

# TECHNICAL DATA SHEET

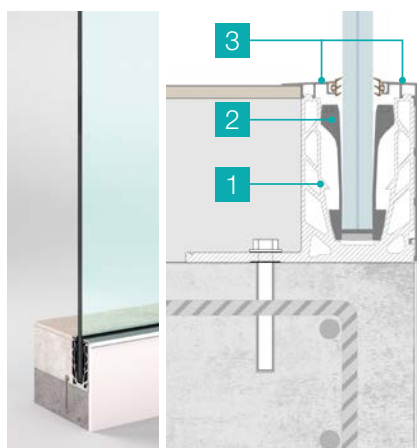
06/2023

## GARDA AP 200 SPECIAL

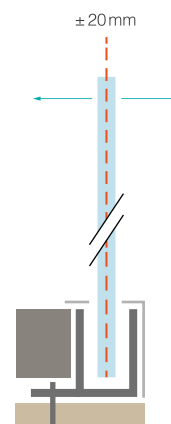
 FIXING **EMBEDDED IN THE FLOOR**

Thanks to the use of glass, the balustrades guarantee maximum formal cleanliness in new construction, renovation and building restoration projects: they are available with or without handrails, according to a customisable system.

The Garda system, tested in certified laboratories, is made up of different elements (profile, fixing system, casing, laminated and tempered glass) designed to guarantee an easy and rapid assembly and an aesthetic result ideal for the world of contemporary architecture.



- 1 Extruded aluminium profile, drilled at base every 250 mm, prepared for different types of fixing: available in 6 or 3 metre bars and, on request, cut to size.
- 2 Patented adjustable clamps for fixing and adjusting glass ( $\pm 20$  mm), with thicknesses 17.52 - 21.52 - 25.52 mm (8/8.4, 10/10.4 and 12/12.4) and thicknesses 16.76 - 20.76 - 24.76 (8/8.2, 10/10.2, 12/12.2). For the use of laminated glass with 0.76 mm plastic, please request the appropriate compensator to be attached to the clamps.
- 3 The casings undergo a 20 micron anodising or powder-coating process that provides a finish with aesthetic and protective characteristics that ensure durability when exposed to aggressive urban or marine atmospheres.



### SPECIFICATION ITEMS

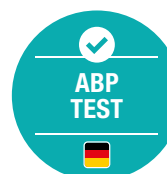
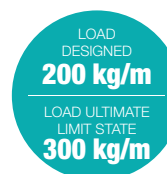
**Garda** balustrade **AP 200 Special** made of extruded aluminium alloy profile ENAW6063T6 (dimensions 162 x 117 mm), to be fixed embedded in the floor, with off-centre fixing and profile aligned with the slab front side. The profiles will be coupled with finishing casings, according to standard configurations: on the internal side (**KS**) and on the external side (**KL**); special ones (**KXV LV** or **KXO LO**) to integrate external or internal finishing infills such as sheet metal or composite panels of various thicknesses. The finish of the casings is optionally 20 micron silver anodised, simil-inox brushed or painted RAL 9010 (other finishes on request) and complete with silicone-compatible gaskets between the casing and glass.

