Stabalux ZL-S

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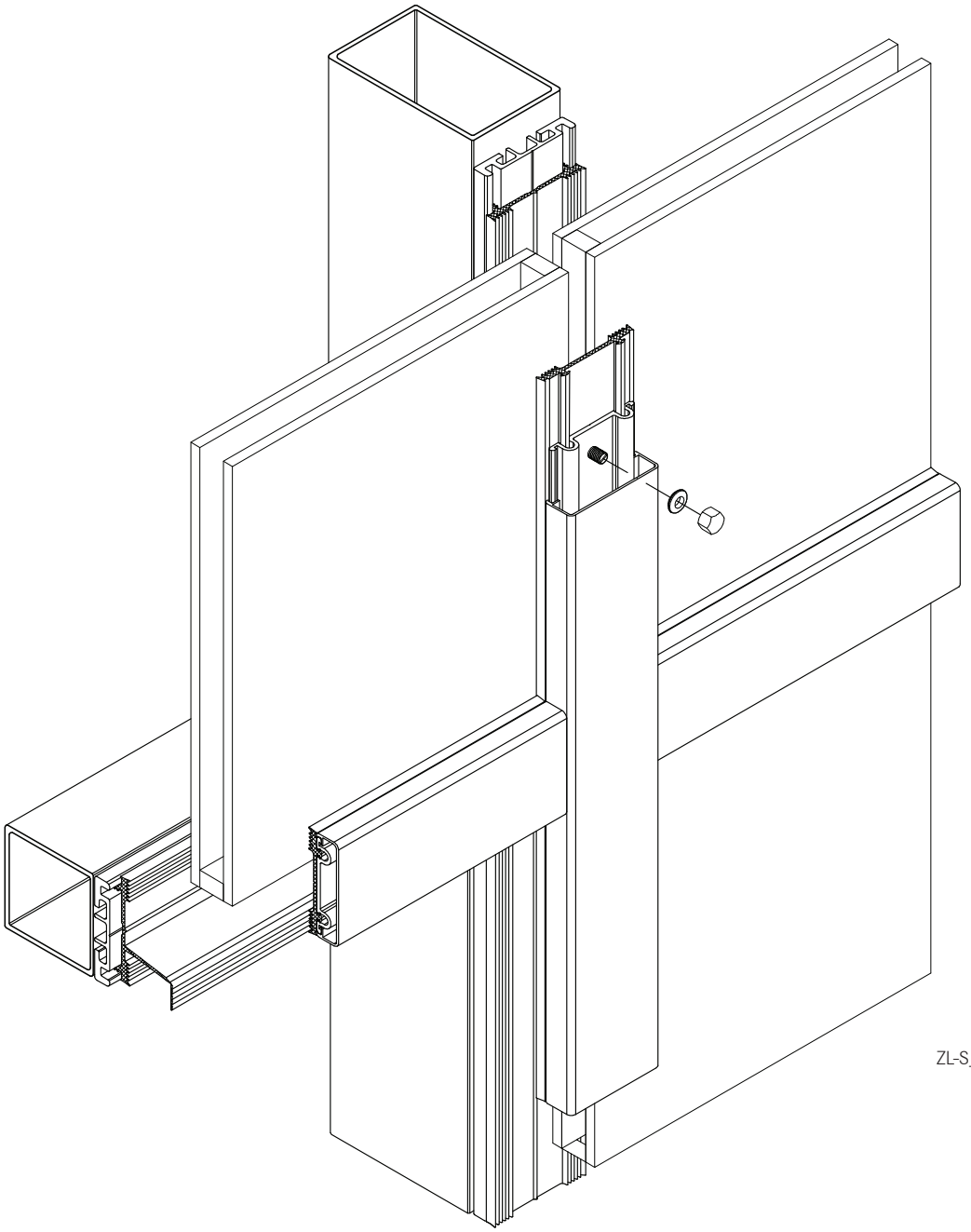
System properties

2.1
1

Steel facade system with spacer strip ZL



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System properties

Stabalux ZL-S system description

- Stabalux ZL-S is a simple and affordable add-on system for single* and double glazing with a complete and customisable range to create facades and roofs with a steel supporting structure.
- The Stabalux ZL-S system is available in 50, 60 and 80 mm widths.
- The spacer strip is attached centrally to the sub-structure to ensure precise seals are made. Together with the seal, this provides a uniform appearance.
- The system can be installed on the construction site without any prior processing of the sub-structure and is therefore an ideal choice for facade refurbishment work.

Specifications

		Facade	Roof up to 2° inclination
System widths		**50, 60, 80 mm**	**50, 60, 80 mm**
Air permeability EN 12152		AE	AE
Watertightness EN 12154/ENV 13050	Static Dynamic	RE 1650 Pa 250 Pa/750 Pa	RE 1350 Pa[2)]
Resistance to wind load	permitted load increased load	2.0 kN/m² 3.0 kN/m²	2.0 kN/m² 3.0 kN/m²
Impact resistance EN 14019		E5 / I5	**Increased requirements in accordance with Cahier 3228 du CSTB Méthode d'essai de choc sur verrière** **Weight 50 kg** **Head 2.4 m**

[2)] the test was carried out using a water volume of 3.4l/(m²min) - above the amount required by the standard

Suitable for passive building construction

	Facade		
System design e.g. ZL-S-60120-44-15	U_f = 0.67 W/(m²K) [1)]	Glass thickness 44 mm	

[1)] Without effect of screws

* only works without the use of threaded sockets

System properties

Certifications, authorisations, CE mark

(Section 9)

The tests we have conducted provide the processor and planner with the certainty and the ability to use the test findings and the products fits, for instance to award the CE mark.

Permeability/Safety

- The Stabalux sealing geometry prevents moisture ingress.
- Condensation is guided away in a controlled manner.
- Stabalux offers slotted and overlapping sealing systems for vertical glazing. Overlapping systems have been tested for inclined facades up to 20°.
- Transom flags increase the safety and impermeability of the installation on vertical glazing.
- A special Stabalux sealing system with offset sealing sections is used for roof glazing. This keeps the supporting structure level during planning and production processes.
- Sealing the transom rebate allows flat roofs to be created with an incline of up to 2°.
- Creation of the required drainage takes place directly at the construction site by pushing together the seals in the facade or slotting together the offset sealing sections in the roof.

Insulation/Thermal Separation (Section 9)

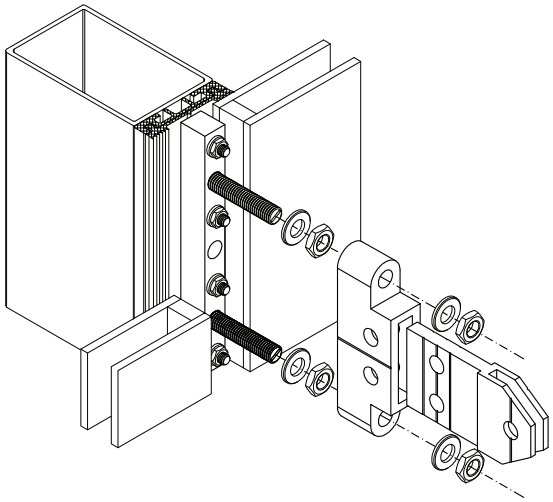
The Stabalux System ZL has excellent thermal properties. It allows a heat transfer coefficient of U_f for frames of up to 0.60 W/(m²K).

Noise insulation of the glass facade (Section 9)

The noise insulating properties of a facade depend on a variety of factors, each of which affects the properties in a different way. The task of the planner is to expertly select the optimum design on a case-by-case basis. Different combinations of frame profiles, glazing systems and noise reducing glass have vastly different effects on noise insulation. Investigations and measurements performed by us are just examples of a huge range of possibilities and serve only as a guideline.

Stabalux SOL sun protection (Section 9)

We offer our proprietary system with exterior lamellae, in addition to the familiar measures for protection against glare and excessive sunlight. Particular attention has been paid here to ensure attachment and assembly can be completed easily with Stabalux systems whilst meeting architectural and climatic requirements. Glass panes and clamping strips are not subject to any load from application of the sun protection. Assembly and sealing are simple and efficient.



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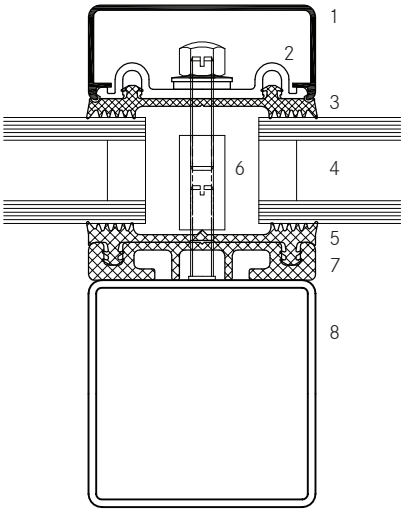
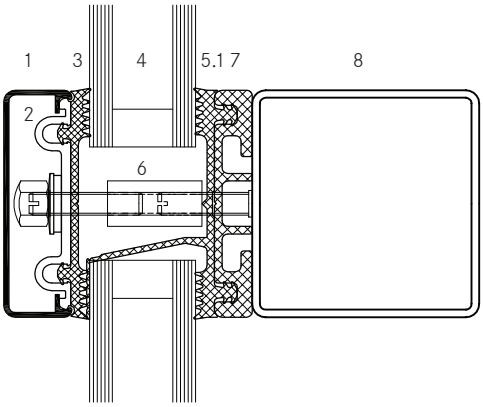
System cross sections and inner seals - facade

Inner seal 5 mm tall / 1 drainage level

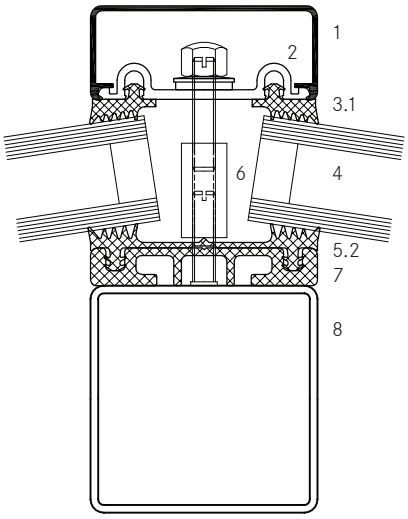
Vertical glazing mullion



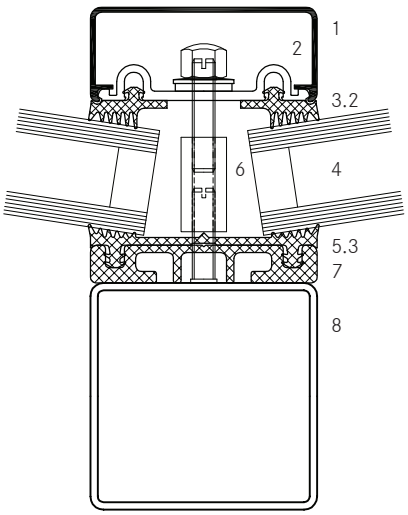
Vertical glazing transom



Polygonal glazing mullions - convex 3° - 15°



Polygonal glazing mullions - concave 3° - 10°



ZL-S_2.1_004.dwg

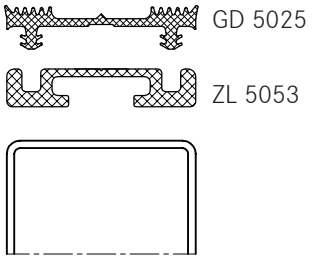
1 Cover profile
2 Pressure profile
3 Outer seal
3.1 Outer seal convex polygonal glazing
3.2 Outer seal concave polygonal glazing
4 Glass / panel
5 Inner seal
5.1 Inner sealing using a transom flag
5.2 Inner seal convex polygonal glazing
5.3 Inner seal concave polygonal glazing
6 System screw fittings
7 Spacer strip
8 Support profile

System cross sections and inner seals - facade

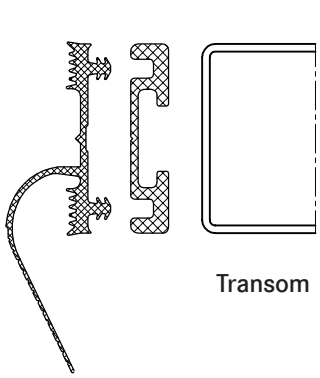
2.1
2

Inner seal 5 mm tall / 1 drainage level

System 50 mm

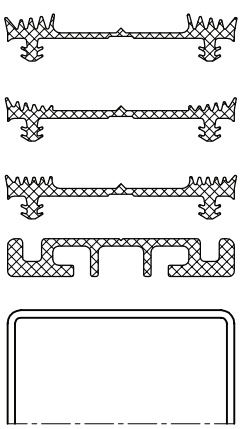


Mullion

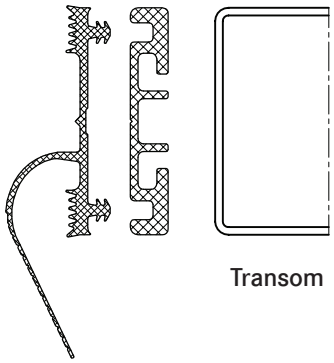


Transom

System 60 mm

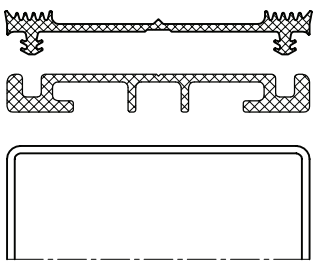


Mullion

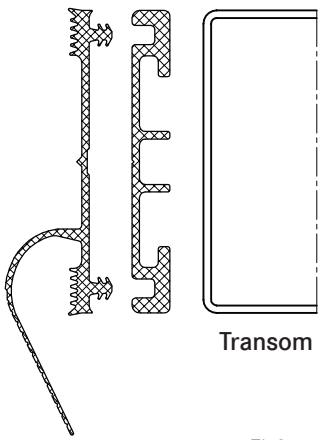


Transom

System 80 mm



Mullion



Transom

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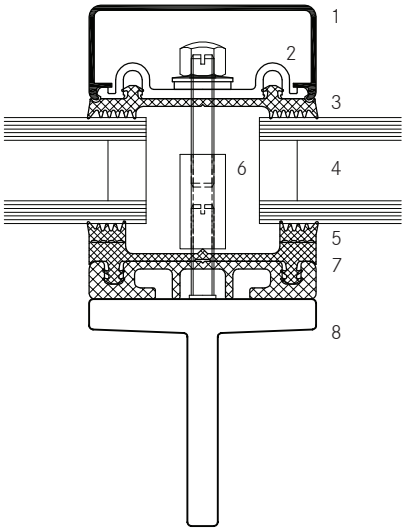
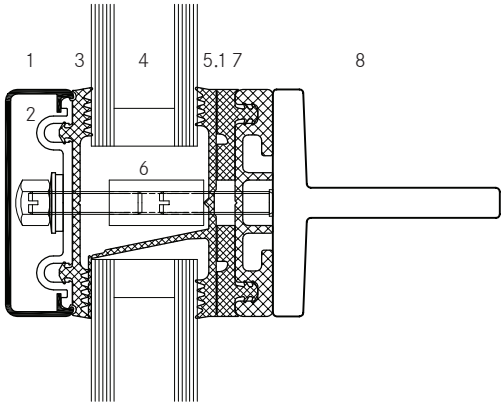
System cross sections and inner seals - facade

Inner seal 10 mm tall / 2 overlapping drainage levels

Vertical glazing mullion - 2nd level*



Vertical glazing transom -1st level*



ZL-S_2.1_004.dwg

1 Cover profile
2 Pressure profile
3 Outer seal
4 Glass / panel
5 Inner seal 10 mm
5.1 Inner sealing using a transom flag 10 mm
6 System screw fittings
7 Spacer strip
8 Support profile

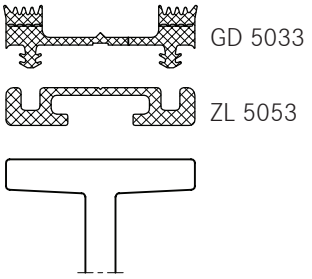
* tested system for vertical facades and facades with an incline up to 20°

System cross sections and inner seals - facade

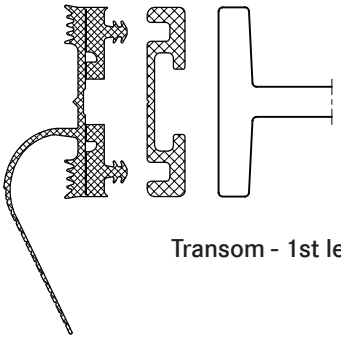
2.1
2

Inner seal 10 mm tall / 2 overlapping drainage levels

System 50 mm

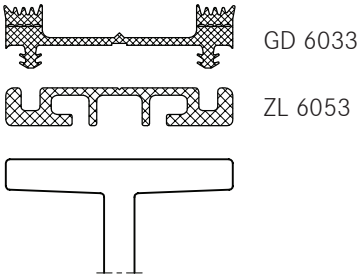


Mullions - 2nd level

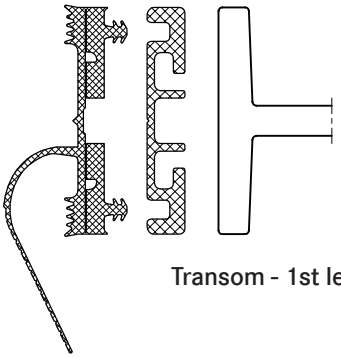


Transom - 1st level*

System 60 mm

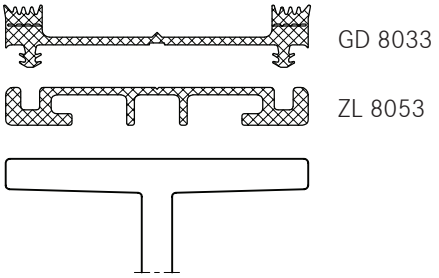


Mullions - 2nd level

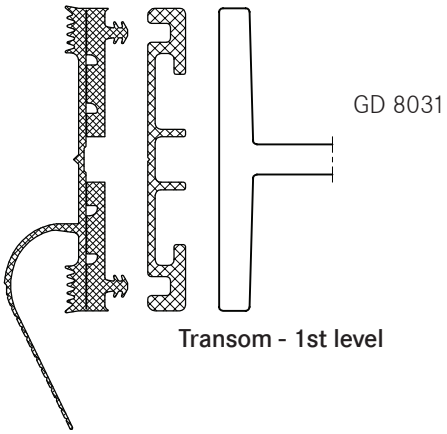


Transom - 1st level*

System 80 mm



Mullions - 2nd level



Transom - 1st level

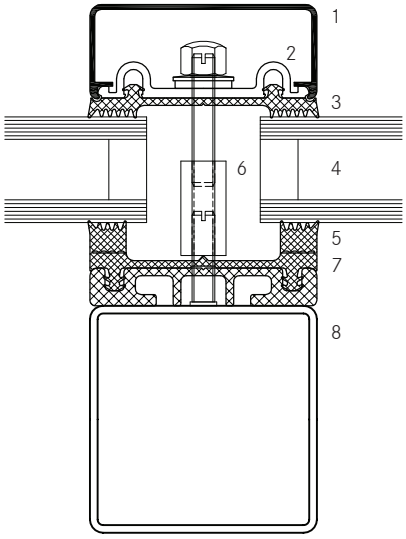
*System 50 mm and System 60 mm upon request

ZL-S_2.1_004.dwg

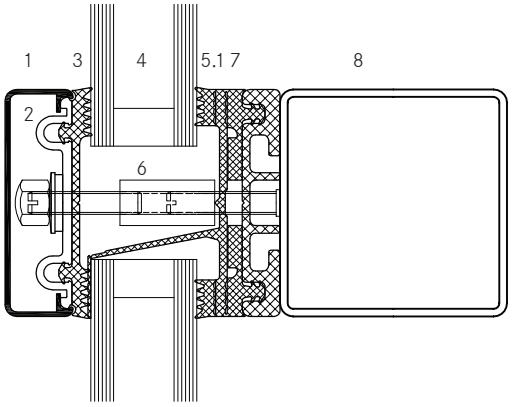
System cross sections and inner seals - facade

Inner seal 12 mm tall / 3 overlapping drainage levels

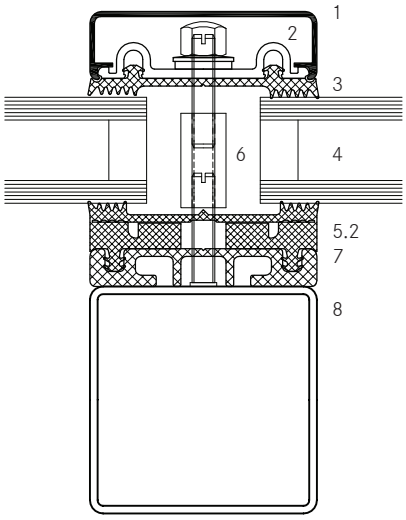
Vertical glazing main mullion - 3rd level*



Vertical glazing transom - 2nd level*



Vertical glazing secondary mullion - 1st level



ZL-S_2.1_004.dwg

1 Cover profile
2 Pressure profile
3 Outer seal
4 Glass / panel
5 Inner seal 12 mm main mullion
5.1 Inner seal using a transom flag
5.2 Inner seal 12 mm secondary mullion
6 System screw fittings
7 Spacer strip
8 Support profile

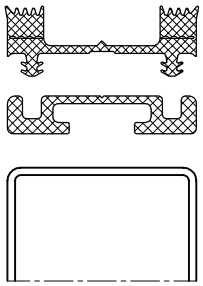
* tested system for vertical facades and facades with an incline up to 20°

System cross sections and inner seals - facade

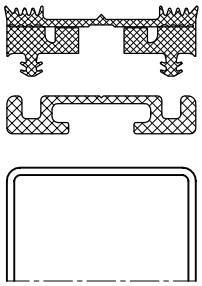
2.1
2

Inner seal 12 mm tall / 3 overlapping drainage levels

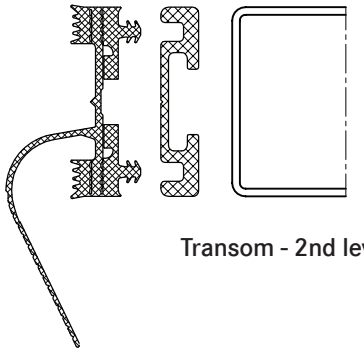
System 50 mm



Main mullion - 3rd level*

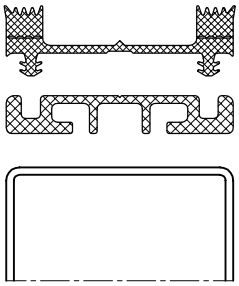


Secondary mullion - 1st level*

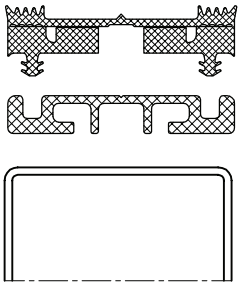


Transom - 2nd level*

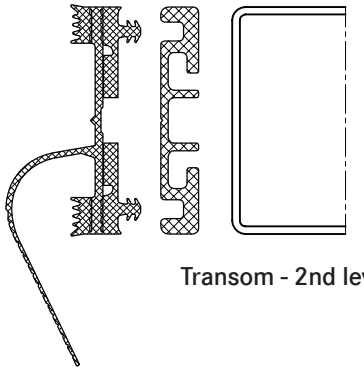
System 60 mm



Main mullion - 3rd level*

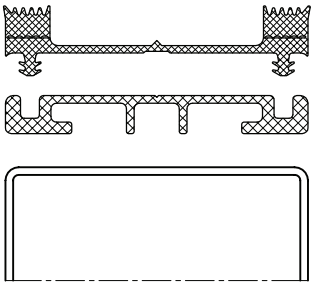


Secondary mullion - 1st level*

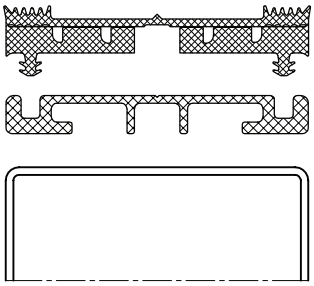


Transom - 2nd level*

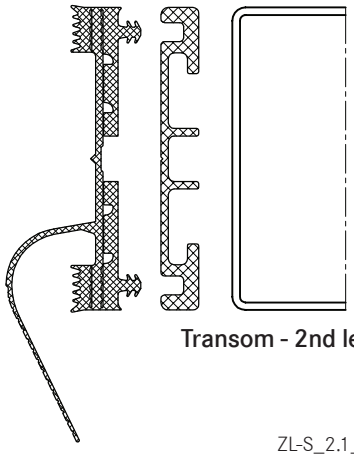
System 80 mm



Main mullion - 3rd level*



Secondary mullion - 1st level*



Transom - 2nd level*

*System 50 mm, 60 mm and 80 mm upon request

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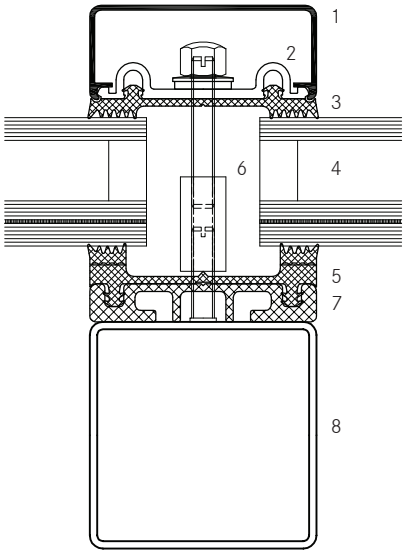
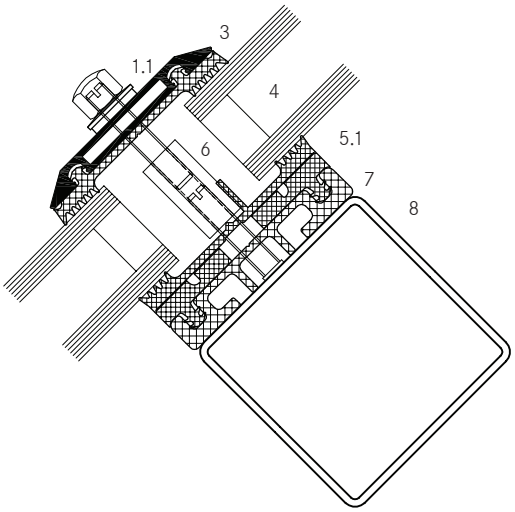
System cross sections and inner seals - roof

Inner seal 10 mm tall / 2 overlapping drainage levels

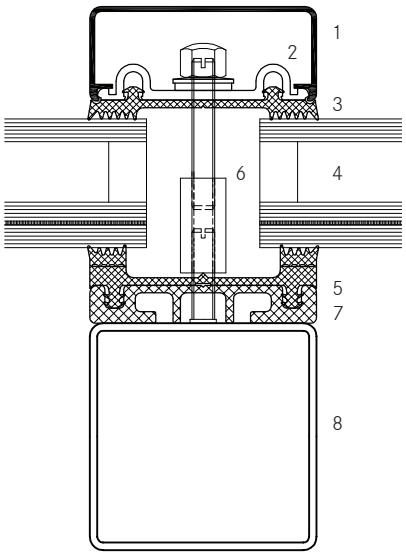
Inclined glazing rafter



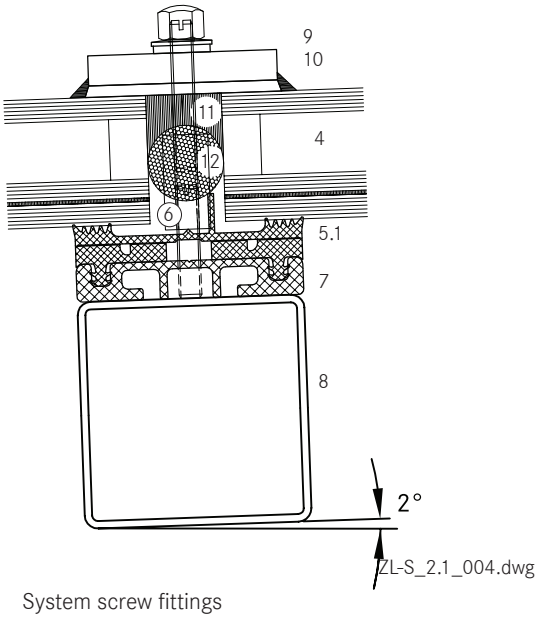
Angled glazing transom



Angled glazing rafter up to 2° inclination



Angled glazing transom up to 2° inclination



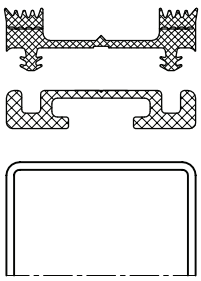
1 Cover profile
1.1 Cover profile
2 Pressure profile
3 Outer seal
4 Glass / panel
5 Inner seal 10 mm rafter
5.1 Inner seal 10 mm transom
6 System screw fittings
7 Spacer strip
8 Support profile
9 Hold-down clamp
10 Washer
11 All weather silicone seal
12 Rope seal

System cross sections and inner seals - roof

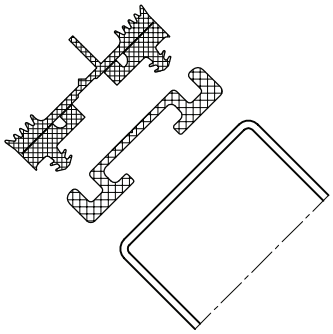
2.1
3

Inner seal 10 mm tall / 2 overlapping drainage levels

System 50 mm

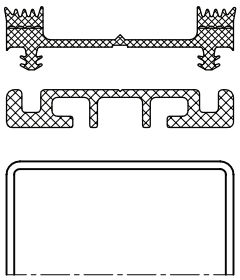


Rafter - 2nd level

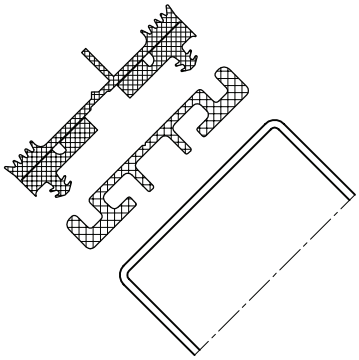


Transom - 1st level

System 60 mm

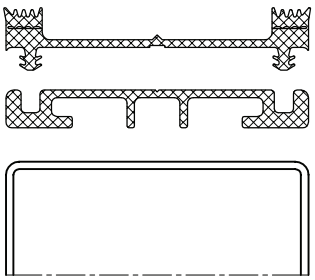


Rafter - 2nd level

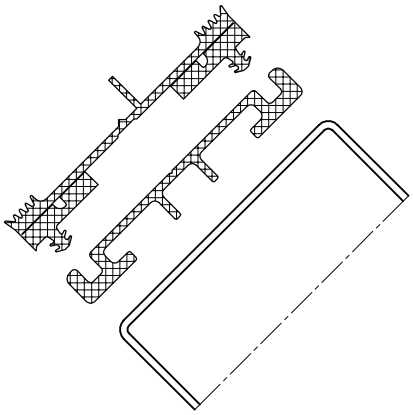


Transom - 1st level

System 80 mm



Rafter - 2nd level



Transom - 1st level

*System 80 mm upon request

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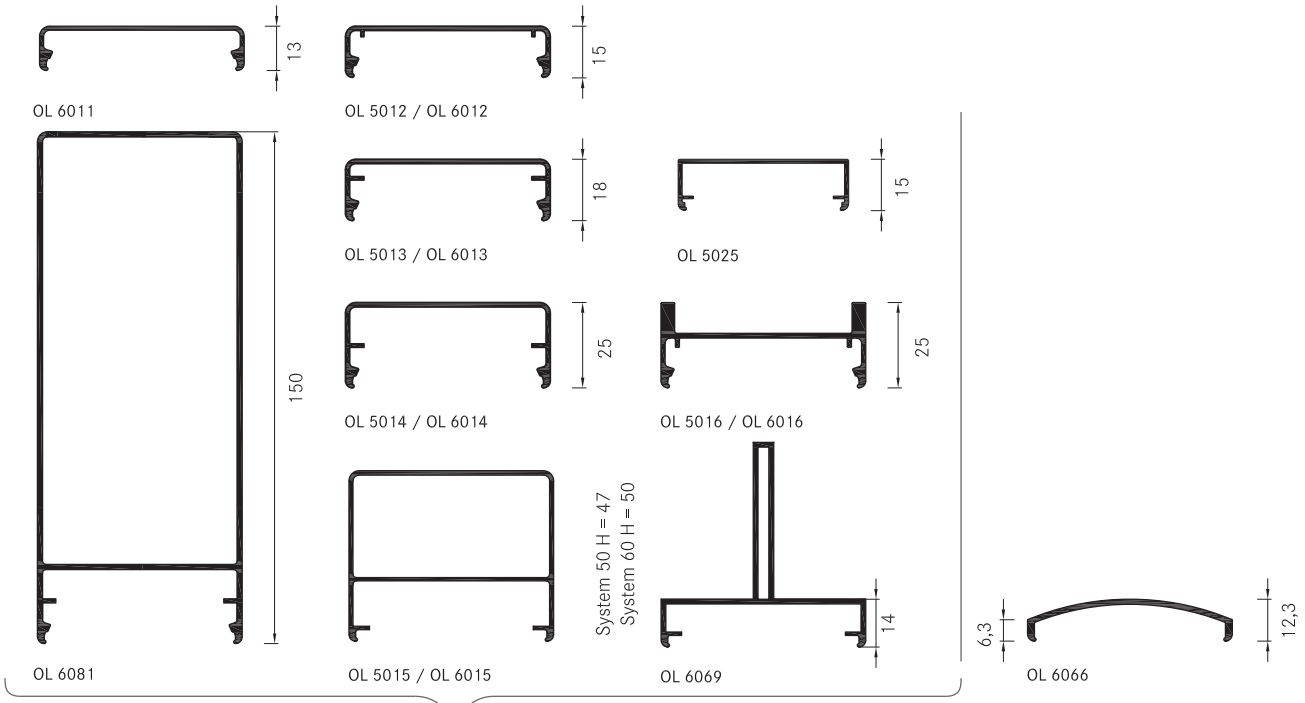
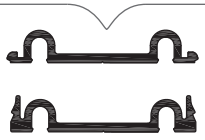
Cover strips and outer seals

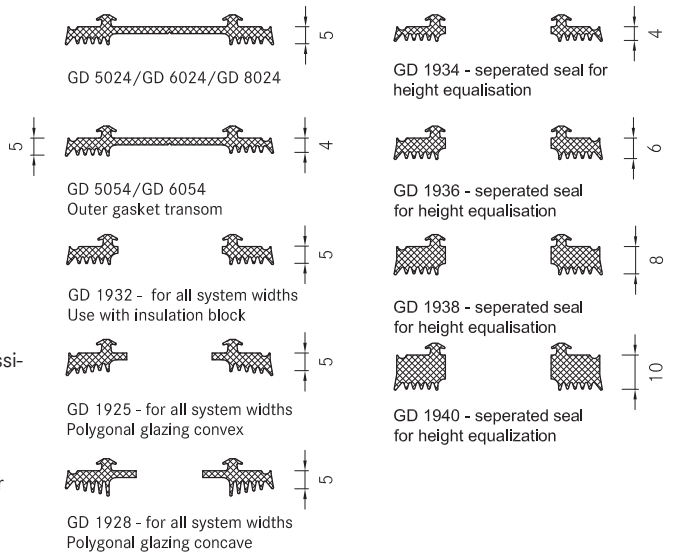
Aluminium - concealed screw fittings





UL 5009 / UL 5009 L [3]
UL 6009 / UL 6009 L [3]
UL 8009 / UL 8009 L [3]

UL 6005 [2]



1) Check mountability (height of U plate + cap nut, possible use of sealing washer or special screws)

2) only possible with special screws

3) The geometry of the clipping process is different for the 50, 60 and 80 mm widths

Cover strips and outer seals

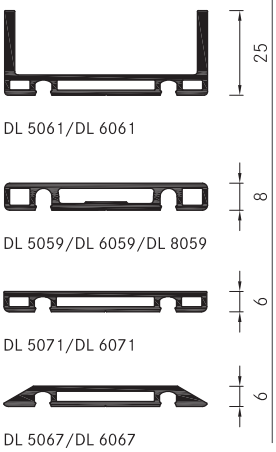
2.1
4

Stainless steel - concealed screw fittings

OL 6064 / Stainless steel

UL 6007 L

Aluminium - visible screw fittings



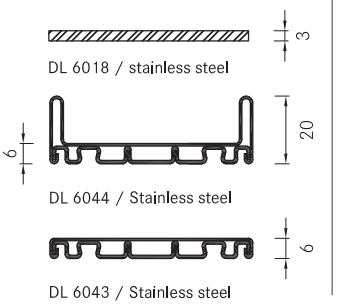
DL 5061/DL 6061

DL 5059/DL 6059/DL 8059

DL 5071/DL 6071

DL 5067/DL 6067

Stainless steel - visible screw fittings



DL 6018 / stainless steel

DL 6044 / Stainless steel

DL 6043 / Stainless steel

Flat cover strip DL 5073/DL 6073

DL 5073/DL 6073 [2)]

GD 6940 - for DL 6018

GD 5024/GD 6024/GD 8024

GD 5054/GD 6054
Outer gasket transom

GD 1932 - - for all system widths
Use with insulation block

GD 1925 - for all system widths
Polygonal glazing convex

GD 1928 - for all system widths
Polygonal glazing concave

GD 1934 -seperated seal for height equalisation

GD 1936 - seperated seal for height equalisation

GD 1938 - seperated seal for height equalisation

GD 1940 - seperated seal for height equalization

GD 6174

GD 6175

Material information

2.2
1

Quality of the supporting structure

The steel load-bearing substructure is used for mounting the glazing and must meet all load and suitability requirements. The static system, profile dimensions and choice of materials are key. The client, architect and/or processor is responsible for this decision.

