GLASSLINE

PLANNING MANUAL

BALARDO

core / core hd / hybrid / smart

GLASS RAILING SYSTEMS

GLASSLINE

BALARDO

CONTENTS

SHOW A **GLASS**-**CLEAR** DISTINCTION **BALARDO** WITH TESTED SAFETY

BALARDO is the No. 1 in glass railings and is often used as a synonym for glass railings.

The BALARDO range was expanded in response to the ever-growing needs of the market:

BALARDO *core* (previously **BALARDO** *alu*)
The number 1 for quick installation

BALARDO *core hd* (previously **BALARDO** *alu hd*)
The safe system for heavy loads

BALARDO *hybrid*
The strong system with infinite adjustment

BALARDO *smart*
The minimalist system for the private sector

BALARDO *aqua control*
The system for controlled drainage of balconies

GLASSLINE sets pioneering accents in glass architecture together with the innovative BALARDO *firstglass* glass edge protection. BALARDO *steel* and BALARDO *wave* complete the BALARDO range.

BALARDO – tested safety included

AbP
With General Building Inspectorate Test Certificate (AbP)

With approved type statics

LGA tested
LGA-tested safety

Deployment also in sports facilities. Ball impact safe.

DIN 18008-4 tested
DIN 18008-4 tested

MADE IN GERMANY

LEVEL

STADIUM / GRANDSTAND

BALARDO

core | core hd |

FLOOR-TO-CEILING GLAZING

PRIVACY PROTECTION

STAIRWAY /
SLOPE

BALCONY

hybrid / smart

ATTIKA

PYLON

Balcony image: 50 Hertz, Werner Huthmacher

OVERVIEW

SYSTEM PROFILES

BALARDO *core*

**THE NUMBER 1
FOR PERMANENT
INSTALLATION**

BALARDO *core hd*

**THE SAFE SYSTEM
FOR HEAVY LOADS**

BALARDO *hybrid*

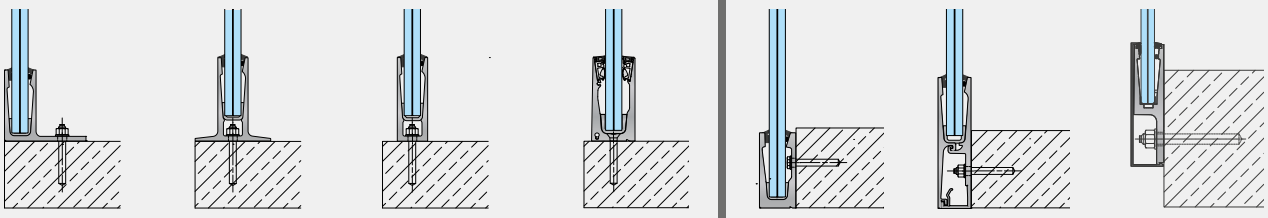
**THE STRONG SYSTEM
WITH INFINITE
ADJUSTMENT**

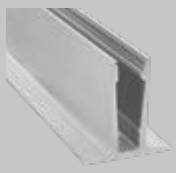
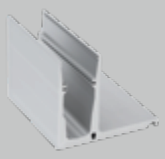
BALARDO *smart*

**THE MINIMALIST
SYSTEM FOR THE
PRIVATE SECTOR**

FLOOR MOUNTING

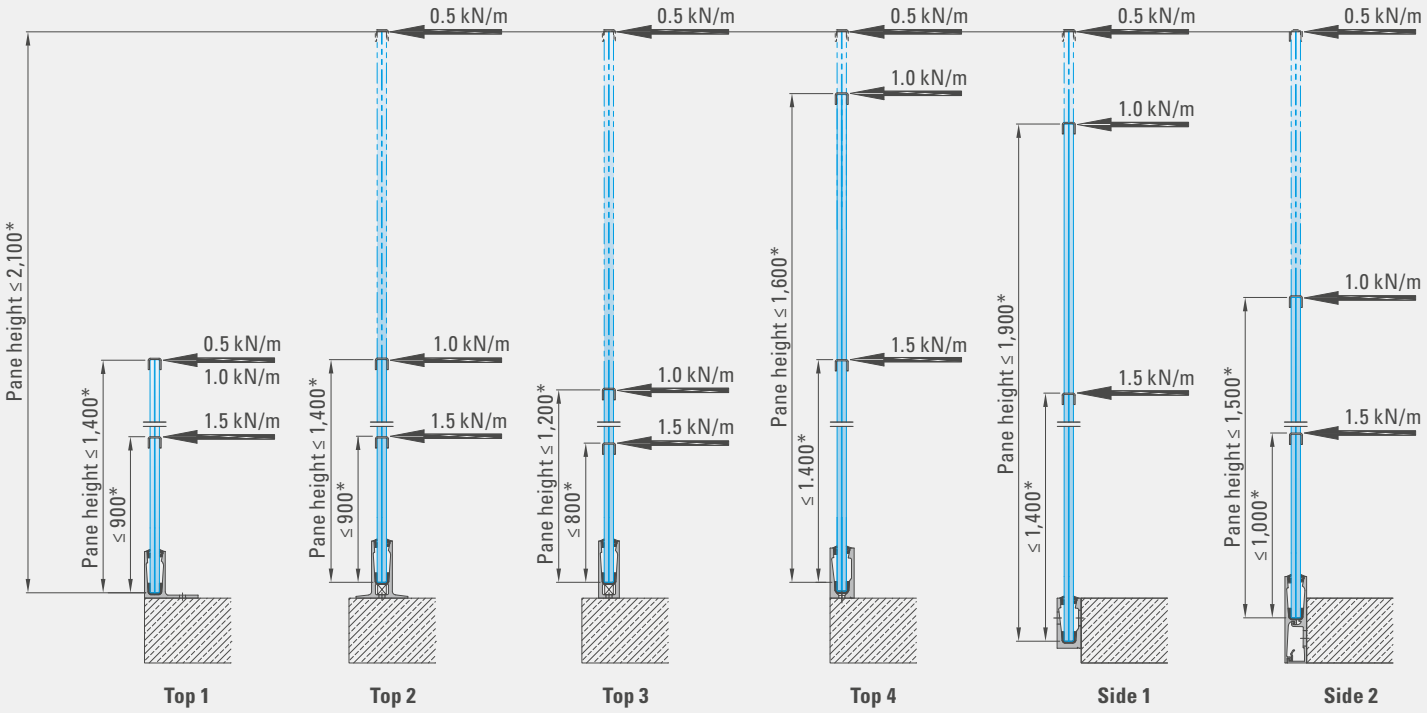
SIDE MOUNTING



	Top 1	Top 2	Top 3	Top 4	Side 1	Side 2	Side 3
BALARDO *core*	 Page 22	 Page 24	 Page 26	 Page 28	 Page 30	 Page 32	
BALARDO *core hd*	 Page 36	 Page 38			 Page 40		
BALARDO *hybrid*	 Page 44			 Page 46	 Page 48		
BALARDO *smart*	 Page 52						 Page 54

BALARDO *core* (previously BALARDO *alu*)

THE NUMBER 1 FOR PERMANENT INSTALLATION



Glass: LSG 2 x 6 mm, 2 x 8 mm und 2 x 10 mm

Rail load up to 1.5 kN/m

1. Private and public construction projects
2. Indoors and outdoors

Installation principle for CLICK•N FIX

3. Connection from above / the side
4. Flat surface / Stairway

✔ Edge protection

✔ **BALARDO** *firstglass*

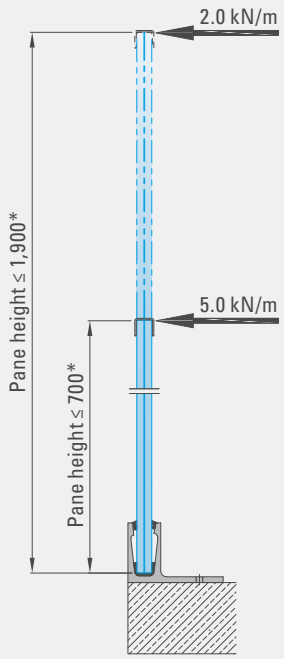
Further product information can be found starting on page 20.

* For pane heights see application and dimension tables for support profiles on page 58, and for glass starting on page 64

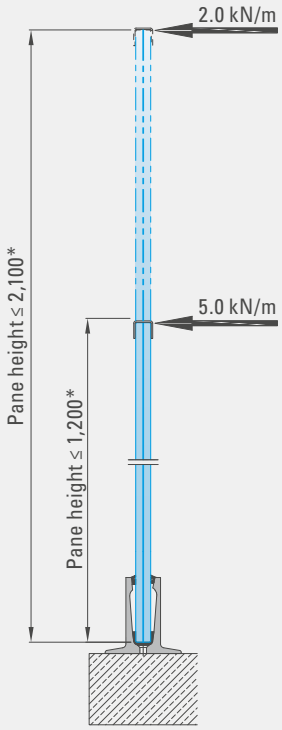
*in accordance with type static calculations

BALARDO *core hd* (previously **BALARDO** *alu hd*)

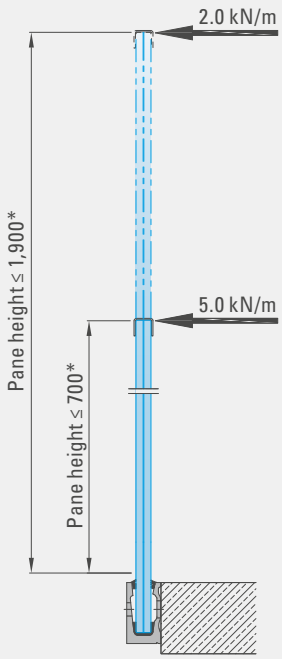
THE SAFE SYSTEM FOR HEAVY LOADS



Top 1



Top 2



Side 1

Glass: LSG 2 x 12 mm und 2 x 15 mm

Rail load up to 5.0 kN/m

1. Public construction projects
2. Indoors and outdoors

Installation principle for CLICK•N FIX

3. Connection from above / the side
4. Flat surface / Stairway

✔ Edge protection

✔ **BALARDO** *firstglass*

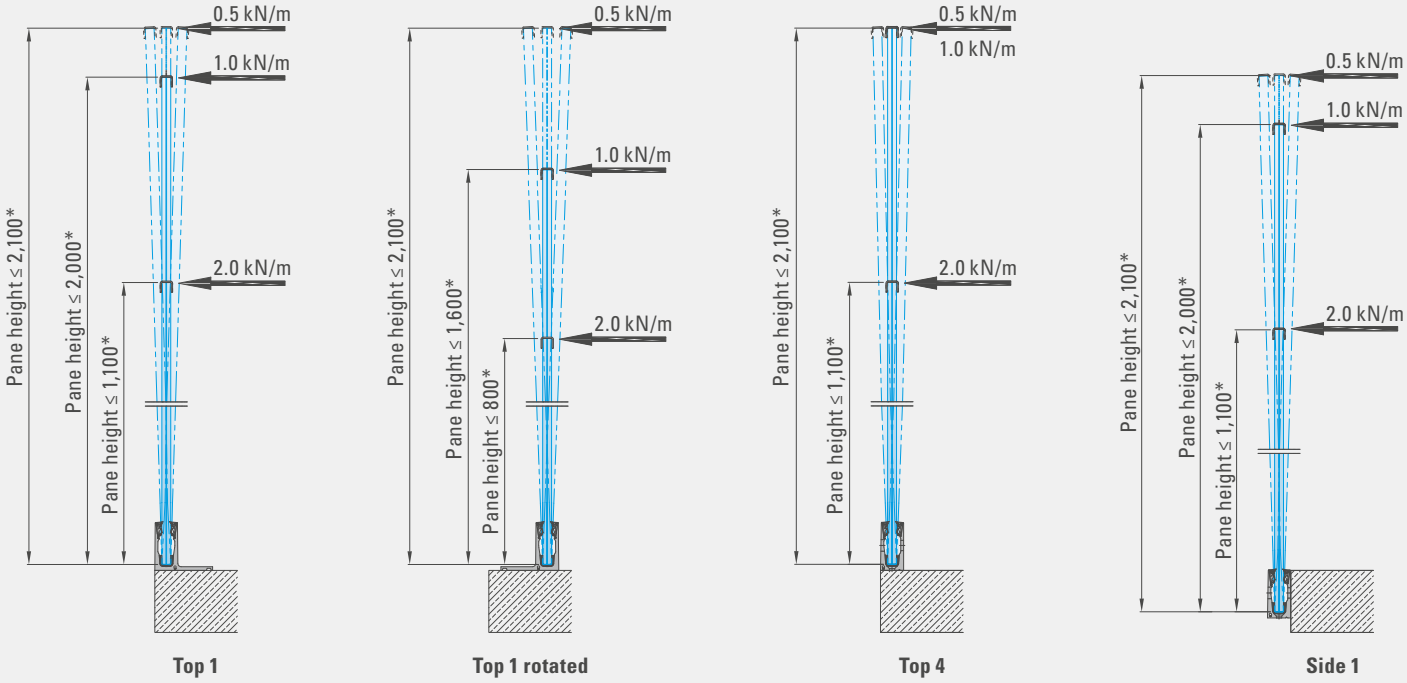
Further product information can be found starting on page 34.

* For pane heights see application and dimension tables for support profiles on page 58, and for glass starting on page 64

*in accordance with type static calculations

BALARDO *hybrid*

THE INFINITELY ADJUSTABLE STRONG SYSTEM



Glass: LSG 2 x 8 mm und 2 x 10 mm

Rail load up to 2.0 kN/m

1. Private and public construction projects
2. Indoors and outdoors

Installation principle for CLEVERFIX

3. Connection from above / the side
4. Flat surface / Stairway

✔ Edge protection

✔ **BALARDO** *firstglass*

✔ **BALARDO** *aqua control*

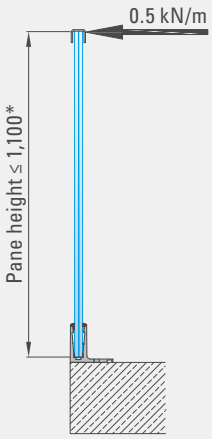
Further product information can be found starting on page 42.

* For pane heights see application and dimension tables for support profiles on page 58, and for glass starting on page 64

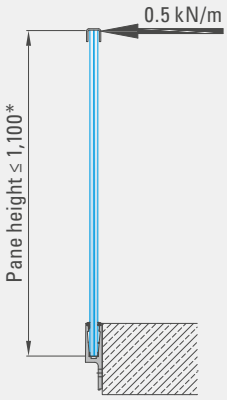
*in accordance with type static calculations

BALARDO *smart*

THE MINIMALIST SYSTEM FOR THE PRIVATE SECTOR



Top 1



Side 3

Glass: LSG 2 x 6 mm und 2 x 8 mm

Rail load up to 0.5 kN/m

1. Private construction projects
2. Indoors

Installation principle for EASYFIX

3. Connection from above / the side
4. Flat surface / Stairway

✔ Edge protection

✔ **BALARDO** *firstglass*

Further product information can be found starting on page 50.

* For pane heights see application and dimension tables for glass starting on page 64

*in accordance with type static calculations

YOUR JOURNEY TO THE IDEAL BALARDO ALL-GLASS RAILING

Criteria for the selection of the system profile, glass and handrail

The following example shows how you determine the appropriate BALARDO glass railing for your **application in just a few steps.**

YOUR SPECIFICATIONS AND REQUIREMENTS

APPLICATION

		Rail load
Private area	☐	0.5 kN/m
Public area	☒	1.0 kN/m
Increased rail loads		
Such as sports facilities, emergency exits	☐	> 2.0 kN/m

SCOPE OF APPLICATION

		Wind load
Indoor application	☐	
Outdoor application	☒	1.4 kN/m²

USE

Level area	☒
Stairway	☒

GLASS HEIGHT

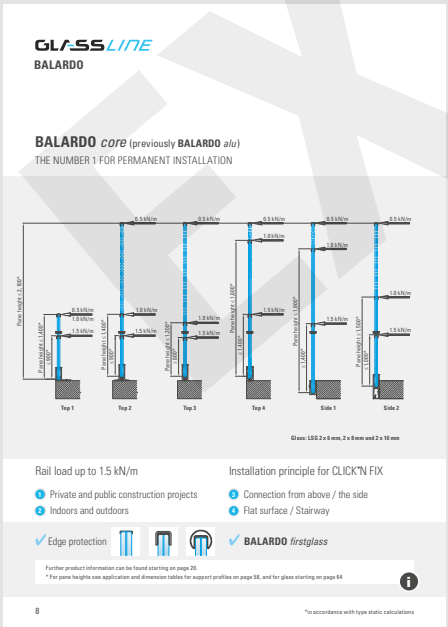
Pane height 1,200 mm

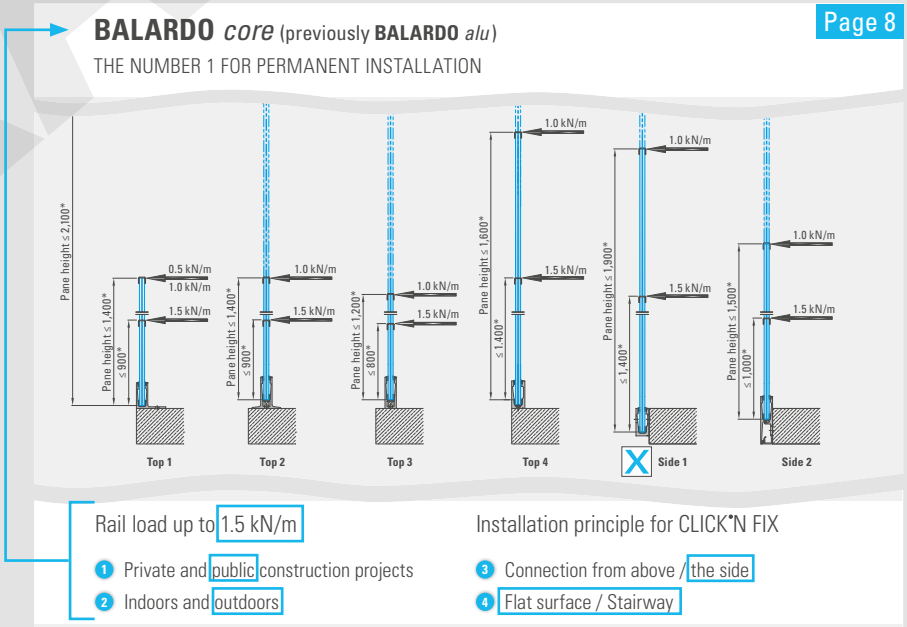
CONNECTION

From above	☐
From the side	☒

Procedure based on your specifications:

1 PROFILE SELECTION Pages 8 – 11





Result: All requirement criteria are satisfied with the specifications of BALARDO *core*.

EXAMPLE

2 DIMENSIONING OF THE SYSTEM PROFILE Pages 58 – 59 (excerpt from the table)

Specified wind load of 1.40 kN/m², specified pane height of 1,200 mm, specified rail load of 1.0 kN/m

SUPPORT PROFILE **BALARDO** *core*

Page 58

Rail load [kN/m]	BALARDO *core*	max. glass height [mm] with permissible wind load [kN/m²]															
		600	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800	1,900	2,000	2,100
1.0	Top 1	2.88	1.98	1.40	1.02	0.76	0.49	0.30	0.16	0.05							
	Top 2	5.88	4.03	2.87	2.09	1.56	1.04	0.64	0.35	0.13							
	Top 3	4.74	3.19	2.23	1.53	0.91	0.47	0.17									
	Top 4	6.59	4.56	3.27	2.41	1.81	1.38	0.94	0.61	0.35	0.16	0.01					
	Side 1	9.43	6.64	4.87	3.67	2.84	2.23	1.77	1.43	1.16	0.92	0.67	0.48	0.33	0.20		
	Side 2	6.28	4.33	3.10	2.27	1.70	1.24	0.81	0.50	0.26	0.08						

Result: Permissible wind load of 1.77 kN/m² ≥ 1.40 kN/m². Compatible profile Side 1.

3 DIMENSIONING OF THE GLASS Pages 64 – 69 (excerpt from the table)

Application for **level areas**

Specified wind load of 1.40 kN/m², specified pane height of 1,200 mm, specified rail load of 1.0 kN/m

Page 64

Rail load [kN/m]	Glass LSG-TSG [mm]		max. glass height [mm] with permissible wind load [kN/m²]					
			1,100	1,200	1,300	1,400	1,500	1,6
1.0	2x6	PVB						
		SGP	2.15					
	2x8	PVB	1.01	0.56	0.24	0.00		
		SGP	2.40	1.92	A 1.55	1.27	1.04	0.
	2x10	PVB	2.40	1.92	B 1.55	1.27	1.04	0.
		SGP	2.40	1.92	1.55	1.27	1.04	0.
	2x12	PVB	4.12	3.20	2.52	2.00	1.57	1.
		SGP	9.15	7.60	6.39	5.44	4.67	4.

Results:

A LSG-TSG **2x8 SGP with** load-distributing handrail and handrail connection to structure

B LSG-TSG **2x10 PVB without** load-distributing handrail. Glass edge protection

Application for **stairways**

Specified wind load of 1.40 kN/m², specified pane height of 1,200 mm, specified rail load of 1.0 kN/m

Page 66

Rail load [kN/m]	Glass LSG-TSG [mm]		max. glass height [mm] with permissible wind load [kN/m²]				
			1,000	1,100	1,200	1,300	1
1.0	2x8	PVB					
		SGP	3.04	2.40	1.92 A	1.55	
	2x10	PVB	2.54	1.92	1.48 B	1.07	
		SGP	3.04	2.40	1.92 C	1.55	
	2x12	PVB	3.04	2.40	1.92	1.55	
		SGP	3.04	2.40	1.92	1.55	
	2x15	PVB	3.04	2.40	1.92	1.55	
		SGP	3.04	2.40	1.92	1.55	

Results

A LSG-TSG **2x8 SGP with** load-distributing handrail and handrail connection to structure

B LSG-TSG **2x10 PVB with** load-distributing handrail and handrail connection to structure

C LSG-TSG **2x10 SGP without** load-distributing handrail. Glass edge protection

Possible without load-bearing handrail connection. A glass edge protection can also be used instead of a handrail. Max. glass width: 6,000 mm.

Load-distributing handrail and handrail connection to structure (supporting components) necessary for outlet elements. The width ratio of the adjacent glass panes is min. 1:4 and max. 4:1. Max. glass width 3,000 mm, see page 75.

xx,xx Deviating width ratios of adjacent panes. Min. 1:2 and max. 2:1.

EXAMPLE

FREEDOM FOR COMMUNICATION

THE NEW OFFICE BUILDING OF THE BHS IN WEIHERHAMMER

The architects of the furoris Group from Chemnitz have installed around 800 m of glass railings in the new BHS office building in Weiherhammer. A place where the employees feel comfortable, where they can connect with each other - a place of transparency and communication.

„We want to adapt the building to our employees and their areas of responsibility. Until now, it was the other way round," says BHS boss Christian Engel. „The workplaces are no longer static. If an employee wishes, he can also place his desk on the balcony."That's why glass railings with their transparency and elegance were the obvious choice. They make the generously curved terraces with their glass balustrades a genuine place to relax.

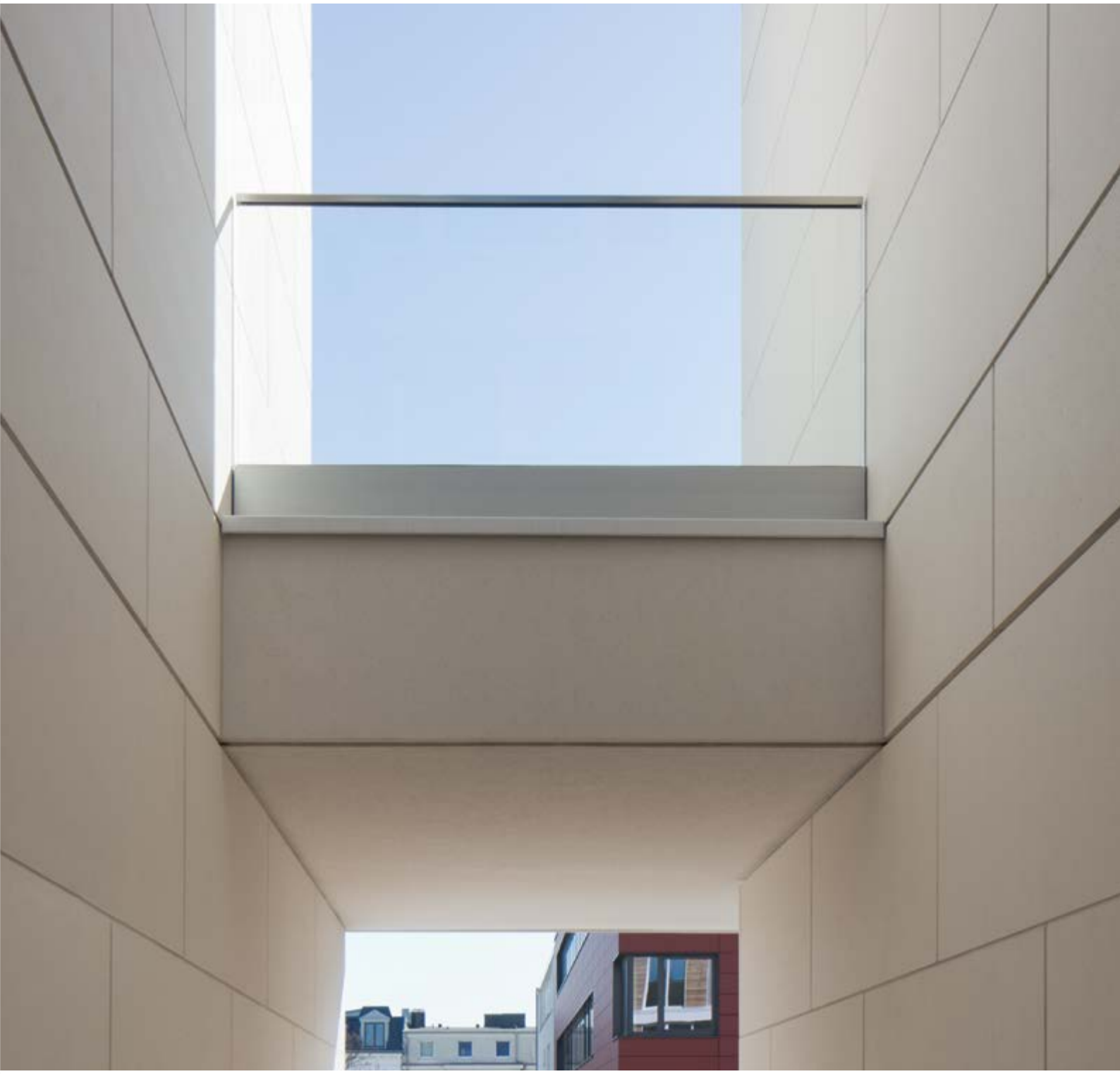
800 linear metres of the BALARDO *core* glass railing system by GLASSLINE were secured to the concrete ceiling and grant the employees both an unobstructed and safe view of nature.

The glass railings consist of aluminium bearing profiles, a 20 millimetre-thick laminated safety glass pane made of 2 x 10 millimetres TSG with 1.52 millimetre film and a load-bearing edge protection. Sebastian Sinn, Sales Manager at Glassline GmbH in Adelsheim, Germany, is pleased about the very special design by the architects of the furoris Group. "We developed our glass railing system as a filigree light-weight construction system just for such ideas. Its design-oriented transparency and functionality impress our customers in every respect."

Foto: furios Gruppe GmbH, Fotograf: Michael Sommer

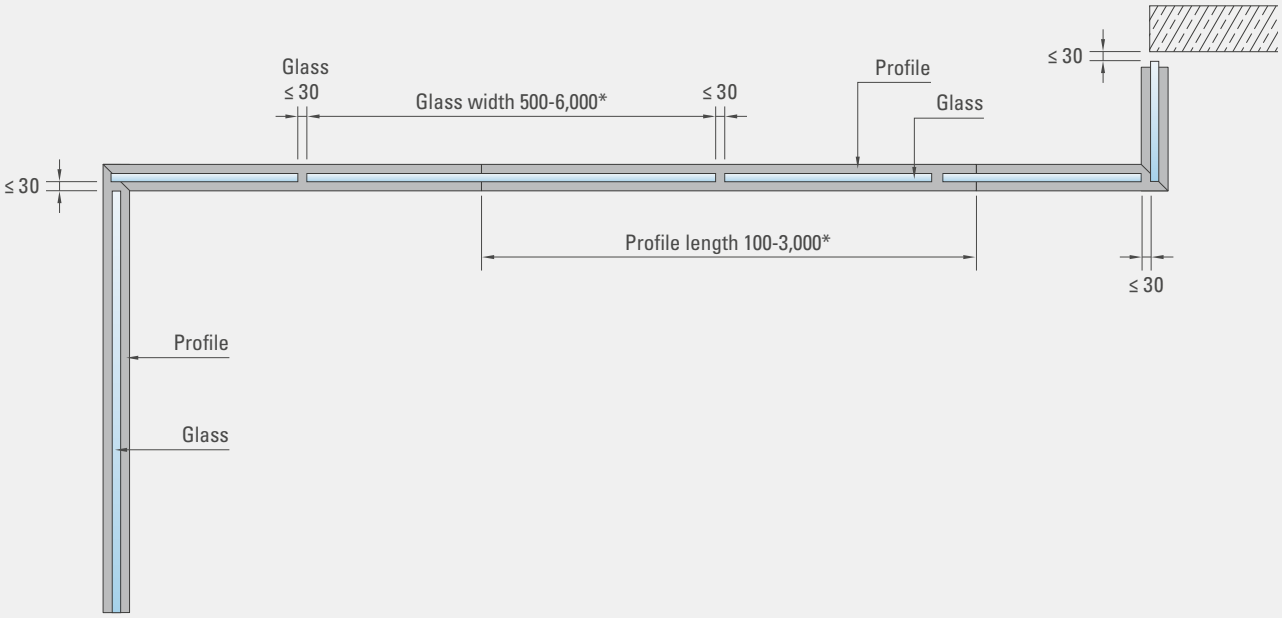
SYSTEM APPLICATIONS

LEVEL AREAS AND STAIRWAYS

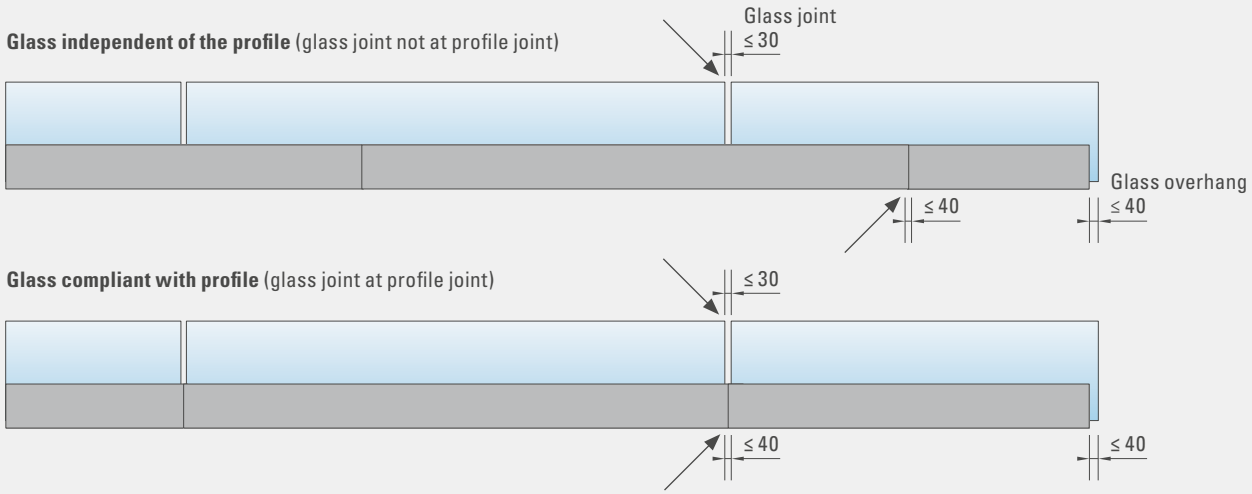


System applications for level areas

Glass and profile



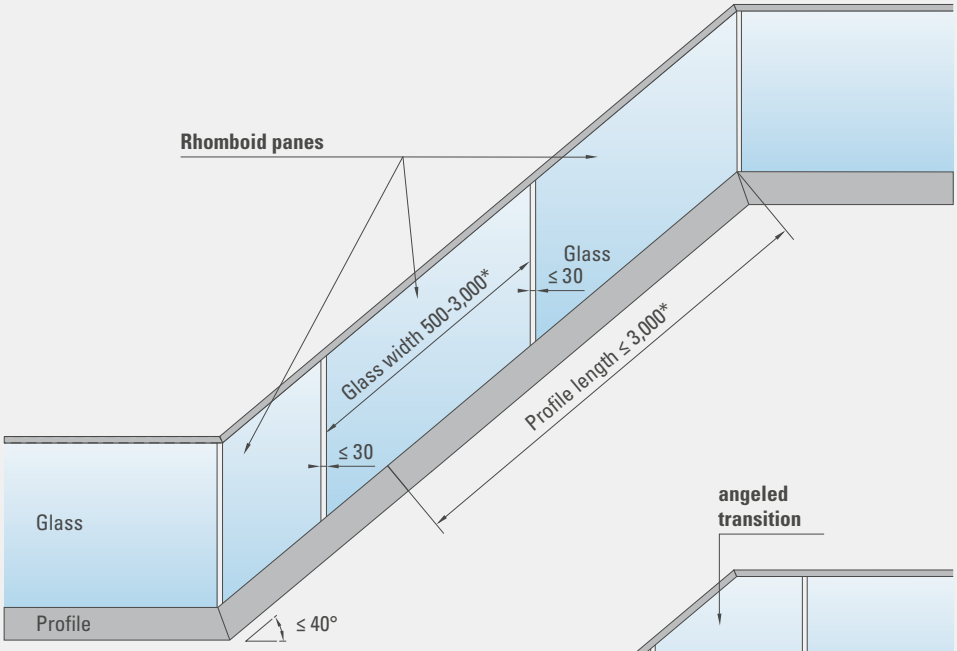
Flexible installation of the glass panes

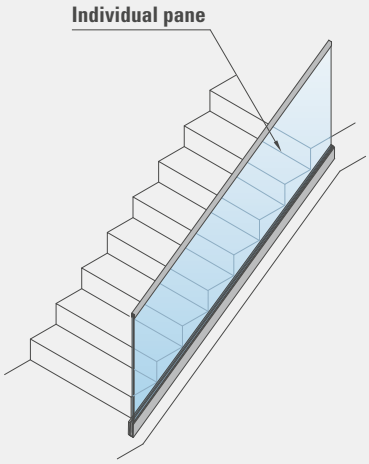


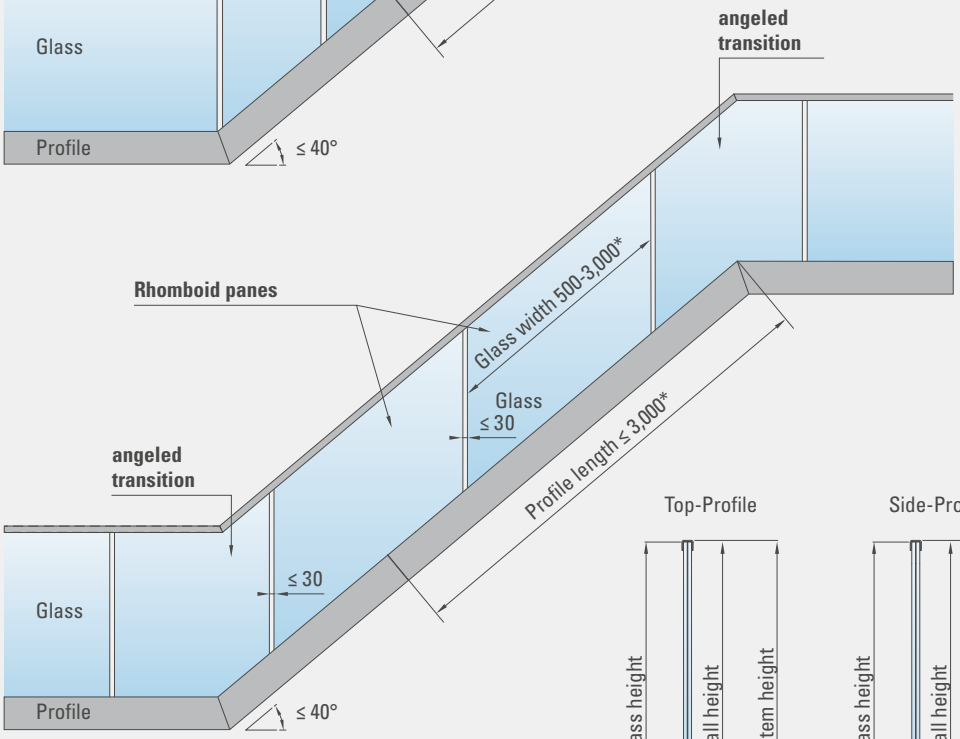
* For application and dimension tables for glass see starting on page 64, for support profiles see page 58, profile spacing ≤ 40 mm. Open, accessible glass edges must be structurally protected, such aswith the vertical glass edge protection profile on page 75.

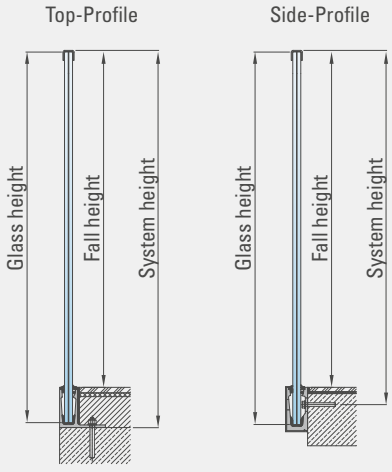
System applications for stairways

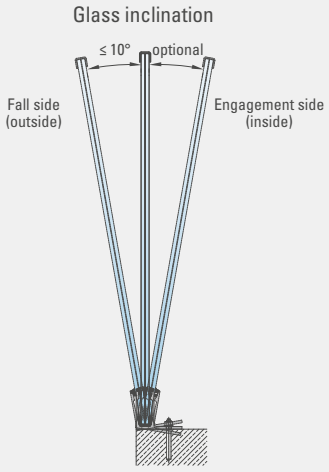
Glass (rhomboid panes, angled transition, individual panes) and profile











* For glass/model panes see page 63, for application and dimension tables see starting on page 64, for support profiles see page 58, profile spacing ≤ 40 mm. Open, accessible glass edges must be structurally protected, such aswith the vertical glass edge protection profile on page 75.

WITH “WOW EFFECT”:

THE WALL DISPLAY CASE IN SENCKENBERG MUSEUM

Floor-to-ceiling glazing must absolutely be stably anchored. The Senckenberg Museum in Frankfurt gives fascinating insights into its world of objects on a safe basis.
Dinosaur skeletons with cult status and the world‘s most diverse bird display collection – it is no accident that the natural history museum in Frankfurt is a major attraction for the young and old. Its sponsor, the Senckenberg Gesellschaft für Naturforschung (SNG), operates seven research institutes and three natural history museums. They proudly include 40 million objects in their collection. To mark the 200-year anniversary of the SNG, another attraction was presented to the public in 2017: the „Faszination Vielfalt“ (Fascination Diversity) special exhibit, which was presented in an enormous wall display case measuring 15 metres wide and 4 metres tall.

Special requirements for statics and stability needed to be met to build the breathtaking display case.

„What was needed was a tall construction with a simple installation that also had to be flexible,“ recalls Dirk Gattschau, glass specialist from Mülheim am Main. This is because loaned items need to be returned and other show pieces perhaps need to be exchanged. With the BALARDO *glasswall* interlocking profile system, he found the ideal solution: „You can relatively easily remove glass panes from the display case, remove objects or carry out cleaning tasks and close the whole thing again once clean.“Also: A General Building Inspectorate Test Certificate (AbP), tested type statics and LGA safety optimally support documentation requirements, approval in individual cases is not required.

SYSTEM PROFILES

BALARDO *core* (previously **BALARDO** *alu*)

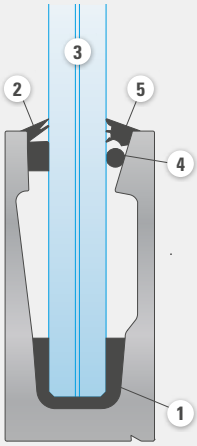
THE NUMBER 1 FOR PERMANENT INSTALLATION

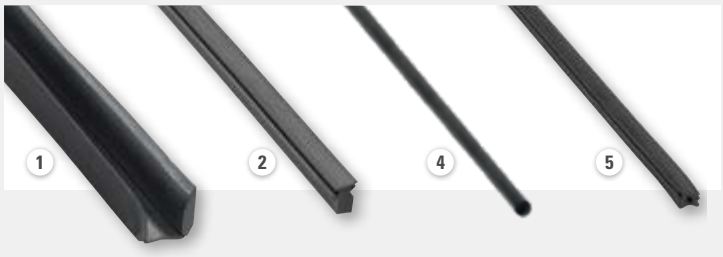
The lightweight BALARDO *core* glass railing systems is the proven, filigree and highly transparent all-rounder for private and also public construction projects. With its compact profiles made of high-quality aluminium, the system provides a light-flooded and open ambience in a wide range of applications and installation situations. In short, BALARDO *core* opens up new potentials for modern glass architecture in terms of safety, design and efficiency. BALARDO *core* offers a complete range of applications, from level areas to staircases and balconies. Its CLICK•N FIX installation principle is revolutionary, which makes installation a piece of cake compared with conventional aluminium glass railings.

THE ADVANTAGES

- ✔ With General Building Inspectorate Test Certificate (AbP)
- ✔ With approved type statics
- ✔ Rail loads up to 1.5 kN/m
- ✔ Deployment also in sports facilities, tested ball impact safety
- ✔ LGA-tested safety
- ✔ Pane widths up to 6,000 mm, pane heights up to 2,200 mm
- ✔ Glass: LSG 2 x 6 mm, 2 x 8 mm and 2 x 10 mm with PVB or SGP 1,52 mm
- ✔ For private and public construction projects
- ✔ For indoors and outdoors
- ✔ For level areas and stairways
- ✔ BALARDO *firstglass* glass edge protection is applicable

THE CLICK'N FIX MOUNTING SET

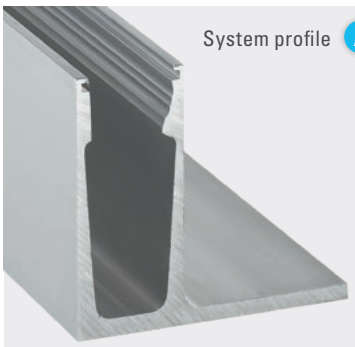


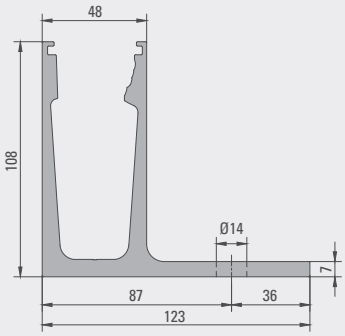


1	Clamping shoe	Material: EPDM	Available length: 3,000 mm
2	Outer seal	Material: EPDM	Available length: 3,000 mm
3	Glass	see starting on page 60	
4	Clamping rod	Material: POM	Available length: 300 mm
5	Inner seal	Material: EPDM	Available length: 3,000 mm

System profile Top 1

System profile A





Material:	Aluminium (EN AW-6063 T66)
Available length:	3,000 mm , 6,000 mm
Glass inset:	Approx. 95 mm
Glass:	LSG 2 x 6 mm, 2 x 8 mm, 2 x 10 mm
PVB / SGP:	1.52 mm

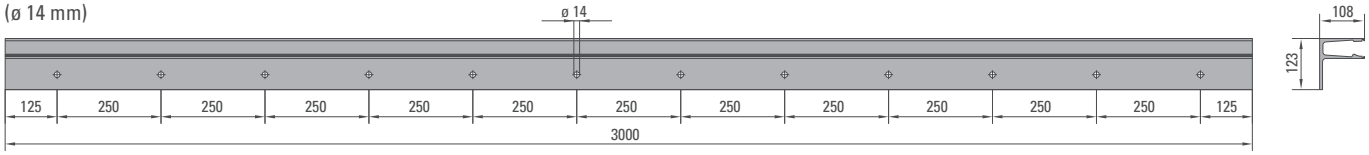
Surfaces:

Natural untreated

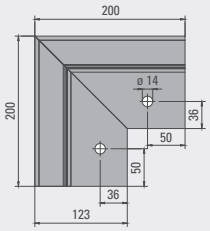
Stainless steel effect (E6EV1)

Fixing distance	
Private area 0.5 kN/m	Public area 1.0 kN/m
a = 500 mm	a = 250 mm

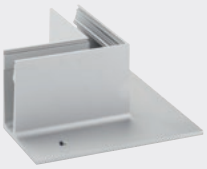
Borehole pattern
(ø 14 mm)

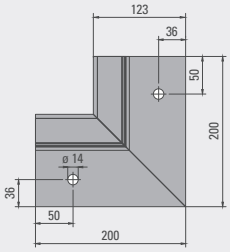


Outside corner B

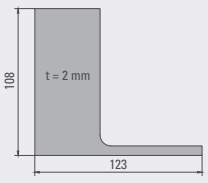


Inside corner C

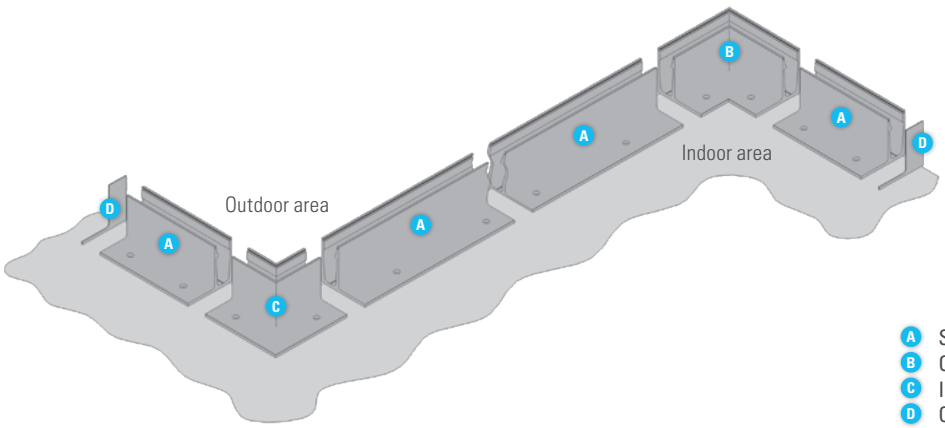




Cover plate D



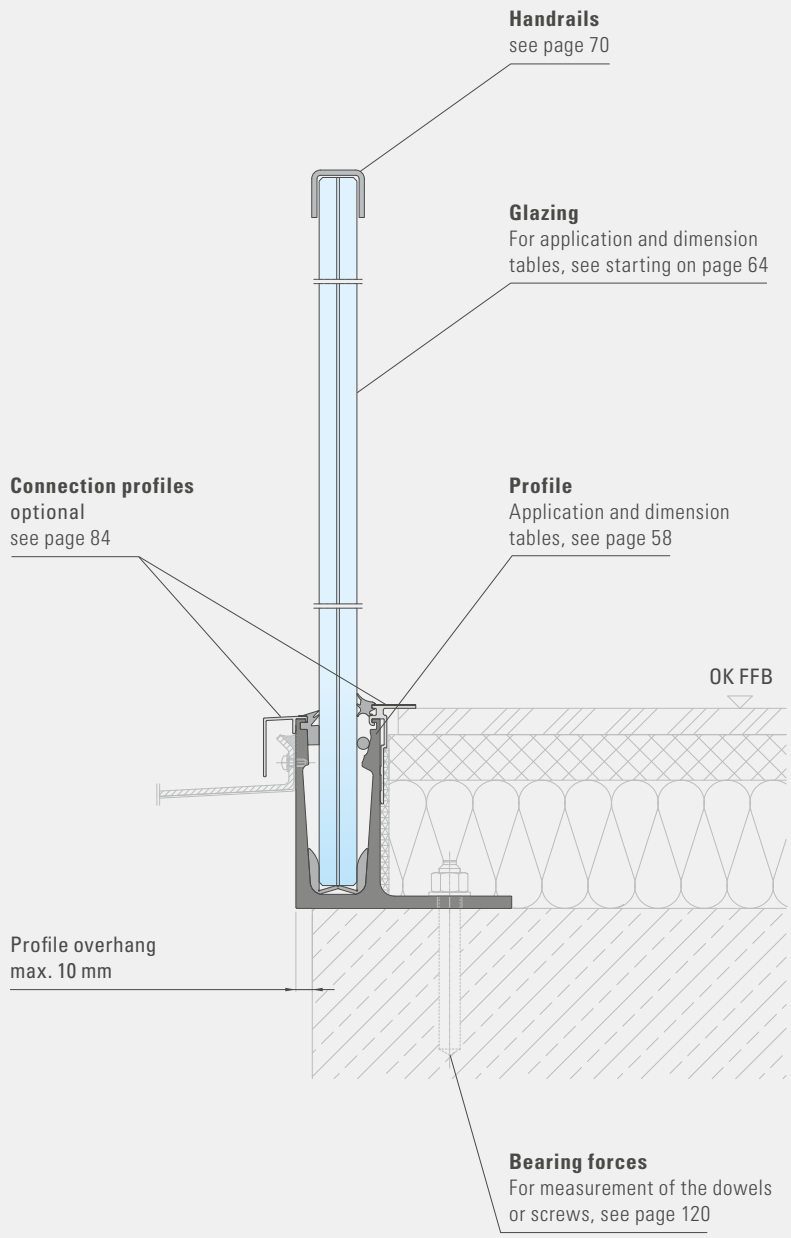
self-adhesive



A System profile
B Outside corner 90°
C Inside corner 90°
D Cover plate (left/right)

All our profiles have a General Building Inspectorate Test Certificate, tested type statics and are LGA-tested.

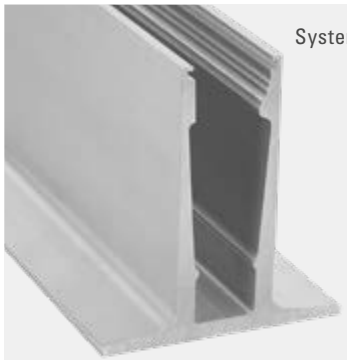
System navigation Top 1



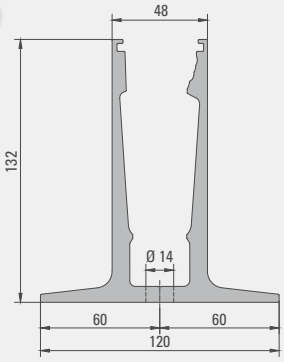
Application examples
Outside / outdoor area
see starting on page 92
Inside / indoor area
see starting on page 112

Installation instructions
see page 138

System profile Top 2



System profile A



Material:	Aluminium (EN AW-6063 T66)
Available length:	3,000 mm
Glass inset:	Approx. 95 mm
Glass:	LSG 2 x 6 mm, 2 x 8 mm, 2 x 10 mm
PVB / SGP:	1.52 mm

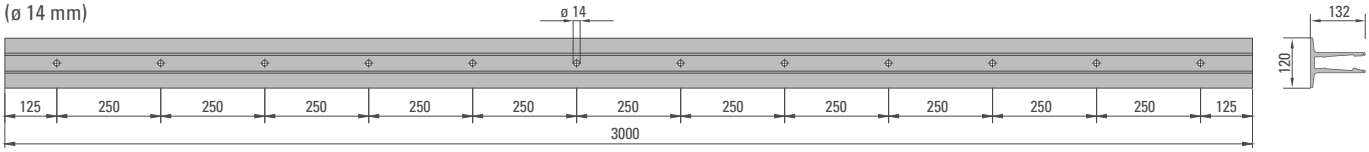
Surfaces:

Natural untreated

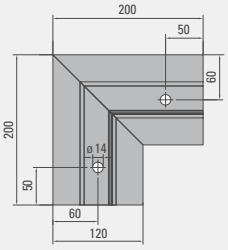
Stainless steel effect (E6EV1)

Fixing distance	
Private area 0.5 kN/m	Public area 1.0 kN/m
a = 500 mm	a = 250 mm

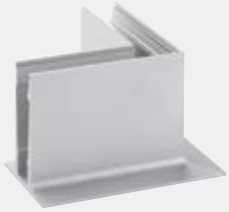
Borehole pattern
(ø 14 mm)

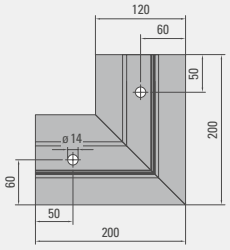


Outside corner B

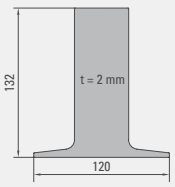


Inside corner C

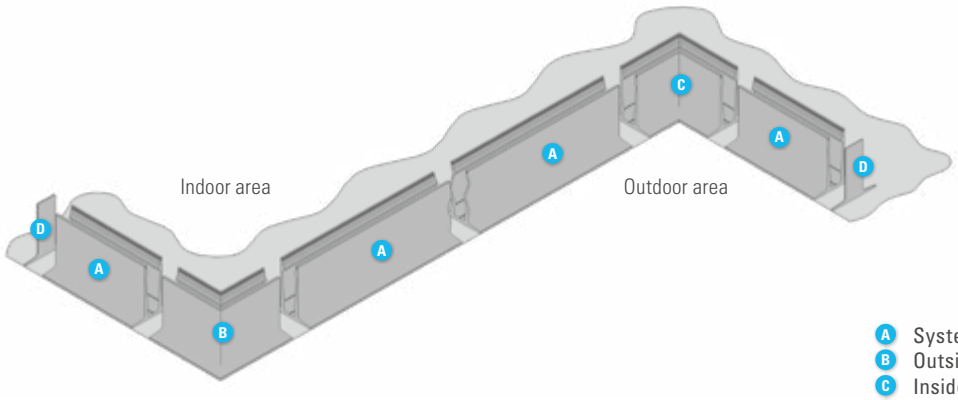




Cover plate D



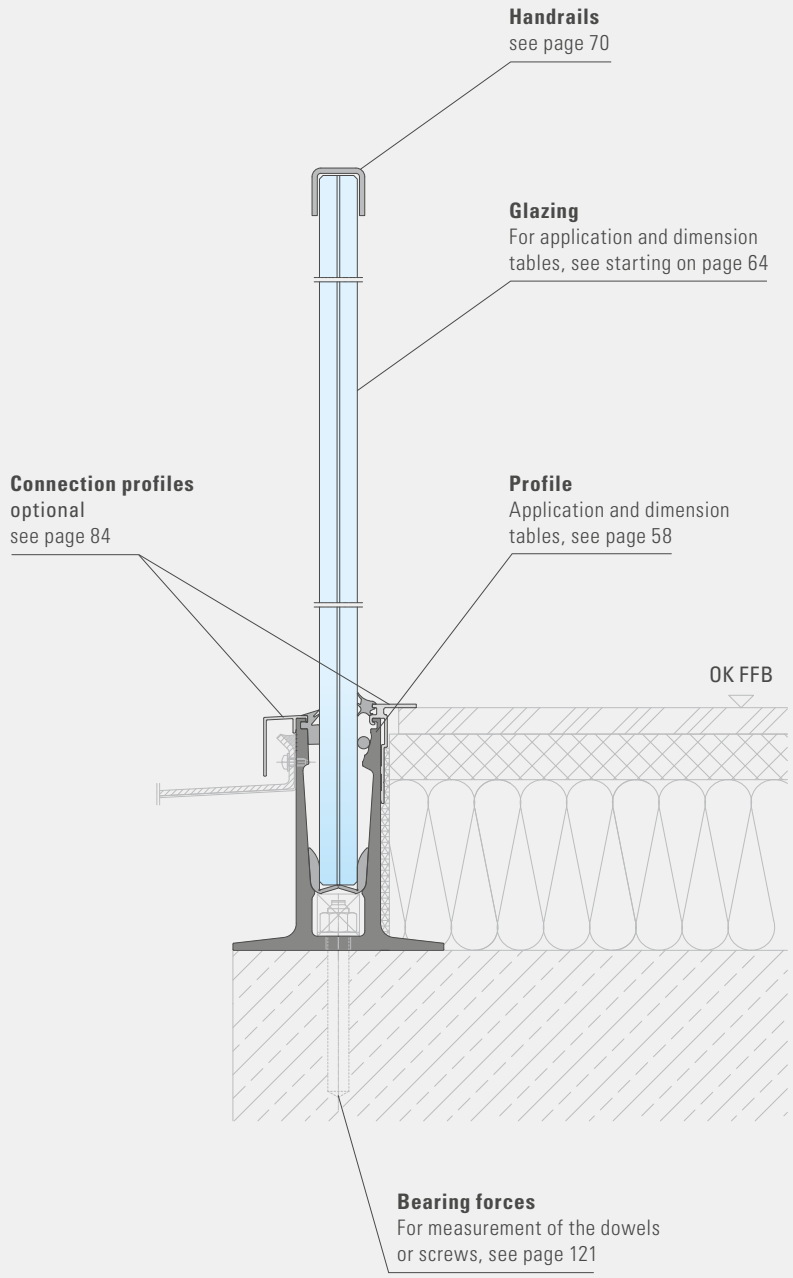
self-adhesive



- A System profile
- B Outside corner 90°
- C Inside corner 90°
- D Cover plate (left/right)

All our profiles have a General Building Inspectorate Test Certificate, tested type statics and are LGA-tested.

System navigation Top 2

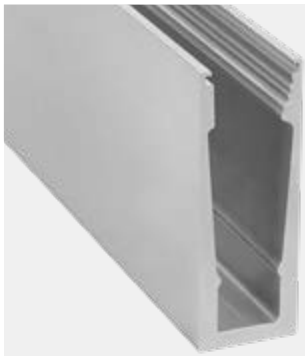


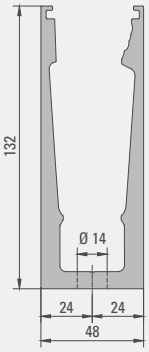
Application examples
Outside / outdoor area
see starting on page 95
Inside / indoor area
see starting on page 113

Installation instructions
see page 138

System profile Top 3

System profile A





Material:	Aluminium (EN AW-6063 T66)
Available length:	3,000 mm
Glass inset:	Approx. 95 mm
Glass:	LSG 2 x 6 mm, 2 x 8 mm, 2 x 10 mm
PVB / SGP:	1.52 mm

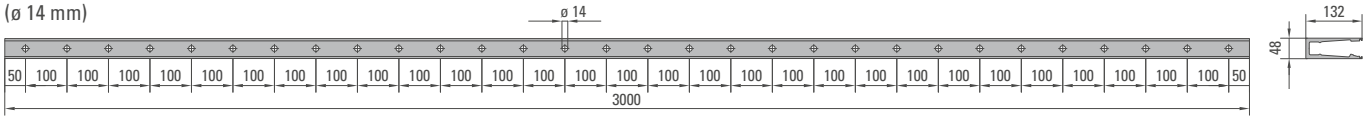
Surfaces:

Natural untreated

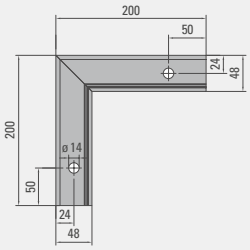
Stainless steel effect (E6EV1)

Fixing distance	
Private area 0.5 kN/m	Public area 1.0 kN/m
a = 200 mm	a = 100 mm

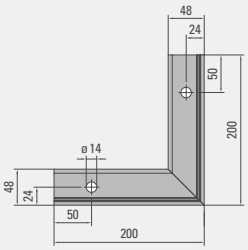
Borehole pattern
(ø 14 mm)



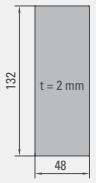
Outside corner B



Inside corner C

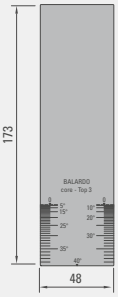


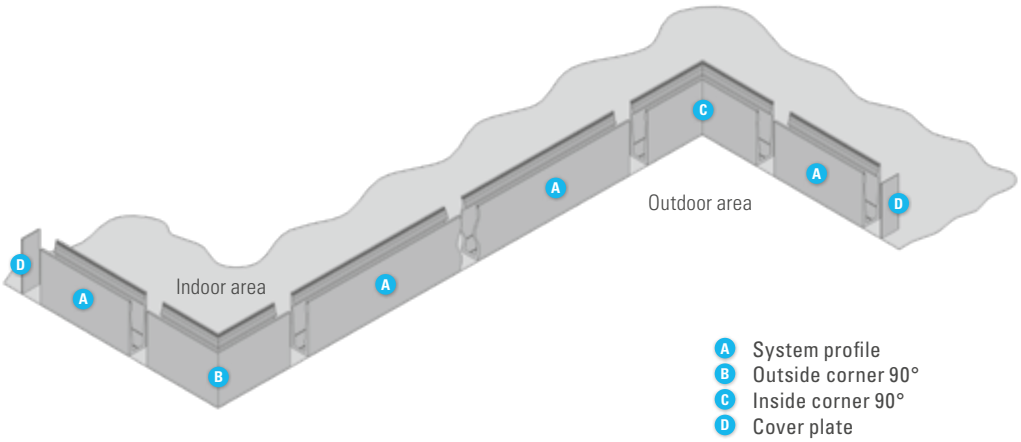
Cover plate D



self-adhesive

Stairway cover plate

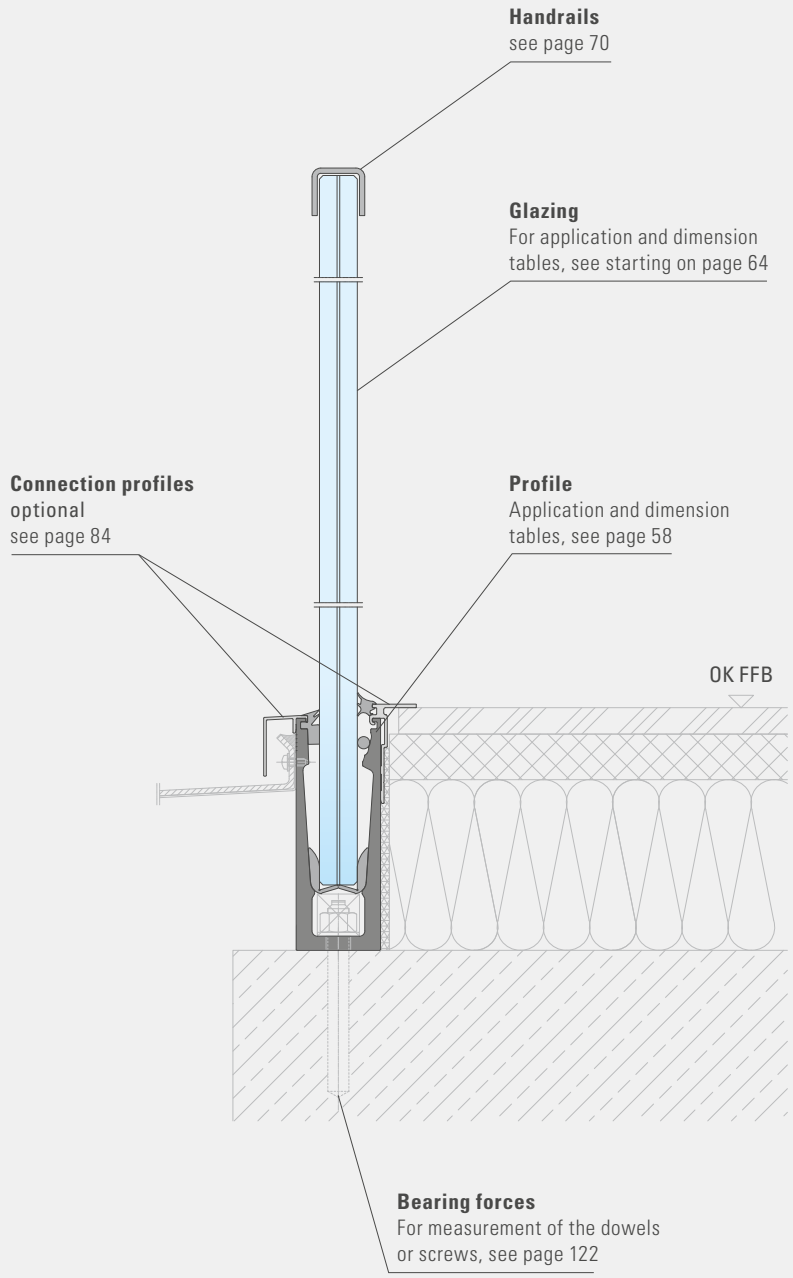




A System profile
B Outside corner 90°
C Inside corner 90°
D Cover plate

All our profiles have a General Building Inspectorate Test Certificate, tested type statics and are LGA-tested.

