



BDLsystem

BDL10 - BDL16

VERSION *02*
EDITION *12.2006*

Technical Office

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BDLsystem

INTRODUCTION

BDLsystem is a system of modular panels used to create pitched and curved transparent roofing.

It consists of a multiwall polycarbonate panel called BDL10 or BDL16, aluminium profiles, rubber joints, stainless steel anchoring hooks and accessories.

Thanks to its range of accessories the system is complete and versatile, easy to install and safe as regards external loads and atmospheric agents.

Being protected around its entire perimeter, the panel can be fitted with an external snap-on profile or an internal snap-on profile. In order to achieve the best possible performance, it is recommended that you use the polycarbonate snap-on for assembly with the profile outside (flat surface inside) and the metal snap-ons (aluminium or steel) for assembly with the flat surface on the outside.

Specifications

For BDL10

Construction of transparent roofing with BDL10 system made up of:

- Panel in multiwall polycarbonate, co-extruded on both sides for UV-protection, four-wall structure, thickness 10mm, weight 2.2 kg/m^2 , thermal insulation $2.6 \text{ W/m}^2\text{K}$, clear colour (opal or smoke-grey), dimensions: module width 600 mm, length (to be defined), ten-year guarantee against hail, loss of light transmission and yellowing.
- Polycarbonate snap-on profile, UV-protected around perimeter (alternatively snap-on profile in silver-coloured anodised aluminium (15 micron minimum) or prepainted white/grey STEEL Snap-on profile).
- Stainless steel (AISI 304) anchoring hooks.
- Retaining profiles in silver-coloured anodised aluminium (15 micron minimum).

For BDL16

Construction of transparent roofing with BDL16 system made up of:

- Panel in multiwall polycarbonate, co-extruded on both sides for UV-protection, four-wall structure, thickness 16mm, weight 2.9 kg/m^2 , thermal insulation $2.1 \text{ W/m}^2\text{K}$, clear colour (opal or smoke-grey), dimensions: module width 600 mm, length (to be defined), ten-year guarantee against hail, loss of light transmission and yellowing.
- Polycarbonate snap-on profile, UV-protected around perimeter (alternatively snap-on profile in silver-coloured anodised aluminium (15 micron minimum) or prepainted white/grey STEEL Snap-on profile).
- Stainless steel (AISI 304) anchoring hooks.
- Retaining profiles in silver-coloured anodised aluminium (15 micron minimum).

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IMPORTANT: The data in this literature have been gathered to assist the client during design and installation. It has been drafted on the basis of our best knowledge and may be modified without any obligation to give prior notice.
The information herein is not binding and does not exempt the client from performing his own checks to verify the suitability of the products for their intended use.
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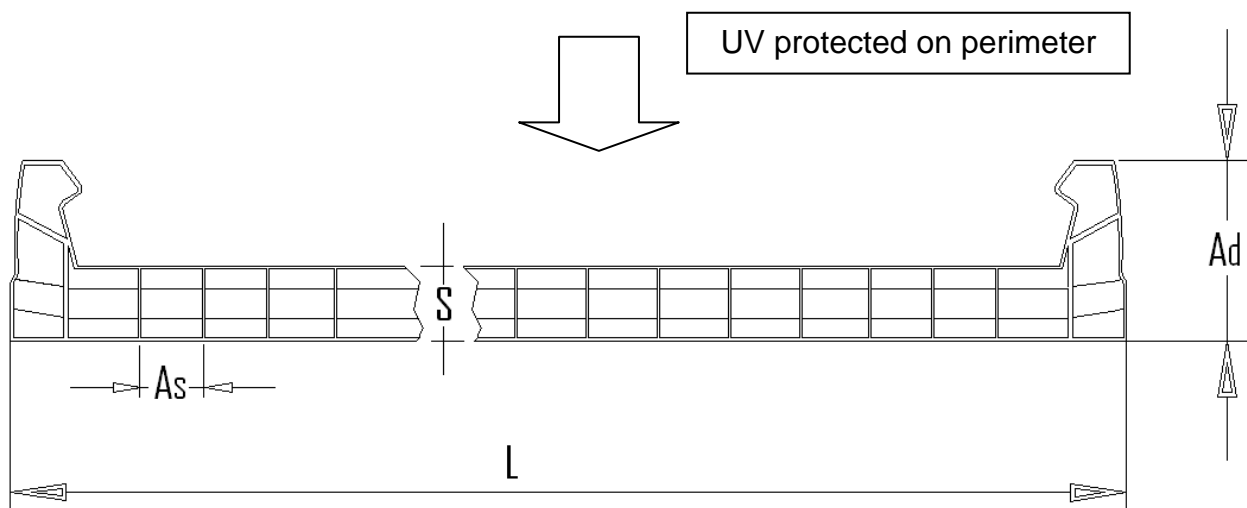
1 SYSTEM COMPONENTS

1.1 BDL Panel

BDL is a multiwall panel in extruded polycarbonate, co-extruded on both sides for UV-protection.

The BDL panel has a connection which, by means of special snap-on profiles, enables a continuous solution to be formed. The distinguishing features of the panel are its strength, its thermal insulation, and that it is self-supporting.

1.1.1 Dimensional standards



Dimension	BDL10	BDL16	Tolerance
Thickness (s)	10 mm	16 mm	± 0.2 mm
Width (L)	600 mm	600 mm	± 2.0 mm
Rib distance (As)	9 mm	20 mm	± 0.5 mm
Catch height (Ad)	24 mm	30 mm	± 0.5 mm
Standard Length	7,000 mm 12,000 mm	12,000 mm	+30 mm ± 4 mm
Special length	on request		
Maximum length	13,500 mm only limitation due to transportation		
Standard weight	2.2 kg/m ²	2.9 kg/m ²	± 5 %
Weight upon request		3.5 kg/m ²	± 5 %

1.1.2 BDL 10 technical specifications

Thermal insulation	2.58 W/m ² °K 2.22 kcal/h m ² °C		
Colours		LT	G
	Clear (8005)	76%	68%
	Opal (8120)	48%	51%
	Ice Mist (8315)	68%	64%
	Green (8012)	64%	73%
	Blue (8022)	63%	72%
	Smoke Grey (8003)	52%	60%
	Athermic (8667)	31%	40%
UV Protection	Co-extruded on both sides		
Guarantee	Ten-year against hail, yellowing, loss of light transmission		
Continuous use temperature	-30°C +120°C		
Thermal expansion coefficient	0.065 mm/m °C (6.5×10 ⁻⁵ m/m °K)		
Fire resistance class	Available		

LT = light transmission

G = solar energy transmitted

1.1.3 BDL 16 technical specifications

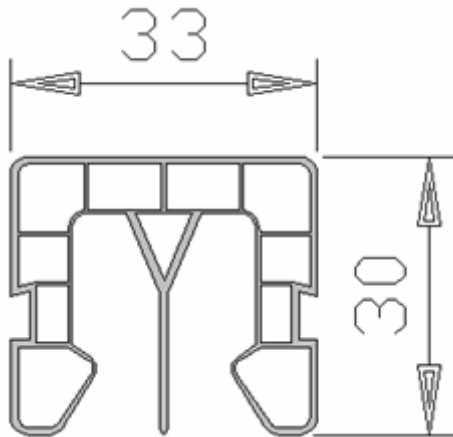
Thermal insulation	2.15 W/m ² °K 1.85 kcal/h m ² °C		
Colours		LT	G
	Clear (8005)	65%	68%
	Opal (8120)	41%	48%
	Ice Mist (8315)	50%	59%
	Green (8012)	61%	65%
	Blue (8022)	60%	64%
	Smoke-Grey (8003)	45%	57%
	Athermic (8667)	17%	34%
UV Protection	Co-extruded on both sides		
Guarantee	Ten-year against hail, yellowing, loss of light transmission		
Continuous use temperature	-30°C +120°C		
Thermal expansion coefficient	0.065 mm/m °C (6.5×10 ⁻⁵ m/m °K)		
Fire Resistance Class	Available		

LT = light transmission

G = solar energy transmitted

1.2 Snap-on profiles

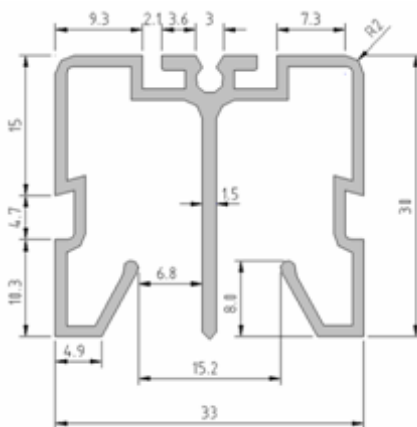
1.2.1 SNAP-ON in polycarbonate (code J443)



The polycarbonate snap-on is used to connect two BDL10 (or BDL16) panels. This snap-on is co-extruded on its outer sides for UV-protection.

TECHNICAL INFORMATION	
Length	7000 mm or upon request
Weight	0.210 kg/lm

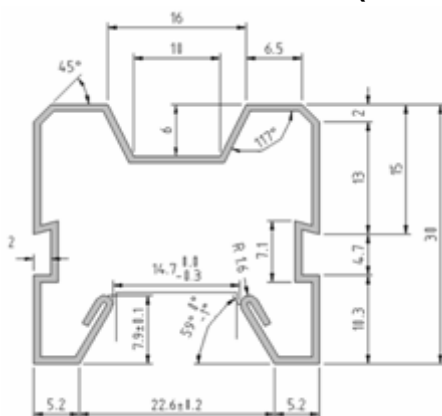
1.2.2 SNAP-ON in aluminium (code M9RA)



The aluminium snap-on is used to connect two BDL10 (or BDL16) panels.

TECHNICAL INFORMATION	
Length	6000 mm
Aluminium alloy	6060 (UNI EN 573-3)
Area	211 mm ²
Weight	0.568 kg/lm
Anodization	15 μ
Tolerances	UNI 3879

1.2.3 SNAP-ON in steel (code M9TB)



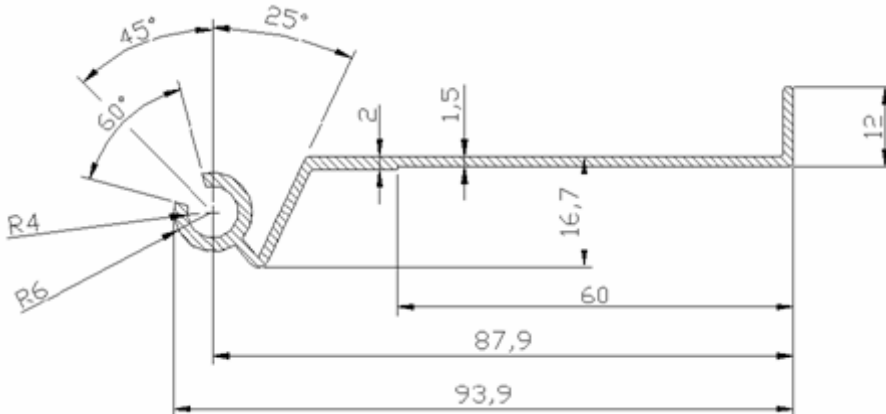
The STEEL Snap-on is used to connect two BDL10 (or BDL16) panels.

TECHNICAL INFORMATION	
Length	7500 mm
Steel	Fe P 02 (UNI 5961/EU 140)
Extension	125 mm
Weight	0.924 kg/lm

1.3 Aluminium profiles

The designs and assembly systems using the profiles described in this paragraph are shown in subsequent paragraphs (Assembly instructions and Cross-sections)

1.3.1 Fixed sill (code M9R6)



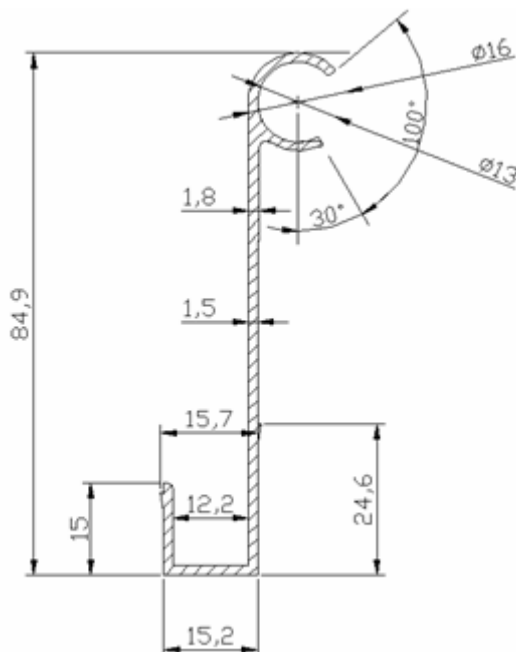
The fixed sill is used to connect the BDL10 (or BDL16) system to the existing structure (reinforced concrete edge beam or metal base).

The sill has a round catch where the revolving sill (M9R7), the 40 mm sill (M9R8) and the 46 mm sill (M9T6) is connected

The position of the catch below the support line together with the small vertical flap prevents any water from flowing back, making the seal safe.

TECHNICAL INFORMATION	
Length	6500 mm
Aluminium alloy	6060 (UNI EN 573-3)
Area	217 mm ²
Weight	0.586 kg/lm
Anodization	15 μ
Tolerances	UNI 3879

1.3.2 Revolving sill (code M9R7)

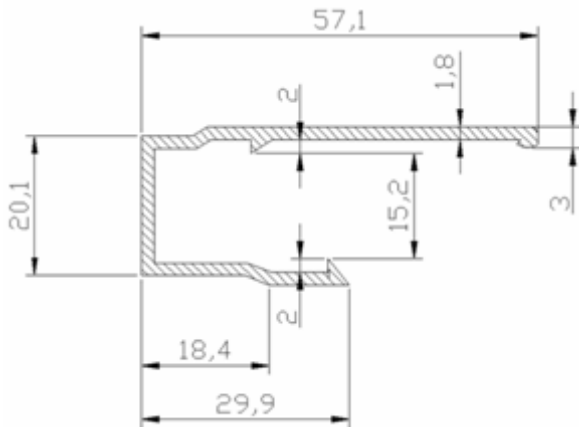


Connected to the fixed sill, the revolving sill is used to create any springing angle.

TECHNICAL INFORMATION	
Length	6500 mm
Aluminium alloy	6060 (UNI EN 573-3)
Area	267 mm ²
Weight	0.563 kg/lm
Anodization	15 μ
Tolerances	UNI 3879

The round catch allows it to be oriented to angles of between 5° and 90°. In the 90° position it can be used as the base for the gable. This sill is used when assembly requires the use of the external snap-on.

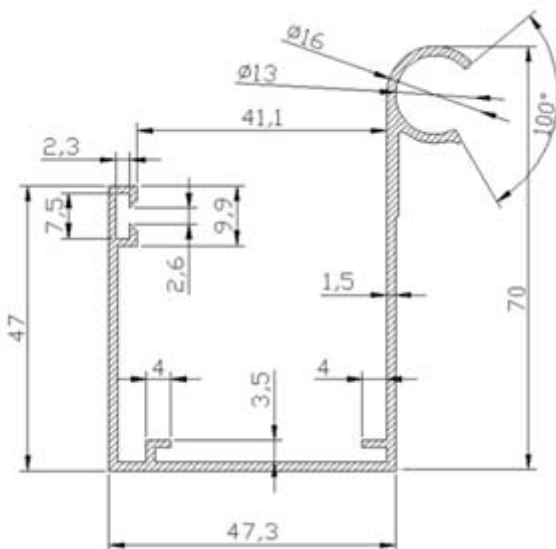
1.3.3 Clip for 10mm sheet (code M9R4) for BDL 10



The clip, suitably cut to a length of 565mm, holds the sheet to the sill. The snap-lock catches enable easy coupling to the sill (M9R7).

TECHNICAL INFORMATION	
Length	5700 mm
Aluminium alloy	6060 (UNI EN 573-3)
Area	194 mm ²
Weight	0.524 kg/lm
Anodization	15 μ
Tolerances	UNI 3879

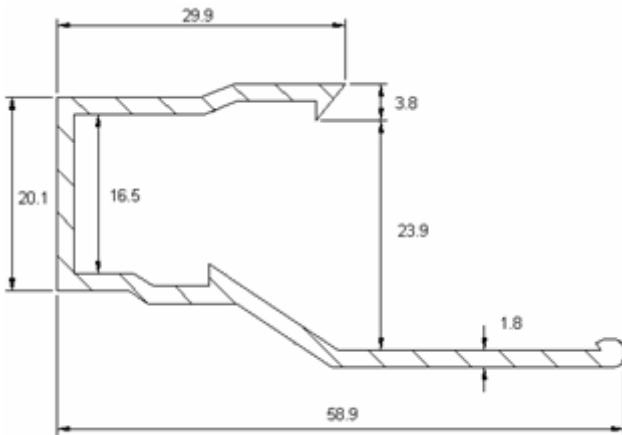
1.3.4 40mm revolving sill (code M9R8) for BDL10



The 40mm revolving sill is used in connection with the fixed sill to create any springing angle. The round catch allows it to be oriented to angles of between 5° and 90°. In the 90° position it can be used as the base for the gable. This sill completes the solution created assembling the snap-on on the inside (aluminium and steel profiles).

TECHNICAL INFORMATION	
Length	6500 mm
Aluminium alloy	6060 (UNI EN 573-3)
Area	306 mm ²
Weight	0.827 kg/lm
Anodization	15 μ
Tolerances	UNI 3879

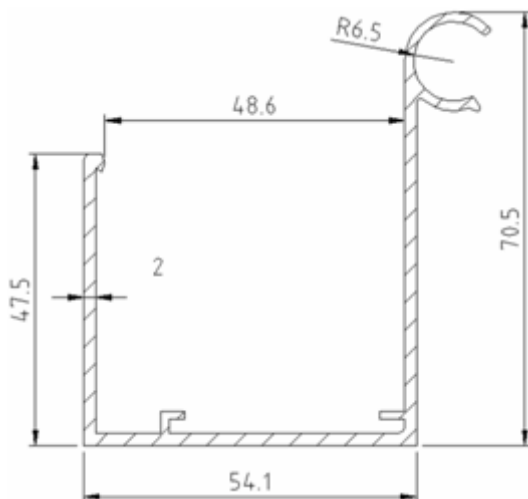
1.3.5 Clip for 16mm sheet (code M9R5) for BDL 16



The clip, suitably cut to a length of 565mm, holds the sheet to the sill. The snap-lock catches enable easy coupling to the sill (M9R7).

TECHNICAL INFORMATION	
Length	5700 mm
Aluminium alloy	6060 (UNI EN 573-3)
Area	198 mm ²
Weight	0.534 kg/lm
Anodization	15 μ
Tolerances	UNI 3879

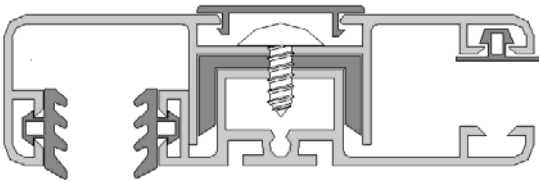
1.3.6 46mm revolving sill (code M9T6) for BDL16



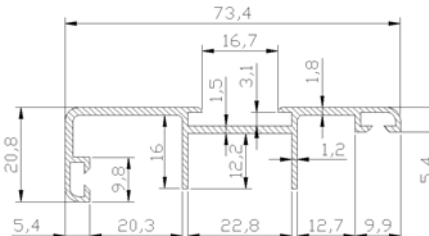
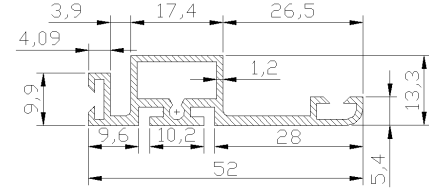
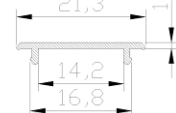


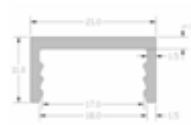


The 46mm revolving sill is used in the solution where the snap-ons are fitted internally (aluminium and steel profiles) in connection with the fixed sill to create any springing angle. The round catch allows it to be oriented to angles of between 5° and 90° and in the 90° position it can be used as base for the gable.

TECHNICAL INFORMATION	
Length	6500 mm
Aluminium alloy	6060 (UNI EN 573-3)
Area	380 mm ²
Weight	1.026 kg/lm
Anodization	15 μ
Tolerances	UNI 3879

1.3.7 Profile for gable

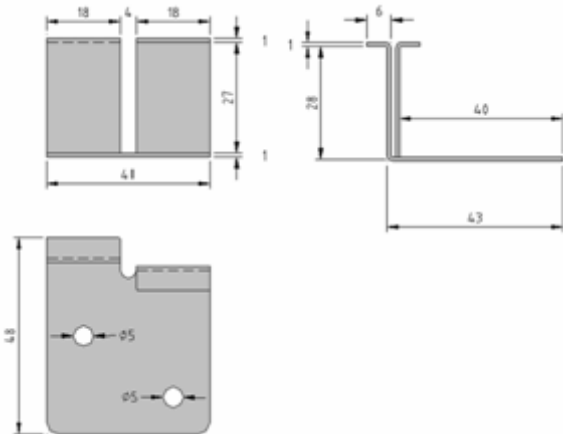


This profile is used to form the end gable or to connect the first panel (and the last) laterally. In the event that a curved solution is used, the aluminium profiles coupled must also be curved. The kit is complete with joints and screws.

COMPOSITION				
ALUMINIUM PROFILES				
Aluminium alloy	6060 (UNI EN 573-3)			
Tolerances	UNI 3879			
Anodization	15 μ	Area	Weight	Length
		Side upper profile (M9S9)		
		217 mm ²	0.585 kg/lm	6000 mm
		Side lower profile (M9T0)		
		176 mm ²	0.475 kg/lm	6000 mm
		Cap (M9T1)		
		27 mm ²	0.072 kg/lm	6000 mm
JOINTS				
Material	Rubber EP/TN			
Tolerances	ISO 3302 CL E2			
		Area	Weight	Quantity
Joint thickness 1 mm (M9S3)		15 mm ²	12 g/lm	As required
Joint thickness 3 mm (M9S5)		30 mm ²	37 g/lm	As required
Thermal cut (M9T5)		73 mm ²	88 g/lm	As required
Screw 4.2 x 13 mm (M9T3)				One every 500 mm
Gasket (M9Z9)			0.9 g/each	One every 500 mm

1.4 Accessories

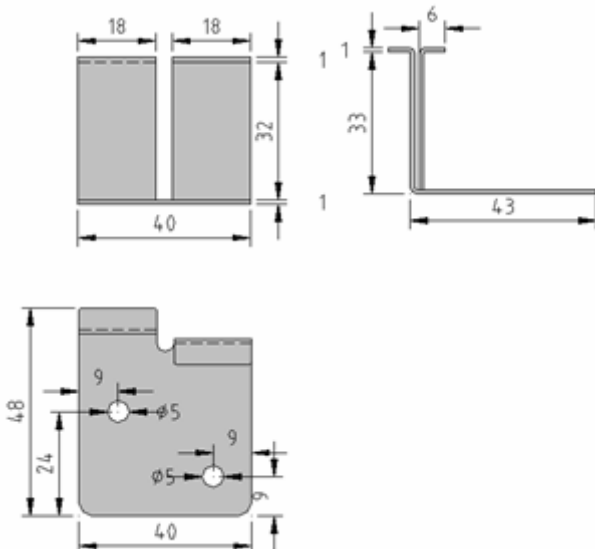
1.4.1 BDL10 fixing hook with snap-on outside (code M9S2)



This hook, made from stainless steel, is used to anchor the panel/joint system to the load-bearing structure. The support structure must have a minimum width of 50mm. The hook must be placed on all of the crosspieces next to each intersection with the snap-ons. The maximum distance between the intersections must be calculated based on the estimated load. Fastening must be by means of two screws that are appropriate for the type of support (fastenings for wood, self-drilling or self-tapping for steel etc.).

TECHNICAL INFORMATION	
Dimensions	mm 43x40x29(h)
Holes for screws	2 holes \varnothing 5 mm
Stainless steel	AISI 304

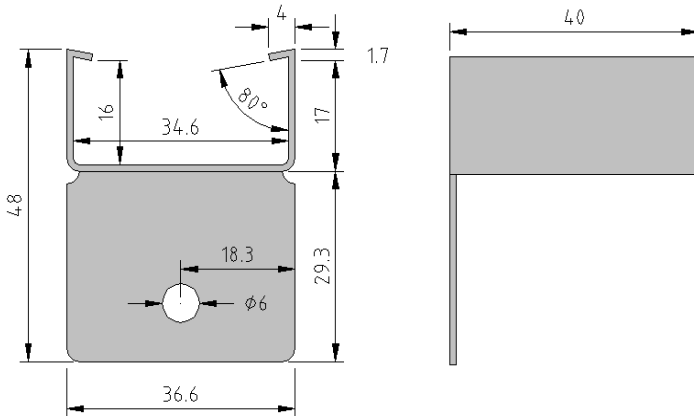
1.4.2 BDL16 fixing hook with snap-on outside (code M9U7)



This hook, made from stainless steel, is used to anchor the panel/joint system to the load-bearing structure. The support structure must have a minimum width of 50mm. The hook must be placed on all of the crosspieces next to each intersection with the snap-ons. The maximum distance between the intersections must be calculated based on the estimated load. Fastening must be by means of two screws that are appropriate for the type of support (fastenings for wood, self-drilling or self-tapping for steel etc.).

