

# Facade panels

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Guidance on design and installation of panels Ceradir V  
Installation with clips

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# CONTENTS

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	Page
• Safety precautions in the preparation and performance of work	2
• Caution / prohibition when installing panels	3
• Transportation and storage	10
• Rear Ventilated Facade system with Ceradir V panels	12
• Design criterion	13
• Installation criterion	14
• Description of the KMEW accessories for installation	19
• Tool required for installation	21
• Installation steps	22
• Substructure Check / Panel Layout	23
• Panel cutting	24
• General Notes for Installation	25
• 【 horizontal application 】	
Installation Highlights (Clip)	26
Installation Highlights (Long Clip)	27
Installation at sill / Clip Installation	28
Installation of vertical joints	29
Metal outside corner	30
Inside corner	31
Around openings, doors and windows	32
Adjoining facade panels to the soffit	33
Parapet covers	34
Overhang	35

	Page
• 【 Vertical installation 】	
Installation Highlights (Clip)	36
Installation Highlights (Long Clip)	37
Installation at sill / Clip Installation	38
Installation of horizontal joints (Application of a T-shaped aluminum joiner)	39
Installation of horizontal joints (Application of an through wall flashing)	40
Outside corner (Metal corner)	41
Inside corner (L-shaped aluminum joiner)	42
Around openings, doors and windows	43
Installation around openings, doors and windows (Panel Cutting)	44
Adjoining facade panels to the soffit	45
Parapet covers	46
Overhang	47
Adjoining facade panels to the roof	48
• Obtuse Angle	49
• Putty and touch-up painting	50
• Replacing a damaged panel	51

# Safety precautions in the preparation and performance of work

## Work safety requirements

- Performance of works on installation should take a complex of measures under the safety precautions, including fire safety.
- Persons who are specially trained and have experience in the installation of Rear Ventilated Facade system should be allowed to install.
- When performing work, installers must follow design installation drawing (technical drawing or notes).
- Each installer must be provided with personal protective equipment designed for the type of work being performed, as well as a safety belt.
- The tools used during the installation of the panels must be in good working condition and used only for their intended purpose.
- Installation should not be carried out in conditions such as strong winds, bad weather or frozen roads.
- Workplaces and access to them must be safe and checked before each use.
- Cutting, drilling and other mechanical impact on the panel should be performed only in a designated area.

## Very important

### ● Warnings for Panel Silica Dust

#### Notes: Do not inhale the silica dust from the panel

Facade panels contain silica. The inhalation of silica dust may cause a potentially dangerous lung disease such as silicosis. Please pay attention to the following points when drilling, cutting and polishing at the time of installation and transportation of panels;

- 1) Work outdoors as much as possible, or ventilate the room with a local exhaust system in case of work indoors .
- 2) Take a respirator.
- 3) Warn others in the vicinity. For more information, please check out the product safety data sheet (SDS). Ignoring the information given in the product safety data sheet and the instruction from installation manual may lead to serious disease.

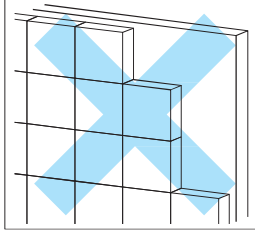
### ● Precautions for health

- 1) If you inhale dust for a long time during cutting work, you may damage your health, so please observe the following items.
  - Use a dust-proof cutter equipped with a vacuum cleaner or in local exhaust system.
  - Wear respirator masks and protective goggles for the powder dust.
  - Work in a well ventilated area.
  - Gargle and wash your hands after working.
- 2) When using solvent-based materials such as touch-up paint and waterproof sealant, primer, wear proper protective equipment (mask / gloves) in a well-ventilated area.

## Caution / prohibition when installing panels

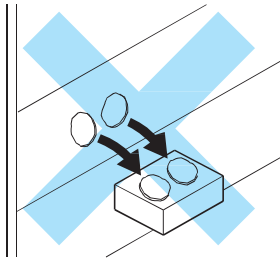
### ● Direct fastening to KMEW facade panels

Attaching the tile directly to the facade panels may cause the tile to fall off, break or crack.



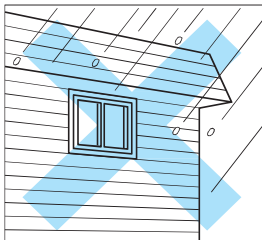
### ● Fastening accessories to be after-attached to KMEW facade panels

When installing accessories to be after-attached, fixing them only to the facade panels may damage the our facade panels or cause the accessories to fall off.



※ Be sure to fix it to the base structure because it is not possible to obtain sufficient holding power by single façade panel fixing. Also, avoid attaching on our façade panel joint, and secure to fasten accessories 30~40mm from the edges of the facade panels

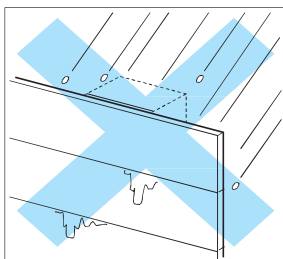
### ● Installing on tilting parapets



Installation on sloping parapets requires harsher conditions closer to the roof than vertical walls, causing deterioration of the coating, frost damage, and leaks.

※ Use roofing materials.

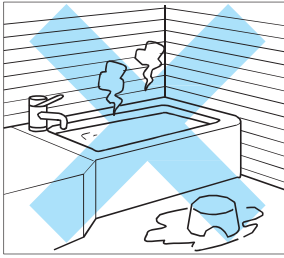
### ● Installation on fences and other similar objects that are exposed to rain from behind.



The back of the façade panels is only protected with a primer. Due to repeated wetting and drying, as a result of water absorption from the back of the panel, the panels may warp.

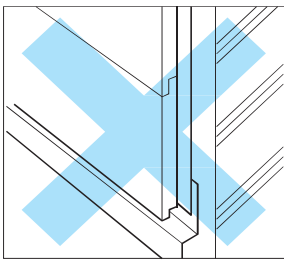
## Caution / prohibition when installing panels

### ● Installation on areas that are constantly subjected to water or steam

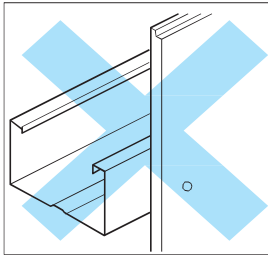


They will be affected by water, heat, etc, resulting in warping, freezing, deterioration in strength and cracking.

### ● Direct fastening of the KMEW facade panels on ALC/RC walls

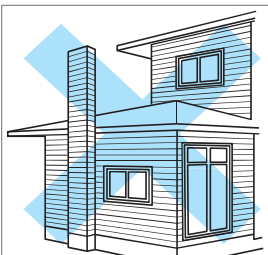


It could cause breakage of the façade panel fastening areas or falling of the facade panels.



It could cause breakage of the façade panel fastening areas or falling of the façade panels. Moreover, this installation method does not correspond to standard Rear Ventilated Facade system installation method.

### ● Installation on centralized smock-stacks



Moisture generated inside smoke stacks will leak through the mortar and the moisture will be absorbed by the facade panel from backside, causing warping and freezing.

### ● Installation on curved walls

It may cause breakage of the façade panel fastening areas or falling due to different shape of the wall.

### ● Installation on reverse tilted walls

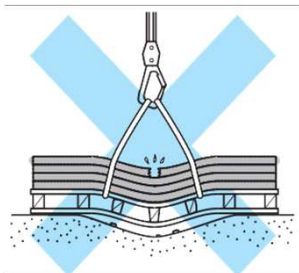


← Reverse tilted wall

Installation of the façade panel on tilted wall, where an eave protrudes from the sill, may cause warping, deformation and panel fall.

## Caution / prohibition when installing panels

### ● Stock the products on not stiff and not flat places



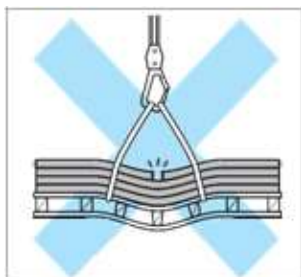
Storage on uneven or non-flat places may result in cracks and breakage of the products.

### ● Transporting panels horizontally



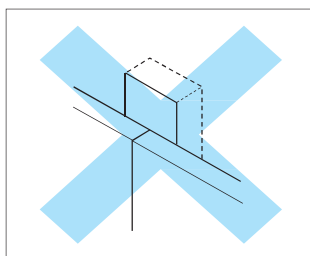
In order to prevent façade panel damage, which can be caused by unexpected braking of the car, fix the façade panels with a rope and insert protectors at the corners.

### ● Lifting the panels with insufficient strong pallet under the panels



In order to avoid façade panels bending put additional strong pallet under the panels. If the panels bent severely, it may cause surface crack and warping.

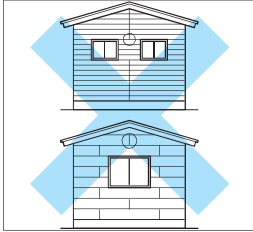
### ● Installation without T-shaped aluminum joiners



If the façade panels are installed without T-shaped aluminum joiners it may cause cracking and deformation of the facade panels.

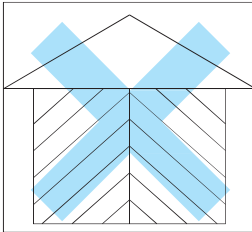
## Caution / prohibition when installing panels

### ● Staggered installation, in which vertical joints are not on a straight line



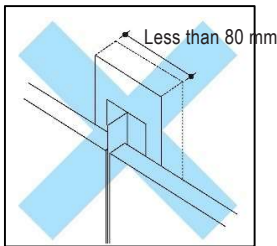
Water flowing down the joint can accumulate on the panel below it and causes water leakage and freezing.

### ● Installation diagonally



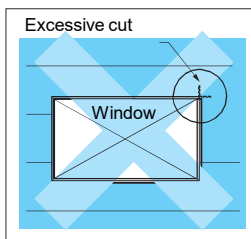
This type of installation does not provide reliable installation of the panels and can lead to displacement, deformation and fall of the panels. This causes water to flow onto the wall, resulting in rainwater leakage.

### ● Using a vertical furring strip that is less than 80 mm wide at the joints



Using a vertical furring strip that is less than 80 mm wide will not secure the clip firmly. It can also lead to cracking of the panel when fixing the edge with a face screw.

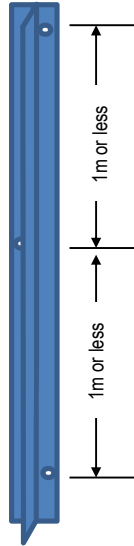
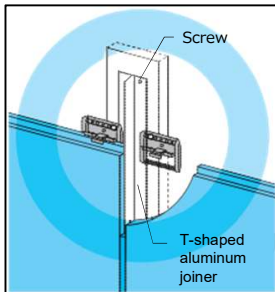
### ● Excessive cut on the panel around openings and installation of the panel without separation if the panel width is less than the required minimum size



This can lead to cracking. Excessive cuts can also lead to rainwater leakage and freezing.

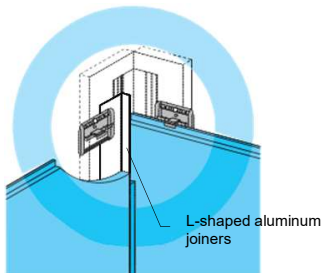
## Caution / prohibition when installing panels

- **T-shaped aluminum joiner should be fixed to the vertical furring strip at intervals of approximately 1 m**



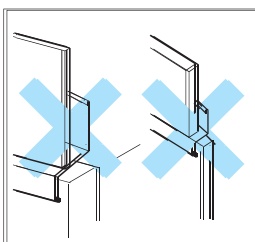
If T-shaped aluminum joiners are not securely fastened, lateral displacement of the facade panels can occur.

- **Use of L-shaped aluminum joiners at inside corners and around openings**



Lateral displacement of the façade panels may occur if the L-shaped aluminum joiners are not used.

- **Install the panel close to the flashing**

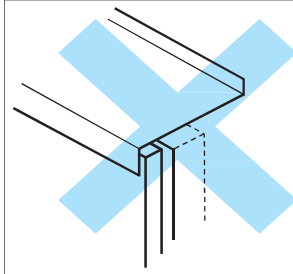


Water can accumulate in the joints between the flashing and the façade as a result of capillary action, which can damage the base material or cause freezing. In addition, this does not correspond to the standard installation technique for rainscreen system.



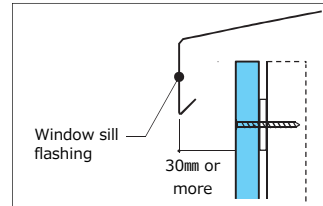
## Caution / prohibition when installing panels

### ● Installation of panels under the projections for the outer frame with the opening of the frame, at least 30 mm.

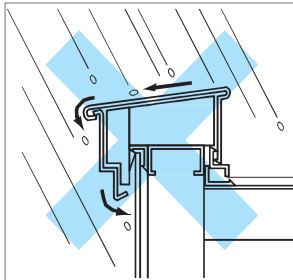


This can lead to corrosion and icing of façade panels due to water dripping from window frames, etc.

※ To prevent water from dripping from the window frame onto the surface of the facade panels, the overhang should be 30 mm or more.

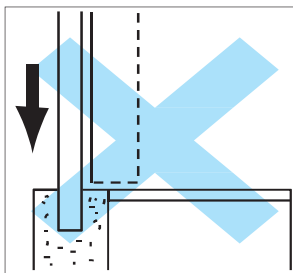


### ● Outward sloped head board for parapet



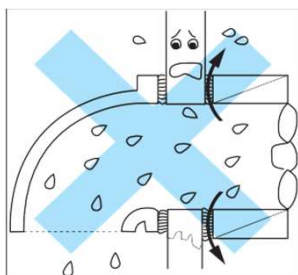
If the head board for parapet is horizontal or tilted outward, large amounts of rainwater will flow down the facade panel, which can lead to stain and freezing of the panel. The head board should be tilted inward.

### ● Installation into / on the foundation



Facade panels absorb water at the junction with the foundation, which can lead to delamination of the coating, damage to the base material, freezing, etc. In addition, there will be no ventilation gap, which is necessary to remove moisture and water.

### ● Installation of ventilation elements after facade panels

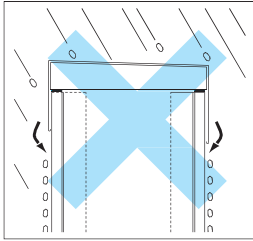


If the ventilation elements are installed after the facade panels have been installed, this may cause subsequent moisture penetration into the walls and lead to condensation, rainwater leakage, freezing, etc.

※ Ventilation hoods and connecting pipes should be installed before installation of the facade panels, and the edges of the wind-moisture protective membrane should be sealed with a waterproof foil, etc. to prevent water ingress.

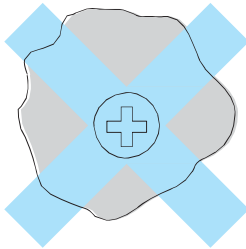
## Caution / prohibition when installing panels

### ● Head board for parapet with insufficient overhang leading to rainwater flow on the façade panel surface or no outlets for ventilation



As a result of water running down from the head board, the panels will get dirty and may be subject to freezing. If the Rear Ventilated Facade system can not be secured, condensation may cause and freezing may occur.

### ● Too large area of application of the touch-up paint



In touching up the nail heads, if the area is too large, the area stands up after years of aging.

※ The touch-up paint should be applied to the screw heads to a minimum.

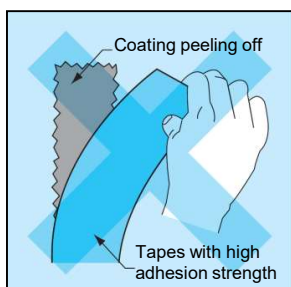
### ● Cleaning of powder/dust on the surface for the facade panel using water



If water is used to clean or wash the surface, light spots may appear on the surface.

※ Use a dust blower, clean dry cloth, soft brush, or etc.

### ● Application of a tape with high adhesive strength on the surface of facade panels



If tapes with high adhesion strength are applied to the surface of the facade panels (for example, fabric tapes or curing tape), the paint coating may peel off, or an adhesive may remain on the surface.

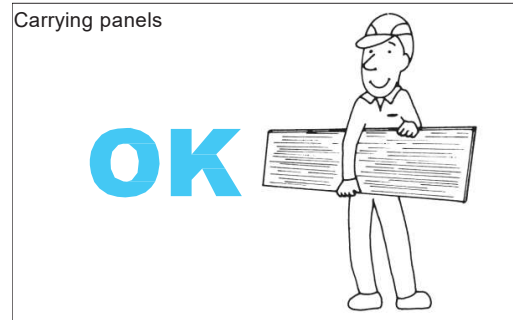
※ If possible, try not to apply the tape to the surface of the facade panels.

# Transporting and storage

## Handling and carrying

- Carry the panels with your hand in the middle as shown on the figure (right) to avoid damage.
- Be careful not to damage the corners and surface of the panel by bumping or dropping the panel.
- Do not touch the panels with dirty hands.

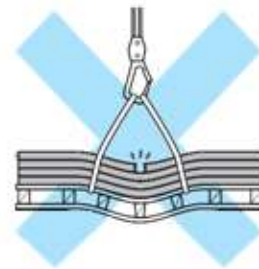
Carrying panels



## Lifting

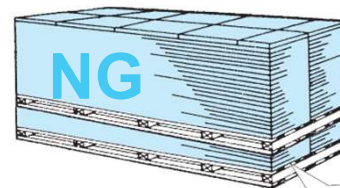
- Pay attention to the points below when lifting the panels
- 1. Do not have the panels warped too much
- 2. When lifting the panels pay close attention neither hit some other objects nor drop.
- 3. When lifting with a crane, reinforce the pallet in order to avoid warping the panels.

Reinforcement example: Slide steel reinforcement through a pallet for reinforcement or use a reinforced pallet with suitable strength

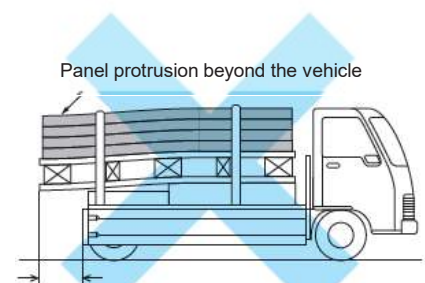
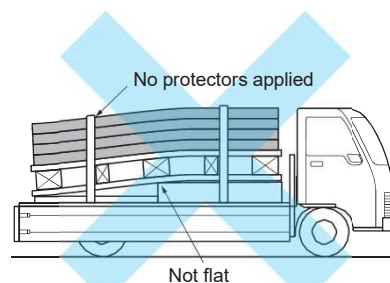
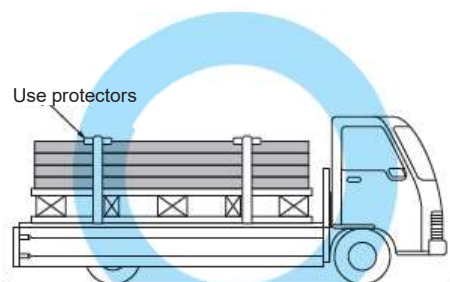


## Transport panels by vehicle

- 1 pallet weighs approximately 2 tons
- Lay the panels horizontally when transporting panels by car.
- To avoid accidental breakage of the panels, fix the panels with straps and insert the protectors to prevent the straps from slipping when transporting the panels.
- When loading and unloading panels, be careful not to damage them.
- Insert the protectors between the panels and straps to avoid damaging the panels when lifting.
- Do not place the pallet with more panels on the pallet with fewer panels.



Don't stack the pallet with more panels on top of the pallet with fewer panels. Otherwise, it may cause cracks on the panels.



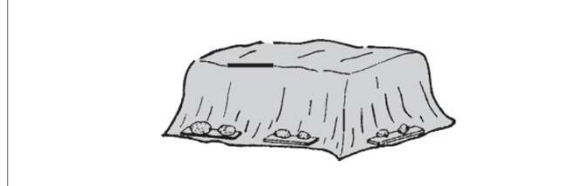
# Transporting and storage

## Storage

- Store the panels in a horizontal position, covered with construction sheet. Before installation, facade panels must be stored dry and avoid contact with the ground to prevent moisture penetration, which can affect quality of the panels.
- Do not stack more than 2 pallets of facade panels in height. Load and unload pallets with a forklift or crane. Be careful not to drop the panels.
- While bringing the panels to the site keep the facade panels clean and do not break the corners.
- When necessary to stand panels on edge prior to installation, take care to avoid contact with rough and abrasive subsurface that could damage the factory-applied coating or sealer.

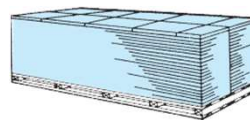


Temporary storage of the panel in an open area

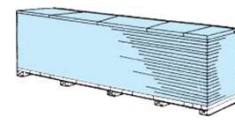


### Storing the panels indoors

a) On pallet



b) On spacers



- Do not place the panels directly on the ground.

## Rear Ventilated Facade system with Ceradir V panels

The figure shows the installation method of Ceradir V series panels on a typical subsystem.

