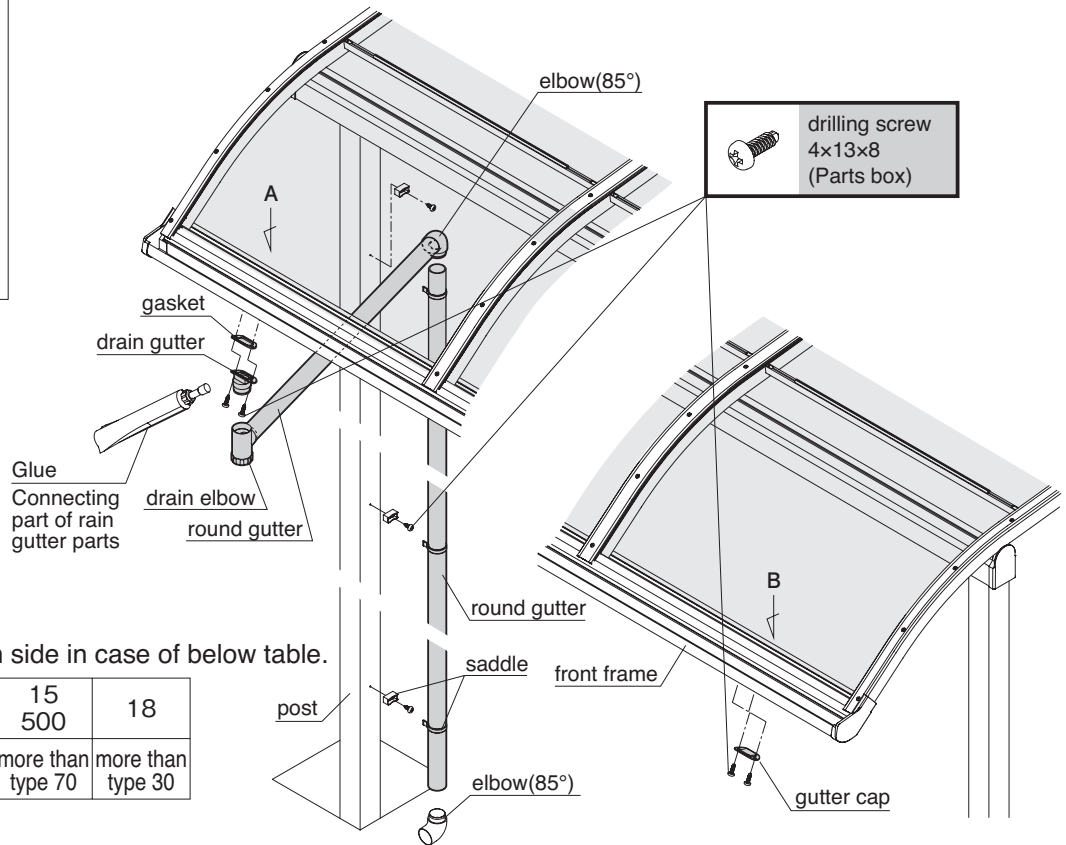
front frame cap

side frame

12 Attaching rain gutter parts



There is the case that rain gutters are installed on both side posts depending on the roof size.



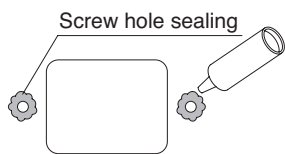
Install the rain gutter on both side in case of below table.

Nominal width	90 300	12 400	15 500	18
Nominal depth	more than type 11	more than type 90	more than type 70	more than type 30

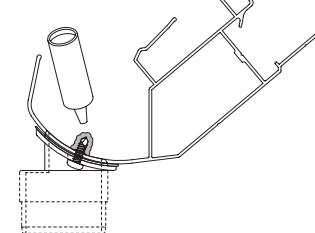
Single unit installation procedure

Be sure to seal around screws in order to prevent danger when cleaning as well as water proof.

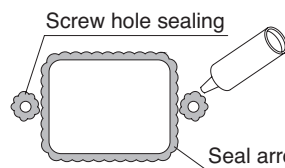
■ A view (rain gutter part)



■ Screw part (Rain gutter parts and rain gutter cap)

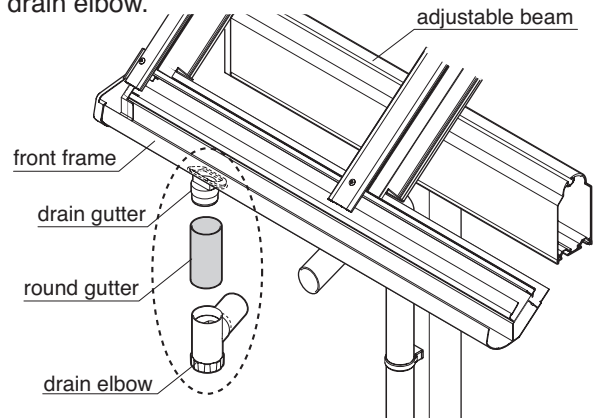


■ B view (rain gutter cap)

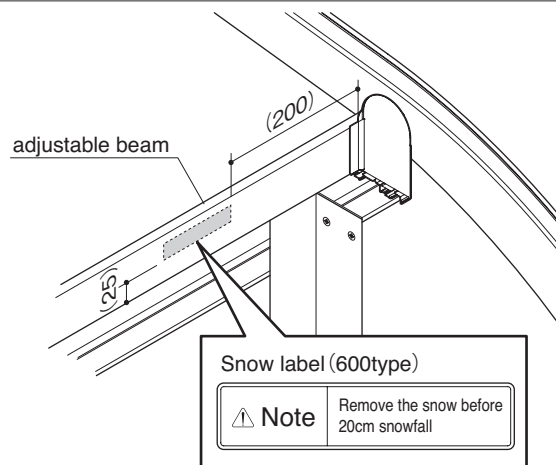


In case the adjustable beam is close to the front frame

Install the round gutter between drain gutter and drain elbow.



13 Attaching labels



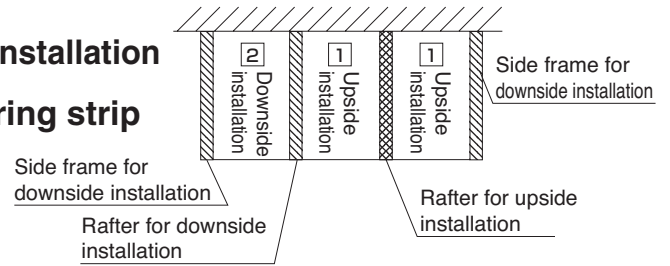
2. Installation procedure of downside roof panel installation

1 Upside installation

2 Downside installation panel and side frame installation

3 Downside installation tight rubber and furring strip installation

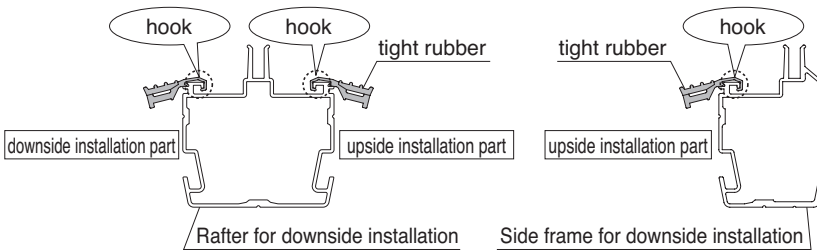
※This manual indicates the case that the downside installation is left side at the view from outside as typical example.



