2.1/22-1829_V1

Valid from September 13, 2022

as of September 30, 2025

About the process

SABCO 2.0

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

Secretariat: CSTB, 84 avenue Jeans Jaures, FR-77447 Marl the Valley Cedex 2Such. : 01 64 68 82 82 - email:secretariat.at@cstb.fr

www.ccfat.fr

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 railings 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 (except for spacer DG41).

Use in stadium stands and their access stairs, with the exception of areas accessible to people with little motivation to take care of them, is only authorized for 7018 profiles with 15.15/4 PVB glazing and for 7019 profiles with 12.12/1 SentryGlas.

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

- The choice of an anti-corrosion treatment by anodization of 20 µm and of the coating adapted to exposure in accordance with standard NF P 24-351 makes it possible to rely on good behavior of the aluminum alloy rebate elements outdoors and in the building. time.
- On laminated glazing with PVB or EVA interlayers, slight color variations are likely to occur over the long term. The risk of delamination of the glass components also appears to be low, insofar as the checks carried out give satisfactory results and the installation instructions are complied with.
- 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 SABCO 2.0 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.

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

The Specialized Group draws attention to the direction of installation of non-symmetrical aluminum support profiles.

The manufacture of tempered laminated glazing with a 0.76 mm thick spacer requires specific know-how from the assembler.

The installation of LEDs is not covered in this document.

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 guardrail systems are identified by a label on the packaging with the name of the SADEV company and the model of the guardrail with its length.

The "One Side 2.0" and "Double Side" cleat systems carry the SADEV logo.

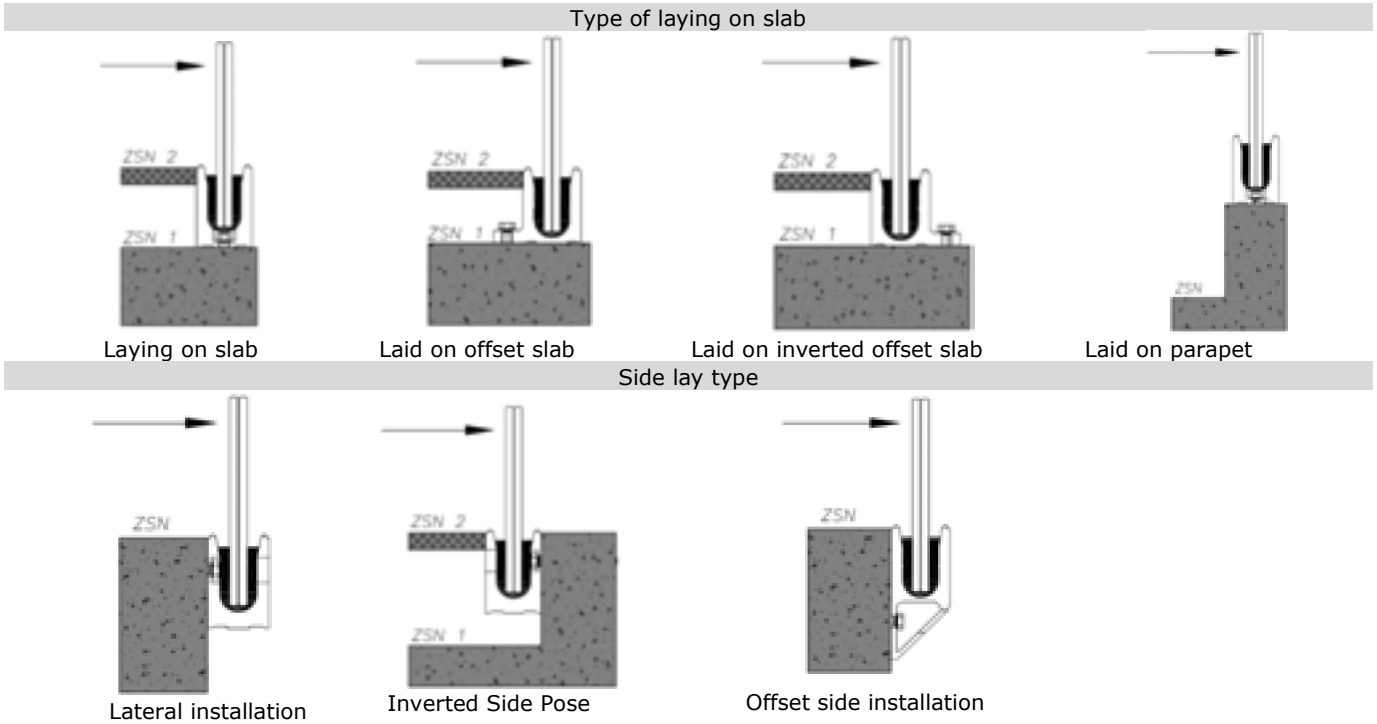
The glazing must comply with the standards NF EN ISO 12543 and NF EN 14449, and be marked as shown in Figure 32. The marking remains visible after implementation.

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 slab, slab nose or acroterion. Fasteners must respect a minimum distance from the edge of the slab given by the manufacturer of the fasteners.

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. The different types of installation are shown in Figure 1 below.



ZSN 1 or 2: Normal parking zone possible

Figure 1 – Application case

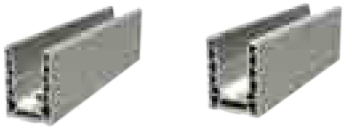
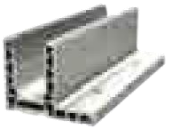
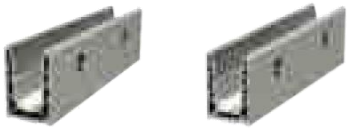
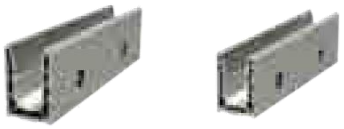
<table>
<tr><th colspan="5">Possible systems</th></tr>
<tr><td colspan="5">Type of laying on slab</td></tr>
<tr><td>Operating expenses</td><td>Categories</td><td colspan="2">on slab</td><td>on offset slab</td><td>on inverted offset slab</td></tr>
<tr><td>0.6kN/ml</td><td>A, B</td><td colspan="2" rowspan="2"> 
SW-8050
(or on parapet)
7030
7010</td><td rowspan="2"> 
7017</td><td rowspan="2"> 
7017R</td></tr>
<tr><td>1kN/ml</td><td>C1 to C4, D</td></tr>
<tr><td>3kN/m</td><td>C5</td><td colspan="2"> 
7019
7018</td><td> 
7018L</td><td>-</td></tr>
<tr><td colspan="6">Side lay type</td></tr>
<tr><td>Operating expenses</td><td>Categories</td><td colspan="2">lateral</td><td>offset side</td><td>inverted lateral</td></tr>
<tr><td>0.6kN/ml</td><td>A, B</td><td colspan="2" rowspan="2"> 
7031
7011</td><td rowspan="2"> 
7013</td><td rowspan="2"> 
7031R
7011R</td></tr>
<tr><td>1kN/ml</td><td>C1 to C4, D</td></tr>
<tr><td>3 kN/ml</td><td>C5</td><td colspan="4">-</td></tr>
</table>

Table 1 – Field of use of guardrail systems according to the categories of use described in standards NF EN 1991-1, NF EN 1991-2 and PR NF P 06-111-2/A1

2.2.2. Component characteristics

2.2.2.1. Glass products

The Sabco system is made up of laminated glazing, flat with spacer in accordance with the NF EN ISO 12543 and NF EN 14449 standards. standard NF EN 12600. A HeatSoak (HST) treatment according to standard NF EN 14179 is carried out on tempered glazing.

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 thicknesses of the glass components according to the types of installation and the categories of use are described in tables 17 to 44.

Generic example	Example with tempered glass	Example with annealed glass
SABCO	SABCO	SABCO
glass product	PVB	SENTRYGLAS®
vendor	XXXXX	XXXXX
glass standard	EN 14179	EN 14449

Table 2 – Glazing identification

The glasses are identifiable by marking, as presented in Figure 32, with the information specified in table 2. The marking remains visible or not after installation (above the profile, in the profile, on the edge of the glass).

The thicknesses of the glass components according to the types of installation and the categories of use are described in tables 17 to 44.

Product	Glasses	Composition of the glazing (spacer thickness in mm)	Divider
PVB	HST tempered	66.2 (0.76) / 88.2 (0.76) / 88.4 (1.52) / 1010.2(0.76)/1010.4(1.52)/1212.4(1.52)/ 1515.4(1.52)	PVB
EVA DAYLIGHT	HST tempered	66.4(1.52)/88.2(0.76)/1010.2(0.76)/ 1010.4(1.52)	EVA
EVA SECURE	HST tempered	88.2(0.76)/1010.4(1.52)	
SENTRYGLAS®	HST tempered	66.1(0.89)/1010.1(0.89)/1212.1(0.89)	Sentry Glass
	Hardened	88.1(0.76)	
	Annealed	1010.1(0.89) / 1212.1(0.89)	
DG41	HST tempered	66.2(0.76)/88.2(0.76)/1010.2(0.76)	PVB Saflex DG41 (indoors only)

Table 3 – SABCO glazing configurations

Glass products with SentryGlas® interlayer must meet the requirements of Technical Application Document No. 6/15-2253_V2.1 and are manufactured by production centers subject to regular CSTB monitoring. The list of manufacturers of laminated glazing with SentryGlas® interlayer is published by Specialized Group No. 6 "Windows and glazing components" in the link https://www.ccfat.fr/groupe-specialise/download/liste-usines-fabrication-glazing-feuillets-avec-9617/

2.2.2.2. Holding devices

SABCO support profiles are made of extruded aluminum conforming to standard NF EN 573 and NF EN755-2. 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 SABCO system. The profiles can be fixed to the structural work by fixing elements (concrete screw, dowel and mechanical dowel, dowel with chemical sealing in steel or stainless steel). For steel constructions, ISO 4017 M10 to M12 screws can be used depending on the loading. The SABCO system consists of a profile drilled Ø 15mm on the support side and Ø 30mm on the other side to allow the passage of the fixing screw.

The profiles can be machined to guarantee the evacuation of water inside the support systems. These profiles have a standard length of 2500mm or 5000mm and can be cut and/or produced to measure. The details of these profiles are shown in Table 4.

Model	Section	Matter	Reference	Drill distance	Implementation
SW-8050	52x110mm	Aluminum 6063T6	Ref. 2500mm: 0080RAIL50	every 200mm	***Picture 16*** ***Picture 17***
7030	75 x 112mm	Aluminum 6063T6	Ref. 2,500mm: 0070RAIL30 Ref. 5000mm: 0070RAIL40	every 200 mm to 400 mm	***Picture 18***
7010	75 x 112mm	Aluminum 6005T6	Ref. 2,500mm: 0070RAIL10 Ref. 5000mm: 0070RAIL20	every 200 mm or 800 mm	***Picture 19***
7017	113 x 98mm	Aluminum 6063T6	Ref. 2500mm: 0070RAIL17 Ref. 5000mm: 0070RAIL27	every 200mm to 400mm	***Picture 20***
7017R	113 x 98mm	Aluminum 6063T6	Ref. 2500mm: 0070RAIL17R Ref. 5000mm: 0070RAIL27R	every 400mm	***Picture 21***
7019	75 x 112mm	Aluminum 6005T6	Ref. 2,500mm: 0070RAIL19 Ref. 5000mm: 0070RAIL29	every 150mm	***Picture 22***
7018	97 x 128mm	Aluminum 6063T6	Ref. 2500mm: 0070RAIL18	every 200mm	***Picture 23***
7018L	165 x 128mm	Aluminum 6063T6	Ref. 2500mm: 0070RAIL18L	every 200mm	***Picture 24***
7031	75 x 112mm	Aluminum 6063T6	Ref. 2,500mm: 0070RAIL31 Ref. 5000mm: 0070RAIL41	every 200mm	***Picture 25***
7031R	75 x 112mm	Aluminum 6063T6	Ref. 2,500mm: 0070RAIL31R Ref. 5000mm: 0070RAIL41R	every 200mm	***Picture 26***
7011	75 x 112mm	Aluminum 6005T6	Ref. 2,500mm: 0070RAIL11 Ref. 5000mm: 0070RAIL21	every 200mm	***Picture 27***
7011R	75 x 112mm	Aluminum 6005T6	Ref. 2,500mm: 0070RAIL11R Ref. 5000mm: 0070RAIL21R	every 200mm	***Picture 28***
7013	75 x 172mm	Aluminum 6005T6	Ref. 2500mm: 0070RAIL13	every 200mm to 400mm	***Picture 29***

Table 4 – Holding Devices

2.2.2.3. Wedging and blocking system

2.2.2.3.1. One Side 2.0 Wedge

Seat wedge in patented acrylonitrile butadiene styrene, width 110 mm, height 86 mm and two self-drilling screws for plastic Ø 4 mm in anti-corrosion treated zinc-plated steel. The shims are identified by different numbers and letters depending on the thickness of the glass marked on the shim (see Table 5).

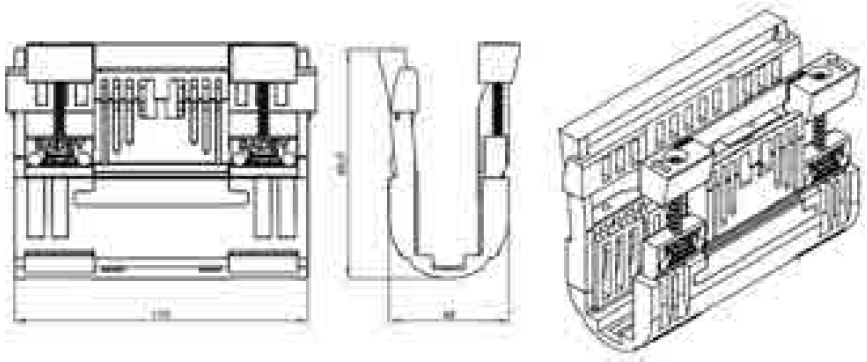
Clamping wedge	Reference	Compatible glazing
One-side 2.0 model 	007AKIT08CAL1S0808	88/2 (0.76mm) 88/4 (1.52mm)
	007AKIT08CAL1S1010	1010/2 (0.76mm) 1010/4 (1.52mm)

Table 5 – One side 2.0 wedge systems

These same shims allow the passage of a strip of LEDs for lighting the glass only (see Figure 33). In no case is the LED ribbon part of the glass component.

2.2.2.3.2. Double Side Wedge

Double seating block in patented acrylonitrile butadiene styrene (ABS), 57 mm wide, 88 mm high and two self-drilling screws for plastic Ø 4 mm in anti-corrosion treated zinc-plated steel. The shims are identified by different numbers and letters depending on the thickness of the glass marked on the shim (see Table 6).

2.2.2.3.2.1. Double Side wedge for profile 7018 / 7018L

Double seat wedge in patented acrylonitrile butadiene styrene (ABS), 57 mm wide, 98 mm high and two self-drilling screws for plastic Ø 4 mm in anti-corrosion treated zinc-plated steel. The shims are identified by different numbers and letters depending on the thickness of the glass marked on the shim (see Table 6).

2.2.2.3.2.2. Double Side wedge for SW profile – 8050

Double seat wedge in patented acrylonitrile butadiene styrene (ABS), 57 mm wide, 82 mm high and two self-drilling screws for plastic Ø 4 mm in anti-corrosion treated zinc-plated steel. The shims are identified by different numbers and letters depending on the thickness of the glass marked on the shim (see Table 6).

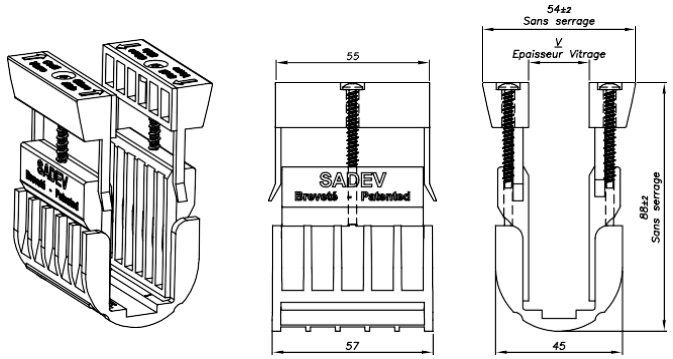
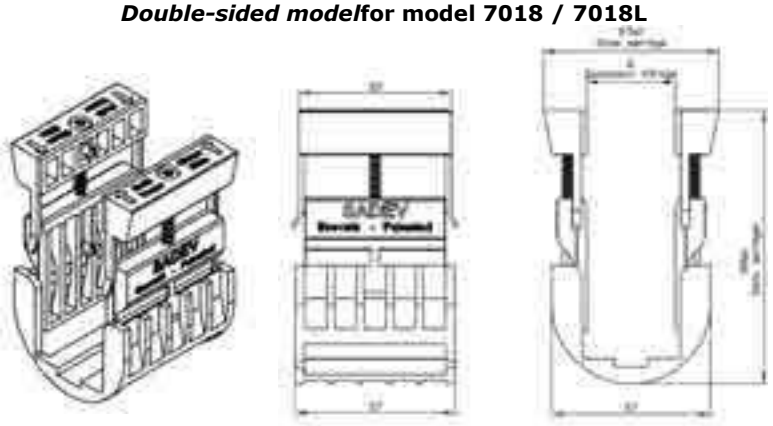
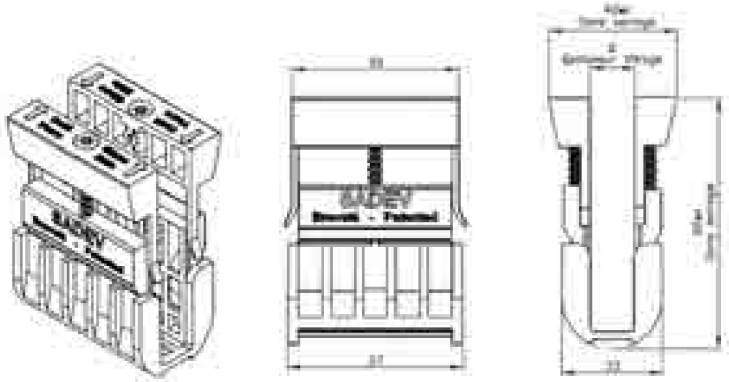
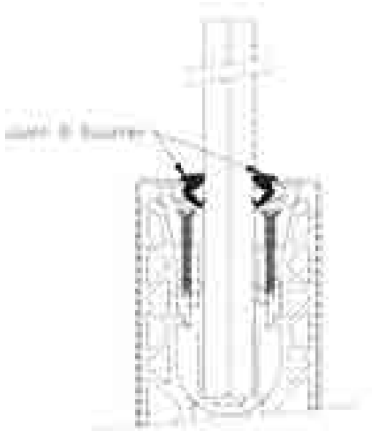
Clamping wedge	Reference	Compatible glazing
Double-sided model 	0070KIT10CALE0808 0070KIT10CALE1010	88/2 (0.76mm) 88/4 (1.52mm) 1010/2 (0.76mm) 1010/4 (1.52mm)
	0070KIT10CALE1212	1212/2 (0.76mm) 1212/4 (1.52mm)
Double-sided model**for model 7018 / 7018L** 	0070KIT10CALE1212L	1212/2 (0.76mm) 1212/4 (1.52mm)
	0070KIT10CALE1515L	1515/2 (0.76mm) 1515/4 (1.52mm)
Double-sided model**for model SW - 8050** 	0070KIT10CALE0606	66/2 (0.76mm) 66/4 (1.52 mm)

Table 6 - Double-side cleat systems

These same shims allow the passage of a strip of LEDs for lighting the glass only (see Figure 33). In no case is the LED ribbon part of the glass component.

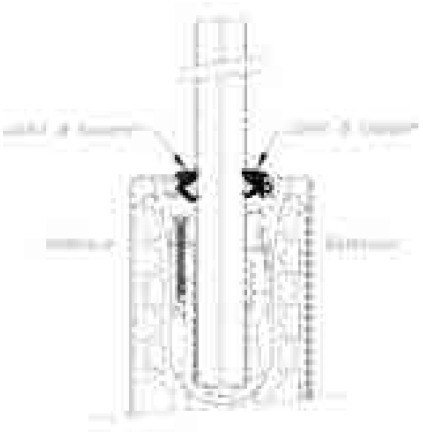
2.2.2.4. Gaskets

The finishing seals are made of EPDM. Their references vary according to the thickness of the glass (see Table 7).



With double side wedge

- Glass of 6.6, Ref: 0080JOINT0606 (model SW – 8050)
- 8.8 glass, Ref: 0070JOINT0808
- 10.10 glass, Ref: 0070JOINT1010
- 12.12 glass, Ref: 0070JOINT1212
- 12.12 glass, Ref: 0070JOINT1212L (model 7018 / 7018L)
- 15.15 glass, Ref: 0070JOINT1515L (model 7018 / 7018L)



With one side 2.0 cleat

- 8.8 glass, Ref: 0070JOINT0808C
- 10.10 glass, Ref: 0070JOINT1010C

Figure 2 – Gaskets

Clip-on exterior seal		
Visual	**Reference**	**Compatible glazing**
	0070GASKET0808C	88
	0070JOINT1010C	1010
Interior seal to be stuffed		
Visual	**Reference**	**Compatible glazing**
	0080JOINT0606 (model SW – 8050)	66
	0070JOINT0808	88
	0070JOINT1010	1010
	0070JOINT1212	1212
	0070JOINT1212L (model 7018 / 7018L)	
	0070JOINT1515L (model 7018 / 7018L)	1515

Table 7 - Packing Systems

2.2.2.5. Finishing profiles / covers

The finishing profiles are in extruded 6063 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, veneer, etc.). 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 house a sealing gasket (see Table 46).

2.2.2.6. Finishing caps

When mounting the Sabco system on the side, PELD plastic finishing plugs can be placed in the external Ø30mm counterbores of the fixing holes in order to obstruct them and obtain a good aesthetic result.

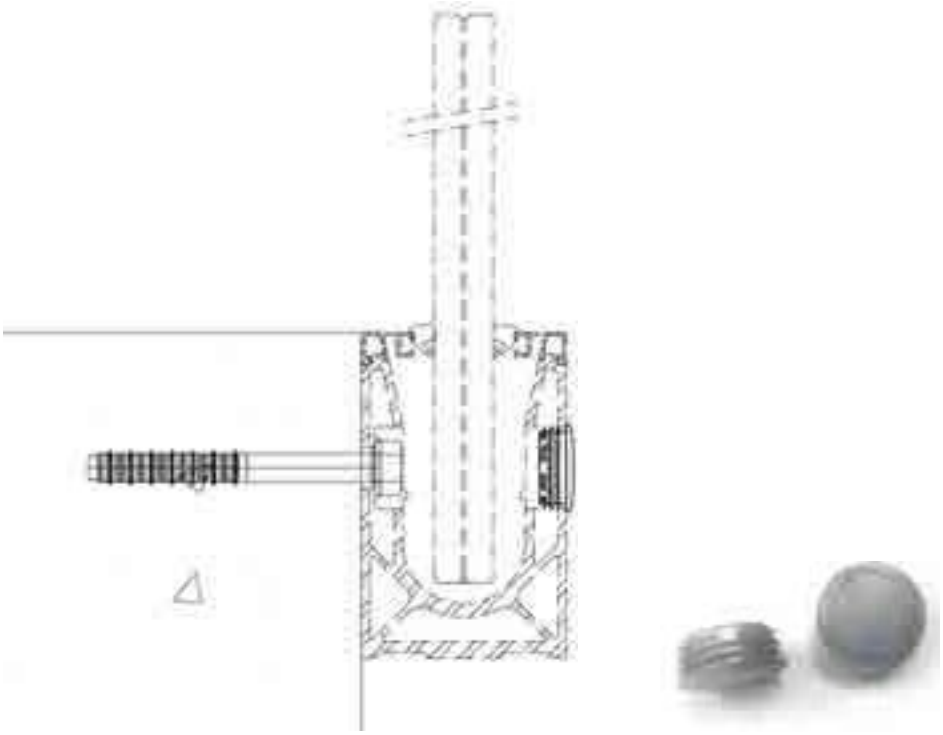


Figure 3 – Finishing cap - Ref. : 007BOU-D30-G

2.2.2.7. Accessories

The accessories for the systems in the range can be installed according to the needs of the site: their use is not compulsory.

2.2.2.7.1. Connecting pins

In order to ensure the alignment of adjoining portions of support profiles, connecting pins can be used.

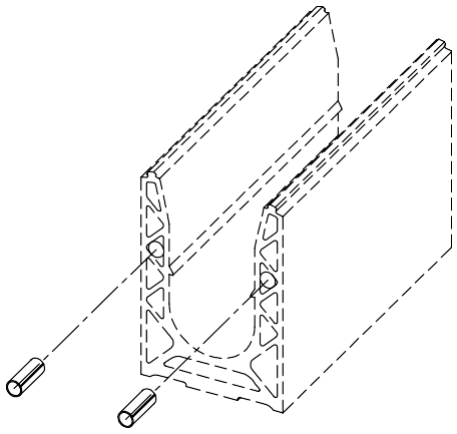


Figure 4 - Example of connecting pins

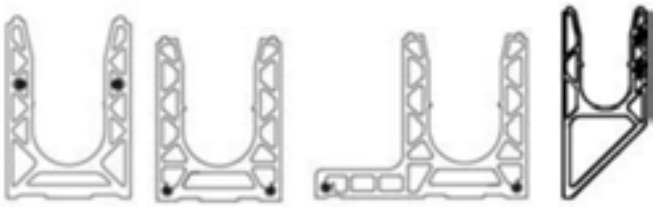
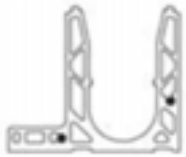
Visual	Profile	Reference	Matter
	- SW-8050	007PIN-06-50	Stainless steel
	- 7030 - 7031 - 7031R	007PIN-15-50	Aluminum
	- 7010 - 7011 - 7011R - 7019 - 7018 - 7018L - 7013	007PIN-08-50	Stainless steel
	- 7017 - 7017R	007PIN-06-30	Aluminum

Figure 5 - Connecting Pins

2.2.2.7.2. Finishing tips

At their ends, the profiles can be finished with 20 µm anodized aluminum or stainless steel end caps. These end caps are glued with an adhesive.