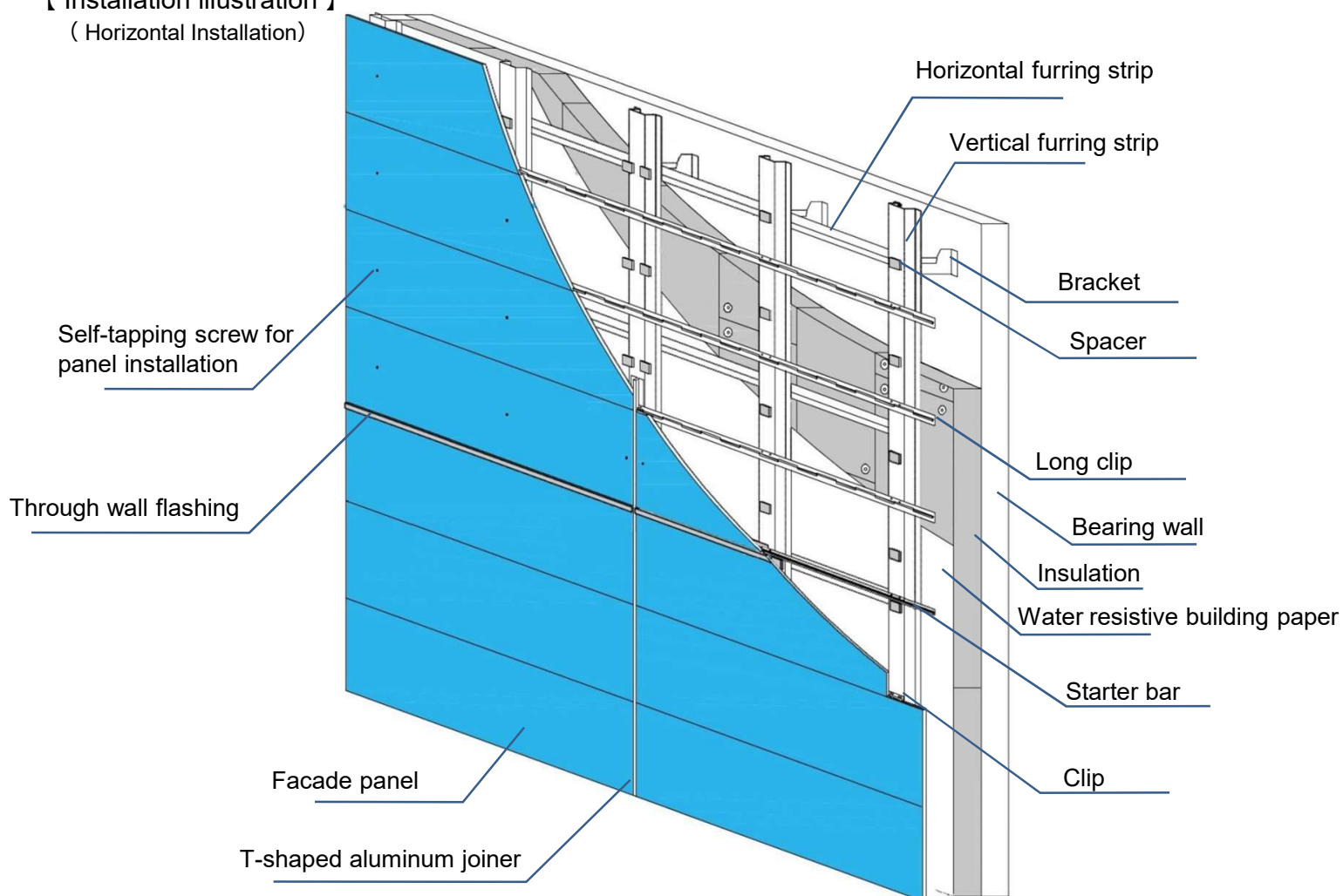
Ceradir V - high-quality products with excellent design like natural materials, released with strict quality control.

The panel is installed without caulking; instead, T-shaped aluminum joiners are used. The installation process is free from wet works and can be carried out at any time of the year.

For detailed information on planning and installation, read the materials in this manual.

### 【 Installation illustration 】

( Horizontal Installation )



# Design criterion

## 1. Description

CERADIR V is a factory-finished fiber cement siding system which utilizes a proven rear ventilated façade technology. Suitable for new construction and retrofit projects, CERADIR V Rear Ventilated Facade Exterior Siding System consists of pre-finished siding panels in a variety of patterns and textures, innovative panel clips and accessories, all of which have been designed for ease of installation. The system creates an air cavity for air passage which helps prevent condensation and mold in the wall cavities by releasing moisture that permeates through the building envelope to the outside. CERADIR V Rear Ventilated Facade Exterior Siding System offers a solution for moisture incursion as well as factory applied coatings that will not only be pleasing to the eye but also allow for low maintenance requirements. CERADIR V is designed and manufactured exclusively for exterior walls.

## 2. Codes

KMEW CERADIR V™ fiber cement panels meet or exceed requirements of:  
European Technical Assessment, ETA-XX/XXXX (Under Acquisition)

## 3. Physical Data

### A. Finishes:

CERADIR V panels are factory finished with hydrophilic coating applied over an acrylic paint.

### B. Textures:

CERADIR V panels come in a wide variety of textures.

### C. Panel Dimensions:

Width	Length	Height	Weight
14mm	3000mm	455mm	21kg

### D: Composition:

CERADIR V is a fiber cement panel which is composed of;  
Mainly Cement-based materials, and Fiber, Admixture, Aid materials. No asbestos is contained.

# Installation criterion

## 1. General Requirements

- A. General: Install products in accordance with the latest installation guidelines of the manufacturer and all applicable building codes and other laws, rules, regulations and ordinances.
- B. Review all manufacturer installation and maintenance instructions and other applicable documents.
- C. CERADIR V is designed and manufactured exclusively for exterior walls. Do not use CERADIR V for any purpose other than application to outer walls.
- D. Do not install CERADIR V as a soffit material, or on walls with a radius.
- E. Staggering vertical joints is not acceptable; T joint joints must run continuous with no running bond configuration.
- F. Panels installed horizontally may not be stacked continuous without a break on walls greater than 16m or 20m in height. Refer to 5 Installation of panel separation gaps (Horizontal installation)
- G. Panels installed vertically cannot be stacked, each course must use a through wall flashing and starter bar.
- H. Carry out necessary reinforcement work when required due to the regional conditions, wind speed, building height, or other factors. KMEW assumes no responsibility for any problems resulting from failure to carry out the necessary reinforcement work.

## 2. Wall Requirements

- A. Proper substrate shall be provided to the installer. The wall shall be sufficient to withstand normal construction and live loads.
- B. Defects in the wall must be reported and documented to the specifier, general contractor and owner for assessment. The installer shall not proceed unless defects are corrected.
- C. Substrate flatness/plane shall be within 3mm every 1,200mm.
- D. CERADIR V panels can not be installed directly to stucco, brick, CMU, tile or similar substrates.
- E. CERADIR V is designed and manufactured exclusively for exterior walls. Do not use CERADIR V for any purpose other than application to outer walls.
- F. Do not install CERADIR V where the backside could be exposed to rain.
- G. The CERADIR V ventilation structure requires "inlets", which take in outdoor air, "air cavities", through which the air circulates, and "outlets", which release the air outside.

# Installation criterion

**When the panel is installed on a metal substructure that does not meet the following requirements, the panels can rattle, warp, look uneven on the plane, and drop. KMEW is not responsible for the damages of panels due to metal substructure.**

## ① Standard specification of metal substructure

- The table below shows the requirements for the specifications of the metal substructure when installing KMEW panels

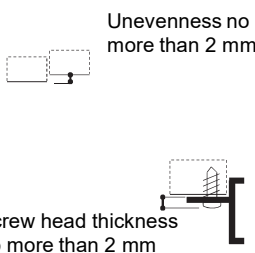
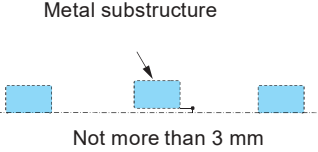
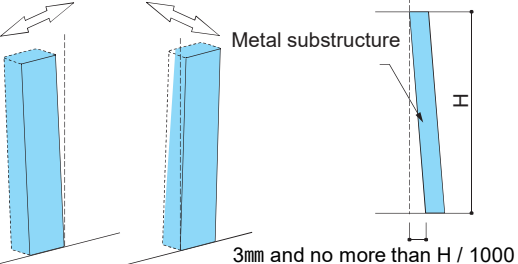
Items	Application	Horizontal	Vertical
Material / thickness ※ All components should be made of durable materials.		Material: galvanized steel with corrosion resistant coating, Stainless steel Thickness: 1.2mm - 2.3mm	
		Material: Aluminum ※1 Thickness: 1.8mm – 2.2mm (Clip fastening: Screw) 1.8mm or more (Clip fastening: Rivet) Length: 3m or less	—
Shape		※ Use metal substructures with the appropriate dimensions suitable for each area of installation. ※ Do not install panels without metal substructure.	
Required pull-out strength for the screw and rivet to secure the clip (pull-out force) ※2		In case of one screw or rivet per a clip : 2,500 N (per screw or rivet) or more	
		In case of two screws or rivets per a clip : 1,250 N (per screw or rivet) or more	
Orientation		Vertical	Horizontal
Pitch		600 mm or less	

- ※1 The substructure configuration must be a two-material specification of long bar and attachment, with a long bar length of 3 m or less and attachment spacing of 1200 mm or less.
- ※2 Rivet pull-out strength when installing the KMEW clip on a metal substructure. Clip B1205 (Galvanized steel / 0.8mm thickness). The tests were carried out according to ISO 14589. The average N-value is at least 10. Also, you should choose a screw and rivet made of a sufficiently strong material.

## ② Installation accuracy of the substructure

For the installation of KMEW panels, it is necessary to ensure the accuracy of the installation of the metal substructure in accordance with the requirements below.

- Installation of a metal substructure at an interval of no more than 600 mm.
- Unevenness of the metal substructure due to screw heads no more than 2 mm.
- Deviation of the metal substructure from the wall in the transverse direction (no more than 3 mm).
- Deviation of a metal substructure from a vertical axis no more than 3 mm and  $H / 1000$  (H mm: floor height)
- Availability of the necessary substructures for installing panels in various locations.

Unevenness of the substructure and screw heads	Deviation of the substructure from the wall in the transverse direction	Substructure vertical straightness
 <p>Unevenness no more than 2 mm</p> <p>Screw head thickness no more than 2 mm</p>	 <p>Metal substructure</p> <p>Not more than 3 mm</p>	 <p>Metal substructure</p> <p>3mm and no more than <math>H / 1000</math></p>

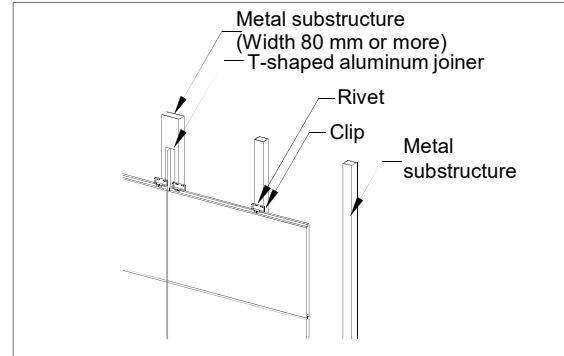
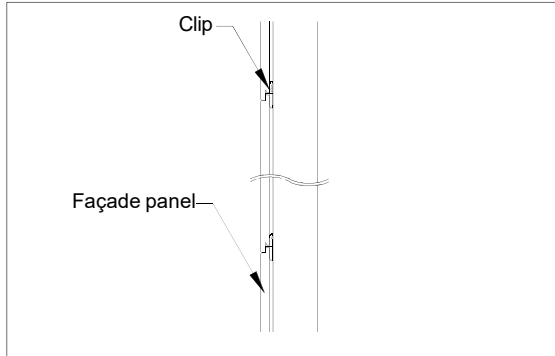


# Installation criterion

## 3. Facade panel installation methods

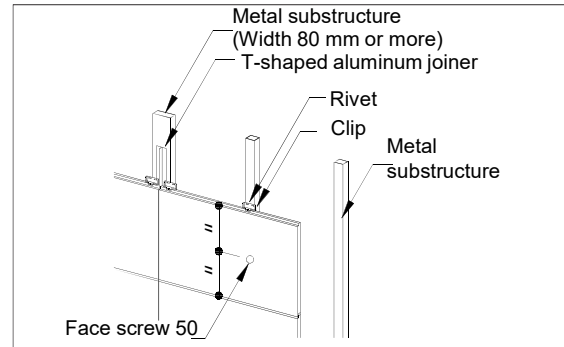
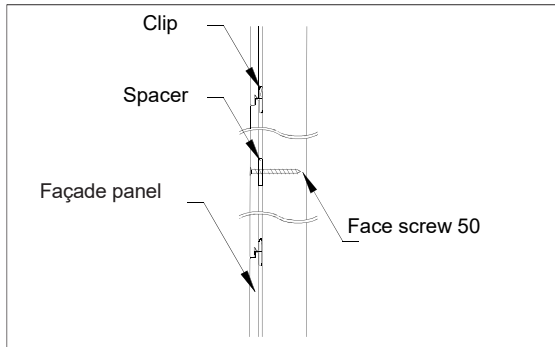
### ■ Horizontal application

#### ① Clip



- The clip is fixed on the substructure with 2 rivets or 2 clip screws.

#### ② Clip + Face Screw (1 pc)

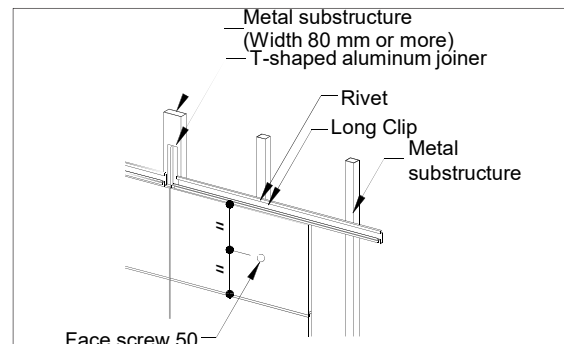
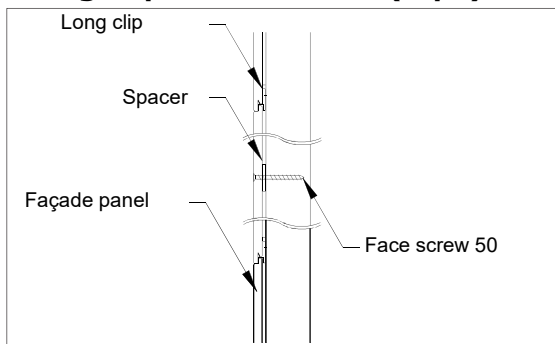


- Clip is fixed on the substructure with 2 rivets or 2 clip screws.
- The panel is fixed with a face screw 50 on each metal substructure in the middle of the panel. Insert spacer at the panel fixing point on the back of the panel with face screw 50.
- Do not use a face screw at the ends of panel due to insufficient space from panel edge.

#### ③ Long clip

- A long clip is fixed on each metal substructure with 2 rivets or 2 clip screws. This installation method is the same as installation method ④, but without using a face screw 50.

#### ④ Long clip + Face screw (1 pc)



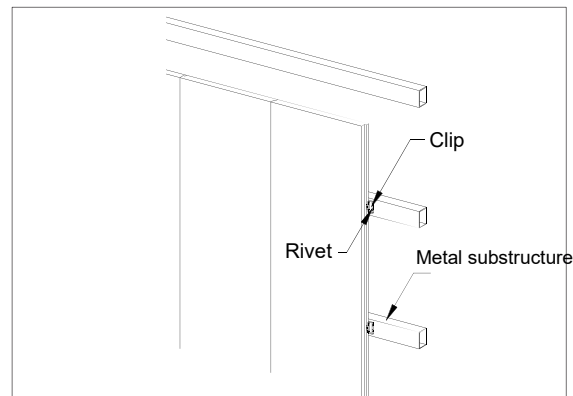
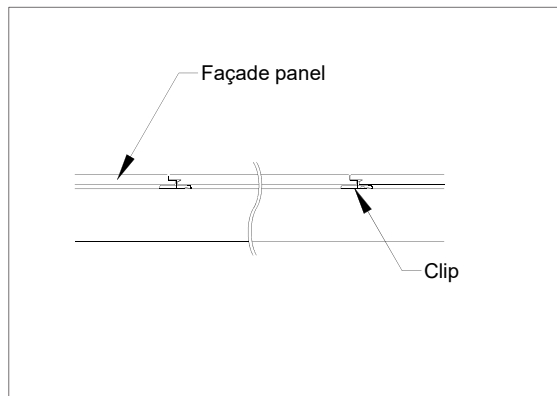
- Long clip is fixed on the substructure with 2 rivets or 2 clip screws.
- The panel is fixed with a face screw 50 on each metal substructure in the middle of the panel. Insert spacer at the panel fixing point on the back of the panel with face screw 50.
- Do not use a face screw at the ends of panel due to insufficient space from panel edge.

# Installation criterion

## 4. Facade panel installation methods

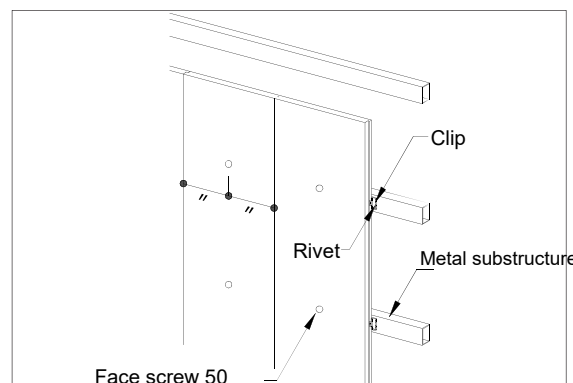
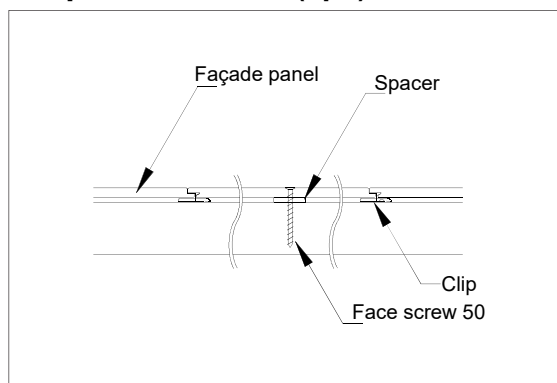
### ■ Vertical application

#### ① Clip



- The clip is fixed on the substructure with 2 rivets or 2 clip screws.

#### ② Clip + Face screw (1pc)

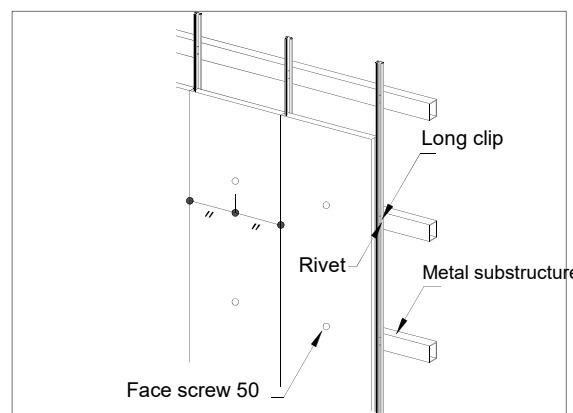
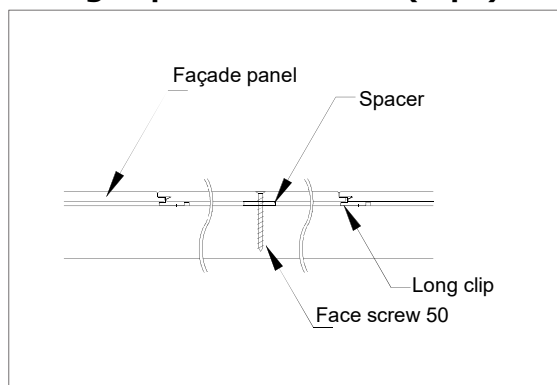


- Clip is fixed on the substructure with 2 rivets or 2 clip screws.
- The panel is fixed with a face screw 50 on each metal substructure in the middle of the panel. Insert spacer at the panel fixing point on the back of the panel with face screw 50.

#### ③ Long clip

- Long clip is fixed on the substructure with 2 rivets 2 clip screws.
- This installation method is the same as installation method ④, but without using a face screw 50.

#### ④ Long clip + Face screw (1 pc)

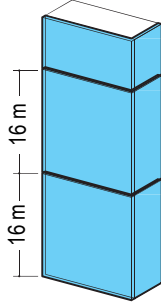
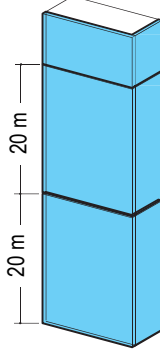


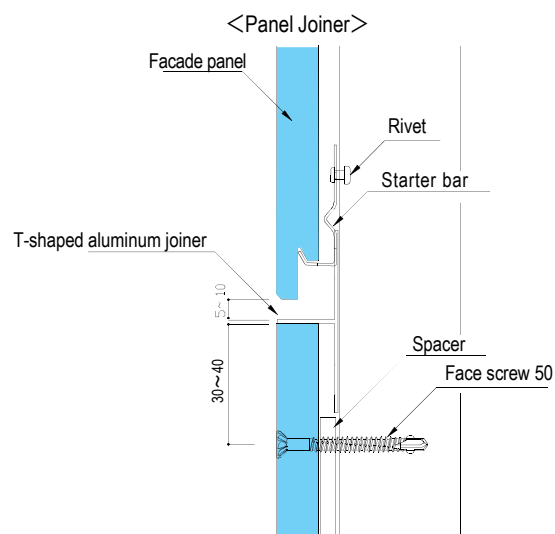
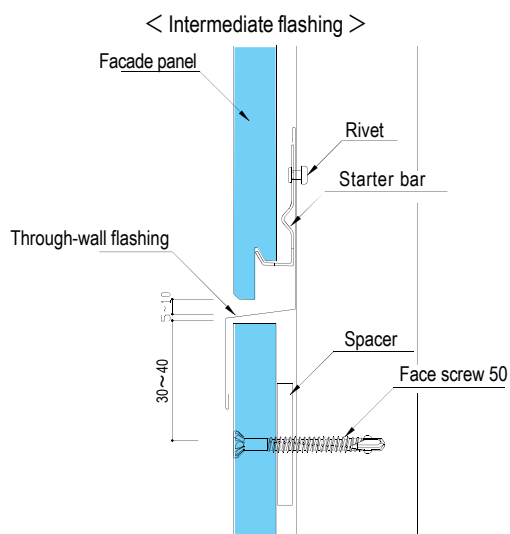
- Long clip is fixed on the substructure with 2 rivets or 2 screws.
- The panel is fixed with a face screw 50 on each metal substructure in the middle of the panel. Insert spacer at the panel fixing point on the back of the panel with face screw 50.