System navigation Top 3

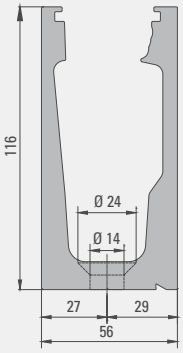


Application examples
Outside / outdoor area
see starting on page 98
Inside / indoor area
see starting on page 114

Installation instructions
see page 138

System profile Top 4

System profile A



Material:	Aluminium (EN AW-6063 T66)
Available length:	3,000 mm
Glass inset:	Approx. 100 mm
Glass:	LSG 2 x 6 mm, 2 x 8 mm, 2 x 10 mm
PVB / SGP:	1.52 mm

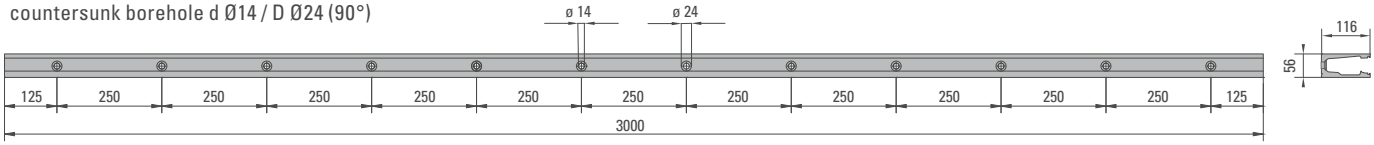
Surfaces:

Natural untreated

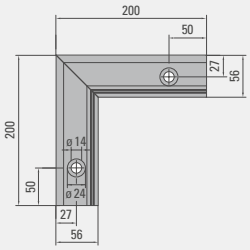
Stainless steel effect (E6EV1)

Fixing distance	
Private area 0.5 kN/m	Public area 1.0 kN/m
a = 250 mm	a = 250 mm

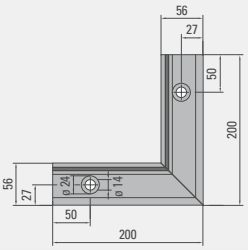
Borehole pattern
countersunk borehole d Ø14 / D Ø24 (90°)



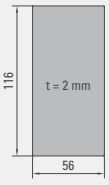
Outside corner B



Inside corner C

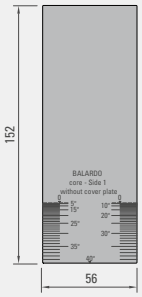


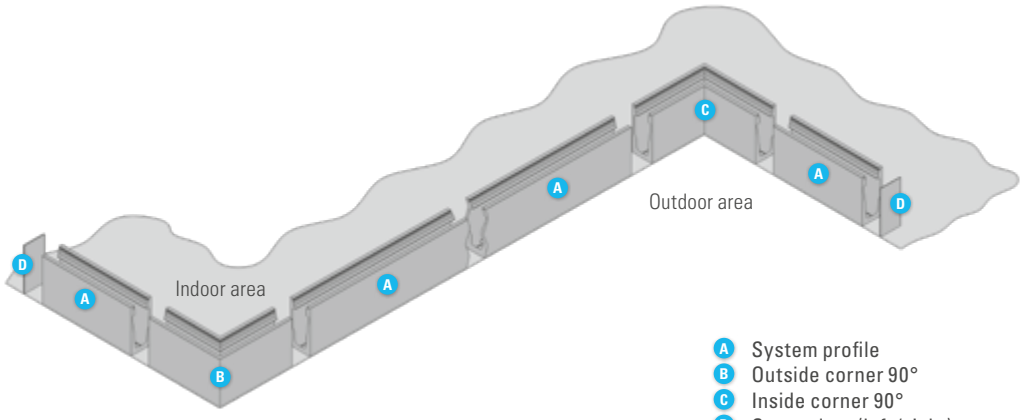
Cover plate D



self-adhesive

Stairway cover plate

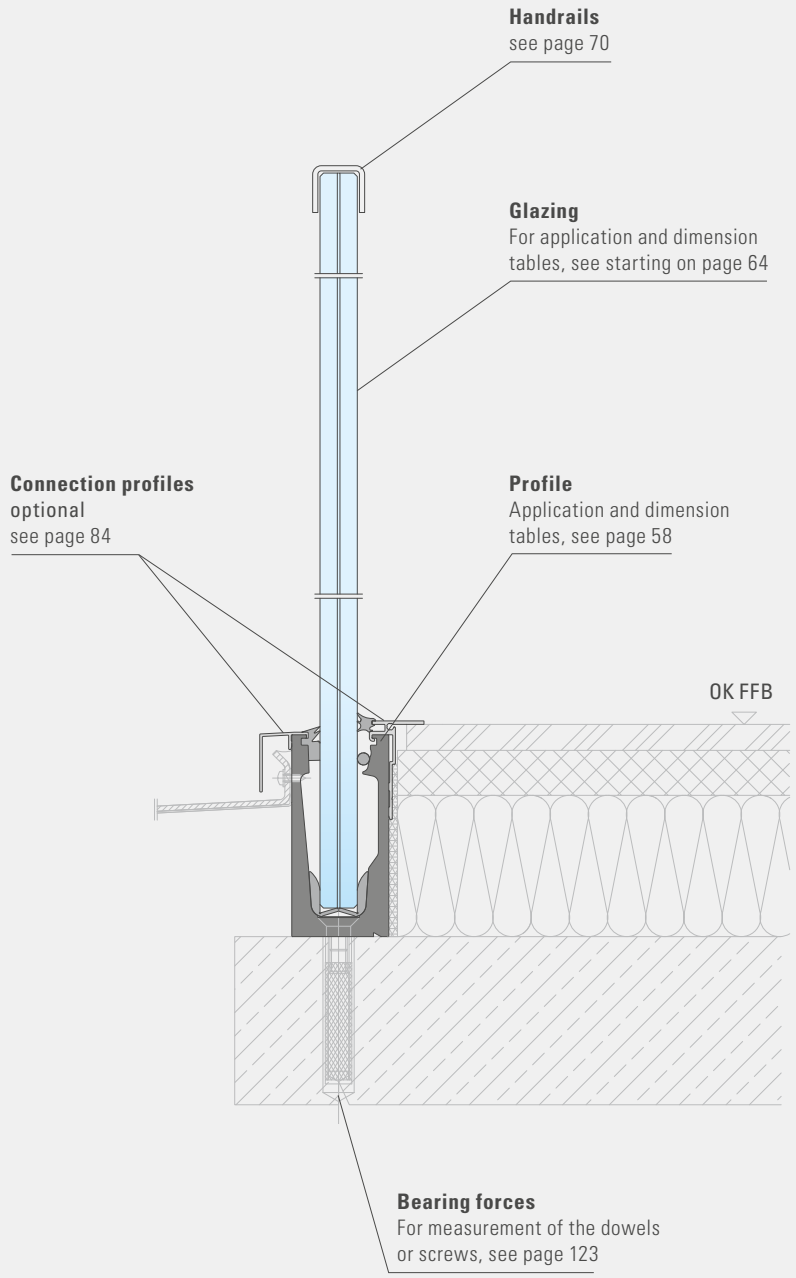




- A System profile
- B Outside corner 90°
- C Inside corner 90°
- D Cover plate (left/right)

All our profiles have a General Building Inspectorate Test Certificate, tested type statics and are LGA-tested.

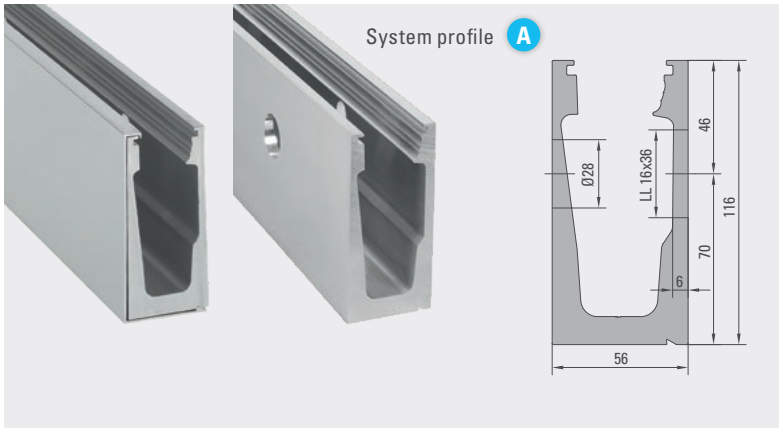
System navigation Top 4



Application examples
Outside / outdoor area
see starting on page 101
Inside / indoor area
see starting on page 115

Installation instructions
see page 138

System profile Side 1



Material:	Aluminium (EN AW-6063 T66)
Available length:	3,000 mm , 6,000 mm
Glass inset:	Approx. 100 mm
Glass:	LSG 2 x 6 mm, 2 x 8 mm, 2 x 10 mm
PVB / SGP:	1.52 mm

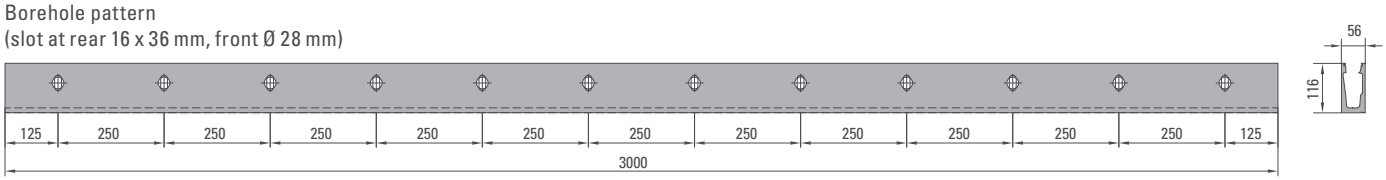
Surfaces:

Natural untreated

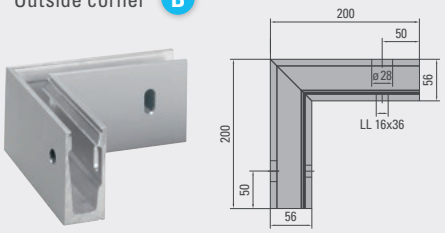
Stainless steel effect (E6EV1)

Fixing distance	
Private area 0.5 kN/m	Public area 1.0 kN/m
a = 500 mm	a = 250 mm

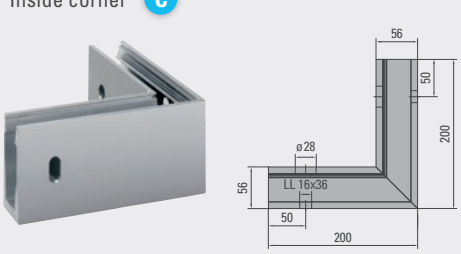
Borehole pattern
(slot at rear 16 x 36 mm, front Ø 28 mm)



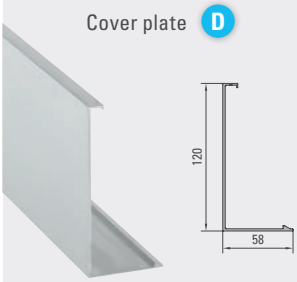
Outside corner B



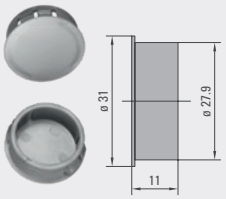
Inside corner C



Cover plate D



Profile cap E

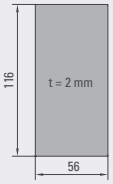


Colour silver (similar to E6EV1)

End plate with cover plate F

self-adhesive

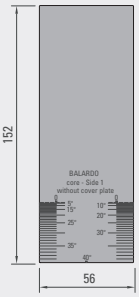
End plate without cover plate G



self-adhesive

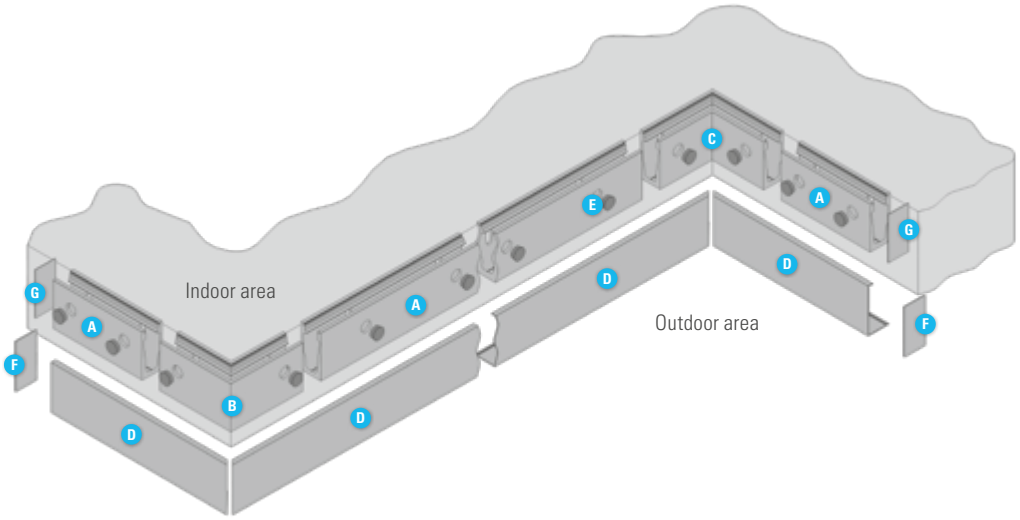
End plate for stairway with cover plate

End plate for stairway without cover plate



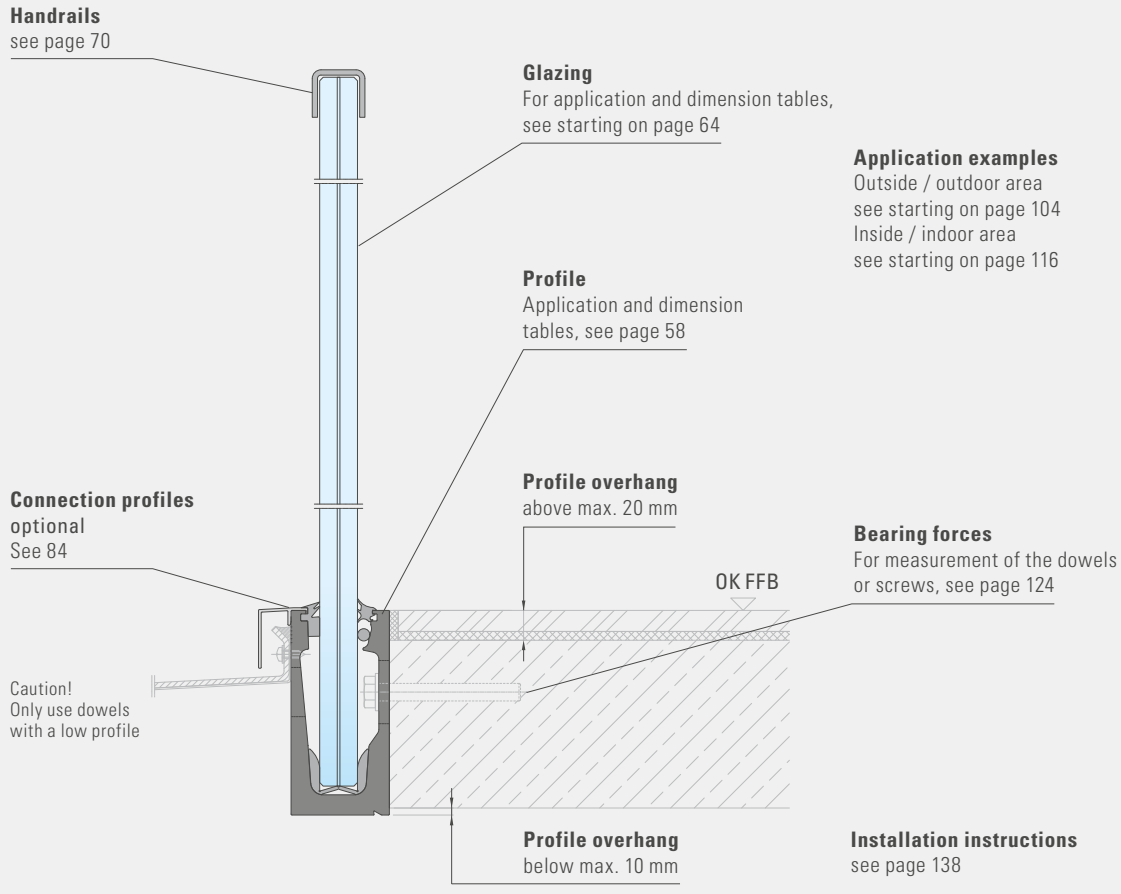
All our profiles have a General Building Inspectorate Test Certificate, tested type statics and are LGA-tested.

System profile Side 1



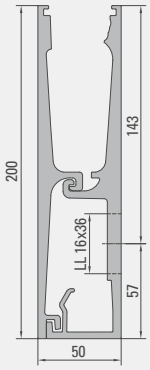
- A System profile
- B Outside corner 90°
- C Inside corner 90°
- D Cover plate
- E Profile cap
- F End plate with cover plate (left/right)
- G End plate without cover plate (left/right)

System navigation Side 1



System profile Side 2

System profile A



Material:	Aluminium (EN AW-6063 T66)
Available length:	3,000 mm
Glass inset:	Approx. 95 mm
Glass:	LSG 2 x 6 mm, 2 x 8 mm, 2 x 10 mm
PVB / SGP:	1.52 mm

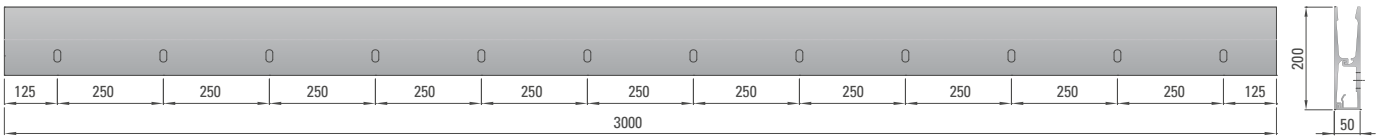
Surfaces:

Natural untreated

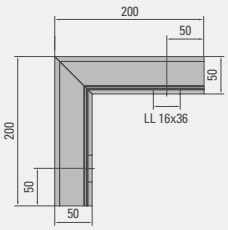
Stainless steel effect (E6EV1)

Fixing distance	
Private area 0.5 kN/m	Public area 1.0 kN/m
a = 500 mm	a = 250 mm

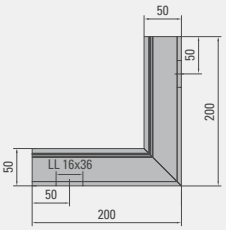
Borehole pattern
(slot 16 x 36 mm)



Outside corner B



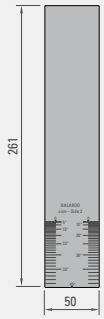
Inside corner C

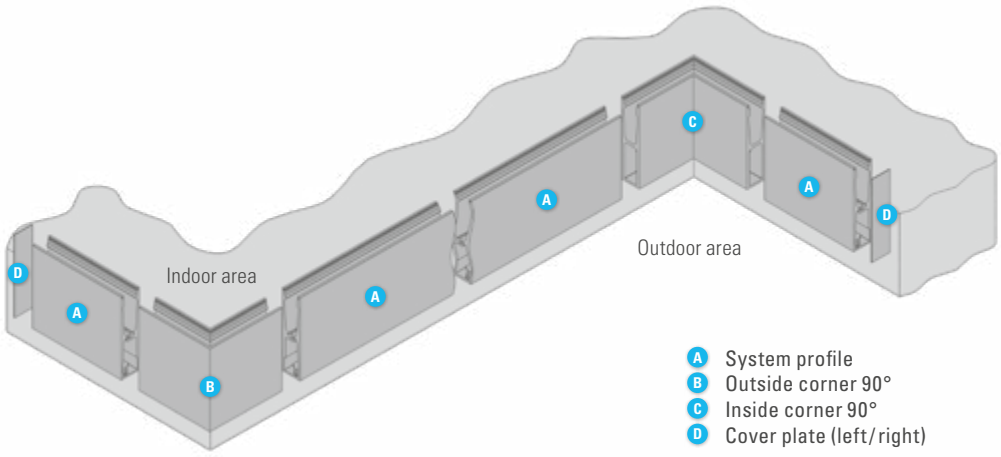


Cover plate D

self-adhesive

Stairway cover plate

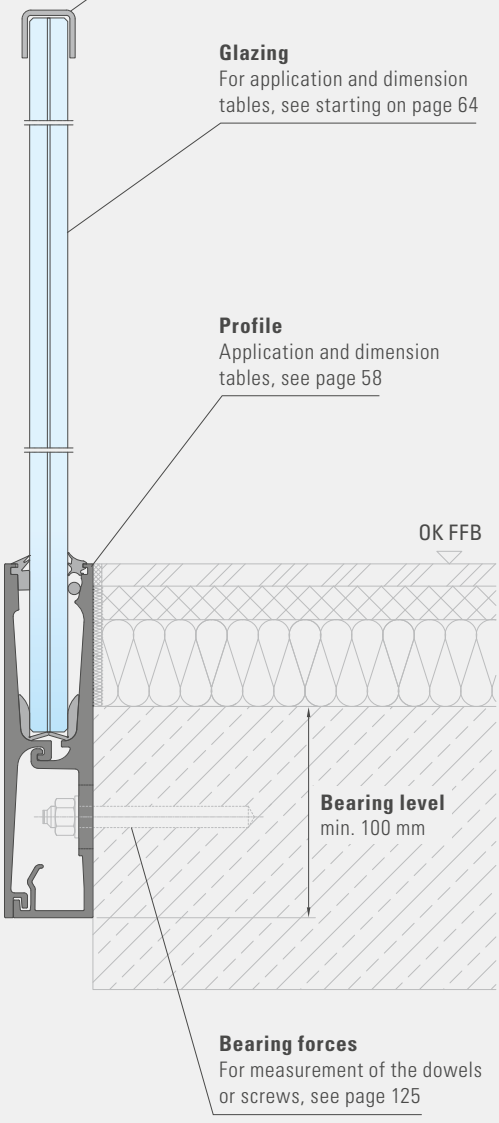




- A System profile
- B Outside corner 90°
- C Inside corner 90°
- D Cover plate (left/right)

All our profiles have a General Building Inspectorate Test Certificate, tested type statics and are LGA-tested.

System navigation Side 2



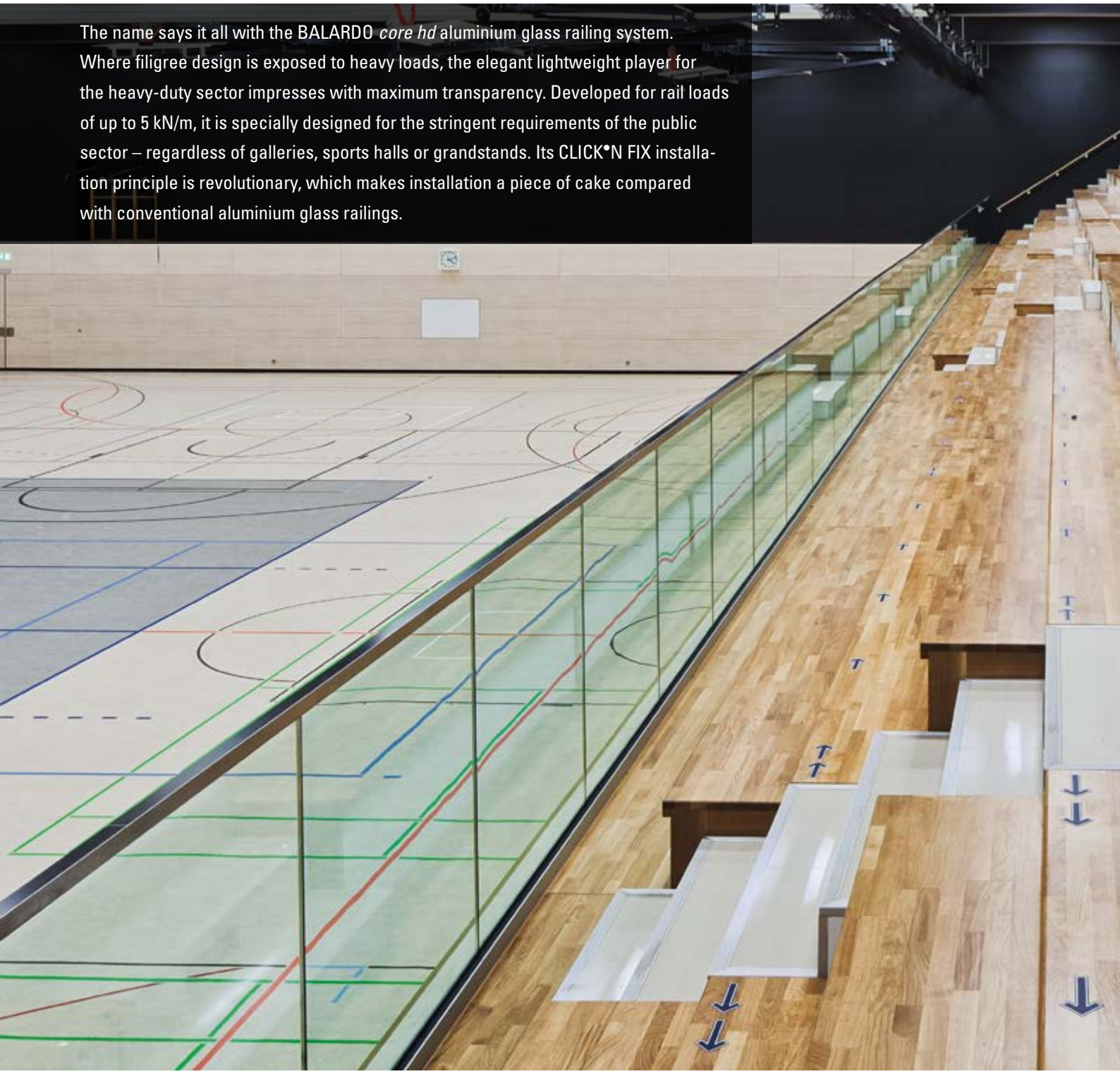
Application examples
Outside / outdoor area
see starting on page 107
Inside / indoor area
see starting on page 117

Installation instructions
see page 138

BALARDO *core hd* (previously **BALARDO** *alu hd*)

THE SAFE SYSTEM FOR HEAVY LOADS

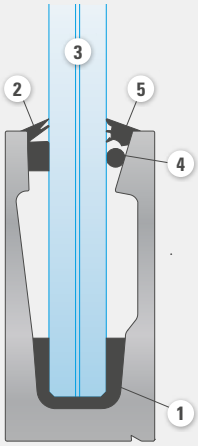
The name says it all with the BALARDO *core hd* aluminium glass railing system. Where filigree design is exposed to heavy loads, the elegant lightweight player for the heavy-duty sector impresses with maximum transparency. Developed for rail loads of up to 5 kN/m, it is specially designed for the stringent requirements of the public sector – regardless of galleries, sports halls or grandstands. Its CLICK•N FIX installation principle is revolutionary, which makes installation a piece of cake compared with conventional aluminium glass railings.

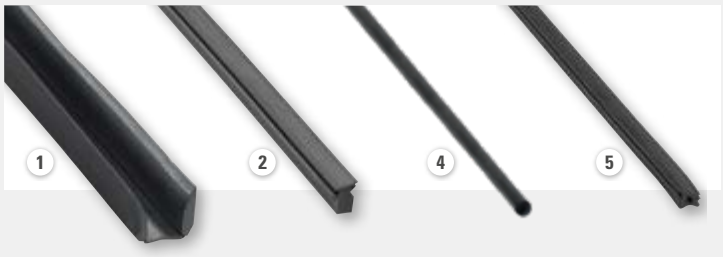


THE ADVANTAGES

- ✔ With General Building Inspectorate Test Certificate (AbP)
- ✔ With approved type statics
- ✔ Rail loads up to 5 kN/m
- ✔ Deployment also in sports facilities, tested ball impact safety
- ✔ LGA-tested safety
- ✔ Pane widths up to 6,000 mm, pane heights up to 2,100 mm
- ✔ Glass: LSG 2 x 12 mm and 2 x 15 mm with PVB or SGP 1,52 mm
- ✔ For public construction projects
- ✔ For indoors and outdoors
- ✔ For level areas and stairways

THE CLICK'N FIX MOUNTING SET

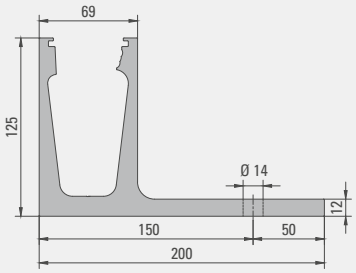




1	Clamping shoe	Material: EPDM	Available length: 3,000 mm
2	Outer seal	Material: EPDM	Available length: 3,000 mm
3	Glass	see starting on page 60	
4	Clamping rod	Material: POM	Available length: 300 mm
5	Inner seal	Material: EPDM	Available length: 3,000 mm

System profile Top 1

System profile A



Material:	Aluminium (EN AW-6063 T66)
Available length:	3,000 mm
Glass inset:	Approx. 105 mm
Glass:	LSG 2 x 12 mm, 2 x 15 mm
PVB / SGP:	1.52 mm

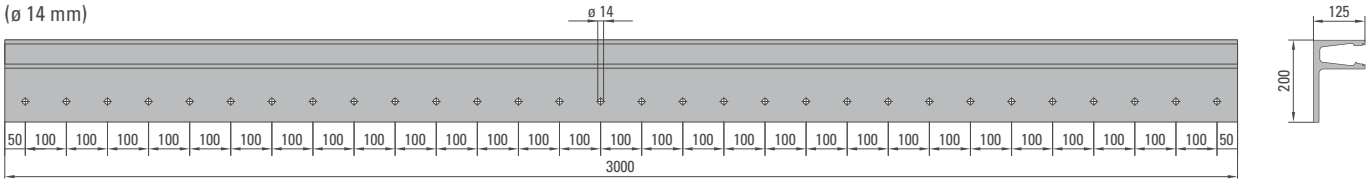
Surfaces:

Natural untreated

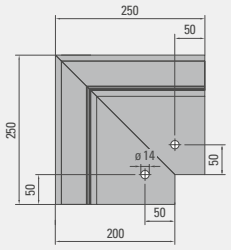
Stainless steel effect (E6EV1)

Fixing distance	
Public area 2.0 kN/m	Public area 3.0 kN/m
a = 200 mm	a = 100 mm

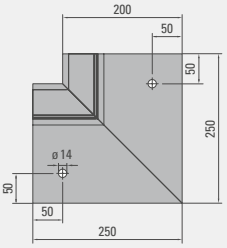
Borehole pattern
(ø 14 mm)



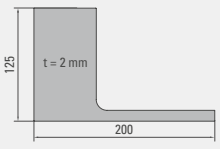
Outside corner B



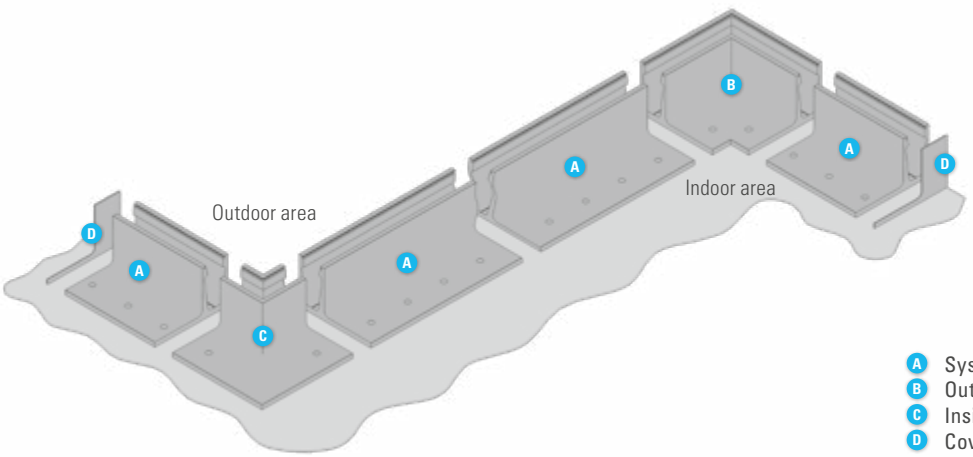
Inside corner C



Cover plate D



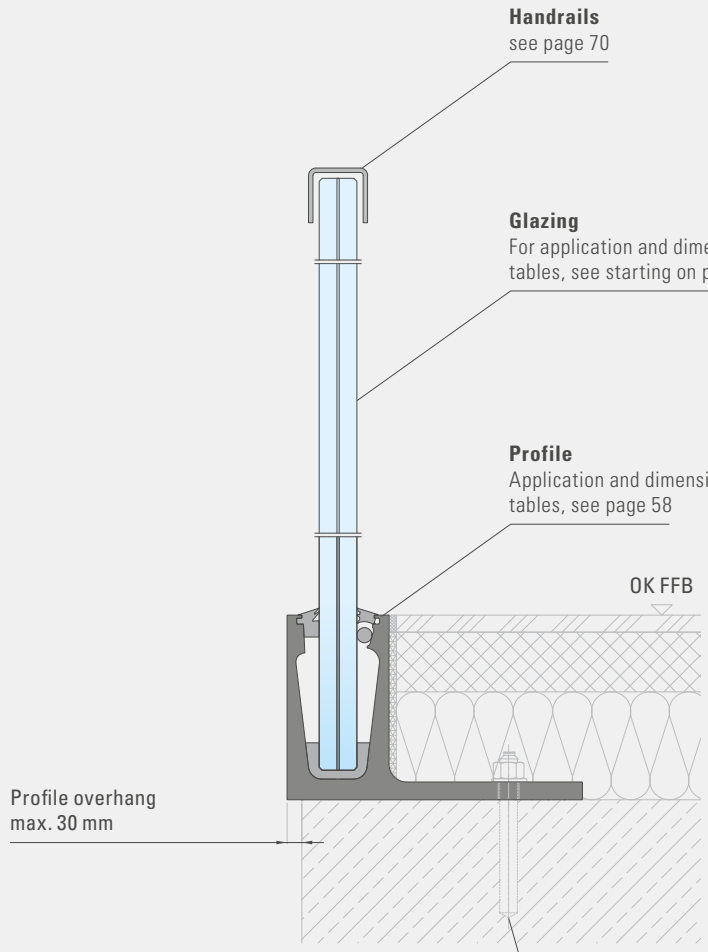
self-adhesive



A System profile
B Outside corner 90°
C Inside corner 90°
D Cover plate (left/right)

All our profiles have a General Building Inspectorate Test Certificate, tested type statics and are LGA-tested.

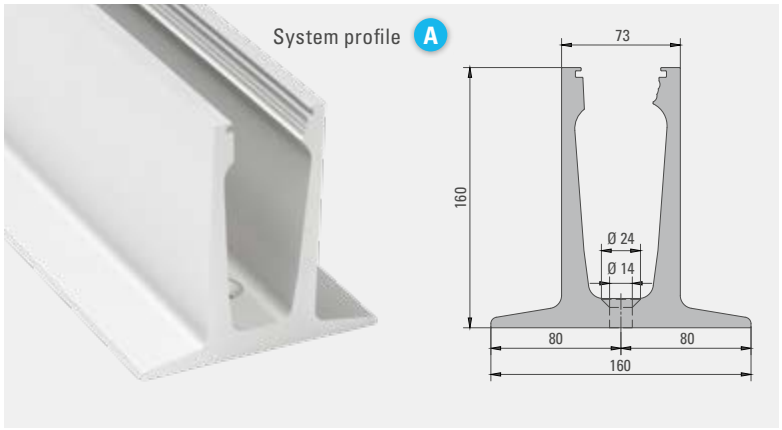
System navigation Top 1



Application examples
Outside / outdoor area
see starting on page 92
Inside / indoor area
see starting on page 112

Installation instructions
see page 138

System profile Top 2

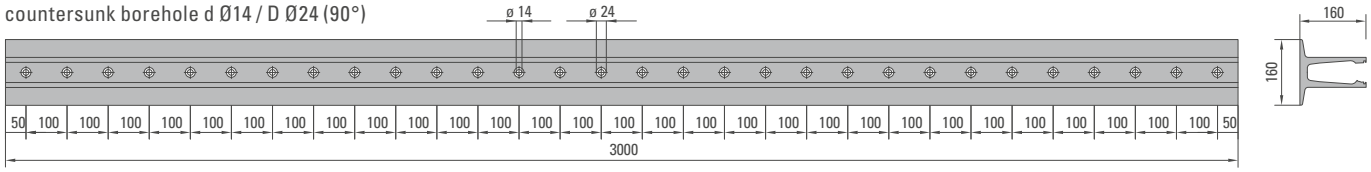


Material:	Aluminium (EN AW-6063 T66)
Available length:	3,000 mm
Glass inset:	Approx. 135 mm
Glass:	LSG 2 x 12 mm, 2 x 15 mm
PVB / SGP:	1.52 mm

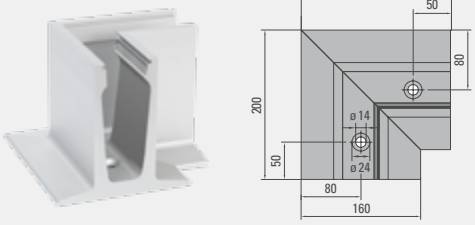
Surfaces:

Fixing distance	
Public area 2.0 kN/m	Public area from 3.0 kN/m
a = 200 mm	a = 100 mm

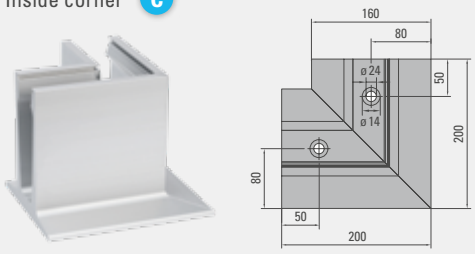
Borehole pattern
countersunk borehole d Ø14 / D Ø24 (90°)



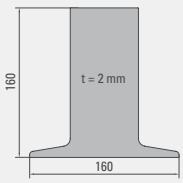
Outside corner **B**



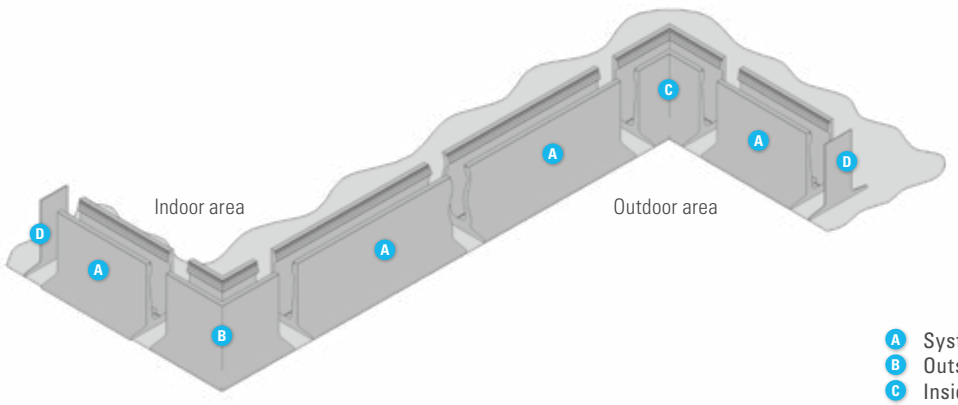
Inside corner **C**



Cover plate **D**



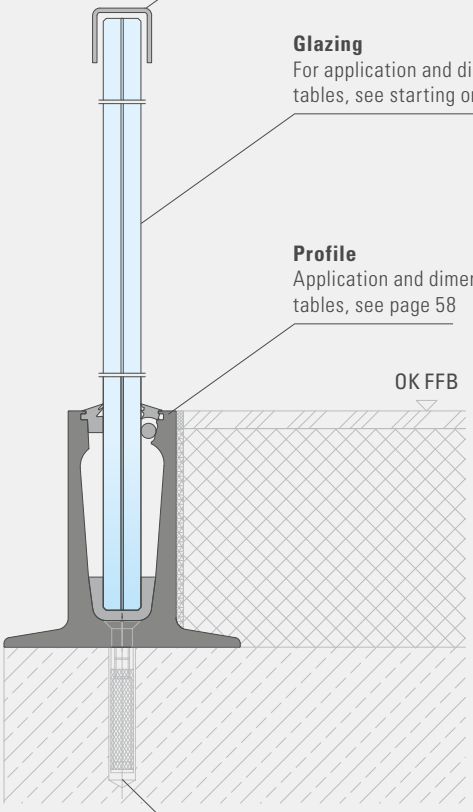
self-adhesive



- **A** System profile
- **B** Outside corner 90°
- **C** Inside corner 90°
- **D** Cover plate (left/right)

All our profiles have a General Building Inspectorate Test Certificate, tested type statics and are LGA-tested.

System navigation Top 2



Handrails
see 70

Glazing
For application and dimension tables, see starting on 64

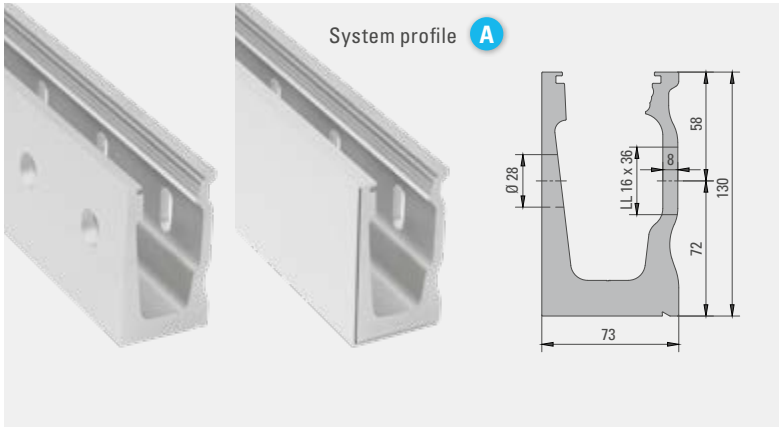
Profile
Application and dimension tables, see page 58

Bearing forces
For measurement of the dowels or screws, see page 127

Application examples
Outside / outdoor area
see starting on page 95
Inside / indoor area
see starting on page 113

Installation instructions
see page 138

System profile Side 1



Material:	Aluminium (EN AW-6063 T66)
Available length:	3,000 mm
Glass inset:	Approx. 105 mm
Glass:	LSG 2 x 12 mm, 2 x 15 mm
PVB / SGP:	1.52 mm

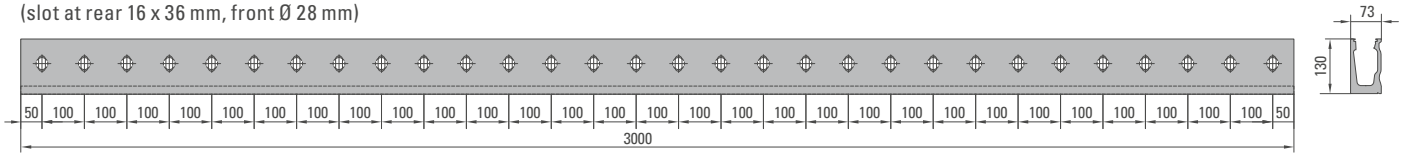
Surfaces:

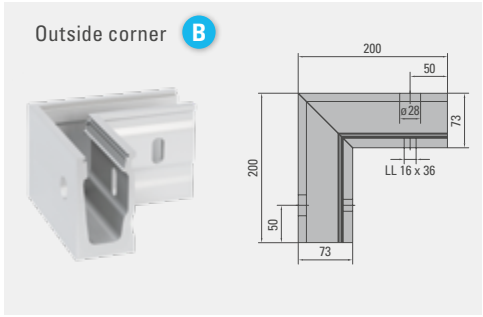
Natural untreated

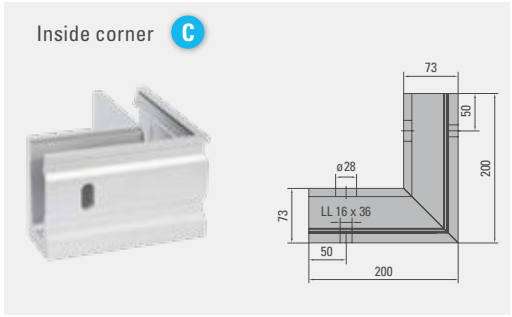
Stainless steel effect (E6EV1)

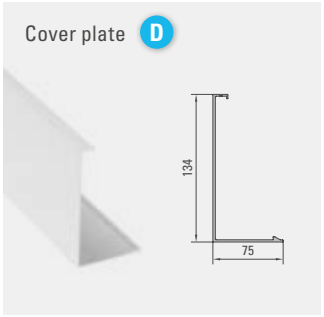
Fixing distance	
Public area 2.0 kN/m	Public area 3.0 kN/m
a = 200 mm	a = 100 mm

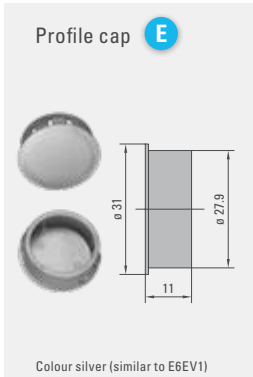
Borehole pattern
(slot at rear 16 x 36 mm, front Ø 28 mm)

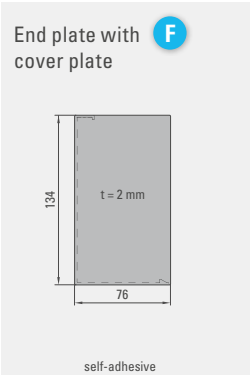


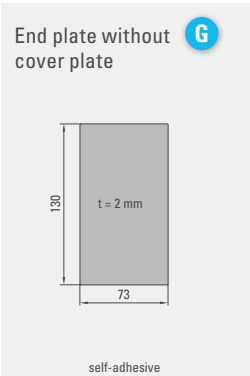


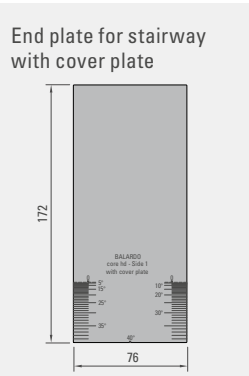


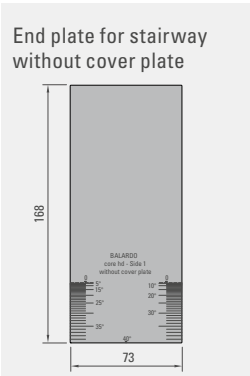






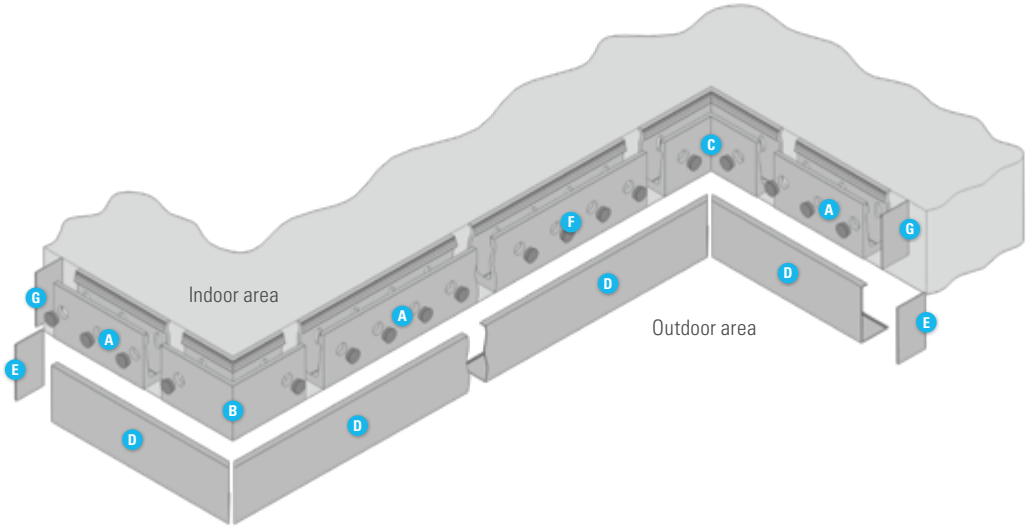






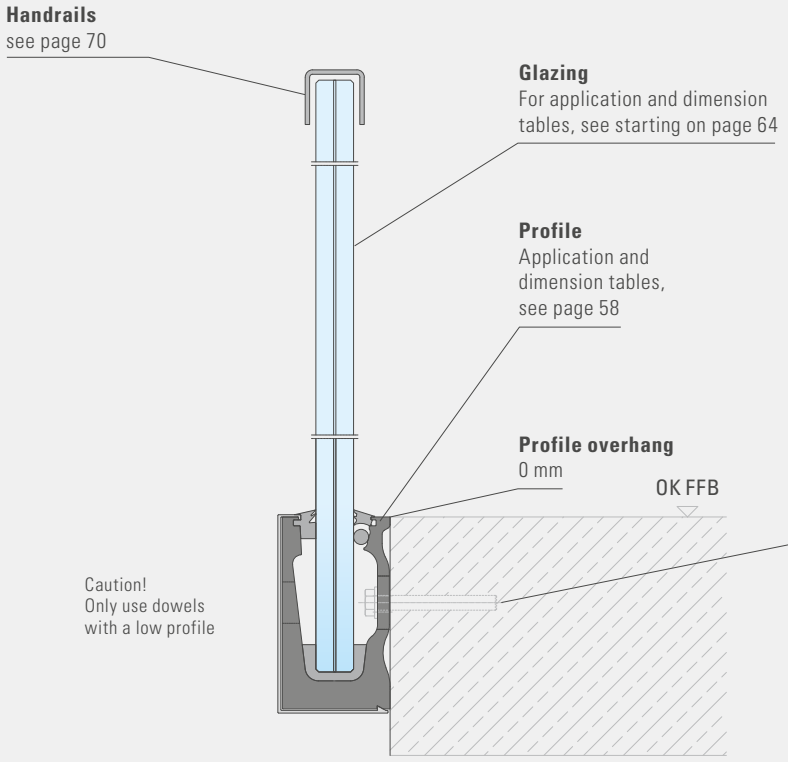
All our profiles have a General Building Inspectorate Test Certificate, tested type statics and are LGA-tested.

System profile Side 1



- A System profile
- B Outside corner 90°
- C Inside corner 90°
- D Cover plate
- E End plate with cover plate (left/right)
- F Profile cap
- G End plate without cover plate (left/right)

System navigation Side 1



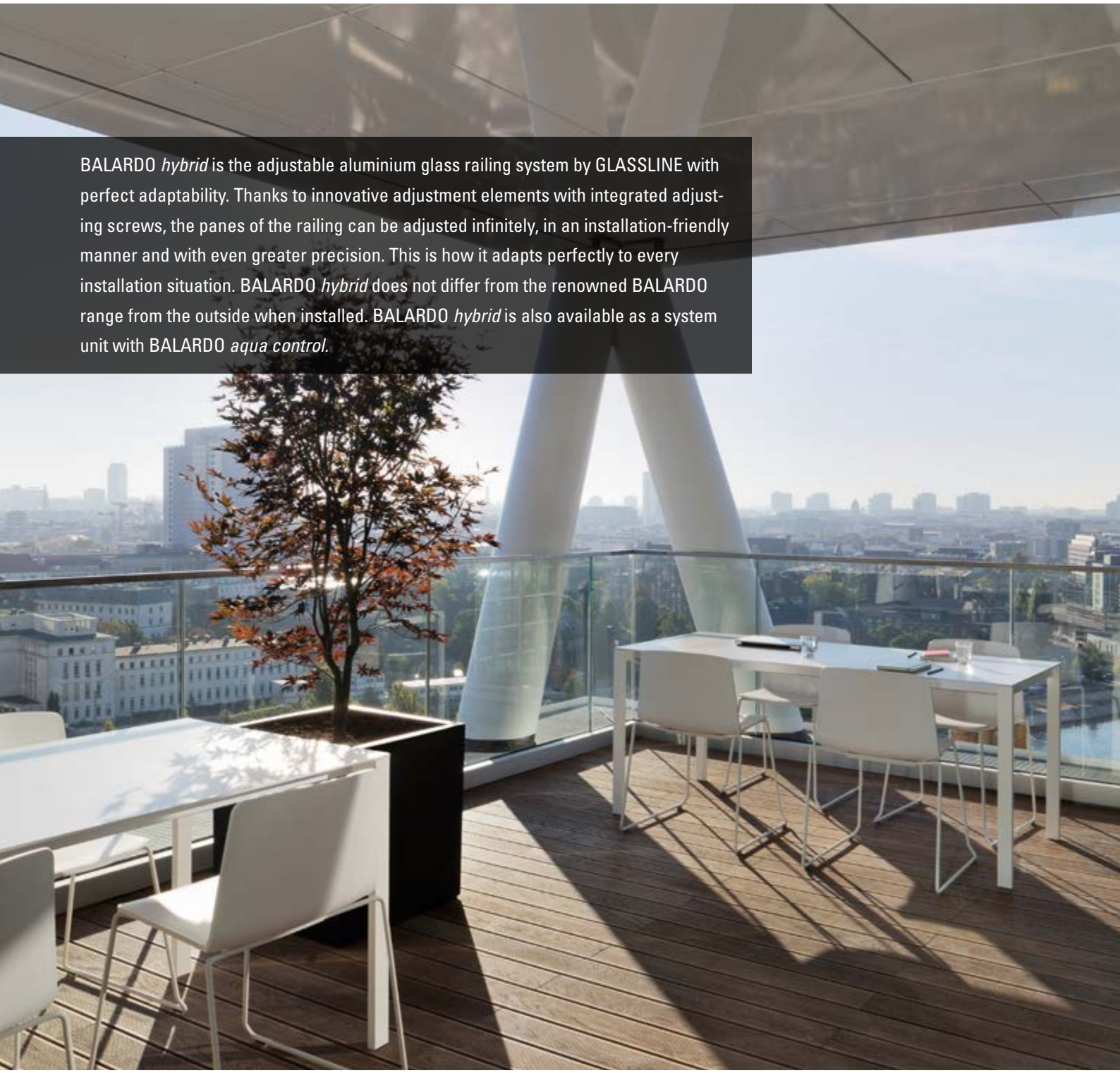
Application examples
Outside / outdoor area
see starting on page 104
Inside / indoor area
see starting on page 116

Bearing forces
For measurement of the dowels or screws, see page 128

Installation instructions
see page 138

BALARDO *hybrid*

THE STRONG SYSTEM WITH INFINITE ADJUSTMENT

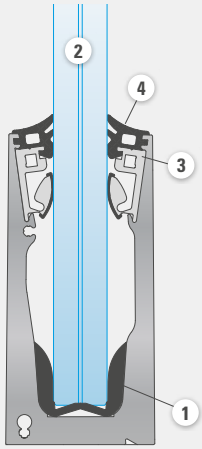


BALARDO *hybrid* is the adjustable aluminium glass railing system by GLASSLINE with perfect adaptability. Thanks to innovative adjustment elements with integrated adjusting screws, the panes of the railing can be adjusted infinitely, in an installation-friendly manner and with even greater precision. This is how it adapts perfectly to every installation situation. BALARDO *hybrid* does not differ from the renowned BALARDO range from the outside when installed. BALARDO *hybrid* is also available as a system unit with BALARDO *aqua control*.

THE ADVANTAGES

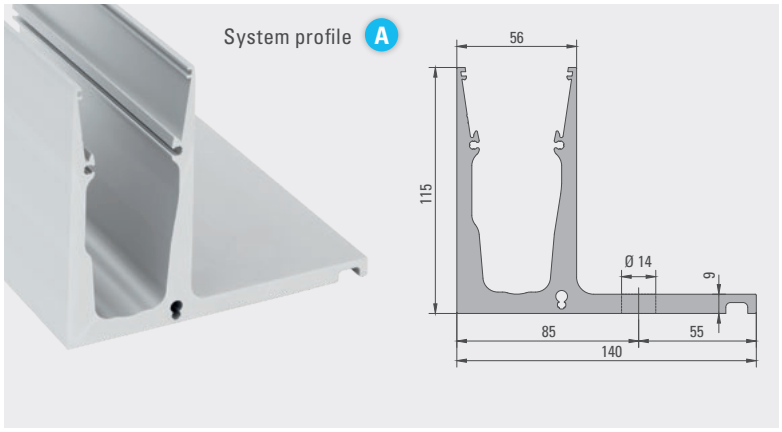
- With General Building Inspectorate Test Certificate (AbP)
- With approved type statics
- Rail loads up to 2 kN/m
- **With integrated adjustability by max. 30 mm at a glass height of 1,000 mm**
- Deployment also in sports facilities, tested ball impact safety
- LGA-tested safety
- Pane widths up to 6,000 mm, pane heights up to 2,100 mm
- Glass: LSG 2 x 8 mm and 2 x 10 mm with PVB or SGP 1,52 mm
- For private and public construction projects
- For indoors and outdoors
- For level areas and stairways
- BALARDO *firstglass* glass edge protection is applicable

THE CLEVERFIX MOUNTING SET



1	Clamping shoe	Material: EPDM	Available length: 3.000 mm	
2	Glass	see starting on page 60		
3	Positioning elements	Material: POM + Aluminium	Available length: 1.000 mm	Screws: M 6 x 12 mm, spacing: 200 mm
4	Inner and outer seal	Material: EPDM	Available length: 3.000 mm	

System profile Top 1

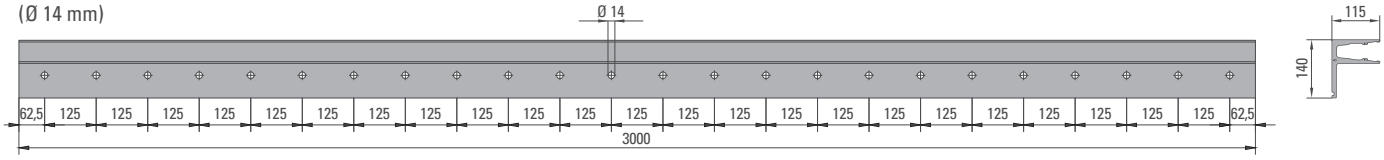


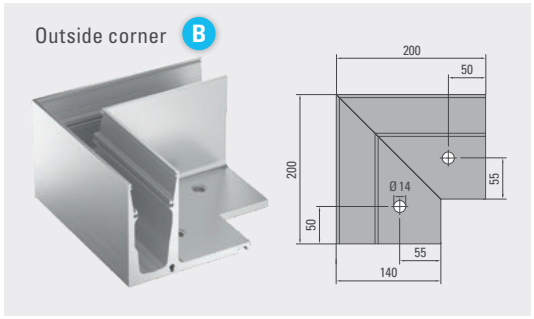
Material:	Aluminium (EN AW-6063 T66)
Available length:	3,000 mm, 6,000 mm
Glass inset:	Approx. 100 mm
Glass:	LSG 2 x 8 mm, 2 x 10 mm
PVB / SGP:	1.52 mm

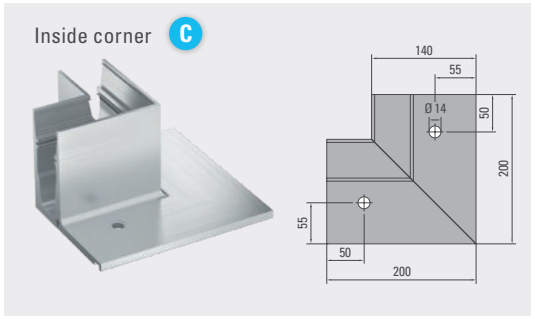
Surfaces:

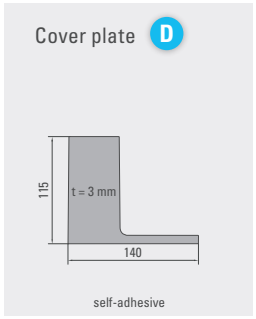
Fixing distance		
Private area 0.5 kN/m	Public area 1.0 kN/m	Public area 2.0 kN/m
a = 500 mm	a = 250 mm	a = 125 mm

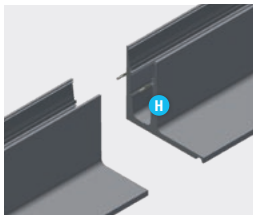
Borehole pattern
(Ø 14 mm)

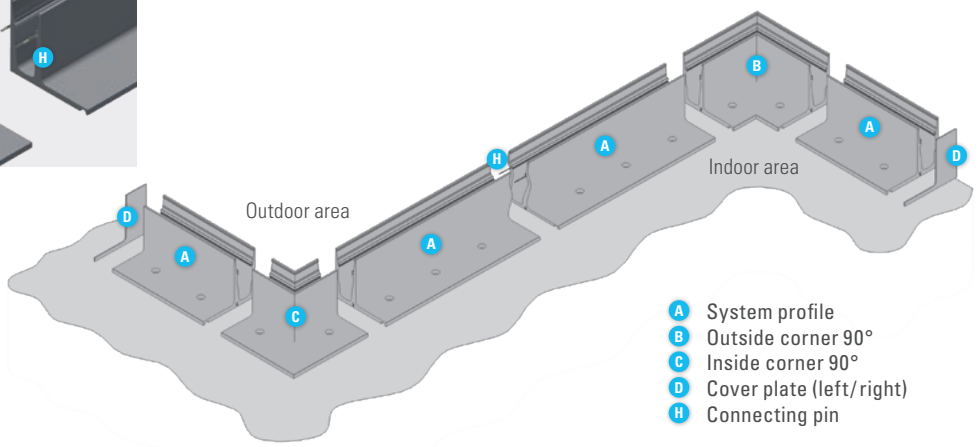






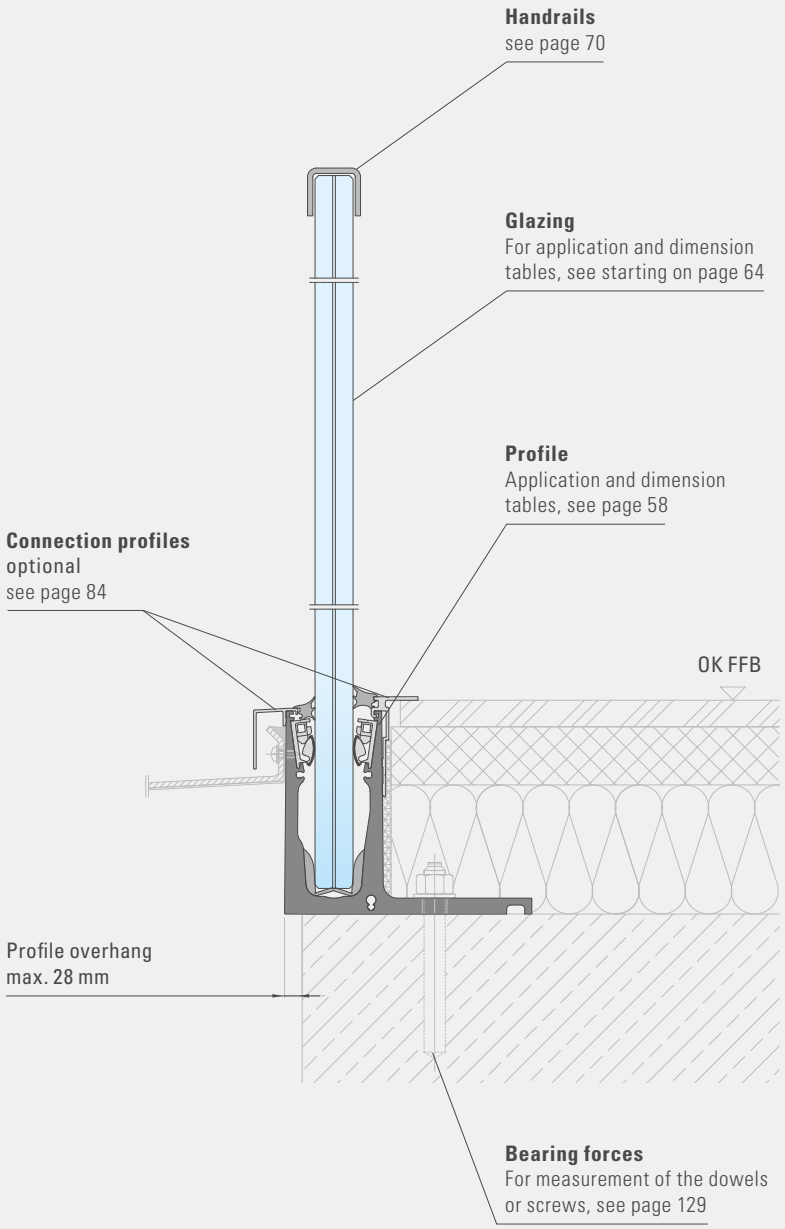






All our profiles have a General Building Inspectorate Test Certificate, tested type statics and are LGA-tested.

