

faraone[®]
RAILINGS 

NINFA[®] **6**
THE SERIES
GLASS BALUSTRADES FOR ARCHITECTURE



CONTAINS THE NINFA 106, 116, 56, 176, 186, 6, 50-N, NINFA 6 STADIO MODELS

2026 UPDATE

Take care of the people you love.

With the latest generation of Ninfa balustrades.



In 2008, the first metres of what would later become a reference system for glass balustrades in Italy were shipped: the Ninfa system.

At the time, this system was relegated to the last pages of the balustrade catalogue, after the stainless steel systems, occupying a small space with a single article.

Five series later, after setting one record after another, the Ninfa balustrade system has definitely conquered designers and operators of the Italian sector, becoming a best-selling item with over 1,600,000 metres (*994 miles*) installed since 2009. Today, more than 2,000 km (*1,243 miles*) of Faraone balustrades have been installed in Italy and abroad since 2009.

Now in its sixth generation, the Ninfa 6 series has new records to break, which we see as a natural evolution of the design inherited from the previous series.

The entire range stems from our desire to always look forward, pursuing continuous innovation, improving performance, aesthetics, functionality, ease of installation and much more.

Among the main new records you will find the simplicity of the management of glass thicknesses and the possibility of using taller glass panels, meeting today's design requirements, with calculation verifications and laboratory tests in full compliance with the regulations.

We do all this not because the market requires it, but because we strongly believe in what we do and always want to raise the level of the category.

Welcome to our new innovation.

Flavio Faraone

CEO Faraone Architetture Trasparenti

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WHY USE THE NEW NINFA FARAONE BALUSTRADE SYSTEM?

After more than 50 years in the world of Transparent Architecture, Ninfa is still the best-selling "all-glass" balustrade in Italy.

The Ninfa glass balustrades by Faraone are synonymous with experience, comfort and safety for outdoor environments such as balconies, terraces, poolside fencing, fences; and for indoor environments such as stairways, galleries and walkways. The reason for using the new Ninfa series 6 balustrades by Faraone can be found in some of the following records achieved to date:

1. The Ninfa system by Faraone was the first industrialized all-glass balustrade to arrive on the market in Italy since 2009, previously there were mainly handcrafted or 'do-it-yourself' solutions;
2. To date, more than 2,000 km (1,243 miles) of Ninfa balustrades have been installed in Italy with total customer satisfaction;
3. Ninfa was the first balustrade to use the "only from the inside" assembly methodology since 2016 and today it reduces assembly times by 40% compared to the market average;
4. Ninfa 6th series is the first glass balustrade system that fully complies with static calculations verified by our technical department, offering unmatched performance;
5. Ninfa the 6th series is the first to present its technology package with the "RS system";
6. Ninfa series 6 offers high customisation and prestigious finishes for the profile and for the glass;
7. NINFA 116, the profile with mounting flush with the wall and/or for solutions with floating floors.

Ninfa the 6th series is not just a product.



Sabatino Faraone
PRESIDENT



Flavio Faraone
CHIEF EXECUTIVE OFFICER / CEO



Pamela Faraone
ADMINISTRATIVE MANAGEMENT



Federico Vallese
ORGANIZATIONAL MANAGEMENT



These are some numbers related to the world of Ninfa: over 60,000 orders processed for direct customers; 2,000 km (1,243 miles) installed equal to 160,000 homes with Ninfa balustrades (about 10 metres/10.93 yd per home).

A network of consultants throughout Italy is ready to offer maximum assistance for every need, starting from simple technical or commercial advice to the definition of the design. The internal department is also able to guide you in choosing the most suitable product for you or to respond to your emergencies. Below we have tried to answer the main FAQs (frequently asked questions), to illustrate how Faraone resolves the main technical issues, whether on the construction site or regarding customer support. In the final part there is a section related to Ninfa's references.



Faraone Headquarter.
Watch the video.



A RECORD THAT IS STILL UNDEFEATED: INSTALLATION FROM THE INSIDE ONLY

Install-time optimization

When the Faraone R&D department designs a balustrade, it also considers the installation phases.

That's why all the NINFA series 6 technology is even easier and quicker to install.

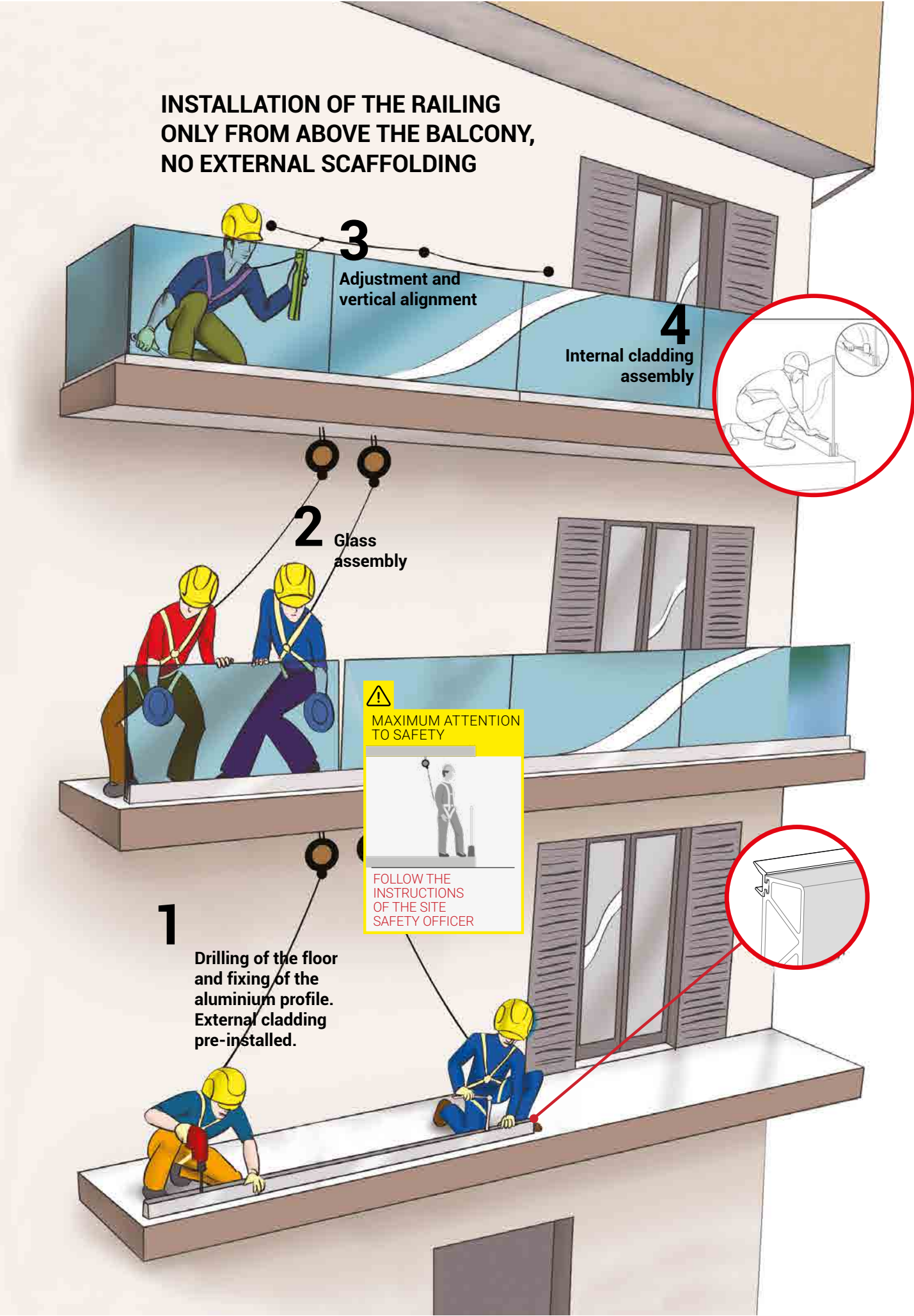
The glass is assembled exclusively from the inside to offer a better installation experience and greater safety for the installer, who is not forced to work from the outside.

Also for the Ninfa 186 profile, which is fascia mounted, the glass is mounted only from the inside.

It is advisable to contact qualified specialists to be sure to get a "state-of-the-art" installation.



Watch the installation video of Ninfa 106

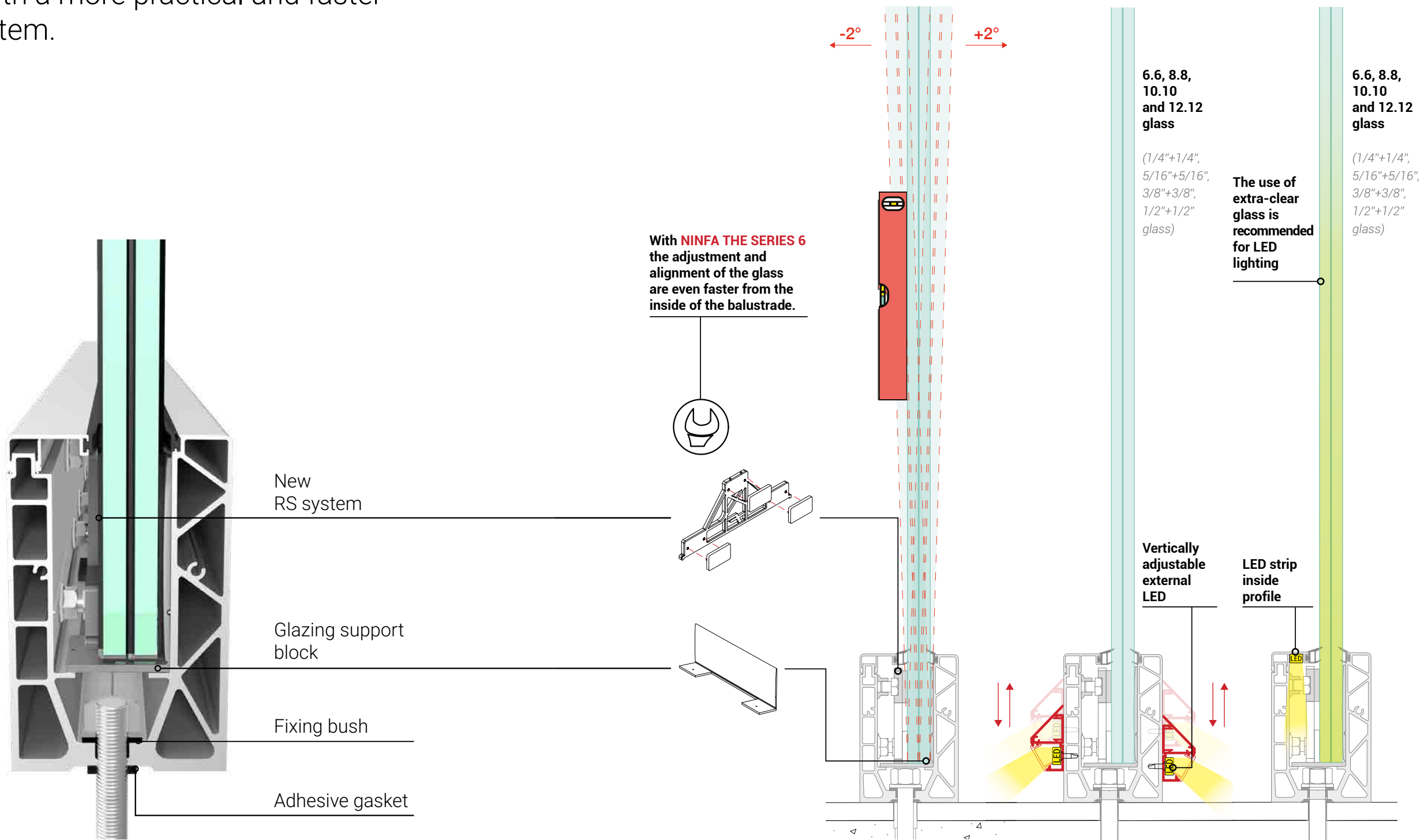
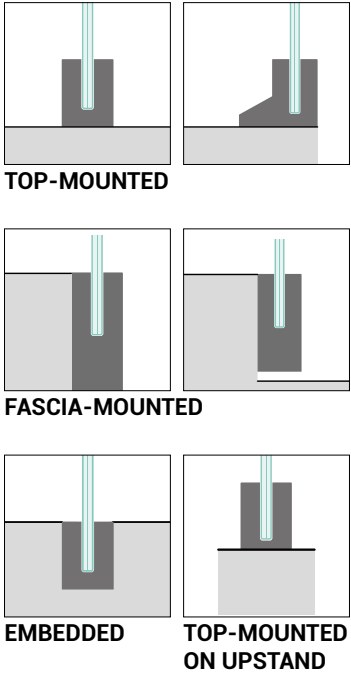


THE NEW NINFA PROJECT

The new NINFA Series 6 project further improves the previous series with a more practical and faster glass adjustment system.

PATENTED AND CERTIFIED SYSTEM
New range with resistance from 200 kg/m (tested to 300 kg/m) up to 500 kg/m (tested to 750 kg/m).
134 lb/ft (tested at 202 lb/ft) up to 336 lb/ft (tested at 504 lb/ft).
THE SYSTEM GUARANTEES THE STANDARD SAFETY LEVEL.

Types of fixing



THE IDEAL TECHNOLOGICAL PACKAGE

- 1 - NINFA system
- 2 - Safety glass

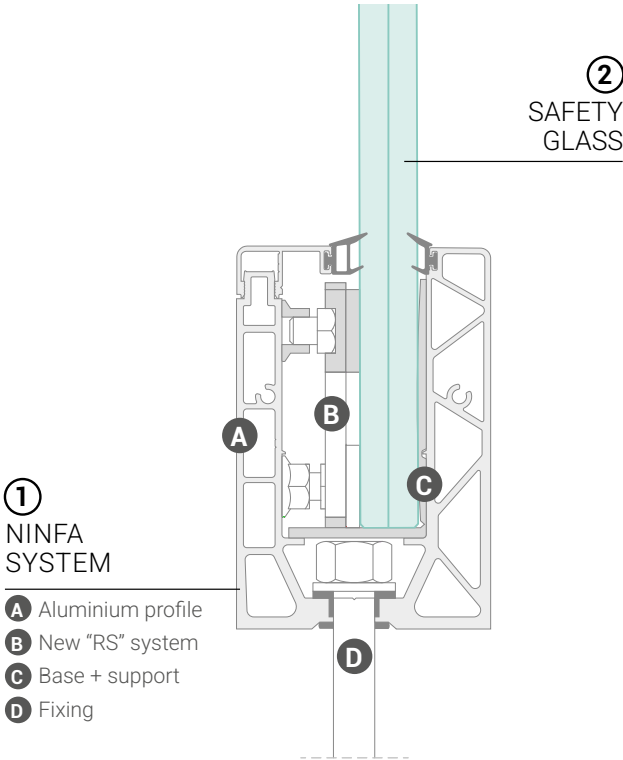
Only with the **NINFA system** and **the appropriate safety glass** can **outstanding performance** be achieved in full compliance with regulations.



The knowledge of the materials used such as aluminium and glass combined with their technological capabilities has allowed Faraone to develop increasingly high-performance systems. This is thanks to the Technology Package consisting of the **NINFA system** (profile, RS, base, fixing) and the **suitable structural glass**.

Why are they both essential? The **NINFA system** concerns Faraone's know-how: from resistance performance (based on the intended use and the glass used) to installation needs and ease of assembly. The Structural Glass, on the other hand, concerns the production technique of the glass sheets, the hardening and processing methods that make this material, basically fragile, into a resistant and high-performing one.

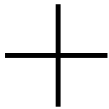
The performance of a glass balustrade depends mainly on the number of panes that make up the balustrade, their thickness and the type of interlayer that is inserted inside.



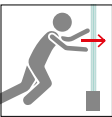
①
NINFA SYSTEM
(SUPPLIED BY FARAONE)



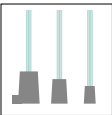
②
SAFETY GLASS
(SPECIFIED BY FARAONE)



The advantages of the NINFA system



TESTING IN COMPLIANCE WITH REGULATIONS
We calculate and test the resistance levels of Ninfa balustrades in compliance with current regulatory standards.

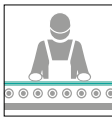


INTENDED USE
Each NINFA glass balustrade is designed for specific uses.

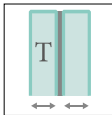


SPEED OF ASSEMBLY
The assembly and plumb alignment of the glass are faster and easier.

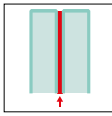
Follow Faraone's specifications for the glass panels



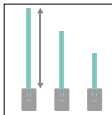
TEMPERING AND HARDENING PROCESSES
One of the main steps in glass processing to increase its resistance fourfold.



CORRECT LAMINATION
In addition to the thickness of the glass panes, it is important to insert the Tempered-Hardened glass on the outside and the Tempered glass on the inside.



TYPES OF INTERLAYER
It is an essential element that determines the behaviour of the glass even after breaking. Use "hard" plastic interlayer for superior resistance.



GUARANTEED GLASS HEIGHT
Thanks to the data of our tests, in addition to the types of glass, we are able to indicate the maximum height of each glass relative to the intended use.

OUR STRENGTH: THE QUICK ASSEMBLY



4 simple steps, and that's it!

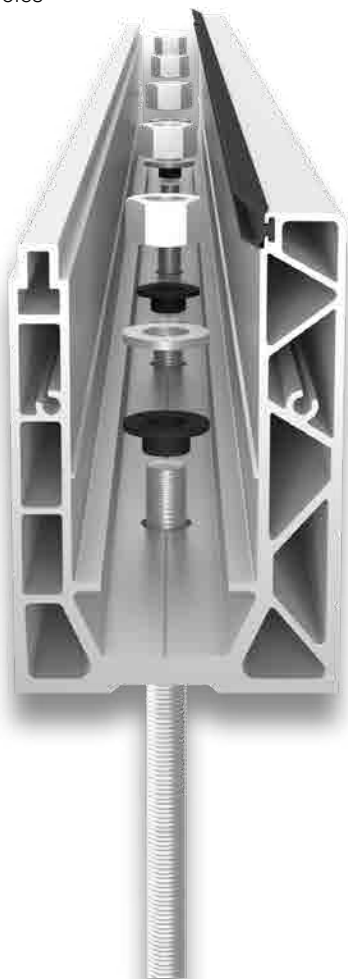
STEP01

> PREPARATION

- a) Position the pre-drilled bar (with external gasket already fitted) as a template
- b) Mark the holes and then drill the floor
- c) Thoroughly clean the holes
- d) Apply the resin
- e) Insert the rods

> START OF ASSEMBLY

- a) Fasten the profile to the floor



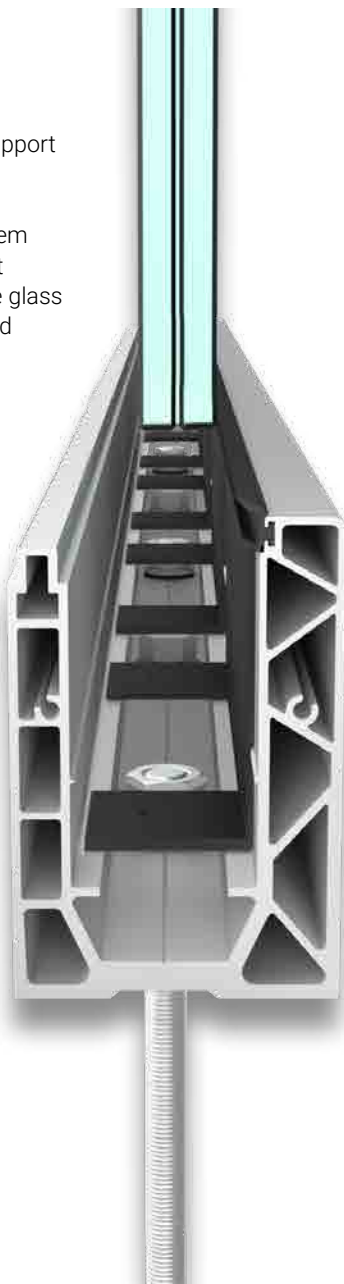
YOU ONLY NEED TO

- Place:
- 1. Adhesive gasket
 - 2. Profile
 - 3. Fixing bush
 - 4. Plain washer
 - 5. M12 nut

STEP02

> GLASS HOUSING

- a) Insert the glazing support block inside the profile
- b) Prepare the RS system by inserting the correct shims according to the glass thickness to be inserted (6.6, 8.8, 10.10, 12.12) (1/4", 1/4", 5/16", 5/16", 3/8", 3/8", 1/2", 1/2")



YOU ONLY NEED TO

- Distribute the glazing support blocks (4 for each metre)

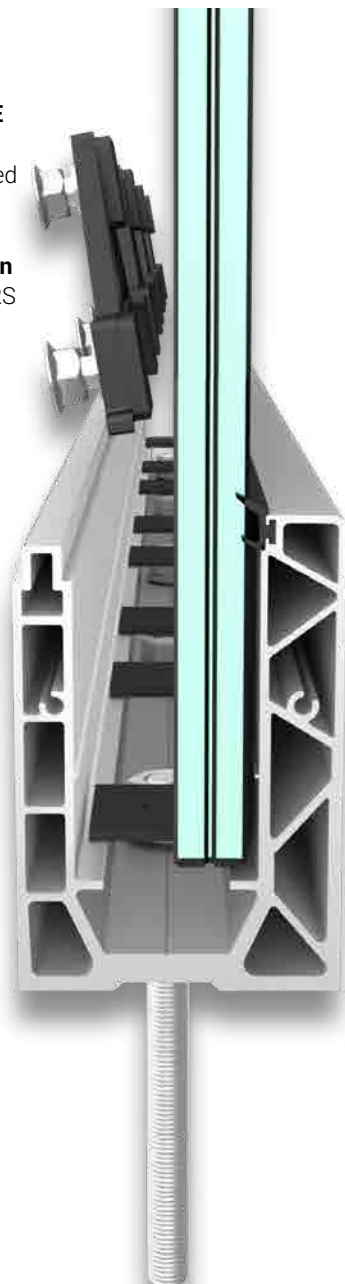
STEP03

> POSITIONING OF THE GLASS

- a) Insert the glass inclined inwards

> RS system Installation

- a) Insert the adjusters (RS system)
- b) Adjust the inclination
- c) Tighten both rows of adjusters



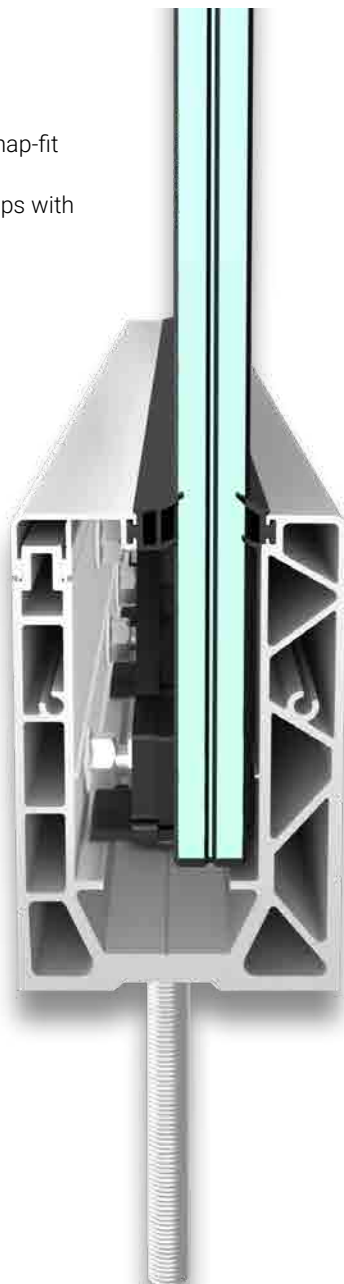
YOU ONLY NEED TO

- Insert 4 adjusters (RS system) per metre. Make sure the glass panels are plumb. Make sure the glass panels are spaced 2 cm (0.78") apart.

STEP04

> FINAL PHASE

- a) Insert the upper snap-fit cladding
- b) Fasten the side caps with the supplied screws



YOU ONLY NEED TO

- Make sure you have performed a professional installation.

ALUMINIUM FINISHES

Illustrative reproduction
of the available finishes

Customise your balustrade



Customise your profile with trendy finishes for INDOOR and OUTDOOR use, or choose a colour on request from more than 2,000 RAL colours.



PROFILE FINISHES

BASE



SILVER
ANODISED
20 micron
(raw on request)

PROFILE FINISHES: RAL FINISHES AND SPECIAL COATINGS

BASE



WHITE
RAL 9010 MATT



BLACK
RAL 9005 MATT

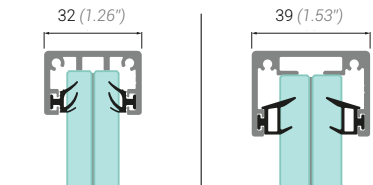
ON REQUEST



2000 RAL COLOURS

OPTIONAL

HANDRAIL



MINIMALIST HANDRAIL



Safety handrail, aluminium profile (structural adhesive fixing EXCLUDED). Recommended technical solution. Check applicable regulations

PROFILE FINISHES

BASE



SILVER
ANODISED 20 µm
(raw on request)



WHITE
RAL 9010 MATT



BLACK
RAL 9005 MATT

OTHER COLOURS

ON REQUEST



2000 RAL COLOURS

LED PACK:

TYPES OF LIGHT



WHITE LIGHT
UNIQUE
LIGHT EFFECT

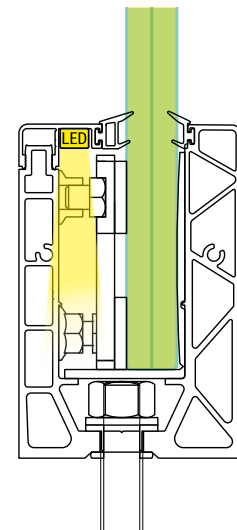


MULTICOLOUR LIGHT
CUSTOMIZE THE TYPE OF
LIGHT WITH THE RGB LED
VERSION.

LED EFFECTS

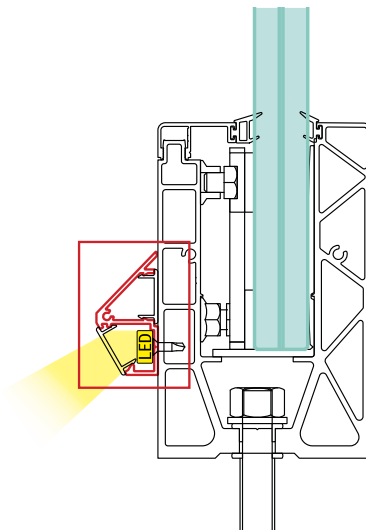
Get the most out of the light
and the effect you want.

INTERNAL LED PACK



LED not supplied by Faraone

EXTERNAL LED PACK



LED not supplied by Faraone

Illustrative reproduction of the available finishes

DISCOVER THE NEW LED EFFECTS FROM PAGES 84 TO 89

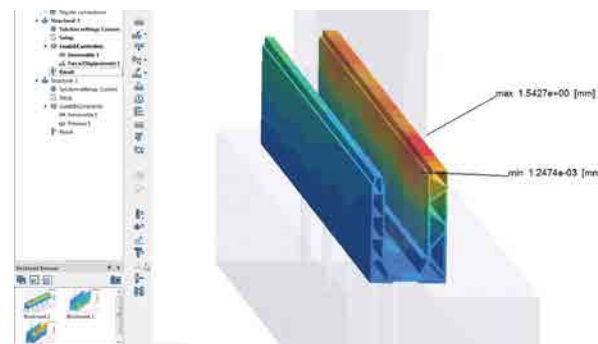
NINFA SERIES 6 AND ITS POTENTIAL

The secret of the new glass balustrades is in the details.



