TECHNICAL CATALOGUE

WINDOW AND FLAT DOOR SYSTEM WITH THERMAL BREAK

Q60 E85 E70 E52 E75 E40 E19 E1600 E8000 Q72 E45 E2300

ETEM

E75

**WINDOW AND FLAT DOOR SYSTEM
WITH THERMAL BREAK**

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ETEM HISTORY

ETEM is a leading aluminium extrusion company. It was founded in 1971 as a part of the largest metal manufacturing holding on the Balkans. With over 40 years of experience ETEM is the first fully integrated designer and producer of architectural systems and aluminium profiles for industrial applications.

Our mission is to listen and promptly respond to our customers' requests and design and manufacture aluminium products and systems, taking into consideration technical and aesthetic requirements.

ETEM focuses on sustainable development and has proven its concern about the protection of the natural environment by making considerable investments in anti-pollution measures and by optimizing production processes following the applicable standards of the European Union.

SERVICES WE PROVIDE

ETEM supports you with the following:

⊳ design of conventional and bespoke architectural system solutions

⊳ innovative engineering in the field of curtain walls, ventilated facades, doors, windows

⊳ professional consultation and adequate technical advices ensured by our engineering team with wide experience in the field of profile extrusion as well as architectural systems' engineering

⊳ reliable customer care constant support trainings, technical support and audits on site

⊳ high quality engineering which guarantees offering the best solution according to the specific features of every single project

⊳ managing the process of certification in accordance with the applicable European standards in Notified Bodies

⊳ production of non-standard length profiles and non-standard processing high quality powder coating

ETEM PRODUCTS AND SUSTAINABLE DEVELOPMENT

SUSTAINABLE DEVELOPMENT IS DEVELOPMENT THAT MEETS THE NEEDS OF THE PRESENT WITHOUT COMPROMISING THE ABILITY OF FUTURE GENERATIONS TO MEET THEIR OWN NEEDS.*

For many, sustainable development is about environmental conservation. This is true but it also includes two other aspects: a social aspect and an economic aspect.

Sustainable development means striking the right balance between economic development, social equity and environmental protection.

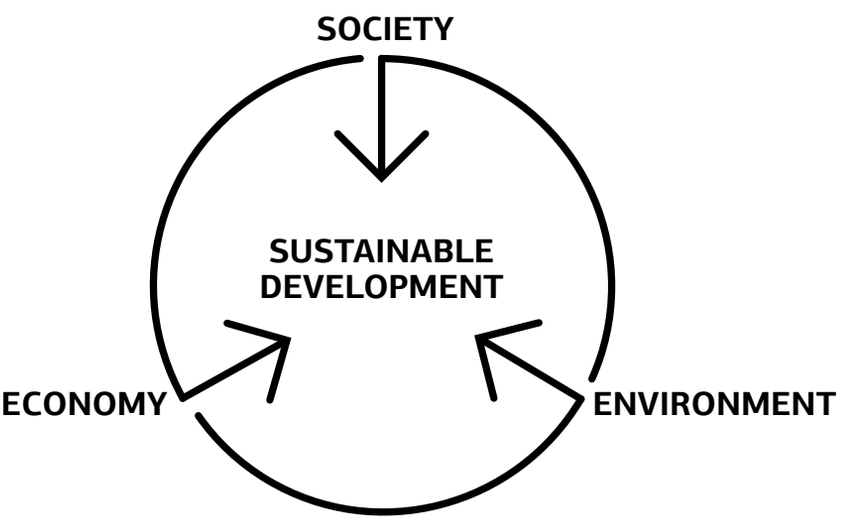
For us meeting this objective translates into the challenge of satisfying market demands at the lowest economic, social and environmental cost possible.

ETEM has always designed architectural systems which are in compliance with all requirements for achieving high energy efficiency.

In order to assure the comfort of the building inhabitants, ETEM systems adapt their functions to the changing environment.

As a moderator between outside and inside our systems provide:

› ENERGY EFFICIENCY
› DAYLIGHT
› SUN-SHADING
› VENTILATION AND GOOD AIR QUALITY
› SAFETY AND SECURITY



* Extract from Brundtland Report, from the United Nations World Commission on Environment and Development WCED

I.

E75

WINDOW SYSTEM WITH THERMAL BREAK

GENERAL INFORMATION

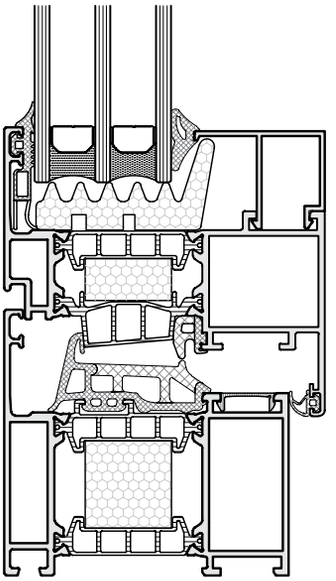
CONCEPT / ADVANTAGES / CERTIFICATES

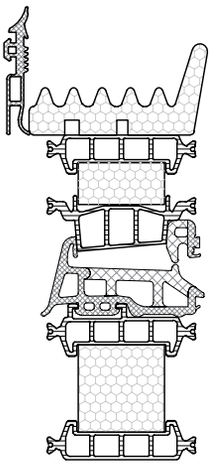
E75 WINDOW CONCEPT

E75 WINDOW IS A SYSTEM IS A SOLUTION CORRESPONDING TO THE MOST STRINGENT REQUIREMENTS FOR THERMAL INSULATION, FUNCTIONALITY AND AESTHETICS.

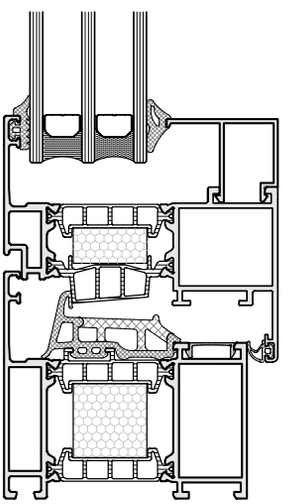
- Elegant straight design
- 75 mm system width allowing usage of triple glazing
- Wide polyamide bars
- Excellent thermal insulation from 1,1 $W/m^2.K$
- Additional insulator in the thermo-break area
- Additional insulator under the glass
- Effective drainage
- Excellent water-tightness and air-permeability
- Co-extruded central gasket
- Possibility for mounting anti-burglar hardware for good security performance
- Extruded corners for crimping machine with glue allowing greater connections

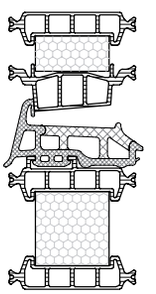
> ADVANCED SYSTEM



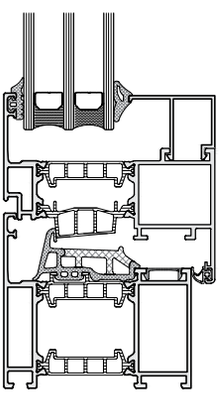


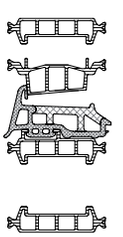
> IMPROVED SYSTEM



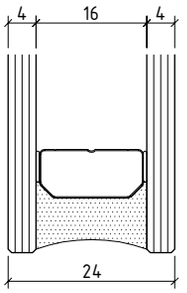
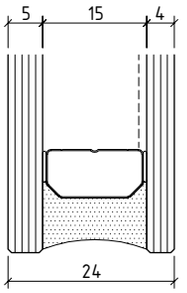
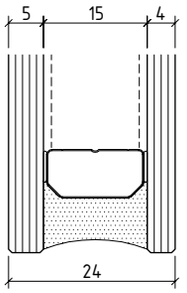
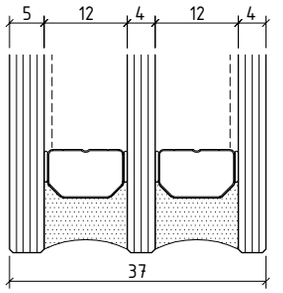


> BASIC SYSTEM





ADVANTAGES AND COMBINATIONS

PERFORMANCE CHARACTERISTICS	Type ot glazing			
	Double Glazing	Double Glazing	Double Glazing	Triple Glazing
	4/16/4 Low Emission	5/15/4 Low Emission Argon	5 Sun Guard/15/4 Low Emission	5 Sun Guard/12/4/12/4 Low Emission
				
Uglass	1,4	1,1	1,0	0,6
Uwindow[1]	1,5	1,3	1,2	0,9
g value[2]	0,6	0,6	0,5	0,46

ADVANTAGES					
Energy Efficiency		*	**	***	****
Sound Insulation		*	**	***	****
Ventilation		□	□	□	□
Daylight		****	***	**	*
Sunshading	**E 66**	*	**	***	****
Automation		□	□	□	□
Safety and security		□	□	□	□

Notes:
1. Uw value is calculated by using warm edge spacer.
2. g value is calculated without external sunshading.
* good
** better
*** the best
**** excellent
□ compatible

COMPLIANCE WITH APPLICABLE REGULATIONS
Production management

Quality management system is certified in accordance with EN ISO 9001:2008.

Environmental management system is certified in accordance with EN ISO 14001.

Factory production control system is certified according to the requirements of EN 15088.

ETEM is authorized to use the QUALICOAT quality sign for paint, lacquer and powder coating on aluminium for architectural applications.

Occupational Health & Safety Management System is certified in accordance with OHSAS 18001.

PERFORMANCE CHARACTERISTICS OF E 75

Characteristic	**Classification / value**	**Standard**
Air permeability	up to class 4	EN 1026 / EN 12207
Watertightness	up to class E 1500	EN 1027 / EN 12208
Resistance to wind load	up to class C 5	EN 12211 / EN 12210
Thermal transmittance	from 1,5 W/m2.K	EN 12412-2 / EN ISO 10077-2
Acoustic performance	38 dB*	EN ISO 717-1

*calculation result according to Annex B of EN 14351-1

CLASSIFICATION OF CHARACTERISTICS

for windows without resistance to fire and/or smoke leakage characteristics according to EN 14351-1

Characteristic / value / dimension	Classification / Value										
Resistance to wind load Test pressure P1 (Pa)	npd	1 (400)	2 (800)	3 (1200)	4 (1600)	5 (2000)	Exxxx (>2000)				
Resistance to wind load Frame deflection	npd	A (≤1/150)		B (≤1/200)		C (≤1/300)					
Resistance to snow and permanent load	npd	Declared information on the infill (e.g. type and thickness of glass)									
Reaction to fire	npd	F	E	D	C	B	A2	A1			
External fire performance	npd	According to EN 13501-5									
Watertightness Non-shielded (A) Test pressure (Pa)		1A (0)	2A (50)	3A (100)	4A (150)	5A (200)	6A (250)	7A (300)	8A (450)	9A (600)	Exxxx (>600)
Watertightness Shielded (B) Test pressure (Pa)	npd	1B (0)	2B (50)	3B (100)	4B (150)	5B (200)	6B (250)	7B (300)			
Dangerous substances	npd	As required by regulations									
Impact resistance Drop height (mm)	npd	200	300	450	700	950					
Load-bearing capacity of safety devices	npd[a]	Threshold value									
Acoustic performance Sound insulation R_w ($C;C_{tr}$) (dB)	npd	Declared values									
Thermal transmittance U_w ($W/(m^2.K)$)	npd	Declared values									
Radiation properties Solar factor (g)	npd	Declared values									
Radiation properties Light transmittance (τv)	npd	Declared values									
Air permeability Max. test pressure (Pa) Reference air permeability at 100 Pa ($m^3/(h \cdot m^2)$ or $m^3/(h \cdot m)$)	npd	1 (150) (50 or 12,50)		2 (300) (27 or 6,75)		3 (600) (9 or 2,25)		4 (600) (3 or 0,75)			
Operating forces[b]	npd	1				2					
Mechanical strength	npd	1		2		3		4			
Ventilation Air flow exponent n Air flow characteristic K Air flow rates	npd	Declared values									
Bullet resistance	npd	FB1	FB2	FB3	FB4	FB5	FB6	FB7	FSG		
Explosion resistance Shock tube	npd	EPR1		EPR2		EPR3		EPR4			
Explosion resistance Range test	npd	EXR1		EXR2		EXR3		EXR4		EXR5	
Resistance to repeated opening and closing Number of cycles	npd	5000			10 000			20 000			
Behaviour between different climates	npd	Under development									
Burglar resistance	npd	1		2		3		4		5	6

NOTE 1: npd: no performance determined
NOTE 2: The figures in brackets are for information

[a] Only if safety device(s) is(are) not provided

[b] Manually operated windows only

BUILDING PHYSICS

DIMENSIONING / FORMULAS / EXAMPLES

ALUMINIUM AS MATERIAL

ALUMINIUM IS A VERY YOUNG METAL, EXTRACTED FOR THE FIRST TIME IN 1854. COMMERCIALLY PRODUCED AS A PRECIOUS METAL FROM 1886, ITS INDUSTRIAL PRODUCTION FOR CIVIL APPLICATIONS ONLY ACHIEVED WIDE USE IN THE 1950'S.

NOW ALUMINIUM PLAYS A KEY ROLE FOR THE SUSTAINABILITY OF NEW BUILDINGS AND THE RENOVATION OF EXISTING ONES. THANKS TO ITS PERFORMANCE PROPERTIES ALUMINIUM CONTRIBUTES TO THE ENERGY PERFORMANCE, SAFETY AND COMFORT OF NEW BUILDINGS.

ADVANTAGES

DESIGN FLEXIBILITY

The extrusion process offers an almost infinite range of forms and sections, allowing designers to integrate numerous functions into one profile

LONG SERVICE LIFE

Aluminium building products are made from alloys that are weatherproof, corrosion-resistant and immune to the harmful effects of UV rays, ensuring optimal performance over a very long period of time

HIGH STRENGTH-TO-WEIGHT RATIO

Thanks to the metal's inherent strength and stiffness, aluminium window and curtain wall frames can be very narrow. Material's light weight makes it easier to transport and handle on-site, reducing the risk of work-related injury

HIGH-REFLECTIVITY

This characteristic feature makes aluminium a very efficient material for light management. Aluminium shading devices can be used to reduce the need for air conditioning in summer

FIRE SAFETY

Aluminium does not burn and therefore is classified as a non-combustible construction material (European Fire Class A1). Aluminium alloys will nevertheless melt at around 6500 C, but without releasing harmful gases

NO RELEASE OF DANGEROUS SUBSTANCES

Several studies have proved that aluminium building products do not present a hazard to occupants or the surrounding environment. Aluminium building products have no negative impact, either on indoor air quality or on soil, surface and groundwater

OPTIMAL SECURITY

Where high security is required, specially designed, strengthened aluminium frames can be used. While the glass for such applications may well be heavy, the overall weight of the structure remains manageable thanks to the light weight of the aluminium frames.

ALLOYS

Aluminium in its pure form is a very soft metal. Thanks to the addition of alloying elements such as copper, manganese, magnesium, zinc, etc. and thanks to suitable production processes, the physical and mechanical properties can be varied in a wide range to satisfy the requirements of a large number of different applications.

ETEM profiles are extruded from the following alloys:
EN AW-1050 [Al 99.5]
EN AW-6060 [Al Mg Si]
EN AW-6063 [Al Mg0,7 Si]
EN AW-6061 [Al Mg1 Si Cu]
EN AW-6005 [Al Si Mg]
EN AW-6082 [Al Si1 Mg Mn]

The most common aluminium alloy which is used by ETEM is EN AW 6063.
Here are the properties of this alloy:

MATERIAL PROPERTIES	
Aluminium alloy	EN AW 6063 F22
Ultimate tensile strength	Rm = 210 N/mm^2
Yield strength	$R_{p0.2}$ = 160 N/mm^2
Modulus of elasticity	Eal=70 000 N/mm^2 = 7.10^9 kg/m^2
Coefficient of thermal expansion	α=0,023 mm/m .K (up to 1,2 mm/m for difference up to 50°C)

EXTRUSION PROCESS

ETEM profiles are obtained through extrusion process, which consists of pushing a hot cylindrical bullet of aluminium through a shaped die. The extrusion process offers almost infinite range of forms and sections, allowing our designers to integrate numerous functions into one single profile.

FINISHING

POWDER COATING
It is a type of paint that is applied as a dry powder. Coating is applied on ETEM profiles electrostatically and then is cured under heat to allow it to flow and form a ''skin''.
ETEM is authorized to use the quality sign QUALICOAT for powder coatings on aluminium for architectural applications. A wide range of colors and gloss levels can be achieved.
ETEM also offers timber imitations painting, in addition to all RAL colors. The technology EZY provides the following colors: Golden Oak, Acero, Betulla, Mogano, Verde Scuro, Wenge, Noce Fiammato, Noce Chiaro, Ciliegio Rosso, Acacia Scuro, Ciliegio Antico, Noce Reale, Ciliegio Reale.

ANODIZING
It is an electrochemical process whereby to reinforce the natural oxide film on the aluminium surface, increasing hardness, corrosion and abrasion resistance. Anodizing gives a very decorative silver matt surface finish, and colored can also be obtained by sealing metallic dyes into the anodized layer.

MAINTENANCE

Apart from routine cleaning for aesthetic reasons, ETEM aluminium profiles do not require any maintenance which translates into a major cost and ecological advantage over lifetime of the product.

RECYCLING

Aluminium scrap can be repeatedly recycled without any loss of value or properties.
In many instances, aluminium is combined with other materials such as steel or plastics, which are most frequently mechanically separated from aluminium before being molten.

WIND LOAD

Wind action

The main influence over the facade is wind action, which depends mainly on the heigh of the curtain wall and location.

As a guideline, the wind pressure values with respect to the structure height are given in the table below:

Building Height	Wind Velocity	Wind Load		Wind Pressure		Wind Suction in a middle zone				Wind Suction in an edge zone	
h	v	$q = \frac{V^2}{16}$		$Wp^* = 1,,25 \times cp \times q$ $c_p = 0,8$		$h/b \leq 0,25$ $W_s = c_p \times q$ $c_p = 0,5$		$h/b \geq 0,5$ $W_s = c_p \times q$ $c_p = 0,7$		$b/8 \leq 2$ m $W_s = c_p \times q$ $c_p = 2,0$	
m	m/s	kg/m2	kg/m2	kg/m2	kg/m2	kg/m2	kg/m2	kg/m2	kg/m2	kg/m2	kg/m2
0 – 8	28,3	50	0,5	50	0,5	25	0,25	35	0,35	100	1,0
8 – 20	35,8	80	0,8	80	0,8	40	0,40	56	0,56	160	1,6
20 – 100	42,0	110	1,1	110	1,1	55	0,55	77	0,77	220	2,2
> 100	45,6	130	1,3	130	1,3	65	0,65	91	0,91	260	2,6

where:

h – building height, m
b – building width, m
v – wind velocity, m/s
q – wind load, kg/m2 and kN/m^2
$w_{p/s}$ – wind pressure / suction ,kN/m^2
c_p – correction factor

*Note: When calculating wind pressure w_p the load is increased with 25%

UNITS CONVERTER

1m = 100cm = 1000mm

1kg = 10N
1kN = 100kg = 1000N

1kg/m^2 = 0,01kN/m^2
1Pa = 1N/m^2 = 0,1kg/m^2
1kPa = 1000Pa = 1kN/m^2 =100kg/m^2
1MPa = 1000kPa = 1 000 000 Pa
1MPa = 1N/mm^2 = 0,1kN/cm^2 =100 000kg/m^2

MULLION SELECTION

*Wind load actions:

The required moment of inertia of a mullion due to the wind action is given by:

a) triangle load

If $\frac{H}{c} \le 1$, $J_{yc} \ge \frac{w \cdot (H/2) \cdot H^4 \cdot 10^8}{120 \cdot E_{al} \cdot f_{max}}$,cm^4

or

b) trapezoid load

If $\frac{H}{c} > 1$, $J_{yc} \ge \frac{w \cdot (C/2) \cdot H^4}{1920 \cdot E_{al} \cdot f_{max}} \cdot 10^8 \cdot \left[25-40 \cdot \frac{(C/2)^2}{H^2} + 16 \cdot \frac{(C/2)^4}{H^4}\right]$,cm^4

Use the same method to calculate J_{yd}

Total of required moment of inertia:
$J_y = J_{yc} + J_{yd}$, cm^4

Where:
J_y – Moment of inertia of a transom, cm^4
w – Wind pressure, kg/m^2
E_{al} – Modulus of Elasticity of aluminium, kg/m^2
f_{max} – Maximum transom deflection, m
H – Length of a mullion, m
a,b – Distance between mullions, m

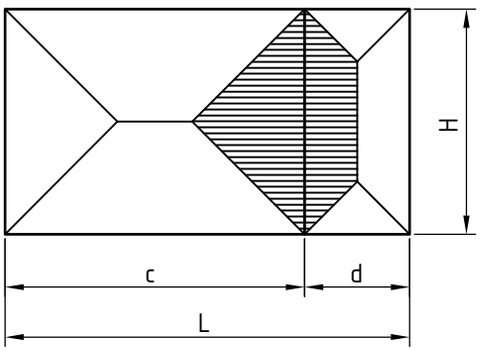
Maximum transom deflection f_{max} by wind load:

$f = \frac{H}{200}$,m or 0,015 m – whichever is less (EN 14351-1)

Use ETEM Catalogue to choose the appropriate mullion with J_y exceeding or equal to the required J_y.

Use ETEM Catalogue to choose the appropriate profile which characteristics exceed or are equal to both calculated values J_x and J_y.

Example:



Initial data:
H = 2,2 m w = 60 kg/m^2
c = 2,4 m E_{al} = 7.10^9 kg/m^2
d = 0,8 m

$f = \frac{H}{200} = \frac{2,2}{200} = 0,011m$ or 0,015 m (EN 14351-1)

$\Longrightarrow f_{max} = 0,011m$ in the following formulas:

$\frac{H}{c} = \frac{2,2}{2,4} = 0,91 < 1$

$J_{yc} \ge \frac{w \cdot (H/2) \cdot H^4 \cdot 10^8}{120 \cdot E_{al} \cdot f_{max}}$,cm^4

$J_{yc} \ge \frac{60 \cdot (2,2/2) \cdot 2,2^4 \cdot 10^8}{120 \cdot 7 \cdot 10^9 \cdot 0,011}$,$cm^4 \Longrightarrow J_{yc} \ge 16,73\ cm^4$

$\frac{H}{d} = \frac{2,2}{0,8} = 2,75 > 1$

$J_{yd} \ge \frac{w \cdot (d/2) \cdot H^4}{1920 \cdot E_{al} \cdot f_{max}} \cdot 10^8 \cdot \left[25 - 40 \cdot \frac{(d/2)^2}{H^2} + 16 \cdot \frac{(d/2)^4}{H^4}\right]$,cm^4

$J_{yd} \ge \frac{60 \cdot (0,8/2) \cdot 2,2^4}{1920 \cdot 7 \cdot 10^9 \cdot 0,011} \cdot 10^8 \cdot \left[25 - 40 \cdot \frac{(0,8/2)^2}{2,2^2} + 16 \cdot \frac{(0,8/2)^4}{2,2^4}\right]$,cm^4

$J_{yd} \ge 9,01\ cm^4$

$J_y = J_{yc} + J_{yd}$, $cm^4 \Longrightarrow J_y = 16,73 + 9,01 = 25,74\ cm^4$

Use ETEM Catalodue to choose the appropriate mullion with $J_y \ge 25,74\ cm^4$
We choose mullion E75300S with $J_x = 13,91\ cm^4$
and $J_y = 41,75\ cm^4$

TRANSOM SELECTION

*Dead load actions:

*Glass pane self weight:

Weight of the glass pane G is calculated as follows:

The required moment of inertia of a transom due to the weight of the glazing is given by:

$$J_{x1} \geq \frac{G \cdot a \cdot 10^8}{48 \cdot E_{al} \cdot f_{max}} \cdot (3 \cdot L^2 - 4 \cdot a^2) \ ,cm^4$$

Where:
G – Weight of glass pane, kg
t – Glass pane thickness, mm
ϱ_{glass} – Density of glass material, kg/m^2/mm
l_g – Horizontal dimension of the glass pane, m
h_g – Vertical dimension of the glass pane, m

*Transom self weight:

The required moment of inertia of a transom due to its self weight is given by:

$$J_{x2} \geq \frac{5 \cdot q \cdot L^4 \cdot 10^8}{384 \cdot E_{al} \cdot f_{max}} \ ,cm^4$$

Total of required moment of inertia:
$J_x = J_{x1} + J_{x2}$,cm^4

Where:
a=0,15 – Distance of a glazing supports of the glass pane, m
J_x – Moment of inertia of a transom, cm^4
q – Self weight of a transom per linear meter, kg/m
E_{al} – Modulus of Elasticity of aluminium, kg/m^2
f_{max} – Maximum transom deflection, m
L – Length of a transom, m

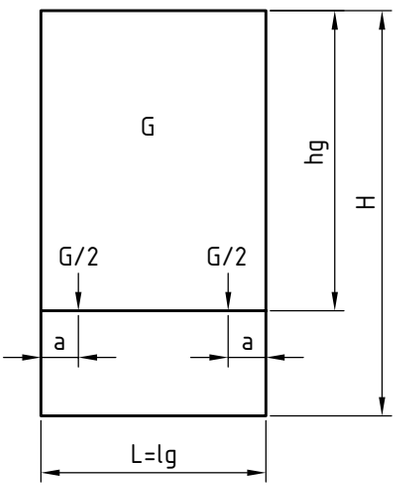
Maximum transom deflection f max by dead load:

$$f = \frac{L}{500} \ ,m \quad \text{or } 0{,}003m \text{ – whichever is less (EN 14351-1)}$$

Use ETEM Catalogue to choose the appropriate transom with J_y exceeding or equal to the required J_y.

Use ETEM Catalogue to choose the appropriate profile which characteristics exceed or are equal to both calculated values J_x and J_y.

Example: $G = t \cdot \varrho_{glass} \cdot l_g \cdot h_g$



Initial data:

t = 12 mm	E_{al} = 7.10^9 kg/m^2
l_g = 1,5 m	ϱ_{glass} = 2,5 kg/m^2/mm
h_g = 2,0 m	q = 2 kg/m
a = 0,15 m	

$G = t \cdot \varrho_{glass} \cdot l_g \cdot h_g = 10 \cdot 2{,}5 \cdot 1{,}5 \cdot 2{,}0 = 75$ kg

$$\Longrightarrow f_{max} = \frac{L}{500} = \frac{1{,}5}{500} = 0{,}003m \text{ or } 0{,}003m \text{ (EN 14351-1)}$$

$\Longrightarrow f_{max} = 0{,}003m$ in the following formulas:

$$J_{x1} \geq \frac{G \cdot a \cdot 10^8}{48 \cdot E_{al} \cdot f_{max}} \cdot (3 \cdot L^2 - 4 \cdot a^2) \ ,cm^4$$

$$J_{x1} \geq \frac{75 \cdot 0{,}15 \cdot 10^8}{48 \cdot 7 \cdot 10^9 \cdot 0{,}003} \cdot (3 \cdot 1{,}5^2 - 4 \cdot 0{,}15^2) \ ,cm^4$$

$$J_{x1} \geq \frac{75 \cdot 0{,}15 \cdot 10^8}{48 \cdot 7 \cdot 10^9 \cdot 0{,}003} \cdot (3 \cdot 1{,}5^2 - 4 \cdot 0{,}15^2), \ cm^4 \Longrightarrow J_{x1} \geq 7{,}43 cm^4$$

$$J_{x2} \geq \frac{5 \cdot q \cdot L^4 \cdot 10^8}{384 \cdot E_{al} \cdot f_{max}} \ ,cm^4 \quad J_{x2} \geq \frac{5 \cdot 2 \cdot 1{,}5^4 \cdot 10^8}{384 \cdot 7 \cdot 10^9 \cdot 0{,}003} \ ,cm^4 \Longrightarrow J_{x1} \geq 0{,}63 cm^4$$

$J_x = J_{x1} + J_{x2}$,cm^4

$J_x = 7{,}43 + 0{,}63 = 8{,}06$ cm^4

Use ETEM Catalodue to choose the appropriate transom with $J_x \geq 8{,}06$ cm^4
We choose transom E75300S with $J_x = 13{,}91$ cm^4
and $J_y = 41{,}75$ cm^4

TRANSOM SELECTION

*Wind load actions:

The required moment of inertia of a transom due to the wind action is given by:

a) triangle load

If $\frac{L}{a} \le 1$, $J_{ya} \ge \frac{w \cdot (L/2) \cdot L^4 \cdot 10^8}{120 \cdot E_{al} \cdot f_{max}}$,cm^4

or

b) trapezoid load

If $\frac{L}{a} > 1$, $J_{ya} \ge \frac{w \cdot (a/2) \cdot L^4}{1920 \cdot E_{al} \cdot f_{max}} \cdot 10^8 \cdot \left[25-40 \cdot \frac{(a/2)^2}{L^2} + 16 \cdot \frac{(a/2)^4}{L^4}\right]$,cm^4

Use the same method to calculate J_{xb}

Total of required moment of inertia:
$J_y = J_{ya} + J_{yb}$, cm^4

Where:
J_y – Moment of inertia of a transom, cm^4
w – Wind pressure, kg/m^2
E_{al} – Modulus of Elasticity of aluminium, kg/m^2
f_{max} – Maximum transom deflection, m
L – Length of a transom, m
a,b – Distance between transoms, m

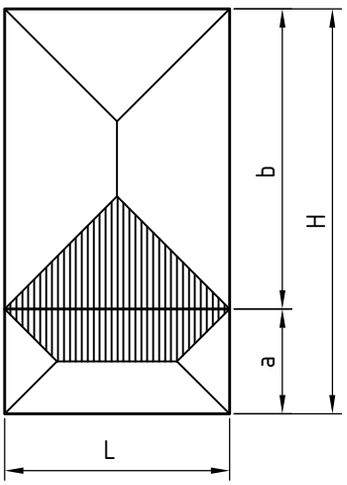
Maximum transom deflection f_{max} by wind load:

$f = \frac{L}{200}$,m or 0,015 m – whichever is less (EN 14351-1)

Use ETEM Catalogue to choose the appropriate transom with J_x exceeding or equal to the required J_x.

Use ETEM Catalogue to choose the appropriate profile which characteristics exceed or are equal to both calculated values J_x and J_y.

Example:



Initial data:
L = 1,5 m w = 60 kg/m^2
a = 0,7 m E_{al} = 7.10 kg/m^2
b = 2,0 m

$f = \frac{L}{200} = \frac{1,5}{200} = 0,0075m$ or 0,015 m (EN 14351-1)

$\Rightarrow f_{max} = 0,0075m$ in the following formulas:

$\frac{L}{a} = \frac{1,5}{0,7} = 2,14 > 1$

$J_{ya} \ge \frac{w \cdot (a/2) \cdot L^4}{1920 \cdot E_{al} \cdot f_{max}} \cdot 10^8 \cdot \left[25 - 40 \cdot \frac{(a/2)^2}{L^2} + 16 \cdot \frac{(a/2)^4}{L^4}\right]$,cm^4

$J_{ya} \ge \frac{60 \cdot (0,7/2) \cdot 1,5^4}{1920 \cdot 7 \cdot 10^9 \cdot 0,0075} \cdot 10^8 \cdot \left[25 - 40 \cdot \frac{(0,7/2)^2}{1,5^2} + 16 \cdot \frac{(0,7/2)^4}{1,5^4}\right]$,cm^4

$J_{ya} \ge 2,41\ cm^4$

$\frac{L}{b} = \frac{1,5}{2,0}, = 0,75 < 1$

$J_{yb} \ge \frac{w \cdot (L/2) \cdot L^4 \cdot 10^8}{120 \cdot E_{al} \cdot f_{max}}$,cm^4 $\Rightarrow J_{yb} \ge \frac{60 \cdot (1,5/2) \cdot 1,5^4 \cdot 10^8}{120 \cdot 7 \cdot 10^9 \cdot 0,0075}$,cm^4

$\Rightarrow J_{yb} \ge 3,62\ cm^4$

$J_y = J_{ya} + J_{yb}$,cm^4

$\Rightarrow J_y = 2,41 + 3,62 = 6,03\ cm^4$

Use ETEM Catalodue to choose the appropriate mullion with $J_y \ge 6,03\ cm^4$
We choose mullion E75300S with $J_x = 13,91\ cm^4$
and $J_y = 41,75\ cm^4$

CALCULATION OF GLASS PANE THICKNESS

*Glazing thickness:

For single glazing the minimum thickness is given by the following equations:

a) If $\frac{h_g}{l_g} \leq 3$, $t = \sqrt{\frac{10 \cdot l_g \cdot h_g \cdot w}{72}}$,mm

or

b) If $\frac{h_g}{l_g} > 3$, $t = \frac{l_g \cdot \sqrt{10 \cdot w}}{72}$,mm

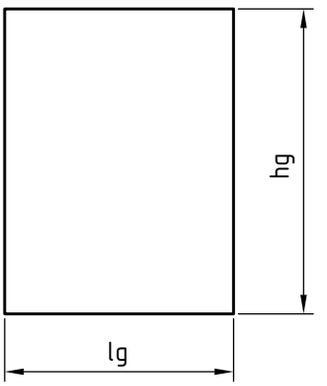
Where:
t – Minimum theoretical glass thickness, mm
w – Wind pressure, kg/m^2
l_g – The smallest dimension of the glass pane, m
h_g – The largest dimension of the glass pane, m

For double glazing, the total thickness of both glasses in the panel is equal to the thickness of a single glass pane (evaluated using the above equations) multiplied by 1.5

For triple glazing, the total thickness of all glasses in the panel is equal to the thickness of a single glass pane (evaluated using the above equations) multiplied by 1.7

Always consult facade engineer or glazing manufacturer when calculating for required glazing thickness and maximum allowable dimensions.

Example:



Initial data:
l_g = 1,5 m
h_g = 2,0 m
w = 60 kg/m^2

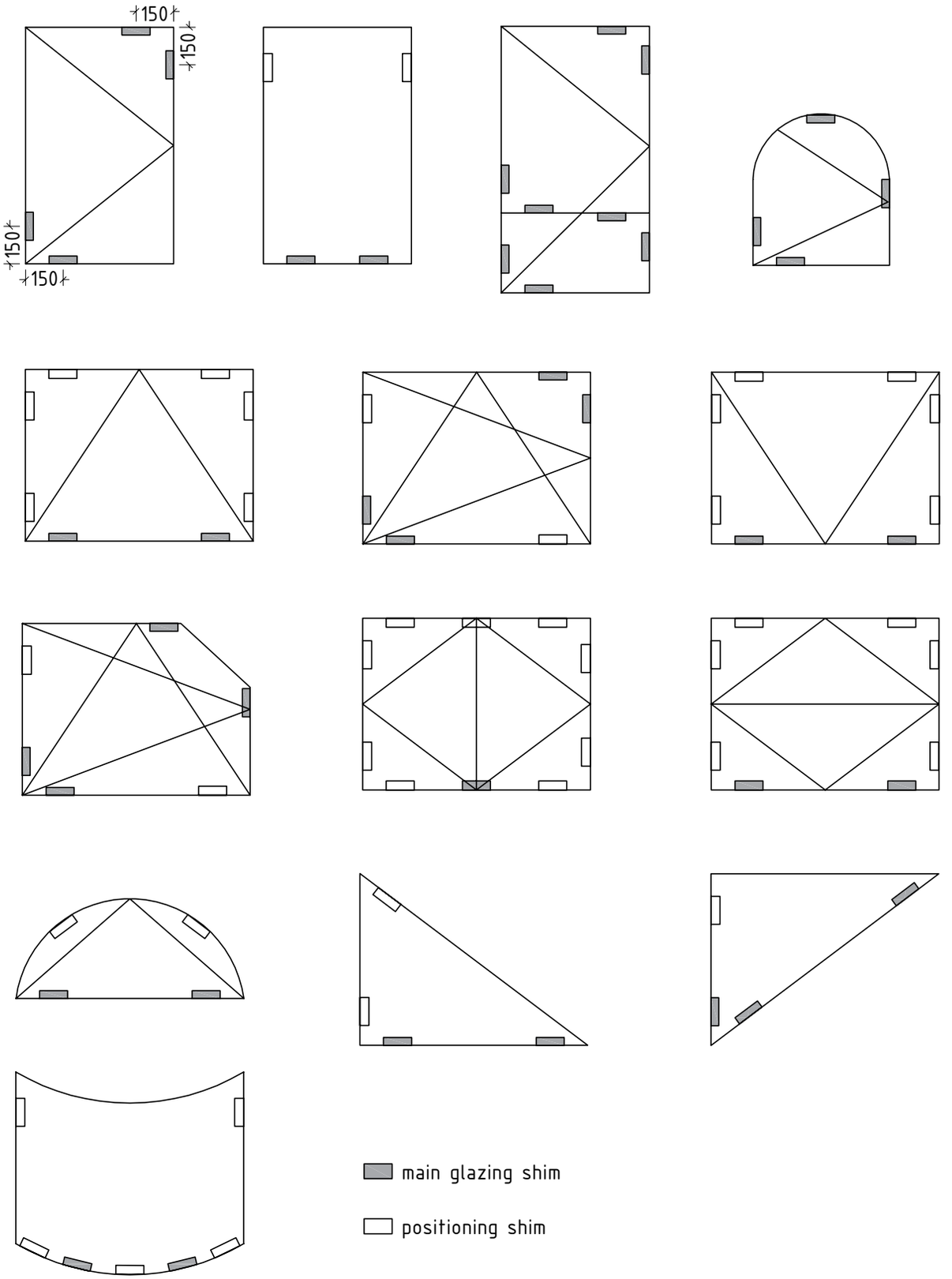
$$\frac{h_g}{l_g} = \frac{2}{1,5} = 1,33 \leq 3$$

$$t = \sqrt{\frac{10 \cdot l_g \cdot h_g \cdot w}{72}} = \sqrt{\frac{10 \cdot 1,5 \cdot 2 \cdot 60}{72}} = \sqrt{\frac{1800}{72}} = 5\text{mm}$$

For double glazing t_{req} = 1,5 . 5 = 7,5 mm

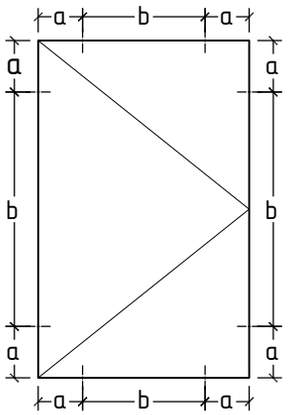
We choose double glazing 5/14/5

GLAZING SHIMS

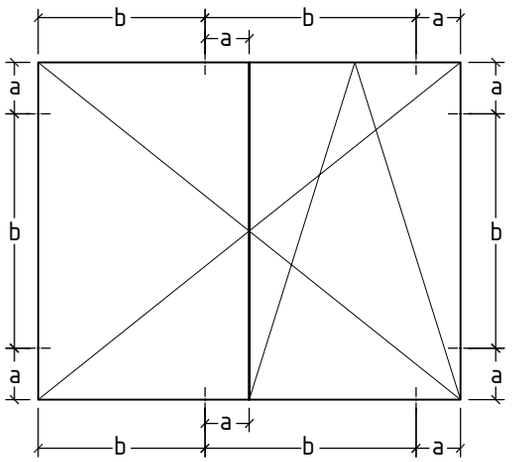


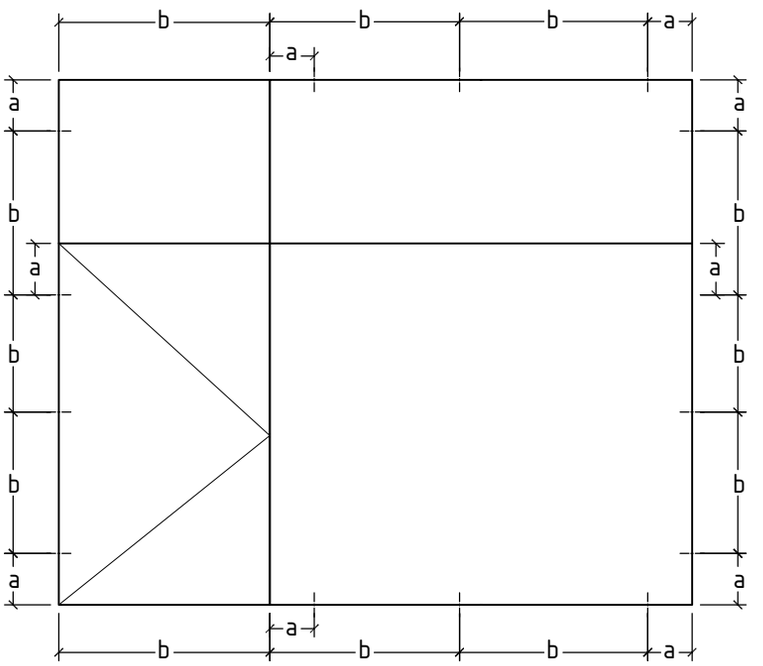
Note:
Main glazing shims should be positioned on 150 mm distance from the glazing edge.
Positioning shims do not have exactly defined position.

POSITION OF ANCHORS



a = 150 ÷ 200 mm
b ≤ 800 mm



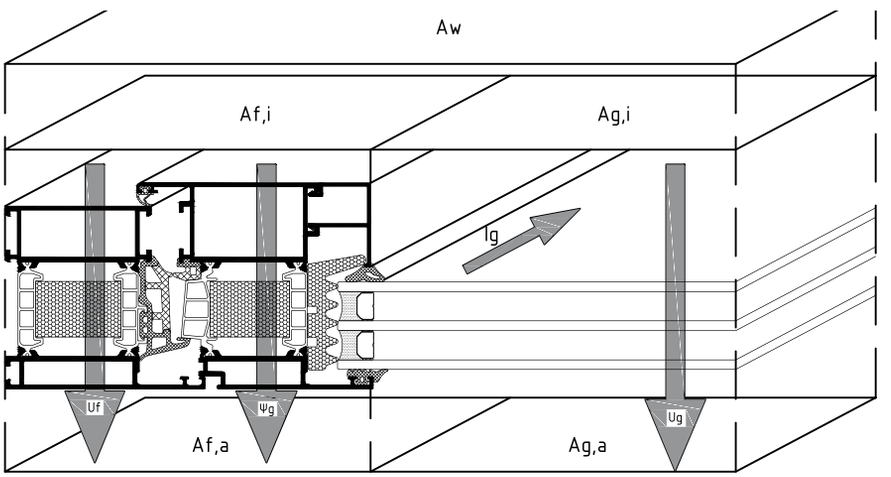


METHOD FOR CALCULATION OF THERMAL TRANSMITTANCE ACCORDING to EN ISO 10077-2

$$Uw = \frac{Ag \times Ug + Af \times Uf + lg \times \Psi g}{Ag + Af} \qquad (1)$$

Uw - thermal transmittance coefficient of the whole structure
Ug - glass thermal transmittance coefficient
Uf - thermal transmittance coefficient of the aluminium frame (frame and sash)
Ψg - spacer linear thermal transmittance
lg - total length of the spacer
Ag - glass area
Af - aluminium frame area (frame and sash)

Uw - is calculated by formula (1)
Ug - is given by the glass manufacturer
Uf - is given by the manufacturer of the aluminium profiles

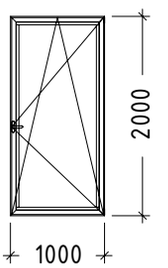


EXAMPLE FOR CALCULATING THERMAL TRANSMITTANCE COEFFICIENT

frame: E75	Uf	1.34	W/(m²K)
spacer: warm edge	Ψg	0.051	W/(mK)
glass: triple glazing	Ug	1.00	W/(m²K)

window width:	1.00m
window height:	2.00m
lenght of glass edge lg:	4.89m

A_g = 1.24m²; A_f = 0.76m²



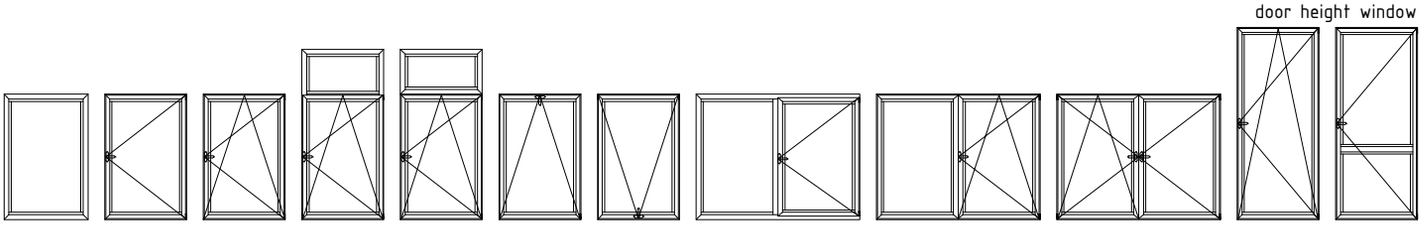
$$Uw = \frac{1.24 \times 1 + 0.76 \times 1.34 + 4.89 \times 0.051}{1.24 + 0.76}$$

Uw ≈ 1,3 W/(m²K)

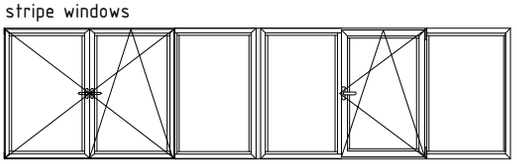
TABLES

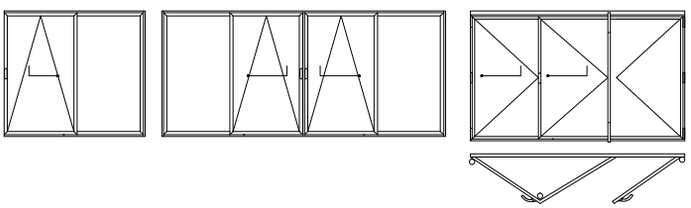
TYPOLOGIES / LIST OF PROFILES / CHARACTERISTICS

door height window



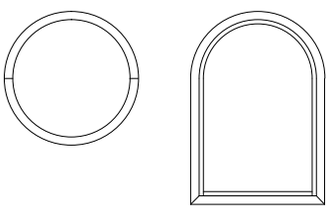
stripe windows



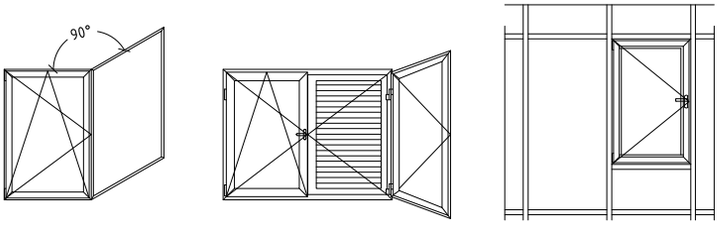


opening Schemes:

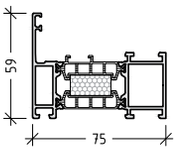
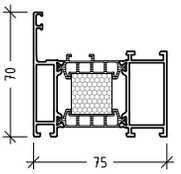
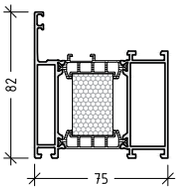
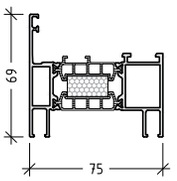
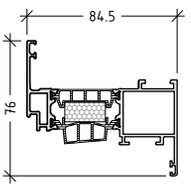
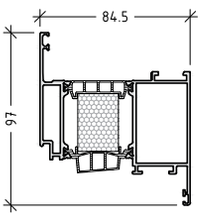
321;330;431;541;550;
532;651;633;761;770;743

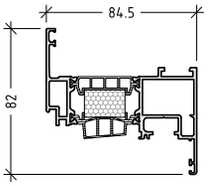
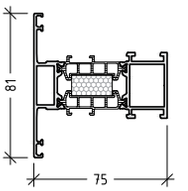
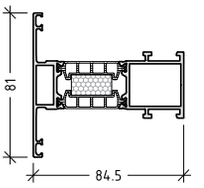
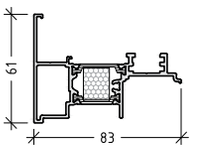
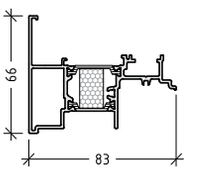
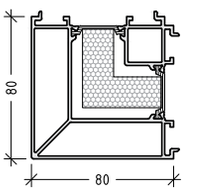


bending profile for FIX position
Rmin=600mm

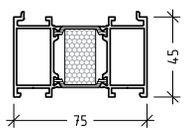
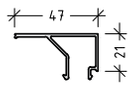
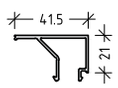
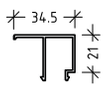
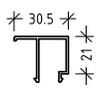
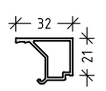


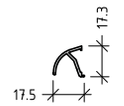
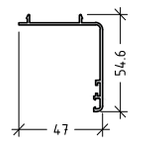
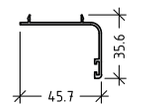
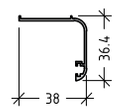
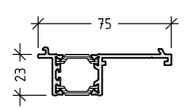
G75-02

code	profile	lenght weight moment of inertia
E 75100S frame		L= 6.01m 1560 g/m Jx=9.68 cm⁴ Jy=38.61 cm⁴
E 75101S frame		L= 6.01m 1762 g/m Jx=17.48 cm⁴ Jy=45.08 cm⁴
E 75102S frame		L= 6.01m 1983 g/m Jx=29.79 cm⁴ Jy=52.1 cm⁴
E 75105S frame		L= 6.01m 1695 g/m Jx=13.4 cm⁴ Jy=44.73 cm⁴
E 75200S sash		L= 6.01m 1651 g/m Jx=11.8 cm⁴ Jy=51.36 cm⁴
E 75201S sash		L= 6.01m 2036 g/m Jx=31.19 cm⁴ Jy=66.94 cm⁴

code	profile	lenght weight moment of inertia
E 75220S sash PVC groove		L= 6.01m 1806 g/m Jx=14.83 cm⁴ Jy=56.28 cm⁴
E 75300S T profile		L= 6.01m 1660 g/m Jx=13.91 cm⁴ Jy=41.75 cm⁴
E 75340S T profile		L= 6.01m 1718 g/m Jx=14.39 cm⁴ Jy=54.44 cm⁴
E 75500S overhung secondary sash profile		L= 6.01m 1408 g/m Jx=8.13 cm⁴ Jy=30.72 cm⁴
E 75540S overhung secondary sash profile PVC groove		L= 6.01m 1488 g/m Jx=8.1 cm⁴ Jy=30.74 cm⁴
E 75600S column for angle 90°		L= 6.01m 2533 g/m Jx=68.24 cm⁴ Jy=68.24 cm⁴

L75-01

code	profile	lenght weight moment of inertia
E 75610S frame extension		L= 6.01m 1600 g/m Jx=11.76 cm⁴ Jy=37.77 cm⁴
E 75700 glazing bead		L= 6.01m 419 g/m
E 75701 glazing bead		L= 6.01m 393 g/m
E 5305 glazing bead		L= 6.01m 316 g/m
E 5380 glazing bead		L= 6.01m 302 g/m
E 60132 glazing bead		L= 6.01m 410 g/m

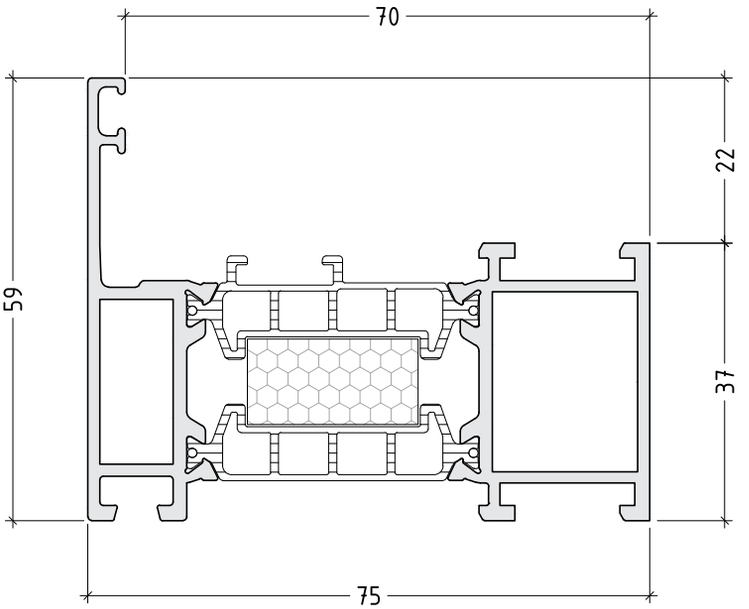
code	profile	lenght weight moment of inertia
E 2357 drip profile		L= 6.01m 144 g/m
E 40820 drip profile		L= 6.01m 143 g/m
E 1115 wall joining profile		L= 6.01m 408 g/m
E 1127 wall joining profile		L= 6.01m 288 g/m
E 5366 wall joining profile		L= 6.01m 269 g/m
E 75601 adapter profile		L= 6.01m 898.5 g/m

L75-02

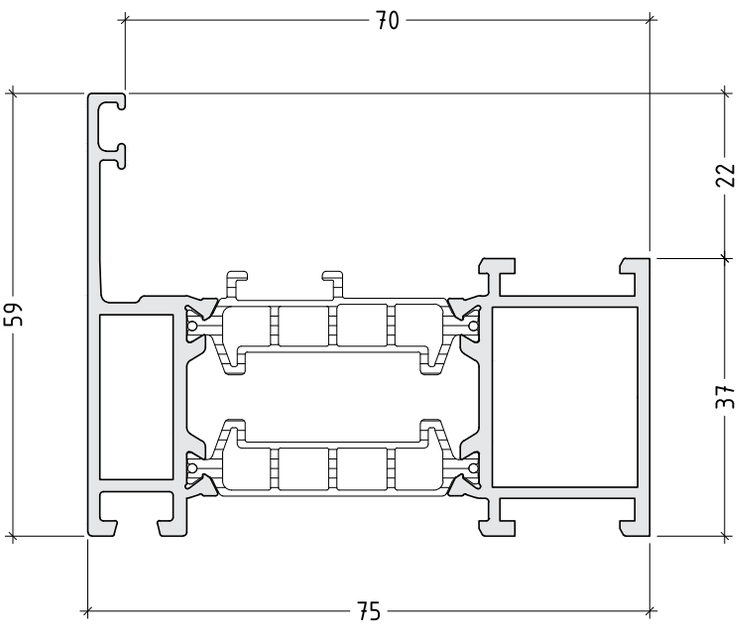
PROFILES

DRAWINGS / SCALE 1:1

E 75100S
frame



E 75100
frame



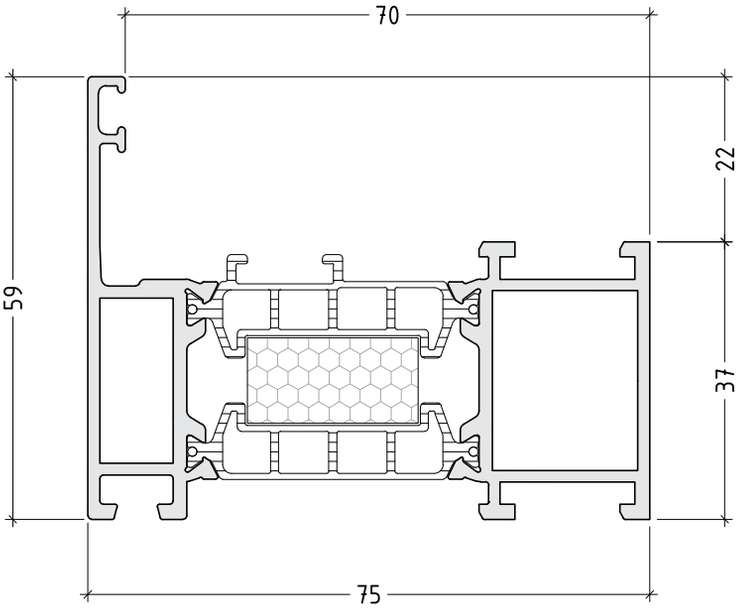
E 75100S – with additional insulator in the thermo-break area

E 75100 – without additional insulator in the thermo-break area

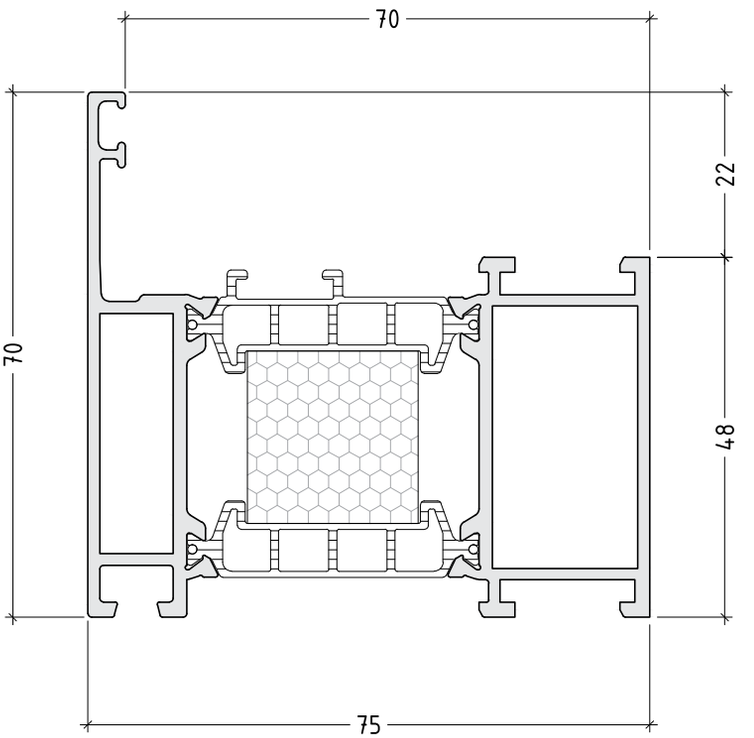
scale : 1:1

1302075-01

E 75100S
frame
1560 g/m



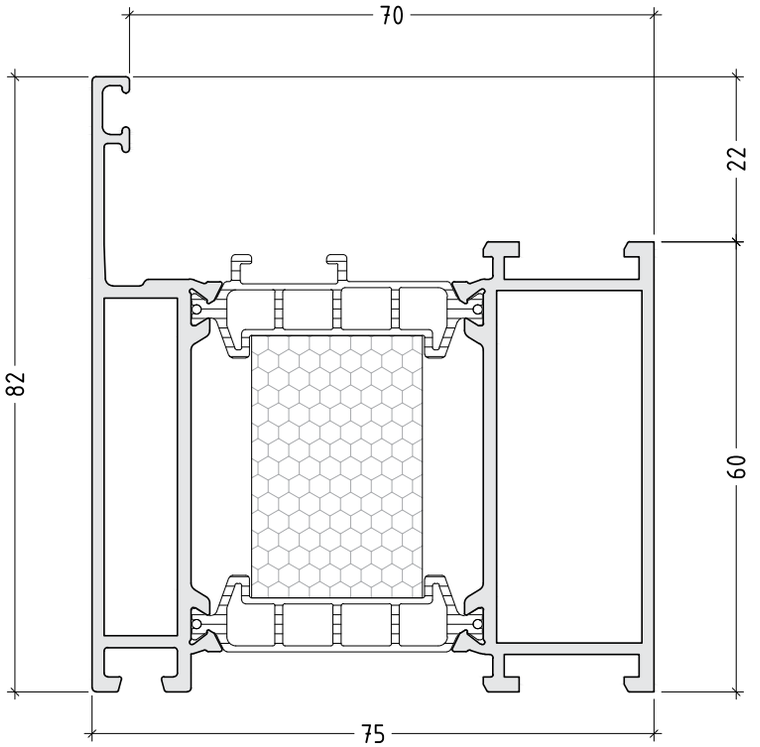
E 75101S
frame
1762 g/m



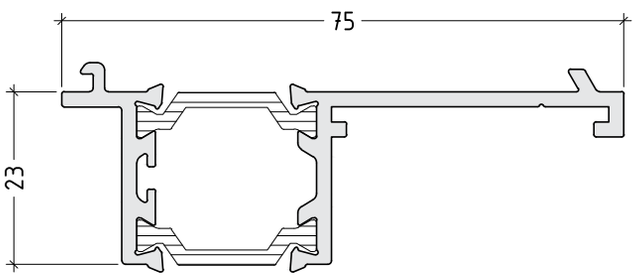
scale : 1:1

1302075-02

E 75102S
frame
1983 g/m



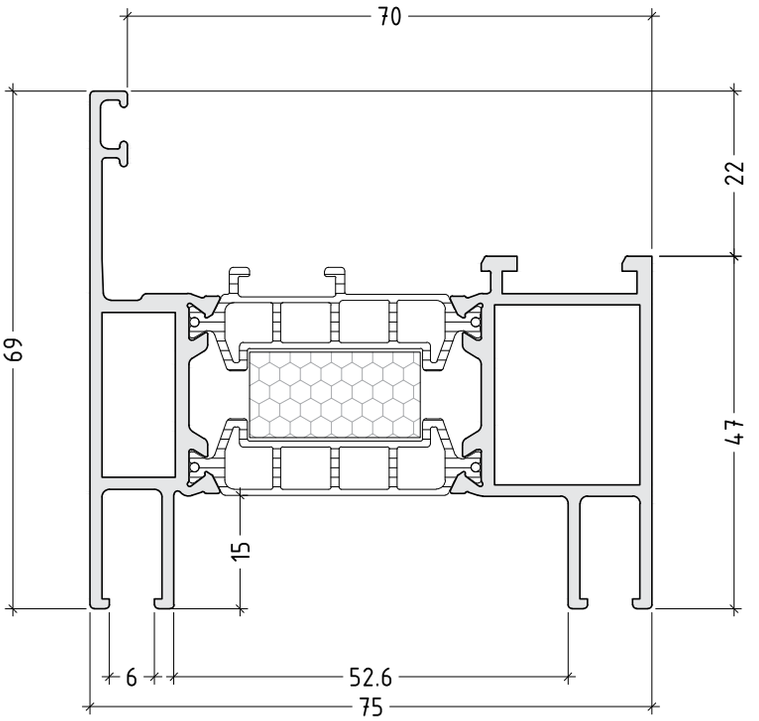
E 75601
adapter
profile
898.5 g/m



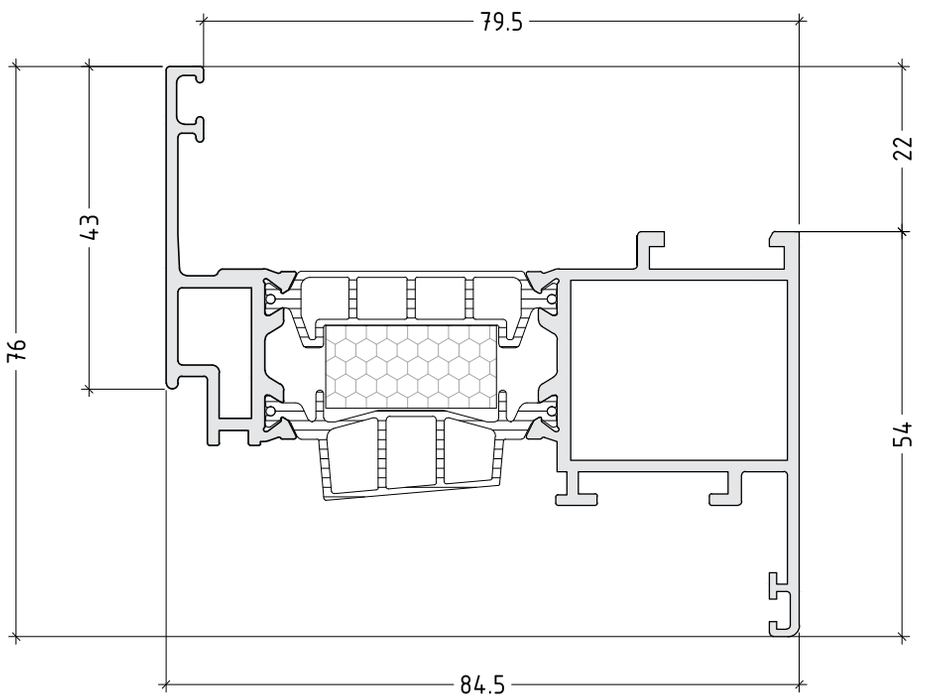
scale : 1:1

1302075-03

E 75105S
frame
1695 g/m



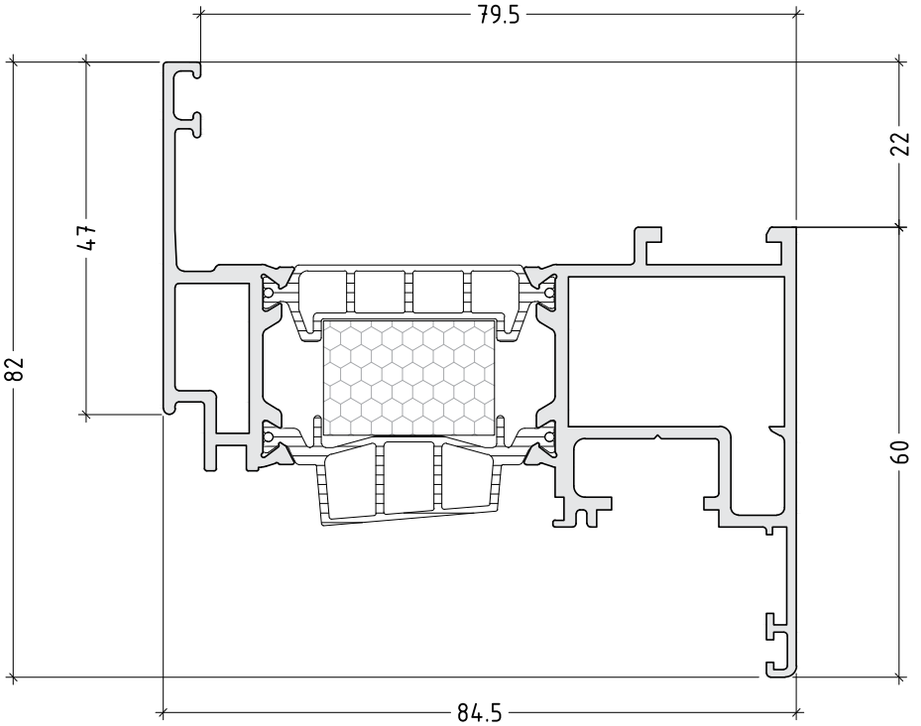
E 75200S
sash
1651 g/m



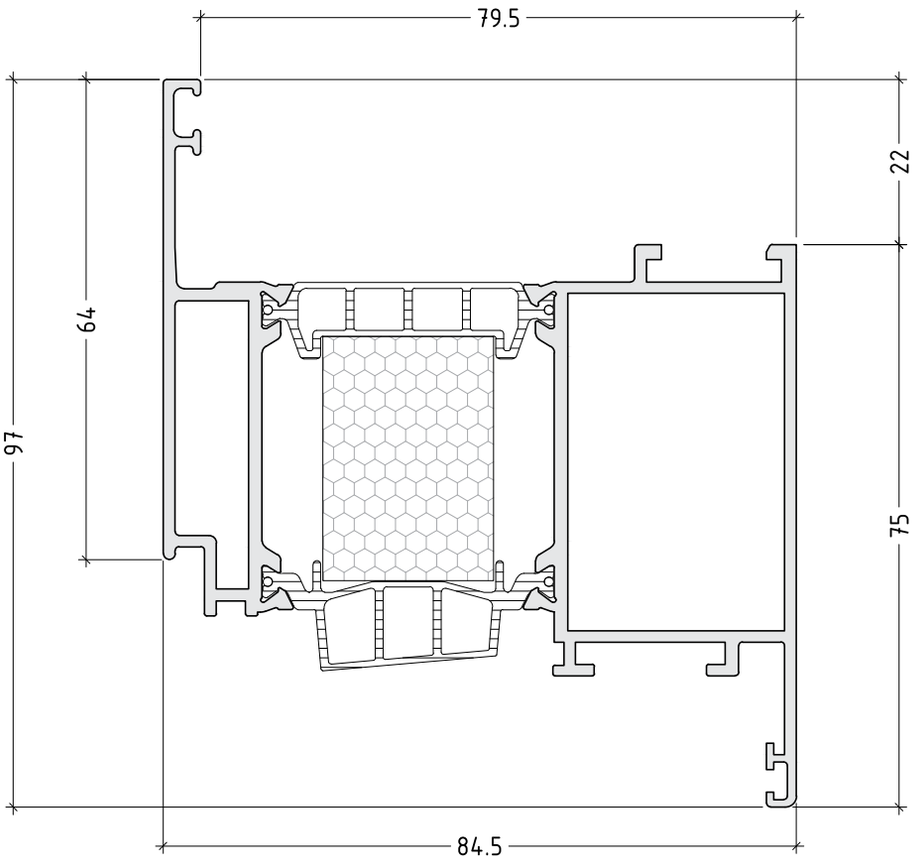
scale : 1:1

1302075-04

E 75220S
sash
PVC groove
1806 g/m



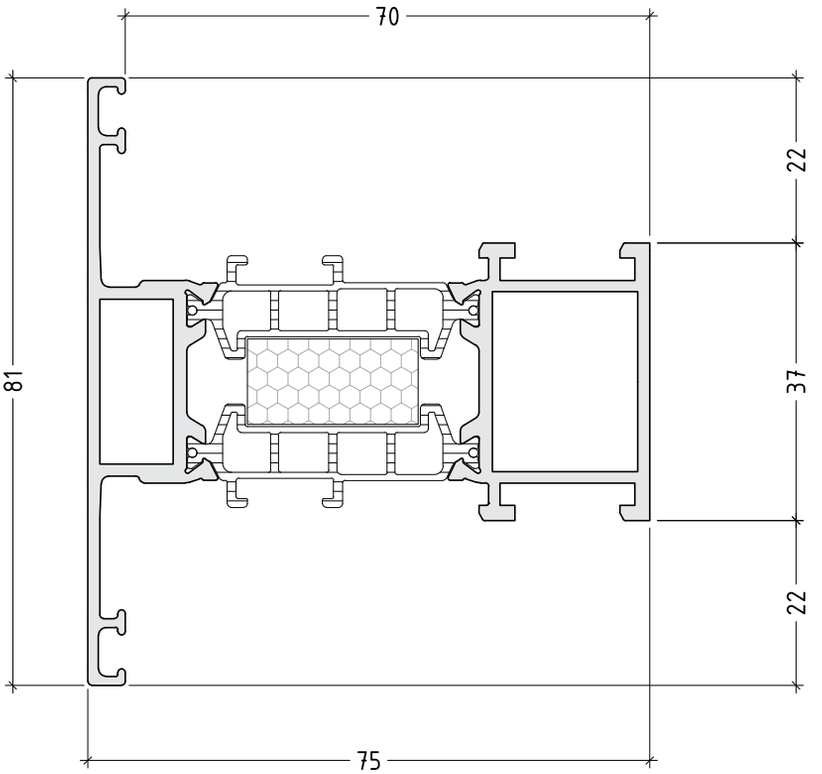
E 75201S
sash
2036 g/m



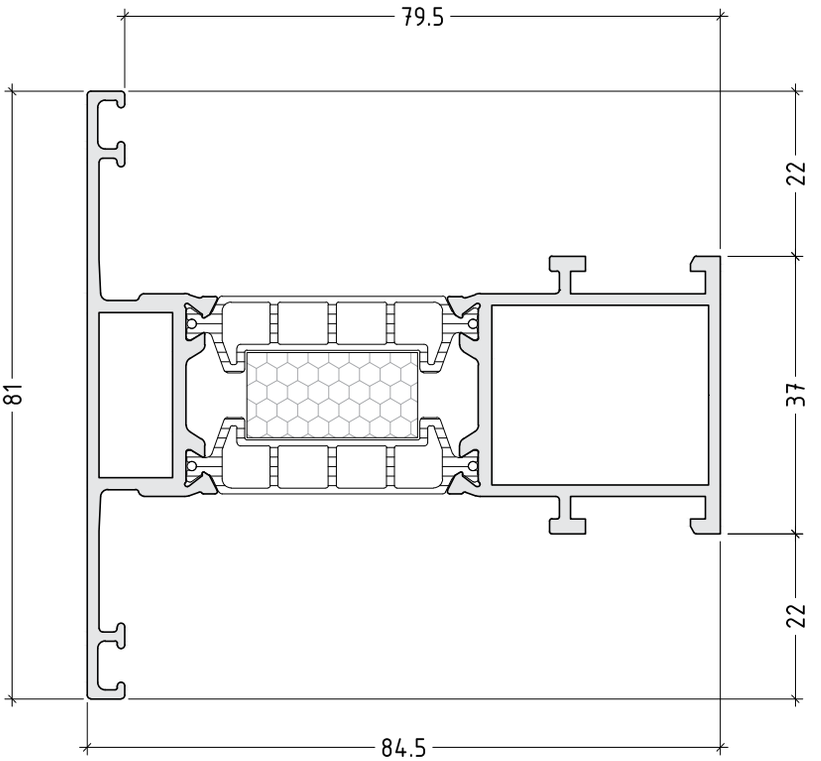
scale : 1:1

1302075-05

E 75300S
T profile
for frame
1660 g/m



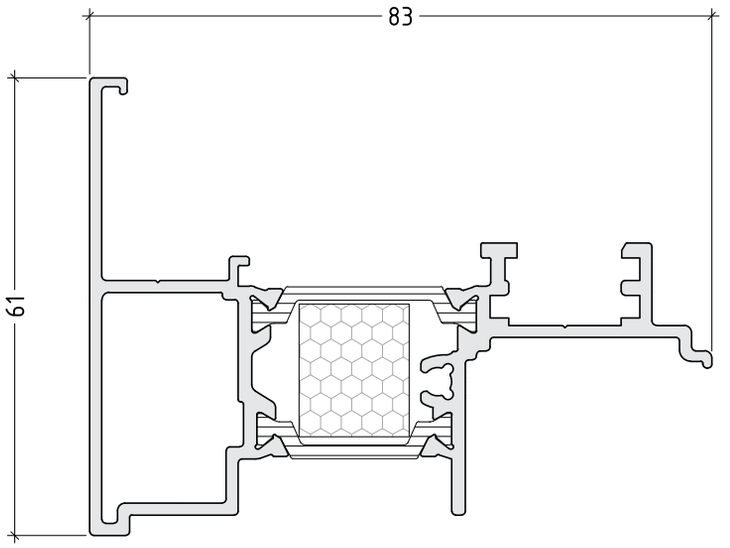
E 75340S
T profile
for sash
1718 g/m



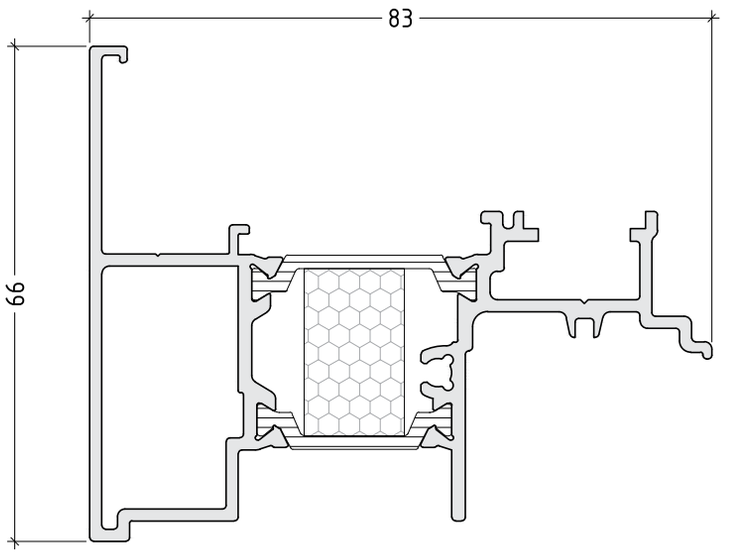
scale : 1:1

1302075-06

E 75500S
overhung
secondary
Sash profile
1408 g/m



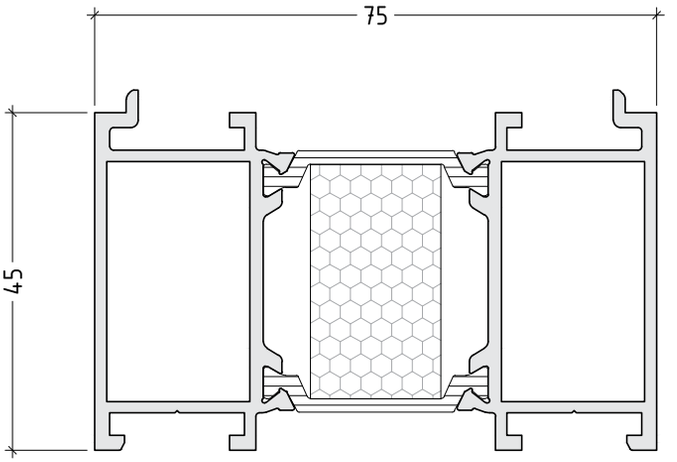
E 75540S
overhung
secondary
Sash profile
PVC groove
1488 g/m