TECHNICAL INFORMATION	
Dimensions	mm 43x40x33(h)
Holes for screws	2 holes \varnothing 5 mm
Stainless steel	AISI 304

1.4.3 BDL10 and BDL16 fixing hook with snap-on inside (code M9S1)



This stainless steel hook allows the panel joint to be anchored to the load-bearing structure.

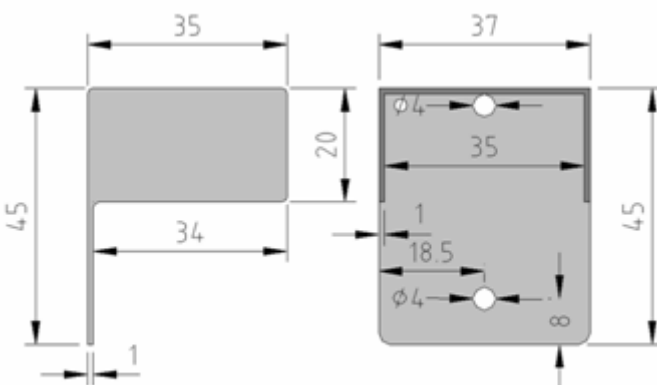
The hook must be placed above the reinforcement, which must have a flat surface of at least 50 mm and sufficient space for the screw to be tightened.

The hook must be placed on all of the crosspieces next to each intersection with the snap-ons. The maximum distance between the intersections must be calculated based on the estimated load.

Fastening must be by means of two screws that are appropriate for the support (fastenings for wood, self-drilling or self-tapping for steel etc.).

TECHNICAL INFORMATION	
Length	mm 40x36,6x48
Holes for screws	1 hole \varnothing 6 mm
Stainless steel	AISI 304

1.4.4 Stainless steel end cover (code M9T7)

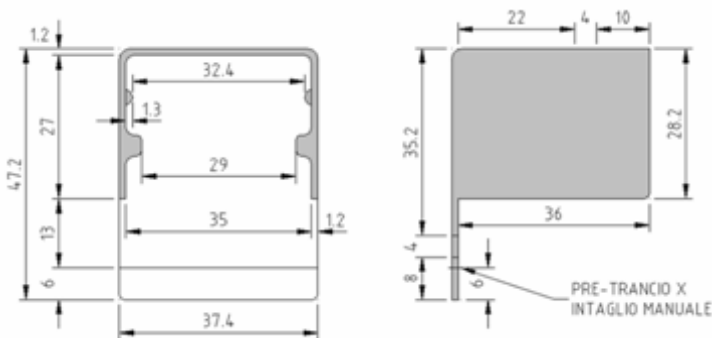


This accessory is used to close the end of the snap-on in the eaves if assembly is carried out using the snap-on on the outside.

The hole on the side allows the cover to be fastened to the PC snap-ons. The durability of the steel makes it suitable for use where greater resistance to negative pressures is required. As well as having an aesthetic finishing function, the cover also prevents dirt from entering the snap-on.

TECHNICAL INFORMATION	
Length	mm 37x35x45
Holes for screws	2 holes \varnothing 4 mm
Stainless steel	AISI 304

1.4.5 Nylon end cover (code M9TA)



This accessory is used to close the end of the snap-on in the eaves if assembly is carried out using the polycarbonate snap-on on the outside. As well as having an aesthetic finishing function, the cover also prevents dirt from entering the snap-on.

The grip of the cover is guaranteed by the friction between the panel and the internal surface. There are also

two holes required for fastening the cover so that it is solidly connected to the PC snap-on.

There is also a notch which allows the lower edge to be cut off in order to form a single lower edge from the panel and cover.

TECHNICAL INFORMATION	
Dimensions	38x48x38 mm
Holes for screws	2 holes \varnothing 4 mm
Material	Nylon PA6
Colour	Ral 7035

1.4.6 Spacer in expanded PE

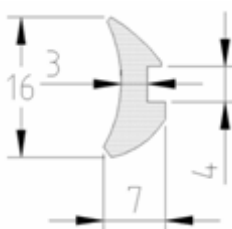


- 40 x 45 mm spacer (code M993)
- 30 x 40 mm spacer (code M9G9)

The spacers made from high-density expanded polyethylene are used, together with the 40 mm or 46 mm revolving sill, to compensate for the difference in height between the aluminium profile and the panel soffit.

TECHNICAL INFORMATION	
Length	2000 mm
Material	Expanded guarnilene

1.4.7 EPDM joint (code M998)



The EPDM rubber joint must be placed in the appropriate seating outside the upper and side profiles, lower profiles and lower sills in order to guarantee the system's water tightness.

2 LOADS AND CAPACITIES

The load diagrams refer to resistant loads for the BDL10 and BDL16 systems created using the accessories and following the procedures indicated.

The load data are divided into pressure (direction of the load acting from the outside towards the inside) and negative pressure (direction of the load acting from the inside towards the outside).

In the calculation of the external load acting upon the structure, the design engineer must check both the climatic conditions of the place in which the system will be installed and the general and specific characteristics of the structure the polycarbonate is inserted into.

Both aerodynamic aspects and roof valleys lead to a multiplication of the external loads (e.g. on the side edges of the structure the wind load has an amplification factor of 2, build-ups of snow can be expected in the roof valleys).

For these calculations refer to the specific regulations in force in each country.

In the event that the breaking value is used as a design parameter, a safety coefficient appropriate for the regulations in force and for the design criteria must be calculated.

Calculation of the actual loads, the amplification coefficients and the safety coefficients are the responsibility of the design engineer.

When assessing the functionality of the roofing, as well as checking the reduced breakage of a safety factor, the loaded deflection must also be checked. Even for normal operating loads the deflection must not create counterslopes which could compromise the water tightness.

Sources:

Istituto Giordano – Bellaria (Italy): TEST REPORT December 2001.

2.1 BDL10 SYSTEM

2.2 Load curve for BDL10 pitched solution on several supports

The situation of system breakage was taken as being the lowest value among the collapse values of the panel, of the snap-on joint or of the aluminium hook.

2.2.1 Breakage curve with pressure load BDL10

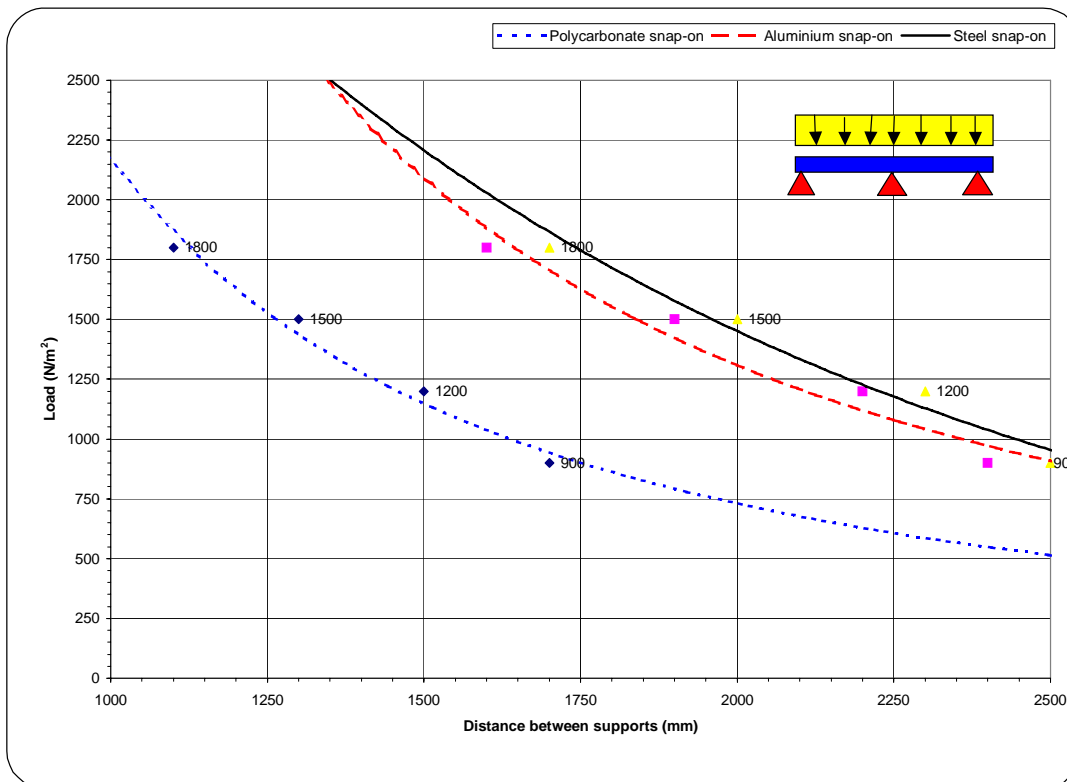


TABLE OF LOADS			
Load (N/m ²)	Maximum distance between supports		
	PC Snap-on	AL. Snap-on	STEEL Snap-on
900	1700 mm	2400 mm	2500 mm
1200	1500 mm	2200 mm	2300 mm
1500	1300 mm	1900 mm	2000 mm
1800	1100 mm	1600 mm	1700 mm

Breaking value: apply suitable safety coefficients.

2.2.2 Breakage curve with negative pressure load BDL10

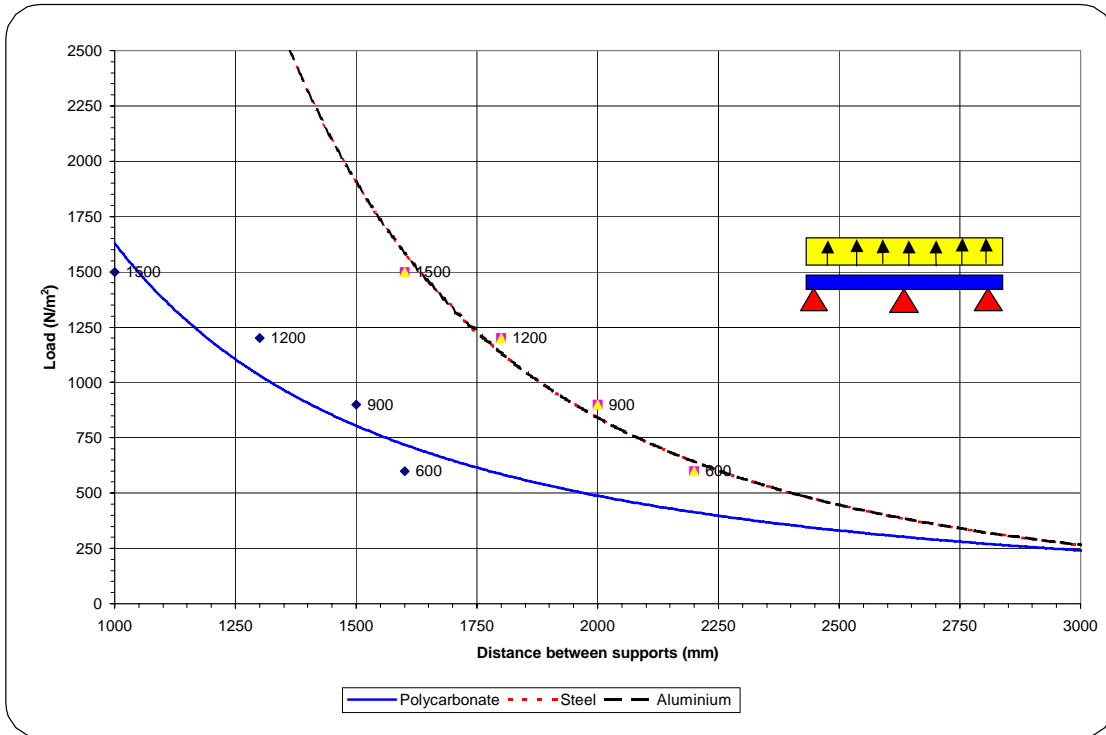


TABLE OF LOADS			
Load (N/m ²)	Maximum distance between supports		
	PC Snap-on	AL. Snap-on	STEEL Snap-on
600	1600 mm	2200 mm	2200 mm
900	1500 mm	2000 mm	2000 mm
1200	1300 mm	1800 mm	1800 mm
1500	1000 mm	1600 mm	1600 mm

Breaking values: apply suitable safety coefficients.

2.3 BDL 10 curved solution

The situation of system breakage was taken as being the lowest value among the collapse of the panel, of the snap-on joint or of the aluminium hook.

The maximum span is taken to mean the maximum distance at the base of the skylight.

The width of the support edge beams and the external edge of the system must therefore be added to the net span of the hole.

The minimum radius of curvature of the BDL10 panel is equal to 2200 mm. Any solution involving smaller radii should be avoided.

2.3.1 Breakage curve with pressure load BDL10

Radius of curvature 2200 mm

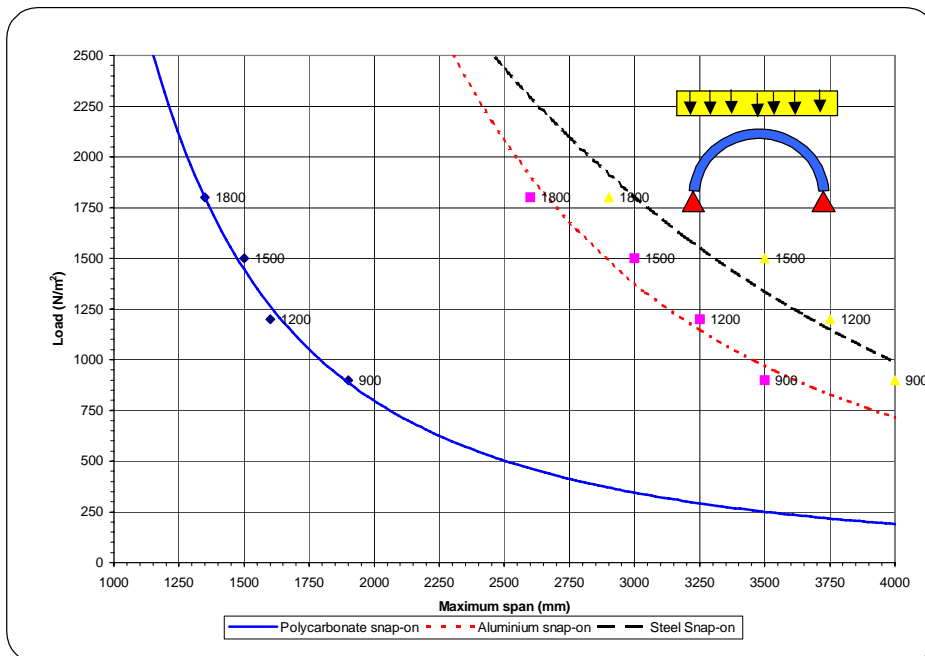


TABLE OF LOADS			
Load (N/m ²)	Maximum span:		
	PC Snap-on	AL. Snap-on	STEEL Snap-on
900	1900 mm	3500 mm	4000 mm
1200	1600 mm	3250 mm	3750 mm
1500	1500 mm	3000 mm	3500 mm
1800	1350 mm	2600 mm	2900 mm

Breaking values: apply suitable safety coefficients.

2.3.2 Breaking curve with negative pressure load BDL10

Minimum radius of curvature 2200 mm

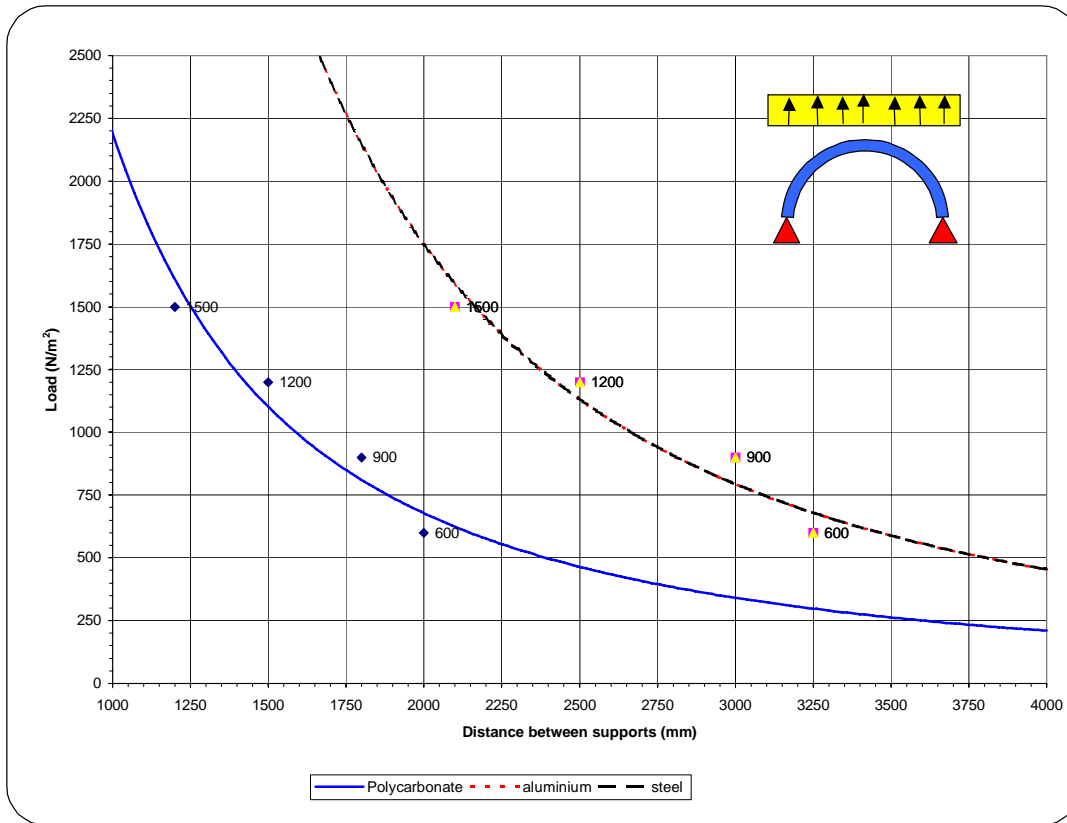


TABLE OF LOADS			
Maximum span			
Load (N/m ²)	PC Snap-on	AL. Snap-on	STEEL Snap-on
600	2000	3250 mm	3250 mm
900	1800	3000 mm	3000 mm
1200	1500	2500 mm	2500 mm
1500	1200	2100 mm	2100 mm

Breaking values: apply suitable safety coefficients.

2.4 BDL16 SYSTEM

2.5 Load curve for BDL16 pitched solution on several supports

The situation of system breakage was taken as being the lowest value among the collapse values of the panel, the snap-on joint or the aluminium hook.

2.5.1 Breakage curve with pressure load BDL16.

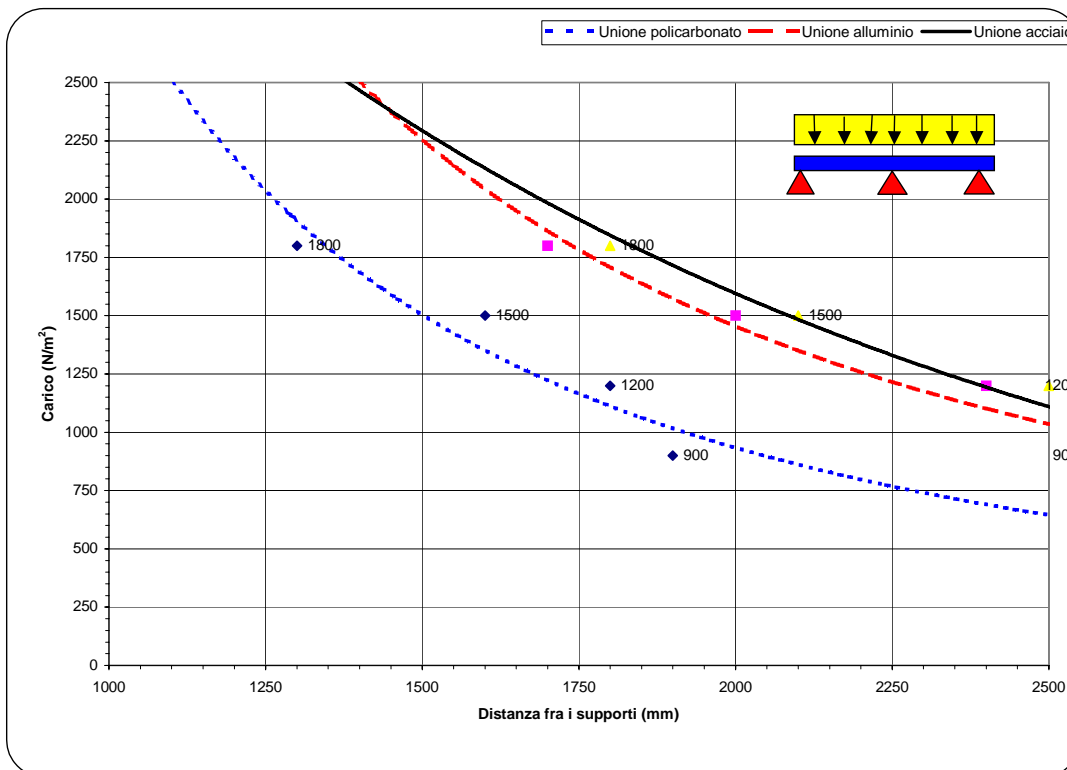


TABLE OF LOADS			
Load (N/m ²)	Maximum distance between supports:		
	PC Snap-on	AL. Snap-on	STEEL Snap-on
900	1900 mm	2600 mm	2700 mm
1200	1800 mm	2400 mm	2500 mm
1500	1600 mm	2000 mm	2100 mm
1800	1300 mm	1700 mm	1800 mm

Breaking values: apply suitable safety coefficients.

2.5.2 Breakage curve with negative pressure load BDL16

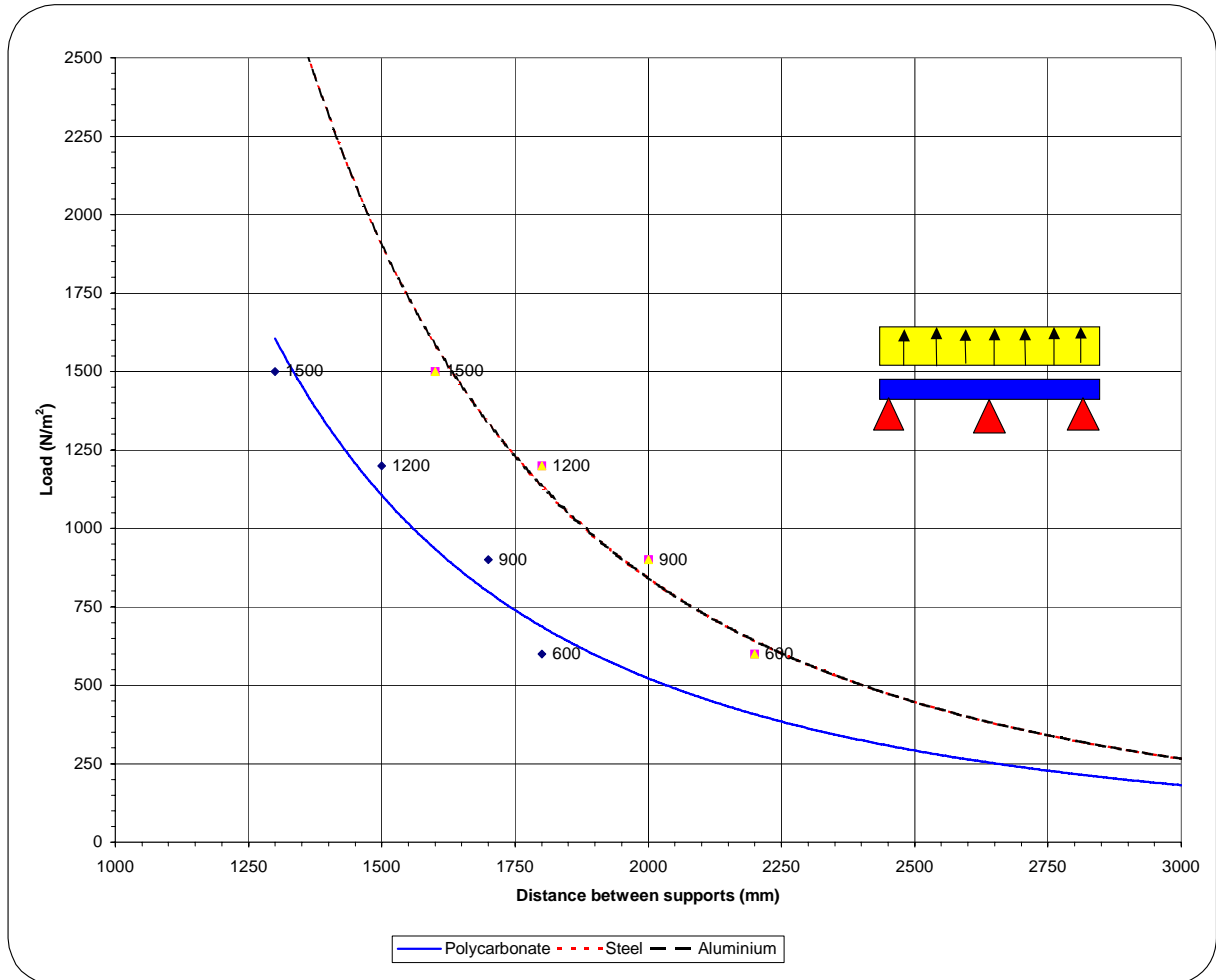


TABLE OF LOADS			
Load (N/m ²)	Maximum distance between supports:		
	PC Snap-on	AL. Snap-on	STEEL Snap-on
600	1800 mm	2200 mm	2200 mm
900	1700 mm	2000 mm	2000 mm
1200	1500 mm	1800 mm	1800 mm
1500	1300 mm	1600 mm	1600 mm

Breaking values: apply suitable safety coefficients.