Sabatino Faraone
Founder and President of the company
with over 50 years of experience in the sector.

THE IMPORTANCE OF THE ALUMINIUM SHOCK ABSORBER PROFILE



What is important to know is that you have to choose the right materials for the intended uses. This is true for aluminium, too: there are different alloys and different hardness levels that determine its characteristics depending on the use; consequently, this aspect also applies to the balustrades.

Ninfa series 6 was born from a deep knowledge of how materials behave, which made it possible to develop a system with the right stiffness and elasticity to achieve an optimal shock-absorbing effect.

It is easy to design a “heavy profile” (rigid and resistant) that is not optimized for glass.

It is difficult, very difficult, to create a “shock-absorbing profile” (elastic and resistant) designed to work together with the glass.

In the following pages you will discover the surprising results achieved by Ninfa series 6.

THE FUNDAMENTAL ROLE OF ACCESSORIES: THE RS SYSTEM

Immediately after the profile, we find the heart of the new NINFA technology: the RS system of internal accessories. Having a profile with exceptional performance is not enough, if it is not accompanied by a system of accessories that are equally high-performing.

The new RS system, an unprecedented glass clamping and adjustment system, allows you to set the glass plumb and tighten it in just a few quick steps, achieving a complete composite system.

Furthermore, the glass thickness change system is also new; it is done simply by replacing the pressure blocks with a single click.



THE GASKETS: ADVANTAGES OF THE NEW DESIGN AND COMPOUND

Have you ever thought of gaskets as an important element for a glass balustrade? They are not needed only to avoid contact of the glass with aluminium, but also to limit the passage of water. Here too, a simple gasket that merely plays a minor role is not enough — it must take on a truly leading role.

The compound must be designed in such a way as not to expand or shrink, and to maintain its colour over time despite its exposure to different weather conditions and atmospheric agents.

On the technical side, it must be easy to insert and must adhere to the glass in the various conditions of inclination.



The Ninfa 6 series has left nothing to chance, thanks to the gasket made with a special compound that allows it not to shrink over time, not to yellow and always remain under pressure on the glass.

FIXING: CHEMICAL OR MECHANICAL?

This is the question that designers and installers ask us most often: which fastening do you recommend?

Fastening is a fundamental element in any application. Whether it's a window, an awning, a canopy, each product must have a fixing suitable to hold its weight under certain conditions.

I can assure you that the fixing for the balustrades is of fundamental importance.

Since as far back as 2008, with the first Ninfa systems, floor fixing has always been a primary element — so much so that throughout the design of the various Ninfa systems over the years, it has always been the first element to be taken into consideration.



The fixing system indicated by Faraone is the only one able to guarantee a perfect fastening strength, which is verified by calculation and carried out in several tests performed both in our test laboratory and at the certification bodies.

- threaded rod certified according to the applicable standard
- a corresponding CERTIFIED chemical anchor recommended by the manufacturer, not just any chemical resin!

Is the mechanical fixing not up to standard? Let me be clear, even the mechanical fixing offers the necessary guarantees if you are sure that you have a "guaranteed" concrete.

This is why fixing with a chemical resin offers all the guarantees needed for those who do not want to have problems after the installation.

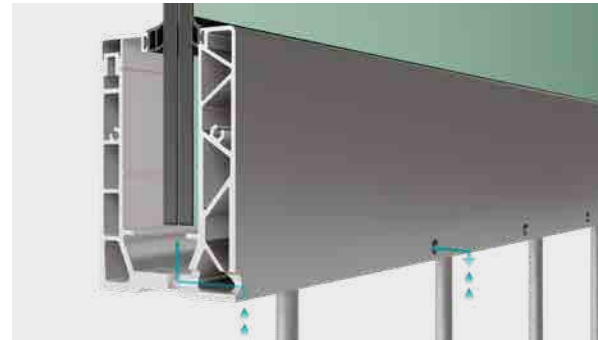
WATER DRAINAGE ON THE PROFILE

The first question that is asked by the designer and the customer is: where does the water go? Water has always been a hassle for all those dealing with outdoor balustrades. You never know where it comes from. Even when everything is planned and well-designed, water can sometimes seep through any micro-crack and become a problem.

When it comes to the balustrade, the utmost attention must be paid during outdoor installation to:

- the gasket along the glass
- the seal between glass panels
- fixing
- water stagnating near the profile due to the inclination and the lack of drainage provisions.
- do not use polyester resins, they are not suitable for the required loads.

By paying attention to all these points, and with a



proper installation, water infiltration can be avoided. However, we wanted to go further with two important technical measures:

- the use of epoxy resin to limit water ingress (waterproof)
- external drainage outlets on the entire new Ninfa 6 series

This prevents water from infiltrating the fixing points, while any excess water drains through the drainage outlets (just as in window systems).

TESTS

① Faraone Laboratory Test

The creation of every product goes through laboratory tests. The Ninfa Series 6 was also subjected to numerous tests at the Faraone LAB during its development process.

faraone® LAB



② Politecnico di Milano Test

After passing the tests at the Faraone LAB, the certifications are also obtained at the Politecnico di Milano.



MAINTENANCE

In general, classic iron or masonry balustrades require continuous routine and major maintenance, with repainting needed every 6 to 10 years.

The more you live in areas affected by atmospheric agents, such as near the sea, the more maintenance you will need to do.

With an aluminium and glass balustrade (with suitable anodising or painting) you can rest assured for many years. These materials are widely used in architecture to last over time. This type of balustrade consists of an aluminium



Maintenance with specific antirust treatments for common metal balustrades is recommended, to prevent them from being corroded by time, losing beauty and safety.



profile painted according to QUALICOAT and SE-ASIDE system and anodised according to QUALANOD.

The main components of a balustrade system are:

- Painted or anodised aluminium profile (supporting structure);
- Floor fixing bolts;
- Laminated tempered/tempered or tempered/hardened glass 8.8 or 10.10 (5/16" 5/16" or 3/8" 3/8") + interlayer;
- Gaskets;



WE ARE GREEN

Faraone chooses sustainable and recyclable raw materials for its products and their packaging. The management of its own special waste is accomplished according to the Italian legislation.



GLASS . Glass is the sustainable material par excellence. Glass can be reused an unlimited number of times, while keeping its properties intact. In addition, at the production level, re-melting the waste material implies a lower waste of energy and raw materials. It is also an energy-efficient material for its applications in architecture and design. (Such as, for example, the application of glass with photovoltaic cells for the balustrades).



ALUMINIUM . Aluminium is today one of the most common materials in the construction sector, both because it is optimal for countless uses and, from an environmental point of view, for its quality, thanks also to the new carbon-free production methods. To date, aluminium is one of the best choices in terms of sustainability, as it is a 100% recyclable material and significantly reduces energy consumption during production, while maintaining its qualitative performance intact.



STEEL . Steel is thought to be the most recycled material in the world, of which Italy holds the record in Europe with about 80%. High strength and durability make it an essential material in the construction world, as well as beneficial for the environment and the economy.



PACKAGING . All our packaging is made from recyclable materials, starting with the cardboard used to make the product packaging.

Certifications:



Members of:



INTENDED USE

For new builds or refurbishments

01 RESIDENTIAL

- private house
- indoors / outdoors



02 RESIDENTIAL COMPLEXES

- balconies
- terraces



03 FENCES

- residential
- public



04 WORKING ENVIRONMENTS

- offices
- conference rooms



05 HOSPITALITY

- hotels
- restaurants
- chalets
- poolside fencing



06 INFRASTRUCTURE

- airports
- train stations



07 HISTORICAL BUILDINGS

- Churches and places of worship
- redevelopment of historic centres



08 SHOPPING CENTRES

- halls
- external terraces



INTENDED USE

For new builds or refurbishments

09HEALTHCARE FACILITIES

- hospitals
- private clinics
- socio-health structures
- nursing homes



10SCHOOL BUILDINGS

- schools
- campus and university



11SPORTS FACILITIES

- stadiums
- sports halls
- swimming pools
- racetracks





NINFA[®] 106

THE MINIMAL & HIGH-PERFORMANCE GLASS BALUSTRADE

The **NINFA 106** glass balustrade was created to increase the safety level of balconies, terraces, stairs, galleries and poolside fencing. It's ideal for private and public spaces.

NINFA 106 is the first system to simultaneously meet engineering software calculation requirements and pass all static load and dynamic impact tests required by the standards. The profile accommodates both 8.8 and 10.10 (5/16" .5/16" and 3/8".3/8") glass thanks to the new **RS system** for adjusting and tightening the glass.

Optional: External LED pack and handrail.

Finishes: Standard and on request customisations.

NINFA[®] 106 H



For uncrowded environments:

Tested to 300 kg/m 202 lb/ft

Dynamic impact resistance up to 350 J 258 ft-lb

NINFA[®] 106 P



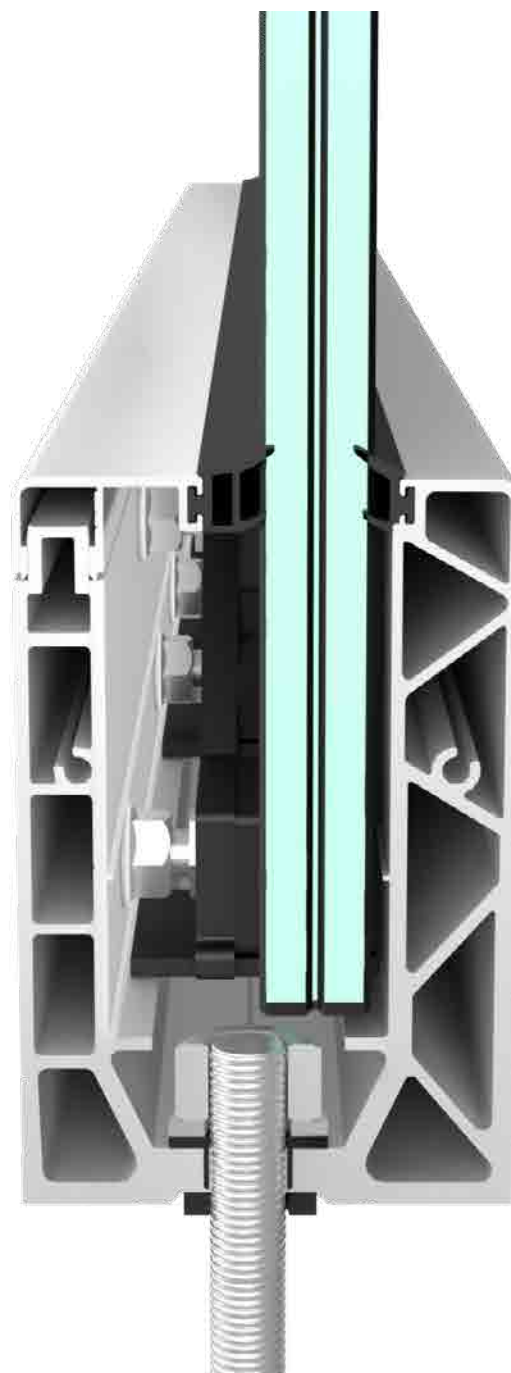
For very crowded environments:

Tested to 450 kg/m 302 lb/ft

Dynamic impact resistance up to 600 J 440 ft-lb

Ninfa 106 H (Home)

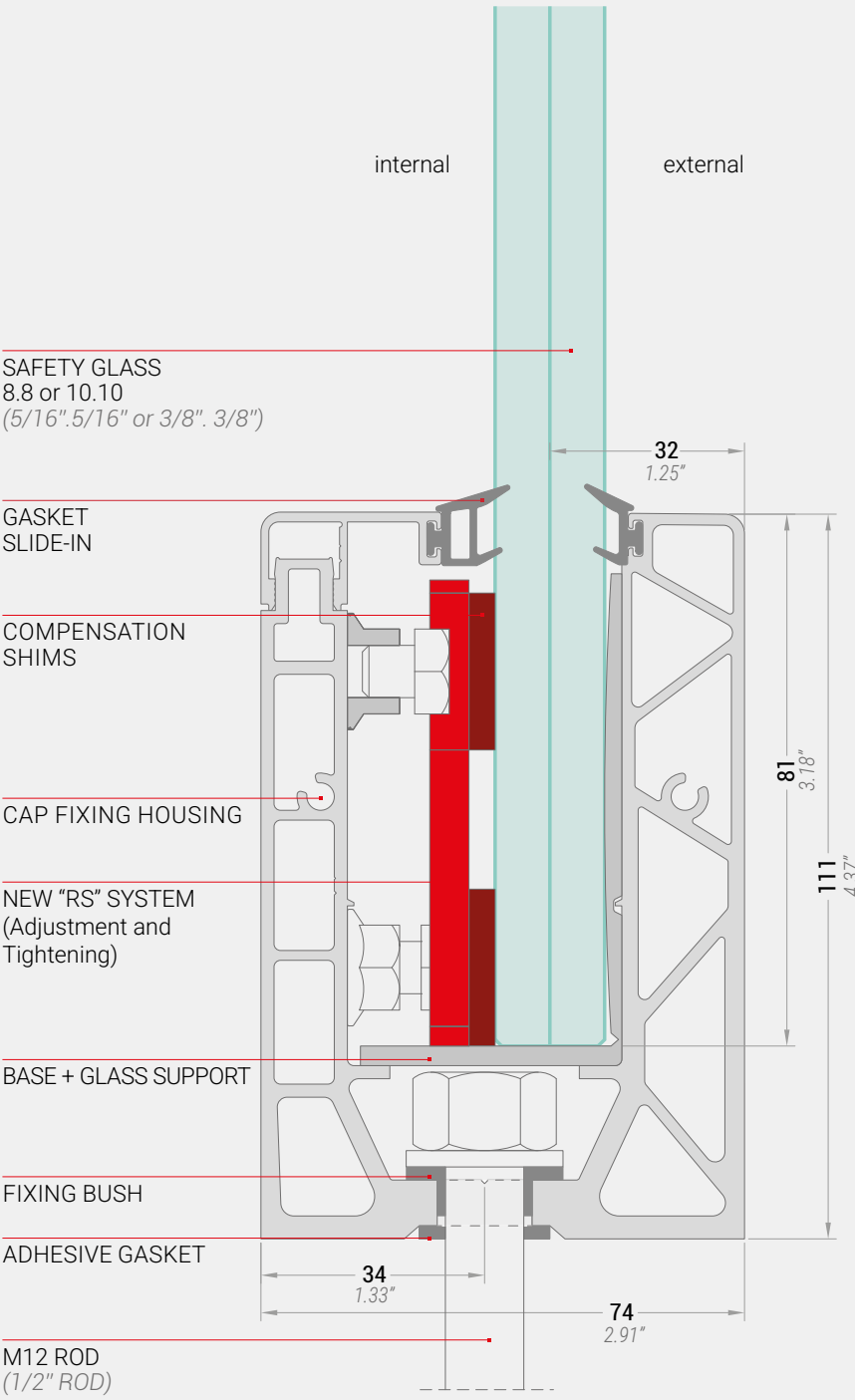
Ninfa 106 P (Professional)



TECHNICAL DETAILS

This page shows the complete list of the main components.

Some accessories, such as the adjusting block, the gaskets and the cladding can vary to accommodate different thicknesses of glass panels, such as the "compensator shim" shown in the drawing alongside.



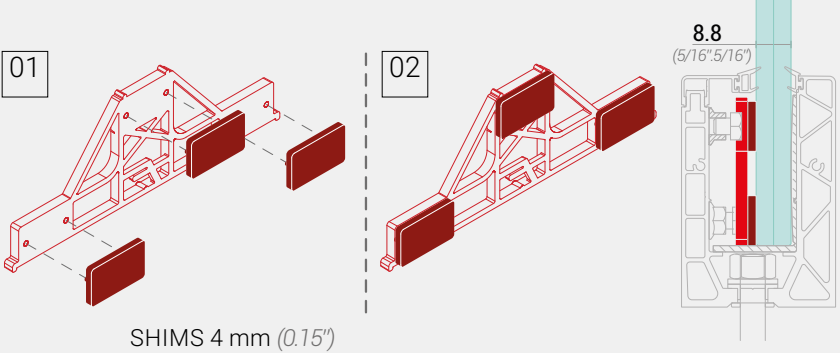
scale 1:1

GLASS THICKNESS VARIATIONS:

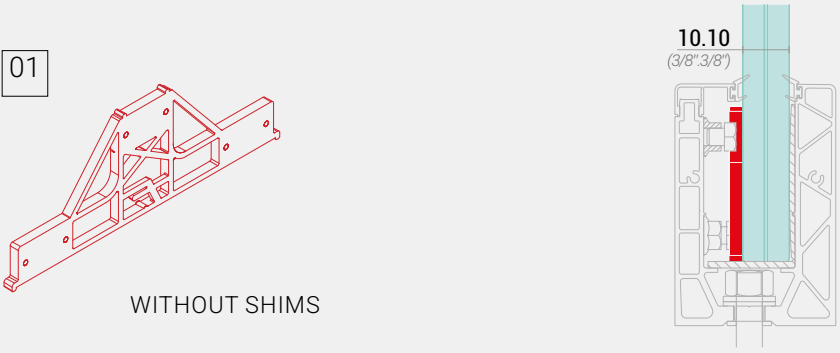
The thickness of the glass can vary from a minimum of 8.8 (5/16".5/16") to a maximum of 10.10 (3/8".3/8") using the appropriate compensation shims inserted in the "RS System".

On the left, the two variants with glass thickness change (highlighted in red).

ASSEMBLY OF THE RS SYSTEM - GLASS 8.8 (5/16".5/16")

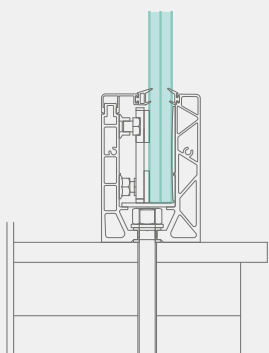


ASSEMBLY OF THE RS SYSTEM - GLASS 10.10 (3/8".3/8")

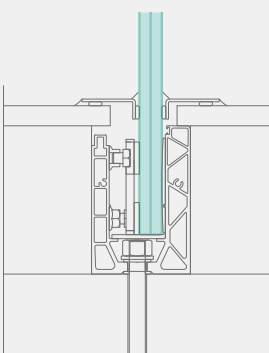


MAIN APPLICATIONS

TOP-MOUNTED



EMBEDDED 1



Embedded 1 recommended for indoor use only



NINFA[®] 116

THE GLASS BALUSTRADE FOR EXTERNAL FLUSH MOUNTING

The **NINFA 116** glass balustrade was created to increase the safety level of balconies, terraces, stairs, galleries and poolside fencing. It's ideal for private and public spaces.

NINFA 116, like the entire new series, has been verified through engineering software calculations and laboratory tests, including static load and dynamic impact tests, as required by Italian regulations.

The profile accommodates both 8.8 and 10.10 (5/16" .5/16" and 3/8".3/8") glass thanks to the new **RS system** for adjusting and tightening the glass.

Optional: External LED pack and handrail.

Finishes: Standard and on request customisations.

NINFA[®] 116 H



For uncrowded environments:

Tested to 300 kg/m 202 lb/ft

Dynamic impact resistance up to 350 J 258 ft-lb

NINFA[®] 116 P



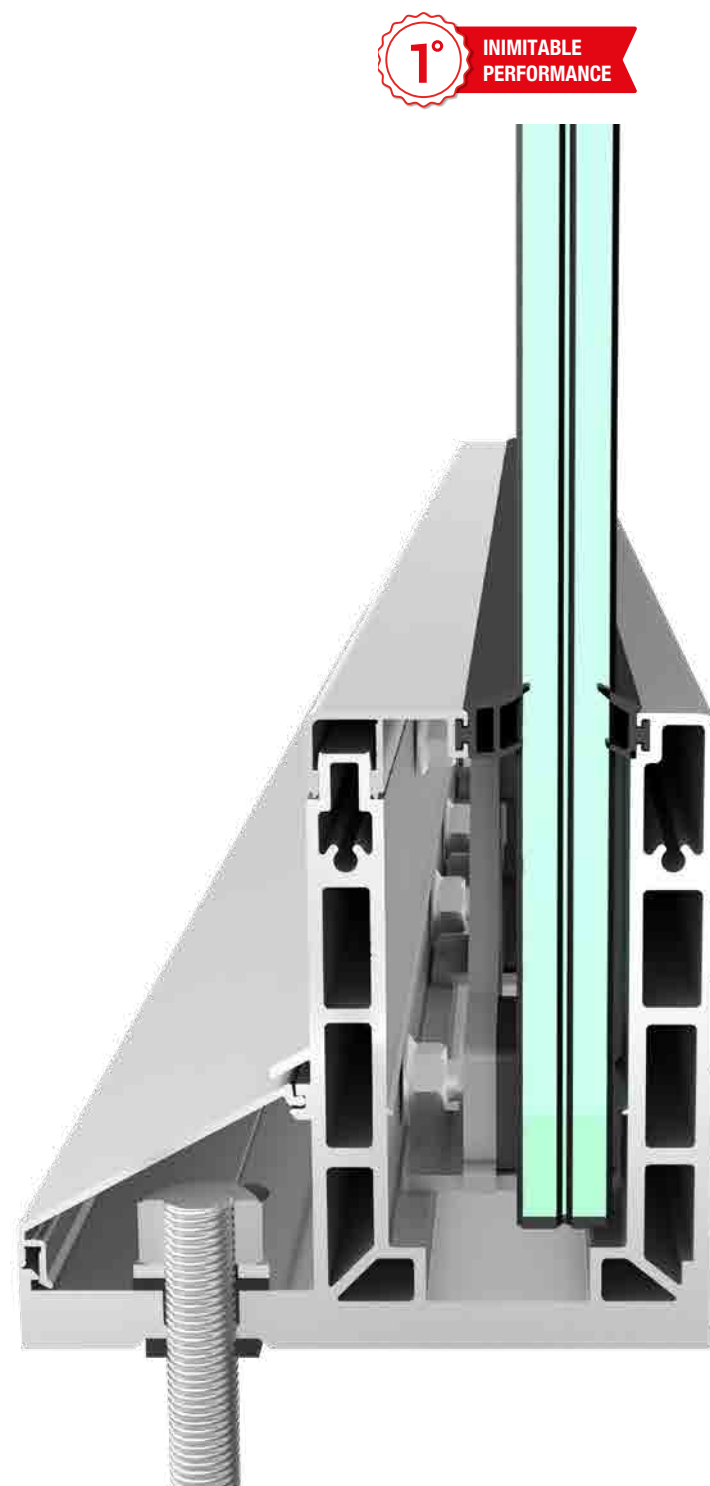
For very crowded environments:

Tested to 450 kg/m 302 lb/ft

Dynamic impact resistance up to 600 J 440 ft-lb

Ninfa 116 H (Home)

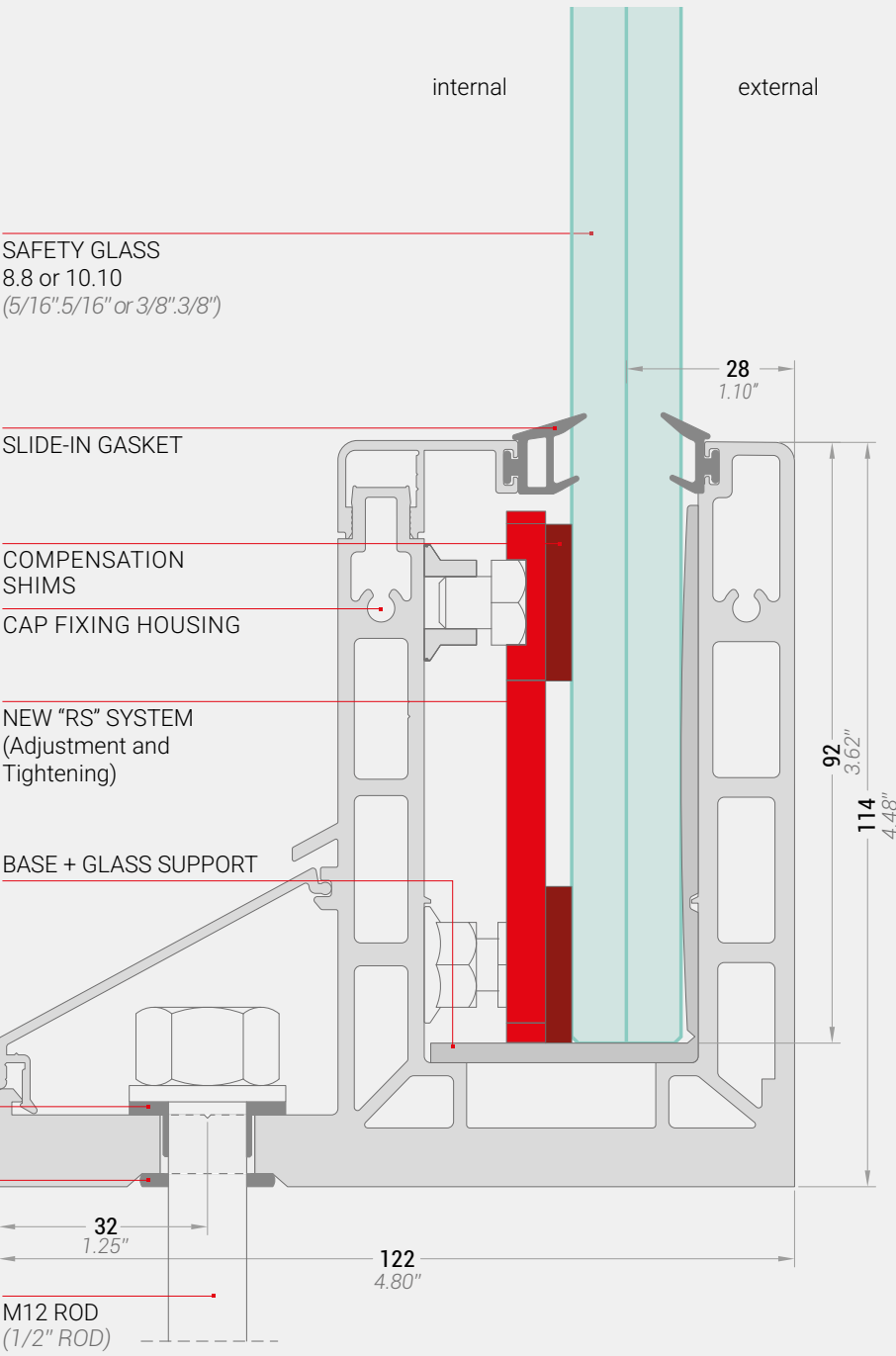
Ninfa 116 P (Professional)



TECHNICAL DETAILS

This page shows the complete list of the main components.

Some accessories, such as the adjusting block, the gaskets and the cladding can vary to accommodate different thicknesses of glass panels, such as the "compensator shims" shown in the drawing alongside.