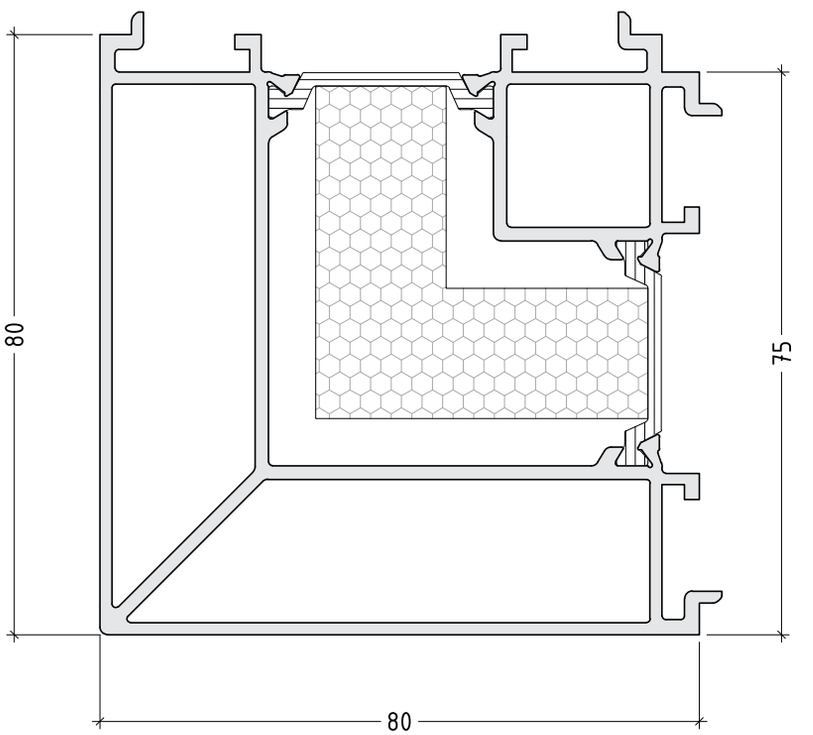
scale : 1:1

1302075-07

E 75610S
frame extension
1600 g/m



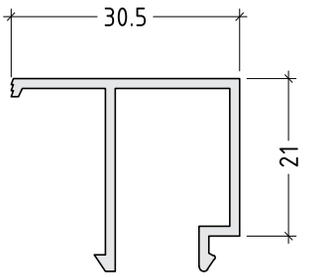
E 75600S
column for
angle 90°
2533 g/m



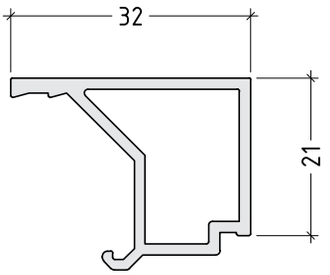
scale : 1:1

1302075-08

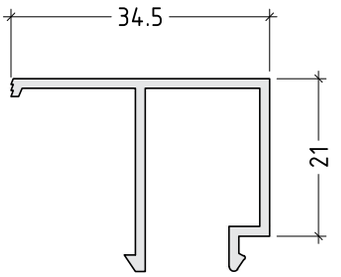
E 5380
glazing bead
302 g/m



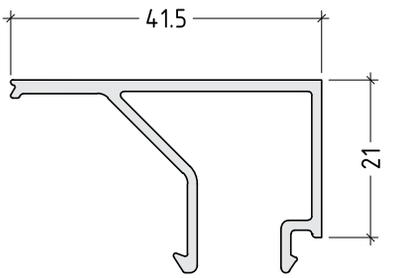
E 60132
glazing bead
410 g/m



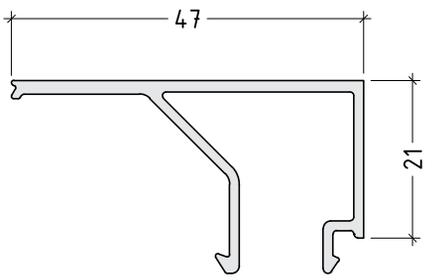
E 5305
glazing bead
316 g/m



E 75701
glazing bead
393 g/m



E 75700
glazing bead
419 g/m

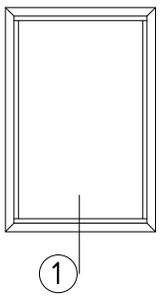


scale : 1:1

1302075-09

SECTIONS

SECTIONS / DETAILS



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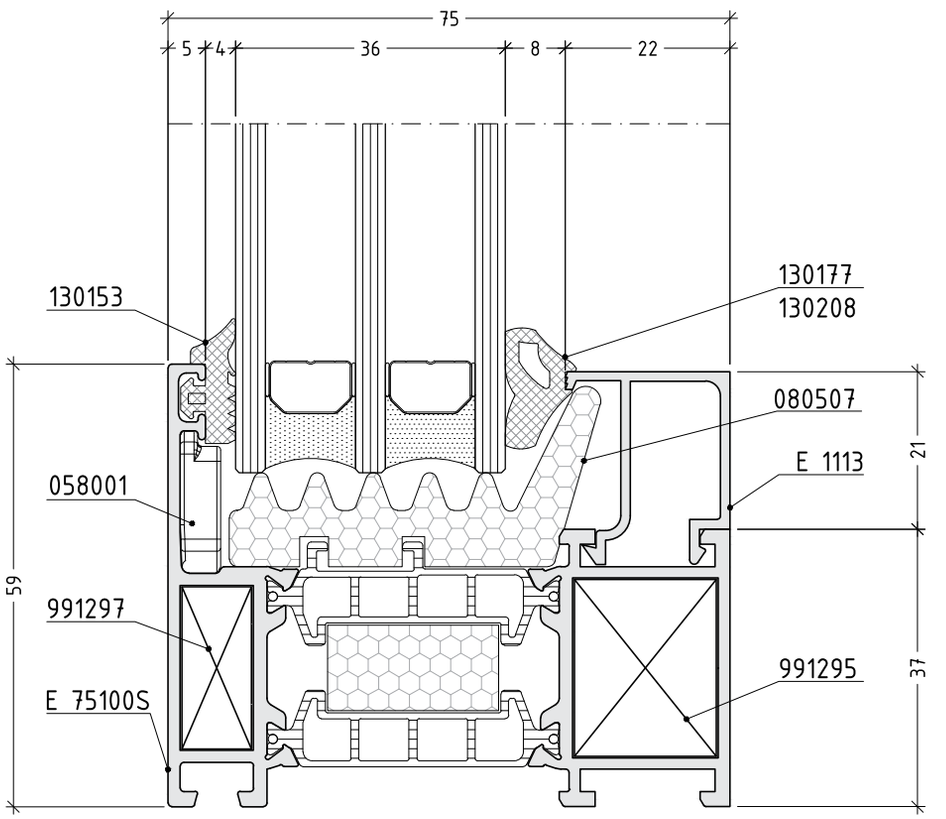
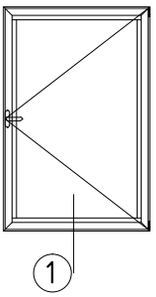


scale : 1:1

D75-01



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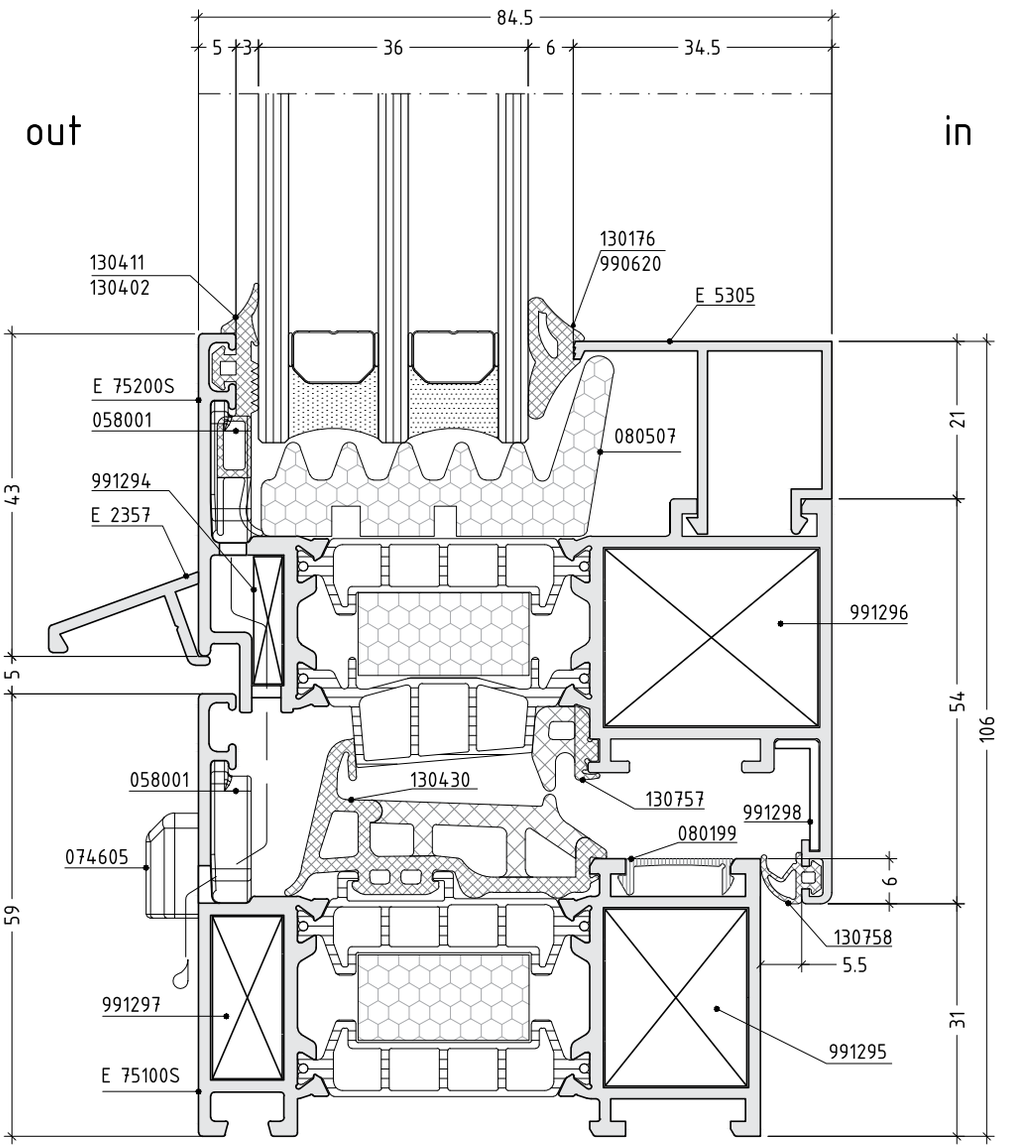
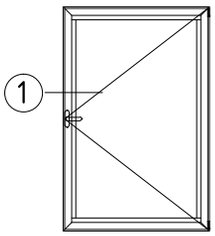


scale : 1:1

D75-02



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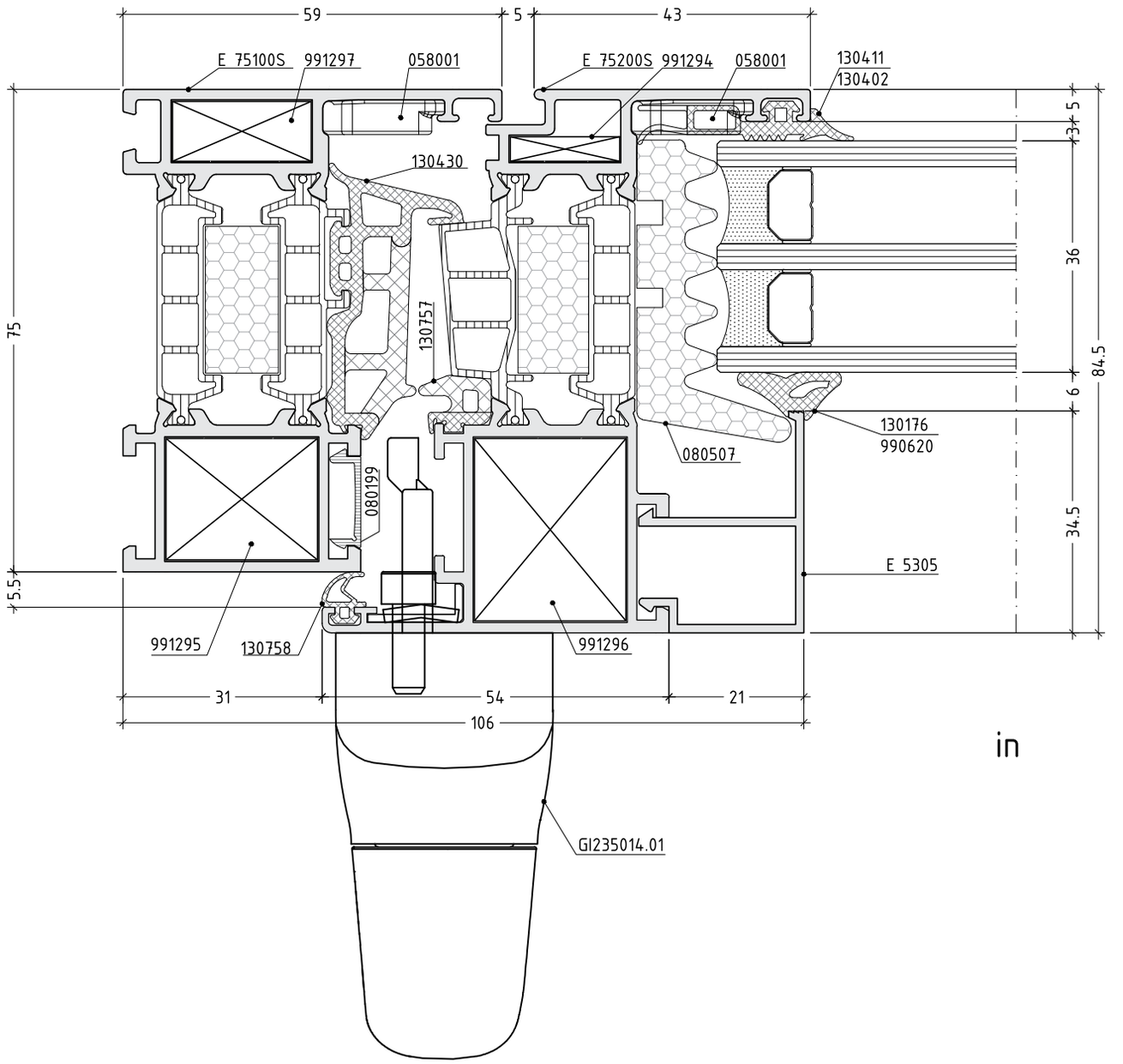
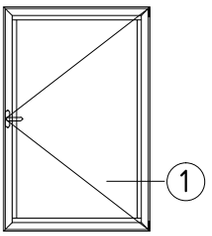
out



in

scale : 1:1

D75-03



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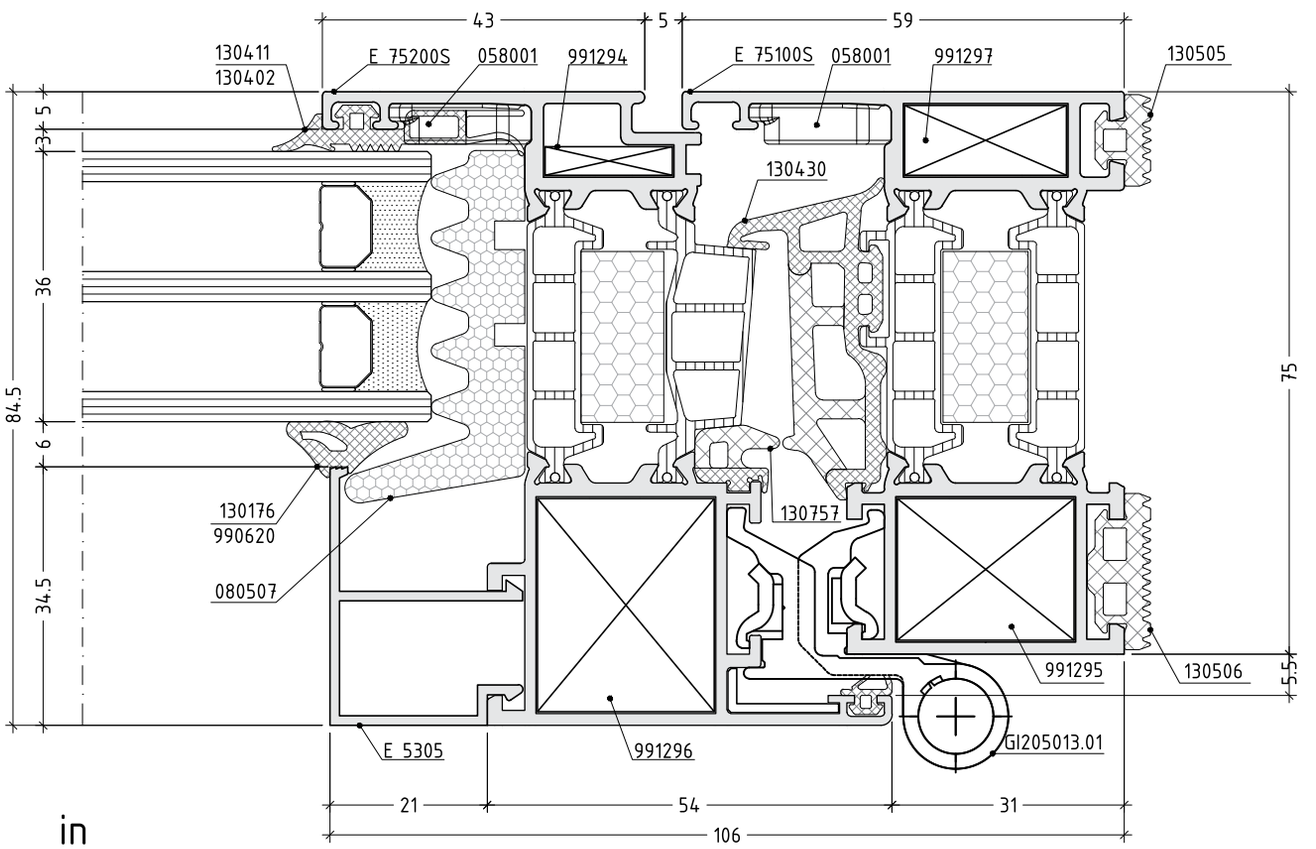
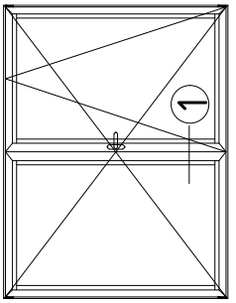
out

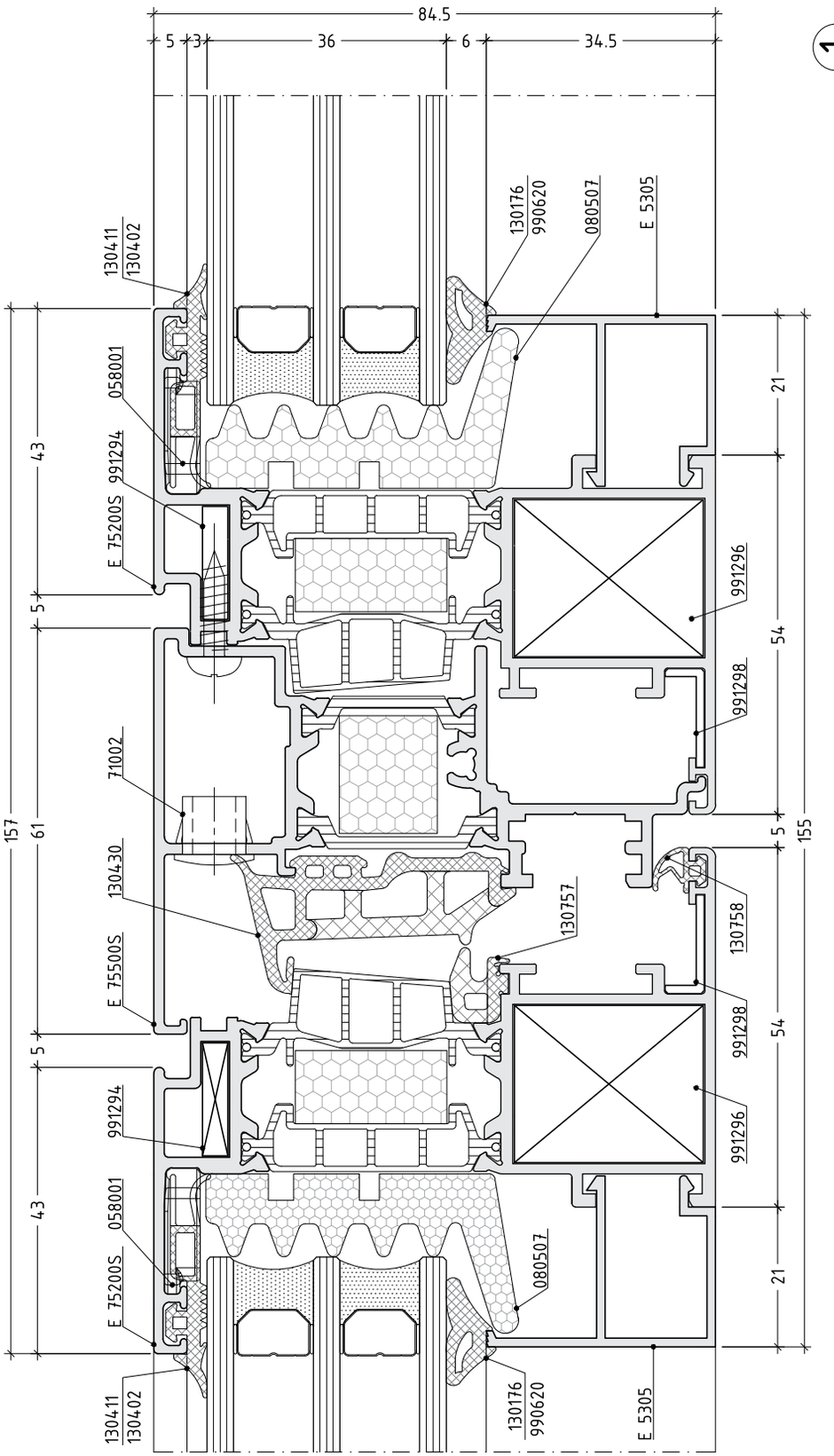


in

scale : 1:1

D75-04





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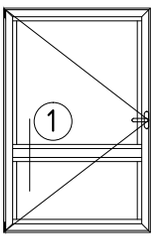
D75-05



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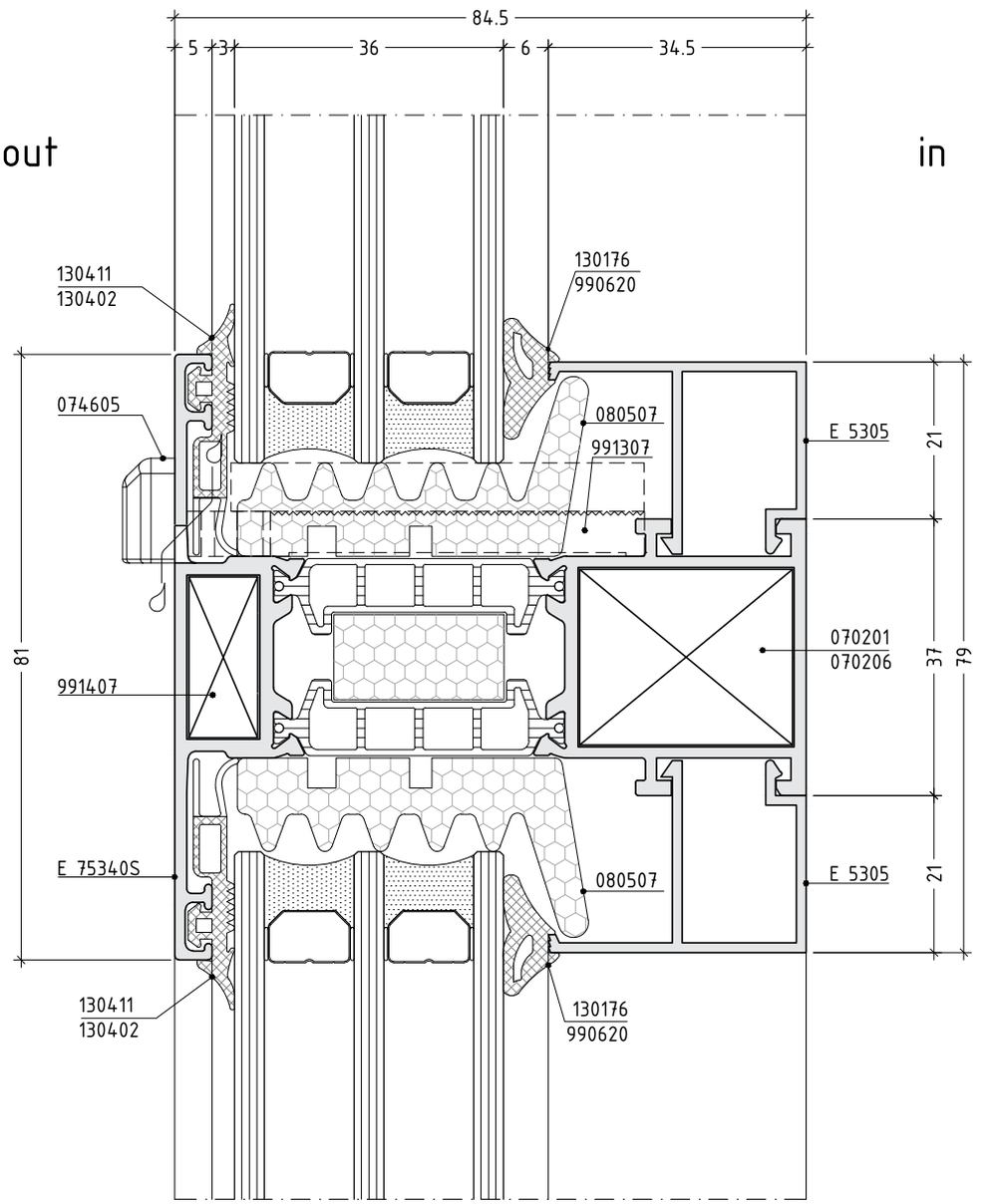

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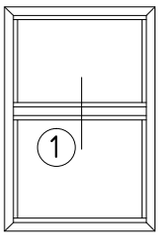
D75-06



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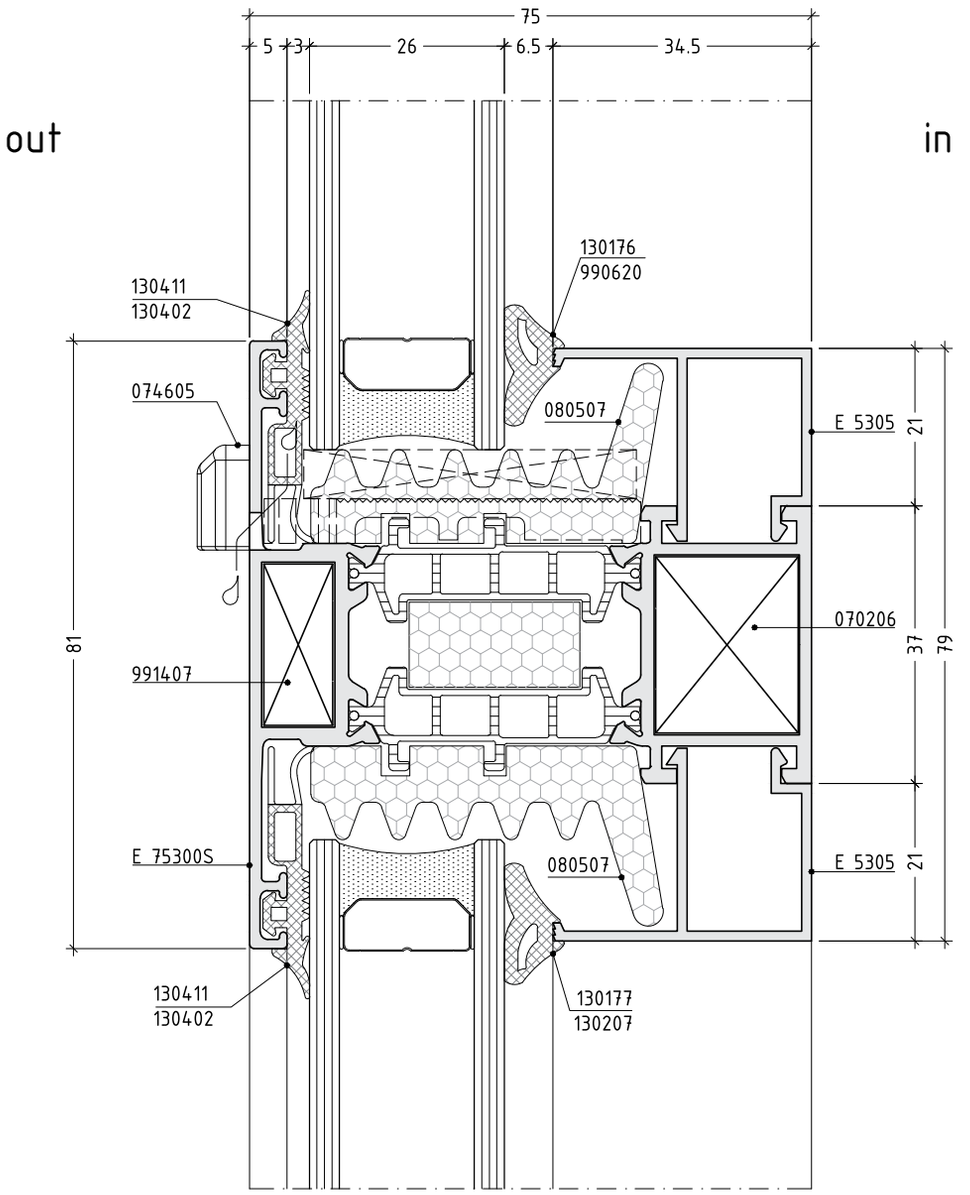

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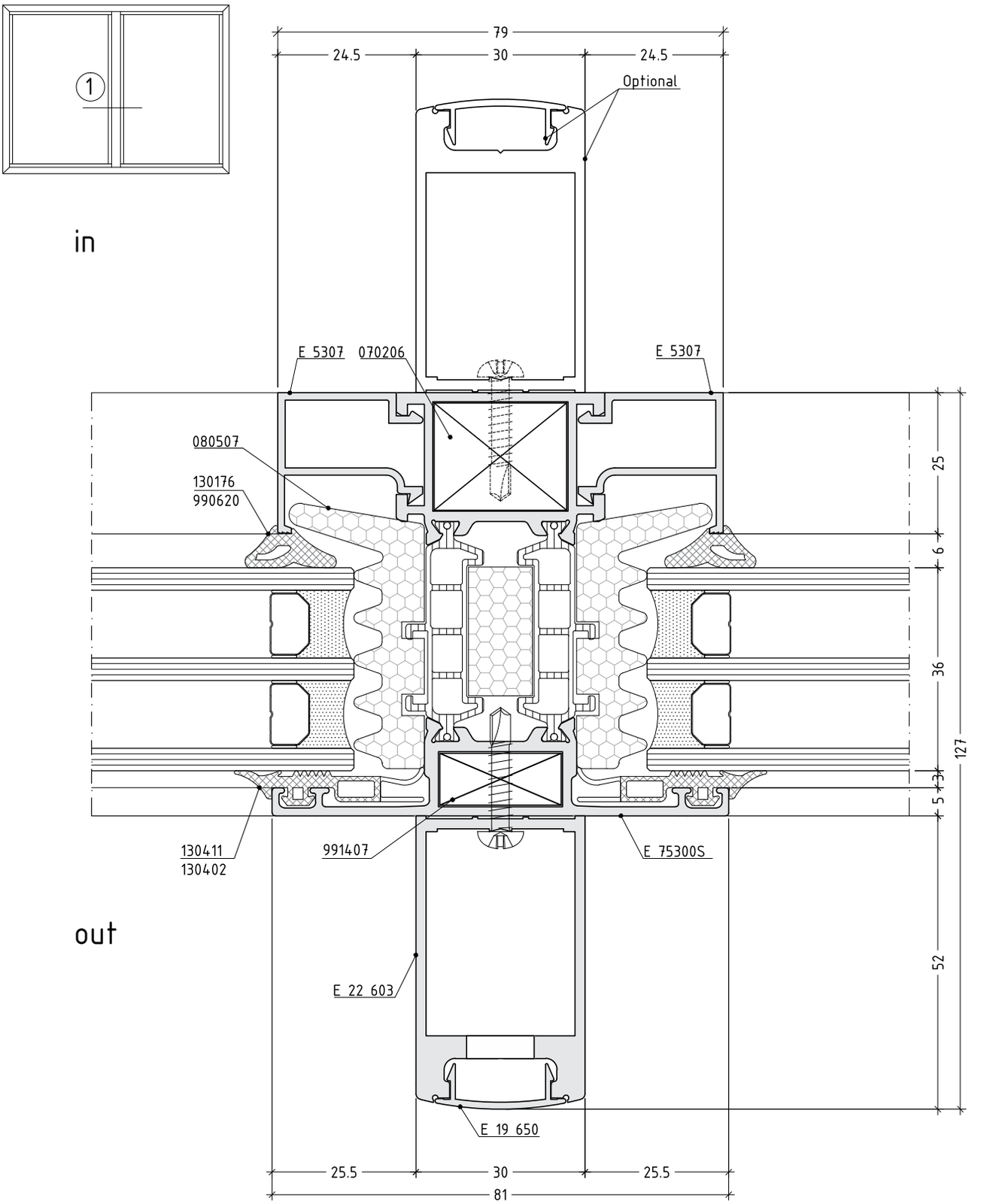
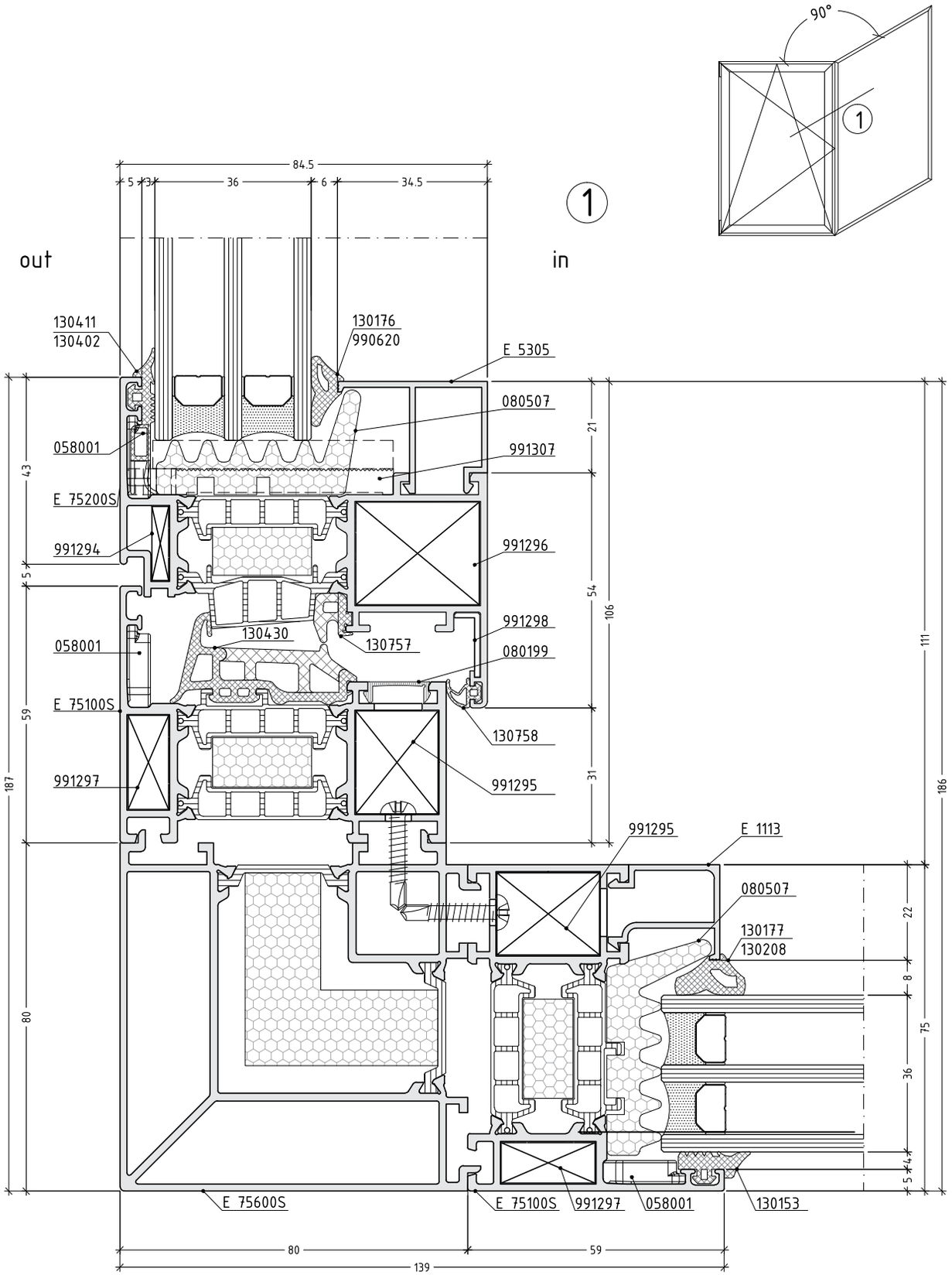
D75-07



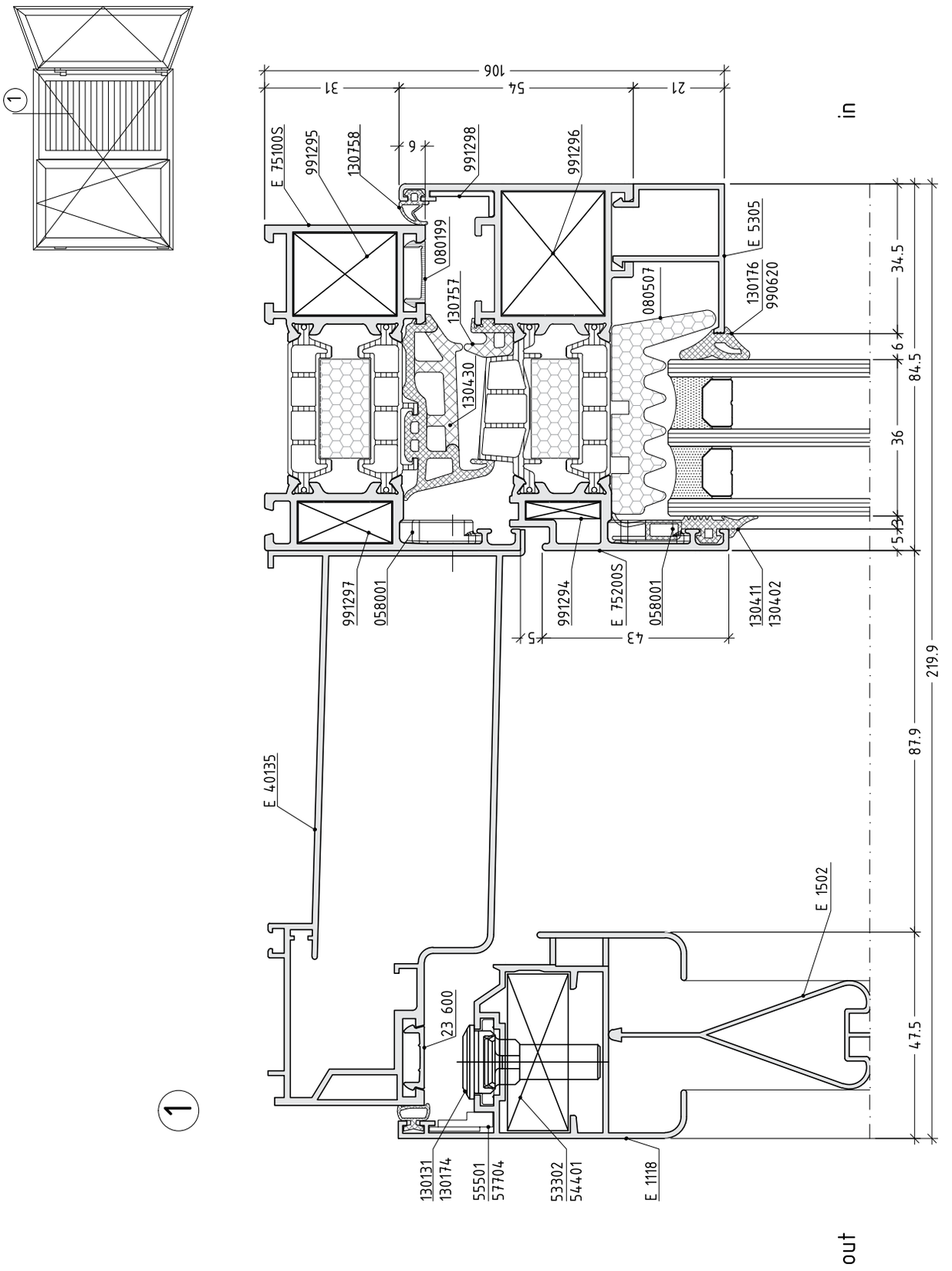
scale : 1:1

D75-08



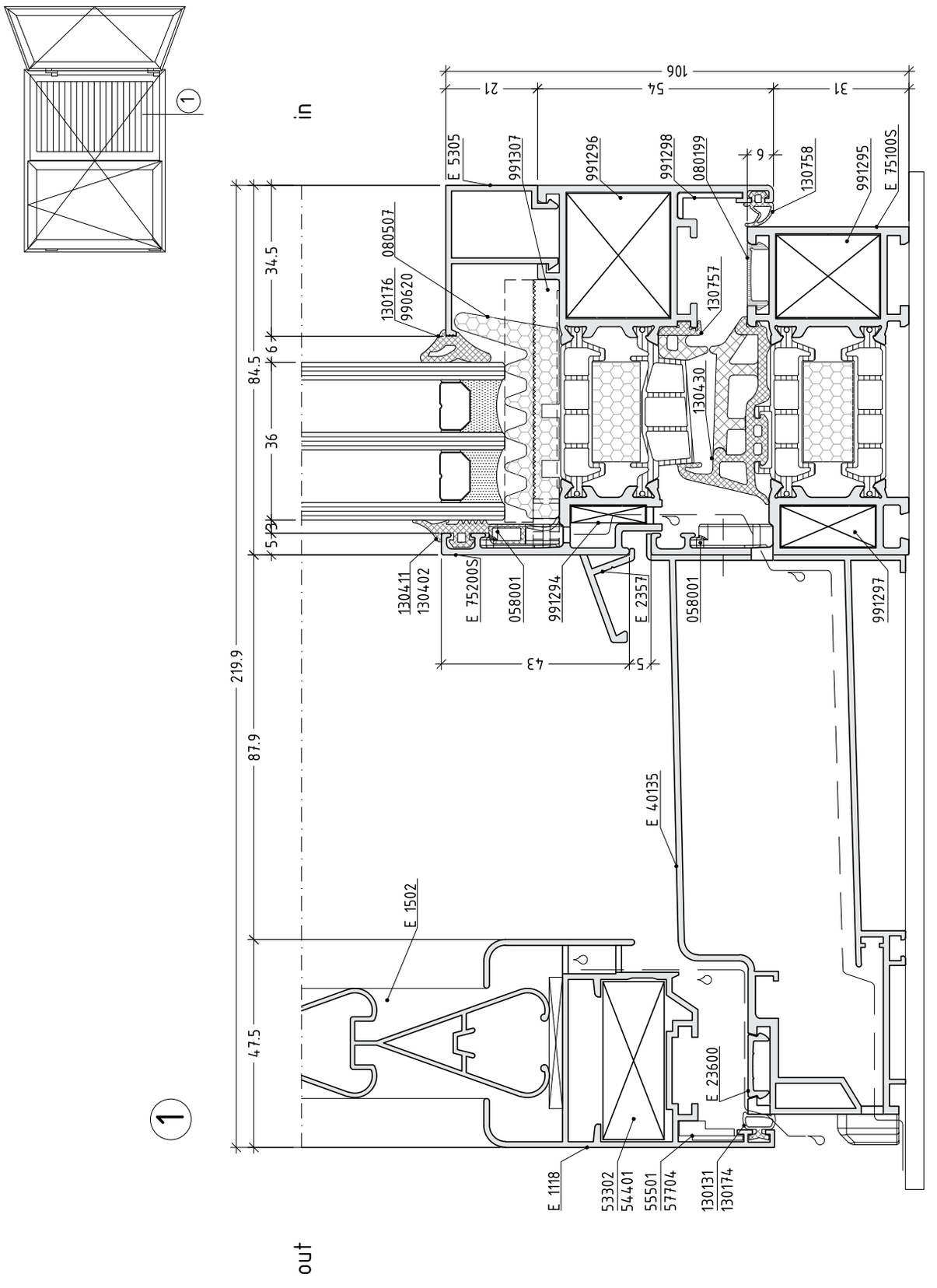
scale : 0.75

D75-09



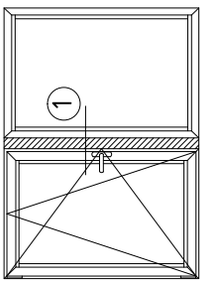
scale : 0.75

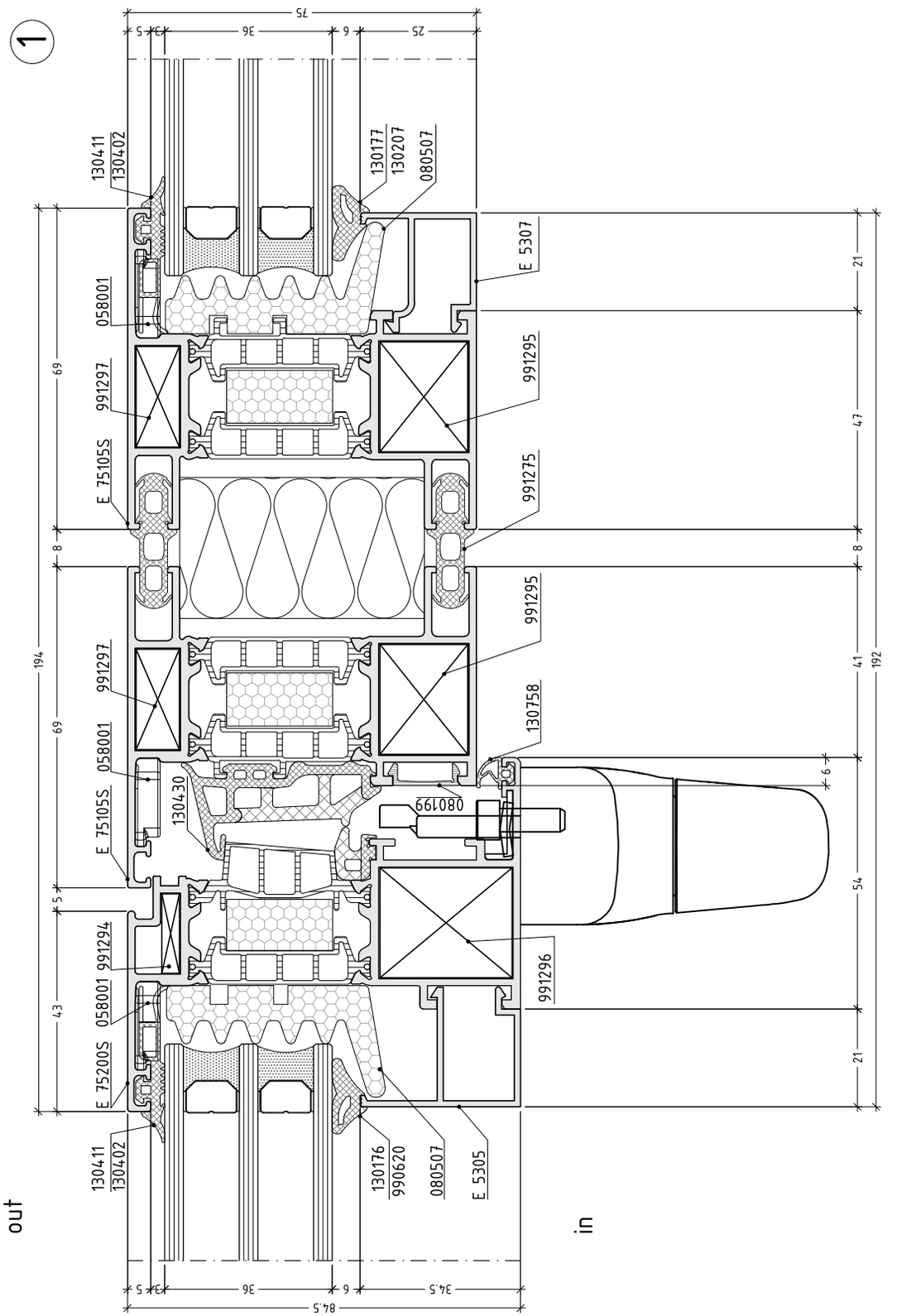
D75-10



scale : 0.75

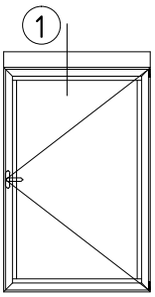
075-11

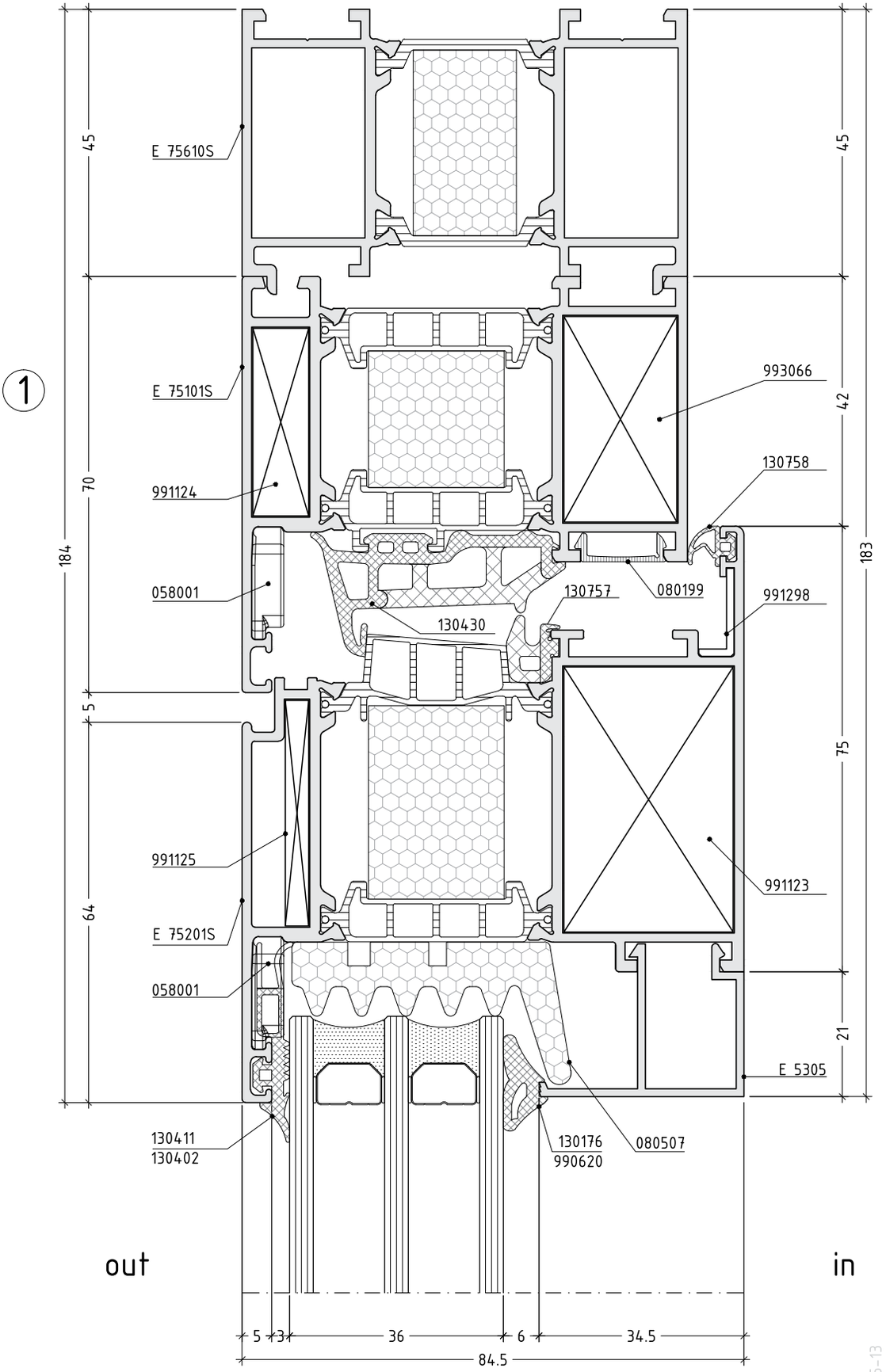




scale : 0.75

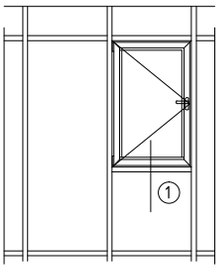
D75-12

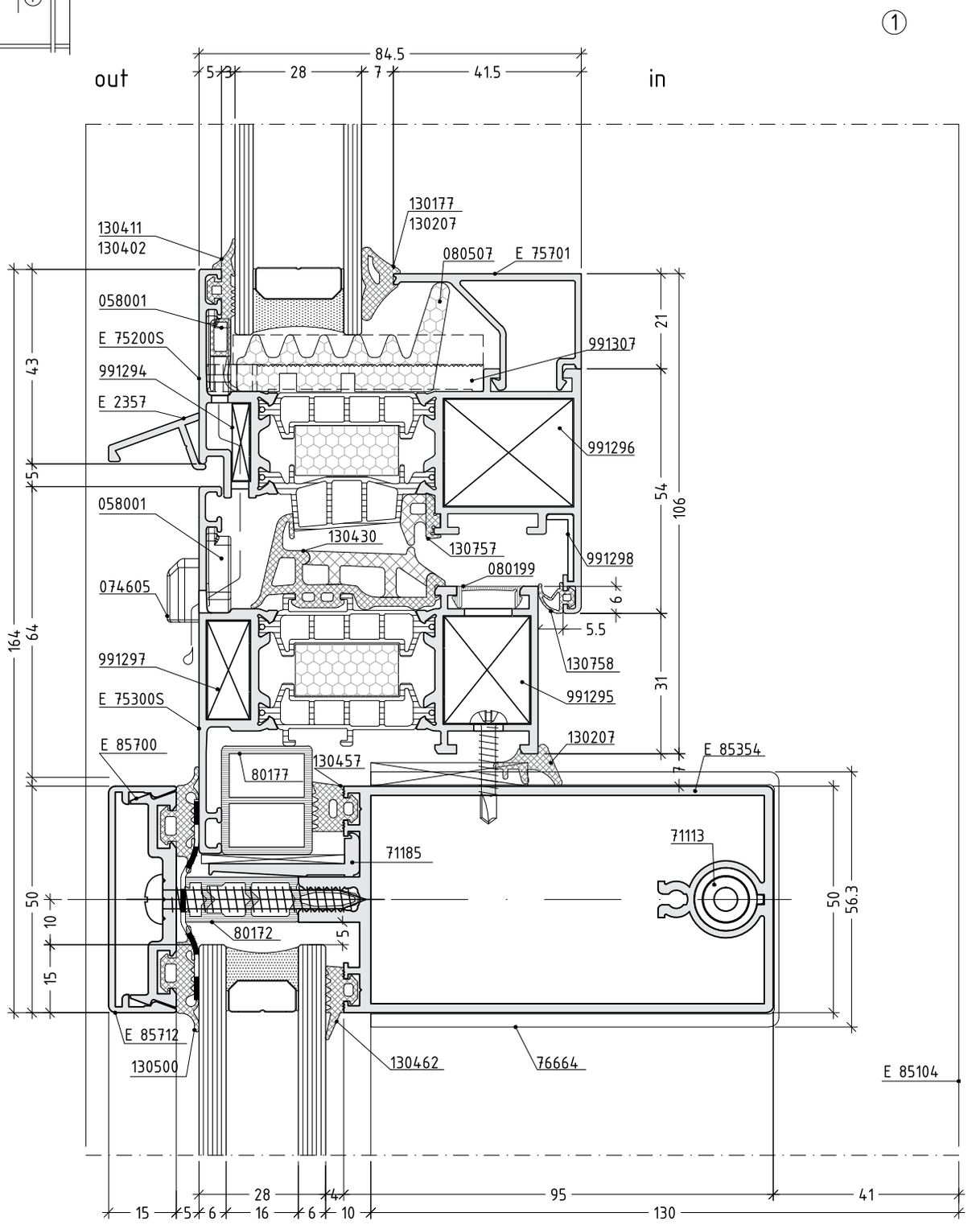




scale : 1:1

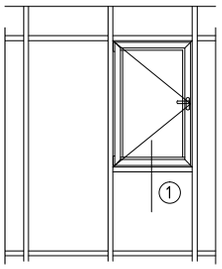
D75-13





scale : 0.75

D75-14



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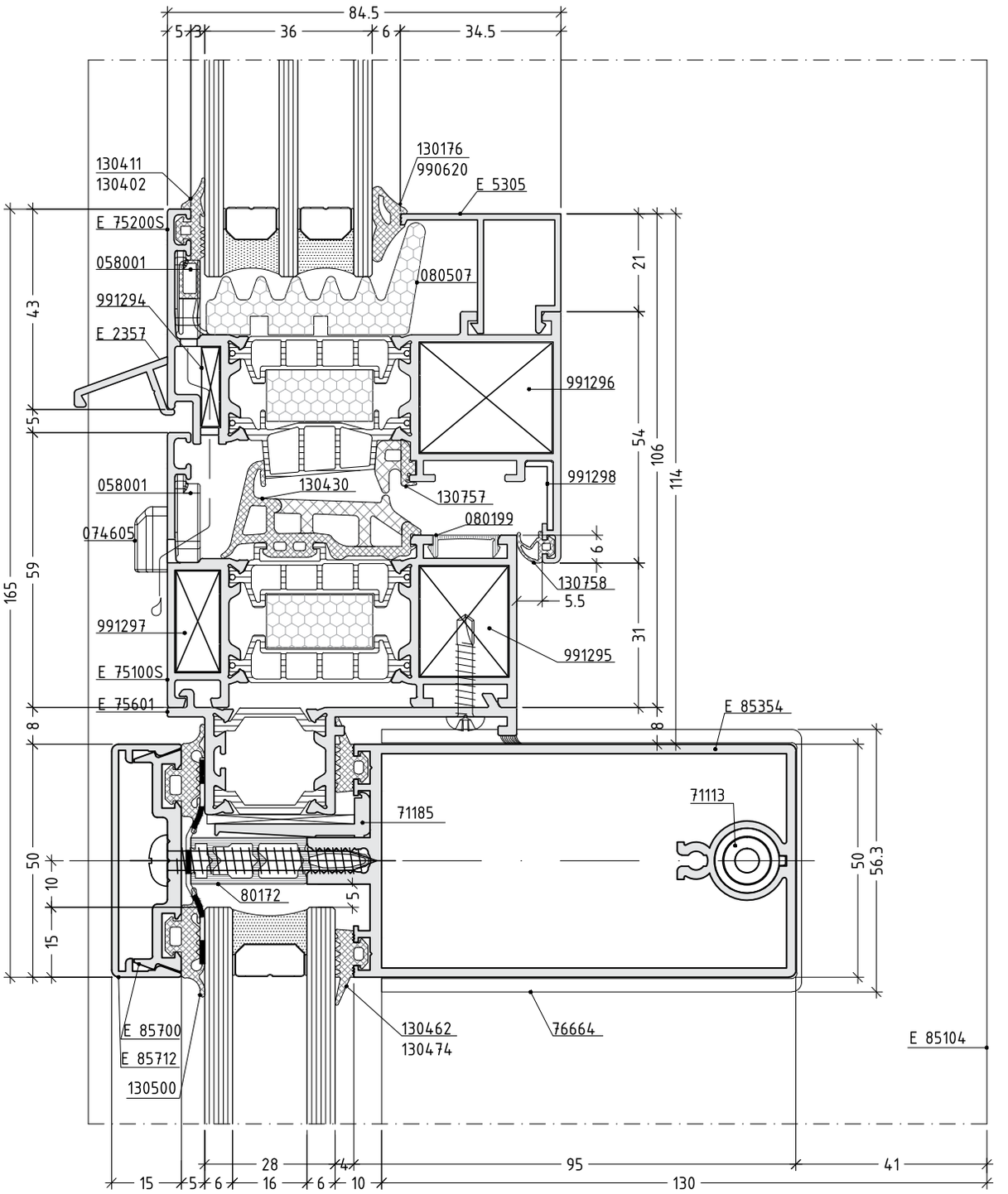
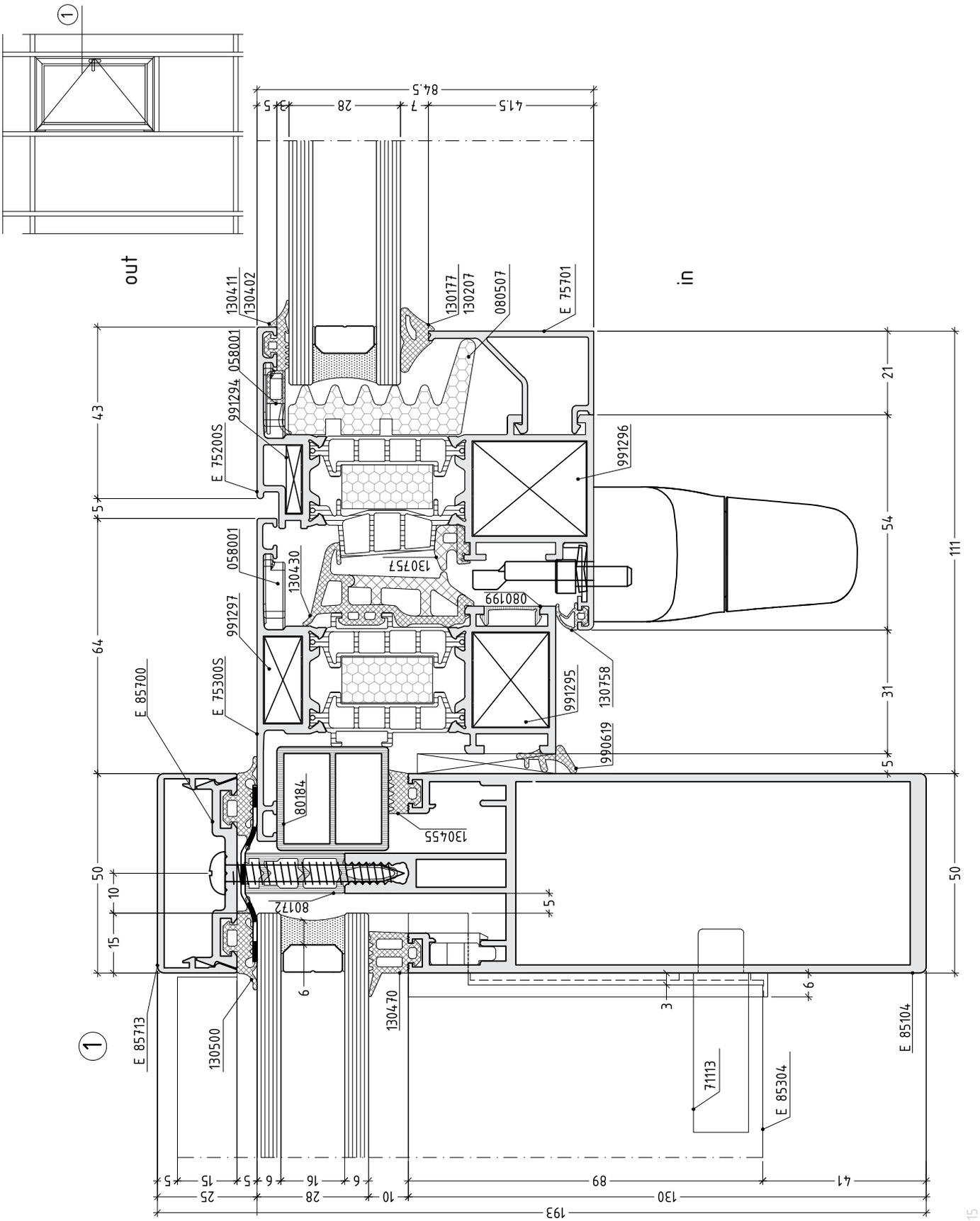


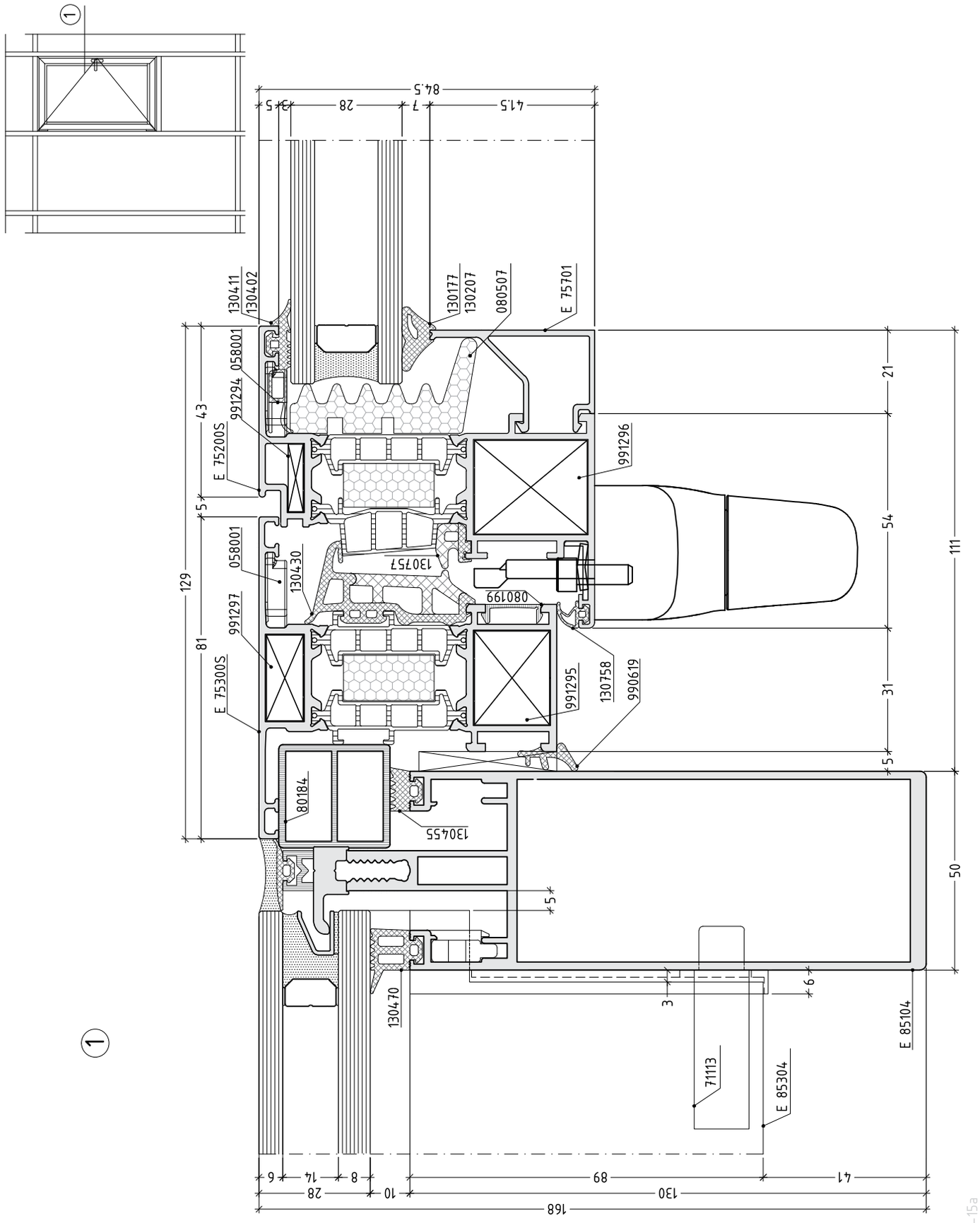
scale : 0.75

D75-14a



scale : 0.75

D75-15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130
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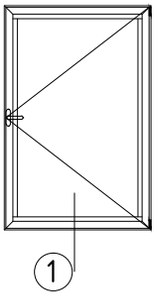
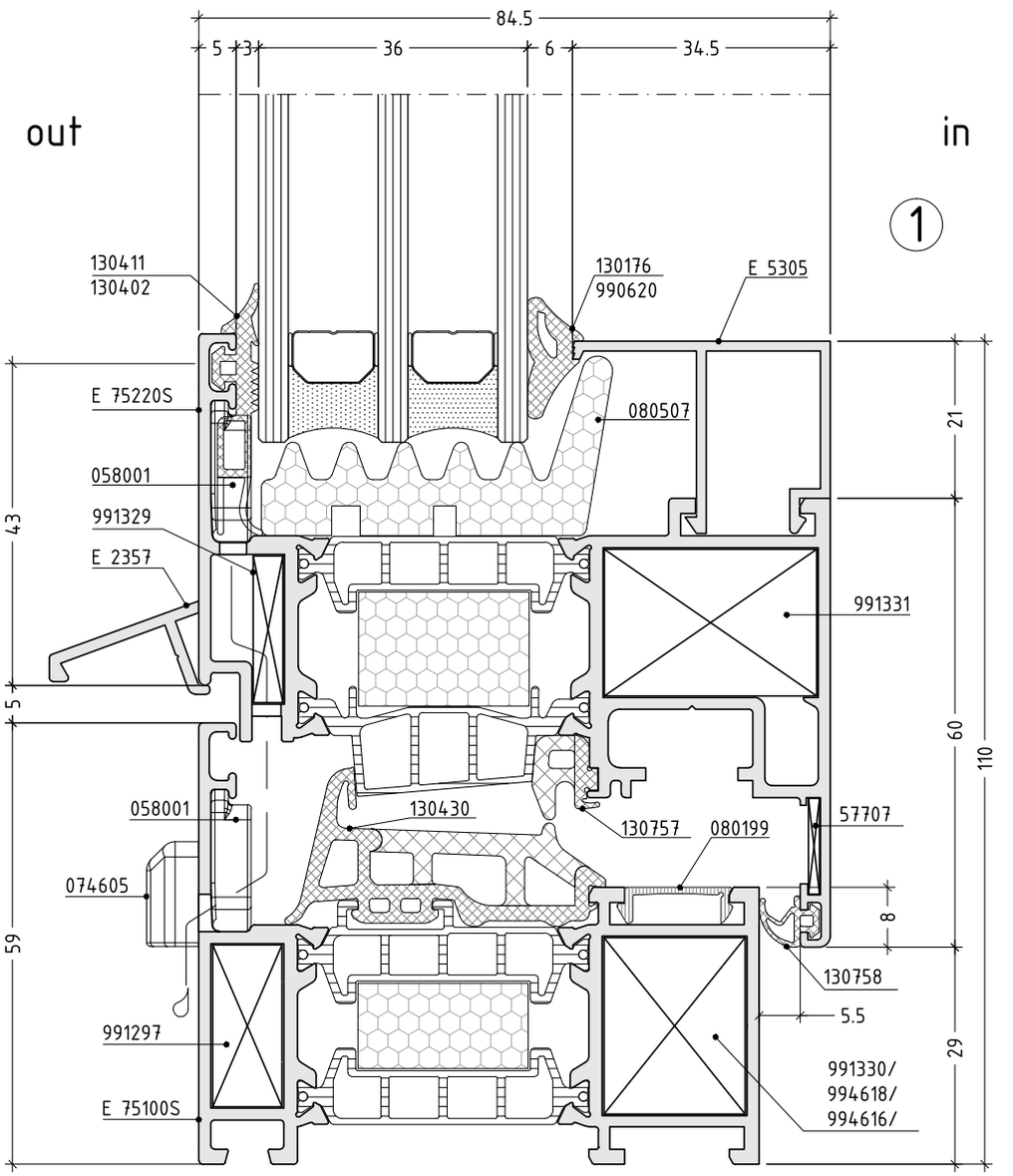
1
D75-15a

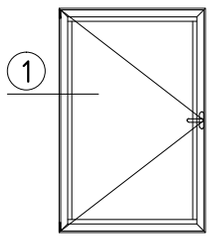
scale : 0.75





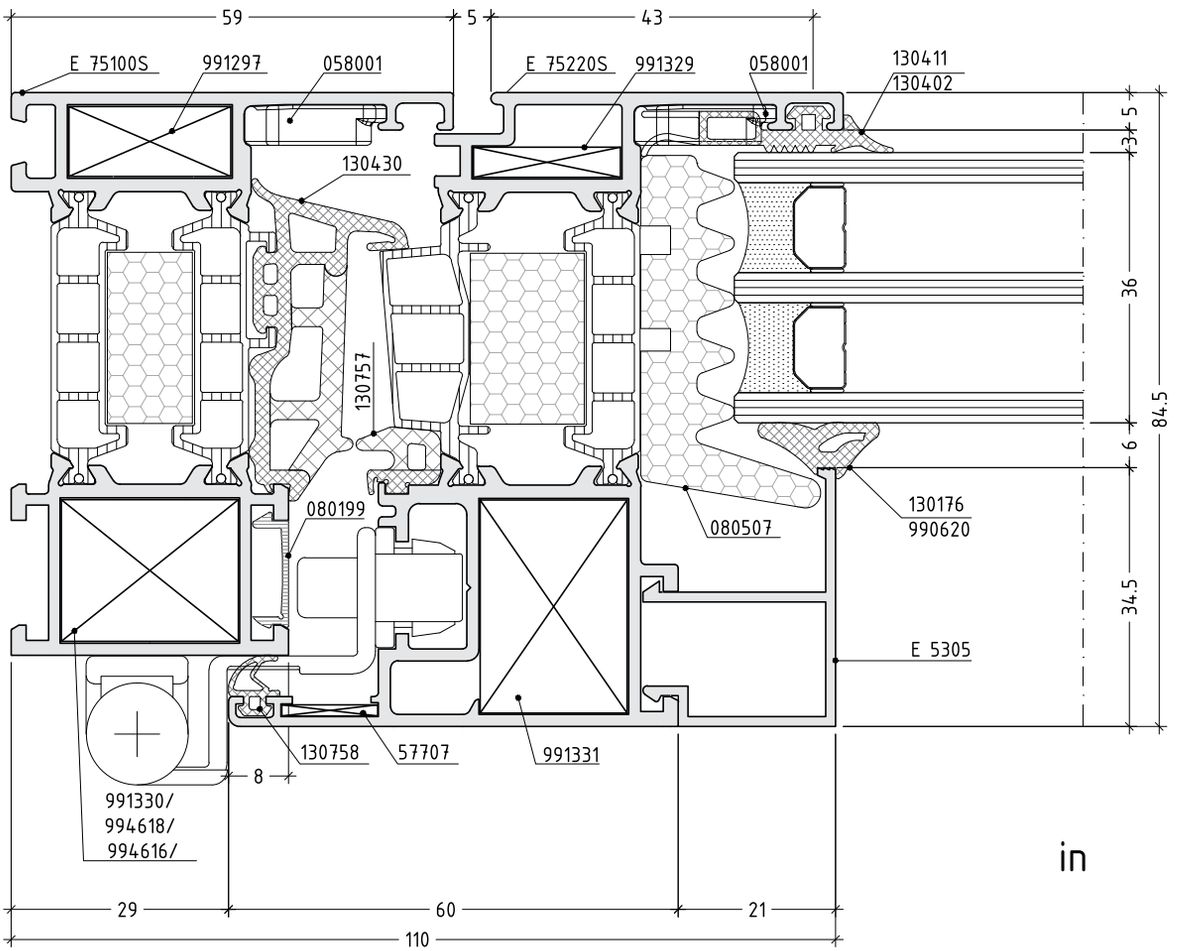
scale : 1:1

D75-16



1

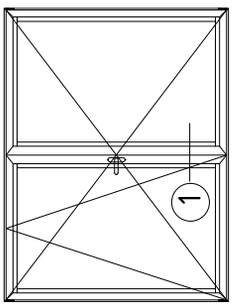
out

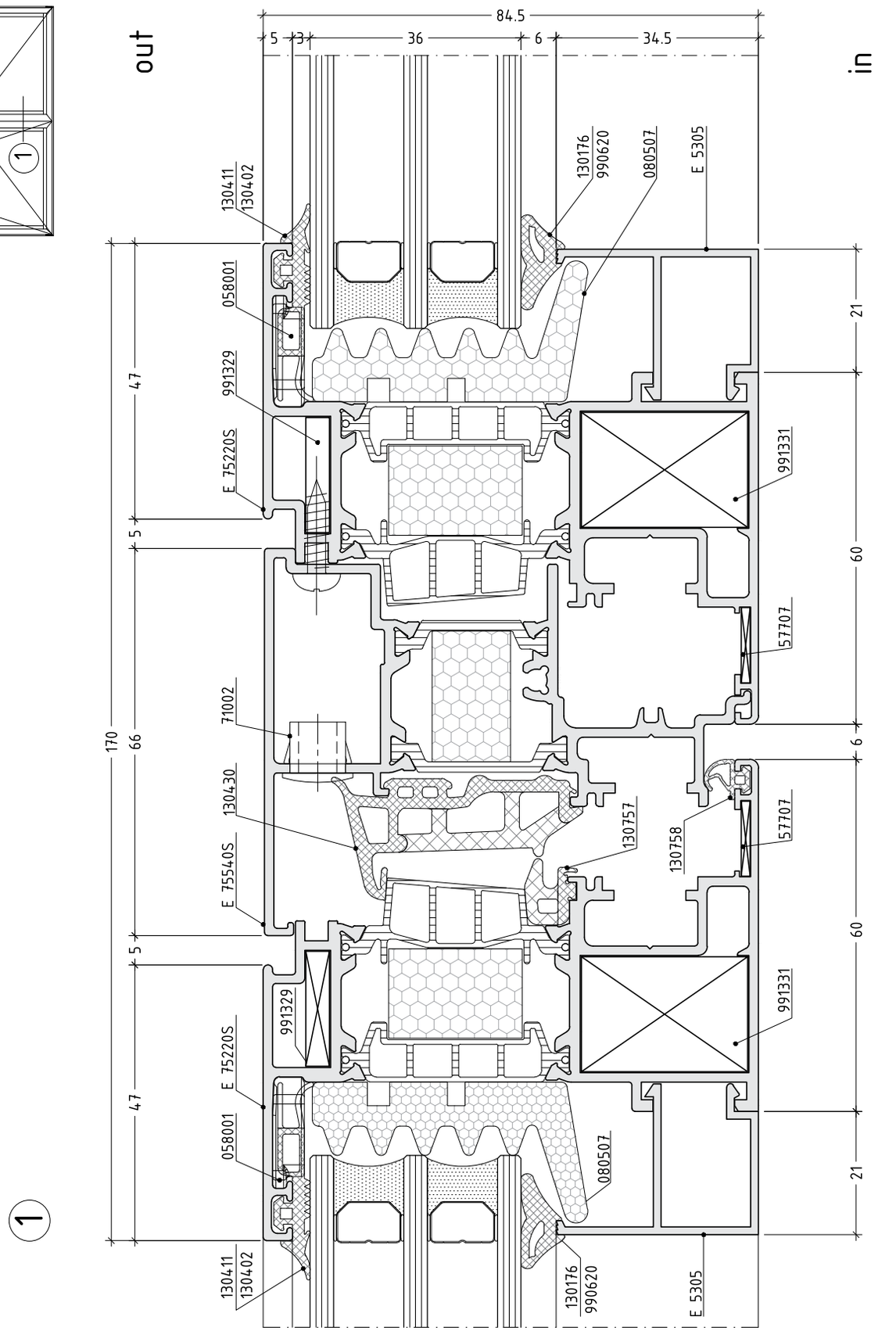


in

scale : 1:1

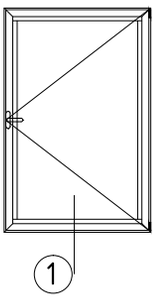
075-17

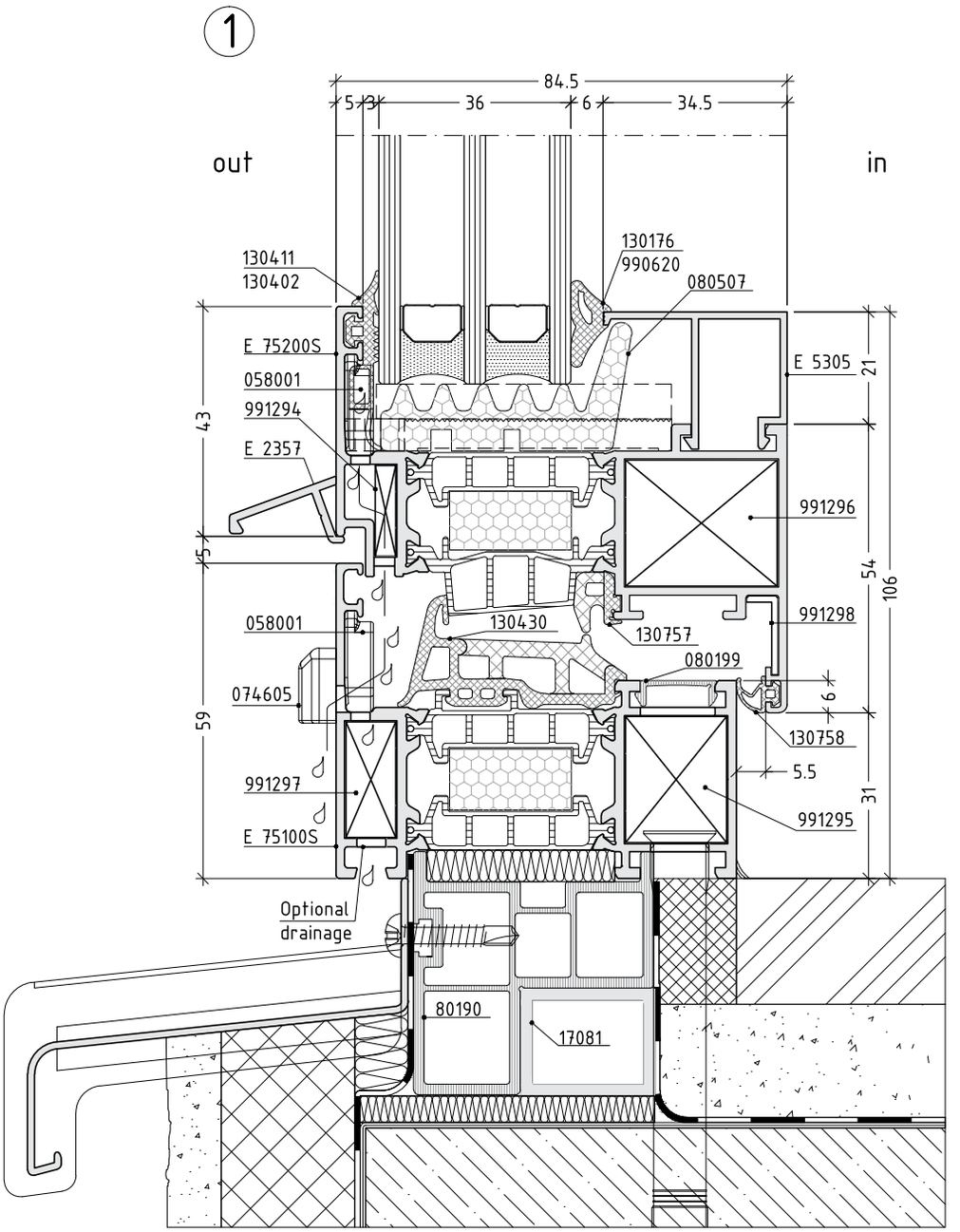




scale : 1:1

D75-18

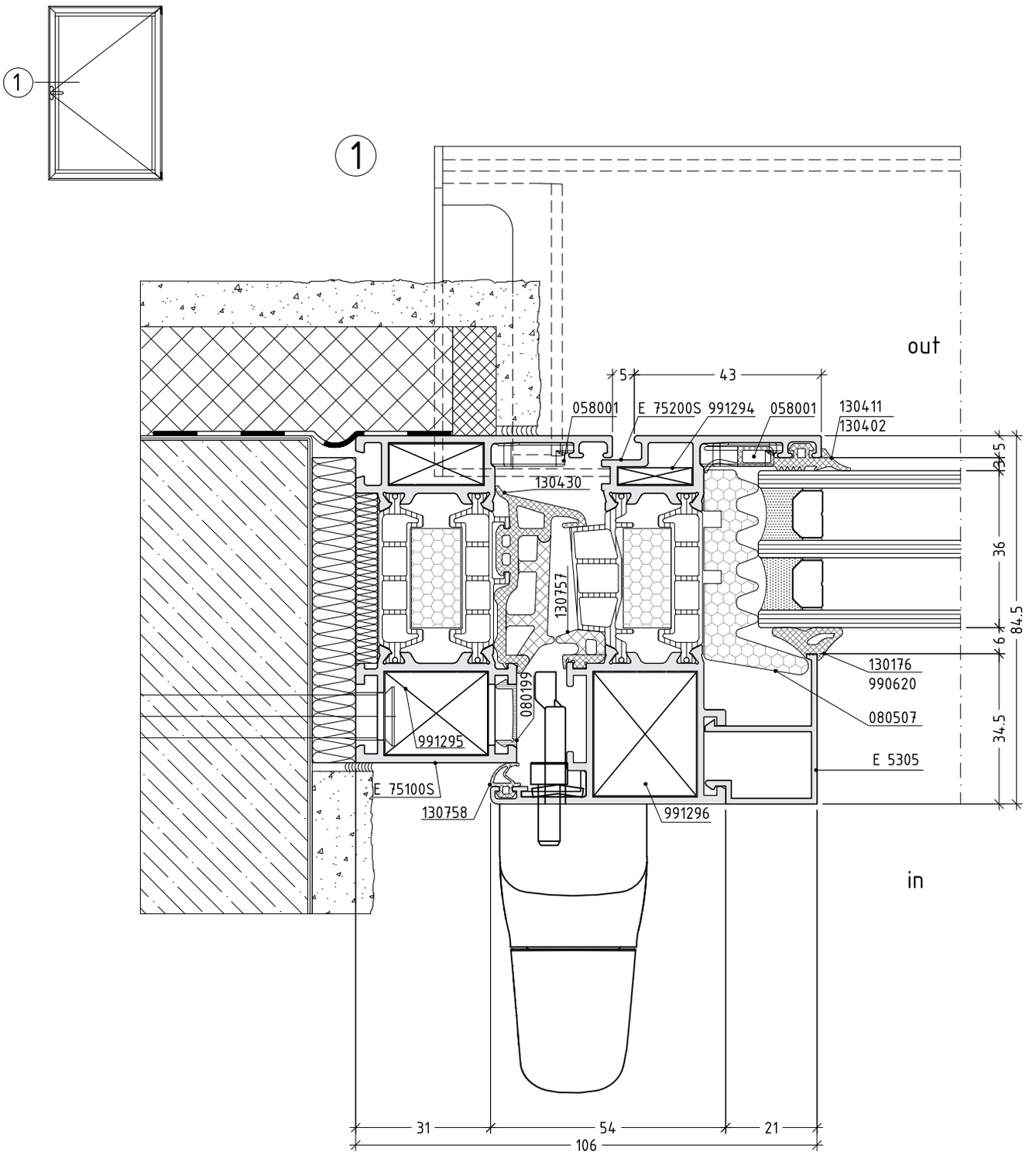




Interface shown on the drawing is an example ONLY!
Connection between backing wall and frame is specific for each single project. It is obligatory to observe different projects' features. All final decisions about materials used, interface finishing, etc. should be approved by the structural / façade engineer responsible for the specific project.

