

DEFENDER

SOLUTIONS FOR GLASS PARAPETS



WHERE BEAUTY
MEETS SAFETY.





WHAT ARE PARAPETS?

Glass parapets are elegant, waist-high safety barriers, which increase the safety and beauty of spaces. They not only protect people from the risk of slipping off balconies and staircases, but also enhance the aesthetics and comfort of spaces.

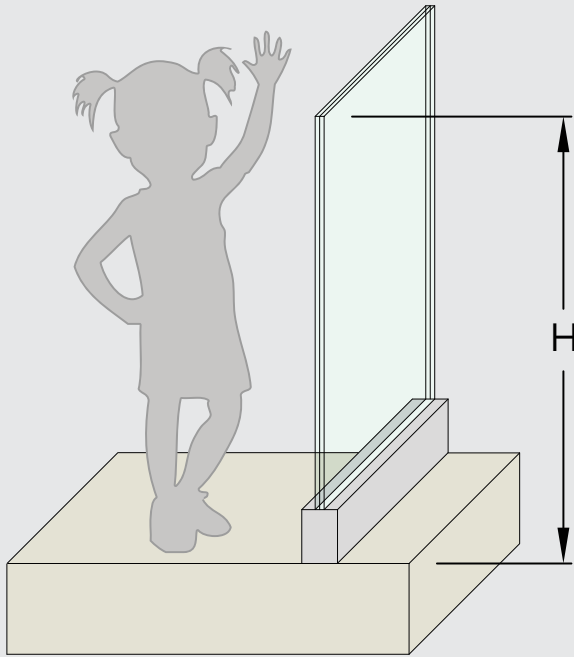


SMART REASONS TO CHOOSE A GLASS PARAPET.

- 👍 Ushers in safety and aesthetics
- 👍 Enhances acoustic comfort
- 👍 Prevents climbing over and falling
- 👍 Facilitates fitting with aesthetic or functional handrail
- 👍 Allows combination with highly impressive lighting solutions

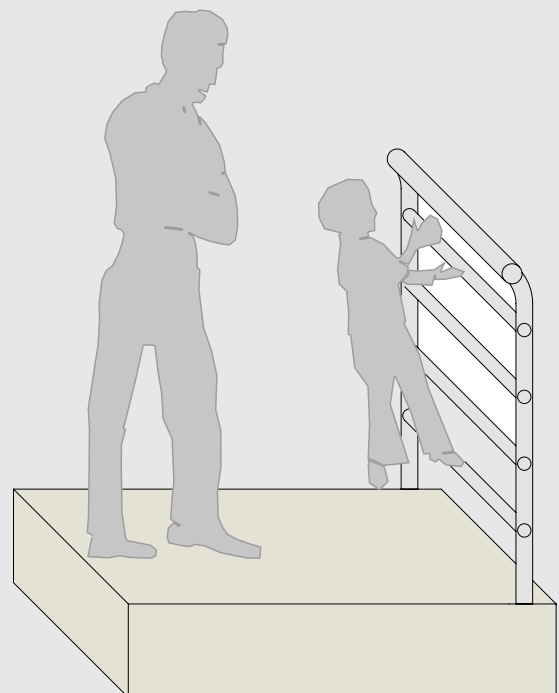


GLASS PARAPETS – ENSURING SAFETY.



The safety requirements of parapets contain regulatory provisions in terms of dimensions, starting with a minimum protective height of 100 cm. Based on local provisions, or specific situations. This can go up to 110-120 cms based on local provisions. In staircases, the protective height is measured starting from the external corner of the tread, with a minimum height of 90 cm.

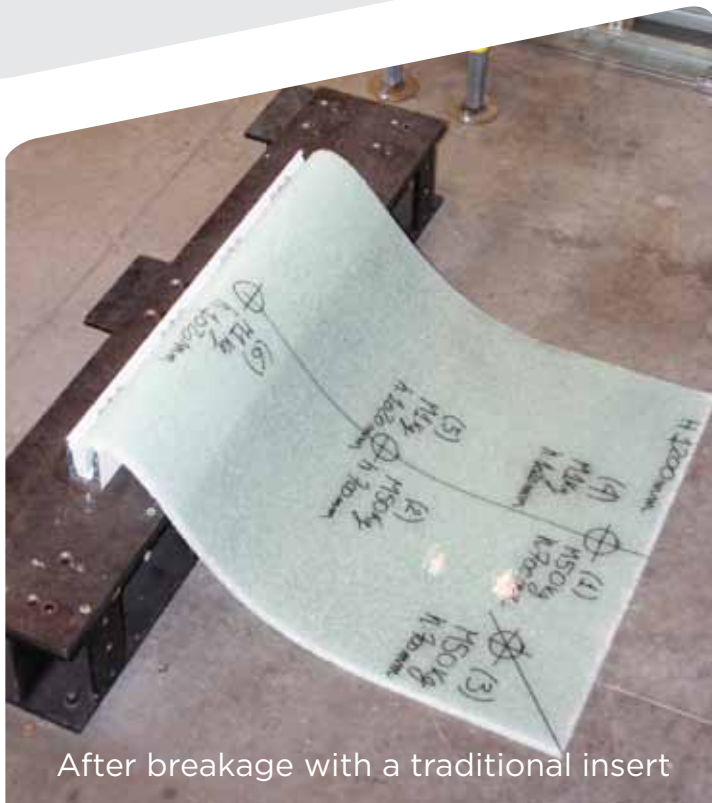
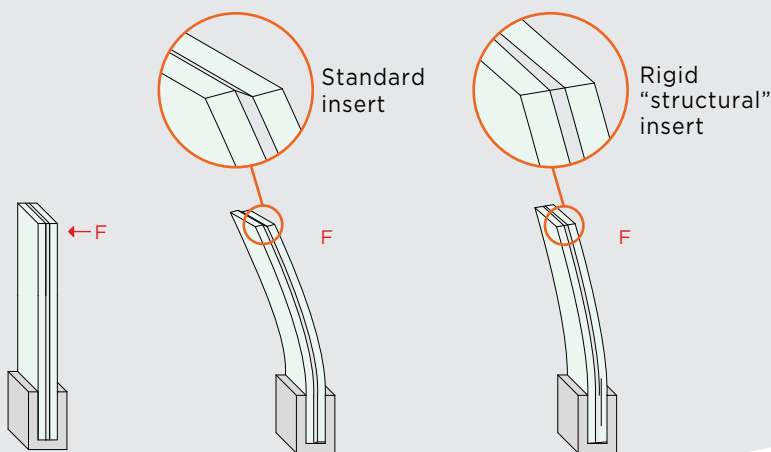
Caution: The height should be calculated from the first usable surface, which is not necessarily the same as the height from the finished floor. Hence, it is vital to identify any precarious or stable walking surfaces near the protective barrier. In case there are large steps or fixed walkable elements just before the parapet, the necessary height has to be increased, compared to more standard situations.