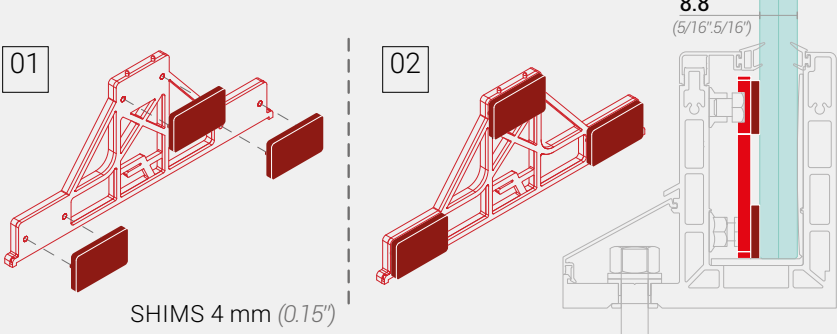
scale 1:1

GLASS THICKNESS VARIATIONS:

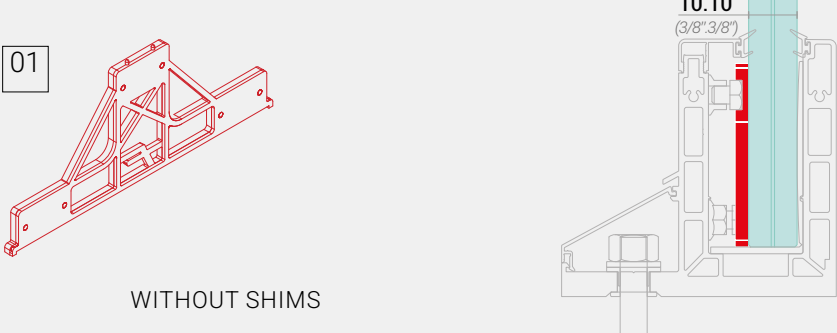
The thickness of the glass can vary from a minimum of 8.8 (5/16".5/16") to a maximum of 10.10 (3/8".3/8") using the appropriate compensator shims

inserted in the "RS System".
On the left, the two variants with glass thickness change (highlighted in red).

ASSEMBLY OF THE RS SYSTEM - GLASS 8.8 (5/16".5/16")



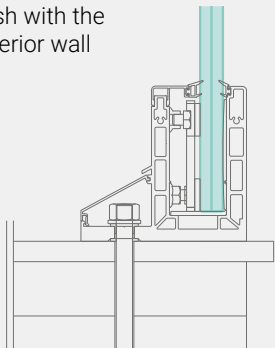
ASSEMBLY OF THE RS SYSTEM - GLASS 10.10 (3/8".3/8")



MAIN APPLICATIONS

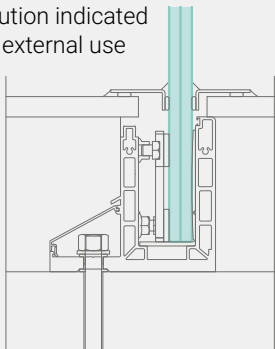
TOP-MOUNTED

flush with the exterior wall



EMBEDDED 1

solution indicated for external use





NINFA[®] 56

THE GLASS BALUSTRADE WITH ULTRA SLIM DESIGN

The **NINFA 56** glass balustrade is the smallest of the series, in height and width (recommended for private spaces) it can be used in the following ways:

1) on a low reinforced concrete wall, **the glass can have a variable height up to a maximum of 90 cm.** (example 20 cm wall + 90 cm glass = H 110 cm, height now required in general) (wall 7.87" + glass 35.43" = H 43.31").

The use of the anti-climbing cladding for children is essential.

2) It can be top-mounted with the normal cladding and with the 8.8 (5/16" 5/16") glass 100 cm (39.37") high only if there is no risk of falling from height.

(example: internal partition, ground floor, or similar).

The profile accommodates **6.6 and 8.8 glass panels** (1/4" 1/4" and 5/16" 5/16"), thanks to the new **RS system** for adjusting and tightening the glass.

Optional: External LED pack and handrail.

Finishes: Standard and on request customisations.

NINFA[®] 56 H



For uncrowded environments:

Tested to 300 kg/m 202 lb/ft

Dynamic impact resistance up to 350 J 258 ft-lb

NINFA[®] 56 P



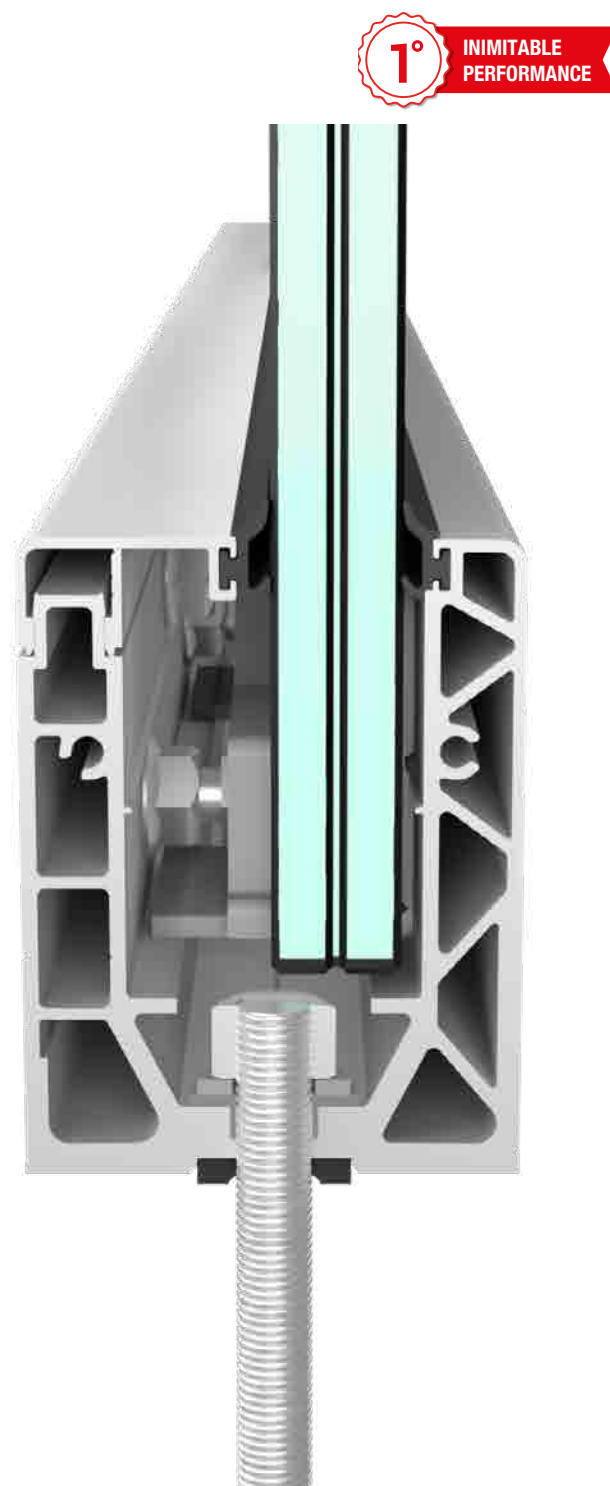
For very crowded environments:

Tested to 450 kg/m 302 lb/ft

Dynamic impact resistance up to 600 J 440 ft-lb

Ninfa 56 H (Home)

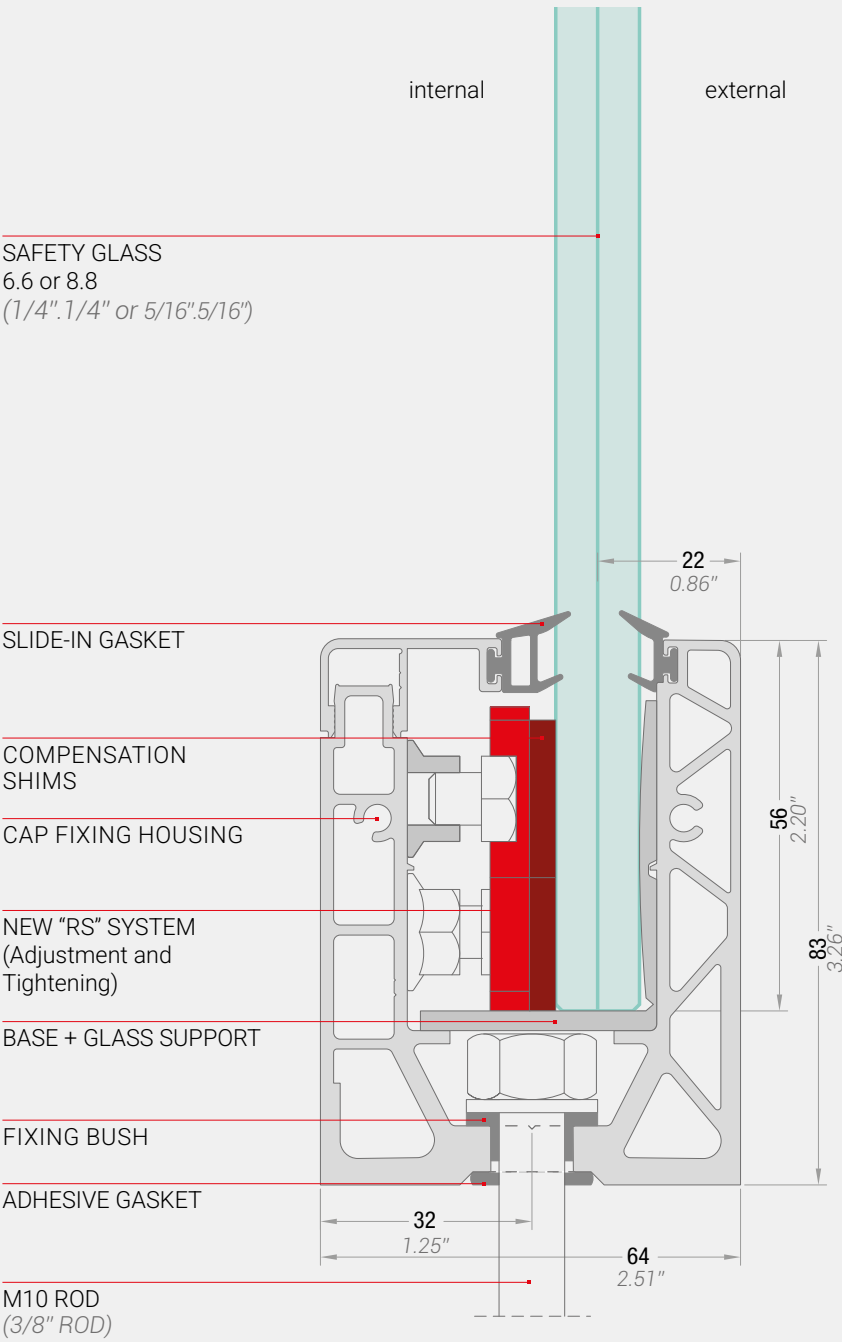
Ninfa 56 P (Professional)



TECHNICAL DETAILS

This page shows the complete list of the main components.

Some accessories, such as the adjusting block, the gaskets and the cladding can vary to accommodate different thicknesses of glass panels, such as the "compensator shims" shown in the drawing alongside.

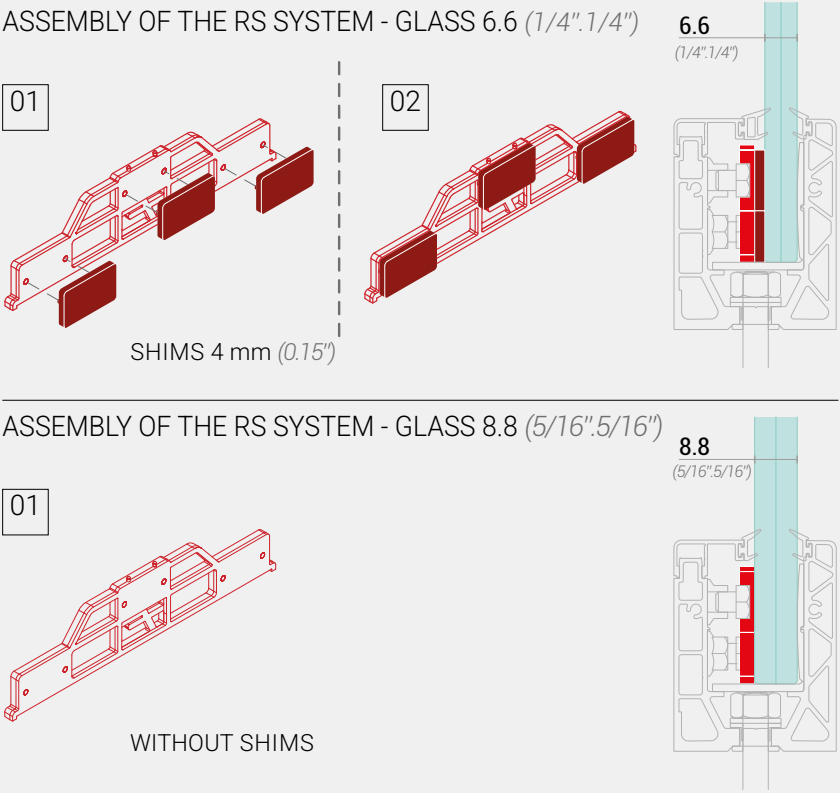


scale 1:1

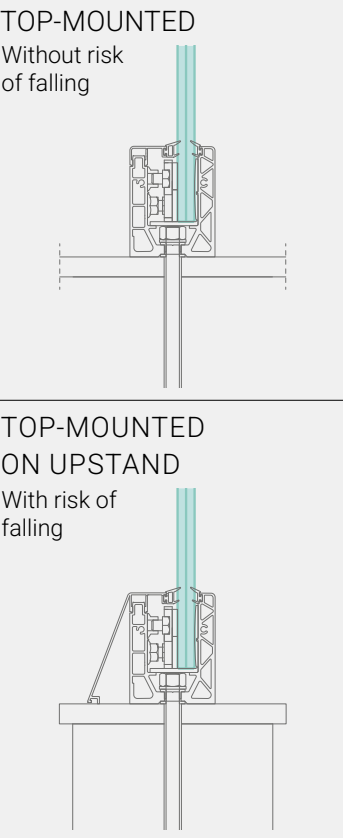
GLASS THICKNESS VARIATIONS:

The thickness of the glass can vary from a minimum of 6.6 (1/4".1/4") to a maximum of 8.8 (5/16".5/16") using the appropriate compensator shims

inserted in the "RS System".
On the left, the two variants with glass thickness change (highlighted in red).



MAIN APPLICATIONS





NINFA[®] 176

THE GLASS BALUSTRADE WITH INTERNAL LATERAL FIXING

The **NINFA 176** glass balustrade is the technology for internal side mounting, ideal for private and public spaces thanks to its performance. **NINFA 176**, like the whole new series, has been verified through engineering calculations and laboratory tests, including static load and dynamic impact tests, as required by Italian regulations. The profile accommodates 8.8, 10.10 and 12.12 (5/16" .5/16", 3/8".3/8" and 1/2".1/2") glass thanks to the new **RS system** for adjusting and tightening the glass.

Optional: External LED pack and handrail.

Finishes: Standard and on request customisations.

NINFA[®] 176 H



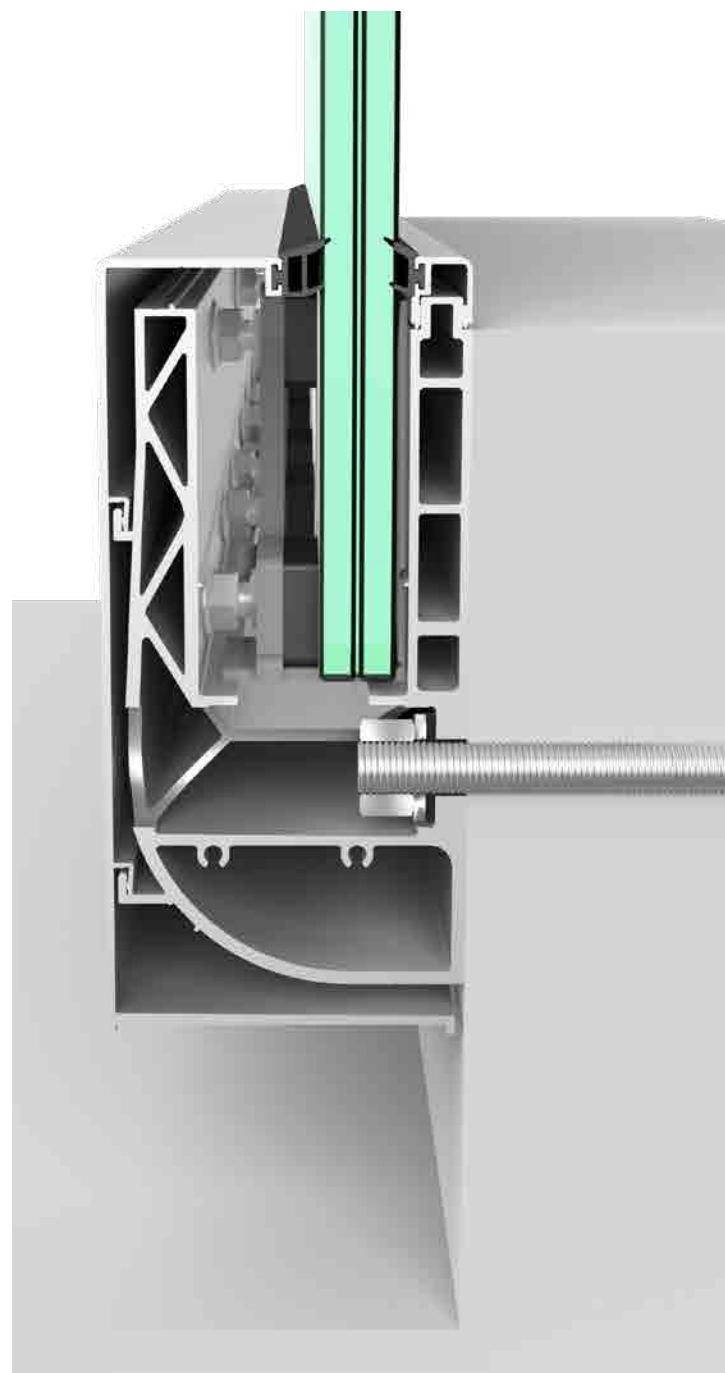
For uncrowded environments:
Tested to 300 kg/m 202 lb/ft
Dynamic impact resistance up to 350 J 258 ft-lb

NINFA[®] 176 P



For very crowded environments:
Tested to 450 kg/m 302 lb/ft
Dynamic impact resistance up to 600 J 440 ft-lb

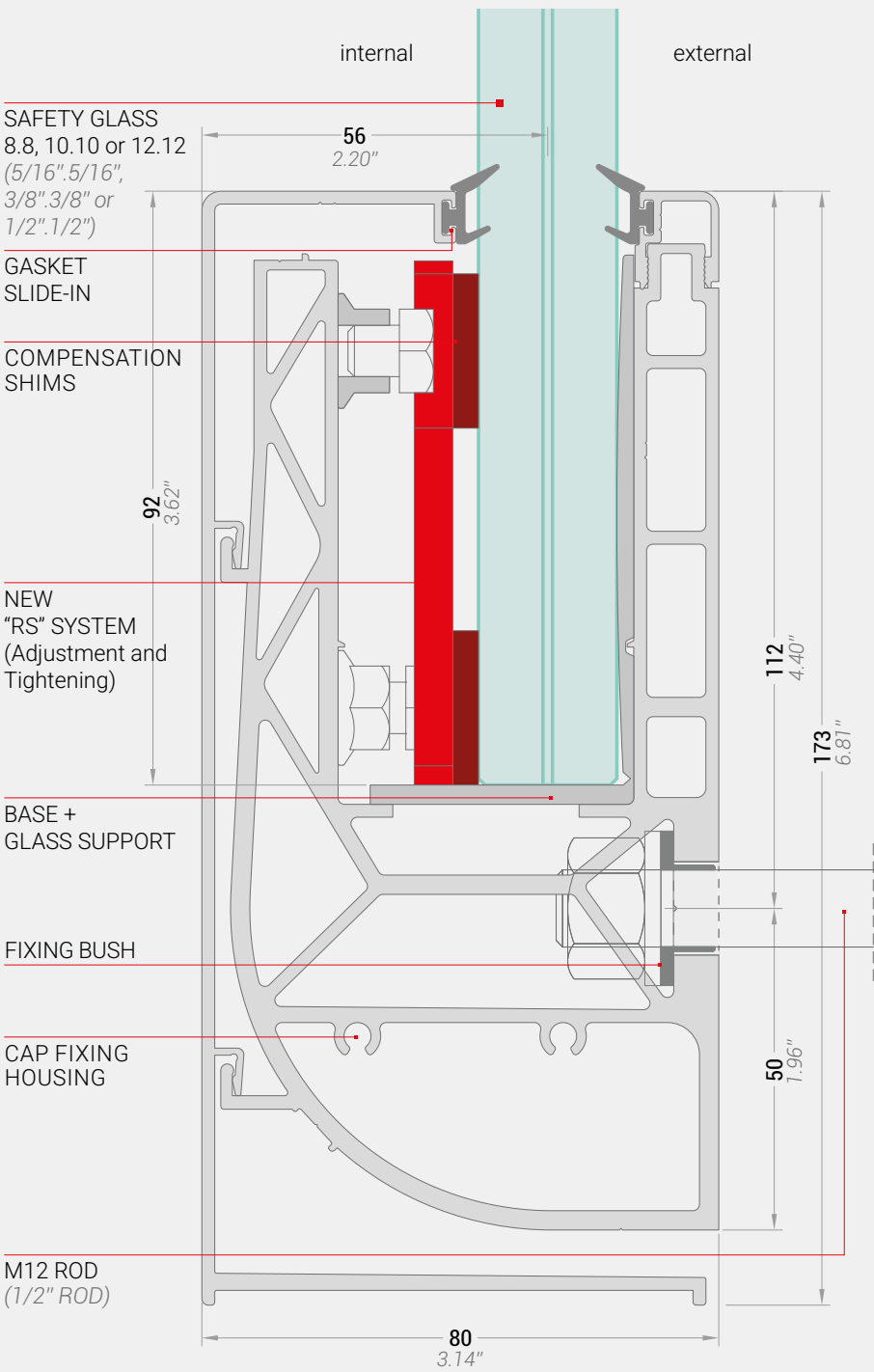
Ninfa 176 H (Home)
Ninfa 176 P (Professional)



TECHNICAL DETAILS

This page shows the complete list of the main components.

Some accessories, such as the adjusting block, the gaskets and the cladding can vary to accommodate different thicknesses of glass panels, such as the "compensator shims" shown in the drawing alongside.



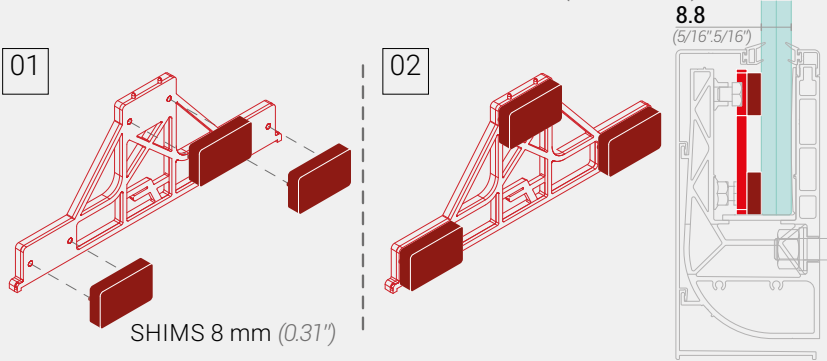
scale 1:1

GLASS THICKNESS VARIATIONS:

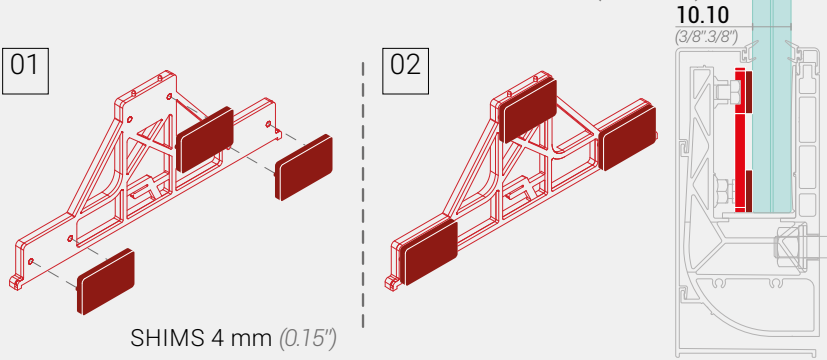
The thickness of the glass can vary from a minimum of 8.8 (5/16".5/16"), 10.10 (3/8".3/8") to a maximum of 12.12 (1/2".1/2") using the appropriate compen-

sator shims inserted in the "RS System".
On the left, the two variants with glass thickness change (highlighted in red).

ASSEMBLY OF THE RS SYSTEM - GLASS 8.8 (5/16".5/16")



ASSEMBLY OF THE RS SYSTEM - GLASS 10.10 (3/8".3/8")

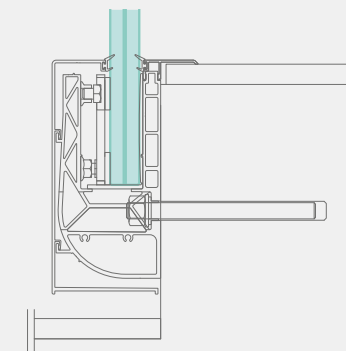


ASSEMBLY OF THE RS SYSTEM - GLASS 12.12 (1/2".1/2")

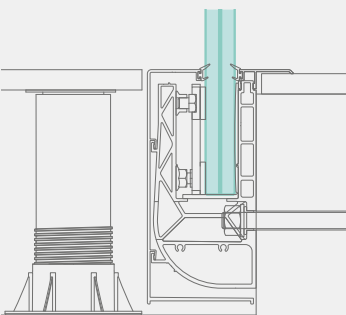


MAIN APPLICATIONS

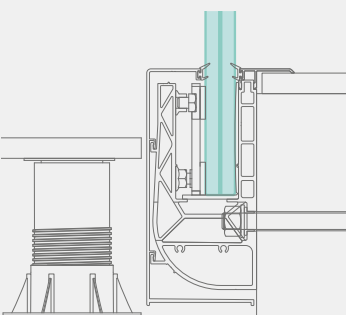
SIDE MOUNTED



EMBEDDED 1



EMBEDDED 2





NINFA[®] 186

THE GLASS BALUSTRADE WITH EXTERNAL LATERAL FIXING

The **NINFA 186** glass balustrade is designed for external side mounting, ideal for private and public spaces thanks to its performance.

NINFA 186, like the whole new series, has been verified through engineering calculations and laboratory tests, including static load and dynamic impact tests, as required by Italian regulations. The profile accommodates 8.8, 10.10 and 12.12 (5/16" .5/16", 3/8".3/8" and 1/2".1/2") glass thanks to the new **RS system** for adjusting and tightening the glass.

Optional: External LED pack and handrail.

Finishes: Standard and on request customisations.