scale : 0.75

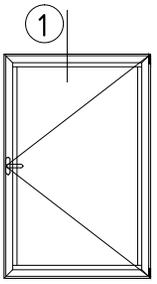
D75-19



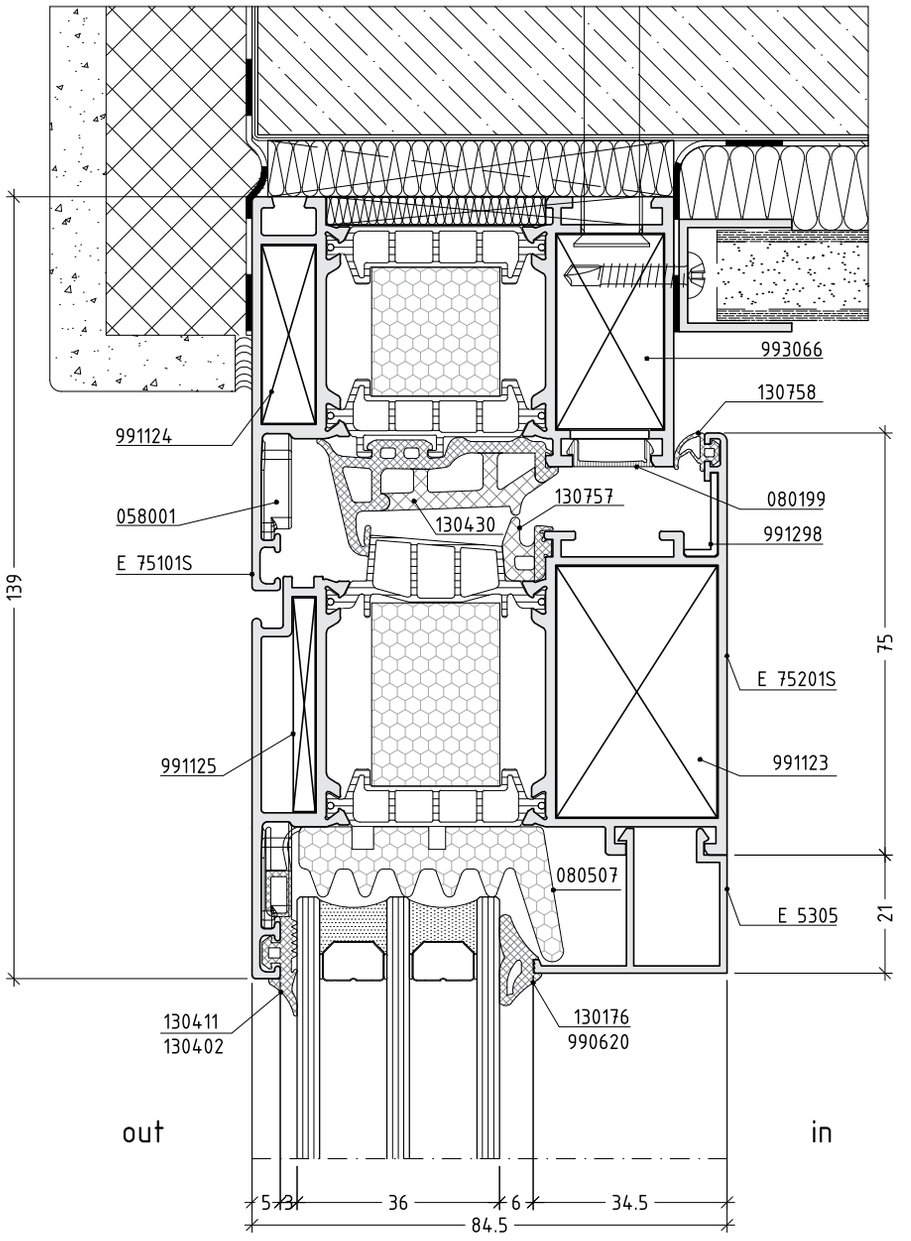
Interface shown on the drawing is an example ONLY!
Connection between backing wall and frame is specific for each single project. It is obligatory to observe different projects' features. All final decisions about materials used, interface finishing, etc. should be approved by the structural / façade engineer responsible for the specific project.

scale : 0.75

D75-20



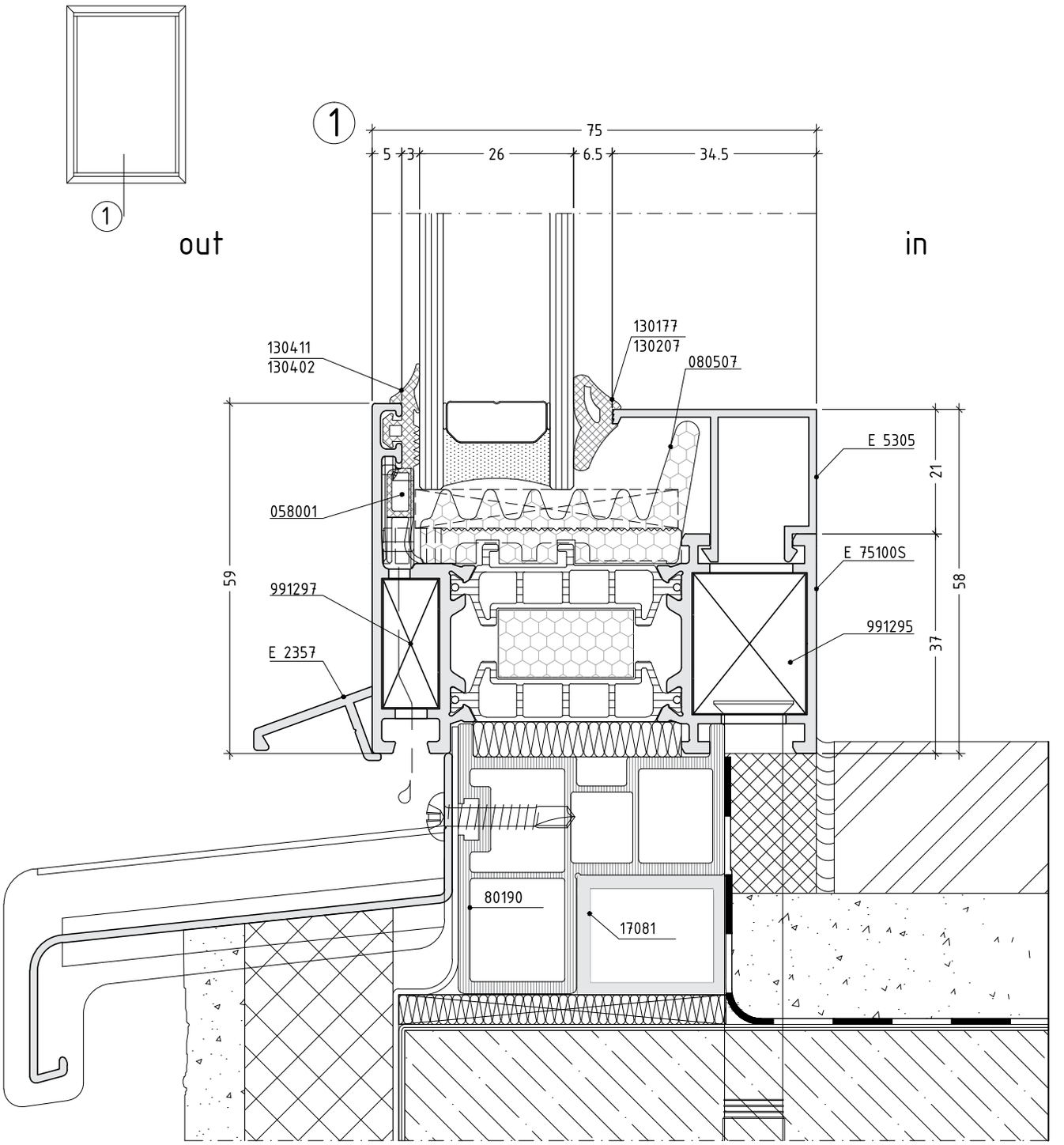
1



Interface shown on the drawing is an example ONLY!
Connection between backing wall and frame is specific for each single project. It is obligatory to observe different projects' features. All final decisions about materials used, interface finishing, etc. should be approved by the structural / façade engineer responsible for the specific project.

scale : 0.75

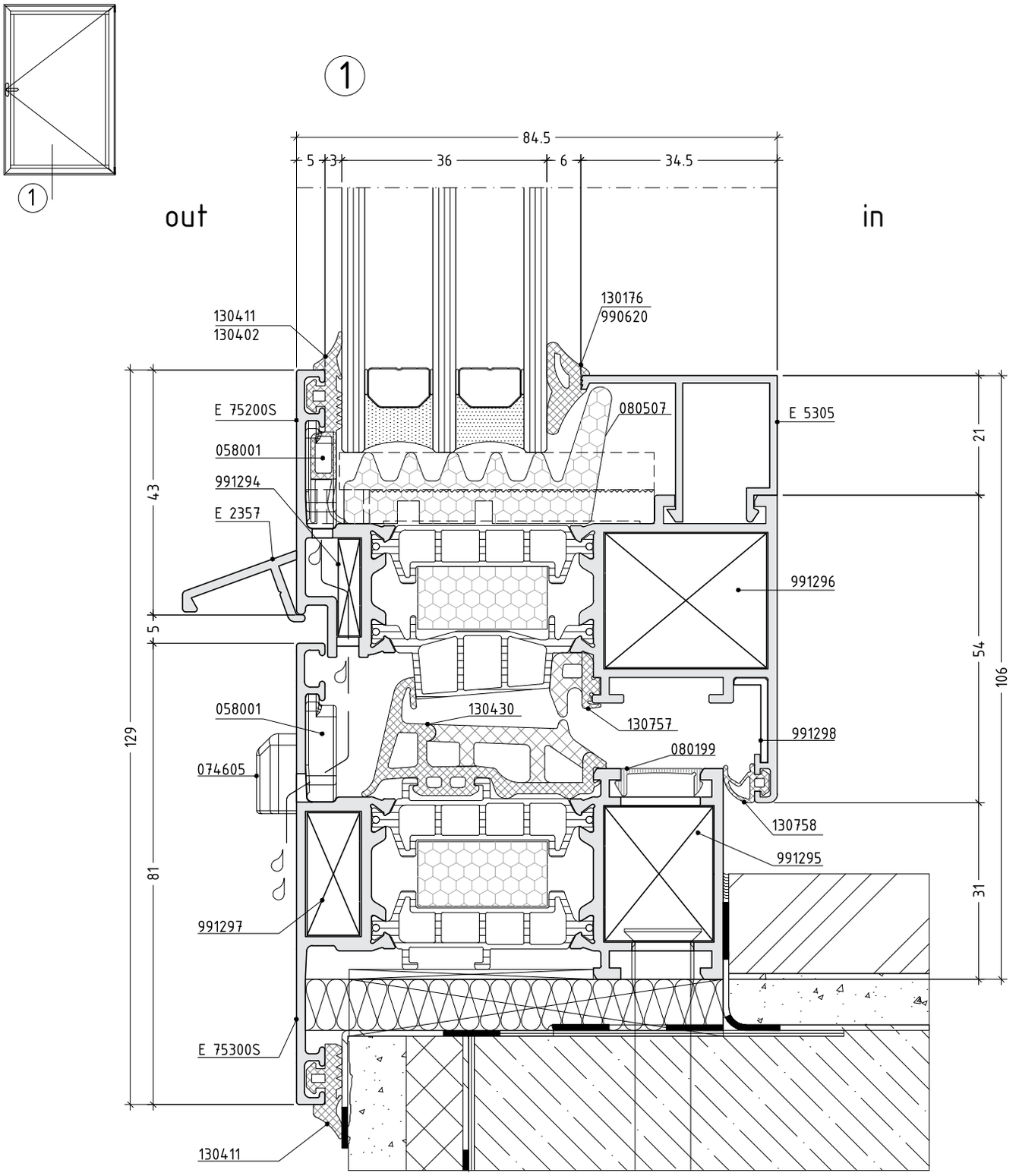
D75-21



Interface shown on the drawing is an example ONLY!
Connection between backing wall and frame is specific for each single project. It is obligatory to observe different projects' features. All final decisions about materials used, interface finishing, etc. should be approved by the structural / façade engineer responsible for the specific project.

scale : 1:1

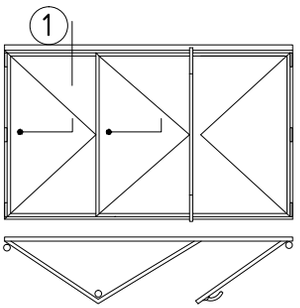
D75-22

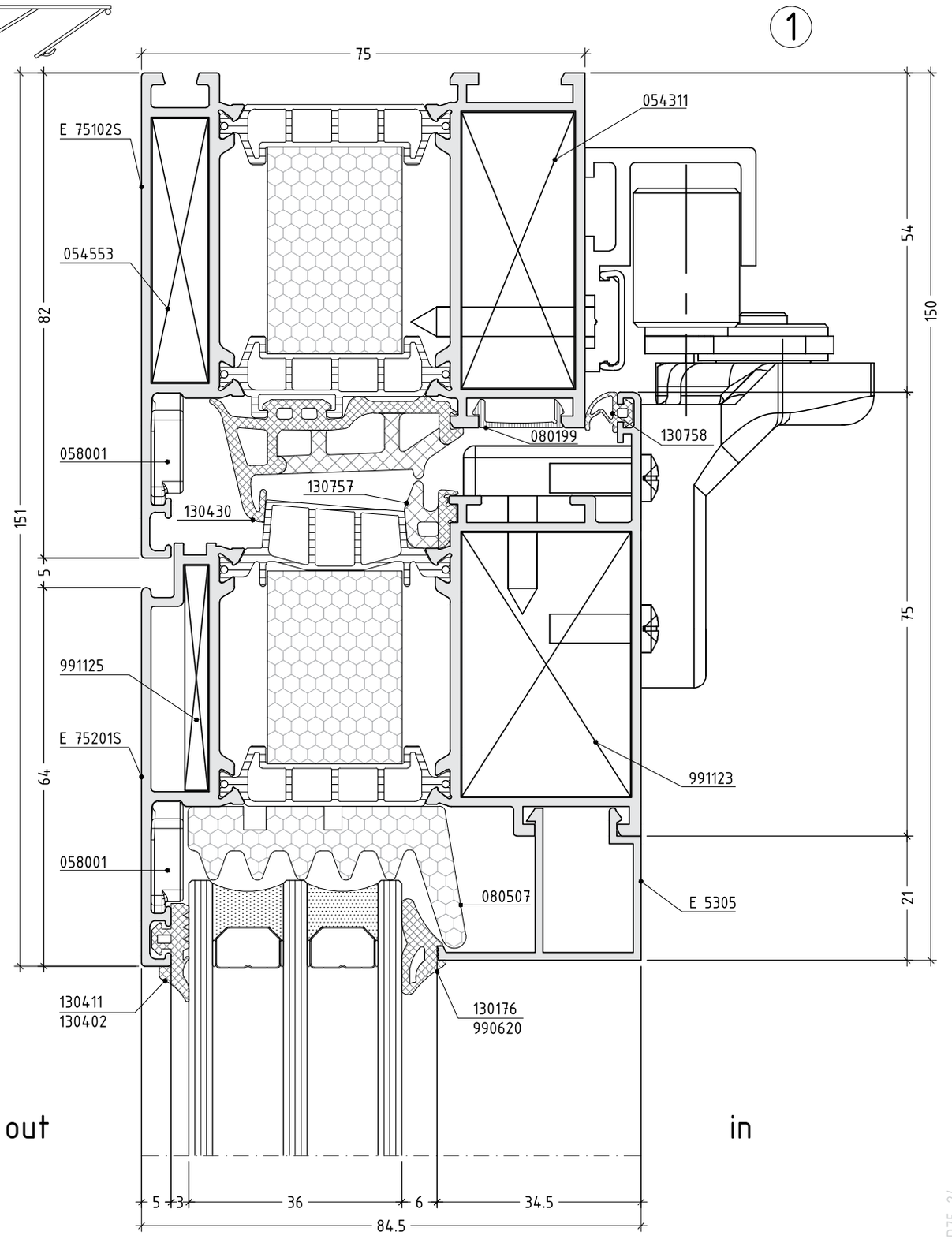


Interface shown on the drawing is an example ONLY!
Connection between backing wall and frame is specific for each single project. It is obligatory to observe different projects' features. All final decisions about materials used, interface finishing, etc. should be approved by the structural / façade engineer responsible for the specific project.

scale : 1:1

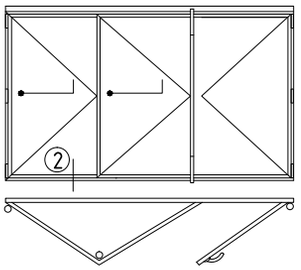
D75-23



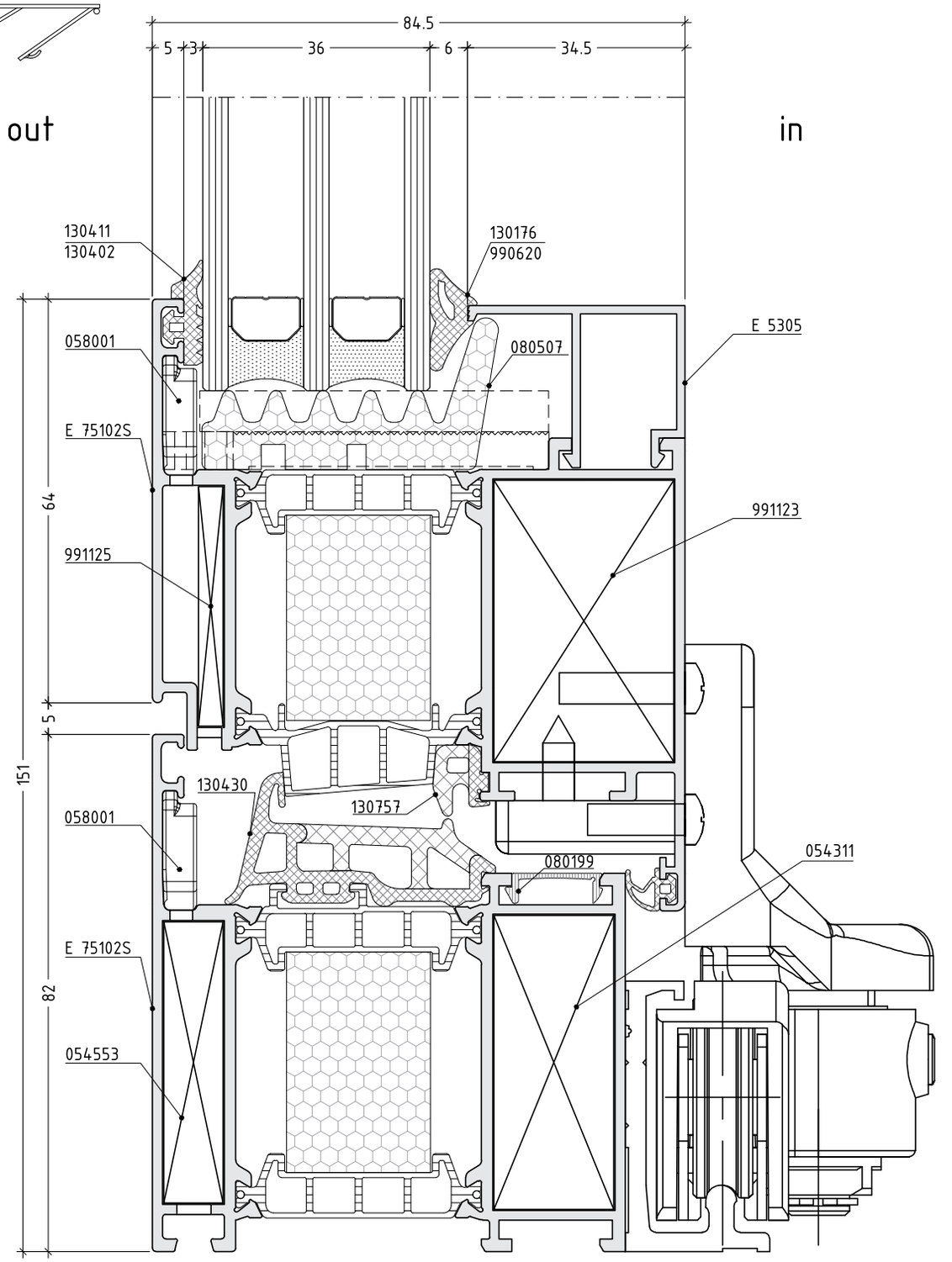


scale : 1:1

D75-24

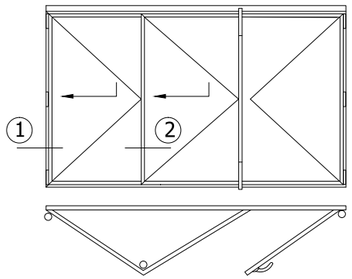


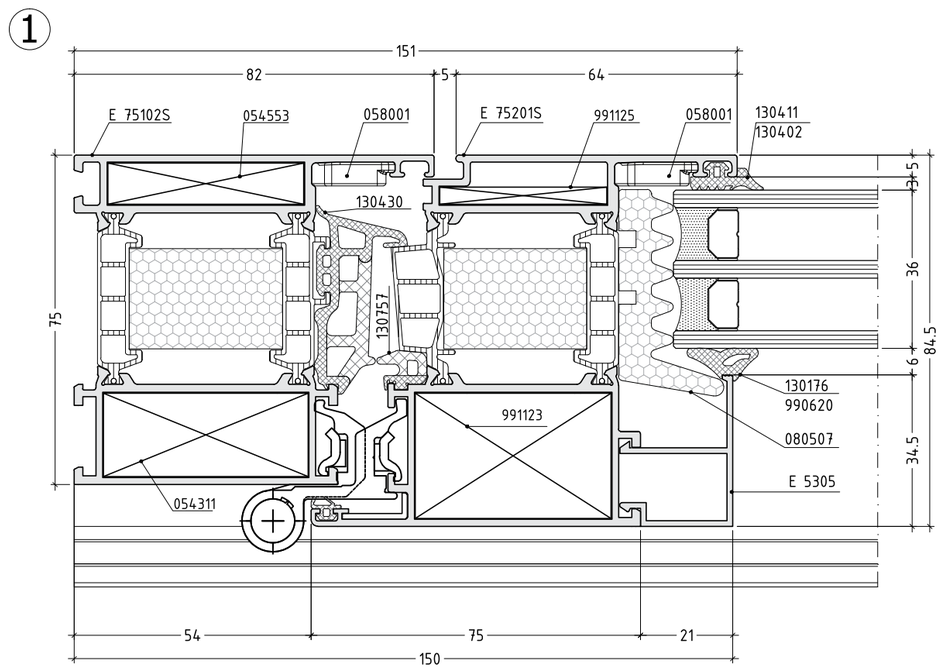
2

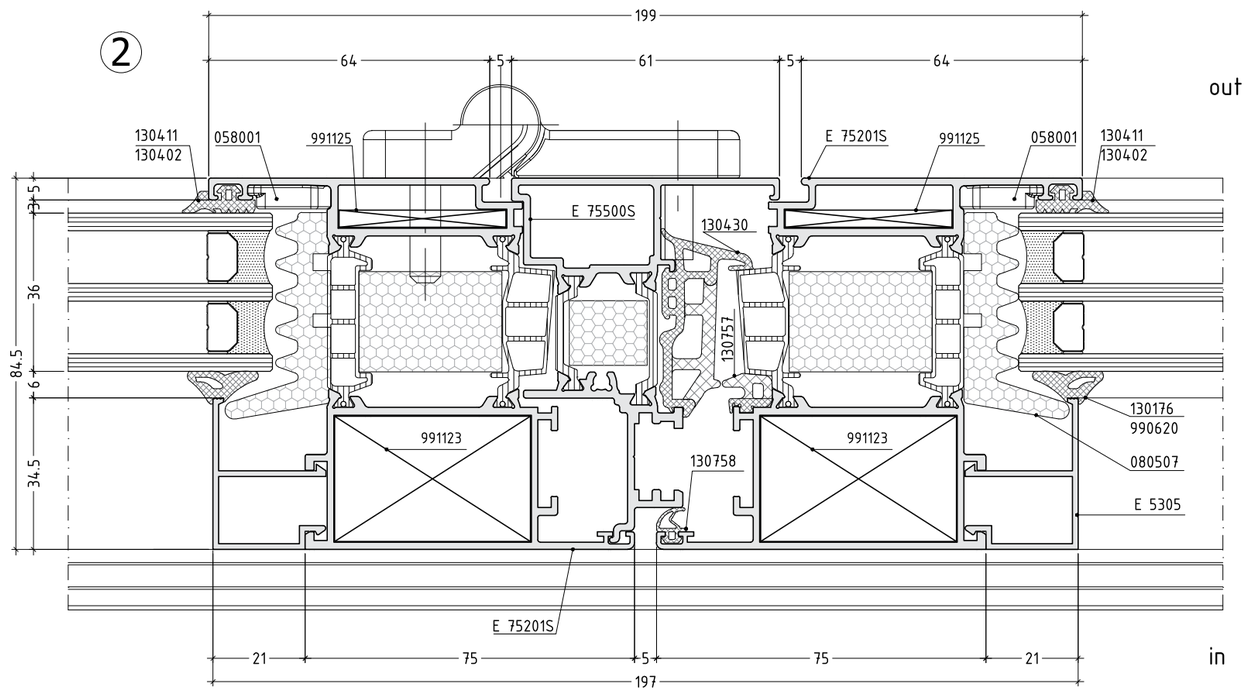


scale : 1:1

D75-25

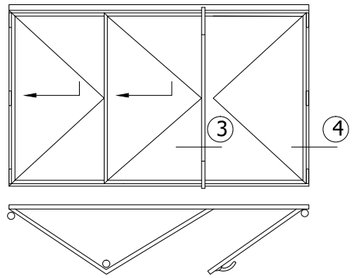


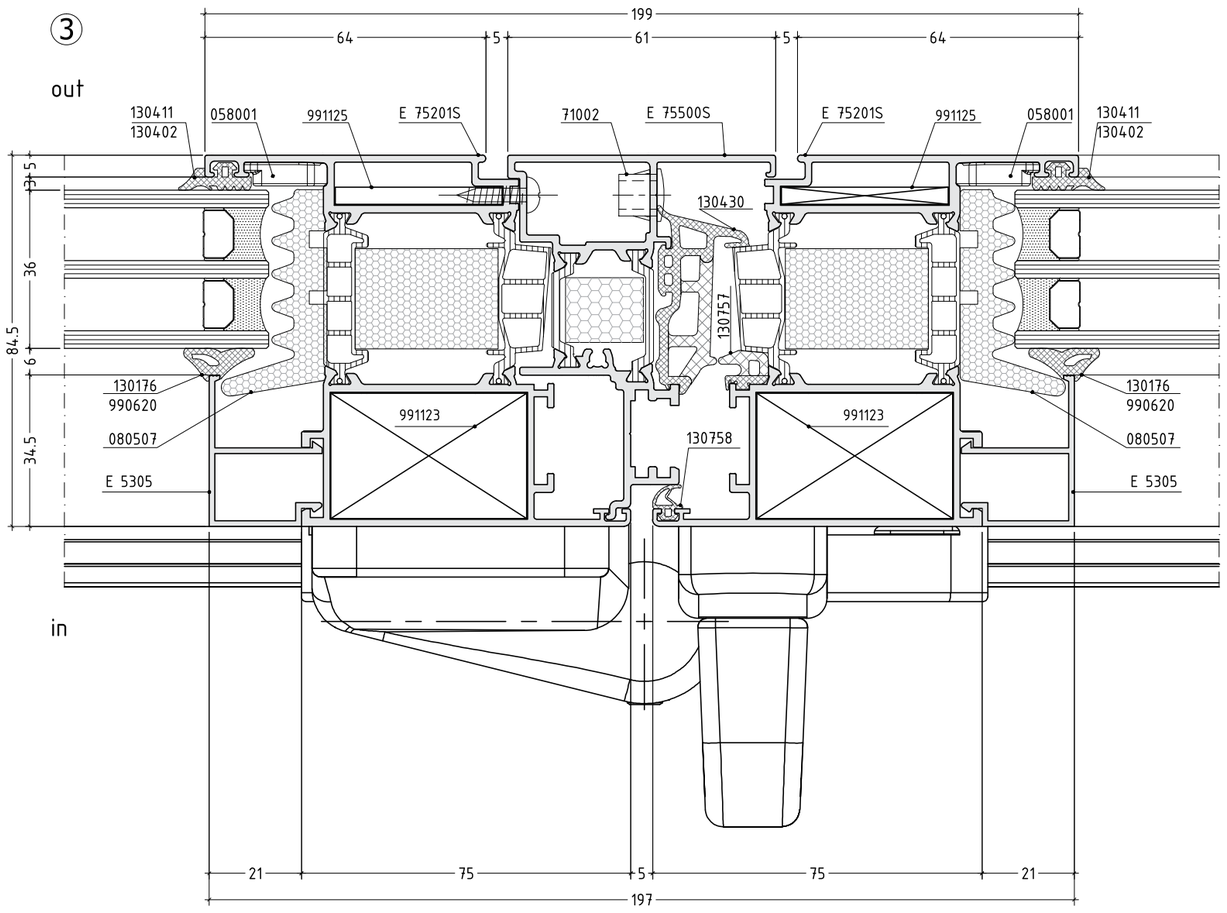


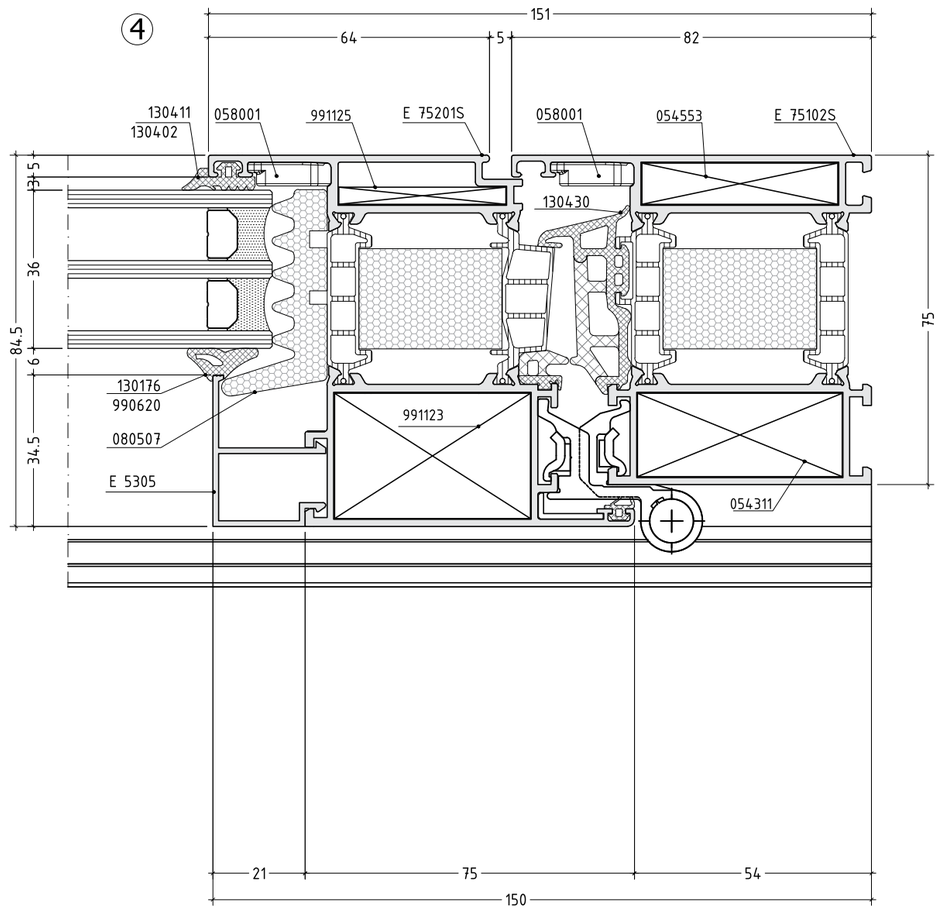


scale : 0.75

D75-26

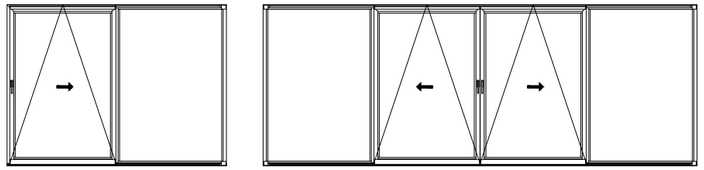


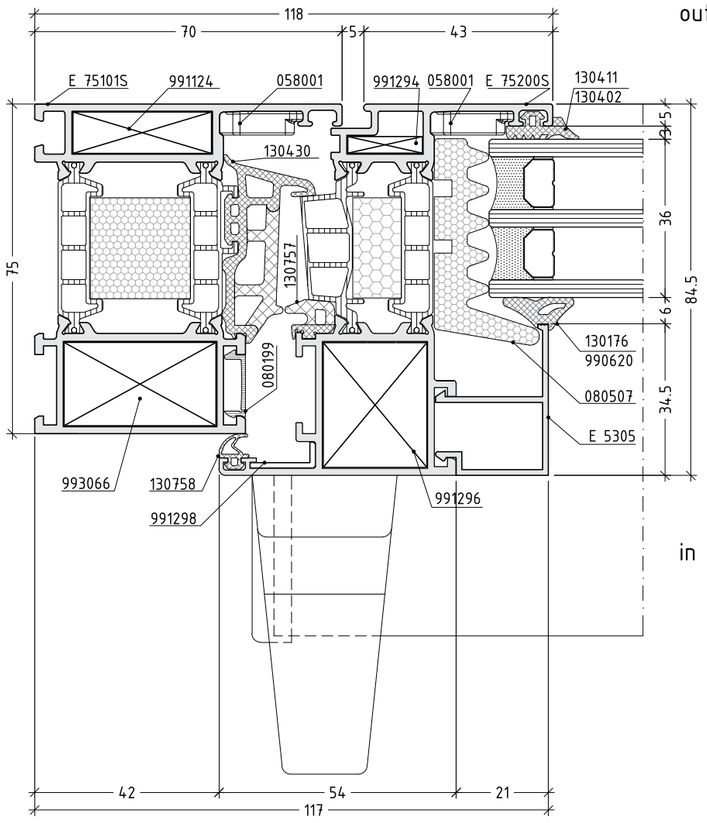


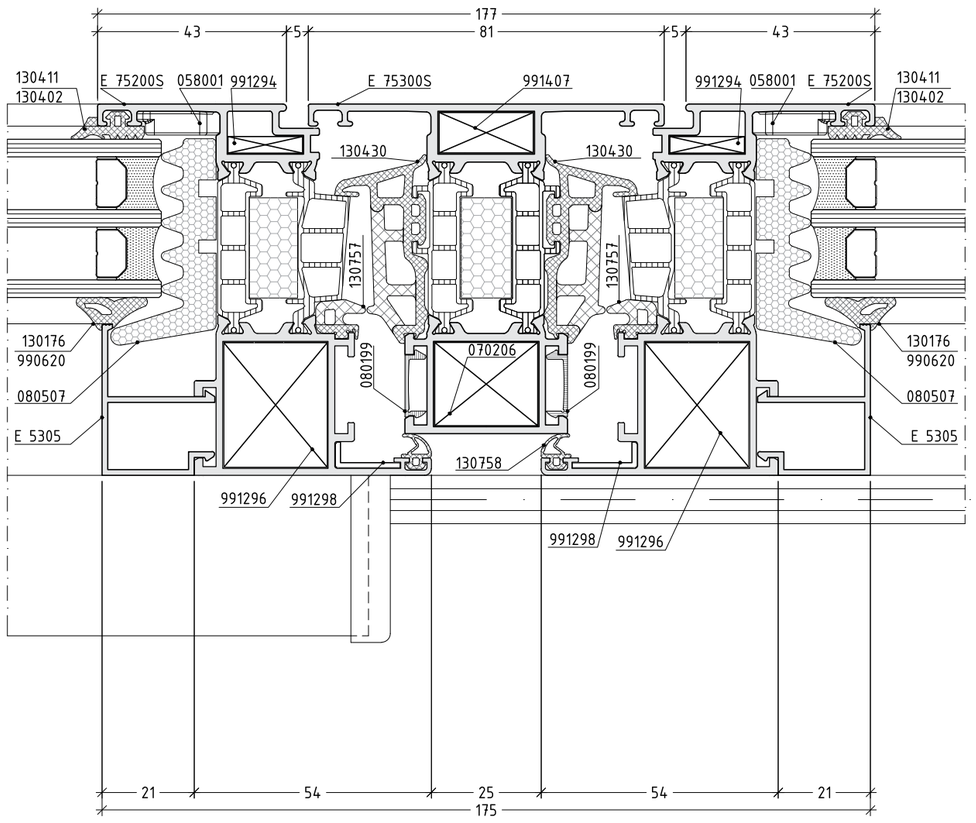


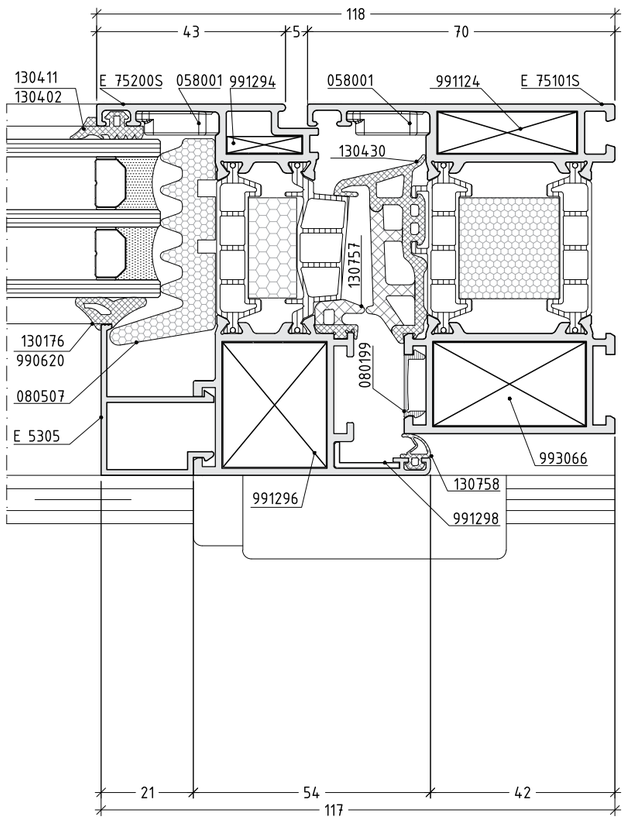
scale : 0.75

D75-27



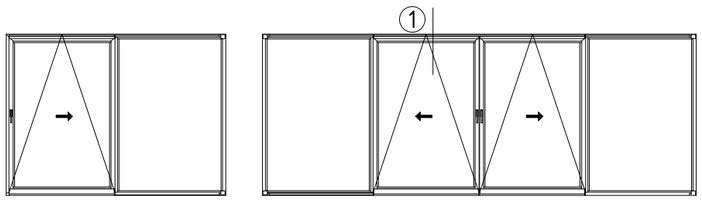


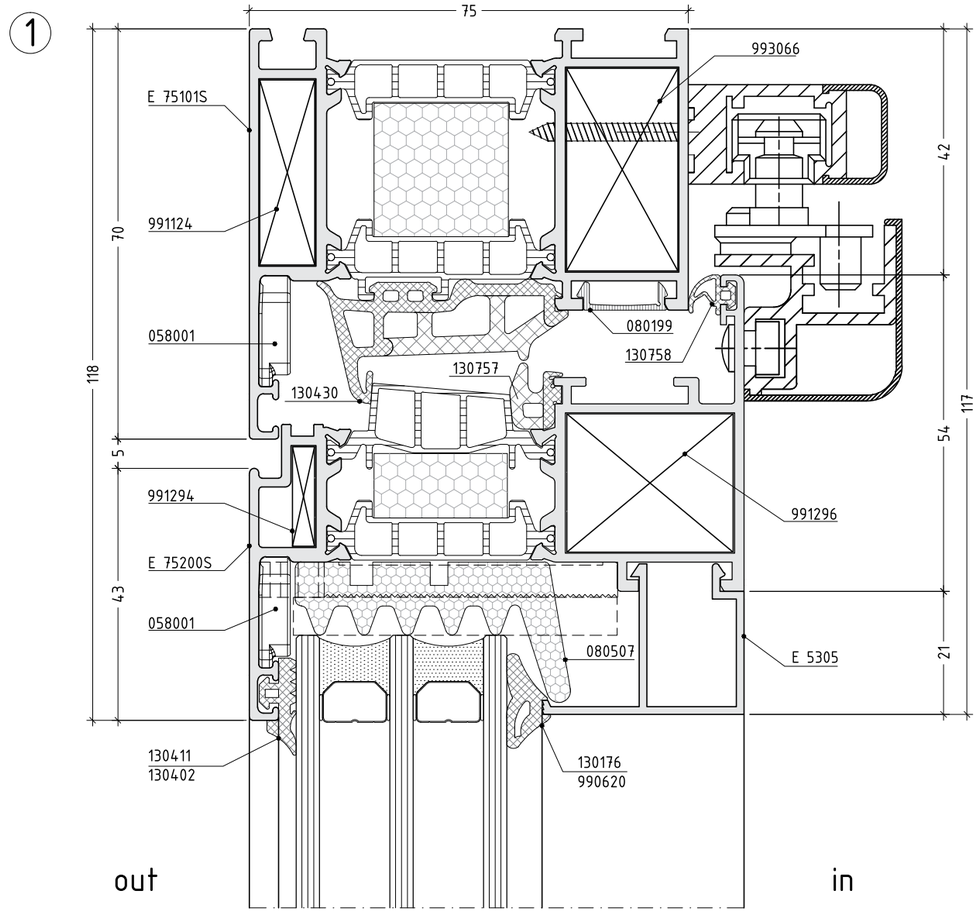




scale : 0.75

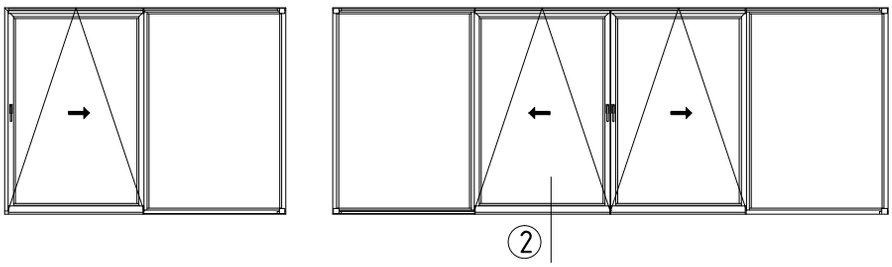
D75-30

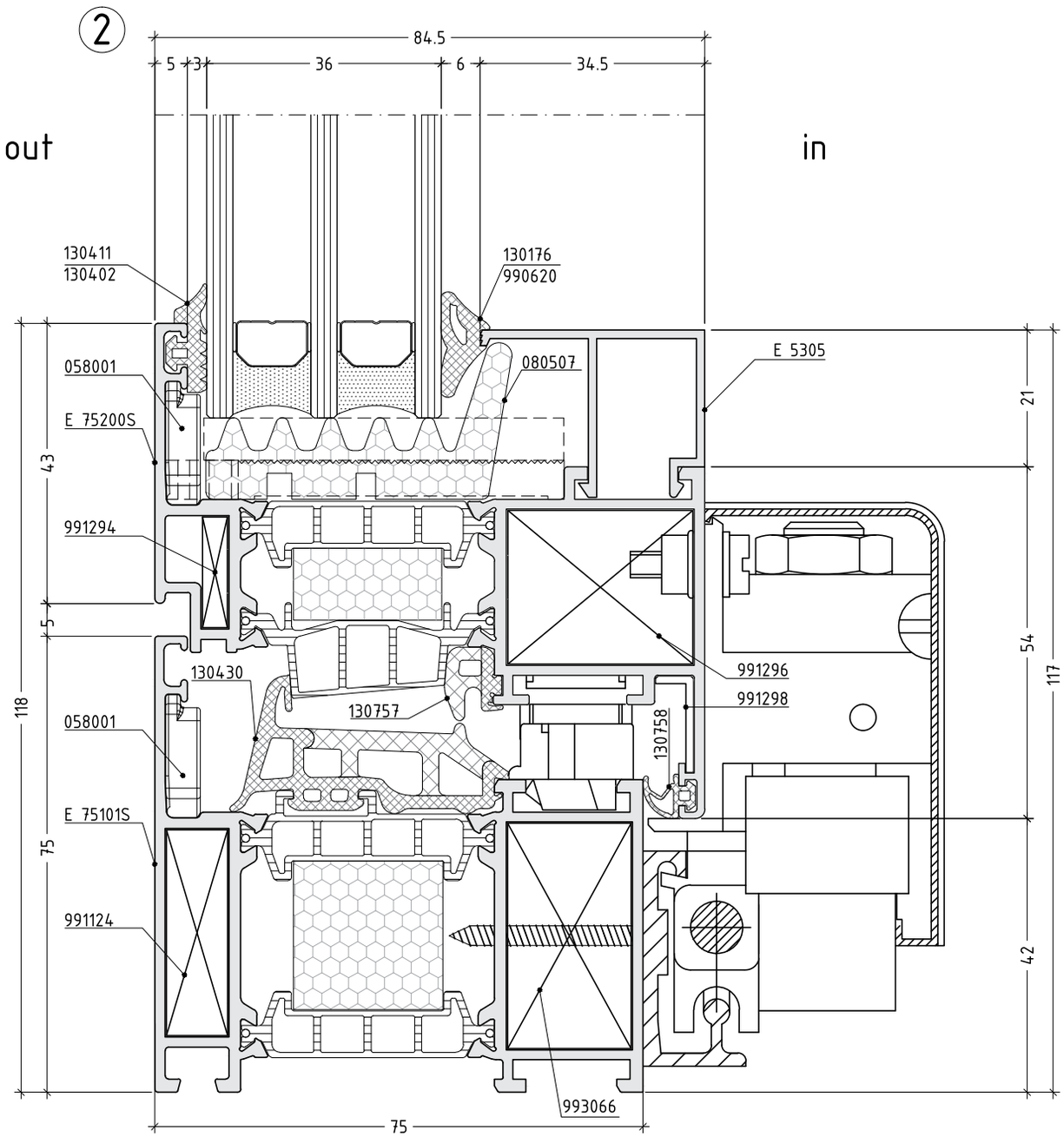




scale : 1:1

D75-28

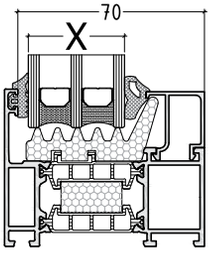
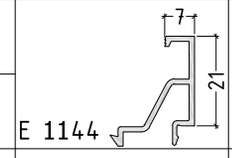
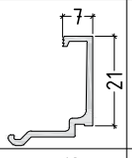
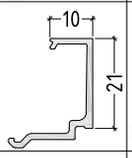
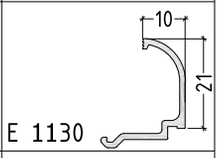
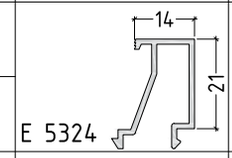
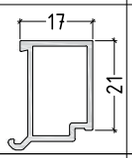
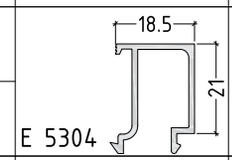
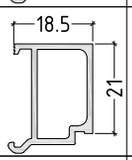
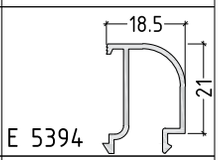
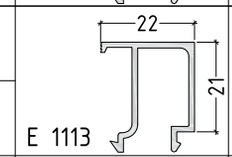
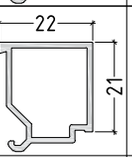
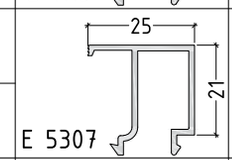
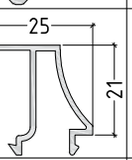
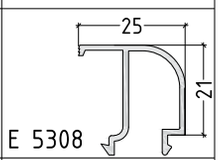
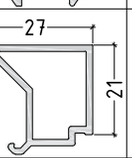
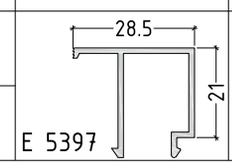




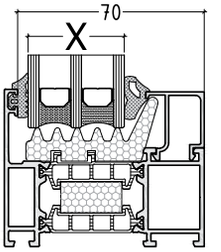
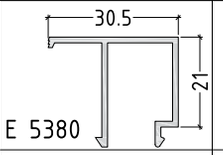
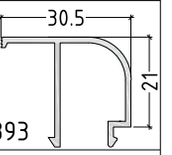
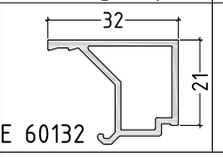
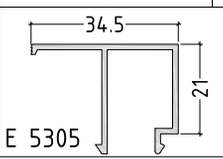
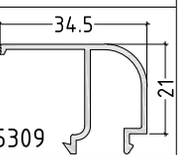
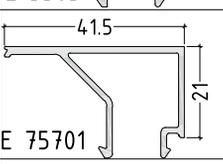
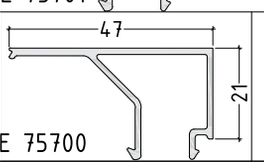
scale : 1:1

D75-29

GLAZING OPTIONS

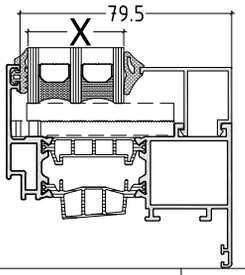
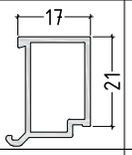
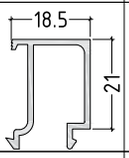
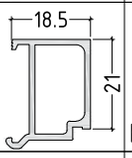
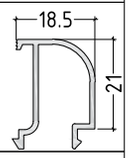
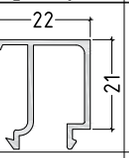
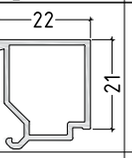
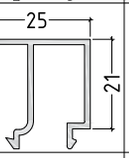
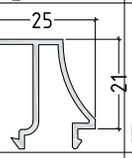
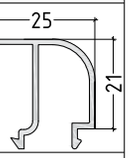
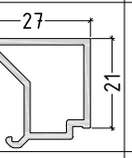
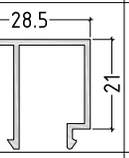
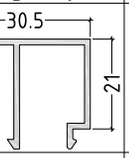
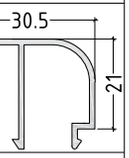
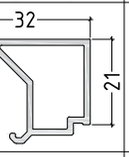
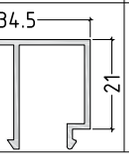
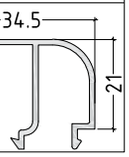
GLAZING OPTIONS								
external gaskets	INTERNAL GASKETS					GLAZING BEADS		
3 mm 130411	5 – 6 mm 130176		7 – 8 mm 130177					
130402	5 mm 990619	6 mm 130207	7 mm 130207	8 mm 130208	10 mm 994412			
4 mm 130153	X mm					1	2	3
130411 130402	55	54	53	52	50			
130153	54	53	52	51	49			
130411 130402	52	51	50	49	47			
130153	51	50	49	48	46			
130411 130402	48	47	46	45	43			
130153	47	46	45	44	42			
130411 130402	45	44	43	42	40			
130153	44	43	42	41	39			
130411 130402	43	42	41	40	38			
130153	42	41	40	39	37			
130411 130402	40	39	38	37	35			
130153	39	38	37	36	34			
130411 130402	37	36	35	34	32			
130153	36	35	34	33	31			
130411 130402	35	34	33	32	30			
130153	34	33	32	31	29			
130411 130402	34	33	32	31	29			
130153	33	32	31	30	28			

T75-01

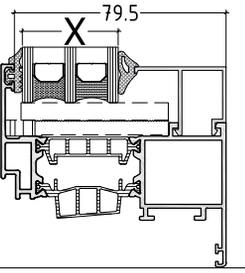
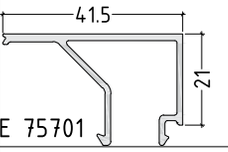
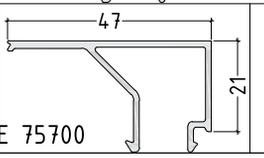
GLAZING OPTIONS								
external gaskets	INTERNAL GASKETS					GLAZING BEADS		
3 mm 130411 130402 4 mm 130153	5 - 6 mm 130176		7 - 8 mm 130177					
	5 mm 990619	6 mm 130207	7 mm 130207	8 mm 130208	10 mm 994412			
	X mm					1	2	3
130411 130402	31	30	29	28	26			
130153	30	29	28	27	25			
130411 130402	30	29	28	27	25			
130153	29	28	27	26	24			
130411 130402	27	26	25	24	22			
130153	26	25	24	23	21			
130411 130402	20	19	18	17	15			
130153	19	18	17	16	14			
130411 130402	15	14	13	12	10			
130153	14	13	12	11	9			

Note:
Tolerance in dimension chain is ±0.5 mm

T75-02

GLAZING OPTIONS								
external gaskets	INTERNAL GASKETS					GLAZING BEADS		
3 mm 130411	5 - 6 mm 130176		7 - 8 mm 130177					
130402	5 mm 990619	6 mm 130207	7 mm 130207	8 mm 130208	10 mm 994412			
4 mm 130153	X mm					1	2	3
130411 130402	54	53	52	51	49			
130153	53	52	51	50	48			
130411 130402	53	52	51	50	48			
130153	52	51	50	49	47			
130411 130402	49	48	47	46	44			
130153	48	47	46	45	43			
130411 130402	46	45	44	43	41			
130153	45	44	43	42	40			
130411 130402	44	43	42	41	39			
130153	43	42	41	40	38			
130411 130402	43	42	41	40	38			
130153	42	41	40	39	37			
130411 130402	41	40	39	38	36			
130153	40	39	38	37	35			
130411 130402	39	38	37	36	34			
130153	38	37	36	35	33			
130411 130402	37	36	35	34	32			
130153	36	35	34	33	31			

T75-03

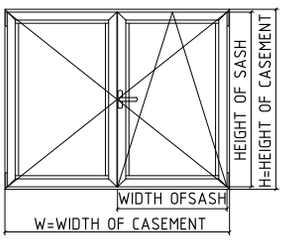
GLAZING OPTIONS								
external gaskets	INTERNAL GASKETS					GLAZING BEADS		
3 mm 130411 130402 4 mm 130153	5 - 6 mm 130176		7 - 8 mm 130177					
	5 mm 990619	6 mm 130207	7 mm 130207	8 mm 130208	10 mm 994412			
	X mm					1	2	3
130411 130402	30	29	28	27	25			
130153	29	28	27	26	24			
130411 130402	24	23	22	21	19			
130153	23	22	21	20	18			

Note:
Tolerance in dimension chain is ±0.5 mm

T75-04

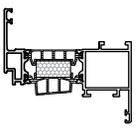
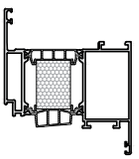
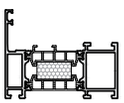
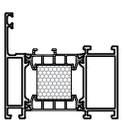
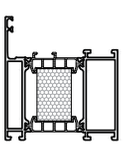
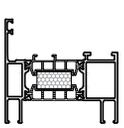
CUTTING LISTS

CALCULATION OF CUTTING LENGHT FOR ONE LEAF WINDOW



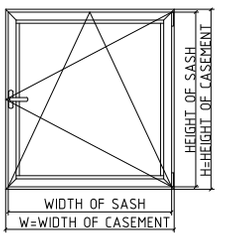
SASH PROFILE SELECTION

FRAME PROFILE SELECTION

FRAME PROFILE SELECTION			E 75200S 	E 75201S 
E 75100S 		WIDTH OF SASH	$\frac{W - 68}{2}$	$\frac{W - 68}{2}$
		HEIGHT OF SASH	H - 63	H - 63
		HEIGHT OF SECONDARY SASH PROFILE	H - 135	H - 135
E 75101S 		WIDTH OF SASH	$\frac{W - 90}{2}$	$\frac{W - 90}{2}$
		HEIGHT OF SASH	H - 85	H - 85
		HEIGHT OF SECONDARYSASH PROFILE	H - 157	H - 157
E 75102S 		WIDTH OF SASH	$\frac{W - 114}{2}$	$\frac{W - 114}{2}$
		HEIGHT OF SASH	H - 109	H - 109
		HEIGHT OF SECONDARY SASH PROFILE	H - 181	H - 181
E 75105S 		WIDTH OF SASH	$\frac{W - 88}{2}$	$\frac{W - 88}{2}$
		HEIGHT OF SASH	H - 83	H - 83
		HEIGHT OF SECONDARY SASH PROFILE	H - 155	H - 155

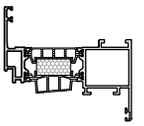
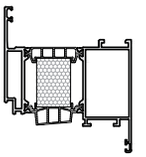
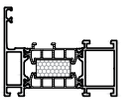
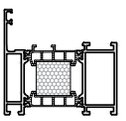
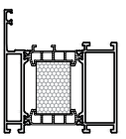
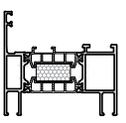
T75-05

CALCULATION OF CUTTING LENGHT FOR ONE LEAF WINDOW



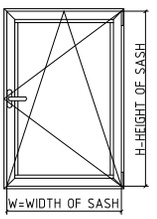
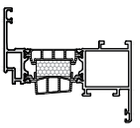
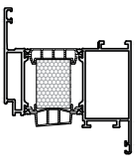
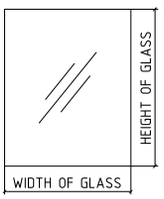
SASH PROFILE SELECTION

FRAME PROFILE SELECTION

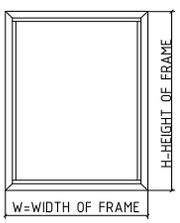
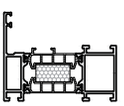
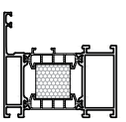
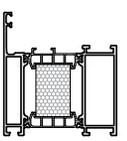
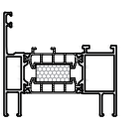
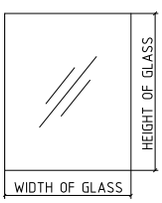
		E 75200S 	E 75201S 
E 75100S 	WIDTH OF SASH	W - 63	W - 63
	HEIGHT OF SASH	H - 63	H - 63
E 75101S 	WIDTH OF SASH	W - 85	W - 85
	HEIGHT OF SASH	H - 85	H - 85
E 75102S 	WIDTH OF SASH	W - 109	W - 109
	HEIGHT OF SASH	H - 109	H - 109
E 75105S 	WIDTH OF SASH	W - 83	W - 83
	HEIGHT OF SASH	H - 83	H - 83

T75-06

CALCULATION OF CUTTING LENGTH FOR GLASS UNIT

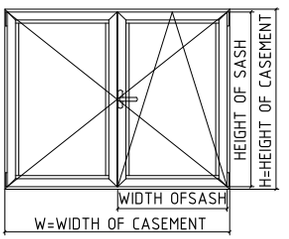
 DIMENSION OF GLASS UNIT		SASH PROFILE E 75200S 	SASH PROFILE E 75201S 
	WIDTH OF GLASS UNIT	W - 123	W - 165
	HEIGHT OF GLASS UNIT	H - 123	H - 165

CALCULATION OF CUTTING LENGTH FOR GLASS UNIT

 DIMENSION OF GLASS UNIT		FRAME PROFILE E 75100S 	FRAME PROFILE E 75101S 	FRAME PROFILE E 75102S 	FRAME PROFILE E 75105S 
	WIDTH OF GLASS UNIT	W - 88	W - 110	W - 134	W - 109
	HEIGHT OF GLASS UNIT	H - 88	H - 110	H - 134	H - 88

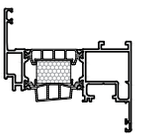
T75-07

CALCULATION OF CUTTING LENGHT FOR ONE LEAF WINDOW

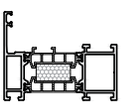
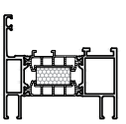


SASH PROFILE SELECTION

E 75220S

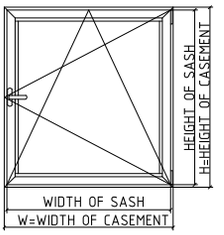


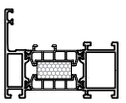
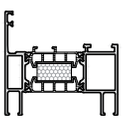
FRAME PROFILE SELECTION

E 75100S 	WIDTH OF SASH	$\frac{W - 64}{2}$
	HEIGHT OF SASH	H - 58
	HEIGHT OF SECONDARY SASH PROFILE	H - 134
E 75105S 	WIDTH OF SASH	$\frac{W - 83}{2}$
	HEIGHT OF SASH	H - 78
	HEIGHT OF SECONDARY SASH PROFILE	H - 154

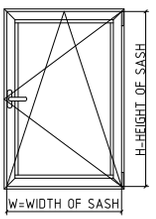
T75-08

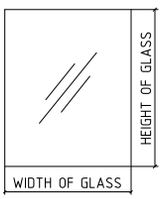
CALCULATION OF CUTTING LENGHT FOR ONE LEAF WINDOW



FRAME PROFILE SELECTION		SASH PROFILE SELECTION: E 75220S
E 75100S 	WIDTH OF SASH	W - 58
	HEIGHT OF SASH	H - 58
E 75105S 	WIDTH OF SASH	W - 78
	HEIGHT OF SASH	H - 78

CALCULATION OF CUTTING LENGTH FOR GLASS UNIT

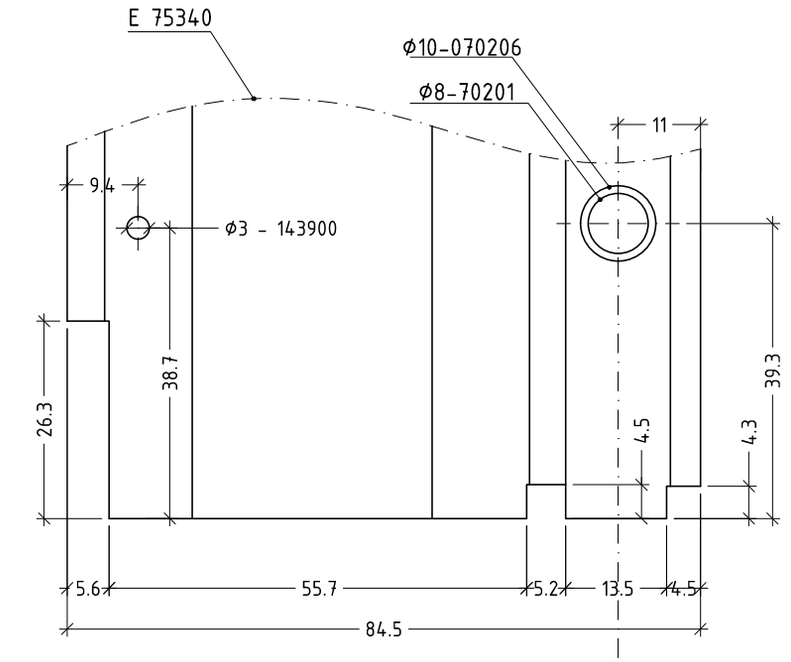


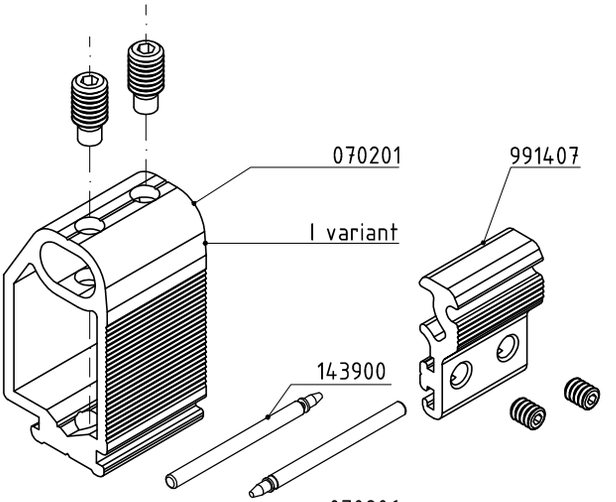
DIMENSION OF GLASS UNIT		SASH PROFILE: E 75220S
	WIDTH OF GLASS UNIT	W - 135
	HEIGHT OF GLASS UNIT	H - 135

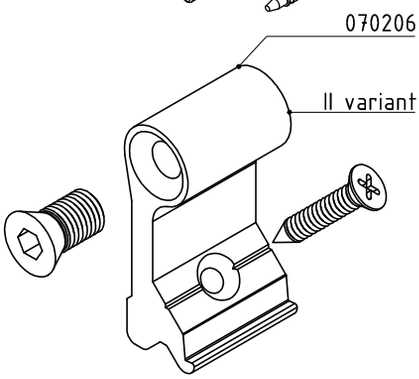
T75-09

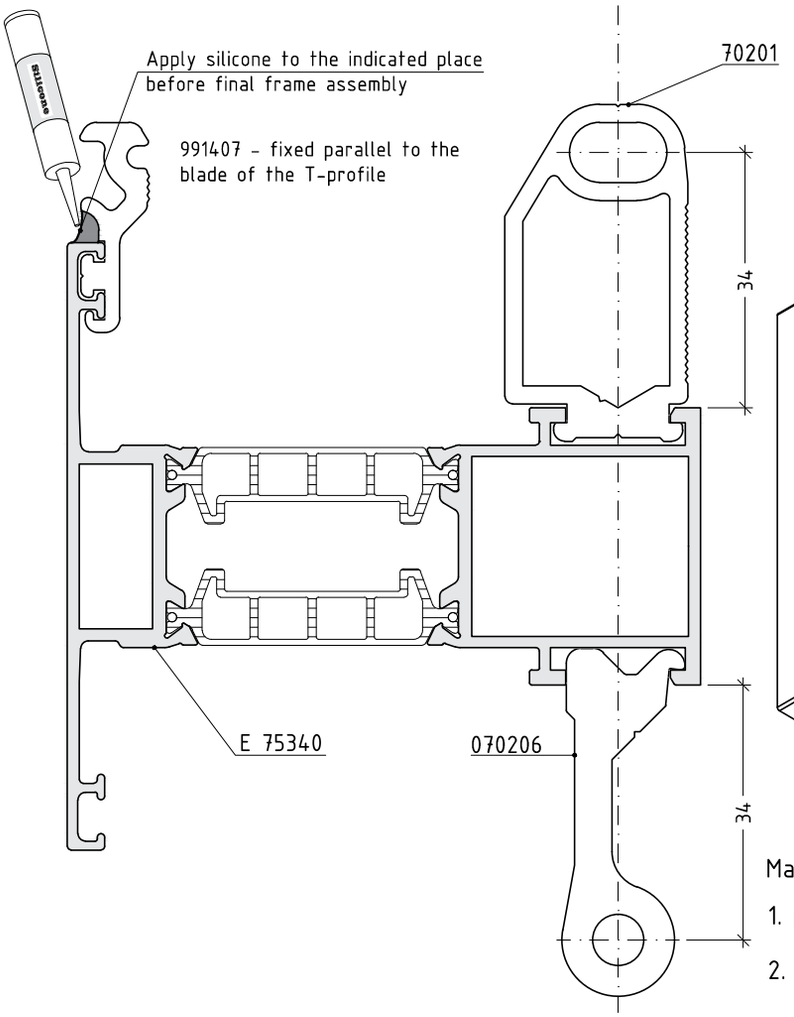
MACHINING

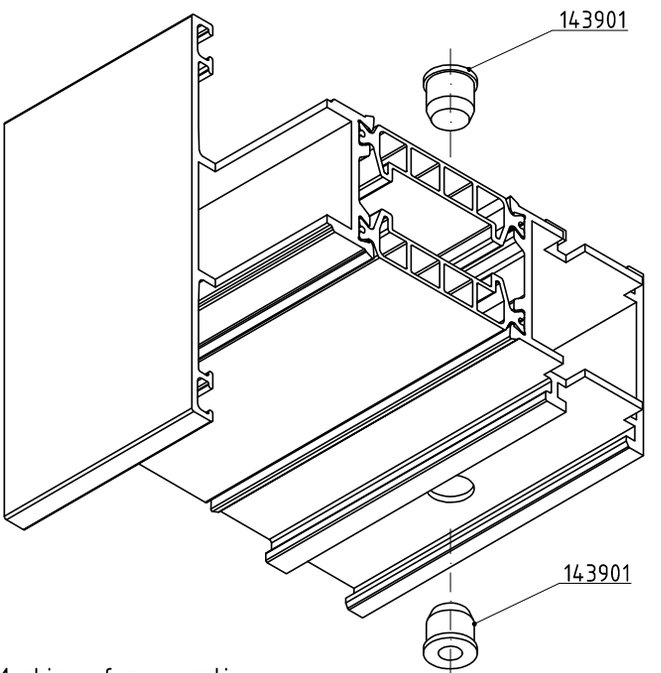
machinings of T profile E 75340











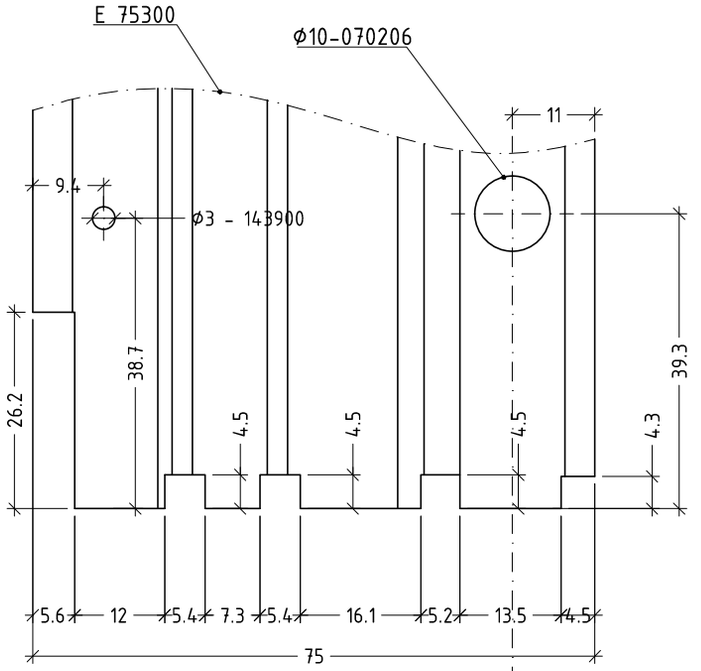
Machines for operation:

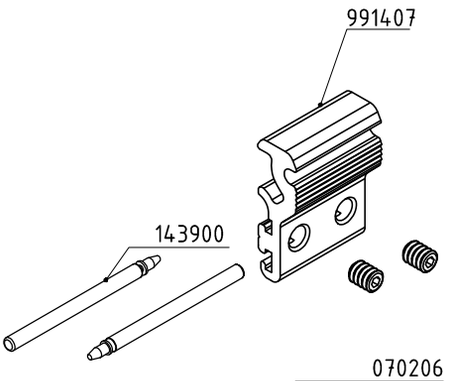
1. punching machine ETEM
2. milling machine
3. copy - router

