

ALUVETRO

LO SGUARDO OLTRE



MODULAR

Glass balustrades
for contemporary architecture.





Our history / Vision

Aluvetro is one of the most important companies for the design and manufacture of patented glass and aluminium balustrades. We manufacture customized systems, creating specific ideas together.

45 years of experience in the transformation of flat glass, in collaboration with Vetraria Pescini, along with an entire production chain - ranging from design up to the manufacture of products in-house - in compliance with regulations and certifications, guaranteeing production that is 100% Made in Italy!

Our fast moving growth and development are the clear proof of our attention to details and professionalism, constantly aimed at improving our products and to satisfying our customers' needs and demands.



1972 Vetraria Pescini is founded.

1990 New machine for the production of IG glass.

2002 The production unit moves to a new 10,000 m² area, with 3,000 m² covered space.

2006 The company expands, adding a further 2,000 m² of covered space, built following sustainability criteria.

2008 Installation of the second laminating line.

2009 Glass Project, Vetraria Pescini's new showroom dedicated to ideas and products mainly for interior design: sliding- and hinged glass doors, railings, balustrades, stairs, canopies, partition walls, walkable surfaces, shower cubicles, mirrors, furniture and suspended façades.

2014 **Aluvetro is founded** as a spin-off of Vetraria Pescini, operating specifically in the sector dedicated to architectural glass balustrades for contemporary architecture.

2015 The first Garda profile, certified in Italy by the Giordano Institute, is created.

2016 Launch of the new corporate image project. Garda balustrades obtain German ABP certification.

2017 The new range of profiles is created.

2018 Construction of the new Aluvetro headquarters. New production area for Vetraria Pescini, doubling the glass processing line.



50 YEARS OF EXPERIENCE

ALUVETRO - FOUNDED THANKS TO THE EXPERIENCE OF VETRARIA PESCINI.
A PRODUCTION CYCLE CARRIED OUT ENTIRELY IN COMPLIANCE
WITH REGULATIONS AND CERTIFICATIONS, 100% MADE IN ITALY!

2019



2020



2021



2019 Garda balustrades obtained US anti-hurricane tests. First commercial branch is set up in the US.

2020 Garda balustrades obtain certificates of conformity in accordance with Swiss regulations, along with NOA certification for Florida.

2021 The new Modular and Garda One systems are designed and launched.



Sustainability

Our ecological mindset starts right from the design of a new product and continues through the production and disposal procedures of raw materials: sustainability is, in fact, a fundamental aspect of our business strategy. We also ask our suppliers and partners to comply with a series of strict ethical criteria aiming at operating in a socially and ecologically responsible manner, minimizing the impact of our activities on the environment. Our new headquarters are equipped with a photovoltaic roof covering 5,000 m², in response to the important commitment to the widespread use of renewable energy. We are committed to finding productive solutions that obtain the best use of waste as a resource, along with minimum quantities of production waste. Glass is a 100% recyclable material, and our choice is, and has always been, that of using sustainable solutions - also those coming from recycled raw materials. Most of our products have, in fact, sustainable quality, high durability, no maintenance required, and can be recycled.

Services

TECHNICAL CONSULTANCY FOR DESIGN

Our qualified staff supply all indications regarding the choice of suitable products in response to their use, loads, and to the best technology for the development of your projects.

TECHNICAL-COMMERCIAL TRAINING COURSES

Our technicians can provide your staff with all the design information regarding regulations in force, as well as the best solutions for the correct use of our balustrade systems. Training courses for marketing staff are also held at our headquarters or at customers' premises.

SALES SUPPORT

We develop specific promotional 'desks' to enhance the knowledge of glass balustrades.

ASSISTANCE DURING INSTALLATION

An Aluvelto team leader will, coordinate your installation personnel to provide instructions for proper installations.



Commercial Network

TURNKEY CREATIONS

We also support our partners with turnkey creations and working as a highly qualified manager, able to follow all design guidelines directly, with optimization of procedures on site and respecting deadlines.

OPERATIONAL ORGANIZATION

Aluvetro has an organization able to follow all steps of work phases with proposals, materials and components that ensure the best quality of the work, and solutions offering top level results, with regards to functionality and aesthetics, as well as in compliance with regulations.

Our continuous commitment to growth, both nationally and internationally, is our main characteristic. Our commercial network - domestic and international - takes care of the sales of products for different uses.

International distribution is present in several countries.



Safety

(THE MAIN STANDARDS TO BE MET**)

NTC 2018 * UPDATING OF TECHNICAL STANDARDS FOR CONSTRUCTIONS

Italian Ministerial Decree 17 January 2018

3.1. OVERLOADING - Provides the required resistances for the elements to protect against falling from a height.*

UNI 7697: 2015 *

February 2015

UNI safety standard for the use of flat glass in construction. Provides information on the types of glass to be used for balustrades.*

UNI 11678:2017 *

15 May 2017

“Glass for the building industry - Glass cladding elements with fall protection function - Resistance to linear static load and dynamic load - Test methods”

UNI standard

The standard defines the test methods to determine the behaviour of linearly distributed static loads and dynamic loads of glass cladding elements with fall protection function.

MINISTERIAL DECREE 236 *

14 June 1989

Technical requirements necessary to ensure accessibility, adaptability and visitability of private buildings and public housing subsidised and facilitated, for the purpose of overcoming and eliminating architectural barriers.

Provides the minimum height of the railings and balustrades in addition to the indications on the necessity and types of handrail.

* In force at the time of printing, check any changes, updates or the presence of new regulations

** Without prejudice to any local regulations in force in the territory where the final customer is located.

EXTRACT NTC 2018 - ITALIAN TECHNICAL STANDARDS

Table 3.1.II - Overloading values for different use categories of constructions

Category	Environments	kN/m
A	Environments for residential use	
	Areas for domestic and residential activities; this category includes the rooms of houses and related services, hotels (excluding areas subject to crowding), hospital rooms	1,0
B	Community staircases, balconies, walkways	2,0
	Offices	
B	Cat. B1 Offices not open to the public (excluding areas subject to crowding)	1,0
	Cat. B2 Offices open to the public (excluding areas subject to crowding)	1,0
C	Community staircases, balconies, walkways	2,0
	Environments susceptible to crowding	
C	Cat. C1 Areas with tables, such as schools, cafes, restaurants, banquet rooms, reading and reception (excluding areas subject to crowding)	1,0
	Cat. C2 Fixed seating areas such as churches, theatres, cinemas, conference and waiting rooms, university classrooms and lecture halls	2,0
C	Cat. C3 Spaces without obstacles to the movement of people, such as museums, exhibition halls, access areas to offices, hotels and hospitals, to lobbies of railway stations	3,0
	Cat. C4 Areas with possible physical activities such as ballrooms, gyms, stages	3,0
D	Cat. C5 Areas that are susceptible to large crowds, such as public event buildings, concert halls, sports arenas and related grandstands, staircases and railway platforms	3,0
	Community staircases, balconies, walkways	According to the category of use served $\geq 2,0$
D	Environments for commercial use	
	Cat. D1 Shops	2,0
D	Cat. D2 Shopping centres, markets, department stores	2,0
	Community stairs, balconies, walkways	According to the category of use served
E	Areas for warehousing and commercial use and industrial use	
	Cat. E1 Areas for the storage of goods and related areas of access, such as libraries, archives, warehouses, depots, manufacturing laboratories	1,0*
F - G	Cat. E2 Environments for industrial use	To be assessed case-by-case
	Depots and areas for vehicle traffic (excluding bridges)	
F - G	Cat. F Depots, areas for traffic, parking and stopover of light vehicles (weight at full load up to 30 kN)	1,0**
	Cat. G Areas for traffic and car parks of medium-size vehicles (full-load weight between 30kN and 160 kN), such as access ramps, cargo loading and unloading areas	1,0**
H - I - K	Roofing	
	Cat. H Roofing accessible for maintenance and repair only	1,0
H - I - K	Cat. I Roofing subject to pedestrian traffic of environments in the category of use between A and D	According to categories of belonging
	Cat. K Roofing for special uses such as installations, heliports	To be assessed case-by-case

* It does not include the horizontal actions possibly exerted by the materials stored.

** Only for railings or partitions in pedestrian areas. The actions on the barriers exerted by the vehicles must be assessed on a case-by-case basis.

UNI 7697:2015

February 2015

Contents related to railings and balustrades

Relevant points to main actions and/or solicitations to be considered in the design:

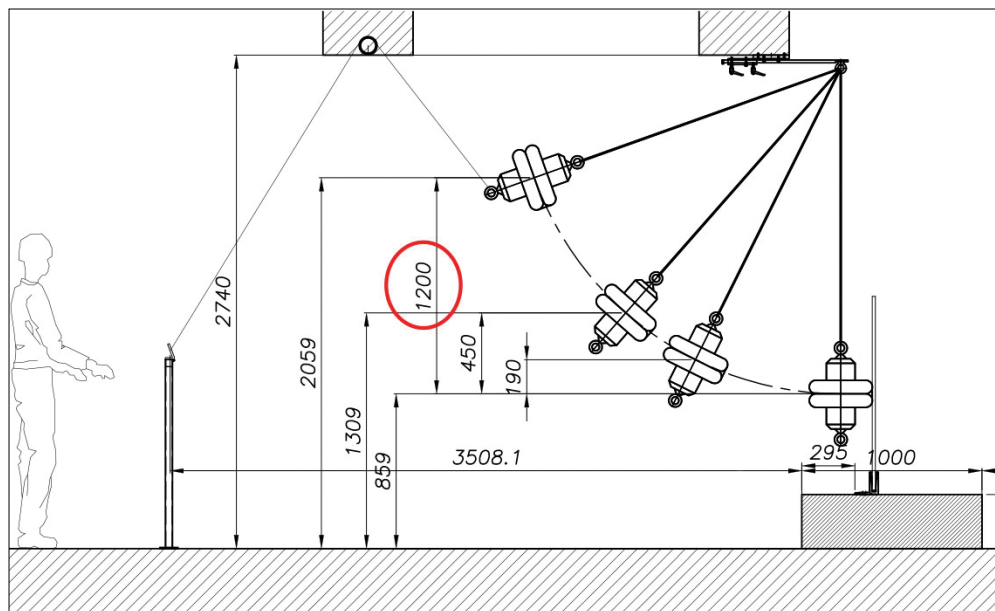
- Dynamic loads, wind, crowd, pedestrian traffic, pressure waves and depression etc.
- Impacts due to the collision of a person

Type of plate to be used

- Safety layering: for railings and balustrades, the minimum composition with performance Class 1 (B) 1 must provide for a thickness of interlayer not less than 0.76 mm.