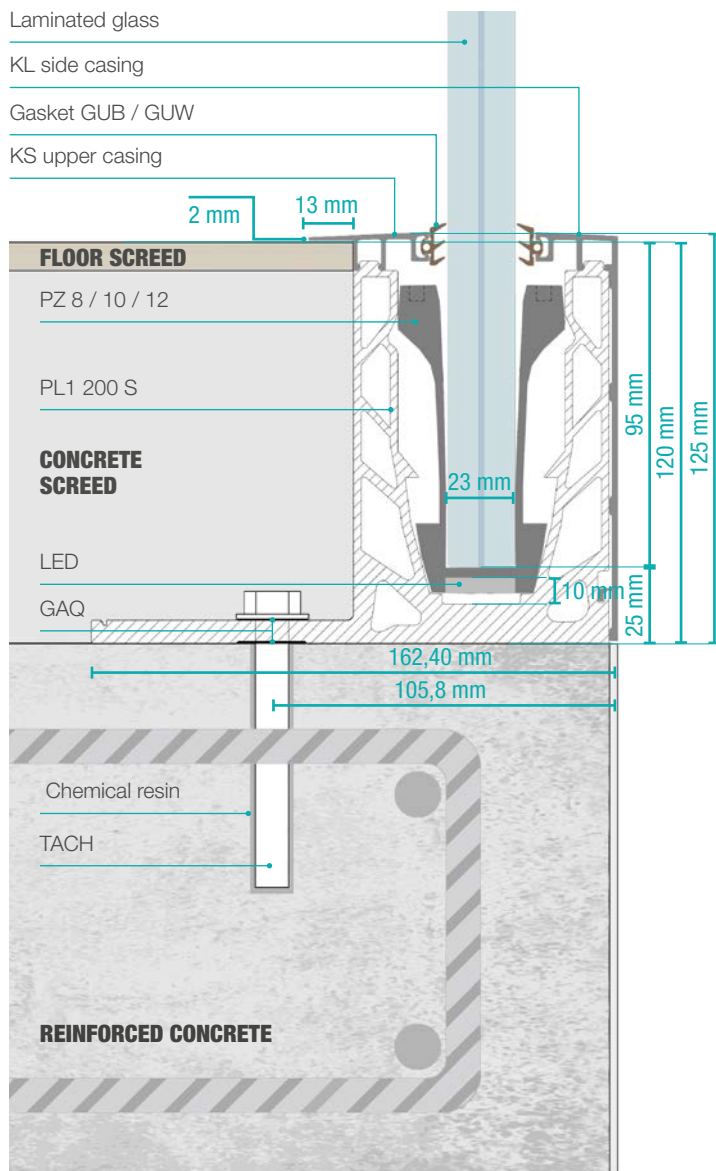
The profile includes specific accessories, known as 'clamps' (**PZ**), which enable the alignment, adjustment and fixing of the glass panels. Clamps and gaskets depend on the thickness of the glass.











The system can be completed with handrails in different formats (**Mini**, **Round** o **Compact**).

The Garda balustrade will be fitted with toughened and tempered glass sheets laminated with plastics of various types, available in various thicknesses, such as: 16.89 mm (8/8.2) with CLASS2 plastic; 20.89 mm (10/10.2) with CLASS2 plastic; 21.52 mm (10/10.4) with PVB. The choice of glass and plastics varies depending on the intended use, operating temperatures and required post-breakage behaviour of the glass.

The Garda AP200 Special balustrade is tested according to UNI 11678 standard at laboratories accredited to the ministry of public works and complies with current regulations (D.M. 17/01/2018 and UNI 7697: 2015) for a thrust resistance of 2 kN/m (SLE), with load tests up to 3 kN/m, safety factor 1.5 (SLU) included on glazing up to 1100 mm above floor level.





Part	Notes
<b>PL1 200 S</b> 	Cross-section dimensions: 162 mm x 117 mm 3 m, 6 m or customised bars drilled externally with 250 mm pitch - ø 12 mm. Tested for a design load of 2kN/m, with an ultimate limit state load of 3kN/m with Hmax of glass 1200 mm
<b>PZ 8/10/12</b> 	PZ8 for glass 8/8.4 PZ10 for glass 10/10.4 PZ12 for glass 12/12.4 For glass sheets with plastics smaller than 1.52 mm, a compensator (optional) is required to be attached to the clamp
<b>KL</b> 	Cross-section dimensions: 25 mm x 124 mm 3 or 6 m bars or cut to length on request Various finishes available
<b>KS</b> 	Cross-section dimensions: 36 mm x 8 mm 3 or 6 m bars or cut to length on request Various finishes available
<b>GUB</b> 	Gasket between glass and casing Gaskets for glass 8/8 - 10/10 - 12/12 Available in black (silicone compatible) Available in white (silicone)
<b>GVB OPTIONAL</b> 	Gasket between glass and glass Available in black or white
<b>TACH OPTIONAL</b> 	Threaded rod with nut and washer For fixing on reinforced concrete For use in combination with two-component chemical L 140 mm - M10 8.8 galvanised steel
<b>KCH OPTIONAL</b> 	Temporary cover casing Dimensions 78 mm x 6 mm 3 or 6 m bars or cut to length on request
<b>GAQ OPTIONAL</b> 	Anti-infiltration seal It prevents water from entering the anchoring layers
<b>IN OPTIONAL</b> 	Pair of accessories for laying on the inside only, to be inserted into the appropriate clamp housings
<b>LED OPTIONAL</b> 	LED strips for indoor or outdoor use Supplied in coils; white light or primary colours; with transformer. Several sizes available

## SAFETY - REGULATORY REFERENCES

Below are the main regulations governing the design and testing of all balustrades and parapets, specifically glass balustrades.

