batimet

Wood-Aluminium · Systems · Windows · Façades



batimet TM50 SE / TM60 SE / TM80 SE

Curtain-Wall-Systems
Assembling Instructions

Edition 54.34

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System-Overview

As a variable system solution, the batimet curtain wall is suitable for both - single-story and multi-story-facades with wooden substructures. The TM50 SE, TM60 SE, and TM80 SE systems stand out for their outstanding design. The design possibilities are virtually unlimited. Both structural and polygonal constructions can be realized. Visible and invisible screw connections are available as facade finish options. Integrated pressure profiles give the TM50 a structural glazing look, and special solutions for burglary protection meet the highest standards of batimet curtain wall systems are extremely easy to work with, ensuring predictable costs and high cost-effectiveness for the construction project. batimet curtain wall systems are compatible with all batimet window systems and have excellent U-values in accordance with DIN EN ISO 10077. According to DIN 4108-4, batimet wood-aluminum curtain wall systems are classified in frame material group 1.

batimet TM50 SE

- The visible width is 50 mm
- Passive House-certified facade system
- High glass loads and glass thicknesses up to 62 mm
- 3 sealing levels available
- Vapor diffusion groove
- Cover Caps in various styles
- Visible screwing of cover caps possible
- Inserted elements from all system possible
- Powder coating or anodizediziced cover caps and inserted elements

Montagevideo:
https://youtu.be/QAsZnqiDo0g

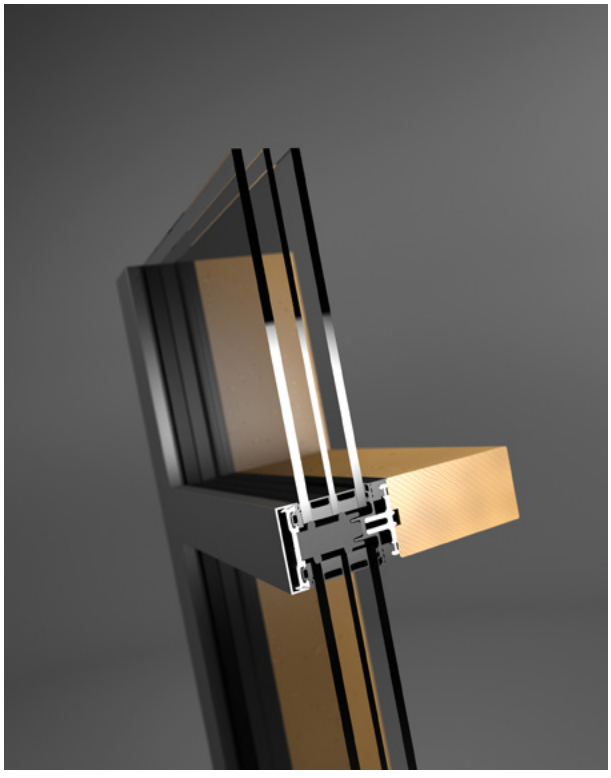


Fig. 1: batimet TM50 SE

batimet TM60 SE

- The visible width is 60 mm
- High glass loads and glass thicknesses up to 62 mm
- Higher glazing bite for bigger glass panes
- Increased structural requirements
- 3 sealing levels available
- Vapor diffusion groove
- Cover Caps in various styles
- Inserted elements from all system possible
- Powder coating or anodizediziced cover caps and inserted elements

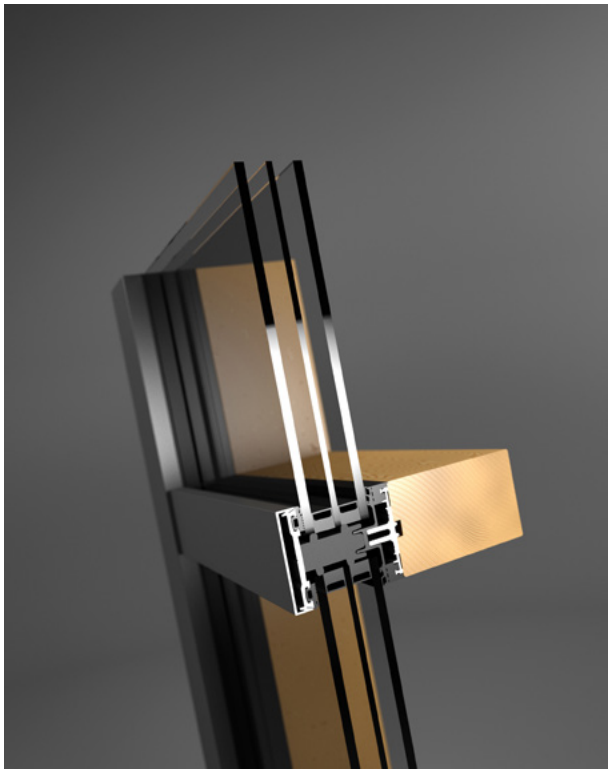


Fig. 2: batimet TM60 SE

batimet TM80 SE

- The visible width is 80 mm
- High glass loads and glass thicknesses up to 62 mm
- Higher glazing bite for bigger glass panes
- Increased structural requirements
- 3 sealing levels available
- Vapor diffusion groove
- Cover Caps in various styles
- Inserted elements from all system possible
- Powder coating or anodizediziced cover caps and inserted elements

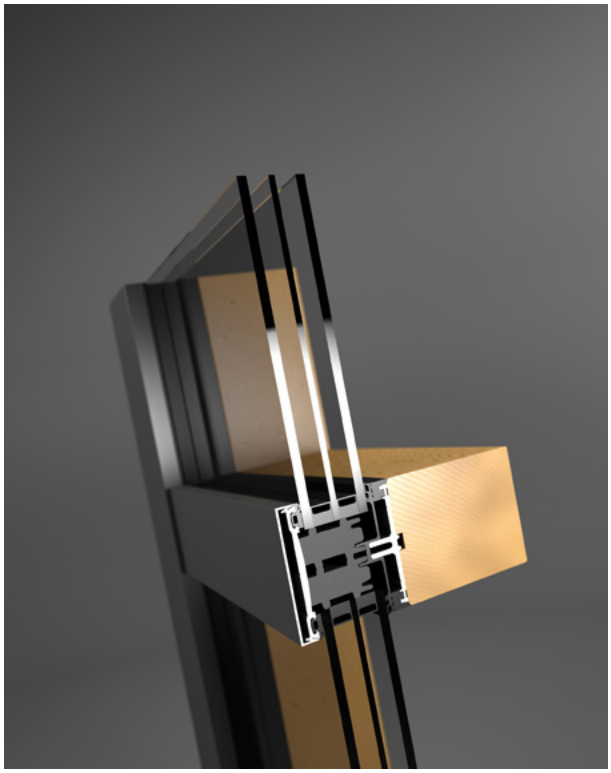


Fig. 3: batimet TM80 SE

System tests

Characteristics	Test report	Result
Air permeability	PB Nr. 40-1/16 (PIV)	Class A 4
Water resistance		Class RE 1200
Wind resistance		±1200 Pa (1800 Pa increased forces)
Sound insulation	31100 1621/1/06 (HFB)	R_w (C; C_{tr}) = 44 (-1; -4) dB
Soft and Hard Impact	261032 (eph Dresden)	Class 5
ETA mullion-transom-connector	PB Nr. 166128 (KIT)	ETA-18/0033
National technical approval	PB Nr. 076150 (KIT)	AbZ Z-14.4-669

Tab. 1: System tests

Comprehensive test reports for mullion-and-beam systems in accordance with DIN EN 13830 are available. These can be provided upon request.

Requirements for wood

Wood types

- Solid wood components in accordance with EN 14081
- Glued laminated timber in accordance with EN 14080
- Laminated veneer lumber (LVL) in accordance with EN 14374 or the European Technical Assessment
- Plywood in accordance with EN 636 or the European Technical Assessment

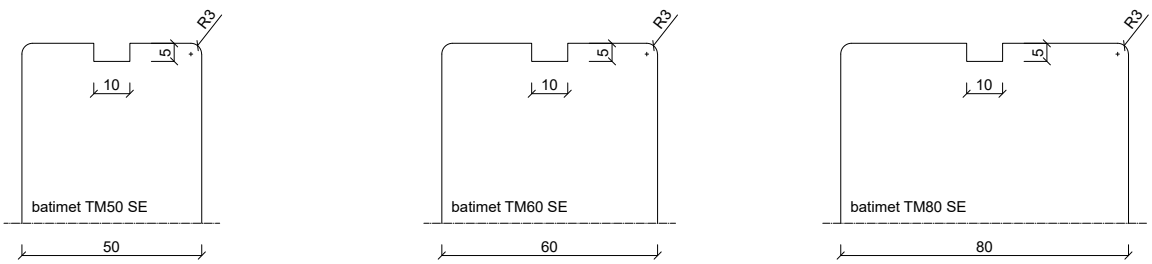


Fig. 4: Processing of wood profiles

Statical calculations

Glass forces

The maximum of the glass forces depends on the glass thickness and the selected glass carrier. Up to 300 kg it is recommended to consider using heavy-duty glass carriers. The maximum of the glass forces for heavy-duty glass carriers is 500 kg. This value depends on the local wind forces, glass dimensions, glass thickness and other factors.

Permitted Bending

- Mullion: L/300 or max. 8 mm (Follow instructions by the manufacturer of the insulated glass!)
- Transom: max. 3 mm

Further information on sizing and design verification is available upon request.

Thermal insulating

Calculation basics
Calculated Ucw element dimension 1.000 mm x 2.500 mm
Calculation basics:
DIN EN ISO 10077-1, DIN EN ISO 10077-2, DIN EN 13947
DIN 4108, DIN EN 673
Base of the calculations are the visible widths.
As the ratio of glass area to frame area increases, the Ucw
value improves.
The classification of wood species according to thermal
conductivity is based on DIN EN ISO 10077-2 [2012-06].
The thickness of the glazing used affects the Uf value.
Calculation formula:
$\frac{\Sigma (A_g \times U_g) + \Sigma (A_f \times U_f) + \Sigma (l_g \times Y_g) + \Sigma (A_p \times U_p)}{\Sigma (A_g + A_f + A_p)}$

Definition of variables	
Glass surface	Ag
Frame surface	Af
Panel surface	Ap
Length glass spacer	Lg
Thermal transmittance glass	Ug
Thermal transmittance frame	Uf
Thermal transmittance panel	Up
Thermal transmittance glass spacer	Ψg

Calculation basics U-Value	
Plastic glass spacer double-Iso	0,040 W/mK
Plastic glass spacer triple-Iso	0,035 W/mK
Thermal insulated panel	0,035 W/mK

Depending on the layout and size adjustments, the Ucw values of the elements will also change. Frame widths and the choice of edge seal also affect these values. We would be happy to calculate the exact Uw values of the window elements for your project. The current batimet terms and conditions at www.batimet.com apply. Subject to technical changes. As of June 12, 2018. You can find current data at: www.batimet.com

TM50 SE

Group of wood types	Infill thickness	UF W/(M²K)	UG 1,1/ DOUBLE ISO	UG 1,0/ DOUBLE ISO	UG 0,7/ TRIPLE ISO	UG 0,6/ TRIPLE ISO	UG 0,5/ TRIPLE ISO
1 - WLF=0,110 W/(m²K)	44	0,75	1,13	1,05	0,81	0,73	0,65
Fir, Spruce	50	0,66	1,12	1,04	0,79	0,71	0,63
Silver Fir	56	0,63	1,11	1,03	0,79	0,71	0,62
2 - WLF=0,130 W/(m²K)	44	0,75	1,13	1,05	0,81	0,73	0,65
Pine, Douglas Fir	50	0,66	1,12	1,04	0,79	0,71	0,63
Larch, Hemlock	56	0,63	1,11	1,03	0,79	0,71	0,62
3 - WLF=0,160 W/(m²K)	44	0,76	1,14	1,06	0,81	0,73	0,65
Meranti, Teak	50	0,67	1,12	1,04	0,79	0,71	0,63
Eucalyptus	56	0,64	1,11	1,03	0,79	0,71	0,63
4 - WLF=0,180 W/(m²K)	44	0,76	1,14	1,06	0,81	0,73	0,65
Oak	50	0,67	1,12	1,04	0,79	0,71	0,63
American Oak	56	0,64	1,11	1,03	0,79	0,71	0,63

Tab. 2: U-Value batimet TM50 SE

TM60 SE

Group of wood types	Infill thickness	UF W/(M²K)	UG 1,1/ 2-FACH ISO	UG 1,0/ 2-FACH ISO	UG 0,7/ 3-FACH ISO	UG 0,6/ 3-FACH ISO	UG 0,5/ 3-FACH ISO
1 - WLF=0,110 W/(m²K)	44	0,72	1,12	1,04	0,80	0,72	0,64
Fir, Spruce	50	0,63	1,11	1,03	0,78	0,70	0,62
Silver Fir	56	0,61	1,10	1,02	0,78	0,70	0,61
2 - WLF=0,130 W/(m²K)	44	0,72	1,12	1,04	0,80	0,72	0,64
Pine, Douglas Fir	50	0,64	1,11	1,03	0,78	0,70	0,62
Larch, Hemlock	56	0,61	1,10	1,02	0,78	0,70	0,61
3 - WLF=0,160 W/(m²K)	44	0,73	1,13	1,05	0,80	0,72	0,64
Meranti, Teak	50	0,64	1,11	1,03	0,78	0,70	0,62
Eucalyptus	56	0,61	1,10	1,02	0,78	0,70	0,62
4 - WLF=0,180 W/(m²K)	44	0,73	1,13	1,05	0,80	0,72	0,64
Oak	50	0,65	1,11	1,03	0,78	0,70	0,62
American Oak	56	0,62	1,10	1,02	0,78	0,70	0,62

Tab. 3: U-Value batimet TM60 SE

TM80 SE

Group of wood types	Infill thickness	UF W/(M²K)	UG 1,1/ 2-FACH ISO	UG 1,0/ 2-FACH ISO	UG 0,7/ 3-FACH ISO	UG 0,6/ 3-FACH ISO	UG 0,5/ 3-FACH ISO
1 - WLF=0,110 W/(m²K)	44	0,68	1,10	1,02	0,78	0,71	0,63
Fir, Spruce	50	0,61	1,09	1,01	0,76	0,69	0,61
Silver Fir	56	0,59	1,08	1,00	0,76	0,69	0,60
2 - WLF=0,130 W/(m²K)	44	0,70	1,10	1,02	0,78	0,71	0,63
Pine, Douglas Fir	50	0,62	1,09	1,01	0,76	0,69	0,61
Larch, Hemlock	56	0,60	1,08	1,00	0,76	0,69	0,60
3 - WLF=0,160 W/(m²K)	44	0,70	1,11	1,03	0,78	0,71	0,63
Meranti, Teak	50	0,63	1,09	1,01	0,76	0,69	0,61
Eucalyptus	56	0,60	1,08	1,00	0,76	0,69	0,61
4 - WLF=0,180 W/(m²K)	44	0,71	1,11	1,03	0,78	0,71	0,63
Oak	50	0,63	1,09	1,01	0,76	0,69	0,61
American Oak	56	0,61	1,08	1,00	0,76	0,69	0,61

Tab. 4: U-Value batimet TM80 SE

Temperature curve TM50 SE

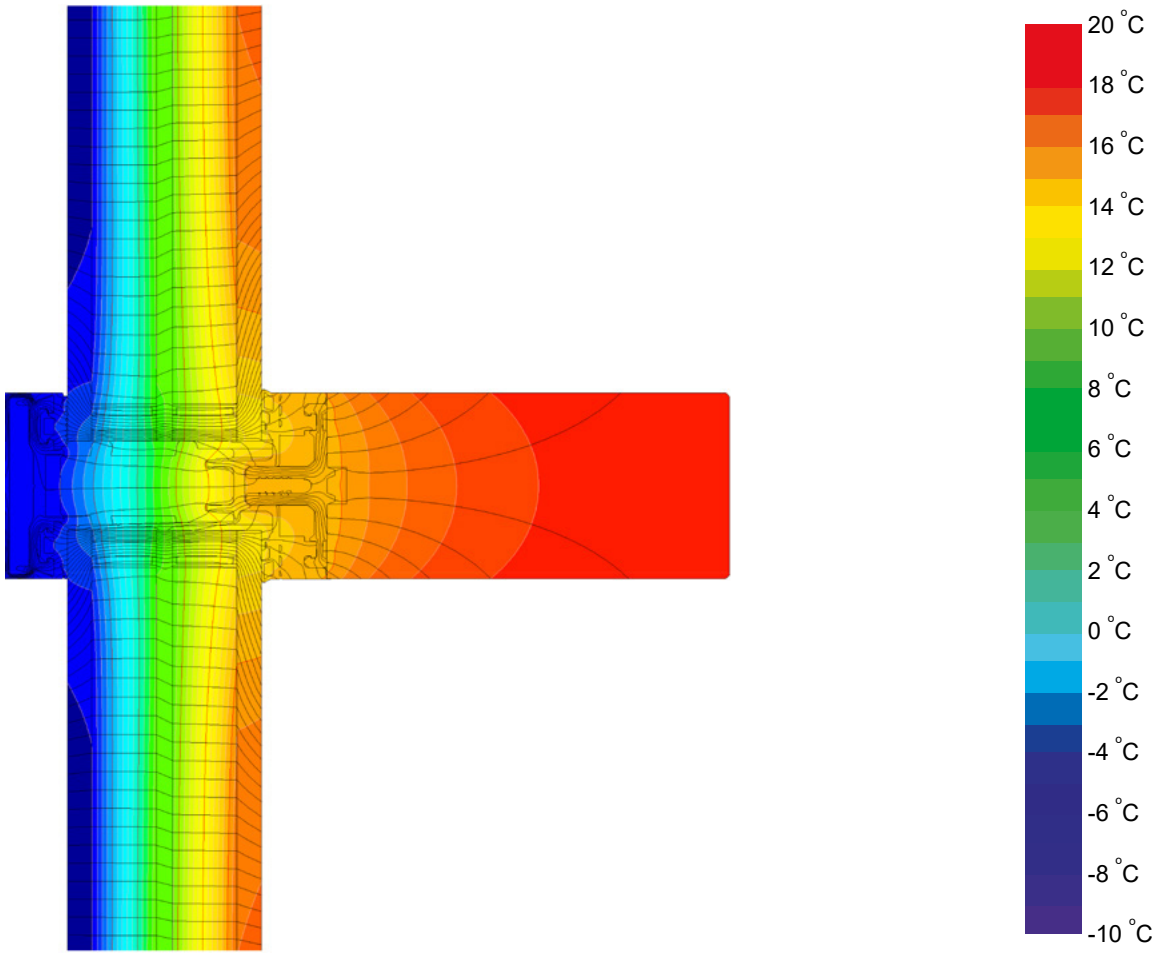


Fig. 5: Temperature curve batimet TM50 SE

Mullion-Transom-Connector

European Technical Assessment ETA-18/0033

ETA-18/0033 regulates the use of mullion-transom-connectors and heavy-duty glass carriers through a European Technical Assessment. batimet mullion-and-rail connectors are wood fasteners consisting of one aluminum mullion element and one aluminum rail element each, which are fastened to the rail and the mullion using screws with an external thread diameter of 5 mm. To absorb wind suction and wind pressure loads, two connector screws are inserted into each connector.

batimet mullion-and-beam connectors are used as timber fasteners for load-bearing timber structures that must be designed and constructed in accordance with DIN 10521 or DIN EN 1995-1-12 in conjunction with DIN EN 1995-1-1/NA3. The applicability of these standards is subject to the building codes and technical building regulations of the respective states.

The depth of transom and mullion needs to be 80 mm at minimum.

The visible width of transom and mullion needs to be 50 mm at minimum.

ETA DANMARK

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Authorised and notified according to Article 29 of the Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011

MEMBER OF EOTA

European Technical Assessment ETA-18/0033 of 2025/10/24

I General Part

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: ETA-Danmark A/S

Trade name of the construction product:	batimet TM-connectors
Product family to which the above construction product belongs:	Three-dimensional nailing plate (concealed beam hangers)
Manufacturer:	batimet GmbH Enderstrasse 90 DE-01277 Dresden Tel +49.351.81186.0 Fax +49.351.81186.11 Internet www.batimet.de
Manufacturing plant:	batimet GmbH Enderstrasse 90 DE-01277 Dresden
This European Technical Assessment contains:	27 pages including 3 annexes which form an integral part of the document
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:	EAD 130186-00-0603, Three Dimensional Nailing Plates
This version replaces:	The ETA with the same number issued on 2018-03-08

Fig. 6: European Technical Assessment ETA-18/0033

Installation mullion-transom-connector

Only 5,0 mm fully threaded countersunk screws (or equivalent) made of stainless steel in accordance with European Technical Approval ETA-11/0190 may be used to secure the connector parts to the mullion and the transom. The lengths of the screws should be selected as follows:

- Mullion: 5,0 x 50 mm
- Transom: 5,0 x 70 mm

To make it easier to install the connector on the mullion, you can use the installation guide (see Fig. 7: Using the installation guide for mullion-transom-connectors).

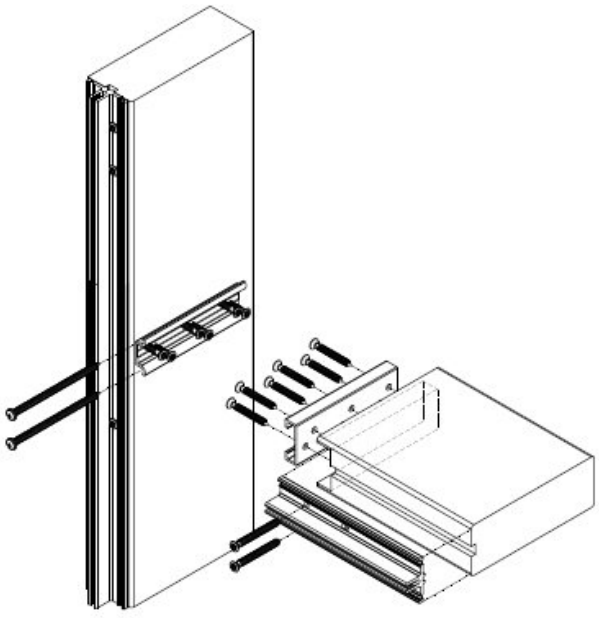


Fig. 7: Exploded view of connector assembly

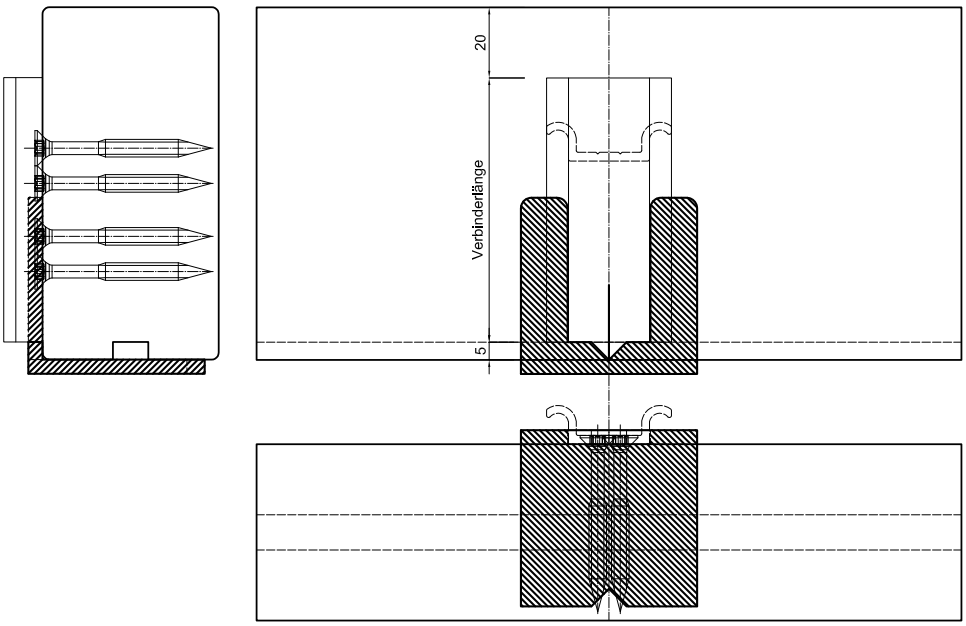


Fig. 8: Using installation guide for connector

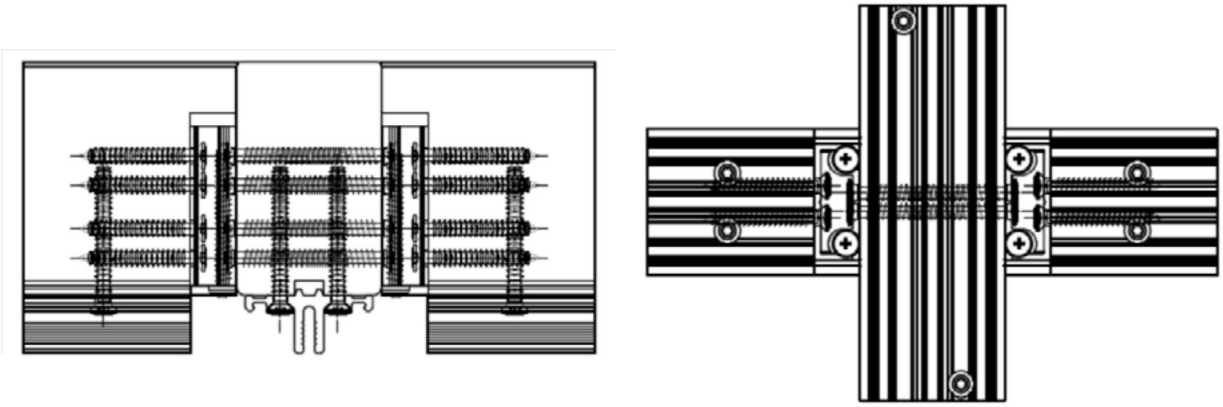


Fig. 09: Assembly diagram connector

Selection connector

The batimet mullion-transom-connector is selected based on the rail depth. The following table provides examples for rail depths ranging from 80 to 255 mm. The fastening screws for securing the connector to the wood are not included with the mullion-transom-connector.

Transom depth [mm]	Connector length [mm]	Article number	Connector screws
80	55	6925055	6625550
105	80	6925080	6625565
125	100	6925100	6625590
140	115	6925115	6615600
165	140	6925140	6615600 + Steel pin[1]
195	170	6925170	6615600 + Steel pin[1]
225	200	6925200	6615600 + Steel pin[1]
255	230	6925230	6615600 + Steel pin[1]

[1] Length steel pin = connector length - 100 mm
The steel pin must be pushed in to the screw hole before the connector screws are screwed in!

Tab. 5: Selection connector

Milling pattern

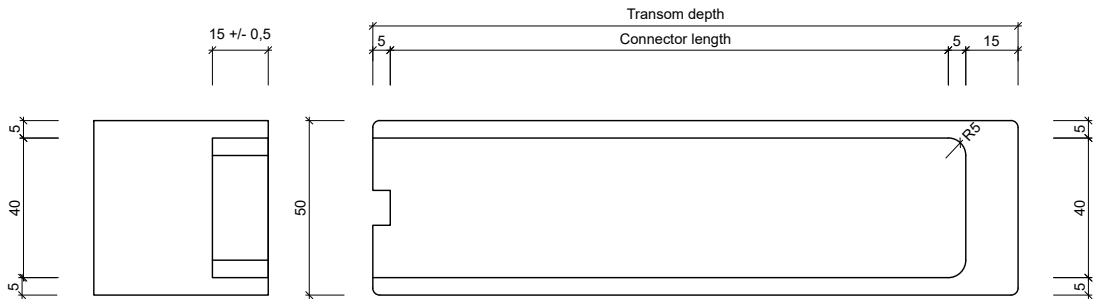
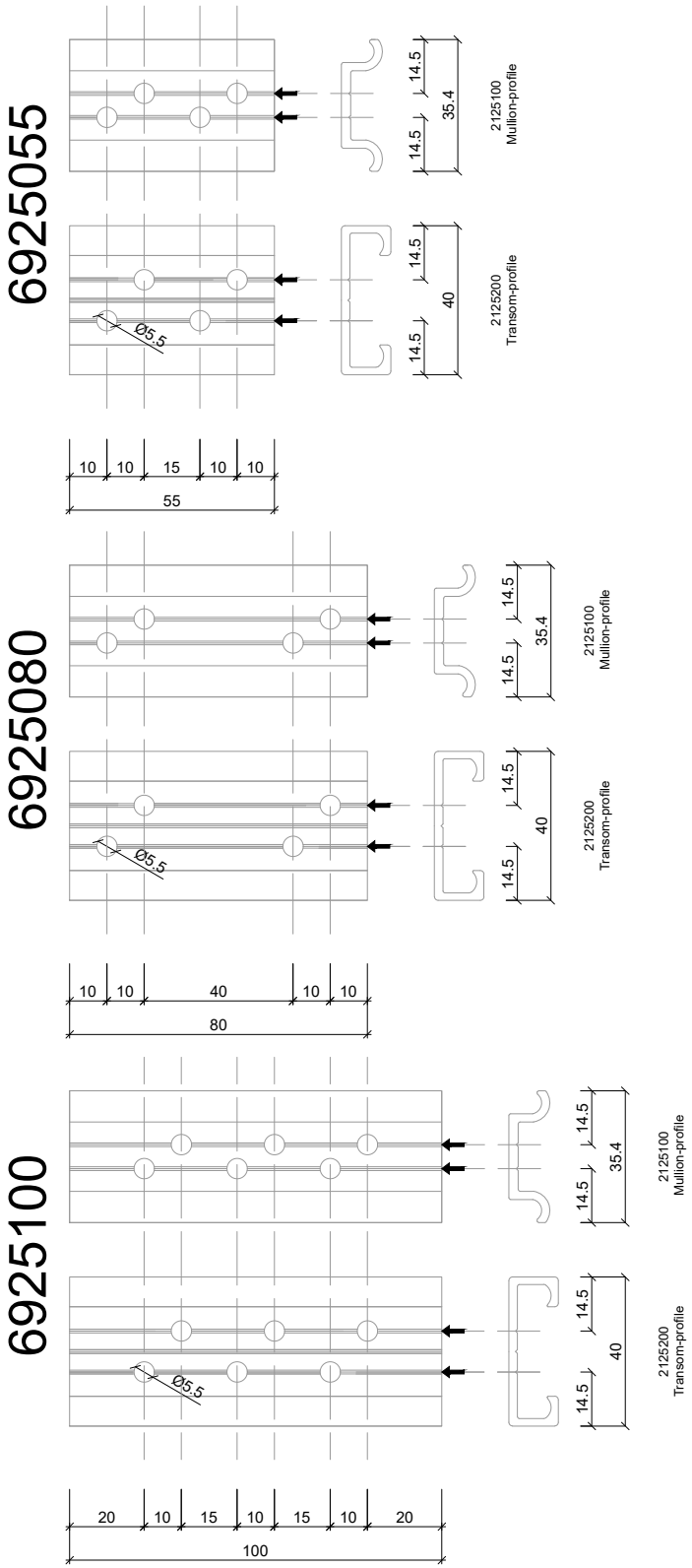
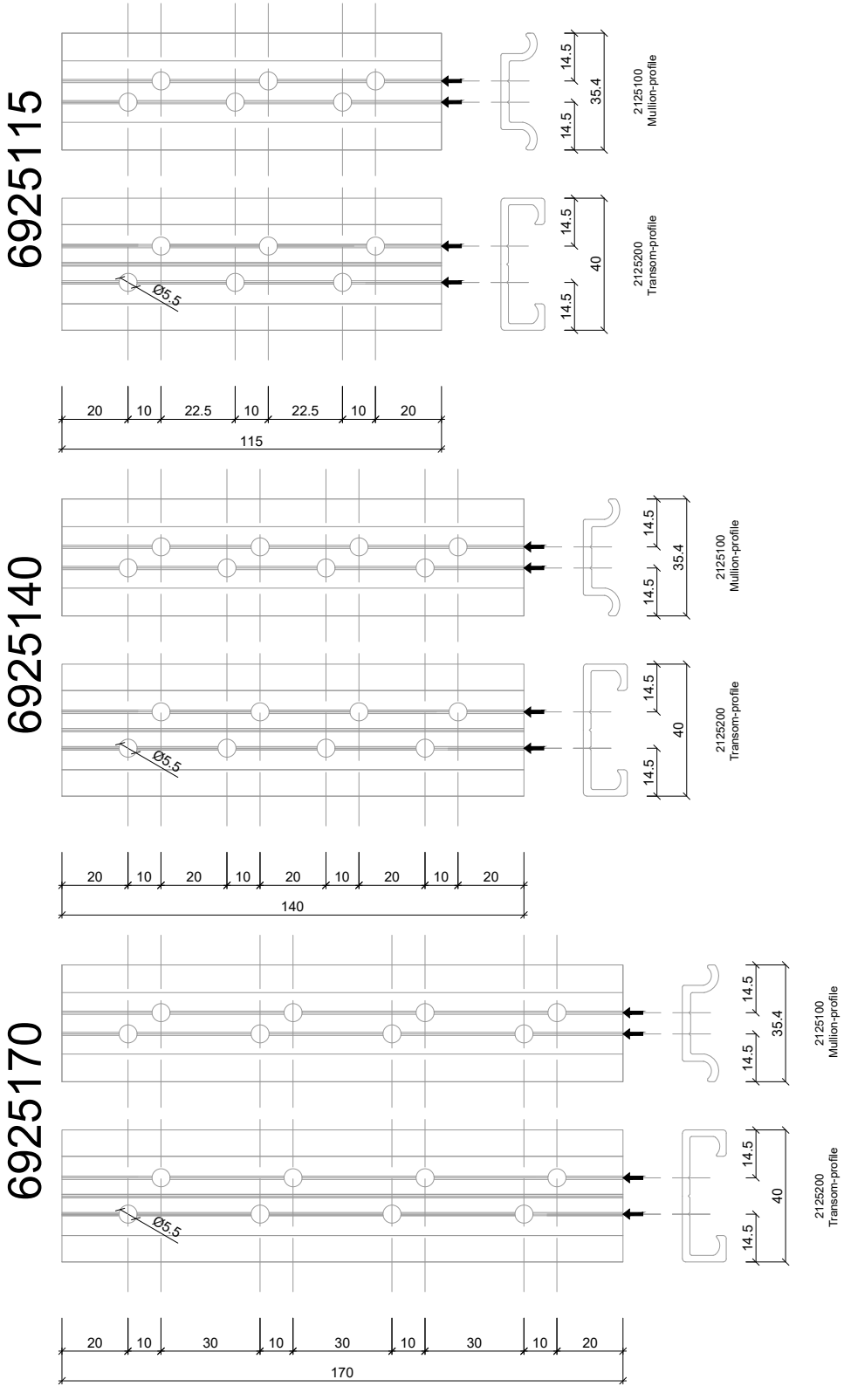


Fig. 10: Milling pattern connector

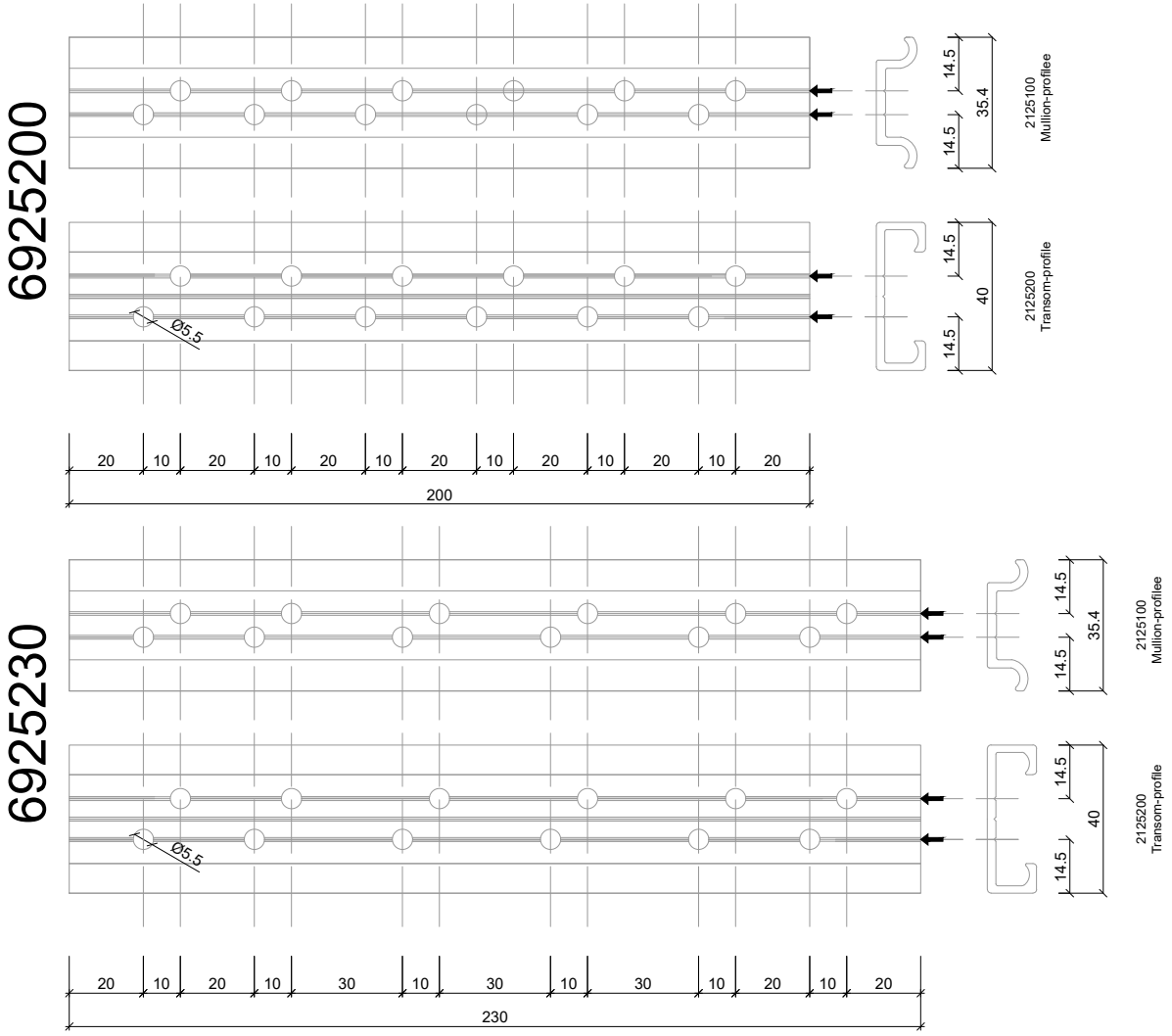
Selection Connector



Selection Connector



Selection Connector



Connection angled transom

The batimet mullion-transom-connector can also be used to construct beam profiles that are intended to be angled in the elevation.