Type of profiles	Die-cut covers	Cut-out hoods open	Stamped covers	Covers for crawlers
				
SW-8050	-	0080CE52	0080CE50 0080CE52	-
7010 **7019**	0070CE10	0070CEU10-01 0070CEU10-03	0070CEC01 0070CEC02	0070CER10
7030	0070CE30	0070CEU30-01 0070CEU30-03	0070CEC01 0070CEC02	-
7011 / 7031 / 7031R	0070CE11	0070CEU11-01 0070CEU11-03	-	0070CER11
7018	0070CE18	-		
7013	 0070CE13G 0070CE13D	 0070CEU13D-01 0070CEU13D-03 0070CEU13G-01 0070CEU13G-03	-	 0070CER13
7015	 0070CE15G 0070CE15D	-		
7017	 0070CE17G 0070CE17D	-		
7018L	0070CE18LG 0070CE18LD	-		

Figure 6 - Finishing cap

2.2.2.7.3. Handrails

A handrail can be placed on the upper edge of the glazing, whether or not secured to the structural work at its ends (see Figure 34). These profiles can be either in 20 µm anodized aluminum in accordance with standard NF EN ISO 7599, or in stainless steel, or in wood.

Depending on the model, handrails can be supplied with EPDM seals. The use of handrails is not compulsory.

2.2.2.7.4. Glazing edge protection profiles

Depending on the thickness of the glazing, protective profiles can be installed on the upper free edges, so as to protect the spacer from humidity and the edge of the glazing from impact (see Figure 35). These profiles can be either in 20 µm anodized aluminum in accordance with standard NF EN ISO 7599, or in stainless steel, or in wood.

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 7 – Example of handrails

figure 8 – Example of protection profiles

2.2.2.7.5. Support bracket

A specific support bracket can be implemented between the SABCO railing profile and the structural work.

This 120x80x10 section bracket reinforced by gussets is made of hot-dip galvanized steel (see Figure 9). When this bracket used is not the standard reference (0070EQIN150) tested, a calculation note must be drawn up.

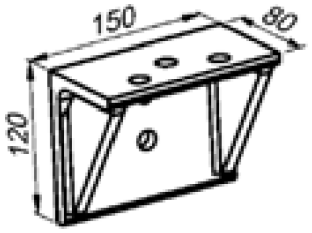
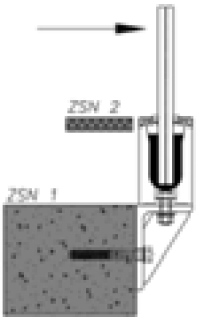
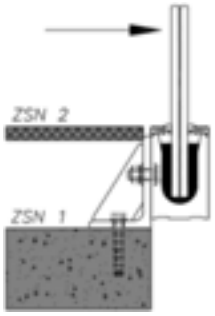


Figure 9 – Angle bracket (Ref: 0070EQIN150)

These brackets can be used for a type of installation on a slab or for a type of side installation:



Laying on slab on square



Laid lateral on bracket

Figure 10 – Installation of a railing system on a bracket

2.2.2.8. Structural fasteners

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 of the guardrails must also be carried out according to §2.3.2. SADEV will send the calculation note for these fasteners if it is supplied. Examples of fixing are given in §2.10 in tables 48 to 57.

- On constructions with a metal support, 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 17 to 44). For steel constructions, screws, M10 to M12 or of equal or better performance, are used depending on the loading.

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 by dowels or to the metal support by screws, every 150mm to 800mm depending on the application.

The patented system consists of clamping the glass in wedges distributed at equal distances from each other on the glass (3 to 8 wedges per meter) depending on the application (see tables 17 and 44).

The "double side" shims make it possible to adjust the plumbness of the glass (±15 mm for a railing 1.1 m high) 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 92 mm for models 7010 / 7011 / 7011R / 7030 / 7031 / 7031R / 7013 / 7017 / 7017R; 88 mm for the SW – 8050 model and 99 mm for the 7018 / 7018L models

The "one side 2.0" shims make it possible to adjust the plumbness of the glass (±15 mm for a 1.1 m high guardrail) 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 92 mm.

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 implementation, the support profiles can be connected (or not) by connecting pieces such as pins (see Figure 5).

If the glass overlaps two profiles, the space between rails will be a maximum of 100 mm.

2.2.3.3. Case of creeping guardrails

SABCO systems are suitable for ramping guardrails up to an angle of 40° from the horizontal. Different types of installation are possible (see Figure 11).

The laying by crawling is carried out from bottom to top, the first glass is held in the rail by a wedge-type retaining device with a clamp or a lifting trolley with a vacuum lifter, once that has been implemented, the following glasses are positioned either in the same way as the previous lens or in contact with the previous lens with a spacer between the lenses.

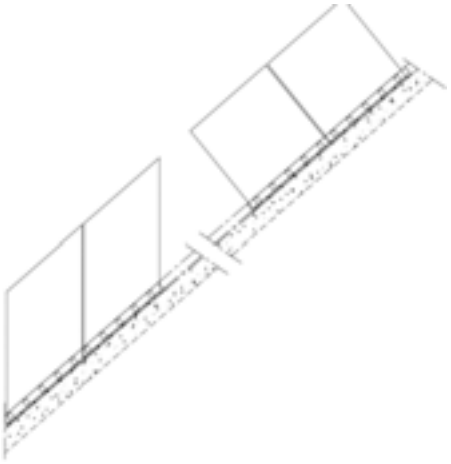


Figure 11 – Crawler typology

2.3. Design layouts

2.3.1. Fastening to the shell

The fixing of the railings to the supports is carried out:

- On concrete, by dowels under ATE/ETE electro-galvanized or stainless steel inside, and only in A4 stainless steel outside, with washers Ø outside 27mm. Refer to § 2.3.2
- On steel constructions, by M10 to M12 screws depending on the loading, with washers Ø outside 27mm.

2.3.2. Sizing of fasteners

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", with at least three fasteners per profile maintenance.

The fasteners are sized either by the SADEV company or by the fastener supplier.

2.3.2.1. SW System Case - 8050 / 7030 / 7010/ 7018 / 7019

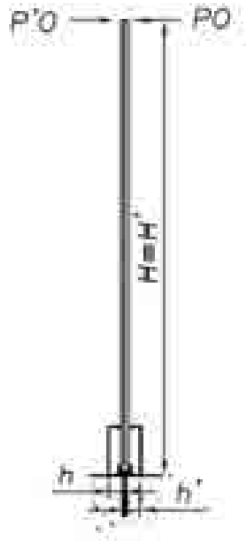


Figure 12 – Dimensioning of fixing anchors for the SW system - 8050 / 7030 / 7010/ 7018 / 7019

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	$k_1.k_2.\ \frac{1,5.P_o.L.H'}{n.h'}$
Shear stress	$k_1.\ \frac{1,5.P_o}{n}$
Inward effort:	
tractive effort	$k_1.k_2.\ \frac{1,5.P'_o.H'}{n.h}$
Shear stress	$k_1.\ \frac{1,5.P'_o}{n}$

Table 8 – Calculation of forces at ULS (in daN) of fixing dowels for installation on slabs

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

In the case of laying on a slab, H=H'

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

k1: distribution coefficient depending on the number of fasteners (see Table 14)

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

	h (m)	***h'(m)***
SW-8050	0.0260	0.0260
7030	0.0375	0.0375
7010	0.0375	0.0375
7018	0.0485	0.0485
7019	0.0375	0.0375

Table 9 - Distance from fixing to edge

2.3.2.2. Case of the 7031 / 7031R / 7011 / 7011R / 7013 system

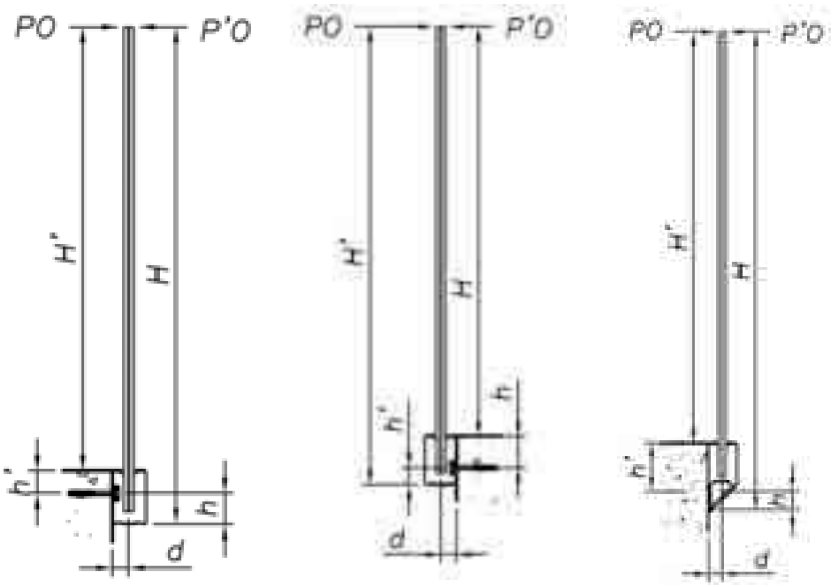


Figure 13 – Dimensioning of fixing dowels for the case of the 7031 / 7031R / 7011 / 7011R / 7013 system

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	$k_1 k_2 \frac{1.5 P_0 L H + 1.35 G L a}{n h}$
Shear stress	$k_1 \frac{1.35 G L}{n}$
Inward effort:	
tractive effort	$k_1 k_2 \frac{1.5 P'_0 H' - G L a}{n h'}$
Shear stress	$k_1 \frac{1.35 G L}{n}$

Table 10 – Calculation of forces at ULS (in daN) of side mounting anchors

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)

G: linear weight of the glass+rail (Gglass + Grail) in

daN/m L: width of the railing, 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': the distance from the fixing above the slab, in m

d: horizontal distance between the mean plane of the glazing and the edge of the

slab (m) k1: distribution coefficient depending on the number of fixings (see

Table 14)

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

	h (m)	***h'(m)***	***d(m)***	**Grail(daN/m)**
7031	0.070	0.038	0.0375	5.9 daN/m
7031R	0.065	0.042	0.0375	5.9 daN/m
7011	0.070	0.038	0.0375	8.1 daN/m
7011R	0.065	0.042	0.0375	8.1 daN/m
7013	0.050	0.080 (min)	0.0375	9.7 daN/m

Table 11 - Distance from the fixing to the edge, and the weights of the profile

2.3.2.3. Case of 7017/7017R/7018L system

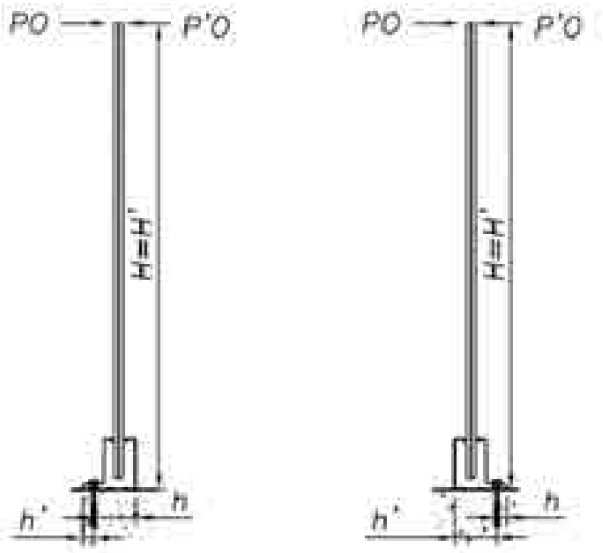


Figure 14 – Dimensioning of fixing dowels for the case of the 7017/ 7017R / 7018L system

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	$k_1.k_2.\ \frac{1.5.P_0.L.H'}{n.h}$
Shear stress	$k_1.\ \frac{1.5.P_0}{n}$
Inward effort:	
tractive effort	$k_1.k_2.\ \frac{1.5.P'_0.H'}{n.h'}$
Shear stress	$k_1.\ \frac{1.5.P'_0}{n}$

Table 12 – Calculation of forces at ULS (in daN) for fixing anchors installed on an offset slab

Note: Self-weight is neglected. 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': the distance from the fixing above the slab, in m

k1: distribution coefficient depending on the number of fasteners (see Table 14)

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

	h (m)	***h'(m)***
7017	0.0955	0.0175
7017R	0.0175	0.0955
7018L	0.1280	0.0370

Table 13 - Distance from fixing to edge

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

Table 14 – 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.

Holes Ø 8 mm must be drilled in the plug and in the profile with a center distance of 1000 mm (case of outdoor installation) on site for the escape of water depending on the case (see Table 45) .

A Ø 8mm hole on the end caps can also be added to improve drainage if required. In the case of engraved railings, the drainage of the concrete rebate must be ensured in the case of an exterior installation.

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

The environment in which the guardrail is to be installed must be taken into account (surface condition of the support, expansion joint of the supports, differences in the coefficient of expansion between the support and the aluminum profiles).

2.4.2.1. Laying on slab or side laying with Double Side wedges

1. Position the profile on the ground (laying on the slab) or on the vertical support (side laying), then drill in the holes respecting the spacings given and check the compatibility of the fixing dowels using the calculation note (adapted to the standard drilling of the rail).

In the case of guardrails embedded in the slab, a play 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.

In the case of lateral installation, put the finishing plugs on the fixing passages on the external side.

4. If necessary, slide the U-shaped profile wedging fork shims in line with each dowel, respecting the given center distances. Beyond 10 mm of wedging measured under a 2m ruler, mortar wedging without shrinkage is necessary.
5. Position the U-shaped seating blocks, respecting the given center distances. Insert the glass into the profile andplace in the desired position (verticality, alignment of the previous glass, etc.).
6. Position the high wedges with their screws on both sides of the glazing, respecting the direction of assembly indicated on the wedge.
7. Engage the tightening screws until the intermediate wedge begins to rise in order to eliminate the play. Properly balance the tightening on each side of the glazing to hold the glass in position. Do the same for all the wedges.
8. Carry out the final tightening distributed on each side of the glazing, screw on the same side as long as the position of the glass is not modified. Depending on the types and thicknesses of the glazing, the high wedge may come into contact with the rest of the wedge.
9. Using a screwdriver with calibrated tightening control (screwdriver supplied on request), check the tightening of the shims. Minimum tightening: 1.5 Nm, maximum: 3 Nm.
10. Fit the finishing covers using the double-sided adhesive provided. In order to obtain an optimal adhesion, the assembled surfaces must be clean, dry and have good cohesion.

Isopropyl alcohol/water (50/50) is a typical solvent for cleaning surfaces. Use appropriate safety precautions for handling solvents.

Application of the tape at temperatures below 10°C is not recommended as the adhesive is too firm to adhere easily.

11. Position the seal on both sides, respecting the direction of assembly (see Figure 2).

In the case of built-in guardrails, a silicone joint on the bottom of the joint must be made between the upper edges of the profile and the ground.

2.4.2.2. Installation on slab or side installation with One Side 2.0 wedges

1. Position the profile on the ground (laying on the slab) or on the vertical support (side laying), then drill in the holes respecting the spacings given and check the compatibility of the fixing dowels using the calculation note (adapted to the standard drilling of the rail).

In the case of guardrails embedded in the slab, a play 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.

In the case of lateral installation, put the finishing plugs on the fixing passages on the external side.

4. If necessary, slide the U-shaped profile wedging fork shims in line with each dowel, respecting the given center distances. Beyond 10 mm of wedging measured under a 2m ruler, mortar wedging without shrinkage is necessary.
5. Position the seal on the outer side, respecting the direction of assembly.
6. Position the U-shaped seating blocks, respecting the given center distances. Insert the glass into the profile andplace in the desired position (verticality, alignment of the previous glass, etc.).
7. Position the high wedges with the screw on the side of the glazing, respecting the assembly direction indicated on the wedge.
8. 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.
9. 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.
10. Using a screwdriver with calibrated tightening control (screwdriver supplied on request), check the tightening of the shims. Tightening to 2Nm.
11. Position the finishing cover using a mallet if necessary.
12. Position the seal on the inside, respecting the direction of assembly.

In the case of built-in guardrails, a silicone joint on the bottom of the joint must be made between the upper edges of the profile and the ground.

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. Manufacture and control of glazing

Glass products

The manufacture of glazing includes the following steps for toughened laminated glazing.

Preparation of glass products

The glass products are cut on an automatic table.

Shaping

The quality of the surface condition of the glazing joints is an industrial flat joint (JPI) or polished flat joint (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
12mm	1mm	3mm
15mm	1mm	3mm

Table 15 - Chamfer height

Heat treatment

- Tempered glass:

The glazing is then washed and heat treated horizontally.

The level of thermal reinforcement of tempered glazing is characterized by the surface compressive stress at any point of the volume, after HeatSoak treatment, which will be at least 90 MPa, except for the configurations:

- Profile 7030 with 88.2 DG41, 88.2 EVA and 1010.4 EVA glazing, the surface stress must be at least 110Mpa.
- Profile 7031 with 88.2 EVA and 1010.4 EVA glazing, the surface stress must be at least 120Mpa.
- Profile 7013 with 1010.1 SGP glazing, the surface stress must be 120Mpa minimum. 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.

- Hardened glazing:

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 30 MPa at any point of the volume. This treatment is carried out systematically on all hardened volumes according to standard NF EN 1863-1.

Production sites that carry out the thermal hardening operation according to standard NF EN 1863-1.

Laminated glazing assembly

The assembly of the glazing and the self-checking of manufacture with PVB, PVB Saflex DG41, EVA SECURE, EVA DAYLIGHT or SentryGlas interlayer is carried out by the glazing manufacturer.

EVA SECURE and EVA DAYLIGHT spacers are supplied by TECHNIS.

Laminated glazing complies with the NF EN ISO 12543 and NF EN 14449 standards. The safety performance classification of laminated glazing is classified 1B1 according to the NF EN 12600 standard and P1A according to the NF EN 356 standard.

2.8.2. Aluminum support profiles

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.

2.8.3. Manufacture of the wedging and blocking system

A dimensional check of the shims is carried out on 10 pieces for each batch of 1000 shims.

2.8.4. 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). Media defects must not exceed the adjustment capabilities of the system. The maximum wedging under the profile is 10 mm. In any case, the rail must not be deformed during tightening. On a case-by-case basis, fork shims may be fitted in line with the bindings (see Figure 15). SADEV fork shims are made of aluminum (5754 / A-G3 alloy) with thicknesses available from 1 to 3
mm. Fork block dimensions are shown in Table 47.

The shims used must be made of a suitable material, supporting the compression forces associated with the use of the guardrail. The adjustment of the support profile does not dispense with wedging with mortar without shrinkage.

In the case of a recessed railing profile, the dimensions of the concrete rebate must be respected.

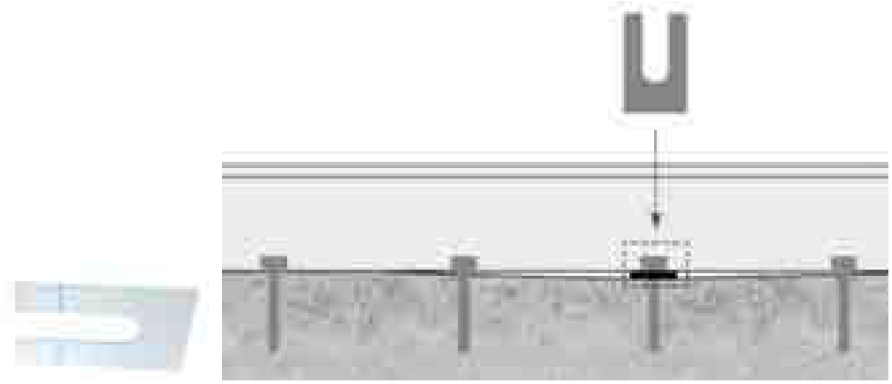


Figure 15 – Example of wedge fork wedge under the profile

2.9. Mention of supporting documents

2.9.1. Experimental results

- Resistance test reports according to CSTB Booklet 3034_V3 "Non-traditional railings in glass products recessed at the bottom":
  - CEBTP mechanical strength test report no. BEB1.F.4007-13 dated 07/04/2015
  - CEBTP mechanical strength test report no. BEB1.F.4007-14 of 07/04/2015
  - CEBTP mechanical strength test report no. BEB1.H.4017-1 dated 19/01/2017
  - CEBTP mechanical strength test report no. BEB1.H.4017-2 dated 19/01/2017
  - CEBTP mechanical strength test report no. BEB1.H.4017-3 dated 19/01/2017
  - CEBTP mechanical strength test report no. BEB1.H.4017-4 dated 19/01/2017
  - CEBTP mechanical strength test report no. BEB1.H.4017-5 dated 19/01/2017
  - CEBTP mechanical strength test report no. BEB1.H.4017-6 dated 19/01/2017
  - CEBTP mechanical strength test report no. BEB1.I.4011-2 dated 02/27/2018
  - CEBTP mechanical strength test report no. BEB1.I.4011-3 dated 02/27/2018
  - CEBTP mechanical strength test report no. BEB1.K.4081-1 dated 20/04/2021
  - CEBTP mechanical strength test report no. BEB1.K.4081-2 dated 20/04/2021
  - CEBTP mechanical strength test report no. BEB1.K.4081-3 dated 20/04/2021
  - CEBTP mechanical strength test report no. BEB1.K.4081-4 dated 20/04/2021
  - CEBTP mechanical strength test report no. BEB1.K.4081-5 dated 20/04/2021
  - CEBTP mechanical strength test report no. BEB1.K.4081-6 dated 20/04/2021
  - CEBTP mechanical strength test report no. BEB1.K.4081-7 dated 20/04/2021
  - CEBTP mechanical strength test report no. BEB1.K.4081-8 dated 20/04/2021
  - CEBTP mechanical strength test report no. BEB1.L.4000-2 dated 20/04/2021
  - CERIBOIS mechanical resistance test report n° RA-GCO0043 of 06/09/2019
  - CERIBOIS mechanical resistance test report n° RA-GCO0044 of 06/09/2019
  - CERIBOIS mechanical strength test report no. RA-GCO0050 dated 17/12/2019
  - CERIBOIS mechanical resistance test report no. RA-GCO0052 of 17/12/2019
  - CERIBOIS mechanical strength test report no. RA-GCO0053 dated 17/12/2019
  - CERIBOIS mechanical resistance test report n° RA-GCO0066_SP V2 of 09/29/2020
  - CERIBOIS mechanical strength test report no. RA-GCO0085 dated 05/10/2021
  - CERIBOIS mechanical strength test report no. RA-GCO0086 of 05/10/2021
  - CERIBOIS mechanical strength test report no. RA-GCO0087 of 05/10/2021
  - CERIBOIS mechanical strength test report no. RA-GCO0088 of 05/10/2021
  - CERIBOIS mechanical strength test report no. RA-GCO0089 of 05/10/2021
  - CERIBOIS mechanical strength test report no. RA-GCO0090 of 05/10/2021
  - CERIBOIS mechanical resistance test report n° RA-GCO0091 of 05/10/2021
  - CERIBOIS mechanical resistance test report n° RA-GCO0092 of 05/10/2021
  - CERIBOIS mechanical resistance test report no. RA-GCO0099 of 06/11/2021
  - CERIBOIS mechanical strength test report no. RA-GCO0100 dated 06/11/2021
  - CERIBOIS mechanical strength test report no. RA-GCO0101 dated 06/14/2021
  - CERIBOIS mechanical strength test report no. RA-GCO0102 dated 06/11/2021
  - CERIBOIS mechanical strength test report no. RA-GCO0103 dated 06/11/2021
  - CERIBOIS mechanical strength test report no. RA-GCO0104 dated 06/11/2021

  - CERIBOIS mechanical strength test report no. RA-GCO0105 dated 06/11/2021
  - CERIBOIS mechanical strength test report no. RA-GCO0106 dated 06/16/2021
  - CERIBOIS mechanical strength test report no. RA-GCO0107 dated 06/14/2021
  - CERIBOIS mechanical strength test report no. RA-GCO0108 dated 06/17/2021
  - CERIBOIS mechanical strength test report no. RA-GCO0117V2 dated 08/23/2021
  - CERIBOIS mechanical strength test report no. RA-GCO0118V2 dated 08/23/2021
  - CERIBOIS mechanical strength test report no. RA-GCO0119V2 dated 08/23/2021
  - CERIBOIS mechanical strength test report no. RA-GCO0120V2 dated 08/23/2021
  - CERIBOIS mechanical resistance test report n° RA-GCO0122 of 24/11/2021
  - CERIBOIS mechanical strength test report no. RA-GCO0123 dated 03/01/2022
  - CERIBOIS mechanical strength test report no. RA-GCO0124 dated 03/01/2022
  - CERIBOIS mechanical strength test report no. RA-GCO0125 dated 03/01/2022
  - CERIBOIS mechanical strength test report no. RA-GCO0126 dated 03/01/2022
  - CERIBOIS mechanical strength test report no. RA-GCO0127 of 03/01/2022
  - CERIBOIS mechanical resistance test report no. RA-GCO0128 of 03/01/2022
  - CERIBOIS mechanical strength test report no. RA-GCO0129 dated 03/01/2022
  - CERIBOIS mechanical strength test report no. RA-GCO0132 dated 03/01/2022
  - CERIBOIS mechanical strength test report no. RA-GCO0133 dated 03/01/2022
  - CERIBOIS mechanical resistance test report no. RA-GCO0134 of 03/01/2022
  - CERIBOIS mechanical strength test report no. RA-GCO0135 dated 03/01/2022
  - CERIBOIS mechanical strength test report no. RA-GCO0137 of 03/01/2022
  - CERIBOIS mechanical strength test report no. RA-GCO0138 of 03/01/2022
  - CERIBOIS mechanical strength test report no. RA-GCO0140 dated 09/03/2022
  - CERIBOIS mechanical strength test report no. RA-GCO0141 dated 09/03/2022
  - CSTB mechanical strength test report no. DEB_20-01795A dated 02/02/2021
  - CSTB mechanical strength test report no. DEB_20-01795B dated 02/02/2021
  - CSTB mechanical strength test report no. DEB_20-01795C dated 02/02/2021
  - CSTB mechanical strength test report no. DEB_20-01795D dated 02/02/2021
  - CSTB mechanical strength test report no. DEB_20-01795E dated 02/02/2021
  - CSTB mechanical strength test report no. DEB_20-01795F dated 02/02/2021
  - VERROTEC mechanical strength test report no. VT 16-0604-01a dated 09/19/2017
- Clamping Block Durability Test Report
  - CEBTP test report no. BEB6.L.3026 for accelerated aging of clamping blocks
- Aging test reports on glazing samples with EVA spacers
  - CSTB test report n°DBV-21-03129 of 04/11/2021
  - CSTB mechanical strength test report no. DBV-22-08676 dated 04/11/2022
- Study reports:
  - VERROTEC study report n° VT 16-0604-03 dated 06/10/2027 for the evaluation of the SentryGlas interlayer
  - VERROTEC study report n° VT 16-0604-04 of 11/10/2017 of seismic calculation
  - VERROTEC study report n° VT 16-0604-05 of 13/10/2017 on different interlayers

2.9.2. Site references

The process has been the subject of more than 120,000 ml in France, including approximately 9,000 ml with One Side 2.0 clamping wedges. and 83585 ml with Double Side wedges.