1 Installation of upside roof panel installation part

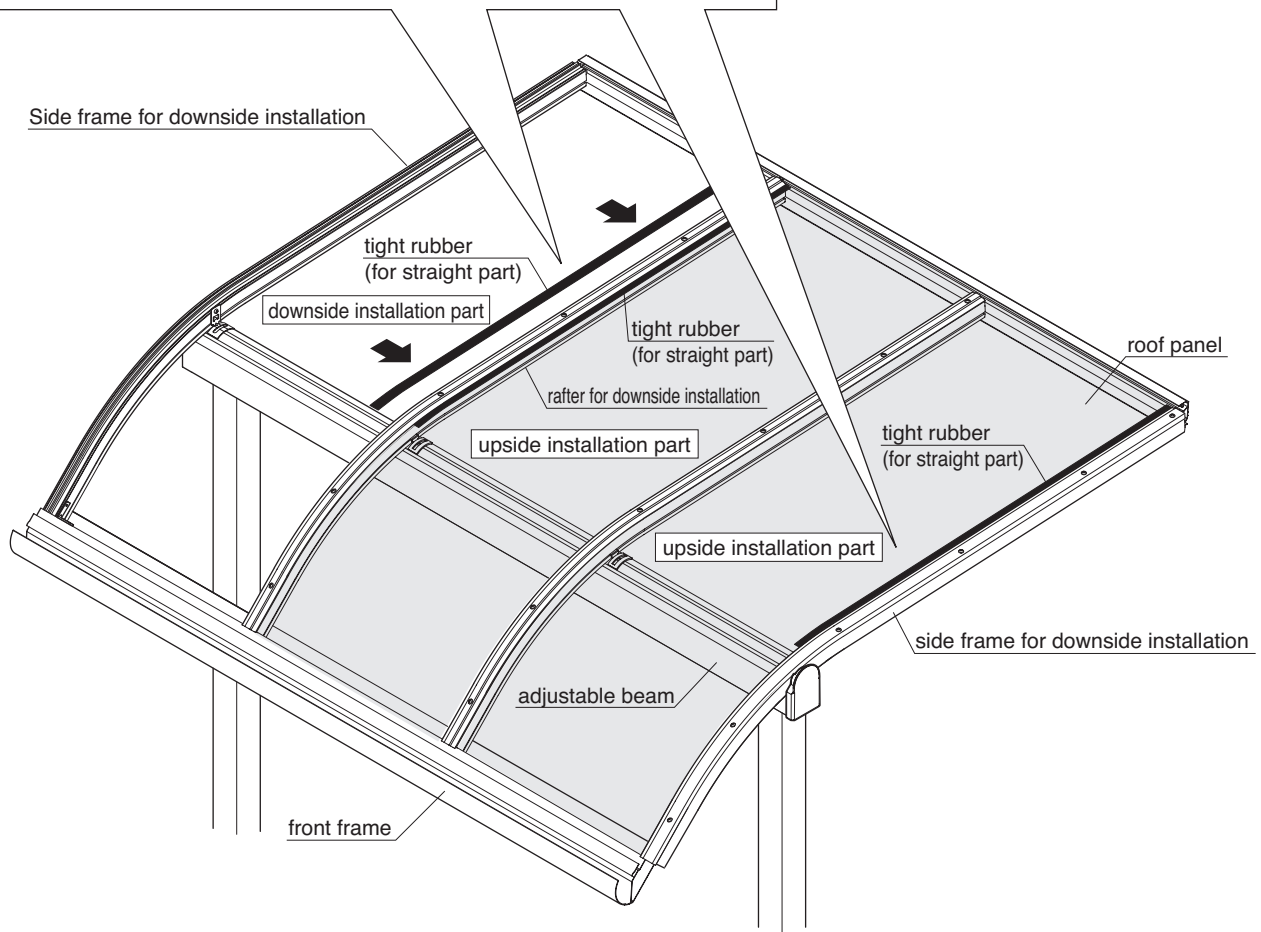
※Install as the same procedure of single unit from p.17 **1** to p.20 **7**.

Align the end of tight rubber to the end of side frame and rafter on house body side. And hook the tight rubber to the rafter and side frame.



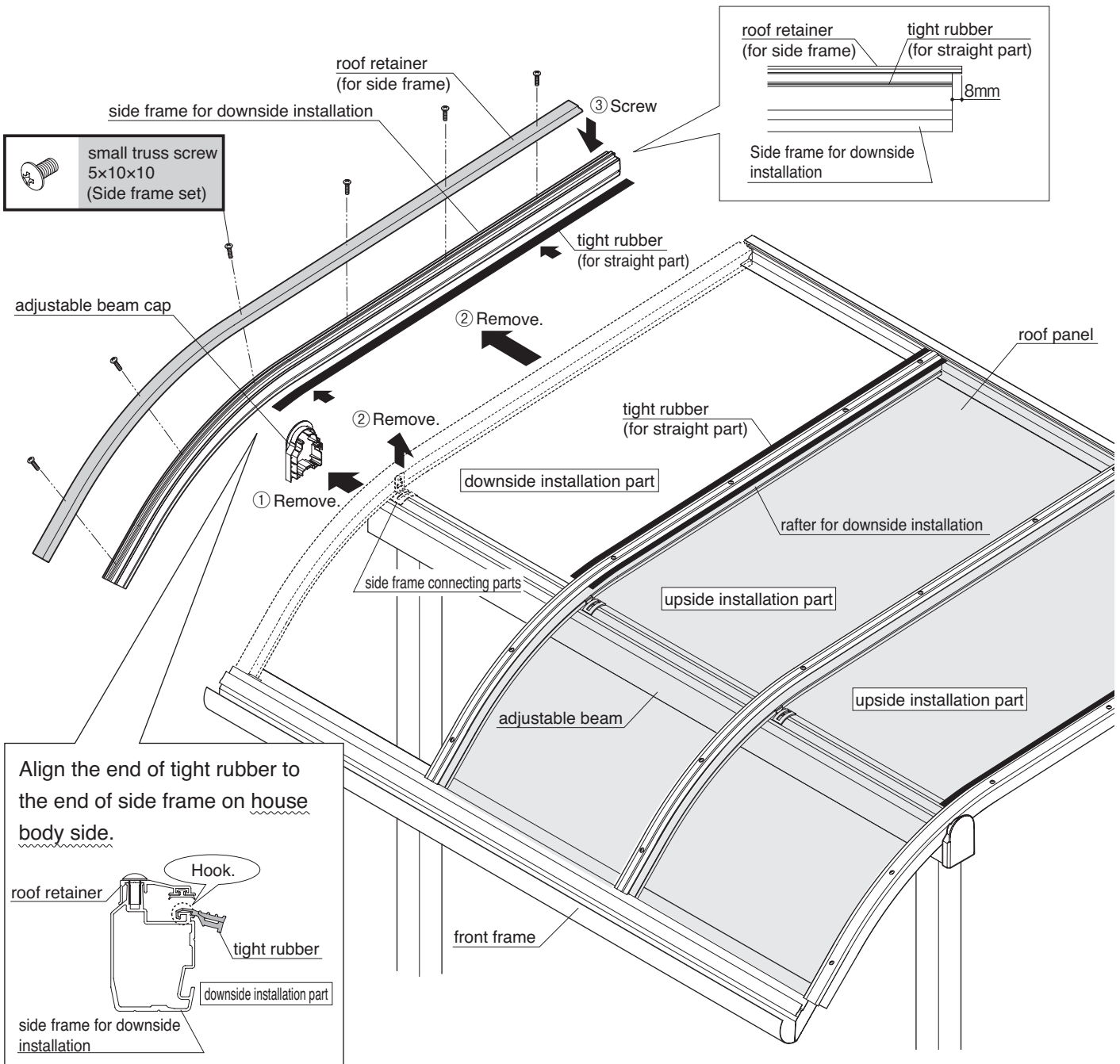
After hooking the tight rubber, install the upside installation panel and roof retainer. (refer p.21 **9**, p.22 **10**.)

The length and number of tight rubbers differ in F type and R type. In case of F type the tight rubber is only one piece for straight part, and in case of R type the tight rubber is divided into two pieces for straight part and round part (L=562mm). The tight rubber for straight part is used at **1** on this page.