Installing the connectors requires modifications to the profiles. Therefore, these slanted transoms must be used only as non-load-bearing profiles (upper transom level). If additional modifications are made to the mullion profiles, a structural analysis of the system's functionality is recommended.

The following variation of the mullion-and-beam joint exists:
1. Doubling the beam (see figures 11, 12, and 13)

The connections shown were designed with a 45° angle. If a steeper angle is required, it is recommended that the functionality be verified.

Doubling the Transom

When doubling up the transom, another piece of wood is attached to the top of the transom. It is recommended to reduce the depth of the wood extension by 10 mm and to position it centrally on the transom (see figure 11). This ensures there is sufficient space for the building envelope connection.

It is secured using glue and screws.

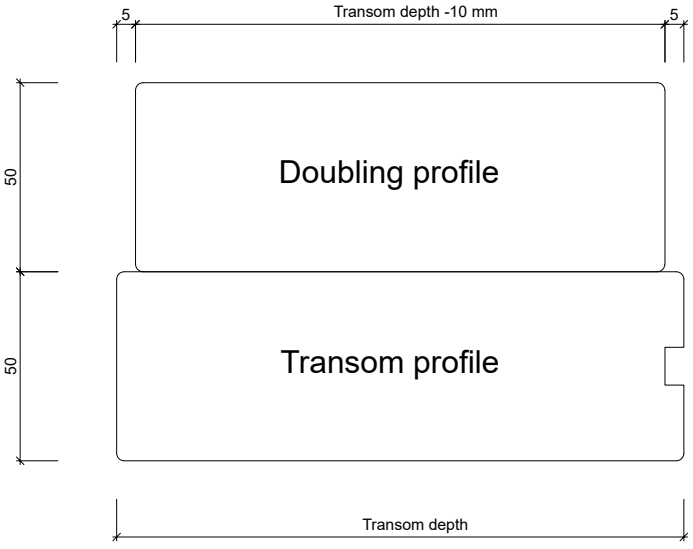


Fig. 11: angled Transom Variant 1 - Positioning of the doubling profile

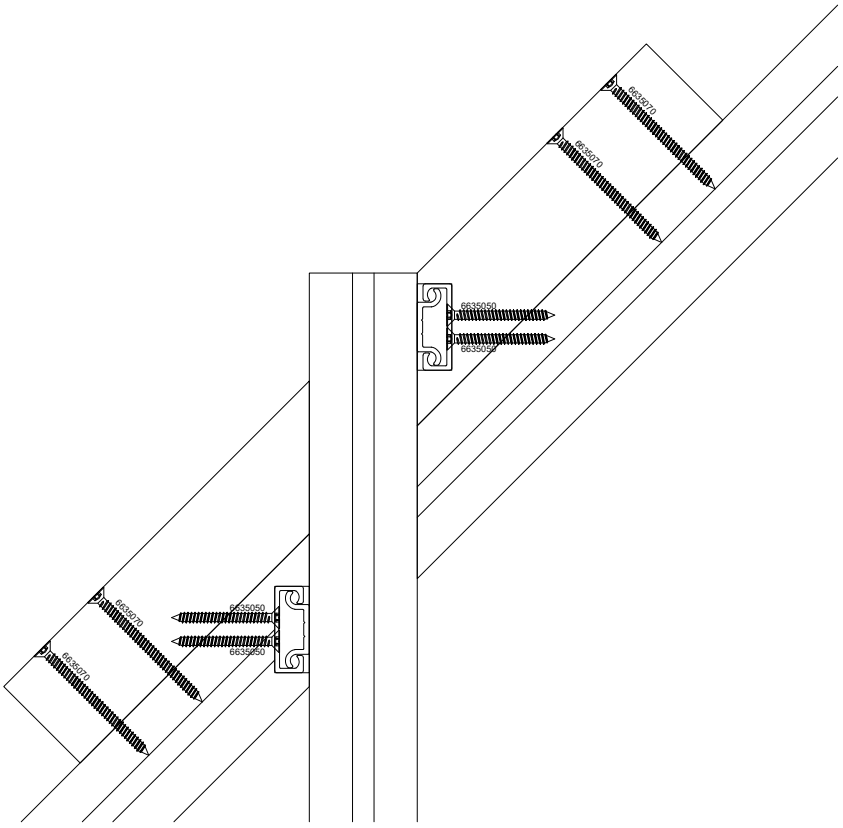


Fig. 12: angled Transom Variant 1 - Positioning of the doubling profile - Slope

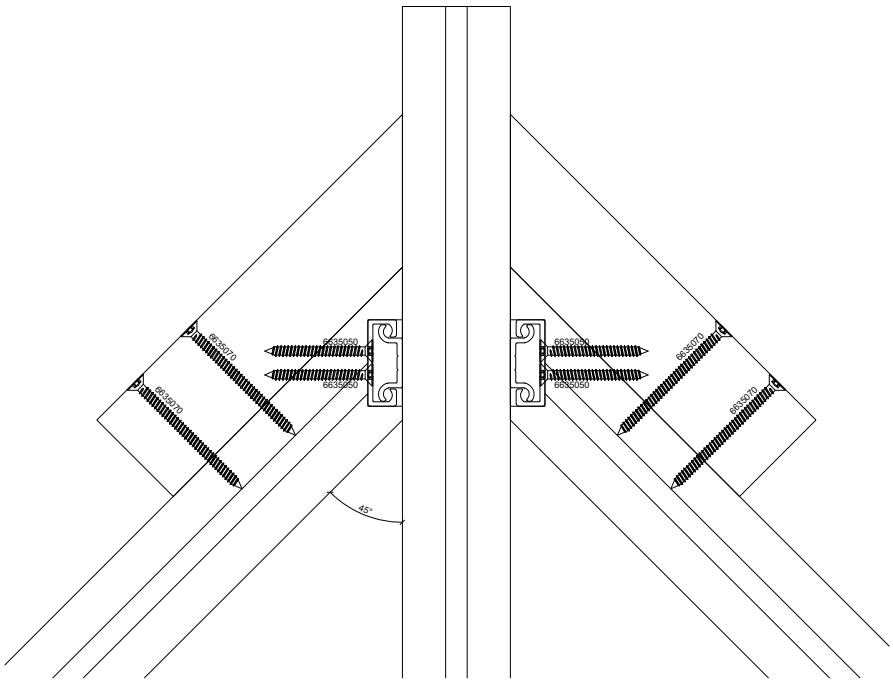


Fig. 13: angled Transom Variant 1 - Positioning of the doubling profile - Gable

Top-mounted structure

The batimet mullion-transom system is a clamping connection used to secure facade elements (e.g., glass, panel, or opening elements). The clamp connection, which is attached to the substructure (wooden mullion and transom profiles), consists of aluminum base profiles with a screw channel, aluminum pressure profiles, and glass carriers made of plastic or aluminum, as well as thread-forming screws (sheet metal screws) and wood screws.

The base profiles are fastened to the wooden mullion and transom profiles at 125 mm intervals using wood screws. The linear clamp joint, which is created by tightening the corresponding sheet metal screws and the resulting contact pressure of the contact profiles, serves to absorb wind suction forces. The pressure profiles are connected to the screw channel of the base profiles using sheet metal screws spaced no more than 250 mm apart. The clamping connection is subjected exclusively to tensile forces. The self-weight of the facade elements is supported by two glass carriers made of plastic or aluminum per facade element, which are connected to the screw channel of the base profiles using metal screws. In the case of aluminum glass carriers (heavy-duty glass carriers), steel bolts additionally ensure that the glass load is transferred to the substructure. The technical specifications must be observed.

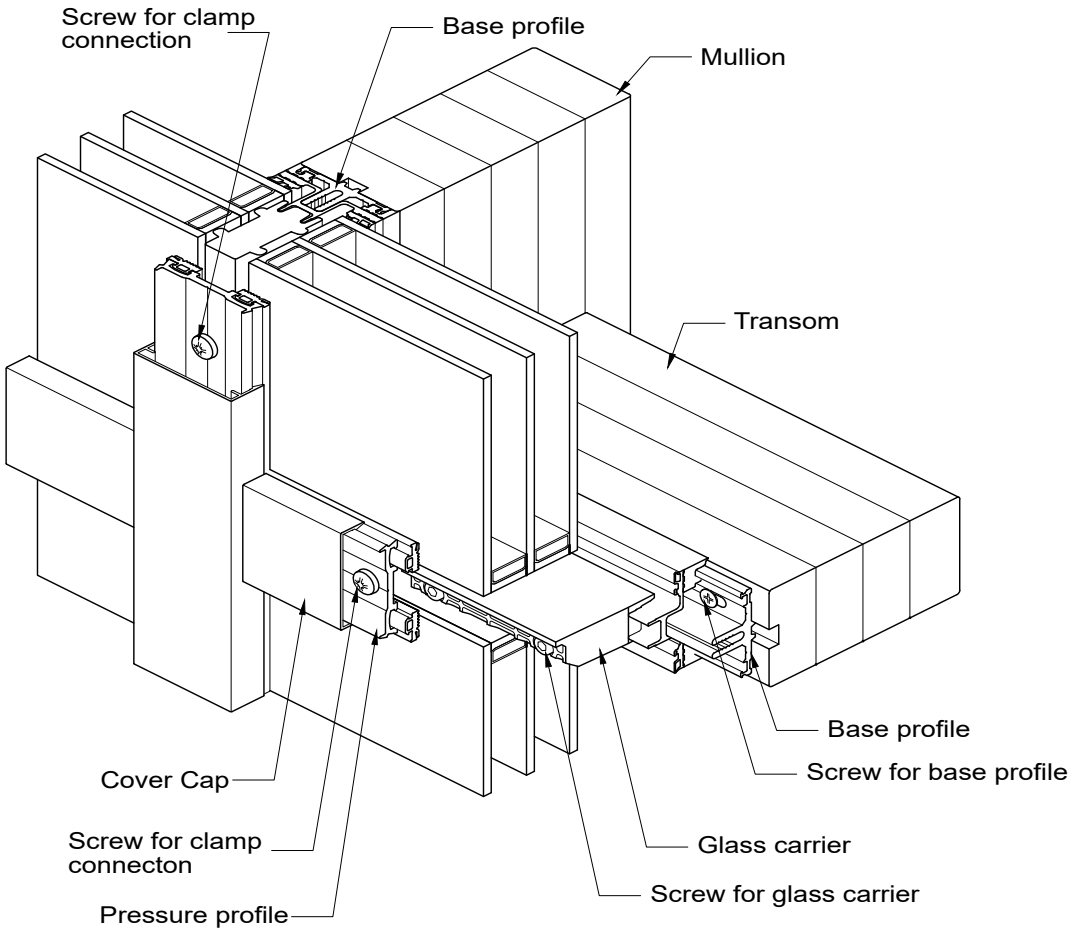
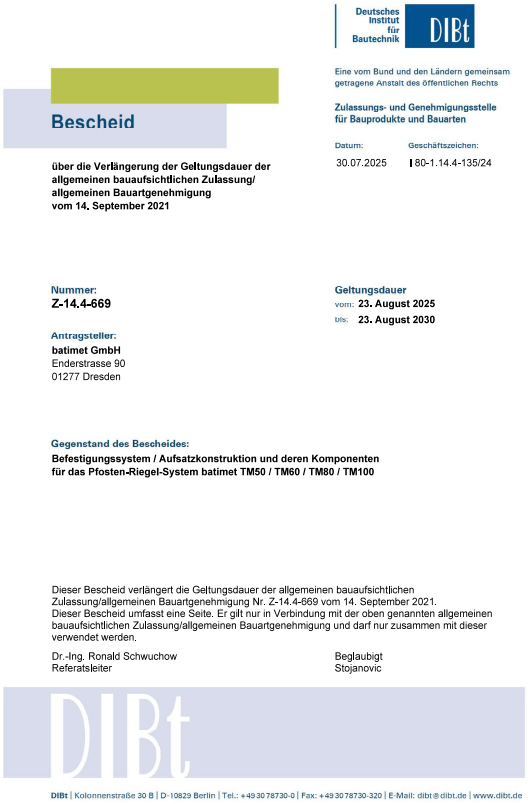


Fig. 14: Components top-mounted structure

National Technical Approval Z-14.4-669

The number of the National technical approval issued by the DIBt for the clamp connection is Z-14.4-669. It contains the essential characteristics and system specifications for the batimet mullion-transom-system. Installation of the mullion-transom-system requires familiarity with the contents of the type approval. The document is available online at www.batimet-kompendium.de.



Deutsches Institut für Bautechnik DIBt

Eine vom Bund und den Ländern gemeinsam getragene Anstalt des öffentlichen Rechts

Zulassungs- und Genehmigungsstelle für Bauprodukte und Bauarten

Bescheid

Datum: 30.07.2025 Geschäftszeichen: I 80-1.14.4-135/24

über die Verlängerung der Geltungsdauer der allgemeinen bauaufsichtlichen Zulassung/ allgemeinen Bauartgenehmigung vom 14. September 2021

Nummer: Z-14.4-669

Geltungsdauer vom: 23. August 2025 bis: 23. August 2030

Antragsteller: batimet GmbH, Enderstrasse 90, 01277 Dresden

Gegenstand des Bescheides: Befestigungssystem / Aufsatzkonstruktion und deren Komponenten für das Pfosten-Riegel-System batimet TM50 / TM60 / TM80 / TM100

Dieser Bescheid verlängert die Geltungsdauer der allgemeinen bauaufsichtlichen Zulassung/allgemeinen Bauartgenehmigung Nr. Z-14.4-669 vom 14. September 2021. Dieser Bescheid umfasst eine Seite. Er gilt nur in Verbindung mit der oben genannten allgemeinen bauaufsichtlichen Zulassung/allgemeinen Bauartgenehmigung und darf nur zusammen mit dieser verwendet werden.

Dr.-Ing. Ronald Schwuchow, Referatsleiter — Beglaubigt Stojanovic

DIBt

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Fig. 15: National Technical Approval Z-14.4-669

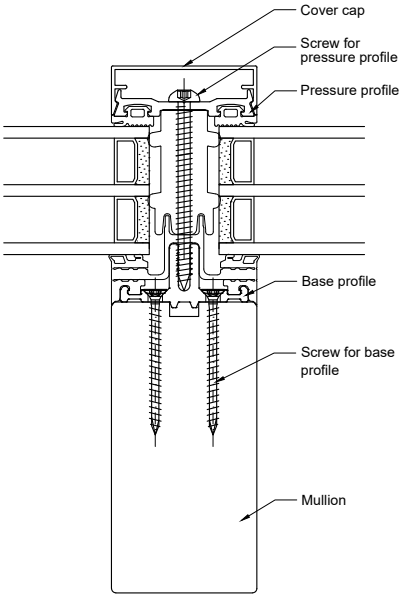


Fig. 16: Sample image mullion

Cutting lists and drilling templates

Overview of cut-to-size aluminum system profiles and gaskets

Profile type	Profile length [mm]	Offset from the mullion centerline [mm]			Gap size [mm]
		TM50	TM60	TM80	
Cover Cap	0 < L ≤ 3000	26,0	31,0	41,0	1,0
	3000 < L ≤ 4000	26,5	31,5	41,5	1,5
	4000 < L ≤ 6000	27,0	32,0	42,0	2,0
Pressure profile	0 < L ≤ 3000	27,5	32,5	42,5	3,5
	3000 < L ≤ 4000	28,0	33,0	43,0	4,0
	4000 < L ≤ 6000	28,5	33,5	43,5	4,5
Base profile		41	46	56	16

Tab. 6: Gap sizes for Cover Caps based on profile length

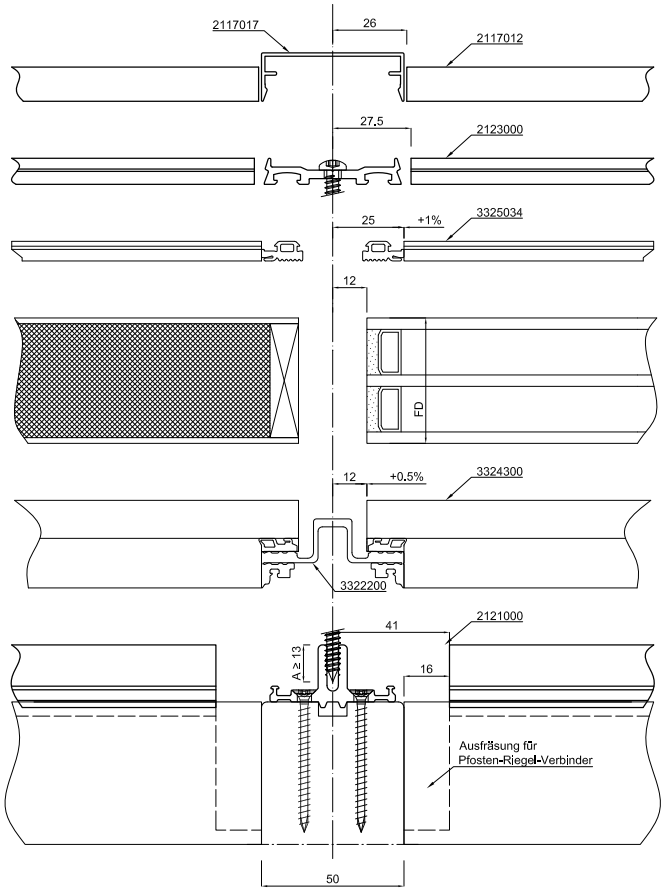


Fig. 17: Cutting length, using the TM50 as an example

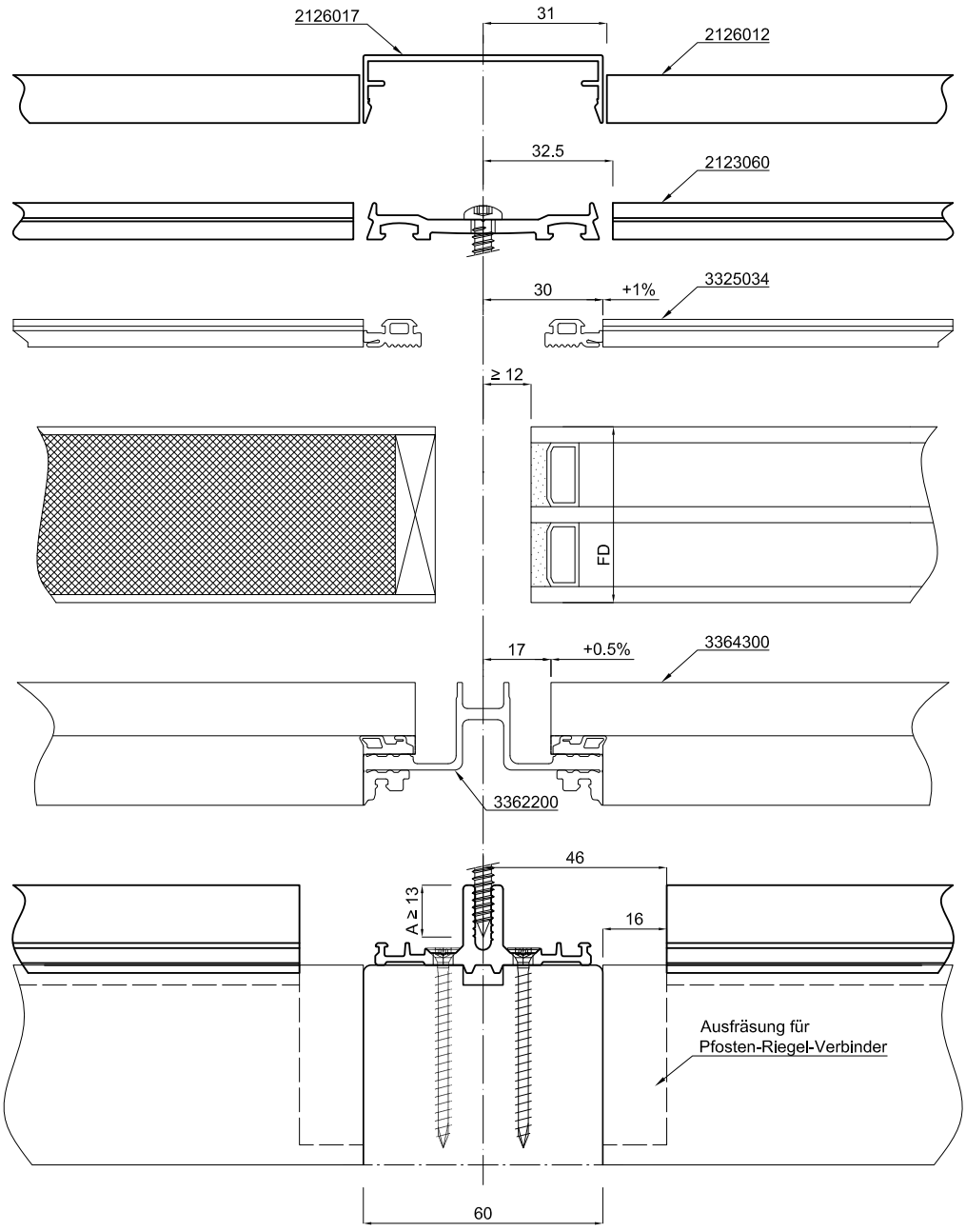


Fig. 18: Cutting length, using the TM60 as an example

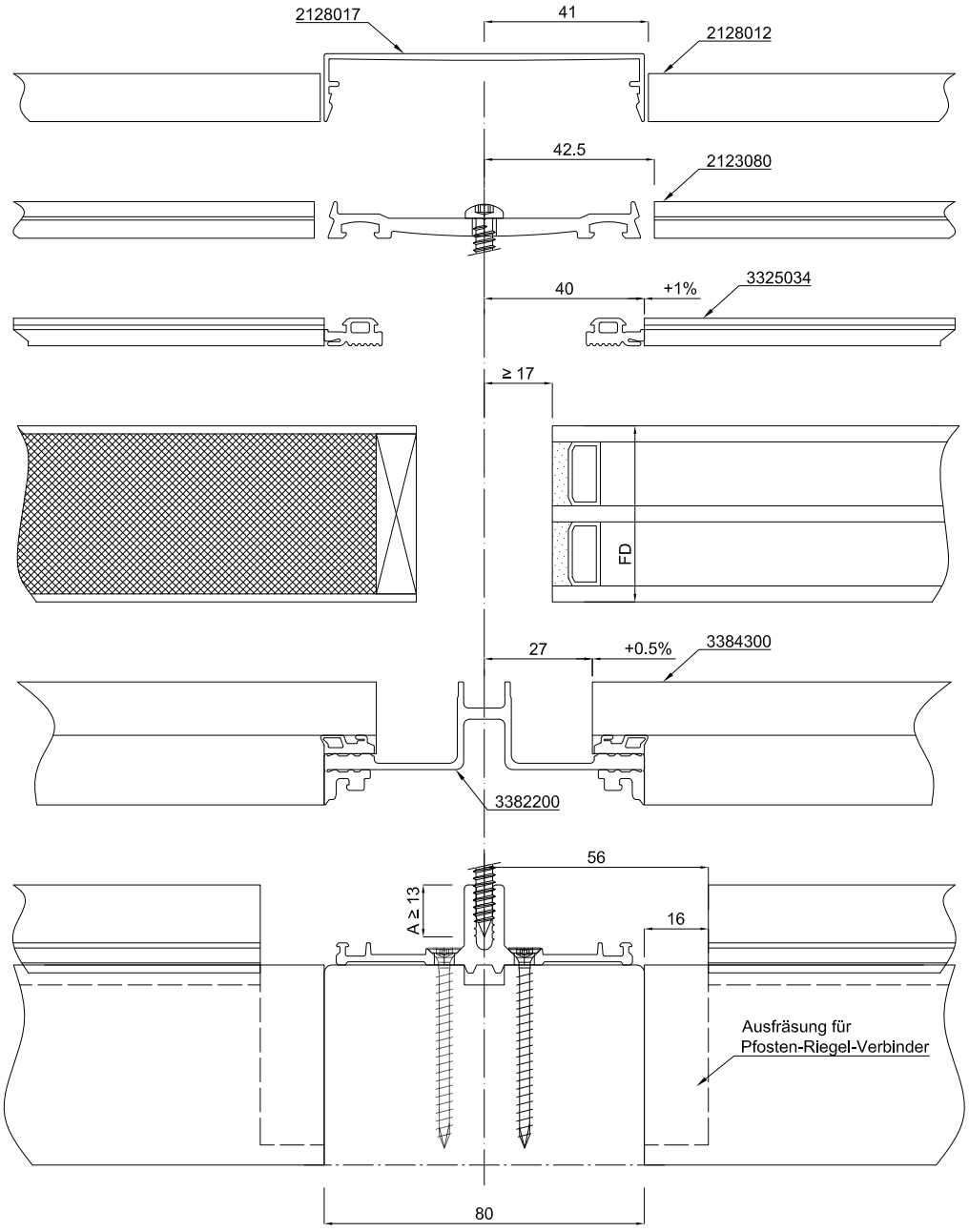


Fig. 19: Cutting length, using the TM80 as an example

Milling pattern for wood profiles and positioning of connectors

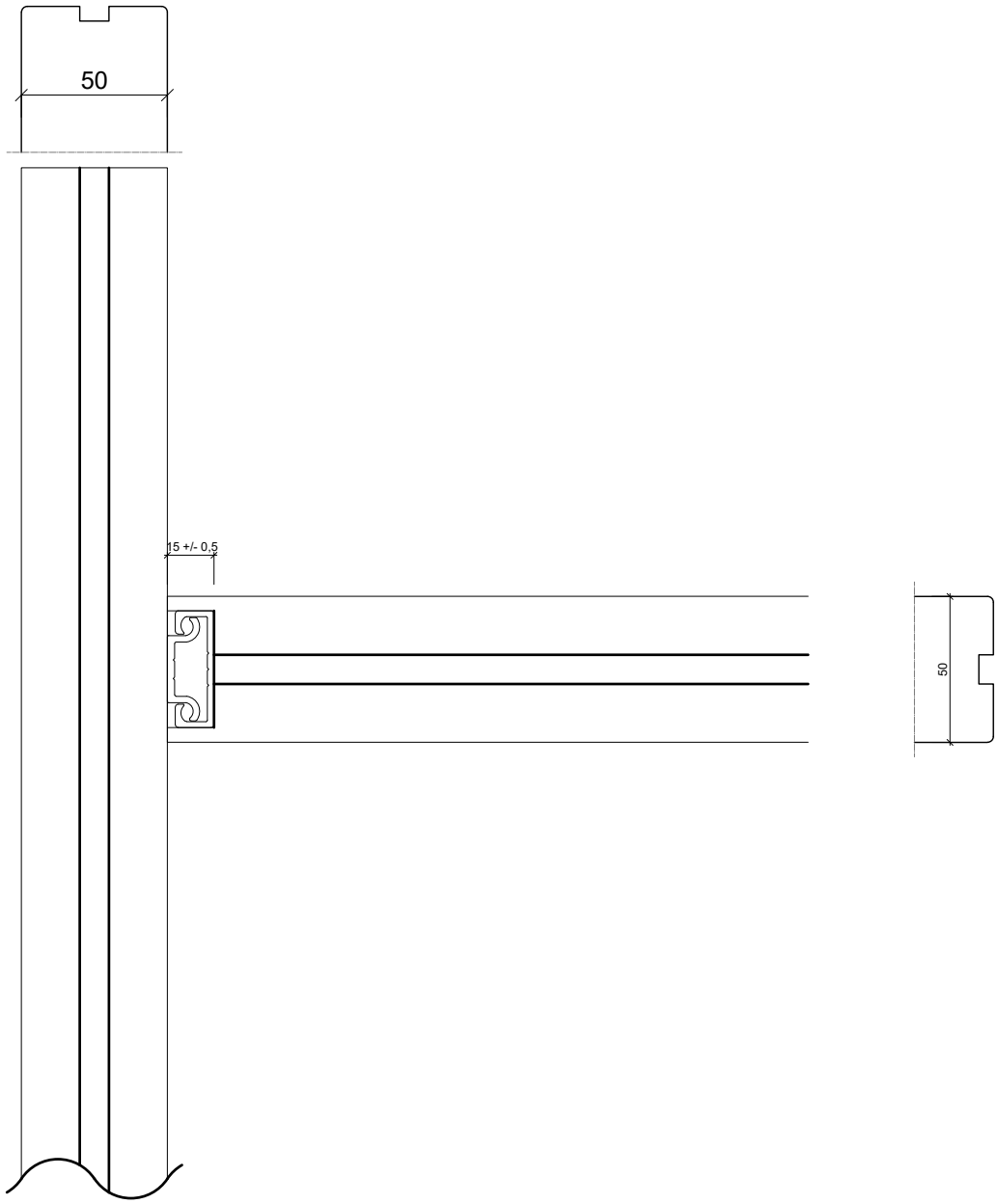


Fig. 20: Milling pattern for wood profiles and positioning of connectors

Drilling pattern for base profile

Screws: Chipboard screws 4 x 50 mm A2/A4 (not included)