2.10. Annex to the Technical File – Implementation diagrams

Manufacturer website	Address	*Hard ened*	*OHS treatment*	**Leafing** *Assembly with spacers:*			
				PVB	**PVB DG41**	**Eva**	**Sentry Glass**
AIV (RIOUGLASS)	ZI – 13 rue COLBERT - 35300 FERNS	✓	✓				
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	✓	✓	✓			✓
FRENCH GLASS	107-109 rue de Picpus - 75012 PARIS					✓	
THE VENECIANA GLASSOLUTIONS Holy gobain	Cima do Alle, Filgueira - 36500 Lalin (Pontevedra) Spain	✓	✓	✓			
MIRROR OF CHARTREUSE	ZA du Parvis - 38507 VOIRON	✓	✓	✓	✓		
MIRROR OF CHARTREUSE	ZA Bievres Dauphine - 38690 DOVE			✓	✓		
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 JEVRIER	✓	✓	✓		✓	
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) Italy	✓	✓	✓			
V2S (RIOU GLASS)	ZI Plaisance - Crafts Street - 11100 NARBONNE			✓	✓	✓	✓
WEHR ETUPES	ZI Technoland - 25461 ETUPES Cedex			✓			
WEHR MUNDOLSHEIM	10 rue Thomas EDISON - 67450 MUNDOLSHEIM			✓			
VERRISSIMA GROUP SAS	111, street from Ingwiller F 57620 GOETZENBRUCK	✓	✓			✓	

Table 16 – list of qualified suppliers and assemblers for the production of glazing for the SABCO 2.0 system

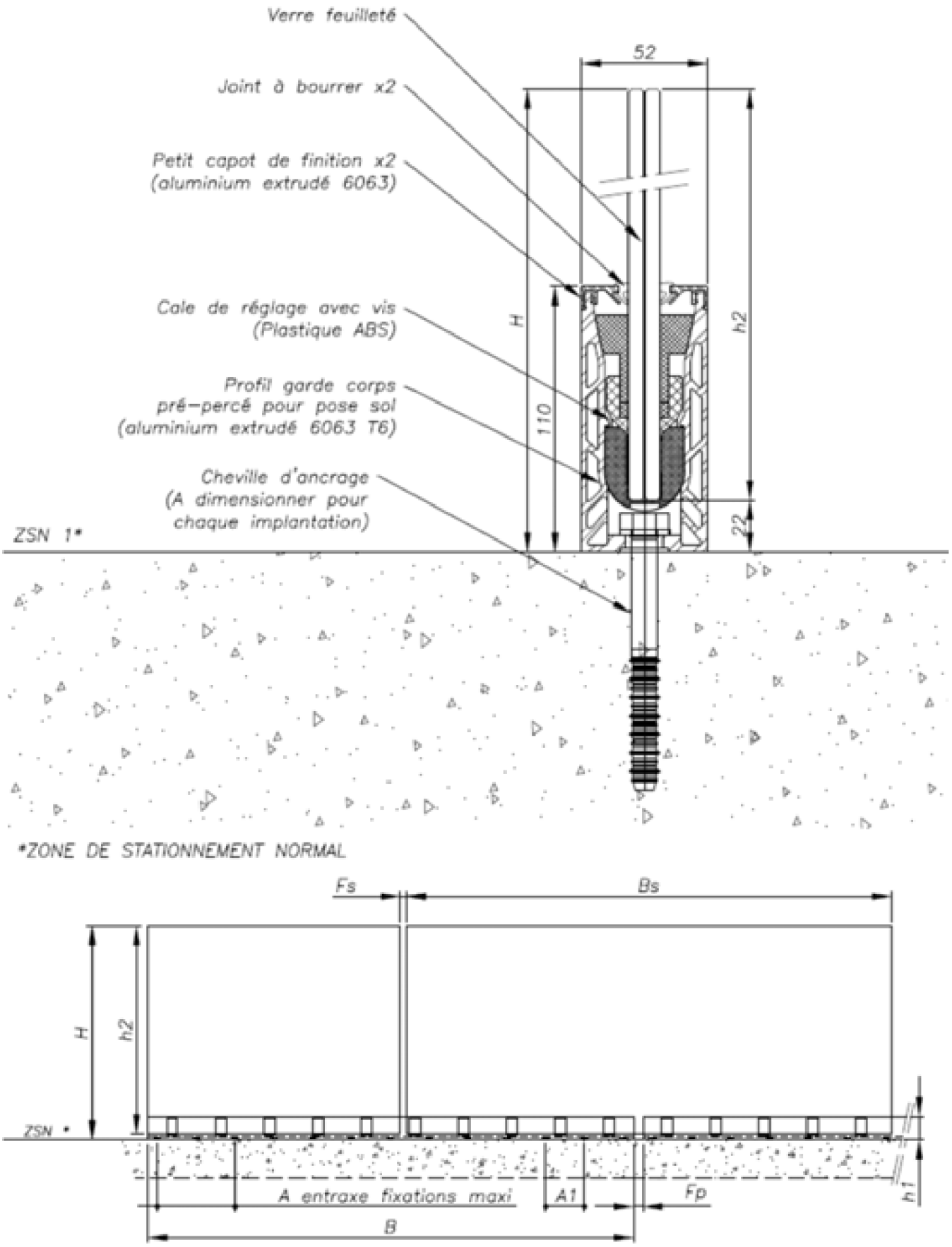


Figure 16 – Installation on slab – Model SW - 8050

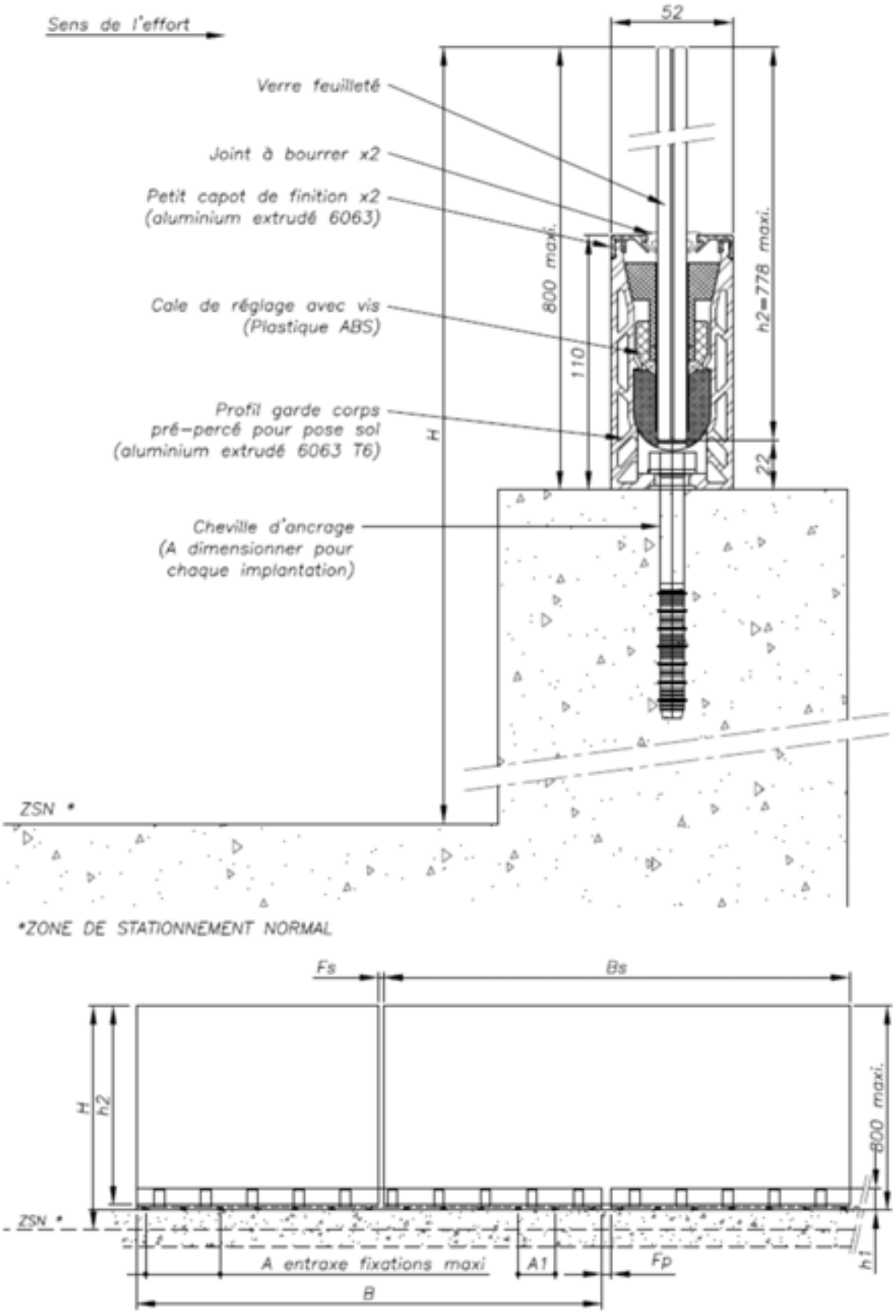


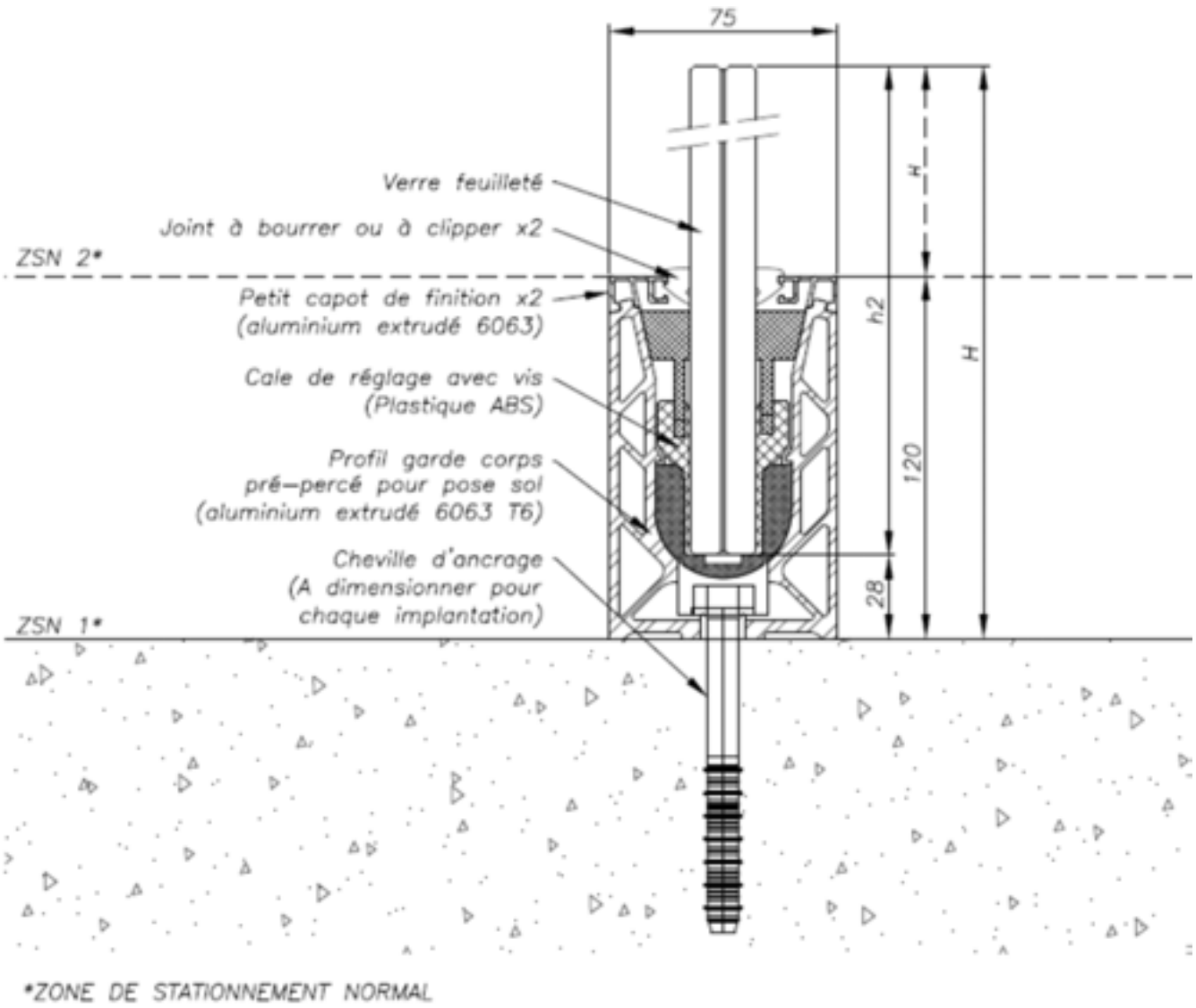
Figure 17 – Installation on parapet – Model SW - 8050

Normal loads	Composition	Categories according to NF EN 1991-1 and 1991-2, and PR NF P 06-111-2/A1	Number of wedges	Maximum dowel spacing	Minimum width (mm)
Laying on slab – SW - 8050 with double side wedges					
0.6kN/m (Pn= 1212 Pa)	66.2 PVB HST 66.4 EVA DAYLIGHT HST	A, B	5 wedges	400mm	800mm
1.0kN/m	_____	C1 to C4, D	_____	_____	_____
3.0kN/m	_____	C5	_____	_____	_____
Installation on parapet - SW - 8050 with double side wedges - Maximum height 80cm*					
0.6kN/m (Pn= 1212 Pa)	66.2 DG41 HST** 66.1 SentryGlas HST	A, B	5 wedges /ml	400mm	1000mm
1.0kN/m (Pn = 2018 Pa)	66.2 DG41 HST** 66.1 SentryGlas HST	C1 to C4, D	5 wedges /ml	400mm	1000mm
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).					
**** Maximum height from the point of application of the load to the low point of the railing fixing plate*** ***** Only for indoor use.***					

Table 17 - Minimum widths (m) with regard to deformation, impact resistance and resistance under horizontal load - Laying on slab - SW - 8050

Characteristic		*Value (mm)*
Maximum glazing width	*Bs*	***5,000***
Maximum System Height Above Finished Floor	*H*	***1100***
Maximum glazing height	h_2	***778 to 1078***
Height of the aluminum profile (rabbet + joint)	h_1	***110***
Maximum distance between two fasteners	*HAS*	***400***
Maximum standard length of the aluminum profile	*B*	***5,000***
Minimum joint between two glazings	*fs*	***5***
Maximum joint between two glazings	*fs*	***110***
Maximum joint between two aluminum profiles	*pf*	***100***

Table 18 – Characteristics of continuous guardrails fixed to the slab – SW - 8050



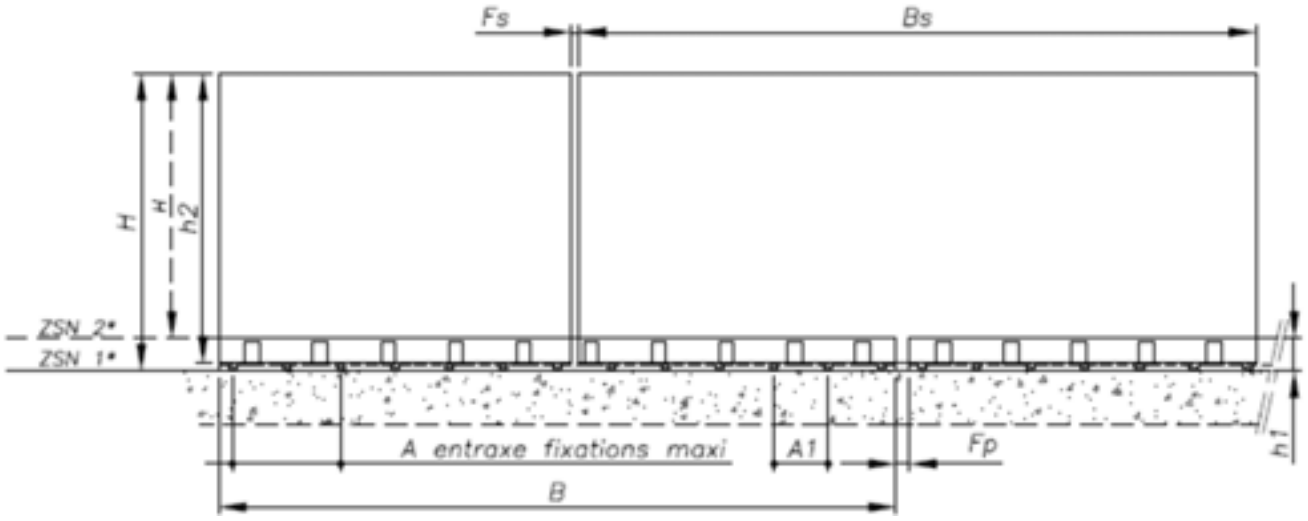


Figure 18 – Installation on slab - Model 7030

Normal loads	Composition	Categoriesaccording to NF EN 1991-1 and 1991-2, and PR NF P 06-111-2/A1	Number of wedges	Maximum dowel spacing	Minimum width (mm)
Laying on slab – 7030 with double side wedges					
0.6kN/m (Pn= 1212 Pa)	88.2 PVB HST 88.2 EVA DAYLIGHT HST	A, B	5 wedges/ml (minimum 4 wedges)	- 200mm (500mm ≤ *Glass width <1000mm)* - 400 mm (Glass width ≥1000mm)	500mm
	1010.1 SGP Annealed		4 wedges / ml (minimum 4 wedges)	300mm	
1.0kN/m (Pn = 2018 Pa)	88.4 PVB HST	C1 to C4, D	6 wedges/ml (minimum 6 wedges)	300mm	500mm
	88.2PVB Saflex DG41 HST**1010.2 PVB HST 1010.2 EVA DAYLIGHT HST		5 wedges/ml (minimum 4 wedges)	200mm	
3.0kN/m	_____	C5	_____	_____	_____
Laying on slab – 7030 with one side 2.0 wedges					
0.6kN/m (Pn= 1212 Pa)	88.4 PVB HST 88.2 EVA DAYLIGHT HST 1010.1 SGP Annealed	A, B	3 wedges / ml (minimum 3 wedges)	300mm	500mm
1.0kN/m (Pn = 2018 Pa)	88.2 EVA DAYLIGHT HST 1010.4 PVB HST 1010.4 EVA DAYLIGHT HST 1010.4 EVA SECURE HST	C1 to C4, D	3 wedges / ml (minimum 3 wedges)	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).

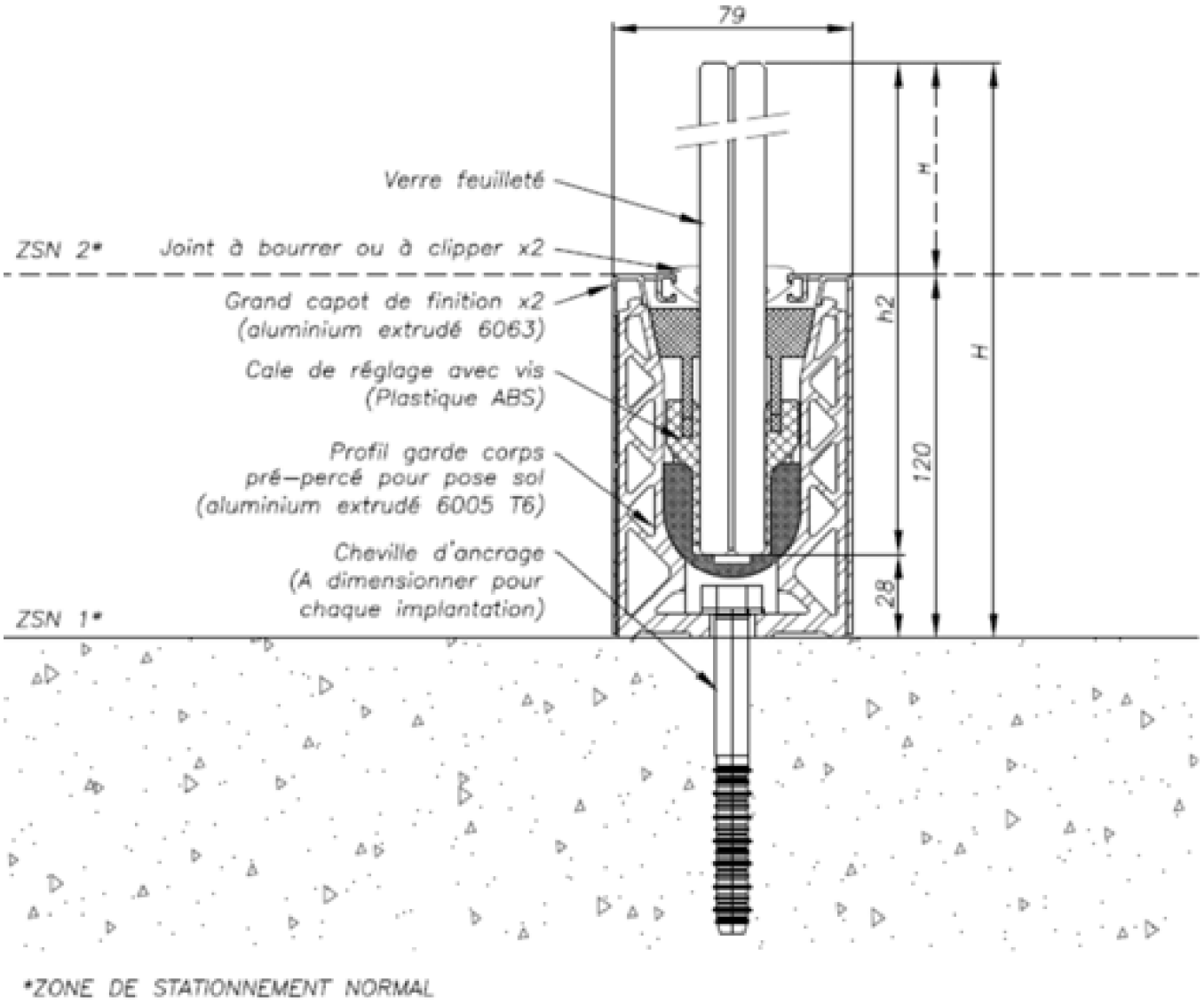
Wind Pressure
For exterior railings subjected to wind loads, it is necessary to check the equation: W50(ELS)*Cp,net ≤Wmax(ELS)
With: Wmax(ELS) = Pn pressure corresponding to the wind load ELS in the sense of the Eurocode: for category 0.6 kN/m Pn= 1,212 Pa, for category 1.0 kN/m Pn = 2,018 Pa , for category 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).