Where the abbreviation PR (Post Rupture) is assigned, it is necessary to limit the risk of immediate collapse. It is assumed that the residual resistance post rupture can be obtained with the use of laminated glass slabs with at least one of the following elements: either annealed glass or hardened or interlayered glass that remains rigid at the operating temperatures of the glazing. By rigid interlayering, we mean the one belonging to the family 2, as defined in the pr EN 16613:2013.

In critical cases, it is advisable to perform the verification in real conditions.



UNI 11678 2017

This standard defines the test methods for determining the behaviour of static and dynamic loads and the requirements for acceptability of test results.

Tests for determination of resistance to linear static load

The method consists in the application of horizontally distributed static loads, measuring the movements and observing the eventual breakages of the system.

The following evidence is required:

- LIMIT STATE OF EXERCISE the identification of the test load must be determined in accordance with the current legislation (NTC)
- ULTIMATE LIMIT STATE the load at the ultimate limit state must be equal to the load at the operating limit state multiplied by a factor of 1.5
- LIMIT STATE OF COLLAPSE. The purpose of the test is the determination of the resistance to the linear static load of the element when partially compromised by previous breakage

Tests for the determination of mechanical resistance to dynamic load

The following evidence is required:

- Hard-body impact test (steel ball) - Impact Energy 10 J
- Impact test from semi-rigid body, the impactor consists of two tyres mounted on steel weights, the total mass must be equal to 50 Kg

MINISTERIAL DECREE 236 - 14 JUNE 1989

Technical requirements necessary to ensure accessibility, adaptability and visitability of private buildings and public housing subsidised and facilitated, for the purpose of overcoming and eliminating architectural barriers.

8.1.8. Balconies and terraces.

The railing must have a minimum height of 100 cm and must not be crossed by a sphere of 10 cm in diameter.

Balconies and terraces			
	Public use	Private use	Private secondary use
Minimum height of railing	100 cm*	100 cm*	90 cm*
Minimum height of balusters or railings	100 cm*	100 cm*	90 cm*
Handrail height	90-100 cm*	90 cm*	90 cm*

* At the time of publication of this regulation, Ministerial Decree no.236 of 14 June 1986, chapter IV, point 8.1.10, is in force

N.B. It is necessary to check the height required for the railings at your municipality because the majority of the municipal technical offices have adjusted the minimum height for the protection against falling from a height to 110 cm; also check any restrictions given by internal regulations at healthcare companies.

Test and static reports, differences

All configurations of **Aluvetro systems** in the catalogue **have been designed to respond to the project loads listed within the M.D. 17/01/2018-section 3.1.4** named Overloads, table 3.1.II (third column dedicated to horizontal loads distributed per linear metre).

Since the verification of this work is 'local' and therefore does not influence the overall static checks of buildings, Italian legislation allows to use two different methods of verification:

STATIC REPORT: Issuing of a static report approved by qualified technicians, where each component of the system is analyzed using static calculations and FEM analysis software.

TEST REPORT: Execution of specific tests as indicated in paragraph 3.1.4 of the M.D. 17/01/2018 "The fulfilment of this requirement can also be documented experimentally and, in any case, taking into account the constraints that the product involves and all the resources that the construction type allows".

ALUVETRO HAS CHOSEN TO CHECK ALL ITS PRODUCTS WITH BOTH METHODS, PROVIDING ITS CLIENTS WITH:

- **Static reports signed by qualified technicians**
- **Test reports issued by certified laboratories recognized by Accredia** (Italian Accreditation Body) with tests carried out in accordance with the UNI 11678:2017 "Test methods for glass buffering elements with anti-fall function".

WARNING

To date, the **"Test Certificate"** (Test report) is often confused with the **"Product Certificate"** and, in fact, it is correct to report that:

1. **There is no harmonized standard that allows an organization to issue a Product Certificate**
2. The **"Test Certificate"** must, according to UNI 11678, include the following wording at the end of each report test: *"This test report is not an assessment of suitability for use or a certificate of conformity of the product. The results obtained refer only to the tested sample, and describe the behaviour of the product during the specific test conditions"*. These documents DO NOT relieve the designer or the installer from the responsibility regarding the verification of the regulatory compliance of the work.

Different maximum permissible steps depending on the verification method adopted, for each model, with the same load, are listed in the tables on pages 36-37.

This difference is due to the fact that the static verification method must, for regulatory imposition, use safety coefficients that reduce the resistance parameters of the elements; in terms of calculation, these adoptions result in a lowering of the performance of the product in a precautionary and practical way to a shorter length of the module compared to the results obtained with the experimental method.

PLEASE SEE TABLES ON PAGES 36-37

Glossary

SERVICEABILITY LIMIT STATE (SLS)

SLSs were beyond which the prescribed exercise requirements are no longer met. With reference to the glass falling protection systems, UNI 11678 indicates that the detection of the load must be determined according to the current legislation, at the time of the printing according to Ministerial Decree 14 January 2018 (NTC 2018)

ULTIMATE LIMIT STATE (ULS)

ULS associated with the extreme value of the bearing capacity. With reference to glass falling protection systems, UNI 11678 indicates that this value must be equal to the load at the operating limit state multiplied by a factor of 1.5

LIMIT STATE OF COLLAPSE (SLC)

SLC a indicates the resistance value and the safety margin against the collapse due to subsequent load actions of compromises from previous breakages.

STRUCTURAL LOAD

CDP A **structural load** is the concentrated or distributed load, which according to the project the system is expected to support. This load will not cause any damage, provided that the design indications are complied with.

POLYVINYL BUTYL (PVB)

PVB plastic material used to join two or more sheets of glass making them adhere to the entire surface of the slabs. The coupling of the PVB slabs is done through the procedure called stratification, which subjects the glass “sandwich” to controlled temperatures and pressures.

Laminated glass is a safety glass made by joining two sheets of glass that adhere to the entire surface using a plastic sheet of Polyvinyl Butyl (PVB). The laminated layer also called PVB glass is therefore characterized by the presence of PVB film combined in a sandwich with the two glass plates. The composition is then heated at 70°C and pressed with rollers to unite the materials and expel the air. This is done by inserting

everything in an autoclave at constant temperature and pressure, which causes the expulsion of air and makes the product transparent.

LAMINATED

these are safety glasses made by joining two sheets of glass that adhere to the entire surface through an interlayer; they are to be considered as safety glass if they comply with the provisions of the UN112543 standard.

TOUGHENING

thermal or chemical process that gives the glass greater resistance to mechanical and thermal stresses. In case of breakage, the tempered glass shatters into small fragments.

HARDENING

thermal process that gives the glass a sensitive and greater resistance to mechanical and thermal stresses. In the event of breakage, the hardened glass fragments into large slab segments. Hardened glass has lower resistance characteristics than tempered glass.

HEAT SHOCK TEST (HTS)

HST, supplemental heat treatment to the hardening process able to significantly reduce (not eliminate) the risk of spontaneous breakage of tempered glass. This risk is due to the possible presence of nickel sulphide inclusions.

PLASTIC CLASS 2

this is a rigid interlayer that remains the same at the temperature of use of the glazing as defined by PREN 16613.

DOWNLOAD THE ITEM OF THE SPECIFICATIONS FROM
THE WEBSITE **ALUVETRO.IT**



PRODUCT RANGE



MODULAR SP R

Balustrade with above-floor fixing, adjustable version.



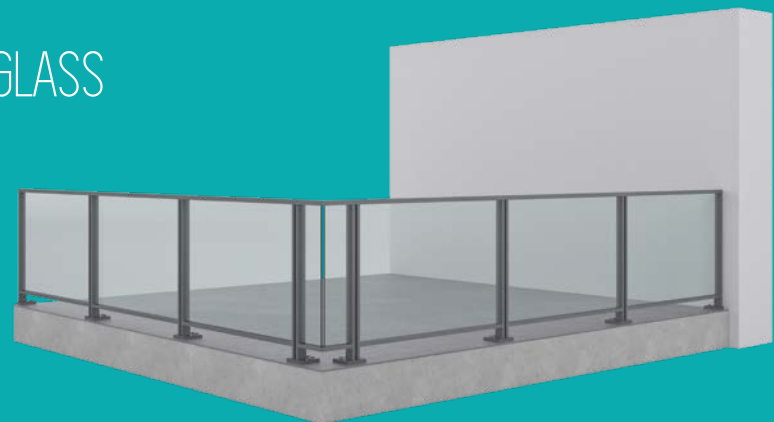
MODULAR SP STANDARD

Balustrade with above-floor fixing, standard version.

Buffering

The element design that foresees the possibility to choose between three different infill solutions: glass, vertical rods made of sheet metal or other materials, guaranteeing highly customizable products.

GLASS





MODULAR FS R

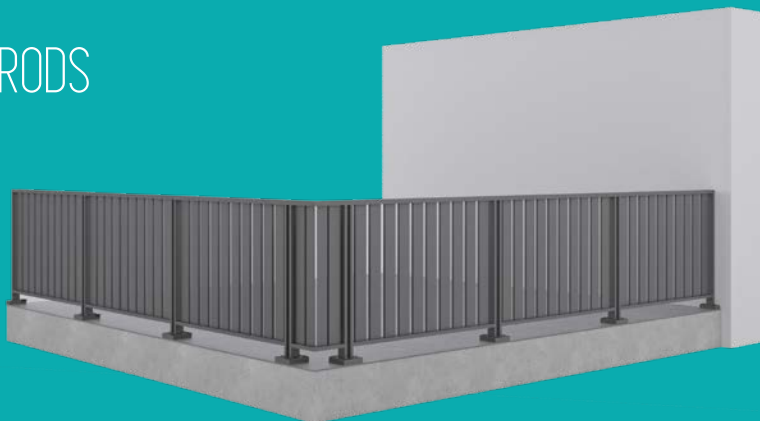
Balustrade with front fixing on the base, adjustable version.



MODULAR FS STANDARD

Balustrade with front fixing on the base, standard version.

RODS



SHEET METAL



Customization

Each system uses aluminium components with highly protective finishings, with powder coating according to **Qualicoat** procedures, so as to guarantee the highest resistance to outdoor weather conditions.



UPRIGHTS AND GLASS PANELS CAN ALSO BE CUSTOMISED WITH RAL COLOURS ON REQUEST

QUALICOAT

QUALICOAT, THE QUALITY MARK FOR PAINTED ALUMINIUM (WITH LIQUID OR POWDERED PRODUCTS) USED IN ARCHITECTURE

ANTHRACITE RAL 7016



WHITE RAL 9003



BLUE RAL 5014



GREY RAL 7012



Glass

The Modular system uses laminated glass tested to withstand dynamic impact, ensuring maximum safety.

The “finished product” is obtained by choosing among numerous colour combinations and different surface finishes: Float, Extra clear, Smoky, Bronze, Various colours, Opaque, partially opaque or shaded screen printing to ensure privacy.

