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Valid from September 13, 2022

as of September 30, 2025

About the process

OSF

Product/Process family: Glass railing

Holder(s): SB INGENIERIE - SADEV

FOREWORD

The technical opinions and the technical application documents, hereinafter referred to interchangeably as Technical Opinions, are intended to provide those involved in the construction industry with information on the suitability for use of the products or processes whose constitution or use is not based on traditional skills and practices.

This resulting document should be taken as such and is therefore not a document of compliance or regulation or a reference of a "quality mark". Its validity is decided independently of that of the supporting documents of the technical file (in particular any regulatory certificates).

The Technical Assessment is a voluntary approach by the applicant, which in no way changes the distribution of the responsibilities of the construction actors. Independently of the existence or not of this Technical Assessment, for each structure,the actors must provide or request, depending on their roles, the required supporting documents.

As the Technical Notice is intended for players reputed to know the rules of the art, it is not intended to contain otherinformation than that relating to the non-traditional nature of the technique. Thus, for aspects of the process that comply with recognized rules of the art for implementation or dimensioning, a reference to these

Specialized Group no.2.1 - Light facade products and processes

COMMISSION CHARGÉE DE FORMULER LES AVIS TECHNIQUES

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Document releases

Version	Description	Rapporteur	President
V1	This is a new request	MOKRANI Youcef	VALEM Frederic

Descriptor:
Flat glass balustrade embedded at the foot by an aluminum profile in a continuous manner without post, with or without comfort handrail. The assembly is carried out on a slab, at the nose of the slab, or at the top of a low acroterion.

Contents

1. Opinion of the Specialized Group

The process described in Chapter 2 "Technical File" below was examined by the Specialized Group, which concluded favorably that it was suitable for use under the conditions defined below:

1.1. Accepted field of employment

1.1.1. Geographical area

The Notice has been formulated for use in mainland France.

1.1.2. Targeted works

Flat railing for buildings in common use, for private use or that can receive the public (housing, education, offices, hospitals) and for the surroundings of buildings implemented both inside and outside.

The field of use is limited to a height of 1.10 m from the finished floor.

1.2. Appreciation

1.2.1. Ability to use the process

1.2.1.1. Stability

The proper stability of the guardrails is ensured insofar as their sizing respects the criteria specified in the Technical File.

1.2.1.2. User safety

The safety of users is ensured in the accepted field of use insofar as the sizing of the guardrails respects the criteria specified in the Technical File in accordance with CSTB Specification 3034-V3.

1.2.1.3. Prevention of accidents during implementation

The implementation is based on the usual techniques.

The process has a Safety Data Sheet. The purpose of the MSDS is to inform the user of this process of the dangers associated with its use and of the preventive measures to be adopted to avoid them, in particular by wearing personal protective equipment (PPE).

1.2.1.4. Installation in seismic zone

The process can be implemented in seismicity zones 1 to 4 on buildings of importance categories I to IV, according to the decree of October 22, 2010 and its amendments.

Note: this Notice does not deal with the specific preventive measures that can be applied to buildings of importance category IV to guarantee the continuity of their operation in the event of an earthquake.

1.2.2. Sustainability

- Laminated glazing may present, in accordance with the criteria required in standard NF EN ISO 12543, on their peripheries, bubbles or delamination over a width of a few millimeters, the consequences of which are purely aesthetic.
- The choice of anti-corrosion treatment and coating adapted to exposure in accordance with the NF P 24-351 standard means that the aluminum alloy rebate elements will perform well outdoors.
- The materials used and the drainage of the rebate make it possible to count on satisfactory durability of the guardrails.
- The system allows the individual removal and replacement of damaged railing glazing.

1.2.3. Environmental impacts

1.2.3.1. Environmental and health data

The system has no Environmental Declaration (ED) and therefore cannot claim any particular environmental performance.

It is recalled that the DE does not fall within the scope of examination of suitability for use of the process.

The data from the DEs are intended in particular to be used to calculate the environmental impacts of the works in which the products or processes concerned are likely to be integrated.

1.2.3.2. Health aspects

This Opinion is formulated with regard to the holder's written commitment to comply with the regulations, and in particular all the regulatory obligations relating to products that may contain dangerous substances, for their manufacture, their integration into works in the field of use. accepted and the exploitation thereof. The verification of information and declarations issued pursuant to the regulations in force does not fall within the scope of this Notice. The holder of this Notice retains full responsibility for such information and statements.

1.3. Additional remarks from the Specialized Group

The Specialized Group draws attention to the quality of the supports on which the OSF guardrails are installed, in particular with regard to their flatness.

As with any glass railing system recessed at the foot, direct installation on concrete supports requires mortar wedging without shrinkage. The adjustment of the support profile does not dispense with wedging with mortar without shrinkage.

In the absence of a handrail, bleaching of the upper edge of the glazing, in the case of outdoor installation, cannot be excluded.

These railing systems do not have a device for adjusting the inclination of the glazing. The absence of a handrail will accentuate this phenomenon of non-alignment of the glazing.

The wedging of the railing systems must be completed with a non-shrink mortar finish.

2. Technical file

From the elements provided by the holder and the Specialized Group's prescriptions accepted by the holder

2.1. Marketing method

2.1.1. Contact information

The process is marketed by the holder:

SADEV
Sadev Building Engineering
76, Chemin des poses – 74330 Poisy - Annecy

Such. : +33 (0)4 50 08 39 16
Email:info@sadev.comInterne
t :www.sadev.com

2.1.2. Identification

The glazing must comply with the standards NF EN ISO 12543 and NF EN 14449, and be marked as shown in figure 1. The marking remains visible after implementation.

2.2. Description

2.2.1. Principle

Flat glass balustrade embedded at the foot by an aluminum profile in a continuous manner without post, with or without comfort handrail. The assembly is carried out on a slab, at the nose of the slab, or at the top of a low acroterion.

The holding systems consist of an aluminum support profile, a wedging system, finishing profiles and seals. Component references are given for each system. The systems and compositions of the glazing are chosen according to the category of building in which the guardrail is installed and according to its method of attachment to the support.

2.2.2. Component characteristics

2.2.2.1. Glass products

The OSF system is made up of laminated glazing, planes with spacer in accordance with the NF EN ISO 12543 and NF EN 14449 standards. The laminated glazing is made up of two HST tempered glasses and classified 1B1 according to the NF EN 12600 standard. HeatSoak treatment (HST) according to standard NF EN 14179 is carried out.

The glazing is rectangular or parallelogram with a maximum angle of 40° (slope in relation to the horizontal). The edges are shaped either JPI or JPP.

The glasses are identifiable by marking, as shown in Figure 1. The marking remains visible or not after installation (above the profile, in the profile, on the edge of the glass).

Generic example	Example with PVB
glass product	PVB
supplier glass	XXXXXEN
standard	14179

Table 1 – Identification of OSF glazing

Figure 1 – Example of marking on the glass

2.2.2.2. Holding devices

The support profiles are made of extruded 6063 T6 aluminum in accordance with the NF EN 573 and NF EN 755-2 standards. These profiles are either Qualanod label certified with 20 µm anodizing and compliant with standard NF EN ISO 7599, or Qualicoat certified with powder coating. These profiles are specially adapted and sized to meet the use of the OSF system. The profiles can be fixed to the structural work by fixing elements (concrete screw, dowel and mechanical stud, dowel with

chemical sealing in steel or stainless steel (ETA-08/0307). For steel constructions screws type DIN 933 M8 to M12 can be used depending on the loading.

These profiles have a maximum length of 6000 mm and can be cut to size. The support profiles can be machined to guarantee the evacuation of water inside the support systems. Drilling details are shown in Figure 2 and Figure 3 for the different profiles.

2.2.2.2.1. Installation on slab - OSF model - R70 (3m) / R80 (6m)

The system consists of a profile drilled Ø 15mm on the support side every 300mm and Ø 30mm on the other to allow the passage of the fixing screw. These profiles have a length of 3000mm and 6000mm as standard and a section width of 55mm and a total height of 102mm.

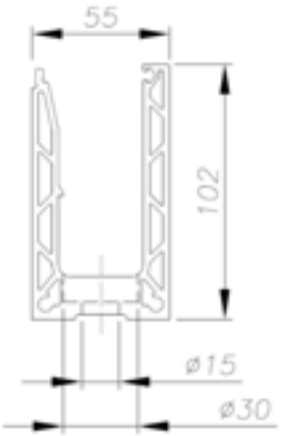


Figure 2 – OSF model – Laying on slab / Laying on parapet

2.2.2.2.2. Installation on slab nose - OSF model - R71 (3m) / R81 (6m)

The system consists of a profile drilled Ø 15mm on the support side every 200mm and Ø 30mm on the other to allow the passage of the fixing screw. These profiles have a length of 3000mm and 6000mm as standard and a section width of 55mm and a total height of 102mm.