# Installation criterion

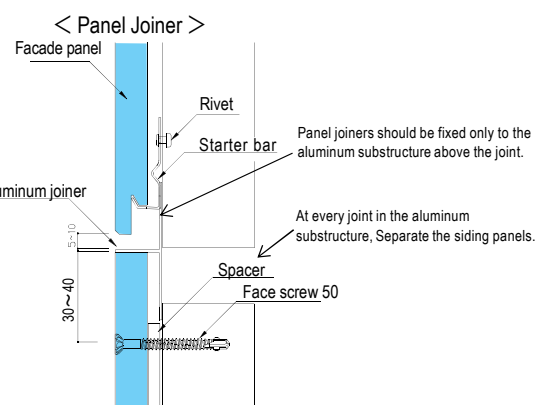
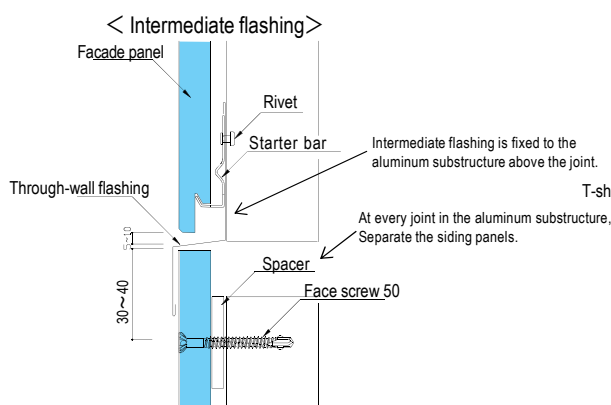
## 5 Installation of panel separation gaps (Horizontal installation)

- ※ This method does not apply for vertical installation. For the installation of each stage (Installation of horizontal joints) follow the instructions according to pages 39-40.
- Make separation gaps between the panels at every specified height to disperse the load on the panel fasteners (clips and starter bars).
- The specified height depends on the installation method of the facade panel. Please refer to the table below.
- ※ If the metal substructure is aluminum, use intermediate flashing or panel joiners at each metal substructure joint to separate the siding panels. Siding panel installation across aluminum substrate joints is not permitted.
- To fix the upper end of the facade panel under the gap, insert a spacer, secure about 30~40 mm from the edge of the panel, and fix it to the metal substructure with face screw 50s.
- Use an intermediate flashing or T-shaped aluminum panel joiner for the gap.
- Install the facade panel above the gap. The gap between the intermediate flashing(or panel joiner) and the starter bar should be about 5 to 10 mm.

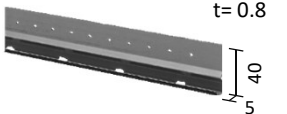

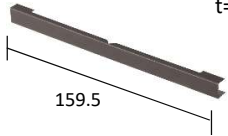
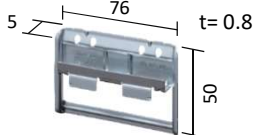
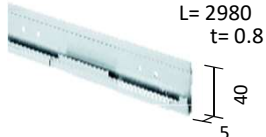
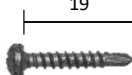
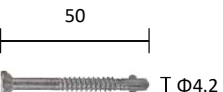
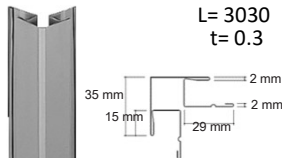
Installation method	①Clip	②Clip + Self-tapping screw (1 piece)	③Long Clip	④Long Clip + Self-tapping screw (1 piece)
Location of panel separation gaps	Every 16m		Every 20m	
				



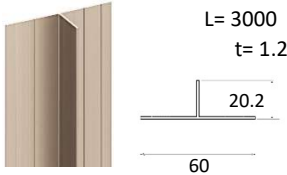
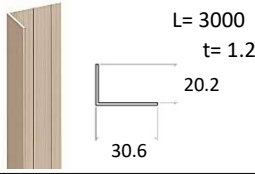
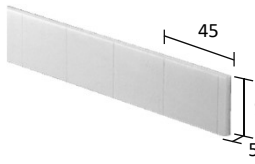
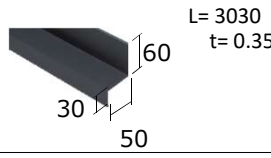
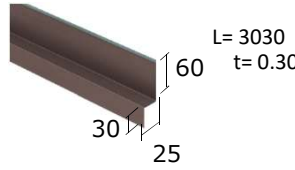
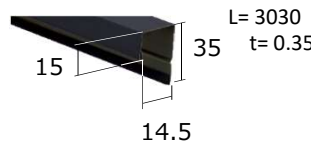


### ■ In case of Aluminum Sub-structure





## Description of the KMEW accessories for installation

Name (SKU)	photo	Material	Places of application
Starter bar for horizontal application (B101052)	 L= 3030 t= 0.8 40 5	Coated galvanized steel (Zn, Al)	Serve as a support for the first panels in the case of horizontal installation. Applied on the sill of the building before the installation of the panel.
Starter bar for vertical application (B12057)	 L= 3030 t= 0.8 32 8 24	Coated galvanized steel (Zn, Al)	Serve as a support for the first panels in the case of vertical installation. Applied on the sill of the building before the installation of the panel.
Cap vertical application starter bar, used for outside corner (B291W1D)	 t= 0.8 159.5	Coated galvanized steel (Zn, Al)	Attaches to a vertical application starter bar
Clip for horizontal and vertical installation (B1205)	 76 5 t= 0.8 50	Hot-dip zinc Al-Mg Alloy of steel (Zn,Mg,Al)	Used for fixing the panel to a metal substructure
Long clip for horizontal and vertical applications (B12055)	 L= 2980 t= 0.8 40 5	Hot-dip zinc Al-Mg Alloy of steel (Zn,Mg,Al)	It is used for fastening the panel to a metal substructure at increased wind loads
Clip screw 19 (For metal substructure) (RY8840)	 19 I Φ4.2	Stainless steel	Used for attaching clips to a metal substructure
Face screw 50 (For metal substructure) (B88501)	 50 I Φ4.2	Stainless steel	It is used to fasten the panel in places where the use of clips is impossible or necessary to strengthen the fastening
Metal corner (B211 ***)	 L= 3030 t= 0.3 35 mm 15 mm 2 mm 2 mm 29 mm	Coated galvanized steel (Zn, Al)	Applies to outside corners of the building

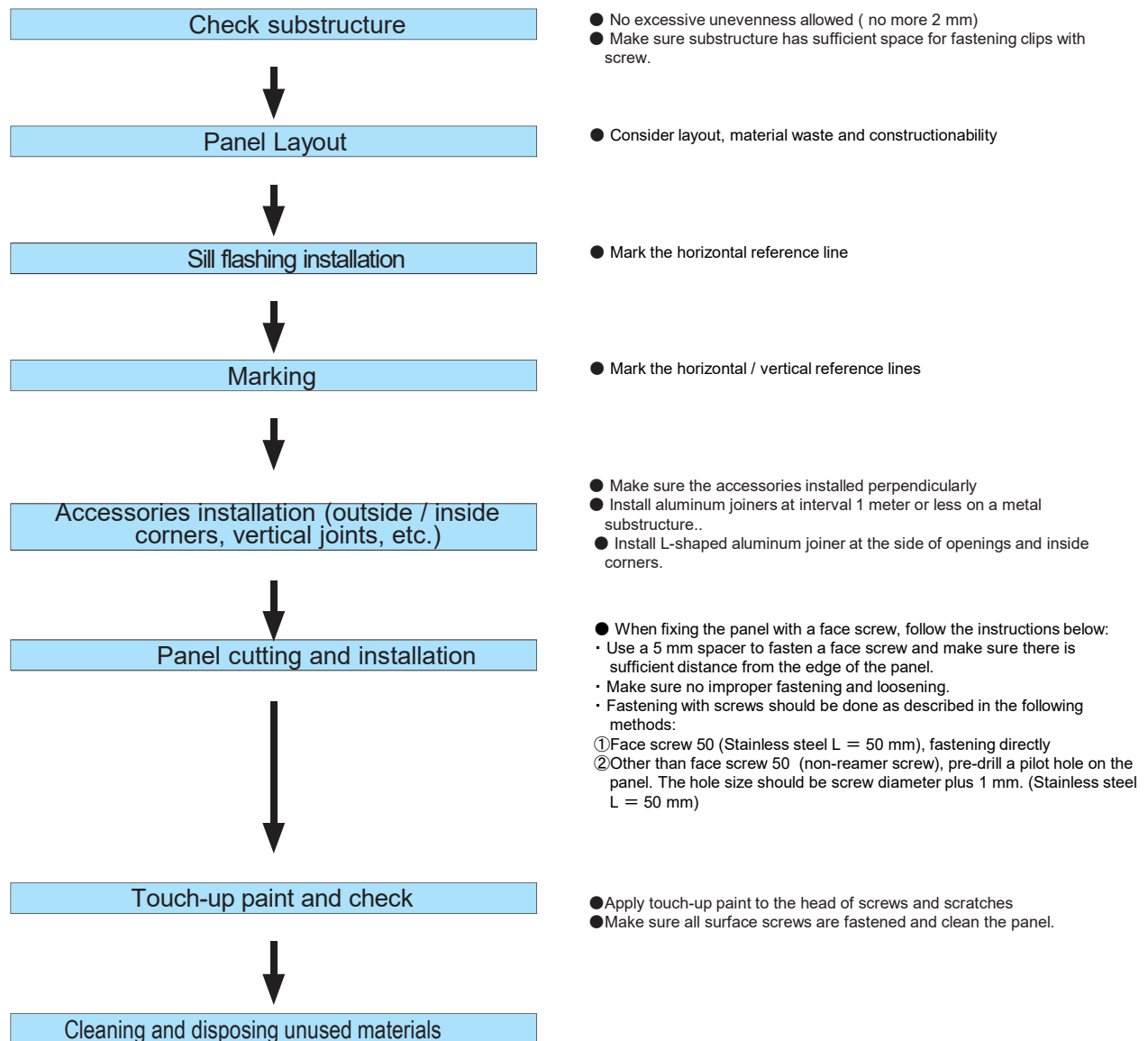
## Description of the KMEW accessories for installation

Name (SKU)	photo	Material	Places of application
T-shaped aluminum joiner (B36F*)		Aluminum	It is used on vertical joints of panels
L-shaped aluminum joiner (B36KF*)		Aluminum	It is applied on the inside corners, between the opening flashing and the panels
Spacer 5mm (RY82S05)		Polypropylene	It is used to eliminate deflection of the panel when it is fixed to the metal substructure with a face screw
Sill flashing (B238W*)		Coated galvanized steel (Zn,Al)	It is used at the sill
Through wall flashing (B2241*)		Coated galvanized steel (Zn,Al)	It is used at each specified height (See page 18)
Soffit flashing (B252W*)		Coated galvanized steel (Zn,Al)	It is used at the soffit
Repair putty (B4901)		Acrylic emulsion	It is used for scratches, chips and holes from face screws
Repair paint (Different for each SKU)		—	It is used on spots where putty is applied and scratches.

## Tools required for installation

Name	Photo	Place of usage
Circular saw		Required for cutting panels (it is recommended to use a saw for blades with diamond coating, for example, Makita 4105KB)
Vacuum cleaner		Needed to remove the panel cut dust
Fiber cement disc		Special diamond coating blade (Makita A-50027 recommended)
Cordless impact driver		Used for drilling holes in panels and installing screws (DTD129RFE / SHE / Z is recommended)
Hand saw		Required for cutting panels
Metal scissors		Required for cutting flashing, metal corners, etc.
File		It is used for flattening the ends of panels after cutting
Plumb		Required to define the vertical straightness
Square ruler		Used for marking with strict perpendicularity
Tape measure		Required for measuring and marking

# Installation steps



## Substructure check

- Check the pitch of the metal substructure. The distance between substructures must be less than 600 mm.
- Make sure there are metal substructures fixed in the outside and inside corners for attaching accessories and panels.
- Make sure there are metal substructures fixed around the window opening.
- Make sure that there is no unevenness in the substructure. The unevenness of the substructure must be less than 2 mm.
- If the unevenness of the substructure is more than 2 mm, insert the spacer and adjust the unevenness.

### [ Horizontal application ]

- Make sure that a metal substructure with a minimum width of 80 mm is installed in the vertical joints of the panel.

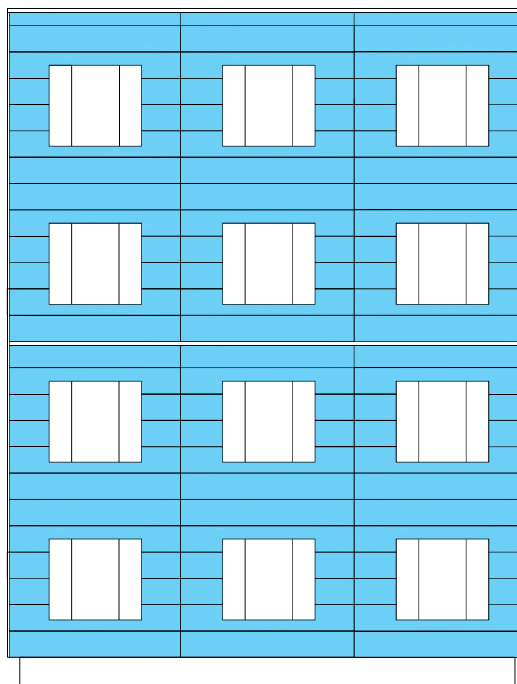
### [ Vertical application ]

- Make sure that the horizontal joints of the panel on the right and left have a metal sub-structure at least 80 mm wide.
- Make sure that the metal substructure is in the position where the fastener can be attached just above the starter bar at the starting position of the siding, such as a sill or overhang.

## Panel Layout

- When considering the arrangement of façade panels, the location of joints should be determined by considering the architectural plan, appearance, size of additional substructure, right / left balance, and material waste.
- In order for the installed facade panels to look beautiful, the places of vertical and horizontal joints should be specified in advance on the drawings.

Layout example  
(Horizontal application)



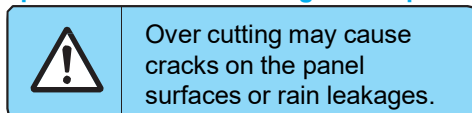


## Panel cutting

**NOTE:** Cut panels from the backside

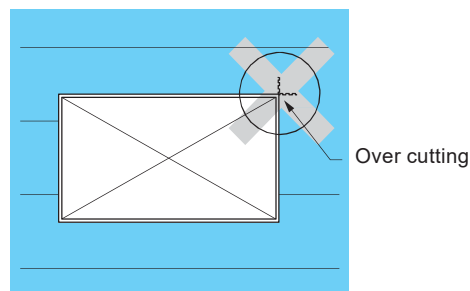
### Horizontal application

Use a dust collecting vacuum saw and dust-proof mats when cutting facade panels.

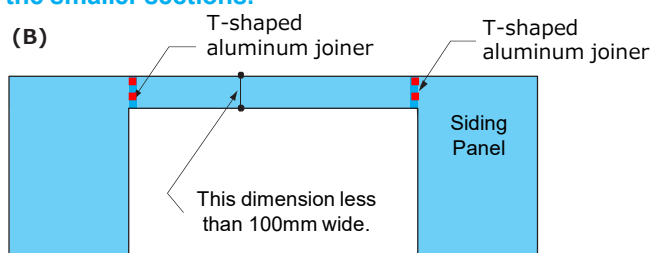
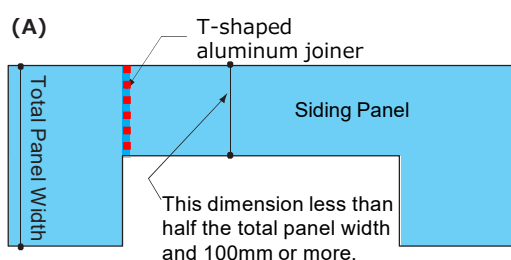


Over cutting may cause cracks on the panel surfaces or rain leakages.

⚠ Do not use water when cleaning dust off of the panels. Use compressed air or a clean dry cloth.



⚠ If small pieces are installed above or below a wide opening, it is recommended to follow example (B) & (C) and completely separate the smaller sections.

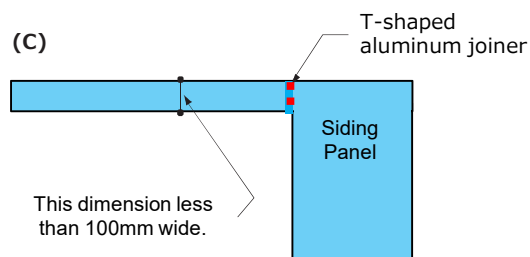


**Example A:** If the cut piece above or below an opening is less than half the total width of the panel but greater than 100mm wide, separate the panel into 2 pieces and install a T-shaped aluminum panel joiner at one edge of the opening.

**Example B:** If the cut piece above or below an opening is less than 100mm in width, separate the panel into 3 pieces and install a T-shaped aluminum panel joiner between each piece.

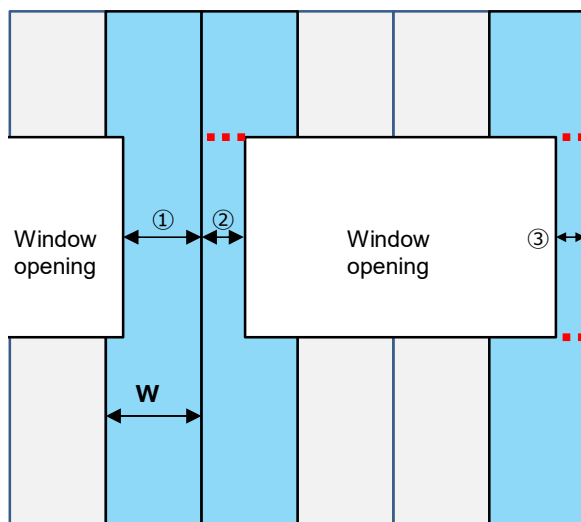
**Example C:** If the cut piece above or below an opening is less than 100mm in width, separate the panel into 2 pieces and install a T-shaped aluminum panel joiner between each piece.

**Note:** Minimum panel dimension is 80mm. Avoid cutting panels smaller than this width.



### Vertical application

- For the upper and lower parts of openings, doors and windows, the panel is cut.
- In case of ①, the width of the cut panel is more than  $\frac{1}{2}$ ; In case of ②, the width of the panel must be more than 100 mm
- If the width of the cut panel becomes less than the required width, then cut off the panel and install a T-shaped aluminum joiner at the joint.



W = Panel Width

① = more than  $\frac{1}{2}$  of W  
→ No need to cut the panel

② = less than  $\frac{1}{2}$  of W and more than 100 mm  
→ Cut the panel and install a T-shaped aluminum joiner in place as shown in the figure.

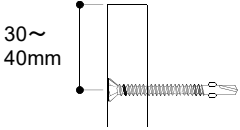
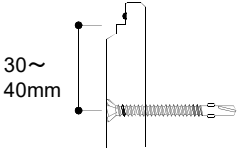
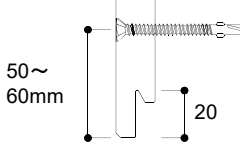
③ = less than 100 mm  
→ Cut the panel and install T-shaped aluminum joiners in two places as shown in the figure.

※ See page 44 for installing cut panels.