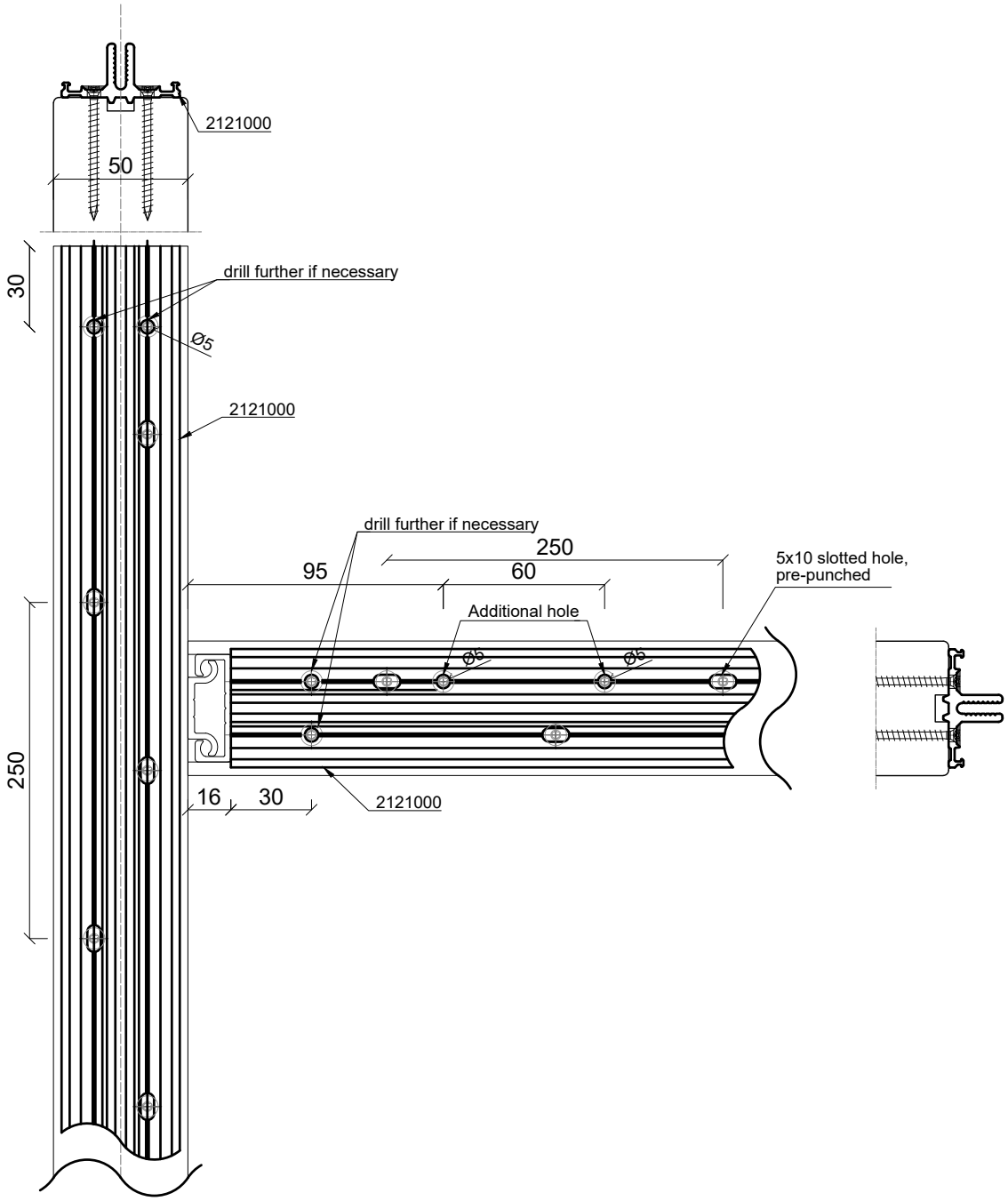


Fig. 21: Drilling pattern base profile

Installation glass carrier and inner gasket

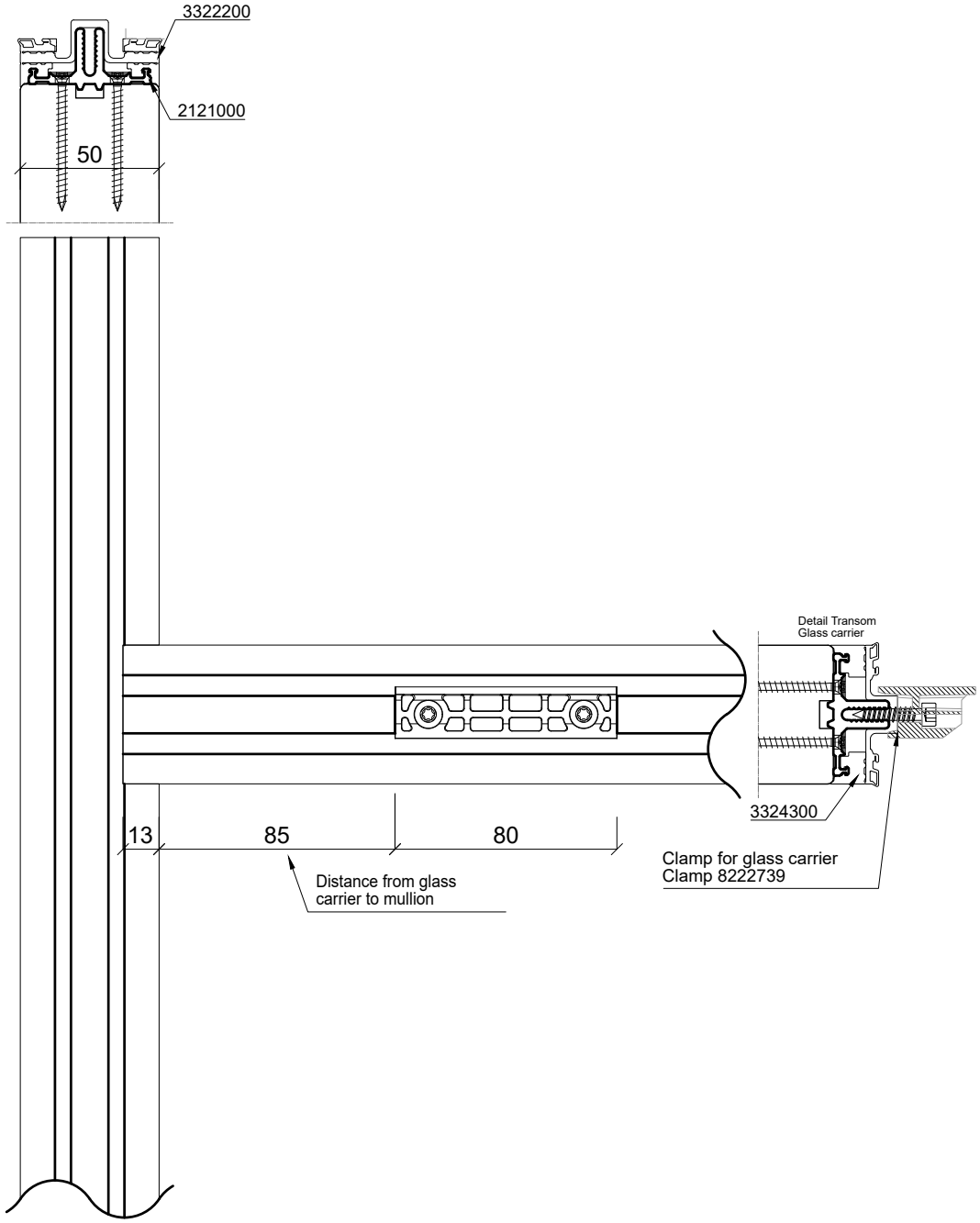


Fig. 22: Installation glass carrier and inner gasket

Installation SE-Spacer

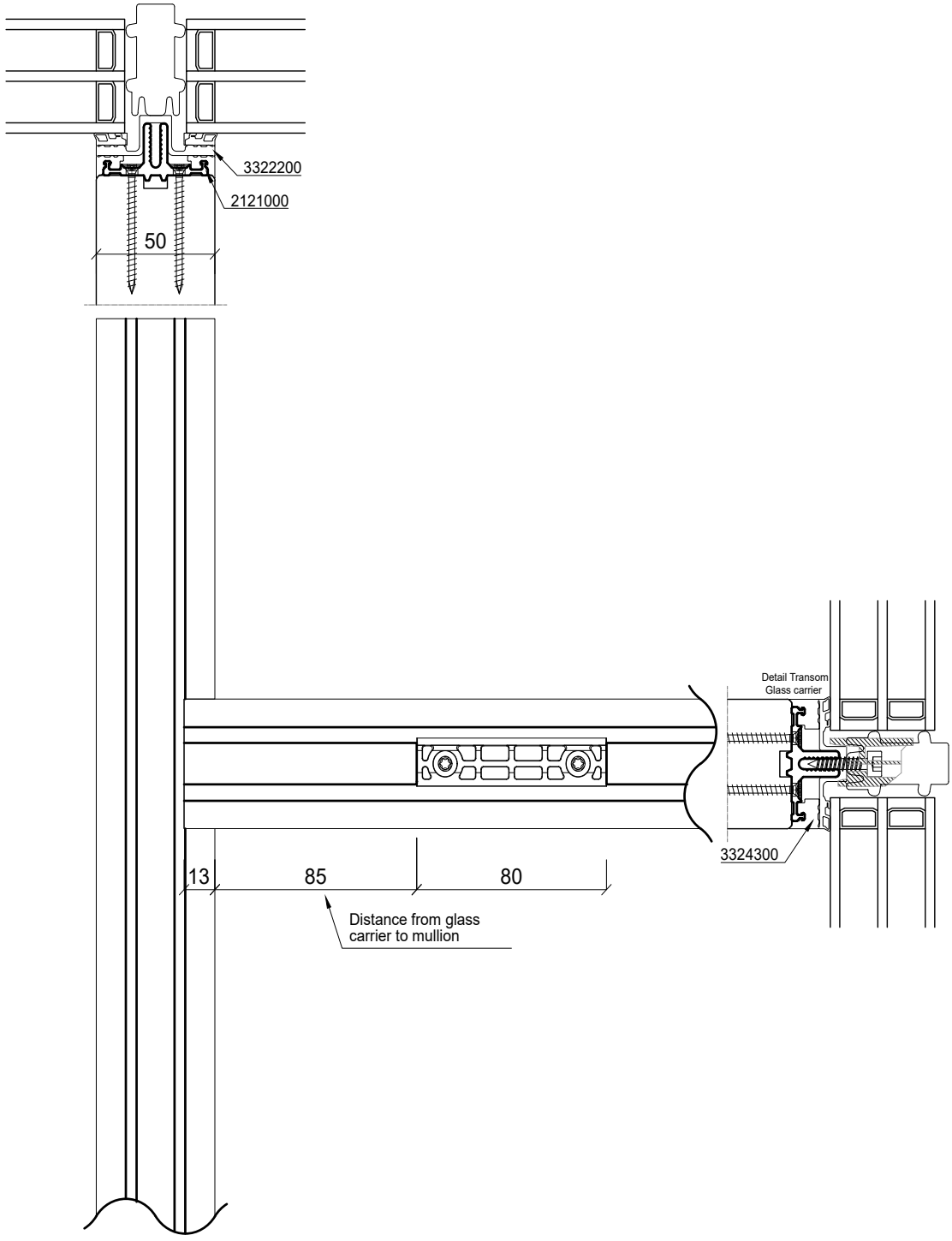


Fig. 23: Installation SE-Spacer

Drilling pattern pressure profile

The system-specific stainless steel screws for the pressure profile are selected based on the panel thickness, as indicated in the selection table. These screws are tightened to a torque of 4 to 5 Nm to ensure fall protection and a watertight seal.

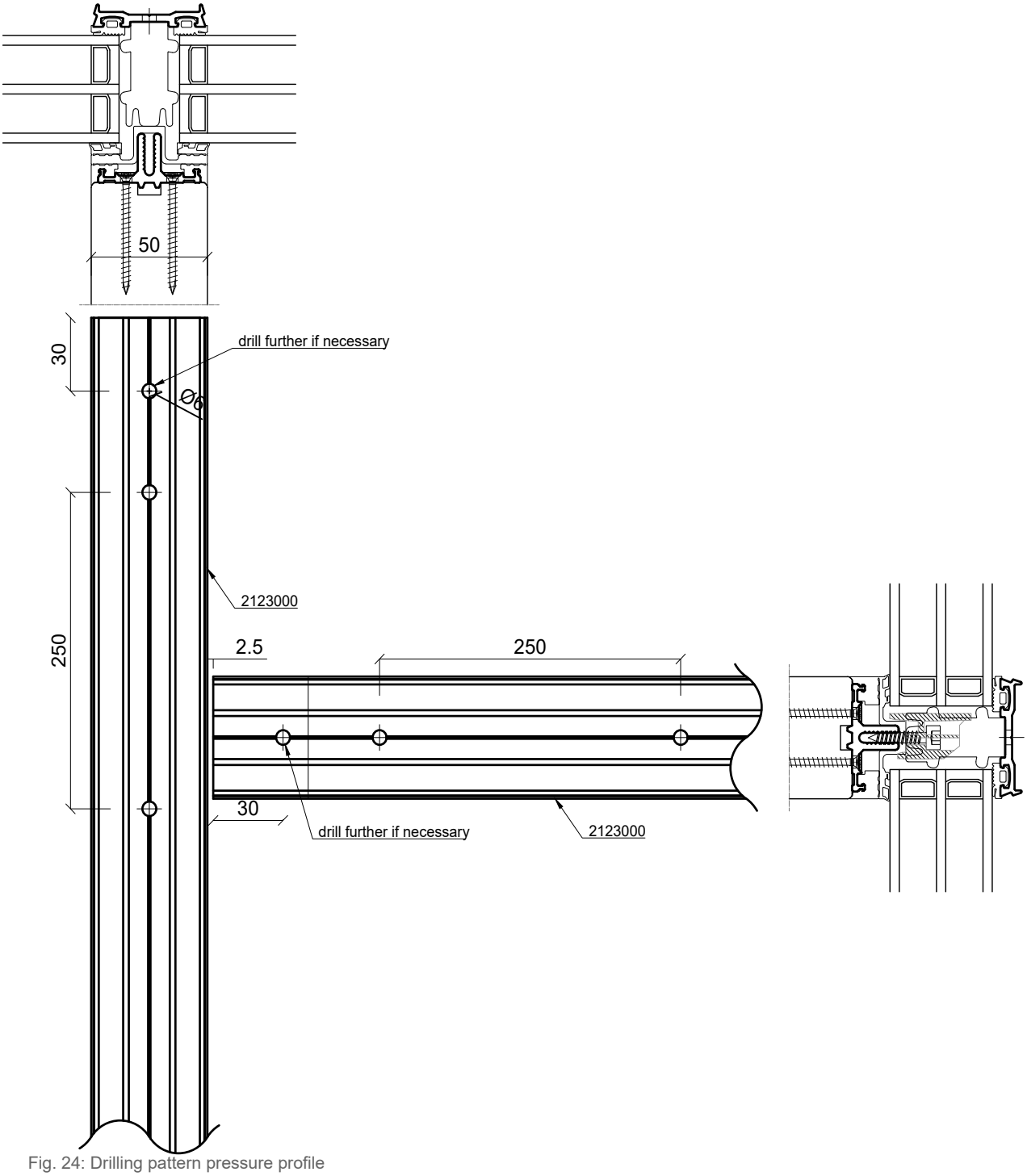


Fig. 24: Drilling pattern pressure profile

Cover Caps

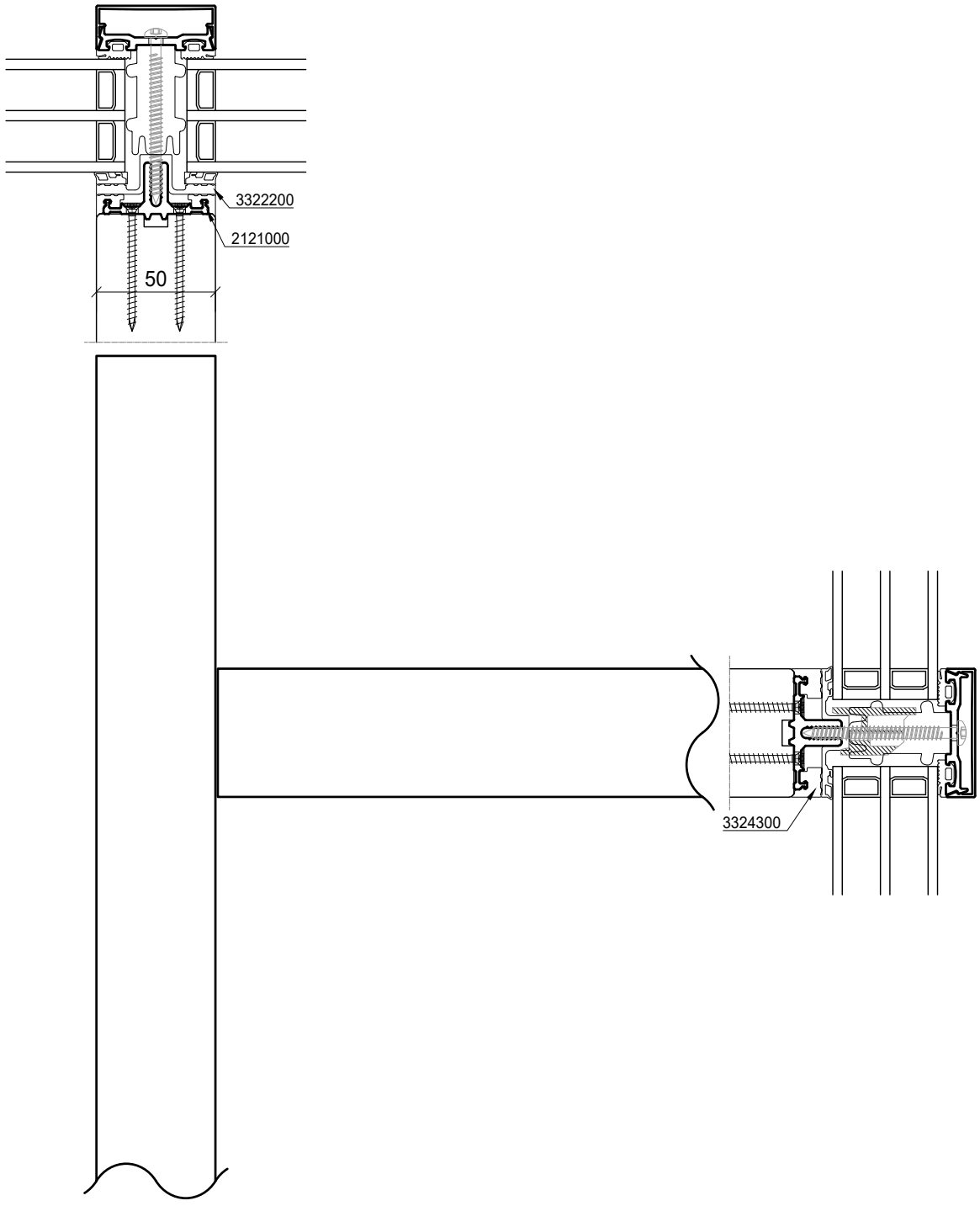


Fig. 25: Cover Caps

Drainage Principles and Sealing Plan

Water drainage from the structure is achieved through a cascade system within the sealing system. This creates three sealing levels while maintaining a consistent water level. Water always drains from a higher to a lower level.

Proper installation of the joints is ensured by system-specific sealing components and special facade sealants. To this end, batimet has developed system sealing clips.

When designing the facade, you can choose between two drainage principles:

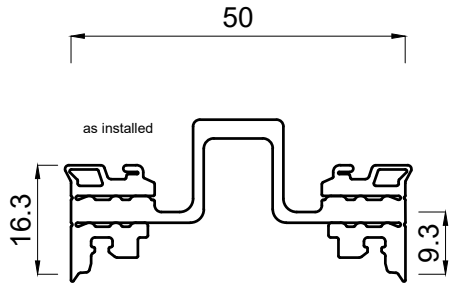
1. Drainage via mullions and
2. Drainage via a base seal.

The choice must be made based on the existing connection conditions. Combinations of the two principles are possible and may be necessary under certain circumstances.

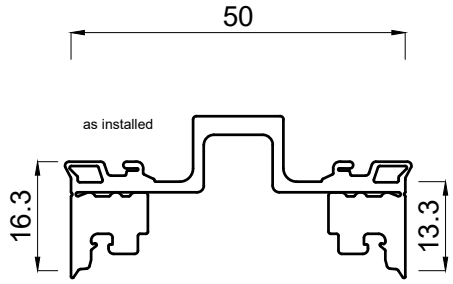
	Article number			
Level	**TM50**	**TM60**	**TM80**	**Bezeichnung**
Level 1	3324100	3364100	3384100	Transom gasket with extension, base
Level 2	3322200	3362200	3382200	Mullion gasket
Level 3	3324300	3364300	3384300	Transom gasket
Level 3	3324400	3364400	3384400	Transom gasket with extension

Tab. 7: Drainage levels with cascade system

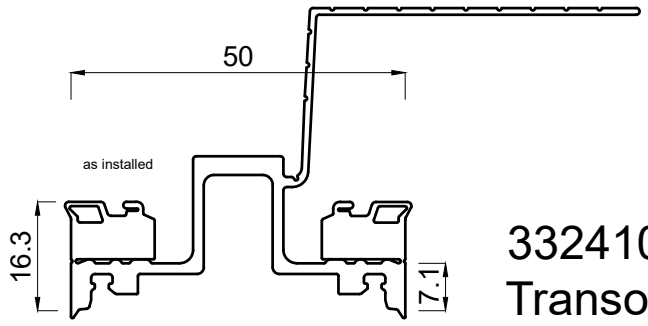
Gasket overview TM50 SE



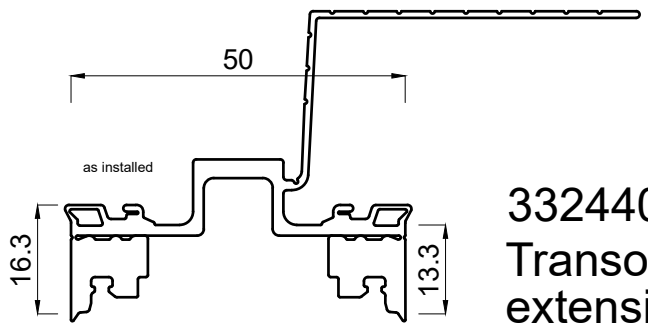
3322200
Mullion gasket 50 mm



3324300
Transom gasket 50 mm

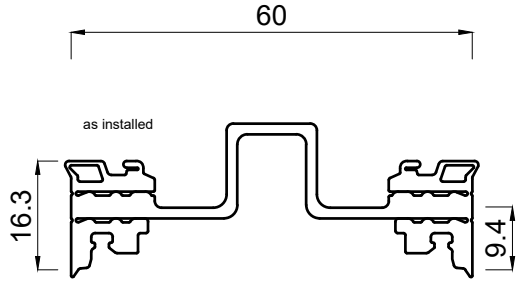


3324100
Transom gasket 50 mm (Base) with extension

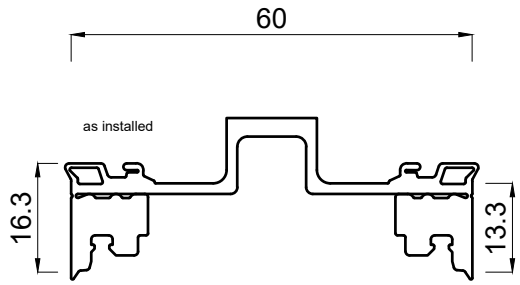


3324400
Transom gasket 50 mm with extension

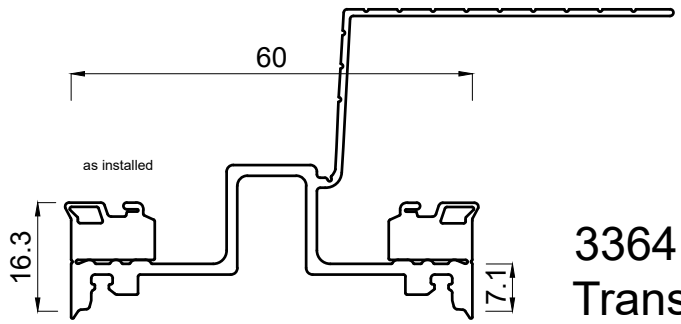
Gasket overview TM60 SE



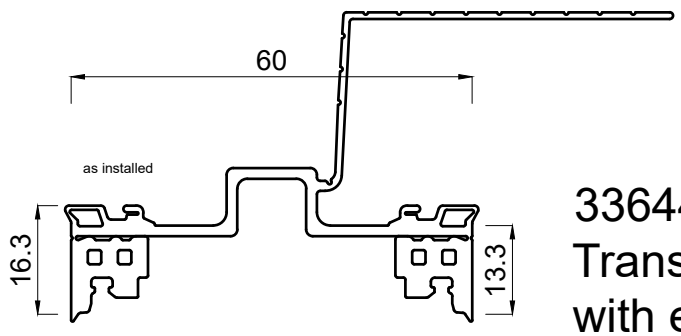
3362200
Mullion gasket 60 mm



3364300
Transom gasket 60 mm

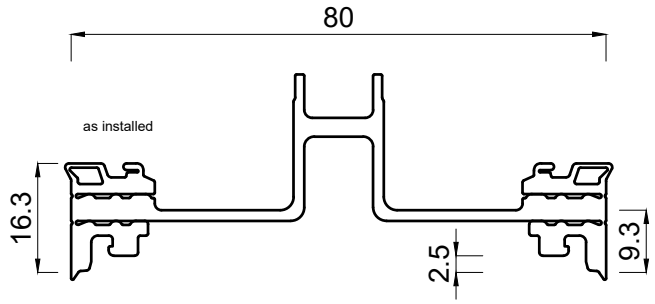


3364100
Transom gasket 60 mm
(Base) with extension

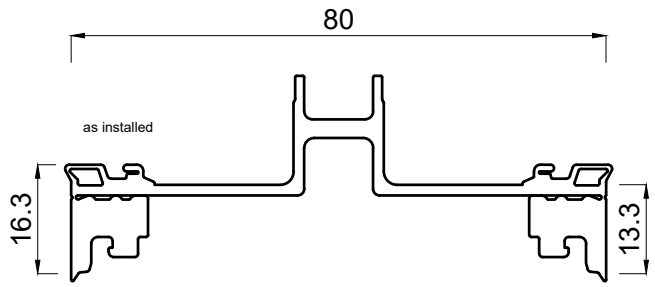


3364400
Transom gasket 60 mm
with extesion

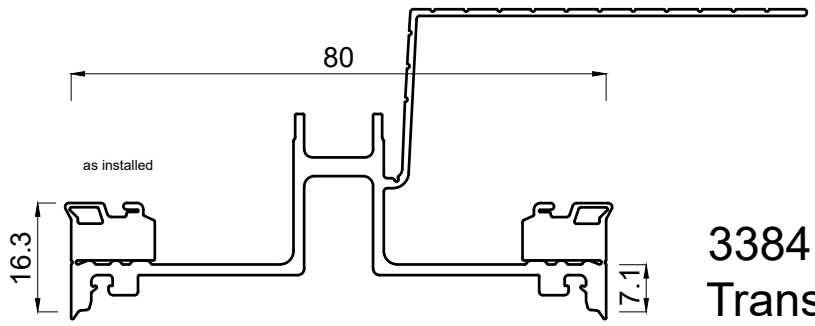
Gasket overview TM80 SE



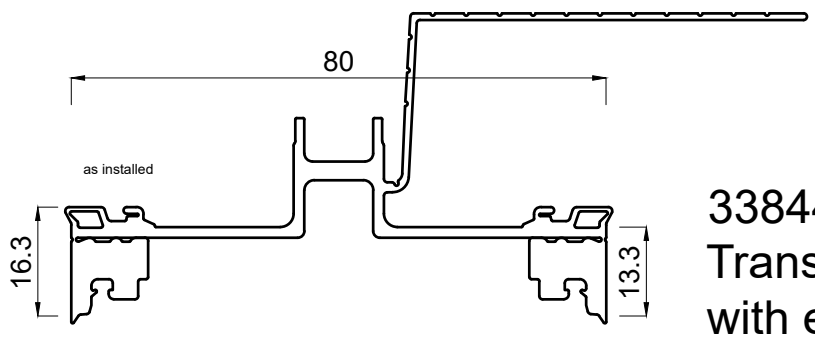
3382200
Mullion gasket 80 mm



3384300
Transom gasket 80 mm



3384100
Transom gasket 80 mm
(Base) with extension



3384400
Transom gasket 80 mm
with extension

Drainage through mullion

Drainage via the mullions involves fewer joint configurations than drainage via the base points. This makes planning the drainage system easier.

The drainage system begins with the continuous mullion gasket, which follow the continuous wooden mullions of the substructure.

All transoms drain water into the adjacent mullions, from where the water is drained out from the bottom of the structure.

For this reason, it is important that the building waterproofing can be extended all the way to the surface of the wooden structure.

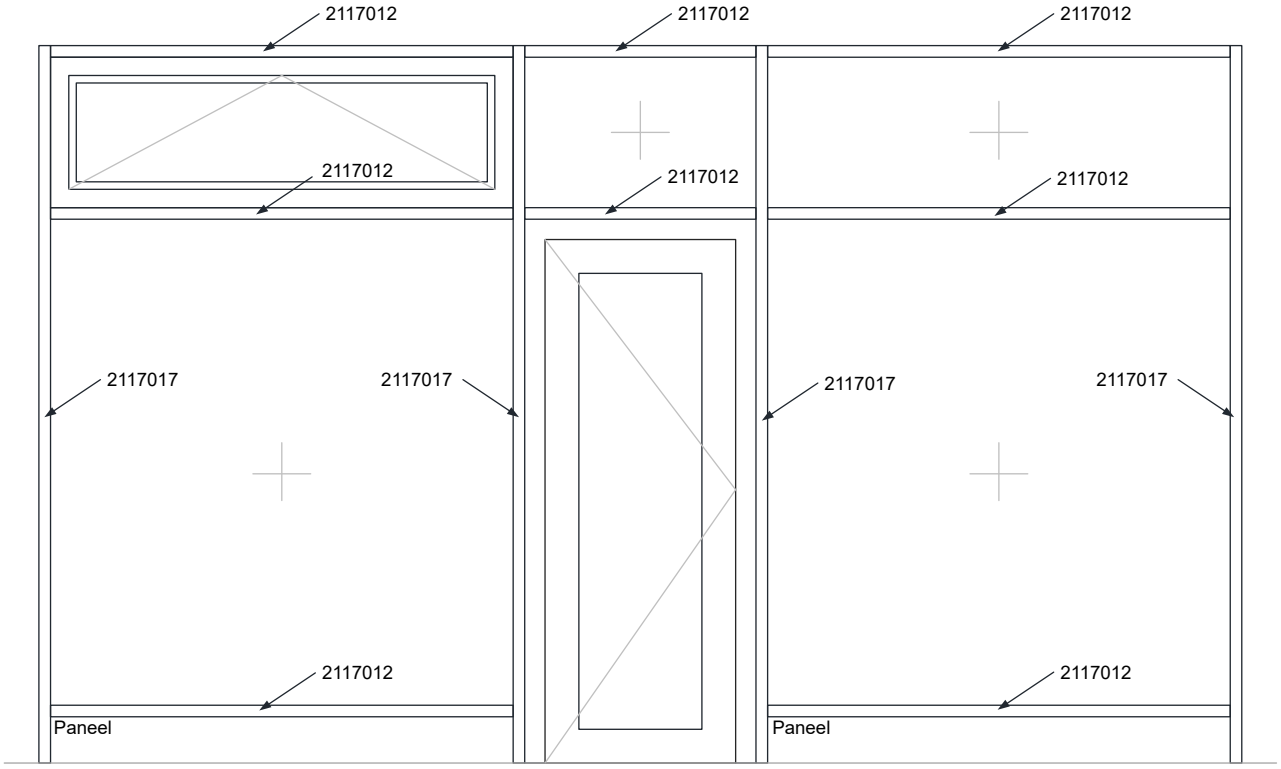


Fig. 26: Scheme cover caps for drainage through the mullion

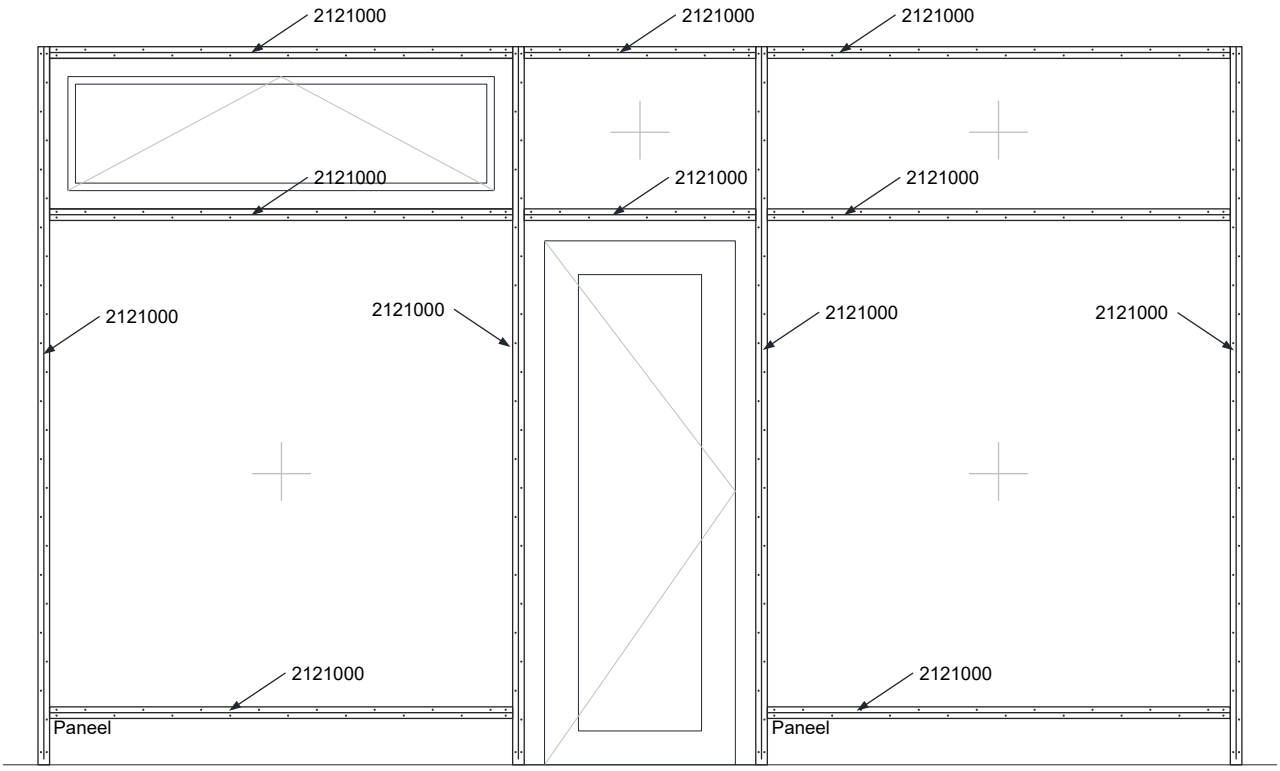


Fig. 27: Scheme base profiles for drainage through mullion

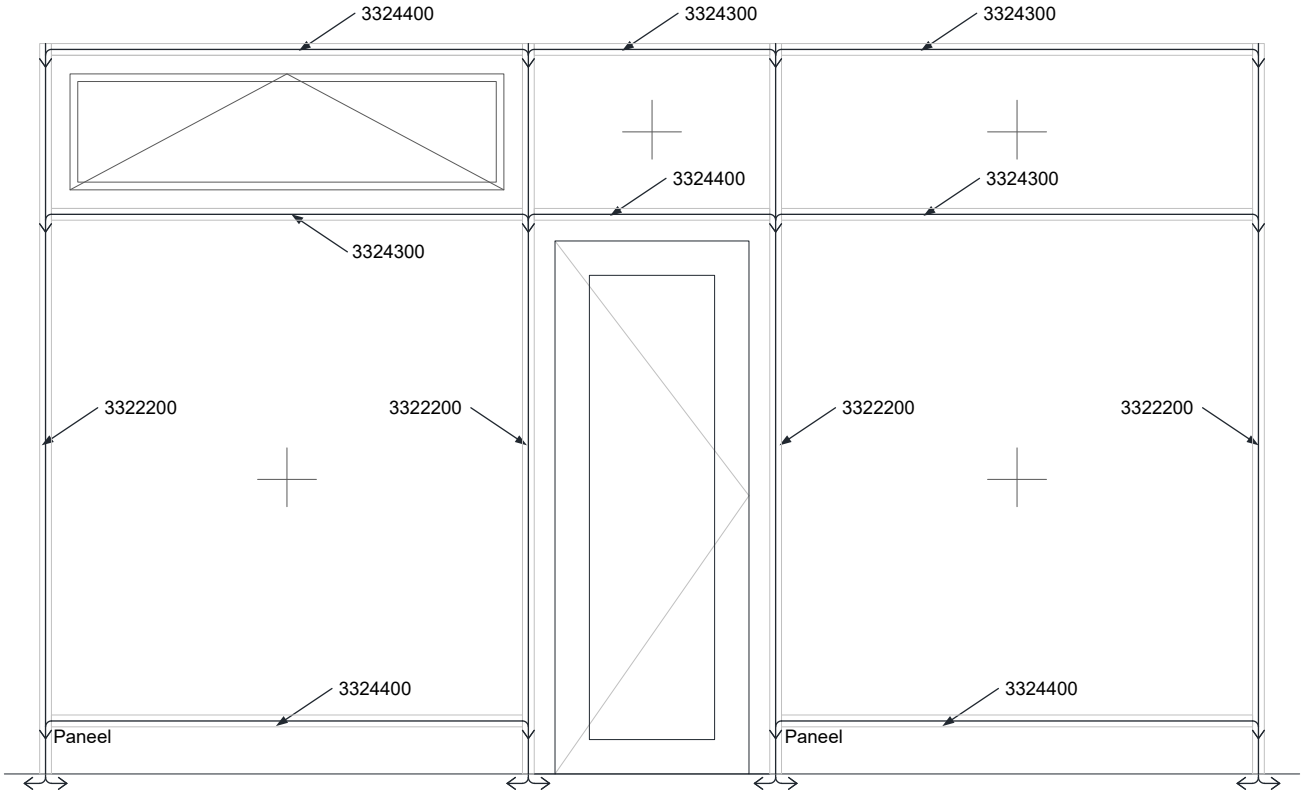


Fig. 28: Scheme inner gaskets for drainage through mullion

Drainage through the base gasket

The drainage through the base gasket is suitable for long, uninterrupted facades. This type of drainage is also suitable for prefabricated facades.

A base gasket running the full width of the facade channels any accumulated water out of the facade toward the front at regular intervals. To achieve this, the gasket must be properly drained (see Fig. 31: Notching the glazing gasket in the area of the base gasket).

Drainage via the base gasket must also be used if a continuous window sill spanning the entire width is to be installed below the facade, or if there is material below a specific transom level that must be protected from moisture (e.g., insulation or similar).

To achieve this layout, the base profiles of some transoms must be routed over the mullions using short extensions. The grooves for the base profile must be re-cut in the wood (see Fig. 31: Path of the base profile when the base profile seal extends over the mullion).

If the base gasket is installed across the entire width, the resulting side opening in the facade must be sealed. To this end, a sufficiently sized, pre-compressed sealing tape must be inserted between the joints of the finishing strips. The remaining holes are sealed with a suitable facade sealant (see Fig. 31: Design of the side connection for drainage via a base seal).