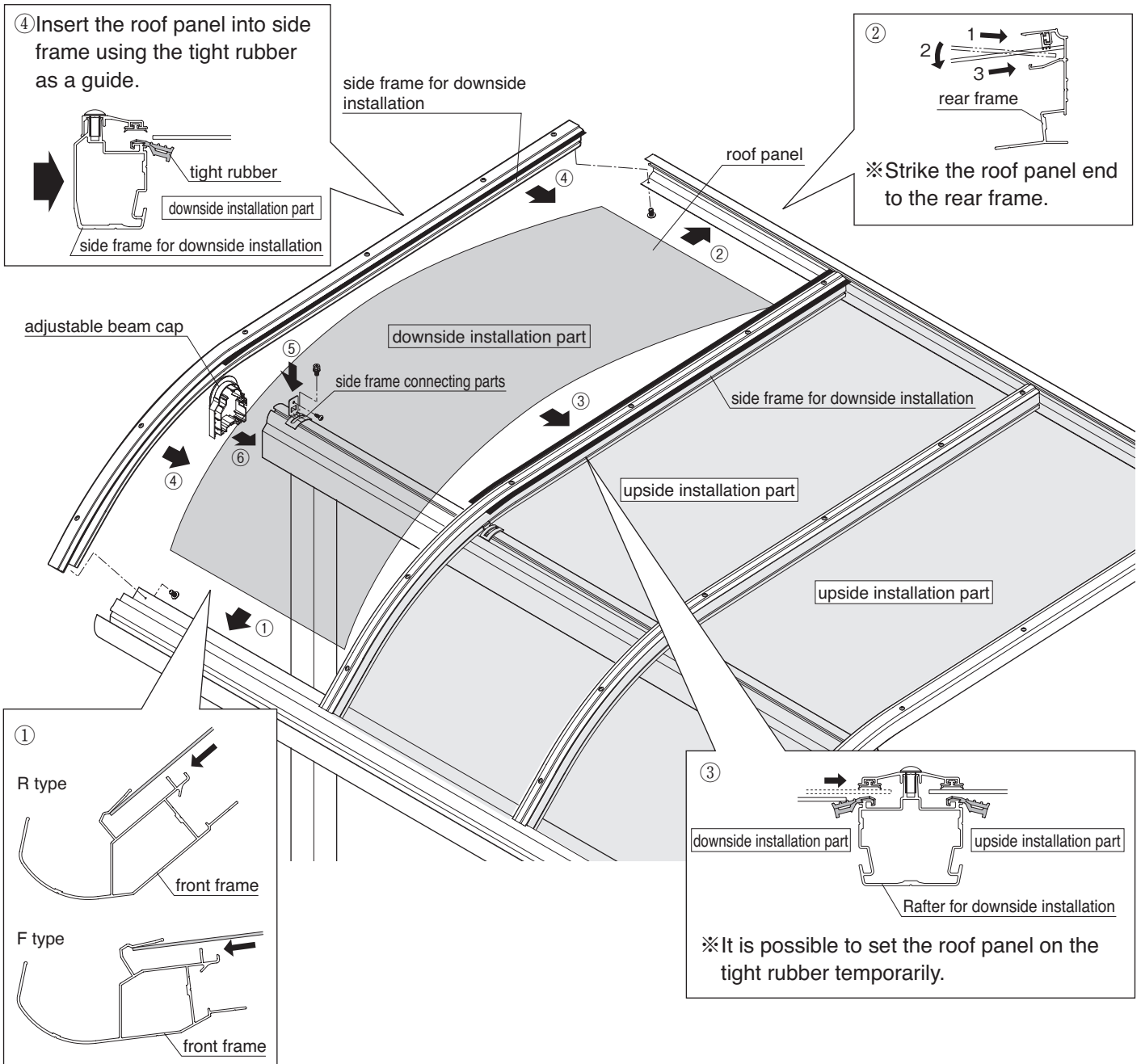
2 Installation of downside roof panel installation part

- ① Remove the adjustable beam cap on downside installation side.
- ② Remove the side frame for downside installation.
- ③ Install the roof retainer and tight rubber to the removed side frame.

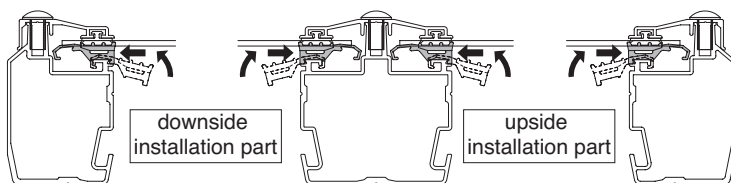


3 Roof panel installation

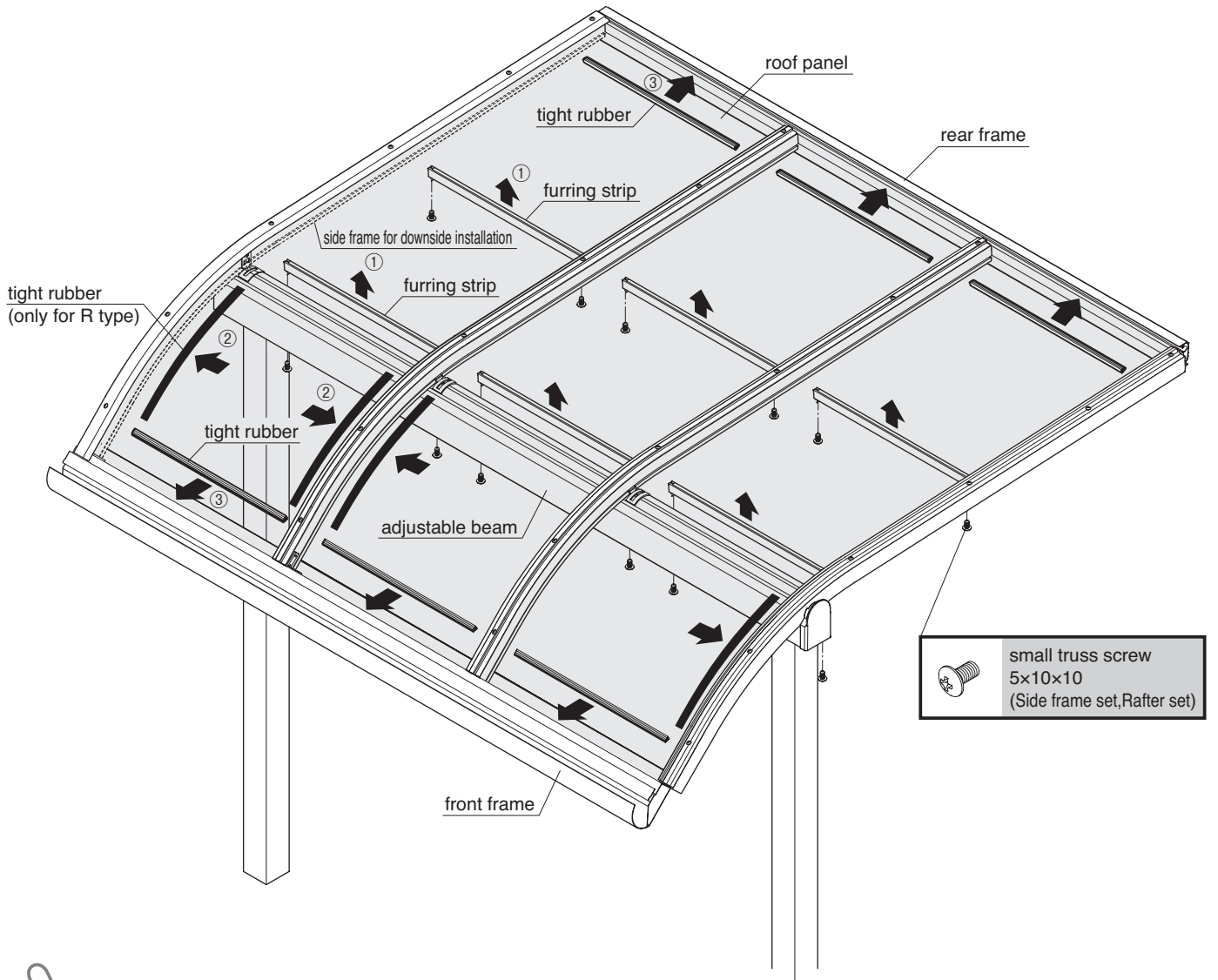
- ① Insert the roof panel into front frame.
- ② Insert the roof panel into rear frame.
- ③ Insert the roof panel into rafter for downside installation.
- ④ Install the side frame while adjusting the roof panel from house body side.
- ⑤ Attach the side frame fixing parts to the adjustable beam.
- ⑥ Attach the adjustable beam cap.



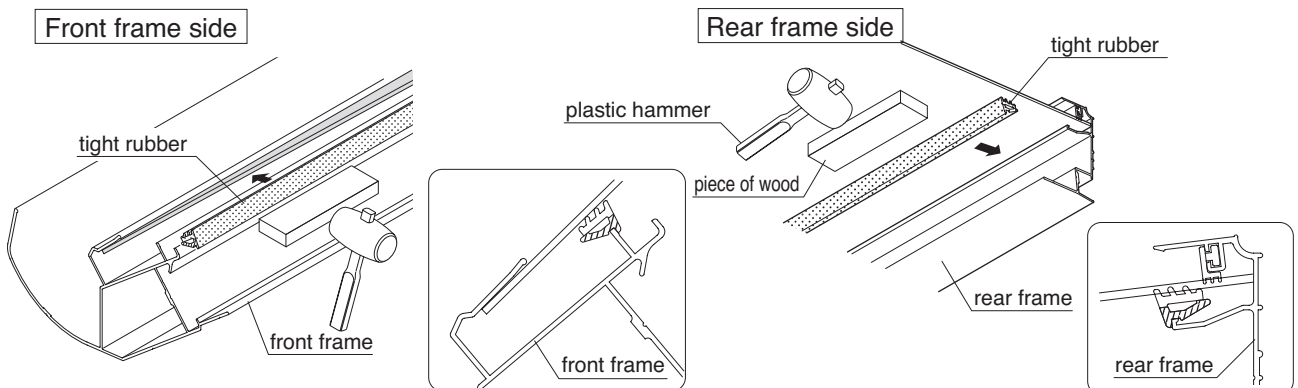
- After fixing the side frame, pick the tight rubber up and insert into side frame.
- ※ If it's difficult to insert, use a piece of wood and tap with plastic hammer.