NINFA[®] 186 (H)



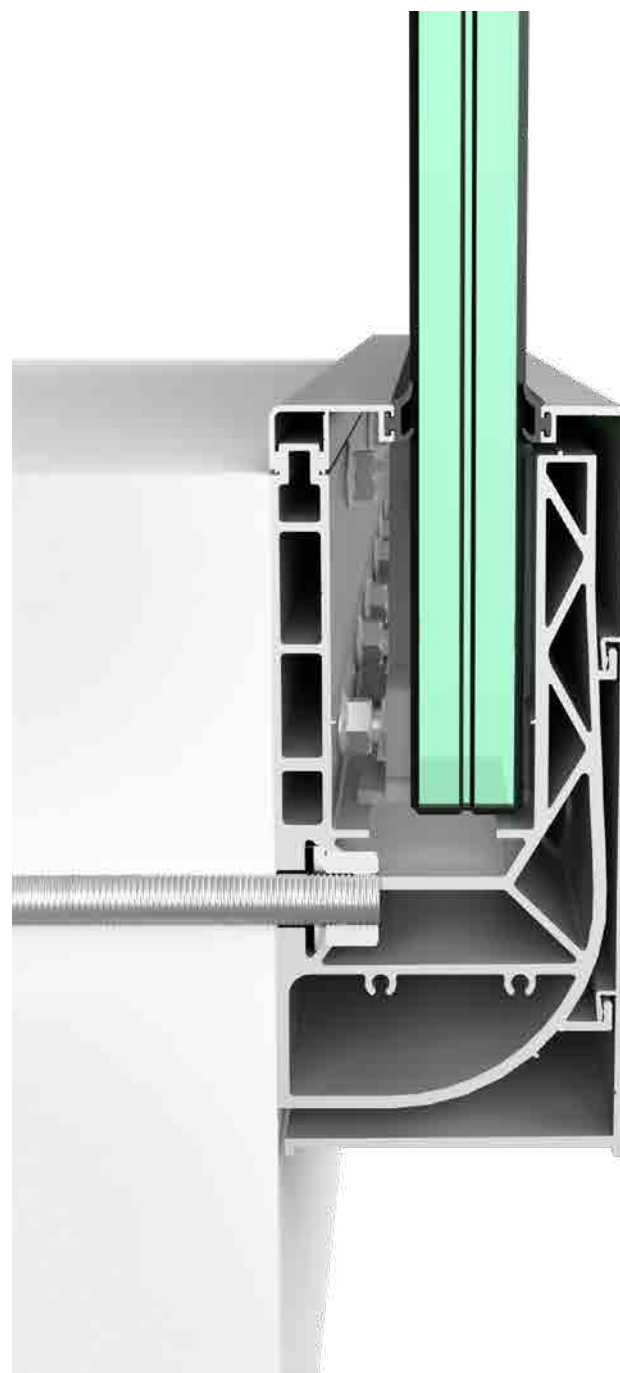
For uncrowded environments:
Tested to 300 kg/m 202 lb/ft
Dynamic impact resistance up to 350 J 258 ft-lb

NINFA[®] 186 (P)



For very crowded environments:
Tested to 450 kg/m 302 lb/ft
Dynamic impact resistance up to 600 J 440 ft-lb

Ninfa 186 H (Home)
Ninfa 186 P (Professional)

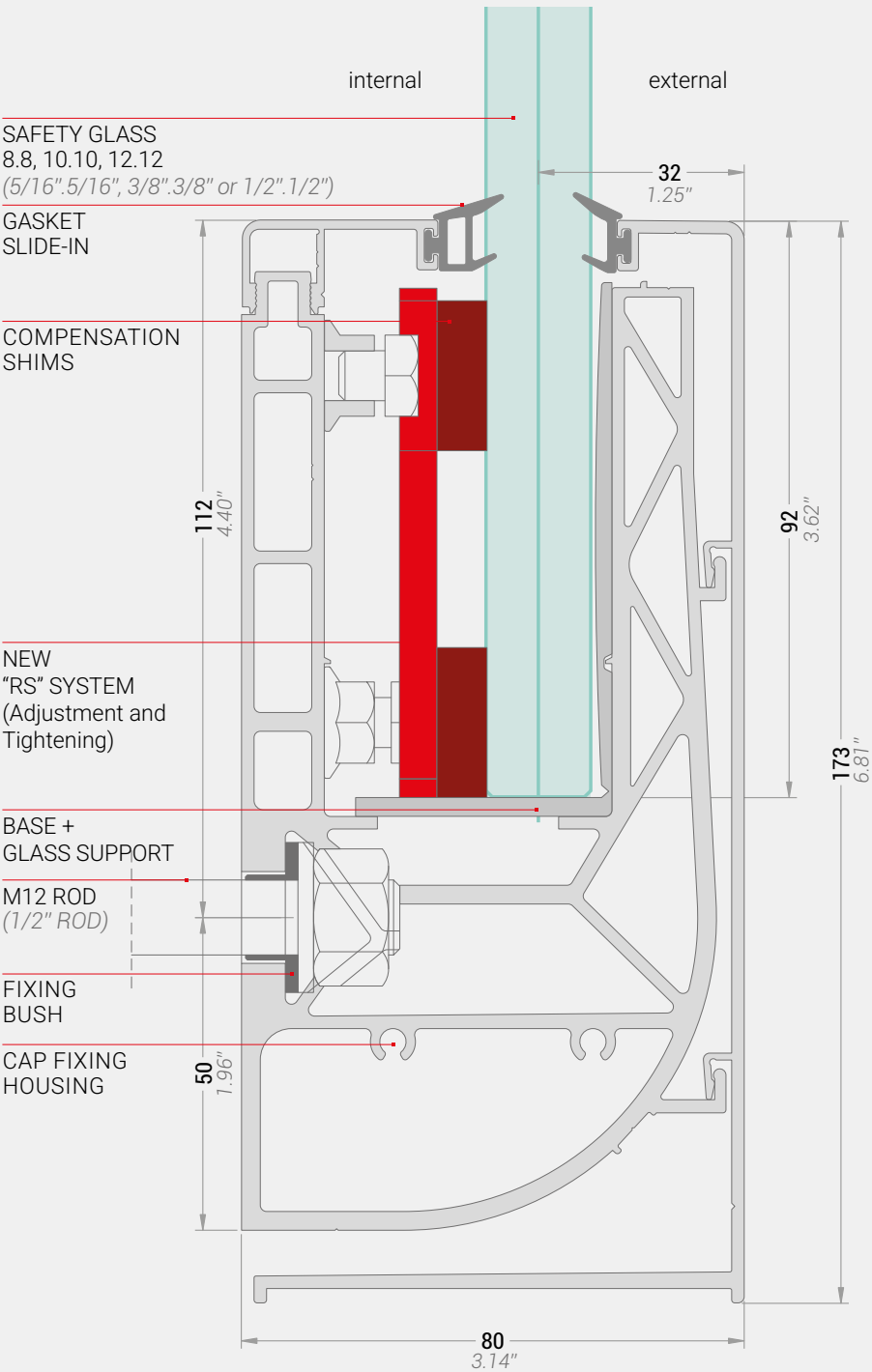


The profile can also be installed flush with the edge of the step.

TECHNICAL DETAILS

This page shows the complete list of the main components.

Some accessories, such as the adjusting block, the gaskets and the cladding can vary to accommodate different thicknesses of glass panels, such as the "compensator shims" shown in the drawing alongside.



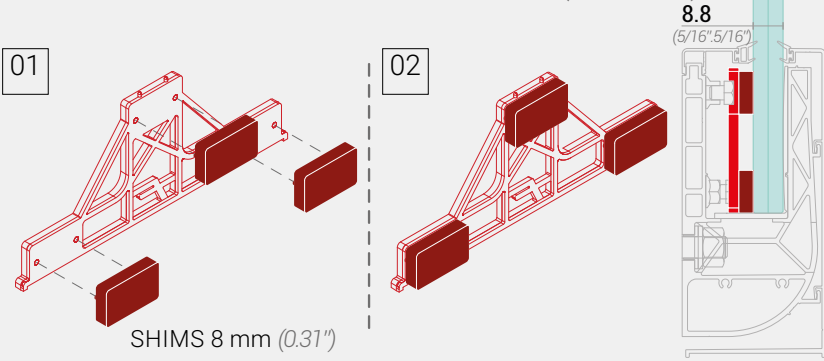
scale 1:1

GLASS THICKNESS VARIATIONS:

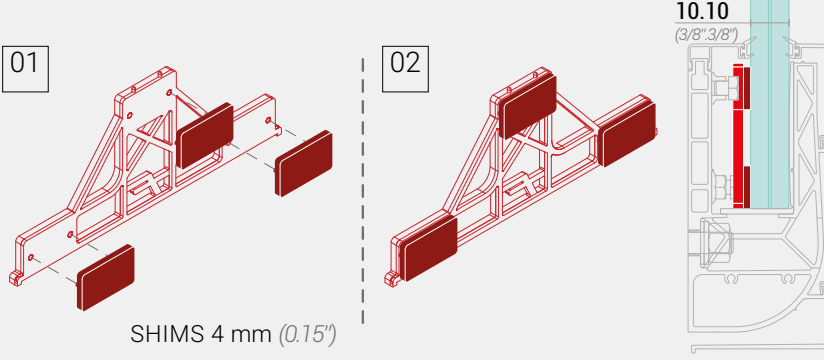
The thickness of the glass can vary from a minimum of 8.8 (5/16".5/16") to a maximum of 12.12 (1/2".1/2") using the appropriate compensator shims

inserted in the "RS System".
On the left, the two variants with glass thickness change (highlighted in red).

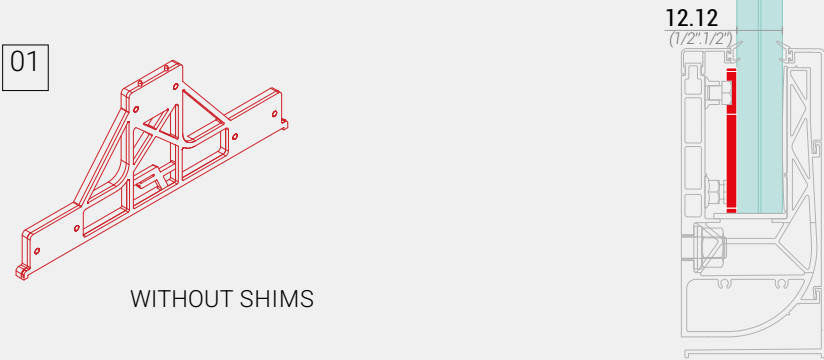
ASSEMBLY OF THE RS SYSTEM - GLASS 8.8 (5/16".5/16")



ASSEMBLY OF THE RS SYSTEM - GLASS 10.10 (3/8".3/8")

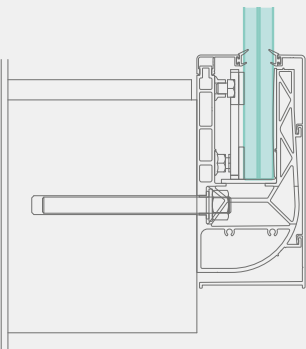


ASSEMBLY OF THE RS SYSTEM - GLASS 12.12 (1/2".1/2")



MAIN APPLICATIONS

FASCIA MOUNTED







The **NINFA 6** glass balustrade represents the new technology of the Faraone company with very high performance levels. It's ideal for public and crowded places.

NINFA 6, like the whole new series, has been verified through engineering calculations and laboratory tests, including static load and dynamic impact tests, as required by Italian regulations.

The profile accommodates both 10.10 and 12.12 (3/8".3/8" and 1/2".1/2") glass thanks to the new **RS system** for adjusting and tightening the glass.

Optional: External LED pack and handrail.

Finishes: Standard and on request customisations.



For uncrowded environments:

Tested to 300 kg/m 202 lb/ft

Dynamic impact resistance up to 350 J 258 ft-lb



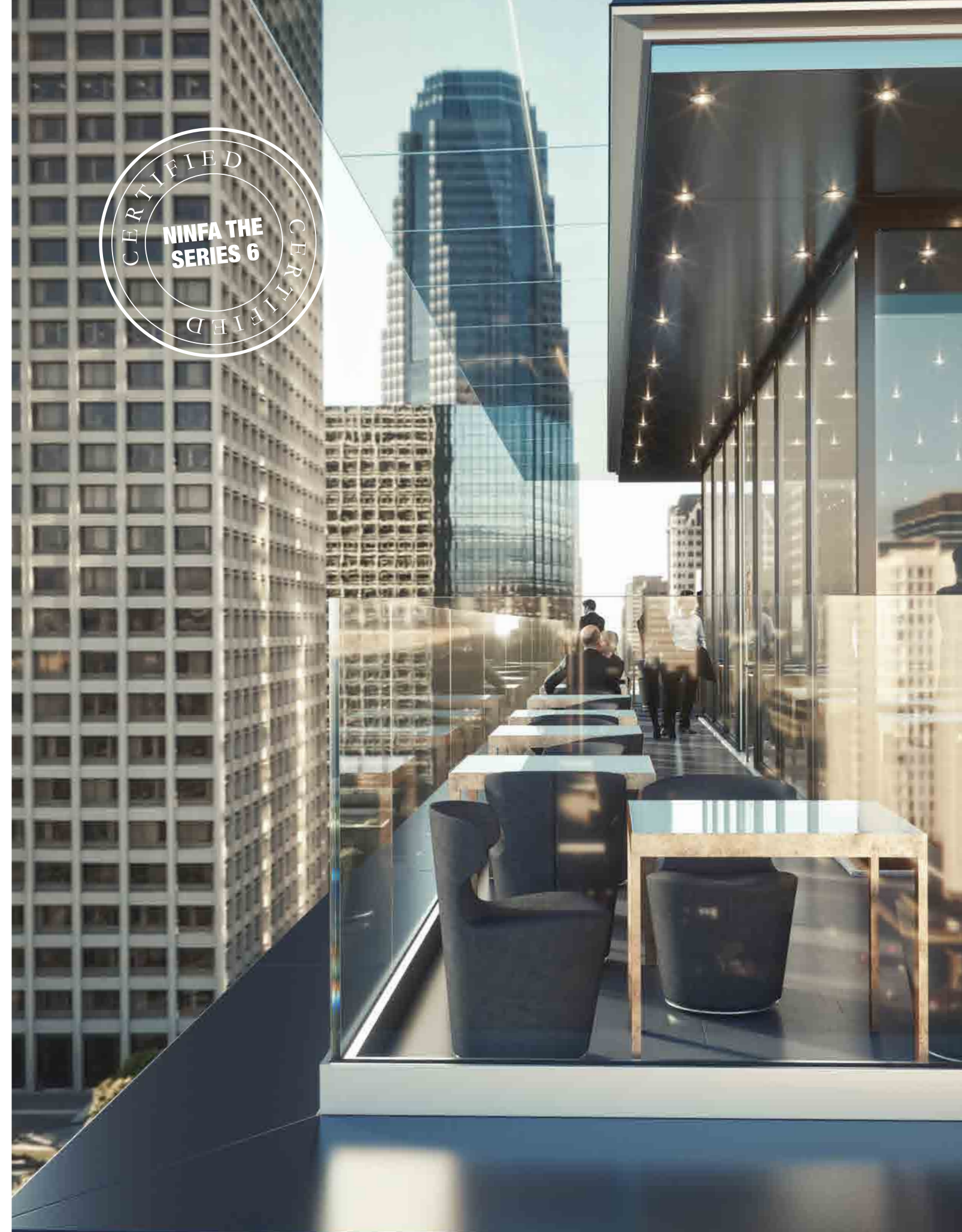
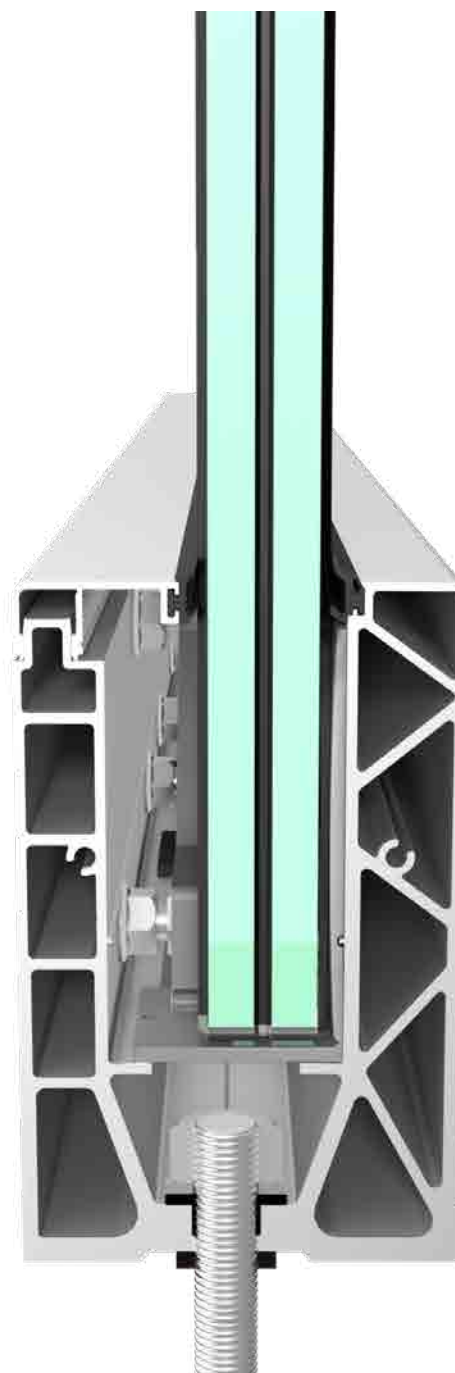
For very crowded environments:

Tested to 450 kg/m 302 lb/ft

Dynamic impact resistance up to 600 J 440 ft-lb

Ninfa 6 H (Home)

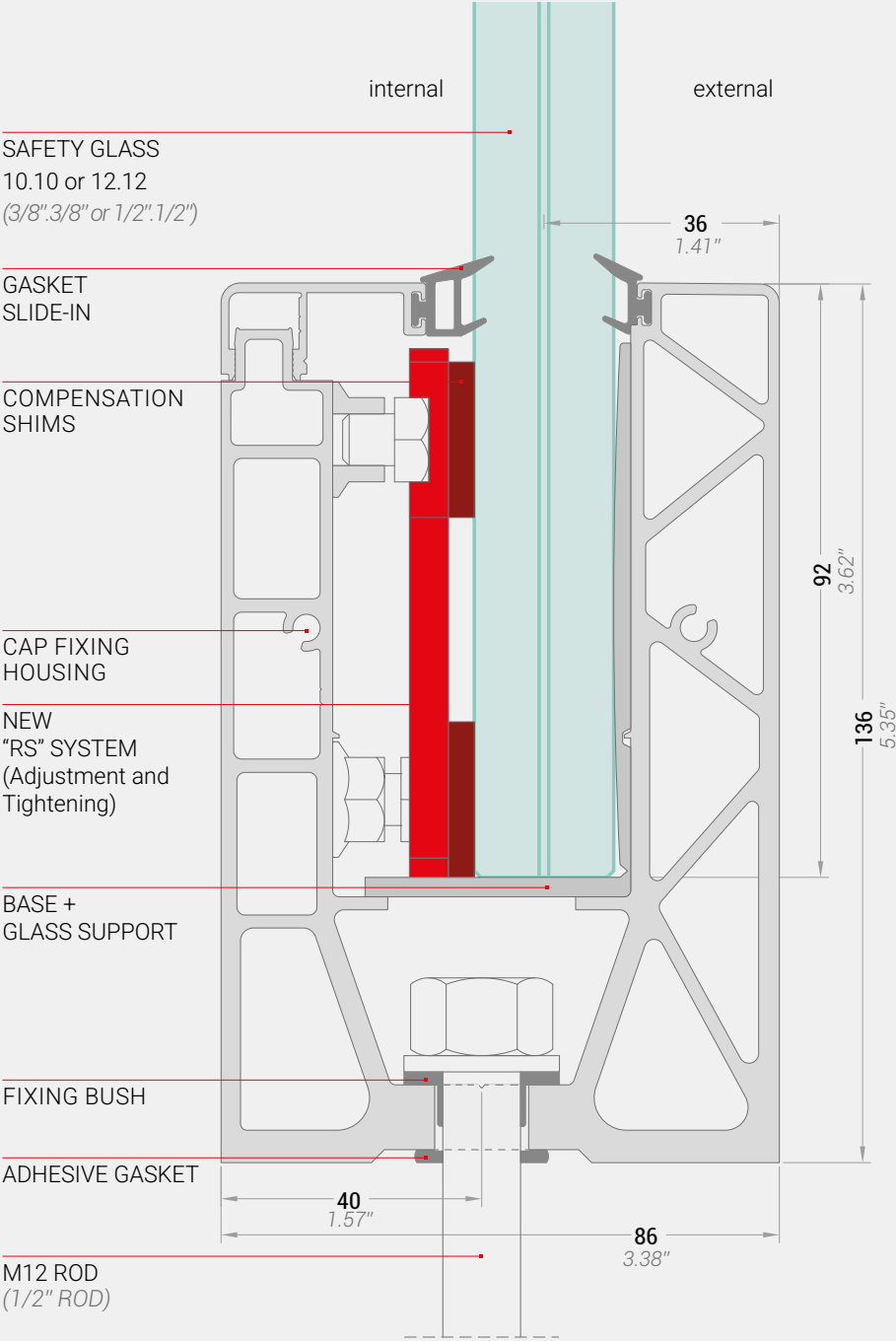
Ninfa 6 P (Professional)



TECHNICAL DETAILS

This page shows the complete list of the main components.

Some accessories, such as the adjusting block, the gaskets and the cladding can vary to accommodate different thicknesses of glass panels, such as the "compensator shims" shown in the drawing alongside.



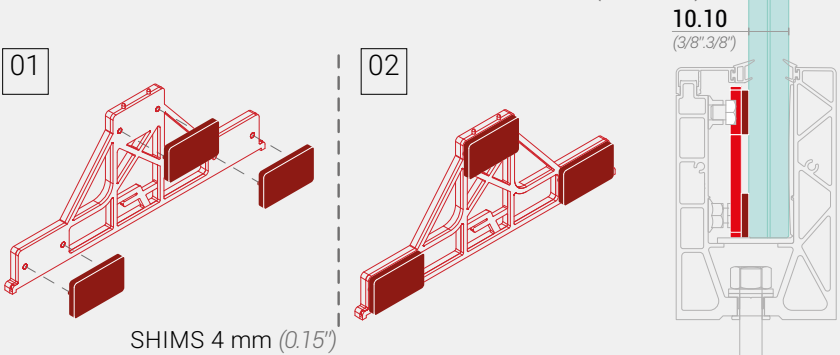
scale 1:1

GLASS THICKNESS VARIATIONS:

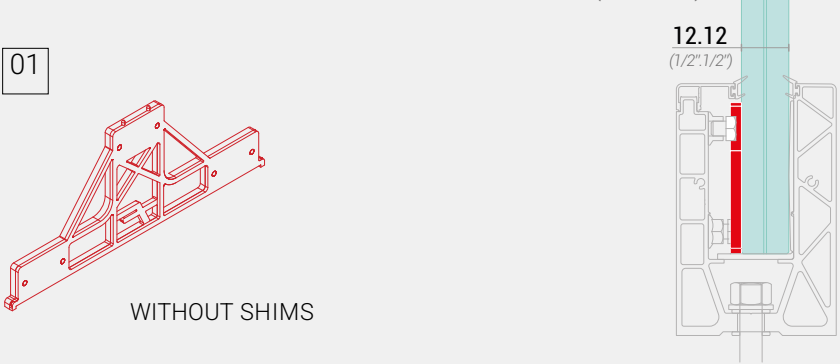
The thickness of the glass can vary from a minimum of 10.10 (3/8".3/8") to a maximum of 12.12 (1/2".1/2") using the appropriate compensator

shims inserted in the "RS System". On the left, the two variants with glass thickness change (highlighted in red).

ASSEMBLY OF THE RS SYSTEM - GLASS 10.10 (3/8".3/8")

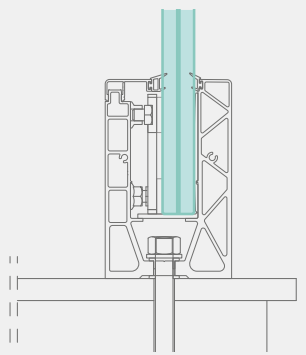


ASSEMBLY OF THE RS SYSTEM - GLASS 12.12 (1/2".1/2")

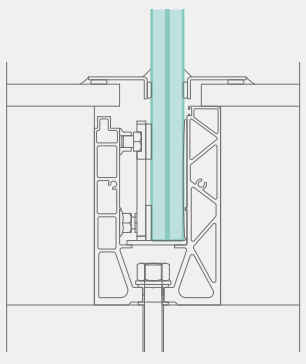


MAIN APPLICATIONS

TOP-MOUNTED



EMBEDDED 1



Embedded 1 recommended for indoor use only



NINFA[®] 50-N
THE IDEAL COMPACT GLASS BALUSTRADE FOR LOW WALLS

NINFA[®] 50-N

THE IDEAL COMPACT GLASS BALUSTRADE FOR LOW WALLS

The **NINFA 50-N** glass balustrade is the new technology from Faraone, ideal for residential and low wall installations. It passes all static load tests required by regulations.

Glass thickness: 8.8 only
(5/16".5/16").

Glass height: max. 600 mm (23.62") from wall

Optional: External LED pack and handrail.

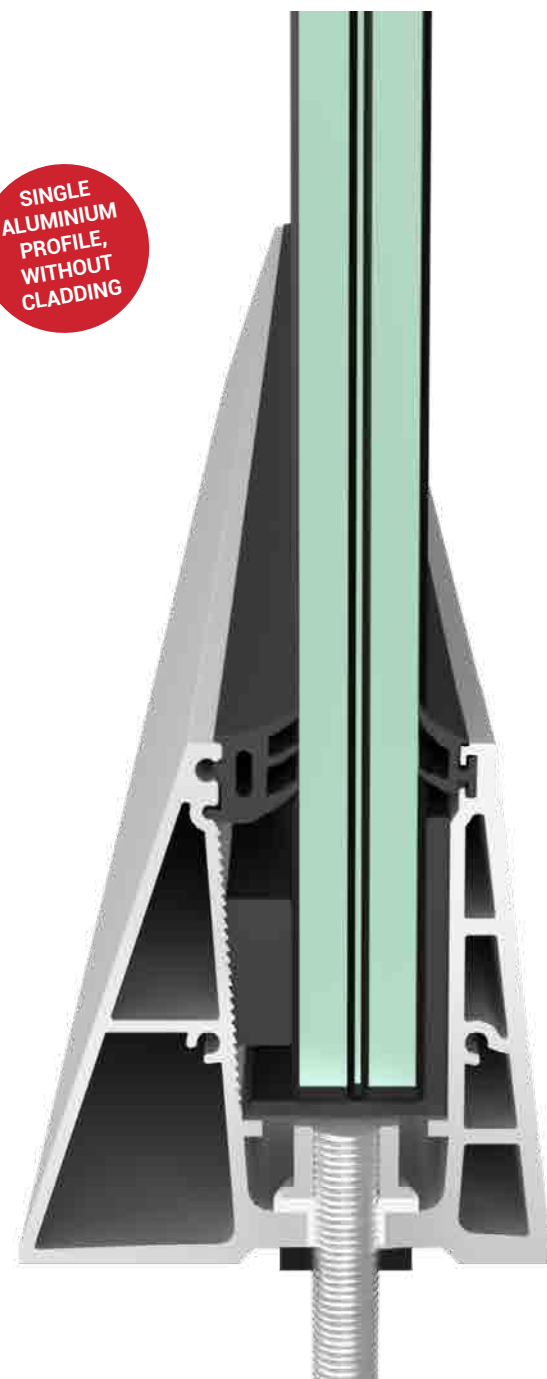
Finishes: Standard and on request customisations.