***** Only for indoor use.***

Table 19 – Minimum widths (m) with regard to deformation, impact resistance and resistance under horizontal load – Laying on slab – Model 7030

Characteristic		*Value (mm)*
Maximum glazing width	*Bs*	***5,000***
Maximum System Height Above Finished Floor	*H*	***1100***
Maximum glazing height	h_2	***1072 to 1192***
Height of the aluminum profile (rabbet + joint)	h_1	***120***
Maximum distance between two fasteners	*HAS*	***400***
Maximum standard length of the aluminum profile	*B*	***5,000***
Minimum joint between two glazings	*fs*	***5***
Maximum joint between two glazings	*fs*	***110***
Maximum joint between two aluminum profiles	*pf*	***100***

Table 20 – Characteristics of continuous guardrails fixed to slab – 7030



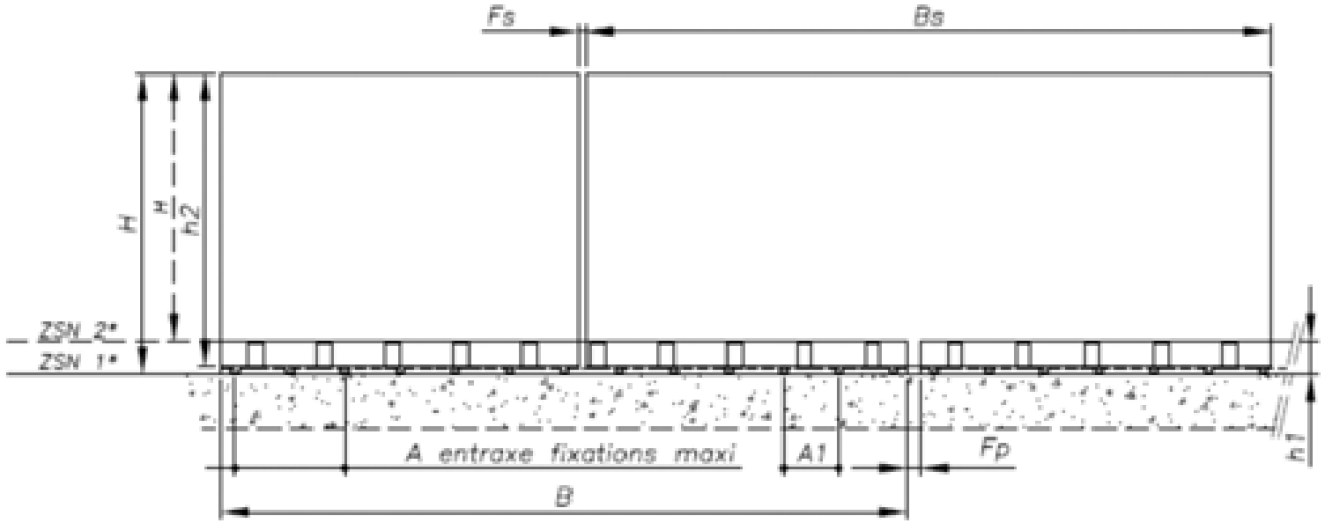


Figure 19 – Installation on slab - Model 7010

Normal loads	Composition	Categoriesaccording to NF EN 1991-1 and 1991-2, and PR NF P 06-111-2/A1	Number of wedges	Maximum dowel spacing	Minimum width (mm)
Laying on slab – 7010 with double side wedges					
0.6kN/m (Pn= 1,212 Pa)	88.4 PVB HST	A, B	4 wedges / ml (minimum 4 wedges)	- 400 mm (500mm ≤ Glass width <1000mm) - 800 mm (Glass width ≥1000mm)	500mm
	88.1 SGP Hardened		4 wedges / ml (minimum 4 wedges)	- 200 mm (800mm ≤ Glass width <1000mm) - 400 mm (Glass width ≥1000mm)	800mm
	1010.1 SGP Annealed		5 wedges/ml (minimum 4 wedges)	400mm	500mm
	1010.4 PVB HST		4 wedges / ml (minimum 4 wedges)	- 400 mm (500mm ≤ Glass width <1000mm) - 600 mm (Glass width ≥1000mm)	
	1010.2 PVB Saflex DG41 HST**		4 wedges / ml (minimum 4 wedges)	400mm	
	1212.4 PVB HST		5 wedges/ml (minimum 4 wedges)	200mm	
1.0kN/m (Pn = 2018 Pa)	88.1 SGP Hardened	C1 to C4, D	4 wedges / ml (minimum 4 wedges)	- 200 mm (800mm ≤ Glass width <1000mm) - 400 mm (Glass width ≥1000mm)	800mm
	1010.4 PVB HST		4 wedges / ml (minimum 4 wedges)	- 400 mm (500mm ≤ Glass width <1000mm) - 600 mm (Glass width ≥1000mm)	500mm
	1010.2 PVB Saflex DG41 HST**		4 wedges / ml (minimum 4 wedges)	400mm	
	1212.4 PVB HST		5 wedges/ml (minimum 4 wedges)	200mm	
3.0kN/m	_____	C5	_____	_____	_____

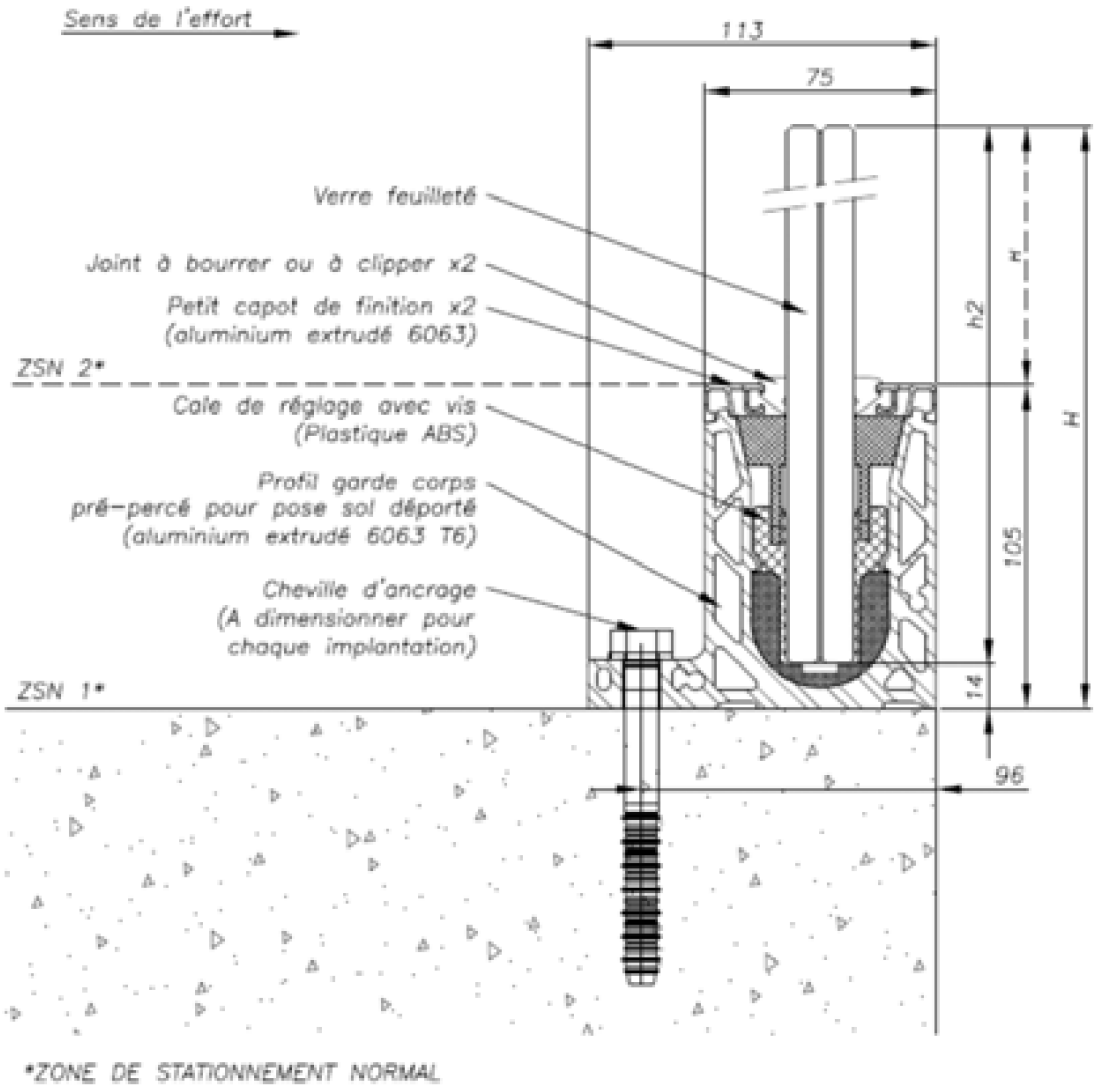
Categories of use
A: dwellings, residential areas (eg dwelling houses, kitchens, rooms and rooms in hospitals, hotels and hostels);
B: offices;
C1: meeting places equipped with tables (e.g. schools, cafes, restaurants, banquet, reception or reading rooms); C2: meeting places equipped with fixed seats (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 21 – Minimum widths (m) with respect to deformation, impact resistance and resistance under horizontal load – Laying on slab – Model 7010

Characteristic		***Value (mm)***
Maximum glazing width	*Bs*	***5,000***
Maximum System Height Above Finished Floor	*H*	***1100***
Maximum glazing height	h_2	***1072 to 1192***
Height of the aluminum profile (rabbet + joint)	h_1	***120***
Maximum distance between two fasteners	*HAS*	***800***
Maximum standard length of the aluminum profile	*B*	***5,000***
Minimum joint between two glazings	*fs*	***5***
Maximum joint between two glazings	*fs*	***110***
Maximum joint between two aluminum profiles	*pf*	***100***

Table 22 – Characteristics of continuous guardrails fixed to slab – 7010



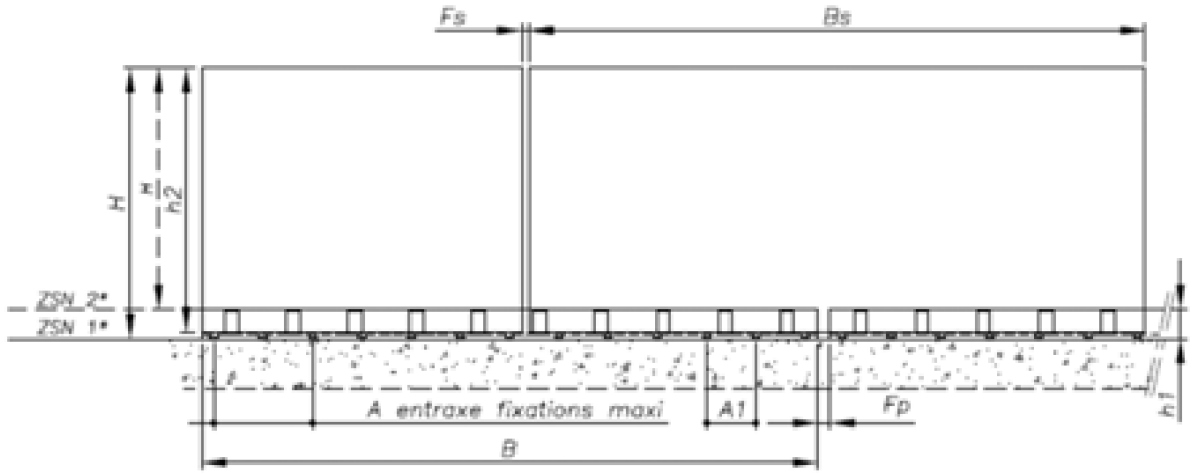


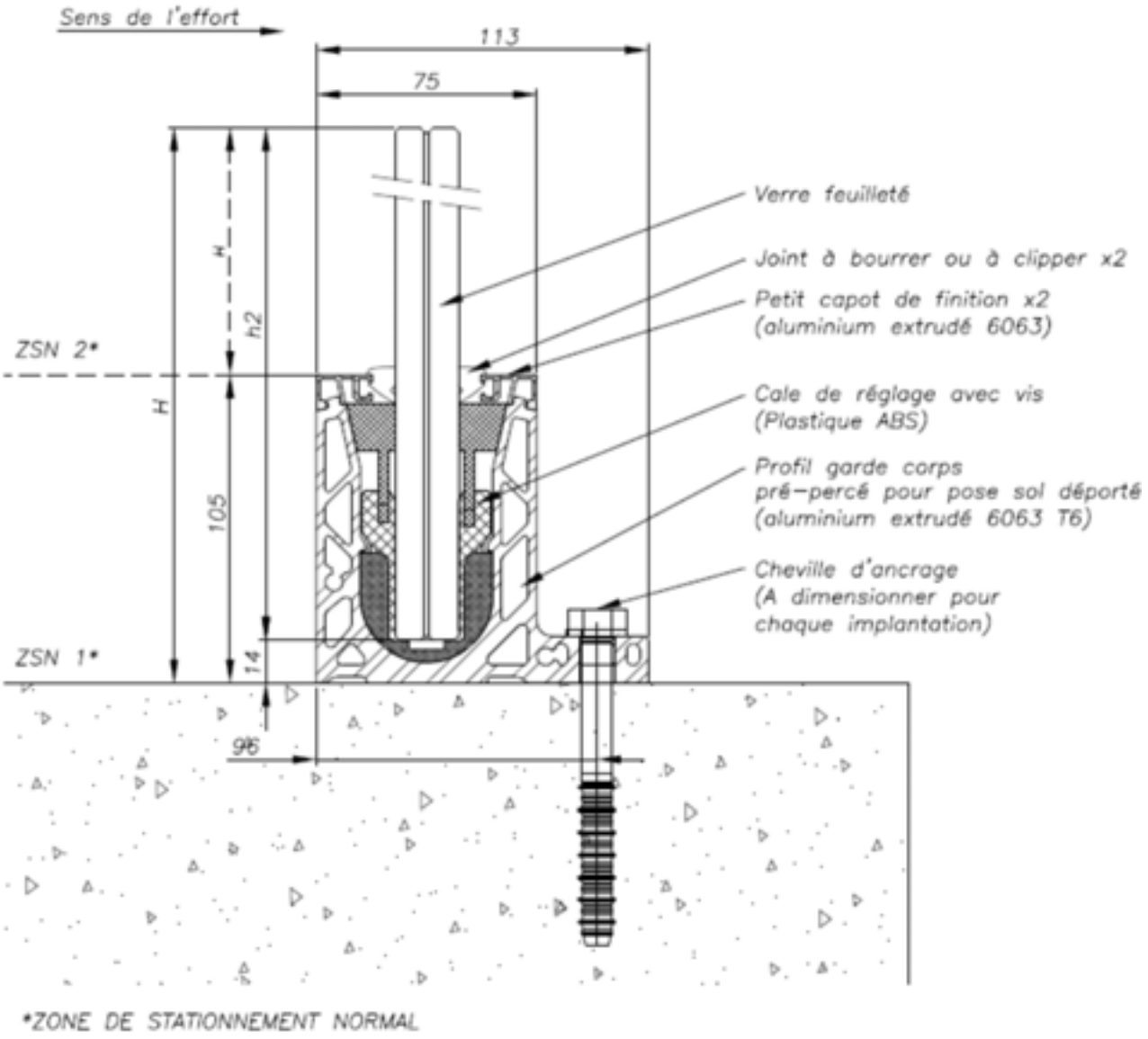
Figure 20 – Installation on offset slab – Model 7017

Normal loads	Composition	Categories according to NF EN 1991-1 and 1991-2, and PR NF P 06-111-2/A1	Number of wedges	Maximum dowel spacing	Minimum width (mm)
Laying on offset slab – 7017 with double side wedges					
0.6kN/m (Pn= 1212 Pa)	88.4 PVB HST	A, B	4 wedges / ml (minimum 4 wedges)	400mm	500mm
1.0kN/m (Pn = 2018 Pa)	88.4 PVB HST	C1 to C4, D	6 wedges/ml (minimum 6 wedges)	400mm	500mm
	1010.4 PVB HST		4 wedges / ml (minimum 4 wedges)	400mm	500mm
3.0kN/m	_____	C5	_____	_____	_____
Laying on offset slab – 7017 with one side 2.0 wedges					
0.6kN/m (Pn= 1212 Pa)	88.4 PVB HST	A, B	3 wedges / ml (minimum 3 wedges)	200mm	500mm
1.0kN/m (Pn = 2018 Pa)	1010.4 PVB HST	C1 to C4, D	3 wedges / ml (minimum 3 wedges)	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 23 – Minimum widths (m) with regard to deformation, impact resistance and resistance under horizontal load – Laying on offset slab 7017

Characteristic		***Value (mm)***
Maximum glazing width	*Bs*	***5,000***
Maximum System Height Above Finished Floor	*H*	***1100***
Maximum glazing height	h_2	***1086 to 1191***
Height of the aluminum profile (rabbet + joint)	h_1	***105***
Maximum distance between two fasteners	*HAS*	***400***
Maximum length of the aluminum profile	*B*	***5,000***
Minimum joint between two glazings	*fs*	***5***
Maximum joint between two glazings	*fs*	***110***
Maximum joint between two aluminum profiles	*pf*	***100***

Table 24 – Characteristics of attached continuous guardrails Installation on offset slab – 7017



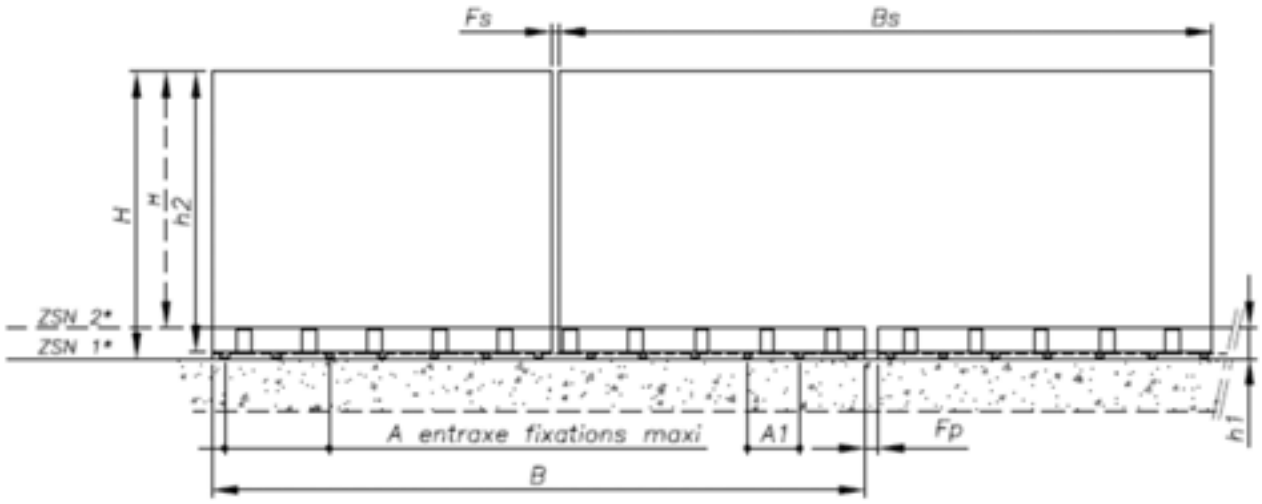


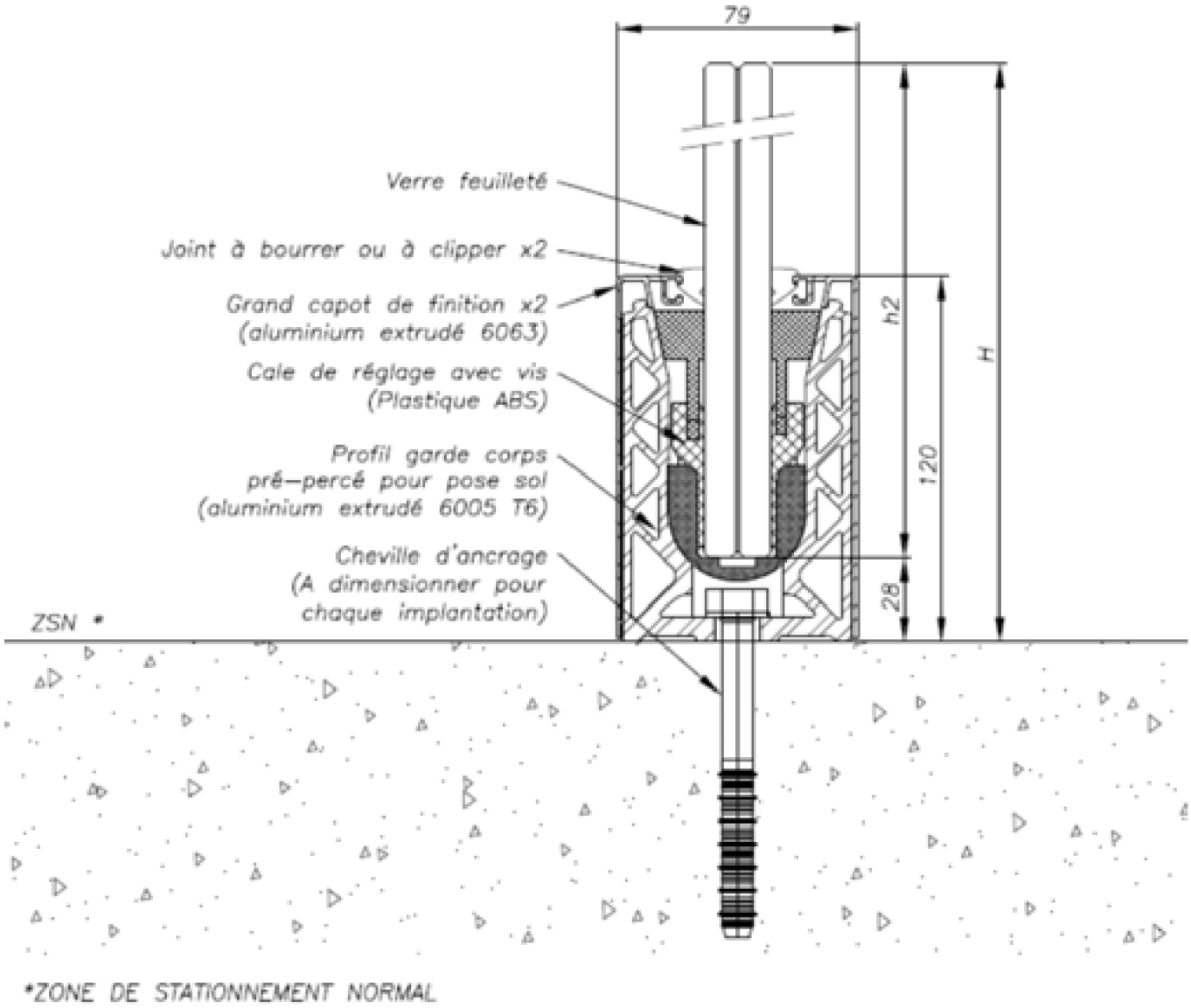
Figure 21 – Installation on offset slab – Model 7017R

Normal loads	Composition	Categories according to NF EN 1991-1 and 1991-2, and PR NF P 06-111-2/A1	Number of wedges	Maximum dowel spacing	Minimum width (mm)
Laying on inverted offset slab – 7017R with double side wedges					
0.6kN/m (Pn= 1212 Pa)	1010.4 PVB HST	A, B	4 wedges / ml (minimum 4 wedges)	400mm	500mm
1.0kN/m (Pn=2018Pa)	1010.4 PVB HST	C1 to C4 D	4 wedges / ml (minimum 4 wedges)	400mm	500mm
3.0kN/m	_____	C5	_____	_____	_____
Laying on inverted offset slab – 7017R with one side 2.0 wedges					
0.6kN/m (Pn= 1212 Pa)	1010.4 PVB HST	A, B	3 wedges / ml (minimum 3 wedges)	400mm	500mm
1.0kN/m (Pn=2018Pa)	1010.4 PVB HST	C1 to C4 D	3 wedges / ml (minimum 3 wedges)	400mm	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 25 – Minimum widths (m) with regard to deformation, impact resistance and resistance under horizontal load – Laying on 7017R inverted offset slab

Characteristic		*Value (mm)*
Maximum glazing width	*Bs*	***5,000***
Maximum System Height Above Finished Floor	*H*	***1100***
Maximum glazing height	h_2	***1086 to 1191***
Height of the aluminum profile (rabbet + joint)	h_1	***105***
Maximum distance between two fasteners	*HAS*	***400***
Maximum length of the aluminum profile	*B*	***5,000***
Minimum joint between two glazings	*fs*	***5***
Maximum joint between two glazings	*fs*	***110***
Maximum joint between two aluminum profiles	*pf*	***100***

Table 26 – Characteristics of attached continuous guardrails Installation on inverted offset slab – 7017R