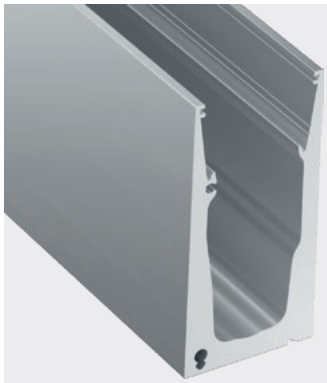
System navigation Top 1



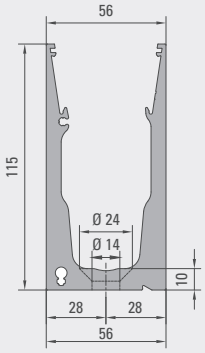
Application examples
Outside / outdoor area
see starting on page 92
Inside / indoor area
see starting on page 112

Installation instructions
see page 140

System profile Top 4



System profile A



Material:	Aluminium (EN AW-6063 T66)
Available length:	3,000 mm, 6,000 mm
Glass inset:	Approx. 100 mm
Glass:	LSG 2 x 8 mm, 2 x 10 mm
PVB / SGP:	1.52 mm

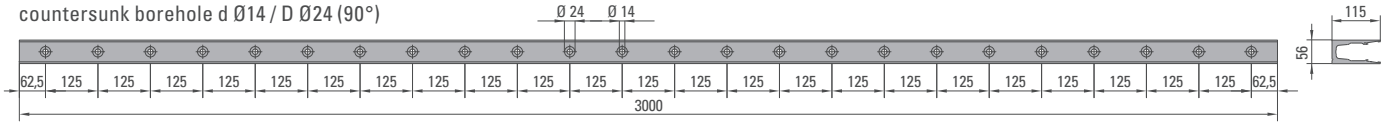
Surfaces:

Natural untreated

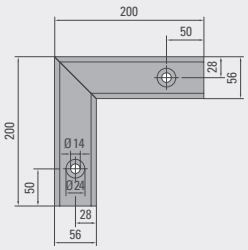
Stainless steel effect (E6EV1)

Fixing distance		
Private area 0.5 kN/m	Public area 1.0 kN/m	Public area 2.0 kN/m
a = 250 mm	a = 250 mm	a = 125 mm

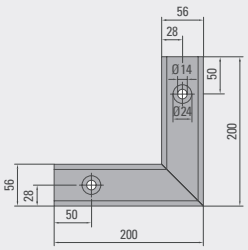
Borehole pattern
countersunk borehole d Ø14 / D Ø24 (90°)



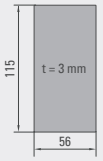
Outside corner B



Inside corner C

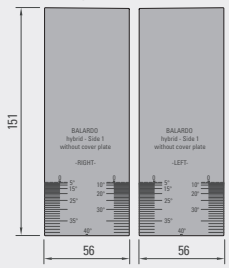


Cover plate D

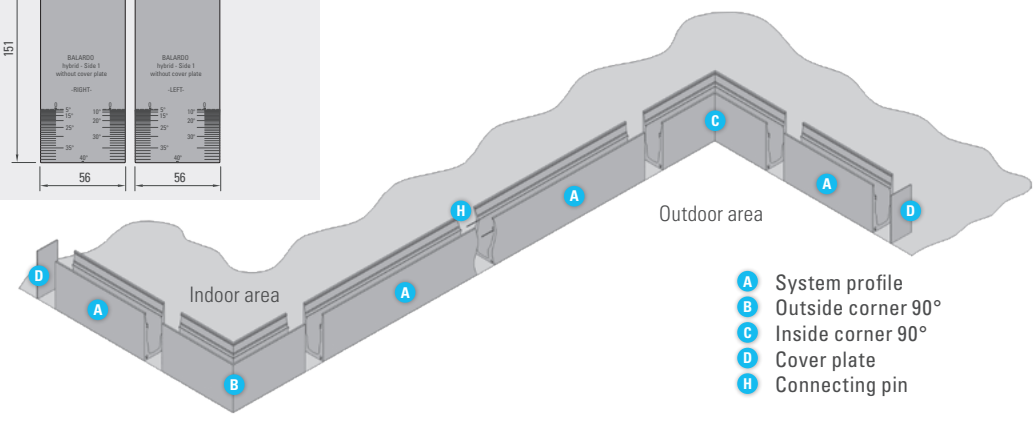


self-adhesive

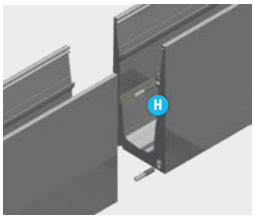
End plate for stairway without cover plate



Connecting pin H

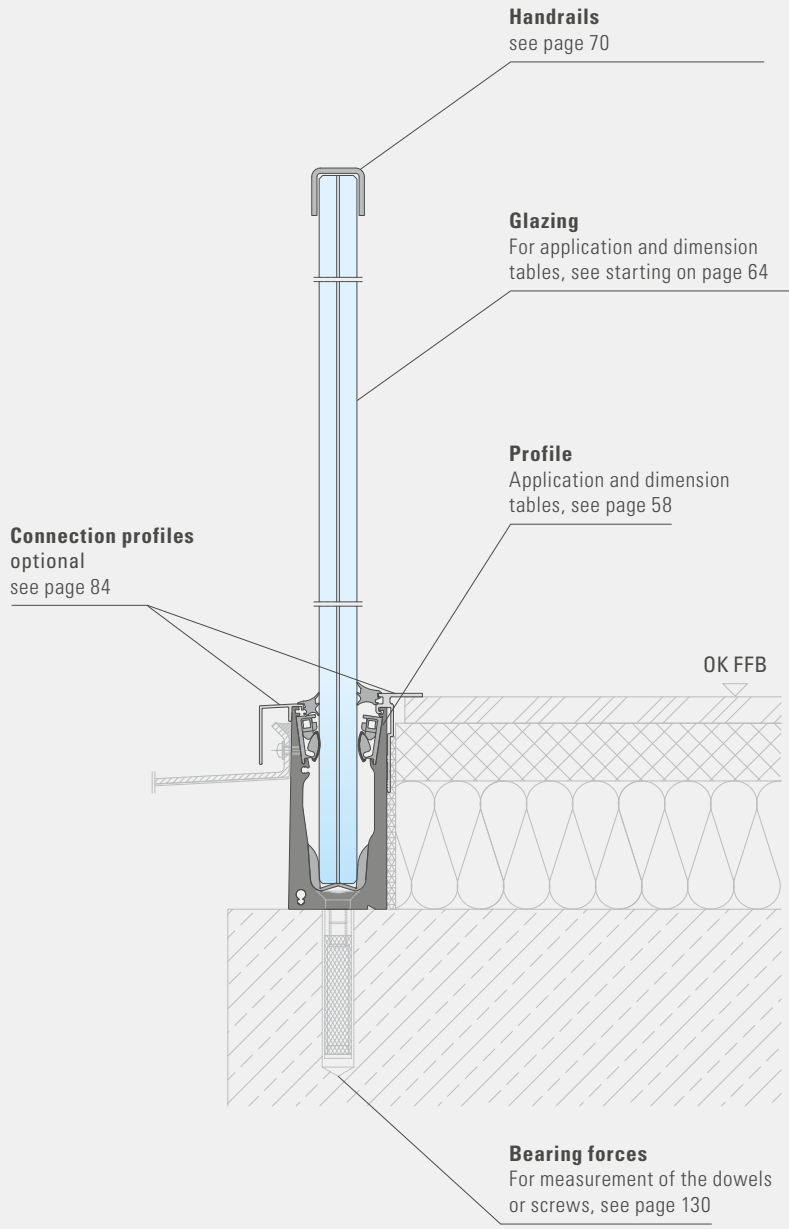


A System profile
B Outside corner 90°
C Inside corner 90°
D Cover plate
H Connecting pin



All our profiles have a General Building Inspectorate Test Certificate, tested type statics and are LGA-tested.

System navigation Top 4

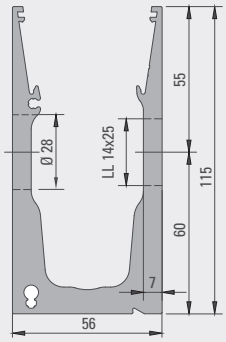


Application examples
Outside / outdoor area
see starting on page 101
Inside / indoor area
see starting on page 115

Installation instructions
see page 140

System profile Side 1

System profile A



Material:	Aluminium (EN AW-6063 T66)
Available length:	3,000 mm, 6,000 mm
Glass inset:	Approx. 100 mm
Glass:	LSG 2 x 8 mm, 2 x 10 mm
PVB / SGP:	1.52 mm

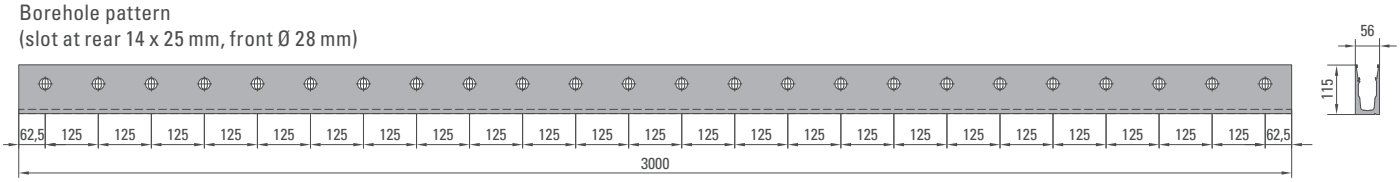
Surfaces:

Natural untreated

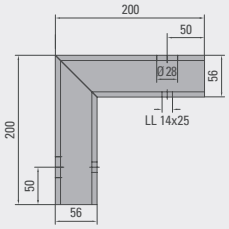
Stainless steel effect (E6EV1)

Fixing distance		
Private area 0.5 kN/m	Public area 1.0 kN/m	Public area 2.0 kN/m
a = 500 mm	a = 250 mm	a = 125 mm

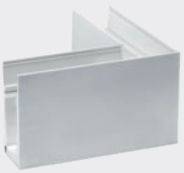
Borehole pattern
(slot at rear 14 x 25 mm, front Ø 28 mm)

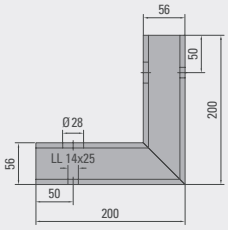


Outside corner B



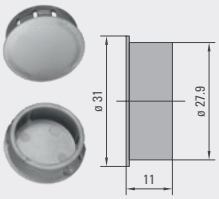
Inside corner C





Cover plate D

Profile cap E



Colour silver (similar to E6EV1)

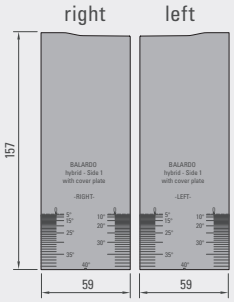
End plate with cover plate F

self-adhesive

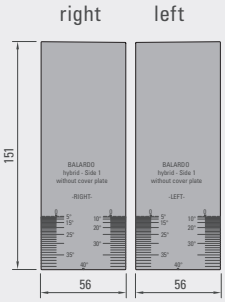
End plate without cover plate G

self-adhesive

End plate for stairway with cover plate

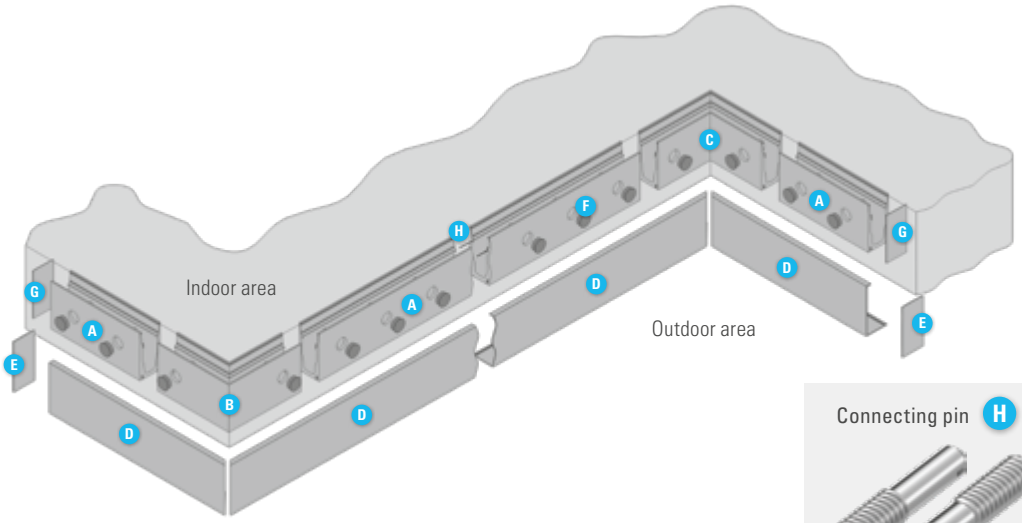


End plate for stairway without cover plate



All our profiles have a General Building Inspectorate Test Certificate, tested type statics and are LGA-tested.

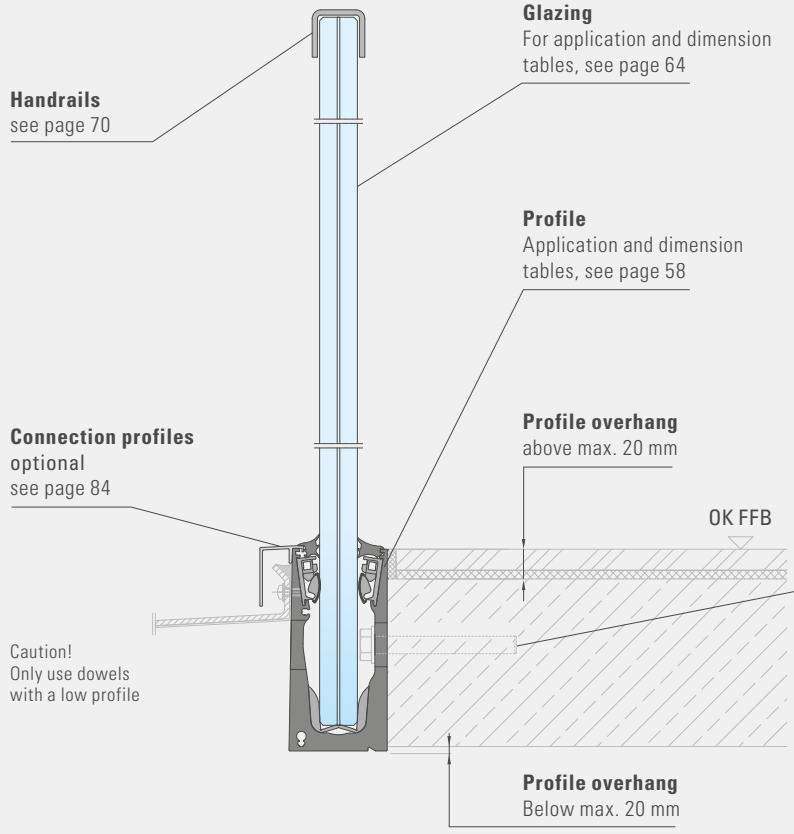
System profile Side 1



- A System profile
- B Outside corner 90°
- C Inside corner 90°
- D Cover plate
- E End plate
  with cover plate (left/right)
- F Profile cap
- G End plate
  without cover plate (left/right)
- H Connecting pin

Connecting pin H

System navigation Side 1



Handrails
see page 70

Glazing
For application and dimension tables, see page 64

Profile
Application and dimension tables, see page 58

Application examples
Outside / outdoor area
see page 104
Inside / indoor area
see page 116

Connection profiles
optional
see page 84

Profile overhang
above max. 20 mm

OK FFB

Bearing forces
For measurement of the dowels or screws, see page 131

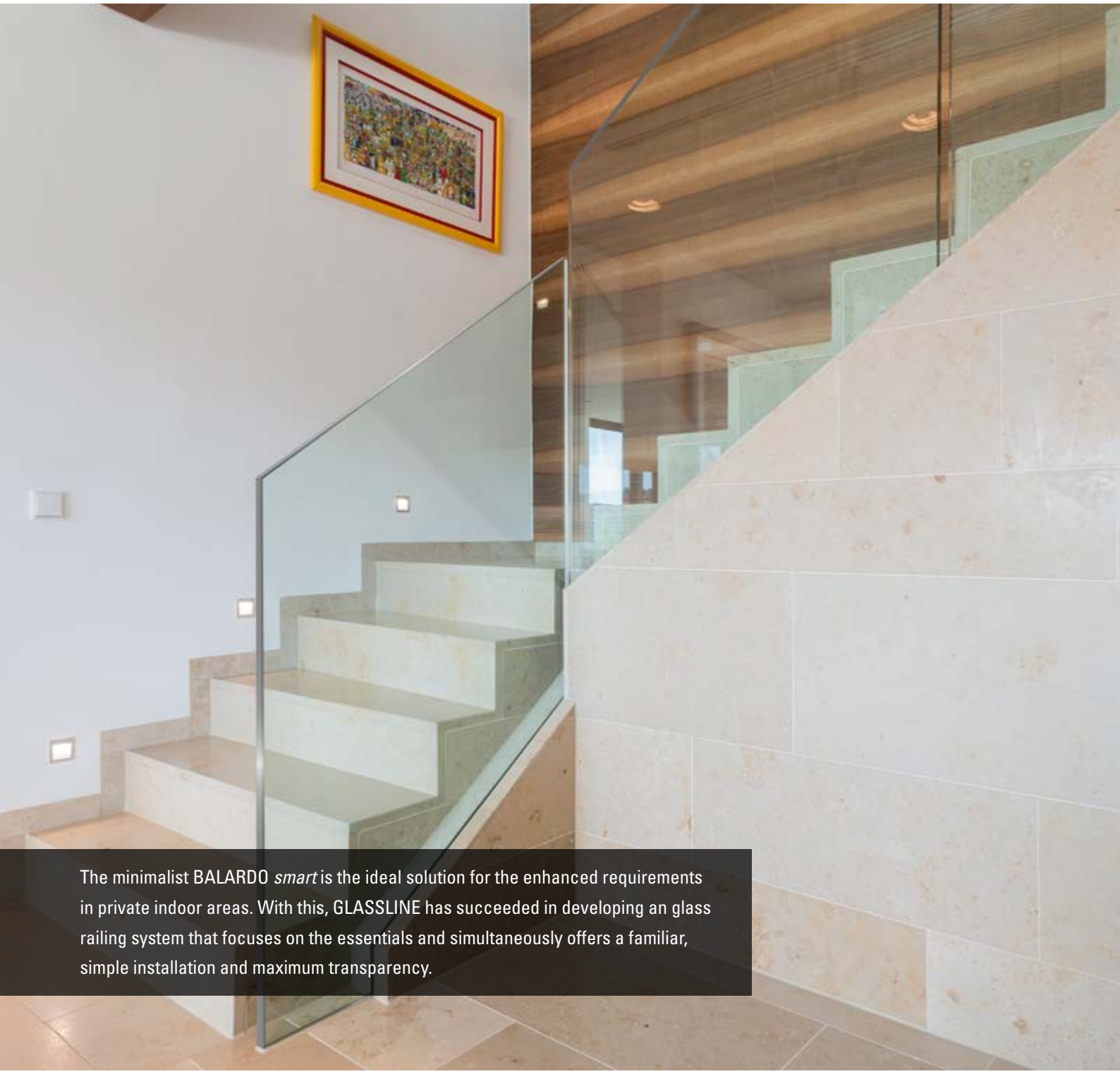
Caution!
Only use dowels
with a low profile

Profile overhang
Below max. 20 mm

Installation instructions
see page 140

BALARDO *smart*

THE MINIMALIST SYSTEM FOR THE PRIVATE SECTOR

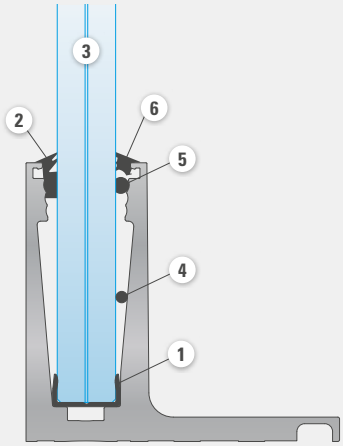


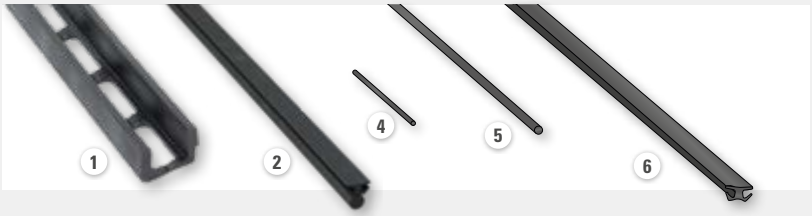
The minimalist BALARDO *smart* is the ideal solution for the enhanced requirements in private indoor areas. With this, GLASSLINE has succeeded in developing an glass railing system that focuses on the essentials and simultaneously offers a familiar, simple installation and maximum transparency.

THE ADVANTAGES

- ✔ With General Building Inspectorate Test Certificate (AbP)
- ✔ With approved type statics
- ✔ Rail loads up to 0.5 kN/m
- ✔ With limited adjustability
- ✔ LGA-tested safety
- ✔ Pane widths up to 6,000 mm, pane heights up to 1,100 mm
- ✔ Glass: LSG 2 x 6 mm and 2 x 8 mm with PVB or SGP 0,76 mm
- ✔ For private construction projects
- ✔ For indoor use
- ✔ For level areas and stairways
- ✔ BALARDO *firstglass* glass edge protection is applicable

THE EASYFIX MOUNTING SET

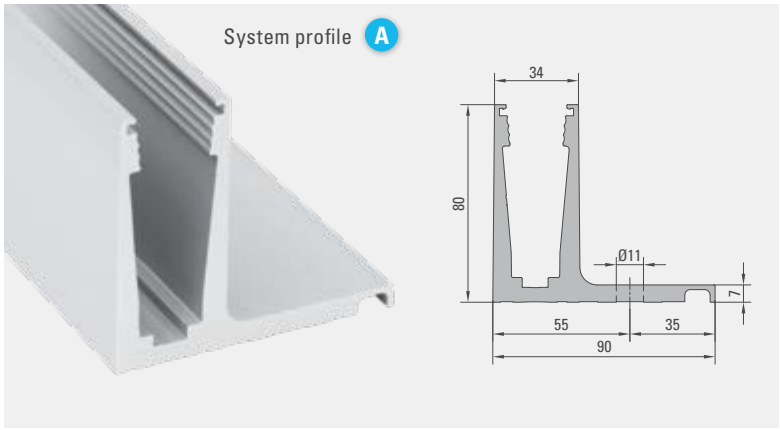




1	Clamping shoe	Material: TPV	Available length: 100 mm
2	Outer seal	Material: EPDM	Available length: 3,000 mm
3	Glass	see starting on page 60	
4	Small round rod	Material: POM	Available length: 100 mm
5	Round cord	Material: EPDM	Available length: 3,000 mm
6	Inner seal	Material: EPDM	Available length: 3,000 mm

System profile Top 1

System profile A



Material:	Aluminium (EN AW-6063 T66)
Available length:	3,000 mm
Glass inset:	Approx. 69 mm
Glass:	LSG 2 x 6 mm, 2 x 8 mm
PVB / SGP:	0.76 mm

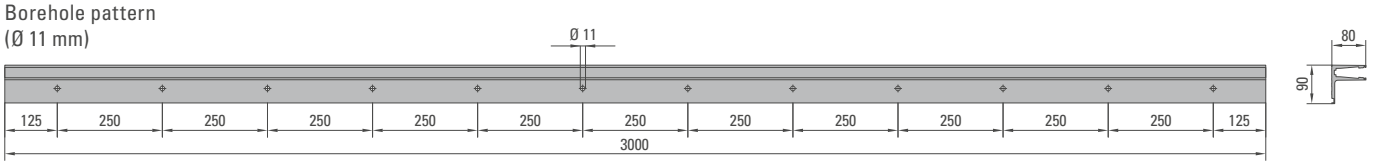
Surfaces:

Natural untreated

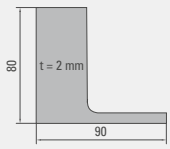
Stainless steel effect (E6EV1)

Fixing distance
Private area 0.5 kN/m
a = 500 mm

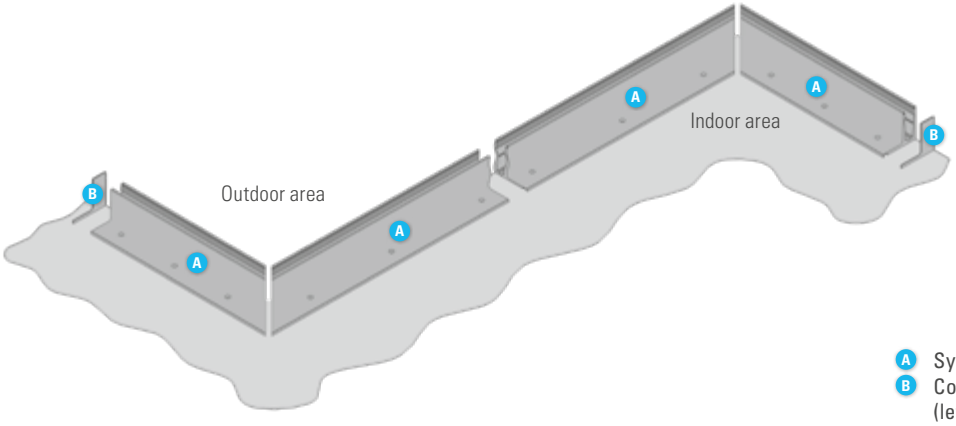
Borehole pattern
(Ø 11 mm)



Cover plate D



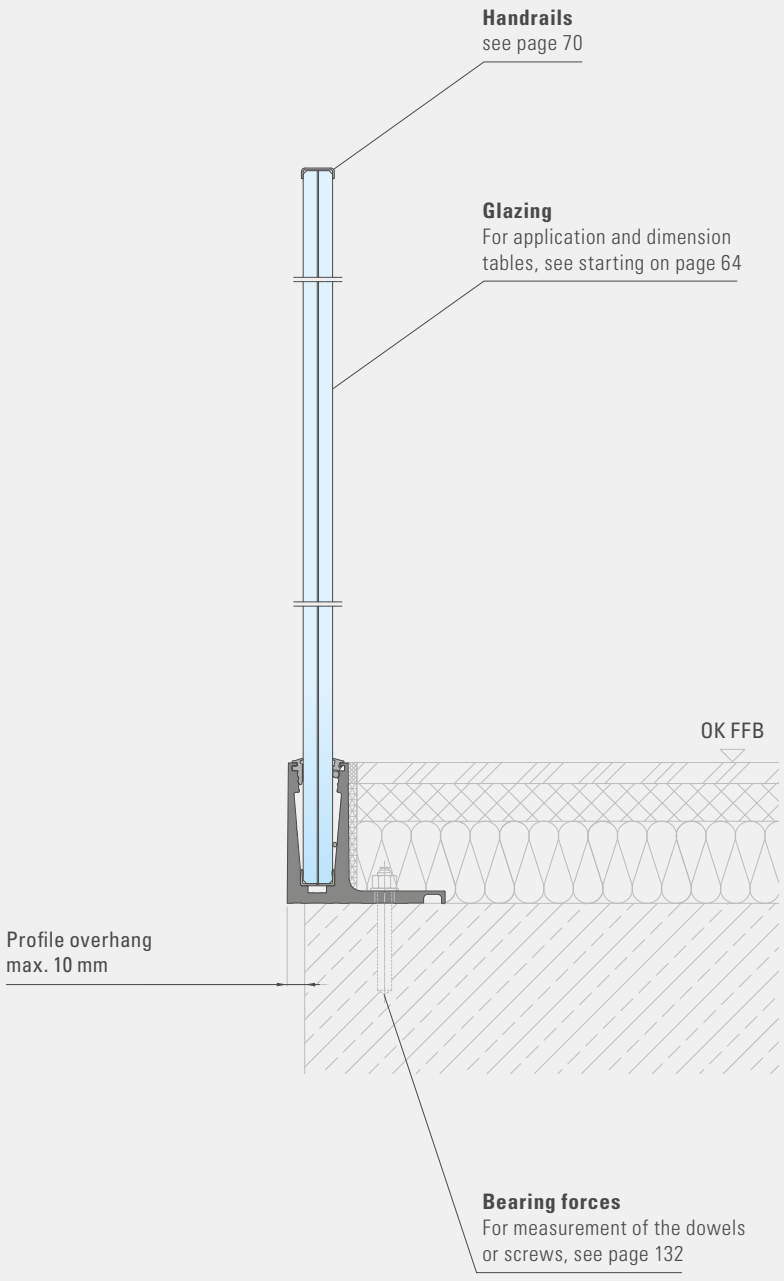
self-adhesive



A System profile
B Cover plate (left/right)

All our profiles have a General Building Inspectorate Test Certificate, tested type statics and are LGA-tested.

System navigation Top 1



Application examples
Inside / indoor area
see starting on page 112

Installation instructions
see page 142

System profile Side 3

Material:	Aluminium (EN AW-6063 T66)
Available length:	3,000 mm
Glass inset:	Approx. 69 mm
Glass:	LSG 2 x 6 mm, 2 x 8 mm
PVB / SGP:	0.76 mm

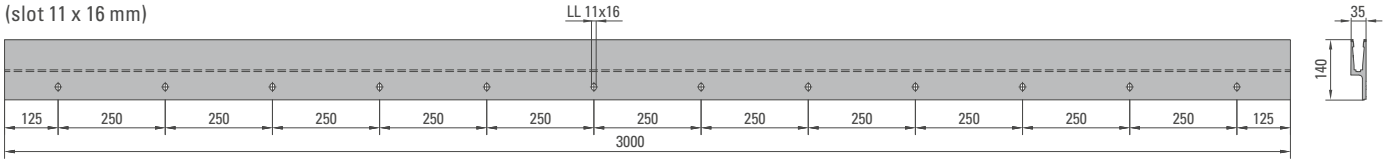
Surfaces:

Natural untreated

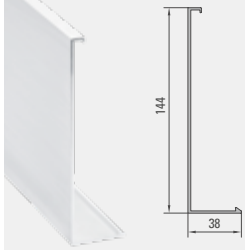
Stainless steel effect (E6EV1)

Fixing distance
Private area 0.5 kN/m
a = 500 mm

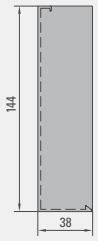
Borehole pattern
(slot 11 x 16 mm)



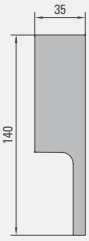
Cover plate B



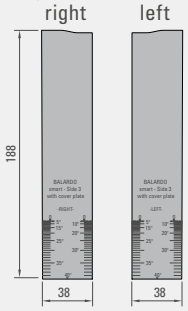
End plate with cover plate C

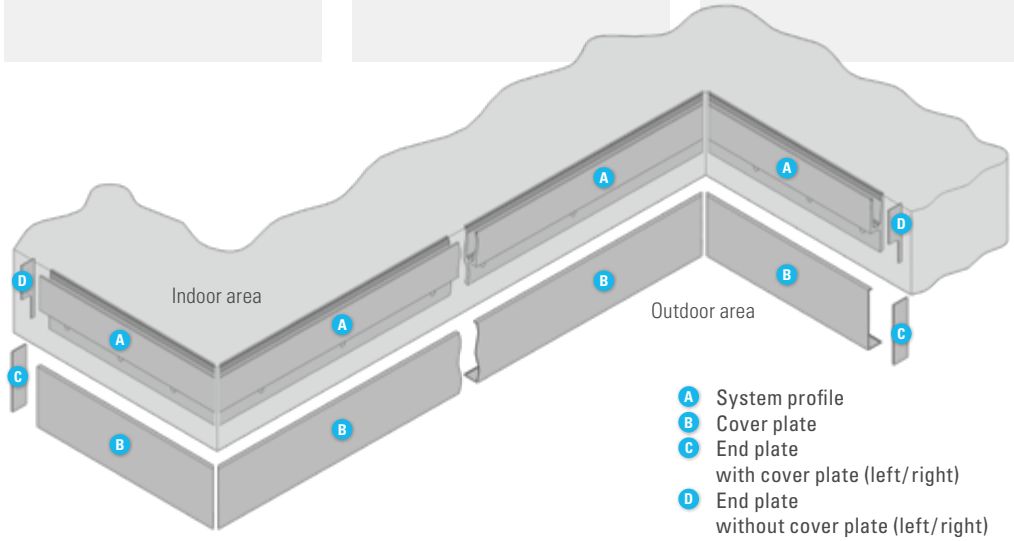


End plate without cover plate D



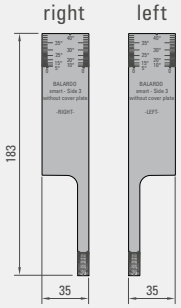
End plate for stairway with cover plate





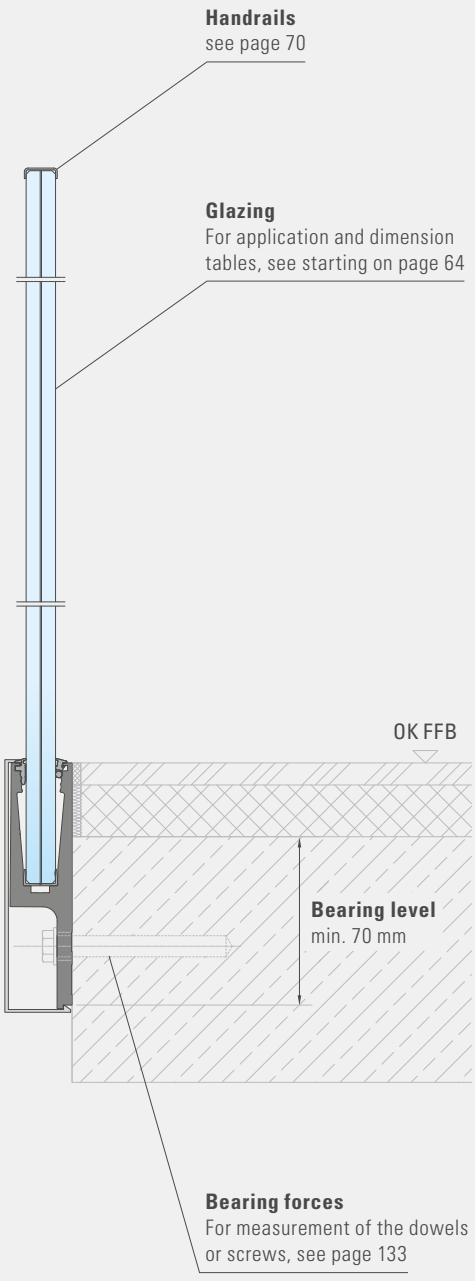
A System profile
B Cover plate
C End plate with cover plate (left/right)
D End plate without cover plate (left/right)

End plate for stairway without cover plate



All our profiles have a General Building Inspectorate Test Certificate, tested type statics and are LGA-tested.

System navigation Side 3



Application examples
Inside / indoor area
see starting on page 117

Installation instructions
see page 142

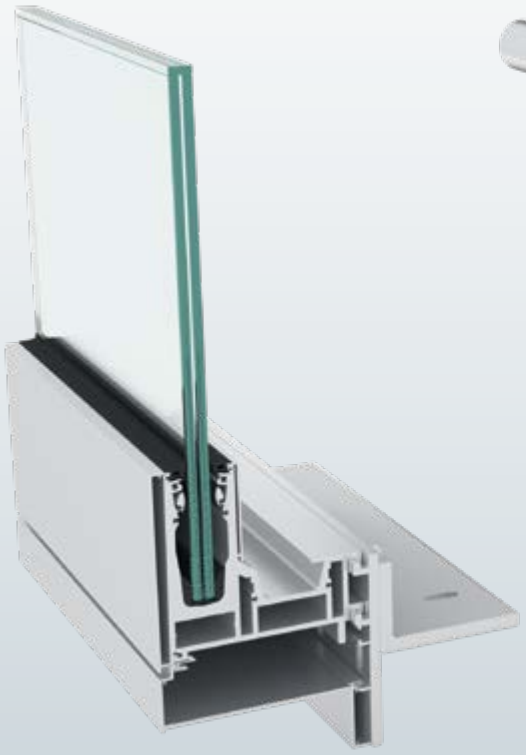
OTHER BALARDO SYSTEMS

BALARDO *aqua control*

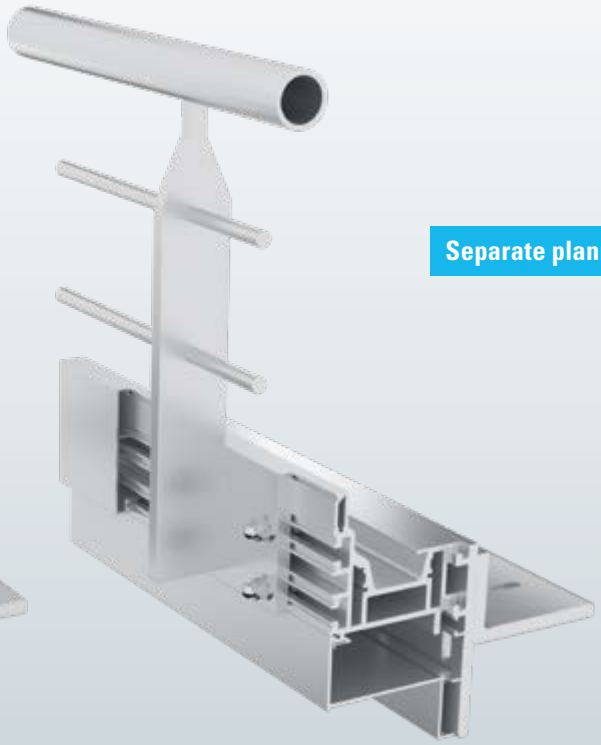
THE SYSTEM FOR CONTROLLED DRAINAGE OF BALCONIES

BALARDO *aqua control* is a system for controlled drainage of balconies and roof terraces. BALARDO *aqua control* comes integrated with the GLASSLINE glass railing BALARDO *hybrid* or as a system-independent drainage profile for other railing systems.

Separate planning manual



BALARDO *aqua control* with BALARDO *hybrid* –
Finely adjustable
glass railing
with drainage



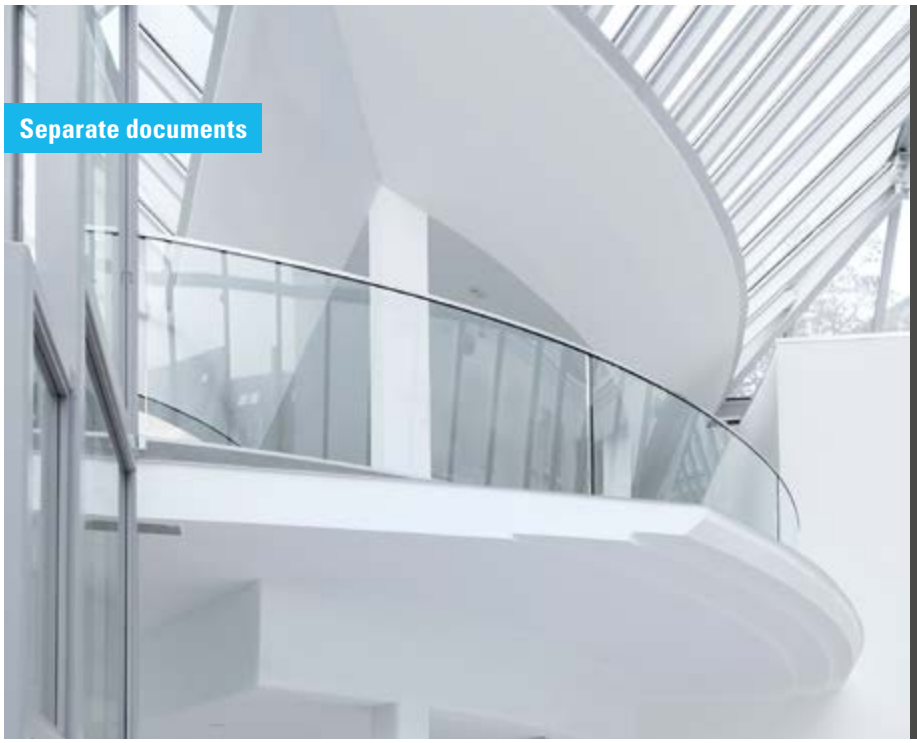
BALARDO *aqua control* –
system-independent
drainage profile
for other railing systems

Separate planning manual

BALARDO *steel*

**THE SYSTEM
FOR THE HIGHEST DEMANDS**

The proven type-tested steel all-glass railing system with a modular design demonstrates high application flexibility as an unchallenged original in public and private construction projects, as well as when used in level areas and stairways. Its structural strengths come to the fore especially in the case of raised floor structures and uneven subterranean areas. This system also offers a large number of type static calculated structural attachments.



Separate documents

BALARDO *wave*

**THE SYSTEM
FOR CURVY ARCHITECTURE**

With curved floor and handrail profiles, the system incorporates elegantly curved building geometries and implements these in highly transparent railings with the aesthetic properties of the glass. Regardless of public or private buildings or indoor or outdoor areas, BALARDO *wave* ensures an atmospheric lightness in an aluminium and steel design.

Attention: Binding information can be found in the approvals and/or type statics.
Only the fields filled in with numbers apply for indoor areas.

APPLICATION AND DIMENSION TABLES

FOR SUPPORT PROFILES

SUPPORT PROFILE **BALARDO** *core*

Rail load [kN/m]	BALARDO *core*	max. glass height [mm] with permissible wind load [kN/m²]															
		600	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800	1,900	2,000	2,100
0.5	Top 1	2.88	1.98	1.40	1.02	0.76	0.49	0.30	0.16	0.05							
	Top 2	7.05	5.03	3.74	2.87	2.26	1.81	1.47	1.21	1.01	0.85	0.72	0.61	0.52	0.45	0.39	0.32
	Top 3	5.90	4.19	3.10	2.36	1.84	1.47	1.18	0.97	0.80	0.66	0.56	0.47	0.38	0.30	0.23	0.17
	Top 4	7.76	5.56	4.15	3.19	2.51	2.02	1.65	1.36	1.14	0.96	0.82	0.70	0.60	0.52	0.45	0.40
	Side 1	10.26	7.64	5.55	4.45	3.41	2.76	2.27	1.89	1.60	1.36	1.17	1.05	0.88	0.80	0.68	0.60
	Side 2	7.45	5.33	3.97	3.05	2.40	1.93	1.57	1.30	1.08	0.91	0.77	0.66	0.57	0.49	0.43	0.37
0.8	Top 1	2.88	1.98	1.40	1.02	0.76	0.49	0.30	0.16	0.05							
	Top 2	6.35	4.43	3.22	2.41	1.84	1.43	1.12	0.86	0.61	0.41	0.26	0.14	0.04			
	Top 3	5.20	3.59	2.58	1.90	1.42	1.08	0.72	0.46	0.26	0.11						
	Top 4	7.76	5.56	4.15	3.19	2.51	2.02	1.65	1.36	1.14	0.96	0.82	0.70	0.60	0.52	0.43	0.33
	Side 1	9.90	7.04	5.22	3.98	3.11	2.48	2.01	1.64	1.36	1.14	0.95	0.81	0.68	0.55	0.43	0.33
	Side 2	6.75	4.73	3.45	2.59	1.98	1.55	1.22	0.97	0.73	0.52	0.35	0.22	0.11	0.03		
1.0	Top 1	2.88	1.98	1.40	1.02	0.76	0.49	0.30	0.16	0.05							
	Top 2	5.88	4.03	2.87	2.09	1.56	1.04	0.64	0.35	0.13							
	Top 3	4.74	3.19	2.23	1.53	0.91	0.47	0.17									
	Top 4	7.76	5.56	4.15	3.19	2.51	2.02	1.65	1.36	1.14	0.92	0.67	0.48	0.33	0.20		
	Side 1	9.43	6.64	4.87	3.67	2.84	2.23	1.77	1.43	1.16	0.92	0.67	0.48	0.33	0.20		
	Side 2	6.28	4.33	3.10	2.27	1.70	1.24	0.81	0.50	0.26	0.08						
1.5	Top 1	2.30	1.39	0.67	0.22												
	Top 2	4.71	2.91	1.45	0.53												
	Top 3	3.45	1.51	0.38													
	Top 4	7.18	5.06	3.71	2.80	2.06	1.29	0.74	0.33	0.03							
	Side 1	8.26	5.64	3.99	2.90	2.06	1.29	0.74	0.33	0.03							
	Side 2	5.12	3.33	1.83	0.83	0.17											

SUPPORT PROFILE **BALARDO** *hybrid*

Rail load [kN/m]	BALARDO *hybrid*	max. glass height [mm] with permissible wind load [kN/m²]															
		600	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800	1,900	2,000	2,100
0.5	Top 1	8.37	6.00	4.49	3.46	2.73	2.20	1.80	1.49	1.25	1.06	0.90	0.78	0.67	0.58	0.51	0.44
	Top 1 gedreht	8.37	6.00	4.49	3.46	2.73	2.20	1.80	1.49	1.25	1.06	0.90	0.78	0.67	0.58	0.51	0.44
	Top 4	8.37	6.00	4.49	3.46	2.73	2.20	1.80	1.49	1.25	1.06	0.90	0.78	0.67	0.58	0.51	0.44
	Side 1	11.17	8.06	6.06	4.71	3.74	3.03	2.50	2.09	1.77	1.51	1.30	1.13	0.98	0.86	0.76	0.67
0.8	Top 1	8.37	6.00	4.49	3.46	2.73	2.20	1.80	1.49	1.25	1.06	0.90	0.78	0.67	0.58	0.51	0.41
	Top 1 rotated	7.67	5.40	3.96	2.99	2.31	1.82	1.45	1.17	0.95	0.76	0.57	0.41	0.28	0.18	0.10	0.03
	Top 4	8.37	6.00	4.49	3.46	2.73	2.20	1.80	1.49	1.25	1.06	0.90	0.78	0.67	0.58	0.51	0.41
	Side 1	10.47	7.46	5.54	4.24	3.32	2.65	2.15	1.77	1.47	1.23	1.03	0.88	0.75	0.64	0.52	0.41

Attention: Binding information can be found in the approvals and/or type statics.
Only the fields filled in with numbers apply for indoor areas.

SUPPORT PROFILE **BALARDO** *hybrid*

Rail load [kN/m]	BALARDO *hybrid*	max. glass height [mm] with permissible wind load [kN/m²]															
		600	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800	1,900	2,000	2,100
1.0	Top 1	8.37	6.00	4.49	3.46	2.73	2.20	1.80	1.49	1.25	1.04	0.81	0.60	0.43	0.30	0.18	
	Top 1 rotated	7.20	5.00	3.61	2.68	2.03	1.56	1.19	0.82	0.54	0.32	0.15	0.02				
	Top 4	8.37	6.00	4.49	3.46	2.73	2.20	1.80	1.49	1.25	1.04	0.81	0.60	0.43	0.30	0.18	0.09
	Side 1	10.00	7.06	5.19	3.93	3.04	2.40	1.92	1.55	1.27	1.04	0.81	0.60	0.43	0.30	0.18	0.09
1.5	Top 1	7.78	5.50	4.05	3.07	2.34	1.57	0.97	0.53	0.21							
	Top 1 rotated	6.03	4.00	2.69	1.51	0.72	0.18										
	Top 4	7.78	5.50	4.05	3.07	2.34	1.57	0.97	0.53	0.21							
	Side 1	8.84	6.06	4.31	3.15	2.34	1.57	0.97	0.53	0.21							
2.0	Top 1	7.20	5.00	3.23	1.73	0.74	0.06										
	Top 1 rotated	4.78	2.15	0.60													
	Top 4	8.52	5.69	3.92	2.36	1.24	0.48										
	Side 1	7.67	5.06	3.23	1.73	0.74	0.06										

SUPPORT PROFILE **BALARDO** *core hd*

Rail load [kN/m]	BALARDO *core hd*	max. glass height [mm] with permissible wind load [kN/m²]															
		600	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800	1,900	2,000	2,100
1.0	Top 1	19.47	14.02	10.51	8.13	6.45	5.21	4.28	3.57	3.00	2.55	2.19	1.89	1.64	1.44		
	Top 2	32.71	23.75	17.96	14.02	11.22	9.15	7.60	6.39	5.44	4.67	4.05	3.54	3.12	2.76	2.45	2.19
	Side 1	19.54	14.07	10.55	8.16	6.47	5.23	4.30	3.58	3.02	2.57	2.20	1.90	1.65	1.44		
1.5	Top 1	18.30	13.02	9.64	7.36	5.75	4.58	3.70	3.03	2.50	2.09	1.75	1.48	1.26	0.99		
	Top 2	31.55	22.75	17.09	13.24	10.52	8.52	7.01	5.85	4.94	4.21	3.62	3.13	2.73	2.39	2.10	1.86
	Side 1	18.37	13.07	9.68	7.39	5.77	4.60	3.72	3.04	2.52	2.10	1.76	1.49	1.26	1.00		
2.0	Top 1	17.14	12.02	8.76	6.58	5.05	3.94	3.12	2.49	1.91	1.37	0.94	0.60	0.33	0.11		
	Top 2	30.38	21.75	16.21	12.47	9.82	7.88	6.43	5.31	4.44	3.74	3.18	2.72	2.34	2.02	1.75	1.53
	Side 1	17.20	12.07	8.80	6.61	5.07	3.96	3.13	2.50	1.93	1.39	0.96	0.62	0.35	0.13		
3.0	Top 1	14.80	10.02	7.01	5.02	3.08	1.72	0.75	0.05								
	Top 2	28.08	19.75	14.46	10.91	8.42	6.61	5.26	4.23	3.44	2.68	1.96	1.39	0.93	0.56	0.26	0.01
	Side 1	14.87	10.07	7.05	5.05	3.11	1.75	0.78	0.07								
4.0	Top 1	12.47	7.65	3.77	1.33												
	Top 2	25.71	17.75	12.71	9.35	7.02	5.26	3.49	2.19	1.20	0.46						
	Side 1	12.54	7.73	3.84	1.39												
5.0	Top 1	8.56	2.89														
	Top 2	23.38	15.75	10.96	7.44	4.36	2.23	0.71									
	Side 1	8.67	2.97														

GLAS – OPEN SPACES FOR YOUR DESIGN

ENJOY OPEN SPACES EVEN WITH GLASS WITH **BALARDO**

The high transparency and the variety of possible combinations of BALARDO work with all decor, especially in conjunction with BALARDO *firstglass* glass edge protection or the system-adapted glass edge protection made of ground stainless steel.

The filigree system is suitable for each individual glass design and supports every motif and pattern harmoniously in its effect. Regardless of printed or coloured PVB film or printed or enamelled glass – your creativity is unlimited.

With BALARDO, you have type statically tested system components. Only laminated safety glass (LSG) is used for maximum safety.

BALARDO can be installed as an glass railing system without additional tests.
This opens up unexpected design possibilities.

AbP
With General Building Inspectorate Test Certificate (AbP)

With approved type statics

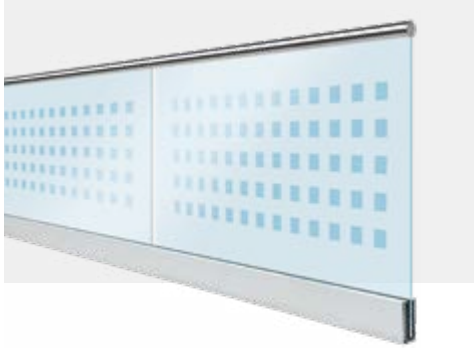
LGA tested
LGA-tested safety

Deployment also in sports facilities. Ball impact safe.

DIN 18008-4 tested
DIN 18008-4 tested

Such aswith a photo

Such aswith a template



Such aswith your company logo

BALARDO

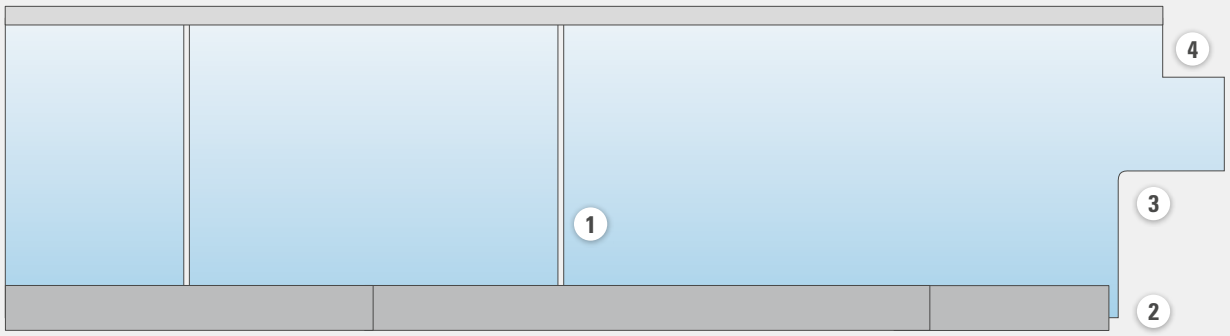
Glass structure / Application

Laminated safety glass (LSG) made of	Glass constructions				
TSG (tempered safety glass)	2 x 6 mm	2 x 8 mm	2 x 10 mm	2 x 12 mm	2 x 15 mm
STG (semi-tempered glass)		2 x 8 mm	2 x 10 mm	2 x 12 mm	
Float (float glass)		2 x 8 mm	2 x 10 mm	2 x 12 mm	2 x 15 mm

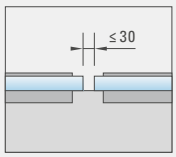
with 1.52 mm bonding layer made of PVB, SGP or equivalent (0.76 mm for BALARDO smart bonding layer)

PVB: Polyvinyl butyral film
SGP: SentryGlas®

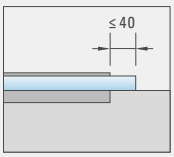
Ground or polished glass edges Glass and profile joints should be protected against penetrating moisture.



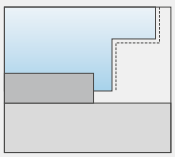
1 Glass joint



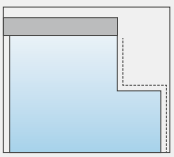
2 Glass overhang



3 Glass recess



4 Glass recess



Printing / Enamelling

LSG-TSG panes may be printed / enamelled.

The dimensioning of the printed / enamelled glass panes is done using the evidence for LSG-TSG panes with the same strength and height.

Filler panels and end panels of 100 - 500 mm must be connected at the top in a load-bearing manner.

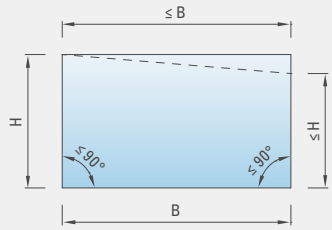
Handrail joint:
750 mm from the glass joint in a straight line, with a non-rigid handrail connection.
100 mm from the glass joint in a straight line, with a rigid handrail connection.

* Open, accessible glass edges must be structurally protected, such aswith the vertical glass edge protection profile on page 75 .
For glass dimensions, see application and dimension tables for glass profiles starting on page 64.

Glass panes / Model panes

Rectangular panes / Trapezoidal panes

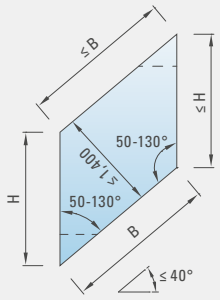
LSG - TSG / STG / Float



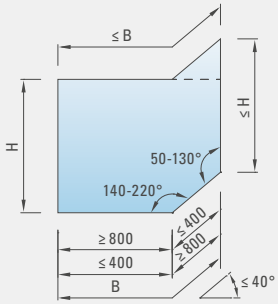
Glass width	B = 500 - 6,000* mm
max. glass height	H = 2,100 mm**

Bevelled glass panes / Model panes

LSG-TSG



rhomboid-shaped

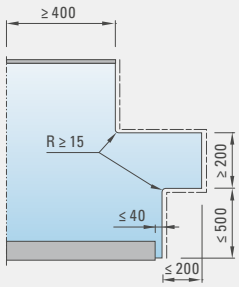


angled transition

Glass width	B = 500 - 3,000* mm
max. glass height	H = 1,800 mm**

permissible glass recesses

LSG-TSG 2x10, 2x12 and 2x15 mm



The recesses are only permissible up to a size of 200 x 500 mm in the lower section. No restrictions are placed on recesses in the upper section.

All glass edges accessible from traffic areas must be protected with adjoining components with a spacing of at most 30 mm or with an edge protection profile.

The dimensioning of the glass panes made of LSG-TSG with a glass recess is done using the evidence for LSG float panes without a recess with the same strength and height.

* For load-distributing handrail, see page 75.

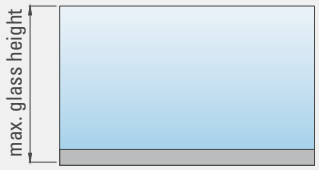
** For glass dimensions, see application and dimension tables for glass profiles starting on page 6. Profile spacing ≤ 40 mm.
Open, accessible glass edges must be structurally protected, such aswith the vertical glass edge protection profile on page 75.

Attention: Binding information can be found in the approvals and/or type statics.
Only the fields filled in with numbers apply for indoor areas.

APPLICATION AND DIMENSION TABLES

GLASS

Glass LSG-**TSG** – Application on a level area



Rail load [kN/m]	Glass LSG-TSG [mm]		max. glass height [mm] with permissible wind load [kN/m²]															
			600	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800	1,900	2,000	2,100
0.5	2x6	PVB	4.41	2.89	1.99	1.42	1.04	0.77										
		SGP	11.17	8.06	6.06	4.71	3.71	2.94										
	2x8	PVB	8.94	6.05	4.33	3.21	2.46	1.93	1.54	1.24	1.02	0.84	0.70					
		SGP	11.17	8.06	6.06	4.71	3.74	3.03	2.50	2.09	1.77	1.51	1.30					
	2x10	PVB	11.17	8.06	6.06	4.71	3.74	3.03	2.50	2.09	1.77	1.51	1.30	1.13	0.98	0.86	0.76	0.67
		SGP	11.17	8.06	6.06	4.71	3.74	3.03	2.50	2.09	1.77	1.51	1.30	1.13	0.98	0.86	0.76	0.67
0.8	2x6	PVB	3.57	2.18	1.15	0.47	0.04											
		SGP	10.47	7.46	5.54	4.24	3.25	2.53										
	2x8	PVB	8.09	5.35	3.72	2.68	1.99	1.50	1.15	0.80	0.53	0.32	0.16					
		SGP	10.47	7.46	5.54	4.24	3.32	2.65	2.15	1.77	1.47	1.23	1.03					
	2x10	PVB	10.47	7.46	5.54	4.24	3.32	2.65	2.15	1.77	1.47	1.23	1.03	0.88	0.75	0.64	0.52	0.41
		SGP	10.47	7.46	5.54	4.24	3.32	2.65	2.15	1.77	1.47	1.23	1.03	0.88	0.75	0.64	0.52	0.41
1.0	2x6	PVB	2.99	1.17	0.19													
		SGP	10.00	7.06	5.19	3.77	2.82	2.15										
	2x8	PVB	7.53	4.88	3.31	2.33	1.66	1.01	0.56	0.24	0.00							
		SGP	10.00	7.06	5.19	3.93	3.04	2.40	1.92	1.55	1.27	1.04	0.81					
	2x10	PVB	10.00	7.06	5.19	3.93	3.04	2.40	1.92	1.55	1.27	1.04	0.81	0.60	0.43	0.30	0.18	0.09
		SGP	10.00	7.06	5.19	3.93	3.04	2.40	1.92	1.55	1.27	1.04	0.81	0.60	0.43	0.30	0.18	0.09
	2x12	PVB	22.37	14.55	10.05	7.25	5.40	4.12	3.20	2.52	2.00	1.57	1.12	0.99	0.87	0.78	0.69	0.63
		SGP	32.71	23.75	17.96	14.02	11.22	9.15	7.60	6.39	5.44	4.67	4.05	3.54	3.12	2.76	2.45	2.19
	2x15	PVB	32.71	23.75	17.50	12.89	9.82	7.67	6.12	4.96	4.08	3.39	2.84	2.49	2.20	1.96	1.76	1.58
		SGP	32.71	23.75	17.96	14.02	11.22	9.15	7.60	6.39	5.44	4.67	4.05	3.54	3.12	2.76	2.45	2.19
1.5	2x10	PVB	8.84	6.06	4.31	3.15	2.34	1.57	0.89	0.39	0.03							
		SGP	8.84	6.06	4.31	3.15	2.34	1.57	0.97	0.53	0.21							
	2x12	PVB	17.90	13.19	9.28	6.79	5.11	3.93	3.07	2.44	1.95	1.53	1.10	0.97	0.86	0.77	0.69	0.62
		SGP	31.55	22.75	17.09	13.24	10.52	8.52	7.01	5.85	4.94	4.21	3.62	3.13	2.73	2.39	2.10	1.86
	2x15	PVB	30.27	22.62	16.22	12.11	9.32	7.34	5.90	4.81	3.98	3.32	2.80	2.46	2.18	1.95	1.75	1.58
		SGP	31.55	22.75	17.09	13.24	10.52	8.52	7.01	5.85	4.94	4.21	3.62	3.13	2.73	2.39	2.10	1.86

Attention: Binding information can be found in the approvals and/or type statics.
Only the fields filled in with numbers apply for indoor areas.