The glass areas can be protected by means of a Cleaner treatment, which considerably reduces cleaning and maintenance times, limiting the accumulation of limescale and dirt.



FLOAT



EXTRA CLEAR



MILKY WHITE



REFLECTIVE



BRONZE



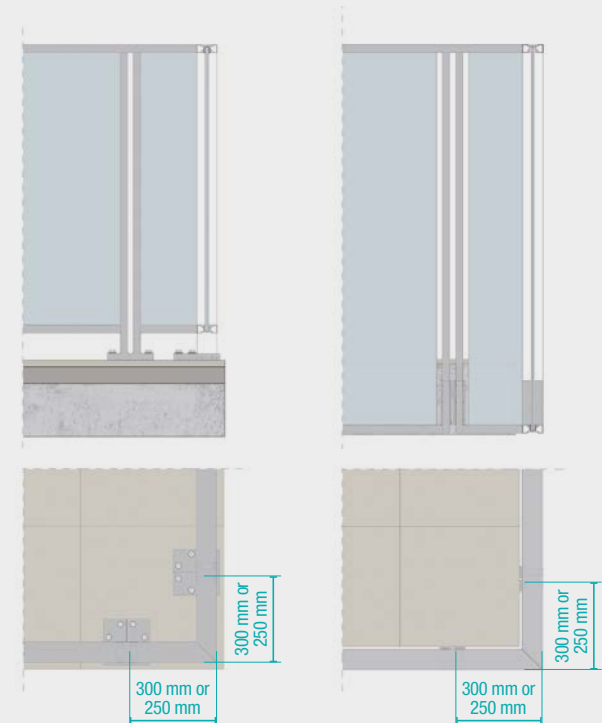
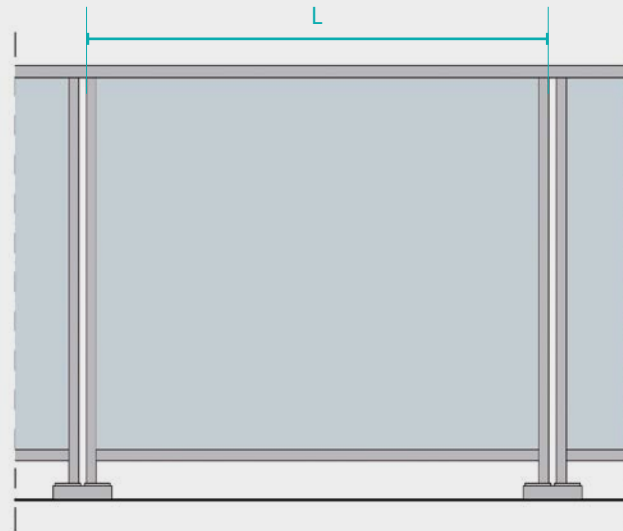
SMOKY



OTHER COLOURS ON REQUEST

Steps of modules and corners

- 600 mm
- 900 mm
- 1000 mm
- 1100 mm
- 1200 mm
- 1300 mm
- 1380 mm
- 1680 mm



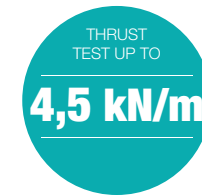


MODULAR



New generation, modern design railings, ideal for each and every type of renovation work on condo façades, as well as for new constructions. Modular balustrades have a series of technical and aesthetic advantages, but customization is the true distinctive feature of this system. The design, geometry of the uprights with pre- assembled your choice between glass, vertical sheet metal rod or other materials, along with the colouring and type of fixing, guarantee architectural results of the highest level.

Modular is designed for quick and easy installation on site, thanks to the many technical advantages for installers. Each module is delivered to the worksite ready for installation.



Technical advantages

- Easy and fast installation
- It arrives at the worksite already pre- assembled and ready for installation
- Adjustable module for uneven situations
- Adjustable and standard versions for each and every type of application
- System tested by certified laboratories
- The surface prevents children from climbing
- The system allows water to drain away
- Maintenance limited to cleaning only

Aesthetic advantages

- Modern and minimal aspect
- Frames can be customized with regards to texture and RAL colours
- Personalized infill, ranging from glass, sheet metal and vertical rods
- Clear-cut and essential design
- Ideal for façades during renovation work
- Decorative feature for new projects
- Customization of glass sheets with different colours
- Corners with "glass-glass" continuity without uprights



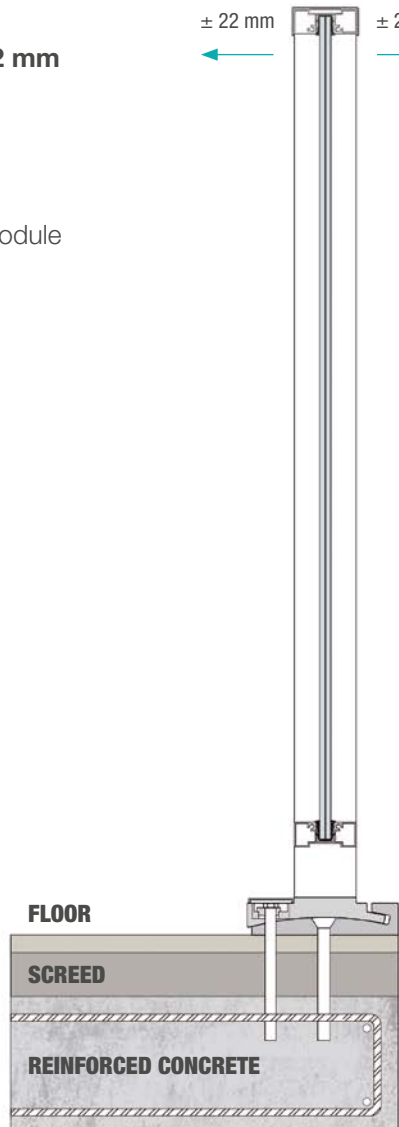
MODULAR SP R

ABOVE FLOOR FIXING - GLASS INFILL

Glass inclination
adjustment ± 22 mm

± 22 mm ← → ± 22 mm

Length of the module
up to **1700 mm**



Corner

Corner solutions are for “glass-glass” continuity without uprights in the centre of the corner.



MODULAR SP R

ABOVE-FLOOR FIXING

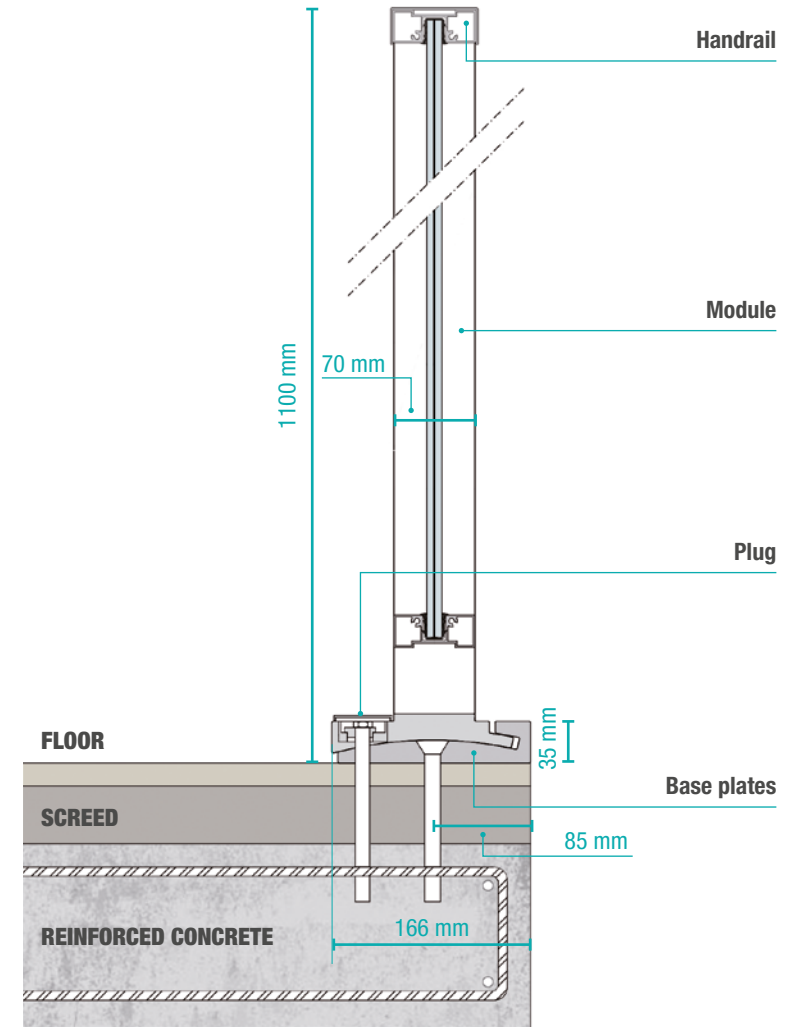
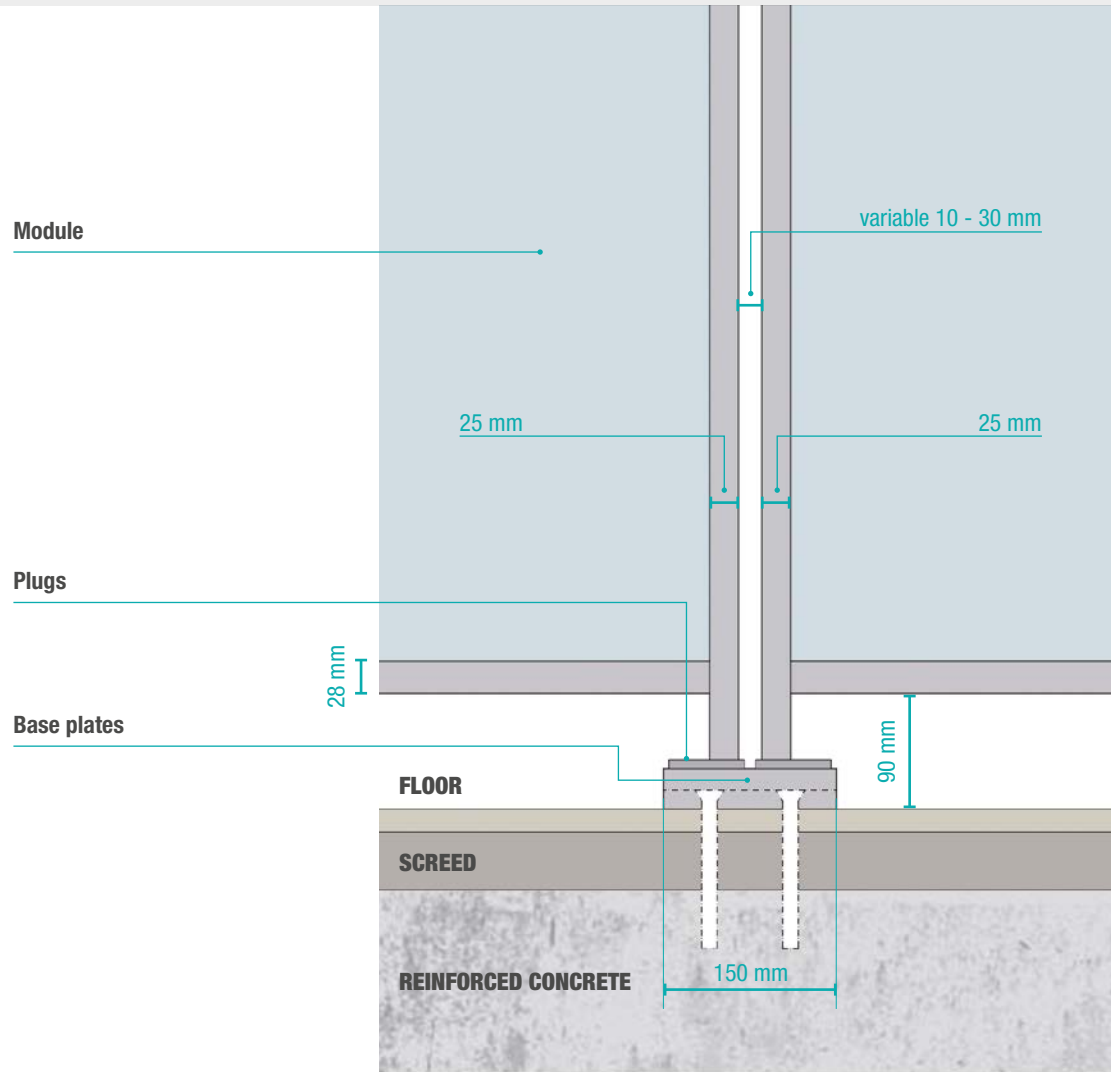
PROJECT
LOAD
200 kg/m