WHY LAMINATED SAFETY GLASS FOR PARAPETS?

For glass parapets, many European regulations prescribe using laminated safety glass defined by standard ISO 12543 and classified 1B1 according to standard EN 12600. This is because, in case of breakage, the insert (often called “plastic”) can withhold the glass fragments, limit the dimensions of the opening, offer residual resistance and reduce the risk of injuries.

In laminated glass, the use of a rigid insert (often called “structural”) allows to obtain better performance and a higher degree of safety. During normal function, the enhanced rigidity allows the glass panels to collaborate more effectively with better performance in terms of resistance and deformation. Moreover, the greater rigidity allows the panel to maintain its original shape even when damaged, until it is replaced.



After breakage with a traditional insert



After breakage with a rigid insert

SAFETY COMPLIANCE.

A glass parapet can be declared compliant with regulatory requirements directly by the installer, who will issue a “Professional Installation Declaration”, accepting responsibility for correct assembly and supplies of materials compliant with the technical specifications of the state-qualified designer, who defines and signs the project-related decisions as consistent with said requirements. A system provided with test reports or calculation reports is capable of meeting the needs of both designers and installers, who make use of the documents by enclosing them in the project or construction site folder.

On-site testing, when necessary and required, is useful to verify the details described in the test report or in the calculation reports.



GUARANTEE OF SAFETY & RELIABILITY.

Saint-Gobain has been at the front line for the evaluation and inspection of parapet performance.

A large crowd of people, mostly men, are gathered behind a metal parapet wall. In the center, a shirtless male soccer player is being lifted and embraced by several fans. The crowd is cheering and celebrating. In the foreground, a soccer player in a purple jersey with the name 'MARECOS' and the number '28' is visible. To the left, a person in a yellow hard hat and a high-visibility vest is standing with their back to the camera. The scene is set at night, likely at a stadium.

Meets extremely
challenging situations
head-on!

The DEFENDER collection has been tested up to a maximum stress of 18,0 kN/m

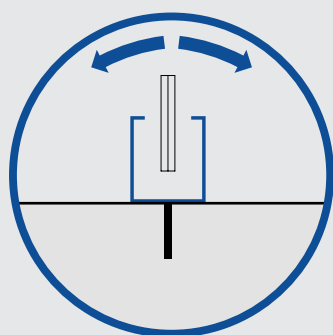
DEFENDER COLLECTION

UNMATCHED SAFETY. AESTHETIC DESIGN.
EASY INSTALLATION.

Views the complete collection designed to meet every need.
Choose where to install your parapet, and we will provide
the tools to implement the project.

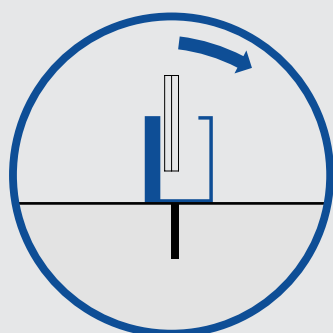
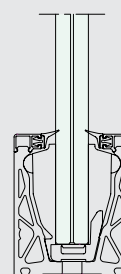


DEFENDER COLLECTION FOR EVERY NEED



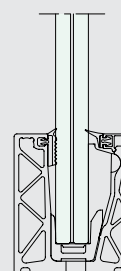
DEFENDER **XP** Small and adjustable

- ⚙ only 75 x 62 mm
- ⚙ glass 6+6, or 8+8
- ⚙ Rapid installation
- ⚙ adjustable on two sides
- ⚙ $\pm 2^\circ$



DEFENDER **PICO** Small and resistant

- ⚙ only 75 x 62 mm
- ⚙ glass 6+6, or 8+8
- ⚙ Rapid installation
- ⚙ single side



DEFENDER **XP** System for Small & Strong and **PICO** system for Residential



SMALL &
STRONG

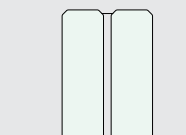
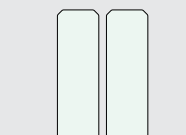


RESIDENTIAL

Glass Thickness

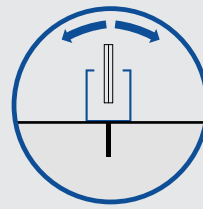
66 (13.52 mm)

