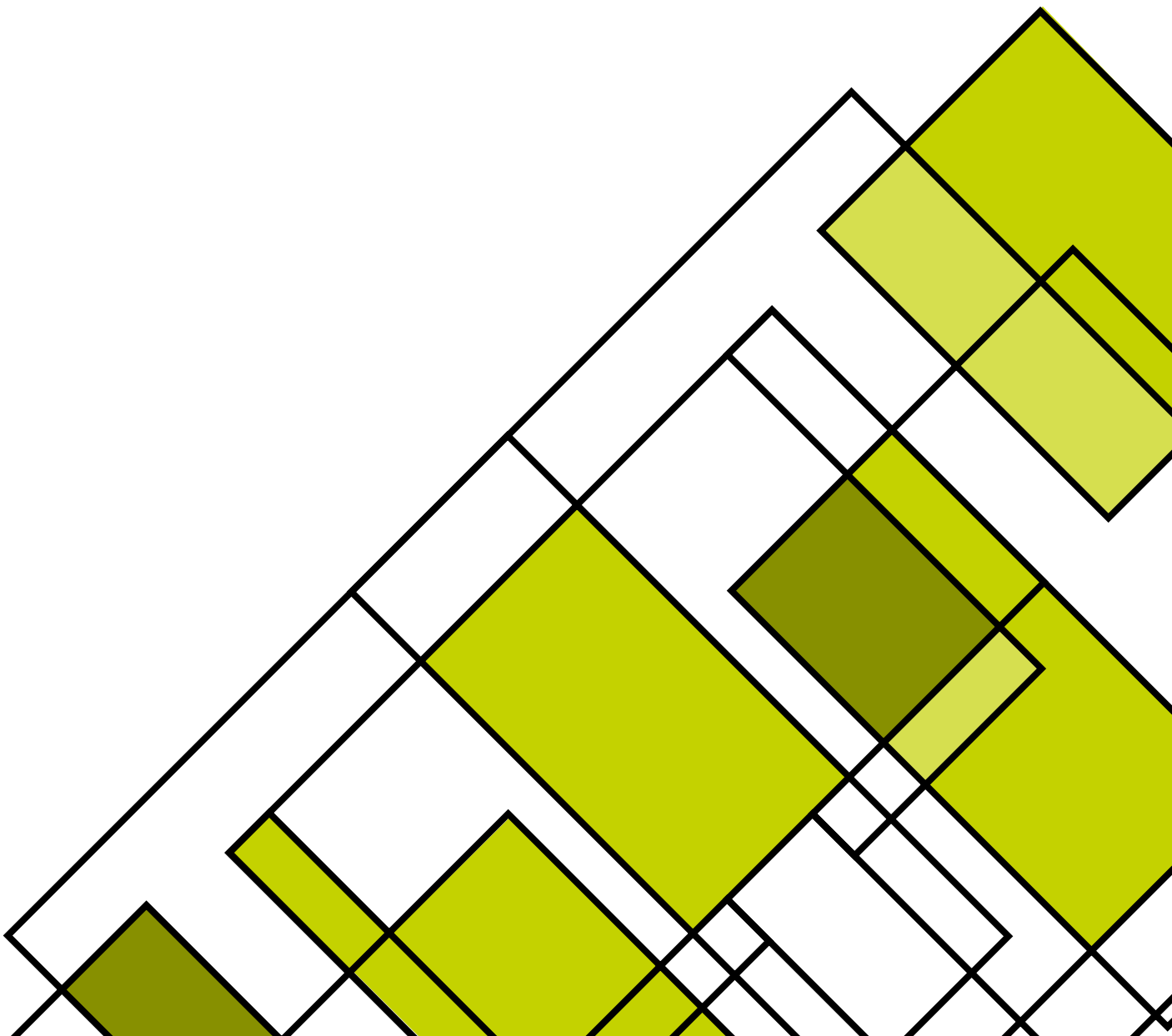
DATA SHEET

System for ventilated facades

DOLCKER

DOLCKER&CLIP



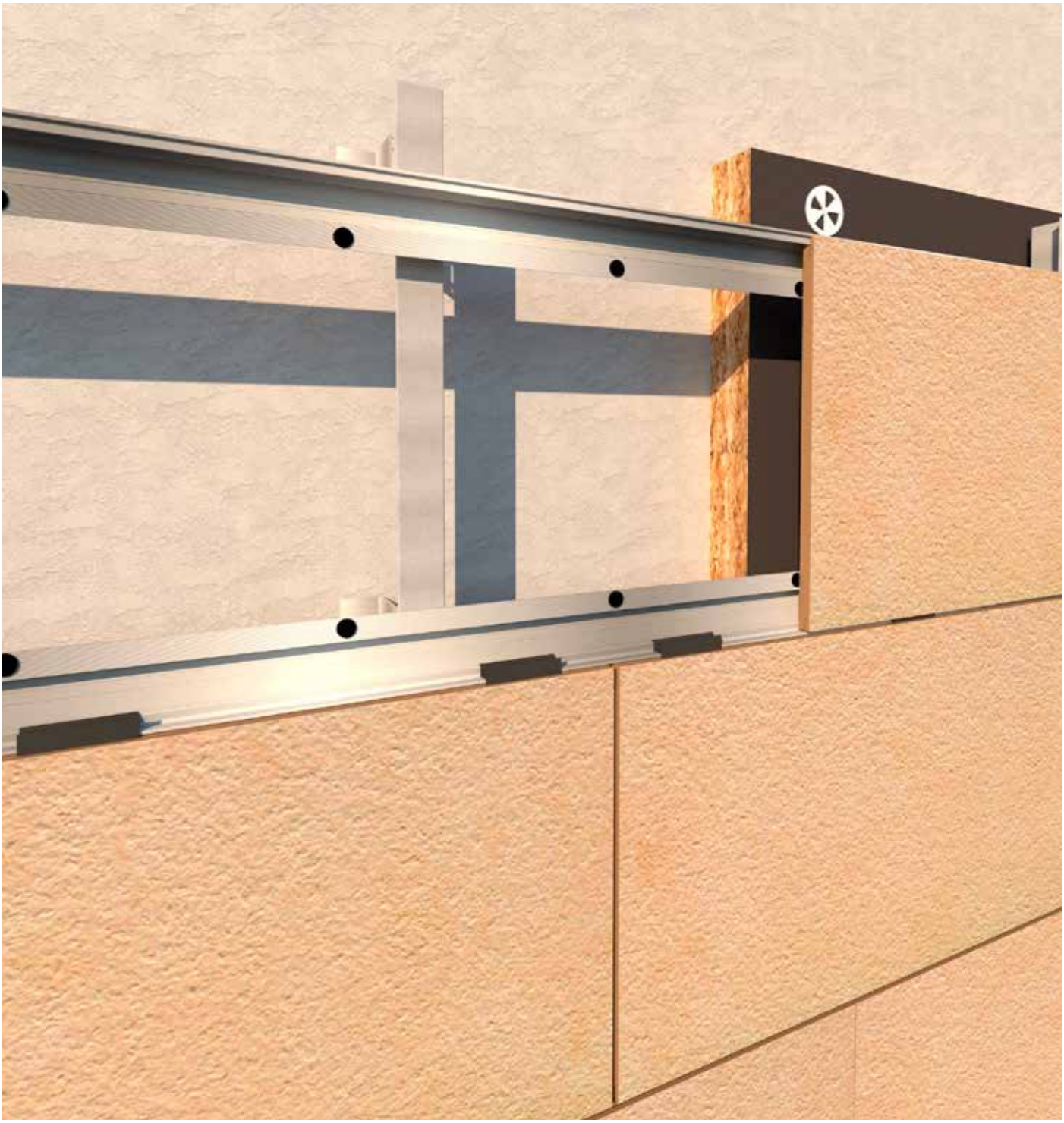
DOLCKER

S Y S T E M

DOLCKER&CLIP

SYSTEM DOLCKER & CLIP

System for 11-14-20 mm thick dolcker full body ceramic ventilated facades with continuous horizontal "G" profiles



1. FACADE´S DESCRIPTION

The DOLCKER & CLIP system for dolcker-type ceramic facades is a system with high-inertia profiles and double security. Each and every one of the elements that make up this system are manufactured with the highest quality raw materials.

It is a mechanical clip fixing system + chemical fixing by means of a substructure that is made up of adjustable brackets made of high-quality aluminum in the shape of an "L" 3 mm thick, which transmit forces and are fixed by means of anchoring to the base structure of the building (brick wall or concrete floor).

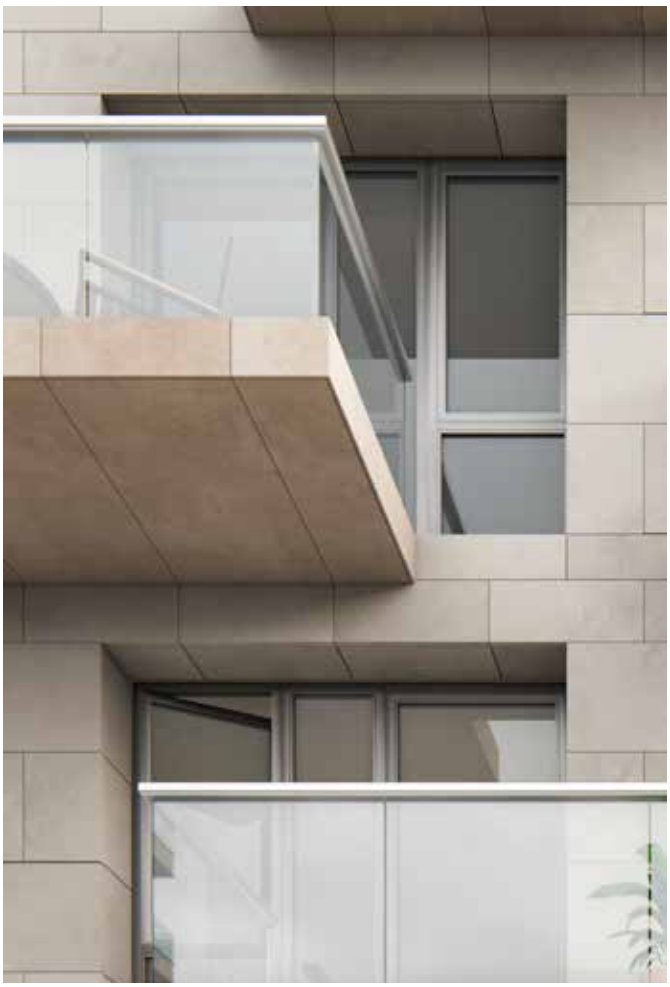
To avoid thermal bridges, DolceStone can supply, as an option, brackets with the DolceCor system (cork projected on the bracket) or DolceThermic (consistent cover that surrounds the bracket avoiding thermal bridge)

On these brackets, the 3 mm thick vertical extruded aluminum profiles in the shape of a "T" with a thickness of 3 mm are fixed using self-drilling stainless steel screws.

Some horizontal "G"-shaped profiles are screwed into these "T"-shaped profiles, thus allowing the piece to be supported in its entirety. It is the ideal system for placing ceramics, allowing the pieces to be replaced as it has a sliding stainless steel clip, achieving an infinite number of placements. It also allows the horizontal profile to be lacquered according to the color of its carpentry, allowing the customer to choose the color of the joint. At least two sliding clips are placed on top of the starter piece at 1/5 of the length of the piece. In the rest of the intermediate pieces, at least 4 clips will be placed for each piece of ceramic.

It is, without a doubt, a system with multiple façade composition options since it is possible to break the vertical joints. These vertical joints are minimized to just 1 mm, thus enhancing the horizontal joints. The output of the ceramic is between 43-47 mm depending on the thickness of the chosen ceramic.

Finally, dots of sika-111 polyurethane gluing and sealing putty or similar (4 per piece) will be added to allow us to absorb the expansion of the façade in the sliding clips.



2. DESCRIPTIVE MEMORY

The DOLCKER & CLIP system is made up of:

Double adjustable brackets L (exit 60-160) x (160 x 40 mm) and single adjustable brackets L (exit 60-160) x (80 x 40 mm) in AWAl MgSi aluminum (6060-T6 or 6063-T5) and 3 mm thick, screwed by means of an expansive anchor in the case of concrete floors and a nylon plug anchor with a hexagonal retaining screw made of AISI 304 stainless steel (AISI 316 if it is a marine environment) in the case of a brick wall.

VERTICAL T PROFILES (40 x 50 mm) in AW-Al MgSi aluminum (6060-T6 or 6063-T5) and 3 mm thick screwed using 4 self-drilling screws nº3 5.5 x 22 with AISI 304 stainless steel EPDM washer (AISI 316 if it is a marine environment) to the brackets.

HORIZONTAL PROFILES in AW-Al MgSi (6060-T6 or 6063-T5) aluminum and 1.4 mm thick, screwed using 2 self-drilling screws nº3 5.5 x 22 with AISI 304 stainless steel EPDM washer (AISI 316 if applicable). marine environment).

DOLCKER porcelain tile, low absorption THICKNESSES 11- 14- 20 mm with slop grooves machined according to design with a high breaking force value. The ceramics are designed longitudinally by the edges, for their fastening at the start by horizontal U profiles designed for this purpose, and Clips for their continuous placement and correct fixation of the same.

Anchoring clips made of aluminum 6063 treatment T5, each clip will be inserted by pressure into the longitudinal channel of the intermediate horizontal U-shaped profiles designed for this purpose, continuously fixing the upper, lower and side pieces, allowing this union the necessary expansions of the complete system.

Dolce-elastic putty fixative (passes the aging test), to prevent vibrations of the pieces and absorb the expansions of the system as well as the fall of the piece in case of breakage. A minimum of 4 chemical fixings per piece will be applied.

3. MATERIALS AND COMPONENTS OF THE SYSTEM

CORBELS

"L"-shaped aluminum fixings that function as adjustable spacers for the transmission of loads from the façade substructure to the base structure of the building (vertical wall of the building) by means of anchors.

To avoid thermal bridges, DolceStone can supply, as an option, brackets with the DolceCor system (cork projected on the bracket) or DolceThermic (consistent cover that surrounds the bracket avoiding thermal bridge)

PHYSICAL AND MECHANICAL CHARACTERISTICS

The brackets are made of extruded aluminum EN AW-AlMgSi (6005A) with T6 treatment.

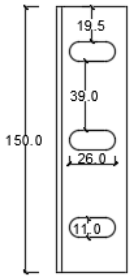
ALUMINUM FACTS	
Designation	
Symbolic	EN AW-Al MgSi
Numeric	AW 6005[a]
Treatment	T6
Rule	UNE-EN 755-2
	UNE-EN 12020-1
Physical properties	
Specific weight	2,70g/cm3
Linear thermal expansion coeff.	23,6·10e-6 K-1 (20/100)°C
Modulus of elasticity	70.000 MPa
Poisson's ratio	0,33
Mechanical properties	
Tensile strength (Rm)	≥ 270 N/mm2
Elastic limit (Rp0,2)	≥ 225 N/mm2
Elongation (A)	≥ 8%
Elongation (A50 mm)	≥ 6%
Brinell Hardness 90	90

BRACKET U VARIABLE OUTLET 60 – 110 MM SUPPORT

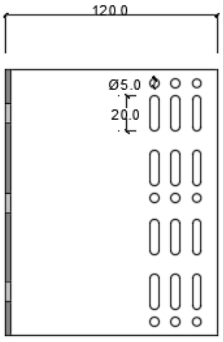
DIMENSIONAL CHARACTERISTICS

There are two types, support and retention and of different dimensions as detailed in the following table:

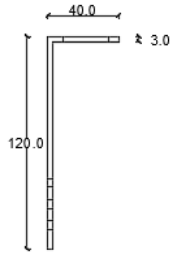
Bracket Double variable exit 40 – 220 mm of Support



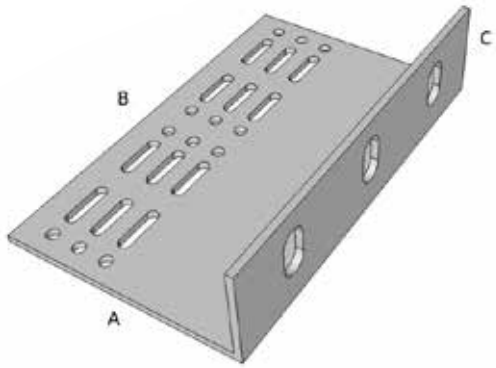
Front elevation view



Side elevation view



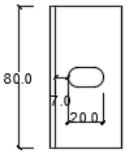
Floor elevation view



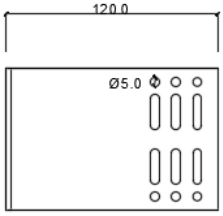
Standard measures simple corbels		
A	B	C
40	150	40
60	150	40
80	150	40
100	150	40
120	150	40
140	150	40
160	150	40
200	150	40
220	150	40

**Measures in mm.*

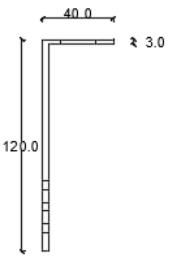
Simple bracket variable output variable 40 – 220 mm Retention



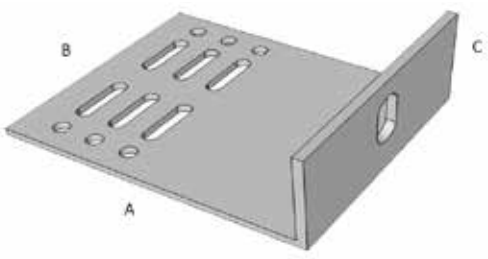
Front elevation view



Side elevation view



Floor elevation view



Standard measures simple corbels		
A	B	C
40	80	40
60	80	40
80	80	40
100	80	40
120	80	40
140	80	40
160	80	40
200	80	40
220	80	40

**Measures in mm.*

To avoid thermal bridges, DolceStone can supply, as an option, brackets with the DolceCor system (cork projected on the bracket) or DolceThermic (consisting of a cover that surrounds the bracket, avoiding thermal bridge).