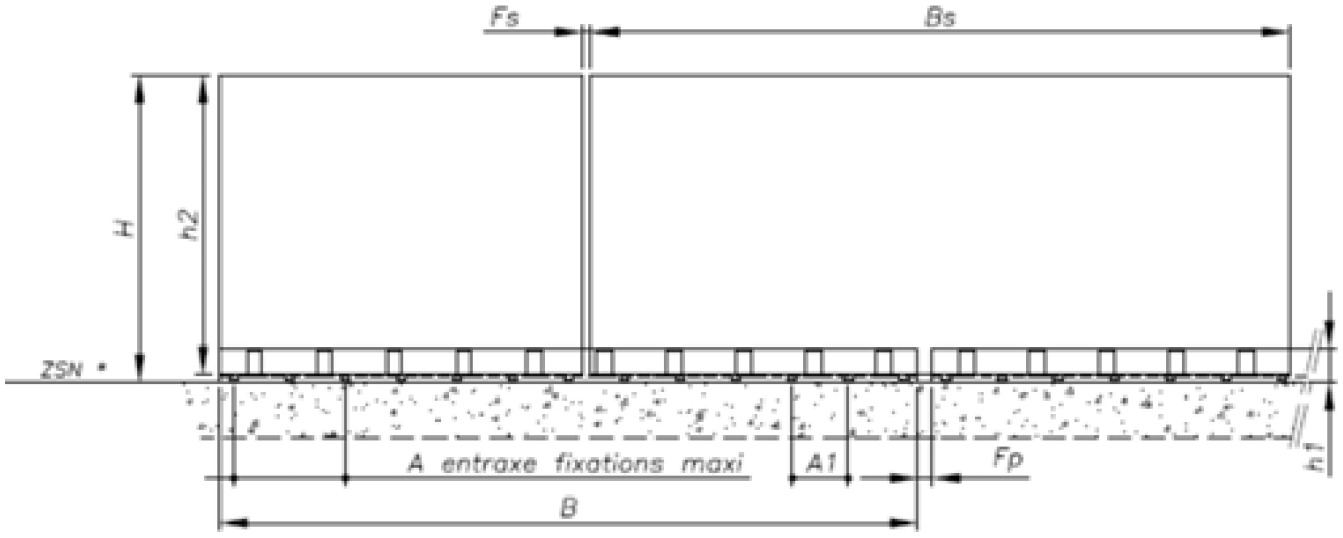


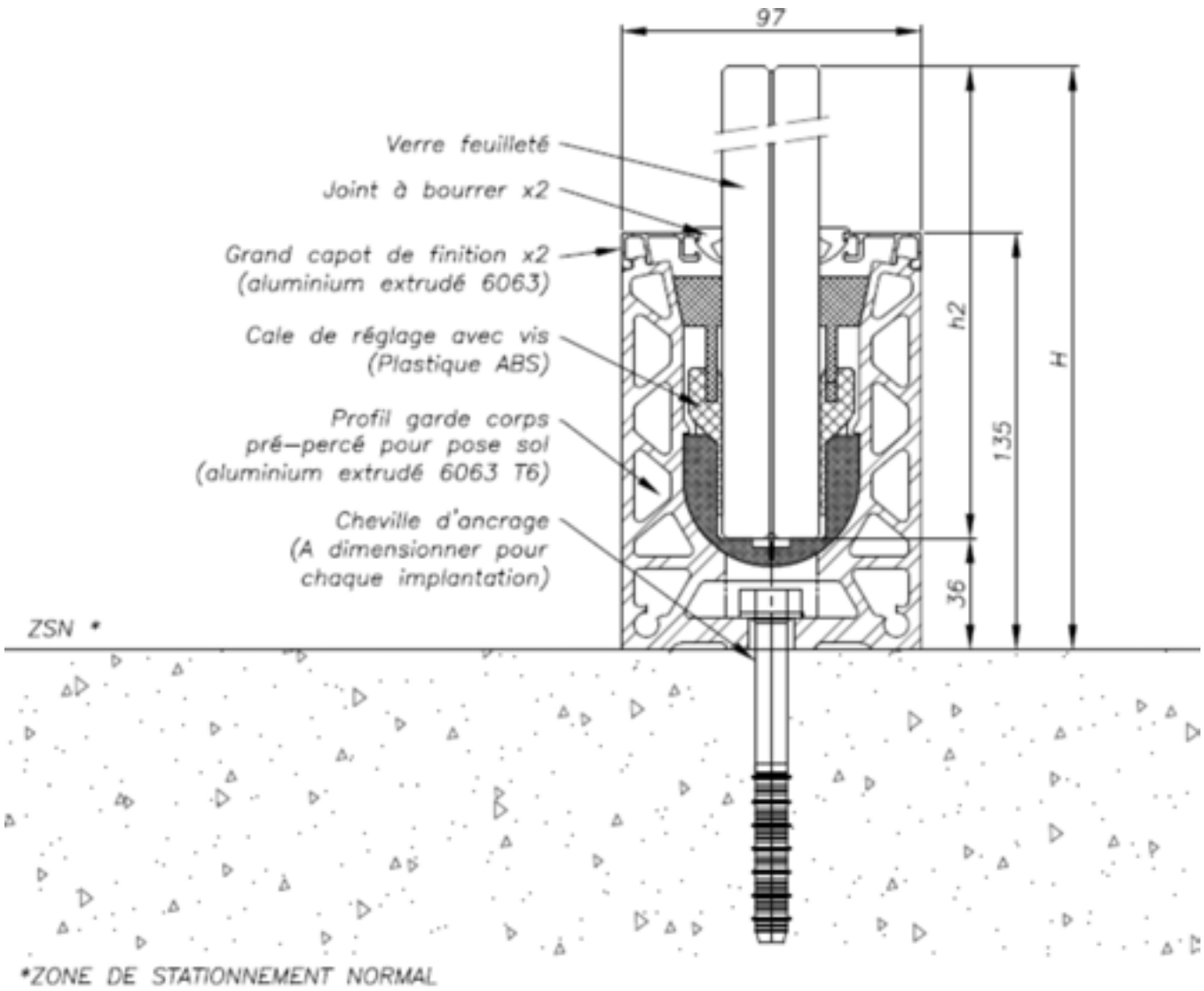
Figure 22 – Installation on slab – Model 7019

Normal loads	Composition	Categories according to NF EN 1991-1 and 1991-2, and PR NF P 06-111-2/A1	Number of wedges	Maximum dowel spacing	Minimum width (mm)
Laying on slab – 7019 with double side wedges					
0.6kN/m (Pn= 1212 Pa)	1212.1 GSP HST	A, B	8 wedges/ml (minimum 4 wedges)	150mm	500mm
1.0kN/m (Pn = 2018 Pa)	1212.1 GSP HST	C1 to C4 D	8 wedges/ml (minimum 4 wedges)	150mm	500mm
3.0kN/m (Pn=6054Pa)	1212.1 GSP HST	C5	8 wedges/ml (minimum 4 wedges)	150mm	500mm
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 27 – Minimum widths (m) with regard to deformation, impact resistance and resistance under horizontal load - Laying on slab – 7019

Characteristic		*Value (mm)*
Maximum glazing width	*Bs*	***5,000***
Maximum System Height Above Finished Floor	*H*	***1100***
Maximum glazing height	h_2	***1072***
Height of the aluminum profile (rabbet + joint)	h_1	***120***
Maximum distance between two fasteners	*HAS*	***150***
Maximum length of the aluminum profile	*B*	***5,000***
Minimum joint between two glazings	*fs*	***5***
Maximum joint between two glazings	*fs*	***110***
Maximum joint between two aluminum profiles	*pf*	***100***

Table 28 – Characteristics of continuous guardrails fixed to slab – 7019



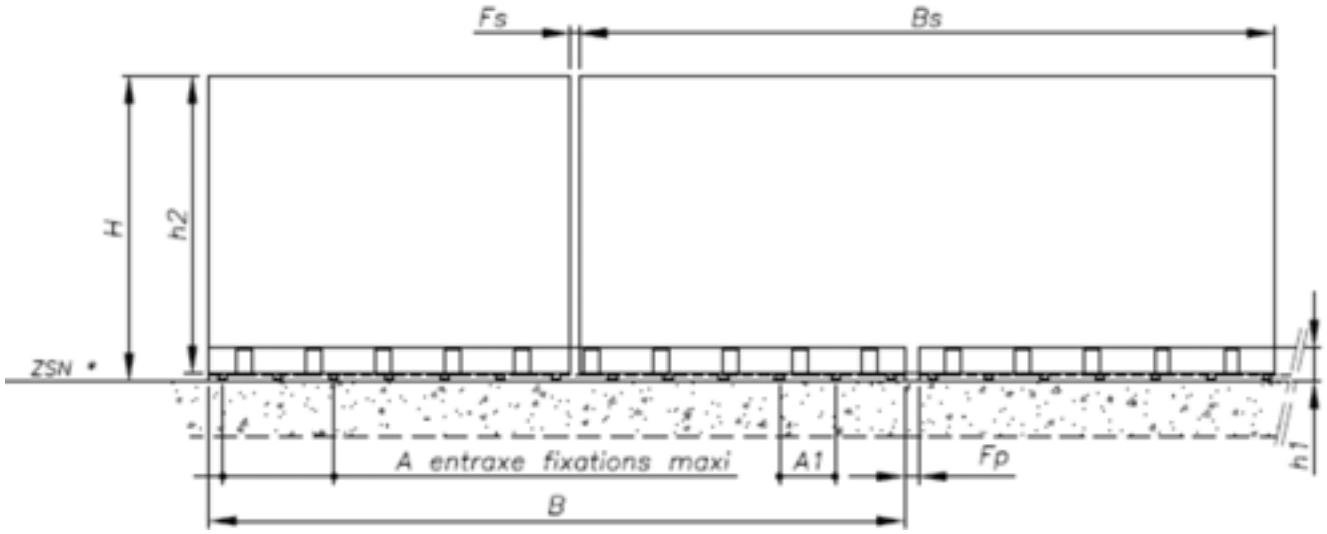


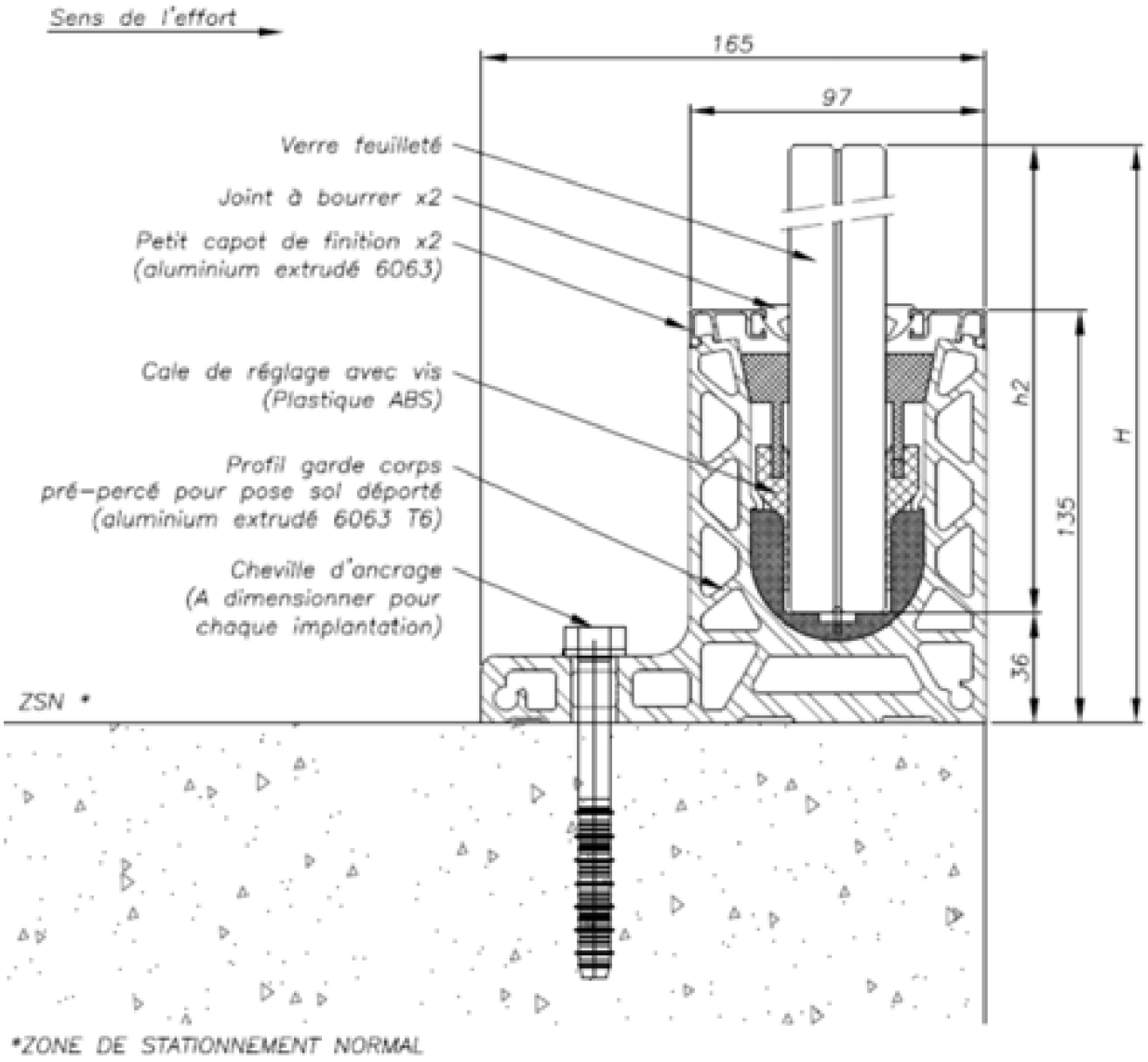
Figure 23 – Installation on slab – Model 7018

Normal loads	Composition	Categories according to NF EN 1991-1 and 1991-2, and PR NF P 06-111-2/A1	Number of wedges	Maximum dowel spacing	Minimum width (mm)
Installation on slab – 7018 with double side wedges					
0.6kN/m (Pn= 1212 Pa)	1515.4 PVB HST	A, B	8 wedges/ml	200mm	1000mm
1.0kN/m (Pn = 2018 Pa)	1515.4 PVB HST	C1 to C4, D	8 wedges/ml	200mm	1000mm
3.0kN/m (Pn=6054Pa)	1515.4 PVB HST	C5	8 wedges/ml	200mm	1000mm
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 29 – Minimum widths (m) with regard to deformation, impact resistance and resistance under horizontal load - Laying on slab – 7018

Characteristic		*Value (mm)*
Maximum glazing width	*Bs*	***5,000***
Maximum System Height Above Finished Floor	*H*	***1100***
Maximum glazing height	h_2	***1064***
Height of the aluminum profile (rabbet + joint)	h_1	***135***
Maximum distance between two fasteners	*HAS*	***200***
Maximum length of the aluminum profile	*B*	***5,000***
Minimum joint between two glazings	*fs*	***5***
Maximum joint between two glazings	*fs*	***110***
Maximum joint between two aluminum profiles	*pf*	***100***

Table 30 – Characteristics of continuous guardrails fixed to slab – 7018



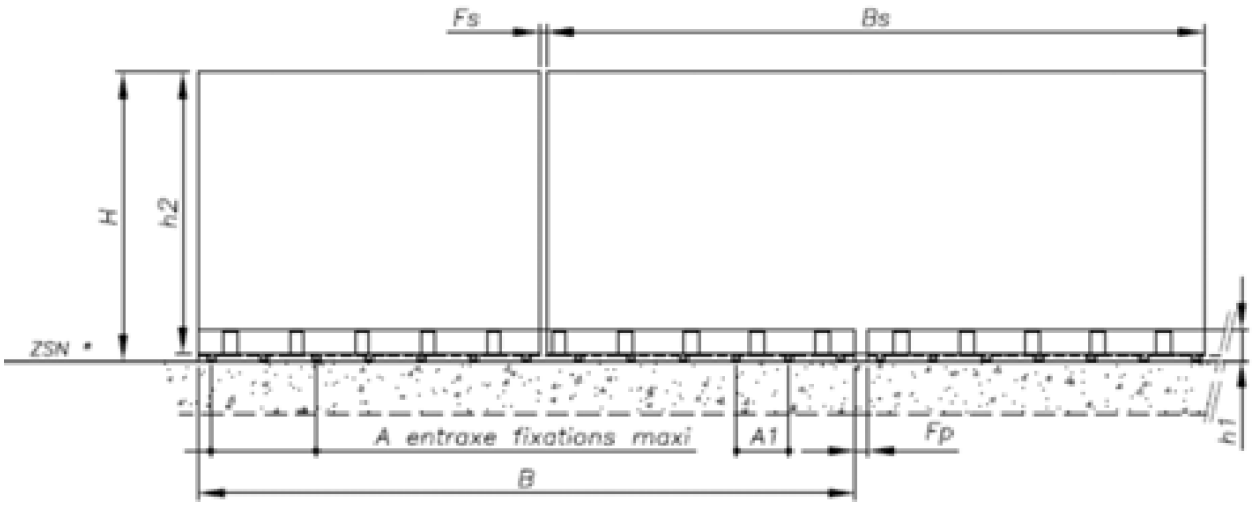


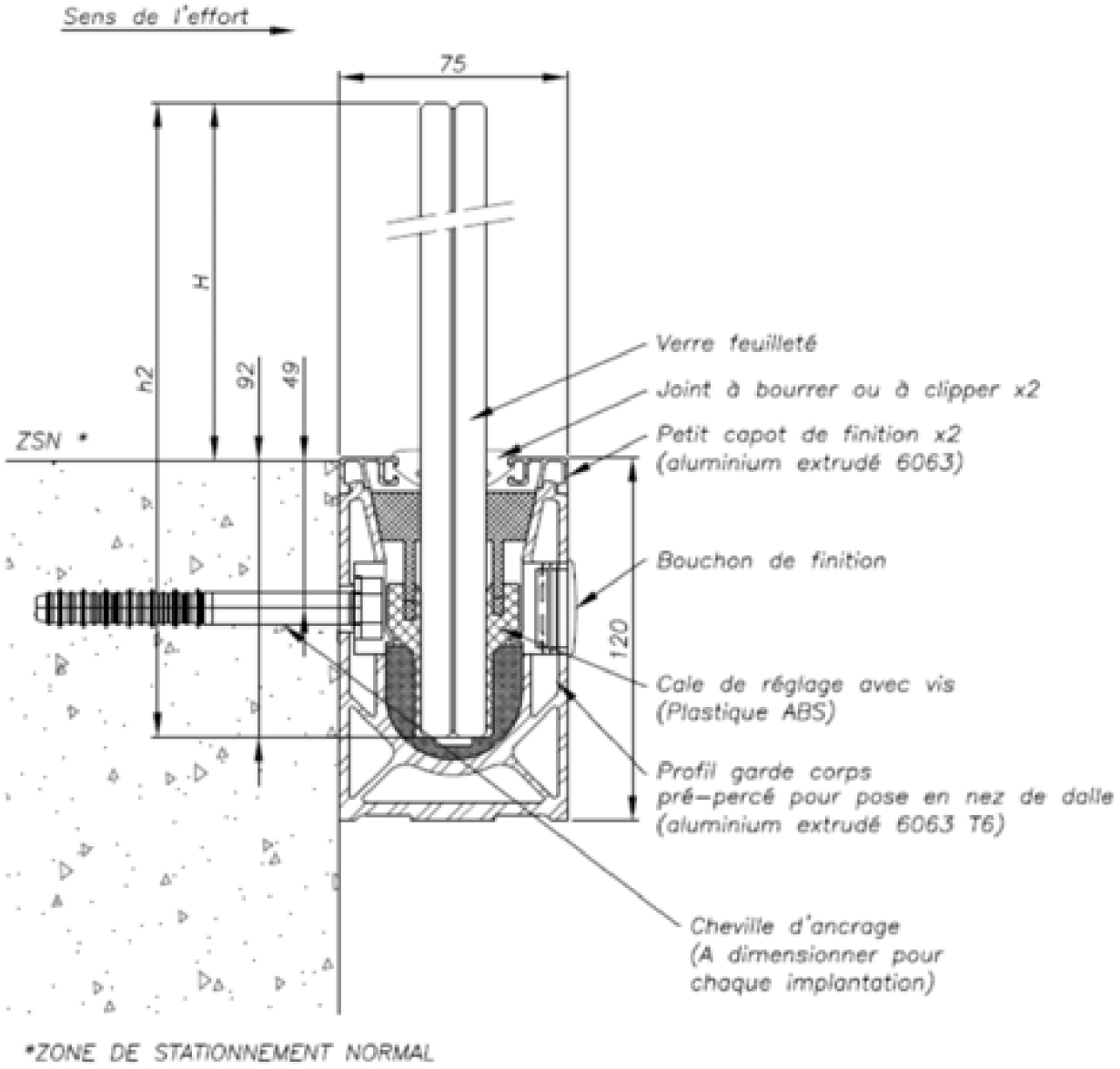
Figure 24 – Installation on slab – Model 7018L

Normal loads	Composition	Categories according to NF EN 1991-1 and 1991-2, and PR NF P 06-111-2/A1	Number of wedges	Maximum dowel spacing	Minimum width (mm)
Laying on slab – 7018L with double side wedges					
0.6kN/m (Pn= 1212 Pa)	1515.4 PVB HST	A, B	5 wedges/ml	200mm	1000mm
1.0kN/m (Pn = 2018 Pa)	1515.4 PVB HST	C1 to C4, D	5 wedges/ml	200mm	1000mm
3.0kN/m (Pn=6054Pa)	1515.4 PVB HST	C5	5 wedges/ml	200mm	1000mm
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 31 – Minimum widths (m) with respect to deformation, impact resistance and resistance under horizontal load - Laying on slab – 7018L

Characteristic		***Value (mm)***
Maximum glazing width	*Bs*	***5,000***
Maximum System Height Above Finished Floor	*H*	***1100***
Maximum glazing height	h_2	***1064***
Height of the aluminum profile (rabbet + joint)	h_1	***135***
Maximum distance between two fasteners	*HAS*	***200***
Maximum length of the aluminum profile	*B*	***5,000***
Minimum joint between two glazings	*fs*	***5***
Maximum joint between two glazings	*fs*	***110***
Maximum joint between two aluminum profiles	*pf*	***100***

Table 32 – Characteristics of continuous guardrails fixed to slab – 7018L



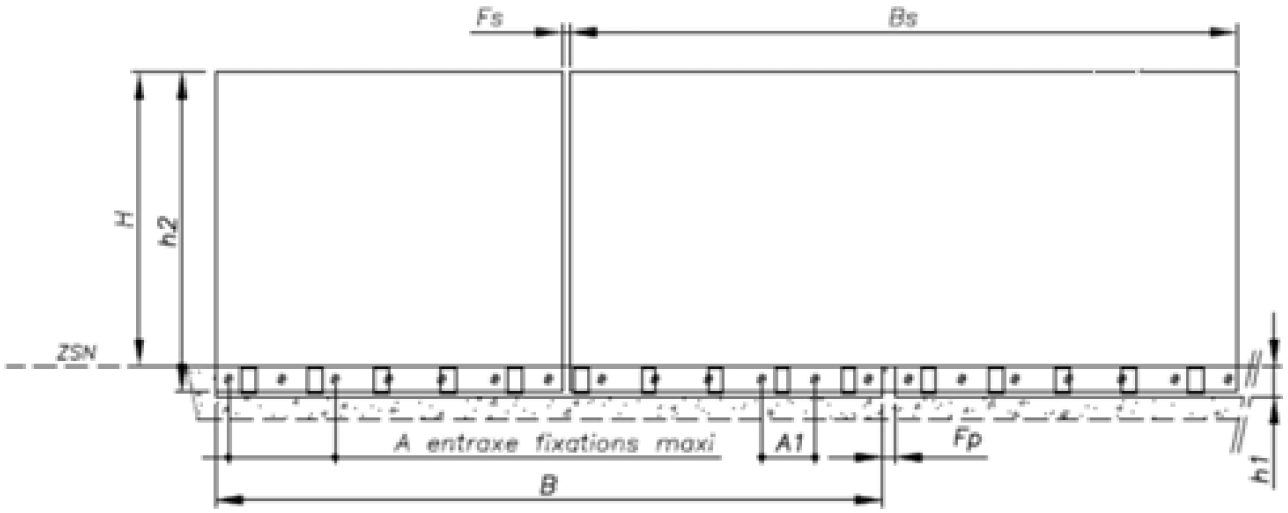


Figure 25 - Side Mount - Model 7031

Normal loads	Composition	Categories according to NF EN 1991-1 and 1991-2, and PR NF P 06-111-2/A1	Number of wedges	Maximum dowel spacing	Minimum width (mm)
Side installation – 7031 with double side wedges					
0.6kN/m (Pn= 1212 Pa)	1010.2 PVB HST 1010.2 EVA DAYLIGHT HST	A, B	5 wedges/ml (minimum 4 wedges)	200mm	500mm
1.0kN/m (Pn=2018Pa)	1010.2 PVB HST 1010.2 EVA DAYLIGHT HST	C1 to C4, D	5 wedges/ml (minimum 4 wedges)	200mm	500mm
3.0kN/m	_____	C5	_____	_____	_____
Side installation – 7031 with one side 2.0 wedges					
0.6kN/m (Pn= 1212 Pa)	88.4 PVB HST 88.2 EVA DAYLIGHT HST 88.2 EVA SECURE HST	A, B	3 wedges / ml (minimum 3 wedges)	200mm	500mm
1.0kN/m (Pn=2018Pa)	1010.4 PVB HST 1010.4 EVA DAYLIGHT HST 1010.4 EVA SECURE HST	C1 to C4, D	3 wedges / ml (minimum 3 wedges)	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 33 – Minimum widths (m) with regard to deformation, impact resistance and resistance under horizontal load – Side installation 7031