88 (17.52 mm)

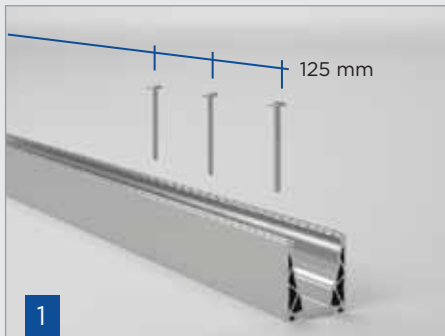


DEFENDER- INSTALLATIONS

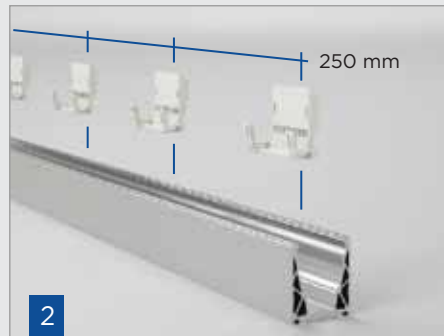
Adjustable, rapid and effective Installation >>>



DEFENDER **XP**



1 Place the pre-drilled profile on the support and secure it with suitable anchors for the type of structure.



2 Place the basic cradles with clamps at the bottom of the groove (for LED installation, during this phase, remove the connectors on the cradles and place the LED strip).



3 Place the glass pane in the profile; the pane will remain in place, once it has been inserted.



4 Insert the pressure contrast system, and then the interface rollers.



5 Adjust and tighten the pressing device to secure the glass pane (3 Nm lock recommended).



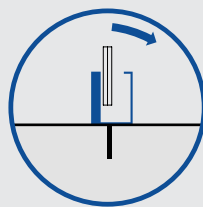
6 Complete the process with internal and external snap on finish profiles after pre-installing the lip gasket.

New patented system for anchoring the glass pane and adjusting its alignment $\pm 2^\circ$.

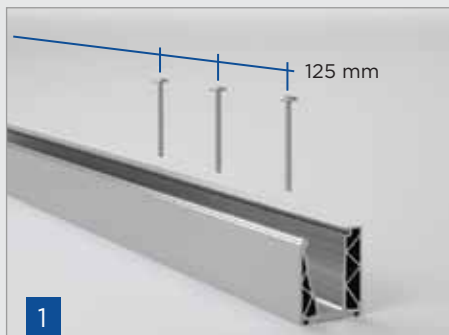


DEFENDER- INSTALLATIONS

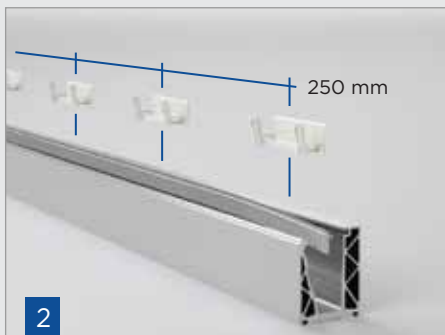
Easy, rapid and single side Installation >>>



DEFENDER **PICO**



1 Place the pre-drilled profile on the support and secure it with suitable anchors for the type of structure.



2 Place the basic cradles at the bottom of the groove and the external seal (for LED installation, during this phase, remove the connectors on the cradles and place the LED strip).



3 Place the glass pane in the profile; the pane will remain in place, once it has been inserted.



4 Insert the pressure contrast system, and then the interface rollers.

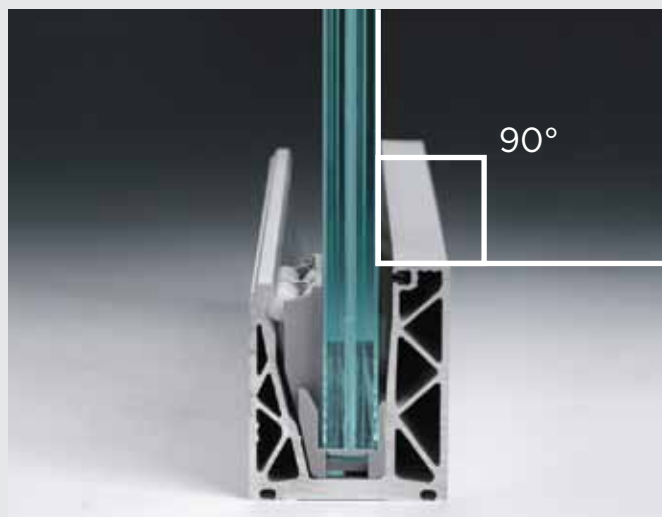
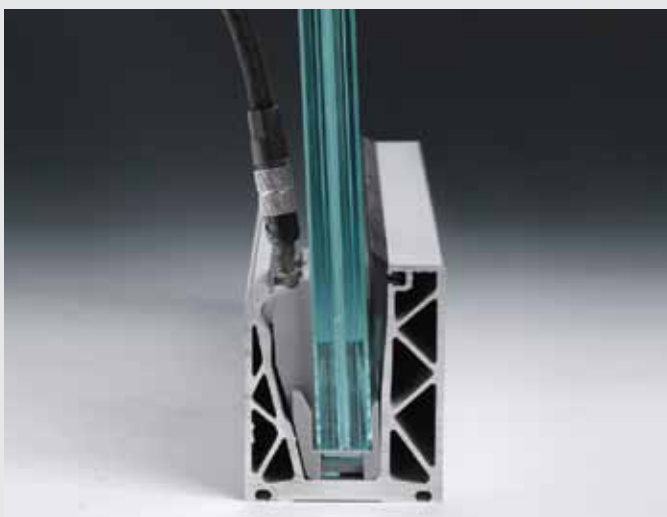


5 Tighten the pressing device to secure the glass pane (2 Nm lock recommended).



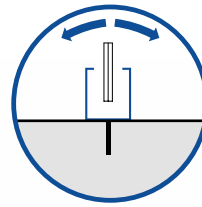
6 Complete the process with the snap on finish profile after pre-installing the lip gasket

New patented system for simple, rapid and single side installation of glass panes.