DolceCor
Projected cork on the bracket

DolceThermic
Consistent cover that surrounds the bracket avoiding thermal bridge

Advantages of sprayed cork

- Impervious to water and other liquids: thanks to the aforementioned air cells, which also do not have a capillary structure makes it practically impossible for water or oil to enter.
- Low specific weight.
- Low thermal conductivity: which makes it an excellent insulator.
- Vibration absorption: quality that is applied for acoustic insulation.
- High coefficient of friction: useful when the architect seeks non-slippery solutions.
- In addition, cork offers interesting chemical properties that give it stability over time and resistance to sun exposure.

PROFILE

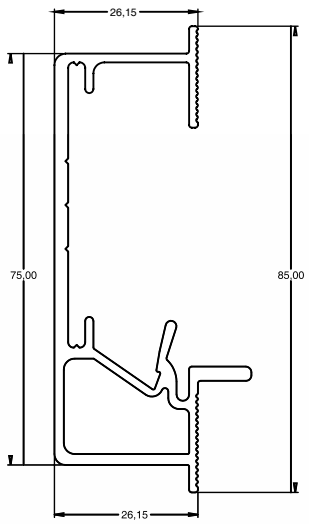
It is the substructure composed of vertical profiles and horizontal profiles. Both of them are made of extruded aluminium.

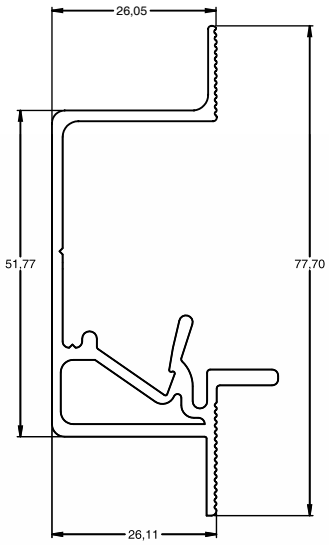
PHYSICAL AND MECHANICAL CHARACTERISTICS

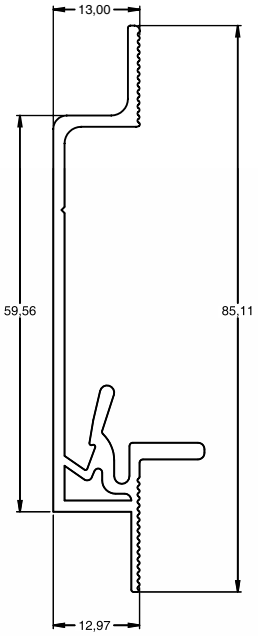
The profiles are made of extruded aluminum EN AW-AlMgSi (6063) with T5 treatment.

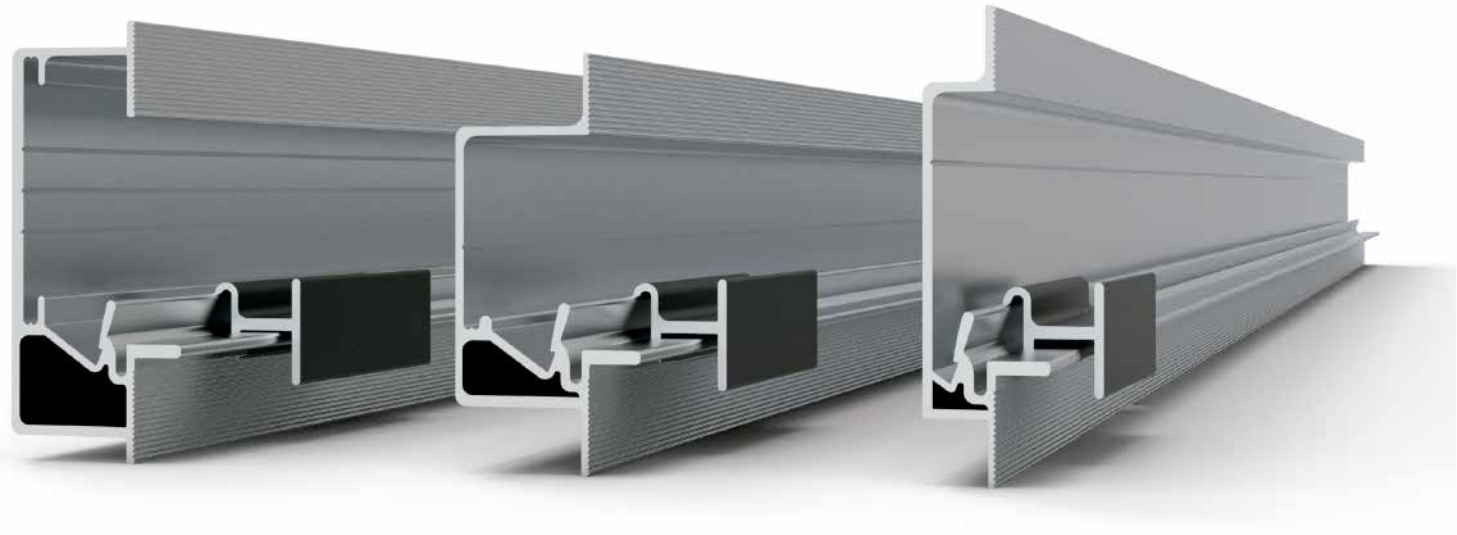
ALUMINUM FACTS	
Designation	
Symbolic	EN AW-Al MgSi
Numeric	6063
Treatment	T5
Rule	UNE-EN 755-9
Physical properties	
Specific weight	2700 kg/m3
Linear thermal expansion coeff.	23,0 µm/m ·°C (entre 20 y 100°C)
Modulus of elasticity (to 20ºC)	63.000 MPa
Poisson's ratio	0,3
Fusion interval	615-655°C
Mechanical properties	
Tensile strength (Rm)	≥ 215 N/mm2
Elastic limit (Rp0,2)	≥ 175 N/mm2
Elongation (A) 5,65%	14
Fatigue limit	≥150 N/mm2
Shear strength	≥135 N/mm2
Brinell Hardness	60

Intermediate Dolker Family









L-SERIES
Profiling suitable for great efforts or lights

The output is compatible with the M series.

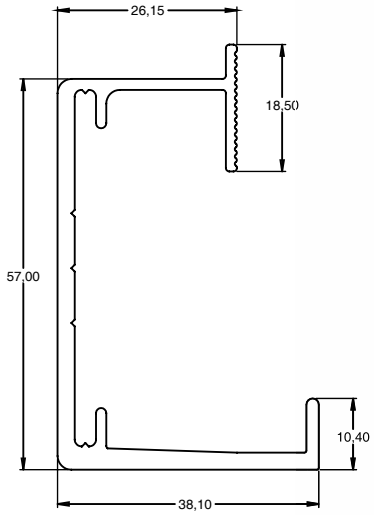
M-SERIES
Standard profiles

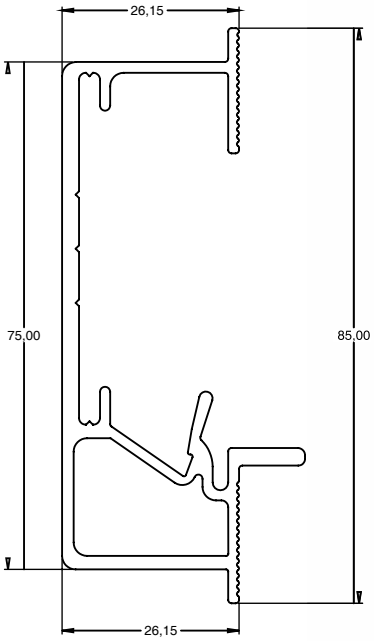
The output is compatible with the L series.

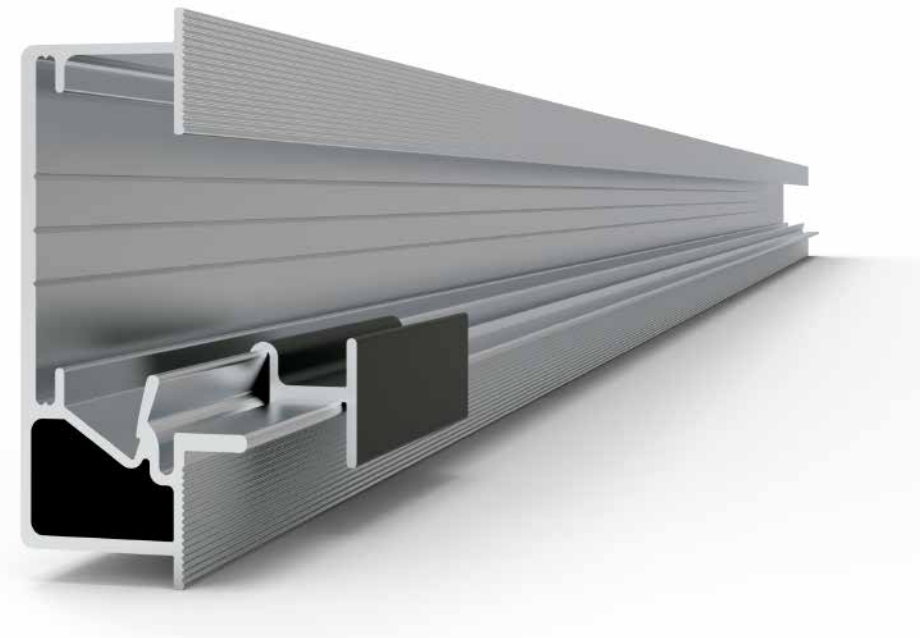
S-SERIES
Formula SLIM profiles

Suitable for small lights or efforts

Dolker L profile

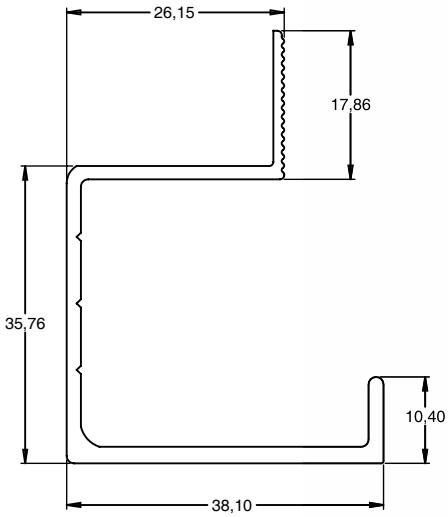


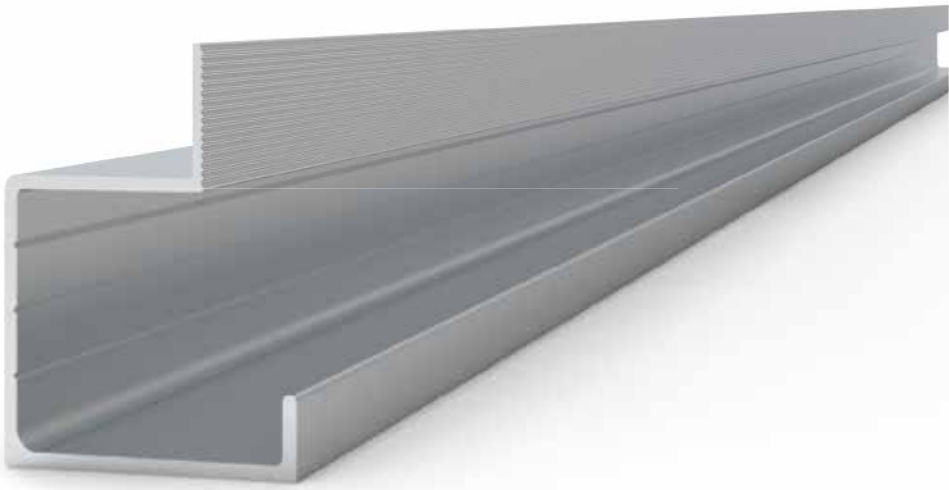


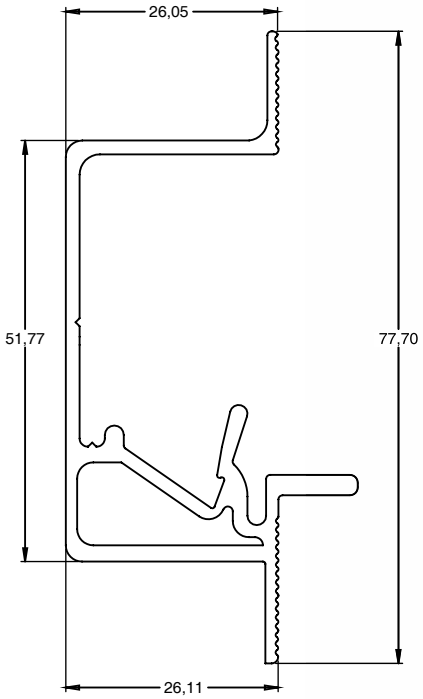


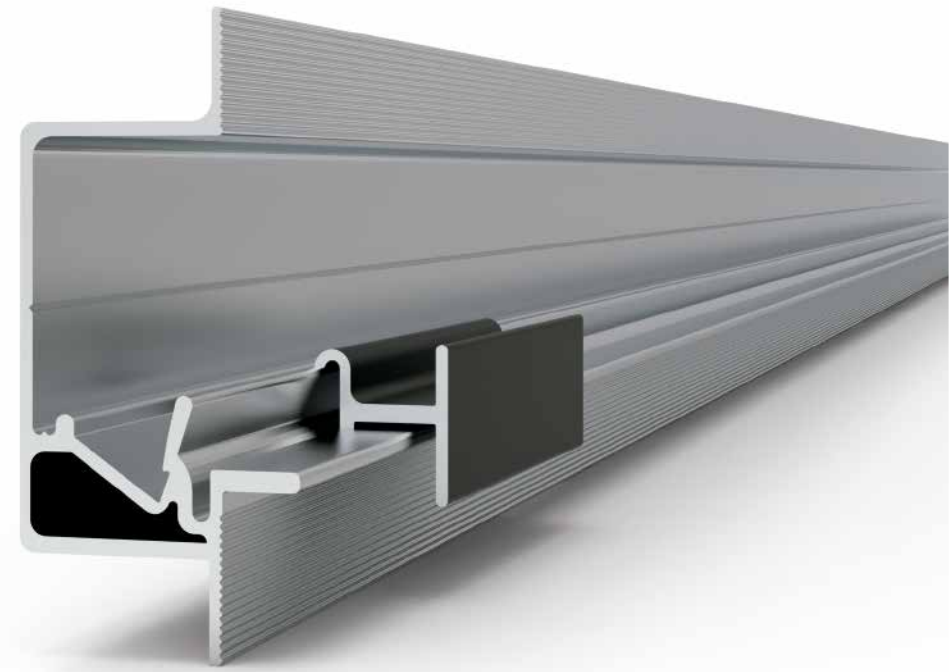
	INT		ARR	
Theoretical weight (kg/m)	1.147		0.898	
Alloy	6063		6063	
Treatment	T-5		T-5	
Area (mm2)	425		332	
Perimeter (m)	0.44		0.306	
Moment of inertia (cm4)	Ix	4.78	Ix	4.77
	Iy	29.11	Iy	16.52
Tolerances	UNE-EN 755-9		UNE-EN 755-9	

