aluplast
Kunststoff-Fenstersysteme

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energeto® neo

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319493 | "energeto neo" VM | en (English) Englisch | Issue 2023-02

VM

QL | +14 | AI | 5-6 | AD 2 | MD 3 | 76 mm

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02	Main profiles: Overview							Page(s)	Filename(s)
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	160x07		68mm	MD		(QL)	Frame	1	
	060x05 [1]		73mm	MD		(QL)	Frame	2	
	060x08 [1]		103mm	MD		(QL)	Frame	3	
	160x15		93mm	MD		(QL)	Renovation frame	4	
	160x01		73mm	AD		(QL)	Frame	5	
	160x02		83mm	AD		(QL)	Frame	6	
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	160x24	[3]	68mm		re.	(QL)	Sash	1	
	060x20 [1]	[3]	75mm		re.	(QL)	Sash	2	
	160x20	[3]	75mm		re.	(QL)	Sash	3	
	060x27 [1] [2]	[4]	75mm	MD	fl.	(QL)	Sash	4	
	160x30	[3]	110mm		re.	(QL)	Sash	5	
	160x33	[3]	125mm		re.	(QL)	Sash	6	
	160x35	[3]	125mm		re.	(QL)	opening outwards, Sash	7	
	170x39		96mm	AD	re.	(CL)	leaf-enclosing, Sash	8	
02 D	Mullions / Transoms						(Scale: 1:1)	1 - 5	02_D_01_neo*
	160x46		114mm	MD		(QL)	Mullion	1	
	160x45		94mm	MD		(QL)	Mullion	2	
	160x43		114mm	AD		(QL)	Mullion	3	
	160x41		94mm	AD		(QL)	Mullion	4	
	160x48	[3]	70mm		re.	(QL)	Transom	5	
02 E	False mullion sash / False mullion profiles						(Scale: 1:1)	1 - 6	02_E_01_neo*
	160x74	[3]	48mm		re.	(QL)		1	
	160x70	[3]	55mm		re.	(QL)		2	
	060x77 [1] [2]	[4]	55mm	MD	fl.	(QL)	False mullion sash	3	
	160x66		74mm			(QL)	big false mullion	4	
	160x64		54mm			(QL)	small false mullion	5	
	160x97		38mm			(QL)	(for false mullion sash) Mini false mullion	6	

[1] powerdur
[2] Glazing rebate +14mm
[3] bonding option = (M) multi
[4] bonding = (M) multi

Abbreviations (not all necessarily used in all profile series):
Gaskets: AD MD — AD = 2 (Backstop gasket system) / MD = 3 (Centre gasket system)
Sash position in frame: — re. recessed / s.re. semi-recessed / fl. flush
Design / Style: — (CL) Classic-line / (QL) Qube-line / (RL) Round-line / (SL) Soft-line / (HL) Historik-line

03 Main profiles: Combinations

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The profiles are sorted numerically within the chapters.
The sashes are sorted numerically within the profile chapters.

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Symbols

Example with:

Mounting mechanical manually
Mounting move positioning
mounting (temporary) disassemble demount
Mounting Sealing gluing
Mounting movement turn down
Mounting General Proceed with ...
Mounting tilting
Mounting setting-up
90° Angle 90° vertical
45° Angle 45°
30° Angle 30°
45° 45° Cutting - 45° / + 45°
45° 45° Cutting + 45° / - 45°
Detail See detail
|A| Accessories Chapter 05 ...
03 A AM / Planner Refer to chapter ...
03 A 160x20 AM / Planner Refer to chapter ... Item ...
08 E VM / Fabricator Refer to chapter ...
VM 08 L VM / Fabricator Refer to chapter ...
AM 05 X Fabricator Refer to AM / Planner Chapter ...
AM 03 B AM / Planner Refer to chapter ...
6mm Info Dimensions [mm] ...
T-01 Refer to table ...
T-01 Table ...
white / not laminated
coloured / laminated

mirroring (option) Mirror axis left or right
Unable to mirror
mirroring / mirrored left and right Set (left and right)
mirroring / mirrored left and right
do not mirror 2x as illustrated
do not mirror 1x as illustrated
mirroring 1x mirrored
Field 1 fixed field right / to the left
Field 3 Lifting / Pushing left / to the right
direction vertical vertical
direction horizontal horizontal
At top and bottom
left and right
Glazing Glass Glazing thickness
double
triple
Panel / Filling
5 Spacer Glazing blocks Colour and Height [mm]
Stop Gasket direction
Water Drops Rain
outside weather side unprotected
interior room side pProtected
sound (more) noise (louder) dB
sound (less) noise (quieter) dB
wait / time clock minutes / hours
wait / time Calendar days / weeks

measure Tape measure
fixing (temporary) Clamp
Cutting saw standard saw
Cutting diamond Saw special saw
Cutting Knife
Cutting Scissors
Cutting Knife or scissors
Cutting Crowbar scraping
Cutting Crowbar chiseling
filing / filing Rounding / Deburring / Scraping
Milling / Milling cutter contour milling standard milling
Milling Rotary milling cutter Ø3mm
countersunk Countersinking Countersunk hole
8.3 countersunk Countersinking Ø8.3mm
Drilling Drill
Drilling Drill Ø2.5mm
Drilling Drilling jig
Drilling No drilling jig available
Drilling drill through 4 levels
Punching - Punching tool remove part
Drilling / Milling Drain Drain
Drilling / Milling ventilate Supply air
Drilling / Milling vent Exhaust
-> for

screwing Screwdriver hand-tight
screwing Cordless screwdriver
screwing do not use cordless screwdriver
screwing wrench
SW 8 screwing wrench SW 8
screwing Ratchet
SW 8 screwing Ratchet SW 8
screwing Washer DIN 9021 Standard ... / Ø15mm Ø15mm
fixing nail
fixing nail Hammer
punch Hammer Steel hammer
punch Mallet
Mounting clip function
Mounting no clip function
Mounting clip function stackable
Mounting insert
disassemble remove
Mounting temporary
disassemble temporary
Info Offset
Info Gasket Sealing
Aluminium profiles visible length visible
AU Aluminium profiles exterior perimeter outside
GU Aluminium profiles overall perimeter outside and interior

Sealing gluing appropriate adhesive
Sealing Silicone rubber appropriate adhesive
Sealing Silicone rubber
Sealing Pre-compressed sealing tape
Sealing Sealing tape sealing film
Sealing Adhesive tape roll
Sealing adhesive Adhesive piece
Sealing Round chord
STOP Attention avoid avoid at all costs
Attention required in any case
Attention important Note Detail
Attention danger health injuries
kg Attention danger very heavy load
Attention danger Suction required
Or Option Alternative
option / yes / good / right / use / keep / available
Yes / good / right / use / keep / available
No / bad / false / not / dispose of / not available
Do not use Not for ... Invalid for ...
Do not use Not for ... Invalid for ...
Option with ... Also with ... Valid also with ...
Not required Not for ... Invalid for ...
Do not use Not for ... Invalid for ...
Do not use Not for ... Invalid for ...

... Info / Note
Planning Planner AM
Processing Fabricator VM
QL Design Qube-line (QL)
CL Design Classic-line (CL)
SL Design Soft-line (SL)
RL Design Rond-line (RL)
HL Design Historik-line (HL)
76 Imm Construction depth Standard minimal
76 Imm Construction depth advanced maximum
5-6 chambers Quantity horizontal
AD 2 gasket level backstop gasket 2 levels AD
MD 3 gasket level centre gasket 3 levels MD
2 gasket level ... gasket levels
Front door Main entrance door system Doors / thresholds
Old building Renovating Structure
Frames Monobloc Block profiles
Al aluskin Aluminium shells Aluminium profiles
foam inside foam-filled
powerdur inside fibre-reinforcement
bonding inside Bonding of pane Glazing rebate M
Glazing rebate Glazing blocks conventional
Glazing rebate Widened by ...
accessible barrier-free (BF)

Scale ~
00_Z_01_IDEAL*KR*
May be subject to change and errors excepted! en

Contents Symbols

Material properties

In compliance with the DIN EN ISO 1163 standard, aluplast uses the following uPVC molding compound as material for the profile systems:

ISO 1163 - PVC-U, EDLP, 082-50-T28

ISO standard DIN EN ...
PVC = Polyvinyl chloride
U = plasticiser-free (hard)
E = Extrusion
D = Powder (Dry-Blend)
L = Light and weathering stabilizer
P = Impact-resistant modified
082 = 80 - 84 °C = Vicat-softening temperature
50 = >40 kJ/m² = Impact strength
T28 = 2500 - 3000 N/mm² = Modulus of elasticity (tensile modulus = tension = T)

The formulation used is free of barium and cadmium.
Other versions / consignments according to system description or on request.

Characteristics CaZn (calcium zinc)

according to standard(s)	Description	Result	Unit
DIN EN ISO 306	Dimensional stability under heat Vicat-softening temperature VST/B 50	80 ± 2	°C
DIN EN ISO 179-1 / 1eA / 1eC / 1fC	Double-v impact strength a_v (RAL-toughness) Charpy / test bar according to RAL	Ø ≥ 40 no value below 20	kJ/m² at + 23 °C
DIN EN ISO 178 / 527-1 + 527-2	Flexural modulus E / tensile modulus E	2800	N/mm²
DIN EN ISO 182-2 / DIN 53 381-1	Stability time t pH-measurement methods, oil bath / conductivity measurement methods	40 ± 6	minutes at + 200 °C

General characteristics of uPVC

according to standard(s)	Description	Result	Unit
DIN 53752 Leitz-dilatometer	Coefficient of linear expansion from - 30 °C and + 50 °C	7 x 10 -5	1/K
DIN 52612-1/-2/-3 Guarded hot plate method	Thermal conductivity	λ 0.16 (Lambda)	W/mK
DIN 4102-1	Fire performance uPVC Flat profiles	B1	-
DIN 4102-1	Fire performance uPVC Hollow chamber profiles	B2	-
DIN EN 13501-1	Fire performance uPVC	E	-

1. Construction

1.1. Profile Design

The characteristic feature of the **aluplast** backstop and centre gasket profile system **energeto® neo** with a profile depth of 76mm is the design of all common frame, sash, mullion, and transom profiles with 5-6 profile chambers.

The multiple inner- and outermost hollow chambers guarantee optimal thermal insulation properties. Additionally, the outermost chambers allow for the concealed drainage and air equalisation of the rebates.

The large middle chambers are designed to accommodate the structurally required reinforcement profiles.

energeto®: Profiles designed for the bonding-of-pane technology (bonding inside) and/or glass fibre reinforced profiles (powerdur inside) in part do not require additional reinforcement and allow for a slim visible frame/sash width.

1.2. Gasket Arrangement

Save for few exceptions, the main profiles come equipped with gaskets. (See also paragraph 5. Gaskets).

The frame's outer backstop gasket and the sash's inner backstop gasket optimise heat and sound insulation values and prevent the formation of condensate in the area of the fittings.

The centre gasket is located in the sash to eliminate the risk of mechanical damage.

Main profiles equipped with TPE backstop, centre, and glazing gaskets can be welded.

Optional (repair) gaskets are available for main profiles without integrated gasket. Insert these (repair) gaskets circumferentially and in one plane. Do not break or cut the gasket in the mitre corner.

2. System Range

Design: Qube-line
(the valid product range according to Plan of Profiles)

- Frames AD (backstop gasket) and frames MD (centre gasket)

- Renovation frames MD (centre gasket)

- Sash re. (recessed), sash fl. (flush)

- Door sashes for residential doors (opening in- and outwards)

- False mullion sash re. (recessed, sash with integrated false mullion)

- False mullion profiles

- Mullions AD (backstop gasket) and mullions MD (centre gasket)

- Transom re. (recessed)

energeto®
- Fibre-reinforced frame (powerdur inside)
- Sash for bonding of pane (bonding inside), fibre-reinforced (powerdur inside)
- Sash for bonding of pane (bonding inside)
- False mullion sash for bonding of pane (bonding inside)
- Transom for bonding of pane (bonding inside)

aluskin (aluminium shells)

(Glazing beads available in Qube-line and Classic-line design)

3. Opening Types

The **aluplast** 5-6 chamber centre gasket profile system **energeto® neo** offers the adequate way of opening for each application and purpose, e.g. for renovations and new buildings both in the residential housing sector and in the administrative and industrial building sector.

- Turn windows and doors
- Tilt-and-turn windows and doors
- Top-hung and bottom-hung windows
- French casement windows and doors
- Multi-sash windows and doors with mullion and transom
- Window walls
- Round-arched and segment-bow windows
- Fixed glazing

4. Hardware

All sash and false mullion profiles have the European standard hardware groove of 16 mm and a locking axis of 13 mm.

All fittings marked with the RAL quality label from any manufacturer can be used.

The locking units are system-related and available at hardware retailers.

The type and the material of the screws used to fix the hardware (screw type) are specified by the hardware manufacturer.

Use only stainless steel screws – minimum quality V2A – for fastening of aluminium components.

5. Gaskets

aluplast profiles can also be delivered with factory-integrated gaskets as per price list.

TPE: can be welded, thermoplastic elastomer according to RAL-GZ 716/1 paragraph II
Base profile colour / lamination / integrated gasket: see valid price list or plans of profiles

For main profiles that come **without** gaskets, (repair) glazing gaskets and (repair) backstop gaskets, made of weathering and aging resistant EPDM-material, are optionally available in papyrus white or black. They are made of aging and weather resistant EPDM (APTK) material.

EPDM: cannot be welded, moulding compound according to DIN 7863

Gaskets must be inserted circumferentially and butt-jointed in the upper cross-piece of the frame or sash. It is not necessary to cut the gasket in the mitre corner.

6. Glazing

All customary single-layer glasses, insulating glasses and door panels can be installed.

Install the glazing with pre-assembled sealing profiles (dry glazing).

Applicable theoretical glazing thickness:

Sash re.:	up to 54 mm
Sash fl.:	up to 68 mm
Frame:	up to 52 mm

7. Reinforcements and Aluminium Profiles

Depending on the window dimensions and structural requirements, cold-rolled, galvanised steel profiles must be inserted into frames, sashes, and mullions or transoms for reinforcement, provided that the profiles have suitable reinforcement chambers or another option for reinforcement.

Material:

Hollow profiles	Band EN 10142 DX51D+Z275 NA-C
Open profiles	Band EN 10142 DX51D+Z275 NA-C

Corrosion protection zinc coating according to DIN EN 10326
For inside reinforcements, the minimum zinc coating is 150g/m²
For outside reinforcements, the minimum zinc coating is 275g/m²

Aluminium profiles: AlMgSi

Use only stainless steel screws – minimum quality V2A – for fastening of aluminium components.

8. Lamination and Colours

The profiles are available as laminated profiles. For further information on the available colour range, please refer to the valid price or lamination foil list.

The base profile colour is white, similar to RAL 9016, or brown (in case of laminated profiles), similar to RAL 8019.

9. Care and Maintenance

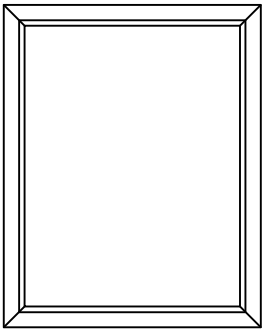
PVC window profiles can be cleaned easily using commercially-available mild cleansing agents. Do not use solvents or abrasive cleansing agents.

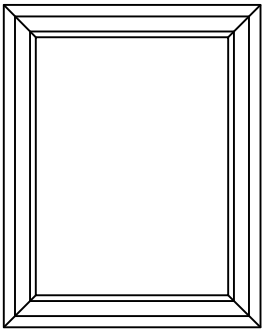
Lubricate the hardware parts as specified by the hardware manufacturer.

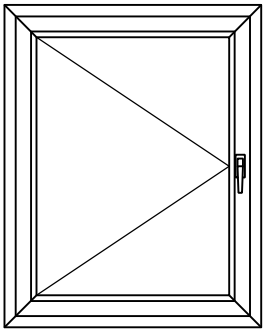
Refer also to **Chapter 10 R Cleaning, 10 S Maintenance, and 10 T Ventilation**.
Here you will find further information and cleaning agents recommended by **aluplast**.

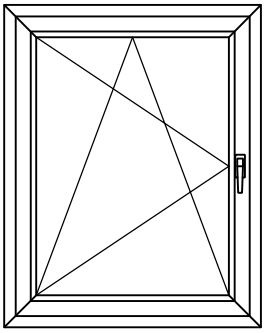
10. Window Material

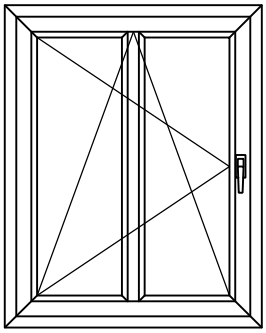
Refer to **Chapter 01 A Material Properties**

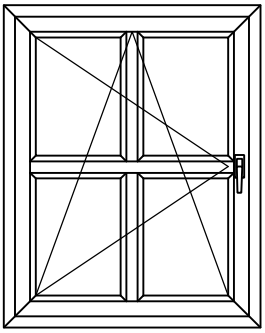

fixed glazing in frame

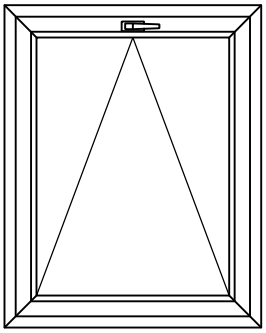

fixed glazing in sash

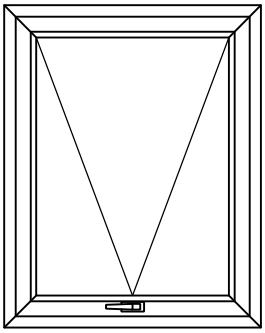

single opening window

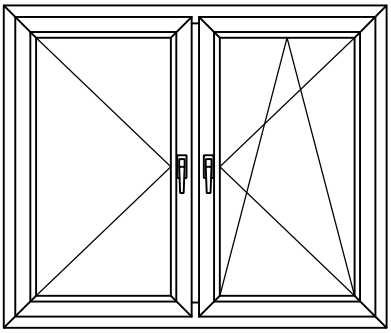

tilt + turn window

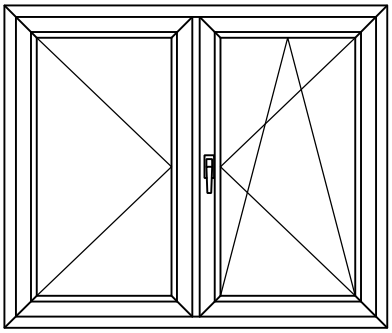

tilt + turn window with transom

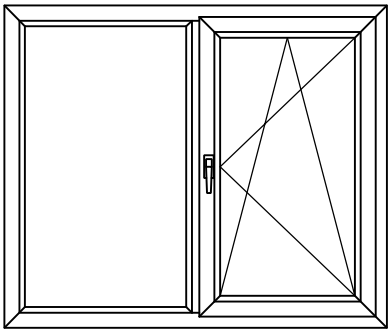

tilt + turn window with cross transom

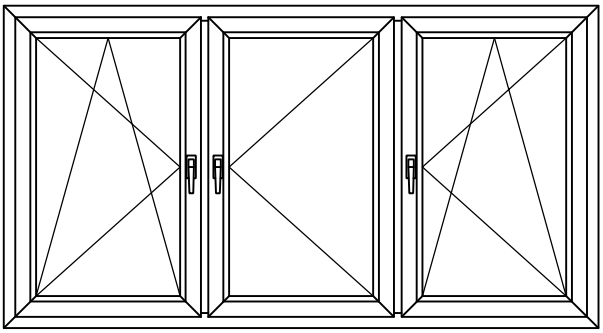

bottom-hung window

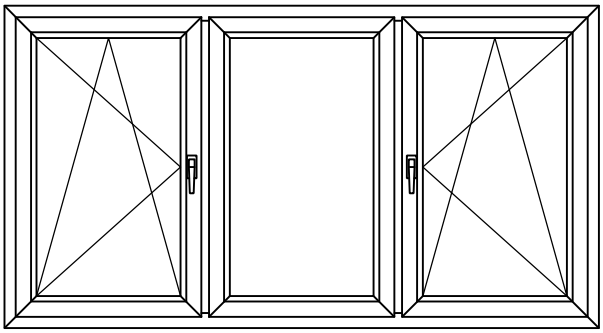

top-hung window

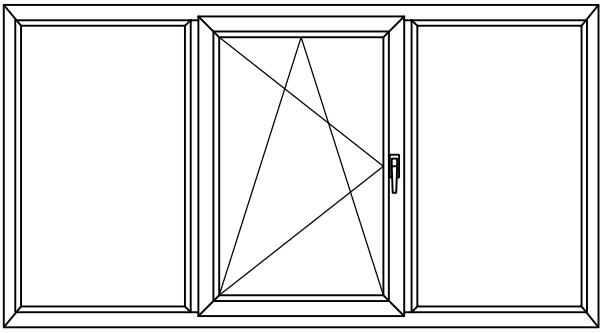

double sash window, single opening / tilt + turn


french casement window, single opening / tilt + turn

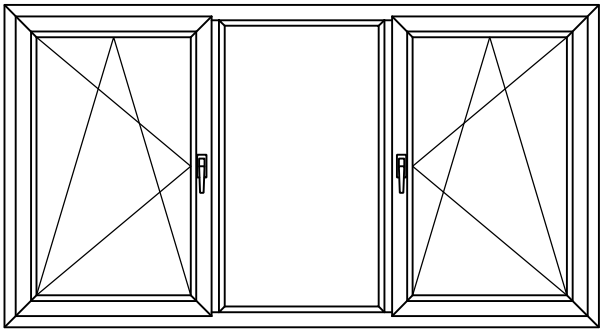

fixed glazing in frame / tilt + turn


triple sash window, tilt + turn / single opening / tilt + turn

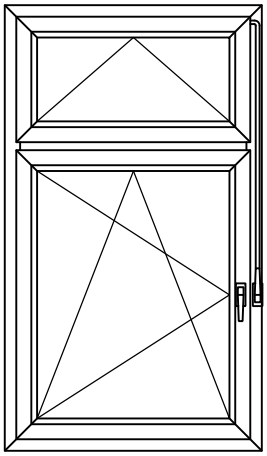

triple sash window, tilt + turn / fixed glazing in sash / tilt+ turn



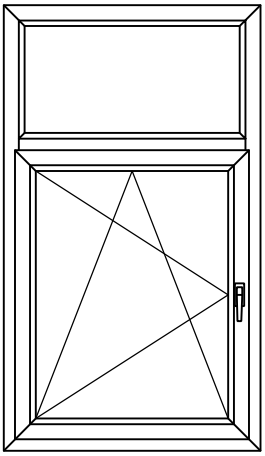
tripartite window, fixed glazing in frame / tilt + turn / fixed glazing in frame



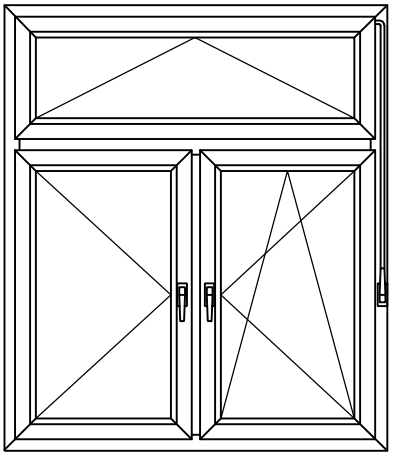
tripartite window, tilt + turn / fixed glazing in frame / tilt+ turn



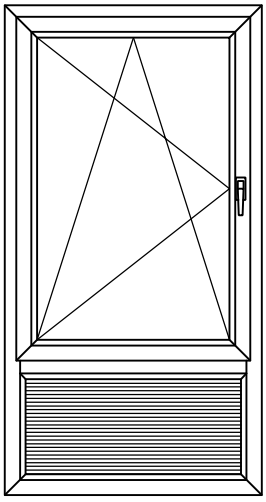
tilt + turn window with bottom-hung fanlight



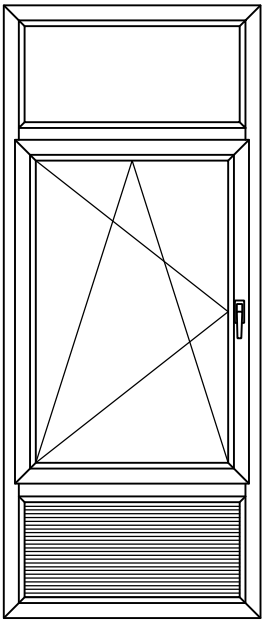
tilt + turn window with fixed fanlight



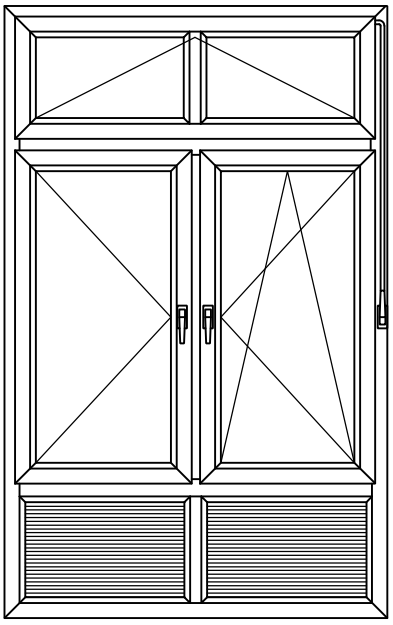
double sash window single opening / tilt + turn, bottom-hung fanlight



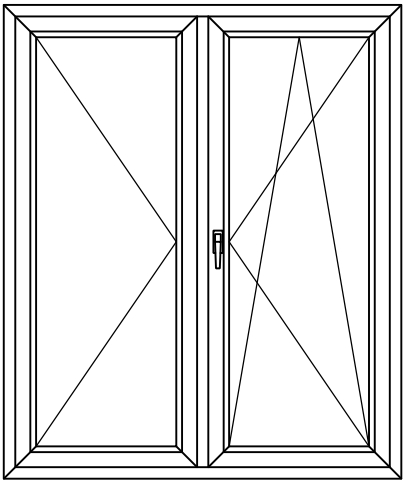
tilt + turn window with parapet



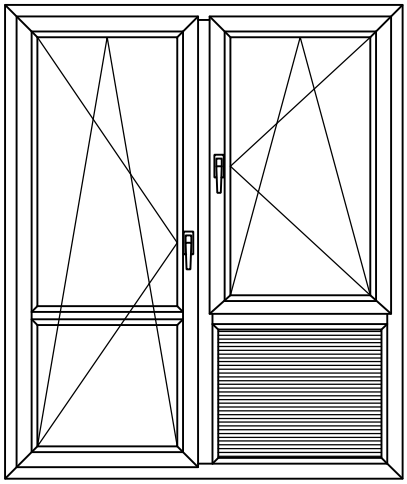
tilt + turn window with parapet and fixed fanlight



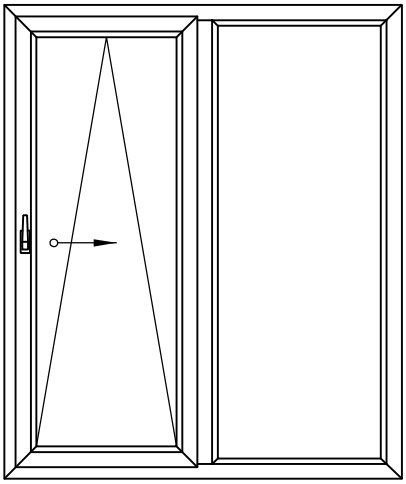
double sash window single opening / tilt + turn, bottom-hung fanlight with transom and parapet with transom



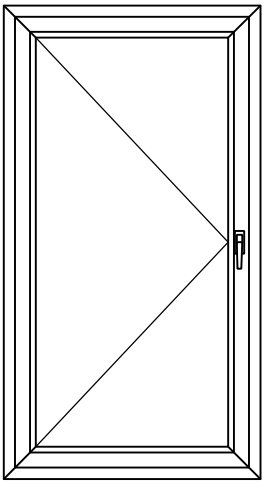
french casement door, single opening / tilt + turn



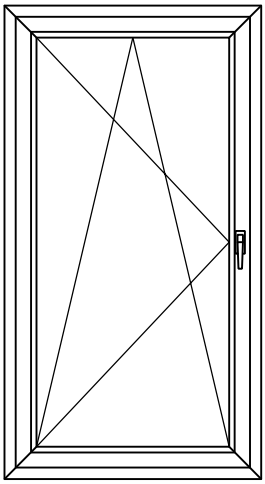
tilt + turn door with transom and tilt + turn window with parapet



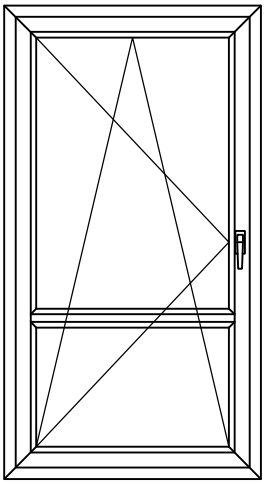
parallel tilt-/ lift + slide door with fixed glazing element



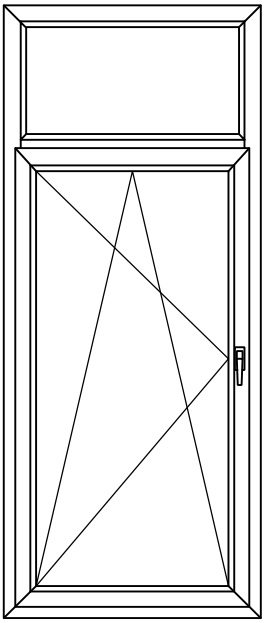
single opening door



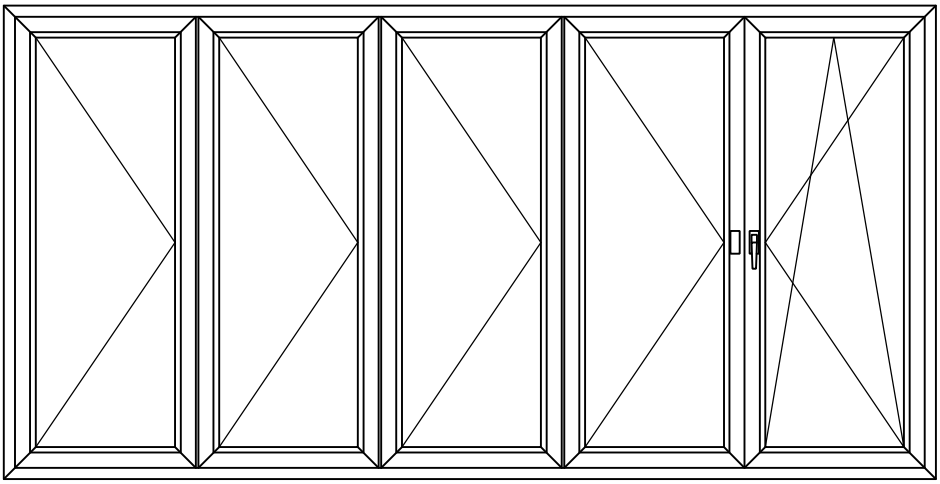
tilt + turn door



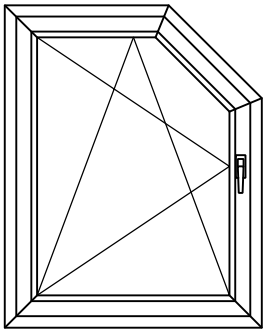
tilt + turn door with transom



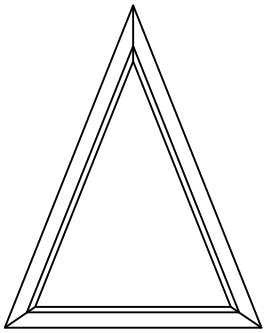
tilt + turn door with fanlight with fixed glazing



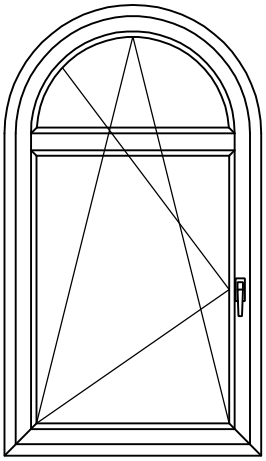
four sash fold + slide door: three folding sashes / one tilt + turn -> backstop gasket systems (hardware-dependent)



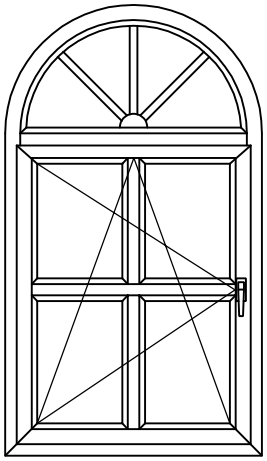
tilt + turn window with oblique corner



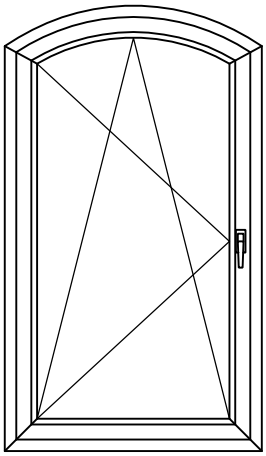
triangular window with fixed glazing



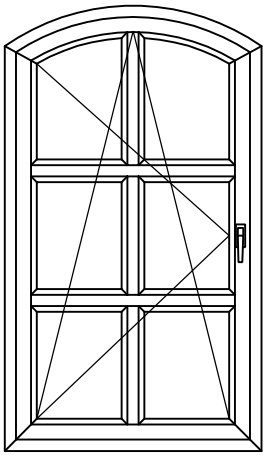
round arched window, tilt + turn with transom 1)



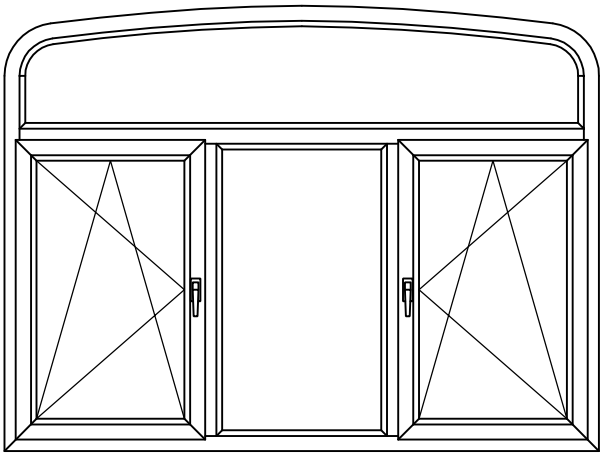
round arched window, tilt + turn with cross transom and fixed fanlight 1)



segment bow window tilt + turn 1)

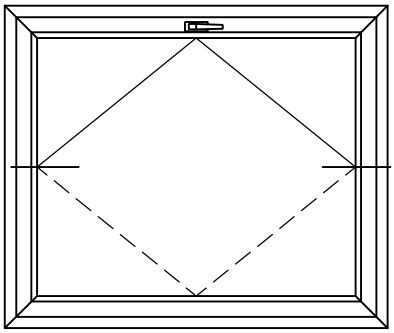


segment bow window tilt + turn with cross transom 1)

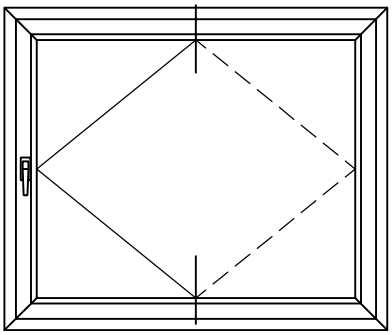


segment bow window with fixed fanlight: tilt + turn / fixed glazing in frame / tilt + turn 1)

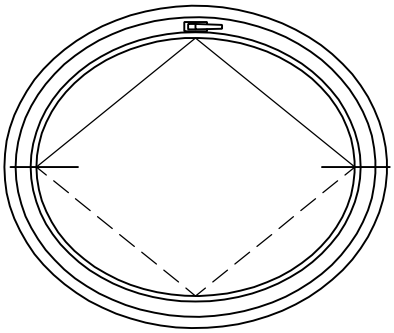
1) ≠ powerdur
2) = IDEAL 7000, IDEAL 4000, IDEAL 2000



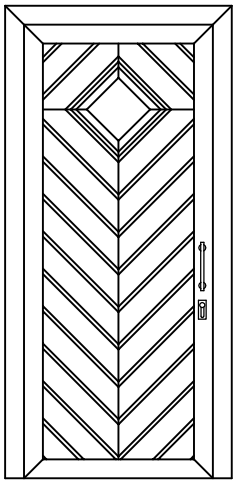
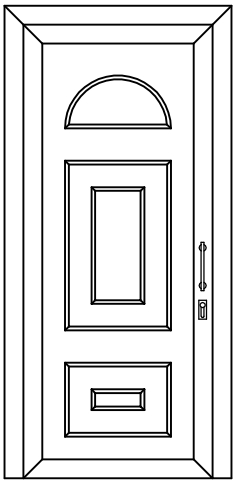
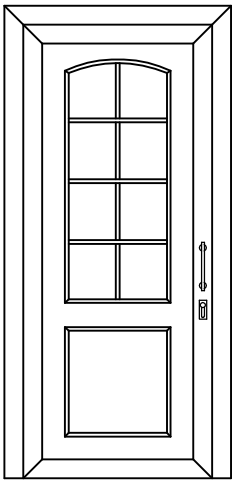
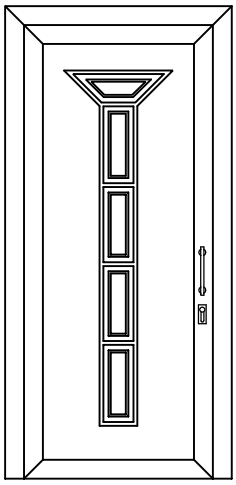
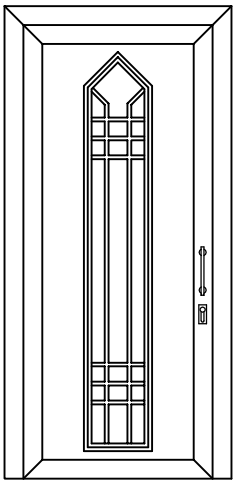
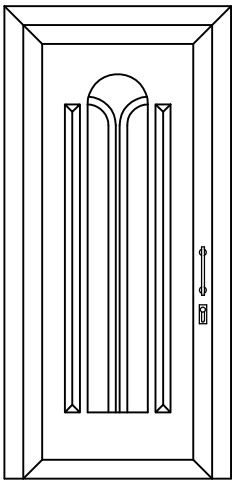
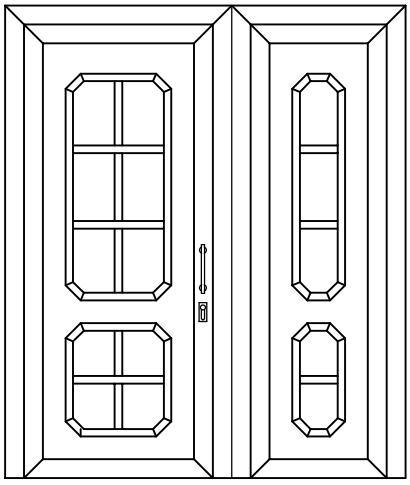
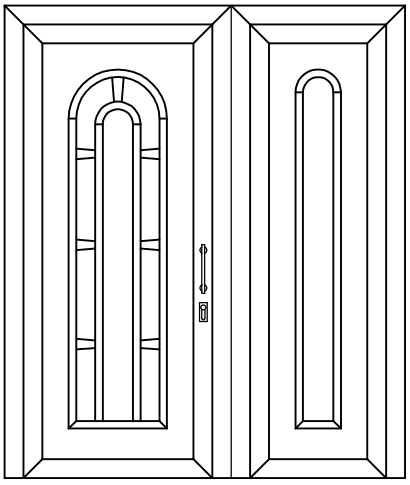
pivot window -> backstop gasket systems 2)



(vertical) pivot window -> backstop gasket systems 2)



oval pivot window -> backstop gasket systems 1) 2)

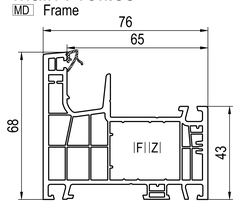
Note: The suitability as residential door depends on the system used.

aluplast GmbH | uPVC window profile systems
Auf der Breit 2 | DE - 76227 Karlsruhe
fon: +49 721 47171-0 | fax: -999
info.de@aluplast.net | www.aluplast.net

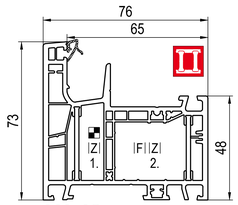
energeto® neo

Main Profiles

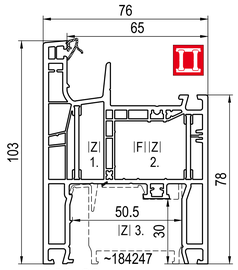
MD Frame



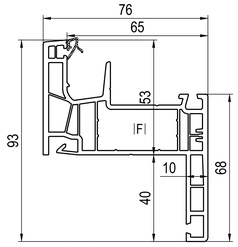
■ 160x07 (QL) MD IBA
|A| 665016, 662017
|F| 269004, 299944
| I | 640441
|P| 269504
|Q| 267501
|U| 267070, 277070, 287070
|O| 660977 |X| 466071
|V| 666371 -> |U| 267070
|Z| 660290



■ 060x05 (QL) MD
▩ 060x050000020 (QL)
|A| 665016, 662017
|F| 269004, 299944
| I | 640441
|P| 269504, 269512
|Q| 267501
|U| 267070, 277070, 287070
|O| 660970 |X| 466071
|V| 666371 -> |U| 267070
|Z| 1. 660291, 2. 660290

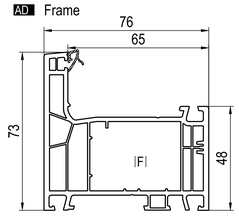


■ 060x08 (QL) MD
|A| 665016, 662017
|F| 269004, 299944
| I | 640441
|P| 269504, 269514
|Q| 267501
|U| 267070, 277070, 287070
|O| 660970 |X| 466071
|V| 666371 -> |U| 267070
|Z| 1. 660291, 2. 660290, 3. 660289

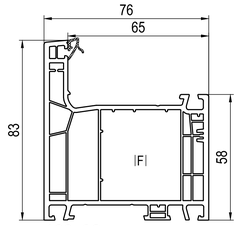


■ 160x15 (QL) MD
|A| 665016, 662017
|F| 229037
| I | 640441
|P| 269504
|Q| 267501
|V| 666371 -> |U| 267070

AD Frame

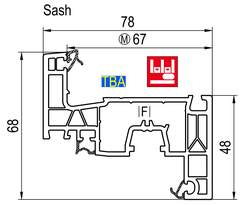


■ 160x01 (QL) AD
|A| 660301
|F| 259105, 259106, 259107, 269066
| I | 640441
|P| 269504, 269512
|Q| 267501
|U| 267070, 277070, 287070
|D| 640047 |O| 660970 |X| 466070

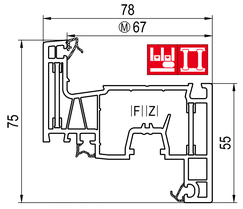


■ 160x02 (QL) AD
|A| 660301
|F| 229114, 229115, 269003
| I | 640441
|P| 269504, 269513
|Q| 267501
|U| 267070, 277070, 287070
|O| 660970 |X| 466070

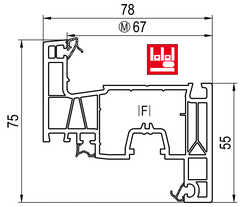
Sash



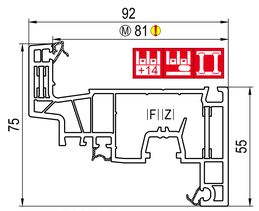
Ⓜ ■ 160x24 (QL) -> 160x74
|A| 685251, 680250, 655251, 650252, 620250, 650250
|F| 269036, 269037, 269038
| I | 620440
|J| 642261, 642262, 642263, 646265, 646266
|P| 269524



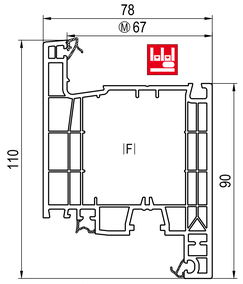
Ⓜ ■ 060x20 (QL) -> 160x70
|A| 685251, 680250, 655251, 650252, 620250, 650250
|F| 269020, 269021, 269022, 269024
| I | 620440
|J| 642261, 642262, 642263, 646265, 646266
|P| 269520
|Z| 660292



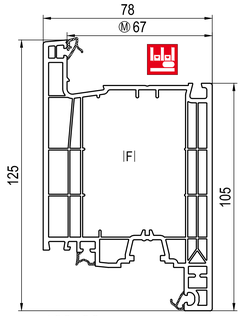
Ⓜ ■ 160x20 (QL) -> 160x70
|A| 685251, 680250, 655251, 650252, 620250, 650250
|F| 269020, 269021, 269022, 269024
| I | 620440
|J| 642261, 642262, 642263, 646265, 646266
|P| 269520



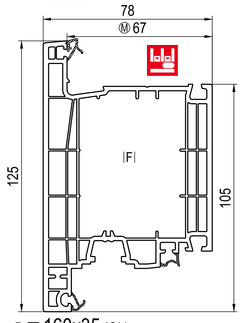
Ⓜ ■ 060x27 (QL) -> 060x77 -> MD
|A| -
|F| 269020, 269021, 269022, 269024
| I | 620440
! |J| 642261, 642262, 642263, 646265, 646266 = Bonding of pane
|P| 269527
|Z| 660292



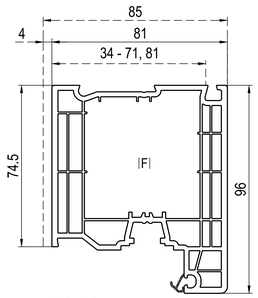
Ⓜ ■ 160x30 (QL)
|A| 685251, 680250, 655251, 650252, 620250, 650250
|F| 269030
| I | 620440
|J| 642261, 642262, 642263, 646265, 646266
|P| 269530



Ⓜ ■ 160x33 (QL)
|A| 685251, 680250, 655251, 650252, 620250, 650250
|F| 269033, 269034
|E| 660033 |O| 640938
| I | -
|J| 642261, 642262, 642263, 646265, 646266
|P| 269533

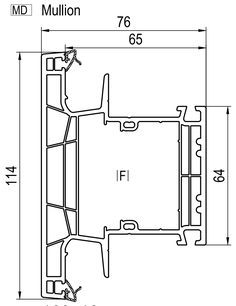


Ⓜ ■ 160x35 (QL)
|A| 685251, 680250, 655251, 650252, 620250, 650250
|F| 269033, 269034
|E| 660033 |O| 640938
| I | -
|J| 642261, 642262, 642263, 646265, 646266

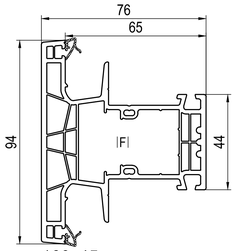


■ 170x39 (CL) -> AD
|A| 620301
|F| 229135, 229137
| I | -

MD Mullion

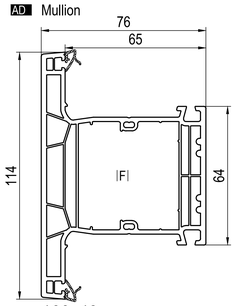


■ 160x46 (QL) MD
|A| 665016, 662017
|D| 667046, 667146
|O| 660950
|X| 669034 bl
|X| 660034 wh
|D| 640046 ~ universal
|F| 269043, 269046, 269047
| I | 640441
|P| 269543
|U| 267070, 277070, 287070
|O| 660971 |X| 466075

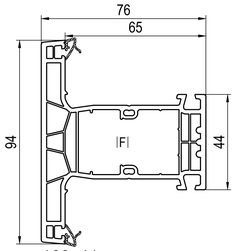


■ 160x45 (QL) MD
|A| 665016, 662017
|D| 667045, 667145
|O| 660950
|X| 669032 bl
|X| 660032 wh
|D| 640046 ~ universal
|F| 269041, 269045
| I | 640441
|P| 269541
|U| 267070, 277070, 287070
|O| 660971 |X| 466074

AD Mullion

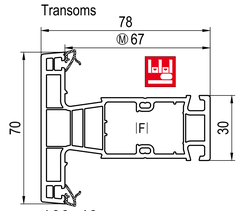


■ 160x43 (QL) AD
|A| 660301
|D| 667043, 667143
|O| 660950
|D| 640046 ~ universal
|F| 269043, 269046, 269047
| I | 640441
|P| 269543
|U| 267070, 277070, 287070
|O| 660971 |X| 466072



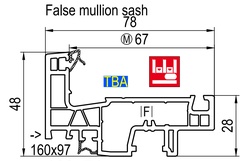
■ 160x41 (QL) AD
|A| 660301
|D| 667041, 667141
|O| 660950
|D| 640046 ~ universal
|F| 269041, 269045
| I | 640441
|P| 269541
|U| 267070, 277070, 287070
|O| 660971 |X| 466073

Transoms

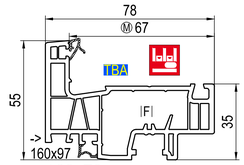


Ⓜ ■ 160x48 (QL) -> Ⓜ 67
|A| 685251, 680250, 655251, 650252, 620250, 650250
|D| 667048
|F| 249046
|J| 642261, 642262, 642263, 646265, 646266
|P| 269548

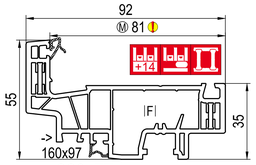
False mullion sash



Ⓜ ■ 160x74 (QL) -> 160x24
|A| 685251, 680250, 655251, 650252, 620250, 650250
|C| 660077
|F| 269036, 269037
|J| 642261, 642262, 642263, 646265, 646266
|P| 269524

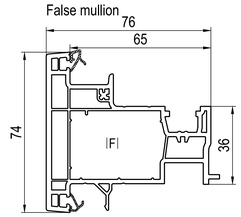


Ⓜ ■ 160x70 (QL) -> 060x20, 160x20
|A| 685251, 680250, 655251, 650252, 620250, 650250
|C| 660077
|F| 269020, 269021, 269022, 269077
|J| 642261, 642262, 642263, 646265, 646266
|P| 269520

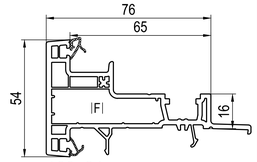


Ⓜ ■ 060x77 (QL) -> 060x27 -> MD
|A| -
|C| 660077
|F| 269020, 269021, 269022, 269077
! |J| 642261, 642262, 642263, 646265, 646266 = Bonding of pane
|P| 269527

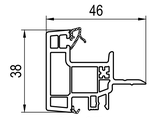
False mullion



■ 160x66 (QL)
|C| 660366 + 660466
|F| 259105, 259106, 259107, 269066
|P| 269566
|C| 660566 + 660466



■ 160x64 (QL)
|C| 660364 + 660464
|F| 229063
|P| 269564
|C| 660564 + 660464



■ 160x97 (QL)
-> 060x77, 160x70, 160x74
|C| 660097
|P| 269597
|C| 660597

IBA in preparation (new or modified)

AD Backstop Gasket System
MD Centre Gasket System

Ⓜ 67 = Bonding of pane Option
! Ⓜ 81 = Bonding of pane

▨ not laminated
■ laminated
▩ **foam inside** -> ▨

|A| Spacer
|C| End caps
|D| Connector without knobs
|E| Corner connector
|F| Reinforcements
| I | Lifter
|J| Bonding of pane
|L| Basic ventilation system
|O| Auxiliary parts
|P| **alu**skin Aluminium shells
|Q| Aluminium step protection
|U| Aluminium threshold
|V| Connection for threshold
|X| Gaskets
|Z| Special accessories