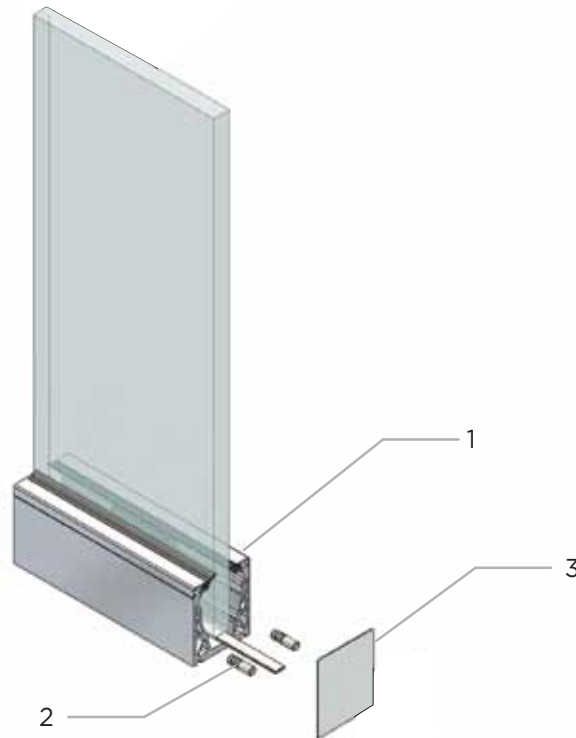
SMALL &
STRONG



DEFENDER **XP**

DEFENDER **XP**

1. XP DESIGN AL (6063T6) PROFILE
2. CENTERING PINS
3. AI PROFILE END CAP



NOTE: TECHNICAL APPROVALS AND VALIDATION



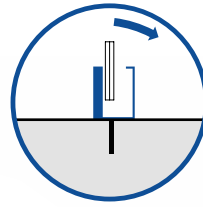
FLOOR ANCHORING
indoor installation



ANCHORING ON RAISED WALL
outdoor installation



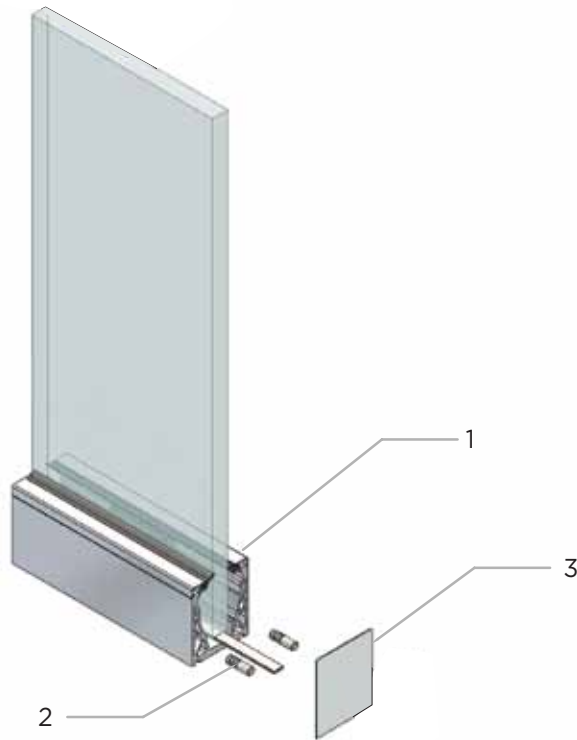
SMALL &
STRONG



DEFENDER **PICO**

DEFENDER **PICO**

1. PICO DESIGN AL (6063T6) PROFILE
2. CENTERING PINS
3. AL PROFILE END CAP



NOTE: TECHNICAL APPROVALS AND VALIDATION



ANCHORING ON RAISED WALL
outdoor installation



FLOOR ANCHORING
indoor installation

STAINLESS STEEL SPIGOT GLASS SYSTEMS



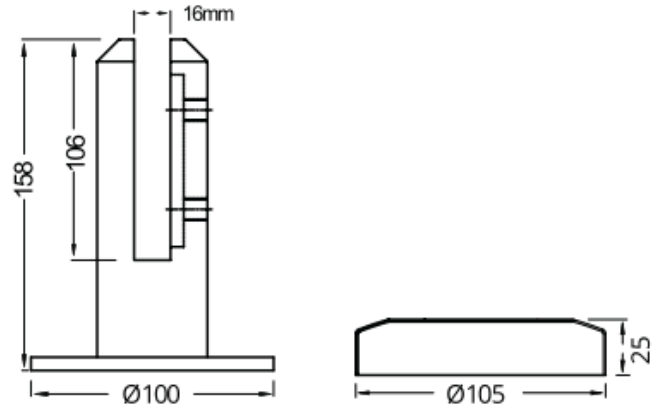
ROUND SPIGOT FOR GLASS SYSTEM - AISI SS 304 / SS 316

Features: Spigot System suitable for 12mm to 13.52mm glass for small residential and pool areas, it will be fixed with anchor fasteners

Finish: Comes with cover plate. Finish: Satin Stainless Steel.



