



**THE ROOF  
AS STRONG AS A BULL!**

# **INSTALLATION INSTRUCTIONS**

## **PREFA FAÇADE SYSTEMS**



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MORE INFORMATION: P. 131**

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## COMPOSITE PANEL

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## GENERAL INFORMATION

PREFA only commissions specialist companies to install PREFA façade products. Therefore, these installation instructions assume that installers have extensive experience with the material, aluminium.

The PREFA installation instructions contain general installation guidelines which must also be adapted to local conditions.

Please note the following:

- ! Do not allow water from copper parts (e.g. gutters, flashings, chimney covers or sheet metal coverings) to come into contact with PREFA aluminium products.
- ! During transport, handle the packing units carefully.
- ! Buildings physics requirements must be observed.

! In strong winds, prevent any sheet metal components from falling or flying off the scaffolding.

! PREFA façade elements can be installed on substructures made of wood, aluminium or a combination of wood and aluminium.

! The length of the prepared edge parts must not exceed 3,000 mm. Do not permanently connect the joints as this will prevent components from expanding.

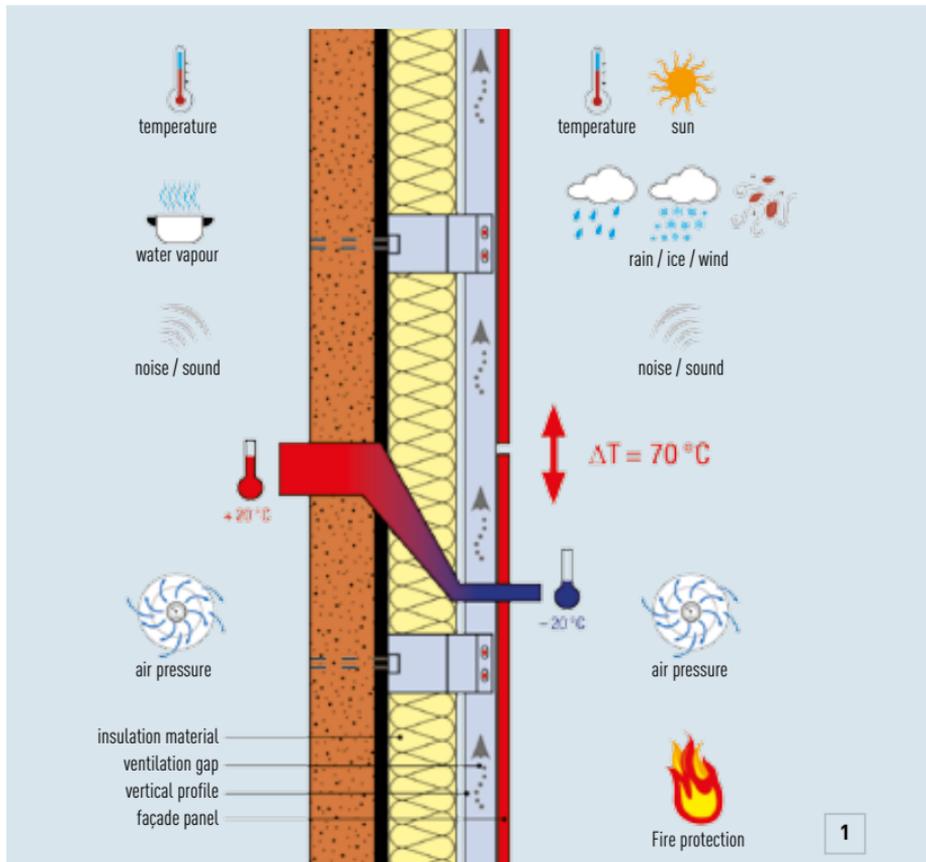
! On PREFA façades, only fabricate the corresponding flashing strip and associated edging or jointing strips from the PREFA flashing strip. This is the only way to ensure that PREFA façade elements will maintain colour consistency in the long term.

## INFORMATION ABOUT VENTILATED FAÇADES (Fig. 1)

Ventilated façades combine functional, environmentally-friendly and aesthetic features. They provide protection from noise, cold and heat, and protect the primary structure from the effect of the weather. The design of the ventilated façade is characterised by a clear, functional separation of the

individual building components.

Basically, the ventilated external cladding is composed of several structurally-coordinated components. An example of ventilated façade cladding is illustrated below in the form of PREFA siding.



The way in which the system is designed depends on the type of cladding and the structural conditions, and so may differ from the illustrated example.

- ! optional insulation layer
- ! ventilation gap
- ! connection and fastening elements
- ! PREFA siding cladding

- ! supporting structure
- ! anchoring elements
- ! substructure

## STRUCTURAL INFORMATION

The substructure must be designed bearing in mind the supporting structure, static requirements, building physics considerations and the type of cladding according to the stability requirements.

Generally speaking, the stability verification consists of calculating

the static load of the substructure, cladding, anchoring elements and fasteners.

For our PREFEA siding, we provide a “bearing distance table”, which can be used to calculate the static load.

## BUILDING PHYSICS INFORMATION

Protection from heat, damp, noise and fire must be taken into account when planning ventilated façades.

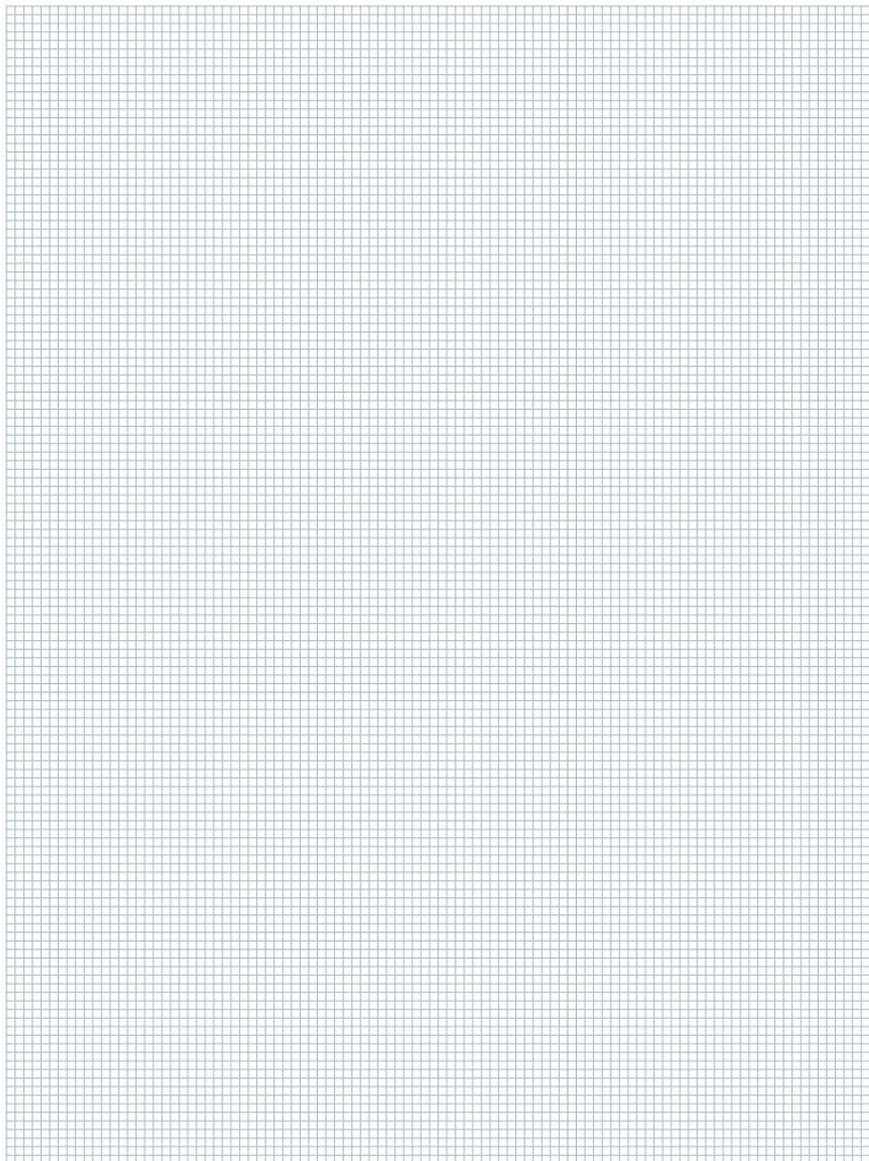
The cross-section of the vertical ventilation cavity must be at least 200 cm<sup>2</sup>/m, and when using wood, at least 300 cm<sup>2</sup>/m. The air inlet and outlet vents at the top

and bottom of the cladding must have a free-cross-section of at least 50 cm<sup>2</sup>/m. On substructures made of wood, this must be at least 150 cm<sup>2</sup>/m.

If installing windproofing, we recommend building a two-layer substructure.

## PREPARING THE CONSTRUCTION SITE

Make sure that the façade is perfectly vertical. If the walls incline significantly inwards or outwards, this must be taken into account when building the substructure. Before the work begins, make sure that all security measures have been complied with and checked. Allow for sufficient expansion of the entire façade.





# INSTALLATION INSTRUCTIONS

FX.12 FAÇADE PANEL

# INSTALLING THE PREFA FX.12 FAÇADE PANEL



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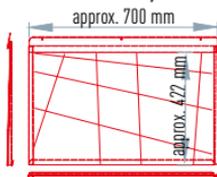
## PREFA FX.12 FAÇADE PANEL — TECHNICAL DATA

**Material:** coated aluminium, 0.7 mm thick, two-layer stove-enamel finish

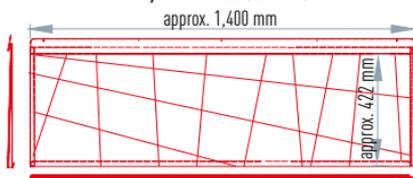
**Dimensions:** 700 × 420 mm and 1,400 × 420 mm (cover)

**Weight:** 1 m<sup>2</sup> = approx. 2.4–2.5 kg = 3.4 per m<sup>2</sup> (small panels) and 1.7 per m<sup>2</sup> (large panels)

PREFA FX.12 FAÇADE PANEL (SMALL)



PREFA FX.12 FAÇADE PANEL (LARGE)



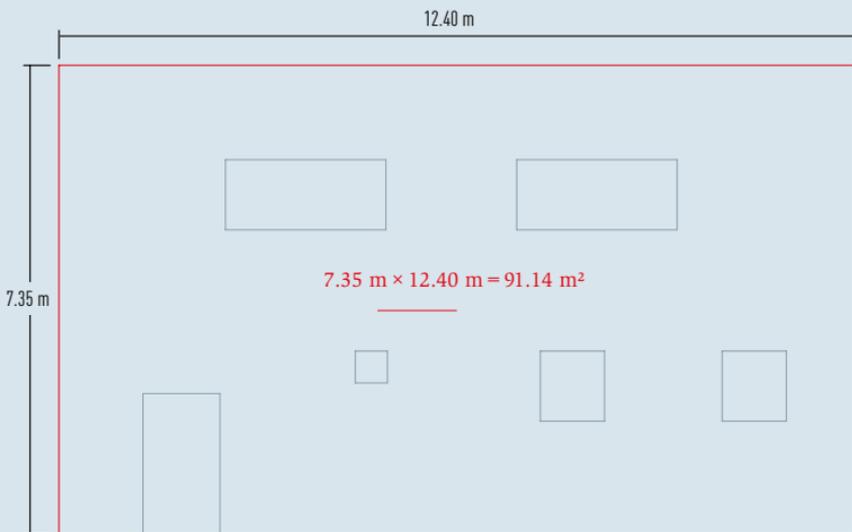
## QUANTITY EVALUATION PREFA FX.12 FAÇADE PANEL

Offcuts and window and door openings are not taken into account in the calculation. Usually (with openings of up to approx. 3 m<sup>2</sup>), offcuts are cancelled out and partially compensated for by

rounding up the ordered packing units.

In principle, it is only possible to install large FX.12 roof panels. However, the desired irregular

### EXAMPLE OF QUANTITY EVALUATION FOR FX.12



effect achieved with different panel lengths and by offsetting panels is then considerably affected. In this example, the ratio of 2 large panels to 1 smaller panel taken into account in the calcula-

tion turned out to be a good solution in terms of the installation technique and appearance.

<b>SURFACE AREA OF FX.12 PANEL (LARGE FORMAT)</b> .....	0.588 m <sup>2</sup>
<b>SURFACE AREA OF FX.12 PANEL (SMALL FORMAT)</b> .....	0.294 m <sup>2</sup>
<b>PANEL RATIO</b> .....	large format FX.12 : small format FX.12 = 2 : 1
<b>SURFACE RATIO</b> .....	large format FX.12 : small format FX.12 = 4 : 1
<b>QUANTITY EVALUATION — PROPORTION OF SMALL FORMAT PANELS (in m<sup>2</sup>)</b> .....	91.14 m <sup>2</sup> / 5 = 18.228 m <sup>2</sup>
<b>QUANTITY EVALUATION — PROPORTION OF SMALL FORMAT PANELS (in pc.)</b> ..	18.228 m <sup>2</sup> / 0.294 m <sup>2</sup> = 62
<b>QUANTITY EVALUATION — PROPORTION OF LARGE FORMAT PANELS (in pc.)</b> .....	62 × 2 = 124
<b>QUANTITY EVALUATION — FX.12 PACKAGES</b>	
<b>PACKAGING UNIT — LARGE FORMAT FX.12</b> .....	20 pc.
<b>PACKAGING UNIT — SMALL FORMAT FX.12</b> .....	28 pc.
<b>LARGE FORMAT</b> .....	124 items = 7 packages
<b>SMALL FORMAT</b> .....	62 items = 3 packages

\* **Note:** with a 2:1 ratio, the percentage of area covered with small FX.12 panels = 20%.

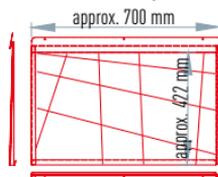
## INSTALLATION EXAMPLES

**Note:** large to small ratio = 2:1. To obtain an individual appearance over the whole surface area, vertical seams should not lie above one another (recommended minimum joint offset: 220 mm).

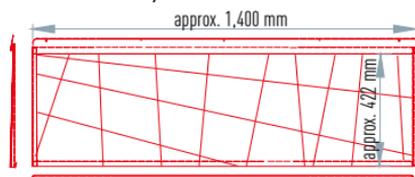
For assistance, we have provided some PREFEA installation examples below (Fig. 5-7).

These can also be downloaded (in pdf and dwg format) from [www.prefa.at](http://www.prefa.at).

**PREFEA FX.12 FAÇADE PANEL (SMALL)**

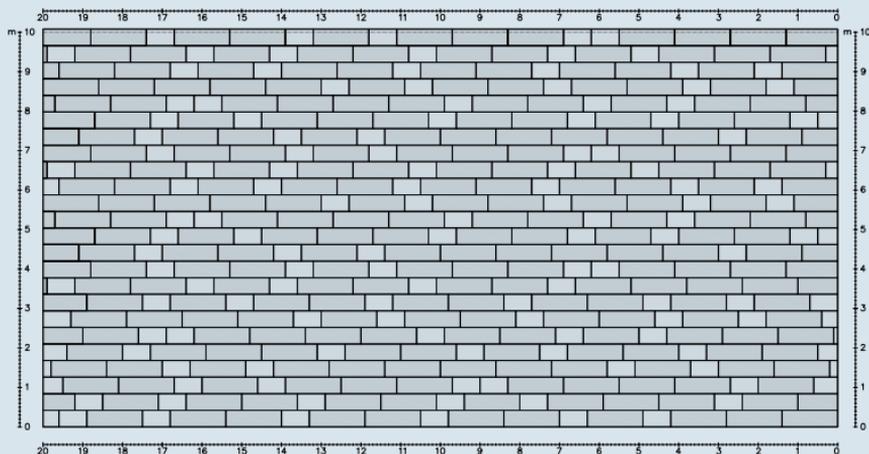


**PREFEA FX.12 FAÇADE PANEL (LARGE)**



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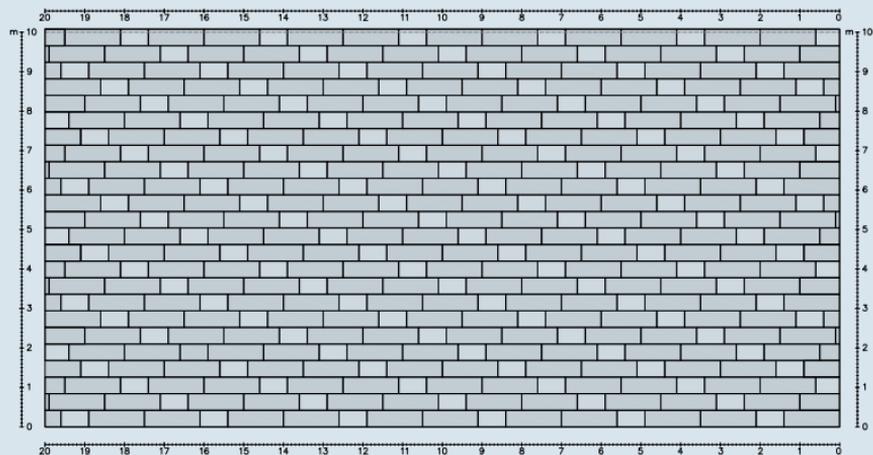
### VARIANT 1



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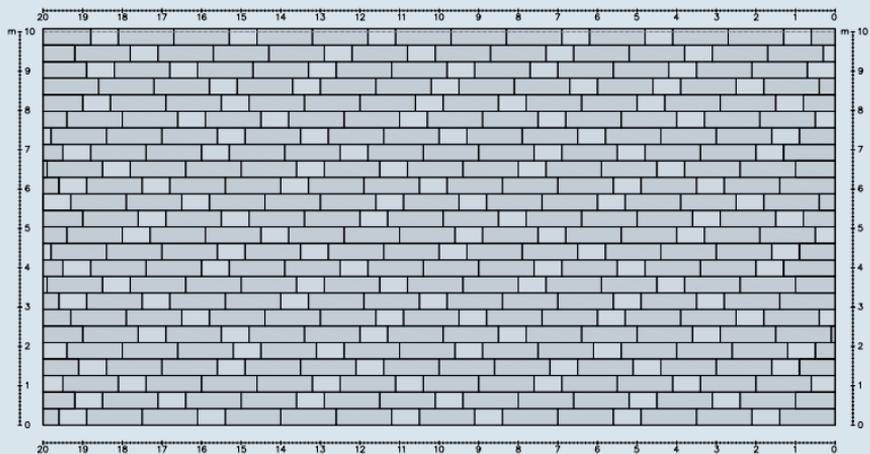
## VARIANT 2

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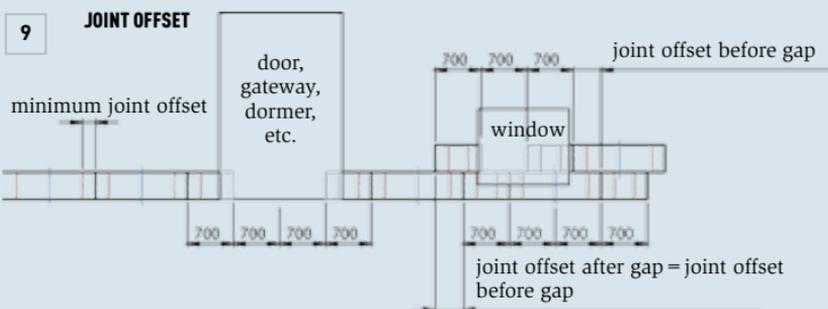
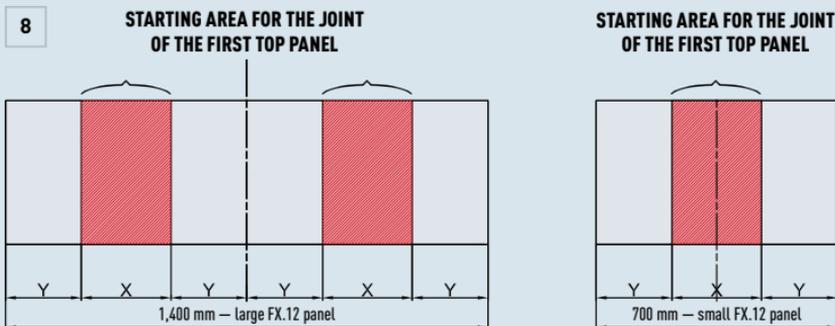
## VARIANT 3

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## PREPARATORY WORK PRIOR TO INSTALLATION

PREFA recommends a minimum “Y” joint offset of 220 mm. When combining large and small FX.12 panels, start each new row with the joint of the first panel in the “X” area. This area is defined in the sketches below for both formats.