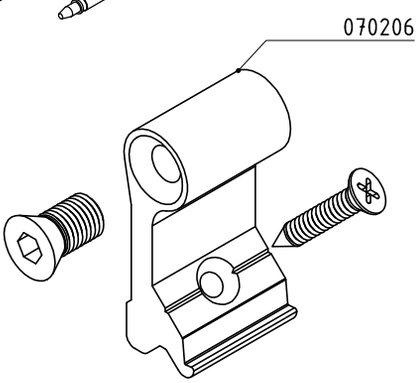
not to scale

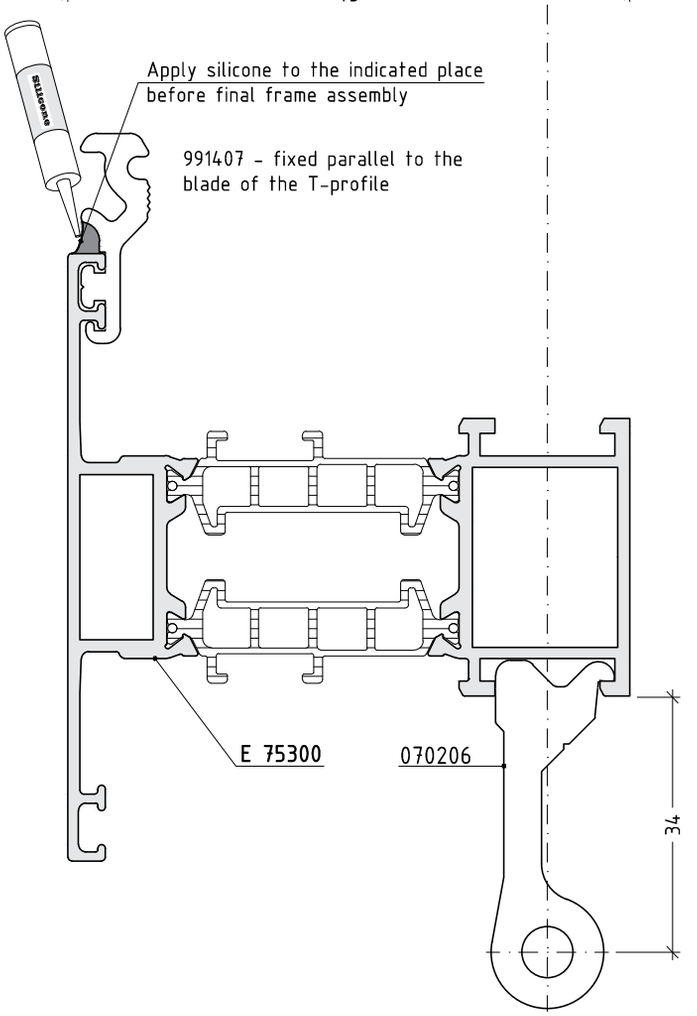
M75-01

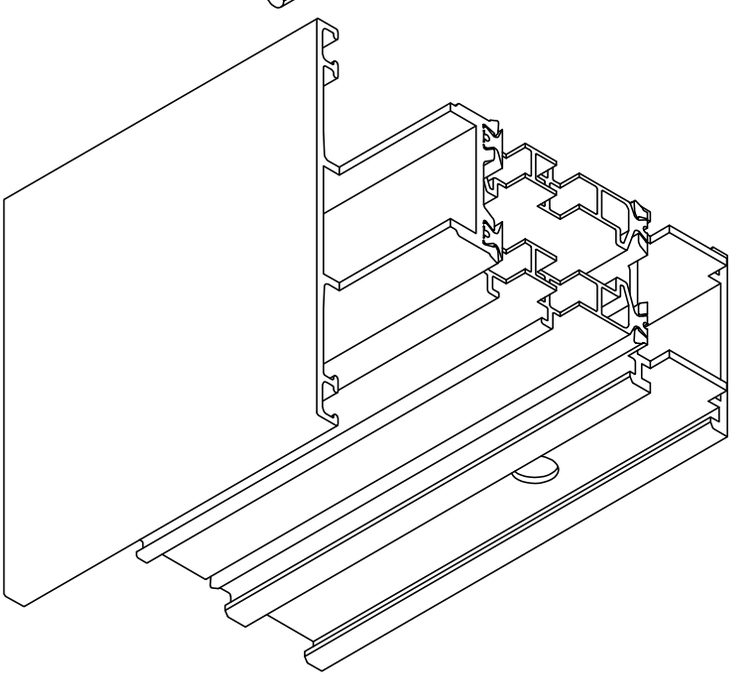
machinings of T profile E75300











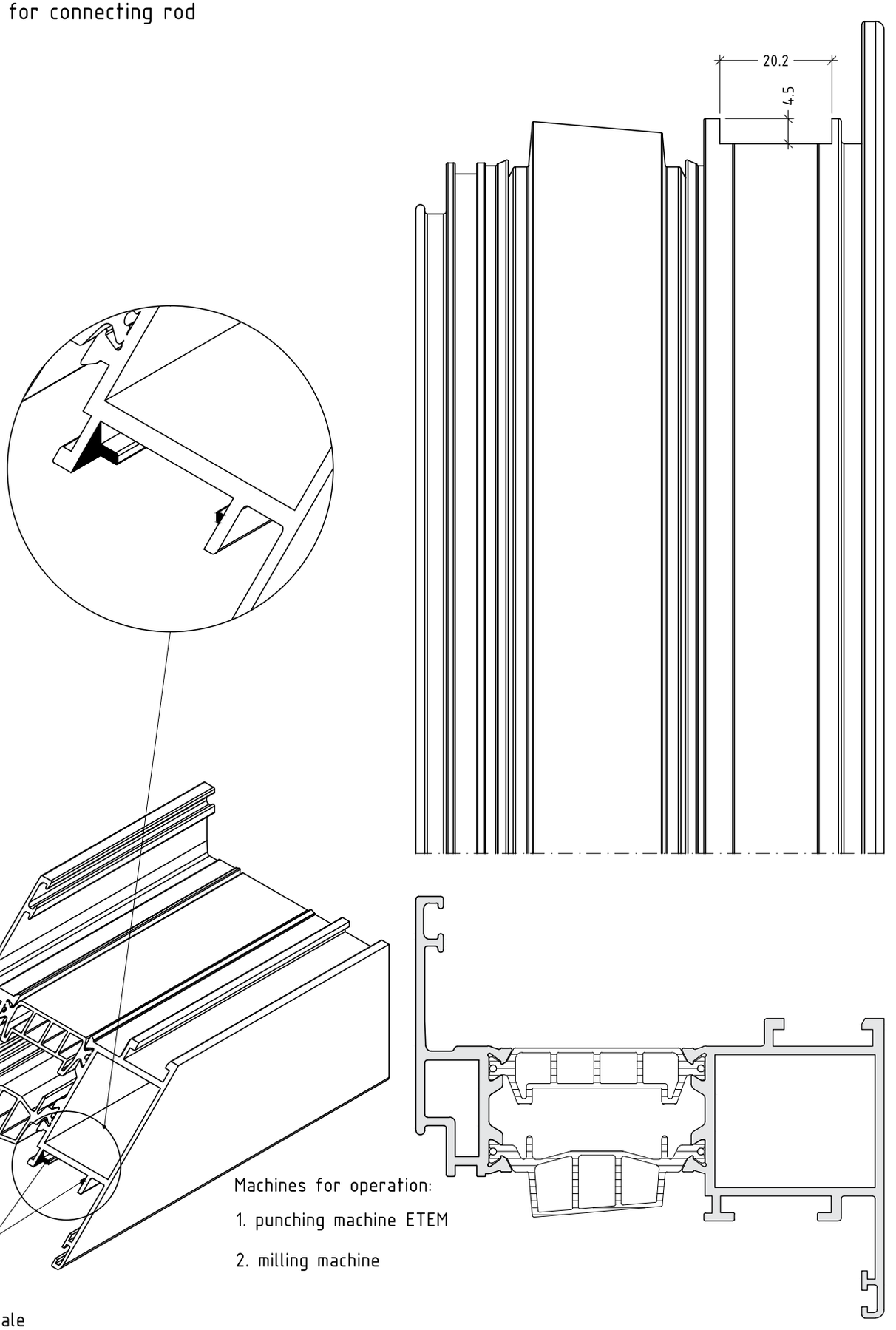
Machines for operation:

1. punching machine ETEM
2. milling machine
3. copy - router

not to scale

M75-02

machining for connecting rod



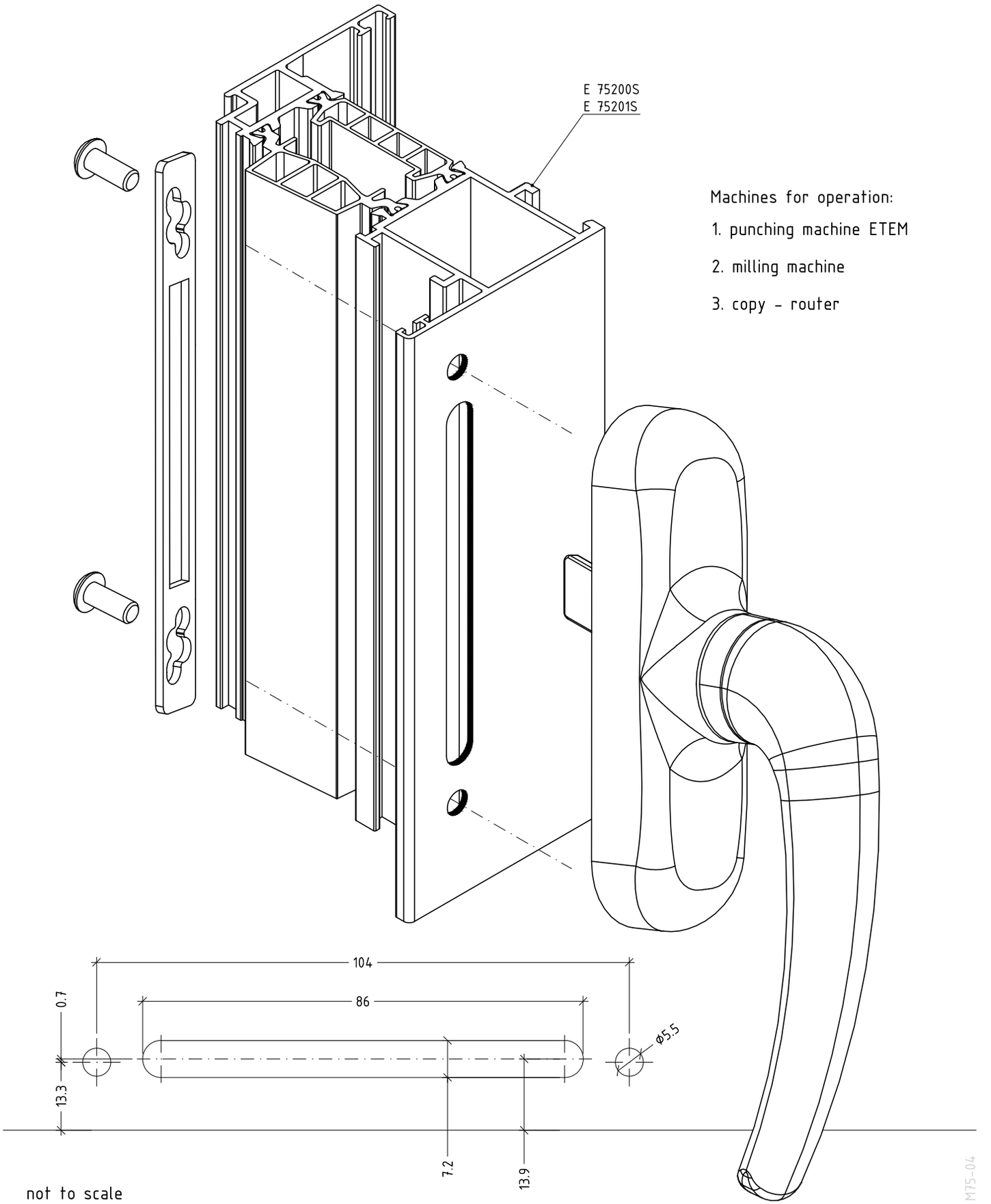
Machines for operation:

1. punching machine ETEM
2. milling machine

not to scale

M75-03

machinings to fix T/T handle



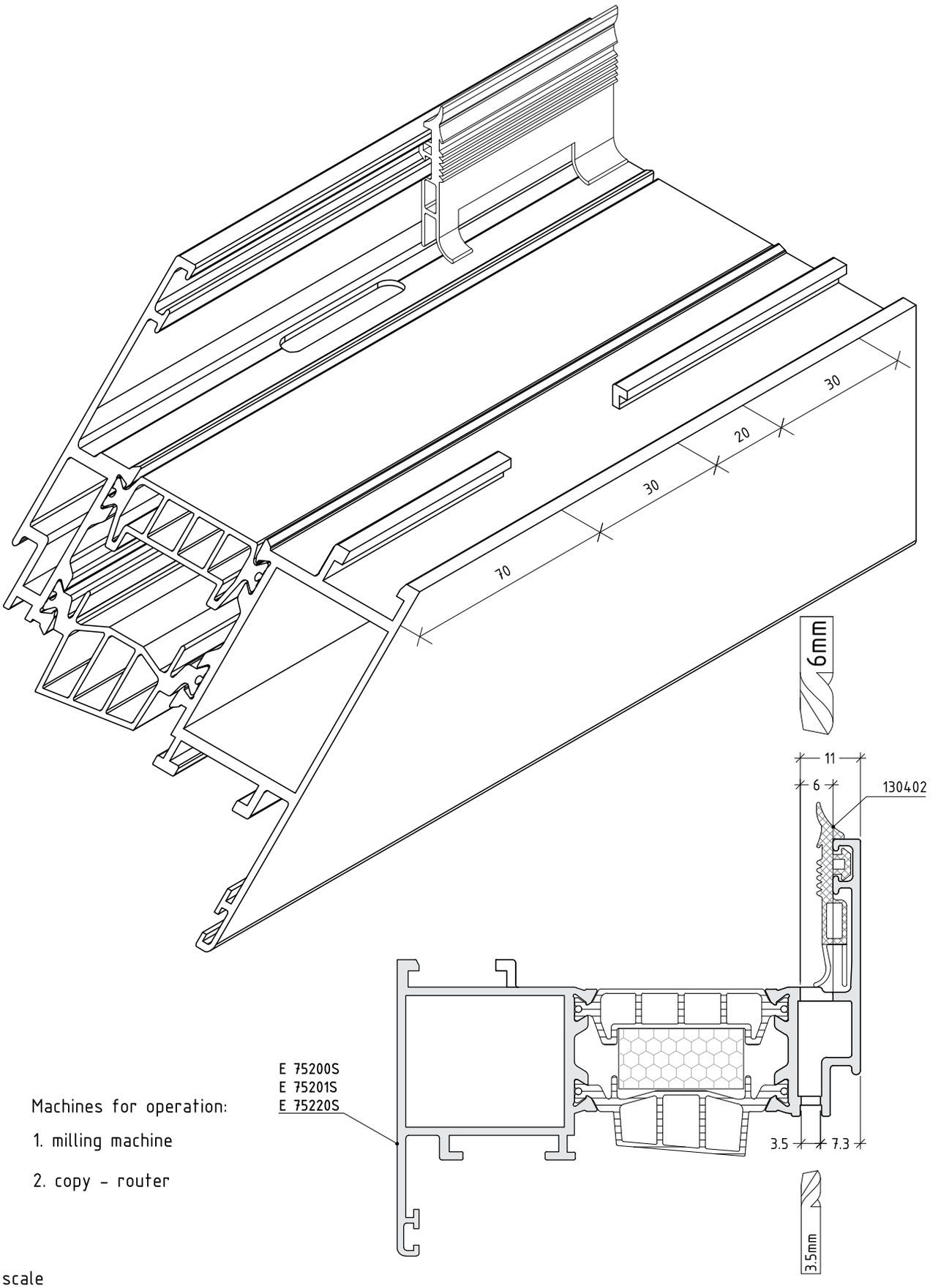
Machines for operation:

1. punching machine ETEM
2. milling machine
3. copy - router

not to scale

M175-04

machining for drain on sash and gasket



E 75200S
E 75201S
E 75220S

Machines for operation:

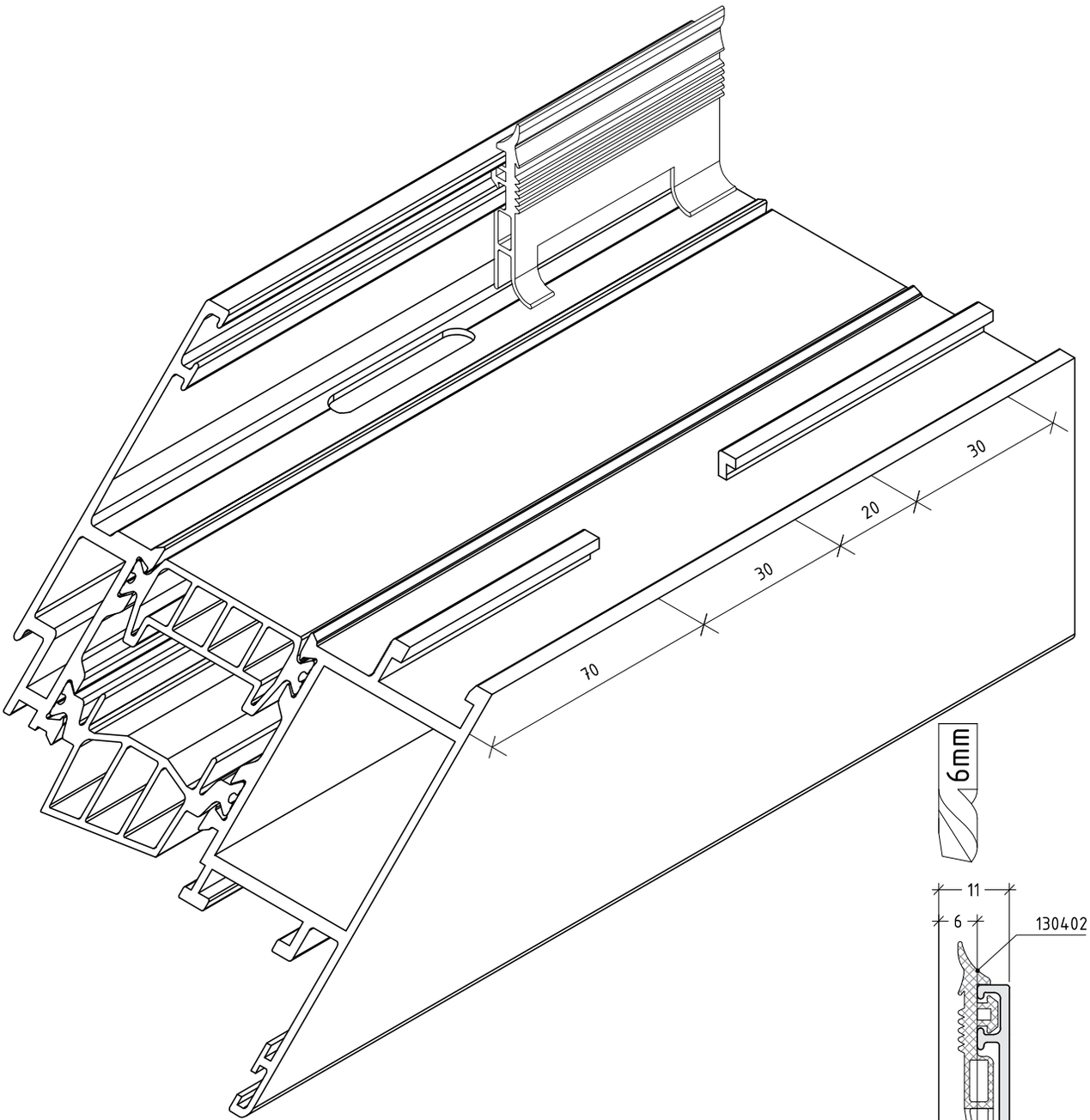
1. milling machine

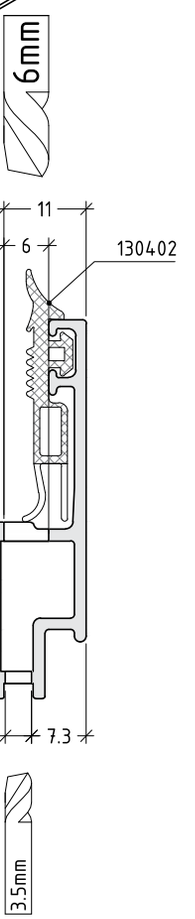
2. copy - router

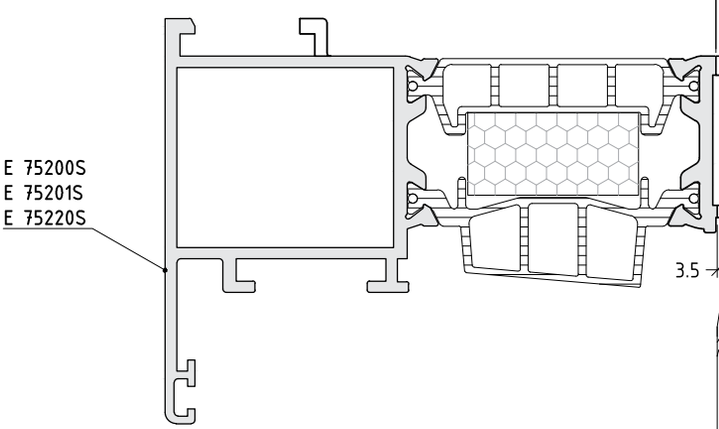
not to scale

M75-05

machining for drain on sash and gasket







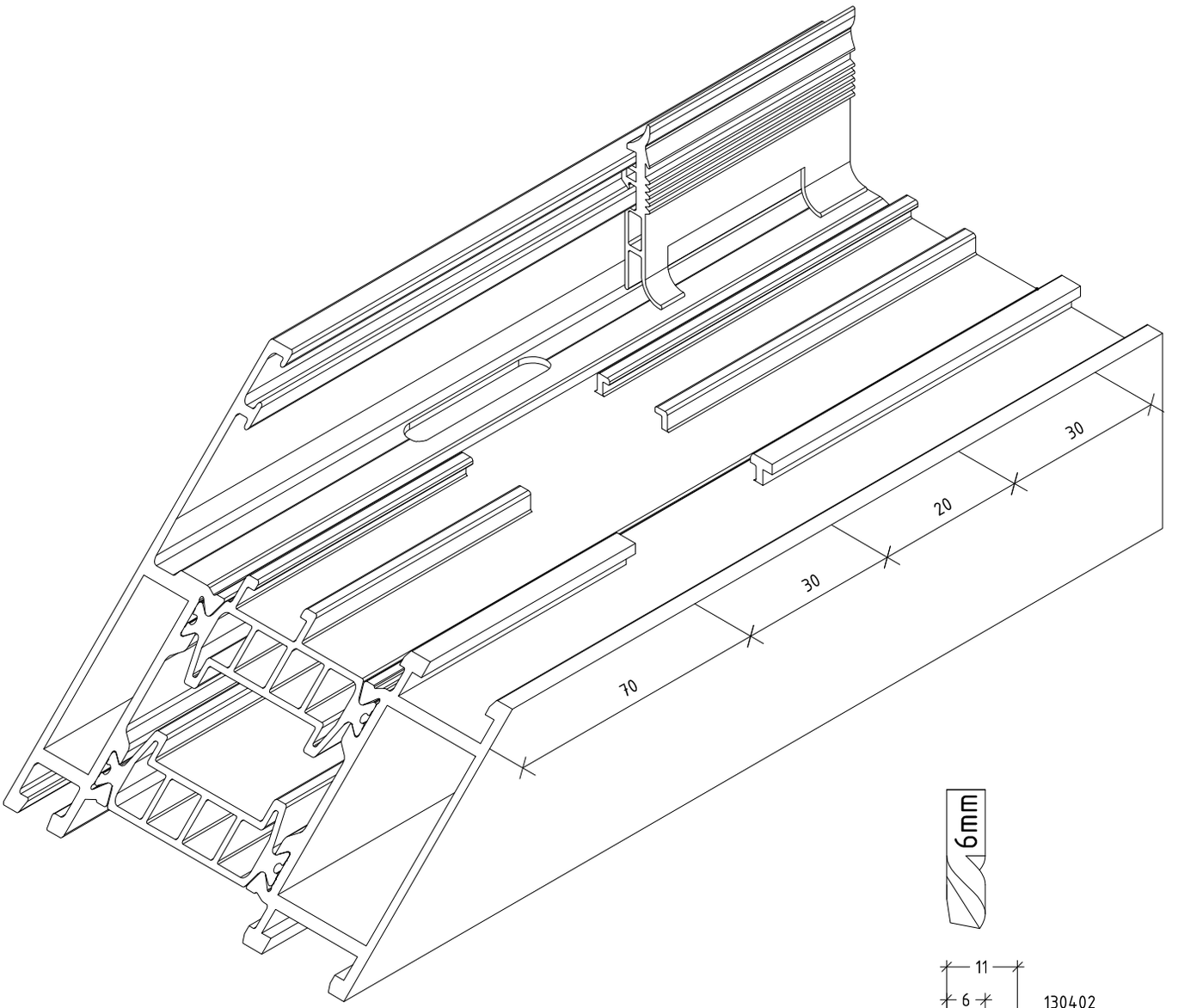
Machines for operation:

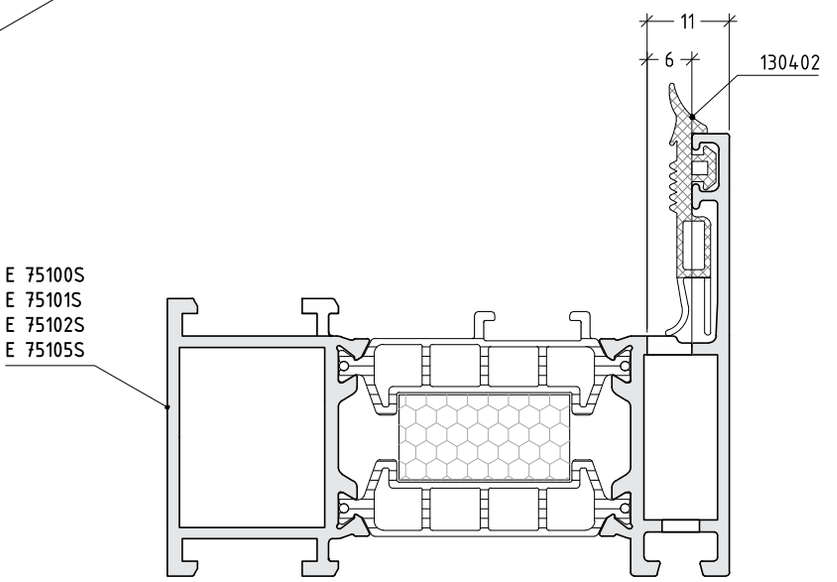
1. milling machine
2. copy - router

not to scale

M75-05

machining for drain on frame and gasket





Machines for operation:

1. milling machine
2. copy – router

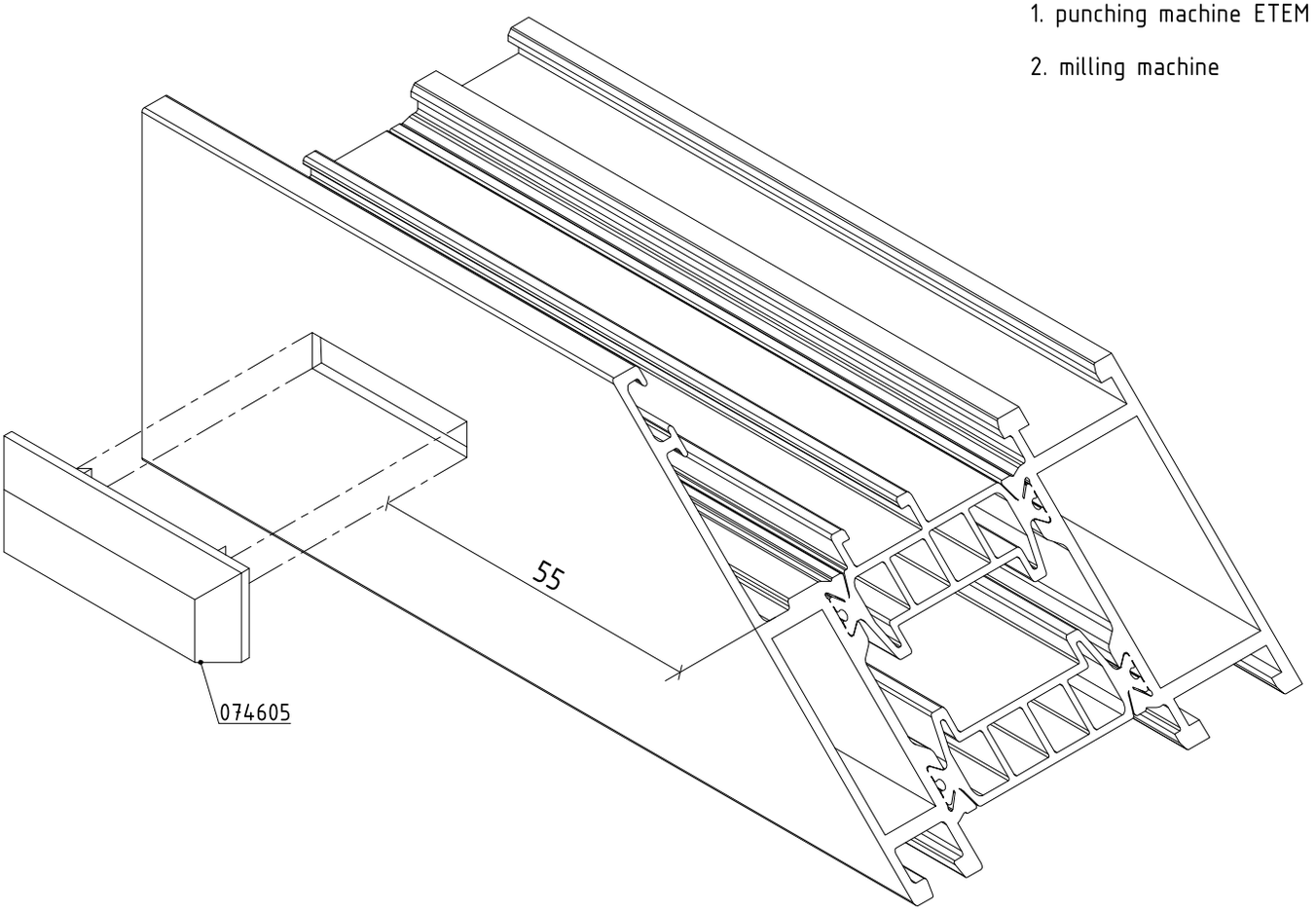
not to scale

M75-06

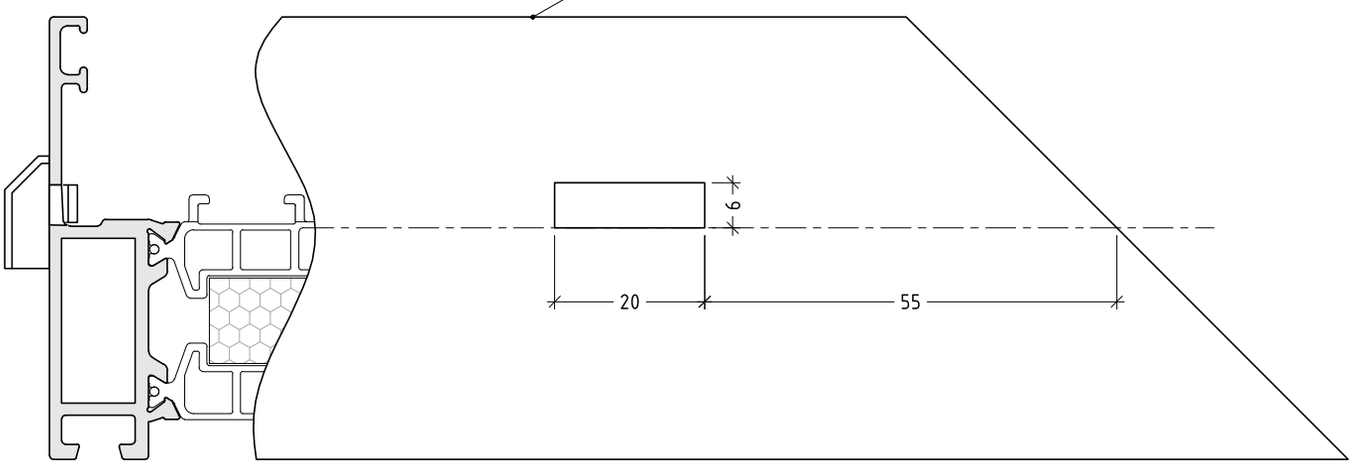
machining for drain on frame and gasket

Machines for operation:

1. punching machine ETEM
2. milling machine



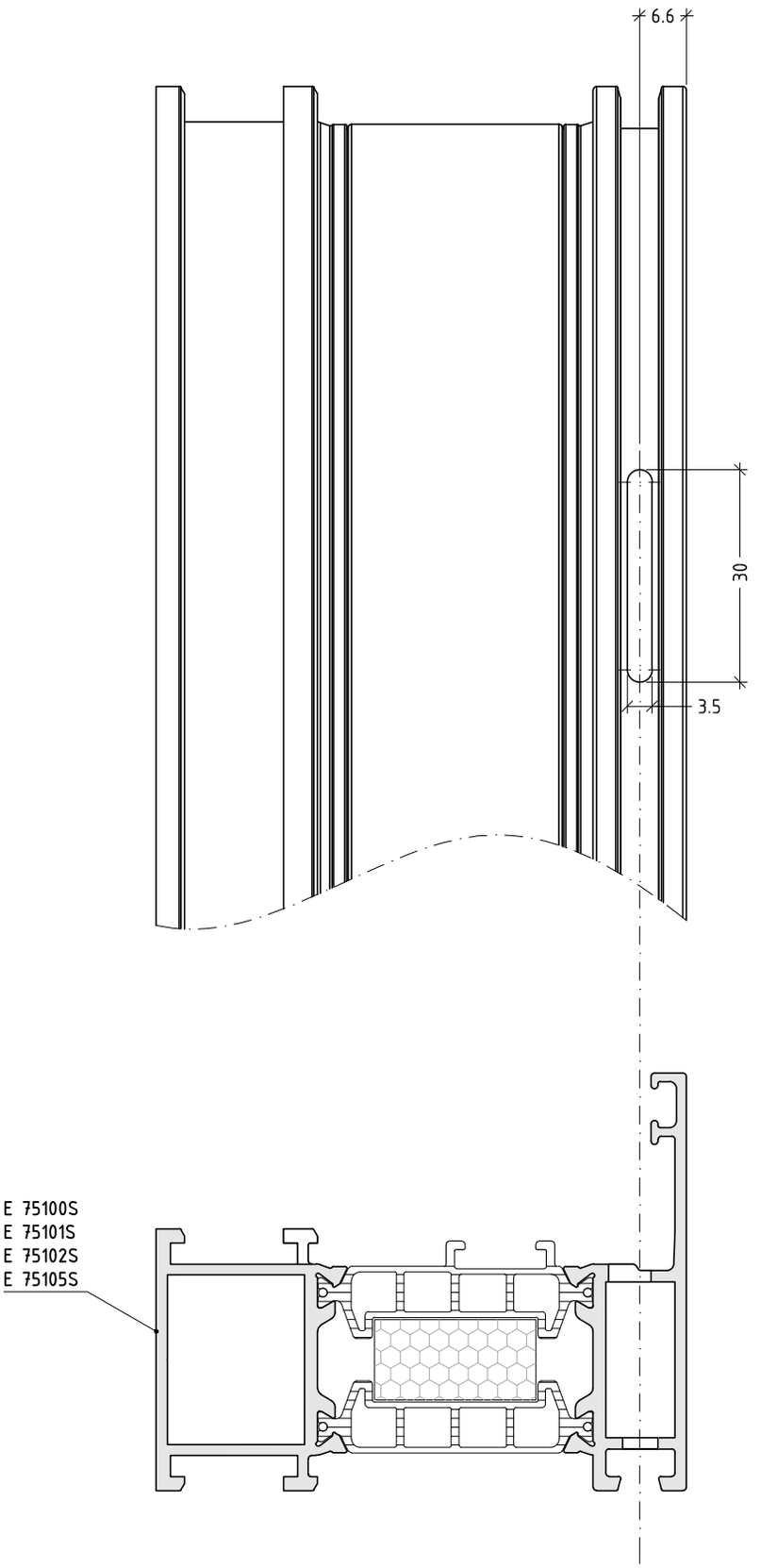
For profile:
E 75100S
E 75101S
E 75102S
E 75105S
E 75300S



not to scale

M75-07

machining for drain on frame



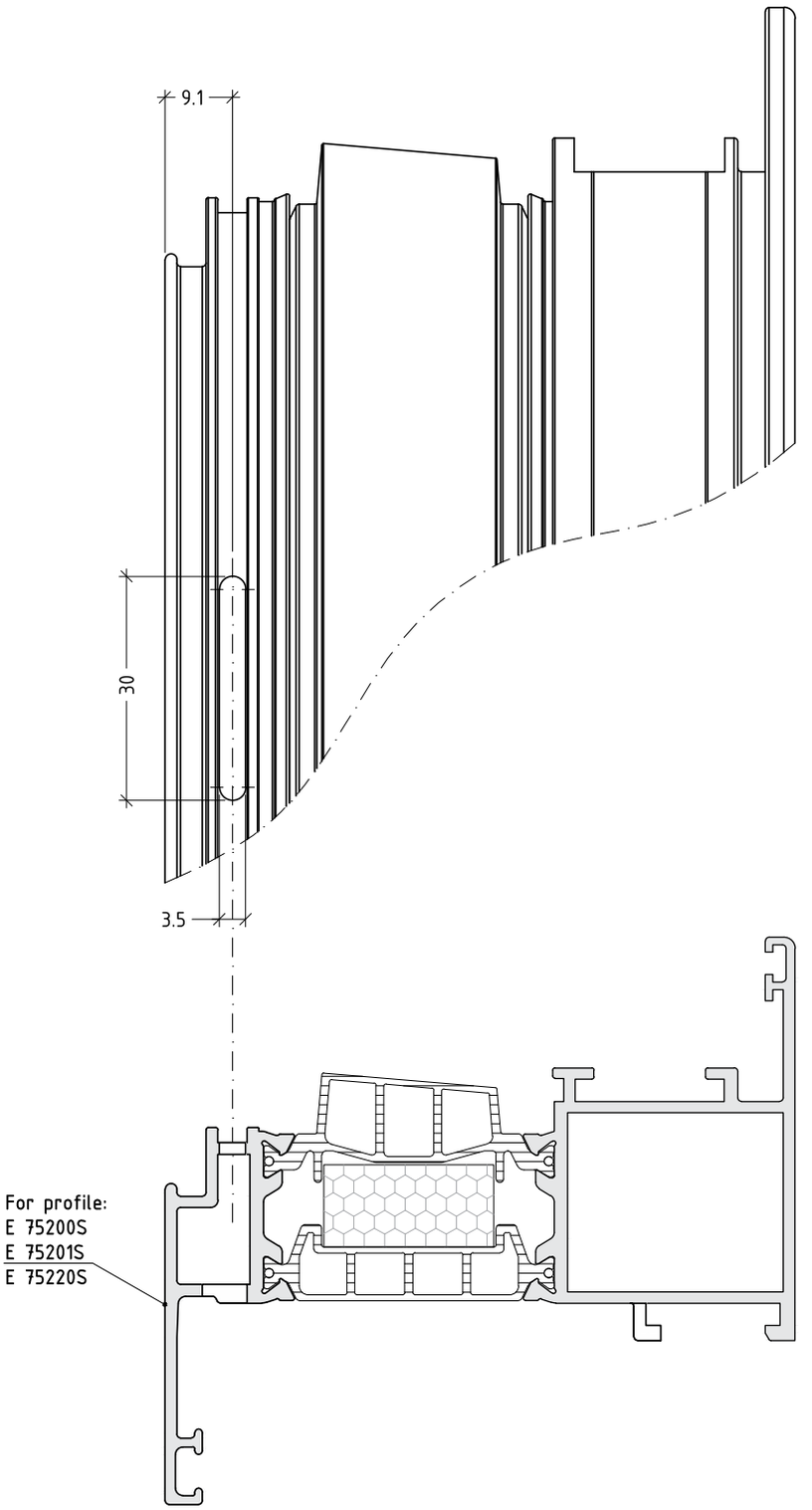
Machines for operation:

1. milling machine
2. copy - router

not to scale

M75-08

machining for drain on sash

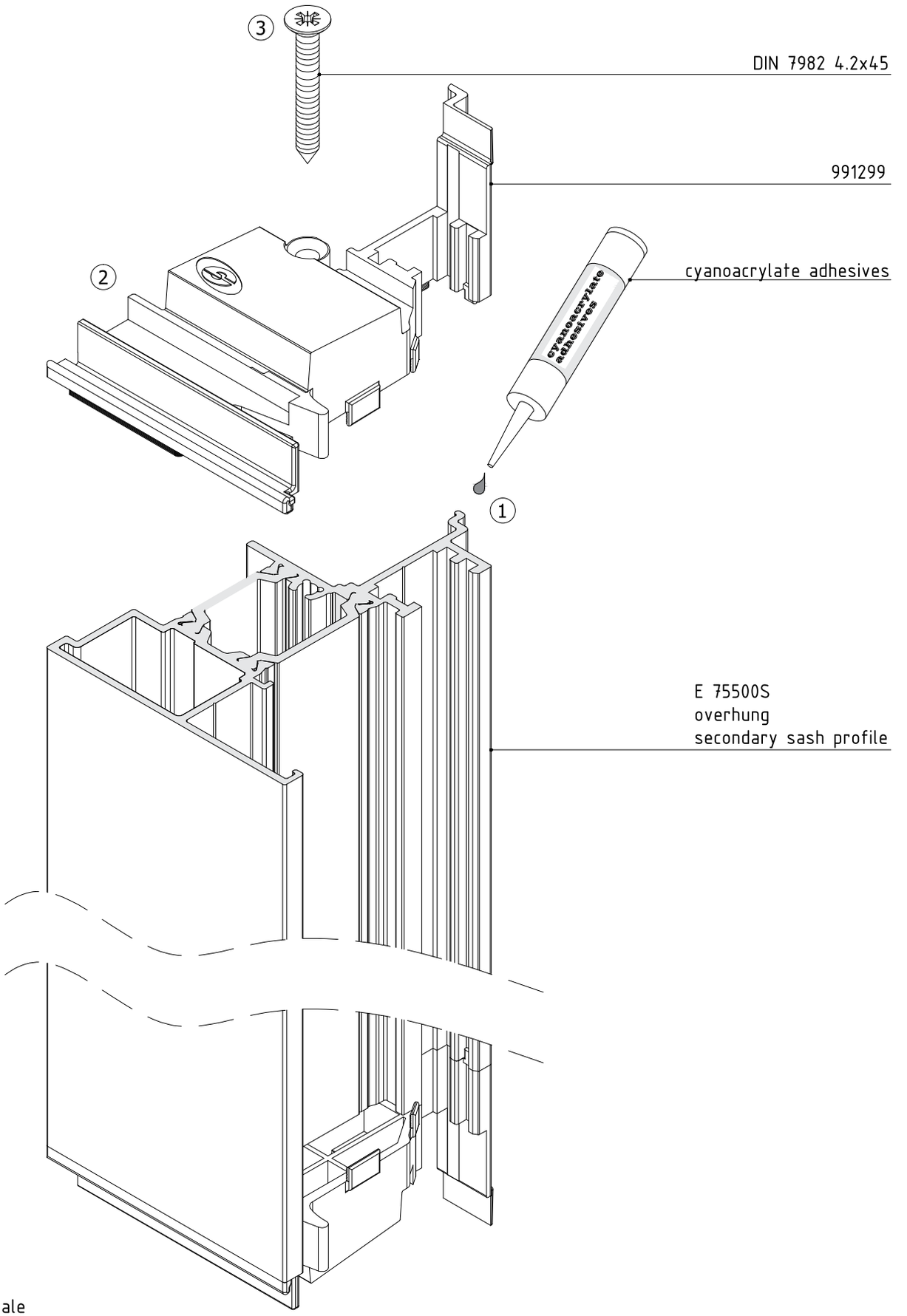


Machines for operation:

1. milling machine
2. copy - router

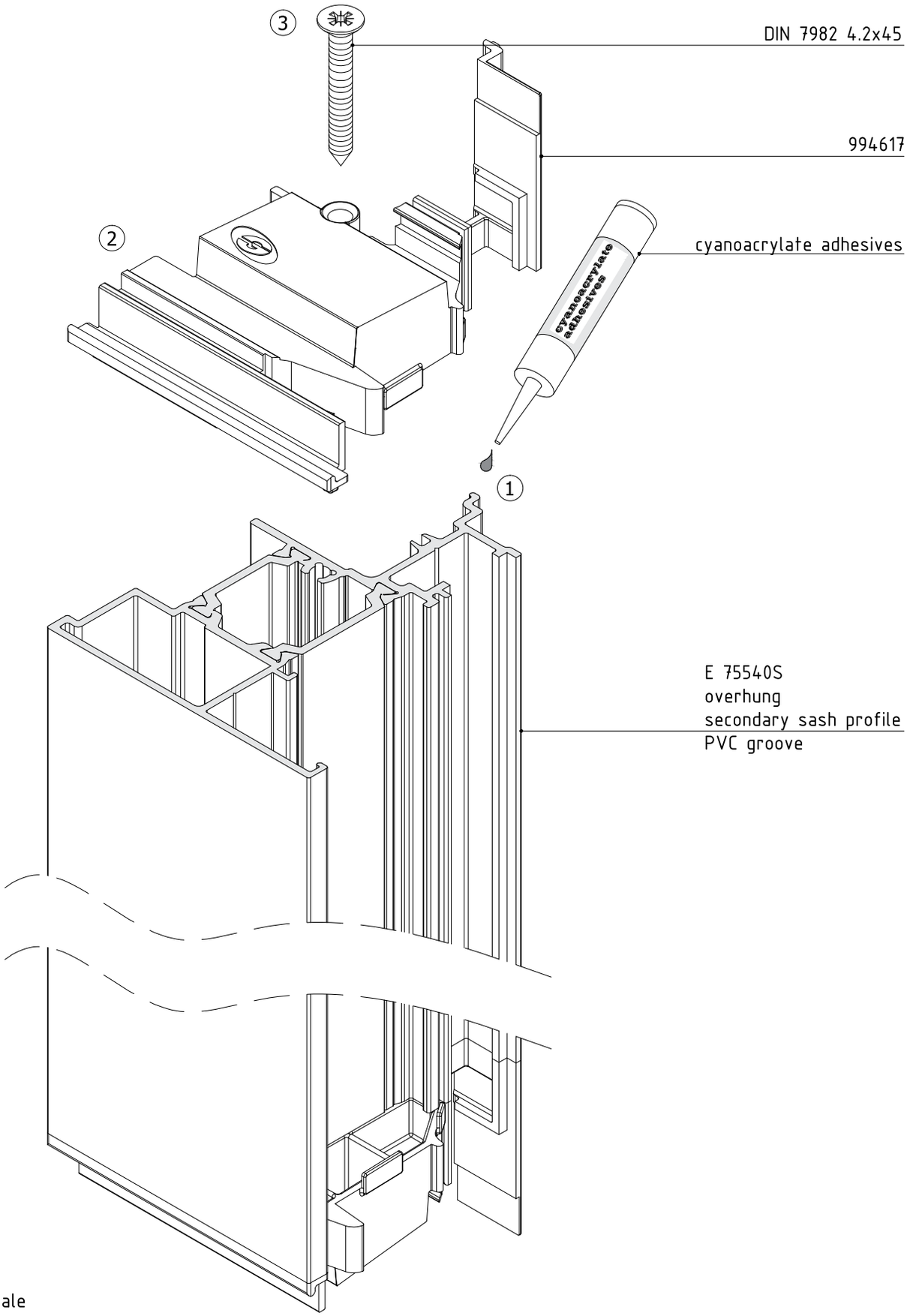
not to scale

M75-09



not to scale

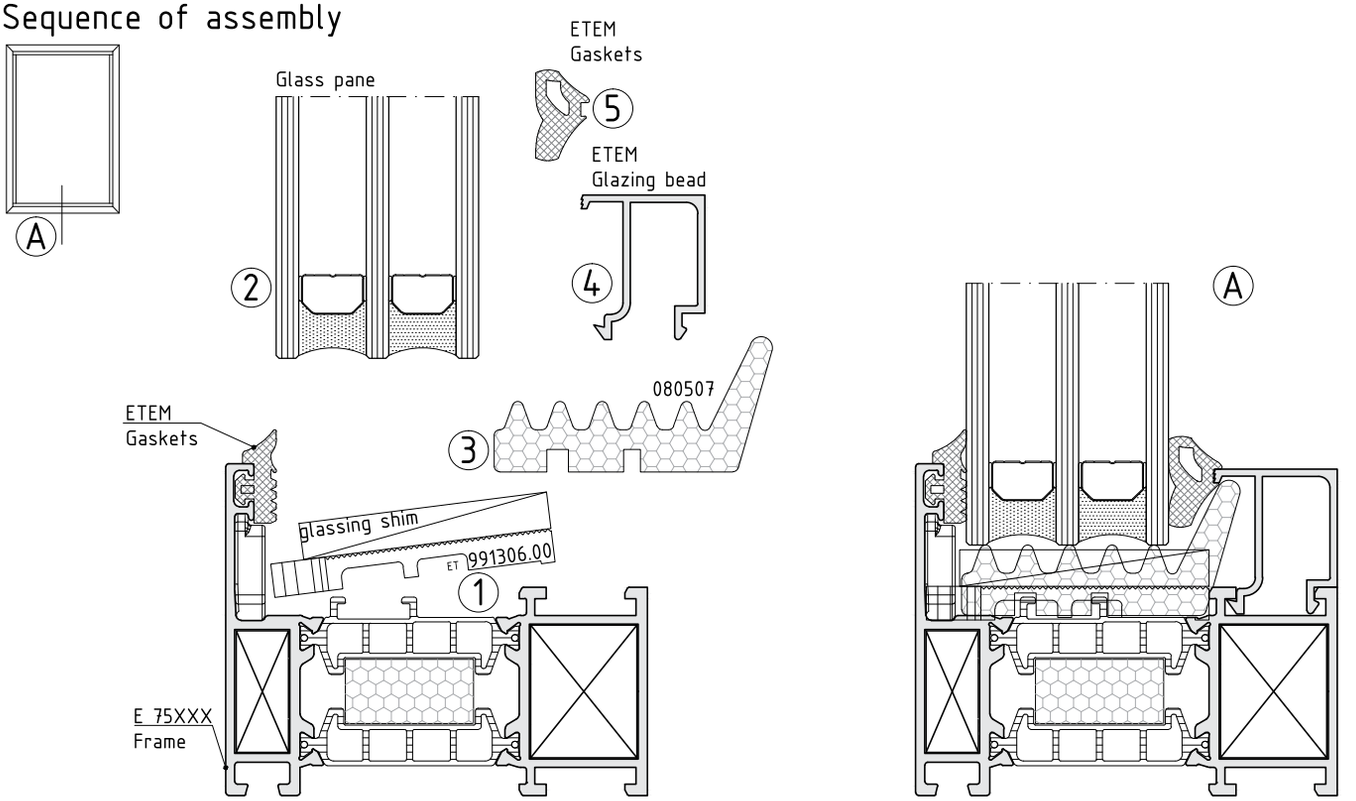
M75-10

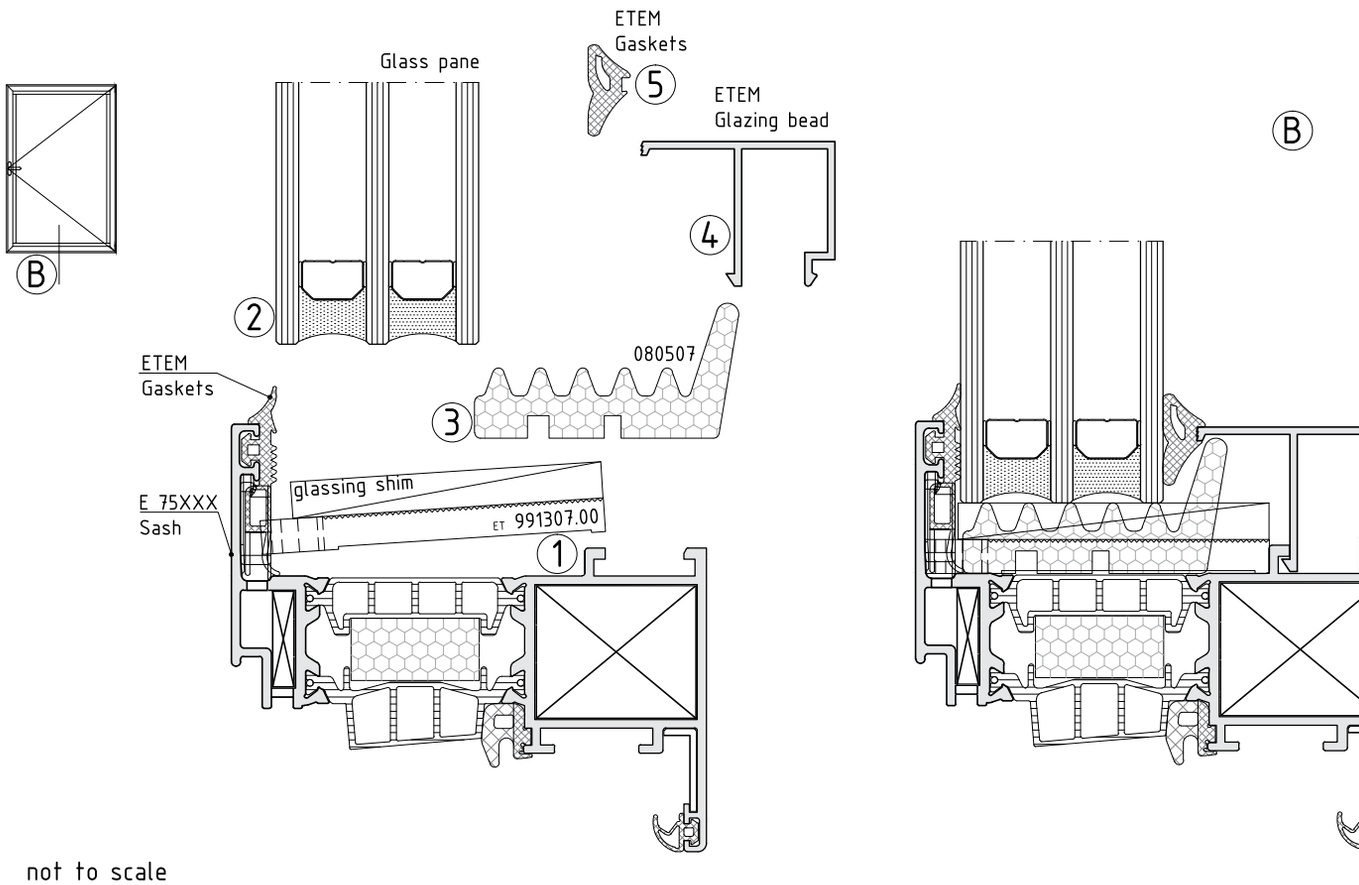


not to scale

M75-11

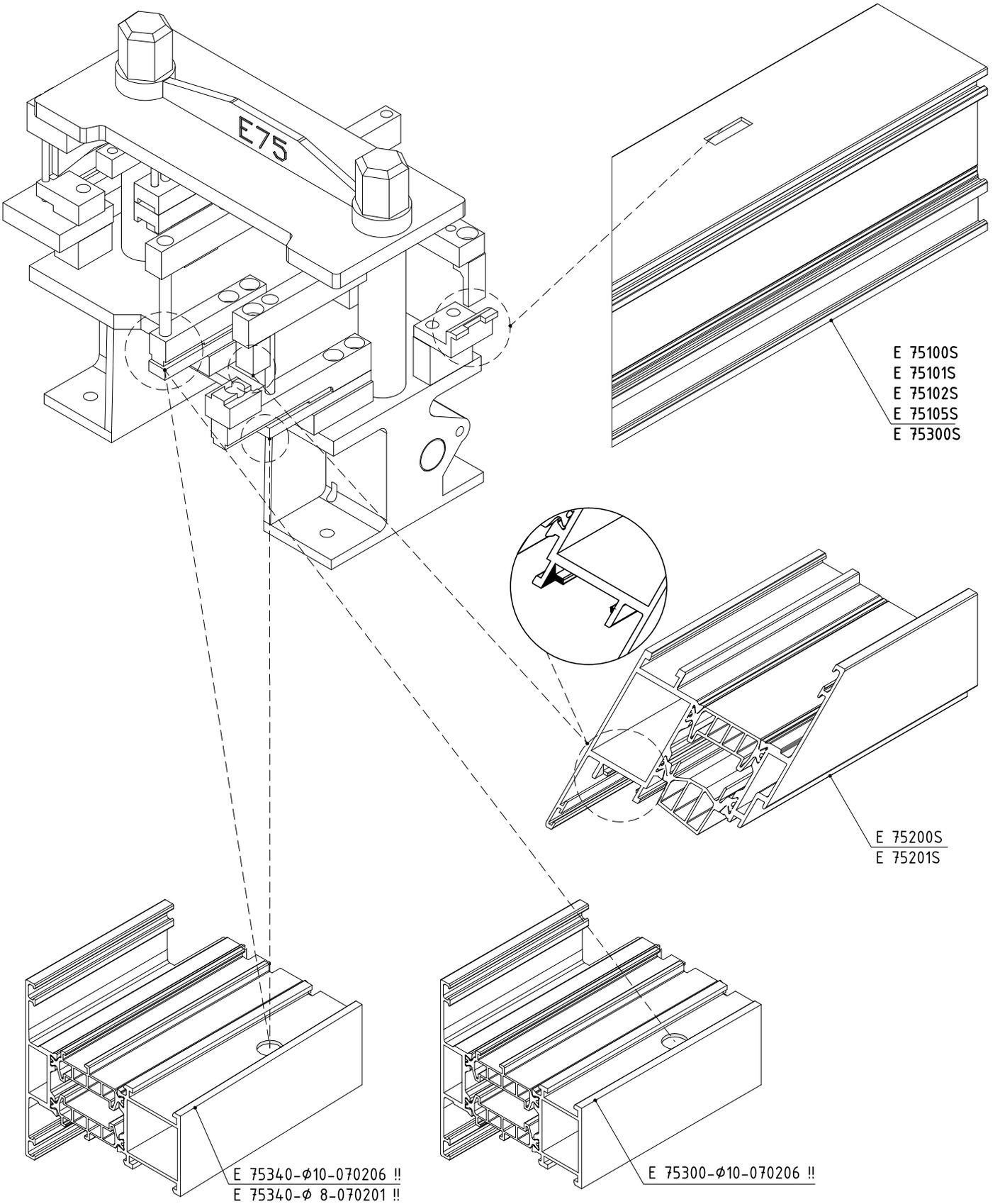
Sequence of assembly





not to scale

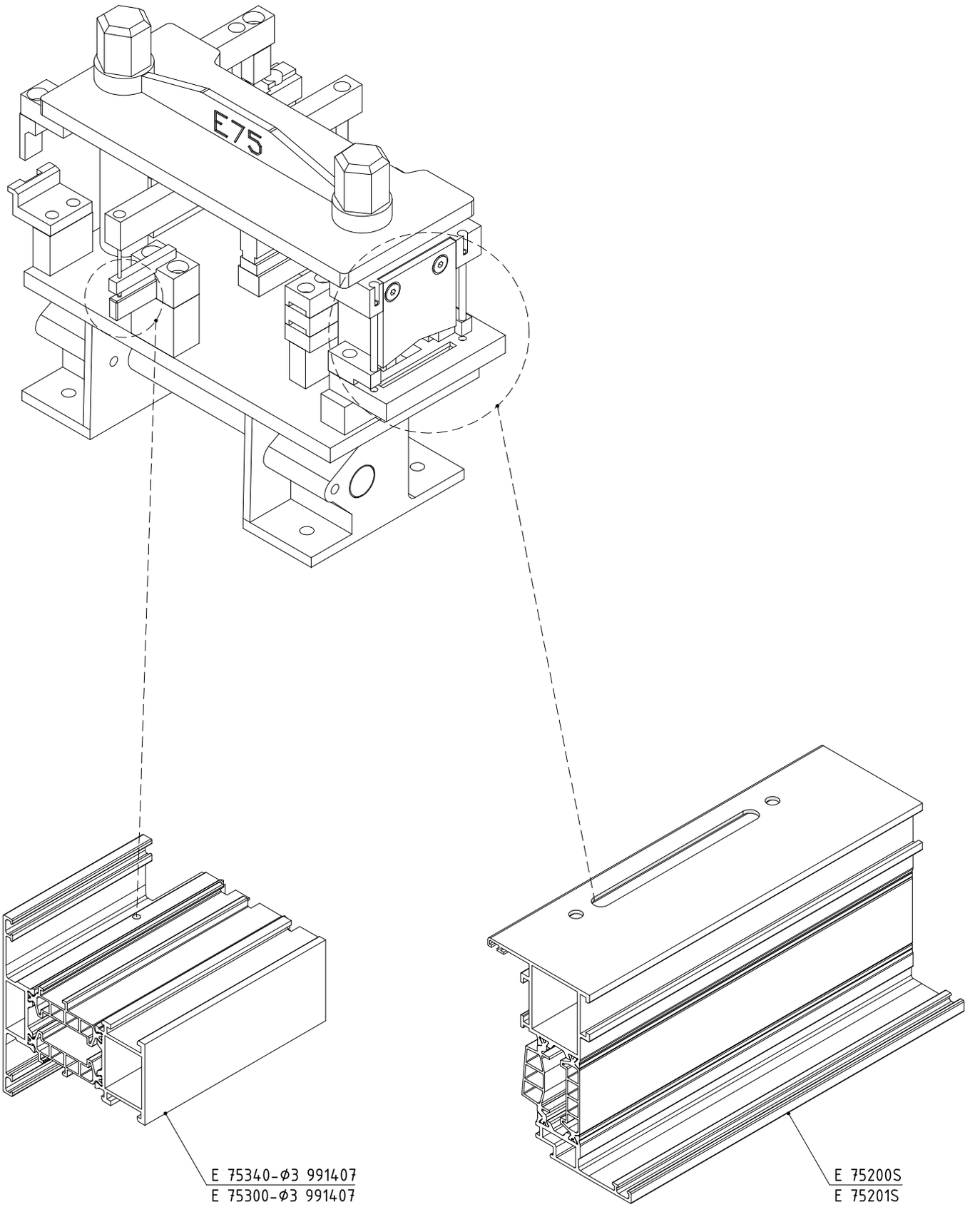
M75-14



Please note that changes are possible.In case you start with E 75 please ask for the last modification of the punching machine

not to scale

M75-12



Please note that changes are possible.In case you start with E 75 please ask for the last modification of the punching machine

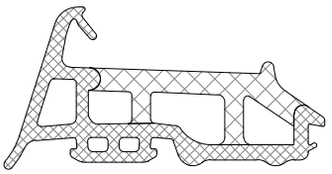
not to scale

M75-13

ACCESSORIES

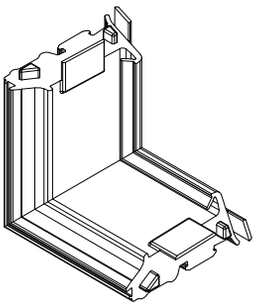
code/description	package/pcs	colour
ET 130430.00	15	●

EPDM central gasket
coextruded



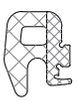
ET 991327.00	40	●

EPDM vulcanised corner for
130075



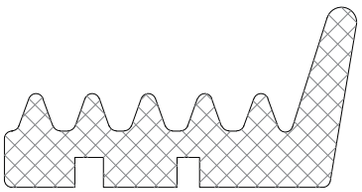
ET 130757.00	100	●

EPDM additional gasket
coextruded for
E75200 / E75201 / E 75220S



ET 080507.00	48	●

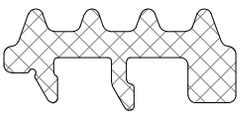
additional insulator for
frame and sash



A75-01

code/description	package/pcs	colour
ET 080511.00	75	●

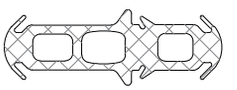
additional insulator for frame,sash e75 new



ET 991275.00	50	●

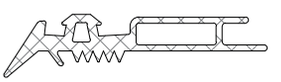
130425 old code

EPDM gasket for expansion joint



ET 130402.00	60	●

glazing EPDM gasket 3 mm



ET 130411.00	150	●

glazing EPDM gasket 3 mm

A75-02

code/description	package/pcs	colour
ET 130153.00	150	●

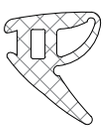
glazing EPDM gasket 4 mm

ET 130176.00	80	●

glazing EPDM gasket
press-in 5-6 mm

ET 130177.00	60	●

glazing EPDM gasket
press-in 7-8 mm



ET 990619.00	125	●

P5 old code

glazing EPDM gasket
press-in 5 mm

A75-03

code/description	package/pcs	colour
ET 990620.00	125	●

P6 old code

glazing EPDM gasket
press-in 6 mm

ET 130207.00	75	●

P7 old code

glazing EPDM gasket
press-in 7 mm

ET 130208.00	40	●

P8 old code

glazing EPDM gasket
press-in 8 mm

ET 994412.00	40	●

P10 old code

glazing EPDM gasket
press-in 10 mm

A75-04

code/description	package/pcs	colour
ET 130758.00	300	●

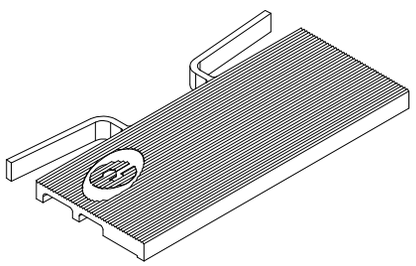
130077 old code

interior EPDM gasket
TOPLINE

ET 991306.00	200	●

9022 old code

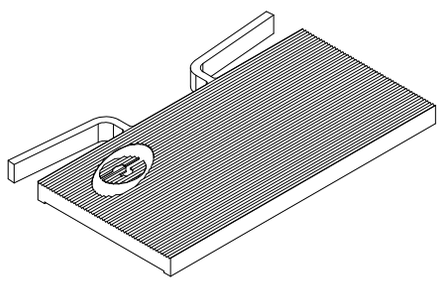
equalizing shim for frame
6 mm



ET 991307.00	200	●

9023 old code

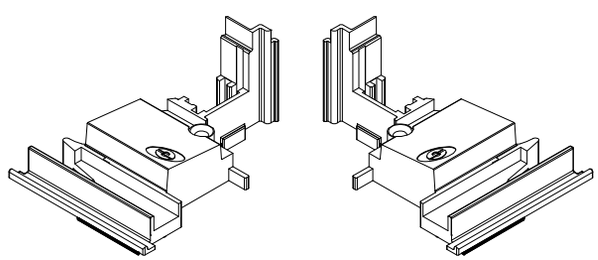
equalizing shim for sash
6 mm



ET 991299.00	4	●

75500 PL old code

pair of plastic plugs for
secondary sash profile
E 75500

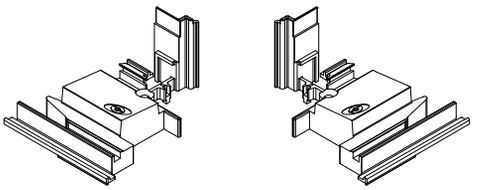


A75-05

code/description	package/pcs	colour
ET 994617.00	1	●

74652 old code

pair of plastic plugs for streight secondary sash profile
E 75540

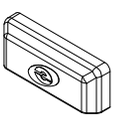


ET 080199.00	6	●
ET 991308.00	6	○

80199 old code

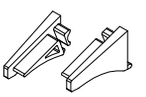
PVC plug for euro groove

ET 074605.00	100	●



plastic drain cap20 x 6 mm

ET 74629.00	200	●

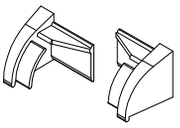


plastic plug for drip profile
E 2357

A75-06

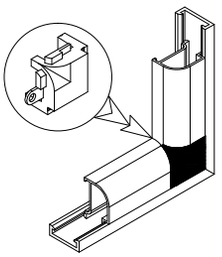
code/description	package/pcs	colour
ET 074624.00	200	●

plastic plug for drip profile
E 40820



ET 059902.00	25	MF
ET 059902.02	25	●
ET 059902.01	25	●

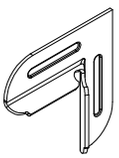
corner for round bead

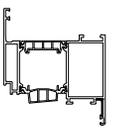


ET 991298.00	20	St. Steel

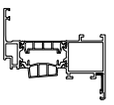
55012 old code

alignment square for
E 75200 / E 75201





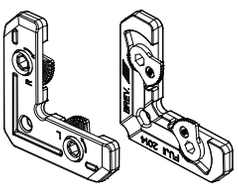
E 75201



E 75200

ET 058001.00	250	MF

alignment square with
locking function



E 75200
E 75201

E 75100
E 75101
E 75102
E 75105

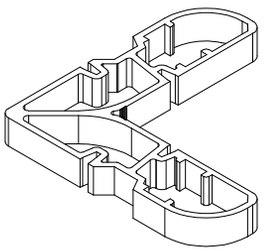
E 75300
E 75340

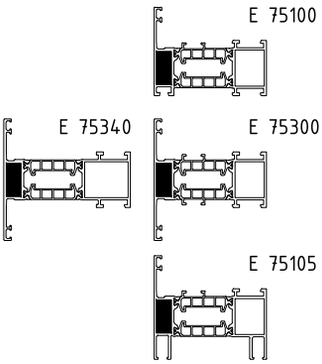
A75-07

code/description	package/pcs	colour
ET 991297.00	250	MF

54552 old code

extruded aluminium corner
bracket 9.3 mm for
E 75100 / E 75300
E 75105 / E 75340

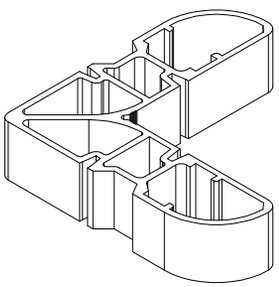


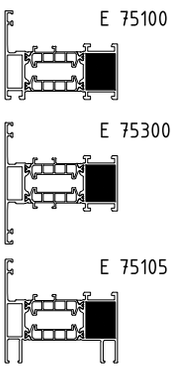


ET 991295.00	100	MF

54309 old code

extruded aluminium corner
bracket 18.9 mm for
E 75100 / E 75300 / E 75105

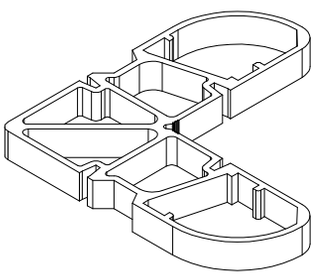


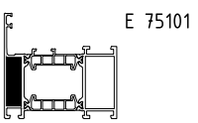


ET 991124.00	200	MF

54554 old code

extruded aluminium corner
bracket 9.3 mm for
E 75101

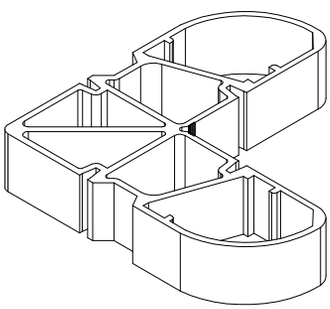


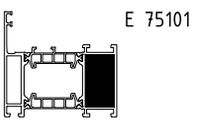


ET 993066.00	100	MF

54313 old code

extruded aluminium corner
bracket 18.9 mm for
E 75101

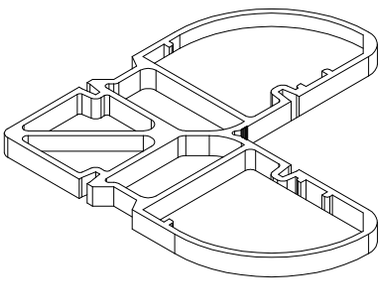


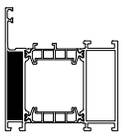


A75-08

code/description	package/pcs	colour
ET 054553.00	100	MF

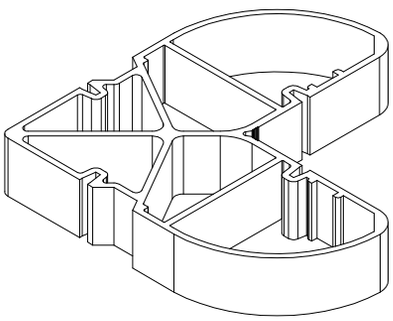
extruded aluminium corner
bracket 9.3 mm for
E 75102

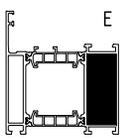




ET 054311.00	100	MF

extruded aluminium corner
bracket 18.9 mm for
E 75102

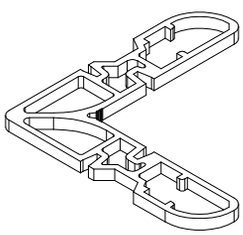


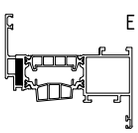


ET 991294.00	300	MF

54001 old code

extruded aluminium corner
bracket 3.8 mm for
E 75200

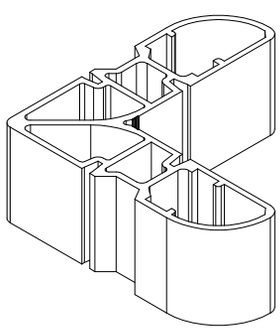


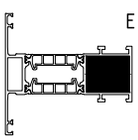


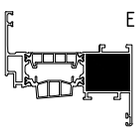
ET 991296.00	100	MF

54310 old code

extruded aluminium corner
bracket 28.4 mm for
E 75200 / E 75340





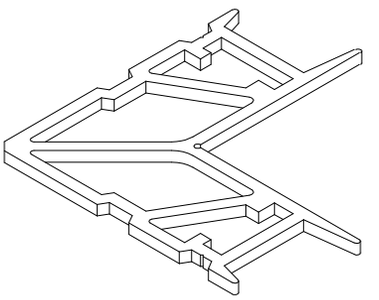


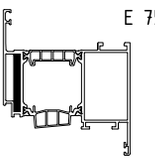
A75-09

code/description	package/pcs	colour
ET 991125.00	300	MF

54002 old code

extruded aluminium corner
bracket 3.8 mm for
E 75201

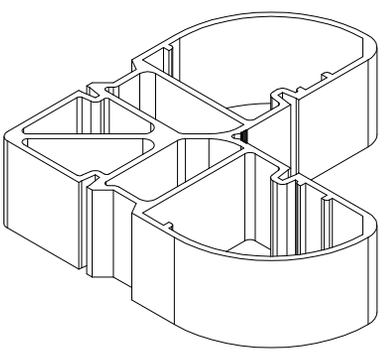


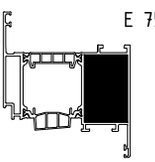


ET 991123.00	50	MF

54312 old code

extruded aluminium corner
bracket 28.4 mm for
E 75201

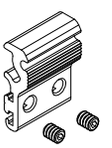


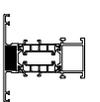


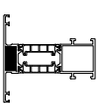
ET 991407.00	10	MF

70305 old code

T - bracket external side for
E 75300 / E 75340

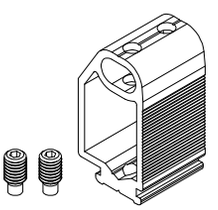


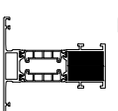




ET 070201.00	100	MF

T - bracket internal side for
E 75340

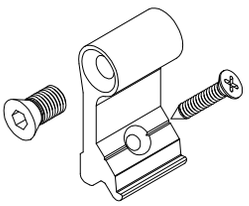


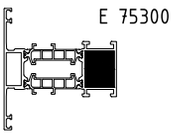


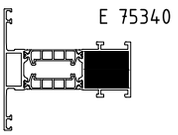
A75-10

code/description	package/pcs	colour
ET 070206.00	10	MF

T - bracket internal side for
E 75300 / E 75340

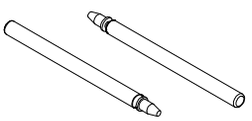






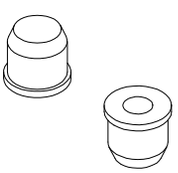
ET 143900.00	100	MF

roll pin 3 x 6 mm with andle



ET 143901.00	100	MF

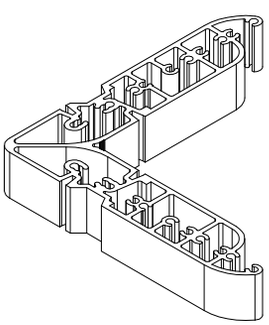
roll pin 4/8 x 6.5 mm

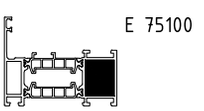


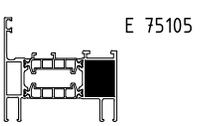
ET 991330.00	90	MF

54703 old code

extruded aluminium corner
bracket 18.9 mm for
E 75100 / E 75105







ETEM mechanism for side hung window

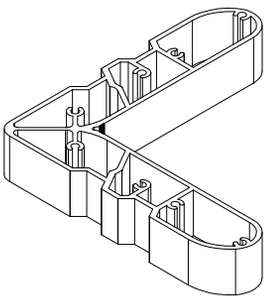
GU-SIEGENIA

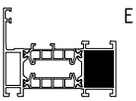
A75-11

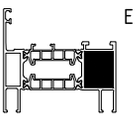
code/description	package/pcs	colour
ET 994616.00	8	MF

54705 old code

extruded aluminium corner
bracket 18.9 mm for
E 75100 / E 75105





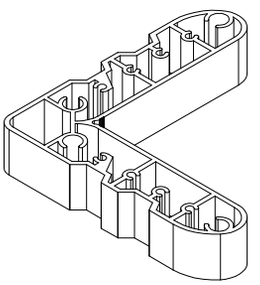


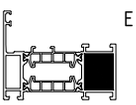
ROTO-WINKHAUSS

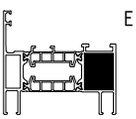
ET 994618.00	70	MF

54704 old code

extruded aluminium corner
bracket 18.9 mm for
E 75100 / E 75105





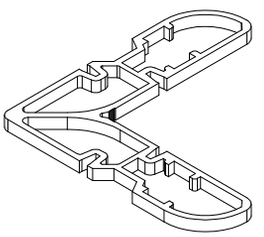


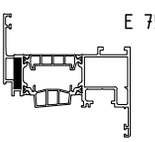
MACO

ET 991329.00	300	MF

54315 old code

extruded aluminium corner
bracket 3.9 mm for
E 75220

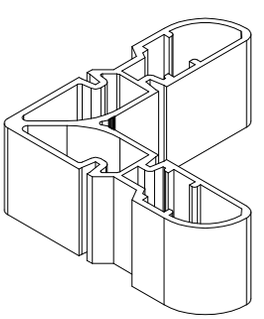


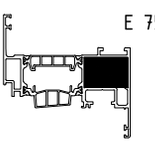


ET 991331.00	100	MF

54706 old code

extruded aluminium corner
bracket 28.3 mm for
E 75220



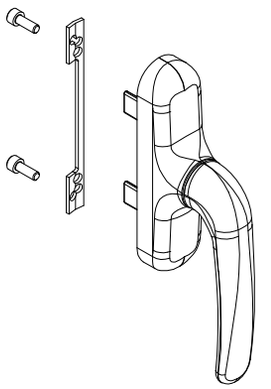


A75-12

code/description	package/pcs	colour
GI235014.01	10	●
GI235014.02	10	●

GI1024 old code

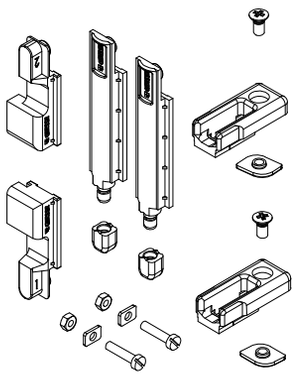
handle for window "PRIMA"



GI206678.00	100	●

GI2270000 old code

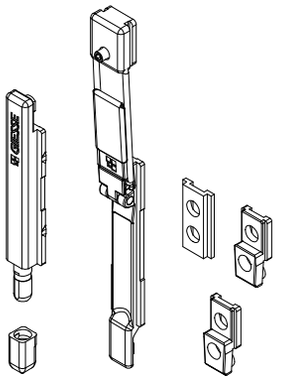
side hung vertical locking set



GI206677.00	10	●

GI2172 old code

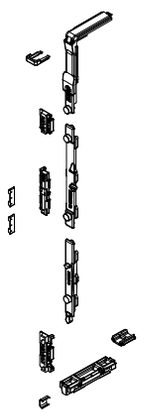
side hung bolt second leaf



GI210010.00	10	natural

4704 old code

T & T mechanism

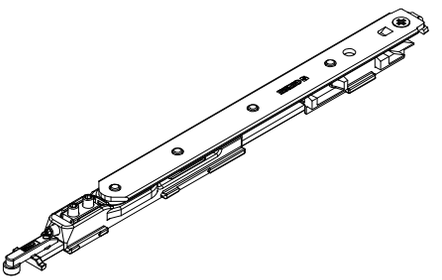


A75-13

code/description	package/pcs	colour
GI206664.00	10	natural

4200 old code

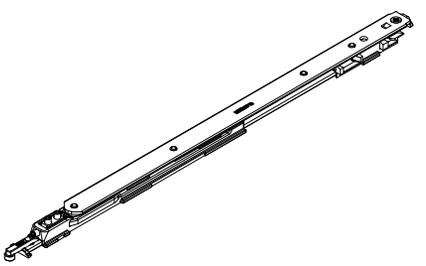
arm for sash L=390-550mm
T & T mechanism



GI206683.00	10	natural

GI4201 old code

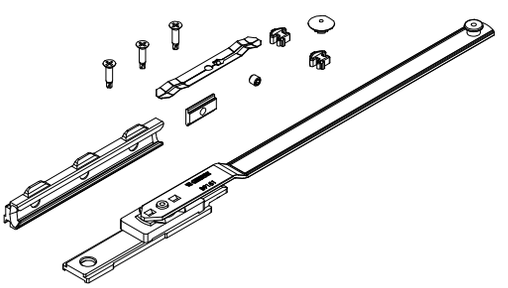
arm for sash
T & T mechanism
L=550 - 1700mm



GI206660.00	10	natural

04301K old code

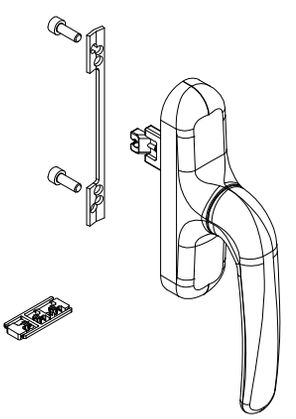
additional arm for
T & T mechanism



GI235011.01	10	●
GI235011.02	10	●

1033 old code

Handle "Prima" for
T & T mechanism

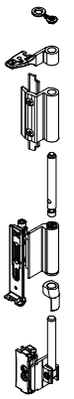


A75-14

code/description	package/pcs	colour
GI205024.01	10	●
GI205024.02	10	○

4711 old code

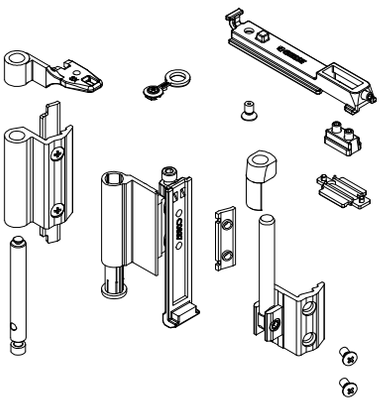
Hinges "Prima" for
T & T mechanism



GI205017.01	5	○
GI205017.02	5	●

4715410 old code

hinges for second sash for
T & T mechanism

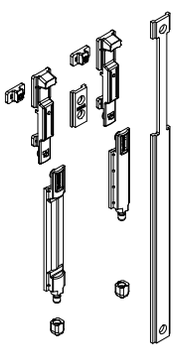


GI206674.00	10	●

04274010 old code

set for second sash

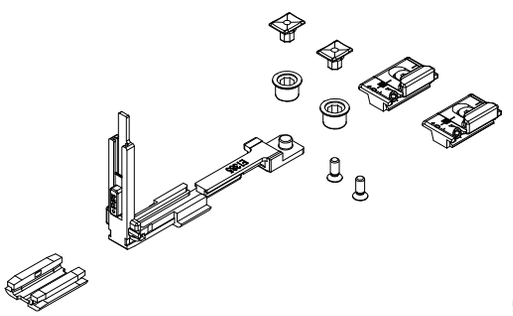
T & T mechanism



GI206662.00	10	natural

GI4770 old code

additional vertical and
horizontal lock for T & T
mechanism

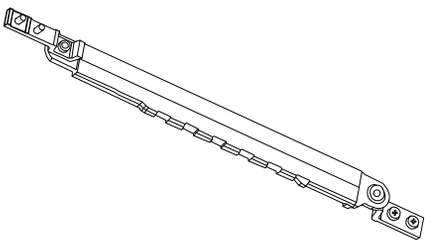


A75-15

code/description	package/pcs	colour
GI255560.00	10	natural

ET255560 old code

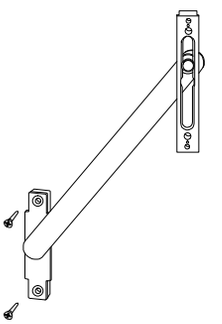
pairs telescopic top- hung window arms



FA215602.00	50	natural

FA3228 old code

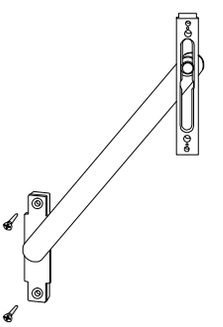
bottom - hung window arm 150 mm



FA215604.00	50	natural

FA3227 old code

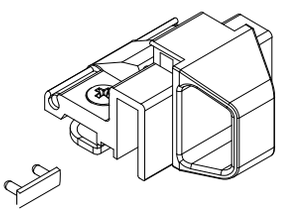
bottom - hung window arm 220 mm



GI200202.01	50	●
GI200202.02	50	●

ET200202 old code

catch for bottom - hung window

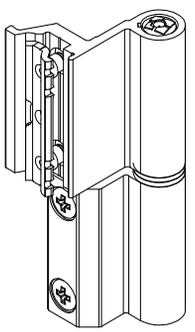


A75-16

code/description	package/pcs	colour
GI205013.01	20	●
GI205013.02	20	●

GI120 old code

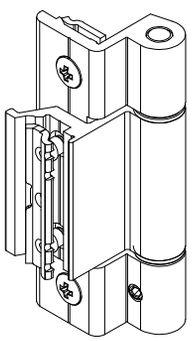
double hinge (75 kg)



GI205022.01	50	●
GI205022.02	50	●

GI600 old code

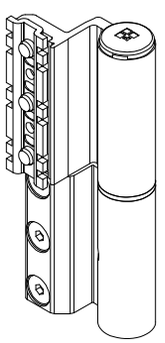
triple hinge (100 kg)



GI205010.01	25	●
GI205010.02	25	●

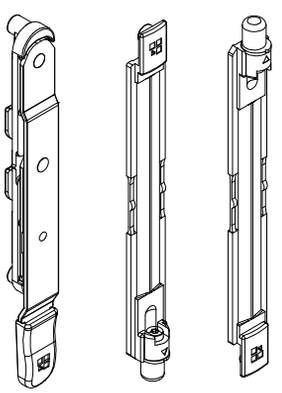
GI535 old code

adjustable double hinge for door "FLASH XL" (100 kg)



GI206685.00	10	natural

two-way bolt

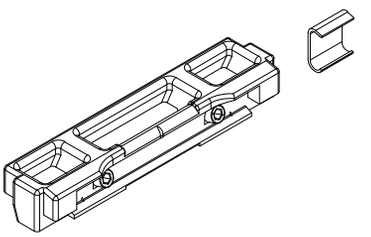


A75-17

code/description	package/pcs	colour
GI206673.00	50	●

GI1349 old code

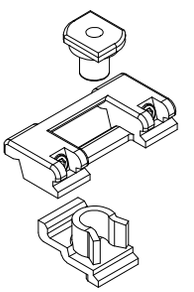
double striker



GI206663.00	50	●

GI2199 old code

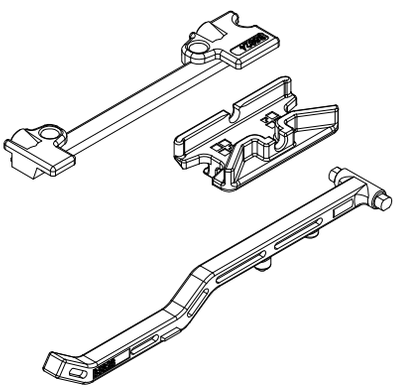
wing stop



GI206686.00	25	natural

GI2234 old code

micro - ventilation



20012259	1	natural

9100TOOL75300 old code

cutter for end milling
machine for
E 75300

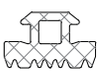
A75-18

code/description	package/pcs	colour
20012260	1	natural

9100TOOL75340 old code

cutter for end milling
machine for
E 75340

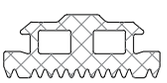
ET 130505.00	100	●



wall-joining epdm gasket
(external) for fixed frame

upon customer's request

ET 130506.00	180	●



wall-joining epdm gasket
(internal)

upon customer's request

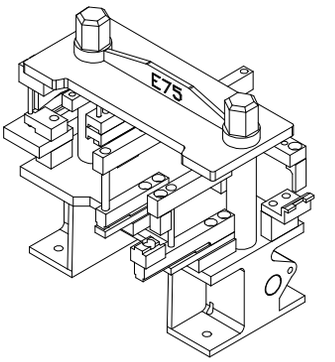
ET 130507.00	220	●

WALL-JOINING EPDM GASKET
PERIMETRIC(EXTERNAL) FOR
FIXED FRAME

upon customer's request

A75-19

code/description	package/pcs	colour
ET 162262.00	1	–



punching machine ETEM

Please note that changes are possible.In case you start with E 75 please ask for the last modification of the punching machine

A75-20

II.