The following limit values must be adhered to in the selection of the steel type:
Rated values of yield strength $f_y \geq 235$ N/mm²;
Tensile strength $f_u \geq 360$ N/mm².

We recommend selecting materials according to Eurocode 3 (DIN EN 1993).

The cross-sectional geometries and dimensions of the supporting profiles should also enable dimensioning according to Eurocode 3.

Corrosion protection and coating on the supporting structure

Mullion and transom constructions usually receive a coloured coating for aesthetic reasons. Galvanization is used to improve anti-corrosion where necessary. The following corrosion protection options are therefore conceivable:

- Colour coating on supporting profiles with strip-galvanized surface.
- Colour coating on supporting profiles with dip-galvanized surface.
- Supporting profiles with galvanized surface but without colour coating.
- Colour coating on supporting profiles with non-galvanized surface.

Conventional coating methods such as air-drying multi-layer coating systems (wet coating) or thermosetting coatings (stove enamelling / powder-coating) can be used, provided suitable pre-treatment is applied.

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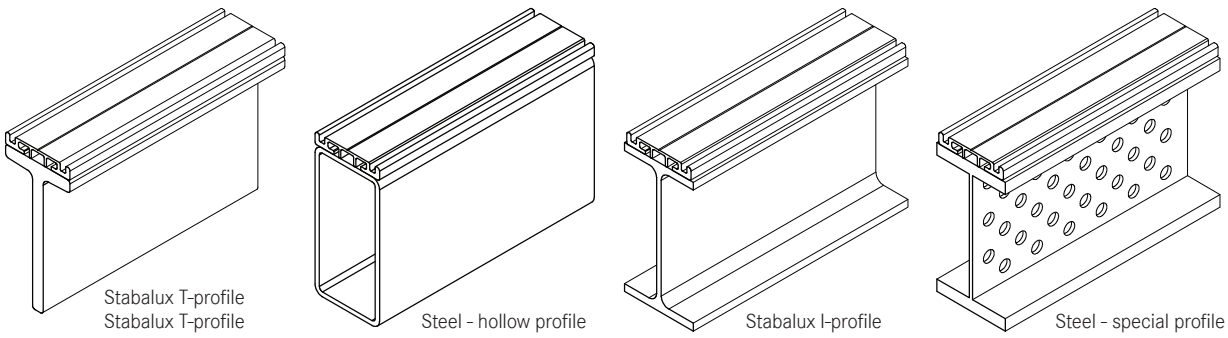


Material information

2.2
1

Profile design

The diagram below shows some examples for the geometry of supporting profiles. The profiles must be protected against corrosion and free of dirt.

The spacer strips can also be mounted onto existing profiles.

Spacer strip quality

Stabalux spacer strips are made of hard PVC, unpunched, in black - suitable for a uniform visual appearance for inner Stabalux seals.

Seal profiles

Stabalux seals are organic natural rubber materials based on EPDM and conform to the DIN 7863 standard, non-cellular elastomer sealing profiles for window and facade construction. Compatibility with contact media should tested by the processor, particularly when using plastic glazing and making structural joints with non-Stabalux products. Sealing the rebate with all weather silicone seal is possible.

All weather silicone seal

Only certified materials may be used for sealing the rebate with all-weather silicone. Pay attention to all information provided by the manufacturer and the sealing work must be carried out by trained persons. It is recommended that a licensed and certified specialist contractor is hired for this purpose. We further refer you to the DIN 52460 standard and IVD data sheets (Trade Association for Sealants).
The compatibility of the materials is particularly important when using all-weather silicone. In this case, the compatibility of the sealant with the edge bonding of the glass and the backfill of the joints. If self-cleaning glass is used, the compatibility must be established in advance. Glass sealants and edge bonding must be UV-resistant. The incline of roofs should also be taken into account. Information about UV-resistance can be requested from the manufacturer. Silicone edge bonding generally provides better UV-resistance than polysulfide-based materials. The advantage of silicone lies in its high vapour sealing properties which is particularly useful when using more volatile argon fillings.
Highly elastic, weatherproof and UV-resistant seals meet the widest range of demands for reliable joints.

Aluminium profiles

The aluminium profiles we supply are generally made from EN AW 6060 according to DIN EN 573-3, T66 according to DIN EN 755-2.

Coating the aluminium

Alongside anodic oxidation, with the corresponding pre-treatment, conventional coating methods such as air-drying multi-layer coating systems (wet coating) or thermosetting coatings (stove enamelling / powder-coating) can be used. By using different mass distribution, longitudinal shadow formation is possible with cover profiles DL 5073 and DL 6073. Resulting actions are to be taken with the agreement of the coater.

Material information

Longitudinal expansions in aluminium profiles exposed to temperature stress

When cutting the lower, upper and cover profiles from aluminium, allowance should be made for temperature-induced longitudinal expansion. The theoretical rod lengths ℓ should be shortened by: $\Delta\ell = \alpha T \cdot \Delta T \cdot \ell$.

Example:

$\Delta\ell = 24 \cdot 10^{-6} \cdot 40 \cdot 1000 = 0.96 \approx$ **1 mm**

$\alpha^T \approx 24 \cdot 10^{-6}$ 1/K	Coefficient of thermal expansion for aluminium
$\Delta T = 40$ K	Assumed temperature difference of aluminium dependent on the colour and amount of solar radiation
$\ell = 1000$ mm	Rod length
$\Delta\ell \approx$ 1 mm	Longitudinal expansion

further examples:

$\Delta\ell = 24 \cdot 10^{-6} \cdot 60 \cdot 1000 = 1.44 \approx$ **1.5 mm**
$\Delta\ell = 24 \cdot 10^{-6} \cdot 100 \cdot 1000 = 2.4 \approx$ **2.5 mm**

A rod with a system length of ℓ = 1000 mm should be shortened by 1 mm for a temperature difference of ΔT = 40 °C. A rod of length ℓ = 3000 mm should be shortened by 3 mm.
For ΔT = 100 °C (often occurs in roof areas and south-facing facades), a rod of length ℓ = 1000 should be shortened by 2.5 mm.

Rod length ℓ (mm)	Temperature difference ΔT	Longitudinal expansion $\Delta\ell$ (mm)
1000	40 °C	1
3000	40 °C	3
1000	60 °C	1.5
3000	60 °C	4.5
1000	100 °C	2.5
3000	100 °C	7.5

Note:

We recommend shortening the lower strip by ≈ 2.5 mm per ℓ = 1000 mm of length. When doing so, ensure to use the correct length of the outer seal.

When using cover profiles in roof area, it is recommended that holes for screwing on the cover strip are created with a diameter of d = 9 mm.

Stainless steel profile

Pressure profiles and bottom sections of cover profiles are made from 1.4301 stainless steel for visible screw fittings. The surface is equivalent to classification 2B according to DIN 10088-2.

Cover profiles using 1.4401 stainless steel. The surface has a ground finish (grain 220, DIN EN 10088-2). The upper parts of the cover profiles are made from 1.4571 stainless steel with ground finish (grain 240, DIN EN 10088-2). A film is attached on one side to protect the surface; its knife edge remains visible on one narrow side.

Other items

All system items are produced according to applicable standards.

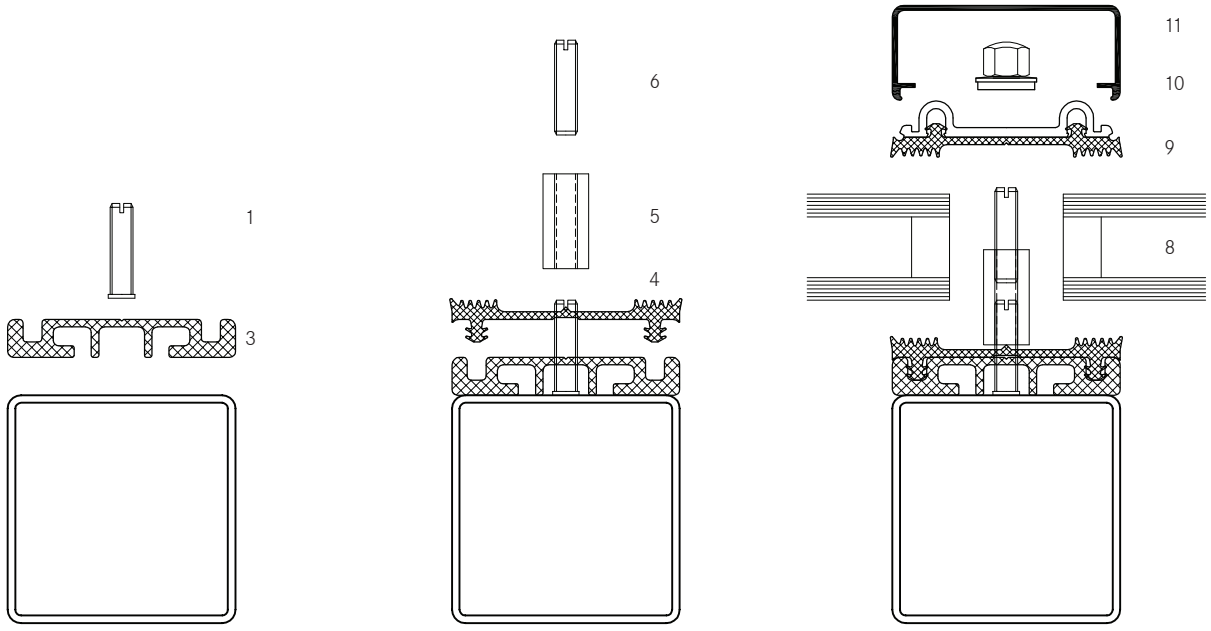
Maintenance and care

The information sheets WP.01 – WP.05 from the Association of Window and Facade Producers (VFF) must be observed. The address can be found in the address section. Further information can be found in section 9.0 - Cleaning / Maintenance.

Assembly sequence

2.2
2

1. Threaded bolts M6, i.e. threaded welding studs must be fastened to the primary steel supporting structure. Pay attention to the intervals between the bolts. The length of the bolts is variable and depends on the height of the inner seal (refer also the section of screw technology).
2. Carry out preparatory work on the steel profiles to suit the statically required glass supports.
3. Drill holes must be prepared for the spacer strips, e.g. ZL 6053 with ⌀ 7mm, in the same intervals as for the threaded bolts, and the spacer strips are then placed over the threaded bolts (fasteners). The spacer strips are positioned continuously in a vertical direction and abutted in a horizontal direction.
4. Installation of the inner seal, e.g. GD 6025.
5. Screw the threaded sockets (e.g. Z 0032, M6 with wrench opening M10, length 25 mm) on to the threaded bolts/threaded welding studs on the supporting steel construction.
6. Screw the threaded bars e.g. Z 0036 into the threaded bars sockets and pay attention to the clamping length. This depends on the glass thickness and the clamping strips.



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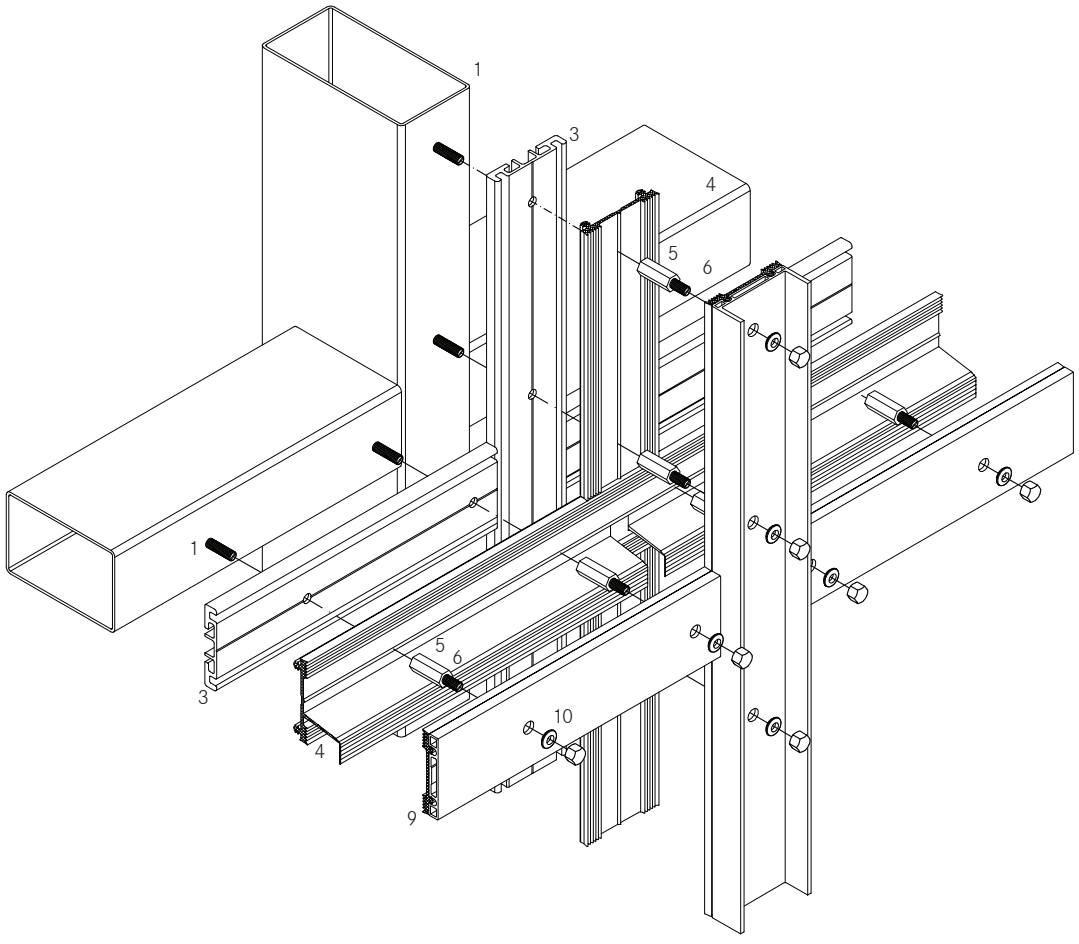
Assembly sequence

7. Attach the glass support e.g. Z 0888.
8. Mounting the filling elements.
9. Lay the outer seal, e.g. GD 6024 together with the clamping strips.
10. Attach the clamping strips (cover profiles e.g. DL 6061, bottom strips, e.g. UL 6009 L) using sealing washer, e.g. Z 0086 and cap nut Z 0043.
11. Clip on the upper strip, e.g. OL 6013, with concealed screw fittings.



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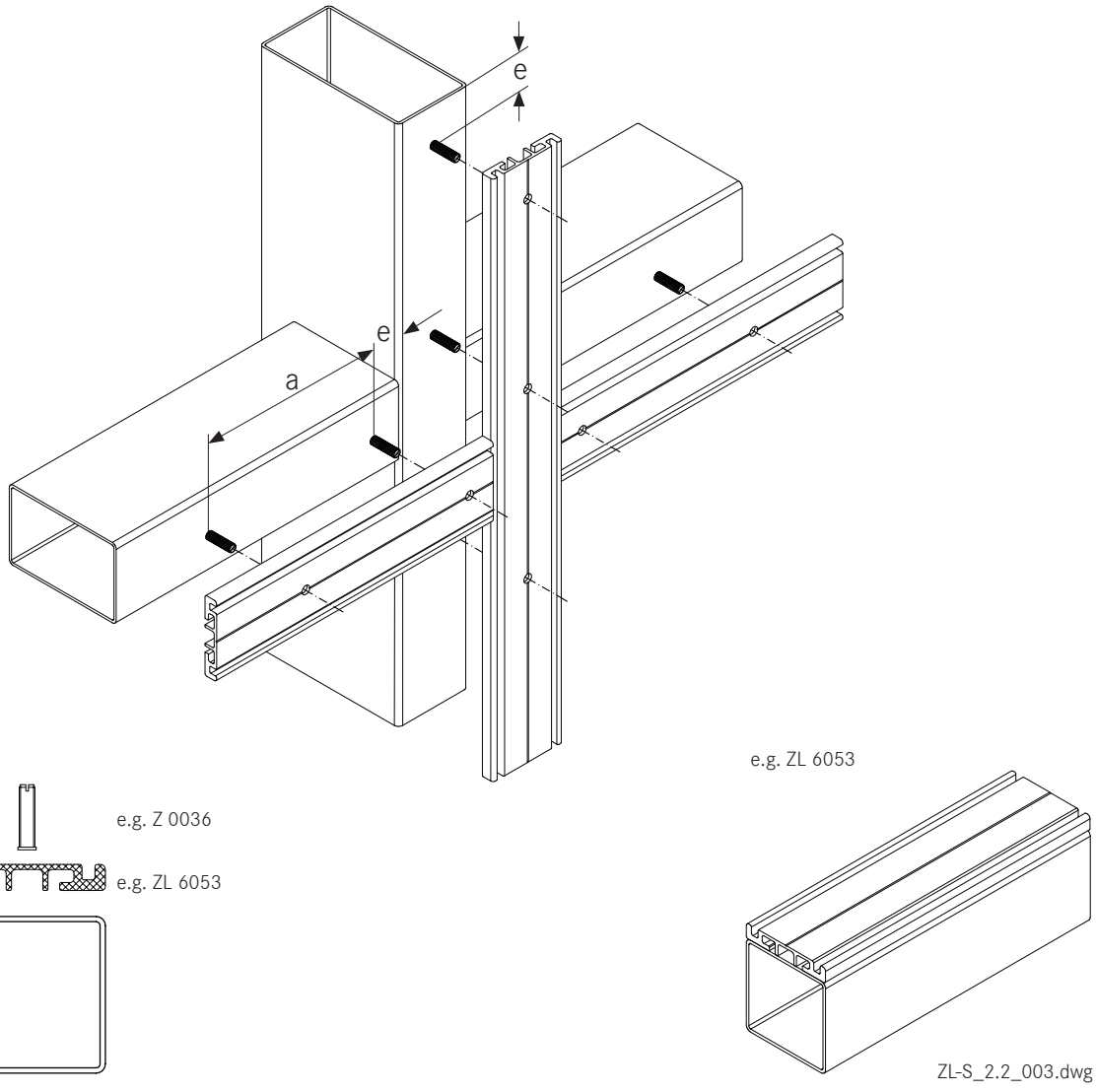
Attaching the spacer strip

Mounting to the supporting structure

- Attach the threaded welding studs M6 according to building approval specifications and/or technical regulations, i.e. supplier instructions. Make threaded holes or threaded blind holes in the steel supporting structure in order to attach the threaded bolts M6.
- Carry out preparatory work on the steel profiles to suit the statically required glass supports.
- Drill holes must be prepared for the spacer strips with ⌀ 7mm, in the same intervals as for the threaded bolts, and the spacer strips are then placed over the threaded bolts.
- The distance for screw fittings is variable. The maximum distance is **a = 250 mm**.
- The distance from the edge for the first screw fitting should generally be in the region **of 30 mm ≤ e ≤ 80 mm**. The placement of the glass supports should also be taken into account. The mullion-transom joints in the structure must also be taken into consideration when selecting the distances.
- The spacer strips are positioned continuously in a vertical direction and abutted with the mullions.
- The length of the spacer strip corresponds to the length of the substructure for mullions and transoms.



Tips for laying seals

Sealing system principle, general information about glazing seals

The Stabalux sealing system consists of the outer and inner sealing sections:

- The outer sealing section has the primary function of preventing the ingress of moisture. At the same time, the sealing section provides a flexible support for the glass panes.

- The inner sealing section acts to protect the inner space, water guiding section and elastic glass supports from moisture and vapour.

Both sealing sections must perform this function over a long period of time.

Seals should be adapted on the construction site, but may also be pre-cut to the required length in the factory and pulled into the spacer strips and/or clamping strips following the mounting instructions for seals. Always ensure that seals are not bearing any loads once installed and are firmly pressed onto joints. All joints should be sealed as per the following descriptions.

Pressure equalisation and controlled drainage

Pressure equalisation is generally achieved via openings at the base, head and ridge points. Should additional ventilation be required in the area of the transom (e.g. where panes are only supported on 2 sides or where transom length is $\ell \geq 2$ m), then this ventilation should be created by placing holes into the cover strip and/or using notches on the lower sealing lips of the outer seal.

The pressure equalisation openings also serve to drain away moisture. The inner sealing section is formed in such a way that when the joints are properly sealed, any moisture that occurs and does not dissipate via the rebate ventilation will drain away downwards. In facades, water is guided via the transom flag into the mullions. There is a choice between using tested sealing systems with between 1 and 3 levels. With inclined glazing with 2 drainage levels, the higher sealing section of the transom overlaps the lower mullion seal. These principles must be consistently implemented down to the lowest point of the glazing so that the water-guiding level of the structure carries moisture to the outside. Film is placed beneath the seals accordingly. It must be ensured that the film will last for a long time.

Tips for laying seals

Inner sealing section

The structure of the inner sealing section is different for **vertical** facades and facades with an inward incline up to 20° as well as **roof glazing**.

Inner sealing for vertical glazing and glazing with an inward incline up to 20°:

- 5 mm butt jointed seals with a drainage section for vertical facades (α=0°)
- 10 mm high seals with two drainage sections to safely guide away any moisture or condensation to the outside. These seals are created by overlapping the seal joints in which the higher sealing section of the transom goes underneath the lower level of the mullion. These seals can be used for vertical facades and facades with an incline up to 20°.
- 12 mm high seals follow the same principle, but allow an additional third drainage section for an intermediate mullion.
- The shaped transom flag protects the vulnerable area of the rebate and ensures that moisture is drained away via the vertical or up to 20° inwards inclined mullions.

Inner seals for glazed roofs:

- A special seal geometry for glazed roofs also allows for two-level stepped drainage. The 10 mm high seals are laid with overlapping joints.

Some basic information for sealing and sticking down Stabalux seals

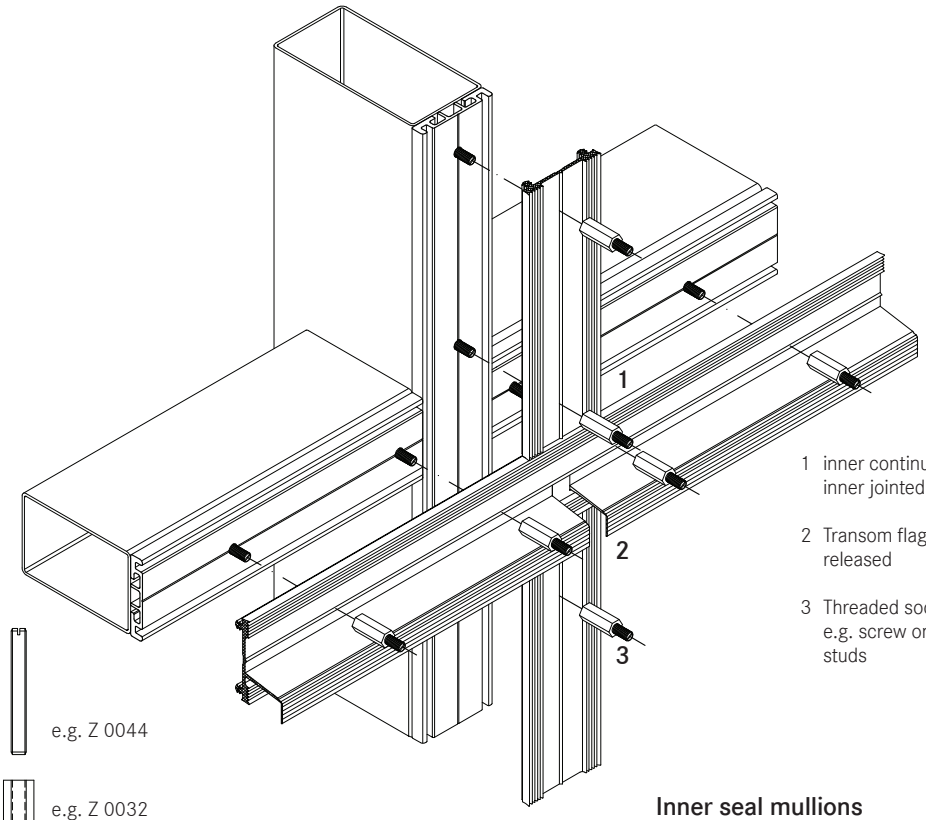
- All joints and seal penetrations must be waterproofed. An exception to this is the Stabalux system screw fittings where the hole diameter of the inner seal is at most the same as the core diameter of the M6 thread of the bolts and the seals are laid close together.
- Gasket joints are should always be sealed using Stabalux sealant, regardless of whether they are butt joints or overlapping. (We recommend Stabalux connecting paste Z 0094. Pay attention to the directions provided by the manufacturer).
- For difficult to seal places we recommend first using a fixing adhesive such as the Stabalux quick fixing glue Z 0055.
- Before gluing, ensure all surfaces are free from moisture, dirt and grease.
- Weather conditions such as snow and rain prevent an effective seal.
- Temperatures below +5 °C are not suitable for fixing seals.
- The hardened connecting paste should not prevent level support of glass.

Seals - Facade

2.2
5

Assemble the inner seal on vertical facade glazing - 1 level join

- The horizontal transom seals are laid continuously across the mullion-transom joints. Ensure here that the clamping feet of the horizontal seal are released around the mullion.
- Mullion seals are butt jointed to the transom seals.
- The transom flags should be released to a width of 10-15 mm at the mullion joint.
- The protruding length of the transom flag should be removed at the perforation once glazing is completed.
- In order to safely drain away moisture from transoms even at the edges of the facade, the inner transom seals must be laid into the released mullion seals. To release and remove the clamping feet we recommend using our release pliers Z 0078 for System 60 and Z 0077 for System 50.
- Ensure all joints are cleanly and solidly sealed. Excess sealant should be removed.