After an opening (window, door, etc.), the joint of the first panel must come to lie on a multiple of 700 mm from the joint of the last panel laid in front of the opening.

Note: transfer the panel division to the starting row. On each additional row, after the opening, simply maintain the joint offset that exists in front of the opening.

## EXAMPLE OF AN INCORRECT INSTALLATION

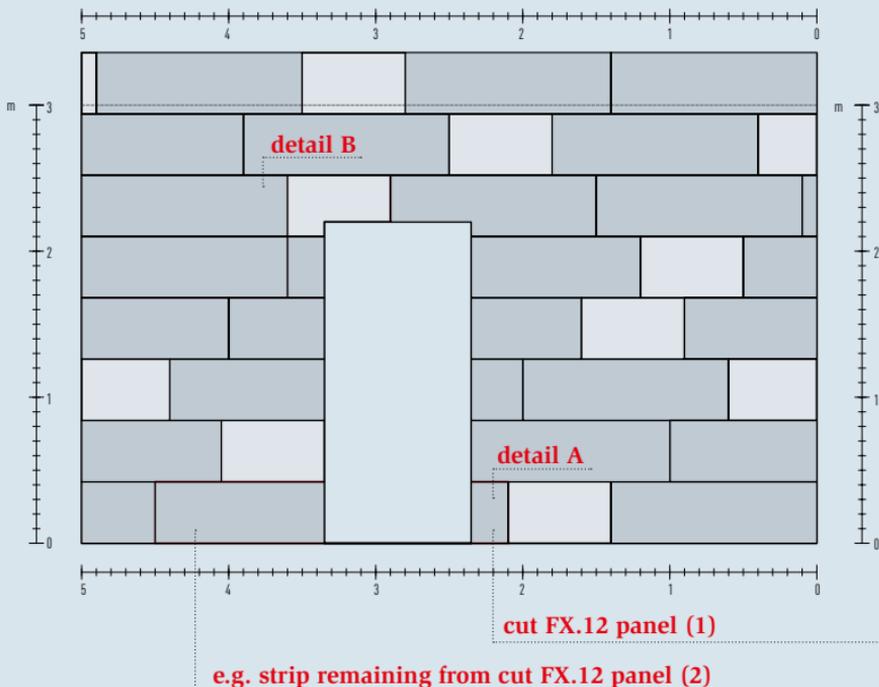
An FX.12 panel which has been cut (see detail A, 1) has been re-used on the other side of the opening (see detail A, 2). This means that it is no longer possible to arrange the joints correctly

which, in the worse case scenario, can lead to overlapping joints (see detail B).

For this reason, installation patterns have been created to ensure an optimum joint offset.

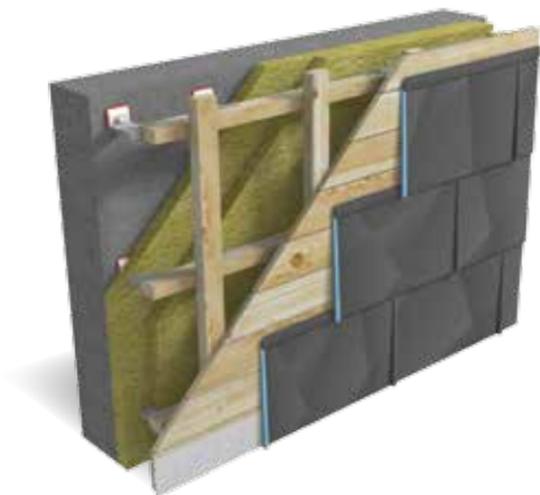
**THE OFFSET (700 mm) WAS NOT OBSERVED ON THE FIRST ROW.**

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## INSTALLATION ON SOLID SHEATHING (at least 24 mm)

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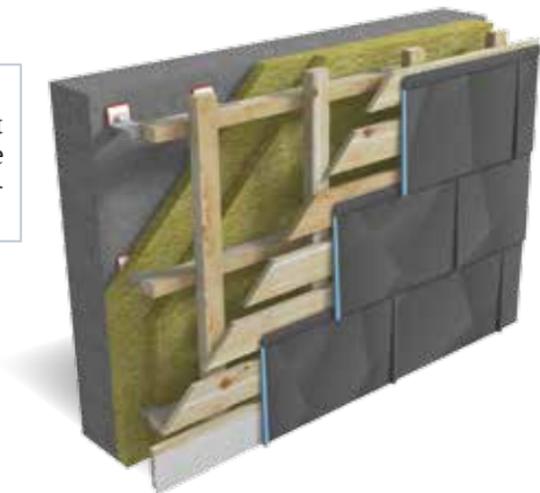


## INSTALLATION ON SKIP SHEATHING (at least 24 mm)

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**Note:**

The edge cleat strip must be installed over the entire surface on the wood sub-structure.



## BASE AREA: PREPARING THE PROFILES

For the bottom connection, the following profiles are pre-fabricated from the PREFA flashing strip or PREFA perforated metal plate:

- a) interlocking profile
- b) base plate
- c) perforated metal plate

These components are connected together before being fastened to the substructure.



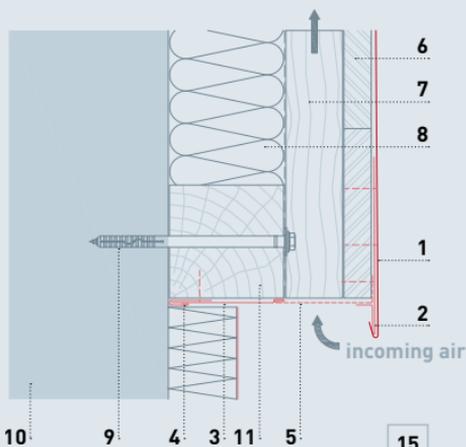
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### VERTICAL SECTION BOTTOM CONNECTION

- 1 PREFA FX.12 façade panel
- 2 PREFA edge cleat strip for FX.12
- 3 cover flashing
- 4 PREFA hemmed flashing
- 5 perforated metal plate (canted)
- 6 solid sheathing (at least 24 mm)
- 7 counter batten
- 8 insulation
- 9 fastener driven into the supporting structure
- 10 supporting structure
- 11 nogging piece



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## INSTALLING THE CLEAT STRIP

The next step involves mounting the PREFA FX.12 edge cleat strips on the substructure or via the pre-fabricated profiles.

The edge cleat strip must be installed over the entire surface on the wood substructure.



## INSTALLATION DETAILS

### FASTENING — CHANNEL PROFILE / PROTRUDING CORNER / RECESSED CORNER

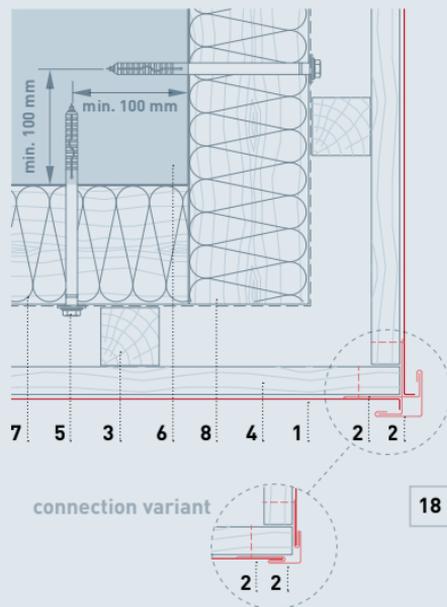
FX.12 panels should always be installed from right to left. The shape of the start profile depends on whether you are starting from a protruding or a recessed corner, or from a wall connection. For example, if you are starting from a wall connection, a simple L-profile or channel profile can be used.



You will need to create different corner constructions depending on whether you are starting from a protruding or a recessed corner (Fig. 18 and 19).

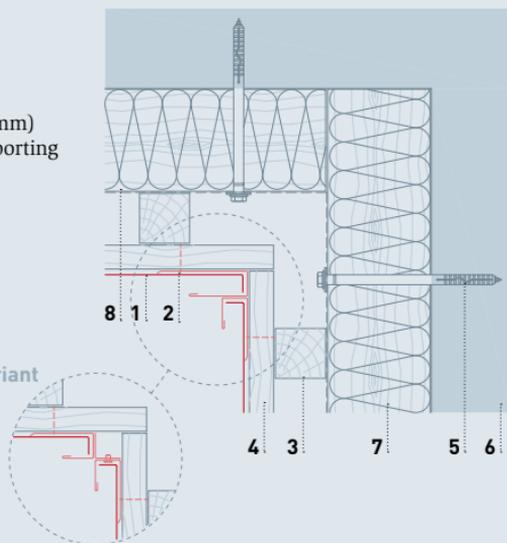
**PROTRUDING CORNER**

- 1 PREFA FX.12 façade panel
- 2 protruding corner (canted; several elements)
- 3 counter batten
- 4 solid sheathing (at least 24 mm)
- 5 fastener driven into the supporting structure
- 6 supporting structure
- 7 insulation
- 8 nogging piece

**RECESSED CORNER**

- 1 PREFA FX.12 façade panel
- 2 channel flashing
- 3 counter batten
- 4 solid sheathing (at least 24 mm)
- 5 fastener driven into the supporting structure
- 6 supporting structure
- 7 insulation
- 8 nogging piece

connection variant



## PREPARATORY WORK FOR THE FX.12 PANEL

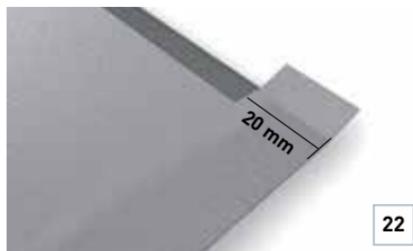
Mark out the dimensions of the first panel according to the first measurement on the installation plan. When doing so, remember to cut the panel 20 mm longer. This additional length of 20 mm will be used to form the upstand and, at the same time, to connect the starter profile to the FX.12 panel.



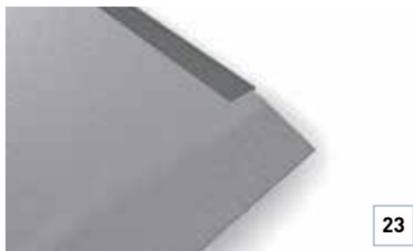
Due to the panel overlap, it may be necessary, to form a slightly tapered upstand.



Once the panel has been cut to the required size, turn it over and cut an incision on the back along the fold (see illustration).



Bend up the cut fold and cut at a slight angle.



Remove the fold at the top and bottom (see Fig. 24 and 25).

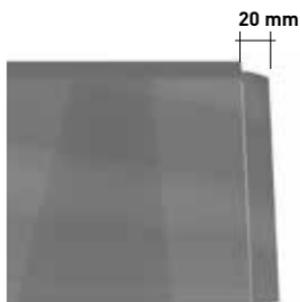


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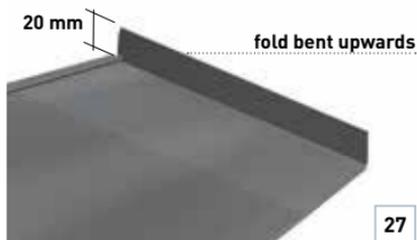


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Notch the fold and form an upstand of 20 mm (see Fig. 26 and 27).



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## STARTING THE INSTALLATION

Mounting the prepared FX.12 panel in the PREFA edge cleat strip.



Both FX.12 panels feature pre-drilled holes for fastening purposes. The panels also feature indentations (punches). These are used to provide additional fastening at the edges.



Make sure that the FX.12 panel is aligned horizontally.



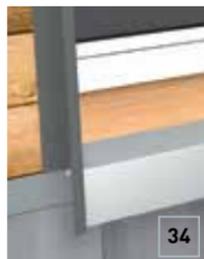
## WINDOW CLADDINGS

### WINDOW LEDGE

Channel profiles or standing seam systems (see Fig. 41) are used to form a border around a window with FX.12 panels. These are mounted on the left and right edges of the substructure. Hemmed flashings are also required and these are glued or riveted in a concealed manner to the window.

Once the profiles have been fitted and fastened in place, the FX.12 panels can be installed right up to the window ledge. Then mount a ventilation grille.

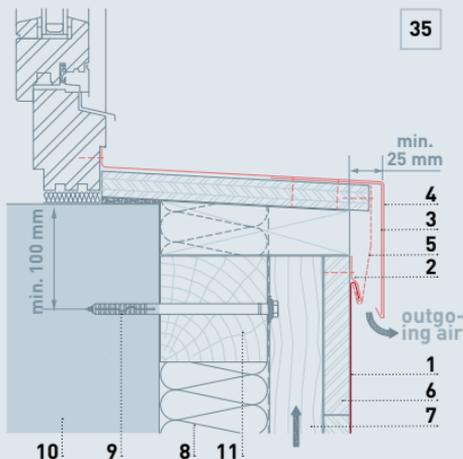
Cant and fasten the ventilation grille (see below) before mounting the fixing strip.



It is now easy to fasten the window ledge to the fixing strip.

### WINDOW LEDGE

- 1 PREFA FX.12 façade panel
- 2 clips
- 3 continuous pre-formed supporting flashing strip
- 4 window ledge
- 5 perforated metal plate (canted)
- 6 solid sheathing (at least 24 mm)
- 7 counter batten
- 8 insulation
- 9 fastener driven into the supporting structure
- 10 supporting structure
- 11 nogging piece



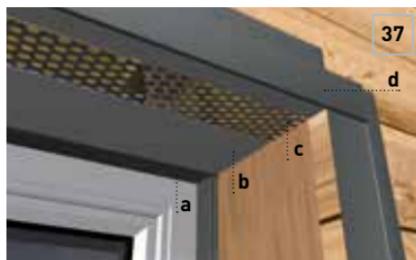
## WINDOW LINTEL

The following profiles must be prepared for fastening the window lintel:

- a) hemmed flashing
- b) window lintel flashing
- c) perforated metal plate
- d) drip

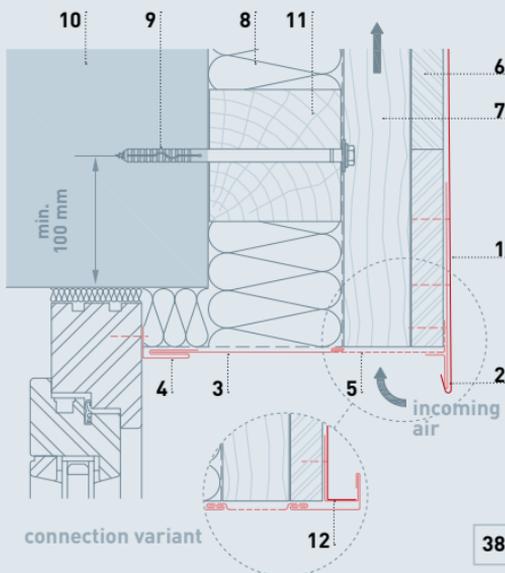
These can be seen in the illustration (two variants with channel profile).

The prepared profiles are connected together and fastened to the substructure.



## WINDOW LINTEL

- 1 PREFA FX.12 façade panel
- 2 PREFA edge cleat strip for FX.12
- 3 cover flashing
- 4 PREFA hemmed flashing
- 5 perforated metal plate (canted)
- 6 solid sheathing (at least 24 mm)
- 7 counter batten
- 8 insulation
- 9 fastener driven into the supporting structure
- 10 supporting structure
- 11 nogging piece
- 12 channel flashing



## WINDOW REVEAL

Creating the window reveal with reveal flashing and hemmed flashing. The hemmed flashing must be installed and fastened according to local conditions.

After completing the window surround (window ledge, reveal and lintel), continue covering the façade with FX.12 panels.

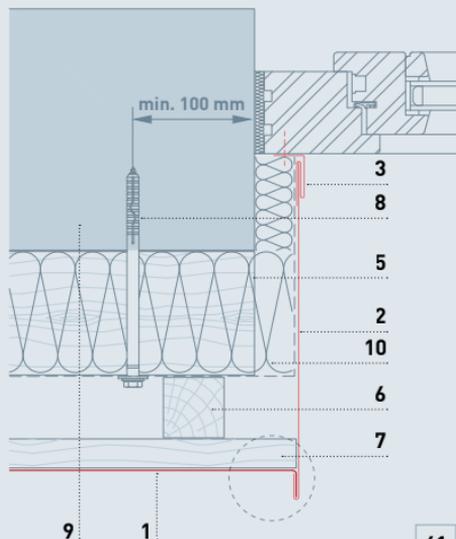
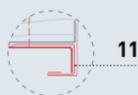
Make sure that the roof parapet flashing is adequately ventilated. See Fig. 42 for an example of a roof parapet construction.



## WINDOW REVEAL

- 1 PREFA FX.12 façade panel
- 2 reveal flashing
- 3 PREFA hemmed flashing
- 4 connection variant
- 5 nogging piece
- 6 counter batten
- 7 solid sheathing (at least 24 mm)
- 8 fastener driven into the supporting structure
- 9 supporting structure
- 10 insulation
- 11 channel flashing

connection variant

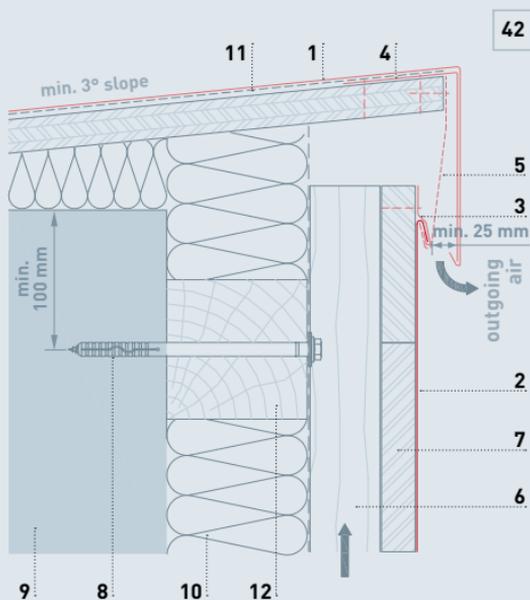


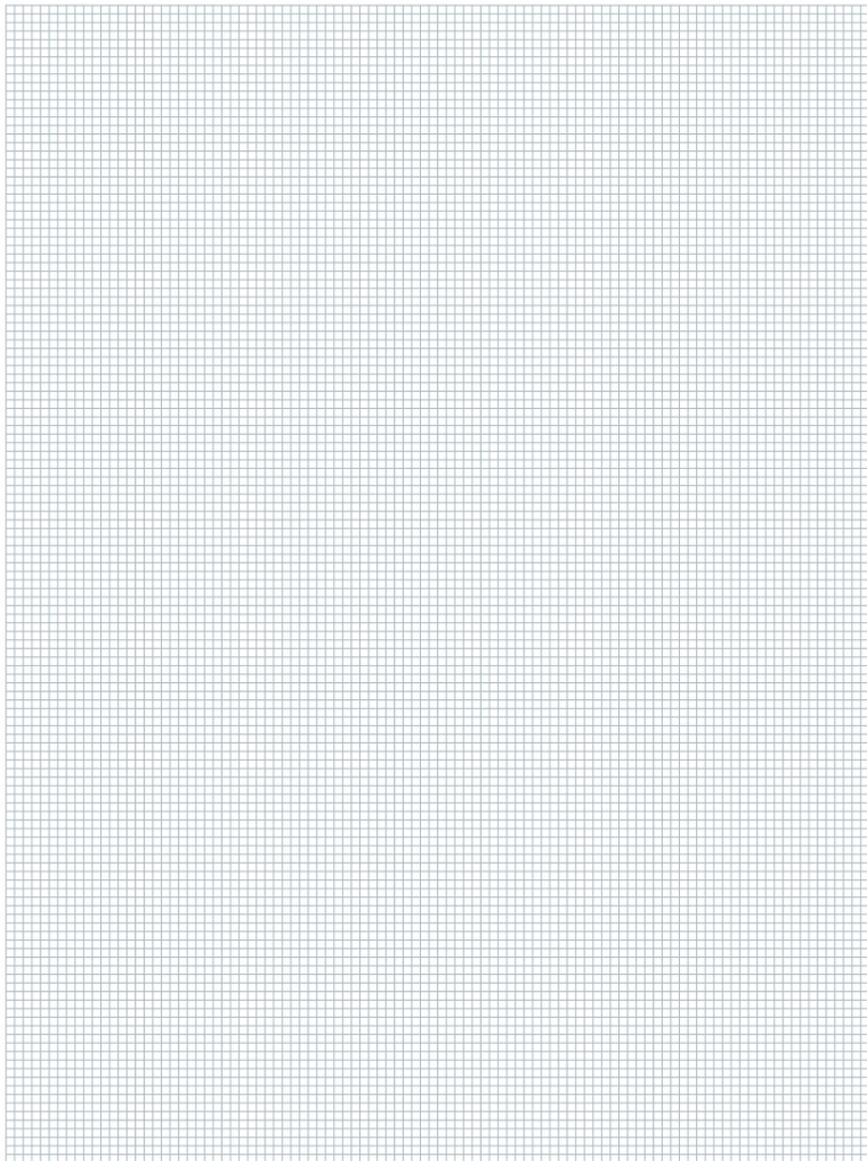
## FORMING THE TOP CONNECTION (ROOF PARAPET)

Make sure that the roof parapet flashing is adequately ventilated. A cleat strip is fastened for the roof parapet. A perforated metal plate is mounted underneath for the outgoing air, and a cover made of flashing strip is mounted above.

