PURSO®

FACADE ELEMENT SYSTEM **P76E**

MANUFACTURING MANUAL

PURSO® *Premium Partner in Building*

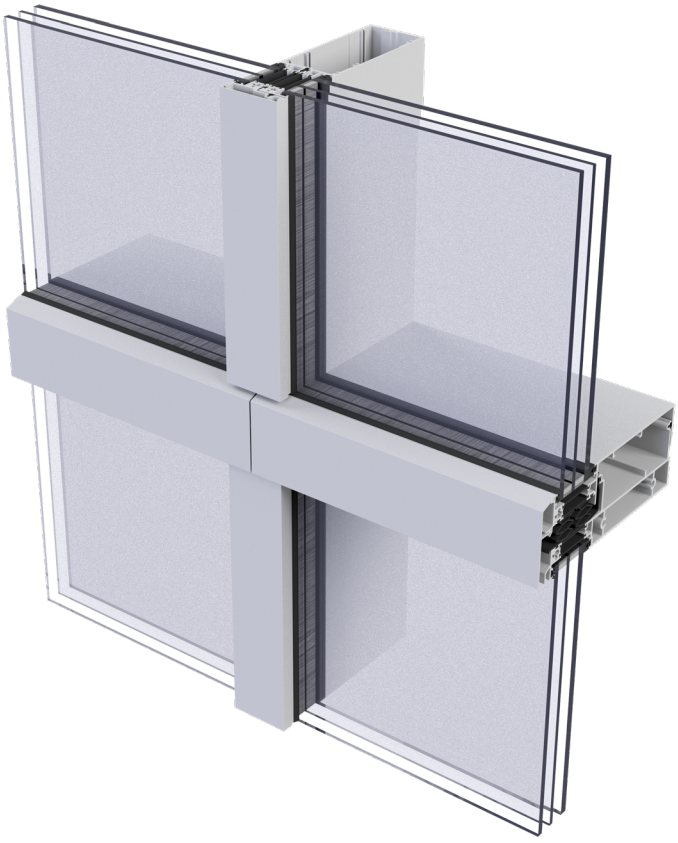
Facade element system P76E

Applications

- Easy-to-install element system for **facade construction**.

Features

- Highly insulated aluminium element facade system, U_{cw}-value down to **0,49 W/m²K** (1500x3300).
- Appearance according to the facade system from the inside and outside, without visible sealing groove.
- Powder coated or anodized surface treatment. Different finishes of inside and outside possible.
- New profile shapes can be produced easy and quickly from our experienced design and production teams.
- Minimal care and maintenance required.
- High resistance to Nordic weather conditions
- Air permeability **AE 1200** (EN 12152)
- Water tightness **RE 1050** (EN 12154)
- Standard frame width vertical 75-78 mm, horizontal 90-120 mm
- Standard frame depth 170 mm.
- Glass thickness from 56 mm up to 59 mm.
- P76E-system will always be tailored to the project.
- Element mounting
- Panels



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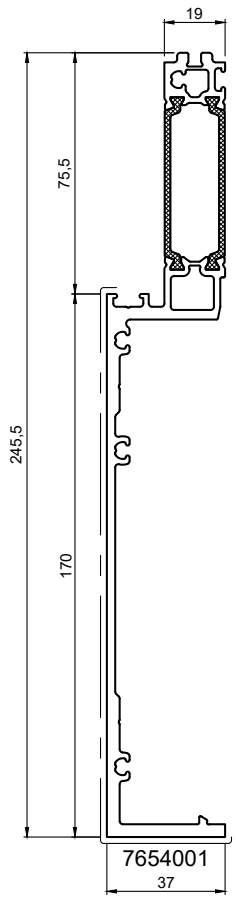
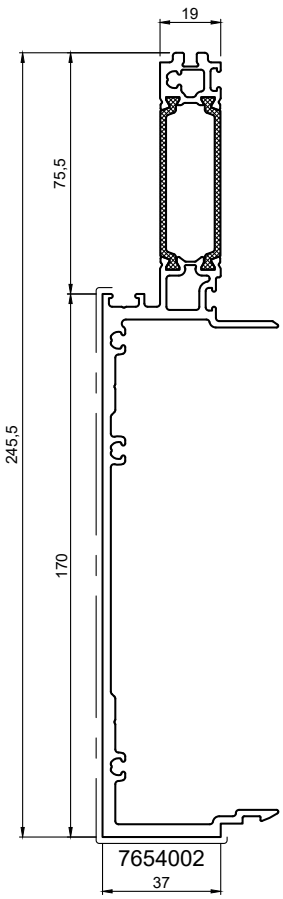
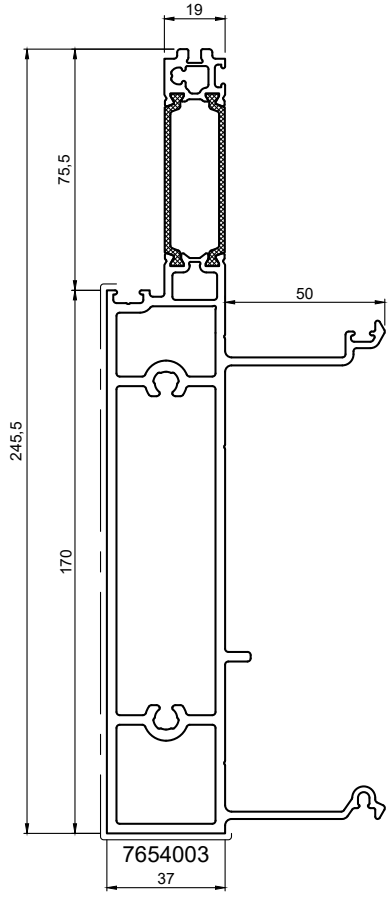
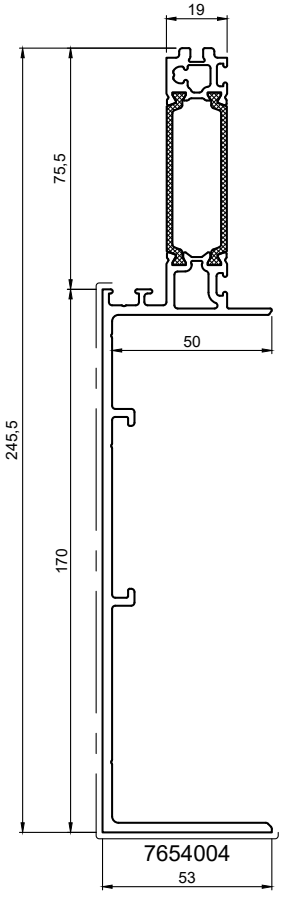
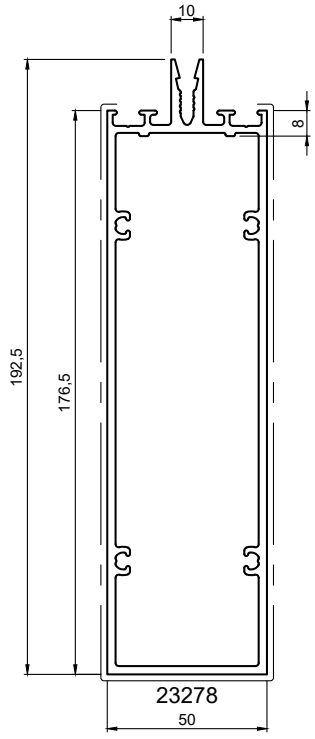
FRAME PROFILES











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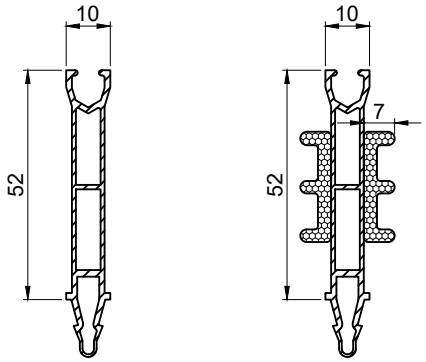
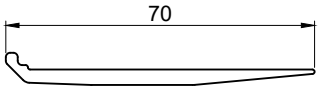
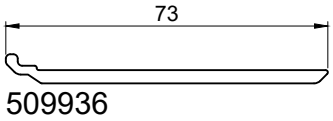
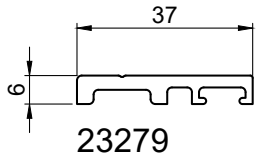






GLAZING BEADS



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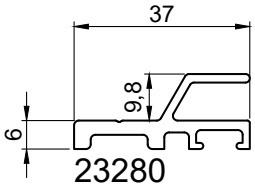

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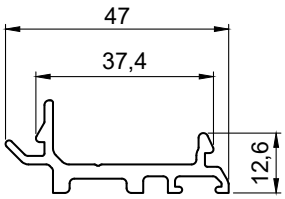

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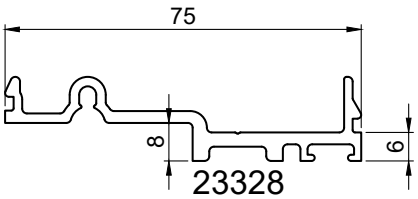

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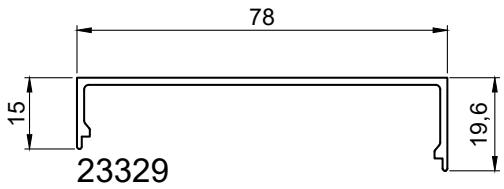
COVER STRIPS



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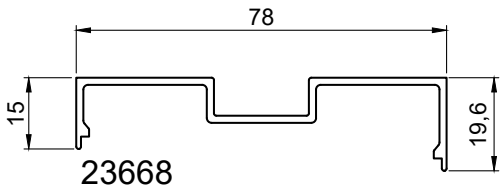

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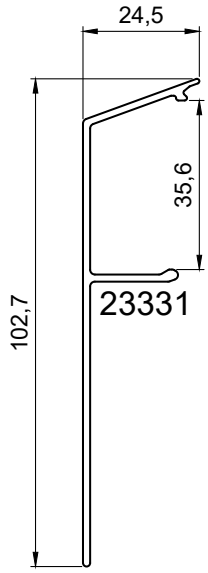

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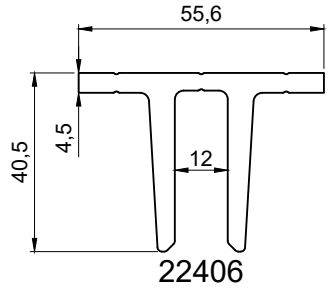
ACCESSORY PROFILES



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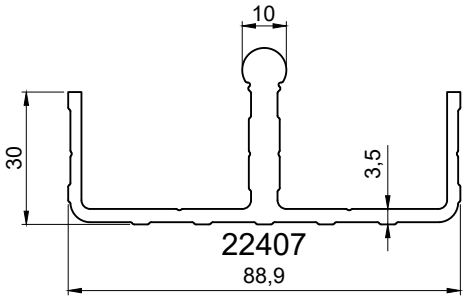

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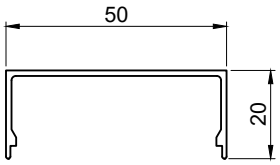

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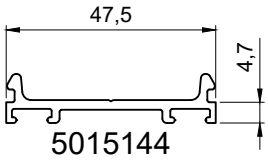

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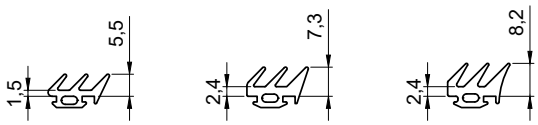
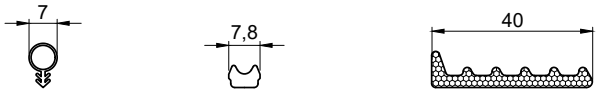
GASKETS

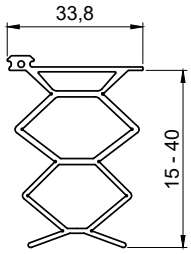


PX1 PX2 PX3

FG5 FG12

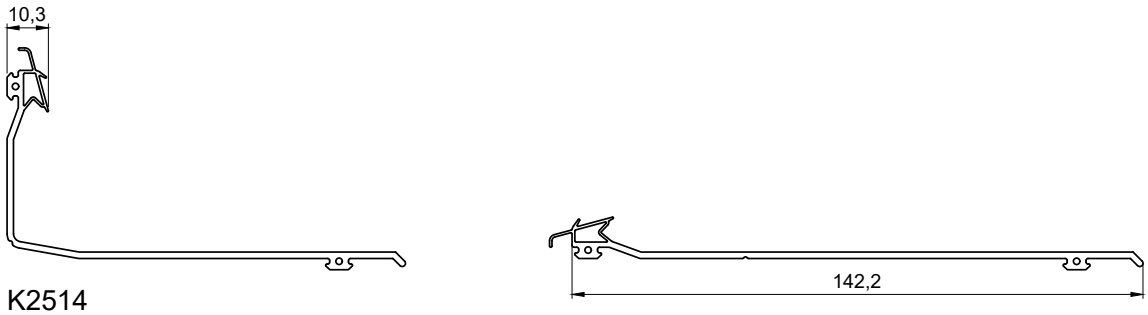


ET1 ET2 PE2



EF1

K2516 K2515



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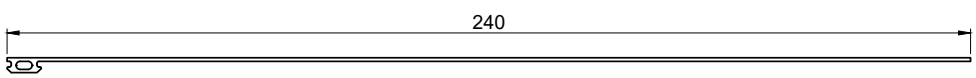
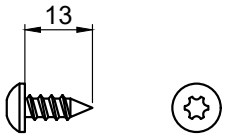


ET240

SCREWS

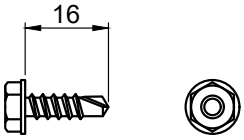
Screw 4,8x13
DIN 7976 A2

JMRUUVI4813
Package 1000 pcs.



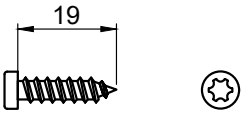
Drill screw 4,8x16
DIN 7504K A2

JMPORARUUVI4816
Package 200 pcs.



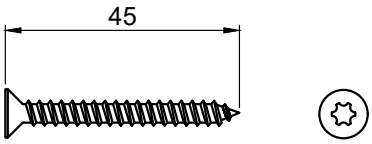
Connecting screw 4,8x19
AISI 410, T-20

JMRUUVI4819
Package 500 pcs.



Screw 4,8x45
DIN 7982T A2, T-25

JMRUUVI4845
Package 200 pcs.



Screw 4,8x50
DIN 912 A2, T-25

JMKIINNITYSRUUVI4850
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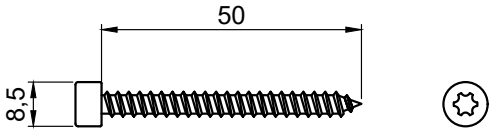
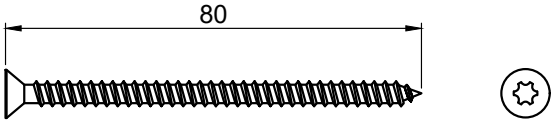


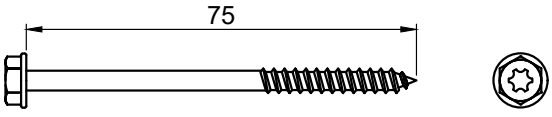
Glazing screw 4,8x80
DIN 7982 A2, T-25

JMUPPOKANTARUUVI4880
Package 200 pcs.



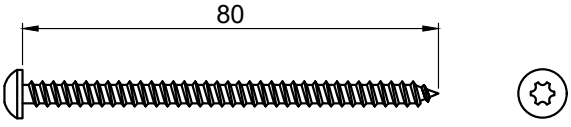
Glazing screw 4,8x75/30
DIN 7976 A2, T-25

JMRUUVI4875
Package 200 pcs.



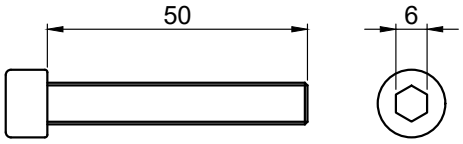
Glazing screw 4,8x80
ISO 14585-C A2, T-25

JMRUUVI4880
Package 250 pcs.

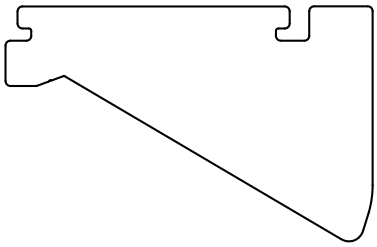


Bolt M8x50
DIN 912 Zn A2, Hex socket

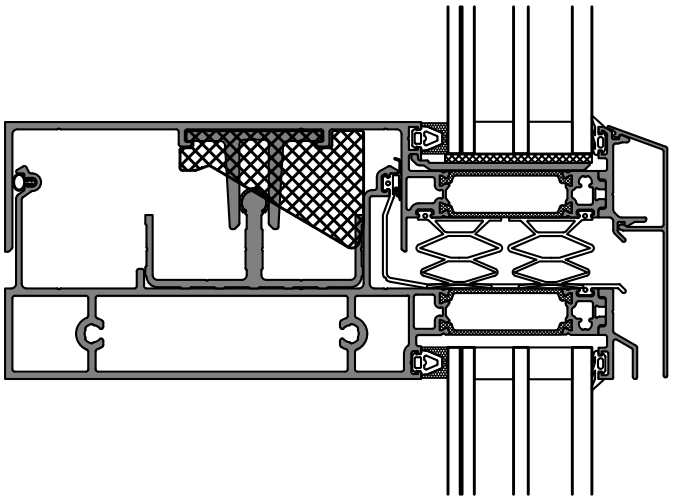
JMPULTTIM850
Package 200 pcs.

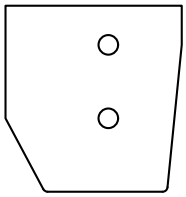


ACCESSORIES

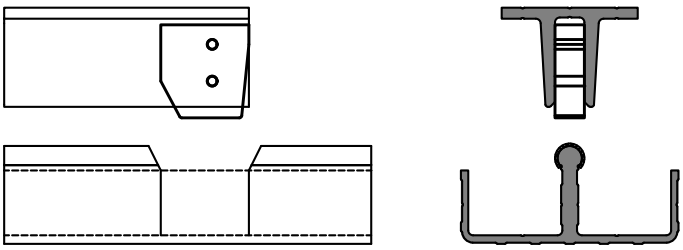


Support piece
K2545

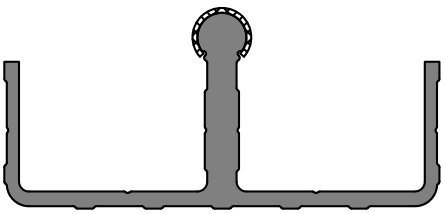




Guide piece
K2546

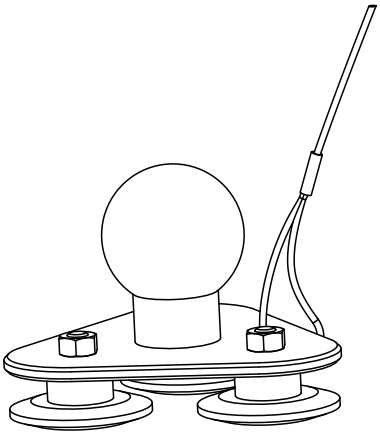


PVC - tube (or similar)
9/12.6

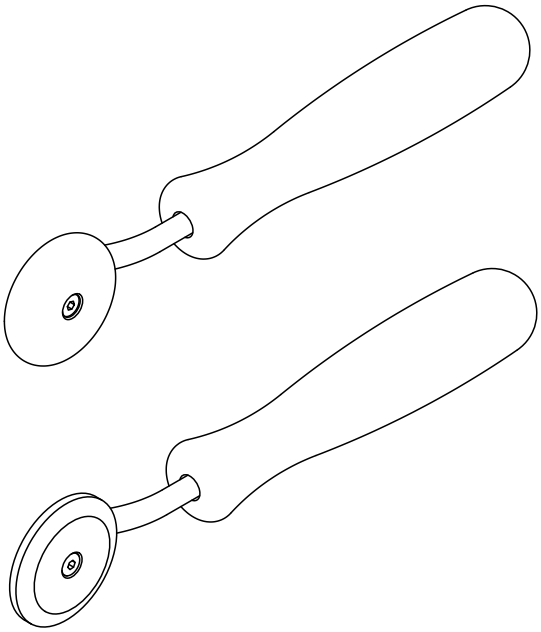


NB!
K2545 is used in elements more than 2m in width.
1pcs/ element, in the middle of the element.

TOOLS



JMK2514
Installation tool for gasket K2514

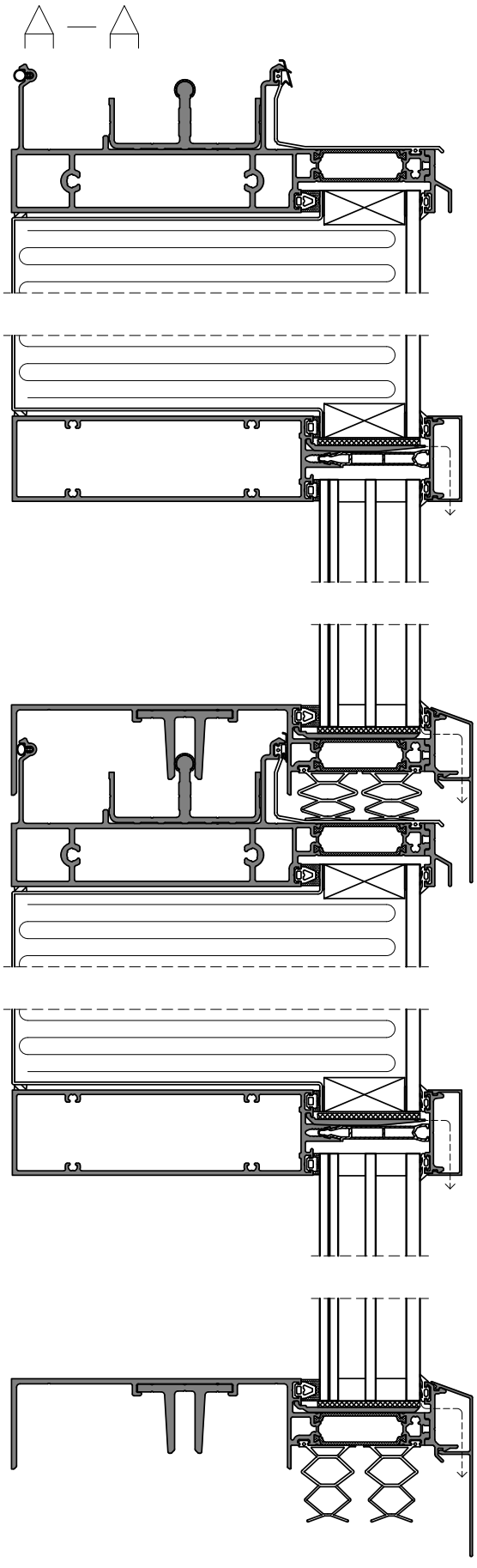


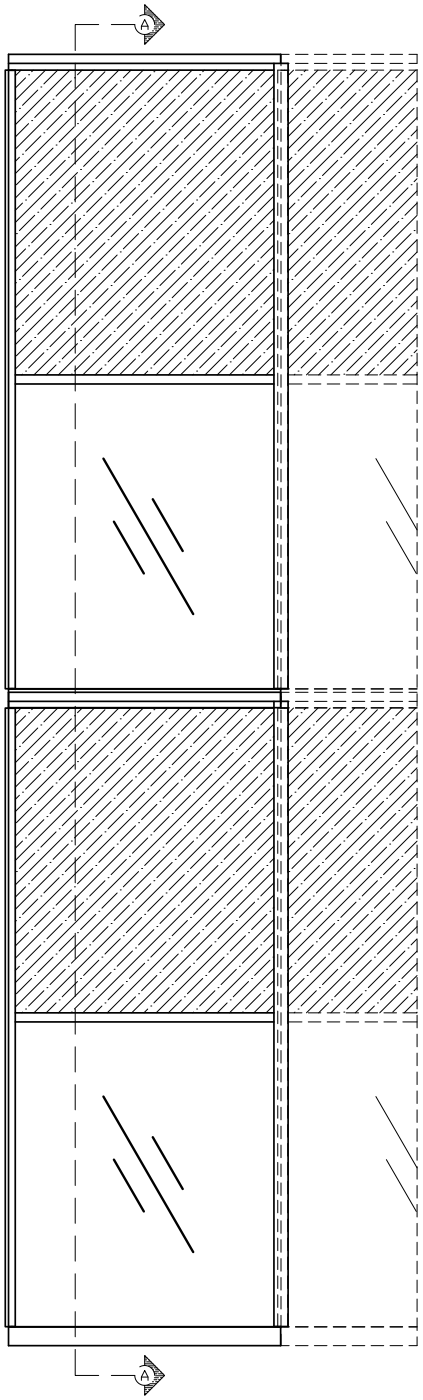
JMK2515
Installation tool for gasket K2515

JMK2516
Installation tool for gasket K2516

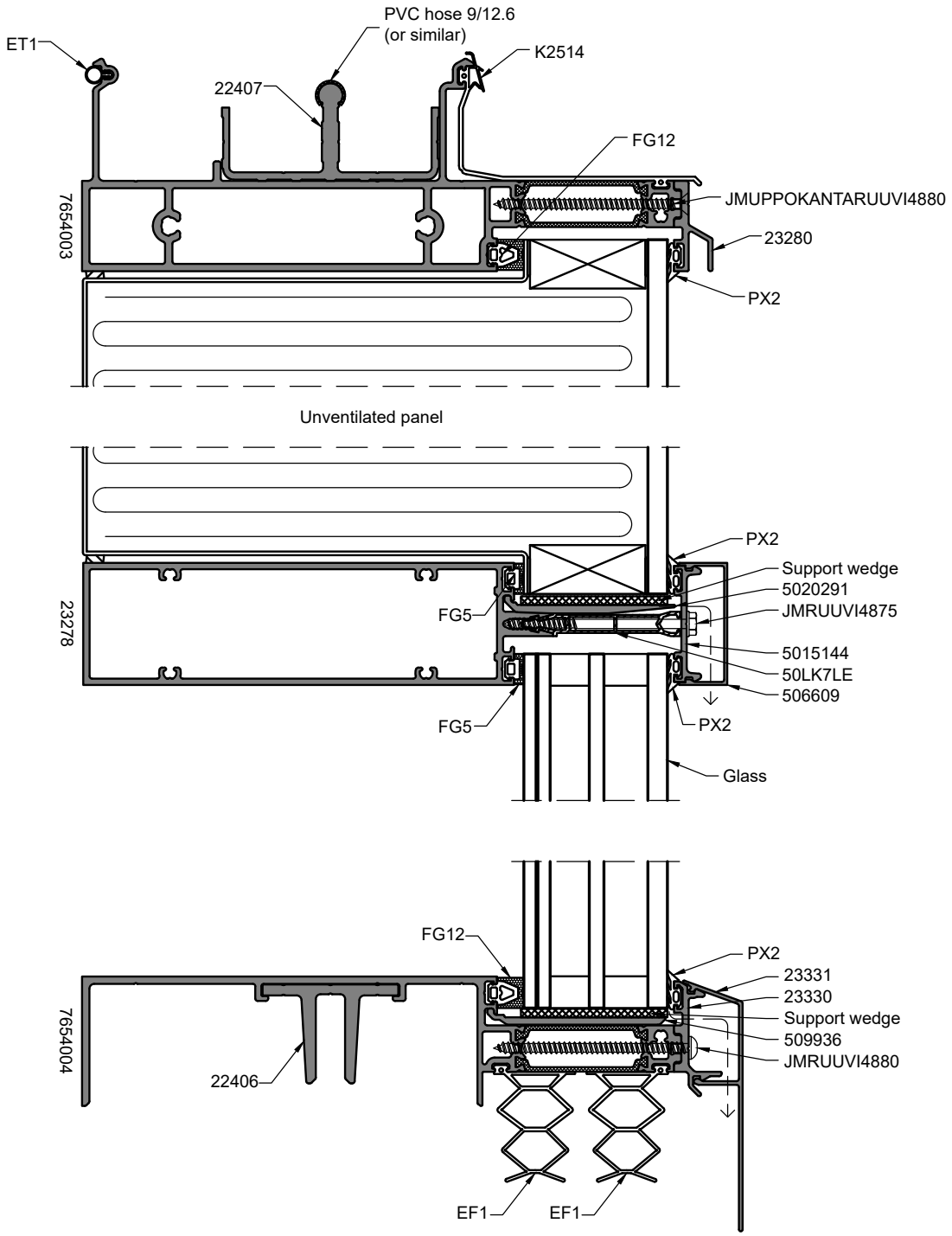
NB!
Tool JMK2514 is not in stock. Available on request.