NINFA[®] 50-N (H)



For uncrowded environments:
Tested to 300 kg/m 202 lb/ft

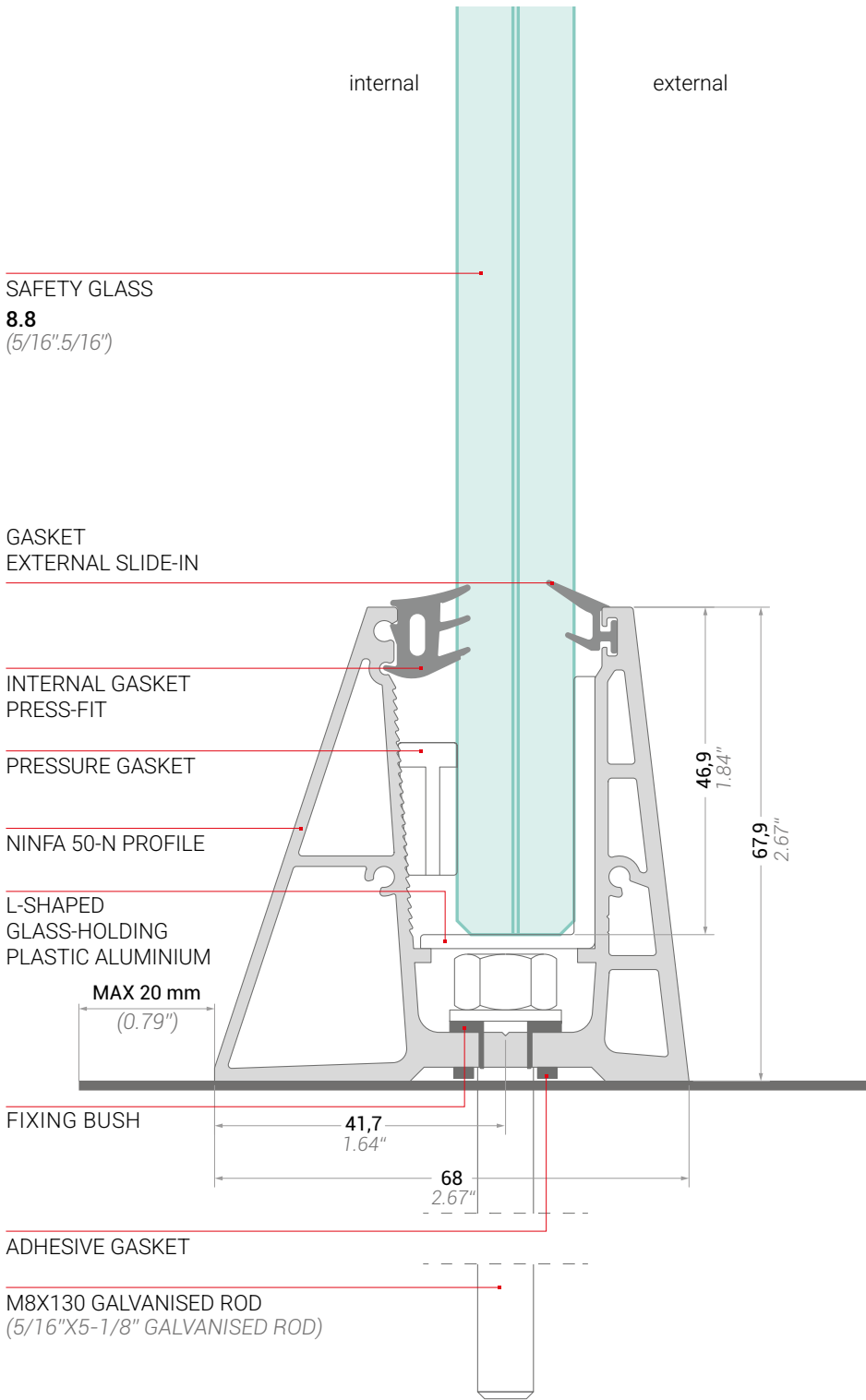
Ninfa 50-N H (Home)



TECHNICAL DETAILS

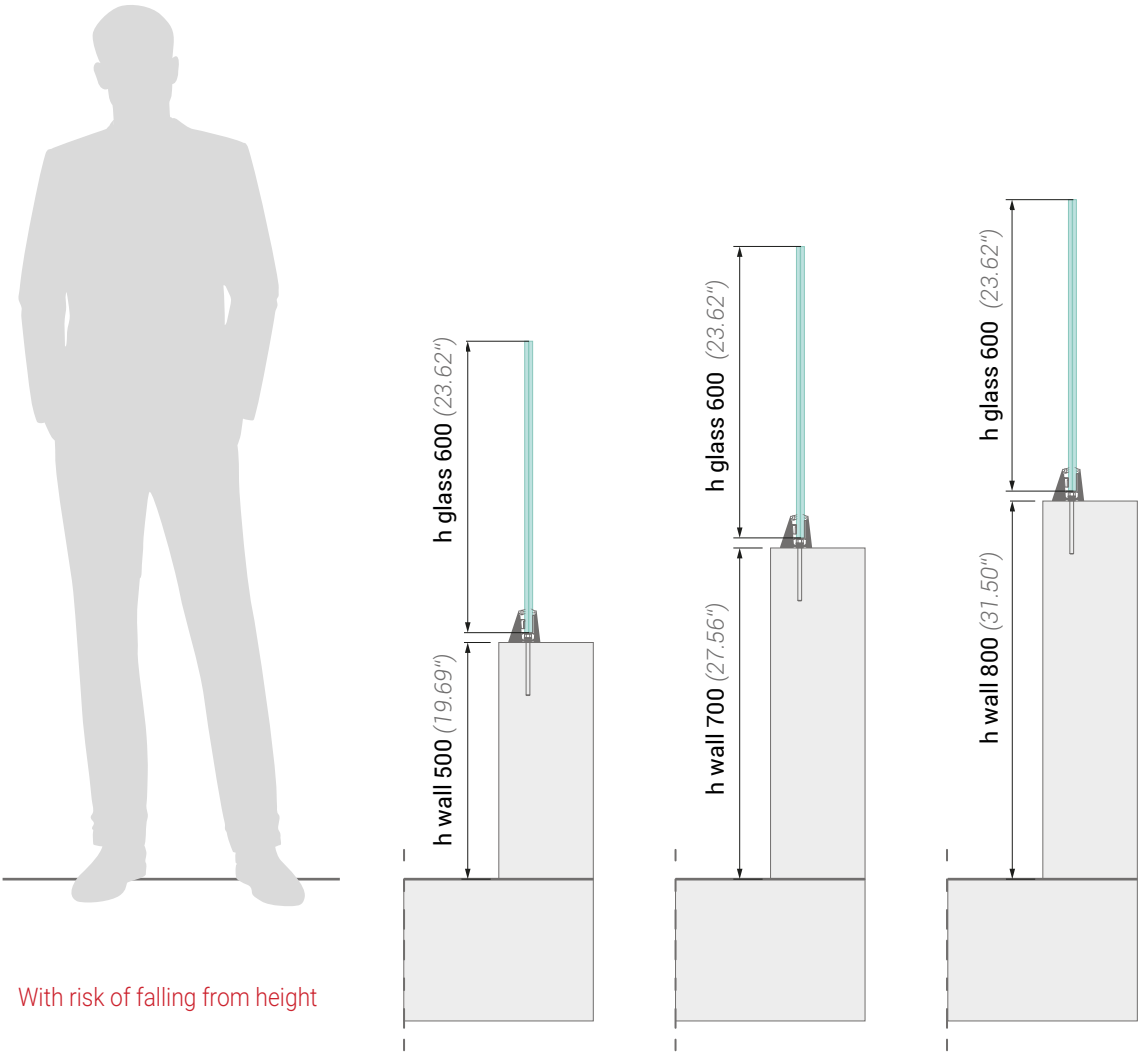
This page shows the complete list of the main components.

Unlike the other profiles in the Ninfa 6 series, the Ninfa 50-N profile does not use the RS system to adjust the glass, but rather an adjuster with a presser.



scale 1:1

INSTALLATION TYPES





NINFA[®] 6 STADIO

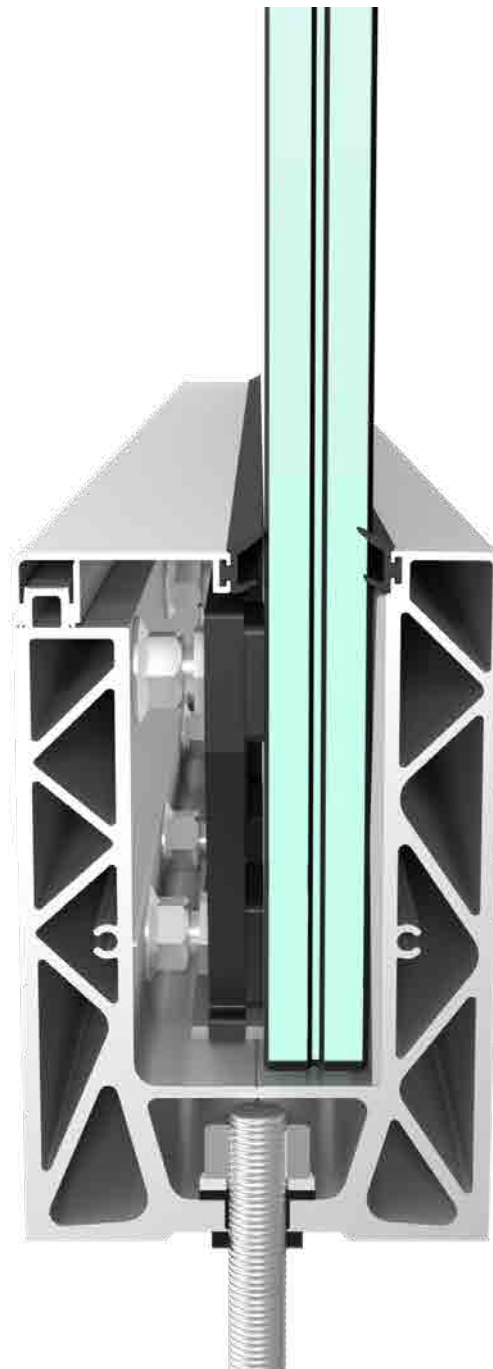
SAFE GLASS BALUSTRADE FOR SPORTS FACILITIES

Sport is pure fun.
People go to stadiums and sports centres to admire the champions, and this balustrade is up to the greatest sporting performances.

Maximum safety for highly crowded places.

Optional: External LED pack and handrail.

Finishes: Standard and on request customisations.



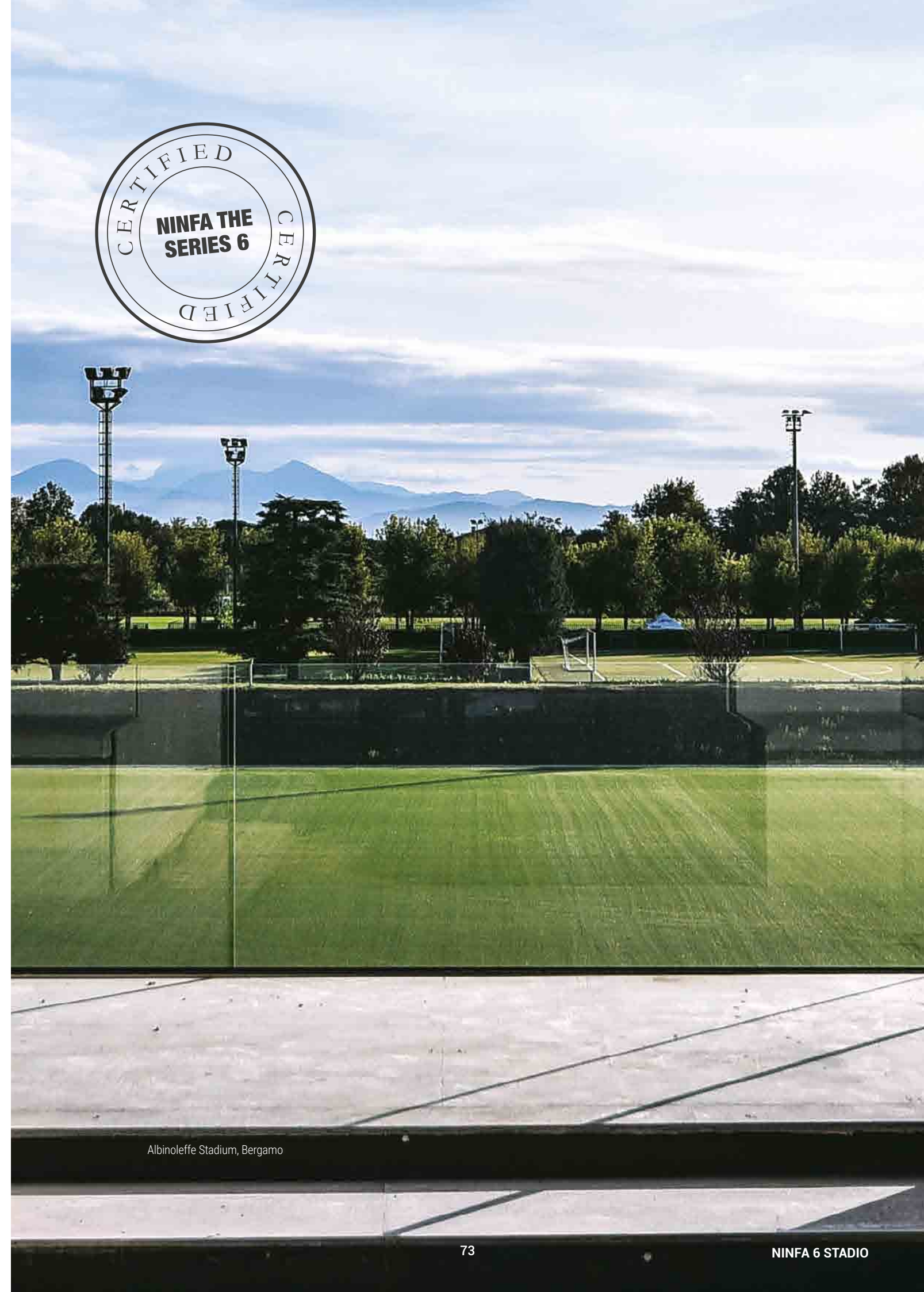
NINFA[®] 6 STADIO P



For very crowded environments:

- Sports facilities
- Dividers
- Barriers
- Large-height glass panels

Ninfa 6 STADIO P (Professional)



Albinoleffe Stadium, Bergamo

STRUCTURAL INNOVATION

Key features of the **NINFA 6 STADIO** profile

The Ninfa 6 Stadio profile is a glass balustrade system designed by Faraone engineers for sports facilities and spectator stands (stadiums, arenas, school gyms, swimming pools, racetracks).

1. VERTICALITY BEYOND LIMITS: BALUSTRADES WITH HEIGHTS UP TO 3 METRES

The first thing that strikes you about the Ninfa Stadio system is its extraordinary dimensional capacity, reaching up to three metres in height. Achieving this maximum height means the balustrade can serve as a true transparent protective barrier. It is a testament to the structural stability of the aluminium profile which, combined with specifically engineered adjustment components and dedicated laminated safety glass, is able to safely anchor and stabilise such a tall element, maximising uninterrupted views.

For **heights of 3 metres (9'-10")** the use of a handrail is recommended



Bergamo Stadium



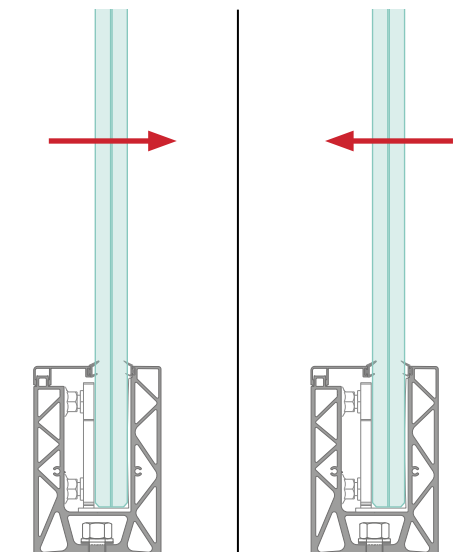
Udine Stadium

2. SYMMETRICAL SAFETY: A COMBINATION OF INSTALLATION EFFICIENCY AND STRUCTURAL INTEGRITY WITHOUT EQUAL

This is the crucial characteristic that differentiates the Ninfa 6 Stadio profile and defines its reliability in crowded public spaces: **guaranteeing exceptional resistance performance to horizontal static linear loads in a perfectly symmetrical manner.** This bidirectional resistance at maximum load is essential to ensure the balustrade maintains its structural properties.

At the same time, the Ninfa 6 Stadio profile features a **patented adjustment system** that allows correction of glass alignment and inclination operated exclusively from the inside of the balustrade.

Its internal architecture ensures that the fixing system and gaskets do not suffer differential settlements.



3. CERTIFICATION FOR THE EXTREME: PERFORMANCE UNDER "STADIUM-LEVEL" LOADS

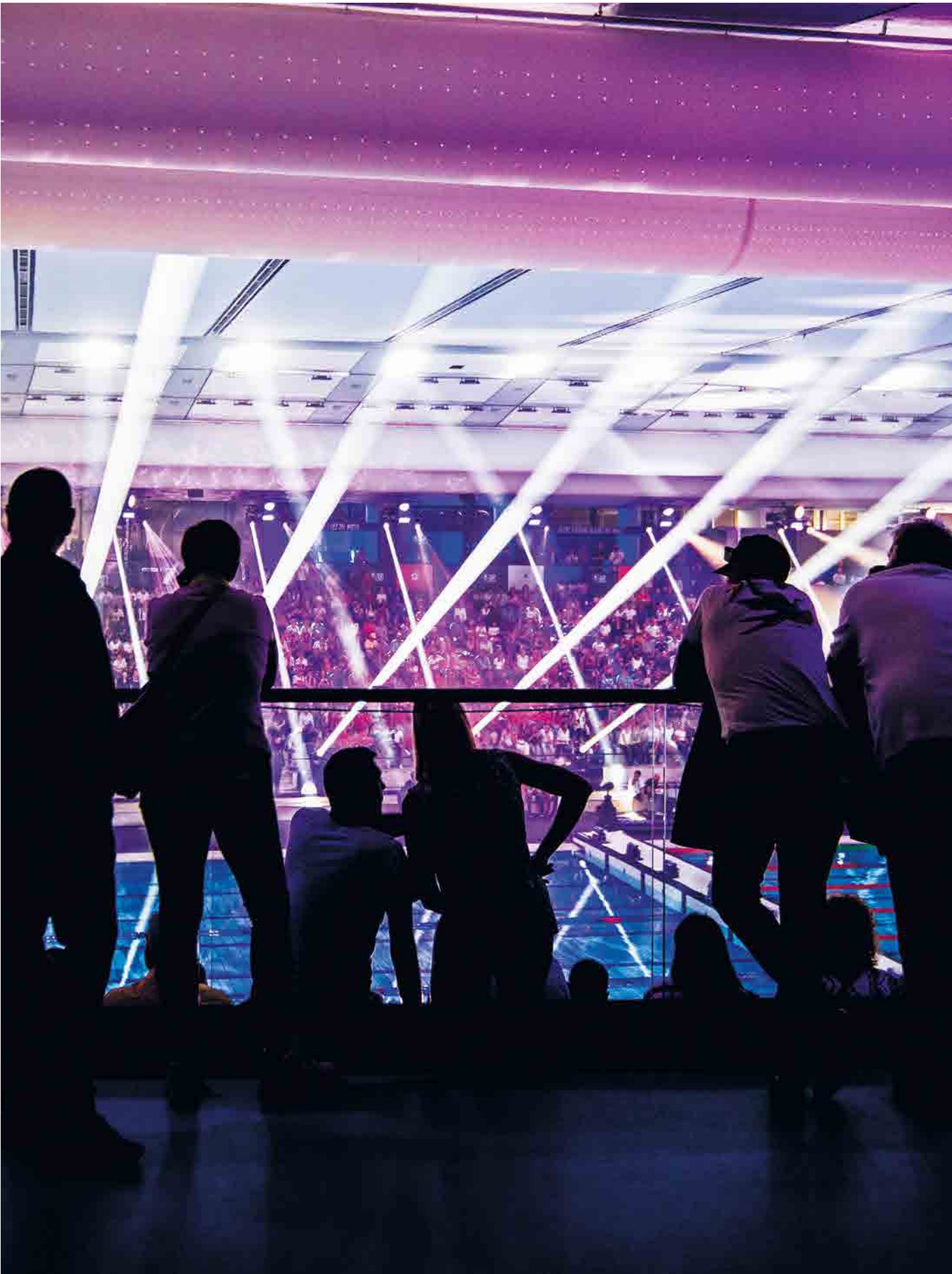
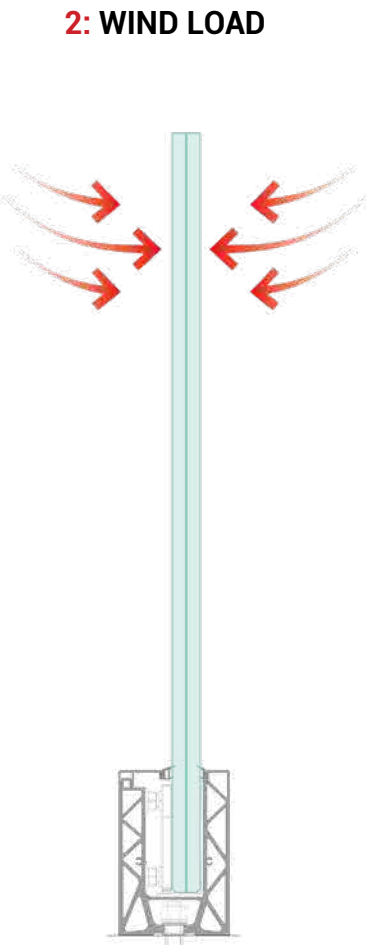
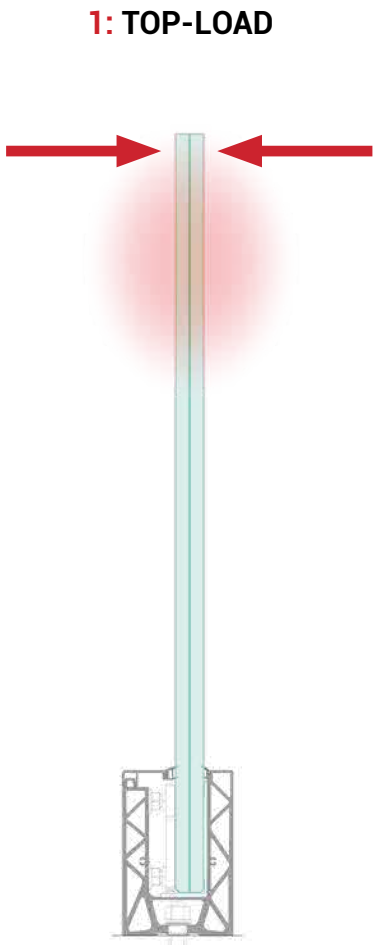
The name itself, "Stadio", derives from its extremely high-level certification. This profile has passed the most stringent tests required by the **UNI EN 13200-3, specific to spectator structures in sports facilities.**

The performance level: The EN 13200-3 standard simulates extreme loads and the profile has been verified by calculation for the 500 kg/m class (336 lb/ft). Laboratory tests have demonstrated the **capacity to resist loads of up to 900 kg/m (605 lb/ft).** This level of robustness is the ultimate guarantee of a product that makes no compromises on safety in public spaces.

Top-load and wind-load tests verify the resistance and stability of glass balustrades.

The top load (1) simulates the horizontal thrust on the upper edge, while **the wind load (2)** reproduces the pressures and depressions due to wind action.

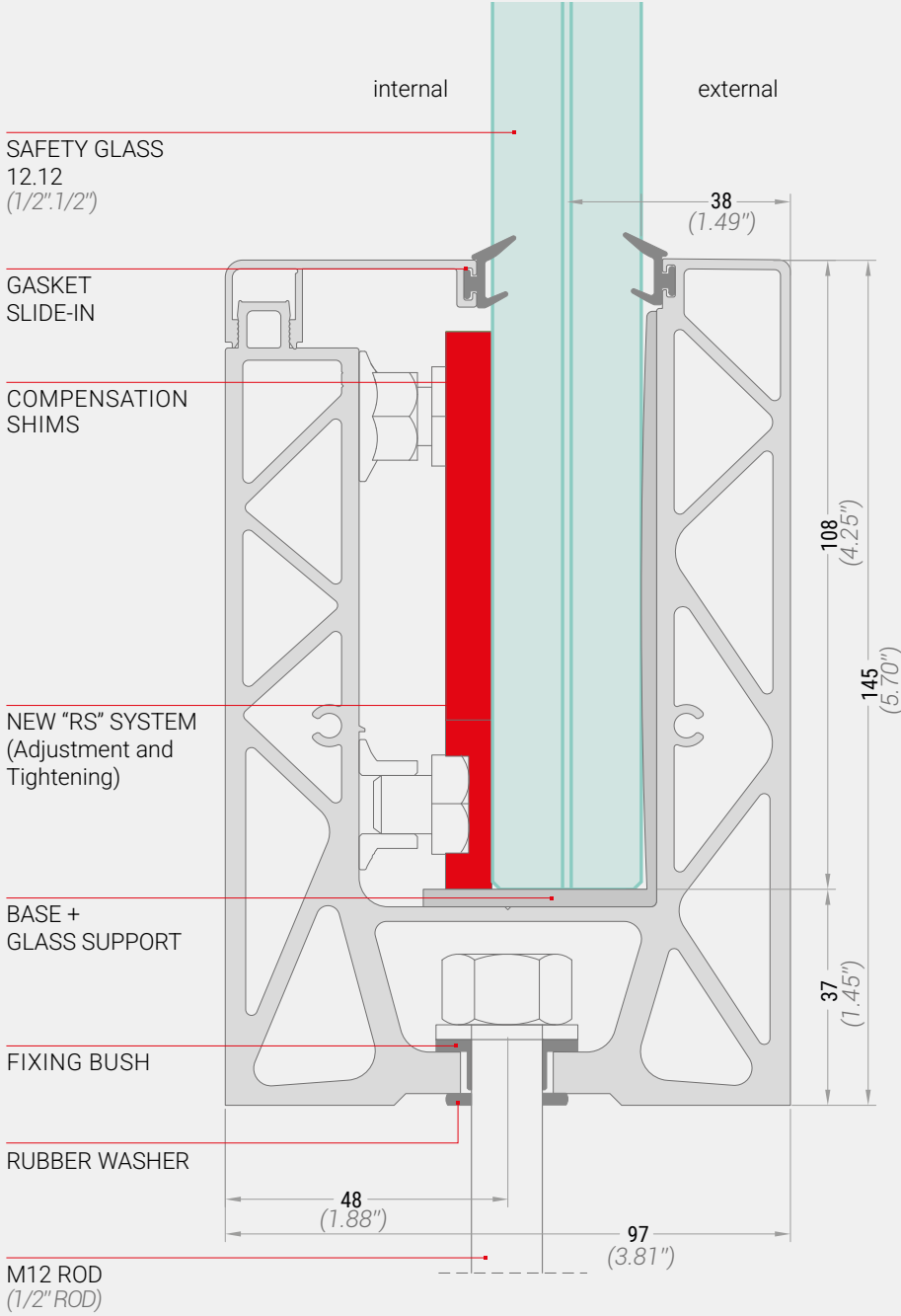
These tests guarantee the structural safety and fall-prevention function of the system.



Felice Scandone Swimming Pool, Naples

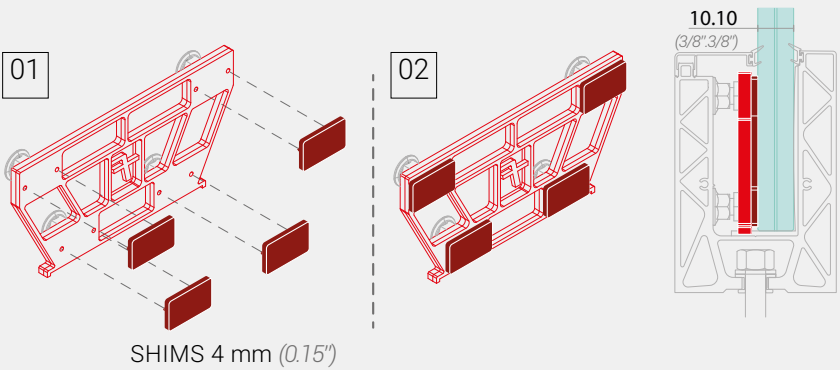
TECHNICAL DETAILS

This page shows the complete list of the main components.