### ROOF PARAPET DETAIL

- 1 roof parapet
- 2 PREFA FX.12 façade panel
- 3 clips
- 4 cleat strip
- 5 perforated metal plate (canted)
- 6 counter batten
- 7 solid sheathing (at least 24 mm)
- 8 fastener driven into the supporting structure
- 9 supporting structure
- 10 insulation
- 11 separating layer
- 12 nogging piece









# INSTALLING THE PREFA SIDING

## GENERAL INFORMATION

(Fig. 43)

**Coating:** coil coating (25  $\mu\text{m}$ ), high-quality two-layer stove-enamel finish

**Ends:** always canted by 11 mm

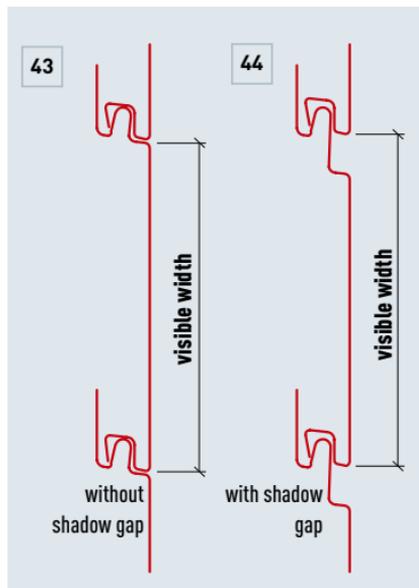
**Manufactured to order only:** both ends without chamfers (not canted)

**With shadow gap (option):** 15 mm wide, 7 mm deep (Fig. 44)

**Lengths:** 500–6,200 mm

at least 5 elements per length

Width	Material thickness	Surface
138 mm	0.7 mm	stucco, lined (P.10 smooth)
200 mm	1.0 mm	smooth, stucco, lined
300 mm	1.2 mm	smooth, lined



## FLASHING STRIPS

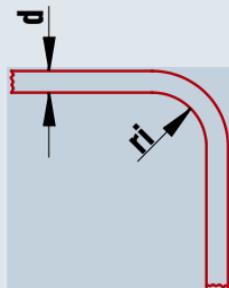
If possible, flashing strips should always be shaped at a temperature of over 20 °C.

The following table shows the minimum permissible bending radius depending on the thickness of the siding or flashing strip.

The minimum permissible bending radius must be taken into account when working on flashing strips (Fig. 45).

$R_i/r_i \geq 2,5 \times d$	
Plate thickness D/d	Inner fold / bending radius $R_i / r_i$
0.7 mm	1.75 mm
1.0 mm	2.50 mm
1.2 mm	3.00 mm

45



## FASTENER

---

### Fastener — siding (aluminium)

JT3-FR-2H-4,8 × 25

- ! Fixing screw for siding on aluminium support profile (L- or T-profile)
  - ! 4,8 × 25 mm; screw head: 12 mm
- 



### Fastener — siding (wood)

JA3-LT-4,9 × 38

- ! Fixing screw for siding on wood panels
  - ! 4,9 × 38 mm; screw head: 12 mm
- 





# INSTALLATION INSTRUCTIONS

**FAÇADE — VERTICAL SIDING**

# BUILDING THE SUBSTRUCTURE

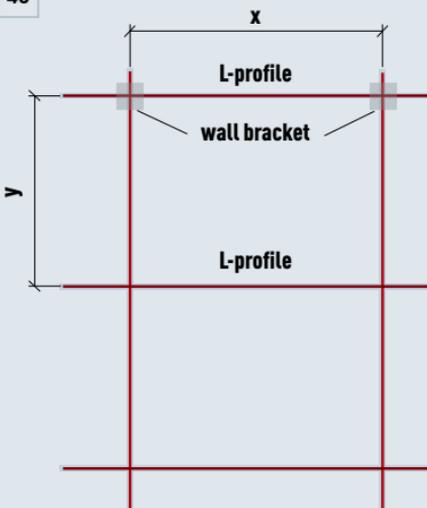
## DIVIDING UP THE FAÇADE SURFACE

Mark out the façade surface as shown in Fig. 46 and 47.

The point at which the markings intersect defines the points at which the drill holes should be marked.

x/y distance according to static requirements.

46



47



## FASTENING THE WALL BRACKETS

Drill holes for the wall brackets at the points at which the markings intersect.

Position the wall brackets on the connections e.g. protruding corners and windows.

Allow a distance of at least 100 mm between the wall bracket fastening (dowel) and the masonry wall (Fig. 48).

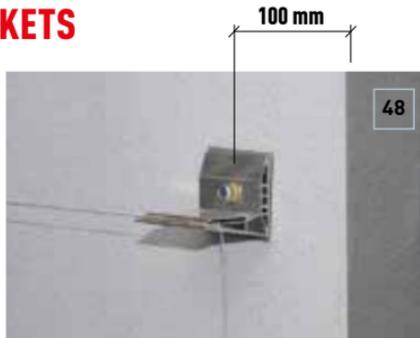
Hammer in the dowel together with the wall bracket and thermal break (Fig. 49).

When doing so, make sure that the dowel rests on the wall bracket.

Align the wall bracket as shown in Fig. 50, and tighten the screw. Do not yet fully tighten the screw, as all the wall brackets need to be aligned beforehand.

### Note:

In individual cases (e.g. window profiles, top or bottom connections), the wall bracket may be mounted with the projected part facing upwards. However, this should only be in exceptional cases.



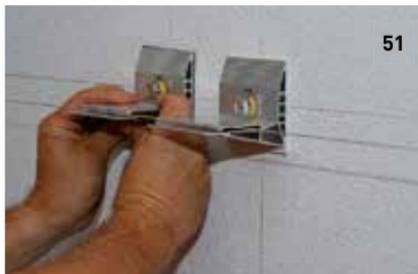
## ALIGNING THE WALL BRACKETS

To align the wall brackets, position the first and last wall brackets and secure firmly in place. Using a piece of string, align all the wall brackets between the first and last ones and secure firmly in place. When doing so, check whether the wall inclines significantly inwards or outwards and that the length of the wall bracket is sufficient.

Then align all the wall brackets in the same way and secure firmly in place. Before securing the bottom row in place (wall bracket on base), insert an interlocking profile under the wall bracket and fasten to the wall (Fig. 59). Ensure a perfectly horizontal alignment.

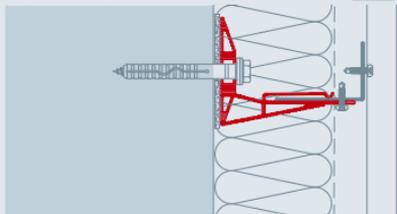
Mounting the wall brackets on windows: the wall brackets must be mounted in such a way that the corresponding connection profiles can be attached to the top or bottom substructure. Allow a distance of at least 100 mm between the wall bracket fastening (dowel) and the masonry wall (Fig. 53).

Mount the wall bracket under the window as illustrated.



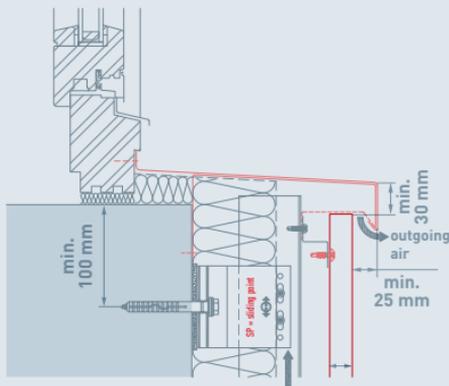
51

**Cross-section:  
wall bracket installation**



52

**Vertical cross-section: window ledge  
Vertical installation**



53

For an illustration of this detail, see Fig. 54

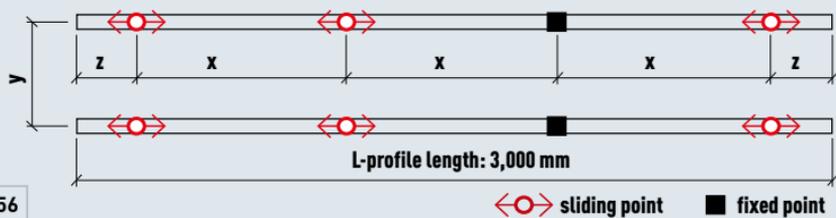


Fully installed window substructure with window ledge flashing strip.

**Note:**

In the case of 2-layered insulation, do not mount the L-profiles (except for the L-profile on the base) until the first layer of insulation has been installed (Fig. 55).





When fastening all the L-profiles, fasten one as a fixed point and all the others as sliding points (Fig. 56, 57, 58).

$x$ ,  $y$ ,  $z$  distances according to static requirements.

**Allowing for wall clearance:** wall clearance of front edge of L-profiles = insulation material thickness + 5 mm (Fig. 59).



◁○▷ sliding point



■ fixed point



# INSULATION

## FIRST LAYER

On horizontal substructures, we recommend laying the insulation in two layers.

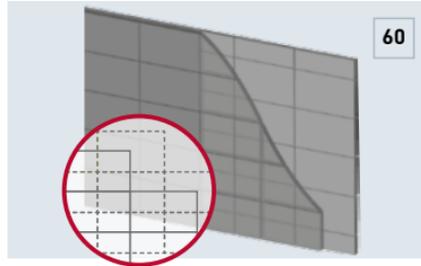
### INSULATION ON THE FAÇADE SURFACE

Mount the insulation in a half-off-set pattern as shown in Fig. 60:  
light grey = 1st layer  
dark grey = 2nd layer

Incorporate the wall brackets (Fig. 61) into the first layer to minimise the flow of thermal energy.

When doing so, cut the insulation so that you can press the wall brackets through it (Fig. 62).

Mount the first layer of insulation as shown in Fig. 63.



60



61



62



63

### INSULATION AROUND A WINDOW

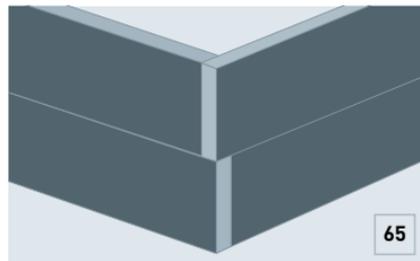
Before incorporating the window into the first layer of insulation, mount the hemmed flashing on the window frame (Fig. 64).

### INSULATION IN CORNERS

When mounting insulation in corners, always offset the joints (Fig. 65).

### INSTALLING THE L-PROFILES

After mounting the first layer of insulation, the L-profiles can be mounted. When doing so, allow for sufficient expansion by fastening all but one of the L-profiles as sliding points as per the diagram on page 39 (Fig. 56).



Align and fasten the L-profiles to the wall bracket according to the diagram in Fig. 66.

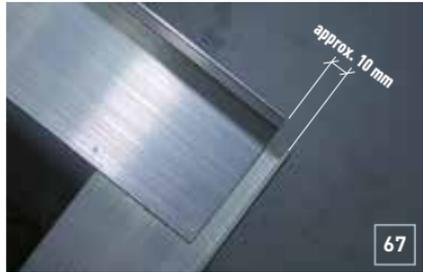
Make sure that the installation is perfectly plumb (vertical).

### Forming corners

**Overlapping protruding corner**  
— allow for sufficient expansion.

The front edges of the L-profiles are set back here by approx. 10 mm (Fig. 67).

**Jointed recessed corner** — the L-profile may end approx. 10 mm before reaching the common point of intersection (Fig. 68 and 69).



## SECOND LAYER

### INSULATION ON THE FAÇADE SURFACE

When all the L-profiles have been mounted, the second layer of insulation can be mounted between the L-profiles (Fig. 70).

The insulation panel is clamped between two L-profiles (Fig. 71).

### Insulating the window reveal

Fill the window reveal with insulation corresponding to the thickness of the reveal (Fig. 72).

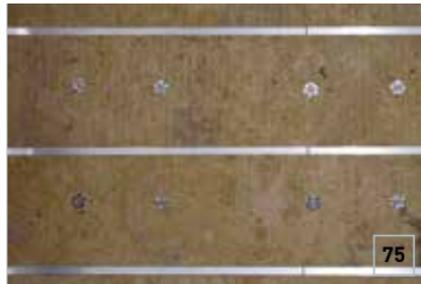
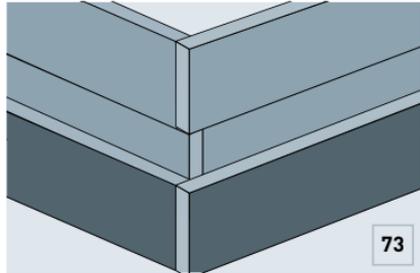
Cover the reveal insulation with the second layer of insulation.



### Insulation in corners

As with the first layer, offset the joints when mounting the insulation (Fig. 73).

Mechanically prevent the insulation from slumping down and protect it from suction forces with insulation anchors, following the manufacturer's instructions (Fig. 74 and 75).



# SIDING

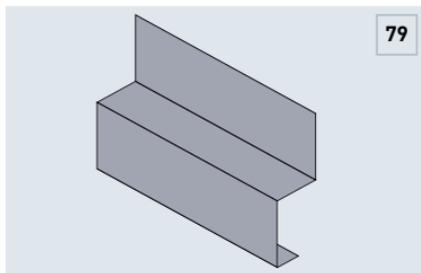
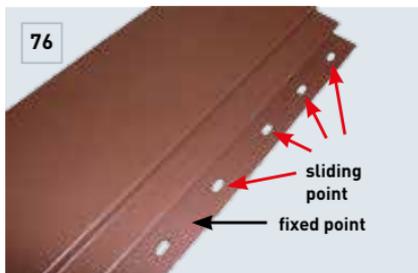
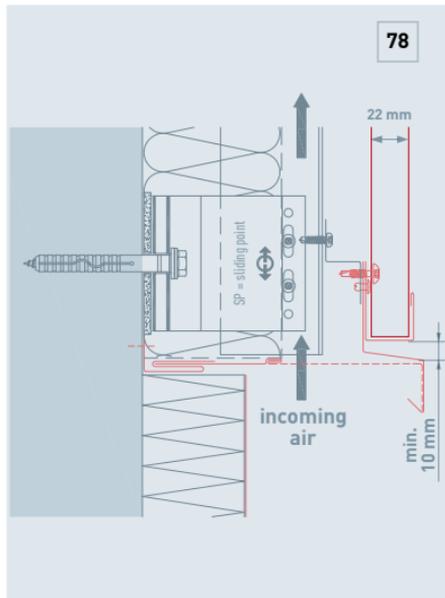
## INSTALLATION ALLOWING FOR SUFFICIENT EXPANSION

Provide one fastening as a fixed point in the centre of the siding, and the others as sliding points (oblong hole; Fig. 76 and 77).

### BASE CONNECTION

Form the base connection using the PREFA base profile (Fig. 78 and 79).

Attaching the drip to the PREFA base profile (Fig. 80).

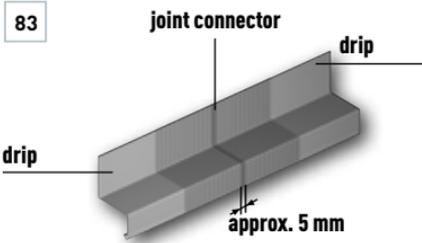


When attaching the drip, make sure that the installation is perfectly horizontal (Fig. 81).

Make sure that any expansion joints are continued from the sub-structure.

### Forming the joint connection for the drip (Fig. 82).

Alternatively, the PREFA joint connector can also be used (Fig. 83).



Corner construction of drip: recessed corner (Fig. 84), protruding corner (Fig. 85).



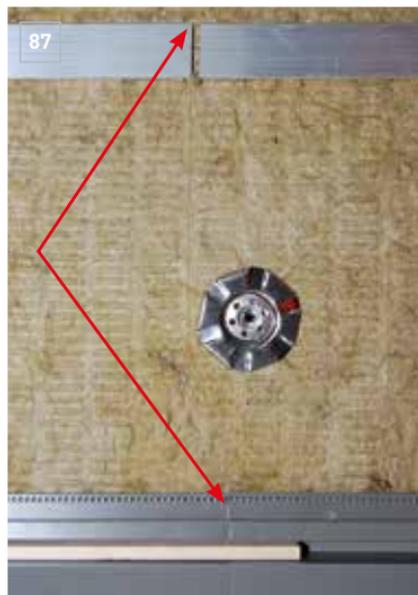


### Aligning and fitting the perforated plate

To provide sufficient ventilation, the distance between the perforated plate and the drip must be at least 10 mm.

We recommend using a gauge to make sure of this during installation (Fig. 86). **Here too, it is particularly important to ensure a perfectly horizontal installation.**

As with the drip, make sure that any expansion gaps are continued from the substructure (Fig. 87).

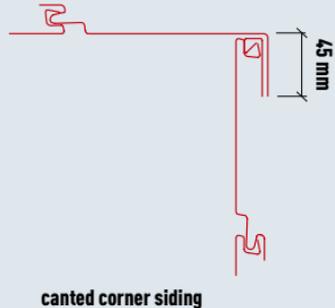
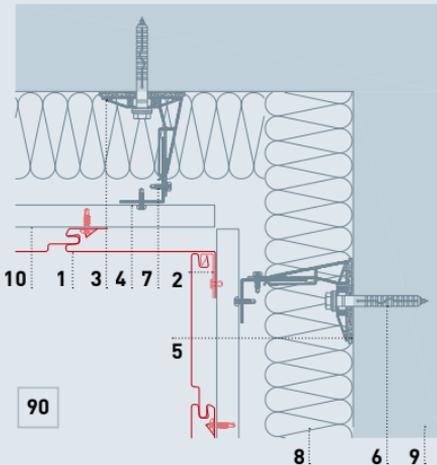


## SIDING INSTALLATION — RECESSED CORNER

To create the recessed corner, cut off the siding's groove (see Fig. 88).

Align the siding and vertical installation as the underlying recessed corner (Fig. 89).

Cant the siding inwards (Fig. 90 and 91).



90

91

- |   |                       |    |   |
|---|-----------------------|----|---|
| 1 | PREFA siding          | 6  | fastener driven into the supporting structure |
| 2 | PREFA starter profile | 7  | connection screw                              |
| 3 | spacer bracket        | 8  | insulation                                    |
| 4 | support profile       | 9  | supporting structure                          |
| 5 | thermal break         | 10 | Z-profile                                     |

Fasten the first side, **allowing for sufficient expansion** (Fig. 92).

Fasten the second side, **allowing for sufficient expansion** (Fig. 93), e.g. by means of oblong holes.

Mounting the starter profile on the canted side of the siding (Fig. 94).

The siding can now be installed on both sides. **Allow for sufficient expansion**

Canted façade siding (recessed corner, Fig. 91).



### Mounting on the façade surface

Check that the installation is perfectly plumb (vertical) — see Fig. 95.

On long façade surfaces, symmetrical constructions or where there are connections for windows or doors, we recommend marking out the visible widths vertically.