PROJECT LOAD
LAST LIMIT STATUS
300 kg/m



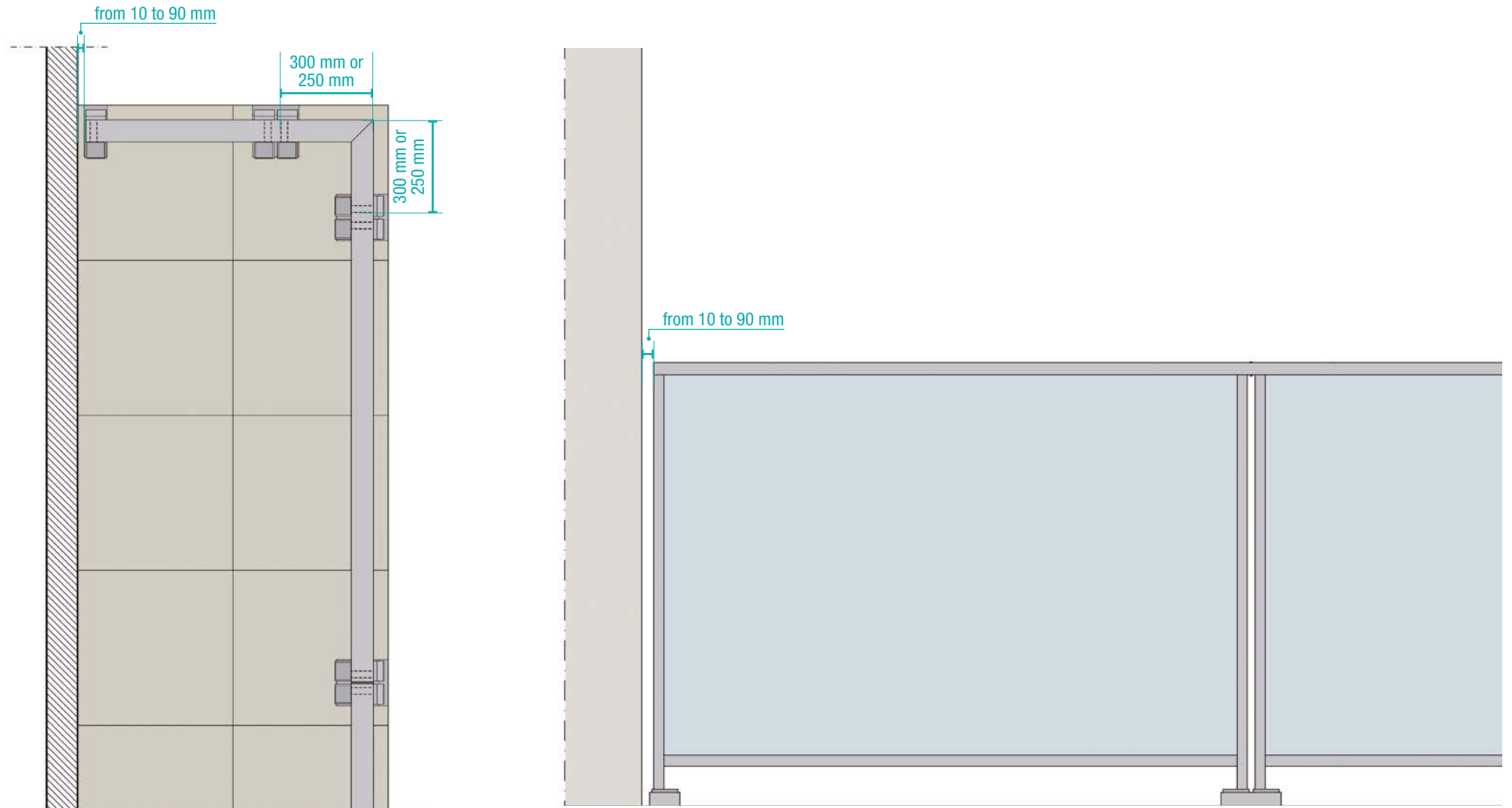
MODULAR SP R

ABOVE-FLOOR FIXING



MODULAR SP R WITH CORNER

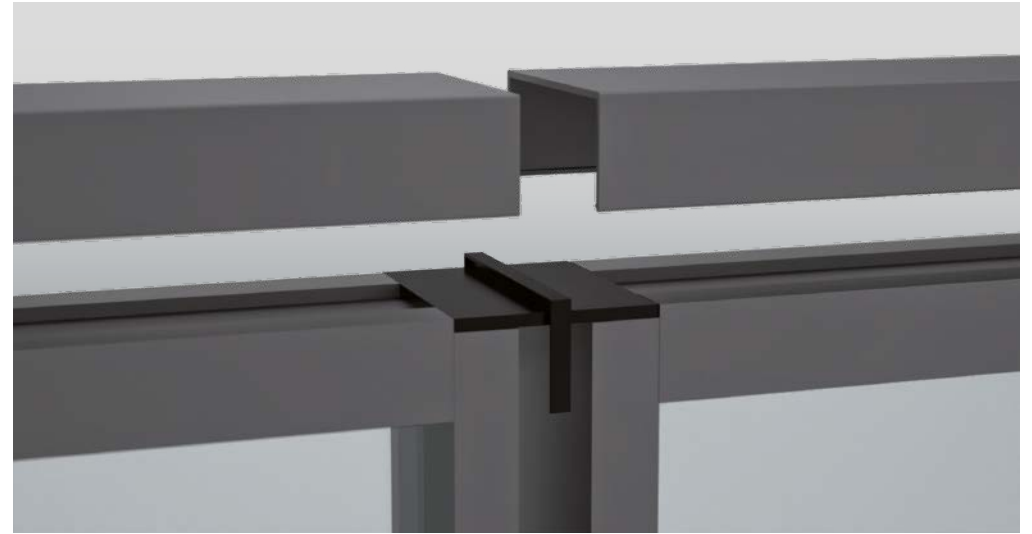
ABOVE-FLOOR FIXING



MODULAR SP R CORNER

ABOVE-FLOOR FIXING

JOINT



MODULAR SP STANDARD

ABOVE FLOOR FIXING - GLASS INFILL

Length of the module
up to **1700 mm**



Corner

Corner solutions are for “glass-glass” continuity without uprights in the centre of the corner.