VERTICAL SECTION



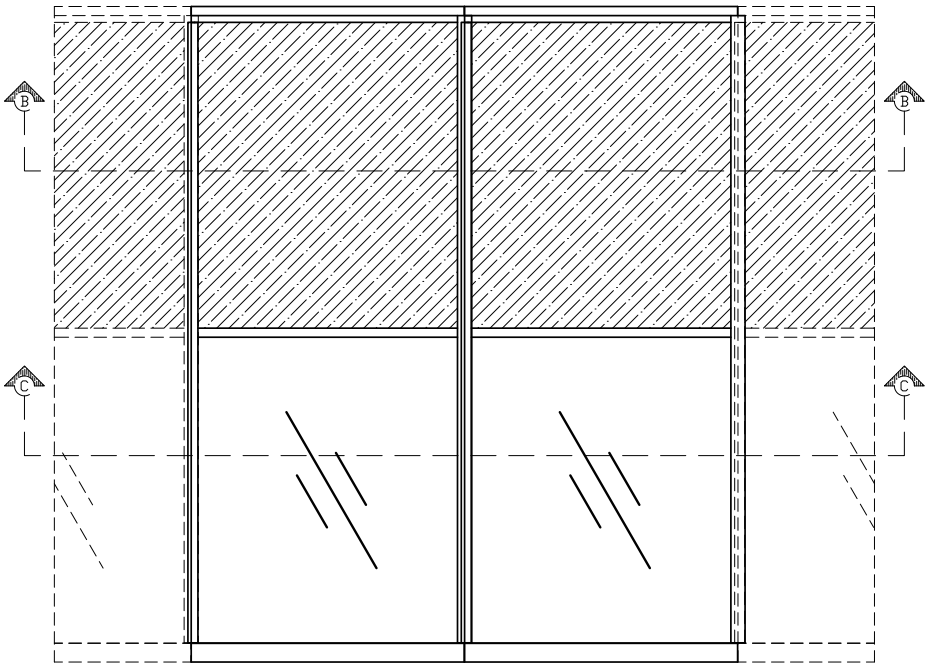


PARTS



Glazing instructions on page 7.1.1

HORIZONTAL SECTION



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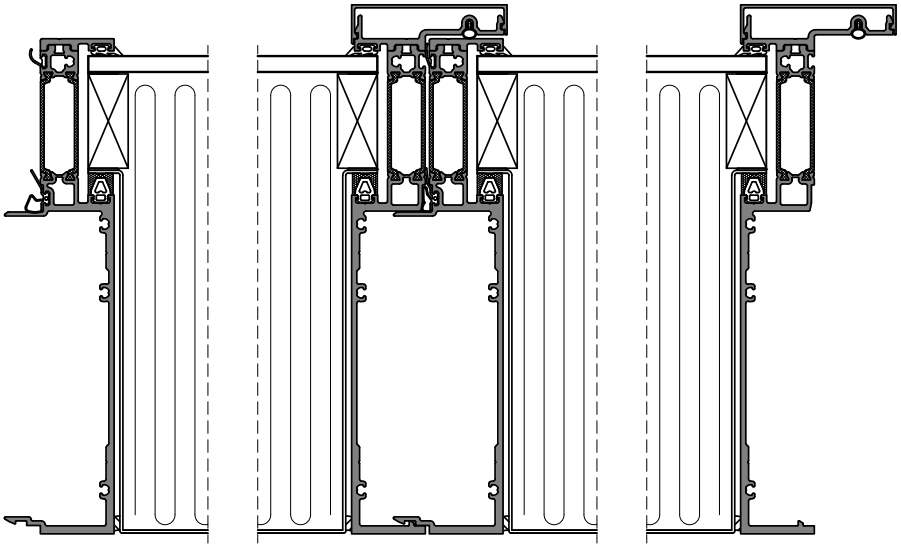
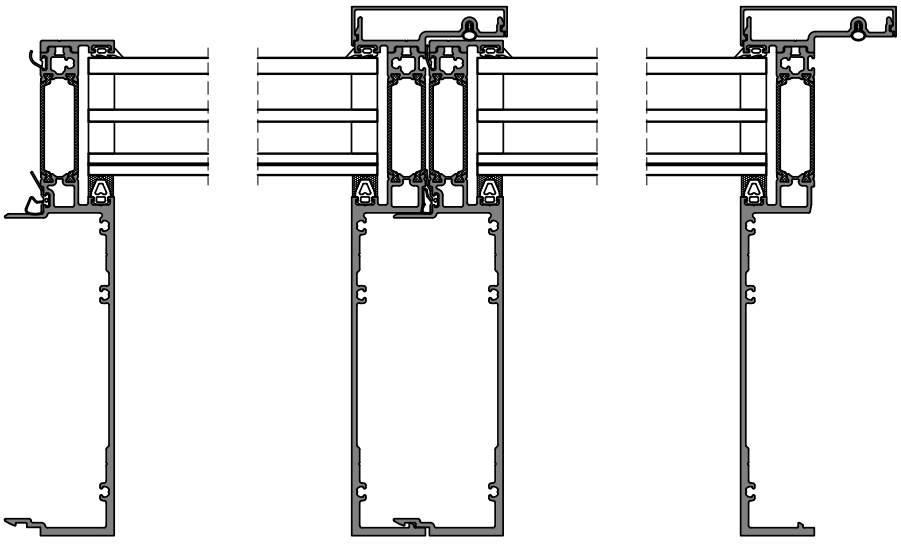


C – C



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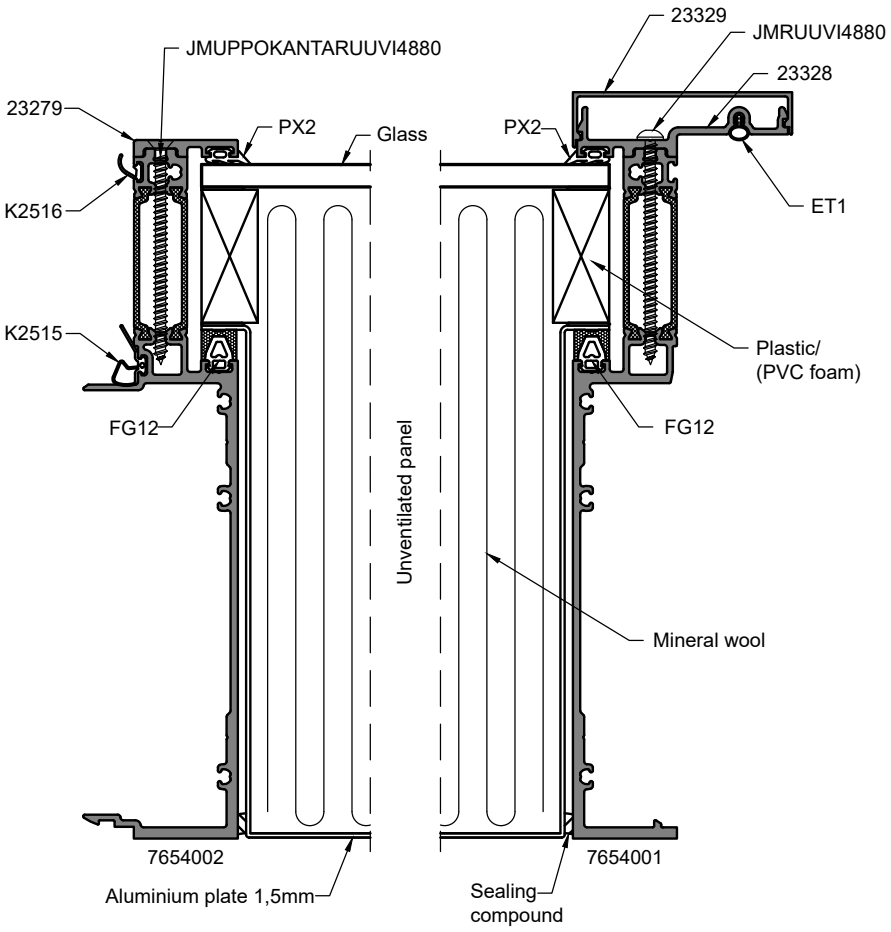
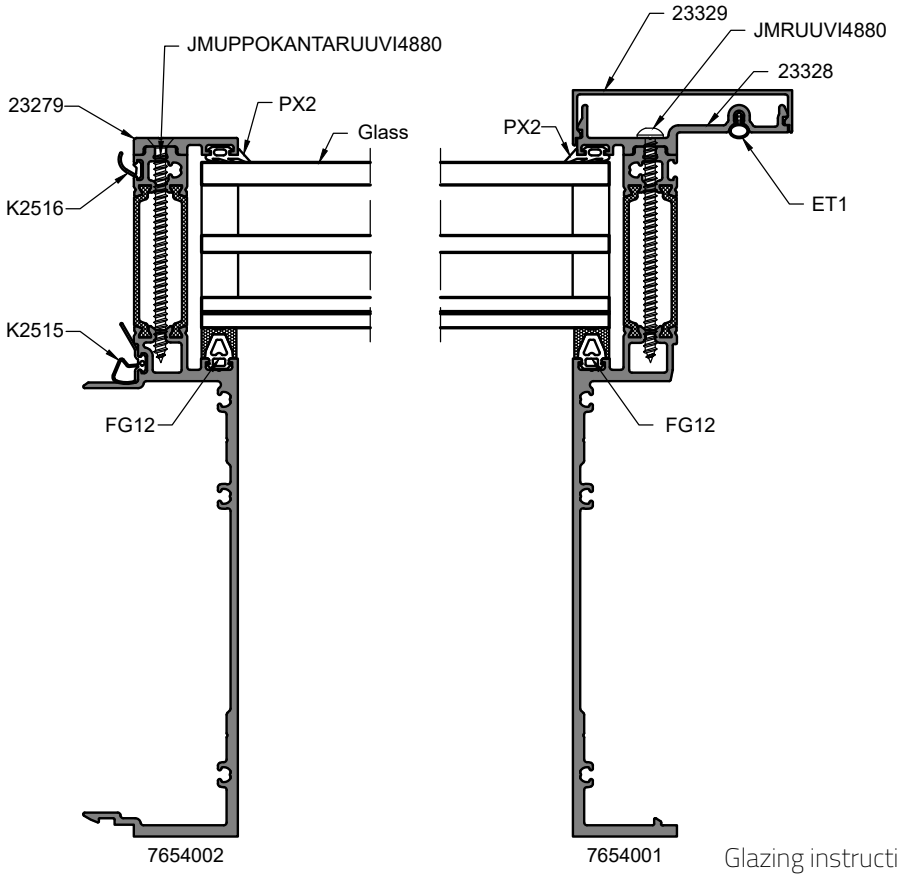
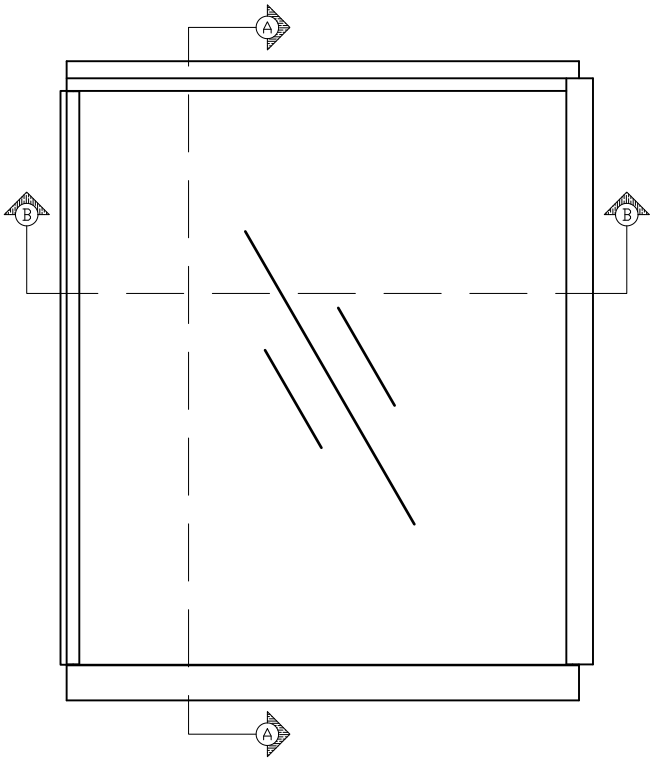
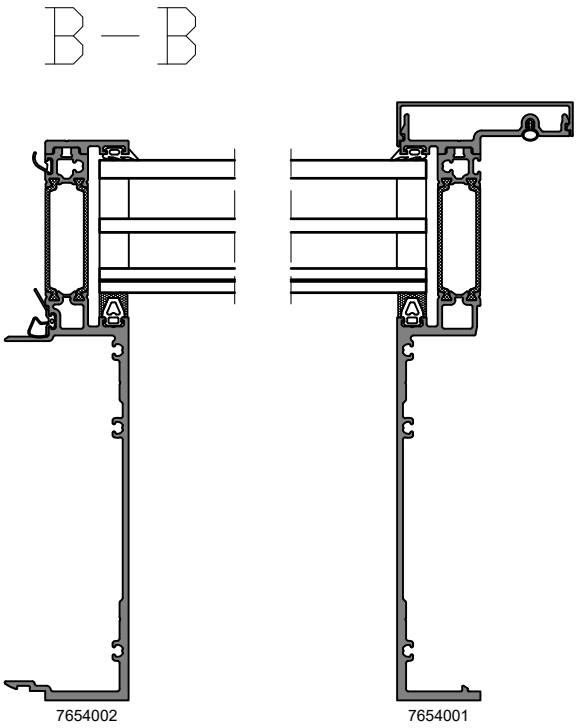


