









# **CONTENTS**

System definition	3
Field of application of the system	3
Technical assistance	3
Panel specification	3
Maintenance	5
Simplified field of application for the system according to AWW	5
Maximum loads chart - 1/50th	7
arcoPlus range	10
Cladding Internal connector	17
Installation principle	18
Drainage principle	22
Sections principle 932-7, 925-7, 920-7, 626, 6124	25
Sections principle 6104, 684	31
Lateral completions	37
Outward angles	40
Inward angles	42
Principle of cladding junction	43
Junction principle between Acroterion and Roofing	45
Junction between Cladding and Roofing	46
Principle of cross- Through « T-shape »	47
Cladding External connector	48
Installation principle	49
Fixing principle	51
Section principle	53
Lateral completions	54
Principle of cladding junction	55





#### 1 - System definition

arcoPlus® connectable Facade systems are used to create lighting glazing for applications such as cladding or roof "saw tooth". They are made of cellular polycarbonate panels, anti - UV co-extruded on both sides.

arcoPlus® connectable Facade systems have got specifically designed lateral edges allowing a single clip-on position for aluminium or polycarbonate connectors.

Two principles of installation:

- · Normal installation: internal aluminium connectors.
- Reverso installation: external connectors (aluminium or polycarbonate).

Two grids of arcoPlus® connectable panels are available:

- 600 mm with thickness: 8, 10, 12 & 20 mm
- 900 mm with thickness: 20, 25 & 32 mm,

arcoPlus® connectable Facade systems can be used without any restriction of width or height on works to be realized. A maximum slope of 15° (positive or negative) from the vertical is admitted without any junction between connectors. For a facade with positive slope, the maximum height is limited to 6 meters.

**Nota:** Under some constraints (structural, thermal, colored, solar...); the expansion moving can generate deformation of the arcoPlus® connectable Facade systems with or without acoustic discomfort.

#### 2 - Field of application of the system

ArcoPlus® connectable systems are suitable for cladding and glazing purposes on new or refurbished buildings of all categories while respecting:

• Regulations in force on a general level

arcoPlus® connectable systems scan be used for any building type (industrial, air-conditioned offices, schools, hospitals, sport centres, housing, swimming pool...), would they be heated or not, however not refrigerated.

They can also be installed in any humidity level (pressure <15mmHg) environments (ie: swimming pools).

arcoPlus® connectable systems do not contribute to the functions of loads transmission, bracing and shock resistance for security purpose (railing function). Those functions are dealt with by the supporting structure.

Any application falling out from those criteria can be submitted to our technical department to be assessed within a specific analysis.

#### 3 - Technical assistance

Technical assistance and distribution over France and UK are provided by Poly-Pac, ZA La Porte de Ker Lann, Bruz (France).

Poly-Pac analyse the solution best suited to the project and develop a detailed list of panels, profiles and accessories required for the installation.

Even though Poly-Pac does not install, the company can attend the beginning of the implementation and provide advices at customer request.

#### 4 - Panel specification

#### 900 mm width :

	932-7	925-7	920-7
Width (mm)	900±2	900±2	900±2
Thick(mm)	32	25	20
Weight (kg)	4.30	4.00	3.50
AR	٧	٧	٧
IR	٧	√	٧
Bicolor	٧	٧	٧
UV Tech	٧	٧	٧
UV Matt	٧	٧	٧
AG / HP	٧	٧	٧

#### • 600 mm width:

	626	6124	6104	684
Width (mm)	600±2	600±2	600±2	600±2
Thick (mm)	20	12	10	8
Weight (kg)	3.20	2.50	2.2	1.85
AR	٧	٧	٧	٧
IR	٧	٧	٧	٧
Bicolor	٧	X	X	X
UV Tech	٧	٧	٧	٧
UV Matt	٧	٧	٧	٧
AG / HP	٧	٧	٧	٧

AR: Anti-glare treatment (visual comfort, prevent from neon effect)

IR: Infrared treatment (prevent from heat increase within the building)

UV Tech: Reinforced UV Protection – 15-year warranty.

UV Matt: External matt finish

AG/HP: Anti-graffiti - high protection

Panels are available in various colours. Please refer to our Caleido range.





#### 4.1 Thermal expansion

While installing the panels, it is essential to check on the polycarbonate panels covering section (in mm) of the aluminium profile according to the following chart:

Installation		Pa	nel len	gth in	m
T° C	1	3	5	7	8
0°c	20	23	25	27	29
15°c	22	26	31	35	39
30°c	23	30	36	42	48

Installation		Panel	length in	m
T° C	10	12	14	16
0°c	30	31	33	37
15°c	41	44	47	53
30°c	53	56	62	70

The covering section « R » must be respected (please refer to drawings on pages 23 to 24).

The linear expansion coefficient is 0,065mm/ml/°C.

Panels are freely expanding within the connectors and the top lateral profiles.

Expansion works towards the top in normal installation, and towards the bottom in reverso installation.

Expansion over the width of the facade is contained by the connectors juxtaposition system.

#### 4.3 - Thermal specifications

Panel	Uc (W/m².K) ψi (W/m. K)		χk (W/k)
932-7	1.26	0.16	0.06
925-7	1.42	0.16	0.06
920-7	1.67	0.16	0.06
626	1.69	0.16	0.06
6124	2.49	0.16	0.06
6104	2.73	0.16	0.06
684	3.05	0.16	0.06

Report CSTB: DER/HTO 2010-177-RB/LS &

DEIS/HTO 2016-034-KZ/LS-N° SAP 70052175

Uc: Thermal coefficient in the core part of the panel (in between connectors)

 $\psi i$  et  $\chi k \colon Thermal$  coefficient alongside the connectors.

#### 4.4 - Shock resistance

Panel	External shocks	Internal shocks
932-7	Q4	03
925-7	Q4	03
920-7	Q4	03
626	Q4	03
6124	Q4	03
6104	Q4	03
684	Q4	03

Report: GINGER CEBTP n°ORE6.B.0015 du 13/09/2011 according to the norm P08-302 (October 1990) and CSTB booklet 3534 (December 2005).

#### 4.5 - Interior /exterior sound absorption

Panels	Interior	Exterior	Rw (C, Ctr)
932-7	21 dB(A)	21 dB(A)	22 (-1 ; -1)
920-7	22 dB (A)	20 dB (A)	23 (-1 ; -2)
626	18 dB(A)	16 dB(A)	19 (-1, -4)

Report CFI d'Andrésy n° ACOU/09/03

Phonic Test according to norms ISO 140-4 and UNI ISO

Report EUROFINS N° EPT.16.AVM.007/53941 dated 20/01/16 & EPT.16.AVM.0008/53941 dated 21/01/16.

#### 4.6 - Optical characteristics

Panel	Colour	Light transmission (LT) %	Solar Factor (SF) %	
	Cristal	53	60	
	Opale	41	52	
932-7	Green	29	49	
	Red	9	50	
	Blue	40	57	
925-7	Cristal	54	60	
323-7	Opale	43	53	
920-7	Cristal	55	60	
320-7	Opale	43	53	
	Cristal	58	58	
	Opale	33	45	
626	Green	55	58	
020	Red	11	49	
	Mauve	14	51	
	AL Grey	5	5	
6124	Cristal	68	66	
0124	Opale	36	48	
6104	Cristal	69	66	
	Opale	38	49	
684	Cristal	70	67	
004	Opale	42	51	

Study report CSTB nº DER/HTO 2010-177-RB/LS & n° EMI -26057688-1.

#### 4.7 - Fire resistance

iii iiic resistance				
Panel	Fire classification	Combustible Mass (MJ/m²)		
932-7	B, s1-d0	128		
925-7	B, s1-d0	119		
920-7	B, s1-d0	104		
626	B, s1-d0	95		
6124	B, s1-d0	75		
6104	B, s1-d0	66		
684	B, s1-d0	55		

Report AFITI LICOF n°2607T13-2 dated 14/06/2013 & n°2900T15-2 dated 07/01/2016





#### 4.8 - Storage

arcoPlus® systems should be stored avoiding exposure to direct sunlight and rain. Should storage be outside, it should not be directly in contact with the ground (a ventilation space must be kept) and should be protected with a light-coloured non-transparent tarpaulin.

To avoid oxidation, untreated aluminium profiles should be unpacked straight away after unloading to avoid any contact with potential residual humidity within the package and stored in a dry environment. In any case, untreated aluminium profiles should not be kept in contact of each others in a humid environment.

Do not store more than two pallets on top of each other. In case of heavy wind, use straps.

#### 4.9 - Resistance to chemical agents

arcoPlus® connectable panels have good resistance to most chemicals with which it is likely to come into contact during normal use.

Chemical agents	Resistance	
Diluted acids	Good	
Concentrated acids	Average to good	
Alkali	Low to average	
Organic solvents – alcohol	Good	
Chlorinated hydrocarbons	Low	
Aromatic hydrocarbons	Low	
Aliphatic polycarbons	Low	
Lubricating oils	Good	
Detergents	Good	

The AG/HP treatment improves the resistance to chemical agents.

Preliminary tests are recommended in case of intense or specific exposure. Use of solvent must be avoided.

#### 5 - Maintenance

arcoPlus® panels should be frequently cleaned with mild soapy water (neutral detergent) and thoroughly rinsed with clear water. Do not use warm water.

Do not use organic solvents, abrasive or alkaline products.

#### 5.2 - How to replace a panel?

#### Cladding normal installation

#### (Inside connectors)

- 1. Remove epdm gasket.
- 2. Unclip the frontal opening aluminium profile.
- Using a portable grinder with a diamond disc, cut the damaged panel carefully, alongside the connector.

A guide could be used in order to protect the other panels against any damage.

Then unclip the weakened panel.

- 4. Starting from the bottom, install the replacement panel.
- Put back in place the frontal opening aluminium profile, and finally clip back the epdm gasket on.

# 14.2 - Cladding reverso installation (outside connectors)

- 1. Starting from the bottom, unclip the connector.
- 2. Starting from the bottom, push the panel from the inside to the outside of the building in order to remove the panel from its fixing halters.
- 3. Slightly bend the edge of the fixing halters
- 4. Put the new panel in place.
- Put the fixing halters back in place using a hammer.
- 6. Clip the connector back on.

When using the aluminium connectors ref. 4310 or 4499, you need to loosen the lateral screws before unclipping and then to tighten them after clipping the connector back on.

## 6 - Simplified field of application for the system according to AWW (air, water, wind)

6.1 - arcoPlus system 932-7, 925-7, 920-7, 626

Zone 1		Zone 2		Zone 3		Zone 4		
H(m)	Normal 1,00	Exposed 1,35	Normal 1,00	Exposed 1,30	Normal 1,00	Exposed 1,25	Normal 1,00	Exposed 1,20
10	Ok	Ok	Ok	Ok	Ok	Ok	Ok	Ok
20	Ok	Ok	Ok	Ok	Ok	Ok	Ok	Ok
30	Ok	Ok	Ok	Ok	Ok	Ok	Ok	-
40	Ok	Ok	Ok	Ok	Ok	Ok	Ok	-
50	Ok	Ok	Ok	Ok	Ok	-	-	-

Based on air and water infiltration resistance performances under normal pressure of 1800Pa (inside connectors) and 2400Pa (outside connectors).