#### Note:

Make sure that the fasteners (screws, rivets, etc.) are perfectly horizontal in relation to the siding to prevent the siding from becoming convexly or concavely deformed.



## WINDOW CONNECTION

### BOTTOM CONNECTION

Cutting out the insulation at the side to create a gap for the window ledge (Fig. 96).

The interlocking profiles should already have been mounted prior to installing the insulation (see Fig. 64).

Window ledge flashing strip (Fig. 97).





### Installing the window ledge

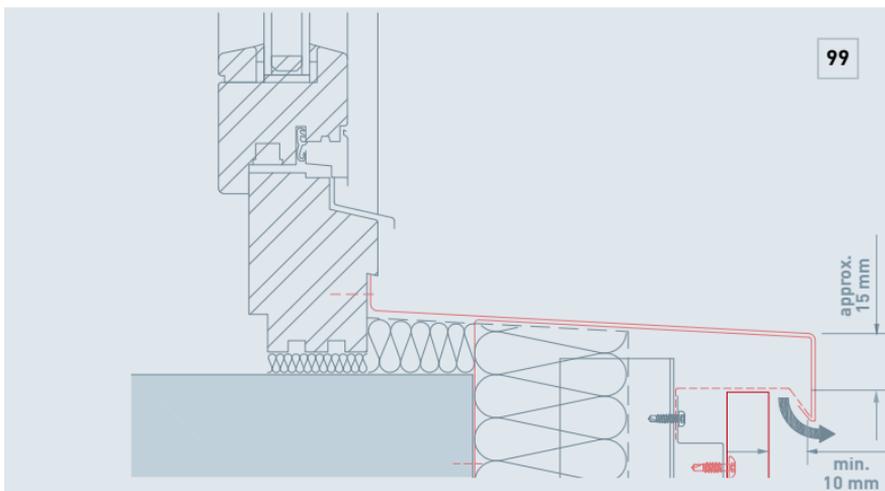
Push in the window ledge and mount the front fold in the window ledge flashing strip.

The window ledge must be mounted with an incline of at least  $3^\circ$  (Fig. 98).

Mount the perforated plate under the window ledge to provide ventilation.



Allow a distance of at least 10 mm between the perforated plate and the window ledge (Fig. 99–101).



The siding can now be mounted under the window (Fig. 102).

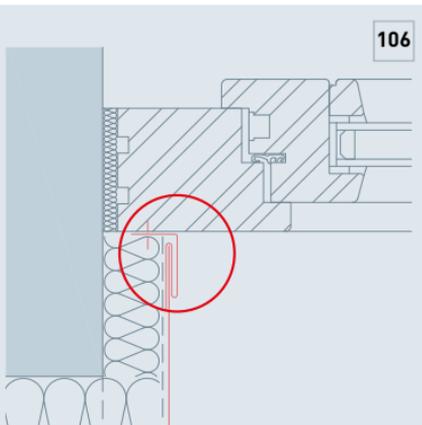
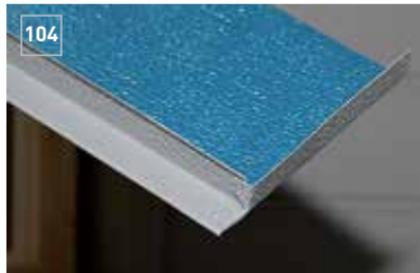
It is a good idea to mark out the siding widths around the window to make sure that they are completely aligned.

### LATERAL CONNECTION

Mount the siding right up to the window. The final piece of siding, which fits right up to the reveal, cannot be mounted until the reveal flashing has been installed (Fig. 103).

Fold the bottom end of the lateral reveal flashing (Fig. 104).

Bottom connection of reveal flashing (Fig. 105 and 106).





Fold the top end of the reveal flashing (Fig. 107).

Top connection of the reveal flashing (Fig. 108).

Mounting the left reveal flashing (Fig. 109).

If the connection siding is very narrow, we recommend mounting it from above (Fig. 110).

Aligning and mounting the siding on the left window reveal (Fig. 111).



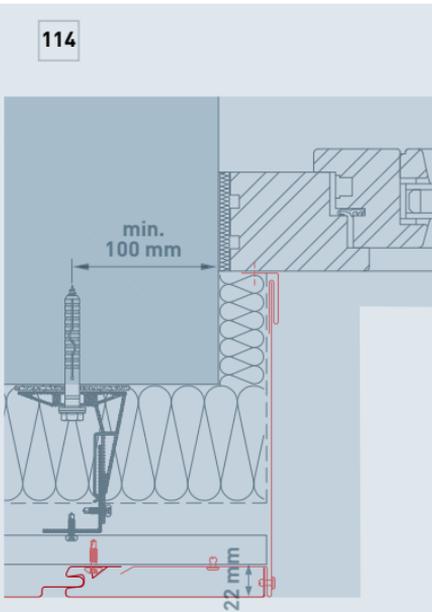


At the front, the siding is fastened between the siding and the window reveal by a riveted joint (Fig. 112).



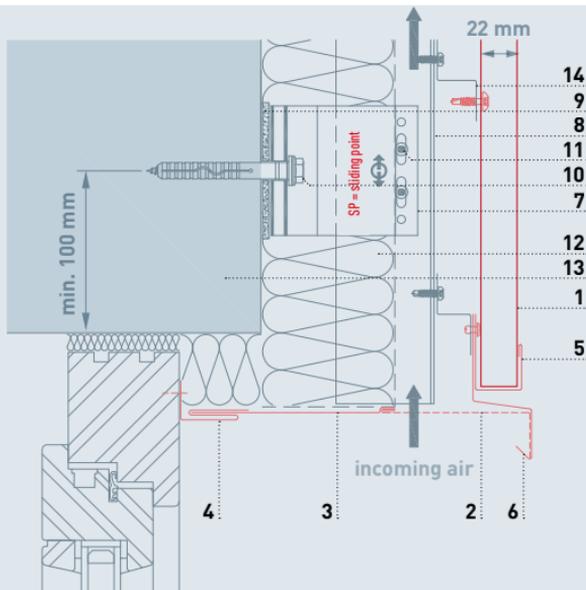
Mounting the reveal flashing on the right (Fig. 113).

The jointed siding on the top and bottom window connections must overlap by at least 10 mm (Fig. 116).

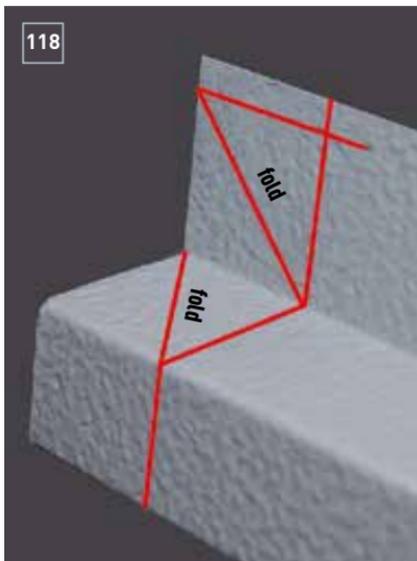


117

- 1 PREFA siding
- 2 perforated metal plate (canted)
- 3 cover flashing
- 4 PREFA hemmed flashing
- 5 PREFA channel profile (canted)
- 6 drip
- 7 spacer bracket
- 8 support profile
- 9 thermal break
- 10 fastener driven into the supporting structure
- 11 connection screw
- 12 insulation
- 13 supporting structure
- 14 Z-profile



118



## TOP CONNECTION

### Installing the top window connection

The top window connection is built in the same way as the base connection.

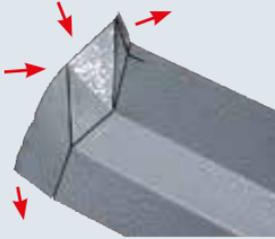
### Preparing the storey separation profile

To make sure that the storey separation profile remains impermeable, the edges must be folded over (Fig. 118 and 119).

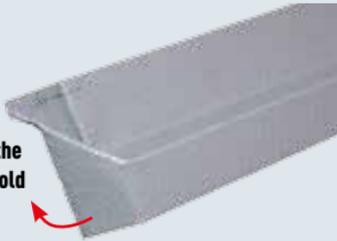
Cross-section of top reveal flashing (Fig. 117).

119

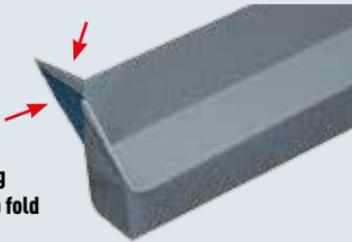
**Pulling  
the folds**



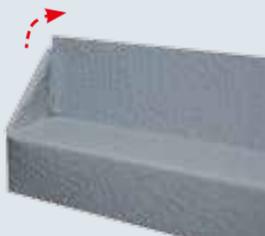
**Folding the  
bottom fold**



**Closing  
the top fold**



**Folding  
the top fold**



Once this has been done on both sides, the storey separation profile can be mounted.

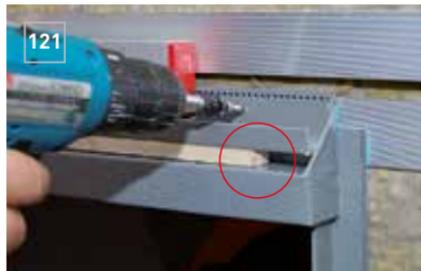
To do so, mount the storey separation profile in the front edge of the reveal flashing and screw onto the substructure (Fig. 120).

Then mount the perforated plate above the storey separation profile. Here too, a distance of at least 10 mm must be allowed between the storey separation profile and the perforated plate (use a gauge; Fig. 121).

120



121





122

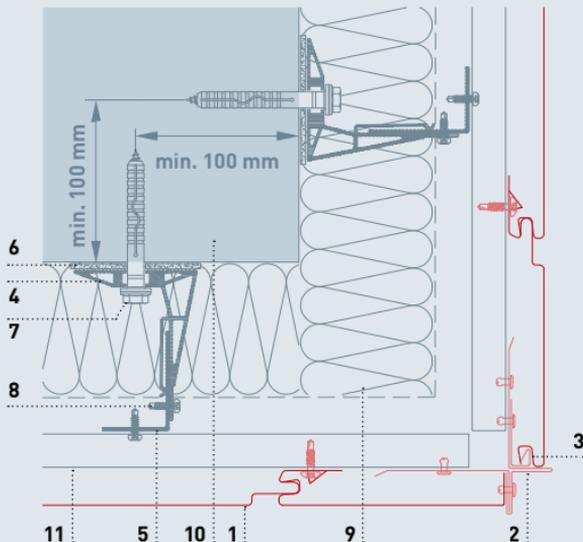
### PROTRUDING CORNER

Mounting the corner bracket. Make sure that the corner bracket is aligned vertically.

2-part corner bracket (Fig. 122).

### VERTICAL SECTION PROTRUDING CORNER

- 1 PREFA siding
- 2 PREFA protruding corner (2 elements)
- 3 PREFA starter profile
- 4 spacer bracket
- 5 support profile
- 6 thermal break
- 7 fastener driven into the supporting structure
- 8 connection screw
- 9 insulation
- 10 supporting structure
- 11 Z-profile



123

Align the corner bracket with the perforated plate of the base connection (Fig. 124).

Fasten the corner siding to the corner profile by riveting the front (Fig. 125).

### Rivet spacing = substructure spacing

Fasten the starter profile on the other side of the protruding corner (installing in a direction moving away from the corner) to start the installation there (Fig. 126).

Insert the first siding with the groove into the starter profile and attach in place. Then continue installing along the surface (Fig. 127).



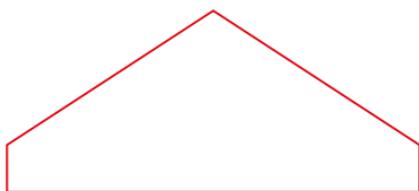
## EXAMPLE OF GABLE CLADDING

### DIAGONAL ROOF VERGE CONNECTION

First, align the substructure with the diagonal connection. Mount a continuous L-profile at a distance of 30 mm from the roof verge board to ensure a secure fastening along the entire length.

The façade substructure should be mounted as shown in the “Building the substructure” section (Fig. 128).

Then form the top connection with a channel profile.



**diagonal roof verge connection**



**lateral connection  
like window or protruding corner**

**bottom connection  
like base connection**

To ensure ventilation of the façade, the channel profile should be wider than the thickness of the siding (Fig. 130).

Allow for sufficient expansion when mounting the channel profile (oblong holes; Fig. 132).

Once all connections have been made, start installing the siding.

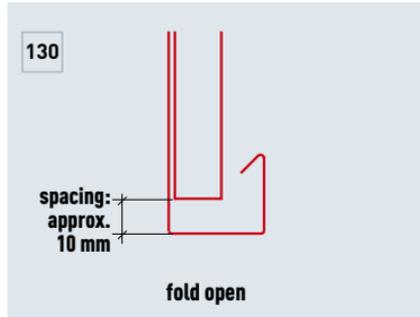
As symmetry is important on triangular surface areas, we recommend dividing up and marking out the façade surface before starting installation. To prepare the diagonal cuts of the siding, it is best to use a cross cut saw with angular adjustment.

The siding should be approx. 10–12 mm shorter than the actual measurements. On the one hand, this will ensure that they can still be inserted into the narrowing side and, on the other, this will ensure ventilation.

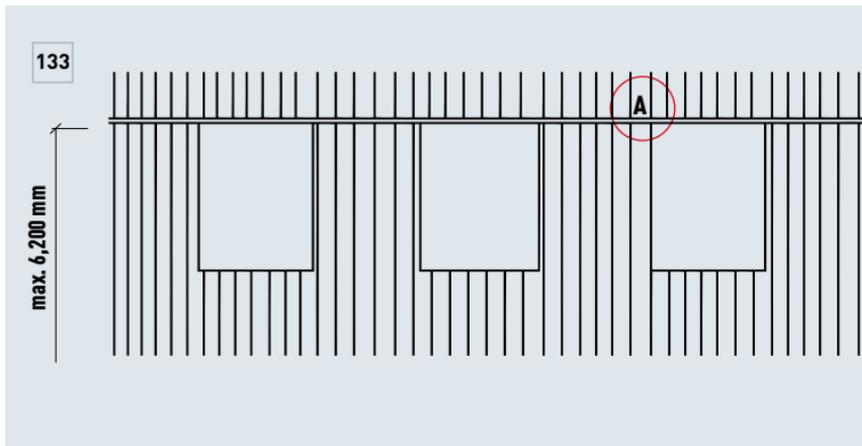
$L = 500\text{--}6,200\text{ mm}$

**Note:**

Order at least 5 pieces/lengths of siding (Fig. 131).



## EXAMPLE OF A WINDOW INSTALLATION AT THE STOREY SEPARATION

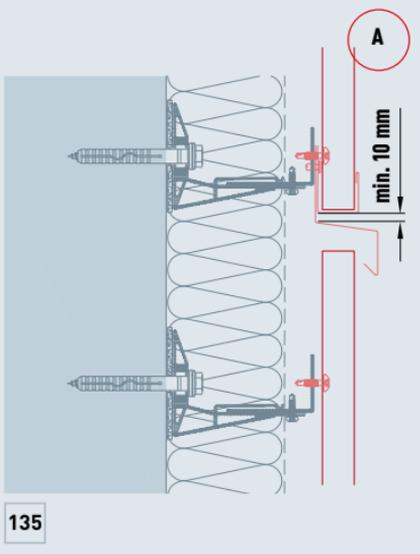


### Recommendations for building storey separations:

- ! to break up the façade horizontally (each storey level is separated)
- ! on punch-window façades with many windows, all with the same vertical drop (Fig. 133)

Build the substructure as described on page 35 onwards. Mount two L-profiles directly above each other in the storey separation area only (Fig. 134).

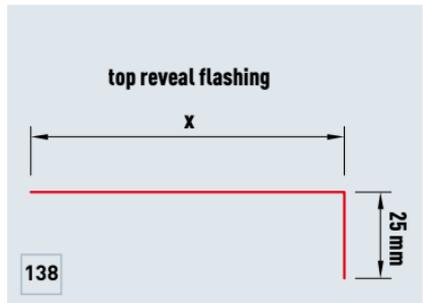




Install the insulation in two layers as described on page 40 onwards (Fig. 135 and 136).

The entire window surround with window ledge, lateral window reveals and top reveal flashing can now be built. For more information, see page 50 onwards (Fig. 137-138).

Mounting the siding on the façade. Here too, it is important to allow for sufficient expansion. Provide a support of approx. 10 mm on the bottom L-profile for the siding (Fig. 139).



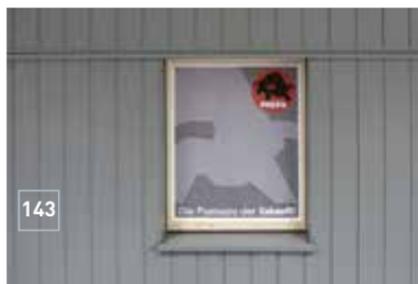
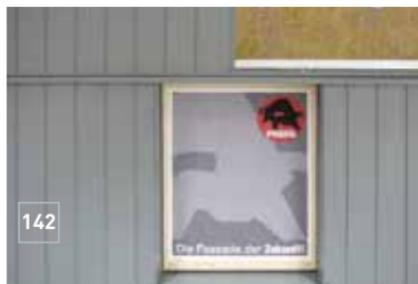
Now make the lateral and bottom window connections. In this design, the storey separation replaces the top window connection (Fig. 140).

Once the siding cladding has been completed, the storey separation profile can be mounted (Fig. 141).

When doing so, make sure that the top reveal flashing (upper window) is mounted in the storey separation profile.

Mount the perforated plate and the siding above the window (Fig. 142).

Completed façade surface with storey separation (Fig. 143).





# INSTALLATION INSTRUCTIONS

**FAÇADE — HORIZONTAL SIDING**

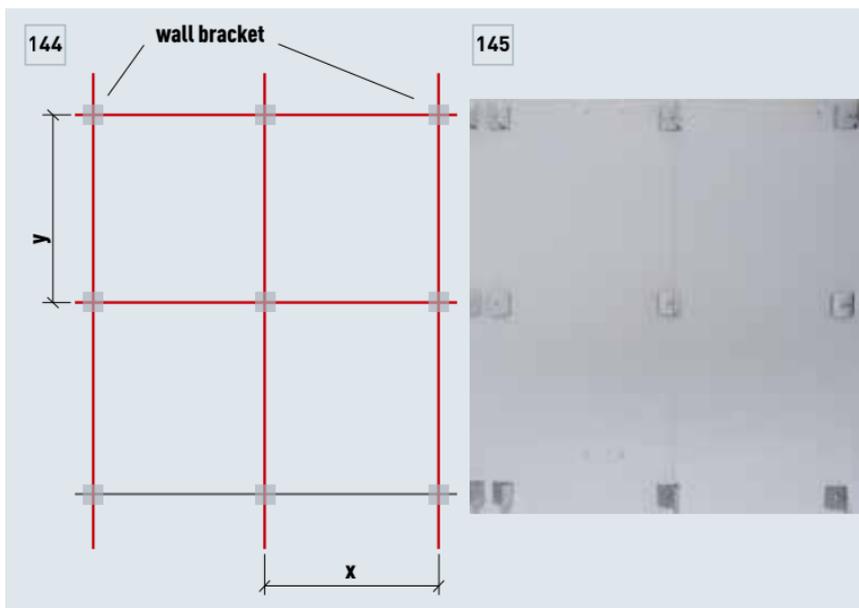
# SUBSTRUCTURE

## DIVIDING UP THE FAÇADE SURFACE

Mark out the façade surface as shown in Fig. 144.

The point at which the markings intersect defines the points at which the drill holes should be marked. (Fig. 145).

x/y distance according to static requirements.



## FASTENING THE WALL BRACKETS

Drill holes for the wall brackets at the points at which the markings intersect.

Position the wall brackets on the connections e.g. protruding corners and windows.

Allow a distance of at least 100 mm between the wall bracket fastening (dowel) and the masonry wall (Fig. 146).

Hammer in the dowel together with the wall bracket and thermal break (Fig. 147).

When doing so, make sure that the dowel rests on the wall bracket.

Align the wall bracket as shown in Fig. 148, and tighten the screw.

Do not yet fully tighten the screw, as all the wall brackets need to be aligned beforehand.