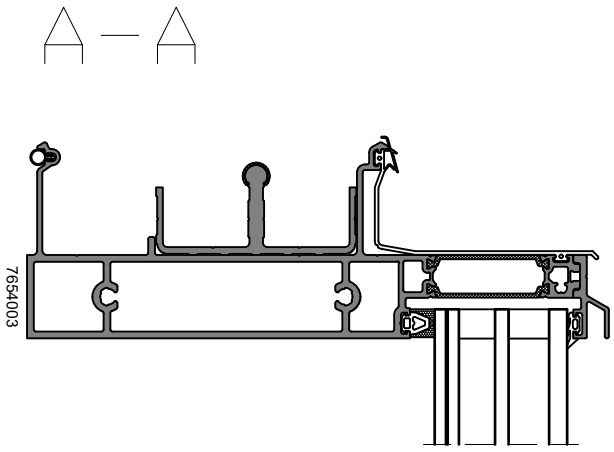


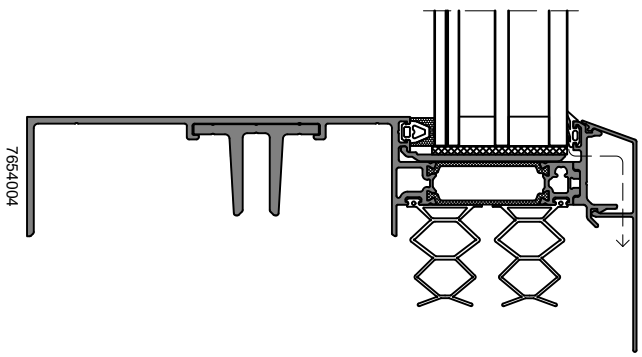
Glazing instructions on page 7.1.1

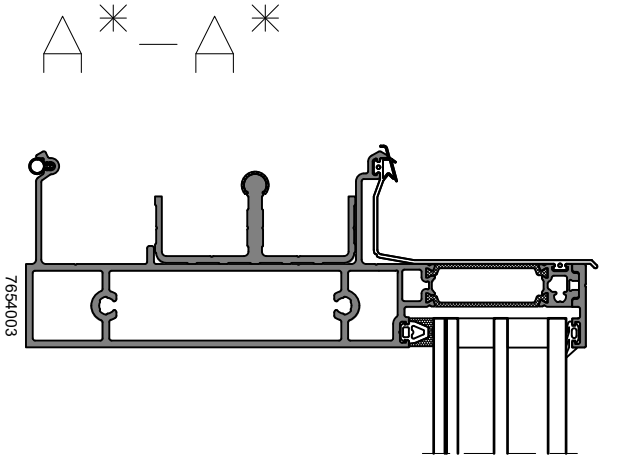
GLASS ELEMENT

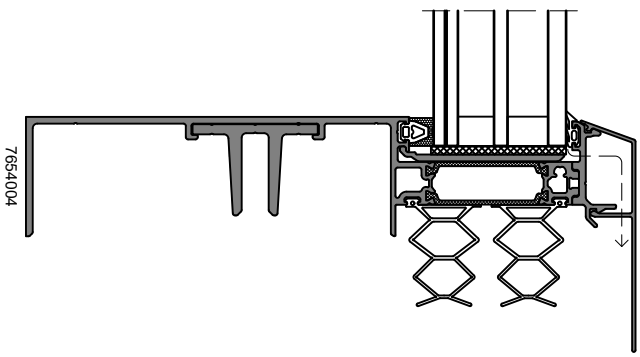




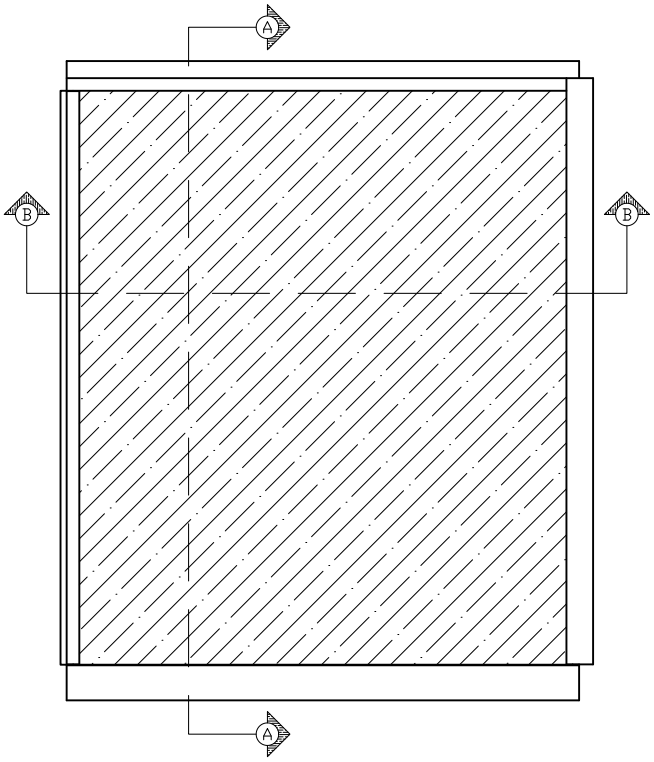


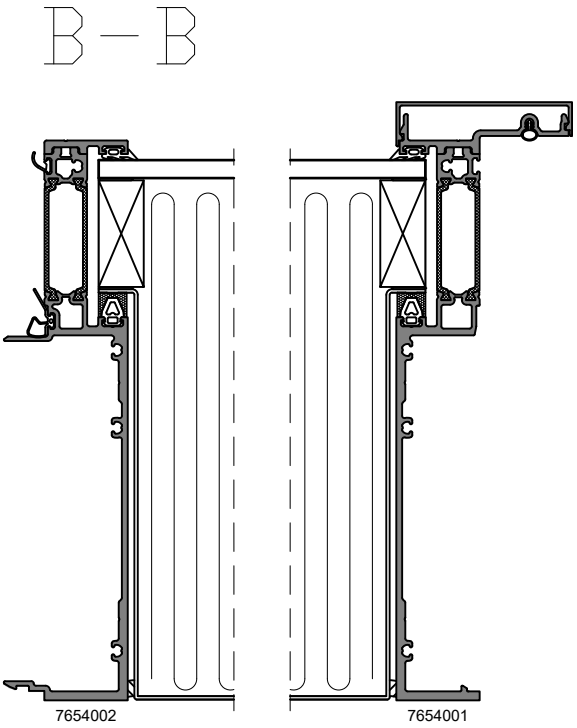


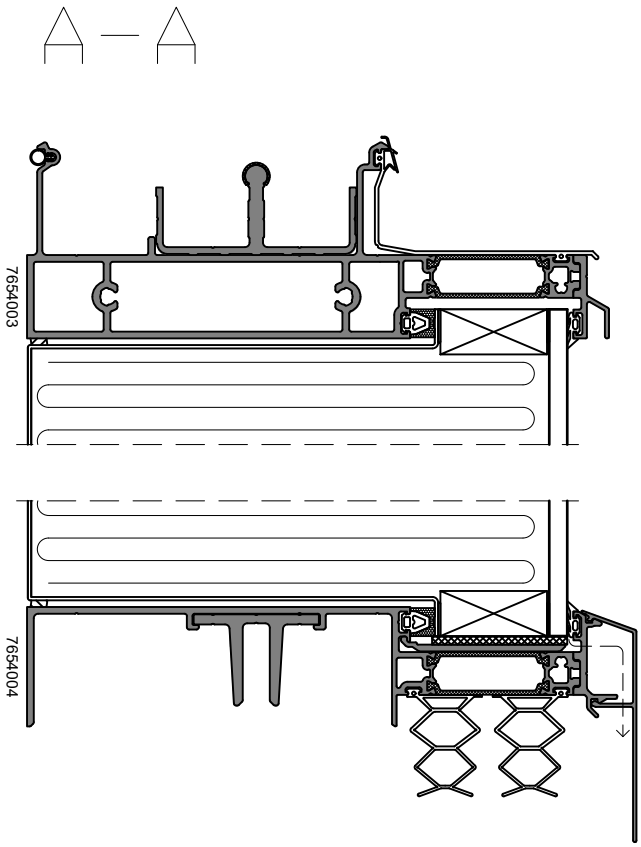


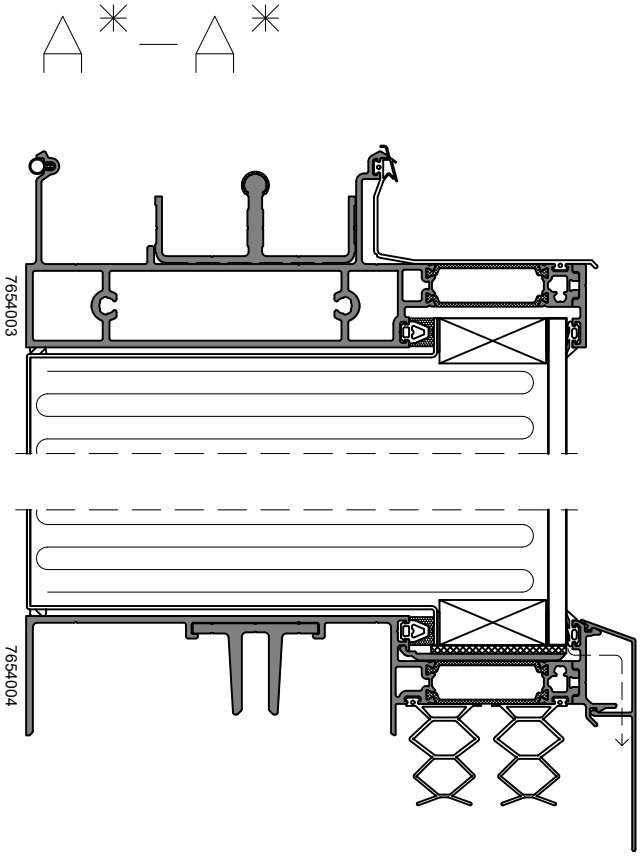


PANEL ELEMENT



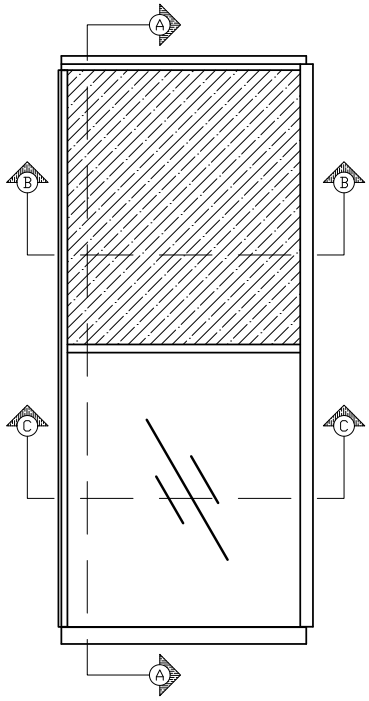




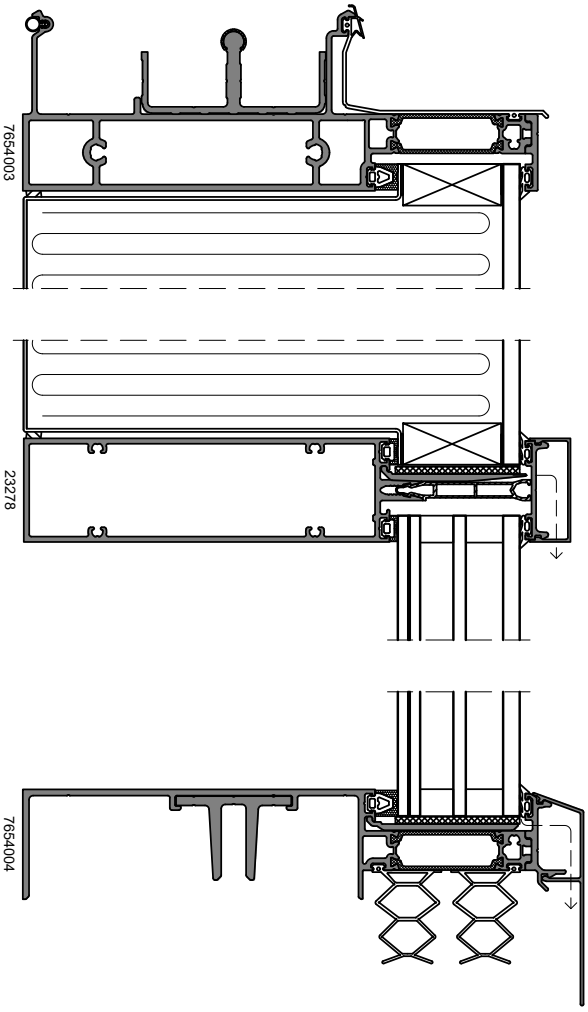


Unventilated panel

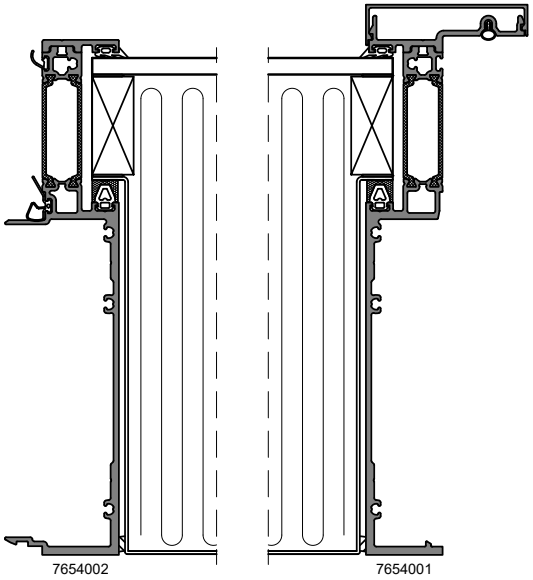
GLASS/ PANEL ELEMENT



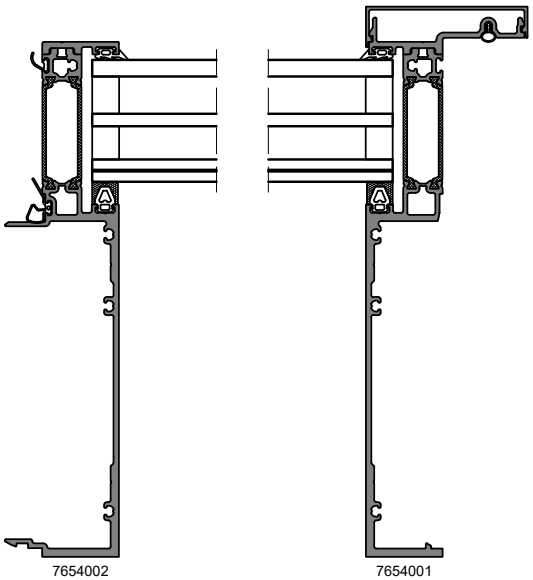
A – A



B – B

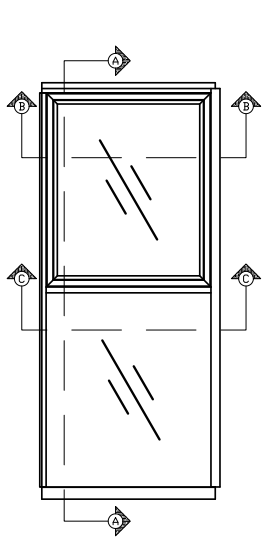


C – C

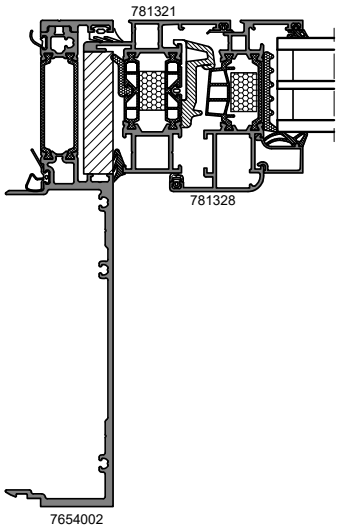


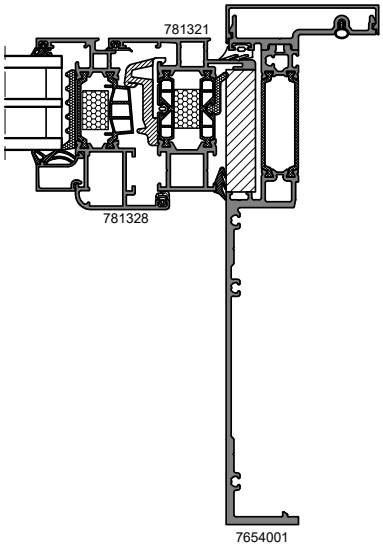
Unventilated panel

LK78X INWARD OPENING WINDOW IN P76E ELEMENT

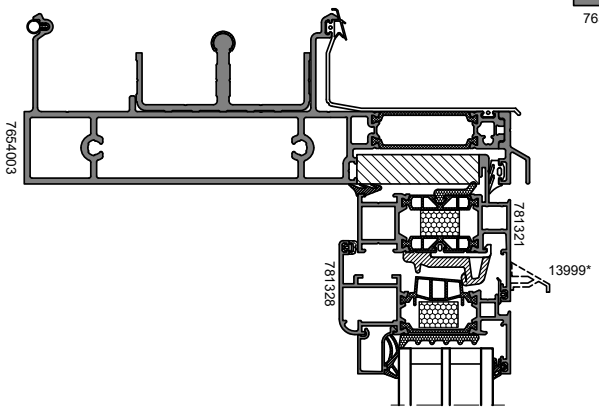


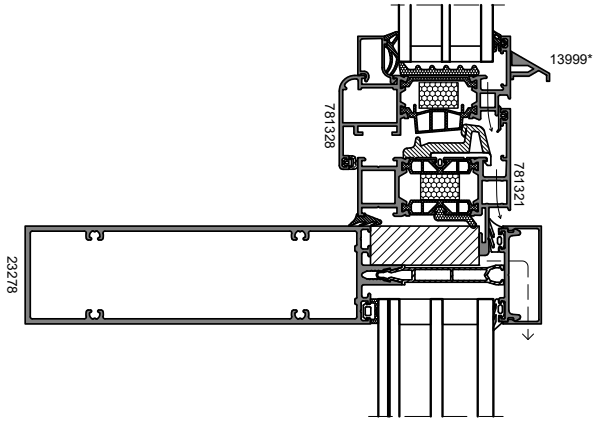
B – B

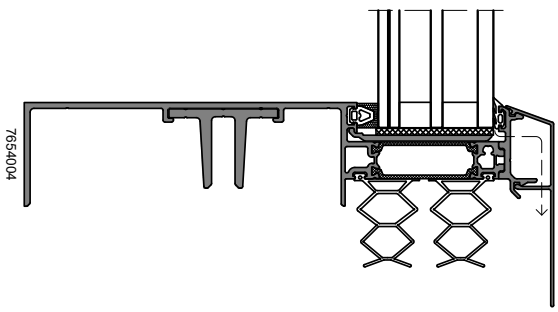




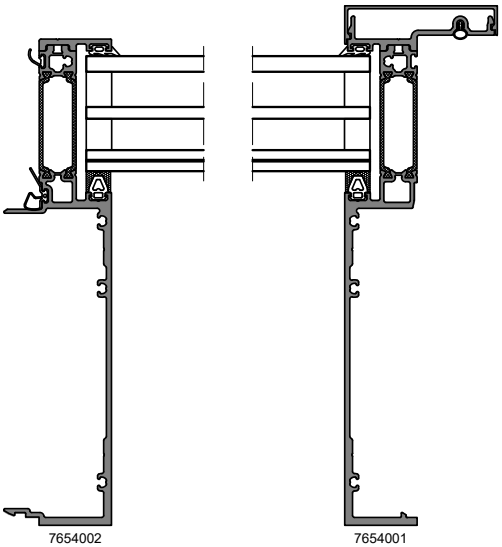
A – A



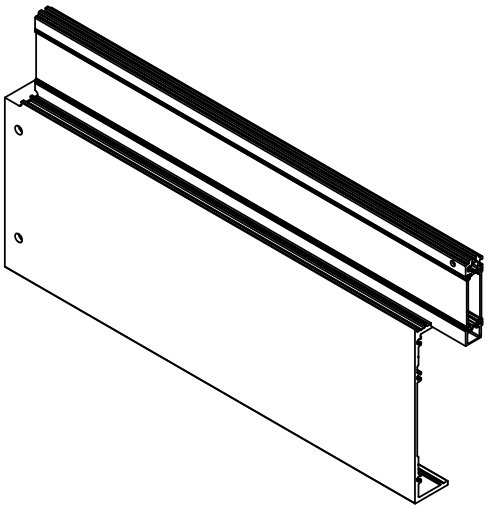


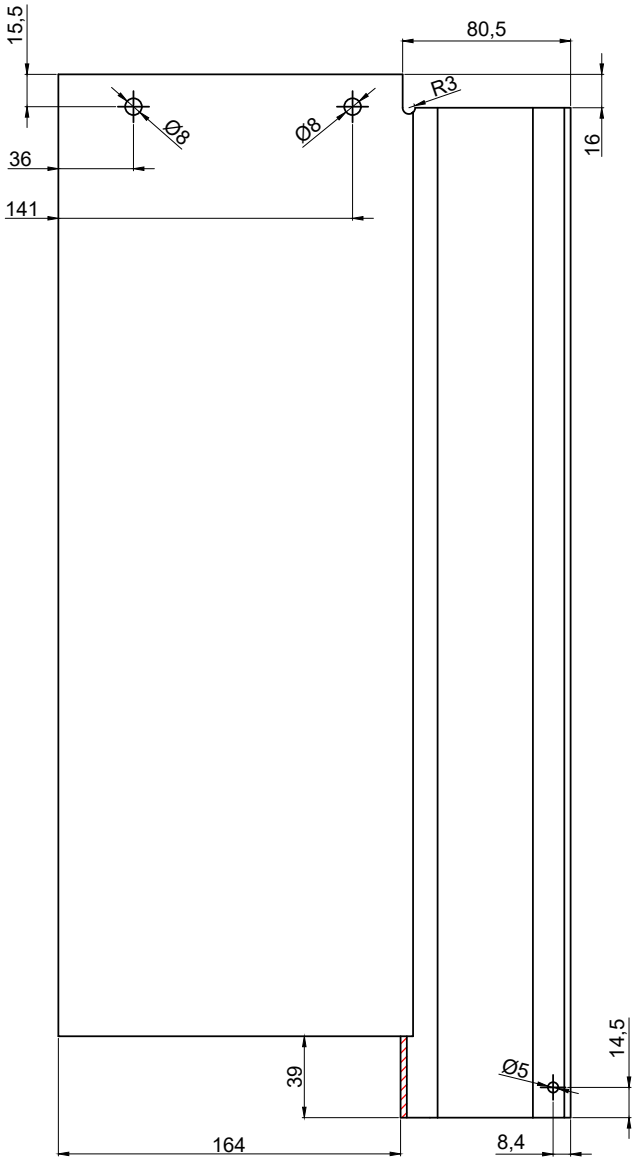


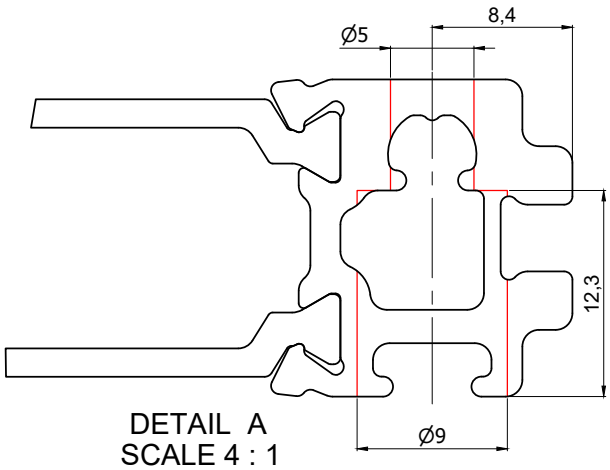
C – C



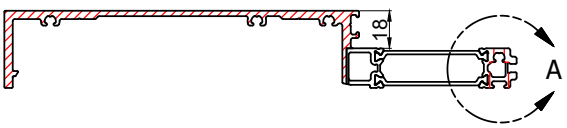
PROFILE 7654001



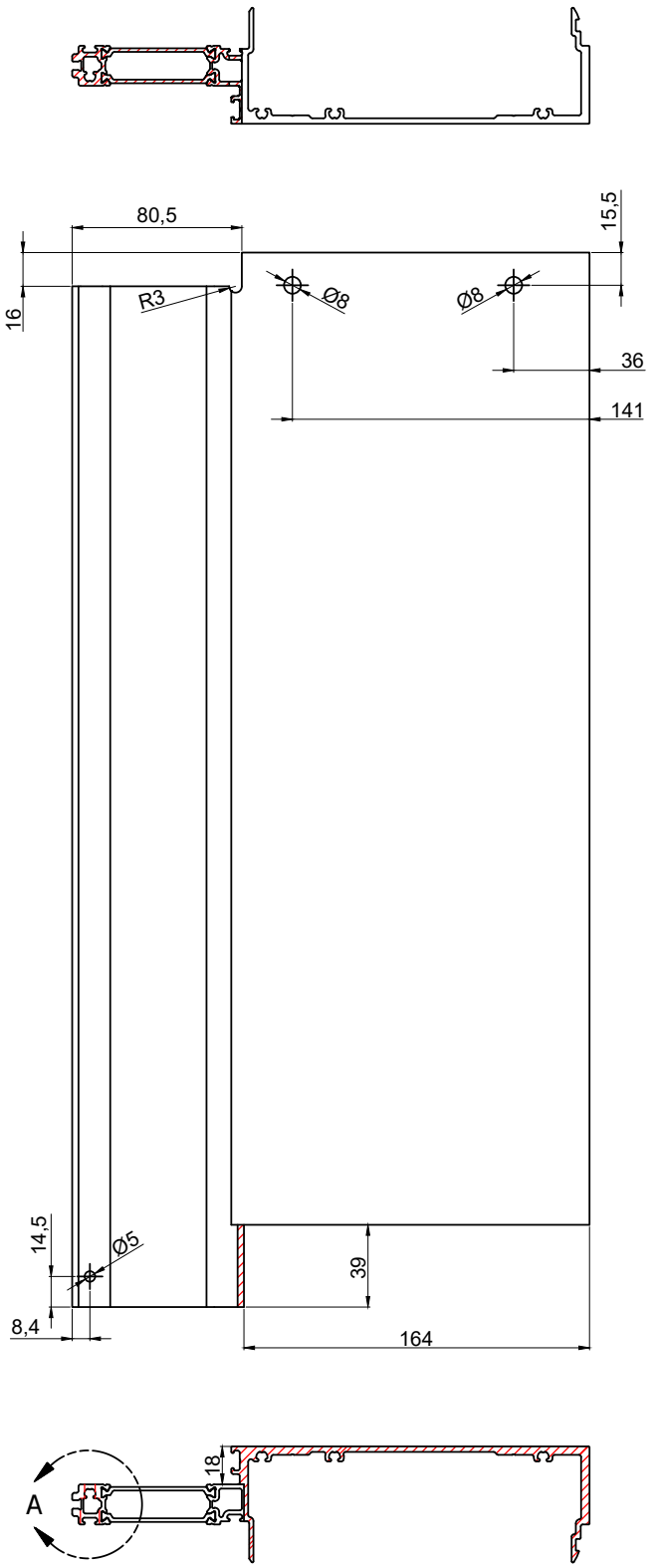


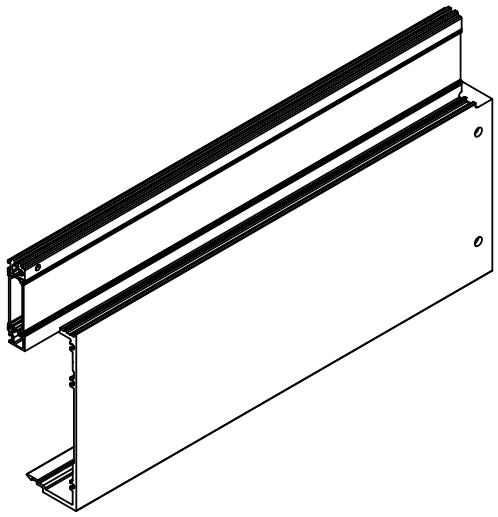


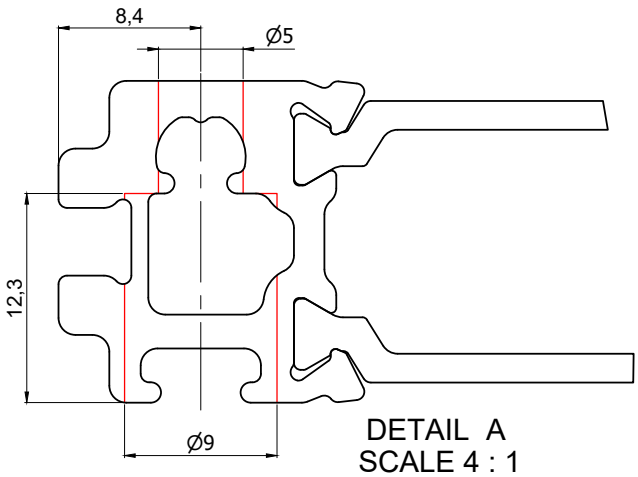
DETAIL A
SCALE 4 : 1



PROFILE 7654002

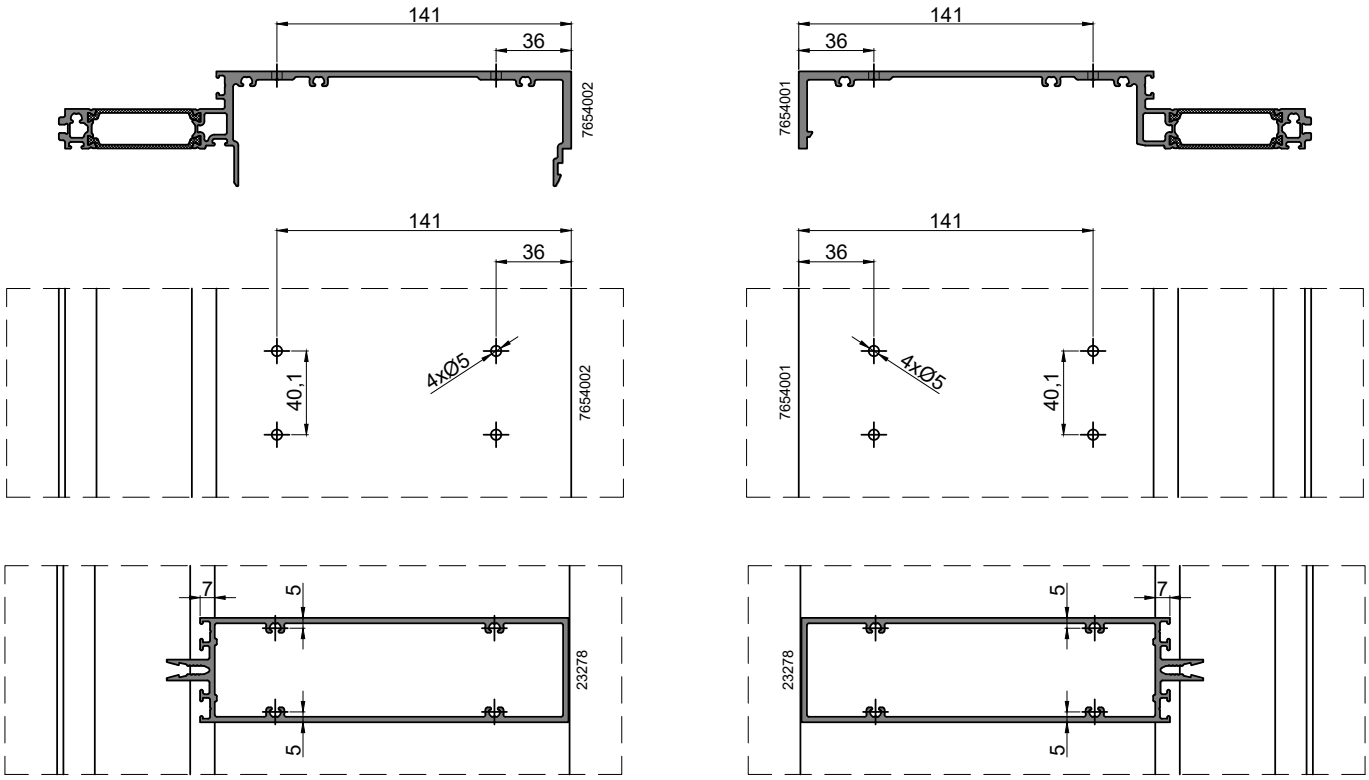


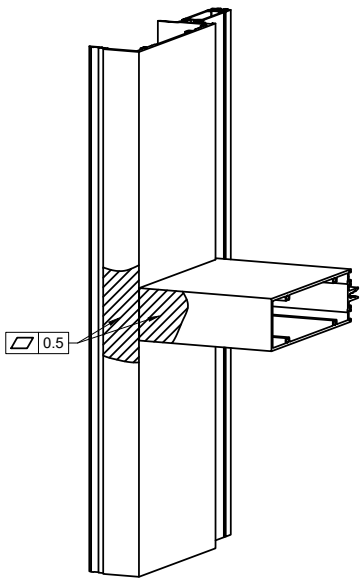




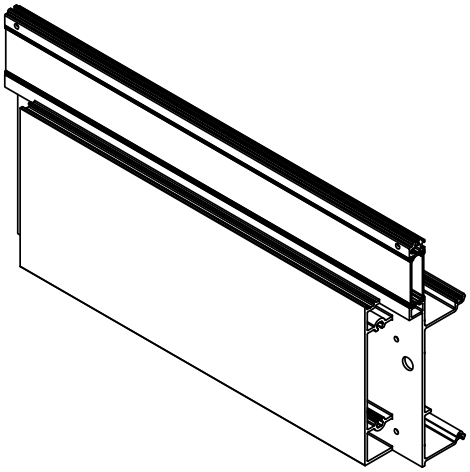
DETAIL A
SCALE 4 : 1

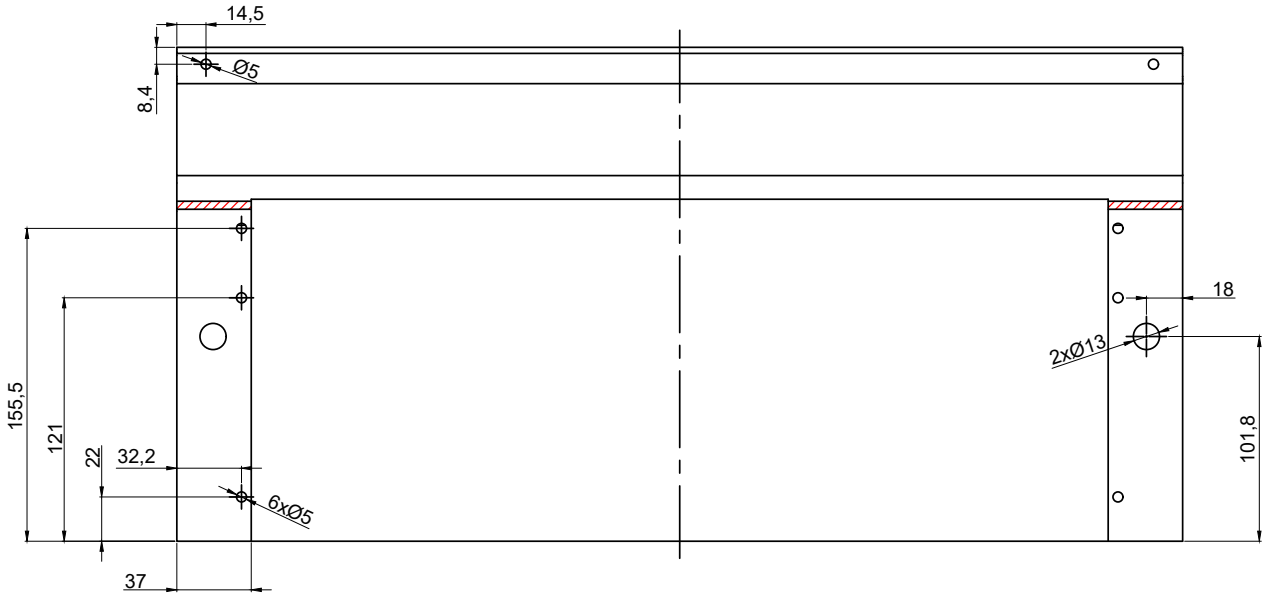
PROFILES 7654001 & 7654002
TRANSOM TO MULLION CONNECTION