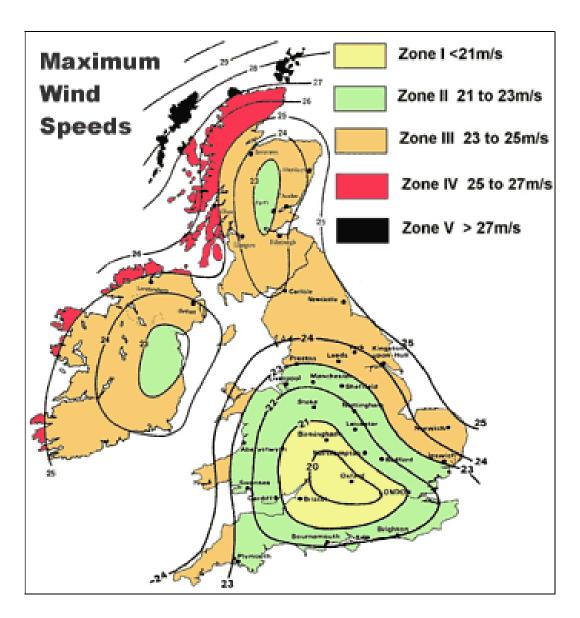




6.2 arcoPlus system 6124, 6104, 684

Ш(т)	Zor	ie 1	Zor	ne 2	Zor	ne 3	Zone 4		
H(m)	Normal 1,00	Exposed 1,35	Normal 1,00	Exposed 1,30	Normal 1,00	Exposed 1,25	Normal 1,00	Exposed 1,20	
10	Ok	Ok	Ok	Ok	Ok	Ok	Ok	Ok	
20	Ok	Ok	Ok	Ok	Ok	-	Ok	-	
30	Ok	Ok	Ok	Ok	Ok	-	-	-	
40	Ok	Ok	Ok	-	Ok	-	-	-	
50	Ok	Ok	Ok	-	-	-	-	-	

Based on air and water infiltration resistance performances under normal pressure of 1800Pa (inside connectors) and 2400Pa (outside connectors).







## 7 - Maximum loads charts - deflection 1/50th

#### 7.1 Maximum load on normal installation with AL connector 4243 or 4499.

			Deflec	ction	value	1/50	)								
Nb	Daniel	Thick	Wind load daN/m²	Span (m)											
ND	Panel			1.0	1.3	1.5	1.8	2.0	2.5	2.6	2.8	3.2			
		8	Positive pressure	180	180	180	180	180	78						
		0	Negative pressure	125	125	125	125	125	68						
			Positive pressure	180	180	180	180	180	87						
	600	10	Negative pressure	125	125	125	125	125	79						
	600	42	Positive pressure	180	180	180	180	180	87						
		12	Negative pressure	125	125	125	125	125	79						
2		20	Positive pressure	180	180	180	157	157	88	60	107*	107*			
supports		20	Negative pressure	160	160	160	163	163	117	84	114*	114*			
			Positive pressure	115	115	115	115	115	60	60	107*	107*			
		20	Negative pressure	111	111	111	111	111	84	84	114*	114*			
		25	Positive pressure	115	115	115	115	115	60	60	107*	107*			
	900		Negative pressure	111	111	111	111	111	84	84	114*	114*			
		32	Positive pressure	125	125	125	125	125	58	58	107*	107*			
			Negative pressure	131	131	131	131	131	77	77	114*	114*			
		8	Positive pressure	180	180	180	180	180	180						
			Negative pressure	114	114	114	114	114	114						
			Positive pressure	180	180	180	180	180	180		107* 10 114* 11 107* 10 114* 11 107* 10 114* 11 107* 10 114* 11 107* 12 114* 12 114* 12 114* 12 114* 12 114* 12 114* 12 114* 12 115 12 117 18 118 12 118 12 118 127* 12 118 180* 18				
	500	10	Negative pressure	114	114	114	114	114	114						
	600		Positive pressure	180	180	180	180	180	180						
		12	Negative pressure	114	114	114	114	114	114						
3			Positive pressure	180	180	180	180	180	180	117	117	180*			
supports & more		20	Negative pressure	163	163	163	153	153	121	113	113	127*			
		22	Positive pressure	180	180	180	180	92	92	180*	180*	180*			
		20	Negative pressure	131	131	131	131	87	87	127*	127*	127*			
		25	Positive pressure	180	180	180	180	92	92	180*	180*	180*			
	900		Negative pressure	131	131	131	131	87	87	127*	127*	127*			
			Positive pressure	180	180	180	180	107	107	180*	180*	180*			
		32	Negative pressure	127	127	127	127	85	85	127*	127*	127*			

<sup>\*</sup>Only with connector 4499





#### 7.2 Maximum load on reverso installation with AL connectors 4310 & 4499

			[	Defle	ction	1/50	)							
Nb	Panel	Thick	Wind load	SPAN (m)										
ND	Panei		daN/m²	1.0	1.3	1.5	1.6	2.0	2.5	2.6	2.8	3.2	3.5	
	:	8	Positive pressure	185	185	185	185	185	183					
			Negative pressure	72	72	72	72	72	60					
		10	Positive pressure	185	185	185	185	185	183					
	600	10	Negative pressure	72	72	72	72	72	60					
	000	12	Positive pressure	240	240	240	240	240	187					
		12	Negative pressure	99	99	99	99	99	78					
2 supports		20	Positive pressure	240	240	240	240	240	205	129*	129*	129*	129*	
2 supports		20	Negative pressure	140	140	140	140	140	107	82*	82*	82*	82*	
	900	20	Positive pressure	152	152	152	152	152	152	119*	119*	119*		
			Negative pressure	98	98	98	98	98	98	93*	93*	93*		
		25	Positive pressure	152	152	152	152	152	152	119*	119*	119*		
			Negative pressure	98	98	98	98	98	98	93*	93*	93*		
		32	Positive pressure	152	152	152	152	152	152	119*	119*	119*		
			Negative pressure	98	98	98	98	98	98	93*	93*	93*		
		8	Positive pressure	240	240	240	240	240	240					
			Negative pressure	68	68	68	55	55	55					
		10	Positive pressure	240	240	240	240	240	240					
	600	10	Negative pressure	68	68	68	55	55	55					
	000	12	Positive pressure	240	240	240	240	240	240					
		12	Negative pressure	78	78	78	78	62	62					
3 supports		20	Positive pressure	240	240	240	240	240	140	240	240			
& more			Negative pressure	100	100	100	100	100	93	115*	115*			
		20	Positive pressure	240	240	240	240	240	240	219*	219*	219*		
		20	Negative pressure	98	98	98	98	98	98	101*	101*	101*		
	900	25	Positive pressure	240	240	240	240	240	240	219*	219*	219*		
	300		Negative pressure	98	98	98	98	98	98	101*	101*	101*		
		32	Positive pressure	240	240	240	240	240	240	219*	219*	219*		
			Negative pressure	98	98	98	98	98	98	101*	101*	101*		

<sup>\*</sup>Only with connector 4499





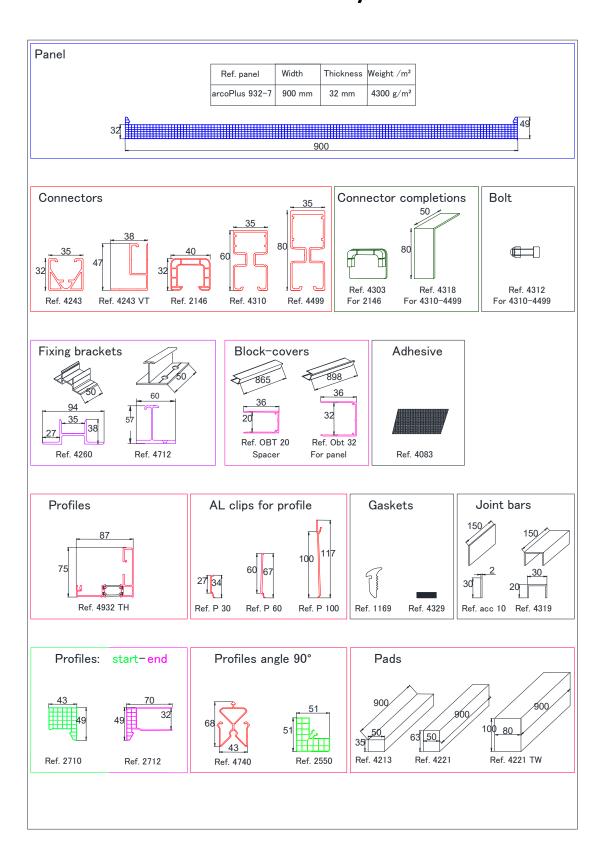
## 7.3 Maximum load on reverso installation with PC connector 2146

Deflection 1/50													
Nb	Panel	Thick	ick Wind load daN/m²	SPAN (m)									
14.5	Tarici	THICK		1.0	1.3	1.5	1.6	2.0	2.5	2.6	2.8	3.2	3.5
		8	Positive pressure	198	152	100	100						
		•	Negative pressure	52	51	51	51						
		10	Positive pressure	198	152	100	100						
	600	10	Negative pressure	52	51	50	50						
	800	12	Positive pressure	240	185	99	99						
			Negative pressure	95	70	68	68						
3 supports		20	Positive pressure	240	240	130	130						
& more			Negative pressure	110	110	103	103						
		20	Positive pressure	76	76	76	76						
		20	Negative pressure	74	74	74	74						
	900	25	Positive pressure	76	76	76	76						
		25	Negative pressure	74	74	74	74						
		32	Positive pressure	159	159	159	159						
			Negative pressure	72	72	72	72						