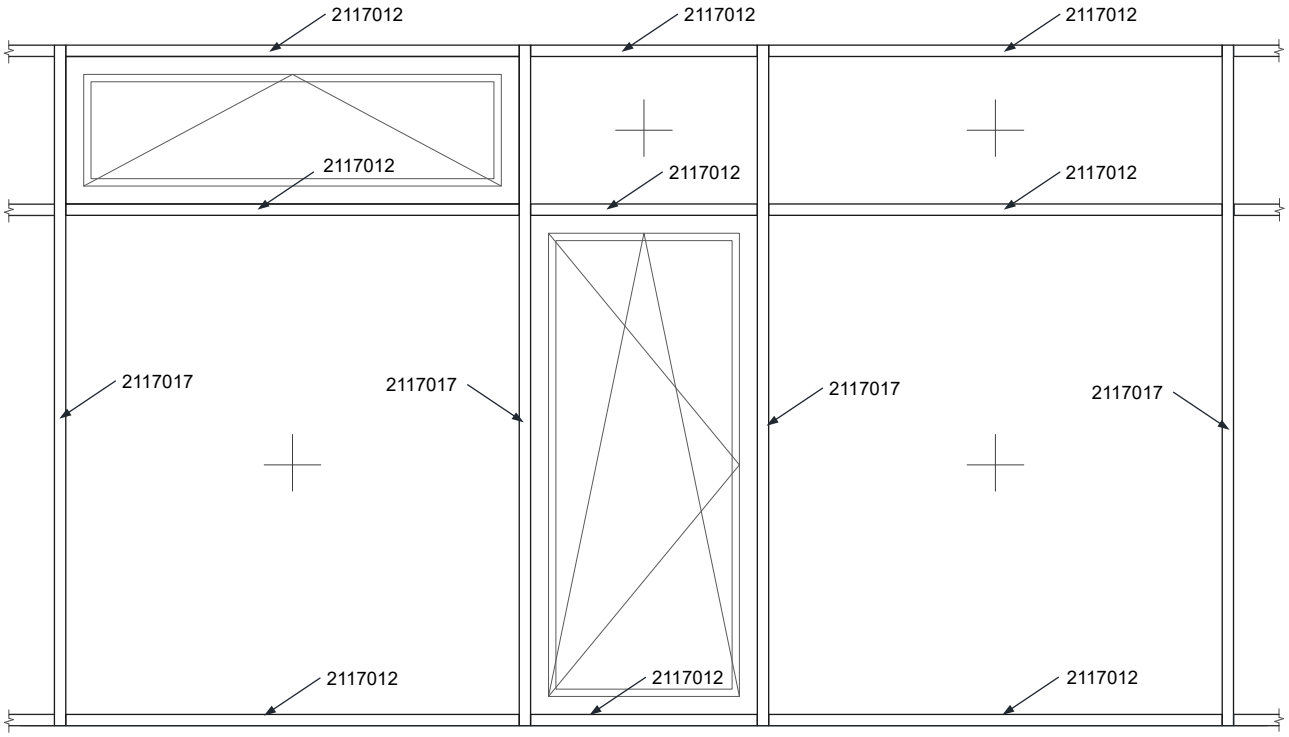


Fig. 29: Scheme cover caps for drainage through the base gasket

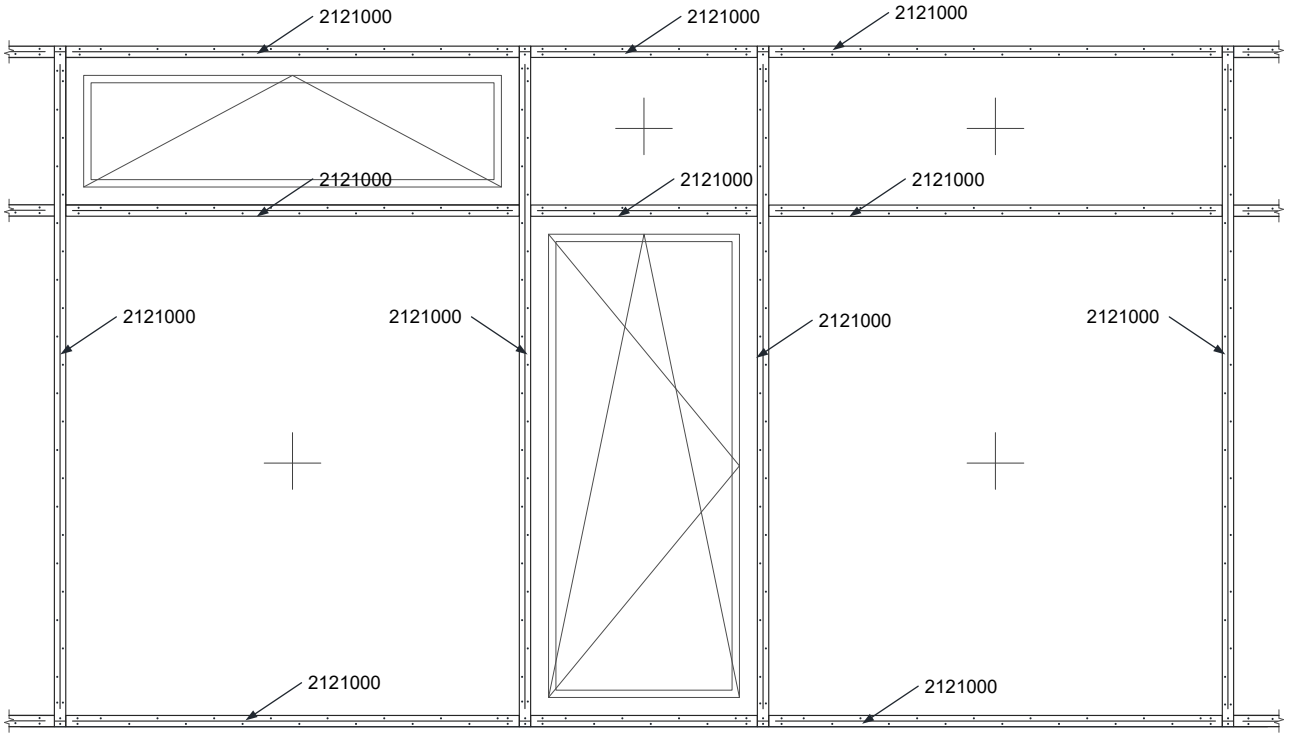


Fig. 30: Scheme base profile for drainage through the base gasket

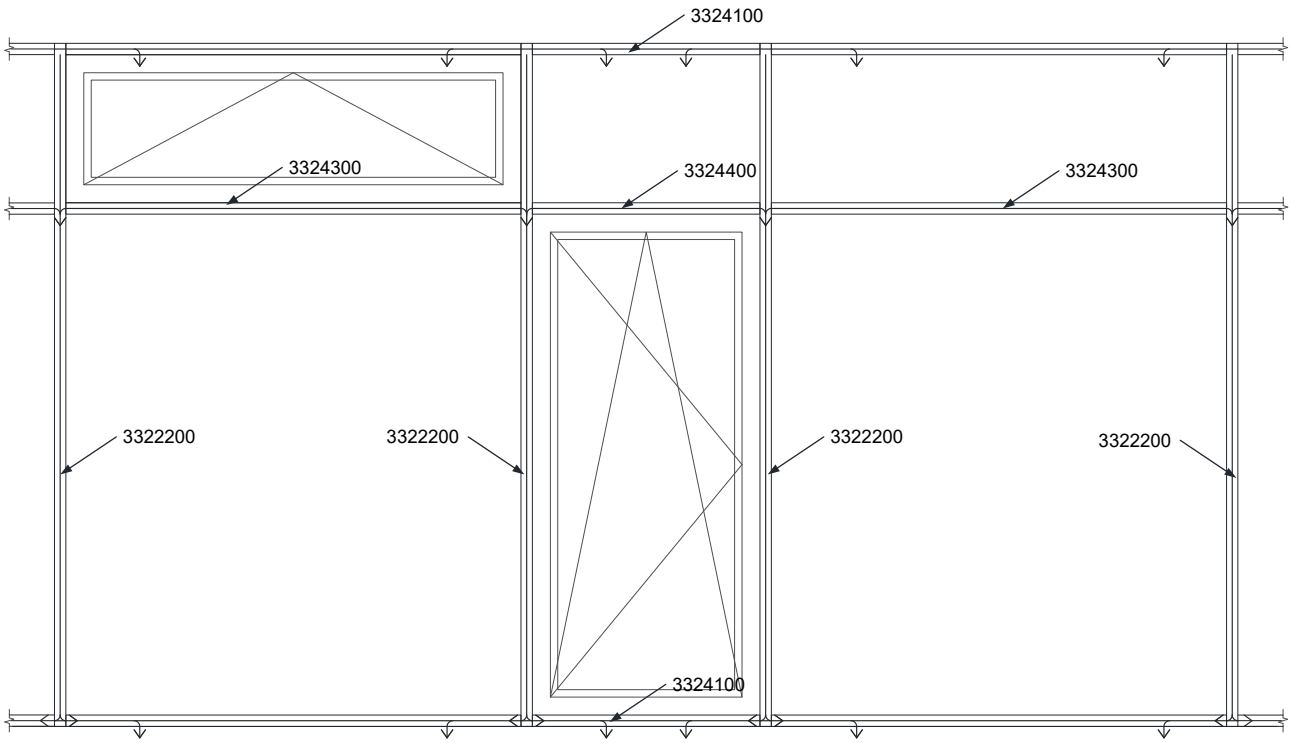


Fig. 31: Scheme inner gaskets for drainage through the base gasket

Combined Drainage

Combined drainage is used for facade elements with specific drainage requirements, such as doors.

The water is drained partly through the transom and partly through the mullion.

This type of assembly is necessary due to the specific way the sealing surfaces fit together.

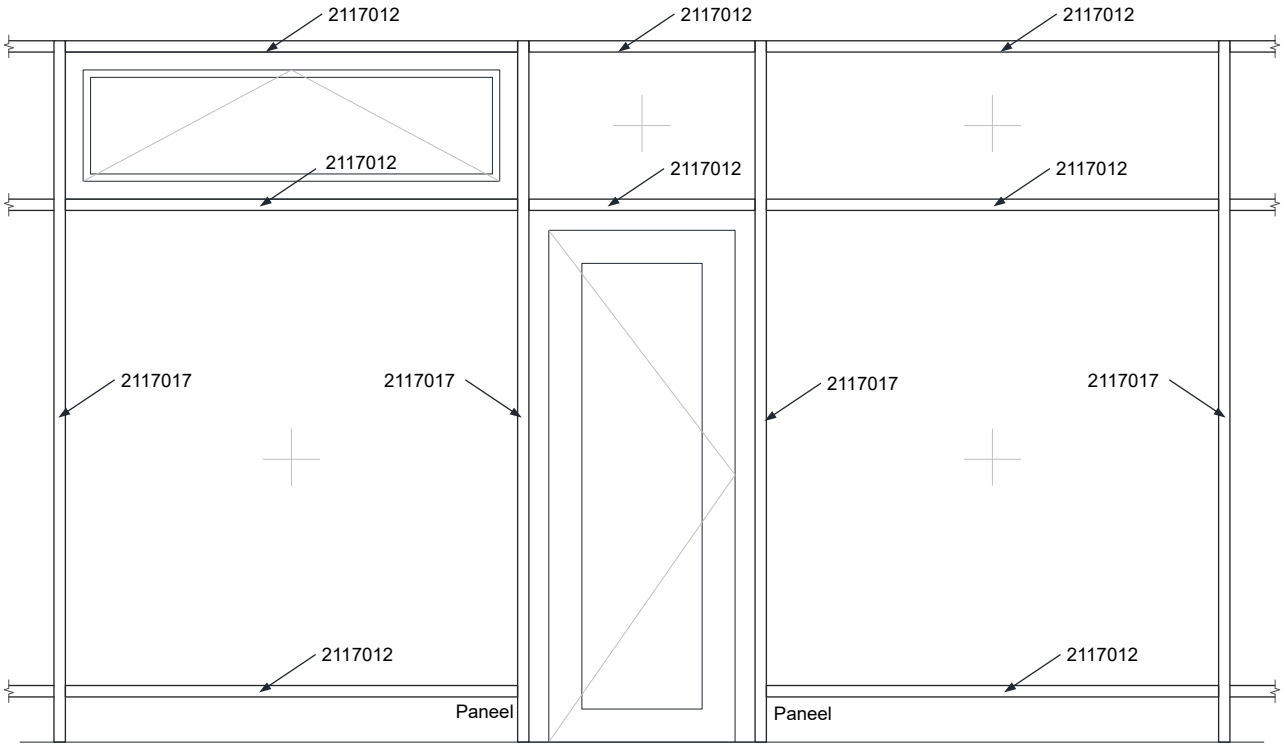


Fig. 32: Scheme cover caps

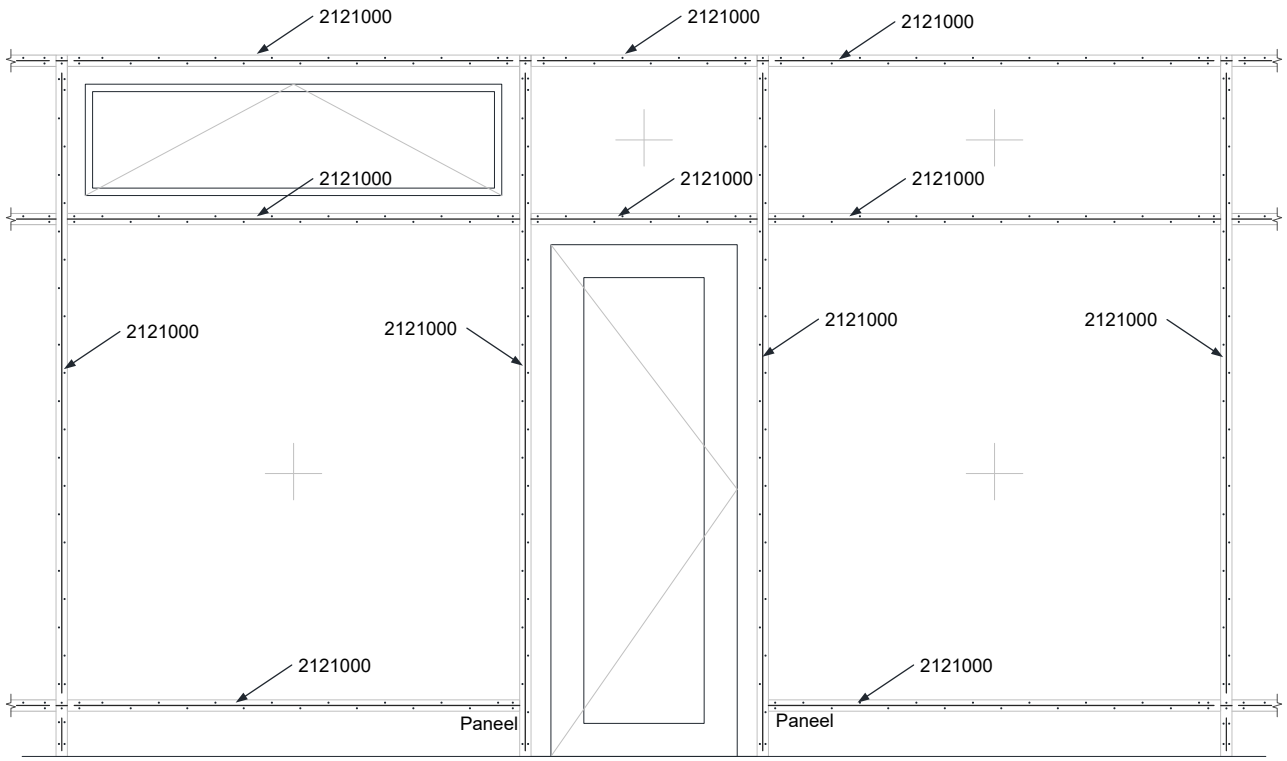


Fig. 33: Scheme base profile for drainage through the base gasket

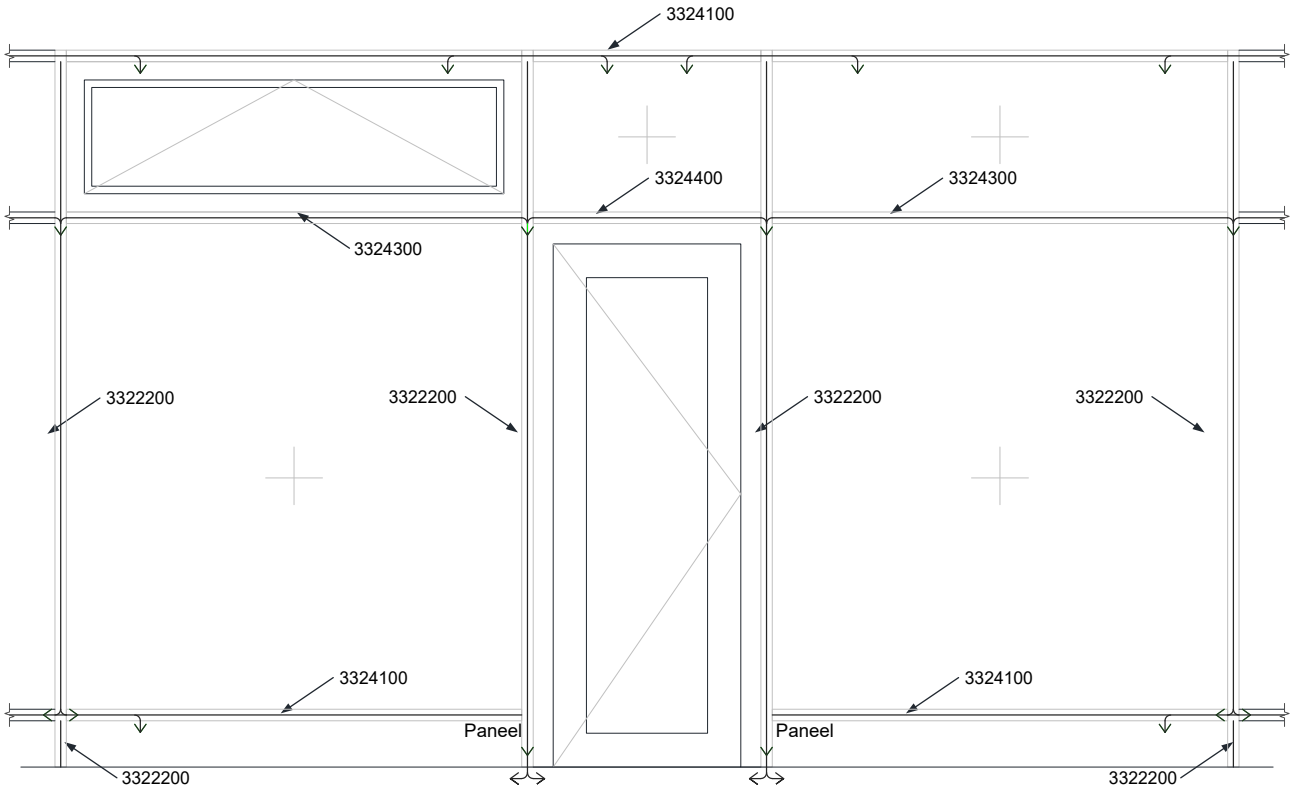


Fig. 34: Scheme inner gasket for drainage through the base gasket

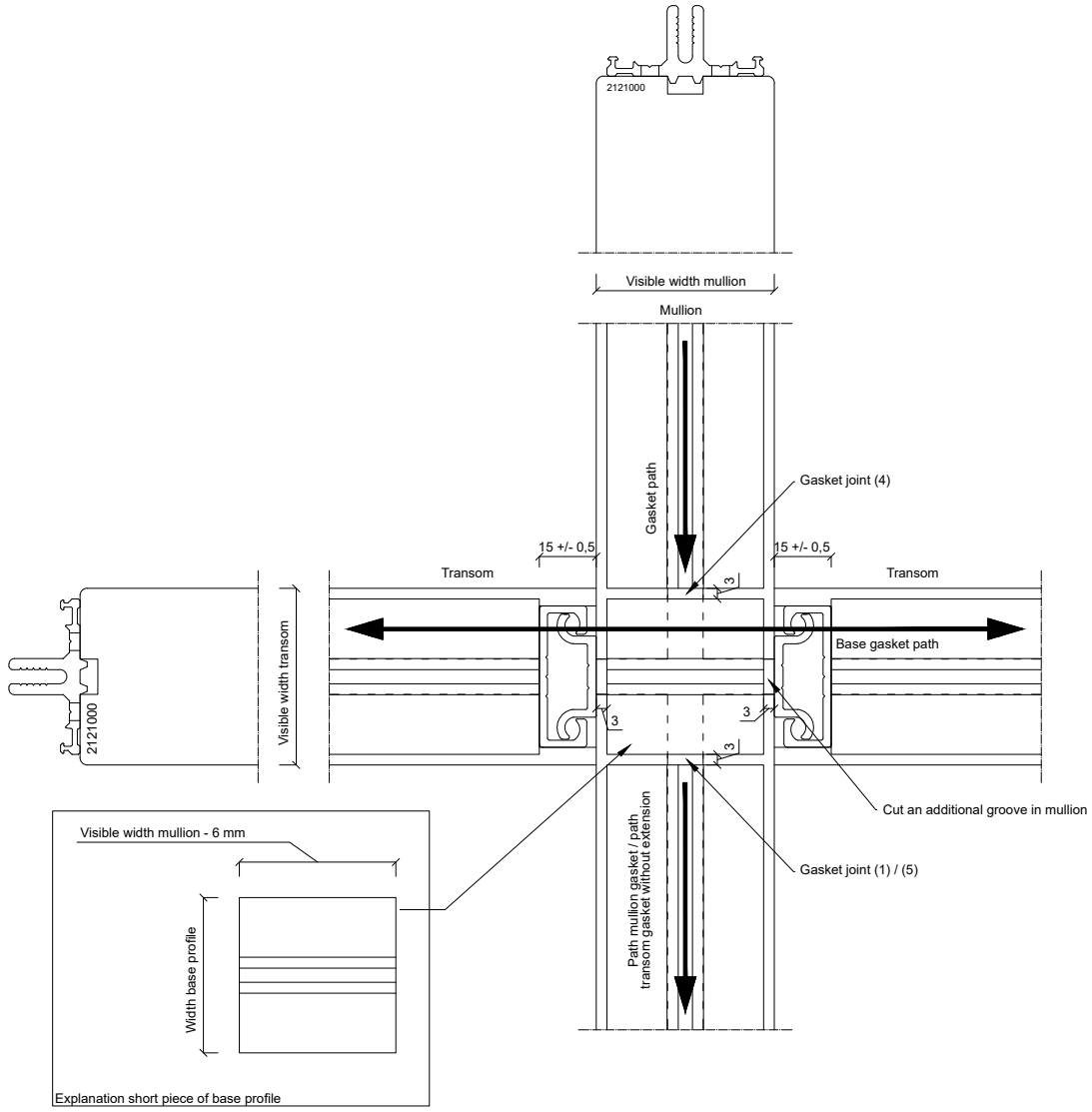


Fig. 35: Scheme inner gaskets for horizontal base profile over the mullion

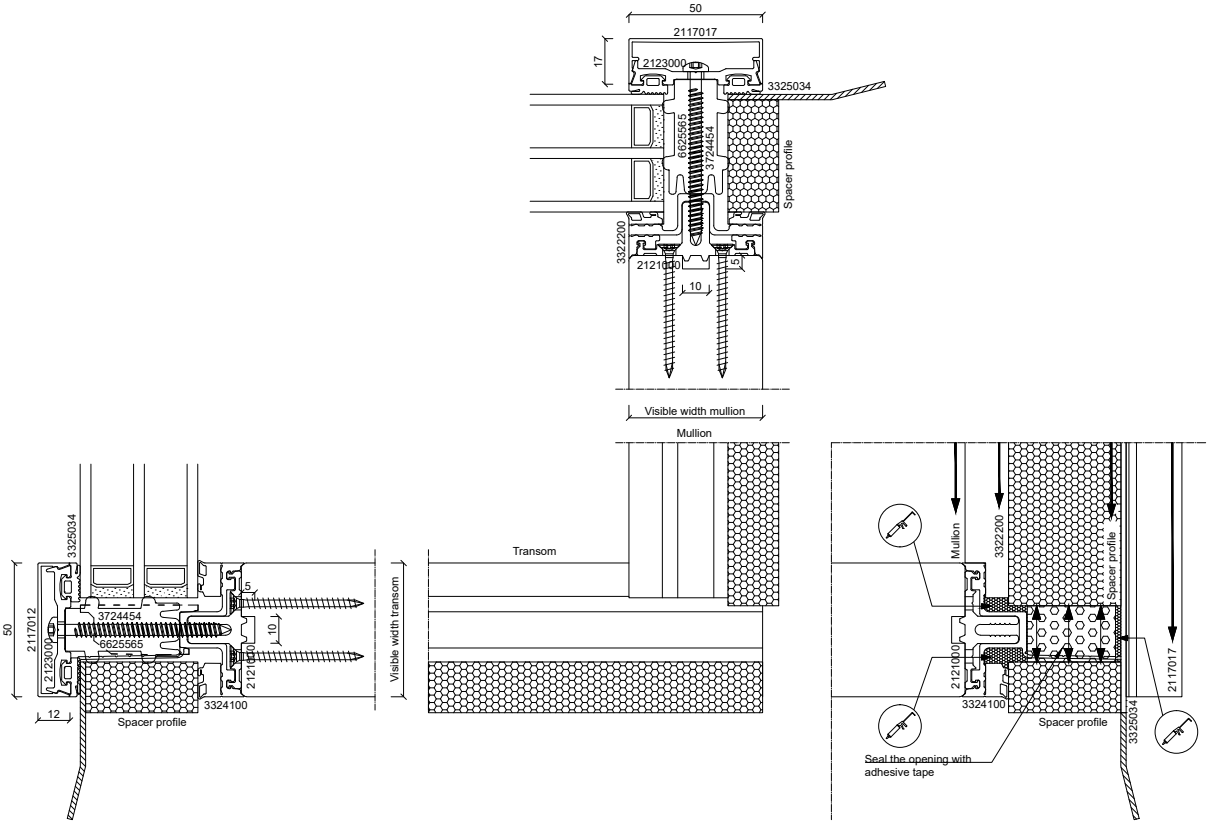


Fig. 36: Installation of the side connection for drainage via a base seal

Additional drainage

Regardless of the type of drainage system, under certain conditions, drainage to the front must be provided by notching the outer glazing gasket.

Case 1: If a transom level is more than 4 m above the lowest transom level (H1 > 4 m, (s. Fig. 31: Scheme inner gasket base profile for drainage through mullion and s. Fig. 34: Schem inner gasket base profile for drainage through the base gasket) additional drainage holes like in principle E1 (s. Fig. 37: principle drainage E1) must be added.

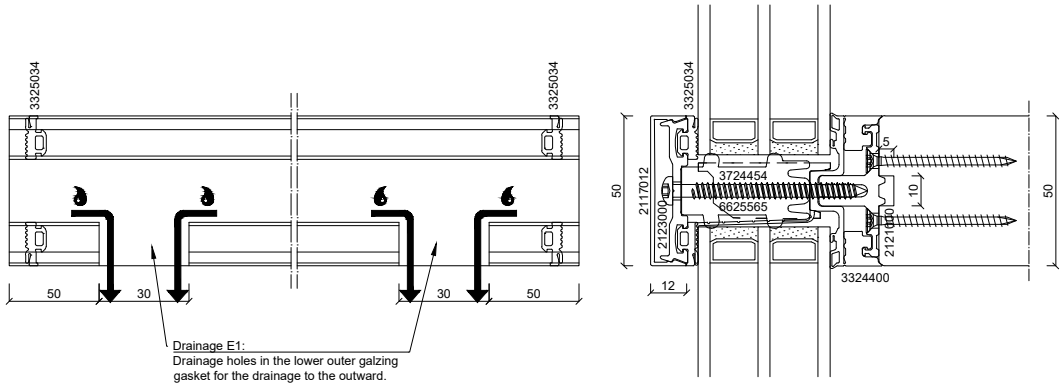


Fig. 37: Principle drainage E1

Case 2: Is the horizontal distance between the centers of two mullions bigger than 2 m (B1 > 2 m, (s. Fig. 31: Scheme inner gasket base profile for drainage through mullion and s. Fig. 34: Schem inner gasket base profile for drainage through the base gasket) additional drainage holes like in principle E2 (s. Fig. 38: principle drainage E2) must be added.

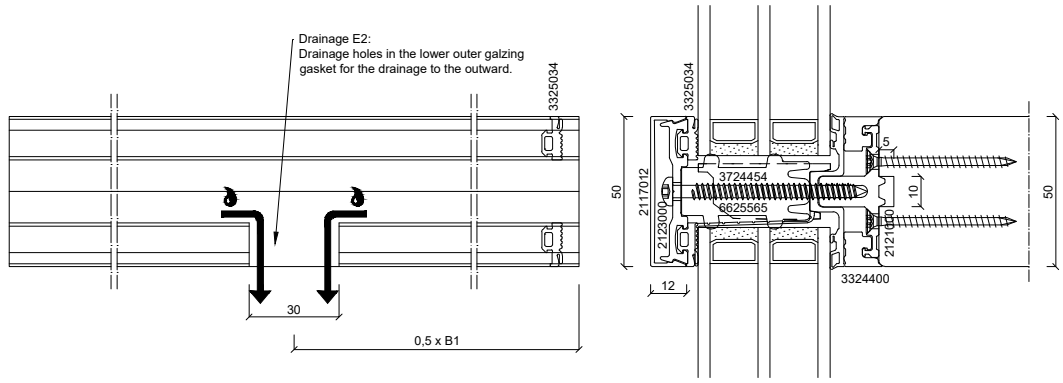
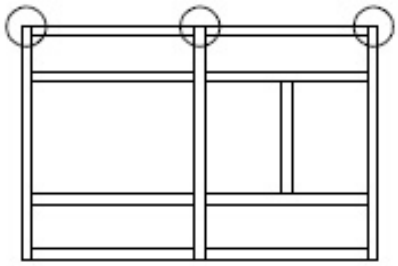


Fig. 38: Principle Drainage E2

Mullion-Transom-T-connection (top)

Gasket	TM50 SE	TM60 SE	TM80 SE
...200		8222503	
...100	8222502	8229602	8229802

Tab. 8: Required crimping pliers and expansion sets



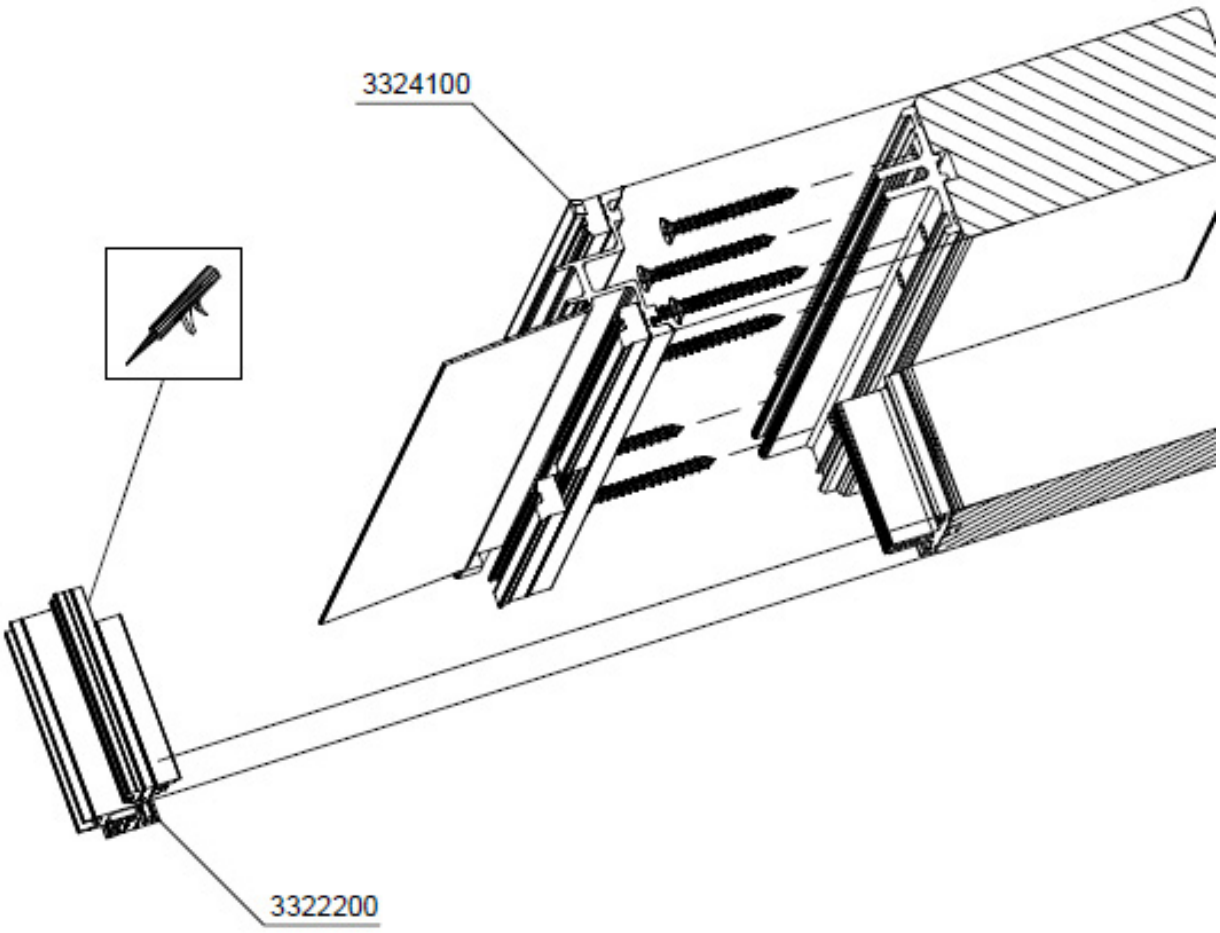
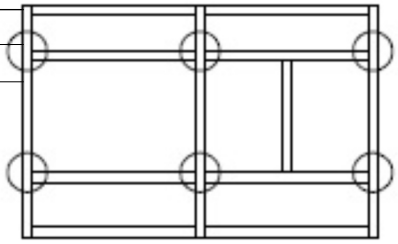


Fig. 39: Gasket joint (1) - mullion-transom-T-connection (top)

Mullion-Transom-T-connection (side)

Gasket	TM50 SE	TM60 SE	TM80 SE
...200	8222502	8229602	8229802
...400		8222503	

Tab. 9: Required crimping pliers and expansion sets



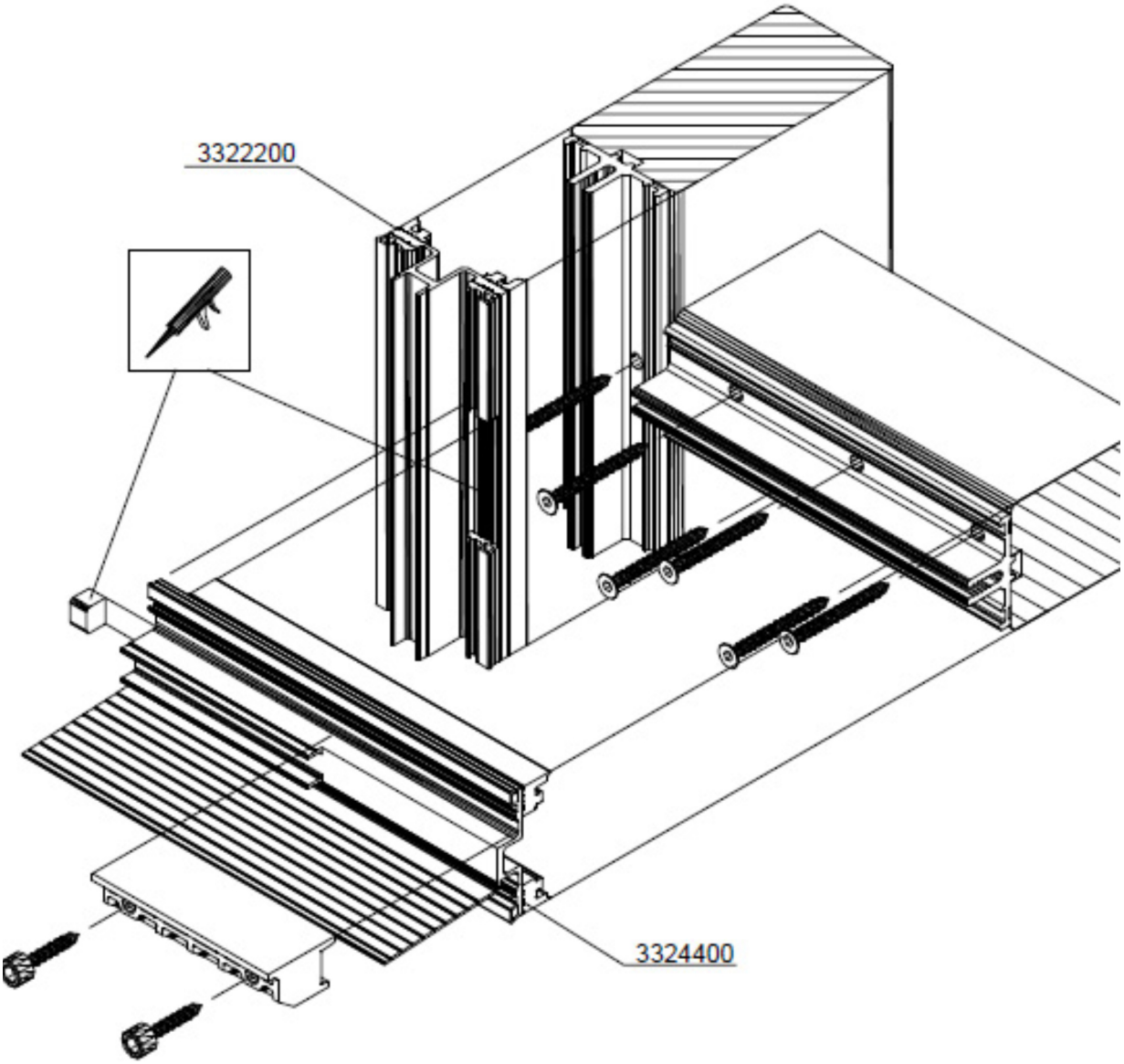


Fig. 40: Gasket joint (2) - mullion-transom-T-connection (side)