1 inner continuous transom seal, inner jointed mullion seal

2 Transom flag in mullion area released

3 Threaded socket und threaded bolt e.g. screw on to threaded welding studs

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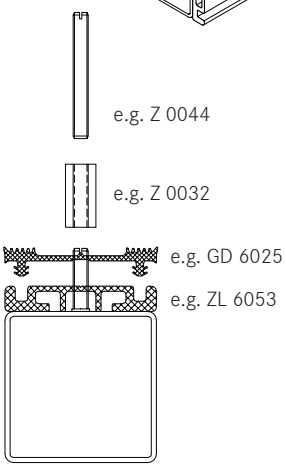
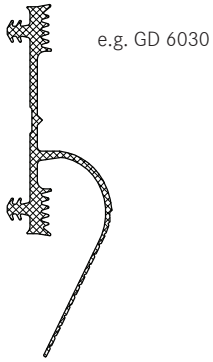


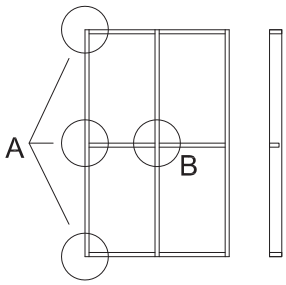
Inner seal mullions

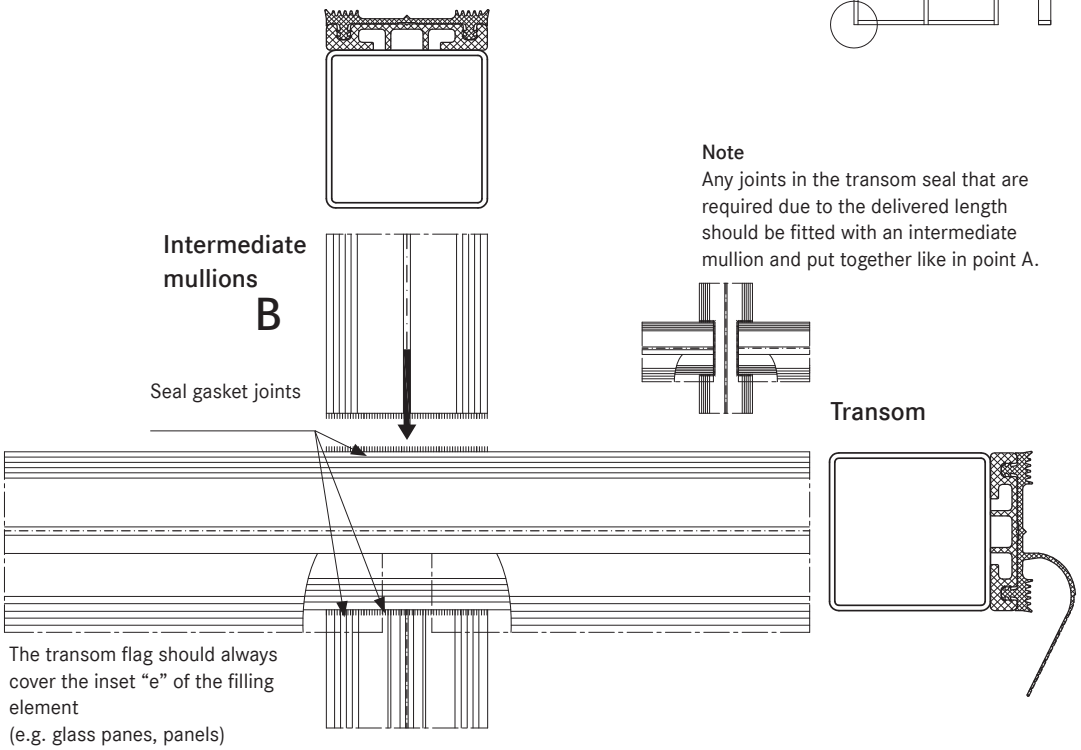
Inner seal transoms

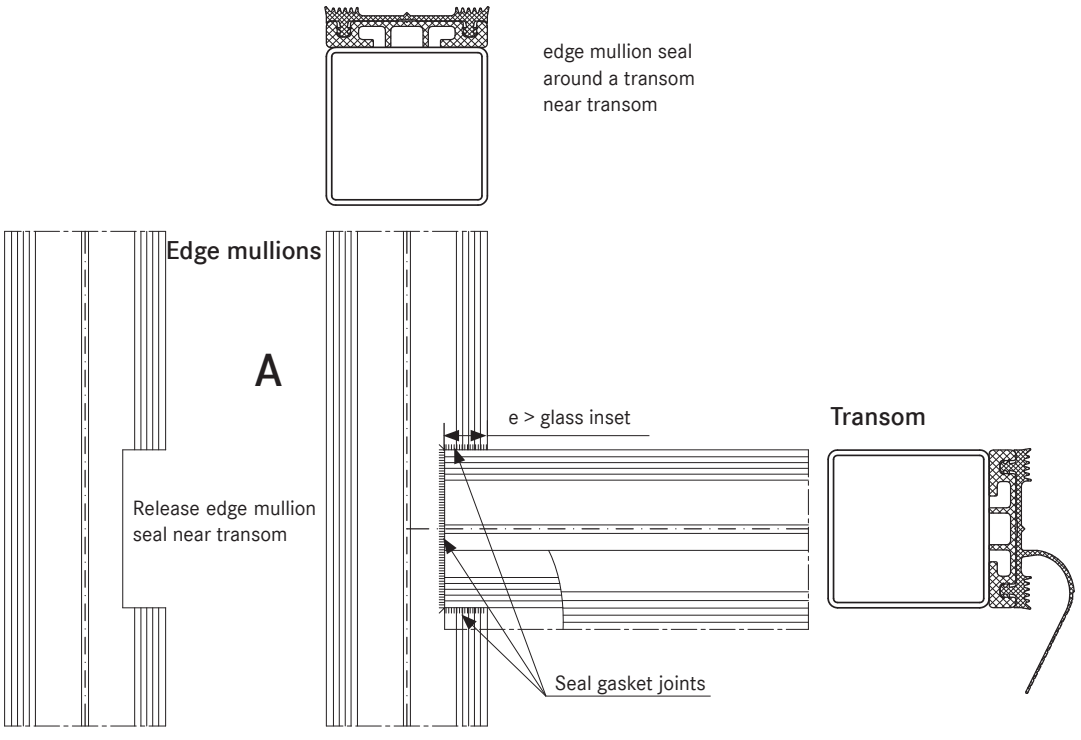


Seals - Facade

Assemble the inner seal on vertical facade glazing - 1 level join







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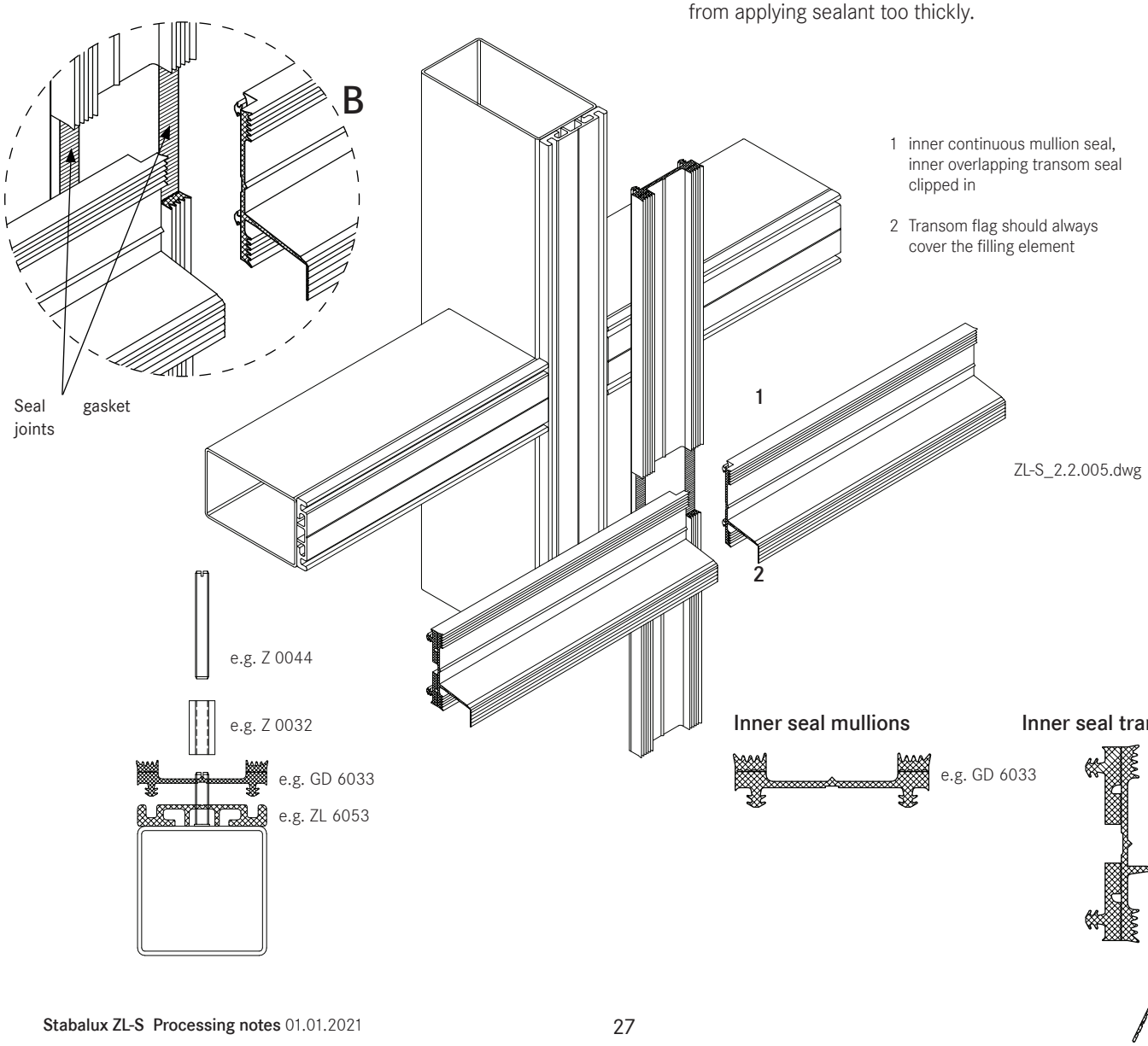
Seals - Facade

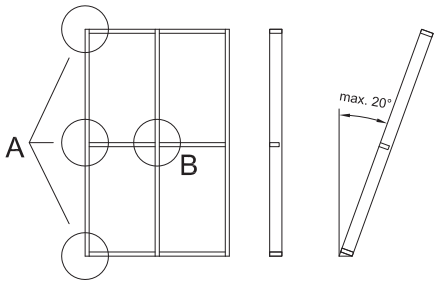
2.2
5

Assembly of the inner seal for vertical facade glazing and facade glazing with an incline of up to 20° - 2 overlapping sections

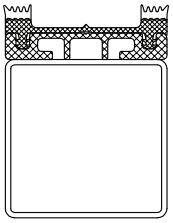
- The 10 mm high seals can be divided across their height to allow a simple overlap at critical transom joints.
- The vertical seals for the mullions (2nd drainage section) are laid continuously.
- The transom seals overlap the mullion seals.
- Moisture and condensation is guided away via the transom flag of the transom seal (1st drainage section) to the main mullion.
- The transom flag must always cover the inset depth of the glass panes and filling element.
- The protruding length of the transom flag should be removed at the perforation once glazing is completed.
- All joints must be sealed. Before laying seals, we recommend completely coating the entire support surfaces and sides with Stabalux connection paste.
- Ensure all joints are cleanly and solidly sealed. Excess sealant must be removed. Absolutely no unevenness in the glass support surface must occur from applying sealant too thickly.



Seals - Facade



Assembly of the inner seal for vertical facade glazing and facade glazing with an incline of up to 20° - 2 overlapping sections



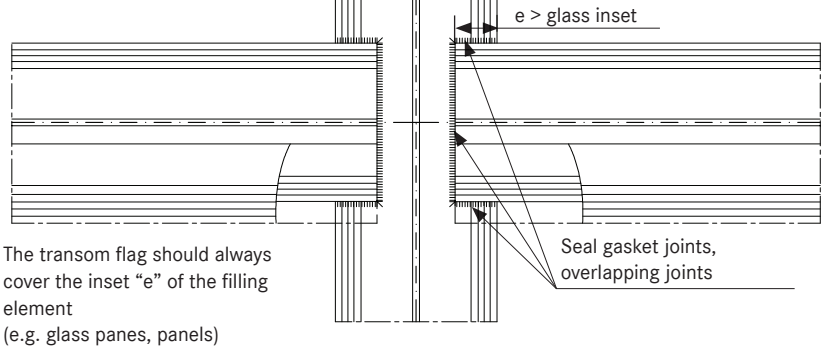
Mullion seals
around a transom upper section
to the width of the transom seal

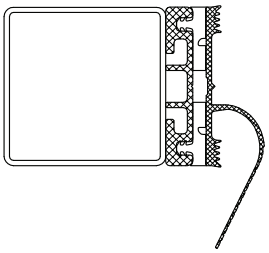
Intermediate mullions

B

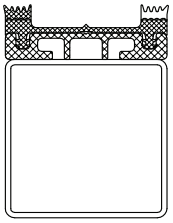
Transom

Transom seal
separate lower section at length of the overlap “e”





The transom flag should always cover the inset “e” of the filling element
(e.g. glass panes, panels)



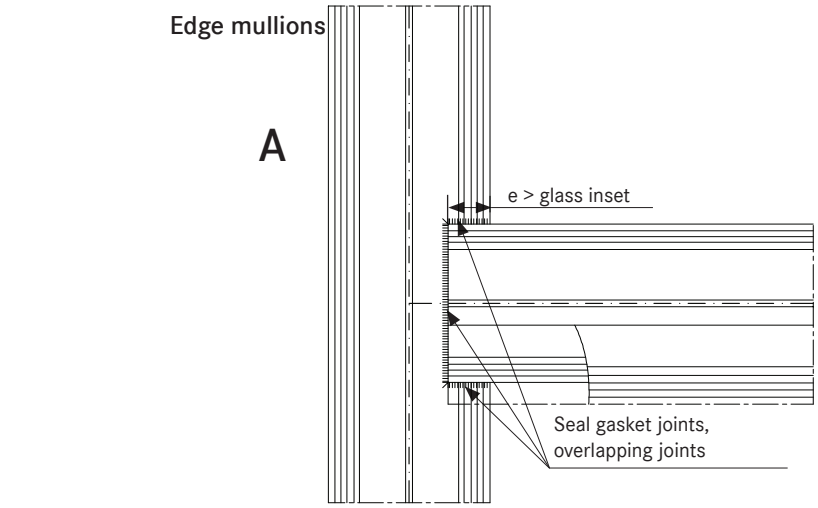
edge mullion seal
around a transom upper section
to the width of the transom seal

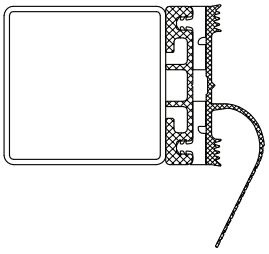
Edge mullions

A

Transom

Transom seal
separate lower section at the length of the overlap “e”





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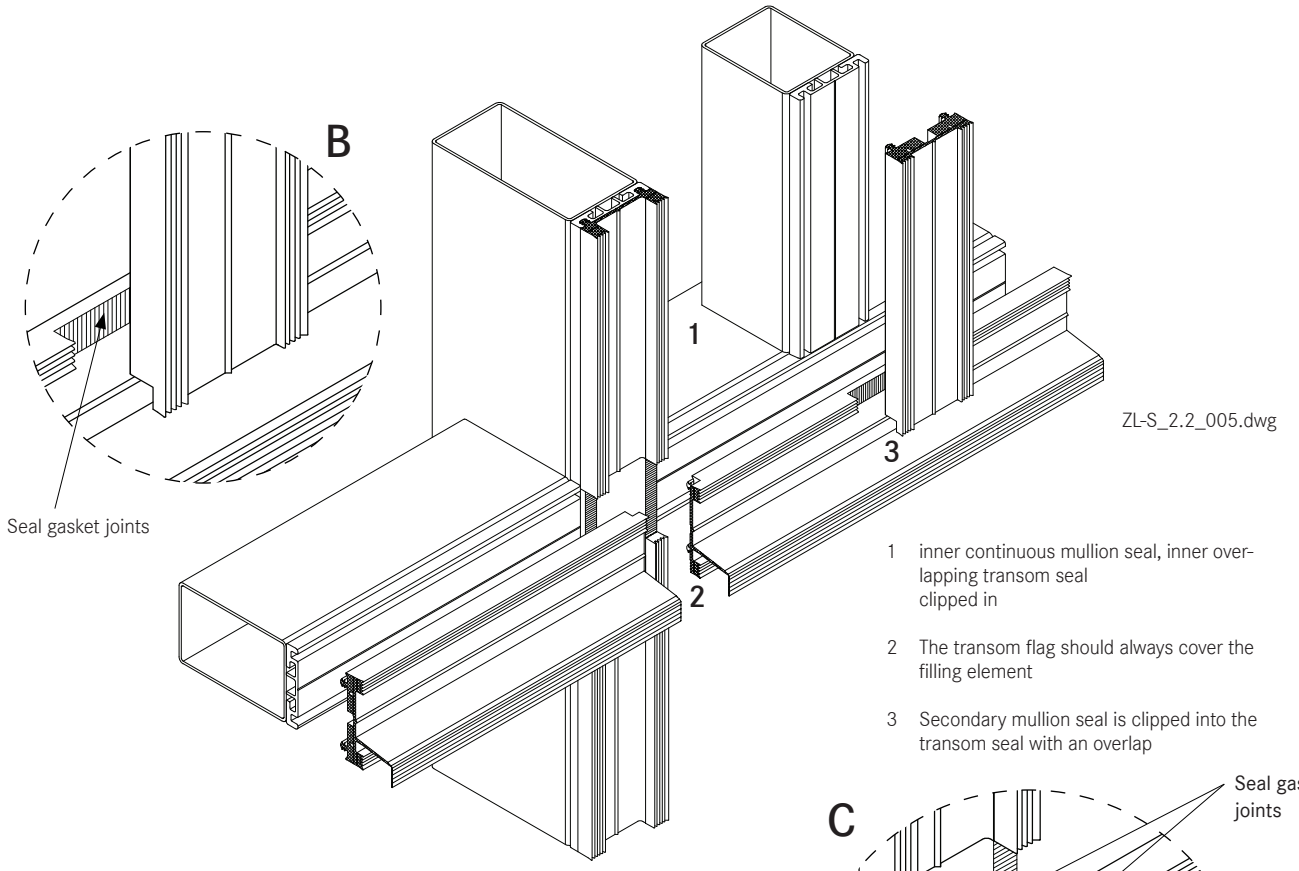
Seals - Facade

Assembly of the inner seal for vertical facade glazing and facade glazing with an incline of up to 20° - 3 overlapping sections

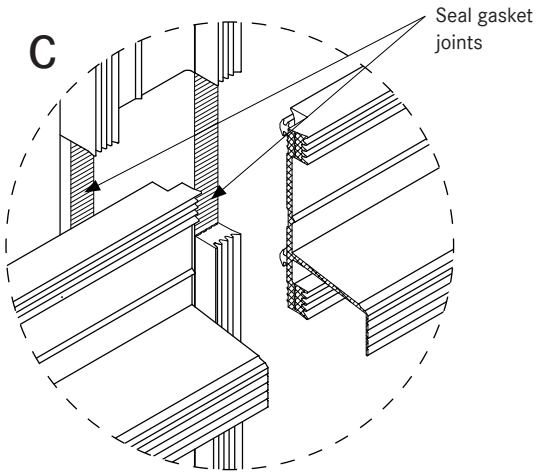
- Optionally, Stabalux seals with three offset water channels can be used in the facade area which safely drain any moisture or condensation to the outside.
- The 12 mm high seals can be divided across their height to allow a simple overlap at critical secondary mullion/transom joints, i.e. transom/primary mullion joints.
- The vertical seals for main mullions (3rd drainage section) are laid continuously.
- The transom seals overlap the main mullion seals.
- Along a transom, seals must be laid continuously.
- Moisture and condensation is guided away via the transom flag of the transom seal (2nd drainage section) to the main mullion.



1 inner continuous mullion seal, inner overlapping transom seal clipped in

2 The transom flag should always cover the filling element

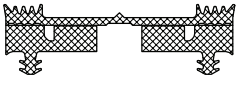
3 Secondary mullion seal is clipped into the transom seal with an overlap



Inner seal main mullion

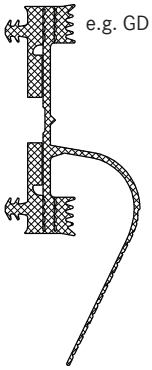
e.g. GD 6314

Inner seal secondary mullion



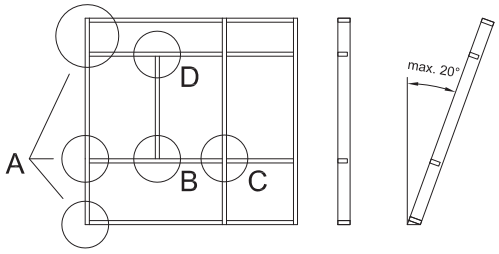
e.g. GD 6315

Inner seal transoms



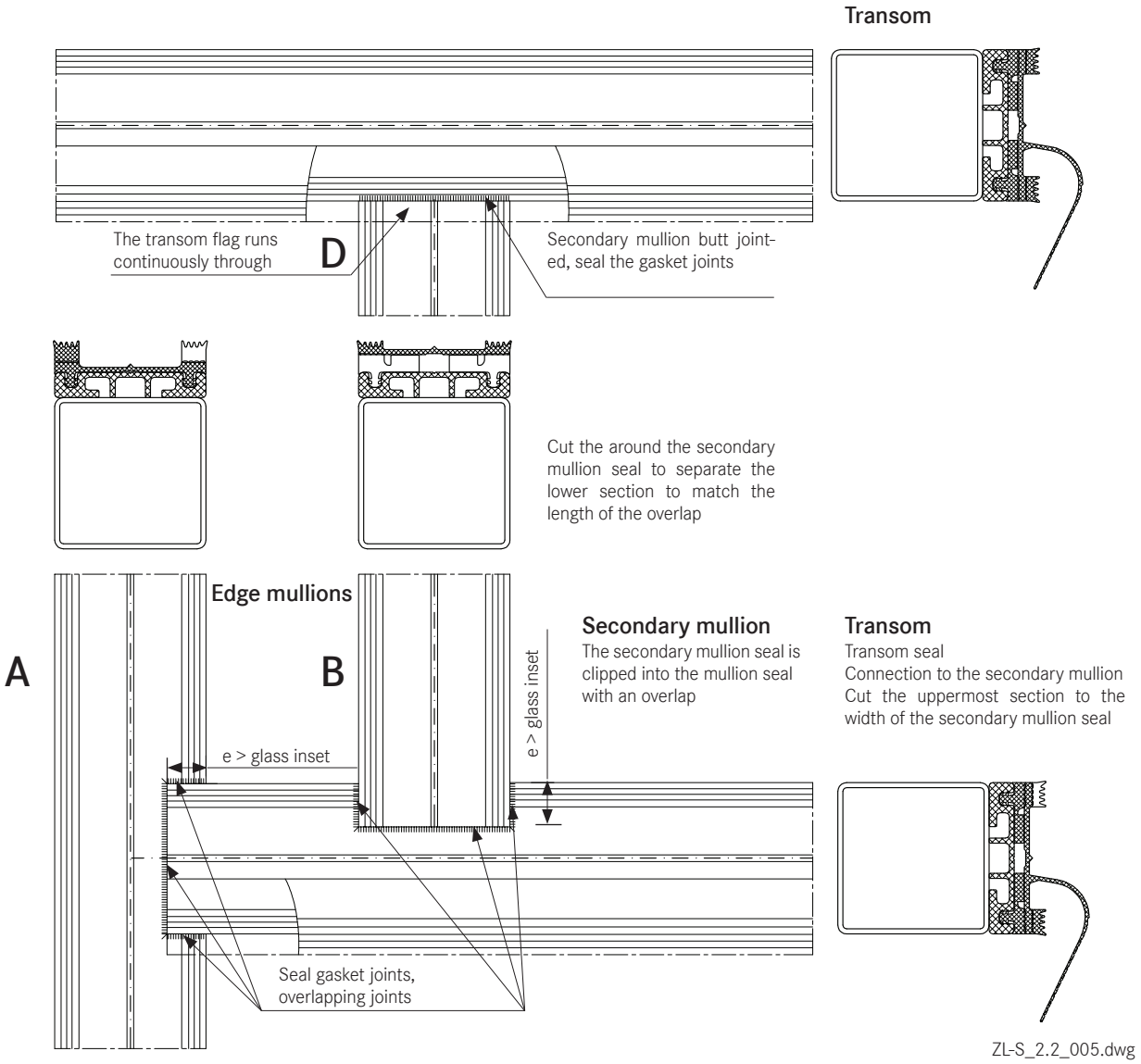
e.g. GD 6318

Seals - Facade



Assembly of the inner seal for vertical facade glazing and facade glazing with an incline of up to 20° - 3 overlapping sections

- The transom flag must always cover the inset depth of the glass panes and filling element.
- The protruding length of the transom flag should be removed at the perforation once glazing is completed.
- Vertical seals on the secondary mullion are butt jointed beneath the upper transom. The transom flag of the upper transom runs continuously in the upper part of the joint.
- Drainage of the secondary mullion (1st drainage section) is achieved by overlapping the seals of the secondary mullion with the seal of the upper transom.



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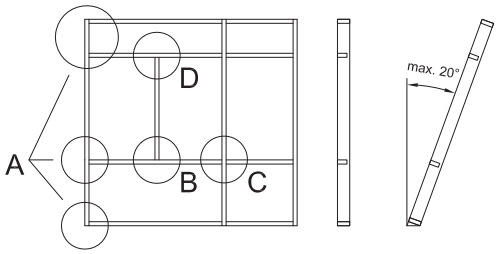
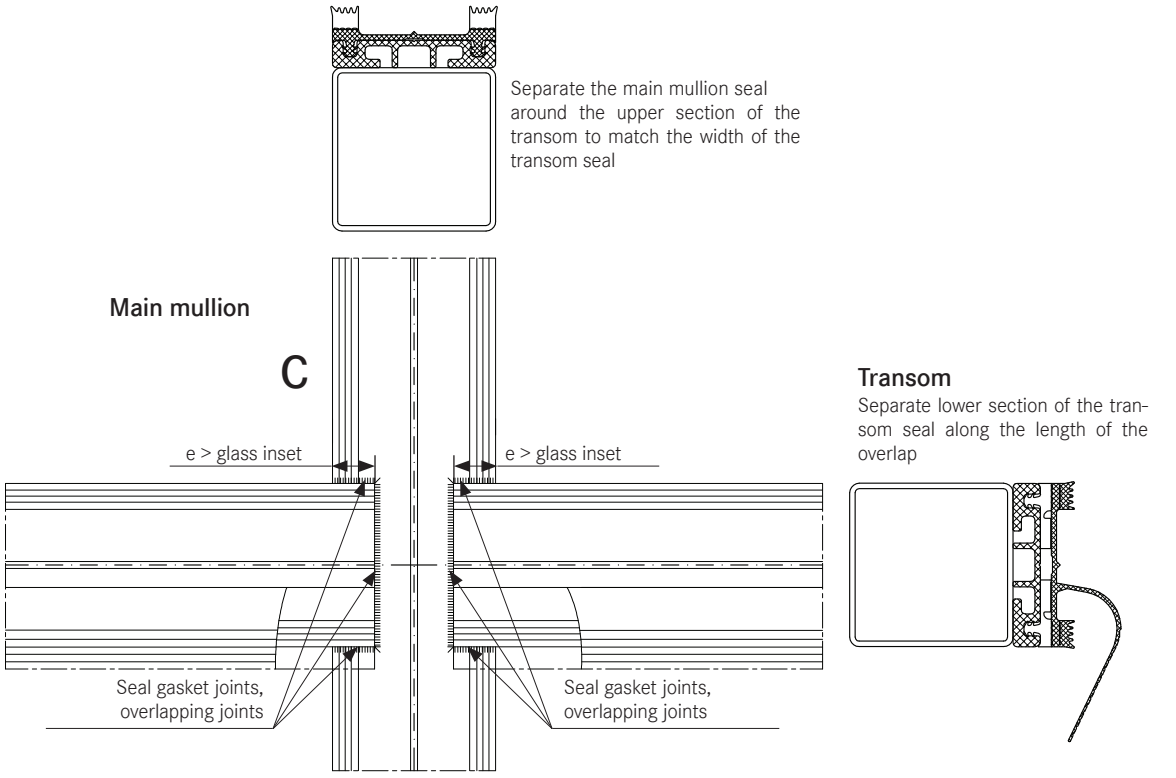
Seals - Facade



Assembly of the inner seal for vertical facade glazing and facade glazing with an incline of up to 20° - 3 overlapping sections

- All joints must be sealed. Before laying seals, we recommend completely coating the support surfaces and edges with Stabalux connection paste.
- Ensure all joints are cleanly and solidly sealed. Excess sealant must be removed. Absolutely no unevenness in the glass support surface must occur from applying sealant too thickly.



The transom flag should always cover the inset "e" of the filling element (e.g. glass panes, panels).

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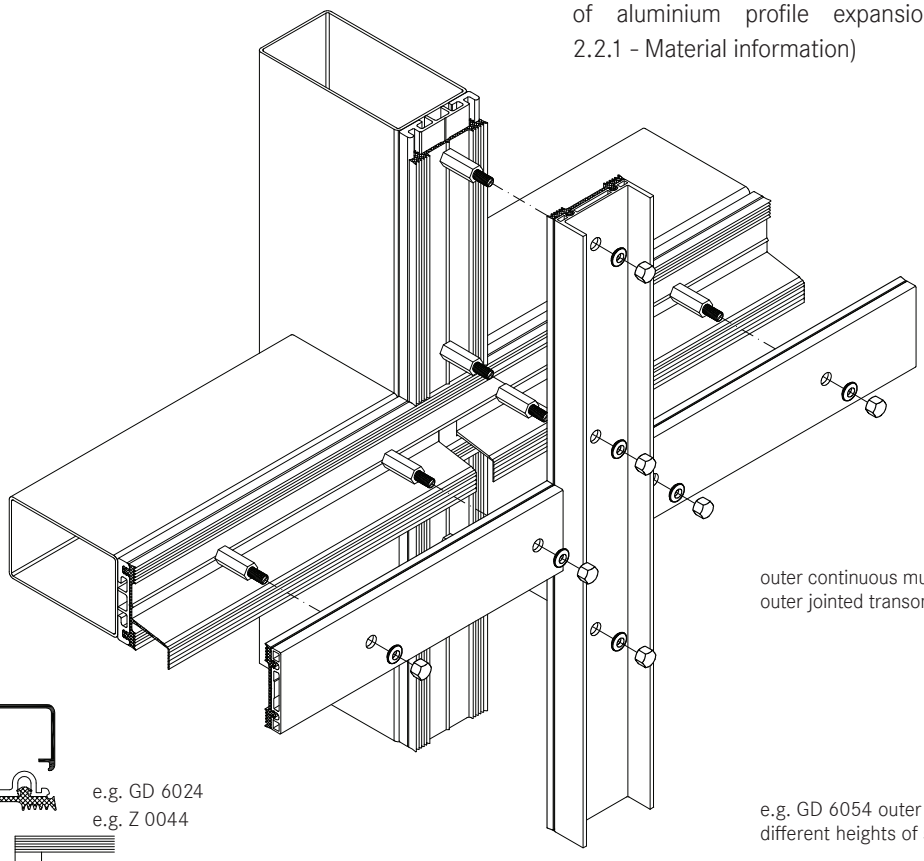
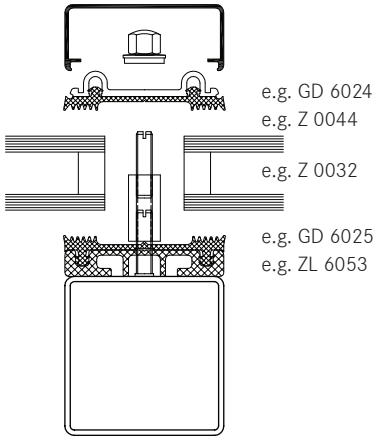
Seals - Facade

Assembly of the outer seal for vertical facade glazing

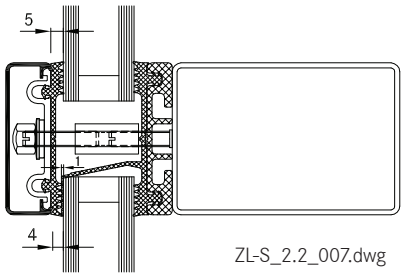
- As well as gently clamping the glass in place, the outer sealing system has the primary task of protecting the rebate against moisture ingress.
- The outer sealing sections must be completely sealed except for the necessary openings for pressure equalisation and condensation dissipation.
- The outer mullion seals are laid continuously and the transom seals are joined.
- Sealant joints are to be laid flat with a slight excess in dimensions. Exact specifications depends on the situation in which the system is used.
- It is not necessary to glue the outer sealing in the mullion-transom joint if the sealant joints fit precisely.
- The flag for the inner transom joint in combination with the outer seal creates additional safety.
- The transom flag should be separate at its perforations to match the thickness of the glass in order that this is clamped down and concealed under the outer seal.
- Different heights of sealing lips on the outer seal bridge the height different created by the transom flag in the outer sealing section.
- Differently high, split seals allow a balance between filling elements of different total thickness of up to 6 mm.
- When mounting the clamping strip, be aware of aluminium profile expansion (see section 2.2.1 - Material information)



outer continuous mullion seal,
outer jointed transom seal



e.g. GD 6054 outer transom seal with different heights of sealing lip



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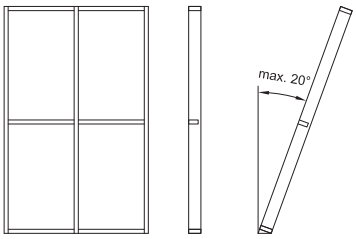
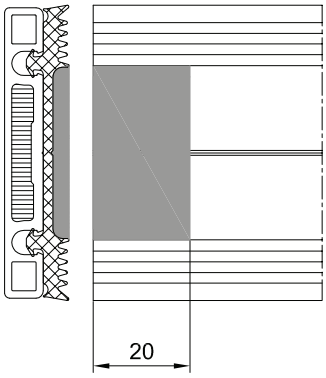
Seals - Facade

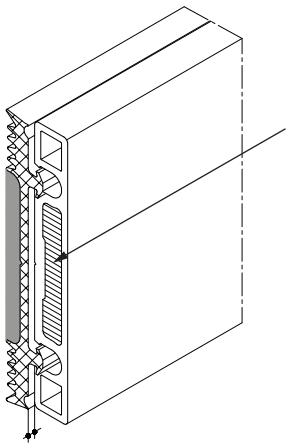


Assembly of the outer seal for facade glazing with an inwards incline of 20°

- If the facade is inclined inwards from the vertical (max. permitted incline 20°), the open ends of the outer transom seals must be closed up using butyl.
- When constructing inwardly inclined facades (up to max. 20°), if flat cover profiles are used in the transoms (e.g. DL 5059, DL 6059, DL 5061, DL 6061, DL 5067, DL 6067, DL 5071, DL 6071, DL 6043, DL 6044) and flat lower and upper strips (e.g. UL 6005 with OL 6066), then the central hollows at each end must be sealed with silicone.



The open end of the transom seal in inwardly inclined facades (up to max. 20°) must be sealed using butyl.



When using flat cover profiles on inwardly inclined facades (up to max. 20°), the central hollow at each end should be sealed with silicone.

Trim the seals to be slightly larger than required.

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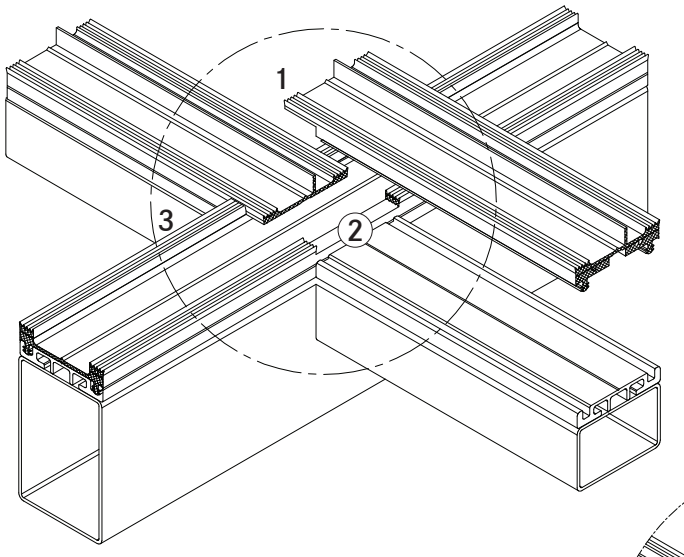
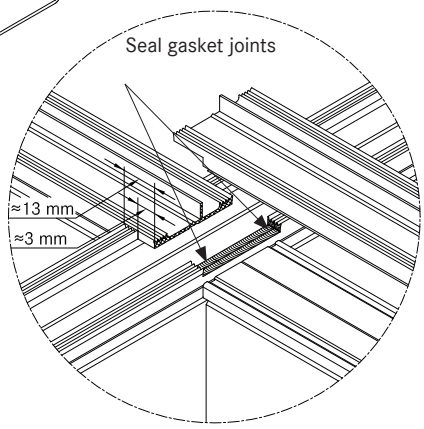
Seals - roof

Assembly of the inner seal for roof glazing

- Optionally, Stabalux seals with offset water channels can be used in the facade area which safely drain any moisture or condensation to the outside.
- The 10 mm high seals can be divided across their height to allow a simple overlap at critical transom joints.
- The transom seals are geometrically shaped so as to create a condensation channel.
- This channel drains from the overlapping transom joint in the rafters.
- Along a transom, seals must be laid continuously.
- All joints must be sealed. Before laying transom seals, we recommend applying a thin coating to the entire support surfaces. Absolutely no unevenness in the glass support surface must occur from applying sealant too thickly.