### UNI 7697: 2015 - 12 February 2015

"Safety Criteria in Glass Applications".

The standard applies to glass in buildings and for any other use that is not regulated by specific relevant rules, while for those that are regulated, the standard only indicates the reference to apply.

In the specifics of balustrades, it indicates the type of glass to be used.

### 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"

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 and criteria for determining whether or not the test is passed.

### D.M. 236/89 - 14 June 1989

Technical provisions necessary to ensure the accessibility, adaptability and easy inspection of private and public buildings, in order to overcome and eliminate architectural barriers.

With regard to parapets, it establishes the minimum height\*, the criterion of non-crossability, as well as indications on the necessity or type of handrail.

\* Check any indications issued by the territorial public body.

D.M. 17 January 2018 - NTC 2018 UPDATE OF TECHNICAL STANDARDS FOR CONSTRUCTION

Regarding parapets, it provides the required resistances for elements placed to protect against falling into a void.

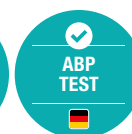
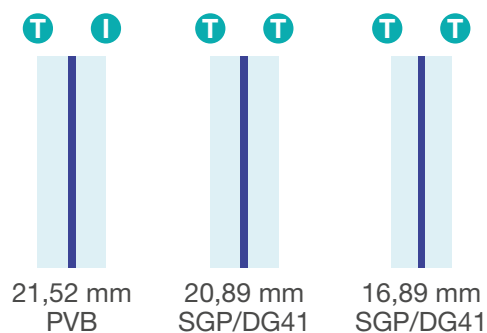
The nominal and/or characteristic values given in the table below are inclusive of ordinary dynamic effects, provided that there is no risk of significant dynamic amplification of the response of the structures.

The overloads, or imposed loads, include the loads related to the intended use of the room; the models inherent to parapets are the linear horizontal loads  $H_k$ .