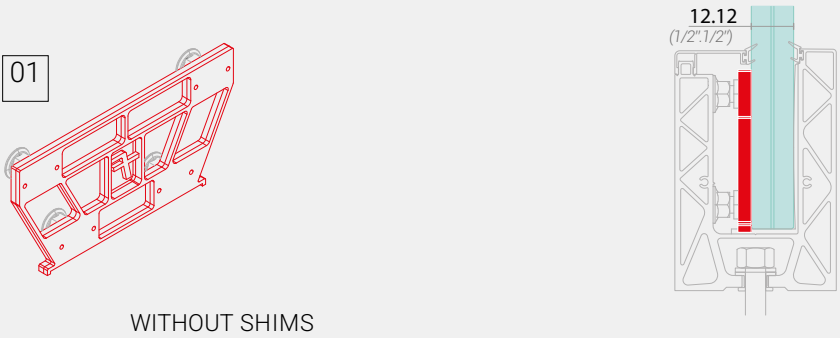


GLASS THICKNESS:
The glass thickness is 12.12

ASSEMBLY OF THE RS SYSTEM - GLASS 10.10 (3/8".3/8")

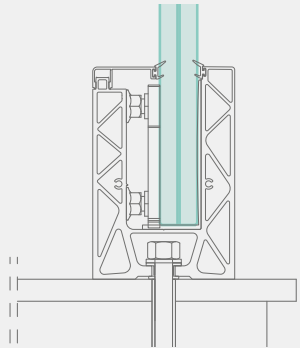


ASSEMBLY OF THE RS SYSTEM - GLASS 12.12 (1/2".1/2")



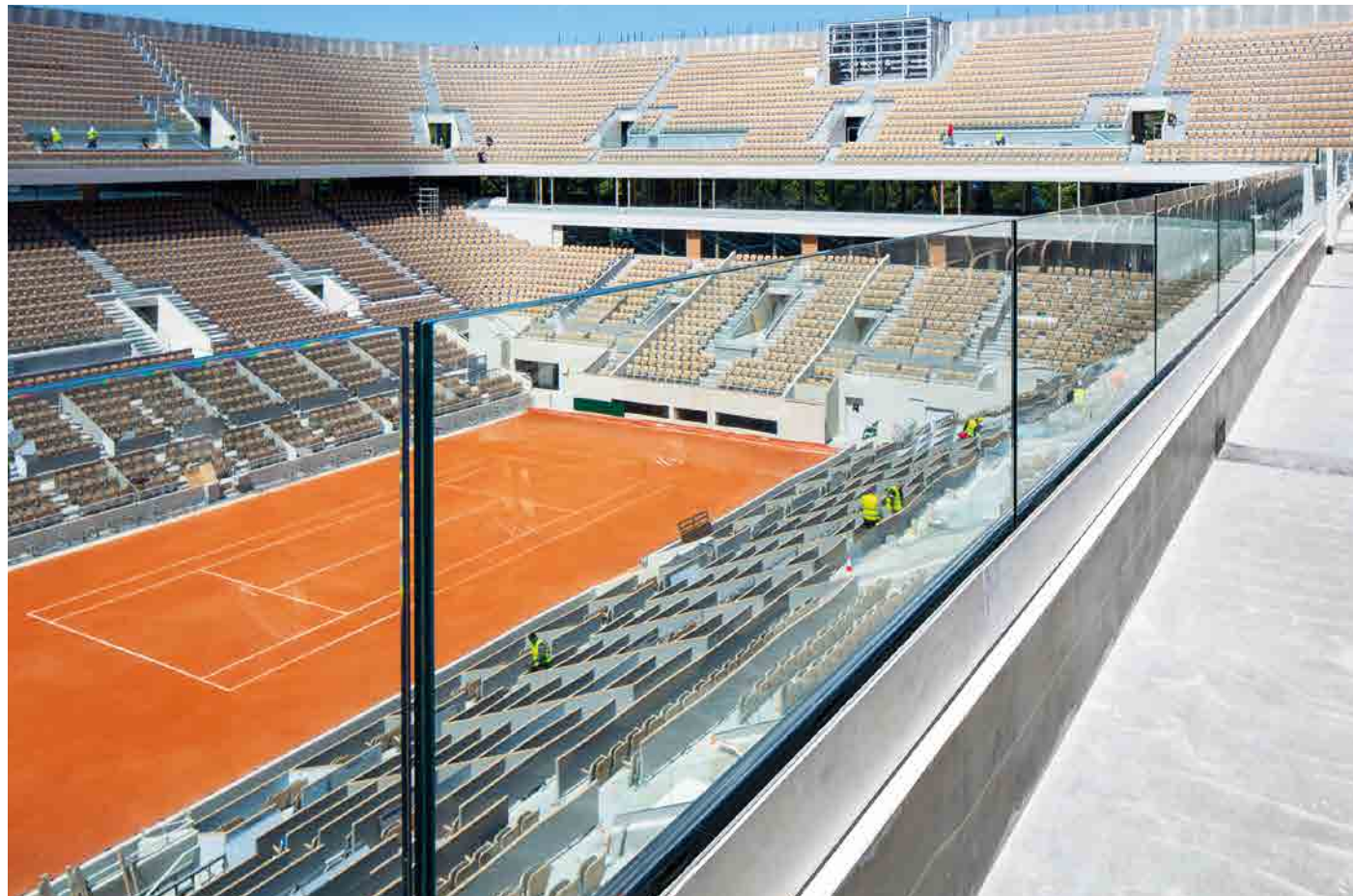
MAIN APPLICATIONS

TOP-MOUNTED

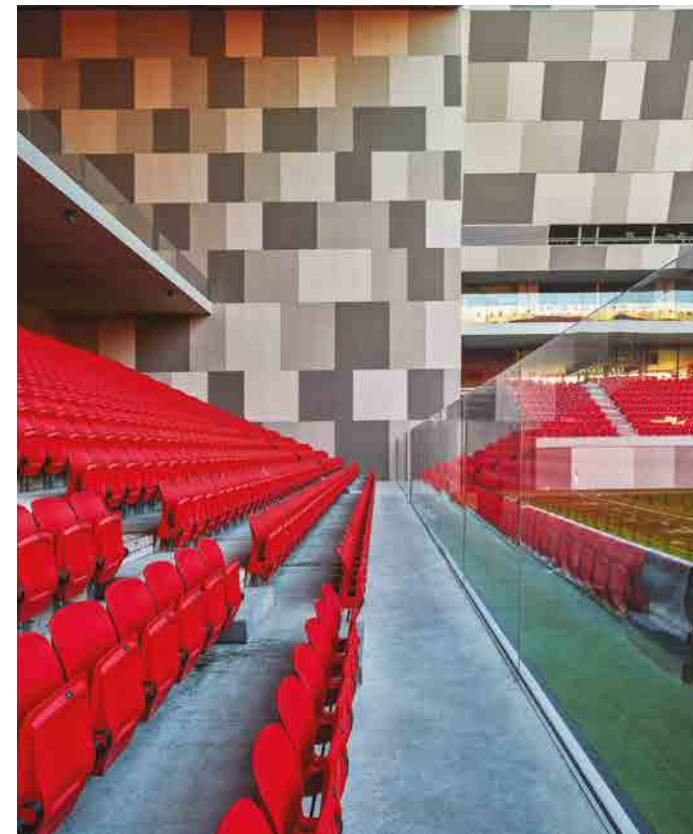




Udine stadium



Philippe Chatrier, Roland Garros, Paris
(Photo: Ercole Salinari)



Left: Qemal Stafa Stadium, Tirana
Right: Albinoleffe Stadium, Bergamo



Nereo Rocco stadium, Trieste



Mugello Circuit



U-Power stadium, Monza



U-Power stadium, Monza

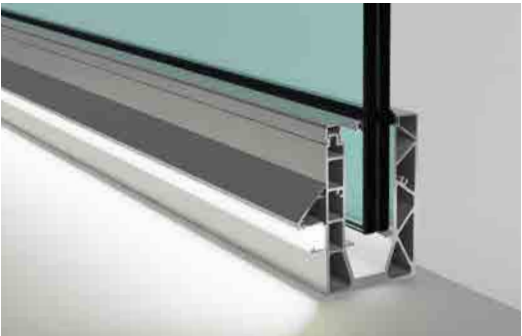
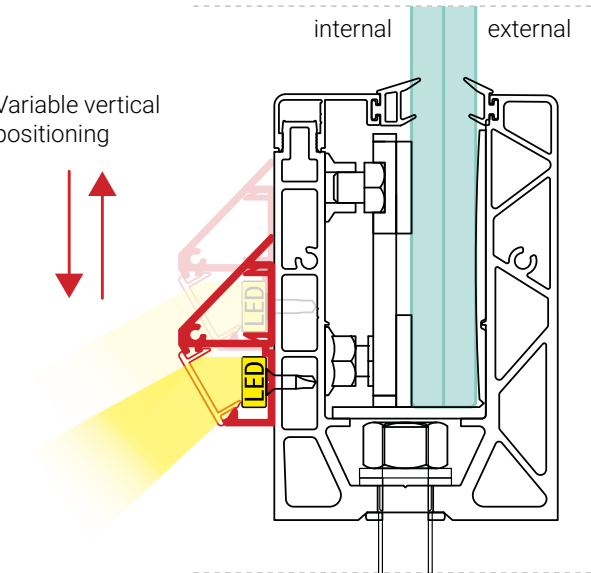
NINFA LED: OUTSIDE THE PROFILE

LED Housing on the internal side of the profile

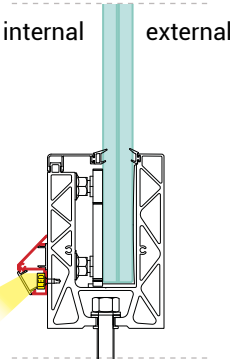
LED profile screwed to the Ninfa aluminium profile.
Inclined projection of light downwards creating a 'step-light' effect.
(LED not supplied by Faraone)

Valid for models: Ninfa 6 Stadio, 6, 106, 56

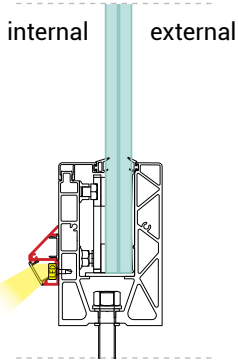
LED POSITIONING OPTIONS - NEW INTERNAL ACCESSORY



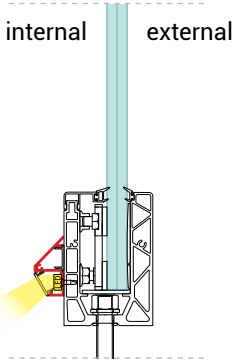
NINFA 6 STADIO



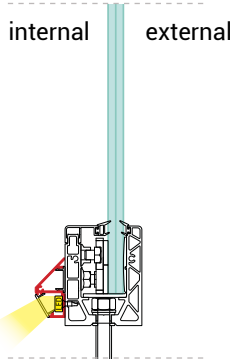
NINFA 6



NINFA 106



NINFA 56



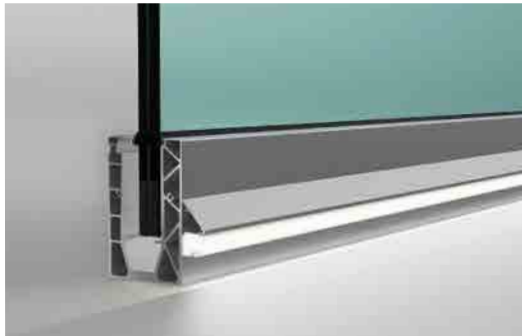
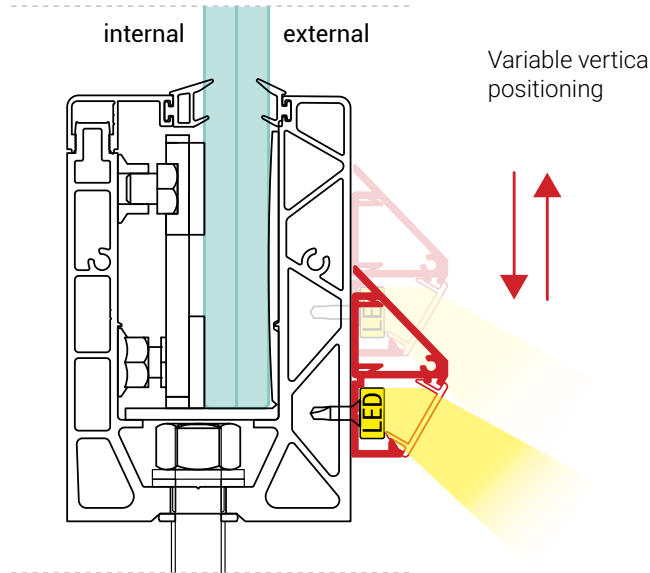
NINFA LED: OUTSIDE THE PROFILE

LED Housing on the external side of the profile

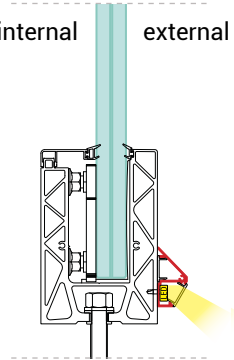
LED profile screwed to the Ninfa aluminium profile.
Inclined projection of light downwards.
Ideal for creating a lighting effect on the outside of the balcony, making each one clearly visible and producing a unique effect together with the building's lighting. (LED not supplied by Faraone)

Valid for models: Ninfa 6 Stadio, 6, 106, 56, 116

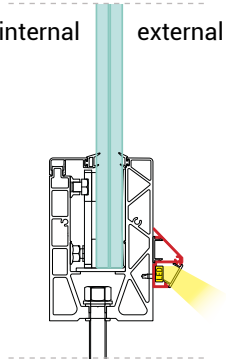
LED POSITIONING OPTIONS - NEW EXTERNAL ACCESSORY



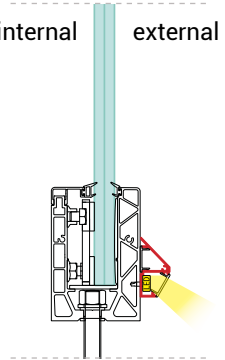
NINFA 6 STADIO



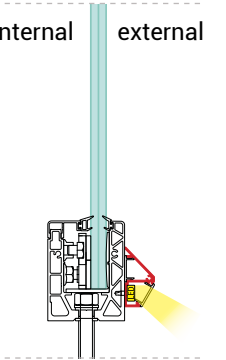
NINFA 6



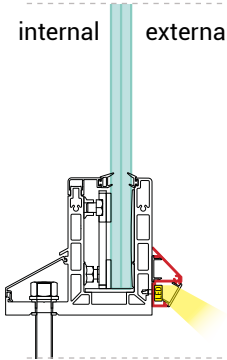
NINFA 106



NINFA 56



NINFA 116

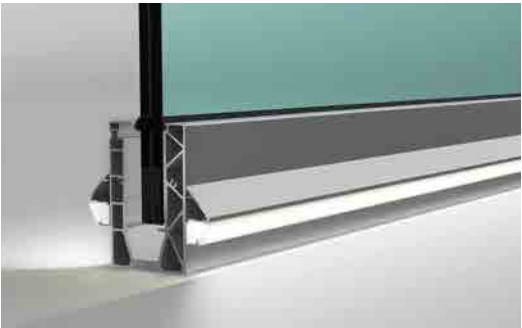


NINFA LED: OUTSIDE THE PROFILE

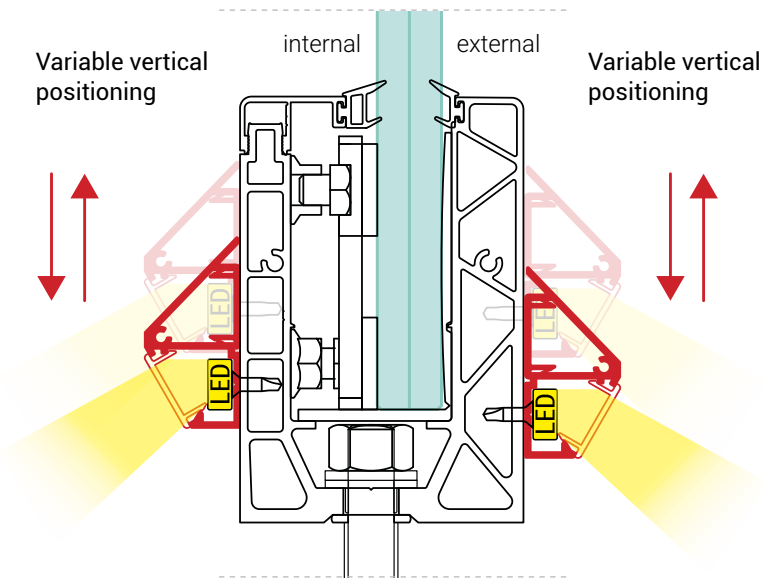
LED Housing on the internal and external sides of the profile

LED profile screwed to the Ninfa aluminium profile.
Inclined projection of light downwards.
Dual use internal/external lighting.
(LED not supplied by Faraone)

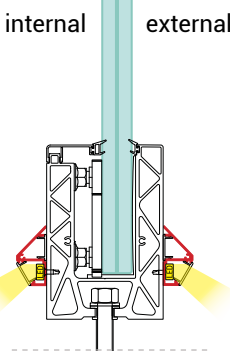
Valid for models: Ninfa 6 Stadio, 6, 106, 56



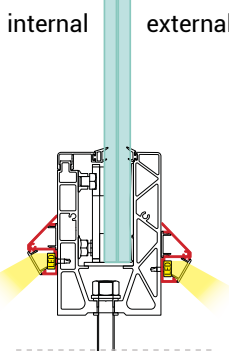
LED POSITIONING OPTIONS - INTERNAL/EXTERNAL ACCESSORY



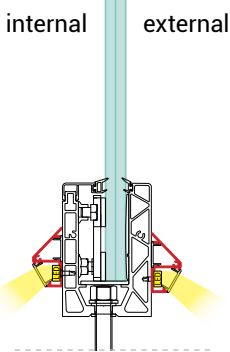
NINFA 6 STADIO



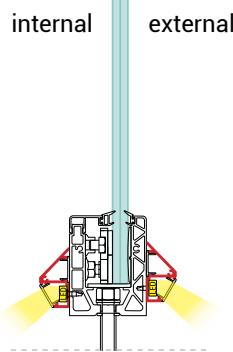
NINFA 6



NINFA 106



NINFA 56

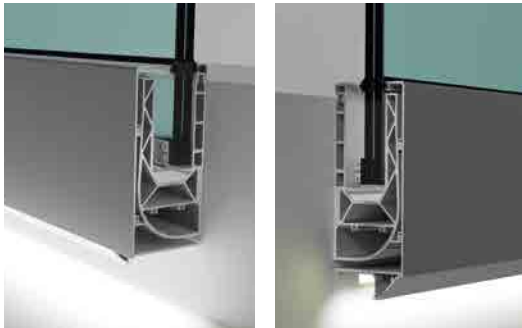


NINFA LED: OUTSIDE THE PROFILE

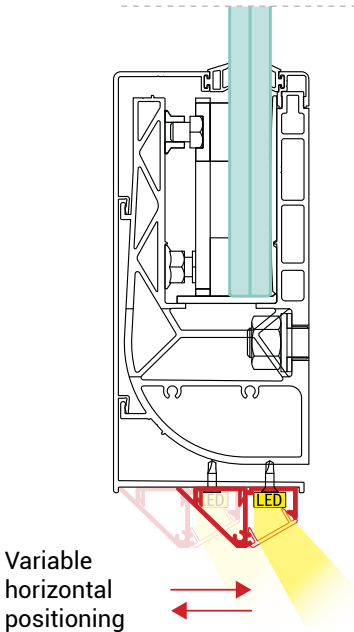
Bottom LED housing for fascia-mounted aluminium profiles

LED profile screwed to the bottom of the Ninfa aluminium profile. Inclined projection of light downwards. The new LED system can also be used with the fascia-mounted profiles, which can be oriented as preferred.
(LED not supplied by Faraone)

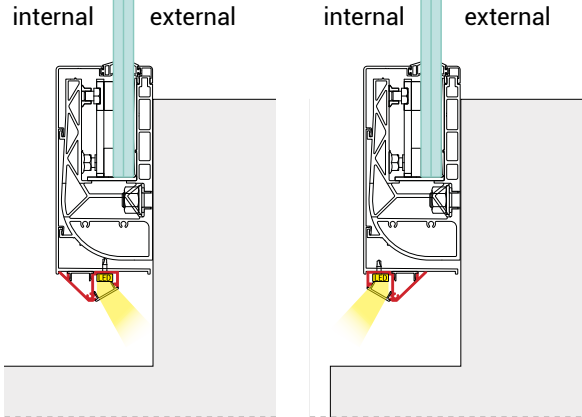
Valid for models: Ninfa 176, 186



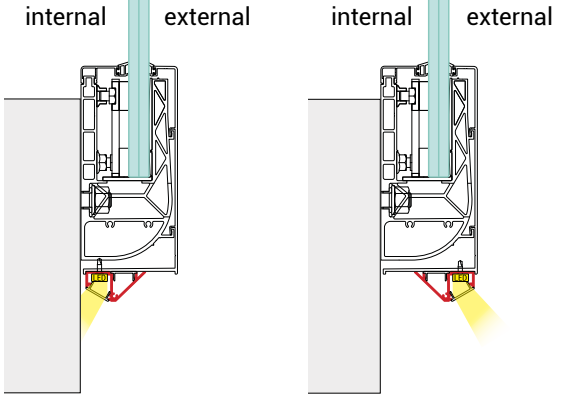
LED POSITIONING OPTIONS - BOTTOM ACCESSORY



NINFA 176



NINFA 186



NINFA LED: INSIDE THE PROFILE

Installation of the LED strip in the cladding

To optimize installation processes and ensure faster, more convenient maintenance, the **new LED position has been moved inside the cladding**.

This upgrade offers several benefits and corresponding adaptations:

- **Total Accessibility:** In the event of servicing or replacing the LED strip, restoration work can be carried out directly by removing the cladding, without needing to remove the glass.

- **Cost Efficiency and Standardization:** Enables the use of standard fixings (threaded rod, nut, and washer) on the Ninfa 106 and Ninfa 56 profiles as well.

- **RS Component Update:** Following this geometric transition, all L-shaped components of the RS adjustment system will no longer be transparent, but will be produced in a colour coordinated with the corresponding T-piece.

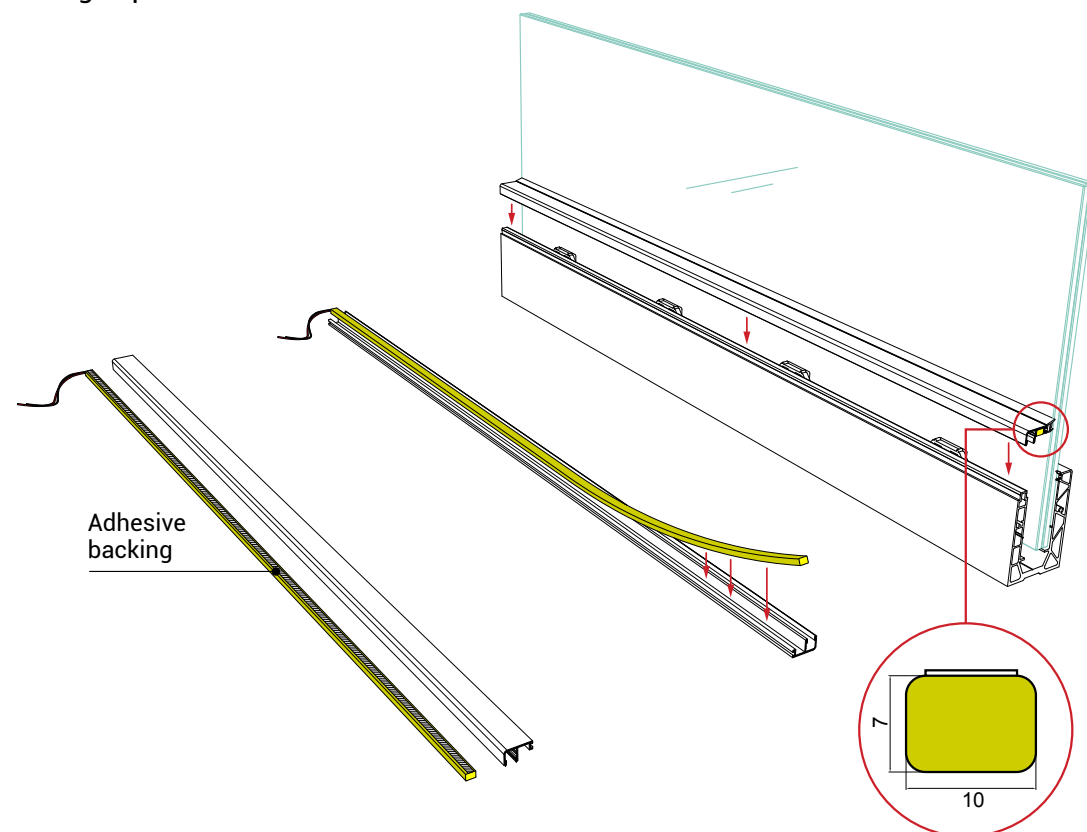
Technical Specifications for the LED Strip: For geometric reasons and to ensure proper mechanical installation within the profile, the LED strip used must meet the following requirements:

Fixing: The strip must be equipped with an adhesive backing on the rear to allow perfect anchoring and alignment within the dedicated channel inside the aluminium cladding.

Maximum Width: 10 mm

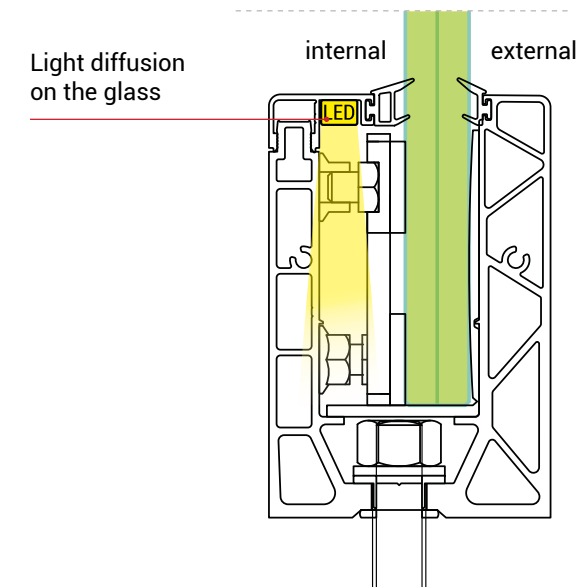
Maximum Height: 7 mm

It is recommended to use LED strips with a protection rating of at least IP65/68 and with heat resistance ratings certified according to the MS CG-12 and GM6073 tests.