After the wall brackets have been mounted, install the PREFA hemmed flashing, making sure that the installation is perfectly horizontal (Fig. 149 and 150).



**Note:**

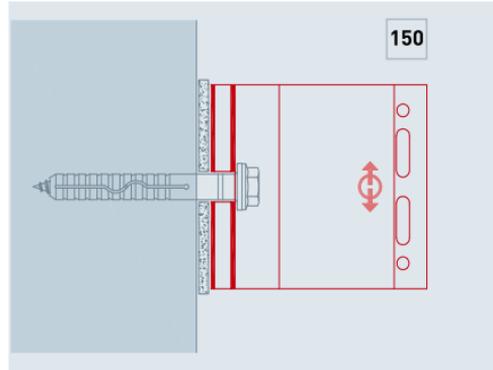
The hemmed flashing can be clamped slightly behind the lowest row of wall brackets to facilitate installation.

## ALIGNING THE WALL BRACKETS

To align the wall brackets, position the first and last wall brackets and secure firmly in place. Then, using a piece of string, align all the wall brackets between the first and last ones and secure firmly in place (Fig. 151).

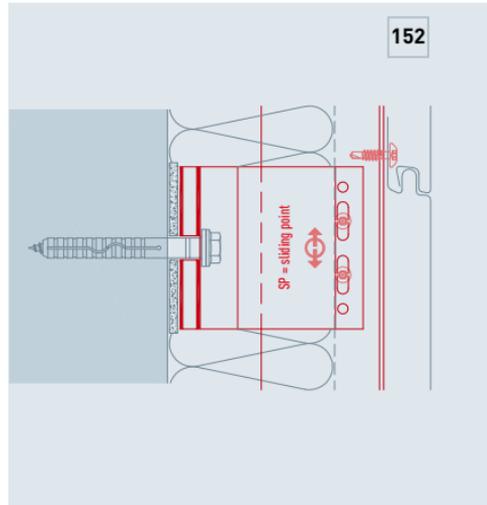


151



150

When doing so, check whether the wall inclines significantly inwards or outwards and that the length of the wall bracket is sufficient (Fig. 152).



152

Then align all the wall brackets in the same way and secure firmly in place. Mounting the wall brackets on windows: the wall brackets must be mounted in such a way that the corresponding connection

profiles can be attached to the substructure (Fig. 153).

Allow a distance of 100 mm between the wall bracket fastening and the masonry wall (Fig. 154).

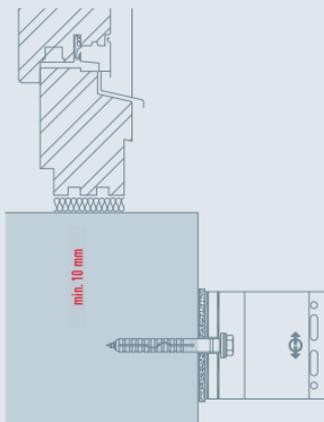


153

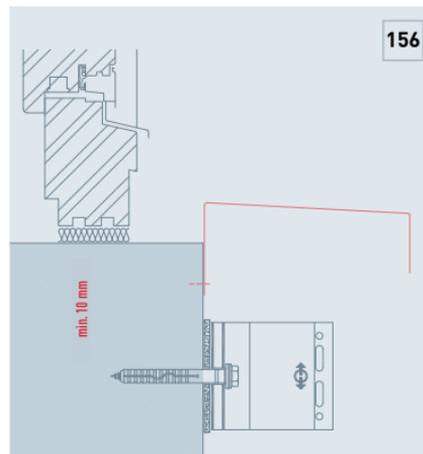
Install the window ledge flashing strip as illustrated (Fig. 155 and 156).



155



154



156

## INSTALLING THE L-PROFILES

**Note:**

In the case of 2-layered insulation (recommended), do not mount the L-profiles until the first layer of insulation has been installed (Fig. 157).

(See pages 40–44 for information on how to install the insulation.)

After mounting the first layer of insulation, the L-profiles can be mounted on the wall brackets. Here, we again recommend aligning the L-profiles with a string to ensure a level façade surface (Fig. 158).

Allow for sufficient expansion and make sure that the installation is perfectly plumb (vertical) — see Fig. 159.



When fastening all the L-profiles, fasten one as a fixed point and all the others as sliding points (Fig. 160 and 161).

**Allowing for wall clearance:**

To ensure perfect ventilation, the L-profiles should protrude by at least 20 mm beyond the insulation (Fig. 162).

Continuous ventilation must be ensured over the whole height of the building.

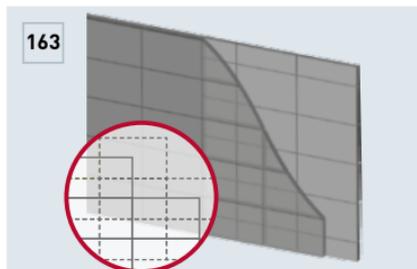


## INSULATION

We recommend laying the insulation in two layers.

Mount the insulation in a half-off-set pattern as shown in Fig. 163:

- 1st layer
- 2nd layer



## FIRST LAYER

### INSULATION ON THE FAÇADE SURFACE

Incorporate the wall brackets (Fig. 164) into the first layer to minimise the flow of thermal energy.

When doing so, cut the insulation so that you can press the wall brackets through it (Fig. 165).



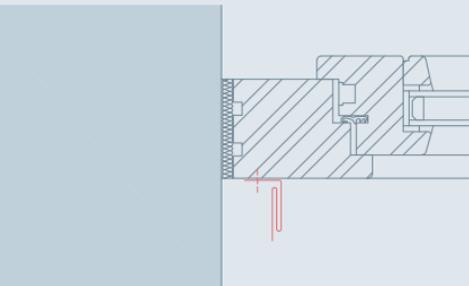
### INSULATION AROUND A WINDOW

Before incorporating the window into the first layer of insulation, mount the hemmed flashing at the top and sides of the window frame (Fig. 166, 167, 168).

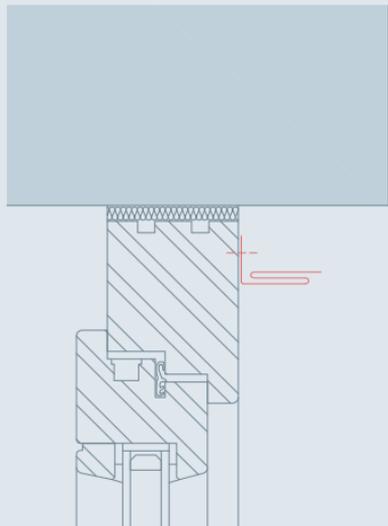
Mount the insulation right up to the window reveals.



167

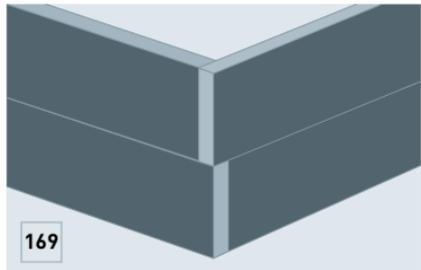


168



### INSULATION IN CORNERS

When mounting insulation in corners, always offset the joints (Fig. 169).



### INSTALLING THE L-PROFILES

After mounting the first layer of insulation, the L-profiles can be mounted.

(See pages 69–70 for information on how to install the L-profiles.)

First layer of insulation including mounted L-profiles (Fig. 170).

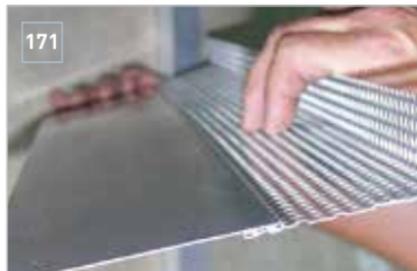


### MOUNTING THE PERFORATED METAL PLATE ON THE BASE

Once the first layer of insulation has been installed and the L-profiles have been mounted, the perforated plate can be mounted on the base.

To prevent the insulation from also being ventilated, fold together a perforated plate with a piece of reveal flashing (Fig. 171).

Alternatively, instead of this folded solution, insert a piece of cover flashing into the perforated plate and rivet to the perforated plate.



## SECOND LAYER

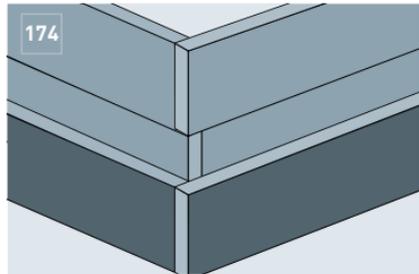
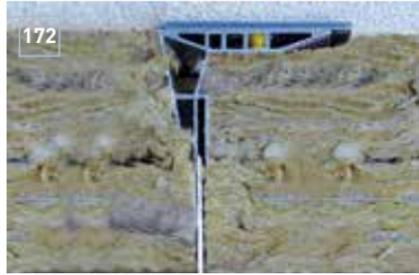
When all the L-profiles have been mounted, the second layer of insulation can be mounted between the L-profiles (Fig. 172).

**Window reveal:** fill the window reveal with insulation according to the thickness of the reveal. Cover the reveal insulation with the second layer of insulation (Fig. 173).

### Insulation in corners:

As with the first layer, offset the joints when mounting the insulation (Fig. 174).

Mechanically prevent the insulation from slumping down and protect it from suction forces with insulation anchors, following the manufacturer's instructions (Fig. 175 and 176).



# SIDING

## CONNECTIONS

### BASE CONNECTION

Installation with storey separation profile and starter strip (Fig. 177). When fastening the storey separation profile (on the perforated plate) to the base, ensure a horizontal alignment (Fig. 178 and 180).

Make sure that any expansion joints are continued from the sub-structure (Fig. 179).

### Forming the joint connection for the drip:

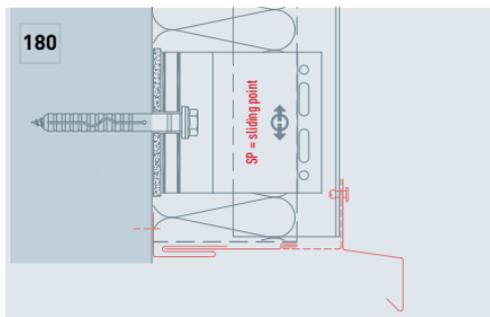
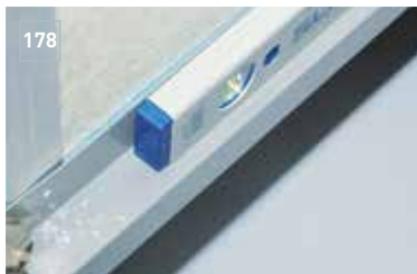
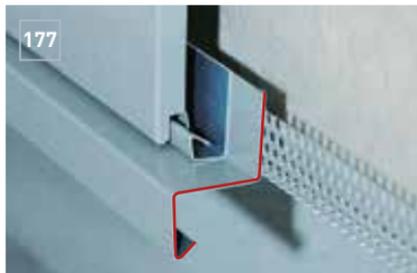
The drips are overlapped and glued. Cut an incision on the (concealed) underlying drip as shown in Fig. 181. Alternatively, the drip's joint connection can be made by inserting and gluing a joint connector (Fig. 182).

### Corner construction of drip:

Protruding corner (Fig. 183), recessed corner (Fig. 184).

Once all the vertical connections have been made, the starter profiles can be installed on the base.

For information on how to install the starter profiles: see page 86.



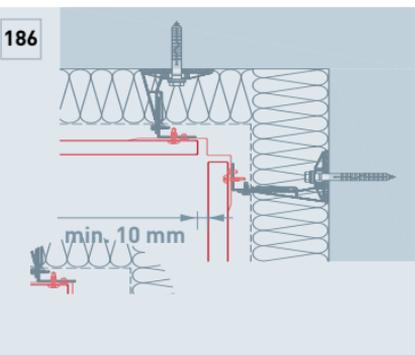
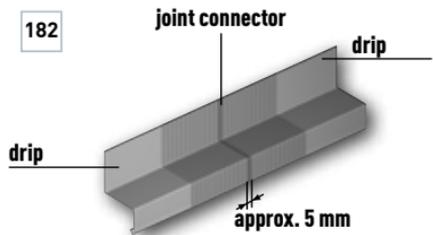


### RECESSED CORNER

When installing the recessed corner profile, make sure that it is perfectly vertical, and allow for sufficient expansion (Fig. 185 and 186).

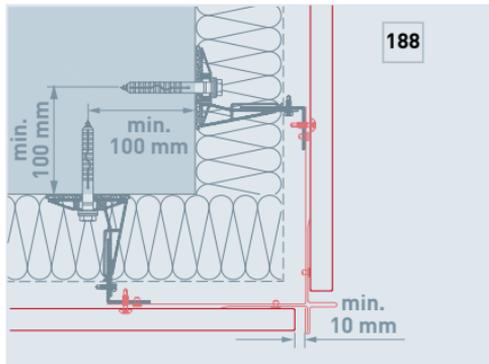
### PROTRUDING CORNER

As the distance from the wall brackets (and therefore also the vertical L-profiles) to the protruding corner must be at least 100 mm, it is necessary to insert corner connector brackets into the substructure before mounting the PREFA protruding corner profile.



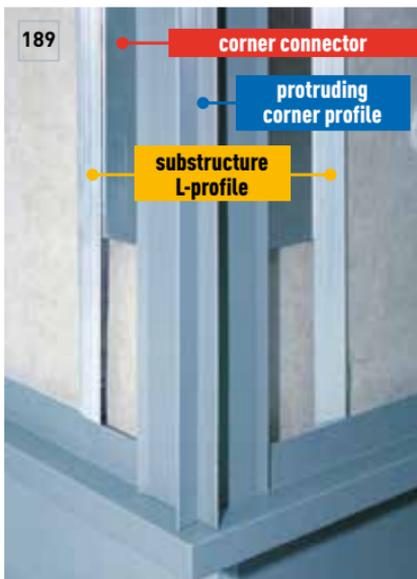


187



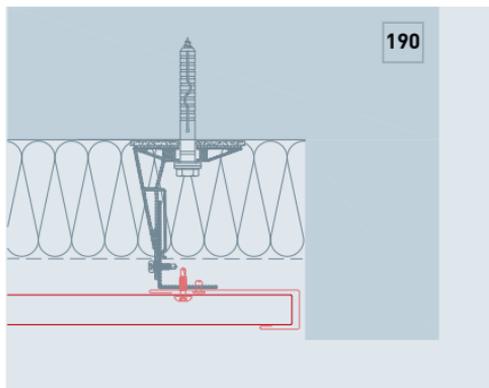
188

For the corner connector brackets, we recommend using 2 mm aluminium brackets with a length of approx. 300–500 mm, set at a distance of 1,000–1,200 mm from each other (Fig. 187 and 188).



189

When installing the PREFA protruding corner profiles, make sure that they are perfectly vertical, and allow for sufficient expansion (Fig. 189).



190

### LATERAL WALL CONNECTION

Lateral connections are created using a channel profile (Fig. 190).

### JOINT CONNECTION

On larger building lengths, a vertical separation can be created using a joint connection.

When installing the joint connection, make sure that it is perfectly vertical, and allow for sufficient expansion (Fig. 191 and 192).

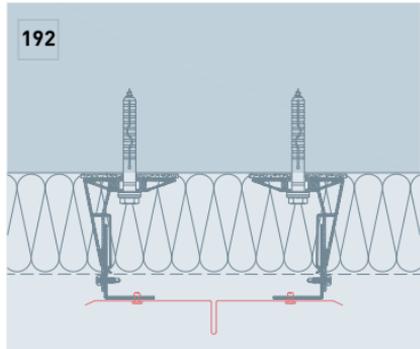
### WINDOW REVEALS (BOTTOM, SIDE, TOP)

#### Note:

The window ledge flashing strip should already have been mounted on the masonry wall — see page 67 (Fig. 151 and 152).

The interlocking profiles should already have been mounted prior to installing the insulation — see page 72 (Fig. 166, 167 and 168).

Cutting out the insulation at the side to create a gap for the window ledge (Fig. 193).



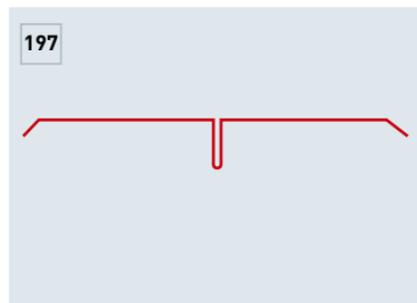


Push in the window ledge and mount the front fold in the window ledge flashing strip (Fig. 194 and 195).

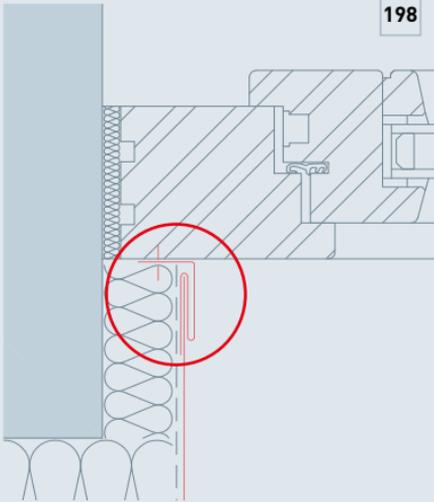
The window ledge must be mounted with an incline of at least  $3^\circ$ .



After mounting the window ledge, install the vertical joint connections under the window along the window reveals (Fig. 196 and 197).



198

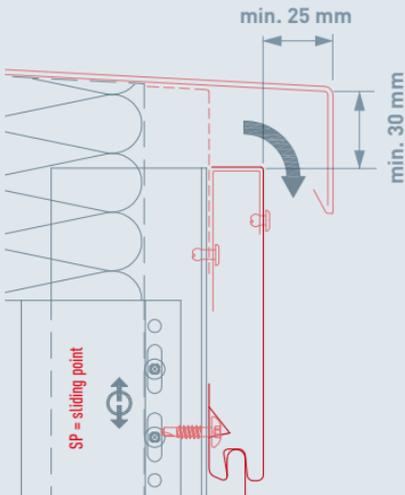


199



Then install the side reveal flashing on the window by inserting them into the interlocking profile. Fold down the window reveal at the bottom (Fig. 198 and 199).

200



201

Mount a perforated plate under the window ledge. This prevents insects and dirt from getting in while at the same time ventilating the façade (Fig. 200 and 201).

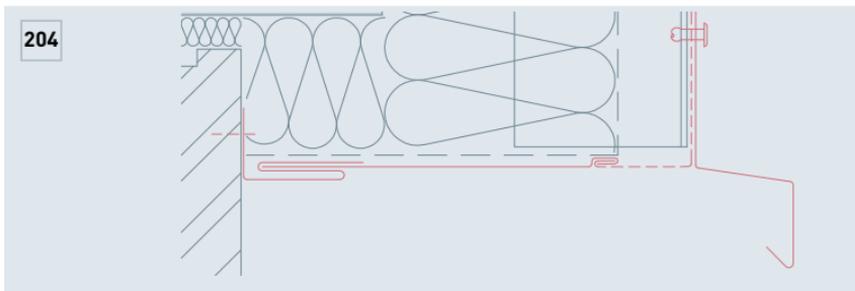


Then, rivet a self-canted channel profile onto the perforated plate (Fig. 201, 202 and 203).

Start mounting the reveal flashing at the top window connection. To do this, insert the reveal flashing and perforated plate (Fig. 204)

into the top interlocking profile (Fig. 205).