Fixing plate cover gasket



Dimensions
Diameter 50mm & Height 158mm

For glass panes
Suitable for 12-13.5mm glass

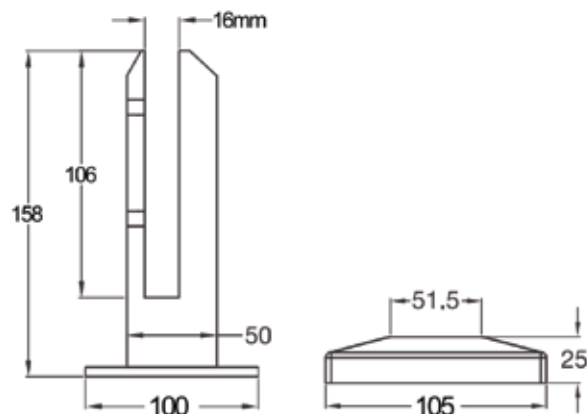
SQ SPIGOT GLASS SYSTEM - AISI SS 304 / SS 316

Features: Square Spigot system made by 50x50x158mm in satin finish suitable for 12-13.52mm glass, will be fixed with of anchor fasteners

Finish: Comes with cover plate. Finish: Satin Stainless Steel.



Fixing plate cover gasket



Diameter
Square 50x50mm Height 158 mm

For glass panes
Suitable for 12-13.52 mm

POINT FIXINGS FOR BALUSTRADES WITH ADJUSTABLE SPACE.



ADJUSTABLE POINT FIXINGS – GLASS BALUSTRADE SYSTEMS.

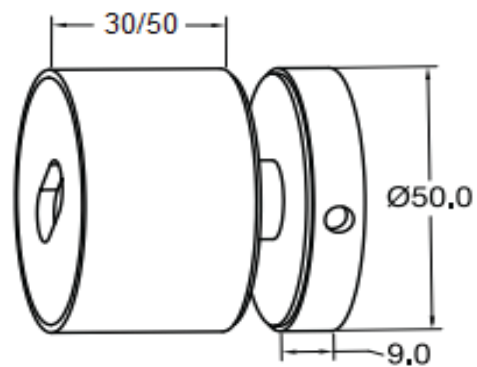
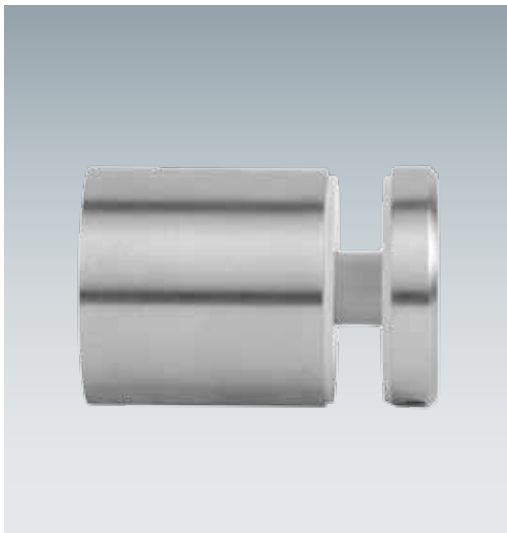


ADJUSTABLE POINT FIXING – AISI SS 304 / SS 316

Features: Cast body.

Screw: Adjustable point fixing system made by diameter 50mm in two lengths 30mm and 50mm. Suitable for 12-17.52mm glass will fix with Single Anchor fasteners.

Finish: Satin Stainless Steel.



Diameter	Glass thickness	Min glass hole
Ø50 mm H 30 mm	12 / 17.5 mm	Ø15 mm
Ø50 mm H 50 mm	12 / 17.5 mm	Ø15 mm

HANDRAILS THAT SPELL CLASS



DEFENDER - SLOT HANDRAIL / ROUND HANDRAIL & ACCESSORIES

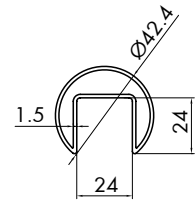


SLOT HANDRAIL AISI SS 304 / SS 316

Material: Stainless steel
 Features: Solt round Handrail,
 dia 42.4mm x 1.5mm, with notch 24 x 24mm

Finish: Stain Stainless Steel
 Suitable for 12mm to 17.52mm glass, comes in
 3000mm standard length

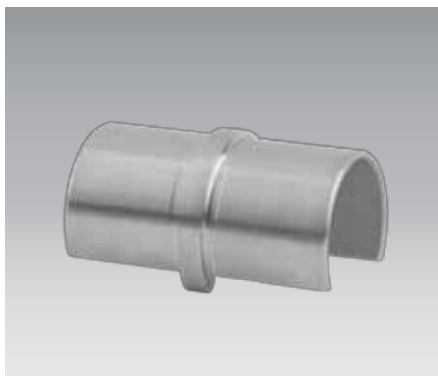
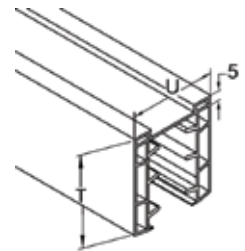
Diameter
 Ø42.4 x L 3000 mm - Th. 1.5 mm



GASKET FOR GLASS EDGE

Material: EPDM
 Colour: Black

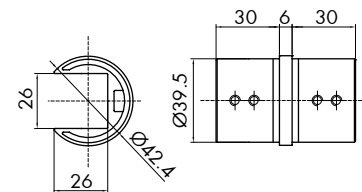
Diameter: Suitable for 12mm to 17.52mm



ALIGNED JOINT FOR SLOT HANDRAIL AISI SS 304 / SS 316

Material: Stainless steel AISI 304/316
 Features: Linear joint for fush handrail
 Finish: Stain Stainless Steel