4 Furring strips and tight rubber installation



※ If it's difficult to insert, use a piece of wood and tap with plastic hammer.

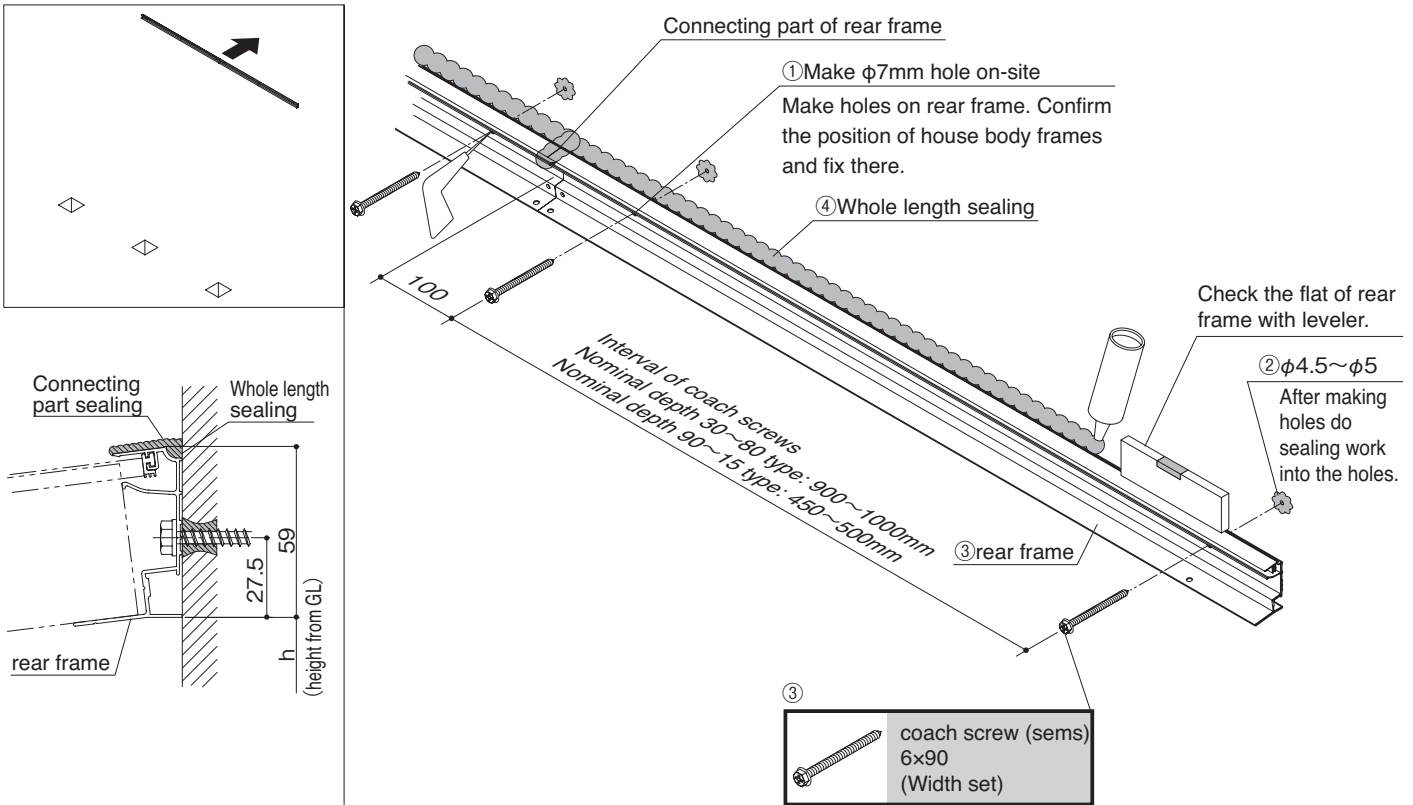


※ Be careful of the direction of tight rubber.

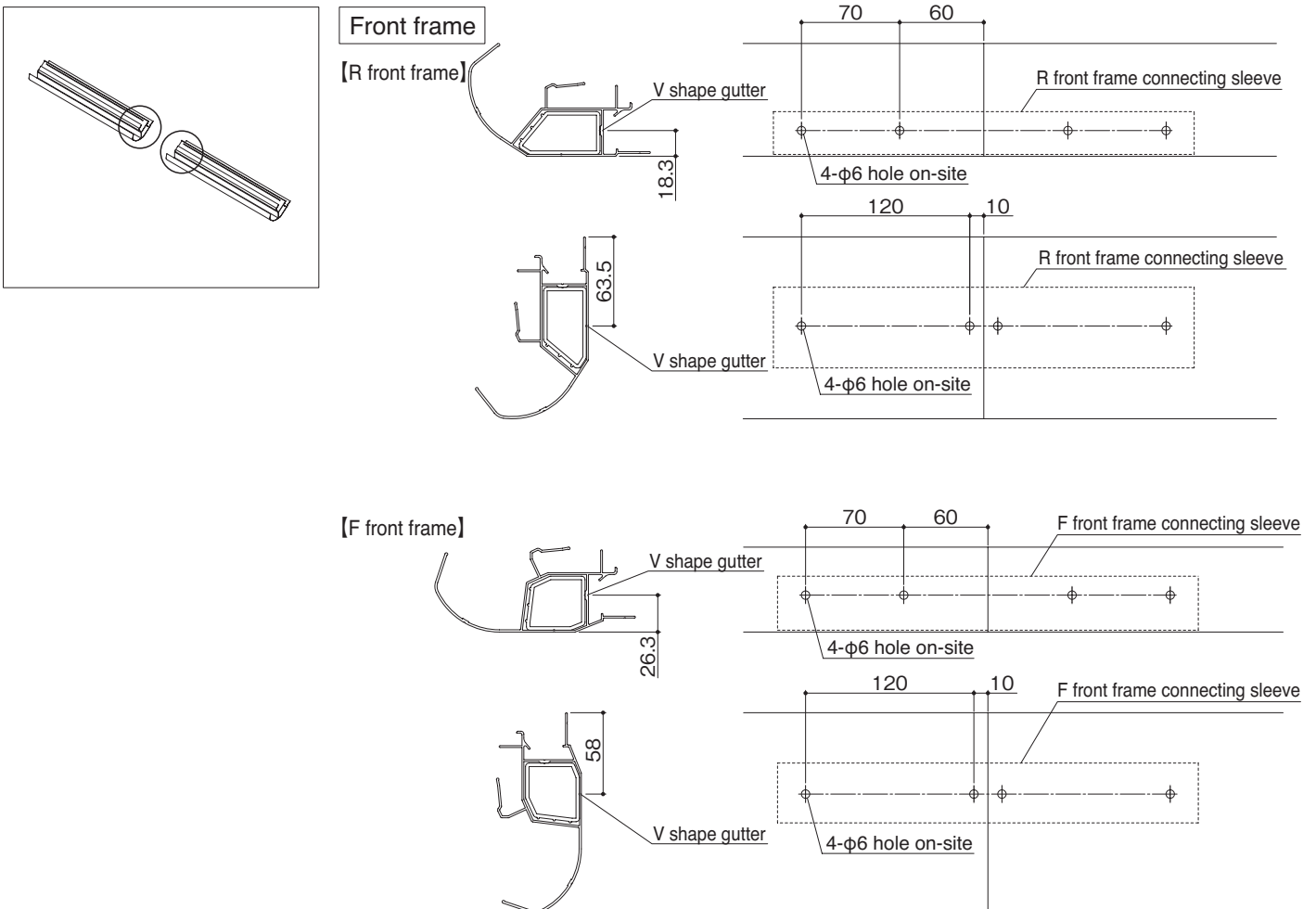


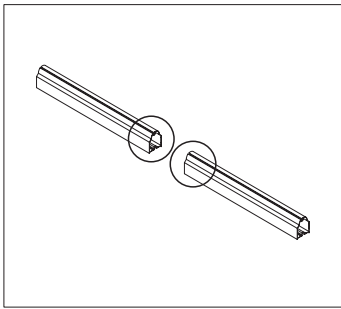
3. Installation procedure of connecting unit