-> for

(CL) Classic-line
(QL) Qube-line

bl black
pw papyrus-white
wh white

Repair gaskets

Standard	TPE	~ MD uPVC-P	Standard	TPE	Option	Basic Air max	REGEL-air®
|X| 479025 bl	|X| 479015 bl	|X| 469019 bl	|X| 449340 bl	|X| 449042 bl	|X| 449343 bl	|L| 689350 bl	|L| 630315 Set
|X| 477025 pw	|X| 477015 pw	|X| 467019 pw	|X| 447340 pw	|X| 447042 pw	|X| 447343 pw	|L| 687350 pw	

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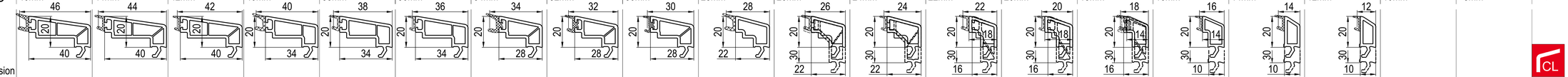
GLAZING BEADS

~ Profile serial			a	c 3)	d	Glazing thickness																						
energeto IDEAL ...						16 - 17mm	18 - 19mm	20 - 21mm	22 - 23mm	▶24 - 25mm	26 - 27mm	28 - 29mm	30 - 31mm	32 - 33mm	34 - 35mm	36 - 37mm	38 - 39mm	40 - 41mm	42 - 43mm	44 - 45mm	46 - 47mm	48 - 49mm	50 - 51mm	52 - 53mm	-1.0 +0.0 54mm ◀	16-54
... neo	Sash	Transoms	67mm Ⓜ	[4]																								
... neo +14	Sash	Transoms	81mm Ⓜ ▶	[4]		▶30 - 31mm	32 - 33mm	34 - 35mm	36 - 37mm	38 - 39mm	40 - 41mm	42 - 43mm	44 - 45mm	46 - 47mm	48 - 49mm	50 - 51mm	52 - 53mm	54 - 55mm	56 - 57mm	58 - 59mm	60 - 61mm	62 - 63mm	64 - 65mm	66 - 67mm	-1.0 +0.0 68mm ◀	30-68
... neo	Frame	Mullion	65mm	[4]		14 - 15mm	16 - 17mm	18 - 19mm	20 - 21mm	22 - 23mm	24 - 25mm	26 - 27mm	28 - 29mm	30 - 31mm	32 - 33mm	34 - 35mm	36 - 37mm	38 - 39mm	40 - 41mm	42 - 43mm	44 - 45mm	46 - 47mm	48 2) 49mm 1)	50 - 51mm	-1.0 +0.0 52mm	14-52
... 7000/neo	Sash	170x39	85mm	[-]		38 - 39mm	40 - 41mm	42 - 43mm	44 - 45mm	46 - 47mm	48 - 49mm	50 - 51mm	52 - 53mm	54 - 55mm	56 - 57mm	58 - 59mm	60 - 61mm	62 - 63mm	64 - 65mm	66 - 67mm	68 - 69mm	70 - 71mm	72 - 73mm	74 - 75mm	-	38-75
... 7000/neo	Sash	170x39	81mm	[-]		34 - 35mm	36 - 37mm	38 - 39mm	40 - 41mm	42 - 43mm	44 - 45mm	46 - 47mm	48 - 49mm	50 - 51mm	52 - 53mm	54 - 55mm	56 - 57mm	58 - 59mm	60 - 61mm	62 - 63mm	64 - 65mm	66 - 67mm	68 - 69mm	70 - 71mm	-	34-71
... 7000/8000			65mm±Ⓜ	[4]		14 - 15mm	16 - 17mm	18 - 19mm	20 - 21mm	22 - 23mm	▶24 - 25mm	26 - 27mm	28 - 29mm	30 - 31mm	32 - 33mm	34 - 35mm	36 - 37mm	38 - 39mm	40 - 41mm	42 - 43mm	44 - 45mm	46 - 47mm	48 - 49mm	50 - 51mm	-1.0 +0.0 52mm ◀	14-52
... 8000 +8	Sash		73mm±Ⓜ	[4]		22 - 23mm	▶24 - 25mm	26 - 27mm	28 - 29mm	30 - 31mm	32 - 33mm	34 - 35mm	36 - 37mm	38 - 39mm	40 - 41mm	42 - 43mm	44 - 45mm	46 - 47mm	48 - 49mm	50 - 51mm	52 - 53mm	54 - 55mm	56 - 57mm	58 - 59mm ◀	-	22-59
... 4000/5000			55mm±Ⓜ	[4]		4 - 5mm	6 - 7mm	8 - 9mm	10 - 11mm	12 - 13mm	14 - 15mm	16 - 17mm	18 - 19mm	20 - 21mm	22 - 23mm	▶24 - 25mm	26 - 27mm	28 - 29mm	30 - 31mm	32 - 33mm	34 - 35mm	36 - 37mm	38 - 39mm	40 - 41mm	-1.0 +0.0 42mm ◀	4-42
... 4000/5000 +8		Sash Transoms	63mm±Ⓜ	[4]		12 - 13mm	14 - 15mm	16 - 17mm	18 - 19mm	20 - 21mm	22 - 23mm	▶24 - 25mm	26 - 27mm	28 - 29mm	30 - 31mm	32 - 33mm	34 - 35mm	36 - 37mm	38 - 39mm	40 - 41mm	42 - 43mm	44 - 45mm	46 - 47mm	48 - 49mm ◀	-	12-49
... 2000	Sash	Transoms	47mm Ⓜ	[4]		-	-	-	-	3 - 4mm	5 - 6mm	7 - 8mm	9 - 10mm	11 - 12mm	13 - 14mm	15 - 16mm	17 - 18mm	19 - 20mm	21 - 22mm	23 ▶24mm	25 - 26mm	27 - 28mm	29 - 30mm	31 - 32mm ◀	-	3-32
... 2000 +8	Sash	Transoms	55mm Ⓜ	[4]		4 - 5mm	6 - 7mm	8 - 9mm	10 - 11mm	12 - 13mm	14 - 15mm	16 - 17mm	18 - 19mm	20 - 21mm	22 - 23mm	▶24 - 25mm	26 - 27mm	28 - 29mm	30 - 31mm	32 - 33mm	34 - 35mm	36 - 37mm	38 - 39mm	40 - 41mm	-1.0 +0.0 42mm ◀	4-42
... 2000	Frame	Mullion	47mm	[3]		-	-	-	-	4 - 5mm	6 - 7mm	8 - 9mm	10 - 11mm	12 - 13mm	14 - 15mm	16 - 17mm	18 - 19mm	20 - 21mm	22 - 23mm	24 - 25mm	26 - 27mm	28 - 29mm	30 - 31mm	32 - 33mm	-	4-33
Nord-line	Sash	Transoms	55mm±Ⓝ	[4]		4 - 5mm	6 - 7mm	8 - 9mm	10 - 11mm	12 - 13mm	14 - 15mm	16 - 17mm	18 - 19mm	20 - 21mm	22 - 23mm	▶24 - 25mm	26 - 27mm	28 - 29mm	30 - 31mm	32 - 33mm	34 - 35mm	36 - 37mm	38 - 39mm	40 - 41mm	-1.0 +0.0 42mm ◀	4-42
Nord-line	Frame	Mullion	65mm	[4]		14 - 15mm	16 - 17mm	18 - 19mm	20 - 21mm	22 - 23mm	24 - 25mm	26 - 27mm	28 - 29mm	30 - 31mm	32 - 33mm	34 - 35mm	36 - 37mm	38 - 39mm	40 - 41mm	42 - 43mm	44 - 45mm	46 - 47mm	48 - 49mm	50 - 51mm	-1.0 +0.0 52mm	14-52
lift-slide 6)	Sash	Transoms	65mm	[4]		14 - 15mm	16 - 17mm	18 - 19mm	20 - 21mm	22 - 23mm	24 - 25mm	26 - 27mm	28 - 29mm	30 - 31mm	32 - 33mm	34 - 35mm	36 - 37mm	38 - 39mm	40 - 41mm	42 - 43mm	44 - 45mm	46 - 47mm	48 - 49mm	50 - 51mm	-1.0 +0.0 52mm	14-52
smart-slide 7)			55mm±Ⓜ	[4]		4 - 5mm	6 - 7mm	8 - 9mm	10 - 11mm	12 - 13mm	14 - 15mm	16 - 17mm	18 - 19mm	20 - 21mm	22 - 23mm	▶24 - 25mm	26 - 27mm	28 - 29mm	30 - 31mm	32 - 33mm	34 - 35mm	36 - 37mm	38 - 39mm	40 - 41mm	-1.0 +0.0 42mm ◀	4-42
multi-slide 7)	Sash	Transoms	47mm	[3]		-	-	-	-	4 - 5mm	6 - 7mm	8 - 9mm	10 - 11mm	12 - 13mm	14 - 15mm	16 - 17mm	18 - 19mm	20 - 21mm	22 - 23mm	24 - 25mm	26 - 27mm	28 - 29mm	30 - 31mm	32 - 33mm	-	4-33
vario-slide 7)	Sash		38mm Ⓜ	[4]		-	-	-	-	-	-	-	-	3 - 5mm	6 - 7mm	8 - 9mm	10 - 11mm	12 - 13 mm	14 - 15mm	16 - 17mm	18 - 19mm	20 - 21mm	22 - 23mm	▶24 - 25mm ◀	-	3-25
easy-slide 7)			32mm	[3]		-	-	-	-	-	-	-	-	-	-	-	3 - 5mm	6 - 7mm	8 - 9mm	10 - 11mm	12 - 13 mm	14 - 15mm	16 - 17mm	18 - 19mm	-	3-19

Glazing Beads

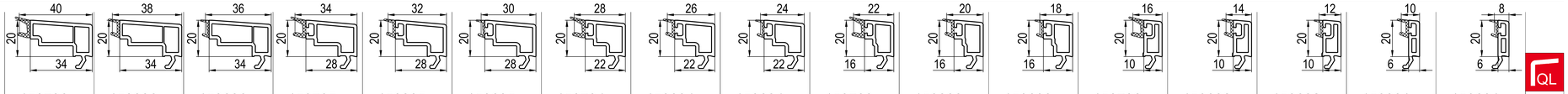
b= 46mm | 44mm | 42mm | 40mm | 38mm | 36mm | 34mm | 32mm | 30mm | 28mm | 26mm | 24mm | 22mm | 20mm | 18mm | 16mm | 14mm | 12mm | 10mm | 8mm | >

(CL) Classic-line



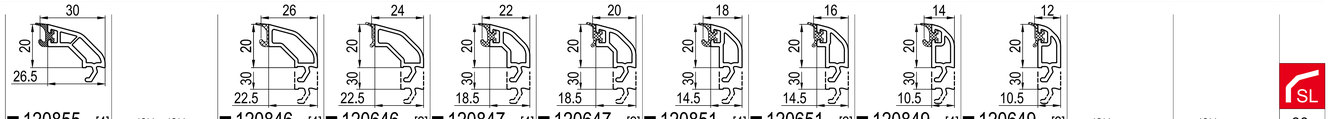
	Gasket	compression																							
h = 20mm 1) 2)	black	[mm]	■ 140741	[6]	■ 140841	[4]	■ 140641	[2]	■ 120740	[6]	■ 120840	[4]	■ 120640	[2]	■ 120738	[6]	■ 120838	[4]	■ 120638	[2]	■ 120736	[6]	■ 120836	[4]	■ 120636	[2]	■ 120835	[4]	■ 120635	[2]	■ 120833	[4]	■ 120633	[2]	■ 120832	[4]	■ 120632	[2]	±(QL)	±(QL)	46-12
	papyrus-white	[mm]	◪ 140771	[6]	◪ 140871	[4]	◪ 140671	[2]	◪ 120770	[6]	◪ 120870	[4]	◪ 120670	[2]	◪ 120768	[6]	◪ 120868	[4]	◪ 120668	[2]	◪ 120766	[6]	◪ 120866	[4]	◪ 120666	[2]	◪ 120865	[4]	◪ 120665	[2]	◪ 120863	[4]	◪ 120663	[2]	◪ 120862	[4]	◪ 120662	[2]	±(QL)	±(QL)	
h = 30mm 2)	black	[mm]	-		-		-		-		-		-		-		-		-		-		■ 130836	[4]	■ 130636	[2]	■ 130754	[6]	■ 130854	[4]	■ 130654	[2]	■ 130753	[6]	■ 130853	[4]	■ 130653	[2]	-	-	26-12
±130250 -> h= 20mm	papyrus-white	[mm]	-		-		-		-		-		-		-		-		-		-		◪ 130866	[4]	◪ 130666	[2]	◪ 130784	[6]	◪ 130884	[4]	◪ 130684	[2]	◪ 130783	[6]	◪ 130883	[4]	◪ 130683	[2]	-	-	

(QL) Qube-line



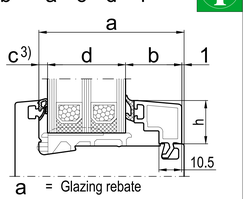
	Gasket	compression																							
h = 20mm 1) 2)	black	[mm]	±(CL)	±(CL)	±(CL)	■ 150736	[6]	■ 150836	[4]	■ 150636	[2]	■ 150735	[6]	■ 150835	[4]	■ 150635	[2]	■ 150734	[6]	■ 150834	[4]	■ 150634	[2]	■ 150733	[6]	■ 150833	[4]	■ 150633	[2]	■ 150732	[6]	■ 150832	[4]	■ 150632	[2]	■ 150831	[4]	■ 150631	[2]	40-8
	papyrus-white	[mm]	±(CL)	±(CL)	±(CL)	◪ 150766	[6]	◪ 150866	[4]	◪ 150666	[2]	◪ 150765	[6]	◪ 150865	[4]	◪ 150665	[2]	◪ 150764	[6]	◪ 150864	[4]	◪ 150664	[2]	◪ 150763	[6]	◪ 150863	[4]	◪ 150663	[2]	◪ 150762	[6]	◪ 150862	[4]	◪ 150662	[2]	◪ 150861	[4]	◪ 150661	[2]		
h = 30mm 2)	black	[mm]	-	-	-	-		-		-		-		-		-		-		±(CL) ±(SL)		±(CL) ±(SL)		±(CL) ±(SL)		±(CL) ±(SL)		±(CL) ±(SL)		±(CL) ±(SL)		±(CL) ±(SL)		-		-		-
±130250 -> h= 20mm	papyrus-white	[mm]	-	-	-	-		-		-		-		-		-		-		±(CL) ±(SL)		±(CL) ±(SL)		±(CL) ±(SL)		±(CL) ±(SL)		±(CL) ±(SL)		±(CL) ±(SL)		±(CL) ±(SL)		-		-		

(SL) Soft-line



	Gasket	compression																							
h = 20mm 1) 2)	black	[mm]	±(CL)	±(CL)	±(CL)	±(CL) ±(QL)		±(CL) ±(QL)		±(CL) ±(QL)		±(CL) ±(QL)		±(CL) ±(QL)		■ 120855	[4]	±(CL) ±(SL)		■ 120846	[4]	■ 120646	[2]	■ 120847	[4]	■ 120647	[2]	■ 120851	[4]	■ 120651	[2]	■ 120849	[4]	■ 120649	[2]	±(QL)	±(QL)	30, 26-12
	papyrus-white	[mm]	±(CL)	±(CL)	±(CL)	±(CL) ±(QL)		±(CL) ±(QL)		±(CL) ±(QL)		±(CL) ±(QL)		±(CL) ±(QL)		◪ 120885	[4]	±(CL) ±(SL)		◪ 120876	[4]	◪ 120676	[2]	◪ 120877	[4]	◪ 120677	[2]	◪ 120881	[4]	◪ 120681	[2]	◪ 120879	[4]	◪ 120679	[2]	±(QL)	±(QL)	
h = 30mm 2)	black	[mm]	-	-	-	-		-		-		-		-		-		-		■ 130856	[4]	■ 130656	[2]	■ 130857	[4]	■ 130657	[2]	■ 130858	[4]	■ 130658	[2]	■ 130859	[4]	■ 130659	[2]	-	-	26-12
±130250 -> h= 20mm	papyrus-white	[mm]	-	-	-	-		-		-		-		-		-		-		◪ 130886	[4]	◪ 130686	[2]	◪ 130887	[4]	◪ 130687	[2]	◪ 130888	[4]	◪ 130688	[2]	◪ 130889	[4]	◪ 130689	[2]	-	-	

Choose glazing bead
b = a - c - d - 1



a = Glazing rebate
b = Glazing bead + Gasket*
c 3) = Repair gaskets*
d = Glazing thickness
1 = 1mm protrusion

Spacer
▶ Bonding of pane ◀ Ⓜ Ⓜ Ⓝ
d ≥ 24mm ⚠

* compressed gasket

± Alternative

1) Backstop Gasket System
2) Centre Gasket System
3) or profile with gasket
4) Sash / Transoms
5) Frame / Mullion
6) Lift-and-slide door
7) Sliding Window

◪ not laminated
■ laminated
|P| **aluskin** Aluminium shells

-> for

(CL) Classic-line
(QL) Qube-line
(SL) Soft-line

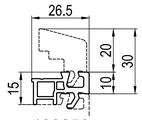
bl black ~ RAL 9005
pw papyrus-white ~ RAL 9018

Centre Gasket System

Additional Profiles

-> Frame / Mullion
with glazing beads h= 20mm

Glazing bead adapter
-> IDEAL 5000/8000



■ 130250 h= 10mm
|A| 650321 -> IDEAL 5000
|A| 680321 -> IDEAL 8000
Spacer

= d
= a

|X| Gaskets

Repair gaskets

| -> Main Profiles | compression [mm] | Glazing thickness | | | | | | | | | | | | | | | | | | |

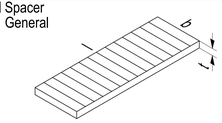
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General

■ 120283
■ 120288
■ 120121
■ 120286
■ 120120
■ 150284
■ 150283
■ 150282
■ 150281
◪ 120117
■ 120123
◪ 120272
■ 190219
|G| 652923
◪ 144286
Bonding of pane
■ 140276
|G| 610004
■ 140275
|G| 610004
■ 120261
■ 120260
■ 120258
■ 120257
■ 120256
◪ 120250
■ 120300
■ 120296
■ 120294
◪ 120292
■ 120291
■ 120299
■ 120297
◪ 120284
◪ 114245 ->3(6)/3mm
◪ 124245 ->6/3mm
◪ 114210
■ 160379 bl (CL)
◪ 160479 pw
■ 160378 bl (CL)
◪ 160478 pw
■ 160376 bl (CL)
◪ 160476 pw
■ 140373 bl (HL)
◪ 140473 pw
■ 140107 (CL)
|C| 640107
|G| 652923
◪ 120101 (CL)
|C| 650932
|G| 659939
◪ 120100 (CL)
|C| 650914
|G| 659918
■ 120114 (HL)
|G| 659918
■ 150202 (SL)
|C| 650202
|G| 652923
◪ 120202 (HL)
|C| 620202
|G| 652923

Accessories

|A| Spacer
General



[mm]	t	b	l		
■	6	...	100	|A| - bl	black ~ 6
	5	50	100	|A| 640305 gn	
	5	40	100	|A| 660948 gn	
	5	34	100	|A| 659938 gn	
	5	28	100	|A| 659908 gn	
	5	25	90	|A| 659907 gn	
	5	12	100	|A| 669944 gn	green ~ 5
	4	50	100	|A| 640304 ye	
	4	40	100	|A| 660947 ye	
	4	34	100	|A| 659937 ye	
	4	28	100	|A| 669910 ye	
	4	20	100	|A| 669920 ye	yellow ~ 4
	3	50	100	|A| 640303 red	
	3	40	100	|A| 660946 red	
	3	34	100	|A| 659936 red	
	3	28	100	|A| 669911 red	
	3	20	100	|A| 669919 red	
	3	12	100	|A| 669922 red	red ~ 3
	2	50	100	|A| 640306 blu	
	2	40	100	|A| 660945 blu	
	2	34	100	|A| 659935 blu	
	2	28	100	|A| 669912 blu	
	2	25	90	|A| 659906 blu	
	2	20	100	|A| 660916 blu	
	2	12	100	|A| 660911 blu	blue ~ 2
	1	25	90	|A| 659905 wh	white ~ 1
	0	-	-	× not required	~ 0

|C| End caps

650932 (CL) -> 120101
640107 (CL) -> 140107
650914 (CL) -> 120100
620202 (HL) -> 120202
650202 (SL) -> 150202

|G| Nipple screw / Clip

652923 -> uPVC -> 120202, 140107, 150202
659918 -> 120100, 120114
610004 -> 140275, 140276
659923 -> aluminium
659939 -> 120101
|T| 259082

|K| Drain slot caps / Drainage profile

690923 ~ Ø5x25mm
620014 Ø10x11mm
Set 600292 ~ Ø5x30mm

|M| Panels (PVC / Sandwich)

620320 24mm
620321 3mm

|T| Aluminium weather bar

259082 (CL)
|G| 659923

|X| Gaskets

420250 wh
421250 br
423250 oc
429250 bl
429334 bl
427334 pw
449251 bl
- pw

◪ not laminated
■ laminated

-> for

(CL) Classic-line
(SL) Soft-line
(HL) Historik-line

br brown
oc ochre
bl black
pw papyrus-white
wh white

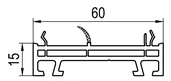
Construction depth
->60mm ->IDEAL 2000
->70mm ->IDEAL 4000 / 5000
->76mm ->energeto neo
->85mm ->IDEAL 7000 / 8000
... ->IDEAL 2000 - 8000

SL visible length
AU exterior perimeter

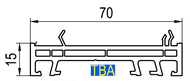
May be subject to change and errors excepted! Laminated profiles and profiles with gasket: see price list! Copyright © aluplast GmbH | All rights reserved | Alle Rechte vorbehalten

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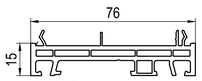
Extensions



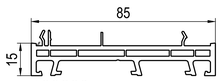
■ 120220 ->60/70mm



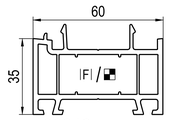
■ 140209 ->70mm
+ |H| 680200 ->85mm



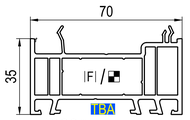
■ 160201 ->76/85mm



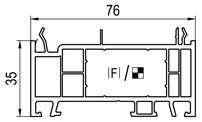
■ 180209 ->85mm



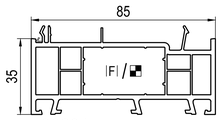
■ 120242 ->60/70mm
120242000020
+ |H| 680200 ->85mm
|F| 229110, 229111
|P| 249335



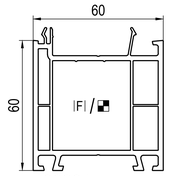
■ 140205 ->70mm
1402050000020
+ |H| 680200 ->85mm
|F| 229110, 229111
|P| 249335



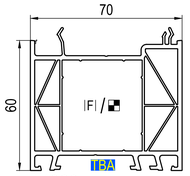
■ 160202 ->76/85mm
1602020000020
|F| 229098, 229100, 229101
|P| 249335



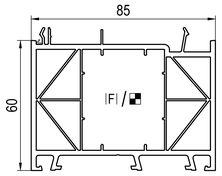
■ 180201 ->85mm
1802010009820
|F| 229098, 229100, 229101
|P| 249335



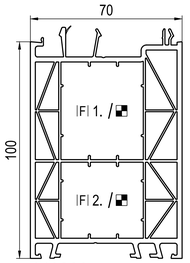
■ 120221 ->60/70mm
1202210000020
+ |H| 680200 ->85mm
|F| 229114, 229115
|P| 249360



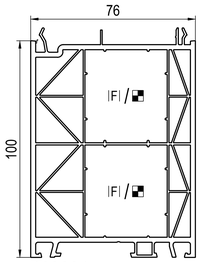
■ 140207 ->70mm
1402070000020
+ |H| 680200 ->85mm
|F| 229017, 229114, 229115
|P| 249360



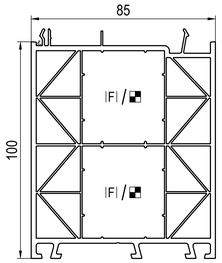
■ 180203 ->85mm
1802030009820
|F| 229114, 229115
|P| 249360



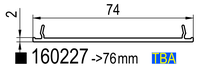
■ 140208 ->70/85mm
1402080009820
|F| 1. 229114, 229115
2. 259010, 259011
|P| 249310



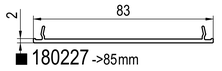
■ 160204 ->76/85mm
1602040000020
|F| 229114, 229115
|P| 249310



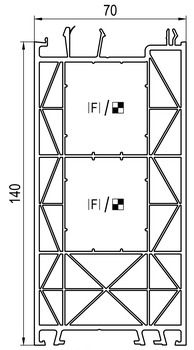
■ 180204 ->85mm
1802040009820
|F| 229114, 229115
|P| 249310



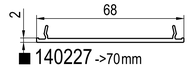
■ 160227 ->76mm IBA



■ 180227 ->85mm

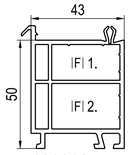


■ 140206 ->70/85mm
1402060000020
|F| 229114, 229115

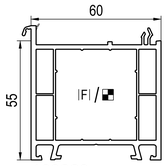


■ 140227 ->70mm

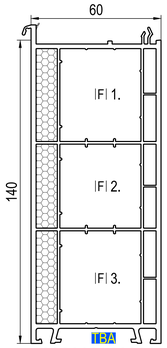
Sill connector



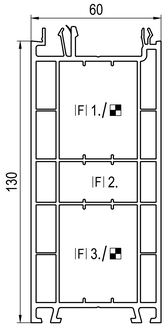
▨ 120238 ->60/70mm
|F| 1. 239030
2. 239129



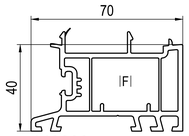
■ 160223 ->76/85mm
1602230000020
|F| 229114, 229115



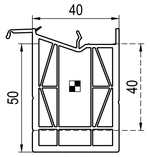
■ 1602260000020
->76/85mm
|F| 1./3. 229114, 229115
2. 249009



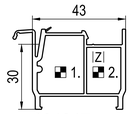
▨ 120223 ->60/70mm
1202230000020
+ |H| 680200 ->85mm
|F| 1./3. 229114, 229115
2. 229110, 229111



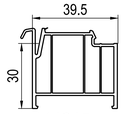
▨ 140200 ->70mm
+ |H| 680200 ->85mm
|F| 239129



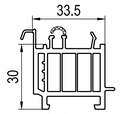
▨ 144216 ->70/76/85mm
1442160000020



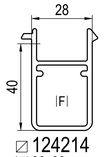
▨ 184247 ->70/76/85mm
1842470000020 -> 1.
1842470000021 -> 1. + 2.
|Z| 680299



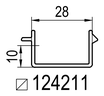
▨ 144215



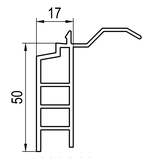
▨ 144247



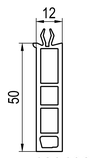
▨ 124214
|F| 22x22mm



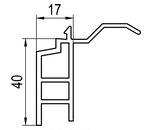
▨ 124211



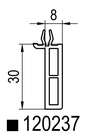
■ 120210



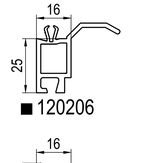
■ 120102



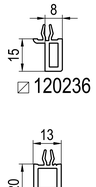
▨ 120209



■ 120237



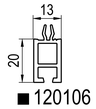
■ 120206



▨ 120236



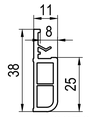
▨ 130211 bl
▨ 130212 pw



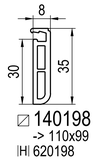
■ 120106



▨ 140277



▨ 140279
->70/76/85mm



▨ 140198
-> 110x99
|H| 620198

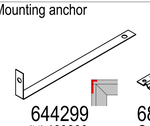
Accessories

|F| see plan:
Reinforcements

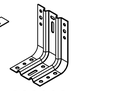
|H| Installation / Mounting anchor



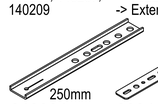
680200
->85mm +
120221, 120223,
120242, 140200,
140205, 140207,
140209



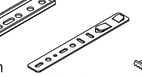
644299
|X| 469299,
742299,
762299,
782299
-> Extension profile



682333
General
-> Extension profile



640331
protrusion
30 mm ->100kg
50 mm ->60kg
70 mm ->30kg



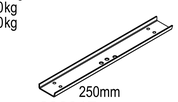
680414
-> 080x04,
180x04



620410
-> General

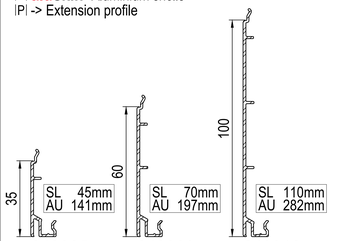


620198
-> 140198



282017
-> energeto neo
IDEAL 5000
IDEAL 7000 / 8000

|P| **alu**skin Aluminium shells
|P| -> Extension profile

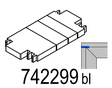


▨ 249335 (CL)
-> 120242,
140205,
160202,
180201

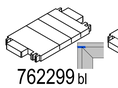
▨ 249360 (CL)
-> 120221,
140207,
180203

▨ 249310 (CL)
-> 140208,
160204,
180204

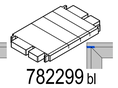
|X| Gaskets



742299 bl
->70mm
-> Extension profile
|H| 644299



762299 bl
->76mm
-> Extension profile
|H| 644299



782299 bl
->85mm
-> Extension profile
|H| 644299

l~30m



469299 bl TPE
->76mm
-> Extension profile
|H| 644299



449251 bl
- pw

l~24m



690060 ->60mm
690070 ->70mm
690076 ->76mm
690085 ->85mm
-> Extension profile

|Z| Special accessories



680299
~13/17x20x1000mm
-> 184247

IBA in preparation
(new or modified)

▨ not laminated
■ laminated
foam inside -> ▨

-> for

gn green
bl black
pw papyrus-white

Construction depth
->60mm ->IDEAL 2000
->70mm ->IDEAL 4000 / 5000
->76mm ->energeto neo
->85mm ->IDEAL 7000 / 8000
... ->IDEAL 2000 - 8000

SL visible length



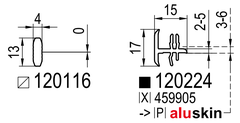
AU exterior perimeter



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fon: +49 721 47171-0 | fax: -999
info.de@aluplast.net | www.aluplast.net

Couplings



▨ 120116

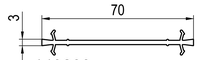
■ 120224
|X| 459905
-> |P| **aluskin**



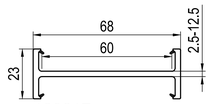
3mm
449140 bl
447140 pw
~|X| Gaskets



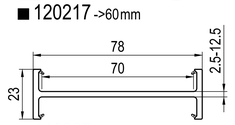
6mm
449141 bl
- pw
~|X| Gaskets



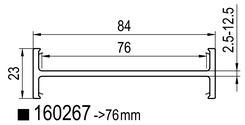
▨ 140203 ->70mm



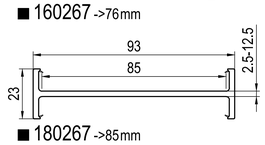
■ 120217 ->60mm



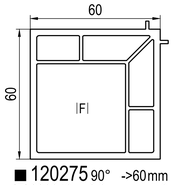
■ 140267 ->70mm



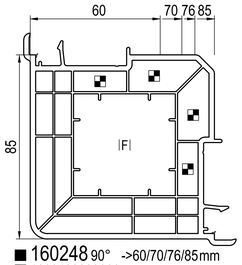
■ 160267 ->76mm



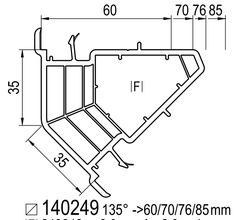
■ 180267 ->85mm



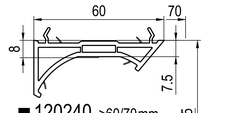
■ 120275 90° ->60mm
|F| 229040 s=2.0mm, Ix=7.0cm⁴
|H| 622041



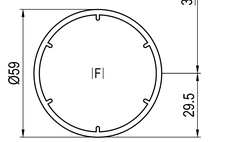
■ 160248 90° ->60/70/76/85mm
▩ 1602480009820
|F| 229040 s=2.0mm, Ix=7.0cm⁴
|H| 622041
|P| 249448



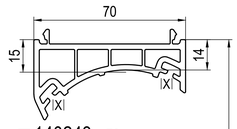
▨ 140249 135° ->60/70/76/85mm
|F| 249242 s=2.0mm, Ix=2.9cm⁴
|H| 622142



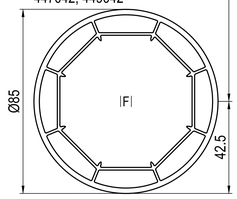
■ 120240 ->60/70mm



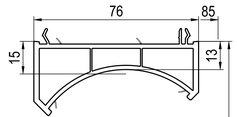
■ 120241 ->60/70mm
|F| 229140 s=3.25mm, Ix=11.7cm⁴
|H| 622140



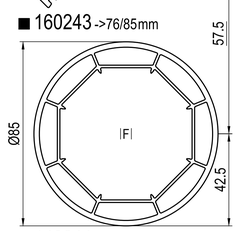
■ 140243 ->70mm
|X| 447340, 449340,
447042, 449042



■ 140244 ->70/76/85mm
|F| 249244 s=3.2mm, Ix=23.5cm⁴
|H| 622333



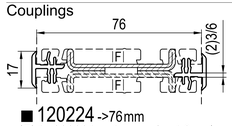
■ 160243 ->76/85mm



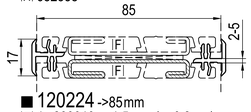
■ 140244 ->70/76/85mm
|F| 249244 s=3.2mm, Ix=23.5cm⁴
|H| 622333

Structural profiles

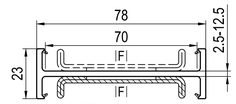
Couplings



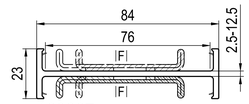
■ 120224 ->76mm
|F| 1x 209901 s=1.5mm, Ix=4.9cm⁴
2x 209901 s=1.5mm, Ix=9.8cm⁴
|H| 682338



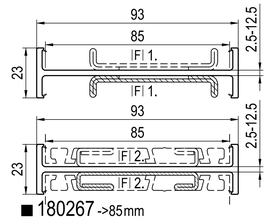
■ 120224 ->85mm
|F| 1x 289018 s=1.5mm, Ix=6.2cm⁴
2x 289018 s=1.5mm, Ix=12.4cm⁴
|H| 682330, 682331



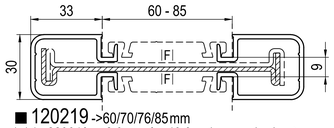
■ 140267 ->70mm
|F| 1x 209900 s=1.5mm, Ix=7.3cm⁴
2x 209900 s=1.5mm, Ix=14.6cm⁴
|H| 682330, 682331



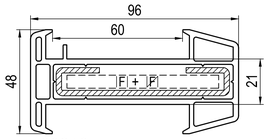
■ 160267 ->76mm
|F| 1x 209900 s=1.5mm, Ix=7.3cm⁴
2x 209900 s=1.5mm, Ix=14.6cm⁴
|H| 682330, 682331
|F| 1x 209901 s=1.5mm, Ix=4.9cm⁴
2x 209901 s=1.5mm, Ix=9.8cm⁴
|H| 682338



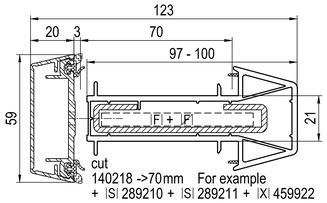
■ 180267 ->85mm
|F| 1. 1x 209900 s=1.5mm, Ix=7.3cm⁴
1. 2x 209900 s=1.5mm, Ix=14.6cm⁴
2. 1x 289018 s=1.5mm, Ix=6.2cm⁴
2. 2x 289018 s=1.5mm, Ix=12.4cm⁴
|H| 682330, 682331



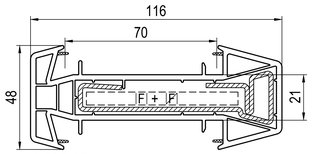
■ 120219 ->60/70/76/85mm
|F| 1x 229019 s=2.0mm, Ix=43.3cm⁴, punched out
2x 229019 s=2.0mm, Ix=86.6cm⁴, punched out
|H| 622019, 642025, 645050



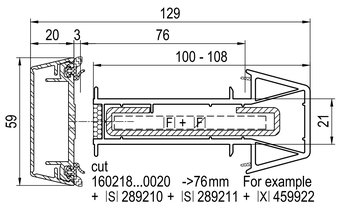
■ 120218 ->60mm T-01
|F| 229018 s=2.5mm, Ix=24.8cm⁴
|P| 229010 s=3.0mm, Ix=9.9cm⁴
|F| steel 70mm s=6.0mm, Ix=17.1cm⁴
|H| 622338, 622354, 682332, 682335



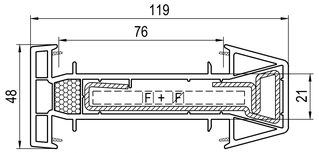
cut
140218 ->70mm For example
+ |S| 289210 + |S| 289211 + |X| 459922



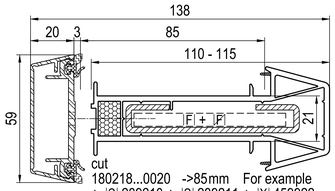
■ 140218 ->70mm T-01
|F| 229018 s=2.5mm, Ix=24.8cm⁴
|F| 289218 s=2.0mm, Ix=37.0cm⁴
|P| 229010 s=3.0mm, Ix=9.9cm⁴
|F| steel 70mm s=6.0mm, Ix=17.1cm⁴
|H| 622338, 622354, 682332, 682335



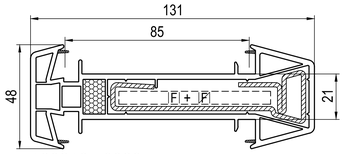
cut
160218...0020 ->76mm For example
+ |S| 289210 + |S| 289211 + |X| 459922



■ 160218...0020 ->76mm T-01
|F| 229018 s=2.5mm, Ix=24.8cm⁴
|F| 289218 s=2.0mm, Ix=37.0cm⁴
|P| 229010 s=3.0mm, Ix=9.9cm⁴
|F| steel 70mm s=6.0mm, Ix=17.1cm⁴
|H| 622338, 622354, 682332, 682335

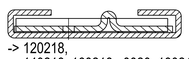


cut
180218...0020 ->85mm For example
+ |S| 289210 + |S| 289211 + |X| 459922

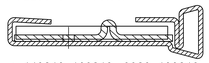


■ 180218...0020 ->85mm T-01
|F| 229018 s=2.5mm, Ix=24.8cm⁴
|F| 289218 s=2.0mm, Ix=37.0cm⁴
|P| 229010 s=3.0mm, Ix=9.9cm⁴
|F| steel 70mm s=6.0mm, Ix=17.1cm⁴
|H| 622338, 622354, 682332, 682335

T-01 Ix [cm⁴]

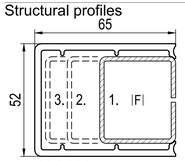


-> 120218,
140218, 160218...0020, 180218...0020
|F| 229018 = 24.8cm⁴
|F| 229018 + |P| 229010 = 34.7cm⁴
|F| 229018 + |P| steel 70x6 = 41.9cm⁴



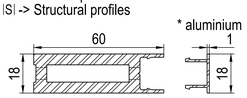
-> 140218, 160218...0020, 180218...0020
|F| 289218 = 37.0cm⁴
|F| 289218 + |P| 229010 = 46.9cm⁴
|F| 289218 + |P| steel 70x6 = 54.1cm⁴

Structural profiles



■ 120109
|F| 1. 229114 s=1.5mm, Ix=4.0cm⁴
1. 229115 s=2.0mm, Ix=5.0cm⁴
2. 229125 s=2.0mm, Ix=12.1cm⁴
2. 229126 s=3.0mm, Ix=16.8cm⁴
3. 259926 s=2.0mm, Ix=18.7cm⁴
|H| 622104 -> |F| 229125, 259926

|S| Aluminium profiles
|S| -> Structural profiles

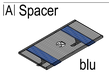


270044 wh + 270045 wh
279044 * + 279045 *
|S| 270045, 279045 |S| 270044, 279044
SL 123mm SL 22mm
AU 180mm AU 80mm
GU 272mm

Ø5.5, a=250mm pierced hole
Ix/Iy=5.5/0.8cm⁴ steel ~16.5/2.5cm⁴*

Accessories

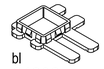
|A| Spacer



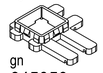
blu
640302 2x50x100 mm
-> Couplings

|F| see plan:
Reinforcements

|H| Installation / Mounting anchor



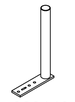
bl
642025 3mm
General
-> Couplings



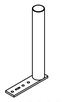
gn
645050 5mm
General
-> Couplings



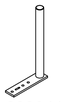
622104
|F| 229125, 259926
-> 120109



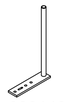
622140
|F| 229140
-> 120241



622333
|F| 249244
-> 140244



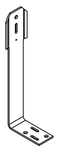
622041
|F| 229040
-> 120275, 160248



622142
|F| 249242
-> 140249



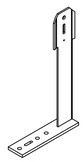
622338
|F| 229018, 289218
-> 120218, 140218, 160218 ...0020, 180218 ...0020



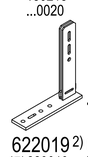
622354 1)
|F| 229018, 289218
-> 120218, 140218, 160218 ...0020, 180218 ...0020



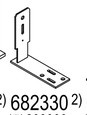
682332
|F| 229018, 289218
-> 120218, 140218, 160218 ...0020, 180218 ...0020



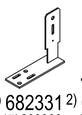
682335 1)
|F| 229018, 289218
-> 120218, 140218, 160218 ...0020, 180218 ...0020



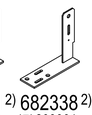
622019 2)
|F| 229019
-> 120219



682330 2)
|F| 209900, 289018
-> 120224, 140267, 160267, 180267



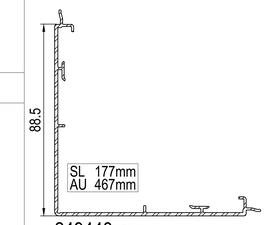
682331 2)
|F| 209900, 289018
-> 120224, 140267, 160267, 180267



682338 2)
|F| 209901
-> 120224, 160267

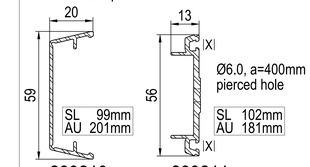
1) General e.g. -> Roller shutter box
2) General e.g. -> Couplings

|P| **aluskin** Aluminium shells
|P| -> Couplings



▨ 249448 (CL)
-> 160248

|S| Aluminium profiles



▨ 289210 (CL) + ▨ 289211 (CL)
|S| 289211 |S| 289210
|X| 459922
-> e.g. 140218, 180218...0020

|S| -> Structural profiles
see
Structural profiles

|X| Gaskets

449340 bl
447340 pw
Standard
-> 140243

TPE
449042 bl
447042 pw
-> 140243

459922 bl
- pw
|S| 289211

3mm
449140 bl
447140 pw
~Couplings

6mm
449141 bl
- pw
~Couplings



459905 bl
-> 120224

Couplings
Structural profiles

▨ not laminated
■ laminated
▩ **foam inside** -> ▨

-> for

blu blue
gn green
bl black
pw papyrus-white
wh white

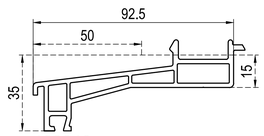
Construction depth
->60mm ->IDEAL 2000
->70mm ->IDEAL 4000 / 5000
->76mm ->energeto neo
->85mm ->IDEAL 7000 / 8000
... ->IDEAL 2000 - 8000

SL visible length
AU exterior perimeter

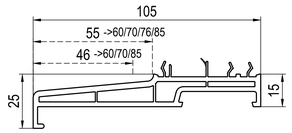
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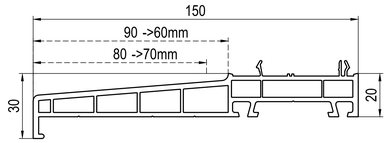
Exterior window sills



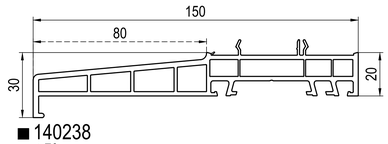
■ 120246
|C| 650921



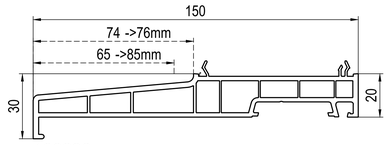
■ 120248
|C| 620249, 640238



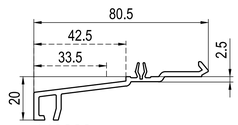
■ 120249
->60/70mm
|C| 640238



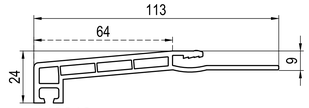
■ 140238
->70mm
|C| 640238



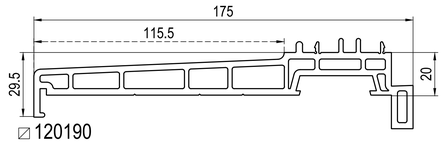
■ 160238
->76/85mm
|C| 640238



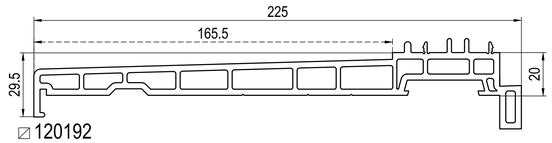
◪ 140229



■ 140219
-> 120x39, 120x91, 140x17, 140x090000011, 150x110000011
|C| 640238

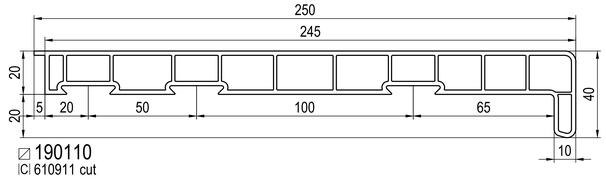


◪ 120190

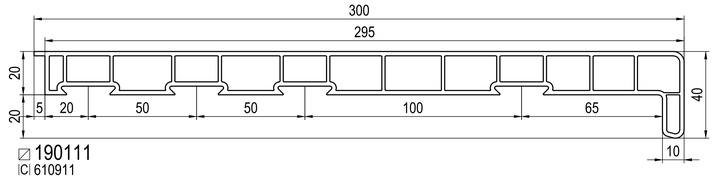


◪ 120192

Interior window sills

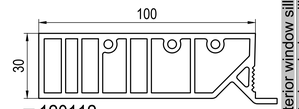


◪ 190110
|C| 610911 cut

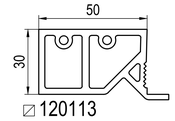


◪ 190111
|C| 610911

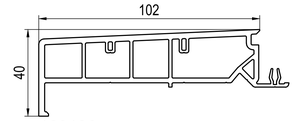
Frames



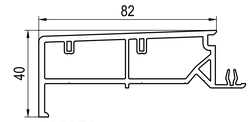
■ 120112



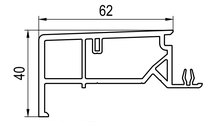
◪ 120113



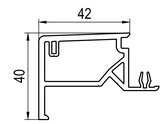
◪ 120196



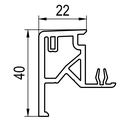
■ 120270



◪ 120195



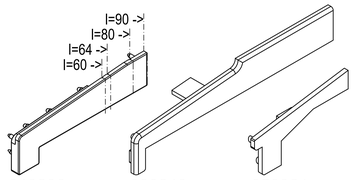
◪ 120194



◪ 120193

Accessories

|C| End caps



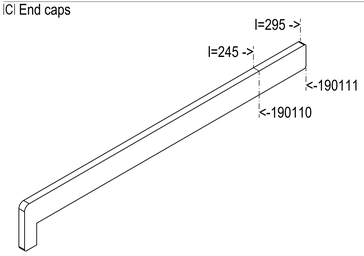
640238
-> 120248, 120249, 140219, 140238, 160238

620249
-> 120248

650921
-> 120246

Accessories

|C| End caps



610911
-> 190110, 190111

◪ not laminated
■ laminated

-> for

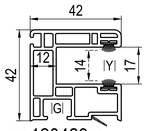
Construction depth
->60mm ->IDEAL 2000
->70mm ->IDEAL 4000 / 5000
->76mm ->energeto neo
->85mm ->IDEAL 7000 / 8000
... ->IDEAL 2000 - 8000

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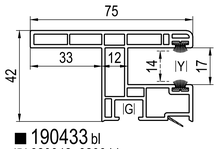
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Auf der Breit 2 | DE - 76227 Karlsruhe
fon: +49 721 47171-0 | fax: -999
info.de@aluplast.net | www.aluplast.net

Roller shutter guides -> max.-L

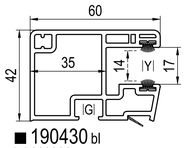
Roller shutter guides



■ 120429 bl
|B| 620042, 620044
|C| 620032
|G| 652923
|Y| 459930 -> max.-L Standard
|Y| 459932 -> mini-L Option



■ 190433 bl
|B| 620042, 620044
|C| -
|G| 652923
|Y| 459930 -> max.-L Standard
|Y| 459932 -> mini-L Option

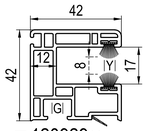


■ 190430 bl
|B| 620038
|C| 690030
|G| 652923
|Y| 459930 -> max.-L Standard
|Y| 459932 -> mini-L Option

■ 190435 bl
|B| 620038
|C| 690035
|G| 652923
|Y| 459930 -> max.-L Standard
|Y| 459932 -> mini-L Option

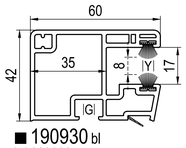
-> mini-L

Roller shutter guides



■ 120929 bl
|B| 620042, 620044
|C| 620032
|G| 652923
|Y| 459930 -> max.-L Option
|Y| 459932 -> mini-L Standard

see
190433
+ Option

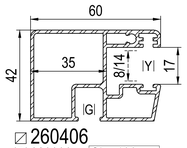


■ 190930 bl
|B| 620038
|C| 690030
|G| 652923
|Y| 459930 -> max.-L Option
|Y| 459932 -> mini-L Standard

■ 190935 bl
|B| 620038
|C| 690035
|G| 652923
|Y| 459930 -> max.-L Option
|Y| 459932 -> mini-L Standard

aluminium

|R| Aluminium roller shutter guides without brush seals



◪ 260406
|B| 620038
|C| -
|G| 659923
SL 100mm
AU 333mm
GU 579mm
|Y| 459930 -> max.-L
|Y| 459932 -> mini-L

Accessories

|B| Inlet funnel



620044
-> 120429, 120929, 190433
-> Roller shutter traverses 120230



620042
-> 120429, 120929, 190433

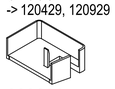


620038
-> 190430, 190930, 190435, 190935
|R| 260406

|C| End caps



620032
-> 120429, 120929



690030
-> 190430, 190930



690035
-> 190435, 190935

|G| Nipple screw / Clip



652923
-> uPVC
-> 120429, 120929, 190430, 190930, 190433, 190435, 190935



659923
-> aluminium
|R| 260406

|Y| Brush seals



459930 bl
-> max.-L
-> 120429, 120929, 190430, 190930, 190433, 190435, 190935
|R| 260406



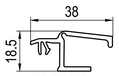
459932 bl
-> mini-L
-> 120429, 120929, 190430, 190930, 190433, 190435, 190935
|R| 260406

Roller shutter

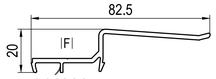
Roller shutter traverses



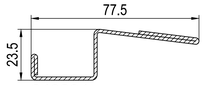
◪ 190274



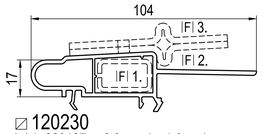
◪ 190273



◪ 144233
|F| 249234



|F| 249234 s=1.5mm, lx=12.6cm⁴

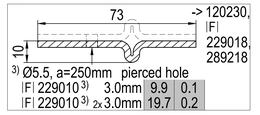


◪ 120230
|F| 1. 229107 s=2.0mm, lx=1.0cm⁴
2. 229010 s=3.0mm, lx=9.9cm⁴
3. 2x 229010 s=3.0mm, lx=19.7cm⁴

Accessories

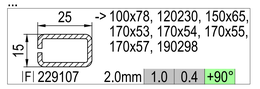
|F| Reinforcements s lx ly

...