Dolker M profile



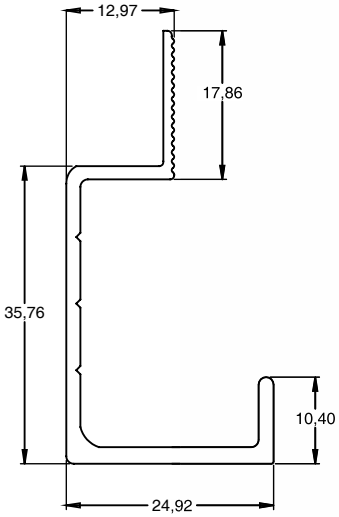


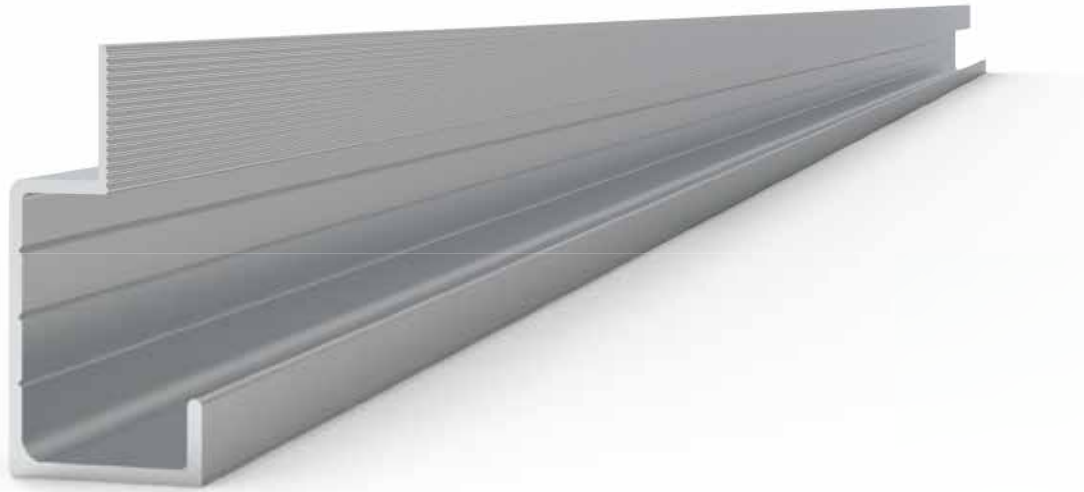


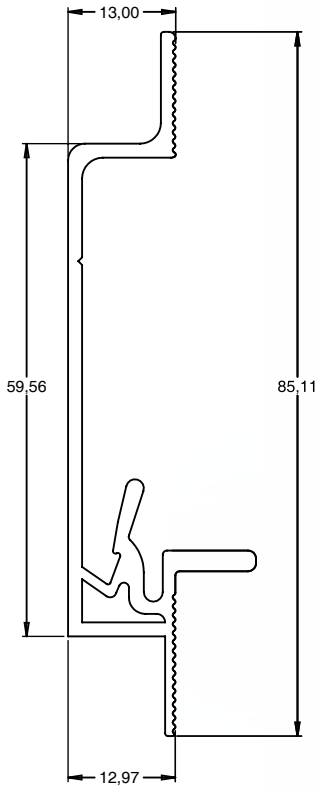


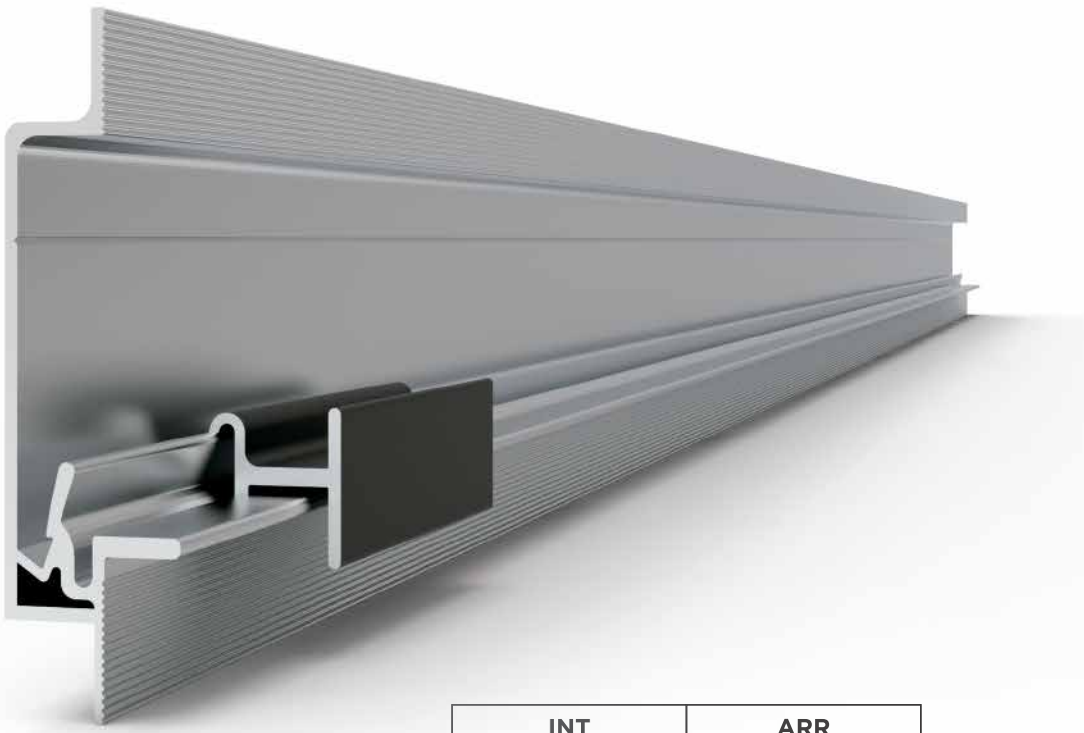
	INT		ARR	
Theoretical weight (kg/m)	0.886		0.557	
Alloy	6063		6063	
Treatment	T-5		T-5	
Area (mm2)	328.22		206.3	
Perimeter (m)	0.28		0.37	
Moment of inertia (cm4)	Ix	3.4	Ix	3.1
	Iy	13.2	Iy	5.4
Tolerances	UNE-EN 755-9		UNE-EN 755-9	

Dolker S profile



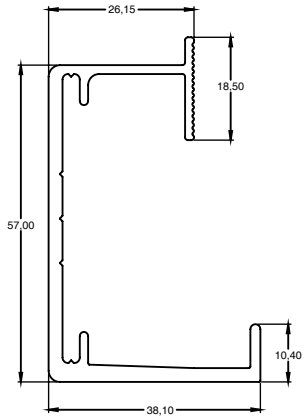


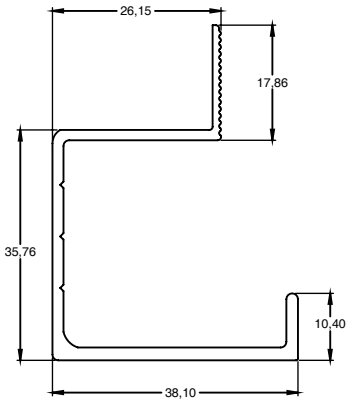


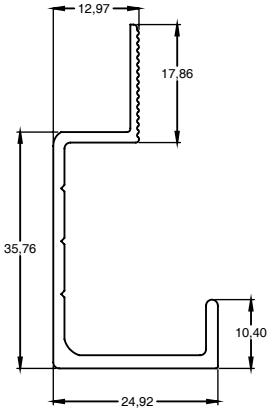


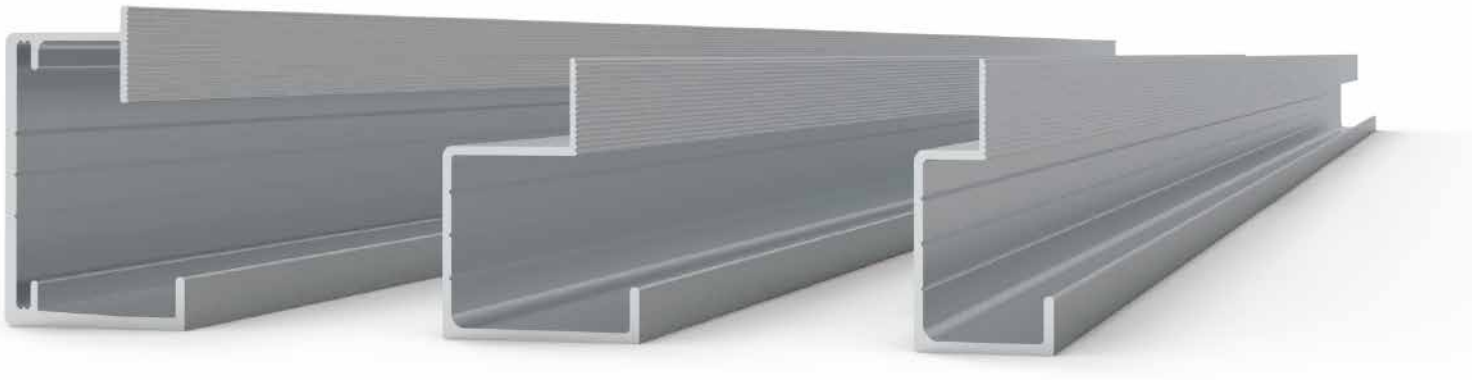
	INT		ARR	
Theoretical weight (kg/m)	0.645		0.429	
Alloy	6063		6063	
Treatment	T-5		T-5	
Area (mm2)	239.8		158.9	
Perimeter (m)	0.19		0.245	
Moment of inertia (cm4)	Ix	0.7	Ix	1
	Iy	11.02	Iy	4.1
Tolerances	UNE-EN 755-9		UNE-EN 755-9	

Dolcker Family Startup or Termination









L-SERIES
Profiling suitable for great efforts or lights

The output is compatible with the M series.

M-SERIES
Standard profiles

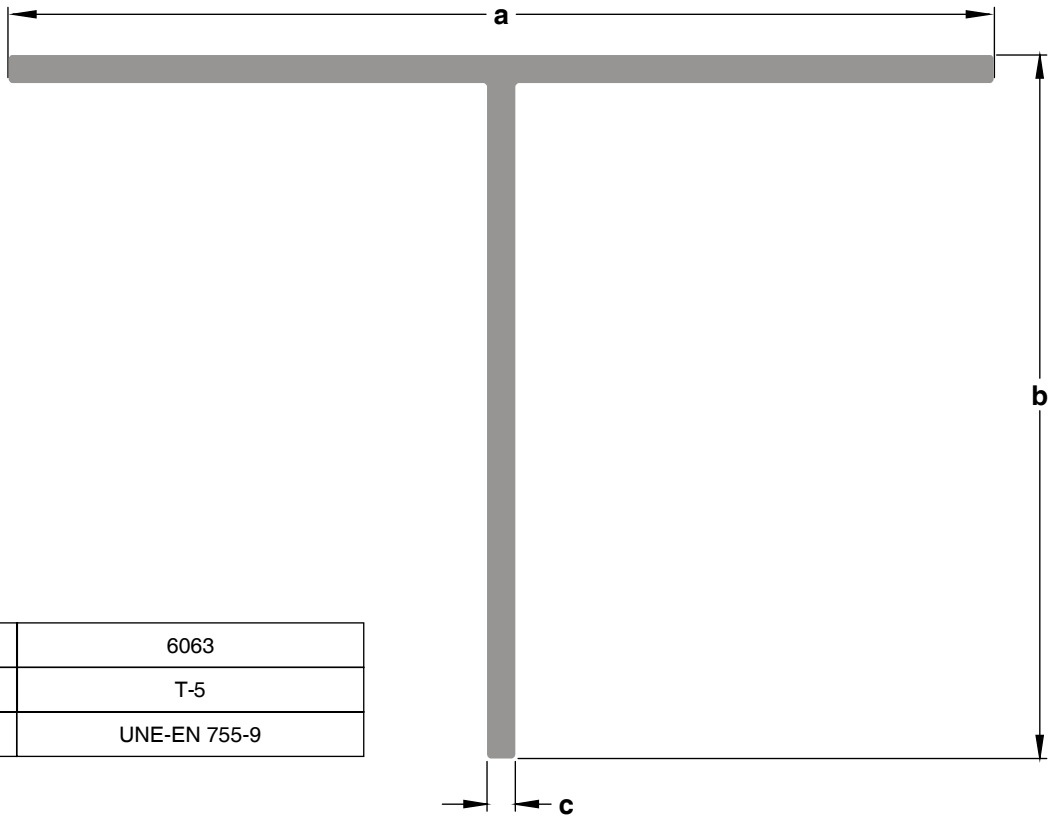
The output is compatible with the L series.

S-SERIES
Formula SLIM profiles

Suitable for small lights or efforts

Vertical T profiles

a	b	c	Weight (kg/m)	Inertia (cm4)		Area (mm2)
40	40	2	0.432	Ix	1.07	159.3
				Iy	2.5	
40	40	2.5	0.540	Ix	1.34	197.6
				Iy	3.06	
40	40	3	0.648	Ix	1.61	234.8
				Iy	3.6	
40	50	2	0.486	Ix	1.07	179.9
				Iy	4.62	
40	50	2.5	0.607	Ix	1.34	222.6
				Iy	5.68	
40	50	3	0.729	Ix	1.61	264.8
				Iy	6.7	
70	50	2	0.972	Ix	5.4	235.9
				Iy	5.7	
70	50	2.5	0.810	Ix	6.65	293.7
				Iy	7.14	
70	50	3	0.648	Ix	7.87	350.9
				Iy	8.57	
70	40	2	0.891	Ix	2.9	219.9
				Iy	5.7	
70	40	2.5	0.743	Ix	3.56	272.6
				Iy	7.15	
70	40	3	0.594	Ix	4.2	324.9
				Iy	8.6	



Alloy	6063
Treatment	T-5
Tolerances	UNE-EN 755-9

SLIDING CLIP

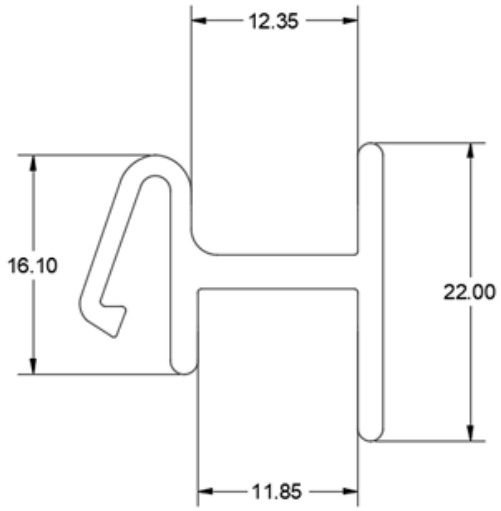
The sliding clip acts as a mechanical fixation, it serves to slide the ceramic pieces of the facade as well as for the placement of the scaffolding bracing pieces. They are clipped to the horizontal profiles. This system allows the ceramic piece to be removable by running the clip. Also, the clip allows to absorb the dilatations of the system. Lacquered in the color chosen by the architect.

PHYSICAL AND MECHANICAL CHARACTERISTICS

The clips are made of extruded aluminum EN AW-AlMgSi (6063) with T5 treatment.

ALUMINUM FACTS	
Designation	
Symbolic	EN AW-Al MgSi
Numeric	6063
Treatment	T5
Rule	UNE-EN 755-9
Physical properties	
Specific weight	2700 kg/m3
Linear thermal expansion coeff.	23,0 µm/m·°C (entre 20 y 100°C)
Modulus of elasticity (to 20ºC)	63.000 MPa
Poisson's ratio	0,3
Fusion interval	615-655°C
Mechanical properties	
Tensile strength (Rm)	≥ 215 N/mm2
Elastic limit (Rp0,2)	≥ 175 N/mm2
Elongation (A) 5,65%	14
Fatigue limit	≥150 N/mm2
Shear strength	≥135 N/mm2
Brinell Hardness	60

DIMENSIONAL CHARACTERISTICS



**The clips can be lacquered in black, with the possibility of lacquering in the color desired by the architect*

DATOS DEL CLIP		
Theoretical weight (kg/m)	0,325	
Alloy	6063	
Treatment	T-5	
Area (mm2)	120	
Perimeter (m)	0,306	
Moment of inertia (cm4)	Ix	0.26
	Iy	0.66
Tolerances	UNE–EN 755-9	

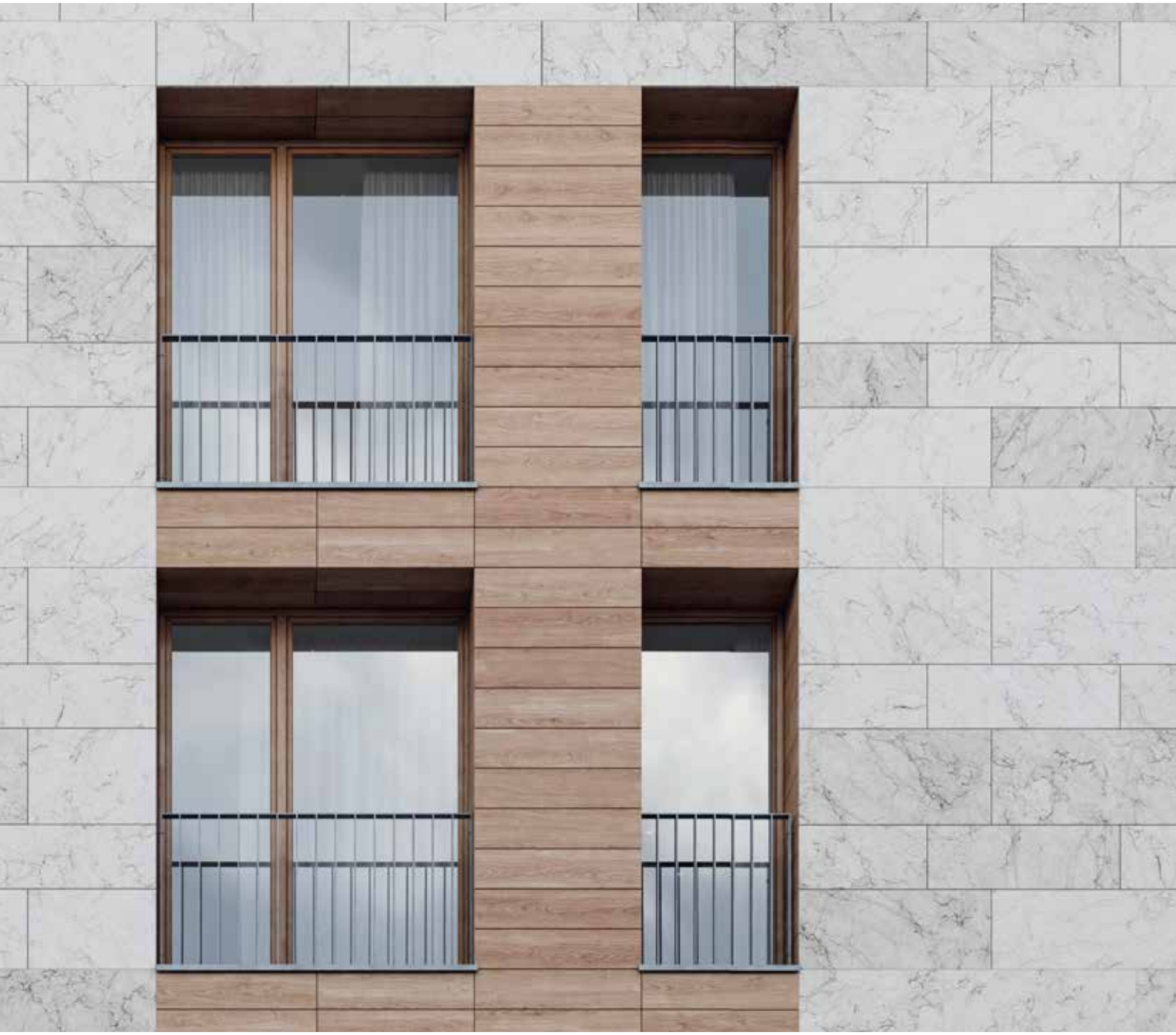
Both the clips and the horizontal profiles of the DOLCKER & CLIP system can be lacquered in any color from the following RAL color table as shown below:

RAL color table

POLYURETHANE PUTTY

4 chemical fixing points will be added per piece unit to improve and reinforce the fixing and gluing of the piece to the horizontal profile. The chemical fixation prevents the piece from moving as a result of the action of the wind, allows the sliding clips to absorb the expansion of the façade, and serves as a damper for possible noise between the profile and the plate.