2.6 BDL 16 curved solution

The situation of system breakage was taken as being the lowest value among the collapse values of the panel, the snap-on joint or the aluminium hook.

The maximum span is taken to mean the maximum distance at the base of the skylight.

The width of the support edge beams and the external edge of the system must therefore be added to the net span of the hole.

The minimum radius of curvature of the BDL10 panel is equal to 3200 mm. Any solution involving smaller radii should be avoided.

2.6.1 Breakage curve with pressure load BDL16

Radius of curvature 3200 mm

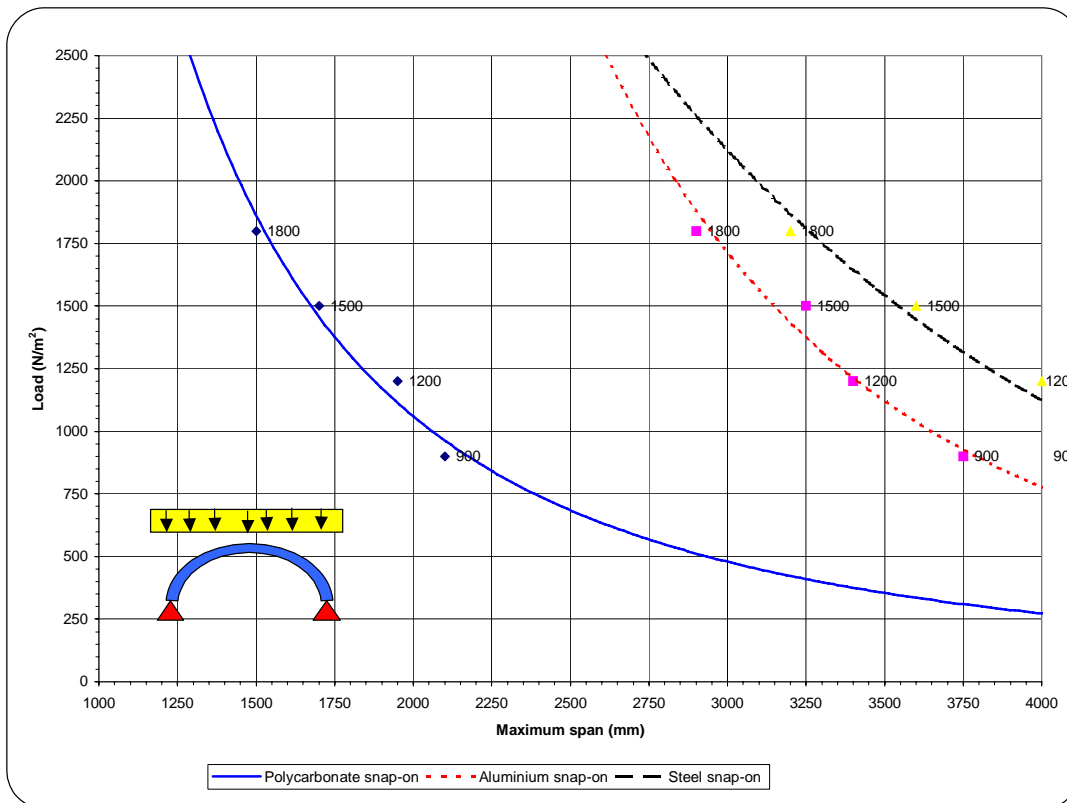


TABLE OF LOADS			
Load (N/m ²)	Maximum span:		
	PC Snap-on	AL. Snap-on	STEEL Snap-on
900	2100 mm	3750 mm	4250 mm
1200	1950 mm	3400 mm	4000 mm
1500	1700 mm	3250 mm	3600 mm
1800	1500 mm	2900 mm	3200 mm

Breaking values: apply suitable safety coefficients.

2.6.2 Breakage curve with negative pressure load BDL16

Radius of curvature 3200 mm

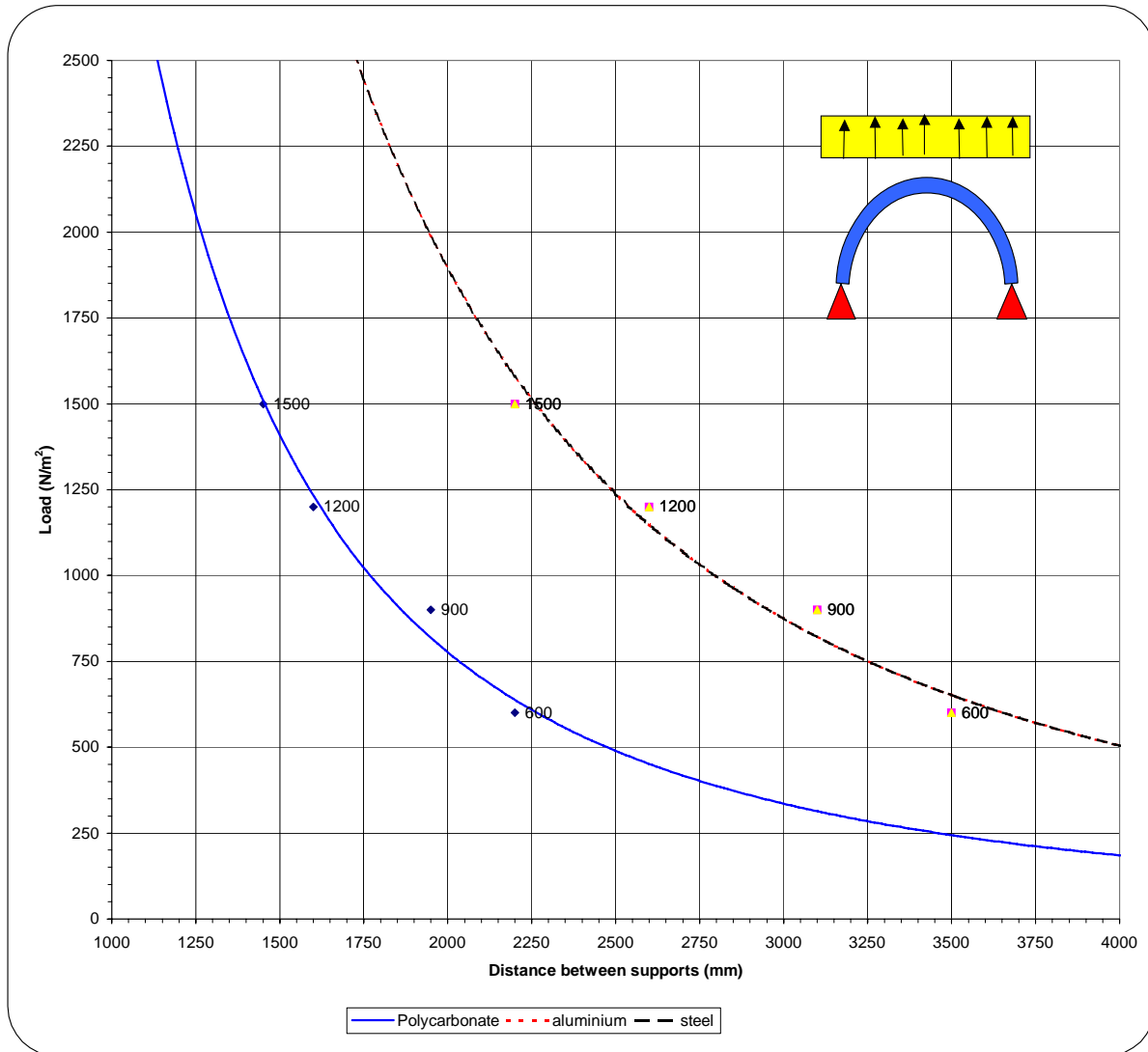


TABLE OF LOADS			
Maximum span			
Load (N/m ²)	PC Snap-on	AL. Snap-on	STEEL Snap-on
600	2200	3500 mm	3500 mm
900	1950	3100 mm	3100 mm
1200	1600	2600 mm	2600 mm
1500	1450	2200 mm	2200 mm

Breaking values: apply suitable safety coefficients.

3 BEFORE INSTALLATION

3.1 Packing and shipping

Custom-made panels will be placed on pallets at POLITEC SA's discretion. For special requirements (customised packing required for on-site unloading and handling), please make arrangements with our sales department when ordering.

3.2 Transportation

Transportation must be carried out using a suitable vehicle so that the panels and pallets rest entirely on its platform. Belts and blocks required to block the pallets must be positioned in such a way that they do not damage the sheets.

3.3 Handling and storage

Handling and storage are difficult phases in which the panels may be damaged. The following instructions must be followed carefully:

- Take great care when using forklift trucks. Always place suitable supports between the forks and the panels to avoid damaging or bending the panel.
- The forks must be spaced out in such a way that the weight is correctly distributed.
- Store the packages containing the panels horizontally, taking care to arrange the supports so that the weight is distributed. Avoid placing too many packs on top of each other (max 500 kg) in order to avoid crushing the panels.
- Store the panel on a slight slope to help any condensation or waterlogging to flow away.
- Place the packages under cover. Where this is not possible protect them with heavy sheets which also guarantee good ventilation.
- **THE PROTECTIVE FILM APPLIED TO THE FACES OF THE PANEL TENDS TO STICK WHEN SUBJECTED TO HIGH TEMPERATURES (PALLETES EXPOSED TO SUN AND HIGH TEMPERATURES), MAKING SUBSEQUENT REMOVAL DIFFICULT.**

3.4 Calculation of thermal expansion

Polycarbonate has a high thermal expansion value,

$$\alpha = 0.065 \text{ mm/m } ^\circ\text{C} \quad (6.5 \times 10^{-5} \text{ m/m } ^\circ\text{K})$$

for correct design the maximum foreseen expansion must be verified in order to provide suitable expansion spaces.

In the case of long panels, the expansion is not inconsiderable and can be calculated using the formula:

$$\Delta L = \alpha \times L \times \Delta T^\circ$$

where:

ΔL is the foreseen difference in length in mm

α is the linear thermal expansion coefficient (0.065 mm/m $^\circ\text{C}$)

L is the length of the panel in m

ΔT° is the estimated temperature difference in degrees centigrade

EXAMPLE:

Calculate the maximum difference in length for a 600 x 8000 mm panel in the situation with the maximum thermal shock (summer winter).

Having verified that the minimum temperature in winter is -20°C and the maximum temperature reached in summer on the surface of the sheet is $+60^\circ$, ΔT° becomes:

$$\Delta T = 60 - (-20) = 80^\circ\text{C}$$

The difference in length is $\Delta L = 0.065 \times 8 \times 80 = 41\text{mm}$

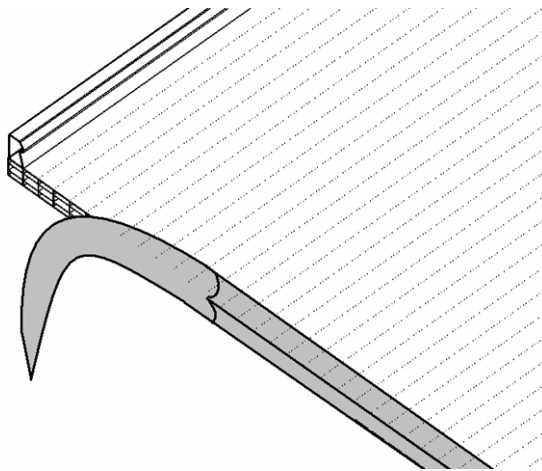
3.5 Cutting and processing

The BDL panels must be cut in such a way as to ensure that the system has the right expansion space (calculated as per the instructions in the previous point).

The panel can be cut using straightforward cutting tools such as a vertical or horizontal cutting machine with reciprocating saws.

The shavings produced by the cutting operation can easily be removed using compressed air.

The transparent tape on the standard sheets stored in the warehouse has the purpose of keeping the inside of the cells clean, protecting them against the dust that is usually found in warehouses and workshops. It must be removed if the panel is cut and duly replaced for material that is stored again.



Before installing the panels, the ends must be closed with adhesive aluminium tape (full, breathable or microperforated) in order to guarantee the cleanliness of the chambers over time. The tape must in turn be protected against the direct action of severe weather conditions with suitable retaining profiles to prevent it from getting washed away. U-shaped profiles in polycarbonate or aluminium can be used, or U-shaped profiles in another material that is compatible with polycarbonate.

4 ASSEMBLY INSTRUCTIONS

4.1 Preliminary checks

- Check that storage has taken place following the recommended procedures.
- Check that the tolerances of the panels and accessories are conformable to those indicated.
- Check and verify that the product is free from evident defects, informing POLITEC SA before starting assembly.
- Arrange all works required as regards safety in the workplace, observing the regulations in force.
- For correct installation of skylights and roofing, the surfaces of the bases and edge beams that the aluminium perimeter profiles will rest on must be verified. Check the distances between them and check that they are flat, restoring levels and surfaces if necessary.

4.2 Fastening the aluminium profiles

The lower aluminium profiles with sill must be fastened onto the support using fastenings that are suitable for the type of edge beam (edge beam in reinforced concrete, in sheet steel, etc).

The centre distance between the fastenings must be no more than 500 mm.

4.3 Fastening of the stainless steel hooks

In order to connect the BDL system to the structure, the stainless steel hooks must be fastened with no. 2 screws for hooks (code M9S2 and code M9U7) or no. 1 screw for hook (code M9S1).

The diameter of the hole on the hooks is 5mm. The screw used has a diameter of 4.8 mm and an appropriate working length for the type of structure support (self-drilling for steel, tap bolts for wood, anchor bolts for reinforced concrete, etc).

4.4 Sealing and joining aluminium profiles

In order to improve air and water tightness and to compensate for any slight unevenness in the surface, the use of insulating (or silicone) joints positioned between the profile and the structure is recommended.

Aluminium sills are joined by placing the two ends side by side. Small squares of sheet metal can be inserted between the edge beam and the sill to guarantee the grip.

4.5 ASSEMBLY OF PITCHED SOLUTION

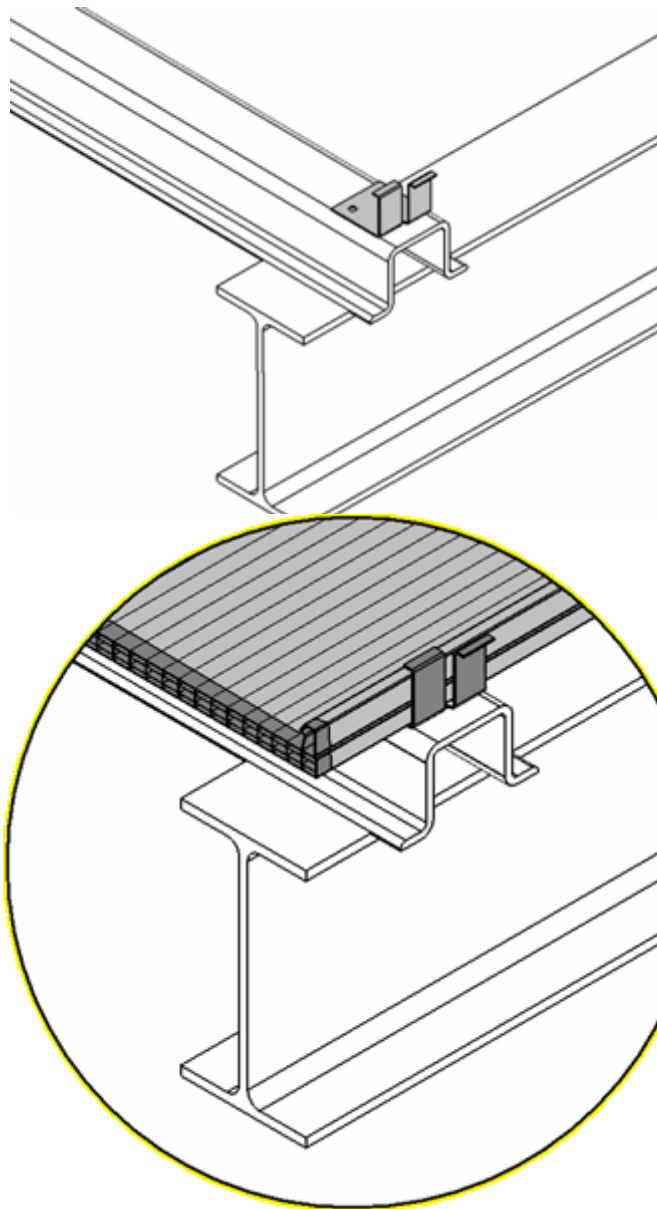
For the pitched solution, the minimum slope recommended is 5%. However, you are advised to check the maximum estimated loaded deflection in order to prevent counterslopes and resultant waterlogging.

The distances between the supports must be checked with the aid of the load curves, taking the necessary safety factors into account.

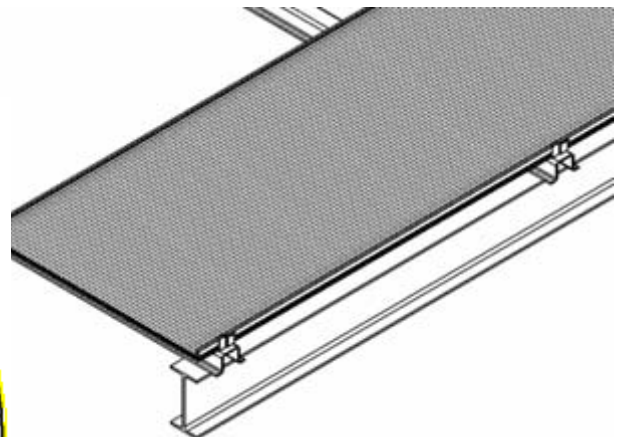
The installation of the side finishings, the eaves and the crest has not been considered in the assembly sequence. Some illustrative examples are shown below.

4.5.1 Assembly with polycarbonate snap-on outside

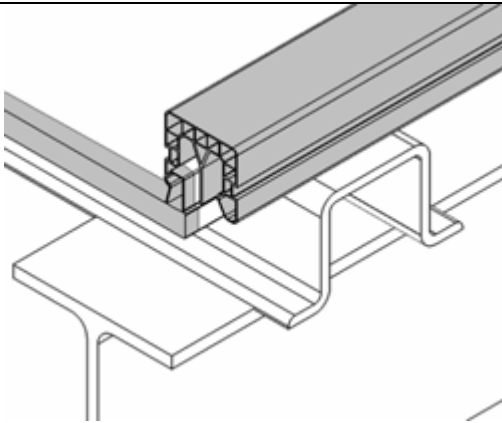
This solution uses the polycarbonate snap-on to connect the BDL polycarbonate panels. The snap-on must be positioned outside the panel, thus creating a flat surface on the inside.



1- Fasten the first line of hooks (code M9S2 for BDL10 and code M9U7 for BDL16), carefully checking their alignment. The TWO fastening screws required for each hook must guarantee the grip and must be appropriate for the type of purlin.



2- Move the BDL panel, with its ends closed with aluminium tape, close to the alignment of the first row of hooks.

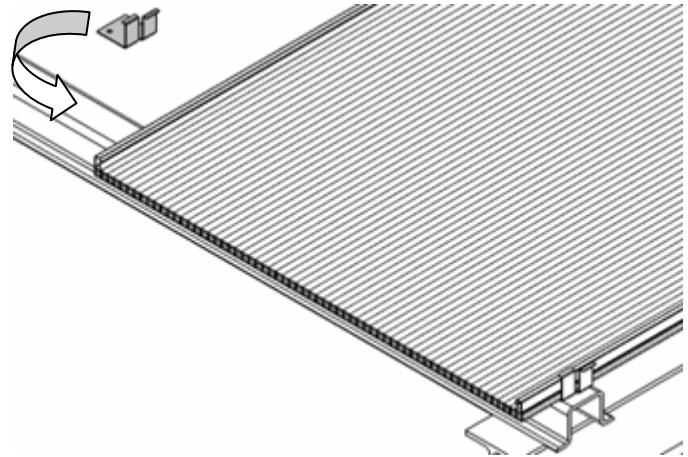


Place the snap-on near the joint.

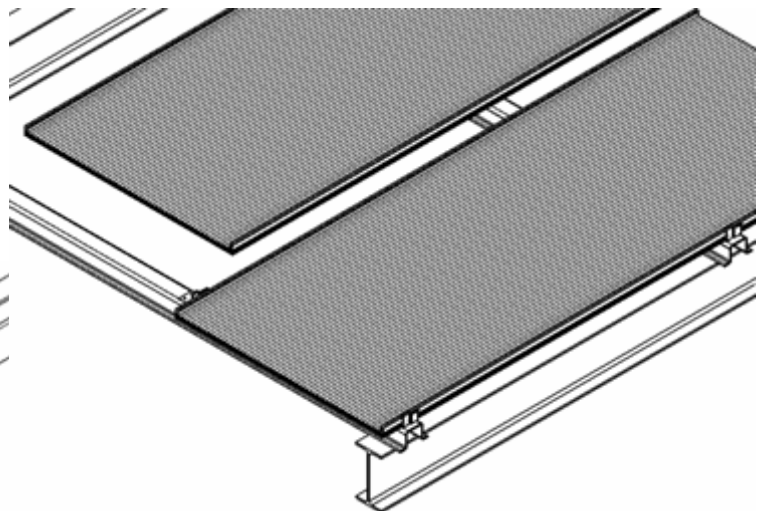
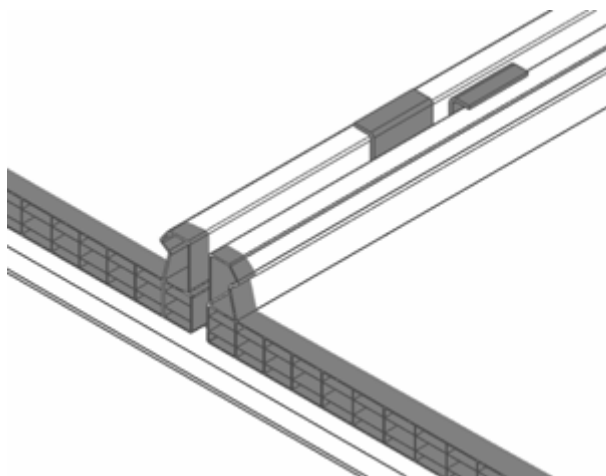
NOTE: As the first and last snap-ons are not held by two panels, they must be considered as unfixed.

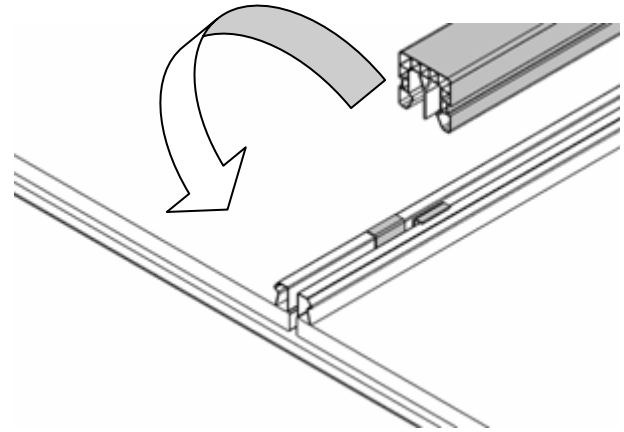
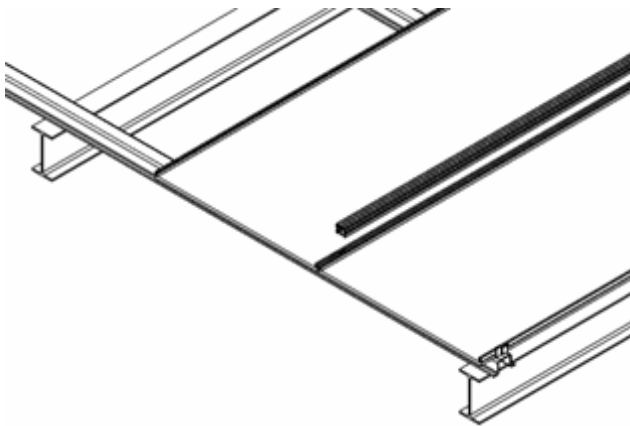
They must therefore be covered and held with suitable connecting plates. The type of connecting plate varies depending on the application (shelter, vicinity to walls, etc.). In any case, it is the sheet metalwork that guarantees the water tightness and the load grip.

3- The second row of hooks is fastened, placing them near the free edge of the panel. It is not recommended that you position all of the rows of hooks in advance as production and operating tolerances could combine to make assembly impossible. The optimal result is obtained by alternating the installation of a panel with that of the hooks.

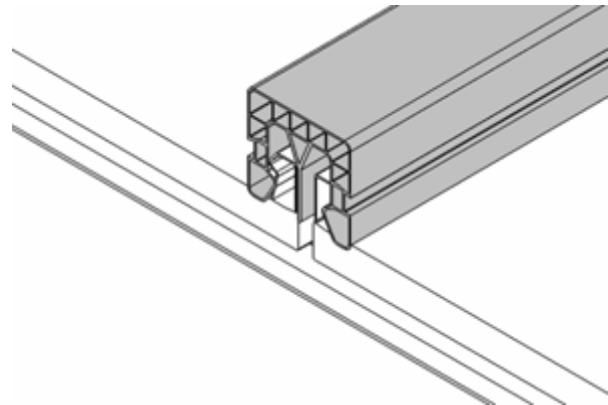


4 – Move the second panel close to the alignment of the hooks, positioning it under the flange of the hook without causing it to break.