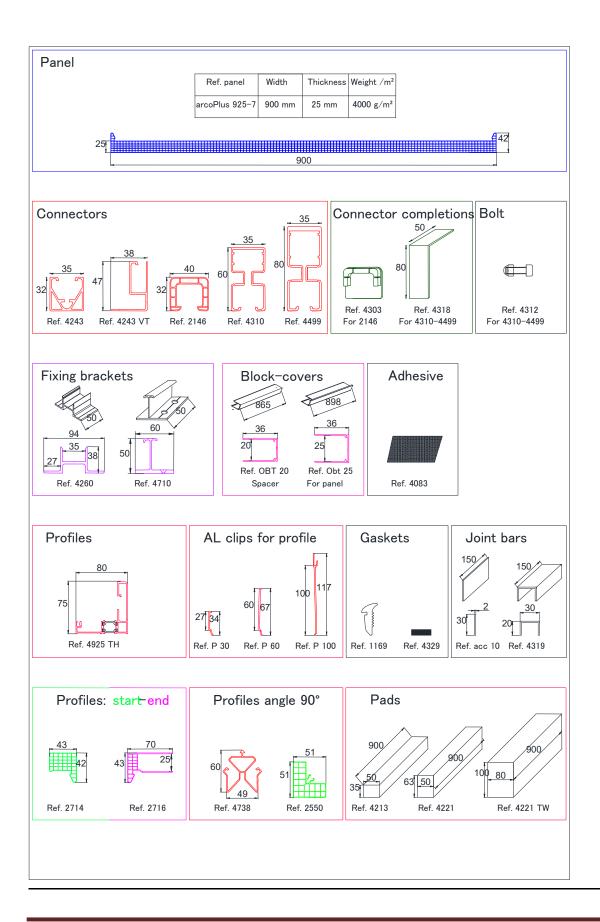
# arcoPlus 932-7 system







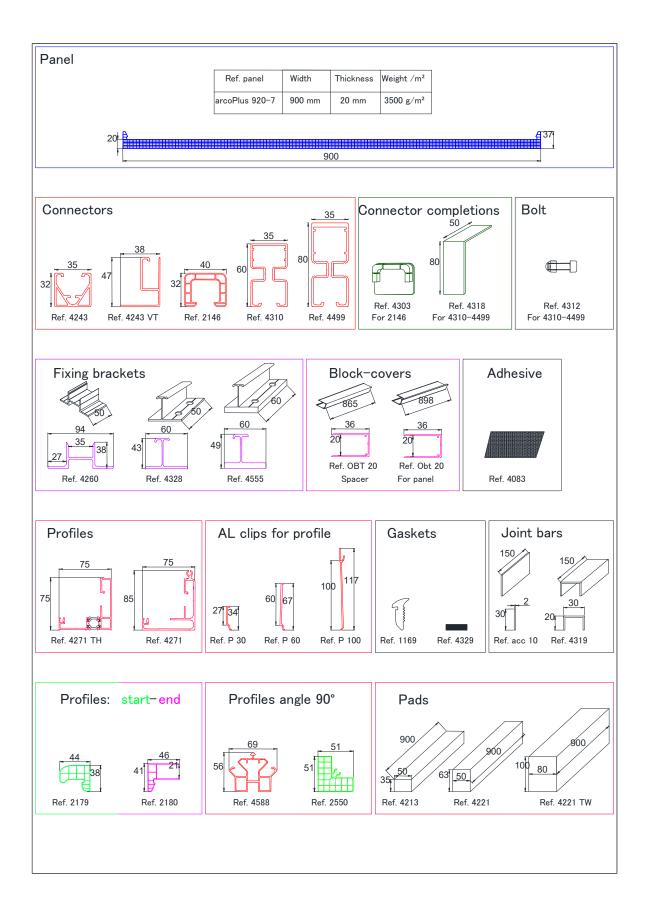
# arcoPlus 925-7 system







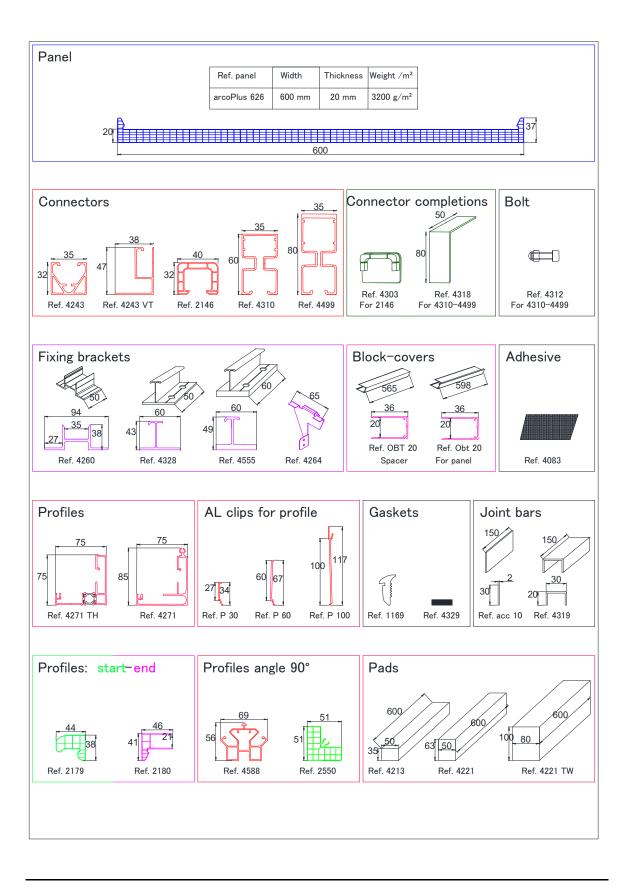
# arcoPlus 920-7 system







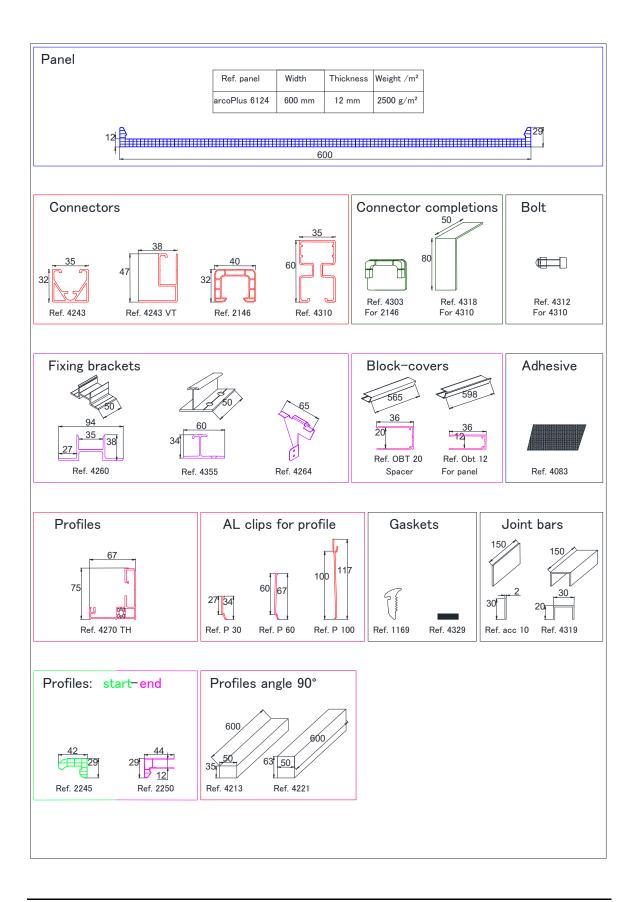
# arcoPlus 626 system







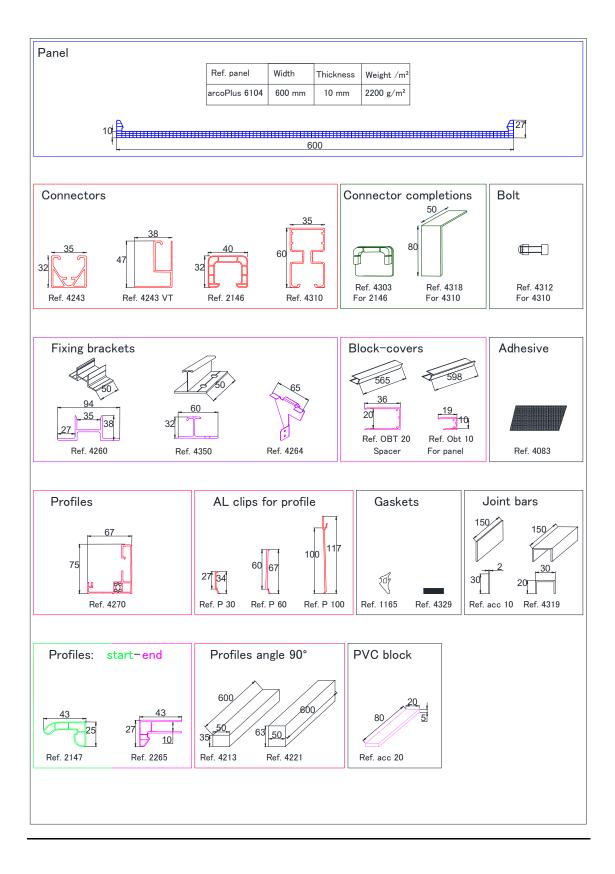
# arcoPlus 6124 system







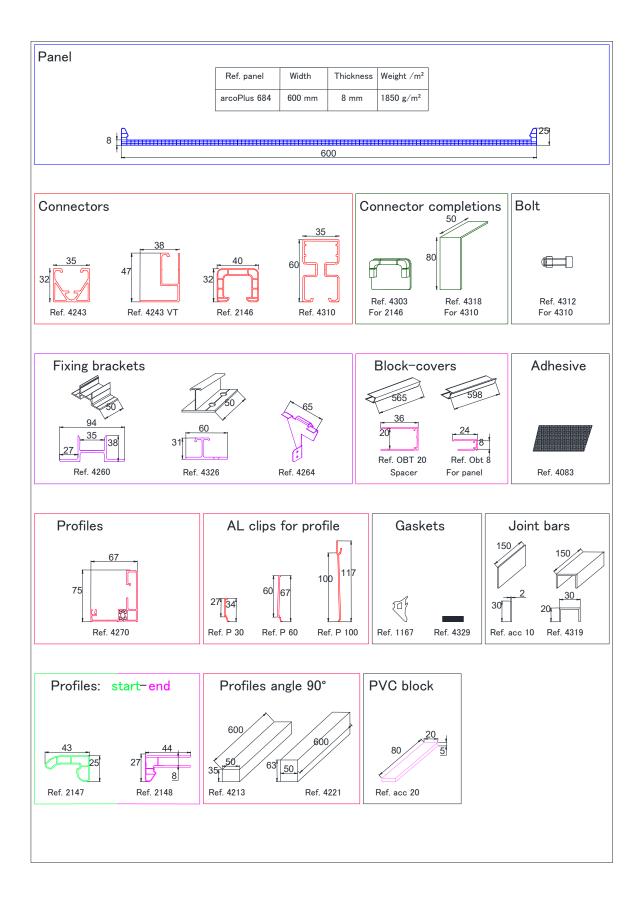
# arcoPlus 6104 system







# arcoPlus 684 system





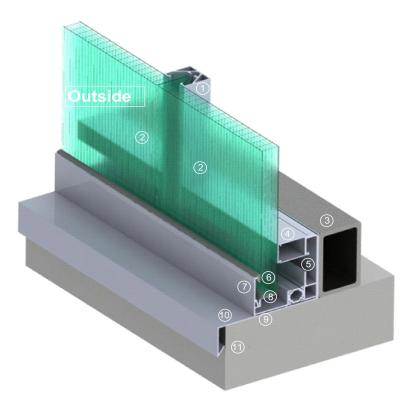


# Cladding Internal connectors





# Principle of installation on low part of cladding

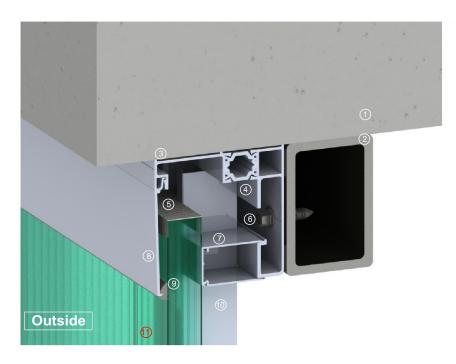


- (1) Connector 4243
- 2 Panel
- (3) Support NS\*
- (4) Block-cover 20 spacer
- 5 Profile
- 6 Joint
- 7 Al clip for profile
- 8 Adhesive
- 9 Backing joint+silicone NS\*
- 10 Steel folded cover NS\*
- (1)Bedrock