E75

FLAT DOOR SYSTEM WITH THERMAL BREAK

GENERAL INFORMATION

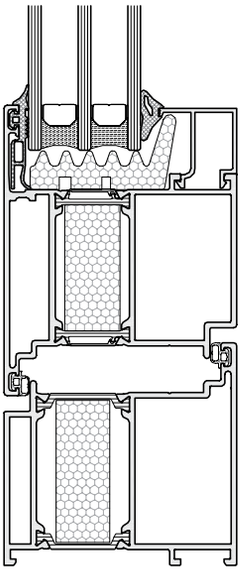
CONCEPT / ADVANTAGES / CERTIFICATES

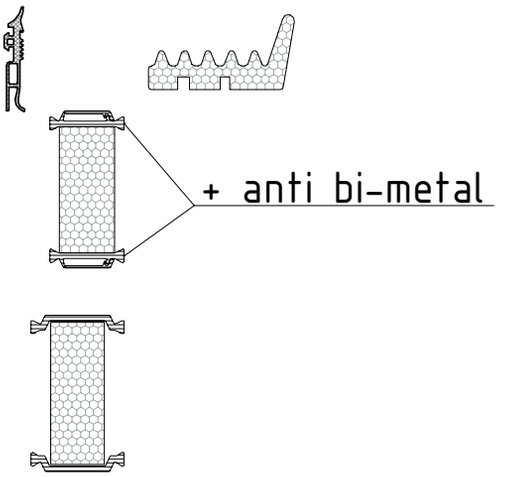
E 75 FLAT DOOR SYSTEM CONCEPT

E75 FLAT DOOR SYSTEM IS A PREMIUM SOLUTION ENSURING EXCELLENT THERMAL INSULATION, COMFORT AND EXQUISITE APPEARANCE.

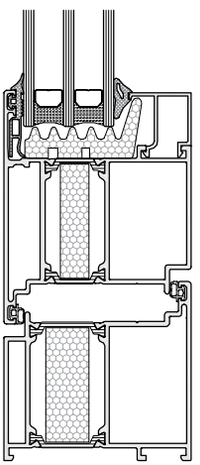
- Elegant straight design
- 75 mm system width allowing usage of triple glazing
- Flushing between opening parts and fixed positions
- Double sash flat doors
- Additional insulator in the thermo-break area
- Additional insulator under the glass
- Anti bi-metal polyamide
- Possibility for automatization
- Opportunity for manufacturing sashes with big dimensions
- Possibility for mounting anti-burglar hardware for good security performance
- Extruded corners for crimping machine with glue allowing greater connections

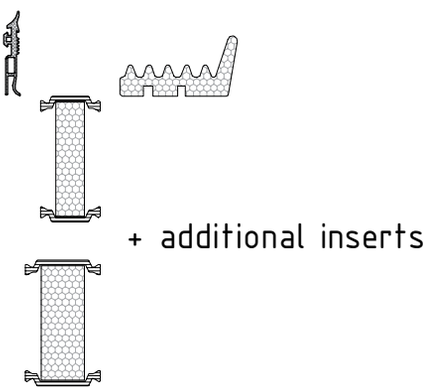
> ADVANCED SYSTEM



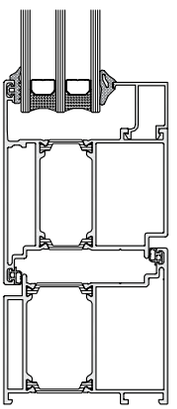


> IMPROVED SYSTEM



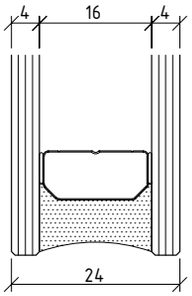
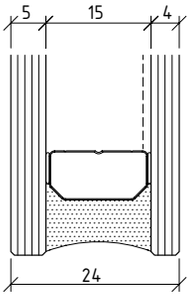
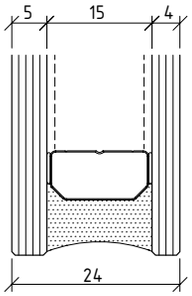
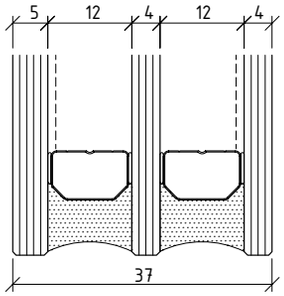


> BASIC SYSTEM



G75DD-01

ADVANTAGES AND COMBINATIONS

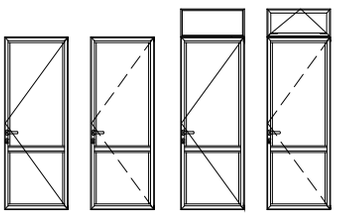
PERFORMANCE CHARACTERISTICS	Type of glazing			
	Double Glazing	Double Glazing	Double Glazing	Triple Glazing
	4/16/4 Low Emission	5/15/4 Low Emission Argon	5 Sun Guard/15/4 Low Emission	5 Sun Guard/12/4/12/4 Low Emission
				
U glass	1,4	1,1	1,0	0,6
U door[1]	1,7	1,5	1,46	1,2
g value[2]	0,6	0,6	0,5	0,46

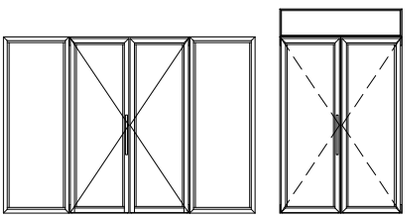
ADVANTAGES					
Energy Efficiency		*	**	***	****
Sound Insulation		*	**	***	****
Daylight		****	***	**	*
Sunshading	E 66	*	**	***	****
Automation		□	□	□	□
Safety and security		**	***	***	****

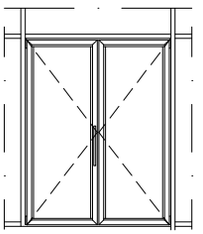
Notes:
1. Uw value is calculated by using warm edge spacer.
2. g value is calculated without external sunshading.
* good
** better
*** the best
**** excellent
□ compatible

TABLES

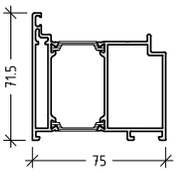
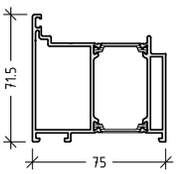
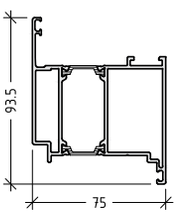
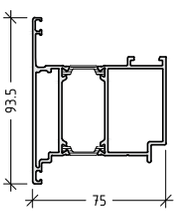
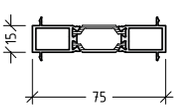
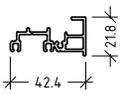
TYPOLOGIES / LIST OF PROFILES / CHARACTERISTICS

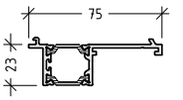
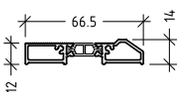
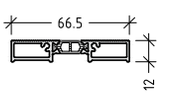
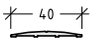




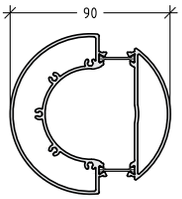
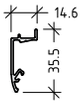
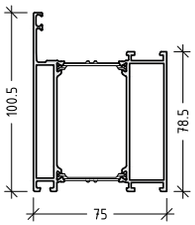


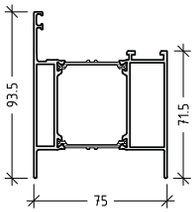
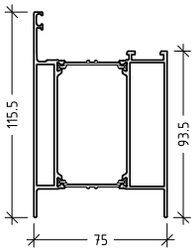
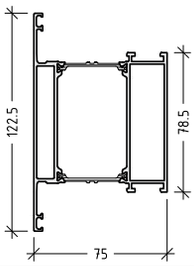
G75D-02

code	profile	lenght weight moment of inertia
E 75110 frame-inward		L= 6.01 m 1932 g/m Jx=27.25 cm^4 Jy=49.95 cm^4
E 75111 frame-outward		L= 6.01 m 1890.4 g/m Jx=26.58 cm^4 Jy=49.88 cm^4
E 75210 sash-inward		L= 6.01 m 2062.4 g/m Jx=36.18 cm^4 Jy=54.04 cm^4
E 75211 sash-outward		L= 6.01 m 2072.4 g/m Jx=36.3 cm^4 Jy=52.06 cm^4
E 75655 connecting profile		L= 6.01 m 940.4 g/m Jx=0.98 cm^4 Jy=19.48 cm^4
E 75800 brush-holder		L= 6.01 m 496.5 g/m

code	profile	lenght weight moment of inertia
E 75601 adapter for facade		L= 6.01 m 897.1 g/m Jx=1.52 cm^4 Jy=10.95 cm^4
E 75802		L= 6.01 m 84.5 g/m
E 75801		L= 6.01 m 84.5 g/m
E 75810		L= 6.01 m 722.3 g/m
E 75811		L= 6.01 m 722.6 g/m
E 75805		L= 6.01 m 210.3 g/m

L75D-01

code	profile	lenght weight moment of inertia
E 75603		L= 6.01 m 2231.5 g/m Jx=56.34 cm⁴ Jy=55.75 cm⁴
E 75602		L= 6.01 m 79.9 g/m
E 75103		L= 6.01 m 2223.4 g/m Jx=57.75 cm⁴ Jy=62.95 cm⁴

code	profile	lenght weight moment of inertia
E 75120		L= 6.01 m 1899.2 g/m Jx=32.42 cm⁴ Jy=55.04 cm⁴
E 75121		L= 6.01 m 2303.6 g/m Jx=68.11 cm⁴ Jy=67.91 cm⁴
E 75303		L= 6.01 m 2312.5 g/m Jx=68.64 cm⁴ Jy=66.96 cm⁴

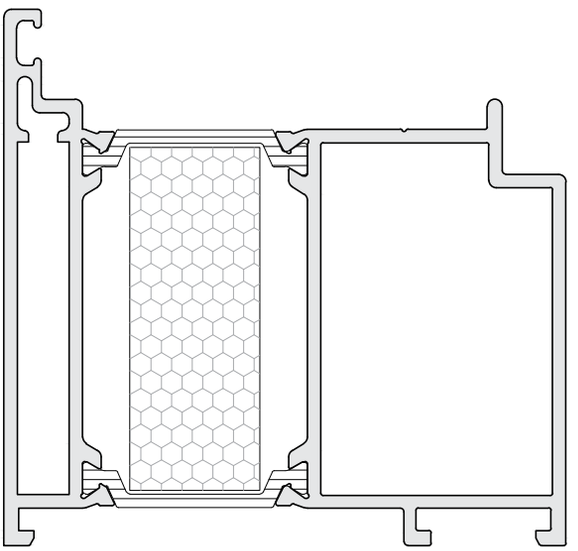
L75D-02

PROFILES

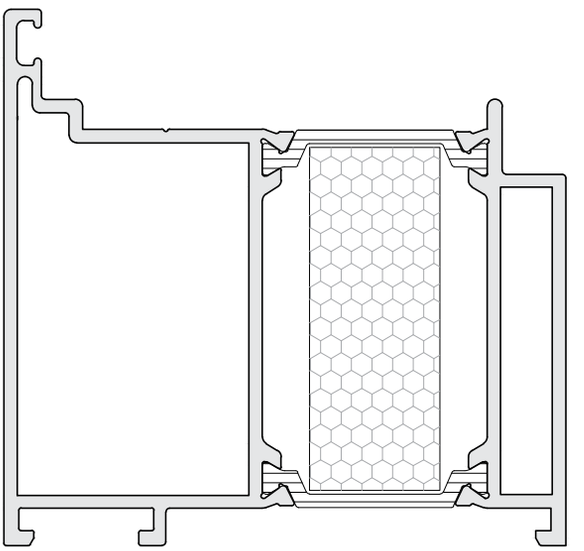
DRAWINGS / SCALE 1:1

frames

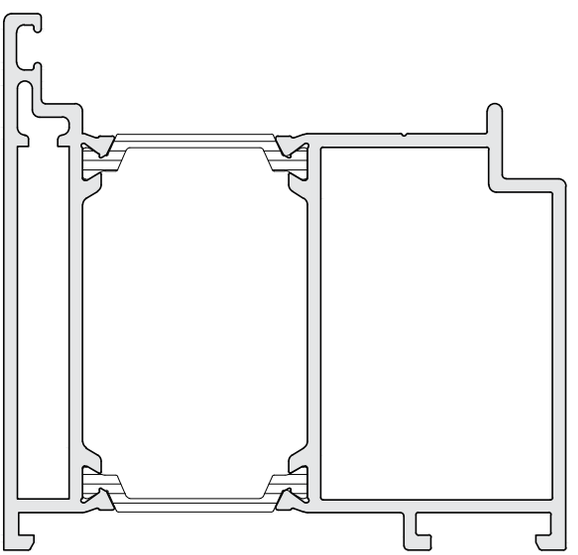
E 75110 S
frame - inward



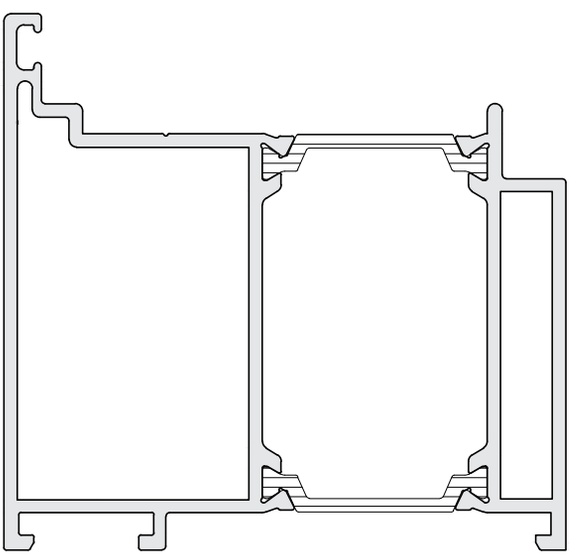
E 75111 S
frame - outward



E 75110
frame - inward



E 75111
frame - outward



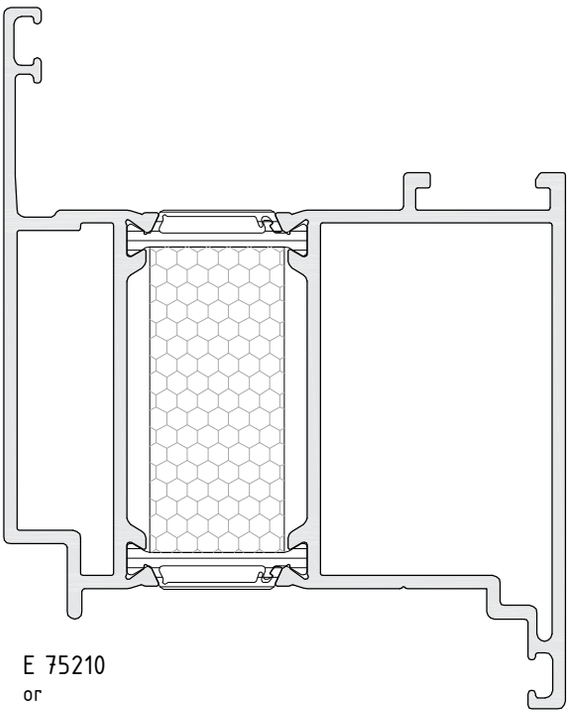
E 75110 S / E 75111 S - improved system - with additional insulator
E 75110 / E 75111 - basic system

scale : 1:1

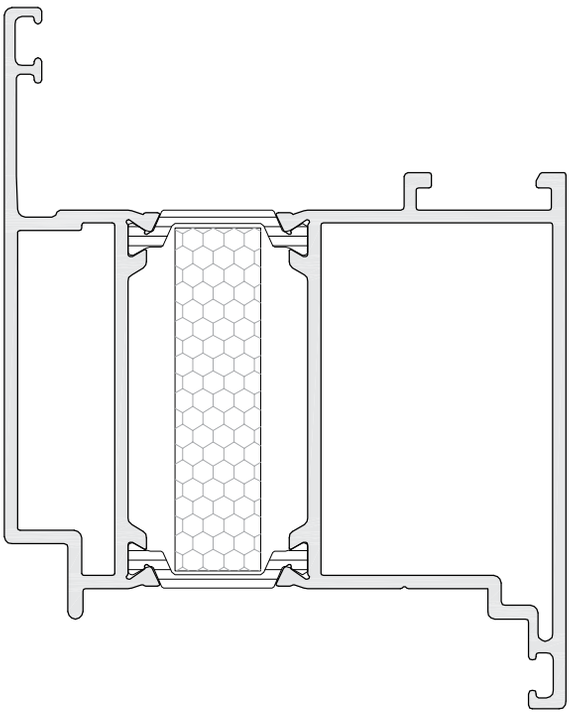
P75D-01

sashes

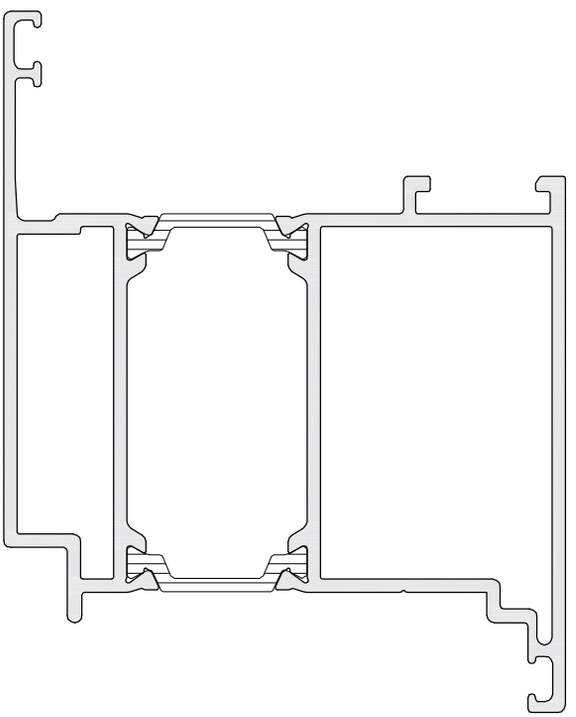
E 75210 RP
or
E 75211 RP



E 75210 S
or
E 75211 S



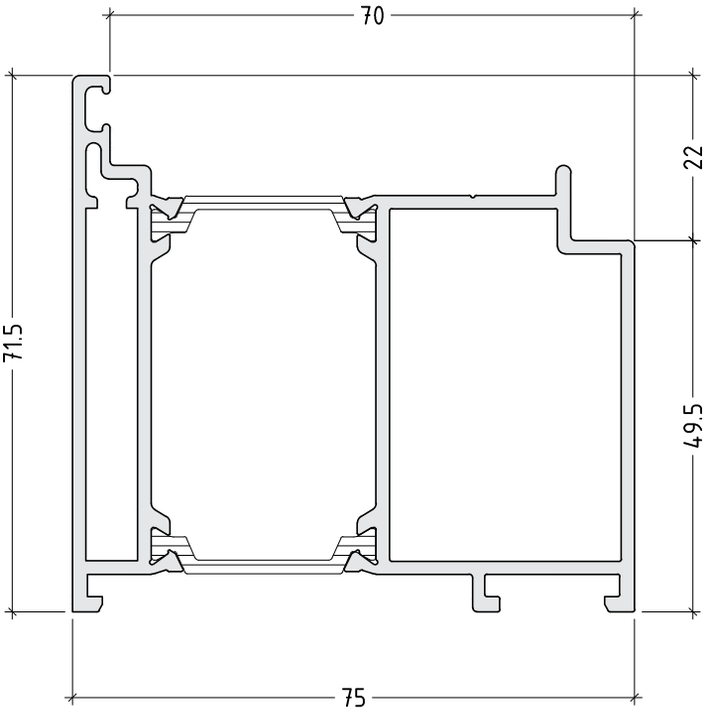
E 75210
or
E 75211



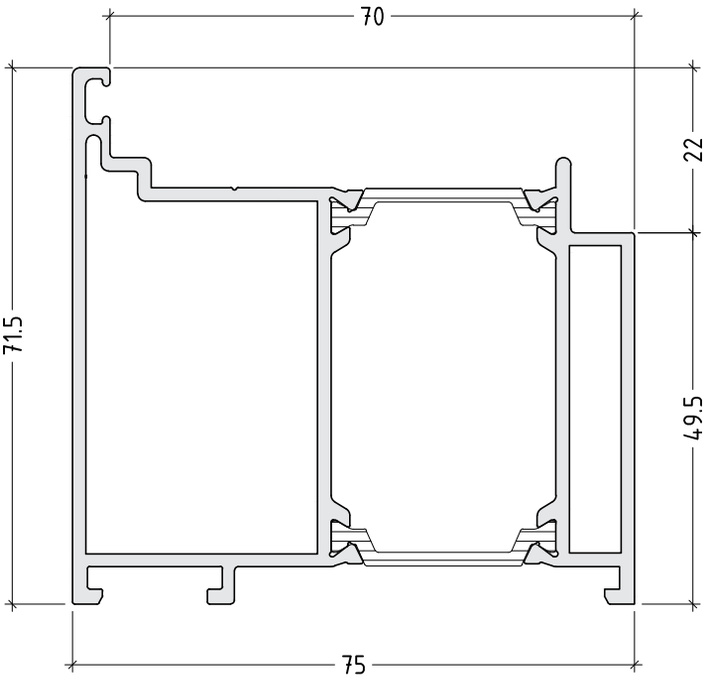
E 75110 RP / E 75111 RP – advanced system – with anti bi-metal polyamide – upon customer's request
E 75210 S / E 75211 S – improved system – with additional insulator
E 75110 / E 75111 – basic system
scale : 1:1

P75D-02

E 75110
frame-inward
1932 g/m

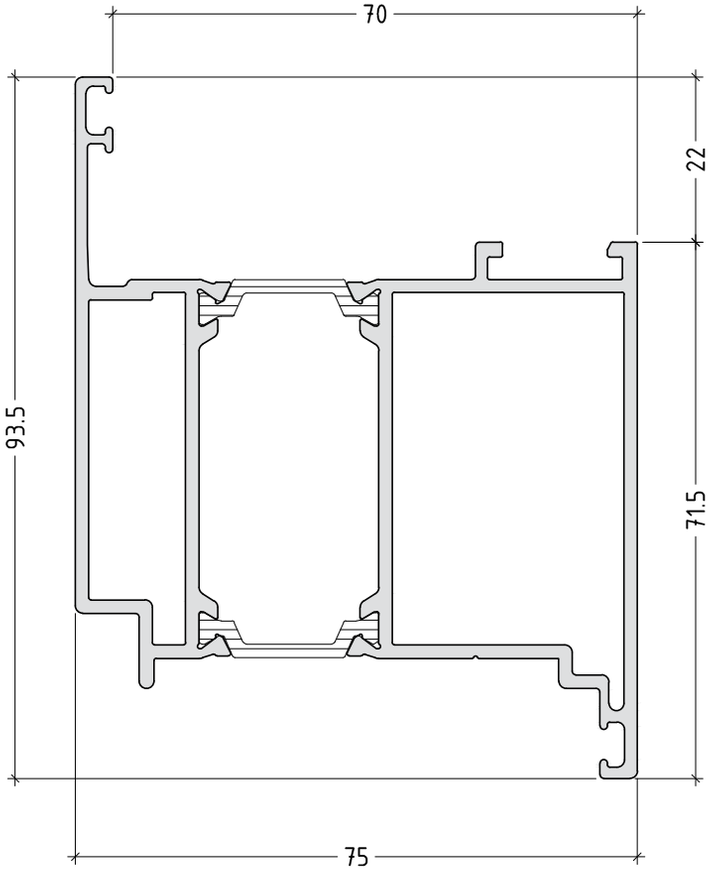


E 75111
frame-outward
1890.4 g/m

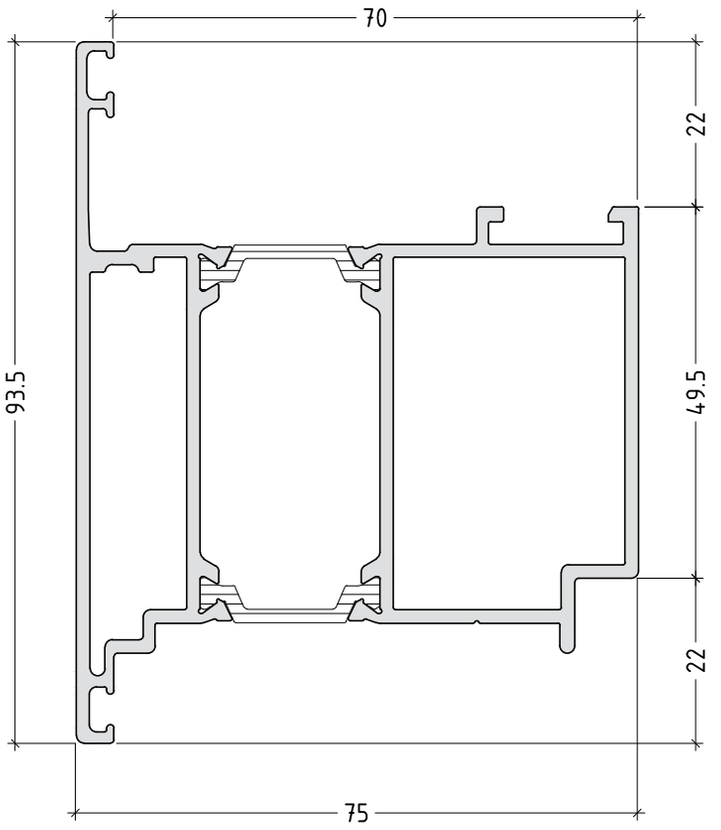


P75D-03

E 75210
sash-inward
2062.4 g/m

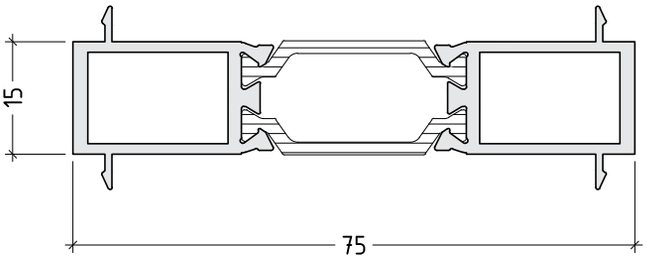


E 75211
sash-outward
2072.4 g/m

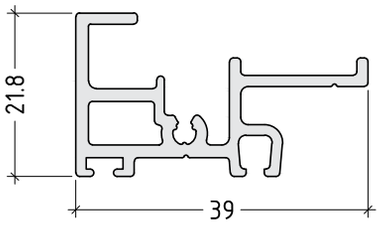


P75D-04

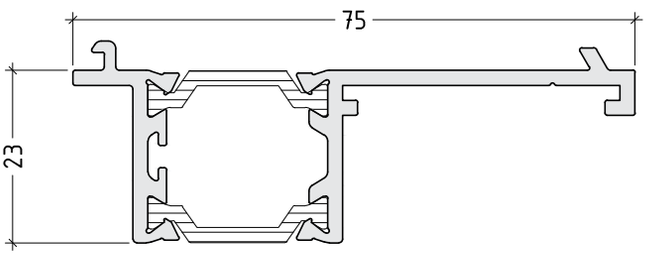
E 75655
connecting
profile
940.4 g/m



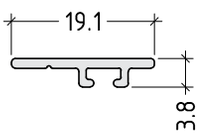
E 75800
brush-holder



E 75601
adapter for
facade
897.1 g/m



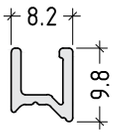
E 75802
84.5 g/m



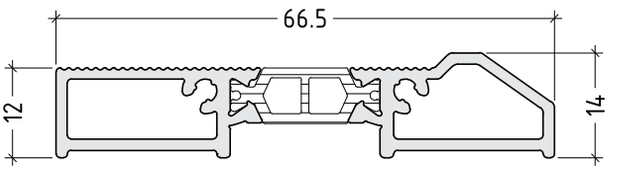
scale : 1:1

P75D-05

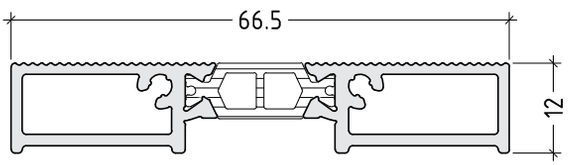
E 75801
84.5 g/m



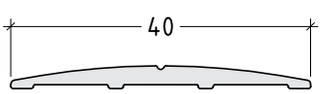
E 75810
722.3 g/m



E 75811
722.6 g/m



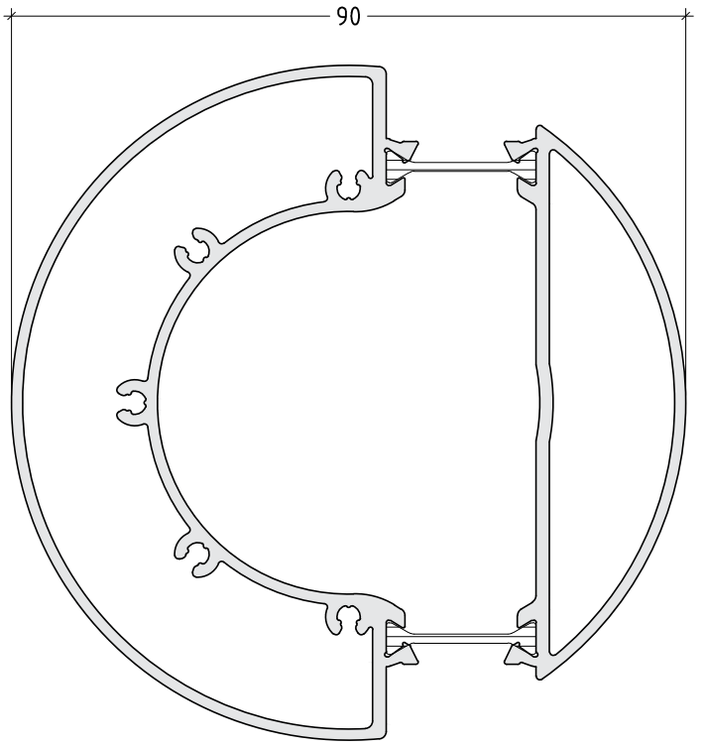
E 75805
210.3 g/m



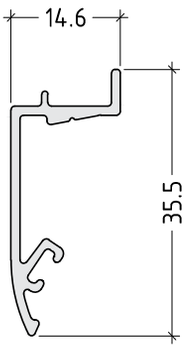
scale : 1:1

P75D-06

E 75603
2231.5 g/m

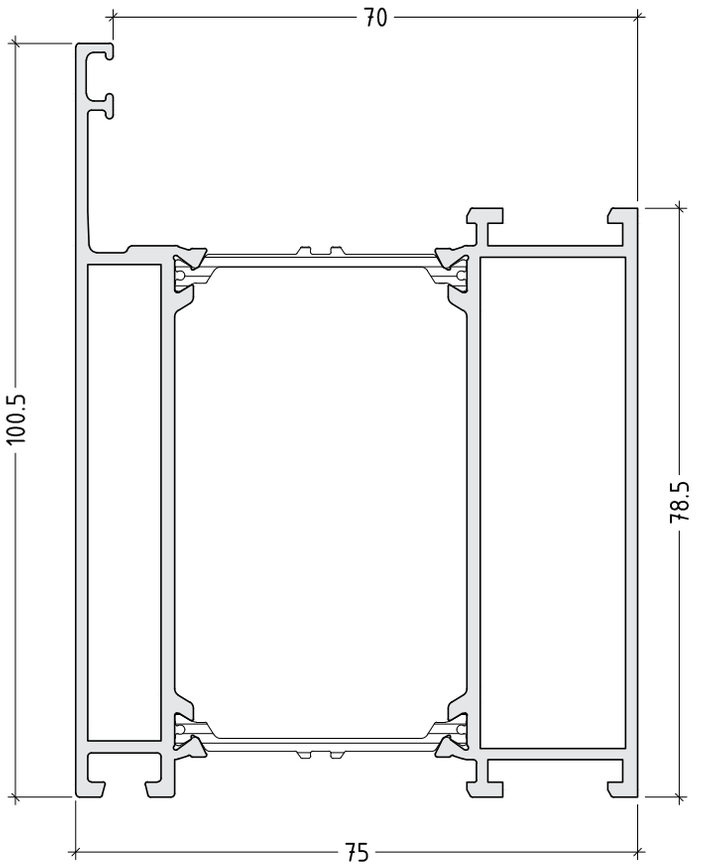


E 75602
79.9 g/m

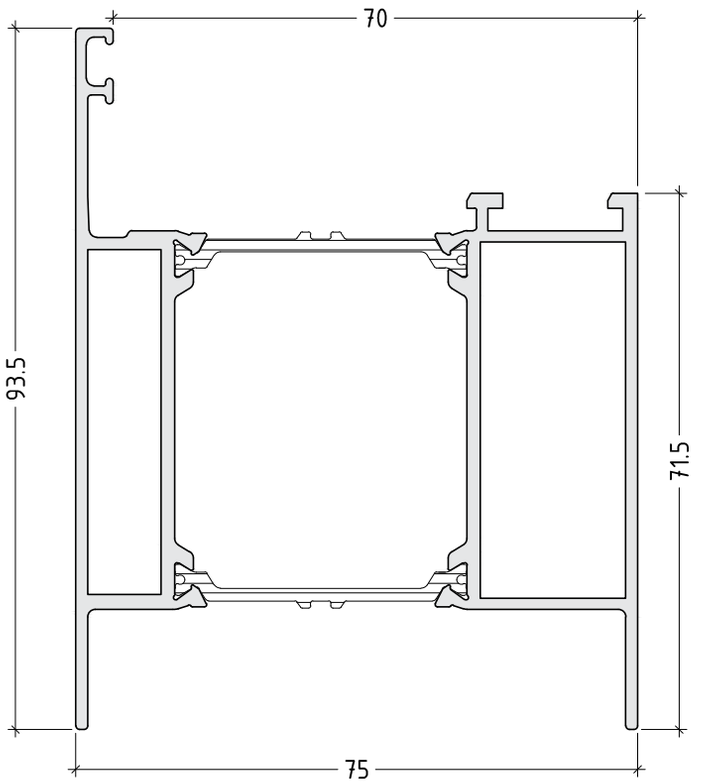


P75D-09

E 75103
2223.4 g/m

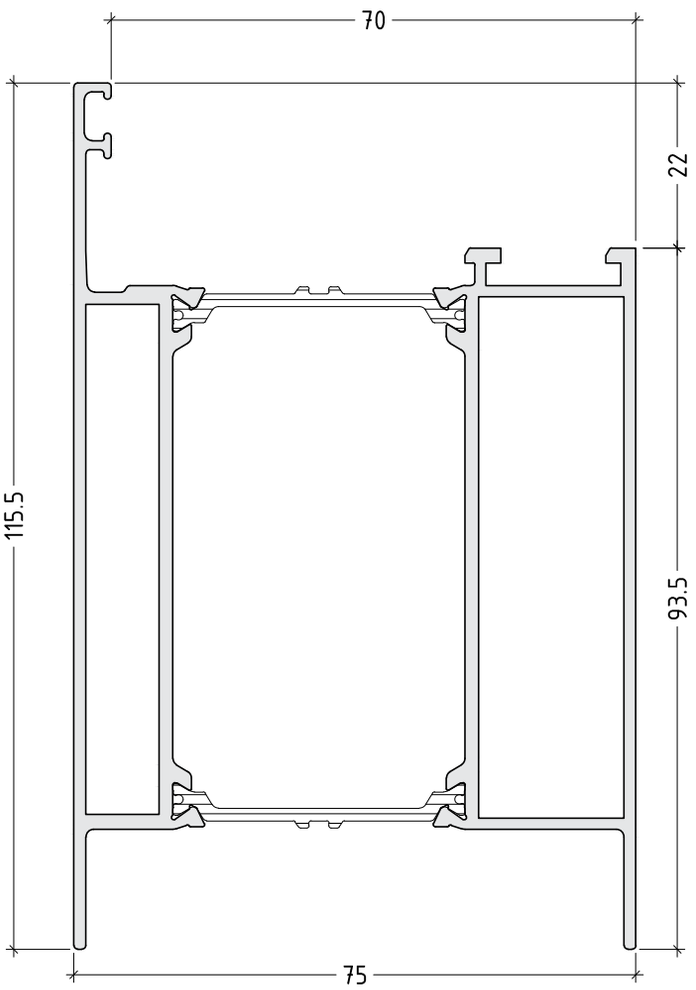


E 75120
1899.2 g/m

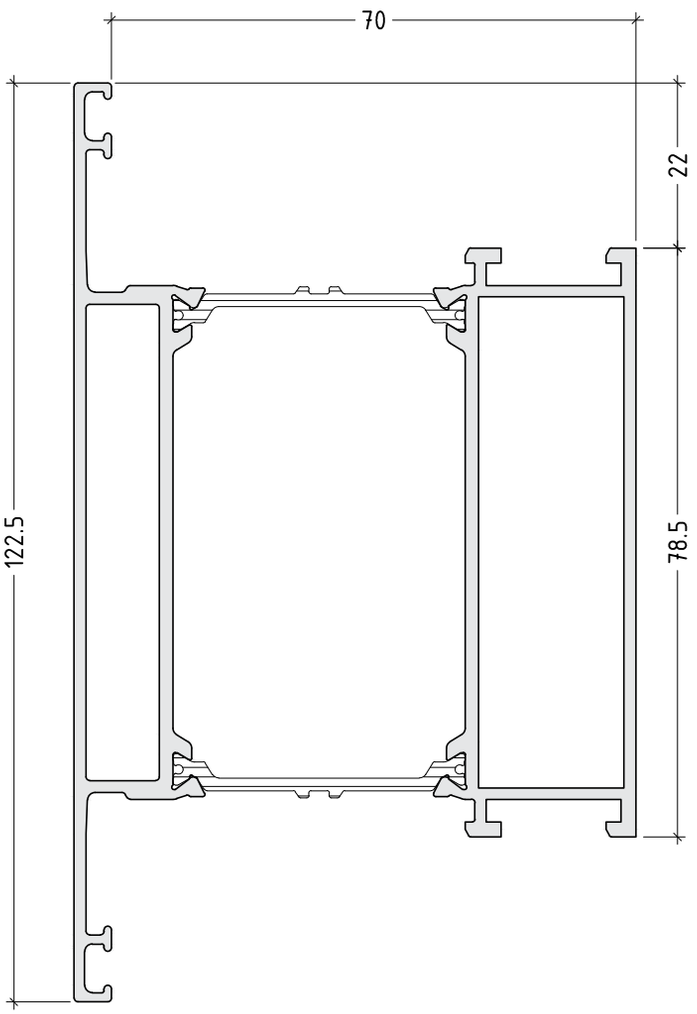


P75D-10

E 75121
2303.6 g/m



E 75303
2312.5 g/m

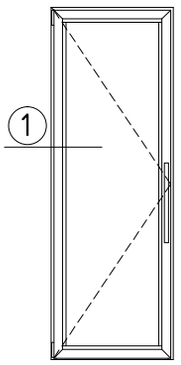


P75D-11

SECTIONS

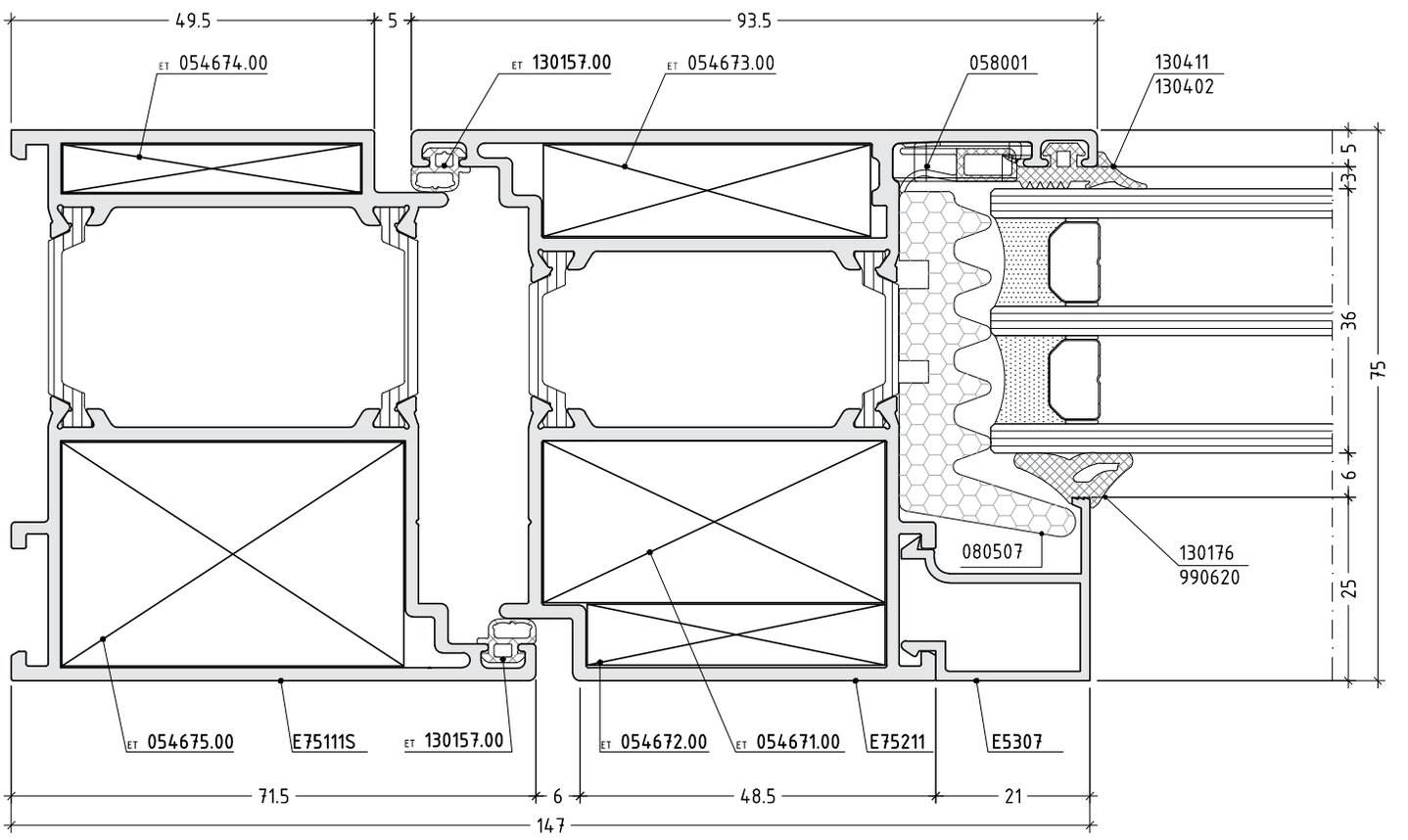
SECTIONS / DETAILS

outward opening



1

out

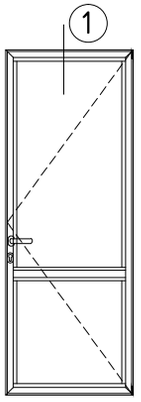


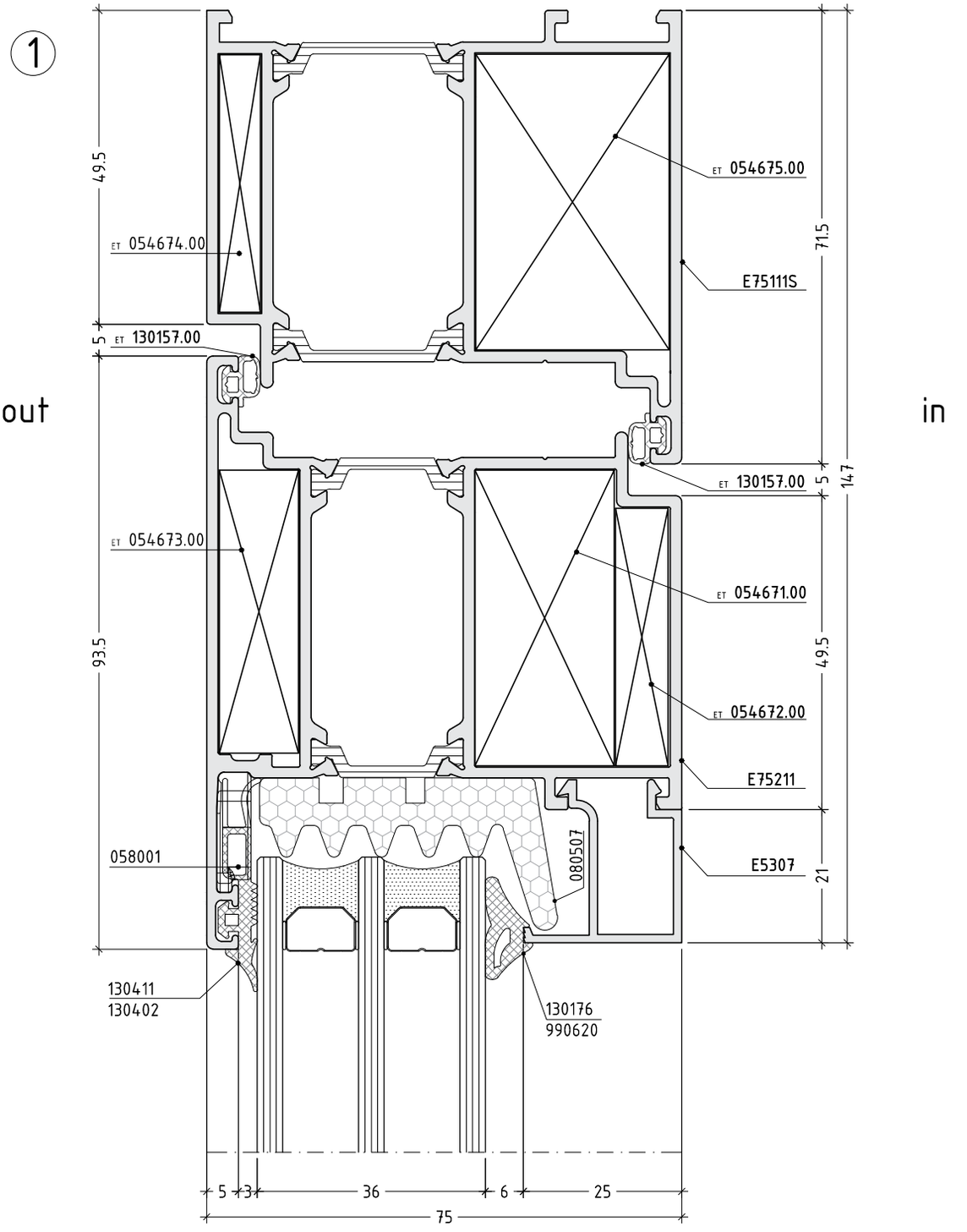
in

scale : 1:1

D75D-05

outward opening

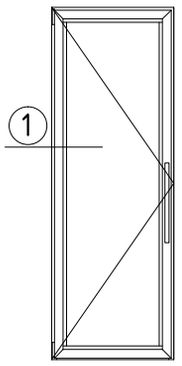




scale : 1:1

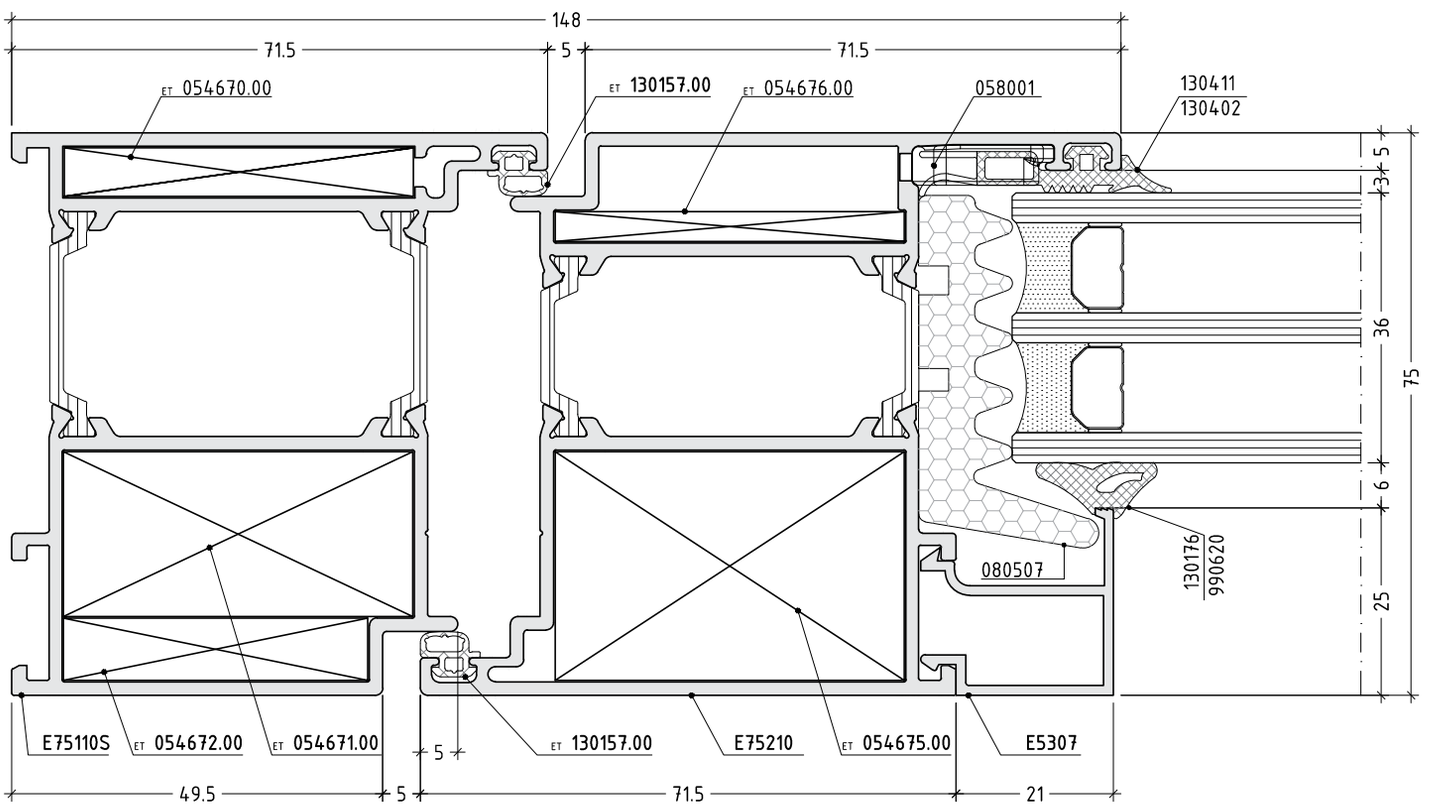
D75D-01

inward opening



1

out

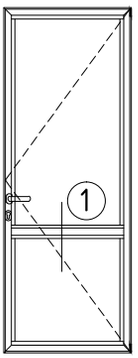


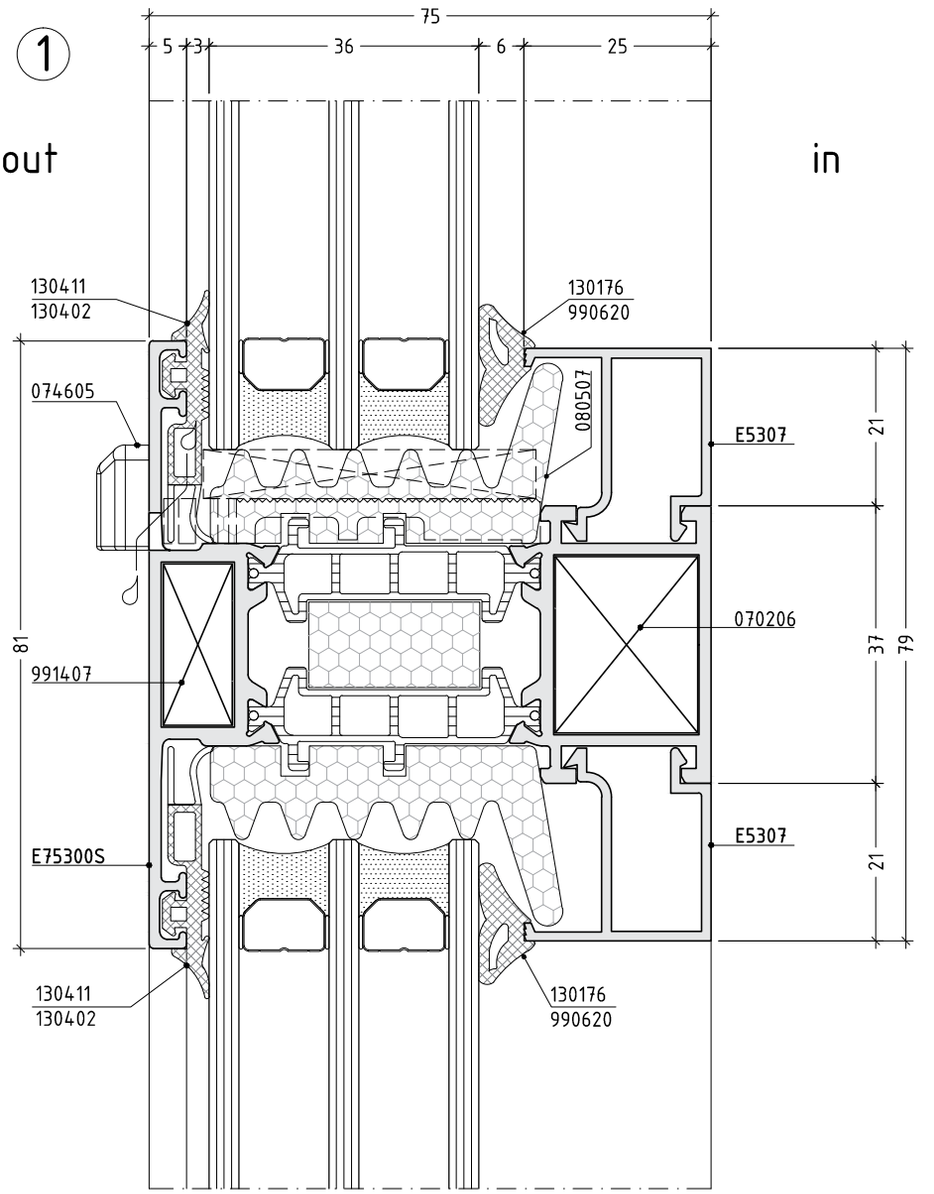
in

scale : 1:1

D75D-06

inward opening

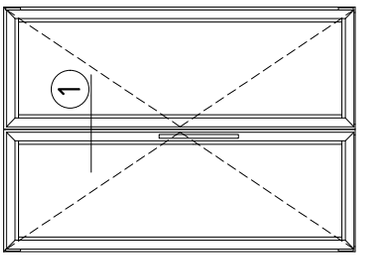


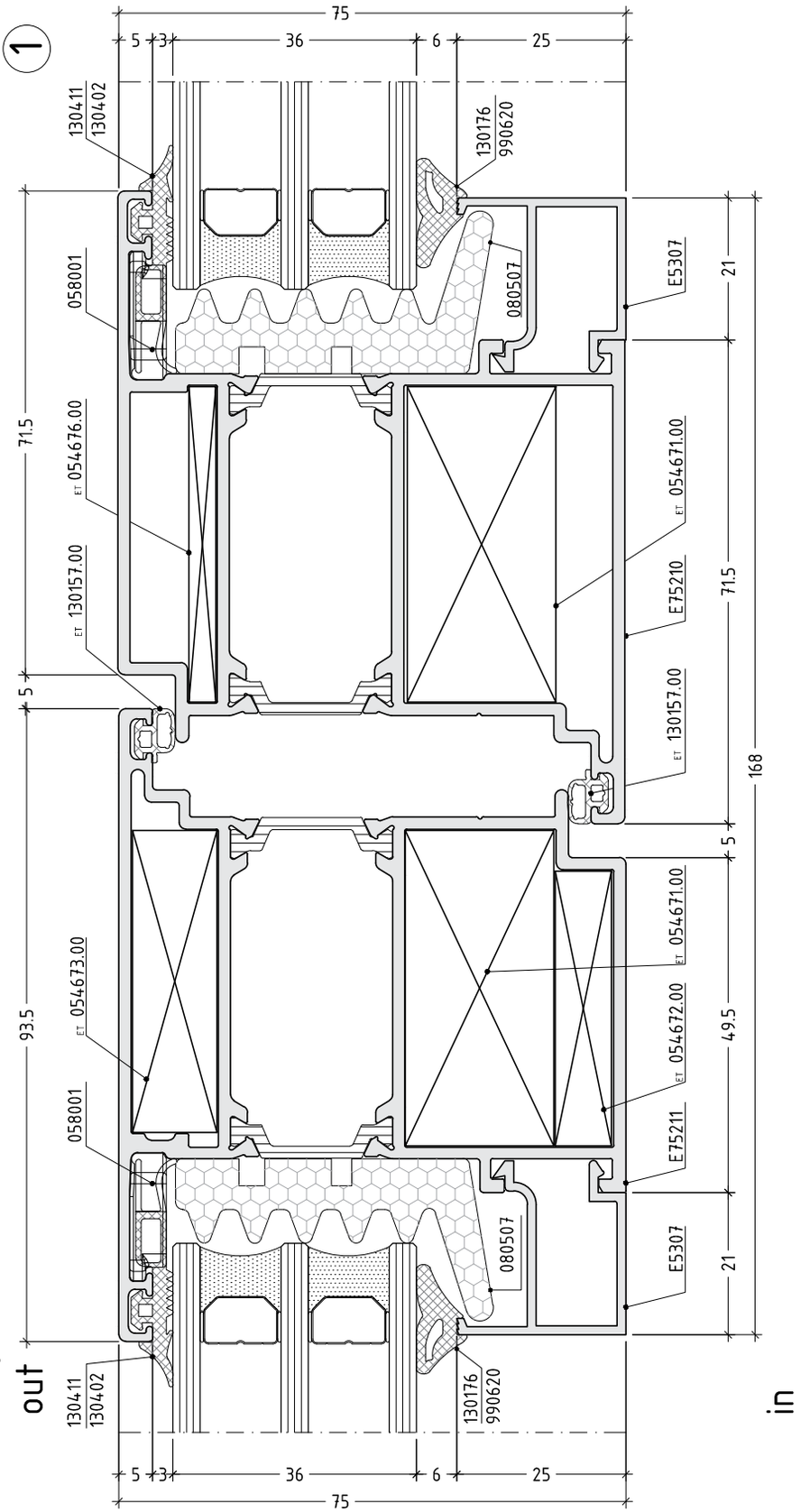


scale : 1:1

D75D-03

outward opening/inward opening





Note:

This central section of double sash door is equal for outward opening and inward opening.

Both option have different machining's.

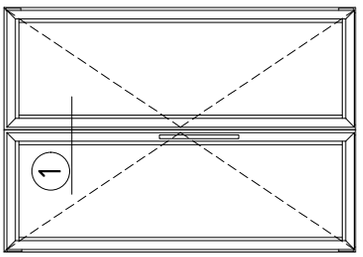
scale : 1:1

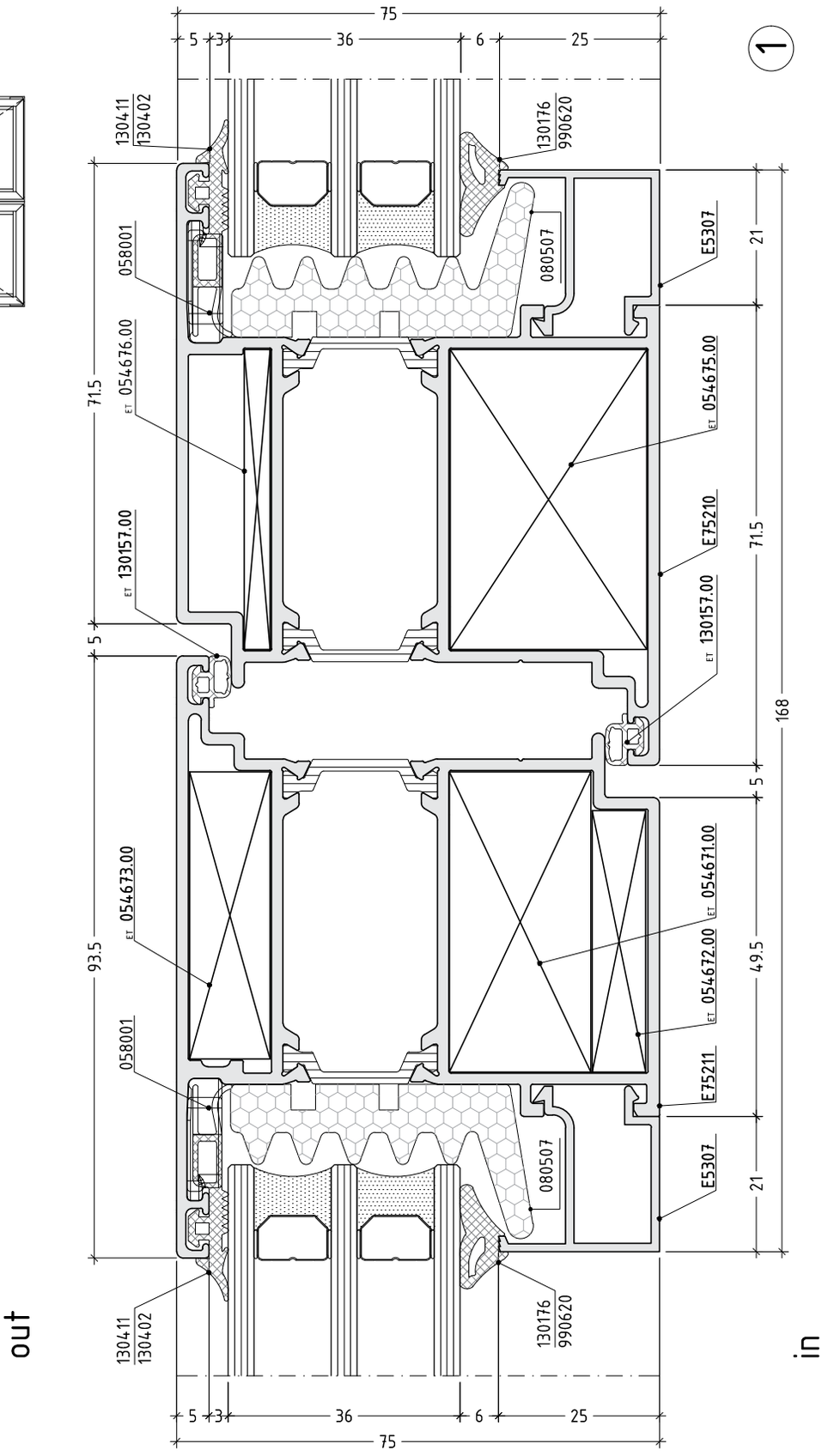
D75D-04

flat door system with thermal break

E75

outward opening

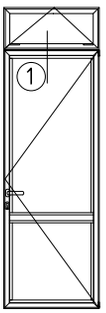


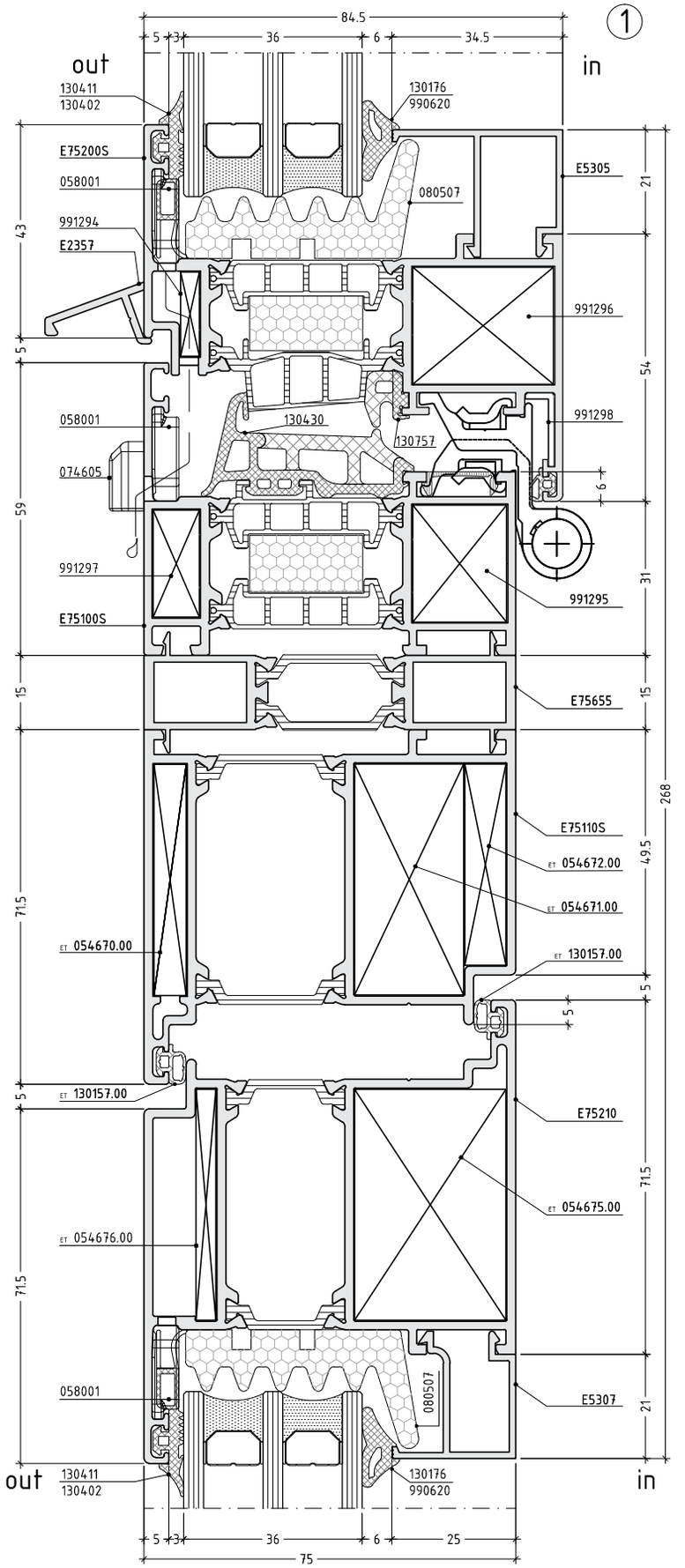


scale : 1:1

D75D-07

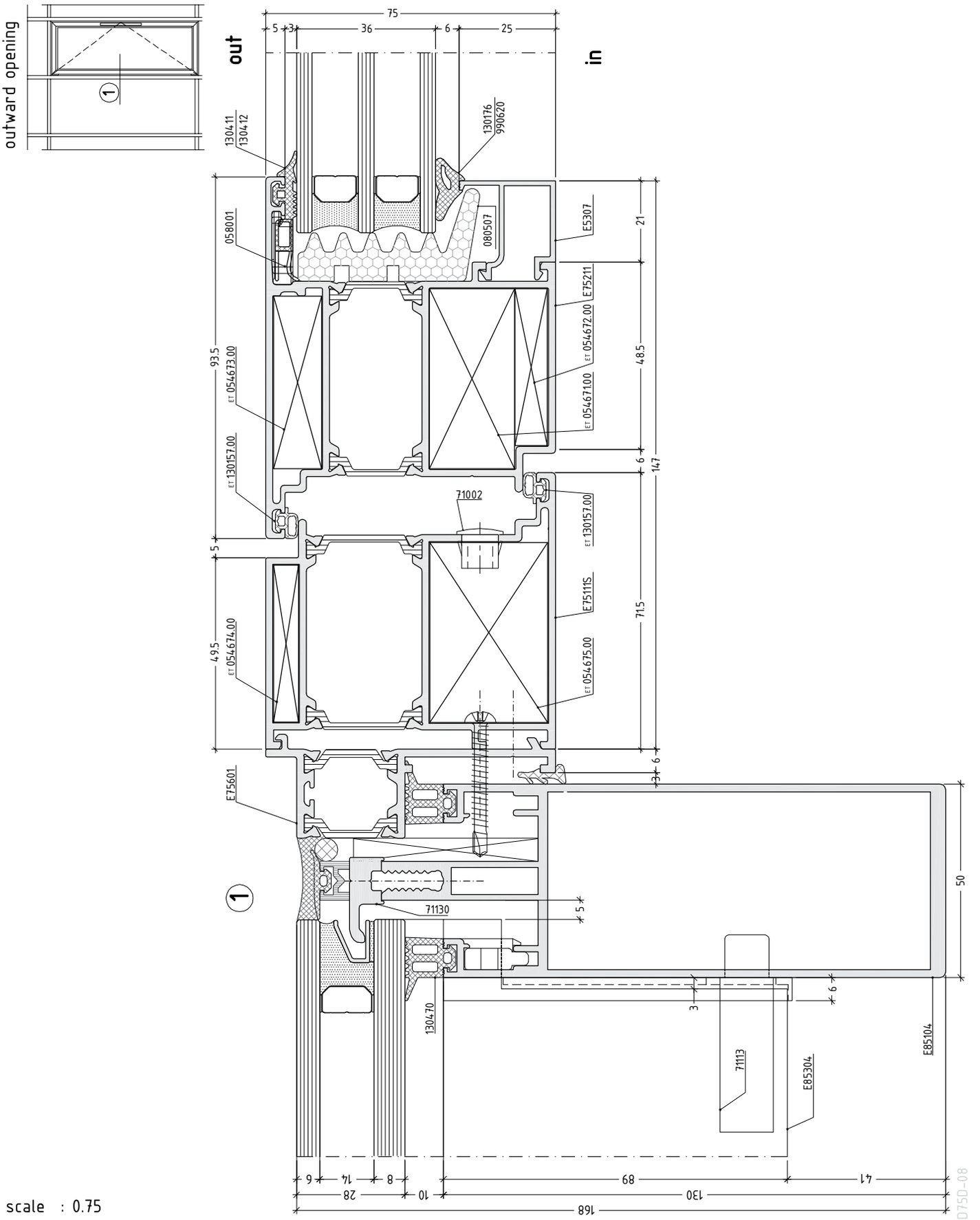
inward opening



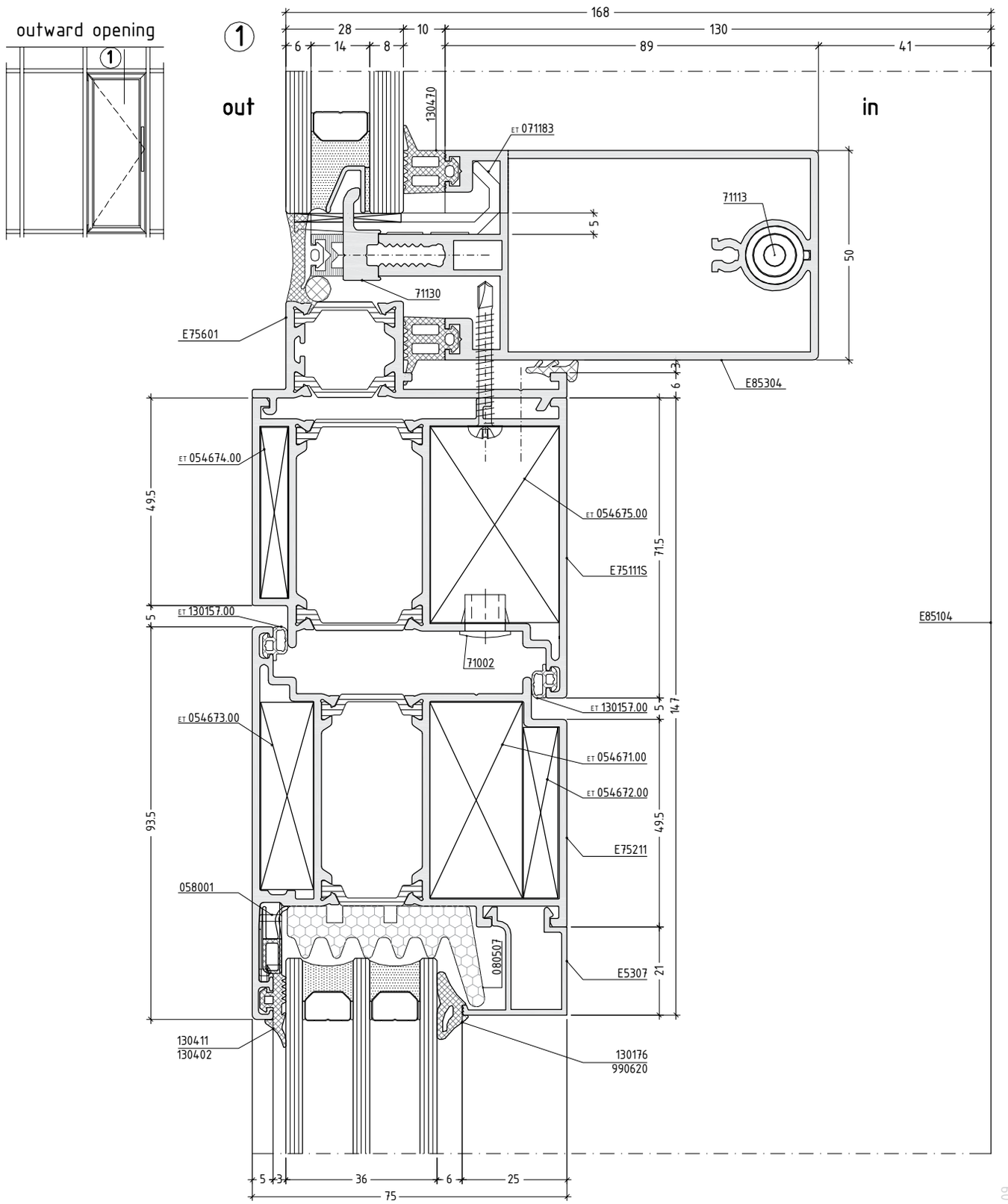


scale : 0.75

0750-02

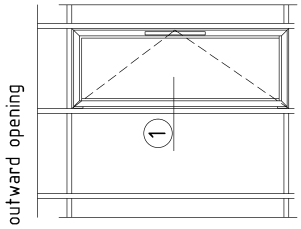

outward opening
1
out
in
75
5
3
36
6
25
130411
130412
130176
990620
058001
080507
E5307
E75211
ET 054672.00
ET 054671.00
ET 054673.00
ET 130157.00
71002
ET 130157.00
E75111S
ET 054675.00
ET 054674.00
E75601
71130
1304.70
71113
E85304
E85104
93.5
49.5
5
21
48.5
6
147
71.5
6
3
50
5
6
3
6
14
8
89
41
28
10
130
168
D75D-08