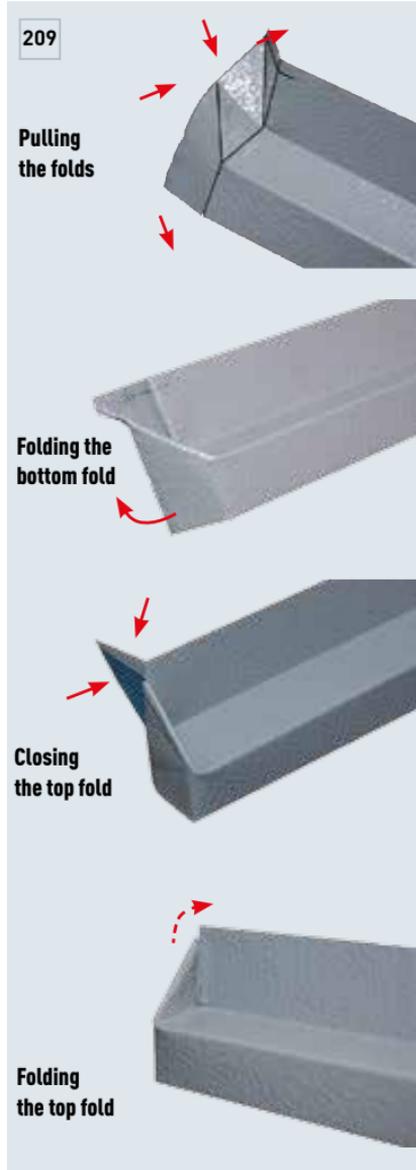
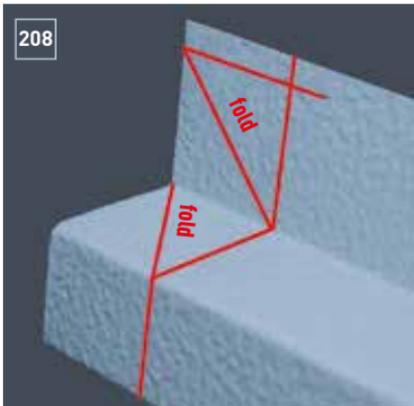
Here again, as an alternative solution, a perforated cover strip can be used (in the same way as indicated on page 73) — see Fig. 206.





The prepared storey separation profile is mounted in the front part (perforated strips) of the reveal flashing, and fastened to the sub-structure (Fig. 207).

The edges must be folded to make sure that the storey separation profile remains impermeable (Fig. 208 and 209).



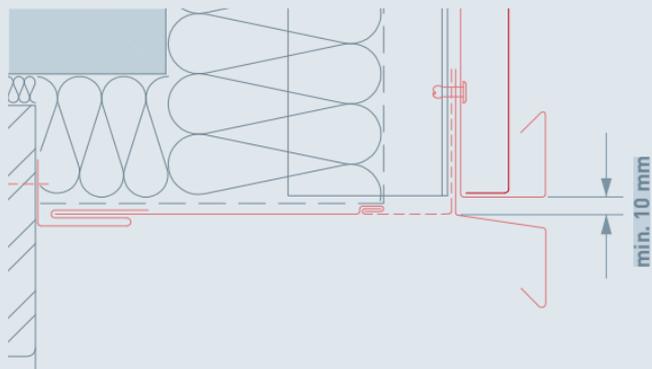
Then mount the top joint connection.

When mounting the top joint connection, make sure that the reveal flashing and the storey separation profile are overlapped (Fig. 210).  
(Joint connection: see Fig. 197)

A channel profile can now be installed over the storey separation profile (Fig. 211 and 212).



212

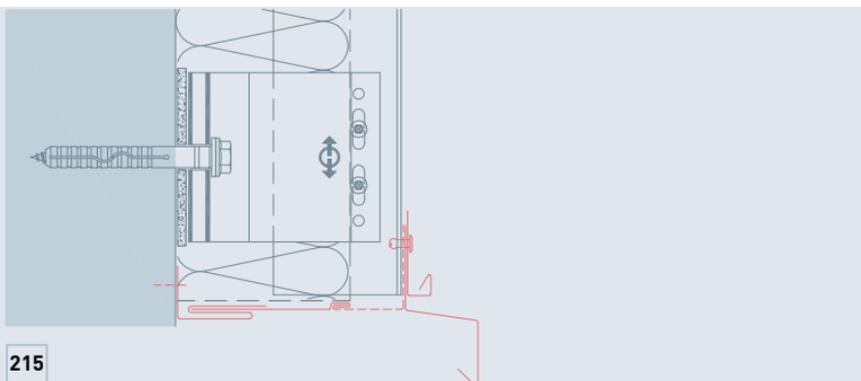


Fully installed window surround (Fig. 213).

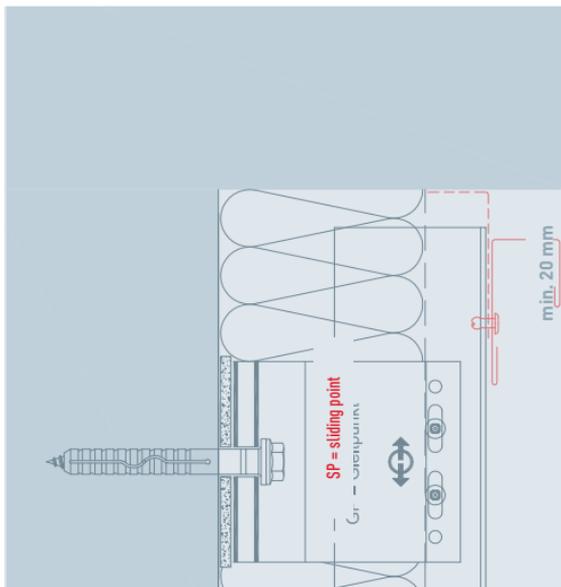
### STARTER PROFILES

Once all the vertical connections have been made, the starter profile can be mounted on the drip on the base.

Fasten with rivets or screws (Fig. 214 and 215).



216



### TOP CONNECTION

To ventilate the façade, mount a perforated plate as shown in Fig. 216.

Then mount a channel profile on the perforated plate at a distance of at least 20 mm from the top edge (Fig. 217 and 218).



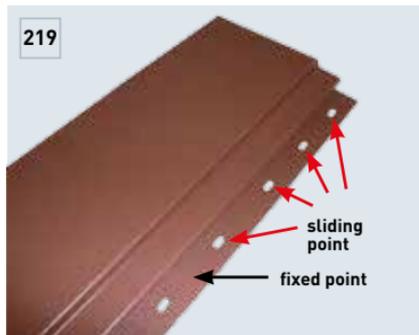
## INSTALLING THE SIDING

### INSTALLATION ALLOWING FOR SUFFICIENT EXPANSION

Provide one fastening as a fixed point in the centre of the siding, and the others as sliding points (by means of oblong holes, Fig. 219 and 220).

### INSTALLING THE SIDING ON THE BASE (START)

When installing the siding, start at the base. To do this, insert the first siding with the groove into the starter profile (Fig. 221).





222

For the fasteners, provide one fixed point and several sliding points as described on page 86.

When doing so, make sure that the installation is perfectly horizontal (Fig. 222).

### INSTALLING THE SIDING ON THE JOINTS (VERTICAL SEPARATION)

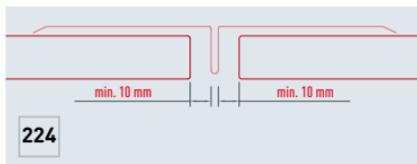
Here, allow for expansion by maintaining an expansion gap of 10 mm (Fig. 223 and 224).

### MOUNTING THE SIDING ON RECESSED CORNERS

An expansion gap of approx. 10 mm must also be maintained when installing the siding on recessed corners (Fig. 225 and 226).



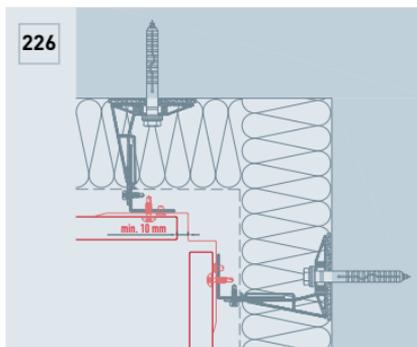
223



224



225



226

### **MOUNTING THE SIDING ON PROTRUDING CORNERS**

An expansion gap of approx. 10 mm must also be maintained when installing the siding on protruding corners (Fig. 227 and 228).

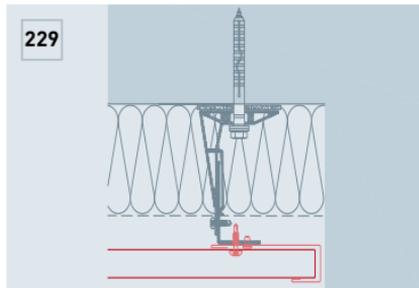
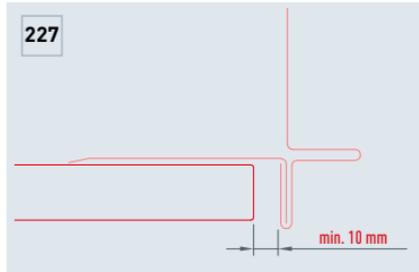
### **MOUNTING THE SIDING ON LATERAL WALL CONNECTIONS**

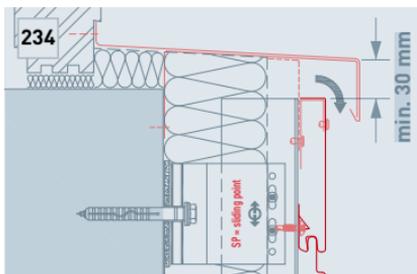
On lateral wall connections, the siding is pushed into a channel profile (Fig. 229).

Here too, a sufficient expansion gap of 10 mm must also be maintained.

### **INSTALLING THE SIDING AT THE WINDOW** **Installing below the window:**

Cut and cant the final siding according to the remaining distance (Fig. 230 and 231).





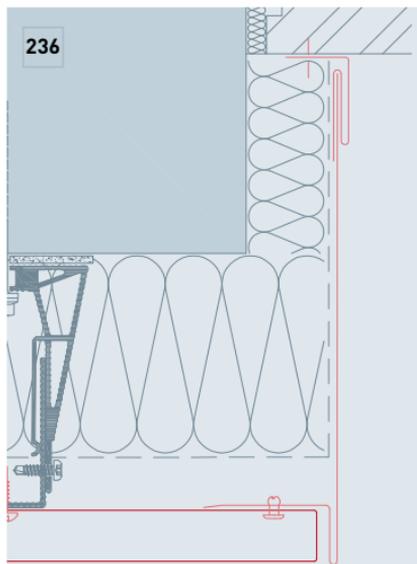
Similarly to the previous siding, mount the cut and canted siding via the tongue and groove system into the final complete siding and rivet to the flashing strip (Fig. 232, 233, 234).

#### Installing at the side of the window:

The lateral connections are mounted to the window's reveal flashing in the same way as the joint connections (Fig. 235 and 236).

#### Installing above the window:

The connection above the window is made in the same way as the connection below the window.



First, make a pass-siding by cutting and folding a siding (Fig. 237 and 238).

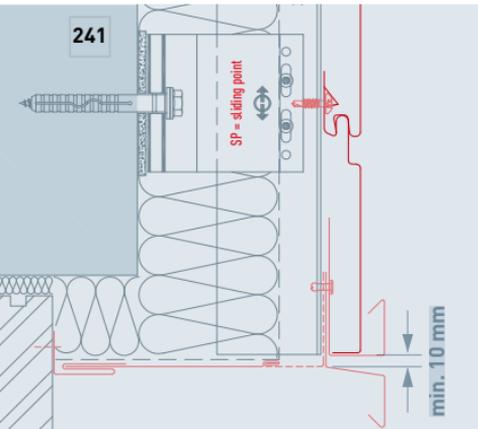
Then, insert the pass-siding into the channel profile and fasten to the substructure (Fig. 239 and 241).

### MOUNTING THE SIDING AT THE TOP CONNECTION

The siding is installed at the top connection similarly to the installation under the window.

Cut and cant the siding similarly to the way described on pages 88 and 89 “Installing below the window” (Fig. 230, 231, 232, 233).

Then fasten the siding to the pre-mounted channel profiles (Fig. 240).





# FULLY INSTALLED PREFA FAÇADE

242



## EXAMPLE OF GABLE CLADDING

First, align the substructure with the diagonal connection. Mount a continuous L-profile at a distance of 30 mm parallel to the roof verge board to ensure a secure fastening along the entire length (Fig. 243).

The façade substructure should be mounted as shown in the “Building the substructure” section.

Form the top connection using a channel profile (Fig. 244).

Allow for sufficient expansion of the channel profile (oblong holes).

Once all connections have been made, you can start installing the siding (Fig. 246).



To prepare the diagonal cuts of the siding, it is best to use a cross cut saw with angular adjustment.

**Note:**

Order at least 5 pieces/lengths of siding (Fig. 247).

245

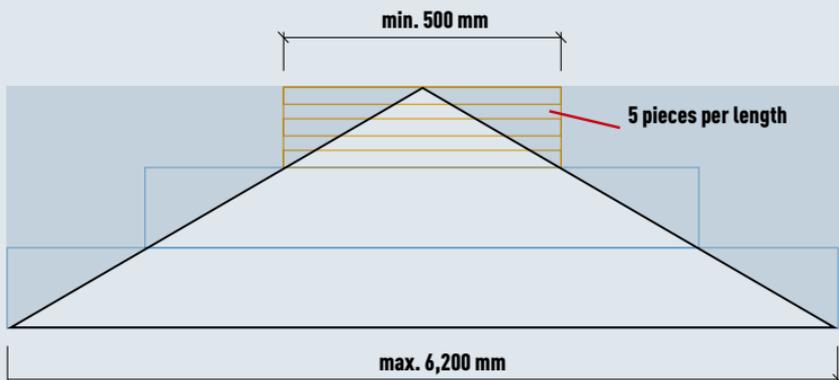
spacing:  
approx.  
10 mm

fold open

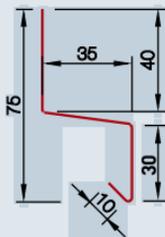


246

247



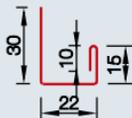
## SYSTEM ACCESSORIES



### STOREY SEPARATION PROFILE

For bottom connections  
base, upper window, storey separation

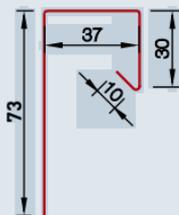
248



### PERFORATED PLATE

For bottom connections  
base, upper window, storey separation

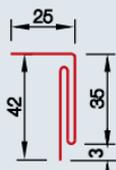
249



### CHANNEL FLASHING

For top and lateral connections  
wall connection, roof verge connection

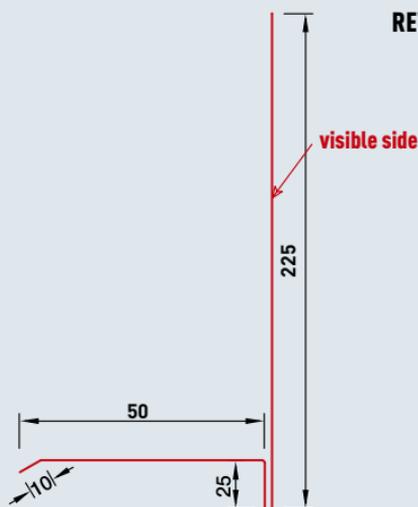
250



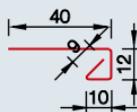
### HEMMED FLASHING

For window connections,  
lateral connections, bottom connections

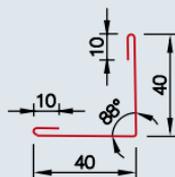
251

**REVEAL FLASHING**

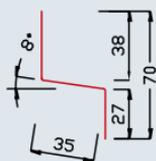
252

**STARTER PROFILE**

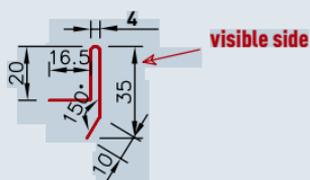
253

**PROTRUDING CORNER**

254

**JOINT CONNECTOR**

255



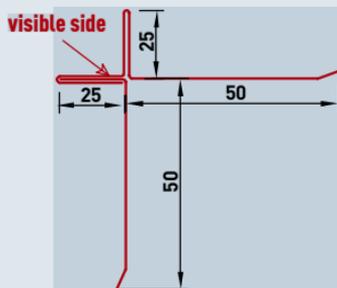
### CLOSING PROFILE

256



### JOINT CONNECTION

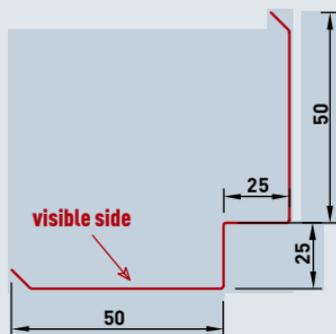
257



### PROTRUDING CORNER (2 ELEMENTS)

max. 2,000 mm  
thickness: max. 0.8 mm

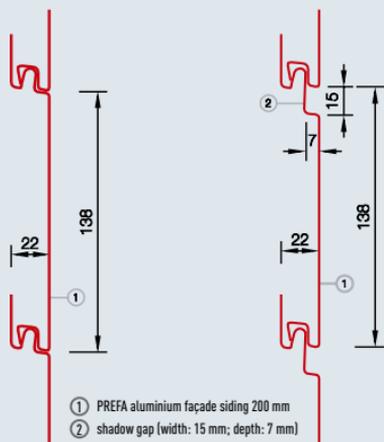
258



### RECESSED CORNER

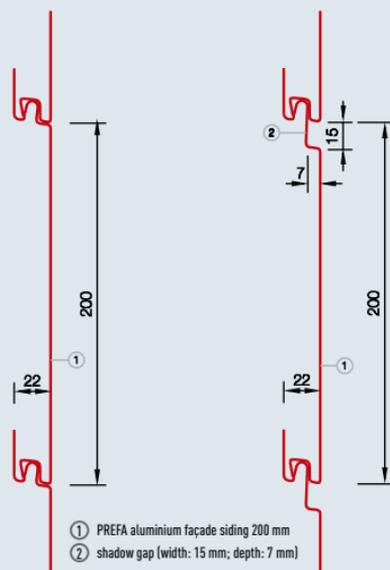
259

# SIDING — PRODUCT OVERVIEW



**PREFEA ALUMINIUM FAÇADE SIDING**  
visible width: 138 mm

260

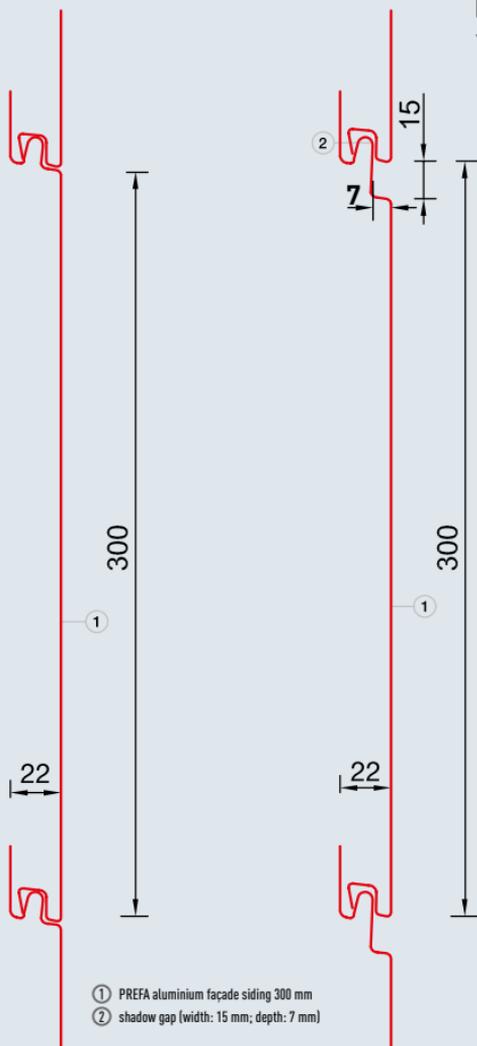


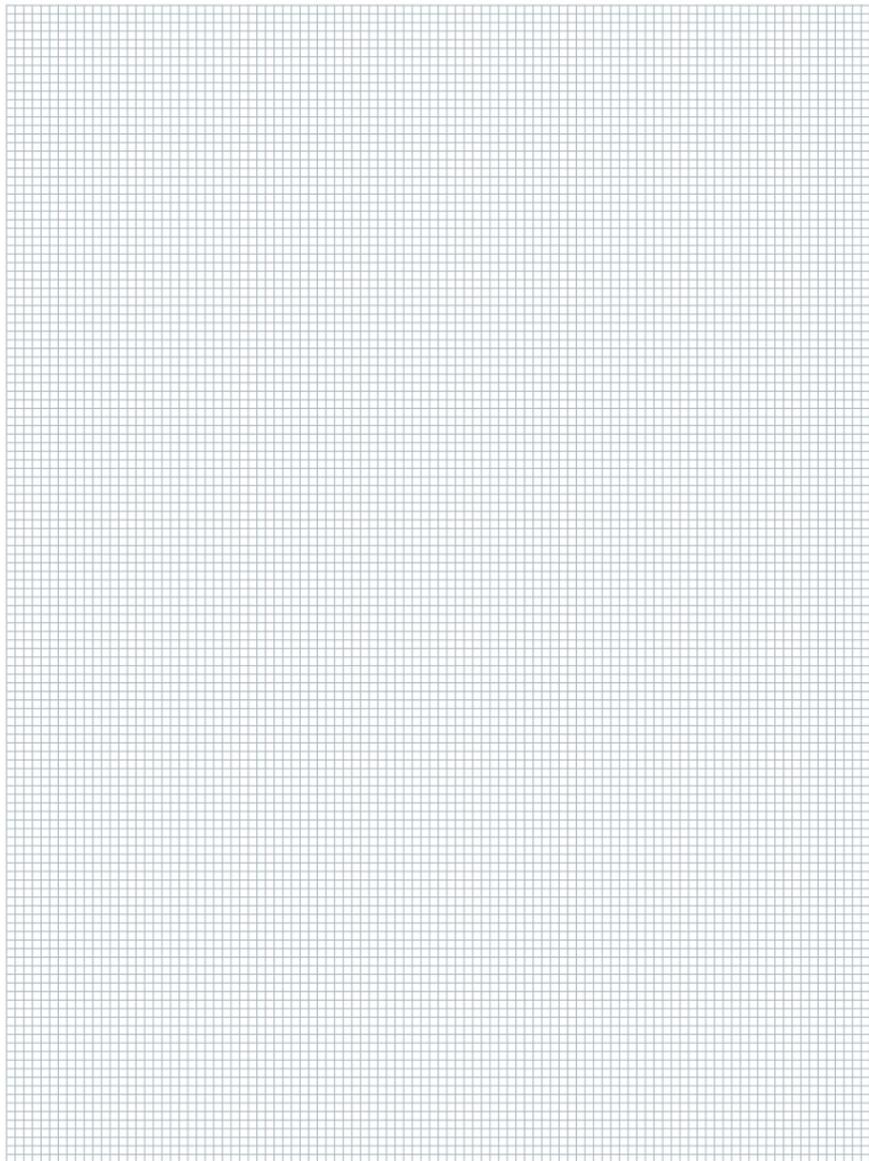
**PREFEA ALUMINIUM FAÇADE SIDING**  
visible width: 200 mm

261

## PREFA ALUMINIUM FAÇADE SIDING

visible width: 300 mm







# INSTALLATION INSTRUCTIONS

**COMPOSITE PANELS**

## INTRODUCTION

These installation instructions provide guidelines for planners and installers and supplement ALCOA's Reynobond processing instructions.