\* Not supplied

# Principle of installation on top part of cladding

## Up to 7 meters



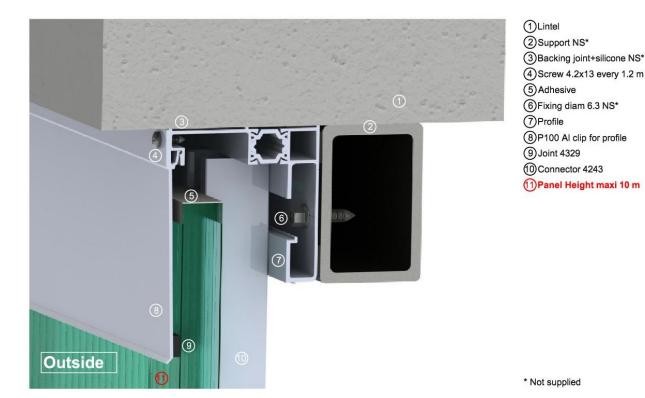
- 1 Lintel
- 2 Support NS\*
- (3)Backing joint+silicone NS\*
- 4)Profile
- (5) Adhesive
- 6 Fixing diam 6.3 NS\*
- 7 Block-cover 20 spacer
- 8 P60 AL clip for profile
- 9 Joint
- 10 Connector 4243
- 11)Panel height maxi 7 m

\* Not supplied

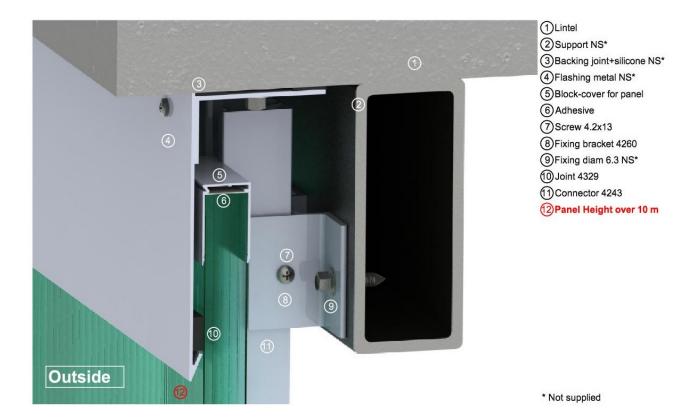




## Up to 10 meters



#### Over 10 meters

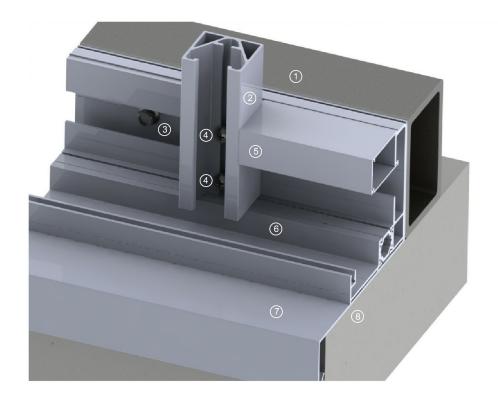






# Fixing of connector 4243

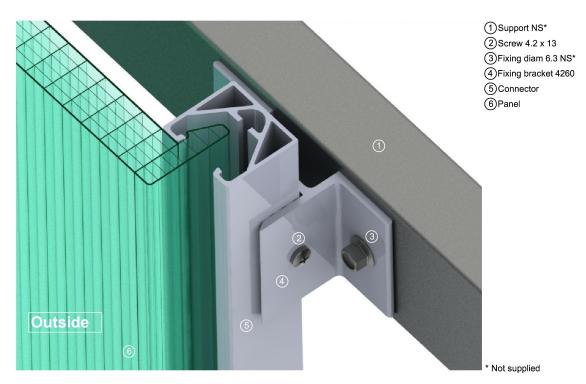
## Fixing of connectors 4243 onto profiles



- ①Support NS\*
- 2 Connector 4243
- ③Fixing diam 6.3 NS\*
- 4) Screw 4.8 x 22
- 5 Block-cover 20 spacer
- 6)Profile
- 7 Steel folded cover NS\*
- 8 Bedrock

\* Not supplied

Fixing of connectors 4243 into 4260 fixing brackets







# Principle of profiles junction

# Lateral, top and low profiles



#### Connectors 4243



- 1)Support NS\*
- 2 Connector 4243 top
- ③ Screw 4.2 x 13
- 4 Fixing diam 6.3 NS\*
- 5 Mastic expansion clearance
- 6 Fixing bracket 4260
- 7 Connector 4243 low