1 remove the lower perforated part and the clamping foot on the transom seal at around 15 mm
2 remove the upper perforated part on the rafter seal
3 Length of transom seal = transom length + ~13 mm per side

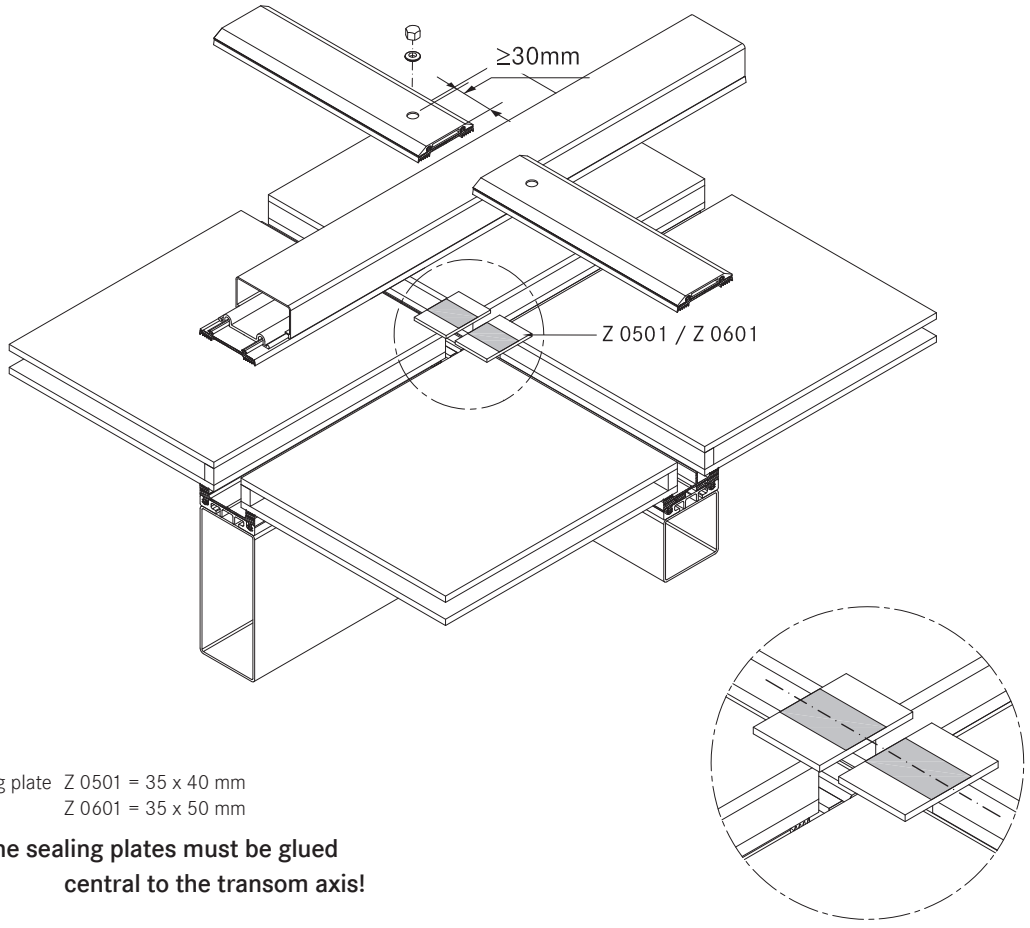
Seals - roof

Assembly of the outer seal for for glazed roofing

- These are laid in fundamentally the same way as for vertical glazing. Split seals such as GD 1932 are not suitable for transom seals in roofs. Split seals can only be installed in mullions in combination with slab insulation. Each installation situation will differ to some degree and always check how well sealed it is.
- For cross joints we recommend using our self-adhesive stainless steel sealing plates with butyl coating Z 0601 for System 60 and Z 0501 for System 50. The stainless steel sealing plates are 35 mm wide and are attached to the edge of the glass panes parallel to the mullion axis.
- Butyl tape is not suitable as a sealing tape between the glass and the outer seal.
- The outer mullion seals are laid continuously and the transom seals are joined.
- Sealant joints are to be laid flat with a slight excess in dimensions. Exact specifications depends on the situation in which the system is used.

Note:

- Horizontal clamping strips prevent the free run off of rain water and dirt.
- Cover strips and upper strips with angled edges reduce the build up of water in front of the clamping strip.
- Shorten the clamping strips on the transoms by 5 mm in the area of the transom joins in order to improve drainage of water. Gasket joints, however, are to be laid flat with a slight excess in dimensions. Open ends of transom clamping strips (upper and cover profiles) should be sealed.



Detail of sealing plate Z 0501 = 35 x 40 mm
Z 0601 = 35 x 50 mm

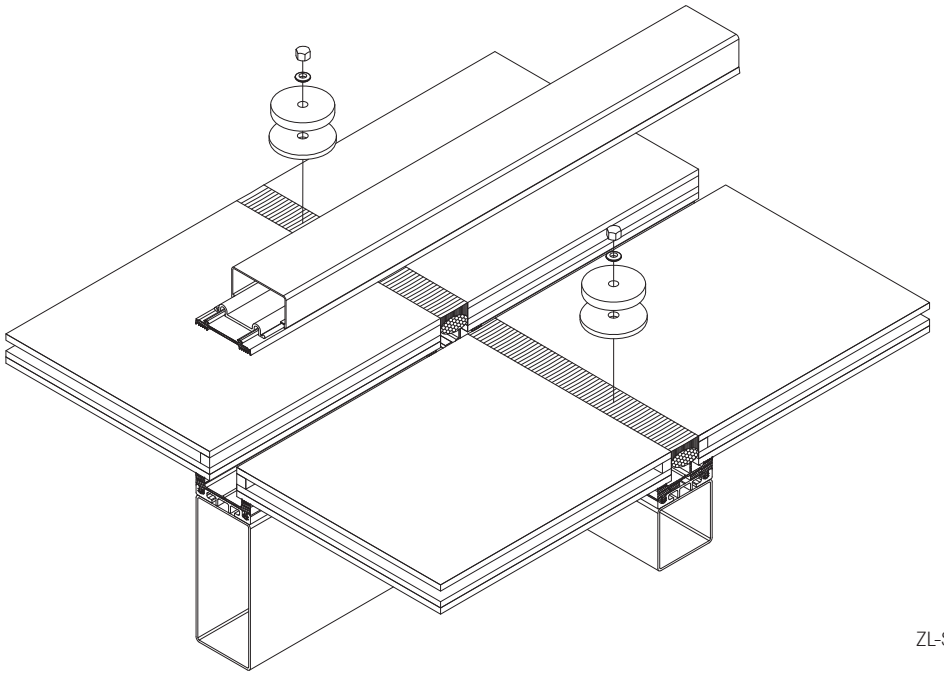
Attention:The sealing plates must be glued central to the transom axis!

For glass insets of 15 mm, the first screw fittings for the transom cover strip begin 30 mm from the end of the cover strip.

Seals - roof

Assembly of the outer seal for for inclined glazed roofing up to 2°.

- These are laid in fundamentally the same way as for vertical glazing. Split seals around the mullions in roofs such as GD 1932 are only suitable when using in combination with slab insulation. Each installation situation will differ to some degree and always check how well sealed it is.
- To ensure free run-off of rain water and dirt on roofs inclined up to 2°, we recommend not using clamping strips in the transoms.
- Instead, the rebate spaces should be sealed with all-weather silicone.
- Implementation of the outer sealing section around mullions is done in the same way as conventional roofs with an inclination up to 15°.
- At the high point or ridge area of the inclined glazing, it is recommended to also install and outer sealing section in the transoms with clamping strips.
- Only certified sealing materials may be used for sealing the transom rebate space.
- Pay attention to all information provided by the manufacturer and the sealing work must be carried out by trained persons. It is recommended that a licensed and certified specialist contractor is hired for this purpose. We further refer you to the DIN 52460 standard and IVD data sheets (Trade Association for Sealants).



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Tips for all roof designs:

When using aluminium cover profiles on roofs, take account of the expansion factor as a result of the high degree of heat absorption when selecting the length to use. Equally, the use of single-piece cover profiles should be carefully considered. In this case it is recommended that holes for screwing on the cover strip are created with a diameter of d = 9 mm. (see section 2.2.1 - Material information).

For wide spans we recommend using concealed screw fittings when selecting the clamping strips (lower + upper strip). This is the preferred option for rafters. Unused holes in the lower strip must be sealed.

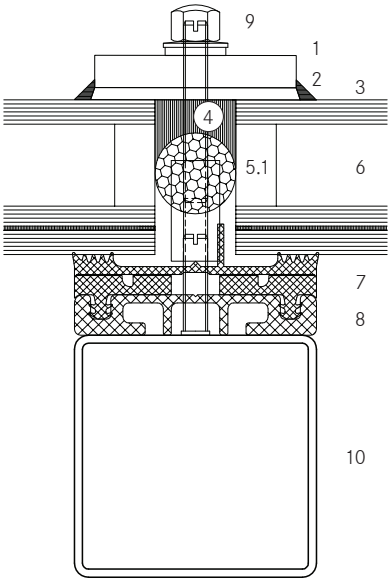
Some roof areas, such as the eaves, see the use of several different materials (glass, silicone, aluminium sheets, ...) each with different expansion coefficients. To avoid the formation of cracks, aluminium sheets should be installed with expansion joints.

Seals - roof

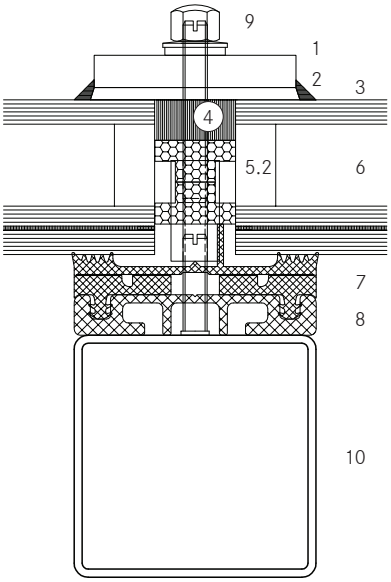
Assembly of the outer seal for glazed roofing up to 2° incline

- The compatibility of the materials is particularly important when using all-weather silicone. In this case, the compatibility of the sealant with the edge bonding of the glass and the backfill of the joints. If self-cleaning glass is used, the compatibility must be established in advance.
- Glass sealants and edge bonding must be UV-resistant. The incline of roofs should also be taken into account. Information about UV-resistance can be requested from the manufacturer. Silicone bonding generally provides better UV-resistance than polysulfide-based edge bonding. The advantage of silicone lies in its high vapour sealing properties which is particularly useful when using more volatile argon fillings.
- Highly elastic, weatherproof and UV-resistant seals meet the widest range of demands for reliable joints.
- If the silicone joint is created without additional mechanical safety devices, ensure that the glass is supported from two sides only. Selective installation of holding clamps can be used to provide support for all glass edges.
- The clamps are made from stainless steal with silicone washers and are screwed in the same as pressure strips. The hold-down clamp should be additionally sealed around the perimeter with silicone sealant. The design is based upon the dimensions of the glass as documented in the glass static analysis.

Angled glazing transom up to 2° inclination with all-weather silicone and round rope seal.



Angled glazing transom up to 2° inclination with all-weather silicone and insulation block.



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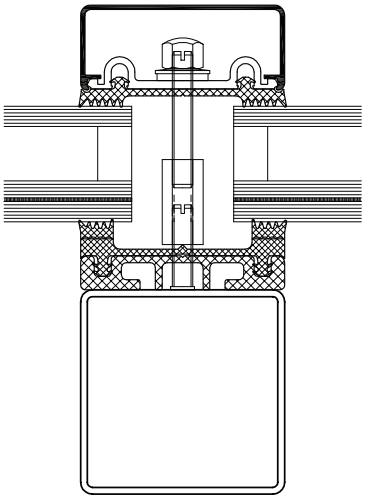
1 Hold-down clamp
2 Silicone washer
3 Silicone sealant / seal around the clamp
4 All weather silicone seal
5.1 Round section rope seal
5.2 Insulation block
6 Glass / filling element
7 Inner seal 10 mm transom
8 Spacer strip
9 System screw fittings
10 Support profile

Seals - roof

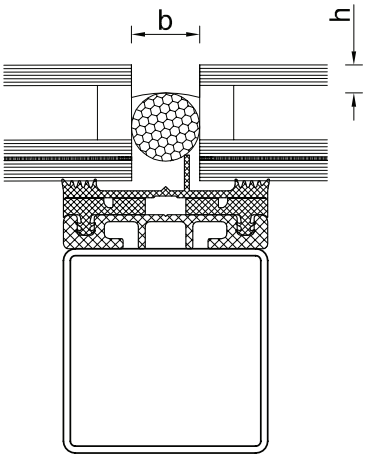
Assembly of the outer seal for glazed roofing up to 2° incline

- The joint width and the joint height for Stabalux SR are defined as w x h = 20 mm x 10 mm. These measurements should always checked when selecting the sealing material and adapted if necessary. Generally: w : h = 2 : 1 to 3.5 : 1.
- PE round section seals or Stabalux slab insulation is suitable as a back fill material.
- Silicone sealant should be applied before laying the mullion seals and cover profiles.
- After the specified setting time, the seals and screw fittings can be installed in the areas around mullions.
- The mullion-transom joints around the clamps are then sealed.
- Before applying this second layer, the joints around transoms must have completely set.

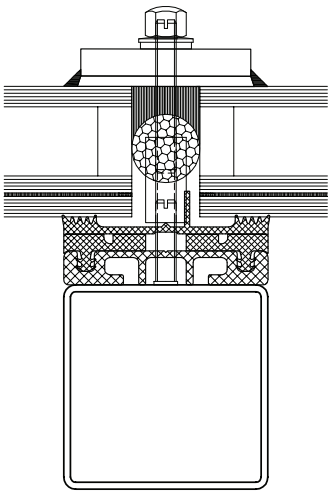
Rafters with clamping strips



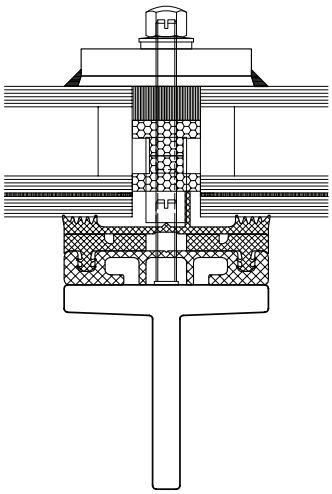
Joint design according to manufacturers specifications!
Generally: w : h = 2 : 1 – 3.5 : 1



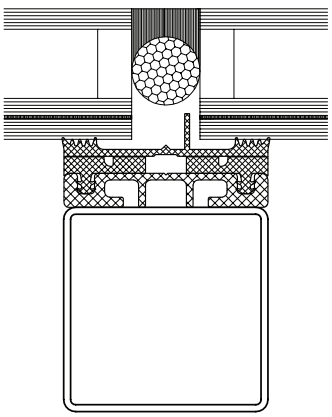
Transom with clamp, all-weather silicone seal and round rope seal



Transom with clamp, all-weather silicone and insulation block



Transom with all-weather silicone and round section rope seal



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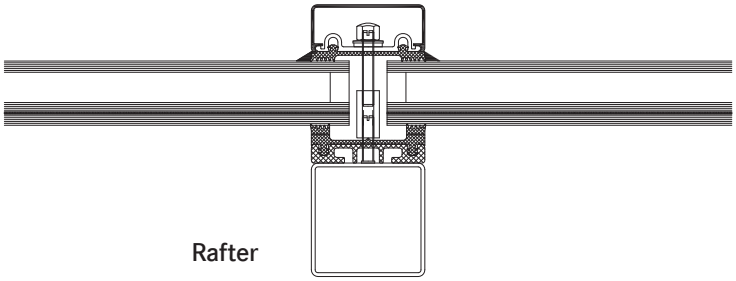
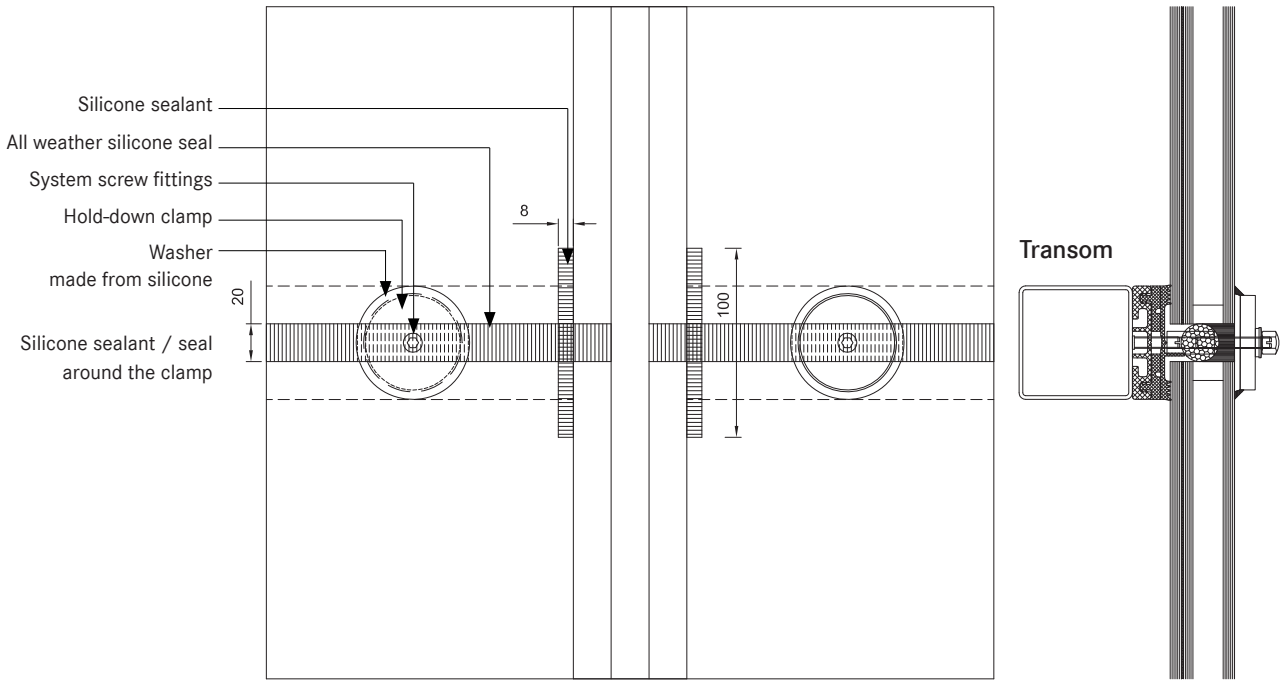
Seals - roof

Steps for creating the seal with all-weather silicone

- Test the silicone sealant and glass edge bondings and other contact surfaces (e.g. panels) for suitability.
- Clean edge bonding adhesive impurities from the surfaces to which sealant will be applied following manufacturer's directions.
- Fill the joints as per the joint dimensions using only non-water absorbent closed-cell PE profiles (no damage to the edge bonding).
- The remaining space in the glass rebate must be large enough that the pressure is able to equalise and a drainage level is available.
- Clean any impurities from the surfaces to which the sealing material is to be applied and any adjacent surfaces according to manufacturer's directions.
- Be particularly aware of any adjacent metal components. Prime according to manufacturer's directions.
- Seal joints without leaving any cavities or bubbles. Mask any adjacent components in advance where necessary.
- Smooth out the filled joints using the manufacturer's smoothing agents and conventional tools with as little water as possible. Remove the adhesive tape when liquid.
- If two or more reactive sealants are used in combination, the first must completely set before the second is applied.





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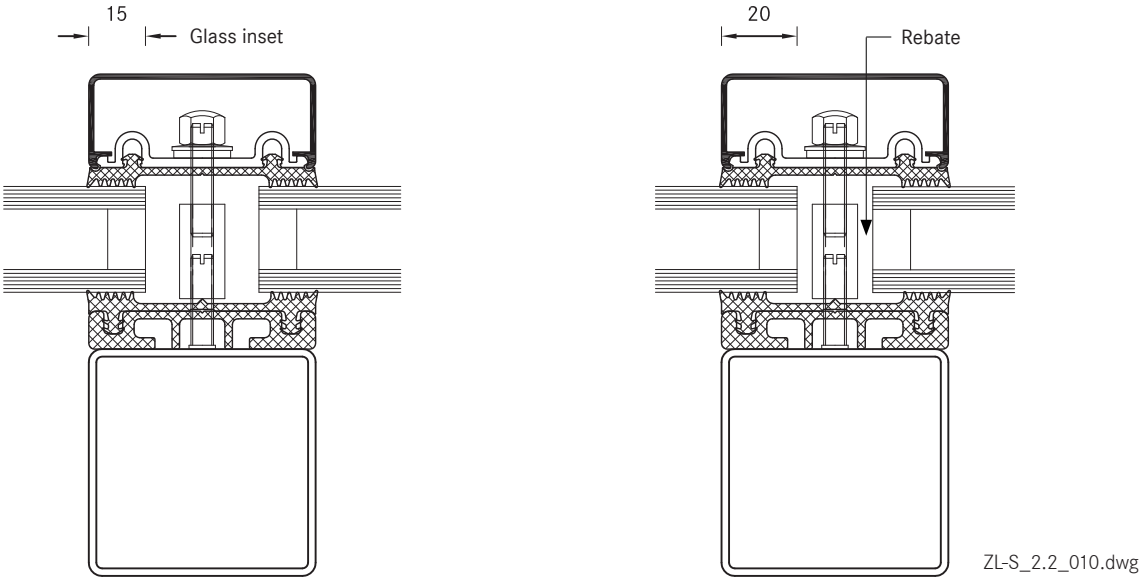
Glass inset and glass support

2.2
7

Glass inset

- Glass industry guidelines must be observed.
- The glass inset is generally 15 mm.
- An increase in the glass inset to 20 mm has a beneficial effect on the heat transfer coefficient Uf of the frame structure.



Glass inset and glass support

2.2
7

Glass support types and selection of glass support

Glass supports carry the load of the glass panes through to the structure. The permissible glass weights also depend on the structure of the glass and the selected mullion-transom connection. The mullion-transom connection must be selected in such a way as to minimise any subsequent turning of the transoms. The depth of the glass supports is determined by the glass structure. Section 9 contains more information in this respect.

The Stabalux ZL-S system distinguishes between two different types and techniques for attaching glass supports:

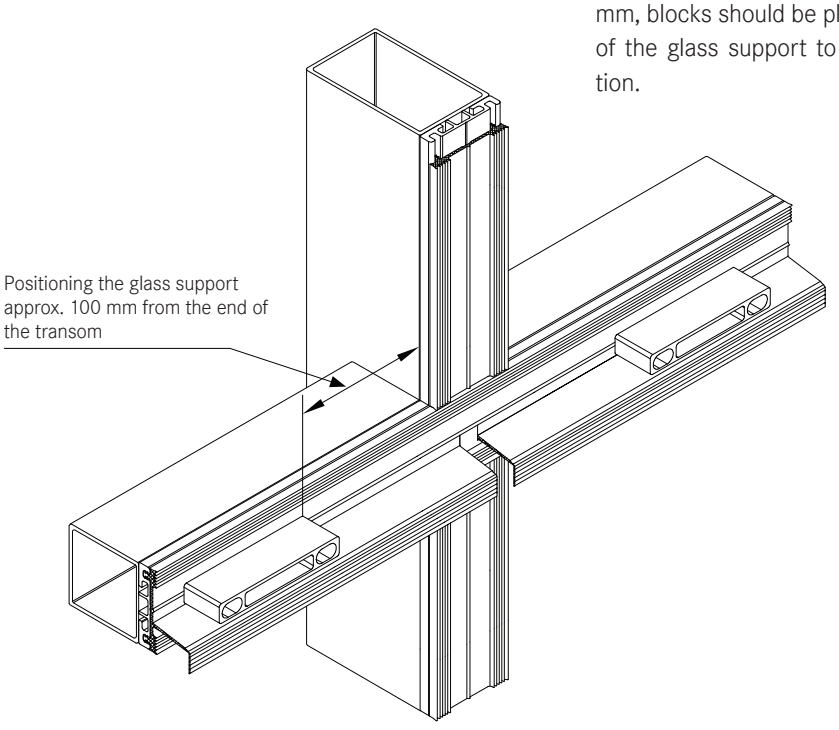
- Glass support GH 5053, i.e. GH 5055 with 2 or 3 welding studs ∅ 10 mm.
- Heavy glass loads require welded glass supports. For this purpose, flat sheets with a thickness of t = 5 mm are welded on to the transoms.

Mounting the glass supports

- Positioning the glass supports and glazing according to glass industry guidelines and guidelines of the Institute for Window Technology.
- The weight of the glass panes is distributed via the glass supports attached to the transoms.
- Glass supports should be attached at an interval of **100 mm** from the end of the transom. When doing so, avoid a collision with the cover strip screw fittings at the end of the transom.

Glazing blocks

- Glazing blocks must be compatible with the edge bonding of the insulated glass panes.
- They should be stable under constant pressure and be able to withstand loads, aging and temperature changes.
- It is important that the blocks ensure circumferential pressure equalisation and that drainage of condensation is not obstructed as well as allowing the glass edges to be offset and small design tolerances to be accommodated.
- If the length of the glass support is more than 100 mm, blocks should be placed along the entire length of the glass support to ensure equal load distribution.



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Glass inset and glass support

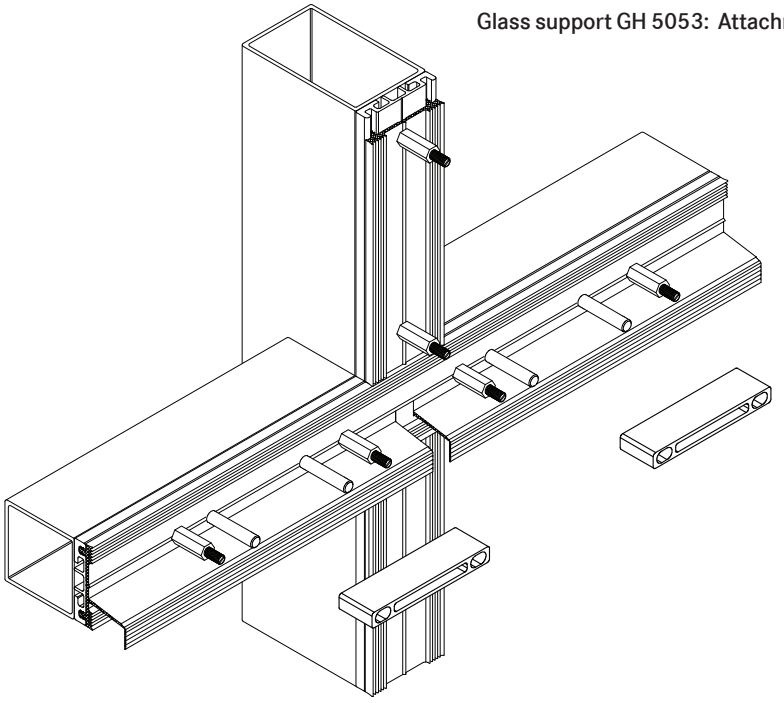
Glass support GH 5053 with bolts

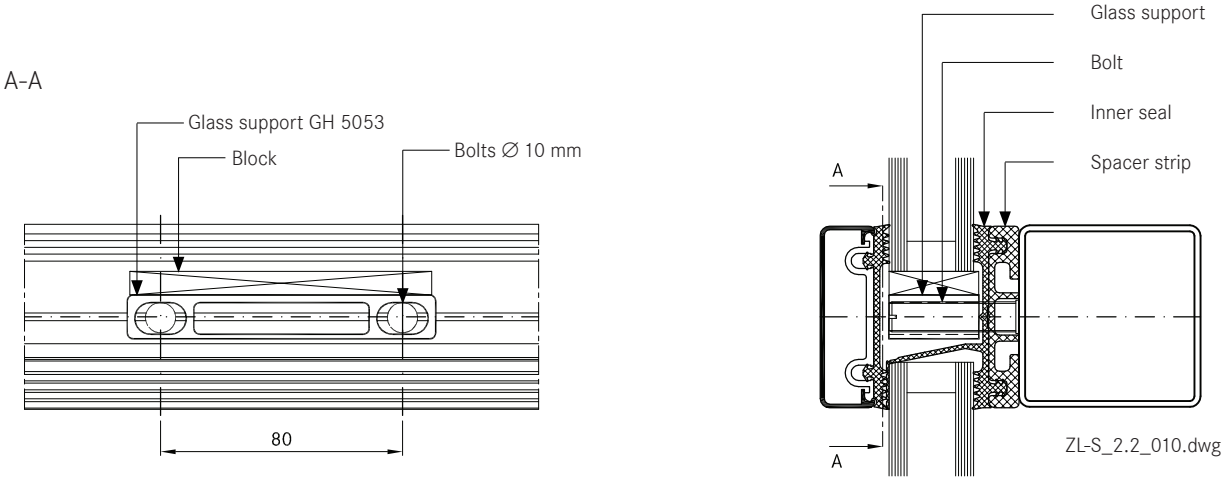
- The glass support consists of the Stabalux system component GH 5053 and 2 welding studs ⌀10 mm, which must be made available on the building site.
- The glass supports GH 5073 are manufactured using aluminium in EN AW 6060 quality, condition T66.
- The depth of the glass supports depends on the installed thickness of the glass panes and the geometry of the inner seal. The require cuts are delivered to match glass support GH 5053.
- The bolts must be sufficiently protected against corrosion and be suitable for weld connections with the steel grade of the supporting structure. Stainless steel bolts must be used otherwise.
- The length of the bolts is calculated based on the installed thickness of the glass panes plus the height of the inner seal and the height of the spacer strip.
- The centre distance between the bolts is 80 mm.
- The bolts must be welded in the centre of the transom in the substructure to disperse the load from the glass. Screw fittings must be positioned vertically to the transom.
- The spacer strip should also be pre-drilled with ⌀ 11 mm holes at the relevant points to attach the bolts.
- Holes must be made at the relevant points of the transom seal. Here it is important to ensure that the holes have as precise a fit as possible. We recommend sealing the holes with Stabalux Z 0094 paste.
- The glass supports are mounted loosely on the building site once the spacer strip and the inner sealing section have been fitted.
- Blocks must be placed under the glass panes along the entire length of the glass supports.
- It is essential to ensure when installing the glazing that neither the glazing blocks nor the glass supports slip.
- The glass supports (bolts) must be validated for the glass thickness, the glass weight and the selected mullion-transom connection.

Glass inset and glass support

Glass support GH 5053 with bolts

Glass support GH 5053: Attachment with welding studs



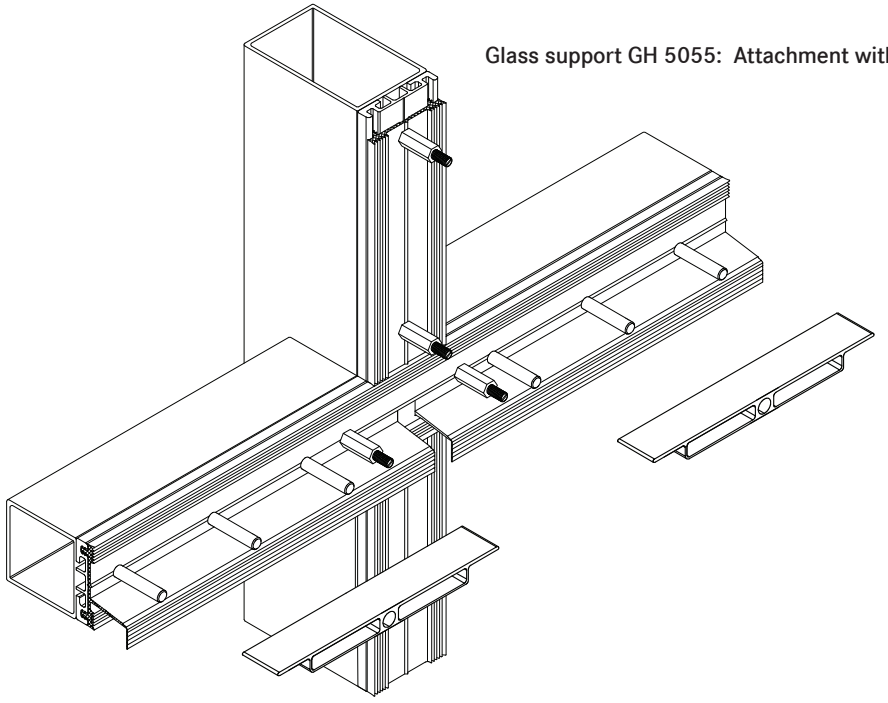


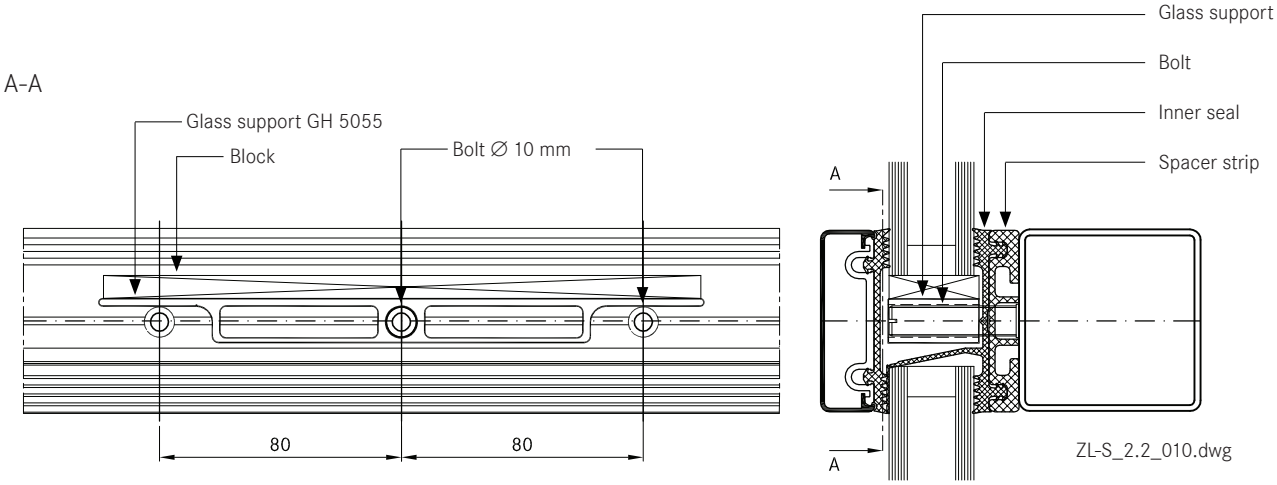
Glass inset and glass support

Glass support GH 5055 with bolts

- The glass support consists of the Stabalux system component GH 5055 and 3 welding studs ⌀10 mm, which must be made available on the building site.
- The glass supports GH 5055 are manufactured using aluminium in EN AW 6060 quality, condition T66.
- The depth of the glass supports depends on the installed thickness of the glass panes and the geometry of the inner seal. The require cuts are delivered to match glass support GH 5055.
- The bolts must be sufficiently protected against corrosion and be suitable for weld connections with the steel grade of the supporting structure. Stainless steel bolts must be used otherwise.
- The length of the bolts is calculated based on the installed thickness of the glass panes plus the height of the inner seal and the height of the spacer strip.
- Installation is performed the same way as GH 5053, but using three screws at intervals of 80 mm.