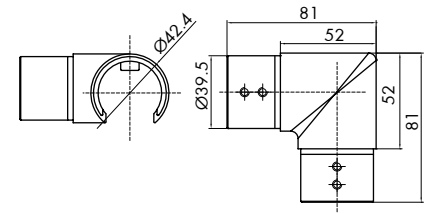
Diameter: Suitable for Diameter 42.4mm
 slot handrail



90° JOINT FOR SLOT HANDRAIL AISI SS 304 / SS 316

Material: Stainless steel AISI SS 304 / SS 316
 Features: 90°corner joint
 Finish: Stain Stainless Steel

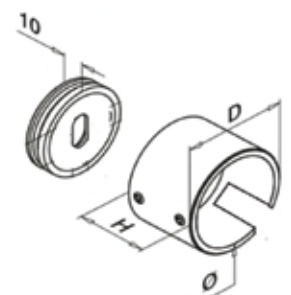
Diameter: Suitable for Diameter 42.4mm
 slot handrail



START FROM WALL FOR SLOT HANDRAIL AISI SS 304 / SS 316

Material: Stainless steel AISI SS 304 / SS 316
 Features: To fix slot handrail with wall
 Finish: Stain Stainless Steel

Diameter: Suitable for Diameter 42.4mm slot handrail



DEFENDER - SLOT HANDRAIL / ROUND HANDRAIL & ACCESSORIES

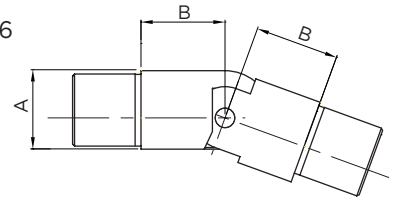


DOWNWARD ADJUSTABLE CONNECTOR AISI SS 304 / SS 316

Material: Stainless steel AISI SS 304 / SS 316

Feature: Handrail inclined elbow

Finish: Stain Stainless Steel



Diameter: Suitable for Diameter 42.4mm slot handrail

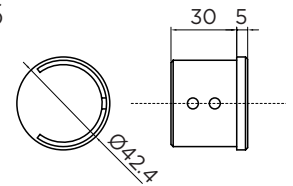


END CAP FOR SLOT HANDRAIL AISI SS 304 / SS 316

Material: Stainless steel AISI SS 304 / SS 316

Finish: Stain Stainless Steel

Diameter: Suitable for Diameter 42.4mm slot handrail



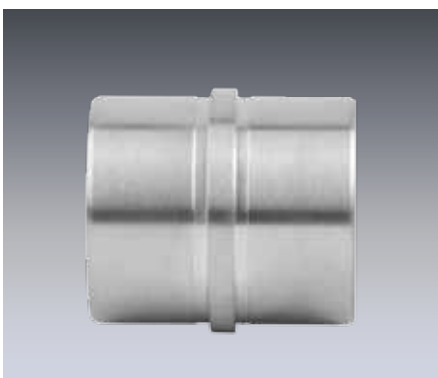
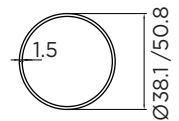
ROUND TUBE FOR HANDRAIL AISI SS 304 / SS 316

Material: Stainless steel AISI SS 304 / SS 316

Feature: To be used as a offset handrail

Finish: Stain Stainless Steel

Diameter: Handrail in Diameter 38.1mm / Diameter 50.8mm with 1.5mm thickness. Standard length 3000mm



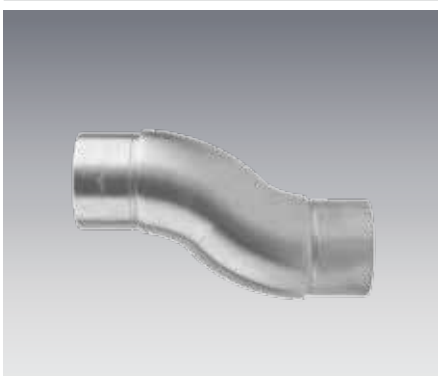
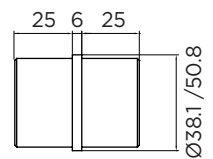
ALIGNED JOINT FOR HANDRAIL AISI SS 304 / SS 316

Material: Stainless steel AISI SS 304 / SS 316

Feature: Aligned joint for slot handrail

Finish: Stain Stainless Steel

Diameter: Suitable for Diameter 38.1mm / Diameter 50.8mm handrail



ALIGNED JOINT FOR SLOT HANDRAIL AISI SS 304 / SS 316

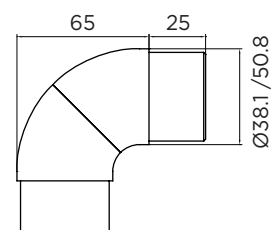
Material: Stainless steel AISI SS 304 / SS 316

Features: Rotating elbow for any angle joint

Internal locking screws supplied

Finish: Stain Stainless Steel

Diameter: Suitable for Diameter 38.1mm / Diameter 50.8mm handrail



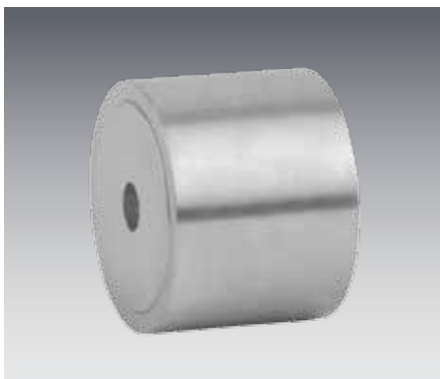
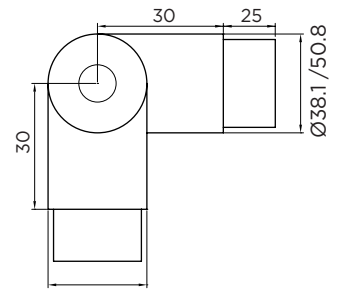
DEFENDER - SLOT HANDRAIL / ROUND HANDRAIL & ACCESSORIES