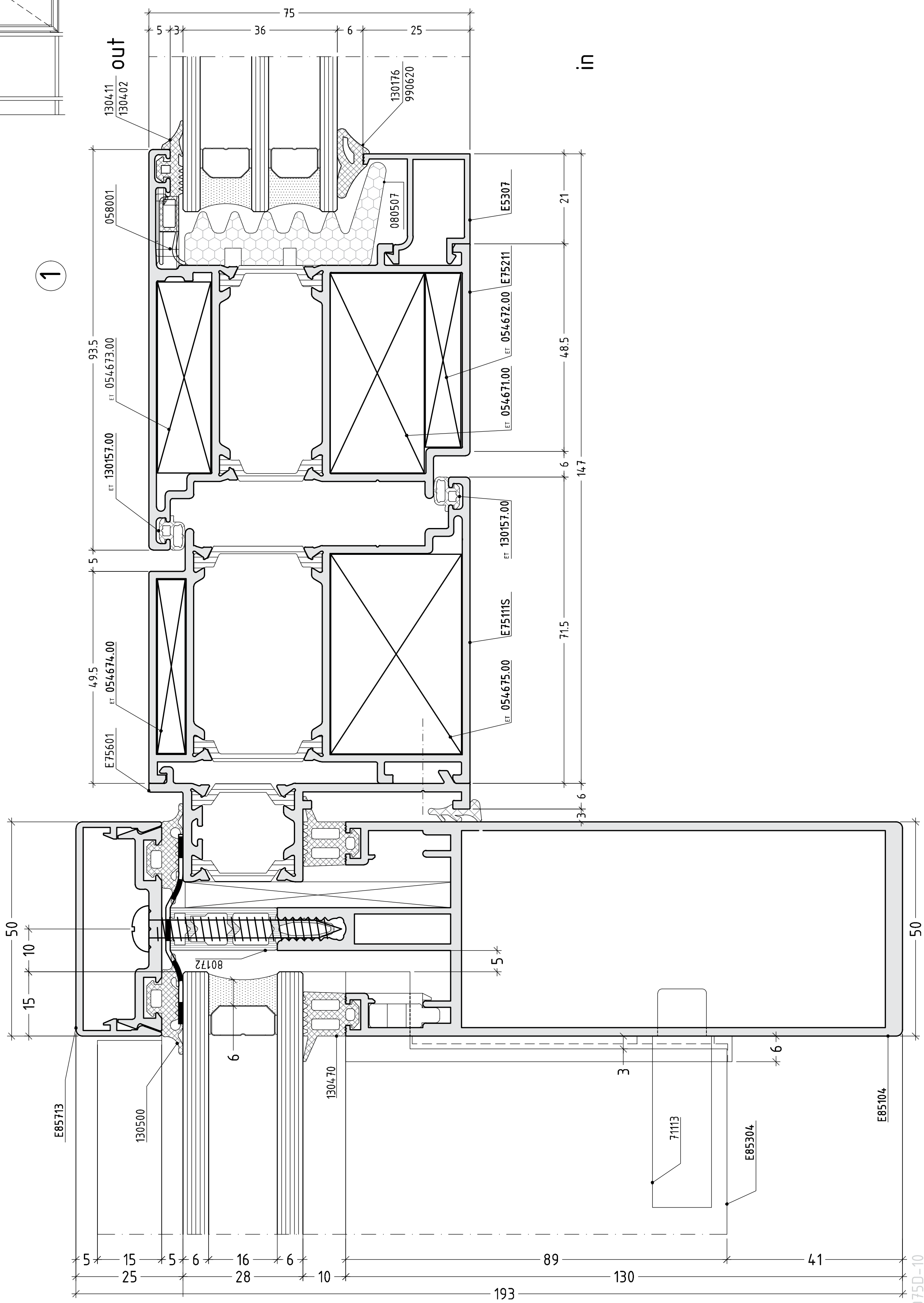
scale : 0.75



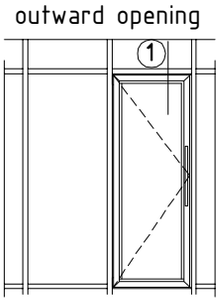
scale : 0.75

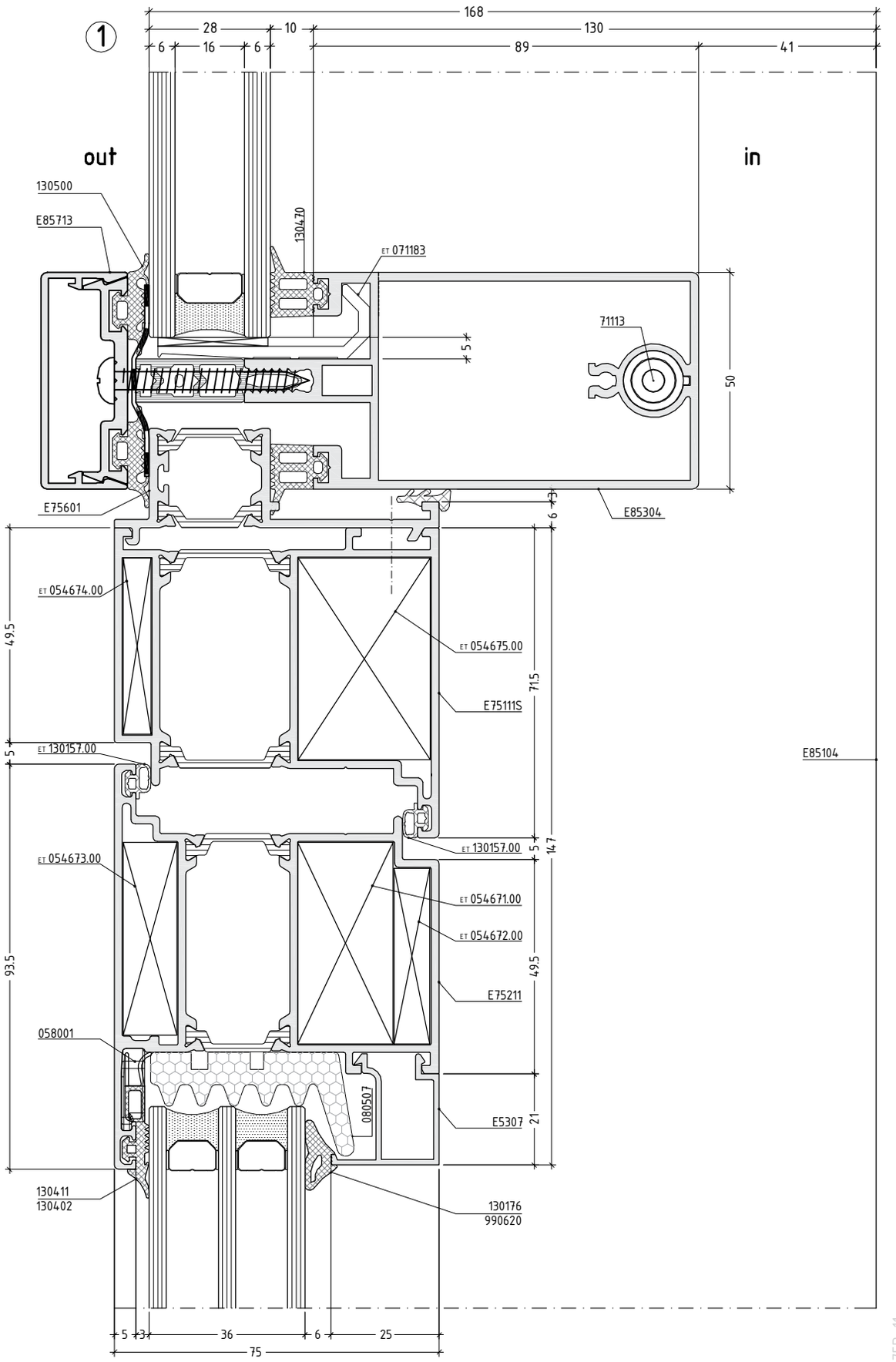
D75D-09


outward opening
1


75
5
3
36
6
25
out
in
130411
130402
130176
990620
058001
080507
E5307
21
1
E75211
054672.00
48.5
93.5
054673.00
054671.00
130157.00
6
147
130157.00
5
E75111S
71.5
49.5
054674.00
054675.00
E75601
6
3
50
10
15
80172
5
50
6
3
130470
130500
E85713
71113
E85304
E85104
5
15
5
6
16
6
89
41
25
28
10
130
193
D75D-10

scale : 0.75





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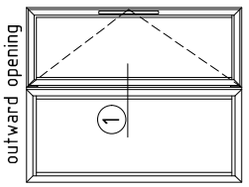
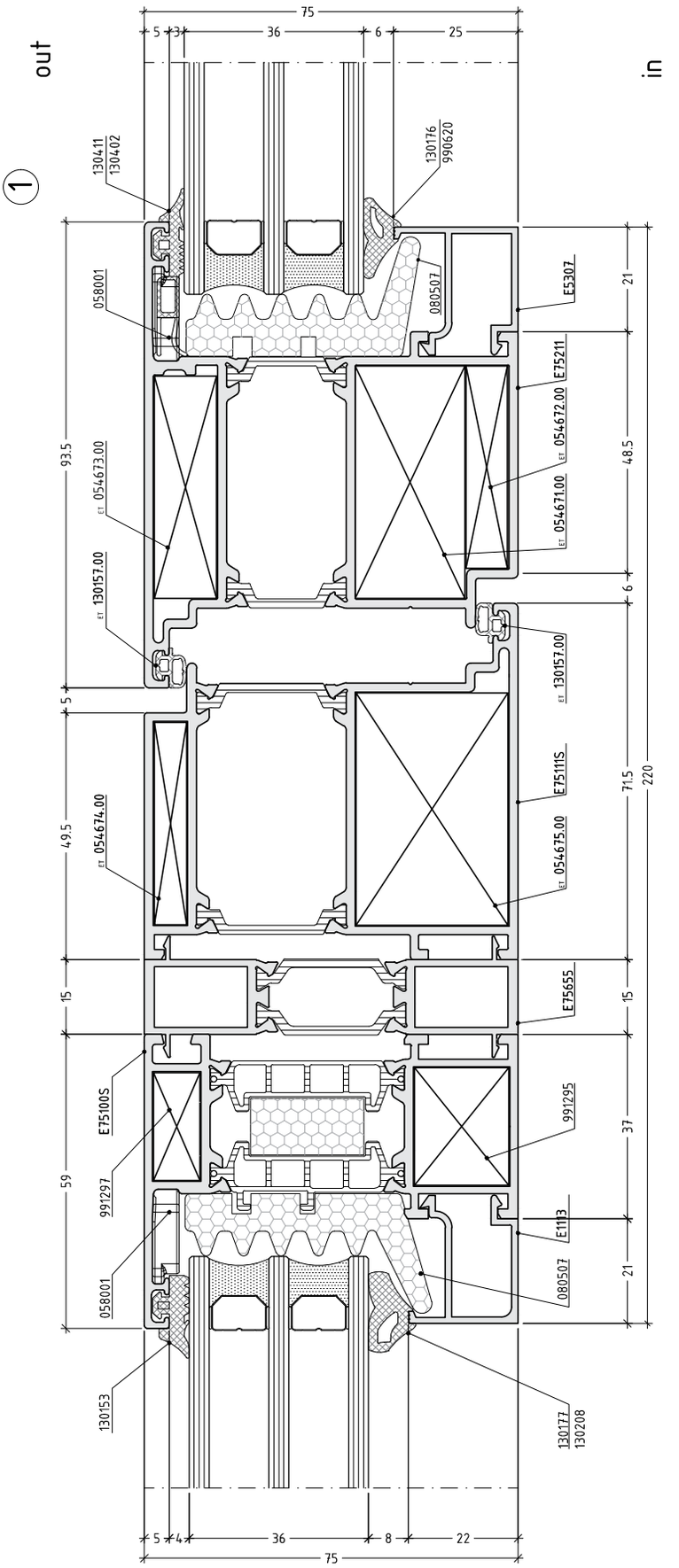
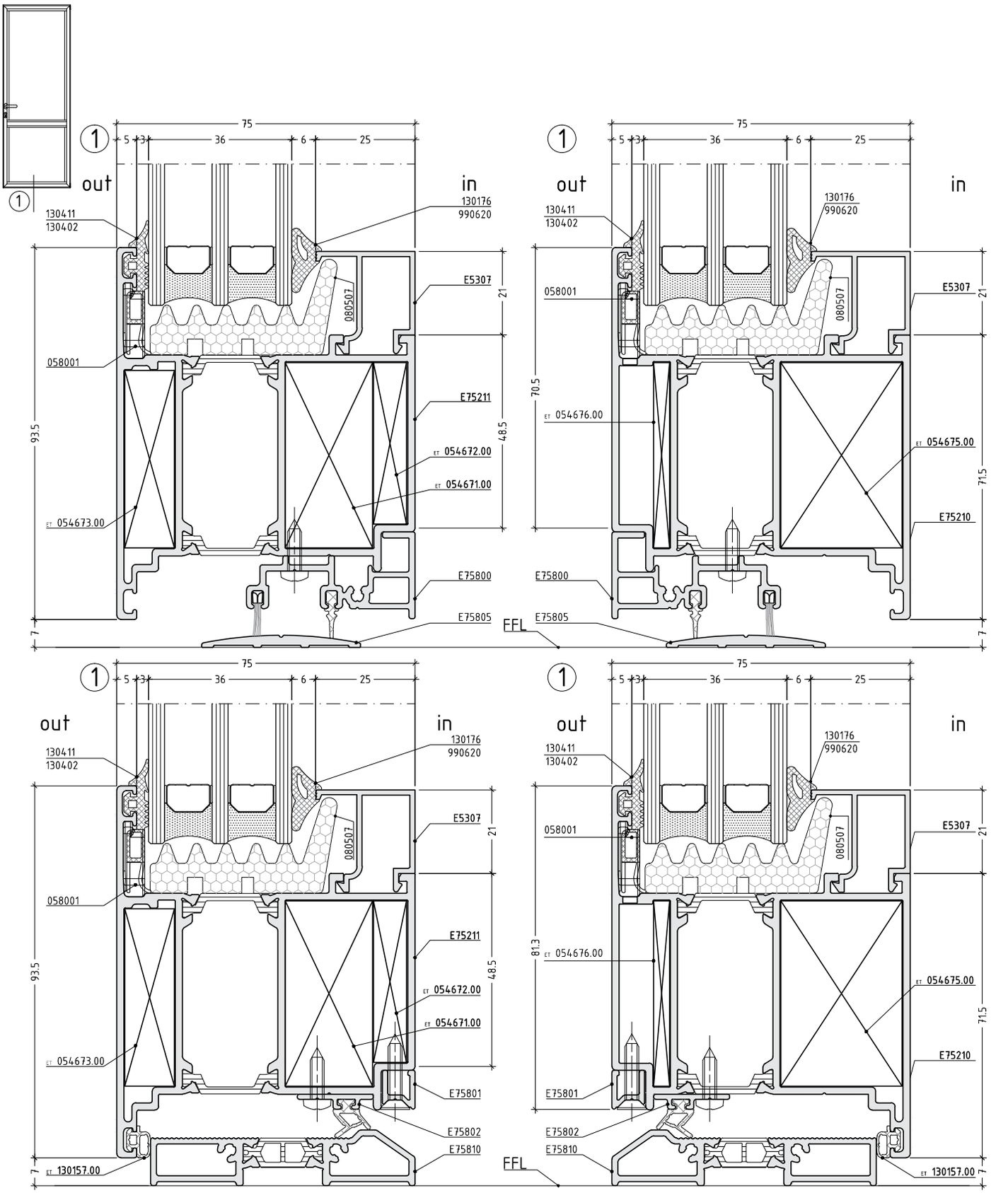
D75D-11





scale : 0.75

D75D-12



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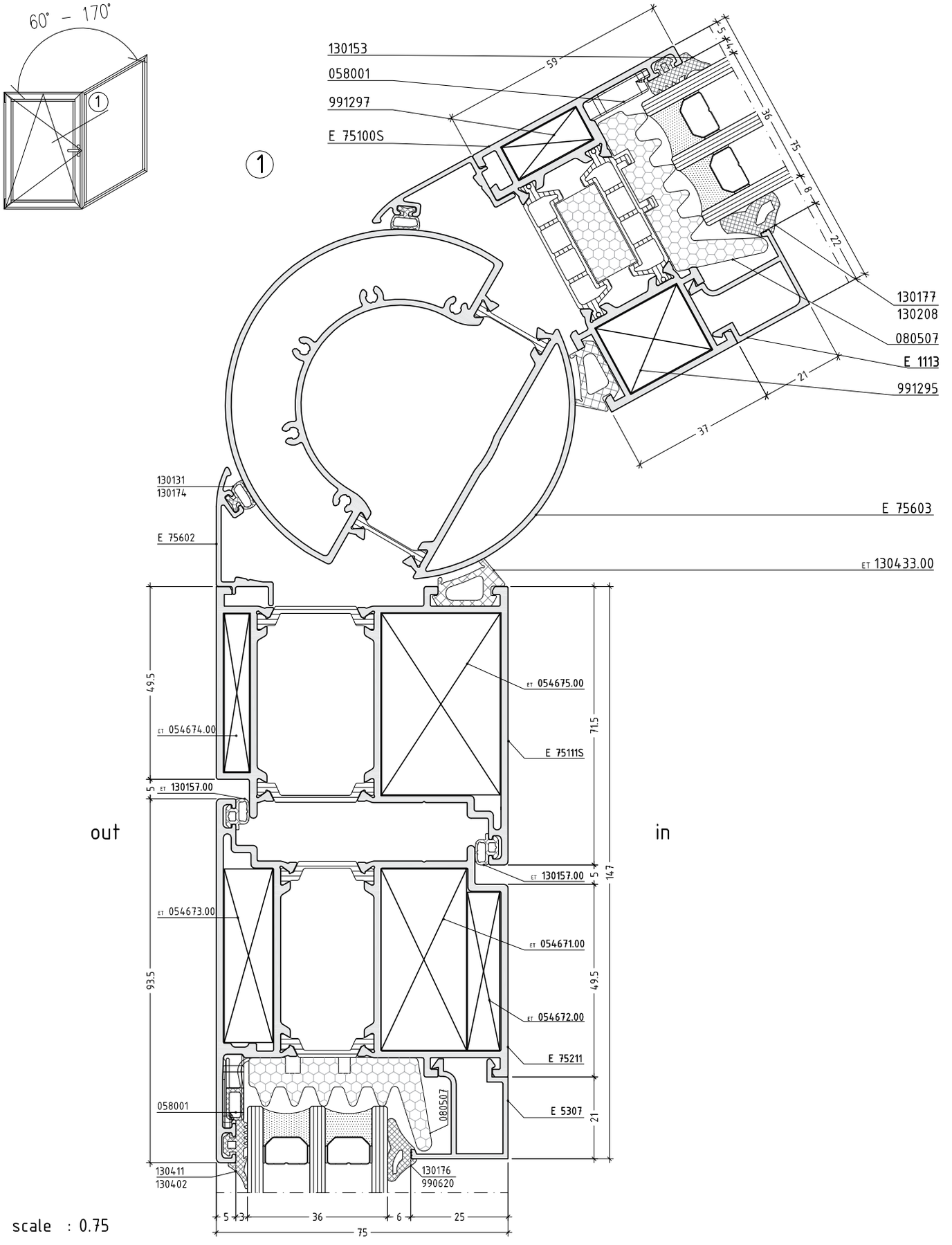
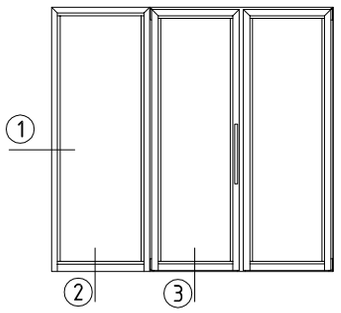
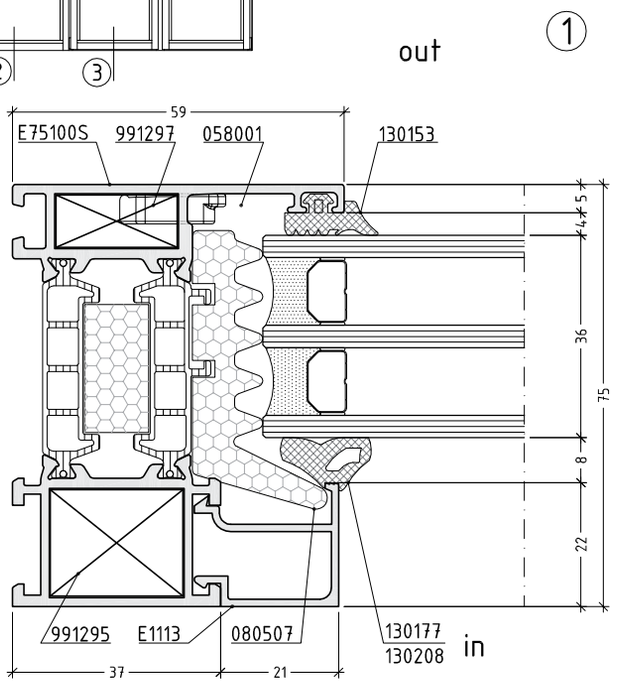
D75D-13

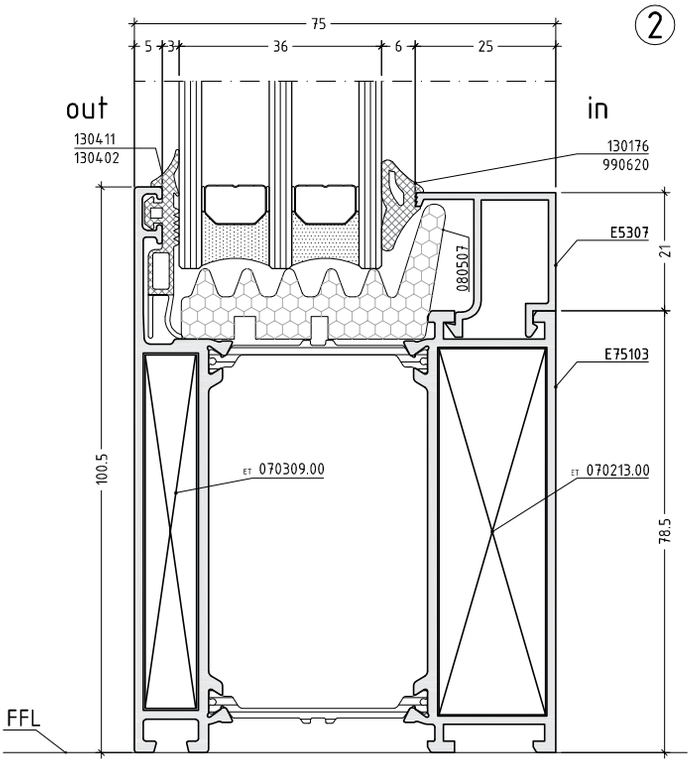


scale : 0.75

D75D-14


1
2
3


1
out
59
E75100S
991297
058001
130153
5
4
36
8
22
75
991295
E1113
080507
130177
130208
in
37
21


2
75
5
3
36
6
25
out
in
130411
130402
130176
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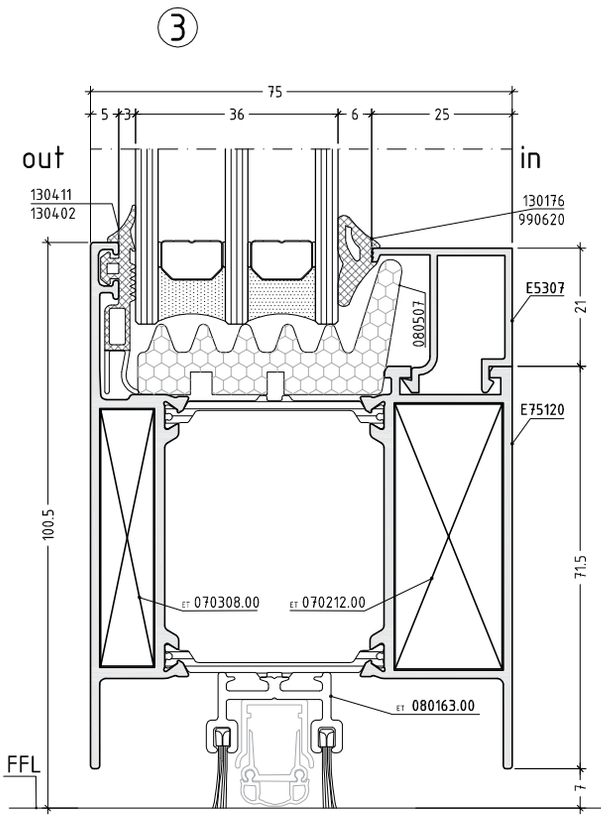
080507
21
E75103
100.5
ET 070309.00
ET 070213.00
78.5
FFL


3
75
5
3
36
6
25
out
in
130411
130402
130176
990620
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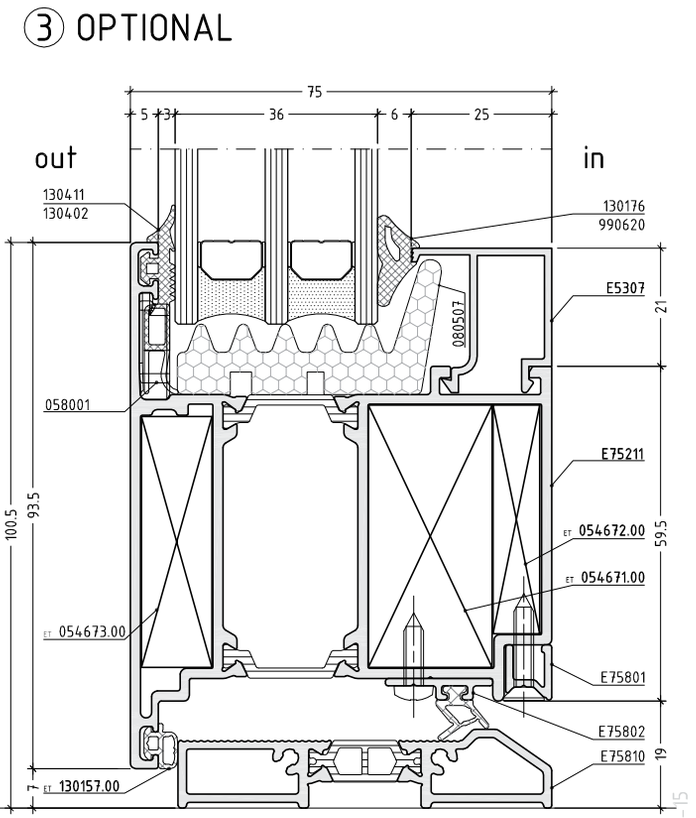
21
E75120
100.5
ET 070308.00
ET 070212.00
71.5
ET 080163.00
7
FFL


3 OPTIONAL
75
5
3
36
6
25
out
in
130411
130402
130176
990620
E5307
080507
21
058001
E75211
100.5
93.5
ET 054672.00
59.5
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ET 054673.00
E75801
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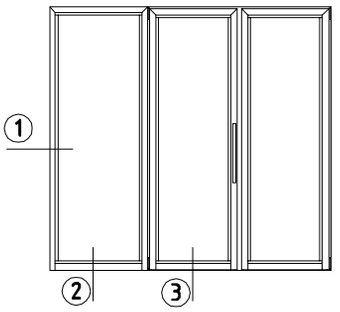
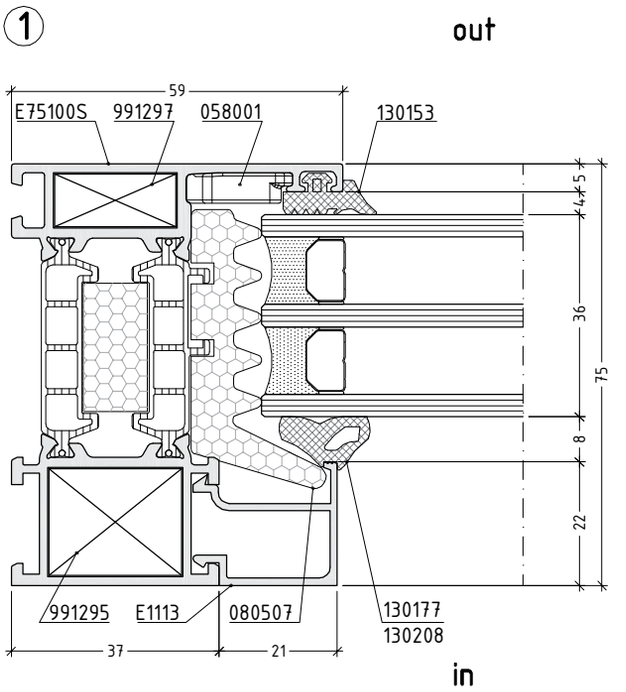
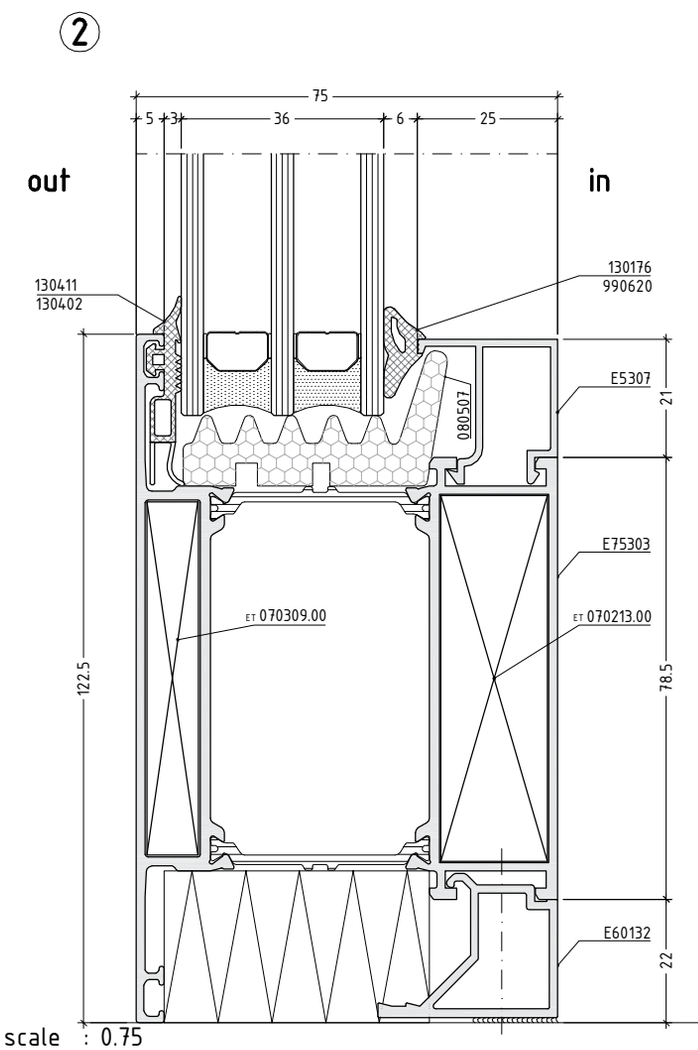
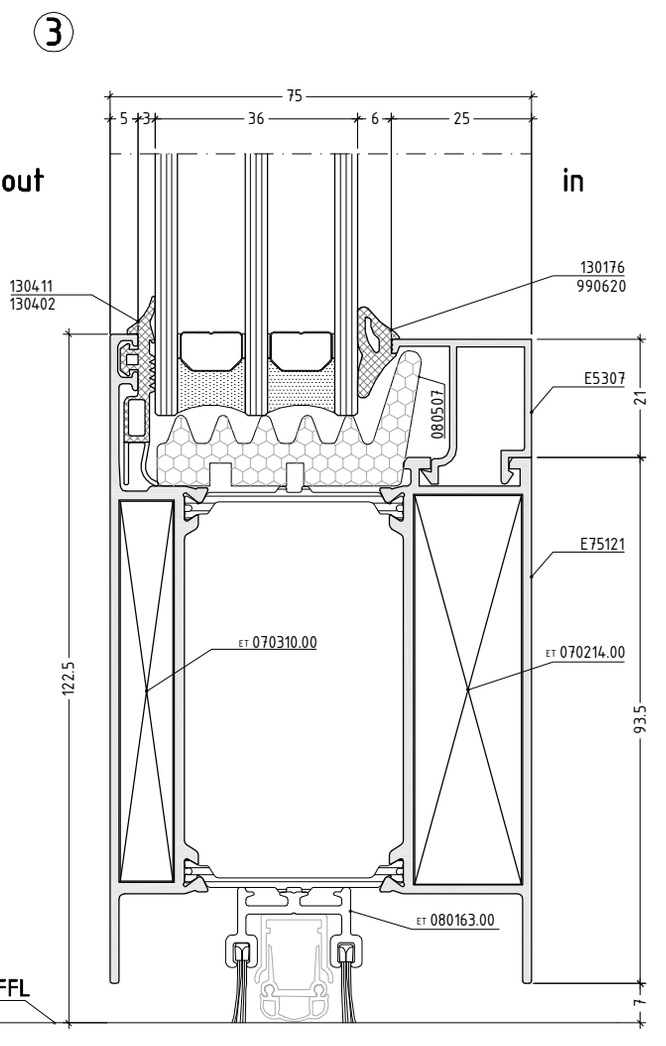
E75810
19
7
ET 130157.00

scale : 0.75



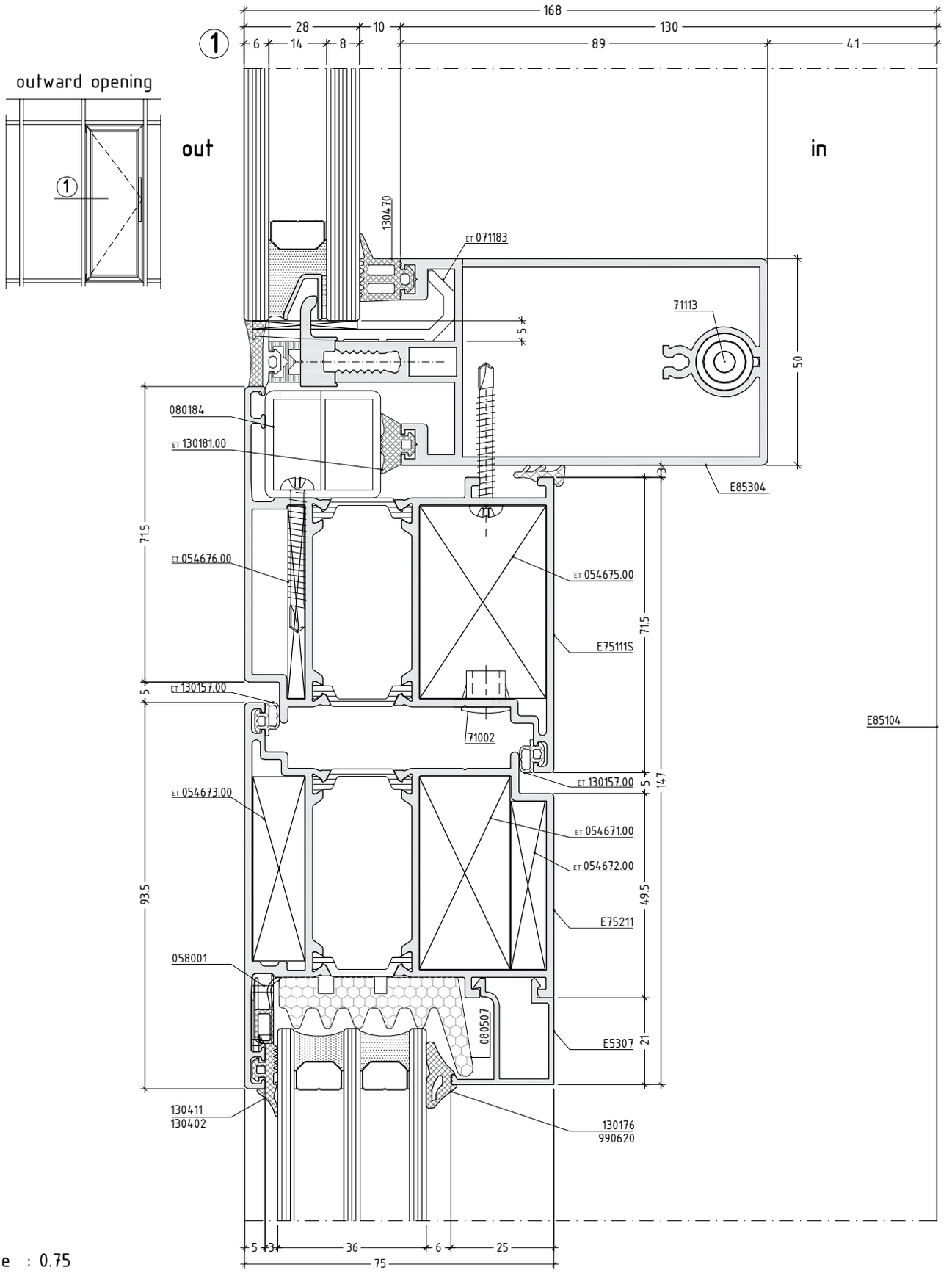






scale : 0.75

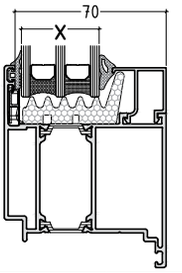
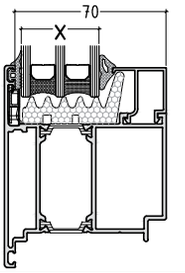
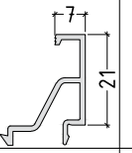
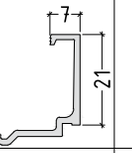
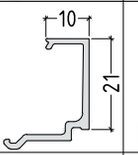
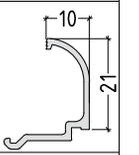
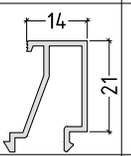
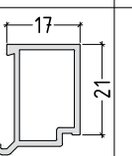
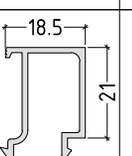
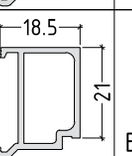
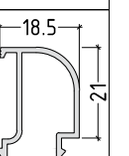
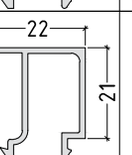
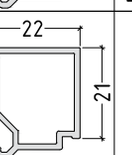
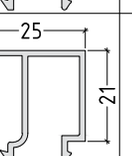
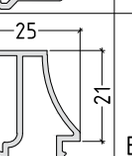
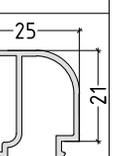
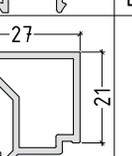
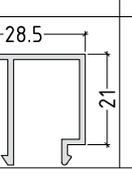
D75D-16



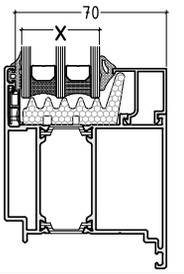
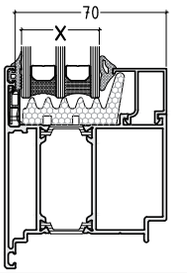
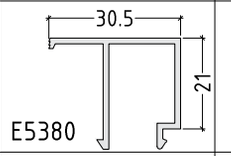
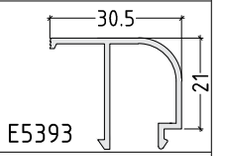
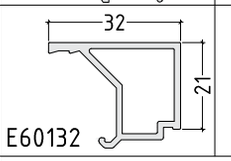
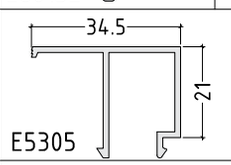
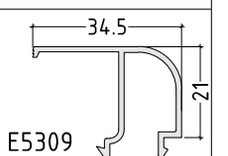
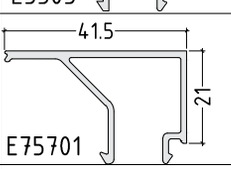
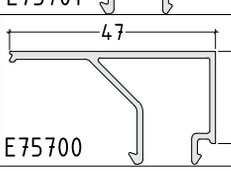
scale : 0.75

D75D-17

GLAZING OPTIONS

GLAZING OPTIONS								
external gaskets	INTERNAL GASKETS					GLAZING BEADS		
3 mm 130411 / 130402 / 4 mm 130153	5 - 6 mm 130176		7 - 8 mm 130177					
	5 mm 990619	6 mm 130207	7 mm 130207	8 mm 130208	10 mm 994412			
	X mm					1	2	3
130411 130402	55	54	53	52	50			
130153	54	53	52	51	49			
130411 130402	52	51	50	49	47			
130153	51	50	49	48	46			
130411 130402	48	47	46	45	43			
130153	47	46	45	44	42			
130411 130402	45	44	43	42	40			
130153	44	43	42	41	39			
130411 130402	43	42	41	40	38			
130153	42	41	40	39	37			
130411 130402	40	39	38	37	35			
130153	39	38	37	36	34			
130411 130402	37	36	35	34	32			
130153	36	35	34	33	31			
130411 130402	35	34	33	32	30			
130153	34	33	32	31	29			
130411 130402	34	33	32	31	29			
130153	33	32	31	30	28			

T75D-01

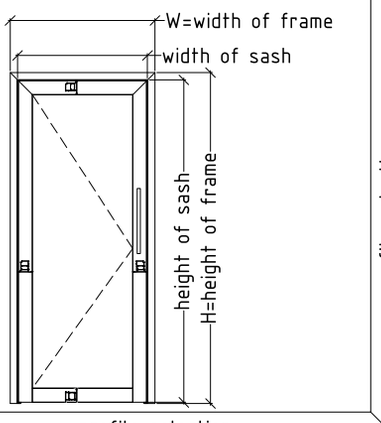
GLAZING OPTIONS								
external gaskets	INTERNAL GASKETS					GLAZING BEADS		
3 mm 130411 130402 4 mm 130153	5 - 6 mm 130176		7 - 8 mm 130177					
	5 mm 990619 	6 mm 130207 	7 mm 130207 	8 mm 130208 	10 mm 994412 			
	X mm					1	2	3
130411 130402	31	30	29	28	26			
130153	30	29	28	27	25			
130411 130402	30	29	28	27	25			
130153	29	28	27	26	24			
130411 130402	27	26	25	24	22			
130153	26	25	24	23	21			
130411 130402	20	19	18	17	15			
130153	19	18	17	16	14			
130411 130402	15	14	13	12	10			
130153	14	13	12	11	9			

Note:
Tolerance in dimension chain is ±0.5 mm

T75D-02

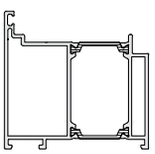
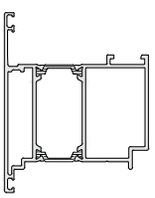
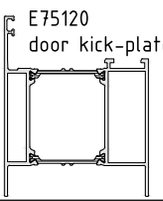
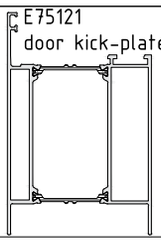
CUTTING LISTS & MACHININGS

outward opening - single sash door



profile selection

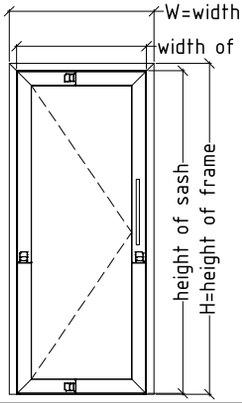
calculation of cutting lenght for one sash door

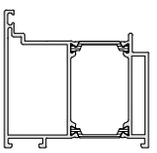
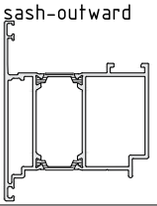
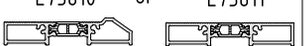
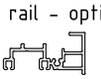
profile selection		pieces	cutting formula	cutting angles
E75111 frame-outward 	width of frame	1	W	2x45°
	height of frame-left	1	H	1x45° + 1x90° up down
	height of frame-right	1	H	1x45° + 1x90° up down
E75211 sash-outward 	width of sash-outward	1	W - 109	2x45°
	height of sash-outward left	1	H - 61.5	1x45° + 1x90° up down
	height of sash-outward right	1	H - 61.5	1x45° + 1x90° up down
option 1				
E75120 door kick-plate 	width of door kick-plate	1	width of sash-134,5	2x90°
option 2				
E75121 door kick-plate 	width of door kick-plate	1	width of sash-134,5	2x90°

not to scale

M75D-01

outward opening - single sash door

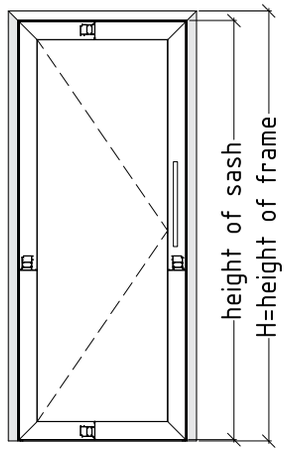


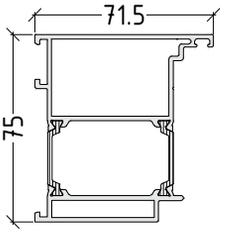
profile selection		calculation of cutting lenght for one sash door		
		pieces	cutting formula	cutting angles
E75111 frame-outward 	width of frame	1	W	2x45°
	height of frame-left	1	H	1x45° + 1x90° up down
	height of frame-right	1	H	1x45° + 1x90° up down
E75211 sash-outward 	width of sash-outward	2	W - 109	2x45°
	height of sash-outward	2	H - 61.5	2x45°
option 1				
E75810 or E75811 	width of door threshold	1	W - 143	1x90°
E75802 bottom rail	width of bottom rail	1	width of sash-32	2x90°
E75801 	width of addition	1	width of sash-47	2x90°
option 2				
E75800 bottom rail - optional finish 	width of bottom rail	1	width of sash-48	2x90°
E75805 - optional finish	width of door threshold	1	W - 125	2x90°

not to scale

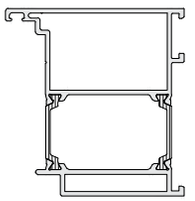
M75D-02

outward opening - single sash door

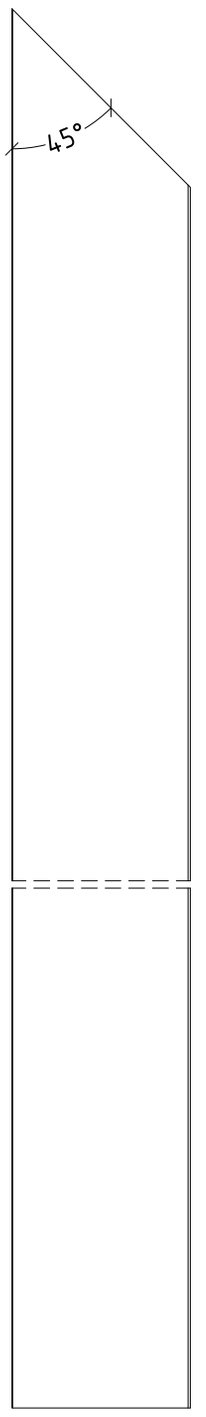


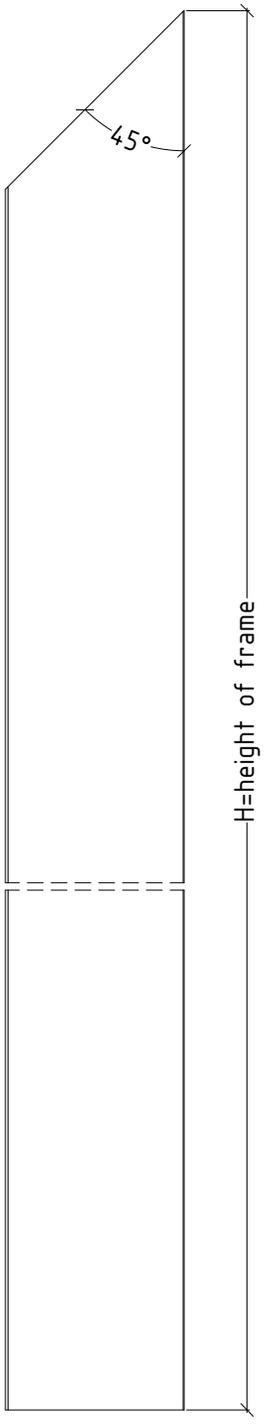


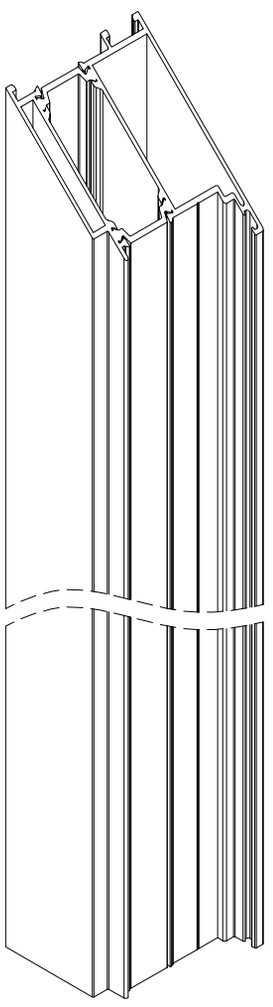
E75111
frame-outward

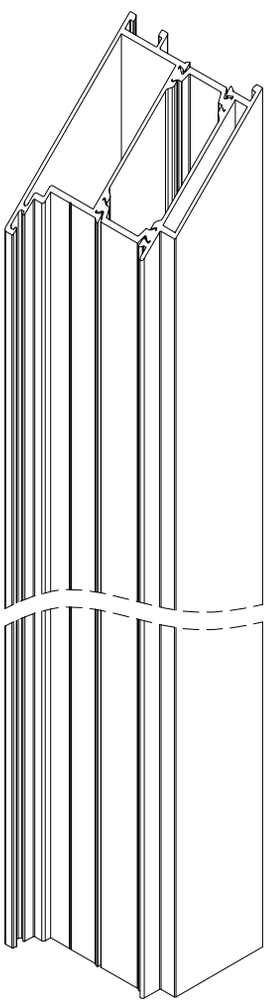


E75111
frame-outward





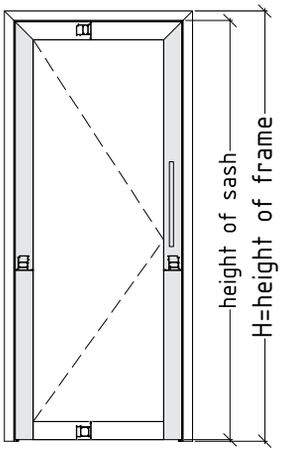


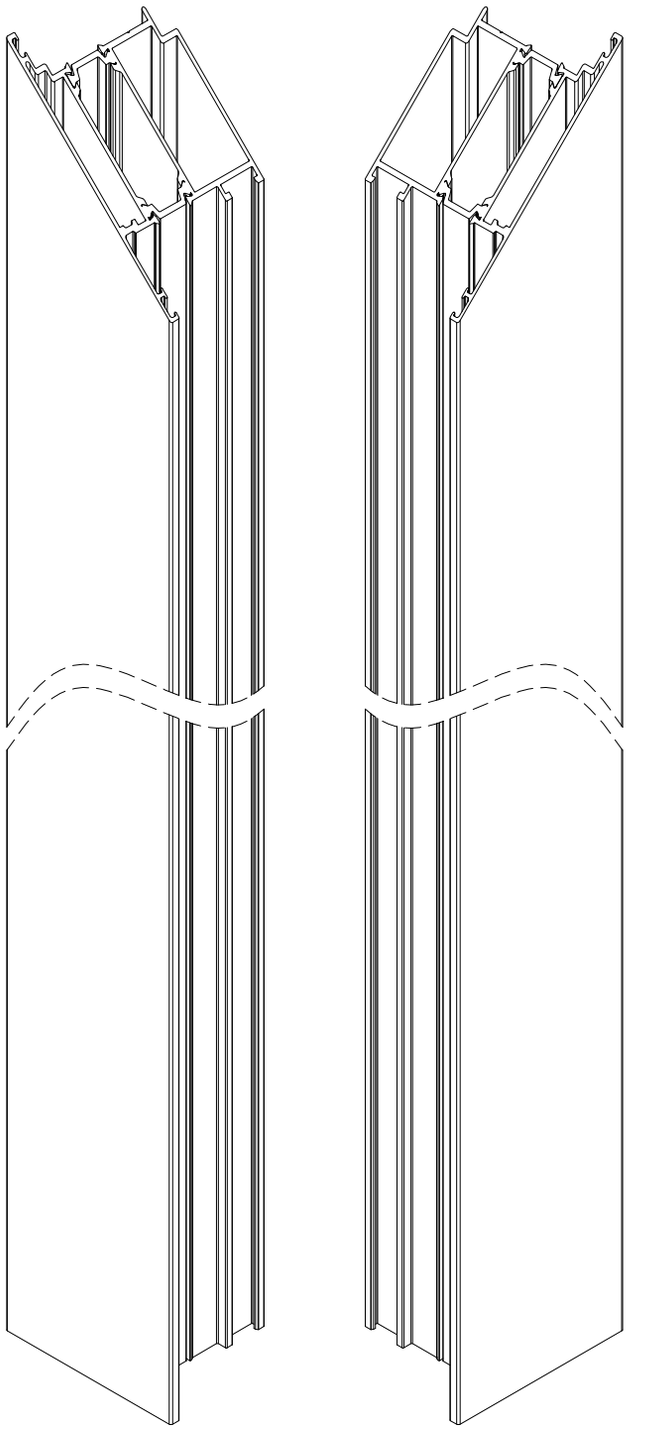


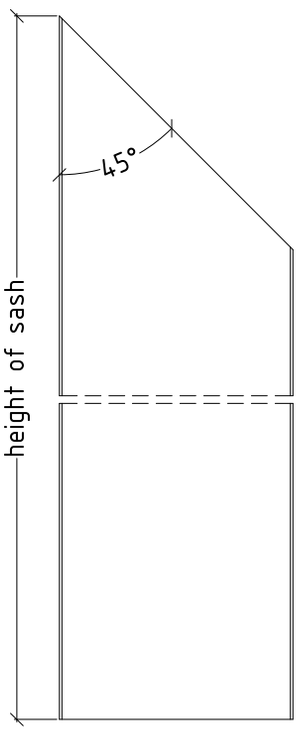
not to scale

M75D-03

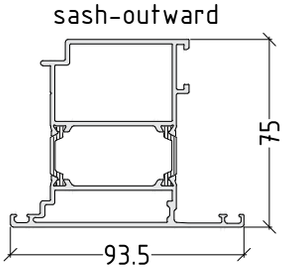
outward opening - single sash door

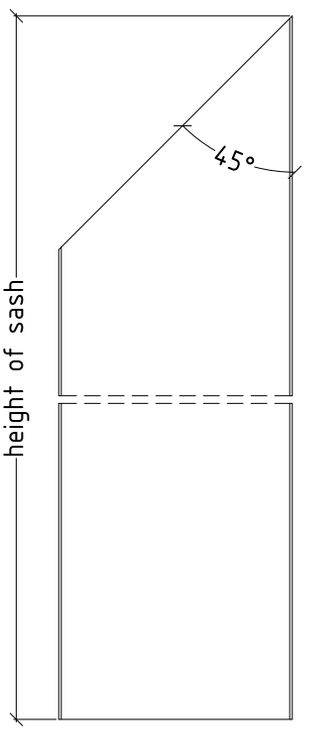




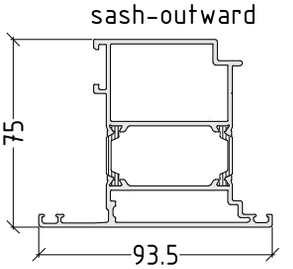


E75211
sash-outward





E75211
sash-outward

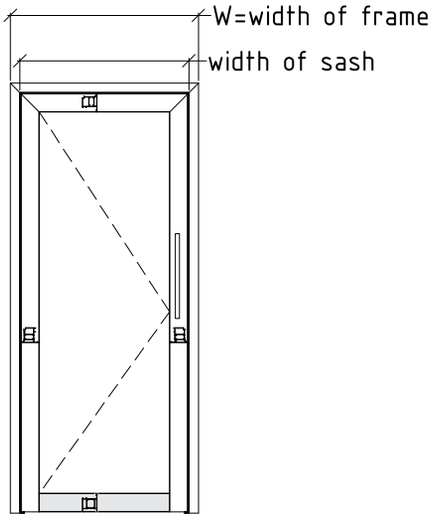


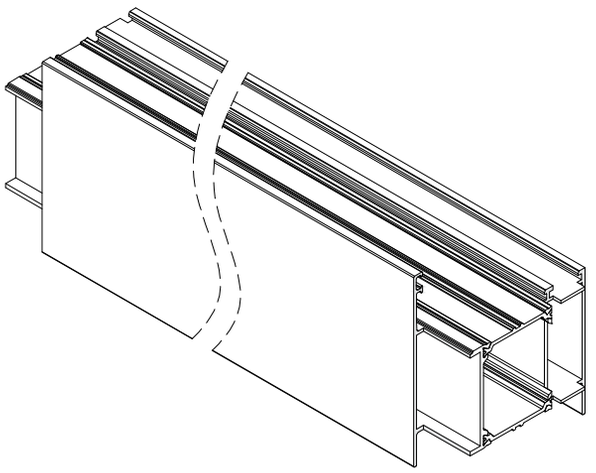
not to scale

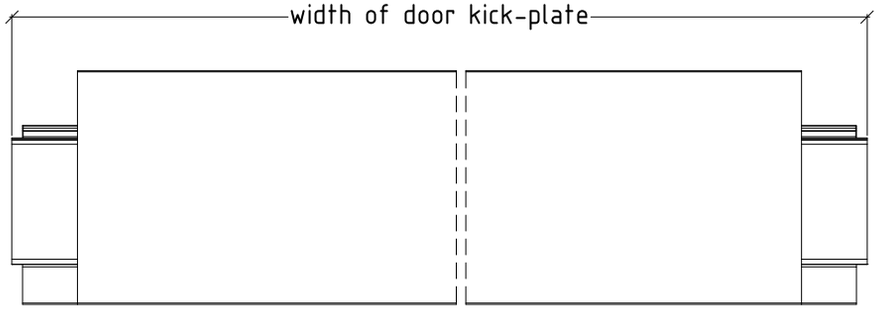
height of sash = H - 61.5

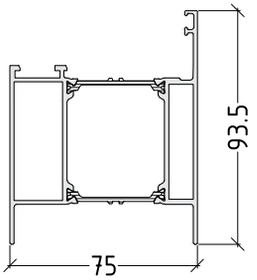
M75D-04

outward / inward opening - single sash door

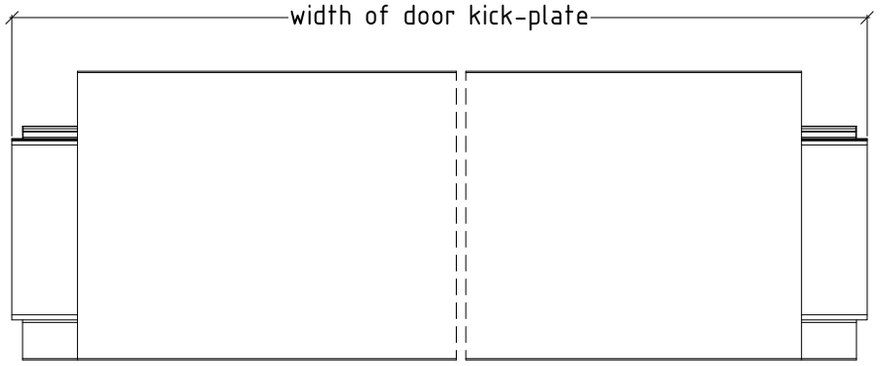


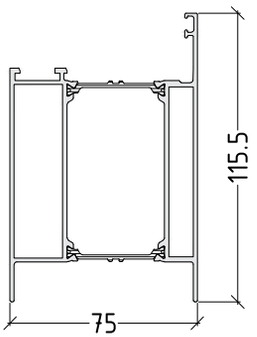


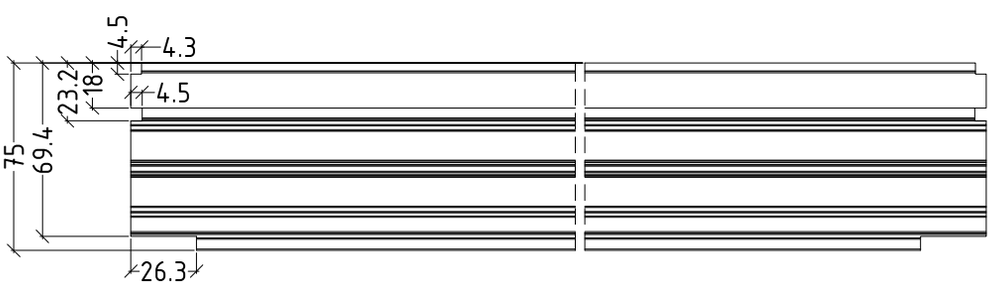




E75120 or E75121
door kick-plate



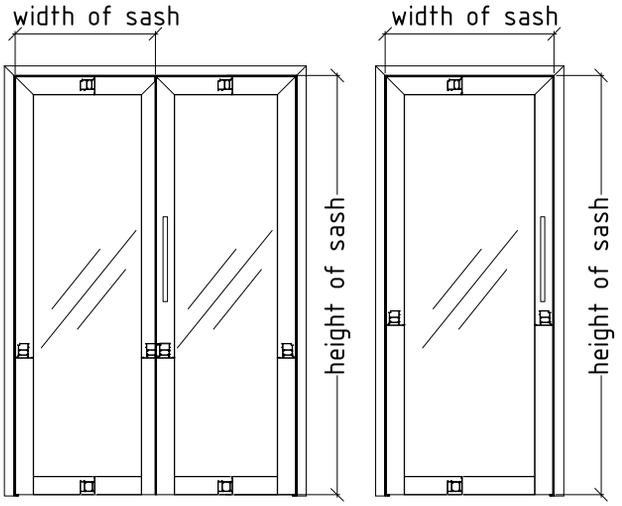


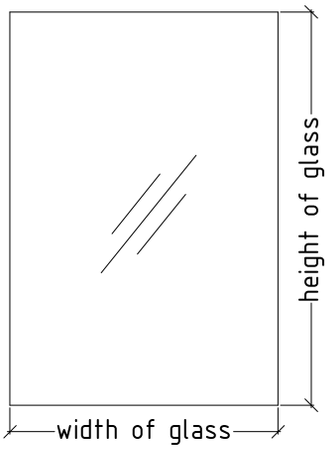


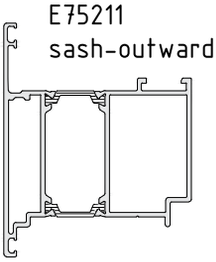
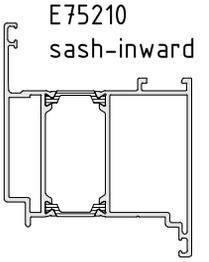
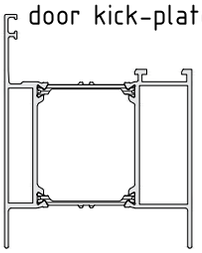
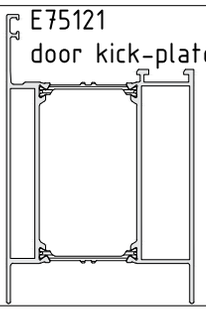
not to scale

width of door kick-plate= width of sash-134,5

M75D-05

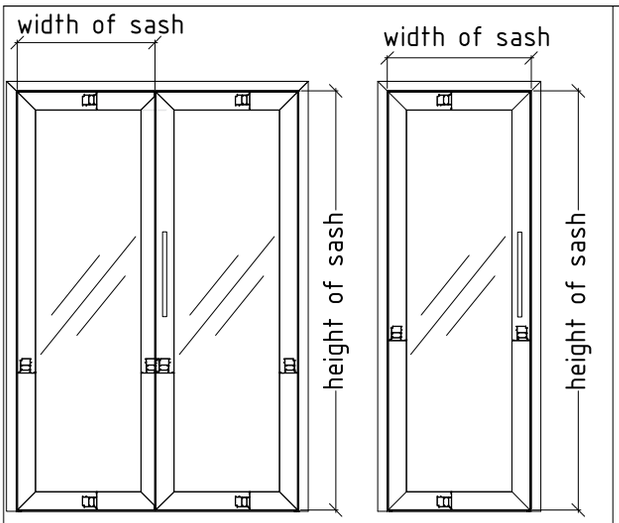


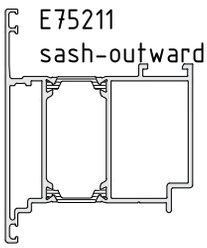
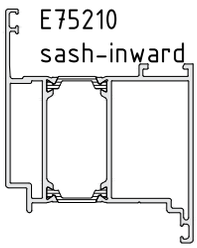
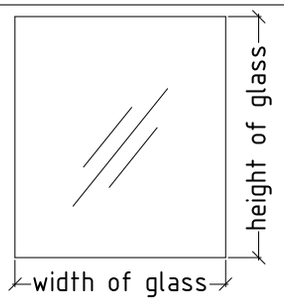


bottom rail profile selection	sash profile selection	calculation of cutting length for glass unit	
		E75211 sash-outward 	E75210 sash-inward 
		cutting formula	cutting formula
E75120 door kick-plate 	width of glass	width of sash-157	width of sash-157
	height of glass	height of sash-157	height of sash-157
E75121 door kick-plate 	width of glass	width of sash-157	width of sash-157
	height of glass	height of sash-179	height of sash-179

not to scale

M75D-06

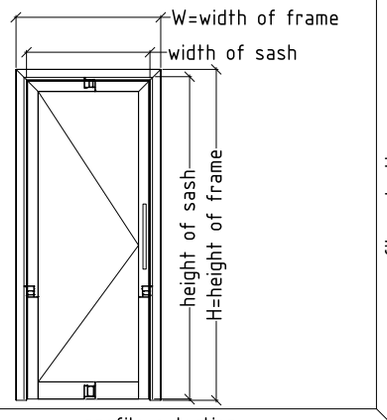


dimension of glass unit		sash profile selection: calculation of cutting length for glass unit	
		 E75211 sash-outward	 E75210 sash-inward
		cutting formula	cutting formula
	width of glass	width of sash-157	width of sash-157
	height of glass	height of sash-157	height of sash-157

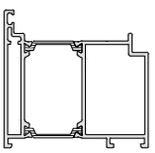
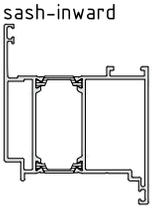
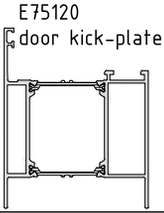
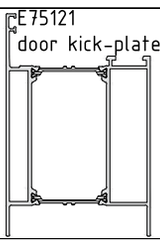
not to scale

M75D-07

inward opening - single sash door



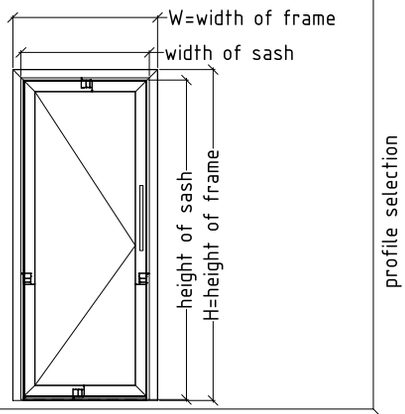
profile selection

profile selection		calculation of cutting lenght for one sash door		
		pieces	cutting formula	cutting angles
E75110 frame-inward 	width of frame	1	W	2x45°
	height of frame-left	1	H	1x45° + 1x90° up down
	height of frame-right	1	H	1x45° + 1x90° up down
E75210 sash-inward 	width of sash-inward	1	W - 109	2x45°
	height of sash-inward left	1	H - 61.5	1x45° + 1x90° up down
	height of sash-inward right	1	H - 61.5	1x45° + 1x90° up down
option 1				
E75120 door kick-plate 	width of door kick-plate	1	width of sash-134,5	2x90°
option 2				
E75121 door kick-plate 	width of door kick-plate	1	width of sash-134,5	2x90°

not to scale

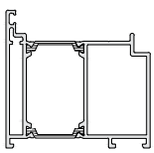
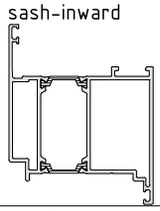
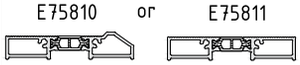
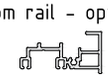
M75D-08

inward opening – single sash door



profile selection

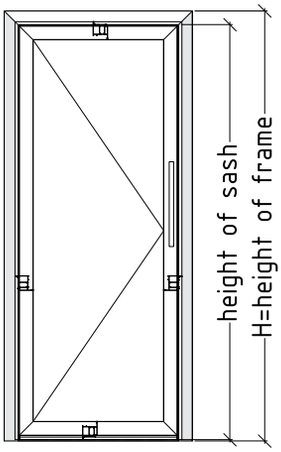
calculation of cutting lenght for one sash door

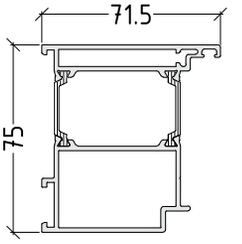
profile selection		pieces	cutting formula	cutting angles
E75110 frame-inward 	width of frame	1	W	2x45°
	height of frame-left	1	H	1x45° + 1x90° up down
	height of frame-right	1	H	1x45° + 1x90° up down
E75210 sash-inward 	width of sash-inward	2	W - 109	2x45°
	height of sash-inward	2	H - 61.5	2x45°
option 1				
E75810 or E75811 	width of door threshold	1	W - 143	1x90°
E75802 bottom rail	width of bottom rail	1	width of sash-32	2x90°
E75801 	width of addition	1	width of sash-47	2x90°
option 2				
E75800 bottom rail - optional finish 	width of bottom rail	1	width of sash-48	2x90°
E75805 - optional finish	width of door threshold	1	W - 125	2x90°

not to scale

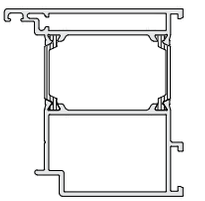
M75D-08

inward opening - single sash door

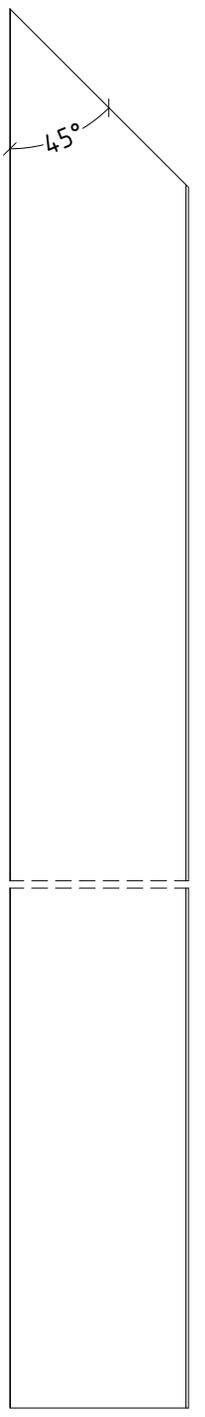


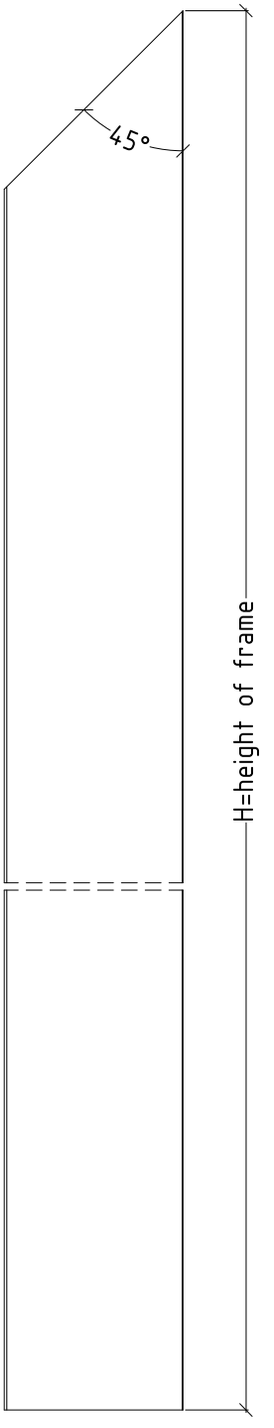


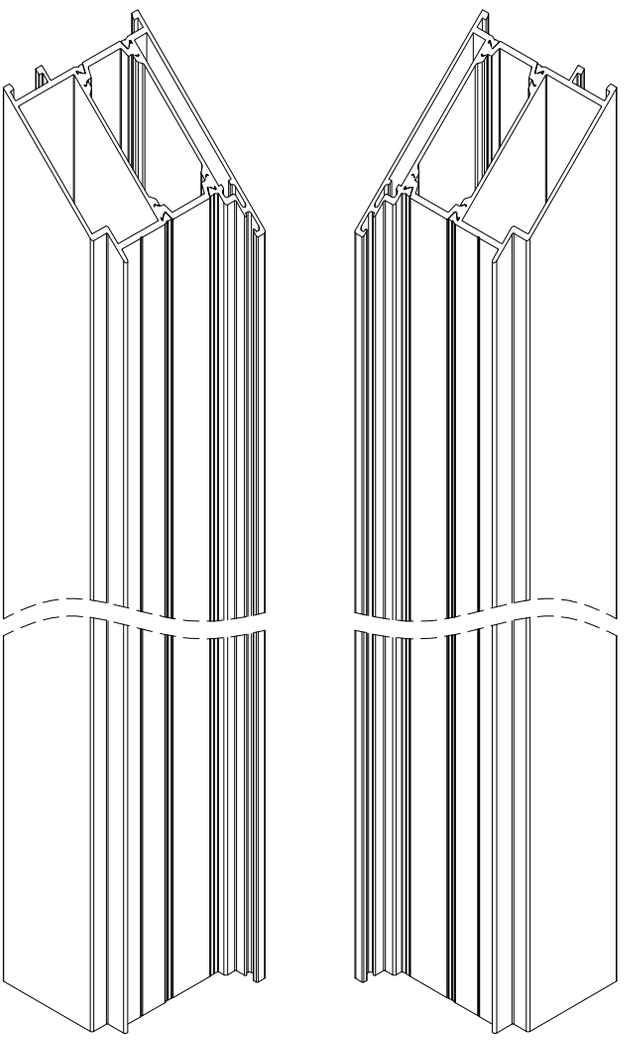
E75110
frame-inward



E75110
frame-inward



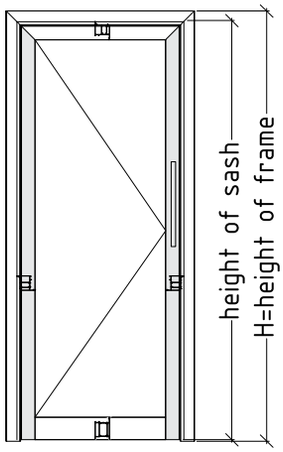


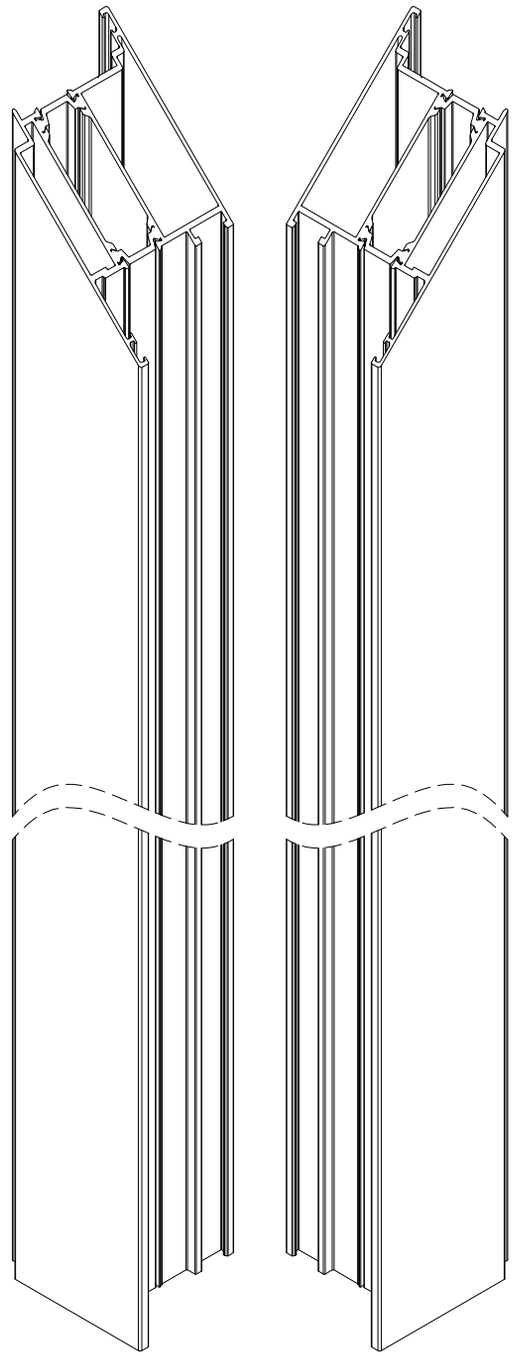


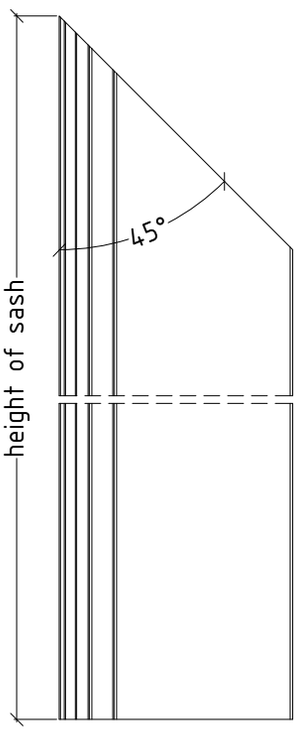
not to scale

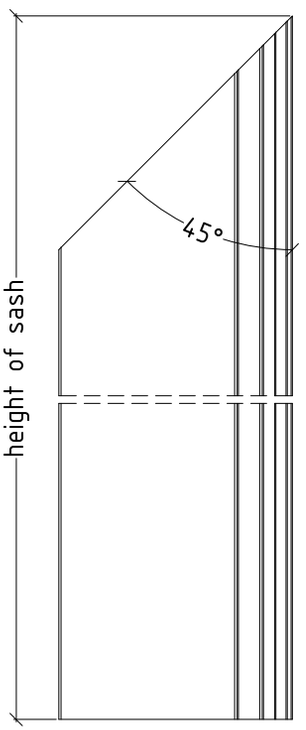
M75D-10

inward opening - single sash door

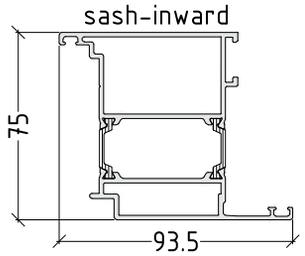




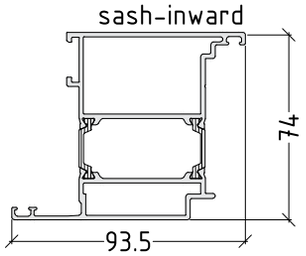




E75210
sash-inward



E75210
sash-inward

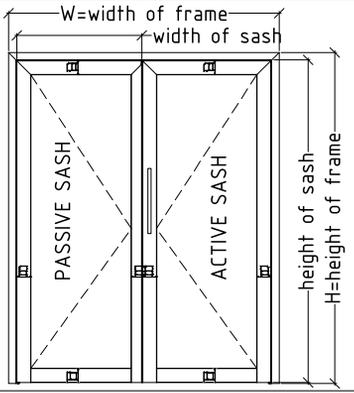


height of sash = H - 61.5

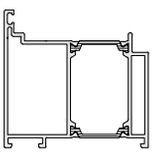
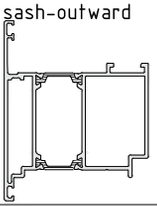
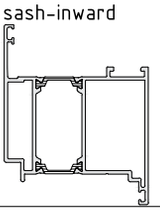
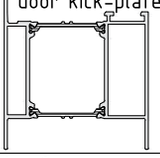
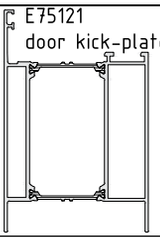
not to scale