# General Notes for Installation

## ■ Fixing panels

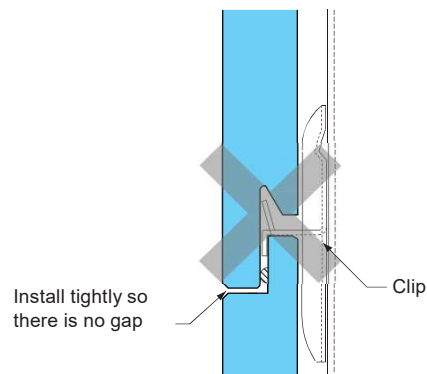
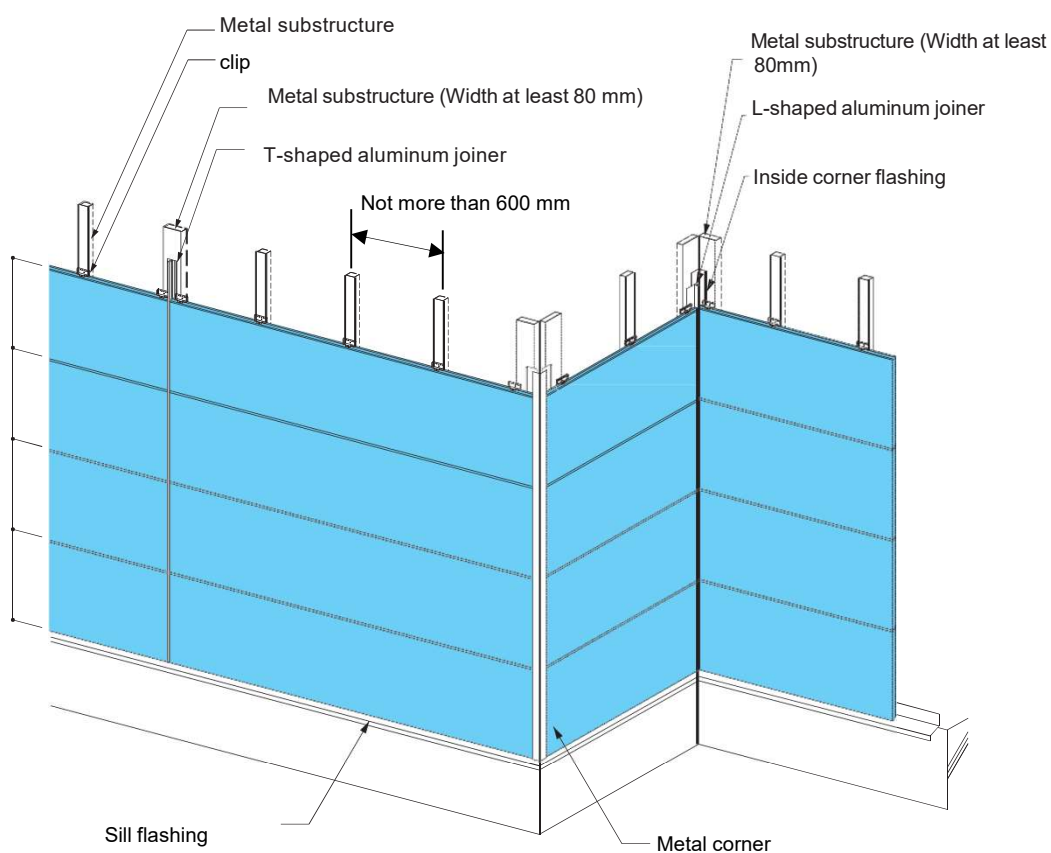
- The bottom or first row of KMEW Siding Panels are to be fixed on either starter bars for horizontal or vertical application.
  - KMEW Siding Panels are to be fixed with panel clips for both horizontal and vertical applications.
  - A clip is to be fastened with a clip screw.
  - However, clips cannot be used to install panels in some areas where the shiplap portion of the panel is removed such as the eave and the top / bottom of the opening.
- In this case, put spacer 5, and fix the panel to the studs through spacer 5 with face screw 50s for both horizontal and vertical applications. Make sure that the required clearances from the panel edges should be kept as shown on the diagram.

Part Fastener	Cut portion	Top of panel	Bottom of panel
Direct fastening screw (For horizontal application)	 <p>30~ 40mm</p>	 <p>30~ 40mm</p>	 <p>50~ 60mm</p> <p>20</p>

## Horizontal application

### Tips for installation (Clip)

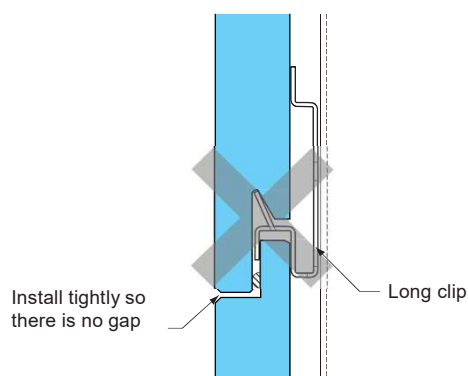
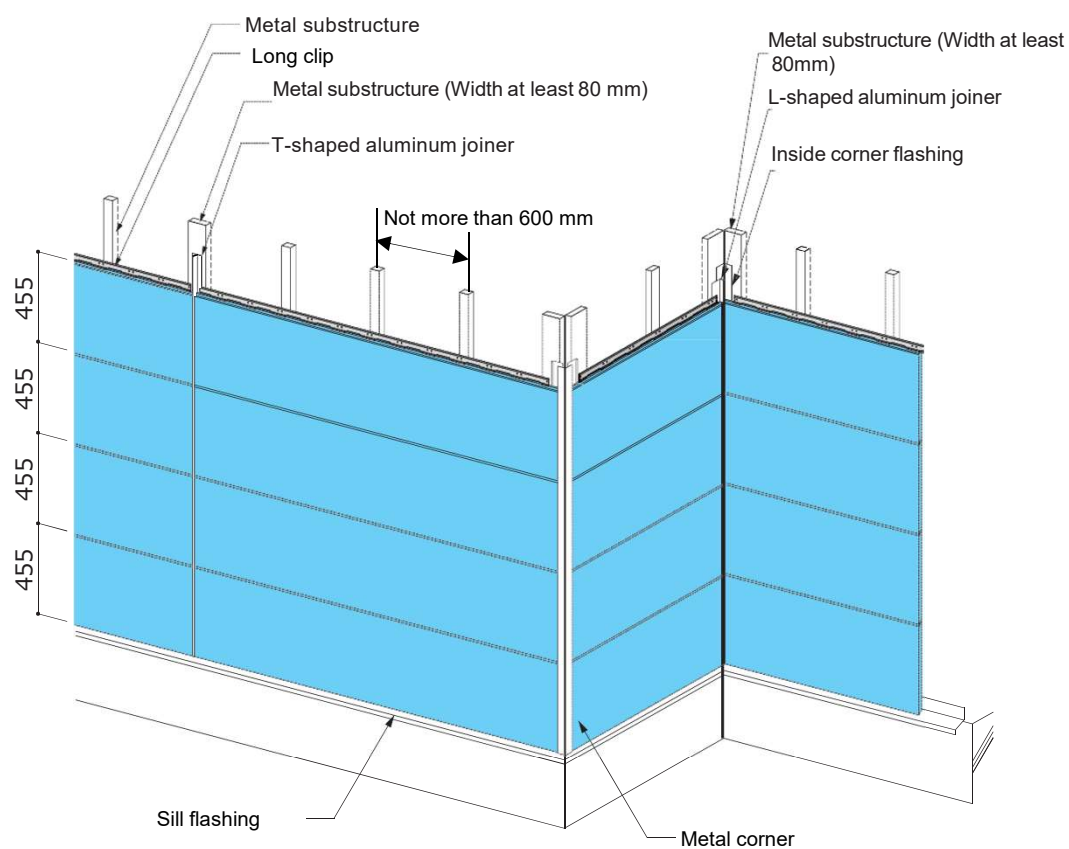
- Installation of panels begins with the installation of starter bar.
- The panels are fixed with clips. A clip is fastened with two rivets or two clip screws.
- Use face screws 50 for reinforcing. Refer to page 16.
- Fix the panel with surface screw in such places as the cut-off points of the panel and above & below the openings, since the clips cannot be installed. Refer to pages 32-35.
- Install a panel on the previous one so that their joint fits tightly without a gap.
- The pitch of vertical substructure should be no more than 600 mm.



## Horizontal application

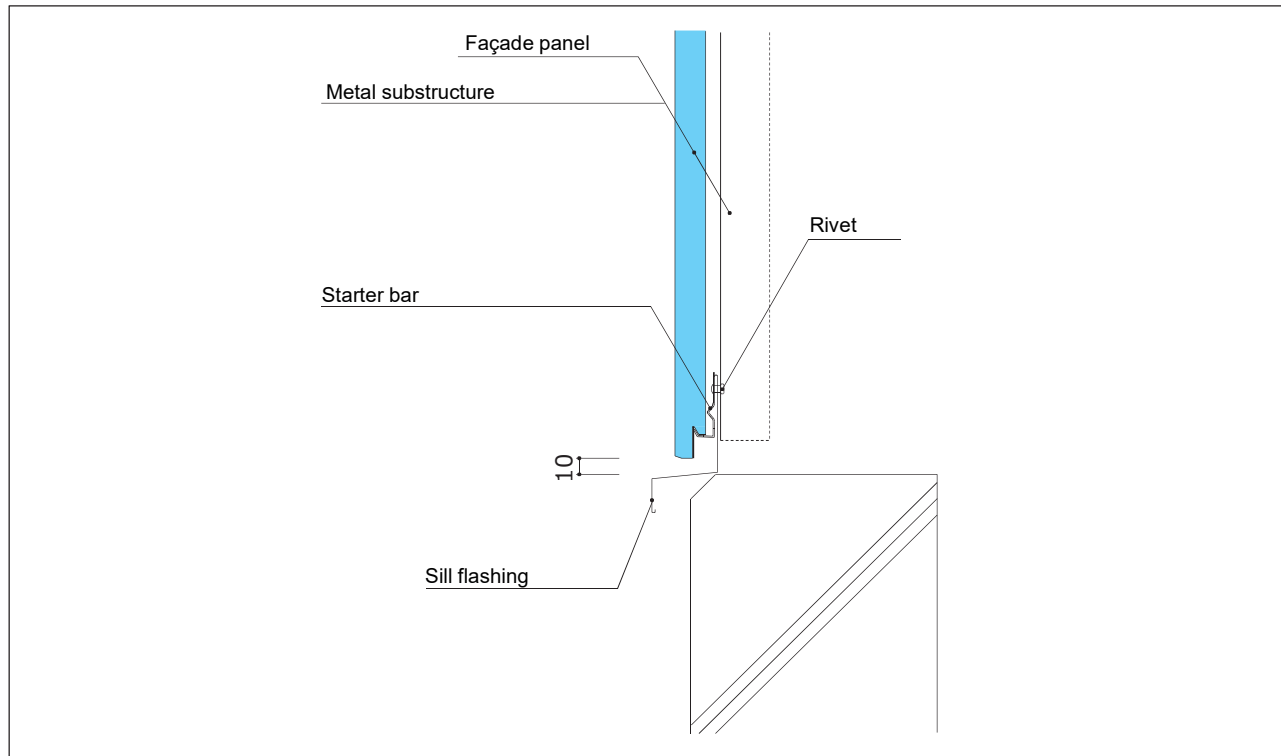
### Tips for installation (Long clip)

- Installation of panels begins with the installation of starter bar.
- The panels are fixed with long clips. A long clip is fastened with two rivets or two clip screws at each metal structure.
- Use face screws 50 for reinforcing. Refer to page 16.
- Fix the panel with surface screw in such places as the cut-off points of the panel and above & below the openings, since the clips cannot be installed. Refer to pages 32-35.
- Install a panel on the previous one so that their joint fits tightly without a gap.
- The pitch of vertical substructure should be no more than 600 mm.



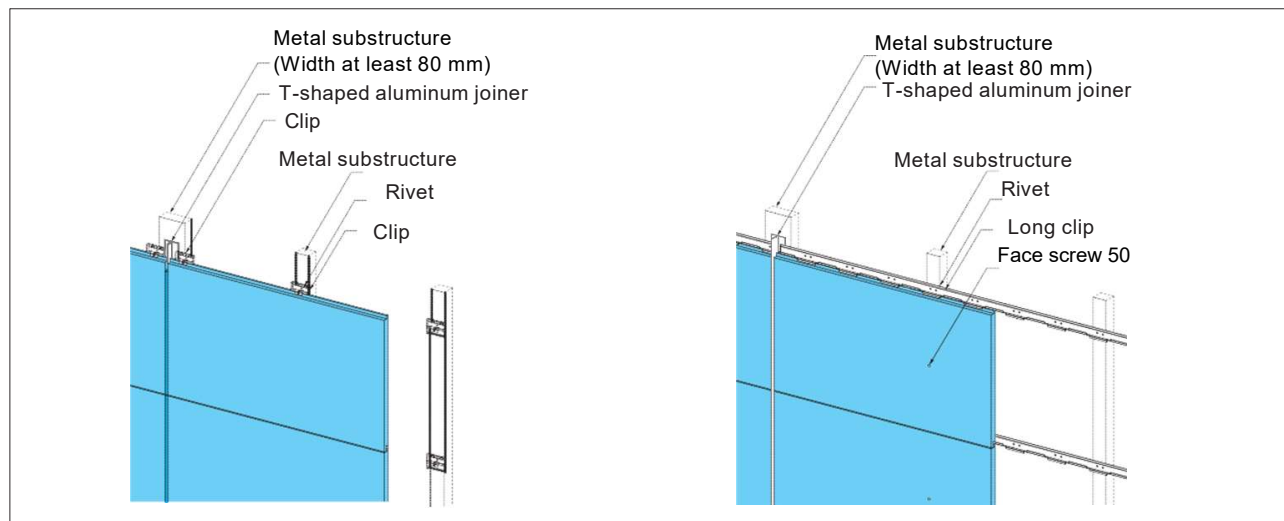
## Horizontal application Installation along sills

- Mark a level line with a leveler or level for starter bar on the sill.
- Fix the starter bar with one rivet or one screw at interval no more than 600 mm.  
※If you miss a rivet, make a pilot hole in the starter bar and then fasten another one to secure the starter bar.
- Secure 10 mm ventilation gap between the bottom of the panel and the sill flashing.
- Make sure that every panel is level.



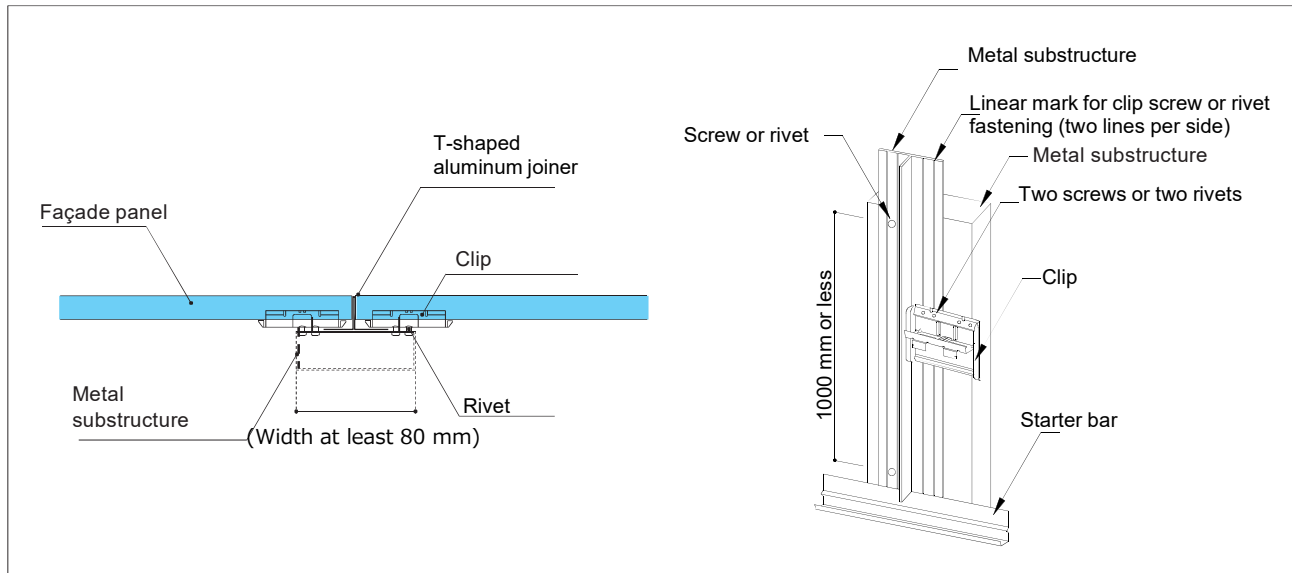
## Horizontal application Installation with clips

- Fasten the clips on the substructure with two rivets or two screws at interval less than 600 mm.
- Fasten long clip on the substructure with two rivets or two screws.
- Fasten the clips with rivets through the holes.

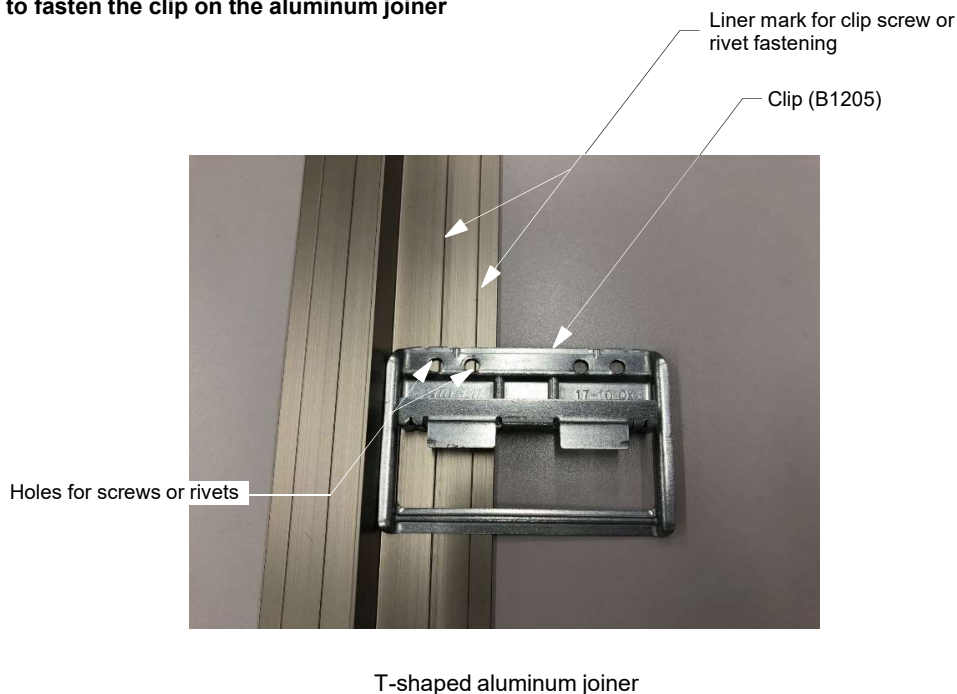


## Horizontal application Vertical joint installation

- Fasten aluminum joiners at vertical joints. When adding another joiner make sure to secure 5 mm gap between the joiners.
- Fasten aluminum joiners at metal substructure to prevent lateral displacement of the façade panels.  
Maximum distance between the screws must be approximately 1 m.
- Fasten the panels with clips from right and left sides of the vertical joints.
- Butt panels to the aluminum joiner then install the panels.
- It is allowed to fasten the clip on the fringe of the aluminum joiner. Place the clip on the aluminum joiner so that the clip holes align along the lines which are made for fastening with screw or rivet.

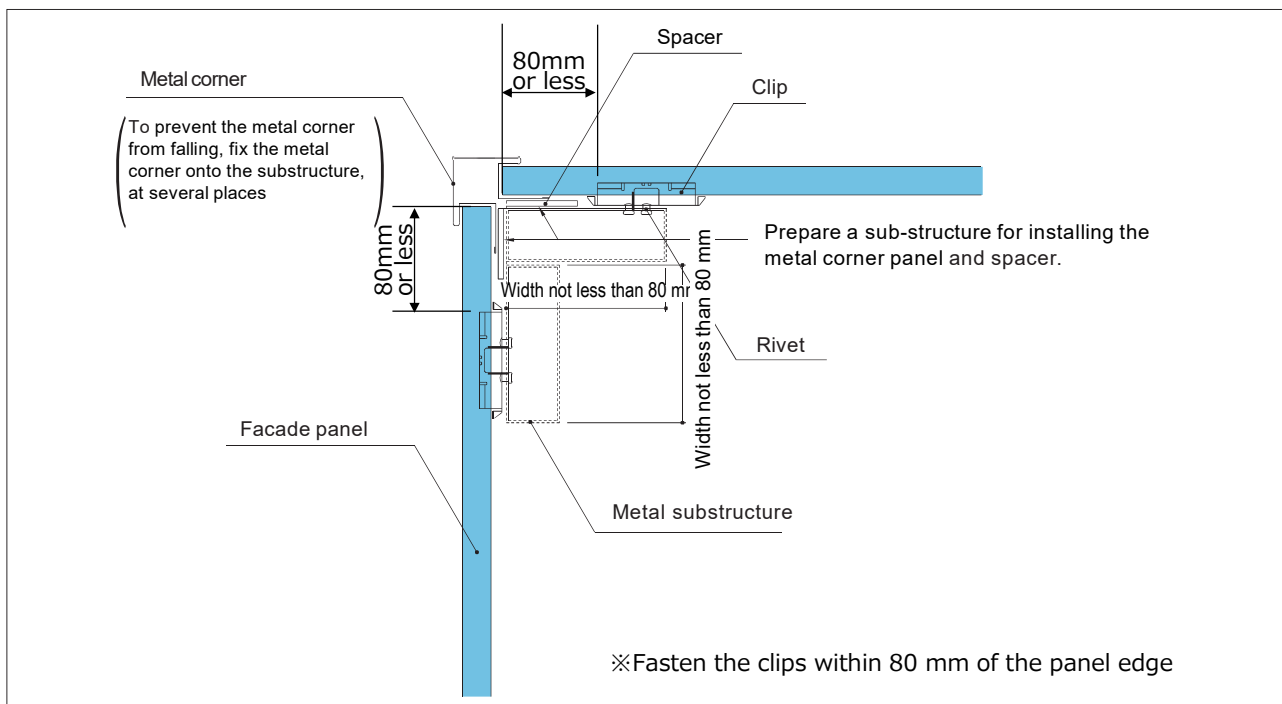


### ● How to fasten the clip on the aluminum joiner

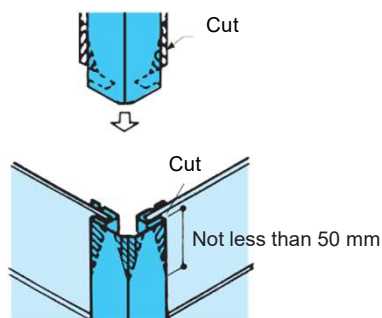


## Horizontal application Metal corner installation

- Fix spacers on both sides of the corner at a distance of no more than 600 mm along the longitudinal direction to adjust the height, then install the metal corner on the spacer to the metal substructure.
- Align the lower end of the metal corner with the façade panel and install it with a gap of about 10 mm from the sill flashing.
- Insert the panels in the metal corner which covers at least 10 mm of the panels and fasten the panels with clips to the substructure using 2 rivets or 2 clip screws.