Sikaflex-111 Stick & Seal neutral polyurethane adhesive putty or similar is used.



SYSTEM **DOLCKER & CLIP** System for 14-20 mm thick ceramic ventilated facades with continuous horizontal "G" profiles

ANCHORS

The anchors used between the bracket and the vertical wall are the following:

- For slabs: Stainless expansive support anchor

ARTICLE Metal anchor I X
MATERIAL Stainless Steel A2
DIAMETER 8 and 10 mm.
LENGTH 75 - 80 - 120

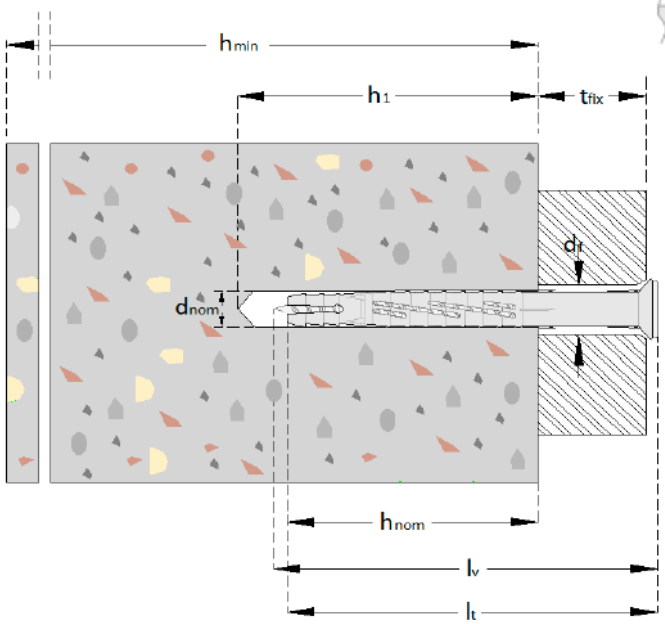
CHARACTERISTICS / PLACEMENT DATA

Metallic expansion anchor by thread for medium loads. Composed by: anchor body, expansion plate, nut and A2 stainless washer

Tightening torque for diameter 8: Minimum: 20 Nm - Maximum: 25 Nm

Tightening torque for diameter 10: Minimum: 40 Nm - Maximum: 45 Nm

- For brickwork: Nylon plug anchor with retaining hexagonal head screw



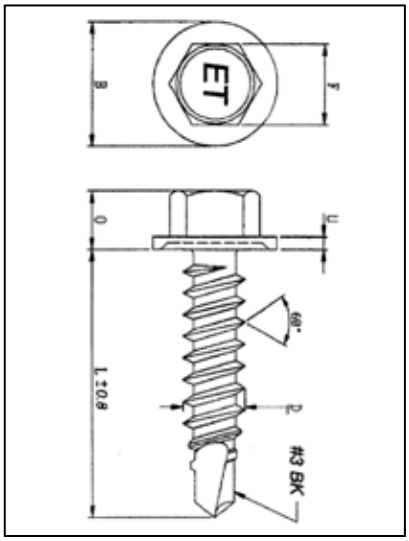
d_{nom} : Anchor diameter
l_t: Anchor length
d_v: Screw diameter
l_v: screw length
t_{fix}: Maximum thickness to set
d_0: Drill hole diameter
h_1: Minimum depth of the hole to be drilled
h*: Minimum thickness must be equal to the thickness of the face of the block plus the thickness of the element to be fixed
h_{min}: Minimum thickness of masonry
h_{nom}: Anchor Depth Minimum Length
h_{ef}: Minimum effective anchor depth
d_f: Drill diameter
T: 6 lobes (torx)
C_{min}: Minimum Allowable Edge Distance
S_{min}: Minimum spacing between anchors

Material Code	Anchor Size	Size Screw	t_{fix}	d_0 [1]	h_1	h_{min}	h* [2]	h_{nom}	h_{ef}	d_f	T	c_{min} [3]	s_{min} [3]
	d_{nom} x l_t (mm)	d_v x l_v (mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
VS8108080	8 x 80	6 x 85	10	8	90	120	25	70	70	9	30	90	90
VS8108100	8 x 100	6 x 105	30				45						
VS8108120	8 x 120	6 x 125	50				65						
VS8108140	8 x 140	6 x 145	70				85						
VS8110080	10 x 80	7 x 85	10	10	90	120	25	70	70	11	40	100	100
VS8110100	10 x 100	7 x 105	30				45						
VS8110120	10 x 120	7 x 125	50				65						
VS8110140	10 x 140	7 x 145	70				85						
VS8110160	10 x 160	7 x 175	90				105						
VS8110200	10 x 200	7 x 205	130				145						
VS8110230	10 x 230	7 x 235	160				175						

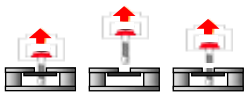
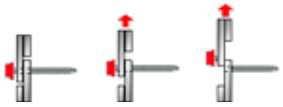
SCREWS

The screws used between vertical profiles-cantilevers and vertical profile-horizontal profile are as follows:

- 5.5 x 22 stainless steel self-drilling screw with EPDM washer



ARTICLE	Self-drilling screw tip nº3
FAMILY CODE	DKH-5
MATERIAL	INOX A2
COVERING	According to the requirement
NOMINAL DIAMETER	5.5 mm.
STANDARD OF MANUFACTURING	DIN 7604K
LENGTH	From 18 to 60mm.

FEATURES			
PULLING RESISTANCE (1) (A) (Depending on the thickness of the aluminum sheet for Ø 5,5 mm.)	2,0 mm	2,0 kN	(A)  (B) 
	3,0 mm	2,7 kN	
	4,0 mm	6,8 kN	
TORSION RESISTANCE		10,4 N-m	
SHEAR STRENGTH (1) (B) (According to screw Ø)	4,8 mm	9,3 kN	
	5,5 mm	11,1 kN	
	6,3 mm	14,1 kN	
SELF DRILLING TIMES (2)		1,8 s	

CERAMIC PIECE

According to documentation provided by DolceStone S.L., the cladding pieces are made of porcelain ceramic of nominal dimensions.

CERAMIC PIECE

PHYSICAL AND MECHANICAL CHARACTERISTICS

Ceramic pieces are classified as dry-pressed ceramic tiles with low water absorption according to the UNE-EN 14411 standard, with the following characteristics declared by the manufacturer:

CARACTERÍSTICAS DIMENSIONALES **DIMENSIONAL CHARACTERISTICS**		UNE-EN-ISO 10545 Test Nº	UNE-EN-14411(1) **ISO 13006 Anexo G** ISO 13006 Annexe G	DOLCKER Valores 1ª Calidad / **Values 1st Quality**		
				SATIN 60X120 11,5mm Caliber: 1 597,2x1197,3	**MATE 60X120 14mm** Caliber: 1 597,2x1197,3	**RUSTIC 60X120 20MM** Caliber: 5 600,4x1200,4
	LONGITUD Y ANCHURA **LENGHT AND WIDTH**	2	0,6%	±0,2%	±0,2%	±0,2%
	ESPESOR **THICKNESS**	2	5,0%	±5,0%	±5,0%	±5,0%
	RECTITUD DE LOS LADOS **WARPAGE OF EDGES**	2	0,5%	±0,2%	±0,2%	±0,2%
	ORTOGONALIDAD **WEDGING**	2	0,5%	±0,25%	±0,25%	±0,25%
	CURVATURA CENTRAL Y LATERAL **CENTRAL AND EDGE CURVATURE**	2	0,5%	±0,2%	±0,2%	±0,2%
	ALABEO **WARPAGE**	2	0,5%	±0,2%	±0,2%	±0,2%
	ABSORCIÓN DE AGUA **WATER ABSORPTION**	3	0,5% máx 0,6%	≤0,1%	≤0,1%	≤0,1%

CARACTERÍSTICAS MECÁNICAS **MECHANICAL CHARACTERISTICS**		UNE-EN-ISO 10545 Test Nº	UNE-EN-14411(1) **ISO 13006 Anexo G** ISO 13006 Annexe G	DOLCKER Valores 1ª Calidad / **Values 1st Quality**		
				SATIN 60X120 11,5mm Caliber: 1 597,2x1197,3	**MATE 60X120 14mm** Caliber: 1 597,2x1197,3	**RUSTIC 60X120 20MM** Caliber: 5 600,4x1200,4
	FUERZA DE ROTURA **BREAKING STRENGHT**	4	≥1300N	≥3000N	≥5000N	≥12000N
	RESISTENCIA A LA FLEXIÓN **FLEXURAL STRENGHT**	4	Media 35/min 32 **Average 35/min 32**	≥42 N/mm^2	≥45 N/mm^2	≥50 N/mm^3
	RESISTENCIA AL. IMPACTO **IMPACT RESISTANCE**	5	MD	0,85	0,85	0,85
	RESISTENCIA A LA ABRASIÓN PROFUNDA **DEEP ABRASION RESISTANCE**	6	< 175 mm^3	< 145 mm^3	< 145 mm^3	< 145 mm^3
	DILATACIÓN TÉRMICA LINEAL **LINEAR THERMAL EXPASION**	8	MD	<7,5 x10^{-6} °C^{-1}	<7,5 x10^{-6} °C^{-1}	<7,5 x10^{-6} °C^{-1}
	CHOQUE TÉRMICO **THERMAL SHOCK**	9	MD	Resiste **Resists**	Resiste **Resists**	Resiste **Resists**
	RESISTENCIA A LA HELADA **FROST RESISTANCE**	12	Exigido **Required**	Resiste **Resists**	Resiste **Resists**	Resiste **Resists**
	REACCIÓN AL FUEGO **REACTION TO FIRE**	No Exigido **No Required**	No Exigido **No Required**	A1/A1fl	A1/A1fl	A1/A1fl
	DILATACIÓN POR HUMEDAD **MOISTURE EXPANSION**	No Exigido **No Required**	Valor Declarado **Declared Value**	------	------	------

CARACTERÍSTICAS HIGIÉNICAS **HYGIENIC CHARACTERISTICS**			UNE-EN-ISO 10545 Test Nº	UNE-EN-14411(1) **ISO 13006 Anexo G** ISO 13006 Annexe G	DOLCKER Valores 1ª Calidad / **Values 1st Quality**		
					SATIN 60X120 11,5mm Caliber: 1 597,2x1197,3	**MATE 60X120 14mm** Caliber: 1 597,2x1197,3	**RUSTIC 60X120 20MM** Caliber: 5 600,4x1200,4
	RESISTENCIA QUÍMICA **CHEMICAL RESISTANCE**	ÁCIDOS BAJA CONCENTRACIÓN **LOW CONCENTRATION ACIDS**	13	MD	CLASE LA	CLASE LA	CLASE LA
		ÁCIDOS ALTA CONCENTRACIÓN **HIGH CONCENTRATION ACIDS**	13	MD	CLASE HA	CLASE HA	CLASE HA
		BASES BAJA CONCENTRACIÓN **LOW CONCENTRATION ALKALI**	13	MD	CLASE LA	CLASE LA	CLASE LA
		BASES ALTA CONCENTRACIÓN **HIGH CONCENTRATION ALKALI**	13	MD	CLASE HA	CLASE HA	CLASE HA
	RESISTENCIA A LAS MANCHAS **STAINS RESISTANCE**		14	MD	4	4	4
	PRODUCTOS DOMÉSTICOS DE LIMPIEZA Y SALES DE PISCINA **HOUSEHOLD DETERGENTS AND ADDITIVES FOR SWIMMING-POOLS**		13	Mímimo UB **Minimun UB**	CLASE LA	CLASE LA	CLASE LA

NORMAS COMPLEMENTARIAS **ADDICIONAL NORMS**		UNE-EN-ISO 10545 Test Nº	UNE-EN-14411(1) **ISO 13006 Anexo G** ISO 13006 Annexe G	DOLCKER Valores 1ª Calidad / **Values 1st Quality**		
				SATIN 60X120 11,5mm Caliber: 1 597,2x1197,3	**MATE 60X120 14mm** Caliber: 1 597,2x1197,3	**RUSTIC 60X120 20MM** Caliber: 5 600,4x1200,4
	DESLIZAMIENTO (Péndulo) **ANTISLIP**	UNE-ENV 12633	Clase 1/2/3	CLASE 1 15<PTV≤35	CLASE 1 15<RD≤35	CLASE 3 Rd>45
	DESLIZAMIENTO (Pies calzados) **ANTISLIP**	DIN 51130	R9/R10 R11/R12	------	R9	R11
	DESLIZAMIENTO (Pies descalzos) **ANTISLIP**	DIN 51097	A/B/C	------	------	C
	DESLIZAMIENTO (DCOF) **ANTISLIP**	ANSI A137.1 Apdo. 9.6	MD	------	------	------
	MATERIAL RECILCADO **RECYCLED MATERIAL**	ISO 14021	MD	Según Modelo **Depending Model**	Según Modelo **Depending Model**	Según Modelo **Depending Model**
	RESISTENCIA DE LOS COLORES A LA LUZ **COLOR RESISTANCE TO LIGHT**	DIN 51094	No Exigido **No Required**	Resiste **Resists**	Resiste **Resists**	Resiste **Resists**

DIMENSIONAL CHARACTERISTICS

The standard manufacturing dimensions of ceramic pieces are defined in the following table:

600 mm x 1200 mm
500 mm x 1200 mm
300 mm x 1200 mm
500 mm x 1000 mm
450 mm x 900 mm
800 mm x 800 mm
600 mm x 900 mm
600 mm x 600 mm
600 mm x 300 mm

* For specific designs, other plate dimensions smaller than those described can be obtained by machining, with equivalent tolerances and with the same thicknesses, as long as the stresses to which they are going to be subjected are less than those defined in this document.

FIBERGLASS MESH

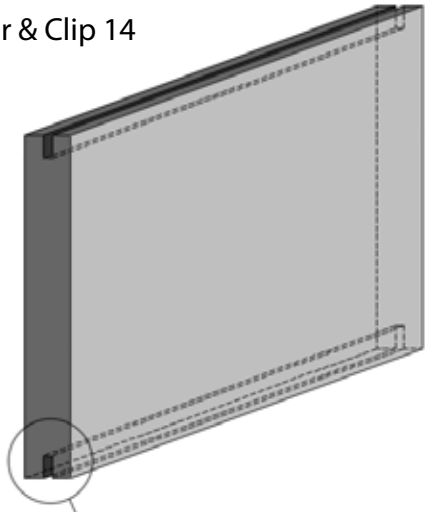
The ceramic has the option of being supplied with a safety mesh on the back of the piece. This mesh prevents pieces of the piece from coming off in the event of any blow.