BALARDO

Rail load [kN/m]	Glass LSG-TSG [mm]		max. glass height [mm] with permissible wind load [kN/m²]															
			600	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800	1,900	2,000	2,100
2.0	2x10	PVB	8.52	5.69	3.92	2.24	0.95	0.10										
		SGP	8.52	5.69	3.92	2.36	1.24	0.48										
	2x12	PVB	16.54	12.01	8.26	5.90	4.31	3.21	2.18	1.36	0.76	0.31						
		SGP	30.38	21.75	16.21	12.47	9.82	7.88	6.43	5.31	4.44	3.74	3.18	2.72	2.34	2.02	1.75	1.53
	2x15	PVB	28.91	21.43	15.21	11.22	8.53	6.63	5.25	4.22	3.43	2.81	2.32	2.04	1.81	1.61	1.45	1.31
		SGP	30.38	21.75	16.21	12.47	9.82	7.88	6.43	5.31	4.44	3.74	3.18	2.72	2.34	2.02	1.75	1.53
3.0	2x12	PVB	13.82	9.63	6.01	3.03	1.14											
		SGP	28.08	19.75	14.46	10.91	8.42	6.61	5.26	4.23	3.44	2.68	1.96	1.39	0.93	0.56	0.26	0.01
	2x15	PVB	26.19	19.06	13.17	9.43	6.94	5.20	3.79	2.48	1.51	0.79	0.23	0.20	0.18	0.16	0.15	0.01
		SGP	28.08	19.75	14.46	10.91	8.42	6.61	5.26	4.23	3.44	2.68	1.96	1.39	0.93	0.56	0.26	0.01
4.0	2x12	PVB	10.73	5.31	1.16													
		SGP	25.71	17.75	12.71	9.35	7.02	5.26	3.49	2.19	1.20	0.46						
	2x15	PVB	23.47	16.68	11.13	7.65	4.38	2.20	0.70									
		SGP	25.71	17.75	12.71	9.35	7.02	5.26	3.49	2.19	1.20	0.46						
5.0	2x12	PVB																
		SGP	23.38	15.75	10.96	7.44	4.36	2.23	0.71									
	2x15	PVB	20.75	14.31	7.88	3.40	0.60											
		SGP	23.38	15.75	10.96	7.44	4.36	2.23	0.71									

Possible without load-bearing handrail connection. A glass edge protection can also be used instead of a handrail. Max. glass width: 6,000 mm.

Load-distributing handrail and handrail connection to structure (supporting components) necessary for outlet elements.
The width ratio of the adjacent glass panes is min. 1:4 and max. 4:1. Max. glass width 3,000 mm, see page 75.

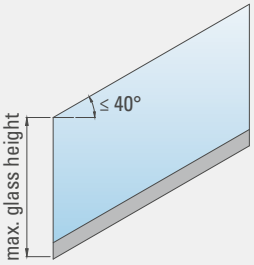
xx,xx Deviating width ratios of adjacent panes. Min. 1:2 and max. 2:1.

Attention: Binding information can be found in the approvals and/or type statics.
Only the fields filled in with numbers apply for indoor areas.

APPLICATION AND DIMENSION TABLES

GLASS

Glass LSG-**TSG** – Application in stairways



Rail load [kN/m]	Glass LSG-TSG [mm]		max. glass height [mm] with permissible wind load [kN/m²]												
			600	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800
0.5	2x8	PVB	6.96	4.68	3.31	2.44	1.84	1.43	1.12	0.90	0.72	0.59	0.47	0.41	0.37
		SGP	11.17	8.06	6.06	4.71	3.74	3.03	2.50	2.09	1.77	1.51	1.30	1.13	0.98
	2x10	PVB	11.17	7.96	5.73	4.30	3.32	2.63	2.12	1.73	1.44	1.20	1.02	0.90	0.79
		SGP	11.17	8.06	6.06	4.71	3.74	3.03	2.50	2.09	1.77	1.51	1.30	1.13	0.98
0.8	2x8	PVB	6.13	3.98	2.71	1.91	1.38	0.88	0.51						
		SGP	10.47	7.46	5.54	4.24	3.32	2.65	2.15	1.77	1.47	1.23	1.03	0.88	0.75
	2x10	PVB	10.47	7.26	5.14	3.77	2.85	2.20	1.73	1.38	1.11	0.90	0.69	0.61	0.54
		SGP	10.47	7.46	5.54	4.24	3.32	2.65	2.15	1.77	1.47	1.23	1.03	0.88	0.75
1.0	2x8	PVB	5.57	3.51	2.31	1.35									
		SGP	10.00	7.06	5.19	3.93	3.04	2.40	1.92	1.55	1.27	1.04	0.81	0.60	0.43
	2x10	PVB	10.00	6.80	4.74	3.42	2.54	1.92	1.48	1.07	0.72				
		SGP	10.00	7.06	5.19	3.93	3.04	2.40	1.92	1.55	1.27	1.04	0.81	0.60	0.43
	2x12	PVB	10.00	7.06	5.19	3.93	3.04	2.40	1.92	1.55	1.27	1.04	0.81	0.60	0.43
		SGP	10.00	7.06	5.19	3.93	3.04	2.40	1.92	1.55	1.27	1.04	0.81	0.60	0.43
	2x15	PVB	10.00	7.06	5.19	3.93	3.04	2.40	1.92	1.55	1.27	1.04	0.81	0.60	0.43
		SGP	10.00	7.06	5.19	3.93	3.04	2.40	1.92	1.55	1.27	1.04	0.81	0.60	0.43
1.5	2x10	PVB	8.84	5.64	3.74	2.37	1.27								
		SGP	8.84	6.06	4.31	3.15	2.34	1.57	0.97	0.53	0.21				
	2x12	PVB	13.72	10.01	6.95	5.00	3.70	2.79	2.13	1.48	0.96				
		SGP	31.55	22.75	17.09	13.24	10.52	8.52	7.01	5.85	4.94	4.21	3.62	3.13	2.73
	2x15	PVB	23.71	17.62	12.55	9.30	7.10	5.54	4.41	3.56	2.91	2.41	2.00	1.76	1.56
		SGP	31.55	22.75	17.09	13.24	10.52	8.52	7.01	5.85	4.94	4.21	3.62	3.13	2.73

Attention: Binding information can be found in the approvals and/or type statics.
Only the fields filled in with numbers apply for indoor areas.

BALARDO

Rail load [kN/m]	Glass LSG-TSG [mm]		max. glass height [mm] with permissible wind load [kN/m²]												
			600	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800
2.0	2x10	PVB	7.67	5.06	3.23	1.73	0.74	0.06							
		SGP	7.67	5.06	3.23	1.73	0.74	0.06							
	2x12	PVB	12.38	8.84	5.94	4.12	2.61	1.45							
		SGP	30.38	21.75	16.21	12.47	9.82	7.88	6.43	5.31	4.44	3.74	3.18	2.72	2.34
	2x15	PVB	22.36	16.45	11.54	8.42	6.31	4.84	3.77	2.97	2.37	1.73	1.21	1.06	0.94
		SGP	30.38	21.75	16.21	12.47	9.82	7.88	6.43	5.31	4.44	3.74	3.18	2.72	2.34
3.0	2x12	PVB	9.69	5.80											
		SGP	28.05	19.75	14.46	10.91	8.42	6.61	5.26	4.23	3.44	2.68	1.96	1.39	0.93
	2x15	PVB	19.68	14.11	9.53	6.65	4.55	2.69							
		SGP	28.05	19.75	14.46	10.91	8.42	6.61	5.26	4.23	3.44	2.68	1.96	1.39	0.93
4.0	2x12	PVB													
		SGP	25.71	17.75	12.71	9.35	7.02	5.26	3.49	2.19					
	2x15	PVB	16.99	11.76	6.79										
		SGP	25.71	17.75	12.71	9.35	7.02	5.26	3.49	2.19	1.20	0.46			
5.0	2x12	PVB													
		SGP	23.38	15.75	10.96	7.44	4.36	2.21							
	2x15	PVB	14.25	7.32											
		SGP	23.38	15.75	10.96	7.44	4.36	2.21	0.71						

Possible without load-bearing handrail connection. A glass edge protection can also be used instead of a handrail. Max. glass width: 6,000 mm.

Load-distributing handrail and handrail connection to structure (supporting components) necessary for outlet elements.
The width ratio of the adjacent glass panes is min. 1:4 and max. 4:1. Max. glass width 3,000 mm, see page 75.

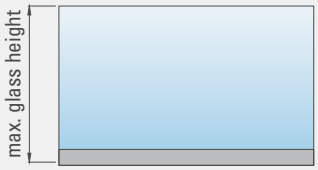
xx,xx Deviating width ratios of adjacent panes. Min. 1:2 and max. 2:1.

Attention: Binding information can be found in the approvals and/or type statics.
Only the fields filled in with numbers apply for indoor areas.

APPLICATION AND DIMENSION TABLES

GLASS

GLASS LSG-**STG** – Application on level areas



Rail load [kN/m]	Glas VSG-TVG [mm]		max. glass height [mm] with permissible wind load [kN/m²]										
			600	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600
0,5	2x8	PVB	4.63	3.04	2.10	1.51	1.11	0.83					
		SGP	11.17	8.06	6.06	4.71	3.74	3.03					
	2x10	PVB	8.02	5.41	3.85	2.85	2.17	1.69	1.34	1.08	0.88	0.72	0.60
		SGP	11.17	8.06	6.06	4.71	3.74	3.03	2.50	2.09	1.77	1.51	1.30
0,8	2x8	PVB	3.78	2.33	1.34	0.61	0.15						
		SGP	10.47	7.46	5.54	4.24	3.32	2.65					
	2x10	PVB	7.18	4.71	3.25	2.32	1.70	1.27	0.85	0.53	0.29	0.12	
		SGP	10.47	7.46	5.54	4.24	3.32	2.65	2.15	1.77	1.47	1.23	1.03
1,0	2x8	PVB	3.22	1.42	0.37								
		SGP	10.00	7.06	5.19	3.93	3.04	2.39					
	2x10	PVB	6.61	4.24	2.84	1.97	1.18	0.62	0.24				
		SGP	10.00	7.06	5.19	3.93	3.04	2.40	1.92	1.55	1.27	1.04	0.81
	2x12	PVB	11.15	6.93	4.54	3.07	1.79	0.90	0.29				
		SGP	32.71	22.47	15.80	11.62	8.83	6.89	5.48	4.43	3.63	3.01	2.52
1,5	2x10	PVB	5.21	2.58	0.89								
		SGP	8.84	6.06	4.31	3.15	2.34	1.57	0.97	0.53	0.21		
	2x12	PVB	8.74	6.21	4.14	2.83	1.61	0.80	0.24				
		SGP	27.40	20.45	14.64	10.91	8.38	6.59	5.28	4.30	3.54	2.95	
2,0	2x12	PVB	7.38	4.98	2.29	0.70							
		SGP	26.09	19.31	13.67	10.05	7.62	5.90	4.66	3.73	3.02	2.46	2.02
3,0	2x12	PVB	1.94										
		SGP	23.48	17.03	11.71	8.34	6.09	4.53	3.00	1.84	0.99	0.36	
4,0	2x12	PVB											
		SGP	20.86	14.75	9.75	6.14	3.25	1.33	0.03				

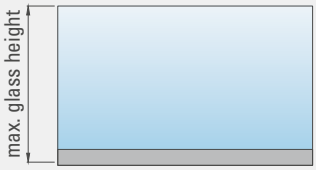
Possible without load-bearing handrail connection. A glass edge protection can also be used instead of a handrail. Max. glass width: 6,000 mm.

Load-distributing handrail and handrail connection to structure (supporting components) necessary for outlet elements.
The width ratio of the adjacent glass panes is min. 1:4 and max. 4:1. Max. glass width 3,000 mm, see page 75.

xx,xx Deviating width ratios of adjacent panes. Min. 1:2 and max. 2:1.

Attention: Binding information can be found in the approvals and/or type statics.
Only the fields filled in with numbers apply for indoor areas.

GLASS LSG **FLOAT** – Application on level areas



Rail load [kN/m]	Glas VSG-Float [mm]		max. glass height [mm] with permissible wind load [kN/m²]										
			600	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600
0.5	2x8	PVB	1.85	0.99	0.39	0.04							
		SGP	6.61	4.43	3.13	2.30	1.74	1.35					
	2x10	PVB	3.68	2.38	1.62	1.13	0.79	0.47	0.25	0.09			
		SGP	11.08	7.56	5.44	4.08	3.15	2.49	2.00	1.64	1.36	1.14	0.96
0.8	2x8	PVB	0.07										
		SGP	5.79	3.75	2.55	1.79	1.28	0.78					
	2x10	PVB	2.84	1.45	0.53								
		SGP	10.27	6.88	4.86	3.57	2.69	2.08	1.63	1.30	1.04	0.84	0.62
1.0	2x8	PVB											
		SGP	5.25	3.30	2.16	1.20	0.56	0.13					
	2x10	PVB	1.78	0.33									
		SGP	9.73	6.43	4.47	3.23	2.39	1.80	1.38	0.97	0.63	0.38	0.19
	2x12	PVB	5.45	3.26	1.89	0.86	0.22						
		SGP	17.79	11.68	8.15	5.94	4.47	3.45	2.72	2.17	1.76	1.44	1.19
	2x15	PVB	10.21	6.51	4.39	3.09	2.23	1.64	1.09	0.66	0.35	0.12	
		SGP	29.44	19.60	13.88	10.28	7.87	6.18	4.96	4.05	3.35	2.81	2.38
1.5	2x12	PVB	1.83	0.32									
		SGP	12.99	9.47	6.56	4.71	3.47	2.61	1.98	1.32	0.84	0.47	
	2x15	PVB	6.74	4.69	2.84	1.39	0.47						
		SGP	22.51	16.72	11.90	8.81	6.71	5.24	4.16	3.36	2.74	2.26	
2.0	2x12	PVB											
		SGP	11.68	8.33	5.58	3.85	2.34	1.24	0.49				
	2x15	PVB	5.08	2.44	0.42								
		SGP	21.20	15.58	10.92	7.95	5.95	4.55	3.54	2.79	2.18	1.06	0.82
3.0	2x15	PVB											
		SGP	18.59	13.30	8.96	6.23	4.10	2.35	1.14	0.28			

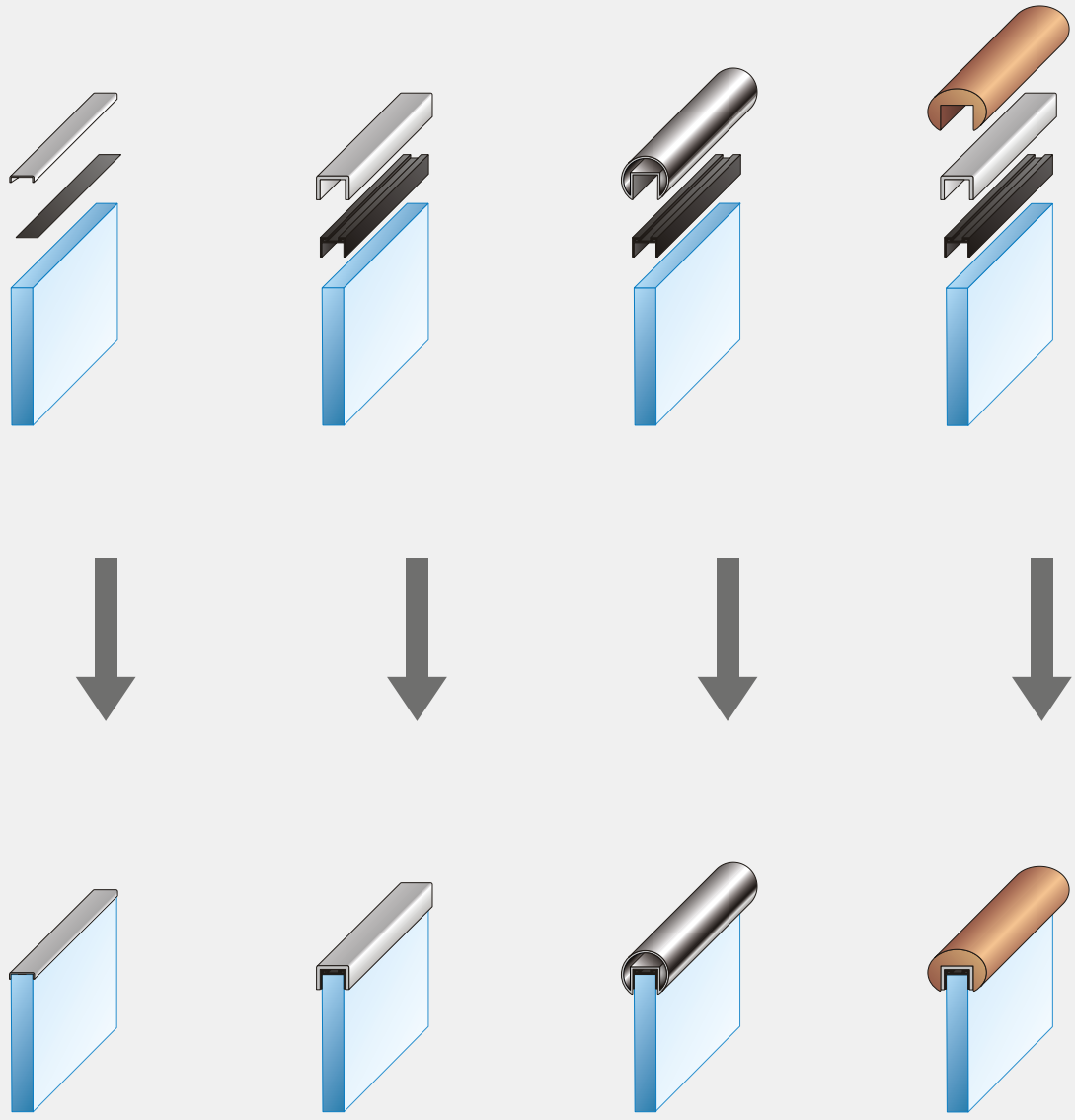
Possible without load-bearing handrail connection. A glass edge protection can also be used instead of a handrail. Max. glass width: 6,000 mm.

Load-distributing handrail and handrail connection to structure (supporting components) necessary for outlet elements.
The width ratio of the adjacent glass panes is min. 1:4 and max. 4:1. Max. glass width 3,000 mm, see page 75.

xx,xx Deviating width ratios of adjacent panes. Min. 1:2 and max. 2:1.

HANDRAILS

Handrail installation



Verification of the handrail connection to the structure on site.

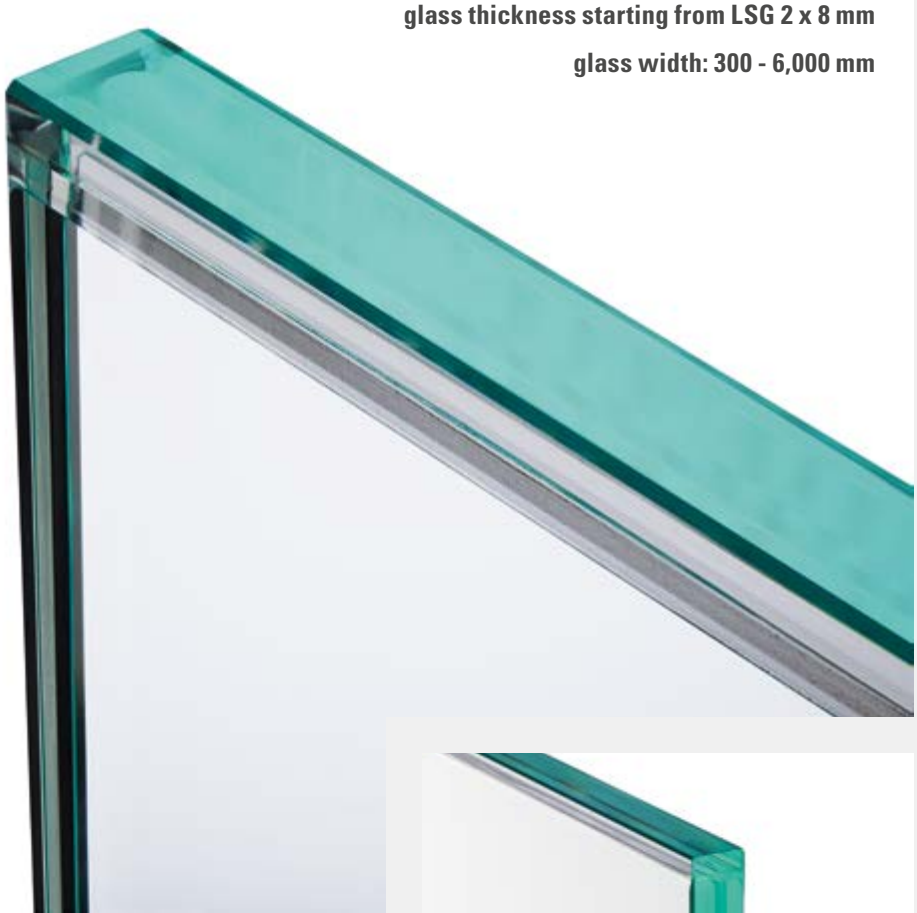
BALARDO *firstglass*

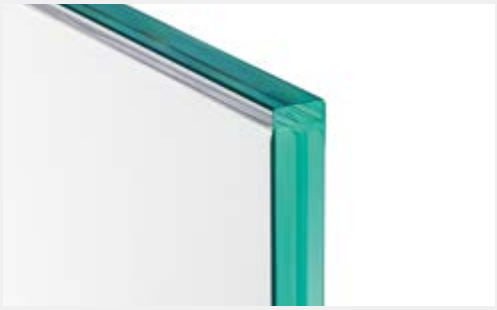
THE ACHIEVEMENT OF FRAMELESS GLASS ARCHITECTURE

DISPLAY CRYSTAL CLEAR EDGES – The laminated glass-clear edge BALARDO *firstglass* redefines transparency in glass railings!

Your advantage: No visible metal edge protection profiles! Just pure glass!
Discover new possibilities in frameless glass architecture.

glass thickness starting from LSG 2 x 8 mm
glass width: 300 - 6,000 mm





DIN 18008-4 tested

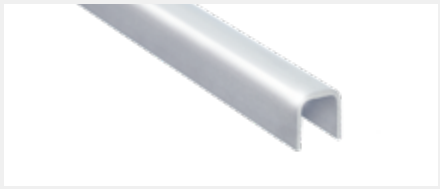
Only at GLASSLINE!

Load-distributing stainless steel handrails

For LSG 2 x 6, 2 x 8, 2 x 10, 2 x 12 and 2 x 15 mm

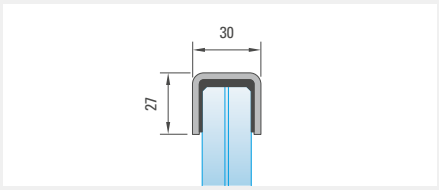
U profile

U 30 x 27 and U 40 x 37 mm, d = 3 mm



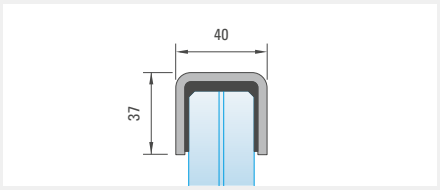
Incl. rubber attachment profile

Available length 3,000 mm



Material: Stainless steel 1.4301 and 1.4404

Surface: sanded



Material: Stainless steel 1.4301

Surface: sanded

90° corner

External dimensions 200 x 200 mm

End piece

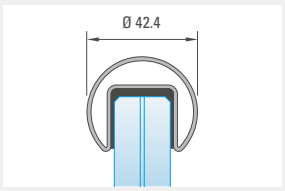
500 mm (closed on one side)

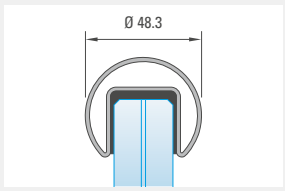
Grooved tube

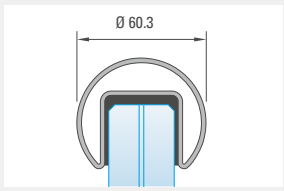
Ø 42.4 mm, Ø 48.3 mm, Ø 60.3 mm

Incl. rubber attachment profile

Available length 5,000 mm, 3,000 mm







Material: Stainless steel 1.4301

Surface: sanded

Handrail connector

Corner connector 90°

Plug handrail end

Wall connection

For Ø 42,4 mm and Ø 48,3 mm

The handrail must be secured against detachment with adhesives of Group E according to DIN 18545-2, if necessary. Processing and bonding instructions are to be observed. PVB compatibility must be checked.

Max. glass width with rail load and glass structure

Handrail [mm]	Rail load [kN/m]	Glass structure [mm]	Glass width [mm]
U 30 x 27 x 3	≤ 1.0	2 x 6 / 2 x 8 / 2 x 10	≤ 3,000
	≤ 2.0	2 x 10	≤ 2,000
U 40 x 37 x 3	≤ 2.0	2 x 12 / 2 x 15	≤ 2,000
U 44 x 39 x 5*	≤ 2.0	2 x 12 / 2 x 15	≤ 3,000
U 50 x 40 x 6*	≤ 5.0	2 x 12 / 2 x 15	≤ 2,000
Ø 42.4	≤ 1.0	2 x 6 / 2 x 8 / 2 x 10	≤ 3,000
Ø 48.3	≤ 1.0	2 x 6 / 2 x 8 / 2 x 10	≤ 3,000
	≤ 2.0	2 x 10	≤ 2,000
Ø 60.3	≤ 2.0	2 x 12 / 2 x 15	≤ 2,400

* Handrail on request.

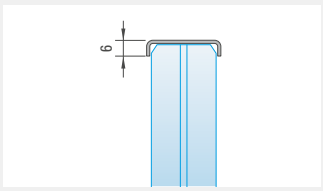
Glass edge protection profiles

Stainless steel

For LSG 2 x 6, 2 x 8, 2 x 10, 2 x 12 and 2 x 15 mm

h = 6 mm, d = 1 mm

Available length 3,000 mm, 1,300 mm



Material: Stainless steel 1.4301

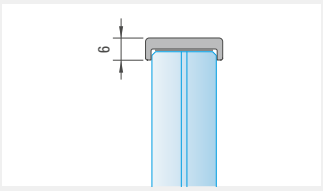
Surface: sanded

Aluminium

For LSG 2 x 6, 2 x 8 and 2 x 10 mm

h = 6 mm, d = 1.5 mm

Available length 3,000 mm, 1,300 mm



Material: Aluminium (EN AW - 6063 T66)

Surface: Natural untreated

90° corner

External dimensions 200 x 200 mm

horizontal

vertical

The edge protection should be secured against detachment with adhesive. Processing and bonding instructions are to be observed.

PVB compatibility must be checked.

Load-distributing wood handrails

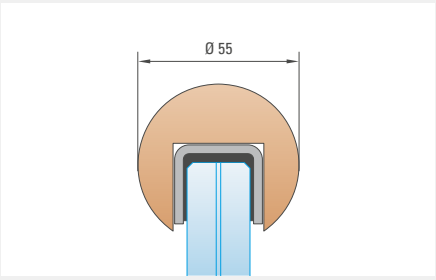
For LSG 2 x 6, 2 x 8, 2 x 10, 2 x 12 and 2 x 15 mm

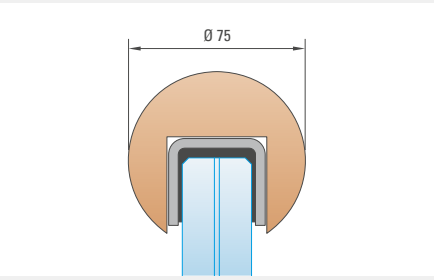
Round Ø 55 mm on a U profile 30 x 27 mm

for LSG 2 x 6 mm, 2 x 8 mm, 2 x 10 mm

Round Ø 75 mm on a U profile 40 x 37 mm

for LSG 2 x 12 mm, 2 x 15 mm





including rubber attachment profile

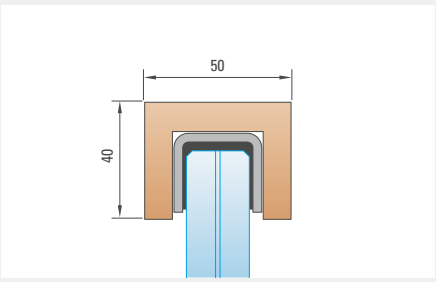
Available length:	3,000 mm
Material of handrails:	Steamed beech
Surface:	sanded and varnished

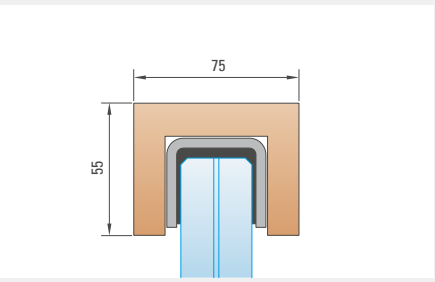
Rectangle w/h 50/40 mm on a U profile 30 x 27 mm

for LSG 2 x 6 mm, 2 x 8 mm, 2 x 10 mm

Rectangle w/h 75/55 mm on a U profile 40 x 37 mm

for LSG 2 x 12 mm, 2 x 15 mm



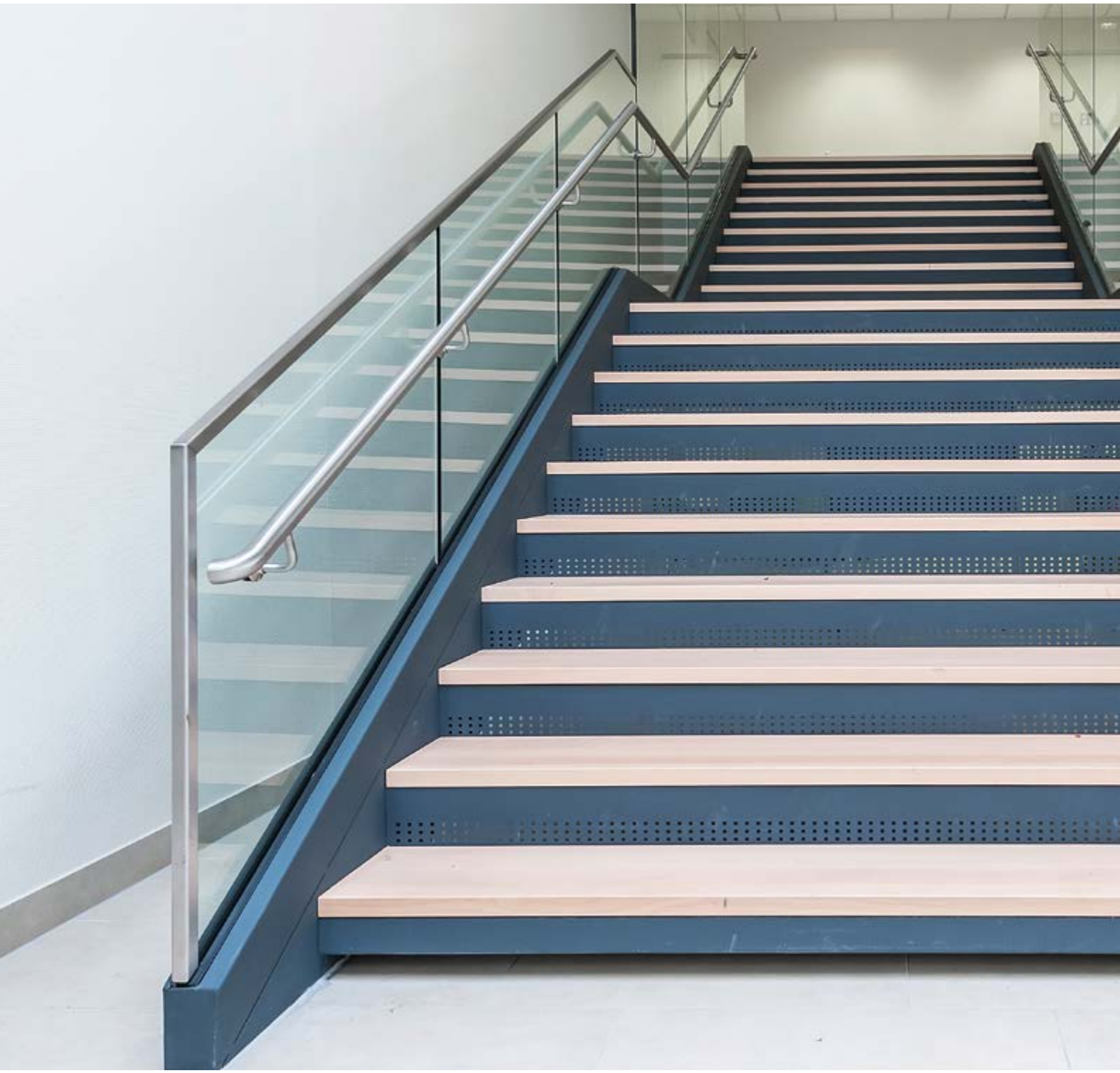


including rubber attachment profile

Available length:	3,000 mm
Material of handrails:	Steamed beech
Surface:	sanded and varnished

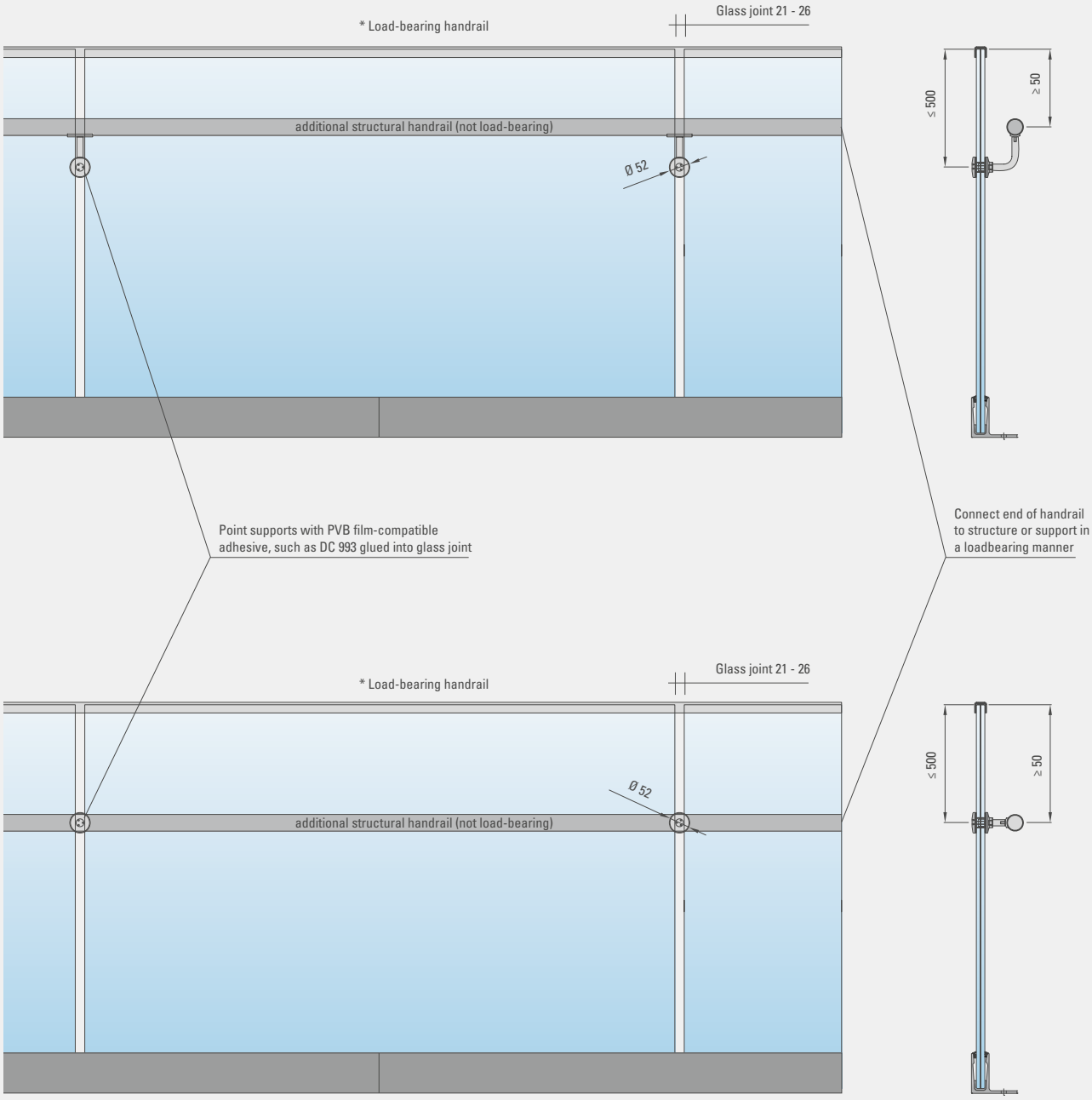
The handrail should be secured against detachment with adhesive, if necessary. Processing and bonding instructions are to be observed. PVB compatibility must be checked.

ADDITIONAL STRUCTURAL HANDRAIL



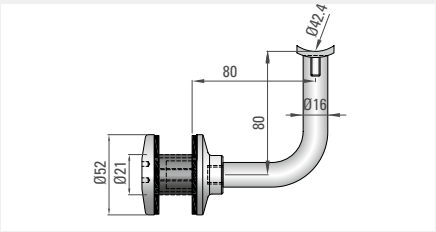
Additional structural handrail

Application examples



* Load-bearing handrail absolutely required. Application / approval under construction law must be agreed with the relevant authorities for each specific object. The structural handrail has no fall-proof function and must be measured and executed in accordance with the requirements. The handrail must be secured against detachment with adhesive, if necessary. PVB compatibility must be considered.

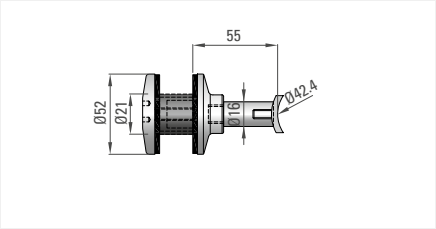
Curved handrail supports



Point supports:	Ø 52 mm
Material:	Stainless steel 1.4404

Surface:	machined

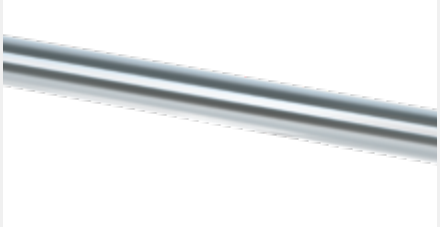
Straight handrail supports

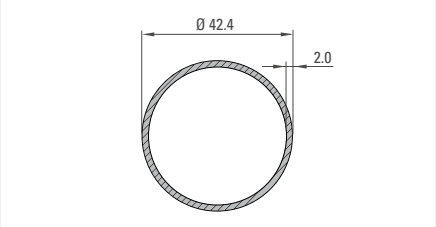


Point supports:	Ø 52 mm
Material:	Stainless steel 1.4404

Surface:	machined

Stainless steel handrail

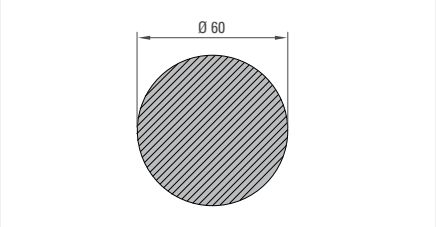




Round tube:	Ø 42.4 x 2.0 mm
Material:	Stainless steel 1.4301

Surface:	sanded
Available length:	6,000 mm

Wood handrail

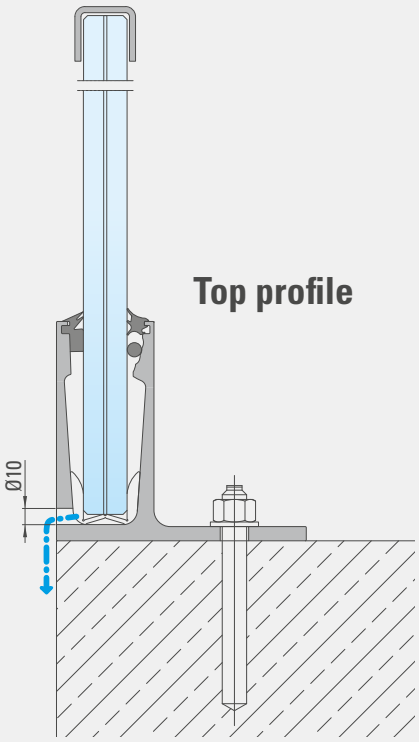


Wood:	Ø 60 mm
Material:	Steamed beech

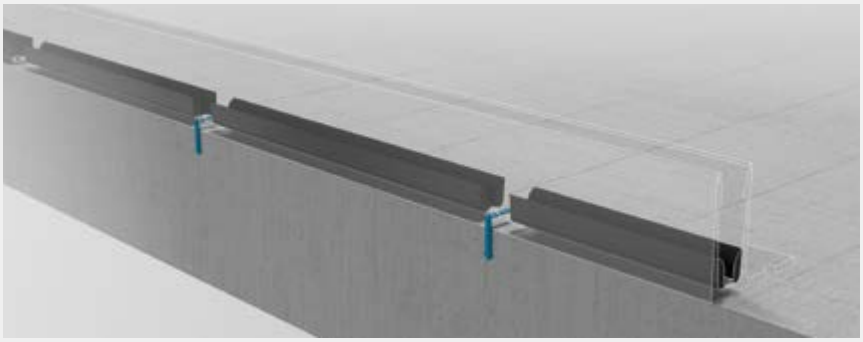
Surface:	sanded and varnished
Available length:	3,000 mm

Glass rebate drainage

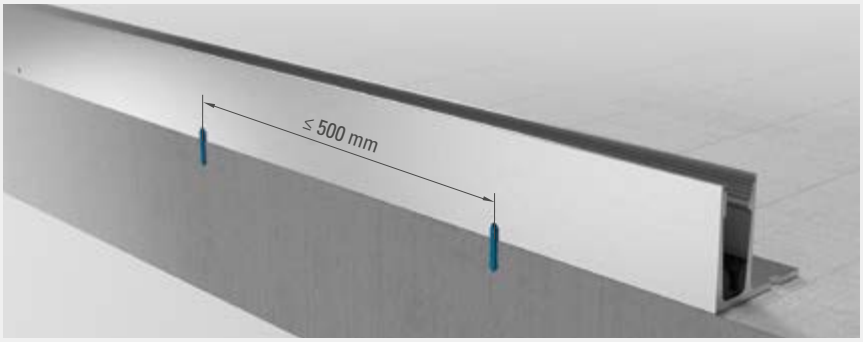
(in accordance with "Technical Guidelines of the Glazing Trade")

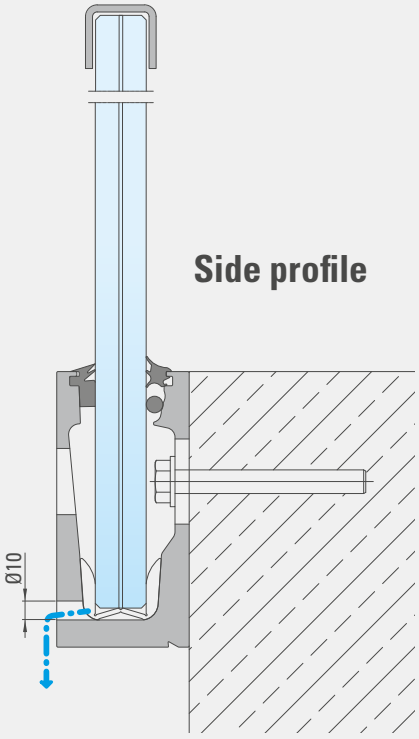


Clamping shoe interruption

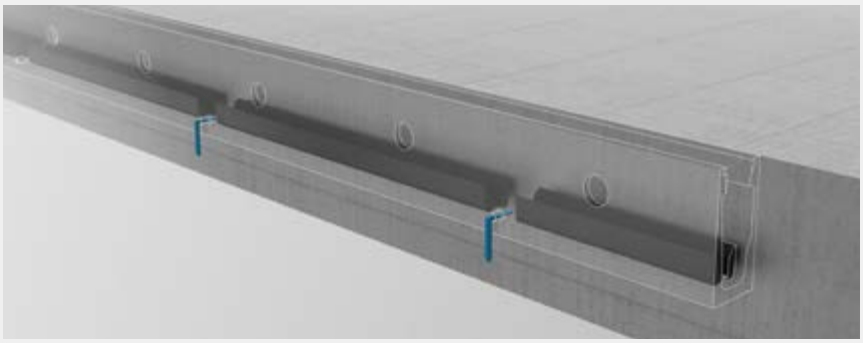


Profile holes Ø 10 mm, spacing ≤ 500 mm (on request)

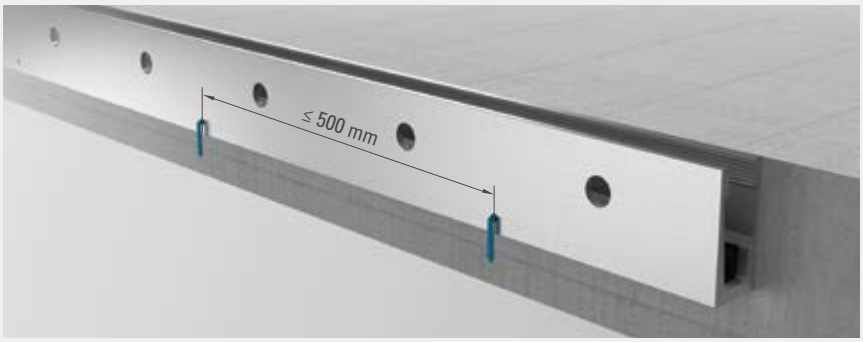




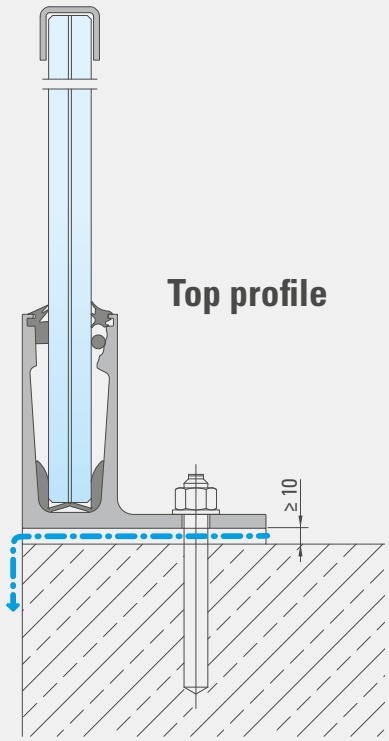
Clamping shoe interruption



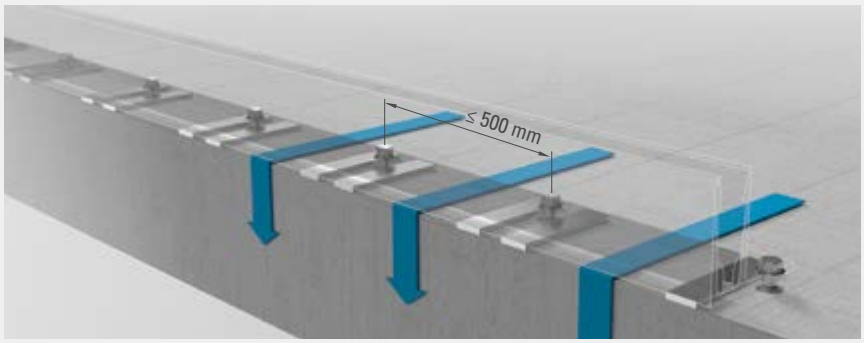
Profile holes Ø 10 mm, spacing ≤ 500 mm (on request)



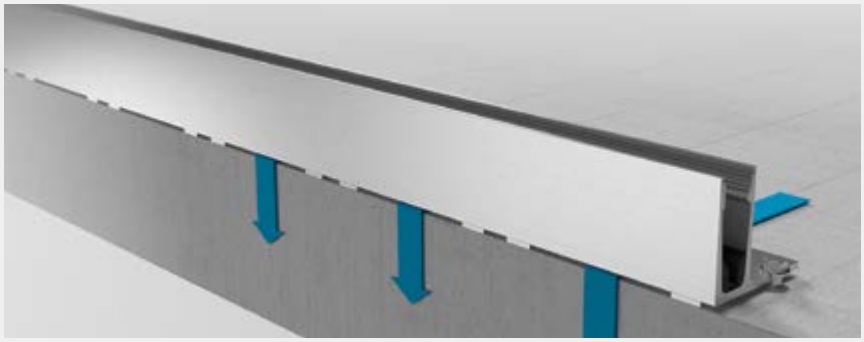
Balcony / terrace drainage

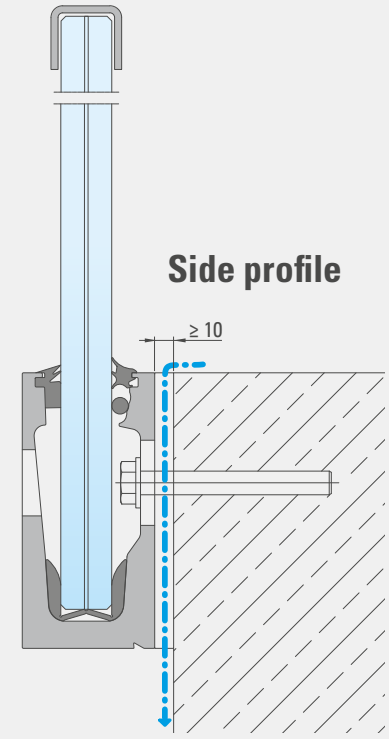


Relining ≥ 10 mm, spacing ≤ 500 mm

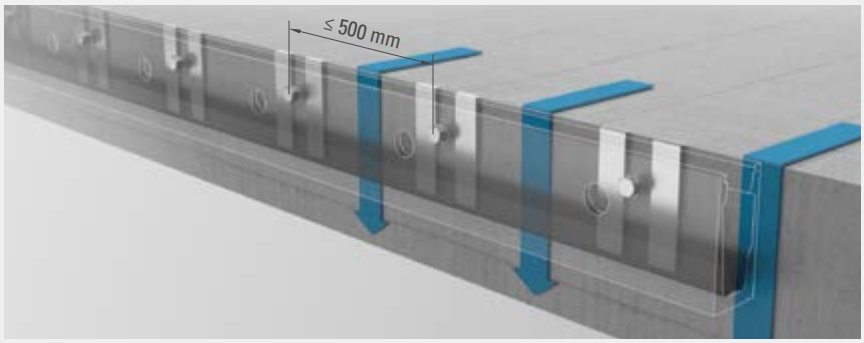


Contact surface per attachment point ≥ 60 mm

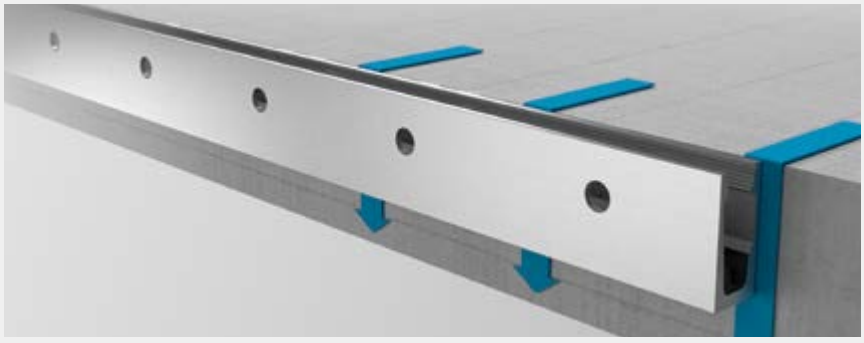




Relining ≥ 10 mm, spacing ≤ 500 mm



Contact surface per attachment point ≥ 60 mm



Accessories

Assembly tool

- For BALARDO *core* and BALARDO *core hd*
- For hammering in the POM rods

EASYFIX assembly tool

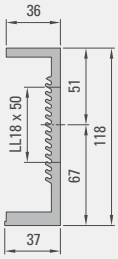
- For BALARDO *smart*
- For pushing in the round cord

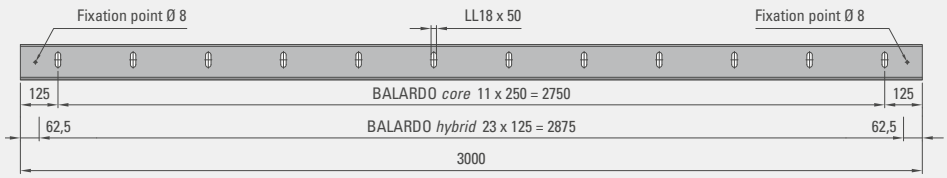
Spaced mounting profile

- U 36 x 118 mm
- Material: Aluminium (EN AW-6063 T66)
- Available length: 3,000 mm
- including spacers
  (12 pieces for *core*, 24 pieces for *hybrid*)
- Slot: 18 x 50 mm
- Borehole pattern BALARDO *core*: every 250 mm
- Borehole pattern BALARDO *hybrid*: every 125 mm

Surfaces

Natural untreated	Stainless steel effect (E6EV1)

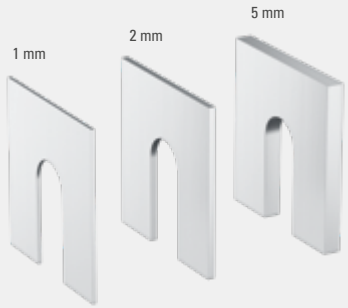




Rosette

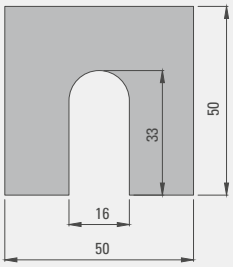
- for M10 countersunk head screw DIN 7991
- Material: Stainless steel A4
- Packaging uni: 12 pieces

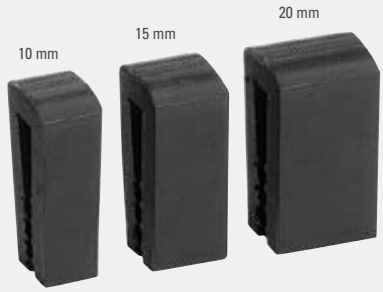
Accessories



Filling plates

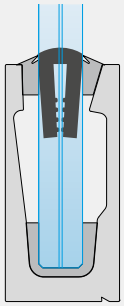
- Material: Aluminium
- Dimensions: 50 x 50 mm
- Slot: 16 x 33 mm
- Thicknesses: 1 mm, 2 mm, 5 mm
- Packaging unit: 10 pieces





Glass spacers for glass joint

- Material: EPDM
- for glass thickness: 2 x 6 mm, 2 x 8 mm, 2 x 10 mm, 2 x 12 mm, 2 x 15 mm
- Glass joint width: 10 mm, 15 mm, 20 mm
- Height: 36 mm
- Self-adhesive on one side
- Packaging unit: 5 pieces
- Max. rod length: 600 mm (for cutting to size)



Screw lock

- Flask 10 ml
- Flask 50 ml

Connection pins Ø 4 x 20 mm for BALARDO *hybrid* profiles and connection profiles

- Material: Stainless steel 1.4301
- with thread M4 x 10 mm
- Packaging unit: 10 pieces

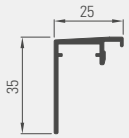
Connecting plates for connection profiles

- Material: Aluminium
- with thread 2 x M5
- Dimensions (length x thickness): 100 x 3 mm
- Width: 15 / 20 / 25 and 30 mm
- Packaging unit: 10 pieces

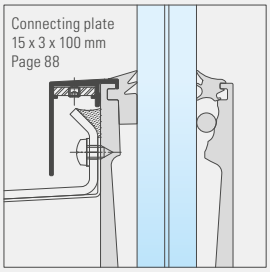
Outside connection profiles

Material: Aluminium / Available length: 3,000 mm
Surfaces: Natural untreated / stainless steel effect (E6EV1)

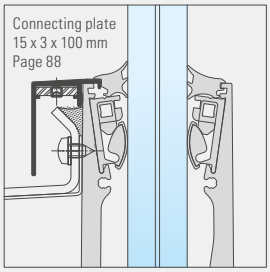
Cover profile



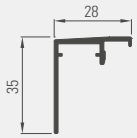
core Top 1/2/3



hybrid Top 1/4 Side 1



Cover profile for core Side 1 / Top 4



core Top 4 Side 1

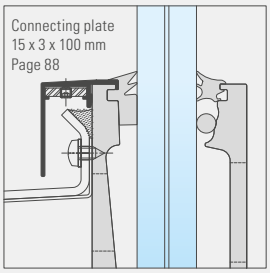
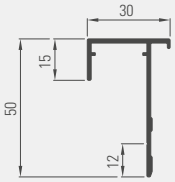
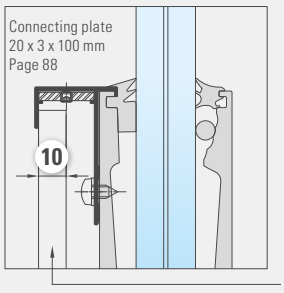


Plate thickness of 10 mm



core Top 1/2/3



hybrid Top 1/4 Side 1

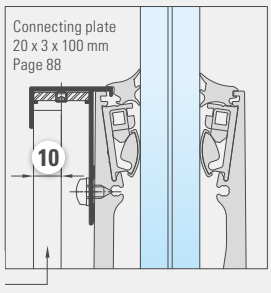
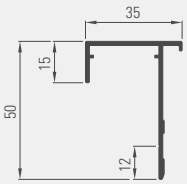
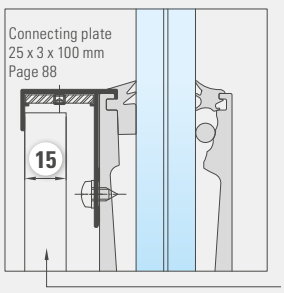


Plate thickness of 15 mm



core Top 1/2/3



hybrid Top 1/4 Side 1

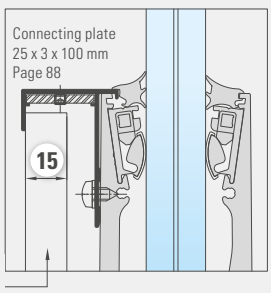
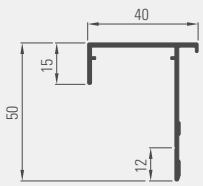
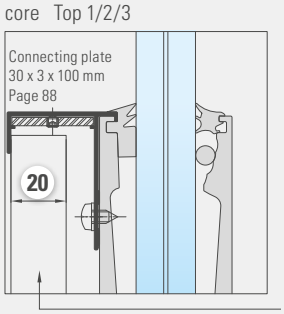


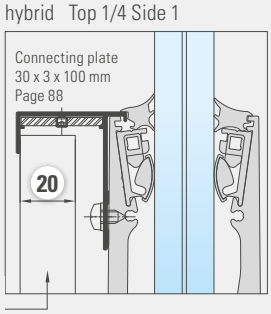
Plate thickness of 20 mm



core Top 1/2/3



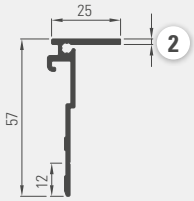
hybrid Top 1/4 Side 1



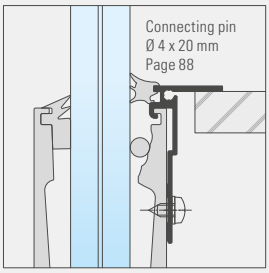
Inside connection profiles

Material: Aluminium / Available length: 3,000 mm
Surfaces: Natural untreated / stainless steel effect (E6EV1)

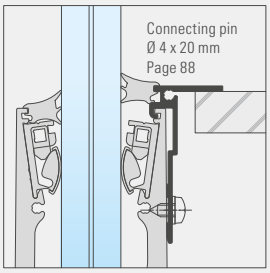
with flank height of 2 mm



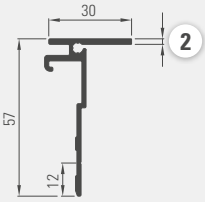
core Top 1/2/3



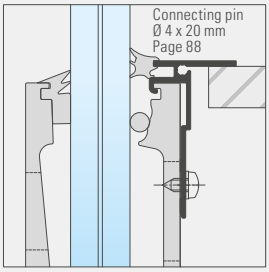
hybrid Top 1/4



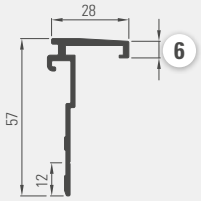
with flank height of 2 mm for core Top 4



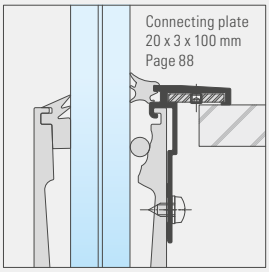
core Top 4



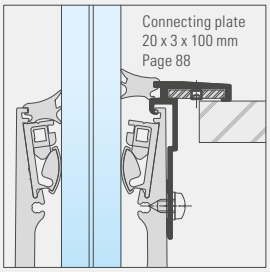
with flank height of 6 mm



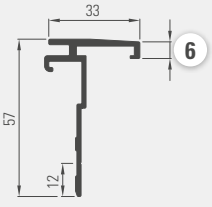
core Top 1/2/3



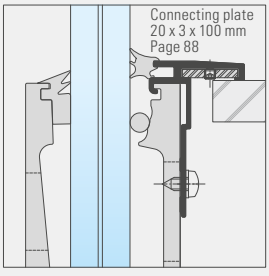
hybrid Top 1/4



with flank height of 6 mm for core Top 4



core Top 4



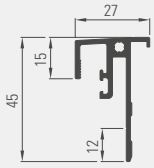
BALARDO

Top profile building cladding for a plate thickness of 3-5 mm

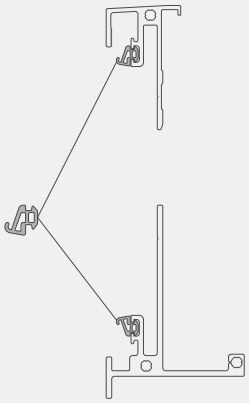
for *core* Top 1 and 3, *hybrid* Top 1 and 4

Material: Aluminium / Available length: 3,000 mm. Surfaces: Natural untreated / stainless steel effect (E6EV1)