Mullion-Transom-T-connection (bottom)

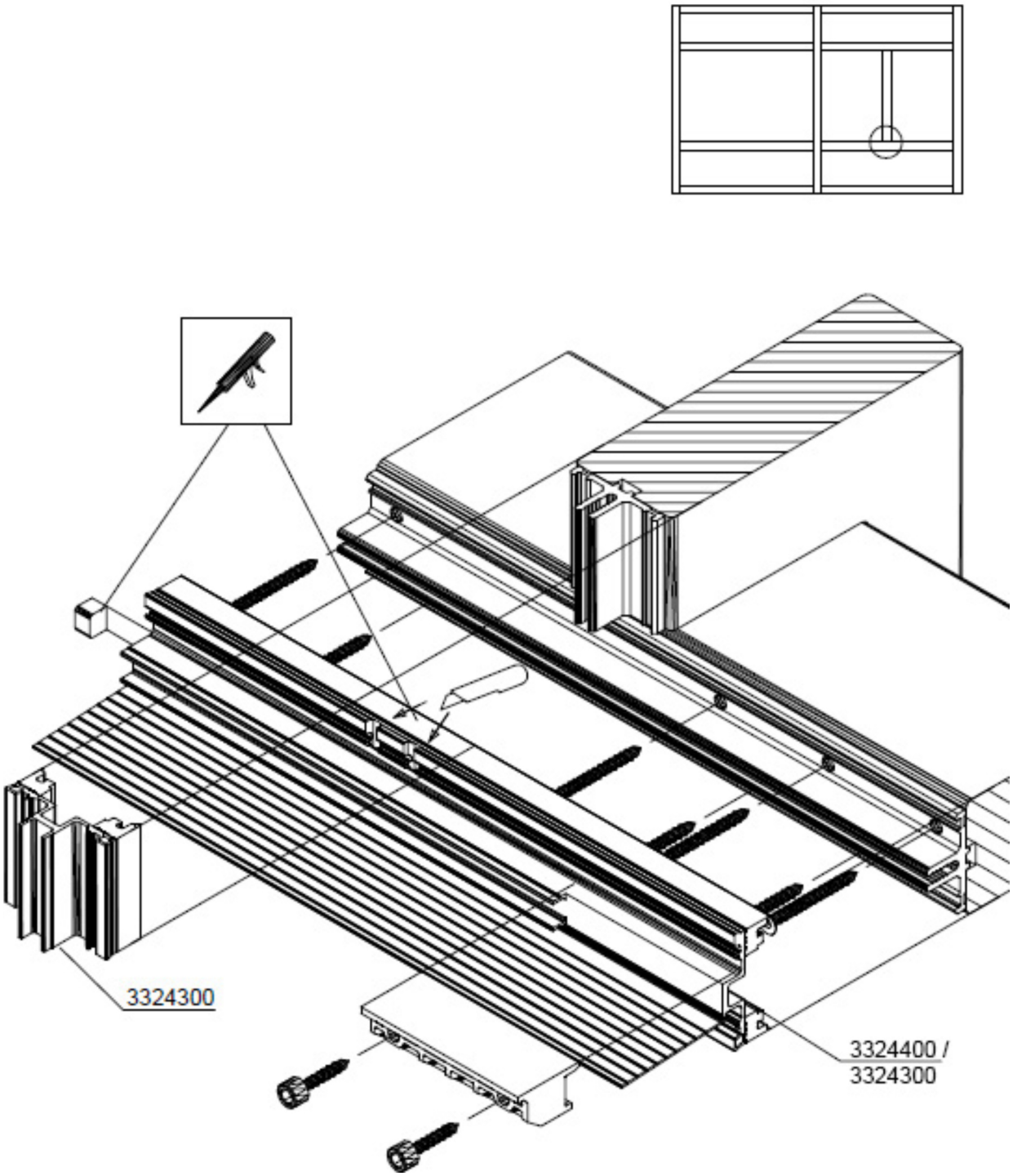
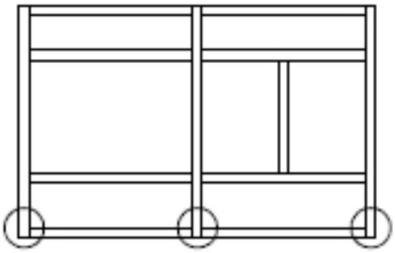


Fig. 41: Gasket joint (3) - mullion-transom-T-connection (bottom)

Mullion-transom-connection bottom (base point)

Gasket	TM50 SE	TM60 SE	TM80 SE
...100	8222502	8229602	8229802
...200		8222503	

Tab. 10: Required crimping pliers and expansion sets



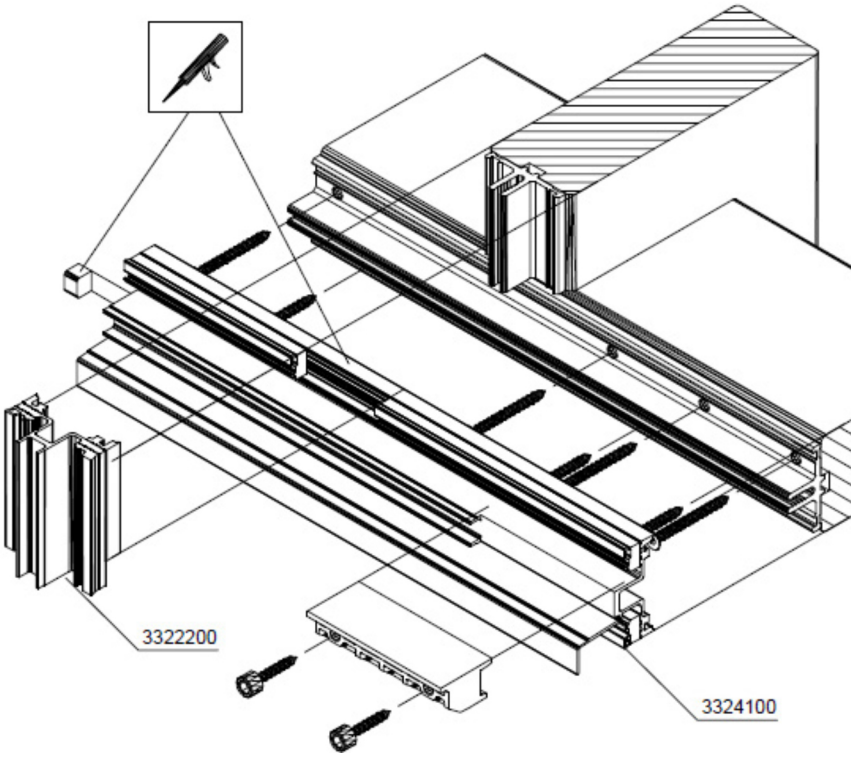


Fig. 42: Gasket joint (4) - mullion-transom-connection bottom (base point)

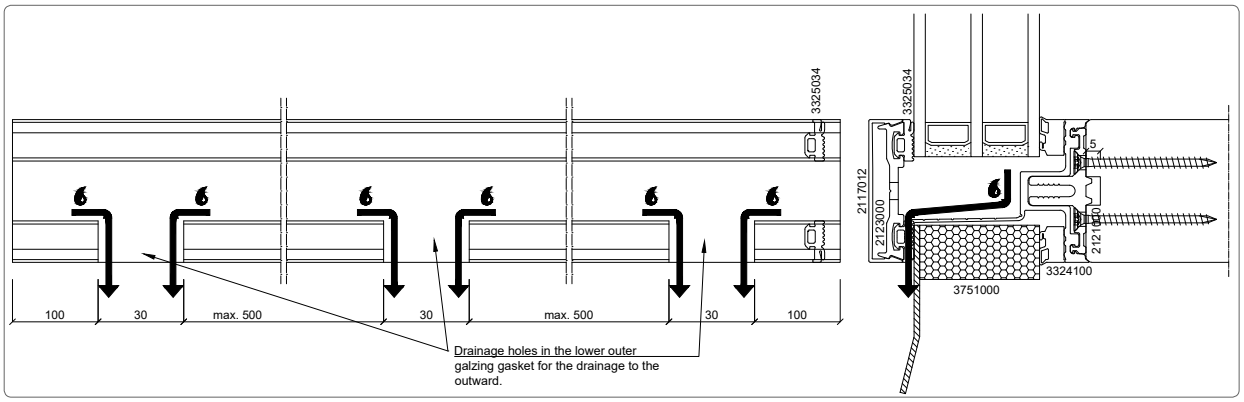


Fig. 43: Detaching the glazing seal in the area of the bottom seal

Mullion-Transom-connection intermediate mullion on transom (top)

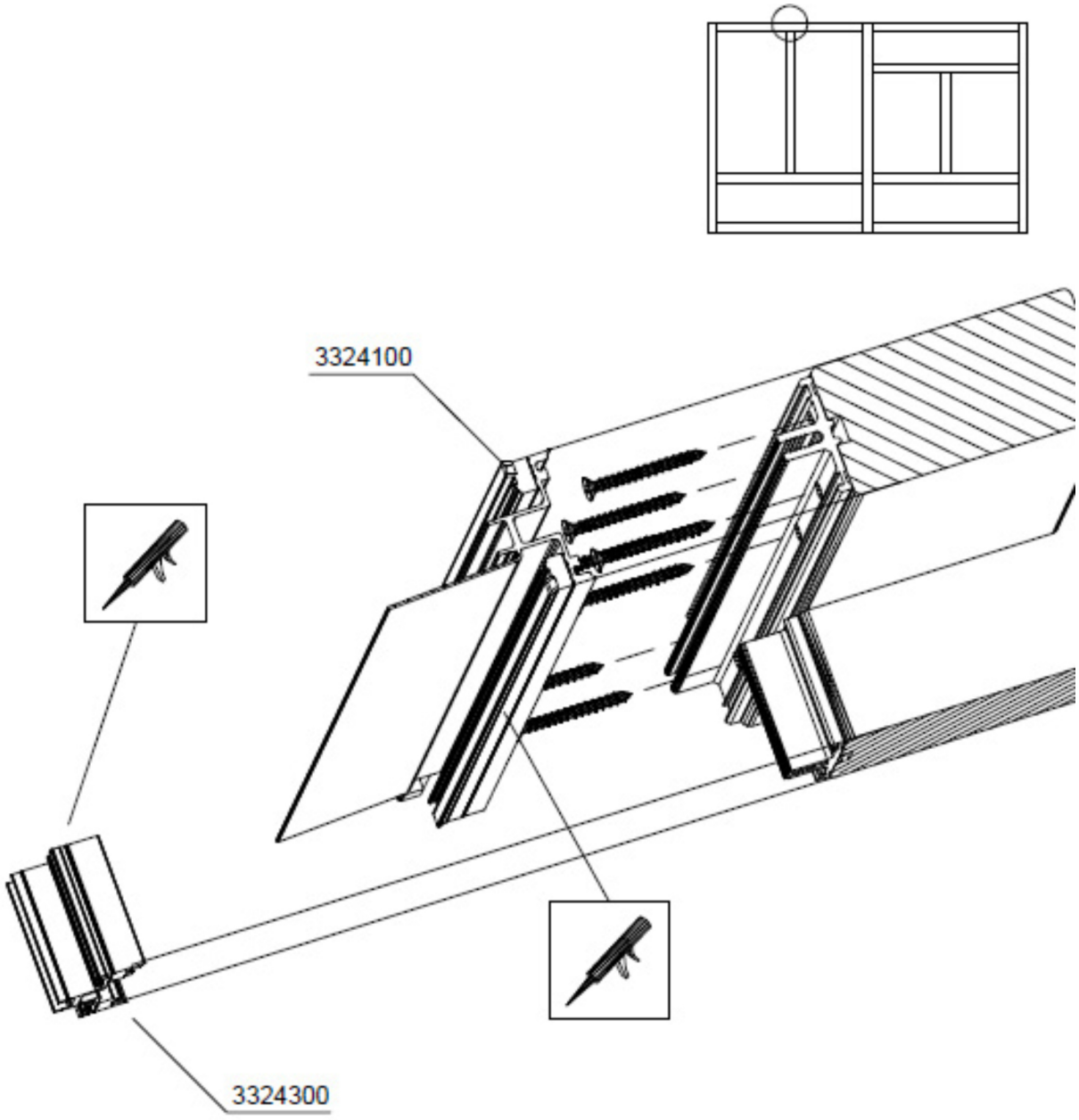


Fig. 44: Gasket joint (5) - Mullion-Transom-connection intermediate mullion on transom (top)

Mullion-transom-T-connection next to doors

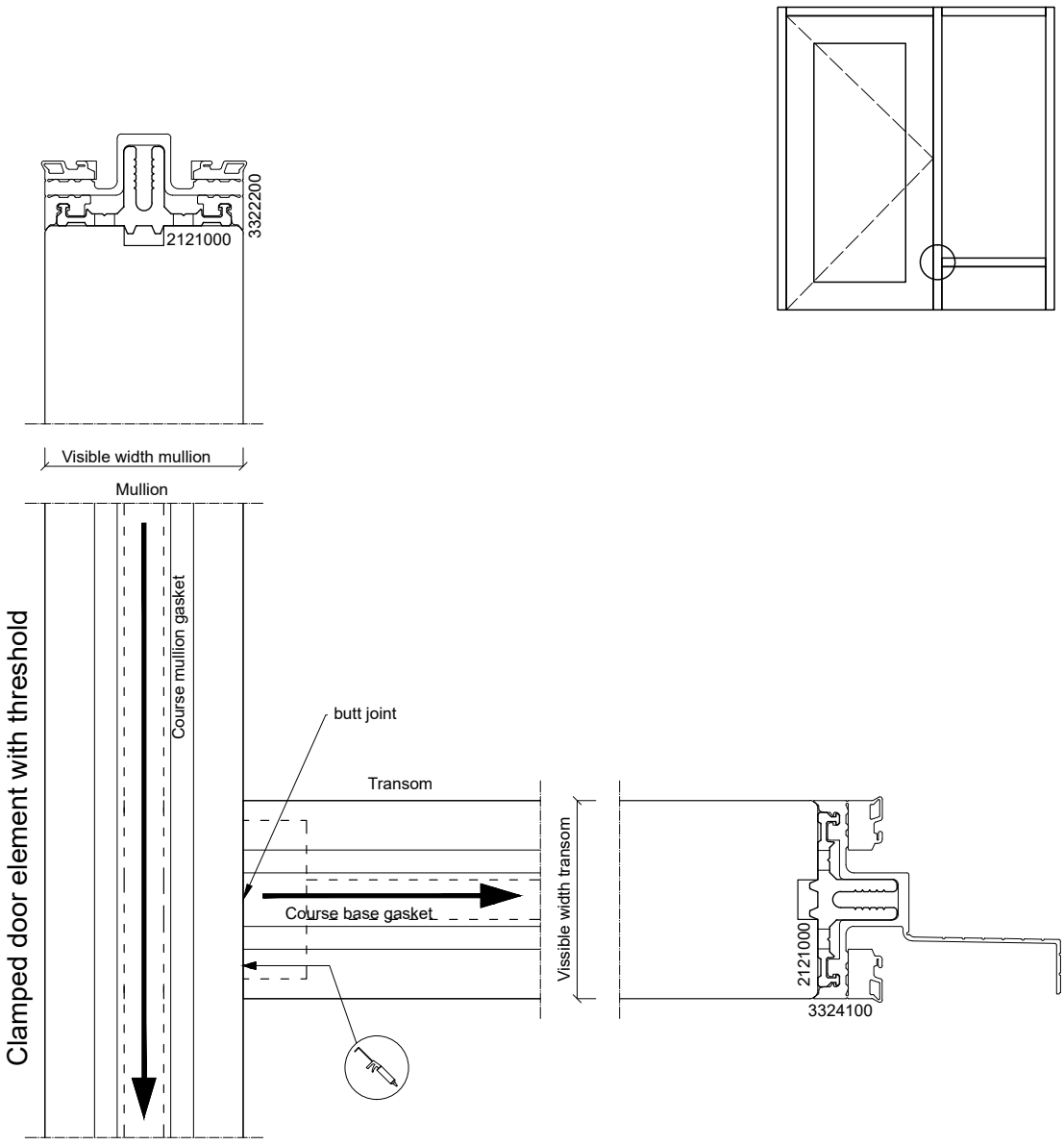


Fig. 45: Gasket joint (6) - Mullion-transom-T-connection next to doors

Transfer glass weight

The glass weight of each glass is transferred by two plastic glass carriers (aus glasfaserverstärktem Polyamid), which are secured to the base profile using the corresponding screws. The selection of these supports depends on the panel thickness or glass thickness (see also the following section, “Components by Panel Thickness”).

The maximum weight can be checked with the system provider.
If the steel pins are not sufficient for reinforcement, heavy-duty glass carriers must be used. To achieve the 13 mm glass depth required for the TM50 SE system, standard 2 mm-thick glazing blocks must be used.

Filling-thickness [mm]	Glass carreir	Screws (Articel-Nbr..)
22 to 26	6921026	5,5 x 25 mm (6615525)
27 to 32	6921030	5,5 x 25 mm (6615525)
33 to 38	6921035	5,5 x 25 mm (6615525)
39 to 47	6921044	5,5 x 35 mm (6615535)
48 to 52	6921050	5,5 x 42 mm (6615542)
53 to 62	6921056	5,5 x 50 mm (6615550)

Tab. 11: Selection of plastic glass covers based on the thickness of the filling

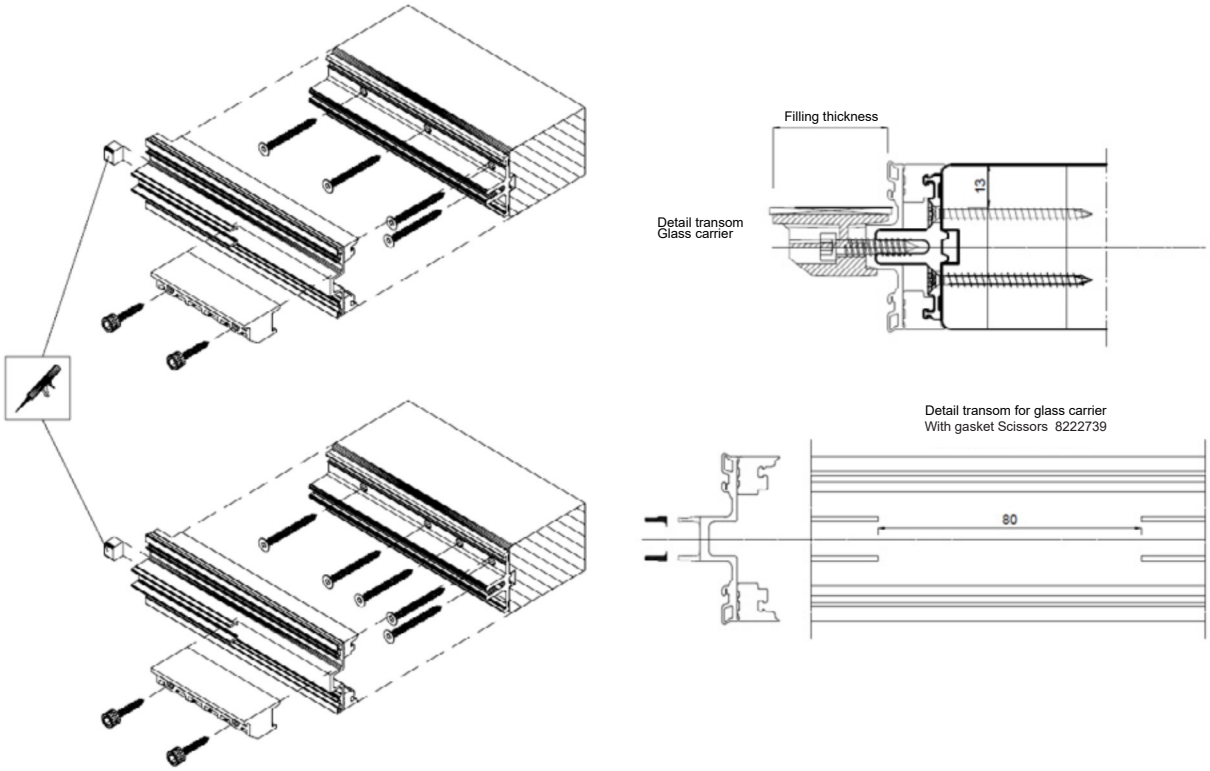


Fig. 46: Installation glass carrier

The weight of a glass pane can be roughly calculated using the following formula:
Pane weight [kg] = 2,5 × Glass thickness [mm] × Pane area [m²]

Maximum pane weight based on the selected glass carrier

The maximum permissible pane weight depends on the glazing thickness and the type of glass carriers used (see table “Maximum pane weights by glazing thickness”)
The minimum requirement is always at least two glass carriers per pane. To support heavier loads, four supports per pane (two placed directly next to each other) or additional reinforcement with steel pins may be provided.

If the steel pins are not sufficient for reinforcement, heavy-duty glass spacers must be used. To achieve the 13 mm glass depth required for the TM50 SE system, standard 2 mm-thick glazing blocks must be used.

For glass carriers without steel pins, the maximum glass weights are specified based on a deflection of 2 mm. For glass carriers with dowels, this deflection is limited to 3 mm.

Filling-thickness [mm]	Glass carrier with steel pin	2 pair glass carrier	1 pair glass carrier
22 to 26	426 kg	296 kg	119 kg
27 to 32	402 kg	269 kg	105 kg
33 to 38	378 kg	242 kg	91 kg
39 to 47	342 kg	202 kg	69 kg
48 to 52	322 kg	179 kg	57 kg
53 to 62	282 kg	134 kg	33 kg

Tab. 12: Maximum pane weights by filling thickness

The maximum glass weight for heavy-duty glass carriers depends on the thickness of the filling and the type of wood selected.
The maximum permissible weight must be determined by calculation.

Plastic glass carriers

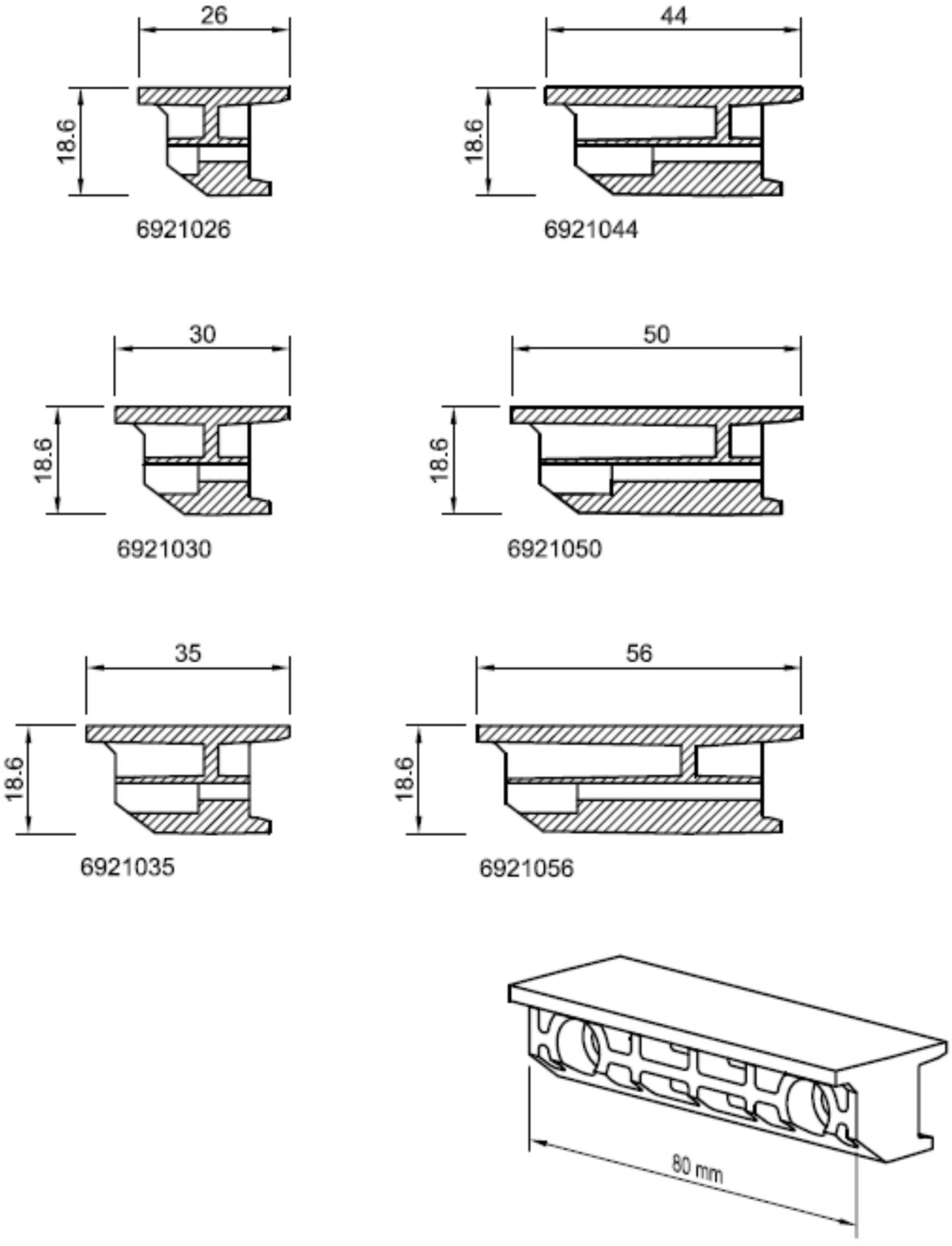


Fig. 47: Plastic glass carrier 26 to 56 mm

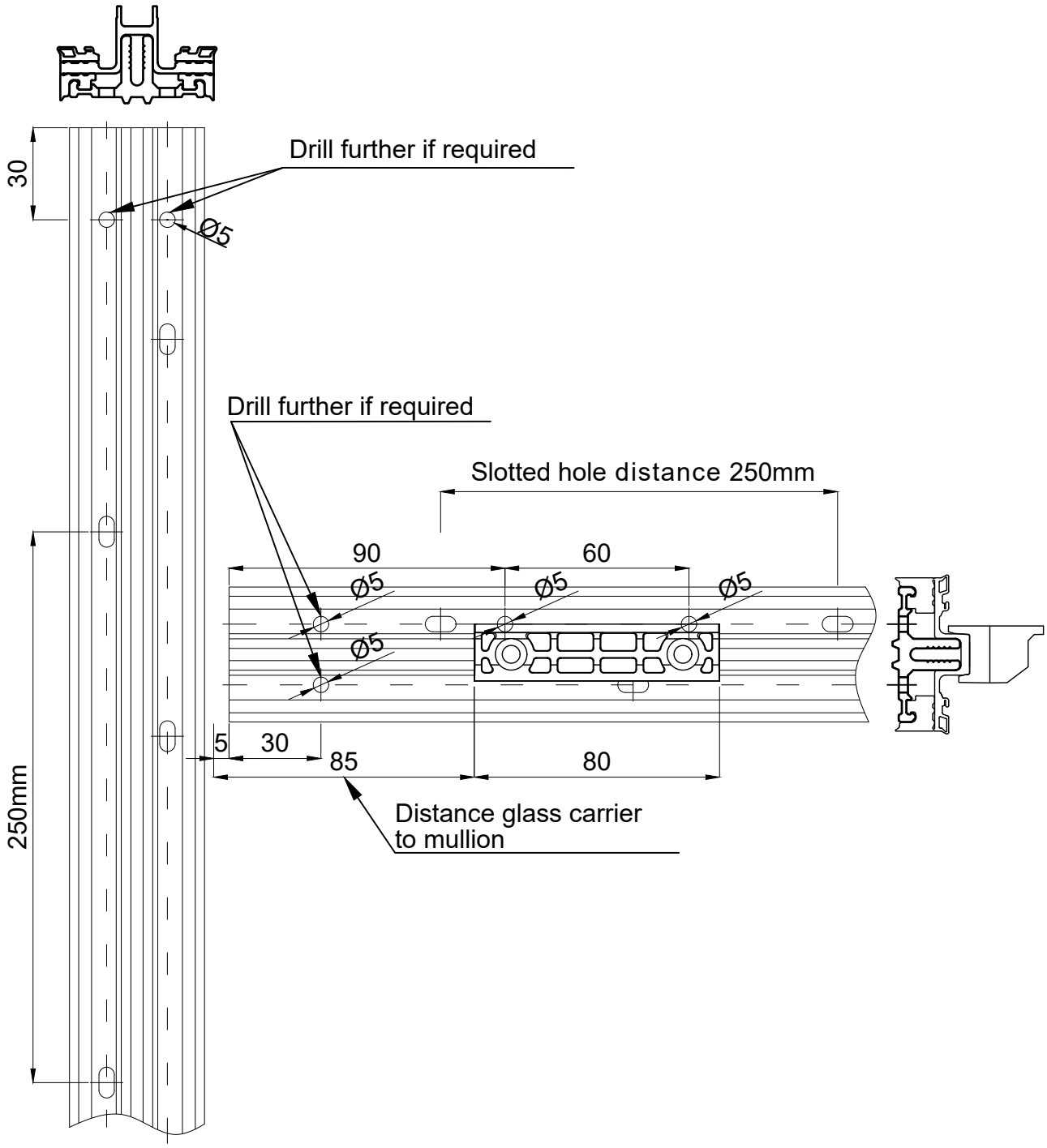


Fig. 48: Deployment standard plastic glass carriers

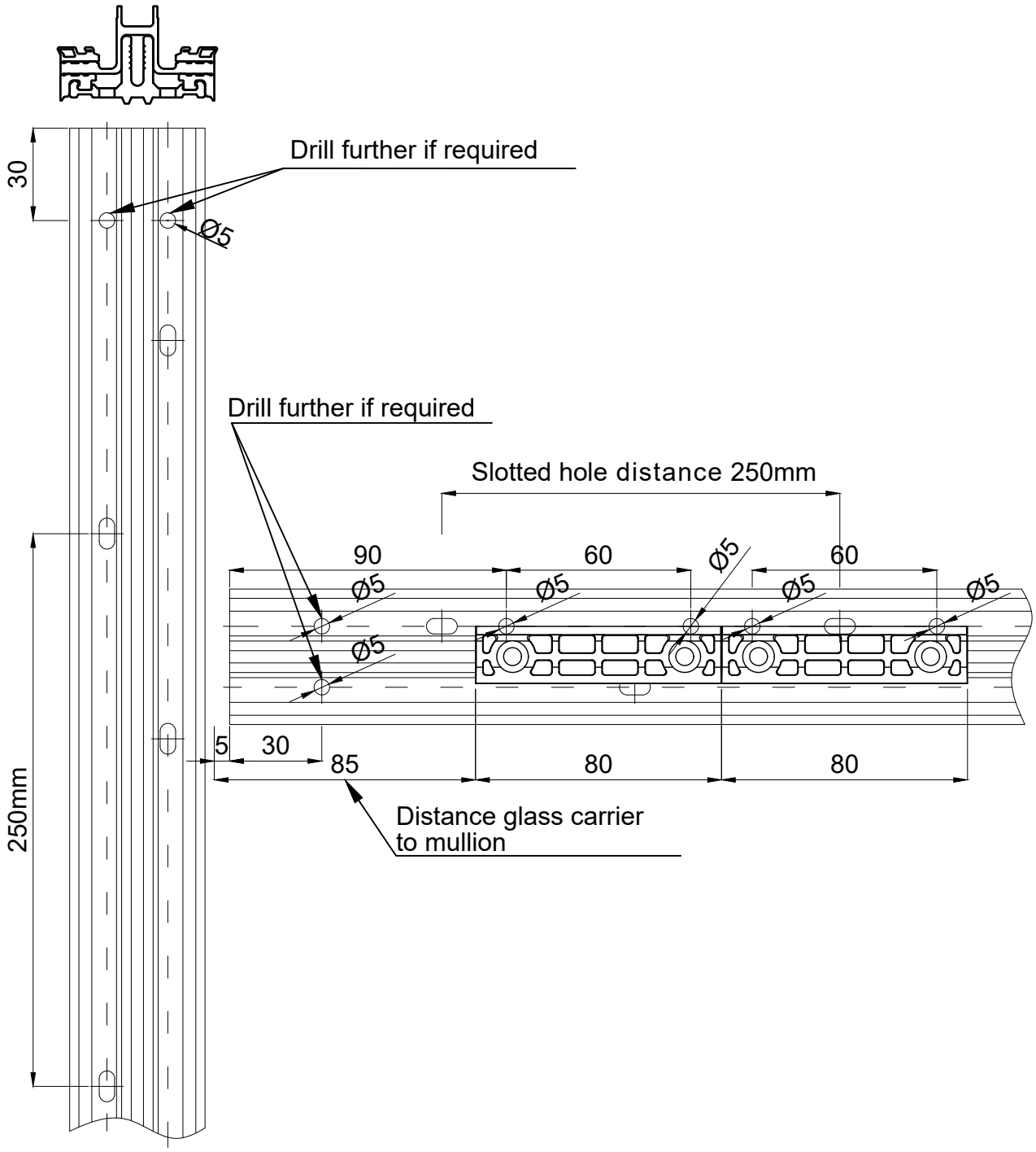


Fig. 49: Deployment double plastic glass carriers

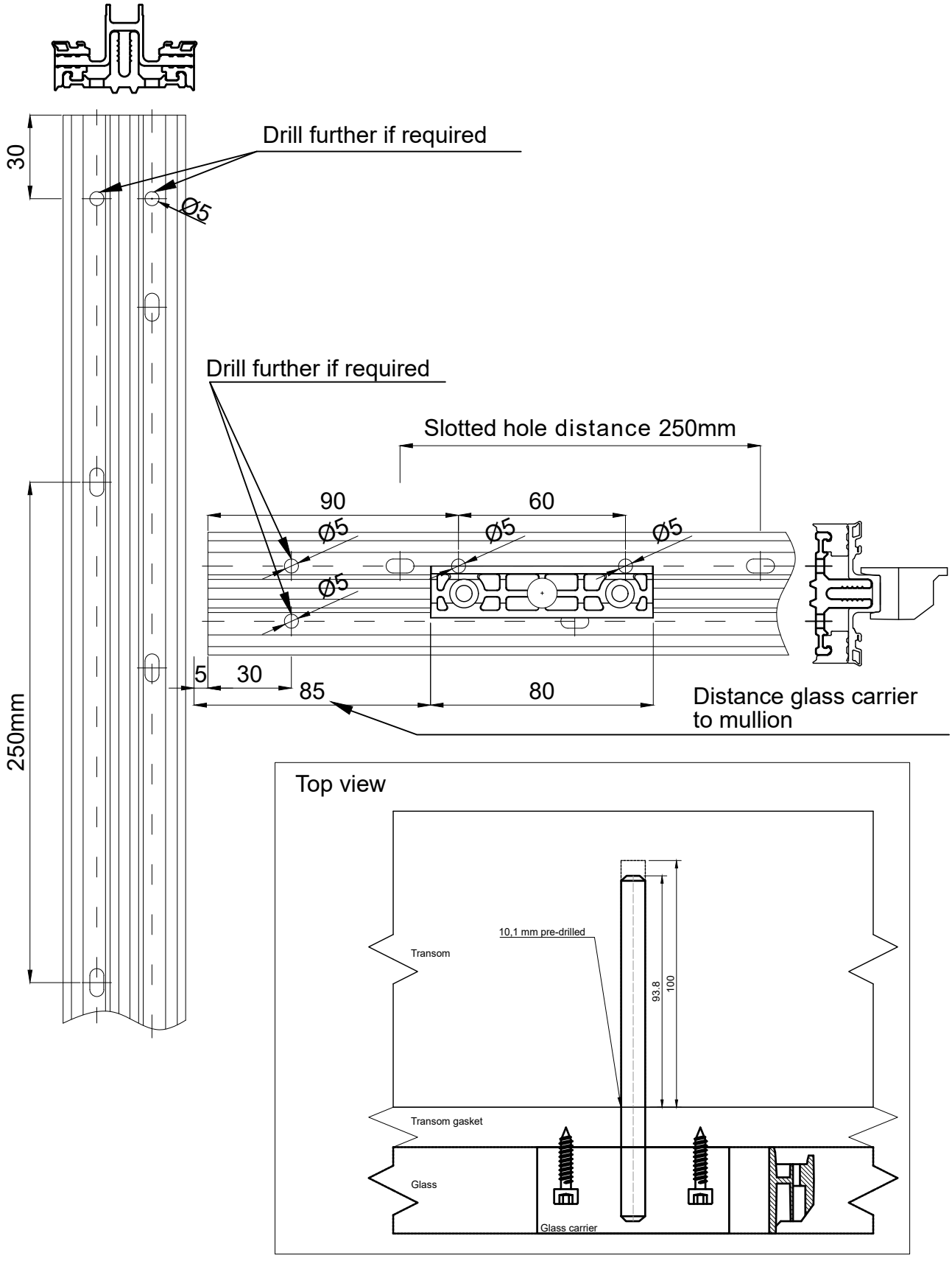
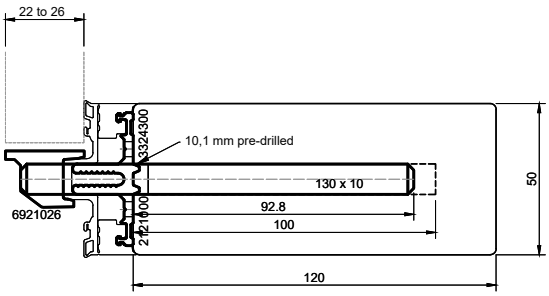