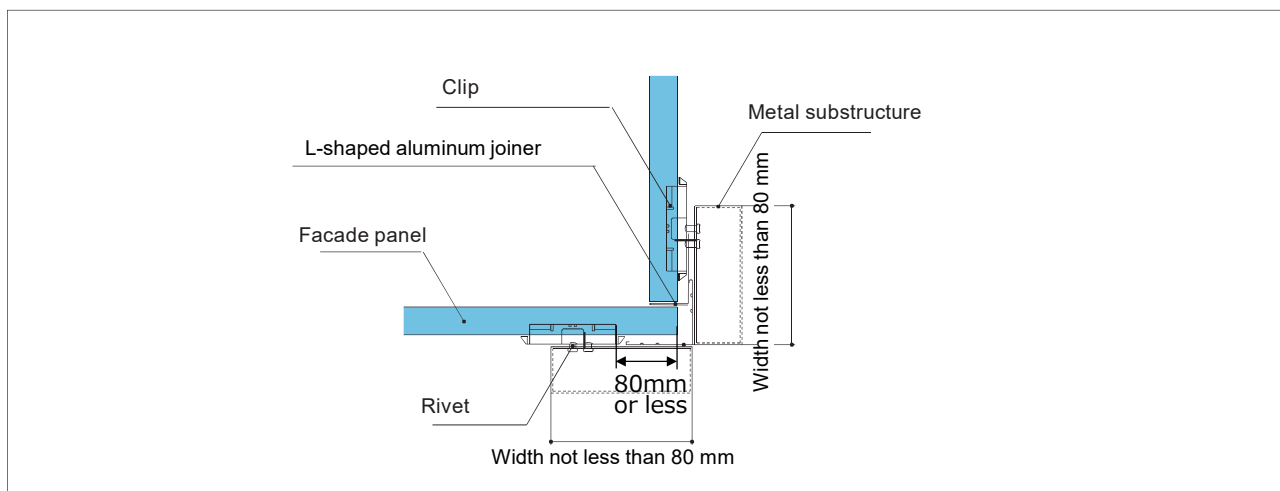


### Metal corner joining method



## Horizontal application Inside corner installation

- Install inside corner flashing on metal substructures.
- To prevent lateral movement of the façade panels, insert a L-shaped aluminum joiner. When adding another joiner make sure to secure 5 mm gap between the joiners.
- Butt panels to the aluminum joiner then install the panels.
- Pay attention to the corner joint if the panel shiplap joints are aligning.
- It is allowed to fasten the clip on the fringe of the aluminum joiner. Place the clip on the aluminum joiner so that the clip holes align along the lines which are made for fastening with a screw or rivet.



※Fasten the clips within 80 mm of the panel edge

### ● How to fasten the clip on the aluminum joiner

Liner mark for clip screw or rivet fastening

Clip (B1205)



Holes for screws or rivets

L-shaped aluminum joiner



## Horizontal application

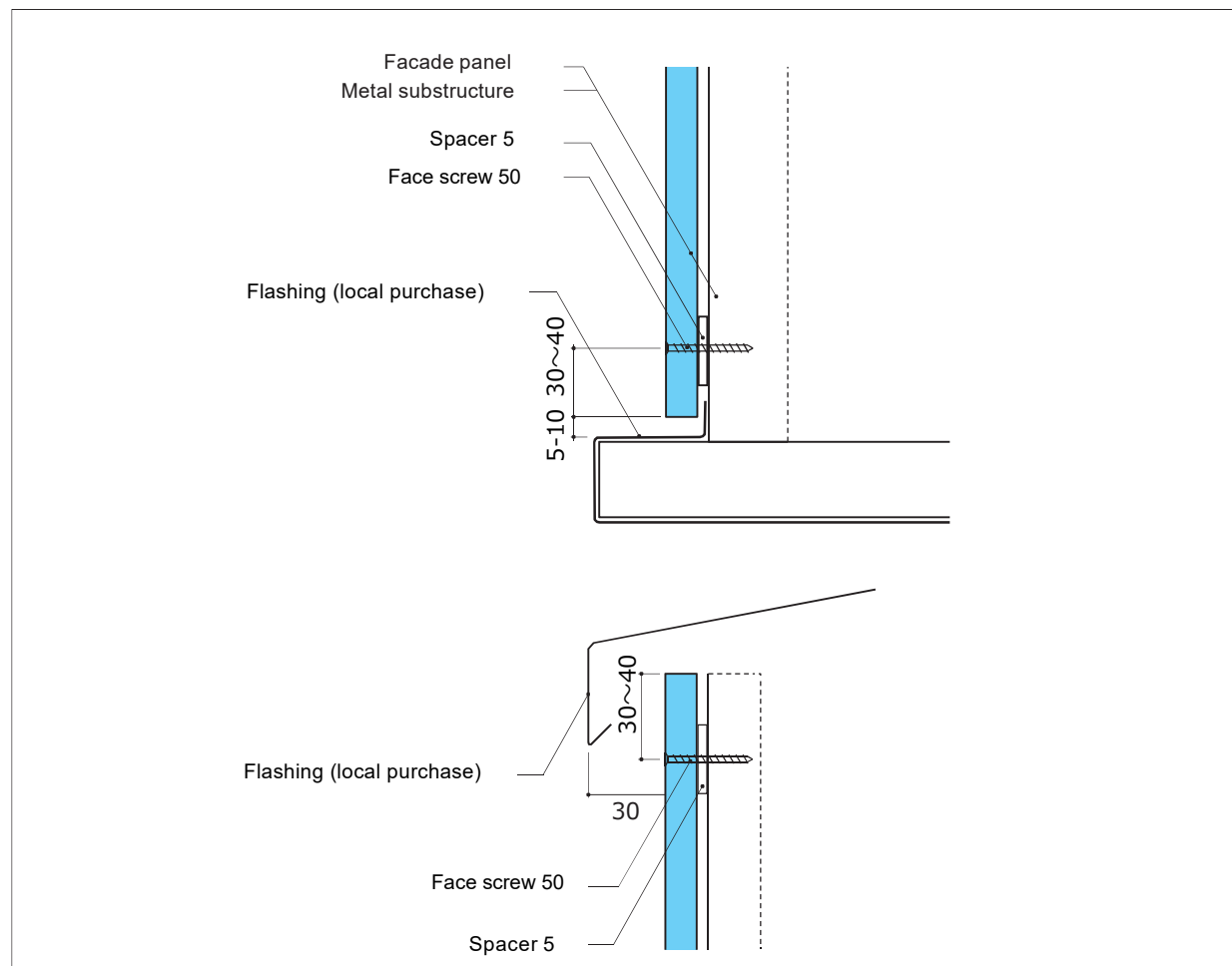
### Installation around openings, doors and windows

#### Installation around openings

- Purchase locally flashing with an appropriate size for the openings.

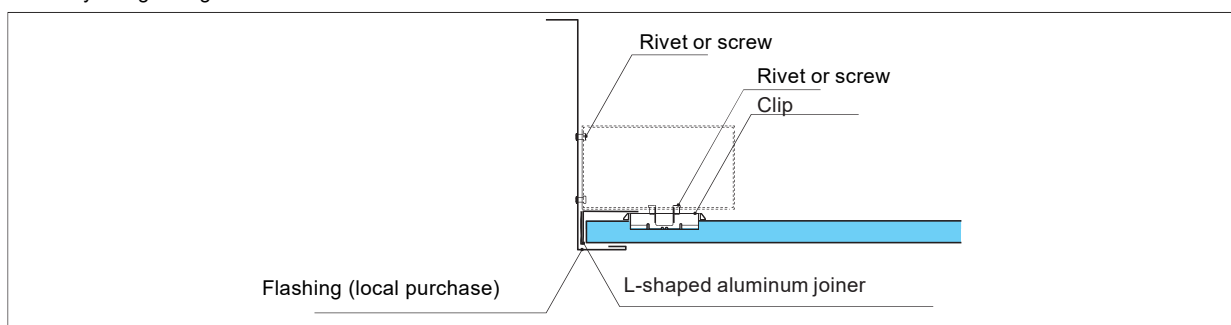
##### ① Finishing the bottom and top of the openings

- Leave a 5-10 mm gap when installing panels on top of openings.
- When installing panels on the upper and lower parts of openings, doors and windows, use a 5 mm spacer and fix the panel with a face screw 50 to the metal substructure at a distance of 30~40 mm from the edge of the panel.
- In the case of using a face screw without reamer, drill a hole in advance to the size of the self-tapping screw diameter plus 1 mm and fix it to the substructure.
- Make sure to apply the touch-up paint to the screw head.



##### ② Right and left sides of the opening

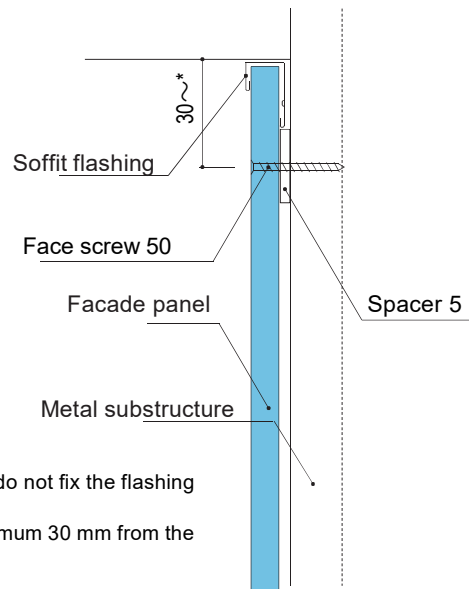
- To prevent lateral displacement of the facade panels, insert a L-shaped aluminum joiner at the vertical joints where the flashings and the panels meet. When installing additional joiner, make sure to secure 5 mm gap between the joiners.
- Butt panels to the aluminum joiner then install the panels.
- It is allowed to fix the clip on the line of the L-shaped aluminum joiner. Install the clip on the L-shaped aluminum joiner so that the clip hole lay along a longitudinal line for screw or rivet.



## Horizontal application

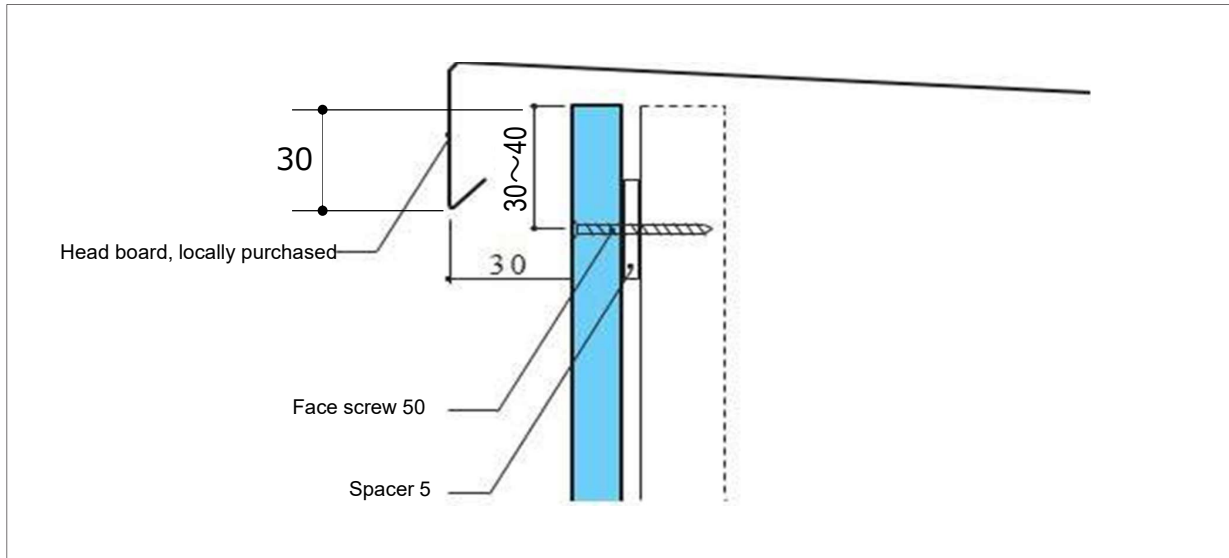
### Installation at eaves

- Before installing the soffits at the eaves, you must first attach the vertical furring stripes, leaving an air gap.
- The flashing is fixed to a metal substructure under the soffits.
- Insert the panels into the flashing so that the cutting edge of the panel are invisible.
- In the places where the panels are adjacent to the eaves, insert a 5mm spacer and fix the panel to the substructure with a face screw 50, avoiding flashing.
- In the case of using a face screw without reamer, drill a hole in advance to the size of the self-tapping screw diameter plus 1 mm and fix it to the substructure.
- After repairing the screw head with putty and apply the touch-up paint once the putty is sufficiently cured.



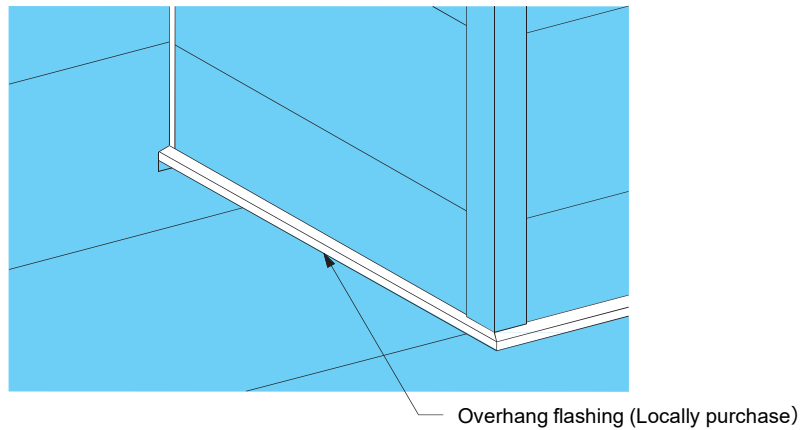
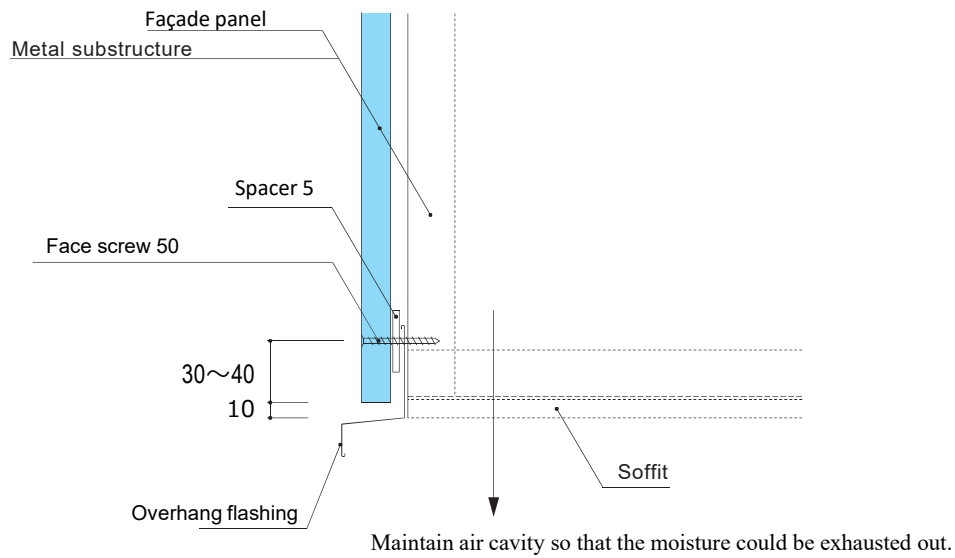
## Horizontal application Parapet installation

- Install the head board for parapet with ventilation gap. The head board should cover 30 mm of the panel. Head board of parapet is locally purchased.
- Top edge of the panel is fastened with spacer and face screw 50 on the metal substructure at the distance about 30~40 mm.



## Horizontal application Overhang installation

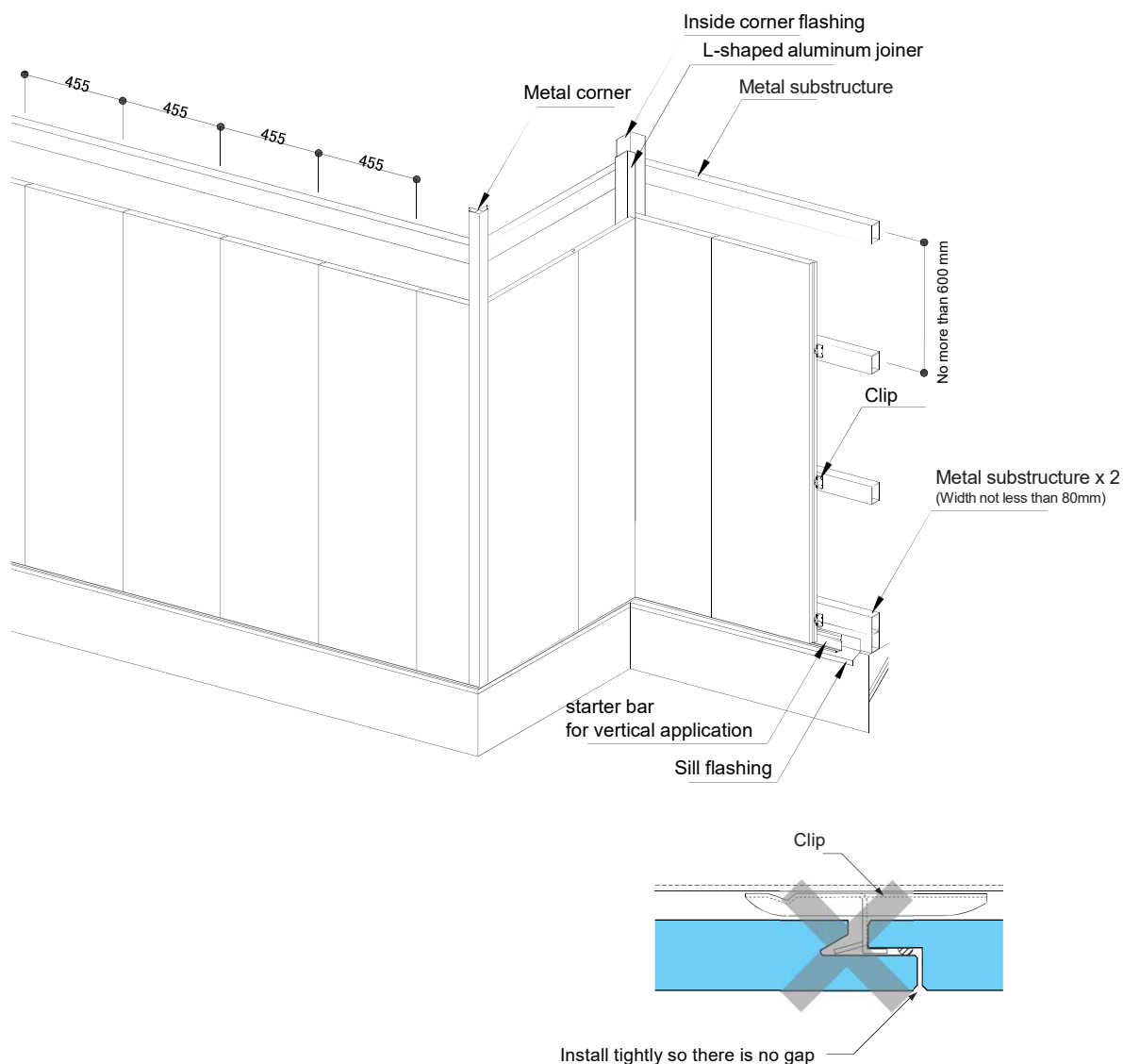
- Secure 10 mm gap between the panel and overhang flashing .



## Vertical Application

### Tips for installation (Clip)

- Installation of panels begins with the installation of a starter bar for vertical application.
- The panels are fixed with clips.
- See information on reinforcement with face screw 50s on page 17
- The clips cannot be installed on the cut-off portions of the panels such as the left and right of the openings or inside/outside corners, so fix the panel in these places with face screws according to the instructions on pages 41, 42, 44.
- Install a panel on the previous one so that their joint fits tightly without a gap.
- The pitch of horizontal substructure should be no more than 600 mm.



#### Caution during vertical installation

Be sure to observe the following rules to prevent the panels from falling.

① In the places where the panel installation begins, it is necessary to fix the starter bar to the substructure as the start bar supports the weight of the panel. (If the starter bar is not used or the starter bar is used with insufficient holding force, the panel may fall out.)

Places where panel installation starts: Sill, horizontal joint, upper edge of openings, joints with the roof.

② In the places where the installation starts, it is necessary to fix the first clip just above the starter bar.

If the clip is not used in the places where the panel installation starts, the panel may fall out.