The contents describe how to handle and use PREFA aluminium composite panels. The sketches provide examples of normal cases. Observe all relevant requirements, legal regulations and guidelines currently in force. The installation instructions do not cover contract law aspects.

Therefore, actionable claims for defects, errors or incompleteness cannot be asserted.

Building-related building physics criteria are not covered in these installation instructions.

Reading the installation instructions does not mean that you should not also act or think for yourself.

## MATERIAL

### GENERAL KEY FIGURES

<b>ALLOY</b>	EN AW 3005 (AlMn1Mg0.5)
<b>FOLD QUALITY</b>	H46 according to EN 1396
<b>PAINT QUALITY</b>	Two-layer stove-enamel finish ((Duragloss 5000)
<b>STANDARD SIZES</b>	1,500 × 4,010 mm (width × length) — from 6 m <sup>2</sup> 1,000/1,250/1,500/1,750/2,000 × 2,000 (width × length) up to 6,000 mm (from 500 m <sup>2</sup> )
<b>PANEL WEIGHT</b>	4 mm (fire retardant [FR]) — 7.5 kg/m <sup>2</sup>

## MECHANICAL VALUES ACCORDING TO EN 1396:2007

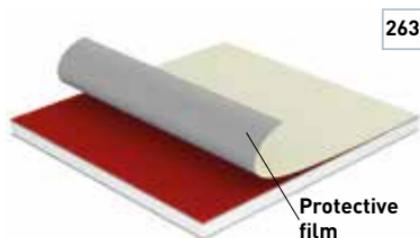
<b>MODULUS OF ELASTICITY</b>	approx. 70,000 N/mm <sup>2</sup>
<b>TENSILE STRENGTH</b>	Rm > 185 N/mm <sup>2</sup>
<b>ELONGATION AT FRACTURE</b>	A50 > 2%
<b>SOUND ATTENUATION</b>	26 dB
<b>FIRE RATING</b>	B-s1-d0 (CH BKZ 5.3)

## PROTECTIVE FILM

The film (Fig. 263) protects the panel's top coat during processing and mounting. The arrows on the film indicate the coating direction (see page 105).

However, it should be removed one month at the latest after on-site installation, particularly where panels are exposed to sunlight and the weather. This protective film should only remain on the panels temporarily.

The arrows on the film indi-



## MATERIAL INFORMATION

There is a repeated print on the reverse side of the PREFA aluminum composite panels (Fig. 264).

«REYNOLBOND FR 1206132028 CERTIFIE CSTB CERTIFIED-47-38 MADE IN FRANCE

264

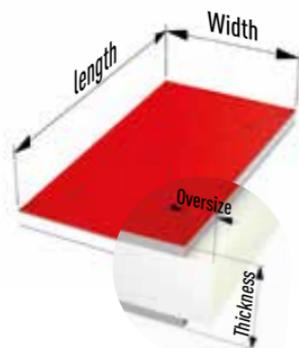
## COATINGS

PREFA aluminium composite panels are available in Duragloss® 5000 coatings, a high-tech polymer-based coating which comes in gloss levels of 3% to 80%.

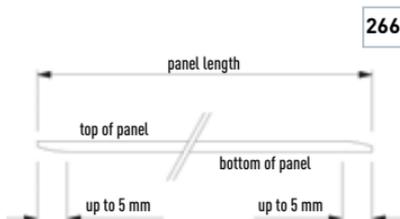
This coating is used in particular to give a perfect appearance to metal-effect shades. (PVDF\* 70/30 coating is also available on request.)

## TOLERANCES

<b>THICKNESS</b>	$\pm 0.10$ mm
<b>WIDTH</b>	$-0 / +3$ mm
<b>LENGTH <math>\leq 4,000</math> mm</b>	$-0 / +4$ mm
<b>LENGTH <math>&gt; 4,000</math> AND <math>&lt; 6,000</math> mm</b>	$-0 / +6$ mm
<b>DIAGONAL DEVIATION</b>	3 mm
<b>OVERSIZE DEVIATION</b>	$\pm 1.5$ mm
<b>CURVATURE</b>	$< 1$ mm
<b>SHIFTING OF COVER PLATES AGAINST EACH OTHER</b>	$\pm 1.5$ mm



265



266

It should also be ensured that the cut edges on the broad side are rounded by up to 5 mm (Fig. 266).

When ordering unprocessed panels, make sure that the

untrimmed sizes are trimmed on all sides by at least 5 mm. This will ensure attractive edges all around and compliance with the manufacturer's guidelines.

## STORAGE

Store the panels in a dry area at room temperature. Note that the panels should be supported at several points along their length. The number of support points depends on the length of the panel. Do not

stack more than three loaded pallets on top of each other. Between working phases and for intermediate storage purposes, insert polystyrene or foam cushion wedges between the panels.

## EXPANSION

The aluminium composite panels are designed solely for use at temperatures of between  $-50^{\circ}\text{C}$  and  $+80^{\circ}\text{C}$ . Allow for material expansion when deciding which type of

fastening system (mechanical or glued) to use.

Thermal expansion coefficient:  $0.0236\text{ mm/m/}^{\circ}\text{C}$ .

EXPANSION AT A TEMPERATURE DIFFERENCE...	PANEL LENGTH			
	2 m	3 m	4 m	6 m
<b>OF <math>60^{\circ}\text{C}</math></b>	2.83 mm	4.25 mm	5.66 mm	8.50 mm
<b>OF <math>100^{\circ}\text{C}</math></b>	4.72 mm	7.08 mm	9.44 mm	14.16 mm

**Note:** panels with a dark top coat absorb more heat than those with light top coats. This should be taken into account when calculating temperature differences. For example, allow for temperatures of approx.  $20^{\circ}\text{C}$  higher with a black panel compared to a white or metal-coloured panel.

## LAYING DIRECTION

Metal-effect coatings have a reflective or mother-of-pearl type appearance produced by tiny aluminium or sparkling particles in the paint.

These particles are aligned in a longitudinal direction during the coating process. The coating direction is indicated by arrows and the manufacturer number on the back of the panel, and on the (temporarily attached) protective film on the front of the panel.

A uniform appearance can only be achieved by mounting the panels in the direction indicated by the arrows (Fig. 267).

The coating direction should already be borne in mind with drawing up the parts list.

Metal-effect coatings are subject to colour variations between different manufacturing batches, therefore, PREFA expressly recommends that you use panels from the same manufacturing batch on one side of the façade to ensure a uniform appearance.

We also recommend ordering spare materials.



right



right

267



wrong



wrong

## CLEANING

How often you should clean the panels and the choice of suitable cleaning agent to use depends on the building's location and the amount of soiling. Clean the panels in steps from top to bottom.

When doing so, observe the following rules:

- ! Clean by hand or with the aid of special machines (industrial cleaner, foam cleaner, etc. — do not use a high-pressure cleaner).
- ! Use soft water (hard water leaves a white residue behind).
- ! Use a suitable cleaning agent.

! After cleaning, thoroughly and systematically rinse the surface with clean, soft water.

Precautionary measures:

Do not use products which could dissolve or disfigure the coating layer.

This includes:

- ! highly alkaline products such as potassium or sodium hydroxide
- ! acidic products
- ! products containing abrasives
- ! solvents

**Note:** wipe off any excess rinse water with a sponge, squeegee or shammy leather to remove any mineral residue from the water.

## CONTACT WITH OTHER MATERIALS

There is a risk of corrosion if aluminium composite panels come into contact with heavy metals (e.g. copper, brass, bronze). If you wish to use these materials together, they must be coated or separated from the aluminium composite panels by electrically insulating spacers (e.g. plastic sockets or washers).

Only plastic material, suitable types of wood, stainless steel or aluminium may come into direct contact with the aluminium composite panels without the need for specific precautionary measures.

# MACHINING AND PROCESSING

As the panels are subject to manufacturing tolerances, make sure that they are suitable for the respective area of application before use. Prior to installation, trim the aluminium composite panels on all sides (see also page 103).

## MACHINING POSSIBILITIES

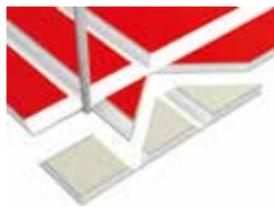
268



Sawing



Drilling



Notching



Contour milling



Engraving milling



# DIMENSIONING EDGE FOLDS

## GENERAL PRINCIPLES

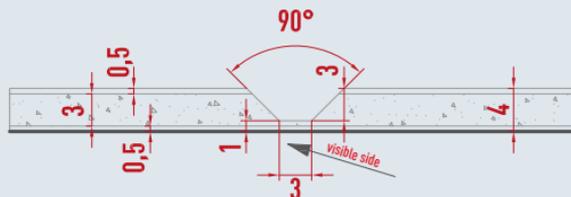
To make a fold, a V-groove must be milled on the back of the aluminium composite panel. Milling should be performed in a way which ensures that 0.5 mm of the top layer and an additional 0.3–0.5 mm of the FR core remain. If the groove is too deep, it will not be possible to create a continuous, attractive fold and the aluminium cover plate could tear.

However, if too much of the core remains (more than 0.5 mm), folding will be very difficult. To form an attractive edge, we also recommend using a milling cutter with a

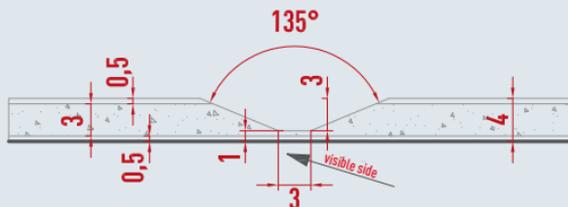
3-mm flat surface (i.e. which cuts a groove with a 3-mm root face). The fold axis will then be in the centre of the milled root face.

As standard, groove cutters are available with a 90° (Fig. 269) and 135° (Fig. 270) root opening angle.

The individual side lengths of the fold should be based on the actual dimensions of the substructure, and the material thickness of 4 mm should be taken into consideration according to the type of fold (recessed corner, protruding corner, etc.).



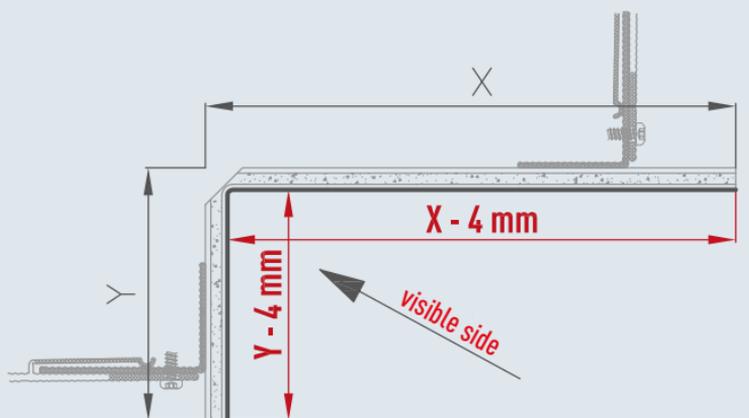
269



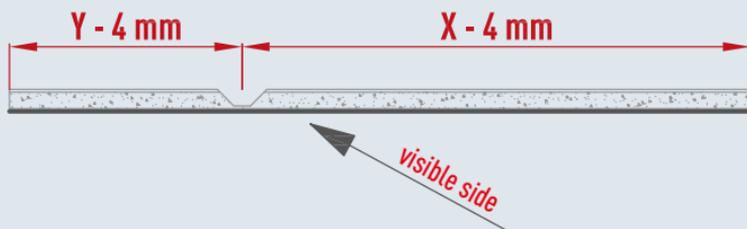
270

## RECESSED CORNER

On a recessed corner, deduct the material thickness of 4 mm from the substructure's dimensions to obtain the V-groove milling axis:



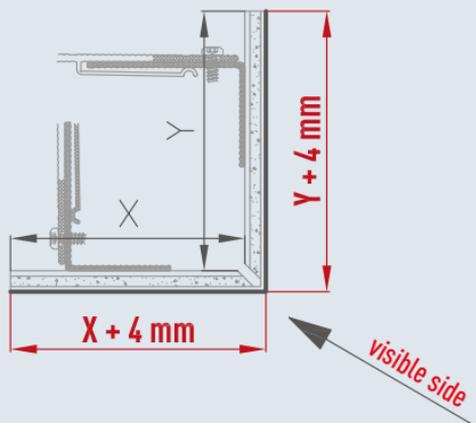
271



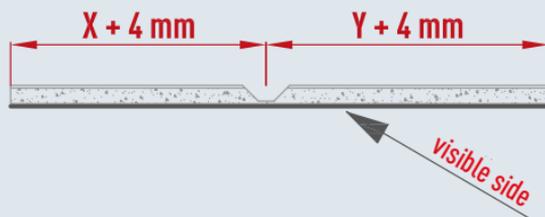
272

## PROTRUDING CORNER

On a protruding corner, add the material thickness of 4 mm to the substructure dimensions to obtain the milling axis:



273

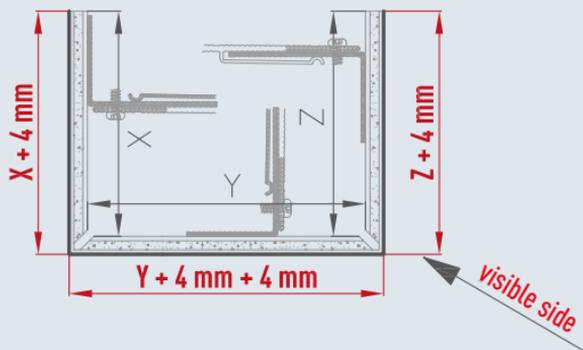


274

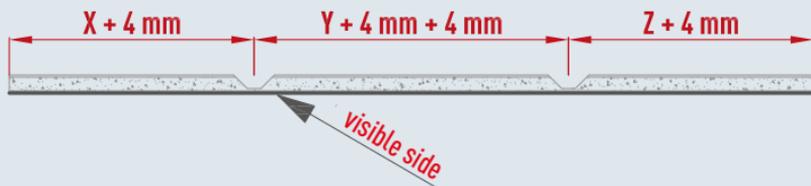
## PROTRUDING U-FOLD

On a U-fold with two protruding corners, consider each corner separately, as each side of the fold must be extended by the material thickness of 4 mm. Therefore, the centre part of the U-fold will be 8 mm longer:

275

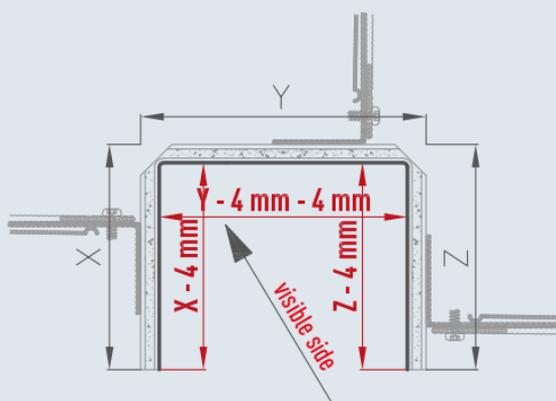


276

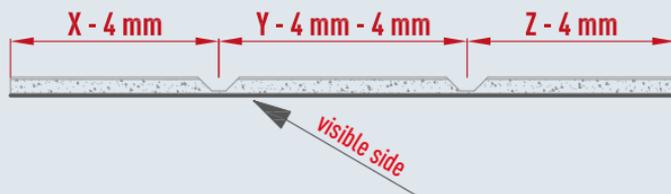


## RECESSED U-FOLD

On a U-fold with two recessed corners, each corner must be considered individually, as each side of the fold must be shortened by the material thickness of 4 mm, to obtain the milling axis. Therefore, the centre part of the U-fold will be 8 mm shorter:



277



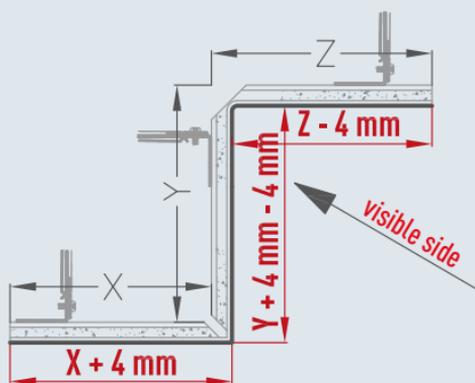
278

## Z-FOLD

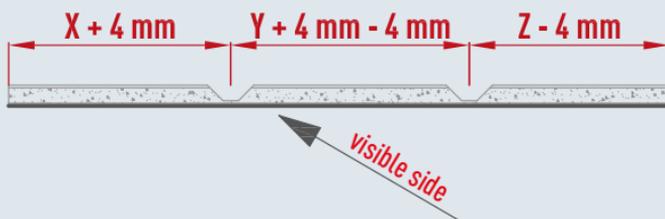
On what is known as a “Z-fold” length must be shortened by 4 mm. with one recessed and one protruding corner, each edge must be considered individually. On the protruding corner, each length must be extended by 4 mm, and on the recessed corner, each

Therefore, the dimensional corrections are cancelled out in the centre part of the Z-fold:

279



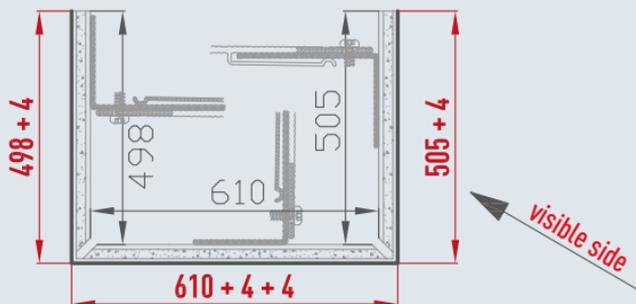
280



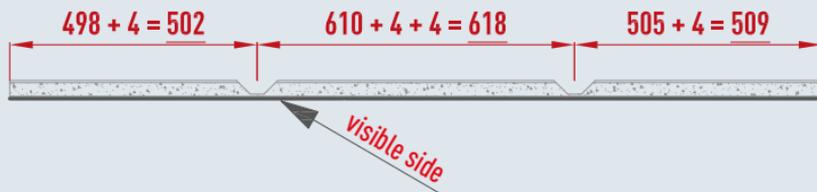
## EXAMPLE — PROTRUDING U-FOLD — WITH DIMENSIONS

Dimensions in millimetres:

281



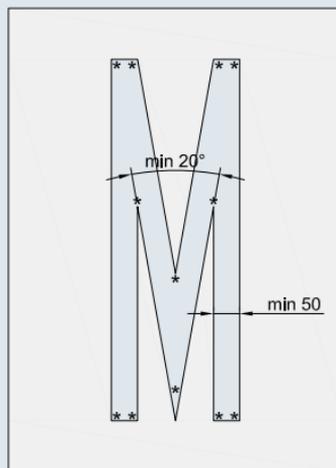
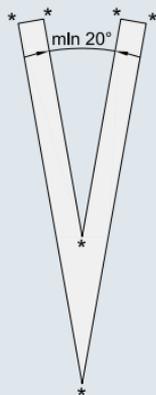
282



## CONTOUR MILLING

Figure 283 shows the minimum dimensions in mm or the angles that are technically possible as far as the material is concerned.