ADJUSTABLE / FLEXIBLE HANDRAIL AISI SS 304 / SS 316

Material: Stainless steel AISI SS 304 / SS 316
 Feature: Flexible elbow for any angle joint
 Finish: Stain Stainless Steel

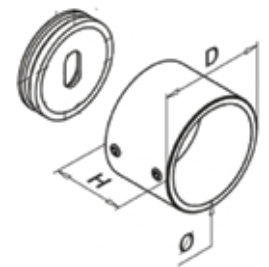
Diameter: Suitable for
 Diameter 38.1mm / Diameter 50.8mm handrail



BRACKET TO FIX HANDRAIL WITH WALL AISI SS 304 / SS 316

Material: Stainless steel AISI SS 304 / SS 316
 Feature: To fix slot handrail with wall
 Finish: Stain Stainless Steel

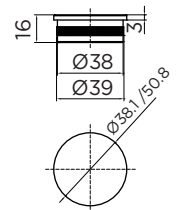
Diameter: Suitable for
 Diameter 38.1mm / Diameter 50.8mm handrail



END CAP FOR HANDRAIL AISI SS 304 / SS 316

Material: Stainless steel AISI SS 304 / SS 316
 Feature: Handrail end cap
 Finish: Stain Stainless Steel

Diameter: Suitable for
 Diameter 38.1mm / Diameter 50.8mm handrail

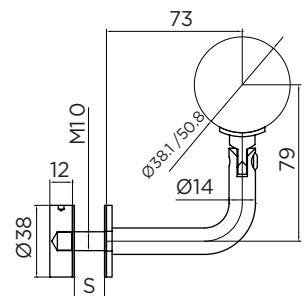


GLASS FITTING FOR HANDRAIL AISI SS 304 / SS 316

Material: Stainless steel AISI SS 304 / SS 316
 Feature: Glass to offset handrail holder
 Finish: Stain Stainless Steel

Tube diameter: Suitable for
 Diameter 38.1 / Diameter 50.8mm handrail

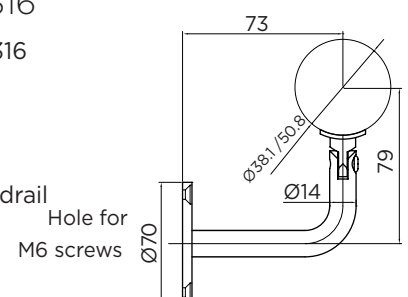
Rec. Hole glass | Glass:
 Ø15 mm | 12 - 17.52 mm



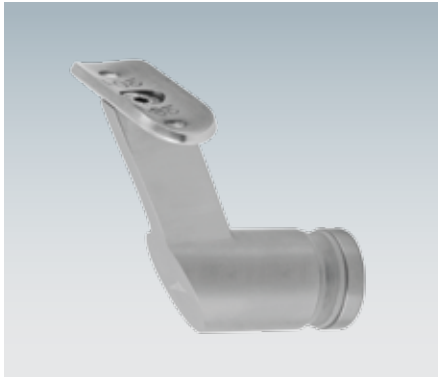
WALL FITTING FITTING FOR HANDRAIL AISI SS 304 / SS 316

Material: Stainless steel AISI SS 304 / SS 316
 Feature: Wall to offset handrail holder
 Finish: Stain Stainless Steel

Diameter: Suitable for
 Diameter 38.1mm / Diameter 50.8mm handrail



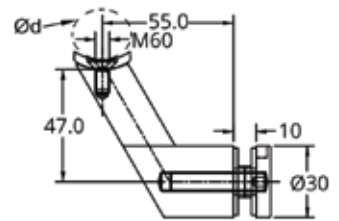
DEFENDER - SLOT HANDRAIL / ROUND HANDRAIL & ACCESSORIES



GLASS FITTING FOR OFFSET HANDRAIL AISI SS 304 / SS 316

Material: Stainless steel AISI SS 304 / SS 316
 Feature: Glass to offset handrail holder
 Finish: Stain Stainless Steel

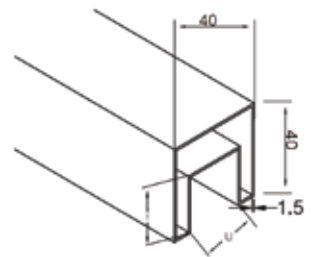
Tube diameter	Rec. hole glass	For glass
Ø38.1 mm	Ø15mm	13.52 / 17.52 mm
Ø50.8 mm	Ø15mm	13.52 / 17.52 mm



SLOT SQ HANDRAIL AISI SS 304 / SS 316

Material: Stainless steel AISI SS 304 / SS 316
 Feature: Square slot handrail
 40 x 40 x 1.5mm slot 24 x 24mm
 Finish: Stain