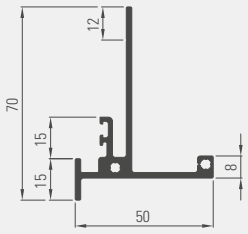
upper profile for Top

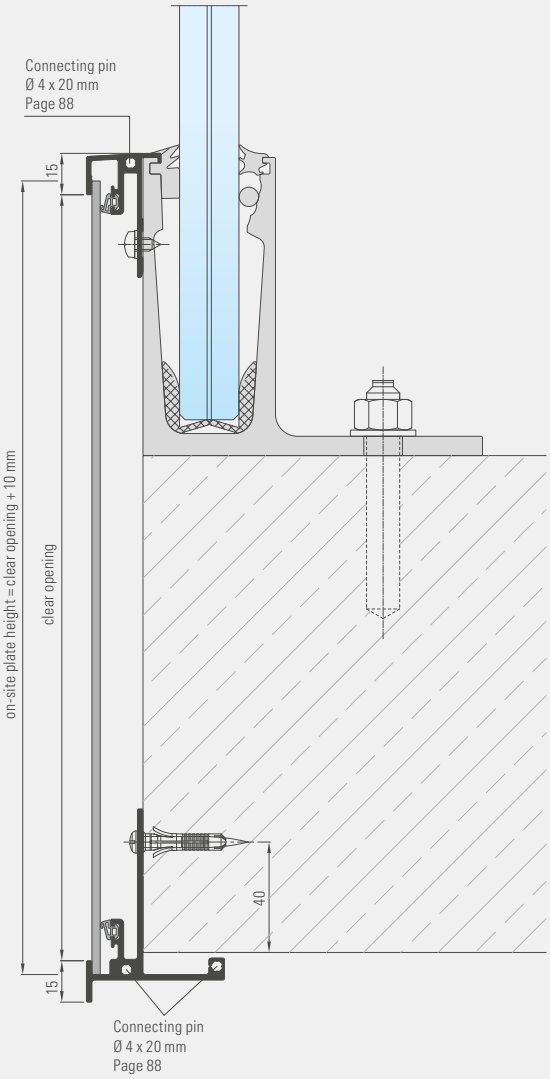


Seal

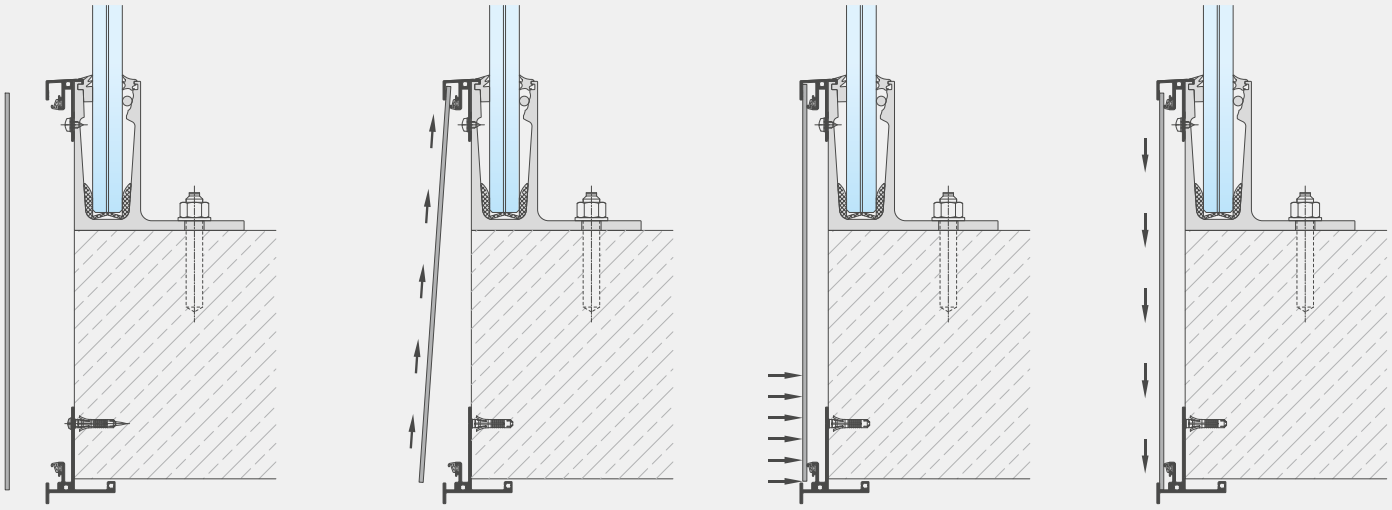


lower profile for Top





Installation instructions

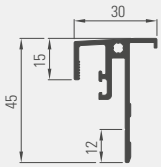


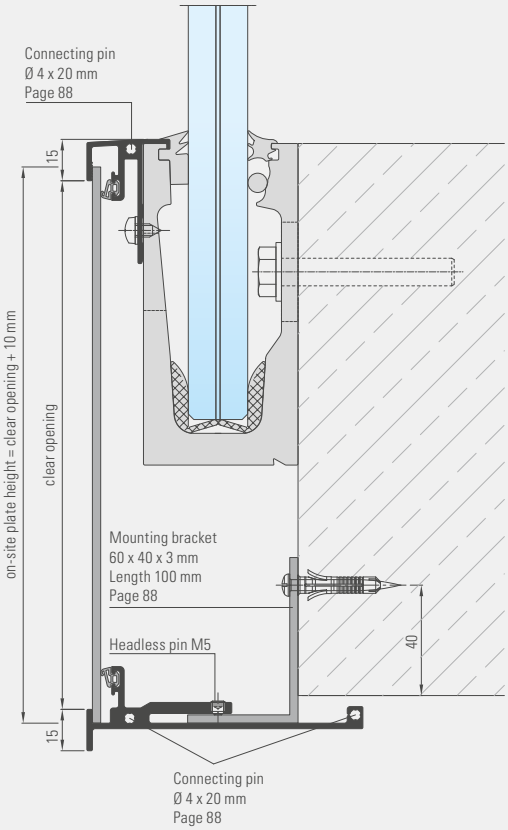
Side profile building cladding for a plate thickness of 3-5 mm

for *core* Side 1

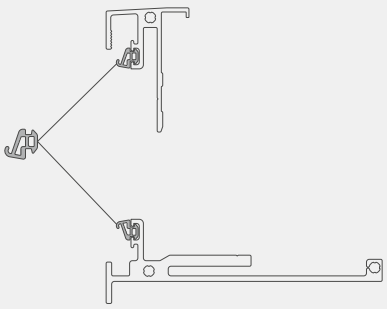
Material: Aluminium / Available length: 3,000 mm. Surfaces: Natural untreated / stainless steel effect (E6EV1)

upper profile for Side

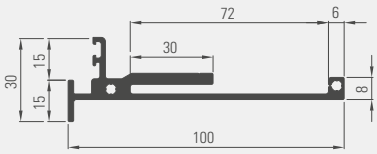




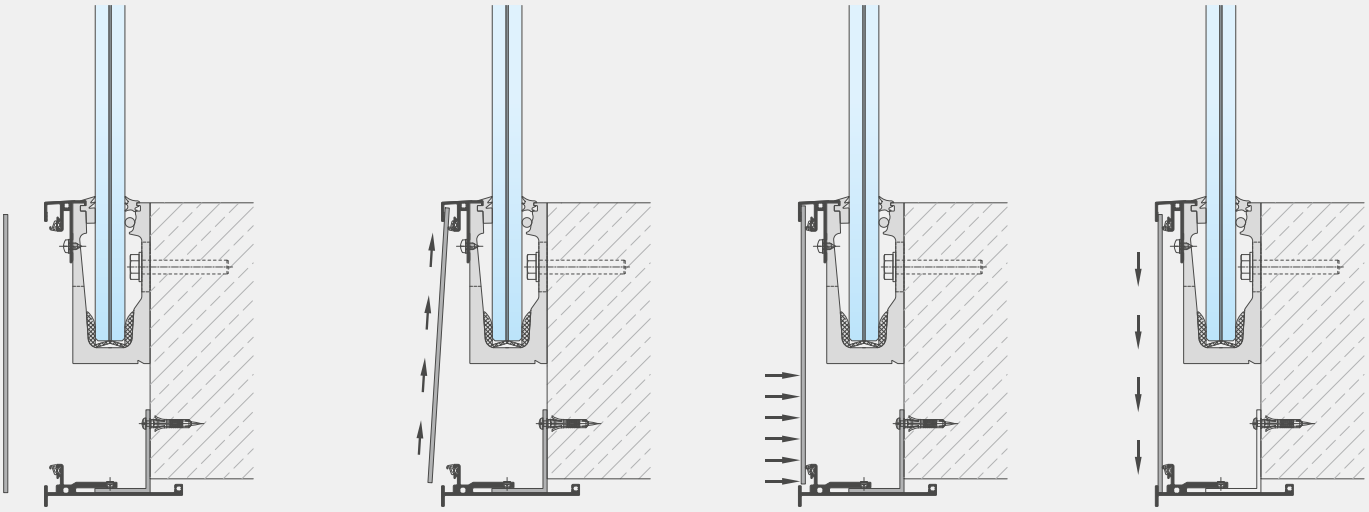
Seal



lower profile for Side



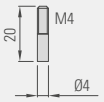
Installation instructions

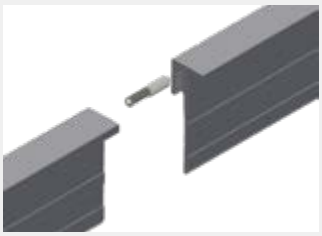


Joining elements

Connecting pin

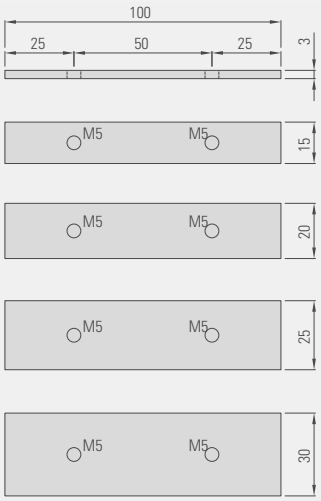
Material: Stainless steel 1.4301
Length: 20 mm, Ø 4 mm

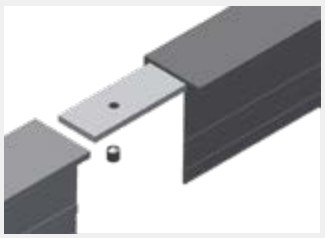




Connecting plates

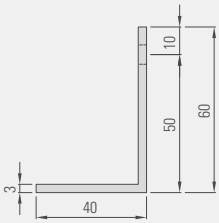
Material: Aluminium
Length: 100 mm
Thickness: 3 mm
Width: 15, 20, 25 and 30 mm

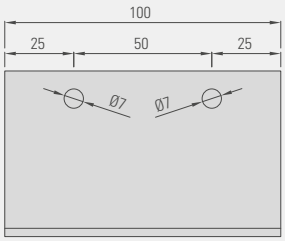


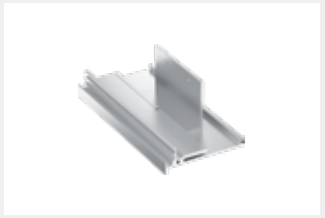


Mounting bracket

Material: Aluminium
Length: 100 mm
Thickness: 3 mm
Flank: 60 x 40 mm







Mounting bracket in profile area

Mounting bracket and connection pins in joint area

IQ BUILDING COMPLEX

IN HAMBURG'S HAFENCITY DISTRICT

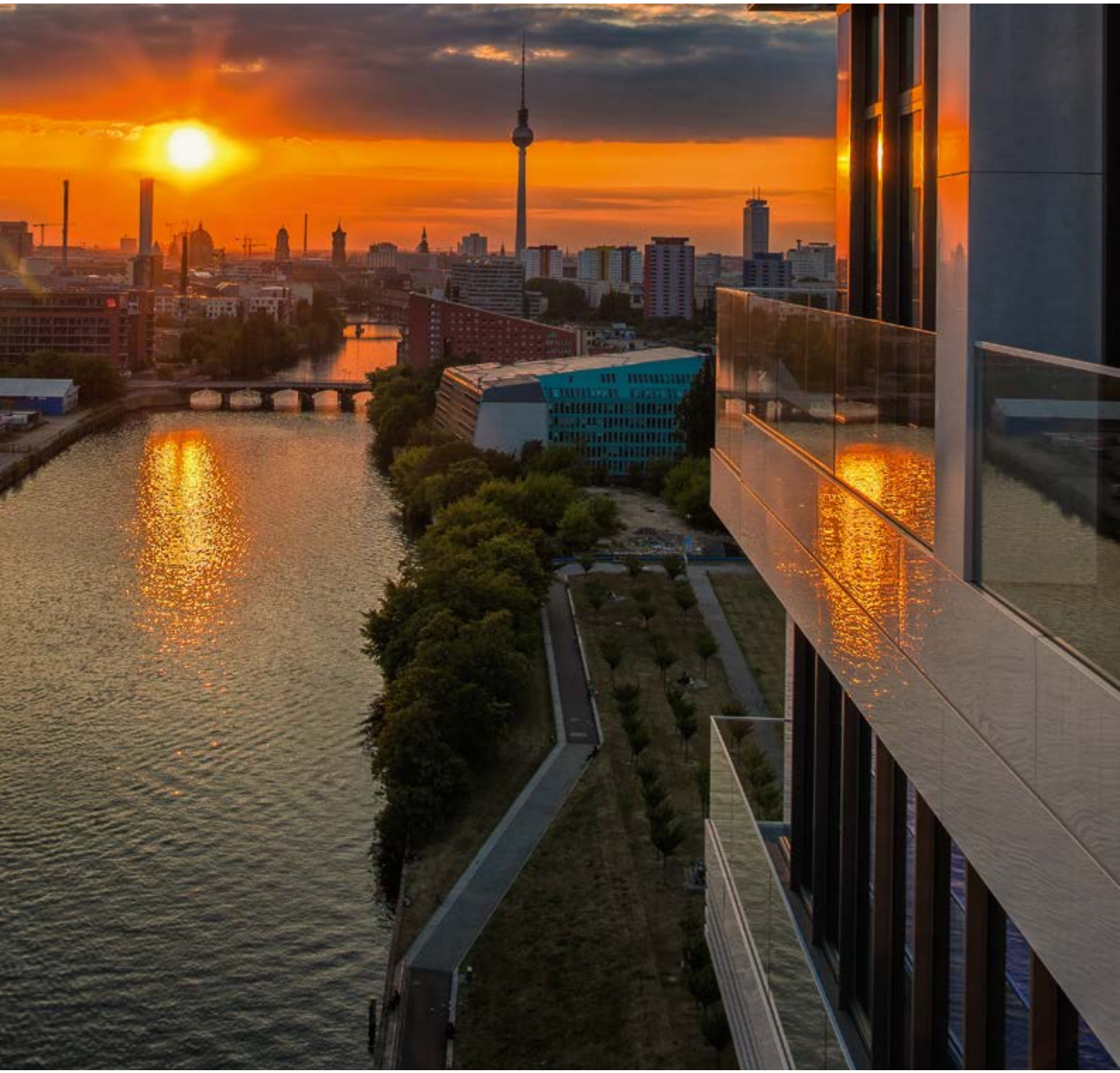
Our BALARDO glass railings in the new IQ building in Hamburg's Hafencity district. IQ stands for "Intelligent Quarters" and the building complex is located right beside the Elbe and along the southeastern Magdeburg port – in the immediate vicinity of the HCU, the German headquarters of Greenpeace, designport hamburg, and other creative uses.

The Hamburg company ECE planned aclearly visible landmark, which is complemented by two other buildings – including about 60 apartments and effective public uses on the ground floor – on a plot of approx. 9,100 square metres in the southern Elbtorquartier.

A shared space with the HCU that opens onto the water offers a high quality of stay and emphasises the architectural merit of this special place. Altogether, the "Intelligent Quarters" cover about 30,000 qm of gross floor space. Together with the Überseequartier opposite and the building development at the tip of the quay of the southern Baakenhafen, the "Intelligent Quarters" and the HCU will form the "Maritime Dreieck" (Maritime Triangle). The buildings were planned in accordance with the sustainability standard of the HafenCity in gold and also satisfy the requirements for a certificate from the German Sustainable Building Council (DGNB).

APPLICATION EXAMPLES

OUTSIDE / OUTDOOR AREA



OVERVIEW

		Top 1		Top 2		Top 3		Top 4	
	Application	**CharacterNo.**	**Page**	**CharacterNo.**	**Page**	**CharacterNo.**	**Page**	**CharacterNo.**	**Page**
1	Connection from above to a balcony	BA-Top1-001	92	BA-Top2-001	95	BA-Top3-001	98	BA-Top4-001	101
2	Connection from above on a roof terrace	BA-Top1-002	92	BA-Top2-002	95	BA-Top3-002	98	BA-Top4-002	101
3	Connection from above with a high floor	BA-Top1-003	92	BA-Top2-003	95	BA-Top3-003	98	BA-Top4-003	101
4	Connection from above to an attic	BA-Top1-004	92	BA-Top2-004	95	BA-Top3-004	98	BA-Top4-004	101
5	Connection from the side to a balcony	BA-Top1-005	93	BA-Top2-005	96	BA-Top3-005	99	BA-Top4-005	102
6	Connection from the side with cantilevered substructure	BA-Top1-006	93	BA-Top2-006	96	BA-Top3-006	99	BA-Top4-006	102
7	Connection from the side with a high floor	BA-Top1-007	93	BA-Top2-007	96	BA-Top3-007	99	BA-Top4-007	102
8	Connection from the side on a roof terrace	BA-Top1-008	93	BA-Top2-008	96	BA-Top3-008	99	BA-Top4-008	102
9	Connection from above with FIX"N SLIDE to an attic	BA-Top1-009	94	BA-Top2-009	97	BA-Top3-009	100	BA-Top4-009	103
10	Connection from the side with FIX"N SLIDE to a roof terrace	BA-Top1-010	94	BA-Top2-010	97	BA-Top3-010	100	BA-Top4-010	103
11	Connection from above with FIX"N SLIDE to a roof terrace	BA-Top1-011	94	BA-Top2-011	97	BA-Top3-011	100	BA-Top4-011	103

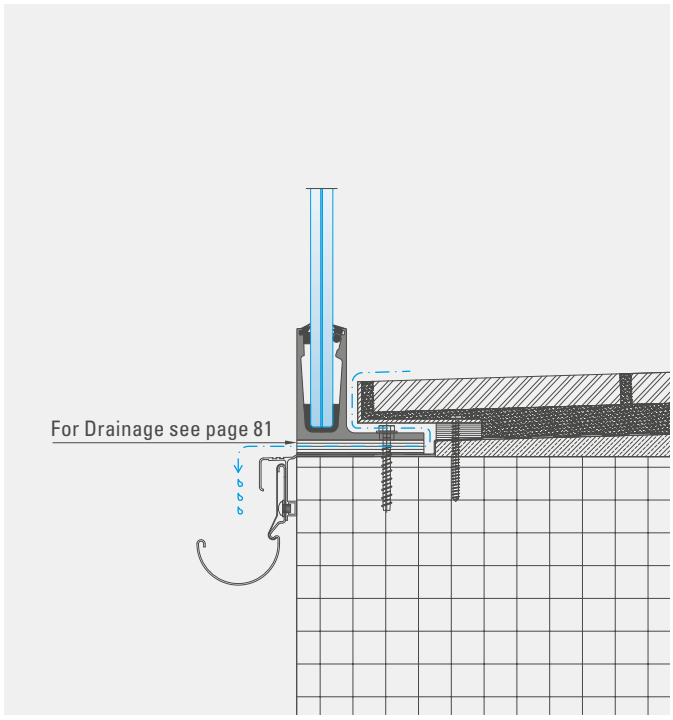
		Side 1		Side 2	
	Application	**CharacterNo.**	**Page**	**CharacterNo.**	**Page**
1	Connection from above to a balcony	BA-Side1-001	104	BA-Side2-001	107
2	Connection from above on a roof terrace	BA-Side1-002	104	BA-Side2-002	107
3	Connection from above with a high floor	BA-Side1-003	104	BA-Side2-003	107
4	Connection from above to an attic	BA-Side1-004	104	BA-Side2-004	107
5	Connection from the side to a balcony	BA-Side1-005	105	BA-Side2-005	108
6	Connection from the side with cantilevered substructure	BA-Side1-006	105	BA-Side2-006	108
7	Connection from the side with a high floor	BA-Side1-007	105	BA-Side2-007	108
8	Connection from the side on a roof terrace	BA-Side1-008	105	BA-Side2-008	108
9	Connection with spaced mounting profile to a concrete structure	BA-Side1-009	106	BA-Side2-009	109
10	Connection with spaced mounting profile to a steel structure	BA-Side1-010	106	BA-Side2-010	109
11	Connection from above with FIX"N SLIDE to an attic	BA-Side1-013	106	BA-Side2-013	109
12	Anbindung seitlich mit FIX"N SLIDE an Dachterrasse	BA-Side1-014	106	BA-Side2-014	109

Observe attachment edge spacings for load application and transfer.

System profile Top 1 Outside

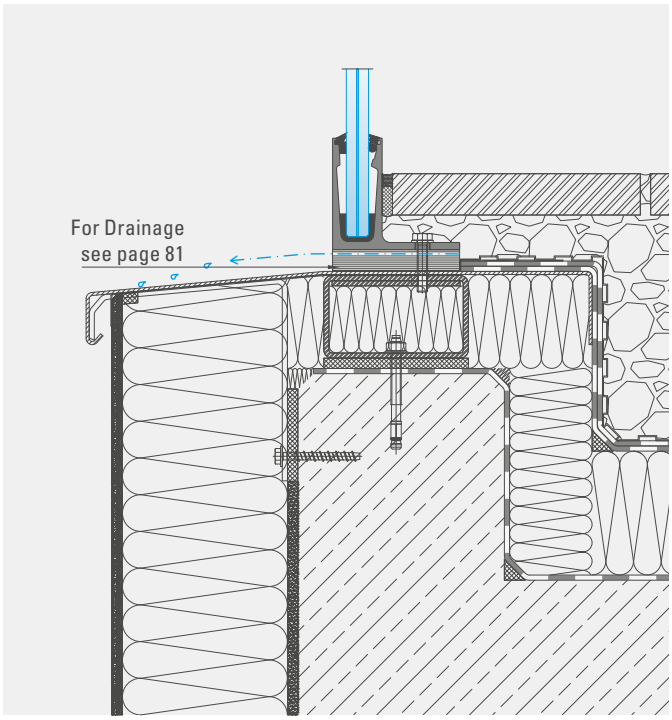
Application examples outdoors **BALARDO** *core / core hd / hybrid*

1 Connection from above to a balcony



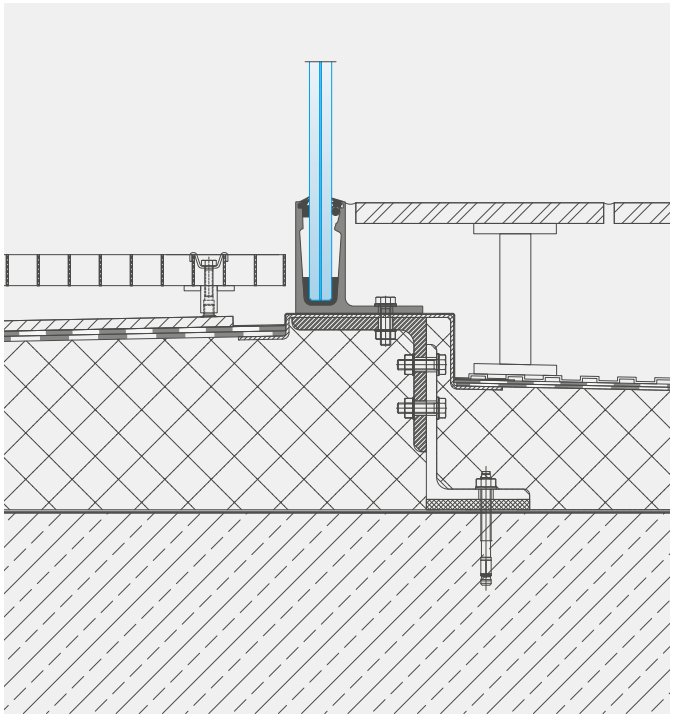
CharacterNo.: BA-Top1-001

2 Connection from above on a roof terrace



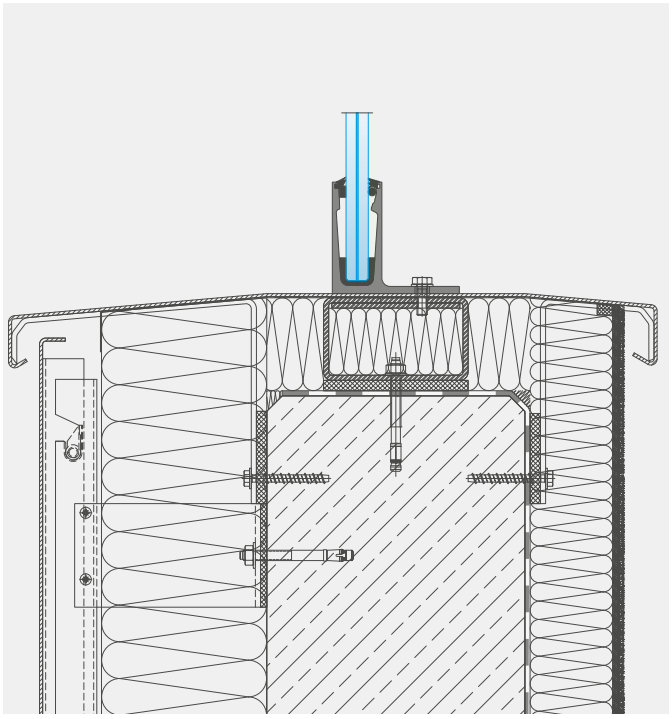
CharacterNo.: BA-Top1-002

3 Connection from above with a high floor



CharacterNo.: BA-Top1-003

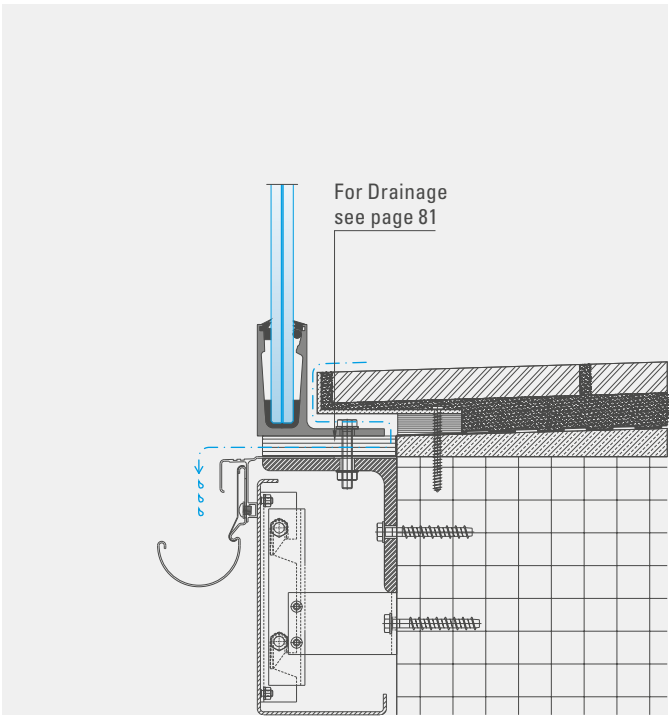
4 Connection from above to an attic



CharacterNo.: BA-Top1-004

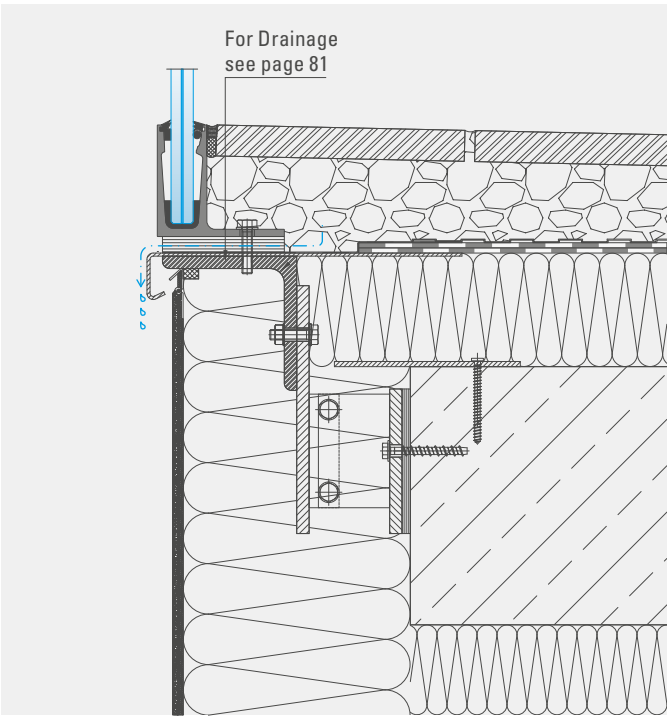
Observe attachment edge spacings for load application and transfer.

5 Connection from the side to a balcony



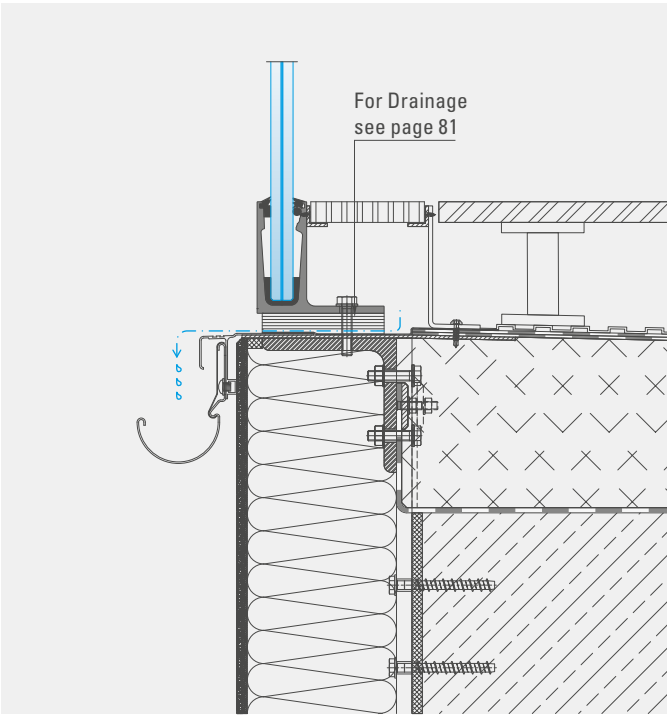
CharacterNo.: BA-Top1-005

6 Connection from the side with cantilevered substructure



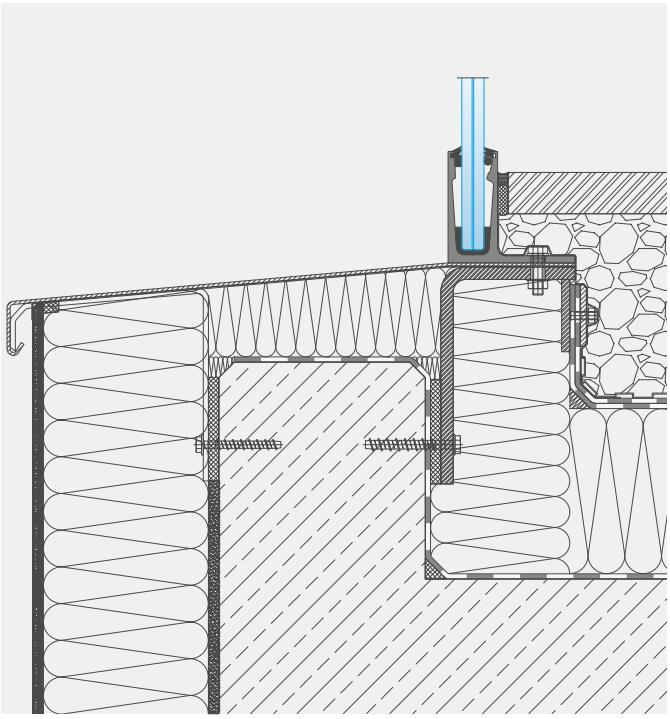
CharacterNo.: BA-Top1-006

7 Connection from the side with a high floor



CharacterNo.: BA-Top1-007

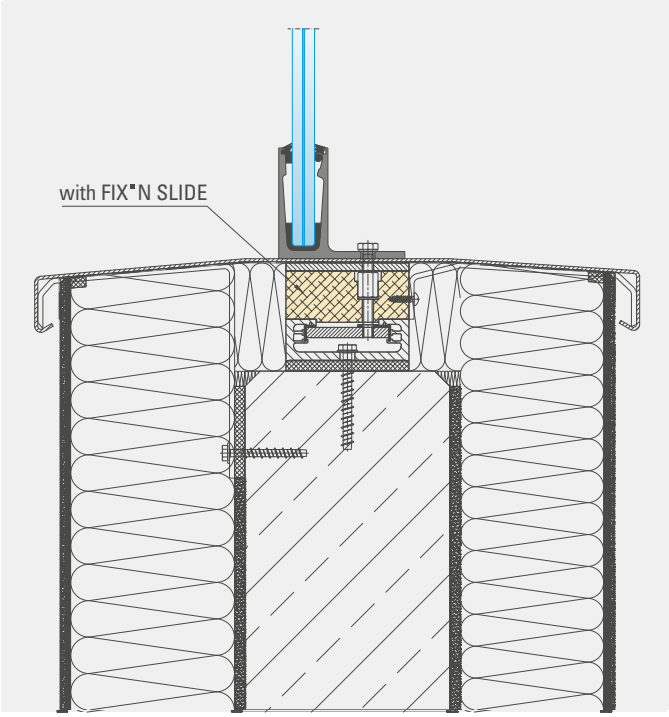
8 Connection from the side on a roof terrace



CharacterNo.: BA-Top1-008

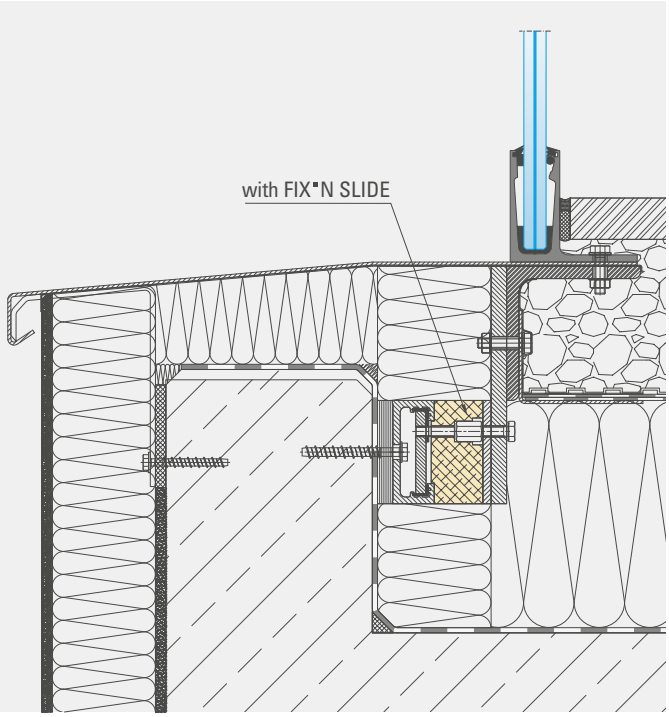
Observe attachment edge spacings for load application and transfer.

9 Connection from above to an attic



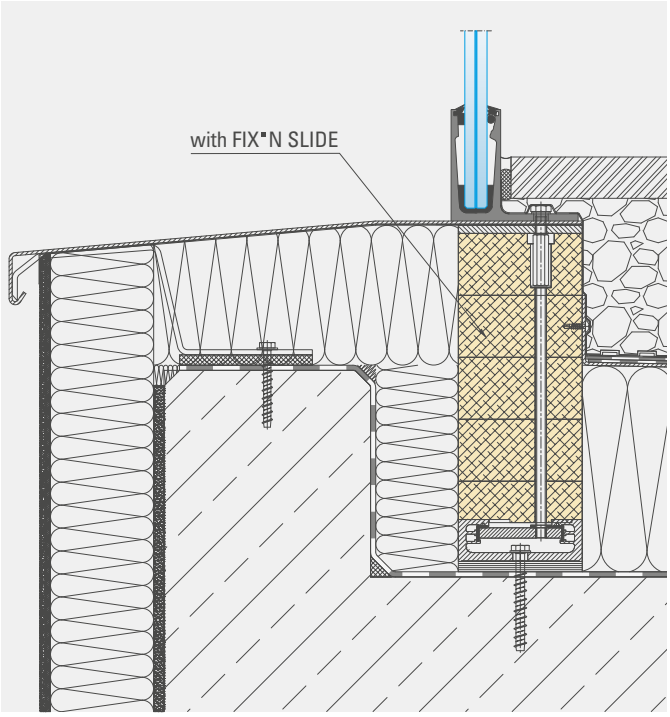
CharacterNo.: BA-Top1-009

10 Connection from the side to a roof terrace



CharacterNo.: BA-Top1-010

11 Connection from above to a roof terrace



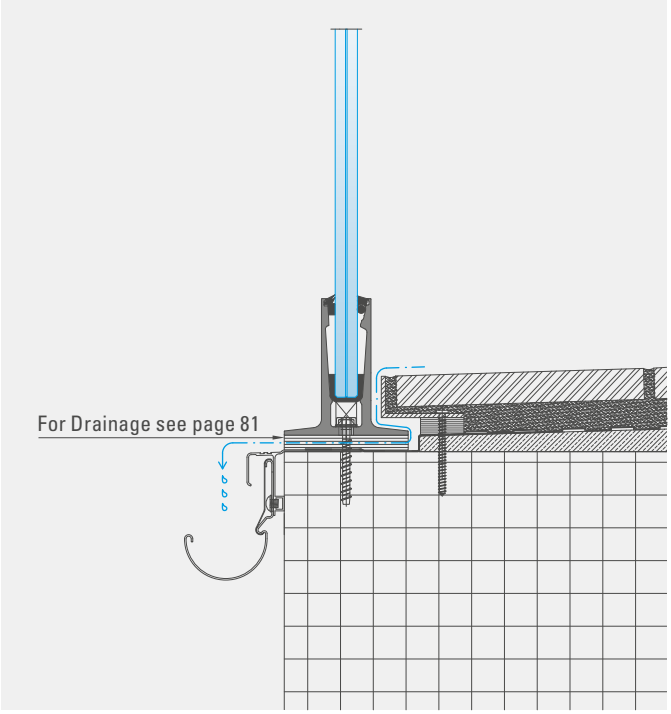
CharacterNo.: BA-Top1-011

Observe attachment edge spacings
for load application and transfer.

System profile Top 2 Outside

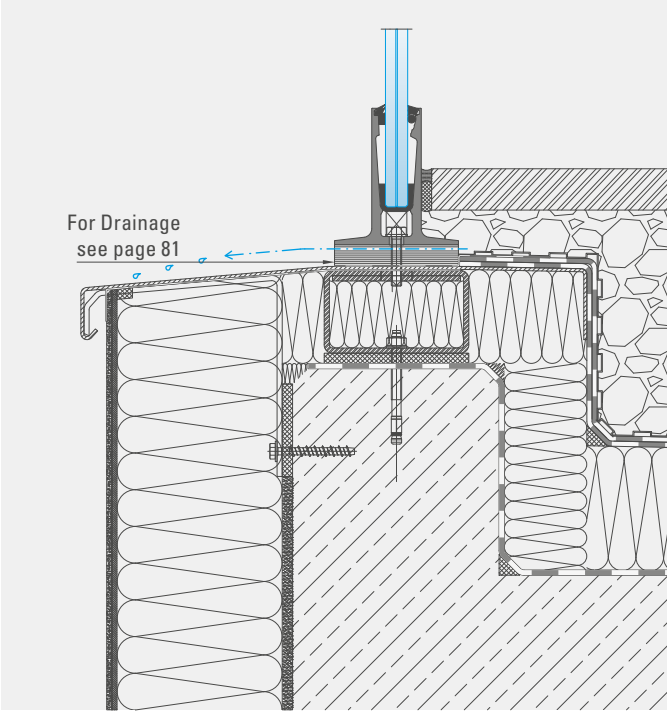
Application examples outdoors **BALARDO** *core / core hd*

1 Connection from above to a balcony



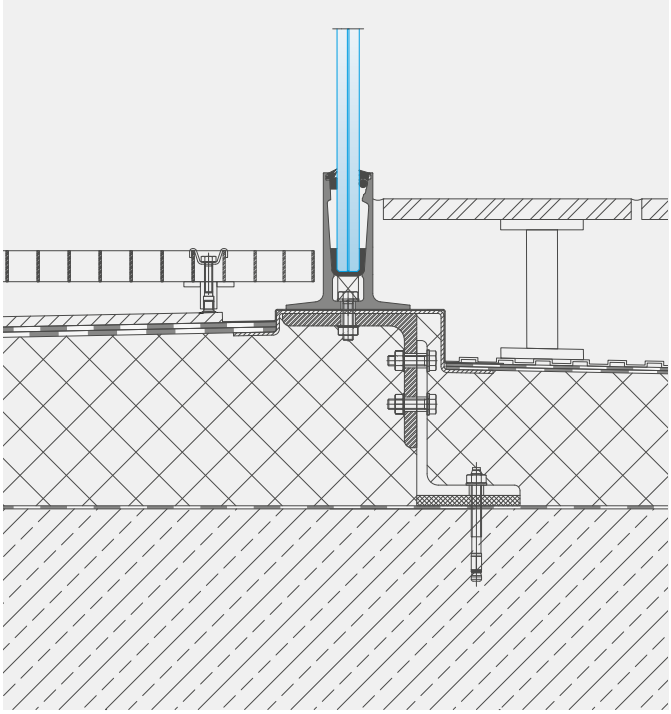
CharacterNo.: BA-Top2-001

2 Connection from above on a roof terrace



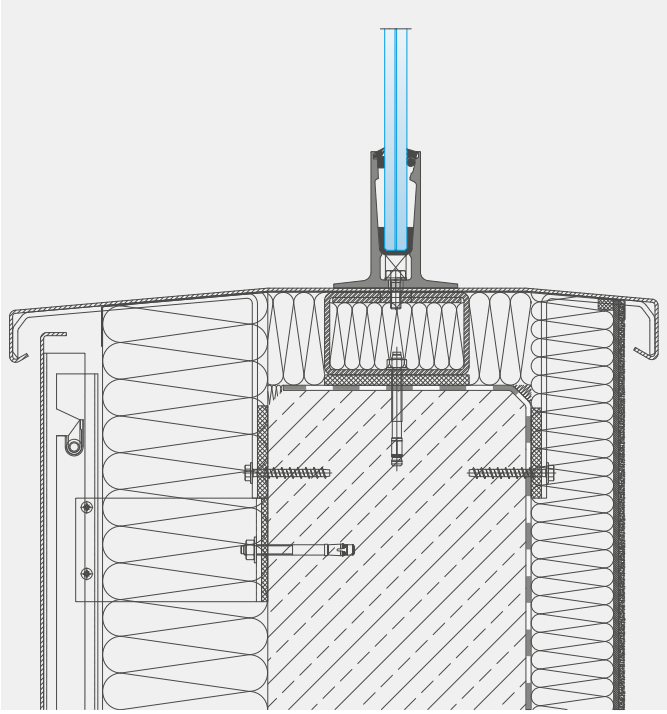
CharacterNo.: BA-Top2-002

3 Connection from above with a high floor



CharacterNo.: BA-Top2-003

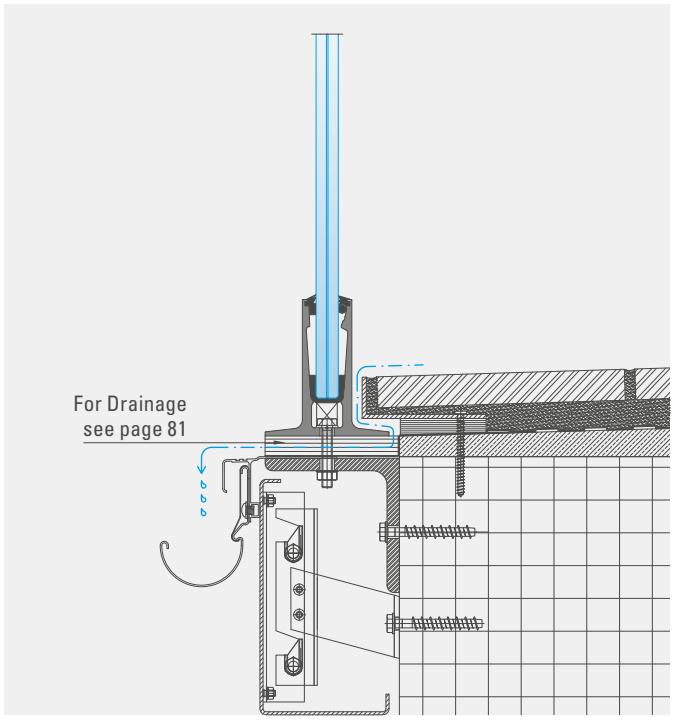
4 Connection from above to an attic



CharacterNo.: BA-Top2-004

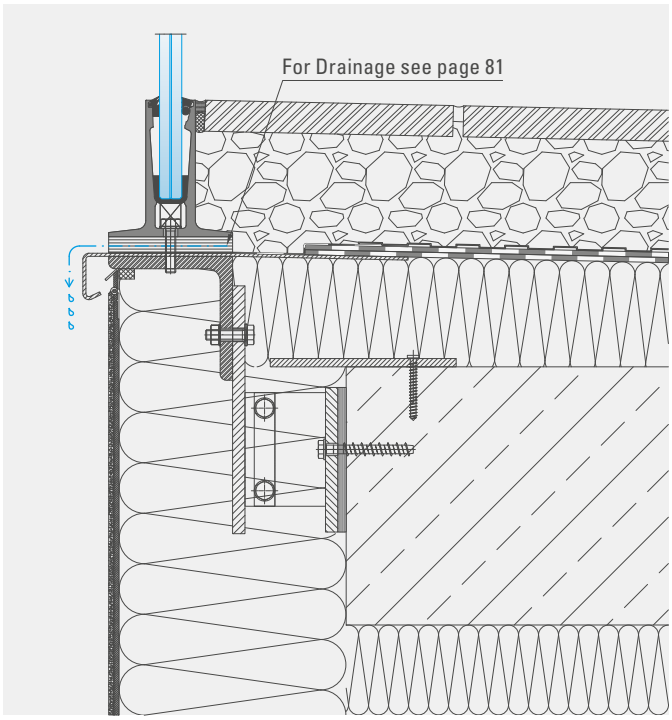
Observe attachment edge spacings for load application and transfer.

5 Connection from the side to a balcony



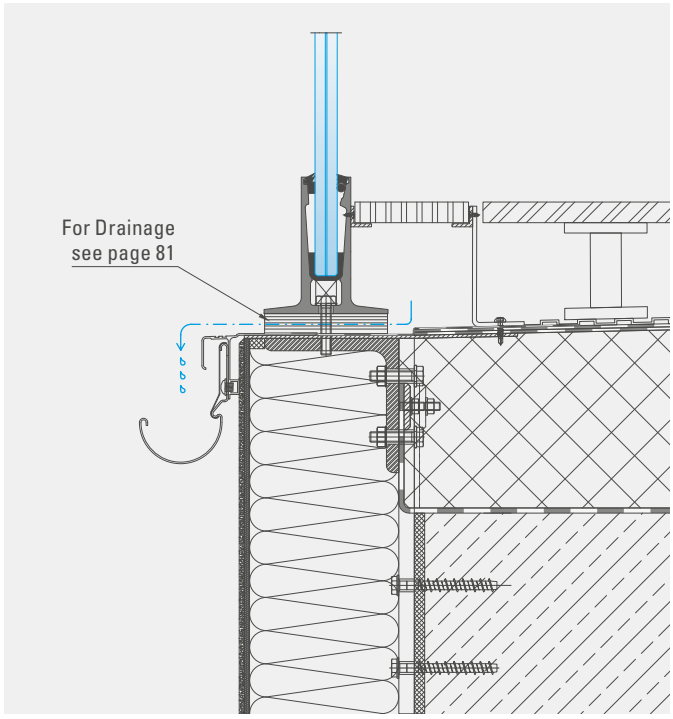
CharacterNo.: BA-Top2-005

6 Connection from the side with cantilevered substructure



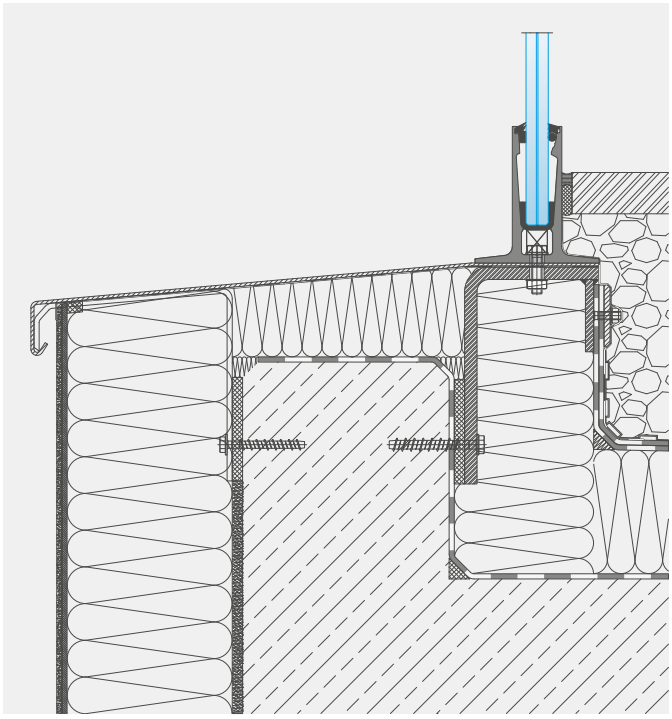
CharacterNo.: BA-Top2-006

7 Connection from the side with a high floor



CharacterNo.: BA-Top2-007

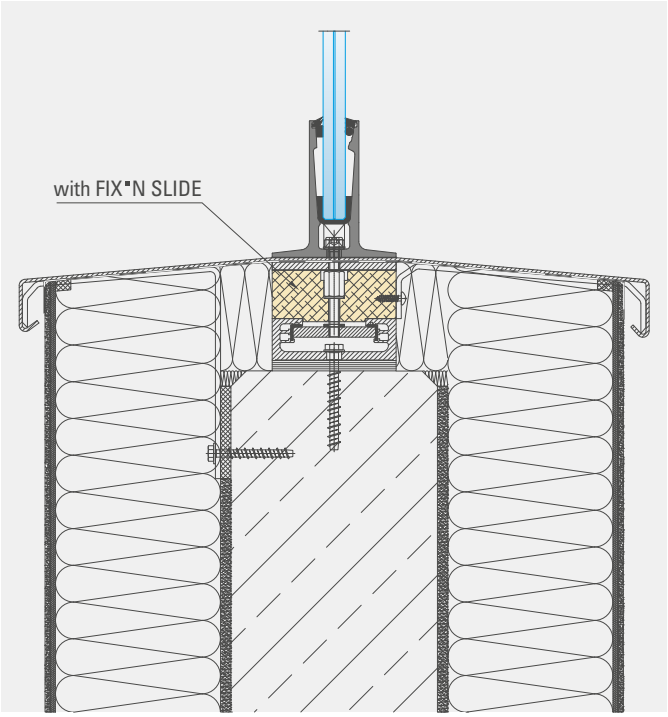
8 Connection from the side on a roof terrace



CharacterNo.: BA-Top2-008

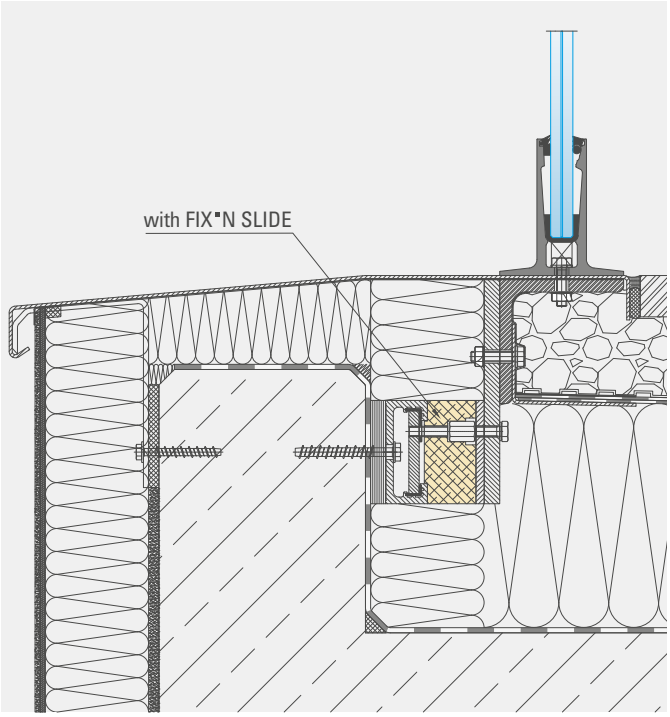
Observe attachment edge spacings for load application and transfer.

9 Connection from above to an attic



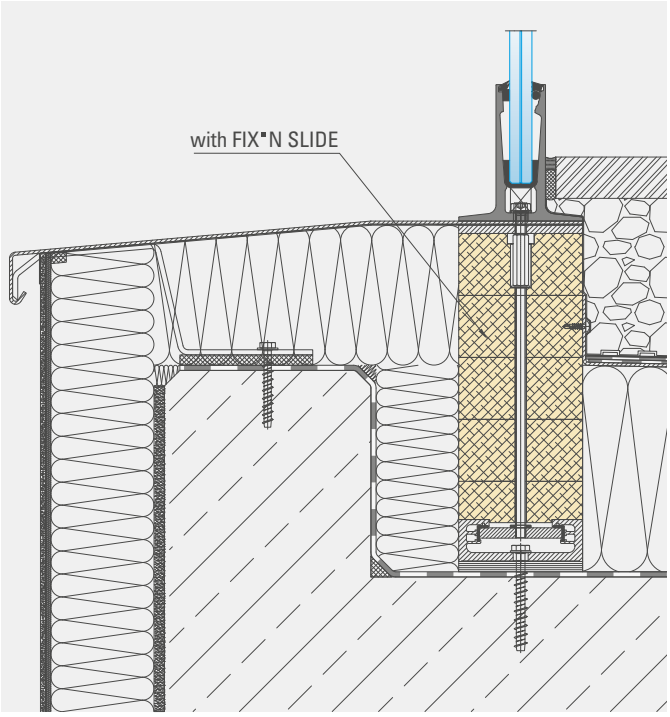
CharacterNo.: BA-Top2-009

10 Connection from the side to a roof terrace



CharacterNo.: BA-Top2-010

11 Connection from above to a roof terrace



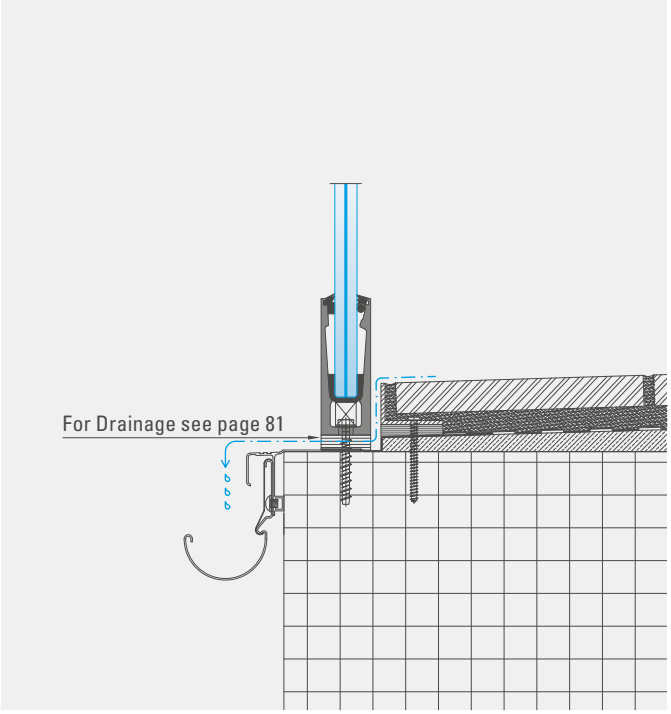
CharacterNo.: BA-Top2-011

Observe attachment edge spacings for load application and transfer.

System profile Top 3 Outside

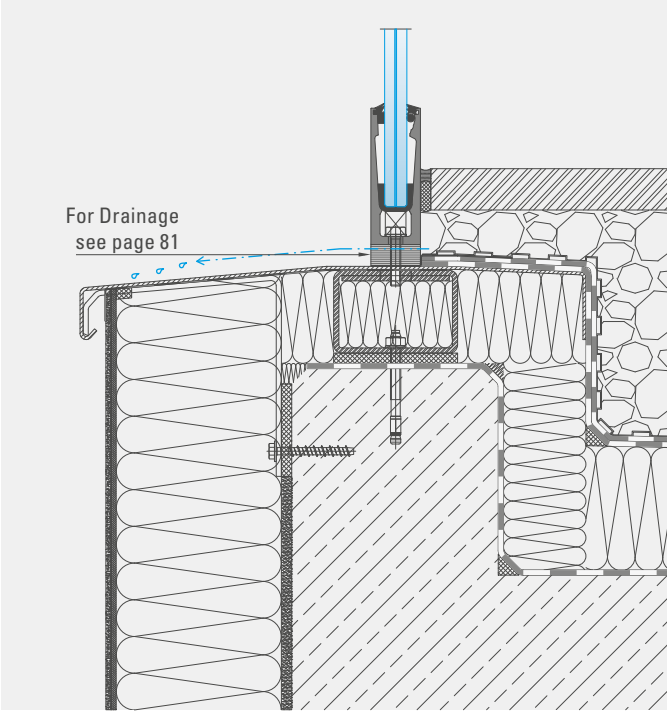
Application examples outdoors **BALARDO** *core*

1 Connection from above to a balcony



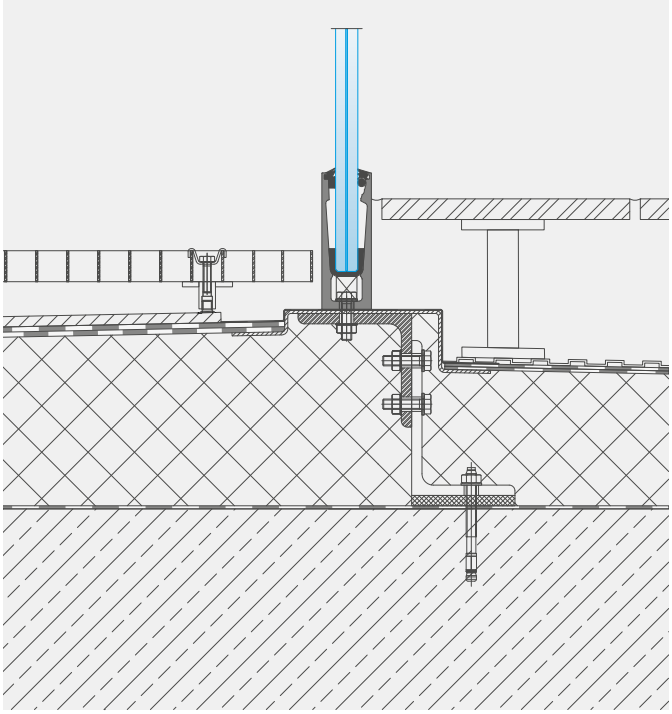
CharacterNo.: BA-Top3-001

2 Connection from above on a roof terrace



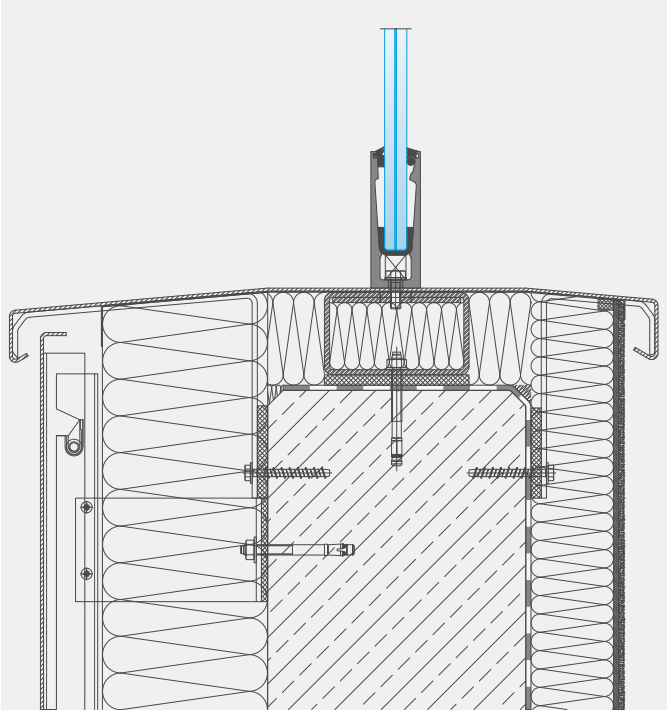
CharacterNo.: BA-Top3-002

3 Connection from above with a high floor



CharacterNo.: BA-Top3-003

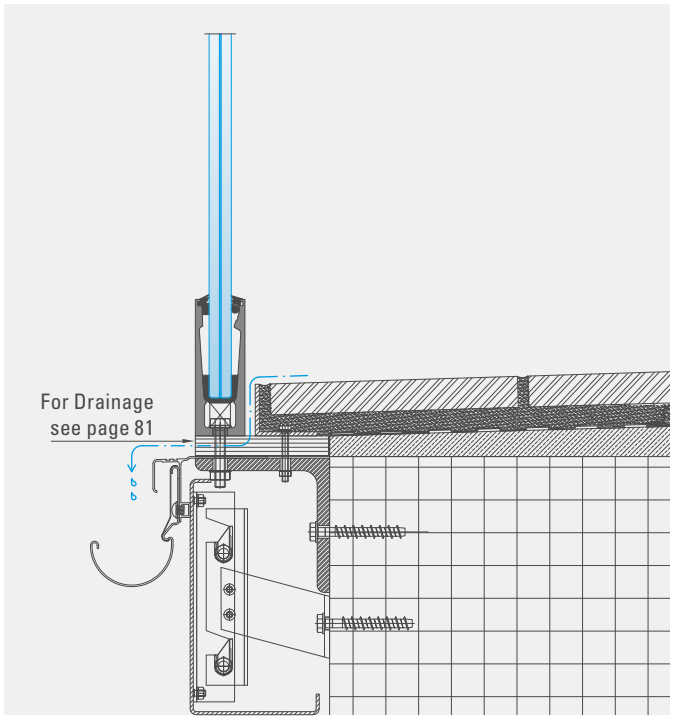
4 Connection from above to an attic



CharacterNo.: BA-Top3-004

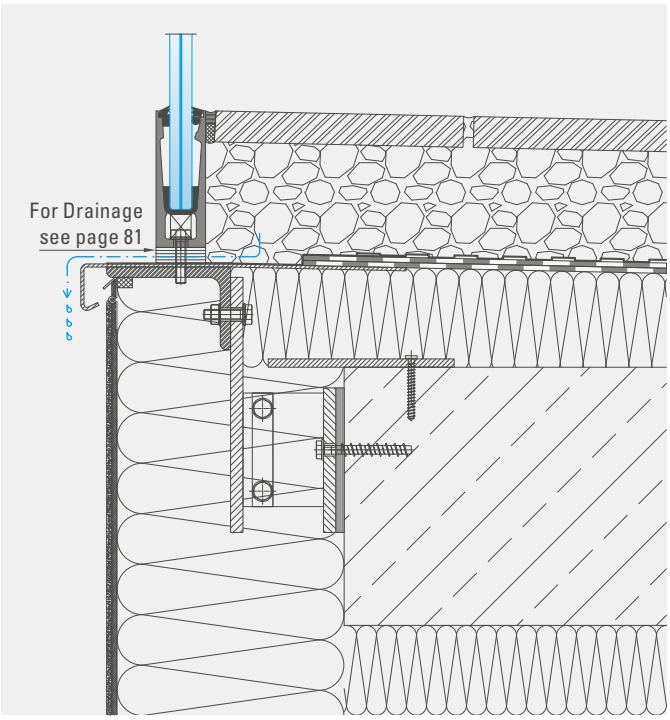
Observe attachment edge spacings for load application and transfer.