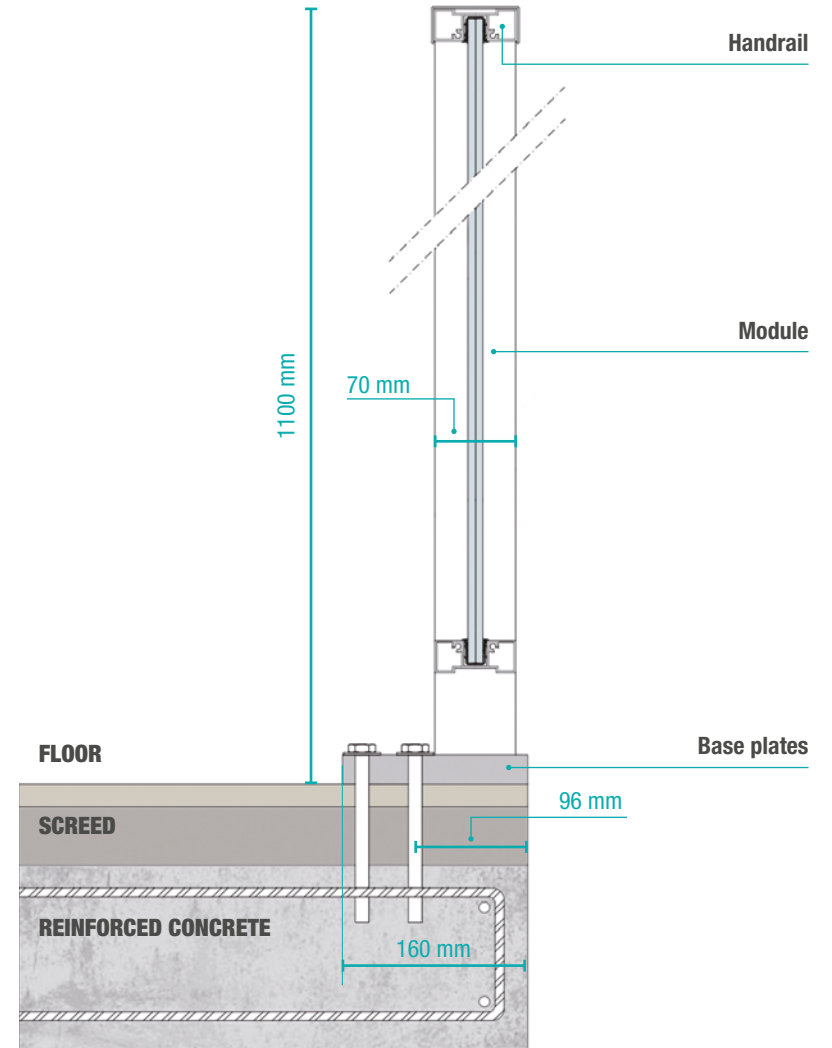
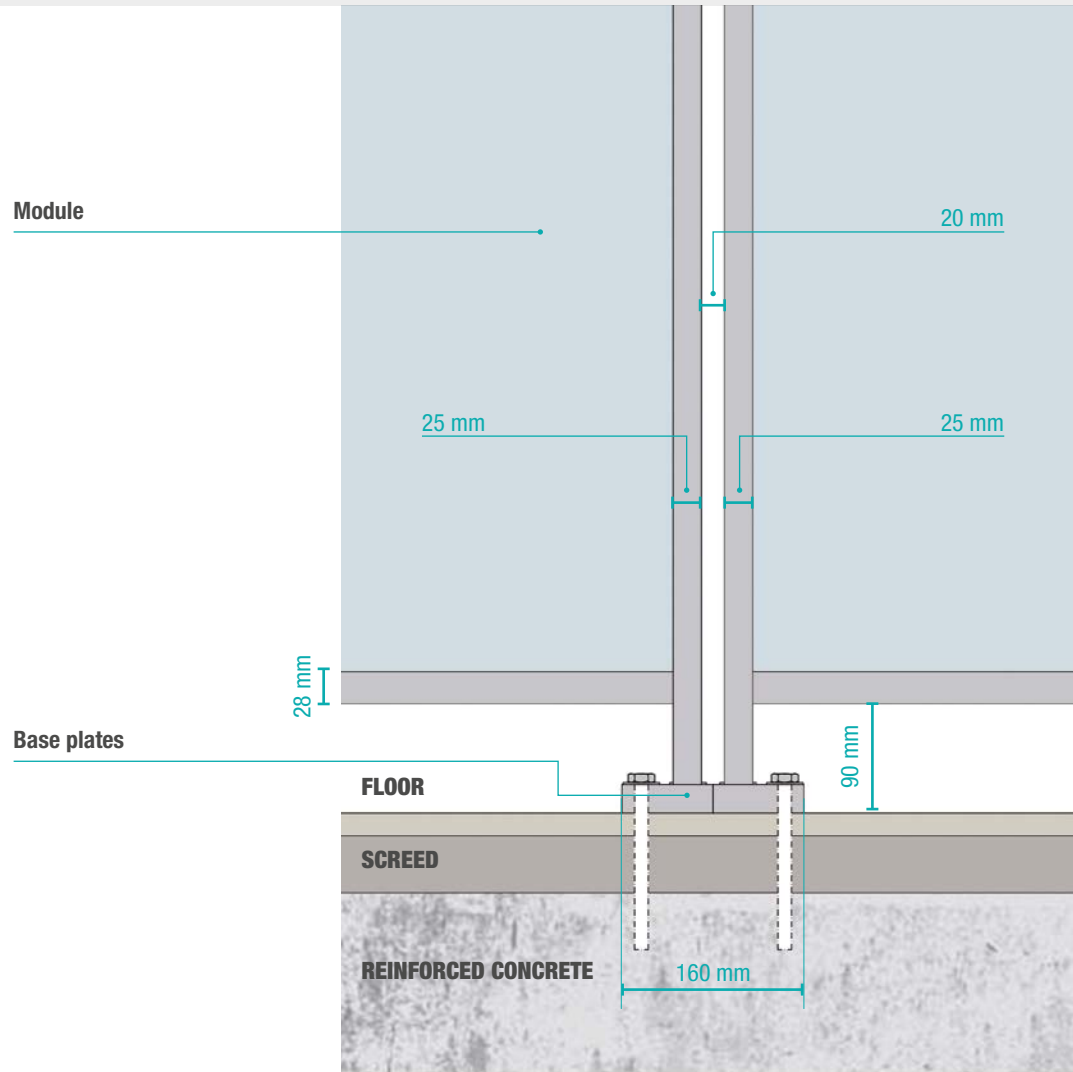
MODULAR SP STANDARD

ABOVE-FLOOR FIXING

PROJECT
LOAD
200 kg/m

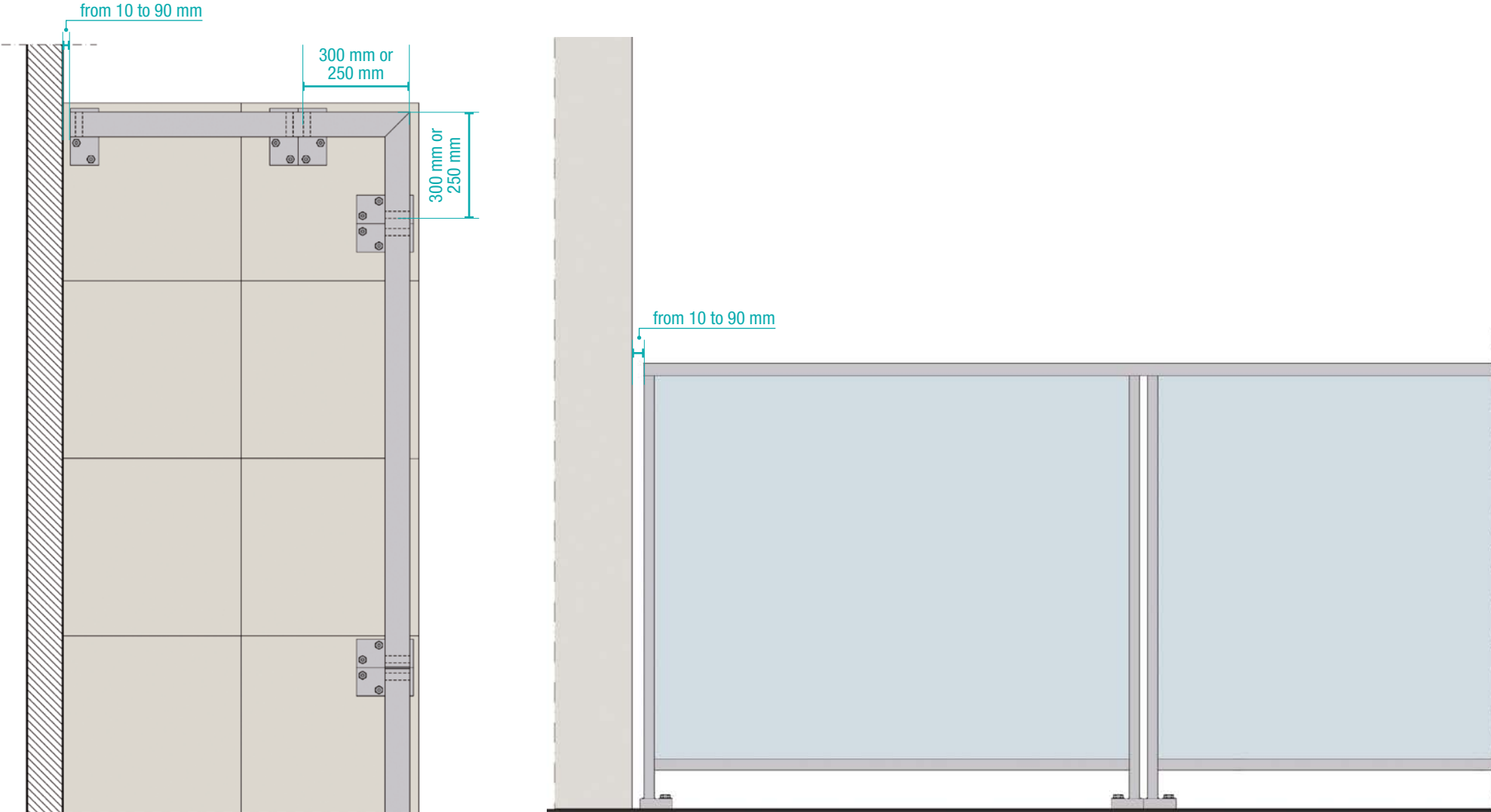
PROJECT LOAD
LAST LIMIT STATUS
300 kg/m





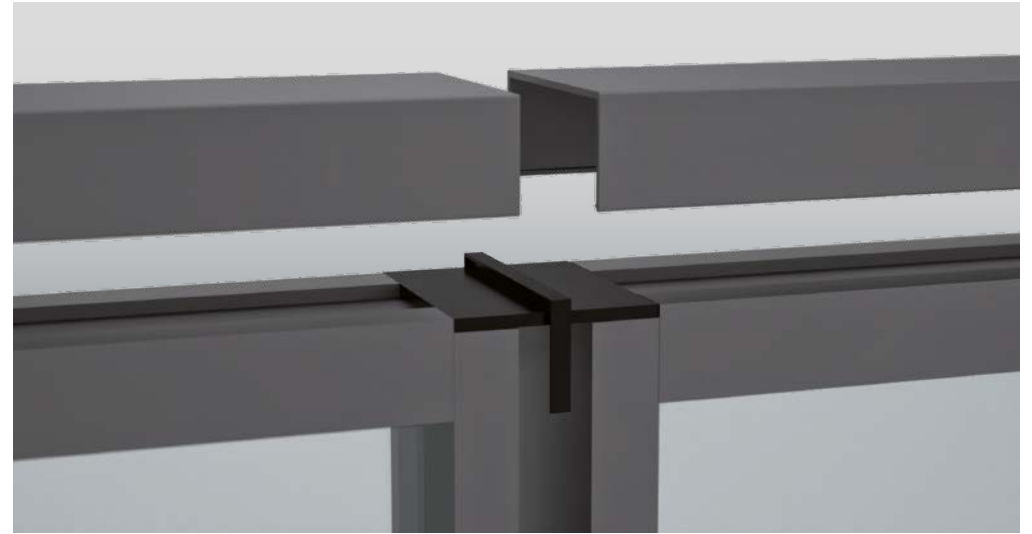
MODULAR SP STANDARD WITH CORNER

ABOVE-FLOOR FIXING



MODULAR SP STANDARD CORNER

JOINT



MODULAR FS R

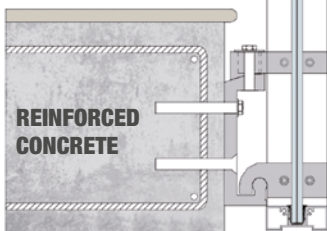
FRONT FIXING ON THE BASE - GLASS INFILL

Glass inclination
adjustment ± 22 mm

± 22 mm \leftarrow \rightarrow ± 22 mm

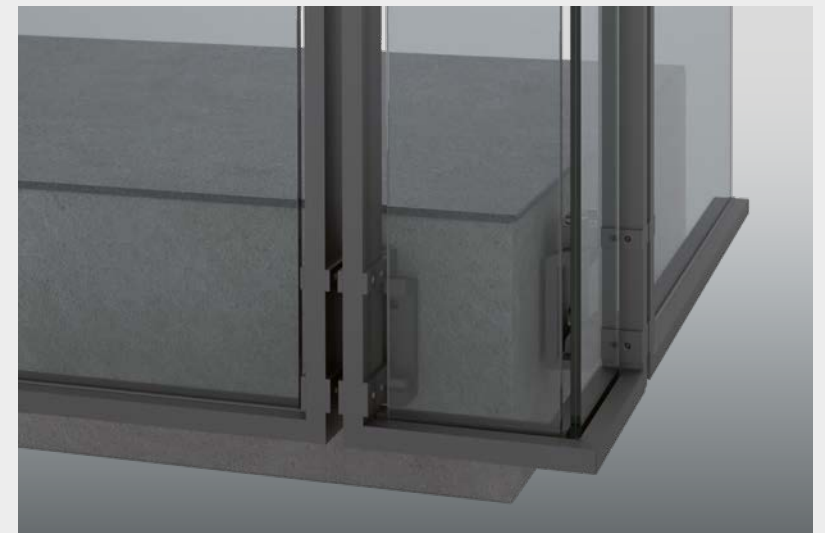
Length of the module
up to **1700 mm**

FLOOR



Corner

Corner solutions are for “glass-glass” continuity without uprights in the centre of the corner.