Glass support GH 5055: Attachment with welding studs





Glass inset and glass support

Classification of system components

Table 1:
Vertical glazing | System 50, 60, 80 | threaded bolt

Row	Total glass thickness t_{Glass} (mm) for vertical glazing	Glass supports [1]		
		GH 5053	GH 5055	Depth (mm)
1	4, 5, 6, 7	GH 0081	Section	9
2	8, 9	Section	Section	12
3	10, 11	Section	Section	14
4	12, 13	Section	Section	16
5	14, 15	Section	Section	18
6	16, 17	Section	Section	20
7	18, 19	Section	Section	22
8	20, 21	GH 0082	Section	24
9	22, 23	GH 0083	GH 0851	26
10	24, 25	GH 0084	GH 0852	28
11	26, 27	GH 0085	GH 0853	30
12	28, 29, 30	GH 0886	GH 0854	32
13	31, 32, 33,	GH 0887	GH 0855	35
14	34, 35, 36	GH 0888	GH 0856	38
15	37, 38, 39	GH 0889	GH 0857	41
16	40, 41, 42	GH 0890	GH 0858	44
17	43, 44	GH 0891	GH 0859	47

1) Cut from GH 5053 or GH 5055.

Glass inset and glass support

Classification of system components

Table 2:

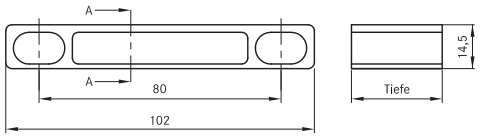
Inclined glazing | System 50, 60, 80 | Threaded bolts

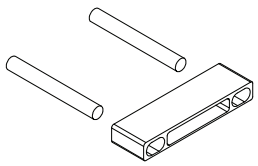
Row	Total glass thickness t_{Glass} (mm) for inclined glazing [1]	Glass supports [2]		
		GH 5053	GH 5055	Depth (mm)
1	24, 25, 26	Section	Section	18
2	27, 28	Section	Section	20
3	29, 30	Section	Section	22
4	31, 32	GH 0082	Section	24
5	33, 34	GH 0083	GH 0851	26

1) Accounting for a 10 mm inner seal.

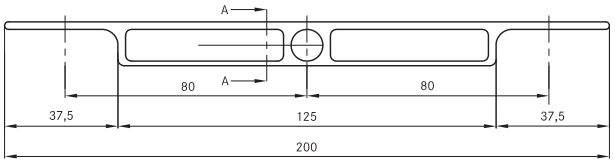
2) Cut from GH 5053 or GH 5055.

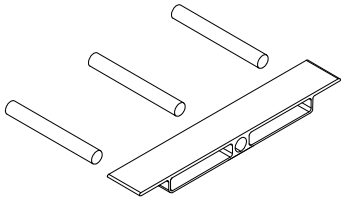
Glass support GH 5053





Glass support GH 5055





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Glass inset and glass support

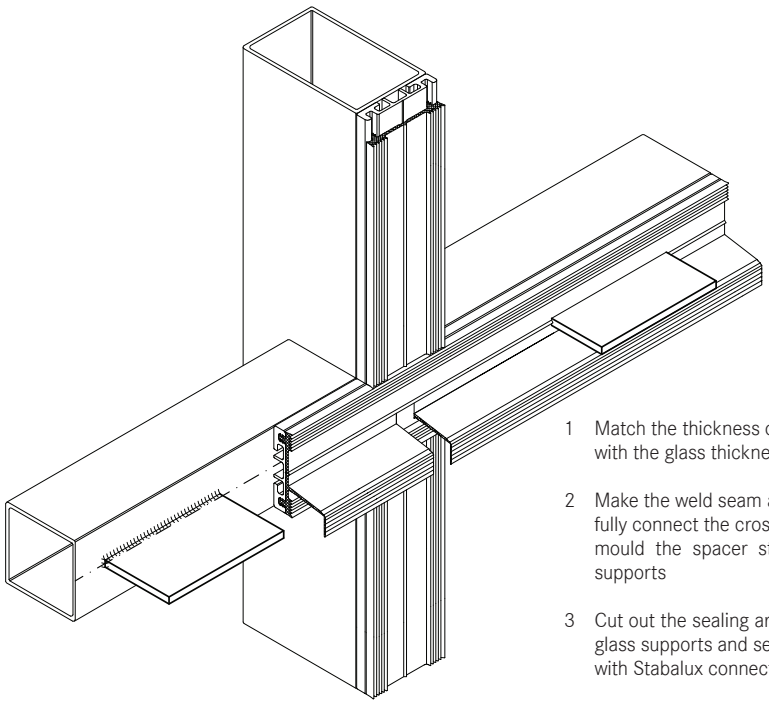
Welded glass support

- Welded glass supports made of flat steel that are welded on to the transom profiles. The glass supports must be made available on the building site.
- Flat steel in grade S235, i.e. matched with the quality of the supporting construction. It must be possible to weld the steel grades together. The weld seam must connect the entire cross section of the glass supports.
- The glass supports must be sufficiently protected against corrosion.
- The depth of the glass supports depends on the installed thickness of the glass panes, the geometry of the inner seal and the height of the spacer strip.
- The glass supports must be welded in the centre of the transom in the substructure to disperse the load from the glass. The glass supports must be positioned vertically to the transom.
- The spacer strip must be cut out at the relevant points so as to ensure that the glass support and the weld seam cannot collide.
- The transom seals must be cut out around the holes for the glass supports and then sealed using Stabalux connection paste Z 0094.
- Blocks must be placed under the glass panes along the entire length of the glass supports.
- It is essential to ensure when installing the glazing that the glazing blocks cannot slip.
- The width of the glass supports is at least 100 mm; their size must suit the static requirements.
- The glass supports must be validated for the glass thickness, the glass weights and the selected mullion-transom connection.

Glass inset and glass support

2.2
7

Welded glass support

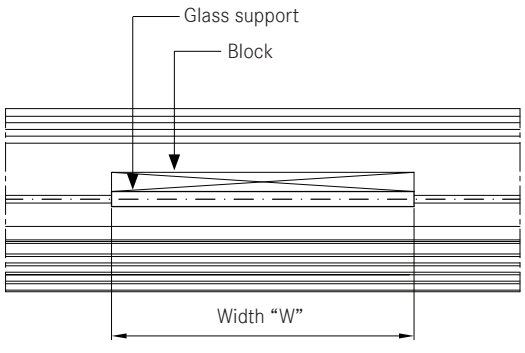


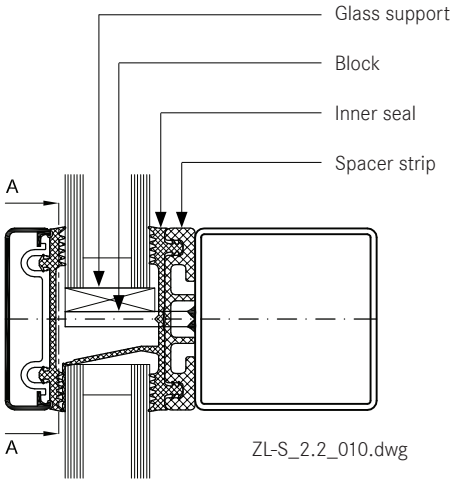
1 Match the thickness of the glass support with the glass thickness

2 Make the weld seam as even as possible, fully connect the cross section, mould the spacer strip around the glass supports

3 Cut out the sealing around the holes for the glass supports and seal with Stabalux connecting paste

A–A





Glass inset and glass support

2.2
7

Glass support GH 5055 with threaded bolt

- The depth of the glass support must be matched with the thickness of the glass.

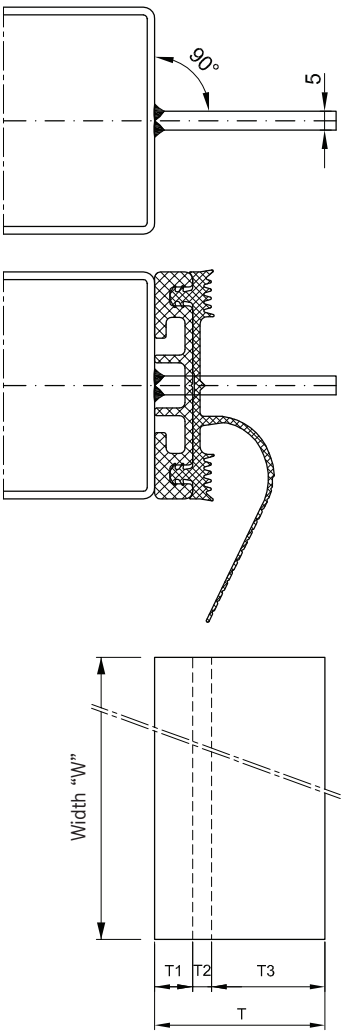
T = depth of the glass support
T1 = height of the spacer strip
T2 = height of the inner seal
(e.g. 5 m, 10 mm or 12 mm)
T3 thickness of the glass pane

T = T1 + T2 + T3

Example:

Spacer strip	T1 = 10 mm
Inner seal (e.g. GD 6030)	T2 = 5 mm
Thickness of pane 6 / 16 / 6	T3 = 28 mm

T = 10 + 5 + 28 = 43 mm



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Screw fittings

Fastenings

- The system screw fittings are a combination of basic room-side screw fittings, a coupling using a threaded socket that allows thermal separation in the rebate and a flexible bolt-nut connection or screw connection on the glazing side.

Basic room-side screw fittings

- The threaded bolts M6 can be used for the basic room-side screw fittings; they are screwed into the threaded holes, i.e. the threaded blind holes. Welding studs M6 can be used alternatively.
- The length of the threaded bolts depends on the height of the spacer strip, the height of the inner seal and the material selected for the supporting structure (mullion and transom profiles), i.e. the selected depth of the blind holes, which must be ≥ 7 mm. Grade 1.4301 A2 stainless steel bolts must be used.
- In most cases the selected welding studs should have a length of 25 mm, and they must be made available on the building site. The bolts must be sufficiently protected against corrosion and be suitable for weld connections with the steel grade of the supporting structure. Stainless steel bolts must be used otherwise.

Coupling with threaded socket

- The threaded socket is delivered in a length of 25 mm and twisted tight on to the basic screw fittings without excessively compressing the inner seal. The Stabalux threaded sockets can be delivered in stainless steel (art. no. Z 0029) or plastic (art. no. Z 0032).

Bolt nuts, i.e. screw connections on the glazing side

- The assembly consists of a threaded bolt and optionally a sealing washer and a cap nut. Screws according to DIN 6912, stainless steel 1.4301 A2 can be used alternatively.
- Screws in the Stabalux system are produced using stainless steel, usually with the material number 1.4301 DIN EN 10088.
- The length of the bolts, i.e. screws is variable and depends on the height of the spacer strip, the height of the inner seal and thickness of the glass. A sufficient screw depth in the threaded socket must be ensured.
- Threaded bolts in suitable lengths are available for all standard glass thicknesses. The length of bolt required can usually be determined using a table of figures. The combination chosen for the clamp connection will depend on the specific situation.
- Depending on the type of screw fittings selected, 2 and 4 mm vulcanised EPDM washers are available.
- The distance for screw fittings is variable. The maximum distance is **a = 250 mm**.
- The distance from the edge for the first screw fitting should generally be in the region of **30 mm ≤ a ≤ 80 mm**. The placement of the glass supports and the choice of mullion-transom connection should also be taken into account.
- The clamp connection is exclusively exposed to tensile forces. The pressure strips are connected using Stabalux system components. To determine the stress limit (maximum tensile force) and permitted tensile forces for the connection, the terms defined in the relevant general building approval and the Eurocode 3 (DIN EN 1993-3) series of standards shall apply.
- Screw fittings are applied using a conventional electric screwdriver with depth stop. This guarantees uniform application of pressure. The depth setting should be chosen so that when using 4 mm EPDM washers, a washer compression of around 1.5 - 1.8 mm is achieved.

Screw fittings

Concealed screw fittings

- Assembly is facilitated by the selection of pre-drilled clamping strips (e.g. UL 5009-L and UL 6009-L, slot 7 x 10 mm, a = 125 mm) with clippable upper strips. A round hole of d = 8 mm should be made in the remaining clamping strips. The functionality of the clip procedure can be checked after the first cover profile has been pushed against the lower strip.

Note:

When using aluminium cover profiles on roofs, take account of the expansion factor as a result of the high degree of heat absorption and its impact on the selected length. Equally, the use of single-piece cover profiles should be carefully considered. In this case it is recommended that holes for screwing on the clamping strip are created with a diameter of d = 9 mm.

Visible screw fittings

- Cover strips should be drilled with a round hole of d = 8 mm.

Note:

(see Note on concealed screw fittings)

Visible recessed screw fittings

- When creating visible recessed screw fittings a stepped bore is required. The lower part of the cover strip should be drilled with a d = 7 mm diameter. The upper part of the cover strip needs a d = 11 mm diameter for the screw head. It is recommended to install a washer (PA washer, e.g. Z 0033) with all screw fittings.

Screw fittings

Fastenings

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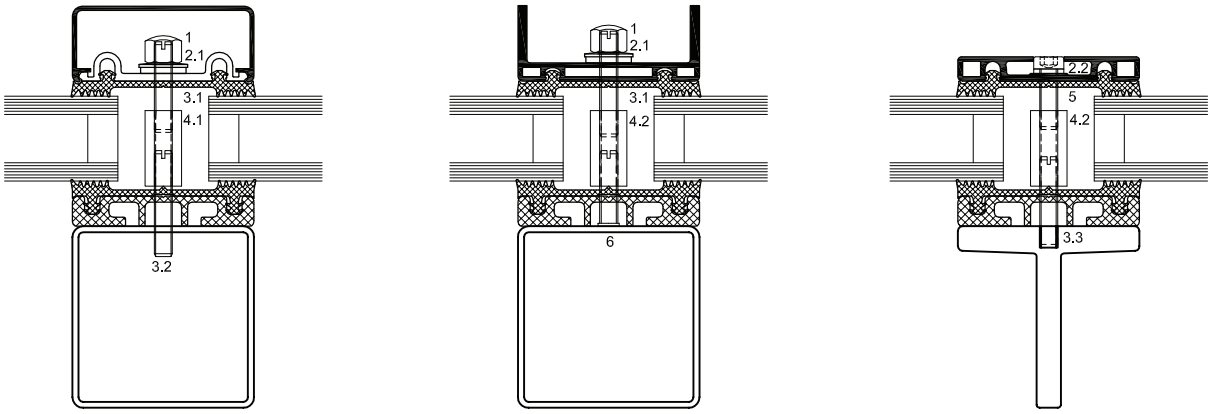


Concealed screw fittings

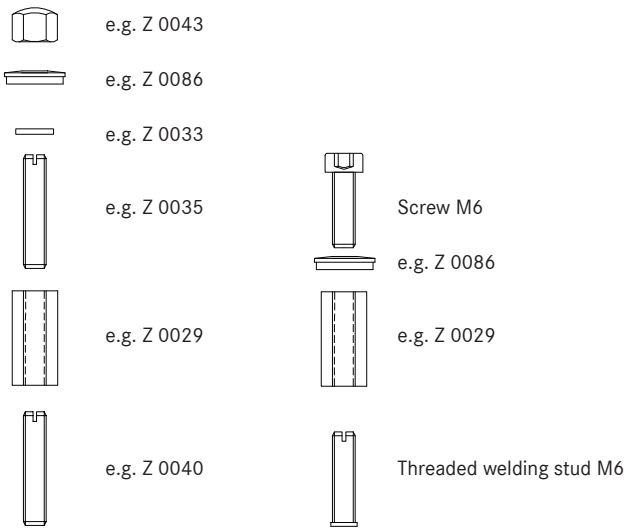
1 cap nut M6 Z0043
2.1 4 mm sealing washer Z 0086
3.1 threaded bolt M6 e.g. Z 35;
3.2 threaded bolt M6 in the threaded hole e.g. Z 0040
4.1 threaded socket M6 e.g. Z 29;

Visible screw fittings

1 cap nut M6 Z0043
2.1 4 mm sealing washer Z 0086
3.1 threaded bolt M6 e.g. Z 35;
4.2 threaded socket M6 e.g. Z 29;
6 threaded welding stud M6

Visible recessed screw fittings

2.2 PA washer Z 0033
3.3 threaded bolt M6 in the threaded hole e.g. Z 40
4.2 threaded socket M6 e.g. Z 32;
5 internal hex screw M6 e.g. GD 6912



e.g. Z 0043

e.g. Z 0086

e.g. Z 0033

e.g. Z 0035

Screw M6

e.g. Z 0086

e.g. Z 0029

e.g. Z 0029

e.g. Z 0040

Threaded welding stud M6

Screw fittings

Calculating the screw length

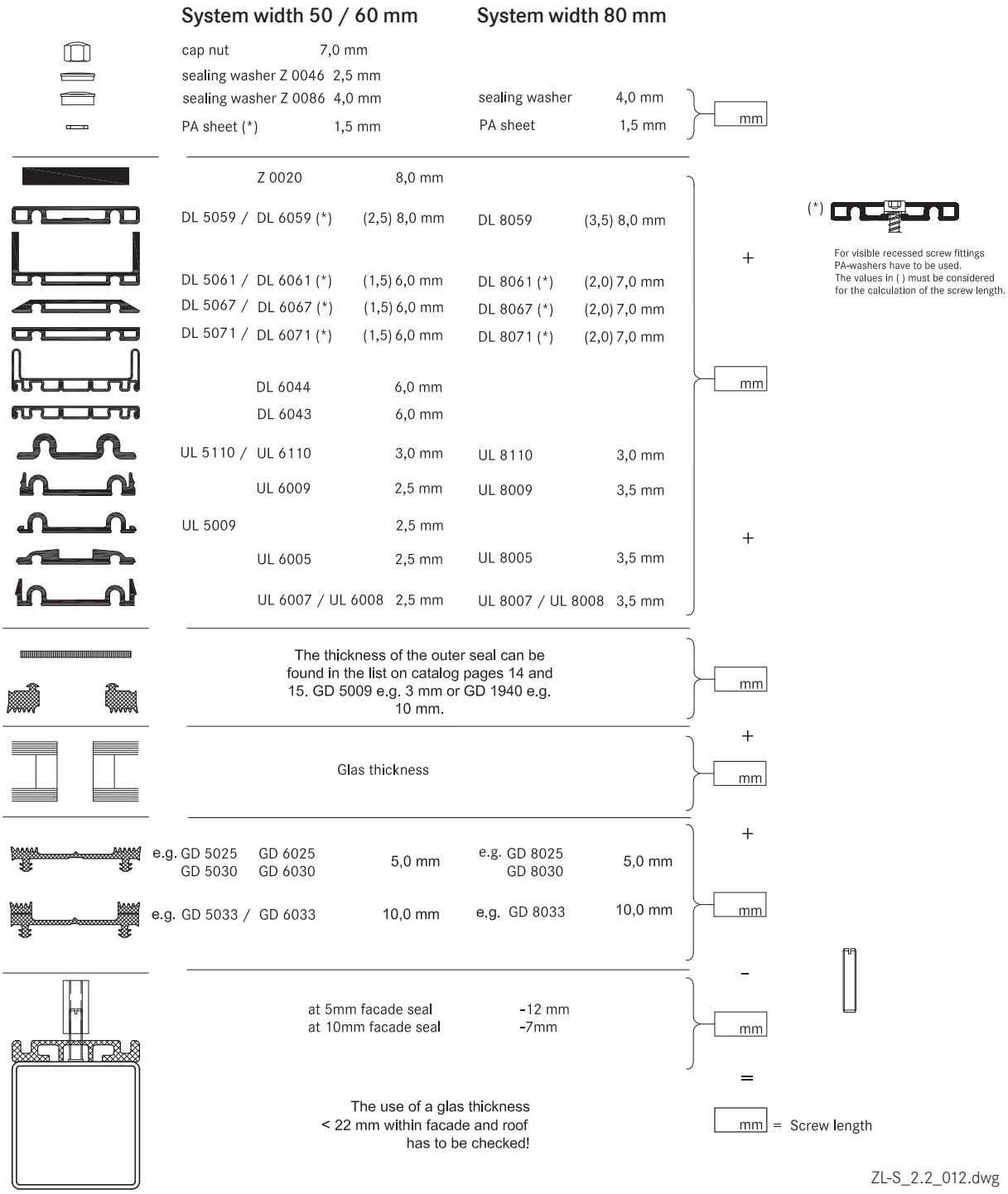
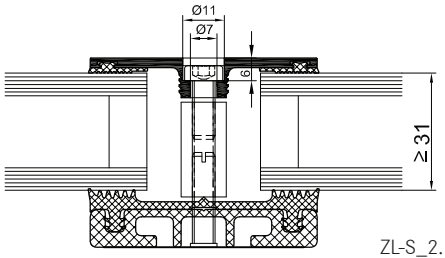


Diagram and item numbers are examples for System 60.

The calculation is the same for system 50.

Screw fittings

Calculating the screw length



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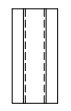
Attention!

The calculation to determine screw lengths for the the calculation to determine screw lengths is:

Glass thickness - 14 mm with facade seal (5 mm)
Glass thickness - 9 mm with facade seal (10 mm)
Glass thickness - 7 mm with facade seal (12 mm)

System screws for Stabalux ZL



Cap nut		
Z 0043	Cap nut, stainless steel M6	

Sealing washers		
Z 46	U washer, stainless steel,	with 2 mm seal
Z 0086	U washer, stainless steel,	with 4 mm seal

Threaded bolts		
Z 0034	Threaded bolts, stainless steel	M6 x 20 mm
Z 0038	Threaded bolts, stainless steel	M6 x 25 mm
Z 0035	Threaded bolts, stainless steel	M6 x 30 mm
Z 0040	Threaded bolts, stainless steel	M6 x 35 mm
Z 0036	Threaded bolts, stainless steel	M6 x 40 mm
Z 0037	Threaded bolts, stainless steel	M6 x 50 mm
Z 0044	Threaded bolts, stainless steel	M6 x 60 mm
Z 0045	Threaded bolts, stainless steel	M6 x 75 mm
Z 0039	Threaded bolts, stainless steel	M6 x 90 mm
Z 0053	Threaded bolts, stainless steel	M6 x 100 mm
Z 0054	Threaded bolts, stainless steel	M6 x 120 mm

Threaded sockets		
Z 0029	Threaded socket, stainless steel	M6 x 25 mm
Z 0032	Threaded socket, stainless steel	M6 x 25 mm

Flat cover strip DL 5073 / DL 6073

Tips for laying the cover strip DL 5073 / DL 6073

We assume that this cover strip will be used with glass panes that are supported on two sides and the recessed screw head is concealed. In this case, a cylinder head screw with inner hex is to be used (e.g. M6 DIN 6912 stainless steel A2 with low head). When covering with a 2 mm cover plug Z 0089, a bore depth of 6 mm is calculated.

Depending on the precision of the bore, it should be decided on case by case basis if any slight changes to this depth are necessary. The cover plug Z 0089 does not need to be glued in place, but may be levelled using levelling compound.

Coating the cover strip

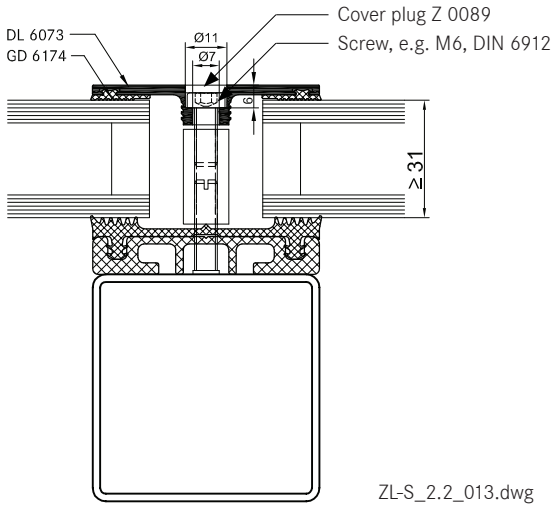
Profile production (aluminium extrusion moulding) with different mass distribution is extremely difficult. Lengthwise shadow formation may result. Resulting actions are to be taken with the agreement of the coater.

Intersections

Due to the special shape of the strip (the material extends into the rebate), there is no closed sealing section available at intersections. We therefore recommend placing particular attention to ensure tightness of the joints and fill will Stabalux connecting paste Z 0094.

Glass supports/blocking

Special attention should be given to dimensional proportions. Glass supports should be designed by the processor depending on the glass thickness and weight (e.g. for welded glass supports).
To support the outer pane, a sufficiently large glazing block must be installed that can carry the load to safely ensure the glass load is distributed effectively.



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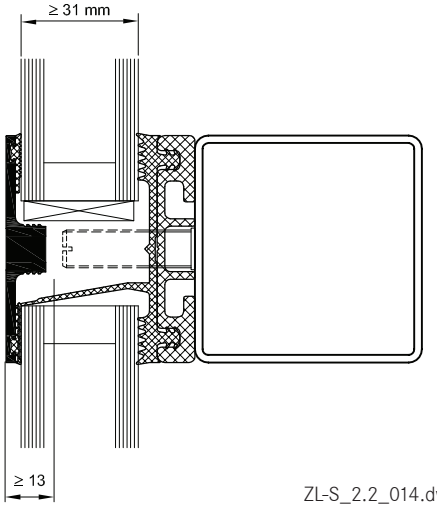

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Slab insulation

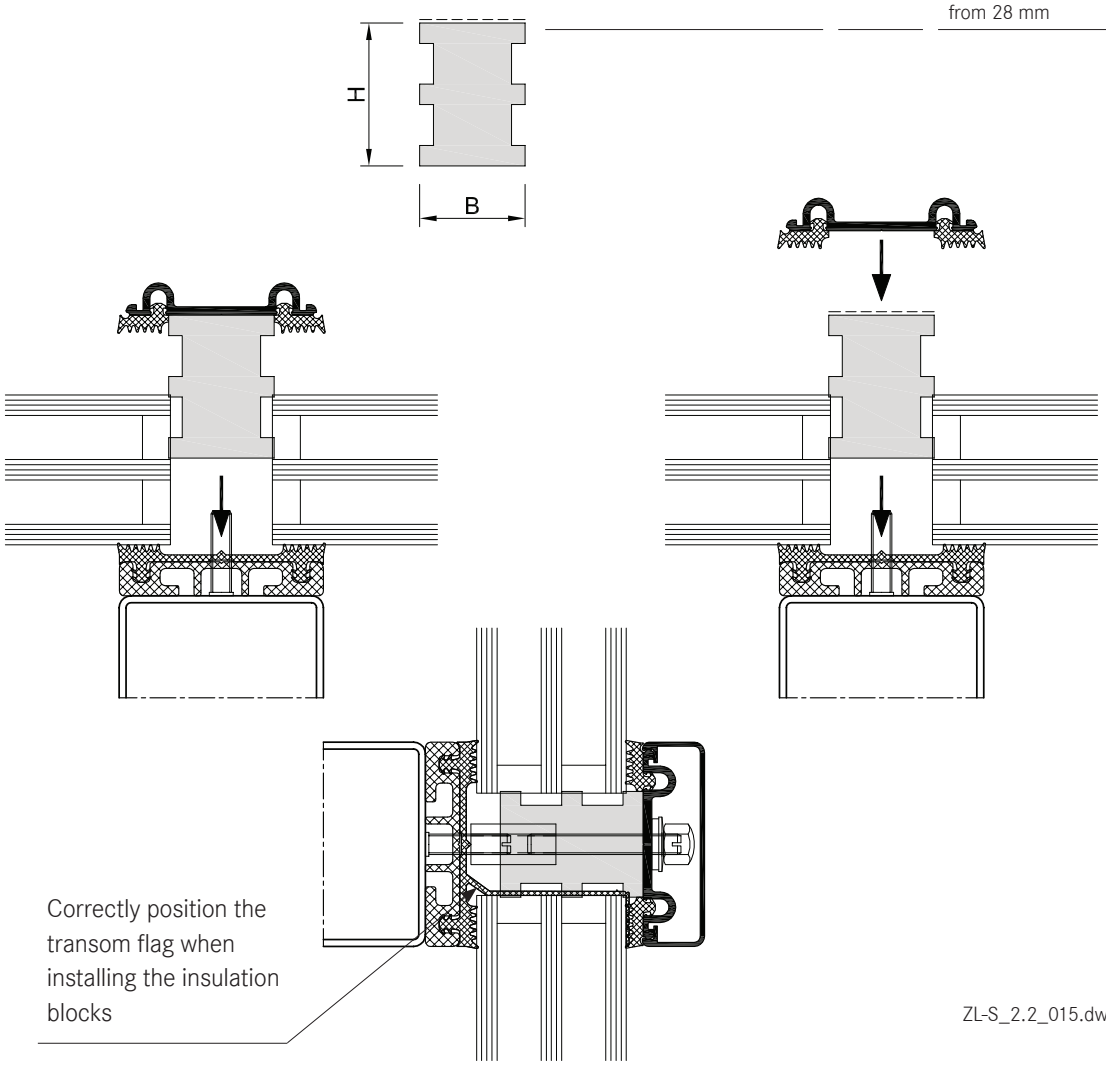
Use of slab insulation

- Using insulation blacks significantly reduces heat dissipation.
- The highly effective slab insulation has a permanently adhesive HOT-MELT.
- Depending on the situation where they are used, insulation blocks can be directly applied to the cover strip/lower strip or placed into the rebate over the screw fittings and pushed into position with the cover strip/lower strip. The type of screw connection (bolt-socket-bolt) means that a groove must first be cut in the insulating block at the points of connection.
- With system width 80 mm and a 40 mm rebate 2x 20 mm wide slab insulation blocks can be combined (40 mm wide insulation blocks available upon request).