**TABLE 3.1.II (EXCERPT FROM D.M. 17/01/2018 SECTION 3.1.IV - OVERLOADS)**

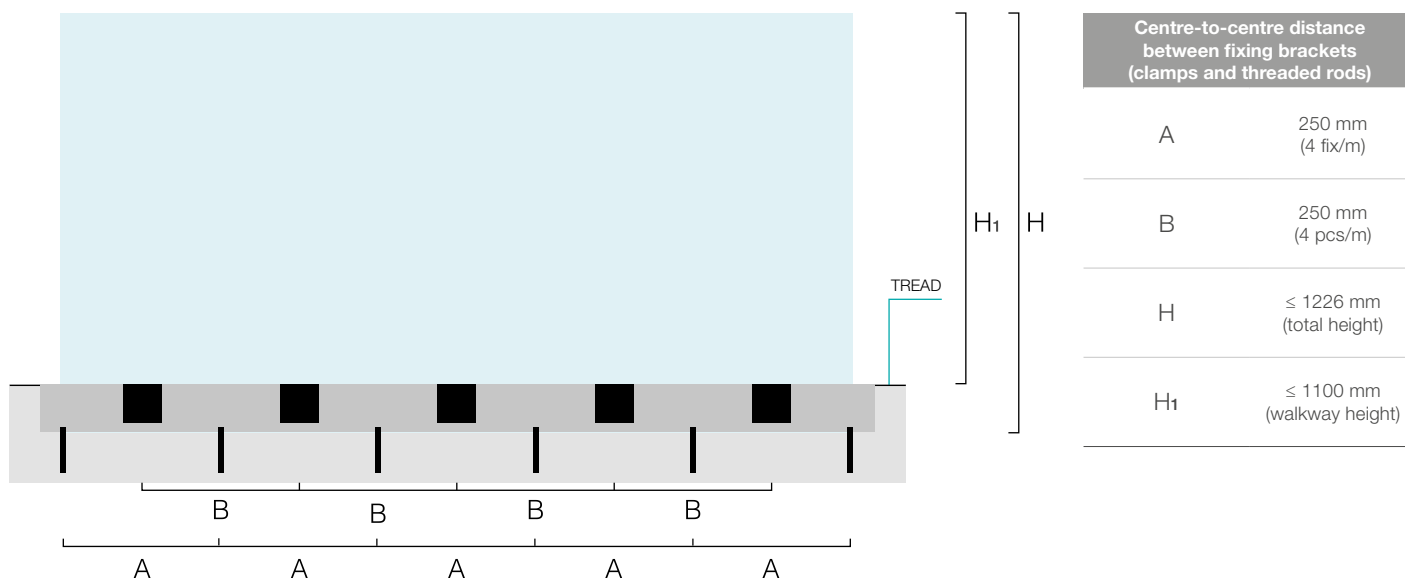
Category	Environments	qk [kN/m2]	Qk [kN]	Hk [kN/m]
A	Residential environments			
	Areas for home and residential activities, this category includes residential premises and their services, hotels (excluding areas subject to crowding), hospital rooms	2,00	2,00	1,00
	Common stairs, balconies, platforms	4,00	4,00	2,00
B	Offices			
	Cat. B1 Offices not open to the public	2,00	2,00	1,00
	Cat. B2 Offices open to the public	3,00	2,00	1,00
	Common stairs, balconies, platforms	4,00	4,00	2,00
C	Environments susceptible to crowding			
	Cat. C1 Areas with tables, such as schools, cafés, restaurants, banquet halls, reading halls and front desks	3,00	3,00	1,00
	Cat. C2 Areas with fixed seating, such as churches, theatres, cinemas, halls for conferences and waiting rooms, university lecture halls and auditoriums	4,00	4,00	2,00
	Cat. C3 Environments without obstacles to the movement of people, such as museums, exhibition halls, access areas to offices, hotels and hospitals, railway station lobbies	5,00	5,00	3,00
	Cat. C4 Areas with possible physical activities such as ballrooms, gyms, stages	5,00	5,00	3,00
	Cat. C5 Areas subject to large crowds, such as buildings for public events, concert halls, sports halls and grandstands, bleachers and railway platforms	5,00	5,00	3,00
	Common stairs, balconies, platforms	According to the category of use served, with the following limitations ≥ 4,00                      ≥ 4,00                      ≥ 2,00		
D	Environments for commercial use			
	Cat. D1 Shops	4,00	4,00	2,00
	Cat. D2 Shopping centres, markets, department stores	5,00	5,00	2,00
	Common stairs, balconies, platforms	According to category of use served		
E	Areas for storage and commercial and industrial use			
	Cat. E1 Goods storage and access areas, such as libraries, archives, warehouses, manufacturing workshops	≥ 6,00	7,00	1,00
	Cat. E2 Industrial environments	To be assessed on a case-by-case basis		
F - G	Garages and areas for vehicle traffic (excluding bridges)			
	Cat. F Garages, traffic, parking and parking areas for light vehicles (weight at full load up to 30 kN)	2,50	2 x 10,00	1,00
	Cat. G Areas for traffic and parking of medium-sized vehicles (laden weight between 30 kN and 160 kN), such as access ramps, loading and unloading areas goods	5,00	To be assessed on a case-by-case basis and in any case not less than 2 x 50,00	1,00
H - I - K	Covers			
	Cat. H Roofs accessible for maintenance and repair only	0,50	1,20	1,00
	Cat. I Accessible covers of rooms of use category A to D	According to categories		
	Cat. K Covers for special uses, such as installations, heliports	To be assessed on a case-by-case basis		