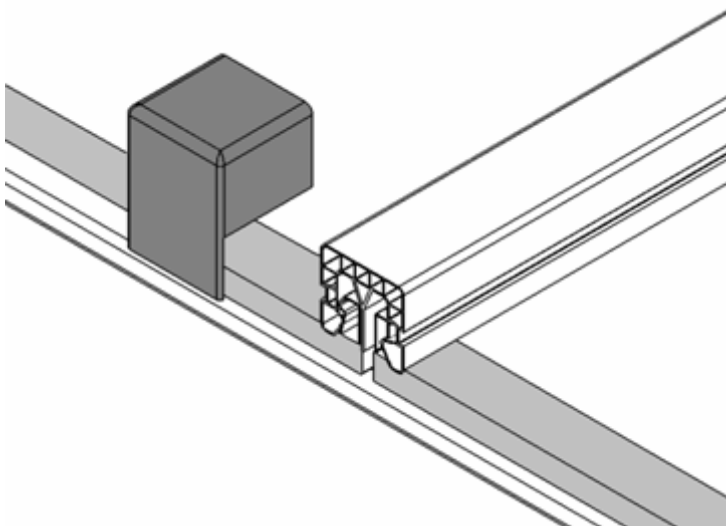




5- Carefully insert the PC snap-on starting from the side of the first purlin and proceeding continuously along the entire length. If necessary, use a rubber mallet to help you, supporting underneath the panel.



6- Proceed as per point 3 until the entire pitch is covered.

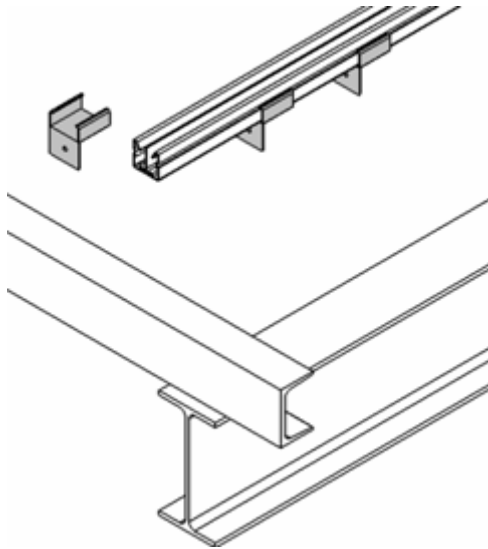


7- Use the Nylon end covers (code M9TA or in stainless steel M9T7) to close the cells in the snap-on clean. Fasten with a spot of silicone.

Refer to the detailed sections on the creation and construction of solutions for eaves, crests and side connections.
The aluminium tape must be protected and kept intact using sheet metalwork or U-shaped retaining profiles.

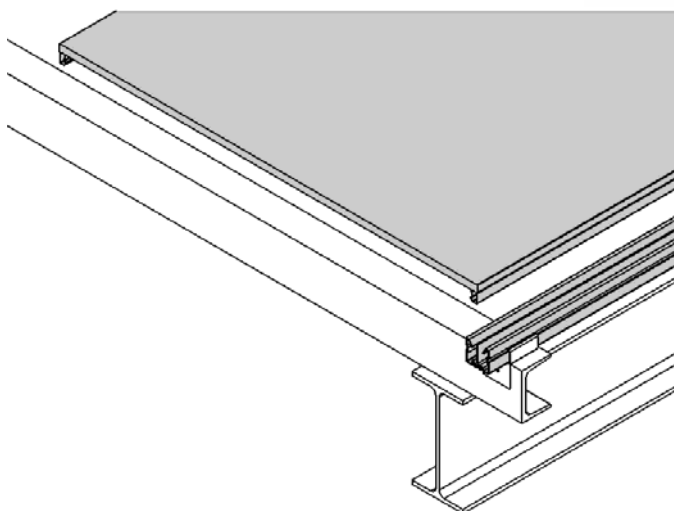
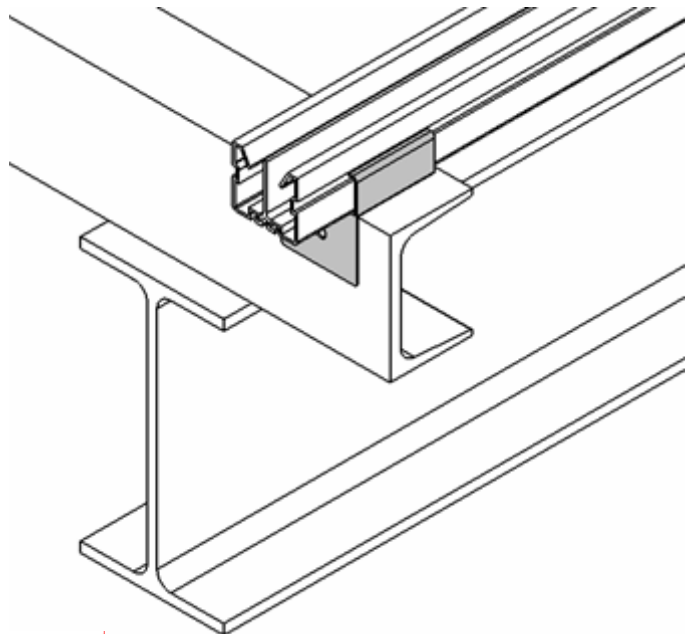
4.5.2 Assembly with metal (steel or aluminium) snap-on on the inside

Assembly can be carried out using both the aluminium snap-on (code M9RA) and the steel snap-on (code M9TB). In both cases the metal snap-on must be fitted underneath the panel, thus creating a flat surface on the outside.

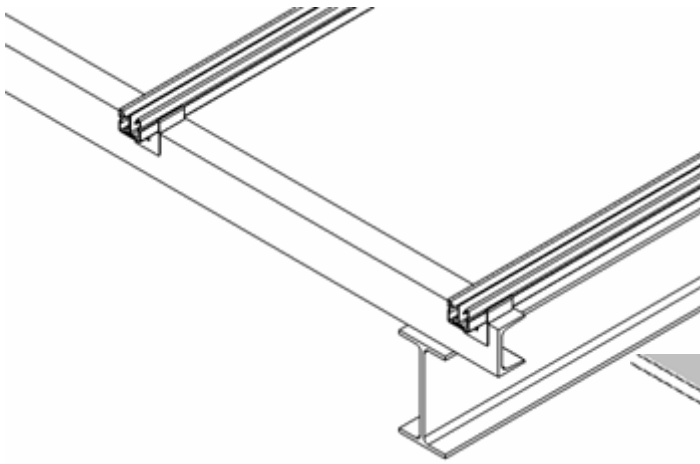


1- Insert the number of hooks required for fastening into the seats.

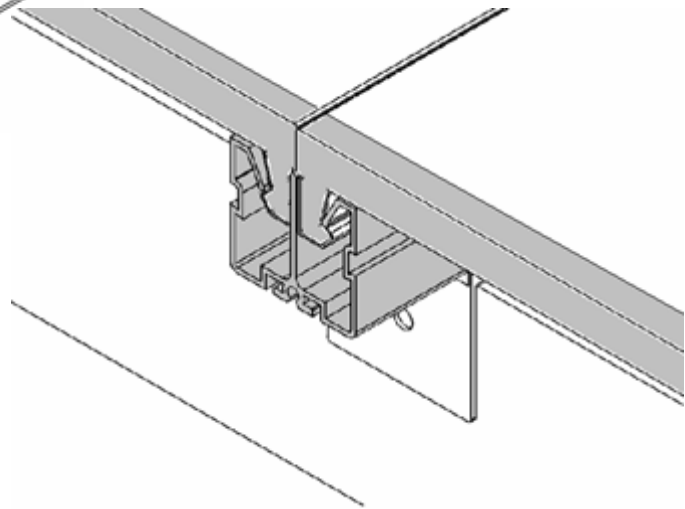
2- Fasten the first line of hooks (code M9S1 for both BDL10 and for BDL16), carefully checking their alignment. The fastenings, required for every hook, must guarantee the grip and must be appropriate for the type of purlin.



3 – Fasten the panel, closed at the ends with adhesive aluminium tape, into the special groove in the snap-on, using a rubber mallet if necessary and countering the force required to insert it. NOTE: the first and last panels are not sufficiently held and must be considered as unfixed. They must therefore be covered and held with suitable connecting plates. The type of connecting plate varies depending on the application (shelter, vicinity to walls, etc.). In any case, it is the sheet metalwork that guarantees the water tightness and the load grip.



4- Position a new metal snap-on with the sufficient number of hooks for all purlins. Insert the panel into the groove in the snap-on. Fasten the hooks in their final position using a suitable screw.



5- Insert the next panel and proceed to the end of the pitch, repeating from point 4.

Refer to the detailed sections on the creation and construction of solutions for eaves, crests and side connections.

The aluminium tape must be protected and kept intact using sheet metalwork or U-shaped retaining profiles.

4.6 ASSEMBLY OF CURVED SOLUTION

The BDL system allows small curved domes to be created. The minimum curvature parameters of the panel must be observed:

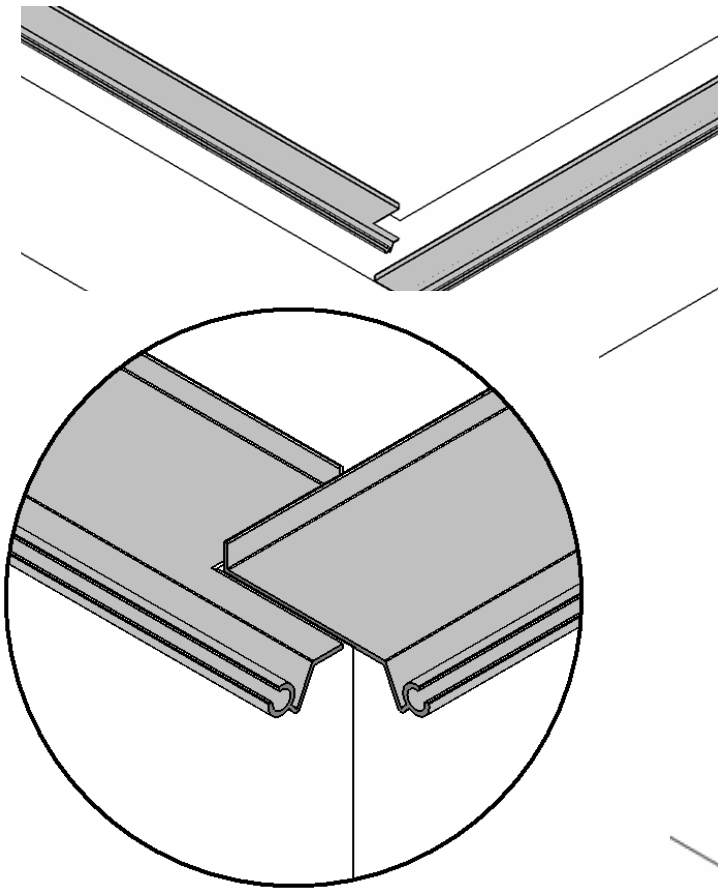
Minimum radius for BDL10 system: 2.200 mm

Minimum radius for BDL16 system: 3.200 mm

4.6.1 Assembly with polycarbonate snap-on outside

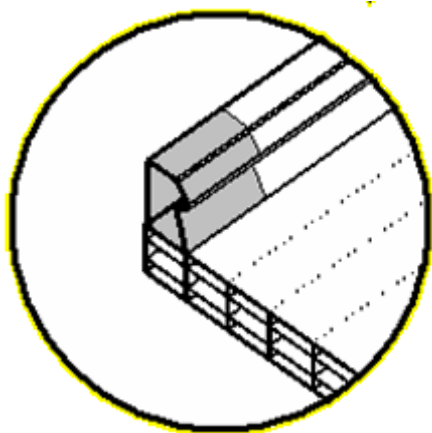
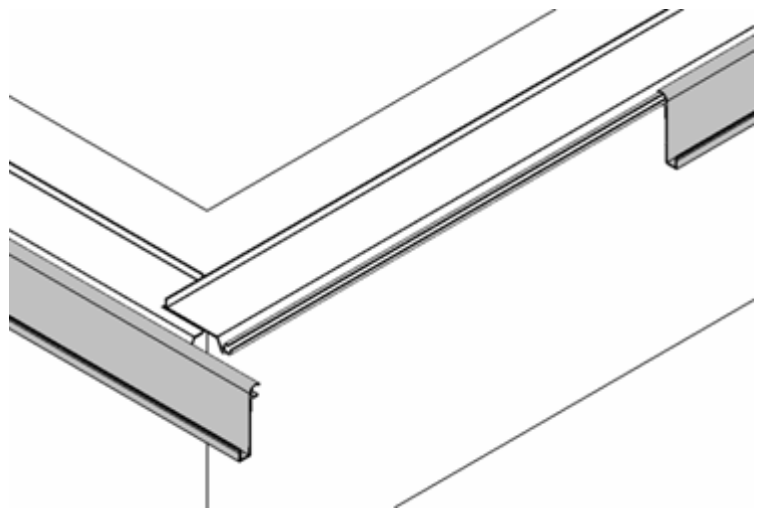
The advantage of an assembly using the polycarbonate snap-on is that the polycarbonate snap-on and the panel can be cold bent during assembly, the only limitation being imposed by the minimum radii of the two systems.

The assembly described here does not consider the construction of the gable which will be dealt with later.

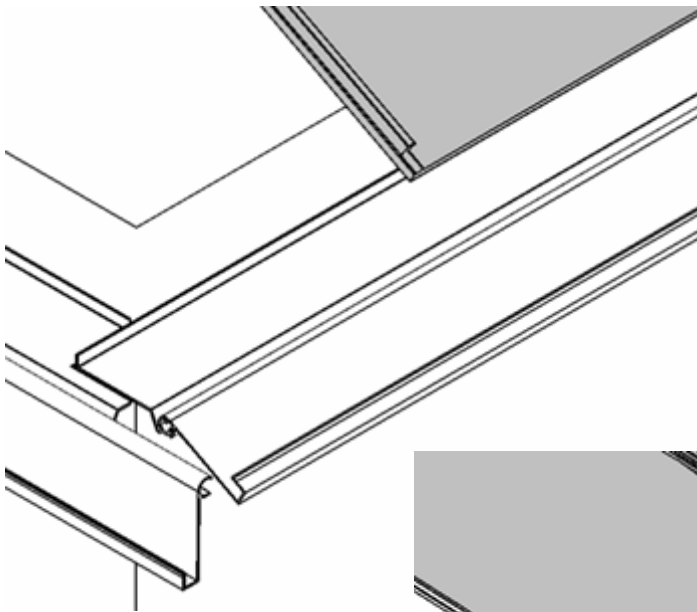


1- Position the aluminium base sills (code M9R6) on the edge beam, taking care to fix any differences in level or unevenness. The maximum centre distance between the sill fastenings must be no more than 500 mm. Particular care must be taken when sealing between the sill and the edge beam and at the point where the corner is formed.

2- Insert the revolving sill (code M9R7) into its seat, making sure you keep the sills for the gable 200mm longer than the size of the edge beam.

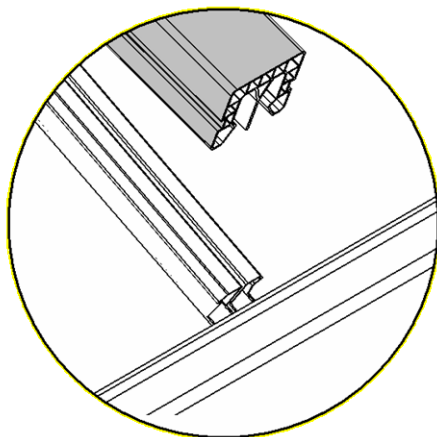
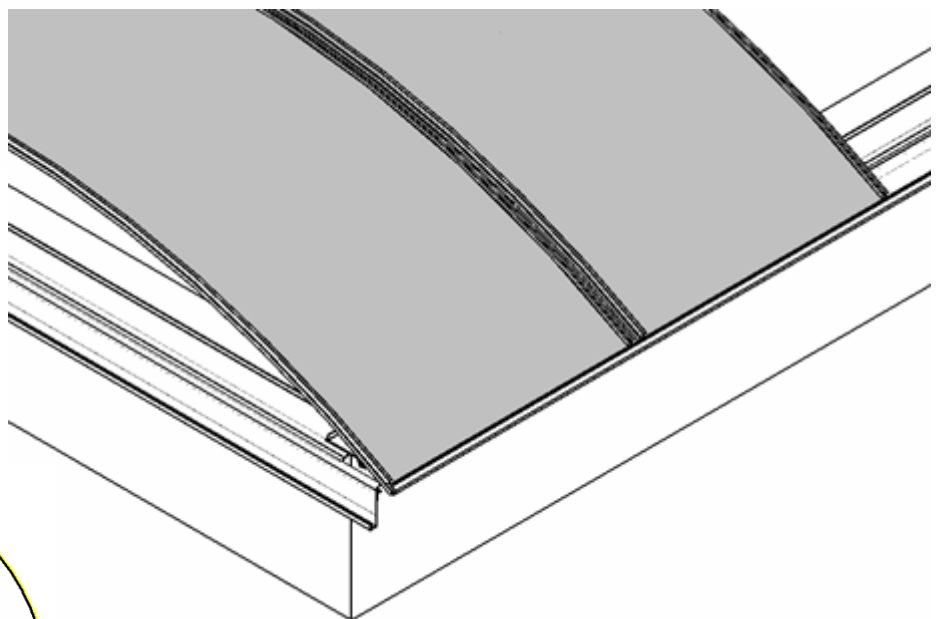


3- Cut part of the joint to a depth of 15mm to aid assembly.

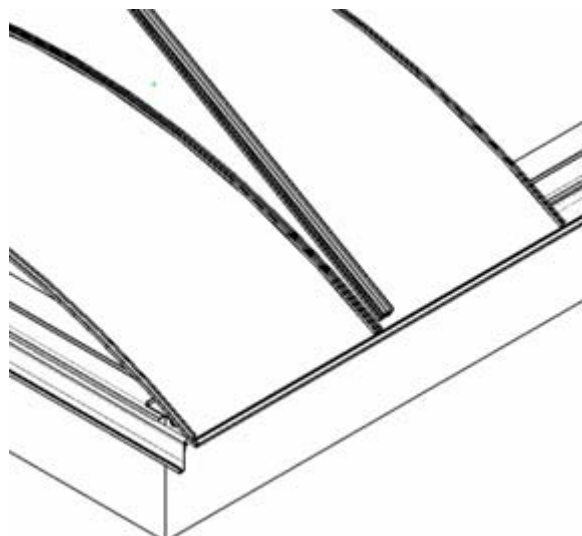


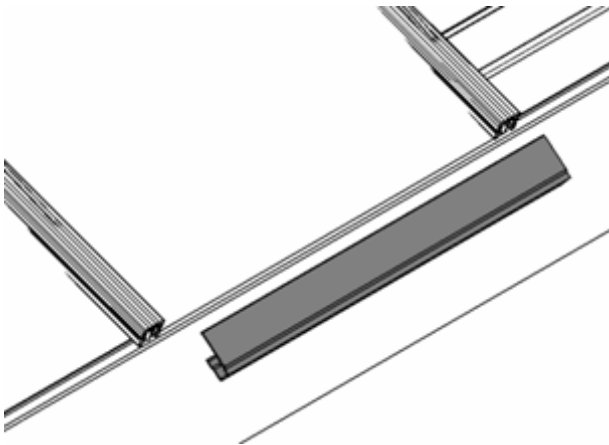
4- Insert the BDL panel into the seating on the M9R7 sill. As it can be rotated, it will position itself to the exact springing angle. The length of the BDL panel will be equal to the length of the arc of circle that subtends the span and in this way the panel will curve itself to the arch required.

5- Proceed by placing a new panel beside the previous one.



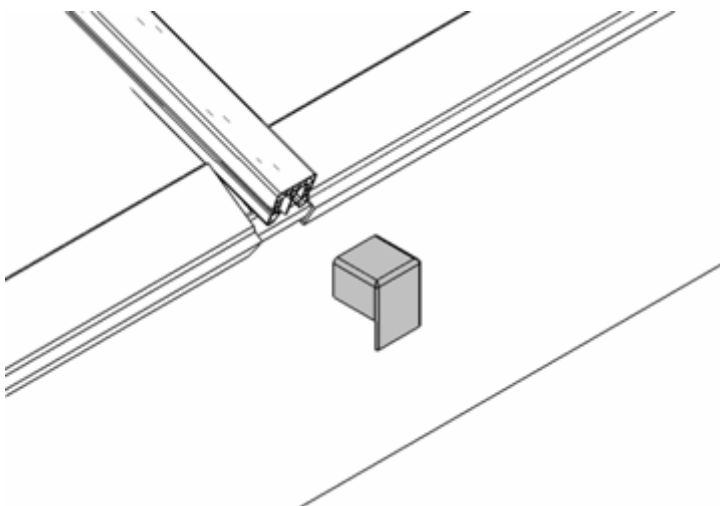
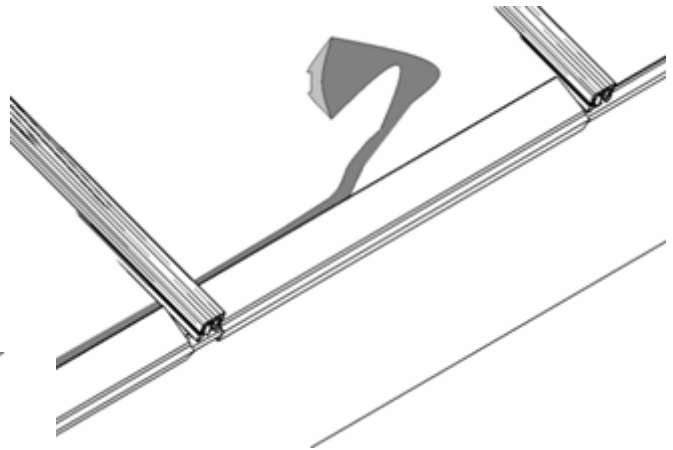
6 – The panels are connected using the polycarbonate snap-on which must be inserted starting from one side and proceeding to the opposite side. A rubber mallet can be used to facilitate the operation when required, countering the impact at the bottom of the panel.





7- Fasten the external edge of the panel using a clip cut to a length of 560 mm (code M9R4 for BDL10 and code M9R5 for BDL16). The snap-lock catches guarantee the hold of the aluminium sill.

8 - Fix the rubber joint (code M998) between the panel and the clip.

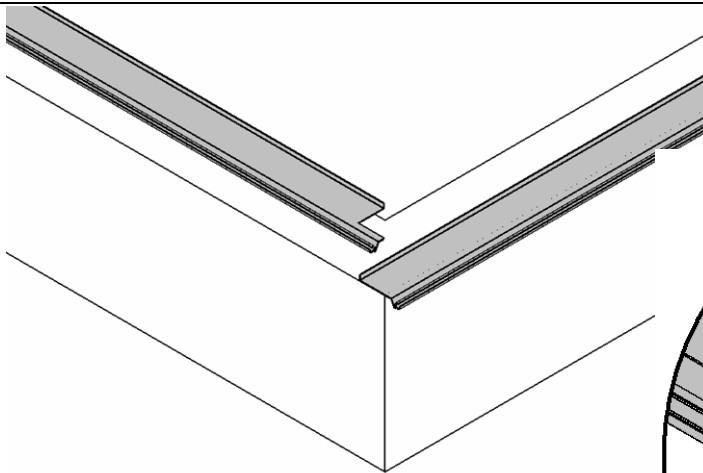


9 - Use a screw to fasten the Nylon cover (code M9TA) or, alternatively, the stainless steel cover (code M9T7) at the position of the snap-on.

4.6.2 Assembly with metal snap-on (steel or aluminium) on the inside

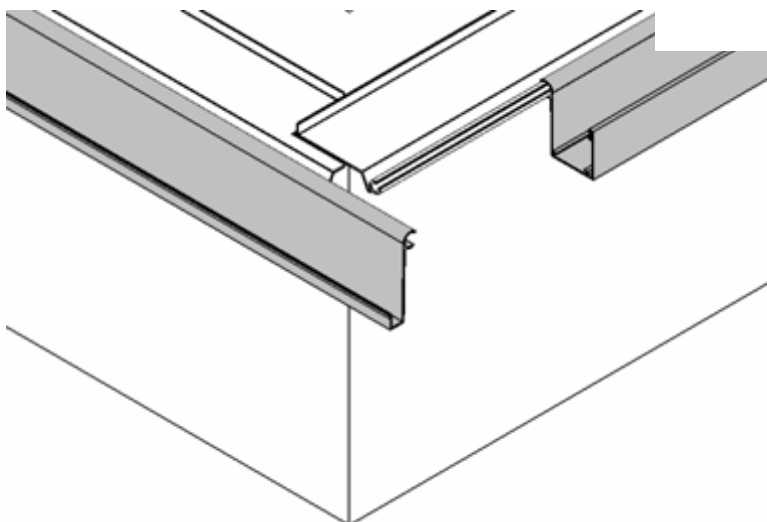
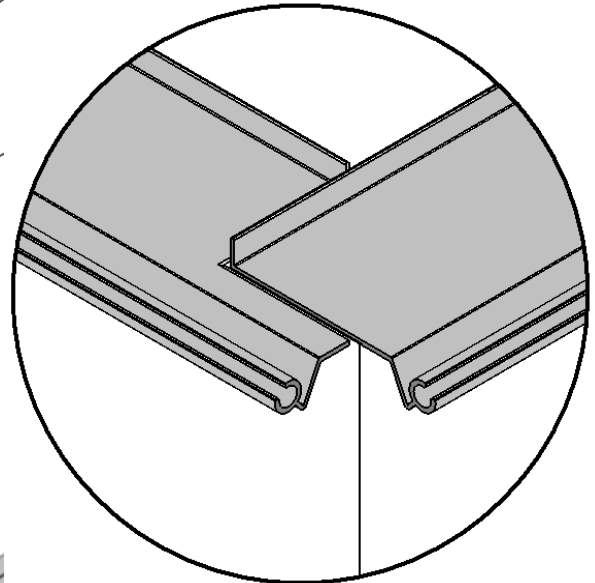
By assembling the system with aluminium snap-ons (code M9RA) or, alternatively, with steel snap-ons (code M9TB), you obtain a solution which can guarantee good load resistance. BDL panels can be curved in place. The metal snap-ons, on the other hand, must be calendered, again with the limitation imposed by the minimum radii of the two systems.