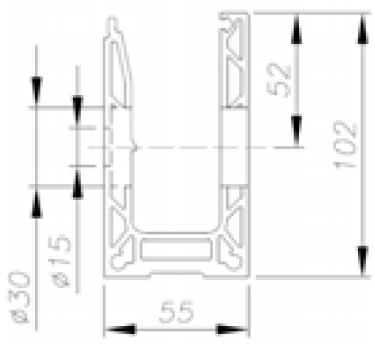


Figure 3 – OSF Model – Side Installation

2.2.2.3. Wedging and blocking system

Seating wedge in patented acrylonitrile butadiene styrene (recycled ABS), 57mm wide and 75mm high, consisting of a low cradle, a middle wedge and a high wedge (see Figure 4) and a self-tapping screw -drill for plastic Ø 4 mm in galvanized steel. A type 6 polyamide PA thickness shim. The shims are identified by different numbers and letters depending on the thickness of the glass marked on the shim (see Table 2):

- 8.8: black wedge with the inscription: Lower cradle: F3 / middle and upper wedge: 4 / thickness wedge: A
- 10.10: black wedge with the inscription: Lower cradle: F3 / middle and upper wedge: 1 / thickness wedge: A

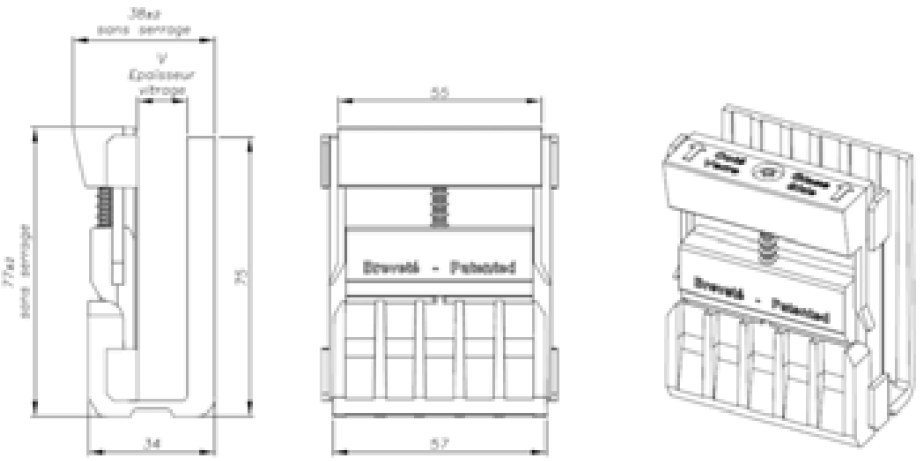


Figure 4 – OSF Model – Clamping Wedge

Clamping wedge	Reference	Compatible glazing	Glazing thickness tolerance [minimum; max]
	009OSF-K12-0808	88/4 (1.52mm)	12.4mm > 13.9mm
	009OSF-K12-1010	1010/4 (1.52mm)	20.2mm > 21.6mm

Table 2 - OSF Range Shim Systems

2.2.2.4. Gaskets

The finishing seals are made of EPDM. Their references vary according to the thickness of the glass (see Table 3).

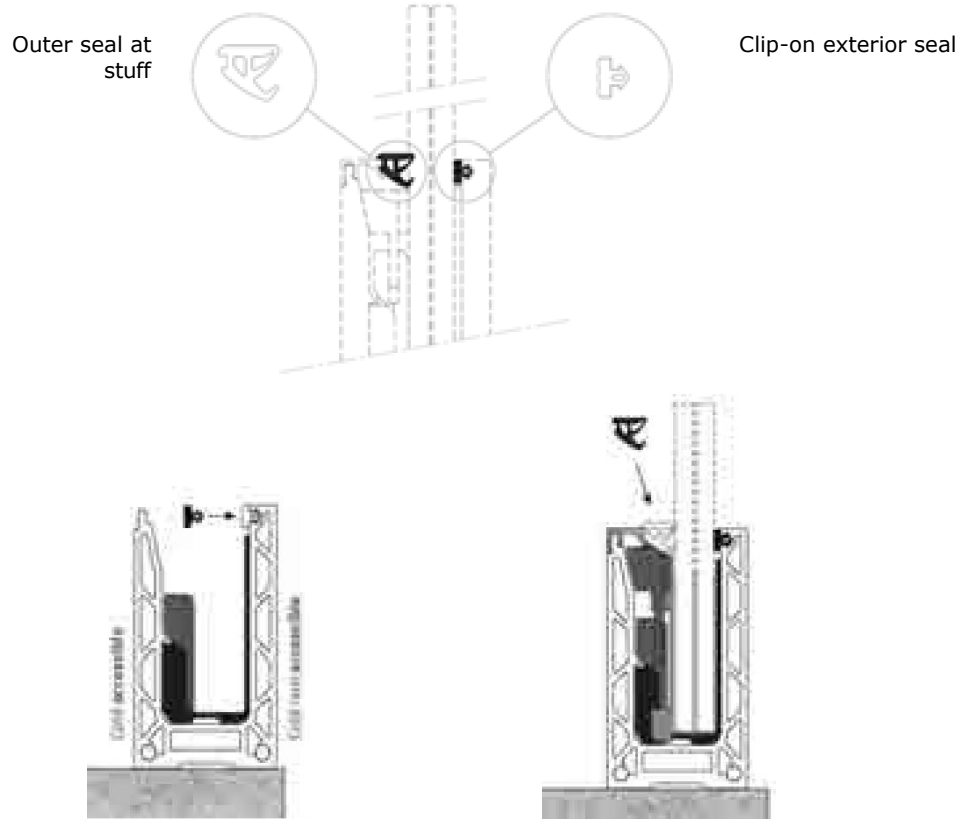


Figure 5 – Gaskets

Clip-on exterior seal		
Visual	**Reference**	**Compatible glazing**
	009JC0309A-N	88/4 (1.52mm) 1010/4 (1.52mm)
Interior seal to be stuffed		
Visual	**Reference**	**Compatible glazing**
	009JOINT0808	88/4 (1.52mm)
	009JOINT1010	1010/4 (1.52mm)

Table 3 - Packing Systems

2.2.2.5. Finishing profiles

The finishing profiles are in extruded 6063 T6 aluminum according to standard NF EN 573 and NF EN 755-2, with a 20 µm anodized finish according to standard NF EN ISO 7599 or special decorative finish (paint, plating, etc.) . The profiles have a length of 3 m (reference 009OSF-C310) or 6 m (reference 009OSF-C610). These elements are used as an external covering of the support profiles. The finishing profiles placed overlapping the upper part of the support profiles have a notch to accommodate a sealing gasket.

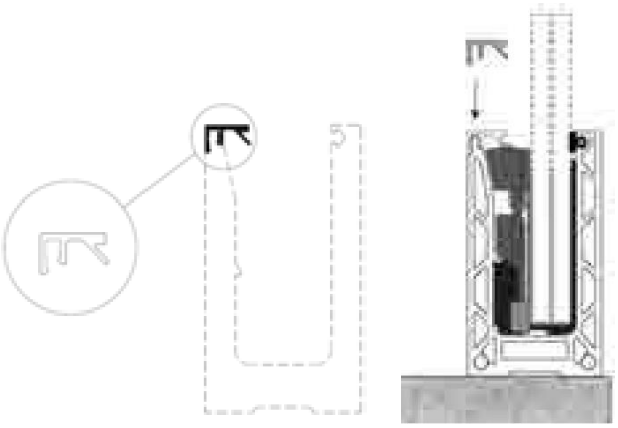


Figure 6 - Finishing cover

2.2.2.6. OSF end caps – side mount

When mounting the OSF system in lateral installation, PELD plastic finishing plugs reference 007BOU-D30-G can be placed in the external Ø30mm counterbores of the fixing holes in order to obstruct them and obtain a good aesthetic result.

Figure 7 - Finishing Cap - Side Mount

2.2.2.7. Accessories

Accessories for OSF range systems can be installed according to site requirements: their use is not mandatory.

2.2.2.7.1. Connecting pins

In order to guarantee the alignment of contiguous portions of support profiles, pins reference 007PIN-06-30 of connection Ø6mm in aluminum can be used.

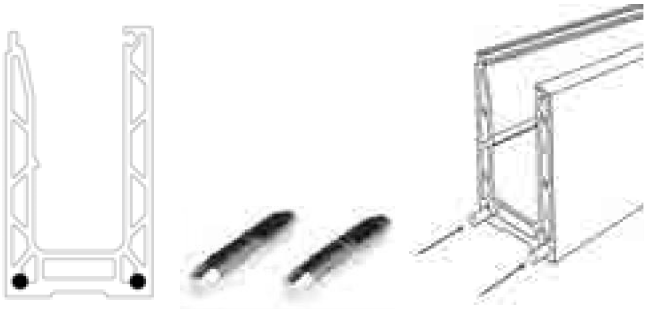


Figure 8 - Connecting Pins

2.2.2.7.2. Finishing tips

At their ends, the profiles can be capped with 20 µm anodized 6063 T6 aluminum end caps, reference 009OSF-CE01. These end caps are glued with an adhesive.