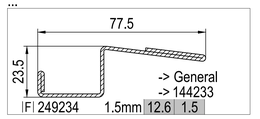
3) Ø5.5, a=250mm pierced hole
|F| 229010 3) 3.0mm 9.9 0.1
|F| 229010 3) 2x 3.0mm 19.7 0.2

...



|F| 229107 2.0mm 1.0 0.4 +90°

...



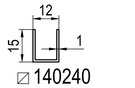
|F| 249234 1.5mm 12.6 1.5

...

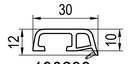
see plan: Reinforcements

Renovation box

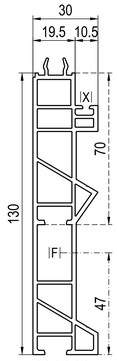
Renovation box



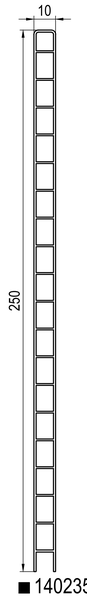
◪ 140240
-> 140235



■ 190299
-> 190298



■ 190298
|F| 229107
|X| 429320

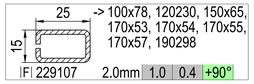


■ 140235

Accessories

|F| Reinforcements s lx ly

...



|F| 229107 2.0mm 1.0 0.4 +90°

...

see plan: Reinforcements

|X| Gaskets



429320 bl
-> 190298

◪ not laminated
■ laminated

-> for

Roller shutter slats
mini-L ~ 8x37 mm
max.-L ~ 14x52 mm

Brush seals
bl black

SL visible length
AU exterior perimeter
GU overall perimeter

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info.de@aluplast.net | www.aluplast.net

ACCESSORIES

|A| Spacer

General — Glazing thickness

|A| wh 1 Spacer; blu 2 see plan:; red 3 Additional Profiles; ye 4; gn 5 General; bl 6 [mm] 0 -

IDEAL 2000 — 5 4-33mm — 0 4-31mm
47 / 20 / 60 / 1:2
620301 red 0mm — 625305 gn 5mm

IDEAL 2000 +8 — 5 4-42mm — 0 4-38mm
IDEAL 4000
IDEAL 5000
55 / 20 / 70
640301 0mm — 640320 5mm

IDEAL 5000 — 3 24-35mm — 2 4-38mm
MD 55 / 30 / 70
-> 130250
650016 12mm — 650321 13mm

IDEAL 7000 / (NL) — 5 14-52mm — 0 14-30mm
65 / 20 / 85
620301 red 0mm — 625305 gn 5mm

IDEAL 7000 — -> 170x39
energeto neo
4 / 81 / 85
620301 red 0mm — 34-71mm 5 — 38-75mm 5

IDEAL 7000 / (NL) — 5 14-52mm
IDEAL 8000
65 / 20 / 85-120
670301 0mm

IDEAL 8000 / (NL) — 3 34-45mm — 2 14-48mm
MD 65 / 30 / 85-120
-> 130250
680016 12mm — 680321 13mm

energeto neo — 3 14-48mm — 3 50-52mm
MD 65 / 25 / 76
665016 gn 4mm — 662017 bl 4mm

energeto neo — 5 14-52mm
AD 65 / 25 / 76
660301 red 0mm

Ⓜ 47 ✓ / 20 / 60 — IDEAL 2000 — 3-32mm

Ⓜ 55 ✓ / 20 / 70 — IDEAL 2000 +8, IDEAL 4000, IDEAL 5000 — 4-42mm

Ⓜ 63 ✓ / 20 / 78 — IDEAL 4000 +8, IDEAL 5000 +8 — 12-49mm

Ⓜ 65 ✓ / 20 / 85 — IDEAL 7000 / (NL), IDEAL 8000 / (NL) — 14-52mm

Ⓜ 73 ✓ / 20 / 93 — IDEAL 8000 +8 — 22-59mm

Ⓜ 67 ✓ / 20 / 78 — energeto neo — 16-54mm

✓ Option — ≥ 24mm |J| Bonding of pane

Ⓜ 81 ! / 20 / 92 — energeto neo +14 — 30-68mm

! required — |J| Bonding of pane

Ⓜ 47	3-32mm	3-20mm	-	-	-	-	-	-
Ⓜ 55	4-42mm	4-20mm	4-35mm	4-38mm	-	-	-	
Ⓜ 63	12-49mm	12-20mm	12-35mm	12-38mm	12-44mm	(12-46mm)		
Ⓜ 65	14-52mm	14-20mm	14-35mm	14-38mm	14-44mm	14-48mm		
Ⓜ 73	22-59mm	-	22-35mm	22-38mm	22-44mm	22-48mm		
Ⓜ 67	16-54mm	16-20mm	16-35mm	16-38mm	16-44mm	16-48mm		
	5 6 1	4	4	0	4	0		
	-1mm	1mm	1mm	5mm	1mm	5mm		
	650250 red	620250 red	650252 red	655251 gn	680250 red	685251 gn		
	Ⓜ 31-73	Ⓜ 40-71	Ⓜ 55-73	Ⓜ 55-73	Ⓜ 63-73	Ⓜ 63-73		

|A| Spacer

|C| End caps

IDEAL 2000
620001 (CL) -> 120x63 — 620029 -> 120x86, 120x82 — 620415 (MB) -> 110x06, 110x08, 110x09, 120x19

IDEAL 2000, IDEAL 4000
620097 (RL) -> 120x97 — 640082 -> 140x74, 140x76, 140x78, 140x82

IDEAL 4000
640066 (CL) -> 140x66 — 640067 (SL) -> 140x67 — 640065 (CL) -> 140x65

IDEAL 5000
650029 (CL) -> 150x68, 150x69 — 650067 (CL) -> 150x67 — 650065 (CL) -> 150x65

IDEAL 7000
670064 (CL) -> 170x64 — 670365 (CL) -> 170x65 |C| 670465 — + — 670465 (CL) -> 170x65 |C| 670365

IDEAL 8000
Set
680029 (CL) -> 080x89, 180x69 — 680066 (CL) -> 180x66
680364 (CL) |C| 680464 — 680464 (CL) -> 180x64 |C| 680364 |C| 680564+|P| — 680564 (CL) -> 180x64 + |P| |P| 259365 (CL) |C| 680464
682229 (QL) -> 080x89 + |P| |P| 289589 (QL) -> 180x69 + |P| |P| 289569 (QL) — 682266 (QL) -> 180x66 + |P| |P| 289566 (QL) — 682264 (QL) -> 180x64 + |P| |P| 289564 (QL)

energeto neo
660364 (QL) -> 160x64 |C| 660464 — 660464 (QL) -> 160x64 |C| 660364 |C| 660564+|P| — 660564 (QL) -> 160x64 + |P| |P| 269564 (QL) |C| 660464
660366 (QL) -> 160x66 |C| 660466 — 660466 (QL) -> 160x66 |C| 660366 |C| 660566+|P| — 660566 (QL) -> 160x66 + |P| |P| 269566 (QL) |C| 660466
660077 (QL) -> 060x77, 160x70, 160x74 — 660097 (QL) -> 160x97 — 660597 (QL) -> 160x97 + |P| |P| 269597 (QL)

|D| Connector P~Plastic

|Ø| Connector without sticks

IDEAL 2000
Ⓜ 47 / 20 / 60 / 1:2
-> 120x41, 120x45
Ⓜ
|D| - |Ø| 627241 |O| -

IDEAL 2000
47 / 20 / 60
-> 120x41, 120x45
|D| 629111 P |Ø| 627101 |O| 620900 — |D| 627102 |Ø| 627132 |O| 620900 — |D| - |Ø| 620116 |O| -

IDEAL 2000 +8, IDEAL 4000, IDEAL 5000
Ⓜ 55 / 20 / 70
-> 140x41, 140x47
Ⓜ
|D| - |Ø| 647241 |O| - — -> 140x45 — Ⓜ |D| - |Ø| 647245 |O| - — -> 140x46 — Ⓜ |D| - |Ø| 647146 |O| -

IDEAL 2000 +8, IDEAL 4000, IDEAL 5000
55 / 20 / 70
-> 140x41, 140x47
|D| 647131 |Ø| 647101 |O| 640900 — |D| 647132 |Ø| 647102 |O| 640900
-> 140x45
|D| - |Ø| 647136 |O| 640901 — |D| 677133 |Ø| 677103 |O| 640901 — -> 140x35 — |D| 627107 |Ø| - |O| -

IDEAL 4000 +8, IDEAL 5000 +8
Ⓜ 63 / 20 / 78
-> 140x48
Ⓜ
|D| - |Ø| 647148 |O| -

IDEAL 5000
MD 55 / 30 / 70
-> 150x43
|D| 657130 |Ø| 657030 |O| 650950 — |D| 657134 |Ø| - |O| 650950
|X| 650032, 659032 ->
|X| 650033, 659033 ->

IDEAL 7000 / (NL)
65 / 20 / 85
-> 170x41
|D| - |Ø| 677142 |O| 670950 — -> 170x44 — |D| - |Ø| 677144 |O| 670950

IDEAL 7000 / (NL), IDEAL 8000 / (NL)
Ⓜ 65 / 20 / 85
-> 170x41
Ⓜ
|D| - |Ø| 677241 |O| 670950 — -> 170x44 — Ⓜ |D| - |Ø| 677244 |O| 670950 — -> 180x46 — Ⓜ |D| - |Ø| 687246 |O| -

IDEAL 7000 / (NL), IDEAL 8000
65 / 20 / 85-120
-> 170x41
|D| 679141 P |Ø| - |O| 670950 — |D| 677101 |Ø| - |O| 670950
-> 170x44
|D| 677146 |Ø| - |O| 670950 — |D| - |Ø| 677145 |O| 670950

IDEAL 8000 +8
Ⓜ 73 / 20 / 93
⚠ -> -
Ⓜ
|D| - |Ø| - |O| -

IDEAL 8000 / (NL)
MD 65 / 30 / 85-120
-> 180x44
|D| 687131 |Ø| - |O| 680950 — |D| - |Ø| 687102 |O| 680950
|X| 650032, 659032 ->
|X| 650033, 659033 ->

energeto neo
MD 65 / 25 / 76
-> 160x45
|D| - |Ø| 667145 |O| 660950 — |D| - |Ø| 667045 |O| 660950
|X| 660032, 669032 ->
-> 160x46
|D| - |Ø| 667146 |O| 660950 — |D| - |Ø| 667046 |O| 660950
|X| 660034, 669034 ->

energeto neo
AD 65 / 25 / 76
-> 160x41
|D| - |Ø| 667141 |O| 660950 — |D| - |Ø| 667041 |O| 660950
-> 160x43
|D| - |Ø| 667143 |O| 660950 — |D| - |Ø| 667043 |O| 660950

energeto neo
Ⓜ 67 / 20 / 78
-> 160x48
Ⓜ
|D| - |Ø| 667048 |O| -

energeto neo +14
Ⓜ 81 / 20 / 92
⚠ -> -
Ⓜ
|D| - |Ø| - |O| -

IDEAL 7000 (NL)
65 / 20 / 120
-> 170x57
|O| 670957 (NL)
|D| 679141 P |Ø| - |O| 670950 — |D| 677101 |Ø| - |O| 670950
|X| 470057, 479057 (NL)

IDEAL 8000 (NL)
MD 65 / 30 / 120
-> 180x57
|O| 670957 (NL)
|D| 687131 |Ø| - |O| 680950 — |D| - |Ø| 687102 |O| 680950
|X| 480057, 489057 (NL)
|X| 650032, 659032 ->
|X| 650033, 659033 ->

|D| Connector
-> General

24 / 55 / Ø4.0 [mm] / 2.5 / 3
|D| 642140 |O| -

|D| Connector

-> |U| / universal — P~Plastic

35x20x1000mm
|D| 620046 P -> 120x41, 120x45, 140x41, 140x47

45x20x1000mm
|D| 640046 P 1x -> 160x41, 160x45, 180x44 2x -> 140x45, 160x43, 160x46, 170x44

40x20x1000mm
|D| 650047 P -> 150x43, 170x41

35.4x17.9x1000mm
|D| 680046 P -> 180x46

82.5x20x1000mm
|D| 680047 P (NL) -> 170x53, 170x54, 170x55, 170x57, 180x54, 180x57

|O| Auxiliary parts

IDEAL 2000
620900 -> |D| 627101, 627102, 629111 -> |Ø| 627131, 627132

IDEAL 2000 +8, IDEAL 4000, IDEAL 5000
640900 -> |D| 647131, 647132 -> |Ø| 647101, 647102

640901 -> |D| 677133 -> |Ø| 647136, 677103

IDEAL 5000
650950 -> |D| 657130, 657134 -> |Ø| 657030

IDEAL 8000
680950 -> |D| 687131 -> |Ø| 687102

IDEAL 7000, IDEAL 8000
670950 -> |D| 677101, 677146, 679141 -> |Ø| 677145, 677142, 677144, 677241, 677244

IDEAL 7000, IDEAL 8000 (NL)
670957 -> 170x57, 180x57

energeto neo
660950 -> |Ø| 667041, 667043, 667045, 667046, 667141, 667143, 667145, 667146

|X| Gaskets

IDEAL 5000 / 8000
IDEAL 8000 (NL)

650032 wh / 659032 bl -> 150x43 |D| 657130, 657134 |Ø| 657030 -> 180x44, 180x57 (NL) |D| 687131 |Ø| 687102

650033 wh / 659033 bl -> 150x43 |D| 657130, 657134 |Ø| 657030 -> 180x44, 180x57 (NL) |D| 687131 |Ø| 687102

energeto neo

669032 bl / 660032 wh -> 160x45 MD |D| 667045, 667145

669034 bl / 660034 wh -> 160x46 MD |D| 667046, 667146

IDEAL 7000
479057 bl / 470057 wh -> 170x57 (NL) |D| 677101, 679141

IDEAL 8000
489057 bl / 480057 wh -> 180x57 (NL) |D| 687131 |Ø| 687102

|E| Corner connector

IDEAL 4000
620125 |F| 229125, 229129 |O| 640938 — 620126 |F| 229126, 229131 |O| 640938 — 640032 |F| 249009 |O| 640938

IDEAL 4000, IDEAL 7000
640029 |F| 249029 |O| 640938 — IDEAL 5000, IDEAL 8000: 640031 |F| 229115 |O| 640938 — IDEAL 2000: 680030 |F| 229115 |O| 640938

IDEAL 7000, energeto neo
640038 |F| 229135, 229137 |O| 640938 — 660033 |F| 269033, 269034 |O| 640938

General -> |E|
|O| 640938

|F| see plan: Reinforcements

|I| Lifter

General
-> 16
620440 -> Sash — 640441 -> Frame

IDEAL 2000
620441 -> Frame

IDEAL 4000 - 8000, energeto neo
640015 -> Frame — 640012 -> Frame

IDEAL 2000
624015 -> Frame

|J| Bonding of pane ≥ 24mm

H [mm]
640033 red 3
640034 ye 4
640035 gn 5

640113 red 13

H [mm]
640020 red 11

H [mm]
640015 wh 12
640014 red 13
640019 ye 14

640012 wh 12
640013 red 13

IDEAL 2000 - 8000, energeto neo
3.5mm
642262 bl

> 45kg
642261 bl

> 45kg
642263 bl

< 45kg
646265 gr

< 45kg
646266 gr

Nord-line
4mm
642230 bl

642233 bl

642232 bl

|L| Basic ventilation system

689350 bl
687350 pw Basic Air max

IDEAL 5000, IDEAL 8000
630315 REGEL-air® Set

650000 Basic Air plus® -> MD

|O| Auxiliary parts

640938 -> |E| 620125, 620126, 640029, 640031, 640032, 640038, 660033, 680030

AD Backstop Gasket System
MD Centre Gasket System

Construction depth
->60mm ~ AD IDEAL 2000
->70mm ~ AD IDEAL 4000 / MD IDEAL 5000
->76mm ~ AD / MD energeto neo
->85mm ~ AD IDEAL 7000 / MD IDEAL 8000
->120mm ~ (MB) / (NL)

Glazing rebate
Ⓜ -> |A| or |J| =Option
Ⓝ -> |J| -> Nord-line

|X| Gaskets

459922 bl / - pw — 459925 bl / 450925 pw — 459923 bl / - pw

429338 bl / - pw — 429330 bl / 420330 wh — 429334 bl / 427334 pw

IDEAL 2000
429921 bl / 427921 pw Standard — 429340 bl / 429340 pw Standard — 429320 bl / - pw

IDEAL 4000 - 8000, energeto neo
479025 bl / 477025 pw Standard — TPE 479015 bl / 477015 pw

TPE
449340 bl / 447340 pw Standard — 449042 bl / 447042 pw — 449343 bl / 447343 pw

energeto neo — Frame / Extension profile
uPVC-P
469019 bl / 467019 pw ~ MD — 449251 bl / - pw — 420250 wh / 421250 br / 423250 oc / 429250 bl

|Z| Special accessories

IDEAL 5000 / 7000 / 8000
650295 -> II
~40x27x1000 mm
-> 050x20
-> 070x20, 080x20

IDEAL 5000
650292 ~43x20x1000 mm -> 050x04
650290 ~14x34x1000 mm -> 050x03, 050x04

IDEAL 8000
680286 ~21x43.5x1000 mm -> 080x04, 080x05
680285 ~13.5x25.5x1000 mm -> 080x04, 080x05

680289 ~52x20x1000 mm -> 080x04, 180x04

energeto neo
660292 -> II ~38x28.5x1000 mm -> 060x20, 060x27
660291 ~9.5x33.5x1000 mm -> 060x05, 060x08

660289 ~51x28x1000 mm -> 060x08
660290 ~31x25x1000 mm -> 060x05, 060x08, 160x07

☐ not laminated
■ laminated

-> for

(CL) Classic-line	blu blue
(QL) Qube-line	ye yellow
(SL) Soft-line	gn green
(RL) Round-line	gr grey
	red red
	bl black
(MB) Monobloc	pw papyrus-white
(NL) IDEAL x000 NL	wh white

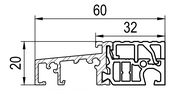
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fon: +49 721 47171-0 | fax: -999
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ALUMINIUM THRESHOLD

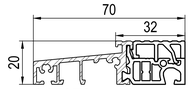
|U| Aluminium threshold — Standard

IDEAL 2000



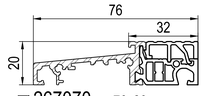
227070 gr 60x20mm

IDEAL 4000
IDEAL 5000 — IDEAL 2000 - 5000



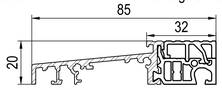
247070 gr 70x20mm

energeto neo — IDEAL 2000 - 5000



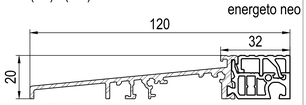
267070 gr 76x20mm

IDEAL 7000
IDEAL 8000 — IDEAL 2000 - 8000 energeto neo



277070 gr 85x20mm

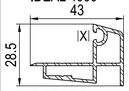
(NL) / (MB) — IDEAL 2000 - 8000 energeto neo



287070 gr 120x20mm

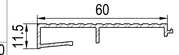
Accessories

IDEAL 4000



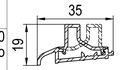
249062
|C| 646062
|U| 247070, 267070, 277070, 287070
|X| 447340, 449340, 447042, 449042, 447343, 449343
-> open-out

IDEAL 7000 (NL)

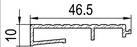


287072 (NL)
|U| 287070
|X| 690072
-> open-out

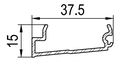
IDEAL 8000
(IDEAL 5000)



287062
Set l= 6m
|U| 247070, 267070, 277070, 287070
energeto neo



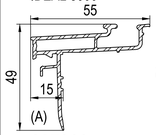
267072
|U| 267070, 277070, 287070
|X| 690072
-> open-out



267071
|U| 267070, 277070, 287070
|X| 690072

Alternative

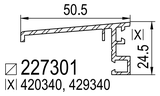
IDEAL 8000



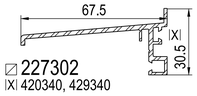
287060
|U| 287061
|X| 689360

287061
|U| 287060

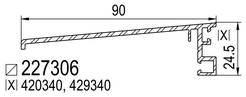
General



227301
|X| 420340, 429340



227302
|X| 420340, 429340



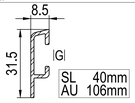
227306
|X| 420340, 429340

|T| Aluminium weather bar — Accessories

General

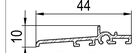


257052
|C| 646052



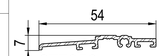
259082 (CL)
|G| 659923

IDEAL 4000



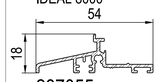
247055
|C| 646055, 646056
|Y| 459932, 459933

IDEAL 7000

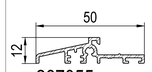


277056
|C| 676056, 676057
|Y| 459932, 459933

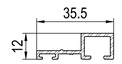
IDEAL 8000



287055
|C| 686055, 686056
|Y| 459933
energeto neo



267055
|C| 666055, 666056
|Y| 459933



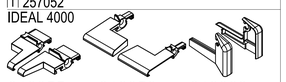
267073
|C| 666073
|Y| 459933
-> open-out

|C| End caps — Accessories

General

646052 gr
|T| 257052

IDEAL 4000

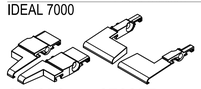


646055 gr
|T| 247055
-> Sash

646056 gr
|T| 247055
-> False mullion

646062 gr
|U| 249062

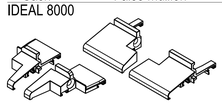
IDEAL 7000



676056 gr
|T| 277056
-> Sash

676057 gr
|T| 277056
-> False mullion

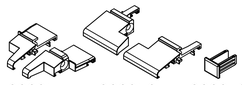
IDEAL 8000



686055 gr
|T| 287055
-> Sash

686056 gr
|T| 287055
-> False mullion

energeto neo



666055 gr
|T| 267055
-> Sash

666056 gr
|T| 267055
-> False mullion

666073 gr
|T| 267073

|G| Nipple screw / Clip — Accessories

General



659923
-> aluminium
|T| 259082

|J| Bonding of pane

≥ 24mm

General



H [mm]
640020 red 11

|Y| Brush seals

General



459932 bl
|T| 247055, 277056



459933 bl
|T| 247055, 267055, 267073, 277056, 287055

|Q| Aluminium step protection

IDEAL 2000
IDEAL 4000
IDEAL 5000



(CL) 227300



(CL) 227303

IDEAL 7000
IDEAL 8000



(CL) 287301



(CL) 287303

energeto neo



(QL) 267501

Additional Profiles



186111 gr l= 5.90m
|U| 227070, 247070, 267070, 277070, 287070

Additional Profiles — see plan 2/5

-> |U| Aluminium threshold b_1 h_1

b_1	h_1		b_2	h_2		
120			120	20	|U|	287070
85			85	20	|U|	277070
76			76	20	|U|	267070
70			70	20	|U|	247070
60			60	20	|U|	227070
			[mm]			1:4
			b	h		
●	●	- - -	85	15	✓	180209
●	●	- - -	85	35	✓	180201
●	●	- - - ~	85	60	✓	180203
●	●	- - -	85	100	✓	180204
○	○	● - -	76	15	✓	160201
○	○	● - ~	76	35	✓	160202
○	○	● - -	76	100	✓	160204
○	○	- - ~	60	55	✓	160223
○	○	- - -	60	140	✓	160226
-	-	● - -	70	15	✓	140209
-	-	● - -	70	35	✓	140205
-	-	● - ~	70	60	✓	140207
-	-	● - -	70	100	✓	140208
-	-	● - -	70	140	✓	140206
-	-	- ○ ●	60	15	✓	120220
-	-	- ○ ●	60	35	✗	120242
-	-	- ○ ● ~	60	60	✓	120221
-	-	- ○ ● ~	60	130	✓	120223

|X| Gaskets

General

496912 gr

TPE

690072 ~50m
12x0.6mm
|U| 267071, 267072, 287072

429340 bl
420340 pw
Standard
|U| 227301, 227302, 227306

IDEAL 4000
IDEAL 7000
IDEAL 8000
energeto neo



466055 gr
-> Frame
-> Mullion



466057 gr
-> Sash

IDEAL 2000
IDEAL 4000
IDEAL 5000
IDEAL 7000
IDEAL 8000



476091 gr
-> Frame
-> Mullion



476092 gr
-> Sash
-> False mullion

IDEAL 2000
IDEAL 4000
IDEAL 5000
IDEAL 8000



446091 gr
-> Frame
-> Mullion



446092 gr
-> Sash
-> False mullion

IDEAL 4000

449340 bl
447340 pw
Standard
|U| 249062

TPE

449042 bl
447042 pw
Alternative
|U| 249062

449343 bl
447343 pw
Option
|U| 249062

IDEAL 5000



156252 gr

IDEAL 8000



(A)
689360 gr
|U| 287060

|X| Gaskets — Accessories

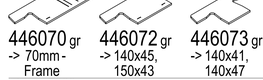
IDEAL 2000



426070 gr
-> 60mm - Frame

426072 gr
-> 120x41, 120x45

IDEAL 4000
IDEAL 5000

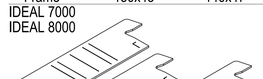


446070 gr
-> 70mm - Frame

446072 gr
-> 140x45, 150x43

446073 gr
-> 140x41, 140x47

IDEAL 7000
IDEAL 8000

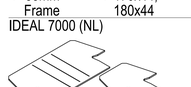


476070 gr
-> 85mm - Frame

476072 gr
-> 170x44, 180x44

476073 gr
-> 170x41

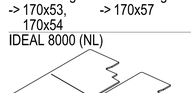
IDEAL 7000 (NL)



(NL) 486070 gr
-> 170x53, 170x54

(NL) 486072 gr
-> 170x57

IDEAL 8000 (NL)



(NL) 486080 gr
-> 180x54

(NL) 486082 gr
-> 180x57

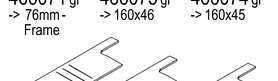
energeto neo



MD 466071 gr
-> 76mm - Frame

MD 466075 gr
-> 160x46

MD 466074 gr
-> 160x45



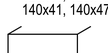
AD 466070 gr
-> 76mm - Frame

AD 466072 gr
-> 160x43

AD 466073 gr
-> 160x41

|D| Connector — P~Plastic — Accessories

-> |U| / universal



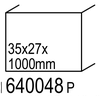
|D| 620046 P
-> 120x41, 120x45, 140x41, 140x47



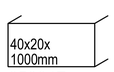
|D| 620047 P
-> 120x07, 120x18



|D| 640047 P
-> 140x07, 150x03, 160x01, 180x04, 180x05



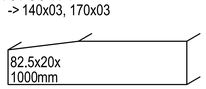
|D| 640048 P
-> 120x05, 140x01, 140x08



|D| 650047 P
-> 150x43, 170x41



|D| 670047 P
-> 140x03, 170x03



|D| 680047 P (NL)
-> 170x53, 170x54, 170x55, 170x57, 180x54, 180x57

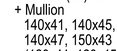
|O| Auxiliary parts — Accessories

IDEAL 2000



620970
-> |U| ≥ 60mm
+ Frame
120x05, 120x07, 120x18
+ Mullion
120x41, 120x45

IDEAL 4000
IDEAL 5000
(IDEAL 2000)



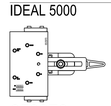
640971
-> |U| ≥ 70(60)mm
+ Mullion
140x41, 140x45, 140x47, 150x43 (120x41, 120x45)

IDEAL 4000



640970
-> |U| ≥ 70mm
+ Frame
040x07, 140x01, 140x03, 140x07

IDEAL 5000

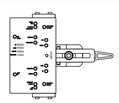


650970
-> |U| ≥ 70mm
+ Frame
050x03, 150x03

IDEAL 7000
IDEAL 8000



680971
-> |U| ≥ 85mm
+ Mullion
170x41, 170x44, 180x44



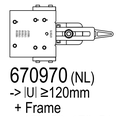
680970
-> |U| ≥ 85mm
+ Frame
070x03, 080x04, 080x05, 170x03, 180x04, 180x05

IDEAL 7000 (NL)
IDEAL 8000 (NL)

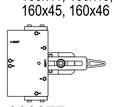
energeto neo



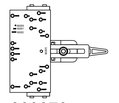
660971
-> |U| ≥ 76mm
+ Mullion
160x41, 160x43, 160x45, 160x46



670970 (NL)
-> |U| ≥120mm
+ Frame
170x53, 170x54, 170x55, 180x54
+ Mullion
170x57, 180x57



660977
-> |U| ≥ 76mm
+ Frame
160x07



660970
-> |U| ≥ 76mm
+ Frame
060x05, 060x08, 160x01, 160x02

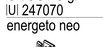
|V| Connection for threshold

IDEAL 2000



->60mm
626370 gr
|U| 227070

IDEAL 4000



->70mm
646370 gr
|U| 247070

energeto neo



->76mm
666371 gr
|U| 267070

AD Backstop Gasket System
MD Centre Gasket System

Construction depth
->60mm ~ AD IDEAL 2000
->70mm ~ AD IDEAL 4000 / MD IDEAL 5000
->76mm ~ AD / MD energeto neo
->85mm ~ AD IDEAL 7000 / MD IDEAL 8000
->120mm ~ (MB) / (NL)

☐ not laminated
■ laminated

-> for
(CL) Classic-line
(QL) Qube-line
(A) aluplast austria
(MB) Monobloc
(NL) IDEAL x000 NL

gr grey
red red
bl black
pw papyrus-white
wh white

SL visible length
AU exterior perimeter

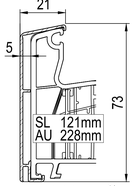
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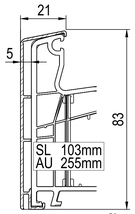
ALUMINIUM SHELLS

|P| aluskin Aluminium shells

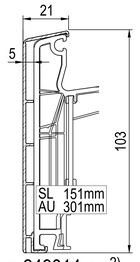
Frame IDEAL 4000 / 5000



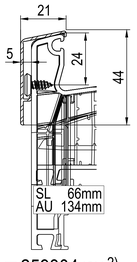
▨ 249312 (CL) 2)
-> 040x07 (CL)
-> 140x07 (CL)
-> 150x02 (CL)



▨ 249313 (CL) 2)
-> 140x03 (CL)
-> 050x03 (CL)
-> 150x03 (CL)

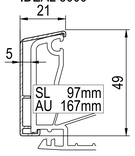


▨ 249314 (CL) 2)
-> 140x81 (CL)
-> 050x04 (CL)



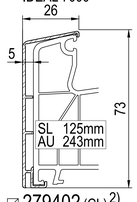
▨ 259304 (CL) 2)
+ |G| 654930
-> 70mm -
Frame (CL)

Frame IDEAL 5000



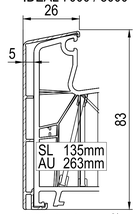
▨ 259310 (CL) 2)
-> 150x10 (CL)

Frame IDEAL 7000

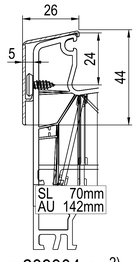


▨ 279402 (CL) 2)
-> 170x02 (CL)

Frame IDEAL 7000 / 8000

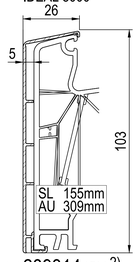


▨ 289313 (CL) 2)
-> 070x03 (CL)
-> 170x03 (CL)
-> 080x05 (CL)
-> 180x05 (CL)



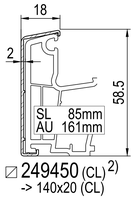
▨ 289304 (CL) 2)
+ |G| 654930
-> 85mm -
Frame (CL)

Frame IDEAL 8000

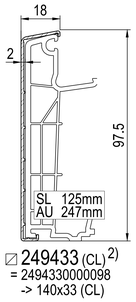


▨ 289314 (CL) 2)
-> 080x04 (CL)
-> 180x04 (CL)

Sash IDEAL 4000

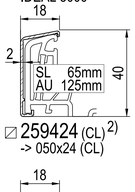


▨ 249450 (CL) 2)
-> 140x20 (CL)

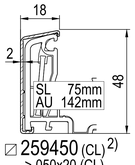


▨ 249433 (CL) 2)
= 2494330000098
-> 140x33 (CL)

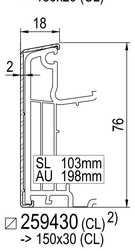
Sash IDEAL 5000



▨ 259424 (CL) 2)
-> 050x24 (CL)

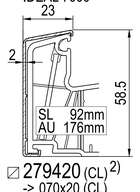


▨ 259450 (CL) 2)
-> 050x20 (CL)
-> 150x20 (CL)

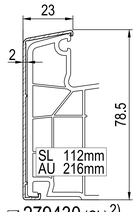


▨ 259430 (CL) 2)
-> 150x30 (CL)

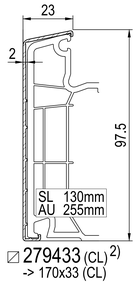
Sash IDEAL 7000



▨ 279420 (CL) 2)
-> 070x20 (CL)
-> 170x20 (CL)

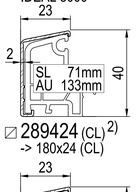


▨ 279430 (CL) 2)
-> 170x30 (CL)

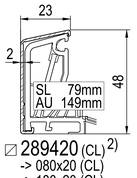


▨ 279433 (CL) 2)
-> 170x33 (CL)

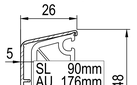
Sash IDEAL 8000



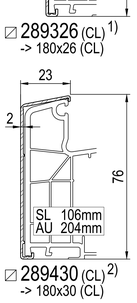
▨ 289424 (CL) 2)
-> 180x24 (CL)



▨ 289420 (CL) 2)
-> 080x20 (CL)
-> 180x20 (CL)

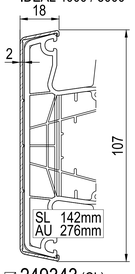


▨ 289326 (CL) 1)
-> 180x26 (CL)

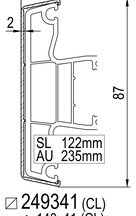


▨ 289430 (CL) 2)
-> 180x30 (CL)

Mullions/Transoms IDEAL 4000 / 5000

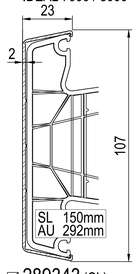


▨ 249343 (CL)
-> 140x45 (CL)
-> 150x43 (CL)

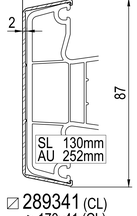


▨ 249341 (CL)
-> 140x41 (CL)
+ False mullion
-> 150x67 (CL)
-> 180x66 (CL)

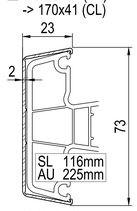
Mullions/Transoms IDEAL 7000 / 8000



▨ 289343 (CL)
-> 170x44 (CL)
-> 180x44 (CL)

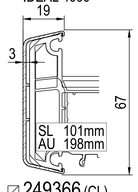


▨ 289341 (CL)
-> 170x41 (CL)



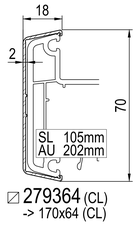
▨ 289346 (CL)
-> 180x46 (CL)

False mullion IDEAL 4000



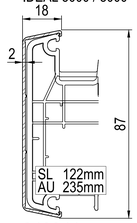
▨ 249366 (CL)
-> 140x66 (CL)
-> 140x67 (SL)

False mullion IDEAL 7000

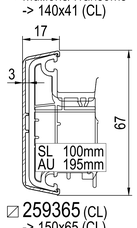


▨ 279364 (CL)
-> 170x64 (CL)

False mullion IDEAL 5000 / 8000

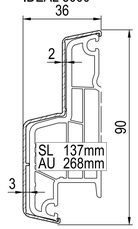


▨ 249341 (CL)
-> 150x67 (CL)
-> 180x66 (CL)
+ Mullions/Transoms
-> 140x41 (CL)



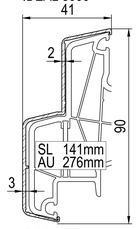
▨ 259365 (CL)
-> 150x65 (CL)
-> 180x64 (CL)
|C| 680564 (CL)

False mullion sash IDEAL 5000

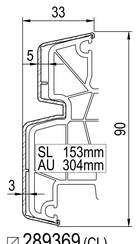


▨ 259368 (CL)
-> 150x68 (CL)

False mullion sash IDEAL 8000



▨ 289489 (CL)
-> 080x89 (CL)

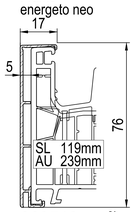


▨ 289369 (CL)
-> 180x69 (CL)

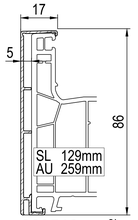
IDEAL 4000 - 8000
(CL) Classic-line CL

|P| aluskin Aluminium shells

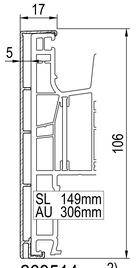
Frame energeto neo



▨ 269512 (QL) 2)
-> 060x05 (QL)
-> 160x01 (QL)

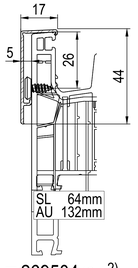


▨ 269513 (QL) 2)
-> 160x02 (QL)

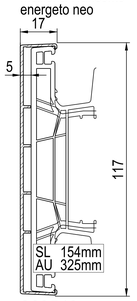


▨ 269514 (QL) 2)
-> 060x08 (QL)

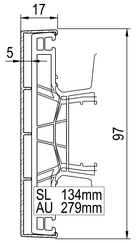
Mullions/Transoms energeto neo



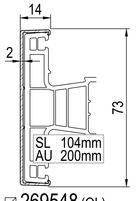
▨ 269504 (QL) 2)
+ |G| 654930
-> 76mm -
Frame (QL)



▨ 269543 (QL)
-> 160x43 (QL)
-> 160x46 (QL)

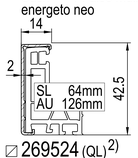


▨ 269541 (QL)
-> 160x41 (QL)
-> 160x45 (QL)

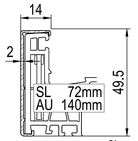


▨ 269548 (QL)
-> 160x48 (QL)

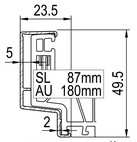
Sash / False mullion sash energeto neo



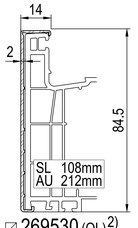
▨ 269524 (QL) 2)
-> 160x24 (QL)
-> 160x74 (QL)



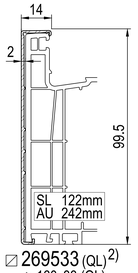
▨ 269520 (QL) 2)
-> 060x20 (QL)
-> 160x20 (QL)
-> 160x70 (QL)



▨ 269527 (QL) 1)
-> 060x27 (QL)
-> 060x77 (QL)

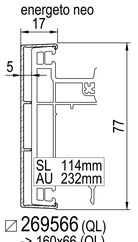


▨ 269530 (QL) 2)
-> 160x30 (QL)

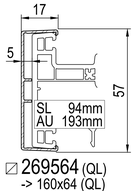


▨ 269533 (QL) 2)
-> 160x33 (QL)

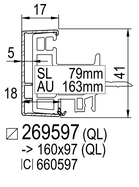
False mullion energeto neo



▨ 269566 (QL)
-> 160x66 (QL)
|C| 660566



▨ 269564 (QL)
-> 160x64 (QL)
|C| 660564

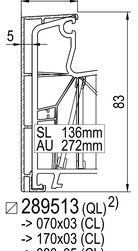


▨ 269597 (QL)
-> 160x97 (QL)
|C| 660597

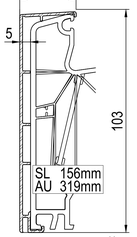
energeto neo
(QL) Qube-line QL

|P| aluskin Aluminium shells

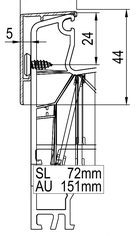
Frame IDEAL 7000 / 8000



▨ 289513 (QL) 2)
-> 070x03 (CL)
-> 170x03 (CL)
-> 080x05 (CL)
-> 180x05 (CL)

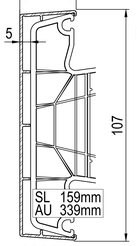


▨ 289514 (QL) 2)
-> 080x04 (CL)
-> 180x04 (CL)



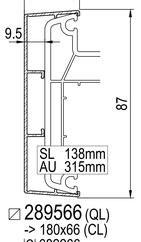
▨ 289504 (QL) 2)
+ |G| 654930
-> 85mm -
Frame (CL)

Mullions/Transoms IDEAL 7000 / 8000

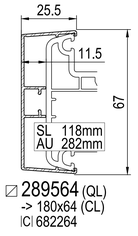


▨ 289543 (QL)
-> 170x44 (CL)
-> 180x44 (CL)

False mullion IDEAL 8000

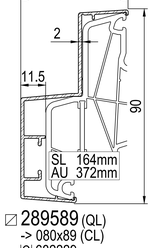


▨ 289566 (QL)
-> 180x66 (CL)
|C| 682266

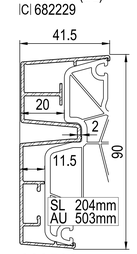


▨ 289564 (QL)
-> 180x64 (CL)
|C| 682264

False mullion sash IDEAL 8000

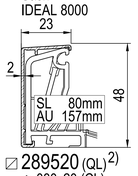


▨ 289589 (QL)
-> 080x89 (CL)
|C| 682229

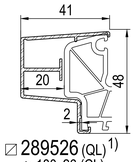


▨ 289569 (QL)
-> 180x69 (CL)
|C| 682229

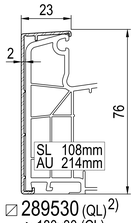
Sash IDEAL 8000



▨ 289520 (QL) 2)
-> 080x20 (CL)
-> 180x20 (CL)



▨ 289526 (QL) 1)
-> 180x26 (CL)



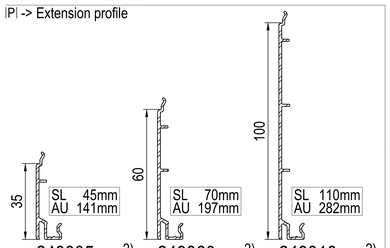
▨ 289530 (QL) 2)
-> 180x30 (CL)

IDEAL 7000 / 8000
(QL) Qube-line QL

IDEAL / energeto® AL aluskin

Additional Profiles

|P| -> Extension profile

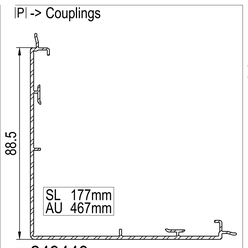


▨ 249335 (CL) 2)
-> 120242,
140205,
160202,
180201

▨ 249360 (CL) 2)
-> 120221,
140207,
180203

▨ 249310 (CL) 2)
-> 140208,
160204,
180204

|P| -> Coupings



▨ 249448 (CL)
-> 160248

Couplings
-> |P| aluskin



■ 120224
|H| 642025,
645050

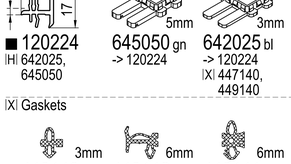
|H| Installation / Mounting anchor



645050 gn
-> 120224

642025 bl
-> 120224
|X| 447140,
449140

|X| Gaskets



449140 bl
447140 pw
|H| 642025

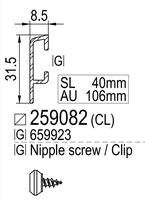
449142 bl
- pw
|X| 449141

449141 bl
- pw
|X| 449142

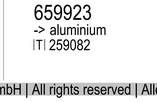
|R| Aluminium roller shutter guides + Accessories
see plan Additional Profiles:
260406 5/5

|S| Aluminium profiles + Accessories
see plan Additional Profiles:
270044, 270045, 279044, 279045, 289210, 289211 3/5

|T| Aluminium weather bar



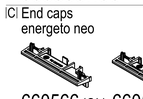
▨ 259082 (CL)
|G| 659923
|G| Nipple screw / Clip



659923
-> aluminium
|T| 259082

Accessories

|C| End caps energeto neo



660566 (QL)
-> 160x66 + |P|
|P| 269566 (QL)
|C| 660466

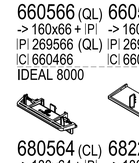


660564 (QL)
-> 160x64 + |P|
|P| 269564 (QL)
|C| 660464

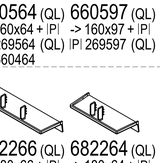


660597 (QL)
-> 160x97 + |P|
|P| 269597 (QL)

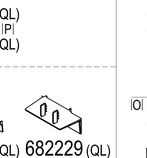
IDEAL 8000



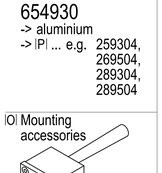
680564 (CL)
-> 180x64 + |P|
|P| 259365 (CL)
|C| 680464



682266 (QL)
-> 180x66 + |P|
|P| 289566 (QL)

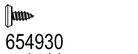


682264 (QL)
-> 180x64 + |P|
|P| 289564 (QL)



682229 (QL)
-> 080x89 + |P|
|P| 289589 (QL)
-> 180x69 + |P|
|P| 289569 (QL)

|G| Nipple screw / Clip



654930
-> aluminium
-> |P| ... e.g. 259304, 269504, 289304, 289504

|O| Mounting accessories

640951
-> |P| aluskin

|X| Gaskets compression [mm]

Glazing	Glazing	Stop
[4]	[4]	[4]
459951 bl	449986 bl	429320 bl
- pw	447986 pw	- pw
Stop Glazing	Stop Glazing	Stop Glazing
[2]	[2]	[2] PVC-P
449338 bl	449348 bl	xxx3xx bl
- pw	447348 pw	+ 0009830
-> Frame -> Mullion	-> Frame -> Mullion	= Frame = Mullion

▨ not laminated
■ laminated

-> for
(CL) Classic-line
(QL) Qube-line
(SL) Soft-line

bl black
pw papyrus-white
gn green

1)
2) or

SL visible length
AU exterior perimeter

May be subject to change and errors excepted! Laminated profiles and profiles with gasket: see price list! Copyright © aluplast GmbH | All rights reserved | Alle Rechte vorbehalten

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REINFORCEMENTS

|F| Reinforcements y⁄x y = Ix | Iy

1 Depending on the installation situation, some reinforcements may have to be turned 90°.

In this case, the Ix- and Iy-values have to be exchanged:

+90° = Ix | Iy | or | Iy | Ix

1) (aluminium) x 1/3 ~ steel ≠aluminium = Ix (Ix) | Iy (Iy) | steel [cm⁴]
2) punched out
3) pierced hole P~Plastic
|D| Connector
|E| Corner connector
|O| Auxiliary parts see plan: Accessories energeto IDEAL
|H| Installation / Mounting anchor see plan: Additional Profiles Structural profiles
-> energeto neo IDEAL 7000/8000, IDEAL 7000/8000 NL IDEAL 4000/5000, Nord-line IDEAL 2000, Lift-and-slide door Sliding Window lift-slide, smart-slide, multi-slide, vario-slide, easy-slide Additional Profiles

-> Glazing rebate

y⁄x y | s [mm] | Ix [cm⁴] | Iy [cm⁴] | -> for

35 | 5 | -> Sash Ⓜ ≥ 55mm
|F| 249027 3) 2.5mm | 1.2 | 0.02 | 2.4m
3) pierced hole

44.5 | 5 | -> Sash Ⓜ ≥ 65mm
|F| 279027 3) 2.5mm | 2.4 | 0.02 | 2.4m
3) pierced hole

39.5 | 4 | -> Sash ≥ 55mm Ⓜ
|F| 259023 3) 2.0mm | 1.9 | 0.02 | 2.4m
3) pierced hole

50 | 5 | -> 170x33, 170x35, 170x36, 170x39
|F| 289027 3) 2.5mm | 3.5 | 0.04 | 2.4m
3) pierced hole

26 | 12 | -> 100x55, 110x90
|F| 209005 1.5mm | 0.7 | 0.2

33 | 26 | -> 100079
|F| 209079 2.0mm | 2.6 | 1.8

31.5 | 32.5 | -> 100x85
|F| 209084 1.25mm | 2.0 | 1.2
|F| 209085 2.0mm | 3.0 | 1.9

31.5 | 48 | -> 100x86
|F| 209086 1.25mm | 3.0 | 3.8
|F| 209087 2.0mm | 4.5 | 5.8

45 | 10 | -> 100097, 100098, 110x67
|F| 209121 1.5mm | 3.0 | 0.2

40 | 31.5 | -> 100x94
|F| 209294 2.0mm | 5.7 | 2.8

40 | 47 | -> 100x92
|F| 209192 1.25mm | 4.6 | 3.5
|F| 209193 2.0mm | 7.0 | 5.5

59 | 10 | -> 140267, 160267, 180267
|H| 682330, 682331
|F| 209900 1.5mm | 7.3 | 0.08
|F| 209900 2x 1.5mm | 14.6 | 0.16

50 | 10 | -> 160267
|H| 682338
|F| 209901 1.5mm | 4.9 | 0.1
|F| 209901 2x 1.5mm | 9.8 | 0.2

30 | 31 | -> 120x07, 120x18
|F| 229001 1.5mm | 2.1 | 1.3

30 | 27 | -> 100x72
|F| 229003 1.5mm | 1.6 | 0.8
|F| 229004 2.0mm | 2.1 | 1.1

30 | 43 | -> 100x74
|F| 229005 2.0mm | 3.5 | 4.1

73 | 10 | -> 120230, |F| 229018, 289218
3) Ø5.5, a=250mm pierced hole
|F| 229010 3) 3.0mm | 9.9 | 0.1
|F| 229010 3) 2x 3.0mm | 19.7 | 0.2

34.5 | 12 | -> 170x81 -> RC2
|F| 229015 1.5mm | 0.9 | 0.2

35 | 40 | -> 140x03, 140207, 170x03
|F| 229017 1.5mm | 3.7 | 2.8

|H| 622354, 682335 | |H| 622338, 682332 | -> 120218, 140218, 160218 ...0020, 180218 ...0020

80 | 13 | -> 120219
|F| 229018 2.5mm | 24.8 | 0.8
|F| 229018 + 229010 | 34.7 | 0.9

110 | 17 | 15
3) pierced hole
|H| 622019
|F| 229019 3) 2.0mm | 43.3 | 0.2
|F| 229019 3) 2x 2.0mm | 86.6 | 0.4

35 | 27 | -> 100090, 120x05, 120x18, 120x22, 140x00, 140x01, 140x08, 140x12, 140x14, 140x16, 140x18, 140x19, 140x22
|F| 229023 1.5mm | 2.3 | 0.9

35 | 27 | -> 100090, 120x05, 120x22, 140x00, 140x01, 140x08, 140x12, 140x14, 140x16, 140x18, 140x19, 140x22
|F| 229024 1.5mm | 3.0 | 1.1

35 | 27 | -> 100090, 120x05, 120x22, 140x00, 140x01, 140x08, 140x12, 140x14, 140x16, 140x18, 140x19, 140x22
|F| 229026 2.0mm | 3.8 | 1.5

35 | 27 | -> 120x22, 140x22, 140x82
|F| 229027 1.5mm | 1.7 | 0.6
|F| 229028 2.0mm | 2.1 | 0.8

35 | 27 | -> 100090, 120x05, 140x00, 140x01, 140x08, 140x12, 140x14, 140x16, 140x18, 140x19, 170x64, 180x66
~ |D| 640048 P
|F| 229029 1.25mm | 2.5 | 1.7
|F| 229030 2.0mm | 3.7 | 2.5