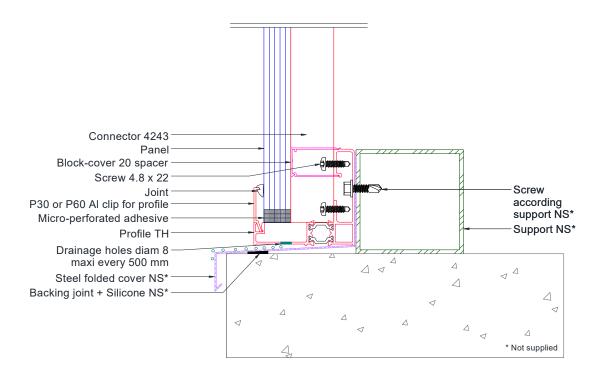
\* Not supplied



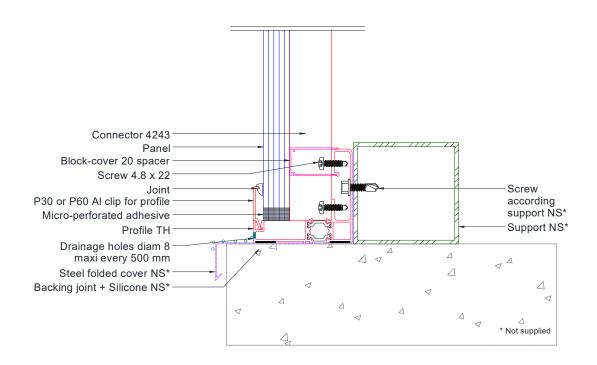


# **Principle of drainage**

### Drainage on base profile



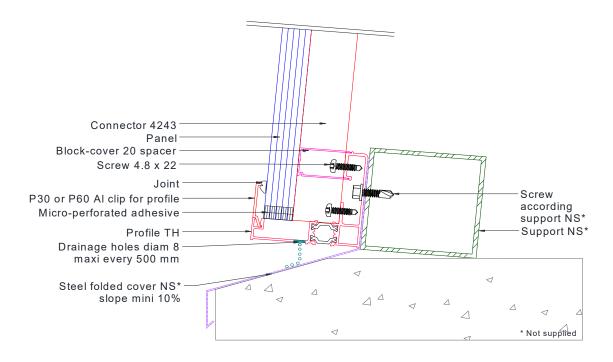
## Drainage on **facade**





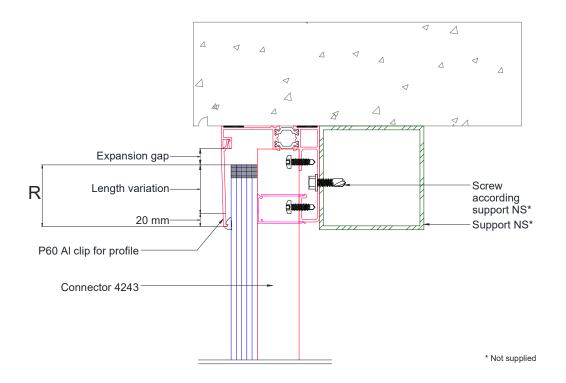


## Drainage on inclined facade



# Principle of recovering "R" on top of the cladding

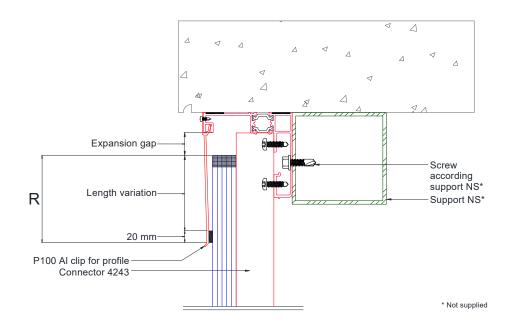
## Up to 7 meters



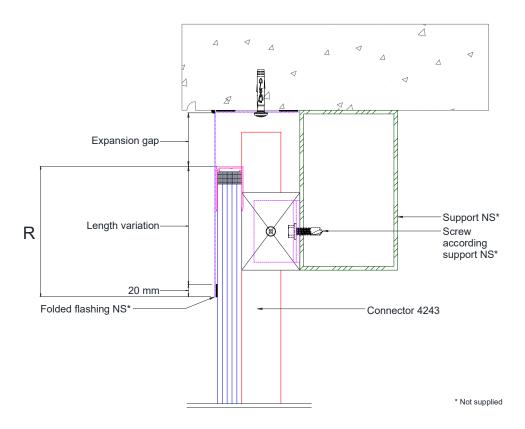




## Up to 10 meters



#### **Over 10 meters**



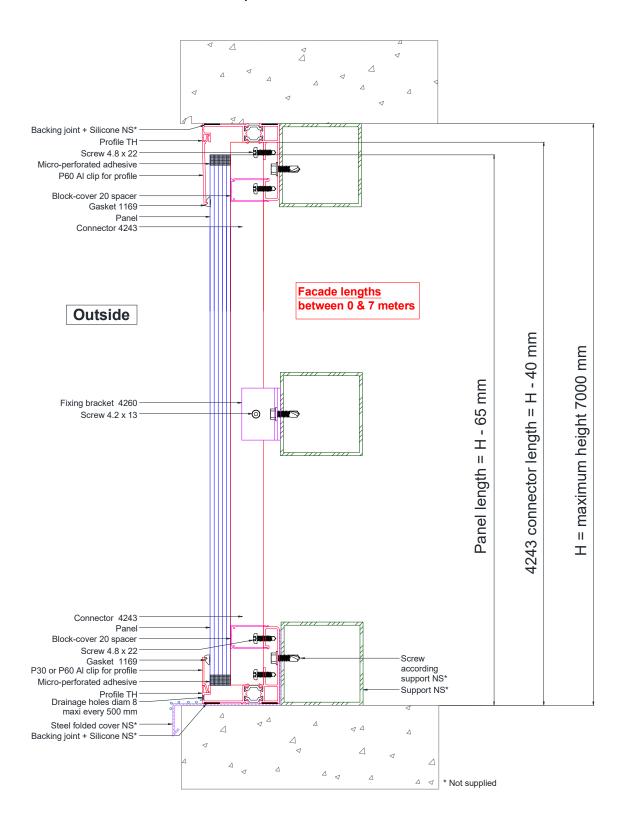




# **Principle of installation in rebates**

arcoPlus 932-7; 925-7; 920-7; 626; 6124

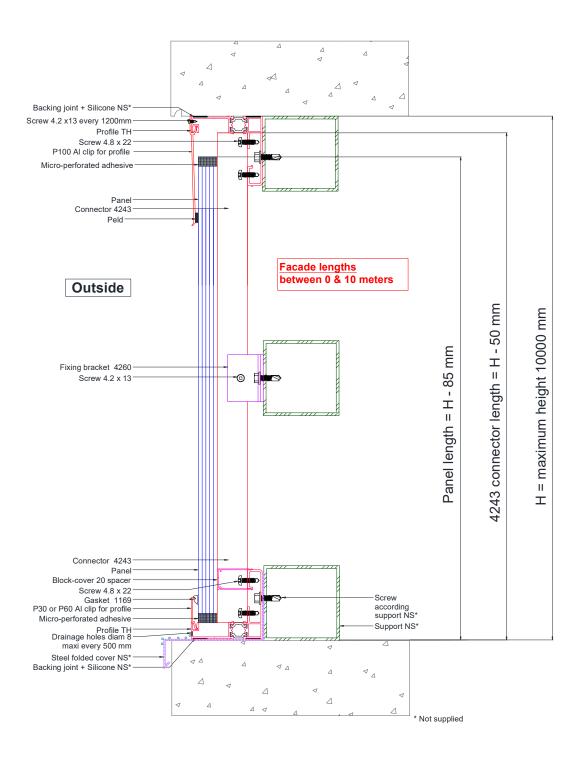
## Up to 7 meters







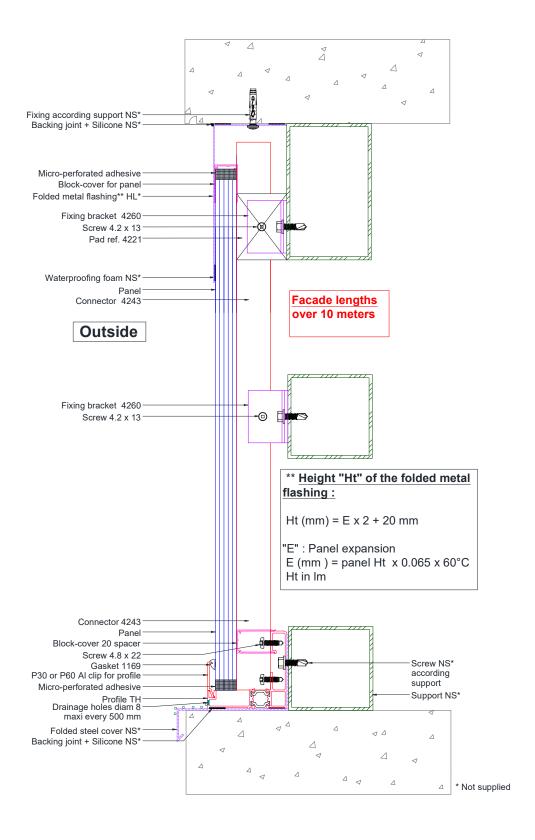
## Up to 10 meters







#### Over 10 meters



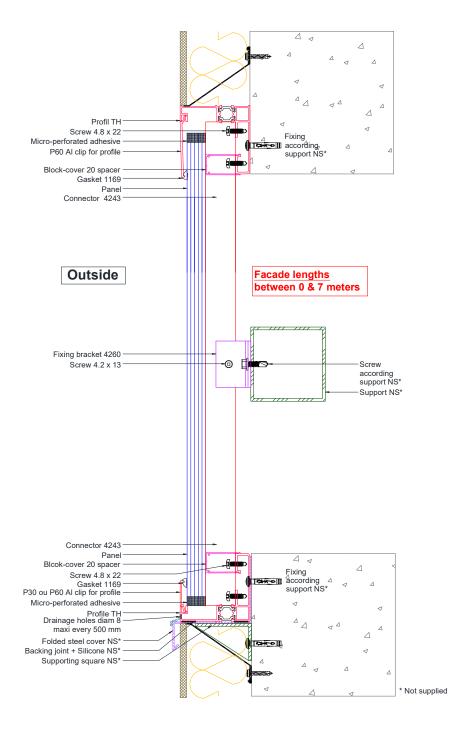




# Principle of installation in front of building

arcoPlus 932-7; 925-7; 920-7; 626; 6124

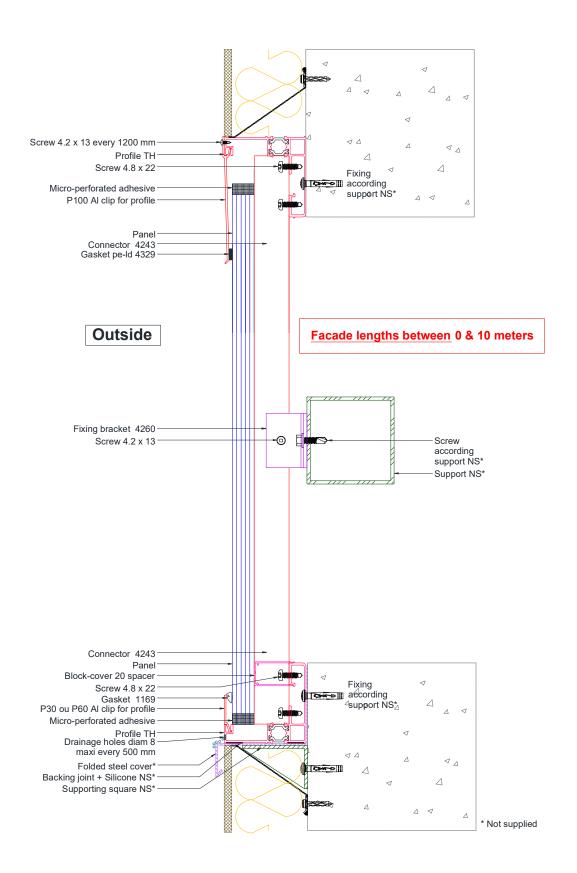
#### Up to 7 meters







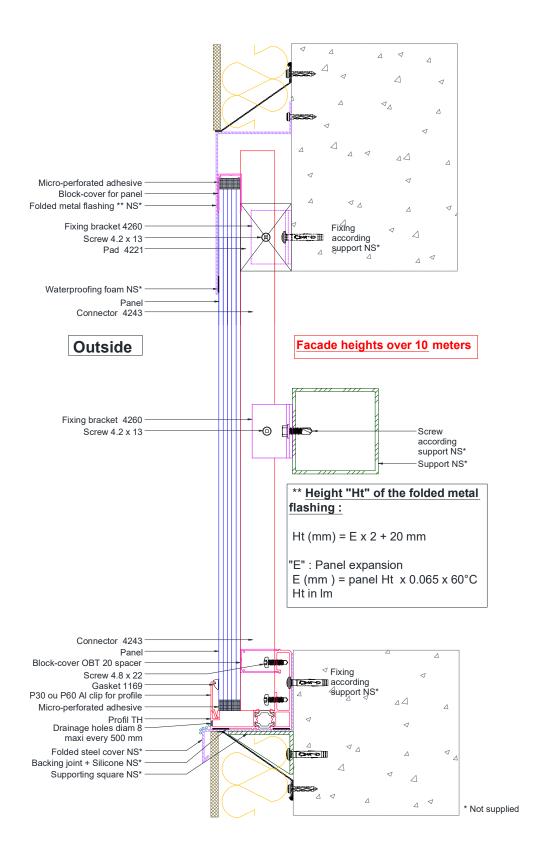
## Up to 10 meters







#### Over 10 meters



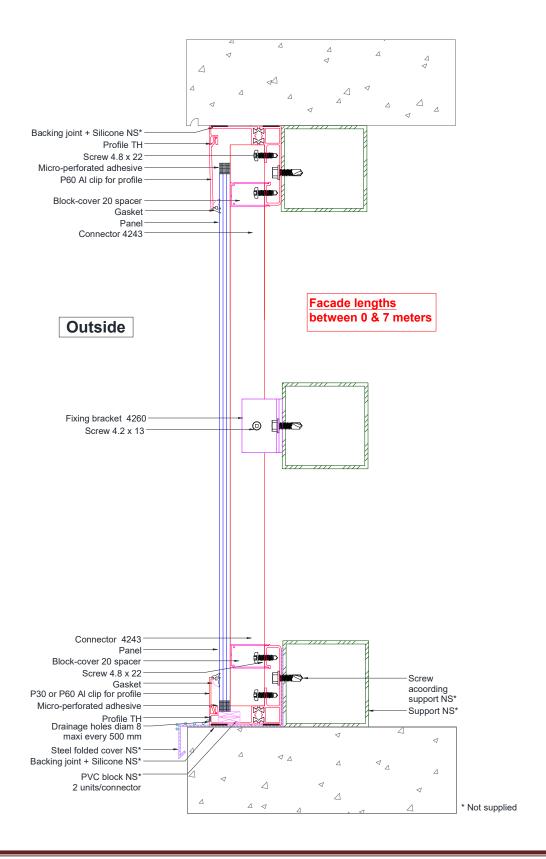




# **Principle of installation in rebates**

arcoPlus 6104; 684

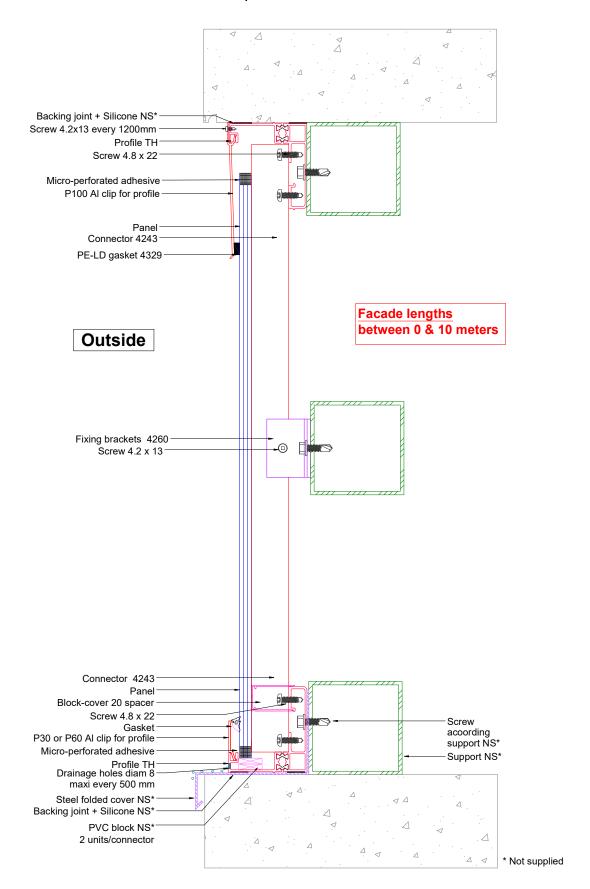
## Up to 7 meters







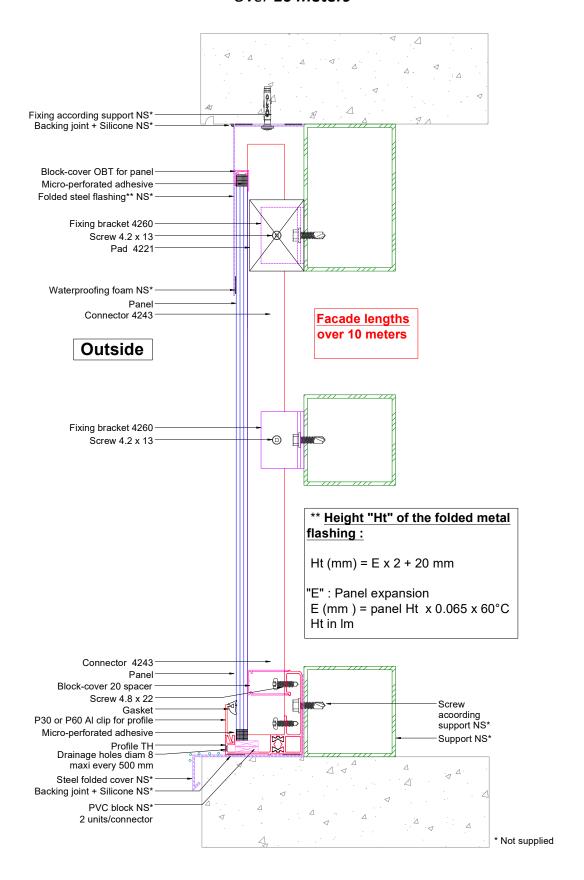