Figure 9 - Finishing cap

2.2.2.7.3. Handrails

A handrail can be placed on the upper edge of the glazing, secured or not to the shell at its ends (see Figure 21). These profiles can be either in 20 µm anodized aluminum in accordance with standard NF EN ISO 7599, or in 316 stainless steel for exterior applications and 304 stainless steel for interior applications.

Handrails are supplied with EPDM gaskets. The use of these

profiles is not mandatory.

Figure 10 - Handrails

2.2.2.7.4. Glazing edge protection profiles

Depending on the thickness of the glazing, protective profiles can be installed on the free edges of the glazing, so as to protect the spacer from humidity and the edge of the glazing from impact (see Figure 22). These profiles can be either in 20 µm anodized aluminum in accordance with standard NF EN ISO 7599, or in 316 stainless steel for exterior applications and 304 stainless steel for interior applications, or in wood for interior applications.

Fixing to the glazing is done with neutral silicone or adhesive compatible with the glazing spacers. The use

of these profiles is not mandatory.

Figure 11 – Protection profiles

2.2.2.7.5. Connectors between glazing

A connector between glass can be placed in the vertical joints of the glazing to ensure perfect alignment. The space between glazing must be at least 10mm and at most 20mm. The connector is made up of a 316 stainless steel flange, an EPDM contact washer, a soft aluminum spacer compatible with glazing and A4 stainless steel screws.

The thickness of the spacer is 2 mm. The length of the spacer is 1-2mm less than the thickness of the glass used. The tightening torque for the screws is 3 Nm.

Fixing the handrail on these connectors is not envisaged.

- Ref. glass 88: 009REL5060-17.5
- Ref. glass 1010: 009REL5060-21.5

Figure 12 – Connector between glazings

2.2.2.8. Fixings to the support

The fixing of the railing shoes to the various supports is carried out:

- On concrete, by dowels under ATE/ETA electro-galvanized or stainless steel indoors, and only in A4 stainless steel outdoors. The calculation note for the fixing dowels for the guardrails must also be produced. SADEV will send the calculation note for these fasteners.

Application	References		ETA
	indoors (Zinc Plated)	Outdoors (Stainless steel)	
0.6kN/ml	NBF II 12	FBN II 12 R	ETA-07/0211 ETA-18/0101
	FBS II 10x100 US	FBS II 10x100 US R	ETA-15/0352
	FH II 15 - M10	FH II 15 R - M10	ETA-07/0025
	RSB 12 + RG 16x90 M10 I (+ screw M10-8.8)	RSB 12 + RG 16x90 M10 IR (+ screw M10-A4-70)	ETA-12/0258
1kN/ml	RSB 12 + RG 16x90 M10 I (+ screw M10-8.8)	RSB 12 + RG 16x90 M10 IR (+ screw M10-A4-70)	ETA-12/0258
	FIS EM PLUS + rod M12 5.8 he f = 120	FIS EM PLUS + rod M12 A4-70 he f = 120	ETA-17/0979 ETA-17/1056

Table 4 – Possible anchoring for floor-to-slab models

Application	References		ETA
	indoors (Zinc Plated)	Outdoors (Stainless steel)	
0.6kN/ml	NBF II 10	NBF II 10 R	ETA-07/0211 ETA-18/0101
	NBF II 12	FBN II 12 R	ETA-07/0211 ETA-18/0101
	FBS II 10x100 US	FBS II 10x100 US R	ETA-15/0352
	FH II 15 - M10	FH II 15 R - M10	ETA-07/0025
	RSB 12 + RG 16x90 M10 I (+ screw M10-8.8)	RSB 12 + RG 16x90 M10 IR (+ screw M10-A4-70)	ETA-12/0258
1kN/ml	FBS II 10x100 US	FBS II 10x100 US R	ETA-15/0352
	FH II 18 - M12	FH II 18 R - M12	ETA-07/0025
	RSB 12 + RG 16x90 M10 I (+ screw M10-8.8)	RSB 12 + RG 16x90 M10 IR (+ screw M10-A4-70)	ETA-12/0258

Table 5 – Possible anchoring for side-mounted models

- On constructions with metal support, by a screw/nut fixing system. The profile must be fixed with the same number of fasteners located in the same locations as provided for mounting on a masonry support. The screw/nut fastening system must be justified by calculation note according to EUROCODE 3 (as well as the metal support), according to the operating loads (see tables 11 and 13). For steel constructions, screws M10 to M12 or of equal or better performance, are used depending on the loading. The use of the M10 screw requires a flat washer type L-M10 (10x27x2).

2.2.3. Elements

2.2.3.1. Rebate installation principle

The glass railing is embedded at the bottom in an aluminum profile. This profile is fixed to the slab or any other support by dowels or screws every 300mm (slab mounting) or 200mm (side mounting) depending on the application.

The patented system consists of clamping the glass in recycled ABS wedges distributed at equal distances from each other on the glass (4 wedges per meter) depending on the application (see tables 11 and 13).

For glass less than 1 meter, the minimum number of wedges is 4.

These wedges make it possible to adjust the glass and ensure its mechanical locking in the profile.

The mechanical blocking is carried out at the same time as the adjustment of the glass by action on the clamping screws of the wedge. The rebate is 75 mm on the height.

2.2.3.2. Case of continuous guardrails

In the case of continuous guardrails, the space between two adjacent glazing is between 5 and 110mm. This joint can be lined with a bead of SNJF E25 silicone sealant and compatible with the glass spacer if the nominal width is less than or equal to 15 mm.

To facilitate installation, the support profiles can be connected by connecting pins (see Figure 8). If the glass overlaps two profiles, the spacing between them is 100 mm maximum.

2.2.3.3. Case of creeping guardrails

The system can be used for creating rampant railings up to an angle of 40° from the horizontal.

Different types of installation are possible (see Figure 13).

Crawling laying is done from bottom to top. The first glass is held in the rail by a wedge-type retainer with a clamp or a lifting trolley with a vacuum lifter. Once this has been implemented, the following lenses are positioned either in the same way as the previous lens or in contact with the previous lens with a spacer between the lenses.

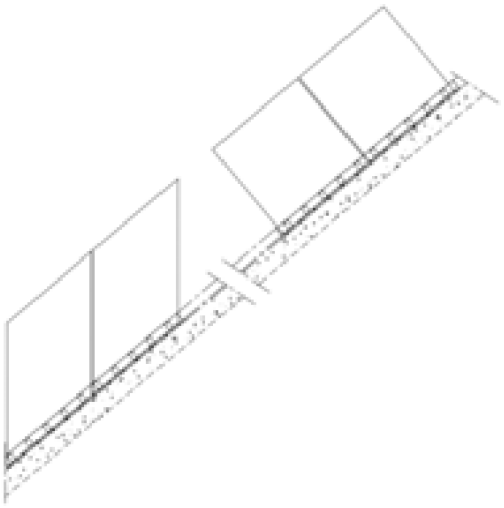


Figure 13 – Crawler typology

2.3. Design layouts

2.3.1. Fastening to the shell

The fixing of the railing shoes to the various supports is carried out by:

- On concrete, electro-galvanized or stainless steel ETA dowels on the inside, and only in A4 stainless steel on the outside, with washers Ø outside 27mm. The dimensioning of the fasteners must be carried out in accordance with the requirements of standard NF EN 1992-4 "Eurocode 2 - Calculation of concrete structures - Part 4: Design and calculation of fasteners for concrete". Refer to § 2.3.2.
- On steel constructions, M8 to M12 screws depending on the loading. The sizing of the fasteners is to be carried out according to the calculation code in force. Refer to § 1.7.2.

2.3.2. Sizing of fasteners

The fasteners are sized either by the SADEV company or by the fastener supplier. The dimensioning is to be carried out according to the calculation code in force. All requirements of this document must be met.

The sizing of the fasteners must be carried out with a minimum of three fasteners.