35 | 16.5 | -> 110x10, 120x91
|F| 229034 1.5mm | 1.7 | 0.3

~ |D| 680046 P
35 | 17.5 | -> 100091, 110x10, 110x99, 120x39, 120x57, 120x59, 120x91, 150x11, 150x110000011, 160x15, 180x15, 180x46
|F| 229037 1.5mm | 2.5 | 0.7

40 | 40 | -> 120275, 160248
|H| 622041
|F| 229040 2.0mm | 7.0 | 7.0

34 | 12.5 | -> 150x10
|F| 229045 1.5mm | 1.1 | 0.2

35 | 54 | -> 120x30, 120x31
|F| 229050 1.5mm | 4.9 | 6.4
|F| 229051 2.5mm | 7.6 | 10.3

34 | 21 | -> 120x26, 120x86
|F| 229055 2.0mm | 2.0 | 0.6

35.5 | 49.5 | -> 120x32, 120x82
|F| 229056 2.0mm | 2.8 | 4.2

31.5 | 49.5 | -> 120x32
|F| 229057 2.0mm | 4.5 | 6.1

48 | 14.5 | -> 120x63, 140x66, 160x64, 180x64
|F| 229063 2.0mm | 4.3 | 0.2

27.5 | 25.5 | -> 110x90
|F| 229093 1.5mm | 1.1 | 0.5

~ |D| 620046 P
35 | 20 | -> 120x41, 120x45, 140x05, 140x09, 140x090000011, 140x15, 140x17, 140x41, 140x47, 150x02, 160202, 180201
|F| 229098 2.5mm | 4.1 | 1.5

~ |D| 620046 P
35 | 20 | -> 120x41, 120x45, 140x05, 140x09, 140x090000011, 140x15, 140x17, 140x41, 140x47, 150x02, 160202, 180201
|F| 229100 1.25mm | 2.0 | 0.8

~ |D| 620046 P
35 | 20 | -> 120x41, 120x45, 140x05, 140x09, 140x090000011, 140x15, 140x17, 140x41, 140x47, 150x02, 160202, 180201
|F| 229101 1.5mm | 2.8 | 1.0

45 | 20 | -> 100090, 180x44
~ |D| 640046 P
|F| 229102 1.5mm | 5.1 | 1.2
|F| 229103 2.5mm | 7.3 | 1.8

25 | 15 | -> 100x78, 120230, 150x65, 170x53, 170x54, 170x55, 170x57, 190298
|F| 229107 2.0mm | 1.0 | 0.4 | +90°

35 | 15 | -> 110x06, 110x08, 110x09, 120x19, 120223, 120242, 140205
|F| 229110 1.5mm | 1.8 | 0.5
|F| 229111 2.0mm | 2.3 | 0.6

30 | 30 | -> 120x07, 120x18, 140x08
~ |D| 620047 P
|F| 229112 1.0mm | 1.5 | 1.5
|F| 229113 2.0mm | 2.7 | 2.7

~ |D| 670047 P
35 | 40 | -> 120x300000096, 120x310000096, 120109, 120221, 120223, 140x03, 140206, 140207, 140208, 150x30, 150x31, 160x02, 160204, 160223, 1602260000020, 170x03, 170x81, 180x30, 180x31, 180203, 180204
|E| 640031 |O| 640038
|E| 680030 + 640938
|F| 229114 1.5mm | 4.0 | 5.0 | +90°
|F| 229115 |E| 2.0mm | 5.0 | 6.4 | +90°

20 | 25 | -> 119x95
|F| 229119 1.5mm | 0.7 | 1.0 | +90°

35 | 40 | -> 140x03, 160x02, 170x03
|F| 229120 2.0mm | 4.0 | 5.4

30 | 30 | -> 120x07, 120x18, 140x08
|F| 229121 1.5mm | 2.1 | 2.1

40 | 50 | -> 120109, 140x33, 140x35, 170080, 170x81
|E| 620125 |O| 640938 |H| 622104
2) 5x punched out -> 3x, 5x -> 120109
|F| 229125 2.0mm | 8.5 | 12.1 | +90°
|F| 229129 2) 2.0mm | 8.5 | 12.1 | +90°

40 | 50 | -> 120109, 140x33, 140x35, 170080, 170x81
|E| 620126 |O| 640938
2) 5x punched out -> 3x, 5x
|F| 229126 3.0mm | 11.8 | 16.8 | +90°
|F| 229131 2) 3.0mm | 11.8 | 16.8 | +90°

50 | 50 | -> 170x33, 170x35, 170x36, 170x39
|E| 640038 |O| 640938
2) 3x punched out
|F| 229135 2.0mm | 14.4 | 14.4
|F| 229137 2) 2.0mm | 14.4 | 14.4

Ø48.3 | -> 120241
|H| 622140
|F| 229140 3.25mm | 11.7 | 11.7

30 | 25.5 | -> 110x90
|F| 229212 1.0mm | 0.5 | 0.3

30 | 15 | -> 100x65, 120238
|F| 239030 2.0mm | 1.5 | 0.5

30 | 20 | -> 120238, 140200
|F| 239129 1.5mm | 1.6 | 0.9 | +90°

35 | 20 | -> 140x05, 140x09, 140x090000011, 140x15, 140x17, 150x02
|F| 249004 2.0mm | 2.6 | 0.5

35 | 50 | -> 140x34
|F| 249007 2.0mm | 5.9 | 6.8

35 | 35 | -> 140x34, 160226 ...0020
|E| 640032 |O| 640938
|F| 249009 2.0mm | 4.5 | 4.5

30 | 32 | -> 140x07, 150x03, 170x020000098, 180x040000098, 180x050000098
~ |D| 640047 P
|F| 249014 1.25mm | 2.0 | 2.0 | +90°
|F| 249015 2.0mm | 3.0 | 3.1 | +90°

32 | 29 | -> 070x20, 140x07, 140x20, 140x27, 150x03, 170x020000098, 170x20, 180x040000098, 180x050000098
|F| 249016 1.5mm | 2.2 | 1.1 | +90°

35 | 29 | -> 140x20, 140x27, 140x76
|F| 249017 1.5mm | 1.9 | 0.7

35 | 10 | -> 100x78, 100084, 100087
|F| 249019 2.0mm | 1.8 | 0.2

35 | 27 | -> 100090, 120x05, 120x22, 140x00, 140x01, 140x08, 140x12, 140x14, 140x16, 140x18, 140x19
|F| 249026 3.0mm | 5.1 | 2.1

40 | 47 | -> 140x28, 140x29, 140x78
|F| 249028 2.0mm | 6.4 | 4.6

40 | 31 | -> 140x28, 140x29, 140x78, 170x30, 170x31
|E| 640029 |O| 640938
|F| 249029 2.0mm | 5.7 | 3.8

45 | 40 | -> 140x45, 140x81, 170x44
2x ~ |D| 640046 P
|F| 249034 1.25mm | 6.1 | 5.2
|F| 249035 2.0mm | 9.2 | 7.8
|F| 249039 2.5mm | 13.4 | 9.8

35 | 18.5 | -> 140x37
|F| 249037 1.2mm | 2.1 | 0.4

34 | 21 | -> 140x46, 140x48, 160x48
|F| 249046 1.5mm | 2.0 | 0.6

40 | 47 | -> 140x78
|F| 249078 2.0mm | 6.3 | 4.3

34.5 | 22.5 | -> 140x24, 140x74
|F| 249174 2.0mm | 2.0 | 0.4

34.5 | 22.5 | -> 140x24, 140x74
|F| 249175 2.0mm | 2.8 | 0.6

48 | 12 | -> 140x90
|F| 249190 1.5mm | 3.5 | 0.3

48 | 23 | -> 140x98, 140x99
|F| 249198 1.5mm | 4.8 | 1.3

30 | 30.5 | -> 140x94
|F| 249204 2.0mm | 2.2 | 1.2

140 | 40 | -> 170080
1) (aluminium) x 1/3 ~ 65 | 6.3 | steel
|F| 249228 1) 2.0mm (197) | (18.8) | 6.7m

77.5 | 23.5 | -> General -> 144233
|F| 249234 1.5mm | 12.6 | 1.5

40 | 33 | -> 140249
|H| 622142
|F| 249242 2.0mm | 2.9 | 2.0 | +90°

Ø60.3 | -> 140244
|H| 622333
|F| 249244 3.2mm | 23.5 | 23.5

35 | 30 | -> 140208
|H| 622104
|F| 259010 1.5mm | 2.7 | 2.5 | +90°
|F| 259011 2.0mm | 3.5 | 3.2 | +90°

26.5 | 9.5 | -> 100069, 100071, 110x96
|F| 259018 2.0mm | 0.8 | 0.2

40 | 27.5 | -> 050x20, 070x20, 080x20, 140x20, 140x27, 150x20, 150x22, 150x26, 150x27, 150x68, 150x69, 170x20, 180x20, 180x26, 180x69
|F| 259020 1.25mm | 2.1 | 0.5
|F| 259021 2.0mm | 3.2 | 0.8
|F| 259022 1.5mm | 2.4 | 0.6

34.5 | 22.5 | -> 050x24, 140x24, 180x24
|F| 259024 1.5mm | 2.0 | 0.4

40 | 27.5 | -> 050x20, 070x20, 080x20, 140x20, 140x27, 150x20, 150x22, 150x26, 150x27, 150x68, 150x69, 170x20, 180x20, 180x26, 180x69
|F| 259026 2.0mm | 4.3 | 1.3

34.5 | 22.5 | -> 050x24, 140x24, 180x24
|F| 259028 2.0mm | 3.0 | 0.7

40 | 54 | -> 150x30, 150x31, 180x30, 180x31
|F| 259031 2.0mm | 7.2 | 6.5

40 | 20 | -> 150x43, 170x41
~ |D| 650047 P
|F| 259043 1.5mm | 3.9 | 1.1
|F| 259044 2.5mm | 5.6 | 1.6

48 | 27.5 | -> 150x67
|F| 259067 2.0mm | 5.0 | 2.5

38 | 9 | -> 170x65
|F| 259080 2.0mm | 1.8 | 0.08

40 | 19.5 | -> 140x67
|F| 259094 2.0mm | 3.1 | 0.4

30 | 32 | -> 140x07, 150x03, 160x01, 160x66, 170x020000098, 180x040000098, 180x050000098
~ |D| 640047 P
|F| 259105 1.25mm | 1.9 | 2.2 | +90°
|F| 259106 2.0mm | 2.9 | 3.2 | +90°
|F| 259107 1.5mm | 2.3 | 2.5 | +90°

35 | 25 | -> 100083, 140x91
|F| 259906 2.0mm | 3.4 | 2.1

60 | 40 | -> 120109
|F| 259926 2.0mm | 18.7 | 10.0

35 | 40 | -> 140x03, 160x02, 170x03
|F| 269003 2.0mm | 3.6 | 5.0

30 | 25 | -> 060x05, 060x08, 160x07
|F| 269004 1.5mm | 1.1 | 0.9

38 | 28 | -> 060x20, 060x27, 060x77, 160x20, 160x70
|F| 269020 1.25mm | 2.0 | 0.6
|F| 269021 1.5mm | 2.3 | 0.7

38 | 28 | -> 060x20, 060x27, 060x77, 160x20, 160x70
|F| 269022 2.0mm | 3.1 | 1.3

38 | 28 | -> 060x20, 060x27, 060x20
|F| 269024 2.0mm | 5.8 | 2.0

45 | 48 | -> 160x30
|F| 269030 2.0mm | 9.9 | 6.6

45 | 60 | -> 160x33, 160x35
|E| 660033 |O| 640938
2) 3x punched out -> 3x
|F| 269033 2.0mm | 13.0 | 20.4
|F| 269034 2) 2.0mm | 13.0 | 20.4

38 | 21 | -> 160x24, 160x74
|F| 269036 1.5mm | 2.0 | 0.3

38 | 21 | -> 160x24, 160x74
|F| 269037 2.0mm | 3.0 | 0.6

38 | 21 | -> 160x24
|F| 269038 2.0mm | 4.9 | 0.9

45 | 28 | -> 160x41, 160x45
|F| 269041 1.5mm | 5.4 | 2.2

45 | 32 | -> 160x43, 160x46
2x ~ |D| 640046 P
|F| 269043 2.5mm | 12.9 | 13.4
|F| 269046 1.5mm | 7.8 | 7.7

45 | 25 | -> 160x41, 160x45
~ |D| 640046 P
|F| 269045 2.0mm | 8.4 | 3.0

45 | 28 | -> 160x43, 160x46
|F| 269047 2.5mm | 10.2 | 9.0

40 | 30 | -> 160x01, 160x66
|F| 269066 2.0mm | 8.0 | 2.6

38 | 28 | -> 060x77, 160x70
|F| 269077 2.5mm | 5.6 | 1.7

40 | 47 | -> 140x28, 140x29, 170x30, 170x31
|F| 279029 2.0mm | 7.3 | 5.8

50 | 42.5 | -> 170x81
1) (aluminium) x 1/3 ~ 5.9 | 3.2 | steel
|F| 279036 1) 2.8mm (17.8) | (9.6)
-> 170x53, 170x54, 170x55, 170x57, 180x54, 180x57

82.5 | 20 | ~ |D| 680047 P
|F| 279054 1.5mm | 21.0 | 2.0

45 | 23 | -> 170x53, 170x54, 170x55, 170x57, 180x54, 180x57
|F| 279055 1.5mm | 4.7 | 1.3

50 | 44.5 | -> 170x81
Ø20 3)
|F| 279082 1.5mm | 13.2 | 6.6 | 6.0m
3) 5x pierced hole -> DIN left blue
|F| 279083 3) 1.5mm | 13.2 | 6.6 | 2.3m
3) 5x pierced hole -> DIN right red
|F| 279084 3) 1.5mm | 13.2 | 6.6 | 2.3m

140 | 40 | -> 170080
1) (aluminium) x 1/3 ~ 69.0 | 6.8 | steel
|F| 279108 1) 2.0mm (206) | (20.4) | 6.7m
-> 120224, 180267

56 | 8.5 | -> 080x04, 080x05
|H| 682330, 682331
|F| 289018 1.5mm | 6.2 | 0.2

14 | 26 | -> 050x20, 070x20, 080x20, 140x20, 150x22, 150x26, 150x27, 170x20, 180x20, 180x26
|F| 289019 1.5mm | 0.1 | 0.8

40 | 29.5 | -> 160x43, 160x46
|F| 289021 2.0mm | 3.4 | 0.8

40 | 22.5 | -> 180x24
|F| 289028 2.0mm | 4.2 | 0.7

45 | 28.5 | -> 170x64, 180x66
|F| 289066 2.0mm | 7.7 | 2.0

48 | 17 | -> 080x89
|F| 289089 2.0mm | 6.3 | 0.4

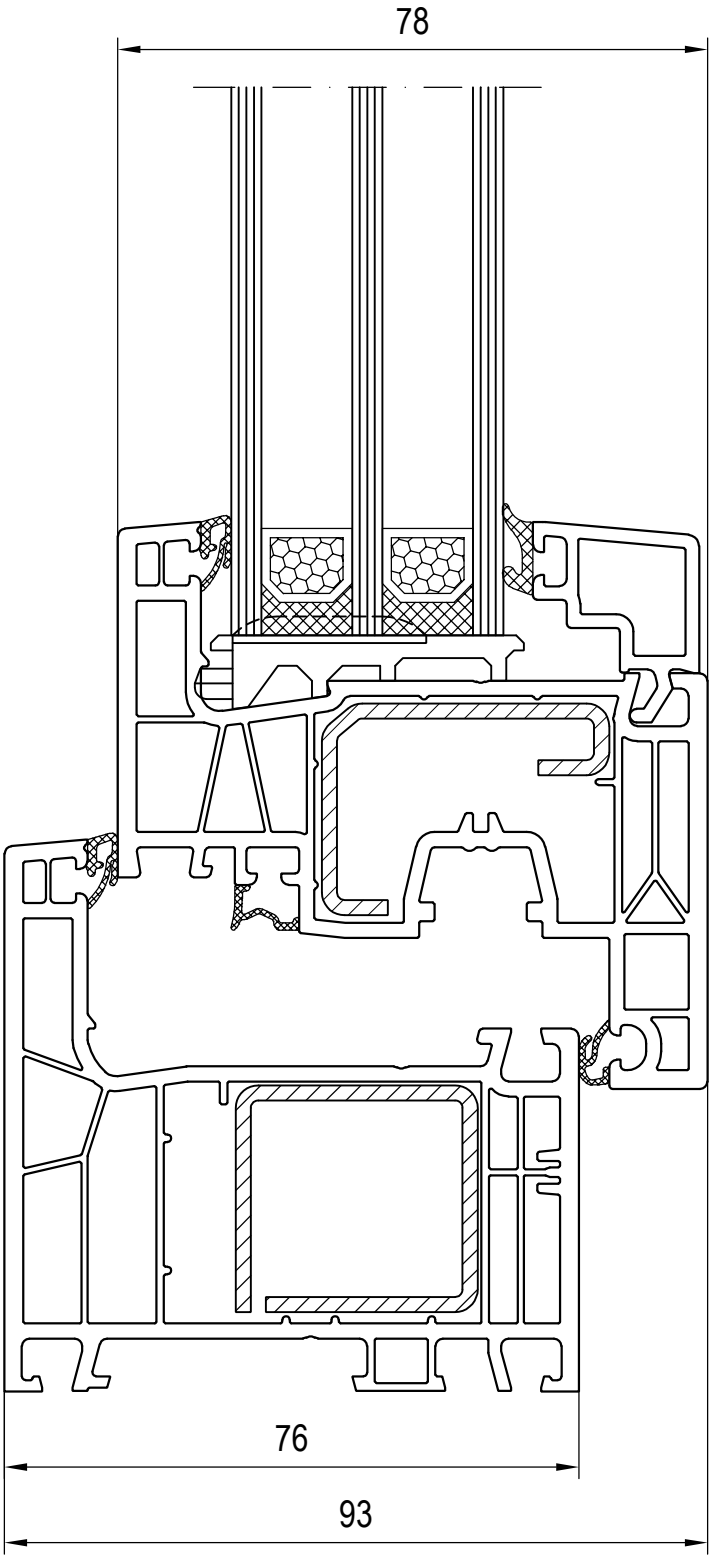
|H| 622354, 682335 | |H| 622338, 682332 | -> 140218, 160218 ...0020, 180218 ...0020

90 | 24.5 | -> 060x05, 060x08, 160x07
|F| 289218 2.0mm | 37.0 | 1.4

90 | 24.5 | -> 060x05, 060x08, 160x07
|F| 289218 + 229010 | 46.9 | 1.5

30 | 25 | -> 060x05, 060x08, 160x07
|F| 299944 1.5mm | 1.9 | 1.5 | +90°

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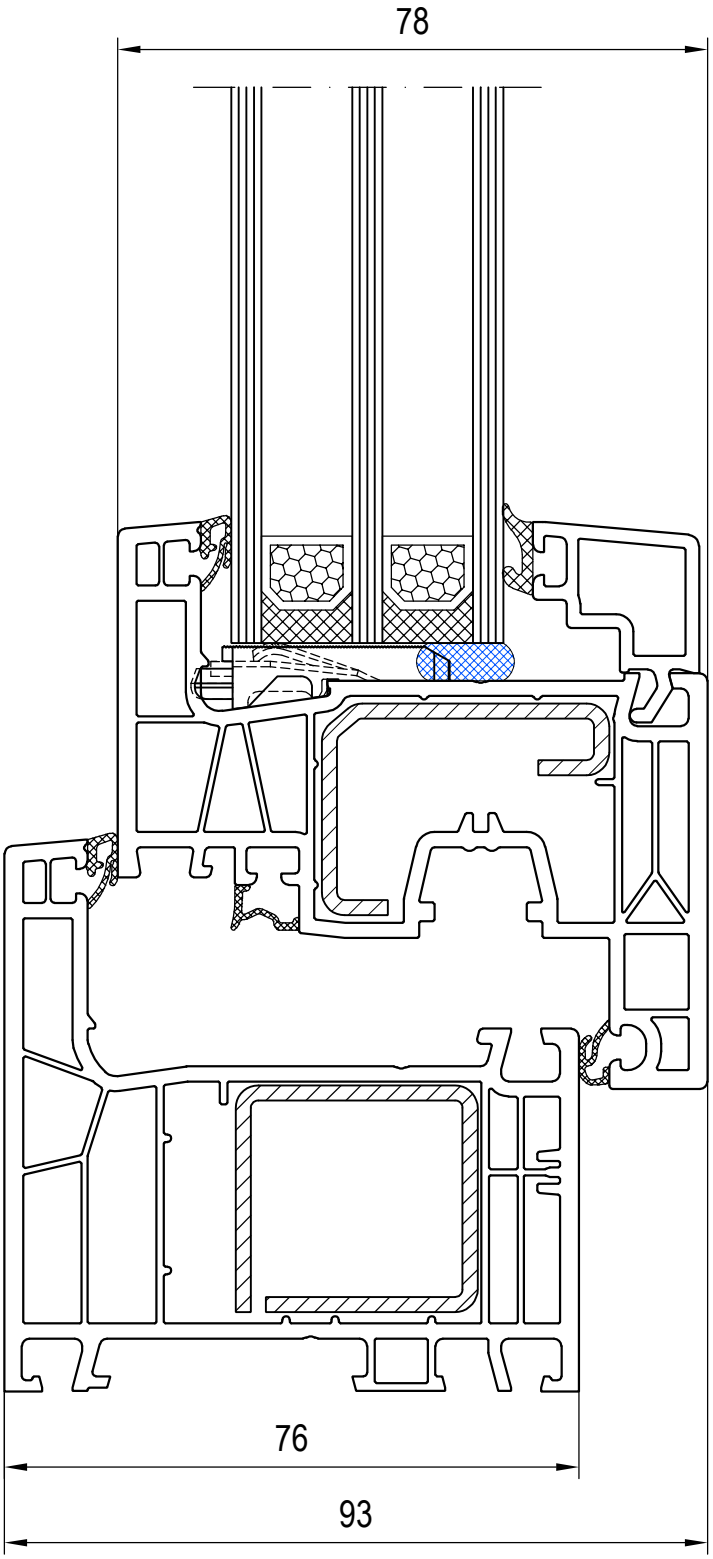


Example ~

Glazing beads
150834/150864

Sash
160x20

Frame
160x01

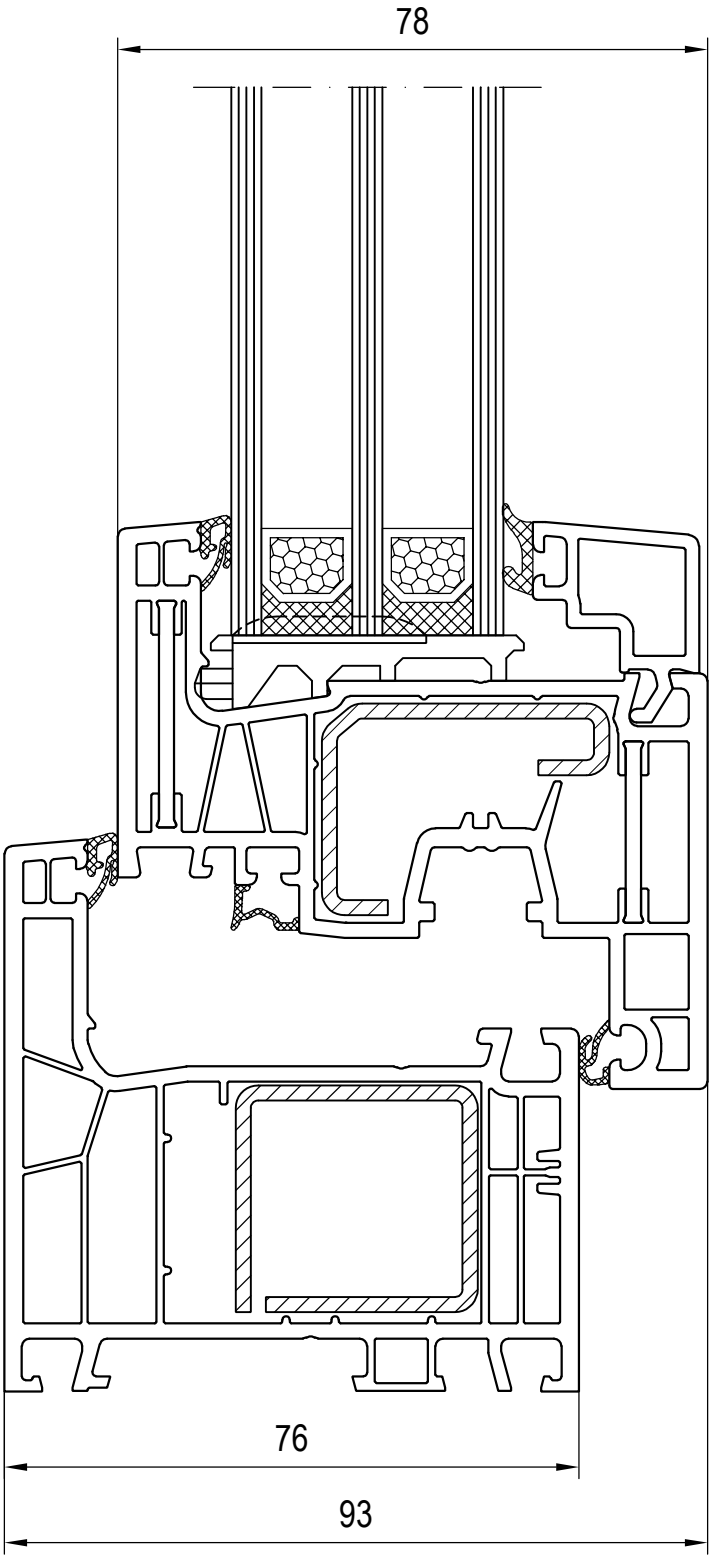


Example ~

Glazing beads
150834/150864

Sash
160x20

Frame
160x01

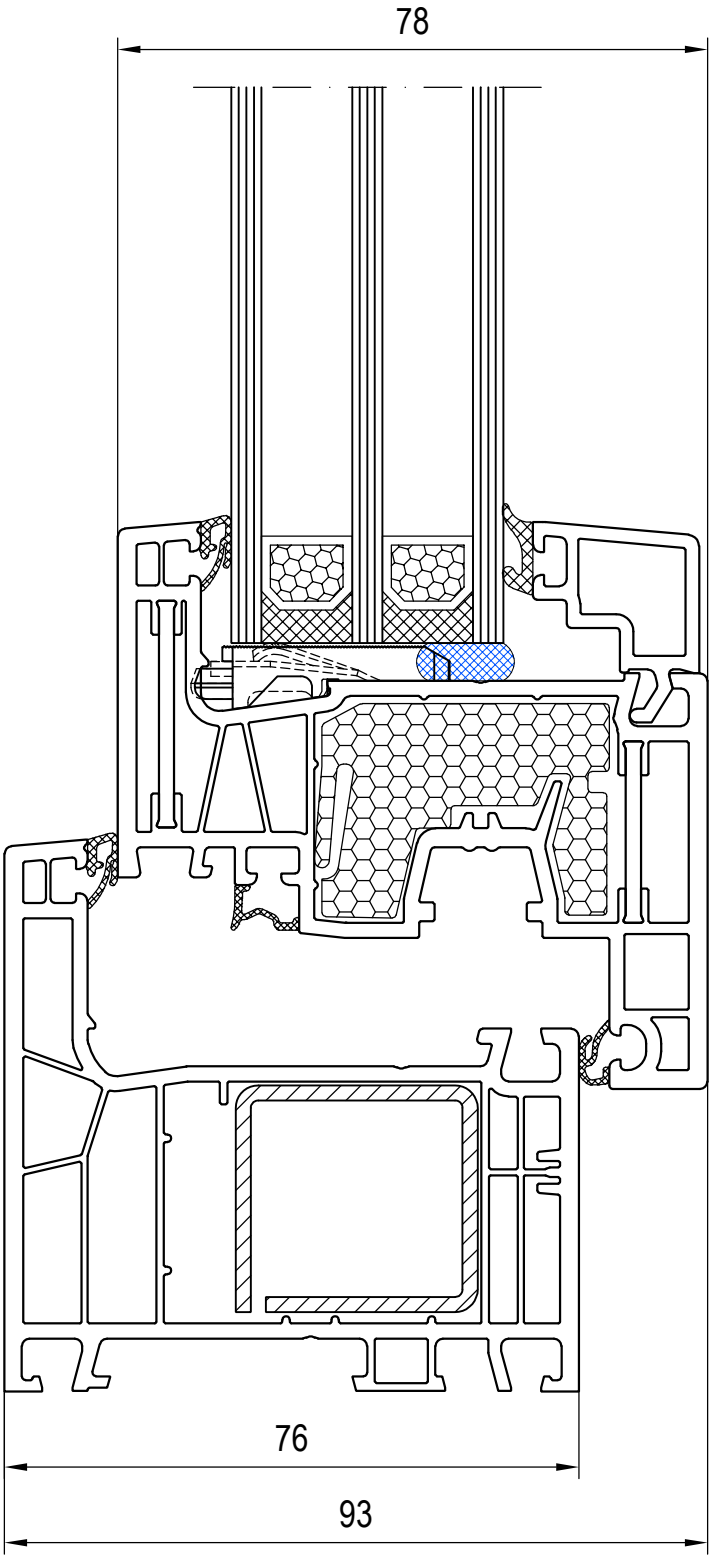


Example ~

Glazing beads
150834/150864

Sash
060x20

Frame
160x01

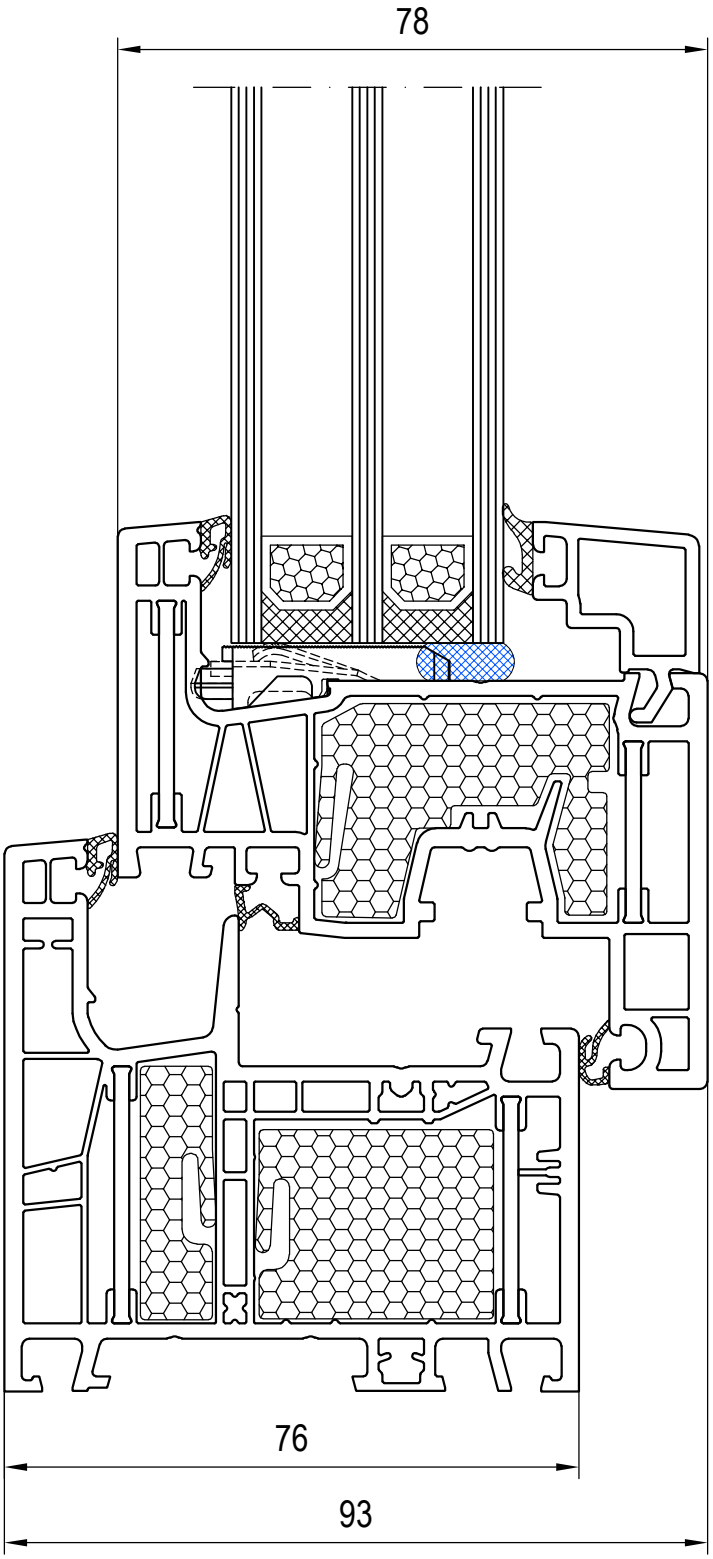


Example ~

Glazing beads
150834/150864

Sash
060x20

Frame
160x01

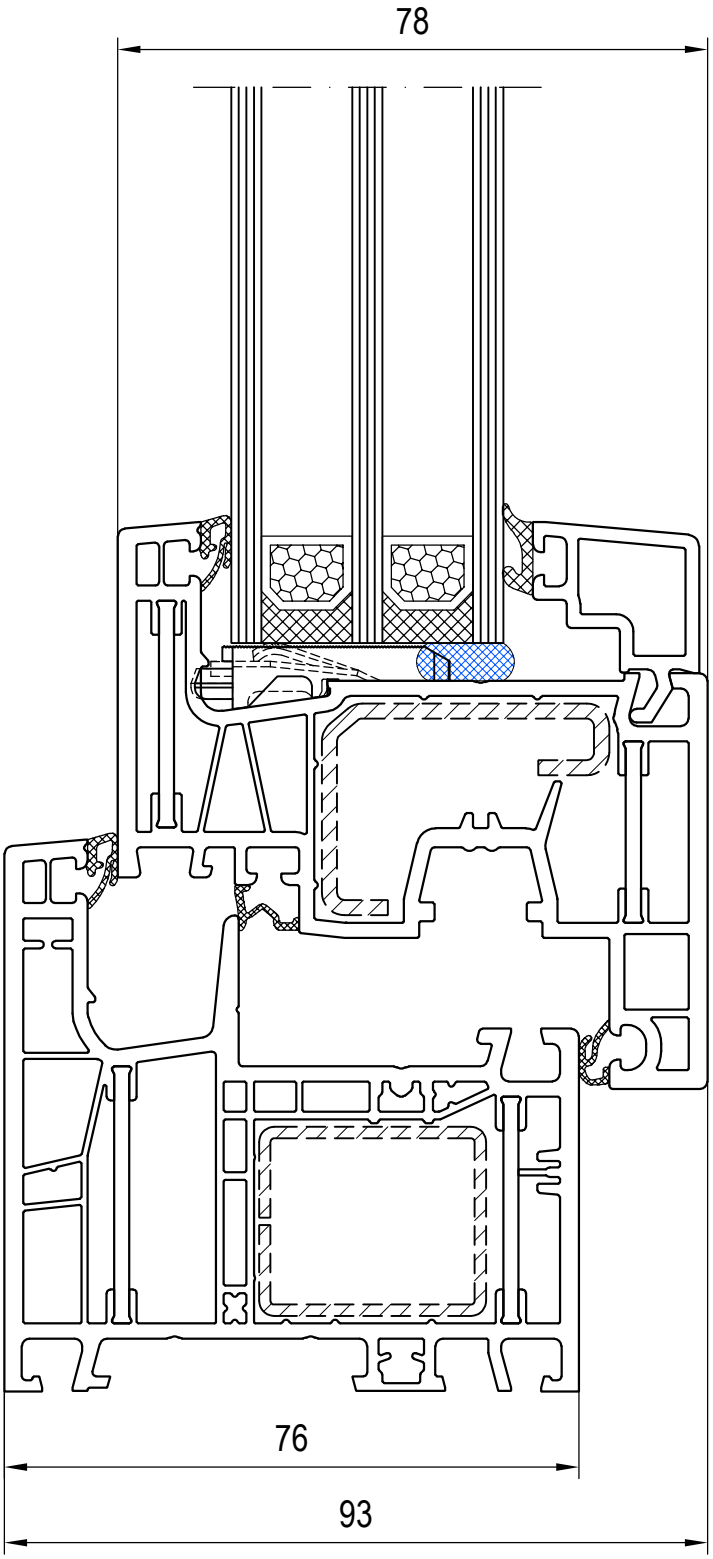


Example ~

Glazing beads
150834/150864

Sash
060x20

Frame
060x05

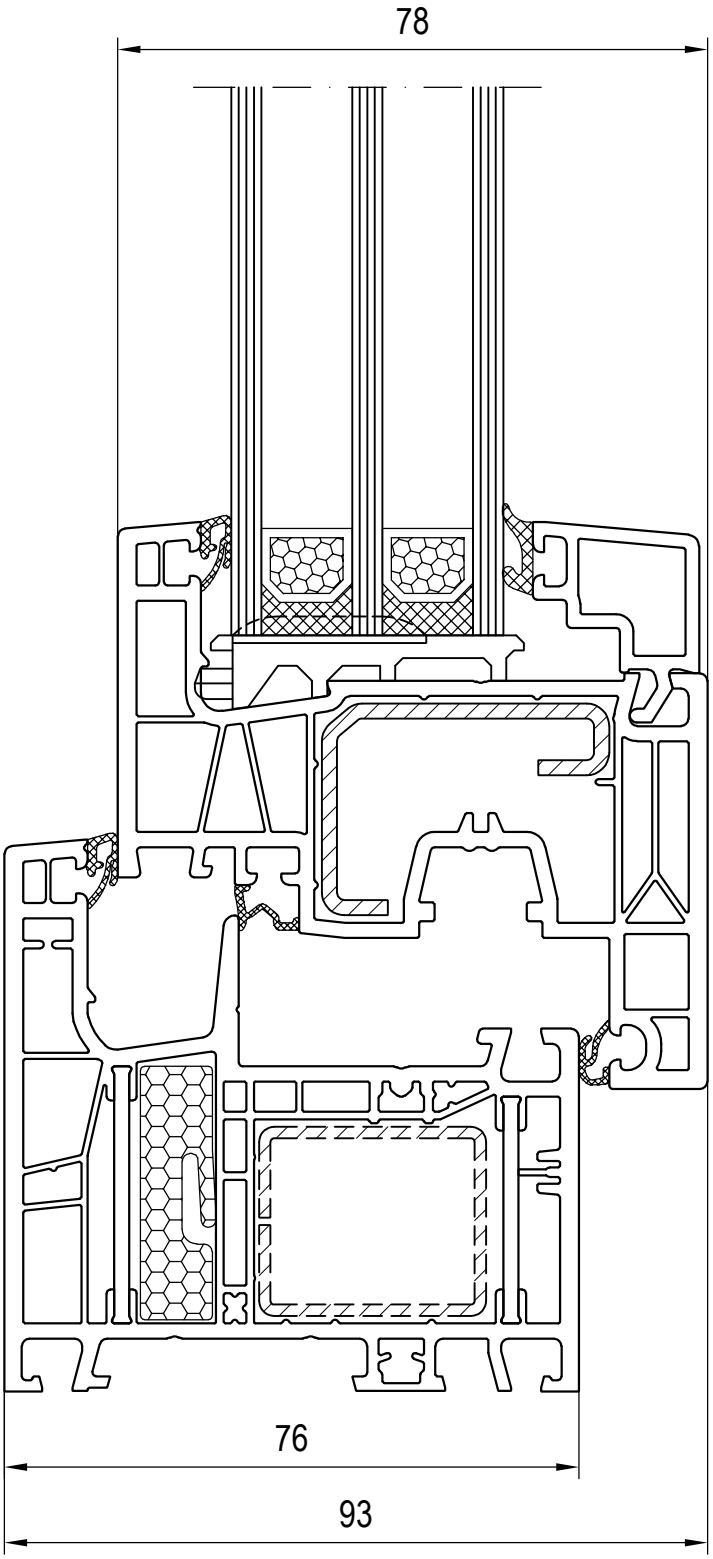


Example ~

Glazing beads
150834/150864

Sash
060x20

Frame
060x05

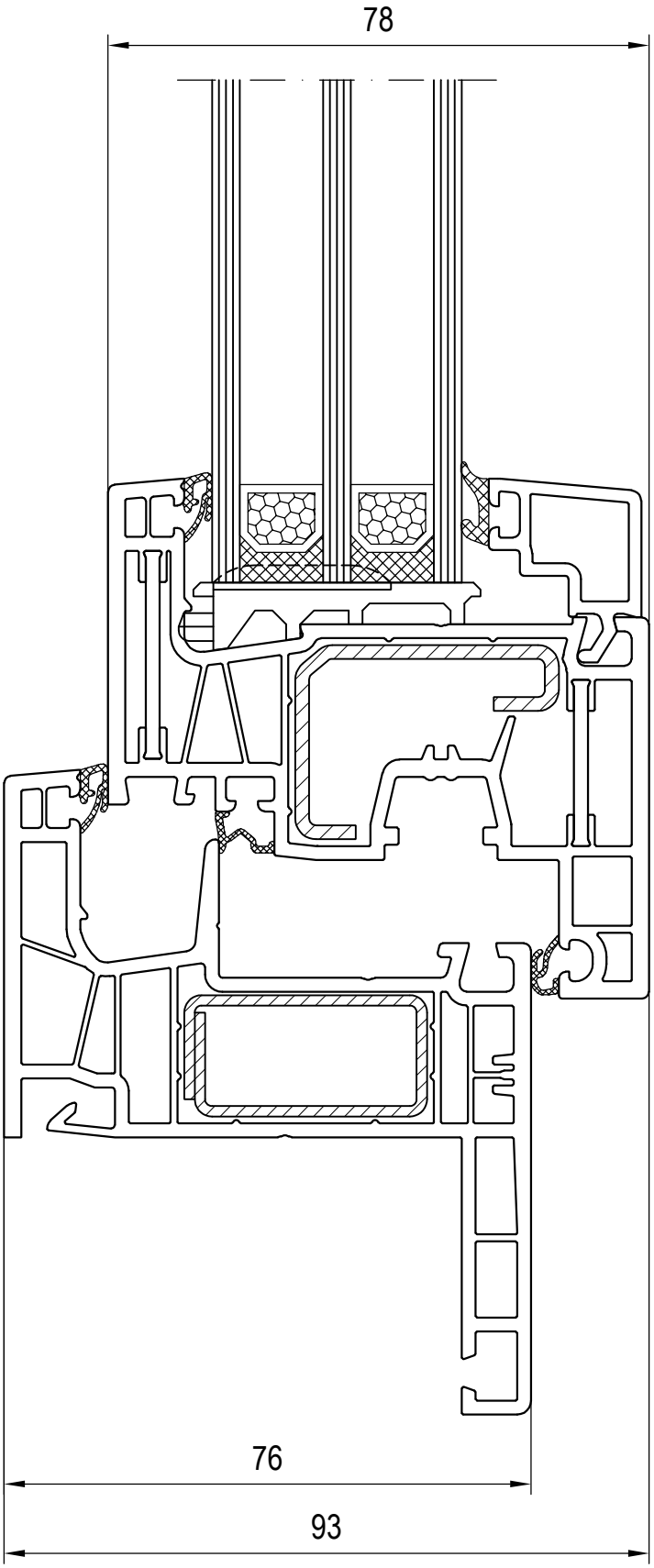


Example ~

Glazing beads
150834/150864

Sash
160x20

Frame
060x05

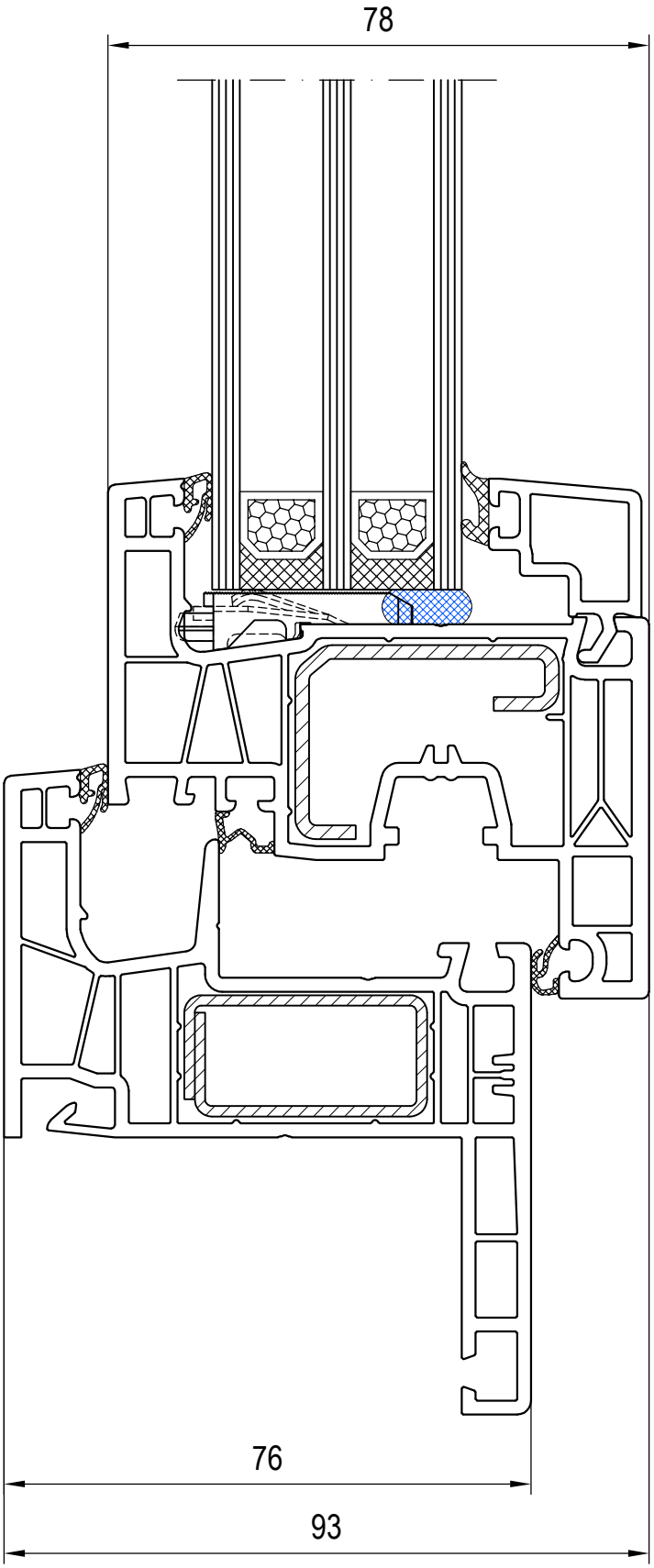


Example ~

Glazing beads
150834/150864

Sash
060x20

Frame
160x15

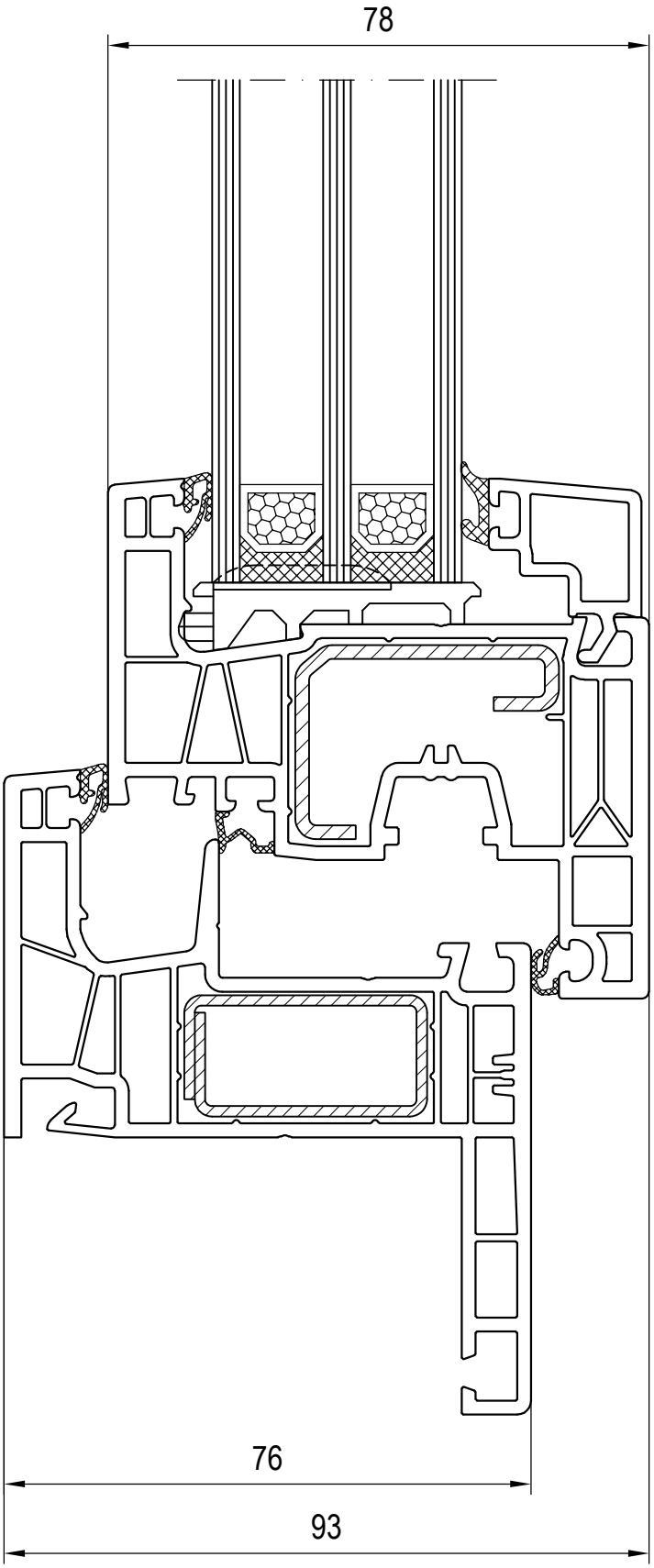


Example ~

Glazing beads
150834/150864

Sash
160x20

Frame
160x15

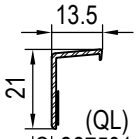


Example ~

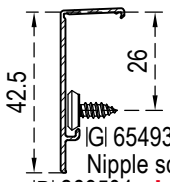
Glazing beads
150834/150864

Sash
160x20

Frame
160x15

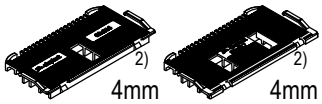


|Q| 267501 (QL)
Aluminium step protection

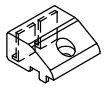


|G| 654930
Nipple screw / Clip
|P| 269504 **alu**skin Option
Aluminium shells

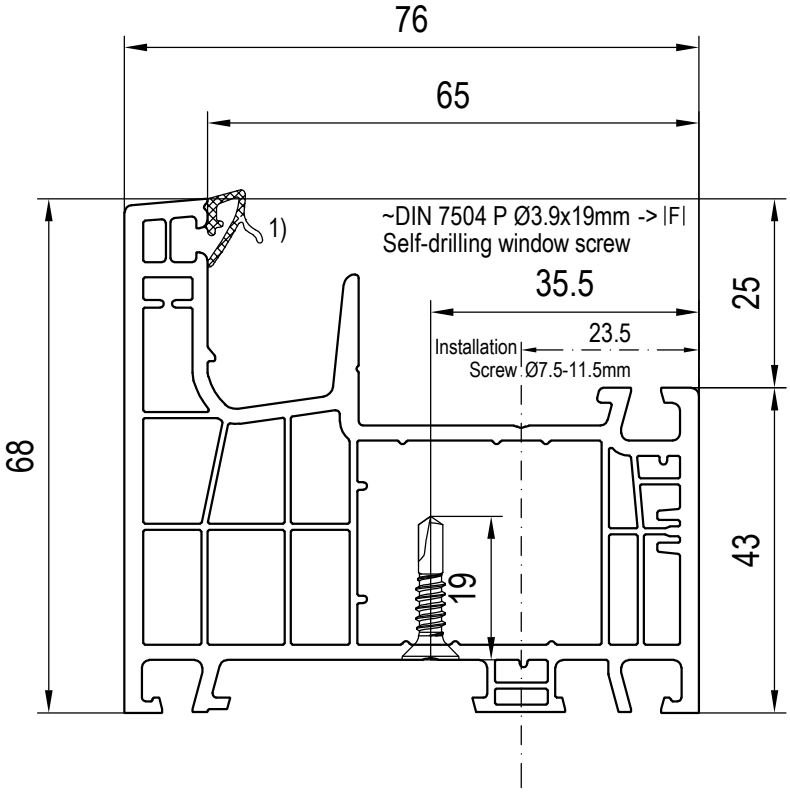
|A| ... refer to chapter 03 A
14-48mm 50-52mm
3 3