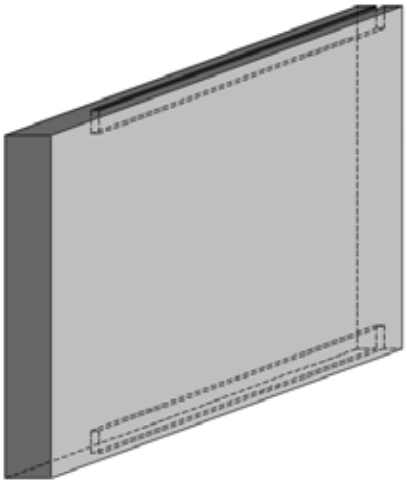
- Composition: Fiberglass
- Weight: 98 g/m2 ± 5%
- Distance to thread axes: 12,5 x 11,8 mm
- Tensile breaking load:
  - Longitudinal: 1.650 N / 5 cm
  - Transversal: 1.400 N / 5 cm

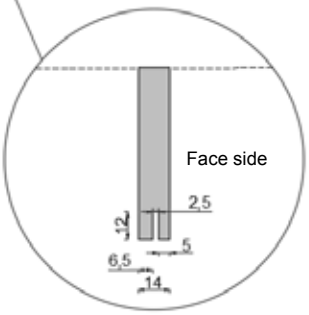
One-component polyurethane adhesive is used to fix the mesh.

CERAMIC SLOTS STUDY

Dolcker & Clip 14

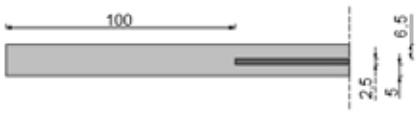






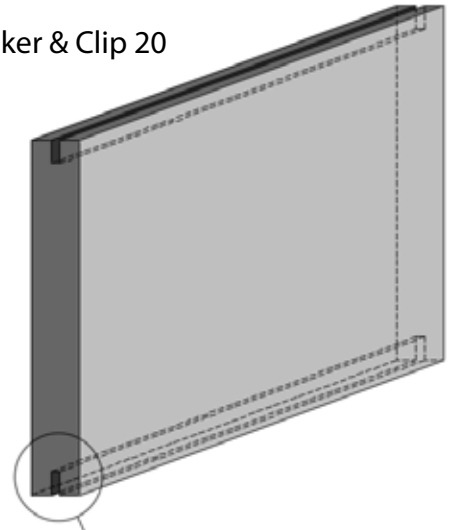
Standard slot

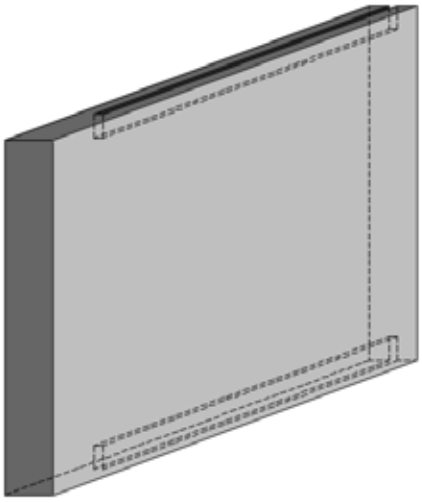
Corner slot

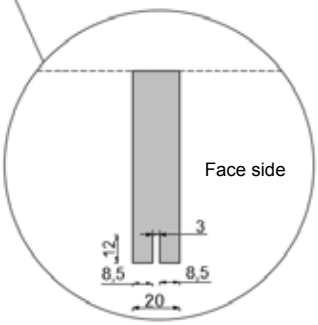


Face side

Dolcker & Clip 20

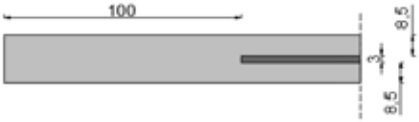






Standard slot

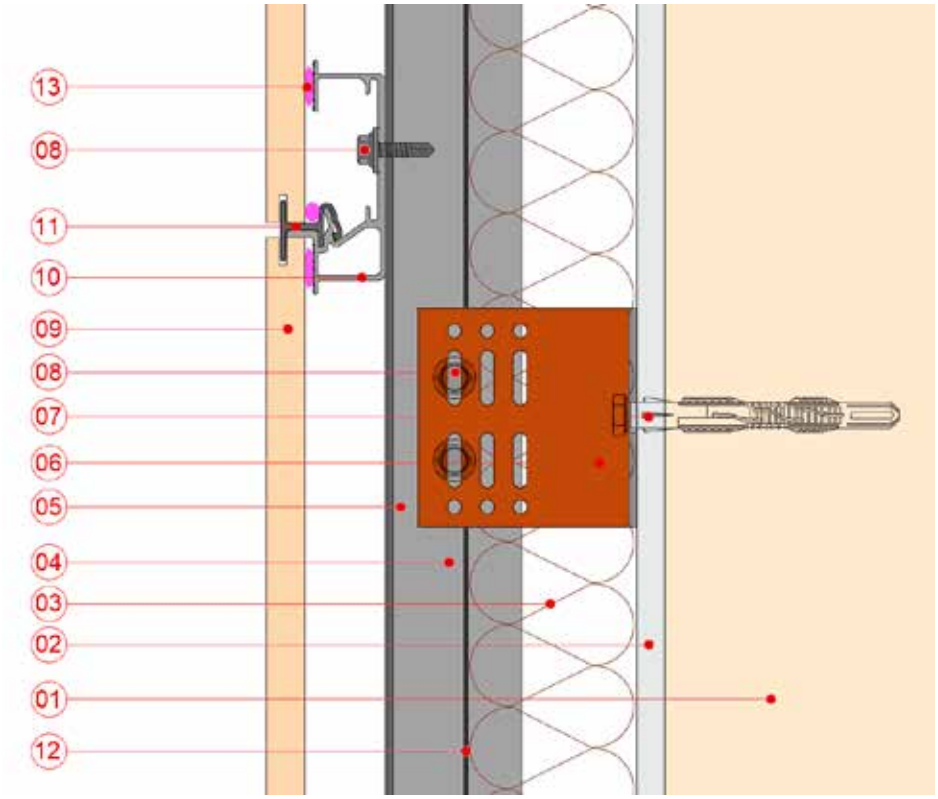
Corner slot



Face side

TYPE DETAILS

- Fastening with intermediate profile:



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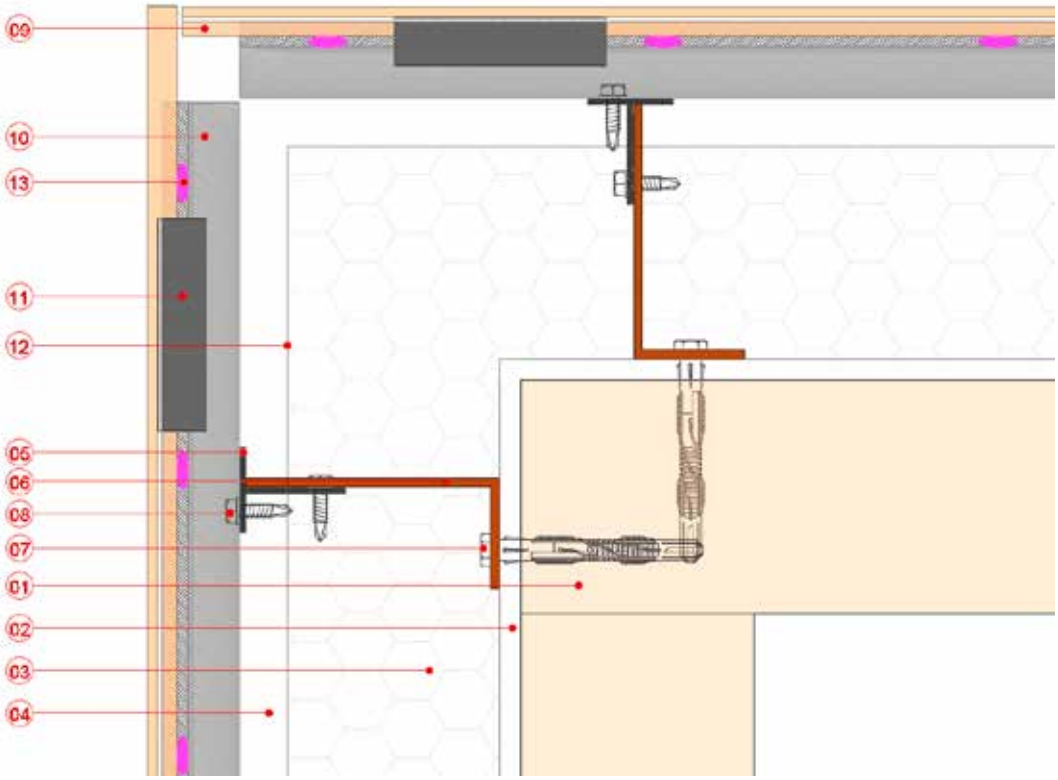
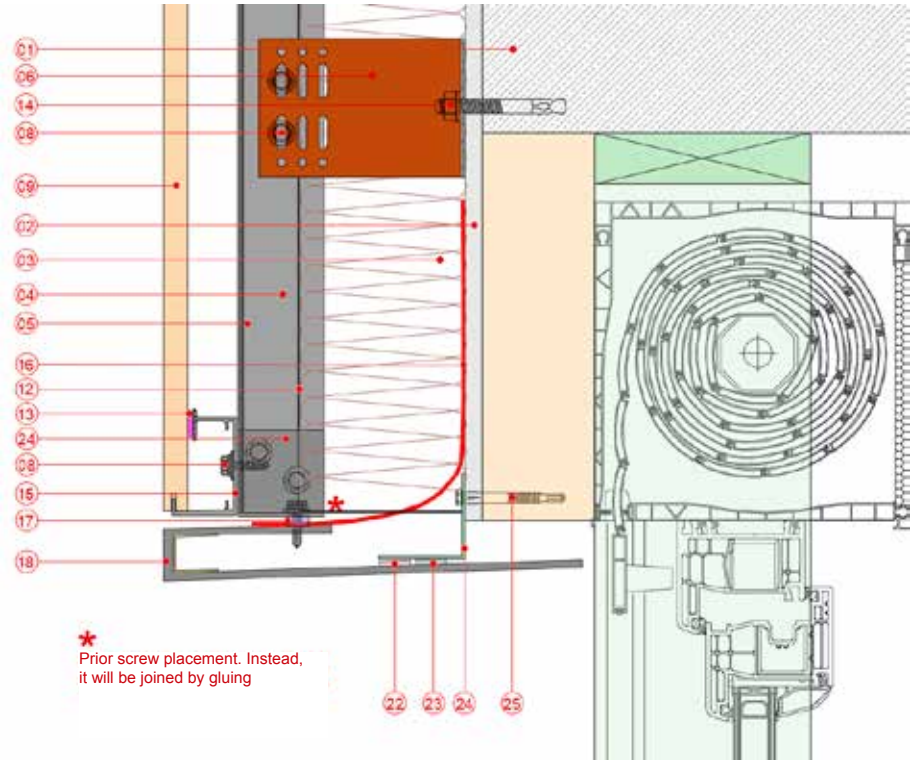
- Corner detail:



- Lintel with finishing profile:



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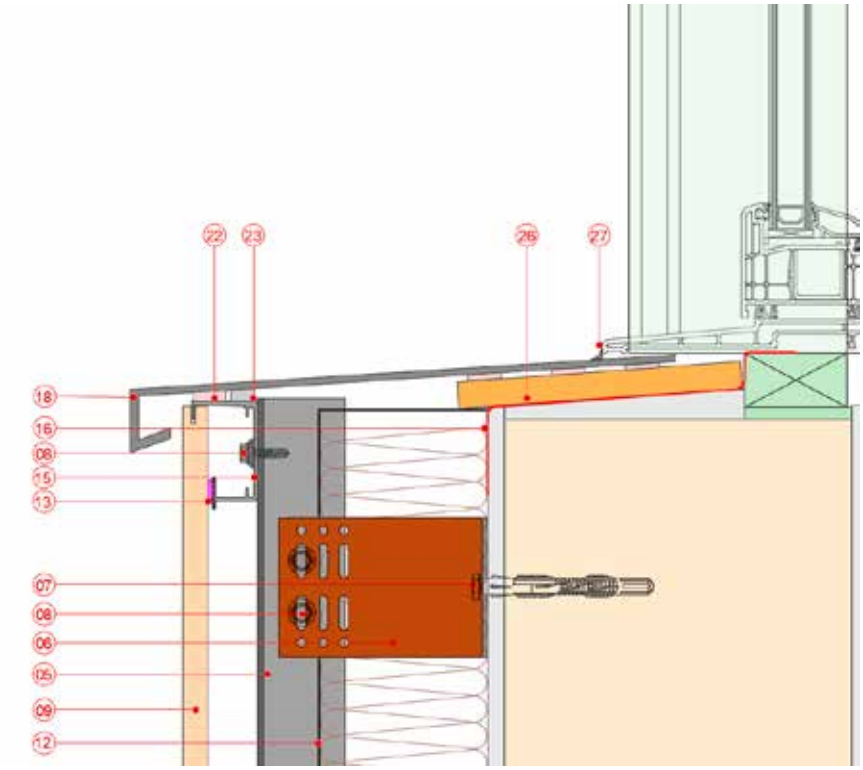
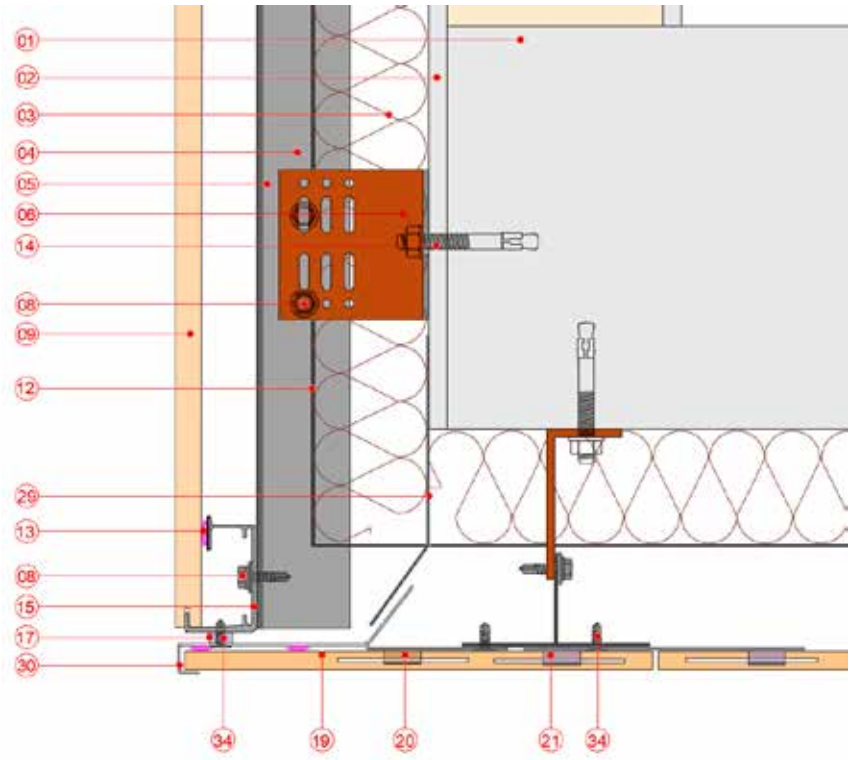
- Sill with boot profile:



- T10 ceramic ceiling installation detail:



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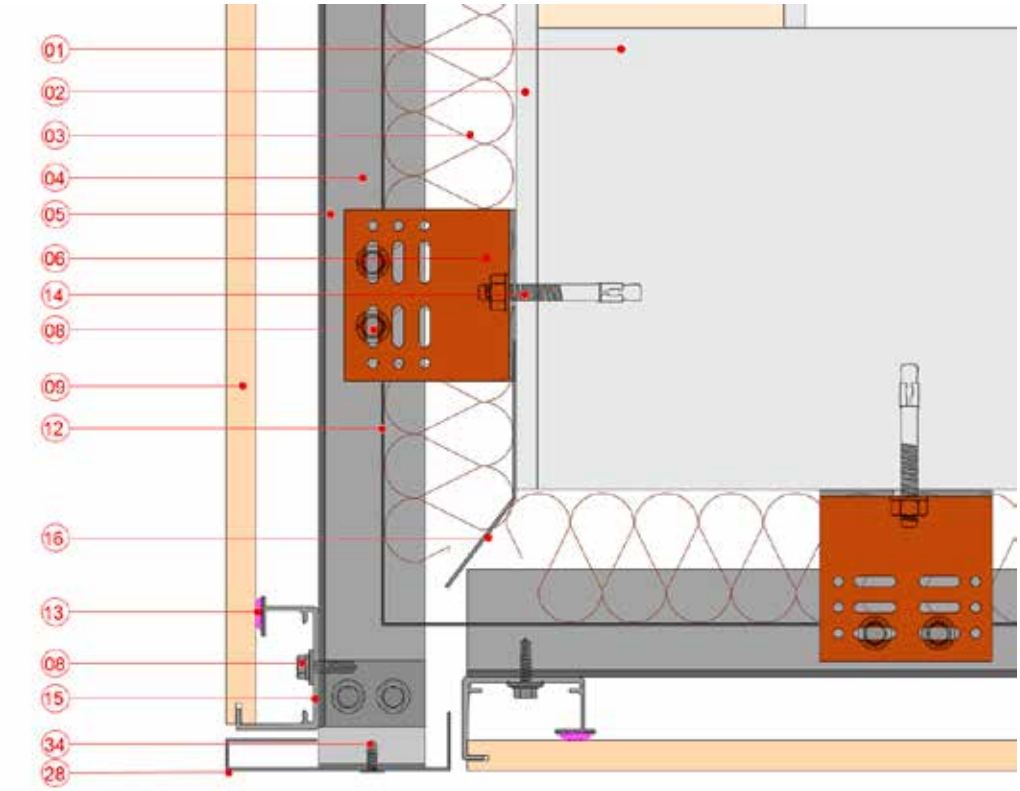
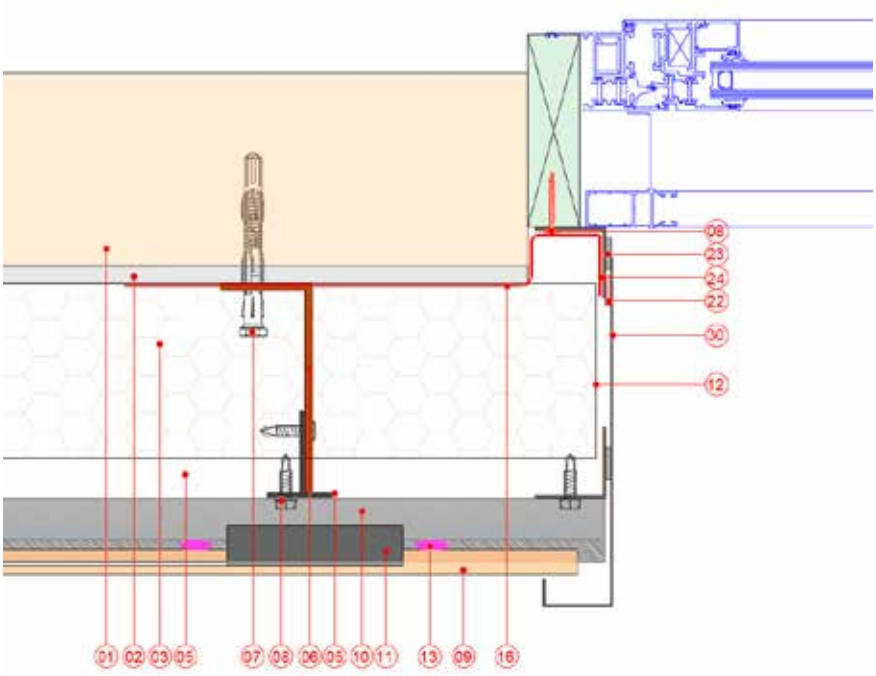
- Detalle colocación techo sistema dolcker