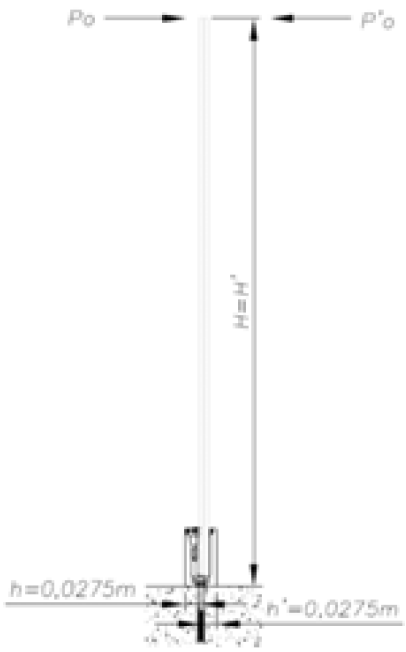


Figure 14 – Sizing of slab mounting anchors

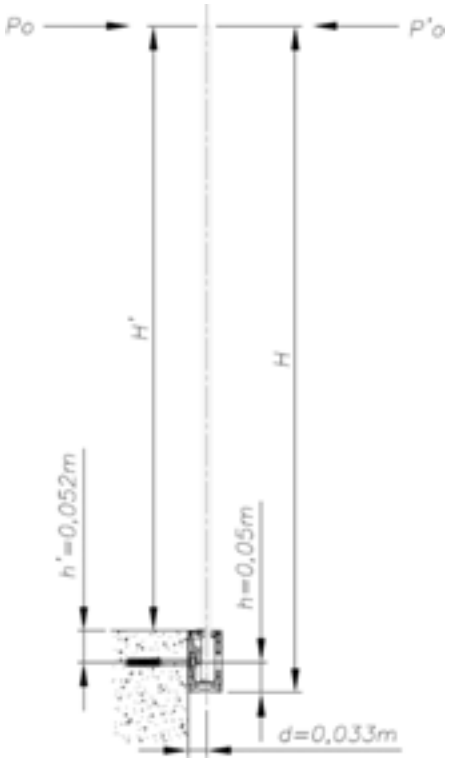


Figure 15 - Sizing of side mounting anchors

2.3.2.1. Case of the OSF system – slab mounting (see Figure 14)

The tensile and shear forces to be considered for the dimensioning of the fasteners are obtained by the formulas in the following table:

Outward effort:	
tractive effort	$1.5.k_1.k_2.\ \frac{P_o.L.H'}{n.h'}$
Shear stress	$1.5.k_1.\ \frac{P_o}{n}$
Inward effort:	
tractive effort	$1.5.k_1.k_2.\ \frac{P'_o.H'}{n.h}$
Shear stress	$1.5.k_1.\ \frac{P'_o}{n}$

Table 6 – Calculation of forces at ULS (in daN) in the fixing anchors: mounting on slab (in daN)

With :

n: the number of active fasteners (in tension or in shear under the action of operating loads)

Po: the operating load per linear meter, load applied from the inside outwards, (unweighted) in daN/m P'o: the operating load of 40 daN, load applied from the outside towards inside, (unweighted)

L: the width of the guardrail, in m

H': the height of the point of application of the load above the concrete slab, in m In the case of installation on a slab, H=H'

h: the distance from the fixing to the inside edge of the profile, in m:

h=0.0275 m h': the distance from the fixing to the outside edge of the profile, in m: h'=0.0275 m k1: distribution coefficient depending on a number of fasteners (see table 8).

k2: increase coefficient (k2 = 8/7) linked to the compression zone on the shell.

The checking of the bindings is carried out at the ELU. The design values are obtained by multiplying the tensile and shear forces from table 6 by 1.5.

2.3.2.2. Case of the OSF system – side mounting (see Figure 15)

The tensile and shear forces to be considered for the dimensioning of the fasteners are obtained by the formulas in the following table:

Outward effort:	
tractive effort	$k_1.k_2.\frac{1.5.P_o.L.H + 1.35.G.L.d}{n.h}$
Shear stress	$k_1.\frac{1.35.G.L}{n}$
Inward effort:	
tractive effort	$k_1.k_2.\frac{1.5.P'_o.H' - G.L.d}{n.h'}$
Shear stress	$k_1.\frac{1.35.G.L}{n}$

Table 7 – Calculation of forces at ULS (in daN) in the fixing anchors: mounting on the slab nose (in daN)

With :

n: the number of active fasteners (in tension or in shear under the action of operating loads)

Po: the operating load per linear meter, load applied from the inside outwards, (unweighted) in daN/m P'o: the operating load of 40 daN, load applied from the outside towards inside, (unweighted)

L: the width of the guardrail, in m

H: the height from the point of application of the load to the low point of the fixing plate, in m H': the height of the point of application of the load above the concrete slab, in m

h: the distance from the fixing to the bottom point of the fixing plate, in m: h=0.05 m h': the distance from the fixing above the slab, in m: h'=0.052 m

d: horizontal distance between the mean plane of the glazing and the edge of the slab: d=0.033 m k1: distribution coefficient depending on the number of fixings (see table 8).

k2: increase coefficient (k2 = 8/7) linked to the compression zone on the shell. G: linear weight of glass + rail in daN/m. OSF Grail system= 4 daN/m

The checking of the bindings is carried out at the ELU. The design values are obtained by multiplying by 1.5 the values of Po and P'o, and by 1 or 1.35 the values of G according to the most unfavorable combination.

not	***k1***
3	1.25
4	1.10
5	1.15
>5	1.15

Table 8 – Distribution coefficient, k1

2.3.3. Drainage

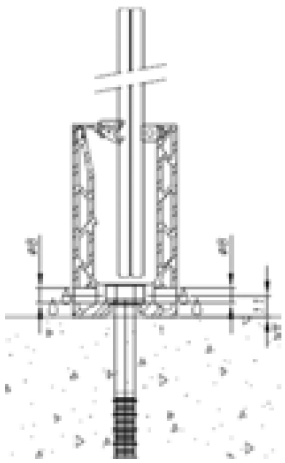
The drainage of the rabbets is carried out on each end of the profiles and/or in the profile.

As the profile must be laid straight and without deflection, the water naturally drains on either side of the profile.

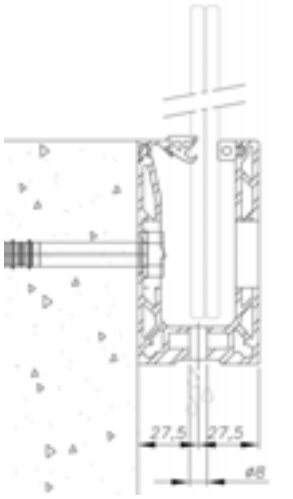
Ø 8 mm holes must be drilled in the cap and in the profile with a center distance of 500 mm (case of outdoor installation) in the workshop for the escape of water depending on the case

In the case of guardrails on slab, the drainage of the rebate can be done towards the inside or the outside of the building.

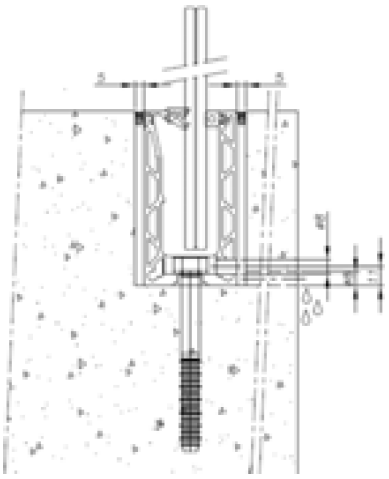
In the case of engraved railings, the drainage of the concrete rebate must be ensured in the case of an exterior installation.



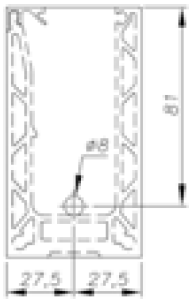
Model drainage on slab either towards the inside or the outside of the building depending on the slopes of the support



Engraved model drainage



Drainage model on slab nosing



Pierce the plug for drainage if necessary

Figure 16 – OSF System Drainage

2.4. Implementing provisions

2.4.1. General conditions of implementation

The implementation is carried out by specialized companies with, if necessary, the technical assistance of SADEV. Training is offered at the request of the installation company.

2.4.2. Specific conditions of implementation

2.4.2.1. Mounting on slab / on parapet / recessed in slab

1. Position the profile on the ground then drill in the holes respecting the centers given in table 11 and check the compatibility of the fixing plugs using the calculation note (suitable for standard rail drilling). In the case of engraved railings, a clearance of at least 5 mm must be respected on either side of the profile.
2. Clean the drilling dust then install the appropriate fasteners following the manufacturer's recommendations.
3. Position the railing profile.
4. If necessary, slide the U-shaped profile wedging fork shims in line with each dowel, respecting the center distances given in tables 11. withdrawal.
5. Fit the seal on the outside, respecting the direction of assembly (see Figure 5).
6. Position the U-shaped setting blocks, respecting the center distances given in tables 11. A height adjustment system (see Figure 20) can be installed on each side of the glazing.
7. Insert the glass into the profile and place it in the desired position.
8. Position the high wedges with the screw on the side of the glazing, respecting the assembly direction indicated on the wedge.
9. Engage the clamping screw until the intermediate shim begins to rise in order to eliminate play. Adjust the tightness of the glazing to hold the glass in position. Do the same for all the wedges.
10. Proceed with final tightening of the glazing. Depending on the types and thicknesses of the glazing, the high wedge may come into contact with the rest of the wedge.
11. Using a screwdriver with calibrated tightening control (screwdriver supplied on request), check the tightening of the shims. Tightening to 2Nm.
12. Position the finishing cover using a mallet if necessary.
13. Position the seal on the inside, respecting the direction of assembly (see Figure 5).
14. In the case of built-in guardrails, a joint bottom and a silicone seal must be made between the upper edges of the profile and the ground.