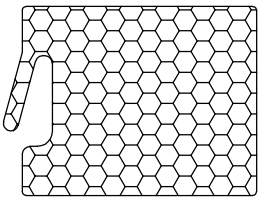


|A| 665016 gn |A| 662017 bl
Spacer

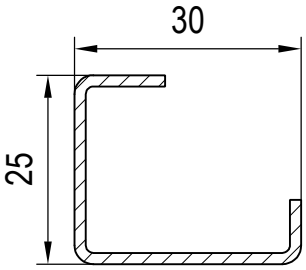


|I| 640441
Lifter

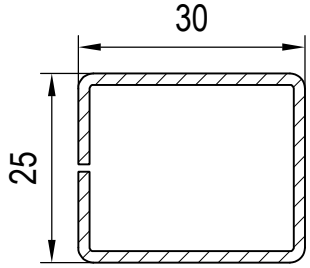




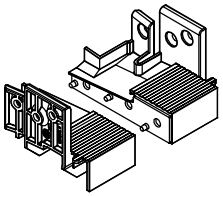
|Z| 660290 ~31x25x1000
Special accessories



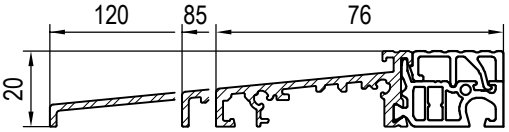
|F| 269004 s=1.5mm 1.1/0.9cm4
Reinforcements



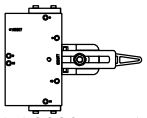
|F| 299944 s=1.5mm 1.9/1.5cm4
Reinforcements



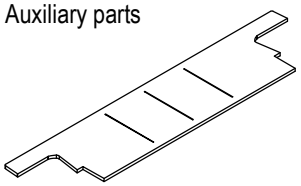
|V| 666371 -> |U| 267070
Threshold connector



|U| 287070 |U| 277070 |U| 267070
Aluminium thresholds |V| |X| |O|



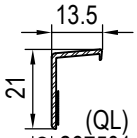
|O| 660977 -> |U|
Auxiliary parts



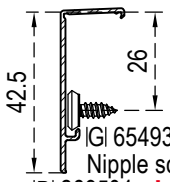
|X| 466071 gr
Gaskets

2) Spacer: In case of fixed glazing only, when central profile wall has been cut off!
1) Integrated gasket(s): see current price list

MD
frame - dormant - telaio - marco - Rahmen

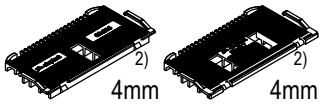


(QL)
|Q| 267501
Aluminium step protection

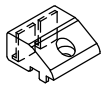


|G| 654930
Nipple screw / Clip
|P| 269504 **alu**skin Option
Aluminium shells

|A| ... refer to chapter 03 A
14-48mm 50-52mm
3 3

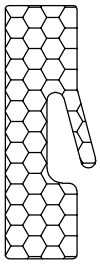


|A| 665016 gn |A| 662017 bl
Spacer

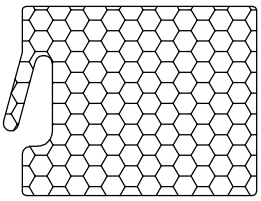


|I| 640441
Lifter

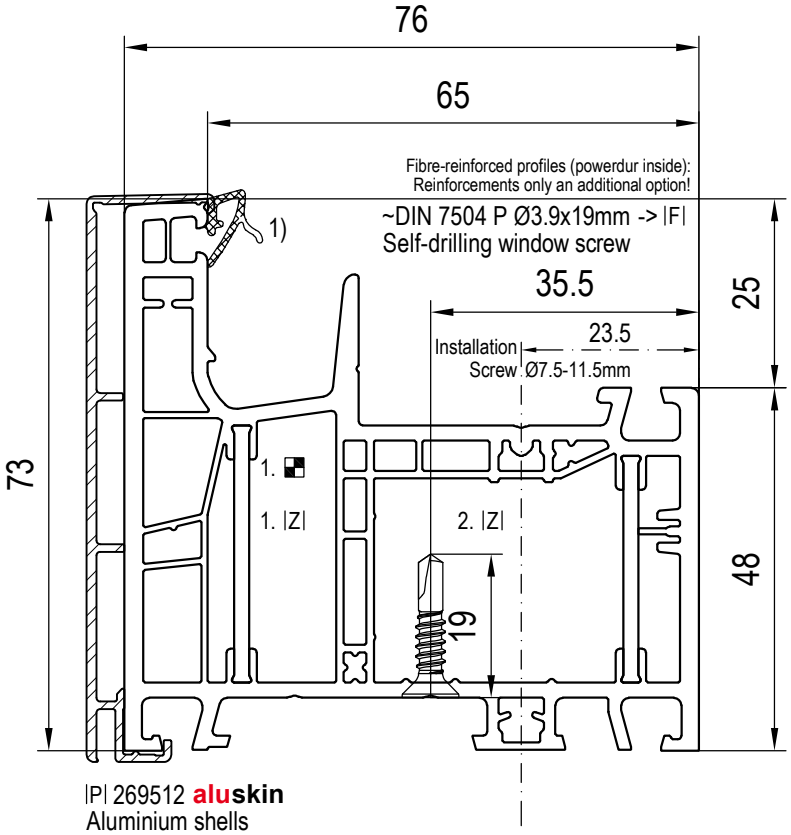
1. **foam inside**
= 060x050000020



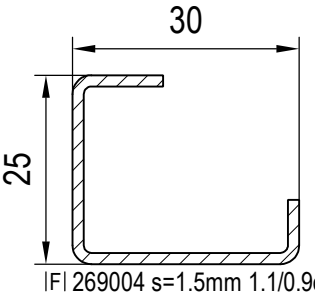
1. |Z| 660291 ~9.5x33.5x1000
Special accessories



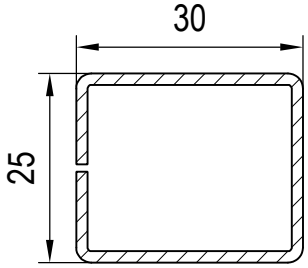
2. |Z| 660290 ~31x25x1000
Special accessories



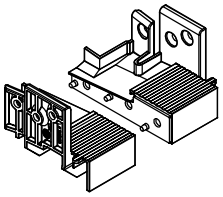
|P| 269512 **alu**skin
Aluminium shells



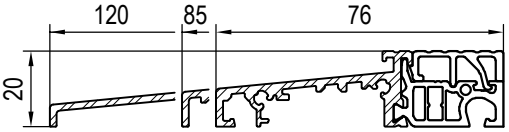
|F| 269004 s=1.5mm 1.1/0.9cm4
Reinforcements



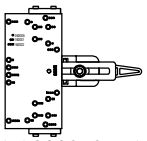
|F| 299944 s=1.5mm 1.9/1.5cm4
Reinforcements



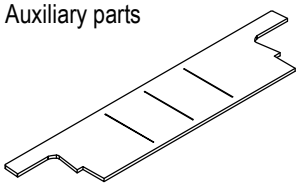
|V| 666371 -> |U| 267070
Threshold connector



|U| 287070 |U| 277070 |U| 267070
Aluminium thresholds |V| |X| |O|



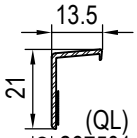
|O| 660970 -> |U|
Auxiliary parts



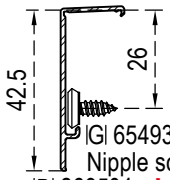
|X| 466071 gr
Gaskets

2) Spacer: In case of fixed glazing only, when central profile wall has been cut off!
1) Integrated gasket(s): see current price list

MD
frame - dormant - telaio - marco - Rahmen

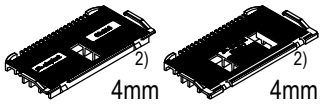


|Q| 267501 (QL)
Aluminium step protection

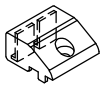


|G| 654930
Nipple screw / Clip
|P| 269504 **aluskin** Option
Aluminium shells

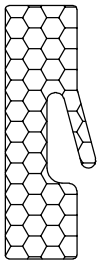
|A| ... refer to chapter 03 A
14-48mm 50-52mm
3 3



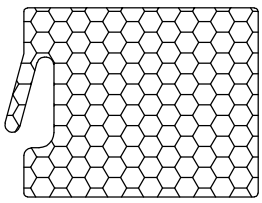
|A| 665016 gn |A| 662017 bl
Spacer



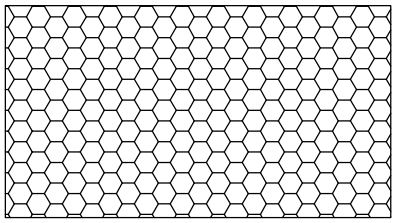
|I| 640441
Lifter



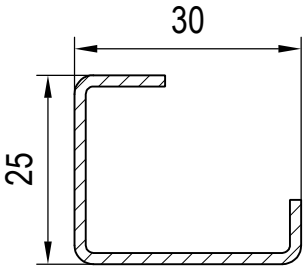
1. |Z| 660291 ~9.5x33.5x1000
Special accessories



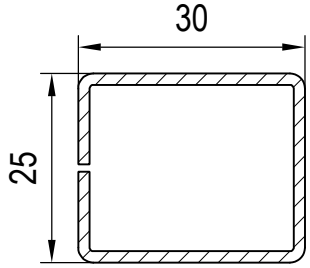
2. |Z| 660290 ~31x25x1000
Special accessories



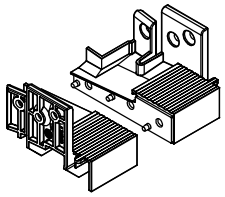
3. |Z| 660289 ~51x28x1000
Special accessories



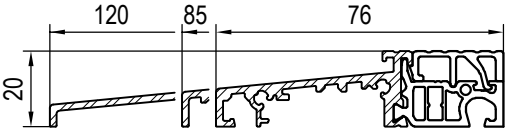
|F| 269004 s=1.5mm 1.1/0.9cm4
Reinforcements



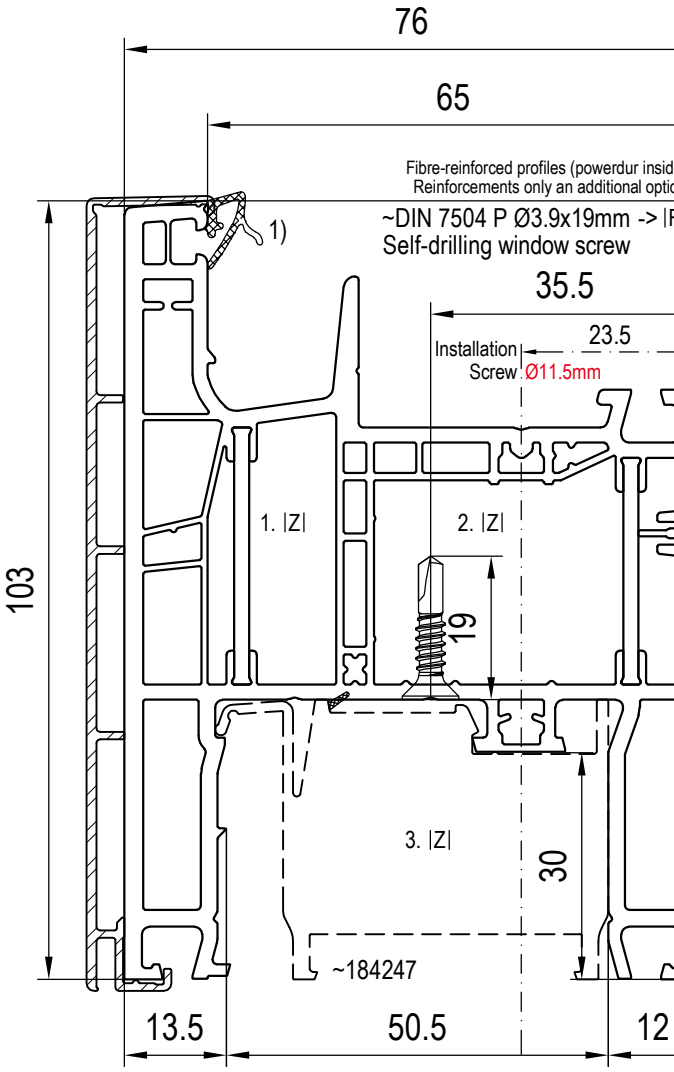
|F| 299944 s=1.5mm 1.9/1.5cm4
Reinforcements



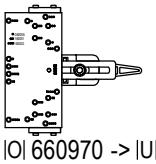
|V| 666371 -> |U| 267070
Threshold connector



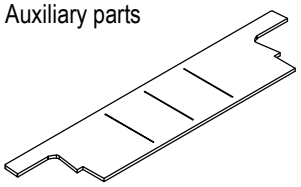
|U| 287070 |U| 277070 |U| 267070
Aluminium thresholds |V| |X| |O|



|P| 269514 **aluskin**
Aluminium shells



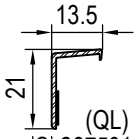
|O| 660970 -> |U|
Auxiliary parts



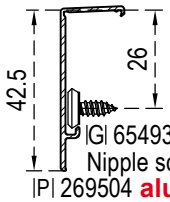
|X| 466071 gr
Gaskets

2) Spacer: In case of fixed glazing only, when central profile wall has been cut off!
1) Integrated gasket(s): see current price list

MD
frame - dormant - telaio - marco - Rahmen

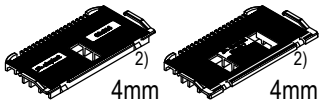


|Q| 267501
Aluminium step protection



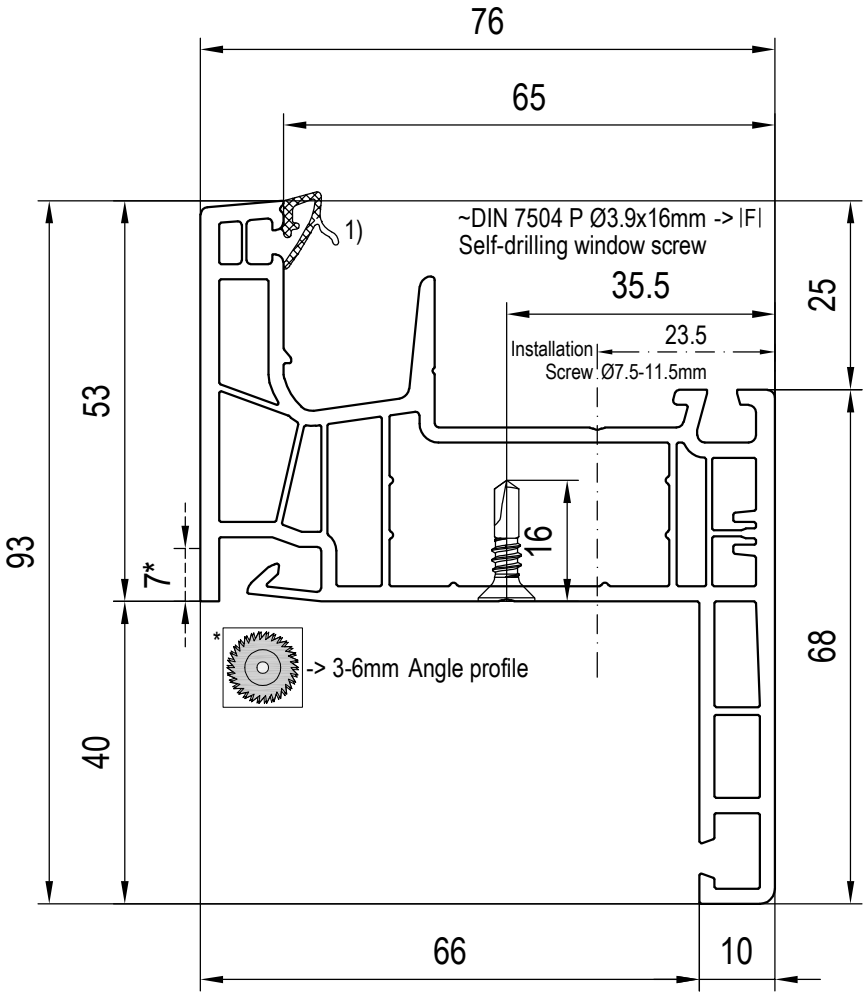
|G| 654930
Nipple screw / Clip
|P| 269504 **aluskin** Option
Aluminium shells

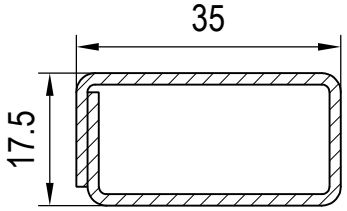
|A| ... refer to chapter 03 A
14-48mm 50-52mm
3 3



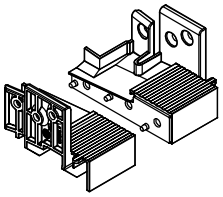
|A| 665016 gn |A| 662017 bl
Spacer

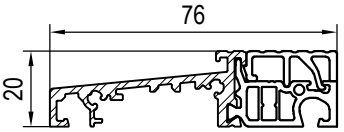

|I| 640441
Lifter





|F| 229037 s=1.5mm 2.5/0.7cm4
Reinforcements

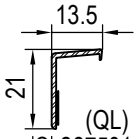

|V| 666371 -> |U| 267070
Threshold connector



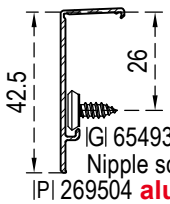
|U| 267070
Aluminium thresholds

2) Spacer: In case of fixed glazing only, when central profile wall has been cut off!
1) Integrated gasket(s): see current price list

MD
frame - dormant - telaio - marco - Rahmen



|Q| 267501 (QL)
Aluminium step protection

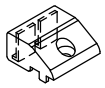


|G| 654930
Nipple screw / Clip
|P| 269504 **alu**skin Option
Aluminium shells

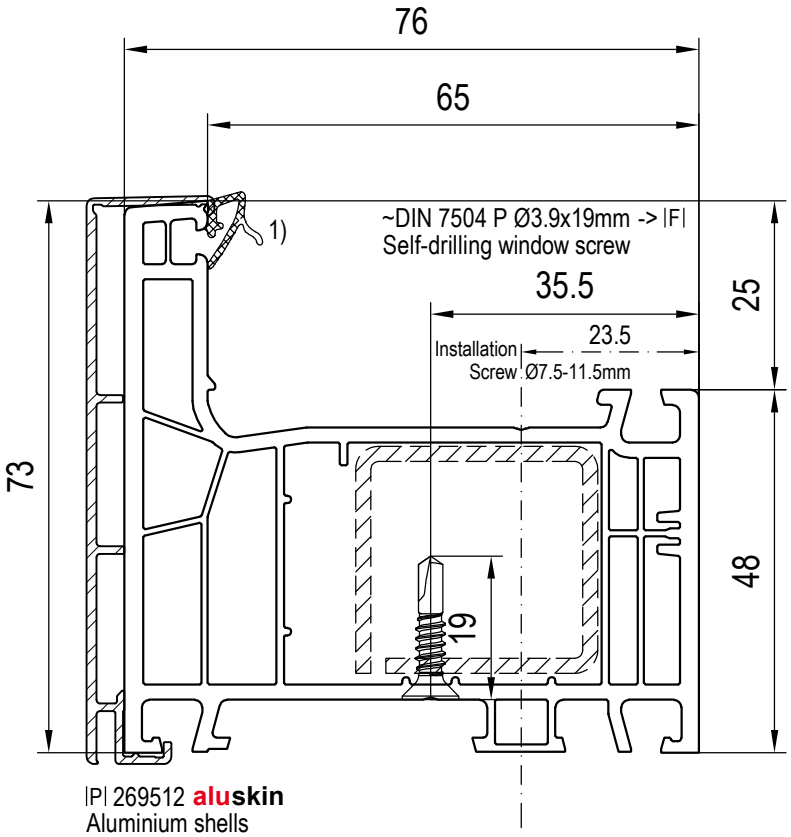
|A| ... refer to chapter 03 A
14-52mm
5



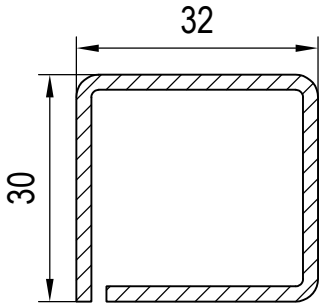
0mm
|A| 660301 red
Spacer



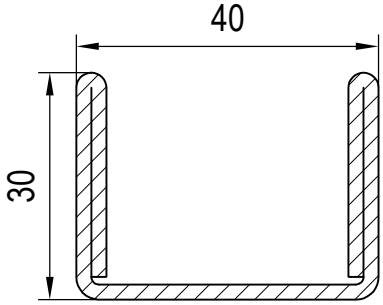
|I| 640441
Lifter



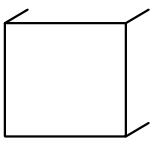
|P| 269512 **alu**skin
Aluminium shells



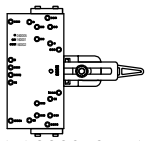
|F| 259105 s=1.25mm 2.2/1.9cm4
|F| 259106 s=2.0mm 3.2/2.9cm4
|F| 259107 s=1.5mm 2.5/2.3cm4
Reinforcements



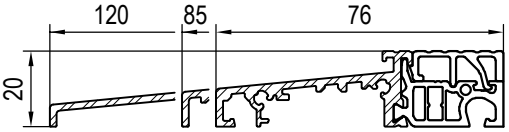
|F| 269066 s=2.0mm 8.0/2.6cm4
Reinforcements



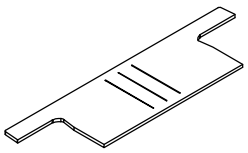
~32x30x1000 mm
|D| 640047 -> |U|
Connector



|O| 660970 -> |U|
Auxiliary parts



|U| 287070 |U| 277070 |U| 267070
Aluminium thresholds

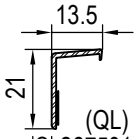


|X| 466070 gr
Gaskets

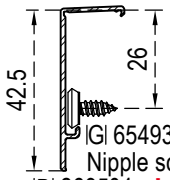
AD

1) Integrated gasket(s): see current price list

frame - dormant - telaio - marco - Rahmen



|Q| 267501
Aluminium step protection

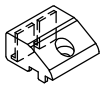


|G| 654930
Nipple screw / Clip
|P| 269504 **alu**skin Option
Aluminium shells

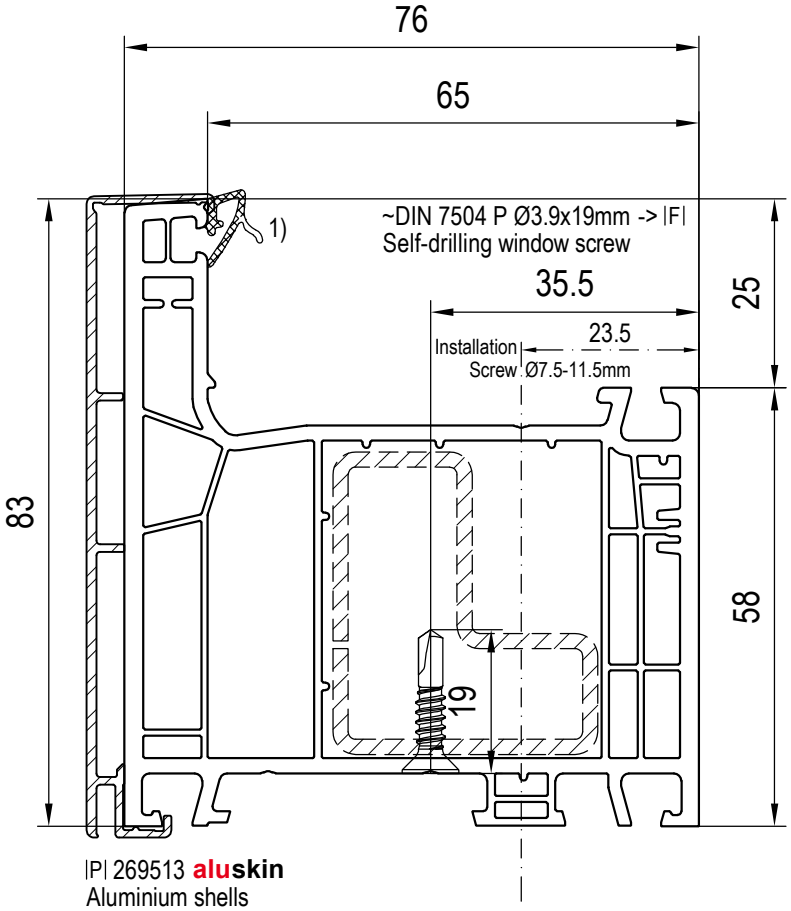
|A| ... refer to chapter 03 A
14-52mm
5



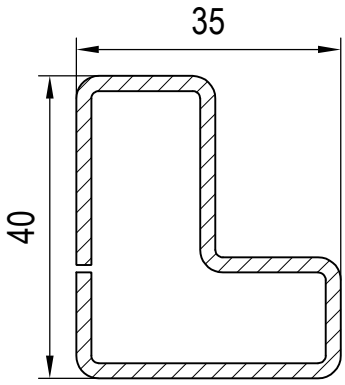
|A| 660301 red
Spacer



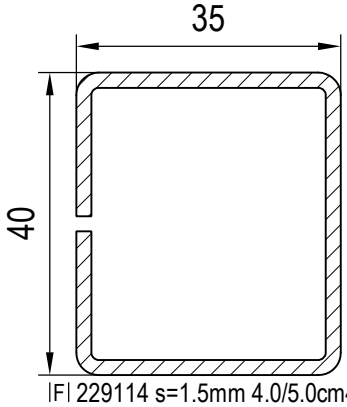
|I| 640441
Lifter



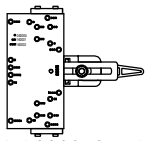
|P| 269513 **alu**skin
Aluminium shells



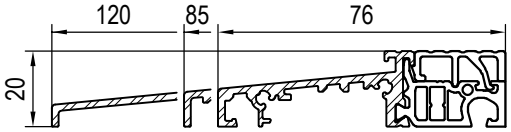
|F| 269003 s=2.0mm 3.6/5.0cm4
Reinforcements



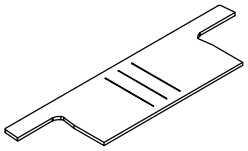
|F| 229114 s=1.5mm 4.0/5.0cm4
|F| 229115 s=2.0mm 5.0/6.4cm4
Reinforcements



|O| 660970 -> |U|
Auxiliary parts



|U| 287070 |U| 277070 |U| 267070
Aluminium thresholds



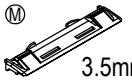
|X| 466070 gr
Gaskets

AD

1) Integrated gasket(s): see current price list

frame - dormant - telaio - marco - Rahmen

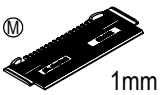
|J| Bonding of pane 24-54mm or |A| Spacer 16-54mm (5 6 1) 16-20mm (4) 16-35mm (4) 16-38mm (0) 16-44mm (4) 16-48mm (0) ... refer to chapter 03 A

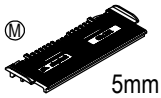

3.5mm
|J| 642262 bl
Bonding of pane

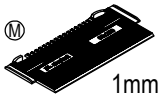

H [mm]
|J| 640033 red 3
|J| 640034 ye 4
|J| 640035 gn 5

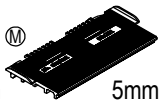

-1mm
|A| 650250 red
Spacer

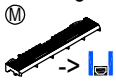

1mm
|A| 620250 red

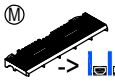

1mm
|A| 650252 red

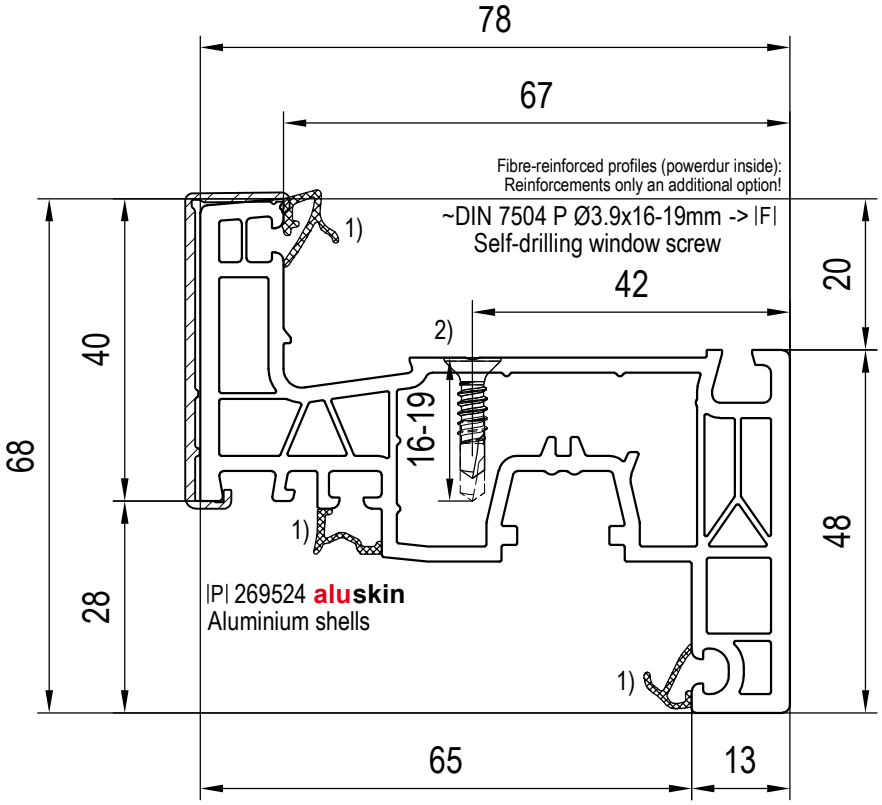

5mm
|A| 655251 gn

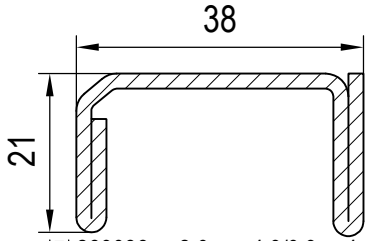

1mm
|A| 680250 red


5mm
|A| 685251 gn

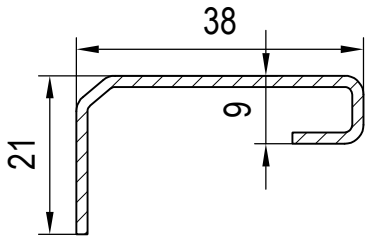

-> |J| kg
|J| 642261 bl >45
|J| 646265 gr <45


-> |J| kg
|J| 642263 bl >45
|J| 646266 gr <45

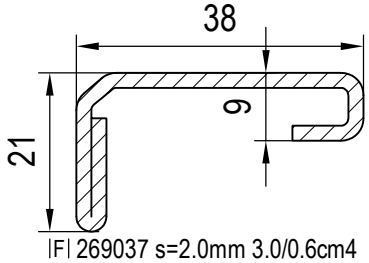




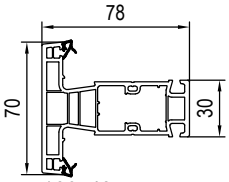
|F| 269038 s=2.0mm 4.9/0.9cm4
Reinforcements



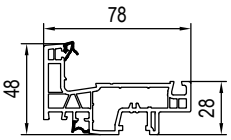
|F| 269036 s=1.5mm 2.0/0.3cm4
Reinforcements



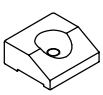
|F| 269037 s=2.0mm 3.0/0.6cm4
Reinforcements



-> 160x48
Transoms



-> 160x74
False mullion sash


|I| 620440
Lifter

2) Seal the screw heads in the bottom horizontal rebate
1) Integrated gasket(s): see current price list

Ⓜ sash - ouvrant - anta - hoja - Flügel

|J| Bonding of pane 24-54mm or |A| Spacer 16-54mm (5 6 1) 16-20mm (4) 16-35mm (4) ... refer to chapter 03 A 16-38mm (0) 16-44mm (4) 16-48mm (0)


3.5mm
|J| 642262 bl
Bonding of pane


H [mm]
|J| 640033 red 3
|J| 640034 ye 4
|J| 640035 gn 5


-1mm
|A| 650250 red
Spacer

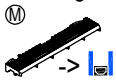

1mm
|A| 620250 red

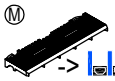

1mm
|A| 650252 red

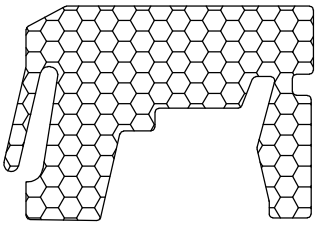

5mm
|A| 655251 gn

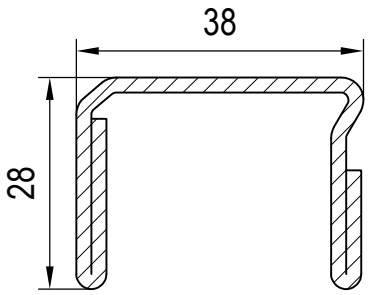

1mm
|A| 680250 red


5mm
|A| 685251 gn

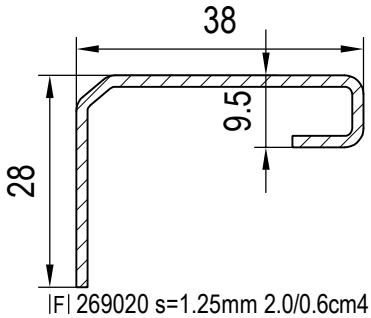

-> |J| kg
|J| 642261 bl >45
|J| 646265 gr <45


-> |J| kg
|J| 642263 bl >45
|J| 646266 gr <45

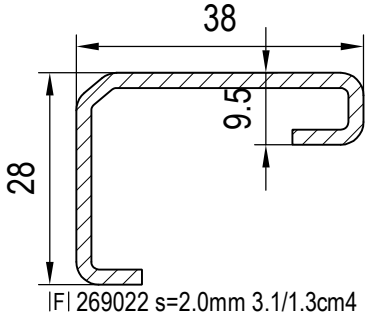

|Z| 660292 ~38x28.5x1000
Special accessories



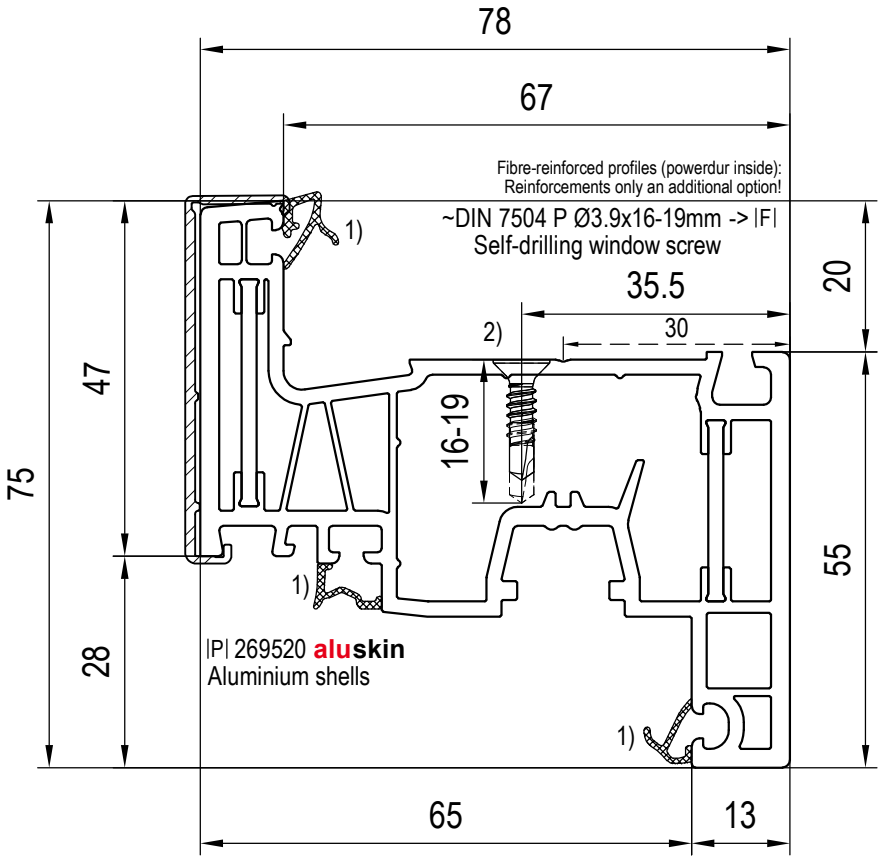
|F| 269024 s=2.0mm 5.8/2.0cm4
Reinforcements

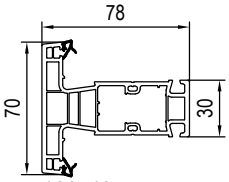


|F| 269020 s=1.25mm 2.0/0.6cm4
|F| 269021 s=1.5mm 2.3/0.7cm4
Reinforcements

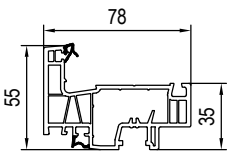


|F| 269022 s=2.0mm 3.1/1.3cm4
Reinforcements

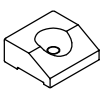




-> 160x48
Transoms



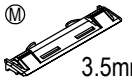
-> 160x70
False mullion sash


|I| 620440
Lifter

2) Seal the screw heads in the bottom horizontal rebate
1) Integrated gasket(s): see current price list

Ⓜ sash - ouvrant - anta - hoja - Flügel

|J| Bonding of pane 24-54mm or |A| Spacer 16-54mm (5 6 1) 16-20mm (4) 16-35mm (4) 16-38mm (0) 16-44mm (4) 16-48mm (0) ... refer to chapter 03 A


3.5mm
|J| 642262 bl
Bonding of pane


H [mm]
|J| 640033 red 3
|J| 640034 ye 4
|J| 640035 gn 5


-1mm
|A| 650250 red
Spacer

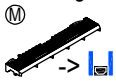

1mm
|A| 620250 red

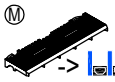

1mm
|A| 650252 red

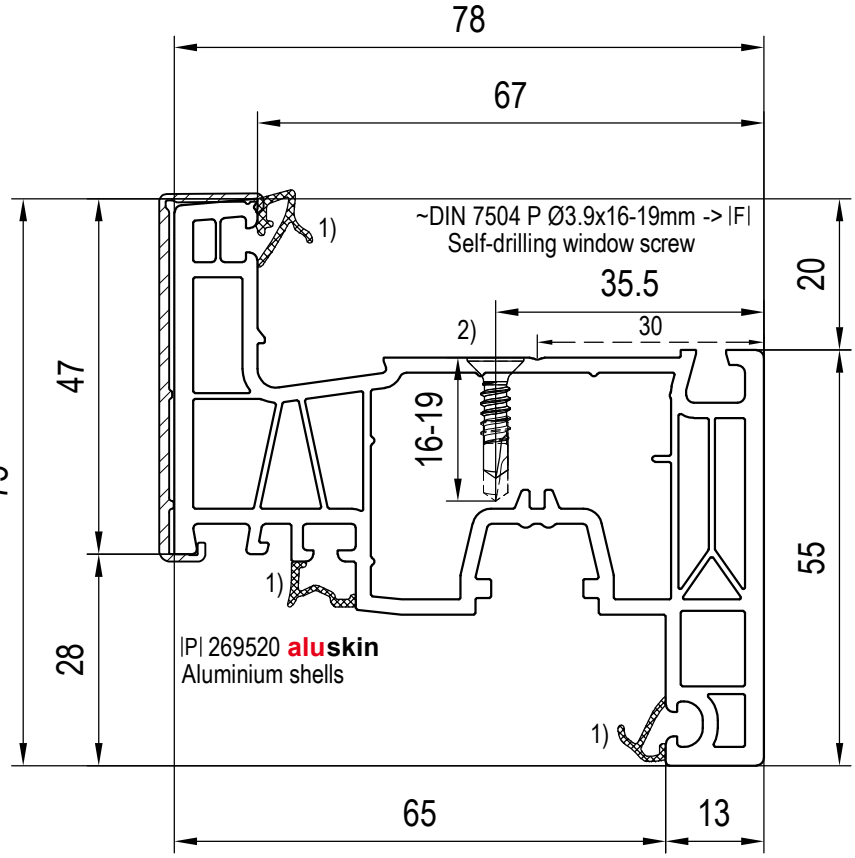

5mm
|A| 655251 gn

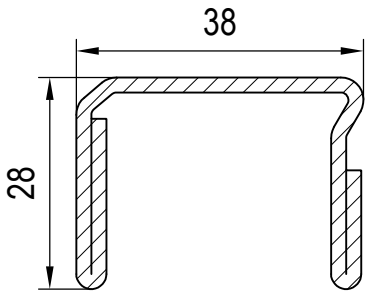

1mm
|A| 680250 red


5mm
|A| 685251 gn

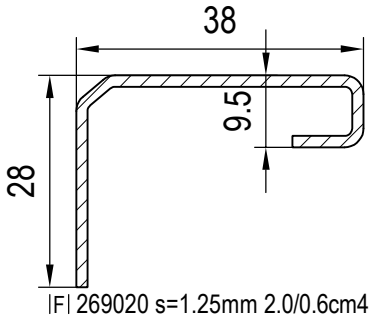

-> |J| kg
|J| 642261 bl >45
|J| 646265 gr <45


-> |J| kg
|J| 642263 bl >45
|J| 646266 gr <45

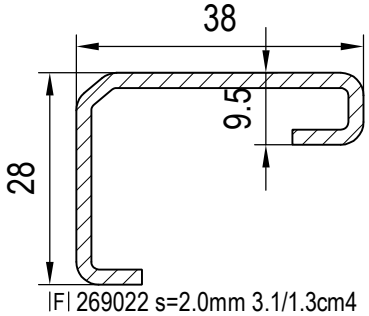




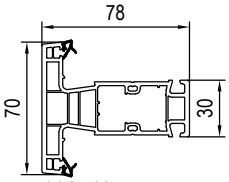
|F| 269024 s=2.0mm 5.8/2.0cm4
Reinforcements



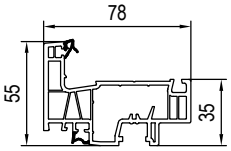
|F| 269020 s=1.25mm 2.0/0.6cm4
|F| 269021 s=1.5mm 2.3/0.7cm4
Reinforcements



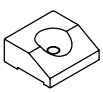
|F| 269022 s=2.0mm 3.1/1.3cm4
Reinforcements



-> 160x48
Transoms



-> 160x70
False mullion sash


|I| 620440
Lifter

2) Seal the screw heads in the bottom horizontal rebate
1) Integrated gasket(s): see current price list

Ⓜ sash - ouvrant - anta - hoja - Flügel

|J| ... refer to chapter 03 A
30-68mm

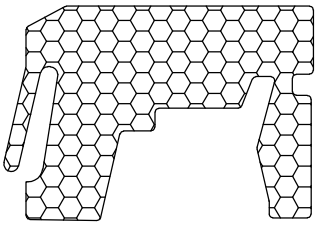
Ⓜ 3.5mm
|J| 642262 bl
Bonding of pane

H [mm]
|J| 640033 red 3
|J| 640034 ye 4
|J| 640035 gn 5

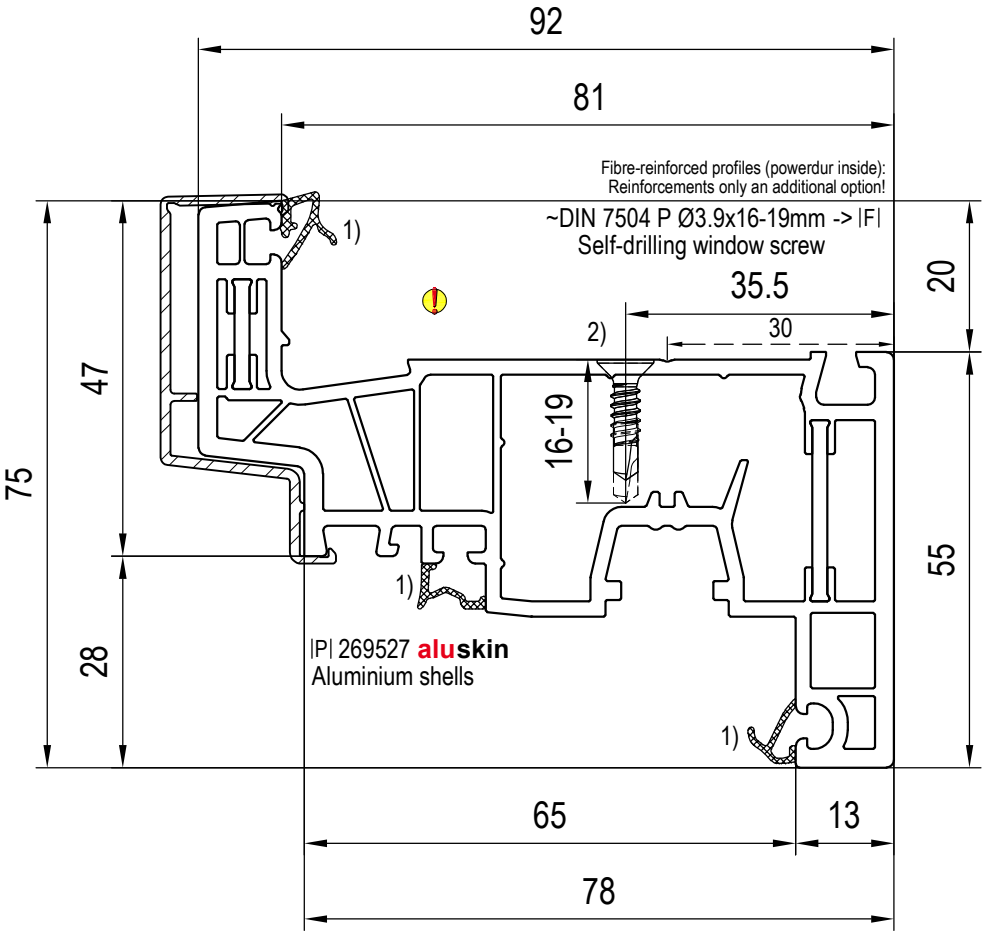
Ⓜ -> kg
|J| 642261 bl >45
|J| 646265 gr <45

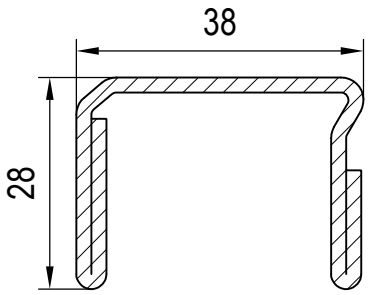
Ⓜ -> kg
|J| 642263 bl >45
|J| 646266 gr <45

Bonding of pane

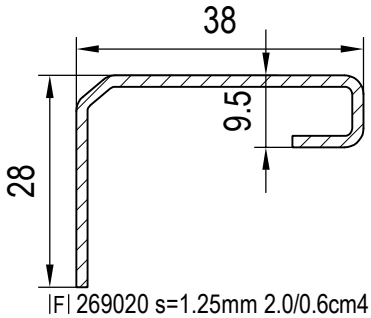


|Z| 660292 ~38x28.5x1000
Special accessories

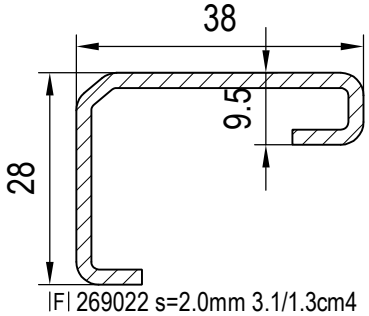




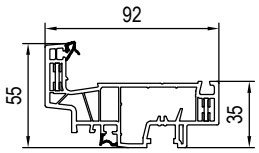
|F| 269024 s=2.0mm 5.8/2.0cm4
Reinforcements



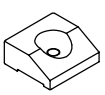
|F| 269020 s=1.25mm 2.0/0.6cm4
|F| 269021 s=1.5mm 2.3/0.7cm4
Reinforcements



|F| 269022 s=2.0mm 3.1/1.3cm4
Reinforcements



-> 060x77
False mullion sash

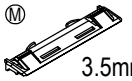


|I| 620440
Lifter

2) Seal the screw heads in the bottom horizontal rebate
1) Integrated gasket(s): see current price list

MD Ⓜ
sash - ouvrant - anta - hoja - Flügel

|J| Bonding of pane 24-54mm or |A| Spacer 16-54mm (5, 6, 1) 16-20mm (4) 16-35mm (4) 16-38mm (0) 16-44mm (4) 16-48mm (0) ... refer to chapter 03 A



3.5mm
|J| 642262 bl
Bonding of pane



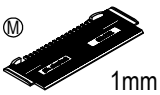
H [mm]
|J| 640033 red 3
|J| 640034 ye 4
|J| 640035 gn 5