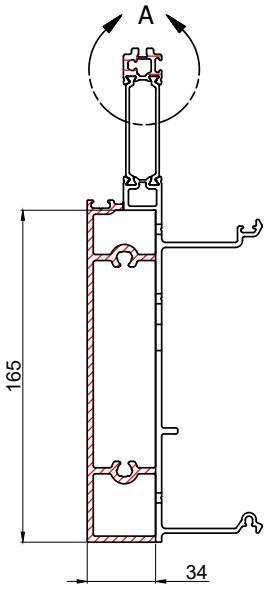


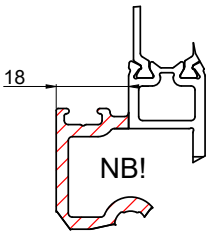
PROFILE 7654003

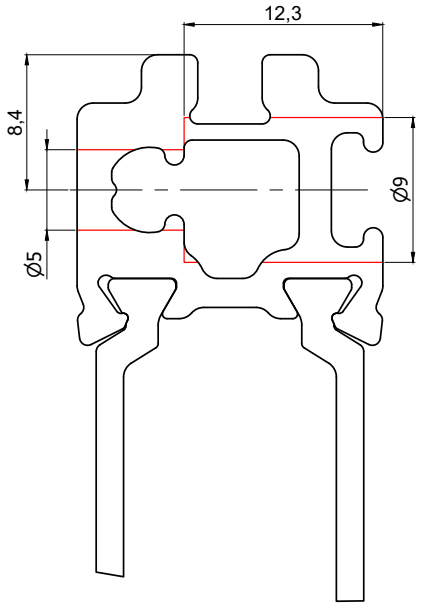




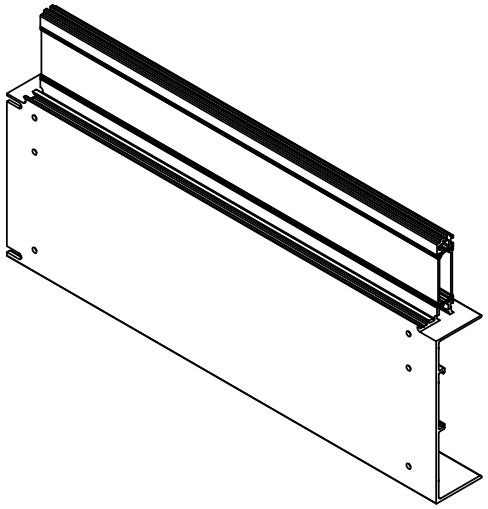
DETAIL A
SCALE 4 : 1

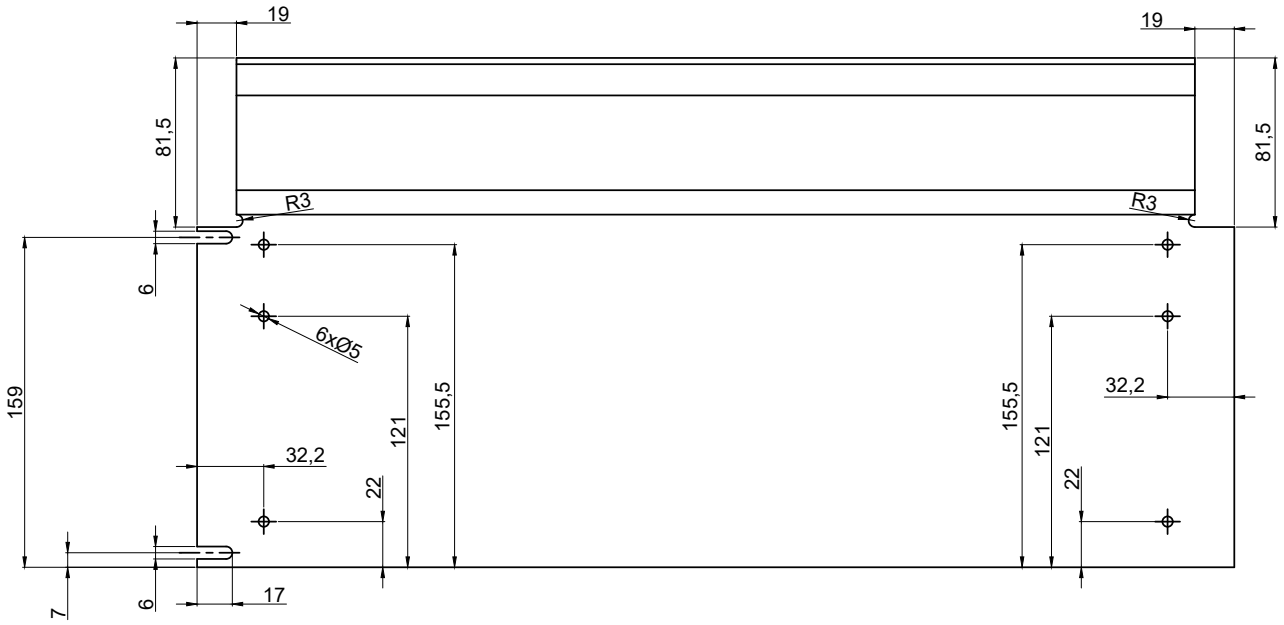


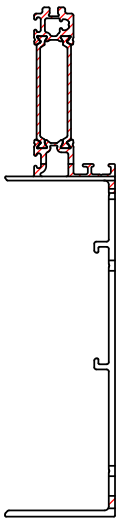


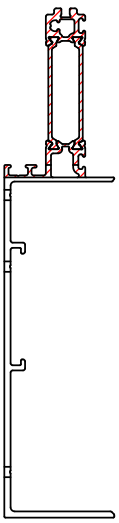


PROFILE 7654004

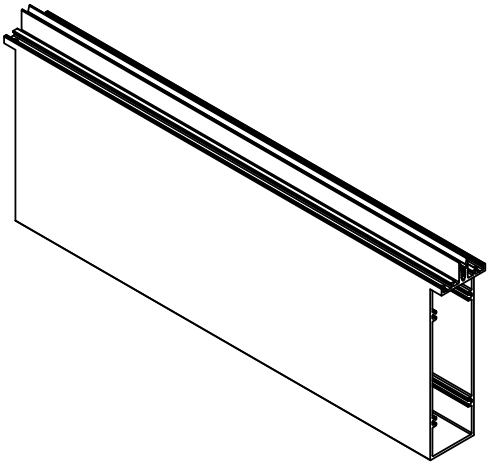


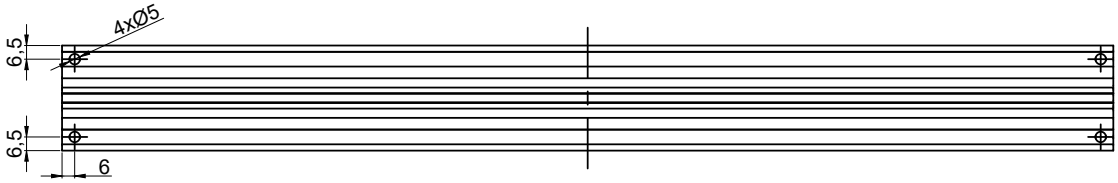


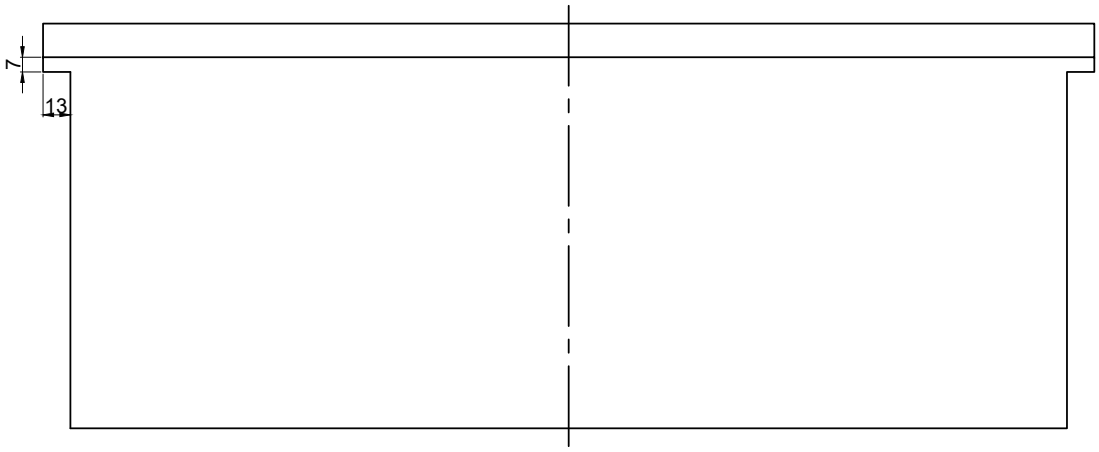


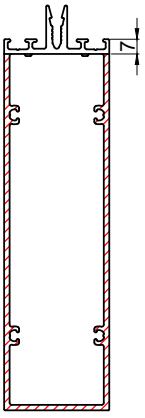


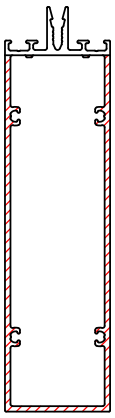
PROFILE 23278



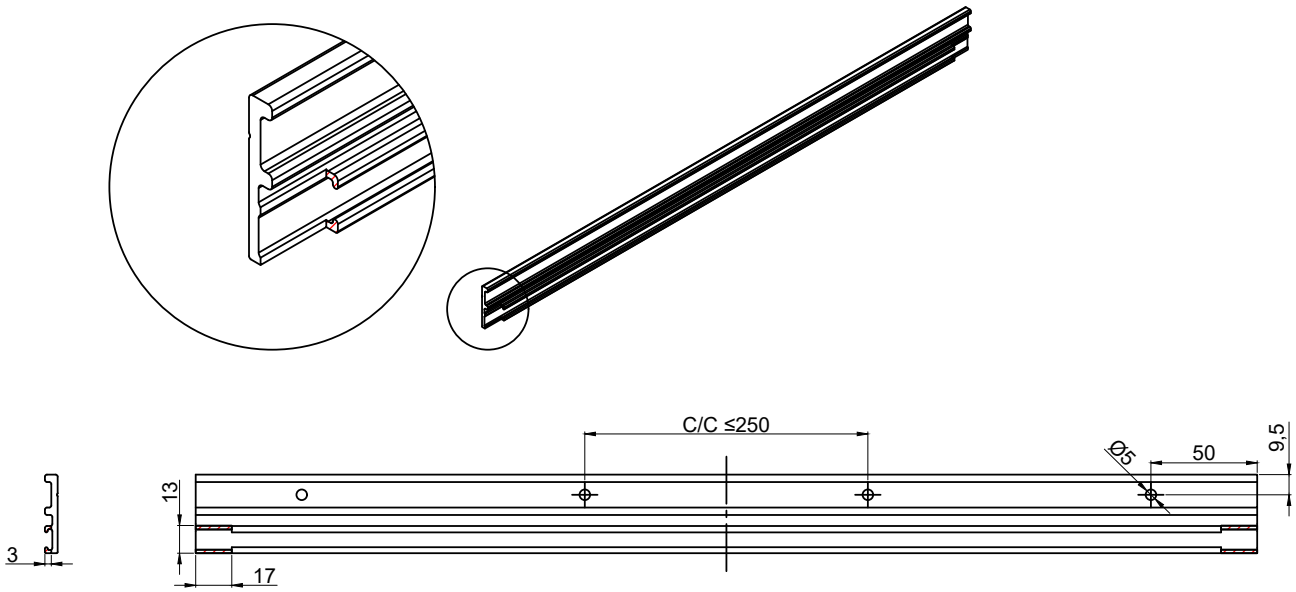




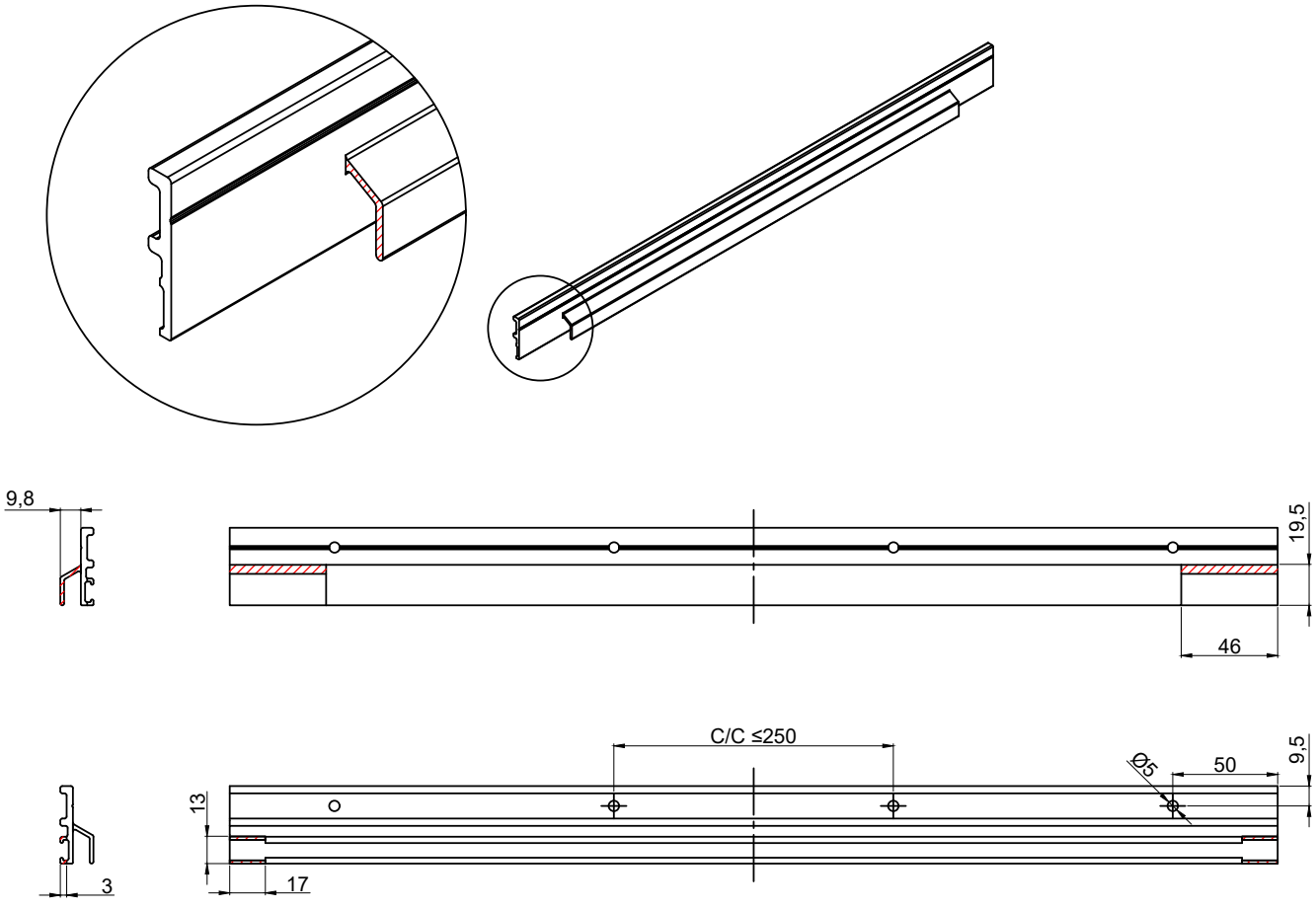




PROFILE 23279



PROFILE 23280



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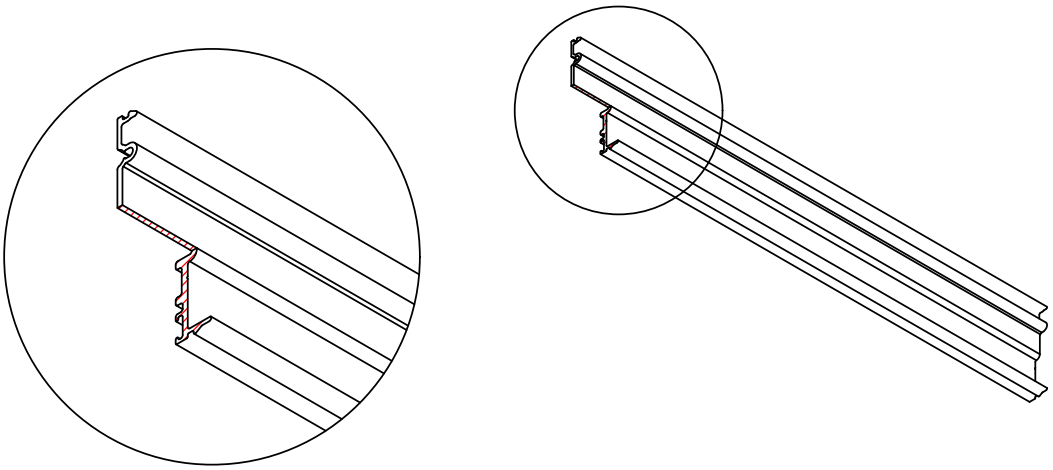
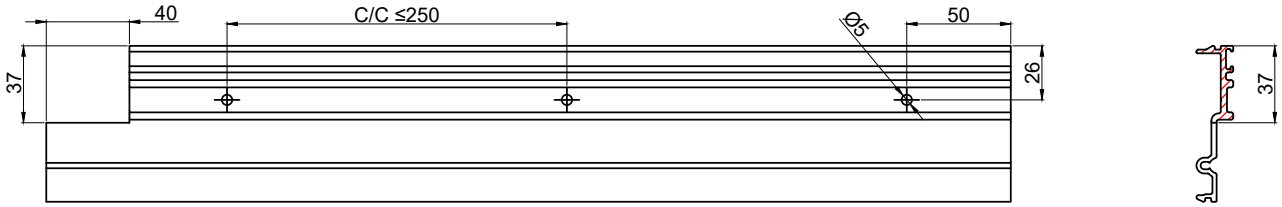
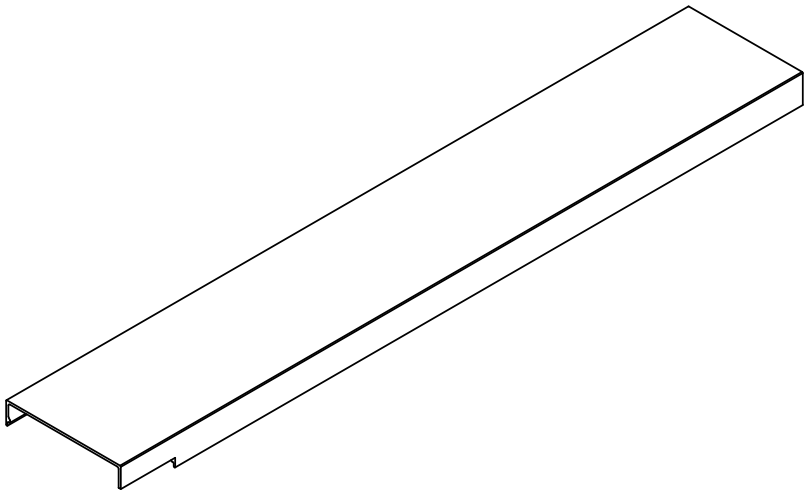
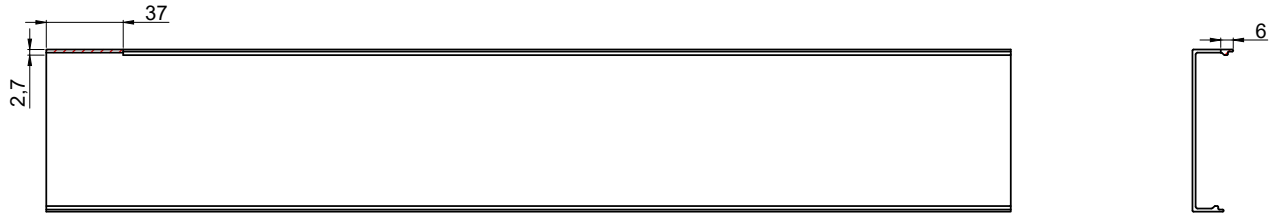


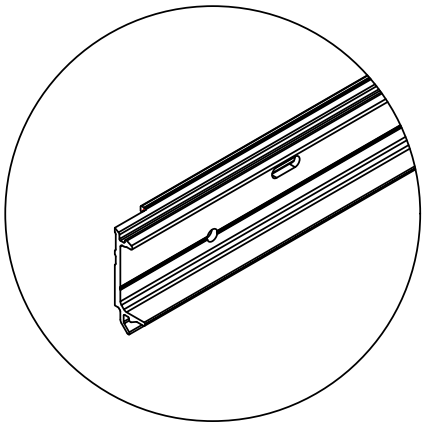


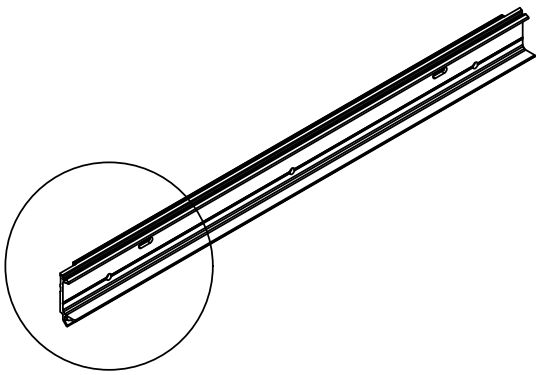
PROFILE 23329

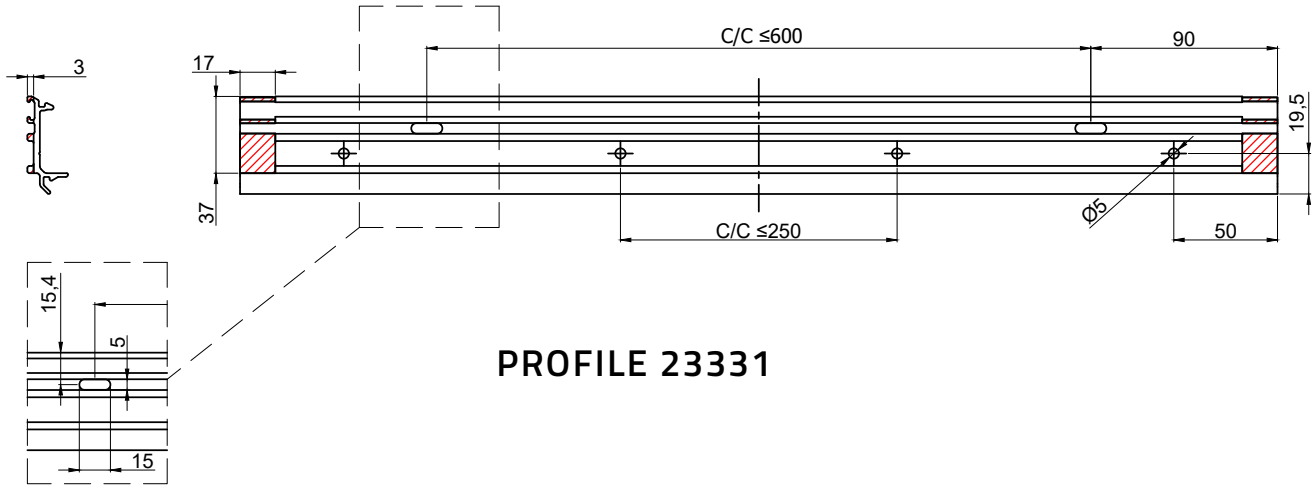




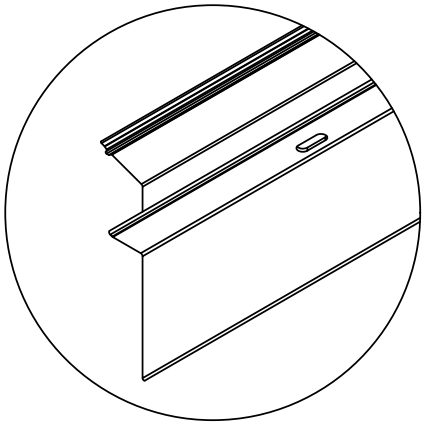
PROFILE 23330

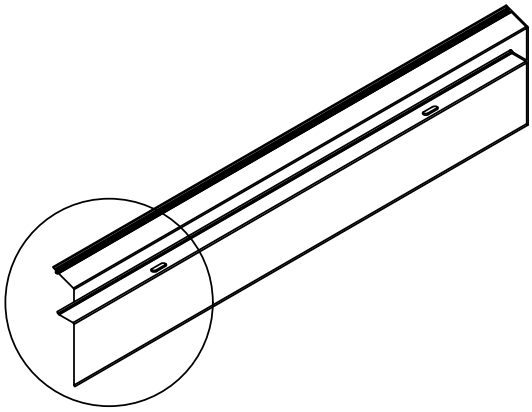


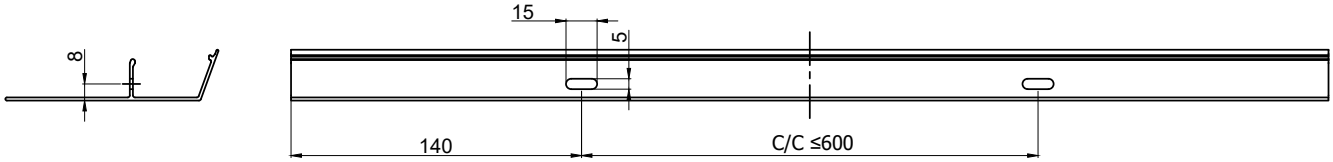




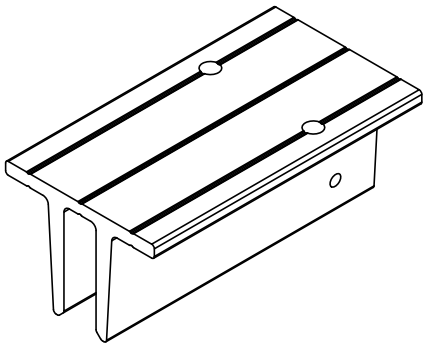
PROFILE 23331

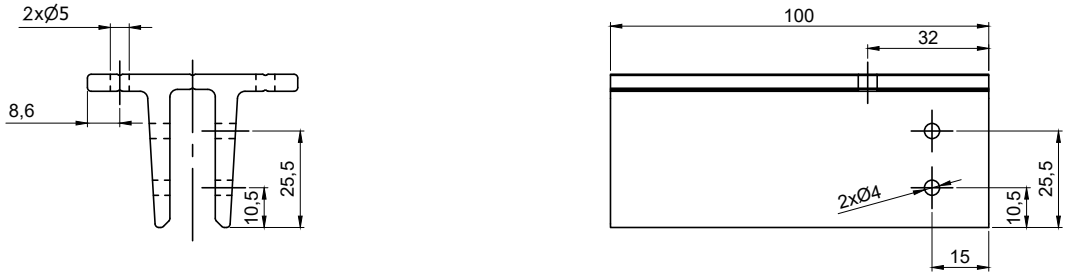




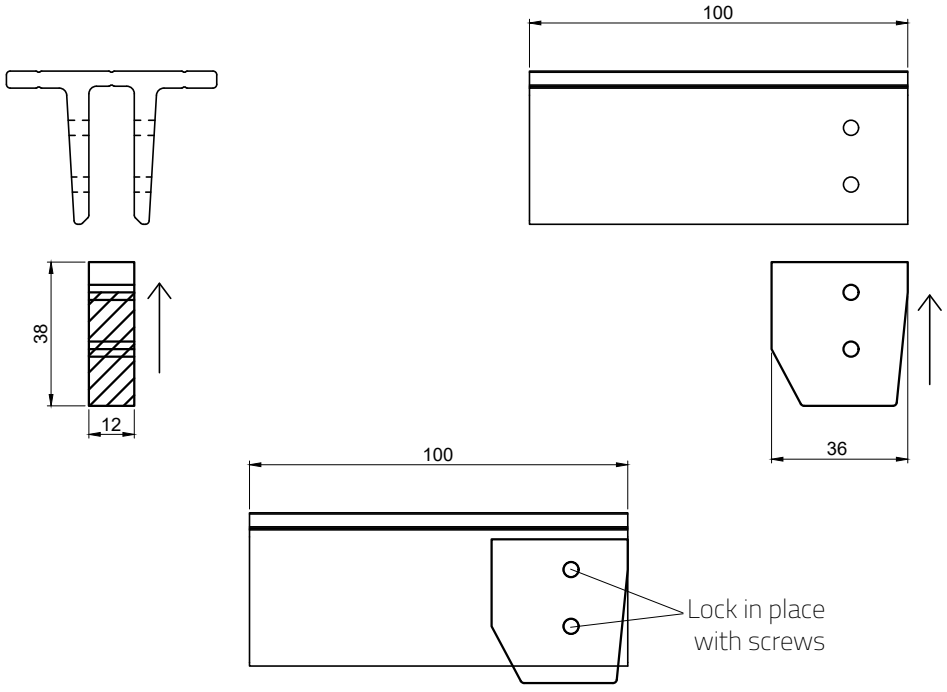


PROFILE 22406



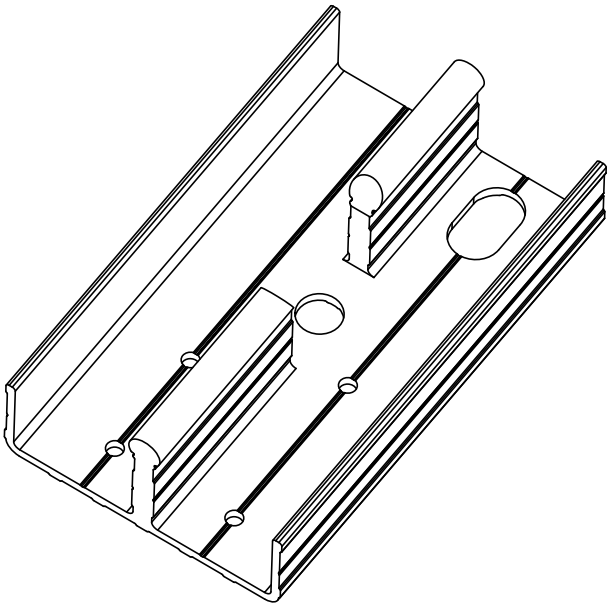


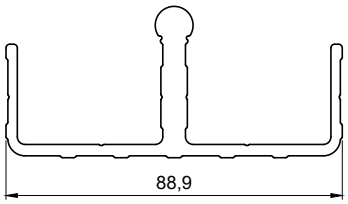
GUIDE PIECE K2546

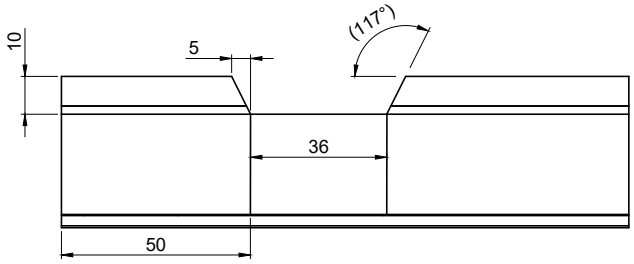


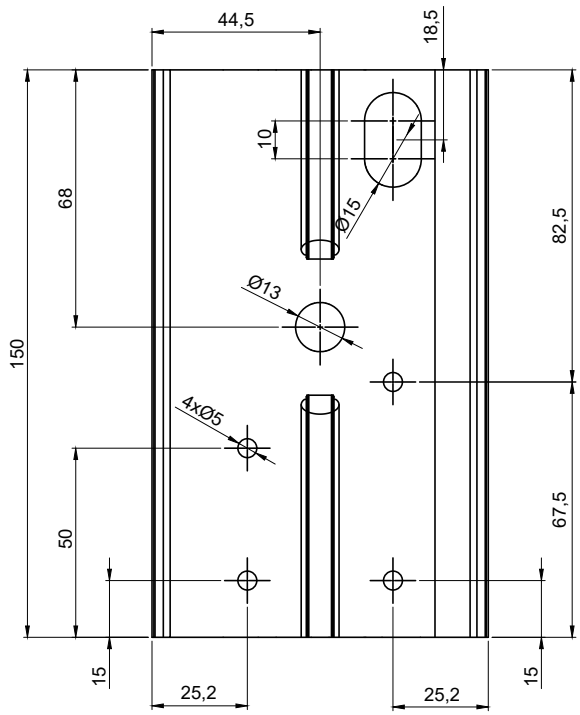
Element includes 2 pcs. P-22406 (L=100mm), one of them includes guide piece K2546