2.4.2.2. Side mounting

1. Position the profile on the vertical support then drill in the holes respecting the centers given in table 13 and check the compatibility of the fixing dowels using the calculation note (suitable for standard rail drilling).
2. Clean the drilling dust then put in place the appropriate fasteners and tighten them according to the manufacturer's recommendations.

3. Position the railing profile. Put the finishing plugs on the fixing passages on the outer side (see Figure 7)
4. If necessary, slide the U-shaped profile wedging fork shims in line with each dowel, respecting the center distances given in tables 13. withdrawal.
5. Fit the seal on the outside, respecting the direction of assembly (see Figure 5).
6. Position the U-shaped setting blocks, respecting the center distances given in tables 13. A height adjustment system (see Figure 20) can be installed on each side of the glazing.
7. Insert the glass into the profile and place it in the desired position.
8. Position the high wedges with the screw on the side of the glazing, respecting the assembly direction indicated on the wedge.
9. Engage the clamping screw until the intermediate shim begins to rise in order to eliminate play. Adjust the tightness of the glazing to hold the glass in position. Do the same for all the wedges.
10. Proceed with final tightening of the glazing. Depending on the types and thicknesses of the glazing, the high wedge may come into contact with the rest of the wedge.
11. Using a screwdriver with calibrated tightening control (screwdriver supplied on request), check the tightening of the shims. Tightening to 2Nm.
12. Position the finishing cover using a mallet if necessary.
13. Position the seal on the inside, respecting the direction of assembly (see Figure 5).

2.5. Maintaining the product or process in service

2.5.1. Maintenance

In the event of breakage or degradation of one of the glass components, the assembly principle makes it possible to replace a glazing of the railing in isolation. The element(s) must be replaced immediately, taking care to put in place precautionary measures. As such, it is mandatory to change the clamping wedges for each lens changed.

2.5.2. Maintenance

The glass should be cleaned regularly with lukewarm water and soap or mild household detergents of a neutral type. Avoid using blades or metal objects that can scratch the glass. The maintenance manual is available on the SADEV website.

2.6. End of life treatment

No information provided.

2.7. Technical assistance

The implementation is carried out by specialized companies with the technical assistance of SADEV.

The latter must provide technical assistance for the following points: choice of glazing, choice and sizing of fixing devices, implementation.

2.8. Principles of manufacture and control of this manufacture

2.8.1. Glazing manufacturing and inspections

PVB glazing

Glazing manufacturing includes the following steps for HST tempered laminated glazing with PVB interlayer.

Preparation of glass products

The glass products are cut on an automatic table.

Shaping

The quality of the surface condition of the edges of the glazing is an industrial flat edge (JPI) or a polished flat edge (JPP). The slice is flat. A 45° chamfer is made on each of the edges.

Nominal glass thickness	H min	H max
8mm	1mm	2mm
10mm	1mm	2mm

Table 9 - Chamfer height

Heat treatment

The glazing is then washed and heat treated horizontally.

The level of thermal reinforcement of the glazing is characterized by the surface compressive stress, which will be at least 90 MPa at any point of the volume, after HeatSoak treatment. This treatment is carried out systematically on all tempered volumes according to standard NF EN 14179.

The production sites that carry out the quenching operation and the HST treatment comply with standard NF EN 14179.

Laminated glazing assembly

The assembly of the glazing and the self-checking of manufacture with PVB interlayer is carried out by the manufacturer of the glazing. Laminated glazing complies with the NF EN ISO 12543 and NF EN 14449 standards. They are classified 1C1 according to the NF EN 12600 standard and P2A according to the NF EN 356 standard.

The possible gap between glasses must be taken into account. The reference edge of the laminated glazing must be the edge of the glazing rebated by the profile.

2.8.2. Manufacturing and controls

On leaving production, each batch of profiles is checked. A dimensional check is carried out on 10 profiles. A visual check is carried out before each packaging.

A dimensional check of the shims is carried out on 10 pieces for each batch of 1,000 shims.

2.8.3. Media control

The support support for the aluminum profiles must be meticulously executed and have flatness irregularities of less than 10 mm measured under a 2 m ruler in accordance with NF DTU 21 (NF P 18-201). The maximum wedging under the profile is 10 mm. SADEV fork shims are made of aluminum (Alloy 5754 / A-G3) with the thickness available from 1 to 3 mm. The dimensions of the fork blocks are shown in Figure 23.

Media defects must not exceed the adjustment capabilities of the system. In any case, the rail must not be deformed during tightening. On a case-by-case basis, shims for shims can be fitted (shim in anodized aluminum 20 µm or in 316 stainless steel (Cf. Figure 17).

The wedging will be completed by a mortar finish without shrinkage.

In the case of a recessed railing profile, the dimensions of the concrete rebate must be respected (65 mm minimum width by 102 mm maximum depth).

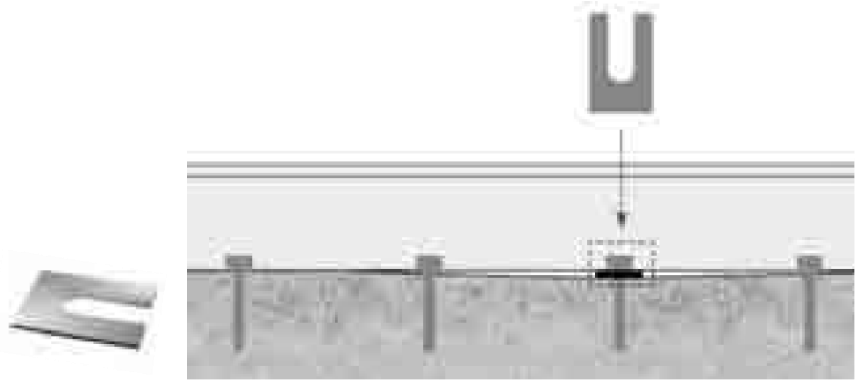


Figure 17 – Shim fork under the profile

2.9. Mention of supporting documents

2.9.1. Experimental results

Railing tests:

- Static and dynamic tests on flat railings embedded at the foot with HST 8.8.4 tempered laminated glass laid on a slab according to CSTB Booklet 3034, width 500 mm, CERIBOIS test report no. RA-GCO0109 of June 11, 2021
- Static and dynamic tests on flat railings embedded at the bottom with HST 8.8.4 tempered laminated glass laid on a slab according to CSTB Booklet 3034, width 1000 mm, CERIBOIS test report no. RA-GCO0110 of June 11, 2021
- Static and dynamic tests on flat railings embedded at the foot with HST 10.10.4 tempered laminated glass placed on the slab nose according to CSTB Booklet 3034, width 500 mm, CERIBOIS test report no. RA-GCO0112 of 9 June 2021

- Static and dynamic tests on flat railings embedded at the foot with HST 10.10.4 tempered laminated glass placed on the slab nose according to CSTB Booklet 3034, width 1000 mm, CERIBOIS test report no. RA-GCO0113 of 3 June 2021

Tests on clamping blocks:

- Tensile and Shore D hardness tests before and after accelerated aging of ABS clamping blocks – CEBTP test report no. BEB6.L.3026 of April 21, 2021

2.9.2. Site references

The OSF guardrail has been the subject of approximately 1500 ml in France.

2.10. Annex to the Technical File – Implementation diagrams

Manufacturer website	Address	*OHS treatment*	Leafing *Assembly with spacers:* PVB
AGC AIV	ZI – 13 rue COLBERT - 35300 FOUGERES	√	
AGC BVI	ZI - Route d'ARCIS - 10170 MERY SUR SEINE	√	√
AGC VERTAL SOUTHEAST	25 rue du Lyonnais - 69800 SAINT-PRIEST	√	
COPROVER (MIR CASTRAISE)	20 rue Henri REGNAULT - 81100 CASTRES		√
DESCHANET Michel SA	ZAC d'Augny - 57685 AUGNY		√
DISSEMINATE	ZI de l'Etang - 42210 MARCLOPT		√
DANIA	ZI of three Fountains – 51100 SAINT DIZIER	√	√
THE VENECIANA GLASSOLUTIONS Saint Gobain	Cima do Alle, Filgueira - 36500 Lalin (Pontevedra) Spain	√	√
CHARTREUSE MIRROR	ZA du Parvis - 38507 VOIRON	√	√
CHARTREUSE MIRROR	ZA Bievres Dauphine - 38690 COLOMBE		√
WEST MIRROR FACTORY	ZI Head of Bay - 14040 LA ROCHELLE		√
MIROITERIE JOSSERAND	2086 avenue de Trevoux - 01000 SAINT-DENIS-LES-BOURGS		√
SGGS ALP'VERRE	8 rue des Terrasses - 74960 CRAN GEVRIER	√	√
SGGS DUTTLENHEIM (TECHNIVERRE 67)	ZI – rue Denis PAPIN - 67120 DUTTLENHEIM	√	√
SGGS PARIS NORMANDY	ZI CAEN WEST - 14651 CARPIQUET Cedex		√
SGGS COUTRAS	ZI d'Eygreteau – BP 50 – 33230 Coutras	√	√
SGGS ECKELT (Austria)	Resthofstrasse 18. 4400 STEYR	√	√
SUNGLASS INDUSTRY SRL	Via Piazzola 13/F - 35010 VILLAFRANCA PADOVANA (PD) Italia	√	√
V2S (RIOU GLASS)	ZI Plaisance - Crafts Street - 11100 NARBONNE		√
WEHR ETUPES	ZI Technoland - 25461 ETUPES Cedex		√
WEHR MUNDOLSHEIM	10 street Thomas Edison - 67450 MUNDOLSHEIM		√