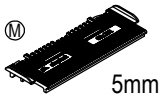
-1mm
|A| 650250 red
Spacer



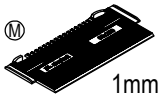
1mm
|A| 620250 red



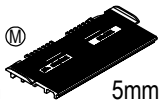
1mm
|A| 650252 red



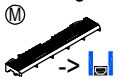
5mm
|A| 655251 gn



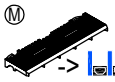
1mm
|A| 680250 red



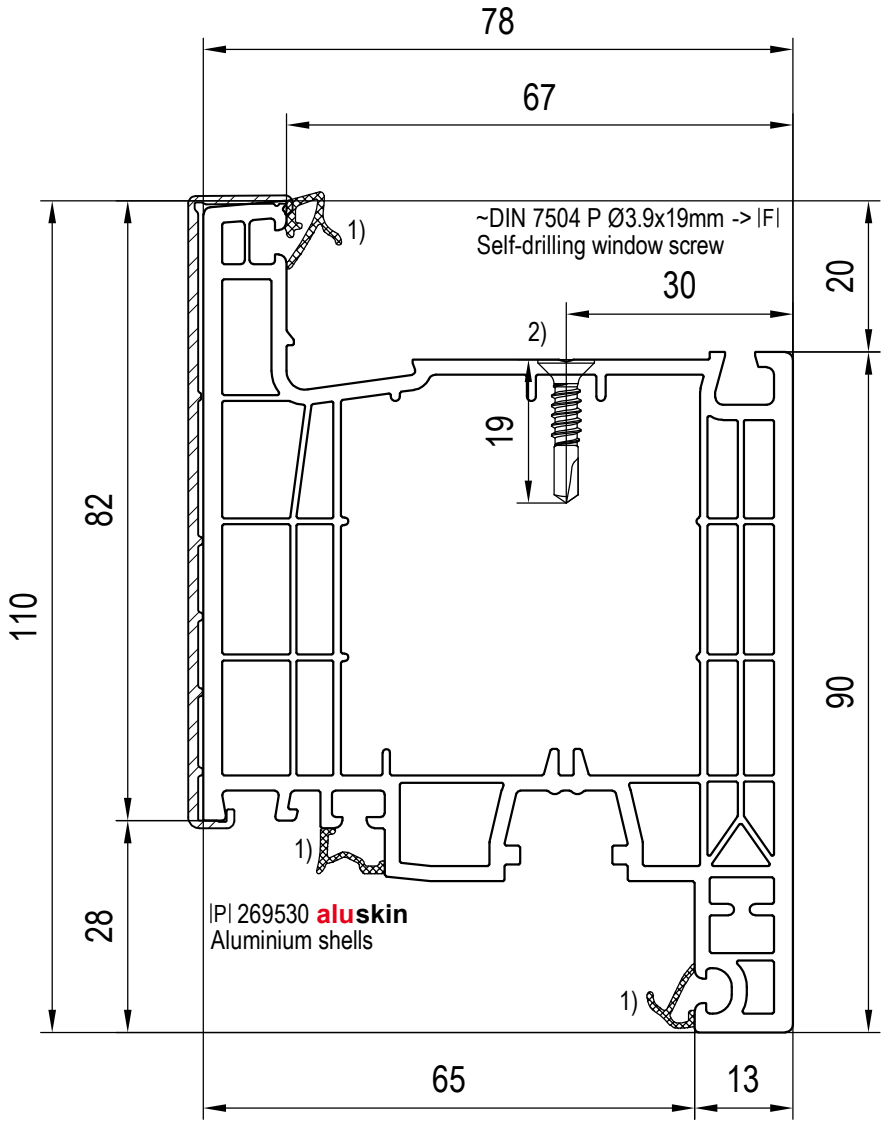
5mm
|A| 685251 gn

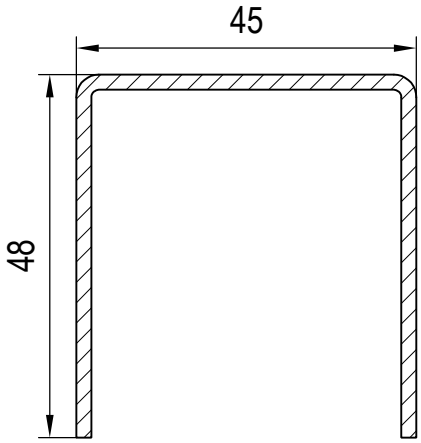


-> |J| kg
|J| 642261 bl >45
|J| 646265 gr <45

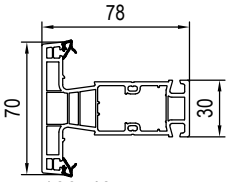


-> |J| kg
|J| 642263 bl >45
|J| 646266 gr <45

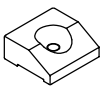




|F| 269030 s=2.0mm 9.9/6.6cm4
Reinforcements



-> 160x48
Transoms



|I| 620440
Lifter

2) Seal the screw heads in the bottom horizontal rebate
1) Integrated gasket(s): see current price list

Ⓜ sash - ouvrant - anta - hoja - Flügel

|J| Bonding of pane 24-54mm or |A| Spacer 16-54mm (5, 6, 1)

... refer to chapter 03 A

16-20mm	16-35mm	16-38mm	16-44mm	16-48mm
(4)	(4)	(0)	(4)	(0)

H [mm]

|J| 640033 red 3
|J| 640034 ye 4
|J| 640035 gn 5

Spacer

-1mm	1mm	1mm	5mm	1mm	5mm
|A| 650250 red	|A| 620250 red	|A| 650252 red	|A| 655251 gn	|A| 680250 red	|A| 685251 gn

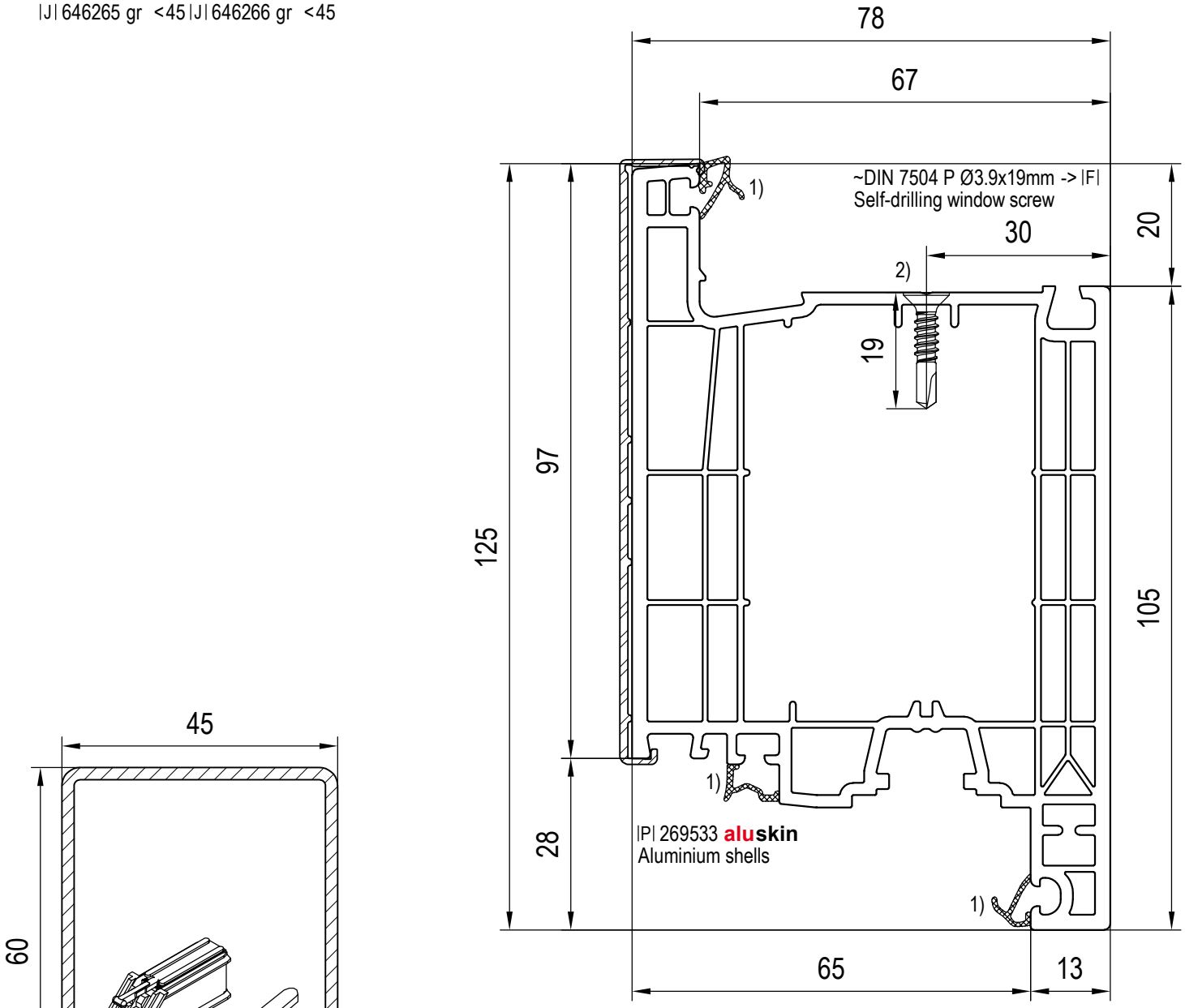
Ⓜ 3.5mm |J| 642262 bl Bonding of pane

Ⓜ -> 24-54mm kg

|J| 642261 bl >45
|J| 646265 gr <45

Ⓜ -> 16-54mm kg

|J| 642263 bl >45
|J| 646266 gr <45



|F| 269033 s=2.0mm 13.0/20.4cm4
|F| 269034 = 3x punched-out
Reinforcements

-> 160x48
Transoms

2) Seal the screw heads in the bottom horizontal rebate
1) Integrated gasket(s): see current price list

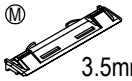
Ⓜ sash - ouvrant - anta - hoja - Flügel

|J| Bonding of pane
24-54mm

or

|A| Spacer
16-54mm (5) (6) (1)
16-20mm (4)
16-35mm (4)
16-38mm (0)
16-44mm (4)
16-48mm (0)

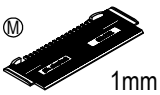
... refer to chapter 03 A

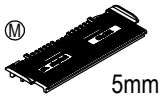

3.5mm
|J| 642262 bl
Bonding of pane

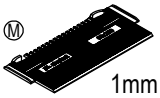

H [mm]
|J| 640033 red 3
|J| 640034 ye 4
|J| 640035 gn 5

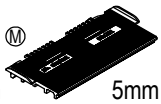

-1mm
|A| 650250 red
Spacer

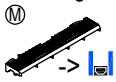

1mm
|A| 620250 red

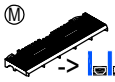

1mm
|A| 650252 red

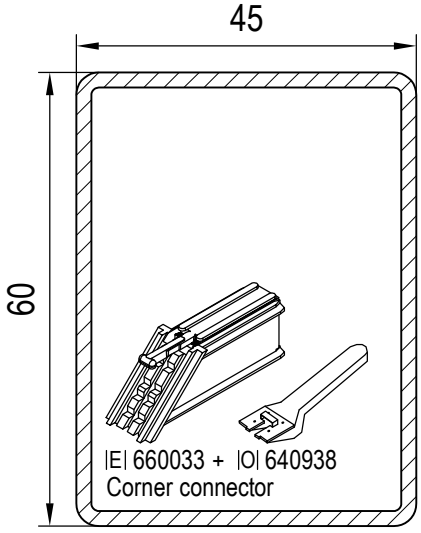

5mm
|A| 655251 gn


1mm
|A| 680250 red

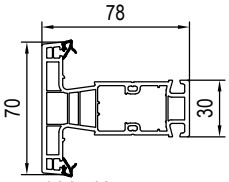

5mm
|A| 685251 gn


-> |J| kg
|J| 642261 bl >45
|J| 646265 gr <45

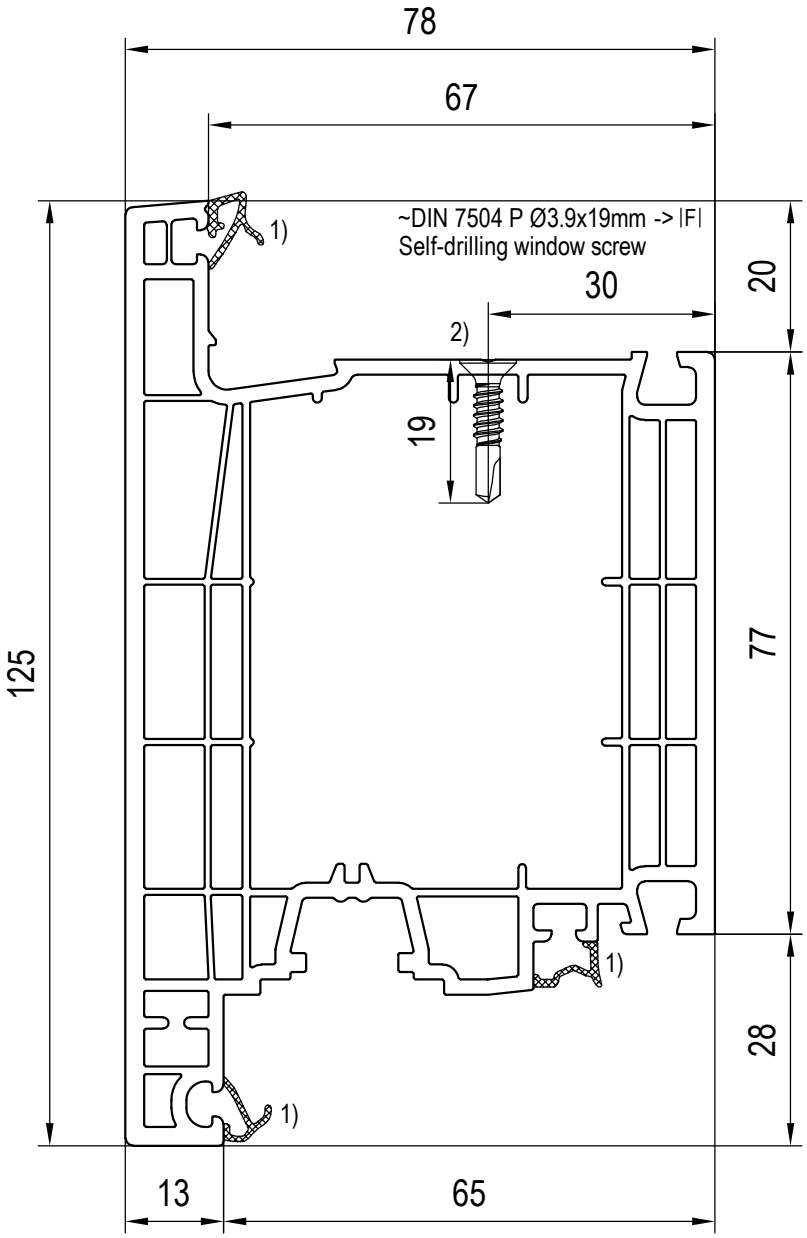

-> |J| kg
|J| 642263 bl >45
|J| 646266 gr <45



|F| 269033 s=2.0mm 13.0/20.4cm4
|F| 269034 = 3x punched-out
Reinforcements



-> 160x48
Transoms



2) Seal the screw heads in the bottom horizontal rebate
1) Integrated gasket(s): see current price list

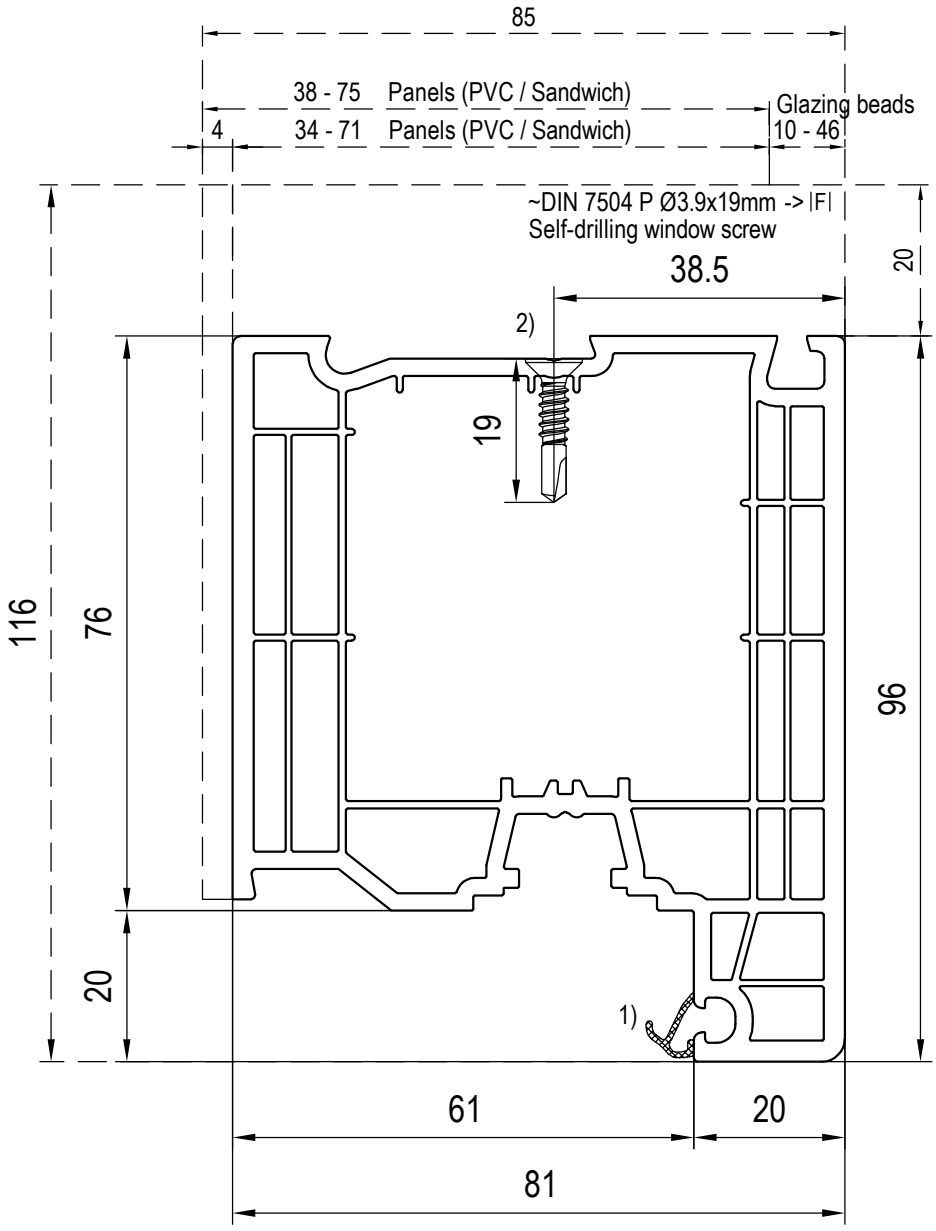
Ⓜ sash - ouvrant - anta - hoja - Flügel

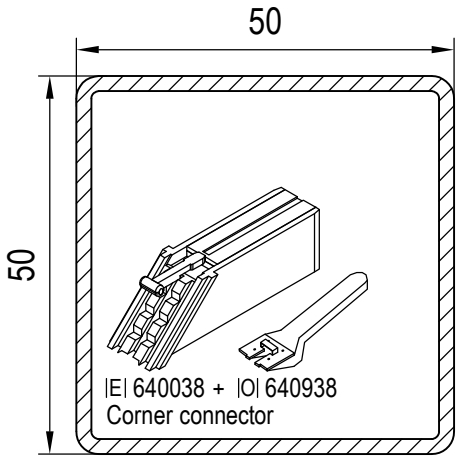
Main Profiles: Sashes
open-out, Sash re. 125mm: 160x35

|A| ... refer to chapter 03 A
34-71mm 38-75mm
5 or 5



0mm
|A| 620301 red
Spacer



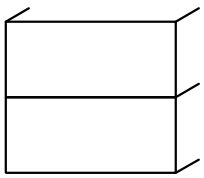


|F| 229135 s=2.0mm 14.4/14.4cm4
|F| 229137 = 3x punched-out
Reinforcements

2) Seal the screw heads in the bottom horizontal rebate
1) Integrated gasket(s): see current price list

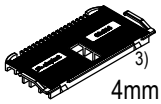
AD
sash - ouvrant - anta - hoja - Flügel

Main Profiles: Sashes
leaf-enclosing, Sash re. 96mm: 170x39

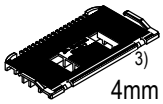


~45x20x1000 mm
2x |D| 640046

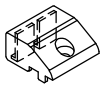
|A| ... refer to chapter 03 A
14-48mm 50-52mm
3 3



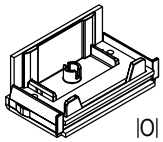
4mm
|A| 665016 gn
Spacer



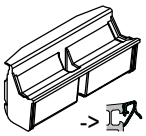
4mm
|A| 662017 bl



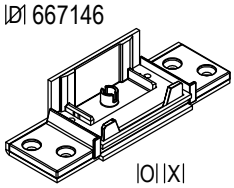
| I | 640441
Lifter



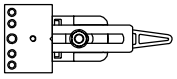
|O| |X|
|Ø| 667146



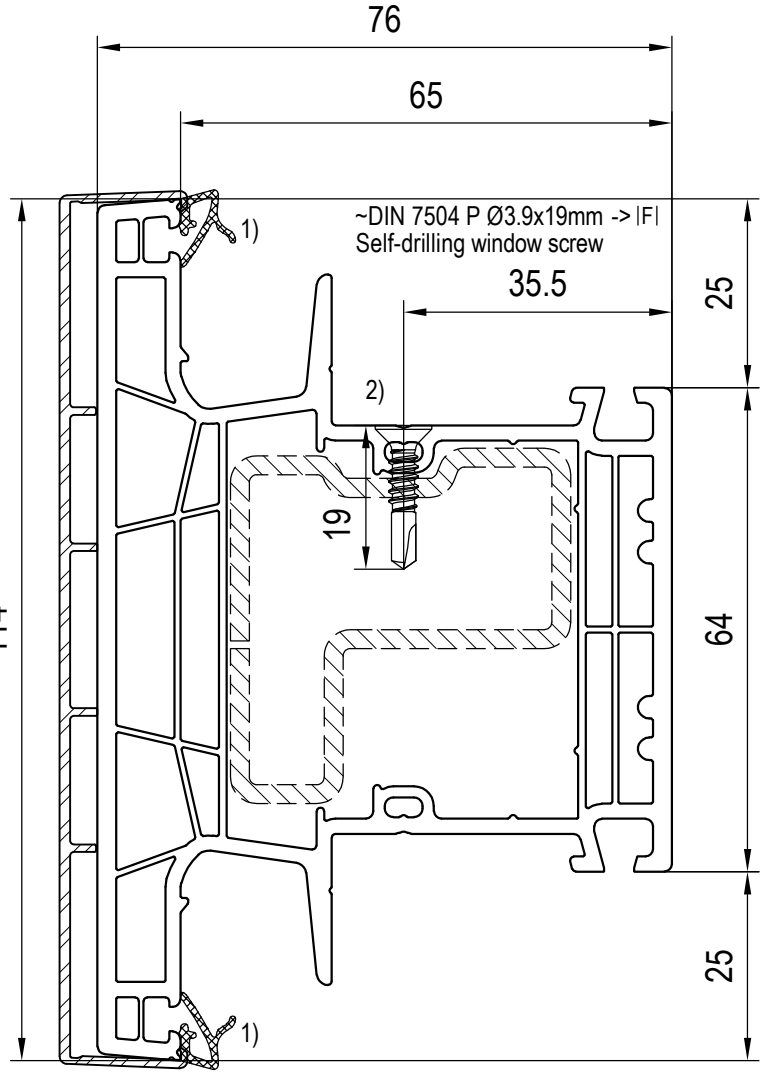
|X| 669034 bl
|X| 660034 wh
Gaskets



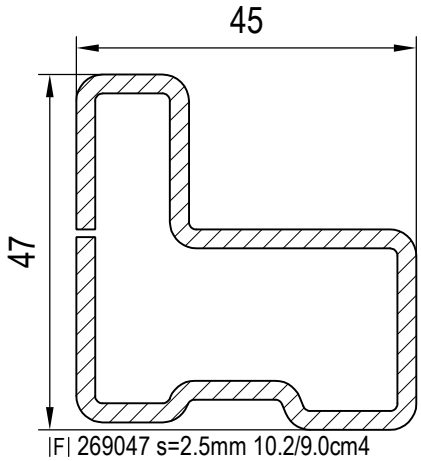
|O| |X|
|Ø| 667046
|D| Connector
|Ø| Connector without knobs



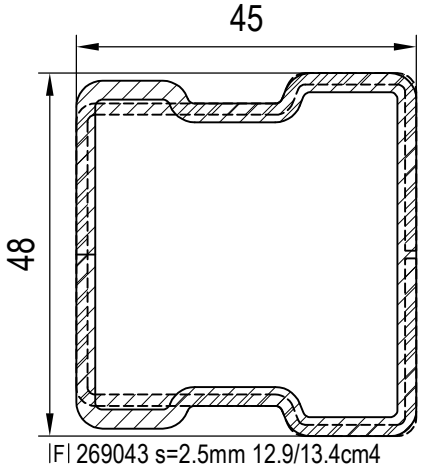
|O| 660950 -> |D| |Ø|
Auxiliary parts



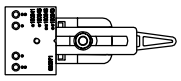
|P| 269543 **aluskin**
Aluminium shells



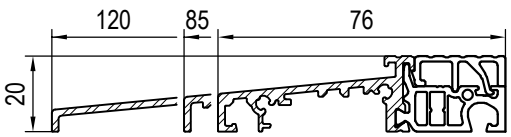
|F| 269047 s=2.5mm 10.2/9.0cm4
Reinforcements



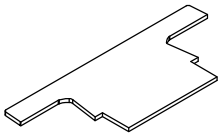
|F| 269043 s=2.5mm 12.9/13.4cm4
(|F| 269046 s=1.5mm 7.8/7.7cm4)
Reinforcements



|O| 660971 -> |U|
Auxiliary parts



|U| 287070 |U| 277070 |U| 267070
Aluminium thresholds

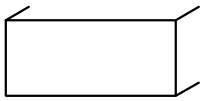


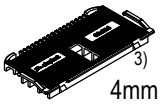
|X| 466075 gr
Gaskets

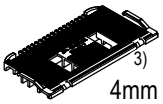
3) Spacer: In case of fixed glazing only, when central profile wall has been cut off!
2) Seal the screw heads in the bottom horizontal rebate
1) Integrated gasket(s): see current price list

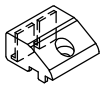
MD
mullion - meneau - montante - poste - Pfosten

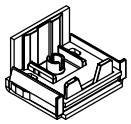
|A| ... refer to chapter 03 A
14-48mm 50-52mm
3 3

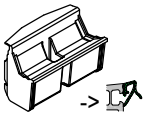

~45x20x1000 mm
|D| 640046

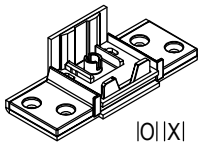

3)
4mm
|A| 665016 gn
Spacer

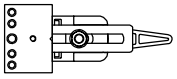

3)
4mm
|A| 662017 bl

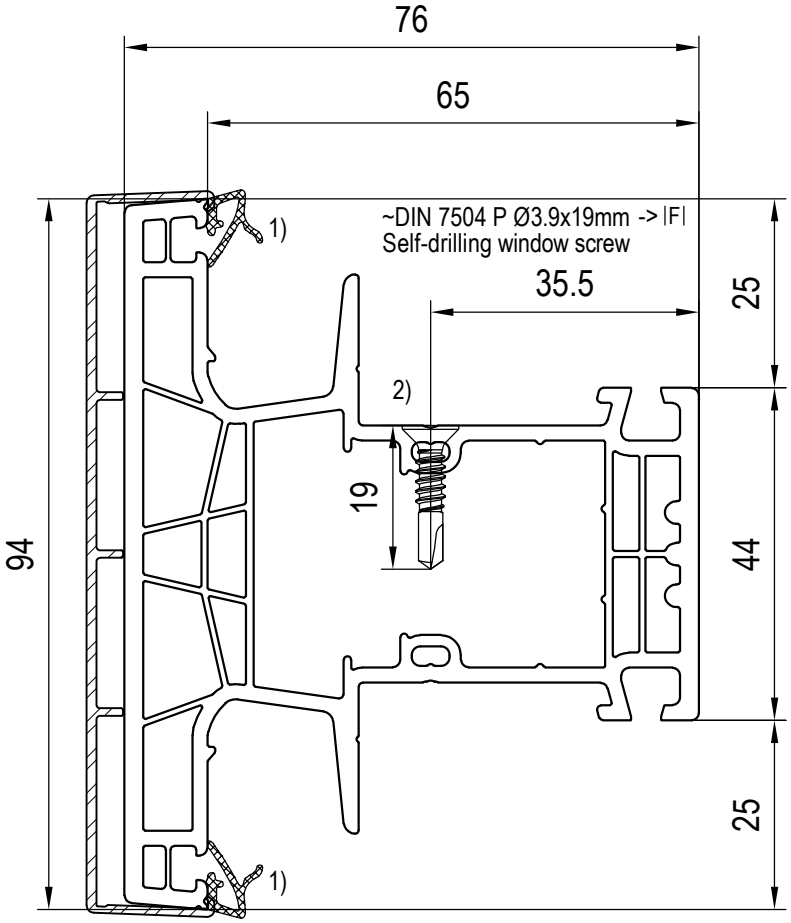

| I | 640441
Lifter


|O| |X|
|Ø| 667145

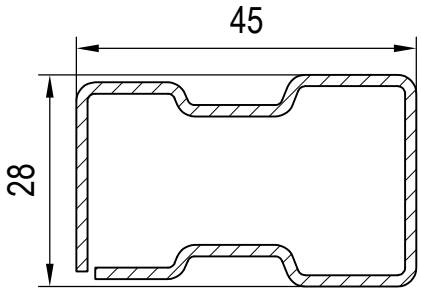

|X| 669032 bl
|X| 660032 wh
Gaskets


|O| |X|
|Ø| 667045
|D| Connector
|Ø| Connector without knobs

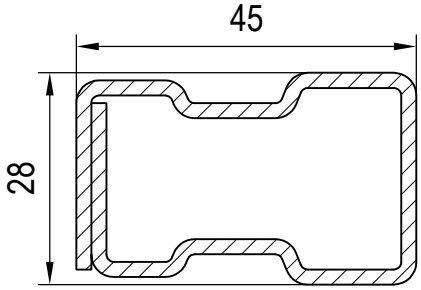

|O| 660950 -> |D| |Ø|
Auxiliary parts



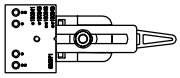
|P| 269541 **aluskin**
Aluminium shells

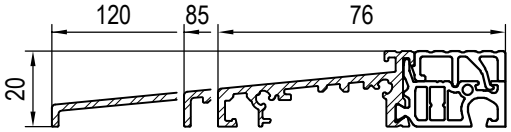


|F| 269041 s=1.5mm 5.4/2.2cm4
Reinforcements

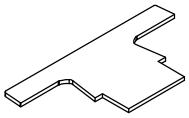


|F| 269045 s=2.0mm 8.4/3.0cm4
Reinforcements


|O| 660971 -> |U|
Auxiliary parts

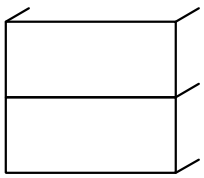


|U| 287070 |U| 277070 |U| 267070
Aluminium thresholds


|X| 466074 gr
Gaskets

3) Spacer: In case of fixed glazing only, when central profile wall has been cut off!
2) Seal the screw heads in the bottom horizontal rebate
1) Integrated gasket(s): see current price list

MD
mullion - meneau - montante - poste - Pfosten

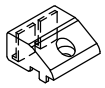


~45x20x1000 mm
2x |D| 640046

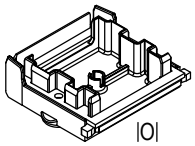
|A| ... refer to chapter 03 A
14-52mm
5



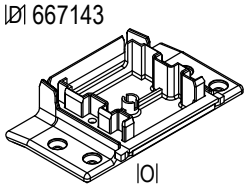
0mm
|A| 660301 red
Spacer



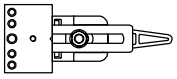
|I| 640441
Lifter



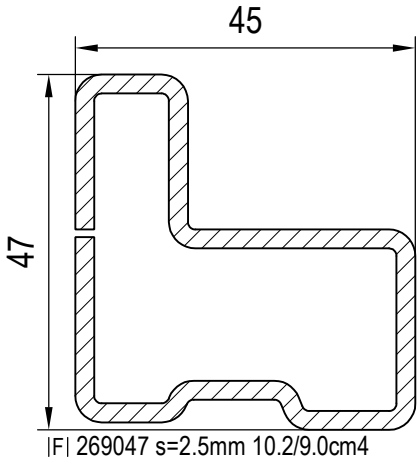
|O|
|Ø| 667143



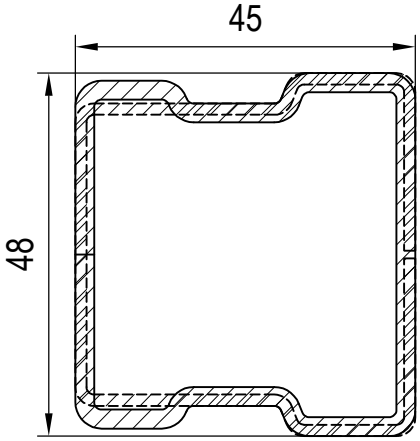
|O|
|Ø| 667043
|D| Connector
|Ø| Connector without knobs



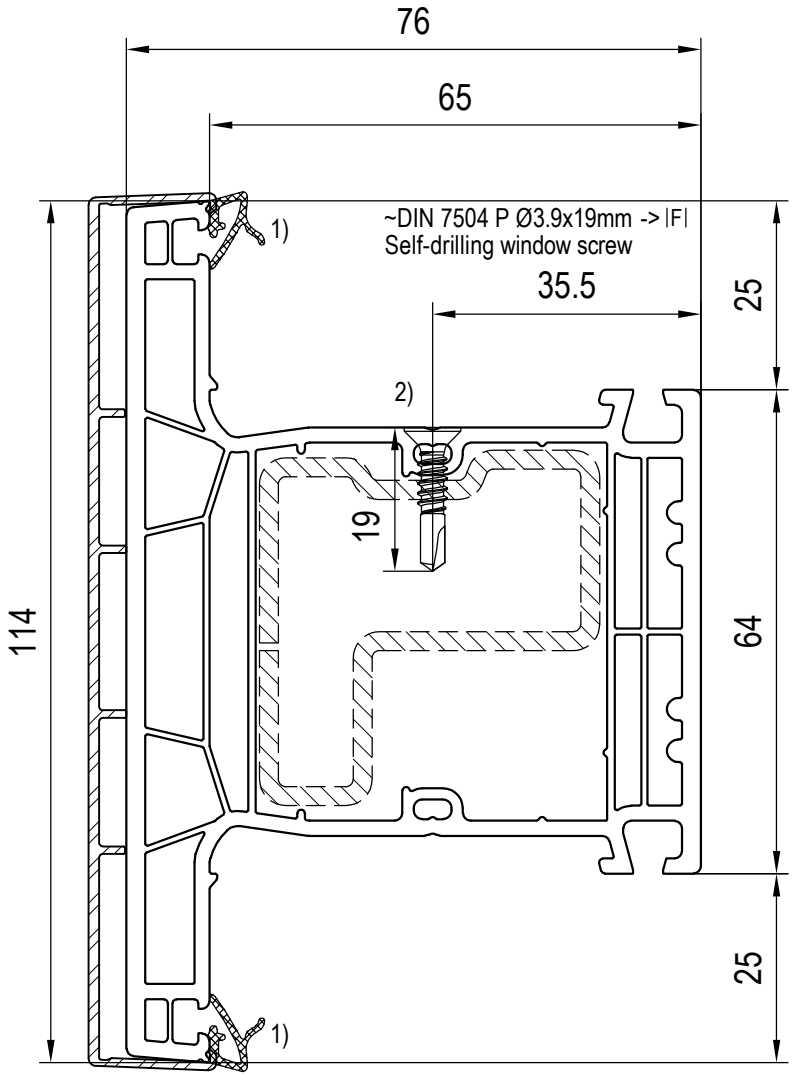
|O| 660950 -> |D| |Ø|
Auxiliary parts



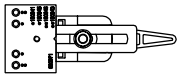
|F| 269047 s=2.5mm 10.2/9.0cm4
Reinforcements



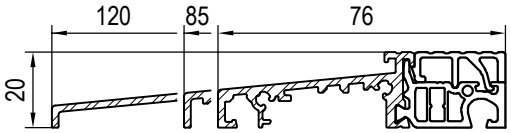
|F| 269043 s=2.5mm 12.9/13.4cm4
(|F| 269046 s=1.5mm 7.8/7.7cm4)
Reinforcements



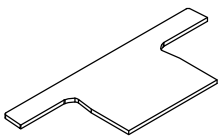
|P| 269543 **alu**skin
Aluminium shells



|O| 660971 -> |U|
Auxiliary parts



|U| 287070 |U| 277070 |U| 267070
Aluminium thresholds

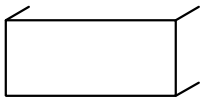


|X| 466072 gr
Gaskets

2) Seal the screw heads in the bottom horizontal rebate
1) Integrated gasket(s): see current price list

AD
mullion - meneau - montante - poste - Pfosten

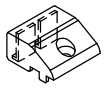
|A| ... refer to chapter 03 A
14-52mm
5



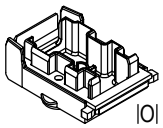
~45x20x1000 mm
|D| 640046



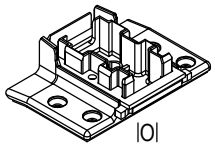
0mm
|A| 660301 red
Spacer



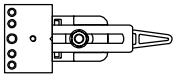
|I| 640441
Lifter



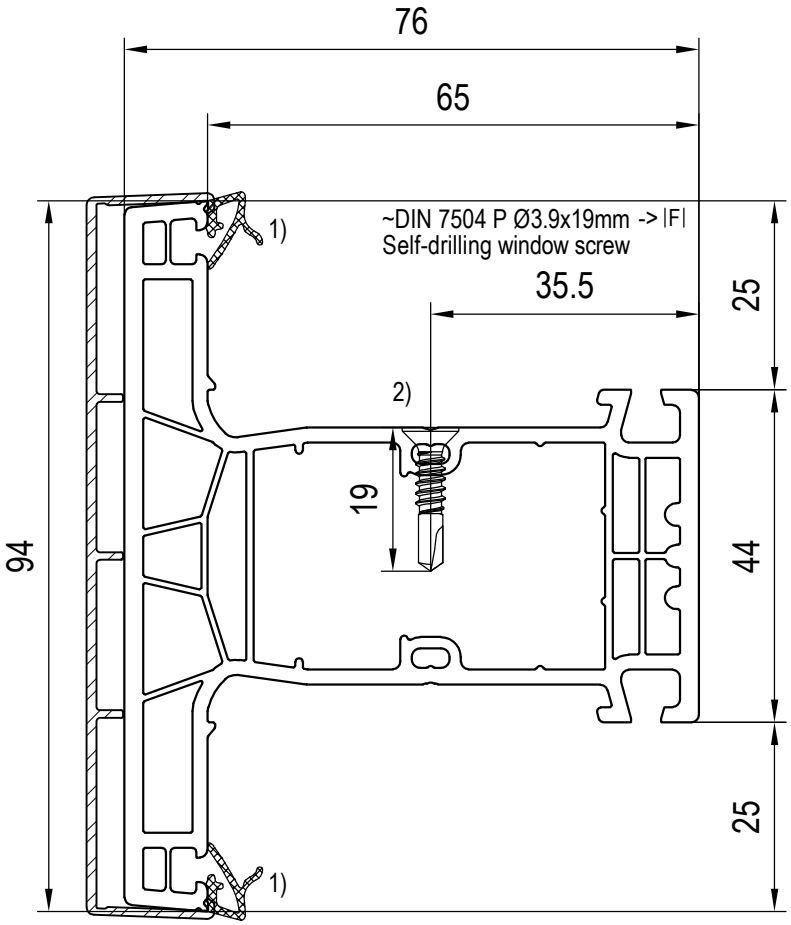
|O|
|Ø| 667141



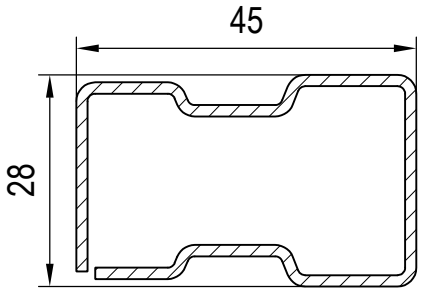
|O|
|Ø| 667041
|D| Connector
|Ø| Connector without knobs



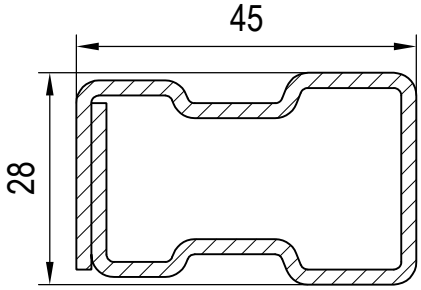
|O| 660950 -> |D| |Ø|
Auxiliary parts



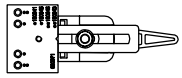
|P| 269541 **aluskin**
Aluminium shells



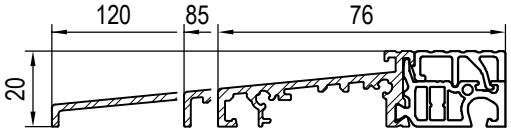
|F| 269041 s=1.5mm 5.4/2.2cm4
Reinforcements



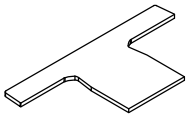
|F| 269045 s=2.0mm 8.4/3.0cm4
Reinforcements



|O| 660971 -> |U|
Auxiliary parts



|U| 287070 |U| 277070 |U| 267070
Aluminium thresholds



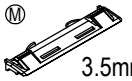
|X| 466073 gr
Gaskets

2) Seal the screw heads in the bottom horizontal rebate
1) Integrated gasket(s): see current price list

AD
mullion - meneau - montante - poste - Pfosten

Main Profiles: Mullions / Transoms
Mullion 94mm: 160x41

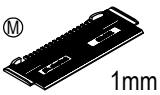
|J| Bonding of pane 24-54mm or |A| Spacer 16-54mm (5 6 1) 16-20mm (4) 16-35mm (4) 16-38mm (0) 16-44mm (4) 16-48mm (0) ... refer to chapter 03 A

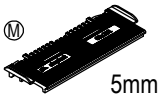

Ⓜ 3.5mm
|J| 642262 bl
Bonding of pane

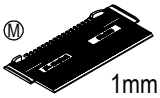

H [mm]
|J| 640033 red 3
|J| 640034 ye 4
|J| 640035 gn 5

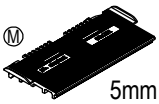

Ⓜ -1mm
|A| 650250 red
Spacer

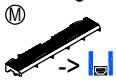

Ⓜ 1mm
|A| 620250 red

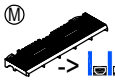

Ⓜ 1mm
|A| 650252 red

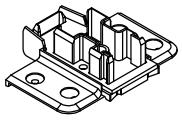

Ⓜ 5mm
|A| 655251 gn

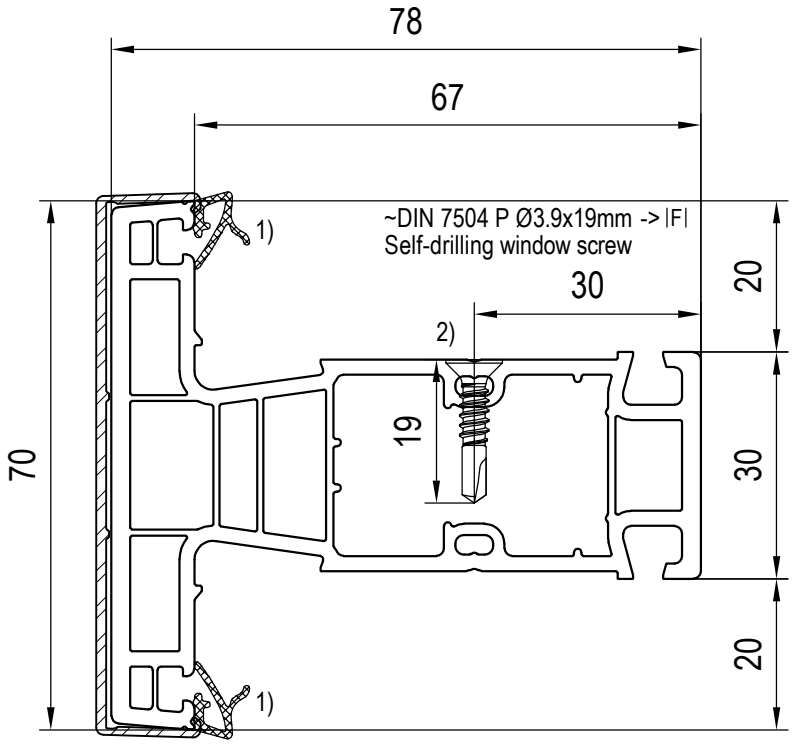

Ⓜ 1mm
|A| 680250 red


Ⓜ 5mm
|A| 685251 gn

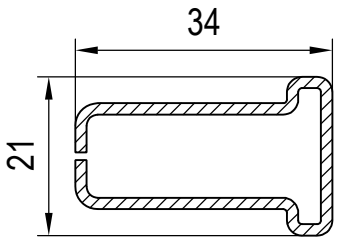

Ⓜ -> |J| kg
|J| 642261 bl >45
|J| 646265 gr <45


Ⓜ -> |J| kg
|J| 642263 bl >45
|J| 646266 gr <45


|Ø| 667048 -> Ⓜ 67
|D| Connector
|Ø| Connector without knobs



|P| 269548 **aluskin**
Aluminium shells



|F| 249046 s=1.5mm 2.0/0.6cm4
Reinforcements

2) Seal the screw heads in the bottom horizontal rebate
1) Integrated gasket(s): see current price list

Ⓜ transom - traverse - traverso - travesaño - Sprosse

|J| Bonding of pane 24-54mm or |A| Spacer 16-54mm (5 6 1) 16-20mm (4) 16-35mm (4) 16-38mm (0) 16-44mm (4) 16-48mm (0) ... refer to chapter 03 A

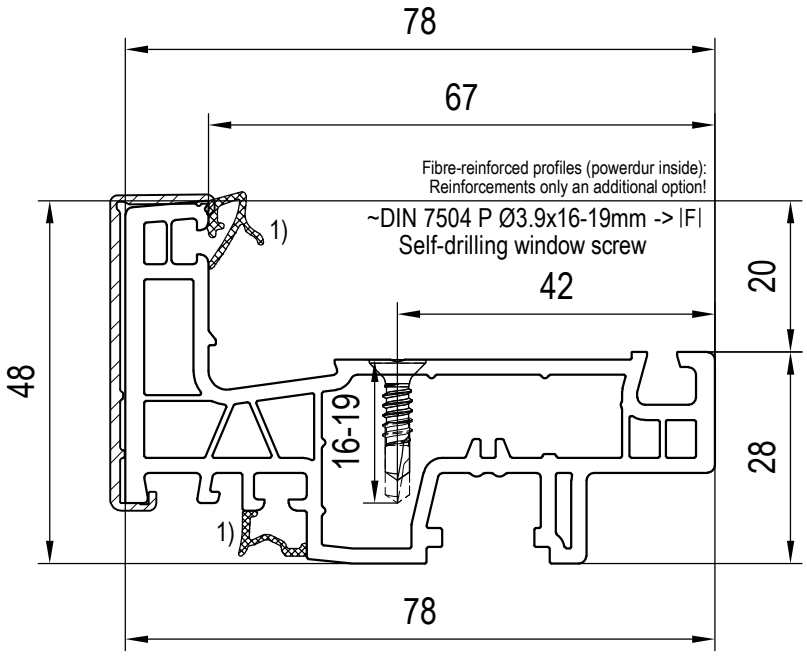
Bonding of pane

	H [mm]
3.5mm |J| 642262 bl	
|J| 640033 red	3
|J| 640034 ye	4
|J| 640035 gn	5

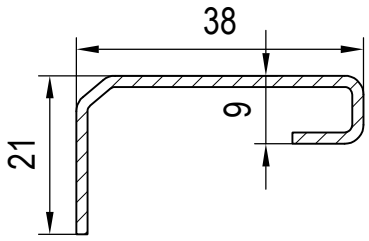
Spacer

-1mm |A| 650250 red	
1mm |A| 620250 red	
1mm |A| 650252 red	
5mm |A| 655251 gn	
1mm |A| 680250 red	
5mm |A| 685251 gn	

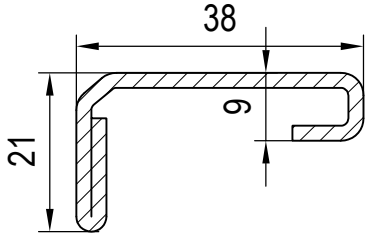
->	kg	->	kg
|J| 642261 bl	>45	|J| 642263 bl	>45
|J| 646265 gr	<45	|J| 646266 gr	<45



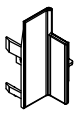
|P| 269524 **aluskin**
Aluminium shells



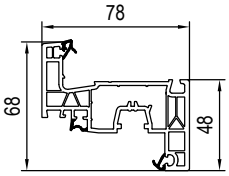
|F| 269036 s=1.5mm 2.0/0.3cm4
Reinforcements



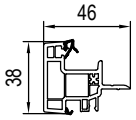
|F| 269037 s=2.0mm 3.0/0.6cm4
Reinforcements



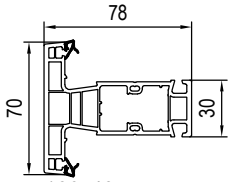
|C| 660077
End caps



-> 160x24
Sash



-> 160x97
False mullion



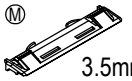
-> 160x48
Transoms

1) Integrated gasket(s): see current price list

false mullion sash - battement intégré - anta-scambio battuta - hoja batiente - Stulpflügel (M)

Main Profiles: False Mullion Sashes / False Mullions
False mullion sash re. 48mm: 160x74

|J| Bonding of pane 24-54mm or |A| Spacer 16-54mm (5 6 1) 16-20mm (4) 16-35mm (4) ... refer to chapter 03 A 16-38mm (0) 16-44mm (4) 16-48mm (0)



3.5mm
|J| 642262 bl
Bonding of pane



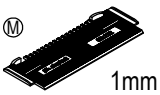
H [mm]
|J| 640033 red 3
|J| 640034 ye 4
|J| 640035 gn 5



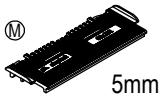
-1mm
|A| 650250 red
Spacer



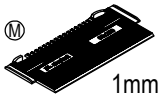
1mm
|A| 620250 red



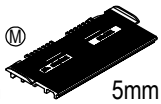
1mm
|A| 650252 red



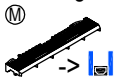
5mm
|A| 655251 gn



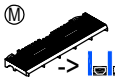
1mm
|A| 680250 red



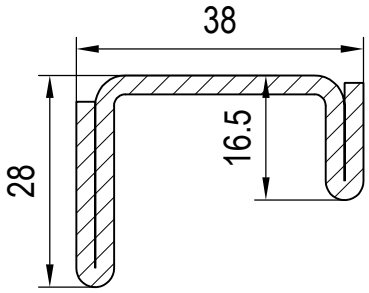
5mm
|A| 685251 gn



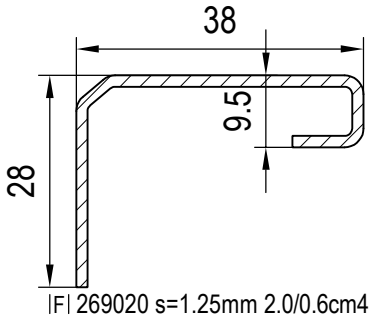
-> |J| kg
|J| 642261 bl >45
|J| 646265 gr <45



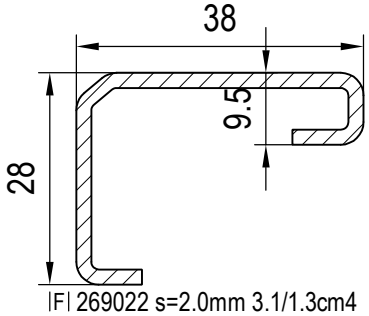
-> |J| |J| kg
|J| 642263 bl >45
|J| 646266 gr <45



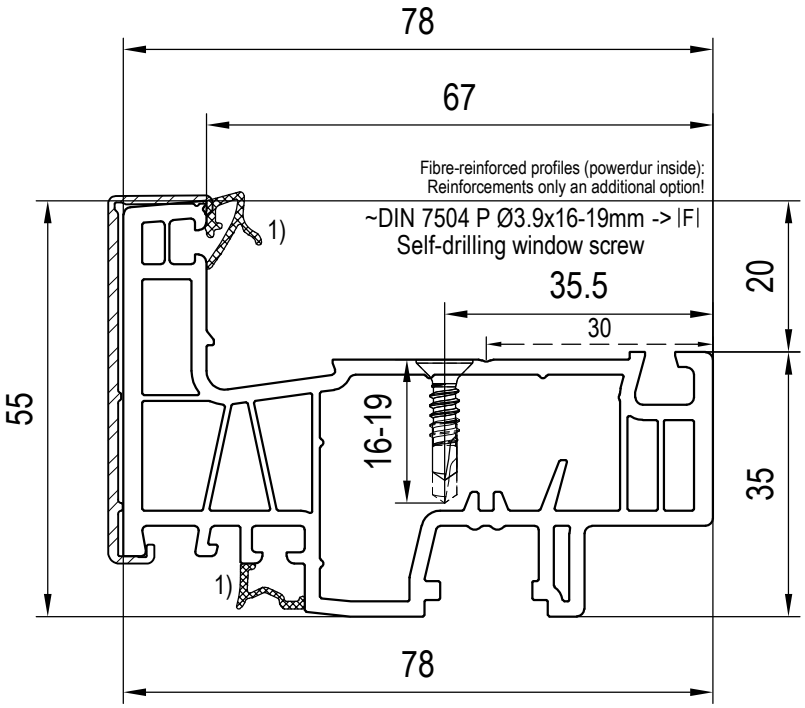
|F| 269077 s=2.5mm5.6/1.7cm4
Reinforcements