- Trim details



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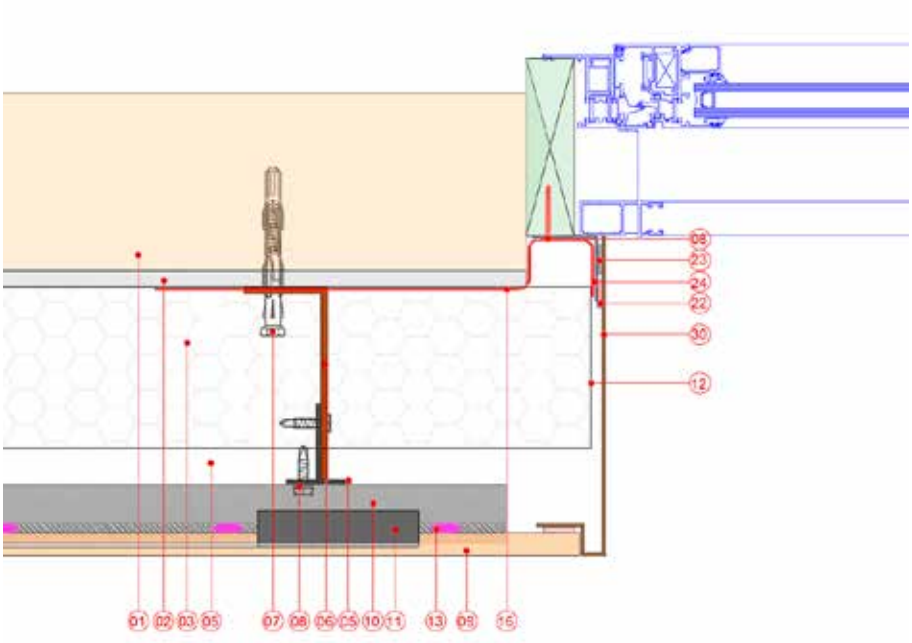

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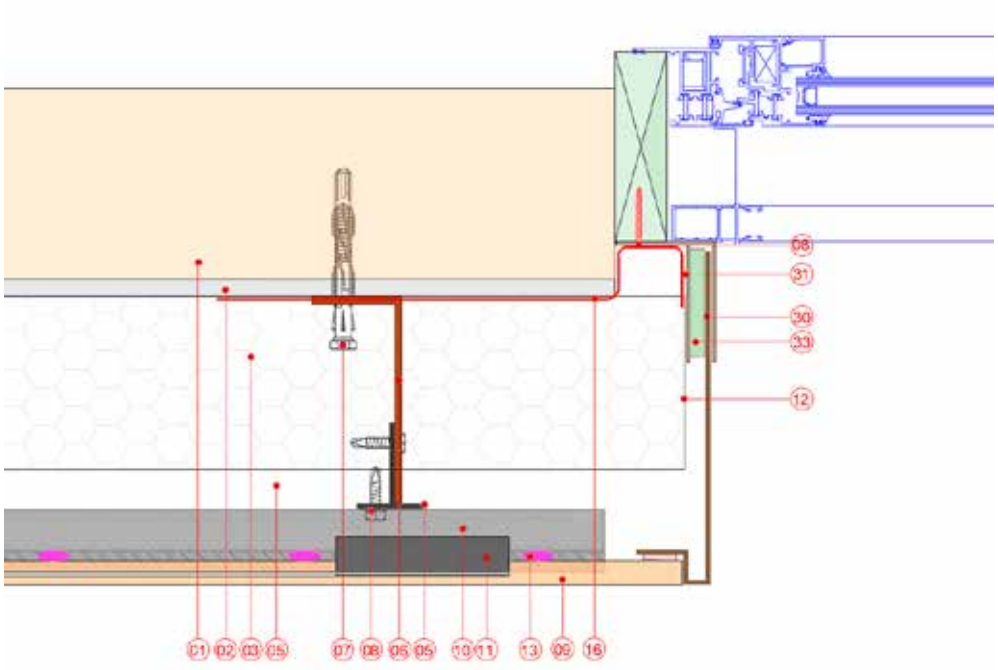

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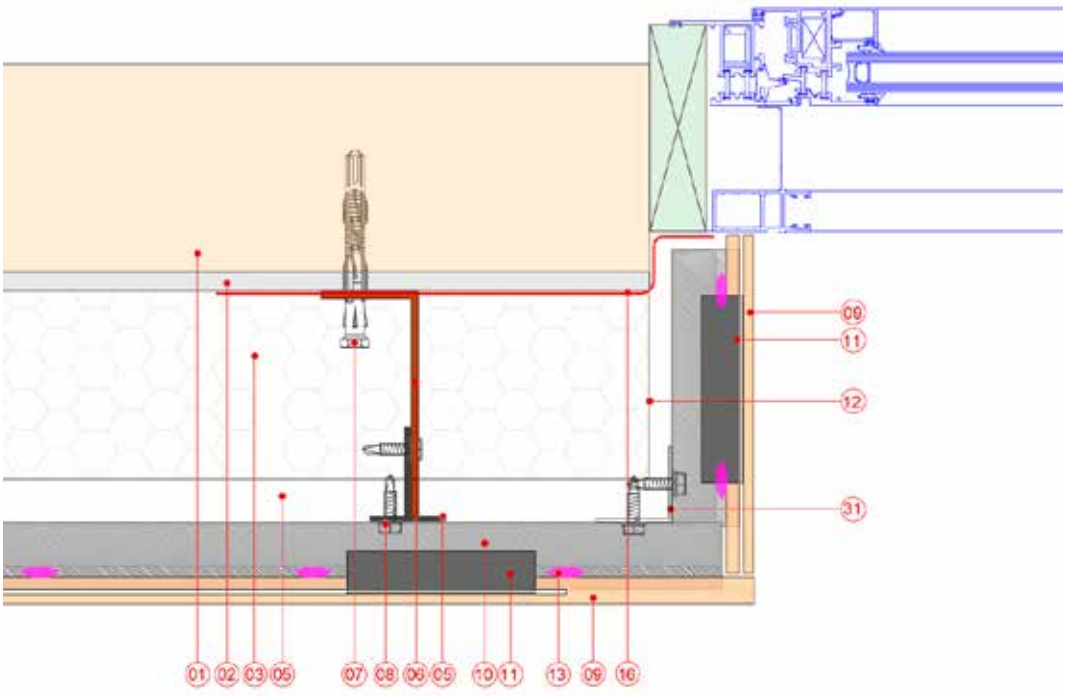

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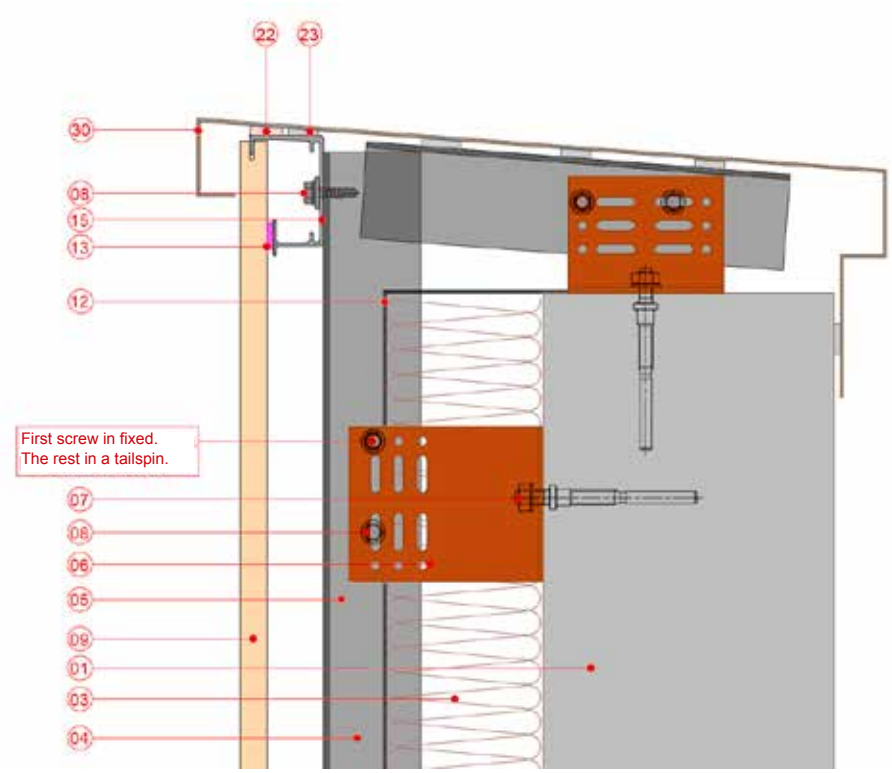

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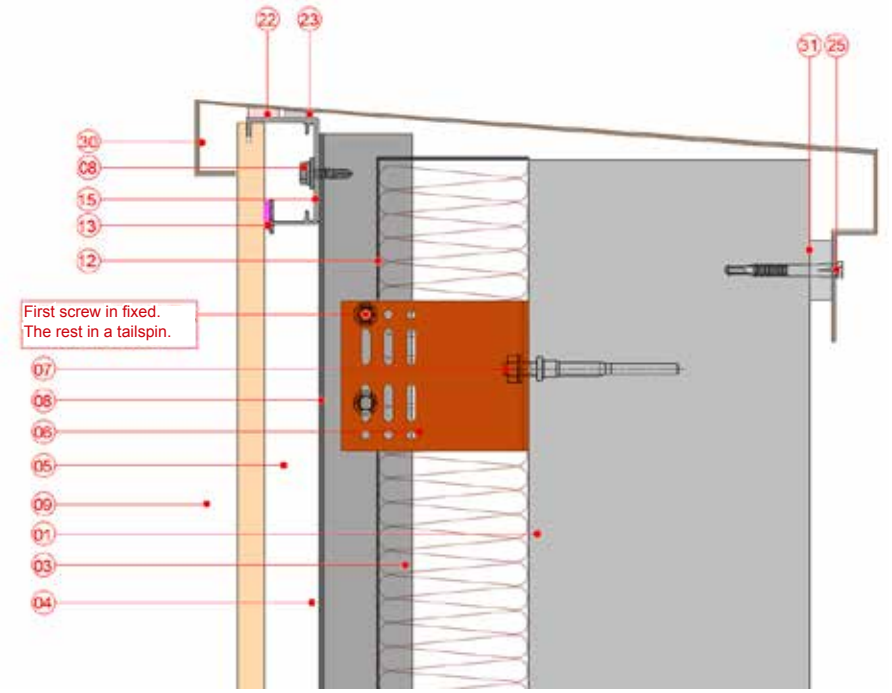
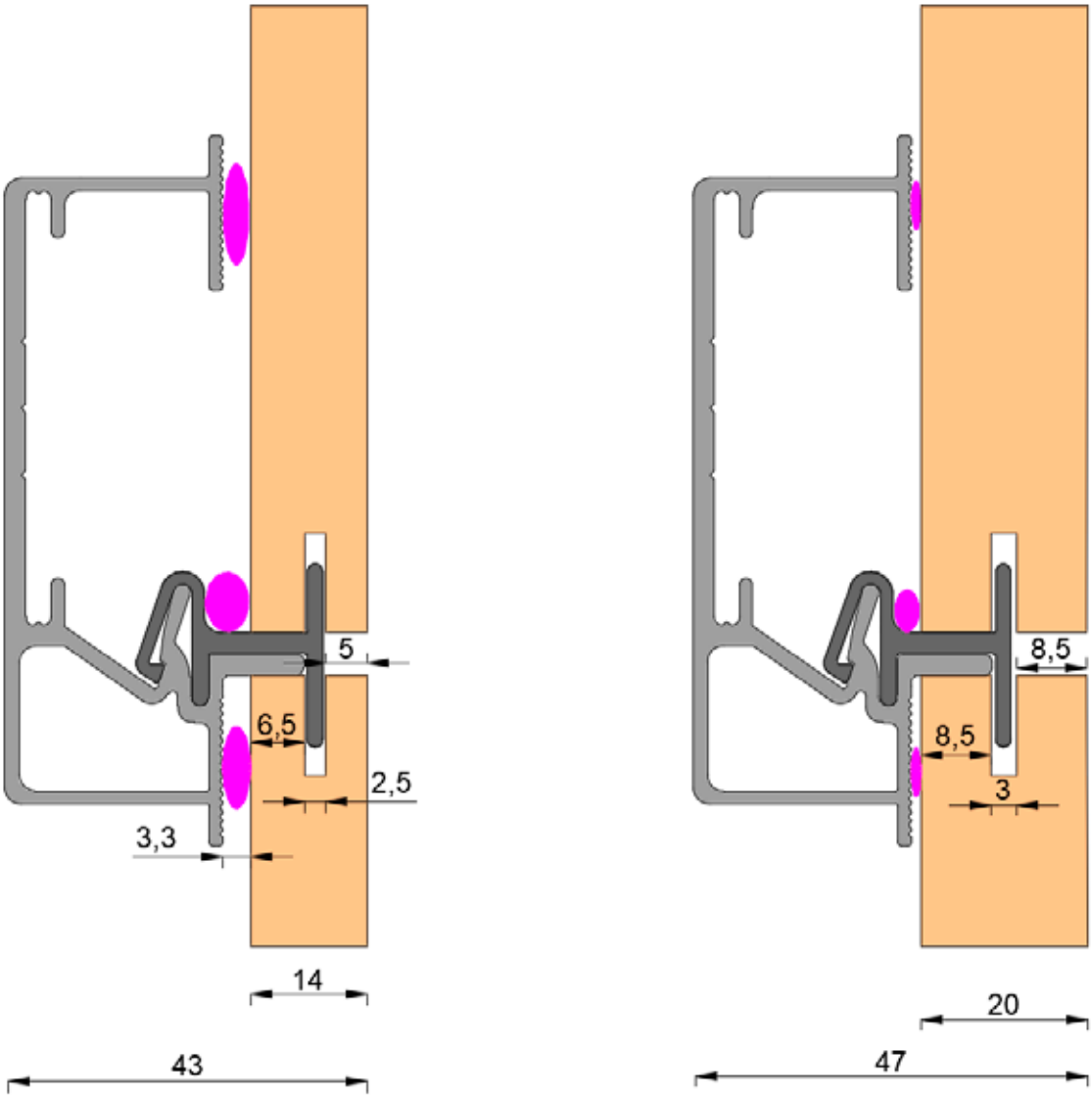
33 Expanded Polystyrene
34 Flat Head Self Drilling Screw