The assembly described here does not consider the construction of the gable which will be dealt with later.



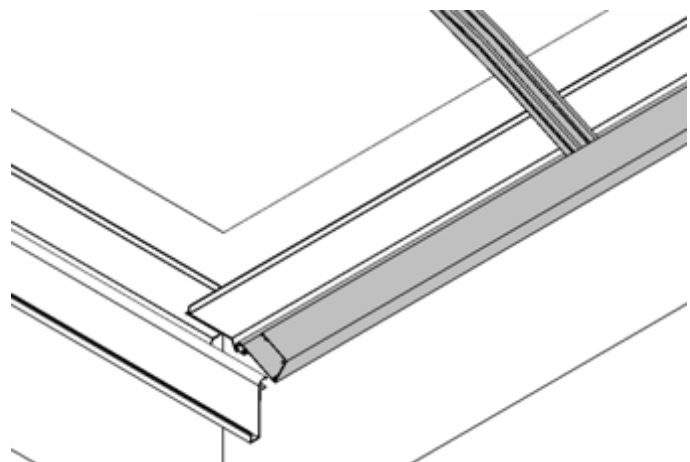
1- Position the aluminium base sills (code M9R6) on the edge beam, taking care to fix any differences in

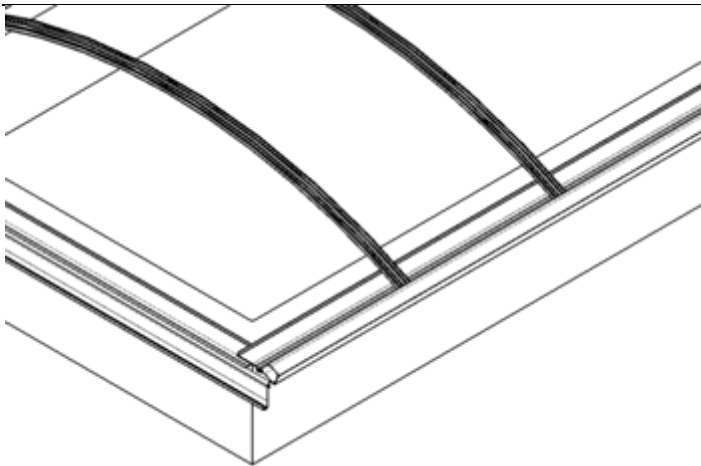
level or unevenness. The maximum centre distance between the sill fastenings must be no more than 500 mm. Particular care must be taken when sealing between the sill and the edge beam and at the point where the corner is formed.



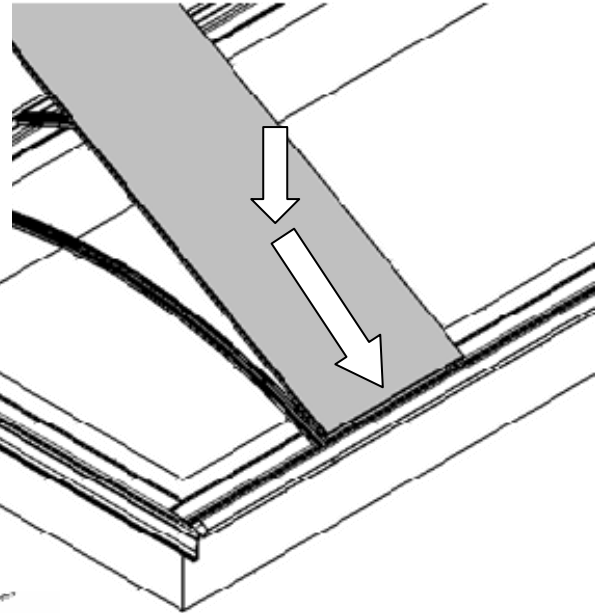
2- Insert the revolving sills (code M9R8 for BDL10 or code M9T6 for BDL16) into their seat. For the sill for the base of the gable, the sill with code M9R7 must be used, making sure you keep the sills 200mm longer than the size of the edge beam.

3- Insert the aluminium snap-on into its seat in the sill, positioned at the required distance in order to position the connecting plate with the gable (construct the gable as shown).

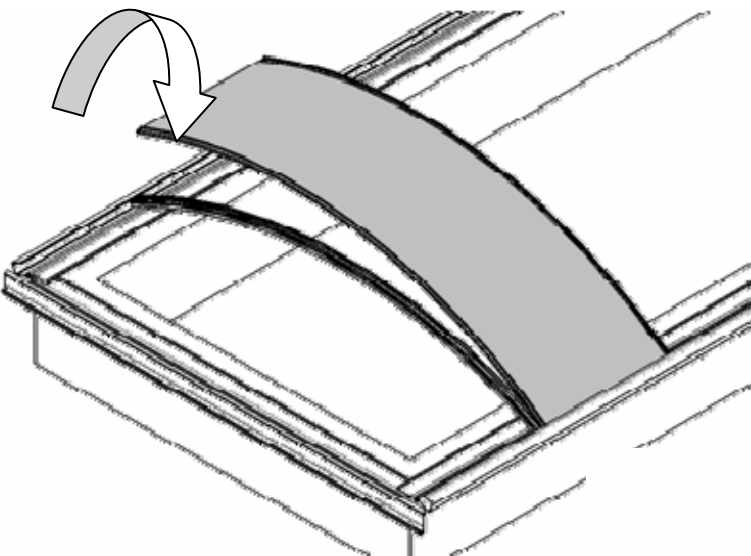




4- Insert the second snap-on at a distance of approximately 600 mm

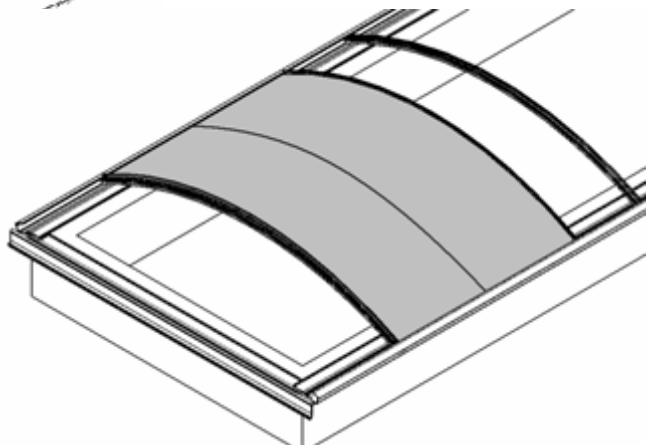


5- Insert the BDL panel into the grooves on the two snap-ons near the sill. Then force it into the sill until the BDL panel is retained.

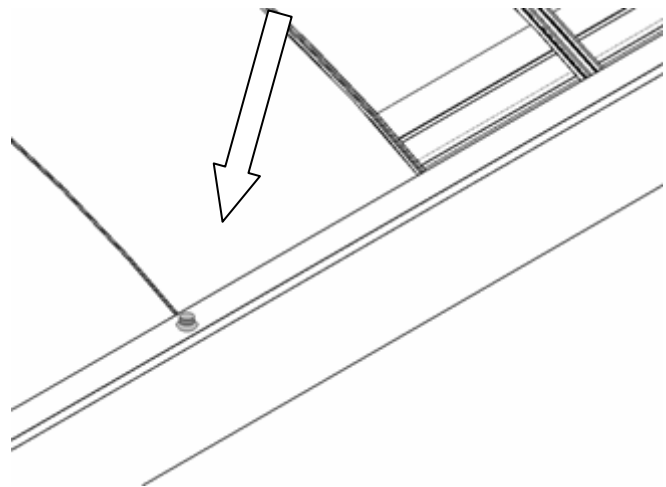


6- Insert the panel into the other side, bending it slightly so that the panel can also enter the second sill. Proceed by inserting the polycarbonate panel into the snap-on, which will be the same length as the sill. The panel and snap-on will have the same curvature.

7- Insert another snap-on and repeat the assembly of the panel as described in the previous points.

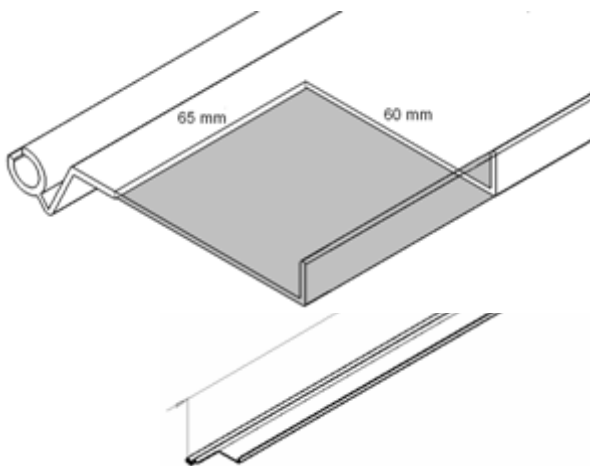


8-Fix the sill and the snap-on near the metal joint with a suitable fastening.



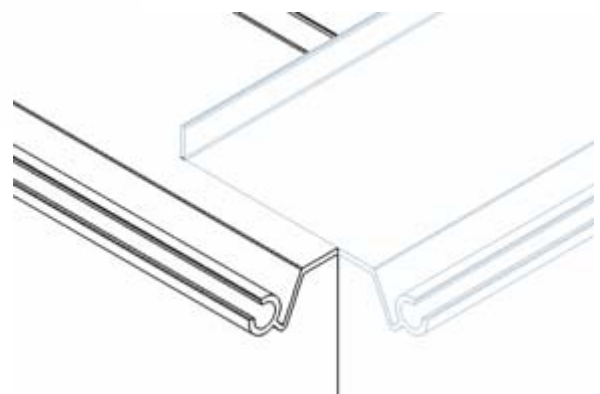
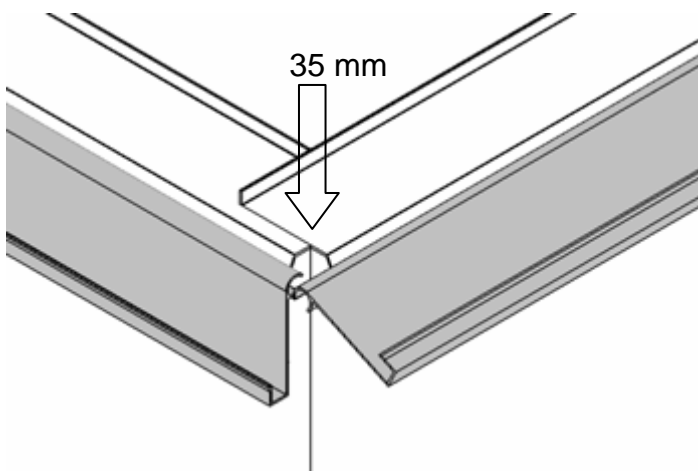
4.6.3 Assembly of end gable

In all set-ups, with snap-on outside (polycarbonate) or snap-on inside (steel or aluminium) for a dome with the external width of the edge beam equal to L the end gable can be created as follows.

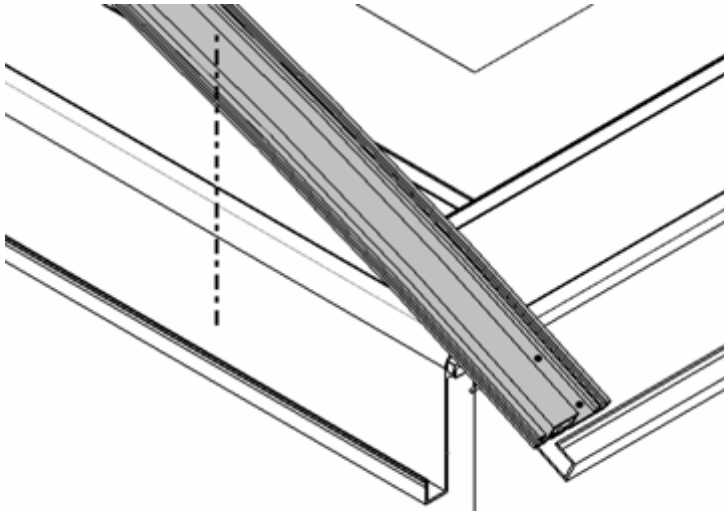


1- On the gable side, the sides of fixed sill (code M9R6) (whose length is equal to the external measurement of the edge beam (L)) must be trimmed, cutting away a 65x60 mm section.

2-Seal the two sills with silicone.



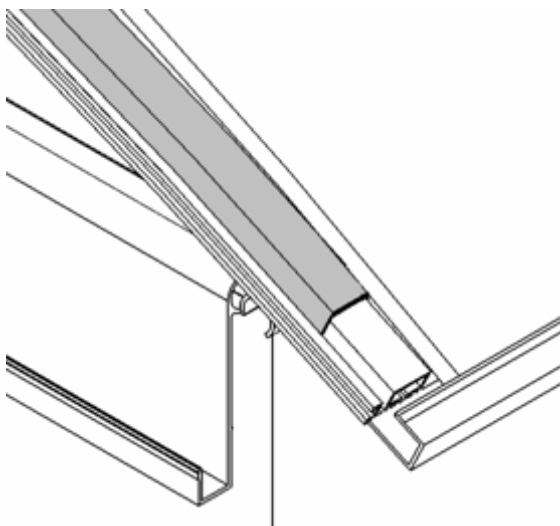
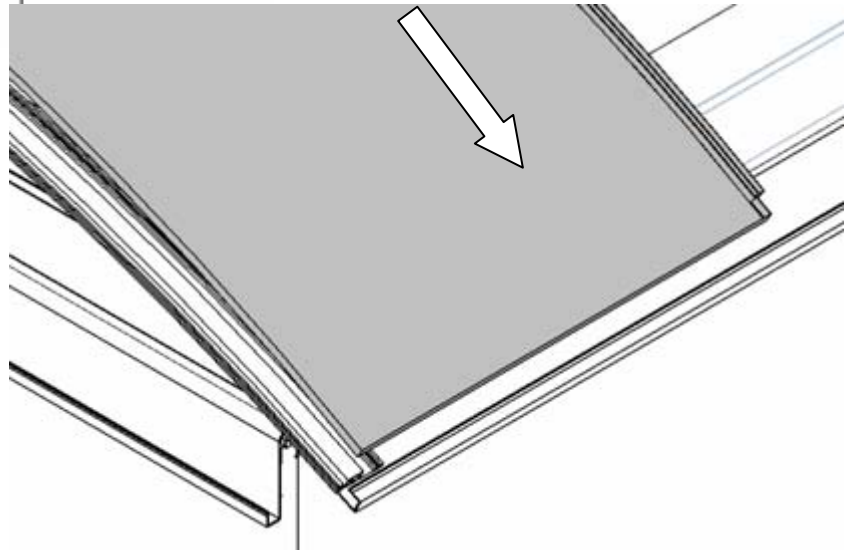
3-Cut the revolving sill (code M9R7) required for the gable, 30 mm longer than the external width of the edge beam. Insert the revolving sill (code M9R7) both into the gable and laterally, making sure that the latter protrudes by 35 mm in relation to the edge of the fixed sill.



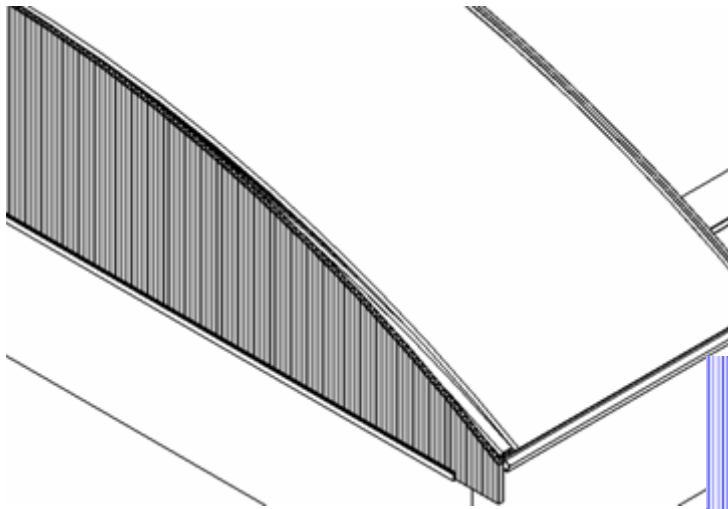
4-Fasten the lower profile of the gable (code M9T0) onto the side revolving sill so that the edge of the profile itself is aligned with the gable's vertical sill (code M9R7). The profile must be provided with a joint (code M9S3 – M9S5).

The lower profile must be calendered to the radius planned in the design. The extension of the profile must be 30 mm less than the extension of the polycarbonate panel.

5-Insert a BDL panel that has been suitably cut and does not have the catch. The measurement will be less than 600 mm in the event that the distance between the two gable is not a multiple of the measurement of the panel.

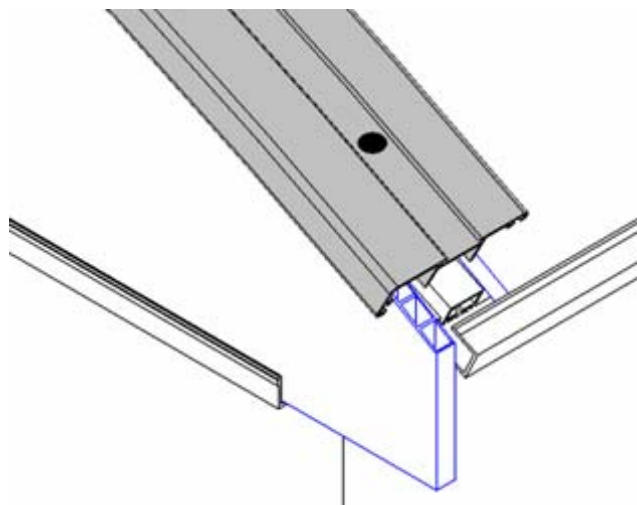
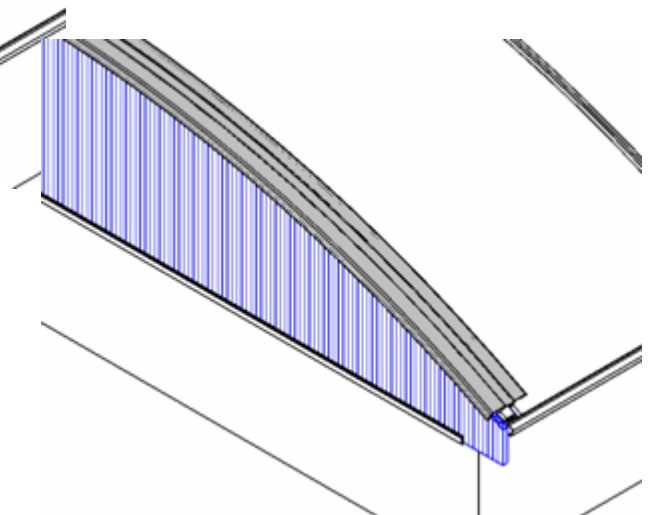


6-Insert the thermal cut (code M9T5) into the seat on the gable's lower profile.



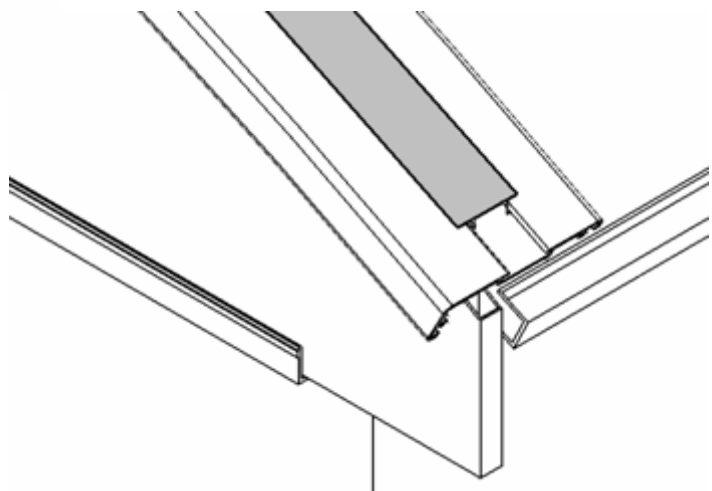
7-Cut a 10 mm-thick multiwall sheet to fill the gable, following the shape given by the upper edge of the gable profile (the ends of the gable sheet must also be closed with the aluminium tape).

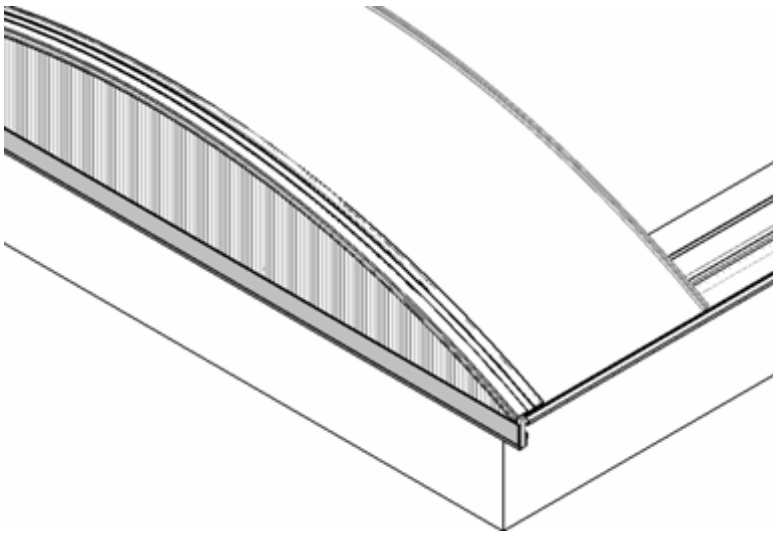
8-Position the upper profile for the gable (code M9S9), with the sealing joints in contact with the BDL panel.



9-Fasten the two profiles, making sure you start near one edge and proceed at regular intervals to the opposite side. The length of the profile will be equal to the length of the lower profile.

10-Insert the cap (code M9T1) required for correct finishing and to hide the fastening screws.

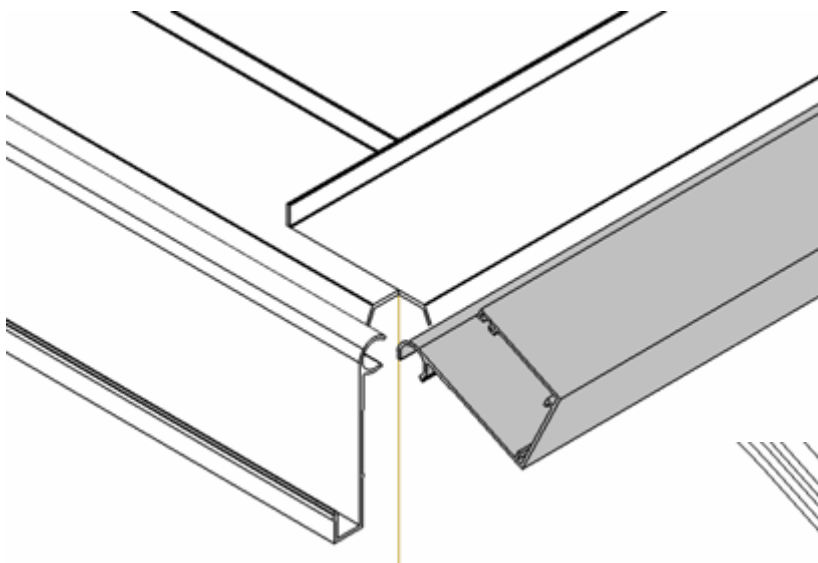




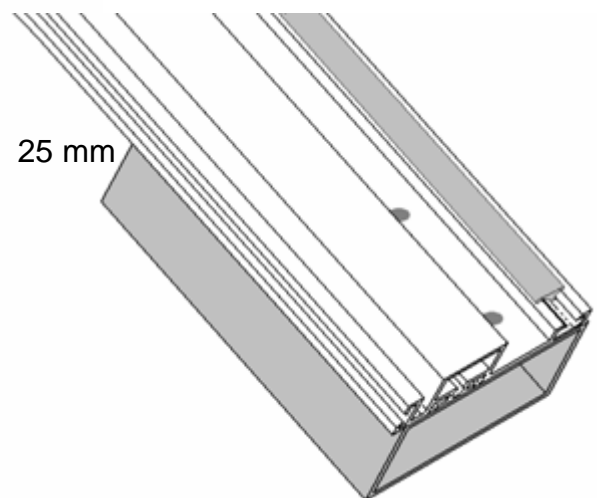
11-insert the clip for 10mm thickness (code M9R4), cut to a length equal to the external width of the edge beams (L) + 200 mm.

12- Complete the sealing of the gable using the joint code M998 together with the clip and a strip of silicone between the upper profile code M9S9 and the vertical sheet.