Characteristic		***Value (mm)***
Maximum glazing width	*Bs*	***5,000***
Maximum System Height Above Finished Floor	*H*	***1100***
Maximum glazing height	h_2	***1192***
Height of the aluminum profile (rabbet + joint)	h_1	***120***
Maximum distance between two fasteners	*HAS*	***200***
Maximum length of the aluminum profile	*B*	***5,000***
Minimum joint between two glazings	*fs*	***5***
Maximum joint between two glazings	*fs*	***110***
Maximum joint between two aluminum profiles	*pf*	***100***

Table 34 – Characteristics of continuous guardrails fixed laterally – 7031

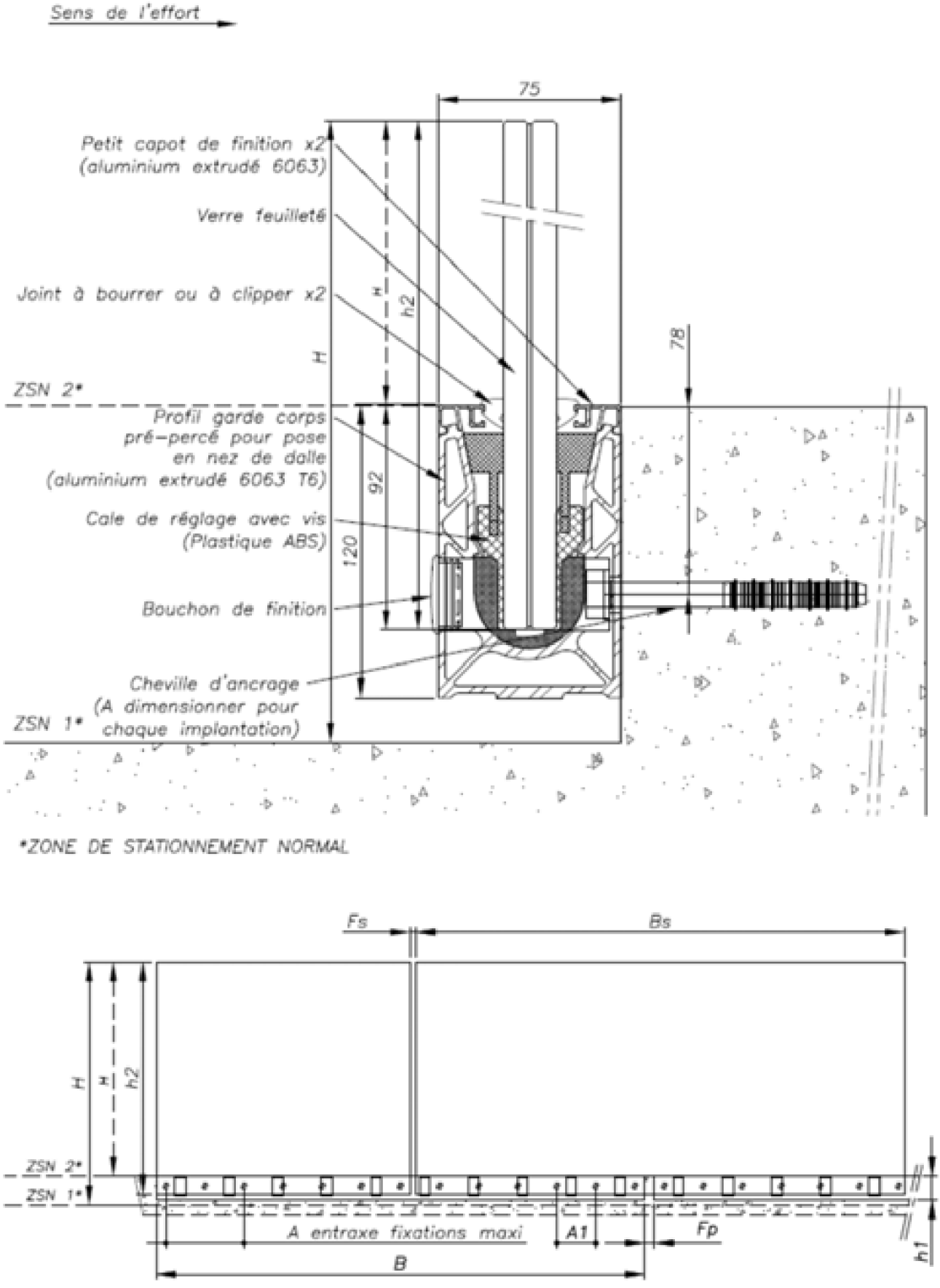


Figure 26 - Inverted Side Mount - Model 7031R

Normal loads	Composition	Categories according to NF EN 1991-1 and 1991-2, and PR NF P 06-111-2/A1	Number of wedges	Maximum dowel spacing	Minimum width (mm)
Inverted side installation – 7031R with double side wedges					
0.6kN/m (Pn= 1212 Pa)	88.4 PVB HST	A, B	4 wedges/ml	200mm	1000mm
	1010.4 PVB HST		4 wedges / ml (minimum 4 wedges)		500mm
1.0kN/m (Pn=2018Pa)	1010.4 PVB HST	C1 to C4, D	4 wedges / ml (minimum 4 wedges)	200mm	500mm
3.0kN/m	_____	C5	_____	_____	_____
Inverted side pose – 7031R with one side 2.0 wedges					
0.6kN/m (Pn= 1212 Pa)	1010.4 PVB HST	A, B	3 wedges / ml (minimum 3 wedges)	200mm	500mm
1.0kN/m (Pn=2018Pa)	1010.4 PVB HST	C1 to C4, D	3 wedges / ml (minimum 3 wedges)	200mm	500mm
3.0kN/m (Pn=6054Pa)	_____	C5	_____	_____	_____

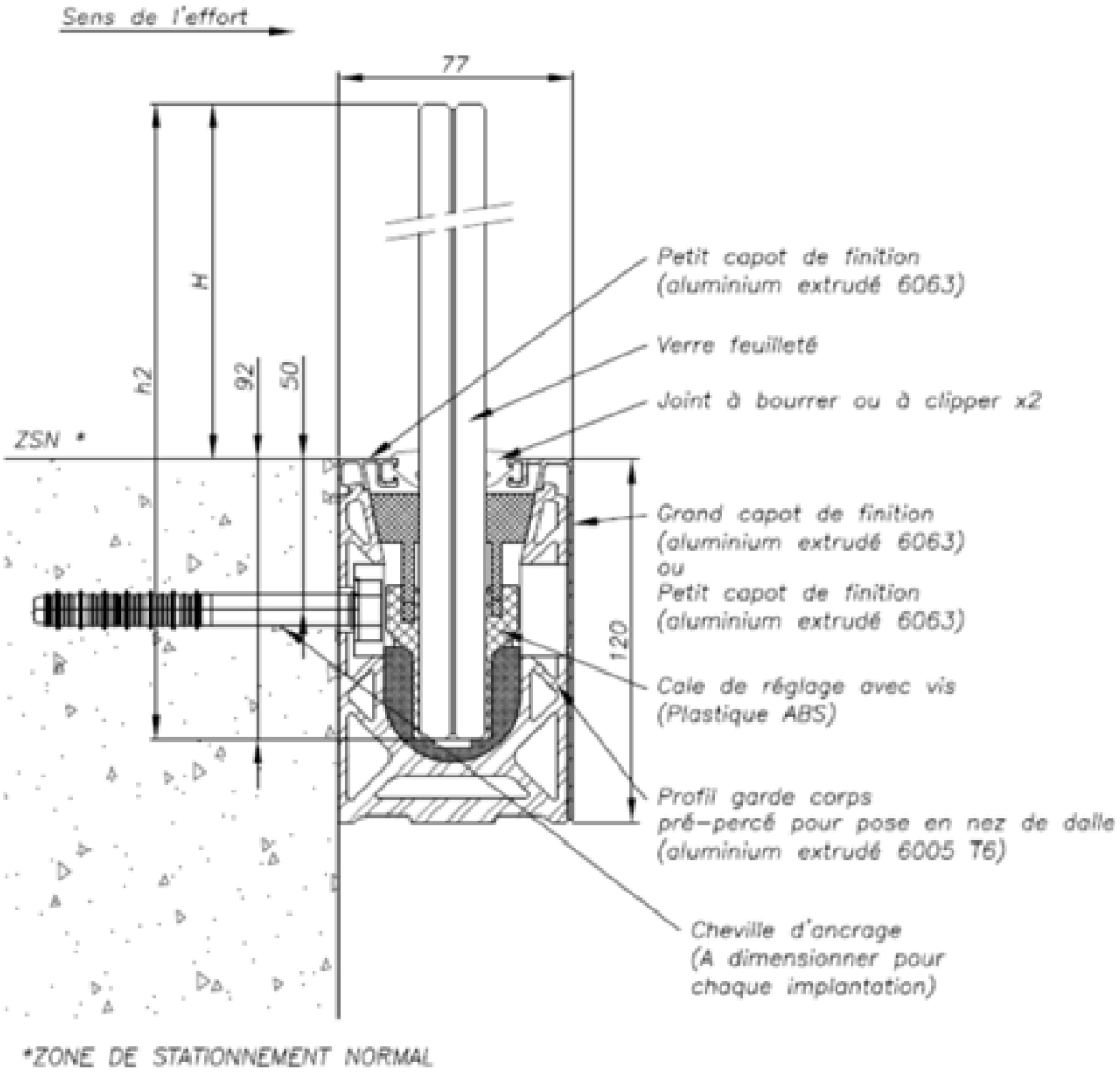
Categories of use
A: dwellings, residential areas (eg dwelling houses, kitchens, rooms and rooms in hospitals, hotels and hostels);
B: offices;
C1: meeting places equipped with tables (e.g. schools, cafes, restaurants, banquet, reception or reading rooms); C2: meeting places equipped with fixed seats (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 35 - Minimum widths (m) with regard to deformation, impact resistance and resistance under horizontal load - 7031R inverted side installation

Characteristic		*Value (mm)*
Maximum glazing width	*Bs*	***5,000***
Maximum System Height Above Finished Floor	*H*	***1100***
Maximum glazing height	h_2	***1192***
Height of the aluminum profile (rabbet + joint)	h_1	***120***
Maximum distance between two fasteners	*HAS*	***200***
Maximum length of the aluminum profile	*B*	***5,000***
Minimum joint between two glazings	*fs*	***5***
Maximum joint between two glazings	*fs*	***110***
Maximum joint between two aluminum profiles	*pf*	***100***

Table 36 – Characteristics of continuous guardrails fixed on the reverse side – 7031R



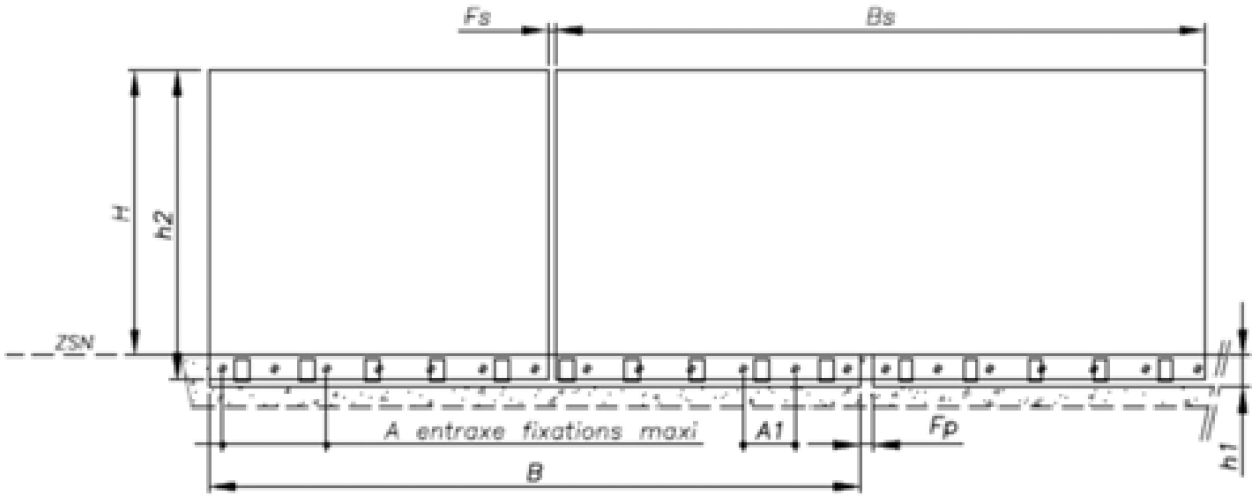


Figure 27 - Side Mount - Model 7011

Normal loads	Composition	Categoriesaccording to NF EN 1991-1 and 1991-2, and PR NF P 06-111-2/A1	Number of wedges	center distancemaxi pegs	Minimum width (mm)
Side installation – 7011 with double side wedges					
0.6kN/m (Pn= 1212 Pa)	1010.4 PVB HST 1010.2 EVA DAYLIGHT HST	A, B	4 wedges / ml (minimum 4 wedges)	200mm	500mm
	1212.1 SGP Annealed		5 wedges/ml (minimum 4 wedges)		
1.0kN/m (Pn=2018Pa)	1010.4 PVB HST 1010.2 PVB Saflex DG41 HST** 1212.2 EVA DAYLIGHT HST	C1 to C4, D	4 wedges / ml (minimum 4 wedges)	200mm	500mm
	1212.1 SGP Annealed		5 wedges/ml (minimum 4 wedges)		
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 37 – Minimum widths (m) with regard to deformation, impact resistance and resistance under horizontal load – side installation 7011

Characteristic		*Value (mm)*
Maximum glazing width	*Bs*	***5,000***
Maximum System Height Above Finished Floor	*H*	***1100***
Maximum glazing height	h_2	***1192***
Height of the aluminum profile (rabbet + joint)	h_1	***120***
Maximum distance between two fasteners	*HAS*	***200***
Maximum length of the aluminum profile	*B*	***5,000***
Minimum joint between two glazings	*fs*	***5***
Maximum joint between two glazings	*fs*	***110***
Maximum joint between two aluminum profiles	*pf*	***100***

Table 38 – Characteristics of continuous guardrails fixed laterally – 7011

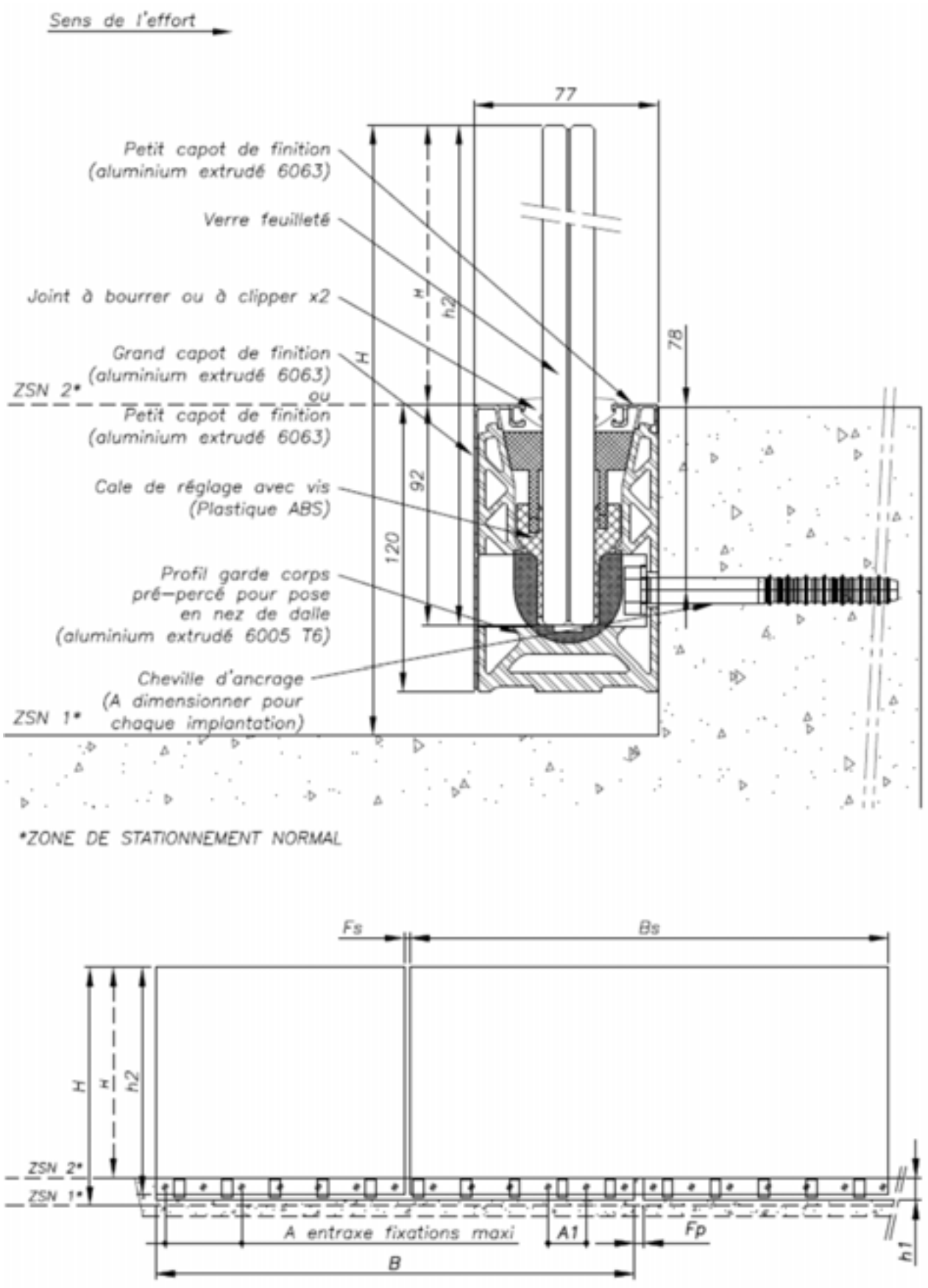


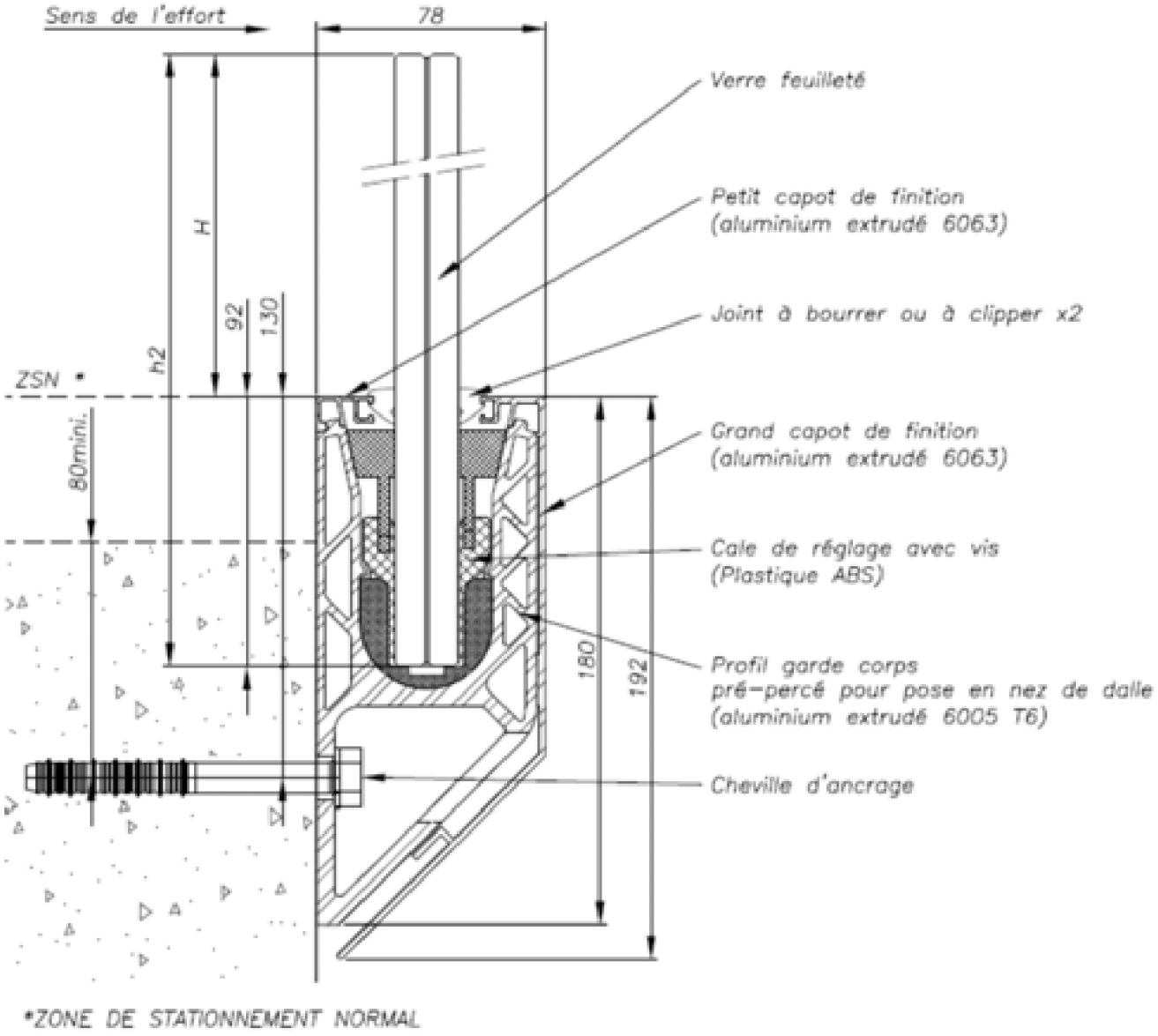
Figure 28 - Inverted Side Mount - Model 7011R

Normal loads	Composition	Categories according to NF EN 1991-1 and 1991-2, and PR NF P 06-111-2/A1	Number of wedges	center distancemaxi pegs	Minimum width (mm)
Inverted side installation – 7011R with double side wedges					
0.6kN/m (Pn= 1212 Pa)	88.4 PVB HST 1010.4 PVB HST	A, B	4 wedges / ml (minimum 4 wedges)	200mm	500mm
1.0kN/m (Pn=2018Pa)	1010.4 PVB HST	C1 to C4, D	4 wedges / ml (minimum 4 wedges)	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 39 – Minimum widths (m) with regard to deformation, impact resistance and resistance under horizontal load – 7011R inverted side installation

Characteristic		***Value (mm)***
Maximum glazing width	*Bs*	***5,000***
Maximum System Height Above Finished Floor	*H*	***1100***
Maximum glazing height	h_2	***1192***
Height of the aluminum profile (rabbet + joint)	h_1	***120***
Maximum distance between two fasteners	*HAS*	***200***
Maximum length of the aluminum profile	*B*	***5,000***
Minimum joint between two glazings	*fs*	***5***
Maximum joint between two glazings	*fs*	***110***
Maximum joint between two aluminum profiles	*pf*	***100***

Table 40 – Characteristics of continuous guardrails fixed on the reverse side – 7011R



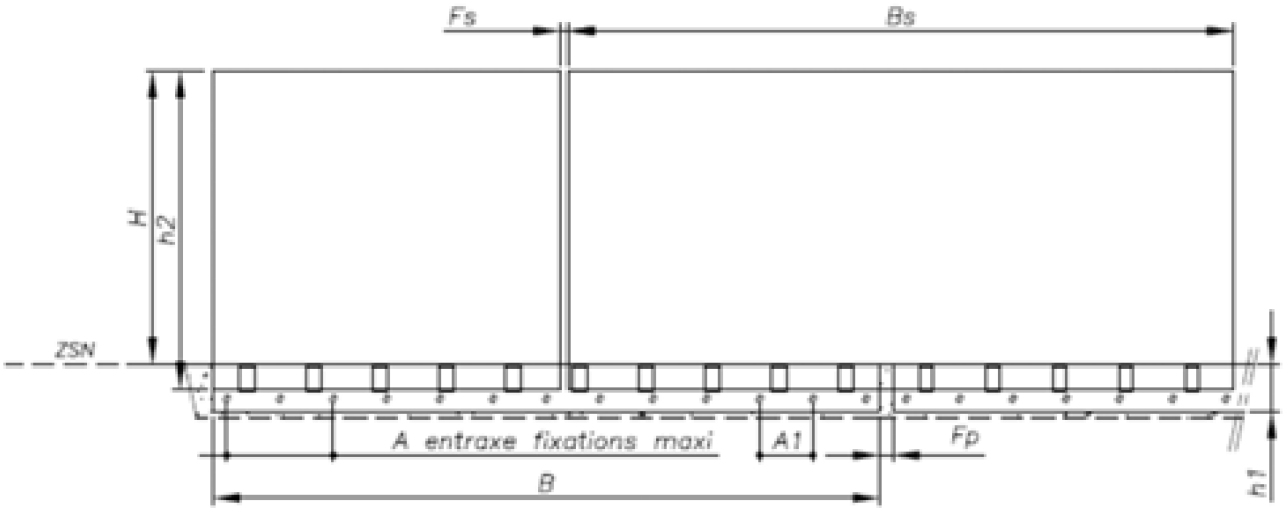


Figure 29 - Offset Side Mount - Model 7013

Normal loads	Composition	Categories according to NF EN 1991-1 and 1991-2, and PR NF P 06-111-2/A1	Number of wedges	Maximum dowel spacing	Minimum width (mm)
Offset side installation – 7013 with double side wedges					
0.6kN/m (Pn= 1212 Pa)	1010.4 PVB HST	A, B	4 wedges / ml (minimum 4 wedges)	400mm	500mm
	1010.1 GSP HST		5 wedges/ml (minimum 4 wedges)	200mm	
1.0kN/m (Pn=2018Pa)	1010.4 PVB HST	C1 to C4, D	4 wedges / ml (minimum 4 wedges)	400mm	500mm
	1010.1 GSP HST		5 wedges/ml (minimum 4 wedges)	200mm	
3.0kN/m	_____	C5	_____	_____	_____
Offset side installation – 7013 with one side 2.0 wedges					
0.6kN/m (Pn= 1212 Pa)	1010.4 PVB HST	A, B	3 wedges / ml (minimum 3 wedges)	200mm	500mm
1.0kN/m (Pn=2018Pa)	1010.4 PVB HST	C1 to C4, D	3 wedges / ml (minimum 3 wedges)	200mm	500mm
3.0kN/m	_____	C5	_____	_____	_____