5 Connection from the side to a balcony



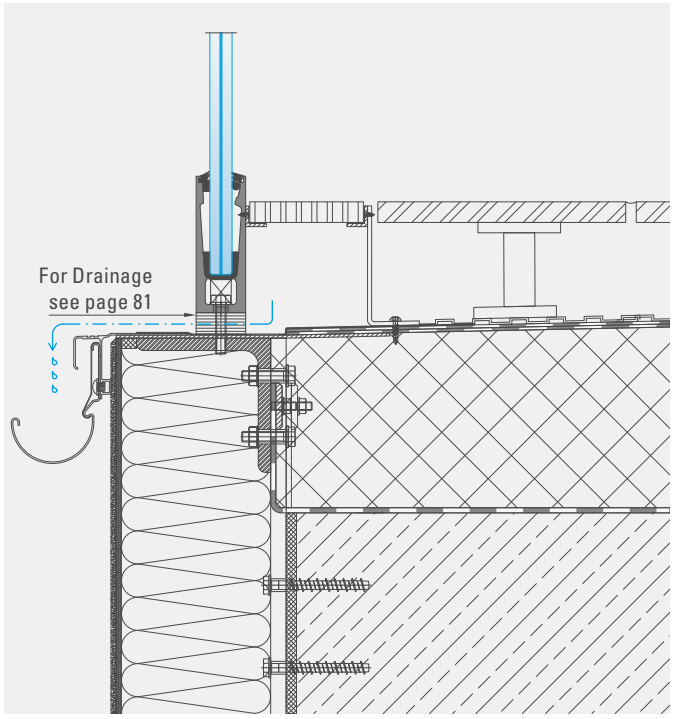
CharacterNo.: BA-Top3-005

6 Connection from the side with cantilevered substructure



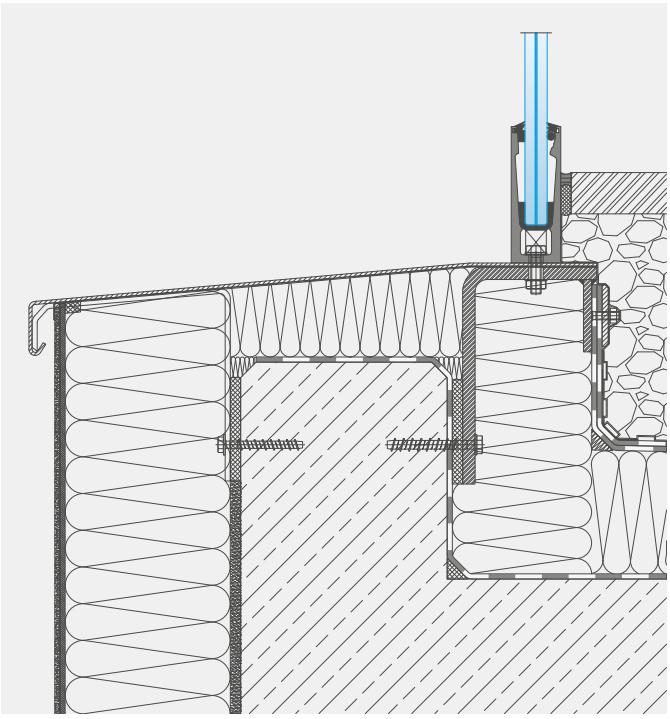
CharacterNo.: BA-Top3-006

7 Connection from the side with a high floor



CharacterNo.: BA-Top3-007

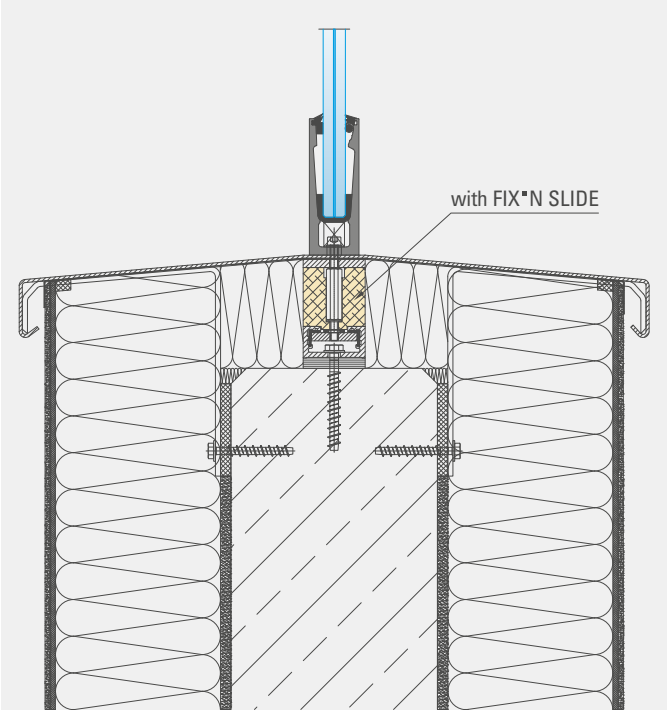
8 Connection from the side on a roof terrace



CharacterNo.: BA-Top3-008

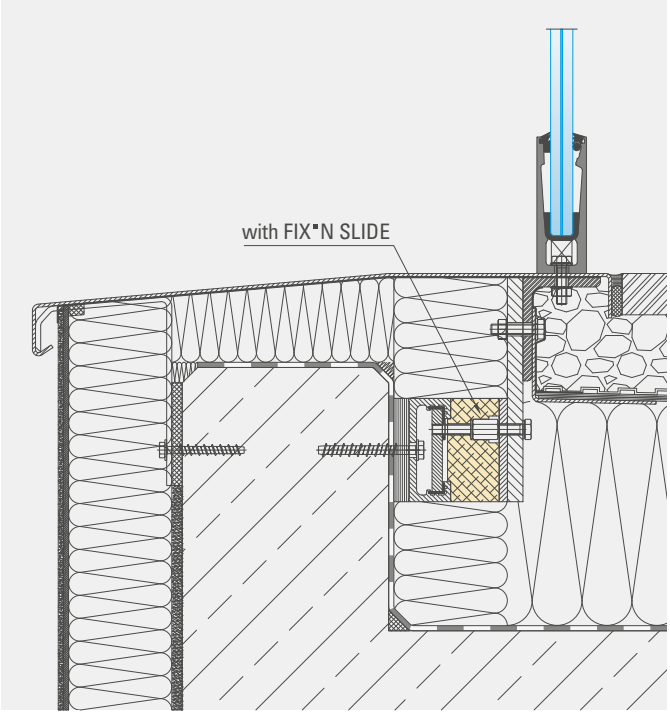
Observe attachment edge spacings for load application and transfer.

9 Connection from above to an attic



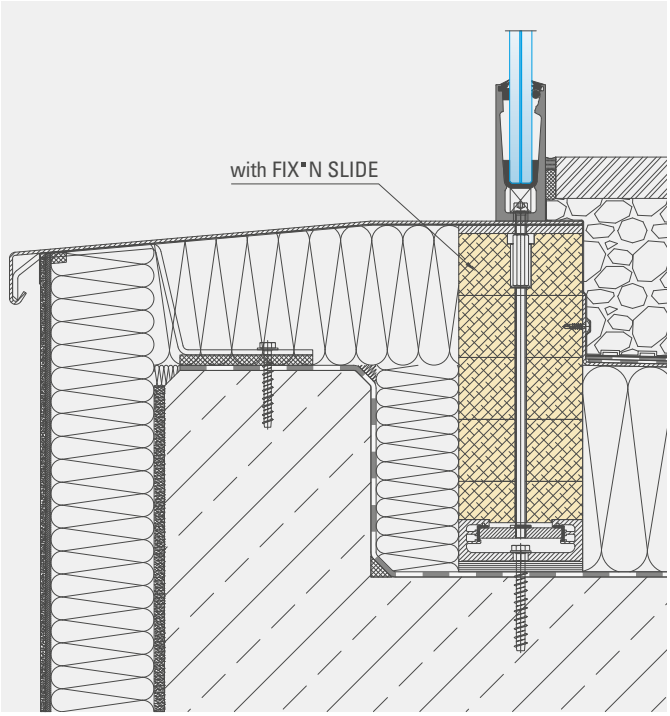
CharacterNo.: BA-Top3-009

10 Connection from the side to a roof terrace



CharacterNo.: BA-Top3-010

11 Connection from above to a roof terrace



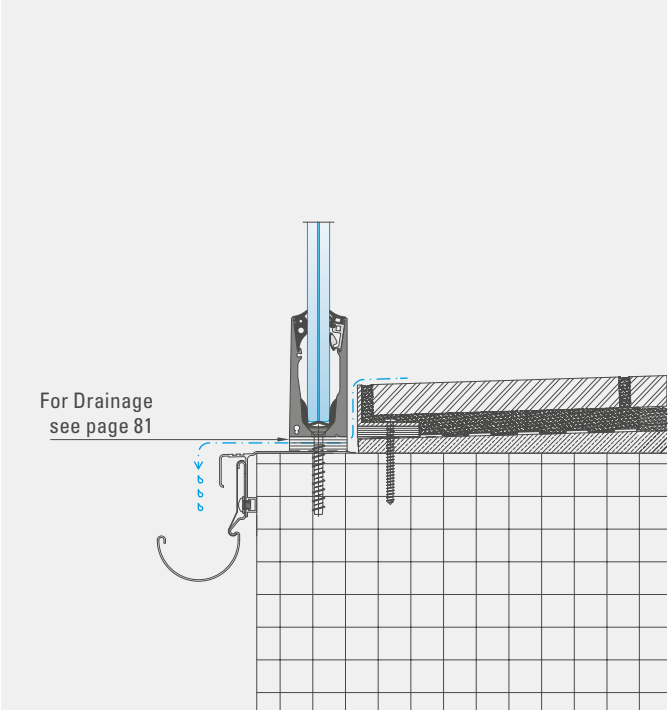
CharacterNo.: BA-Top3-011

Observe attachment edge spacings
for load application and transfer.

System profile Top 4 Outside

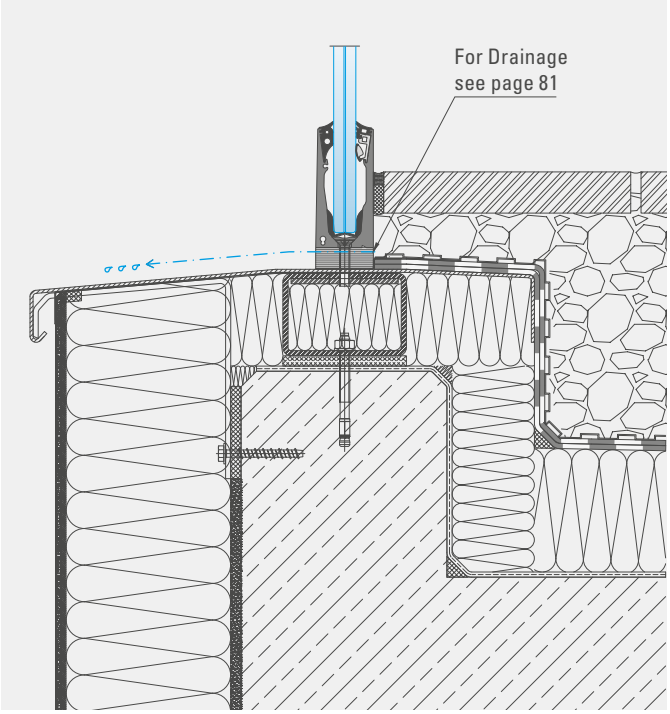
Application examples outdoors **BALARDO** *core / hybrid*

1 Connection from above to a balcony



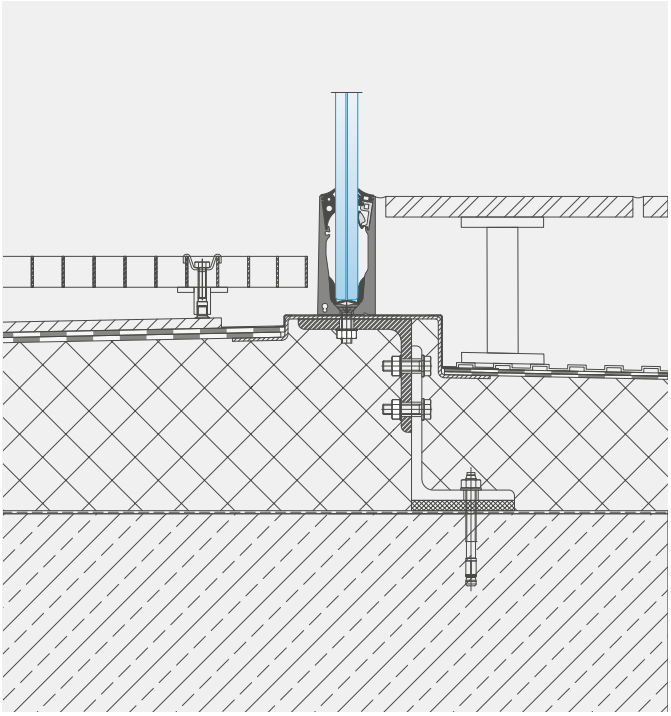
CharacterNo.: BA-Top4-001

2 Connection from above on a roof terrace



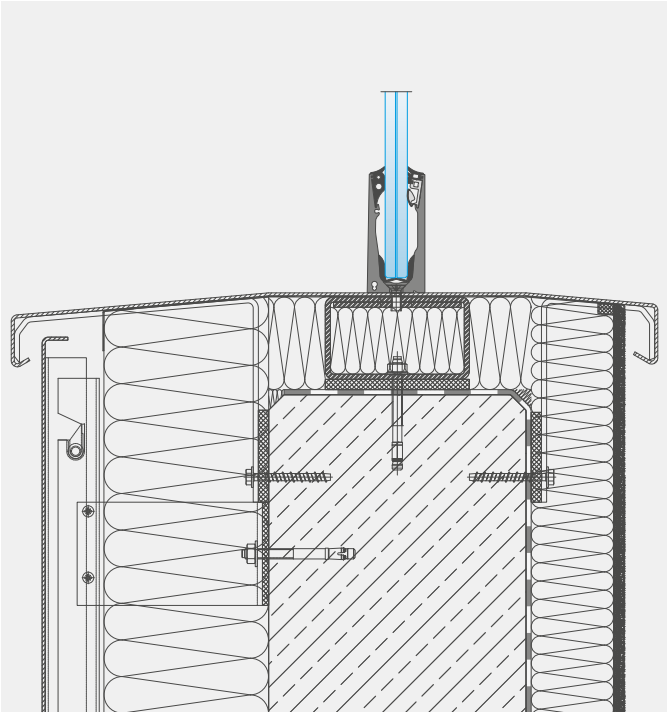
CharacterNo.: BA-Top4-002

3 Connection from above with a high floor



CharacterNo.: BA-Top4-003

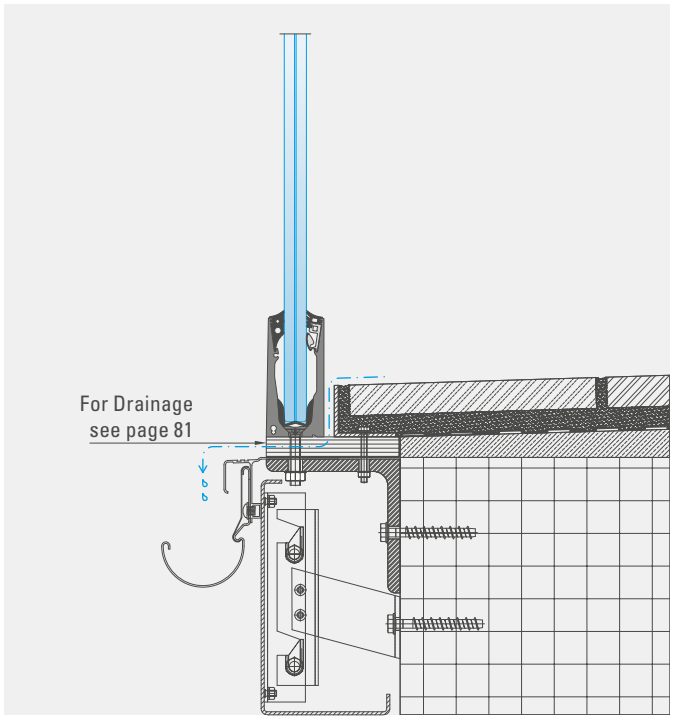
4 Connection from above to an attic



CharacterNo.: BA-Top4-004

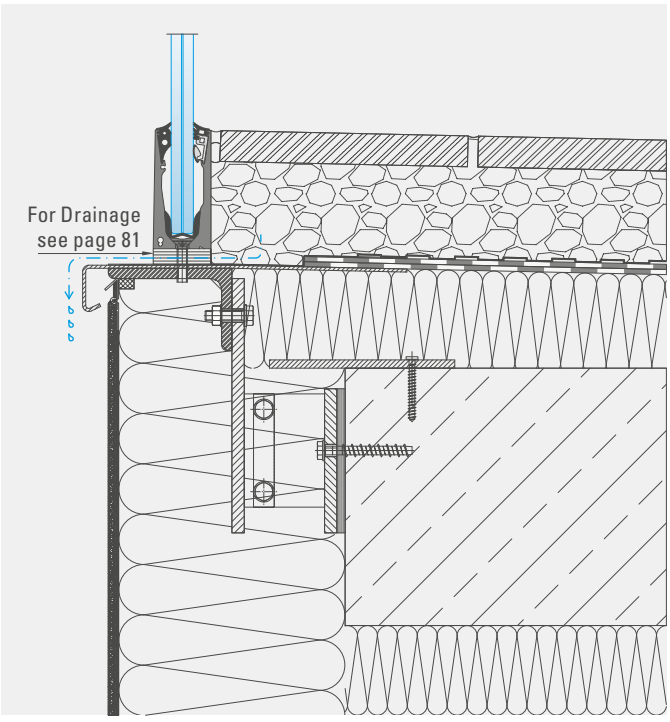
Observe attachment edge spacings for load application and transfer.

5 Connection from the side to a balcony



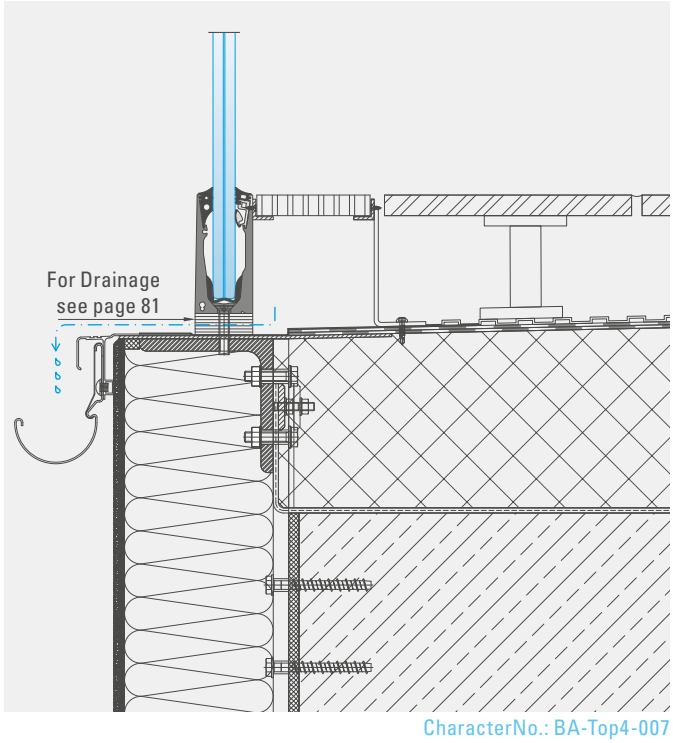
CharacterNo.: BA-Top4-005

6 Connection from the side with cantilevered substructure



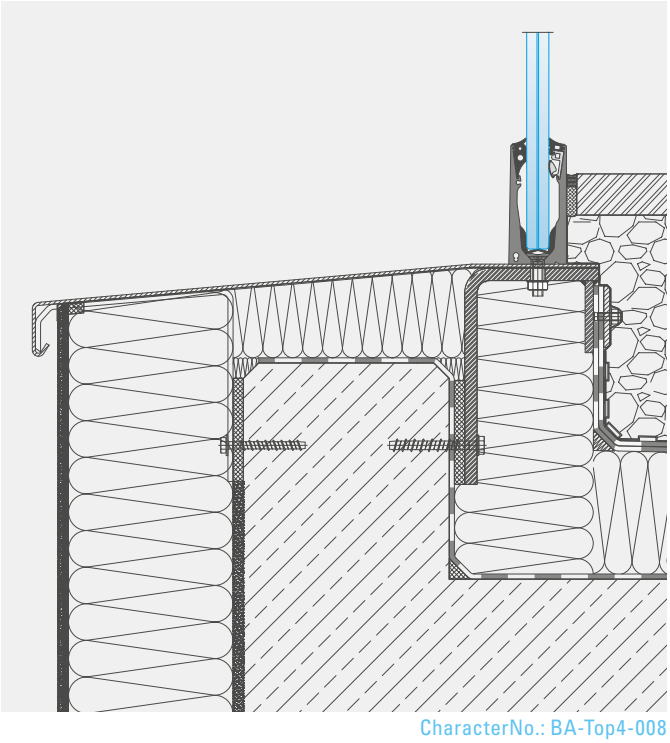
CharacterNo.: BA-Top4-006

7 Connection from the side with a high floor



CharacterNo.: BA-Top4-007

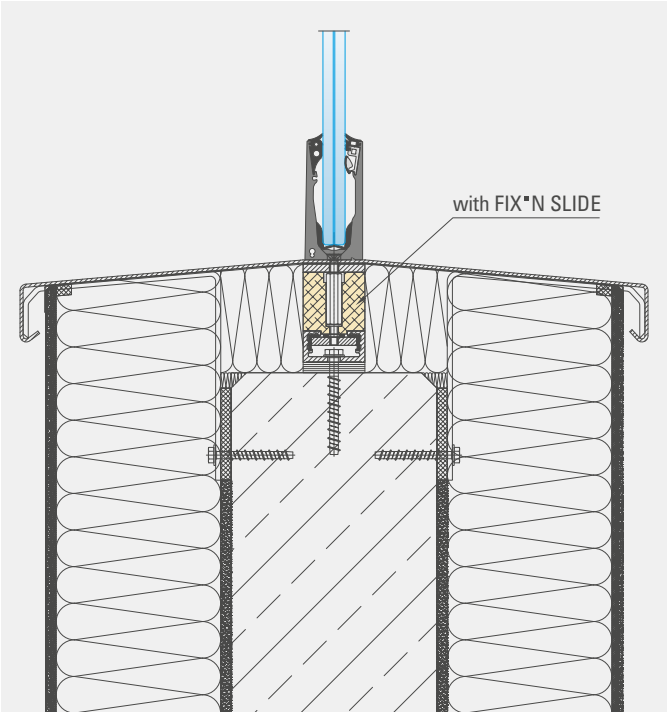
8 Connection from the side on a roof terrace



CharacterNo.: BA-Top4-008

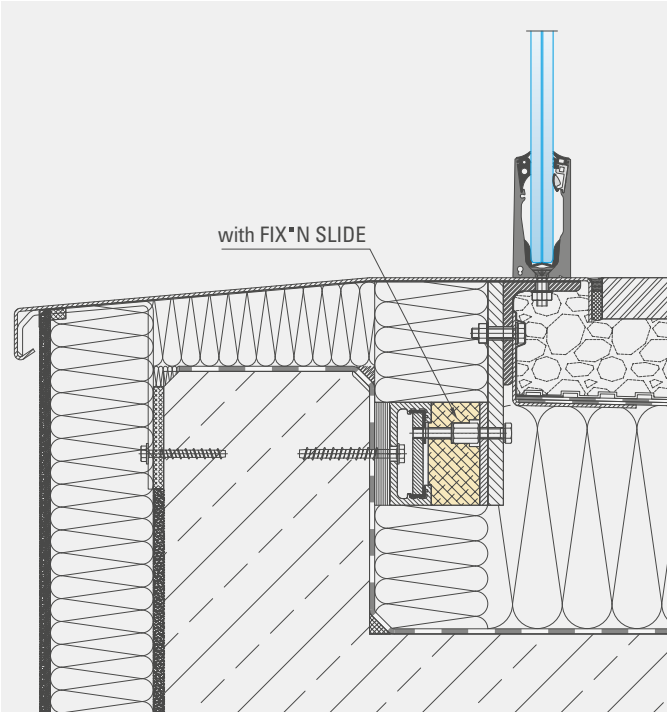
Observe attachment edge spacings
for load application and transfer.

9 Connection from above to an attic



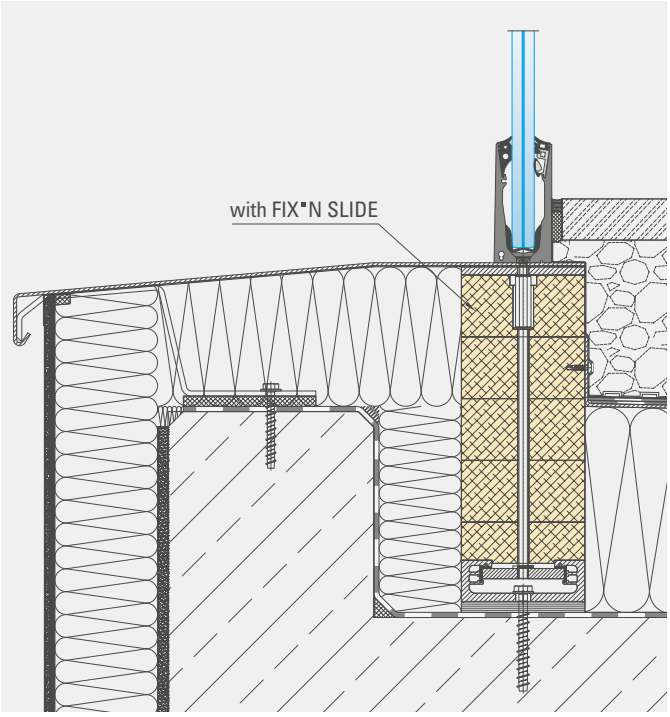
CharacterNo.: BA-Top4-009

10 Connection from the side to a roof terrace



CharacterNo.: BA-Top4-010

11 Connection from above to a roof terrace



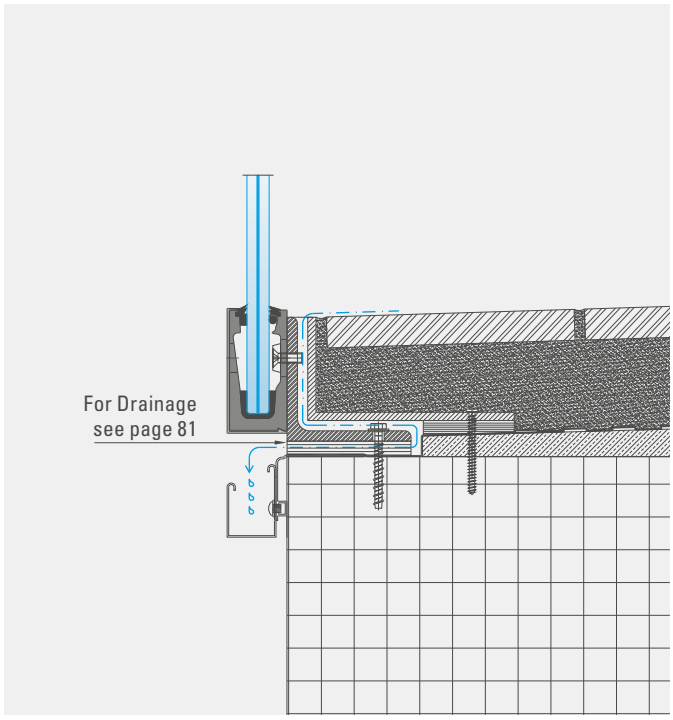
CharacterNo.: BA-Top4-011

Observe attachment edge spacings for load application and transfer.

System profile Side 1 Outside

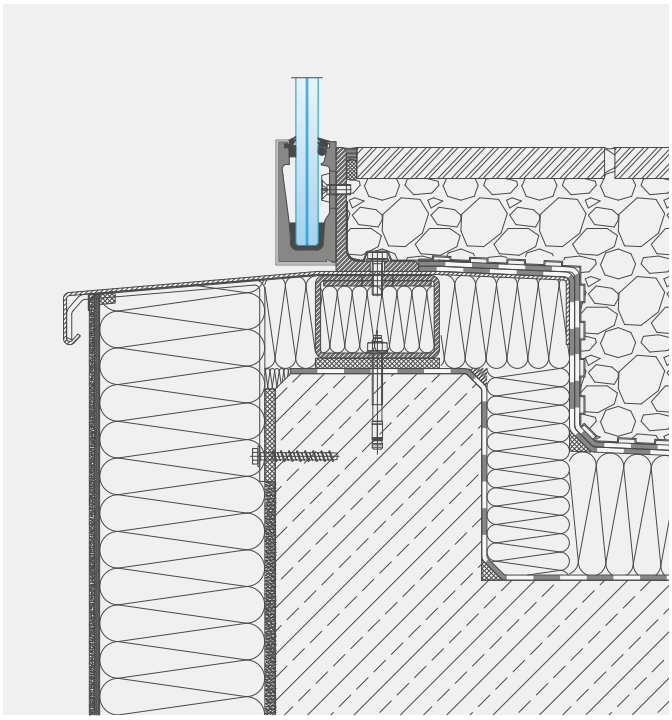
Application examples outdoors **BALARDO** *core / core hd / hybrid*

1 Connection from above to a balcony



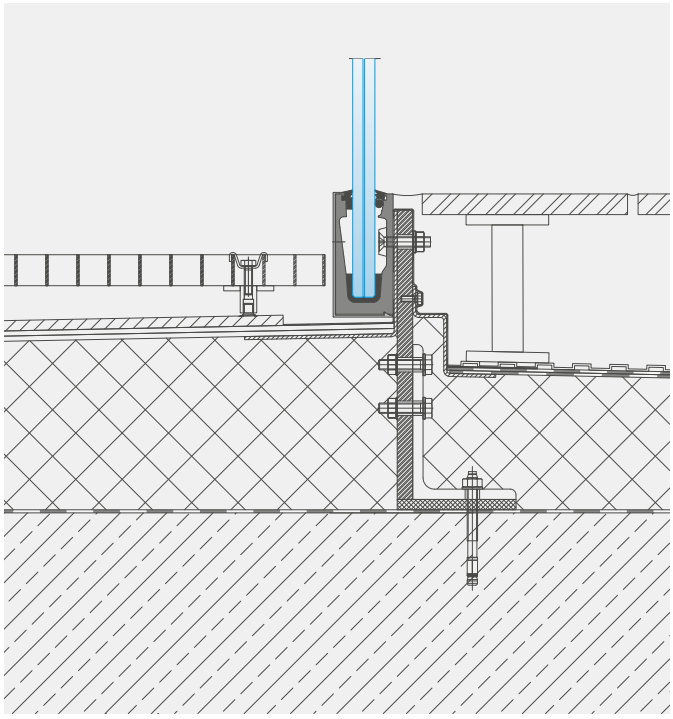
CharacterNo.: BA-Side1-001

2 Connection from above on a roof terrace



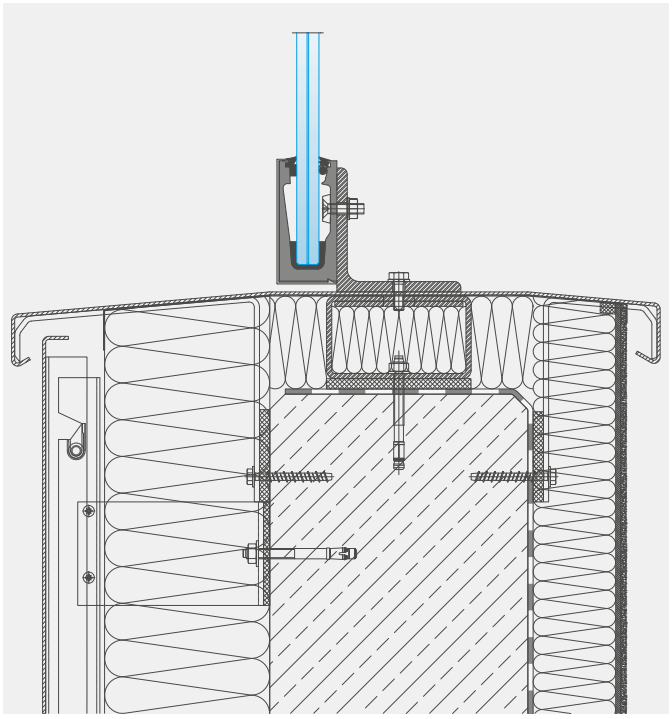
CharacterNo.: BA-Side1-002

3 Connection from above with a high floor



CharacterNo.: BA-Side1-003

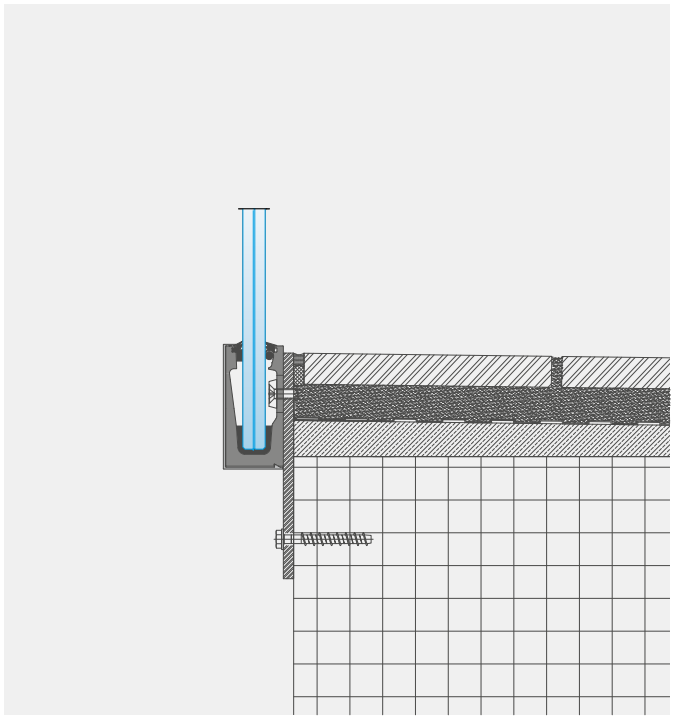
4 Connection from above to an attic



CharacterNo.: BA-Side1-004

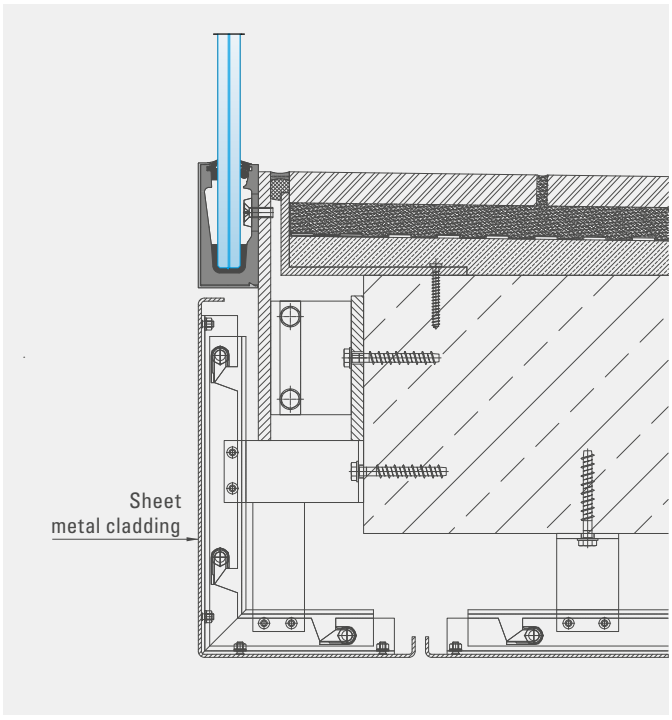
Observe attachment edge spacings for load application and transfer.

5 Connection from the side to a balcony



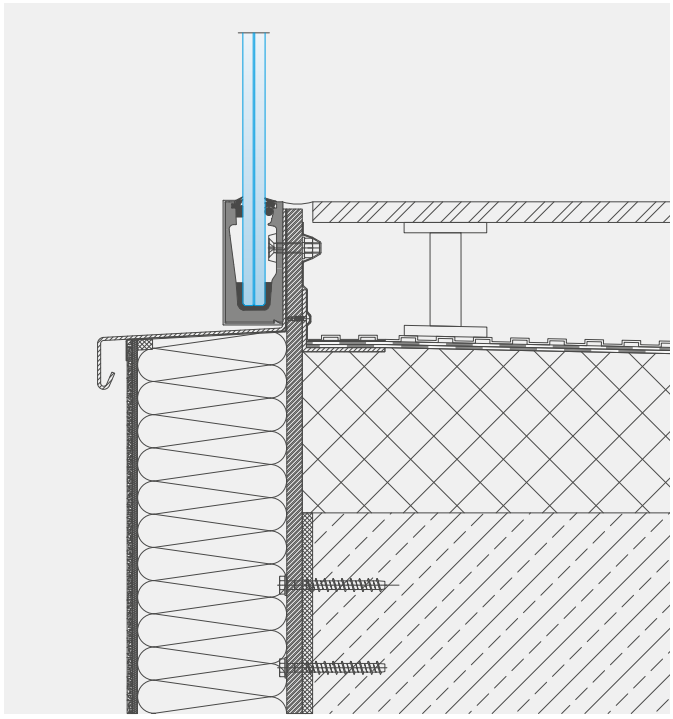
CharacterNo.: BA-Side1-005

6 Connection from the side with cantilevered substructure



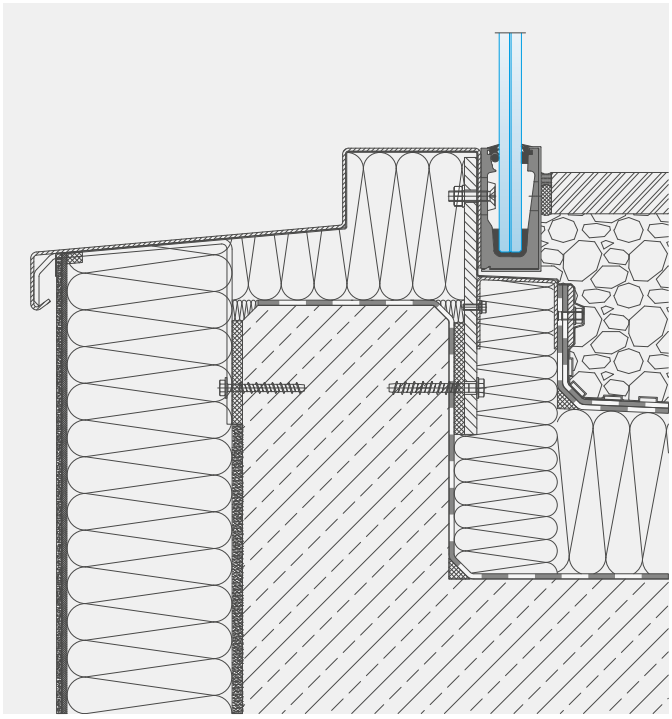
CharacterNo.: BA-Side1-006

7 Connection from the side with a high floor



CharacterNo.: BA-Side1-007

8 Connection from the side on a roof terrace

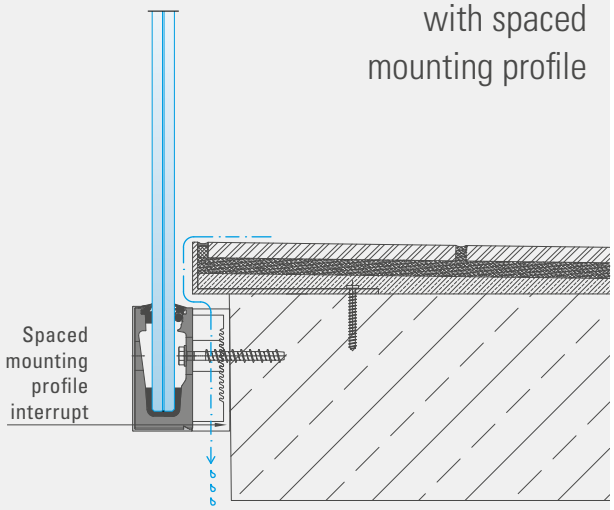


CharacterNo.: BA-Side1-008

Observe attachment edge spacings for load application and transfer.

9 Connection to a concrete structure

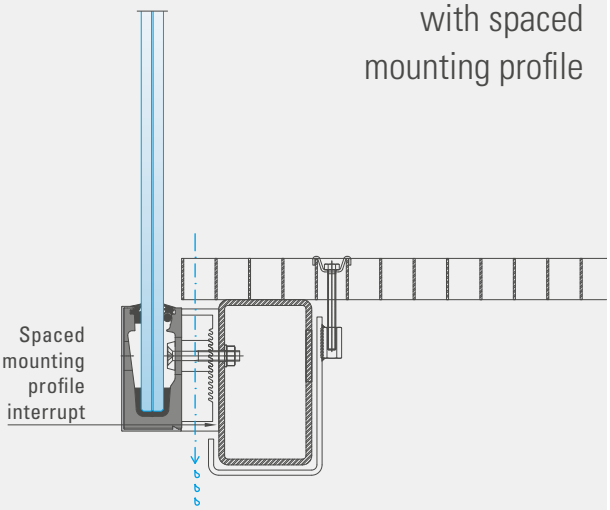
with spaced mounting profile



CharacterNo.: BA-Side1-009

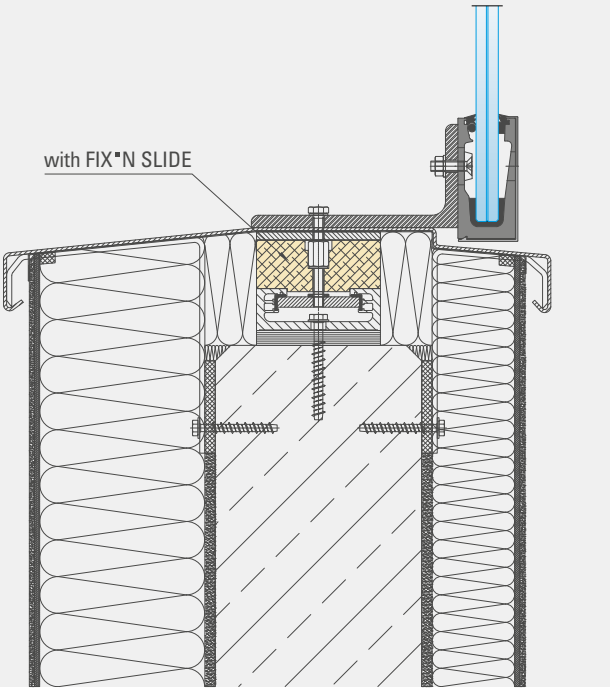
10 Connection to a steel structure

with spaced mounting profile



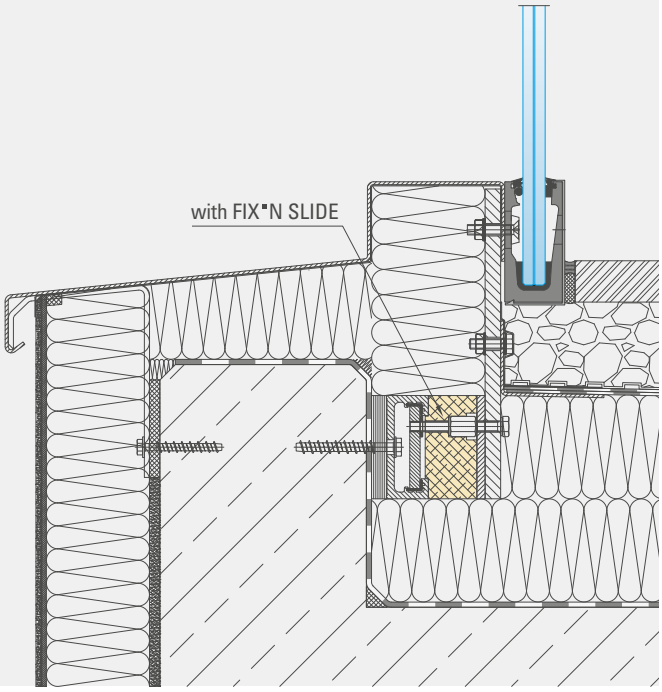
CharacterNo.: BA-Side1-010

11 Connection from above to an attic



CharacterNo.: BA-Side1-013

12 Connection from the side to a roof terrace



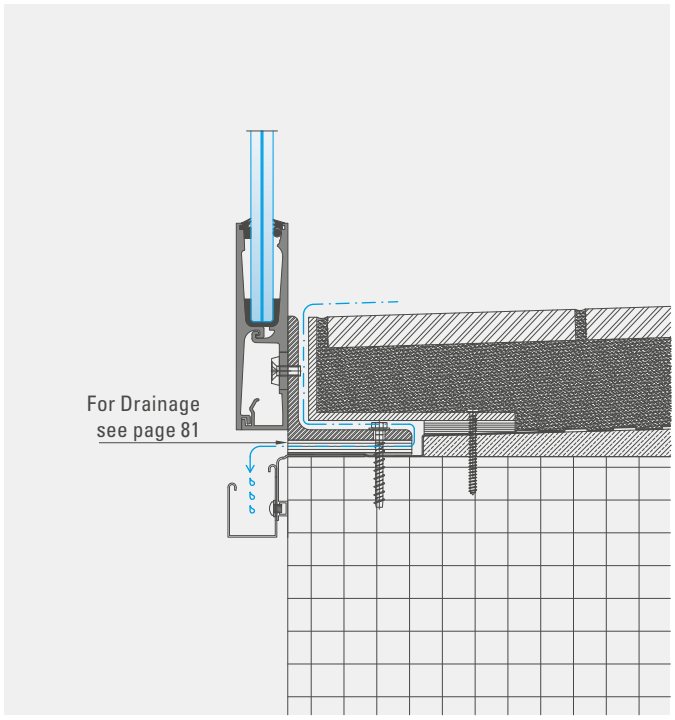
CharacterNo.: BA-Side1-014

Observe attachment edge spacings for load application and transfer.

System profile Side 2 Outside

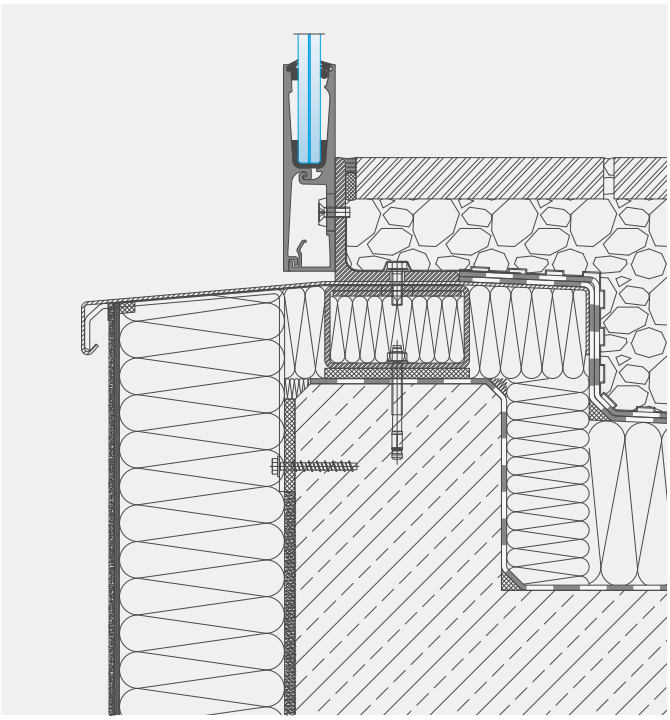
Application examples outdoors **BALARDO** *core*

1 Connection from above to a balcony



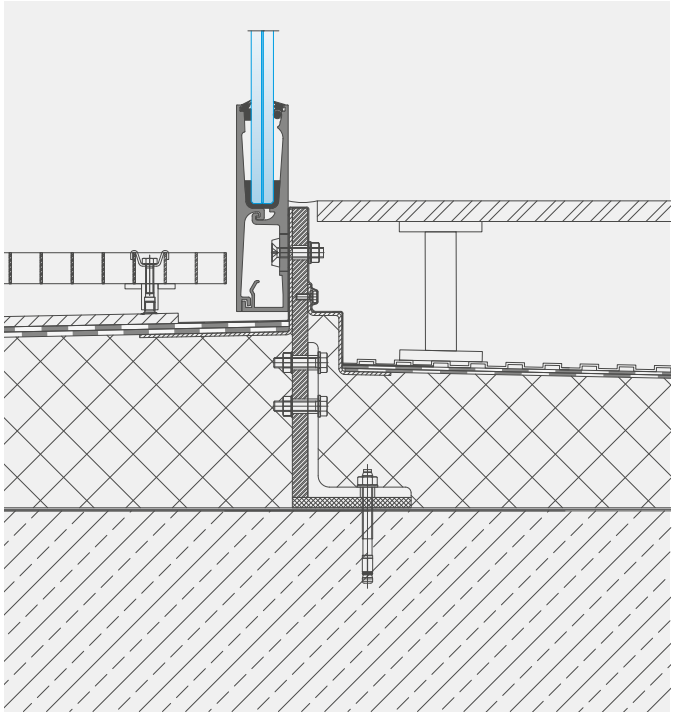
CharacterNo.: BA-Side2-001

2 Connection from above on a roof terrace



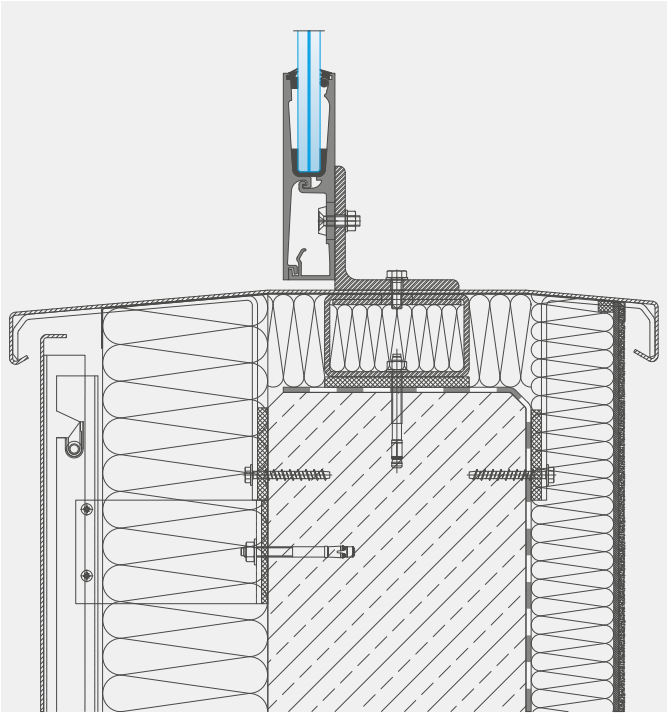
CharacterNo.: BA-Side2-002

3 Connection from above with a high floor



CharacterNo.: BA-Side2-003

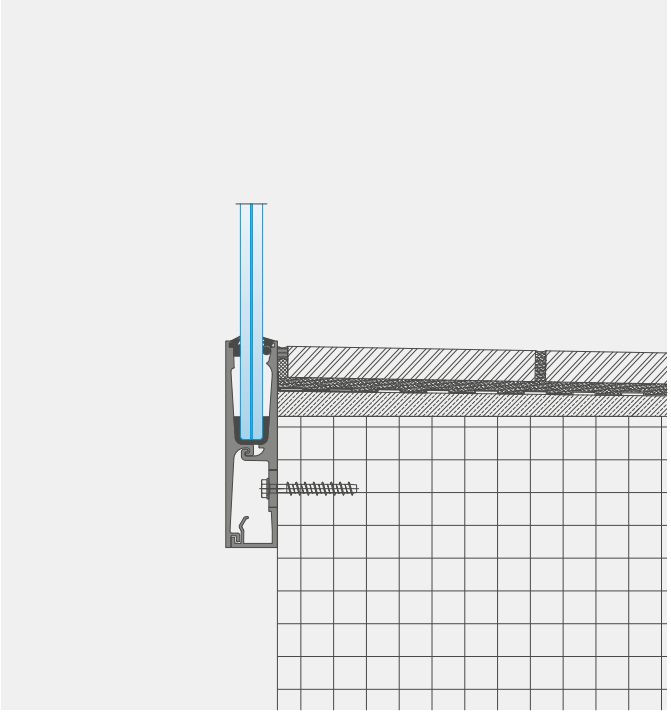
4 Connection from above to an attic



CharacterNo.: BA-Side2-004

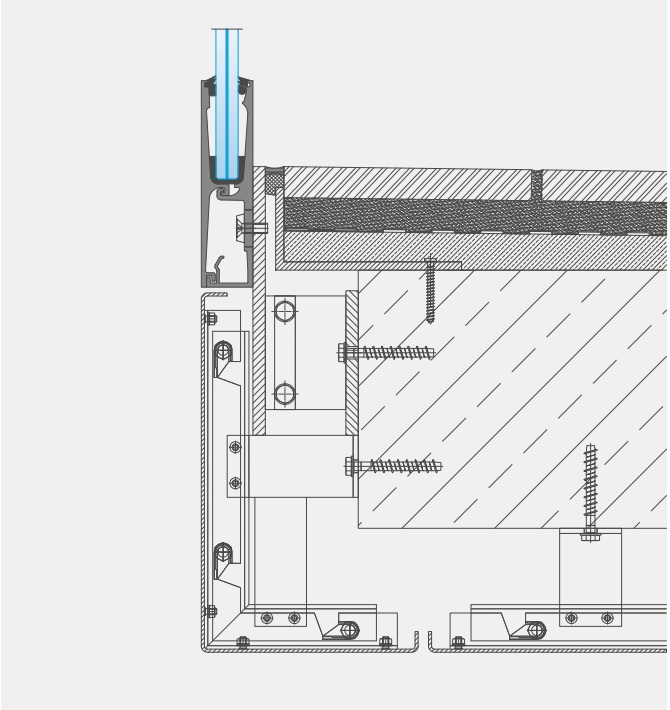
Observe attachment edge spacings for load application and transfer.

5 Connection from the side to a balcony



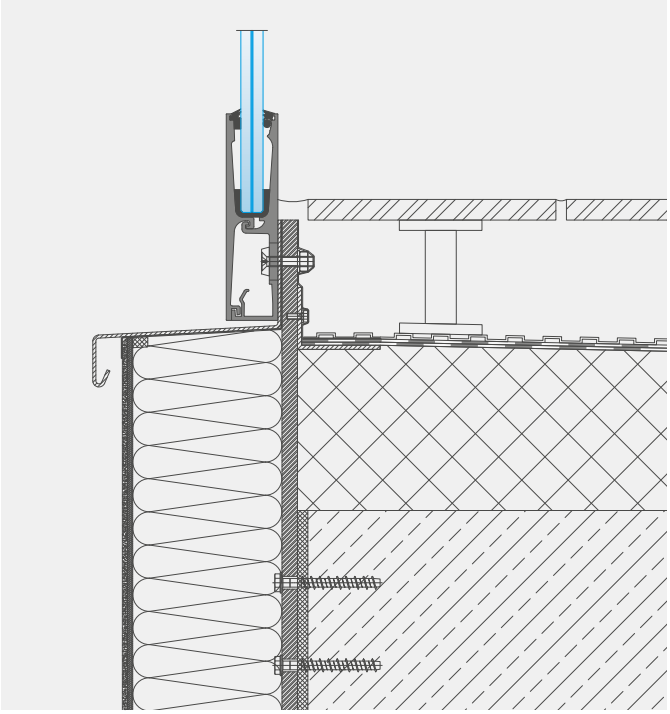
CharacterNo.: BA-Side2-005

6 Connection from the side with cantilevered substructure



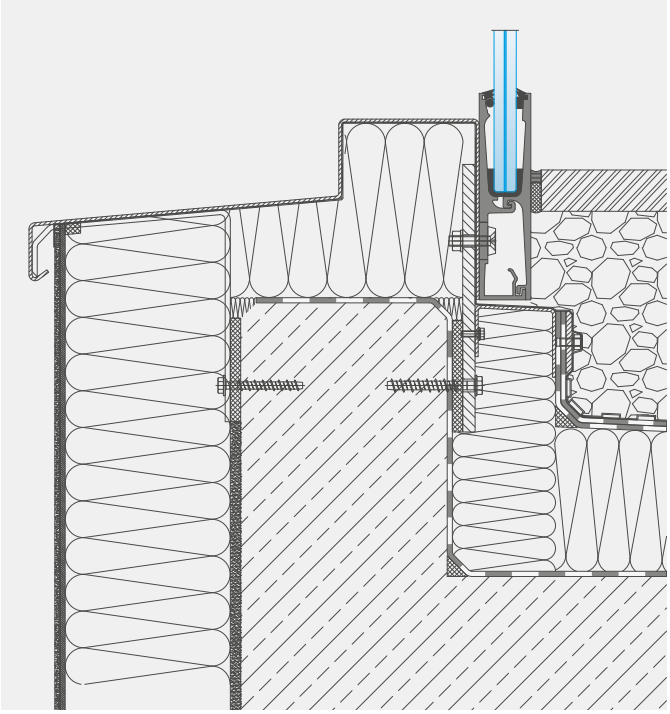
CharacterNo.: BA-Side2-006

7 Connection from the side with a high floor



CharacterNo.: BA-Side2-007

8 Connection from the side on a roof terrace

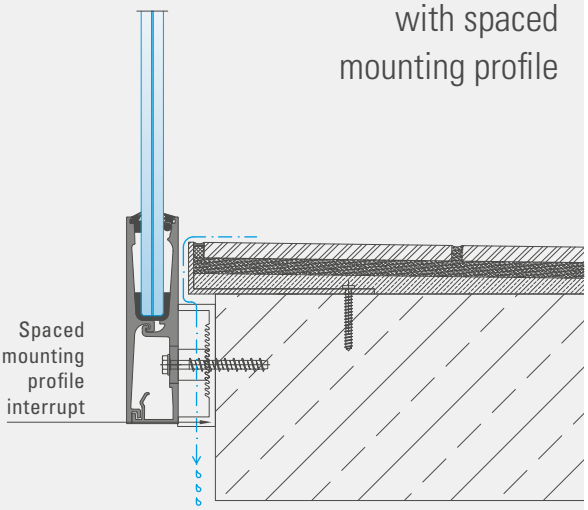


CharacterNo.: BA-Side2-008

Observe attachment edge spacings for load application and transfer.

9 Connection to a concrete structure

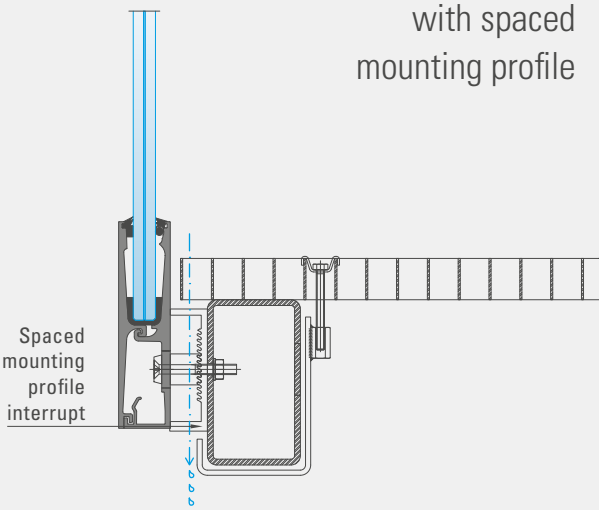
with spaced mounting profile



CharacterNo.: BA-Side2-009

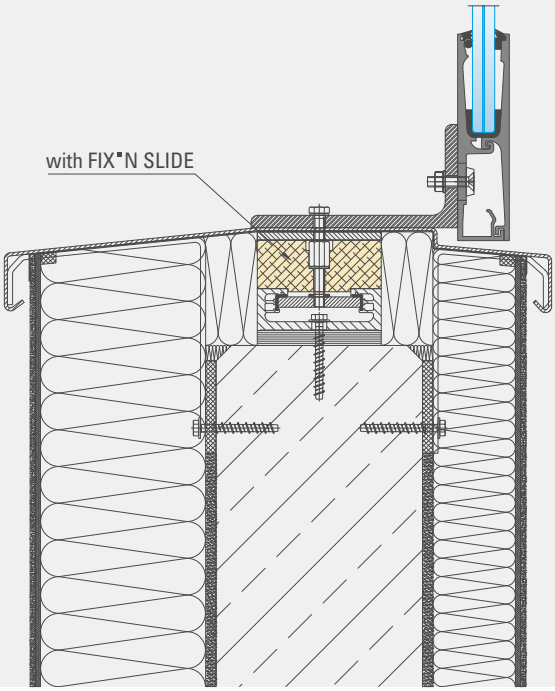
10 Connection to a steel structure

with spaced mounting profile



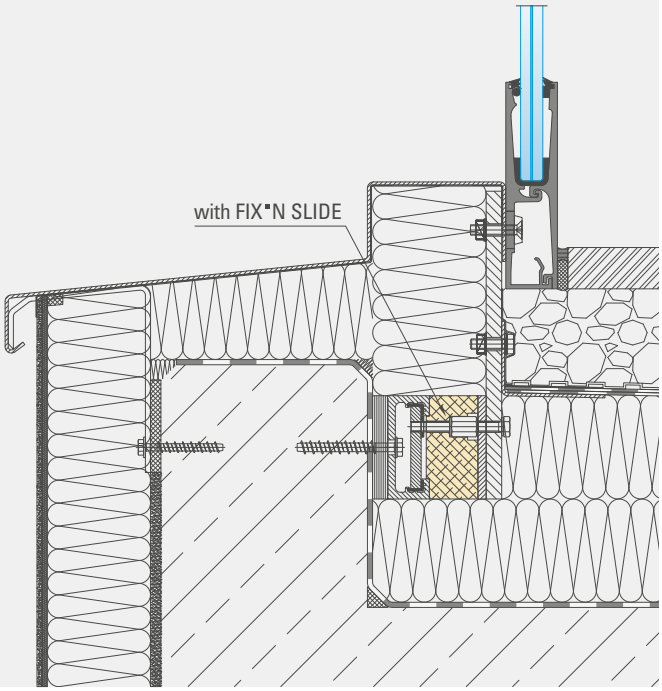
CharacterNo.: BA-Side2-010

11 Connection from above to an attic



CharacterNo.: BA-Side2-013

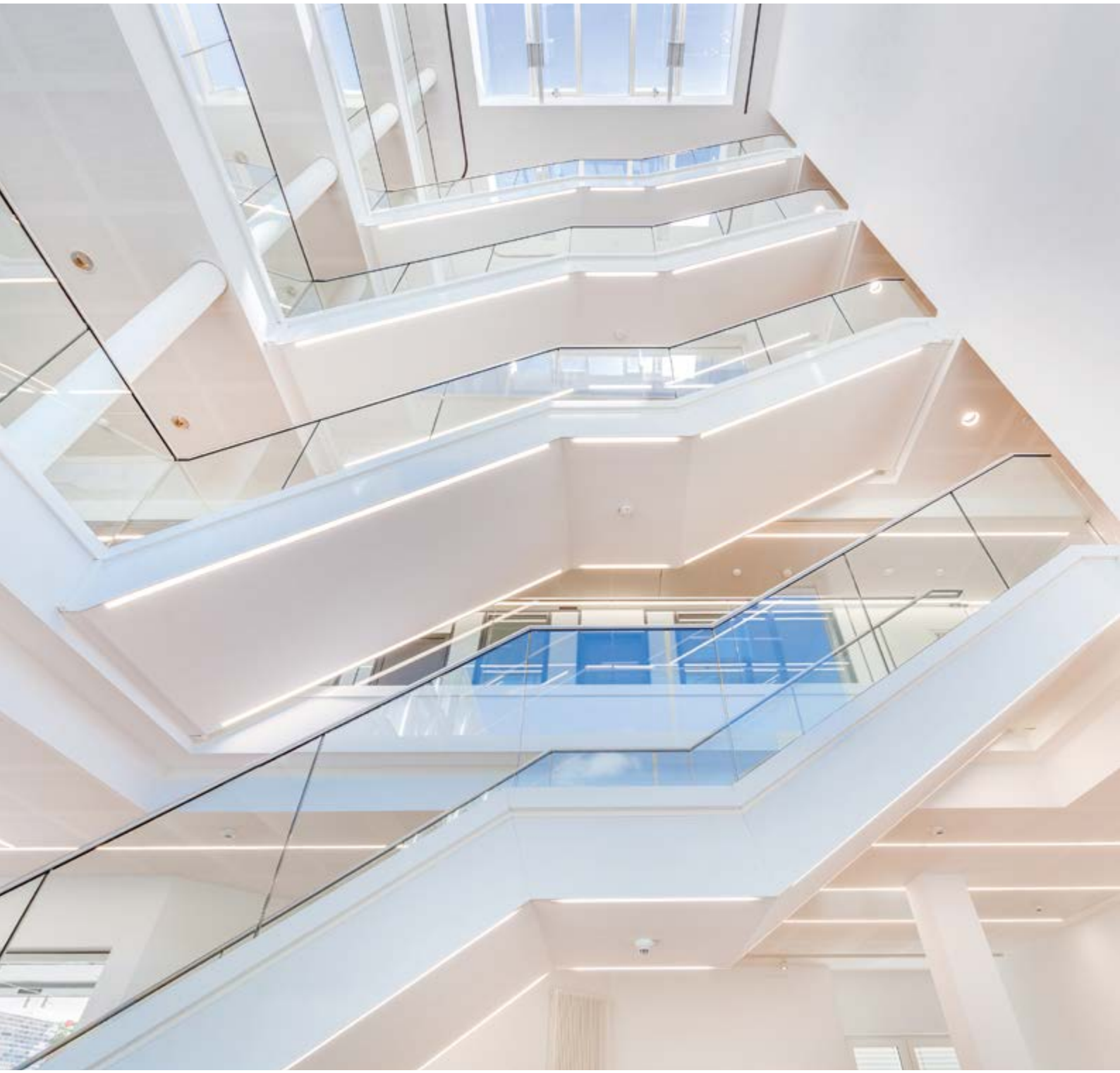
12 Connection from the side to a roof terrace



CharacterNo.: BA-Side2-014

APPLICATION EXAMPLES

INSIDE / INDOOR AREA



OVERVIEW

		Top 1		Top 2		Top 3		Top 4	
	Application	**CharacterNo.**	**Page**	**CharacterNo.**	**Page**	**CharacterNo.**	**Page**	**CharacterNo.**	**Page**
1	Connection from above, flush profile	BA-Top1-101	112	BA-Top2-101	113	BA-Top3-101	114	BA-Top4-101	115
2	Connection from above, flush profile with exterior cladding	BA-Top1-102	112	BA-Top2-102	113	BA-Top3-102	114	BA-Top4-102	115
3	Connection from above, overhanging profile with steel substructure	BA-Top1-103	112	BA-Top2-103	113	BA-Top3-103	114	BA-Top4-103	115
4	Connection from above, overhanging profile with FIX"N SLIDE and exterior cladding	BA-Top1-104	112	BA-Top2-104	113	BA-Top3-104	114	BA-Top4-104	115

		Side 1	
	Application	**CharacterNo.**	**Page**
1	Connection from the side, flush profile	BA-Side1-101	116
2	Connection from above, flush profile with exterior cladding	BA-Side1-102	116
3	Connection from the side, stair stringer	BA-Side1-103	116
4	Connection from above, flush profile with FIX"N SLIDE and exterior cladding	BA-Side1-104	116

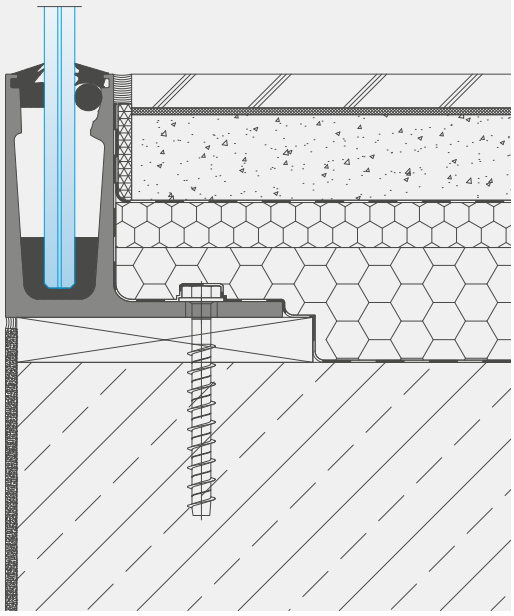
		Side 2 + Side 3	
	Application	**CharacterNo.**	**Page**
1	Connection from the side, overhanging profile	BA-Side2-101	117
2	Connection from above, overhanging profile with exterior cladding	BA-Side2-102	117
3	Connection from the side, stair stringer	BA-Side2-103	117
4	Connection from above, overhanging profile with FIX"N SLIDE and exterior cladding	BA-Side2-104	117

Observe attachment edge spacings for load application and transfer.