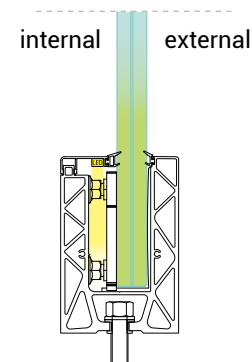


TECHNICAL DETAILS

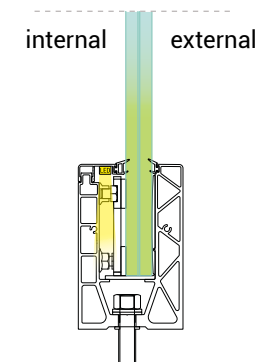
LED POSITIONING OPTIONS



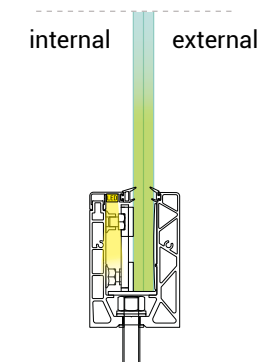
NINFA 6 STADIO



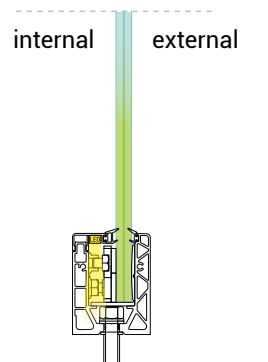
NINFA 6



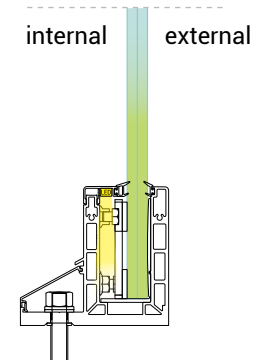
NINFA 106



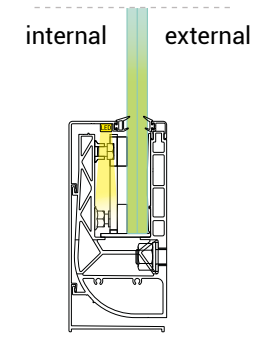
NINFA 56



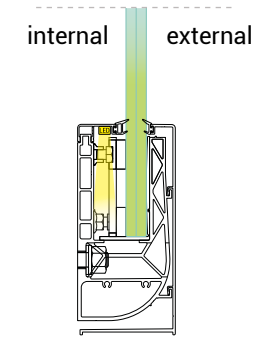
NINFA 116



NINFA 176



NINFA 186



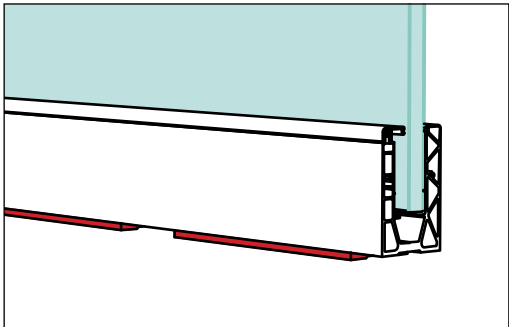
DEDICATED SOLUTIONS FOR WATER DRAINAGE

ALUMINIUM SHIMS

The Ninfa profile remains raised to allow water to run off. Consult the designer and/or Works Supervisor to determine the water load on the balcony.

> ADVANTAGES:

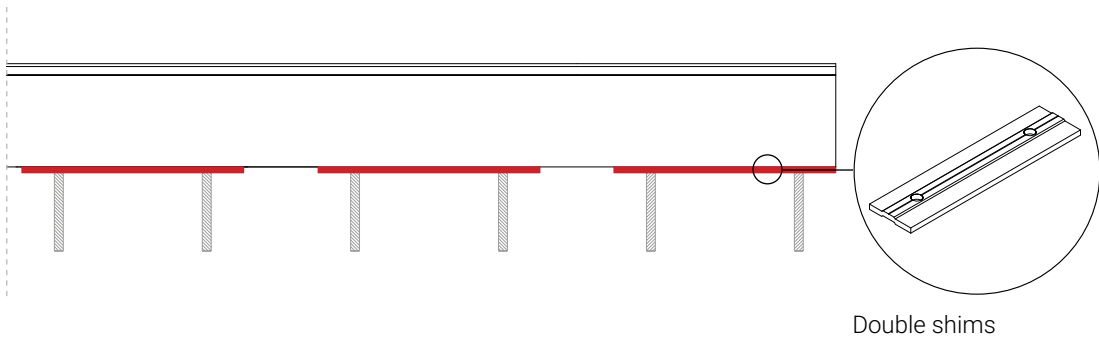
- Made to fit perfectly with the Ninfa profile
- Double hole for greater stability
- Same finish as aluminium profile
- 20 micron (0.79 mil) anodising, after processing



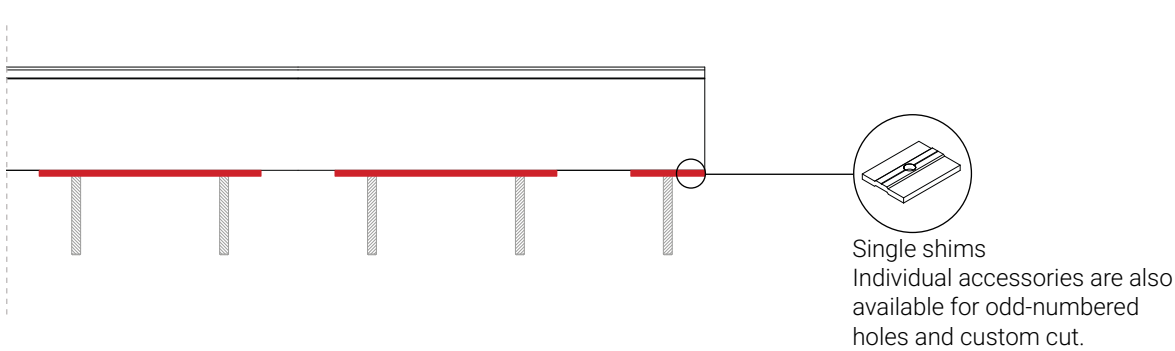
TECHNICAL DETAILS

DISTRIBUTION OF ALUMINIUM SHIMS

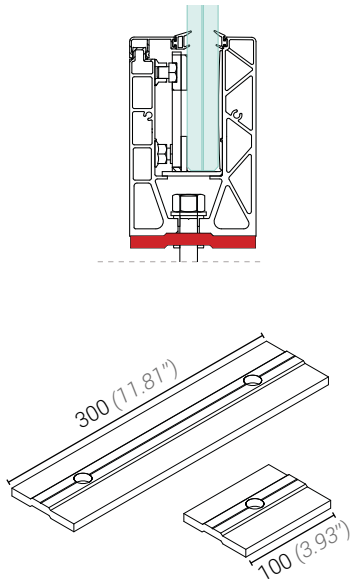
Standard layout



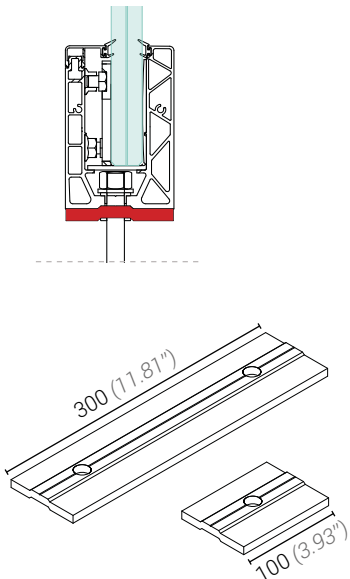
Set up with odd numbered holes and custom cut



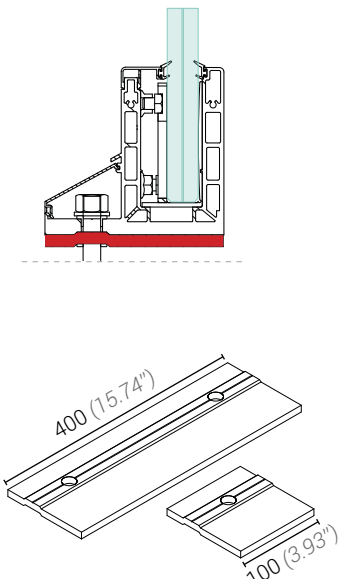
NINFA 6



NINFA 106



NINFA 116

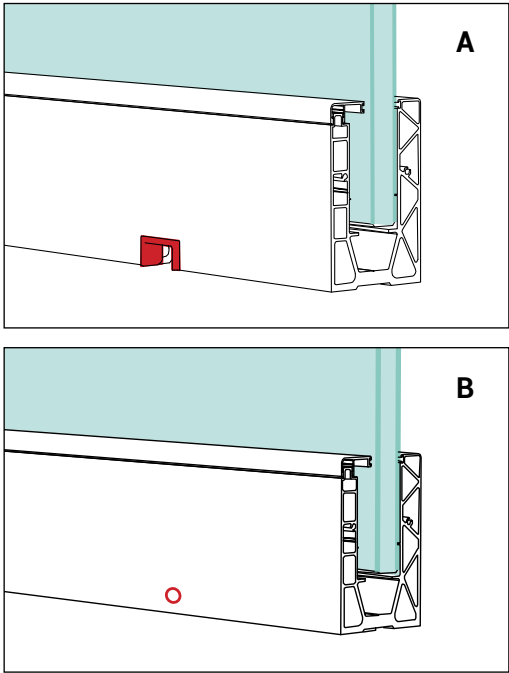


DEDICATED SOLUTIONS FOR WATER DRAINAGE

TYPES OF PROFILE PROCESSING:
Processing and accessories that allow water to drain away.

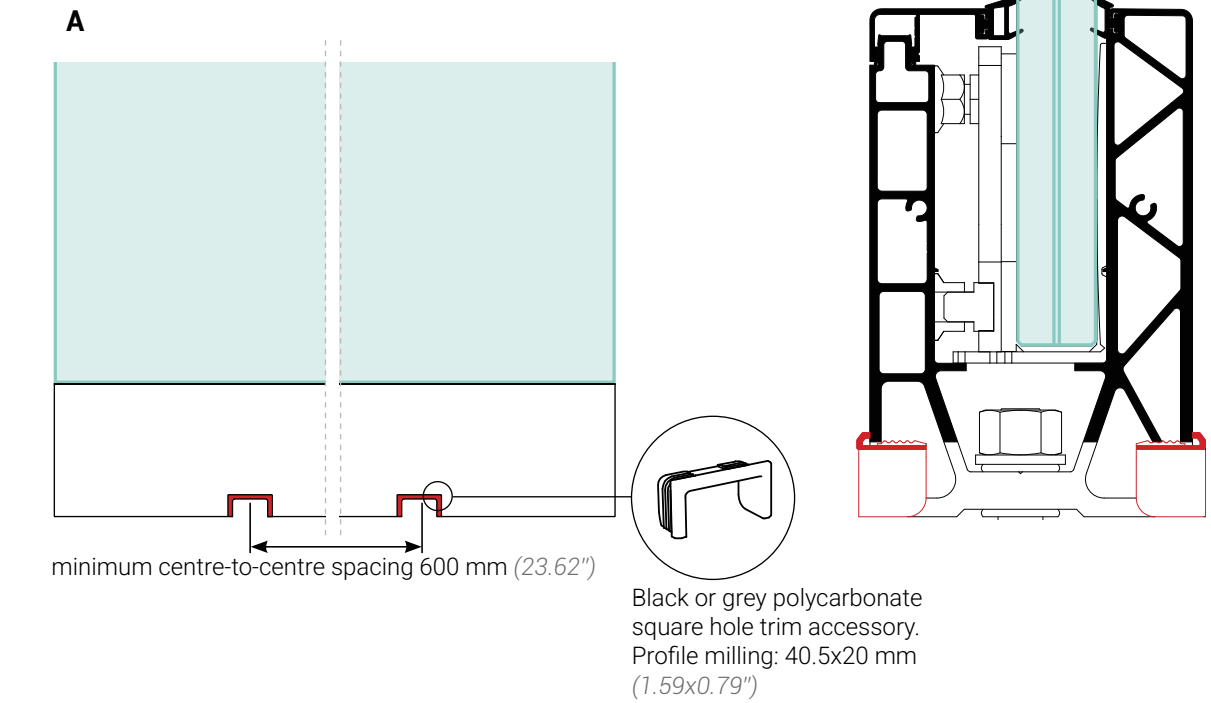
A) Profile with through milling
Solution for draining water without the use of shims. Static load tests were carried out in the laboratory with the processed profile (minimum 600 mm / 23.62" in centre distance).
In order to determine the number of through holes in a given context/project, we recommend that you rely on your designer and/or structural engineer, who will have to consider the possible design water load and thus determine the optimal spacing.
Valid for models: Ninfa 6,106

B) Profile with side hole
Solution for draining any water present in the profile (minimum of 3 holes per 6 m / 19' 8" profile).

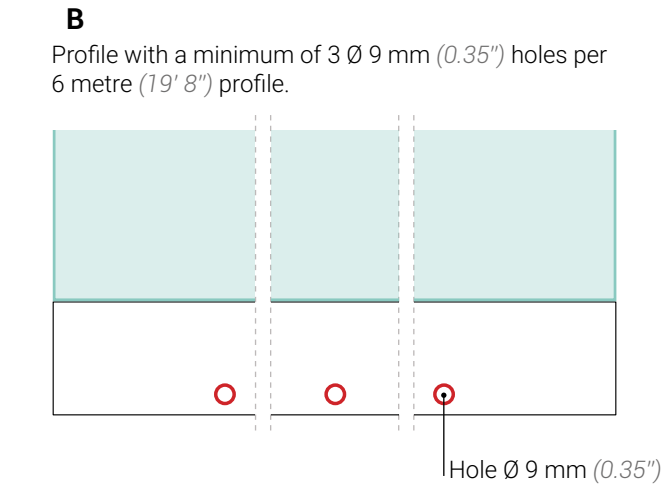


TECHNICAL DETAILS

PROFILE WITH THROUGH MILLING FOR WATER DRAINAGE



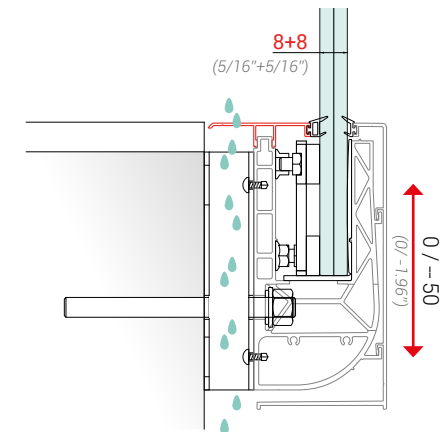
PROFILE WITH SIDE HOLE FOR INTERNAL WATER DRAINAGE



NINFA176/186 SOLUTIONS FOR WATER DRAINAGE AND COVER PROFILES

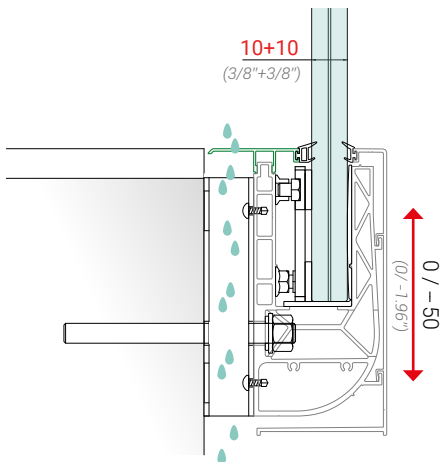
CONNECTION BETWEEN FLOOR AND PROFILE

Example valid for models:
Ninfa 176/186 with 8+8 (5/16"+5/16") glass



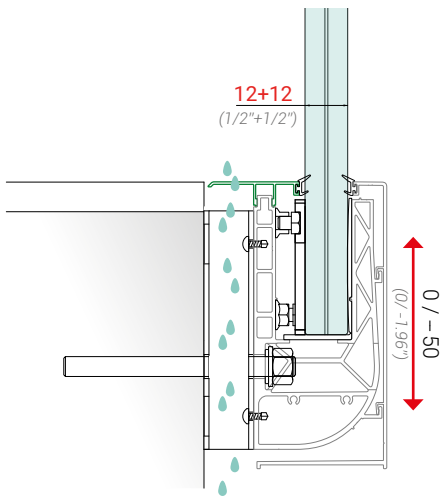
CONNECTION BETWEEN FLOOR AND PROFILE

Example valid for models:
Ninfa 176/186 with 10+10 (3/8\"/>



CONNECTION BETWEEN FLOOR AND PROFILE

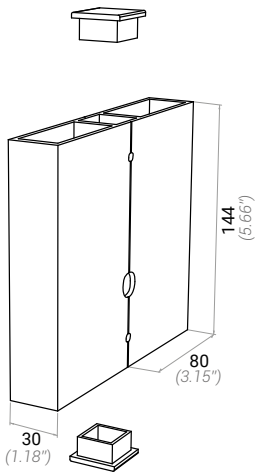
Example valid for models:
Ninfa 176/186 with 12+12 (1/2\"/>



TECHNICAL DETAILS

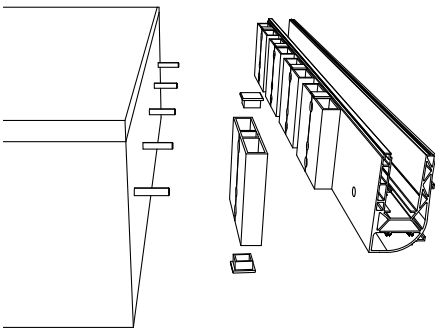
APPLICATIONS
 WATER DRAINAGE / SPACER
 WITH LATERAL FIXING

Example valid for models:
 Ninfa 176/186



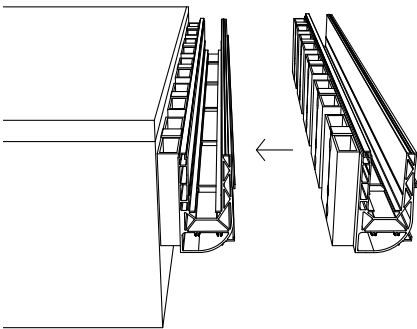
STEP01

- a) Fix the lateral spacer/water drainage to the profile
- b) Prepare the fixing screws



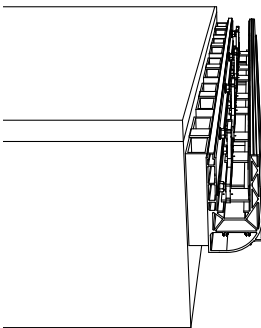
STEP02

- a) Fix the profile to the wall following the installation instructions for NINFA 176/186



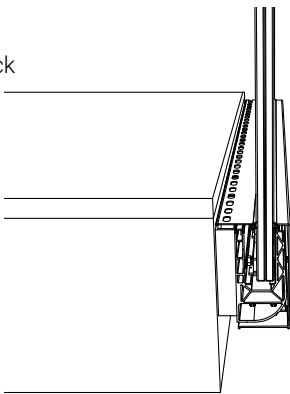
STEP03

- a) Prepare the accessories inside the profile, following the installation instructions for NINFA 176/186



STEP04

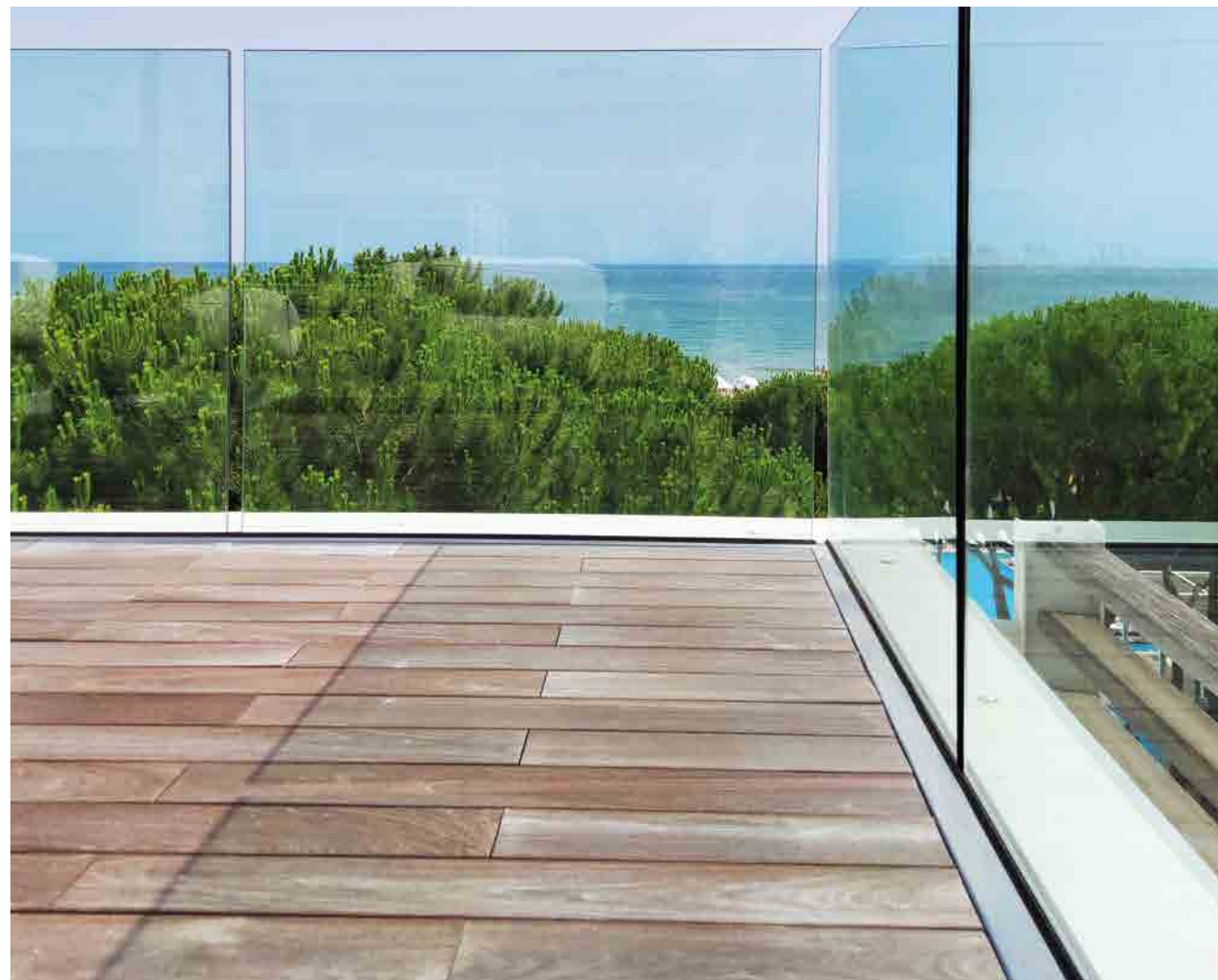
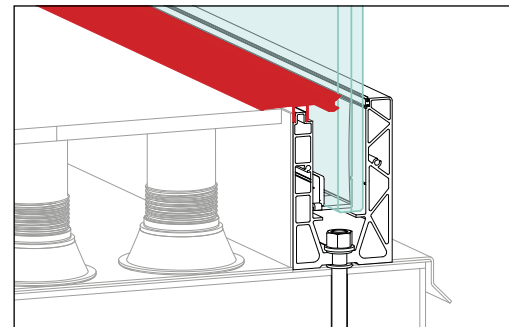
- a) Insert, adjust, and lock the glass using the RS system
- b) Insert the internal and external cover.



COVER CLADDING

External cover cladding

For a perfect finish and connection between floor and glass, with no visible screws; snap-fit only.

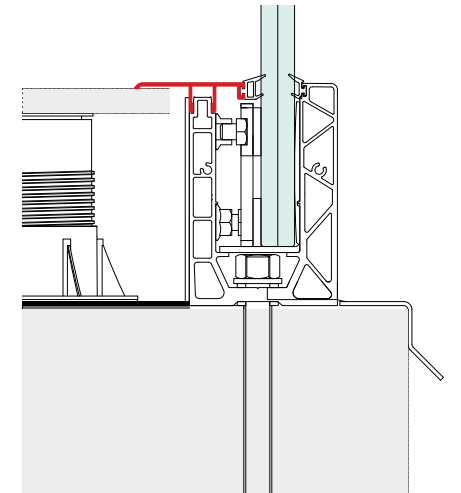


TECHNICAL DETAILS

APPLICATIONS

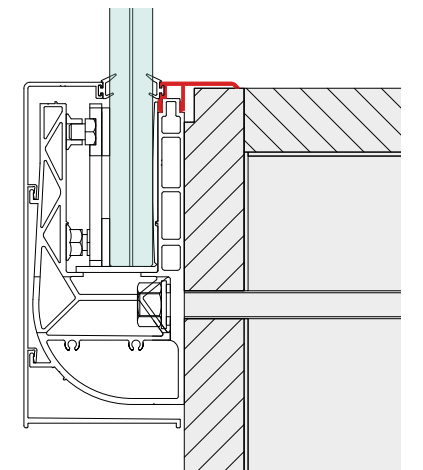
ON FLOATING FLOOR

Example valid for models: Ninfa 6,106,56,116



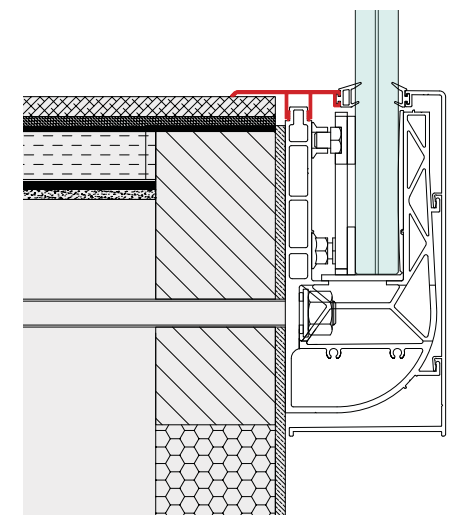
CONNECTION BETWEEN FLOOR AND PROFILE

Example valid for models: Ninfa 176



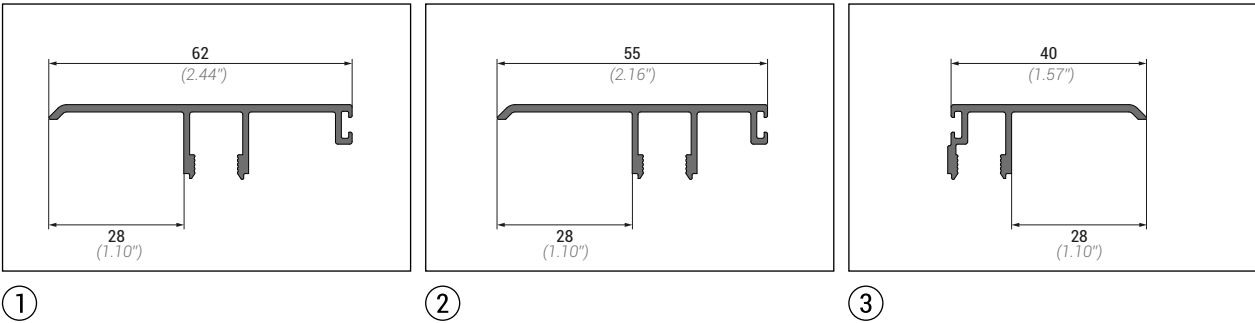
CONNECTION BETWEEN FLOOR AND PROFILE

Example valid for models: Ninfa 186

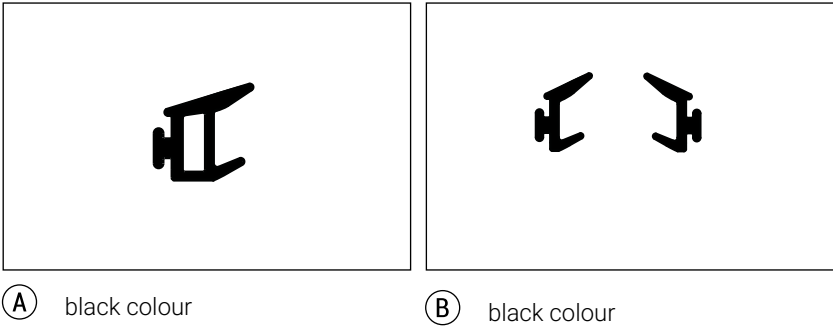


TECHNICAL DETAILS

TYPES

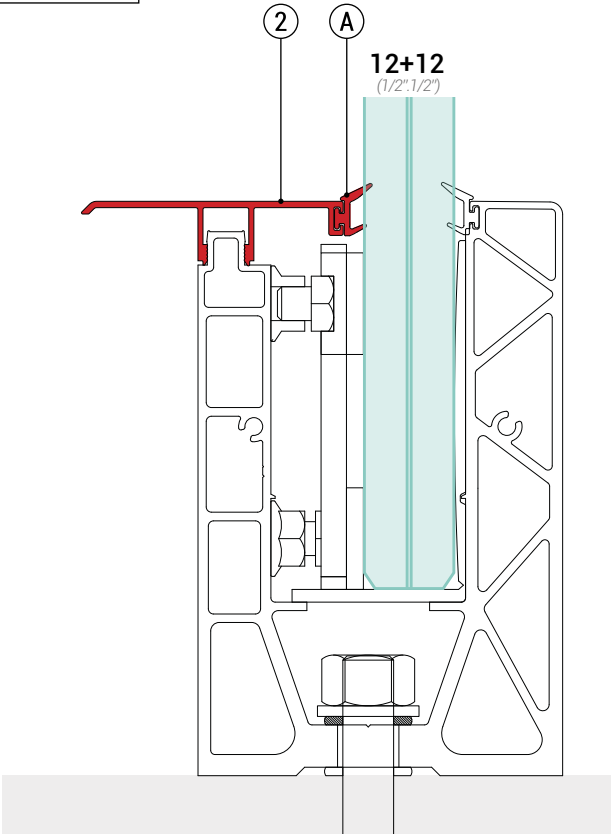


GASKETS

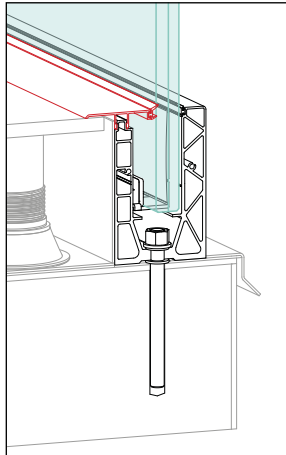


Example of cover cladding and gasket combination with Ninfa 6 and 12+12 (1/2"+1/2") glass