MODULAR FS R

FRONT FIXING ON THE BASE

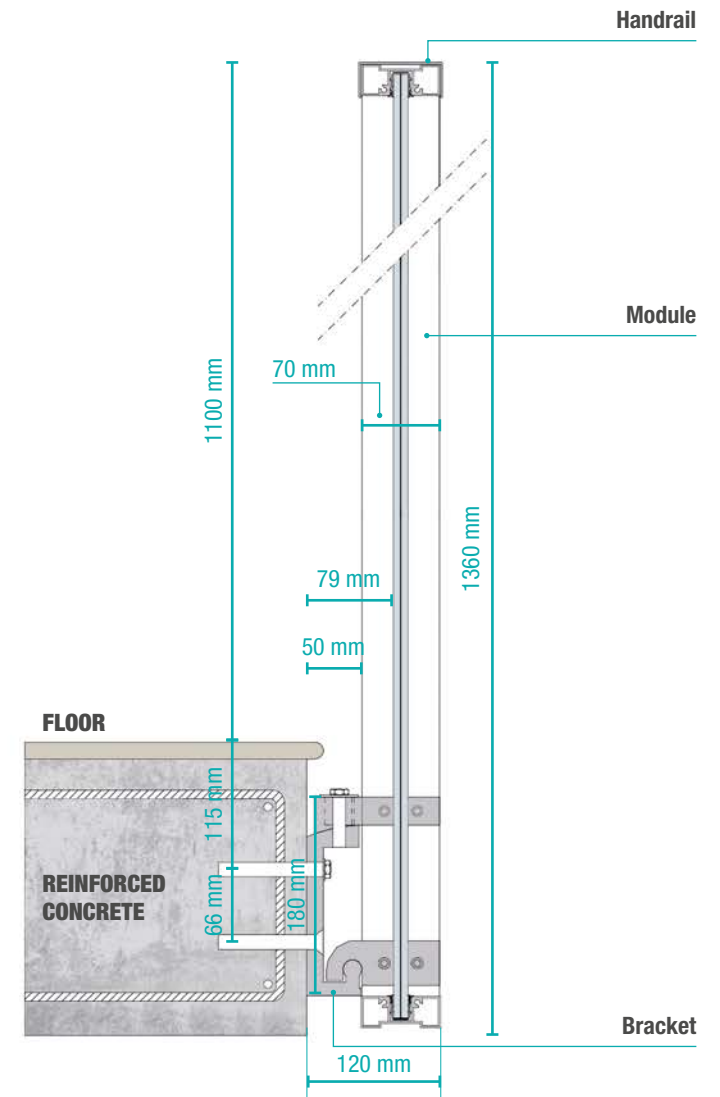
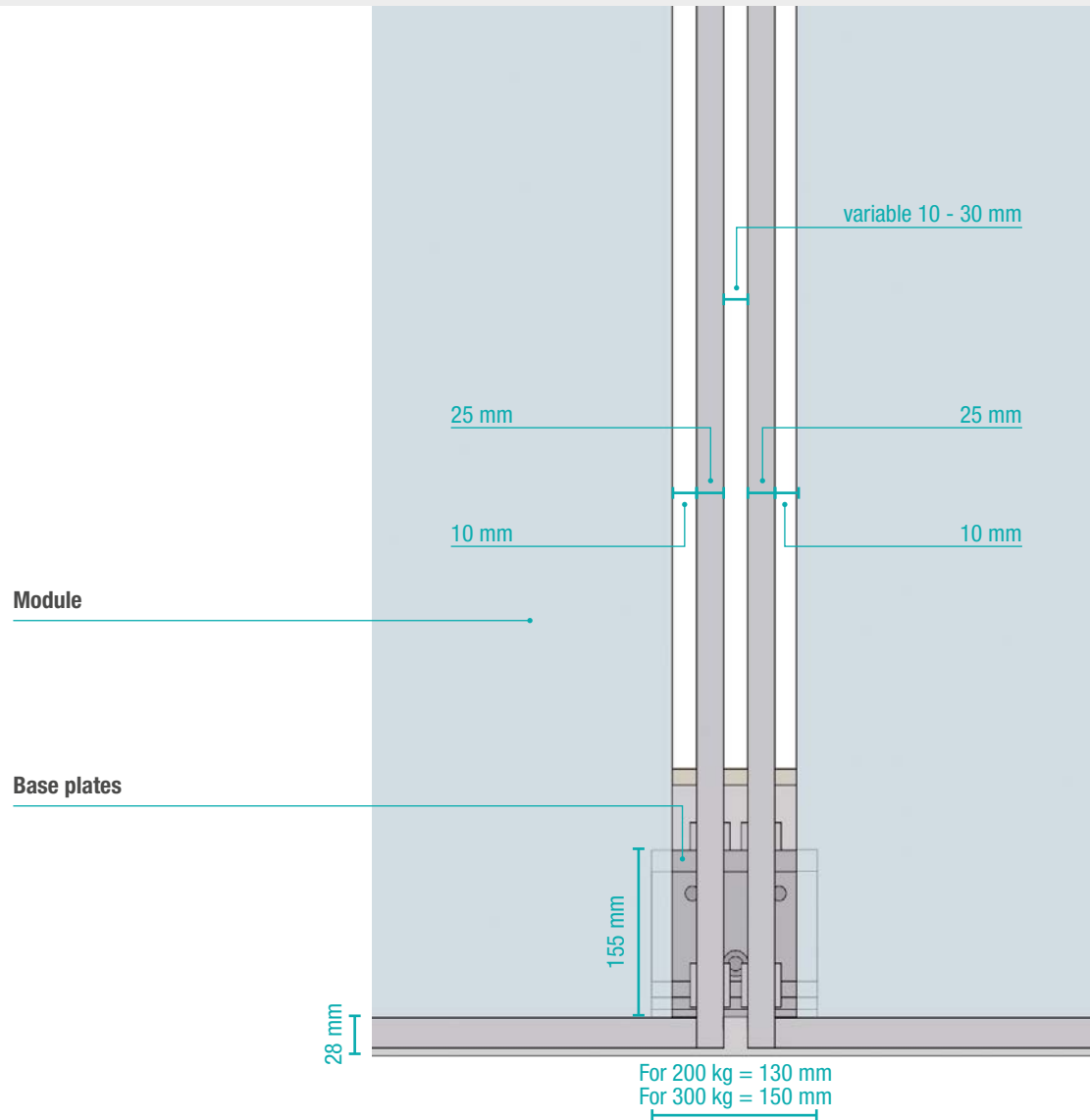
PROJECT
LOAD
200 kg/m