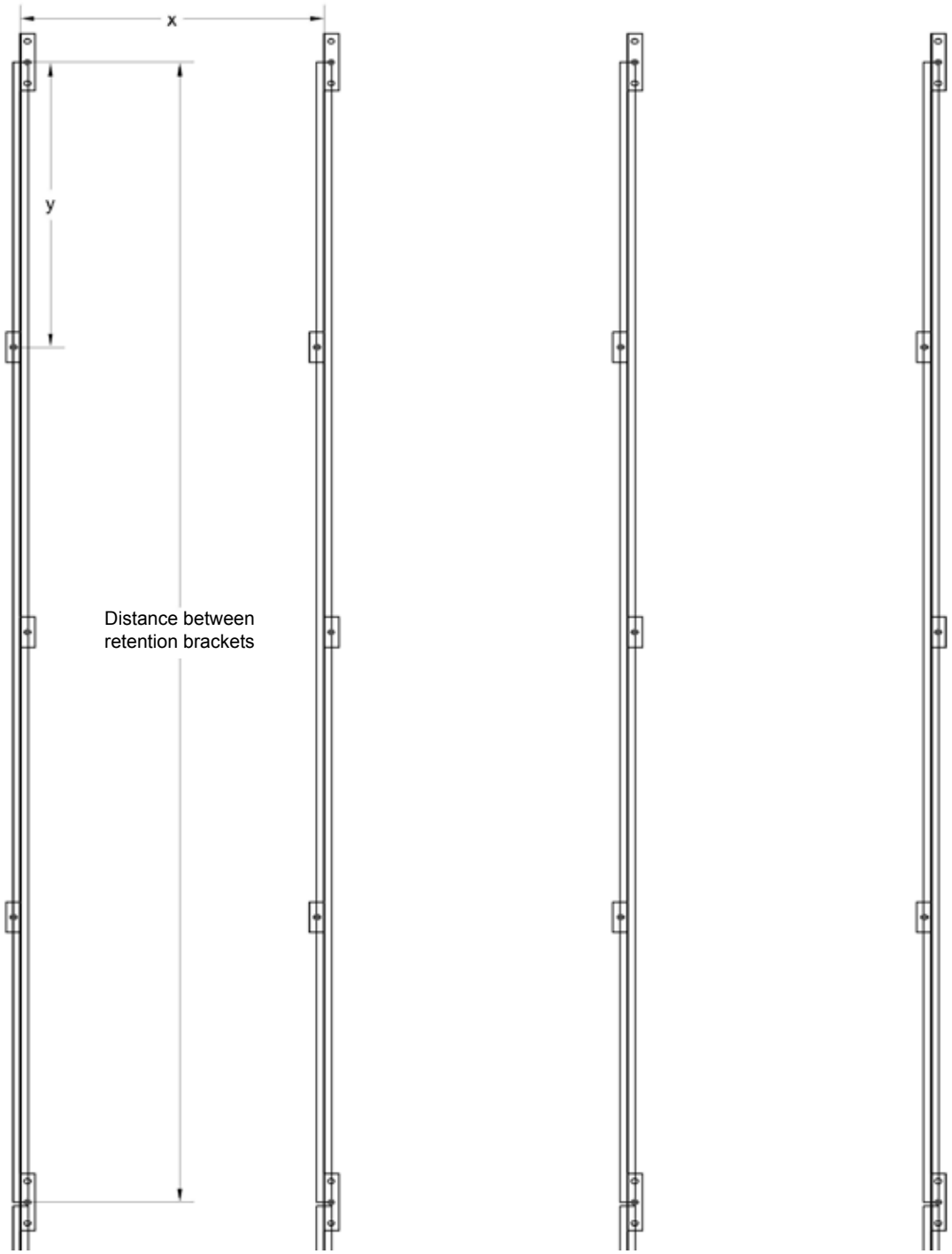
INSTALLATION STUDY FOR 14 AND 20 MM CERAMICS

Depending on the thickness of the ceramic, the output from the beginning of the horizontal profile will be different. In the case of 14 mm ceramics, an output of 43 mm will be obtained. On the other hand, with 20 mm thick ceramics, the output will become 47 mm.



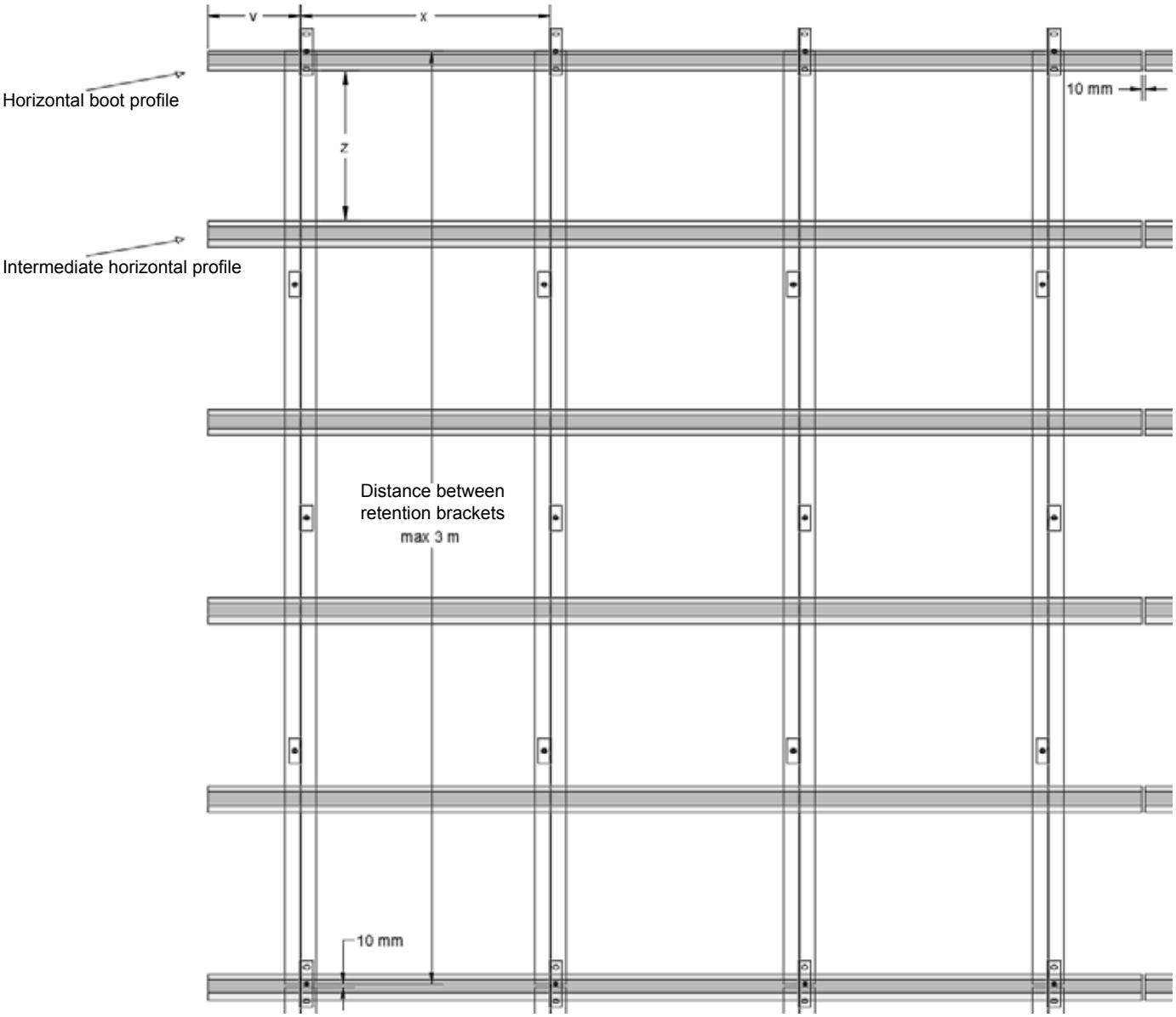
PLACEMENT OF THE VENTILATED FACADE

1- Placement of corbels and vertical profiles



x: Depending on the characteristics of the work. Never higher than 1.1 m.
y: Depending on the characteristics of the work. Never higher than 0.75 m.

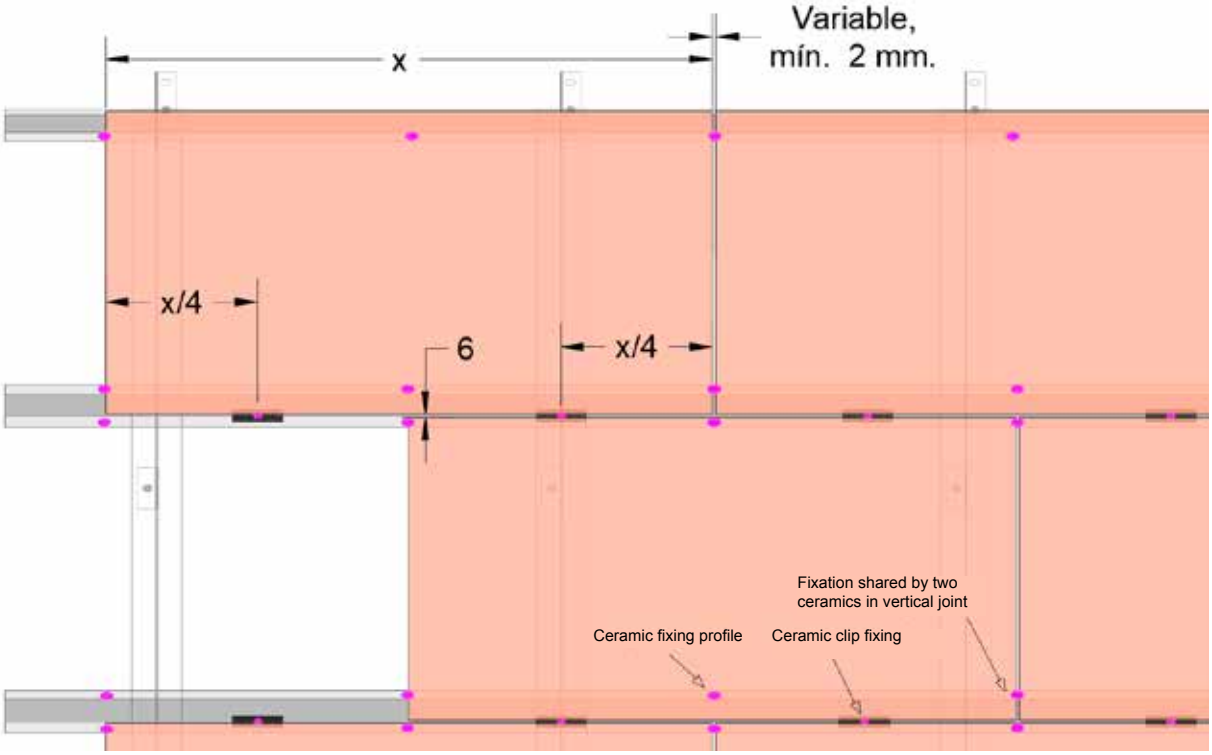
2- Placement of horizontal profiles



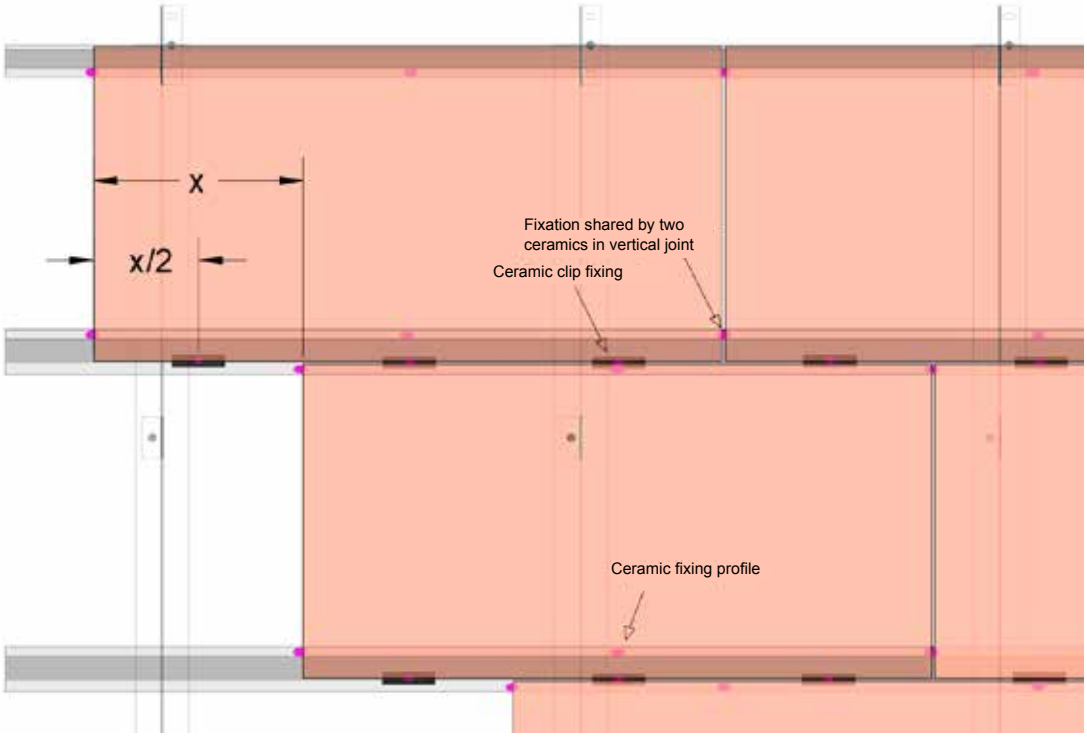
x: Depending on the characteristics of the work. Never higher than 1.1 m
y: Depending on the characteristics of the work. Never higher than 0.75 m.
v: It is not recommended to fly the profiles more than 40 cm.
z: Depending on the thickness of the ceramic. If it is greater than 0.6 m, it would be necessary to place a horizontal T-profile to hold the ceramic by chemical fixing between the two Dolcker profiles.

3- Placement of clips and ceramics. Depending on the type of installation, the number of clips needed to set ceramics will vary.

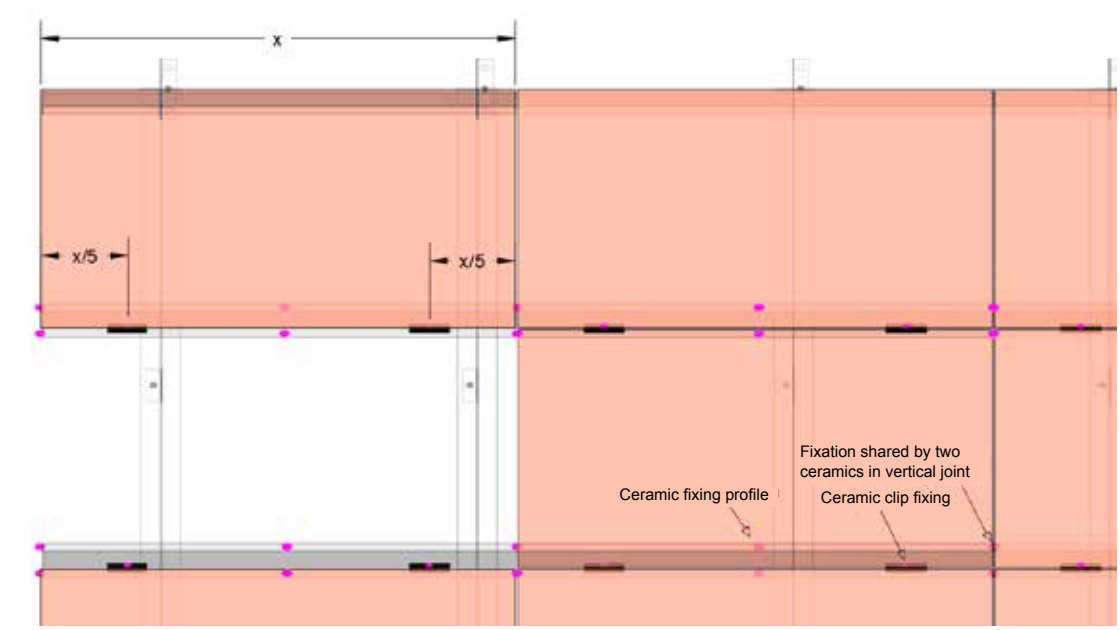
- Matajunta installation 1/2.



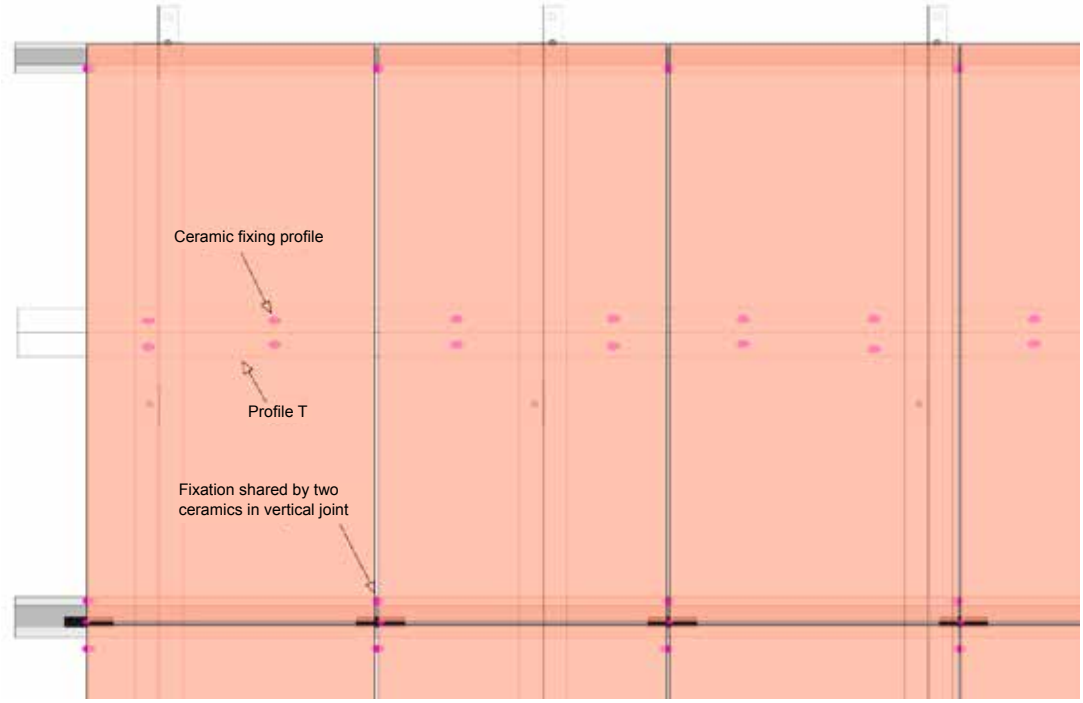
Matajunta installation 1/3



- Continuous joint installation



- Vertical ceramic installation



In the event that the ceramics were placed in a vertical position, it would be necessary to place a T-profile glued to the ceramic using chemical fixings. The T-profile would sit between the two Dolcker profiles.