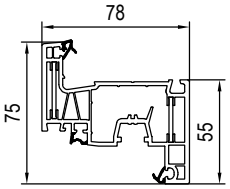
|F| 269020 s=1.25mm 2.0/0.6cm4
|F| 269021 s=1.5mm 2.3/0.7cm4
Reinforcements



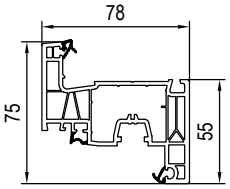
|F| 269022 s=2.0mm 3.1/1.3cm4
Reinforcements



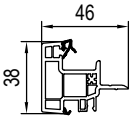
|P| 269520 **aluskin**
Aluminium shells



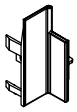
-> 060x20
Sash



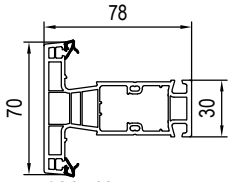
-> 160x20
Sash



-> 160x97
False mullion



|C| 660077
End caps



-> 160x48
Transoms

1) Integrated gasket(s): see current price list

false mullion sash - battement intégré - anta-scambio battuta - hoja batiente - Stulpflügel (M)

Main Profiles: False Mullion Sashes / False Mullions
False mullion sash re. 55mm: 160x70

|J| ... refer to chapter 03 A
30-68mm

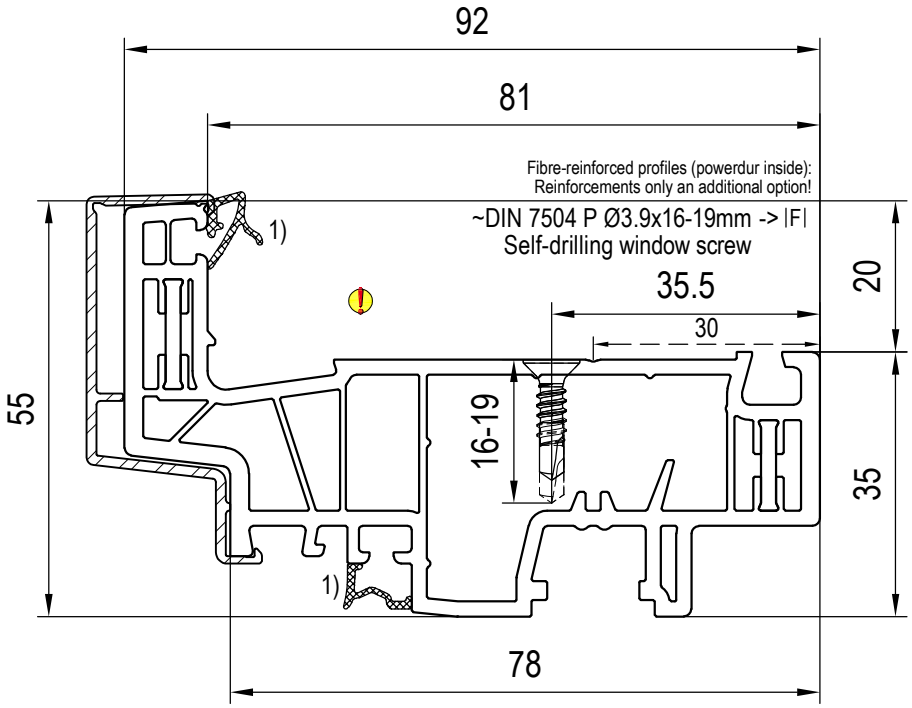
Ⓜ 3.5mm
|J| 642262 bl
Bonding of pane

H [mm]
|J| 640033 red 3
|J| 640034 ye 4
|J| 640035 gn 5

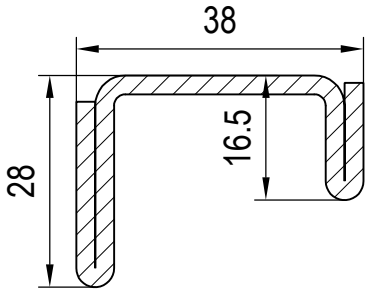
Ⓜ -> kg
|J| 642261 bl >45
|J| 646265 gr <45

Ⓜ -> kg
|J| 642263 bl >45
|J| 646266 gr <45

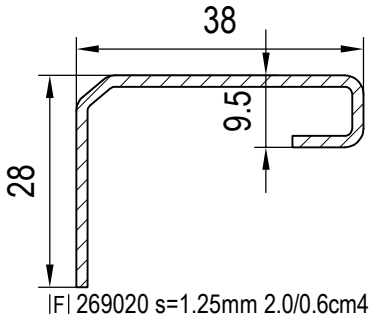
Bonding of pane



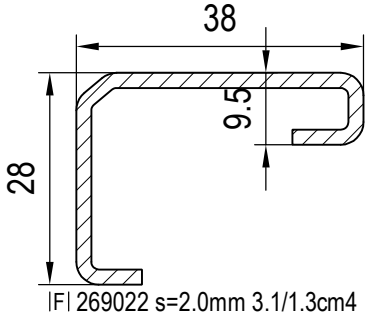
|P| 269527 **aluskin**
Aluminium shells



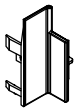
|F| 269077 s=2.5mm5.6/1.7cm4
Reinforcements



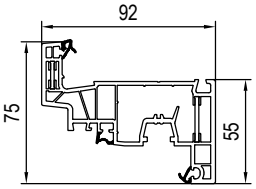
|F| 269020 s=1.25mm 2.0/0.6cm4
|F| 269021 s=1.5mm 2.3/0.7cm4
Reinforcements



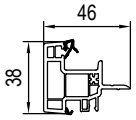
|F| 269022 s=2.0mm 3.1/1.3cm4
Reinforcements



|C| 660077
End caps



-> 060x27
Sash

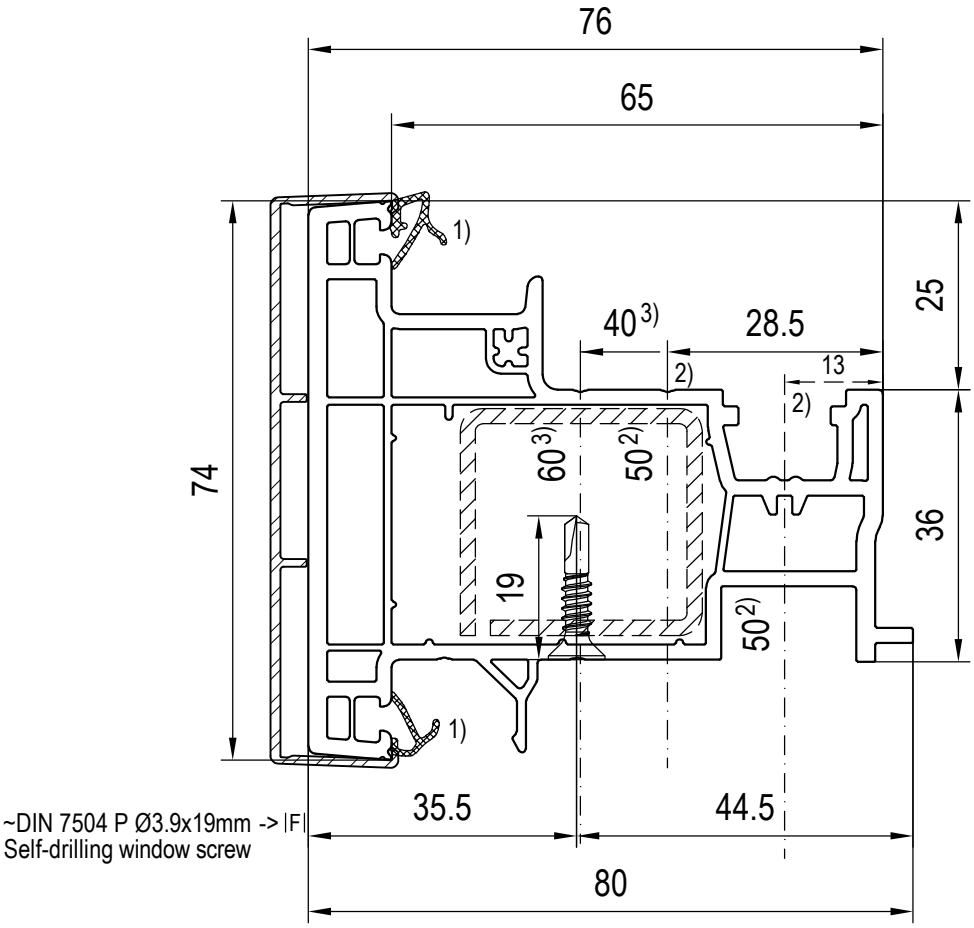


-> 160x97
False mullion

1) Integrated gasket(s): see current price list

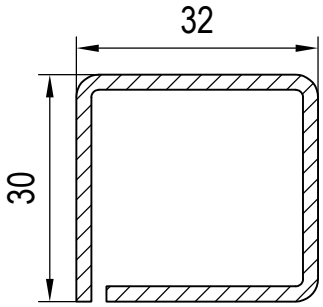
false mullion sash -
battement intégré - anta-scambio battuta - hoja batiente - Stulpflügel

MD Ⓜ

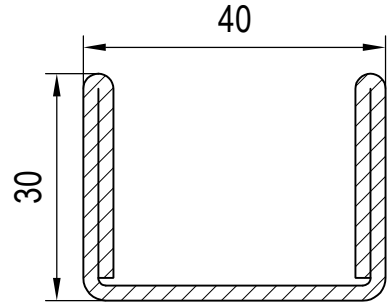


~DIN 7504 P Ø3.9x19mm -> |F|
Self-drilling window screw

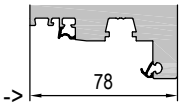
|P| 269566 **aluskin**
Aluminium shells



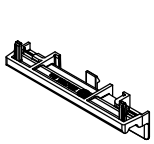
|F| 259105 s=1.25mm 2.2/1.9cm4
|F| 259106 s=2.0mm 3.2/2.9cm4
|F| 259107 s=1.5mm 2.5/2.3cm4
Reinforcements



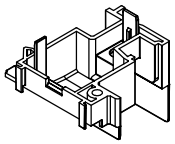
3) -> |F| 269066 s=2.0mm 8.0/2.6cm4
Reinforcements



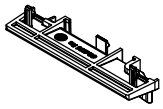
-> Sash



|C| 660366
End caps



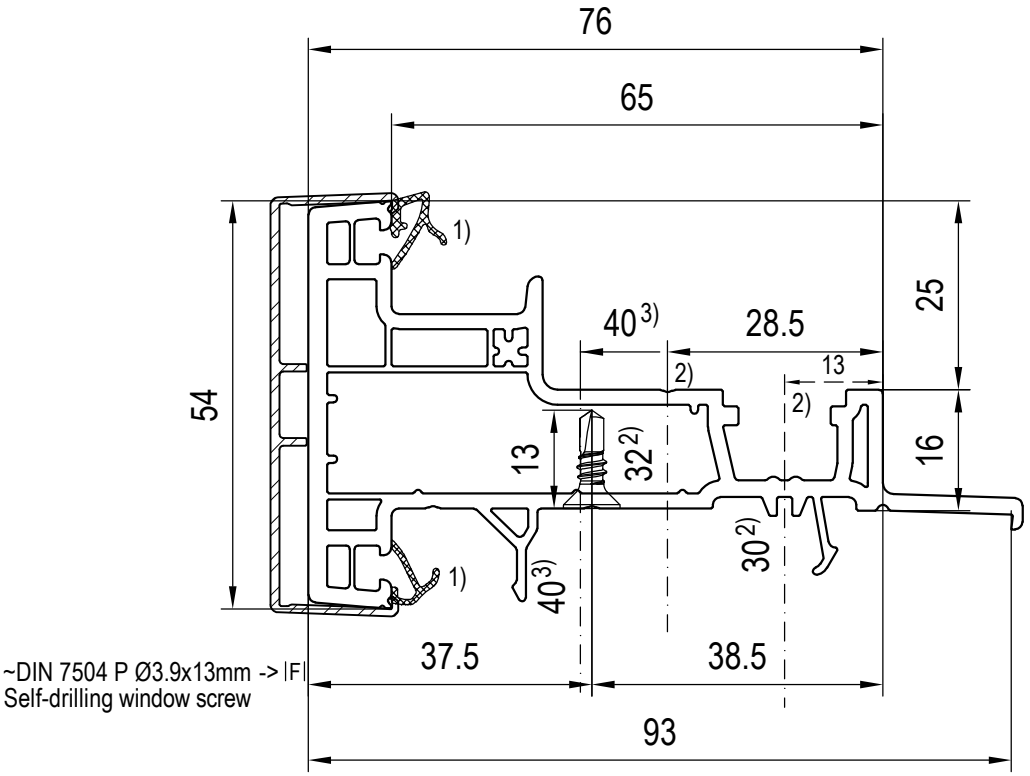
|C| 660466



|C| 660566 -> |P|

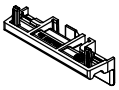
2) Screw the false mullion directly to the sash profile (screw through)
1) Integrated gasket(s): see current price list

false mullion - battement - scambio battuta - batiente - Stulp

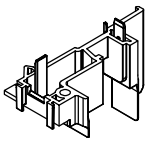


~DIN 7504 P Ø3.9x13mm -> |F|
Self-drilling window screw

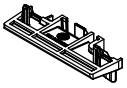
|P| 269564 **aluskin**
Aluminium shells



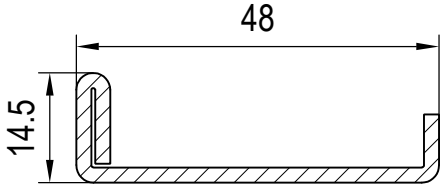
|C| 660364
End caps



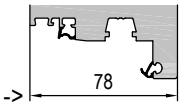
|C| 660464



|C| 660564 -> |P|



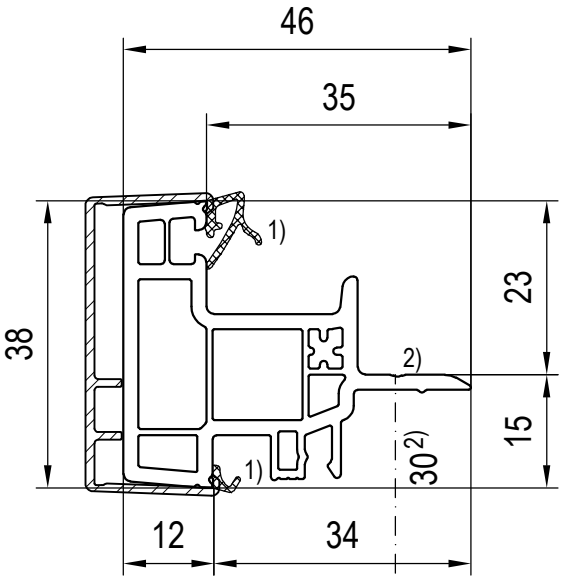
3) -> |F| 229063 s=2.0mm 4.3/0.2cm4
Reinforcements



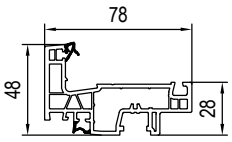
-> Sash

2) Screw the false mullion directly to the sash profile (screw through)
1) Integrated gasket(s): see current price list

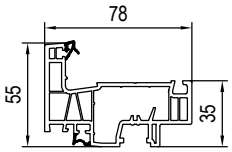
false mullion - battement - scambio battuta - batiente - Stulp



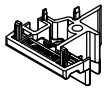
|P| 269597 **aluskin**
Aluminium shells



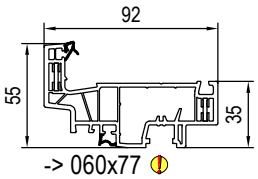
-> 160x74
False mullion sash



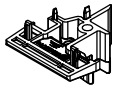
-> 160x70
False mullion sash



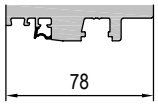
|C| 660097
End caps



-> 060x77
False mullion sash



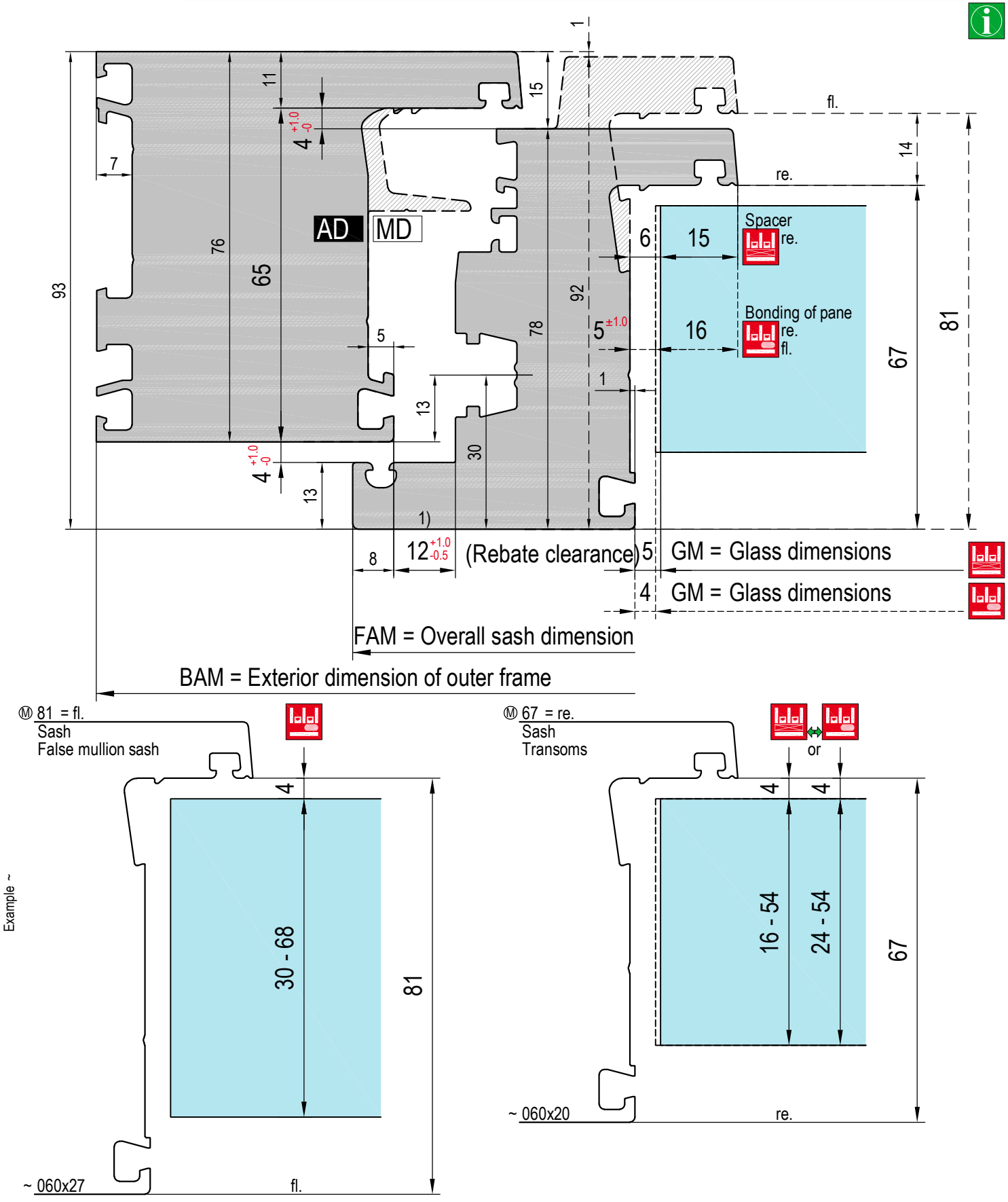
|C| 660597 -> |P|
End caps



~ Stop bead
-> False mullion sash

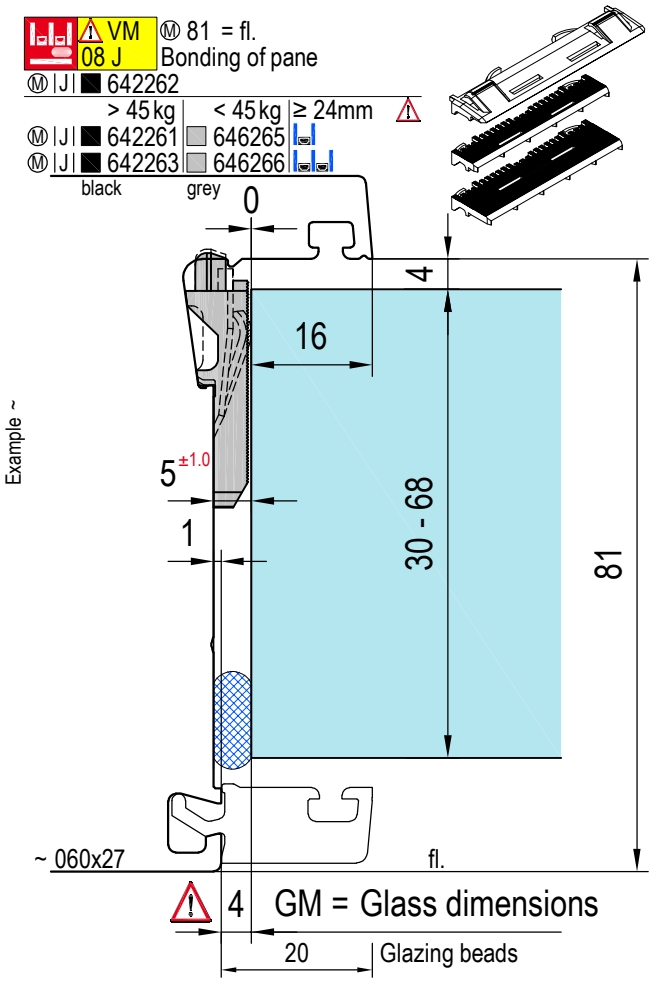
2) Screw the false mullion directly to the sash profile (screw through)
1) Integrated gasket(s): see current price list

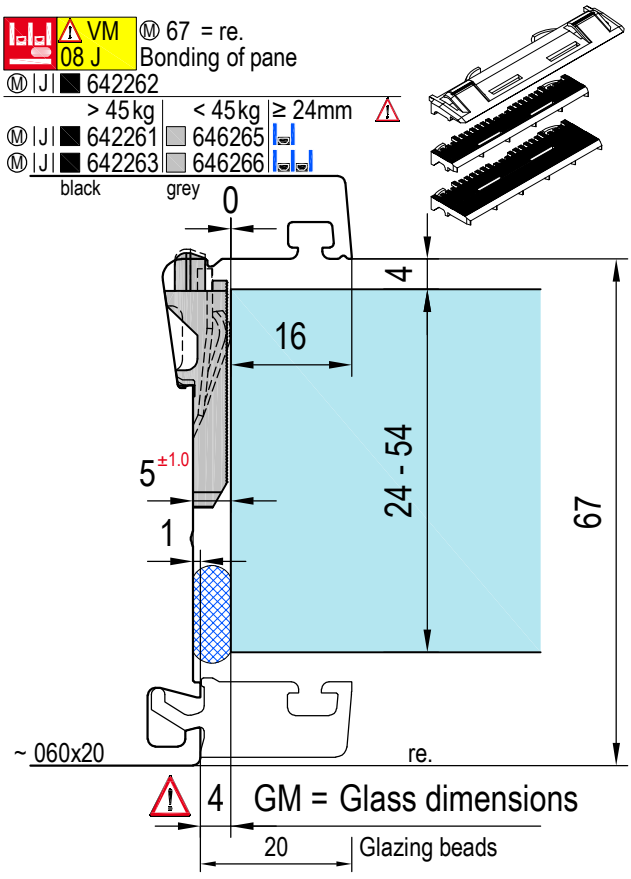
false mullion - battement - scambio battuta - batiente - Stulp



1) Rebate clearance of main entrance door on left and right side = 13 mm
AD = 2 (Backstop gasket system) / MD = 3 (Centre gasket system)
re. recessed / s.re. semi-recessed / fl. flush

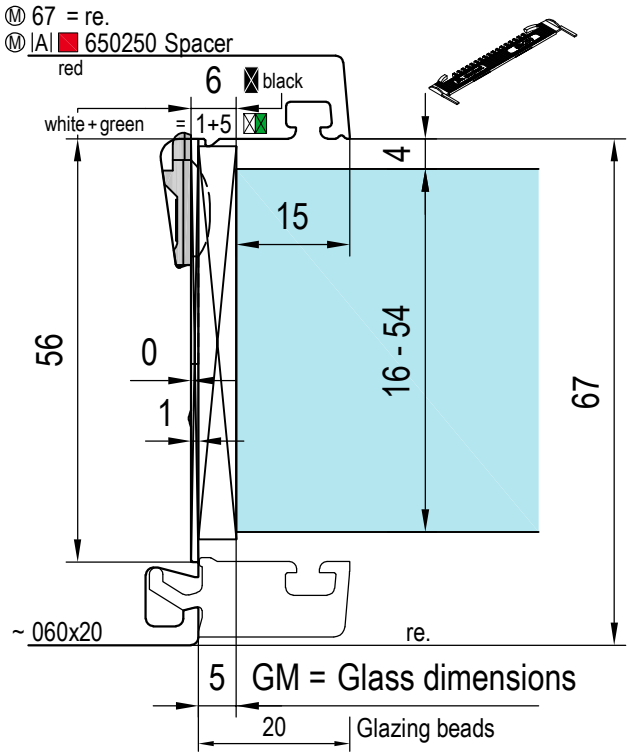
Ⓜ 67
Ⓜ 81

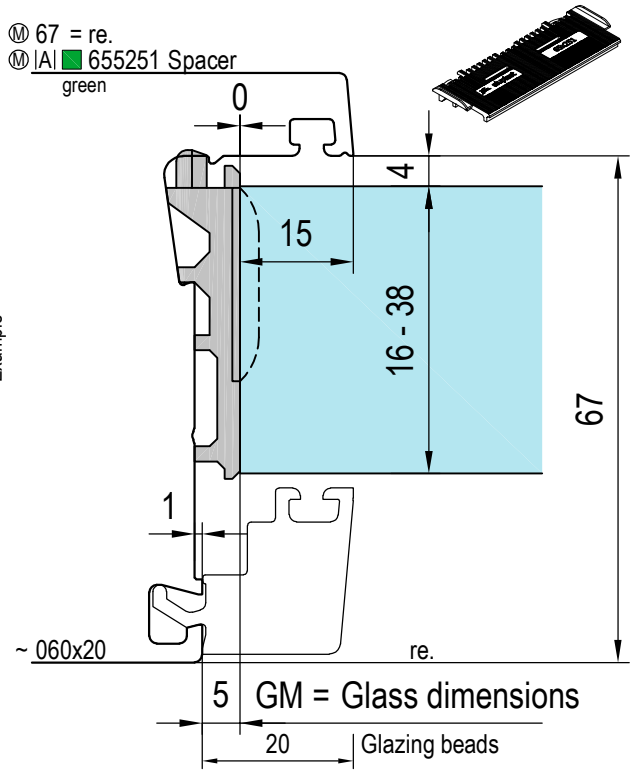


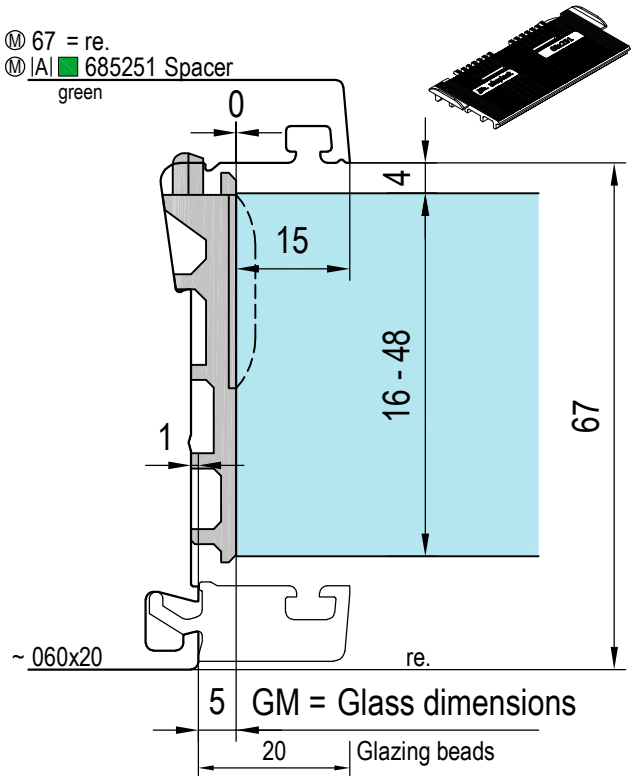


Example ~

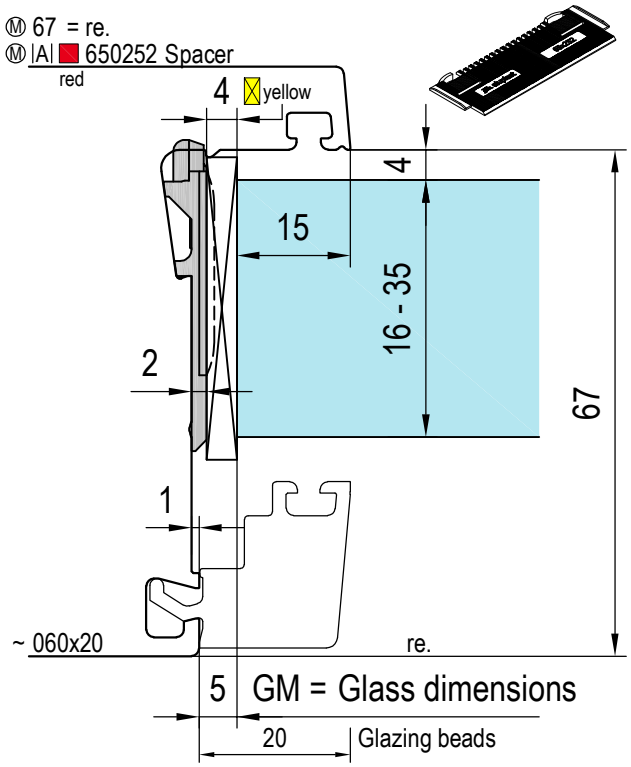
re. recessed / s.re. semi-recessed / fl. flush

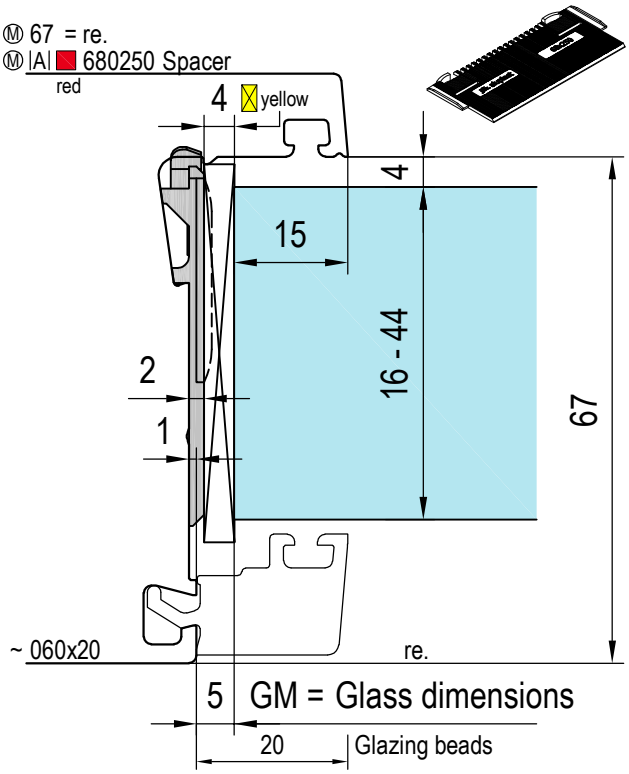


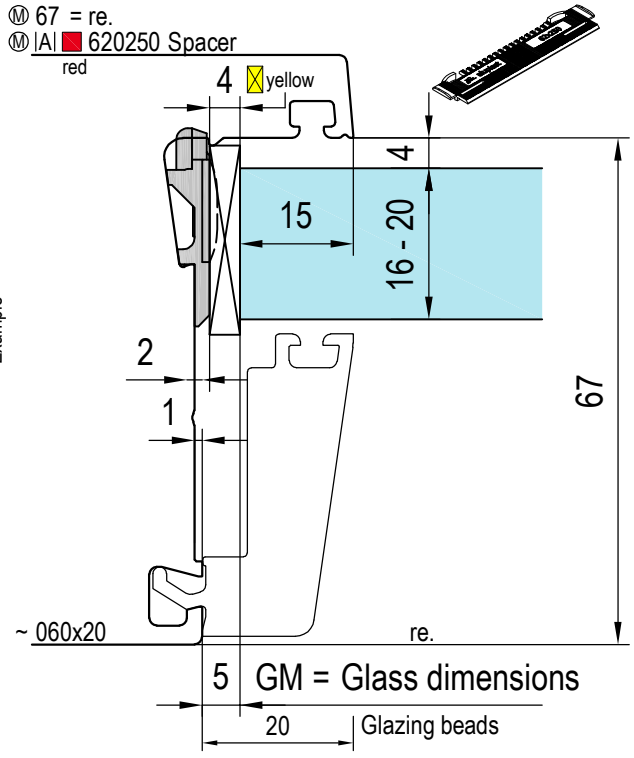




re. recessed / s.re. semi-recessed / fl. flush



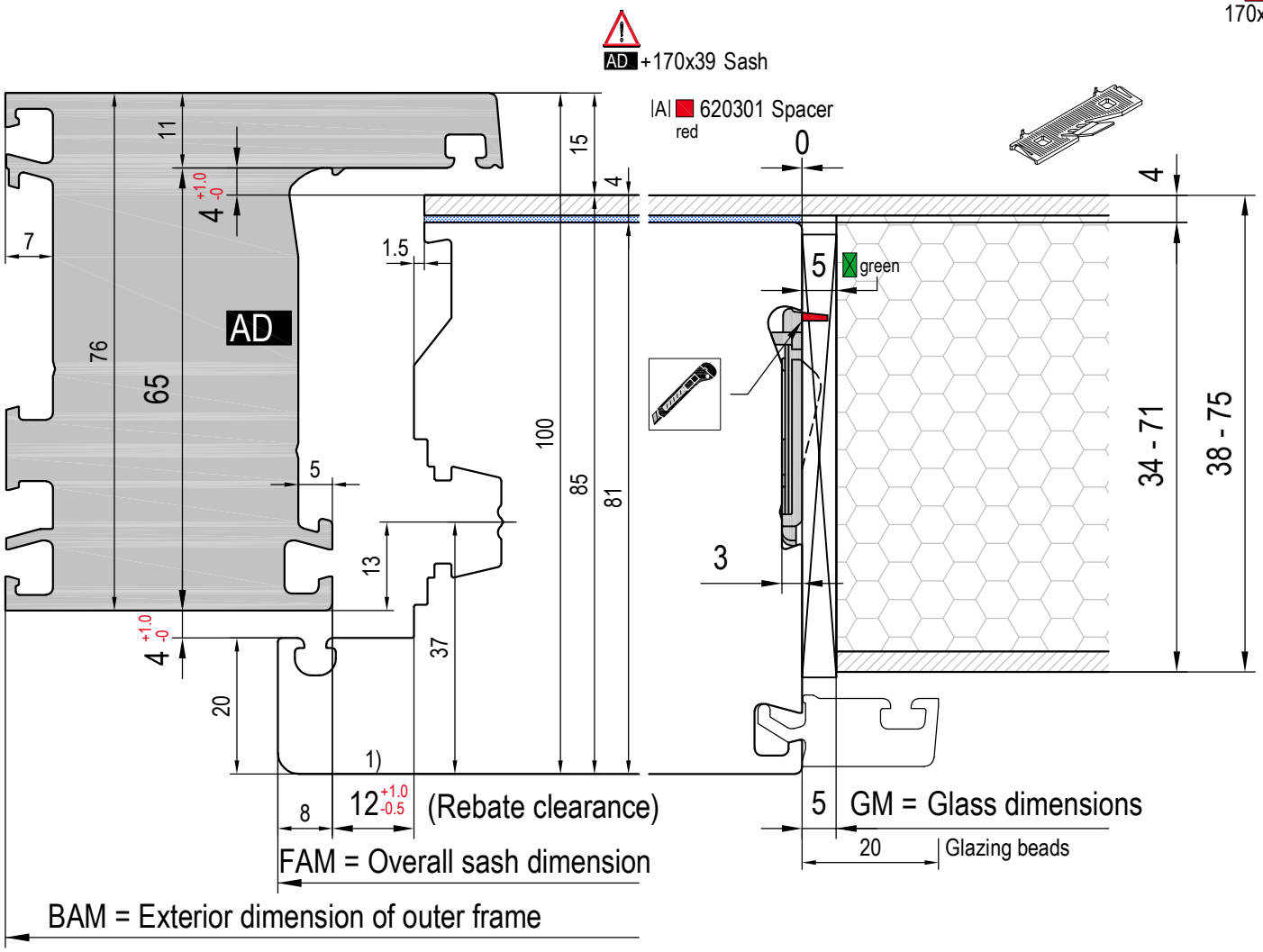




Example ~

re. recessed / s.re. semi-recessed / fl. flush

170x39

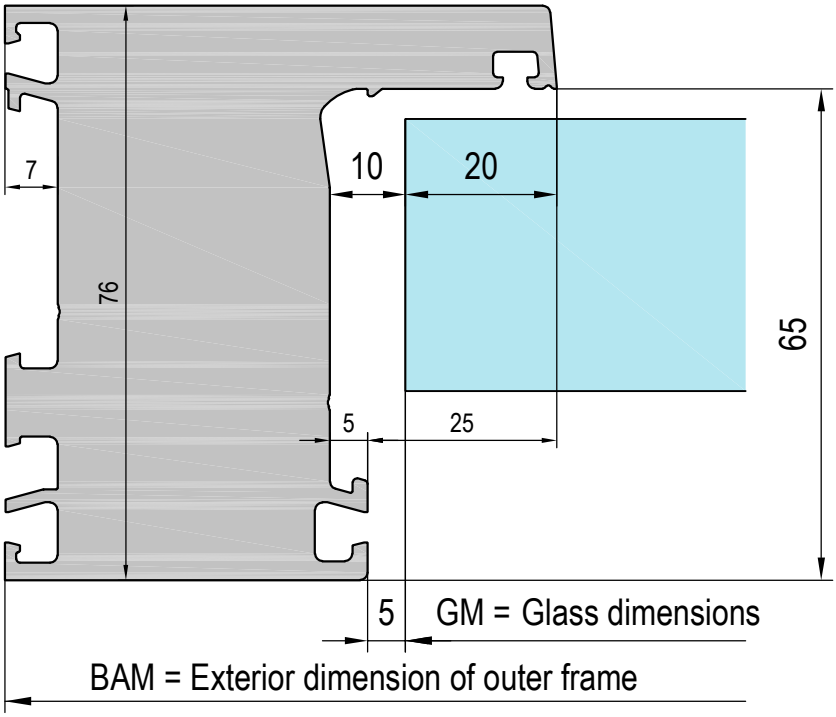


Example ~

1) Rebate clearance of main entrance door on left and right side = 13 mm
AD = 2 (Backstop gasket system) / MD = 3 (Centre gasket system)

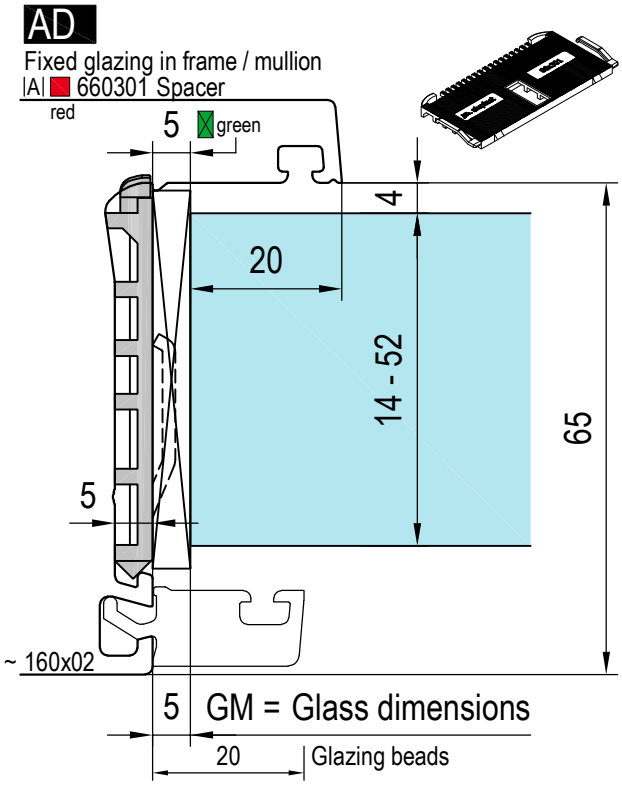
AD

Fixed glazing in frame / mullion



AD

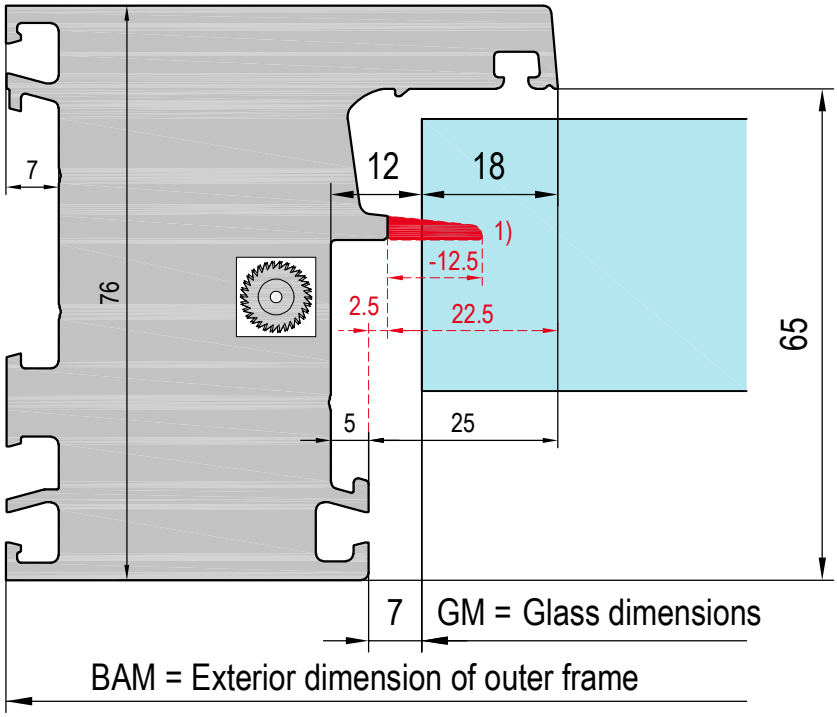
Fixed glazing in frame / mullion
Al 660301 Spacer
red



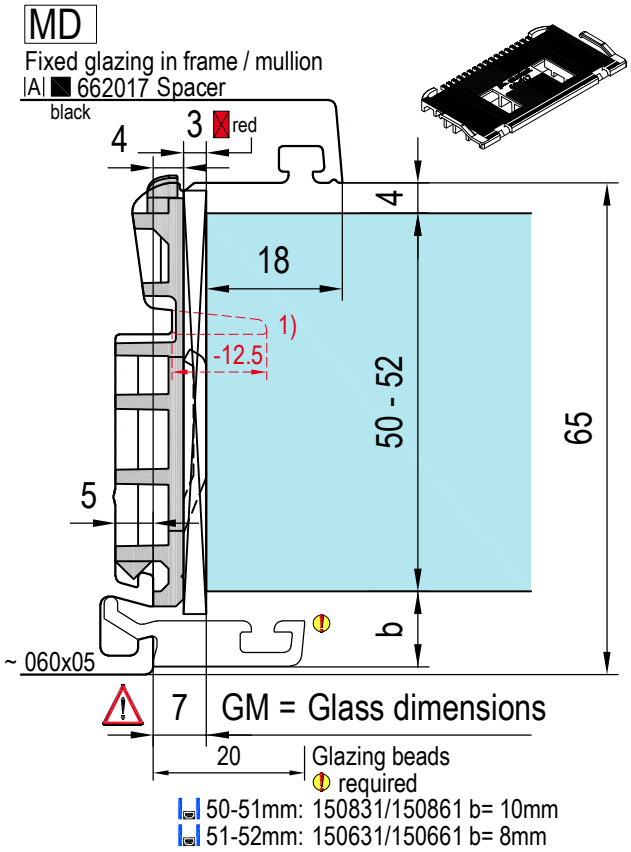
Example ~

AD = 2 (Backstop gasket system) / MD = 3 (Centre gasket system)

MD ⚠ 1)
Fixed glazing in frame / mullion



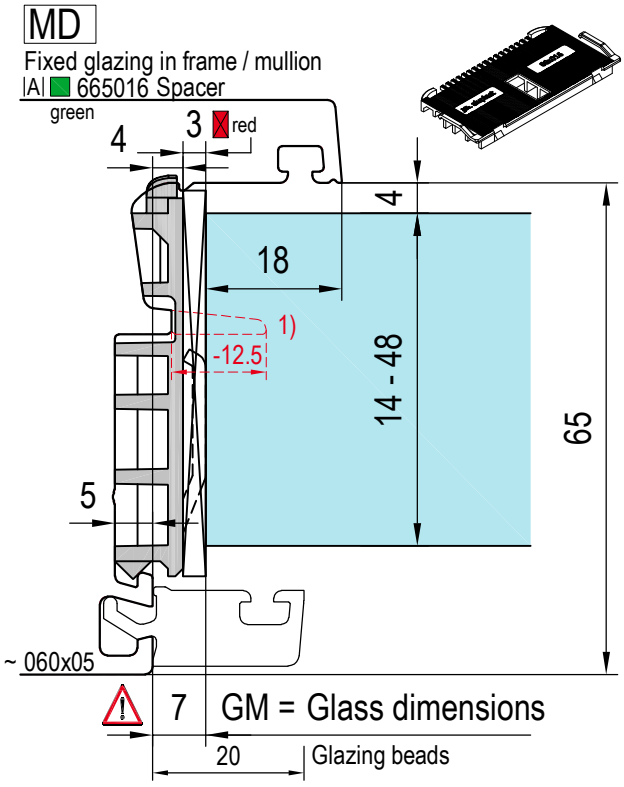
MD
Fixed glazing in frame / mullion
|A| ■ 662017 Spacer
black



Example ~

50-51mm: 150831/150861 b= 10mm
51-52mm: 150631/150661 b= 8mm

MD
Fixed glazing in frame / mullion
|A| ■ 665016 Spacer
green

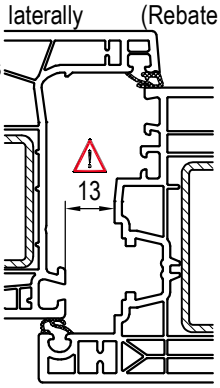


1) Cut the centre gasket web(s)!
AD = 2 (Backstop gasket system) / MD = 3 (Centre gasket system)

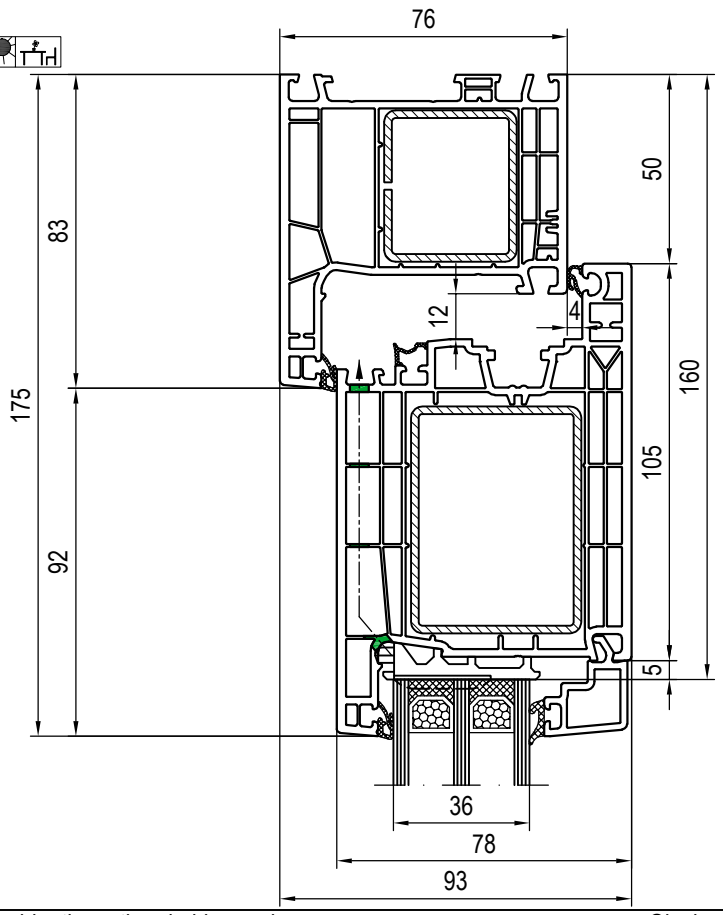
Combinations: frame - sash

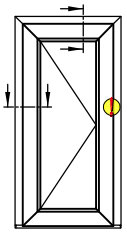
Glazing beads 150834/150864
Sash 160x33 |F| 269034
Frame 160x02 |F| 269003
Reinforcements
Option

Combinations: frame - sash laterally (Rebate clearance)



Example ~



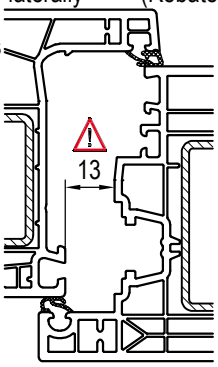


~ top

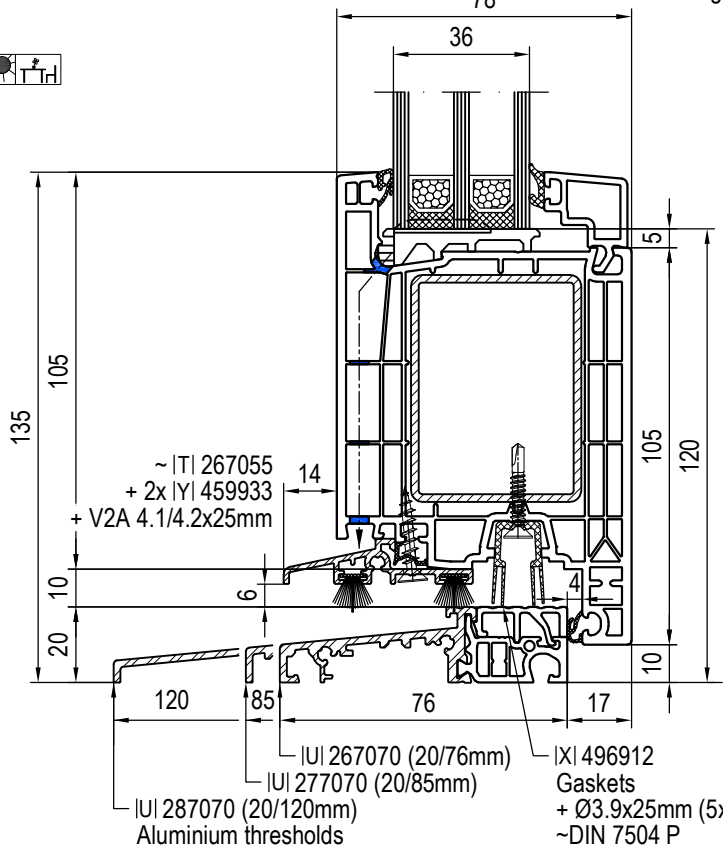
Combinations: thresholds - sash

Glazing beads 150834/150864
Sash 160x33 |F| 269034
Frame 160x02 |F| 269003
Reinforcements
Option

Combinations: frame - sash laterally (Rebate clearance)



Example ~

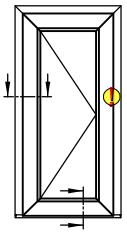


~ Aluminium weather bar
+ Brush seals



FFL

Seal thresholds laterally with silicone rubber!