1 Rear frame installation



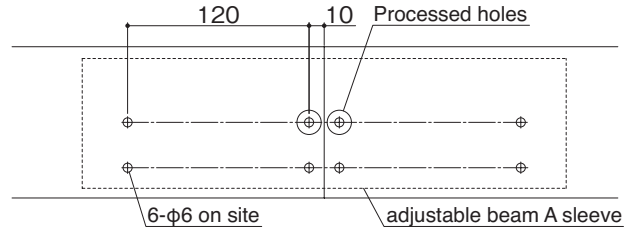
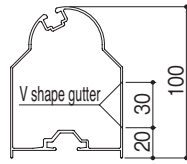
2-① Front frame and adjustable beam depth processing



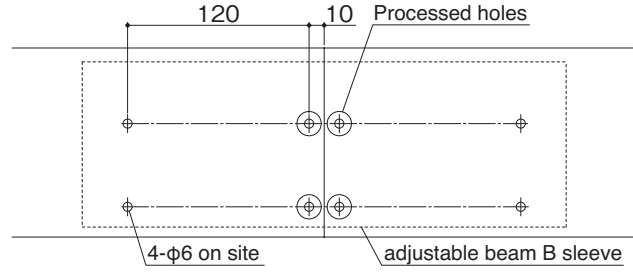
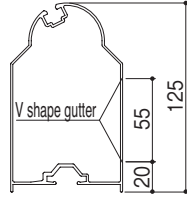


Adjustable beam

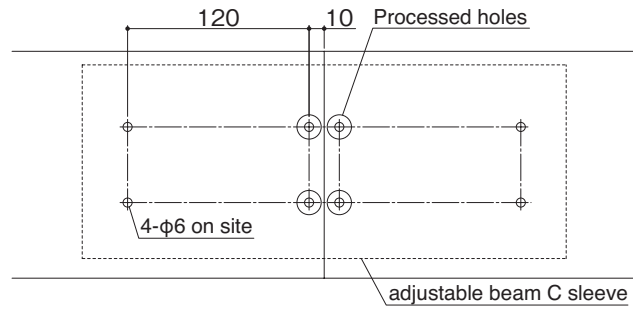
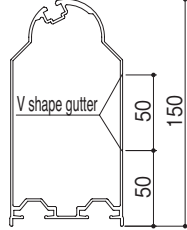
[adjustable beam A]



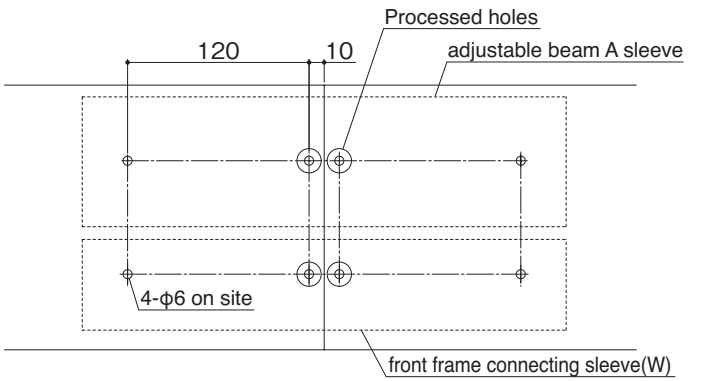
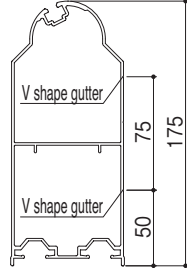
[adjustable beam B]



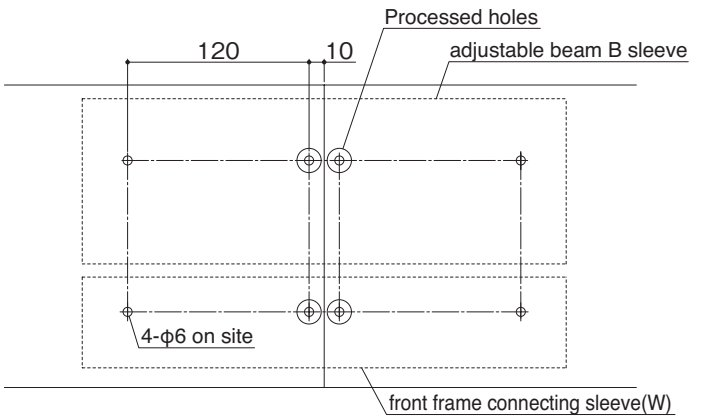
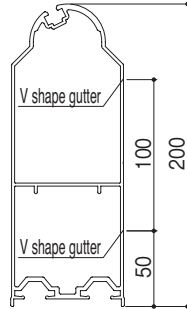
[adjustable beam C]



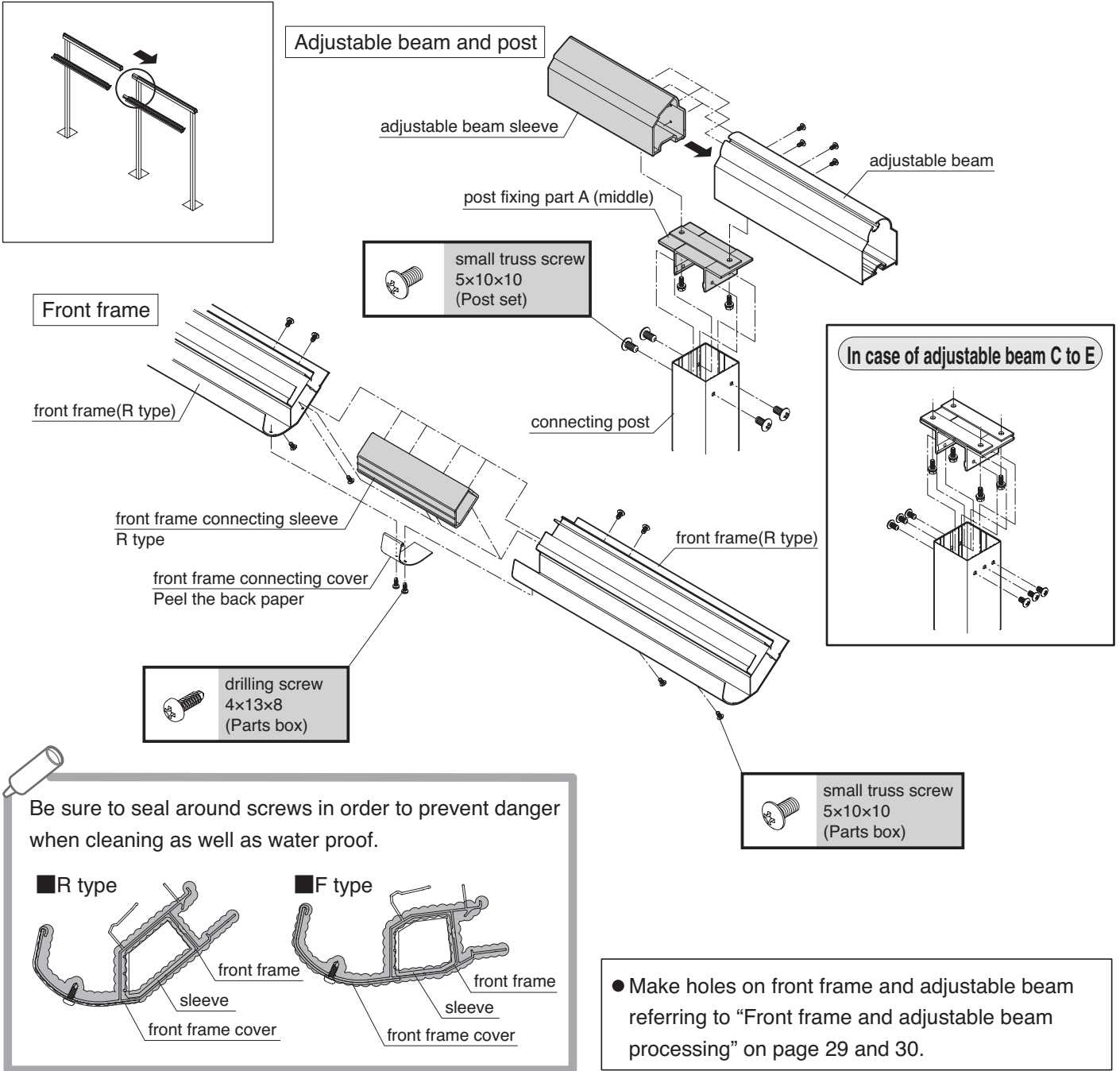
[adjustable beam D]