PROFILE 22407

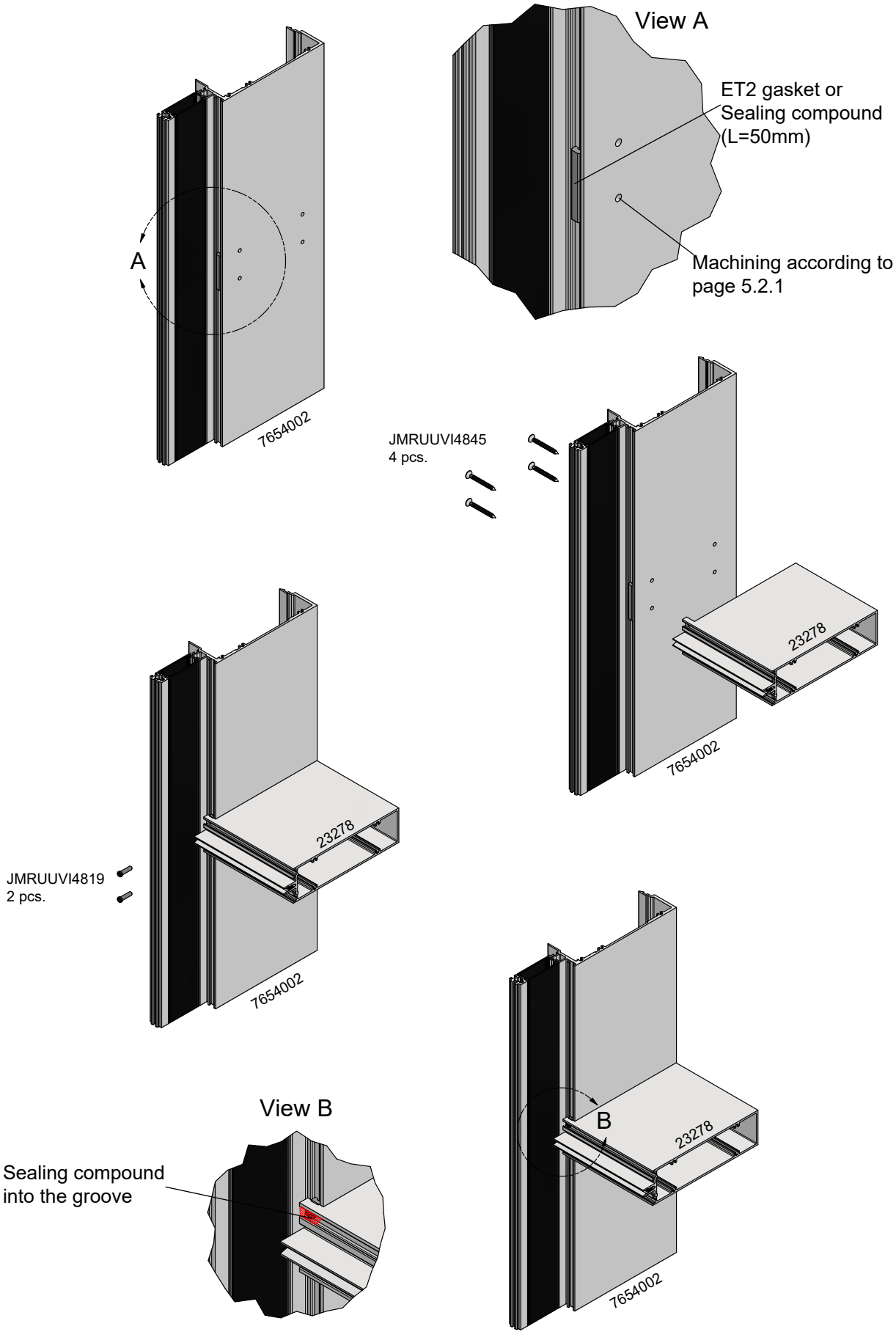




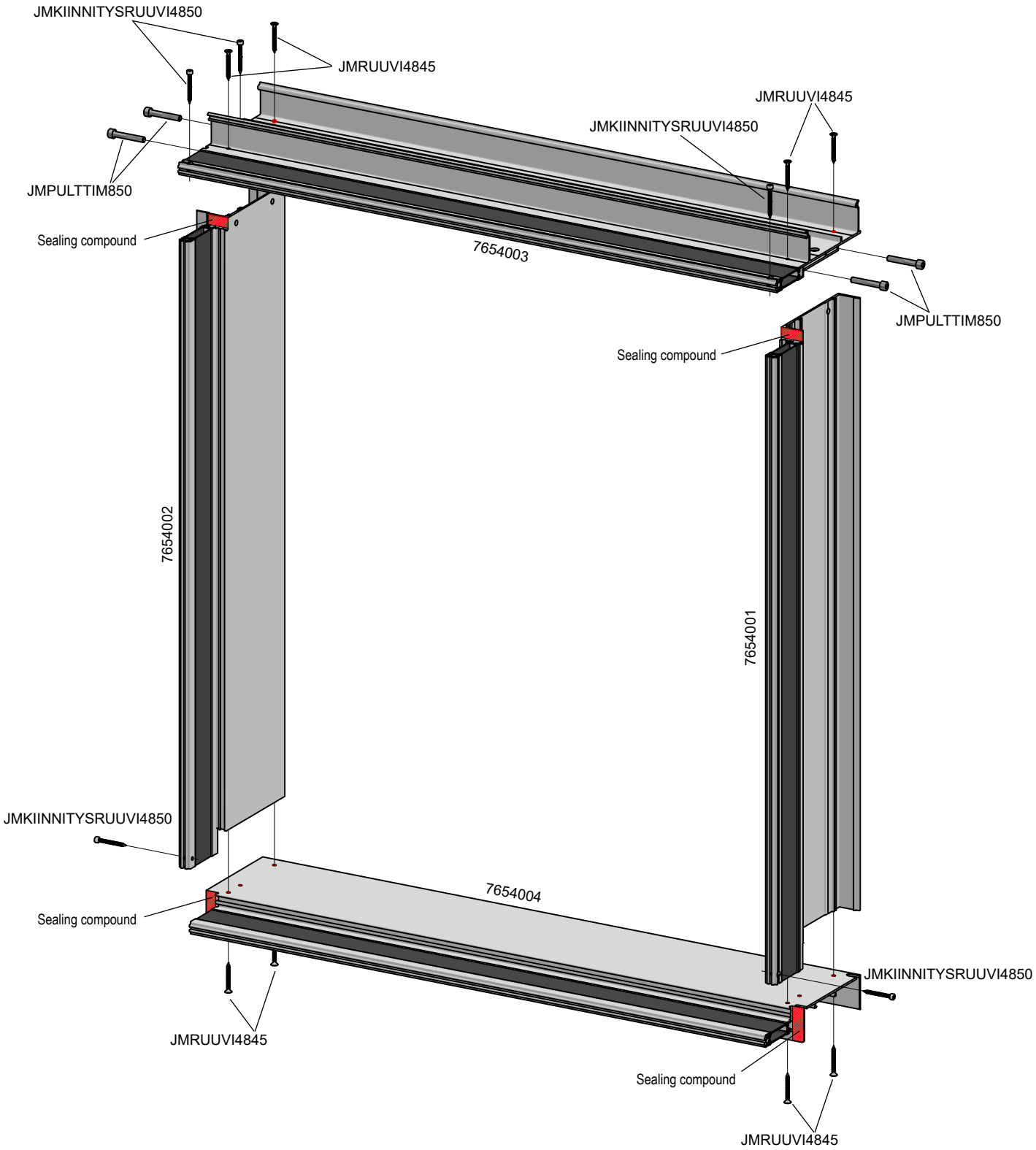




TRANSOM TO MULLION CONNECTION

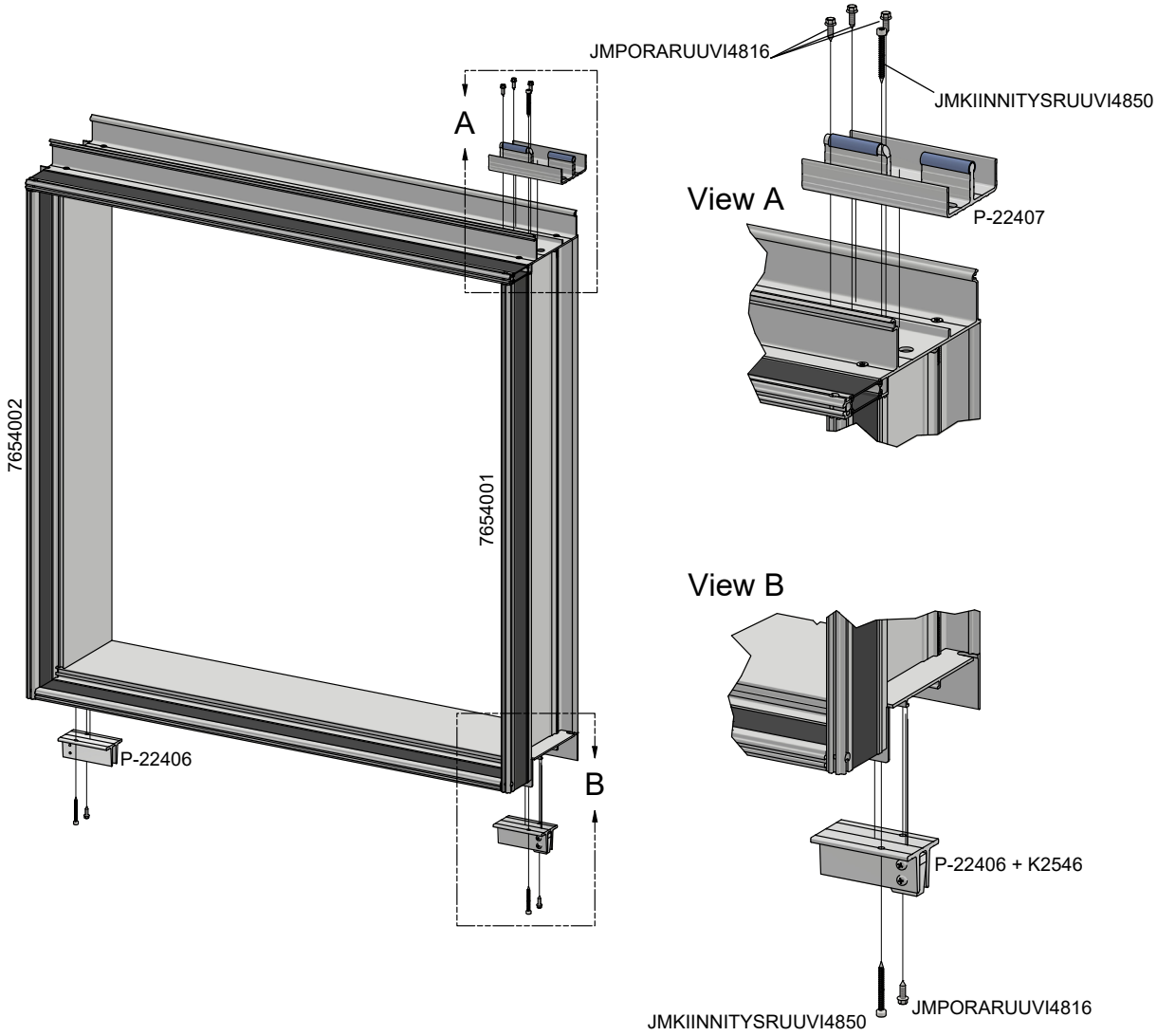


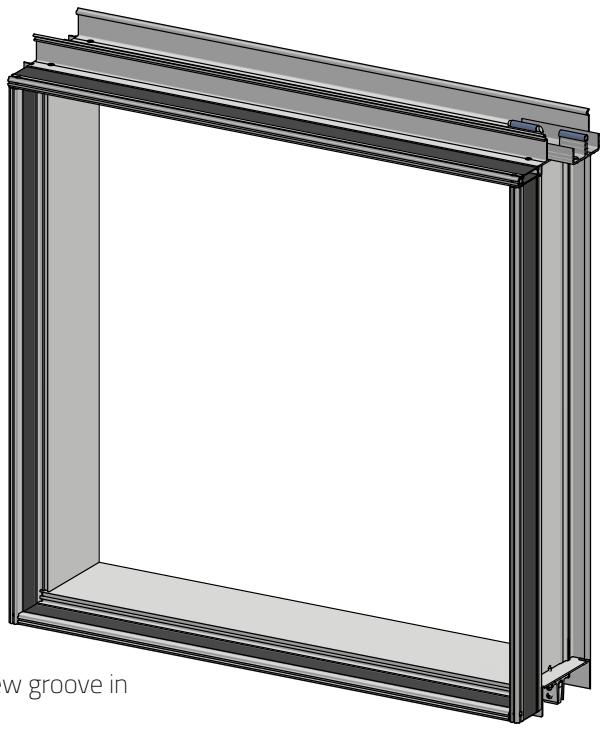
ELEMENT ASSEMBLY



NB!
Before tightening the screws use sealing compound to seal the screwing holes.

INSTALLATION OF GUIDE PROFILES

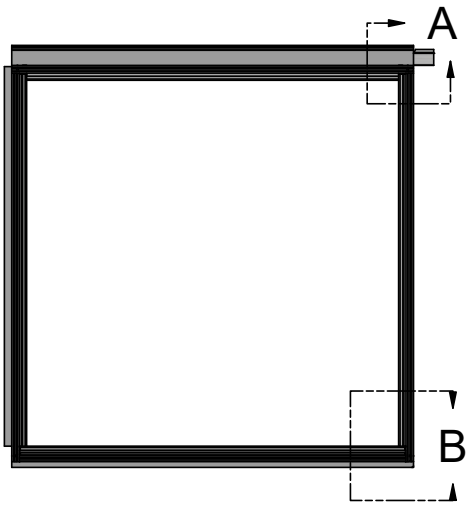




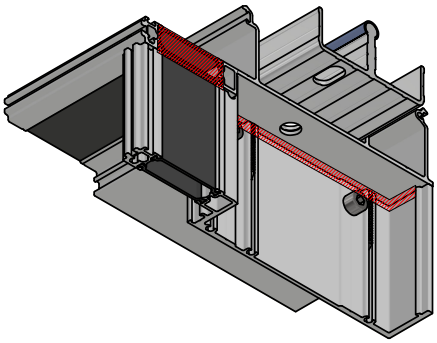
JMKIINNITYSRUUVI4850 goes into screw groove in profile 7654001 & 7654002

NB!
Before tightening the screws use sealing compound to seal the screwing holes.

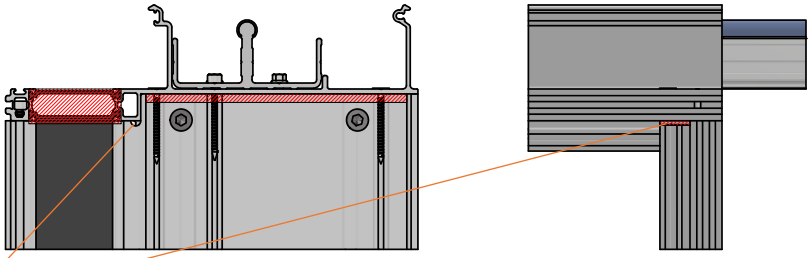
SEALING OF THE ELEMENT TOP CORNERS



The corners of the element are cleaned and the sealant is applied to each corner as shown in the pictures

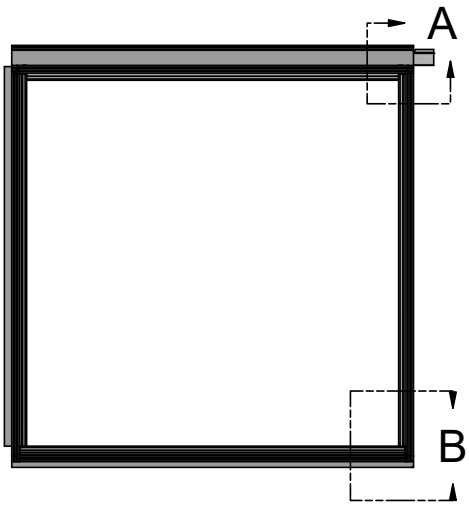


View A
and its projections

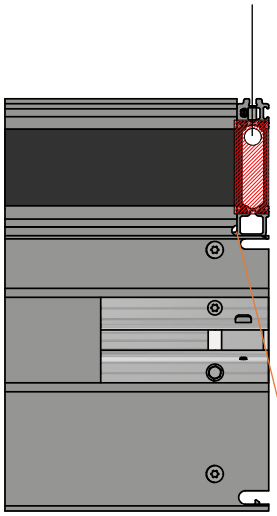


Fill the sealing hole with sealing compound until it comes through profile

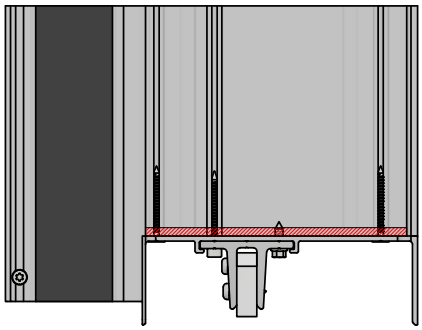
SEALING OF THE ELEMENT BOTTOM CORNERS

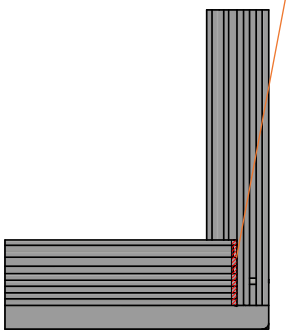


Area between thermal breaks is blocked with sealing compound.
On bottom side leave 10 mm opening on sealing compound.

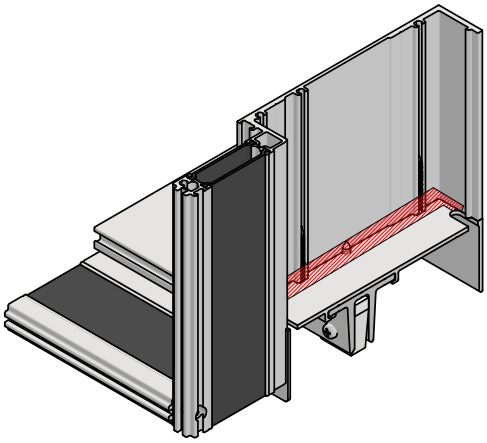


View B
and its projections

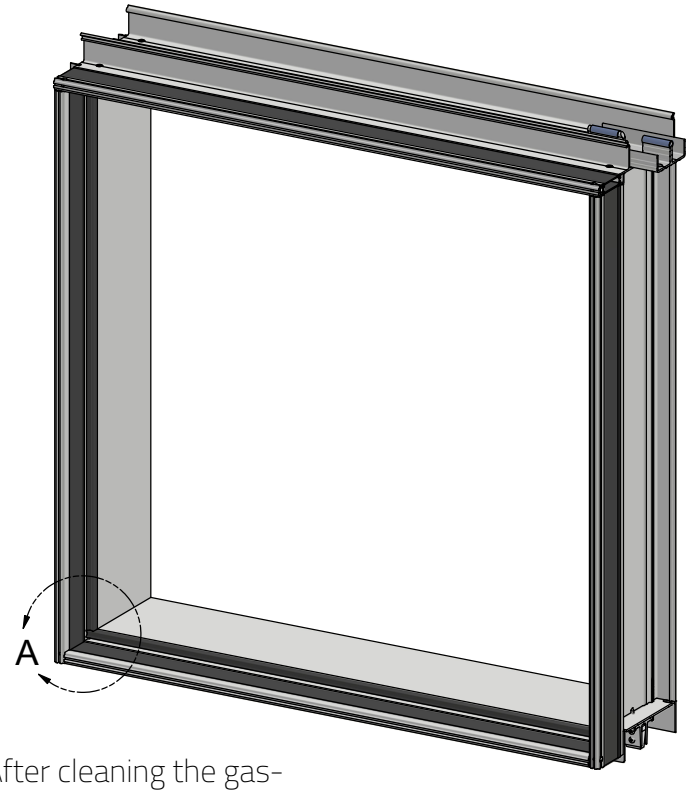




Fill the sealing hole with sealing compound until it comes through profile

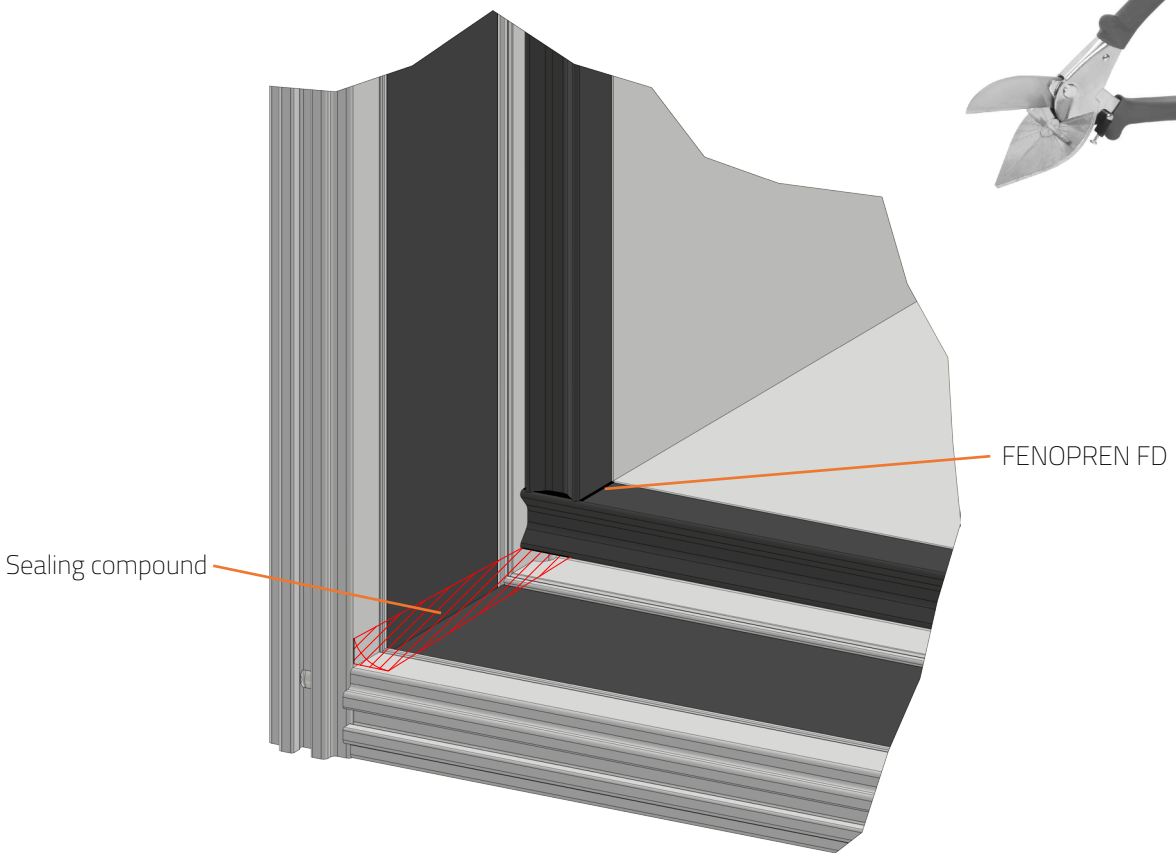


INSTALLATION OF GASKETS

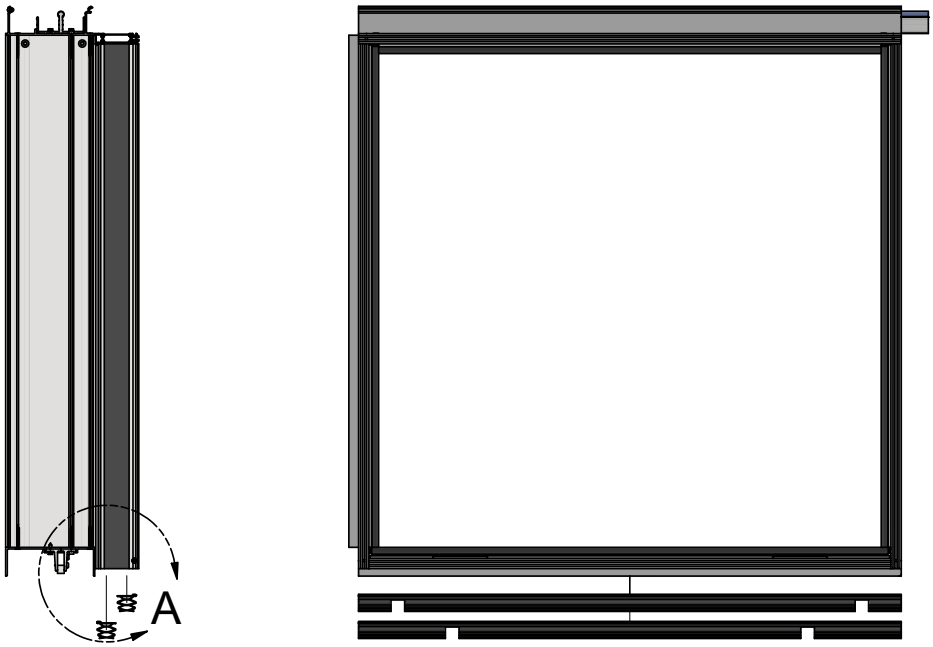


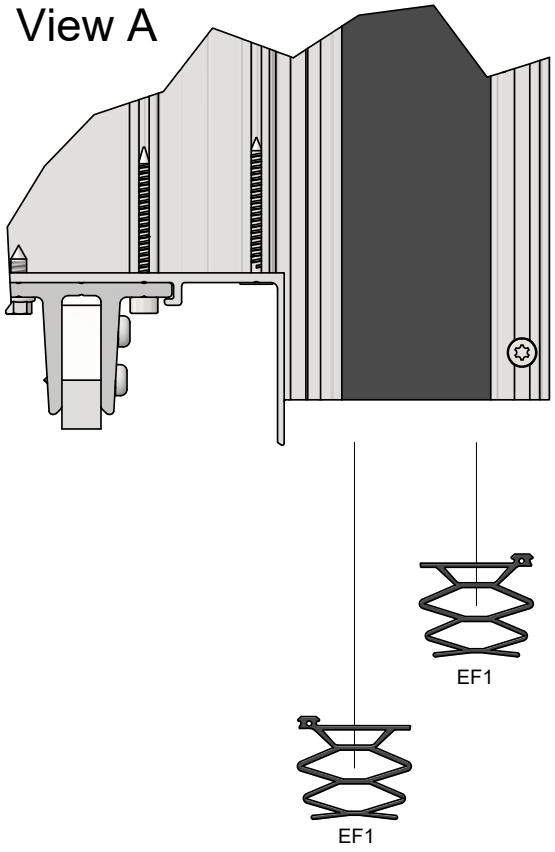
Cut gaskets straight. After cleaning the gasket surfaces use FENOPREN FD (or similar) between gaskets.

View A



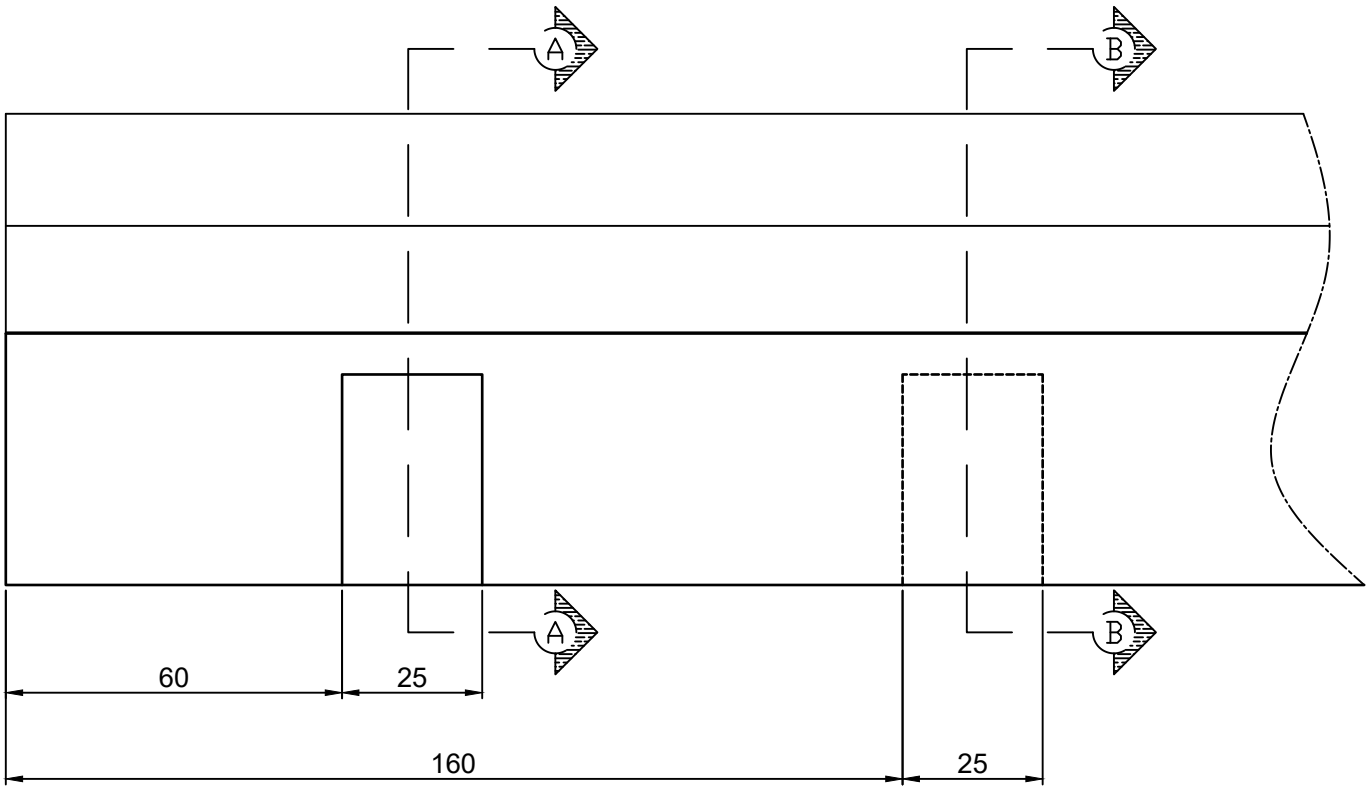
INSTALLING EF1 GASKETS



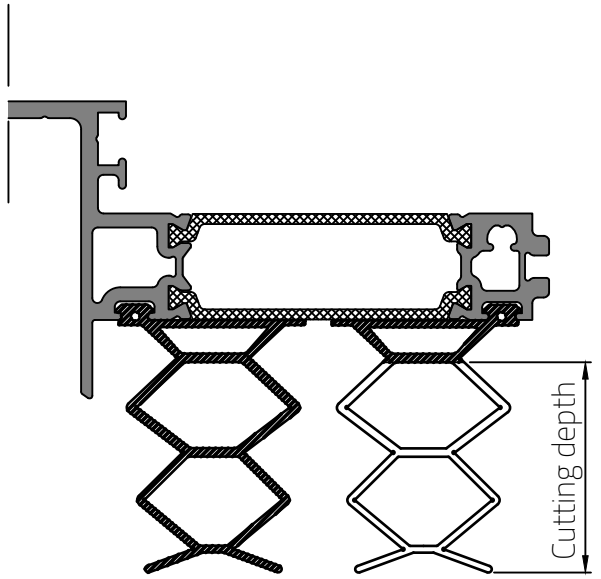


NB!
Cutting water holes in gasket EF1
according to page 6.3.1

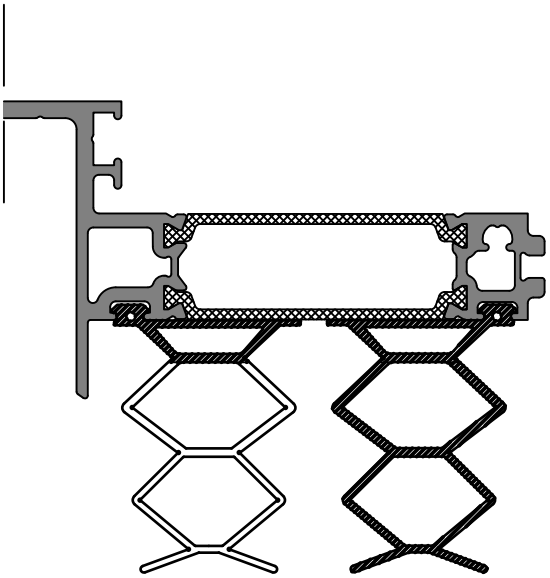
DRAINHOLES EF1 GASKETS



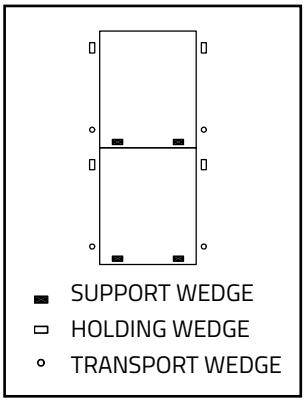
A-A



B-B



GLAZING INSTRUCTIONS FOR ELEMENT FACADE SYSTEM



Make sure that the glass grooves, glazing strips and glass are clean and dry before starting sealing.