Table 10 – list of qualified suppliers and assemblers for the production of glazing for the OSF system

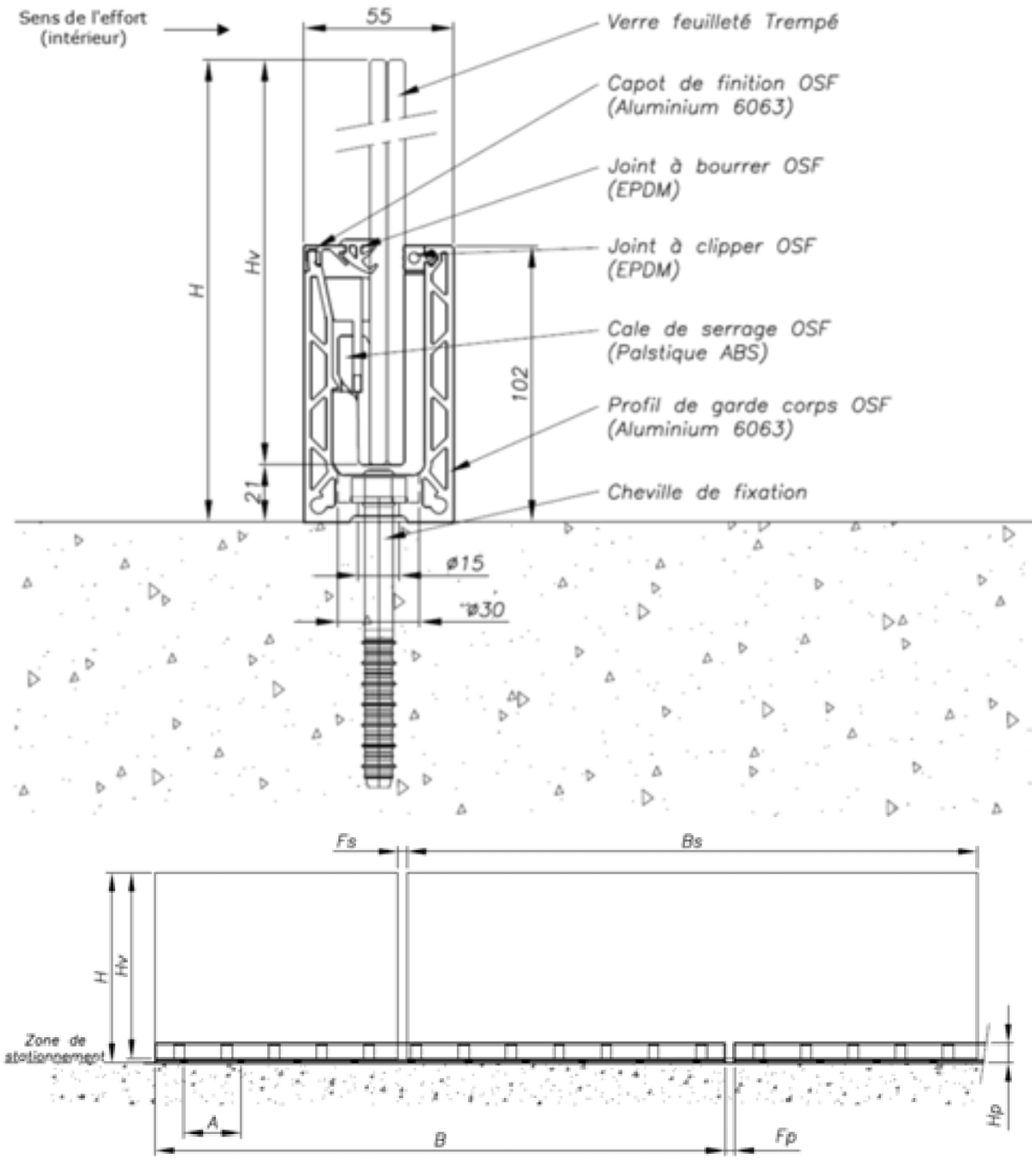


Figure 18 – Floor mounting - Model OSF R70 / R80

Normal loads	Composition	Categories according to NF EN 1991-1 and 1991-2, and PR NF P 06-111-2/A1	Number of wedges per ml	center distancemaxi pegs	Minimum width (mm)
Floor Mount – OSF R70/R80					
0.6kN/m (Pn= 1212 Pa)	88.4 PVB HST	A, B	4 / meter with 4 wedges minimum (<1ml)	300mm	500mm
1.0kN/m (Pn=2018Pa)	88.4 PVB HST	C1 to C4 D	4 / meter with 4 wedges minimum (<1ml)	300mm	500mm
3.0kN/m	_____	C5	_____	_____	_____

Categories of use
A: dwellings, residential areas (eg dwelling houses, kitchens, rooms and rooms in hospitals, hotels and hostels);
B: offices;
C1: meeting places equipped with tables (e.g. schools, cafes, restaurants, banquet, reception or reading rooms); C2: meeting places equipped with fixed seats (e.g. theatre, conference room, meeting room);
C3: meeting places not presenting any obstacle to the movement of people (eg: exhibition hall, stations, hotel); C4: meeting places allowing physical activities (e.g. gymnasium, stages);
C5: meeting places likely to accommodate large crowds (eg concert hall, sports hall, stands, station platform, etc.);
D: commerce (eg common retail and department stores).

Wind Pressure
For exterior railings subjected to wind loads, it is necessary to check the equation: W50(ELS)*Cp,net ≤Wmax(ELS)

With: Wmax(ELS) = Pn pressure corresponding to the wind load ELS in the sense of the Eurocode: for category 0.6 kN/m Pn= 1,212 Pa, for category 1.0 kN/m Pn = 2,018 Pa , for category 3.0 kN/m Pn= 6,054 Pa. Cp,net net pressure coefficient calculated according to Eurocode 1 (NF EN 1991-1-4/NA). W50: peak dynamic pressure calculated with a reference wind speed corresponding to an annual probability of exceedance equal to 0.02 (return period event equal to 50 years).

Table 11 - Minimum widths (m) with respect to deformation, impact resistance and resistance under horizontal load - OSF R70/R80- Slab mounting

Characteristic		*Value (mm)*
Maximum glazing width	*Bs*	***6000***
Maximum System Height Above Finished Floor	*H*	***1100***
Maximum glazing height	h_2	***1079***
Height of the aluminum profile (rabbet + joint)	h_1	***102***
Maximum distance between two fasteners	*HAS*	***300***
Maximum length of the aluminum profile	*B*	***6000***
Minimum joint between two glazings	*fs*	***5***
Maximum joint between two glazings	*fs*	***110***
Maximum joint between two aluminum profiles	*pf*	***100***

Table 12 – Characteristics of continuous guardrails fixed to the ground – OSF R70/R80