[adjustable beam E]

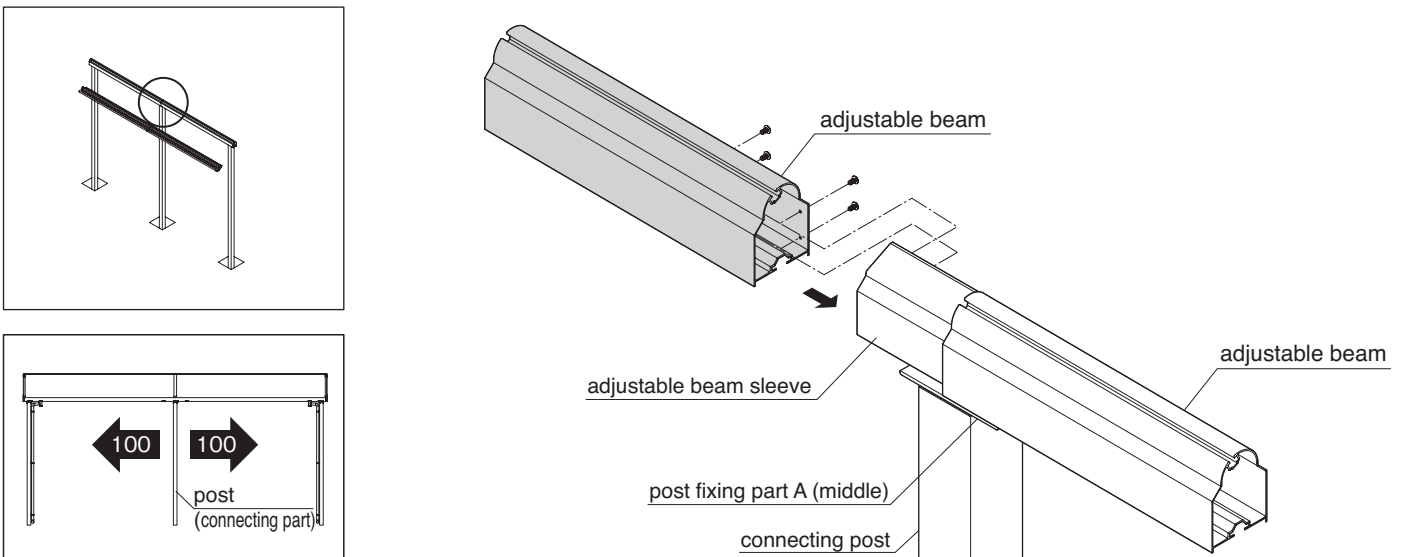


2-② Front frame, adjustable beam and post assembling

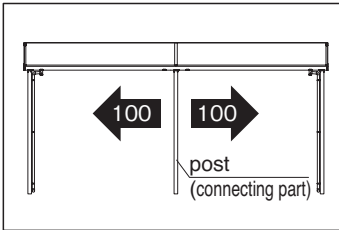


Installation procedure of connecting unit

3-② Adjustable beam and post (connecting side) installation



In case of moving the connecting post



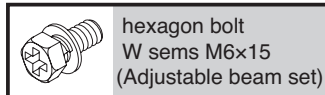
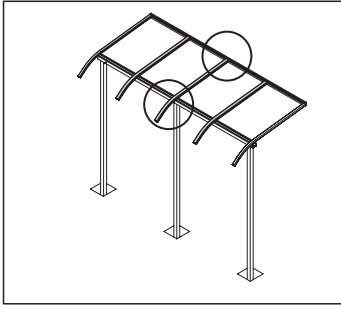
- When moving the connecting post, screw the post connecting parts to the adjustable beam and joint sleeve.
- ※ The position of screw and number of screws are different depending on the post moving dimension.

Screwing position	
<p>post moving dimension In case of $0 < A \leq 65$</p>	<p>adjustable beam connecting part A post adjustable beam sleeve</p> <p>adjustable beam sleeve 17 17 17 17</p> <p>100 adjustable beam</p> <p><Adjustable beam connecting part> 2-truss screw 5x20x10 adjustable beam: $\phi 6\text{mm}$ / sleeve: $\phi 4.5\text{mm}$ on-site Screw at 10mm from end of post connecting parts.</p> <p><post connecting parts> 4-truss screw 5x20x10 Make holes on post connecting parts/adjustable beam: $\phi 6\text{mm}$ on-site. Sleeve: $\phi 4.5\text{mm}$ on-site</p>
<p>post moving dimension In case of $65 < A \leq 80$</p>	<p>adjustable beam connecting part A post adjustable beam sleeve</p> <p>adjustable beam sleeve 17 17 17 17</p> <p>100 adjustable beam</p> <p><Adjustable beam connecting part> 2-truss screw 5x20x10 adjustable beam: $\phi 6\text{mm}$ / sleeve: $\phi 4.5\text{mm}$ on-site Screw at 10mm from connecting part.</p> <p><post connecting parts> 4-truss screw 5x20x10 Make holes on post connecting parts/adjustable beam: $\phi 6\text{mm}$ on-site. Sleeve: $\phi 4.5\text{mm}$ on-site</p>
<p>post moving dimension In case of $80 < A \leq 100$</p>	<p>adjustable beam connecting part A post adjustable beam sleeve</p> <p>adjustable beam sleeve 17 17 17 17</p> <p>100 adjustable beam</p> <p><Adjustable beam connecting part> 2-truss screw 5x20x10 adjustable beam: $\phi 6\text{mm}$ / sleeve: $\phi 4.5\text{mm}$ on-site Screw at 10mm from connecting part.</p> <p><post connecting parts> 4-truss screw 5x20x10 Make holes on post connecting parts/adjustable beam: $\phi 6\text{mm}$ on-site. Sleeve: $\phi 4.5\text{mm}$ on-site</p>

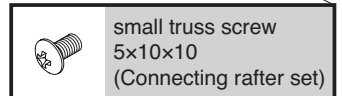
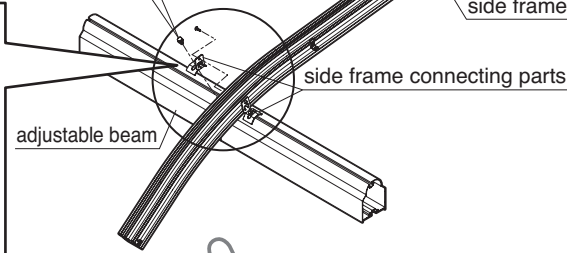
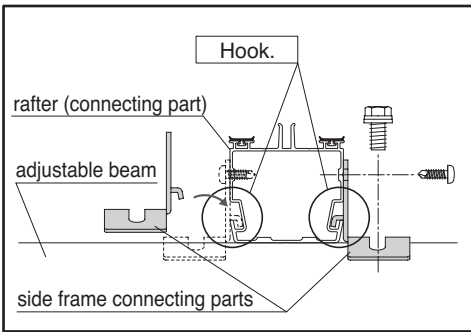
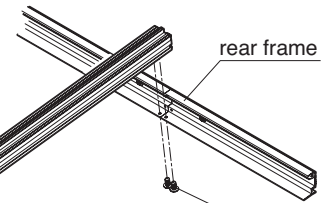
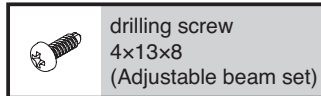
In case of adjustable C to E

Screwing position	
<p>post moving dimension In case of $0 < A \leq 65$</p>	<p>adjustable beam connecting part A post</p> <p>adjustable beam sleeve 14.5 14.5</p> <p>100 adjustable beam</p> <p><Adjustable beam connecting part> 2-truss screw 5x20x10 adjustable beam: $\phi 6\text{mm}$ / sleeve: $\phi 4.5\text{mm}$ on-site Screw at 10mm from end of post connecting parts.</p> <p><post connecting parts> 4-truss screw 5x20x10 Make holes on post connecting parts/adjustable beam: $\phi 6\text{mm}$ on-site. Sleeve: $\phi 4.5\text{mm}$ on-site</p>
<p>post moving dimension In case of $65 < A \leq 80$</p>	<p>adjustable beam connecting part A post</p> <p>adjustable beam sleeve 14.5 14.5</p> <p>100 adjustable beam</p> <p><Adjustable beam connecting part> 2-truss screw 5x20x10 adjustable beam: $\phi 6\text{mm}$ / sleeve: $\phi 4.5\text{mm}$ on-site Screw at 10mm from connecting part.</p> <p><post connecting parts> 4-truss screw 5x20x10 Make holes on post connecting parts/adjustable beam: $\phi 6\text{mm}$ on-site. Sleeve: $\phi 4.5\text{mm}$ on-site</p>
<p>post moving dimension In case of $80 < A \leq 100$</p>	<p>adjustable beam connecting part A post</p> <p>adjustable beam sleeve 14.5 14.5</p> <p>100 adjustable beam</p> <p><Adjustable beam connecting part> 2-truss screw 5x20x10 adjustable beam: $\phi 6\text{mm}$ / sleeve: $\phi 4.5\text{mm}$ on-site Screw at 10mm from connecting part.</p> <p><post connecting parts> 4-truss screw 5x20x10 Make holes on post connecting parts/adjustable beam: $\phi 6\text{mm}$ on-site. Sleeve: $\phi 4.5\text{mm}$ on-site</p>

4-② Rafter (connecting part) installation



Hook the fin of rafter fixing metal to the rafter (connecting part) and fix temporarily.