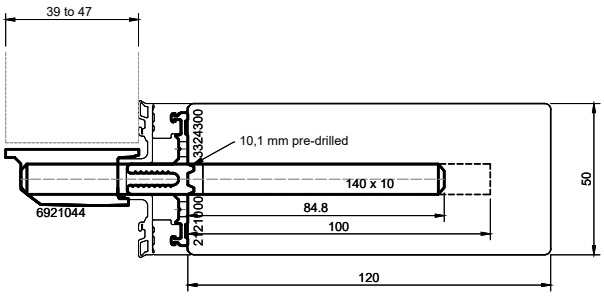
Fig. 50: Deployment glass carriers with steel pin

Glass carrier with steel pin

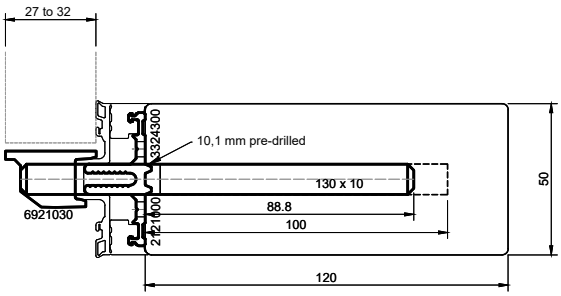
6921126



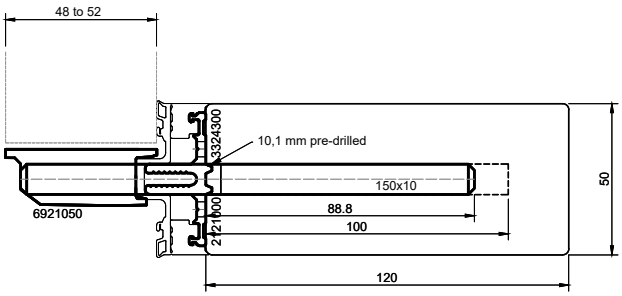
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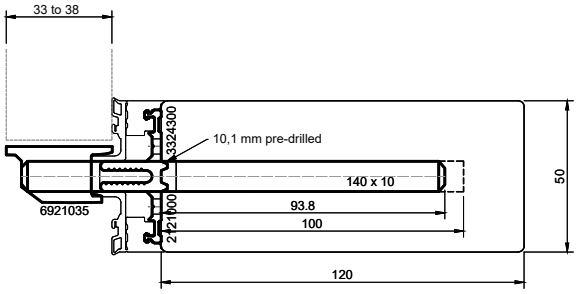
6921130



6921150



6921135



6921156

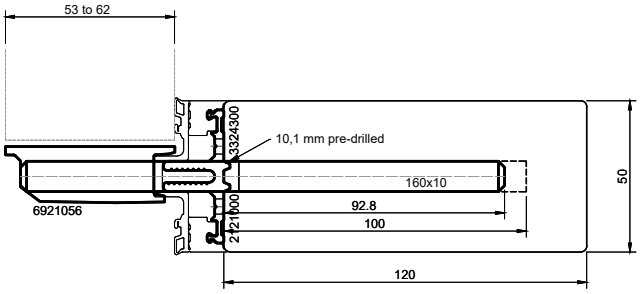


Fig. 51: Deployment glass carrier with steel pin

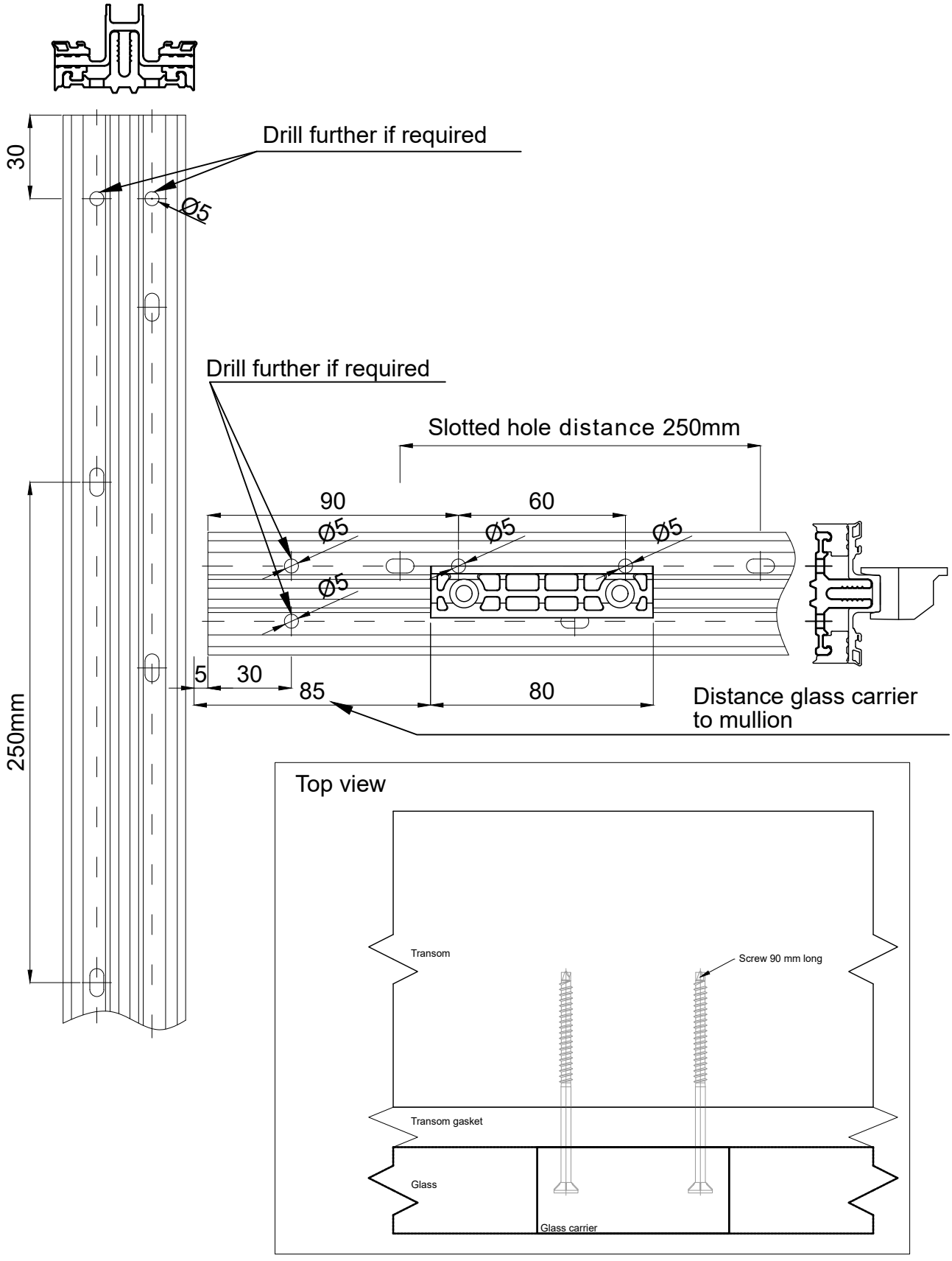


Fig. 52: Deployment glass carrier with screw into the transom

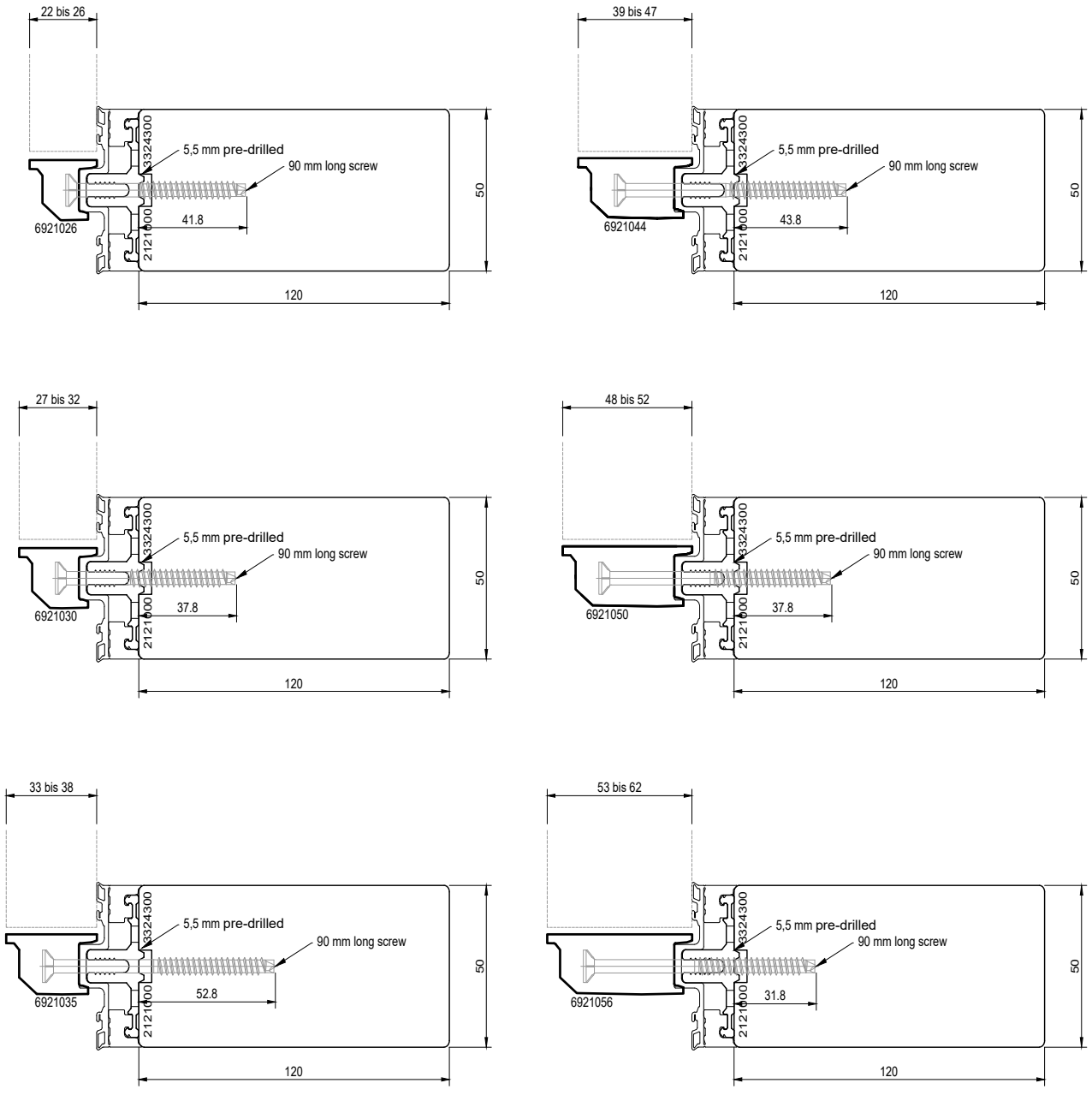


Fig. 53: Screwed glass carrier with screw into the transom

Heavy-duty glass carrier

The heavy-duty glass carriers always consist of a vertical and a horizontal component, which are connected using two sheet metal screws (M6 x 30 mm, A2, DIN 7991), and are available in L- and T-configurations. Their use is also regulated by ETA-18/0033. The heavy-duty glass carriers make a positive contribution to the evaluation of the mullion-transom connection and can thus enable a reduction in the cross-sections required for structural analysis.

The load is transferred via steel bolts that are inserted directly into the wooden substructure. To do this, the base profile and the wooden substructure must be pre-drilled.

The depth of the heavy-duty glass carriers is determined individually for each panel. The following applies:

Depth of glass carriers = panel thickness - 5 mm

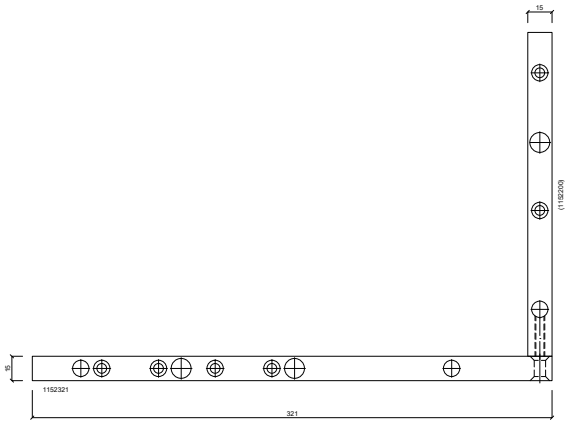


Fig. 54: Heavy-duty glass shelf, L-shape

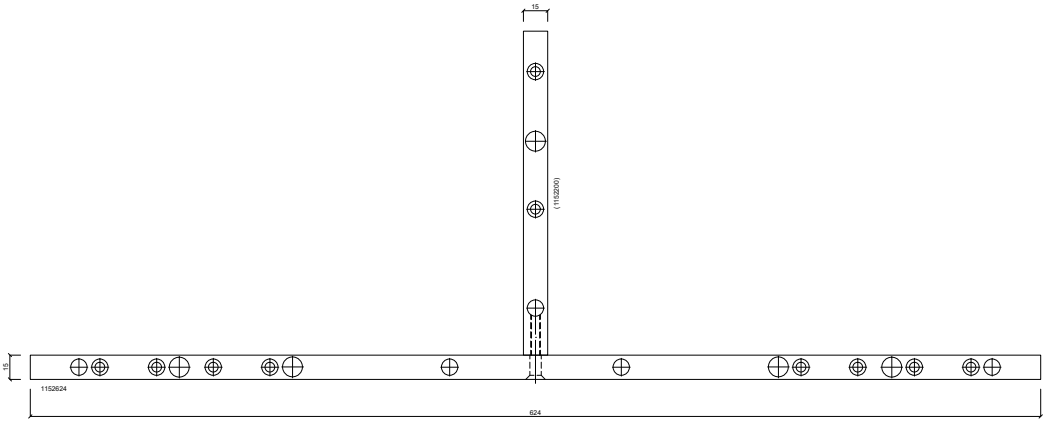


Fig. 55: Heavy-duty glass carriers, T-style

Components heavy-duty glass carriers

1152624
Heavy-duty glass carrier Al,
T-Form (2 parts, 624x15 + 200x15)

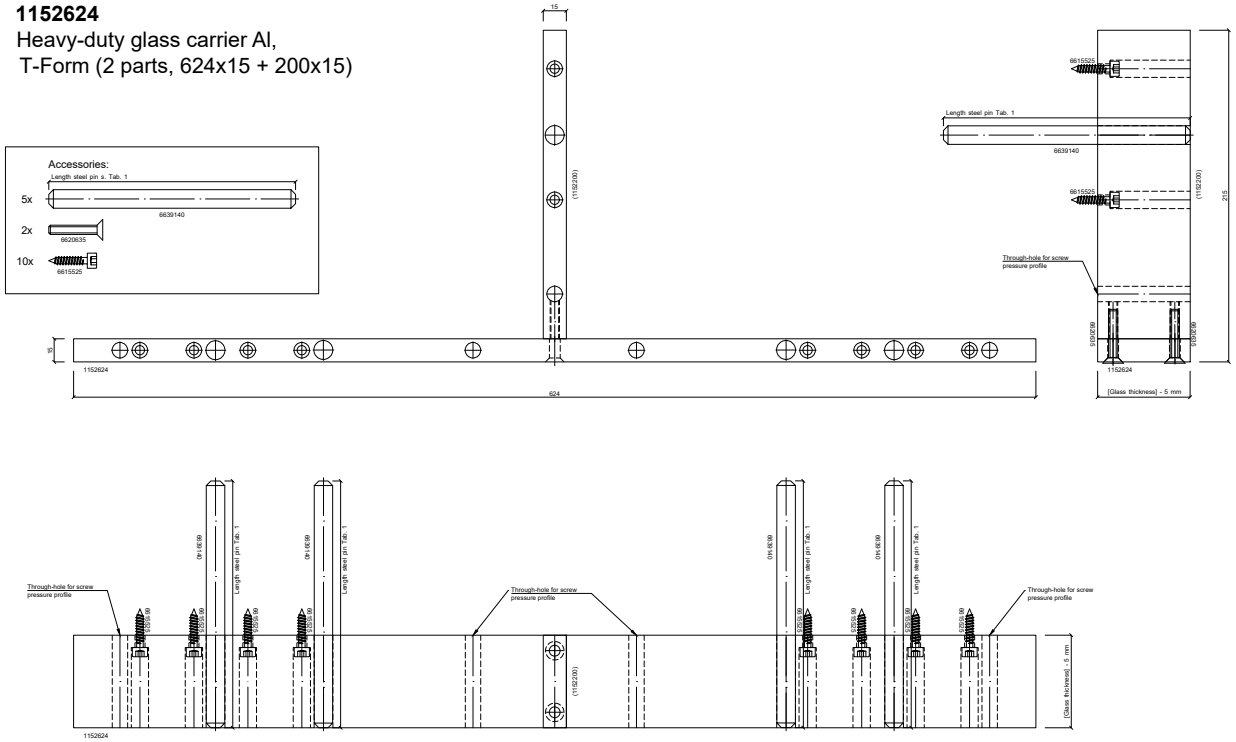
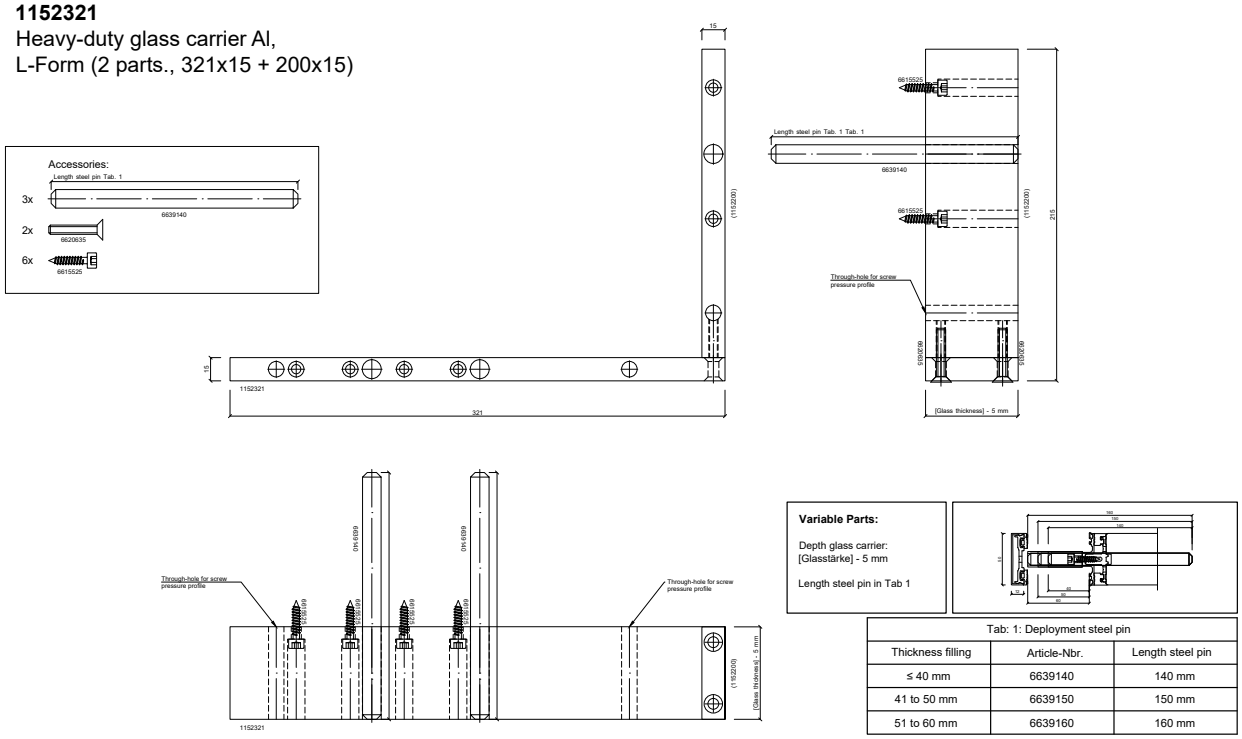


Fig. 56: Components heavy-duty glass carriers - 1152624

1152321
Heavy-duty glass carrier Al,
L-Form (2 parts., 321x15 + 200x15)



Variable Parts:

Depth glass carrier:
[Glasstärke] - 5 mm

Length steel pin in Tab 1

Tab: 1: Deployment steel pin		
Thickness filling	Article-Nbr.	Length steel pin
≤ 40 mm	6639140	140 mm
41 to 50 mm	6639150	150 mm
51 to 60 mm	6639160	160 mm

Fig. 57: Components heavy-duty glass carriers - 1152321

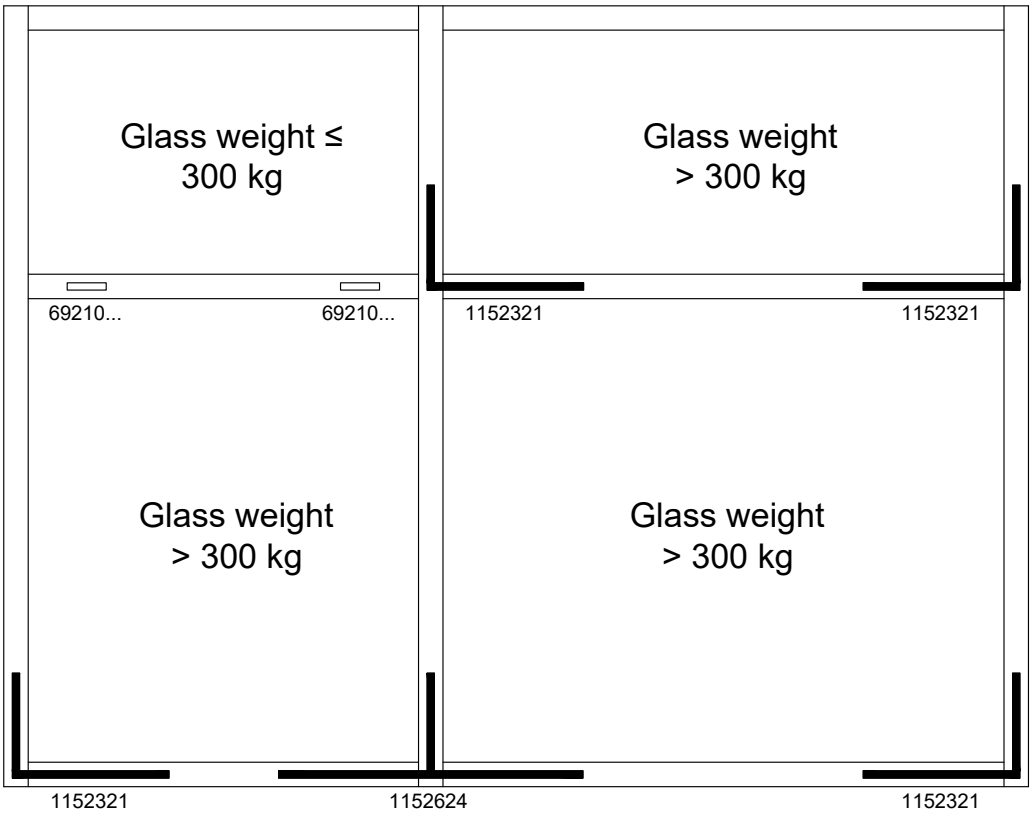
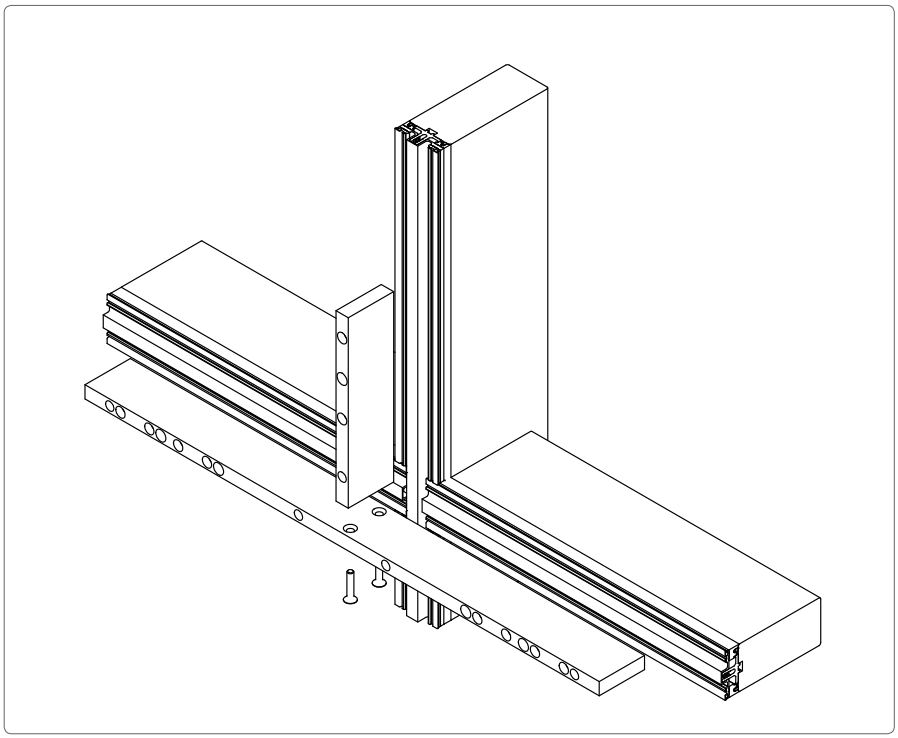
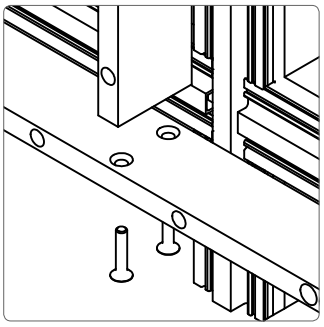


Fig. 58: Components heavy-duty glass carriers

For glass panels weighing 300 kg or more, it is recommended that you consider using heavy-duty glass carriers.

Installation of glass carriers





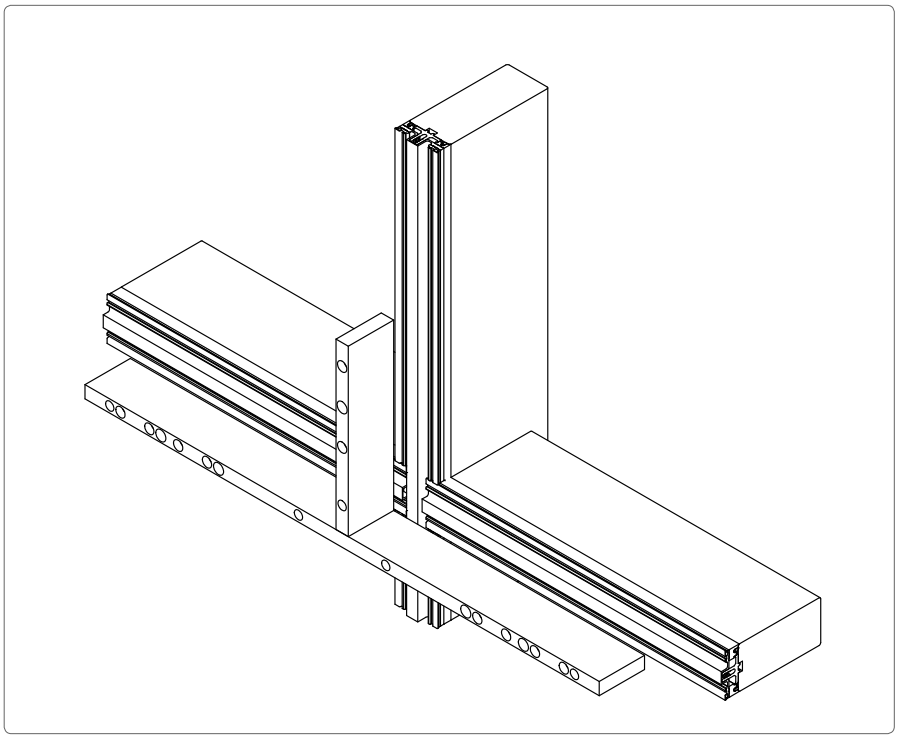
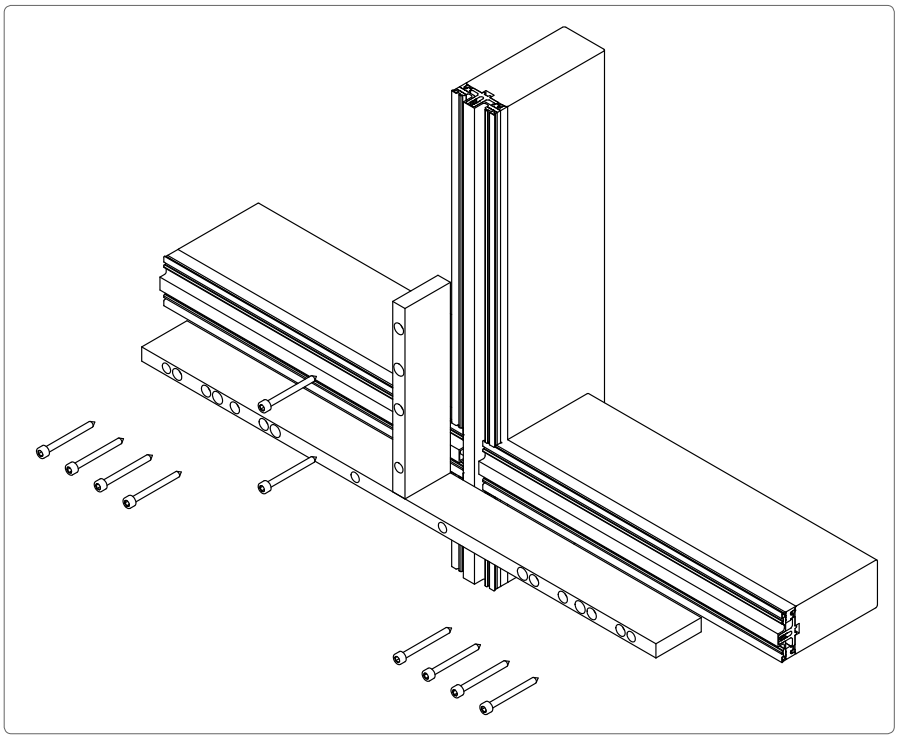


Fig. 59: Installation step 1 - heavy-duty glass carriers



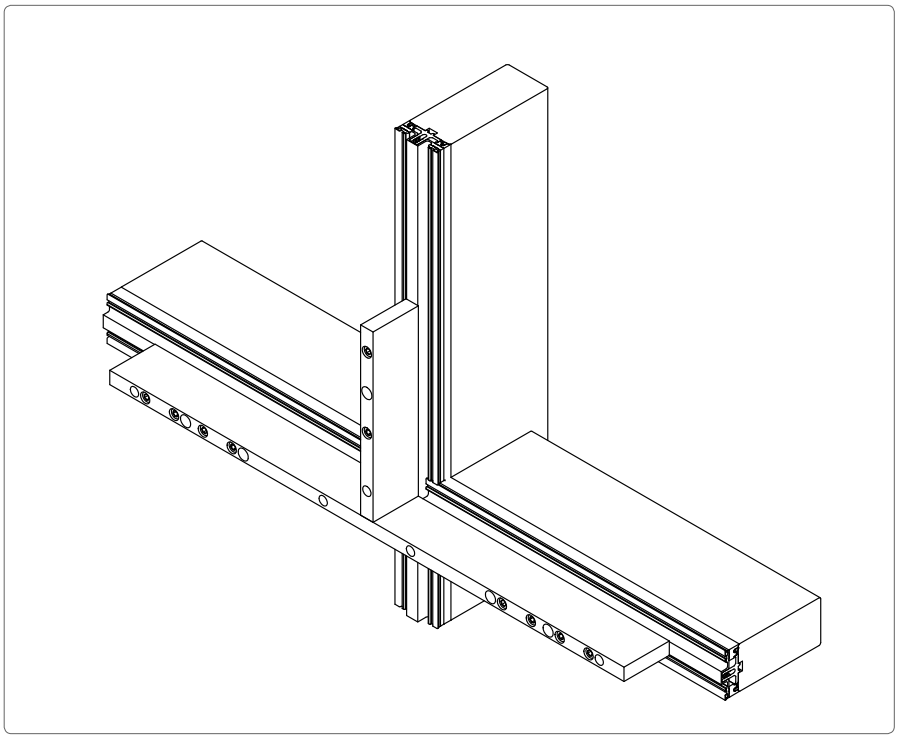
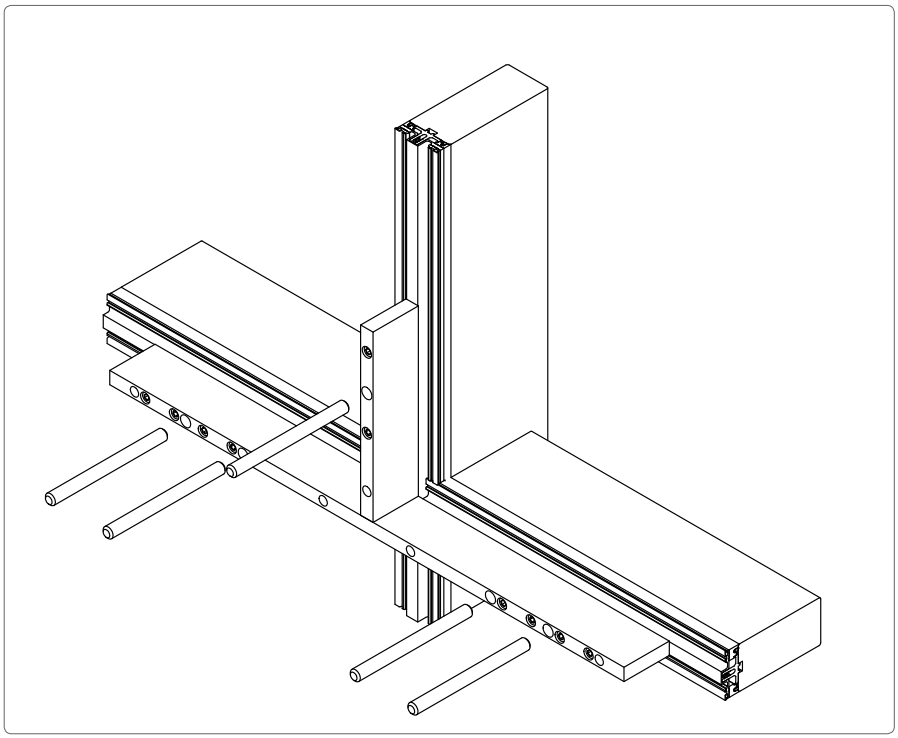
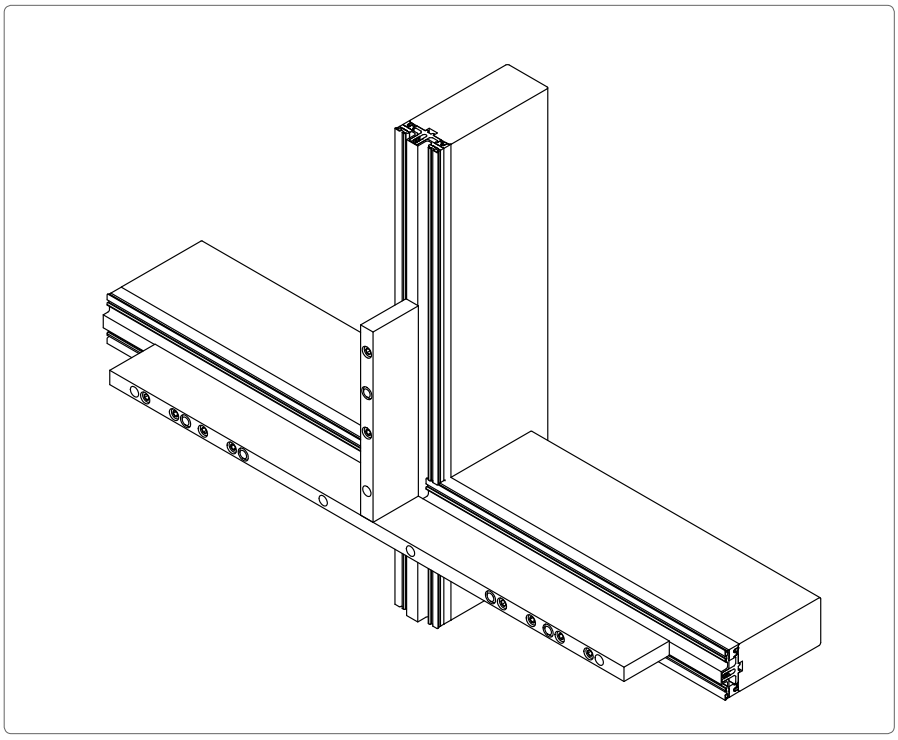


Fig. 60: Installation step 2 - heavy-duty glass carriers





Pre drilled holes for steel pins with a diameter of 12 mm and a depth of 110 mm in the wooden substructure.