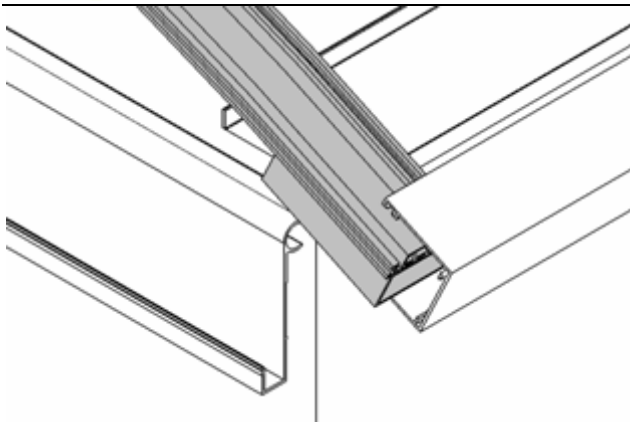
SOLUTION WITH METAL SNAP-ON (aluminium or steel) ON THE INSIDE



1-In the event that the solution is set up with metal snap-ons positioned internally, construction takes place following the same procedures. The revolving sill code M9R8 for 10mm thickness or code M9T6 for 16mm thickness will be inserted onto the side sill.



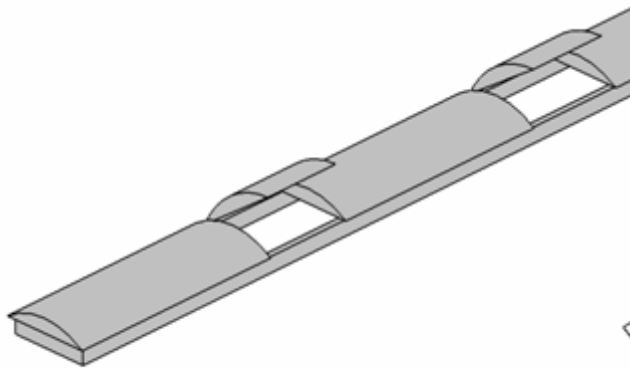
2-Position a 25mm shim, fastening it to the base of the gable profile. For example, a 50x25x1.5mm tube with a length of 80 mm can be used.



3-Insert the gable profile with the shim, taking care to align the external edge with the profile placed at the base of the gable.

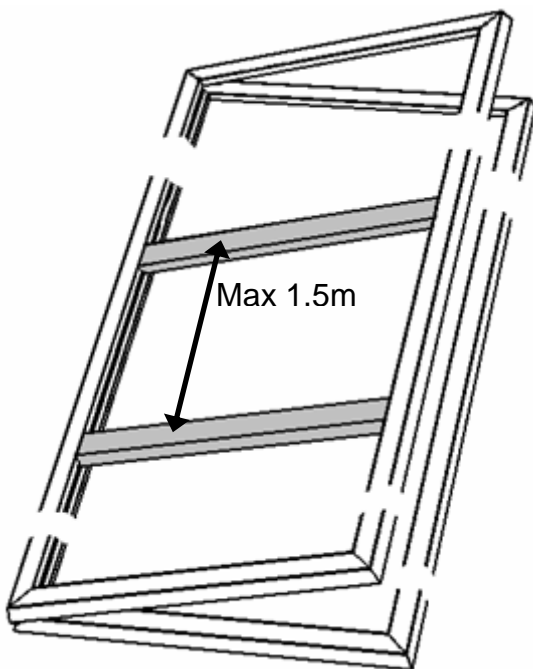
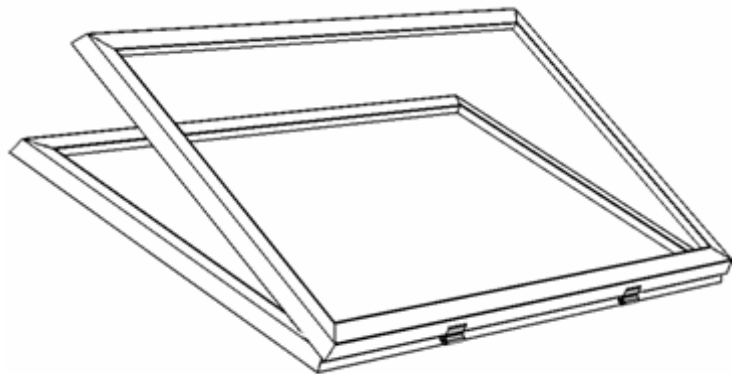
Proceed with the same procedure as in the previous points 5 to 12.

4.6.4 Inclusion of openable components



Openable components can be included for air circulation. These components can be placed interrupting the fixed skylight or alternating with it as required.

Assembly is carried out by installing a frame fastened to the base and a counter frame hinged to it.



A skylight inclusive of all accessories (gable, side profiles, snap-ons, panels, etc.) will be set up on each frame and on each fixed section.

In order to facilitate the positioning of the opening mechanism, it is recommended that you insert a central reinforcement into the opening frame. If the length of the opening frame exceeds 1500 mm this reinforcement is necessary.

The connection between the gable on the openable end and the gable on the fixed part must be created with suitable sheets which allow rainwater to drain away at the sides of the skylight. It is recommended that you insulate the sheet metalwork using a suitable insulating material.

4.7 Completions

Connections with the eaves, the crest and the wall coupling must be set up based on the specific details of the solution.

The aluminium closing tape (full or microperforated) on the end of the panel must be protected in any case.

The temperature range and the resultant expansion of the panel must also be calculated so that the panels are held by the sheet metalwork provided in extreme conditions.

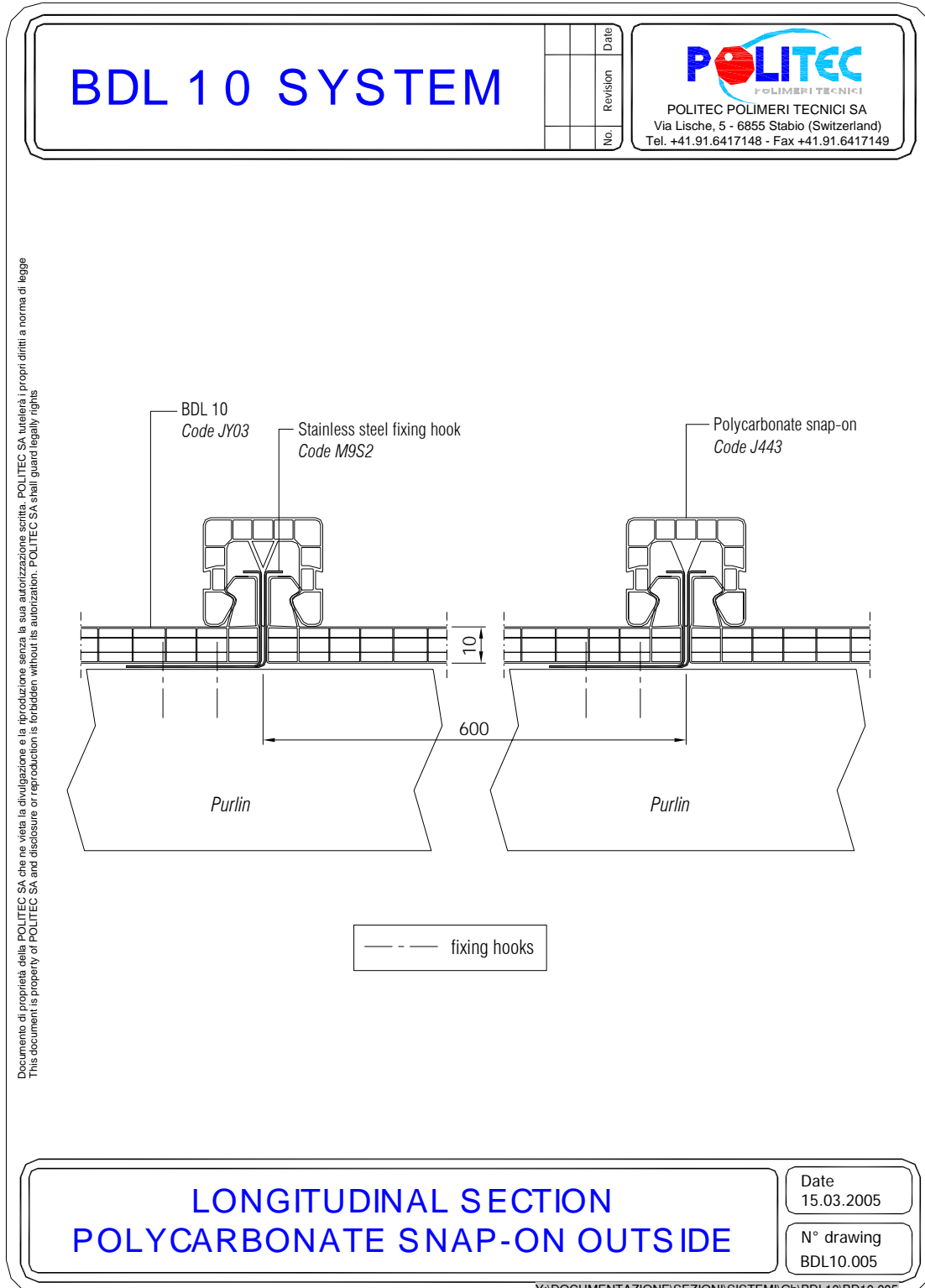
The side edges must also be coupled to the existing structure.

Detailed cross-section examples are provided in the relevant paragraph.

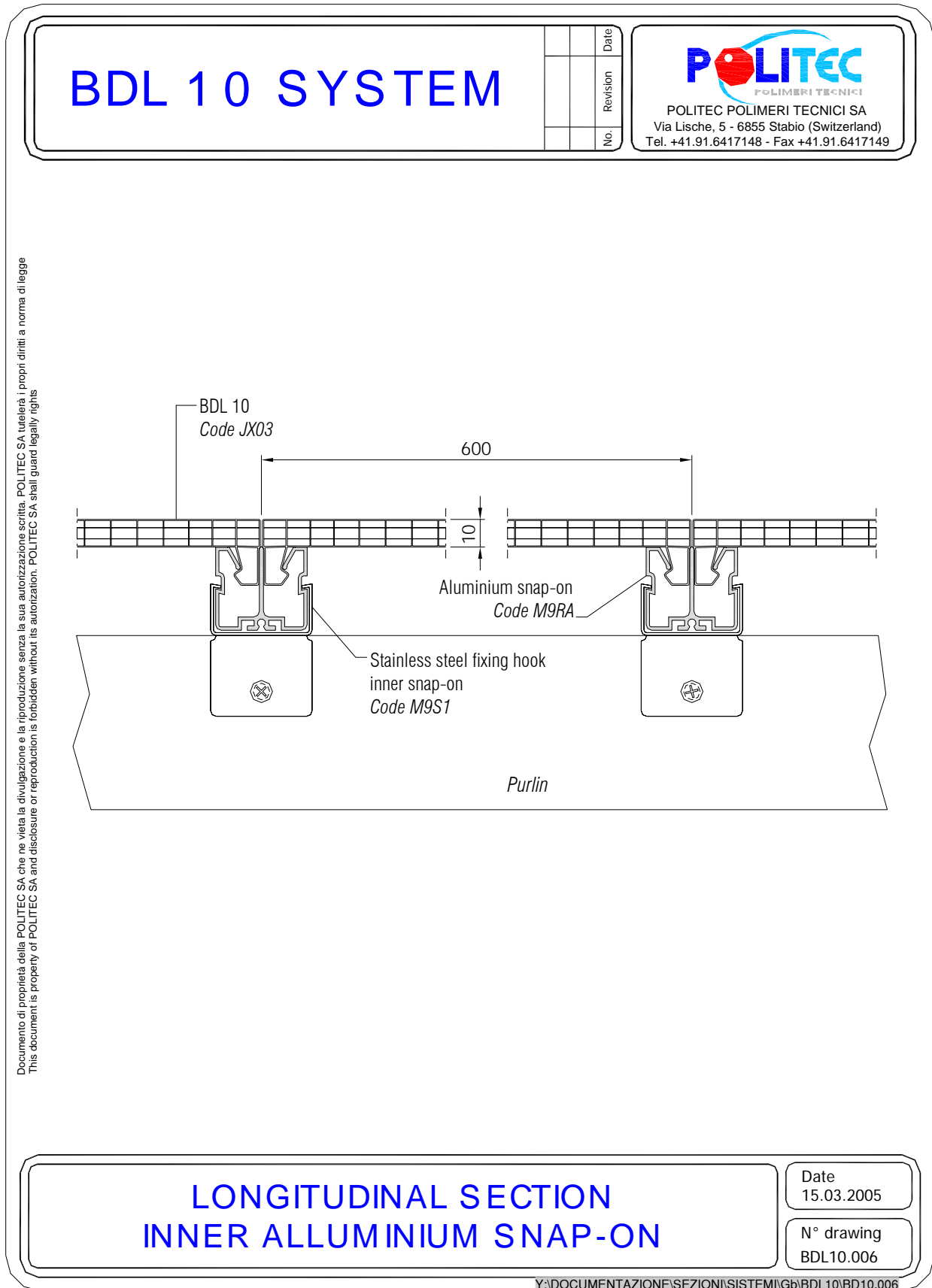
5 CROSS-SECTIONS

5.1 BDL10

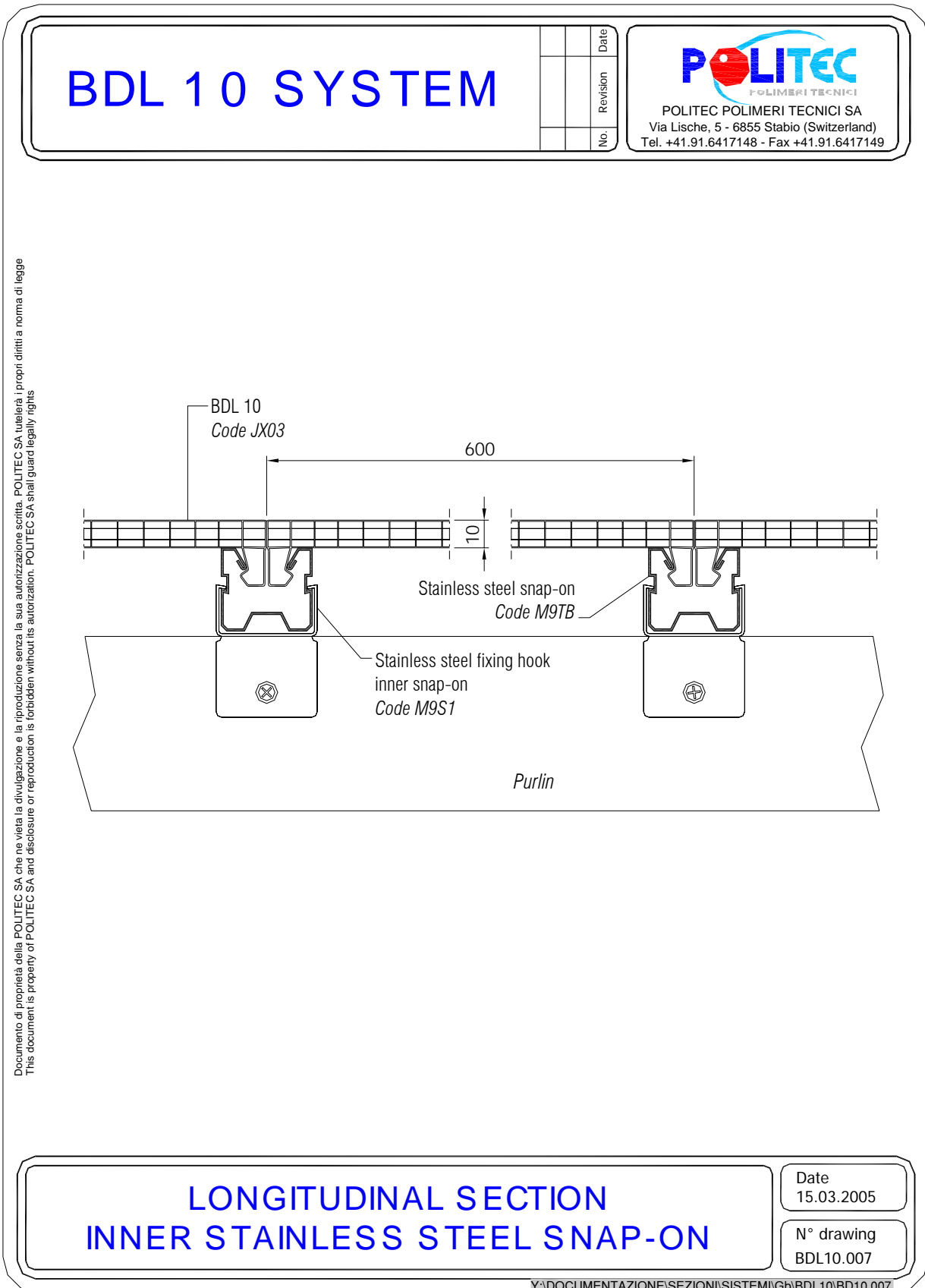
5.1.1 Detail of hook with polycarbonate snap-on



5.1.2 Detail of hook with aluminium snap-on

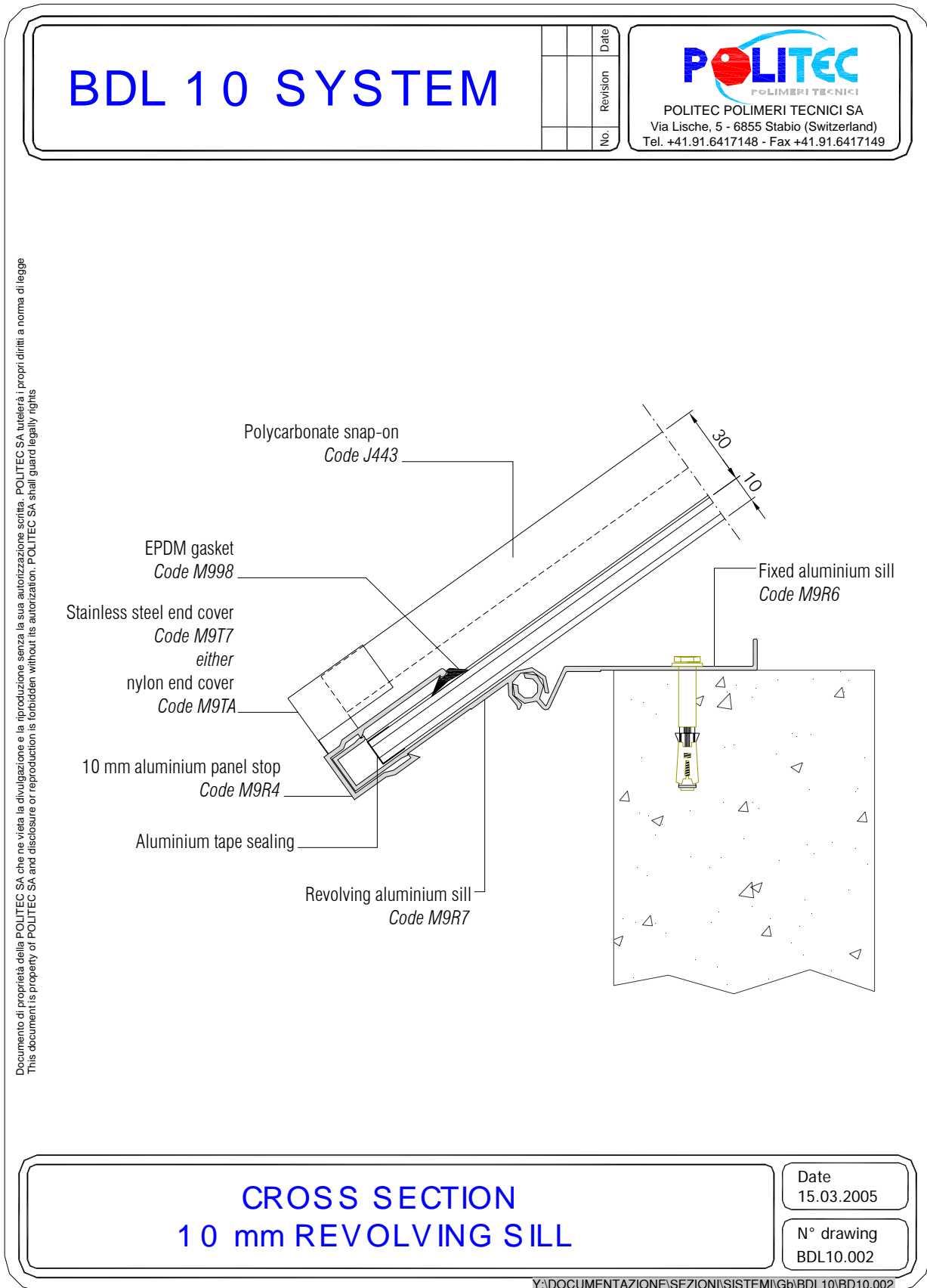


5.1.3 Detail of hook with steel snap-on

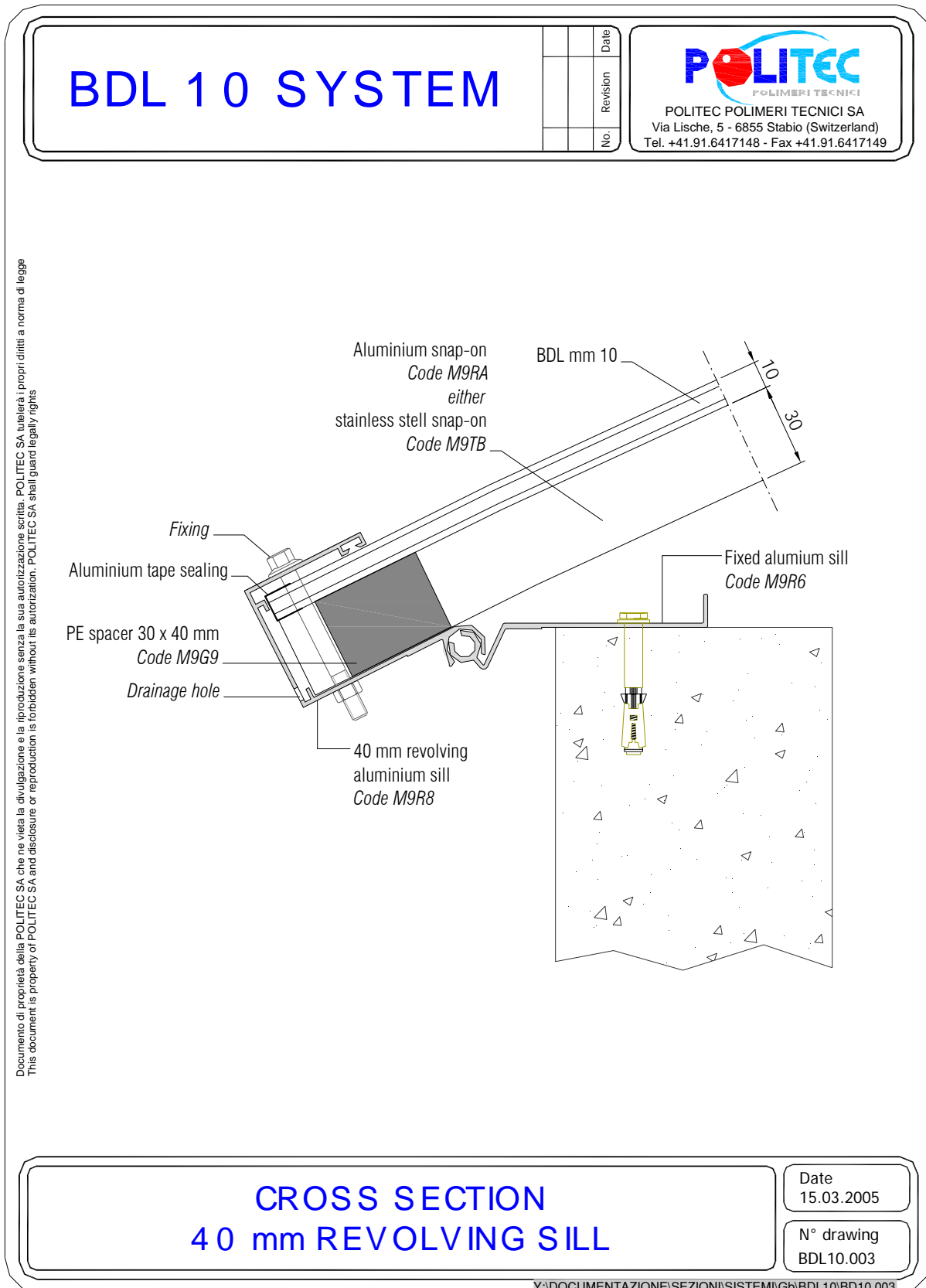


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5.1.4 Skylight: lateral detail with polycarbonate snap-on