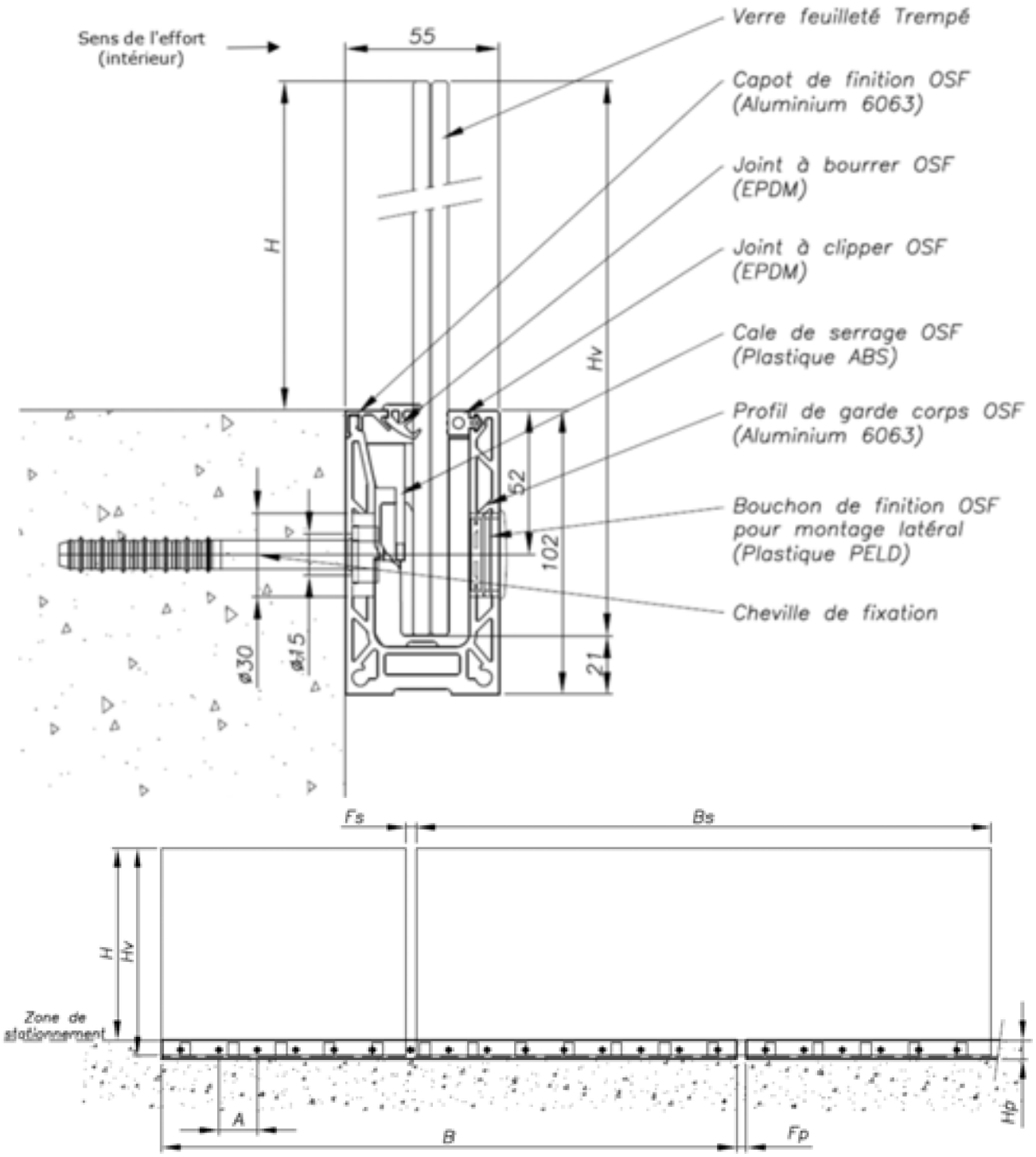


Figure 19 - Side mounting - Model OSF R71 / R81

Normal loads	Composition	Categories according to NF EN 1991-1 and 1991-2, and PR NF P 06-111-2/A1	Number of wedges per ml	center distancemaxi pegs	Minimum width (mm)
Side Mount – OSF R71/R81					
0.6kN/m (Pn= 1212 Pa)	1010.4 PVB HST	A, B	4 / meter with 4 wedges minimum (<1ml)	200mm	500mm
1.0kN/m (Pn=2018Pa)	1010.4 PVB HST	C1 to C4 D	4 / meter with 4 wedges minimum (<1ml)	200mm	500mm
3.0kN/m	_____	C5	_____	_____	_____
Categories of use A: dwellings, residential areas (eg dwelling houses, kitchens, rooms and rooms in hospitals, hotels and hostels); B: offices; C1: meeting places equipped with tables (e.g. schools, cafes, restaurants, banquet, reception or reading rooms); C2: meeting places equipped with fixed seats (e.g. theatre, conference room, meeting room); C3: meeting places not presenting any obstacle to the movement of people (eg: exhibition hall, stations, hotel); C4: meeting places allowing physical activities (e.g. gymnasium, stages); C5: meeting places likely to accommodate large crowds (eg concert hall, sports hall, stands, station platform, etc.); D: commerce (eg common retail and department stores).					
Wind Pressure For exterior railings subjected to wind loads, it is necessary to check the equation: W50(ELS)*Cp,net ≤Wmax(ELS) With: Wmax(ELS) = Pn pressure corresponding to the wind load ELS in the sense of the Eurocode: for category 0.6 kN/m Pn= 1,212 Pa, for category 1.0 kN/m Pn = 2,018 Pa , for category 3.0 kN/m Pn= 6,054 Pa. Cp,net net pressure coefficient calculated according to Eurocode 1 (NF EN 1991-1-4/NA). W50: peak dynamic pressure calculated with a reference wind speed corresponding to an annual probability of exceedance equal to 0.02 (return period event equal to 50 years).					

Table 13 – Minimum widths (m) with respect to deformation, impact resistance and resistance under horizontal load – OSF R71/R81 – Side mounting

Characteristic		***Value (mm)***
Maximum glazing width	*Bs*	***6000***
Maximum System Height Above Finished Floor	*H*	***1100***
Maximum glazing height	h_2	***1281***
Height of the aluminum profile (rabbet + joint)	h_1	***102***
Maximum distance between two fasteners	*HAS*	***200***
Maximum length of the aluminum profile	*B*	***6000***
Minimum joint between two glazings	*fs*	***5***
Maximum joint between two glazings	*fs*	***110***
Maximum joint between two aluminum profiles	*pf*	***100***

Table 14 – Characteristics of continuous guardrails fixed to the ground – OSF R71/R81

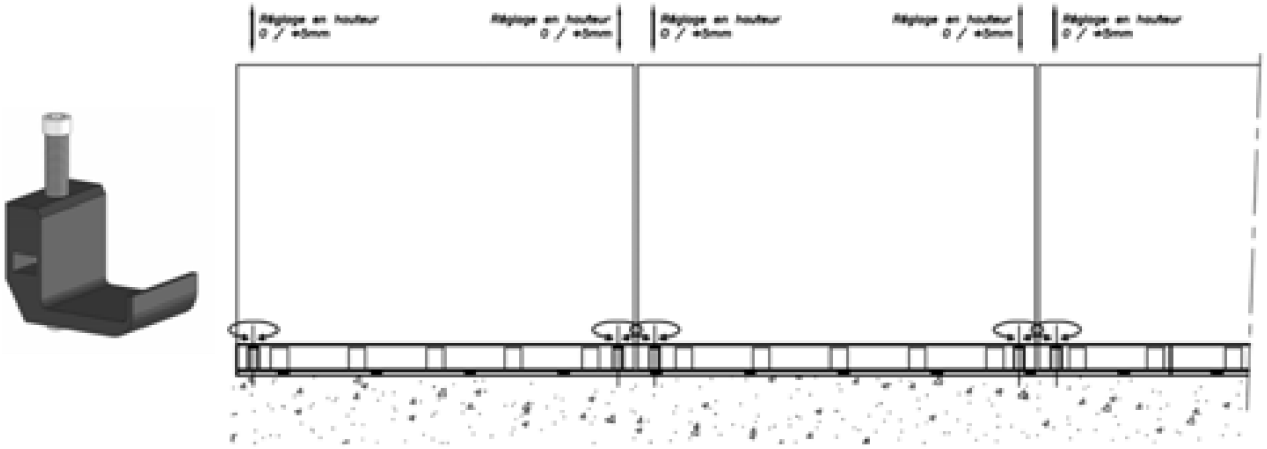
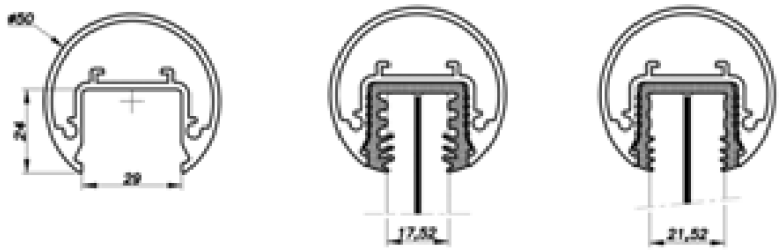
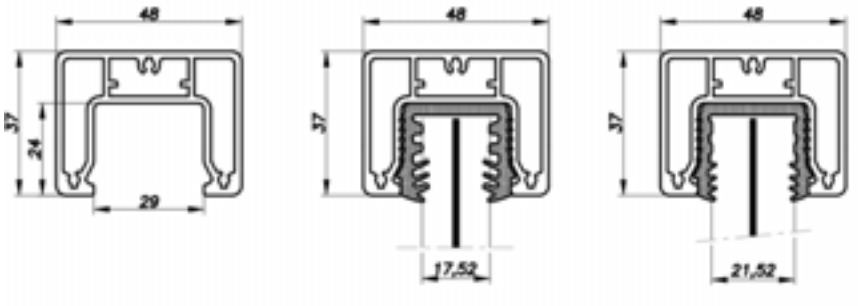