PROJECT LOAD
LAST LIMIT STATUS
300 kg/m



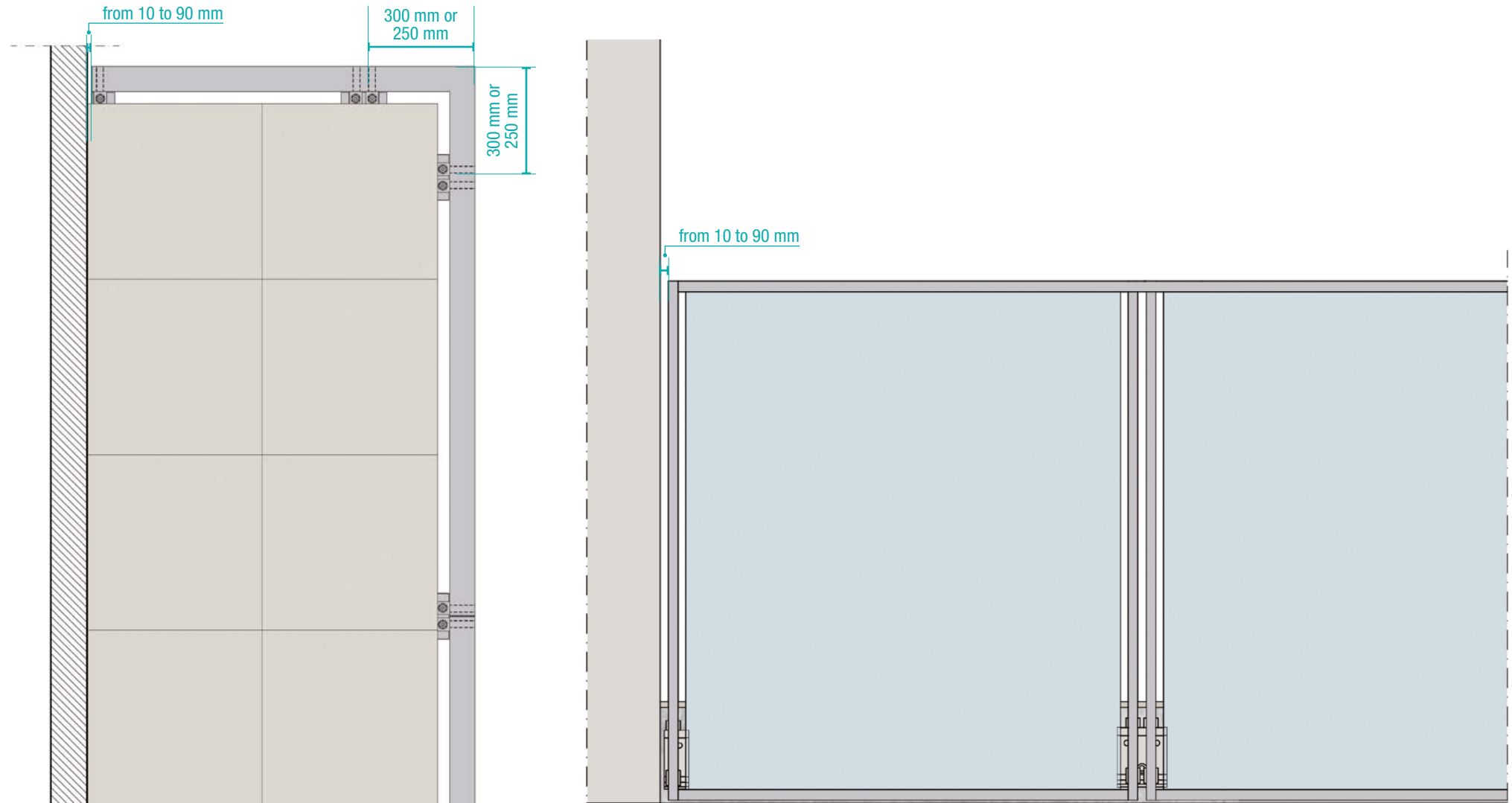
MODULAR FS R

FRONT FIXING ON THE BASE



MODULAR FS R WITH CORNER

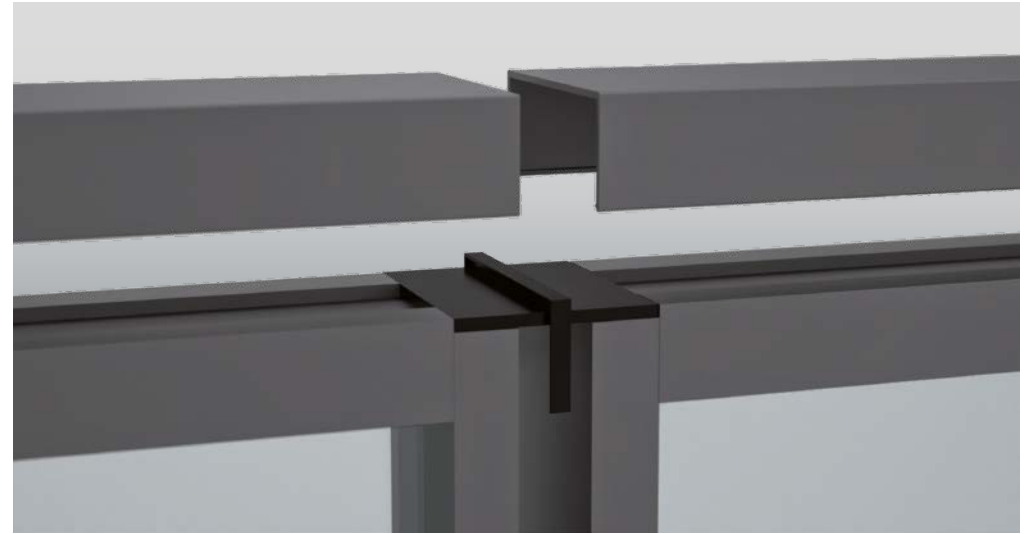
FRONT FIXING ON THE BASE



MODULAR FS R CORNER

FRONT FIXING ON THE BASE

JOINT



MODULAR FS STANDARD

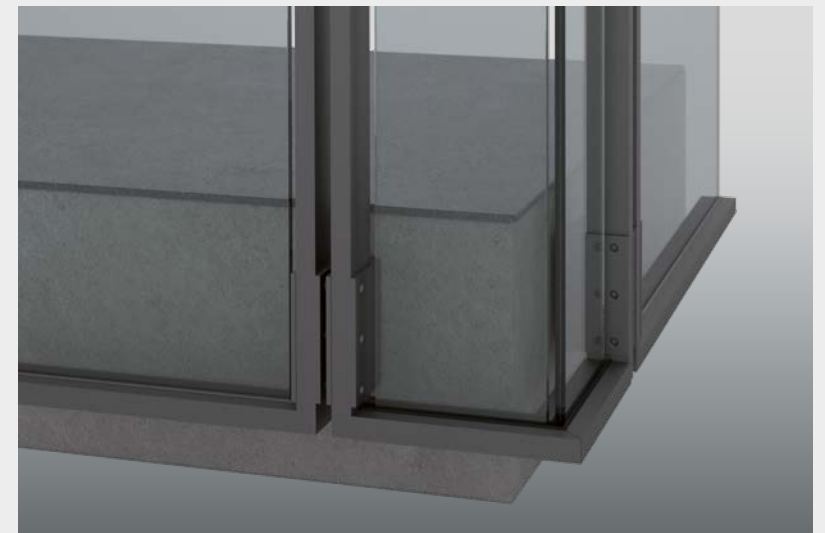
FRONT FIXING ON THE BASE - GLASS INFILL

Length of the module
up to **1700 mm**



Corner

Corner solutions are for “glass-glass” continuity without uprights in the centre of the corner.



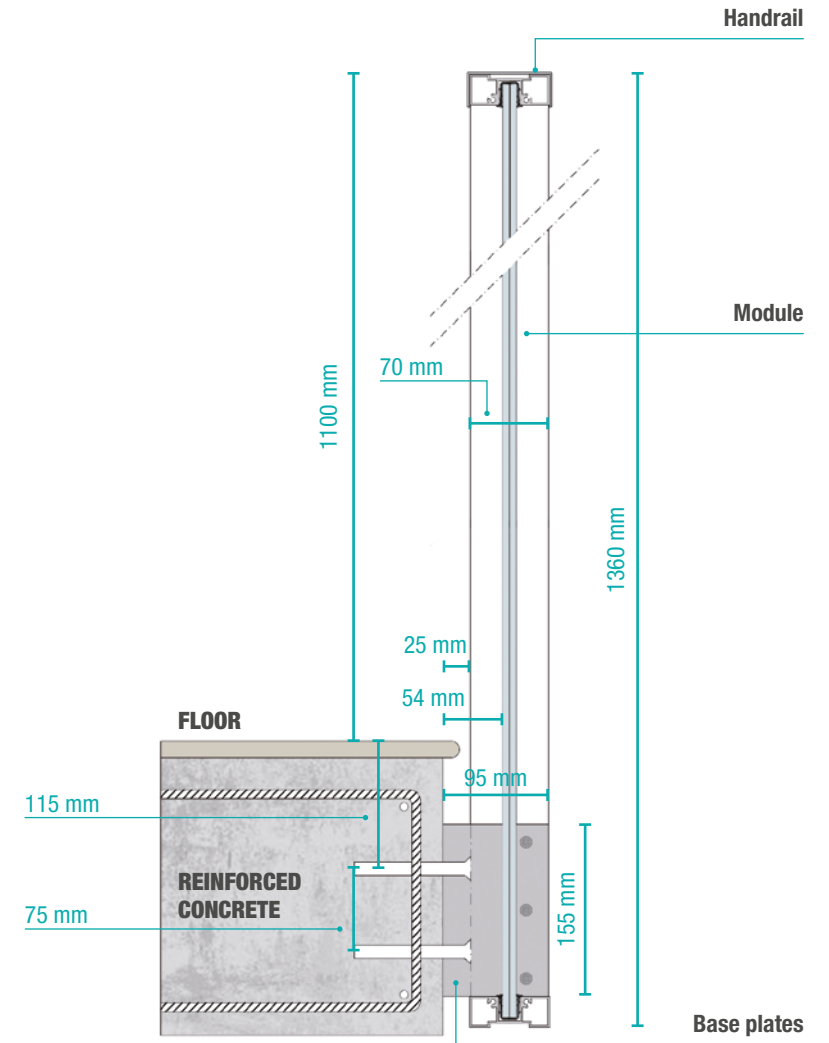
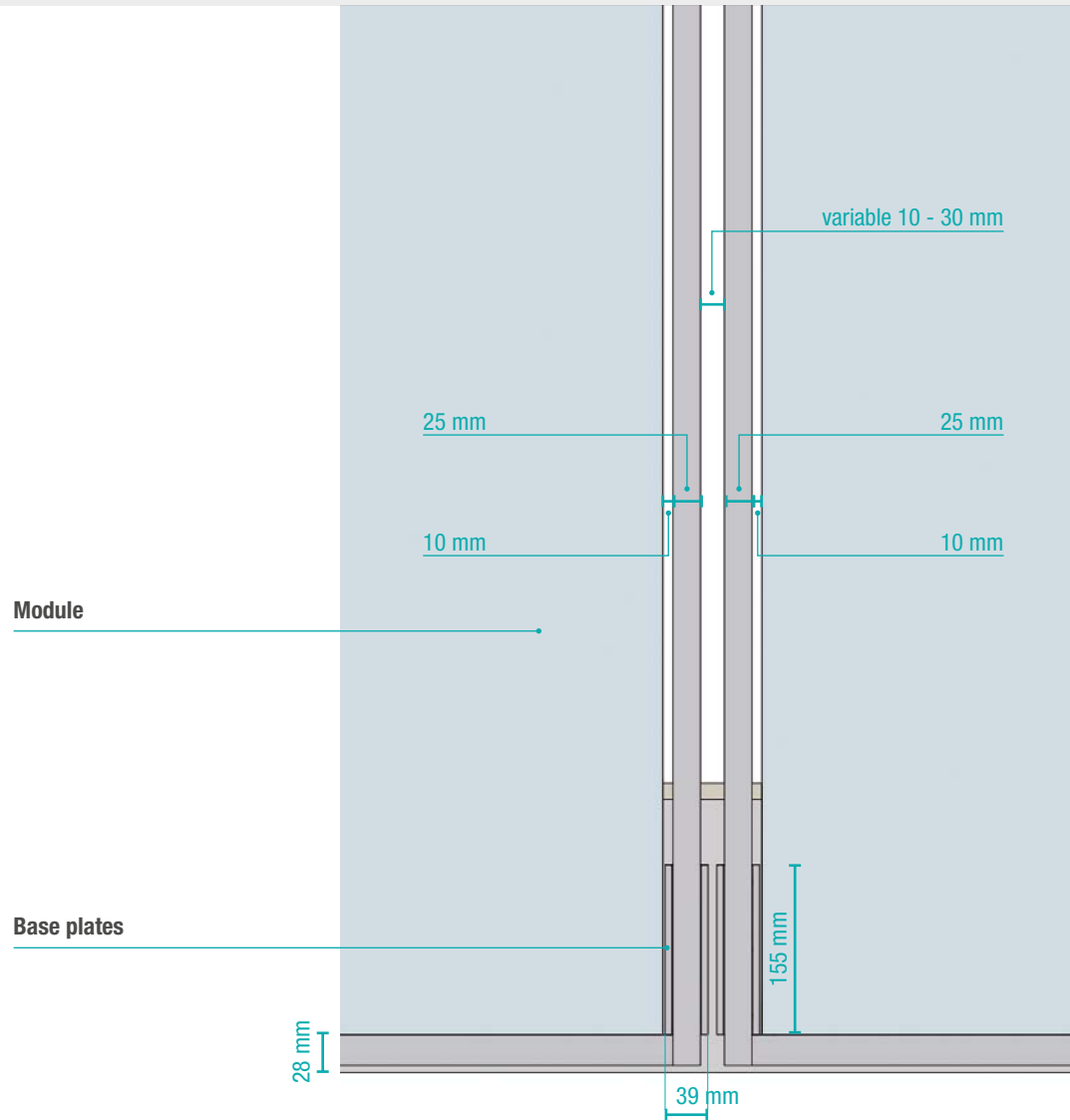
MODULAR FS STANDARD