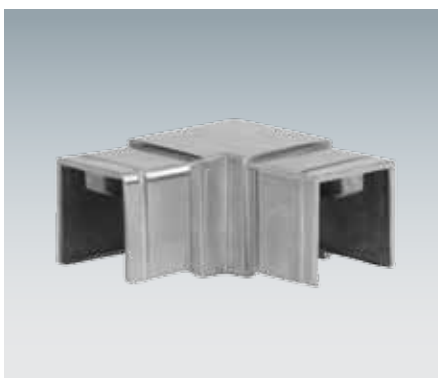
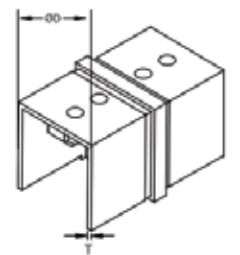
Diameter:
 SQ 40 x 40 x L 3000 - Th. 1.5 mm



IN-LINE JOINT FOR SQ SLOT HANDRAIL AISI SS 304 / SS 316

Material: Stainless steel AISI SS 304 / SS 316
 Feature: Aligned joint for slot square handrail
 Finish: Stain Stainless Steel

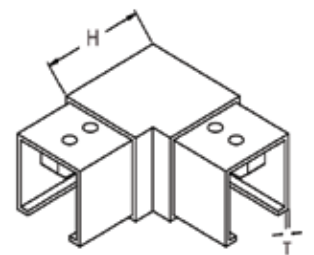
Diameter: Suitable for square slot handrail 40 x 40 x 1.5mm



90° JOINT FOR SQ SLOT HANDRAIL AISI SS 304 / SS 316

Material: Stainless steel AISI SS 304 / SS 316
 Feature: 90° angle joint for slot square handrail
 Finish: Stain Stainless Steel

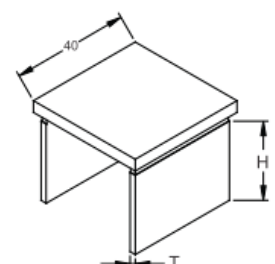
Diameter: Suitable for square slot handrail 40 x 40 x 1.5mm



END CAP FOR SQ SLOT HANDRAIL AISI SS 304 / SS 316

Material: Stainless steel AISI SS 304 / SS 316
 Features: End cap for slot square handrail
 Finish: Stain Stainless Steel

Diameter: Suitable for square slot handrail 40 x 40 x 1.5mm

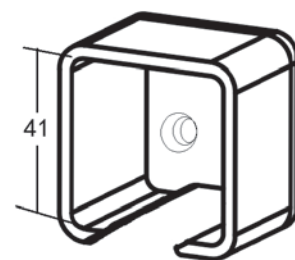


DEFENDER - SLOT HANDRAIL & ACCESSORIES



BRACKET TO FIX SLOT SQUARE
HANDRAIL WITH WALL
AISI SS 304 / SS 316

Material: Stainless steel AISI SS 304 / SS 316
Feature: To fix slot square handrail with wall
Finish: Stain Stainless Steel



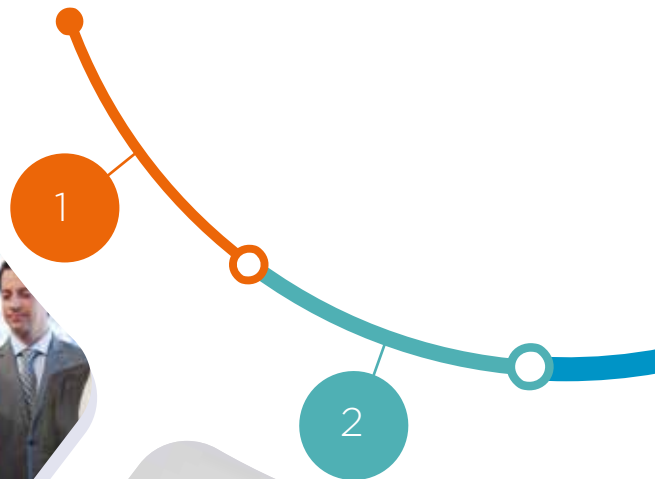
END-TO-END SOLUTIONS FROM SAINT-GOBAIN.

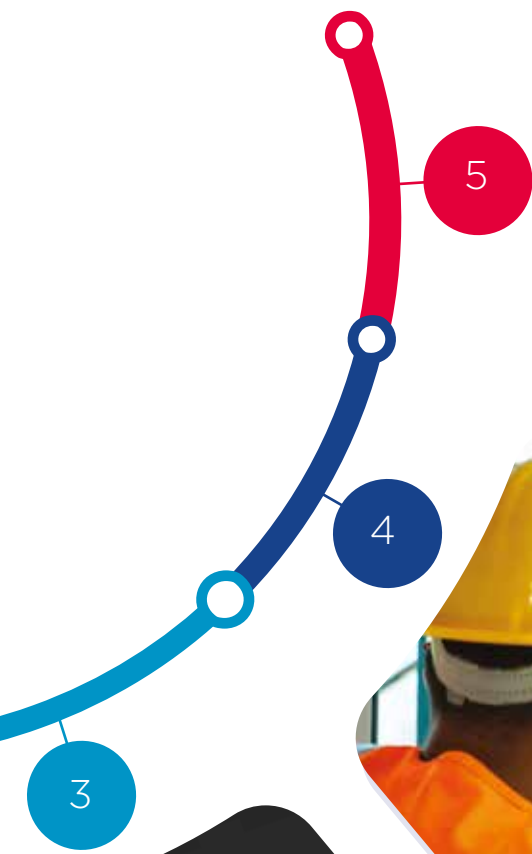


Project Brief
Understanding
the requirement



**Customized
designs**
Designs crafted to
the customer's needs





Post-sales service

Continued after sales support



Installation

Expert installation by trained professionals



One stop solution

Glass, Profiles & Hardware for every need



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