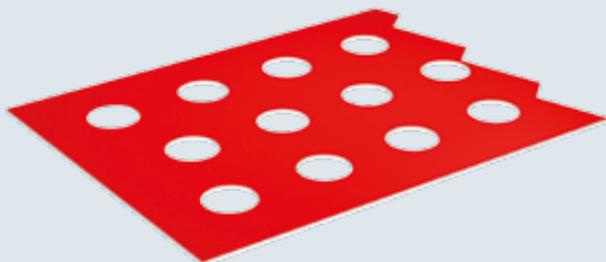
283



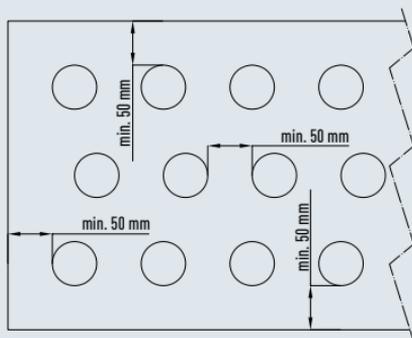
\* = radius at least 2 mm

## PERFORATION

- ! Perforation is only possible if the holes are milled.
- ! Extra care should be taken in sensitive areas (close to the sea, polluted air, etc.).
- ! Edge rolling of perforated panels is not permitted.
- ! The required fastening points must be taken into account.
- ! Distance between holes: min. 50 mm.
- ! Distance to edge: min. 50 mm.



284



285

# FASTENING TYPES

## FASTENING ON METAL SUBSTRUCTURE

### FIXED POINT

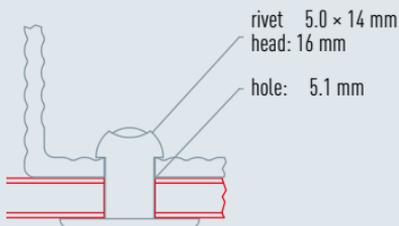
In this case, the panel cannot move as the aluminium composite panel is firmly attached to the substructure at this point.

Drill hole:

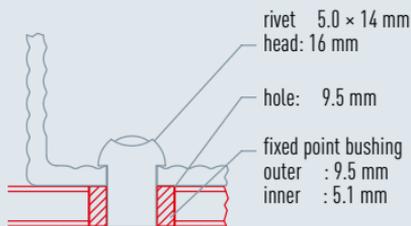
- ! panel: 5.1 mm or 9.5 mm with fixed point bushing
- ! metal substructure: 5.1 mm

#### RIVETED FIXED POINT

286



287



**Note:** always mount rivets with their corresponding nosepiece to avoid deforming the surface.

## SLIDING POINT

The drill hole is larger than the diameter of the fastening. In this case, the panel can expand and move.

- ! Panel borehole = 9.5 mm
- ! Metal substructure borehole = 5.1 mm

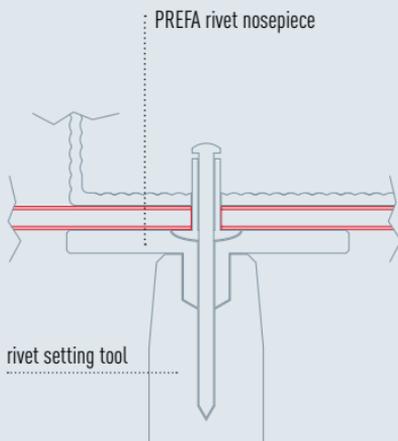
### RIVET NOSEPIECE

288

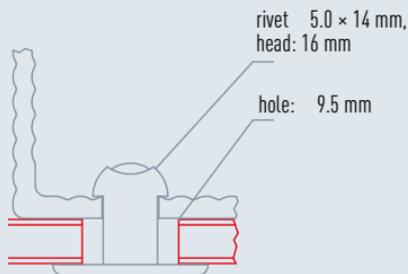


### RIVETED SLIDING POINT

289



290



**Note:** always mount rivets with their corresponding nosepiece to avoid deforming the surface and to prevent the panel from sliding.

## FASTENING ON WOOD SUBSTRUCTURE

### EPDM SEALING TAPE

All holes in the façade panel must be made with a bore diameter of 9.5 mm to ensure an installation free of stress.

To protect the wood substructure from water ingress, cover with EPDM sealing tape, whereby the tape should extend beyond the square timber by at least 5–10 mm.



### PRE-DRILLING THE WOOD SUBSTRUCTURE

After this, pre-drill the wood substructure with a 3.3-mm drill using a bracket boring fixture, to ensure, on the one hand, the right-angled entry of the screw into the substructure, and, on the other, to prevent the wood panel from breaking.



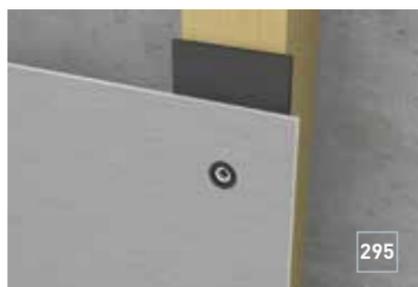
### FAÇADE-CENTRING JOINT

Before tightening the screw, insert the façade-centring joint into the bore hole.



## FIXED POINT

When installing the aluminium composite panels on the wood substructure, the fixed points should be designed in such a way that a suitable fixed point bushing (8.5 on 5.1 mm) can be inserted into the façade-centring joint before tightening the screw to a moderate torque setting.



## SLIDING POINT

The sliding point should be designed similarly to the fixed point, the difference being that an additional bushing is not inserted into the façade-centring seal.

In general, make sure that the tightening torque used does not cause the façade-centring joint to stick out from under the screw head after tightening.



## FASTENING USING FAÇADE ADHESIVES

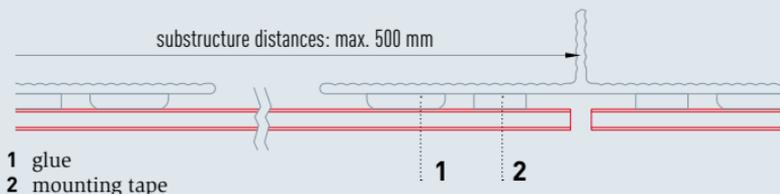
The system comprises:

- ! permanently elastic glue which firmly attaches the PREFEA aluminium panel to the substructure while at the same time absorbing the expansions;
- ! double-sided adhesive mounting tape which is used to attach the composite panel during installation so that the glue can harden properly.

This type of adhesive system can be purchased from a wide range of companies.

We recommend using an approved adhesive system.

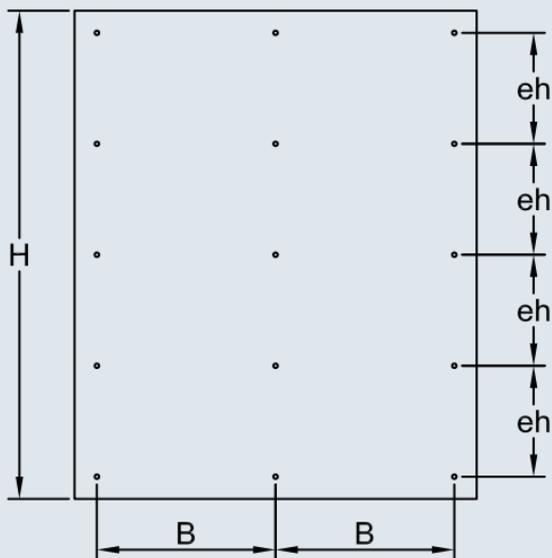
The maximum permitted panel size on glued installations is 3,000 × 1,500 mm, with a maximum building height above escape route level (or building height restriction) of 7 m.



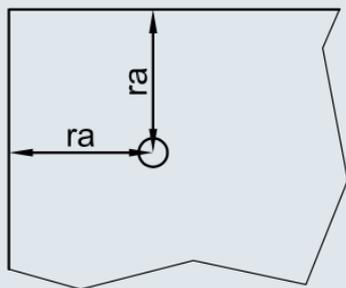
## FASTENING DISTANCES

The distances between the vertical support profiles depend on the static requirements.

Individual, building-related planning is essential.



300



301

$eh$  = max. 500 mm

$B$  (mechanical) = max. 800 mm

$B$  (glued) = max. 500 mm

$ra$  (distance to edge) = 25–50 mm

## ARRANGEMENT AND EFFECT OF FIXED POINTS AND SLIDING POINTS

### FASTENED ON TWO VERTICAL PROFILES

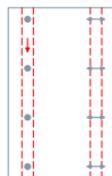
302

Vertical:

Identical expansion of panel and support profile.

Horizontal:

The panel expands to the right.



### FASTENED ON THREE VERTICAL PROFILES

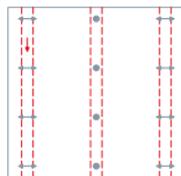
303

Vertical:

Identical expansion of panel and support profile.

Horizontal:

In this case, the panel expands to the left and right.



### FASTENED ON SEVERAL VERTICAL PROFILES

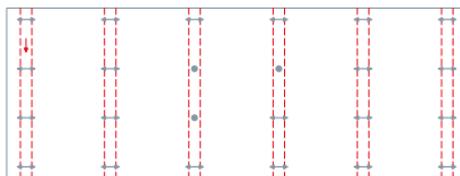
304

Vertical:

Identical expansion of panel and support profile.

Horizontal:

3 fixed points attach the panel in position.  
The panel expands to the left and right.



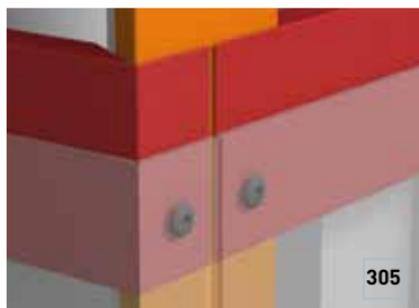
● fixed point

↔ sliding point

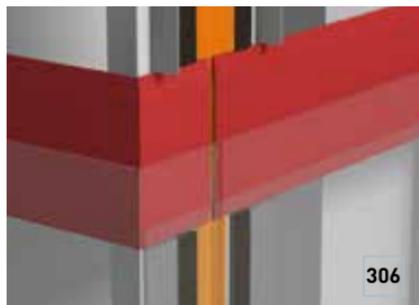
↓ direction of profile expansion (substructure)

# JOINT BACKING STRIP ON ALUMINIUM COMPOSITE PANELS

## FASTENED MECHANICALLY



## GLUED



# ACCESSORIES

## FASTENING ON METAL SUBSTRUCTURE

### PREFA FAÇADE RIVET

Façade rivet:  $5 \times 14$  mm  
 Head: 16 mm  
 Clamping range: 5.5–9 mm



307

### PREFA FIXED POINT BUSHINGS FOR FIXED POINTS WITH RIVETS

For façade rivet:  $5.0 \times 14$  mm  
 Head: 16 mm;  
 Outer : 9.5 mm; inner : 5.1 mm



308

### PREFA RIVET NOSEPIECE

For mounting aluminium composite panels free of stress; threaded connection  
 $M10 \times 1$  mm for 16 mm rivet head



309

### SPECIAL DRILL BIT FOR METAL SUBSTRUCTURES

For working on aluminium composite panels on steel and aluminium substructures  
 $5.1 \times 85$  mm



310

### SINGLE-HANDED SPRING-LOADED BORING FIXTURE

For working on aluminium composite panels  
 Borehole diameter: 9.5 mm (panel),  
 5.1 mm (substructure)



311

**BRACKET BORING FIXTURE**

For working on aluminium  
composite panels  
Borehole diameter: 9.5 mm (panel),  
5.1 mm (substructure)



312

**FASTENING ON WOOD SUBSTRUCTURE****PREFA FAÇADE SCREW**

Façade screw: 4.8 × 30 mm  
Head: 16 mm



313

**EPDM JOINT TAPE**

For sealing joints on wood substructures  
70 mm × 0.75 mm; 135 mm × 0.75 mm



314

**PREFA FIXED POINT BUSHINGS  
FOR FIXED POINTS WITH SCREWS**

For façade screw: 4.8 × 38 mm  
Outer : 8.5 mm; inner : 5.1 mm



315

**SPECIAL DRILL BIT FOR WOOD SUBSTRUCTURES**

For pre-drilling the wood substructure  
3.3 mm



316

---

**BRACKET BORING FIXTURE**

For working on  
aluminium composite panels  
Borehole diameter: 9.5 mm (panel),  
3.3 mm (substructure)



317

---

**MACHINING THE ALUMINIUM COMPOSITE PANEL**

---

**PORTABLE CIRCULAR SAW**

For working on  
aluminium composite panels  
With a hacksaw blade for metal  
or hardwood, hollow-ground teeth  
and a negative hook angle



318

---

**EDGE ROUTER**

For working on  
aluminium composite panels



319

**COMPOSITE MILLING MACHINE**

For working on aluminium  
composite panels



320

**90°-ROUTER BIT**

For working on aluminium  
composite panels  
(e.g.: Festool OF 1010 EB with guide rails)



321

**135°-ROUTER BIT**

For working on aluminium  
composite panels  
(e.g.: Festool OF 1010 EB with guide rails)



322

**DEBURRING TOOL**

For working on aluminium  
composite panels  
S/E type, for direct mounting of blades  
3.2 mm



323

**BLADES FOR DEBURRING TOOL**

For working on aluminium  
composite panels  
Type S10/E100, 3.2 mm



324

---

**PREFA FILM CUTTER**

For fixed point: 5.1 mm  
For sliding point: 9.5 mm

325

---

**COMPOSITE PANEL MOUNTING AID**

8 mm joint width, for longitudinal  
and transverse joints

326

---

**STEP DRILL BIT**

For working on aluminium  
composite panels  
from 5.1 to 9.5 mm

327

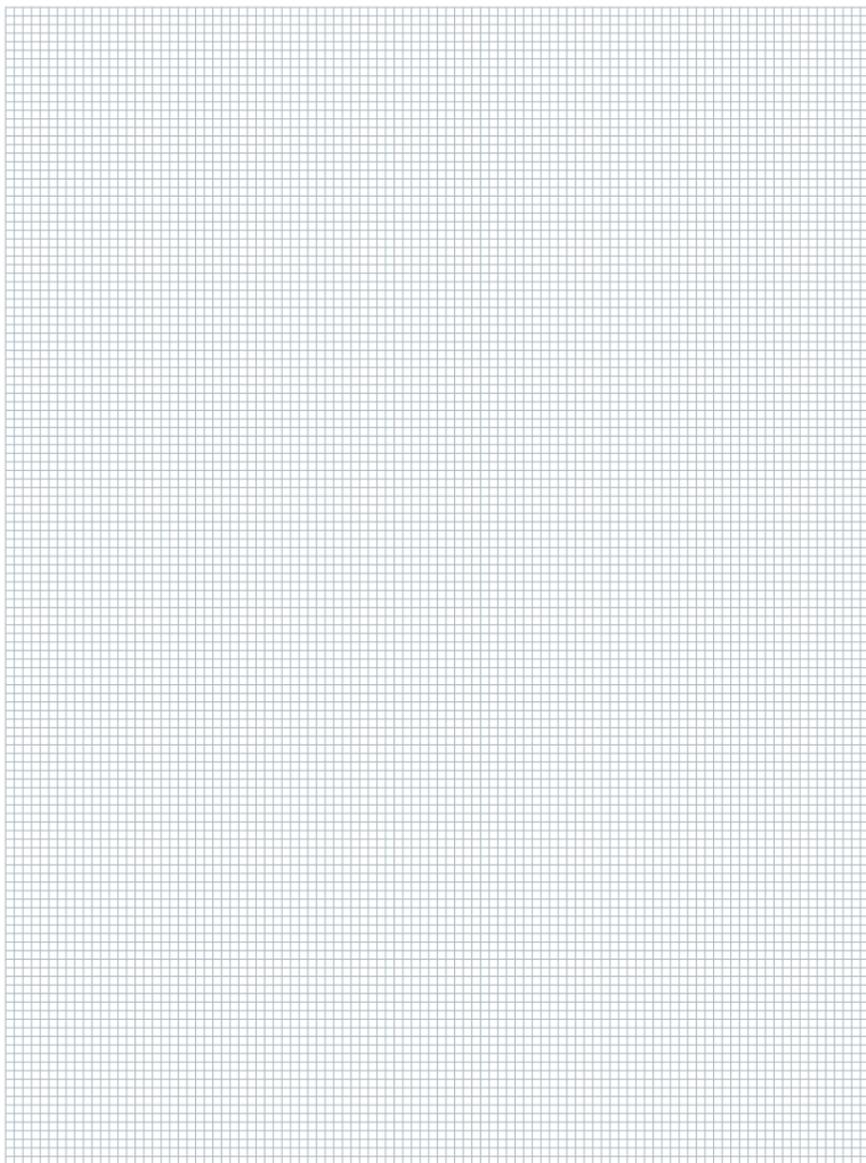
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**STEP DRILL BIT DEPTH STOP**

9.5 mm  
For adjusting the step drill bit's bore depth

328

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## PREFA PRODUCTS

PREFA not only offers specialist companies façade elements, but also a complete range of accessories for all façade surfaces, as well as long-lasting colour coating.

Call us to ask for our comprehensive price list: [www.prefa.com](http://www.prefa.com)

Austria: + 43 2762 502-0  
 Germany: + 49 36 941 785-0  
 Switzerland: + 41 71 952 68 19  
 Italy: + 39 0471 06 86 80

## PREFA SERVICE

PREFA provides a comprehensive service for specialist companies, ranging from in-depth advice by our long-term roof experts and on-time deliveries in all sales regions, to detailed installation instructions and the PREFA hot-

line (for the telephone number, see above) for on-site assistance.

PREFA training courses play an important role in ensuring a satisfactory and efficient installation.

## PREFA ACADEMY

PREFA's training centre conducts training courses on façade systems which include practical installation sessions. Early registration is required if you wish to take part in these training courses.

To register, contact:

Austria: + 43 2762 502-0  
 Germany: + 49 36 941 785-0  
 Switzerland: + 41 71 952 68 19  
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## PREFA INSTALLATION VIDEOS

You can find PREFA installation videos in the **Login area** of our website ([www.prefa.com](http://www.prefa.com)). You

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**THE ROOF  
AS STRONG AS A BULL!**

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Republic, Slovakia, Hungary, Poland, Slovenia, Croatia, Estonia,  
Latvia, Lithuania, Russia, Great Britain

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- ! **STORM-PROOF**
- ! **RUST-PROOF**
- ! **BREAK-PROOF**
- ! **LIGHT**
- ! **BEAUTIFUL**
- ! **COLOUR-FAST SURFACE**
- ! **GREAT FOR RENOVATIONS**
- ! **COMPLETE SYSTEM**
- ! **ENVIRONMENTALLY FRIENDLY**
- ! **40-YEAR GUARANTEE**