※ If it seems impossible to use the first clip just above the starter bar, insert a spacer 5 and fix the panel with face screw 50 at a required distance from the panel edge. When fastening the panel with self-tapping screw 50, observe the distance from the edge of the panel. (2 - 3 face screws along the width of the panel)

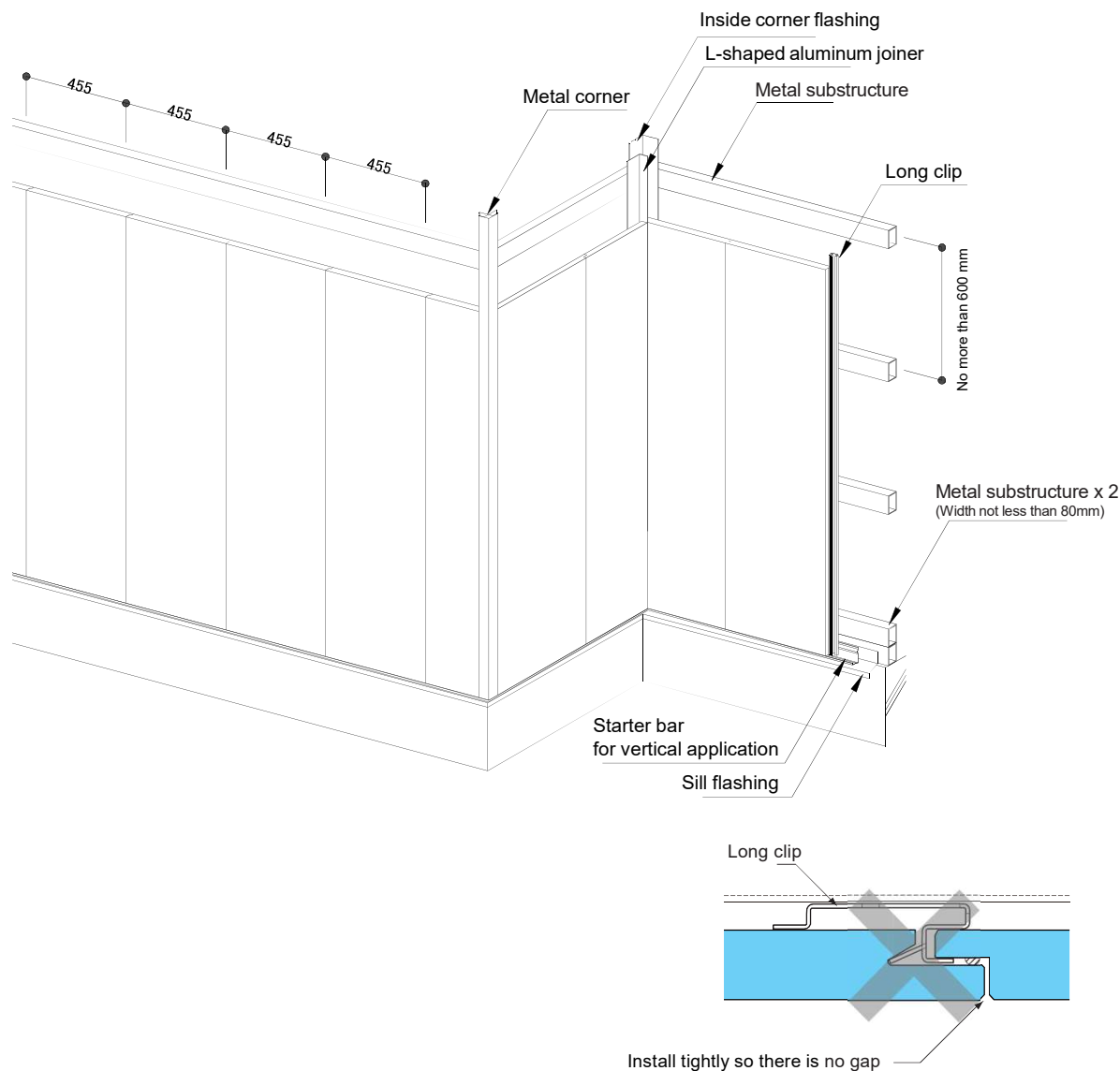
③ To prevent the panel from falling, do not take your hands from the clip until the fastening is completed with a rivet or clip screw.



## Vertical Application

### Tips for installation (Long Clip)

- Installation of panels begins with the installation of a starter bar for vertical application.
- The panels are fixed with long clips.
- For reinforcement with face screws see page 17.
- The long clips cannot be installed on the cut-off portions of the panels such as the left and right of the openings or inside/outside corners, so fix the panel in these places with face screws according to the instructions on pages 41, 42, 44.
- Install a panel on the previous one so that their joint fits tightly without a gap.
- The pitch of horizontal substructure should be no more than 600 mm.



#### Caution during vertical installation

Be sure to observe the following rules to prevent the panels from falling.

① In the places where the panel installation begins, it is necessary to fix the starter bar to the substructure as the start bar supports the weight of the panel. (If the starter bar is not used or the starter bar is used with insufficient holding force, the panel may fall out.)

Places where panel installation starts: Sill, horizontal joint, upper edge of openings, joints with the roof.

② In the places where the installation starts, it is necessary to fix the first clip just above the starter bar.

If the clip is not used in the places where the panel installation starts, the panel may fall out.

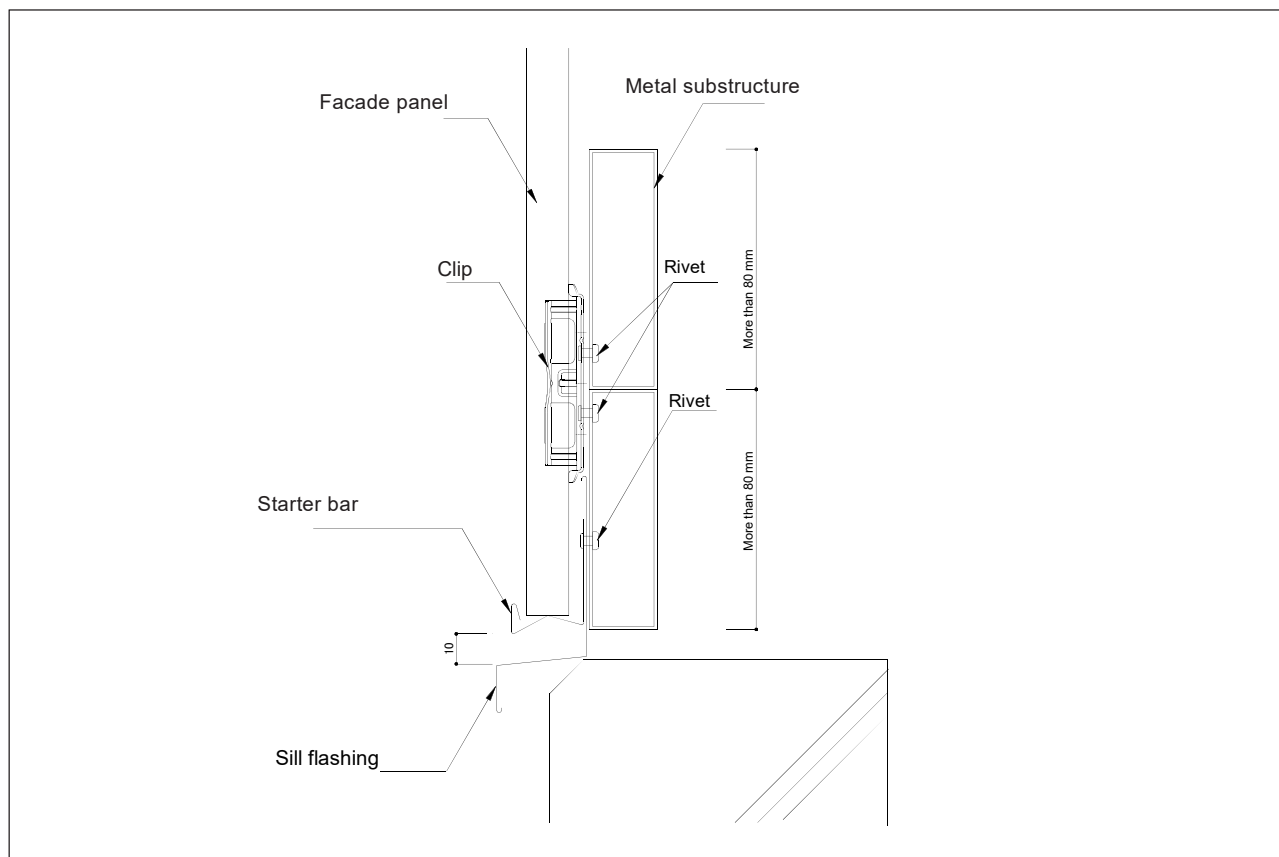
※ If it seems impossible to use the first clip just above the starter bar, insert a spacer 5 and fix the panel with face screw 50 at a required distance from the panel edge. When fastening the panel with self-tapping screw 50, observe the distance from the edge of the panel. (2 - 3 face screws along the width of the panel)

③ To prevent the panel from falling, do not take your hands from the clip until the fastening is completed with a rivet or clip screw.



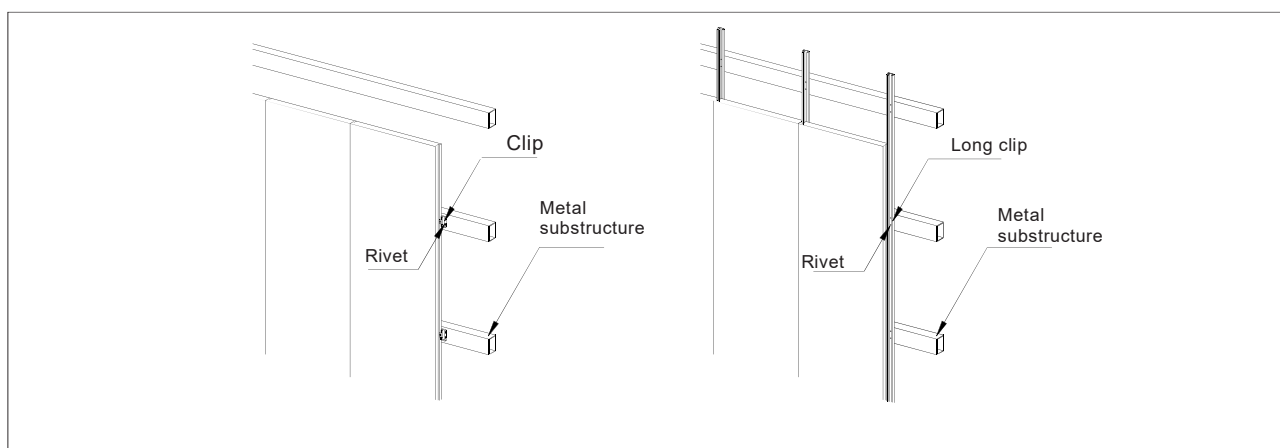
## Vertical application Installation along the sills

- Mark a level line with a leveler or level for starter bar on the sill.
  - Fix the starter bar with a rivet or a screw at interval no more than 455 mm.  
※If you miss a rivet, make a pilot hole in the starter bar and then fasten another one to secure the starter bar.
  - The clip for fixing the panel is fastened just above the starter bar with two rivets or two screws.
  - Secure 10 mm ventilation gap between the bottom of the panel and the sill flashing.
- Note: For the installation on the basics of vertical application, see pages 36-37.



## Vertical application Installation with clips

- Fasten the clips on the substructure with two rivets or two screws at interval less than 600 mm.
- Fasten long clip on the substructure with two rivets or two screws.
- Fasten the clips with rivets or screws through the holes



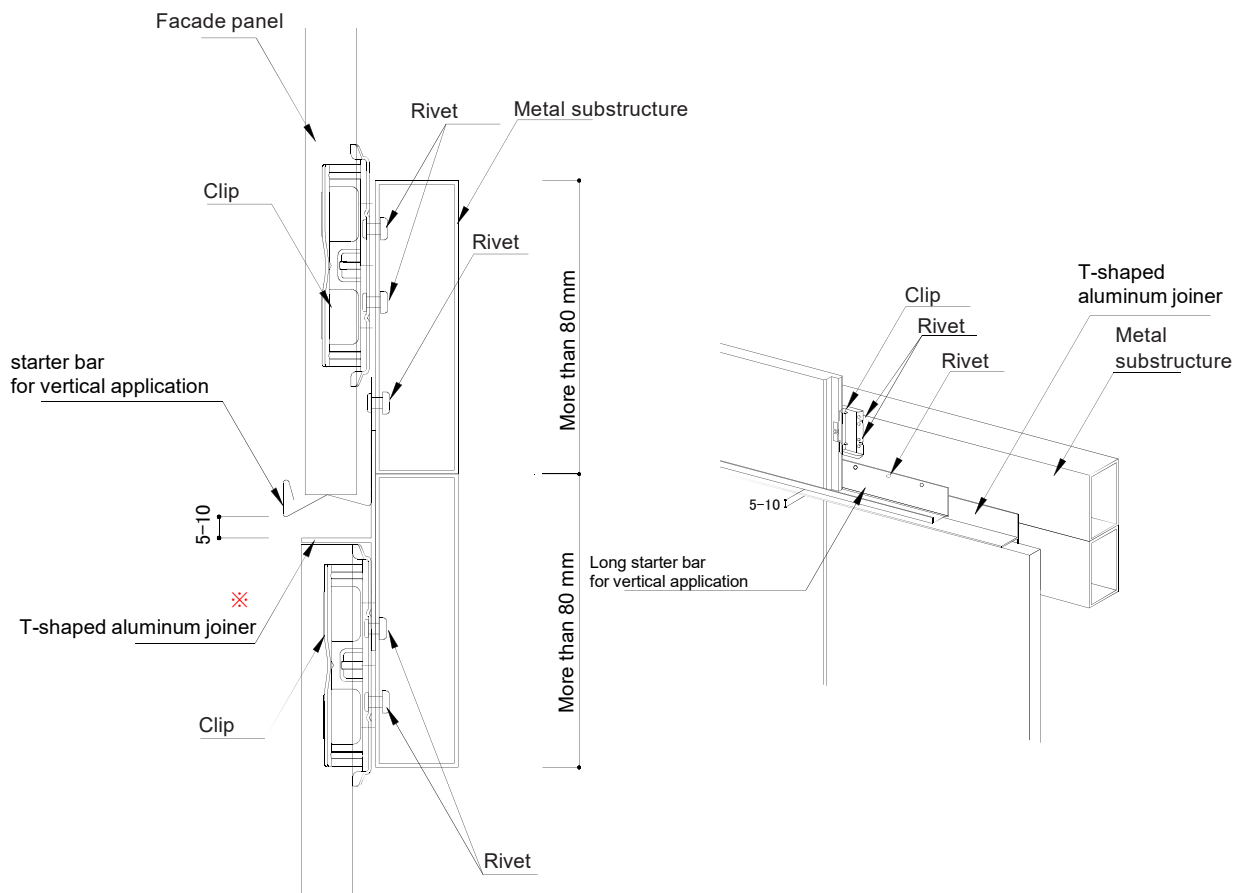
## Vertical application

### Horizontal joint installation (T-shaped aluminum joiner)

#### ■ Aluminum joiner application

- An aluminum joiner is installed on the upper edge of the panel. When adding another joiner make sure to secure 5 mm gap between the joiners.
  - Fasten aluminum joiners to the metal substructure at maximum distance of approximately 1 m between the screws.
  - At the end of the aluminum joiners, after marking the contour line, a starter bar is fixed and then attached to the substructure with a rivet, or a face screw at an interval of not more than 455 mm.  
※If you miss a rivet, fasten another rivet at a position where the fastening interval is 455 mm or less to securely fix the starter bar.
  - Even if there is an air gap between the metal substructure and the insulation, leave a gap of at least 5 mm between the starter bar and the aluminum joiner. If there is no air gap, leave a gap of at least 10 mm.
  - The clip is fixed over the long starter bar with two rivets or two face screws.
  - It is allowed to fasten the clip on the fringe of the aluminum joiner. Place the clip on the aluminum joiner so that the clip holes align along the lines which are made for fastening with screw or rivet.
- ※See P36-37 for caution during vertical installation.

Aluminum joiner specification



- ※ It is not recommended to install a L-shaped aluminum joiner, as the joiner will not be able to prevent water from entering inside.



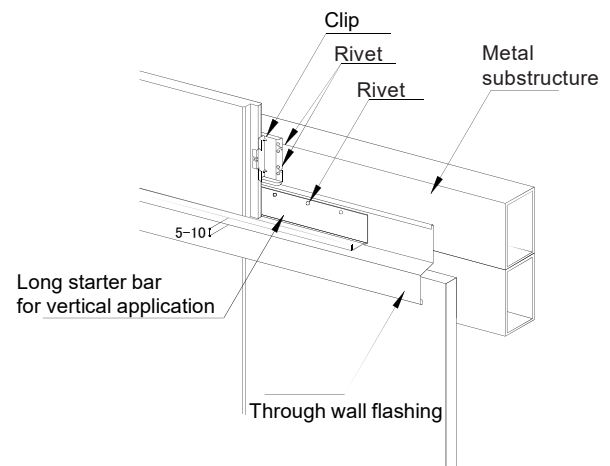
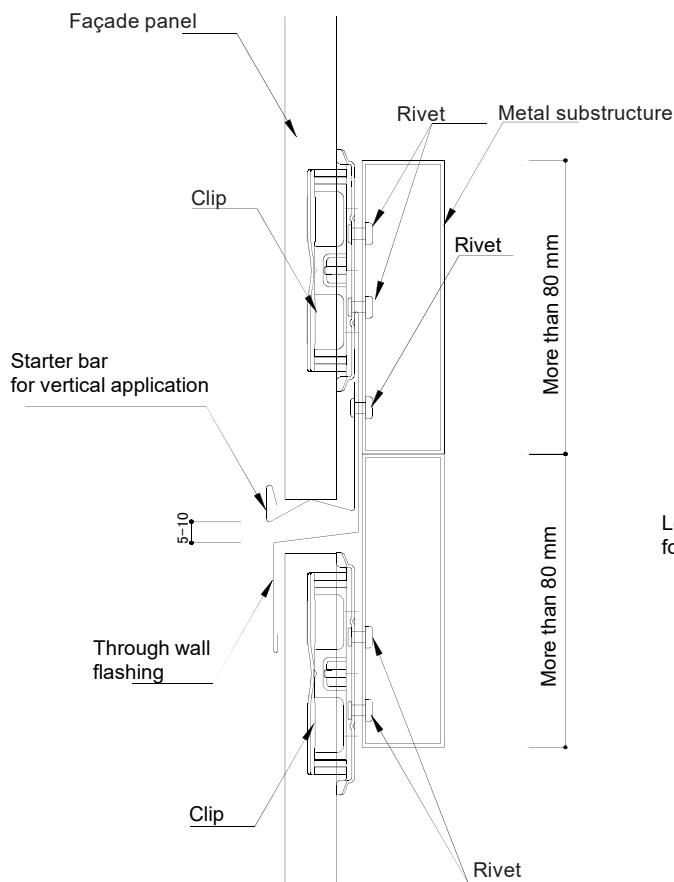
## Vertical application

### Horizontal joint installation (Through wall flashing)

#### ■ Through wall flashing application

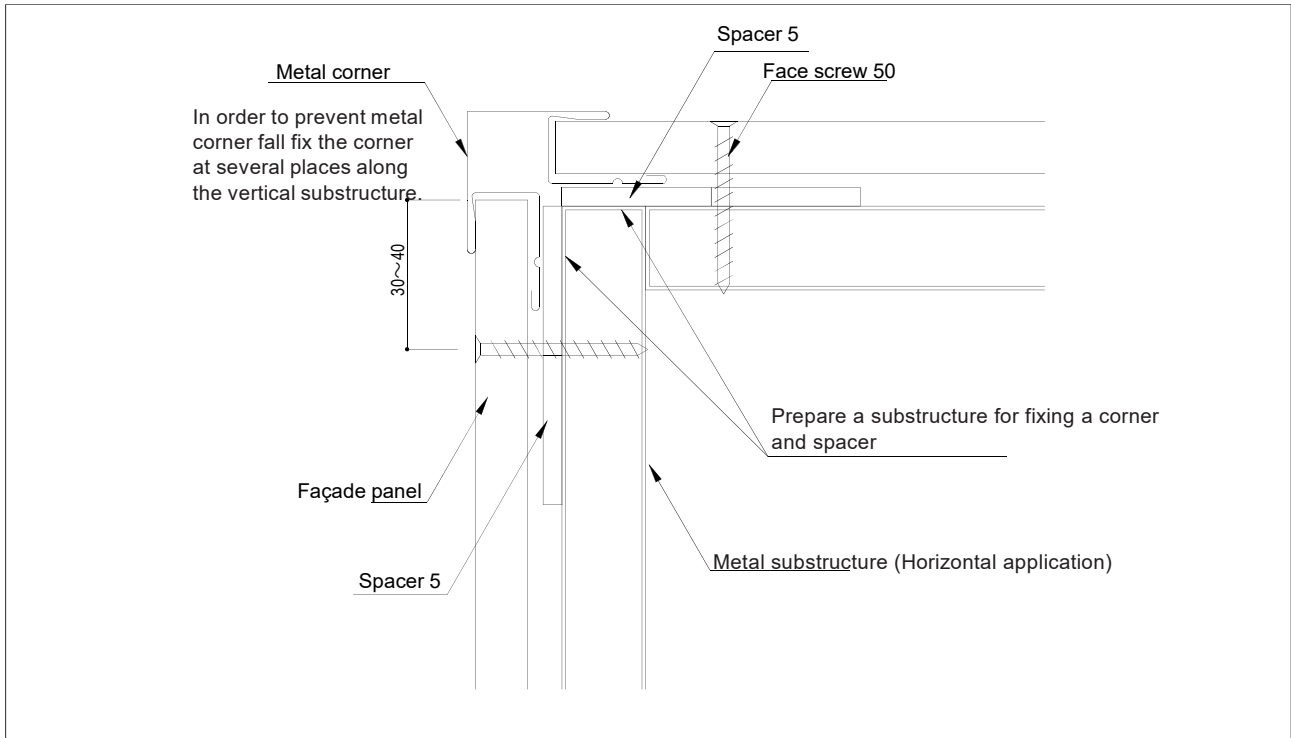
- Through wall flashing is installed on the upper edge of the panel
  - Fasten the starter bar on the metal substructure just above the through wall flashing with one rivet or one screw at a distance no more than 455mm.
    - ※ If you miss a rivet, fasten another rivet at a position where the fastening interval is 455 mm or less to securely fix the starter bar.
  - Even if there is an air gap between the metal substructure and the insulation, leave a gap of at least 5 mm between the starter bar and the through wall flashing. If there is no air gap, leave a gap of at least 10 mm.
  - The clip is fixed right above the starter bar with two rivets or two clip screws.
- ※ See P36-37 for caution during vertical installation.