5.1.5 Skylight: lateral detail with aluminium or steel snap-on



5.1.6 Skylight: upper detail of gable

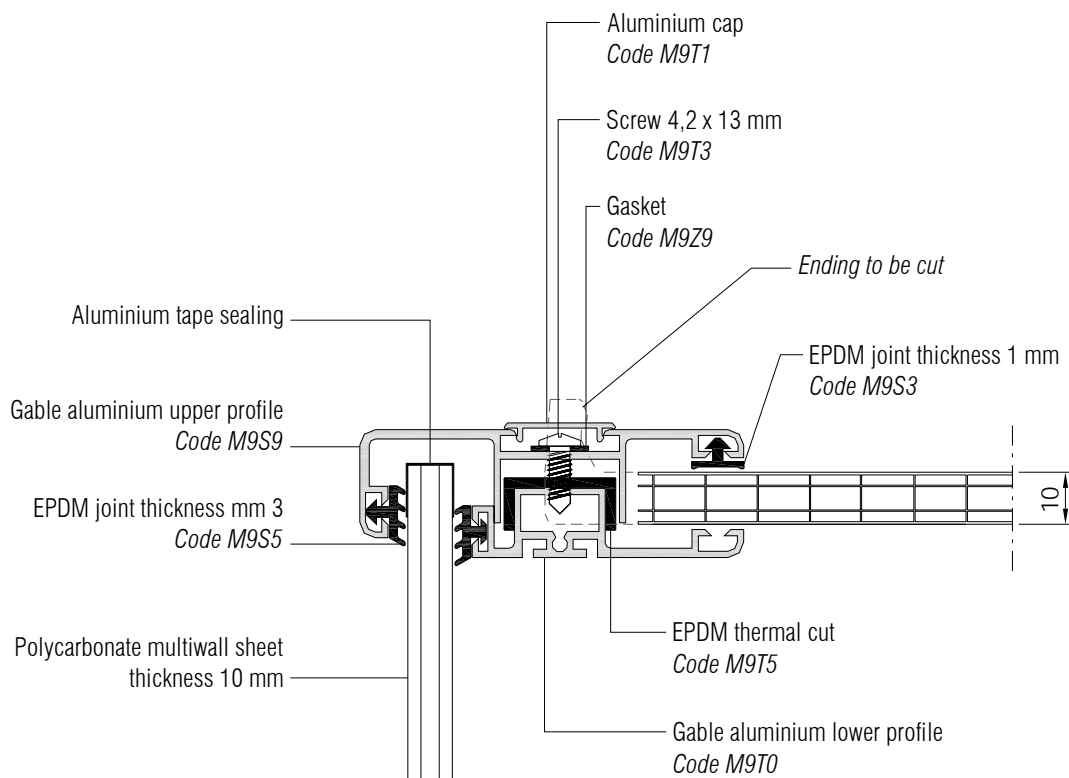
BDL 10 SYSTEM

No.	Revision	Date



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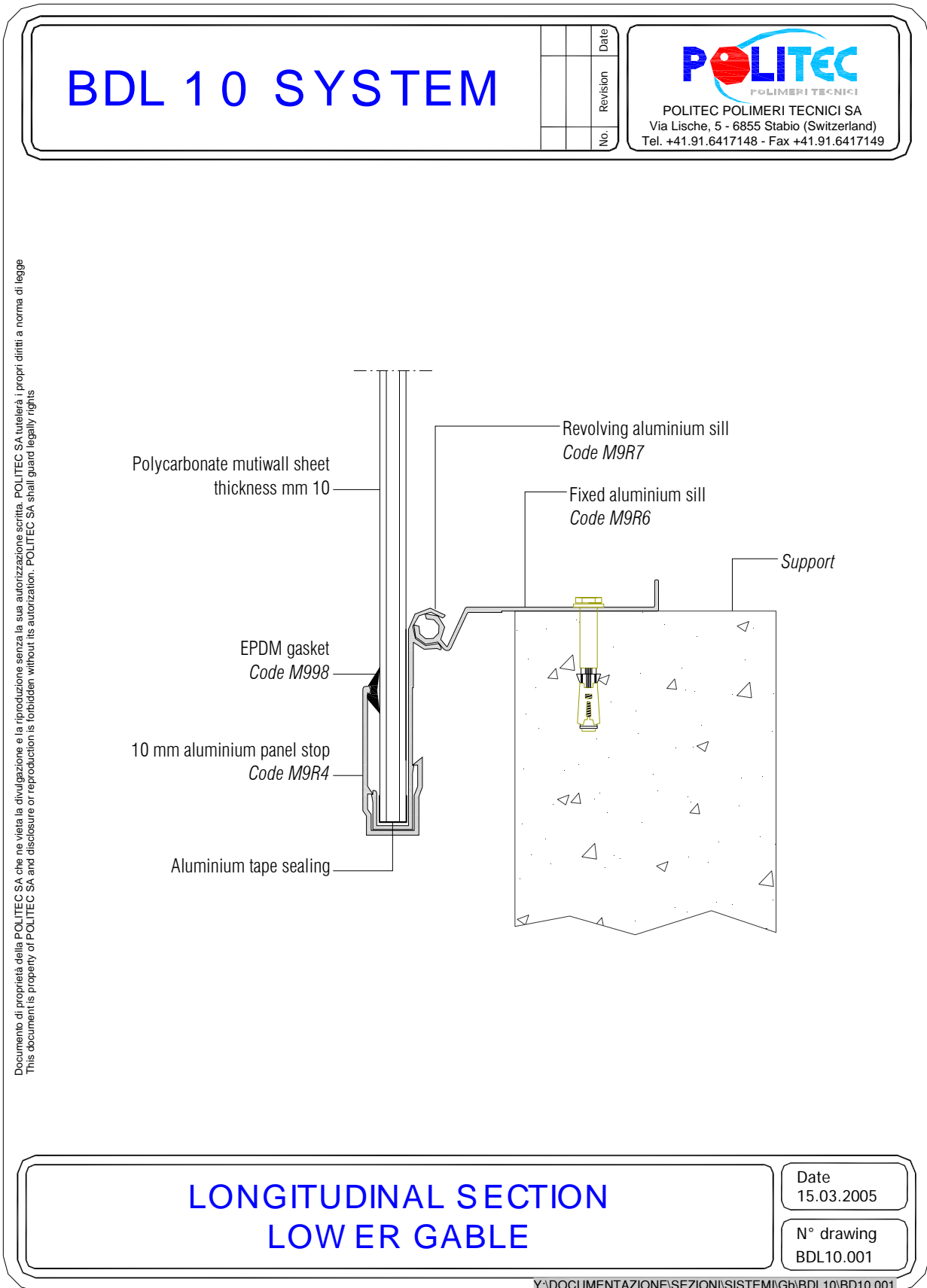
**LONGITUDINAL SECTION
UPPER GABLE**

Date
15.03.2005

N° drawing
BDL10.004

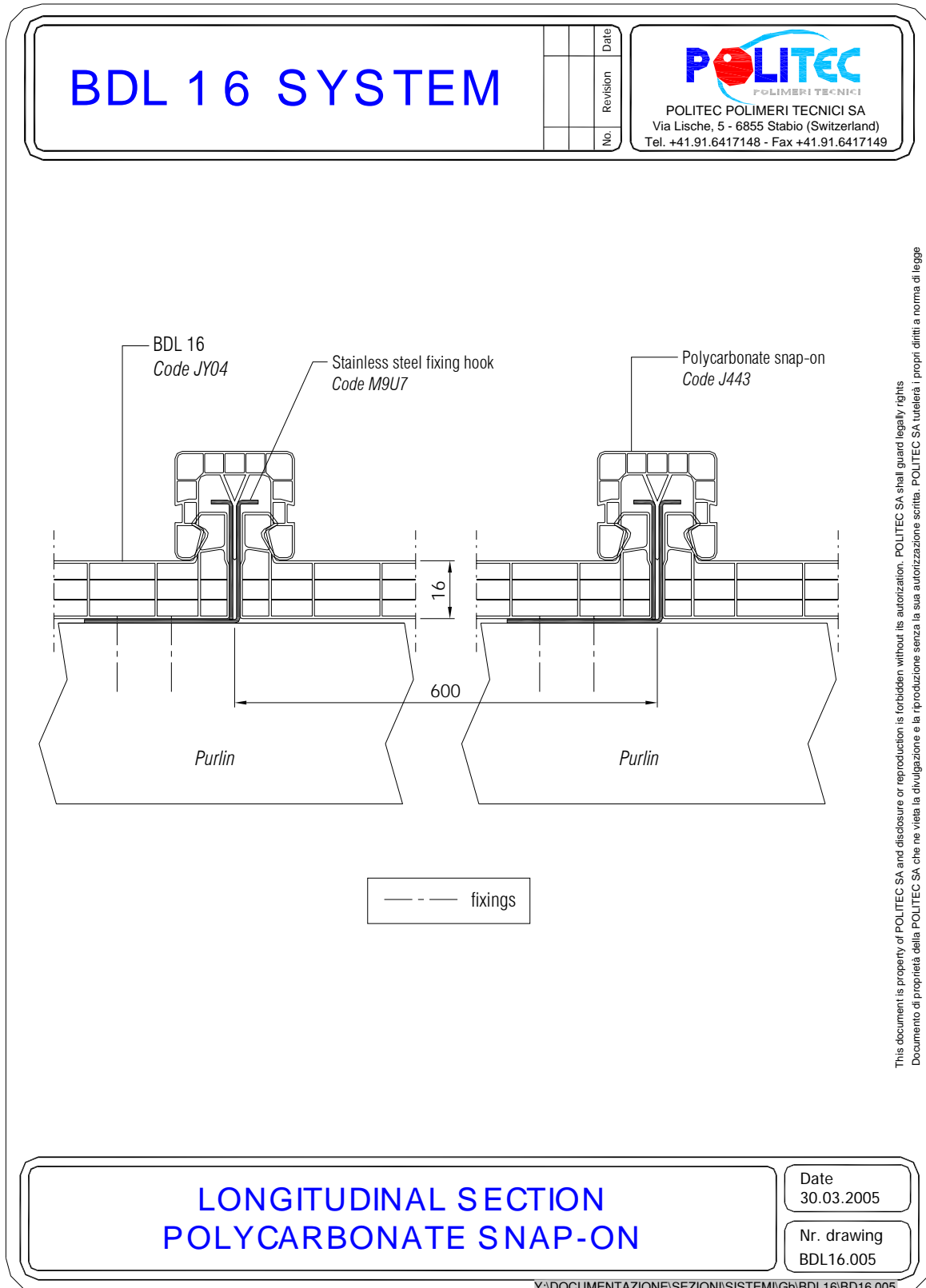
Y:\DOCUMENTAZIONE\SEZIONI\SISTEMI\Gb\BDL10\BD10.004

5.1.7 Skylight: lower detail of gable

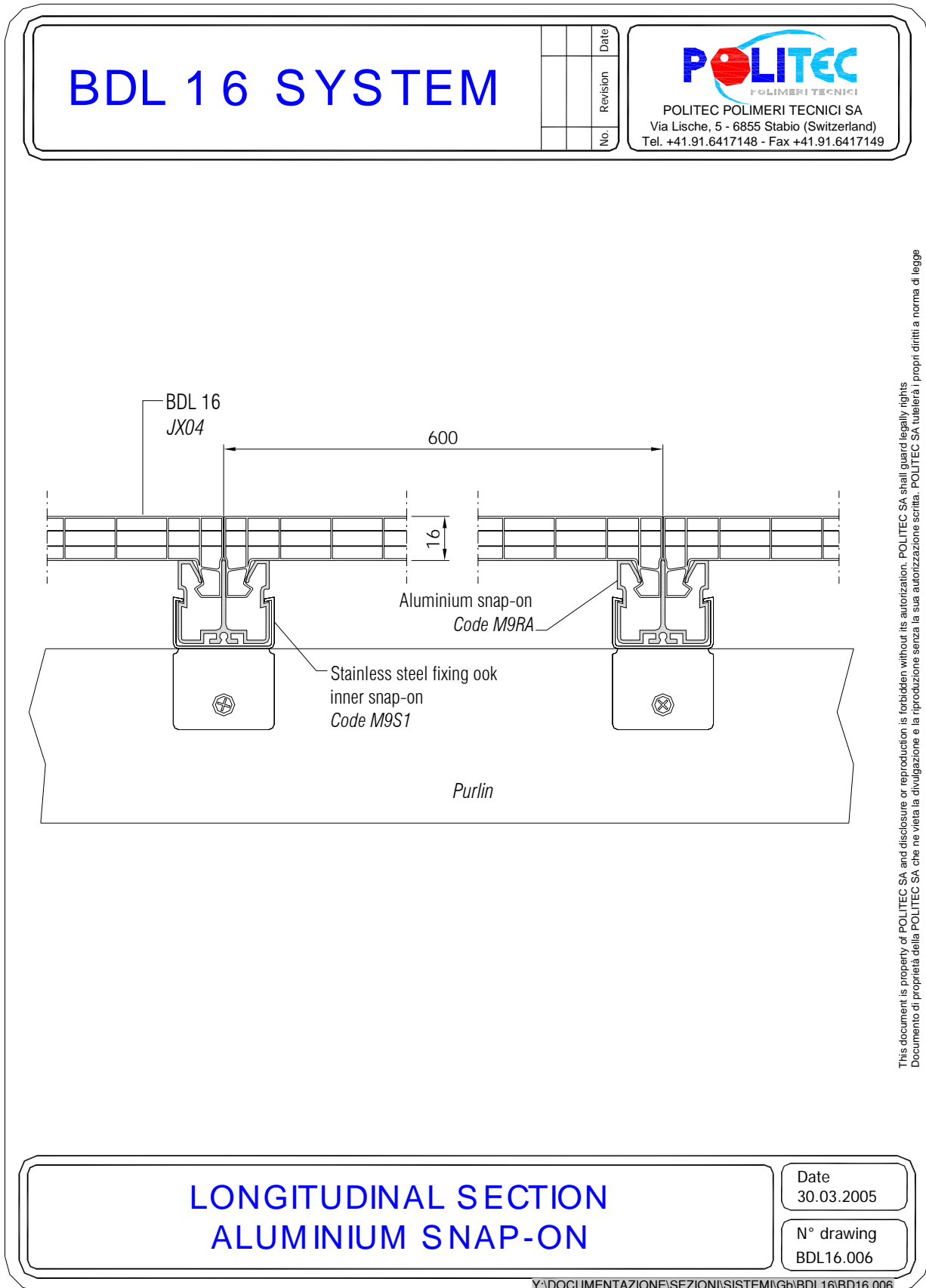


5.2 BDL16

5.2.1 Detail of hook with polycarbonate snap-on

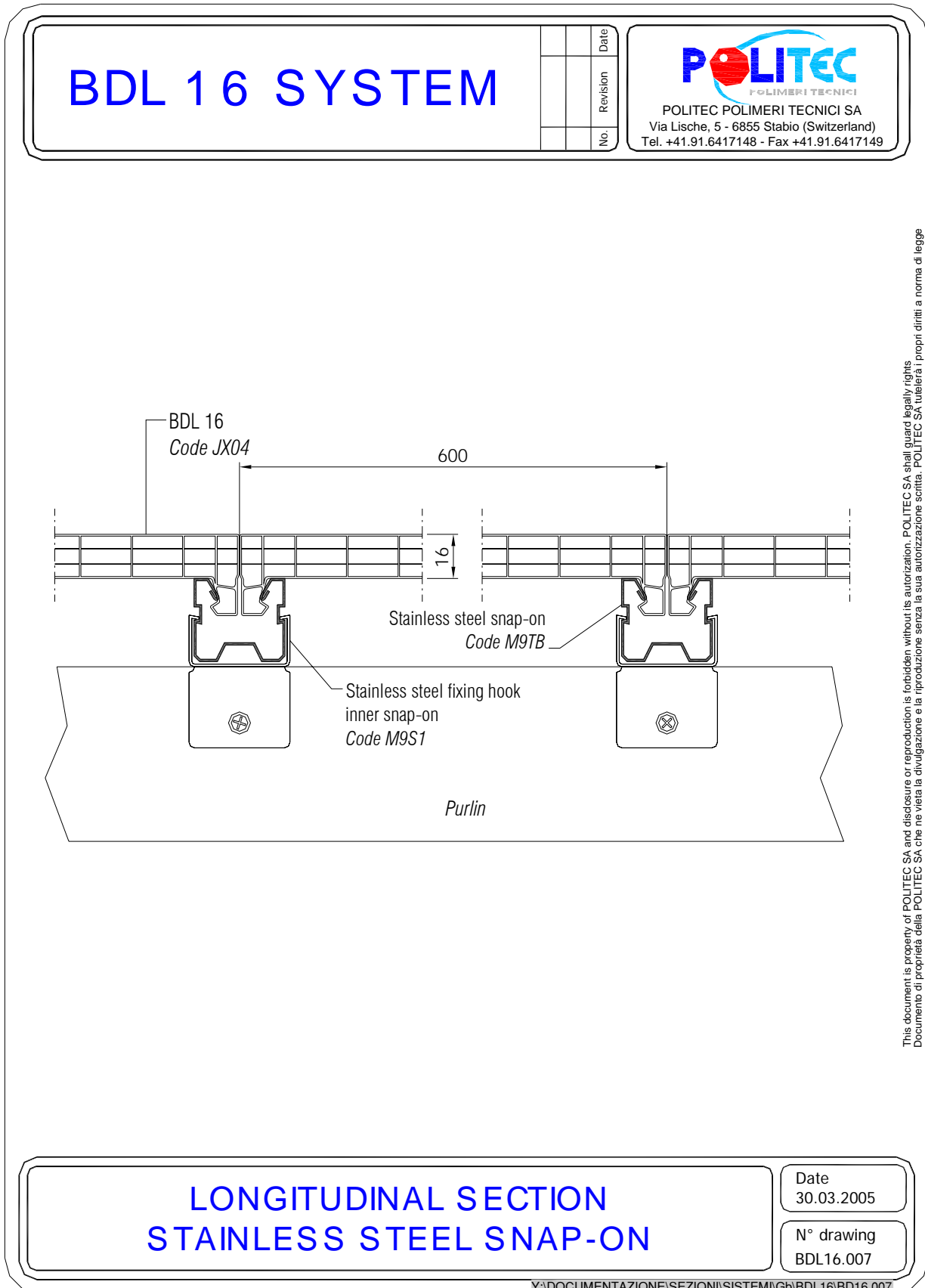


5.2.2 Detail of hook with aluminium snap-on



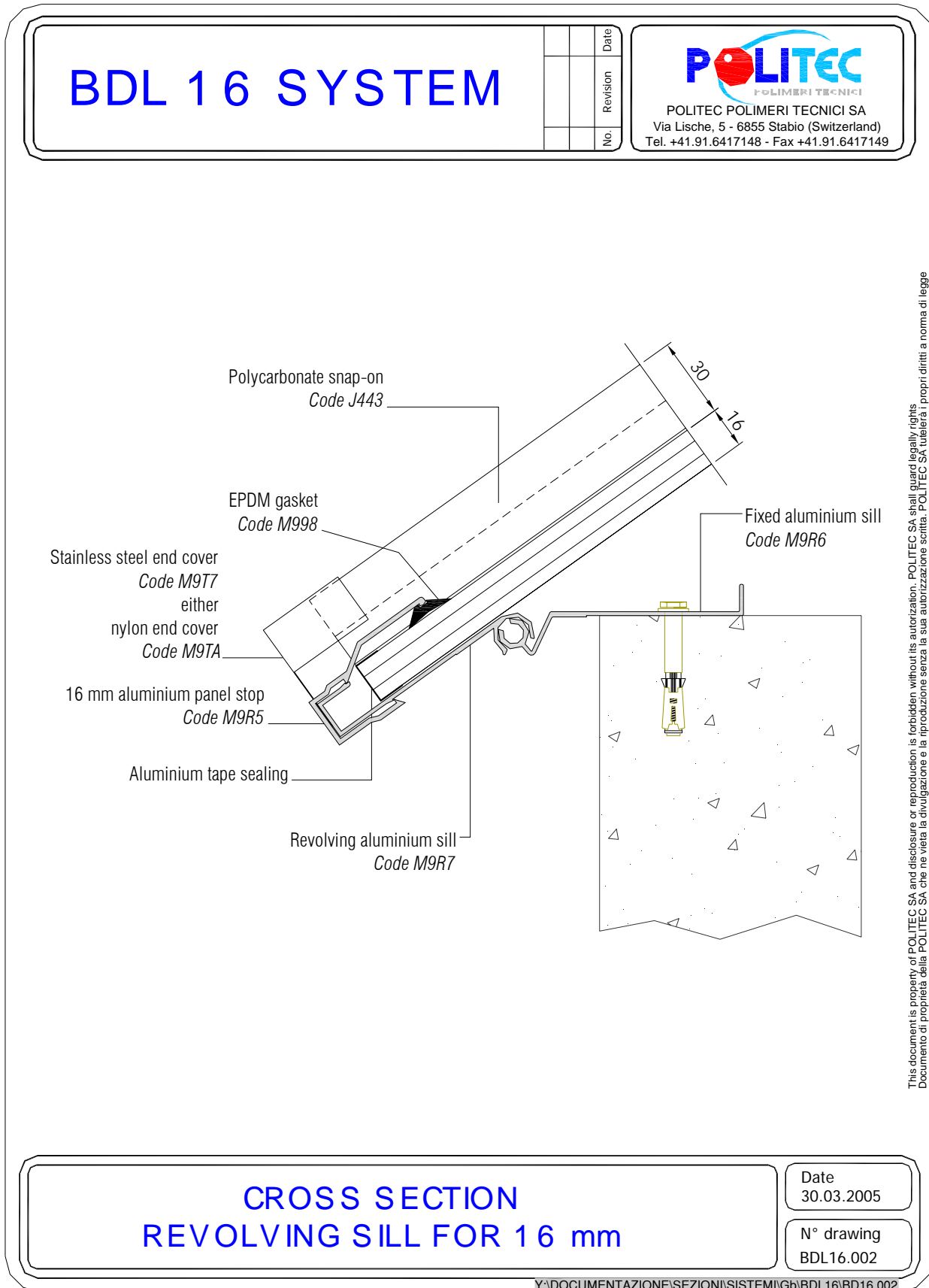
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5.2.3 Detail of hook with steel snap-on



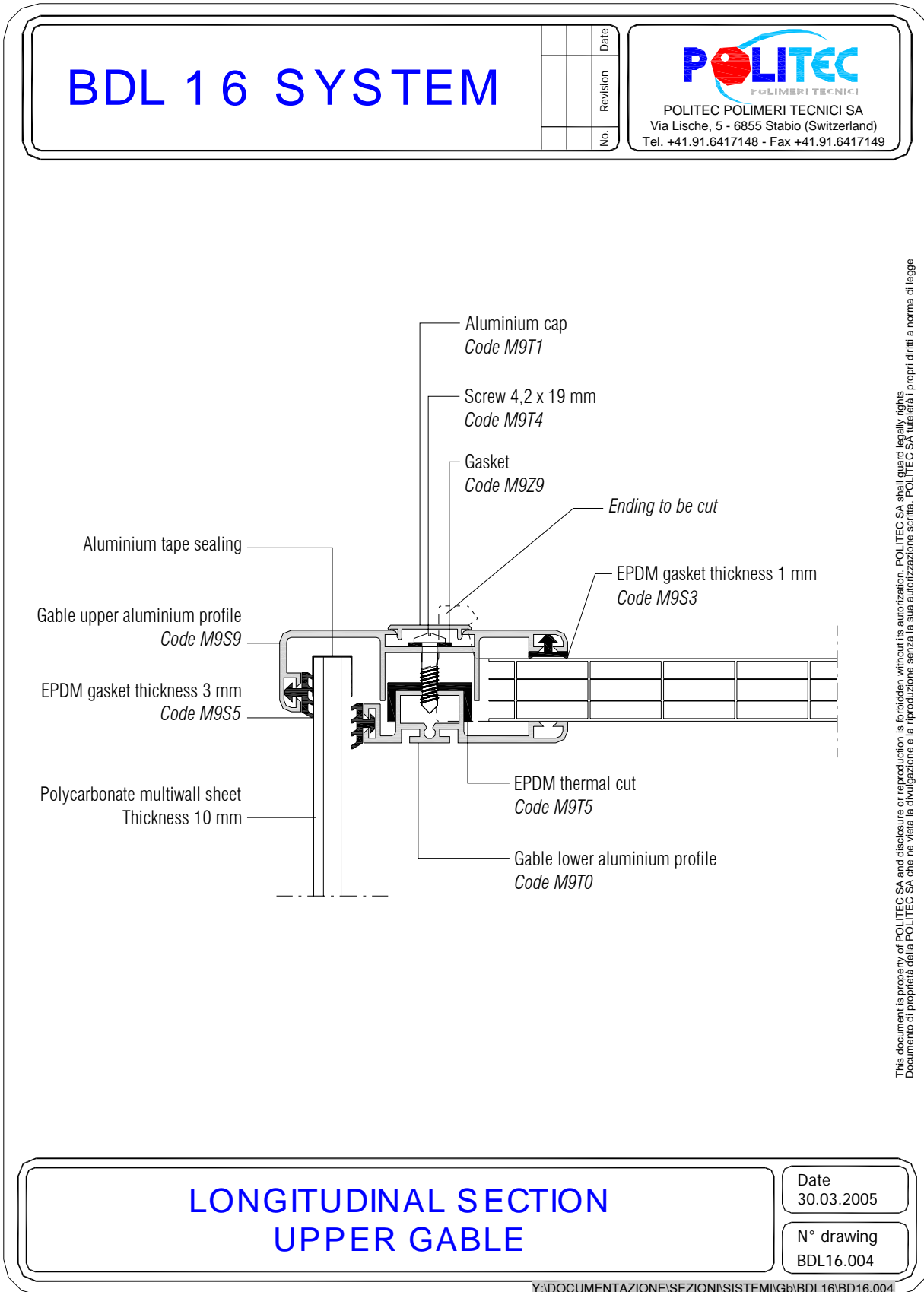
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5.2.4 Skylight: lateral detail with polycarbonate snap-on



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5.2.6 Skylight: upper detail of gable