## Up to 10 meters







#### Over 10 meters



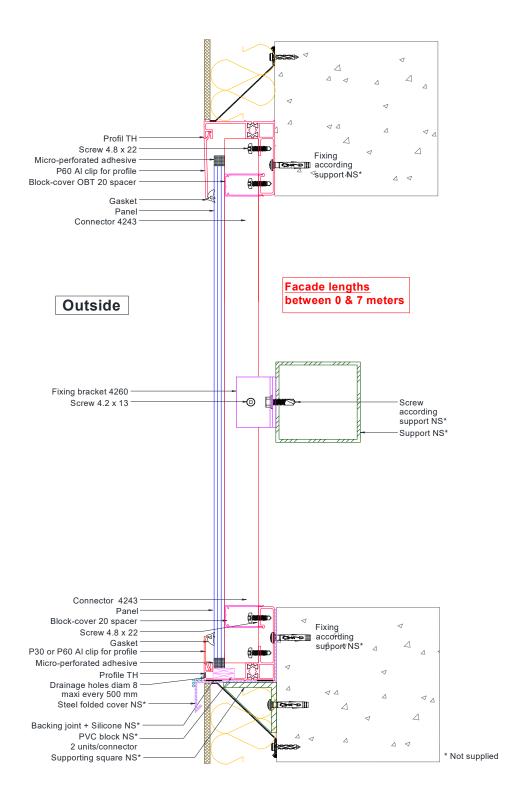




# Principle of installation in front of building

arcoPlus 6104; 684

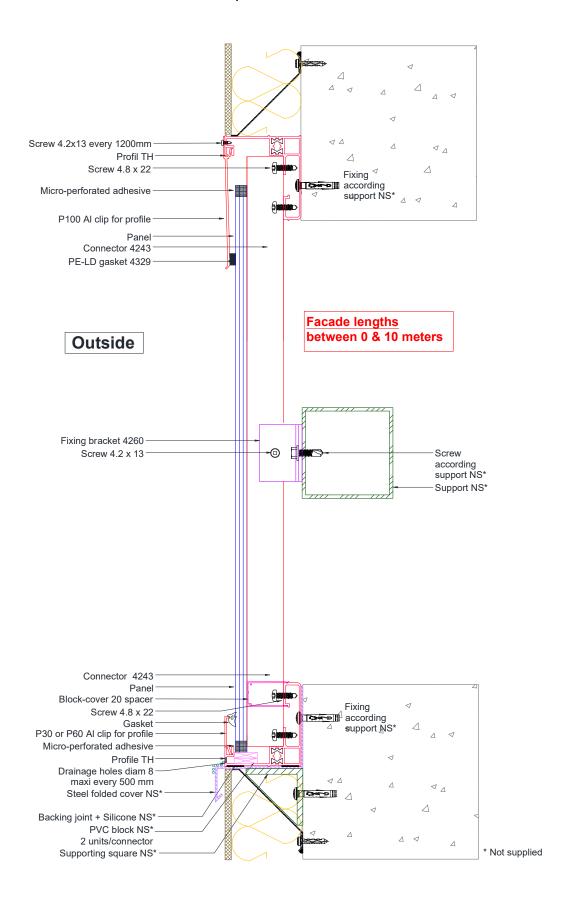
#### Up to 7 meters







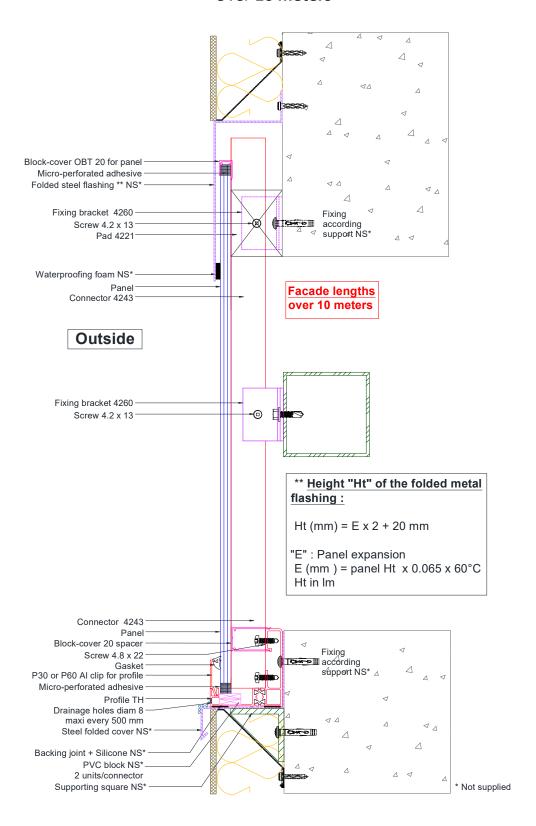
## Up to 10 meters







#### Over 10 meters

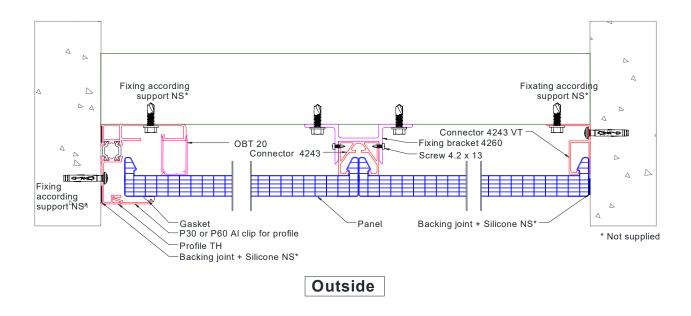






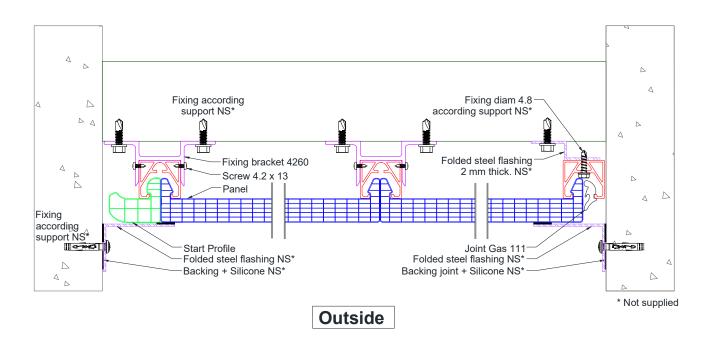
## Lateral completions in rebates with connector 4243

**On the left:** with frame profile - **On the right:** with connector 4243 VT



On the left: with start profile

- On the right: with gasket Gas 111

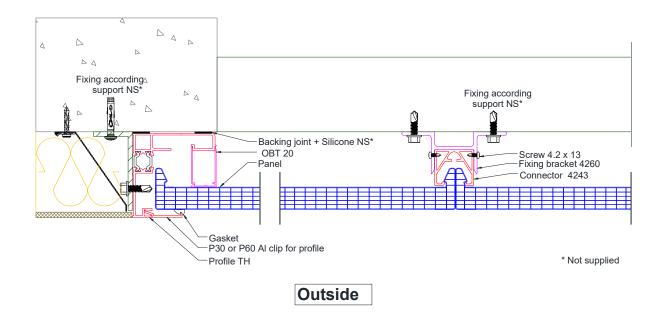




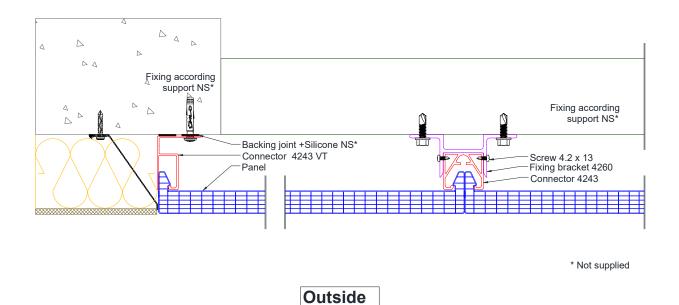


# Lateral completions in front of building with connector 4243

#### Completions with frame profile



#### Completion with connector 4243 VT

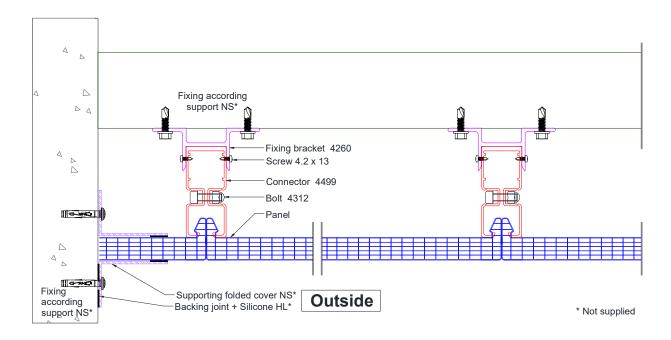




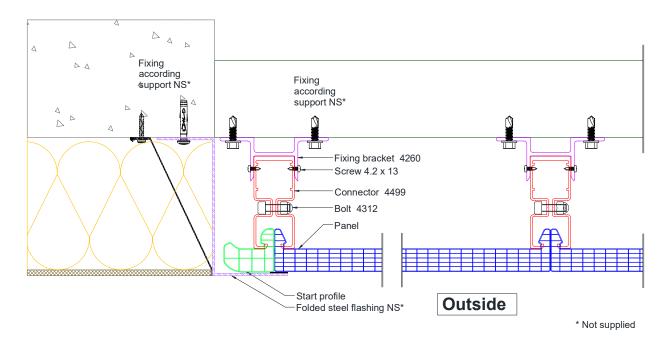


# **Lateral completions with connector 4499**

#### Lateral completions in rebates



## Lateral completions in front of building

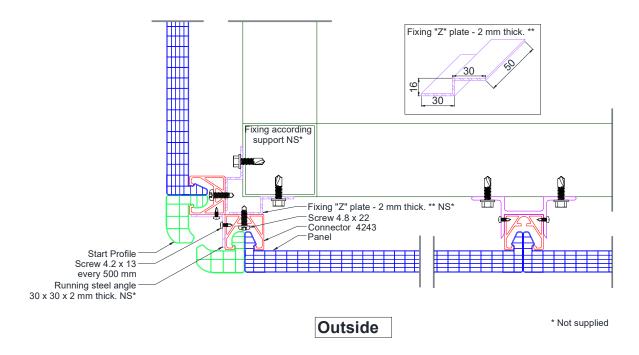




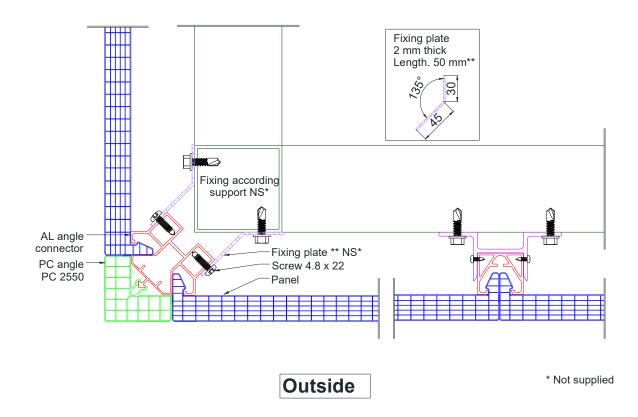


# Principle of installation of 90° angle (Outward)

#### Polycarbonate angle with PC 90° profiles



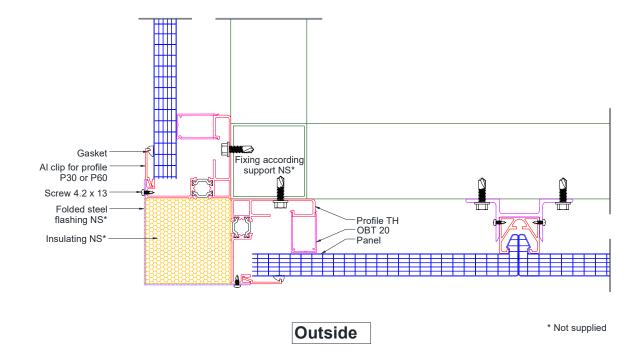
#### Polycarbonate angle with start profile