Through wall flashing specification

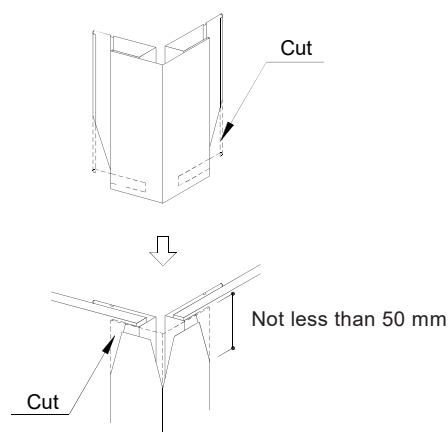


## Vertical application Metal corner installation

- Cut the shiplaps of the panel before installing.
- Fasten on the right and left sides of the corner a cap vertical application starter bar which is used for outside corner in vertical application.
- Fix spacers on both sides of the corner at a distance of no more than 600 mm along the longitudinal direction to adjust the height.
- Then install the metal corner on the spacer and fasten to the metal substructure with screws.
- Align the lower end of the metal corner with the façade panel.
- Fasten the panel with spacer and face screw 50 on the metal substructure at a distance no more than 600 mm by securing 30~40 mm gap from the panel edge.
- In the case of using a face screw without reamer, drill a hole in advance to the size of the face screw 50 diameter plus 1 mm and fix it to the metal substructure.
- Make sure to apply touch-up paint on the screw heads.

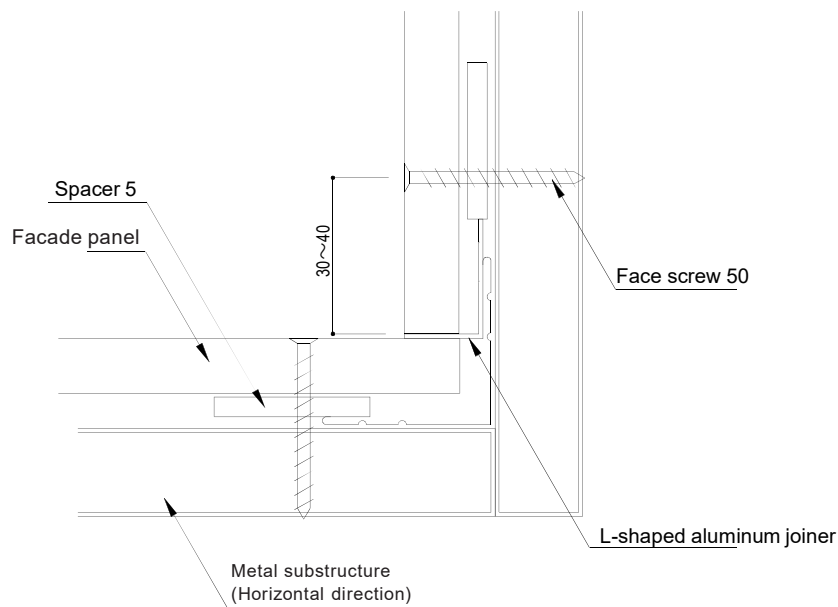


### Metal corner joining method



## Vertical application Inside corner installation

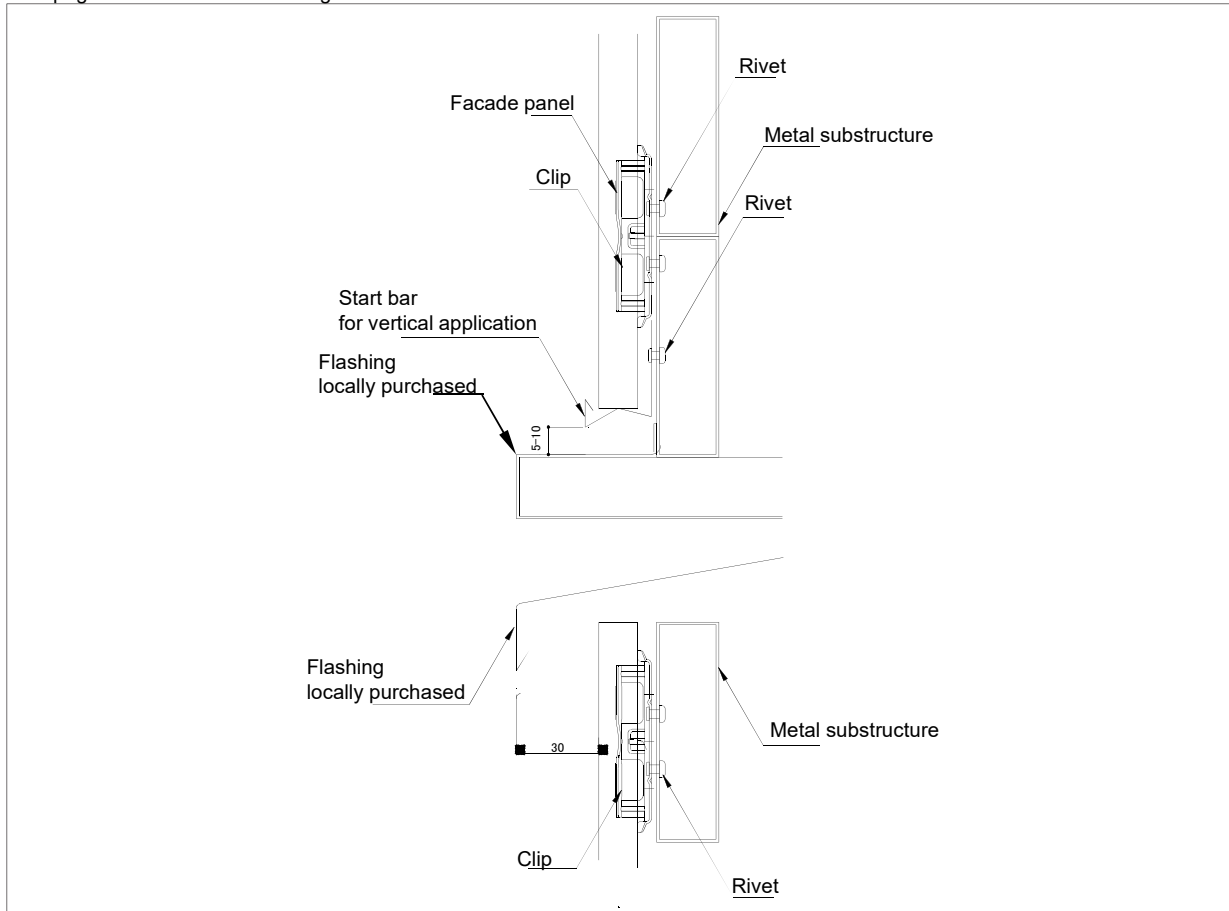
- Fix an inside corner flashing to metal substructure.
- Insert L-shaped aluminum joiner at the joint of the panels. When adding another joiner make sure to secure 5 mm gap between the joiners.
- Butt panels to the aluminum joiner then install the panels.
- Cut the shiplaps of the panels before installing them.
- The panel is fixed on spacers to a metal substructure at a distance of no more than 600 mm with face screw 50s, leaving a distance of 30~40 mm from the edge of the panel.
- In the case of using face screw without reamer, drill a pilot hole with the size of the face screw diameter plus 1 mm and fix it to the substructure.
- Be sure to apply touchup paint to the screw head.



## Vertical application

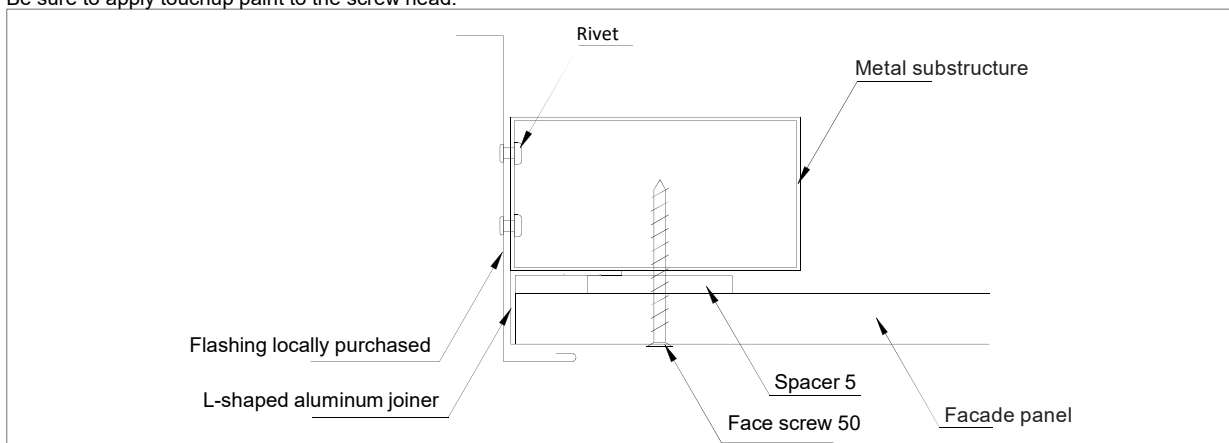
### Installation around openings, doors and windows

- Purchase flashings for the openings locally and cut them with the appropriate size for installation.
- ① **Bottom and top of the openings**
  - Above the opening, install a starter bar to the metal substructure with one rivet or one clip screw at an interval of not more than 455 mm. Make sure the starter bar installed horizontally.
  - ※If you miss a rivet, fasten another rivet at a position where the fastening interval is 455 mm or less to securely fix the starter bar.
  - The clip is fixed right above the starter bar with two rivets or two clip screws.
  - Leave a 5-10 mm gap between the starter bar and the flashing.
  - Install the panels with clips under the opening. Fasten the clips to the metal substructure with two rivets or two clip screws. See pages 36-37 for caution during vertical installation.



## ② Right and left sides of the opening

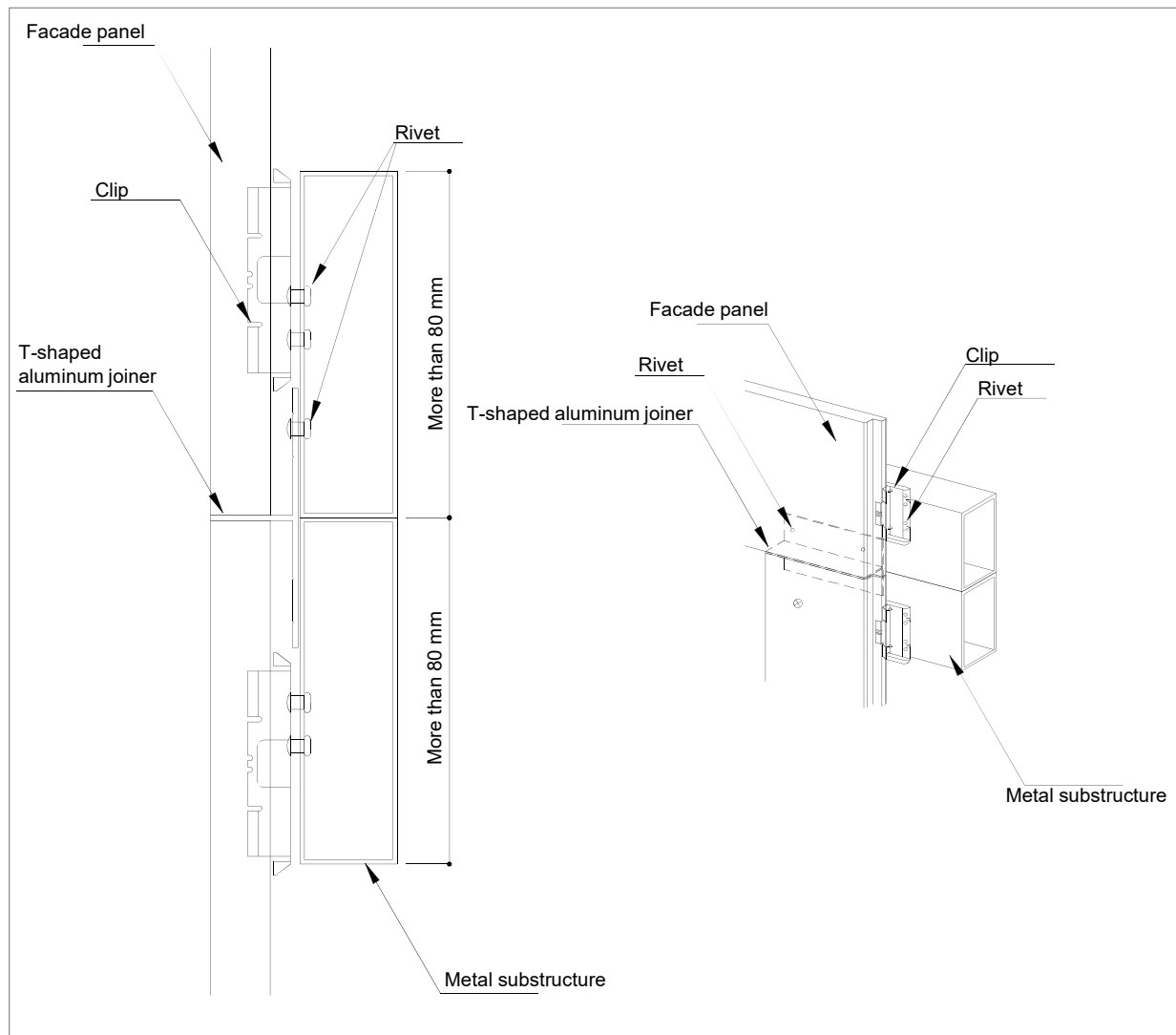
- Secure a L-shaped aluminum joiner between the panel and the flashing. When adding another joiner make sure to secure 5 mm gap between the joiners.
- Butt the panel to the aluminum joiner then install the panels.
- Cut the shiplaps of the panels before installing them.
- Fix the panel on spacers to a metal substructure at a distance of no more than 600 mm with a face screw 50, leaving a distance of 30 ~40mm from the edge of the panel.
- In the case of using a face screw without reamer, drill a pilot hole with the size of the face screw diameter plus 1 mm and fix it to the substructure.
- Be sure to apply touchup paint to the screw head.



## Vertical application

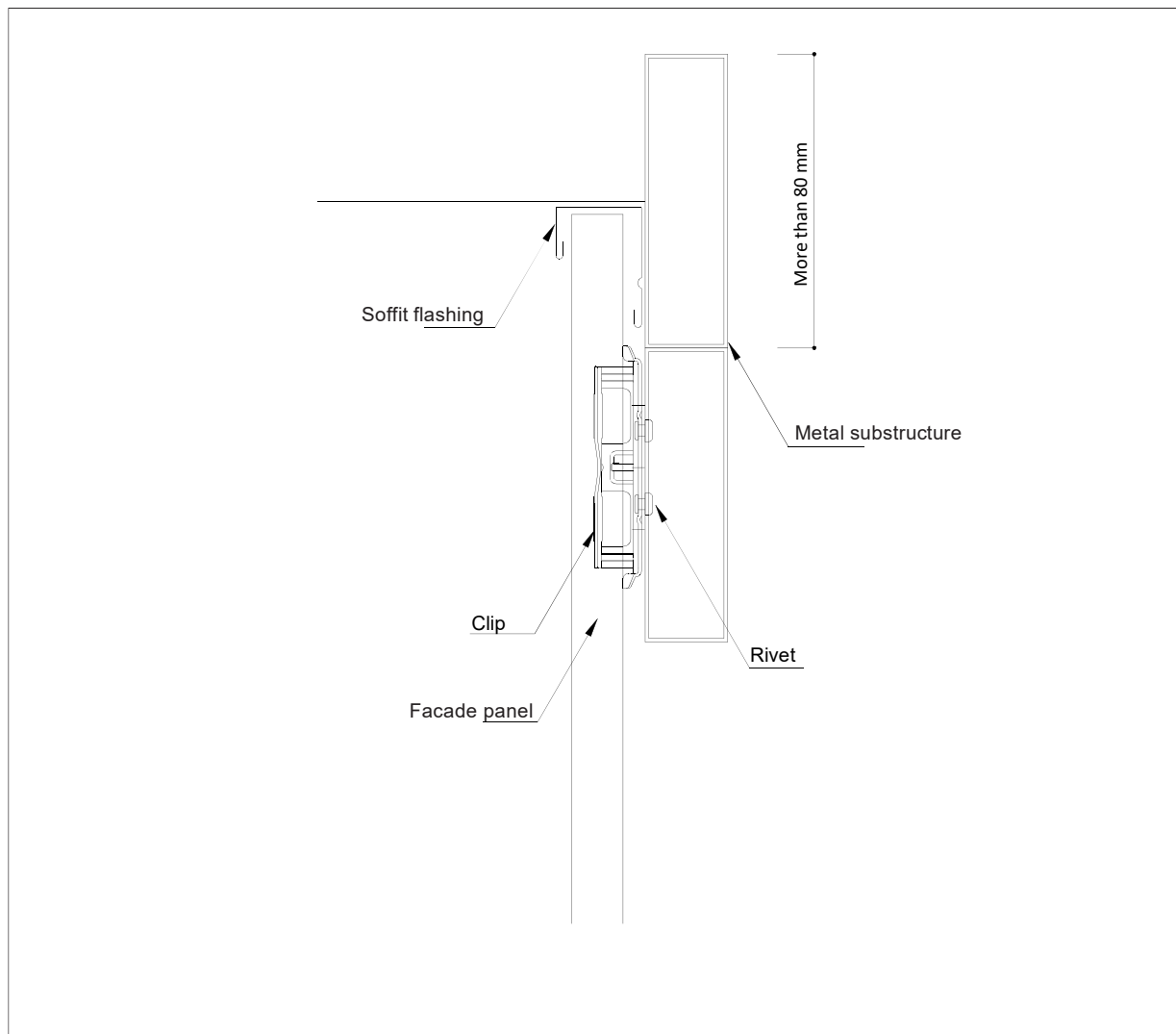
### Installation around openings, doors and windows (Panel Cutting)

- Cut the panel if the width of the cut panel is smaller. See page 24 for installation.
- Install a T-shaped aluminum joiner at the joint of the cut panel.
- The aluminum joiner is fixed to the metal substructure with rivets or clip screws.
- Fix the bottom and top of the panels with clips.
- Butt panels to the aluminum joiner then install the panels.
- It is allowed to fasten the clip on the fringe of the aluminum joiner. Place the clip on the aluminum joiner so that the clip holes align along the lines which are made for fastening with screw or rivet.



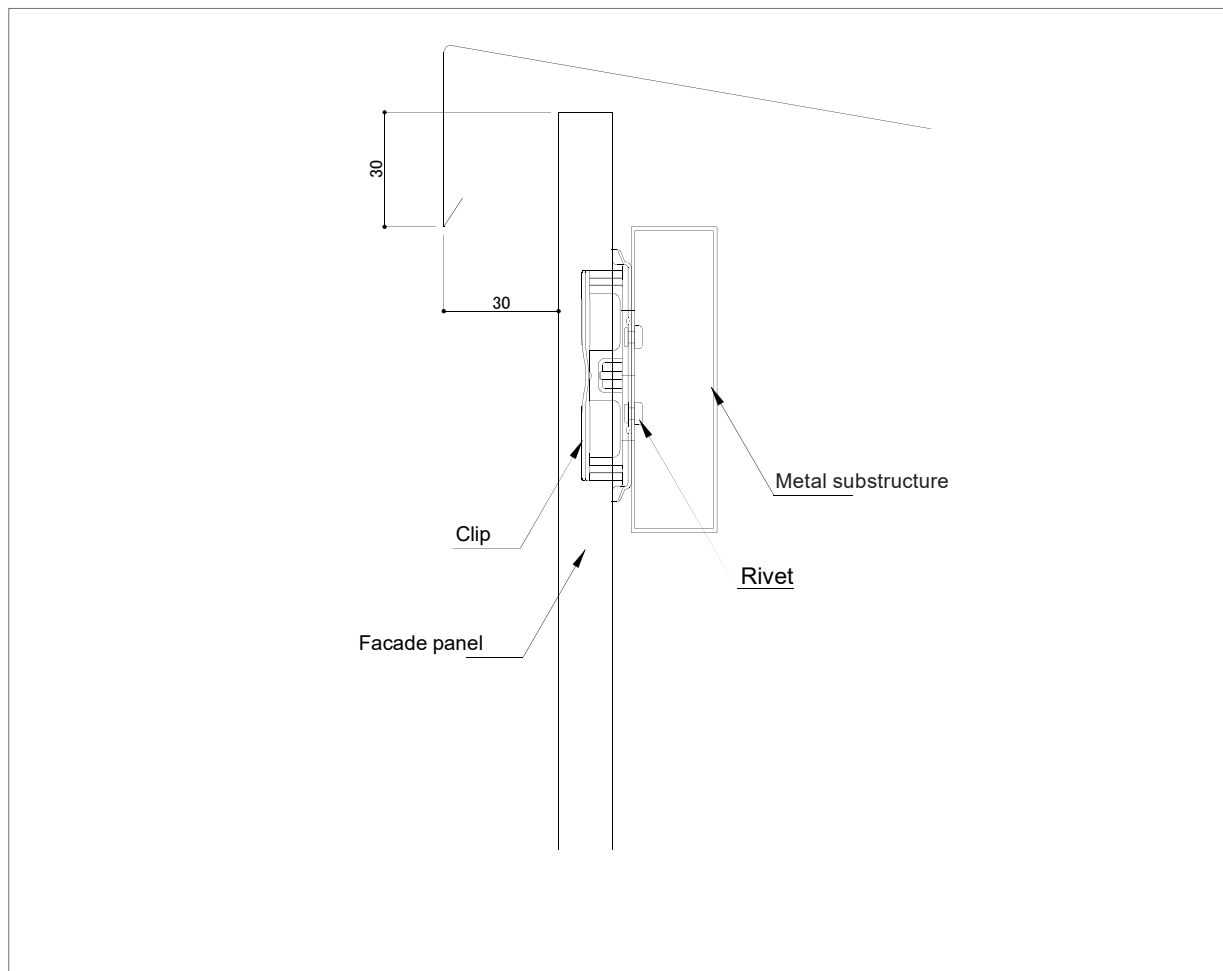
## Vertical application Installation at eaves

- Before installing the soffits at the eaves, you must first attach the vertical furring stripes, leaving an air gap.
- The flashing is fixed to a metal substructure under the soffits.
- Insert the panels into the flashing so that the cutting edges of the panels are invisible.
- In the places where the panels are adjacent to the eaves of the roof, fasten the clips to the metal substructure with two rivets or two face screw 50s.