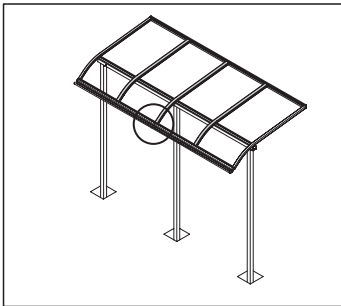


In case that there isn't enough space to use driver, do M5 topping work into $\phi 4.5$ pre-holes and use upset bolts to install the rafters. It can be tightened with the wrench.

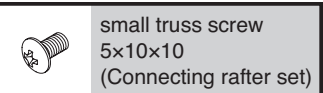


Upset bolts M5x12
(Connecting rafter set)

4-③ Front frame (connecting part) installation



rafter (connecting part)



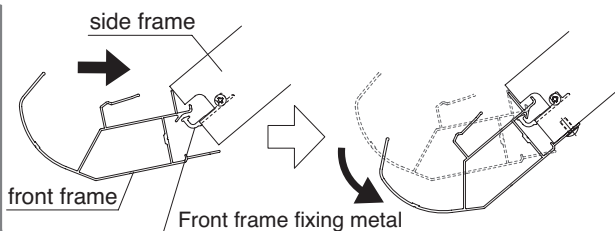
front frame

front frame connecting cover

front frame

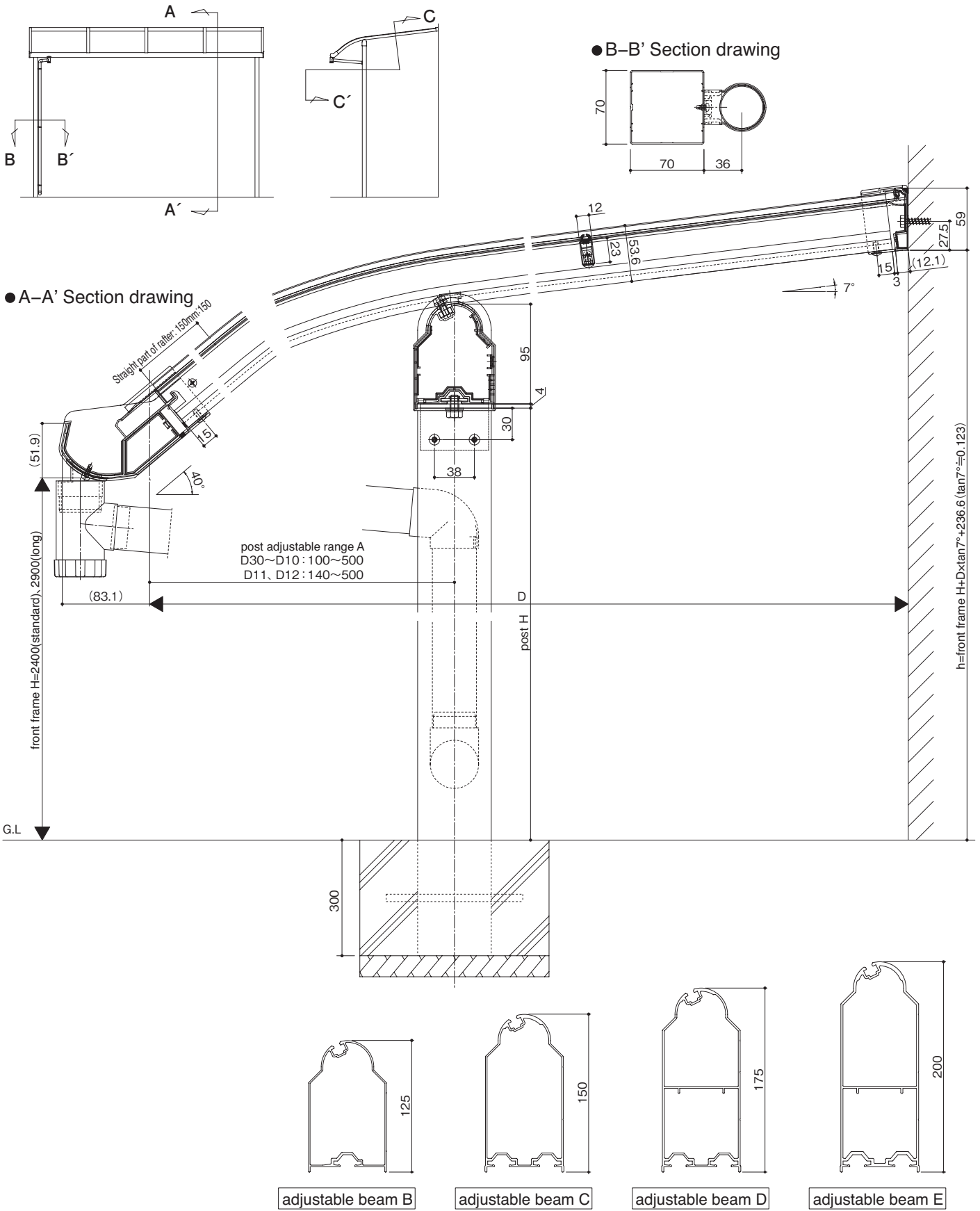


Temporal setting method of front frame

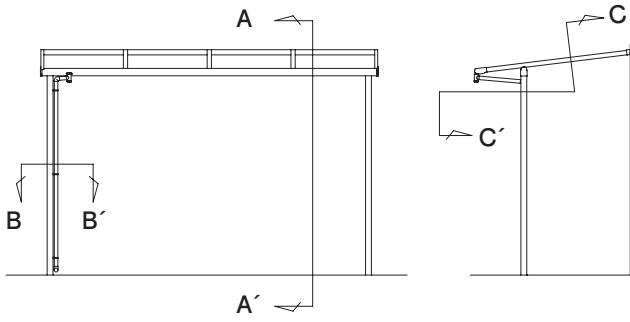


9-② Attaching rain gutter parts

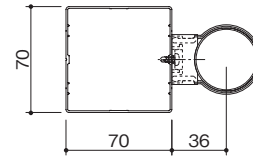
The number of rain gutters is different depending on the roof size. See page 24 about the number of rain gutters and installation.