System profile Top 1 Inside

Application examples indoors **BALARDO** *core / core hd / hybrid / smart*

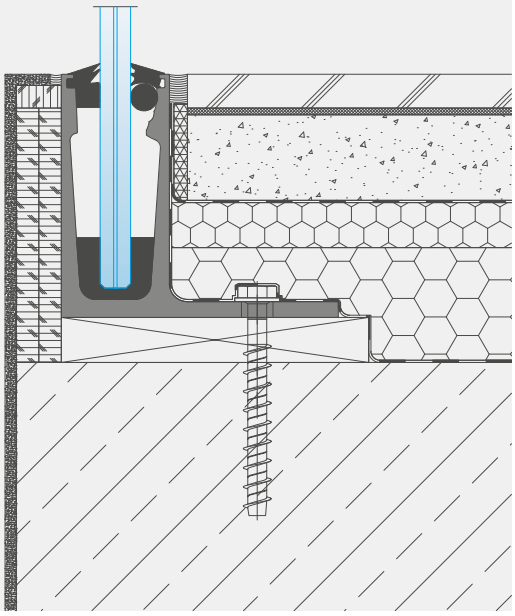
1 Connection from above, flush profile



CharacterNo.: BA-Top1-101

2 Connection from above, flush profile

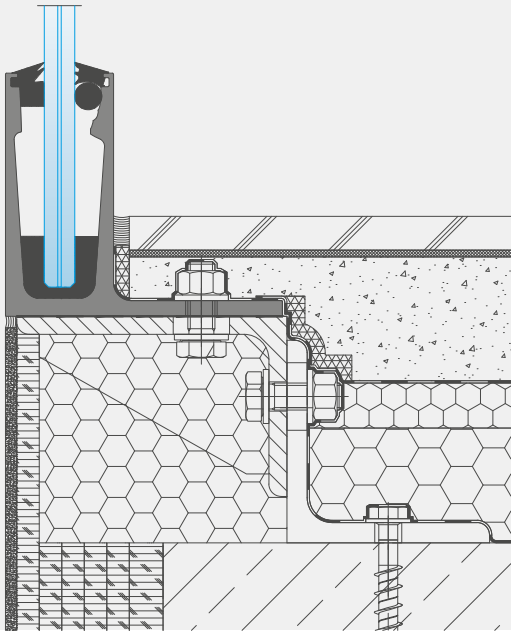
With exterior cladding



CharacterNo.: BA-Top1-102

3 Connection from above, overhanging profile

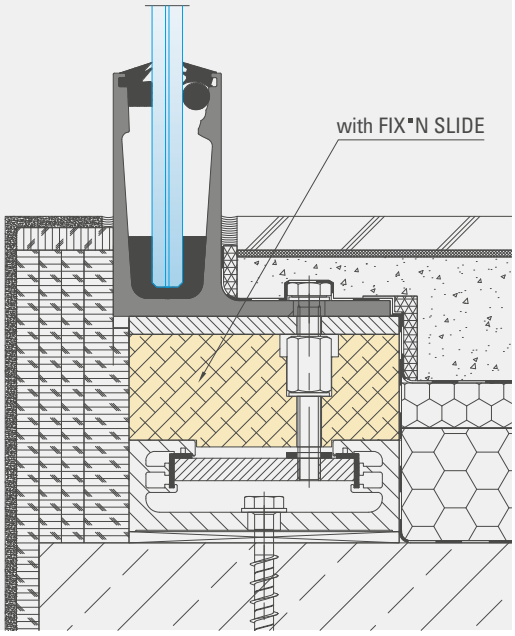
With steel substructure



CharacterNo.: BA-Top1-103

4 Connection from above, overhanging profile

With exterior cladding



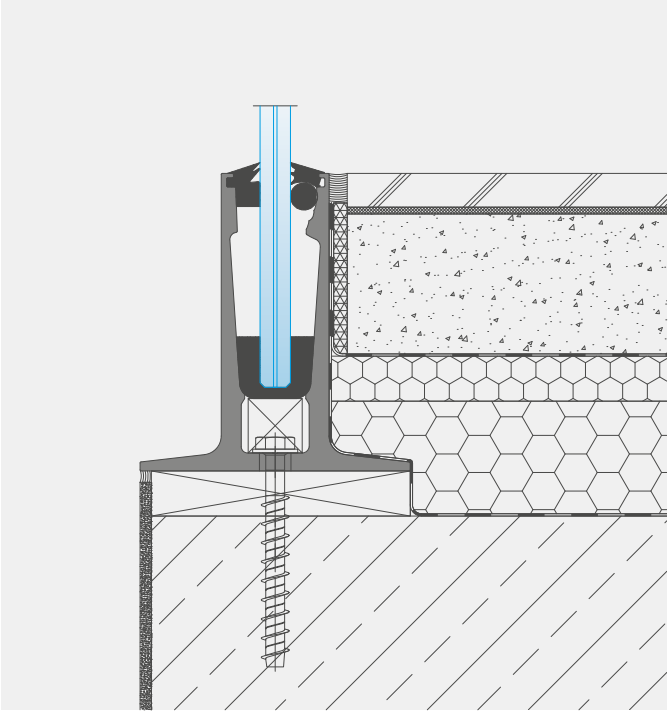
CharacterNo.: BA-Top1-104

Observe attachment edge spacings
for load application and transfer.

System profile Top 2 Inside

Application examples indoors **BALARDO** *core / core hd*

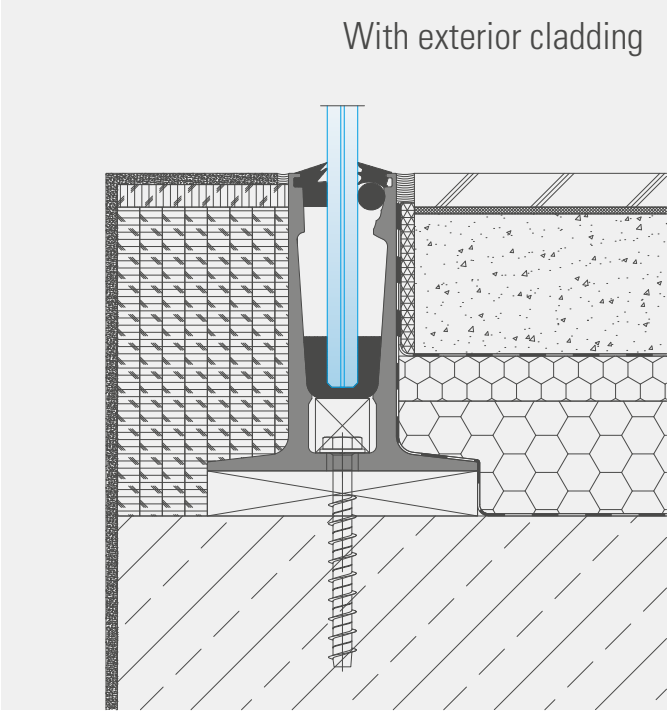
1 Connection from above, flush profile



CharacterNo.: BA-Top2-101

2 Connection from above, flush profile

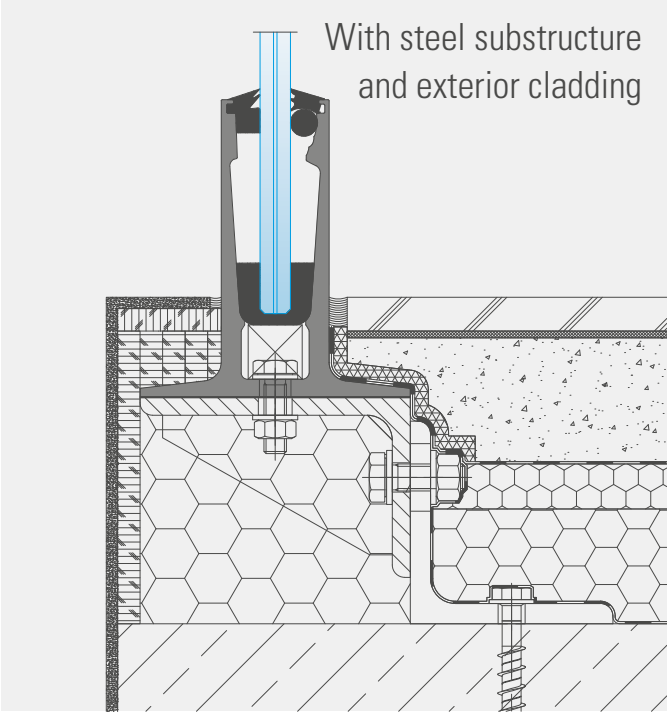
With exterior cladding



CharacterNo.: BA-Top2-102

3 Connection from above, overhanging profile

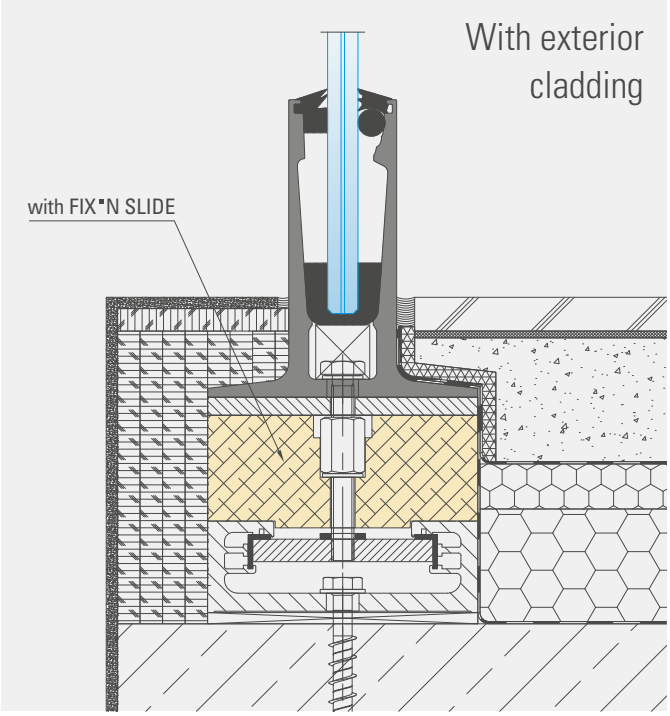
With steel substructure
and exterior cladding



CharacterNo.: BA-Top2-103

4 Connection from above, overhanging profile

With exterior
cladding



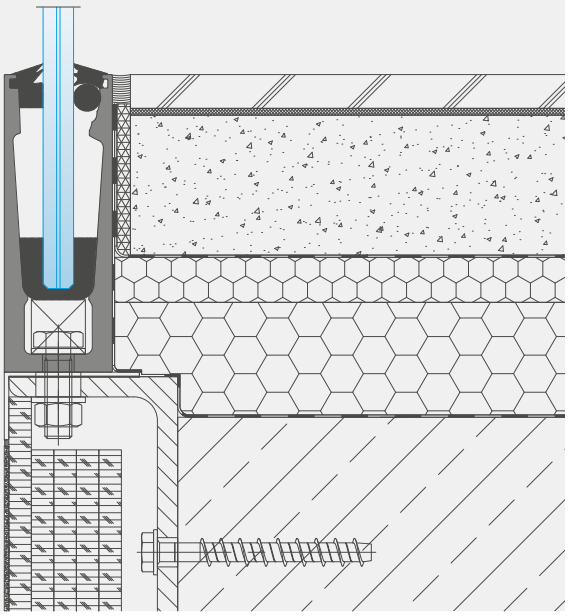
CharacterNo.: BA-Top2-104

Observe attachment edge spacings for load application and transfer.

System profile Top 3 Inside

Application examples indoors **BALARDO** *core*

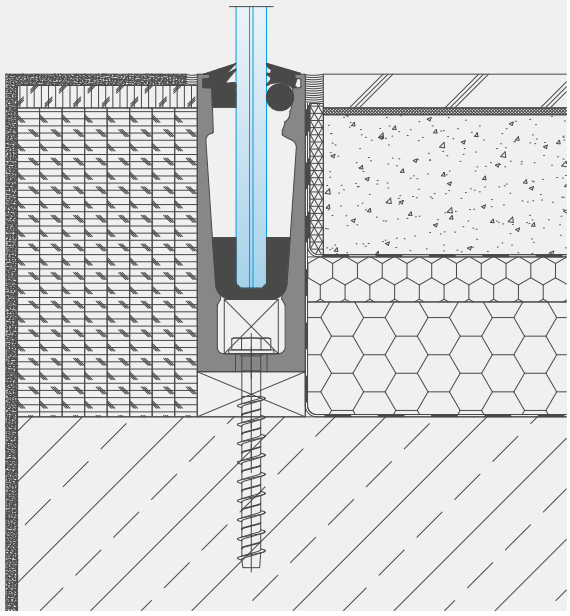
1 Connection from above, flush profile



CharacterNo.: BA-Top3-101

2 Connection from above, flush profile

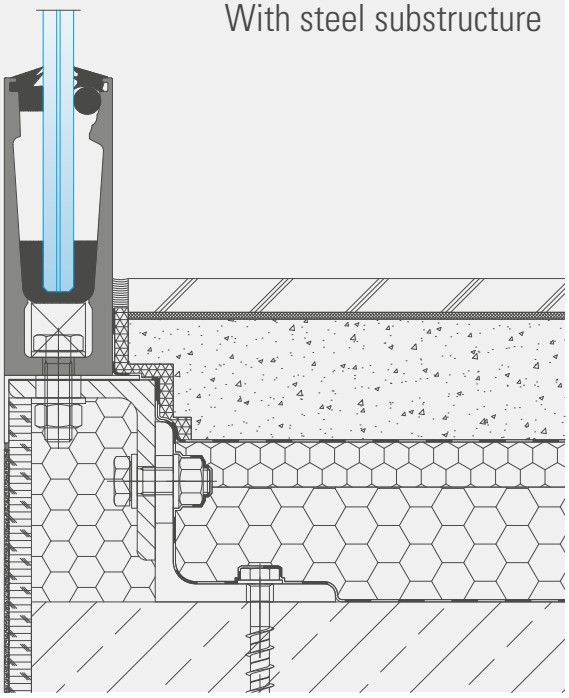
With exterior cladding



CharacterNo.: BA-Top3-102

3 Connection from above, overhanging profile

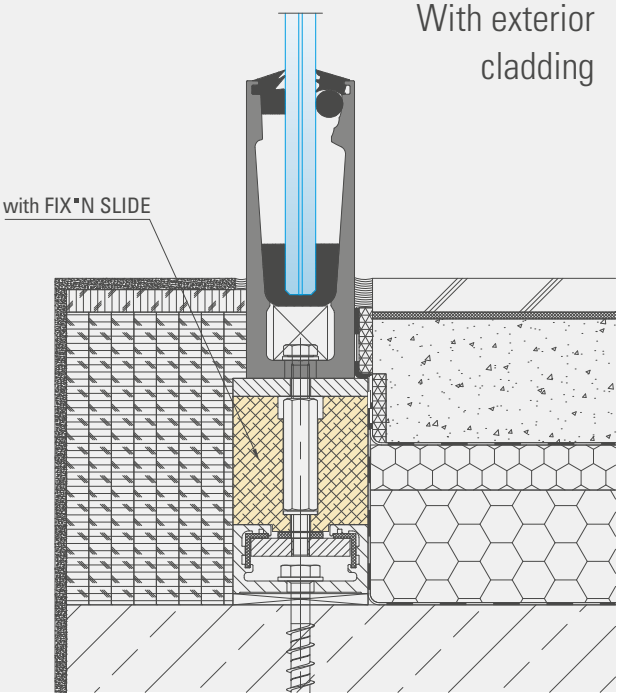
With steel substructure



CharacterNo.: BA-Top3-103

4 Connection from above, overhanging profile

With exterior cladding



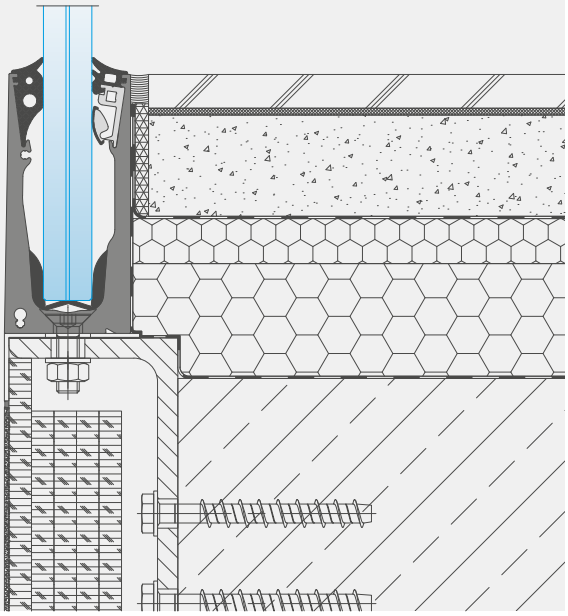
CharacterNo.: BA-Top3-104

Observe attachment edge spacings
for load application and transfer.

System profile Top 4 Inside

Application examples indoors **BALARDO** *core / hybrid*

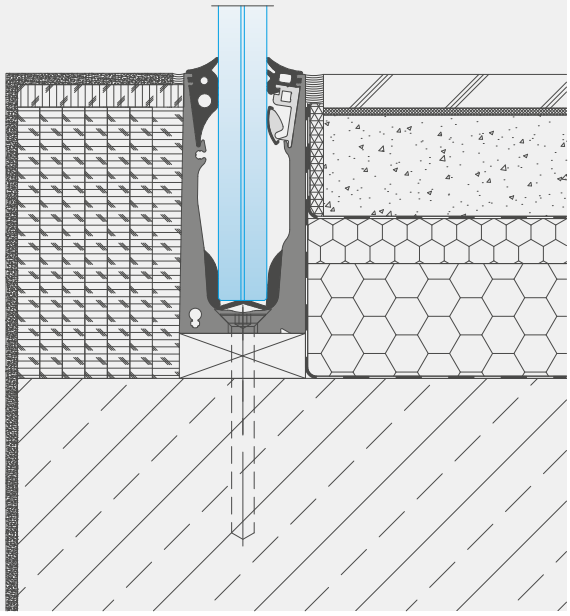
1 Connection from above, flush profile



CharacterNo.: BA-Top4-101

2 Connection from above, flush profile

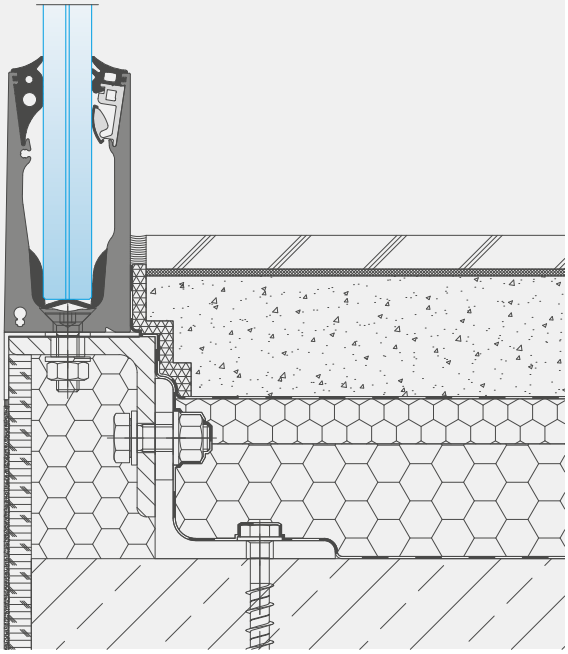
With exterior cladding



CharacterNo.: BA-Top4-102

3 Connection from above, overhanging profile

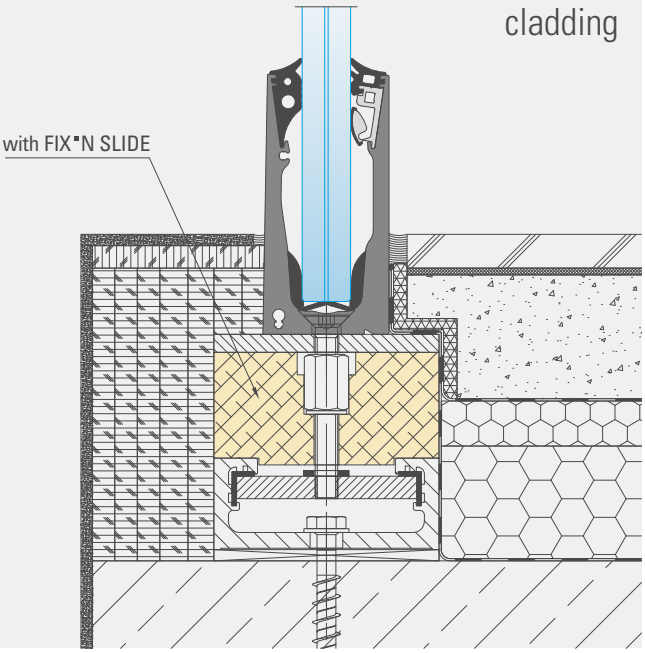
With steel substructure



CharacterNo.: BA-Top4-103

4 Connection from above, overhanging profile

With exterior cladding



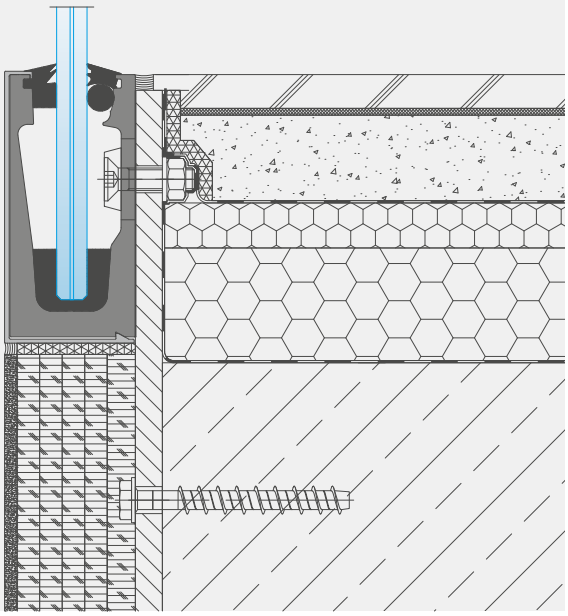
CharacterNo.: BA-Top4-104

Observe attachment edge spacings for load application and transfer.

System profile Side 1 Inside

Application examples indoors **BALARDO** *core / core hd / hybrid*

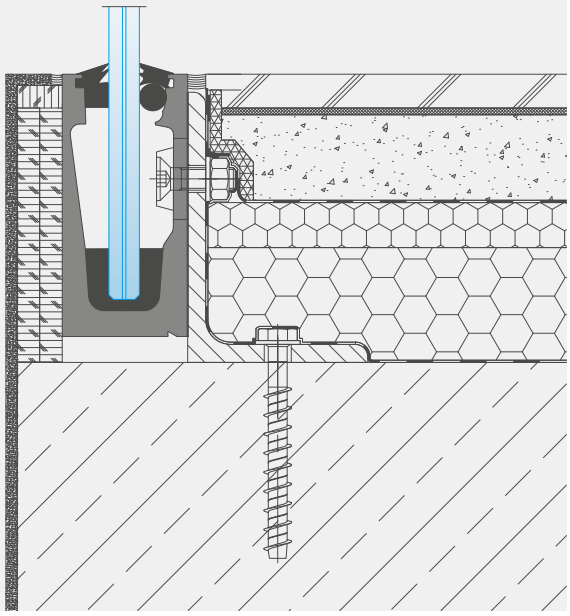
1 Connection from the side, flush profile



CharacterNo.: BA-Side1-101

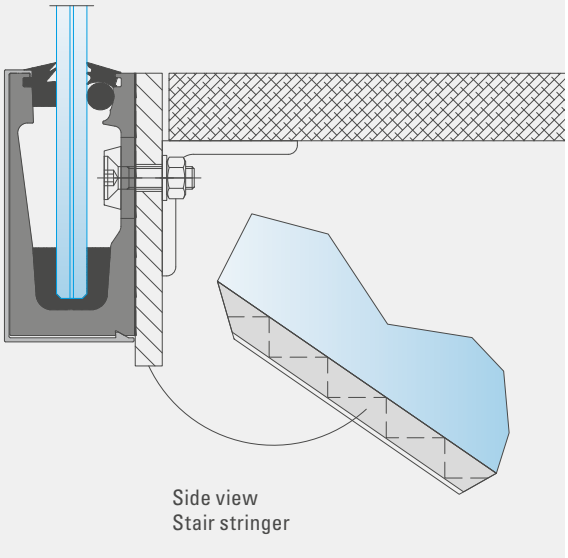
2 Connection from above, flush profile

With exterior cladding



CharacterNo.: BA-Side1-102

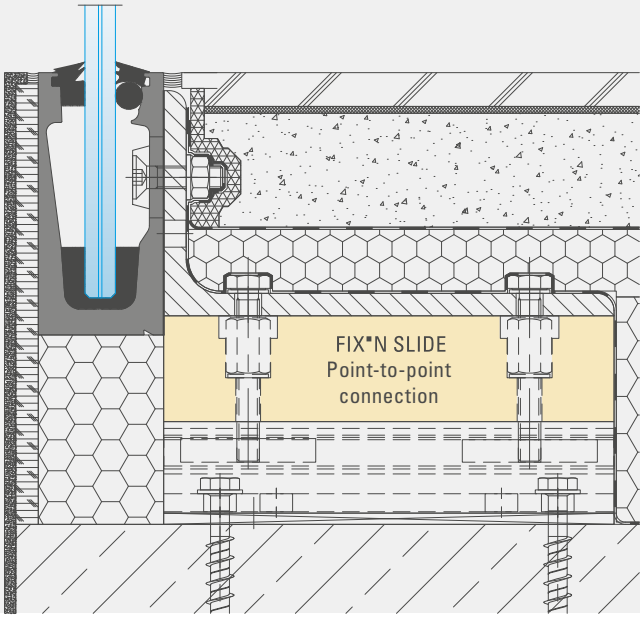
3 Connection from the side, stair stringer



CharacterNo.: BA-Side1-103

4 Connection from above, flush profile

With exterior cladding



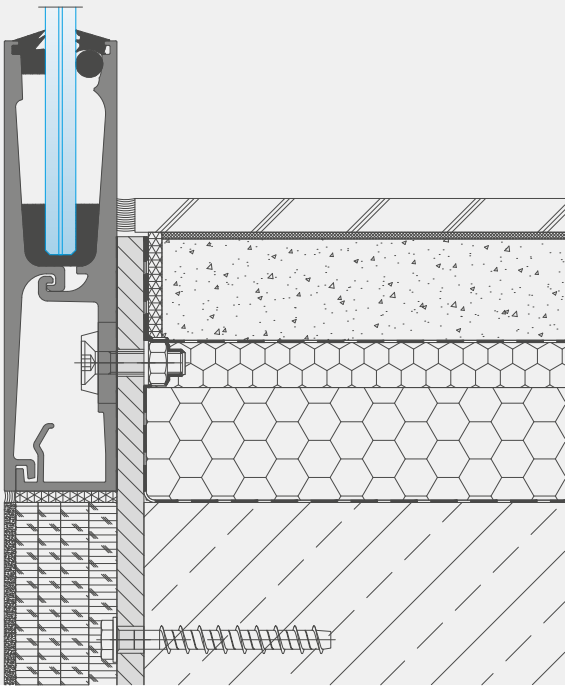
CharacterNo.: BA-Side1-104

Observe attachment edge spacings for load application and transfer.

System profile Side 2 Inside

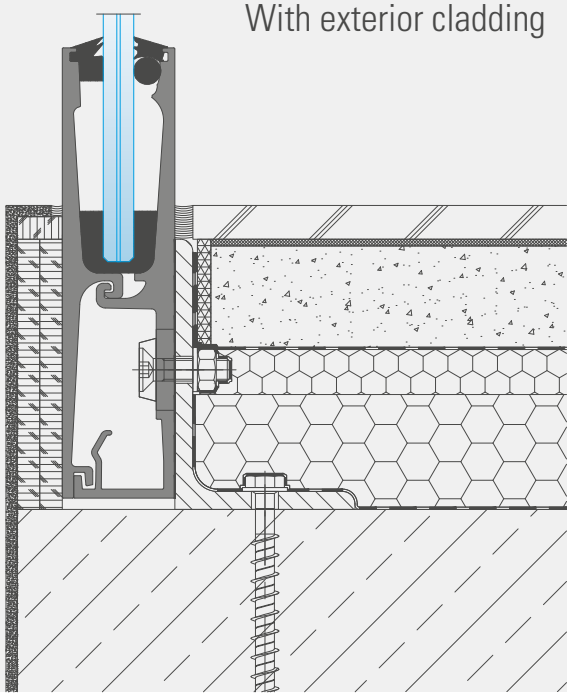
Application examples indoors **BALARDO** *core / smart* (System profile Side 3)

1 Connection from the side, overhanging profile



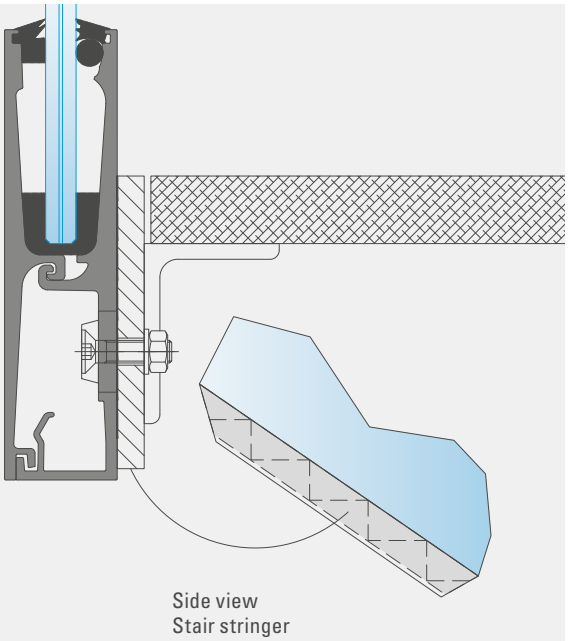
CharacterNo.: BA-Side2-101

2 Connection from above, overhanging profile



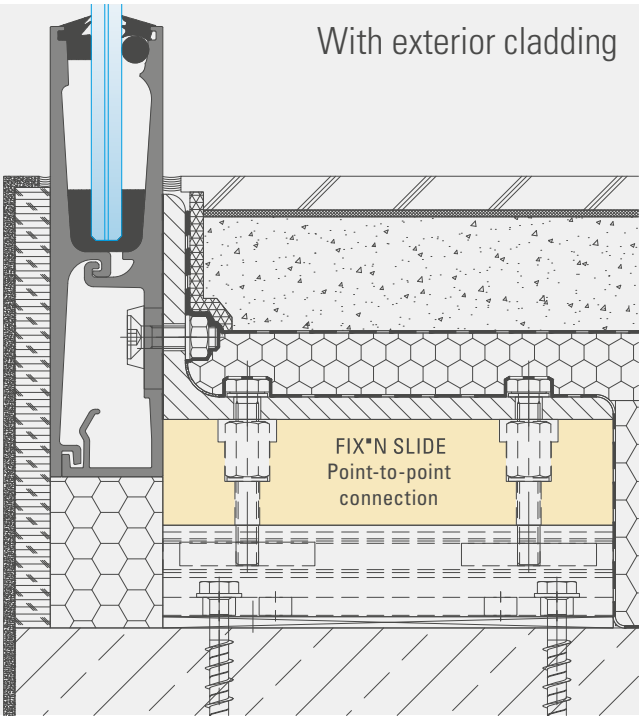
CharacterNo.: BA-Side2-102

3 Connection from the side, stair stringer



CharacterNo.: BA-Side2-103

4 Connection from above, overhanging profile



CharacterNo.: BA-Side2-104

LIVING LEVELS BERLIN – FILIGREE
ALL-GLASS RAILINGS FOR TRANSPARENT ARCHITECTURE

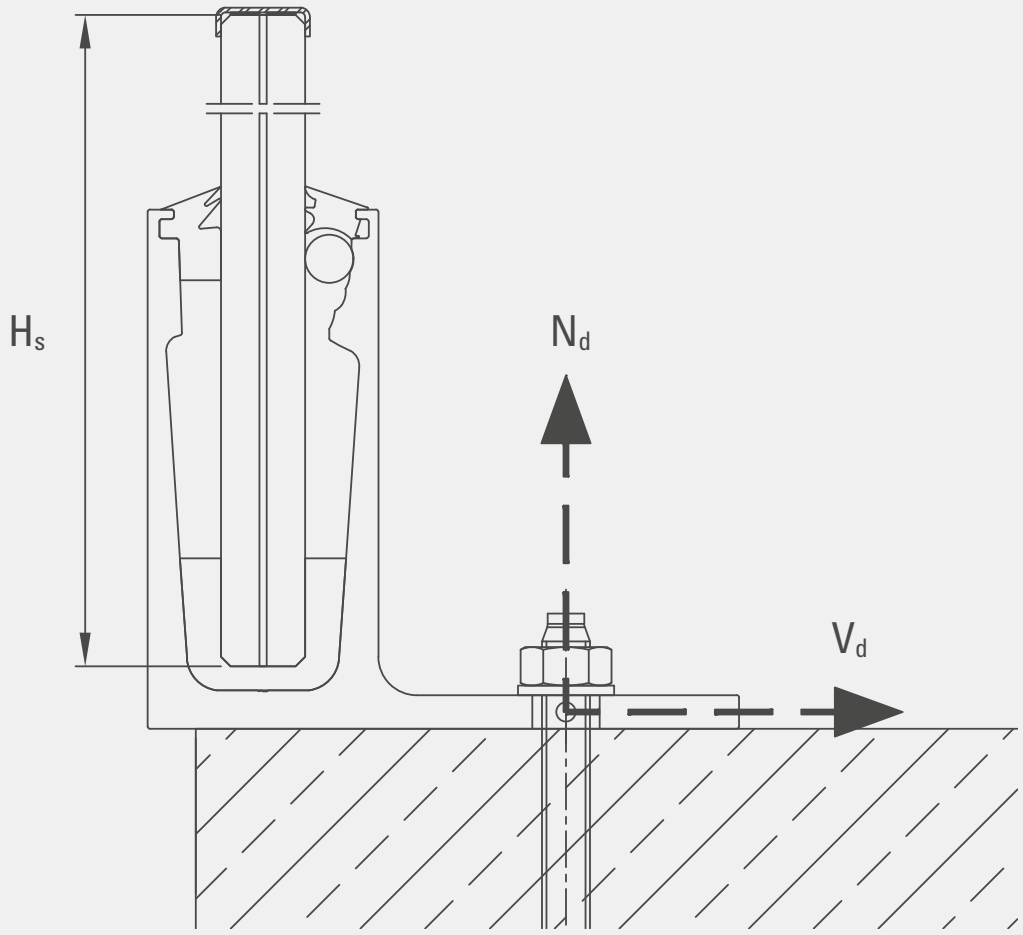
About 900 metres of railings were installed on the residential tower on the East Side Gallery in Berlin Projekt Living Levels by Assmann + Klasen GbR. The Berlin-based company already knew the advantages of BALARDO from another project. Due to the positive experience with more reliable project management and support in the individual project stages, there was trust during Living Levels and further follow-up projects in smooth cooperation with GLASSLINE. Technical and economic factors were especially crucial.

BALARDO core, with its CLICK•N FIX installation principle, allows for very easy and fast installation. Due to the perfect interaction between aluminium profile, clamping shoe, clamping rod, and interior and exterior seals, the pane is absolutely securely and quickly fixed in place in an instant without tools.

The system had even more advantages in store for its use in Living Levels. This is how the maximum fixing distance between the individual screws was an unrivalled 500 mm with BALARDO core. Compared with other systems, this means: fewer screw connections and less installation work and thus less time expenditure. The aluminium profile is simultaneously designed for a glass thickness of 16 mm LSG. GLASSLINE was also able to score through the preparation of custom lengths and custom boreholes. Because there were hardly any offcuts, the material costs were significantly reduced.

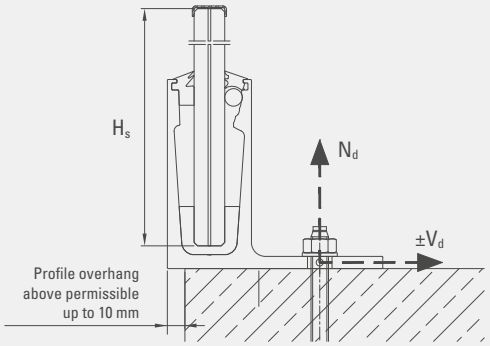
DIMENSIONING OF THE CONNECTION

BEARING FORCES FOR MEASUREMENT OF THE DOWEL / SCREW CONNECTION



BALARDO *core* System profile Top 1

Bearing forces (calculated value – traction force N_d [kN], shear force V_d [kN])



Horizontal imposed loads: q_k = 0.5 kN/m, connection distance A = 500 mm

Glass height H_s (mm)		Characteristic wind load W_e (kN/m²)														
		0.00	0.60	0.80	1.00	1.10	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	2.88
600	N_d	7.15	8.71	9.23	9.75	10.00	10.26	11.04	11.91	12.77	13.64	14.50	15.37	16.23	17.10	17.44
	$\pm V_d$	0.38	0.54	0.62	0.71	0.76	0.80	0.89	0.98	1.07	1.16	1.25	1.34	1.43	1.52	1.56
800	N_d	9.48	12.23	13.15	14.25	15.02	15.78	17.31								
	$\pm V_d$	0.38	0.62	0.74	0.86	0.92	0.98	1.10								
1000	N_d	11.81	16.09													
	$\pm V_d$	0.38	0.71													
1100	N_d	12.97														
	$\pm V_d$	0.38														
1200	N_d	14.14														
	$\pm V_d$	0.38														
1300	N_d	15.30														
	$\pm V_d$	0.38														
1400	N_d	16.46														
	$\pm V_d$	0.38														

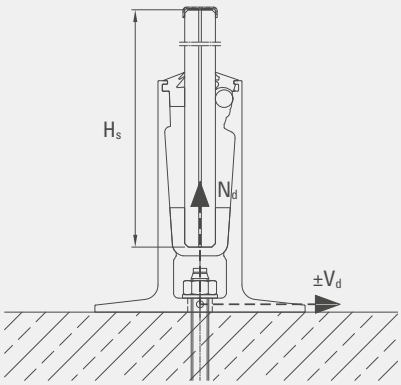
Horizontal imposed loads: q_k = 1.0 kN/m, connection distance A = 250 mm

Glass height H_s (mm)		Characteristic wind load W_e (kN/m²)														
		0.00	0.60	0.80	1.00	1.10	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	2.88
600	N_d	6.94	7.72	7.97	8.23	8.36	8.49	8.75	9.01	9.27	9.53	9.79	10.05	10.40	10.83	11.00
	$\pm V_d$	0.38	0.46	0.48	0.51	0.52	0.54	0.58	0.62	0.67	0.71	0.76	0.80	0.85	0.89	0.91
800	N_d	9.21	10.58	11.04	11.50	11.73	11.96	12.41								
	$\pm V_d$	0.38	0.48	0.52	0.56	0.59	0.62	0.68								
1000	N_d	11.47	13.62													
	$\pm V_d$	0.38	0.51													
1100	N_d	12.61														
	$\pm V_d$	0.38														
1200	N_d	13.74														
	$\pm V_d$	0.38														
1300	N_d	14.88														
	$\pm V_d$	0.38														
1400	N_d	16.01														
	$\pm V_d$	0.38														

In the case of a divergent connection distance $D_{div.}$, the values of the bearing forces should be multiplied by the factor F = ($D_{div.}$ [in mm] / A [mm]).

BALARDO *core* System profile Top 2

Bearing forces (calculated value – traction force N_d [kN], shear force V_d [kN])



Horizontal imposed loads: q_k = 0.5 kN/m, connection distance A = 500 mm

Glass height H_s (mm)		Characteristic wind load W_e (kN/m²)														
		0.00	0.60	0.80	1.00	1.10	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00
600	N_d	4.28	5.24	5.55	5.87	6.03	6.19	6.67	7.20	7.72	8.25	8.78	9.31	9.84	10.37	10.90
	$\pm V_d$	0.38	0.54	0.62	0.71	0.76	0.80	0.89	0.98	1.07	1.16	1.25	1.34	1.43	1.52	1.61
800	N_d	5.64	7.31	7.87	8.54	9.01	9.47	10.40	11.33	12.25	13.18	14.11	15.04	15.97	16.89	17.82
	$\pm V_d$	0.38	0.62	0.74	0.86	0.92	0.98	1.10	1.22	1.34	1.46	1.58	1.70	1.82	1.94	2.06
1000	N_d	7.00	9.59	10.60	12.03	12.75	13.47	14.91	16.35	17.78	19.22	20.66				
	$\pm V_d$	0.38	0.71	0.86	1.01	1.09	1.16	1.31	1.46	1.61	1.76	1.91				
1100	N_d	7.68	10.80	12.25	13.99	14.85	15.72	17.46	19.19	20.92						
	$\pm V_d$	0.38	0.76	0.92	1.09	1.17	1.25	1.42	1.58	1.75						
1200	N_d	8.36	12.07	14.02	16.08	17.11	18.14	20.20								
	$\pm V_d$	0.38	0.80	0.98	1.16	1.25	1.34	1.52								
1300	N_d	9.04	13.49	15.90	18.31	19.52	20.72									
	$\pm V_d$	0.38	0.85	1.04	1.24	1.34	1.43									
1400	N_d	9.72	15.10	17.89	20.68											
	$\pm V_d$	0.38	0.89	1.10	1.31											
1500	N_d	10.40	16.80	19.99												
	$\pm V_d$	0.38	0.94	1.16												
1600	N_d	11.08	18.57													
	$\pm V_d$	0.38	0.98													
1800	N_d	11.05														
	$\pm V_d$	0.38														
2000	N_d	11.02														
	$\pm V_d$	0.38														
2100	N_d	11.00														
	$\pm V_d$	0.38														

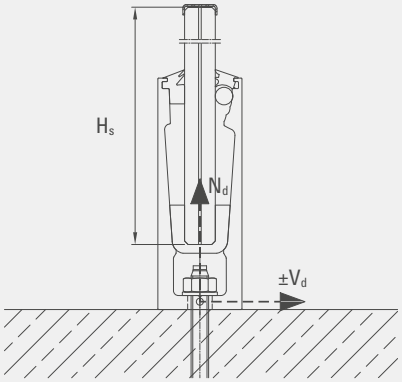
Horizontal imposed loads: q_k = 1.0 kN/m, connection distance A = 250 mm

Glass height H_s (mm)		Characteristic wind load W_e (kN/m²)														
		0.00	0.60	0.80	1.00	1.10	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00
600	N_d	4.35	4.82	4.98	5.14	5.22	5.30	5.46	5.62	5.78	5.93	6.09	6.25	6.46	6.73	6.99
	$\pm V_d$	0.38	0.46	0.48	0.51	0.52	0.54	0.58	0.62	0.67	0.71	0.76	0.80	0.85	0.89	0.94
800	N_d	5.72	6.56	6.83	7.11	7.25	7.39	7.67	7.95	8.23	8.62	9.08	9.55	10.01	10.48	
	$\pm V_d$	0.38	0.48	0.52	0.56	0.59	0.62	0.68	0.74	0.80	0.86	0.92	0.98	1.04	1.10	
1000	N_d	7.10	8.39	8.82	9.25	9.47	9.68	10.11								
	$\pm V_d$	0.38	0.51	0.56	0.64	0.68	0.71	0.79								
1100	N_d	7.78	9.34	9.86	10.38											
	$\pm V_d$	0.38	0.52	0.59	0.68											
1200	N_d	8.47	10.32													
	$\pm V_d$	0.38	0.54													
1300	N_d	9.16														
	$\pm V_d$	0.38														
1400	N_d	9.84														
	$\pm V_d$	0.38														

In the case of a divergent connection distance $D_{div.}$, the values of the bearing forces should be multiplied by the factor F = ($D_{div.}$ [in mm] / A [mm]).

BALARDO *core* System profile Top 3

Bearing forces (calculated value – traction force N_d [kN], shear force V_d [kN])



Horizontal imposed loads: q_k = 0.5 kN/m,connection distance A = 200 mm

Glass height H_s (mm)		Characteristic wind load W_e (kN/m²)														
		0.00	0.60	0.80	1.00	1.10	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00
600	N_d	4.35	5.30	5.62	5.94	6.10	6.25	6.73	7.26	7.79	8.32	8.85	9.38	9.91	10.44	10.96
	$\pm V_d$	0.15	0.21	0.25	0.29	0.30	0.32	0.36	0.39	0.43	0.47	0.50	0.54	0.57	0.61	0.65
800	N_d	5.72	7.39	7.95	8.62	9.09	9.55	10.48	11.41	12.33	13.26	14.19	15.12	16.04	16.97	17.90
	$\pm V_d$	0.15	0.25	0.30	0.35	0.37	0.39	0.44	0.49	0.54	0.59	0.63	0.68	0.73	0.78	0.83
1000	N_d	7.10	9.68	10.69	12.13	12.85	13.56	15.00	16.44	17.88						
	$\pm V_d$	0.15	0.29	0.35	0.41	0.44	0.47	0.53	0.59	0.65						
1100	N_d	7.78	10.90	12.35	14.09	14.95	15.82	17.56								
	$\pm V_d$	0.15	0.30	0.37	0.44	0.47	0.50	0.57								
1200	N_d	8.47	12.17	14.13	16.19	17.22										
	$\pm V_d$	0.15	0.32	0.39	0.47	0.50										
1300	N_d	9.15	13.60	16.02												
	$\pm V_d$	0.15	0.34	0.42												
1400	N_d	9.84	15.22													
	$\pm V_d$	0.15	0.36													
1500	N_d	10.53	16.92													
	$\pm V_d$	0.15	0.38													
1600	N_d	11.21														
	$\pm V_d$	0.15														
1800	N_d	11.20														
	$\pm V_d$	0.15														
2000	N_d	11.18														
	$\pm V_d$	0.15														
2100	N_d	11.17														
	$\pm V_d$	0.15														

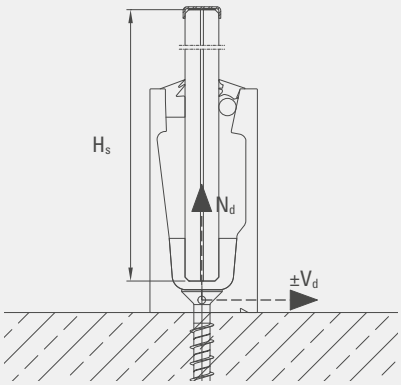
Horizontal imposed loads: q_k = 1.0 kN/m, connection distance A = 100 mm

Glass height H_s (mm)		Characteristic wind load W_e (kN/m²)														
		0.00	0.60	0.80	1.00	1.10	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00
600	N_d	4.38	4.86	5.01	5.17	5.25	5.33	5.49	5.65	5.81	5.97	6.13	6.28	6.50	6.76	7.03
	$\pm V_d$	0.15	0.18	0.19	0.20	0.21	0.21	0.23	0.25	0.27	0.29	0.30	0.32	0.34	0.36	0.38
800	N_d	5.76	6.60	6.87	7.15	7.29	7.43	7.71	7.99	8.27	8.66	9.12				
	$\pm V_d$	0.15	0.19	0.21	0.23	0.24	0.25	0.27	0.30	0.32	0.35	0.37				
1000	N_d	7.14	8.44	8.87												
	$\pm V_d$	0.15	0.20	0.23												
1100	N_d	7.83														
	$\pm V_d$	0.15														
1200	N_d	8.52														
	$\pm V_d$	0.15														

In the case of a divergent connection distance $D_{div.}$, the values of the bearing forces should be multiplied by the factor F = ($D_{div.}$ [in mm] / A [mm]).

BALARDO *core* System profile Top 4

Bearing forces (calculated value – traction force N_d [kN], shear force V_d [kN])



Horizontal imposed loads: q_k = 0.5 kN/m, connection distance A = 500 mm

Glashöhe H_s (mm)		innen	Outdoor areas – characteristic wind load W_e (kN/m²)													
			0,60	0,80	1,00	1,10	1,20	1,40	1,60	1,80	2,00	2,20	2,40	2,60	2,80	3,00
600	N_d	4,71	5,74	6,08	6,43	6,60	6,77	7,28	7,86	8,43	9,00	9,57	10,14	10,72	11,29	11,86
	$\pm V_d$	0,19	0,27	0,31	0,36	0,38	0,40	0,45	0,49	0,54	0,58	0,63	0,67	0,72	0,76	0,81
800	N_d	6,24	8,05	8,66	9,39	9,90	10,40	11,41	12,42	13,43	14,44	15,45	16,46	17,47	18,48	19,49
	$\pm V_d$	0,19	0,31	0,37	0,43	0,46	0,49	0,55	0,61	0,67	0,73	0,79	0,85	0,91	0,97	1,03
1000	N_d	7,76	10,59	11,69	13,26	14,05	14,83	16,41	17,98	19,55	21,12	22,69	24,26			
	$\pm V_d$	0,19	0,36	0,43	0,51	0,54	0,58	0,66	0,73	0,81	0,88	0,96	1,03			
1100	N_d	8,53	11,95	13,53	15,43	16,38	17,33	19,23	21,12	23,02	24,92					
	$\pm V_d$	0,19	0,38	0,46	0,54	0,59	0,63	0,71	0,79	0,87	0,96					
1200	N_d	9,29	13,35	15,50	17,75	18,88	20,01	22,26	24,52							
	$\pm V_d$	0,19	0,40	0,49	0,58	0,63	0,67	0,76	0,85							
1300	N_d	10,06	14,94	17,58	20,23	21,55	22,87									
	$\pm V_d$	0,19	0,42	0,52	0,62	0,67	0,72									
1400	N_d	10,82	16,73	19,79	22,86	24,39										
	$\pm V_d$	0,19	0,45	0,55	0,66	0,71										
1500	N_d	11,59	18,61	22,13												
	$\pm V_d$	0,19	0,47	0,58												
1600	N_d	12,35	20,59	24,58												
	$\pm V_d$	0,19	0,49	0,61												
1800	N_d	12,33	23,74													
	$\pm V_d$	0,19	0,54													
2000	N_d	12,32														
	$\pm V_d$	0,19														
2100	N_d	12,31														
	$\pm V_d$	0,19														

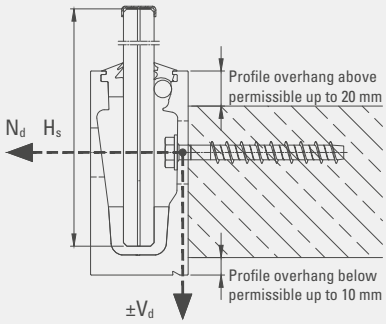
Horizontal imposed loads: q_k = 1.0 kN/m, connection distance A = 250 mm

Glass height H_s (mm)		innen	Outdoor areas – charakteristische Windlast W_e (kN/m²)													
			0.60	0.80	1.00	1.10	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00
600	N_d	9.48	10.51	10.85	11.19	11.37	11.54	11.88	12.22	12.57	12.91	13.25	13.60	14.05	14.63	15.20
	$\pm V_d$	0.38	0.46	0.48	0.51	0.52	0.54	0.58	0.62	0.67	0.71	0.76	0.80	0.85	0.89	0.94
800	N_d	12.55	14.37	14.97	15.58	15.88	16.18	16.79	17.40	18.00	18.86	19.87	20.88	21.89	22.90	23.91
	$\pm V_d$	0.38	0.48	0.52	0.56	0.59	0.62	0.68	0.74	0.80	0.86	0.92	0.98	1.04	1.10	1.16
1000	N_d	15.62	18.45	19.39	20.33	20.80	21.28	22.22	23.47	25.05	26.62	28.19	29.76			
	$\pm V_d$	0.38	0.51	0.56	0.64	0.68	0.71	0.79	0.86	0.94	1.01	1.09	1.16			
1100	N_d	17.16	20.57	21.71	22.85	23.42	23.99	25.26	27.16	29.06	30.96					
	$\pm V_d$	0.38	0.52	0.59	0.68	0.72	0.76	0.84	0.92	1.01	1.09					
1200	N_d	18.69	22.75	24.10	25.46	26.13	26.81	28.84	31.10							
	$\pm V_d$	0.38	0.54	0.62	0.71	0.76	0.80	0.89	0.98							
1300	N_d	20.23	24.99	26.57	28.16	28.95	29.99									
	$\pm V_d$	0.38	0.56	0.65	0.75	0.80	0.85									
1400	N_d	21.76	27.28	29.12	30.95	32.05										
	$\pm V_d$	0.38	0.58	0.68	0.79	0.84										
1500	N_d	23.30	29.62	31.73												
	$\pm V_d$	0.38	0.60	0.71												
1600	N_d	24.83	32.03													
	$\pm V_d$	0.38	0.62													
1800	N_d	24.82														
	$\pm V_d$	0.38														

In the case of a divergent connection distance $D_{div.}$, the values of the bearing forces should be multiplied by the factor F = ($D_{div.}$ [in mm] / A [mm]).
Rotated installation at q_k > 0.5 kN/m must be verified separately.

BALARDO *core* System profile Side 1

Bearing forces (calculated value – traction force N_d [kN], shear force V_d [kN])



Horizontal imposed loads: q_k = 0.5 kN/m, connection distance A = 500 mm

Glass height H_s (mm)		Characteristic wind load W_e (kN/m²)														
		0.00	0.60	0.80	1.00	1.10	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00
600	N_d	6.32	7.71	8.17	8.64	8.87	9.10	9.80	10.57	11.34	12.11	12.89	13.66	14.43	15.20	15.98
	$\pm V_d$	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
800	N_d	8.37	10.83	11.65	12.63	13.32	14.00	15.36	16.72	18.09	19.45	20.81	22.18	23.54	24.90	26.27
	$\pm V_d$	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31
1000	N_d	10.43	14.24	15.73	17.85	18.91	19.97	22.09	24.21	26.33	28.45	30.57	32.69	34.81	36.94	39.06
	$\pm V_d$	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
1100	N_d	11.45	16.06	18.21	20.77	22.05	23.33	25.89	28.45	31.02	33.58	36.14	38.70	41.26		
	$\pm V_d$	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41		
1200	N_d	12.48	17.96	20.85	23.90	25.42	26.94	29.99	33.03	36.08	39.12	42.17				
	$\pm V_d$	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45				
1300	N_d	13.50	20.09	23.66	27.23	29.02	30.80	34.37	37.94	41.51						
	$\pm V_d$	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48						
1400	N_d	14.53	22.51	26.64	30.78	32.85	34.91	39.05								
	$\pm V_d$	0.51	0.51	0.51	0.51	0.51	0.51	0.51								
1500	N_d	15.56	25.04	29.79	34.53	36.90	39.27									
	$\pm V_d$	0.55	0.55	0.55	0.55	0.55	0.55									
1600	N_d	16.58	27.71	33.10	38.49	41.19										
	$\pm V_d$	0.58	0.58	0.58	0.58	0.58										
1800	N_d	16.55	31.95	38.76												
	$\pm V_d$	0.65	0.65	0.65												
2000	N_d	16.52	36.69													
	$\pm V_d$	0.72	0.72													
2100	N_d	16.50														
	$\pm V_d$	0.75														

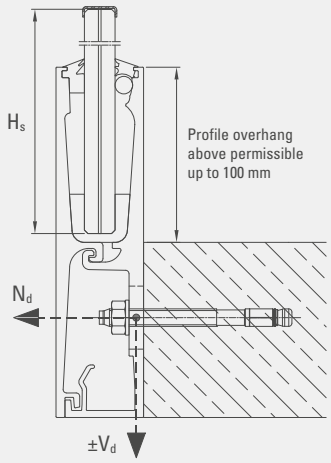
Horizontal imposed loads: q_k = 1.0 kN/m, connection distance A = 250 mm

Glass height H_s (mm)		Characteristic wind load W_e (kN/m²)														
		0.00	0.60	0.80	1.00	1.10	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00
600	N_d	4.34	4.81	4.96	5.12	5.19	5.27	5.43	5.58	5.73	6.06	6.44	6.83	7.22	7.60	7.99
	$\pm V_d$	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
800	N_d	5.75	6.57	6.84	7.11	7.25	7.38	7.68	8.36	9.04	9.73	10.41	11.09	11.77	12.45	13.13
	$\pm V_d$	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
1000	N_d	7.15	8.42	8.85	9.27	9.48	9.98	11.04	12.11	13.17	14.23	15.29	16.35	17.41	18.47	
	$\pm V_d$	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	
1100	N_d	7.85	9.39	9.90	10.41	11.02	11.67	12.95	14.23	15.51	16.79	18.07				
	$\pm V_d$	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21				
1200	N_d	8.55	10.38	10.99	11.95	12.71	13.47	14.99	16.52							
	$\pm V_d$	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22							
1300	N_d	9.25	11.40	12.11	13.62	14.51	15.40	17.19								
	$\pm V_d$	0.24	0.24	0.24	0.24	0.24	0.24	0.24								
1400	N_d	9.96	12.44	13.32	15.39	16.42										
	$\pm V_d$	0.26	0.26	0.26	0.26	0.26										
1500	N_d	10.66	13.50	14.89												
	$\pm V_d$	0.27	0.27	0.27												
1600	N_d	11.36	14.59													
	$\pm V_d$	0.29	0.29													
1800	N_d	11.37														
	$\pm V_d$	0.32														

In the case of a divergent connection distance $D_{div.}$, the values of the bearing forces should be multiplied by the factor F = ($D_{div.}$ [in mm] / A [mm]).
Rotated installation and installation with overhang must be verified separately.

BALARDO *core* System profile Side 2

Bearing forces (calculated value – traction force N_d [kN], shear force V_d [kN])



Horizontal imposed loads: q_k = 0.5 kN/m, connection distance A = 500 mm

Glass height H_s (mm)		Characteristic wind load W_e (kN/m²)														
		0.00	0.60	0.80	1.00	1.10	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00
600	N_d	6.41	7.74	8.19	8.64	8.86	9.09	9.77	10.52	11.27	12.02	12.77	13.52	14.27	15.02	15.77
	$\pm V_d$	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
800	N_d	8.19	10.50	11.27	12.20	12.85	13.49	14.78	16.06	17.35	18.63	19.92	21.20	22.49	23.77	25.06
	$\pm V_d$	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
1000	N_d	9.99	13.52	14.90	16.86	17.84	18.82	20.78	22.74	24.70	26.66	28.62	30.58			
	$\pm V_d$	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40			
1100	N_d	10.89	15.13	17.10	19.45	20.62	21.80	24.15	26.50	28.86						
	$\pm V_d$	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43						
1200	N_d	11.80	16.80	19.44	22.22	23.61	25.00	27.77								
	$\pm V_d$	0.47	0.47	0.47	0.47	0.47	0.47	0.47								
1300	N_d	12.70	18.68	21.92	25.16	26.78	28.40									
	$\pm V_d$	0.50	0.50	0.50	0.50	0.50	0.50									
1400	N_d	13.60	20.81	24.55	28.29											
	$\pm V_d$	0.53	0.53	0.53	0.53											
1500	N_d	14.50	23.04	27.32												
	$\pm V_d$	0.57	0.57	0.57												
1600	N_d	15.40	25.39													
	$\pm V_d$	0.60	0.60													
1800	N_d	15.43														
	$\pm V_d$	0.67														
2000	N_d	15.46														
	$\pm V_d$	0.74														
2100	N_d	15.48														
	$\pm V_d$	0.77														

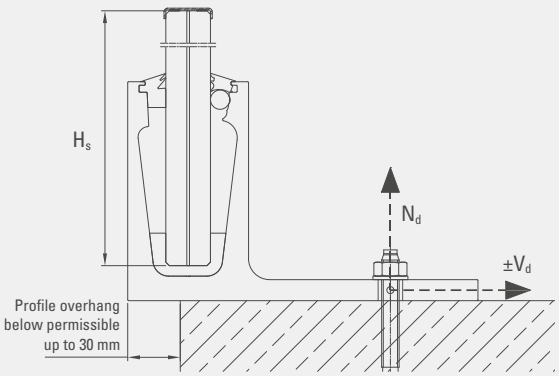
Horizontal imposed loads: q_k = 1.0 kN/m, connection distance A = 250 mm

Glass height H_s (mm)		Characteristic wind load W_e (kN/m²)														
		0.00	0.60	0.80	1.00	1.10	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00
600	N_d	6.33	6.90	7.12	7.35	7.46	7.57	7.80	8.02	8.25	8.47	8.70	8.93	9.23	9.60	9.98
	$\pm V_d$	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
800	N_d	7.99	9.14	9.53	9.91	10.11	10.30	10.68	11.07	11.45	12.00	12.64	13.29	13.93	14.57	15.21
	$\pm V_d$	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
1000	N_d	9.75	11.51	12.10	12.69	12.98	13.28	13.87	14.65							
	$\pm V_d$	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20							
1100	N_d	10.63	12.75	13.45	14.16	14.51	14.86									
	$\pm V_d$	0.22	0.22	0.22	0.22	0.22	0.22									
1200	N_d	11.51	14.01	14.85												
	$\pm V_d$	0.23	0.23	0.23												
1300	N_d	12.39														
	$\pm V_d$	0.25														
1400	N_d	13.28														
	$\pm V_d$	0.27														

In the case of a divergent connection distance $D_{div.}$, the values of the bearing forces should be multiplied by the factor F = ($D_{div.}$ [in mm] / A [mm]).
Rotated installation must be verified separately.