M75D-11

outward opening - double sash door



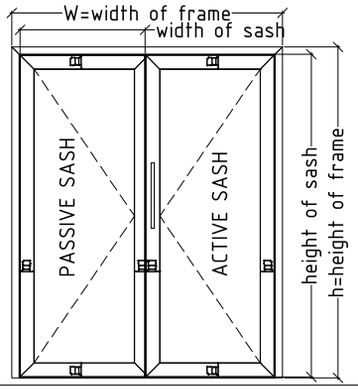
profile selection

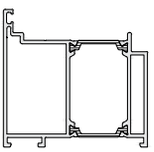
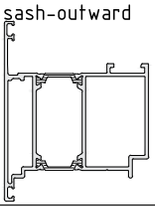
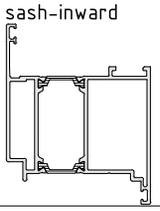
profile selection		pieces	cutting formula	cutting angles
E75110 frame-outward 	width of frame	1	W	2x45°
	height of frame-left	1	H	1x45° + 1x90° up down
	height of frame-right	1	H	1x45° + 1x90° up down
E75211 sash-outward 	width of sash-outward	2	$\frac{W - 92}{2}$	2x45°
	height of sash-outward	2 + 1	H - 61.5	1x45° + 1x90° up down
E75210 sash-inward 	height of sash-inward	1	H - 61.5	1x45° + 1x90° up down
option 1				
E75120 door kick-plate 	width of door kick-plate	2	width of sash-134,5	2x90°
option 2				
E75121 door kick-plate 	width of door kick-plate	2	width of sash-134,5	2x90°

not to scale

M75D-12

outward opening - double sash door

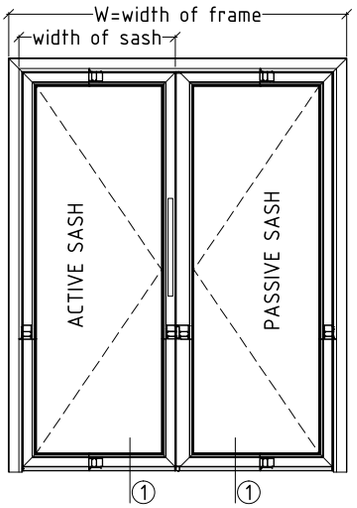


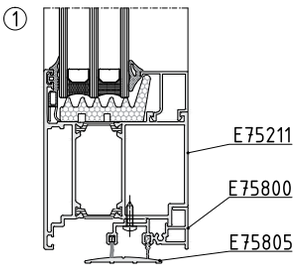
profile selection		calculation of cutting lenght for two sash door		
		pieces	cutting formula	cutting angles
E75110 frame-outward 	width of frame	1	W	2x45°
	height of frame-left	1	H	1x45° + 1x90° up down
	height of frame-right	1	H	1x45° + 1x90° up down
E75211 sash-outward 	width of sash-outward	4	$\frac{W - 92}{2}$	2x45°
	height of sash-outward	2 + 1	H - 61.5	2x45°
E75210 sash-inward 	height of sash-inward	1	H - 61.5	2x45°
option 1				
E75810 or E75811 	width of door threshold	1	W - 143	1x90°
E75802 bottom rail	width of bottom rail	2	width of sash-32	2x90°
E75801 	width of addition	1	width of sash-47 for active sash	2x90°
	width of addition	1	width of sash-25 for passive sash	2x90°

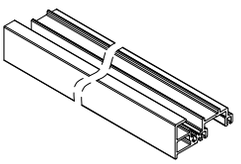
not to scale

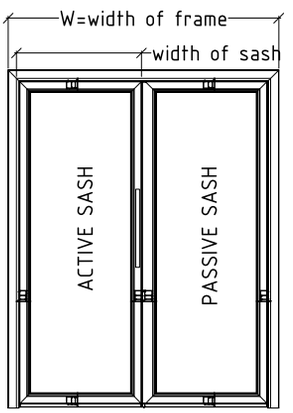
M75D-13

outward opening - double sash door





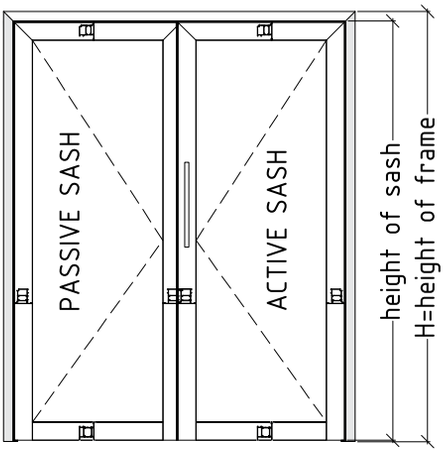


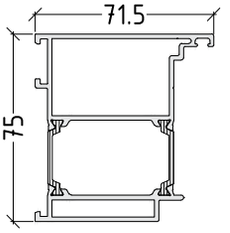
 profile selection		profile selection	calculation of cutting lenght for two sash door		
			pieces	cutting formula	cutting angles
option 2					
E75800 bottom rail 	width of bottom rail		1	width of sash-48 for active sash	2x90°
	width of bottom rail		1	width of sash-42 for passive sash	2x90°
E75805	width of door threshold		1	W - 125	2x90°

not to scale

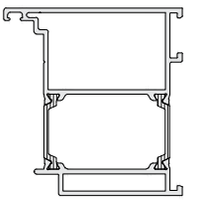
M75D-14

outward opening – double sash door

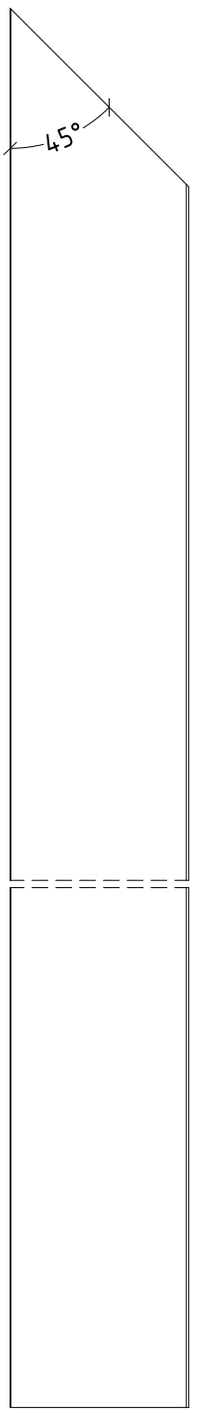


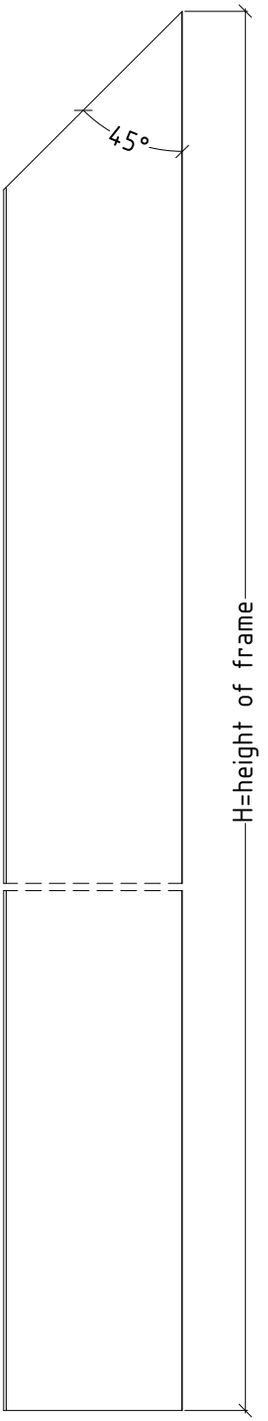


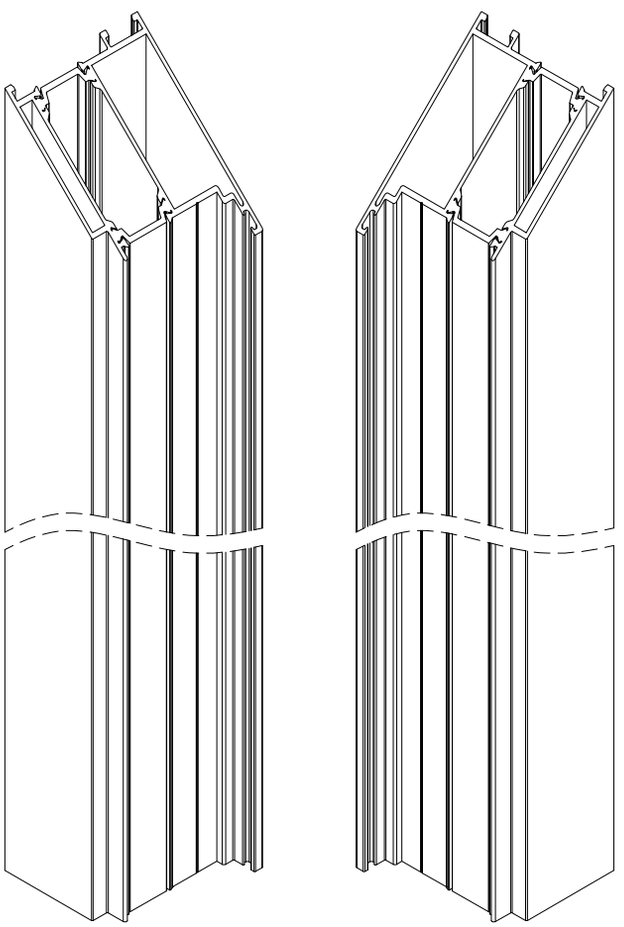
E75111
frame-outward



E75111
frame-outward



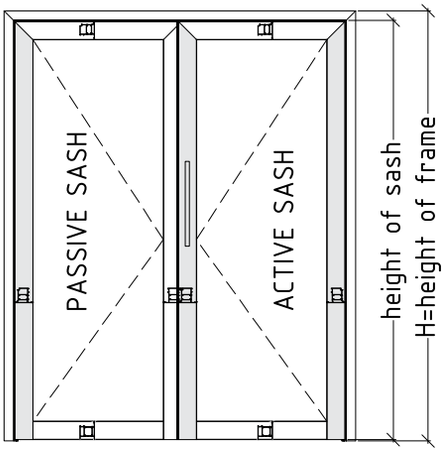


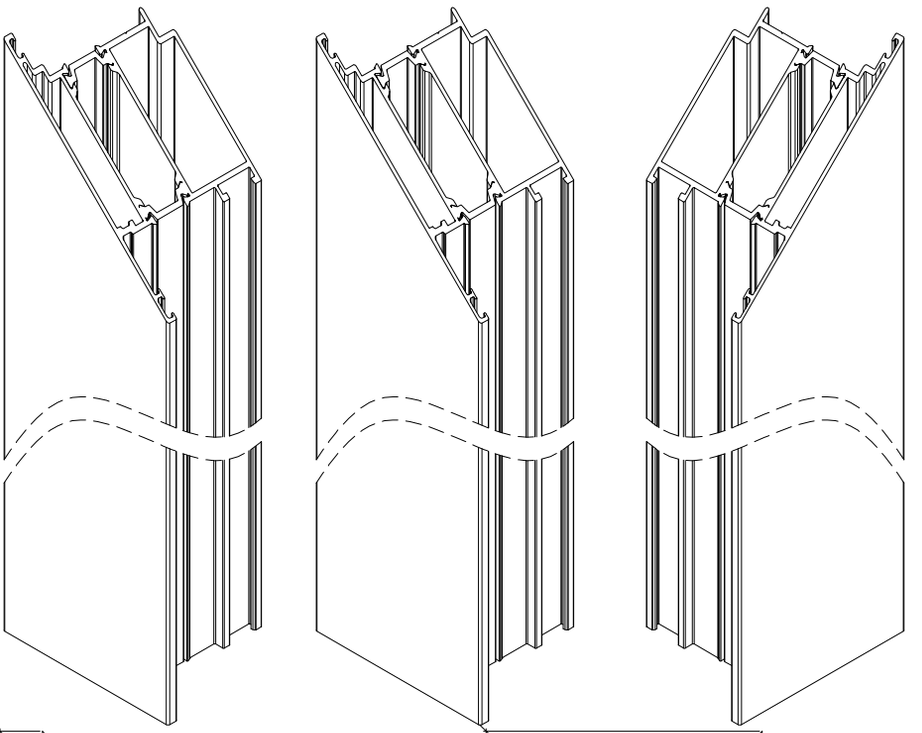


not to scale

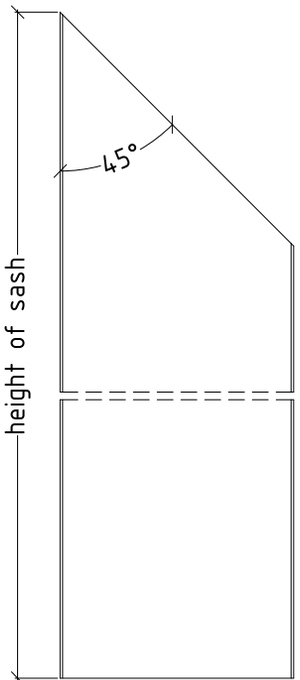
M75D-15

outward opening - double sash door

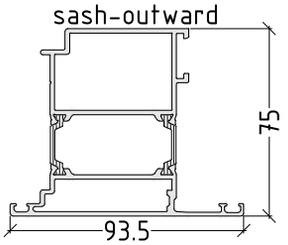


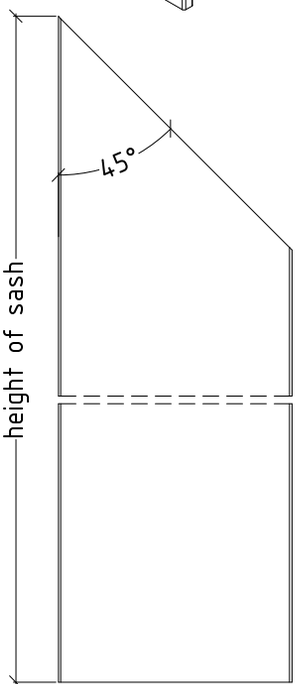


height of sash = H - 61.5

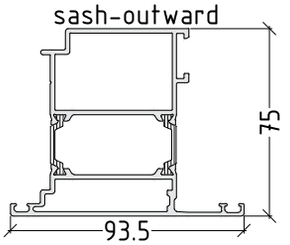


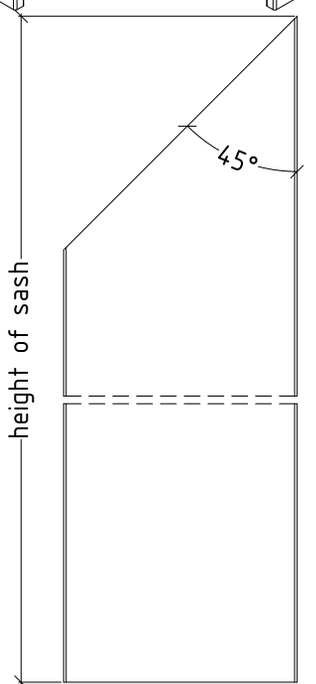
E75211
sash-outward



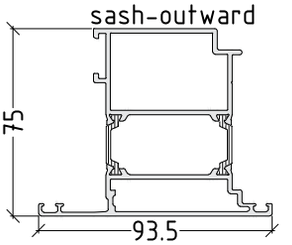


E75211
sash-outward





E75211
sash-outward

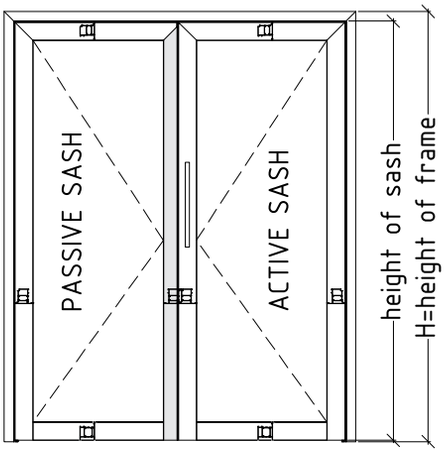


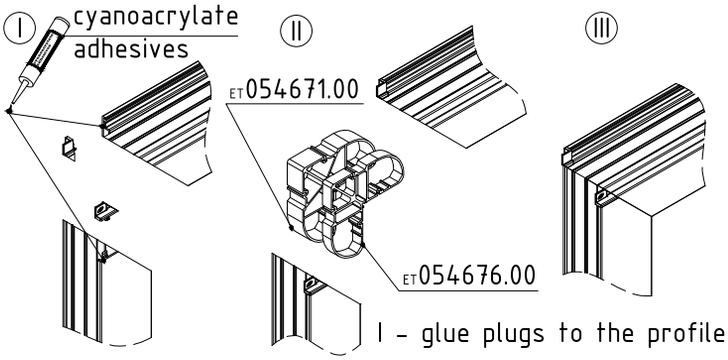
not to scale

height of sash = H - 61.5

M75D-16

outward opening - double sash door





Sequence of assembly between sash-inward and sash-outward and specific joint corners usage

I - glue plugs to the profile

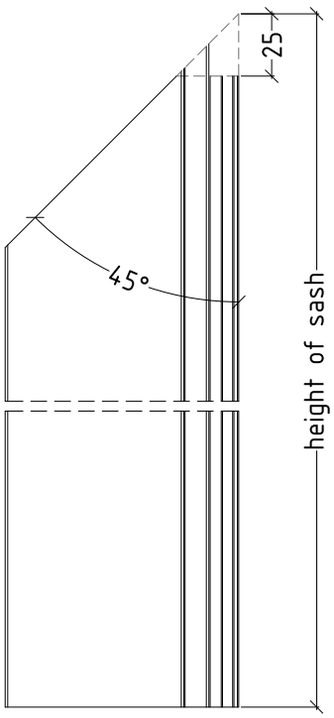
II - insert corner brackets in combination

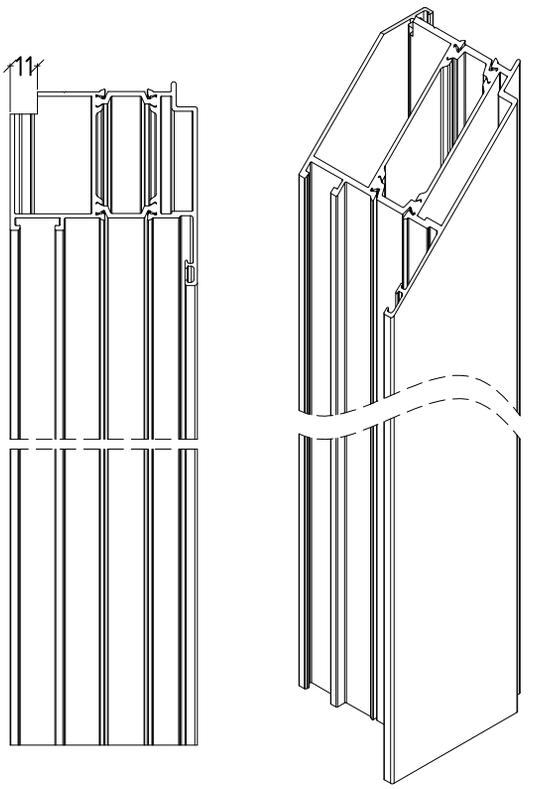
ET054671.00 + ET054676.00

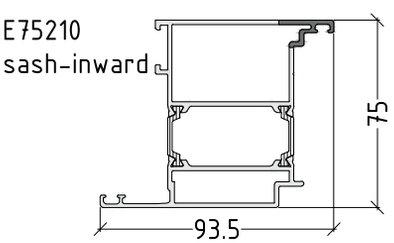
for sash

E75210 sash-inward + E75211 sash-outward

III - crimp profiles





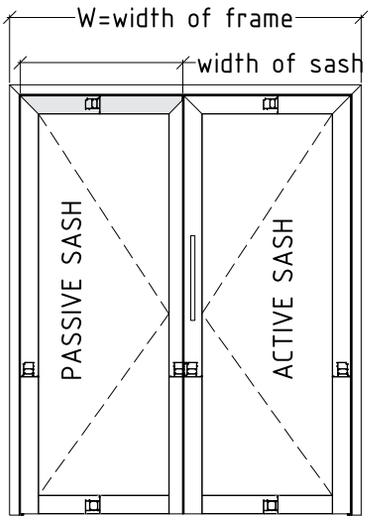


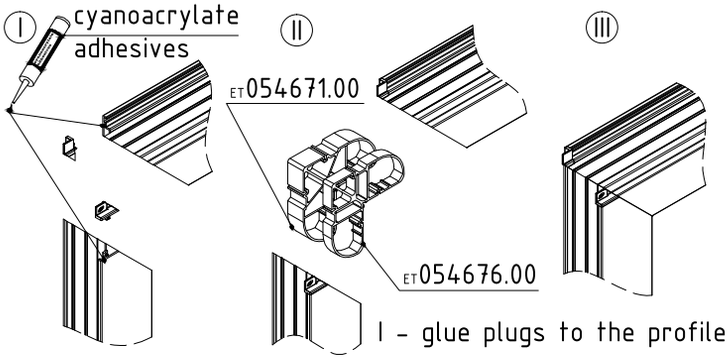
not to scale

height of sash = H - 61.5

M75D-17

outward opening - double sash door





Sequence of assembly between sash-inward and sash-outward and specific joint corners usage

I - glue plugs to the profile

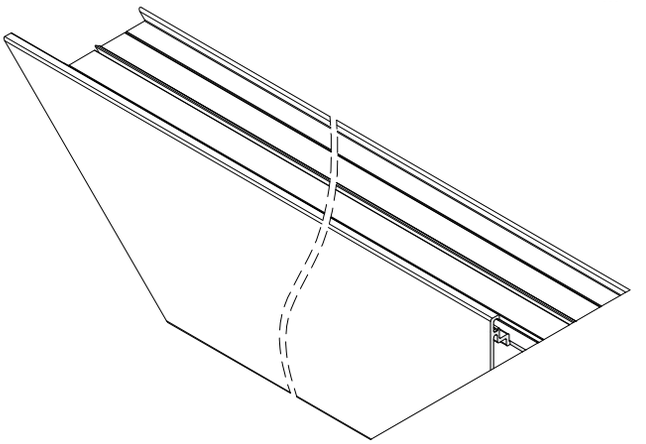
II - insert corner brackets in combination

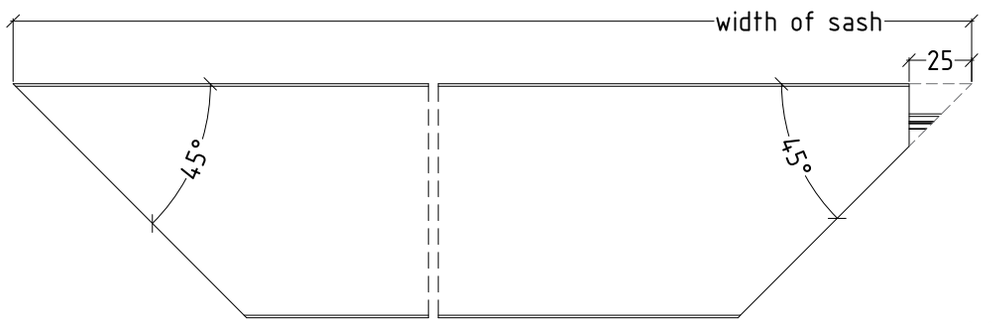
ET054671.00 + ET054676.00

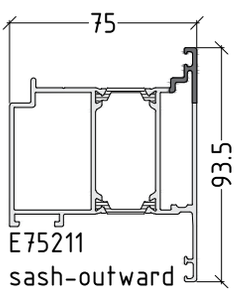
for sash

E75210 sash-inward + E75211 sash-outward

III - crimp profiles





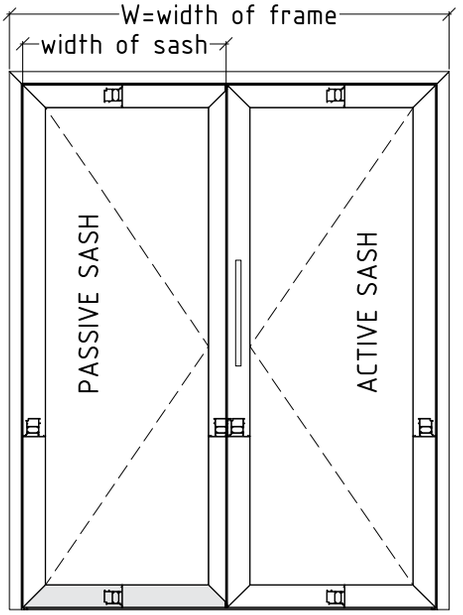


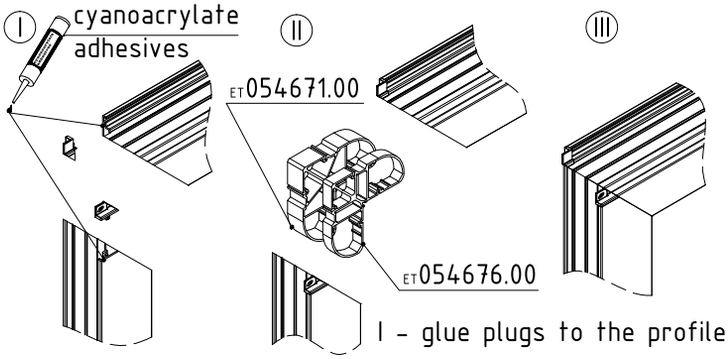
$$\text{width of sash} = \frac{W - 92}{2}$$

not to scale

M75D-18

outward opening - double sash door





Sequence of assembly between sash-inward and sash-outward and specific joint corners usage

I - glue plugs to the profile

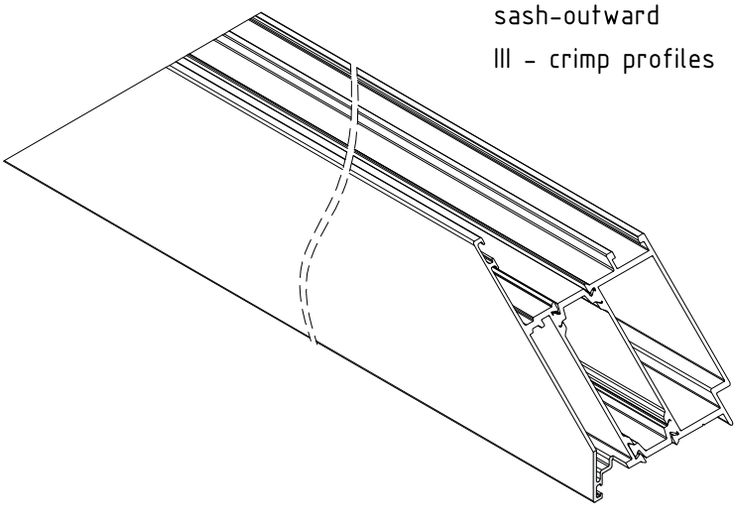
II - insert corner brackets in combination

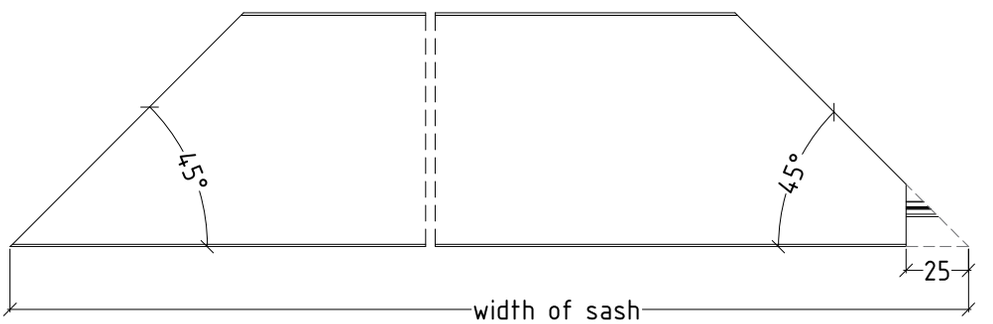
ET054671.00 + ET054676.00

for sash

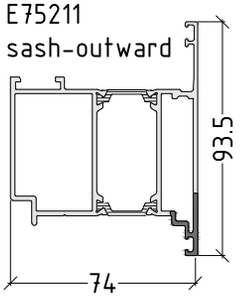
E75210 sash-inward + E75211 sash-outward

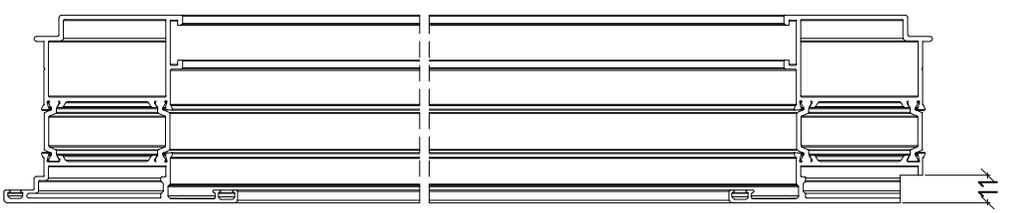
III - crimp profiles





E75211
sash-outward



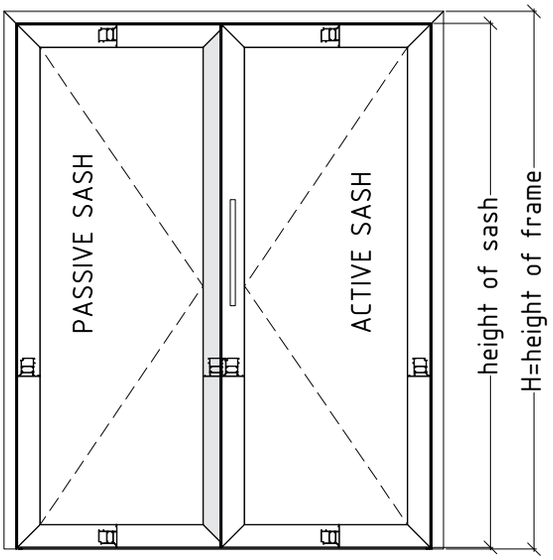


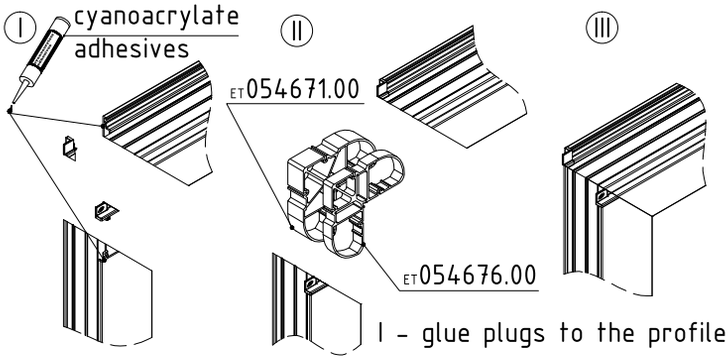
not to scale

$$\text{width of sash} = \frac{W - 92}{2}$$

M75D-19

outward opening - double sash door





Sequence of assembly between sash-inward and sash-outward and specific joint corners usage

I - glue plugs to the profile

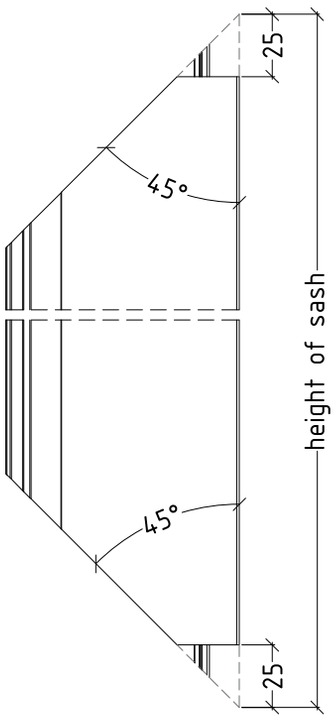
II - insert corner brackets in combination

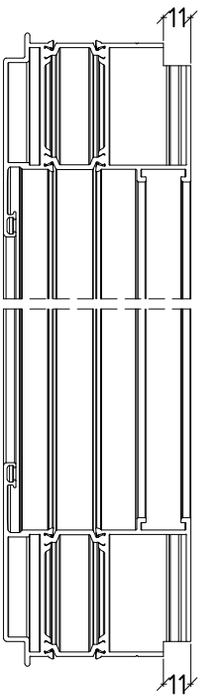
ET054671.00 + ET054676.00

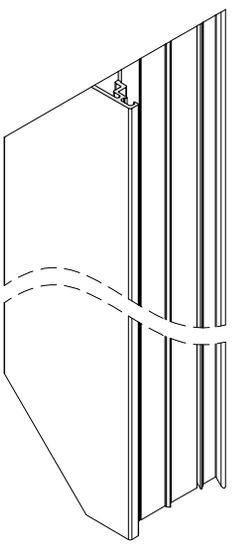
for sash

E75210 sash-inward + E75211 sash-outward

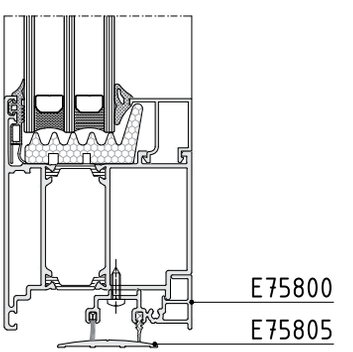
III - crimp profiles

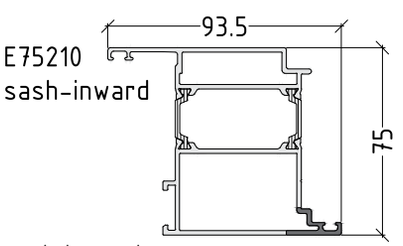






These machinings are for door with brush holder E75800 and E75805 threshold



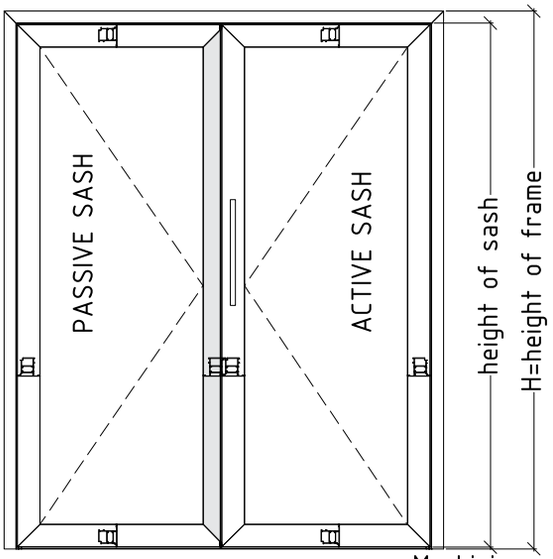


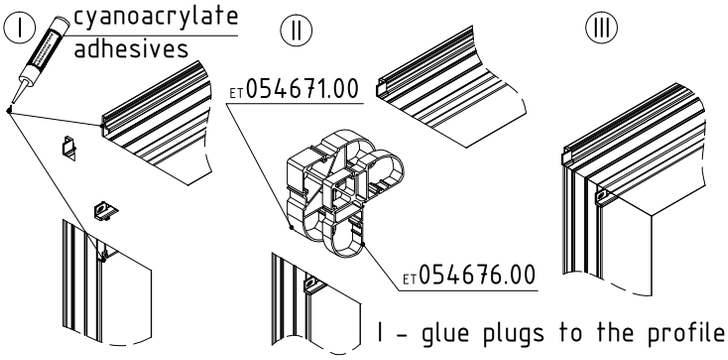
not to scale

height of sash = H - 61.5

M75D-20

outward opening - double sash door





Sequence of assembly between sash-inward and sash-outward and specific joint corners usage

I - glue plugs to the profile

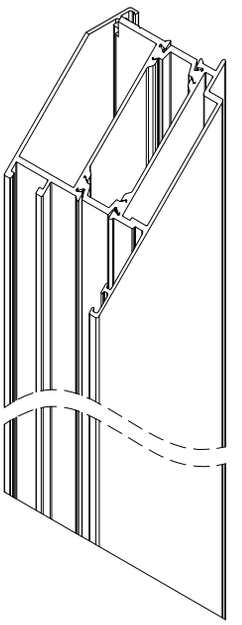
II - insert corner brackets in combination

ET054671.00 + ET054676.00

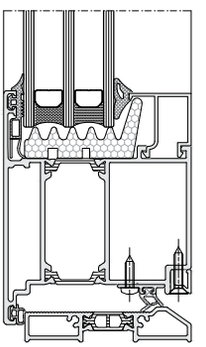
for sash

E75210 sash-inward + E75211 sash-outward

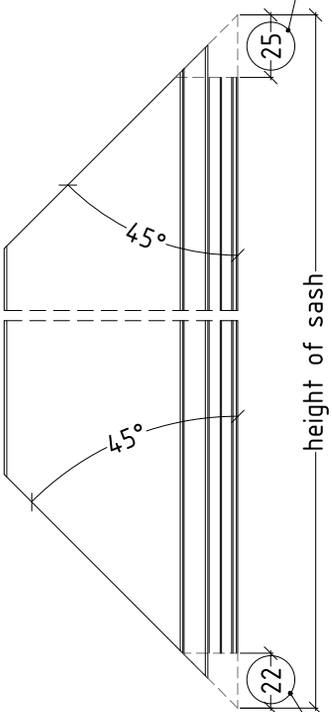
III - crimp profiles

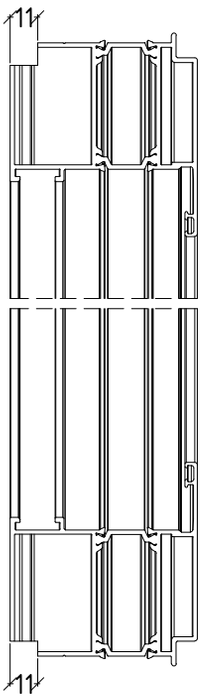


These machinings are for door with threshold E75810 or E75811

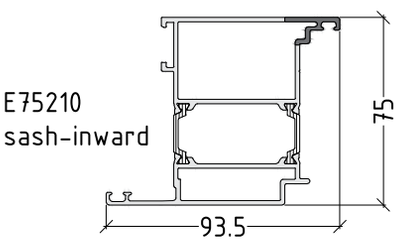


Machinings on the bottom and upper side are different





Machinings on the bottom and upper side are different

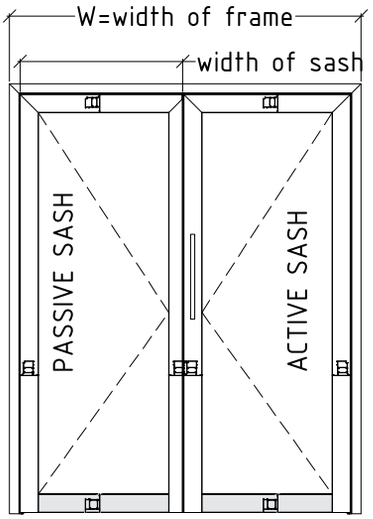


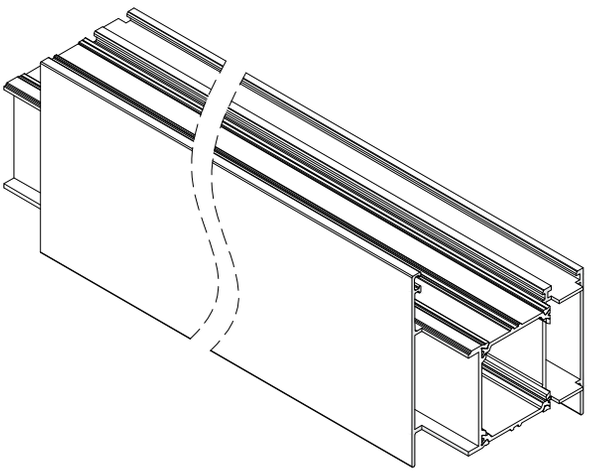
not to scale

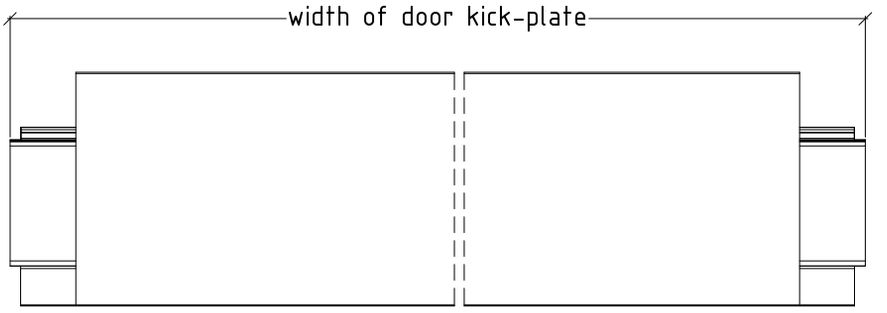
height of sash = H - 61.5

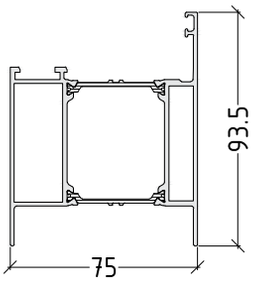
M75D-21

outward opening - double sash door

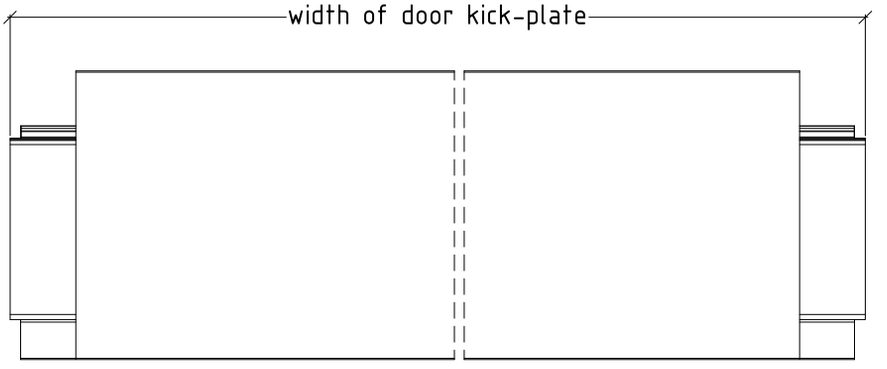


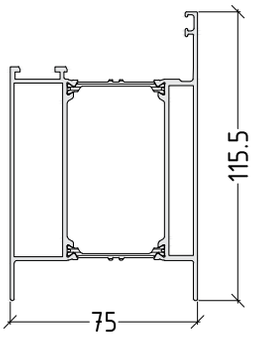


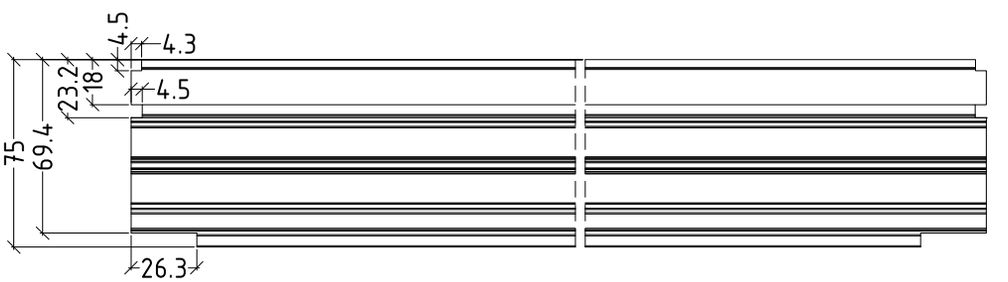




E75120 OR E75121
door kick-plate





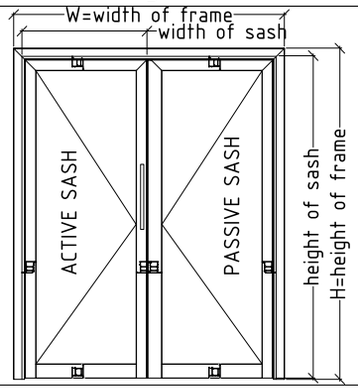


not to scale

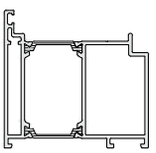
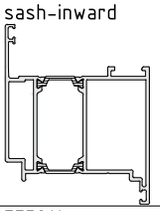
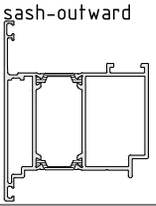
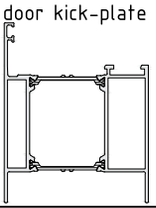
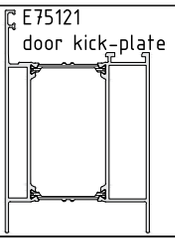
width of door kick-plate= width of sash-134,5

M75D-22

inward opening – double sash door



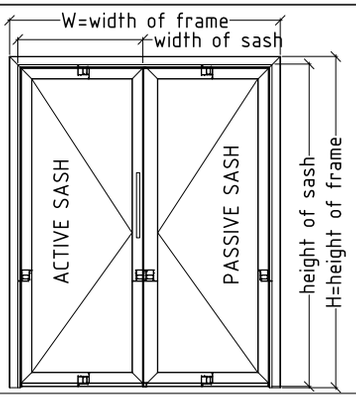
profile selection

profile selection		calculation of cutting lenght for two sash door		
		pieces	cutting formula	cutting angles
E75110 frame-inward 	width of frame	1	W	2x45°
	height of frame-left	1	H	1x45° + 1x90° up down
	height of frame-right	1	H	1x45° + 1x90° up down
E75210 sash-inward 	width of sash-inward	2	$\frac{W - 92}{2}$	2x45°
	height of sash-inward	2 + 1	H - 61.5	1x45° + 1x90° up down
E75211 sash-outward 	height of sash-outward	1	H - 61.5	1x45° + 1x90° up down
option 1				
E75120 door kick-plate 	width of door kick-plate	2	width of sash-134,5	2x90°
option 2				
E75121 door kick-plate 	width of door kick-plate	2	width of sash-134,5	2x90°

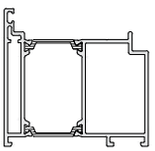
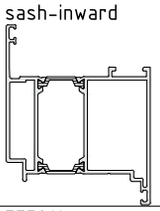
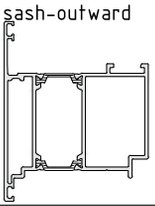
not to scale

M75D-23

inward opening - double sash door



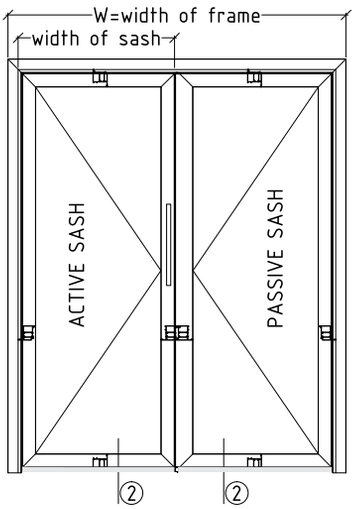
profile selection

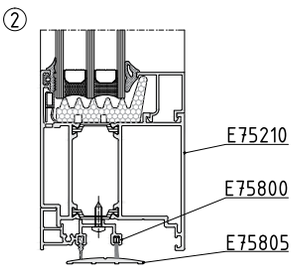
profile selection		calculation of cutting lenght for two sash door		
		pieces	cutting formula	cutting angles
E75110 frame-inward 	width of frame	1	W	2x45°
	height of frame-left	1	H	1x45° + 1x90° up down
	height of frame-right	1	H	1x45° + 1x90° up down
E75210 sash-inward 	width of sash-inward	4	$\frac{W - 92}{2}$	2x45°
	height of sash-inward	2 + 1	H - 61.5	2x45°
E75211 sash-outward 	height of sash-outward	1	H - 61.5	2x45°
option 1				
E75810 or E75811 	width of door threshold	1	W - 143	1x90°
E75802 bottom rail	width of bottom rail	2	width of sash-32	2x90°
E75801 	width of addition	1	width of sash-47 for active sash	2x90°
	width of addition	1	width of sash-25 for passive sash	2x90°

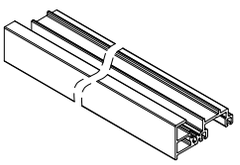
not to scale

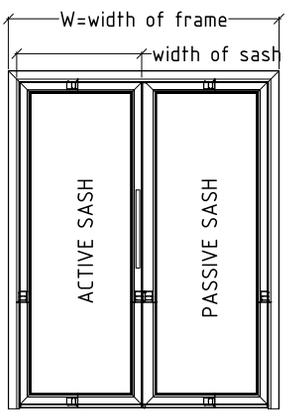
M75D-24

inward opening - double sash door







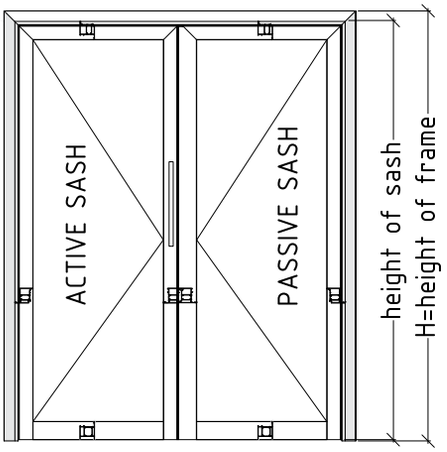


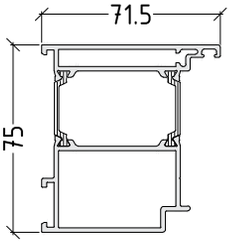
profile selection		calculation of cutting lenght for two sash door		
		pieces	cutting formula	cutting angles
option 2				
E75800 bottom rail 	width of bottom rail	1	width of sash-48 for active sash	2x90°
	width of bottom rail	1	width of sash-42 for passive sash	2x90°
E75805 - optional finish	width of door threshold	1	W - 125	2x90°

not to scale

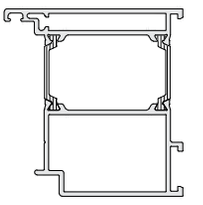
M75D-25

inward opening - double sash door

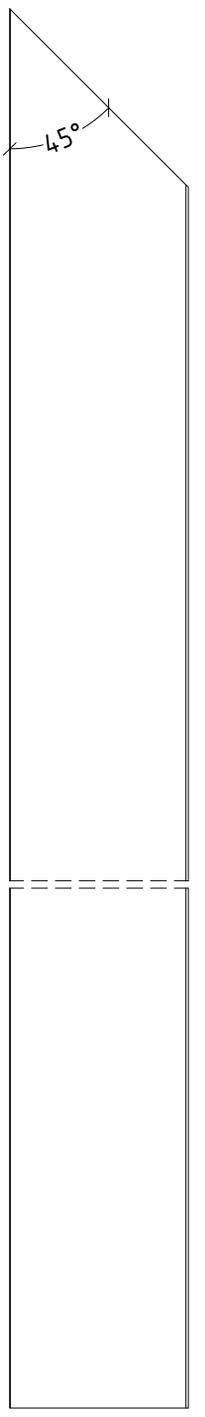


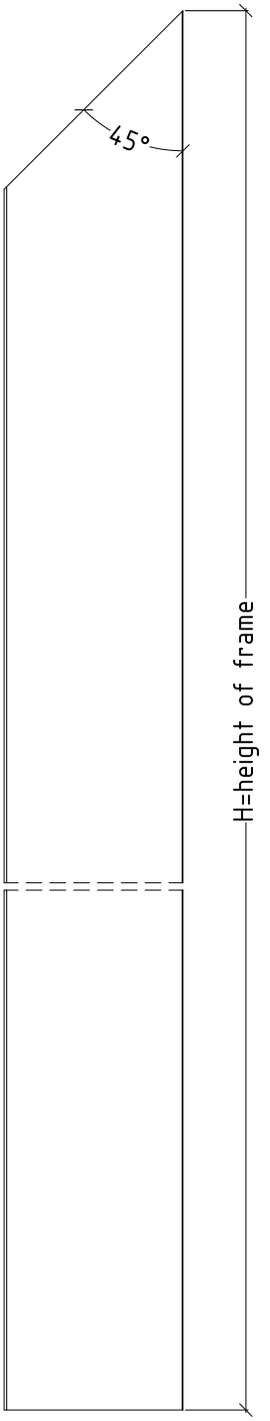


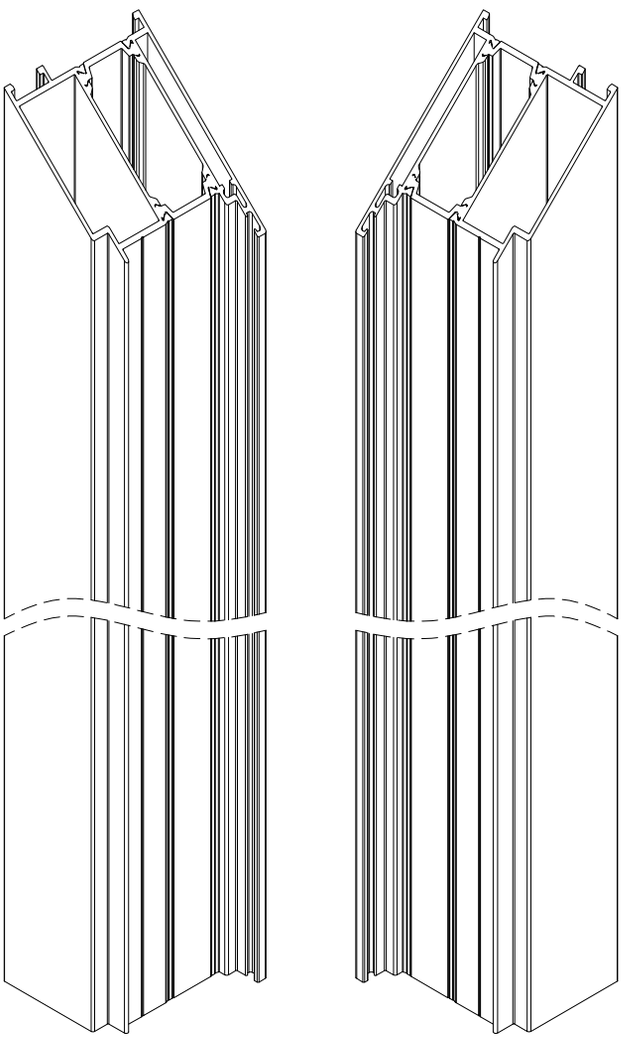
E75110
frame-inward



E75110
frame-inward



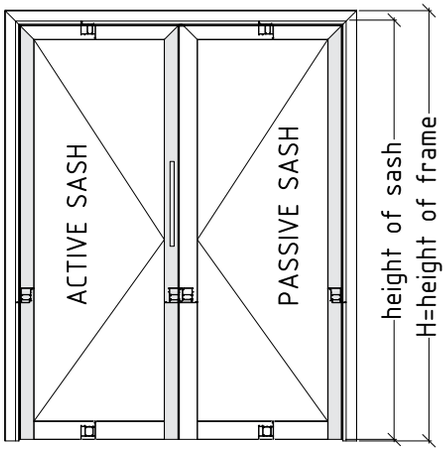


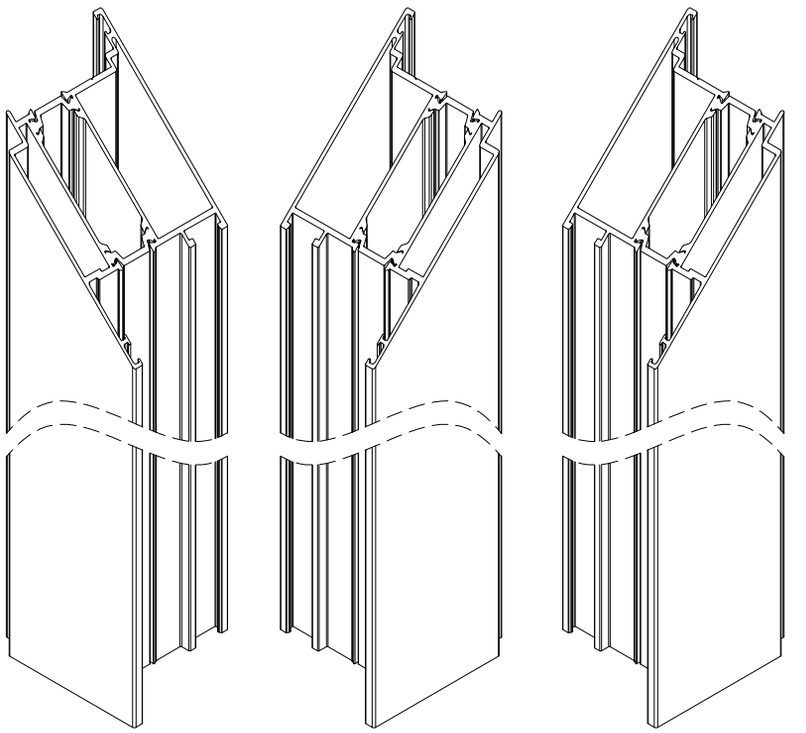


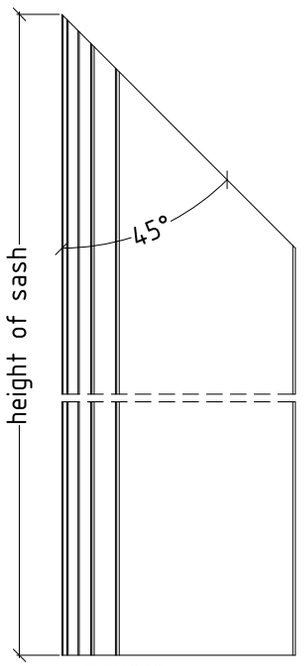
not to scale

M75D-26

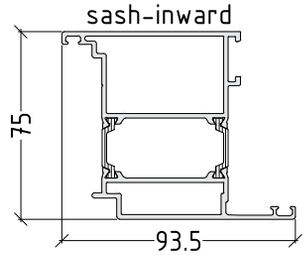
inward opening - double sash door

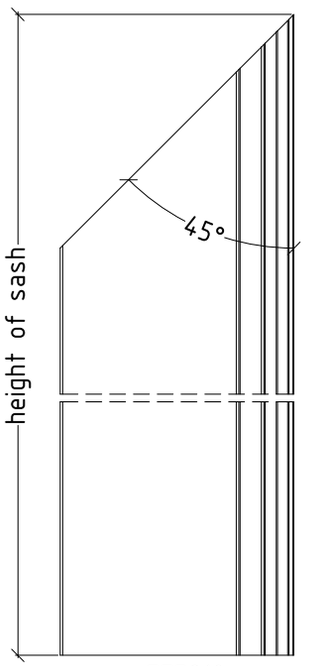




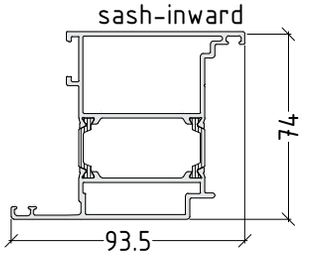


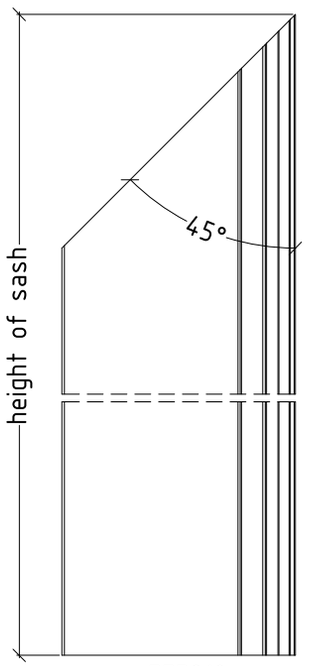
E75210
sash-inward



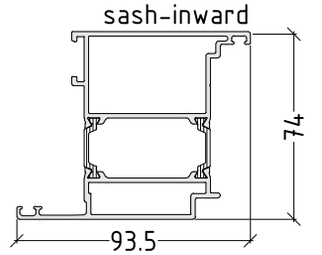


E75210
sash-inward





E75210
sash-inward

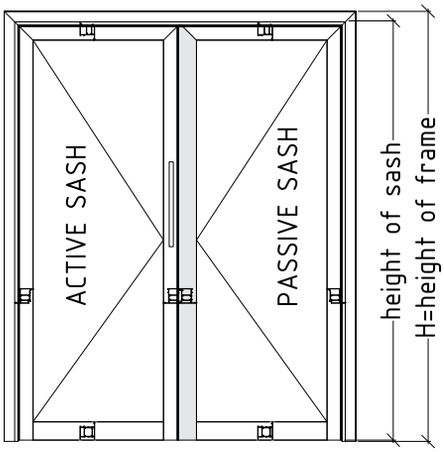


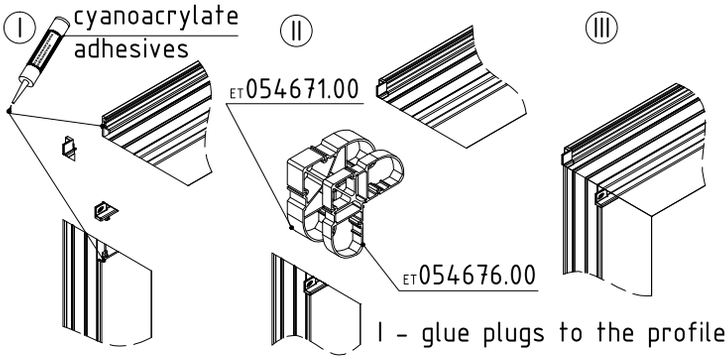
not to scale

height of sash = H - 61.5

M75D-27

inward opening - double sash door





Sequence of assembly between sash-inward and sash-outward and specific joint corners usage

I - glue plugs to the profile

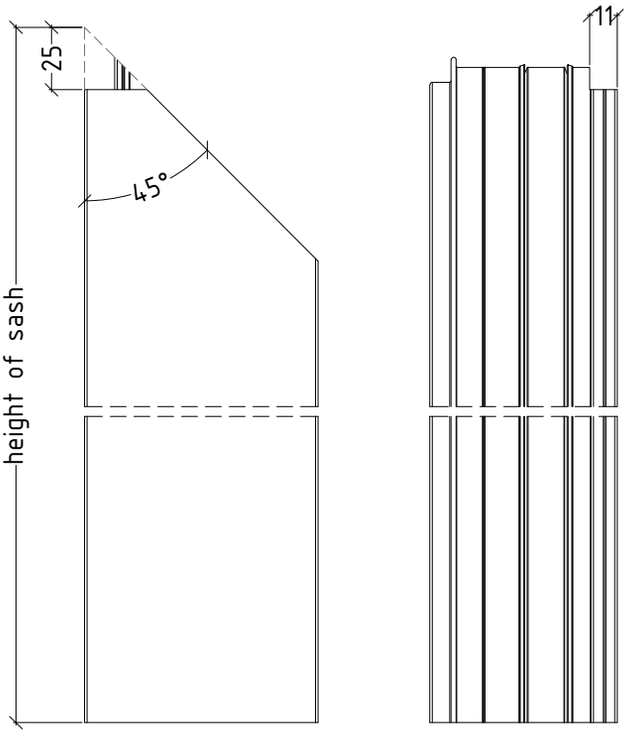
II - insert corner brackets in combination

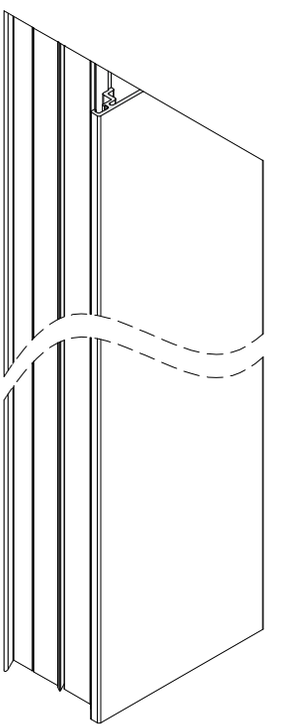
ET054671.00 + ET054676.00

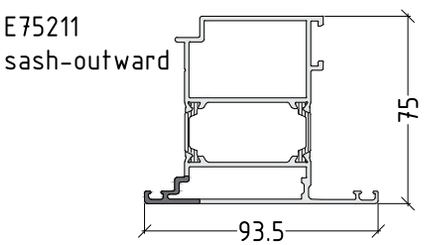
for sash

E75210 sash-inward + E75211 sash-outward

III - crimp profiles





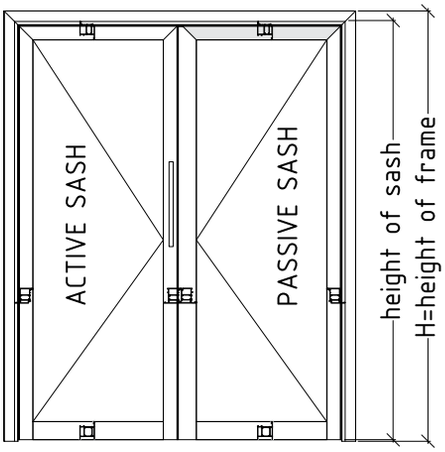


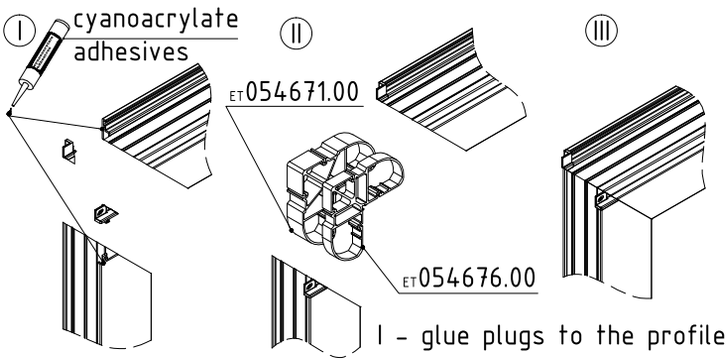
not to scale

height of sash = H - 61.5

M75D-28

inward opening – double sash door





Sequence of assembly between sash-inward and sash-outward and specific joint corners usage

I – glue plugs to the profile

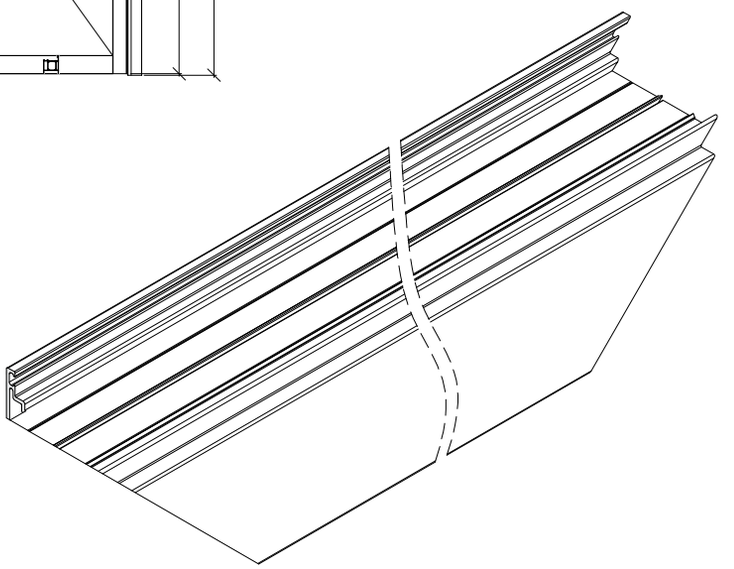
II – insert corner brackets in combination

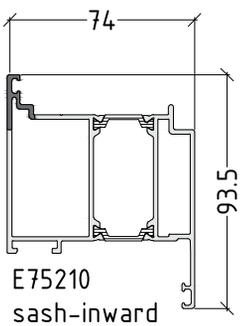
ET054671.00 + ET054676.00

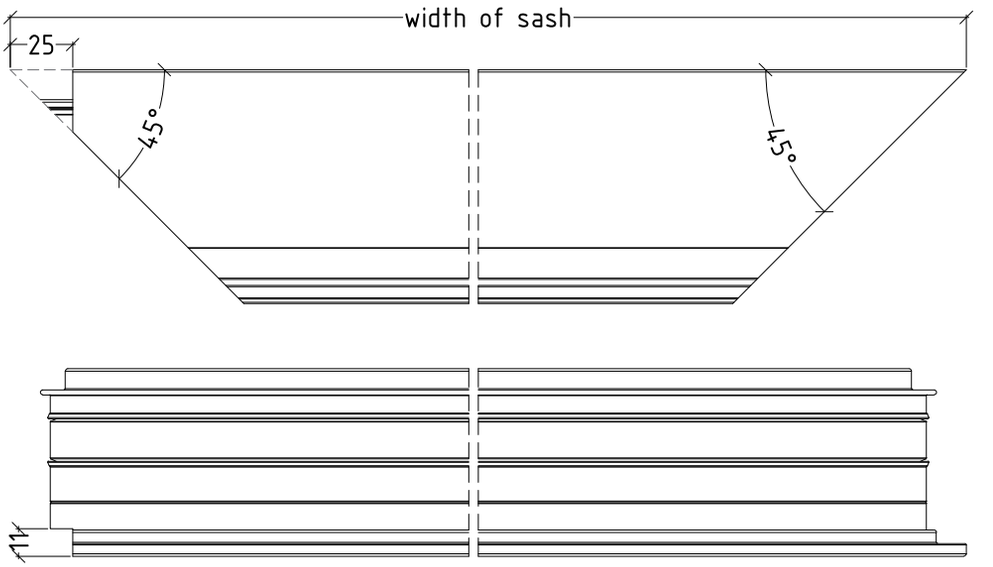
for sash

E75210 sash-inward + E75211 sash-outward

III – crimp profiles





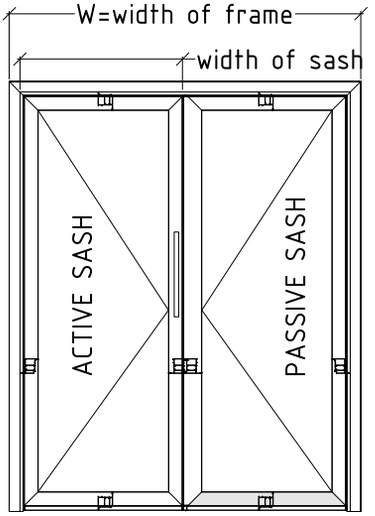


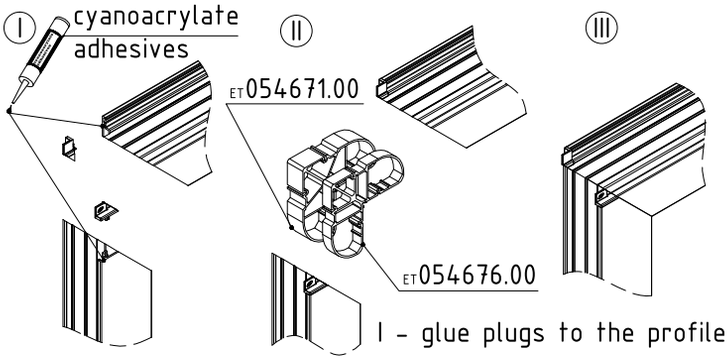
not to scale

$$\text{width of sash} = \frac{W - 92}{2}$$

M75D-29

inward opening – double sash door





Sequence of assembly between sash-inward and sash-outward and specific joint corners usage

I – glue plugs to the profile

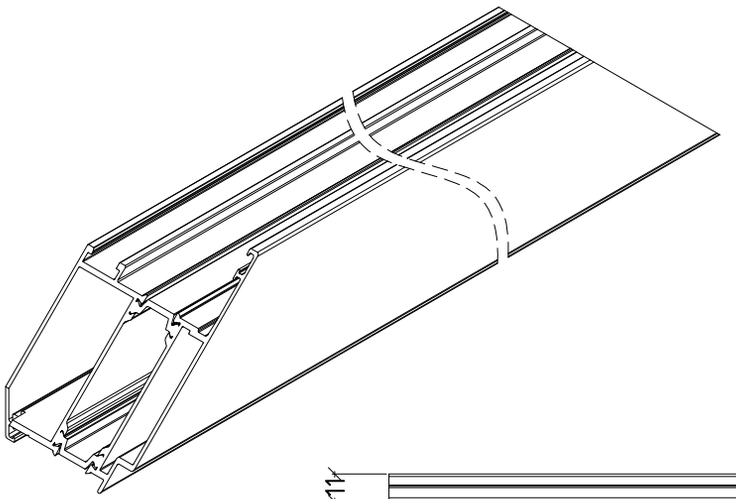
II – insert corner brackets in combination

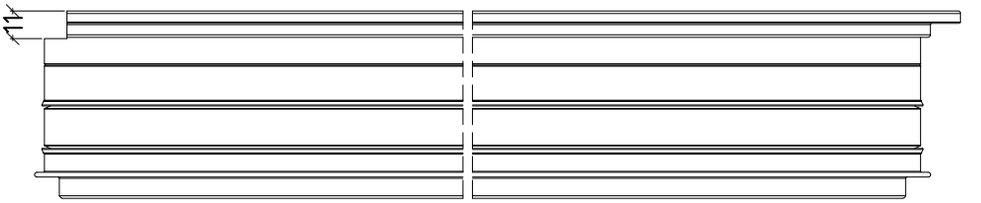
ET054671.00 + ET054676.00

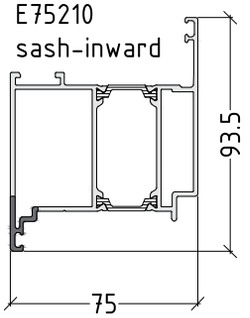
for sash

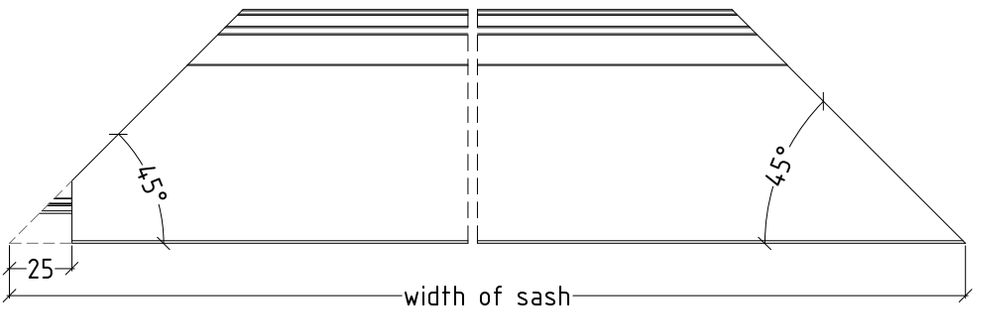
E75210 sash-inward + E75211 sash-outward

III – crimp profiles







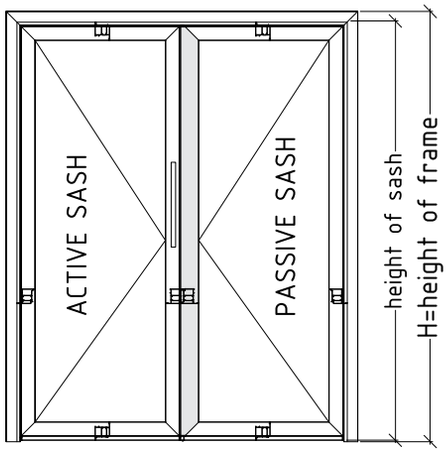


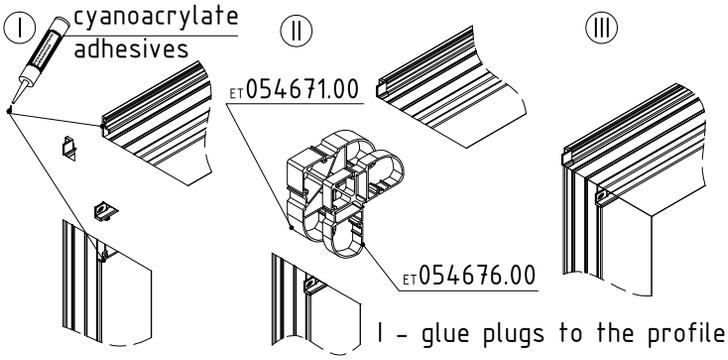
not to scale

$$\text{width of sash} = \frac{W - 92}{2}$$

M75D-30

inward opening - double sash door





Sequence of assembly between sash-inward and sash-outward and specific joint corners usage