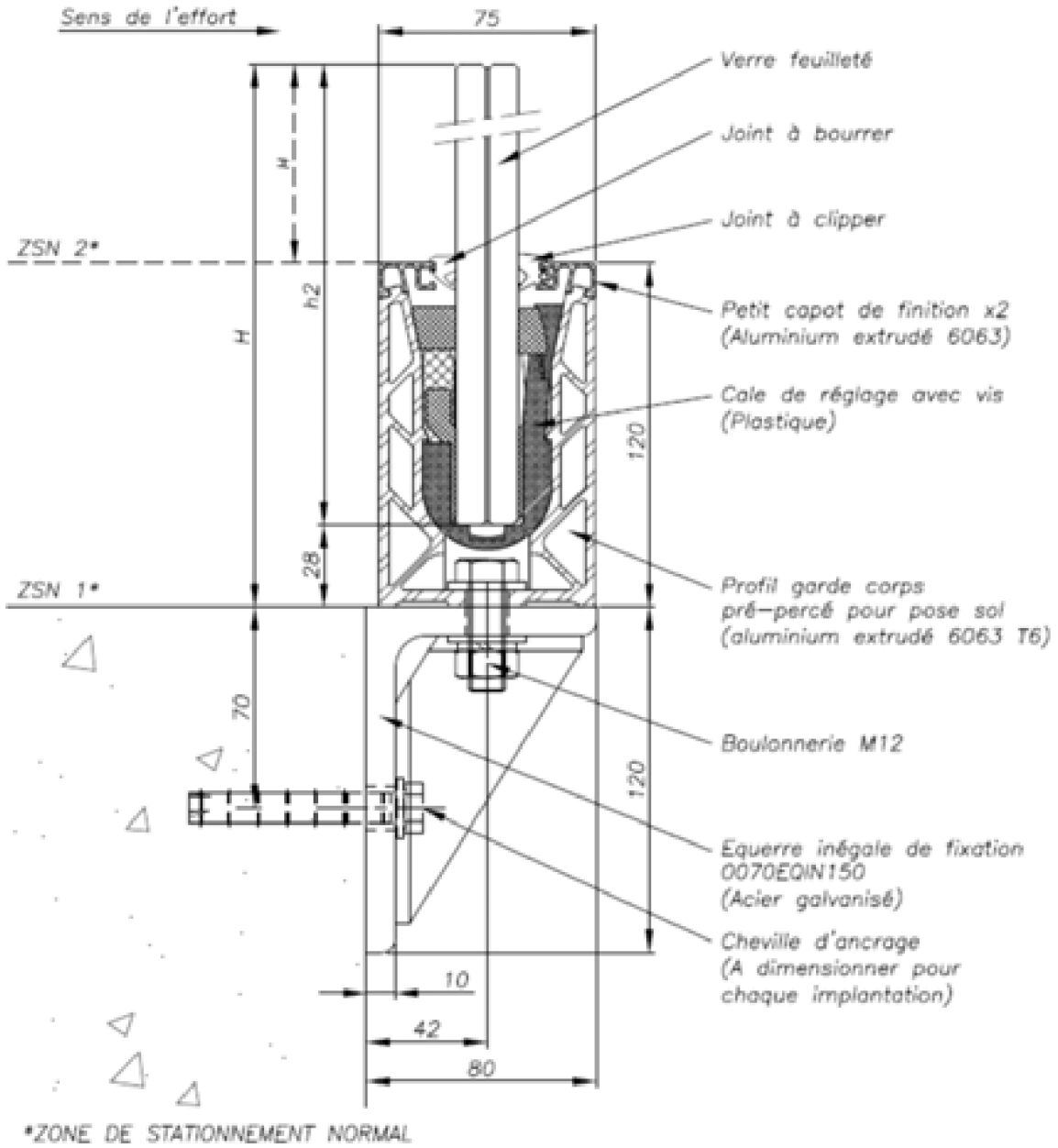
Categories of use
A: dwellings, residential areas (eg dwelling houses, kitchens, rooms and rooms in hospitals, hotels and hostels);
B: offices;
C1: meeting places equipped with tables (e.g. schools, cafes, restaurants, banquet, reception or reading rooms); C2: meeting places equipped with fixed seats (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 41 – Minimum widths (m) with respect to deformation, impact resistance and resistance under horizontal load – Offset side installation 7013

Characteristic		*Value (mm)*
Maximum glazing width	*Bs*	***5,000***
Maximum System Height Above Finished Floor	*H*	***1100***
Maximum glazing height	h_2	***1192***
Height of the aluminum profile (rabbet + joint)	h_1	***192***
Maximum distance between two fasteners	*HAS*	***400***
Maximum length of the aluminum profile	*B*	***5,000***
Minimum joint between two glazings	*fs*	***5***
Maximum joint between two glazings	*fs*	***110***
Maximum joint between two aluminum profiles	*pf*	***100***

Table 42 – Characteristics of continuous guardrails fixed laterally offset – 7013



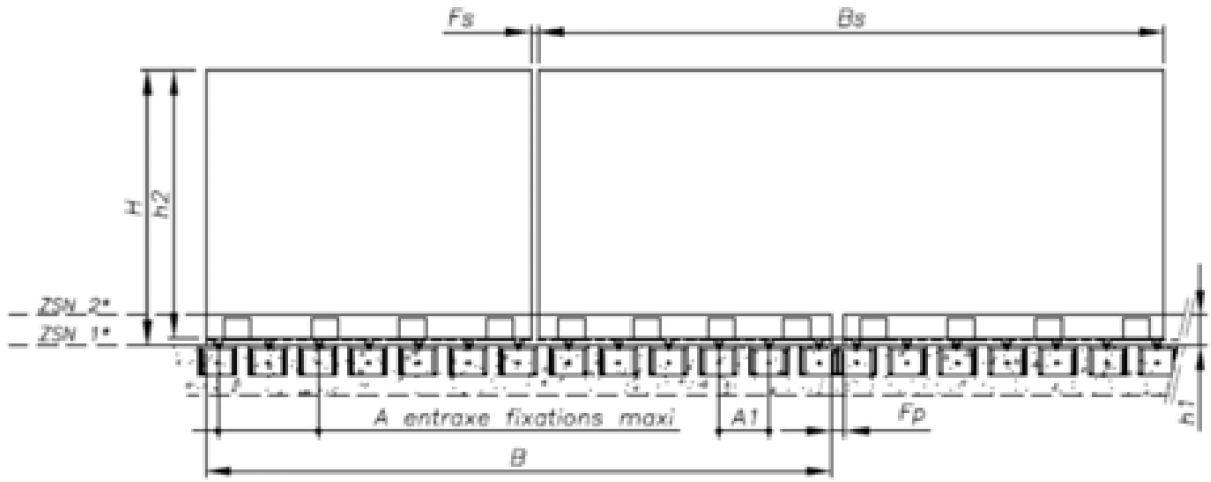


Figure 30 – Installation on bracket - Model 7030 on bracket

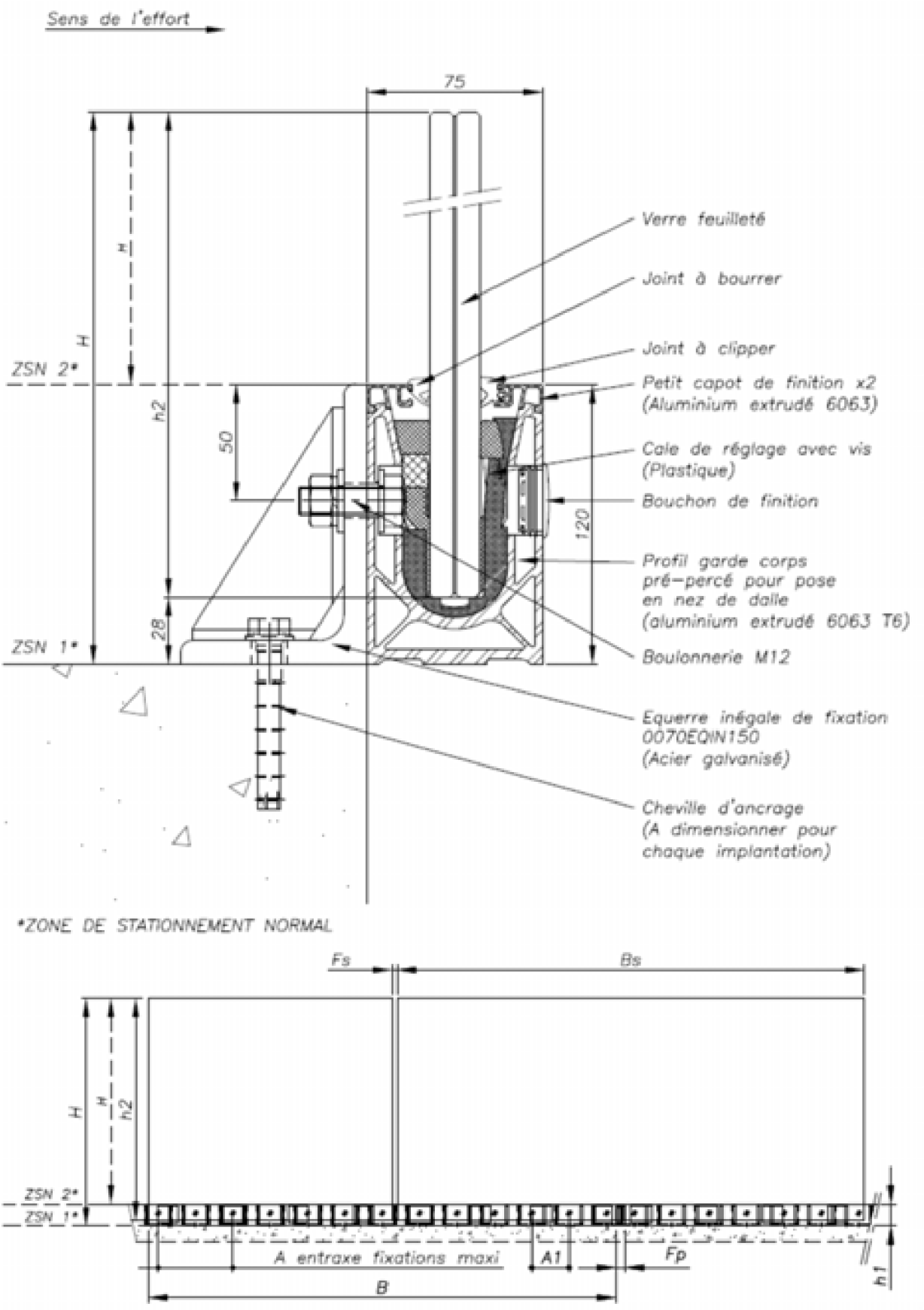


Figure 31 – Installation on bracket - Model 7031 on bracket

Normal loads	Composition	Categories according to NF EN 1991-1 and 1991-2, and PR NF P 06-111-2/A1	Number of wedges	Maximum dowel spacing	Minimum width (mm)
Installation on the 7030 square with one side 2.0 wedges					
0.6kN/m (Pn= 1212 Pa)	1010.4 PVB HST	A, B	3 wedges/ml	300mm (4 squares / ml)	1000mm
1.0kN/m (Pn=2018Pa)	1010.4 PVB HST	C1 to C4, D	3 wedges/ml	300mm (4 squares / ml)	1000mm
3.0kN/m	_____	C5	_____	_____	_____
Lateral installation 7031 on the bracket with one side 2.0 wedges					
0.6kN/m (Pn= 1212 Pa)	1010.4 PVB HST	A, B	3 wedges/ml	200mm (5 squares / ml)	1000mm
1.0kN/m (Pn=2018Pa)	1010.4 PVB HST	C1 to C4, D	3 wedges/ml	200mm (5 squares / ml)	1000mm
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 43 – Minimum widths (m) with regard to deformation, impact resistance and resistance under horizontal load – Installation on the bracket

Characteristic		*Value (mm)*
Maximum glazing width	*Bs*	***5,000***
Maximum System Height Above Finished Floor	*H*	***1100***
Maximum glazing height	h_2	***1072 to 1192***
Height of the aluminum profile (rabbet + joint)	h_1	***120***
Maximum distance between two fasteners	*HAS*	***300***
Maximum length of the aluminum profile	*B*	***5,000***
Minimum joint between two glazings	*fs*	***5***
Maximum joint between two glazings	*fs*	***110***
Maximum joint between two aluminum profiles	*pf*	***100***

Table 44 – Characteristics of the continuous guardrails attached to the bracket – Model 7030 and 7031 on bracket

Figure 32 – Example of marking on the glass

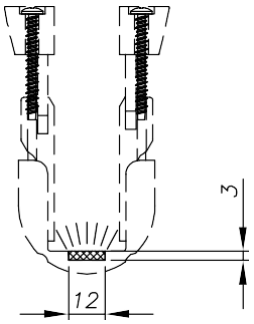
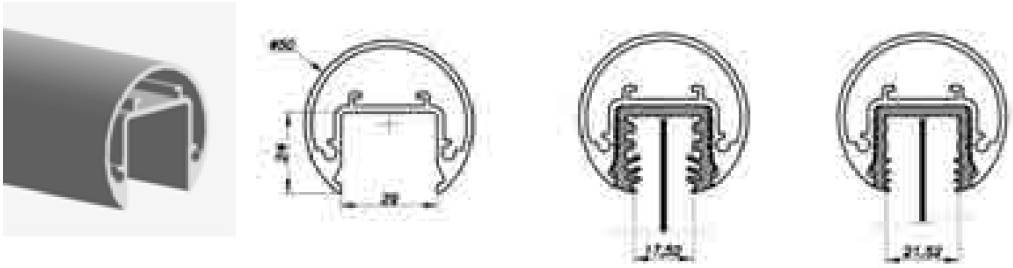
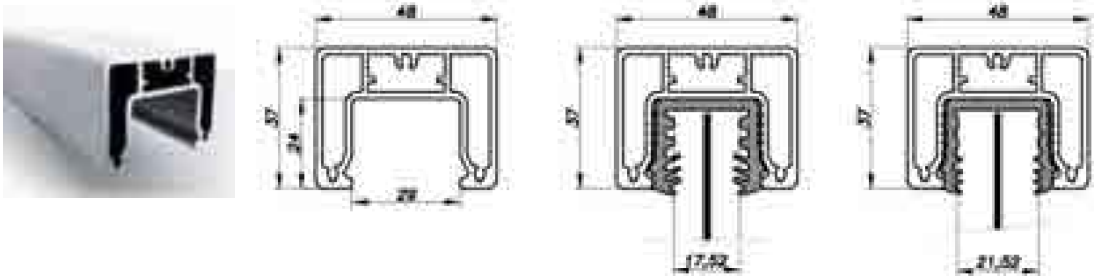


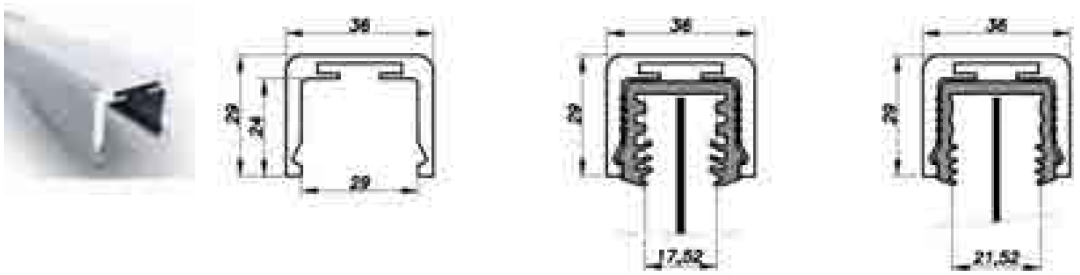
Figure 33 - Dimensions for LEDs



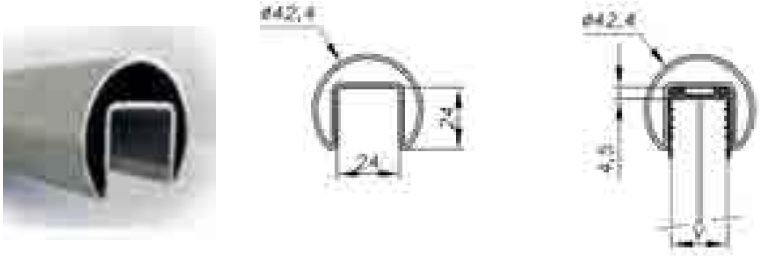
Ref. :0102050500AL+ seal ref. :001024AL175 for 8.8 thick glass
or0102050500AL+ seal ref. :001024AL215 for a 10.10 thick glass



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



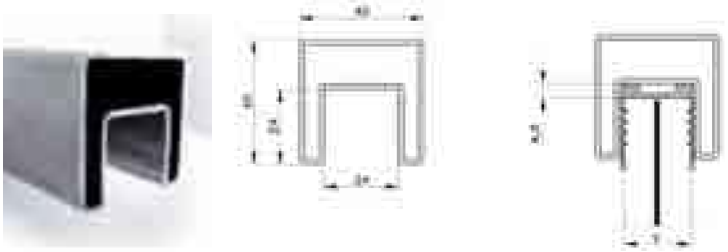
Ref. :010203629500AL+ seal ref. :001024AL175 for 8.8 thick glass
or010203629500AL+ seal ref. :001024AL215 for a 10.10 thick glass



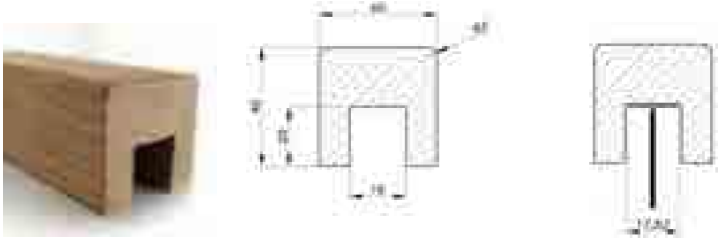
Ref. : 00 10 20 42 500 + seal ref. : 00 10 24V

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

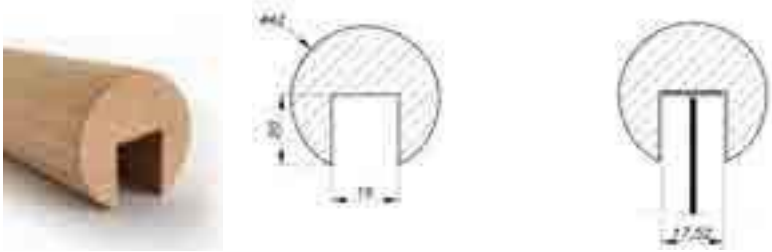
Ref. : 00 10 20 60 500 + seal ref. : 00 10 34V



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

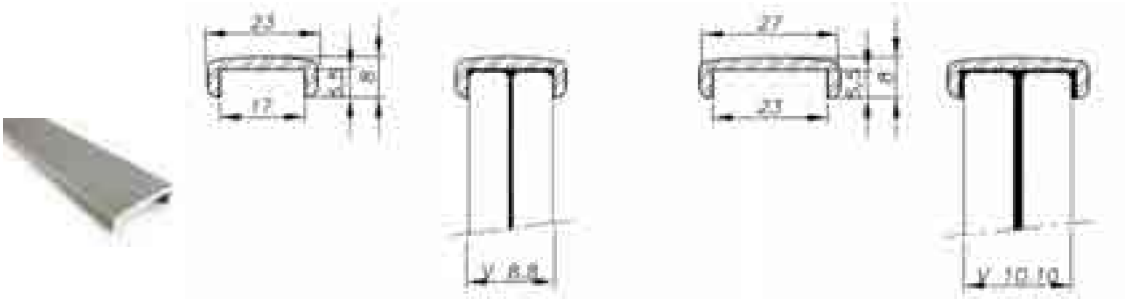


Ref. : 0010204040180W20 (raw beech) indoors only Ref. : 0010204040180W10 (raw oak) only indoors



Ref. : 00102042180W20 (raw beech) indoors only Ref. : 00102042180W10 (raw oak) only indoors

Figure 34 – Example of handrail

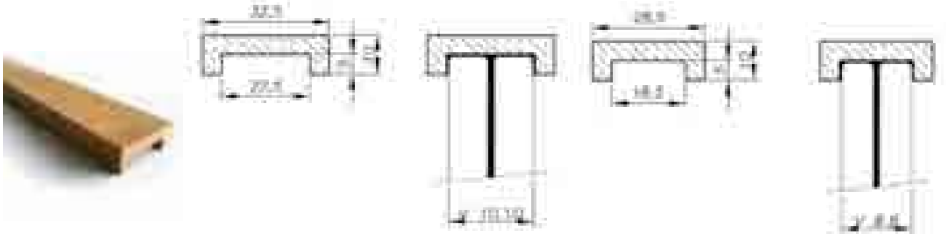


Ref. : 010201708300 – 2.5m (aluminum)
Ref. : 010201708600 – 5m (aluminum)

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

Ref. : 010201810300A4 (316 stainless steel)

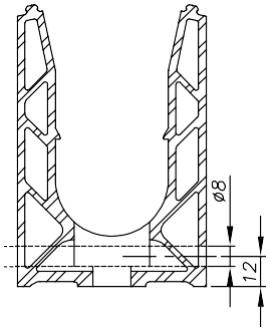
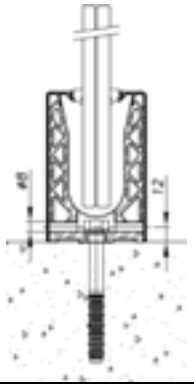
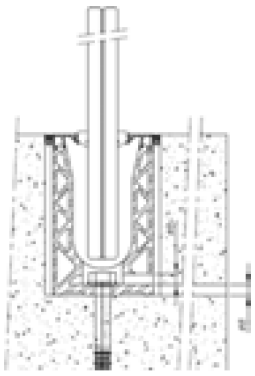
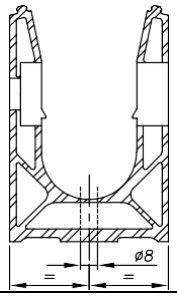
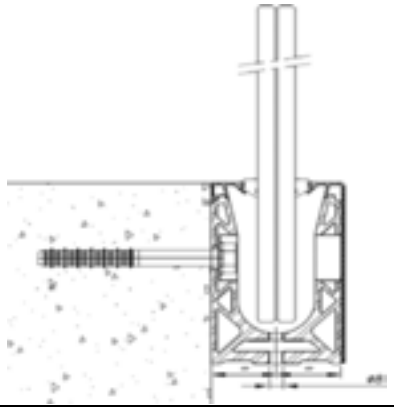
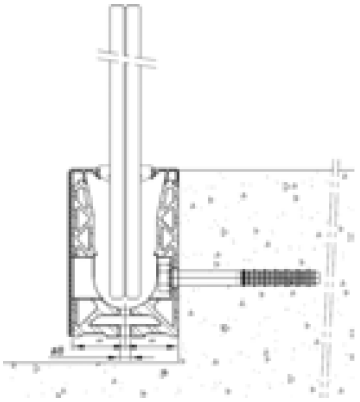
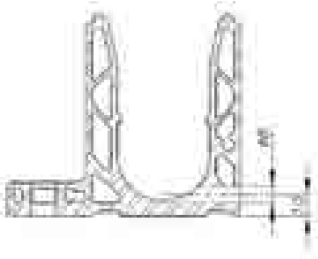
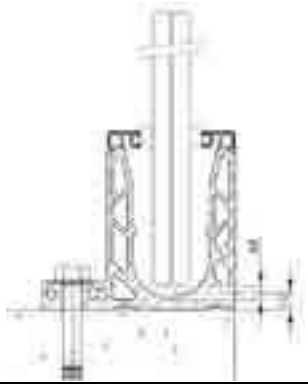
Ref. : 010202210300A4 (316 stainless steel)



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

Ref. : 0010203210240W20 (raw beech) indoors only
Ref. : 0010203210240W10 (raw oak) only indoors

Figure 35 – Example of glazing edge protection profiles

 	***Drainage 7010 /7030 / 7019***
	***Engraved model drainage***
  	***Drainage 7011 / 7011R /7031 / 7031R***
 	***Drainage 7017 / 7017R***