Fill the drill holes with a small amount of facade sealant to seal the penetration of the base profile gasket.

Fig. 61: Installation step 3 - heavy-duty glass carriers

Components by filling thickness

The length of the clamping profile screws depends on the panel thickness, the clamping profile used, and the type of fastening. The following table refers to pressure profile 2123000; other variants must be dimensioned during the design phase.

Screw depth	Glazing gasket 3-4 mm (Article-Nbr. 3325034)	Glazing gasket 5-6 mm (Article-Nbr. 3325056)	Holding force
A = 13 mm	Opt. = Filling thickness + 18 mm	Opt. = Filling thickness + 20 mm	4,3 kN
A ≤ 17 mm	Max. ≤ Filling thickness + 22 mm	Max. ≤ Filling thickness + 24 mm	6,5 kN

Tab. 13: Pull-out values based on screw embedment depth

The recommended lengths of the sunshade bolts were selected so that approximately 30 to 50 mm of the thread can be used to attach the sunshade. According to General Type Approval Z-14.4-669, the screw recess must be at least 13 mm deep.

Filling-thickness	Glass carrier	Screw glass carrier (2 Pieces)	Gasket Outside	Screw pressure profile A ≥ 13 mm	SE-Spacer	Sunshade bolt (tapered bolt)
mm			Artikel-Nr.			
6 bis 7	Hard wood block*	-	**3325056**	6625528	-	6638080
8 bis 10	Hard wood block*	-	3325034	6625528	-	6638080
11 bis 15	Hard wood block*	-	3325034	6625532	-	6638080
16 bis 20	Hard wood block*	-	3325034	6625538	-	6638080
22 bis 23	6921026	6615525	**3325056**	6625545	-	6638100
24 bis 26	6921026	6615525	3325034	6625545	-	6638100
27 bis 28	6921030	6615525	3325034	6625548	-	6638100
28 bis 29	6921030	6615525	**3325056**	6625550	-	6638100
30 bis 32	6921030	6615525	3325034	6625550	-	6638100
33 bis 36	6921035	6615525	3325034	6625555	-	6638100
37 bis 38	6921035	6615525	**3325056**	6625560	-	6638100
39 bis 40	6921044	6615535	**3325056**	6625560	-	6638120
41 bis 43	6921044	6615535	3325034	6625560	-	6638120
44 bis 47	6921044	6615535	3325034	6625565	3724454	6638120
48 bis 50	6921050	6615542	3325034	6625570	3724454	6638120
51 bis 52	6921050	6615542	3325034	6625571	3724454	6638120
53 bis 56	6921056	6615550	3325034	6625574	3724454	6638120
57 bis 58	6921056	6615550	3325034	6625576	3724454	6638130
58 bis 59	6921056	6615550	**3325056**	6625580	3724454	6638130
60 bis 62	6921056	6615550	3325034	6625580	3724454	6638130

*not included

Tab. 14: Components by filling thickness (TM50, TM60 und TM80)

Components by filling thickness TM50 SG

Filling-thickness	Glass carrier	Screw glass carrier (2 Pieces)	Gasket Outside	Screw pressure profile A ≥ 13 mm	SE-Spacer	Sunshade bolt (tapered bolt)
mm			Artikel-Nr.			
13 bis 16	Hard wood block*	-	3325023	6618523	-	6638080
19 bis 22	Hard wood block*	-	3325023	6618529	-	6638080
25 bis 28	Hard wood block*	-	3325023	6618535	-	6638100
31 bis 34	6921026	6615525	3325023	6618541	-	6638100
37 bis 38	6921030	6615525	3325023	6618547	-	6638100
39 bis 40	6921035	6615525	3325023	6618547	-	6638100
43 bis 46	6921035	6615525	3325023	6618553	3724454	6638100
49 bis 52	6921044	6615535	3325023	6618559	3724454	6638120
55 bis 58	6921050	6615542	3325023	6618565	3724454	6638120

*not included

Tab. 15: Components by filling thickness (TM50 SG)

Inserted elements

Window and door units can be incorporated into the curtain wall as insert elements.
Clamping frame profiles are available for the various systems.

The insert elements are secured using the circumferential clamping mechanism between the base profile and the pressure profile of the mullion-transom construction.
In addition, the frames can be screwed with the glass support if required. For this, additional glass supports can be fitted to the clamping element. These then allow the bolting to be carried out (as shown in the following illustrations).

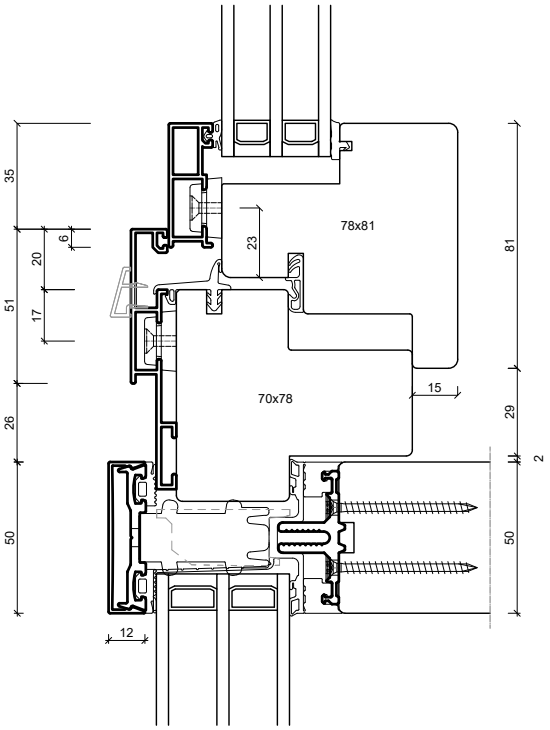


Fig. 62: Installation inserted element without screwed connection

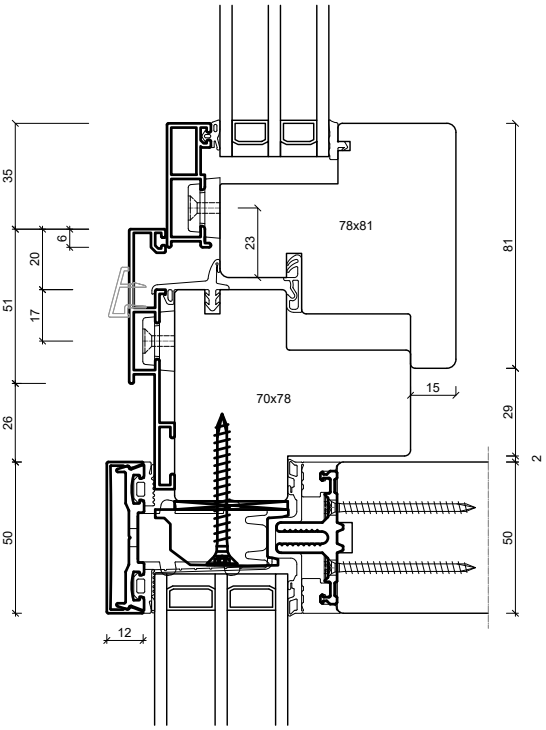


Fig. 63: Installation inserted element with glass carriers

Sunshade bolt

Construction

Solar protection can be attached to the mullion using 8 mm diameter solar protection bolts. To do this, pre-drill the base profile with a 6.8 mm drill bit, than drill out the pressure and cover profile with an 11 mm drill bit.

The stainless steel gasket with extruded EPDM should be pressed lightly against the cover profile and secured using the nuts provided (set 6637900).

Length:	Article-Nbr. for M8:
80 mm	6638080
100 mm	6638100
120 mm	6638120
130 mm	6638130

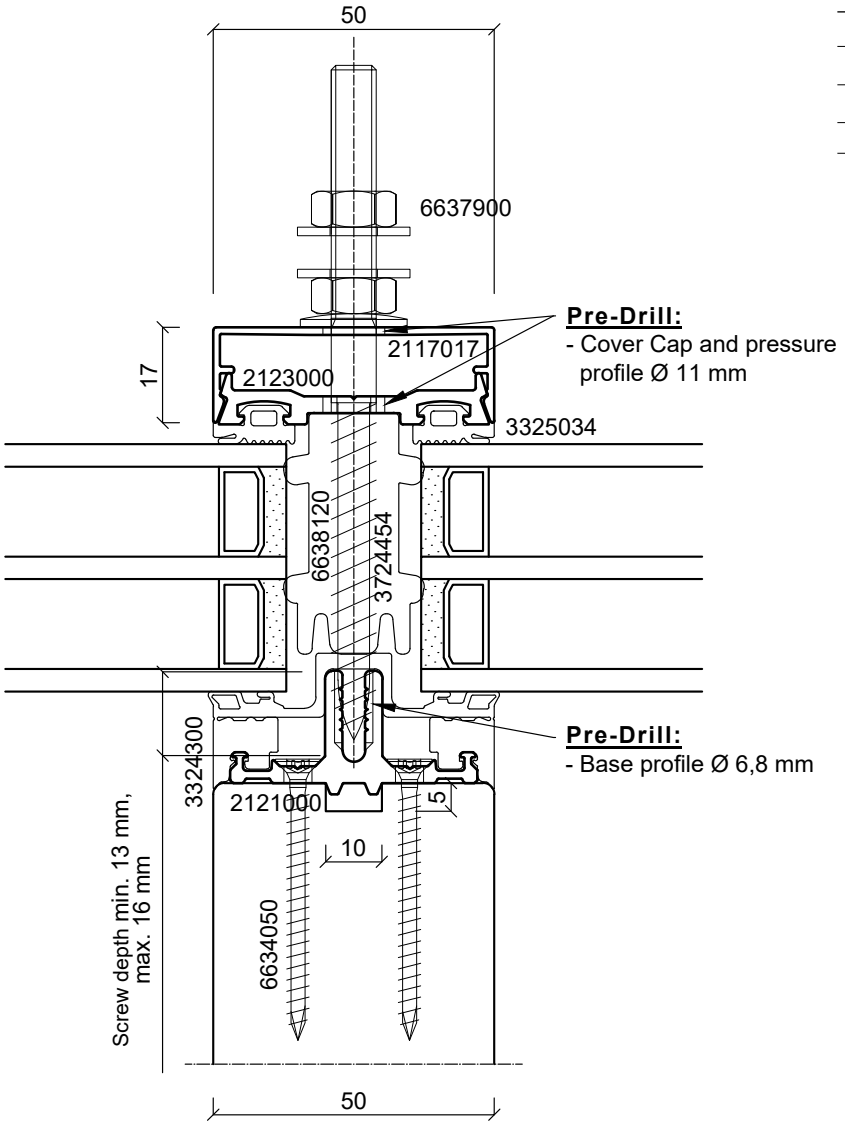


Fig. 64: Special solution - Sunshade Bolt

Supported vertical forces

The mechanical strength of the sunshade bolts has been verified through testing (see test report 2618257, EPH Dresden). The bolts were always evaluated in pairs and with a bracket assembly.

The sunshade bolts must be inserted into the base profile to a minimum depth of 13 mm and installed accordingly.

Bolt diameter	max. Glass thickness	max. distance of forche to surfache of the cover caps	min. Distance between bolts	max. force (1 mm zul. Bending)
M8 (2 Pieces)	60 mm	160 mm	90 mm	0,28 kN

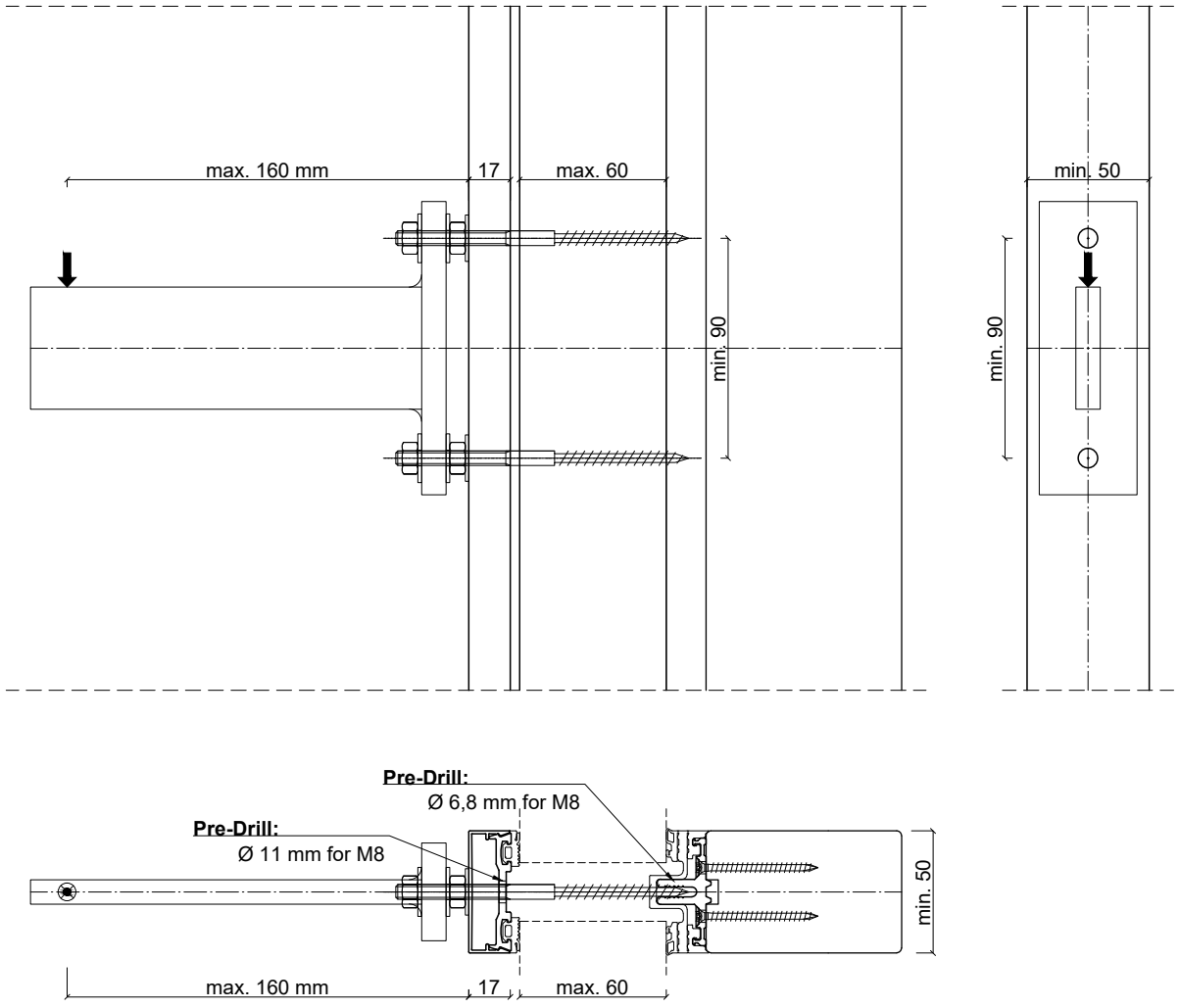


Fig. 65: Installation sunshade bolt

Special Solution

Polygonal facades

Polygonal facades can be constructed using standard gaskets up to a 5° angle. The 3326012 polygonal glazing gasket also allows for Facades with a slope of 5° to 15°. The glass thicknesses and glazing specifications must be taken into account in the facade design.

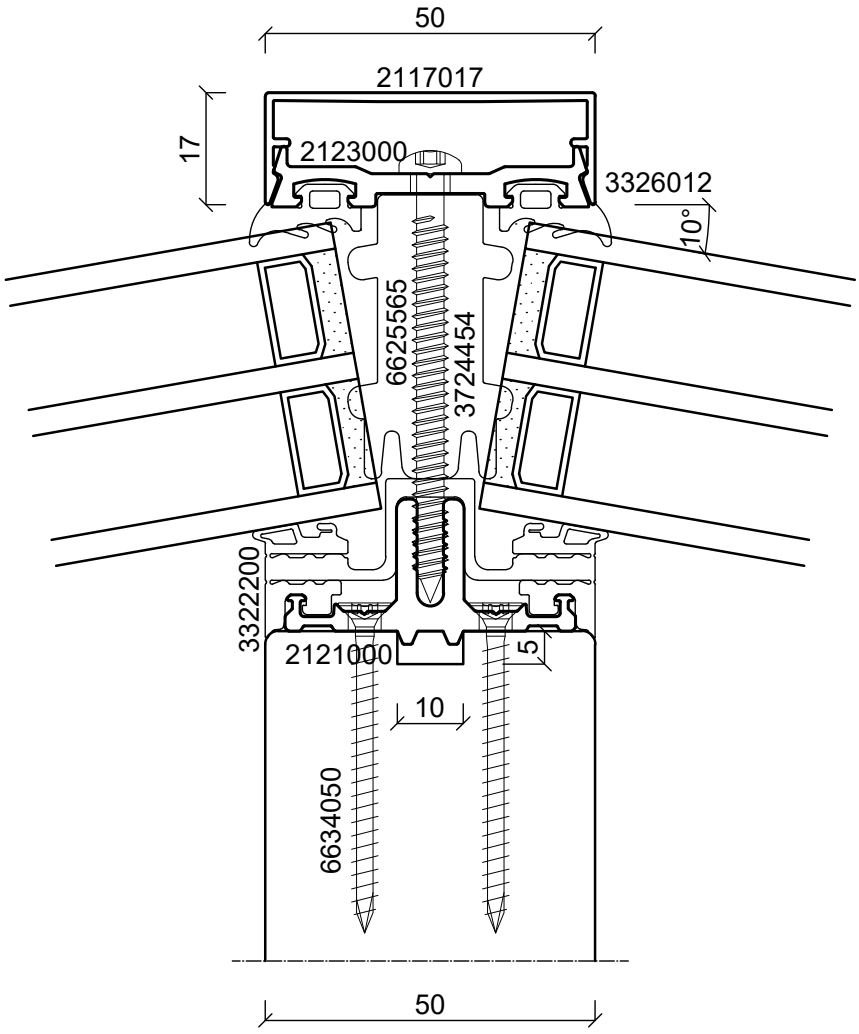


Fig. 66: Sonderlösung - Polygonal facade

Mounting mullion

The mounting mullion is used in facades where movement is expected that needs to be accommodated within the structure. In this case, the base profile is installed as a split assembly. The construction shown here can accommodate movement of +/- 5 mm. The total movement of the facade, as determined by the facade designer, dictates the number of mounting mullions to be used.

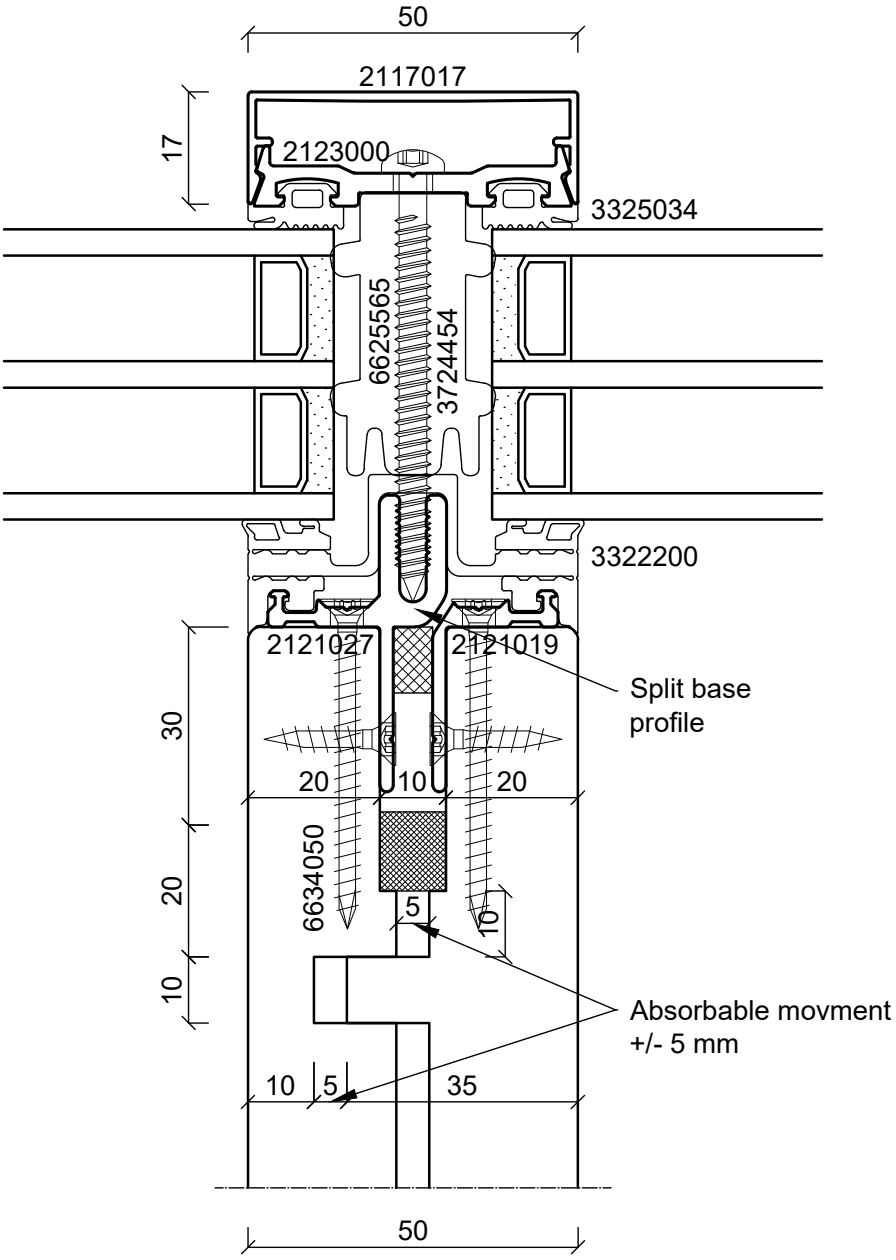


Fig. 67: Special Solution - Mounting mullion

Wood cover caps

Wooden cover strips can be installed to create a wood-grain appearance on the exterior of the facade. Profile 2123800 is available for the TM50 SE system, and profile 2123860 is available for the for the TM60 SE system. Wooden cover strips can be mounted to these profiles using clip fasteners.

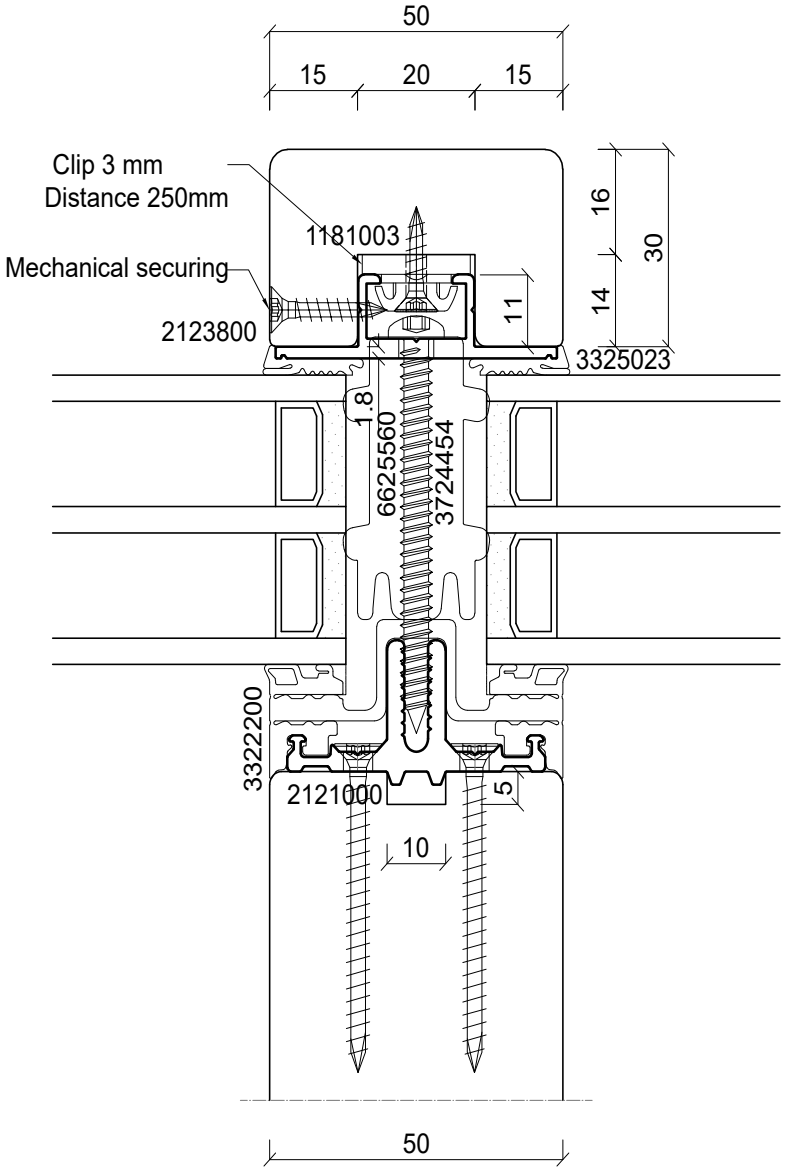
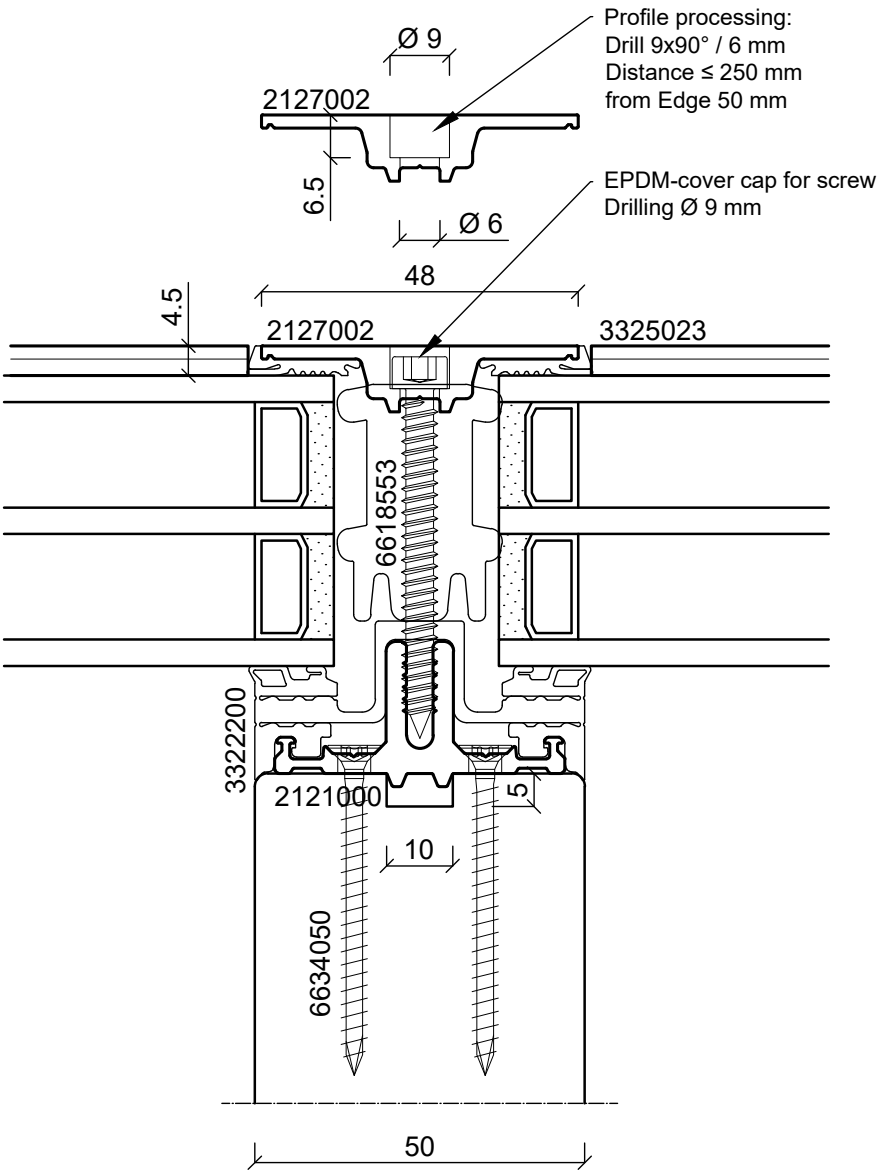


Fig. 68: Sepcial Solution - wood cover caps

Structural Glazing



Note: Due to the raised profile of the pressure plate, the Schwelast glass carriers cannot be used!

Fig. 69: Special Solution - Structural Glazing

burglary protection WK2 / RC2

Manufacturing the batimet curtain-wall-system to meet the burglary resistance requirements of WK2 / RC2 in accordance with DIN EN 1627 requires only minimal additional effort. This is achieved through the following measures:

- Savety glazing, min. class P4A in accordance DIN EN 356:1999
- Additional reinforcement of the glass to prevent shifting (2 glass carriers on each side of all panels)
- Anti tamper drive in scre heads

The WK2/RC2 certification applies to the TM50, TM60, and TM80 systems. Within these systems, the following options can be used:

- Standard cover profiles (12 and 17 mm),
- Cover profiles for structural glazing, and
- Wooden cover strips.

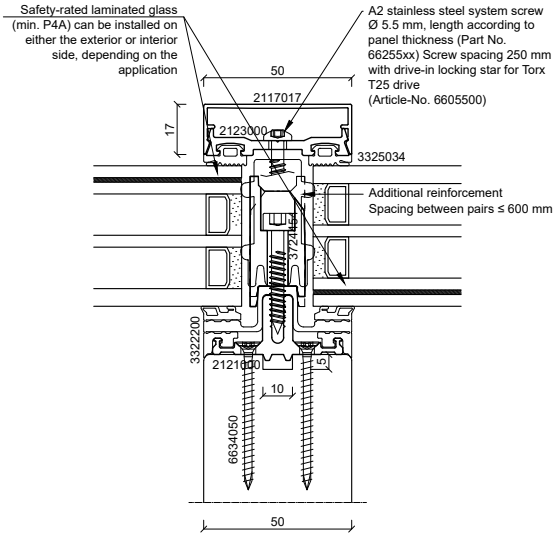


Fig. 70: Sepcial Solution - burglary resistance - detail

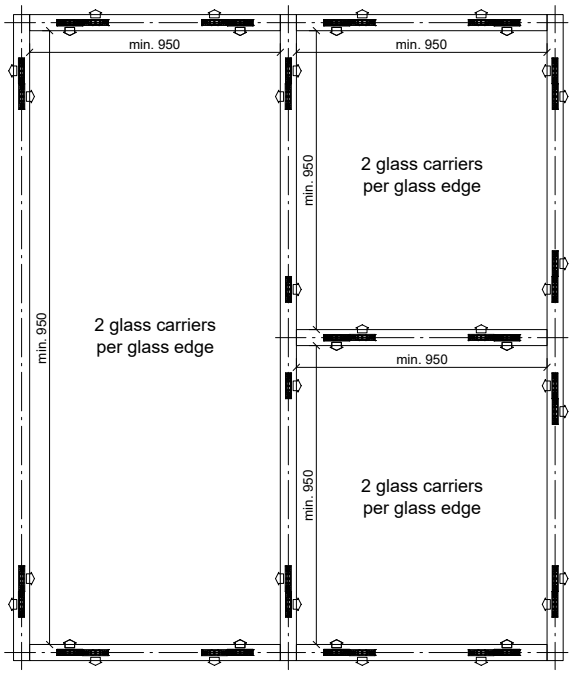


Fig. 71: Sepcial Solution - burglary resistance - detail - installation glass cariers

Gasket Scissors

Gasket Scissors 8222501

The gasket scissors 8222501 are designed for cutting all mullion and rail gaskets to length.

Usage

The gasket scissors are placed on the continuous gasket using the guide rails.