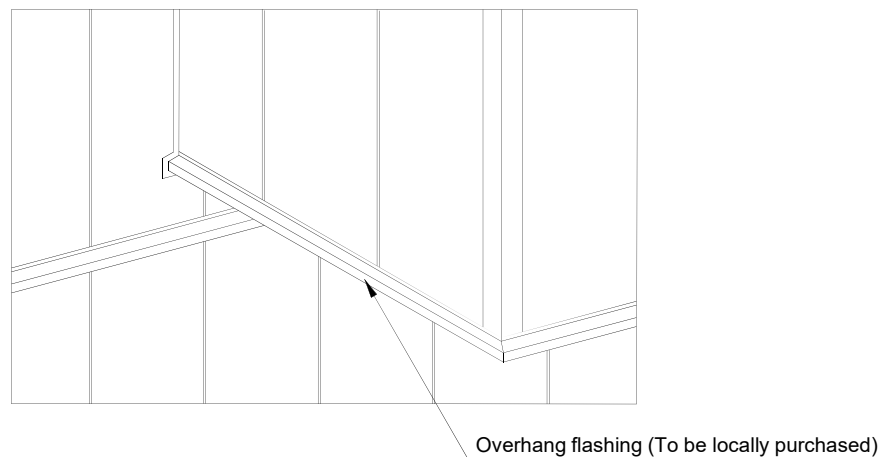
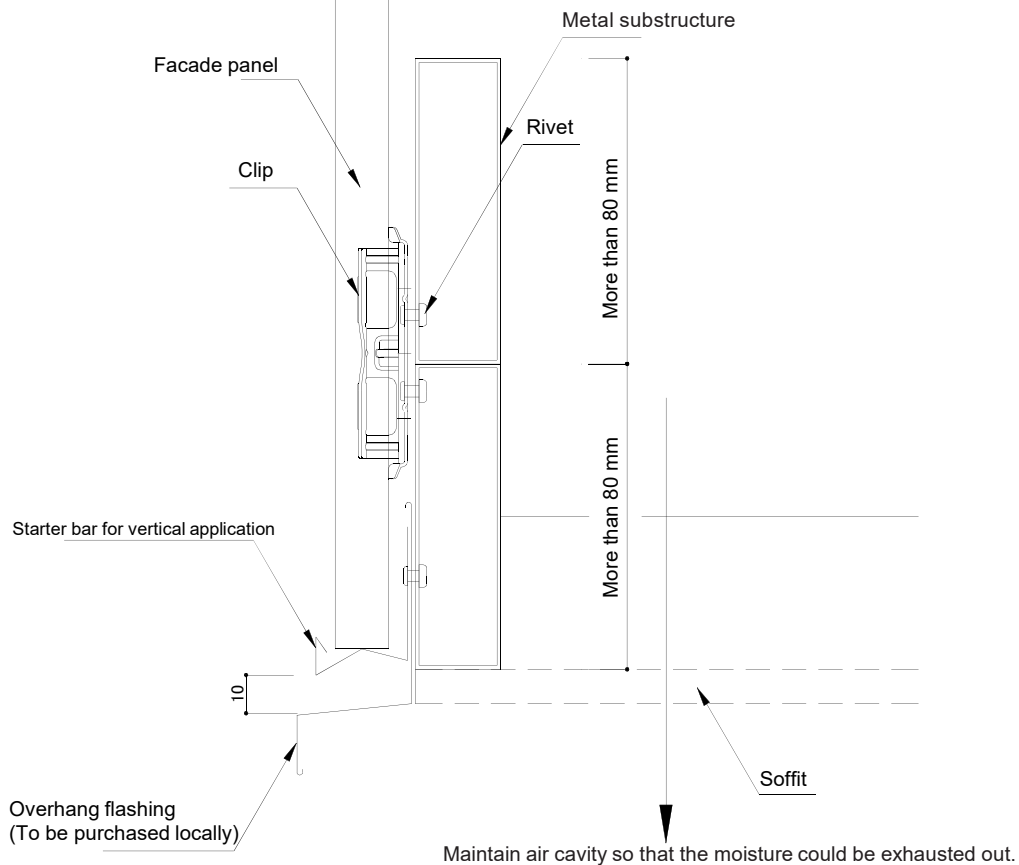
## Vertical application Head board for parapet

- Install the flashing with ventilation gap behind the panel. The head board should cover 30 mm of the panel. Head board of parapet is locally purchased.
  - Put a clip on the top edge of the panel and fasten on the metal substructure with two rivets or two screws.
- ※ See P36-37 for caution during vertical installation.



## Vertical application Overhang flashing installation

- Install overhang flashing on the metal substructure.
- Install a starter bar to the metal substructure with one rivet or one clip screw at an interval of not more than 455 mm. Make sure the starter bar installed horizontally.
- ※ If you miss a rivet, fasten another rivet at a position where the fastening interval is 455 mm or less to securely fix the starter bar.
- The clip is fixed right above the starter bar with two rivets or two clip screws
- Leave a 5-10 mm gap between the starter bar and the overhang flashing.
- ※ See P36-37 for caution during vertical installation.

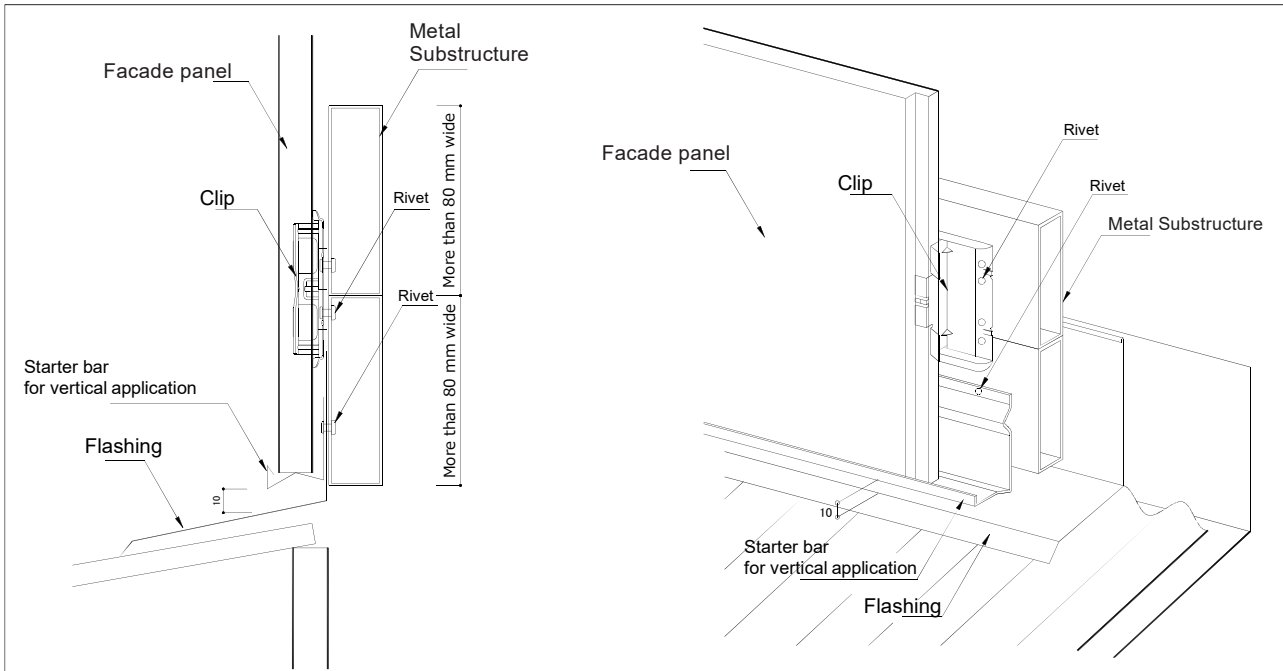




## Vertical application Intersection with roof

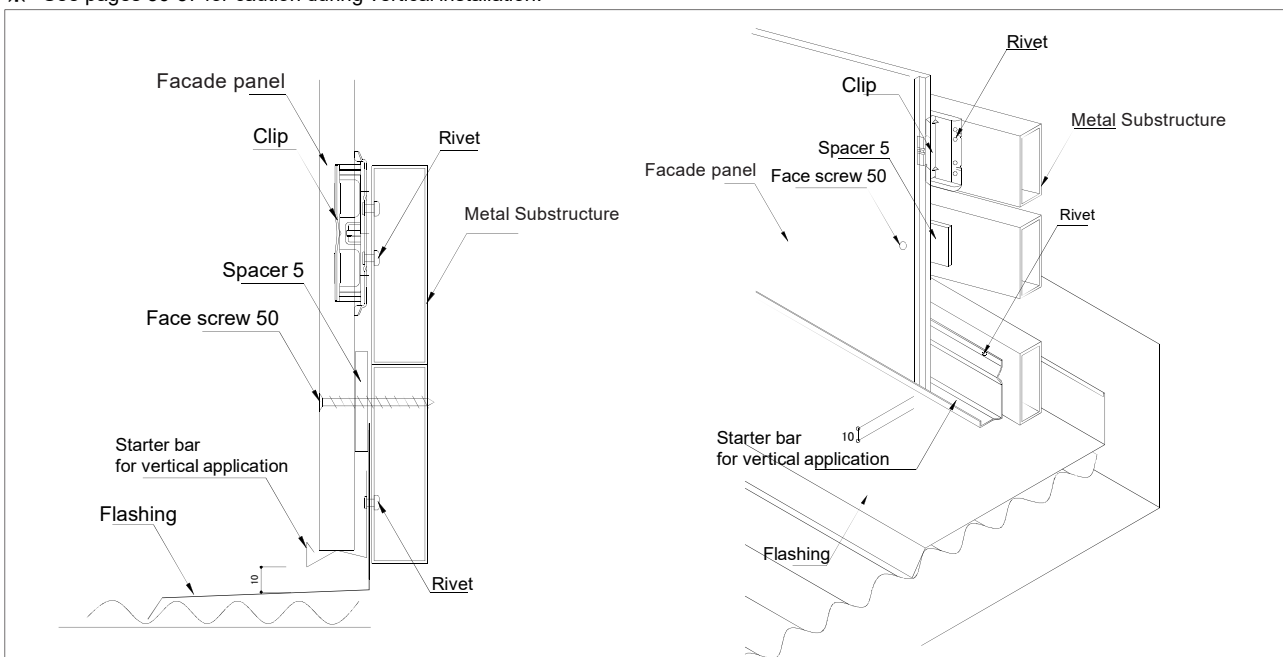
### ① Ridge Side

- Install the panel the same way at sill.
- Install a starter bar to the metal substructure with one rivet or one clip screw at an interval of not more than 455 mm. Make sure the starter bar installed horizontally.
  - ※ If you miss a rivet, fasten another rivet at a position where the fastening interval is 455 mm or less to securely fix the starter bar.
- The clip is fixed right above the starter bar with two rivets or two clip screws.
- Leave a 10 mm gap between the starter bar and the flashing.
- ※ See pages 36-37 for caution during vertical installation.



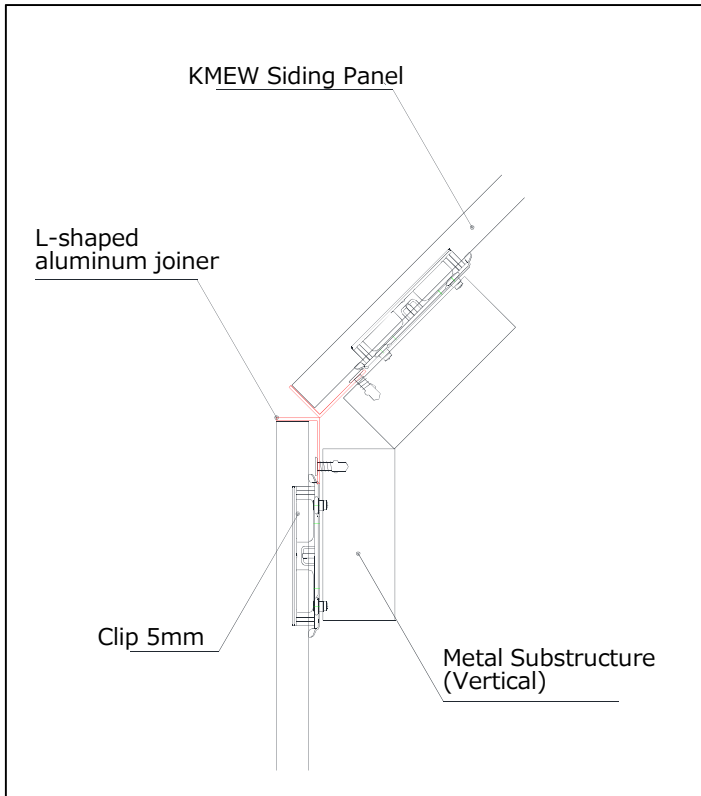
### ② Slope Side

- Install a starter bar.
- Install a starter bar to the metal substructure with one rivet or one clip screw at an interval of not more than 455 mm.
  - ※ If you miss a rivet, fasten another rivet at a position where the fastening interval is 455 mm or less to securely fix the starter bar.
- Leave a 10 mm gap between the starter bar and the flashing.
- Insert a spacer 5 between the starter bar and the first clip and fix the panel with a face screw 50. (Fasten the face screw at a distance of 80 mm from the edge of the panel)
- Be sure to apply touchup paint to the screw head.
- ※ See pages 36-37 for caution during vertical installation.

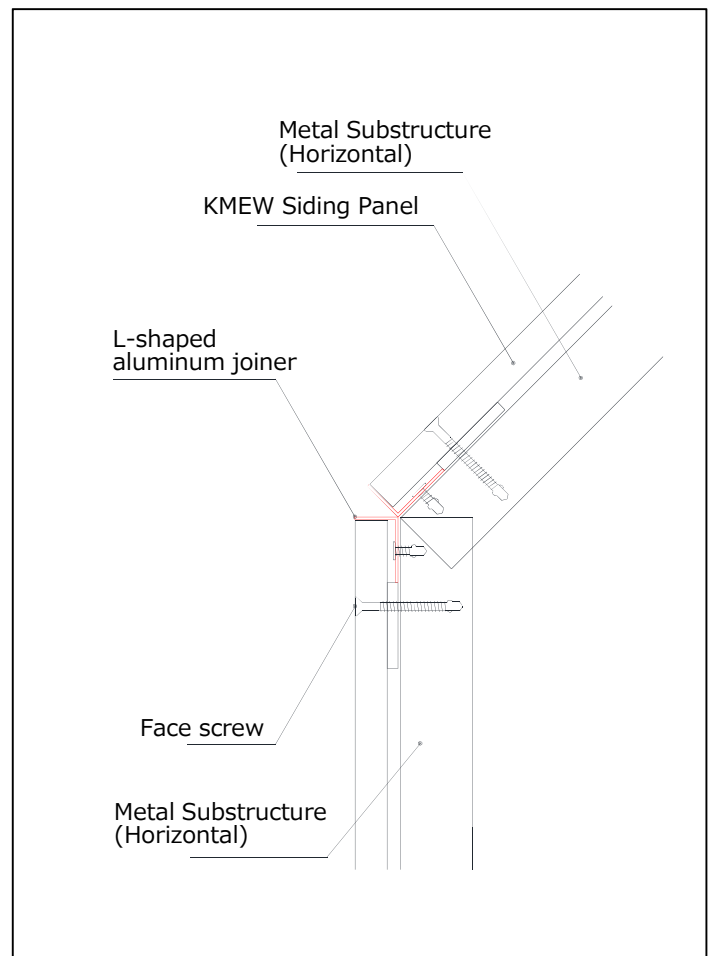


## Horizontal and Vertical applications Obtuse Angle

Horizontal application



Vertical application



# Putty and Touch-up paint

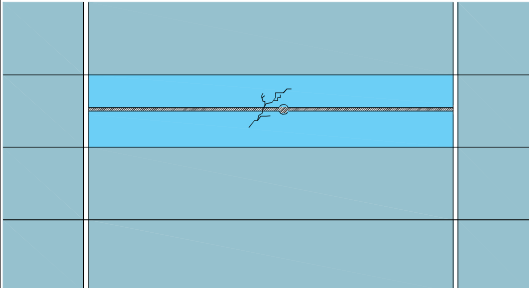
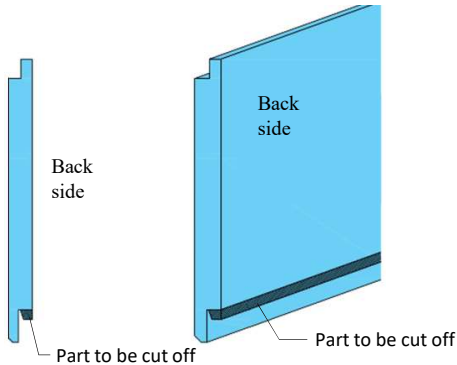
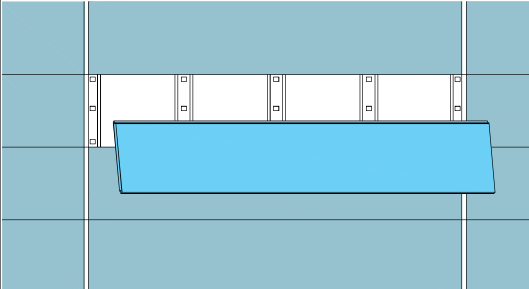
- Apply KMEW touch-up paint to a damaged spot that has formed during the installation of the panel with a face screw. Failure to apply touch-up paint to damaged spots may cause frost damage on the panel.
- Store the touch-up paint at temperatures below 40°C (Storing at high temperatures is dangerous. Opening the lid may cause a blowout).
- Do not apply caulking on the screw heads. If caulking is used on the screw heads, the applied spots may cause a whitening phenomenon.
- When using the touch-up paint, follow the application procedure below. Failure to follow the procedures and precautions may result in poor performance, color mismatch, and noticeable repairs due to aging. KMEW cannot take any responsibility in this case, so please use it with caution.
- If a large scratch is found on the panel, it is best to replace it instead of touching it up.

## Repair paint application procedure

Order	Main work and Precautions	Diagram
1) Preliminary check	<ul style="list-style-type: none"> <li>● Check the facing of the panel for moisture. Do not apply touch-up paint in rainy weather or when the air temperature is 5 °C or less.</li> <li>● Do not use it on spots where frost or dew has formed.</li> <li>● Clean the areas where the repair paint will be applied.</li> </ul>	
2) Mixing repair paint	<ul style="list-style-type: none"> <li>● Stir the touch-up paint well with a stick attached, scraping off the mass that has accumulated on the bottom of the can (2 min. or 200 times).</li> <li>● Apply the repair paint without thinning.</li> </ul> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>※</p> <ul style="list-style-type: none"> <li>● Be careful not to foam when stirring paint.</li> <li>● Stir the paint before painting to prevent solid pigments from settling.</li> <li>● Insufficient mixing may cause color differences.</li> </ul> </div>	<p>Don't shake the paint can use a mixing brush.</p> <p>Stir well until the color of the paint is uniform</p>
3) Repair paint application	<ul style="list-style-type: none"> <li>● Using the left-over panel, conduct some test paintings and adjust the color intensity.</li> <li>● The area to be applied is small, only the screw head and scratches. Use the attached brush to apply thinly with a diameter of about 10 mm so that it does not drip.</li> <li>● For products painted in various colors, the color intensity of each spot is different, so adjust the color intensity based on the location of the screws.</li> <li>● Screw head repair. Fix the screw a little deeper into the panel. After applying the putty, wait until it is completely dry, then apply the repair paint.</li> </ul> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>※</p> <ul style="list-style-type: none"> <li>● Do not apply thick paint to avoid gloss.</li> <li>● A paint surface that is too wide will stand out. Apply minimal paint.</li> </ul> </div>	<p>Putty application</p> <p>Approx. 10 mm</p> <p>Fix the screw a little deeper into the panel</p>
4) End of work Check	<ul style="list-style-type: none"> <li>● Check if there are any unpainted spots.</li> </ul>	

## Replacing a damaged panel

※ The panel to be replaced is fastened only with face screws.

Order	Actions	Picture
Remove the damaged panel	<ul style="list-style-type: none"> <li>● Make a hole in the center of the panel, for which it will be convenient to pull the panel out later.</li> <li>● Adjust the circular saw blade to match the thickness of the panel.</li> <li>● Accurately cut through the panels not to damage other accessories of the system.</li> <li>● Pull out and remove the two cut pieces without touching the rest of the panels</li> </ul>	
Prepare a new panel	<ul style="list-style-type: none"> <li>● Cut the panel to the same length as the damaged one.</li> <li>● Adjust the circular saw blade to match the thickness of the groove on the panel back side.</li> <li>● Cut the back of the groove off. Be careful not to damage the front.</li> </ul>	
Installation of a new (replacement) panel	<ul style="list-style-type: none"> <li>● Insert spacer 5s on metal substructure in places where face screw 50s are fastened.</li> <li>● First insert the panel to the top and then place the bottom.</li> </ul>	
	<ul style="list-style-type: none"> <li>● On each metal substructure, fasten the panel with face screw 50s on the both sides (the distance from the edge of the panel is 30~40 mm) and in the center of the panel.</li> </ul>	