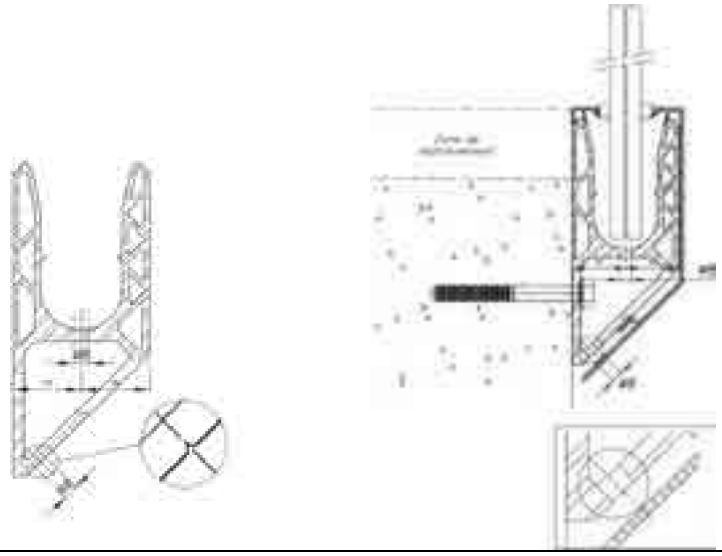
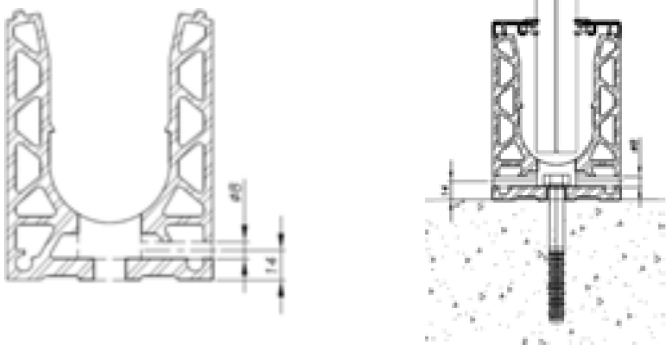
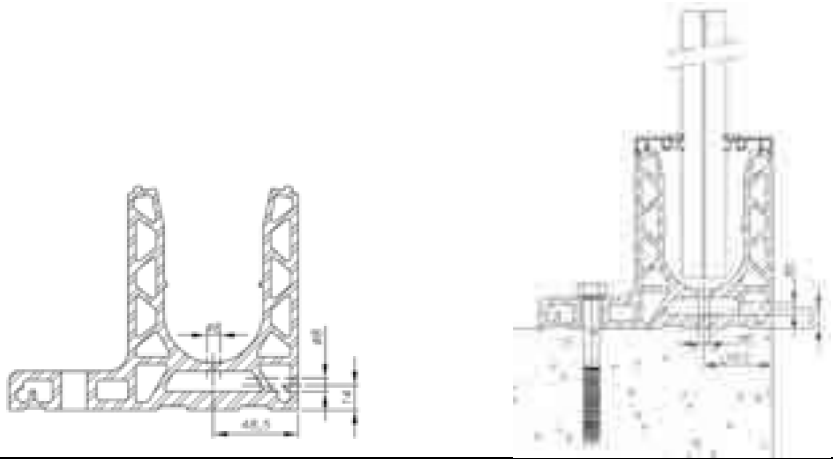
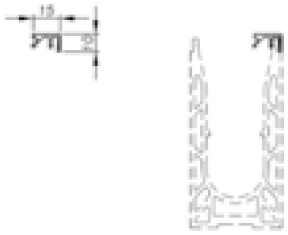
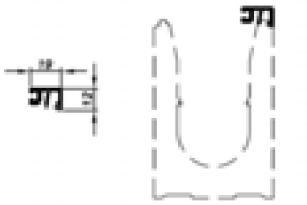
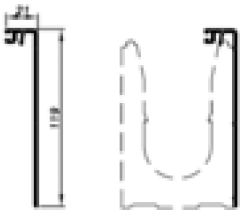
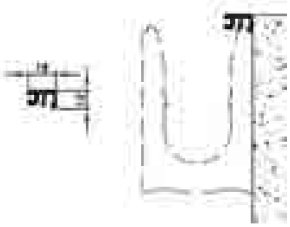
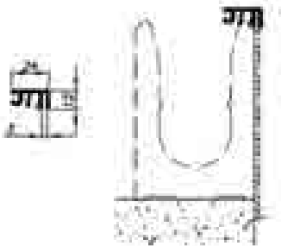
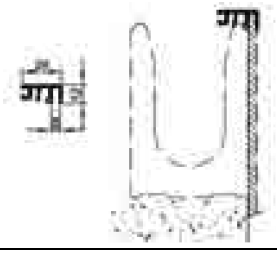
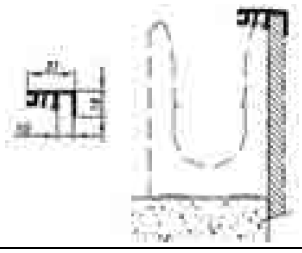
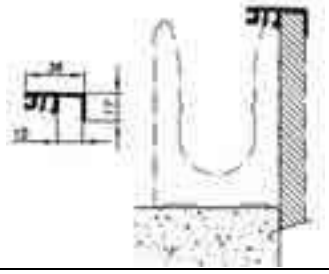
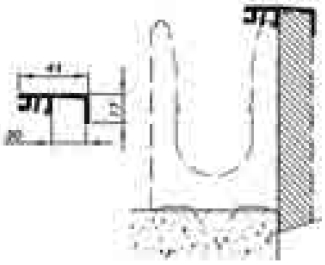
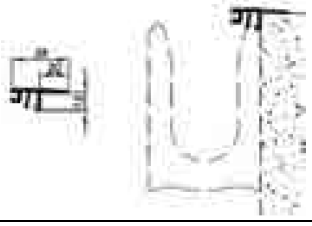
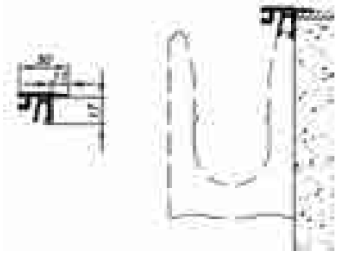
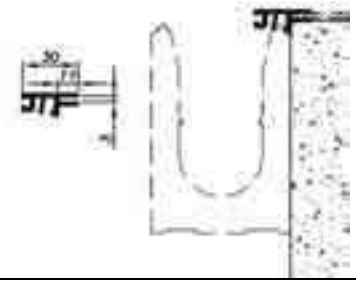
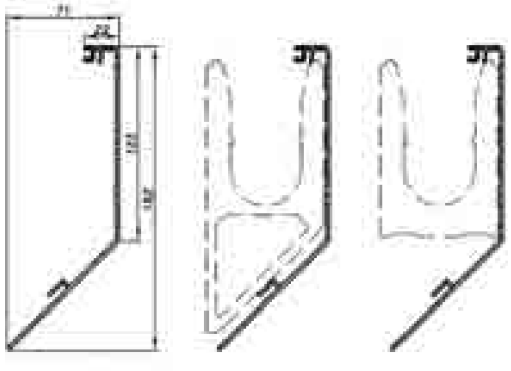
	***Drainage 7013***
	***Drainage 7018***
	***Drainage 7018L***

Table 45 - Drainage

Visual	Reference	Compatible profile
	0080CAPO252	UniquelySW -8050
	0070CAPO217	All profiles except SW – 8050 and 7018 / 7018L
	0070CAPO209	All profiles except SW – 8050 and 7018 / 7018L
	0070CAPO210	All profiles except SW – 8050 and 7018 / 7018L
	0070CAPO213	All profiles except SW – 8050 and 7018 / 7018L
	0070CAPO225	All profiles except SW – 8050 and 7018 / 7018L
	0070CAPO214	All profiles except SW – 8050 and 7018 / 7018L

	0070CAPO215	All profiles except SW – 8050 and 7018 / 7018L
	0070CAPO216	All profiles except SW – 8050 and 7018 / 7018L
	0070CAPO204	All profiles except SW – 8050 and 7018 / 7018L
	0070CAPO212	All profiles except SW – 8050 and 7018 / 7018L
	0070CAPO211	All profiles except SW – 8050 and 7018 / 7018L
	0070CAPO226	All profiles except SW – 8050 and 7018 / 7018L

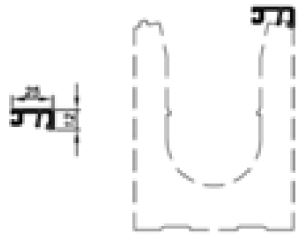
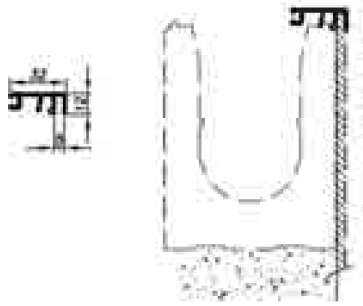
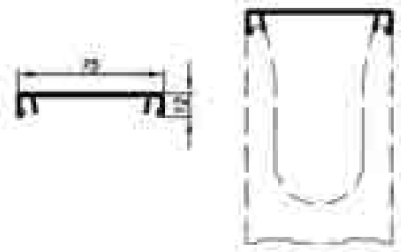
	0070CAPO222	Uniquely7018 and 7018L
	0070CAPO223	Uniquely7018 and 7018L
	0070CAPO221	All profiles except SW – 8050 and 7018 / 7018L

Table 46 - Finishing cap

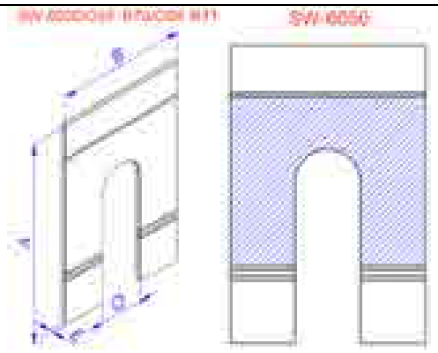
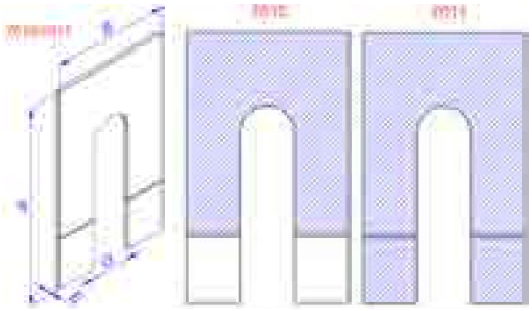
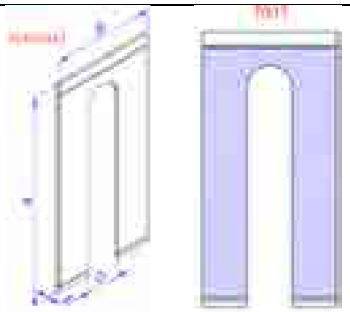
Reference	Profile used	HAS (mm)	B (mm)	O (mm)	E (mm)	Pictures:
007SHIM092E10	SW-8050	52	60	20	1	
007SHIM092E20					2	
007SHIM092E30					3	
007SHIM101E10	7010	75	60	20	1	
--	7011	101	--	--	--	
007SHIM101E20	7010	75	60	20	2	
--	7011	101	--	--	--	
007SHIM101E30	7010	75	60	20	3	
--	7011	101	--	--	--	
007SHIM124E10	7017	113	60	20	1	
007SHIM124E20					2	
007SHIM124E30					3	
007SHIM162E10	7013	162	60	20	1	
007SHIM162E20					2	
007SHIM162E30					3	

Table 47 - Fork shim dimensions and references

Application	References		Concrete edge distance C20/25		Concrete edge distance C30/37		Max center distan	Min thickness. of the slab	ETA
	Indoors (Zinc	Outside (Stainles	Galvan	Stainles	Galvan	Stain			
0.6kN/ml	NBF II 12	FBN II 12 R	90	90	70	70	300	200	ETA-07/0211 ETA-18/0101
	FBS II 10x100 US	FBS II 10x100 US R	80	90	70	70	300	200	ETA-15/0352
	FH II 15 - M10	FH II 15 R - M10	90	90	70	70	300	200	ETA-07/0025
	RSB 12 + RG 16x90 M10 I (+ screw M10-8.8)	RSB 12 + RG 16x90 M10 IR (+ screw M10-A4-70)	65	65	65	65	300	200	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)	130	-	100	-	300	200	ETA-12/0258
	FIS EM PLUS + rod M12 5.8 he f = 120	FIS EM PLUS + rod M12 A4-70 hef = 120	110	110	80	80	300	200	ETA-17/0979

Table 48 – Example of possible anchoring for models laid on ground on slab SW - 8050

Application	FISCHER references		Concrete edge distance C20/25		Concrete edge distance C30/37		Max center distance.	Min thickness. of the slab	ETA
	Indoors (Zinc	Outdoors (Stainless steel)	Galvan	Stain	Galvan	Stain			
0.6kN/ml	NBF II 10	NBF II 10 R	75	75	55	55	400	120	ETA-07/0211 ETA-18/0101
	NBF II 12	FBN II 12 R	70	70	70	70	400	120	ETA-07/0211 ETA-18/0101
	FBS II 10x100 US	FBS II 10x100 US R	85	85	60	60	800	150	ETA-15/0352
	FH II 15 - M10	FH II 15 R - M10	90	90	70	70	800	180	ETA-07/0025
	RSB 12 + RG 16x90 M10 I (+ screw M10-8.8)	RSB 12 + RG 16x90 M10 IR (+ M10-A4-70 screws)	65	65	65	65	800	140	ETA-12/0258
1kN/ml	FBS II 10x100 US	FBS II 10x100 US R	95	95	70	70	400	200	ETA-15/0352
	FH II 18 - M12	FH II 18 R - M12	85	85	80	80	400	200	ETA-07/0025
	RSB 12 + RG 16x90 M10 I (+ screw M10-8.8)	RSB 12 + RG 16x90 M10 IR (+ M10-A4-70 screws)	65	65	65	65	400	140	ETA-12/0258

Table 49 – Example of possible anchoring for models laid on floor on slab 7010 / 7030

Application	FISCHER references		Concrete edge distance C20/25		Concrete edge distance C30/37		Max center distance.	Min thickness. of the slab	ETA
	Indoors (Zinc	Outdoors (Stainless steel)	Galvan	Stain	Galvan	Stain			
0.6kN/ml	NBF II 10	NBF II 10 R	50	55	50	55	200	110	ETA-07/0211 ETA-18/0101
	FBS II 10x100 US	FBS II 10x100 US R	50	50	40	40	200	80	ETA-15/0352
	RSB 12 + RG 16x90 M10 I (+ screw M10-8.8)	RSB 12 + RG 16x90 M10 IR (+ M10-A4-70 screws)	65	65	65	65	200	130	ETA-12/0258
1kN/ml	NBF II 10	NBF II 10 R	50	55	50	55	200	110	ETA-07/0211 ETA-18/0101
	FBS II 10x100 US	FBS II 10x100 US R	40	40	40	40	200	120	ETA-15/0352
	RSB 12 + RG 16x90 M10 I (+ screw M10-8.8)	RSB 12 + RG 16x90 M10 IR (+ M10-A4-70 screws)	65	65	65	65	200	130	ETA-12/0258

Table 50 – Example of possible anchoring for side-mounted models 7011 / 7031

Application	FISCHER references		Concrete edge distance C20/25		Concrete edge distance C30/37		Max center distan	Min thicknes s. of the slab	ETA
	Indoors (Zinc	Outside (Stainles	Galvan	Stain	Galvan	Stain			
0.6kN/ml	NBF II 10	NBF II 10 R	50	55	50	55	200	120	ETA-07/0211 ETA-18/0101
	FBS II 10x100 US	FBS II 10x100 US R	40	40	40	40	200	80	ETA-15/0352
	RSB 12 + RG 16x90 M10 I (+ screw M10-8.8)	RSB 12 + RG 16x90 M10 IR (+ screw M10-A4-70)	65	65	65	65	200	130	ETA-12/0258
1kN/ml	NBF II 10	NBF II 10 R	50	55	50	55	200	120	ETA-07/0211 ETA-18/0101
	FBS II 10x100 US	FBS II 10x100 US R	40	40	40	40	200	120	ETA-15/0352
	RSB 12 + RG 16x90 M10 I (+ screw M10-8.8)	RSB 12 + RG 16x90 M10 IR (+ screw M10-A4-70)	65	65	65	65	200	130	ETA-12/0258

Table 51 – Example of possible anchoring for inverted lateral installation models 7011R / 7031R

Application	FISCHER references		Concrete edge distance C20/25		Concrete edge distance C30/37		Max center distan	Min thickness . of the slab	ETA
	Indoors (Zinc	Outside (Stainles	Galvan	Stainle	Galvani	Stain			
0.6kN/ml	NBF II 10	NBF II 10 R	55	55	55	55	200	120	ETA-07/0211 ETA-18/0101
	FBS II 10x100 US	FBS II 10x100 US R	80	80	80	80	400	170	ETA-15/0352
	FH II 15 - M10	FH II 15 R - M10	80	80	80	80	200	200	ETA-07/0025
	RSB 12 + RG 16x90 M10 I (+ screw M10-8.8)	RSB 12 + RG 16x90 M10 IR (+ screw M10-A4-70)	65	65	65	65	400	200	ETA-12/0258
1kN/ml	NBF II 10	NBF II 10 R	-	-	80	80	200	200	ETA-07/0211 ETA-18/0101
	FBS II 10x100 US	FBS II 10x100 US R	70	70	70	70	200	200	ETA-15/0352
	FH II 15 - M10	FH II 15 R - M10	100	100	100	100	200	200	ETA-07/0025
	RSB 12 + RG 16x90 M10 I (+ screw M10-8.8)	RSB 12 + RG 16x90 M10 IR (+ screw M10-A4-70)	75	75	75	75	200	200	ETA-12/0258

Table 52 – Example of possible anchoring for 7013 offset side mounting models

Application	FISCHER references		Concrete edge distance C20/25		Concrete edge distance C30/37		Max center distan	Min thickness . of the slab	ETA
	Indoors (Zinc	Outside (Stainles	Galvan	Stain	Galvan	Stain			
0.6kN/ml	NBF II 12	FBN II 12 R	80	80	70	70	400	200	ETA-07/0211 ETA-18/0101
	FBS II 10x120 US	FBS II 10x120 US R	60	60	60	60	400	200	ETA-15/0352
	FH II 15 - M10	FH II 15 R - M10	70	70	70	70	400	200	ETA-07/0025
	RSB 12 + RG 16x90 M10 I (+ screw M10-8.8)	RSB 12 + RG 16x90 M10 IR (+ screw M10-A4-70)	65	65	65	65	400	200	ETA-12/0258
1kN/ml	FBS II 10x120 US	FBS II 10x120 US R	60	60	60	60	400	200	ETA-15/0352
	FH II 18 - M12	FH II 18 R - M12	80	80	80	80	400	200	ETA-07/0025
	RSB 12 + RG 16x90 M10 I (+ screw M10-8.8)	RSB 12 + RG 16x90 M10 IR (+ screw M10-A4-70)	65	65	65	65	400	200	ETA-12/0258
	FIS EM PLUS + rod M12 5.8 Depthof Example anchor 100mm	FIS EM PLUS + rod M12 A4-70 Depthof Example anchor 100mm	45	45	45	45	400	200	ETA-17/0979

Table 53 – Example of possible anchoring for models laid on floor on offset slab 7017

Application	FISCHER references		Concrete edge distance C20/25		Concrete edge distance C30/37		Max center distan	Min thickness. of the slab	ETA
	Indoors (Zinc	Outside (Stainles	Galvan	Stainle	Galvani	Stain			
0.6kN/ml	NBF II 12	FBN II 12 R	-	-	85	85	400	200	ETA-07/0211 ETA-18/0101
			85	85	70	70	200	200	
	FBS II 10x120 US	FBS II 10x120 US R	-	-	80	80	400	200	ETA-15/0352
			52	52	40	40	200	200	
	FH II 15 - M10	FH II 15 R - M10	110	110	80	80	400	200	ETA-07/0025
			80	80	70	70	200	250	
	RSB 12 + RG 16x90 M10 I (+ screw M10-8.8)	RSB 12 + RG 16x90 M10 IR (+ screw M10-A4-70)	75	75	65	65	400	200	ETA-12/0258
			87	87	87	87	200	250	
1kN/ml	FBS II 10x120 US	FBS II 10x120 US R	-	-	85	85	200	200	ETA-15/0352
	FH II 15 - M10	FH II 15 R - M10	-	-	160	160	200	250	ETA-07/0025
	RSB 12 + RG 18x125 M12 I (+ screw M12-8.8)	RSB 12 + RG 18x125 M12 IR (+ screw M12- A4-70)	115	-	85	-	400	200	ETA-12/0258
	RSB 12 + RG 16x90 M10 I (+ screw M10-8.8)	RSB 12 + RG 16x90 M10 IR (+ screw M10-A4-70)	150	150	87	87	200	250	ETA-12/0258
	FIS EM PLUS + rod M12 8.8 Depthof Example anchor 100mm	FIS EM PLUS + rod M12 A4-70 Example anchor depth 100mm	-	-	115	-	400	200	ETA-17/0979
			150	150	87	87	200	250	

Table 54 – Example of possible anchoring for models laid on floor on slab inverted offset 7017R

Application	FISCHER references		Concrete edge distance C20/25		Concrete edge distance C30/37		Max center distan	Min thickness. of the slab	ETA
	Indoors (Zinc	Outside (Stainles	Galvan	Stain	Galvani	Stain			
1kN/ml	NBF II 12	FBN II 12 R	70	70	70	70	200	200	ETA-07/0211 ETA-18/0101
	FBS II 10x100 US	FBS II 10x100 US R	40	40	40	40	200	200	ETA-15/0352
	FH II 15 - M10	FH II 15 R - M10	70	70	70	70	200	200	ETA-07/0025
	RSB 12 + RG 16x90 M10 I (+ screw M10-8.8)	RSB 12 + RG 16x90 M10 IR (+ screw M10-A4-70)	65	65	65	65	200	200	ETA-12/0258
3 kN/ml	FBS II 10x120 US	FBS II 10x120 US R	-	-	100	100	200	200	ETA-15/0352
	RSB 12 + RG 16x90 M10 I (+ screw M10-8.8)	-	-	-	110	-	200	250	ETA-12/0258
	RSB 12 + RG 18x125 M12 I (+ screw M12-8.8)	RSB 12 + RG 18x125 M12 IR (+ screw M12- A4-70)	-	-	110	110	200	250	ETA-12/0258
	FIS EM PLUS + rod M12 5.8 Depthof Example anchor 100mm	FIS EM PLUS + rod M12 A4-70 Example anchor depth 100mm	-	-	110	110	200	200	ETA-17/0979

Table 55 – Example of possible anchoring for models laid on floor on slab 7018

Application	**FISCHER references**		**Concrete edge distance C20/25**		**Concrete edge distance C30/37**		**Max center distan**	**Min thickness. of the slab**	**ETA**
	Indoors (Zinc	**Outside (Stainles**	**Galvan**	**Stain**	**Galvani**	**Stain**			
1kN/ml	NBF II 12	FBN II 12 R	70	70	70	70	200	200	ETA-07/0211 ETA-18/0101
	FBS II 10x120 US	FBS II 10x120 US R	40	40	40	40	200	200	ETA-15/0352
	FH II 15 - M10	FH II 15 R - M10	70	70	70	70	200	200	ETA-07/0025
	RSB 12 + RG 16x90 M10 I (+ screw M10-8.8)	RSB 12 + RG 16x90 M10 IR (+ screw M10-A4-70)	65	65	65	65	200	200	ETA-12/0258
3 kN/ml	FBS II 10x120 US	FBS II 10x120 US R	75	75	65	65	200	200	ETA-15/0352
	FH II 15 - M10	FH II 15 R - M10	95	95	85	85	200	200	ETA-07/0025
	RSB 12 + RG 16x90 M10 I (+ screw M10-8.8)	RSB 12 + RG 16x90 M10 IR (+ screw M10-A4-70)	75	75	65	65	200	200	ETA-12/0258
	FIS EM PLUS + rod M12 5.8 DepthExample anchor 70mm	FIS EM PLUS + rod M12 A4-70 Example anchor depth 70mm	75	75	70	70	200	200	ETA-17/0979

Table 56 – Example of possible anchoring for models laid on floor on slab offset 7018L

Application	FISCHER references		Concrete edge distance C20/25		Concrete edge distance C30/37		Max center distan	Min thickness. of the slab	ETA
	Indoors (Zinc	Outside (Stainles	Galvan	Stai	Galvan	Stainles			
1kN/ml	NBF II 10	NBF II 10 R	55	55	55	55	150	200	ETA-07/0211 ETA-18/0101
	FBS II 10x100 US	FBS II 10x100 US R	40	40	40	40	150	200	ETA-15/0352
	FH II 15 - M10	FH II 15 R - M10	70	70	70	70	150	200	ETA-07/0025
	RSB 12 + RG 16x90 M10 I (+ screw M10-8.8)	RSB 12 + RG 16x90 M10 IR (+ screw M10-A4-	65	65	65	65	150	200	ETA-12/0258
3 kN/ml	FIS EM PLUS + rod M12 5.8 Depth of Example anchorage	FIS EM PLUS + rod M12 A4-70 Depth of Example anchorage	-	-	300	300	150	300	ETA-17/0979

Table 57 – Example of possible anchoring for floor standing models 7019