FRONT FIXING ON THE BASE

PROJECT LOAD
200 kg/m

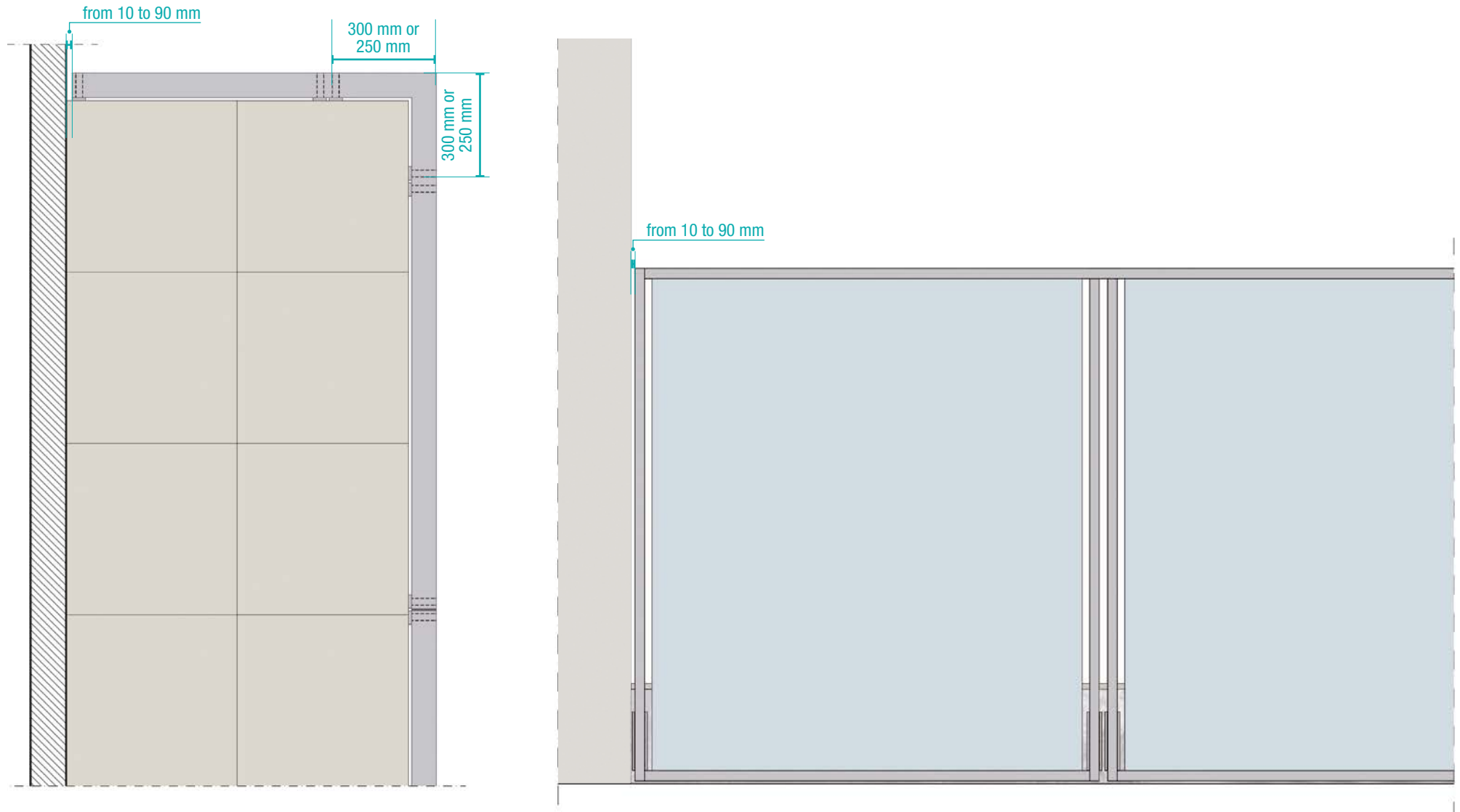
PROJECT LOAD
LAST LIMIT STATUS
300 kg/m





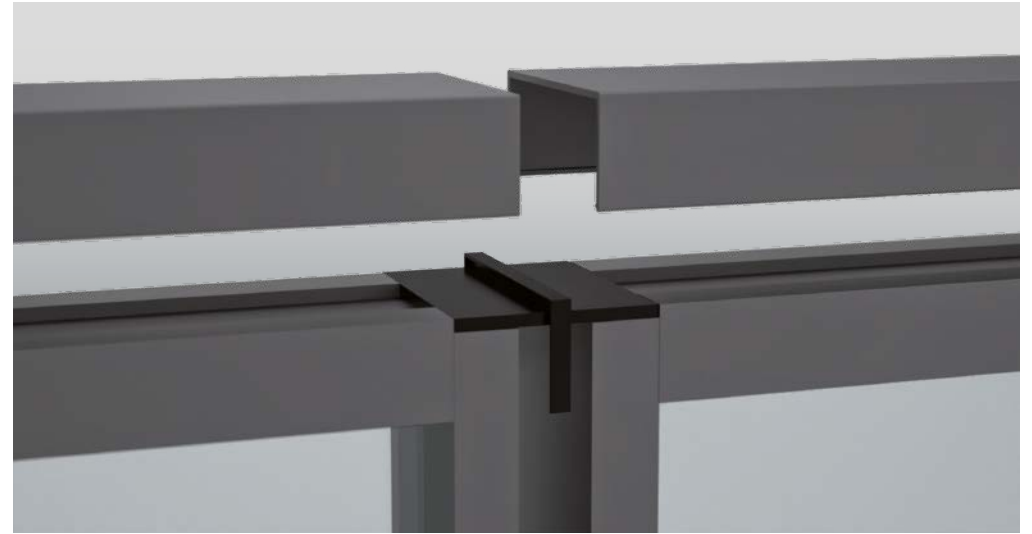
MODULAR FS STANDARD WITH CORNER

FRONT FIXING ON THE BASE



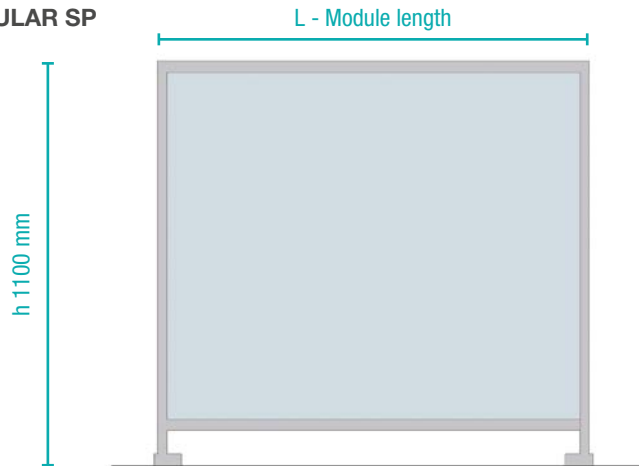
MODULAR FS STANDARD CORNER

JOINT

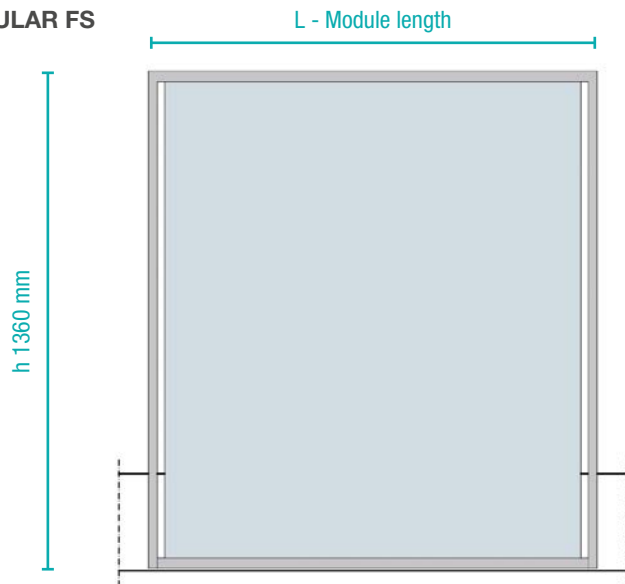


Module steps

MODULAR SP



MODULAR FS



VERSIONS AVAILABLE IN ACCORDANCE WITH THE LOAD OF THE PROJECT.

	200 kg/m	300 kg/m
SP / FS STANDARD	✓	✓
SP / FS ADJUSTABLE	✓	✓

DIMENSIONS OF STANDARD SP (L x H) MODULES.

- 600 x 1100 mm
- 900 x 1100 mm
- 1000 x 1100 mm
- 1100 x 1100 mm
- 1200 x 1100 mm
- 1300 x 1100 mm
- 1380 x 1100 mm
- 1680 x 1100 mm*
(only for loads of 200 kg/m)

DIMENSIONS OF STANDARD FS (L x H) MODULES.

- 600 x 1360 mm
- 900 x 1360 mm
- 1000 x 1360 mm
- 1100 x 1360 mm
- 1200 x 1360 mm
- 1300 x 1360 mm
- 1380 x 1360 mm
- 1680 x 1360 mm*
(only for loads of 200 kg/m)

MAXIMUM LENGTH OF THE MODULES ACCORDING TO THE VERIFICATION METHOD USED.

		STATIC REPORT	LAB TESTS
200 kg/m	SP / FS STANDARD	up to 1380 mm	up to 1680 mm
	SP / FS ADJUSTABLE	up to 1380* mm	up to 1680 mm
300 kg/m	SP / FS STANDARD	up to 980 mm	up to 1380 mm
	SP / FS ADJUSTABLE	up to 980* mm	up to 1380 mm

* a larger base plate and counter-plate must be used due to high loads



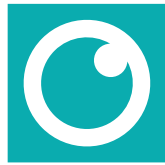




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LO SGUARDO OLTRE



MODULAR

Balaustre in vetro
per l'architettura contemporanea.