BALARDO *core hd* System profile Top 1

Bearing forces (calculated value – traction force N_d [kN], shear force V_d [kN])



Horizontal imposed loads: q_k = 2.0 kN/m, connection distance A = 200 mm

Glass height H_s (mm)		Characteristic wind load W_e (kN/m²)														
		0.00	0.60	0.80	1.00	1.10	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00
600	N_d	3.78	4.23	4.38	4.53	4.60	4.68	4.82	4.97	5.12	5.27	5.42	5.57	5.77	6.01	6.26
	$\pm V_d$	0.60	0.66	0.69	0.71	0.72	0.73	0.75	0.77	0.79	0.82	0.84	0.86	0.89	0.92	0.96
800	N_d	5.03	5.82	6.08	6.34	6.47	6.60	6.87	7.13	7.39	7.76	8.20	8.64	9.08	9.51	9.95
	$\pm V_d$	0.60	0.69	0.72	0.74	0.76	0.77	0.80	0.83	0.86	0.90	0.95	1.00	1.04	1.09	1.14
1000	N_d	6.28	7.50	7.91	8.32	8.52	8.73	9.13	9.68	10.36	11.04	11.72	12.40	13.08	13.76	14.44
	$\pm V_d$	0.60	0.71	0.74	0.78	0.80	0.82	0.85	0.90	0.96	1.02	1.08	1.14	1.20	1.26	1.32
1100	N_d	6.90	8.38	8.87	9.37	9.61	9.86	10.41	11.23	12.05	12.87	13.70	14.52	15.34	16.16	16.98
	$\pm V_d$	0.60	0.72	0.76	0.80	0.82	0.84	0.88	0.95	1.01	1.08	1.15	1.21	1.28	1.34	1.41
1200	N_d	7.53	9.28	9.87	10.45	10.75	11.04	11.92	12.89	13.87	14.85	15.82	16.80	17.77	18.75	19.73
	$\pm V_d$	0.60	0.73	0.77	0.82	0.84	0.86	0.92	1.00	1.07	1.14	1.21	1.28	1.36	1.43	1.50
1300	N_d	8.15	10.21	10.89	11.58	11.92	12.37	13.52	14.66	15.80	16.95	18.09	19.24			
	$\pm V_d$	0.60	0.74	0.79	0.83	0.86	0.89	0.97	1.04	1.12	1.20	1.28	1.36			
1400	N_d	8.77	11.16	11.95	12.75	13.22	13.88	15.21	16.54	17.86						
	$\pm V_d$	0.60	0.75	0.80	0.85	0.88	0.92	1.01	1.09	1.18						
1500	N_d	9.40	12.13	13.04	13.96	14.72	15.48									
	$\pm V_d$	0.60	0.76	0.82	0.87	0.92	0.96									
1600	N_d	10.02	13.13	14.17												
	$\pm V_d$	0.60	0.77	0.83												
1800	N_d	9.93														
	$\pm V_d$	0.60														

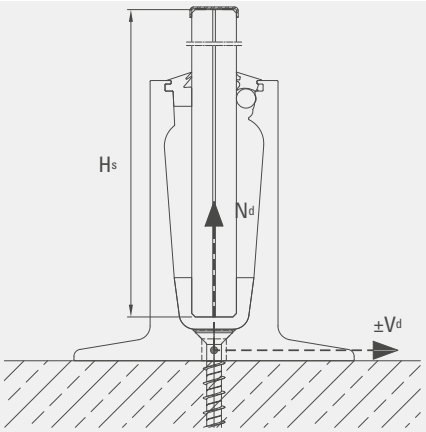
Horizontal imposed loads: q_k = 5.0 kN/m, connection distance A = 100 mm

Glass height H_s (mm)		Characteristic wind load W_e (kN/m²)														
		0.00	0.60	0.80	1.00	1.10	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00
600	N_d	4.99	5.21	5.29	5.36	5.40	5.44	5.51	5.59	5.66	5.74	5.81	5.88	5.96	6.03	6.11
	$\pm V_d$	0.75	0.78	0.79	0.80	0.81	0.81	0.83	0.84	0.85	0.86	0.87	0.88	0.89	0.90	0.91

In the case of a divergent connection distance $D_{div.}$, the values of the bearing forces should be multiplied by the factor F = ($D_{div.}$ [in mm] / A [mm]).
Rotated installation must be verified separately.

BALARDO *core hd* System profile Top 2

Bearing forces (calculated value – traction force N_d [kN], shear force V_d [kN])



Horizontal imposed loads: q_k = 2.0 kN/m, connection distance A = 200 mm

Glass height H_s (mm)		Characteristic wind load W_e (kN/m²)														
		0.00	0.60	0.80	1.00	1.10	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00
600	N_d	5.10	5.39	5.48	5.57	5.62	5.67	5.76	5.85	5.95	6.04	6.14	6.23	6.32	6.42	6.51
	$\pm V_d$	0.60	0.66	0.69	0.71	0.72	0.73	0.75	0.77	0.79	0.82	0.84	0.86	0.89	0.92	0.96
800	N_d	6.75	7.24	7.41	7.57	7.65	7.74	7.90	8.07	8.23	8.40	8.56	8.73	8.89	9.06	9.22
	$\pm V_d$	0.60	0.69	0.72	0.74	0.76	0.77	0.80	0.83	0.86	0.90	0.95	1.00	1.04	1.09	1.14
1000	N_d	8.39	9.16	9.41	9.67	9.80	9.93	10.18	10.44	10.70	10.95	11.21	11.46	11.72	11.98	12.23
	$\pm V_d$	0.60	0.71	0.74	0.78	0.80	0.82	0.85	0.90	0.96	1.02	1.08	1.14	1.20	1.26	1.32
1100	N_d	9.21	10.14	10.45	10.76	10.91	11.07	11.38	11.69	12.00	12.30	12.61	12.92	13.23	13.62	14.13
	$\pm V_d$	0.60	0.72	0.76	0.80	0.82	0.84	0.88	0.95	1.01	1.08	1.15	1.21	1.28	1.34	1.41
1200	N_d	10.03	11.13	11.50	11.87	12.05	12.24	12.60	12.97	13.34	13.71	14.07	14.44	14.93	15.54	16.16
	$\pm V_d$	0.60	0.73	0.77	0.82	0.84	0.86	0.92	1.00	1.07	1.14	1.21	1.28	1.36	1.43	1.50
1300	N_d	10.85	12.15	12.58	13.01	13.22	13.44	13.87	14.30	14.73	15.16	15.59	16.15	16.87	17.59	18.31
	$\pm V_d$	0.60	0.74	0.79	0.83	0.86	0.89	0.97	1.04	1.12	1.20	1.28	1.36	1.43	1.51	1.59
1400	N_d	11.68	13.17	13.67	14.17	14.42	14.67	15.17	15.67	16.16	16.66	17.26	18.09	18.92	19.75	20.58
	$\pm V_d$	0.60	0.75	0.80	0.85	0.88	0.92	1.01	1.09	1.18	1.26	1.34	1.43	1.51	1.60	1.68
1500	N_d	12.50	14.21	14.78	15.36	15.64	15.93	16.50	17.07	17.64	18.22	19.17	20.12	21.07	22.03	22.98
	$\pm V_d$	0.60	0.76	0.82	0.87	0.92	0.96	1.05	1.14	1.23	1.32	1.41	1.50	1.59	1.68	1.77
1600	N_d	13.32	15.27	15.92	16.57	16.89	17.22	17.87	18.52	19.17	20.09	21.17	22.26	23.34	24.42	25.51
	$\pm V_d$	0.60	0.77	0.83	0.90	0.95	1.00	1.09	1.19	1.28	1.38	1.48	1.57	1.67	1.76	1.86
1800	N_d	13.29	15.76	16.58	17.40	17.81	18.22	19.04	20.18	21.55	22.92	24.29				
	$\pm V_d$	0.60	0.79	0.86	0.96	1.01	1.07	1.18	1.28	1.39	1.50	1.61				
2000	N_d	13.27	16.31	17.32	18.33	18.84	19.34	21.02	22.71							
	$\pm V_d$	0.60	0.82	0.90	1.02	1.08	1.14	1.26	1.38							
2100	N_d	13.26	16.60	17.72	18.84	19.42	20.35	22.21								
	$\pm V_d$	0.60	0.83	0.92	1.05	1.11	1.18	1.30								

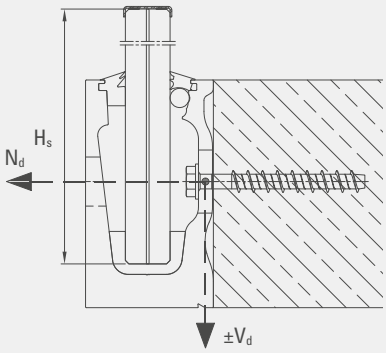
Horizontal imposed loads: q_k = 5.0 kN/m, connection distance A = 100 mm

Glass height H_s (mm)		Characteristic wind load W_e (kN/m²)														
		0.00	0.60	0.80	1.00	1.10	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00
600	N_d	6.46	6.60	6.65	6.69	6.72	6.74	6.79	6.83	6.88	6.93	6.97	7.02	7.07	7.11	7.16
	$\pm V_d$	0.75	0.78	0.79	0.80	0.81	0.81	0.83	0.84	0.85	0.86	0.87	0.88	0.89	0.90	0.91
800	N_d	8.53	8.78	8.86	8.94	8.98	9.02	9.11	9.19	9.27	9.35	9.44	9.52	9.60	9.68	9.77
	$\pm V_d$	0.75	0.79	0.81	0.82	0.83	0.84	0.85	0.87	0.88	0.89	0.91	0.92	0.94	0.95	0.97
1000	N_d	10.60	10.99	11.11	11.24	11.31	11.37	11.50	11.63	11.75	11.88	12.01	12.14	12.27	12.39	12.52
	$\pm V_d$	0.75	0.80	0.82	0.84	0.85	0.86	0.88	0.89	0.91	0.93	0.95	0.97	0.98	1.00	1.02
1100	N_d	11.64	12.10	12.26	12.41	12.49	12.56	12.72	12.87	13.03	13.18	13.34				
	$\pm V_d$	0.75	0.81	0.83	0.85	0.86	0.87	0.89	0.91	0.93	0.95	0.97				
1200	N_d	12.67	13.22													
	$\pm V_d$	0.75	0.81													

In the case of a divergent connection distance $D_{div.}$, the values of the bearing forces should be multiplied by the factor F = ($D_{div.}$ [in mm] / A [mm]).

BALARDO *core hd* System profile Side 1

Bearing forces (calculated value – traction force N_d [kN], shear force V_d [kN])



Horizontal imposed loads: q_k = 2.0 kN/m, connection distance A = 200 mm

Glass height H_s (mm)		Characteristic wind load W_e (kN/m²)														
		0.00	0.60	0.80	1.00	1.10	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00
600	N_d	6.03	6.35	6.45	6.56	6.61	6.67	6.78	6.88	6.99	7.10	7.20	7.31	7.42	7.53	7.63
	$\pm V_d$	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
800	N_d	7.95	8.51	8.70	8.89	8.99	9.08	9.27	9.46	9.65	9.83	10.02	10.21	10.40	10.59	10.79
	$\pm V_d$	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
1000	N_d	9.87	10.75	11.04	11.34	11.48	11.63	11.92	12.22	12.51	12.80	13.09	13.40	14.12	14.83	15.54
	$\pm V_d$	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
1100	N_d	10.83	11.90	12.25	12.60	12.78	12.96	13.31	13.66	14.02	14.37	14.79	15.65	16.51	17.37	18.23
	$\pm V_d$	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
1200	N_d	11.80	13.06	13.48	13.90	14.11	14.32	14.74	15.16	15.58	16.02	17.04	18.06	19.09	20.11	21.13
	$\pm V_d$	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27
1300	N_d	12.76	14.24	14.73	15.22	15.47	15.71	16.20	16.70	17.19	18.25	19.45	20.64			
	$\pm V_d$	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29			
1400	N_d	13.72	15.43	16.00	16.57	16.86	17.14	17.71	18.28	19.23						
	$\pm V_d$	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31						
1500	N_d	14.68	16.64	17.30	17.95	18.28	18.60									
	$\pm V_d$	0.33	0.33	0.33	0.33	0.33	0.33									
1600	N_d	15.64	17.87	18.62												
	$\pm V_d$	0.35	0.35	0.35												
1800	N_d	15.66														
	$\pm V_d$	0.39														

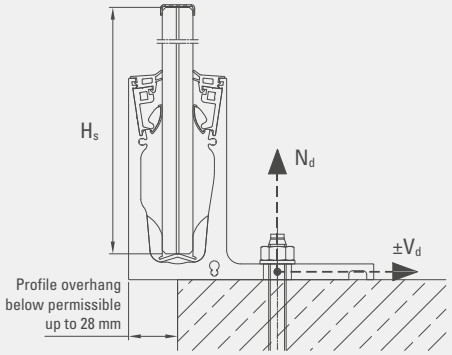
Horizontal imposed loads: q_k = 5.0 kN/m, connection distance A = 100 mm

Glass height H_s (mm)		Characteristic wind load W_e (kN/m²)														
		0.00	0.60	0.80	1.00	1.10	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00
600	N_d	7.48	7.64	7.69	7.74	7.77	7.80	7.85	7.91	7.96	8.01	8.07	8.12	8.17	8.23	8.28
	$\pm V_d$	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07

In the case of a divergent connection distance $D_{div.}$, the values of the bearing forces should be multiplied by the factor F = ($D_{div.}$ [in mm] / A [mm]).
Rotated installation must be verified separately.

BALARDO *hybrid* System profile Top 1

Bearing forces (calculated value – traction force N_d [kN], shear force V_d [kN])



Horizontal imposed loads: q_k = 0.5 kN/m, connection distance A = 500 mm

Glass height H_s (mm)		Characteristic wind load W_e (kN/m²)														
		0.00	0.60	0.80	1.00	1.10	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00
600	N_d	4.31	5.32	5.66	5.99	6.16	6.33	6.83	7.39	7.95	8.51	9.07	9.63	10.19	10.74	10.97
	$\pm V_d$	0.38	0.54	0.62	0.71	0.76	0.80	0.89	0.98	1.07	1.16	1.25	1.34	1.43	1.52	1.56
800	N_d	5.74	7.52	8.11	8.83	9.33	9.82	10.81	11.79	12.78	13.77	14.76	15.75	16.73	17.72	18.12
	$\pm V_d$	0.38	0.62	0.74	0.86	0.92	0.98	1.10	1.22	1.34	1.46	1.58	1.70	1.82	1.94	1.99
1000	N_d	7.17	9.94	11.02	12.56	13.32	14.09	15.63	17.17	18.71	20.25	21.78	23.32	24.86		
	$\pm V_d$	0.38	0.71	0.86	1.01	1.09	1.16	1.31	1.46	1.61	1.76	1.91	2.06	2.21		
1100	N_d	7.89	11.23	12.79	14.65	15.57	16.50	18.36	20.22	22.08	23.94					
	$\pm V_d$	0.38	0.76	0.92	1.09	1.17	1.25	1.42	1.58	1.75	1.91					
1200	N_d	8.60	12.58	14.68	16.89	17.99	19.10	21.30	23.51							
	$\pm V_d$	0.38	0.80	0.98	1.16	1.25	1.34	1.52	1.70							
1300	N_d	9.32	14.10	16.69	19.28	20.57	21.87	24.46								
	$\pm V_d$	0.38	0.85	1.04	1.24	1.34	1.43	1.63								
1400	N_d	10.03	15.82	18.82	21.82	23.32	24.82									
	$\pm V_d$	0.38	0.89	1.10	1.31	1.42	1.52									
1500	N_d	10.75	17.63	21.08	24.52											
	$\pm V_d$	0.38	0.94	1.16	1.39											
1600	N_d	11.46	19.54	23.45												
	$\pm V_d$	0.38	0.98	1.22												
1800	N_d	11.37	22.55													
	$\pm V_d$	0.38	1.07													
2000	N_d	11.29														
	$\pm V_d$	0.38														
2100	N_d	11.25														
	$\pm V_d$	0.38														

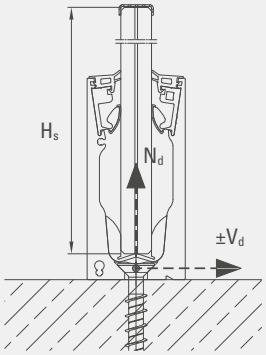
Horizontal imposed loads: q_k = 1.0 kN/m, connection distance A = 250 mm

Glass height H_s (mm)		Characteristic wind load W_e (kN/m²)														
		0.00	0.60	0.80	1.00	1.10	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00
600	N_d	4.49	4.99	5.16	5.33	5.41	5.49	5.66	5.83	6.00	6.16	6.33	6.50	6.72	7.00	7.11
	$\pm V_d$	0.38	0.46	0.48	0.51	0.52	0.54	0.58	0.62	0.67	0.71	0.76	0.80	0.85	0.89	0.91
800	N_d	5.96	6.85	7.14	7.44	7.59	7.74	8.03	8.33	8.63	9.05	9.54	10.03	10.53	11.02	11.22
	$\pm V_d$	0.38	0.48	0.52	0.56	0.59	0.62	0.68	0.74	0.80	0.86	0.92	0.98	1.04	1.10	1.13
1000	N_d	7.43	8.82	9.28	9.74	9.97	10.20	10.66	11.28	12.04	12.81	13.58	14.35	15.12		
	$\pm V_d$	0.38	0.51	0.56	0.64	0.68	0.71	0.79	0.86	0.94	1.01	1.09	1.16	1.24		
1100	N_d	8.17	9.84	10.40	10.95	11.23	11.51	12.14	13.07	14.00	14.92					
	$\pm V_d$	0.38	0.52	0.59	0.68	0.72	0.76	0.84	0.92	1.01	1.09					
1200	N_d	8.90	10.89	11.55	12.22	12.55	12.88	13.87	14.98							
	$\pm V_d$	0.38	0.54	0.62	0.71	0.76	0.80	0.89	0.98							
1300	N_d	9.64	11.97	12.75	13.52	13.91	14.42	15.72								
	$\pm V_d$	0.38	0.56	0.65	0.75	0.80	0.85	0.95								
1400	N_d	10.38	13.08	13.98	14.88	15.41	16.16									
	$\pm V_d$	0.38	0.58	0.68	0.79	0.84	0.89									
1500	N_d	11.11	14.21	15.24	16.28											
	$\pm V_d$	0.38	0.60	0.71	0.83											
1600	N_d	11.85	15.37	16.55												
	$\pm V_d$	0.38	0.62	0.74												
1800	N_d	11.80														
	$\pm V_d$	0.38														
2000	N_d	11.76														
	$\pm V_d$	0.38														

In the case of a divergent connection distance $D_{div.}$, the values of the bearing forces should be multiplied by the factor F = ($D_{div.}$ [in mm] / A [mm]).
Rotated installation and installation with overhang must be verified separately.

BALARDO *hybrid* System profile Top 4

Bearing forces (calculated value – traction force N_d [kN], shear force V_d [kN])



Horizontal imposed loads: q_k = 0.5 kN/m, connection distance A = 500 mm

Glass height H_s (mm)		Characteristic wind load W_e (kN/m²)														
		0.00	0.60	0.80	1.00	1.10	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00
600	N_d	3.60	4.39	4.65	4.92	5.05	5.18	5.57	6.01	6.45	6.89	7.32	7.76	8.20	8.64	9.08
	$\pm V_d$	0.15	0.21	0.25	0.29	0.30	0.32	0.36	0.39	0.43	0.47	0.50	0.54	0.57	0.61	0.65
800	N_d	4.74	6.12	6.58	7.14	7.52	7.91	8.67	9.44	10.21	10.98	11.75	12.51	13.28	14.05	14.82
	$\pm V_d$	0.15	0.25	0.30	0.35	0.37	0.39	0.44	0.49	0.54	0.59	0.63	0.68	0.73	0.78	0.83
1000	N_d	5.88	8.02	8.85	10.04	10.63	11.23	12.42	13.61	14.80	15.99	17.18	18.37	19.56	20.75	21.94
	$\pm V_d$	0.15	0.29	0.35	0.41	0.44	0.47	0.53	0.59	0.65	0.71	0.77	0.83	0.89	0.95	1.01
1100	N_d	6.44	9.03	10.23	11.66	12.38	13.10	14.53	15.97	17.40	18.84	20.27	21.71	23.14	24.58	26.01
	$\pm V_d$	0.15	0.30	0.37	0.44	0.47	0.50	0.57	0.63	0.70	0.77	0.83	0.90	0.96	1.03	1.10
1200	N_d	7.01	10.08	11.70	13.40	14.25	15.11	16.81	18.51	20.22	21.92	23.62	25.33	27.03		
	$\pm V_d$	0.15	0.32	0.39	0.47	0.50	0.54	0.61	0.68	0.75	0.83	0.90	0.97	1.04		
1300	N_d	7.58	11.27	13.26	15.25	16.25	17.25	19.24	21.24	23.23	25.23	27.22				
	$\pm V_d$	0.15	0.34	0.42	0.50	0.53	0.57	0.65	0.73	0.81	0.89	0.96				
1400	N_d	8.15	12.60	14.91	17.22	18.38	19.53	21.84	24.15	26.46						
	$\pm V_d$	0.15	0.36	0.44	0.53	0.57	0.61	0.69	0.78	0.86						
1500	N_d	8.72	14.01	16.66	19.31	20.63	21.95	24.60	27.25							
	$\pm V_d$	0.15	0.38	0.47	0.56	0.60	0.65	0.74	0.83							
1600	N_d	9.29	15.49	18.50	21.50	23.01	24.51	27.52								
	$\pm V_d$	0.15	0.39	0.49	0.59	0.63	0.68	0.78								
1800	N_d	9.28	17.85	21.64	25.44											
	$\pm V_d$	0.15	0.43	0.54	0.65											
2000	N_d	9.26	20.48	25.16												
	$\pm V_d$	0.15	0.47	0.59												
2100	N_d	9.26	21.90													
	$\pm V_d$	0.15	0.48													

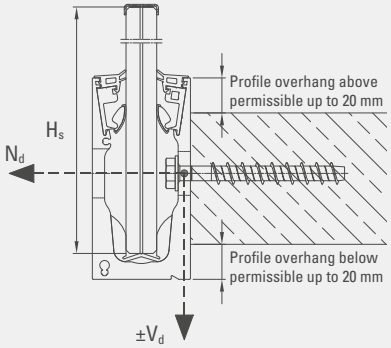
Horizontal imposed loads: q_k = 1.0 kN/m, connection distance A = 250 mm

Glass height H_s (mm)		innen	Outdoor area – Characteristic wind load W_e (kN/m²)													
			0.60	0.80	1.00	1.10	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00
600	N_d	3.63	4.02	4.15	4.28	4.35	4.41	4.55	4.68	4.81	4.94	5.07	5.20	5.38	5.60	5.82
	$\pm V_d$	0.15	0.18	0.19	0.20	0.21	0.21	0.23	0.25	0.27	0.29	0.30	0.32	0.34	0.36	0.38
800	N_d	4.77	5.46	5.69	5.92	6.04	6.15	6.38	6.61	6.84	7.17	7.55	7.94	8.32	8.70	9.09
	$\pm V_d$	0.15	0.19	0.21	0.23	0.24	0.25	0.27	0.30	0.32	0.35	0.37	0.39	0.42	0.44	0.47
1000	N_d	5.91	6.98	7.34	7.70	7.88	8.05	8.41	8.89	9.48	10.08	10.67	11.27	11.86	12.46	13.05
	$\pm V_d$	0.15	0.20	0.23	0.26	0.27	0.29	0.32	0.35	0.38	0.41	0.44	0.47	0.50	0.53	0.56
1100	N_d	6.48	7.78	8.21	8.64	8.85	9.07	9.55	10.27	10.98	11.70	12.42	13.14	13.85		
	$\pm V_d$	0.15	0.21	0.24	0.27	0.29	0.30	0.34	0.37	0.40	0.44	0.47	0.50	0.53		
1200	N_d	7.06	8.59	9.10	9.61	9.87	10.12	10.89	11.74	12.59	13.44					
	$\pm V_d$	0.15	0.21	0.25	0.29	0.30	0.32	0.36	0.39	0.43	0.47					
1300	N_d	7.63	9.42	10.02	10.62	10.92	11.31	12.31	13.31							
	$\pm V_d$	0.15	0.22	0.26	0.30	0.32	0.34	0.38	0.42							
1400	N_d	8.20	10.28	10.97	11.66	12.08	12.65	13.81								
	$\pm V_d$	0.15	0.23	0.27	0.32	0.34	0.36	0.40								
1500	N_d	8.77	11.15	11.95	12.74	13.40										
	$\pm V_d$	0.15	0.24	0.29	0.33	0.35										
1600	N_d	9.34	12.05	12.95												
	$\pm V_d$	0.15	0.25	0.30												
1800	N_d	9.34														
	$\pm V_d$	0.15														
2000	N_d	9.33														
	$\pm V_d$	0.15														
2100	N_d	9.33														
	$\pm V_d$	0.15														

In the case of a divergent connection distance $D_{div.}$, the values of the bearing forces should be multiplied by the factor F = ($D_{div.}$ [in mm] / A [mm]).

BALARDO *hybrid* System profile Side 1

Bearing forces (calculated value – traction force N_d [kN], shear force V_d [kN])



Horizontal imposed loads: q_k = 0.5 kN/m, connection distance A = 500 mm

Glass height H_s (mm)		Characteristic wind load W_e (kN/m²)														
		0.00	0.60	0.80	1.00	1.10	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00
600	N_d	5.03	6.14	6.51	6.88	7.06	7.25	7.80	8.41	9.03	9.64	10.26	10.87	11.49	12.10	12.72
	$\pm V_d$	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
800	N_d	6.67	8.63	9.28	10.07	10.61	11.16	12.24	13.33	14.42	15.50	16.59	17.68	18.76	19.85	20.94
	$\pm V_d$	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31
1000	N_d	8.32	11.36	12.54	14.24	15.08	15.93	17.62	19.31	21.00	22.69	24.39	26.08	27.77	29.46	31.15
	$\pm V_d$	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
1100	N_d	9.14	12.82	14.53	16.57	17.59	18.61	20.66	22.70	24.75	26.79	28.83	30.88	32.92	34.97	37.01
	$\pm V_d$	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
1200	N_d	9.96	14.33	16.64	19.07	20.28	21.50	23.93	26.36	28.79	31.22	33.65	36.08			
	$\pm V_d$	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45			
1300	N_d	10.78	16.04	18.89	21.74	23.16	24.59	27.43	30.28	33.13	35.98					
	$\pm V_d$	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48					
1400	N_d	11.60	17.97	21.27	24.57	26.22	27.87	31.17	34.47							
	$\pm V_d$	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51							
1500	N_d	12.42	19.99	23.78	27.57	29.46	31.36	35.14								
	$\pm V_d$	0.55	0.55	0.55	0.55	0.55	0.55	0.55								
1600	N_d	13.24	22.12	26.43	30.74	32.89	35.04									
	$\pm V_d$	0.58	0.58	0.58	0.58	0.58	0.58									
1800	N_d	13.22	25.51	30.96												
	$\pm V_d$	0.65	0.65	0.65												
2000	N_d	13.19	29.30													
	$\pm V_d$	0.72	0.72													
2100	N_d	13.18	31.35													
	$\pm V_d$	0.75	0.75													

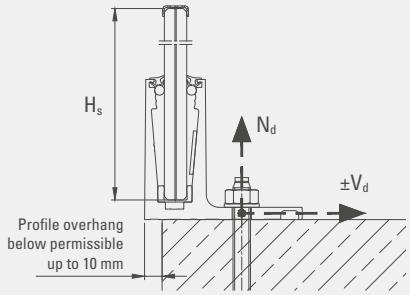
Horizontal imposed loads: q_k = 1.0 kN/m, connection distance A = 250 mm

Glass height H_s (mm)		Characteristic wind load W_e (kN/m²)														
		0.00	0.60	0.80	1.00	1.10	1.20	1.40	1.60	1.80	2.00	2.20	2.40	2.60	2.80	3.00
600	N_d	4.73	5.23	5.40	5.57	5.65	5.73	5.90	6.07	6.24	6.41	6.57	6.74	6.96	7.24	7.52
	$\pm V_d$	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
800	N_d	6.26	7.15	7.45	7.74	7.89	8.04	8.34	8.63	8.93	9.35	9.84	10.34	10.83	11.32	11.82
	$\pm V_d$	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
1000	N_d	7.80	9.18	9.64	10.10	10.33	10.56	11.03	11.64	12.41	13.18	13.95	14.72	15.49	16.25	17.02
	$\pm V_d$	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
1100	N_d	8.56	10.24	10.79	11.35	11.63	11.91	12.53	13.46	14.39	15.32	16.25				
	$\pm V_d$	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21				
1200	N_d	9.33	11.32	11.98	12.64	12.98	13.31	14.30	15.41	16.51						
	$\pm V_d$	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22						
1300	N_d	10.10	12.43	13.21	13.98	14.37	14.88	16.17								
	$\pm V_d$	0.24	0.24	0.24	0.24	0.24	0.24	0.24								
1400	N_d	10.86	13.57	14.47	15.37	15.90	16.65									
	$\pm V_d$	0.26	0.26	0.26	0.26	0.26	0.26									
1500	N_d	11.63	14.73	15.76	16.80											
	$\pm V_d$	0.27	0.27	0.27	0.27											
1600	N_d	12.40	15.92	17.10												
	$\pm V_d$	0.29	0.29	0.29												
1800	N_d	12.42														
	$\pm V_d$	0.32														
2000	N_d	12.44														
	$\pm V_d$	0.36														

In the case of a divergent connection distance $D_{div.}$, the values of the bearing forces should be multiplied by the factor F = ($D_{div.}$ [in mm] / A [mm]).
Rotated installation and installation with overhang must be verified separately.

BALARDO *smart* System profile Top 1

Bearing forces (calculated value – traction force N_d [kN], shear force V_d [kN])



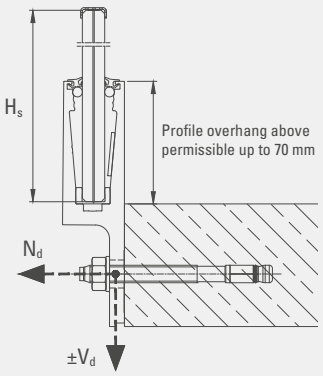
Horizontal imposed loads: q_k = 0.5 kN/m, connection distance A = 500 mm

Glass height H_s (mm)		Indoors W_e (kN/m²)
		0.00
600	N_d	7.08
	$\pm V_d$	0.38
800	N_d	9.41
	$\pm V_d$	0.38
1000	N_d	11.74
	$\pm V_d$	0.38
1100	N_d	12.91
	$\pm V_d$	0.38

In the case of a divergent connection distance $D_{div.}$, the values of the bearing forces should be multiplied by the factor F = ($D_{div.}$ [in mm] / A [mm]).
Rotated installation at q_k > 0.5 kN/m must be verified separately.

BALARDO *smart* System profile Side 3

Bearing forces (calculated value – traction force N_d [kN], shear force V_d [kN])



Horizontal imposed loads: q_k = 0.5 kN/m, connection distance A = 500 mm

Glass height H_s (mm)		Indoors W_e (kN/m²)
		0.00
600	N_d	4.72
	$\pm V_d$	0.10
800	N_d	6.13
	$\pm V_d$	0.12
1000	N_d	7.54
	$\pm V_d$	0.15
1100	N_d	8.24
	$\pm V_d$	0.17

In the case of a divergent connection distance $D_{div.}$, the values of the bearing forces should be multiplied by the factor F = ($D_{div.}$ [in mm] / A [mm]).
Rotated installation at q_k > 0.5 kN/m must be verified separately.

VISUALLY APPEALING AND MODERN –
WUPPERTAL-DÖPPERSBERG CENTRAL STATION

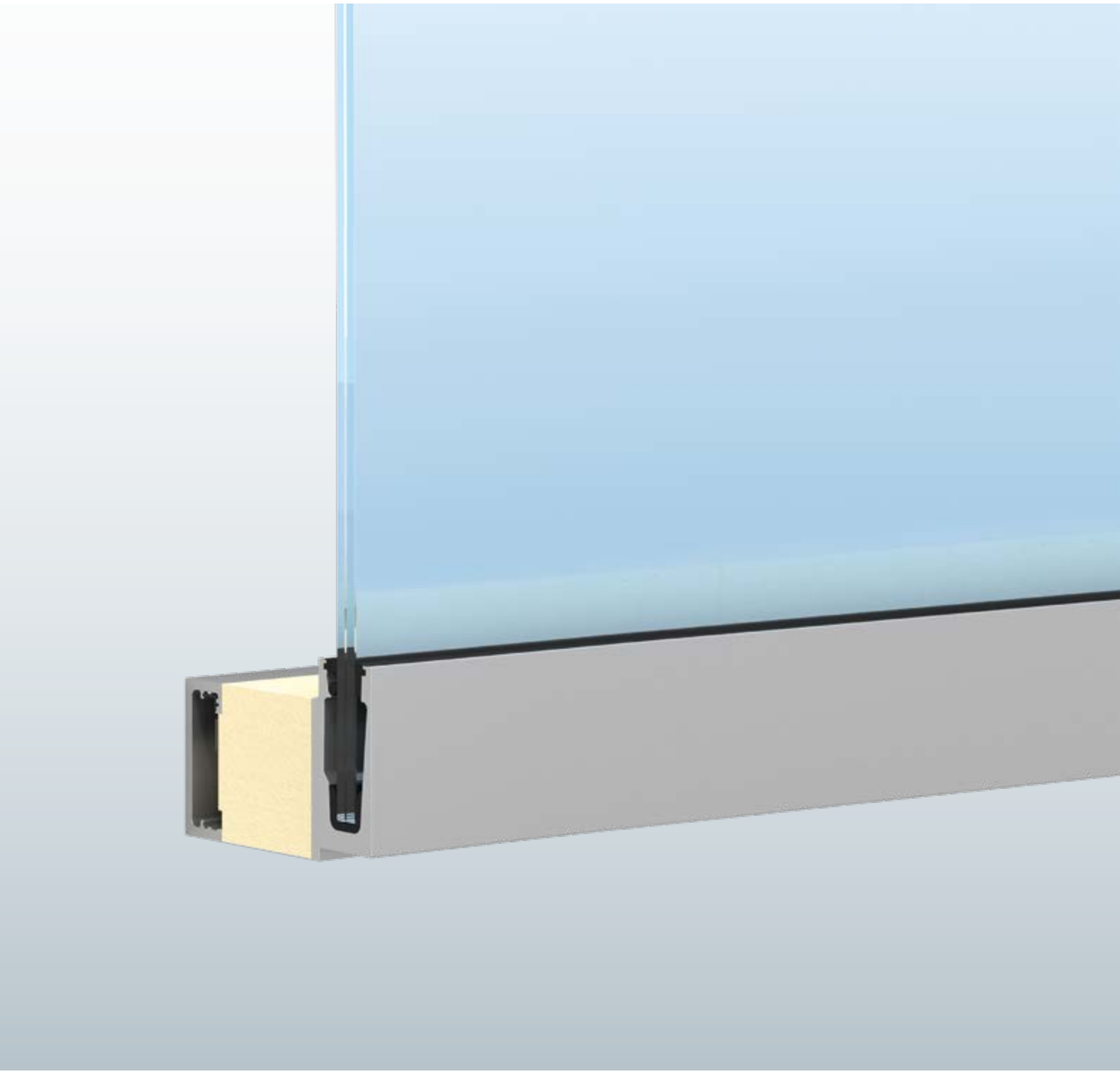
Even a transport hub can be designed elegantly and in a contemporary manner with glass. The modernisation of the Wuppertal-Elberfeld Central Station proves this.

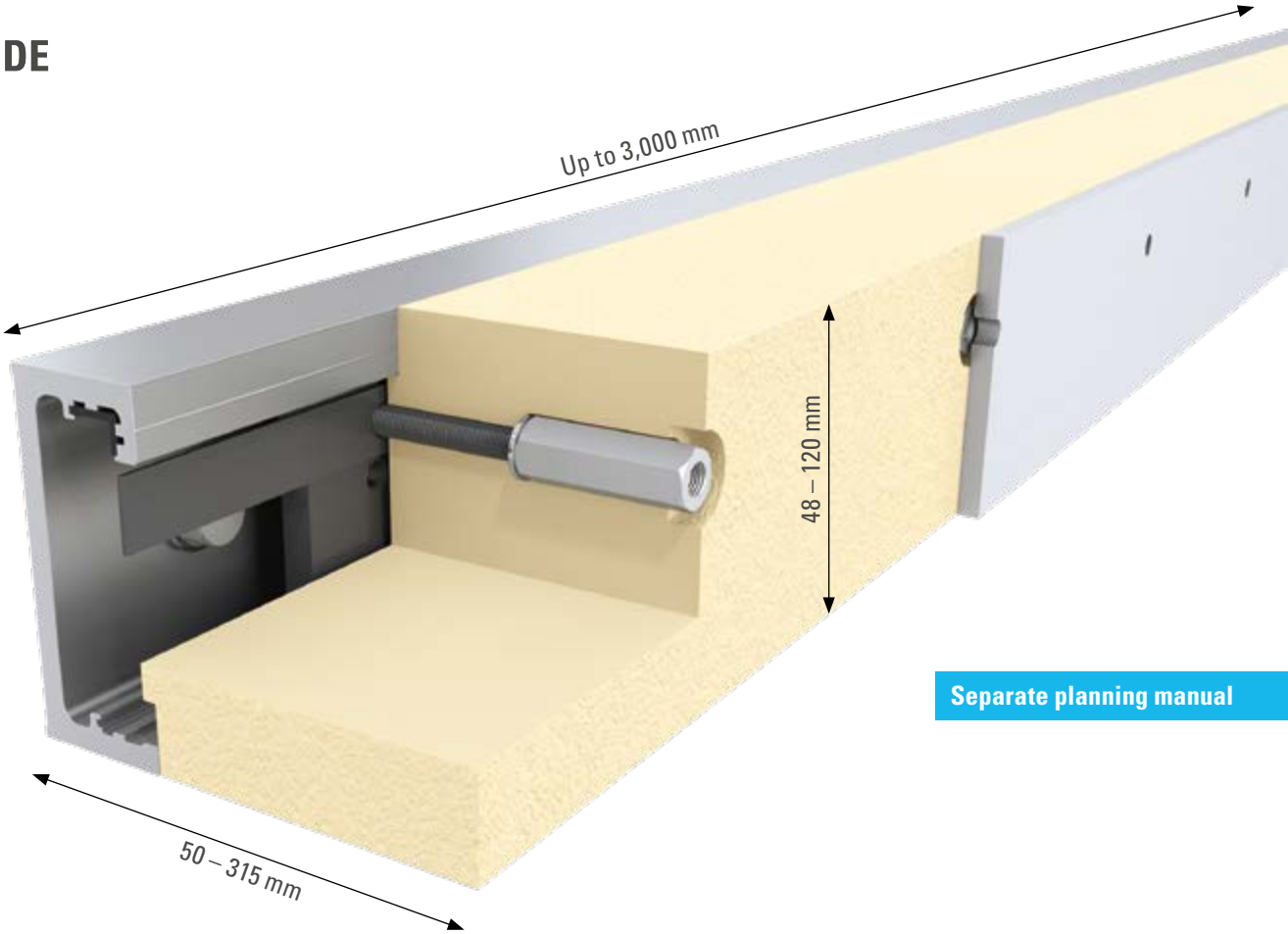
In the impressive modernisation project, the station forecourt in front of the historic station building was structured on two levels: a mall with 15 business units was built on the lower level, which was connected to a newly built parking garage with 240 car parking spaces. The new bus station was built on top of that, which offered partially direct access to the train tracks. A harmonious natural stone façade surrounds both the mall and parking garage. Inside, circles of steel columns provide not only natural light, but also an ultra-modern design. This impression is emphasised by the glass railings on the access stairs to the parking garage. The client advertised for a modular system in the balustrade and stairway area that should consist of a glass support profile, LSG glazing, a handrail made of stainless steel and an aluminium veneer to the floor. The panes needed to be linearly inserted into the support profile. The handrail had to be load-bearing and be mounted continuously as a U profile onto the glass elements. The glazing needed to be installed according to the Technical Rules for the Use of Accident-proof Glazing (TRAV) / Category B with tested type static calculations and General Building Inspectorate Test Certificate (AbP). This work was done by MBN Bau Aktiengesellschaft in Georgsmarienhütte, who were also responsible for the construction of the mall and parking garage.

„For us in the construction and project management, only BALARDO *steel* by GLASSLINE was considered as an all-inclusive package," said Oliver Möllmann, Assistant Project Manager of ARGE Döppersberg. The BALARDO *steel* glass railing system was installed over a total length of 67 metres.

FIX'N SLIDE *outside*

THE SYSTEM WITH THERMAL SEPARATION FOR SECURE ATTACHMENT OF ADD-ON ELEMENTS TO BUILDING ENVELOPES





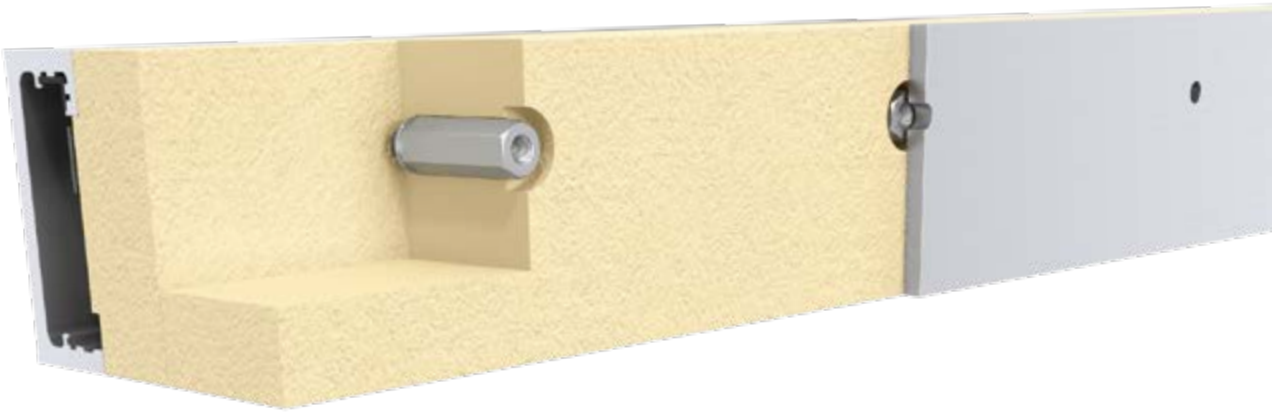
Separate planning manual

FIX'N SLIDE

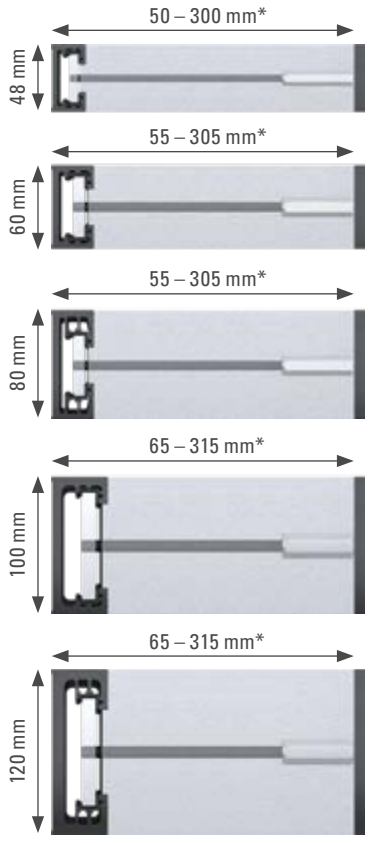
THE SYSTEM WITH THERMAL SEPARATION FOR SECURE ATTACHMENT OF ADD-ON ELEMENTS TO BUILDING ENVELOPES

The system is modularly built and as flexible as the application requires. The main components are application-independent aluminium rails for pre-assembly and connection to the substructure, slide-in plates made of stainless steel with tensile threaded rods and threaded sockets, pressure-resistant insulating elements and an optional aluminium connecting plate.

- Rails in fixed bearing lengths and individual lengths up to 3,000 mm
- 5 system widths from 48 to 120 mm
- The holes can be additionally variably bored for attachment of the rails
- Insulation thicknesses of 50 to 315 mm
- Slide-in plates with tensile threaded rods can be adapted to the attachment points of the add-on elements by being shifted
- Optional aluminium flush plaster/connecting plate (8 mm thickness)
- Pre-drilled insulating element for the mounting of threaded rods and threaded sockets, additional holes can be variably drilled



FIX'N SLIDE – LINEAR CONNECTION



	Available depths without optional connecting plate													
48	50	70	80	100	120	140	160	180	200	220	240	260	280	300
60	55	75	85	105	125	145	165	185	205	225	245	265	285	305
80	55	75	85	105	125	145	165	185	205	225	245	265	285	305
100	65	85	95	115	135	155	175	195	215	235	255	275	295	315
120	65	85	95	115	135	155	175	195	215	235	255	275	295	315

Available lengths

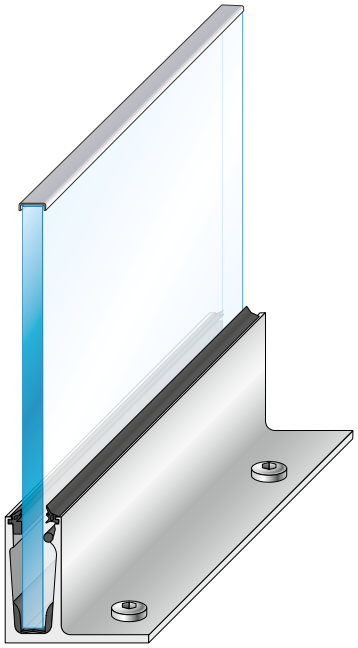
Further sizes upon request

600	800	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000

*Depths without an optional connecting plate t = 8 mm (aluminium, surface E6/EV1)

INSTALLATION INSTRUCTIONS

CLICK•N FIX MOUNTING TO **BALARDO** *core / core hd*

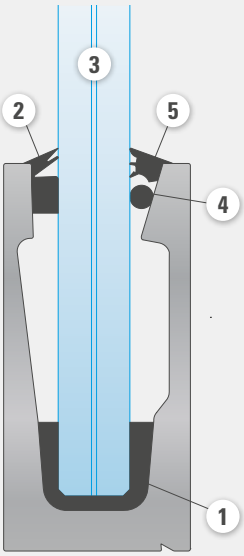


The CLICK•N Fix mounting set makes the installation of all-glass railings incredibly easy:

Insert the glass and place the clamping rod onto the profile. As soon as you push the pane outwards, it makes a „click“ sound and the clamping rod falls into place and locks the pane in position.

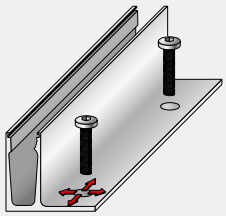
Installation video available at
www.glassline.de/installation-balardo-core

THE CLICK•N FIX MOUNTING SET

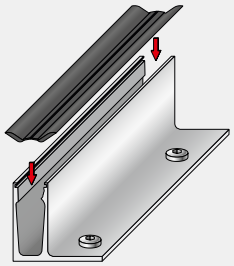


1	Clamping shoe	Material: EPDM	Available length: 3,000 mm
2	Outer seal	Material: EPDM	Available length: 3,000 mm
3	Glass	see starting on page 60	
4	Clamping rod	Material: POM	Available length: 300 mm
5	Inner seal	Material: EPDM	Available length: 3,000 mm

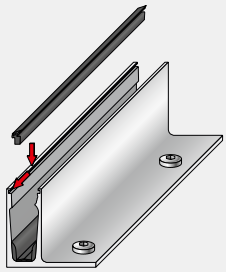
Installation instructions for CLICK'N FIX



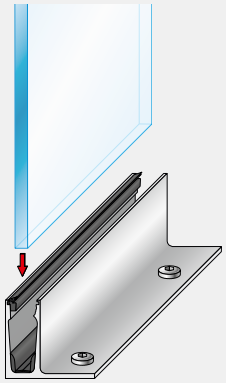
1 Mount the profile. Align it with the substructure, not the profile. The profiles are pre-deformed and only after insertion of the glass and clamping rod in water.



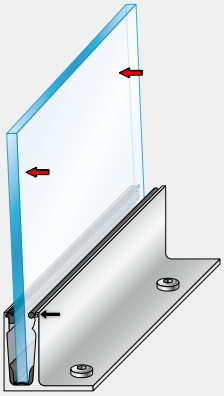
2 Insert the clamping shoe.
For a side profile: Clip in the system cover plate!



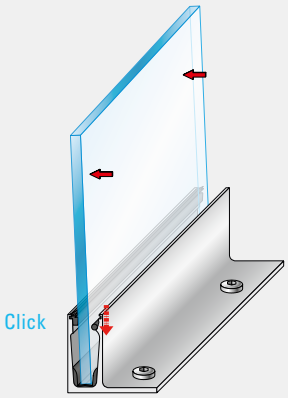
3 Press the outer seal firmly.



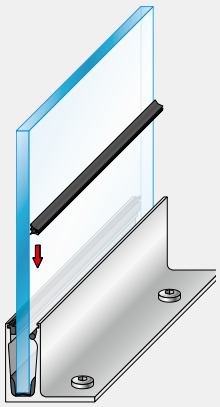
4 Insert the glass pane.



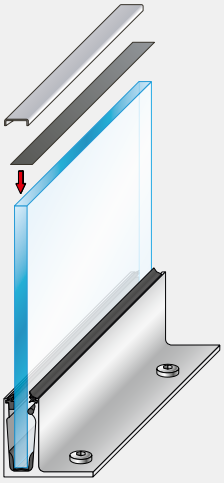
5 Position the clamping rod and press the glass against the outer seal.
(Max. 50 mm spacing between rods)



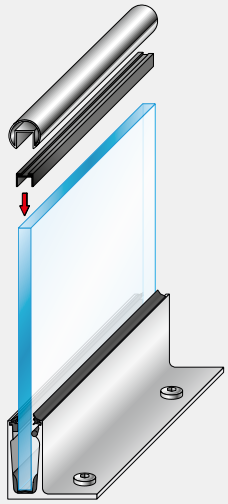
6 Press until the clamping rod engages with an audible „click".



7 Insert the inner seal.



8 Mount the glass edge protection profile or ...

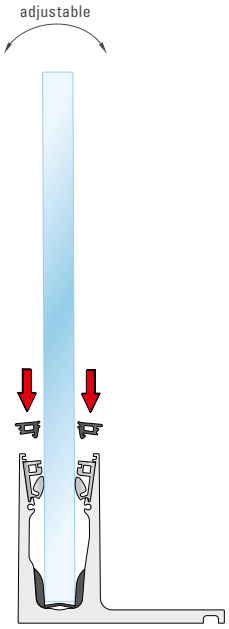


9 ... Mount the handrail. Finished!

Corners: Place a clamping rod of max. 50 mm into the corner profile

INSTALLATION INSTRUCTIONS

CLEVERFIX MOUNTING TO **BALARDO** *hybrid* ADJUSTABLE FROM BOTH SIDES.

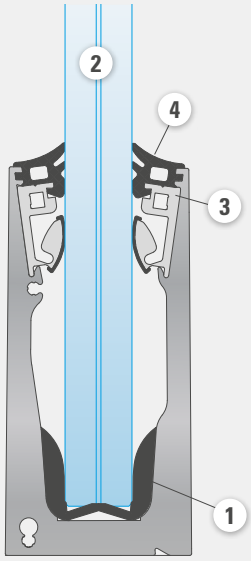


CLEVERFIX mounting allows you to adjust your panes from the inside and outside at any time and on any construction site!

Regardless of inside or outside. You can use a cordless screwdriver to easily adjust the stud bolts to move the pane through the positioning elements and thereby position these correctly for your construction project.

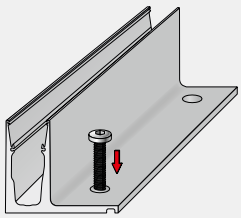
Installation video available at
www.glassline.de/installation-balardo-hybrid

THE CLEVERFIX MOUNTING SET

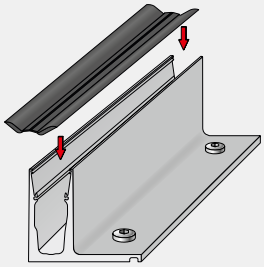


1	Clamping shoe	Material: EPDM	Available length: 3,000 mm
2	Glass	see starting on page 60	
3	Positioning elements	Material: POM + Aluminium Screws: M 6 x 12 mm	Available length: 1,000 mm
4	Inner and outer seal	Material: EPDM	Available length: 3,000 mm

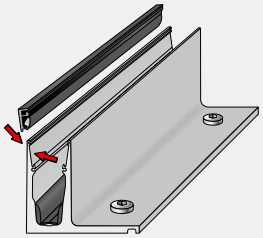
Installation instructions for CLEVERFIX



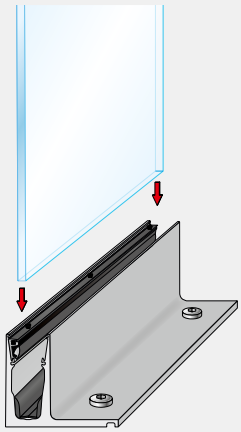
1 Mount the profile. Align it with the substructure, not the profile. The profiles are pre-deformed and only after insertion of the glass and positioning element in water.



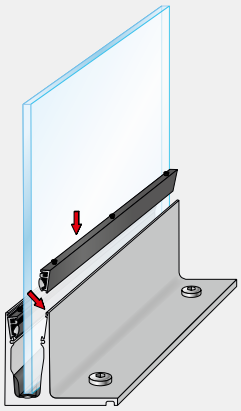
2 Insert the clamping shoe.



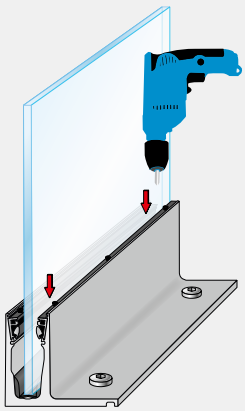
3 Clip in the outer positioning element.



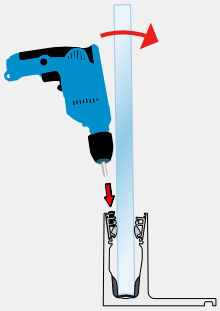
4 Insert the glass pane.



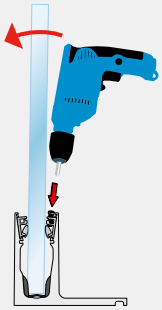
5 Clip in the inner positioning element. (Max. 300 mm spacing two elements)



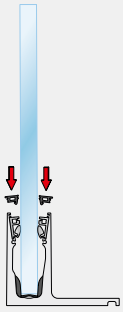
6 Fix the screws to the positioning element and insert the pane into the correct place. You can use a cordless screwdriver to easily adjust the set screws on the inside and outside. Spacing of the screws: 200 mm.



7 By screwing in the stud bolt to the left, the positioning element presses against the pane and pushes it to the right.



8 By screwing in the stud bolt to the right, the positioning element presses against the pane and pushes it to the left.

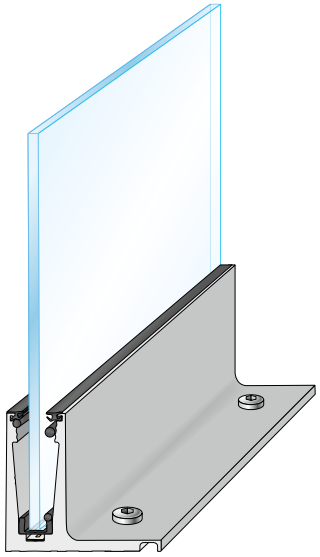


9 Insert the end seals.

Please use a longer bit.
Corners: Remove screws from positioning element.

INSTALLATION INSTRUCTIONS

EASYFIX MOUNTING TO **BALARDO** *smart*

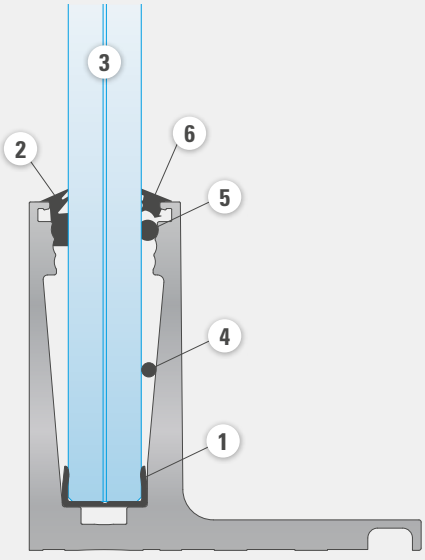


Bring your glass railing home with EASYFIX mounting.

You can make your home secure in easy steps. A clamping shoe, seal and round rods are the only components necessary for this. For an additional highlight in your home, you can light up the glass with an LED strip.

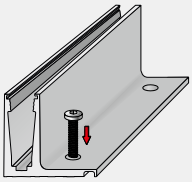
Installation video available at
www.glassline.de/installation-balardo-smart

EASYFIX MOUNTING SET

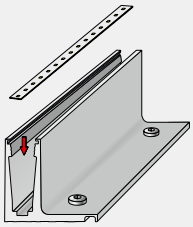


1	Clamping shoe	Material: TPV	Available length: 100 mm
2	Outer seal	Material: EPDM	Available length: 3,000 mm
3	Glass	see starting on page 60	
4	Small round rod	Material: POM	Available length: 100 mm
5	Round cord	Material: EPDM	Available length: 3,000 mm
6	Inner seal	Material: EPDM	Available length: 3,000 mm

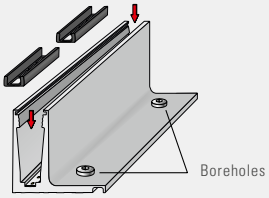
Installation instructions for EASYFIX



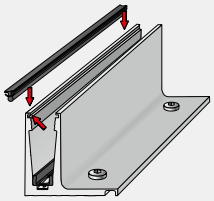
1 Mount the profile. Align it with the substructure, not the profile. The profiles are pre-deformed and only after insertion of the glass and clamping rod in water.



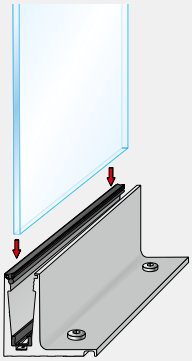
2 OPTIONAL: Place the LED strip into the profile slot



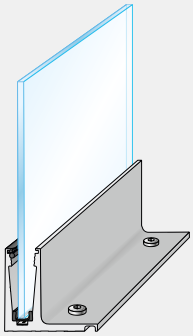
3 Insert the clamping shoe pieces at 250 mm intervals (into every borehole).



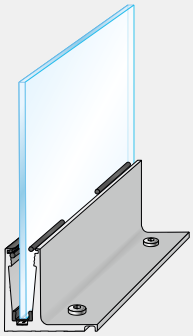
4 Press the outer seal into the slot.



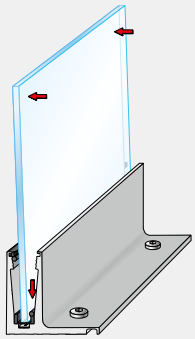
5 Insert the glass pane.



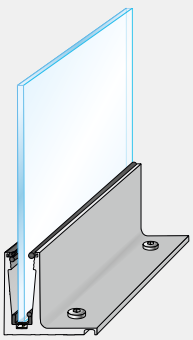
6 Please make sure that the glass pane rests in the clamping shoe.



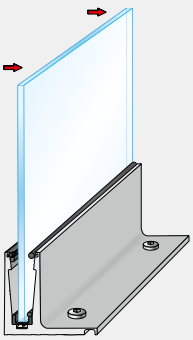
7 Place a clamping rod every 250 mm (for each borehole; depending on the pane) between the profile edge and pane.



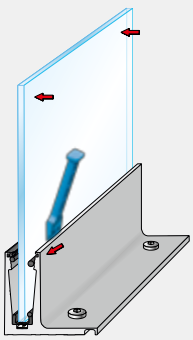
8 Press the pane outwards. The clamping rods slide downwards.



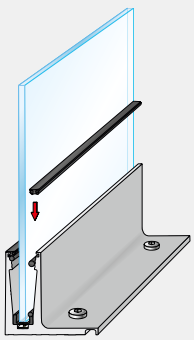
9 Place a continuous round cord into the profile slot.



10 Push the pane inwards. The clamping rods secure the pane in place.



11 Press the pane outward and use the tool to push the round cord into the recesses provided for it in the profile until the pane is aligned straight.



12 To finish, push in the inner seal.

CUSTOMER FEEDBACK

"We have been working together with Glassline since 2016 and look forward to many joint projects. Regardless of beautiful canopies or transparent railings – Glassline products are well-received by our customers. We like to install the products because they score with their quality and are easy to mount. At the same time, they also impress us with their special aesthetics."

Christian Driemel,
owner of Glaswohnen.de

"We have been working together with GLASSLINE since 2002. First, we used the point supports, now we increasingly use the BALARDO glass railings and the CANOPY glass canopies from GLASSLINE. We really like these products. For one, they are very easy to install. And secondly, our customers like the elegant and transparent aesthetics. That's why we're more than happy to use GLASSLINE products. We have been working with our partners for a very long time and this works well at GLASSLINE. Delivery performance could still be improved a bit more in our view. But I'm sure that GLASSLINE will also master this."

Eckart Menke,
partner at Menke Glas GmbH

"We have been working together continuously with GLASSLINE since 2012. As processors, it is simply important to us that the systems are easy to apply. GLASSLINE offers unbeatable installation advantages with its CLICK•N FIX system. Installation is easy and fast, and our employees receive good installation instructions and even videos, if needed. I find everything quickly on the GLASSLINE website. In addition, the great aesthetics of the products especially impress me. They are so simply elegant that the railings look like they are floating."

Femcke Rickertsen,
Deputy Managing Director of Schlosserei Marten Rickertsen

RAINVILLE APARTMENTS IN HAMBURG

GREATEST LIVING COMFORT, LIGHT-FLOODED ROOMS

With a striking combination of natural stone façade and light-flooded rooms, the building with its 23 apartments blends into the architectural environment dating from the nineteenth-century „Gründerzeit“ and the 1930s on the Elbchaussee in Hamburg. The glass guardrails of the balconies and loggias give the building a modern edge. BALARDO *core* as a system solution met all the requirements for maximum transparency, tested safety and fast installation with the CLICK•N FIX system. Its swift application without any bureaucratic red-tape allowed for a narrow time frame in which to complete the project.

Photo: Werner Huthmacher

ERSTE CAMPUS VIENNA

STRAIGHT AND CURVED SHAPES COMBINED

The building concept of the headquarters of Erste Campus Wien is based on floating structures. The ensemble of curved structures is connected on the outside by bridges, which incorporate and extend the impressive, contoured glass architecture.

Fall-proof, curved glass railings were designed to complement the dynamic shapes and open building structure as highly transparent and discreet components. The combination of BALARDO *steel* (straight) and BALARDO *wave* (curved) proved to be the perfect solution for the high demands of both curved and straight shapes.

GLASSLINE

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SYSTEM SOLUTIONS FOR DEMANDING FRAMELESS GLASS ARCHITECTURE AND SAFE MOUNTING OF ADD-ON ELEMENTS TO ETICS

GLASSLINE is a leading supplier which develops, manufactures and sells high-quality system solutions in the point support system, glass railing system and frameless canopy construction sectors, alongside systems with thermal separation for secure fastening of attachment elements to building envelopes.

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· Technical and constructional modifications are reserved.
· All screw connections are to be permanentlysecured against loosening, such as through gluing.
· The pressure-resistant insulating elements are to be protected against UV radiation and weather influences.
· Object-specific application as well as verifications of load application and transfer are to be checked or carried out on-site.