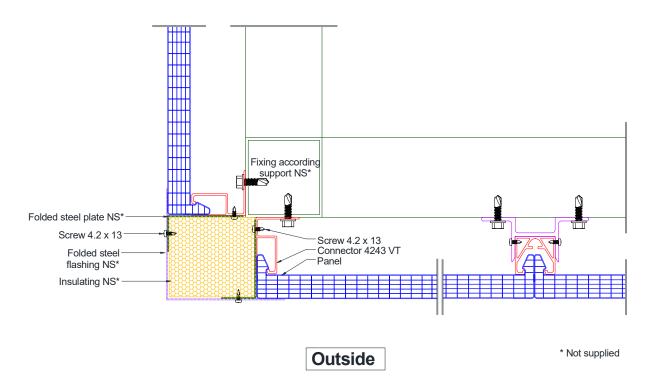




## Aluminium angle with frame profiles



## Aluminium angle with connector 4243 VT

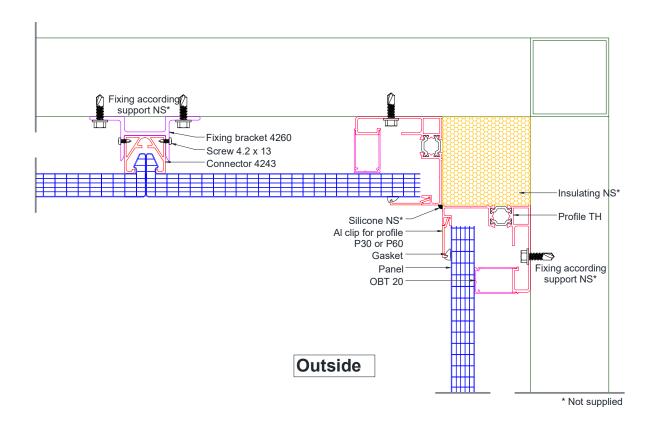




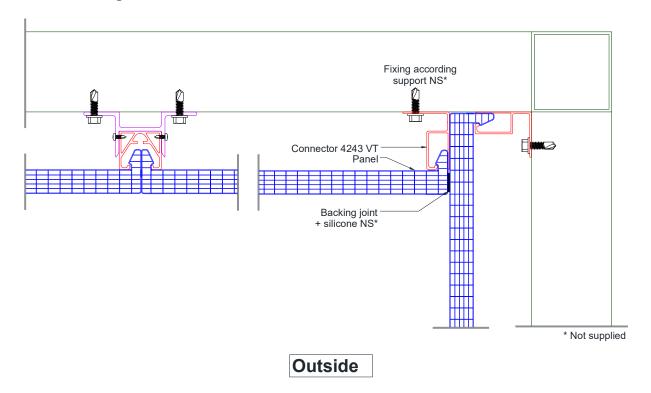


# Installation principle of inward angle

## Aluminium angle with frame profile



#### Aluminium angle with connector 4243 VT

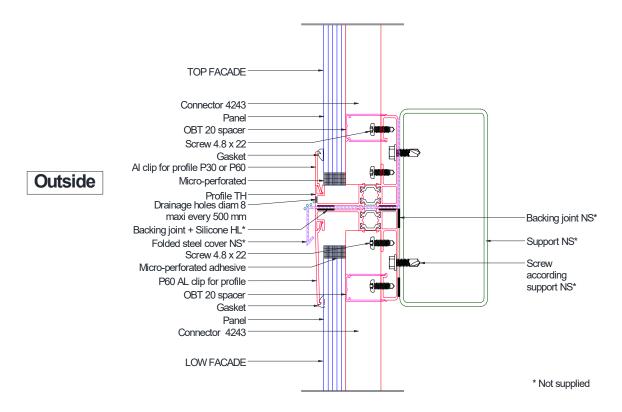




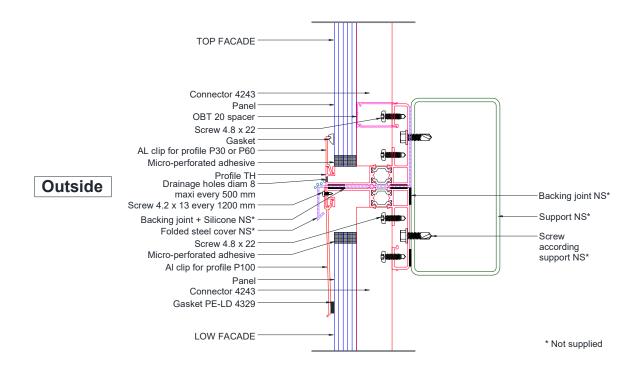


## Principle of cladding junction

#### Up to 7 meters



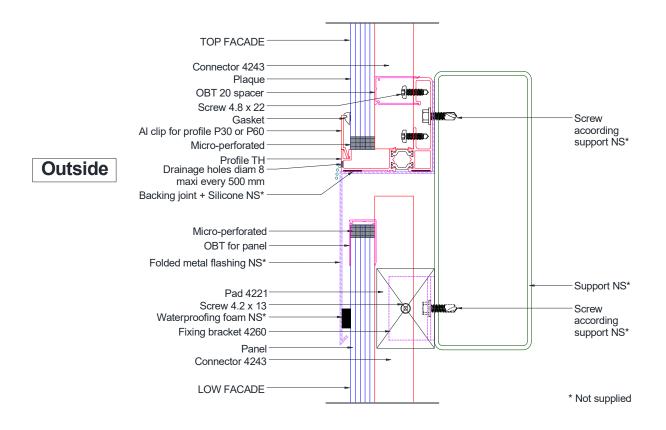
#### Up to 10 meters





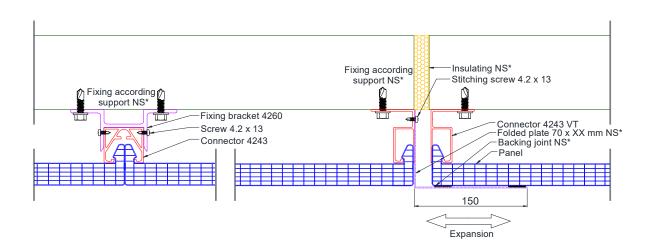


#### Over 10 meters



## Principle of expansion joint

#### Expansion joint with connector 4243 VT

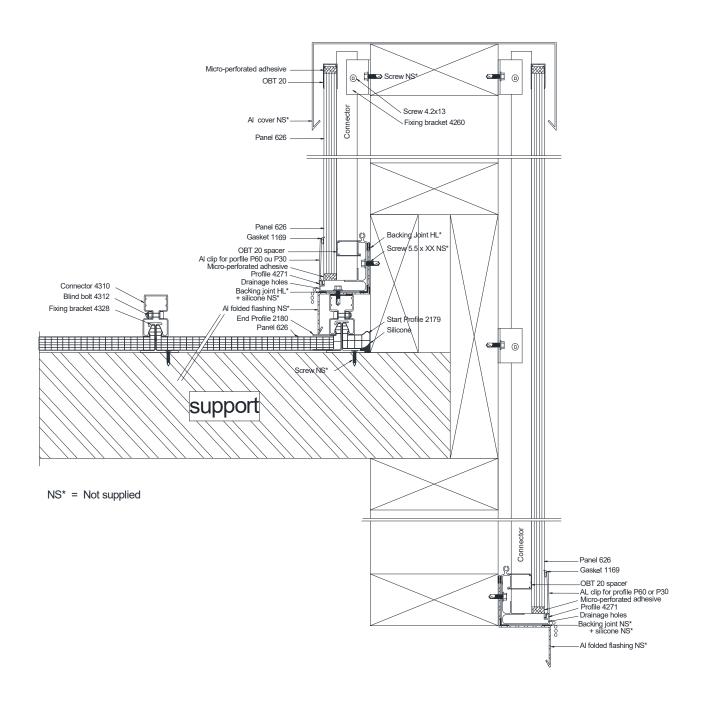






# Junction principle between acroterion and roofing

Junction between acroterion and arcoPlus roofing

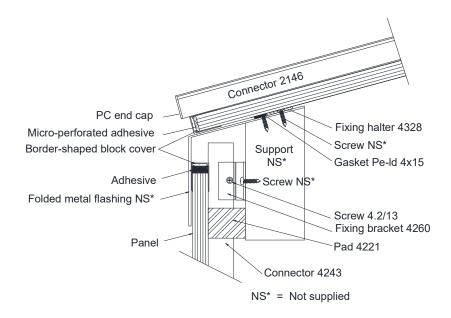




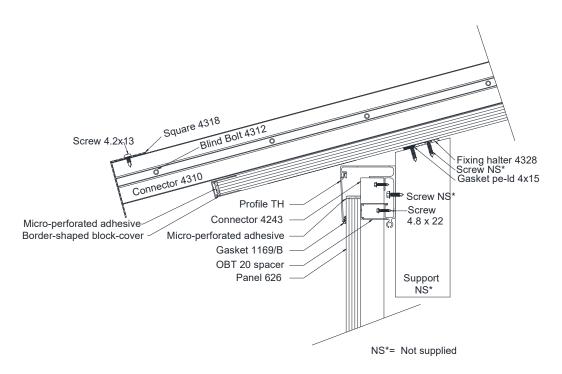


## Junction principle between cladding and roofing

#### Junction with metal flashing



## Junction with frame profile

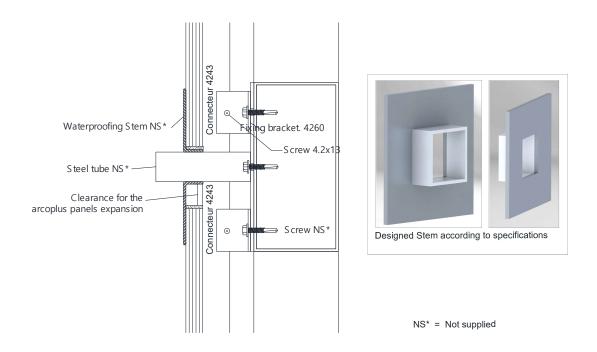




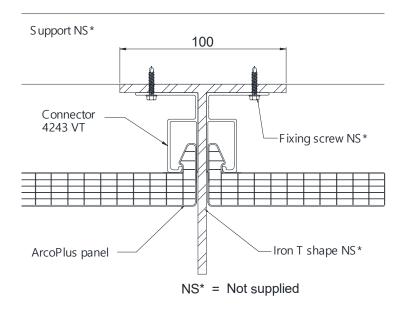


# **Principle of Cross –Through Stem**

#### Cross-Through Stem



#### Cross-Through T-Shape







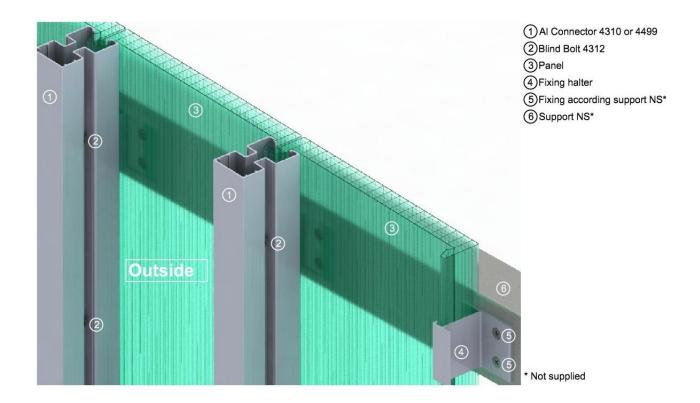