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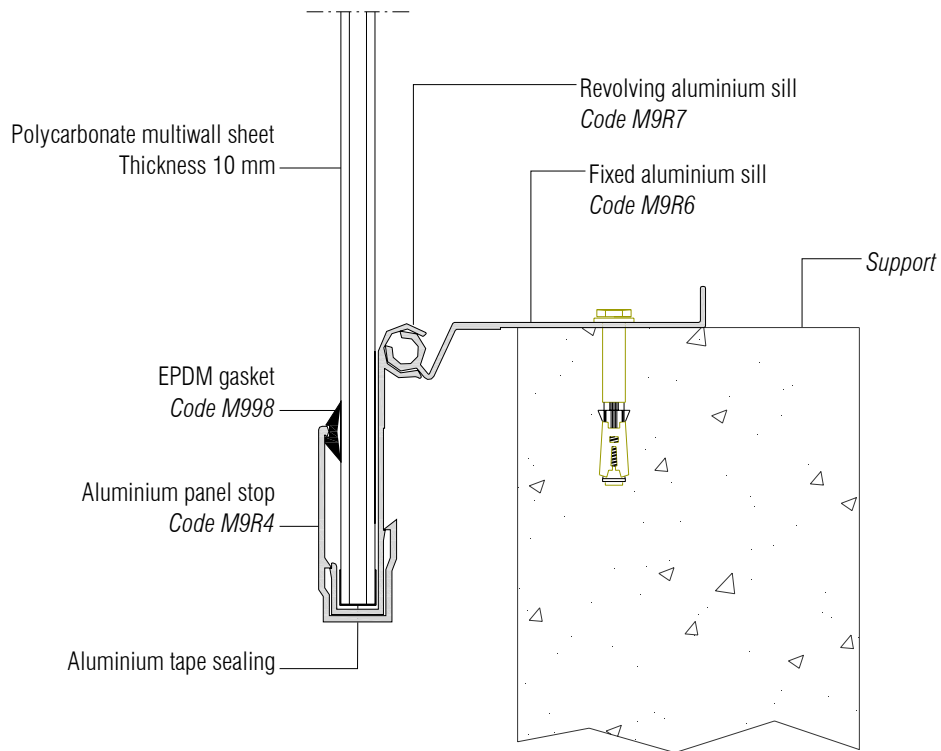
5.2.7 Skylight: lower detail of gable

BDL 16 SYSTEM

No.	Revision	Date



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**LONGITUDINAL SECTION
LOWER GABLE**

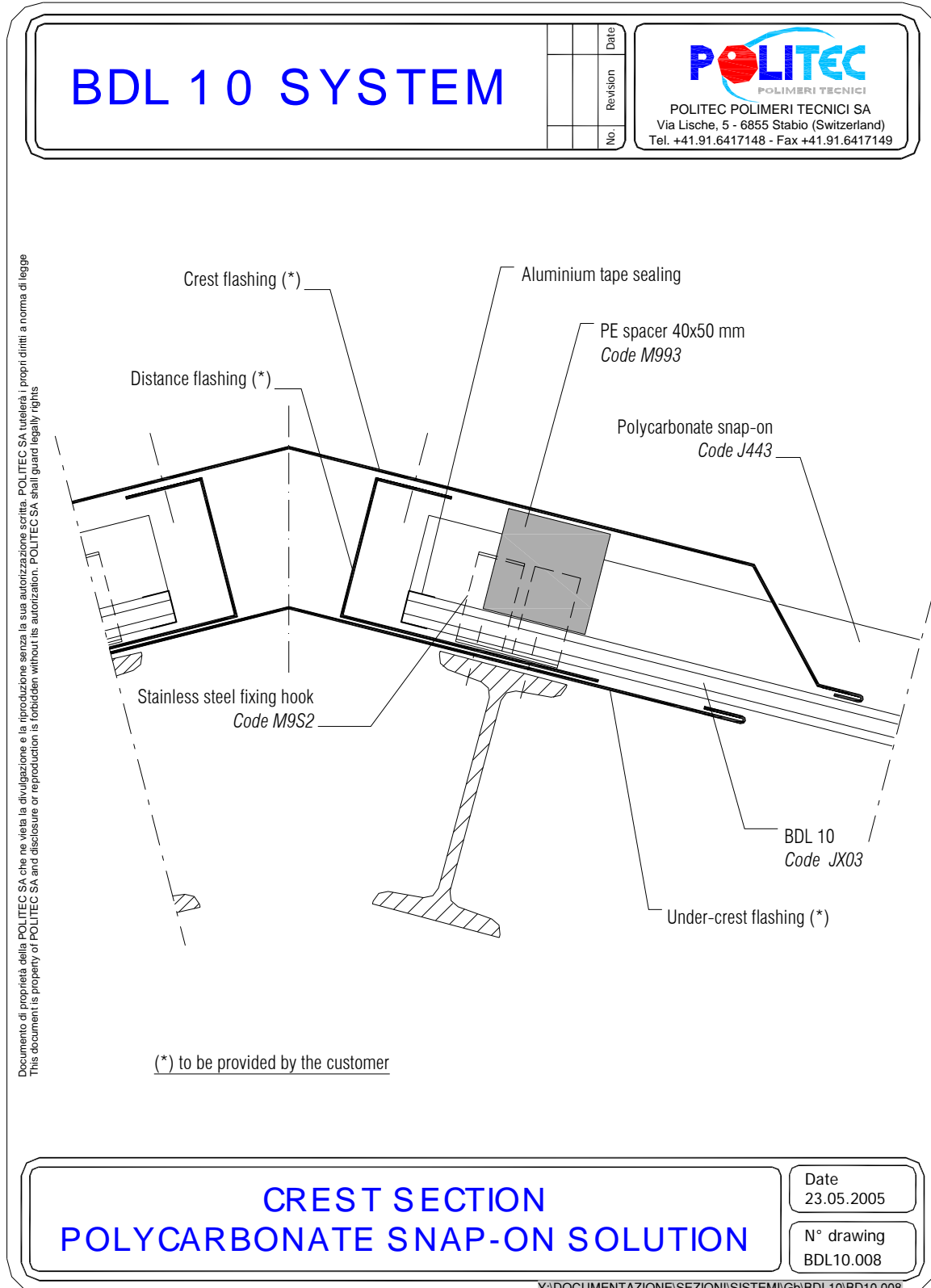
Date
30.03.2005

N° drawing
BDL16.001

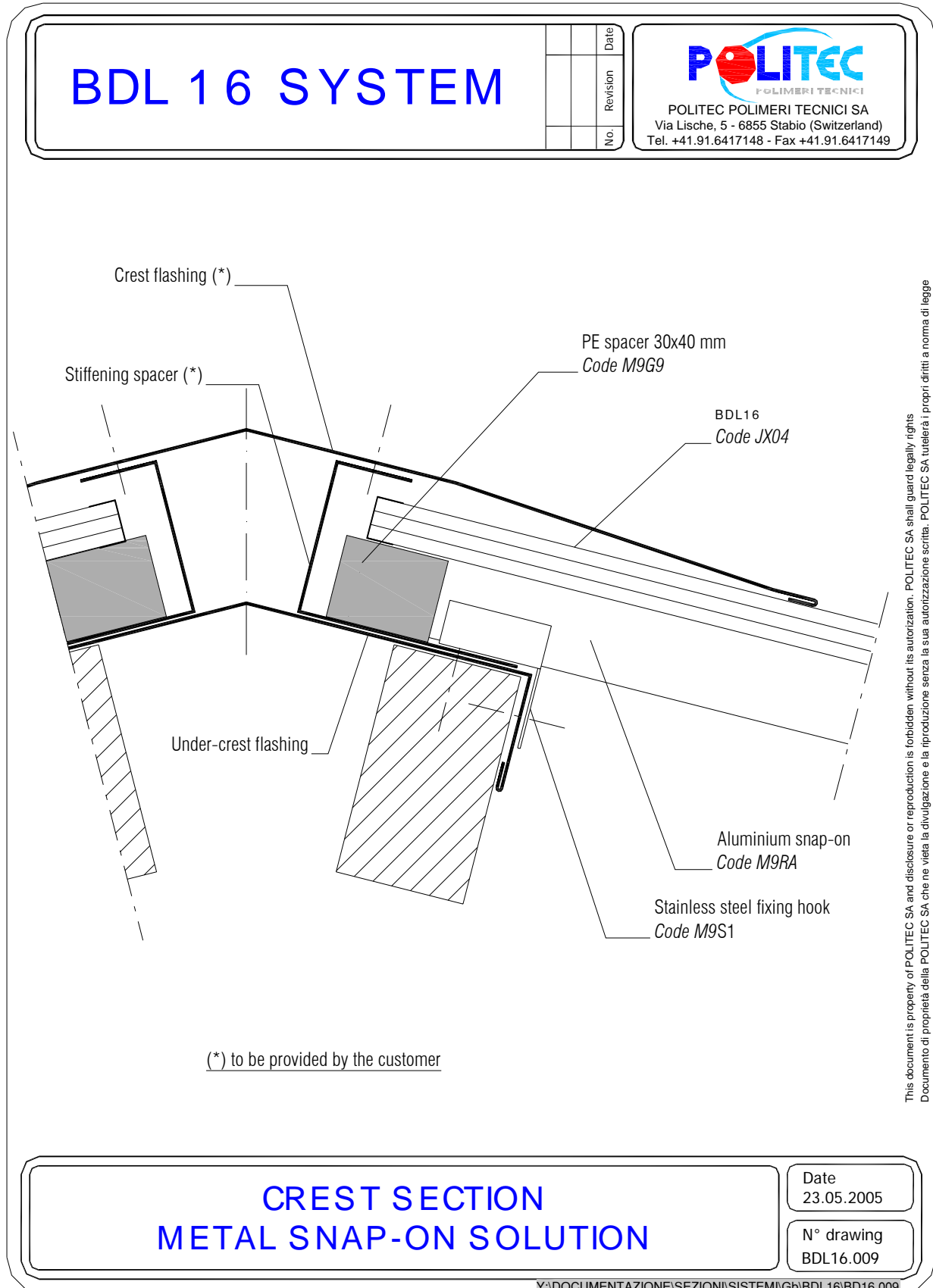
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5.3 General details

5.3.1 Crest with polycarbonate snap-on

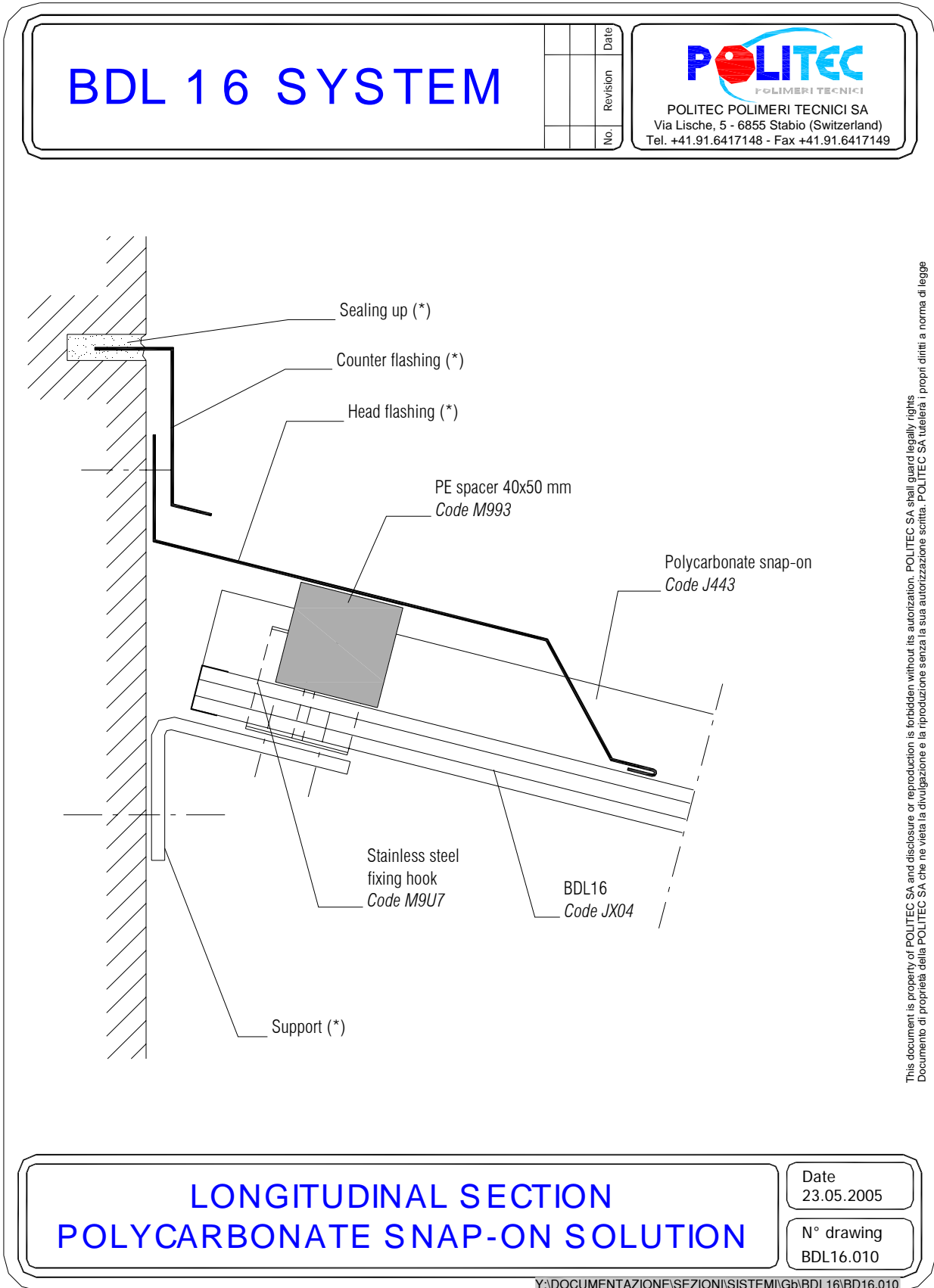


5.3.2 Crest with metal snap-on



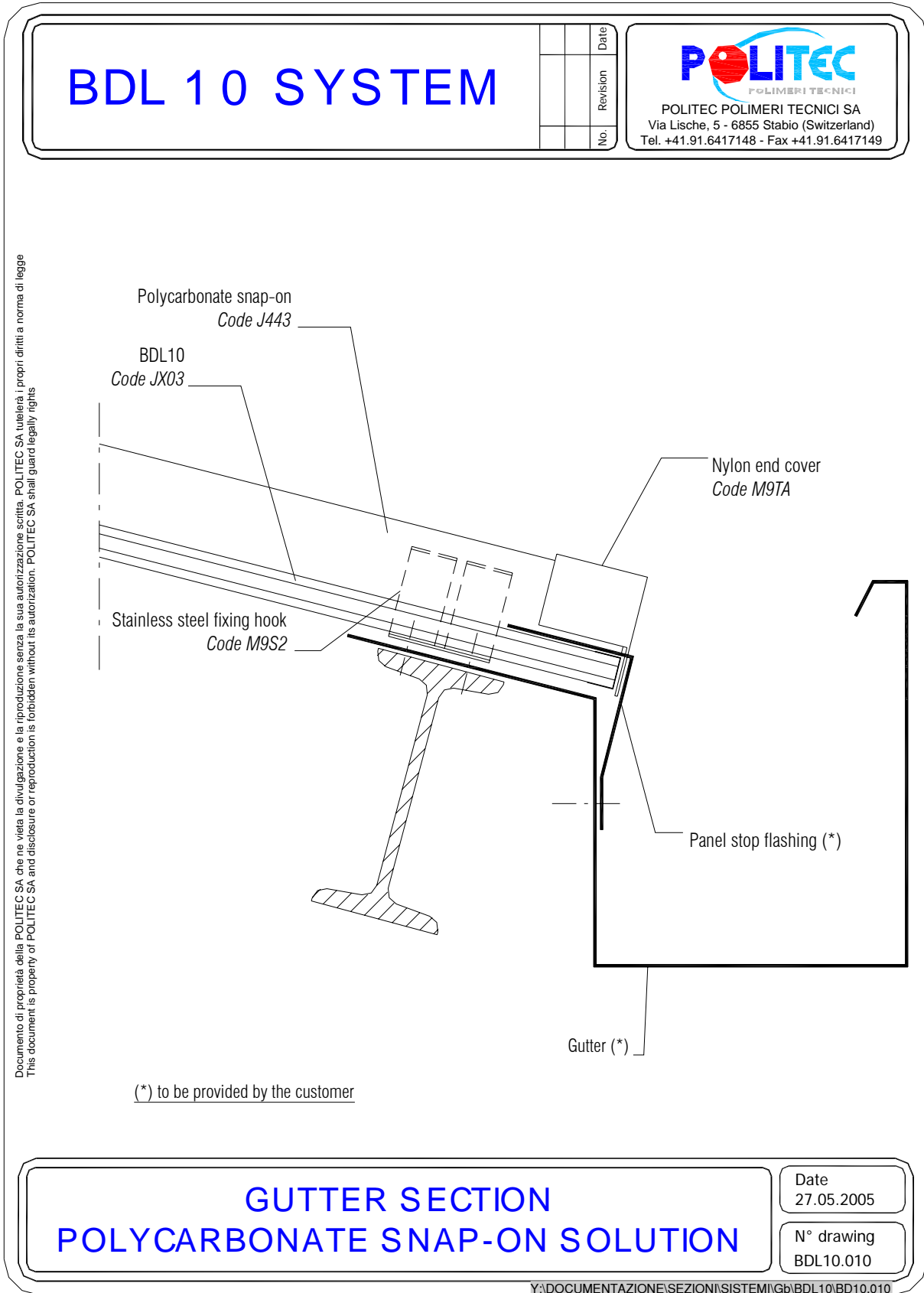
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5.3.3 Wall connection



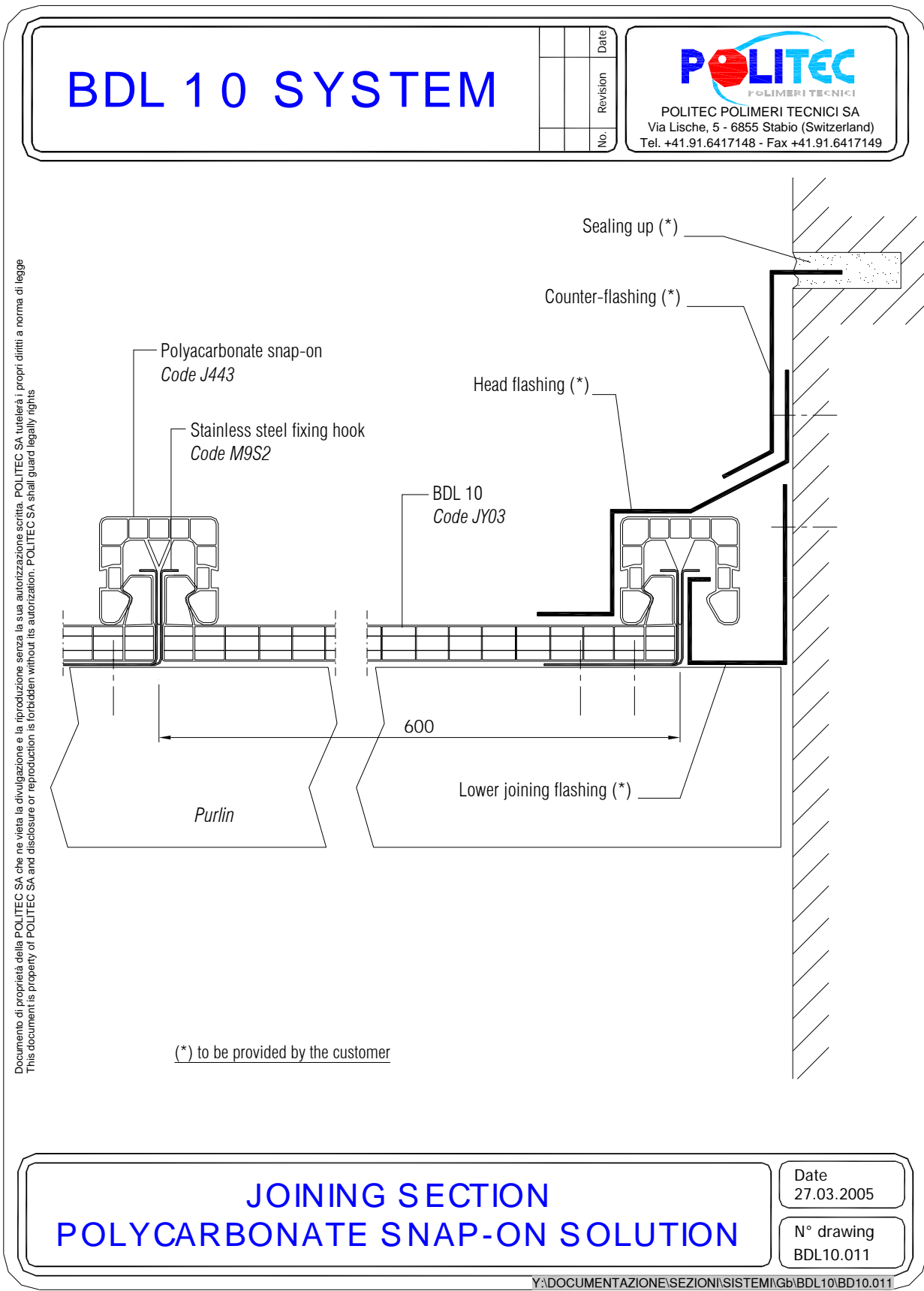
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5.3.4 Gutter



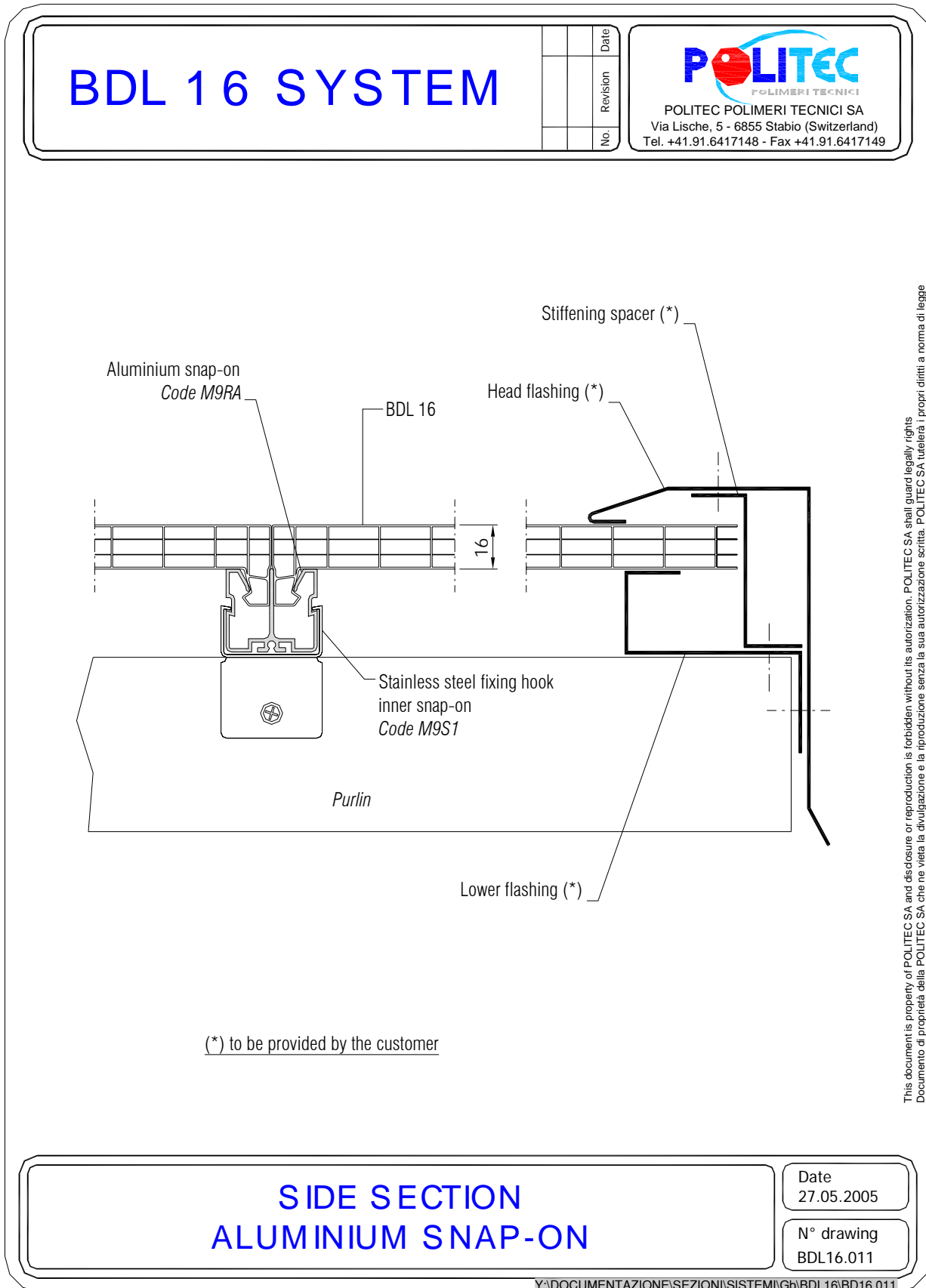
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5.3.5 Connection between BDL system and side brickwork



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5.3.6 Side connection with cut panel and metal snap-on



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