## TYPES OF GLASS

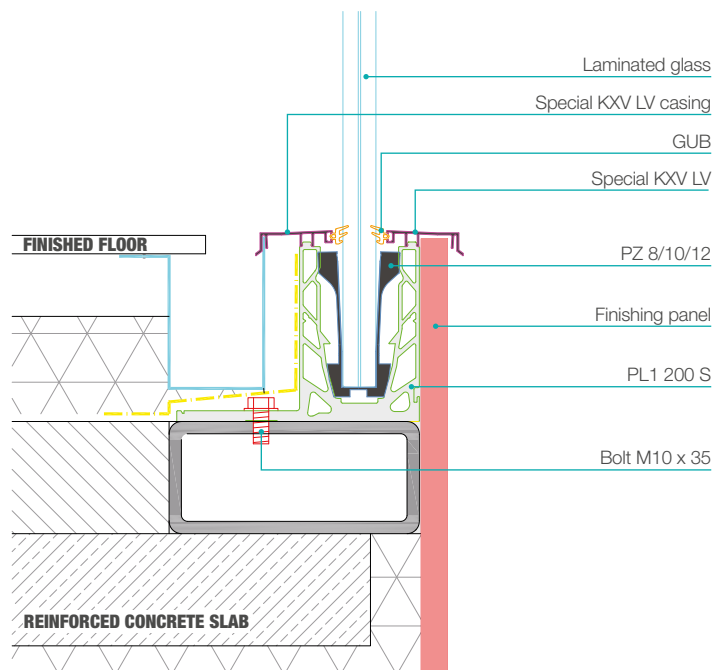
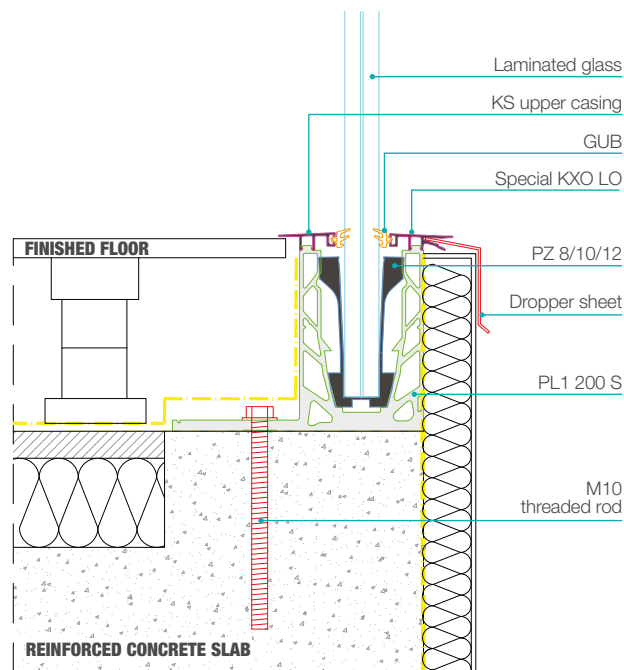


SLE kN/m	SLU kN/m	H walkway balustrade	Glass types
2,0	3,0	1100 mm	10/10.4 T + I PVB 10/10.2 T + T SGP/DG41 8/8.2 T+T DG41/SGP

## FASTENING CLAMPS



## OPTIONAL FOR INTEGRATION WITH COATING MATERIALS



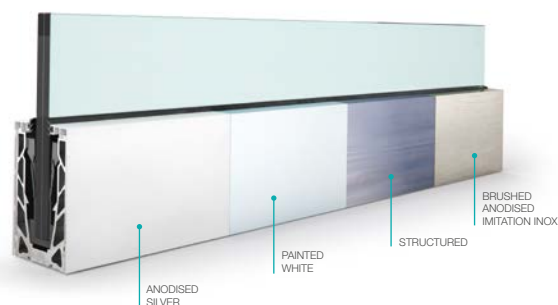
## CUSTOMISATION OF FINISH

The Garda system is fully customisable: the casings are available in 12 finishes and many other customisations with anodic treatments in the available colours or powder coating according to RAL tables: standard finishes and design finishes designed to meet contemporary architectural demands.