# Cladding External connectors



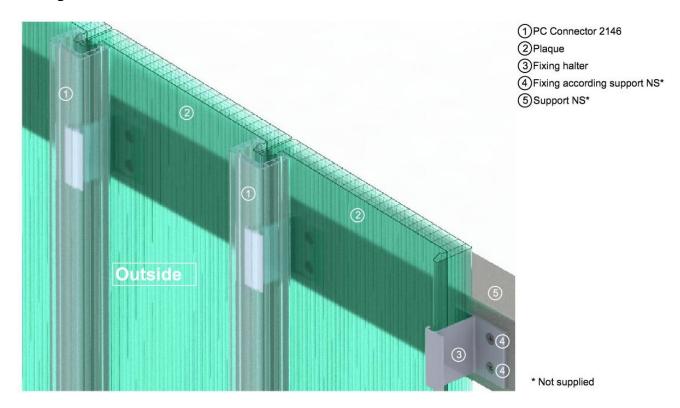


# **Principle of cladding external connectors**

## Cladding with Al connector



#### Cladding with PC connector

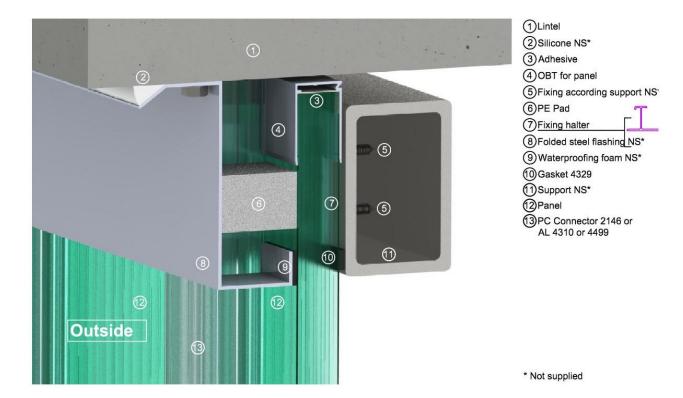






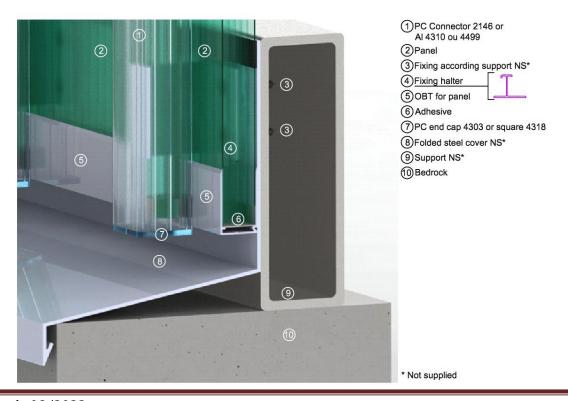
## Principle of installation on top part of cladding

#### With 2146 connector



## Principle of installation on low part of cladding

#### With 2146 connector

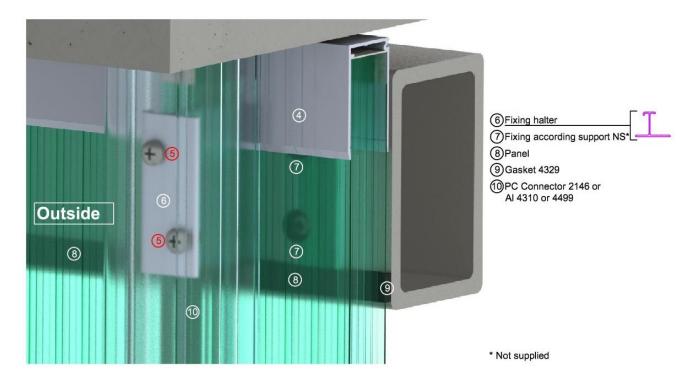




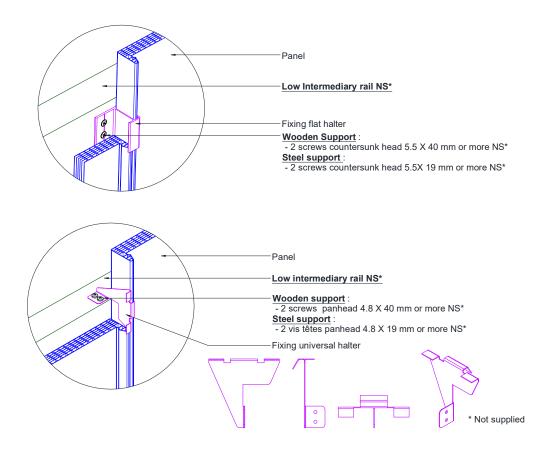


# **Principle of fitting**

## Fixed point on top of the cladding



#### Principle of fixing the brackets on intermediary and low supports

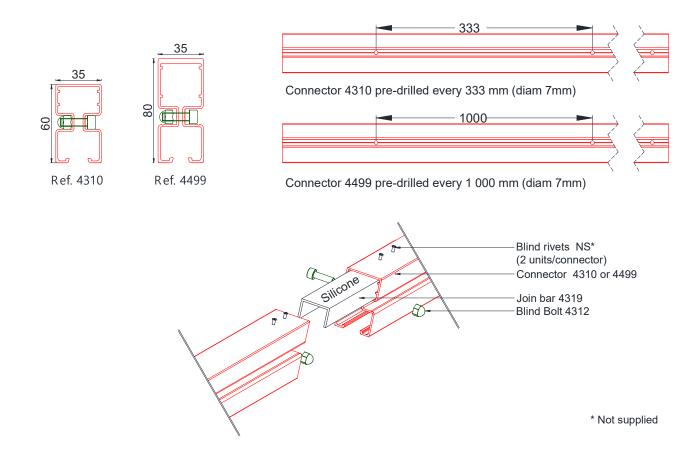






# **Principle of junction**

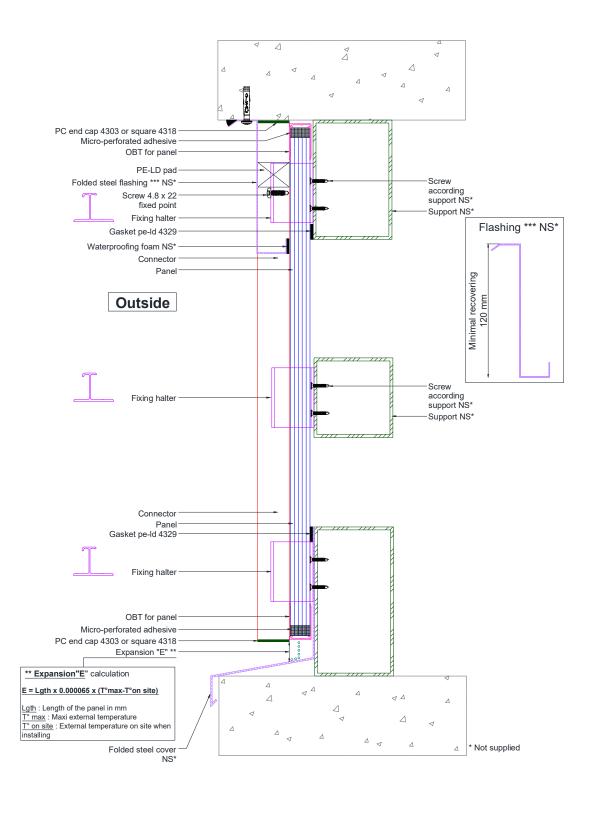
## Bolts Distribution – Junction of AL connectors 4310 & 4499







# Principle of installation with external connector



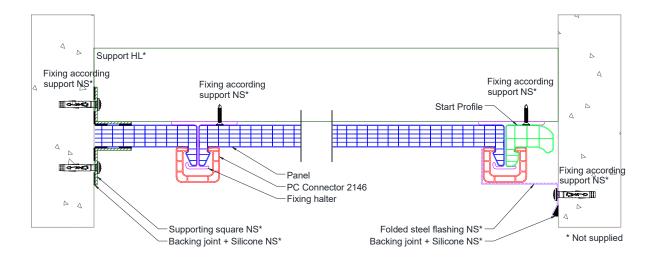




## **Lateral completions**

### On the left: with steel angles

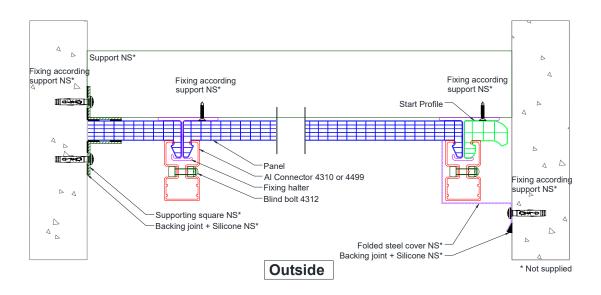
#### **On the right:** with start profiles



Outside

#### On the left: steel angles

#### **On the right:** with start profiles

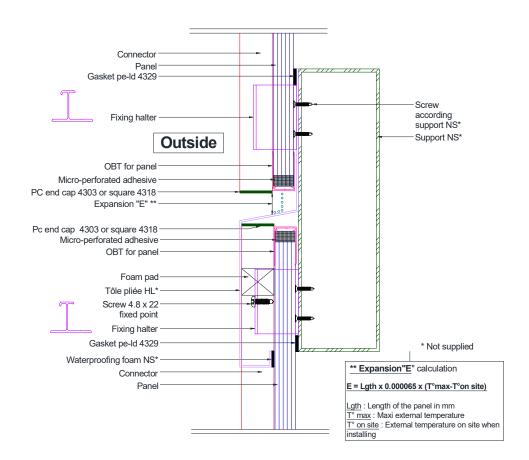






# **Principle of junction**

#### Junction of horizontal cladding



# Principle of vertical expansion joint