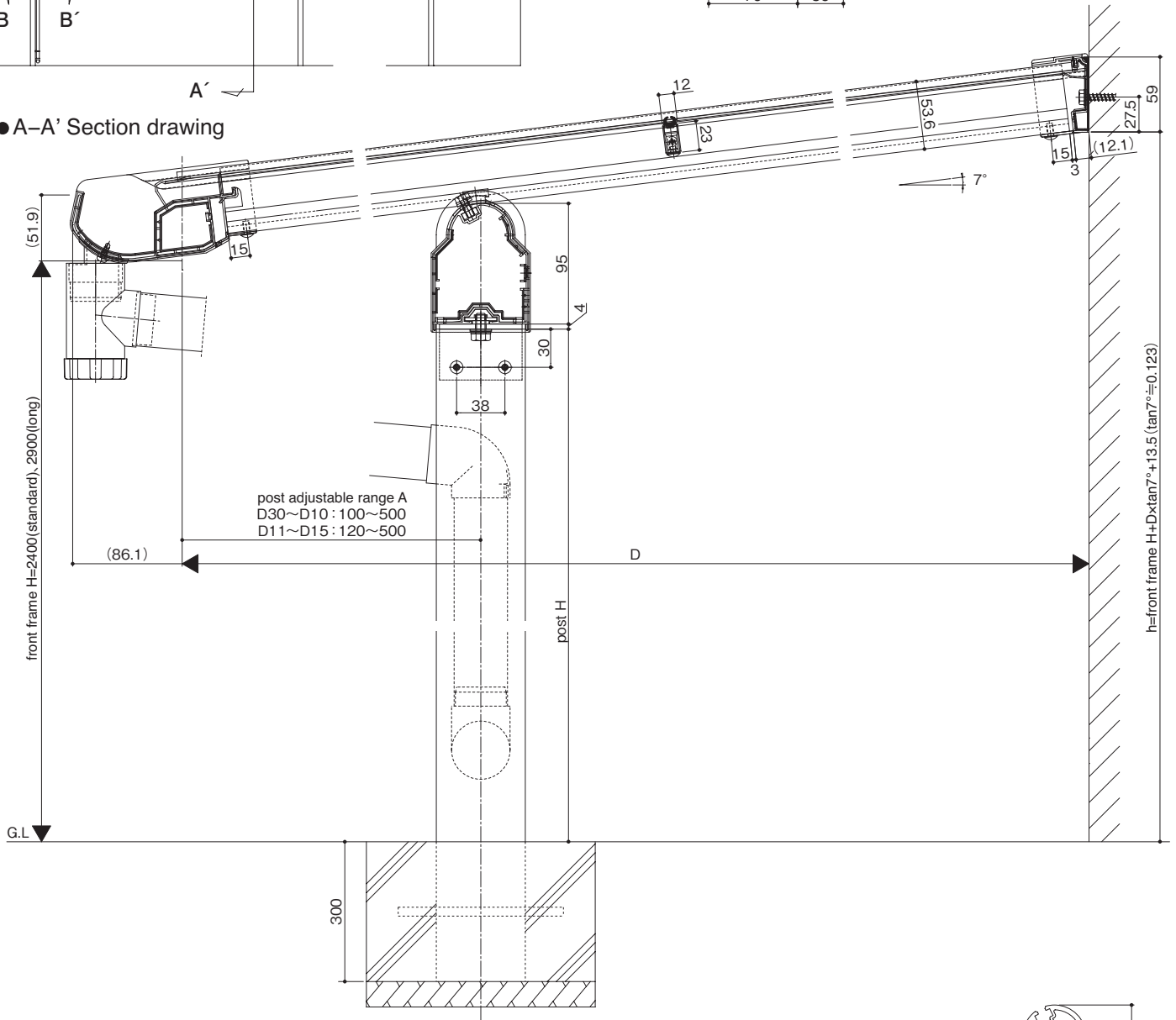
Nominal depth \ Nominal width	30	40	50	60	70	80	90	10	11	12
60·200										
90·300	adjustable beam A				adjustable beam B	adjustable beam C	adjustable beam D			
12·400	adjustable beam B								adjustable beam D	
15·500	adjustable beam B								adjustable beam E	
18	adjustable beam C				adjustable beam D		adjustable beam E			



● B-B' Section drawing

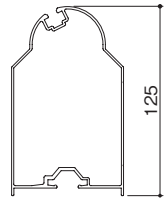
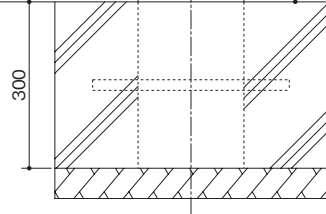


● A-A' Section drawing

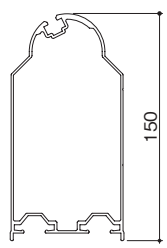


post adjustable range A
 D30~D10 : 100~500
 D11~D15 : 120~500

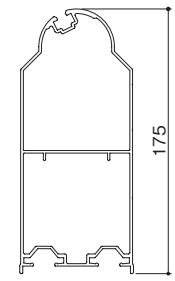
$h = \text{front frame } H + D \times \tan 7^\circ + 13.5 (\tan 7^\circ \approx 0.123)$



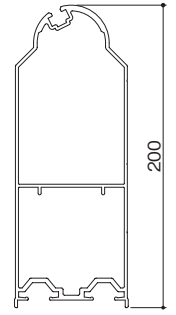
adjustable beam B



adjustable beam C



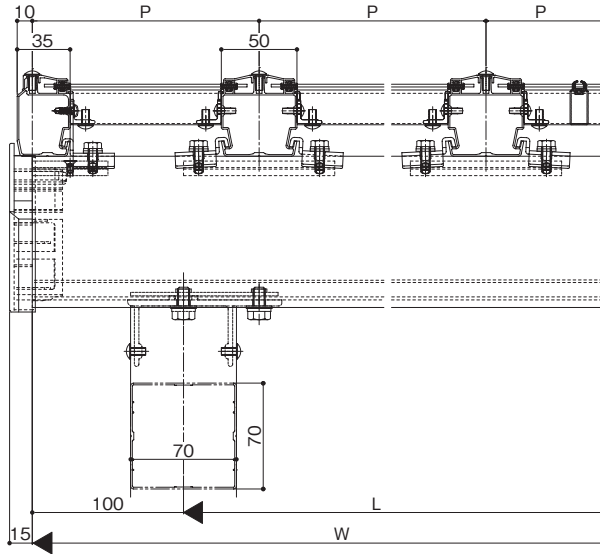
adjustable beam D



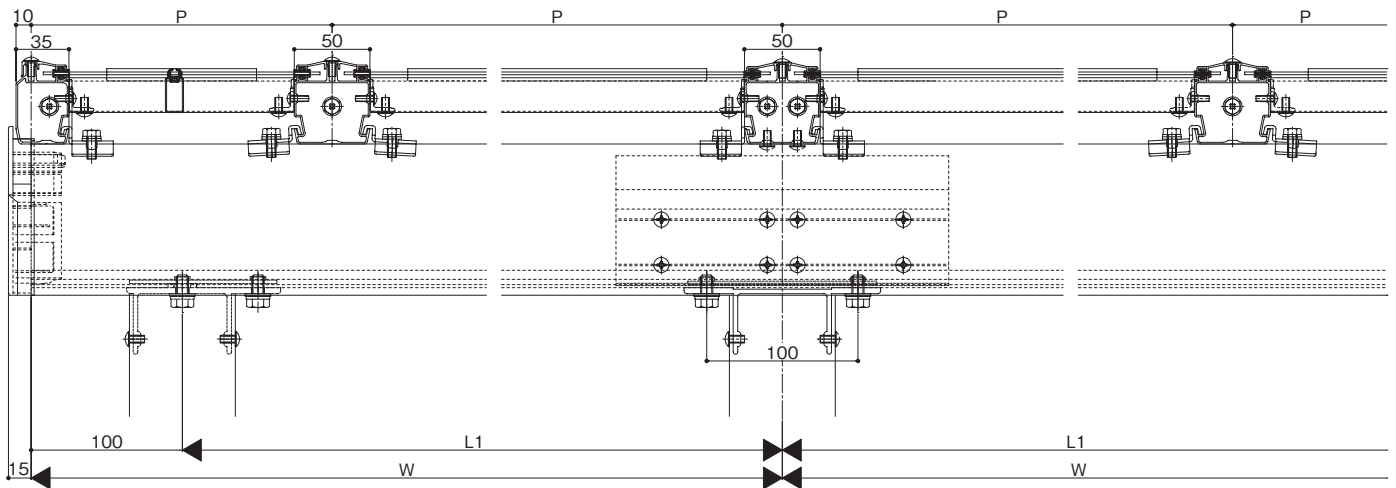
adjustable beam E

Nominal depth \ Nominal width	30	40	50	60	70	80	90	10	11	12	13	14	15
60·200													
90·300	adjustable beam A				adjustable beam B		adjustable beam C		adjustable beam D				
12·400	adjustable beam B								adjustable beam E				
15·500	adjustable beam B								adjustable beam E				
18	adjustable beam C						adjustable beam D		adjustable beam E				

●C-C' Section drawing Single unit installation



●C-C' Section drawing Connecting unit installation



Nominal width	L	L1	W	P		
				Nominal depth 30~80	Nominal depth 90~15	
909 type	60	1618	1718	1818	909	454.5
	90	2527	2627	2727		
	12	3436	3536	3636		
	15	4345	4445	4545		
	18	5254	—	5454		
1000 type	200	1800	1900	2000	1000	500
	300	2800	2900	3000		
	400	3800	3900	4000		
	500	4800	4900	5000		