4. START-UP

GENERAL SPECIFICATIONSES

For each work and in view of the architectural project, a technical project of the ventilated façade will be carried out in which the elements to be used and their layout will be calculated and determined.

Said project will include the plans and construction details necessary for the correct understanding and subsequent installation of the system by the construction personnel.

In any case, DolceStone, S.L., provides all the necessary data to carry out the project and the execution of the ventilated façade; must provide, if requested, technical assistance during the project and execution phases, including the resolution of singular points.

The assembly of the DOLCKER & CLIP ventilated façade system must be carried out by specialized personnel authorized by DolceStone, S.L., under its control and technical assistance, using the previously described fixing elements.

The ceramics already placed must not be under tension and must have sufficient freedom of movement. For these purposes, sufficient margin must be provided in the holes when making the joints, thus enabling expansion due to humidity and temperature.

PREPARATION OF THE SUPPORT AND SYSTEM OF FIXATION

On site, before assembling the system, the stability and bearing capacity of the support must be checked and whether the anchors provided for in the technical project are adequate for it, by means of the proper pull-out tests according to the work control plan, supervised by the optional address.

In the event that the planned anchorage is not adequate, it must be replaced with the approval of the Project Management, taking the necessary precautions in terms of position and number of anchorages.

The installer of the façade will give his prior consent to the support before placing the system.
The substructure must be properly aligned in order to guarantee the flatness of the cladding system.

The fixing system must anticipate the expansion of the plates and be defined according to:
- Wind loads
- Maximum distances between fixing points of the panels
- Format and dimensions of the panels
- Expansion joints of the building and the components

VENTILATED AIR CHAMBER

The existence of a continuous air chamber, between 3 and 10 cm thick, ventilated by ascending natural convection behind the cladding, must be taken into account.

5. ASSEMBLY

The steps of the assembly of the ventilated facade must be the following:

1. Stakeout
2. Placement of corbels
3. Placement of vertical profiles
4. Placement of thermal insulation
5. Placement of horizontal profiles
6. Placement of sliding clips
7. Placement of ceramics, with establishment of joints and application of adhesive putty in the grooves made in the ceramic.
8. Placing the ceramic in the lower strip of the facade

LAYOUT

The facade will be reconsidered checking the planimetry of the support to be covered, verifying the plan for a good choice of anchorage.

The axes of the vertical profiles will be placed according to the dimensions of the covering tile, at a distance equal to or less than 120 cm, depending on the format of the tile, as defined in the project and justified by calculation.

The characteristics of the support, both in collapse and flatness, must meet the conditions set out in the CTE, as well as in the corresponding regulations and provisions in force.

PLACEMENT OF THE BRACKETS

First of all, the "L" spacer profiles will be fixed on the supporting wall or the beams and/or edges of the slab using suitable anchors.

A placement and distribution of the vertically aligned spacers will be carried out, distributed between slab edges. The vertical distance will depend on the type and condition of the support and, in turn, on the loads that it has to transmit to it, provided that the support allows it, less than 1 meter.

PLACEMENT OF THE VERTICAL PROFILES

The vertical "T" profiles will be placed, fixing them to the "L" brackets with the screws described above, with a maximum distance between them of 110 cm depending on the size of the ceramic piece and the calculation of each project.

The vertical profiles, perfectly aligned, will be fixed with fixed and elongated holes to the brackets, in such a way that they guarantee the adequate movement of the substructure and a good planimetry. To do this, they are fixed to a fixed hole at their upper end, the lower ones being slotted. The minimum horizontal joint between vertical profiles will be 2 mm for each linear meter of profile.

PLACEMENT OF INSULATION

Whenever it is applied, the entire exterior face of the vertical wall and the resistant structure of the building will be covered according to the specifications of the project.

PLACEMENT OF THE HORIZONTAL PROFILES

The horizontal "G" profiles will be placed, fixing them to the vertical "T" profiles with the screws described above.

The flatness of the frameworks of horizontal extruded aluminum profiles must be guaranteed through the appropriate anchoring system, in order to ensure the flatness of the cladding system.

The minimum joint between these horizontal profiles will be 2 mm for each linear meter of profile.

PLACEMENT OF THE SLIDING CLIPS

A minimum of two sliding clips will be placed on each horizontal profile per piece of ceramic for easy installation and sliding on the horizontal profiles. Once the clip has been placed in the desired position on the ceramic, a chemical fixation point will be applied to prevent subsequent displacement of the clip.

CERAMIC PLACEMENT

The ceramics will be placed leaning entirely on the horizontal profiles thanks to the grooves made on the edge of the ceramics. In its placement, the clips are prepared in the upper part of the piece at a distance of not less than 5 cm from the vertex. In ceramics, a minimum of 4 chemical fixing points will be applied for better absorption of expansion and stability against the wind.

JOINTS

The joints between the ceramics must always be open. In this system the vertical joints can be considered non-existent at only 2 mm while that the distance of the horizontal joints will be the one marked by the clip, which will be 5-6 mm. Finally, the bottom row of ceramics is placed.

6. MAINTENANCE

For the cleaning of the ceramic, the recommendations of the manufacturer of the same will be followed, being its cleaning similar to that of the usual ceramic pieces for exteriors.

In case of replacement of parts, the difference in tone with respect to those previously placed must be taken into account.

The DOLCKER & CLIP system allows parts to be changed by removing the chemical fixation, sliding the clips into the continuous slots of the following parts, thus being able to disassemble the part. To reassemble it, simply slide the clips to the original position.

7. COMPLIANCE WITH NATIONAL REGULATIONS

SE – STRUCTURAL SAFETY

The DOLCKER & CLIP System for cladding ventilated facades with ceramics does not contribute to the stability of the building, and therefore the Basic Structural Safety Requirements do not apply to it.

However, it must be taken into account that the structural behavior of the ventilated facade must be such that it does not compromise compliance with the rest of the Basic Requirements, and in particular those of Safety of Use and Habitability, as indicated in the Law of Ordinance of the building: Safety of use in such a way that the normal use of the building does not pose a risk of accident for people (article 3.1.b.3), and other functional aspects of the construction elements or facilities that allow satisfactory use of the building (article 3.1.c.4).

The use of the DOLCKER & CLIP System for cladding ventilated facades with ceramics requires the development of a technical project in accordance with current regulations.

In the project, the stability, resistance and admissible deformations will be verified, justifying the adequate composition of the system to withstand the mechanical stresses that may derive from the actions corresponding to the ultimate limit states and service.

The calculation will be specified based on the location and height of the building and the characteristic resistance values of the panel. Likewise, special attention will be paid to the localized instability phenomena that the wind can produce in certain parts of buildings, especially in tall buildings.

The support of the ventilated façade system, usually constituted by an enclosing wall, must comply with the essential structural safety requirements that are inherent to it, considering the actions and stresses that the ventilated façade system transmits to it.

The joint between the substructure of the system and the rear enclosure must be planned so that during the period of use the extreme limit stresses or the durability limit values are not exceeded.

SI- SAFETY IN CASE OF FIRE

The composition of the enclosure, including the insulation, must comply with the CTE, Basic Fire Safety Document (DB-SI), in regard to fire stability, as well as the reaction to fire of the materials that comprise it.

In accordance with Decision 96/603/CE of the Commission of October 4, 1996, fired clay products obtain a class A1 reaction to fire classification (without contribution to fire) without the need for tests.

The cladding material meets the requirement demanded in CTE-DB-SI (SI-2 point 1.4) regarding

exterior propagation, for the exterior cladding materials of the façade and the interior surfaces of the ventilated chambers of the façade.

As in all ventilated façade systems, in the event of a fire, propagation by the chimney effect may occur, for which reason the fire behavior specifications of the materials must be respected and, where appropriate, provide for fire break zones.

SU - SAFETY OF USE

The CTE does not specify requirements related to the safety of use for ventilated facade systems. However, it is recommended that for the lower areas of buildings, in accessible areas for public use, an intermediate vertical profile should be placed.

HS - HEALTH

The complete enclosure solution must guarantee the minimum degree of impermeability required for the building to which it is incorporated, as described in the CTE-DB-HS, in order to satisfy the basic requirement of protection against moisture (HS 1).

As the System is described in the Technical Report, the ventilated air chamber may be considered a "very high resistance barrier to filtration" (B3) as described in the CTE-DB-HS, HS 1, section 2.3 .2, provided that:

- The dimensions of the air chamber are respected, joints and amount of ventilation openings described above.

- The insulating material must be non-hydrophilic and be located between the air chamber and the vertical wall.

There is, in the lower part of the chamber and when it is interrupted, a system for collecting and evacuating the water filtered into it (as described in section 2.3.3.5 of the CTE-DB-HS, HS-1). In any case, special attention must be paid, in the design of the facades, to the incorporation of windows and lighting elements, as well as the correct solution of singular points, exterior fixings, etc., to achieve adequate watertightness. at these points, avoiding the accumulation and filtration of water.

The verification of the limitation of surface and interstitial condensation humidity must be carried out in accordance with the provisions of section HE-1 (Limitation of energy demand) of the CTE-DB-HE (HE-1, point 3.2.3).

The components of the system, as declared by its manufacturer, do not contain or release dangerous substances in accordance with national and European legislation.

HR - PROTECTION AGAINST NOISE

The complete enclosure solution, and fundamentally the support wall plus the insulation, must comply with the requirements of the CTE-DB-HR in terms of protection against noise.

The constructive solution of the meeting of the facade with the vertical separation elements will be studied, so as to avoid the transmission of noise by flanks.

HE - ENERGY SAVING

The complete construction solution for the enclosure must meet the requirements of the CTE-DB-HE in terms of hygrothermal behaviour.

The System, as described in the Technical Report, for the purposes of calculating the thermal transmittance, as described in Appendix E of the CTE-DB-HE, the air chamber will be considered a "highly ventilated air chamber", and the total thermal resistance of the enclosure will be obtained by neglecting the thermal resistance of the air chamber and of the other layers between the air chamber and the outside environment, and including an external surface resistance corresponding to still air, equal to the resistance inner surface of the same element (HE-1, Appendix E).

8. POINTS TO CONSIDER

USE OF THE PRODUCT. START-UP

In the execution of singular points such as sills, lintels, jambs, breastplates, etc., the tightness of the same, and its previous waterproofing if necessary, as well as the correct evacuation of water avoiding its accumulation must be taken into account.

LIMITATIONS OF USE

For those cases that are outside the field of application of said Basic Document, or when wind actions higher than those considered in the CTE-DB-SE-AE are foreseen, it will be necessary to carry out a specific study to determine the wind actions.

WASTE MANAGEMENT

The specifications of Royal Decree 105/2008, which regulates the Production and Management of Construction and Demolition Waste, as well as the applicable regional and local regulations, will be followed.

TERMS OF SERVICE

According to the durability tests carried out and the site visits, it is considered that the System behaves satisfactorily in accordance with the requirements related to durability; provided that the facade, installed as described in this document, is subject to proper use and maintenance, in accordance with the provisions of the CTE.

DOLCESYSTEM QUALITY

DOLCESYSTEM GUARANTEED

9. ANNEX

EXTRACTION RESISTANCE TEST OF DIFFERENT ANCHORS FOR VENTILATED FAÇADE

The tested systems are:

NYLTX set consisting of expansion and compression nylon plug with anti-rotation wings and hexagonal screw with ring and torx footprint.

Expansion anchor with ring 10x90 Zinc-plated steel

The test method consists of the following steps:

1.- Drill with hammer and 10mm bit, for the Nyltx plug, and 10mm drill for the anchor expansive 10x90

2.-The assembly is fixed with the help of a suitable screwdriver and nozzle

3.-The dynamometer is mounted, the red marker of maximum tension or starting point is set to zero and the extraction is started.

With the following significant results:

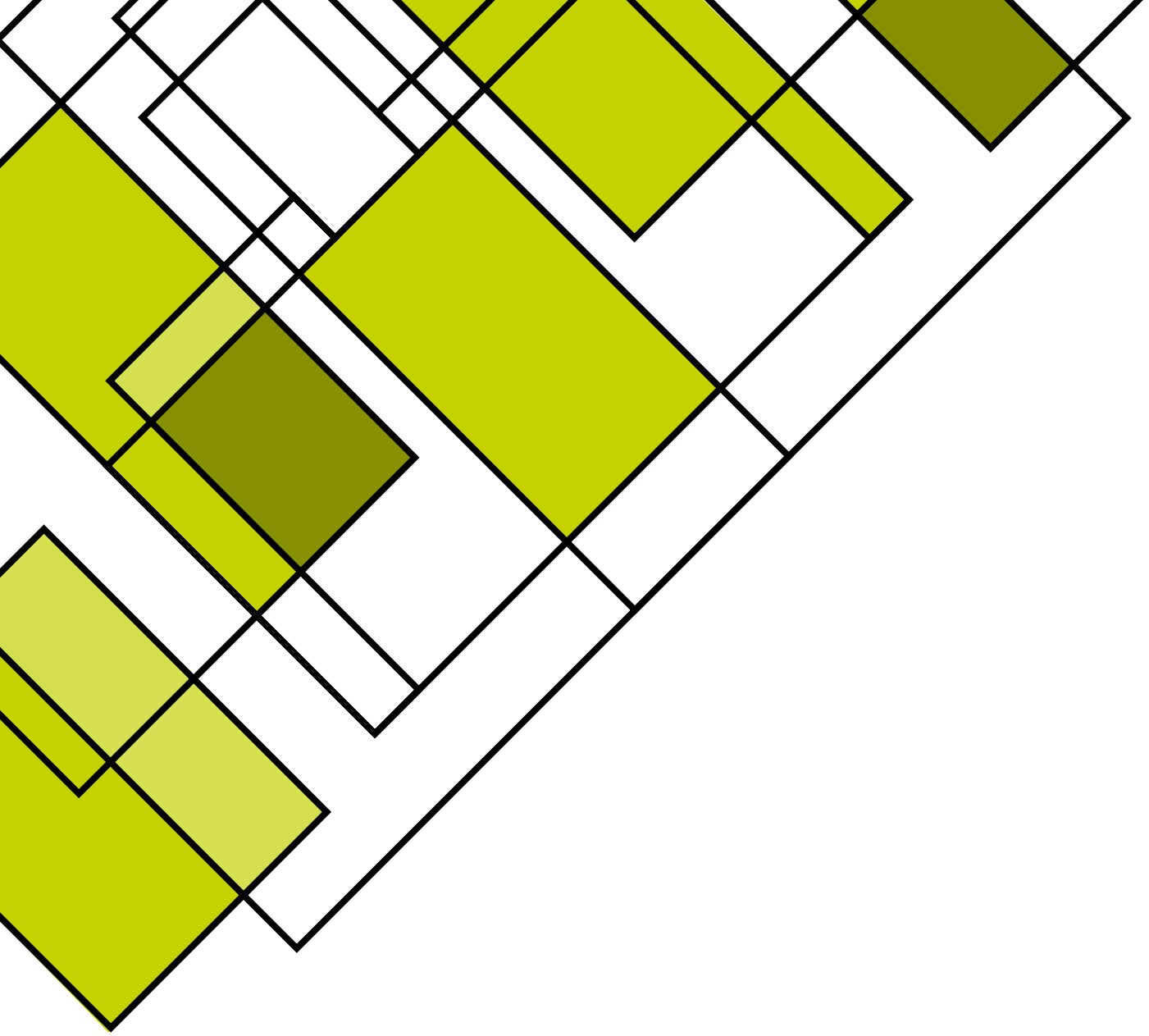
EXPANSIVE ANCHORAGE 10x90

3 equal values of 1,400 Kg

HIGH PERFORMANCE 10X80 NYLON ANCHORAGE
The plug has been tested in various situations of the closing wall:

With the following values: 700 Kg - 450 kg - 400 Kg.

ETANCO, S.A.
May 12, 2017



DOLCKER

Street / Talamanca del Jarama, 19
Portal A - 5 A and B
28051 Madrid - SPAIN

Telephone: 913 851 480

dolcker@dolcker.es

www.dolcker.es