Note:

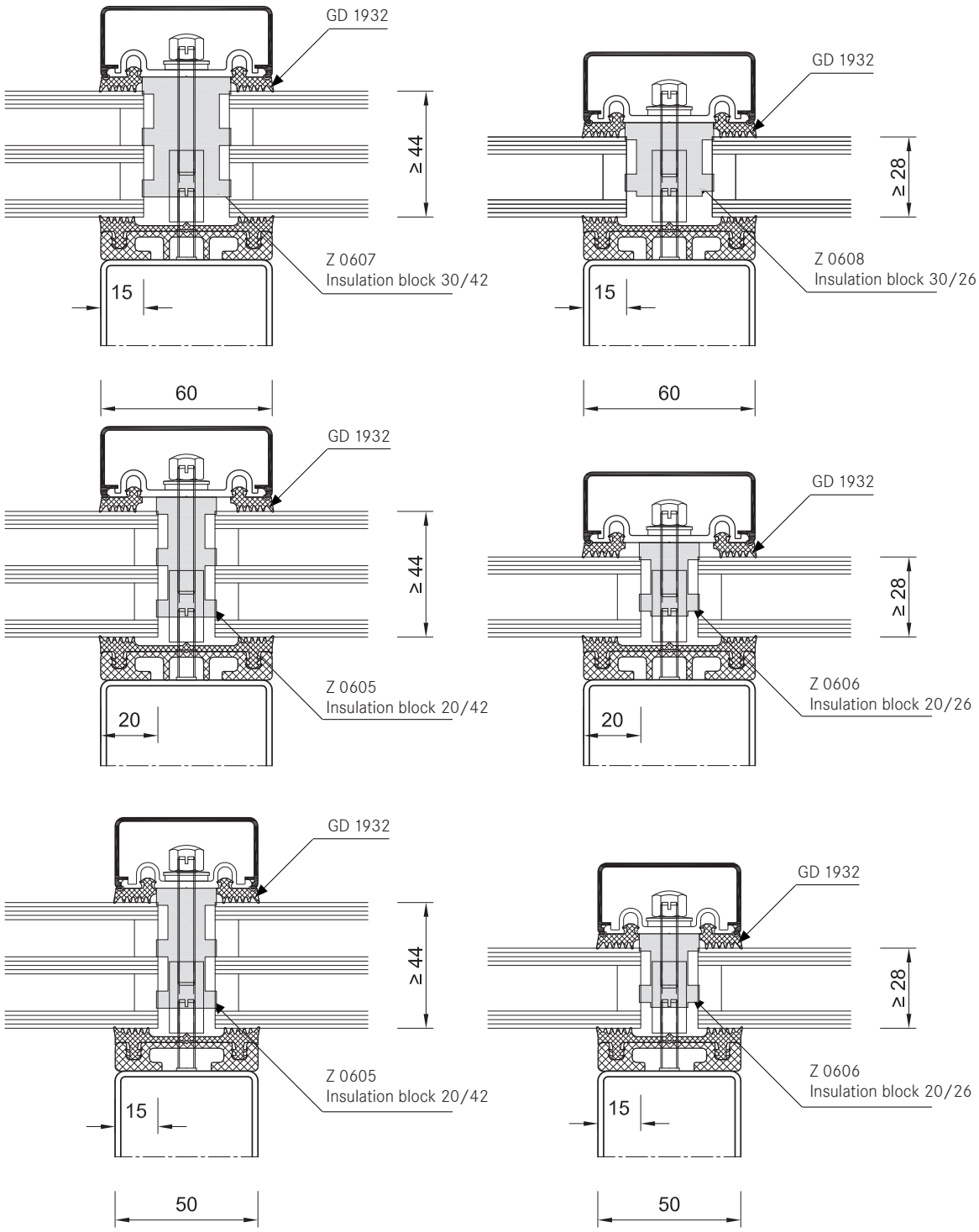
- The use of slab insulation with cover profiles DL 5073 / DL 6073 should be tested for each individual situation.
- 2-piece outer seals are always used with slab insulation blocks: for example outer seal GD 1932

Insulation block	Width (=rebate)	Height
Z 0605 insulation block 20 / 42	20 mm	42 mm, glass thickness from 44 mm
Z 0606 insulation block 20 / 26	20 mm	26 mm, glass thickness from 28 mm
Z 0607 insulation block 30 / 42	30 mm	42 mm, glass thickness from 44 mm
Z 0608 insulation block 30 / 26	30 mm	26 mm, glass thickness from 28 mm



Slab insulation

Examples:



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Pane support variants

2.3
1

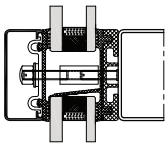
Special design

Glass structures that partially refrain from using visible cover profiles are considered **special designs.**

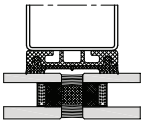
These designs **do not** conform to the intended uses of the system. No guarantees are made for e.g. quality of seals, durability and structural stability. Responsibility here lies entirely with the company implementing the design.

Based on our experience we recommend paying close attention to the points made on the following pages during planning and implementation.

Mullion-transom structure, 2-sided cover strip

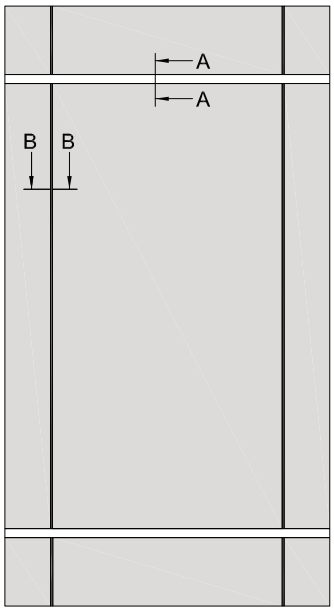


Cut A - A



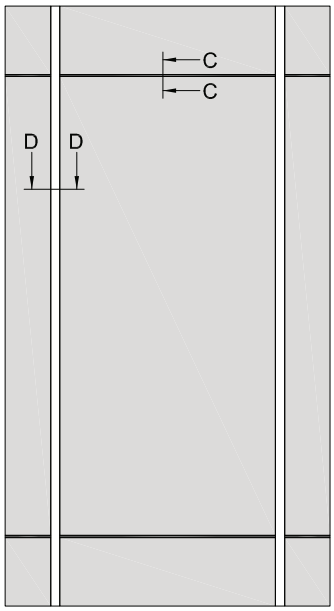
Cut B - B

Mullion-transom structure with transom cover profiles [1)]

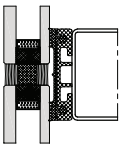


[1)] Seals with 1, 2 or 3 sections are possible

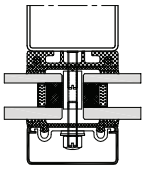
Mullion-transom structure with mullion cover profiles [2)]



[2)] Use of mullion seals with 1 section in mullions and transoms



Cut C - C



Cut D - D

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Pane support variants

2.3
1

Vapour seal:

When using this type of structure, it is important to be aware that any loss of contact pressure can affect the room-side permeability. There is an increased risk of condensation build up in the rebate.

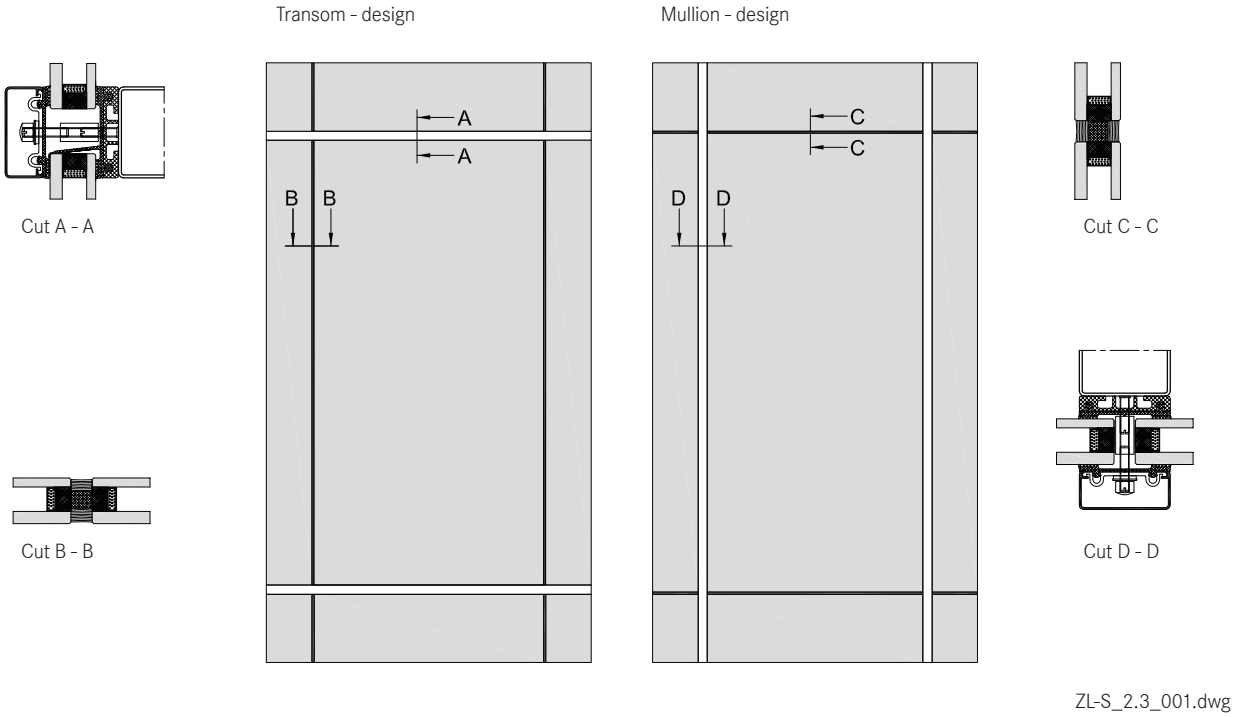
Vertical clamping strips

The glass supports should be placed to below the outer pane and sealed with it.

Horizontal clamping strips

Ventilation and condensation drainage is achieved via a recess in the lower sealing lip in the centre of the outer seal or at one third intervals.

Transom structure, mullion structure 2-sided cover strip



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Pane support variants

Design requirements

1 Vapour seal:

The room-side level of glazing must have the best possible vapour seal. In this regard, the vapour diffusion properties of the silicone sealant to be used should be tested.

Ensure that there are no permeable areas around concave cross joints.

2 Rebate ventilation, pressure equalisation and condensation drainage

Systems with partially sealed rebate represent a limitation to rebate ventilation. Check on a case-by-case basis that no damage will be caused by standing condensation. It is especially critical that designs with sealed vertical joints are evaluated. To allow ventilation of the horizontal rebate we recommend installing a suitable vertical ventilation space. Alternatively, ventilation can be achieved using the outer joints.

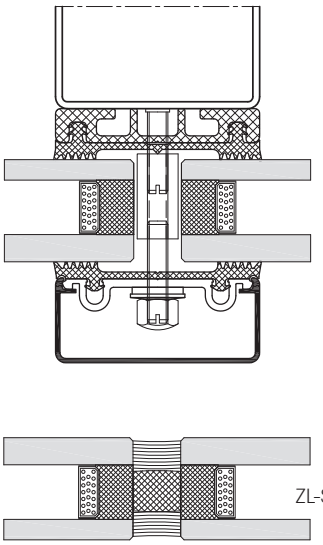
3 Weatherproofing

The outward facing seals must be watertight. In cross joints, it is especially important to ensure a firm join between the Stabalux profile seal and the silicone joints. We recommend sealing up to the outer edge of the glass before mounting the cover profiles.

We would like emphasise once again that our profile seals will not make a permanent bond with commonly used silicone sealants. A seal can only be created at contact points through permanent application of pressure.

4 Mechanical strength of the screw fittings

Ensure screw fittings are of a sufficiently size. Special attention should be given to the effects of wind suction and the reduced support.



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5 Glass weight distribution

Mechanical distribution of the weight of the glass panes through the structure must be ensured. System glass supports can be used for existing horizontal transoms. Designs using “only” mullions require special glass supports which carry the weight of the glass directly into the mullions.

6 Glass sizing

Attention should be given to the reduced support of panes when dimensioning the glass. For example, only the vertical or horizontal cover profiles are effective in the event of wind suction stresses or stress on the fall protection.

7 Material compatibility

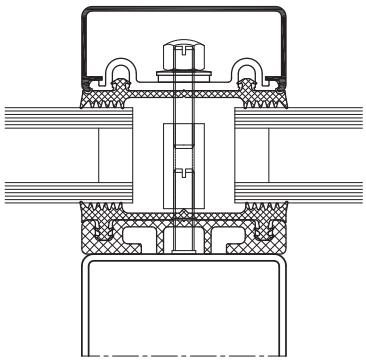
Compatibility of the silicone sealants with our profile sealants and the edge bonding of the glass must be ensured. We recommend the exclusive use of tested silicone sealants from the whole-glass facades sector. Approval is usually given by the silicone manufacturer.

System cross sections

2.3
2

Examples:

1



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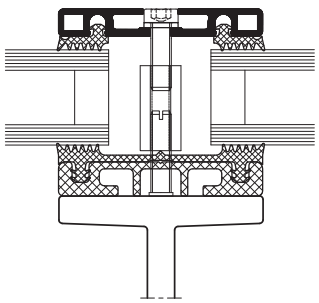
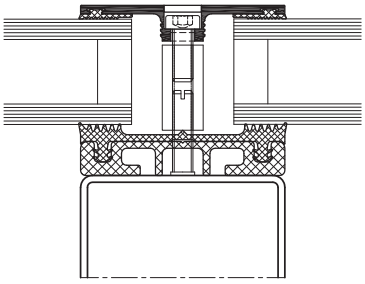


3



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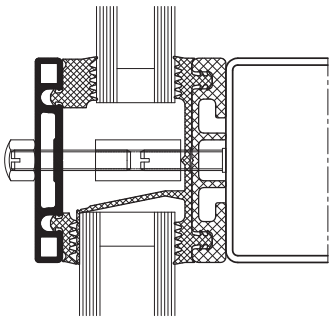

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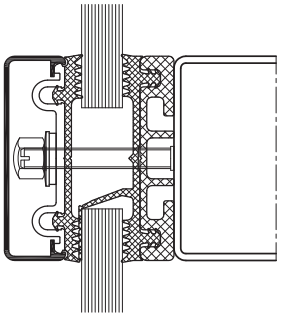

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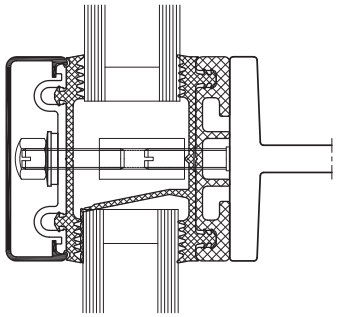

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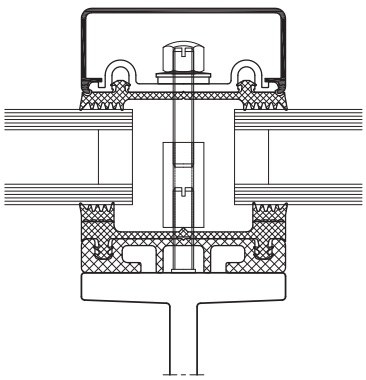

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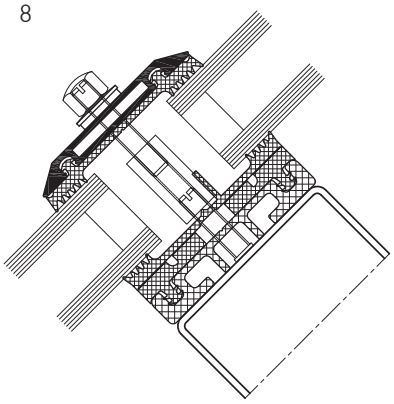


ZL-S_2.3_001.dwg

1 Vertical glazing, mullion
concealed screw fittings

2 Vertical glazing, mullion
visible screw fittings

3 Vertical glazing, mullion
flat cover strip DL 5073 / DL 6073

4 Vertical glazing, transom,
visible recessed screw fittings,
Outer seal for height compensation

5 Vertical glazing, transom,
concealed screw fittings,
single glazing,

6 Vertical glazing, transom,
concealed screw fittings,

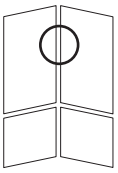
7 Inclined glazing, mullion,
concealed screw fittings

8 Inclined glazing, transom
visible screw fittings

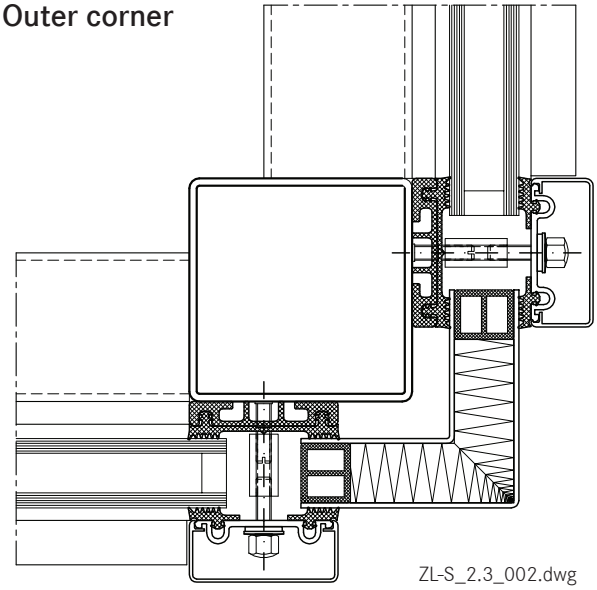
System details

Creating facade corners

At exposed areas such as glass facade corners, it is particularly important to ensure sufficient heat insulation in order to avoid the creation of thermal bridges and prevent a build-up of condensation. Thermal current calculations provide information about the actual heat loss.

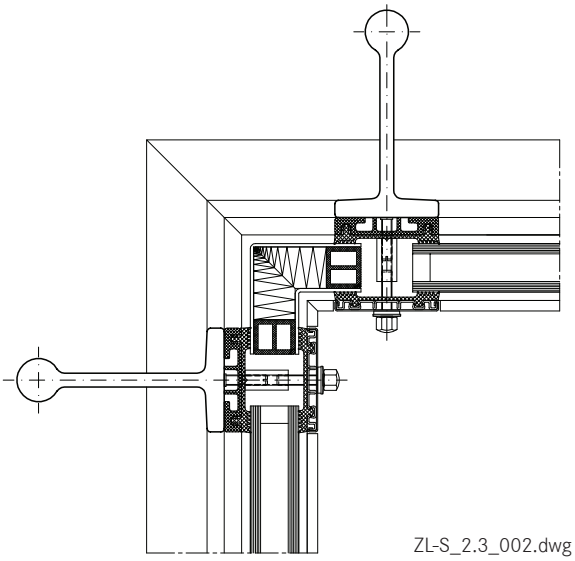


Outer corner



ZL-S_2.3_002.dwg

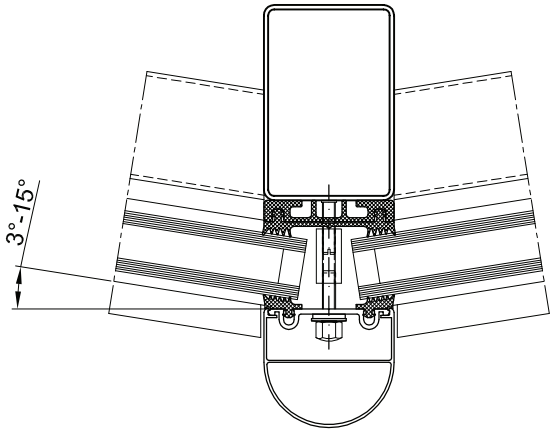
Inner corner



ZL-S_2.3_002.dwg

Facade polygon

Special seal allow a polygon shaped arrangement of the facade mullions. For convex glass surfaces an angle between 3° and 15° can be freely chosen. For concave glass surfaces the angle can vary between 3° and 10°.



ATTENTION:
Adhere to the minimum glass inset!

Determine the threaded bolt length using consideration of the angle

Geometrically check the feasibility.
Recommendation: Use System 60 at minimum

ZL-S_2.3_002.dwg

System details

Eaves with glass roof connection

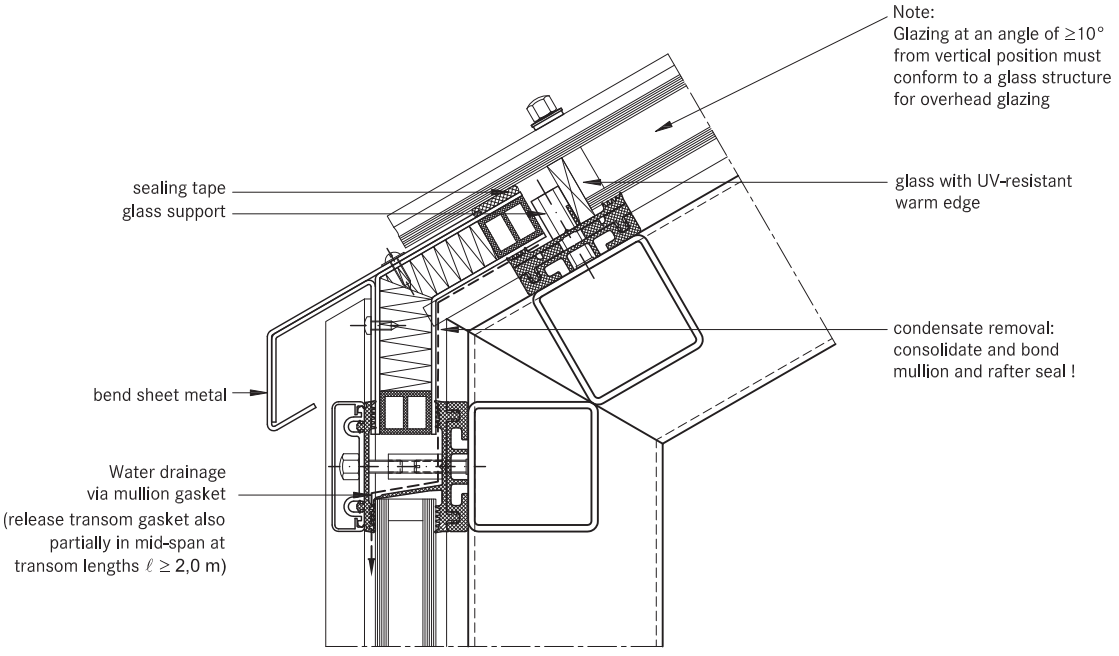
- Depending on the construction of the transoms, a design with or without rain gutters and the choice of stepped glazing or closable cover profiles gives us different variants for implementation.
- All options require condensation and moisture to be drained away at the eaves.

Design with stepped glazing

- With a stepped glazing design it is important to select a UV-resistant edge bonding for the glass. This edge bonding systems, usually silicone-based, are quite permeable to gases and are therefore unable to achieve the required high values for sound and heat insulation of conventional systems , i.e. require additional sealing around the edges.
- Our thermal calculations show that stepped glass panes, compared to covered glass edges, have a much less favourable isothermal movement.
- Stepped glass panes must also be statically measured according to their reduced hold against wind suction.
- The additional thermal loads that occur in stepped glass panes should countered by the use of pre-tensioned glass (TVG, ESG) for the outer panes.
- Stepped glass panes should be preferred for flatter inclined roofs as water can drain away at the eaves unhindered.

Example 1:

Design with stepped glazing



ZL-S_2.3_003.dwg

System details

Eaves with glass roof connection
Design using cover profiles

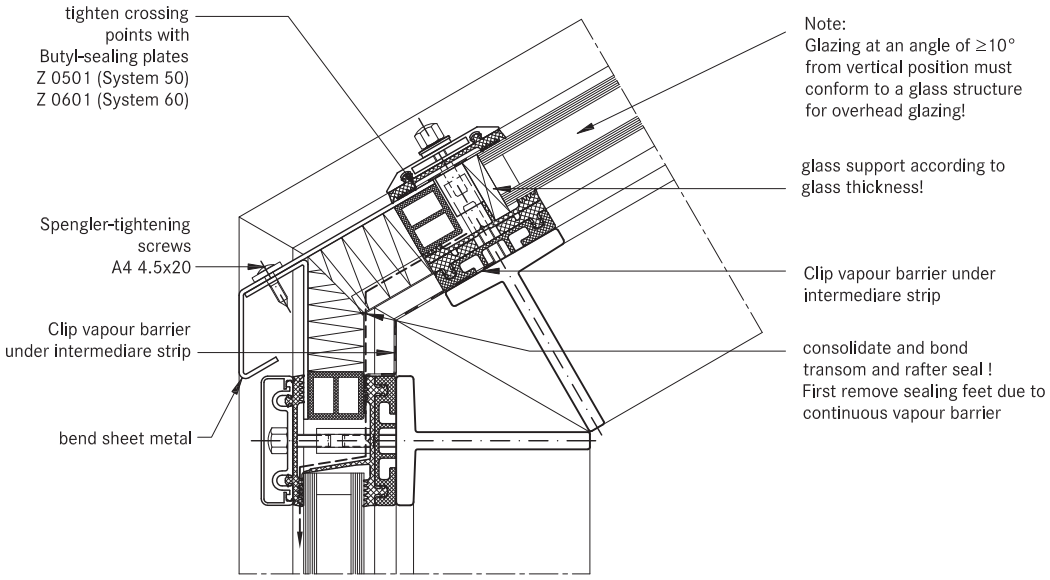
- Horizontal pressure strips prevent the free run off of rain water and dirt.
- Cover strips with angled edges reduce the build up of water in front of the cover strip.
- The outer sealing level on glass roofs must also be thoroughly sealed.
- In combination with our butyl clad stainless steel panels, glazing with pressure strips on 4 sides achieves a higher level of safety.
- Make sure that the inner sealing section provides guaranteed drainage for condensation.
- To improve drainage and heat-induced expansion, cover profiles should be shortened by 5 mm at transom joints. Gasket joints, however, are to be laid flat with a slight excess in dimensions. Open ends of the transom cover profiles must be sealed.

Note:

Due to the increased thermal stresses in the roof, we recommend using concealed screw fitting when choosing clamping strips for larger system lengths and in rafters. Unused holes in the lower strip must be sealed.

Example 2:

Design using cover profiles



ZL-S_2.3_004.dwg

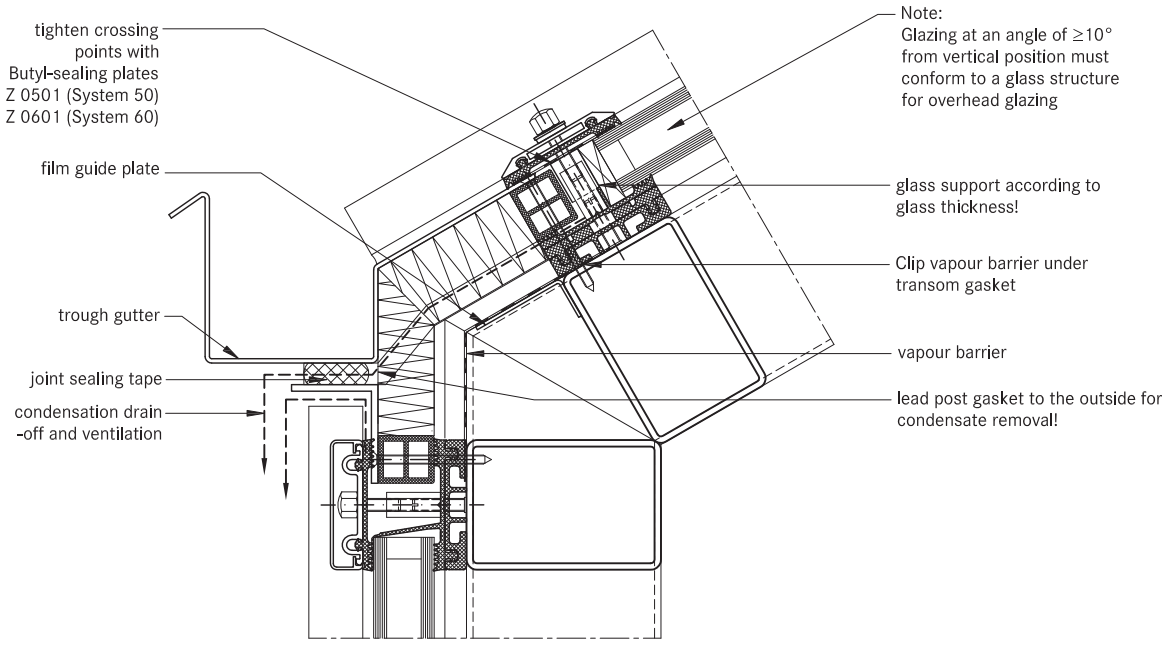
System details

Eaves with glass roof connection
Design with gutter

- The gutter must be able to take its own weight and mounted in such a way that stresses from its own weight, water and ice will not lead to deformations and directly apply a load to the glazing.
- Overflowing water must not be able to get inside the structure. Alongside the gutter-shaped outer rafter seal, the moisture barrier installed over the guide plate also acts to drain away condensation.

Example 3:

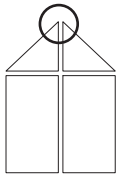
Design with gutter



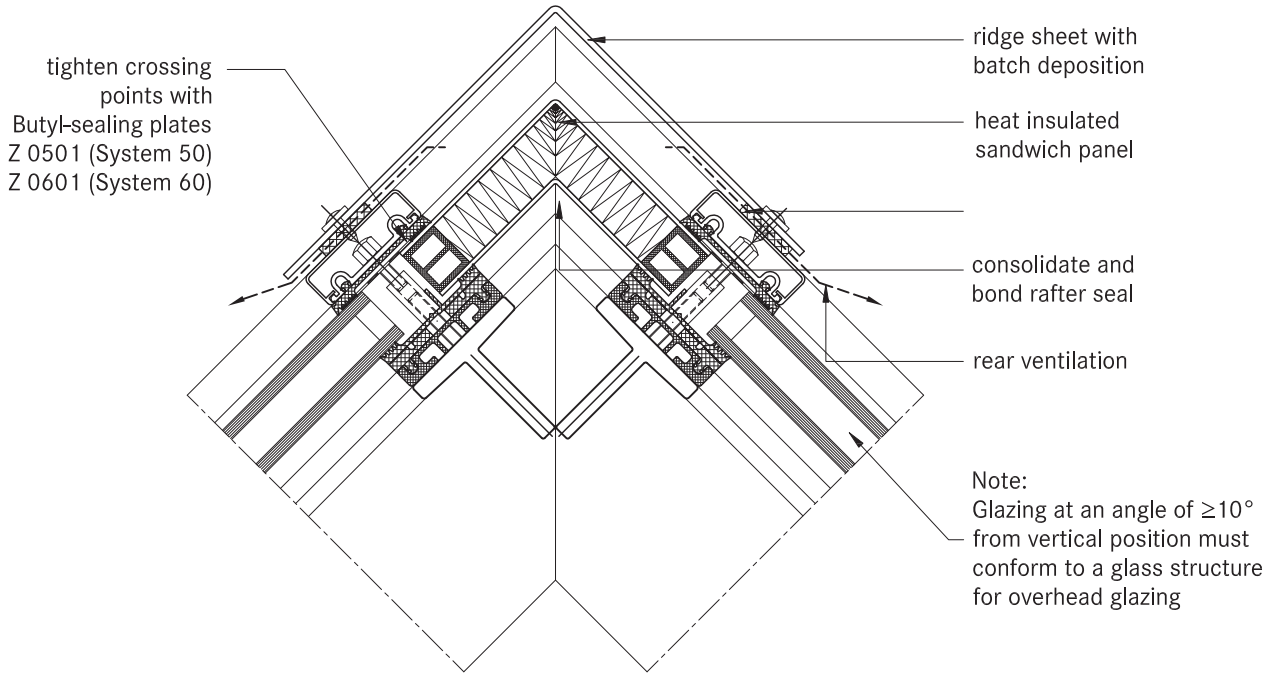
ZL-S_2.3_005.dwg

System details

Roof ridge design



- When designing the ridge cap, ensure that the rafter cover profiles are pulled under the ridge cap.



ZL-S_2.3_006.dwg

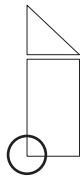
Structural attachments

Structural attachment film baffles

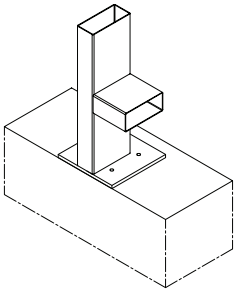
- Attachment of glazing to the building structure requires a well thought out approach.
- Moisture damage can occur if moisture condenses at any thermal bridges.
- Thermal bridges must be avoided and warm air from the inside spaces must not penetrate too deeply into the structure.
- The required moisture barriers must be installed as deeply as possible into the inner space using impermeable structural film baffles. This prevents moisture penetration into the structure via condensation from the air inside.
- An additional foil to seal against rainwater must be permeable to moisture. Only if this foil has a water vapour diffusion resistance value μ of max. μ = 3000 can a dry structure be guaranteed in the transition zones.

Structural attachments

Facade base

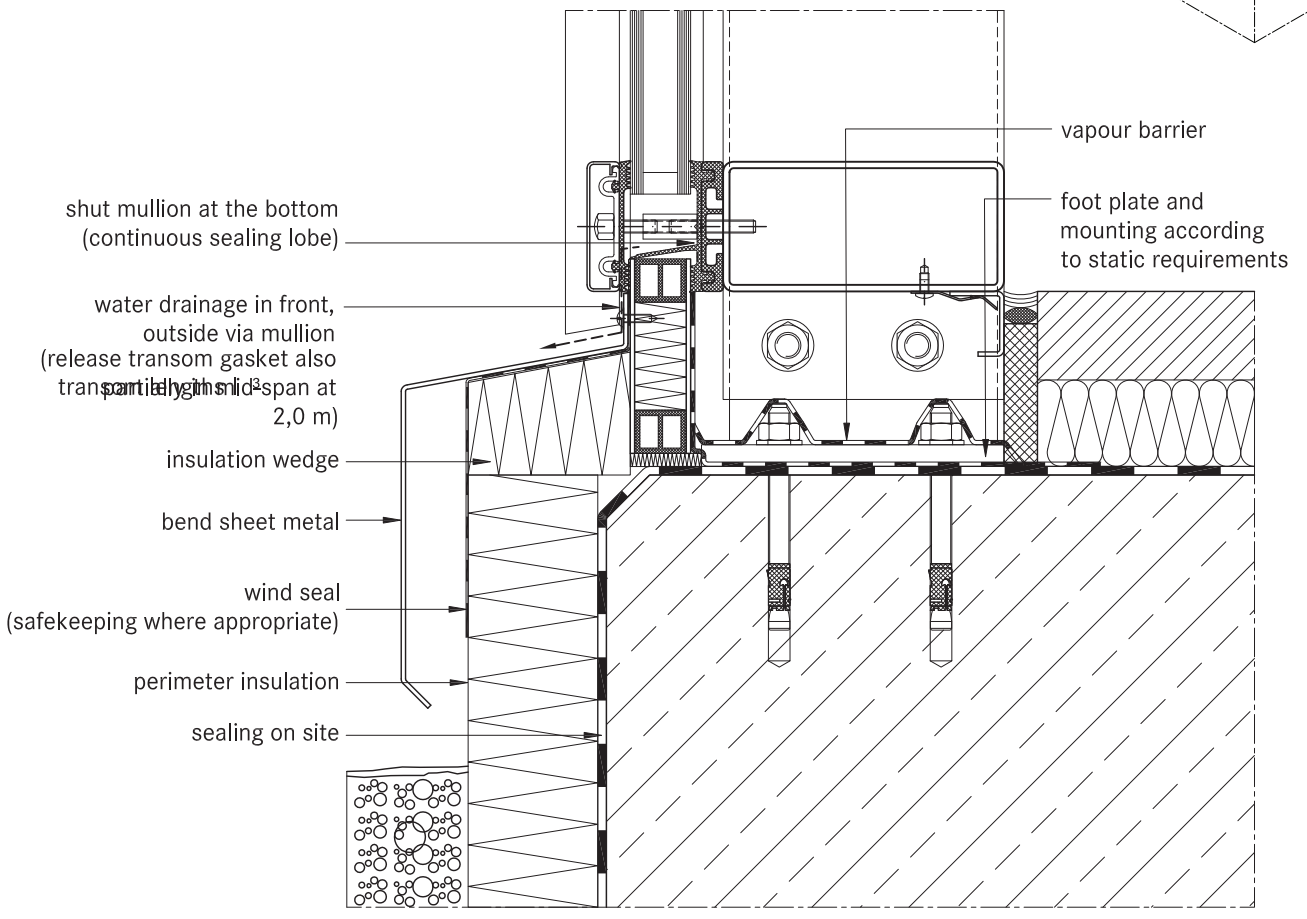


- Controlled drainage of the rebate space can only be ensured if the sealing sections overlap in such a way that no moisture can get under the seals and foils.
- Run foils under the transom seal to act as a moisture barrier and glue to the steel structure. In accordance with DIN 18195 the seal should be run at least 150 mm above the water-guiding layer.
- Attach foil with moisture barrier in accordance with the requirements of DIN 18195.