Wedging

Wedge types

- support wedges, which transfer the stress caused by the weight of the glass pane to the frame
- transport wedges, which hold the glass pane in the correct place in the window element during transportation
- holding wedges, which ensure the glass pane stays in place

Support wedges

Support wedges are made of plastic which is resistant to varying weather and temperature with a hardness of 70°-90° Shore A or equivalent material. Support wedge thickness must be at least 5mm. Support wedge thickness can be 3mm when an aluminium glass support profile is used under it. Wedge width is chosen such that that the wedges hold and support the vacuum glass through its whole width. If the width of the vacuum glass is less than 1500mm, the support wedge length must be 50-100mm. If the vacuum glass is over 1500mm wide, the support wedge length must be at least 100-150mm.

Glass support profile

The glass support profile is chosen in accordance with page 7.1.1.

Holding and transport wedges

Holding and transport wedges must be of a flexible thickness and they must not interfere with support wedge operation. Holding and transport wedges must be at least 100mm long and as wide as the support wedges.

Installing the wedges

Support, holding and transport wedges are placed according to the principle set out in picture 1. The wedges are placed 50-100mm from the corners of the vacuum glass, unless the glass supplier advices otherwise. The wedges are installed such that they hold and support the vacuum glass through its whole width. The wedges must not block the glass space ventilation holes.
When installing holding and transport wedges, it must be ensured that they will stay in place and that they won't obstruct the operation of the support wedges.

Sealing

3mm gaps are to be left at the ends of glazing lists, and the gaps are filled with elastic sealing compound.

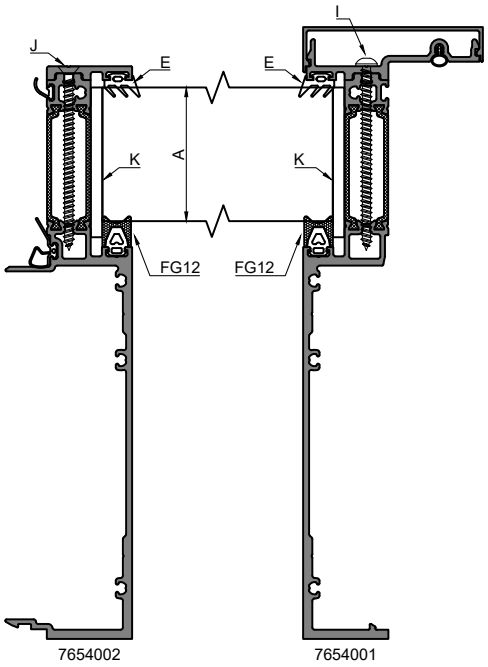
The shaped sealant bands supplied by us are made of EPDM rubber. These shaped sealant bands are very resilient to temperature changes, heat and aging.
A shrinking allowance of approximately 5mm per meter must be taken into account when shortening shaped sealant bands. The corner and extension points of shaped sealant tapes are glued and sealed using a sealing compound suitable for EPDM rubber, such as FENOPREN FD black.

Ventilation of the enclosed area

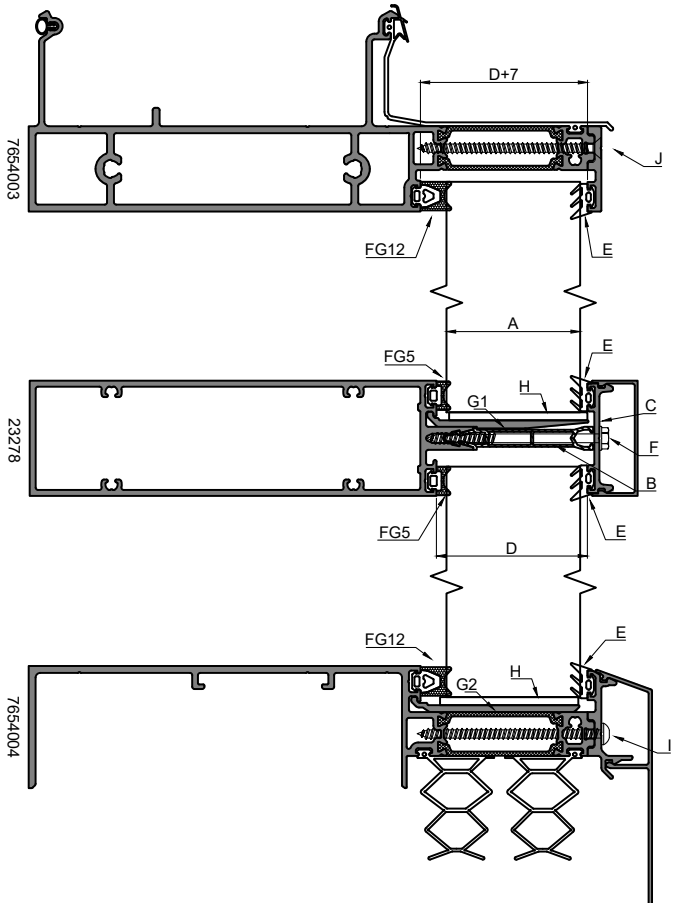
Lap joint

No separate ventilation holes are made in the glazing strips in the enclosed areas of insulating glass.
The airspace behind the facade glass is ventilated via the ventilation holes in the glazing strips and cover profile.

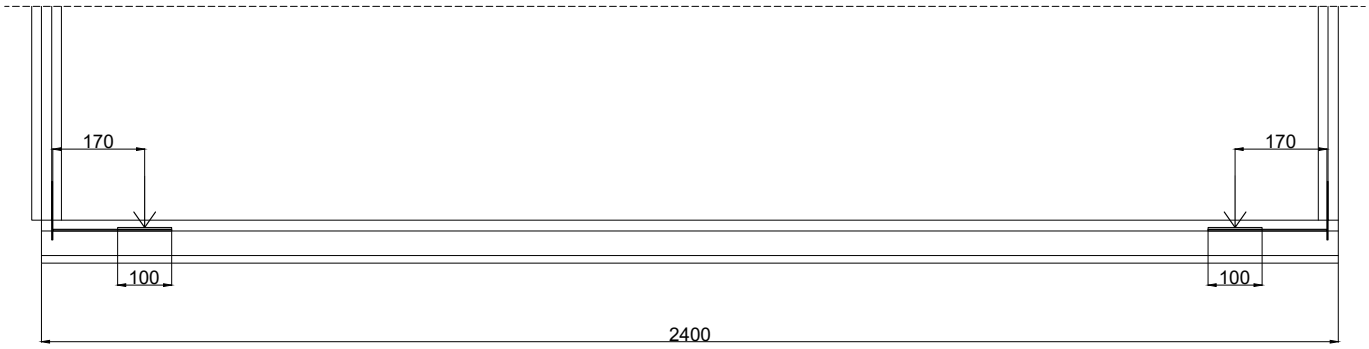
Glazing instruction



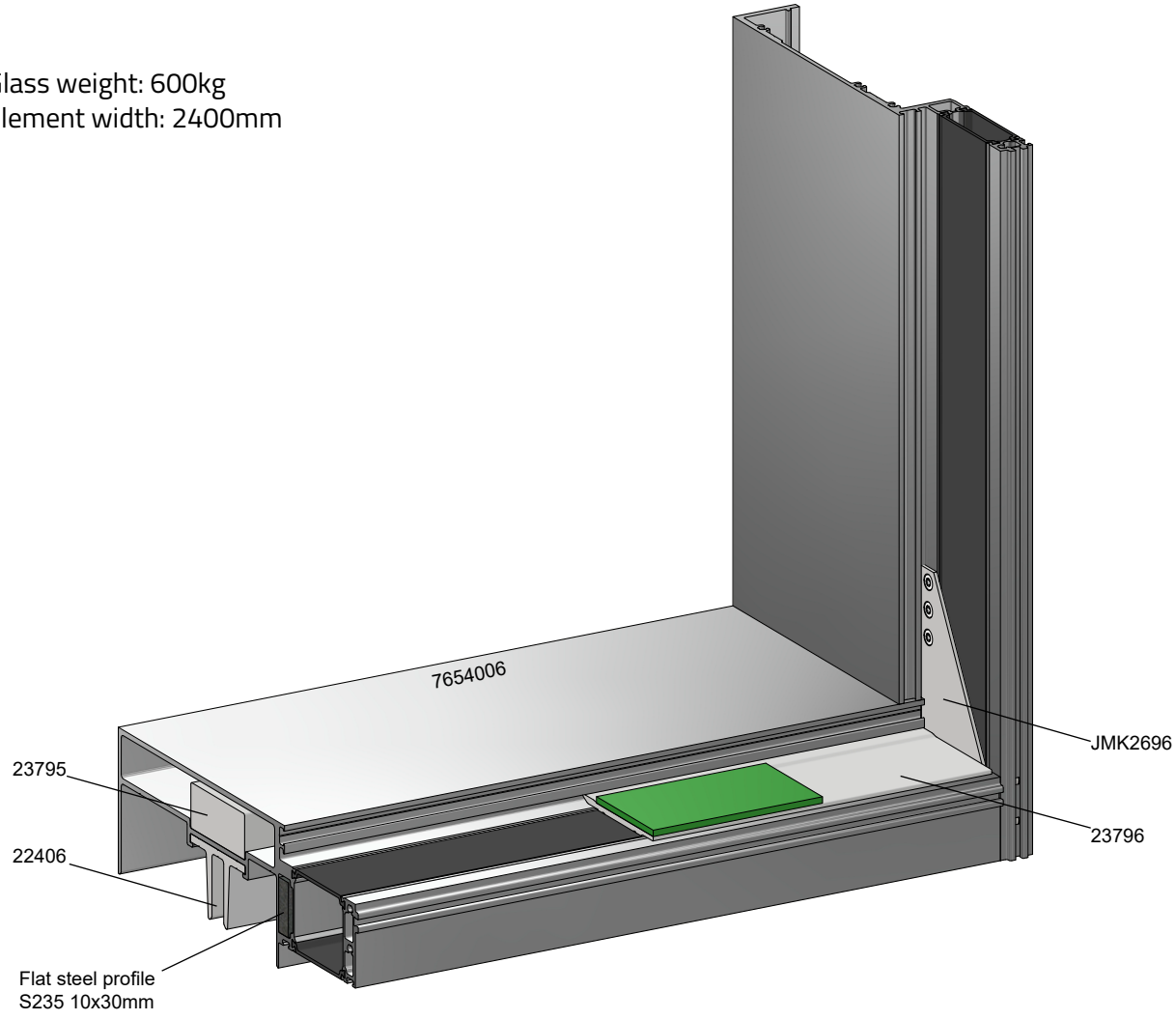
Thickness of glass package	Thermal break	Glazing bead	Depth of glass space	Exterior seal	Mounting screw	Glass support profile	Glass support prfoile	Support wedge	Mounting screw	Mounting screw	Holding wedge
A	B	C	D	E	F	G1	G2	H	I	J	K
56	50LK7LE/ 50LK7PE	5015144	65	PX3	JMRUUVI4875	5020291	509936	t = 3 mm	JMRUUVI4880	JMUPPOKAN-TARUUVI4880	t = 5 mm
57			65	PX2							
58			65	PX2							
59			65	PX1							



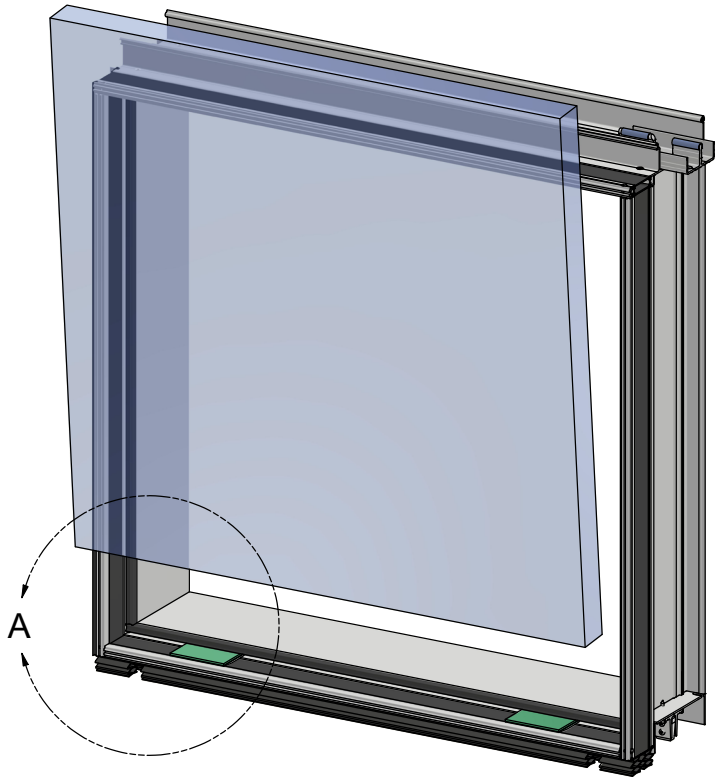
SPECIAL SOLUTION



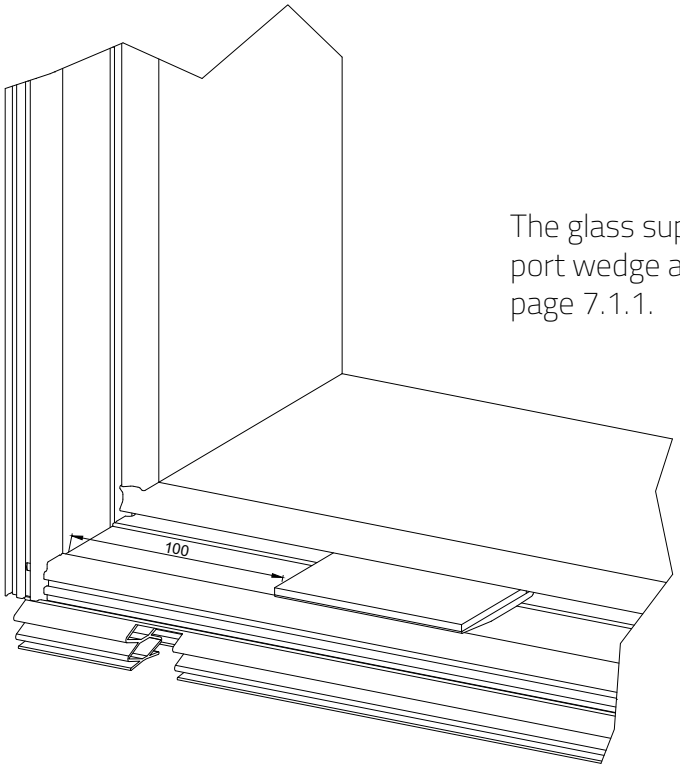
Glass weight: 600kg
Element width: 2400mm



GLASS INSTALLATION

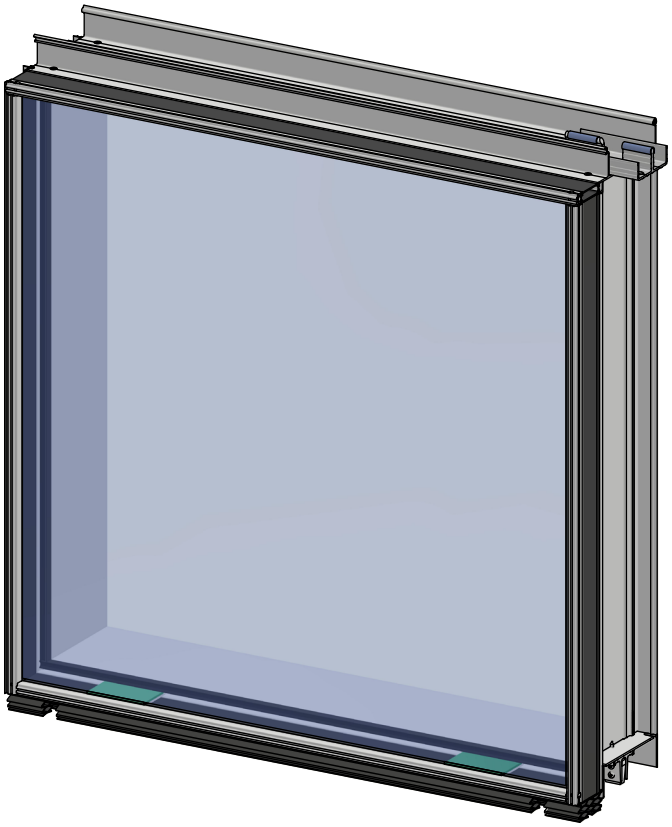


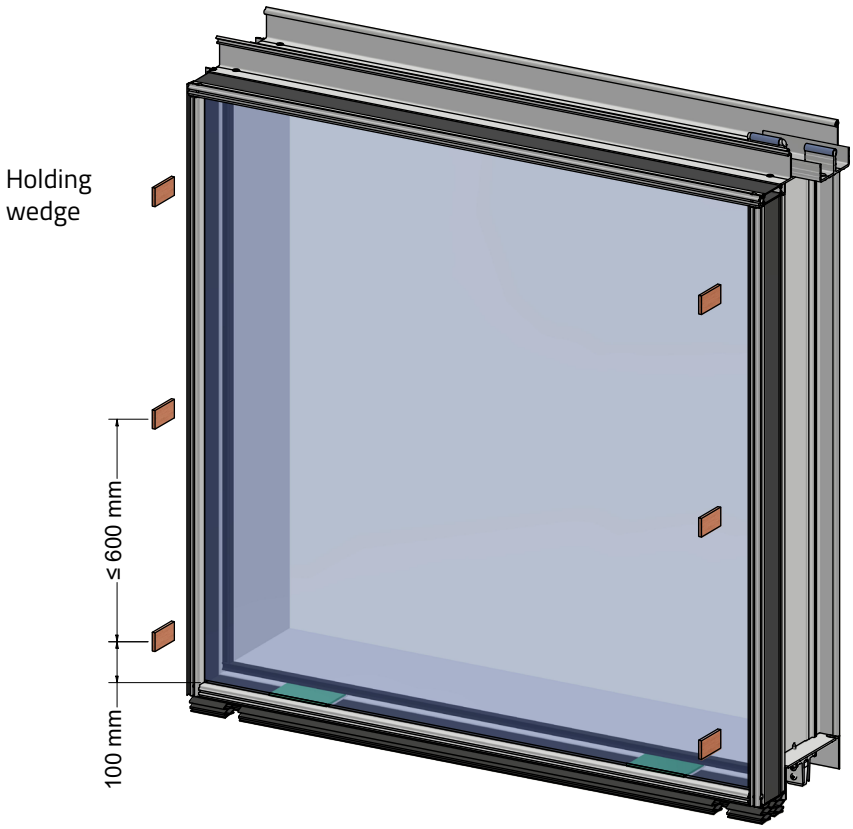
View A



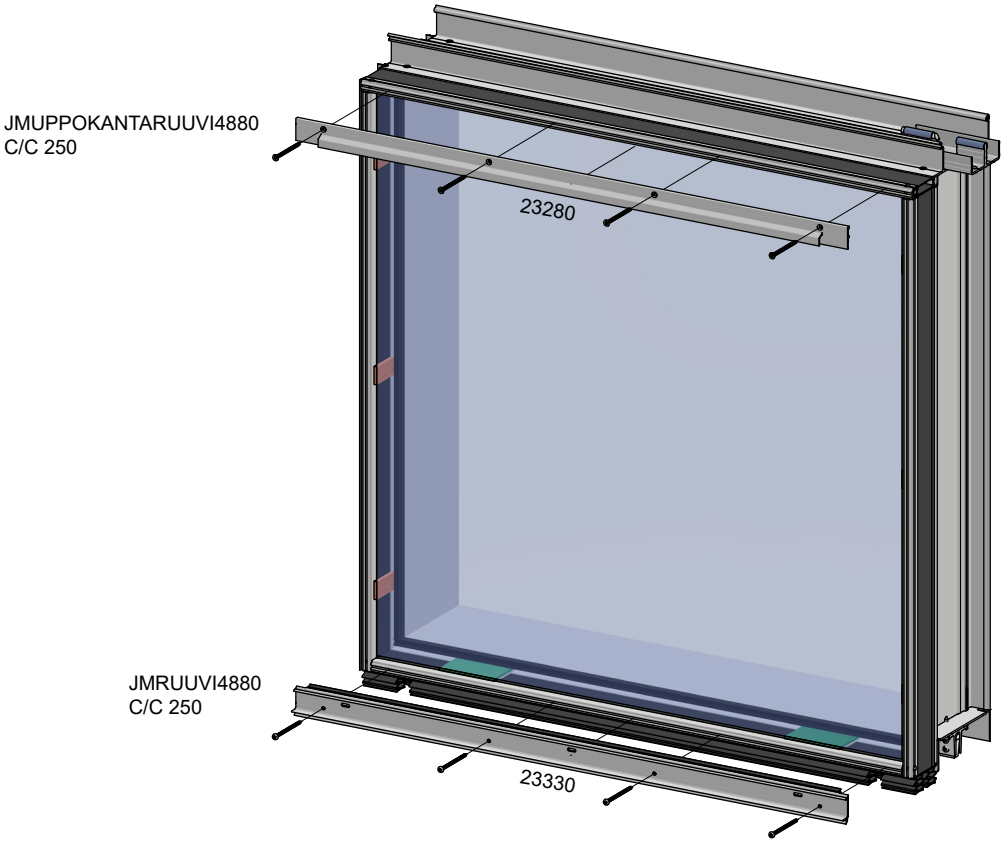
The glass support profile and the support wedge are selected according to page 7.1.1.

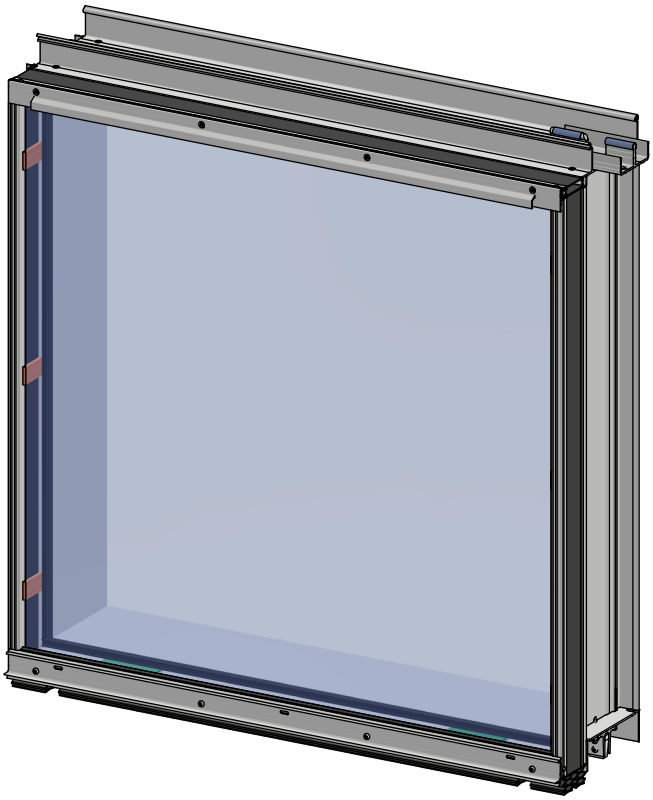
HOLDING WEDGES



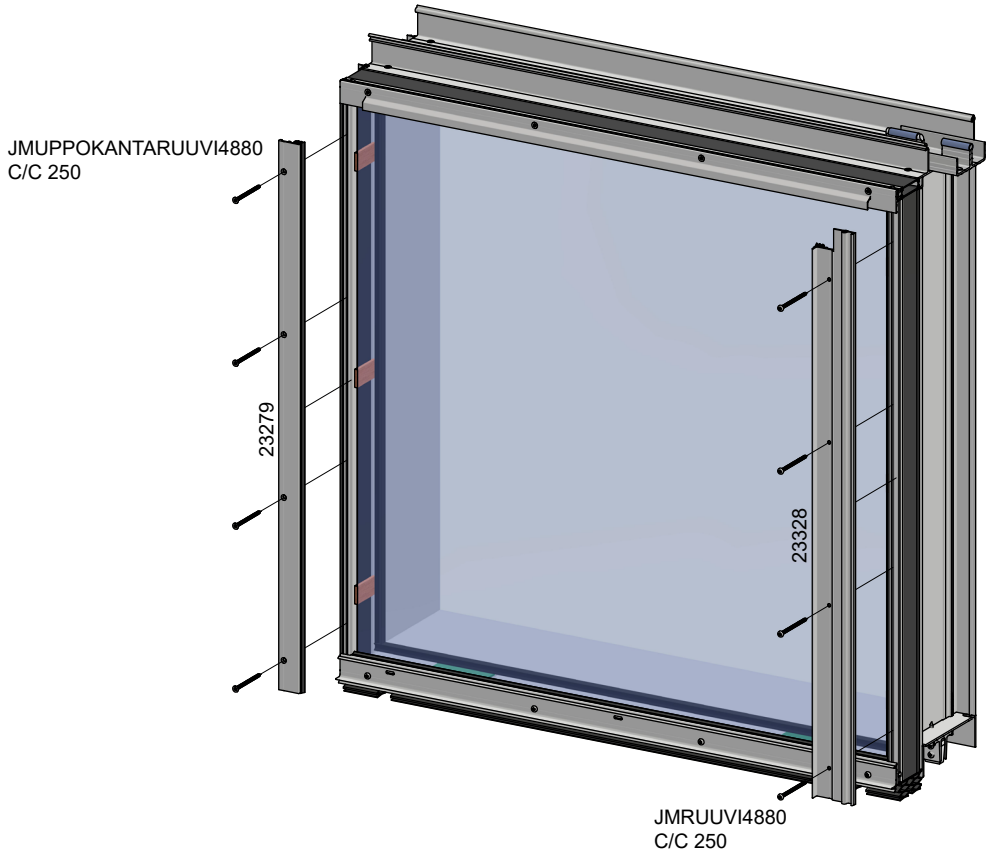


GLAZING BEADS
23280 & 23330

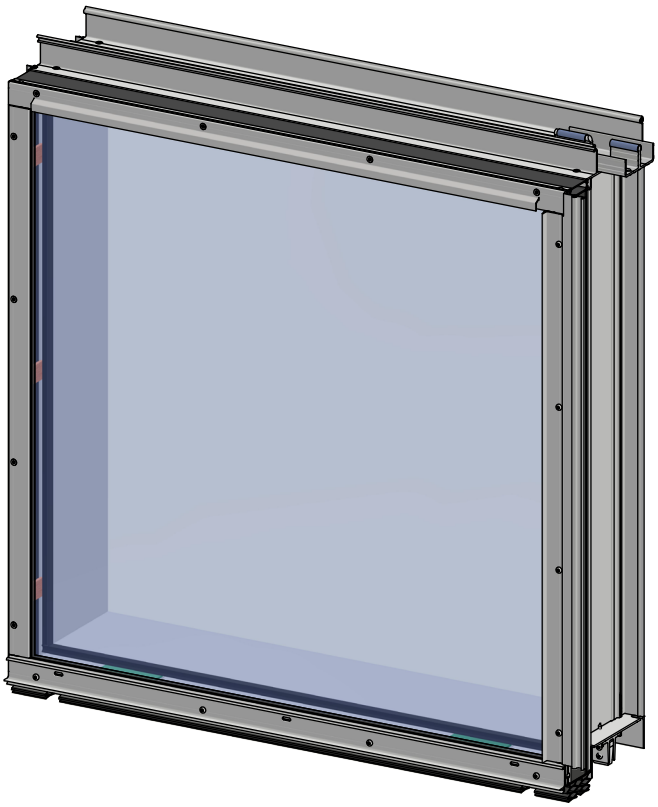




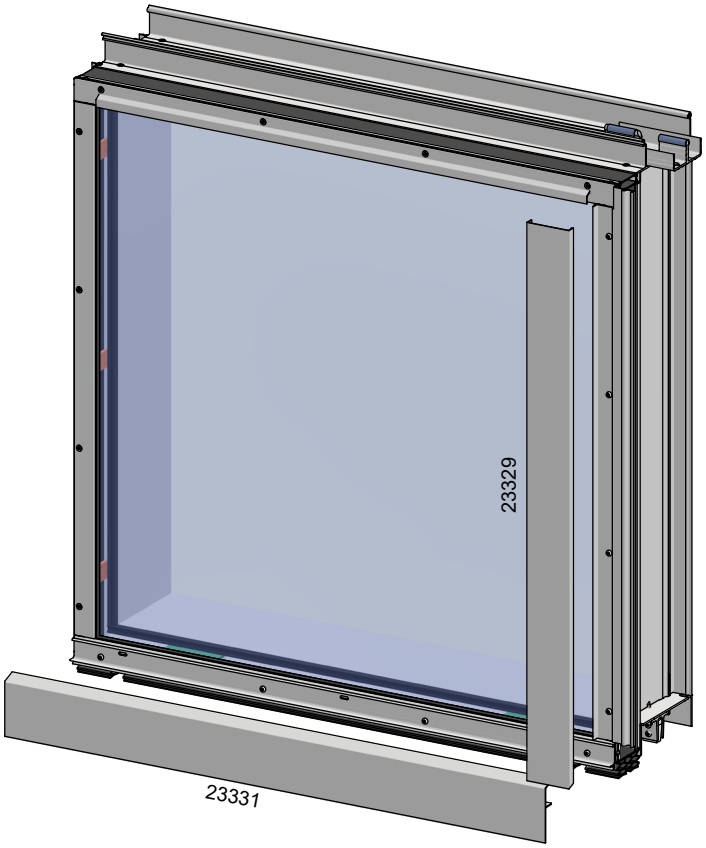
GLAZING BEADS
23279 & 23328



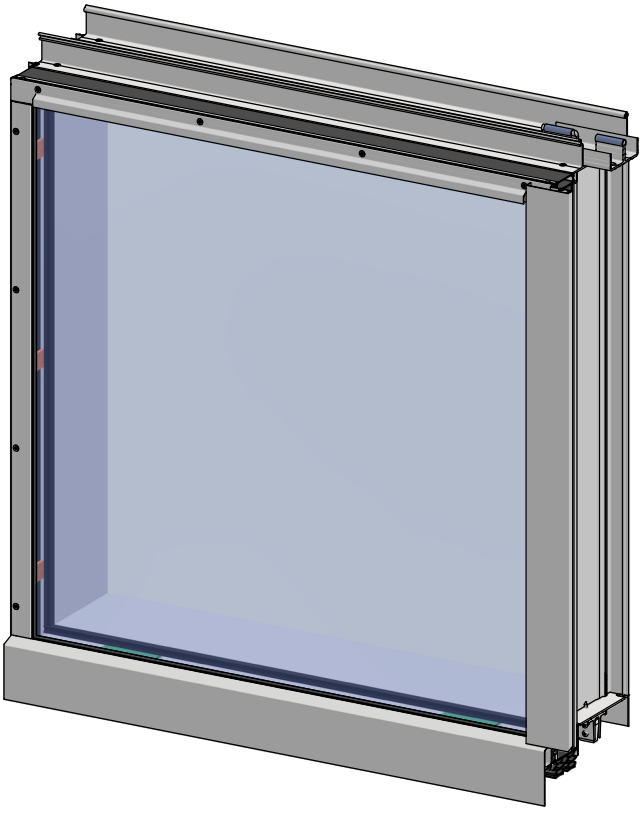
3mm gaps are to be left at the ends of glazing lists, and the gaps are filled with elastic sealing compound.