### STANDARD FINISHES



### DESIGN FINISHES

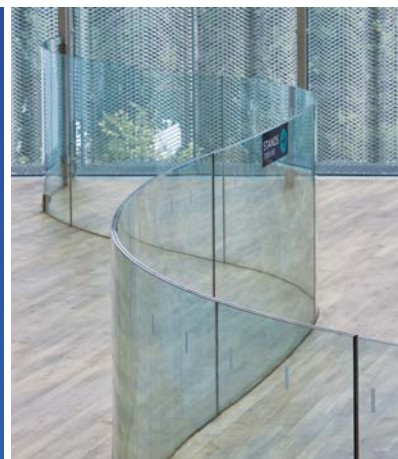
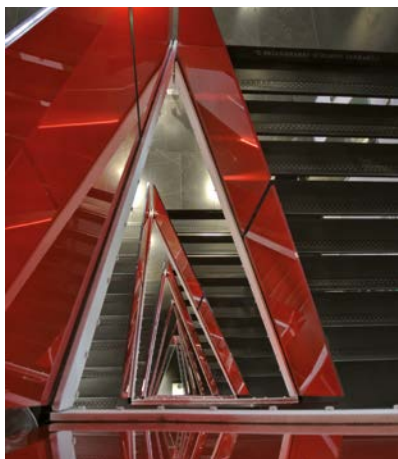
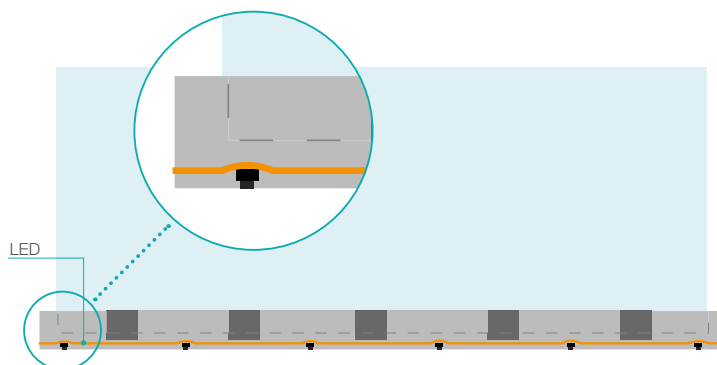


## CUSTOMISATION OF GLASS AND LEDS

Customisation of the glass can be achieved by various processes: layering with coloured plastics, internal layering enamelling, or screen printing. Furthermore, each solution can be combined with the use of LEDs to create a striking lighting effect.

Curved glass sheets can be mounted on all Garda balustrades with radii starting from a minimum of 200 cm in plan or perspective view.

To make curved balustrades in plan view, the profiles are curved, as well as the casings, according to the request.



## TEMPORARY COVER CAP - KCH



Provisional element applied as protection to the profile to avoid the entry of inerts during the completion phases of the construction site. It also provides the floor dimension reference.



## SYSTEM ASSEMBLY

Each profile is ready for installation: the balustrade is completed by fixing screws (optional), seals, casings, clamps.

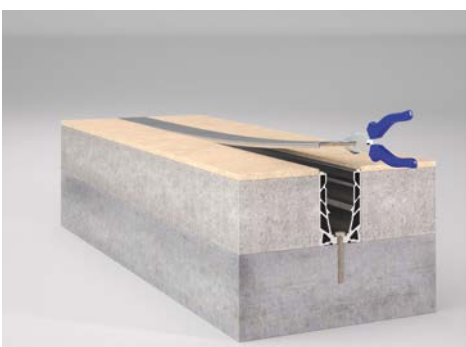
Final adjustment is carried out with the aid of a simple Allen key or by using the special extension (**PR55**) for the power tool, which makes tightening the adjustment screws even quicker.

(The figures show the assembly of the Garda AP system. The steps are the same for the Garda AP Special)

SCAN THE QR  
CODE AND  
WATCH THE  
INSTALLATION  
VIDEO TUTORIAL



**1** Perforate the slab with the drill, place the profile, fixing screws and temporary cover to prevent aggregates from soiling the profile during construction.



**2** Lift up the temporary cover to start laying the accessories.



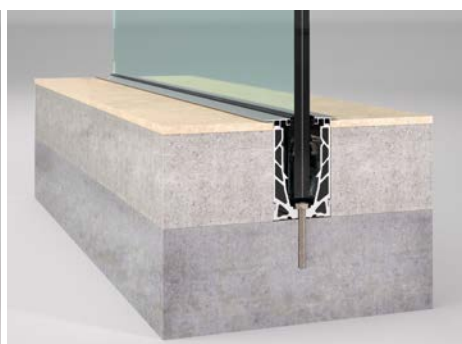
**3** Lay the clamps inside the profile every 250 mm. Do not place the clamps over the fixing screws.



**4** Adjust the inclination of the glass using the screws on the clamps and tighten.



**5** Place the gaskets on the finishing casing and put the casing on the profile.



**6** Installation finished.



## DOWNLOAD CATALOGUE AND BIM FILES AND WATCH THE INSTALLATION VIDEO

Discover all the advantages  
of the Garda system at **[www.aluvetro.it](http://www.aluvetro.it)**