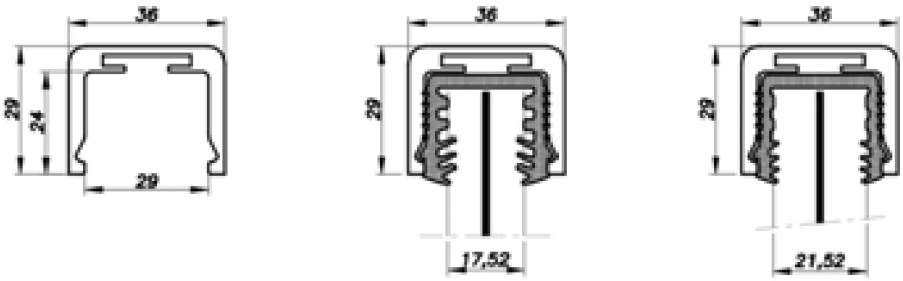
Figure 20 – Option - Height adjustment system (Patented)



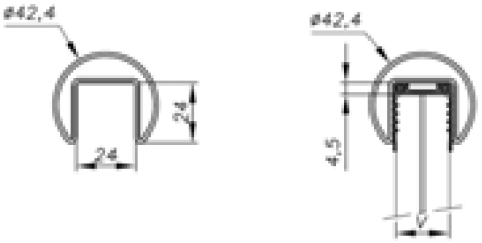
Ref. :0102050500AL+ seal ref. :001024AL175 for 8.8 thick glass
or0102050500AL+ seal ref. :001024AL215 for a 10.10 thick glass



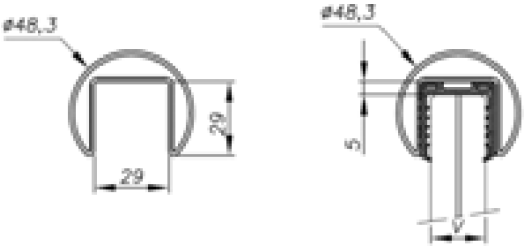
Ref. :0010204837500AL+ seal ref. :001024AL175 for 8.8 thick glass
or0010204837500AL+ seal ref. :001024AL215 for a 10.10 thick glass



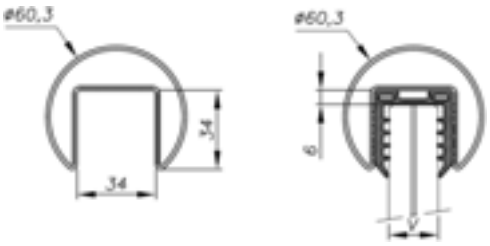
Ref. :010203629500AL+ seal ref. :001024AL175 for 8.8 thick glass
or010203629500AL+ seal ref. :001024AL215 for a 10.10 thick glass



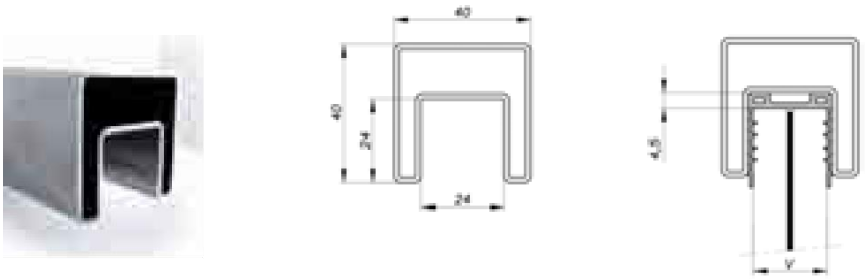
Ref. : 00 10 20 42 500 + seal ref. : 00 10 24V



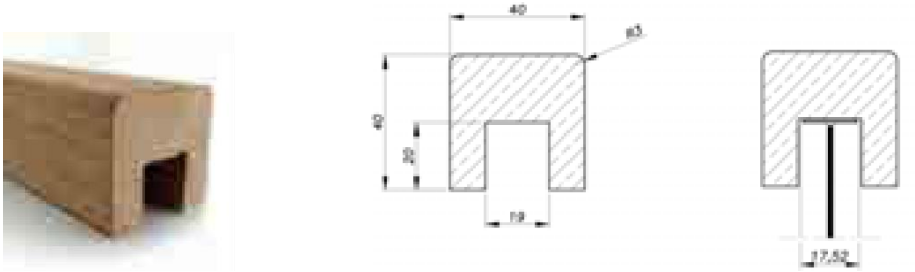
Ref. : 00 10 20 48 500 + seal ref. : 00 10 29V



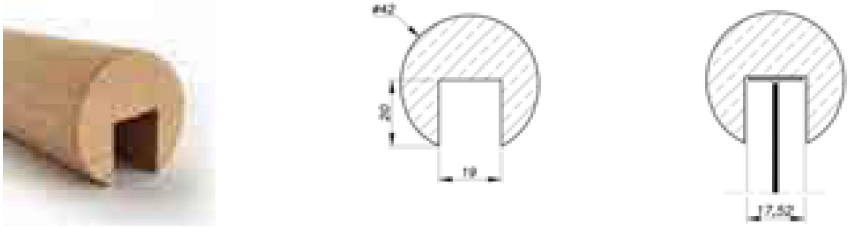
Ref. : 00 10 20 60 500 + seal ref. : 00 10 34V



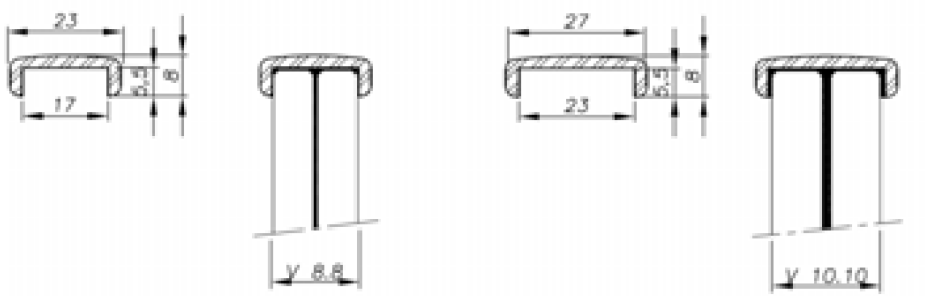
Ref. : 00 10 20 4040 600 + seal ref. : 00 10 24V



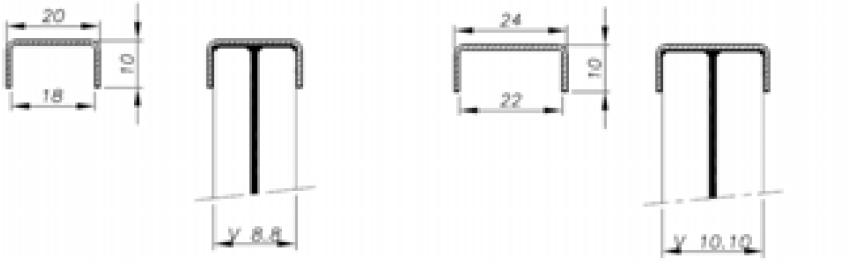
Ref. : 0010204040180W20 (raw beech) indoor installation Ref. : 0010204040180W10 (raw oak) installation indoors



Ref. : 00102042180W20 (raw beech) indoor installation Ref. : 00102042180W10 (raw oak) indoor installation Figure 21 – Example of a handrail



Ref. : 010201708300 – 2.5m (aluminum)Ref. : 010202308250 – 2.5m(aluminum) Ref. : 010201708600 – 5m (aluminum)Ref. : 010202308500 – 5m (aluminum)



Ref. : 010201810300A4 (316 stainless steel) Ref. : 010202210300A4 (316 stainless steel)

Ref. : 010202810240W20 (raw beech)Ref. : 0010203210240W20 (raw beech) Ref. : 0010202810240W10 (raw oak)Ref. : 0010203210240W10 (raw oak)

Figure 22 – Example of glazing edge protection profiles

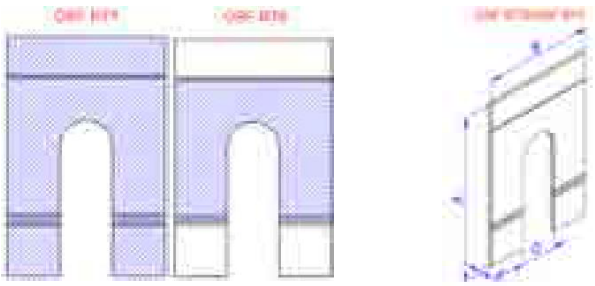
Reference	Profile used	HAS (mm)	B (mm)	O (mm)	E (mm)	Image
007SHIM092E10	OSF-R70	55	60	20	1	
--	OSF R71	92	--	--	--	
007SHIM092E20	OSF-R70	55	60	20	2	
--	OSF R71	92	--	--	--	
007SHIM092E30	OSF-R70	52	60	20	3	
--	OSF R71	55	--	--	--	

Figure 23 – Dimension of the shim fork under the profile