For the different seal widths, the guide rails must be mounted in the appropriate position.

The lower cross guide on the cutting table is inserted into the base profile, which is positioned at a right angle.

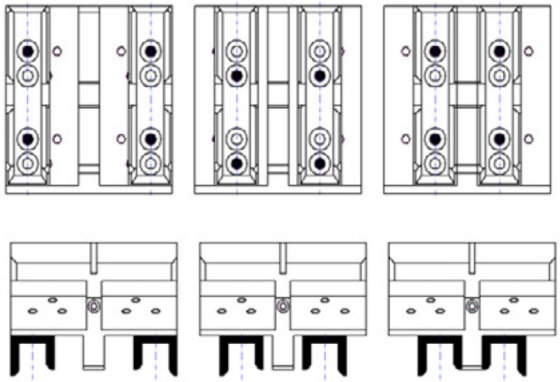


Fig. 72: Loading devices (from left to right)
TM50, TM60 und TM80

Pos.	discription	Amount	Sales units	labeling	Part No.
1	Unterlage	1	1	8222501-01	8229201
2	PU giude rails incl. screws (VE = 2 Pieces)	1	1	8222501-02-E	8229301
20	Blade	1	1	8222501-20	8229101

Tab. 17: Spare Parts List: TM gasket scissors, mullion gasket 8222502

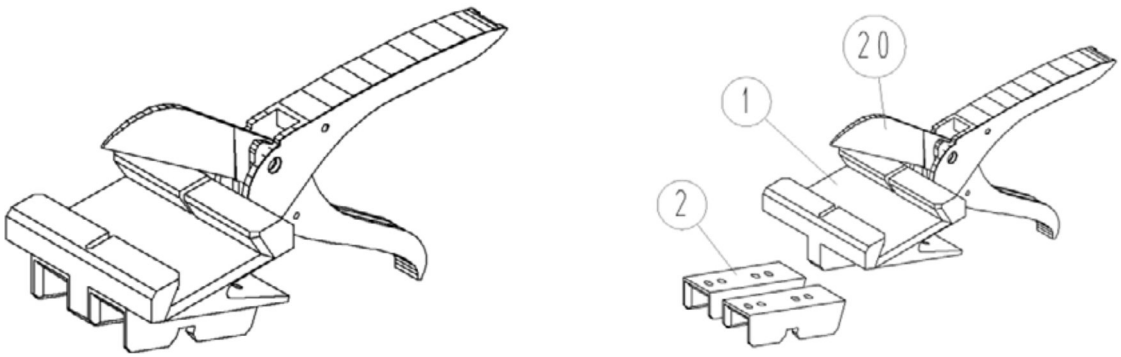


Fig. 73: Dichtungsschere 8222501

Gasket Scissors 8222502

The gasket scissors 8222502 is used to notch the mullion gasket on both sides at the cross joint of the following systems:

Usage

Position the gasket scissors on the gasket and cut into it. To cut the TM60 and TM80 gaskets, the blade holder 50 must be removed and the corresponding extension kit installed. The recess in the blade holder is used to center the gasket over the base profile.

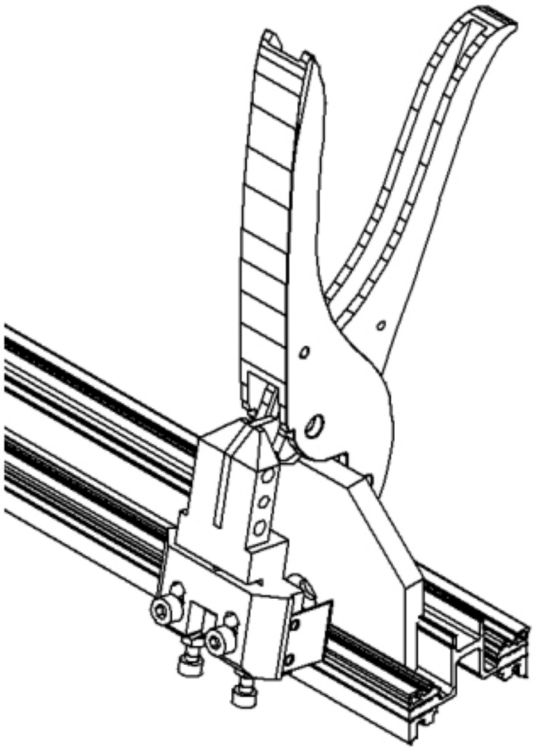


Fig. 74: Usage gasket scissors 8222502

Pos.	discription	Amount	Sales units	labeling	Part No.
2	Underlay	1	1	8222502-02	8229202
5	Blade Holder 50 (includes blades)	1	1	8222502-05	8229502
	PU Blade (PU = 2 Pieces)	1	1	8222502-20	8229102

Tab. 18: Spare Parts List: TM Sealing Scissors Mullion Seal 8222502 -

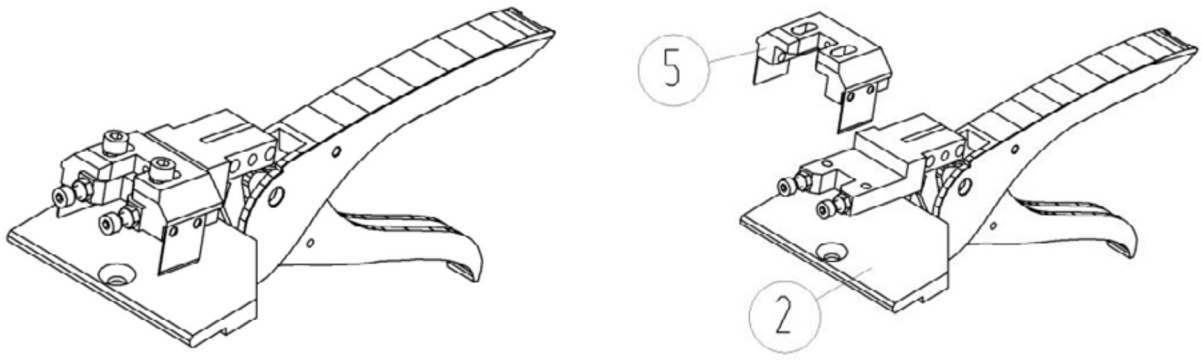


Fig. 75: Gasket Scissors 8222502

Gasket Scissors 8222503

The gasket scissors 8222503 are used to cut the end of the locking gasket at the cross joint of the systems TM50, TM60, and TM80.

In addition, the mullion gasket can be notched to overlap the lowest gasket level (base gasket). To do this, adjust the knurled screw to the desired cutting depth.

Usage

Position the gasket scissors against the gasket and cut out the gasket.

To notch the lower segments, slide the seal upside down onto the cutting mat.

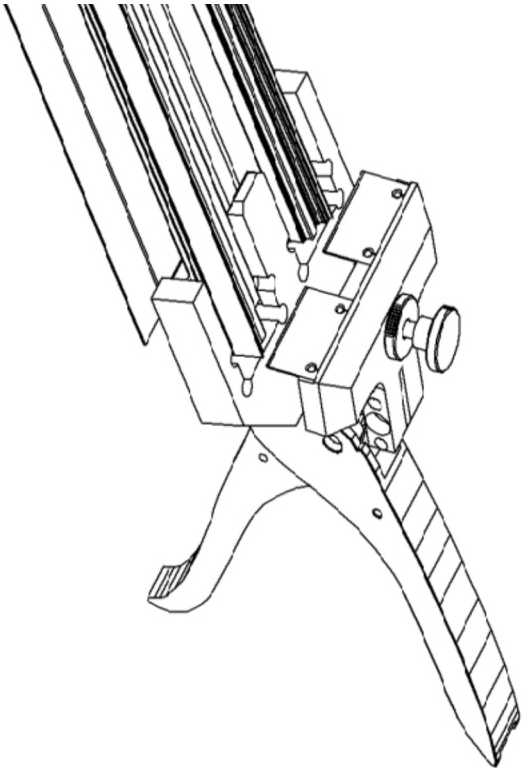
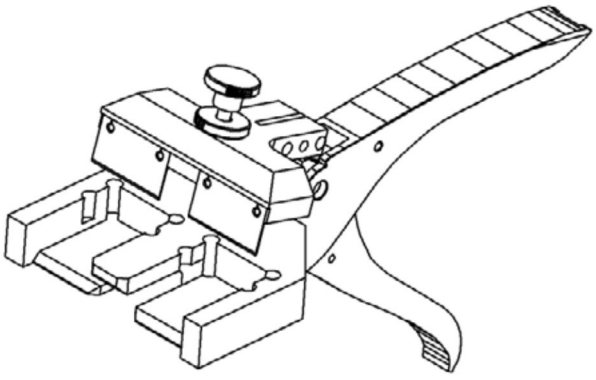


Fig. 76: Usage gasket scissors 8222503

Pos.	discription	Amount	Sales units	labeling	Part No.
2	Underlay	1	1	8222503-02	8229203
3	PU blades incl. screws (PU = 2 pieces)	1	1	8222503-03- E	8229103
21	Knurled screw incl. washer	1	1	8222503-21- E	8229303

Tab. 19: Spare Parts List: gasket scissors transom gasket 8222503



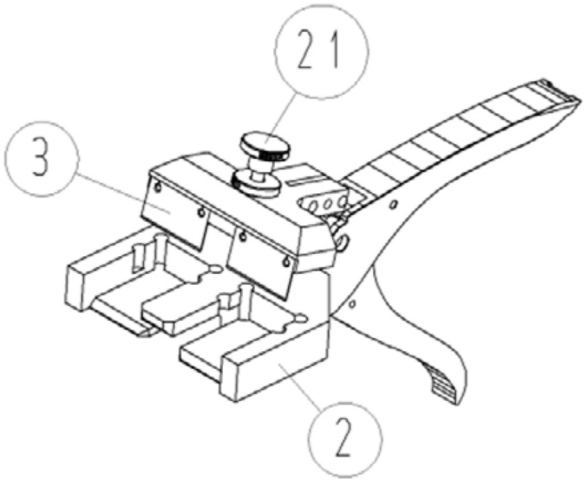


Fig. 77: Gasket scissors 8222502

Gasket Scissors 8222504

The gasket scissors 8222504 are used to notch the flanges for securing the glass suppor

Usage

Position the gasket scissors on the gasket and cut it out.

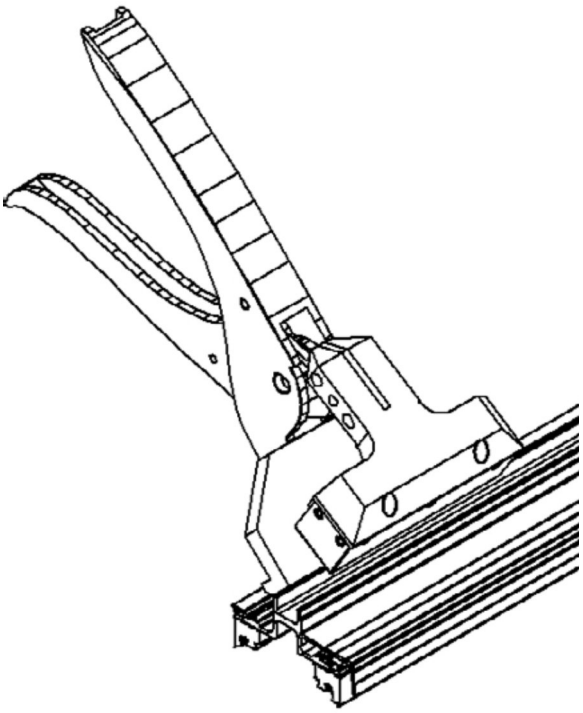


Fig. 78: Usage gasket scissors 8222504

Pos.	discription	Amount	Sales units	labeling	Part No.
3	Underlay	1	1	8222504-03	8229204
	VE Messer (VE = 3 Stück)	1	1	8222504-20	8229104

Tab. 20: Spare Parts List: TM gasket scissors, transom gasket 8222504

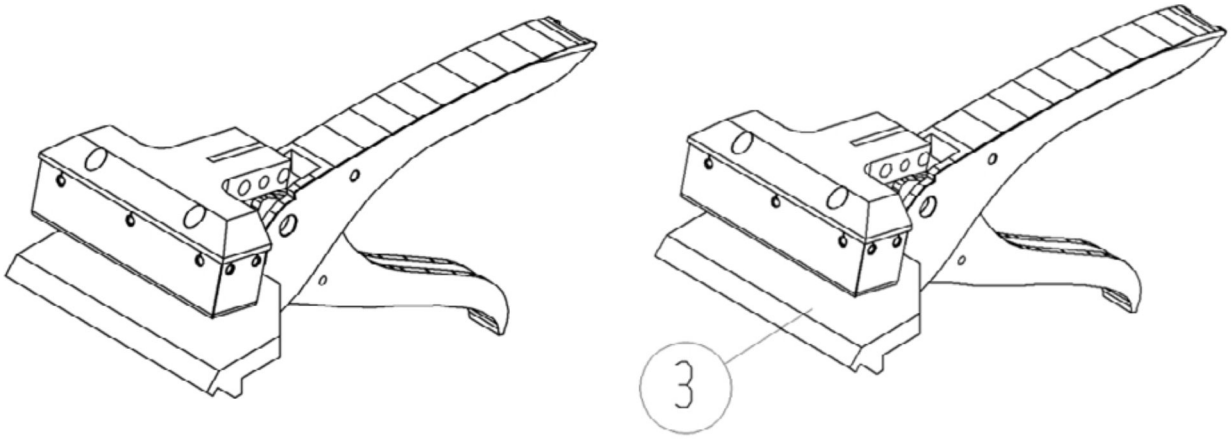


Fig. 79: Gasket scissors 8222504

Extension Kit TM60 8229602

The TM60 extension kit 8229602 is required to notch the mullion gasket on both sides at the cross joint of the TM60 system using the gasket scissors 8222502.

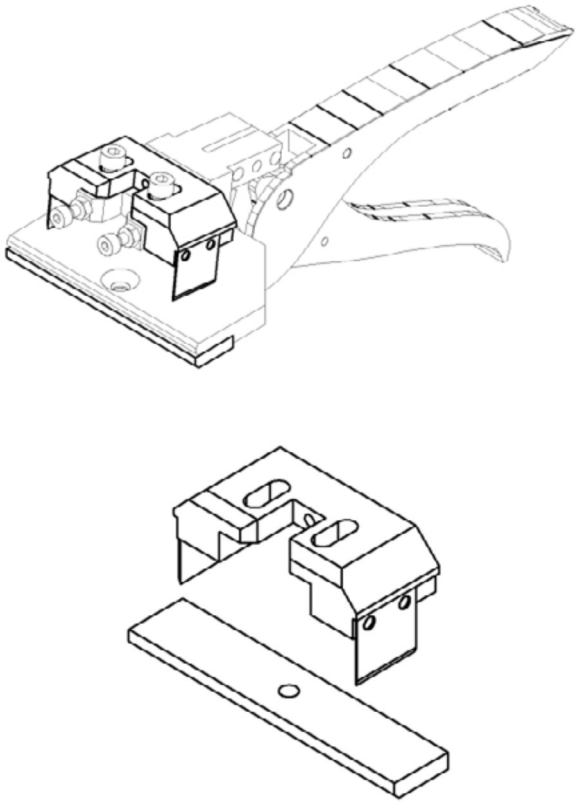


Fig. 80: Extension Kit TM60 8229602

Extension Kit TM80 8229802

The TM80 extension kit 8229802 is required to notch the mullion gasket on both sides at the cross joint of the TM80 system using the gasket scissors 8222502.

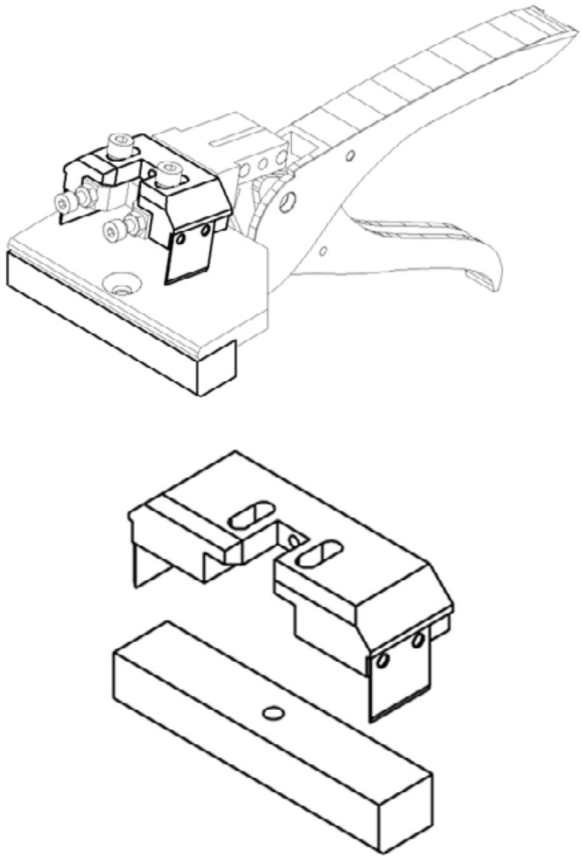


Fig. 81: Extension Kit TM60 8229802

Usage:
To cut the TM60 or TM80 gasket, the blade holder-50 on the gasket scissors must be removed and the appropriate extension kit installed.

Pos.	discription	Amount	Sales units	labeling	Part No.
	PU Blade (PU = 2 pieces)	1	1	8222502-20	8229102

Tab. 21: Spare Parts List for Expansion Kits

Building interface details

Building interface bottom, Installation in the soffit, without a gutter

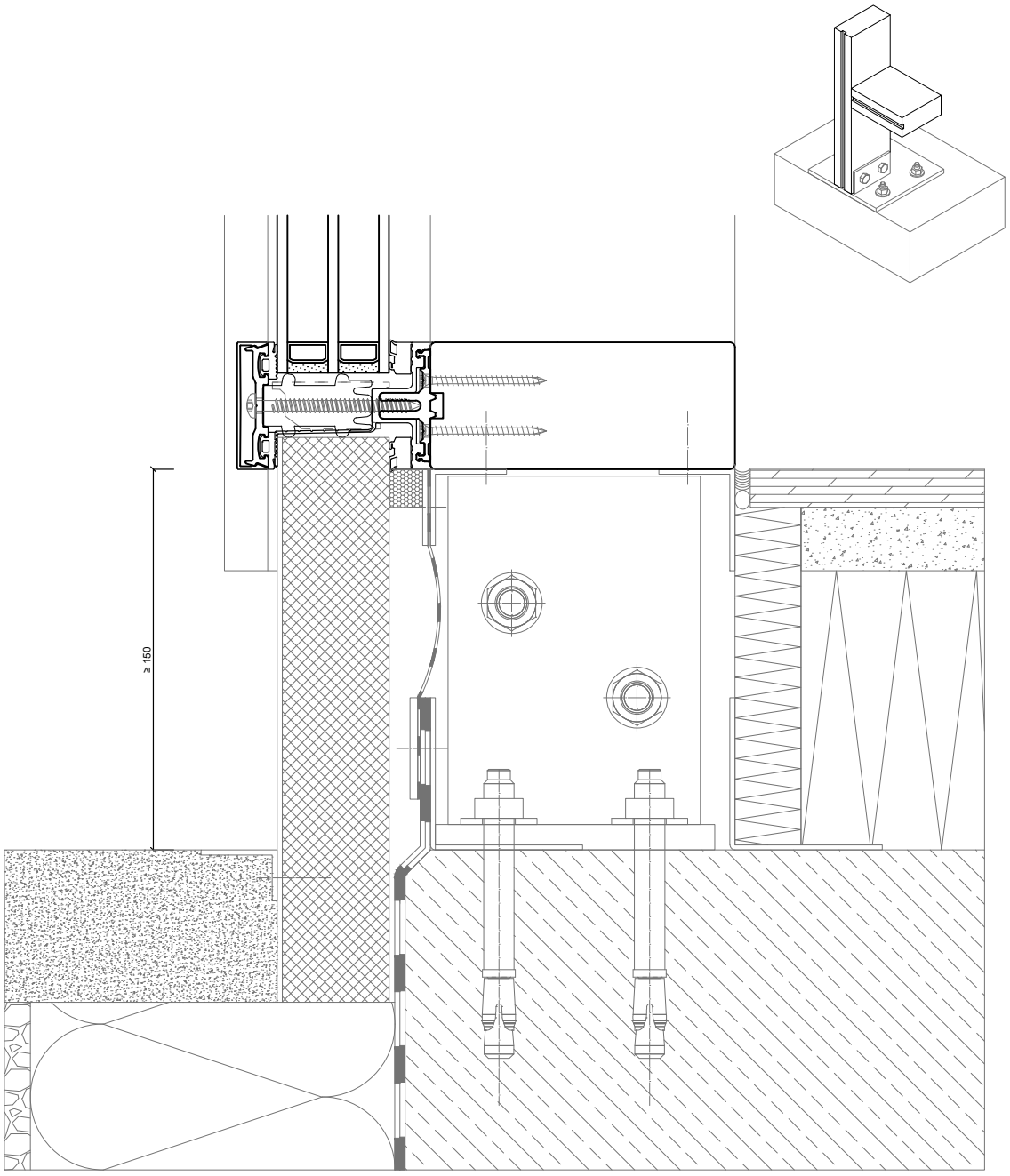


Fig. 82: Building interface bottom, Installation in the soffit, without a gutter

Building interface bottom, Installation in the soffit, with a gutter

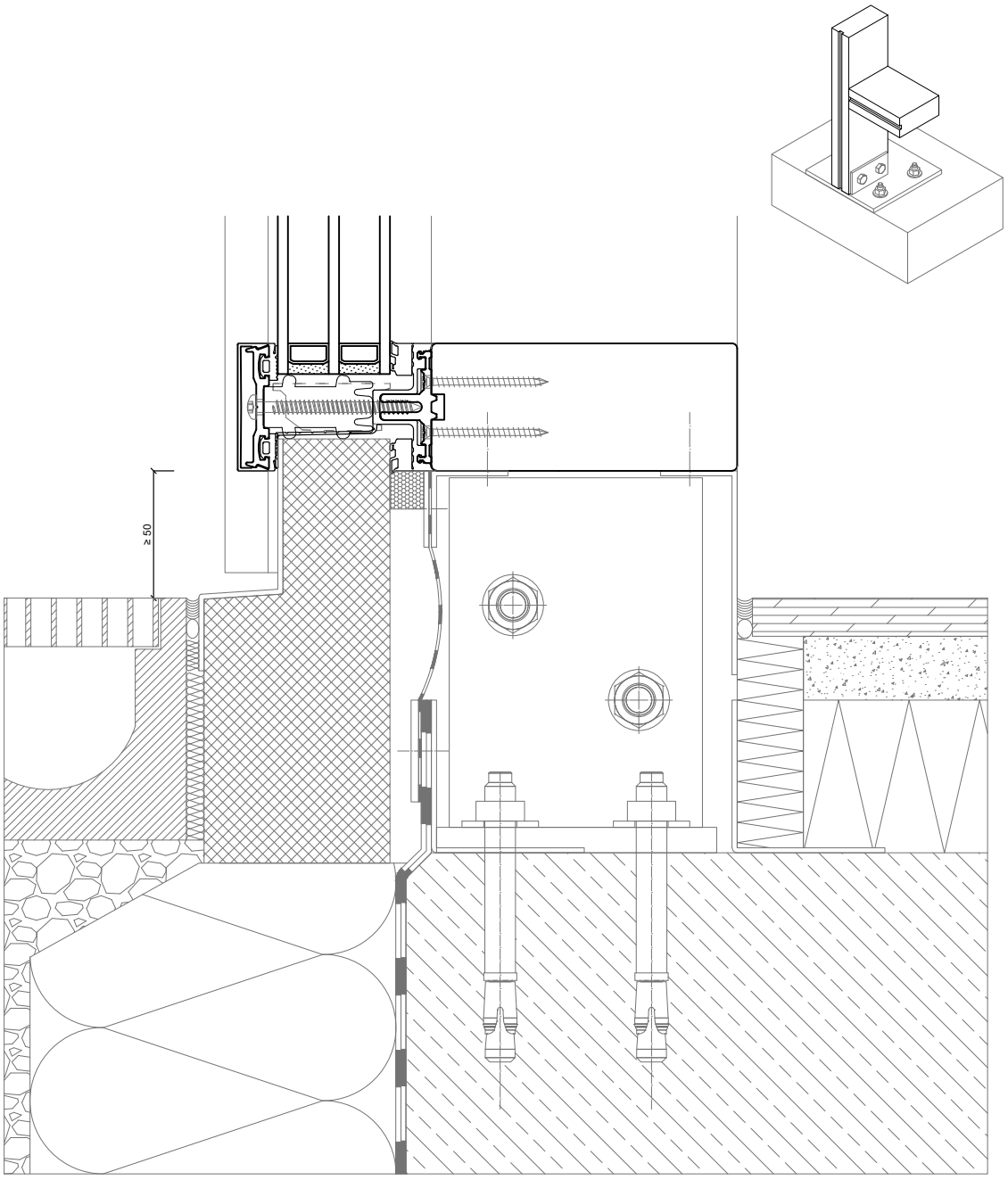


Fig. 83: Building interface bottom, Installation in the soffit, with a gutter

Building interface bottom, Installation in the soffit

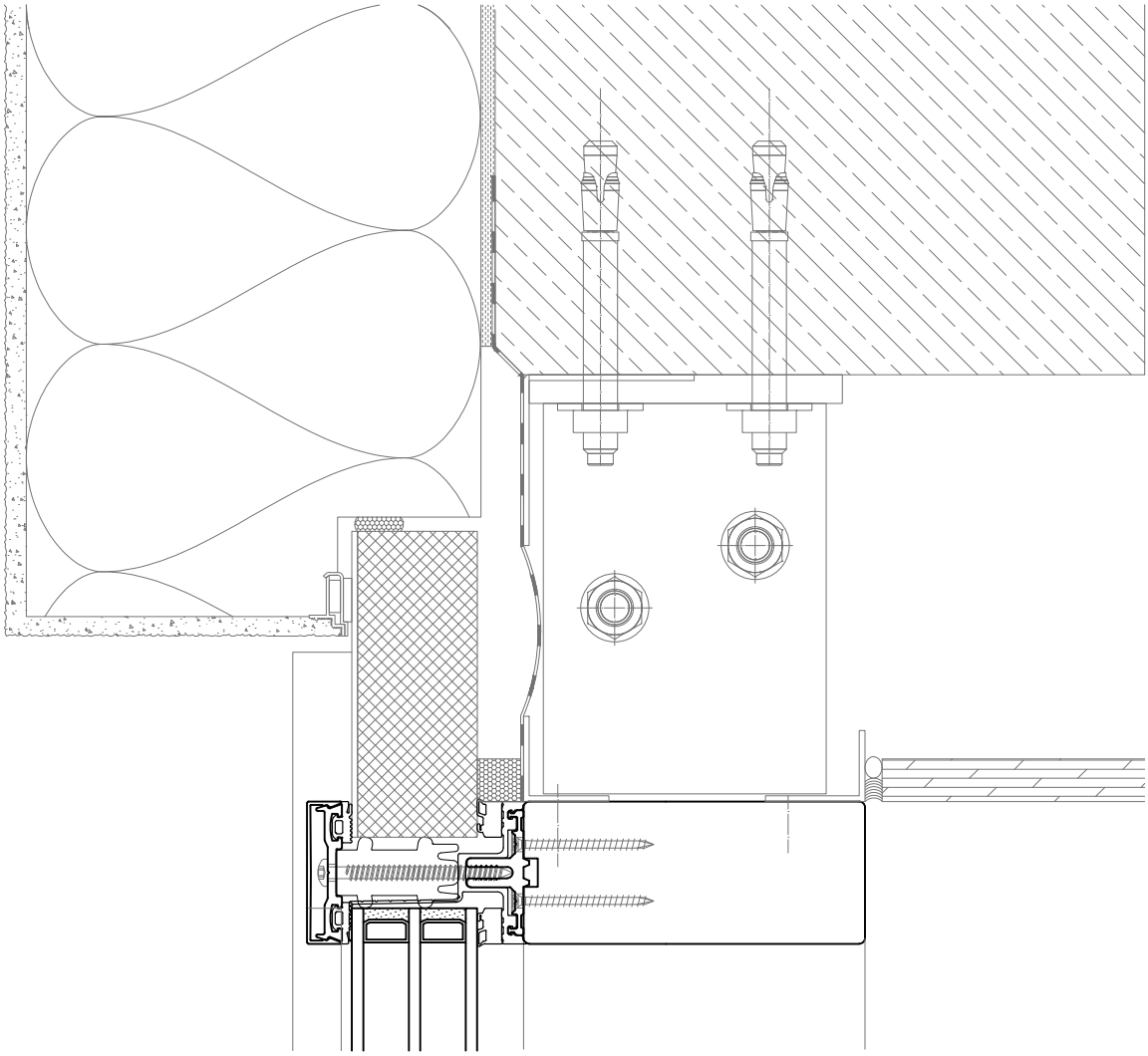


Fig. 84: Building interface bottom, Installation in the soffit

Building interface side, Installation in the soffit

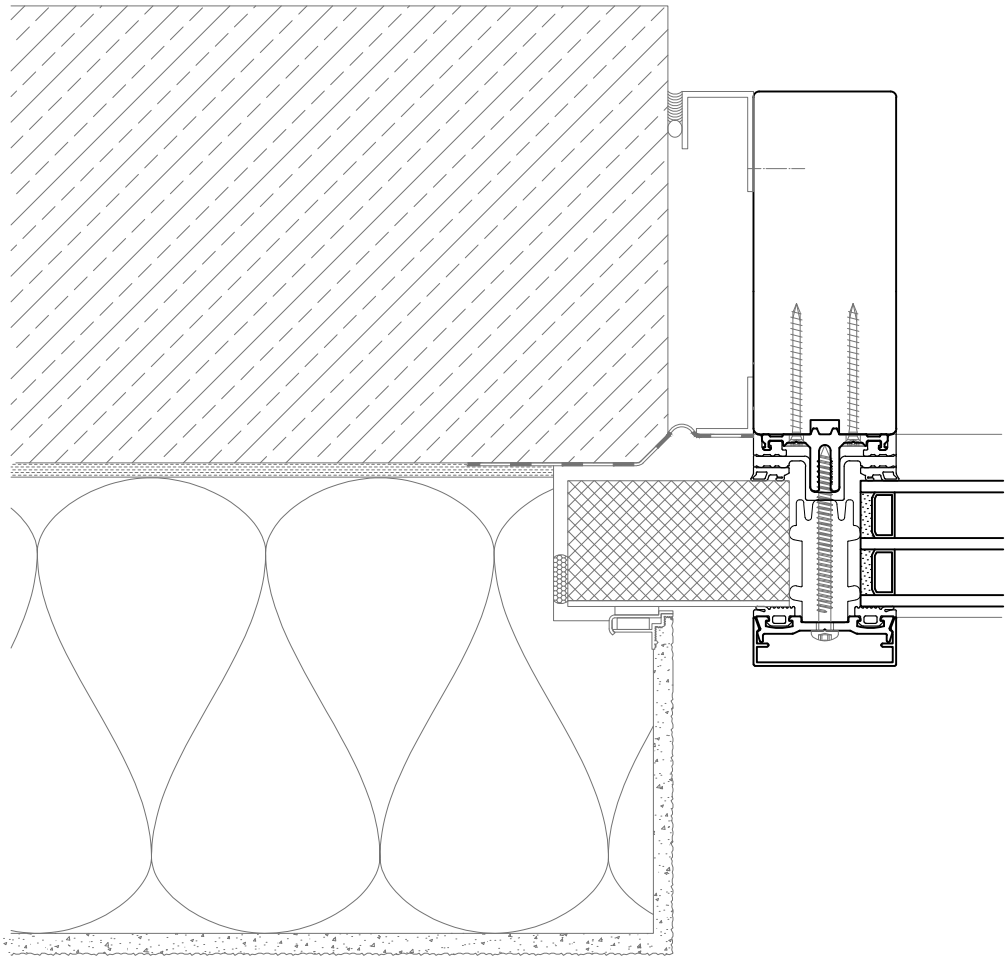


Fig. 85: Building interface side, Installation in the soffit

Building interface floor transition

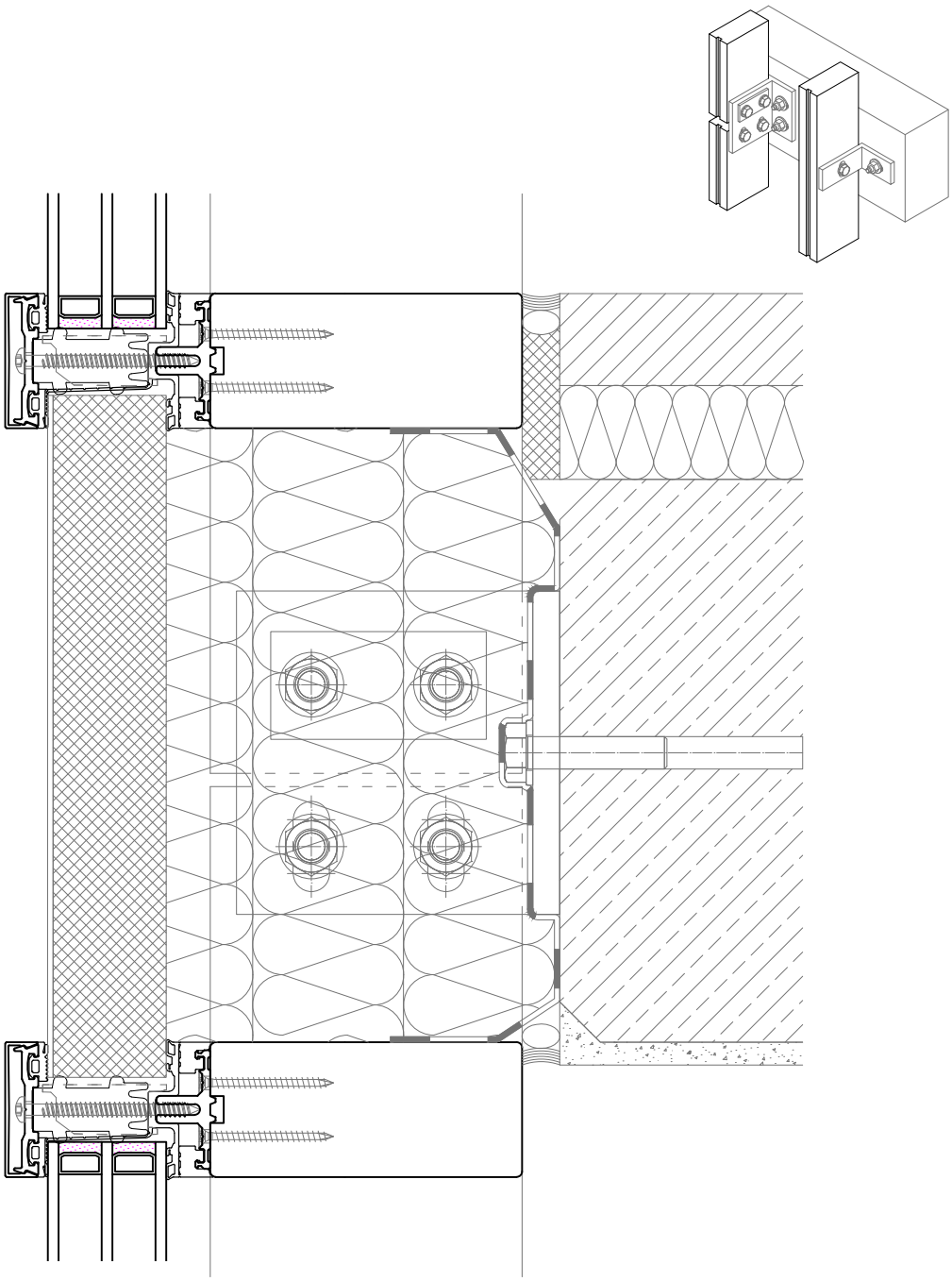


Fig. 86: Building interface floor transition

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