- 2) External cover cladding
- A) Slide-in gasket



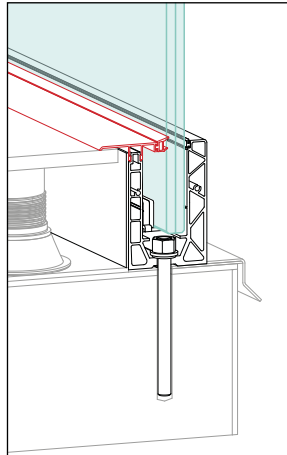
NINFA 6



With 10+10 (3/8"+3/8") glass:
Cover 1 + gasket B

With 12+12 (1/2"+1/2") glass:
Cover 2 + gasket A

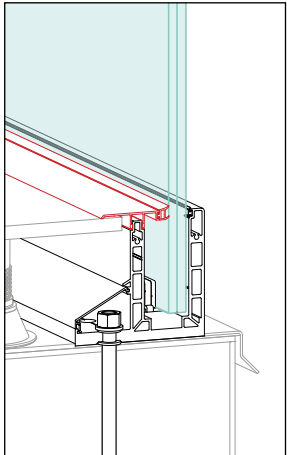
NINFA 106



With 8+8 (5/16"+5/16") glass:
Cover 2 + gasket A

With 10+10 (3/8"+3/8") glass:
Cover 2 + gasket B

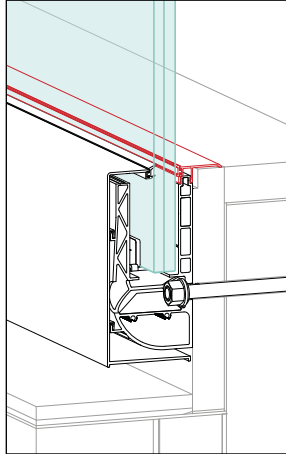
NINFA 116



With 8+8 (5/16"+5/16") glass:
Cover 2 + gasket A

With 10+10 (3/8"+3/8") glass:
Cover 2 + gasket B

NINFA 176

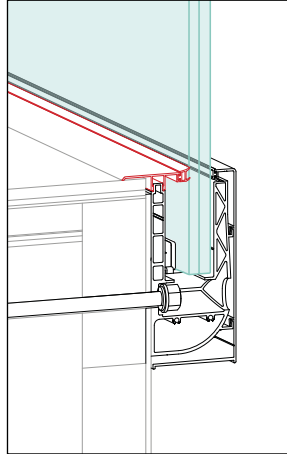


With 8+8 (5/16"+5/16") glass:
Cover 3 + gasket B

With 10+10 (3/8"+3/8") glass:
Cover 3 + gasket B

With 12+12 (1/2"+1/2") glass:
Cover 3 + gasket B

NINFA 186



With 8+8 (5/16"+5/16") glass:
Cover 1 + gasket A

With 10+10 (3/8"+3/8") glass:
Cover 2 + gasket A

With 12+12 (1/2"+1/2") glass:
Cover 2 + gasket B

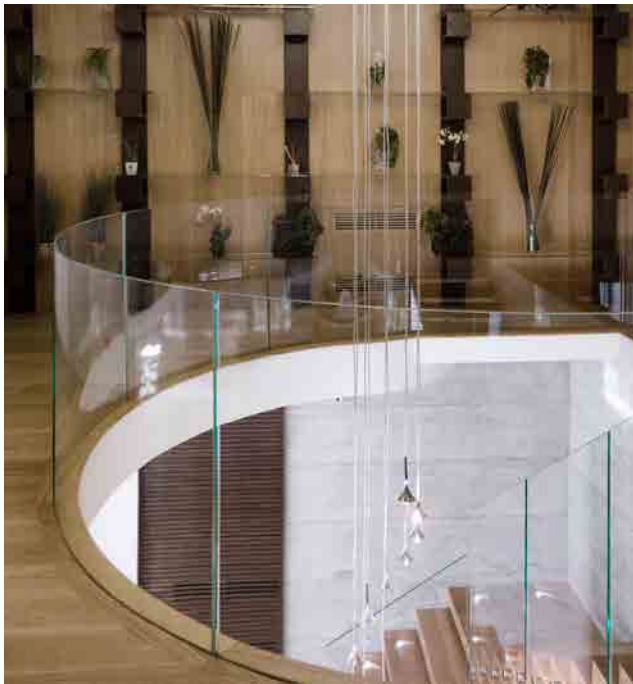
ACHIEVEMENTS WITH NINFA BALUSTRADES OVER THE YEARS.



NINFA, Maritime Station,
Salerno, IT



NINFA, Maritime Station,
Salerno, IT



Curved glass in private residence, Marcianise (CE),
Partner: Idea Vetro



Enzo Ferrari Museum,
Maranello (MO)

Redevelopment of the Malgrate lakeside promenade,
Malgrate (LC), IT, Partner: Vetreria Colombo





NINFA, Shopping centre Berlin, DE



NINFA WITH LED, Bridge of Peace, Tbilisi, Georgia

NINFA, Rome Fiumicino Airport, IT



Convention Centre, Rome





Ninfa balustrades, Residential building,
Milan area



Ninfa balustrades, Residential building,
Milan area

Multifunctional building, Cuneo, IT



Multifunctional building, Cuneo, IT



Baldoria (ex Velvet) Rimini
Partner: Vetreria Nuova Romagnola



Felice Scandone Swimming Pool, Naples

Bergamo stadium



Ninfa balustrades, Residential building,
Milan area



Residential building, Jesolo

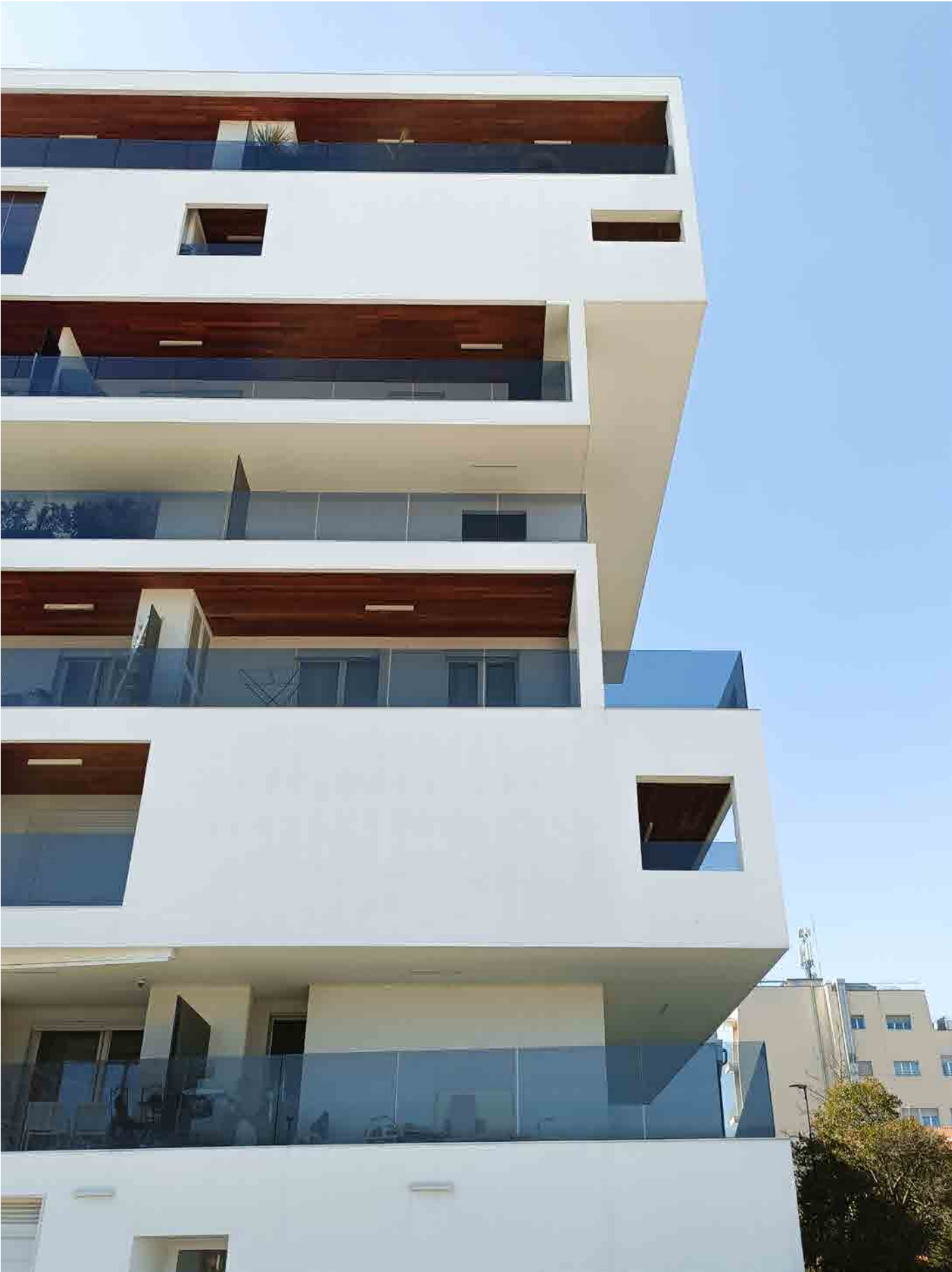




Residential building, Milan



Residential building, Pescara



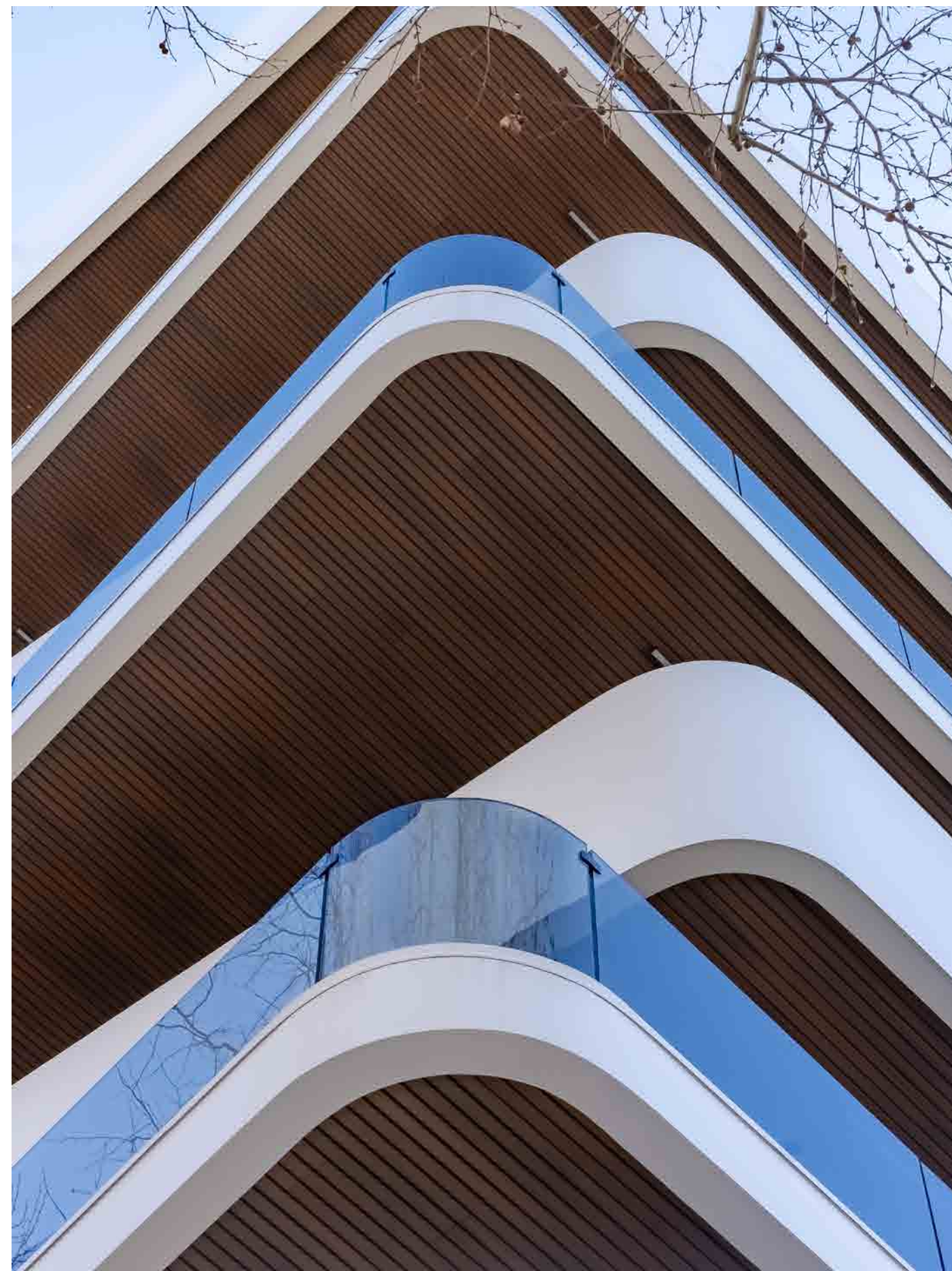
Residential building, Milan



Hotel in Riccione, Partner: Vetreria Nuova Romagnola



Hotel in Riccione, Partner: Vetreria Nuova Romagnola

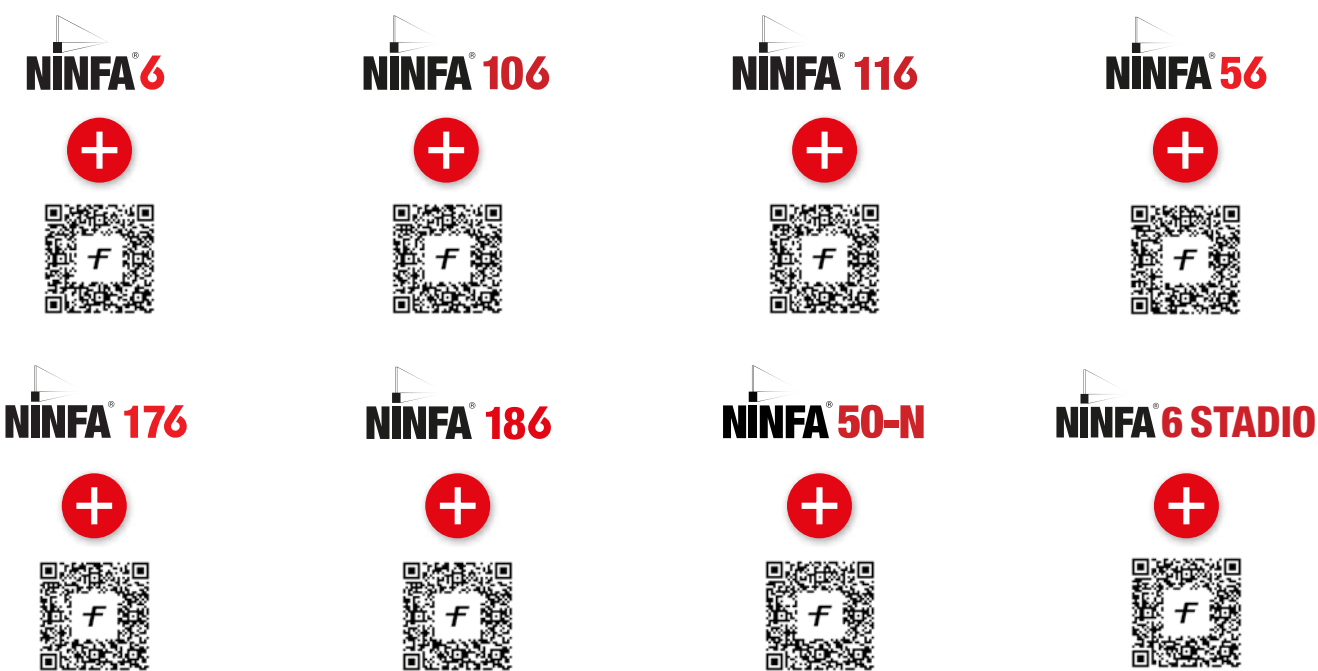


Residential building, Pescara

ASSEMBLY INSTRUCTIONS

NINFA THE SERIES 6

Download the assembly instructions in PDF format



CUSTOMER CARE

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We guide you in choosing the best solution for your needs.



EXPERT GUIDE

Managing a project through all its phases can be challenging. That is why we provide comprehensive support, from technical consultation through to after-sales service.

How to contact us:
email: faraone@faraone.it
web: faraone.it



Contact us now



INSTALLATION

We carefully select the experts who carry out the installation of our products to ensure our quality standards. During this phase, tests are carried out on site to ensure that the installation has been performed in a competent manner and that everything is safe.



Watch the installation video

TECHNICAL SPECIFICATIONS

Ninfa glass balustrade system (or similar), compliant with current standards, with relevant test report including:

Static load test with horizontal static linear load of 2 kN/m (137 lb/ft) or 3 kN/m (206 lb/ft). Dynamic load test with variable pendulum height depending on the intended use and possible breakage of glass.

Technical drawings with the heights and dimensions of each component of the balustrade. In addition, the type of glass panes and interlayer of the laminated package must be defined in order to meet the PR "post-breakage" requirement.

1. CHARACTERIZATION OF NINFA SERIES 6 BALUSTRADES

Ninfa glass balustrade system or railing (or similar) made with 6060 T66 or 6063 T66 aluminium alloy profile of the model chosen by the Works Supervisor, based on the intended use and the resistance class; suitable for floor mounting, embedded, or fascia mounting, to be chosen from the following models (or similar):

1/A) NINFA 6 model, profile size 86x136 mm (3.39x5.35") (base x height), linear horizontal load from 2 to 5 kN/m (137 to 343 lb/ft) for laminated glass* 10+10 3/8"+3/8"), 12+12 (1/2"+1/2") up to a glass height of 1500 mm (59.06").

1/B) Model NINFA 106 profile size of 74x111 mm (2.91"x 4.37") (base x height), linear horizontal load from 2 to 3 kN/m (137 to 206 lb/ft) for laminated glass* 8+8 (5/16"+5/16"), 10+10 (3/8"+3/8") up to a glass height of 1400 mm (55.118");

1/C) Model NINFA 56 profile size 64x83 mm (2.51"x 3.26") (base x height), linear horizontal load from 2 to 3 kN/m (137 to 206 lb/ft) for laminated glass* 6+6 (1/4"+1/4"), 8+8 (5/16"+5/16") up to a glass height of 900 mm (35.433");

1/D) Model NINFA 186 profile size of 80x173 mm (3.14"x 6.81") (base x height), linear horizontal load from 2 to 3 kN/m (137 to 206 lb/ft) for laminated glass* 8+8 (5/16"+5/16"), 10+10 (3/8"+3/8"), 12+12 (1/2"+1/2");* up to a glass height of 1500 mm (59.06");

1/E) Model NINFA 176 profile size of 80x173 mm (3.14"x 6.81") (base x height), linear horizontal load from 2 to 3 kN/m (137 to 206 lb/ft) for laminated glass* 8+8 (5/16"+5/16"),

10+10 (3/8"+3/8"), 12+12 (1/2"+1/2") up to a glass height of 1400 mm (55.118");

1/F) Model NINFA 116 profile size of 122x114 mm (4.80"x 4.48") (base x height), linear horizontal load from 2 to 3 kN/m (137 to 206 lb/ft) for laminated glass* 8+8 (5/16"+5/16"), 10+10 (3/8"+3/8") up to a glass height of 1400 mm (55.118");

1/G) Model NINFA 50-N profile size of 68x68 mm (2.68x2.68") (base x height), linear horizontal load from 2 kN/m (137 lb/ft) for laminated glass* 8+8 (5/16"+5/16") up to a glass height of 600 mm (23.622");

1/H) Ninfa 6 Stadio - 5 kN (343 lb/ft)

a.1) BASE PROFILE suitable for floor installation, made with 6063 T66 aluminium alloy extruded profiles, for positioning and adjustment of the glass panel. The profile geometry is specifically engineered to guarantee both stiffness under static load and the flexibility required to absorb accidental impacts.

a.2) GLASS consisting of 2 toughened glass panes 12 mm (1/2") thick each, laminated with rigid interlayer (SentryGlas type or similar belonging to family 2 according to EN 16613:2019) with a minimum height of 1100 mm (43.30") or as required.

a.2A) Glass panels used as separators between spectators with heights up to 2.3 metres (7' 6.54") without connection, and up to 3 metres (9' 10.11") but connected by an aluminium top rail profile properly fixed to the glass panels.

a.3) ACCESSORIES: glass fixing to the aluminium profile is achieved through special accessories with adjusters that allow plumb alignment, levelling and tightening of the glass panels — operations carried out exclusively from the inside of the balustrade (4 kits per metre of profile are provided). The glass, both on the external and internal side, comes into contact only with the plastic adjusters.

The gaskets inserted in the profile grooves complete the upper seal between the glass and the aluminium profile.

a.4) FIXING: the profile is fixed to the floor with M12 (1/2") threaded rods and chemical resin anchor. Fixing must be carried out on reinforced concrete beam or slab, ensuring the concrete is of minimum class

C25/30. Special attention is recommended when drilling through the waterproofing membrane; in this case, epoxy resins capable of restoring the seal between the rod and the drilled membrane are advised (e.g. Hilti HIT-Re 500 V4, or similar). Standard fixing span: 20 cm (7.87").

a.5) WATER DRAINAGE HOLES: any water present inside the profile can be drained through appropriate drainage holes in the Ninfa profile.

a.6) ALUMINIUM FINISHES. Exposed aluminium profiles shall be anodised in silver or other anodised-range colours on request. Anodising thickness: 20 microns (0.79 mil) (Qualanod mark). Alternatively powder coated in RAL colours (Qualicoat mark) or other colours upon request.

a.7) LABORATORY TEST REPORTS:

The complete balustrade system must be supported by laboratory test reports carried out in the laboratory in full compliance with the following regulations:

- UNI EN 13200-3:2018 separation elements for spectators in stadiums and grandstands; Additional indications on laboratory tests:

- The report must include technical drawings with the dimensions and thickness of the glass, the type of interlayer used for lamination;
- The certificate must include all photos of the sample during the test phases, also illustrating the type of assembly with the balustrade free from any lateral constraint. Individual pages must be stamped by the certification body;
- The Designer or Works Supervisor reserves the right to request an experimental test directly on site (with the same system and standards used in the laboratory) in order to assess the quality of the balustrade system and above all the resistance of the fixing in use.

2. FUNCTIONALITY AND AESTHETICS OF THE NINFA BALUSTRADES

The aluminium profile of the balustrade will be equipped with special accessories that allow adjustment for the alignment and plumb alignment of the glass sheets.

The type and quantity of floor/slab/wall fixings for the profiles will vary according to the resistance class requested by the Works Supervisor and the nature of the support. Where fixing is carried out on a reinforced concrete beam or slab, the concrete must be of minimum class C25/30.

Exposed aluminium profiles shall be anodised in silver, 15 micron (0.60 mil) class (or other colours upon request), or alternatively powder coated with epoxy powder in RAL colours or other colours upon request.

3. PERFORMANCE IN POST-BREAKAGE CONDITIONS

For the NINFA system profiles it is sufficient to use tempered-hardened laminated glass to obtain residual post-breakage resistance. It is advisable to pay extreme attention to the installation of the hardened sheet, which must be placed in the compressed part of the laminate, i.e. externally to the horizontal static linear load and impacts.

4. ADDITIONAL SAFETY GUARANTEES IN POST-BREAKAGE OF GLASS AND HANDRAIL

To ensure "system redundancy" and satisfy the post-breakage criterion, the Works Supervisor may also require an upper handrail anchored and bonded to the individual glass panes in order to ensure, in case of breakage of the sheets, the transfer of linear loads to the adjacent intact sheets and the reduction of the risk of collapse of the laminate glass with both sheets broken. Note that this solution involves a price increase due only to the cost of the handrail.

RIGID INTERLAYER

To ensure "system redundancy" and achieve the satisfaction of the post-breakage criterion, without the use of the upper handrail, it is possible to improve the performance of the plastic interlayer. * In this case the glass panes will be both tempered-hardened and combined with rigid plastic interlayers belonging to family 2, as defined in EN 16613.

Such systems must guarantee a load resistance of 1 kN/m (69 lb/ft) even with one pane broken, and prevent immediate collapse of the laminated unit in the event of both panes breaking. Note that this solution involves a price increase due to the cost of lamination with rigid interlayer. Paragraph to be used according to the

type of project and the requirements of the designer and Works Supervisor.

The use of rigid interlayers belonging to Family 2 (EN 16613), combined with adequate thicknesses of toughened glass, allows for improved resistance and stiffness of the glazed panel. Experimentally, residual resistance to static and dynamic loads can be guaranteed even with one or both panes broken.

Test reports on balustrades are prepared by laboratories authorised by the Ministry of Infrastructure and Transport.

For the tests to be considered valid, any handrail or the upper part of the balustrade must not have any fixings to walls and/or columns. The floor anchorage of the balustrade must reproduce the most unfavourable fixing conditions; therefore a cracked reinforced concrete substrate of maximum strength class C25/30 is recommended.

The certificate must also include photos of the assembled sample to demonstrate the type of test carried out.

TO LEARN MORE

Consult the document "Guide to designing glass balustrades" on the www.faraone.it website.

This documentation is the result of a long and careful experimental campaign combined with Faraone's experience, and makes available to all interested parties the many tests carried out and the behaviour/performance of the various glass solutions (all valid with Faraone systems only).

Ing. Gabriele Romagnoli

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Faraone s.r.l. a socio unico
Via Po 12 / 64018 Tortoreto (TE) Italy.
T. +39 0861 784200
www.faraone.it

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