Example 1:

Mounting intermediate mullion to base plate

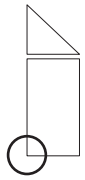


ZL-S_2.3_007.dwg

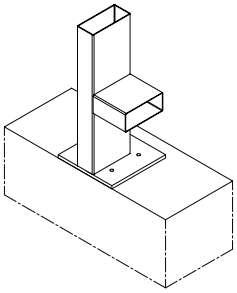
Drainage of the base area is achieved via the transom flag towards the outside. In this case the transom flag around the mullion at the base should not be released. For edge mullions, ensure there is a corresponding seal placed (continuous transom seal up the to the end point) and a constructive design of the drainage section.

Structural attachments

Facade base

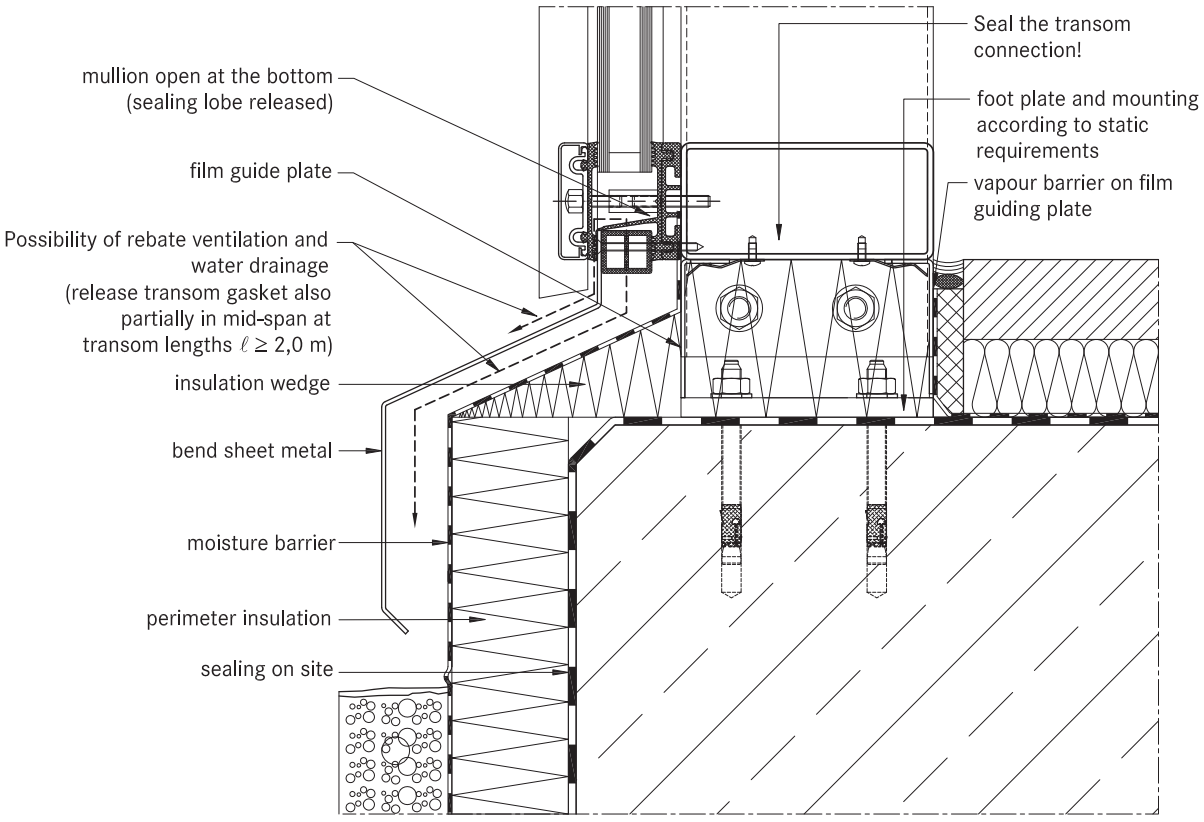


- Rebate space ventilation is achieved via the open end of the vertical cover profiles.
- Ensure the connection is impermeable to vapour.
- Mullion mountings must be sufficiently statically dimensioned. Required axis and edge distances for anchoring the base plates and in the building structure must be observed.



Example 2:

Mounting intermediate mullion to base plate

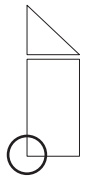


Where transom flags are interrupted by joints, filler rods in the joint must also be cut.

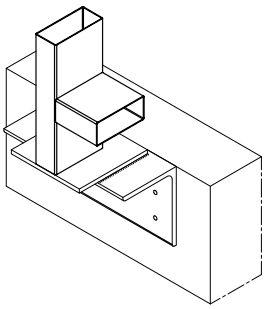
ZL-S_2.3_008.dwg

Structural attachments

Facade base

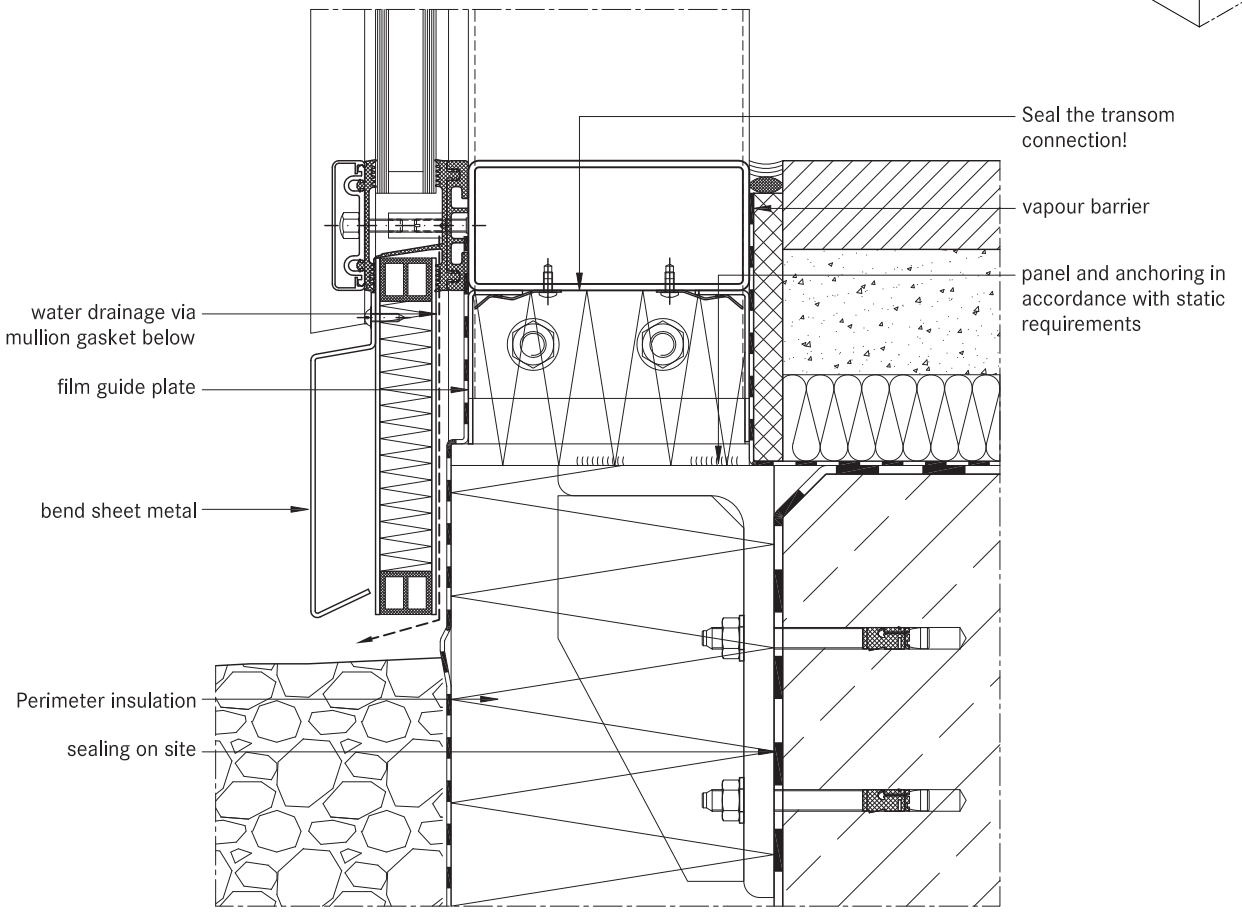


- Heat insulation around the structural connection should be designed in such as way as to prevent cold bridges forming.
- Steel parts should also be provided with sufficient protection against corrosion even in concealed areas.
- Weather-protection sheets should be used depending on the requirements of the construction. Sufficient rear ventilation must be ensured.



Example 3:

Attaching intermediate mullions at base plates

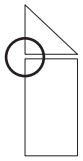


ZL-S_2.3_009.dwg

Structural attachments

Connection before intermediate floors

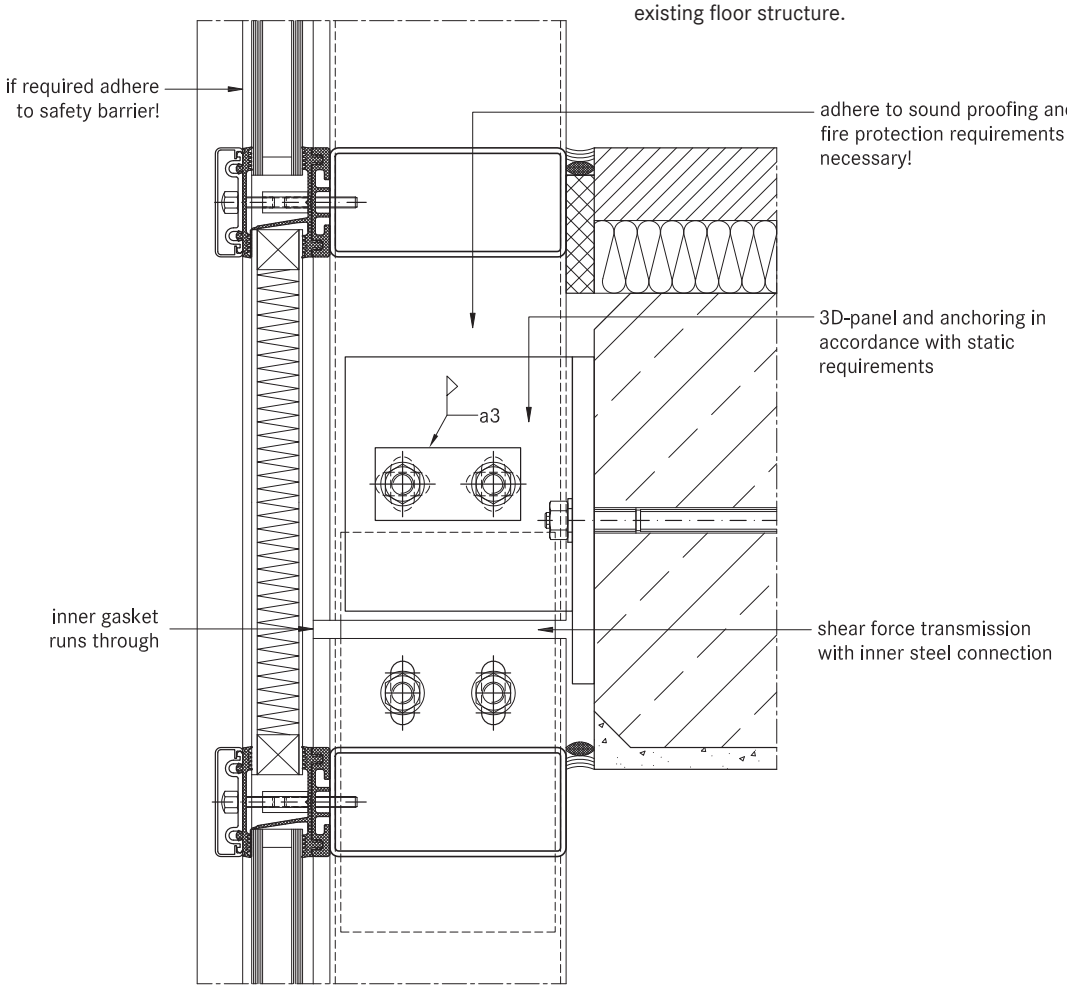
- Depending on requirements, mullions are designed as continuous multi-span transoms or separated at each floor.
- Reasons for separating mullions can include e.g. building settlement, fire protection, sound insulation, etc.
- If the separation joint is intended to absorb expansion, then as well as the required degree of freedom for mullions the ability for movement of integrated elements must also be ensured.
- The constructive design of the mullion joint and mounting should be chosen according to the statically calculated base system and determines the choice and arrangement of fixed and movable bearings, type of screw fittings, structural connection parts and attachment to the concrete floor.
- With continuous mullions and a corresponding mount the multi-span support principle is in effect. Sagging due to horizontal effects is lower. The required moment of inertia reduces for 2-span supports with the same span length compared to the 1-span support by a factor of 0.415. However, a tension and stability analysis should be carried out.

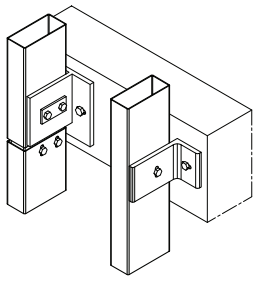


Example:

Mullions separated at each floor

In this example, distribution of horizontal and vertical loads is achieved at each floor through the existing floor structure.



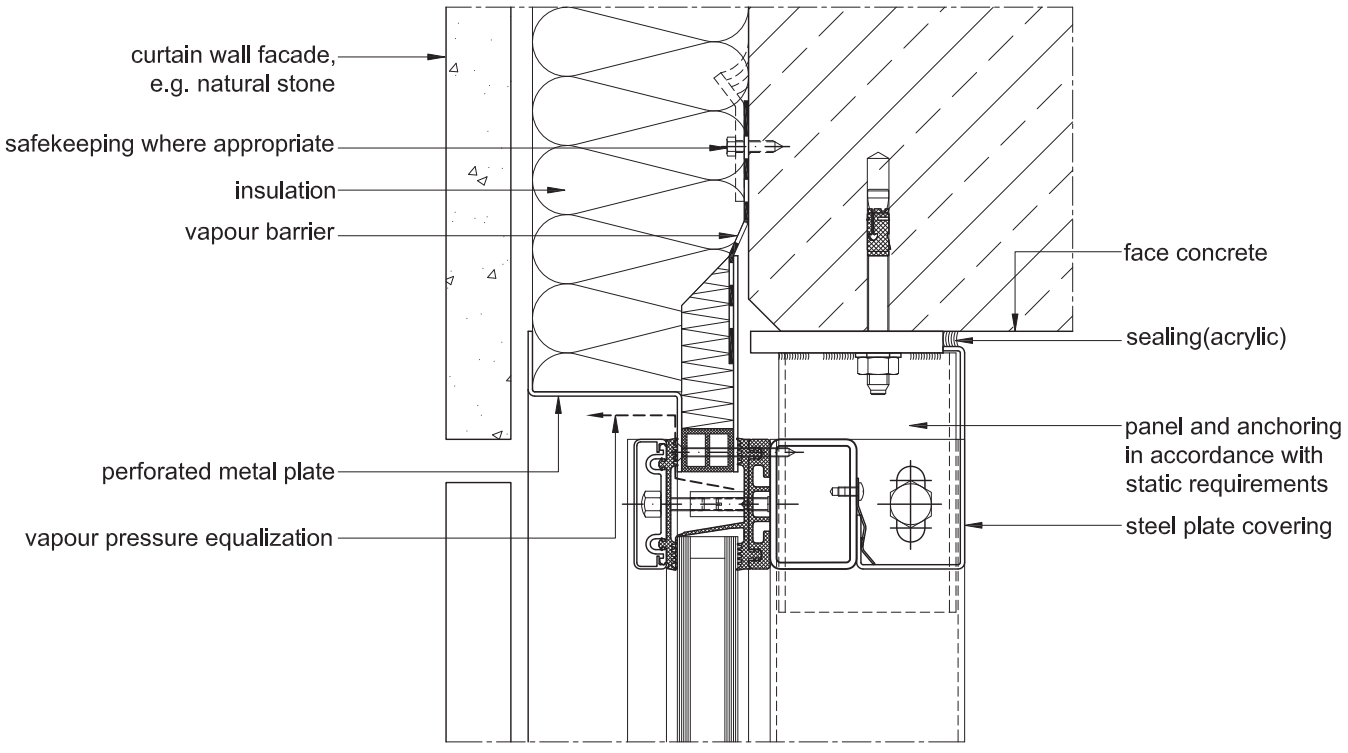


ZL-S_2.3_010.dwg

Structural attachments

Ceiling connection

- Structural connections should take account of any movement that may occur.
- As well as temperature induced expansion in the facade, all longitudinal expansions and movements of the affected components must be considered.
- Additional stresses from restraints must be avoided.

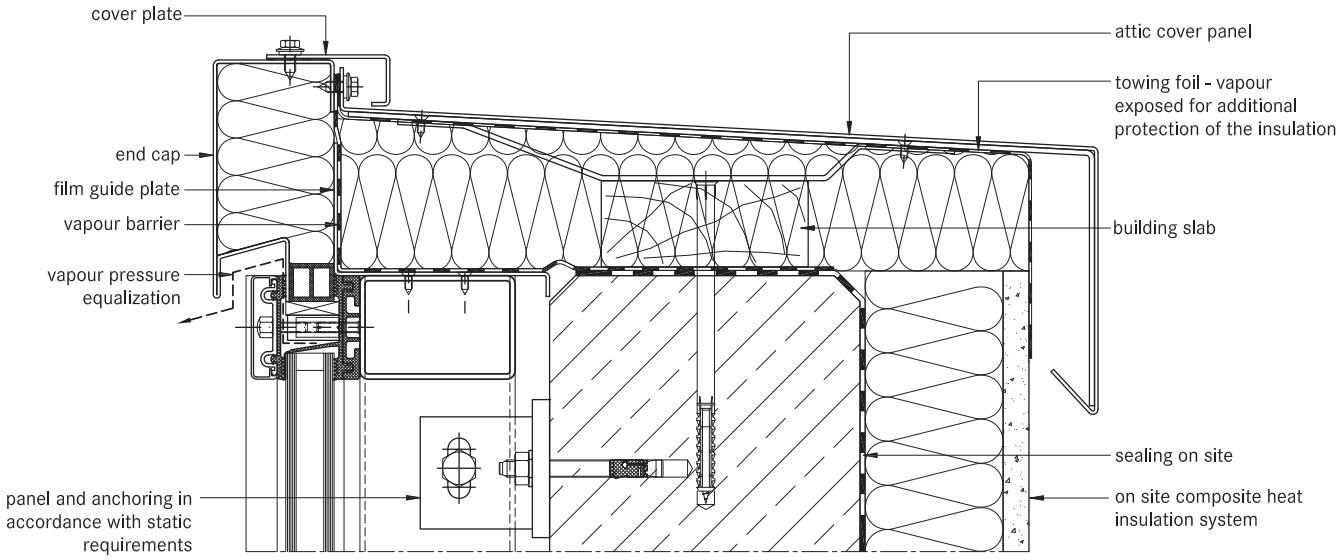


ZL-S_2.3_011.dwg

Structural attachments

2.3
4

Facade connection to parapets

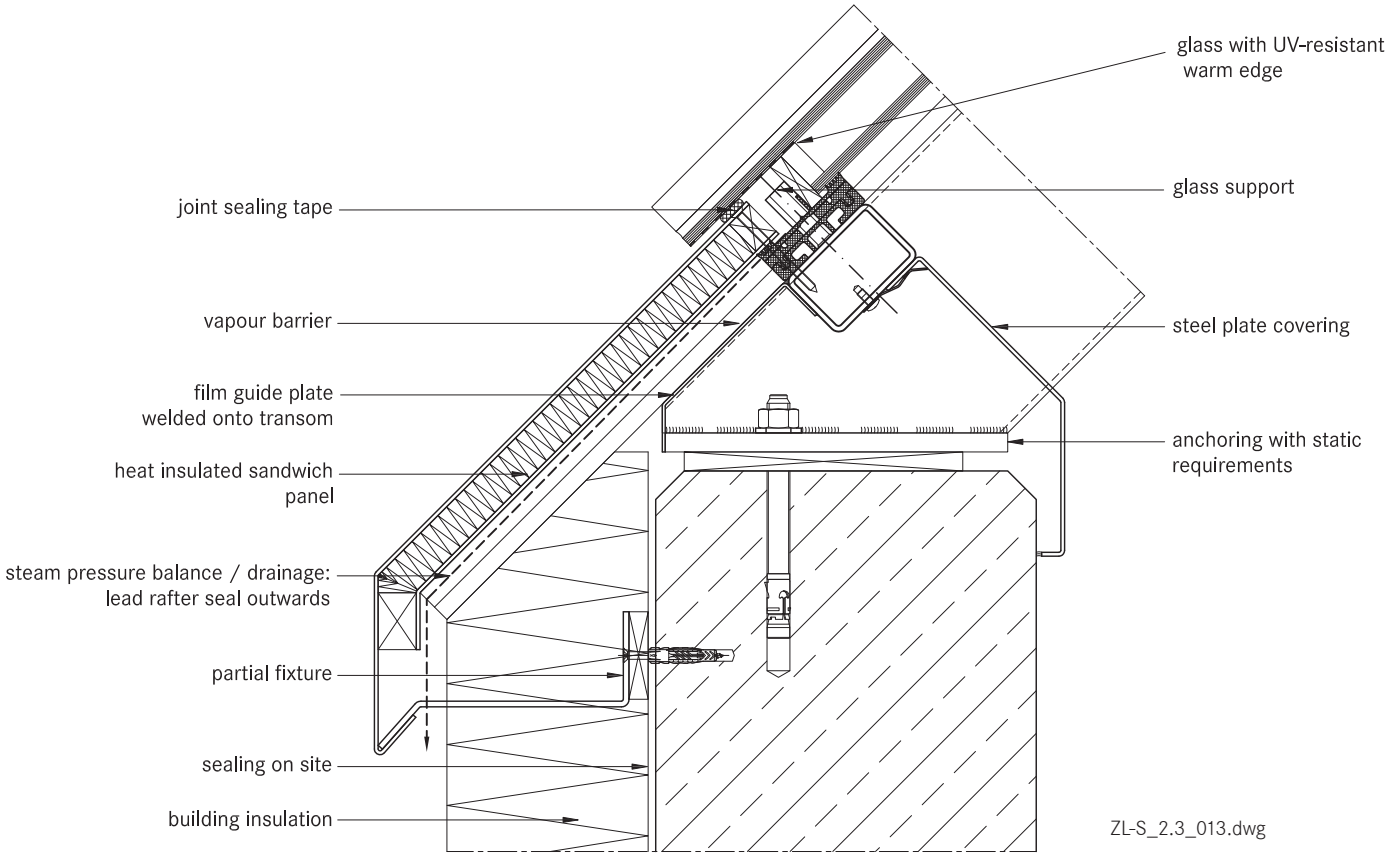


ZL-S_2.3_012.dwg

Structural attachments

Connection to structural eaves

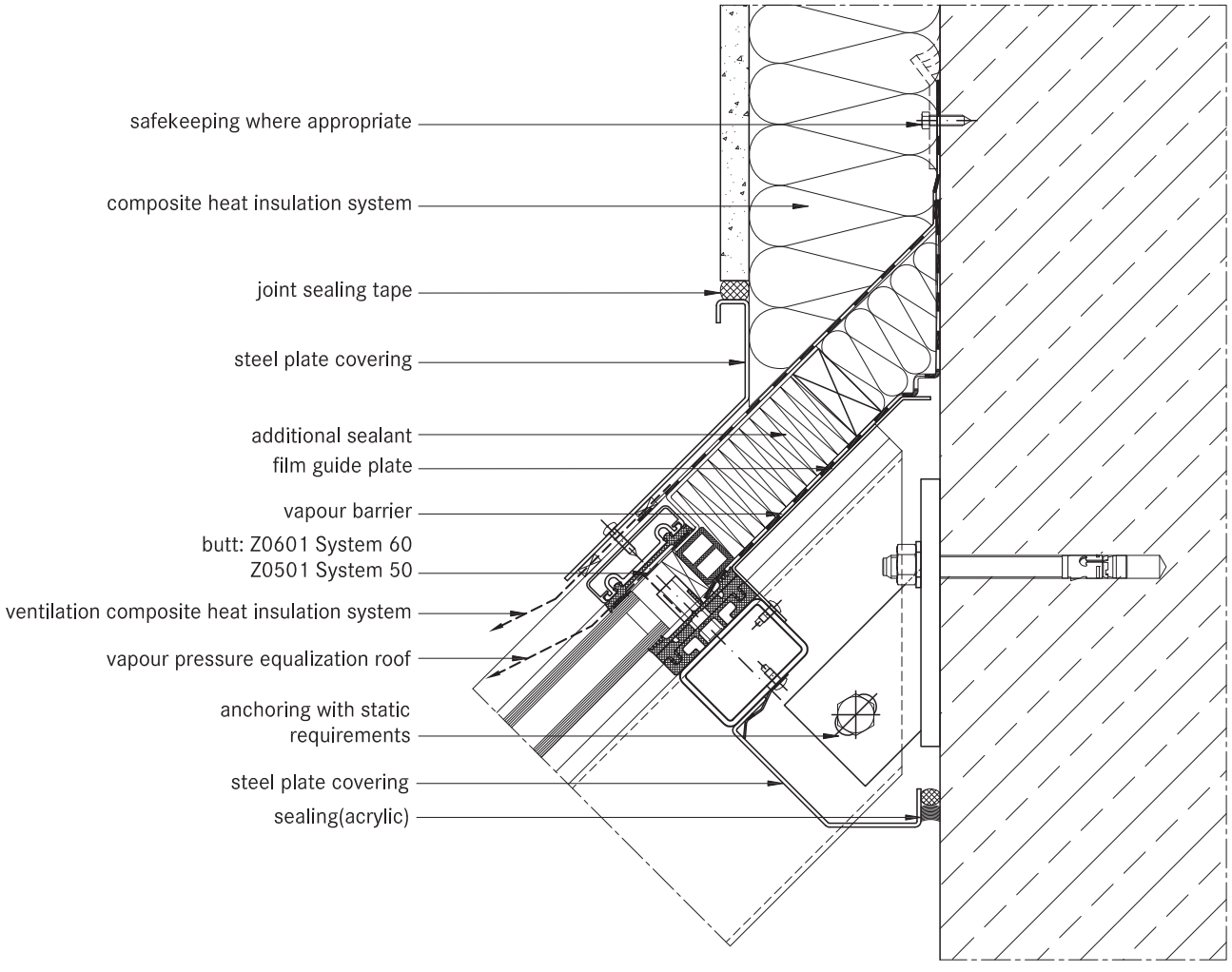
- This connection is suitable for glass roofs that are being installed as skylights in the structure. These may be gabled roofs, single pitch roofs, pyramids or arched roofs.



Structural attachments

Ridge connection to walls

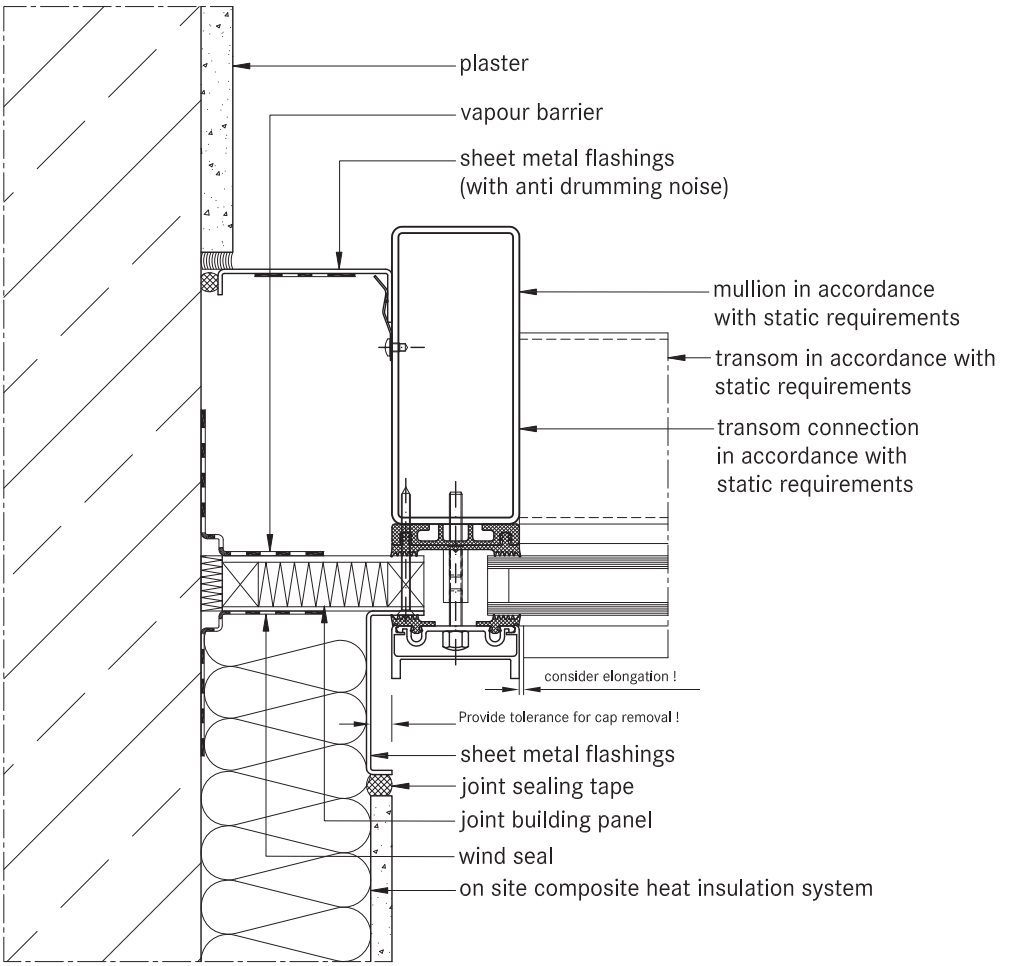
- When making ridge connections to walls, permeability to moisture is particularly important. Warm air with a high level of moisture gets into cooler zones of the inner sealing section where the design is not sufficiently sealed and can cause structural damage from penetrating into the connecting structure.
- Joint seals made from butyl-clad stainless steel plates (Z 0501, Z 0601) must be installed on the outside of joint areas.