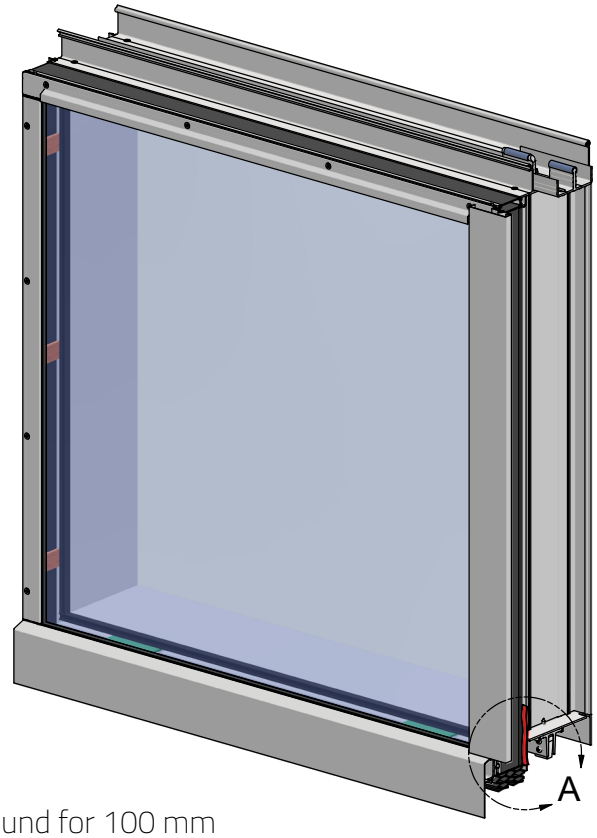
INSTALLATION OF COVER LISTS



Snap cover list 23331 first in place, after that 23329.

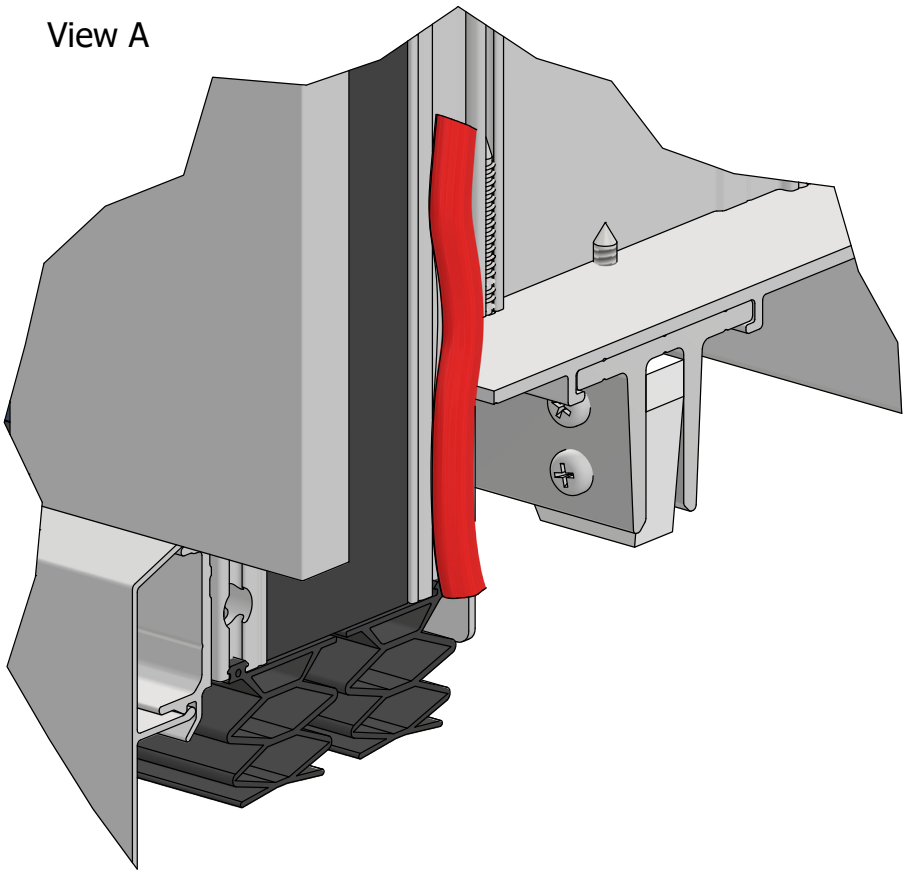


PREPARATION BEFORE ELEMENT INSTALLATION

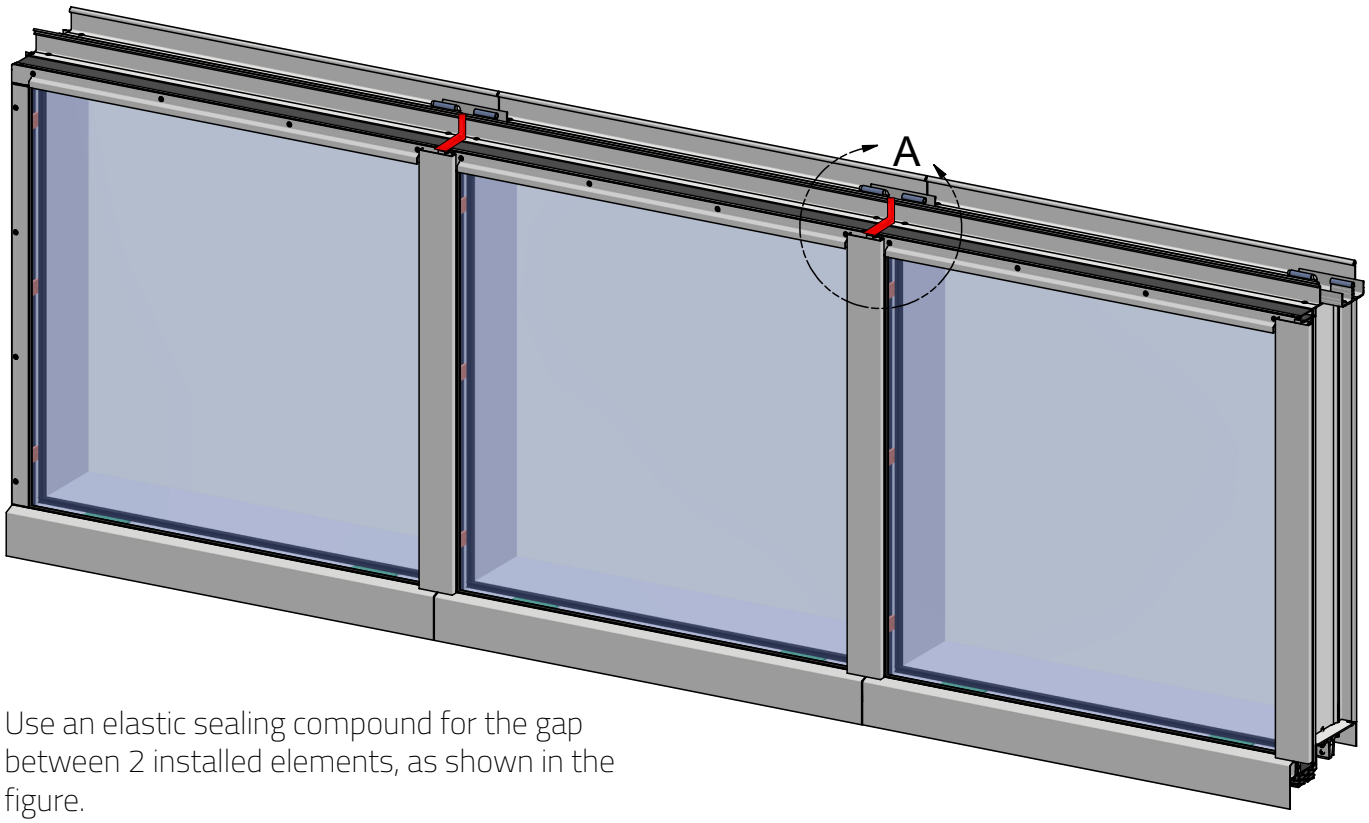


Use an elastic sealing compound for 100 mm length, as shown in the figure before installing the element.

View A

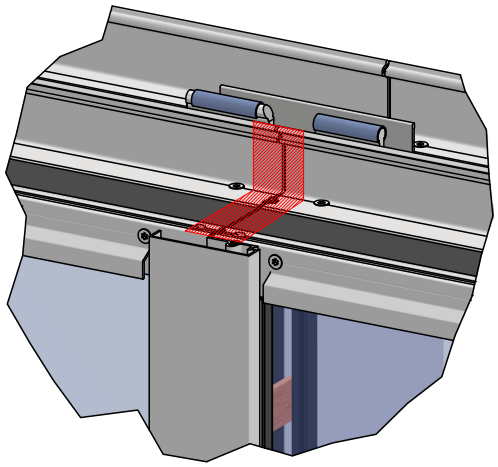


SEALING THE GAP BETWEEN TWO ELEMENTS BEFORE INSTALLING K2514 GASKET



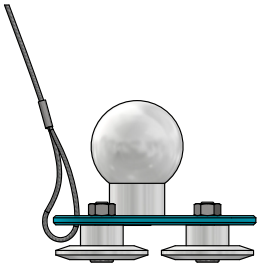
Use an elastic sealing compound for the gap between 2 installed elements, as shown in the figure.

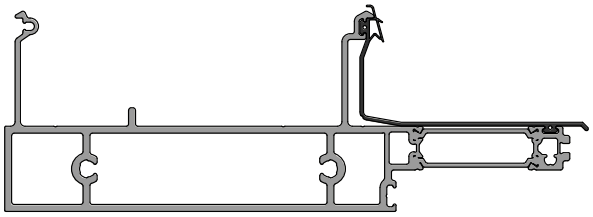
View A



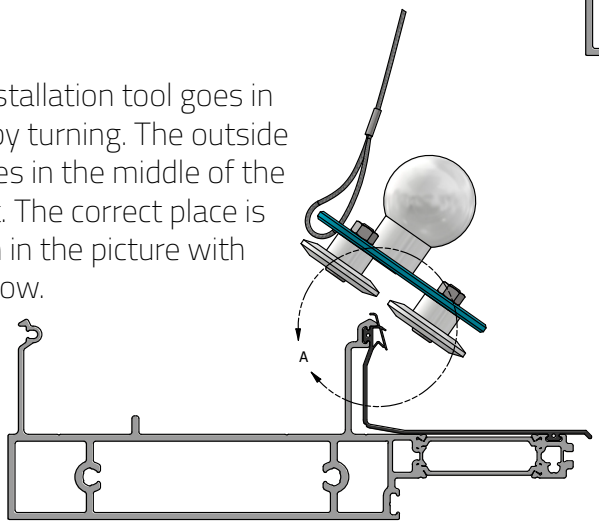
INSTALLATION TOOL FOR K2514 GASKET

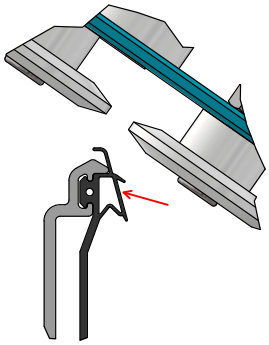
Installing tool for gasket K2514 is placed on the profile so that one roll goes outside the gasket and two rolls take guidance of the profile.



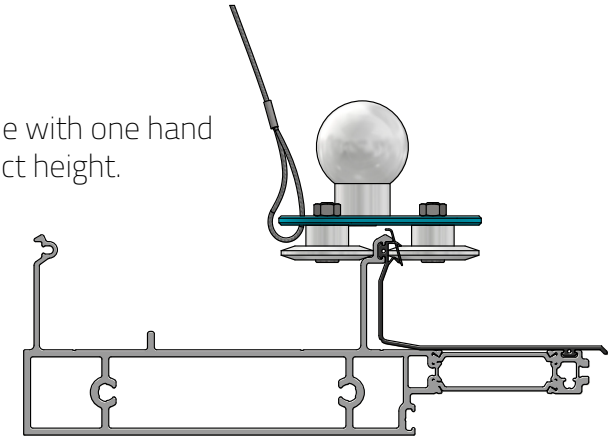


The installation tool goes in place by turning. The outside roll goes in the middle of the gasket. The correct place is shown in the picture with red arrow.

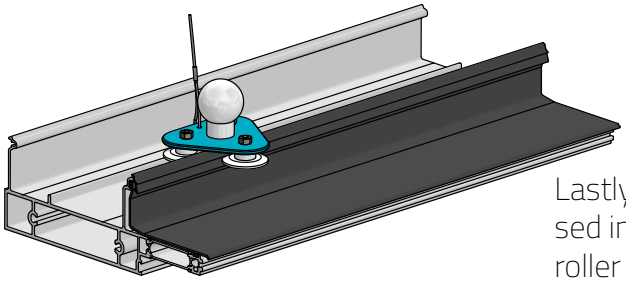




The tool is rolled along the profile with one hand directing the gasket to the correct height.



The soap solution can be used to facilitate the installation of the seal.

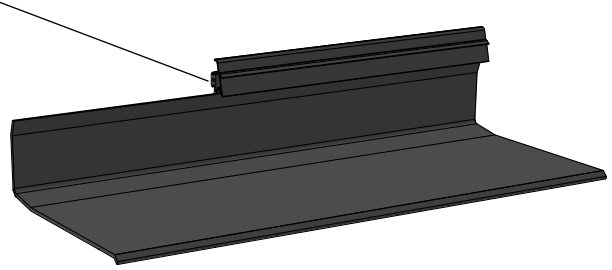


Lastly, the outer leg of the gasket is pressed into place. You can use the handle roller tool and soap water solution.

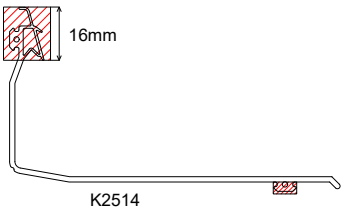
K2514 GASKET CONTINUATION

The surfaces of the workpieces to be bonded must be free from dirt and grease. For cleaning, we recommend FENOSOL S 20 UVA cleaner.

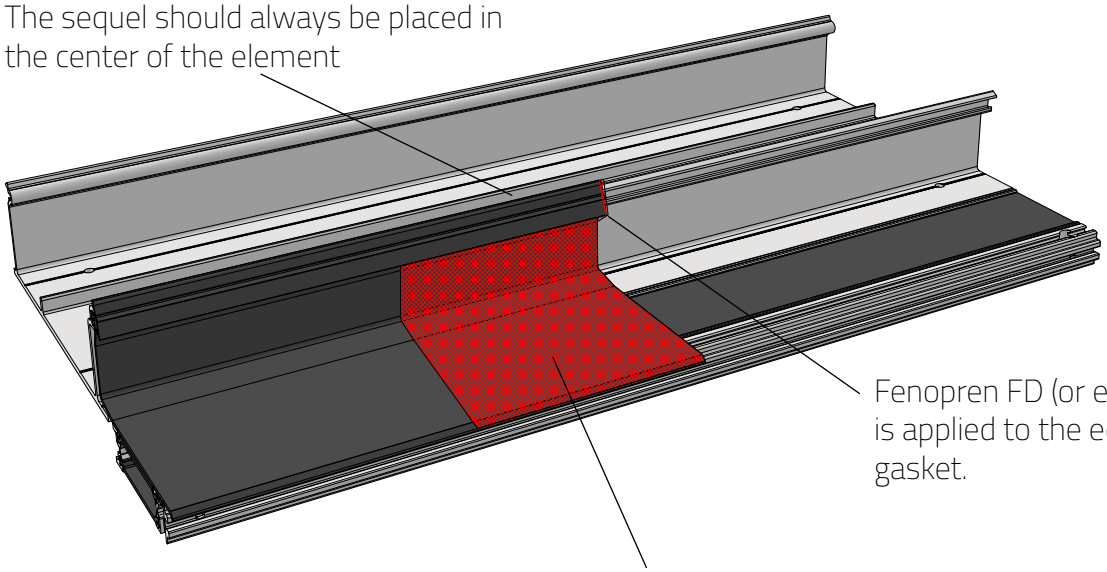
Fenopren FD (or equivalent) adhesive is applied to the edge of the K2514 gasket.



Remove gasket's legs in 100mm length.



The sequel should always be placed in the center of the element

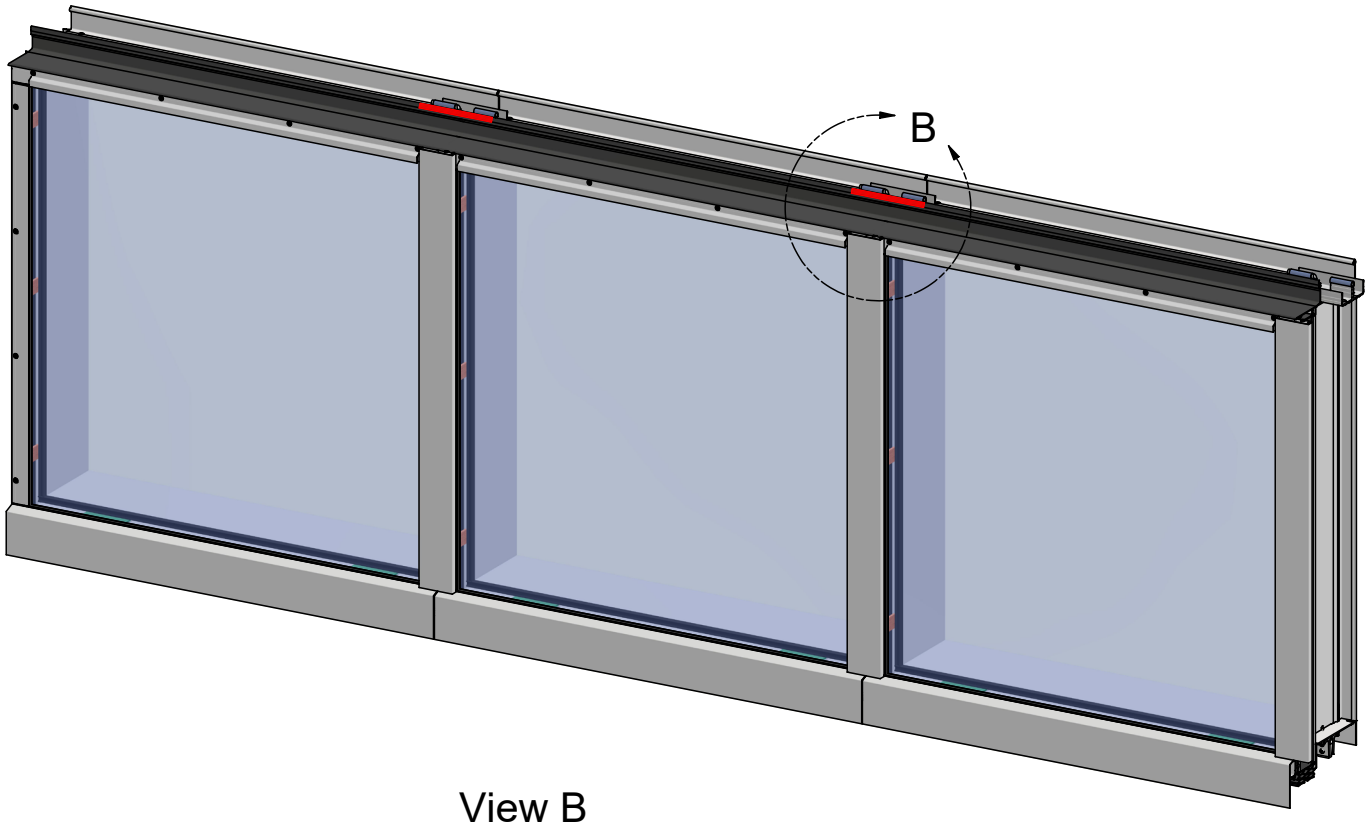


Fenopren FD (or equivalent) adhesive is applied to the edge of the K2514 gasket.

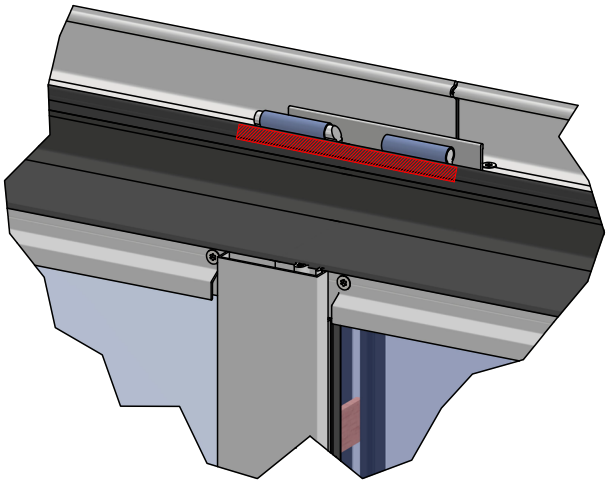
Fenopren FD (or equivalent) adhesive is applied to the gasket in the element for 100mm length.

The adhesive should be installed according to the instructions on the adhesive used to achieve the desired result.

SEALING ON TOP OF THE K2514 GASKET AT THE INTERSECTION OF 4 ELEMENTS

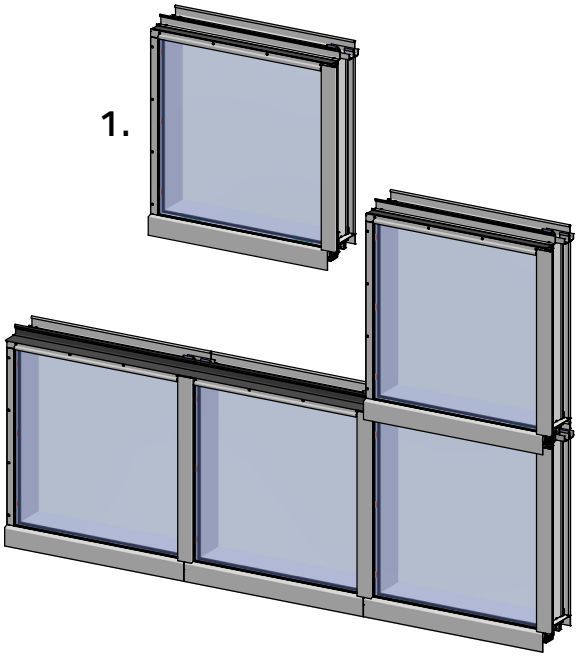


View B

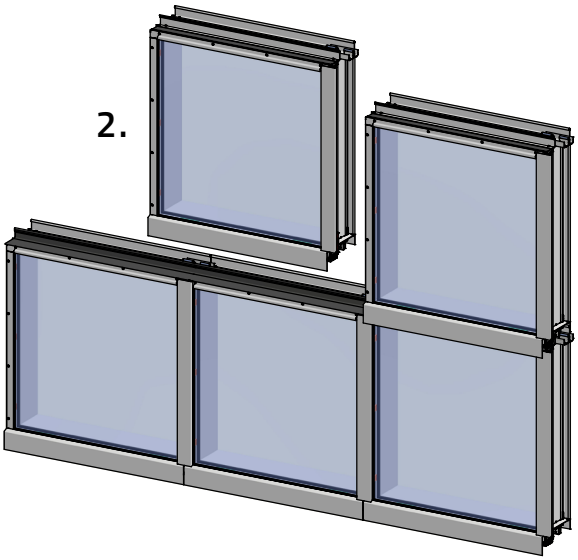


Use an elastic sealing compound on top of the K2514 gasket for 100mm length as shown in the figure.

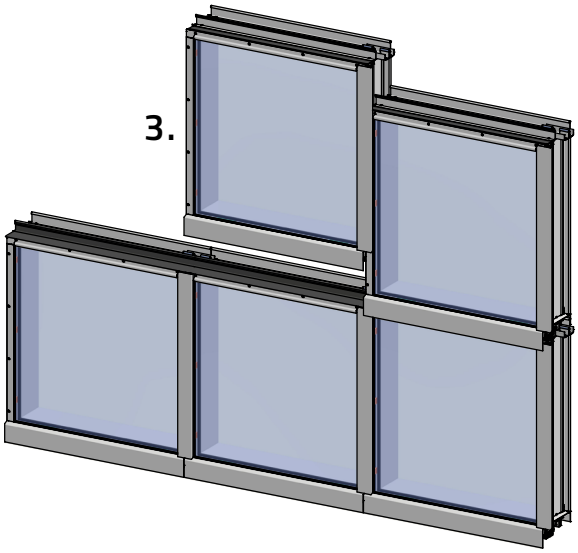
ELEMENT INSTALLATION



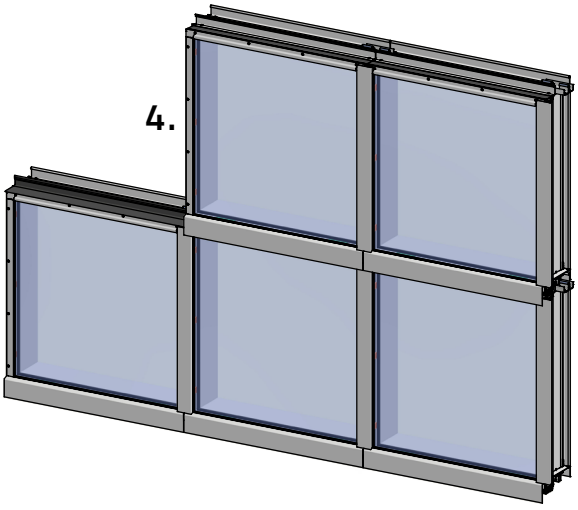
Install the vertical edge of the element by pressing the vertical profiles together in lateral direction.



The element is lowered down 50-100mm from the upper surface of the lower element.