I - glue plugs to the profile

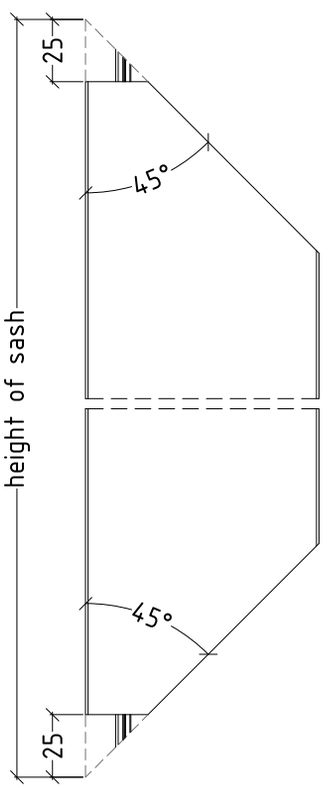
II - insert corner brackets in combination

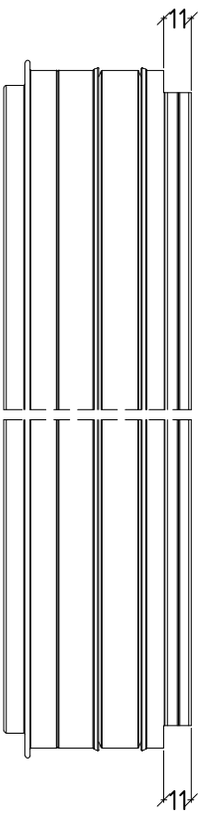
ET054671.00 + ET054676.00

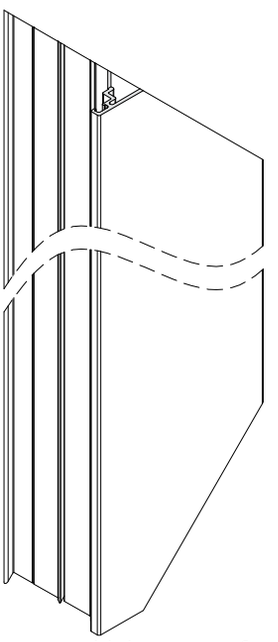
for sash

E75210 sash-inward + E75211 sash-outward

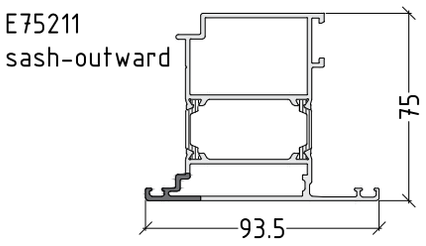
III - crimp profiles



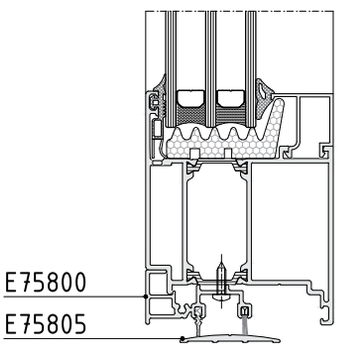




These machinings are for door with brush holder E75800 and E75805 threshold



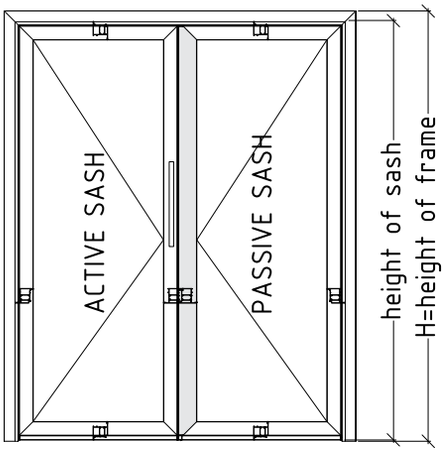
not to scale

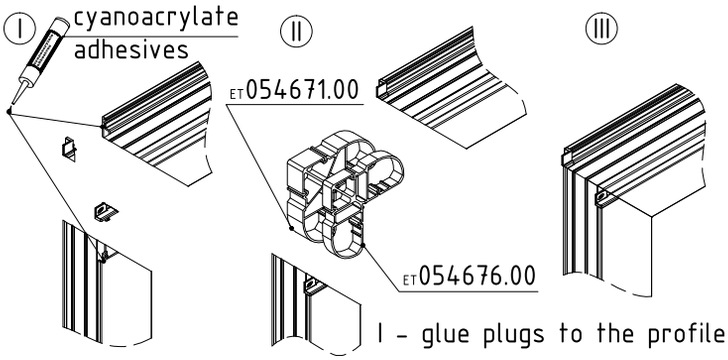


height of sash = H - 61.5

M75D-31

inward opening - double sash door





Sequence of assembly between sash-inward and sash-outward and specific joint corners usage

I - glue plugs to the profile

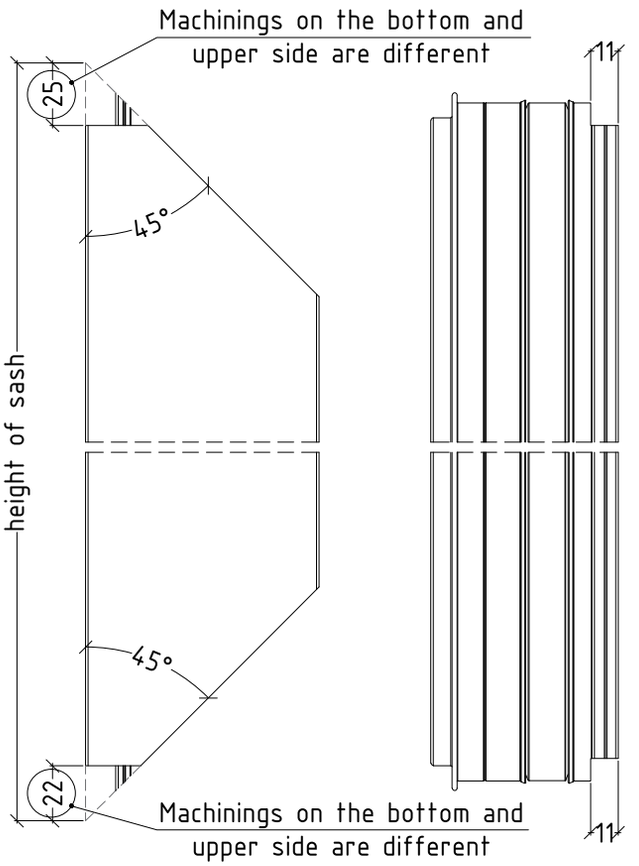
II - insert corner brackets in combination

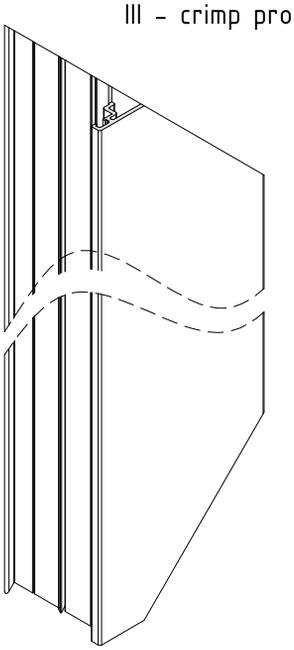
ET054671.00 + ET054676.00

for sash

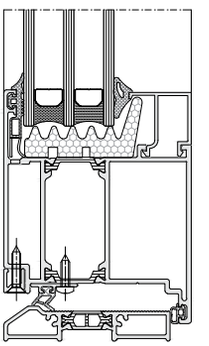
E75210 sash-inward + E75211 sash-outward

III - crimp profiles

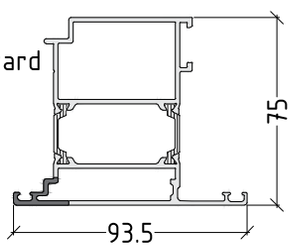




These machinings are for door with threshold E75810 or E75811



E75211
sash-outward

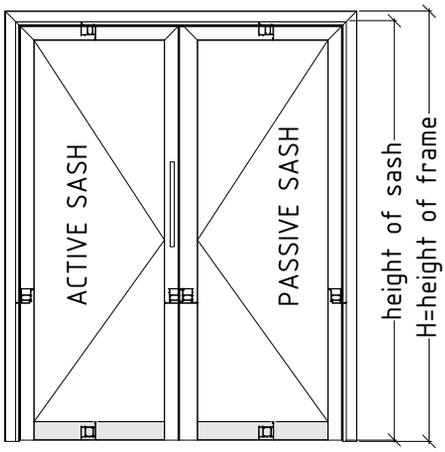


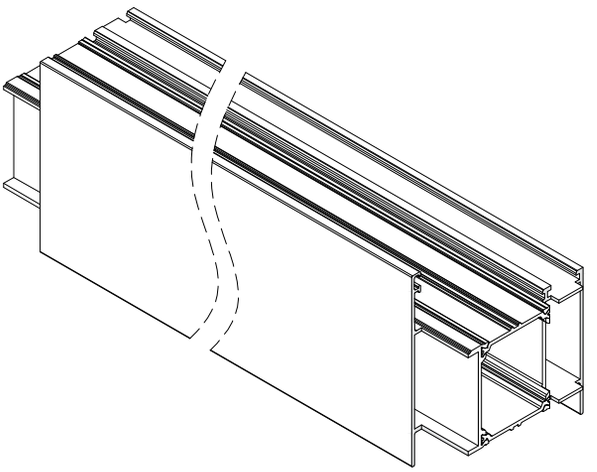
not to scale

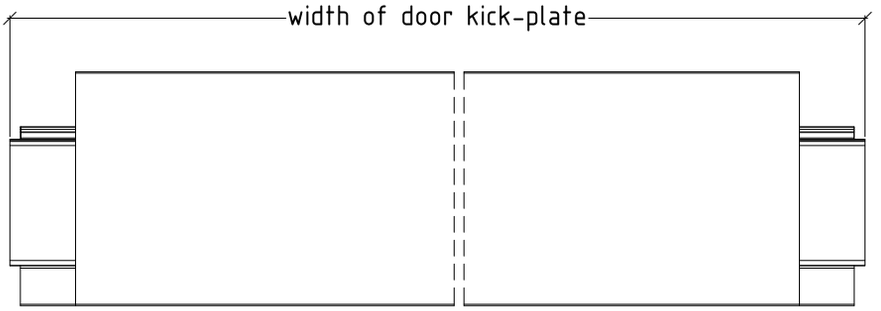
height of sash = H - 61.5

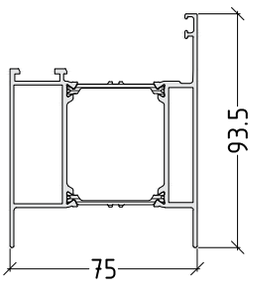
M75D-32

inward opening - double sash door

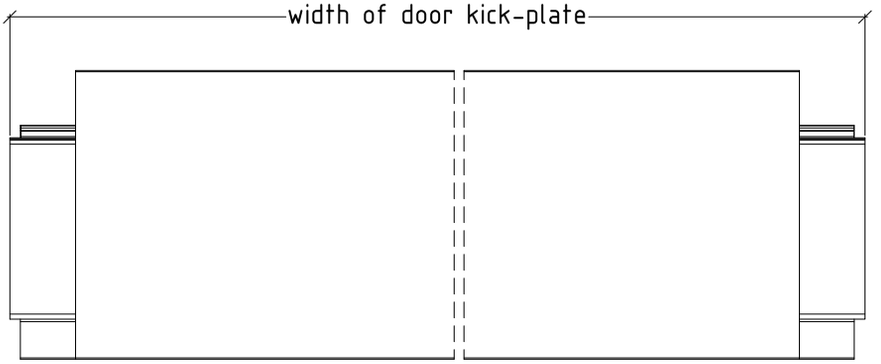


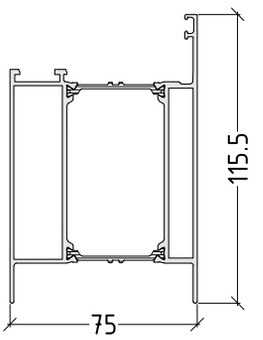


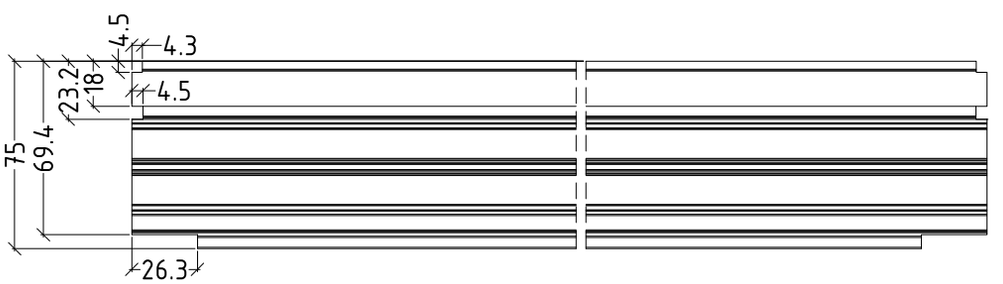




E75120 OR E75121
door kick-plate





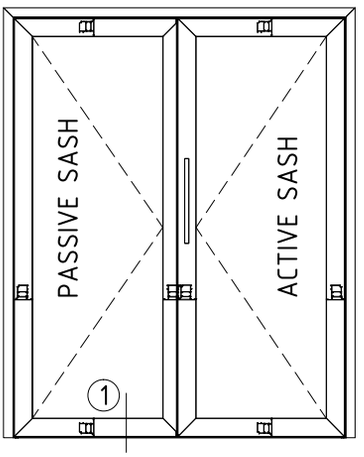


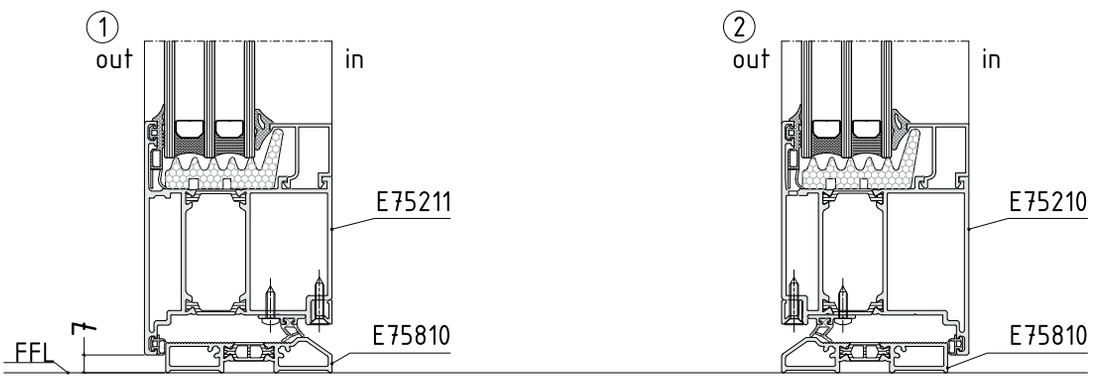
not to scale

width of door kick-plate= width of sash-134,5

M75D-33

outward opening
double sash door



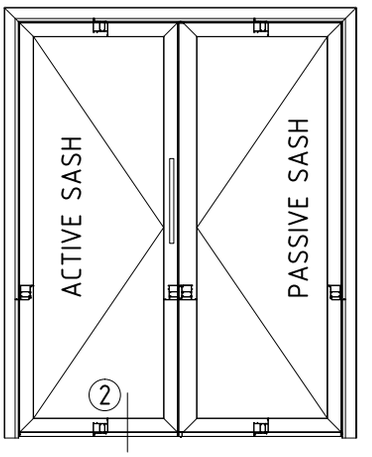


NOTE:

In outward opening

Pay attention for positioning of E75810 and mounting to the frame!

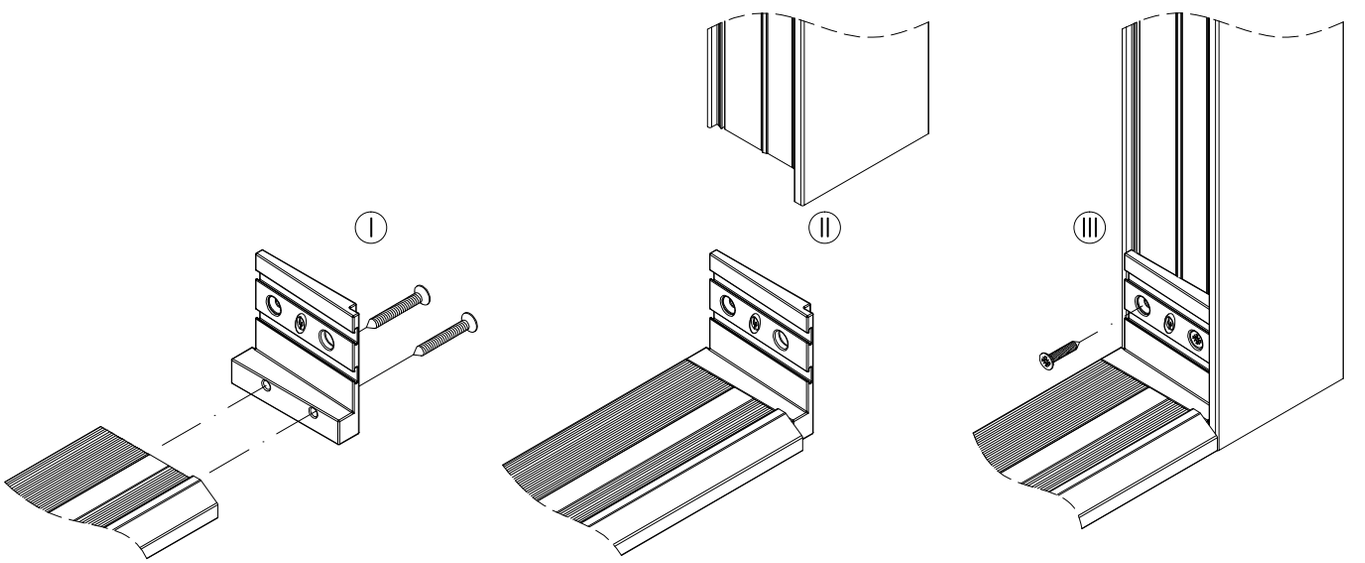
inward opening
double sash door



NOTE:

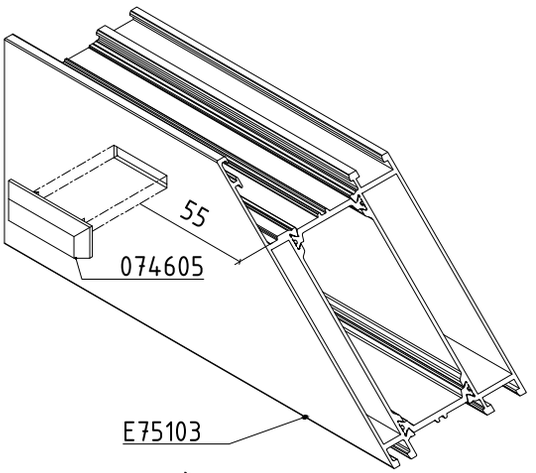
In inward opening

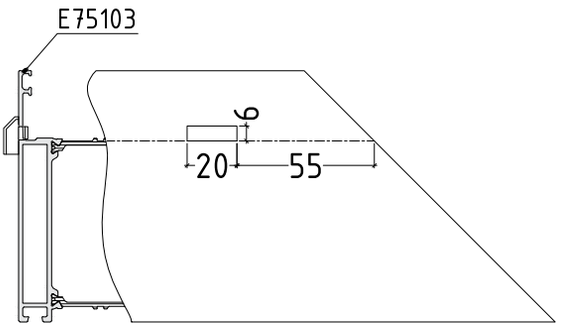
Pay attention for positioning of E75810 and mounting to the frame!

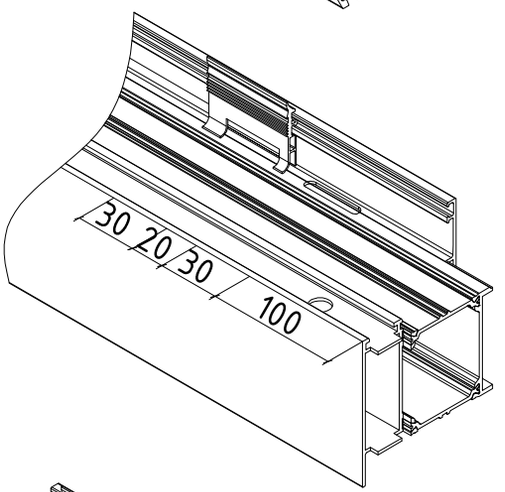


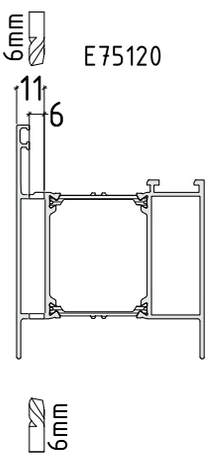
not to scale

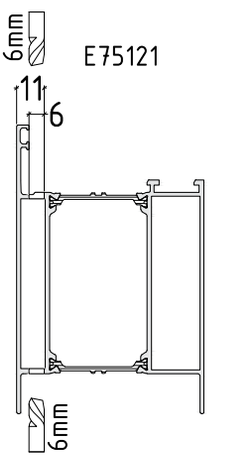
M75D-34

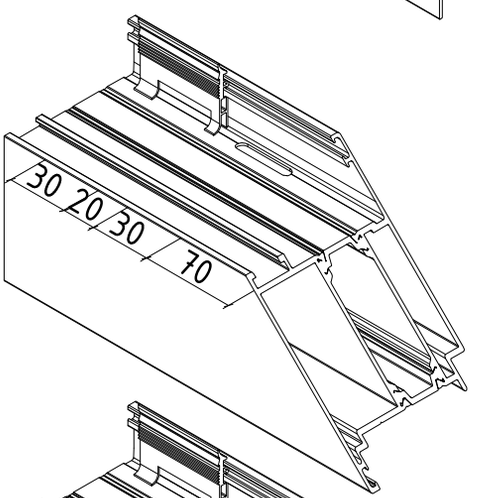


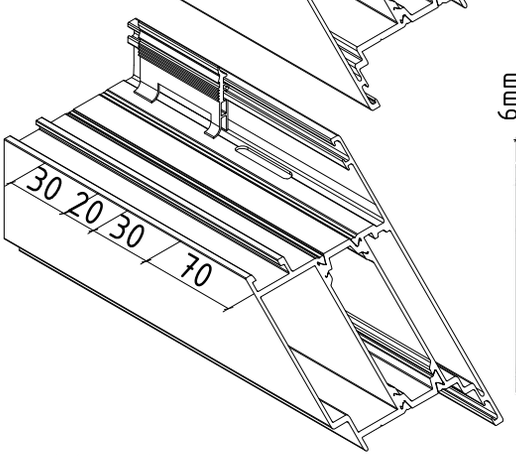


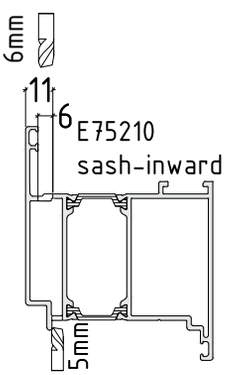


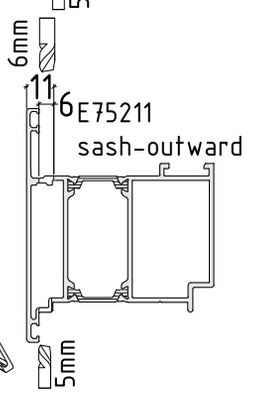


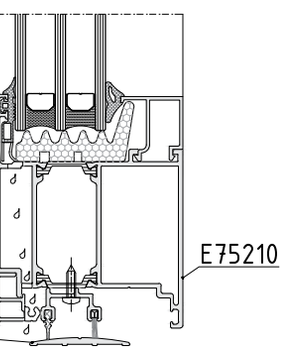


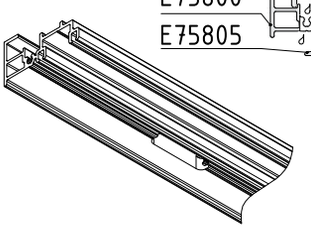


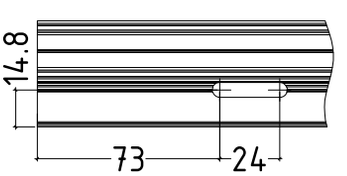


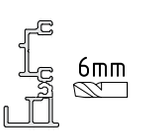








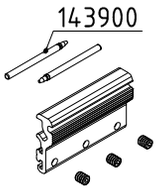




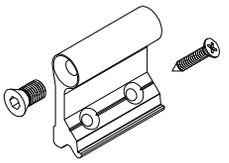
E75800
brash-holder

not to scale

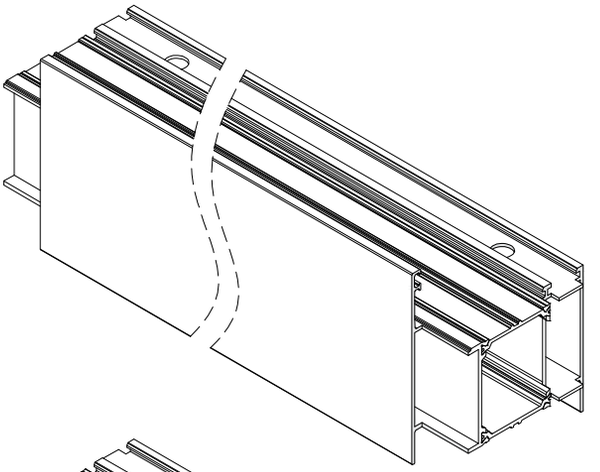
M75D-35

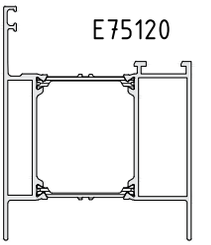


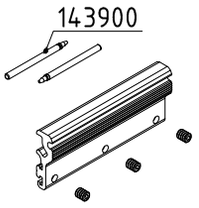
ET070308.00



ET070212.00







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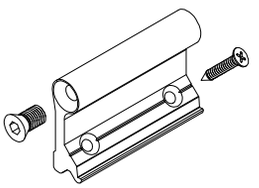

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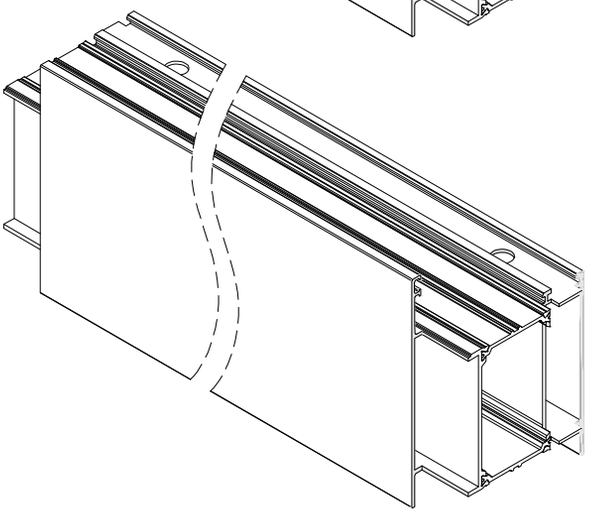
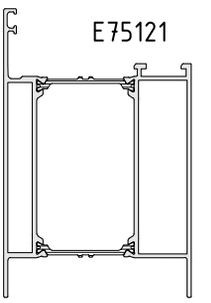
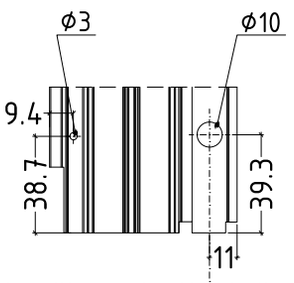
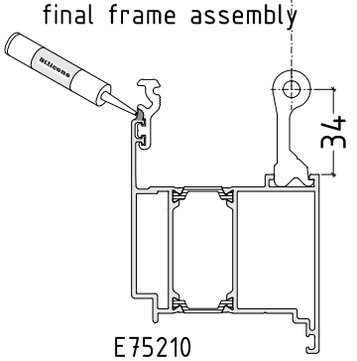


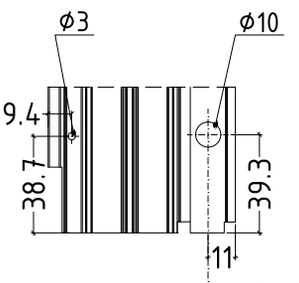




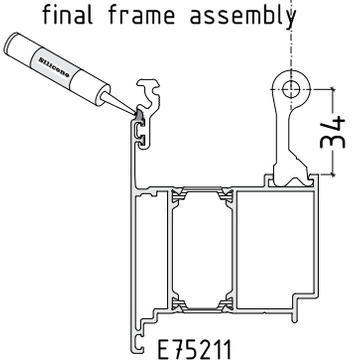
Apply silicone to the indicated place before final frame assembly



E75210
sash-inward



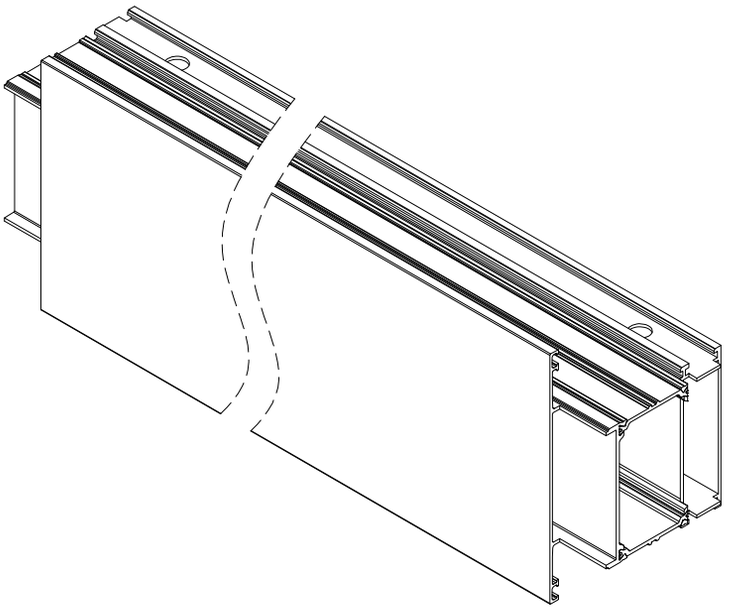
Apply silicone to the indicated place before final frame assembly

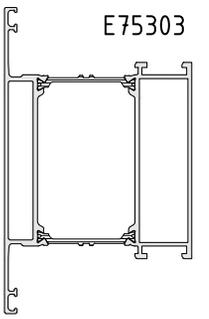


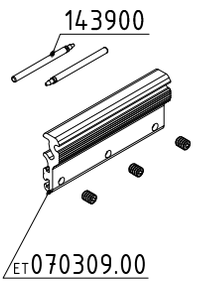
E75211
sash-outward

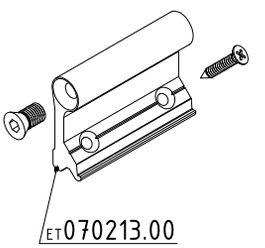
not to scale

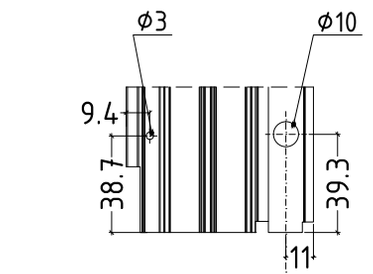
M75D-36



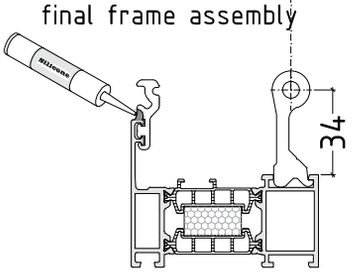








Apply silicone to the indicated place before final frame assembly

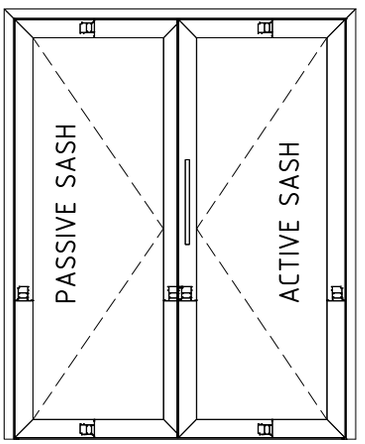


E 75100S
E 75101S
E 75102S
E 75105S
frame

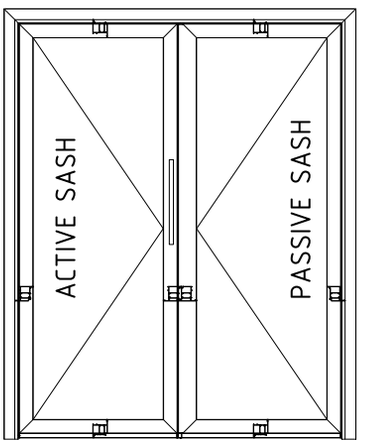
not to scale

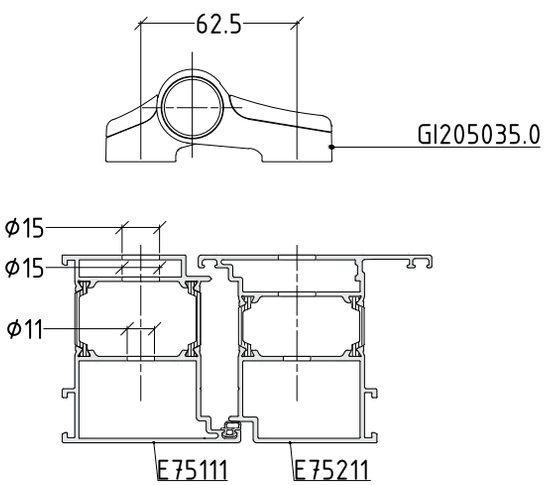
M75D-37

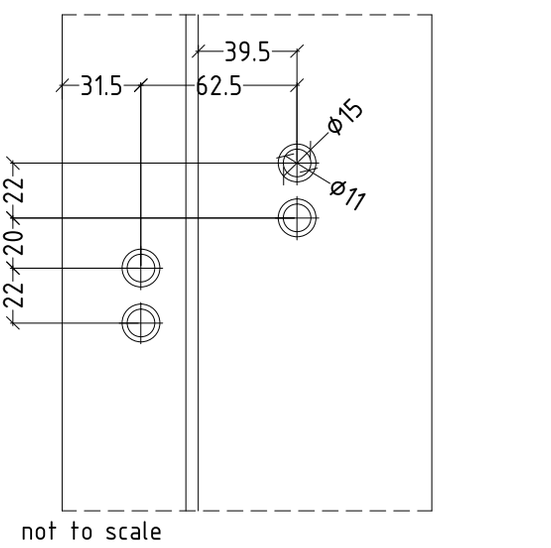
outward opening
double sash door

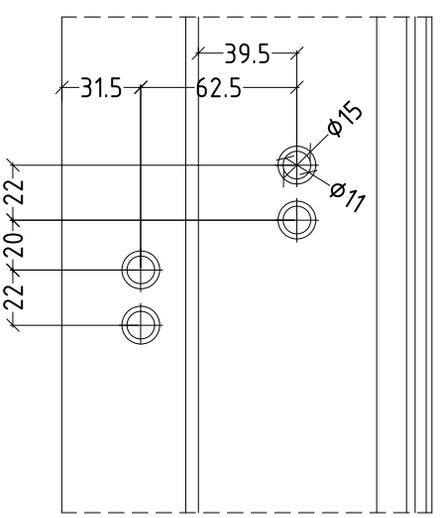


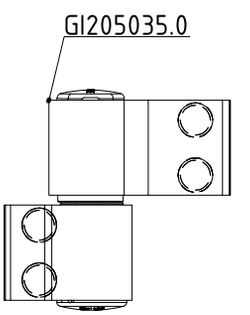
inward opening
double sash door

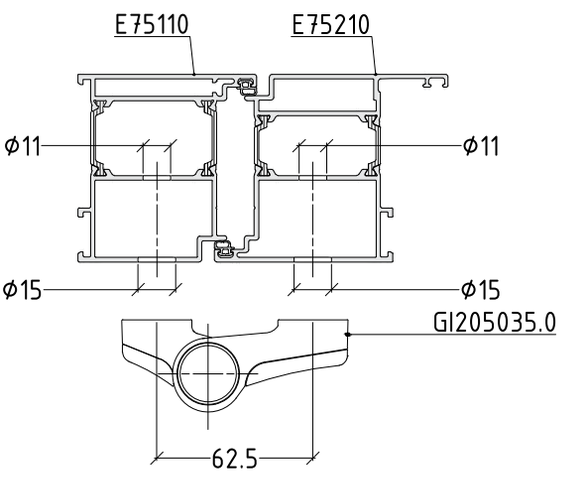








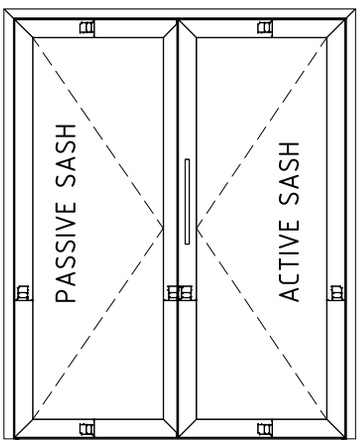




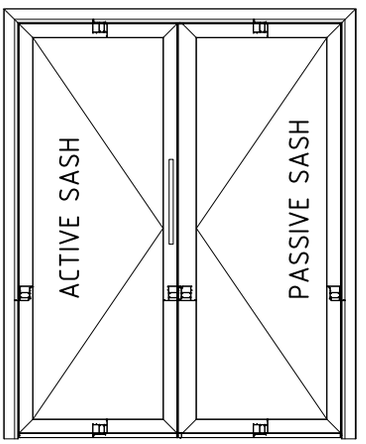
not to scale

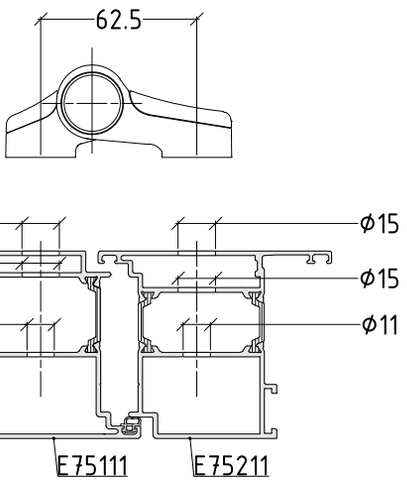
M75D-38

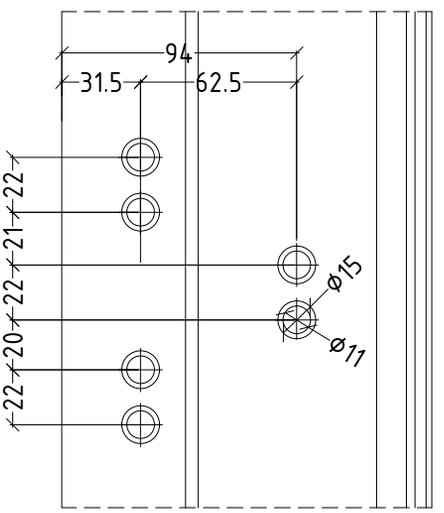
outward opening
double sash door

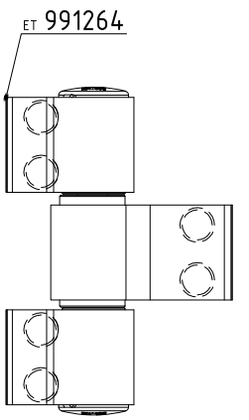


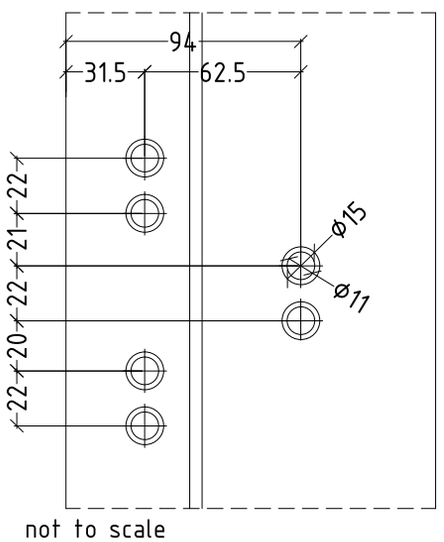
inward opening
double sash door



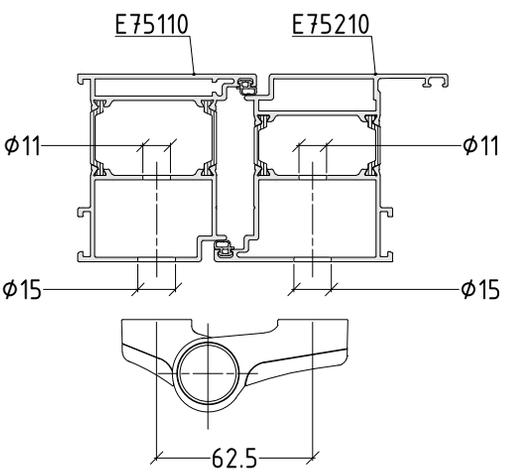






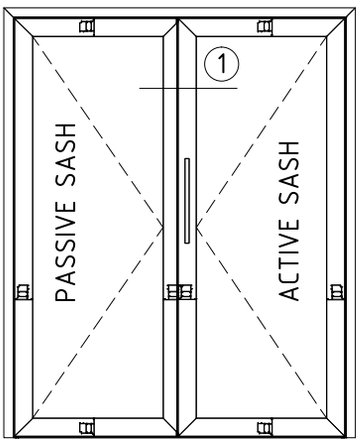


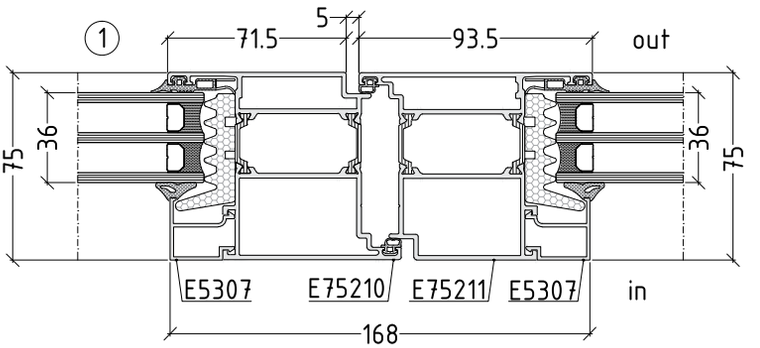
not to scale

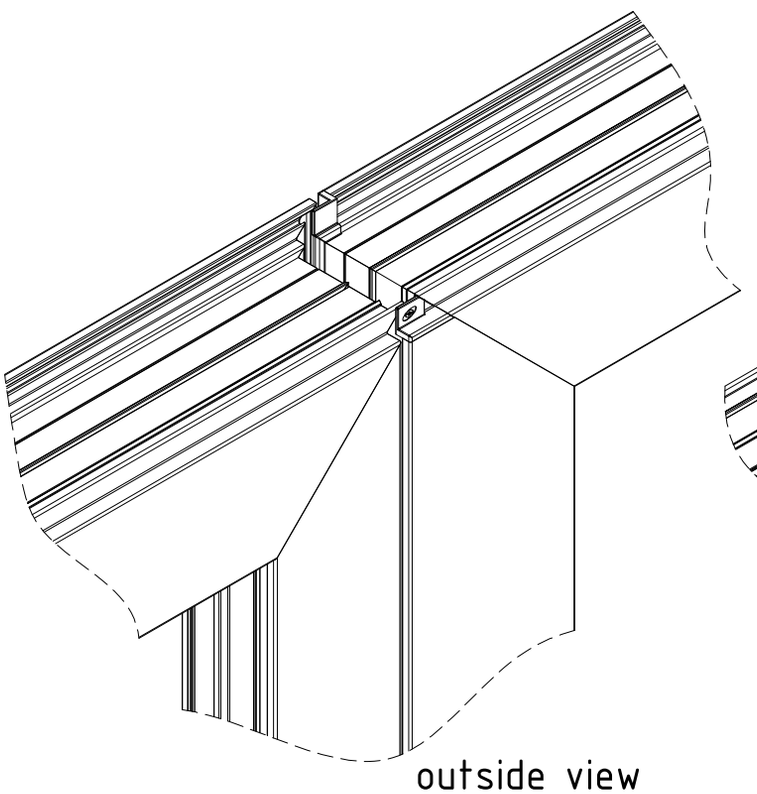


M75D-39

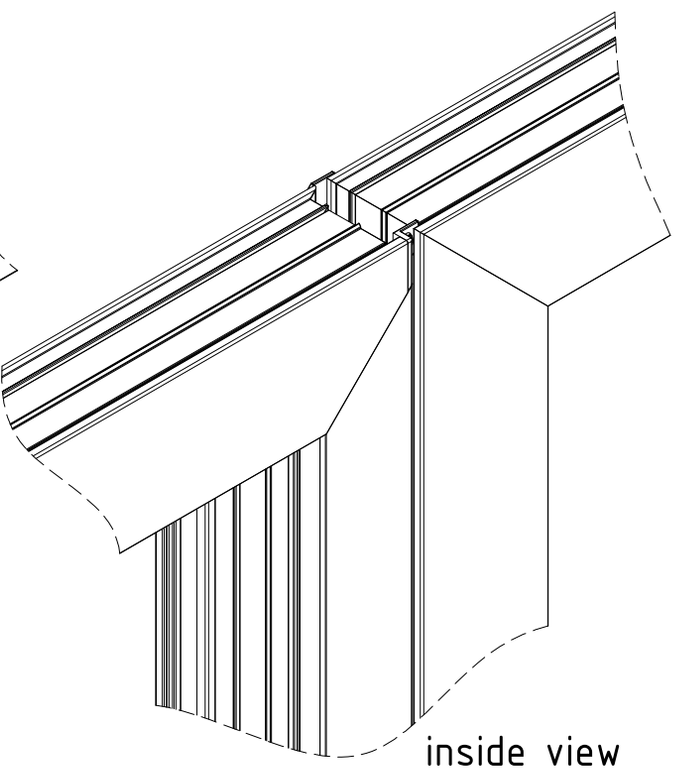
outward opening
double sash door







outside view



inside view

Note:

This central section of double sash door is equal for outward opening and inward opening.

not to scale

M75D-40

ACCESSORIES

code/description	package/pcs	colour
ET 130411.00	150	●

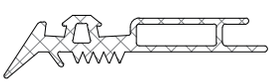
glazing EPDM gasket 3 mm

ET 130153.00	150	●

glazing EPDM gasket 4 mm

ET 130402.00	60	●

glazing EPDM gasket 3 mm



ET 990619.00	125	●

P5 old code

glazing EPDM gasket
press-in 5 mm

A75D-01

code/description	package/pcs	colour
ET 990620.00	125	●

P6 old code

glazing EPDM gasket
press-in 6 mm

ET 130207.00	75	●

P7 old code

glazing EPDM gasket
press-in 7 mm

ET 130208.00	40	●

P8 old code

glazing EPDM gasket
press-in 8 mm

ET 994412.00	40	●

P10 old code

glazing EPDM gasket
press-in 10 mm

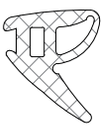
A75D-02

code/description	package/pcs	colour
ET 130176.00	80	●

glazing EPDM gasket
press-in 5-6 mm

ET 130177.00	60	●

glazing EPDM gasket
press-in 7-8 mm



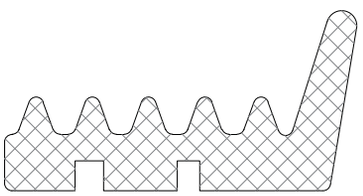
ET 130157.00	150	●

EPDM gasket

ET 080507.00	48	●

130078 old code

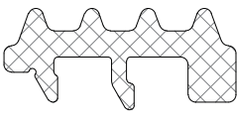
additional insulator for
frame and sash for triple glazing



A75D-03

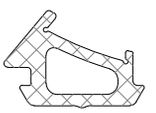
code/description	package/pcs	colour
ET 080511.00	75	●

additional insulator for frame
and sash for double glazing



ET 130433.00	70	●

gasket for variable angle
E 75

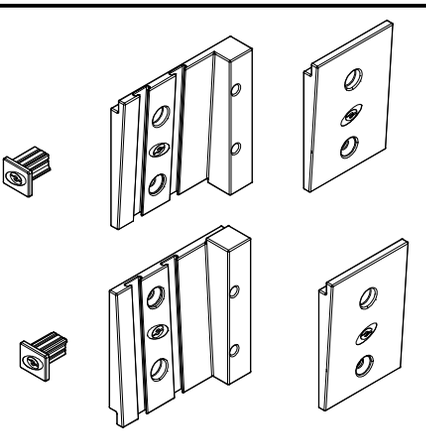


ET 130468.00	100	●

outside silicone gasket

ET 995563.00	100	●

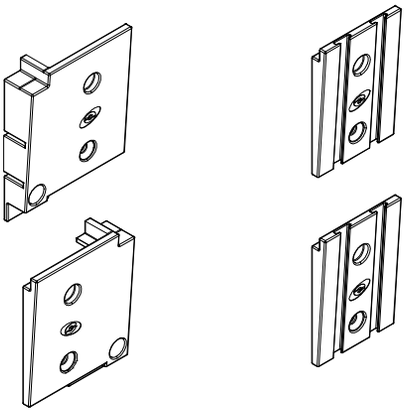
set pl. plugs for
single-sash flat door with
therminal threshold



A75D-04

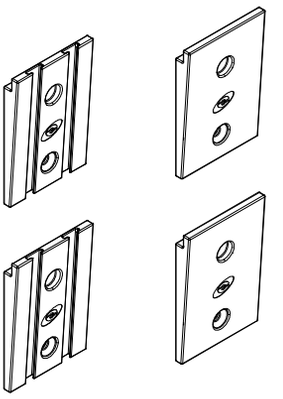
code/description	package/pcs	colour
ET 995564.00	100	●

set pl. plugs for
single-sash flat door with
brush holder



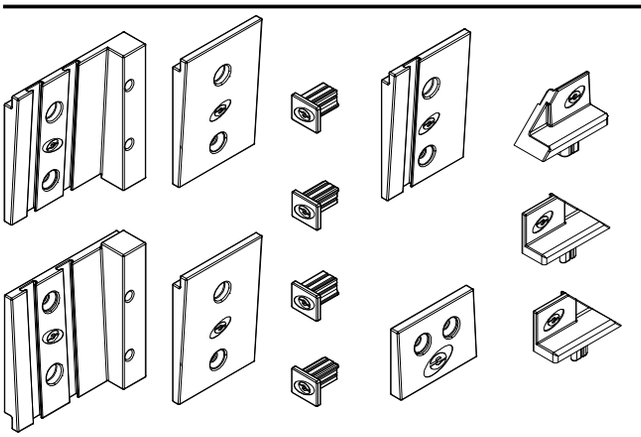
ET 995565.00	100	●

'set pl. plugs for single-sash
flat door with kick-plate



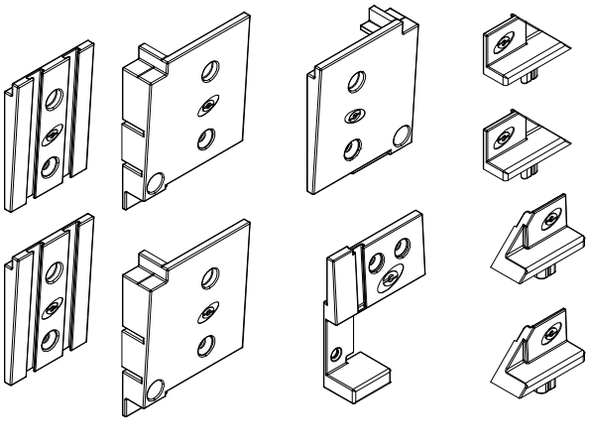
ET 995566.00	100	●

set pl. plugs for
double-sash flat door with
thermal threshold



ET 995567.00	100	●

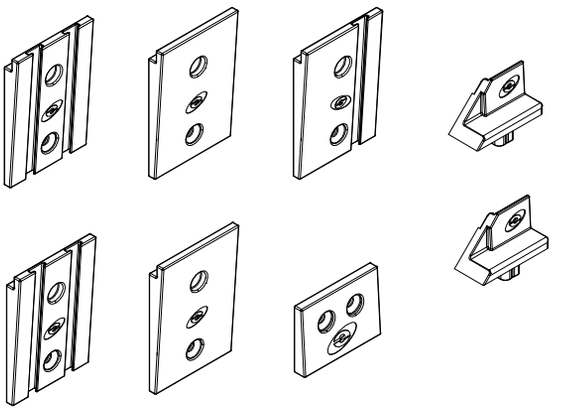
set pl. plugs for
double-sash flat door with
brush holder



A75D-05

code/description	package/pcs	colour
ET 995568.00	100	●

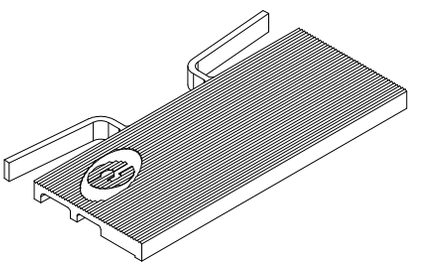
set pl. plugs for double-sash flat door with kick-plate



ET 991306.00	200	●

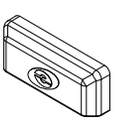
9022 old code

equalizing shim 6 mm



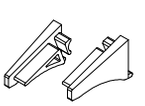
ET 074605.00	100	●

plastic drain cap20 x 6 mm



ET 74629.00	200	●

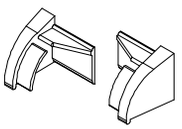
plastic plug for drip profile E 2357



A75D-06

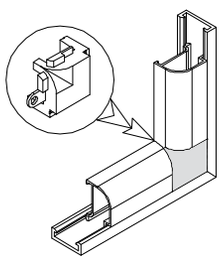
code/description	package/pcs	colour
ET 074624.00	200	●

plastic plug for drip profile
E 40820

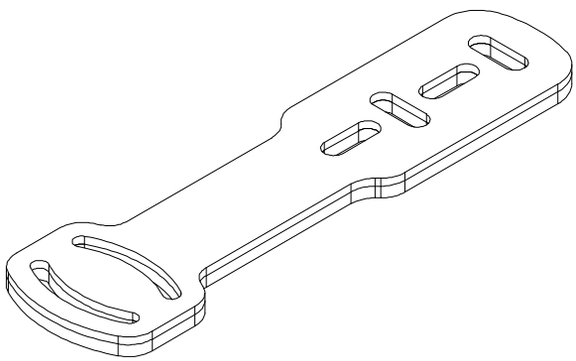


ET 059902.00	25	MF
ET 059902.02	25	●
ET 059902.01	25	○

corner for round bead

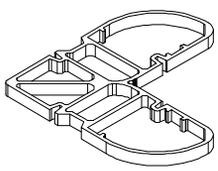


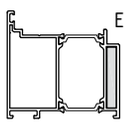
ET 055516.00	1	



ET 054674.00	200	MF

extruded aluminium corner
bracked 6.4 mm for
E 75111

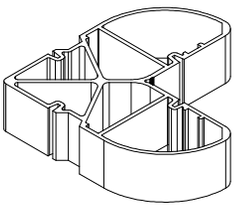


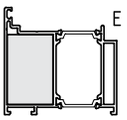


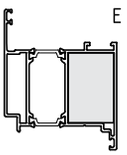
A75D-07

code/description	package/pcs	colour
ET 054675.00	50	MF

extruded aluminium corner
bracket 30.4 mm for
E 75111 / E 75210

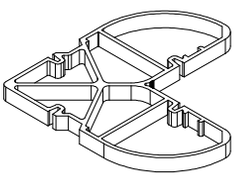


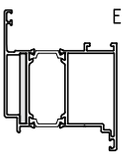




ET 054676.00	200	MF

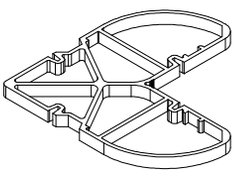
extruded aluminium corner
bracket 3.9 mm for
E 75210

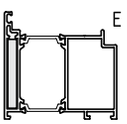




ET 054670.00	150	MF

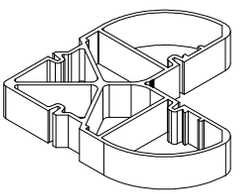
extruded aluminium corner
bracket 6.4 mm for
E 75110

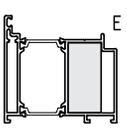


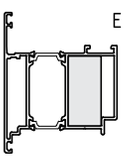


ET 054671.00	100	MF

extruded aluminium corner
bracket 21.9 mm for
E 75110 / E 75211



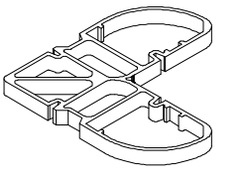


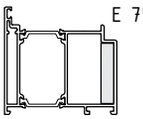


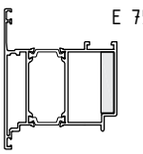
A75D-08

code/description	package/pcs	colour
ET 054672.00	100	MF

extruded aluminium corner
bracket 8.2 mm for
E 75110 / E 75211

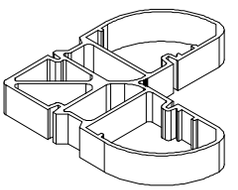


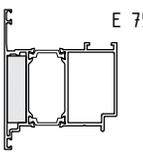




ET 054673.00	100	MF

extruded aluminium corner
bracket 12.4 mm for
E 75211

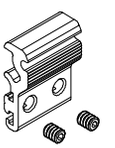


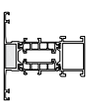


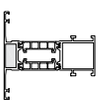
ET 991407.00	10	MF

70305 old code

T - bracked external side for
E 75300 / E 75340

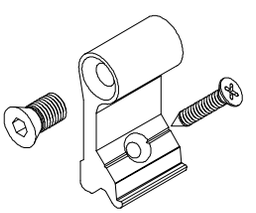


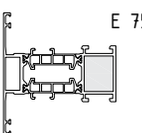


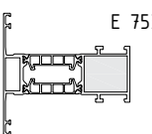


ET 070206.00	10	MF

T - bracked external side for
E 75300 / E 75340



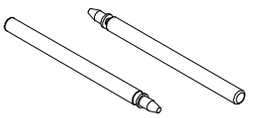




A75D-09

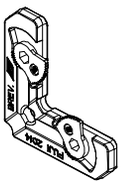
code/description	package/pcs	colour
ET 143900.00	100	MF

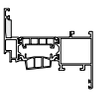
roll pin 3 x 6 mm with andle



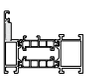
ET 058001.00	250	MF

alignment square with
locking function

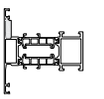




E 75200
E 75201



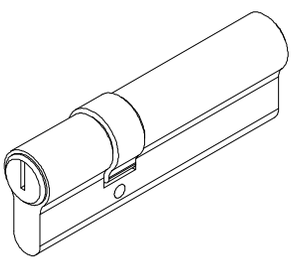
E 75100
E 75101
E 75102
E 75105



E 75300
E 75340

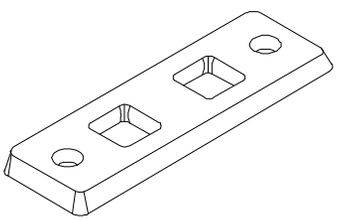
ET 990989.00	10	nickel

cilinder 30/60 mm nickel



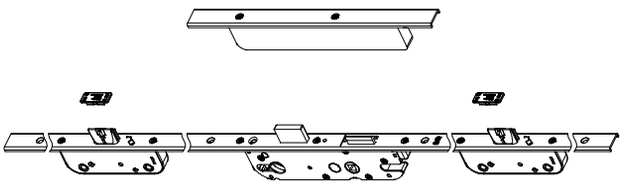
GI206699.00	100	nickel

striker for treshold giesse



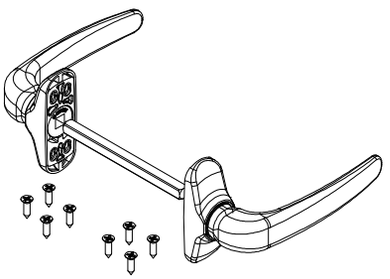
A75D-10

code/description	package/pcs	colour
GU 238835.00	1	nickel



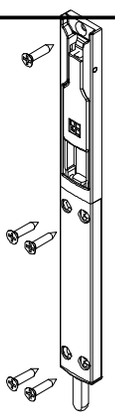
Security lock GU 35/92/240
6-29040-31-0-1

GI205011.00	10	●
		●
		●



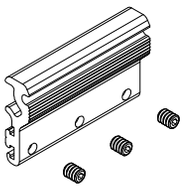
Double handle for door prima

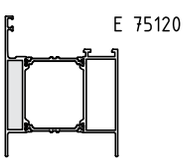
ET 994573.00	10	●



bolt for secondary sash
GIESSE

ET 070308.00	10	MF



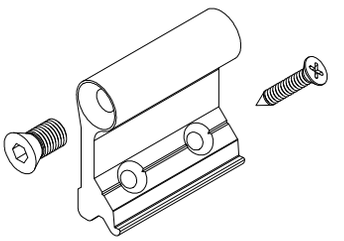


T- bracked external side

A75D-11

code/description	package/pcs	colour
ET 070212.00	10	MF

T – bracked internal side



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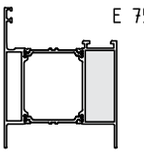

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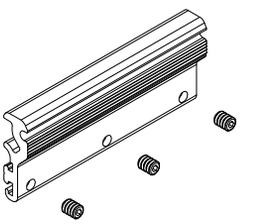
T – bracked external side



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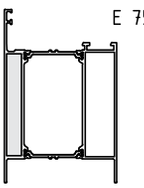

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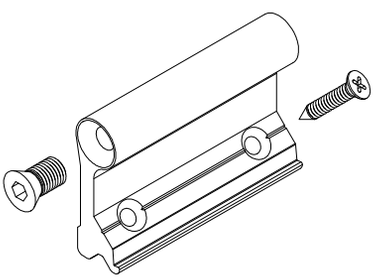

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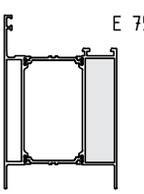

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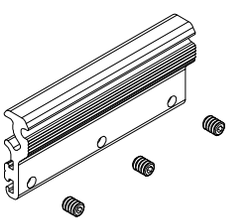
T – bracked external side



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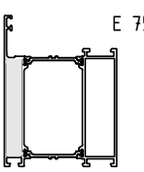

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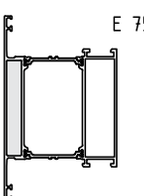
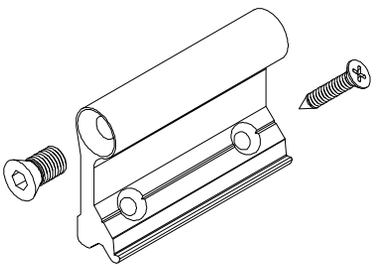
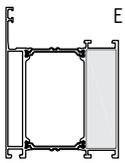


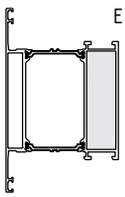
A75D-12

code/description	package/pcs	colour
ET 070213.00	10	MF

T- bracked internal side

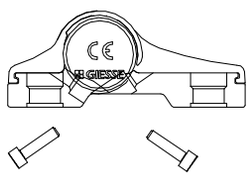


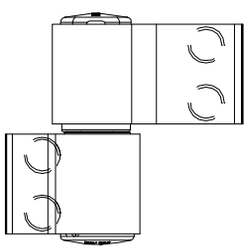




GI205035.0	10	●
		●
		●

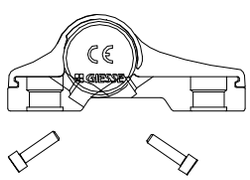
double hinge for flat door
Domina

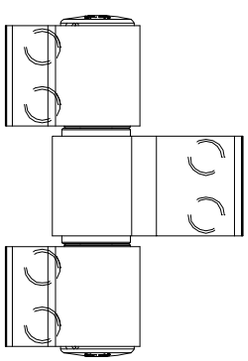




ET 991264	5	●

triple hinge for flat door
Domina





GI205039.00	24	MF

bolt adjustable spacer 48 mm
for hinge Domina

A75D-13

code/description	package/pcs	colour
GI255616.00	24	MF

conter plate kit for hinge
Domina

A75D-14

III.

CE MARKING

STANDARDS / PERFORMANCE CHARACTERISTICS

CE MARKING

WHAT DOES THE SIGN CE MEAN?

It is an abbreviation of the French "Conformite Europeene"– i.e. European Conformity. By placing the CE marking the manufacturer declares that the product complies with the general safety requirements set out in the Construction Product Regulation 305/2011.

WHAT IS THE PURPOSE OF CE MARKING?

The CE marking represents ''the European passport'' of the product, its main objectives are:

CE is a declaration by the manufacturer that the product meets the essential requirements of relevant European legislation relating to health, safety and environmental protection;

CE indicates to officials in relevant ministries and departments that the product can be put on the market lawfully in the country;

CE ensures free movement of goods within the EU and the European Free Trade Association (EFTA);

CE permits the withdrawal of products that do not meet the standards by monitoring and custom authorities;
marking with the CE mark is necessary in cases where the product is distributed within the internal market.

WHAT ARE THE REQUIREMENTS FOR THE CE MARKING?

Doors, windows and gates (except those intended to be used for internal communication only, for fire/smoke compartmentation and on escape routes) are covered by System 3 of assessment and verification of constancy of performance.
According to the Construction Product Regulation 305/2011, this system sets the following duties:

Tasks to be performed by the manufacturer	Tasks to be performed by Notified testing laboratory	Conformity accessment (the basis for CE marking, which is set by the final producer)
factory production control – FPC	Determination of the product type on the basis of type testing, type calculation, tabulated values, etc.	Declaration of performance issued by the manufacturer or his authorized representative based on test results.

LEGAL ACTS

- Construction Products Regulation (305/2011/EU – CPR) – replacing the Construction Products Directive (89/106/EEC – CPD)
- EN 14351-1:2006+A1:2010 – Windows and doors – Product standard, performance characteristics – Part 1: Windows and external pedestrian doorsets without resistance to fire and/or smoke leakage characteristics

MAIN METHODS FOR OBTAINING TEST RESULTS BY THE MANUFACTURER

According to the Construction Product Regulation 305/2011 there are three main options for the manufacturers of windows and doors to obtain test results.

1

THE MANUFACTURER SELECTS A SAMPLE FOR TESTING AND CARRIES OUT FACTORY PRODUCTION CONTROL

↓

NOTIFIED TESTING LABORATORY TESTS THE SAMPLE

↓

THE MANUFACTURER OWNS THE TEST REPORT

↓

MANUFACTURER ISSUES DECLARATION OF PERFORMANCE AND AFFIXES CE MARKING

2

PARTNER (SECOND MANUFACTURER PRODUCING PRODUCT WITH CORRESPONDING PRODUCT-TYPE) SELECTS A SAMPLE FOR TESTING AND CARRIES OUT FACTORY PRODUCTION CONTROL

↓

NOTIFIED TESTING LABORATORY TESTS THE SAMPLE

↓

THE PARTNER OWNS THE TEST REPORT

↓

THE MANUFACTURER CARRIES OUT FACTORY PRODUCTION CONTROL AND IS ALLOWED TO USE THE TEST RESULTS OF HIS PARTNER AFTER OBTAINING PARTNER'S AUTHORIZATION

↓

MANUFACTURER ISSUES DECLARATION OF PERFORMANCE AND AFFIXES CE MARKING

3

THE SYSTEM PROVIDER SELECTS SAMPLES FOR TESTING

↓

NOTIFIED TESTING LABORATORY TESTS THE SAMPLE

↓

THE SYSTEM PROVIDER OWNS THE TEST REPORT

↓

THE MANUFACTURER CARRIES OUT FACTORY PRODUCTION CONTROL AND IS ALLOWED TO USE THE TEST RESULTS OF THE SYSTEM PROVIDER AFTER OBTAINING SYSTEM PROVIDER'S AUTHORIZATION

↓

AGREEMENT BETWEEN THE MANUFACTURER AND THE SYSTEM PROVIDER

- INSTRUCTIONS FOR ASSEMBLING AND INSTALLATION OF THE SYSTEM PROVIDER RELEVANT FOR FPC OF THE MANUFACTURER
- NO REDUCTION OF PERFORMANCE LEVEL OF THE PRODUCT

↓

MANUFACTURER ISSUES DECLARATION OF PERFORMANCE AND AFFIXES CE MARKING

PERFORMANCE CHARACTERISTICS

According to European product standard for windows and doors without resistance to fire and/or smoke leakage characteristics – EN 14351-1

RESISTANCE TO WIND LOAD

Tests on windows and external pedestrian doorsets shall be carried out in accordance with EN 12211. The deflection of frame elements (e.g. transoms and mullions) shall be determined by calculation or by test (reference method).

RESISTANCE TO SNOW AND PERMANENT LOAD

The manufacturer shall provide sufficient information on the infill to enable the determination of the load-bearing capacity of the infill, e.g. information on the thickness and type of glass.

FIRE CHARACTERISTICS REACTION TO FIRE

The (materials used in) roof windows shall be tested and classified in accordance with EN 13501-1.

EXTERNAL FIRE PERFORMANCE

Roof windows shall be tested and classified in accordance with EN 13501-5.

WATERTIGHTNESS

A watertightness test shall be carried out in accordance with EN 1027.
The results shall be expressed in accordance with EN 12208.

DANGEROUS SUBSTANCES

In so far as the state of the art permits, the manufacturer shall establish those materials in the product which are liable to emission or migration during normal intended use and for which emission or migration into the environment is potentially dangerous to hygiene, health or the environment.

IMPACT RESISTANCE

Windows and external pedestrian doorsets fitted with glass or other fragmental material shall be tested and the results shall be expressed in accordance with EN 13049. Where relevant, the test shall be carried out from both sides.

LOAD-BEARING CAPACITY OF SAFETY DEVICES

Safety devices (e.g. retaining and reversing catches, restrictors, and fixing devices for cleaning procedures), if provided and engaged in accordance with the manufacturer's published instructions, shall be able to hold the leaf, casement or sash in place for 60 s when 350 N are applied to the leaf, casement or sash in the most unfavourable way (i.e. position, direction).

HEIGHT AND WIDTH OF DOORSETS AND FRENCH WINDOWS

The clear opening height and width of external pedestrian doorsets and French windows be expressed in mm. Where the threshold and the head/transom are not parallel, the maximum and minimum height shall be stated.

ABILITY TO RELEASE

Emergency exit devices, hinges and panic devices installed on external pedestrian doorsets in escape routes shall comply with EN 179, EN 1125, EN 1935, prEN 13633 or prEN 13637.

ACOUSTIC PERFORMANCE

The sound insulation shall be determined in accordance with EN ISO 140-3 (reference method) or where applicable by using values given in the product standard.

THERMAL TRANSMITTANCE

The thermal transmittance for windows and external pedestrian doorsets shall be determined by using:
EN ISO 10077-1.

RADIATION PROPERTIES

The determination of the total solar energy transmittance (solar factor, g-value) and light transmittance of translucent glazings shall be carried out in accordance with EN 410, or if relevant, with EN 13363-1 or EN 13363-2 (reference method).

AIR PERMEABILITY

Two air permeability tests shall be carried out in accordance with EN 1026, one with positive test pressures and one with negative test pressures.

DURABILITY

The manufacturer shall provide information about maintenance and the replaceable parts. The manufacturer shall declare the material(s) from which the product is manufactured including any applied coating and/or protection. This shall apply to all components that have an effect on the durability of the product in intended use except those components that comply with individual product standards (hardware, weather stripping).

OPERATING FORCES

Manually operated windows shall be tested in accordance with EN 12046-1. The results shall be expressed in accordance with EN 13115.

MECHANICAL STRENGTH

Windows shall be tested in accordance with EN 14608 and EN 14609. Prior to and after those tests manually operated windows shall be tested in accordance with EN 12046-1.

VENTILATION

Air transfer devices integrated in a window or an external pedestrian doorset shall be tested and evaluated in accordance with EN 13141-1:2004, 4.1. Joints and openings not subject to testing shall be taped over.

BULLET RESISTANCE

After testing in accordance with EN 1523 the bullet resistant characteristics of windows and external pedestrian doorsets shall be expressed in accordance with EN 1522.

EXPLOSION RESISTANCE

SHOCK TUBE

After testing in accordance with EN 13124-1 the explosion resistance characteristics of windows and external pedestrian doorsets shall be expressed in accordance with EN 13123-1.

RANGE TEST

After testing in accordance with EN 13124-2 the explosion resistance characteristics of windows and external pedestrian doorsets shall be expressed in accordance with EN 13123-2.

RESISTANCE TO REPEATED OPENING AND CLOSING

A repeated opening and closing test shall be carried out in accordance with EN 1191. The results shall be expressed in accordance with EN 12400.

BEHAVIOUR BETWEEN DIFFERENT CLIMATES

A climate test on windows with frames manufactured from a combination of materials shall be carried out in accordance with ENV 13420.

BURGLAR RESISTANCE

After testing in accordance with ENV 1628, ENV 1629 and ENV 1630 the results shall be expressed in accordance with ENV 1627.

STANDARDS

GENERAL

- EN 12020 (1÷2) – ALUMINIUM AND ALUMINIUM ALLOYS – EXTRUDED PRECISION PROFILES IN ALLOYS EN AW-6060 AND EN AW-6063
- EN 755 (1÷9)– ALUMINIUM AND ALUMINIUM ALLOYS – EXTRUDED ROD/BAR, TUBE AND PROFILES
- EN 573 (1÷3) – ALUMINIUM AND ALUMINIUM ALLOYS – CHEMICAL COMPOSITION AND FORM OF WROUGHT PRODUCTS
- EN 1990 EUROCODE – BASIS OF STRUCTURAL DESIGN
- EN 1991 EUROCODE 1 – ACTIONS ON STRUCTURES
- EN 1998 EUROCODE 8 – DESIGN OF STRUCTURES FOR EARTHQUAKE RESISTANCE
- EN 1999 EUROCODE 9 – DESIGN OF ALUMINIUM STRUCTURES

WINDOWS AND DOORS

1. EN 14351 (1÷2) – WINDOWS AND DOORS – PRODUCT STANDARD, PERFORMANCE CHARACTERISTICS
2. EN 12519 – WINDOWS AND PEDESTRIAN DOORS – TERMINOLOGY
3. EN 12207 – WINDOWS AND DOORS – AIR PERMEABILITY – CLASSIFICATION
4. EN 1026 – WINDOWS AND DOORS – AIR PERMEABILITY – TEST METHOD
5. EN 12208 – WINDOWS AND DOORS – WATERTIGHTNESS – CLASSIFICATION
6. EN 1027 – WINDOWS AND DOORS – WATERTIGHTNESS – TEST METHOD
7. EN 12210 – WINDOWS AND DOORS – RESISTANCE TO WIND LOAD – CLASSIFICATION
8. EN 12211 – WINDOWS AND DOORS – RESISTANCE TO WIND LOAD – TEST METHOD
9. EN 1191 – WINDOWS AND DOORS – RESISTANCE TO REPEATED OPENING AND CLOSING – TEST METHOD
10. EN ISO 10077 (1÷2) – THERMAL PERFORMANCE OF WINDOWS, DOORS AND SHUTTERS – CALCULATION OF THERMAL TRANSMITTANCE
11. EN 12412-2 – THERMAL PERFORMANCE OF WINDOWS, DOORS AND SHUTTERS – DETERMINATION OF THERMAL TRANSMITTANCE BY HOT BOX METHOD – PART 2: FRAMES
12. EN 13115 – WINDOWS – CLASSIFICATION OF MECHANICAL PROPERTIES – RACKING, TORSION AND OPERATING FORCES
13. EN 1627 – WINDOWS, DOORS, SHUTTERS – BURGLAR RESISTANCE – REQUIREMENTS AND CLASSIFICATION
14. EN 1628 – WINDOWS, DOORS, SHUTTERS – BURGLAR RESISTANCE – TEST METHOD FOR THE DETERMINATION OF RESISTANCE UNDER STATIC LOADING
15. EN 1629 – WINDOWS, DOORS, SHUTTERS – BURGLAR RESISTANCE – TEST METHOD FOR THE DETERMINATION OF RESISTANCE UNDER DYNAMIC LOADING
16. EN 1630 – WINDOWS, DOORS, SHUTTERS – BURGLAR RESISTANCE – TEST METHOD FOR THE DETERMINATION OF RESISTANCE TO MANUAL BURGLARY ATTEMPTS
17. EN ISO 717-1 – ACOUSTICS – RATING OF SOUND INSULATION IN BUILDINGS AND OF BUILDING ELEMENTS – PART 1: AIRBORNE SOUND INSULATION
18. EN ISO 10140 – ACOUSTICS – LABORATORY MEASUREMENT OF SOUND INSULATION OF BUILDING ELEMENTS

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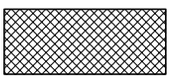
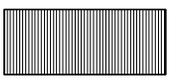
* The text is extract from EN 14351-1

HEDGES

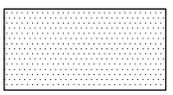
Hatches for different materials



EPDM

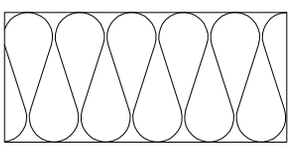


PVC

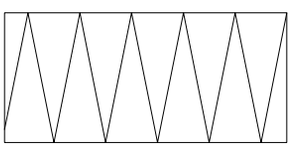


gypsum board

silicone seal



Insulation soft 20 mm



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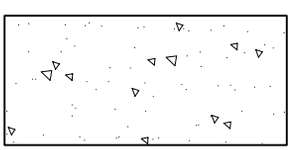
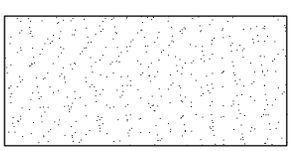
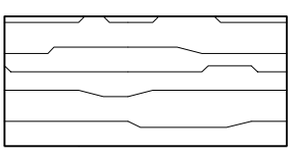


concrete wall



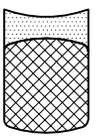
plaster



wood

butyl seal

membrane

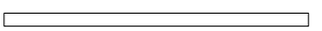


silicone seal

backer rod

PVC spacer

etalbond



sheet aluminium

glass

aluminium profile

steel

LIABILITY

The stated data and calculating methods are provided by ETEM as a guideline only.
The information given in this catalogue does not substitute of all applicable regulations – Eurocodes, harmonized European standards, national or regional building codes.

The specific conditions and technical details of every particular project have to be taken into consideration.

The right choice of all elements as well as any special requirements regarding stability of the structure must always be considered by the structural/façade engineer, responsible for the project.

The solutions presented in these pages are indicative and can not cover all possible project cases. Because of that every single project has to be evaluated by the structural/facade engineer in charge taking into consideration the specific features, such as climate conditions, location, orientation, etc.

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