ZL-S_2.3_014.dwg

Structural attachments

Horizontal wall connection to heat insulation bonding system

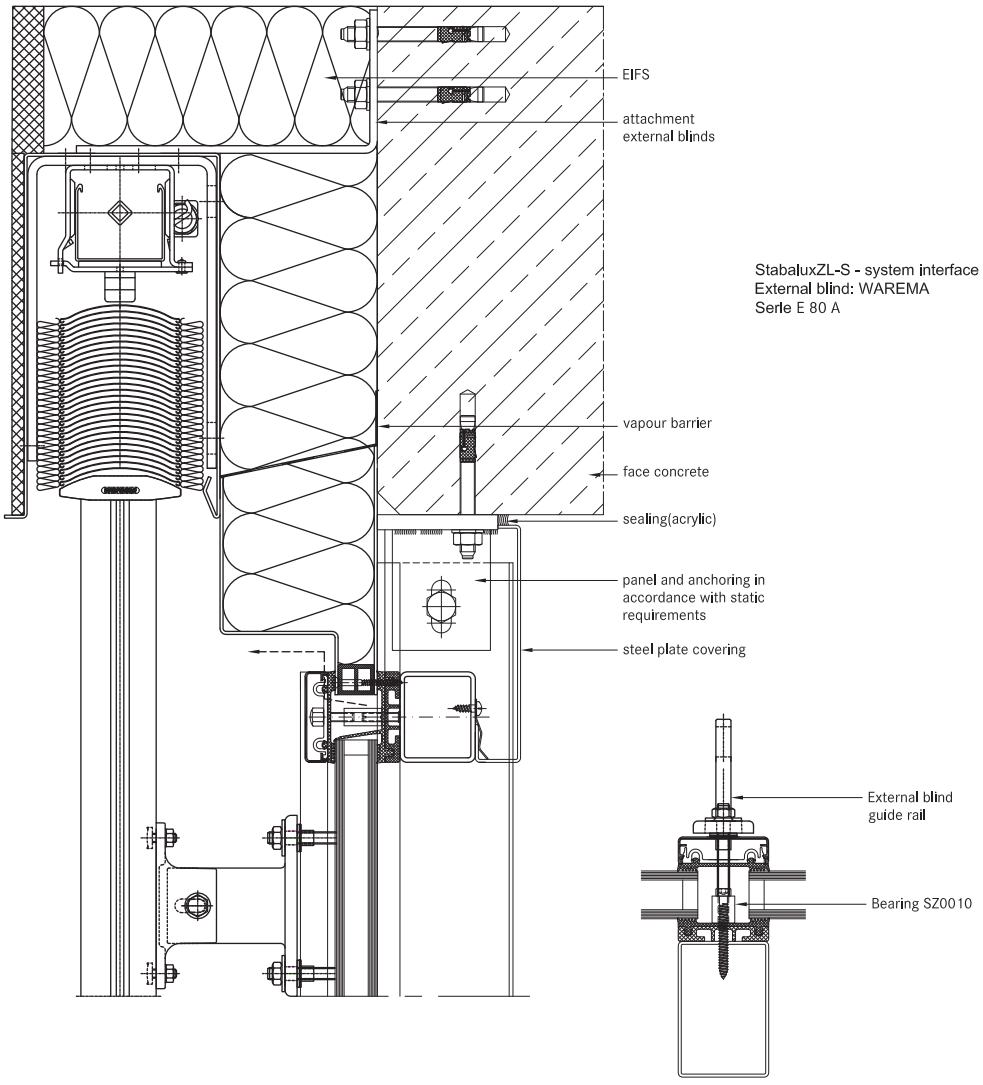


ZL-S_2.3_015.dwg

Structural attachments

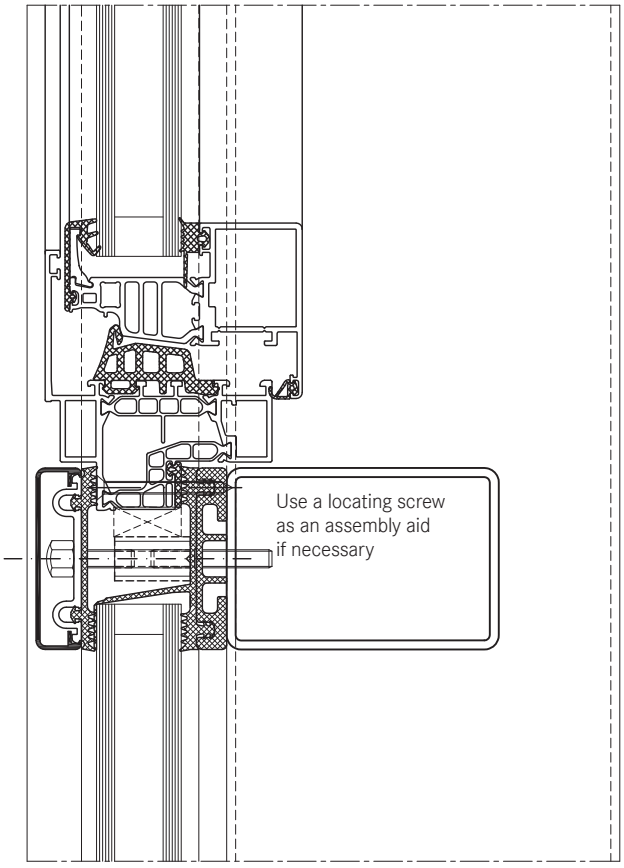
2.3
4

Ceiling conection including WAREMA external blinds

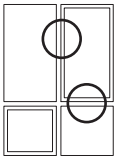


ZL-S_2.3_024.dwg

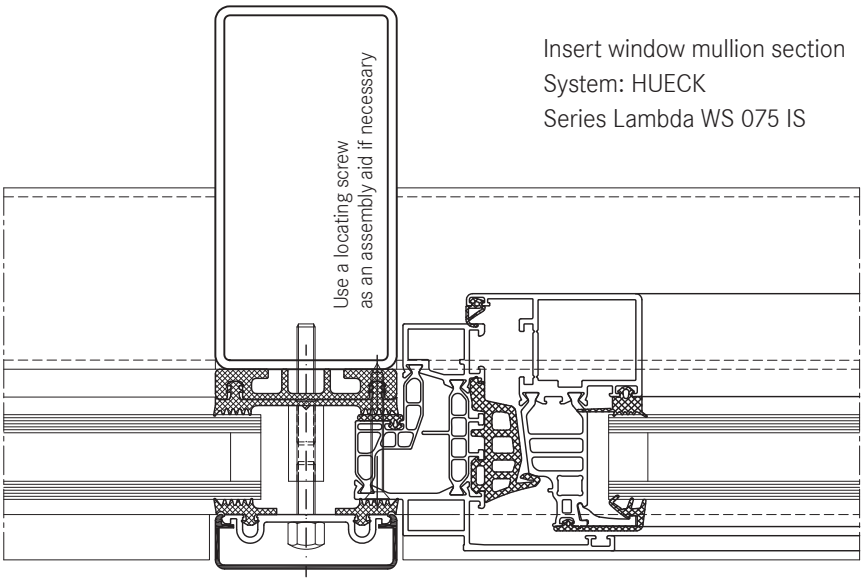
Installing windows and doors



Insert window transom section
System: HUECK
Series Lambda WS 075 IS



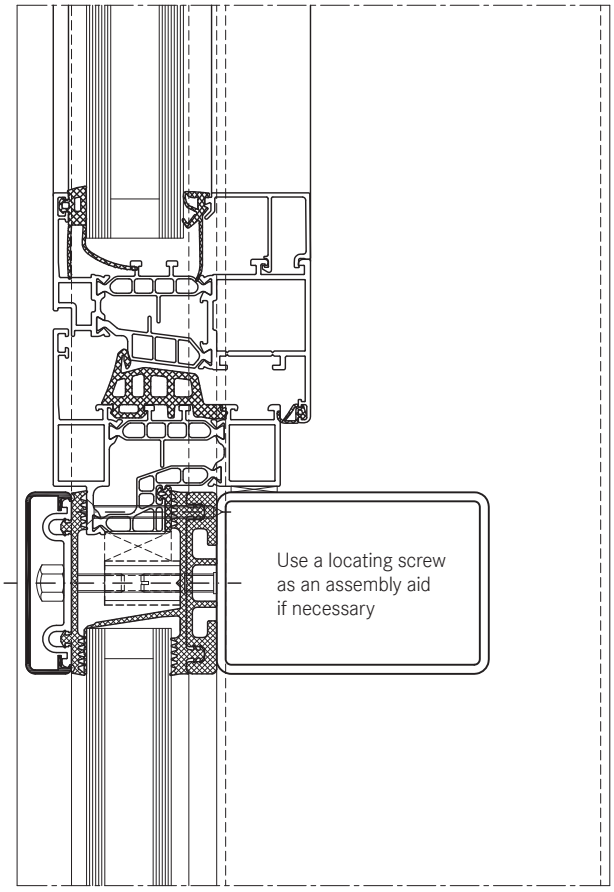
Mullion and transom facades and glass roofs from Stabalux are neutral with regards to the selection of insert elements. All commonly available window and door systems made from steel, aluminium, wood or plastic can be used. Frame profiles from the window and door manufacturer's should be selected to match the chosen glass thickness. If no profiles with a suitable insert rebate are available, mountings may be used as shown in the following examples. Like with glass elements, windows are set into the facade on glass supports, padded and then secured against slippage.



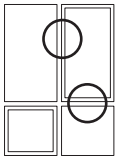
Insert window mullion section
System: HUECK
Series Lambda WS 075 IS

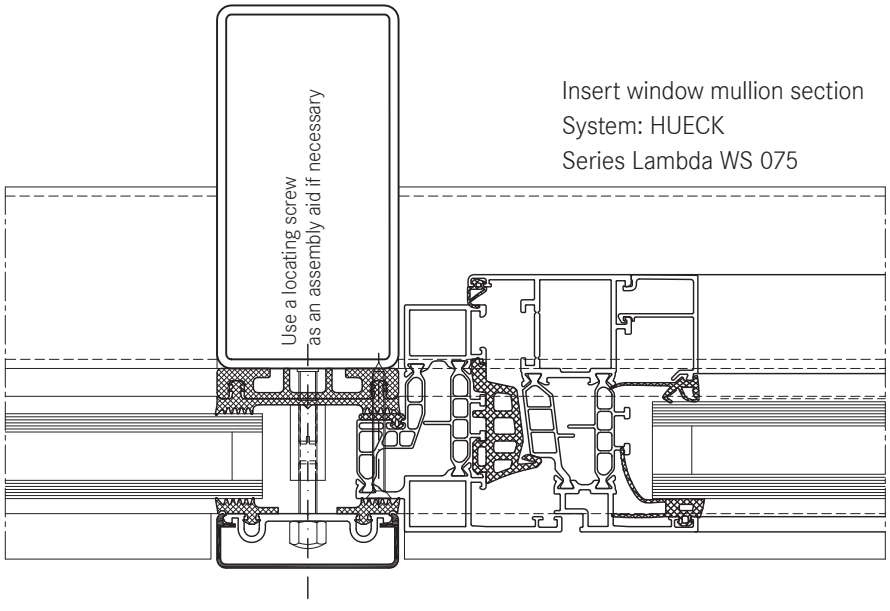
ZL-S_2.3_01 .dwg

Installing windows and doors



Insert window transom section
System: HUECK
Series Lambda WS 075

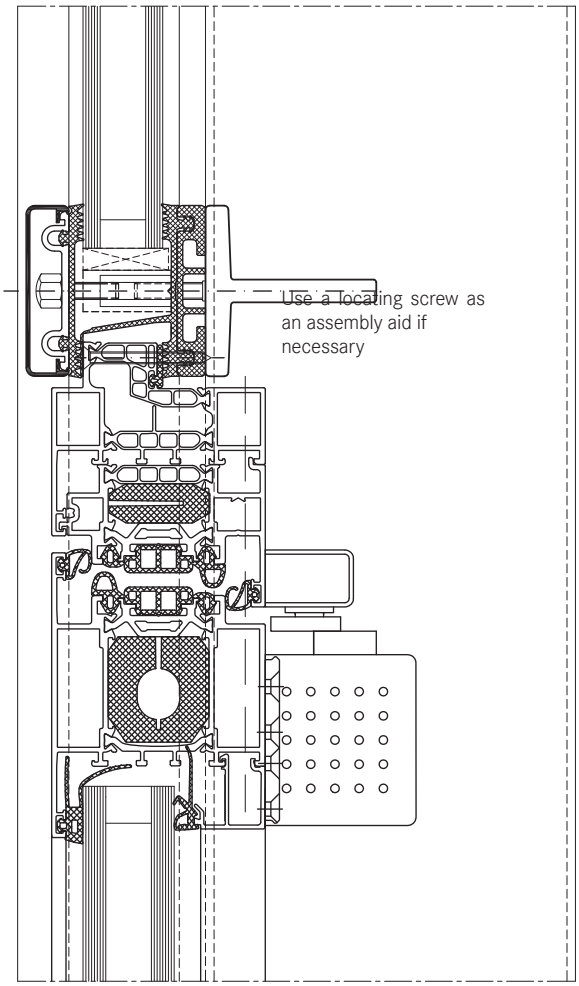




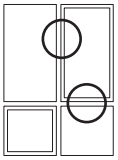
Insert window mullion section
System: HUECK
Series Lambda WS 075

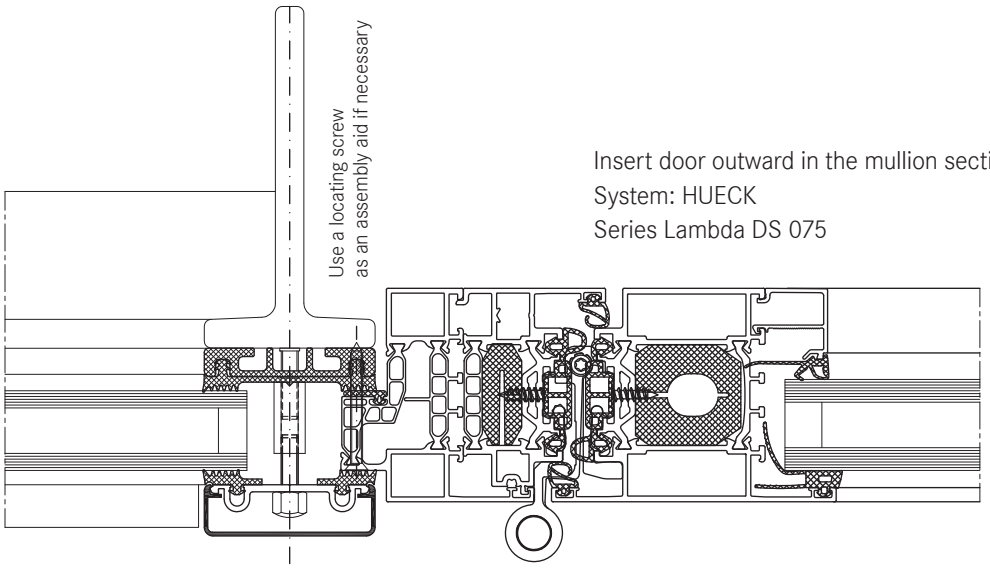
ZL-S_2.3_017.dwg

Installing windows and doors



Insert door outward in the transom section
System: HUECK
Series Lambda DS 075

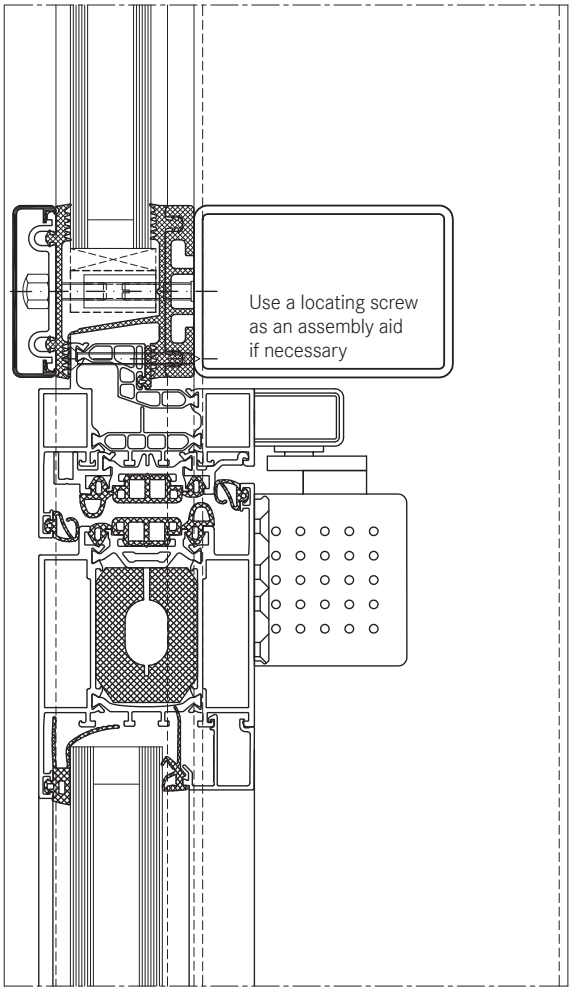




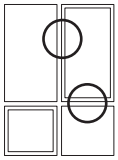
Insert door outward in the mullion section
System: HUECK
Series Lambda DS 075

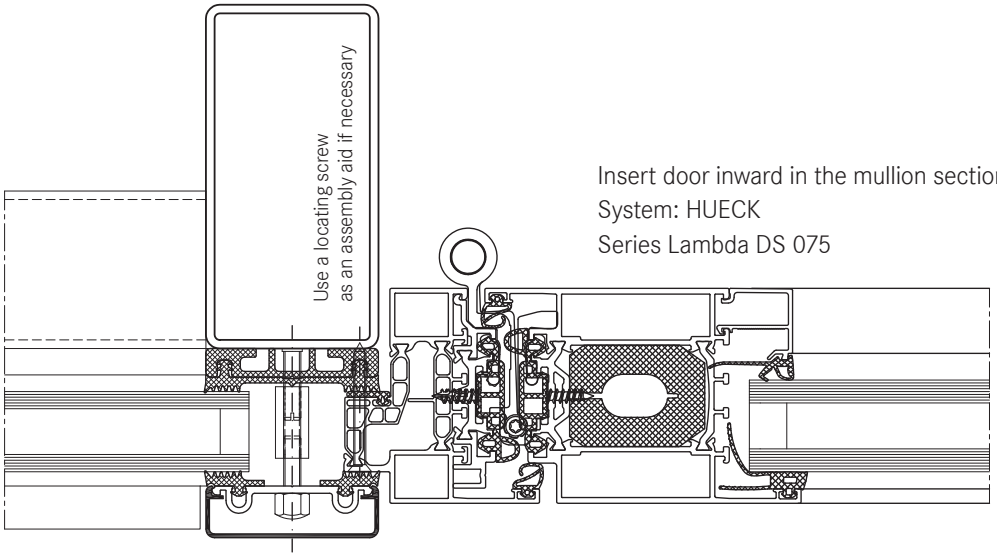
ZL-S_2.3_018.dwg

Installing windows and doors



Insert door inward in the transom section
System: HUECK
Series Lambda DS 075

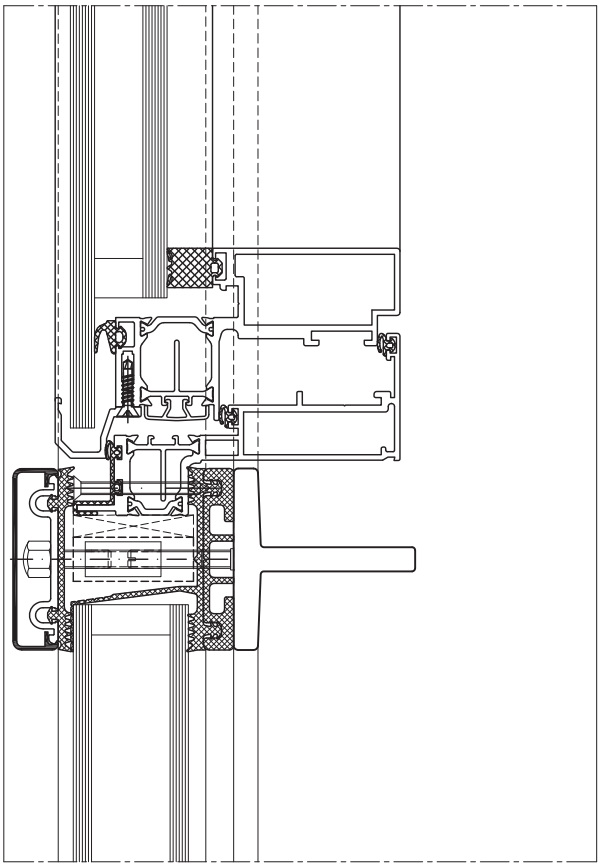




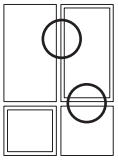
Insert door inward in the mullion section
System: HUECK
Series Lambda DS 075

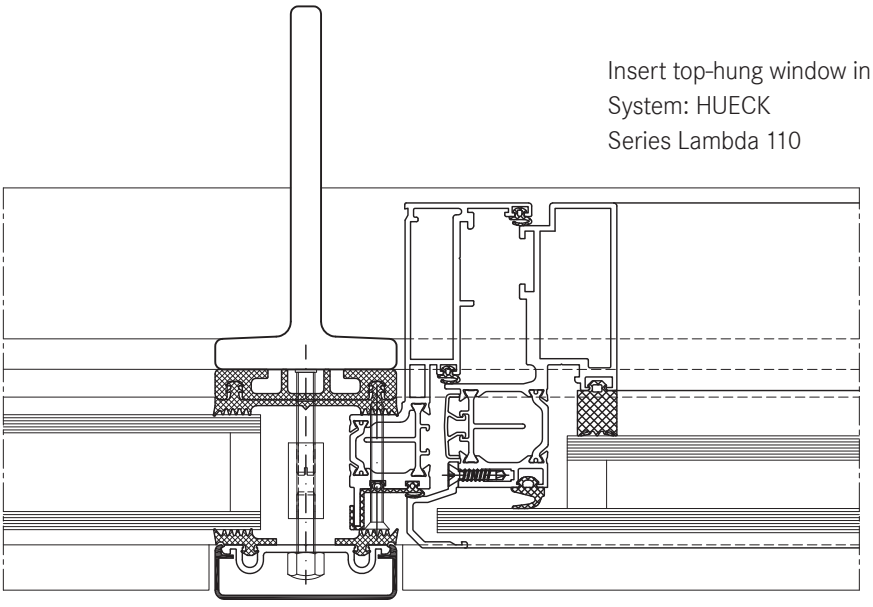
ZL-S_2.3_019.dwg

Installing windows and doors



Insert top-hung window in the transom section
System: HUECK
Series Lambda 110

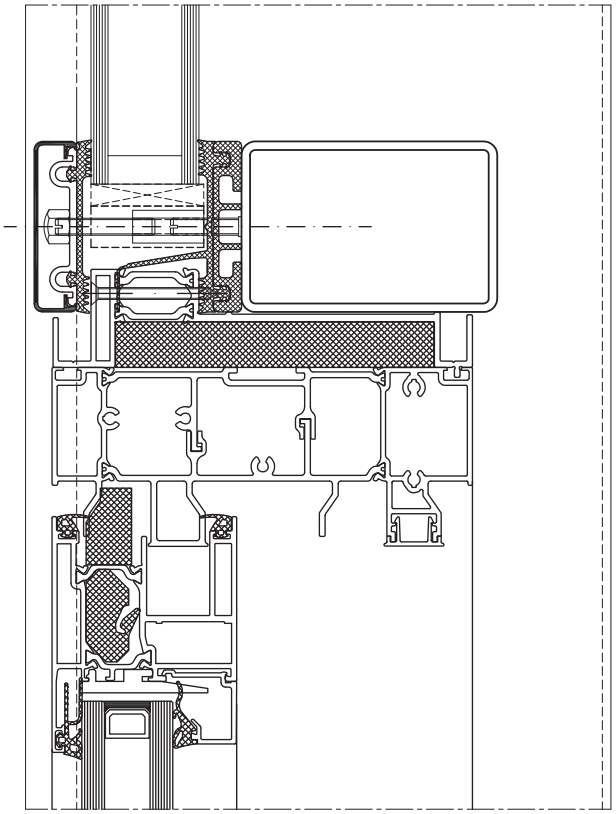




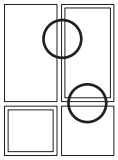
Insert top-hung window in the mullion section
System: HUECK
Series Lambda 110

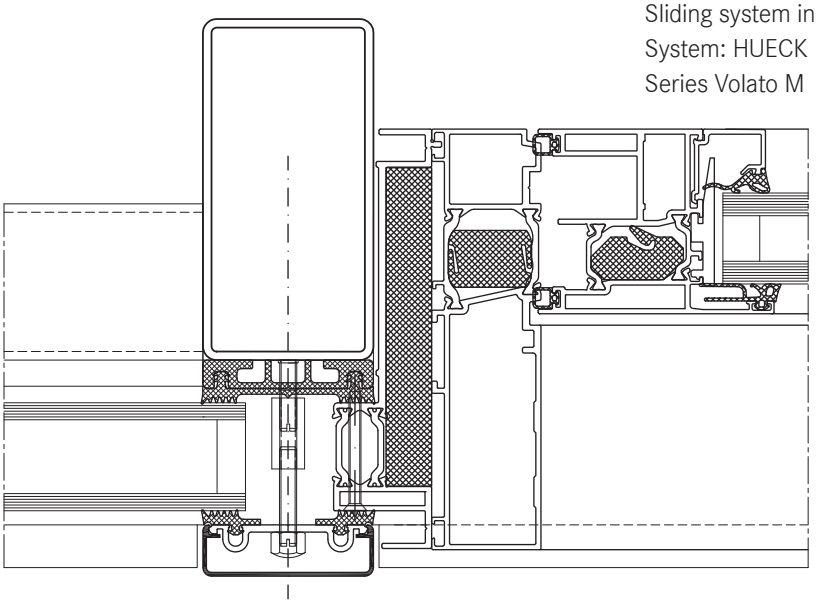
ZL-S_2.3_020.dwg

Installing windows and doors



Sliding system in the transom section
System: HUECK
Series Volato M



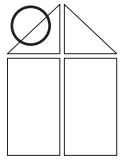


Sliding system in the mullion section
System: HUECK
Series Volato M

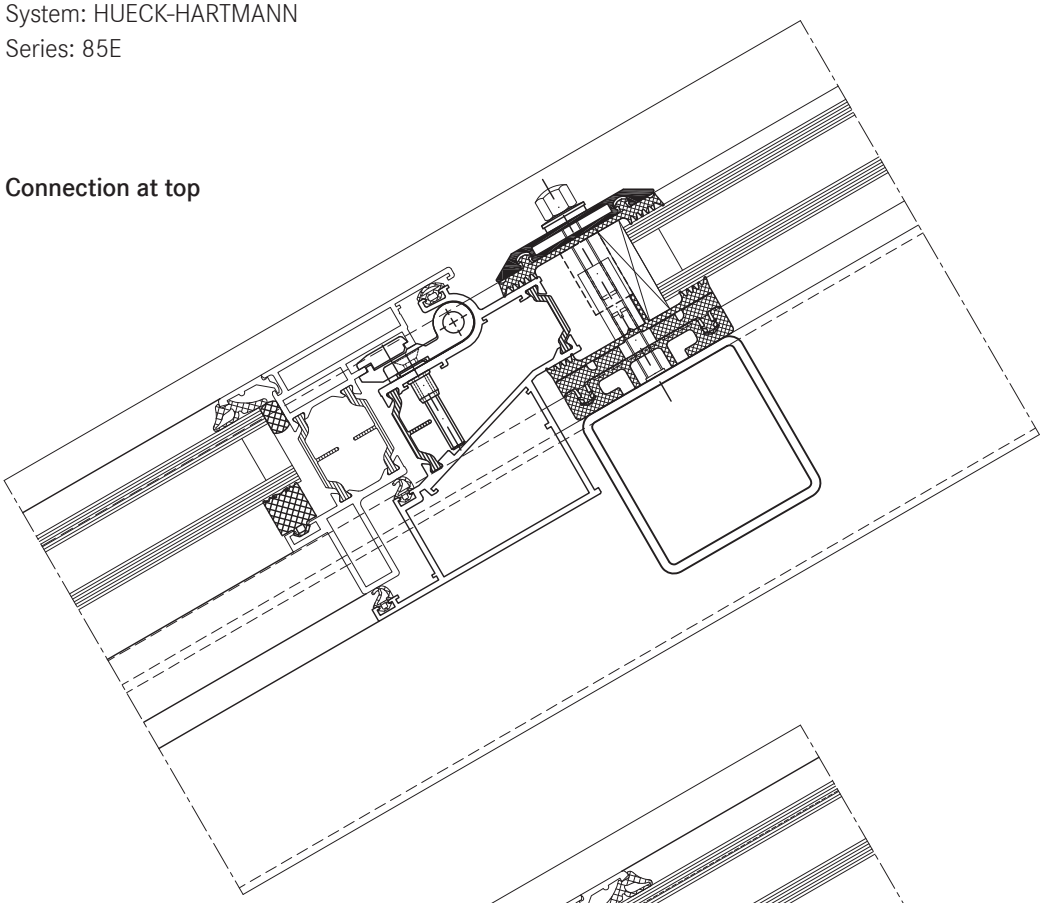
ZL-S_2.3_021.dwg

Installing windows and doors

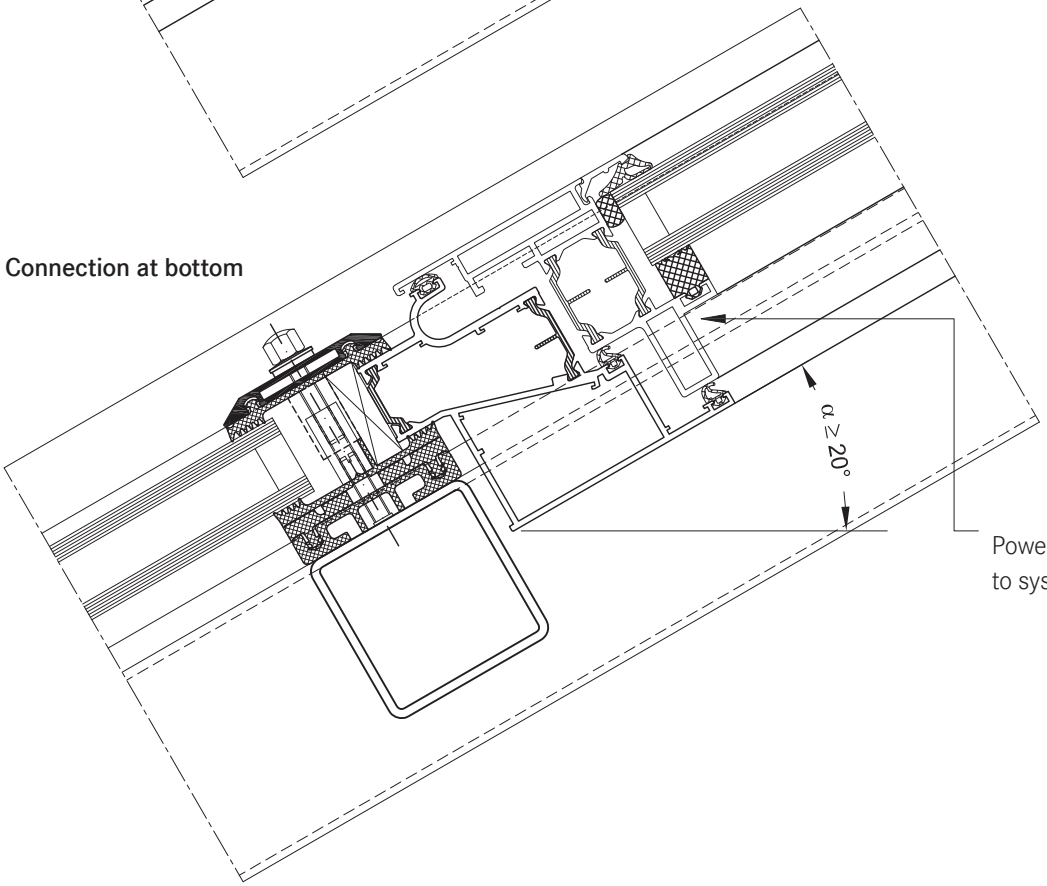
Flush roof surface window
System: HUECK-HARTMANN
Series: 85E



Connection at top

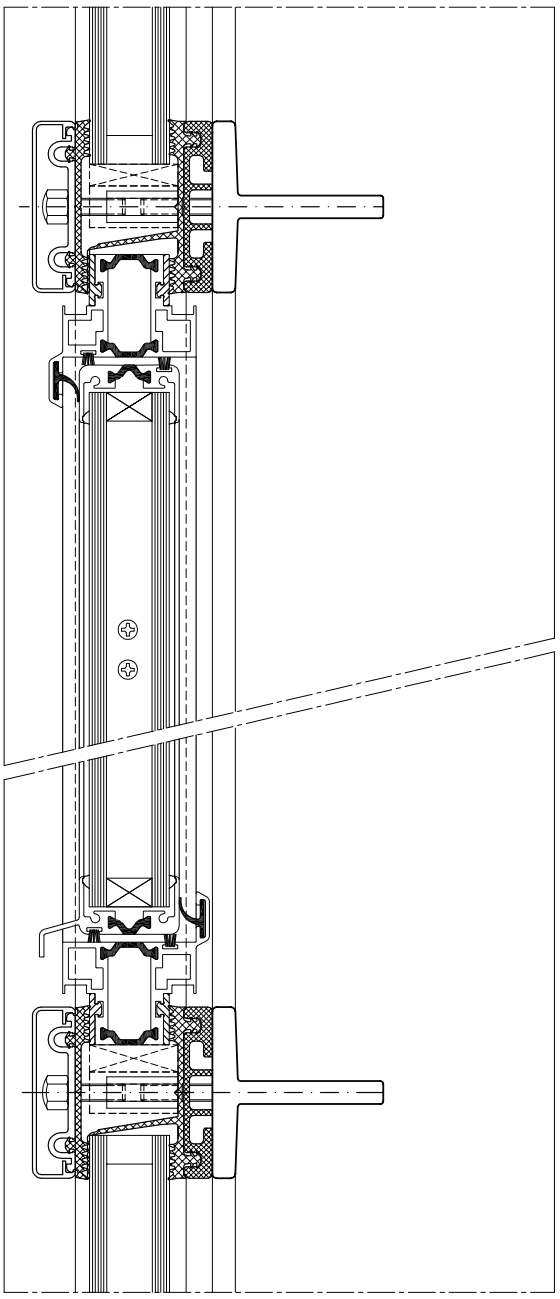


Connection at bottom

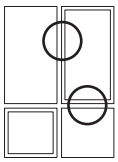


ZL-S_2.3_020.dwg

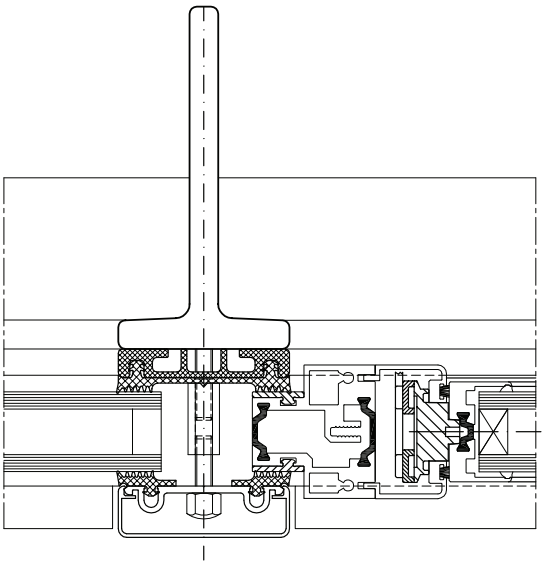
Installing windows and doors



Insert window - transom sections
System: Hahn
Series: Lamellae S9 iVt-05



Insert window - mullion section
System: Hahn
Series: Lamellae S9 iVt-05



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