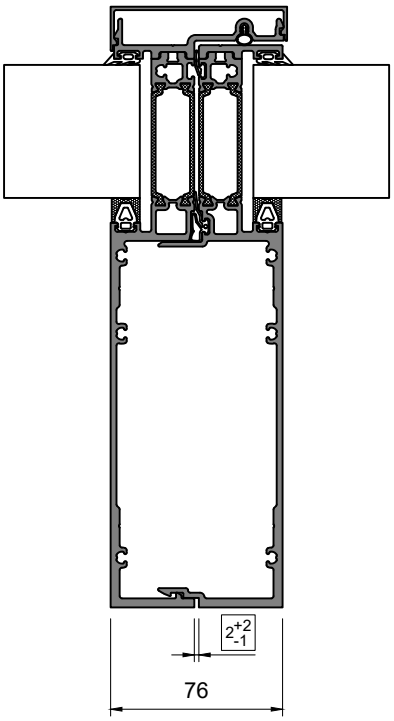


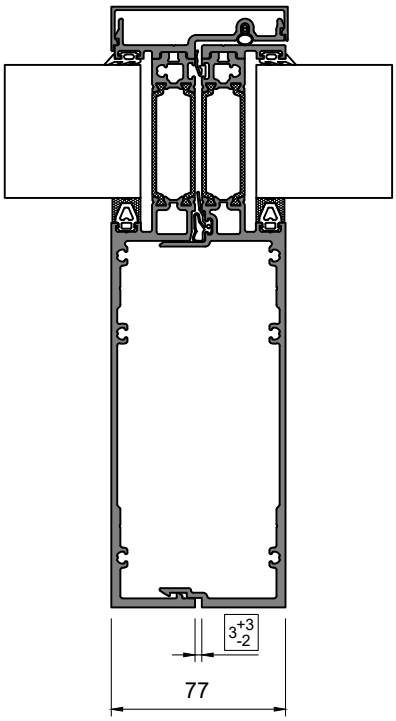
Attach the element to intermediate floor.

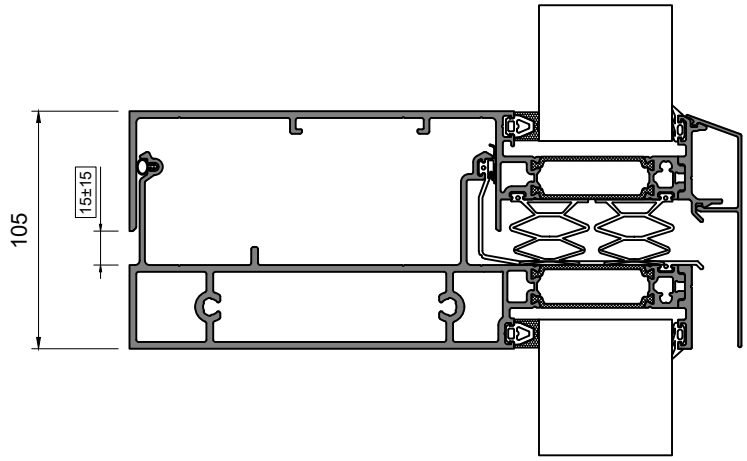


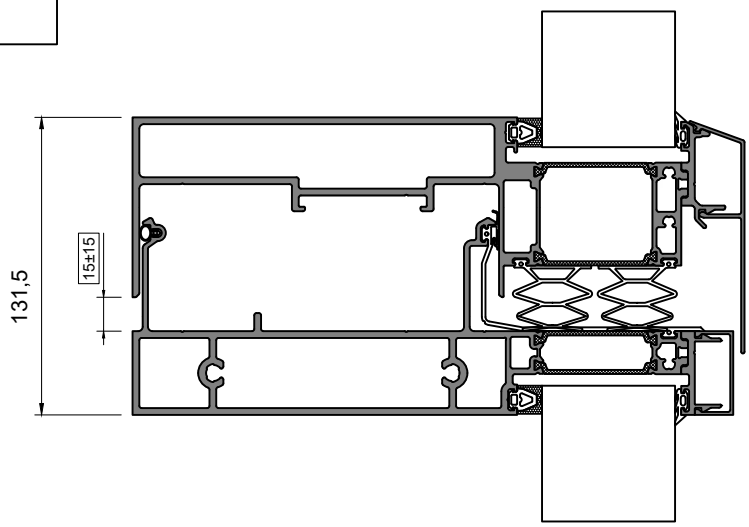
Lower the element into place and check that the K2514 gasket has remained in place.

ELEMENT INSTALLATION TOLERANCES

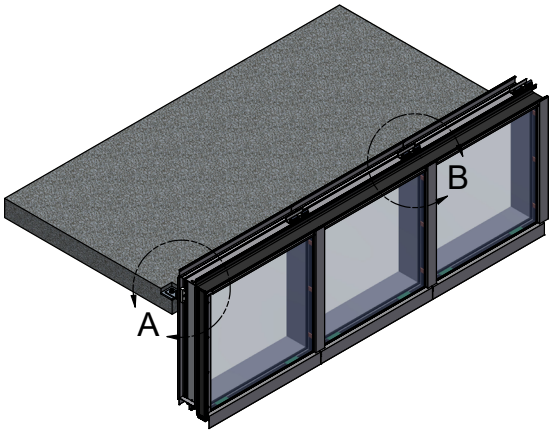




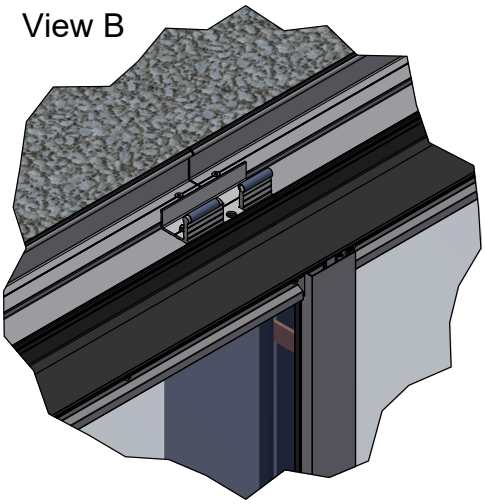




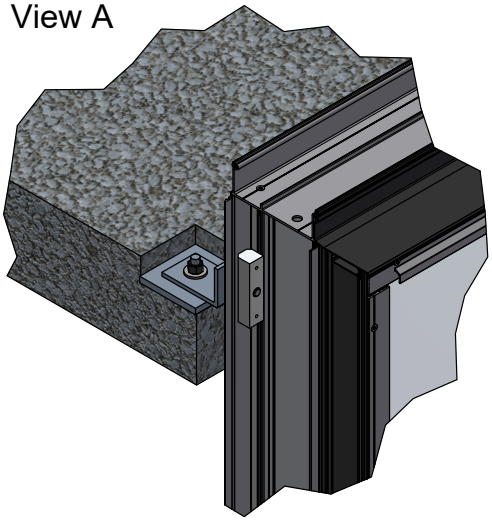
ELEMENT MOUNTING EXAMPLE 3D



View B



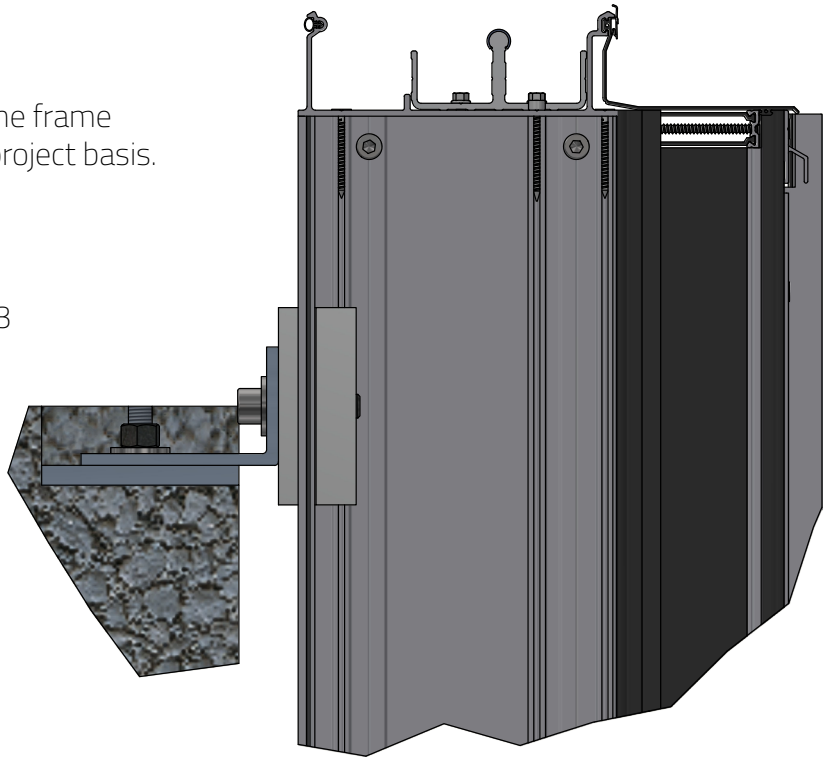
View A



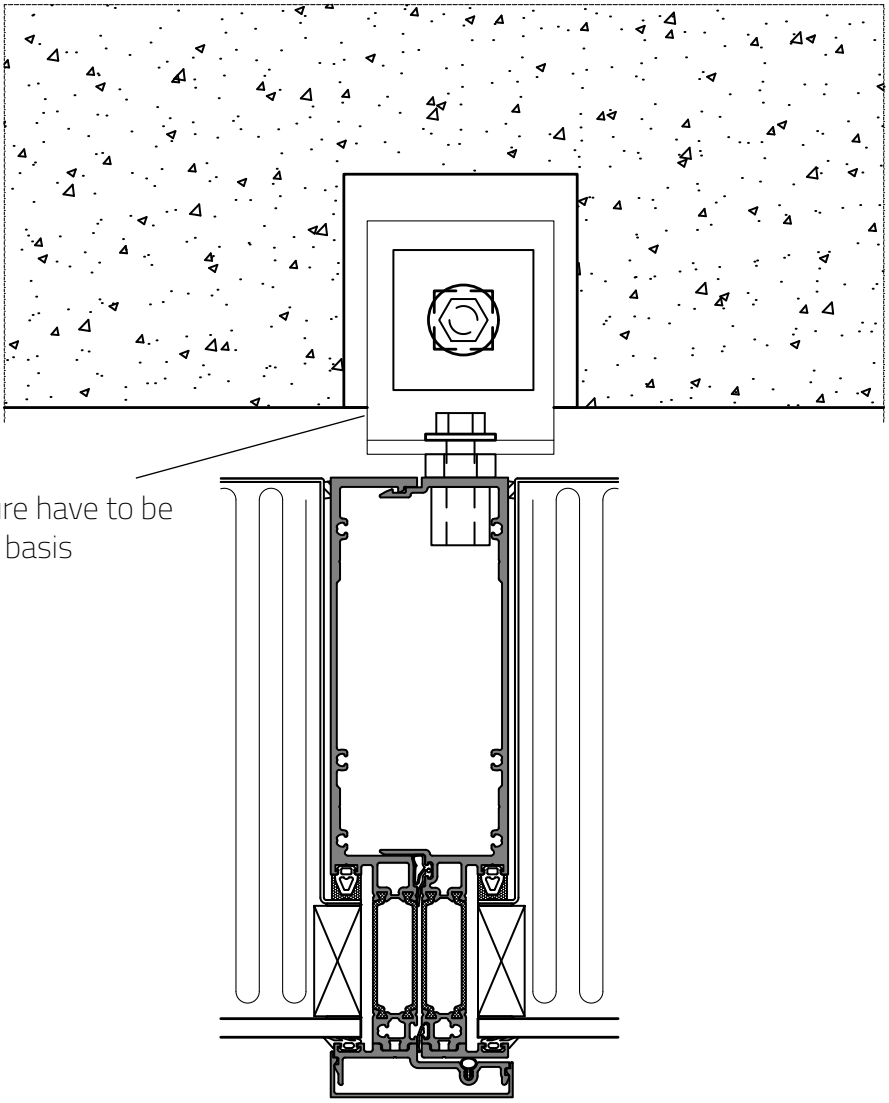
The weight of the element is distributed over the previous element via a guide profile 22407

Attaching the elements to the frame structure is inspected on a project basis.

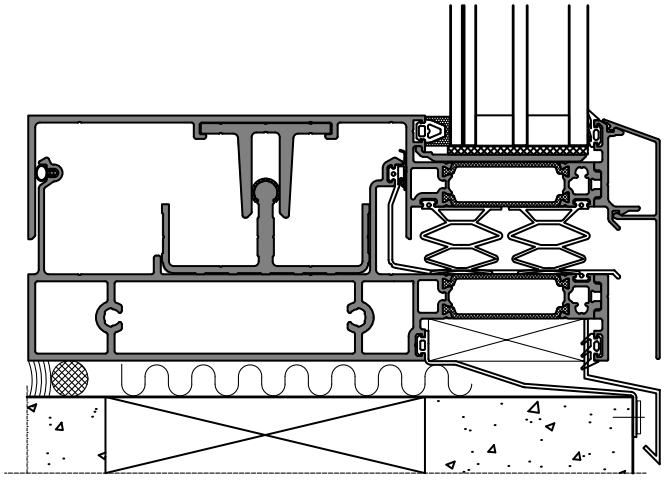
More detail info in page 8.3.3



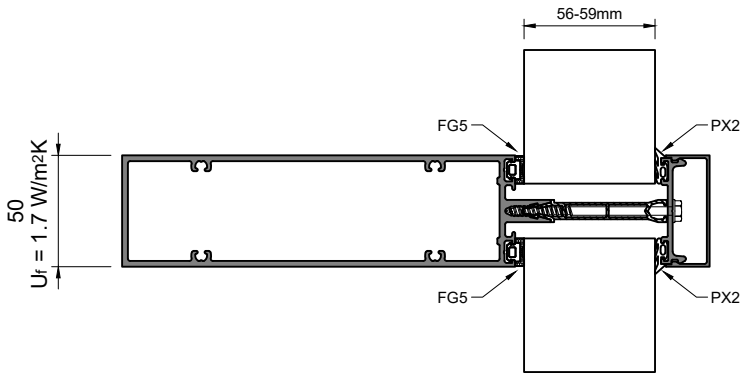
MOUNTING EXAMPLE 2D

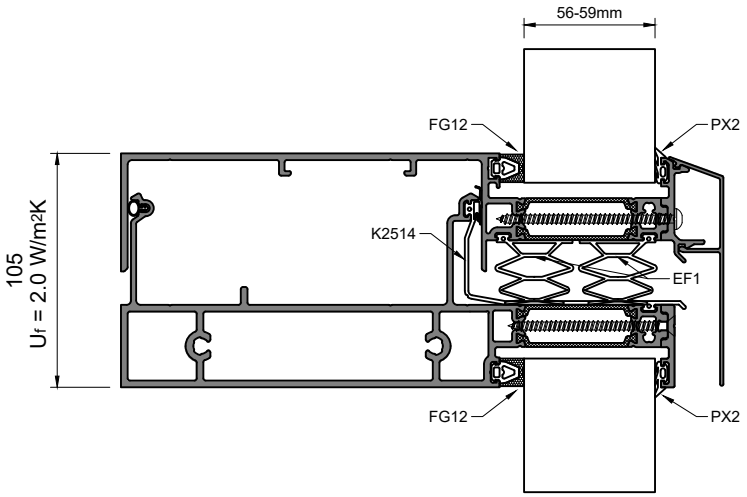


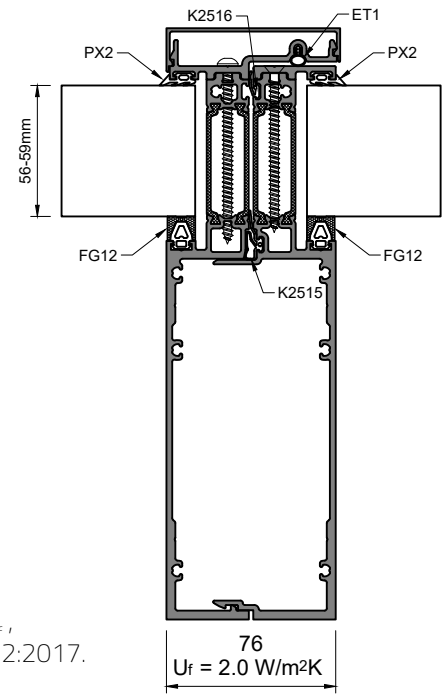
Fixation to structure have to be checked in project basis



ELEMENT SYSTEMS U_F-VALUES

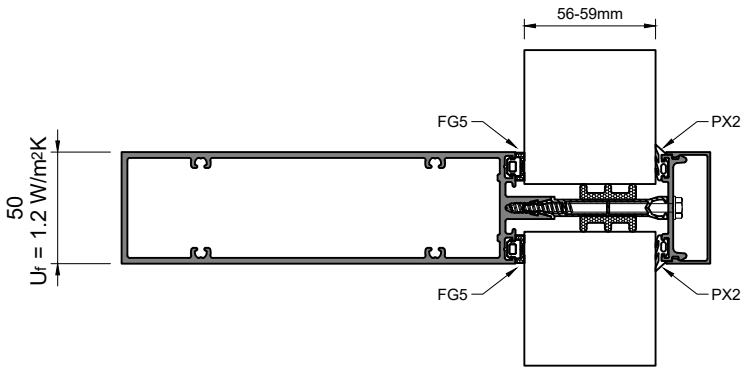


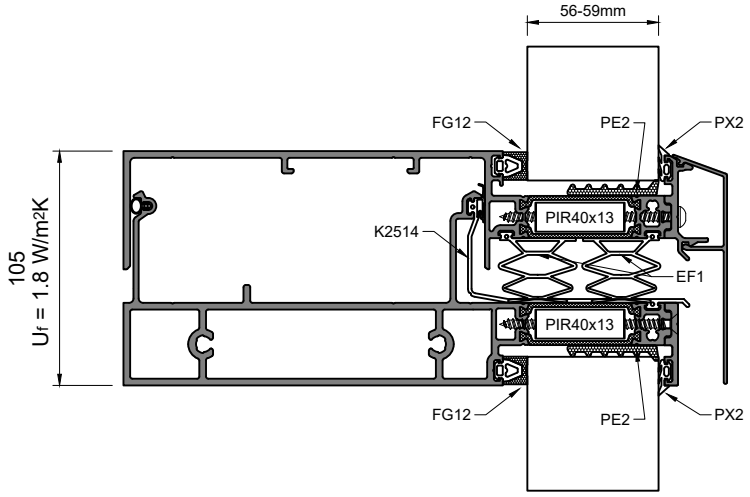


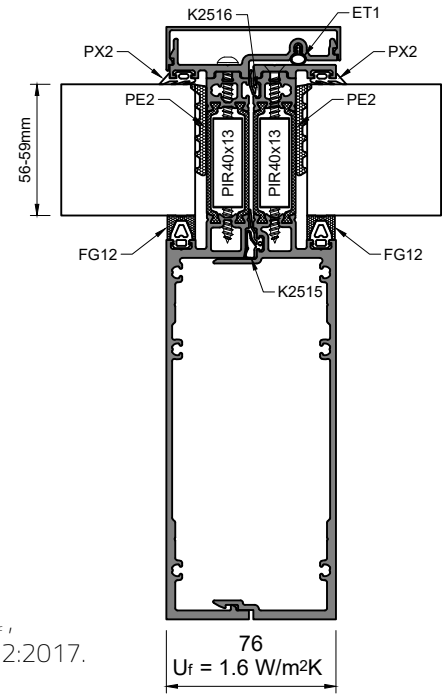


The thermal transmittance of the frame, U_f, calculated accordance with EN ISO 10077-2:2017. The screw influence is included.

INSULATED ELEMENT SYSTEMS U_F-VALUES

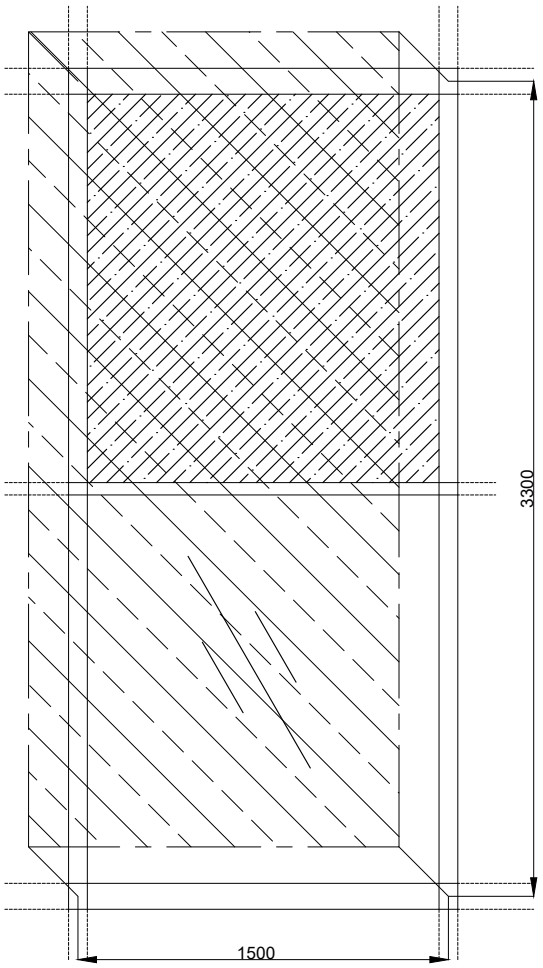






The thermal transmittance of the frame, U_f, calculated accordance with EN ISO 10077-2:2017. The screw influence is included.

EXAMPLE OF THE U-VALUE OF THE ELEMENT



The average heat transfer coefficient of the facade

Calculation according to SFS-EN ISO 12631:2017

Target:
Purso P76E element system
Insulated Glass/ solid element

Dimensions of the element:

Width	1500	mm
Height	3300	mm
Height of the glass part	1572.5	mm
Height of the closed part	1572.5	mm
Horizontal frame width	105	mm
Transom width	50	mm
Vertical frame width	76	mm
A total	4.95	m^2
Aperture	2.24	m^2
Horizontal frame	1.42	m
Vertical frame	3.30	m
Transom frame	1.42	m

Calculation:

Horizontal frame	A_{TJ}	0.15 m^2	U_{TJ}	2.0 $W/(m^2K)$	0.29	W/K
Vertical frame Panel-Panel	A_{TJ}	0.13 m^2	U_{TJ}	1.7 $W/(m^2K)$	0.21	W/K
Vertical frame Glass-Glass	A_{TJ}	0.13 m^2	U_{TJ}	2.3 $W/(m^2K)$	0.29	W/K
Transom frame	A_{TJ}	0.07 m^2	U_{TJ}	2.8 $W/(m^2K)$	0.20	W/K
Glazing	A_g	2.24 m^2	U_g	0.50 $W/(m^2K)$	1.12	W/K
Panel	A_p	2.24 m^2	U_p	0.14 $W/(m^2K)$	0.31	W/K
					2.43	W/K

$$U_{cw} = \frac{\sum A_g U_g + \sum A_p U_p + \sum A_{TJ} U_{TJ}}{\sum A_g + \sum A_p + \sum A_{TJ}}$$

Ucw = 0.49 $W/(m^2K)$

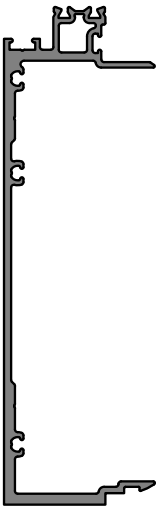
Ucw = 0.49 $W/(m^2K)$

P76E CROSS-SECTIONAL VALUES OF THE FRAME PROFILES

Ix	410.84 cm⁴
Wx	44.19 cm³
Iy	12.06 cm⁴
Wy	4.23 cm³

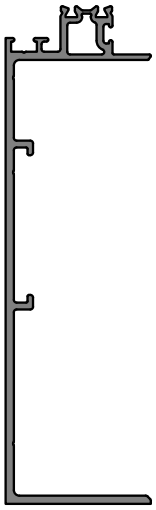
7654001

Ix	467.61 cm⁴
Wx	50.57 cm³
Iy	22.55 cm⁴
Wy	5.32 cm³



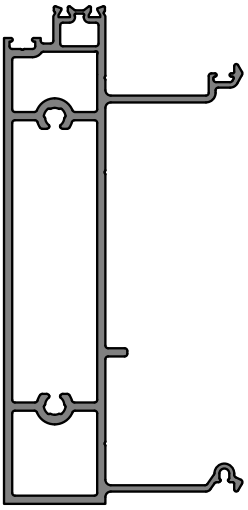
7654002

Ix	405.44 cm⁴
Wx	42.46 cm³
Iy	21.81 cm⁴
Wy	5.42 cm³



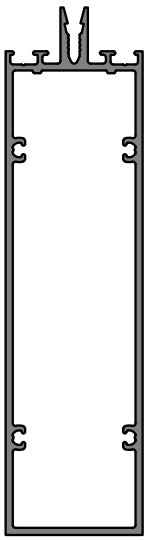
7654004

Ix	669.78 cm⁴
Wx	72.28 cm³
Iy	90.58 cm⁴
Wy	14.88 cm³



7654003

Ix	522.33 cm⁴
Wx	54.18 cm³
Iy	58.91 cm⁴
Wy	23.56 cm³



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CE marking of construction products

CE marking is a common EU-wide system for certifying the characteristics of construction products. By CE marking, a manufacturer declares that their product complies with the applicable harmonised product standard or with a European Technical Approval.
The standards applicable for buildings and building elements are defined on a national level.

Product Standard EN 13830:2003 requirements for facades:

Resistance to wind load:
Facades shall be rigid enough to withstand planned wind loads and transfer them back onto the building frame.
The maximum allowed deflection of frames is L/200 or up to 15 mm.
The allowed deflection on glass panes is L/300. (The product standard does not require this; it is a recommendation from specialty glass industry.)

Resistance to dead weight:
The facade shall withstand its dead weight load and transfer it onto the building frame.
The maximum allowed deflection of horizontal frames due to the weight of the structures (e.g. glass weight) is L/500 or up to 3 mm.

Air permeability:
The air permeability of facades is tested in accordance with Standard EN 12153. The classification is based on Standard EN 12152.
Purso P76E facade system comply with air permeability class AE1200 requirements.

Watertightness:
The watertightness of facades is tested in accordance with Standard EN 12155. The classification is based on Standard EN 12154.
Purso P76E facade systems comply with watertightness class RE1050 requirements.

Resistance to horizontal loads:
Facades shall withstand the variable horizontal loads they are subjected to.

Building movement and thermal movement:
Facade design shall take into account structural thermal movement and building movement.

Thermal transmittance:
The thermal transmittance coefficient U_{cw} of facades shall be defined in accordance with Standard SFS-EN ISO 12631:2017.
The following factors influence thermal transmittance:
- The distribution and size of aluminium frames.
- The U_g value of glass and the type of strip.
- Possible filling pieces.

Other characteristics commonly required from facades:

- Airborne sound insulation
- Resistance to impact
- Resistance to fire

CE marking-related requirements to take into account in the Purso P76E facade design

- The maximum allowed deflection caused due to the wind load complies with Standard EN 13830:2003.
- Lap joint technique shall be used.
- Frame sealings FG5 and FG12.

Manufacturer's actions:

- Factory production control (FPC)
- Declaration of performance (DoP)
- The manufacturer must attach the CE mark.

An updated version of Product standard EN 13830 has been published: EN 13830:2015. However, as it has not yet been published in the Official Journal of the European Union, it cannot be used in CE marking (as of 20 June 2022). One of the updates in the new standard version concerns less strict deflection conditions.

TECHNICAL INFORMATION

Profiles

- Aluminium alloy usually EN-AW 6060 T6
  $R_{P0,2}$ min = 150 N/mm²
  R_m min = 190 N/mm²
  E = 70000 N/mm²
- Thermal transitions caused by changes in temperature must be taken into account in the design
- Thermal expansion coefficient of aluminium is $24x10^{-6}$/K
- Shape tolerances of profiles according to EN 755-9 or EN 12020-2
- Alloy is well suited for anodizing
- Delivery length of profiles normally 6,6 m, other lengths available on request
- Material of thermal breaks is polyamide which endures anodizing and powder coating

Surface treatment

Anodizing

Anodizing is an electrochemical method for increasing the thickness of the natural oxide layer of aluminium. Anodizing forms a hard, mechanical wear-resistant surface with excellent weather resistance.

Powder Coating

In powder coating the powder is injected into the surface of the profiles, which then is melted in a furnace into a durable and smooth surface. Before painting, the profiles are pre-processed, in order to ensure the endurance of the coating. Normally profiles are painted with RAL color shades, but other colors are also possible.

Gaskets

Material: EPDM-rubber
Colour: black

Valmistus, myynti ja tekninen neuvonta
Manufacturing, sales and technical information

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12/2022