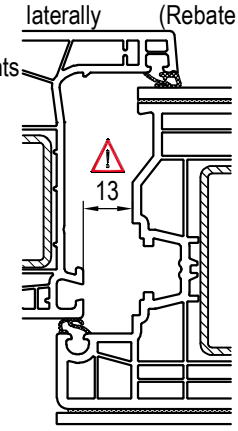


~ bottom

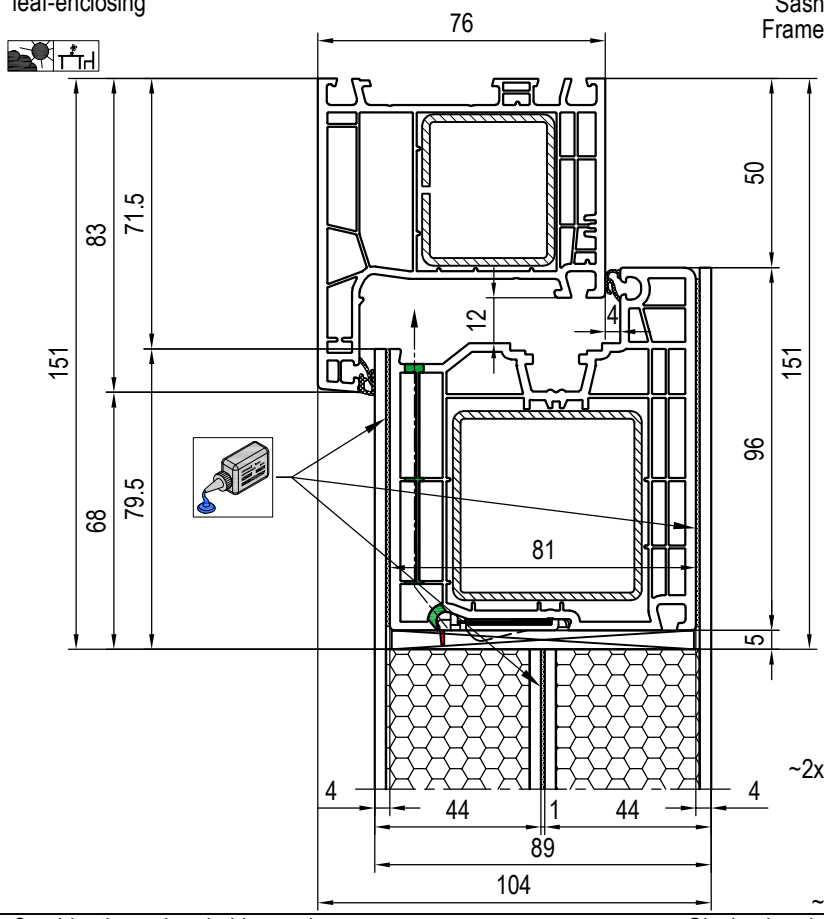
Combinations: frame - sash leaf-enclosing

Glazing beads -
Sash 170x39 |F| 229137
Frame 160x02 |F| 269003
Reinforcements
Option

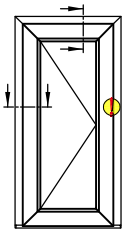
Combinations: frame - sash laterally (Rebate clearance)



Example ~



~2x Panel 44mm



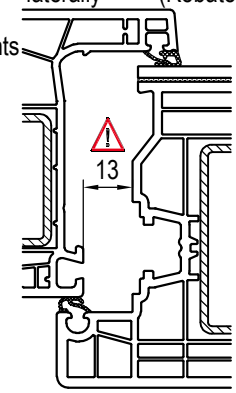
~ top

Combinations: thresholds - sash leaf-enclosing

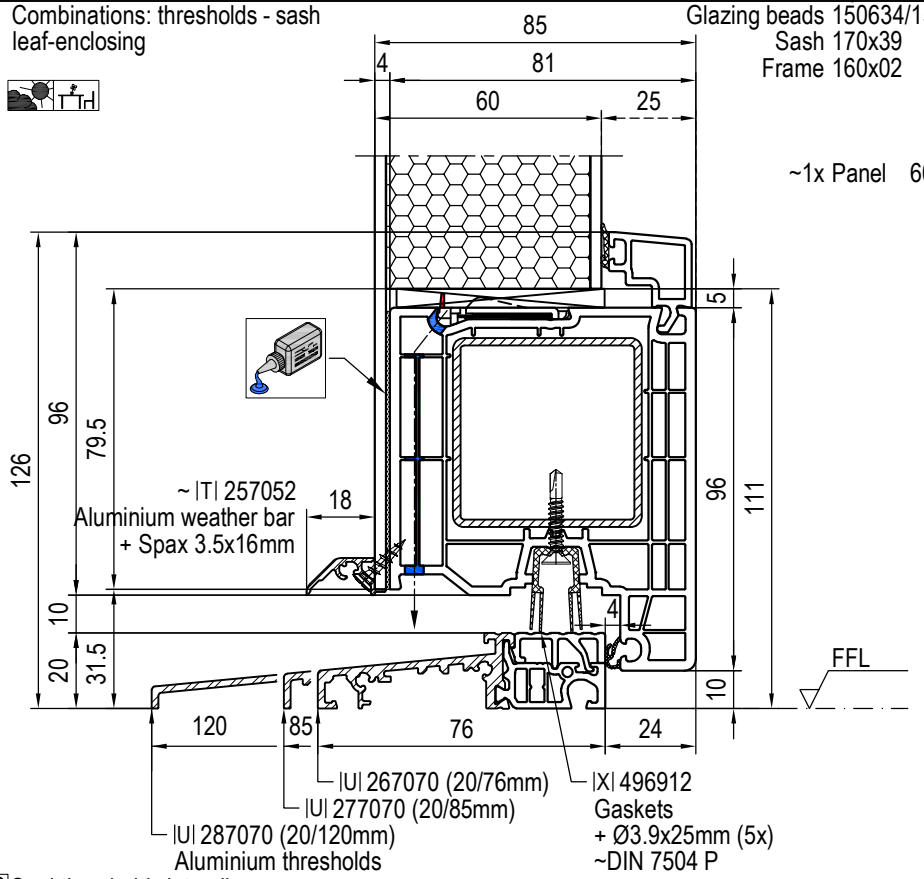
Glazing beads 150634/150664
Sash 170x39 |F| 229137
Frame 160x02 |F| 269003
Reinforcements
Option

~1x Panel 60mm

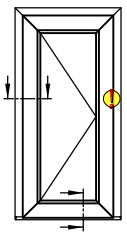
Combinations: frame - sash laterally (Rebate clearance)



Example ~

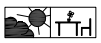


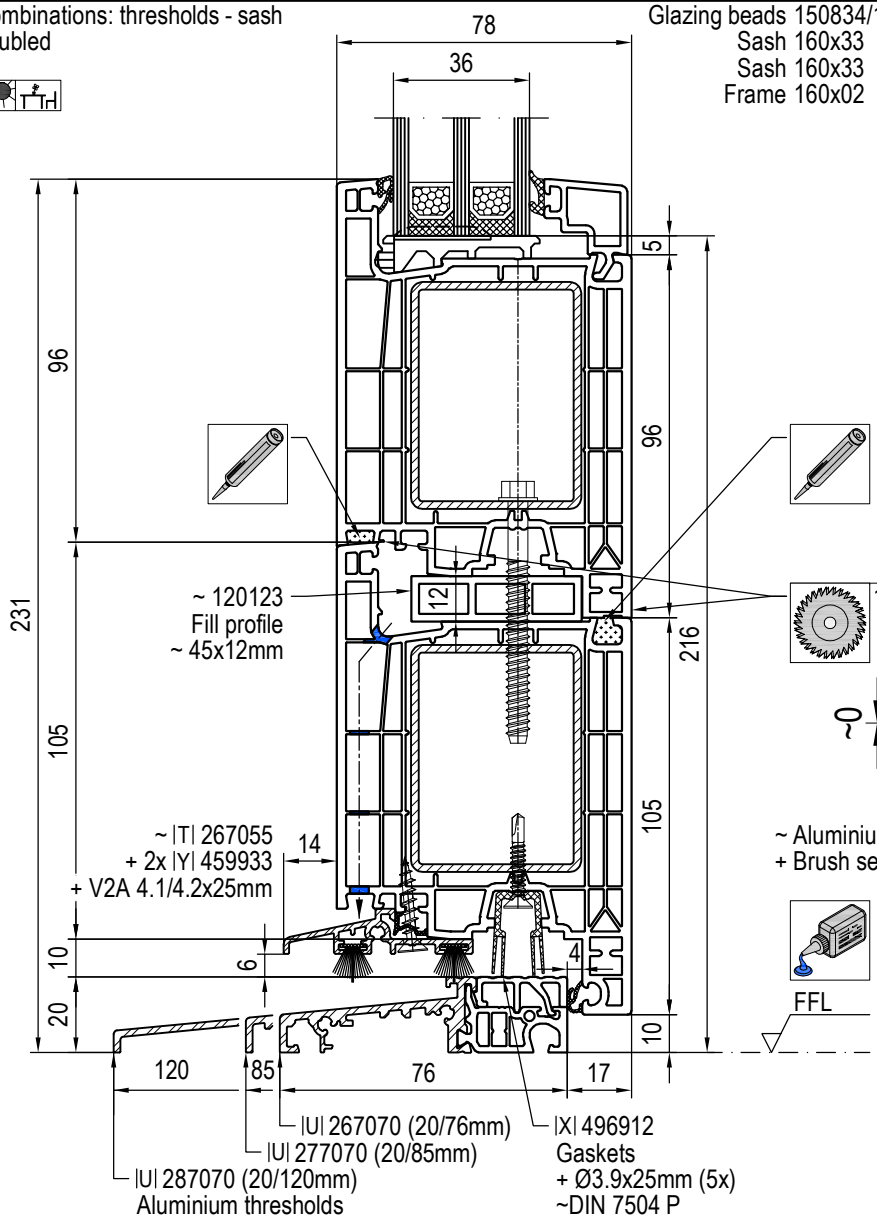
Seal thresholds laterally with silicone rubber!



~ bottom

Combinations: thresholds - sash doubled

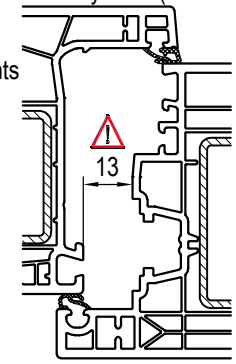


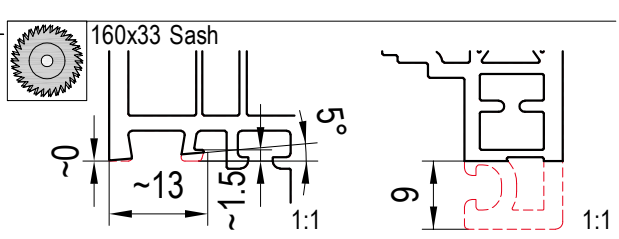


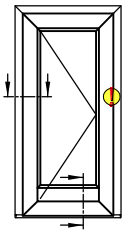
Example ~

Glazing beads 150834/150864
Sash 160x33
Sash 160x33 |F| 269034
Frame 160x02 |F| 269003
Reinforcements
Option

Combinations: frame - sash laterally (Rebate clearance)



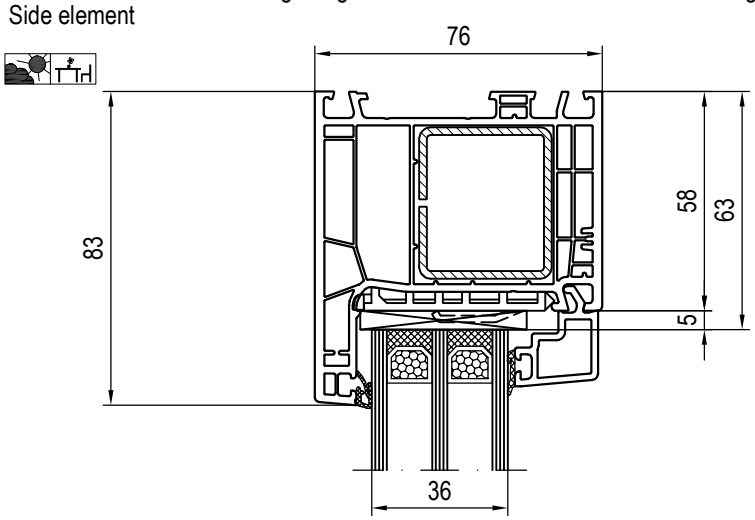




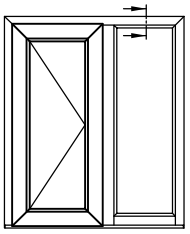
Seal thresholds laterally with silicone rubber!

Combinations: frame - fixed glazing
Side element

Glazing beads 150634/150664
Sash -
Frame 160x02



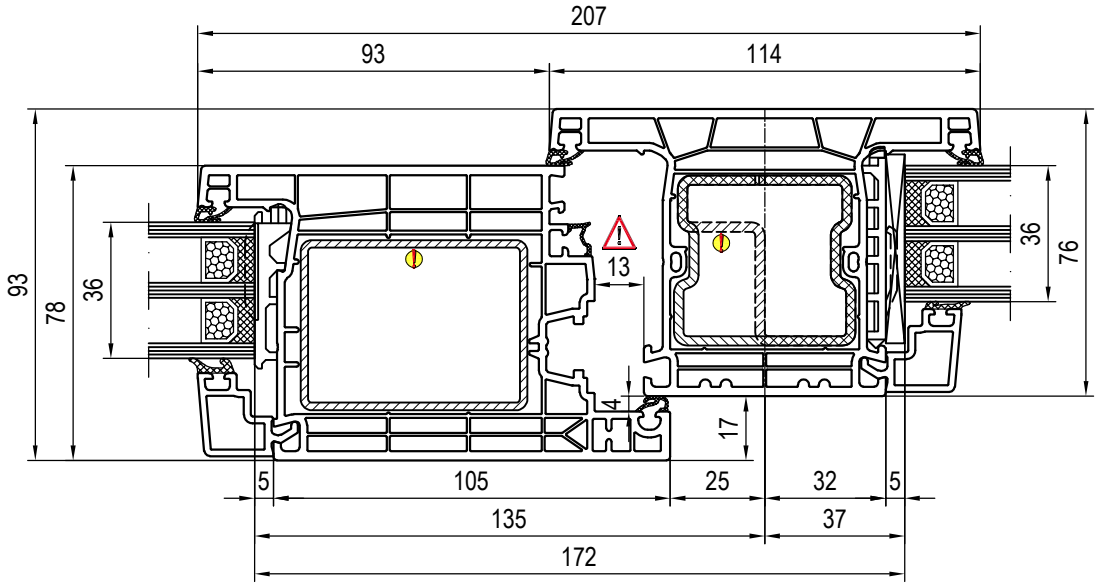
Example ~



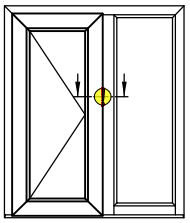
~ top

Combinations: sash - mullion - fixed glazing
Side element: Threshold continuous

Glazing beads 150834/150864, 150634/150664
Sash 160x33 |F| 269034
Mullion 160x43 |F| 269047
Reinforcements
Option



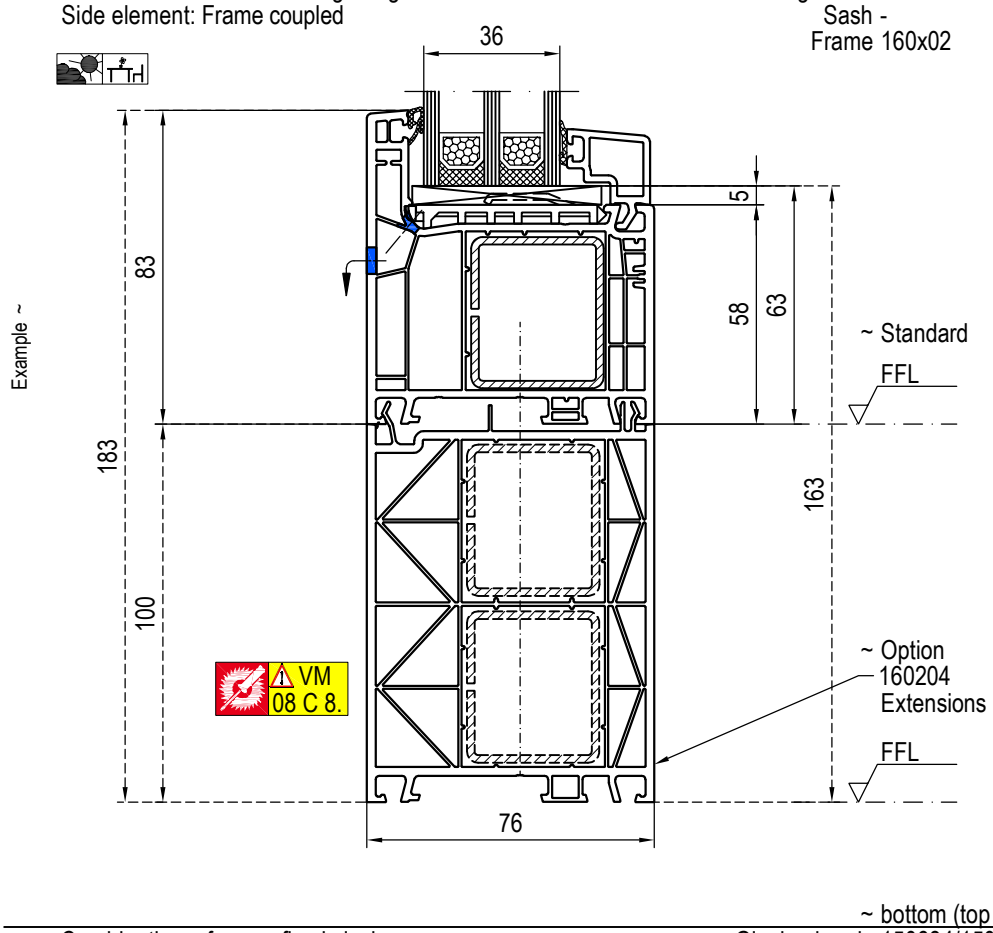
Example ~

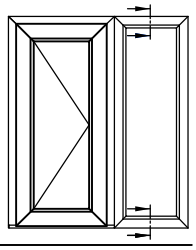


~ laterally (Rebate clearance)

Combinations: frame - fixed glazing
Side element: Frame coupled

Glazing beads 150634/150664
Sash -
Frame 160x02

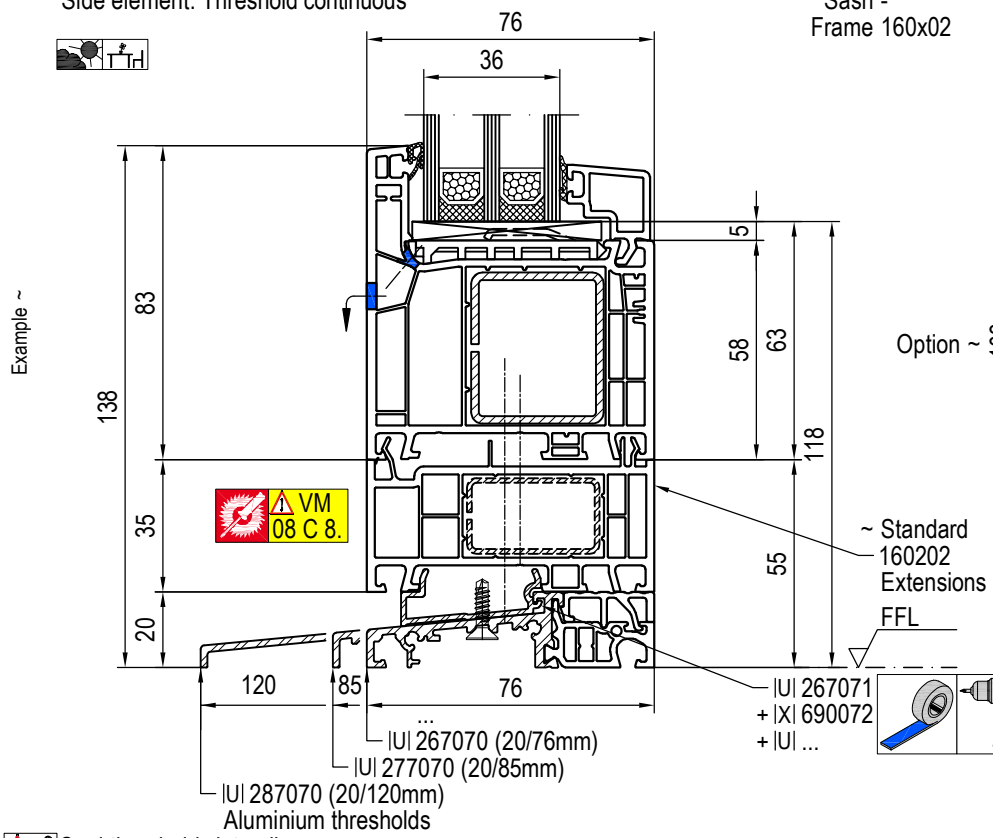


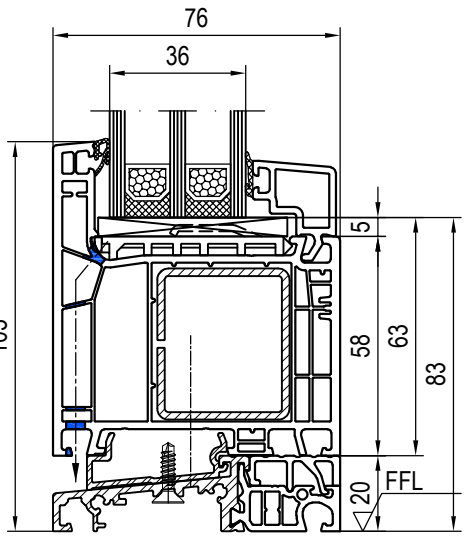


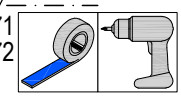
~ bottom (top)

Combinations: frame - fixed glazing
Side element: Threshold continuous

Glazing beads 150634/150664
Sash -
Frame 160x02

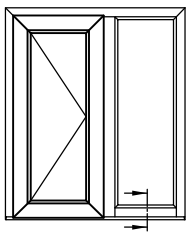






L ≥ 1m: 2x
3.9x16mm
~DIN 7504 P

Seal thresholds laterally with silicone rubber!

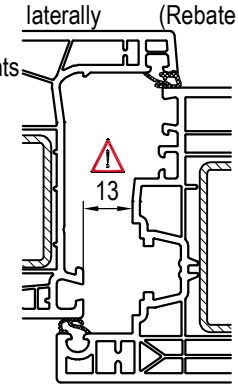


~ bottom

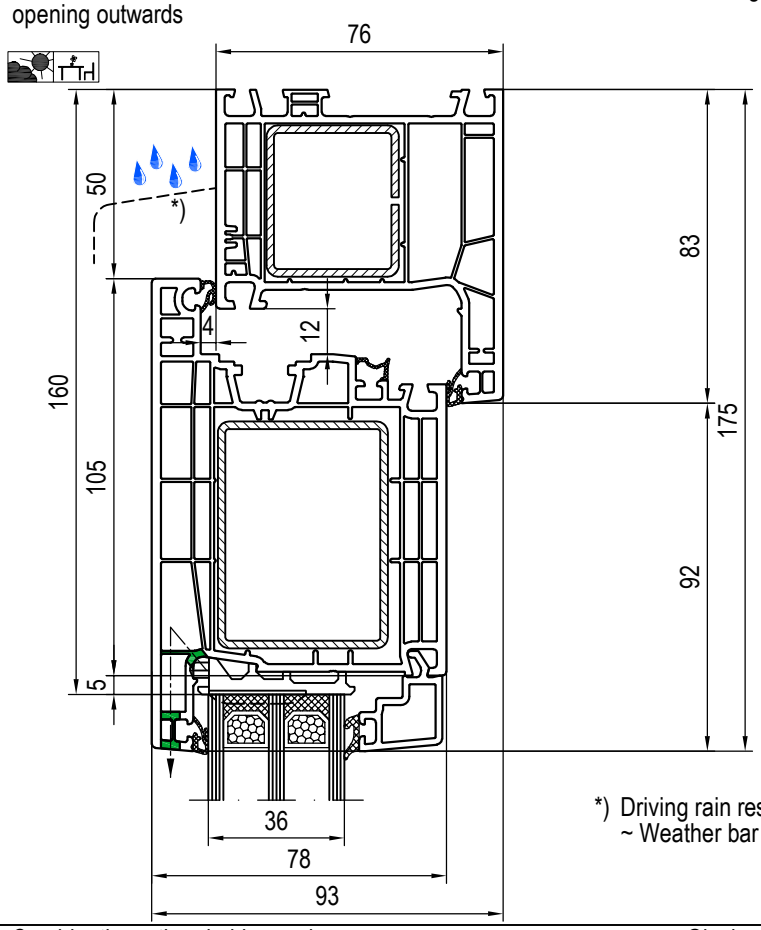
Combinations: frame - sash
opening outwards

Glazing beads 150834/150864
Sash 160x35 |F| 269034
Frame 160x02 |F| 269003
Reinforcements
Option

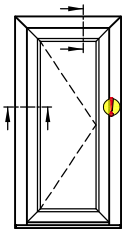
Combinations: frame - sash
laterally (Rebate clearance)



Example ~



*) Driving rain resistant
~ Weather bar

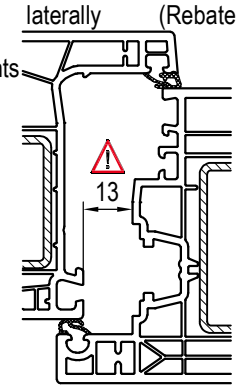


~ top

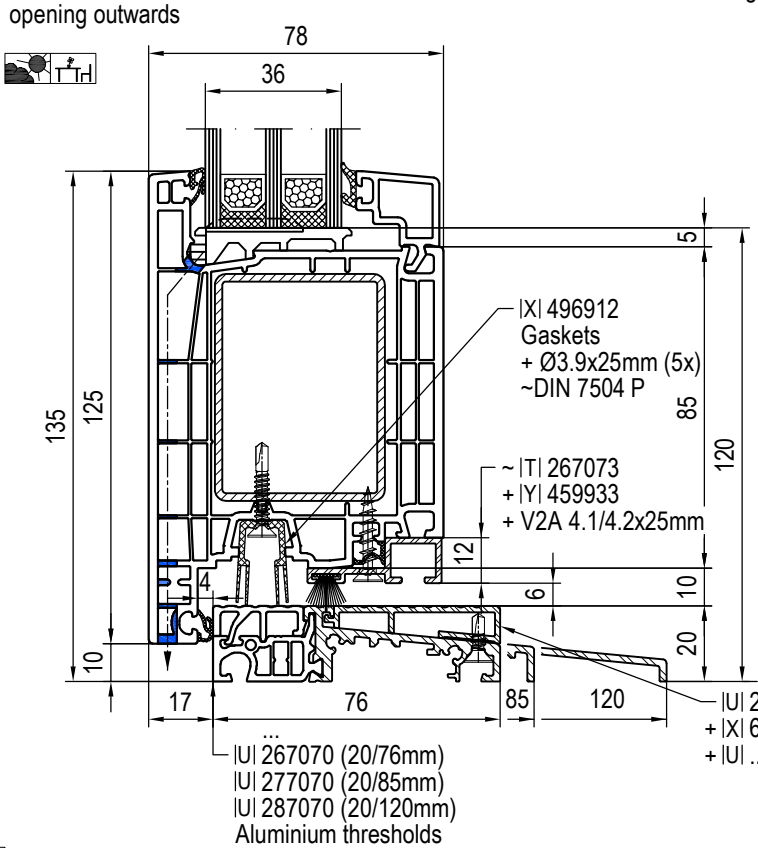
Combinations: thresholds - sash
opening outwards

Glazing beads 150834/150864
Sash 160x35 |F| 269034
Frame 160x02 |F| 269003
Reinforcements
Option

Combinations: frame - sash
laterally (Rebate clearance)



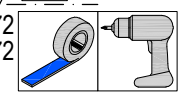
Example ~



~ Aluminium weather bar
+ Brush seals



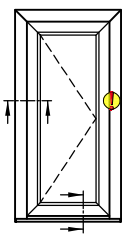
FFL



|U| 267072
+ |X| 690072
+ |U| ...

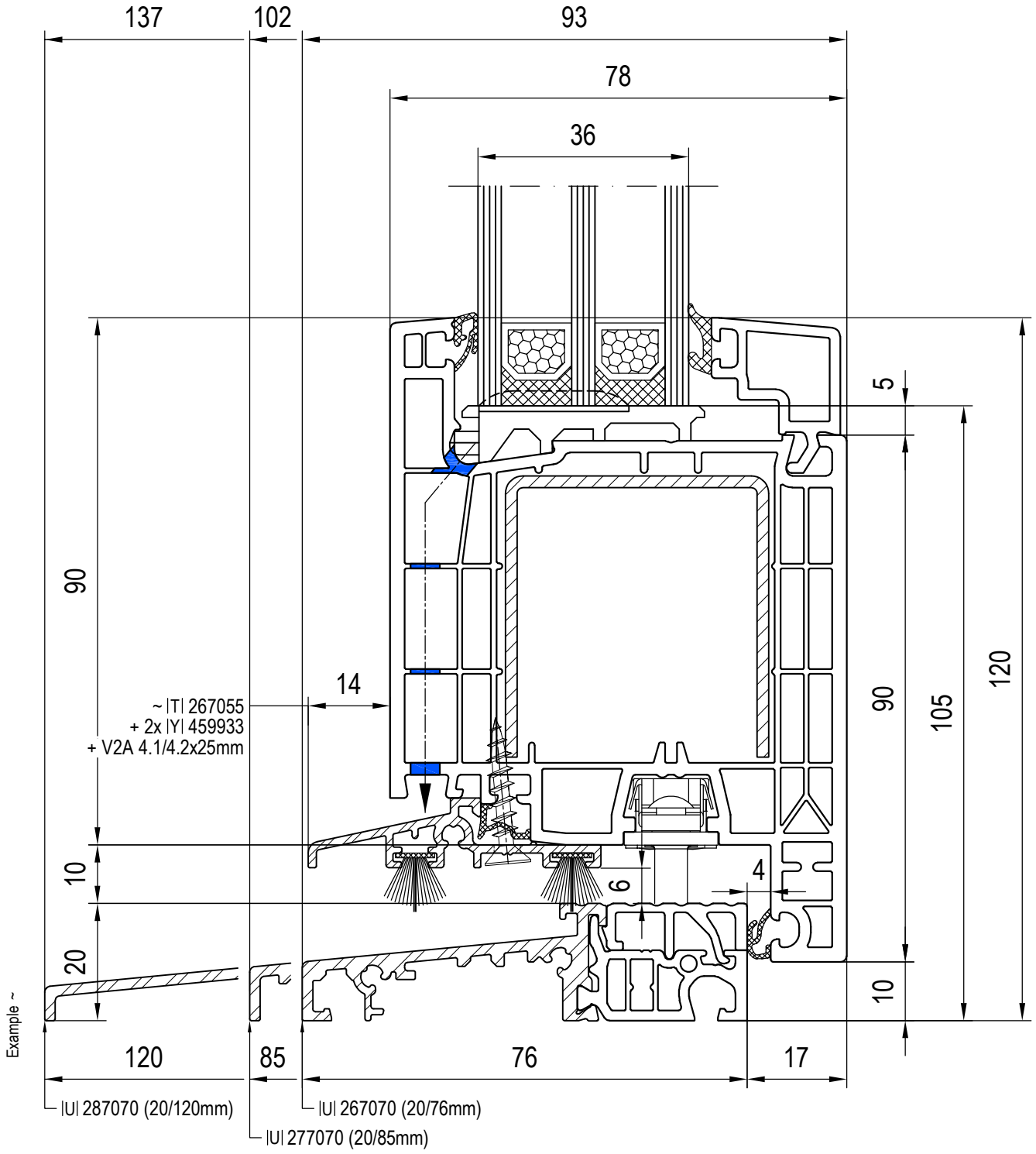
L ≥ 1m: 2x
3.9x13mm
~DIN 7504 P

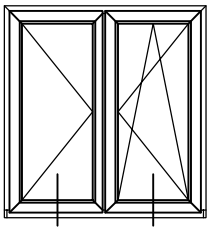
Seal thresholds laterally
with silicone rubber!



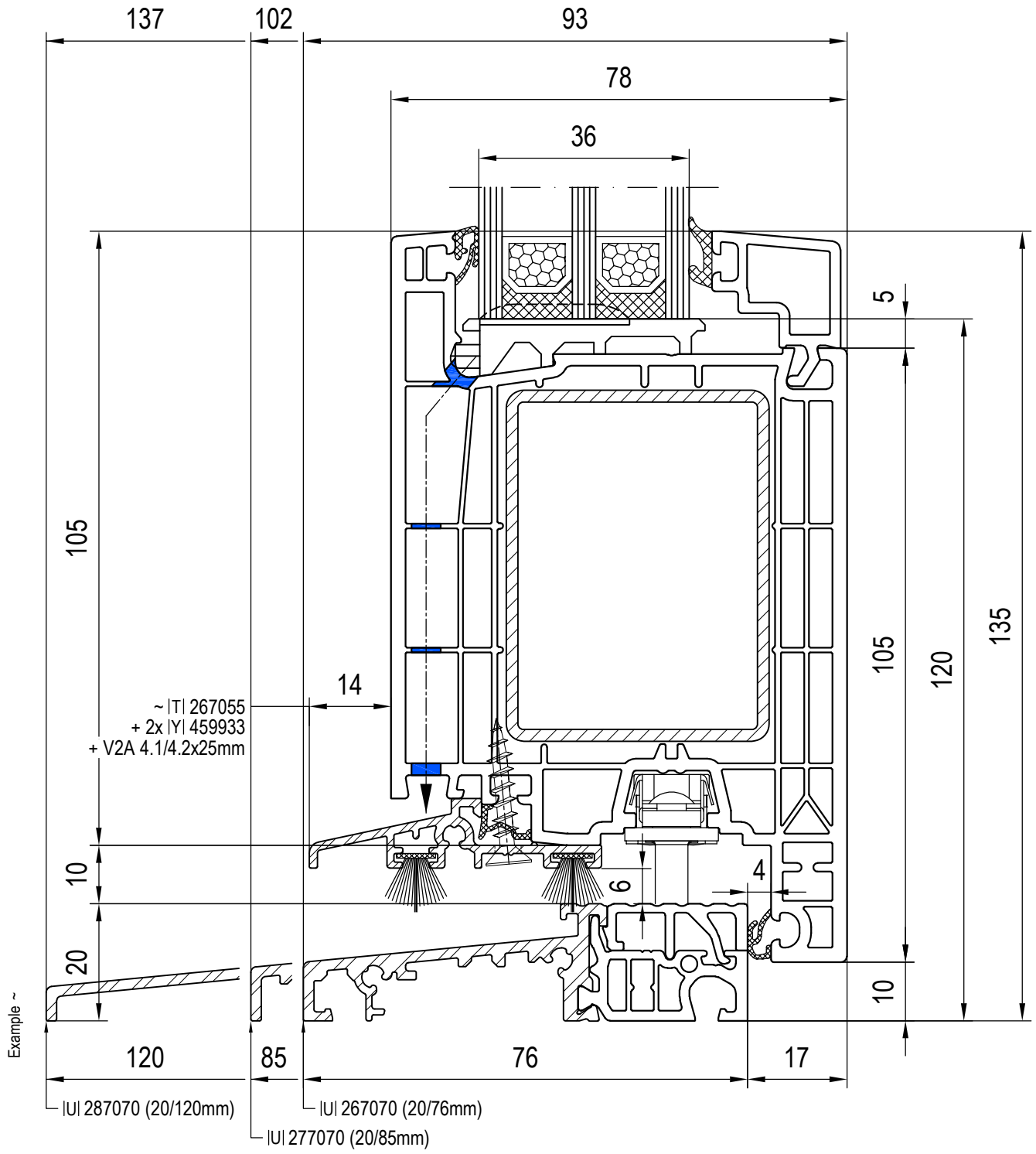
~ bottom

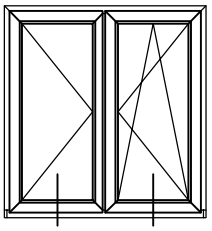
Combinations: Residential door thresholds
Frame/Threshold - Sash opening outwards



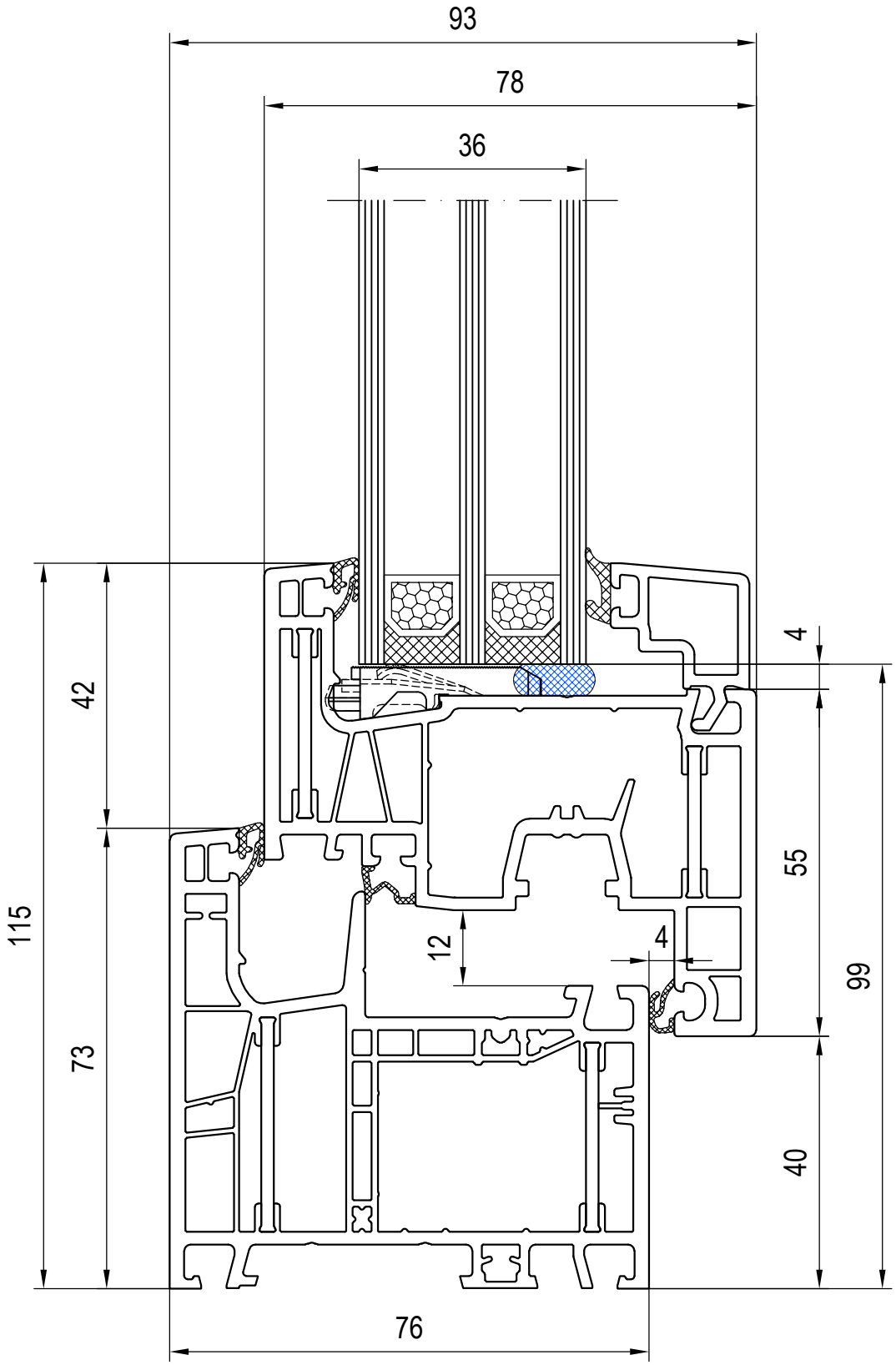


Seal thresholds laterally with silicone rubber!

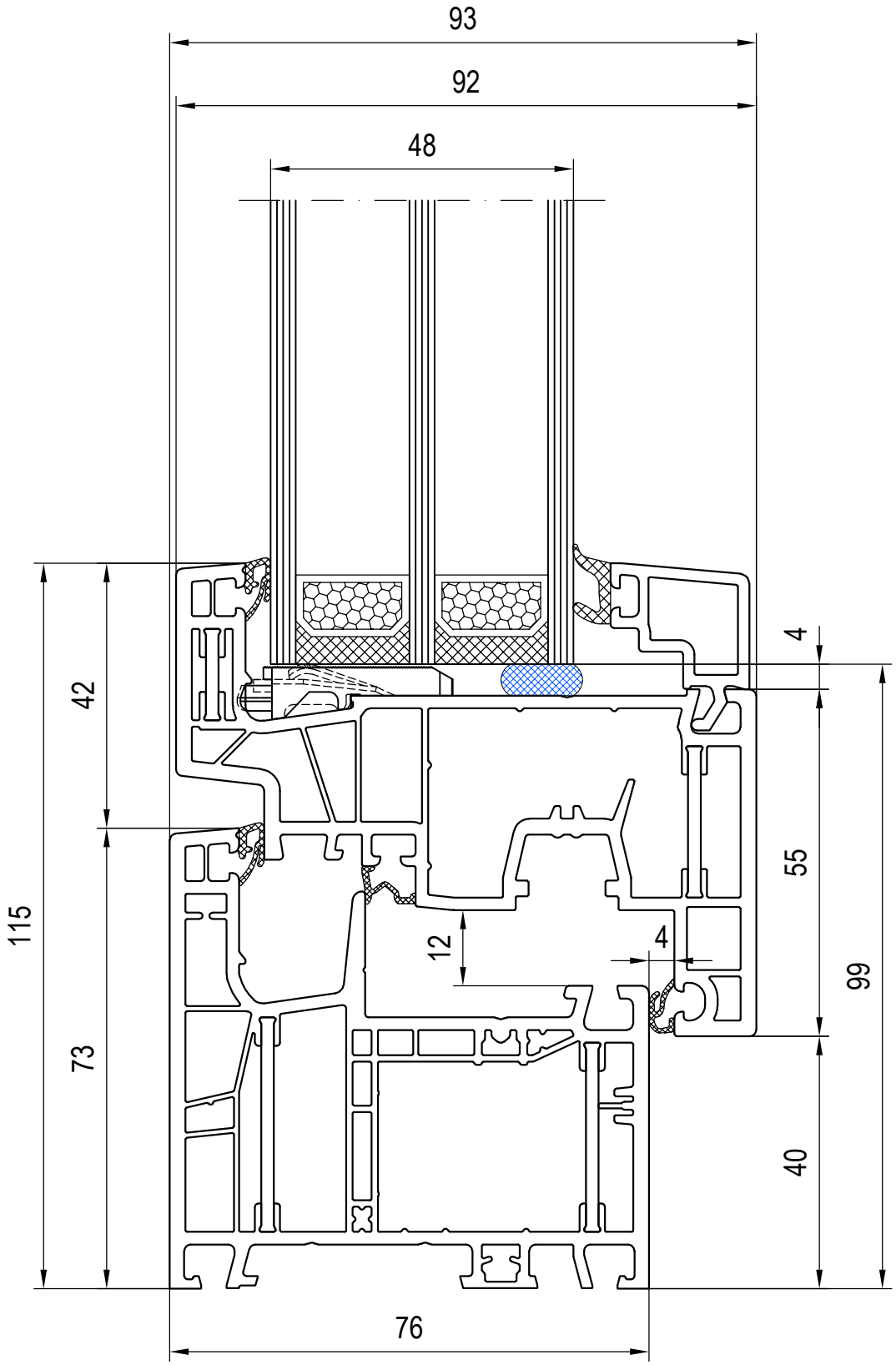




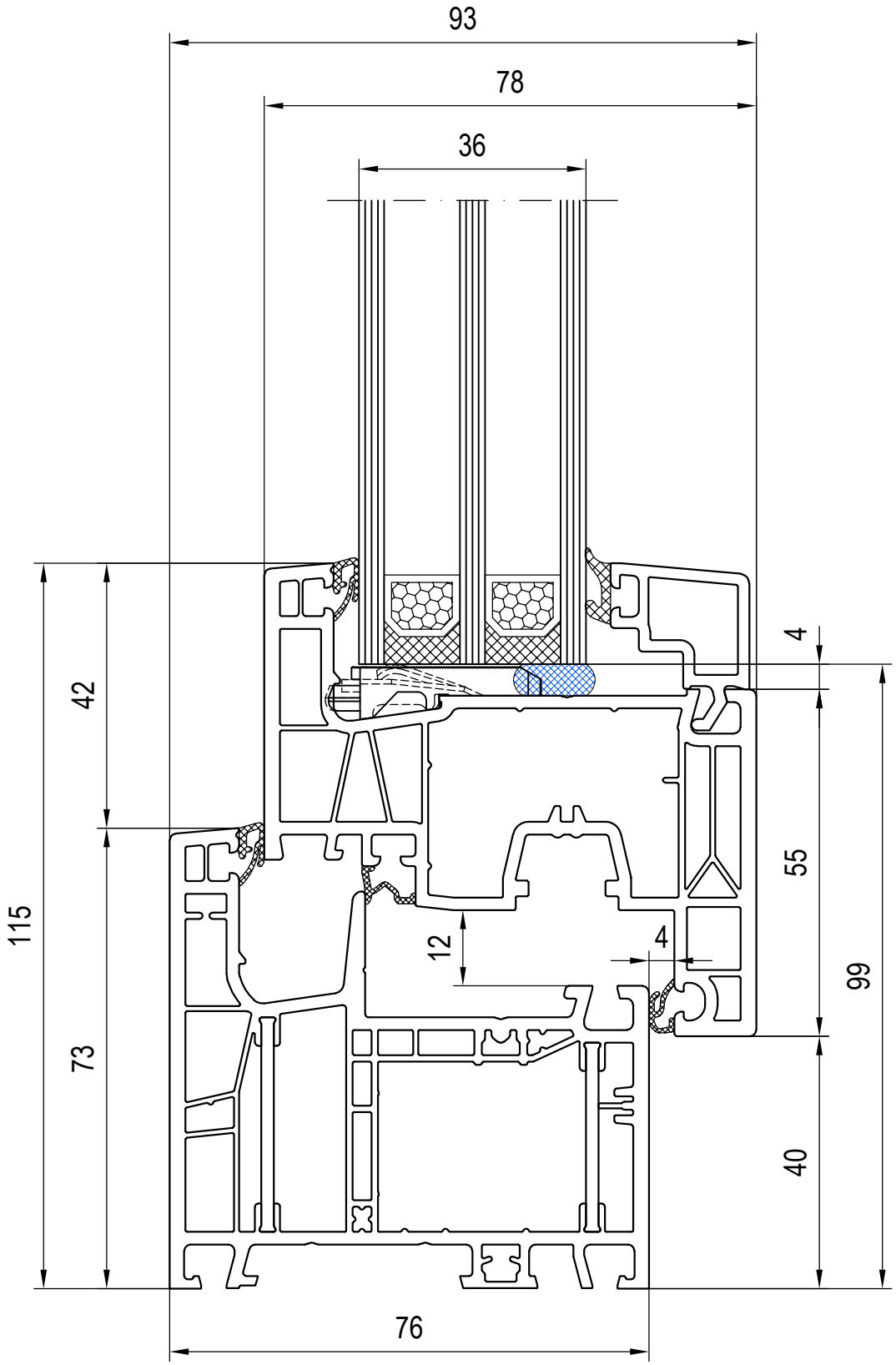
Seal thresholds laterally with silicone rubber!



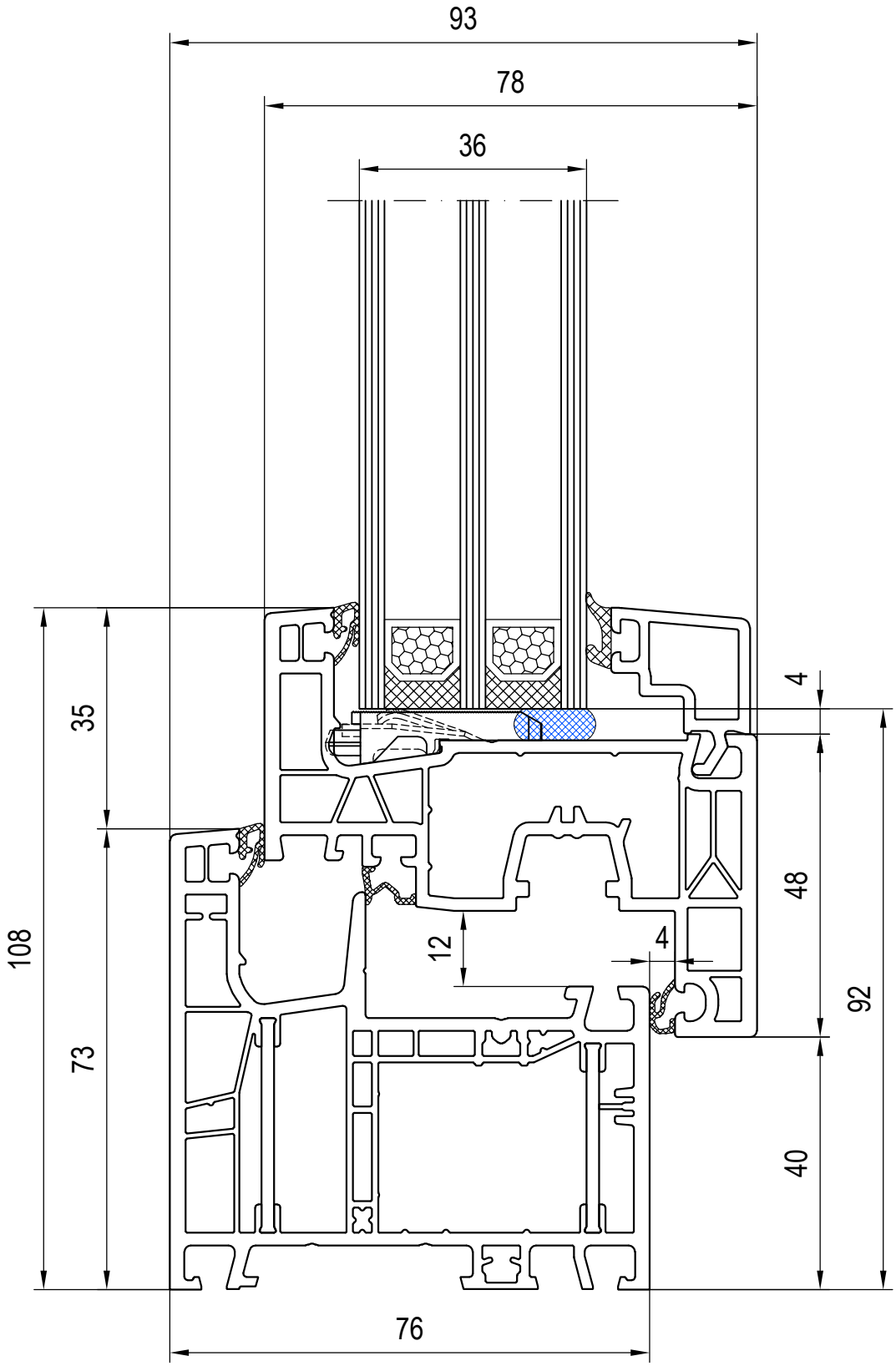
Example ~



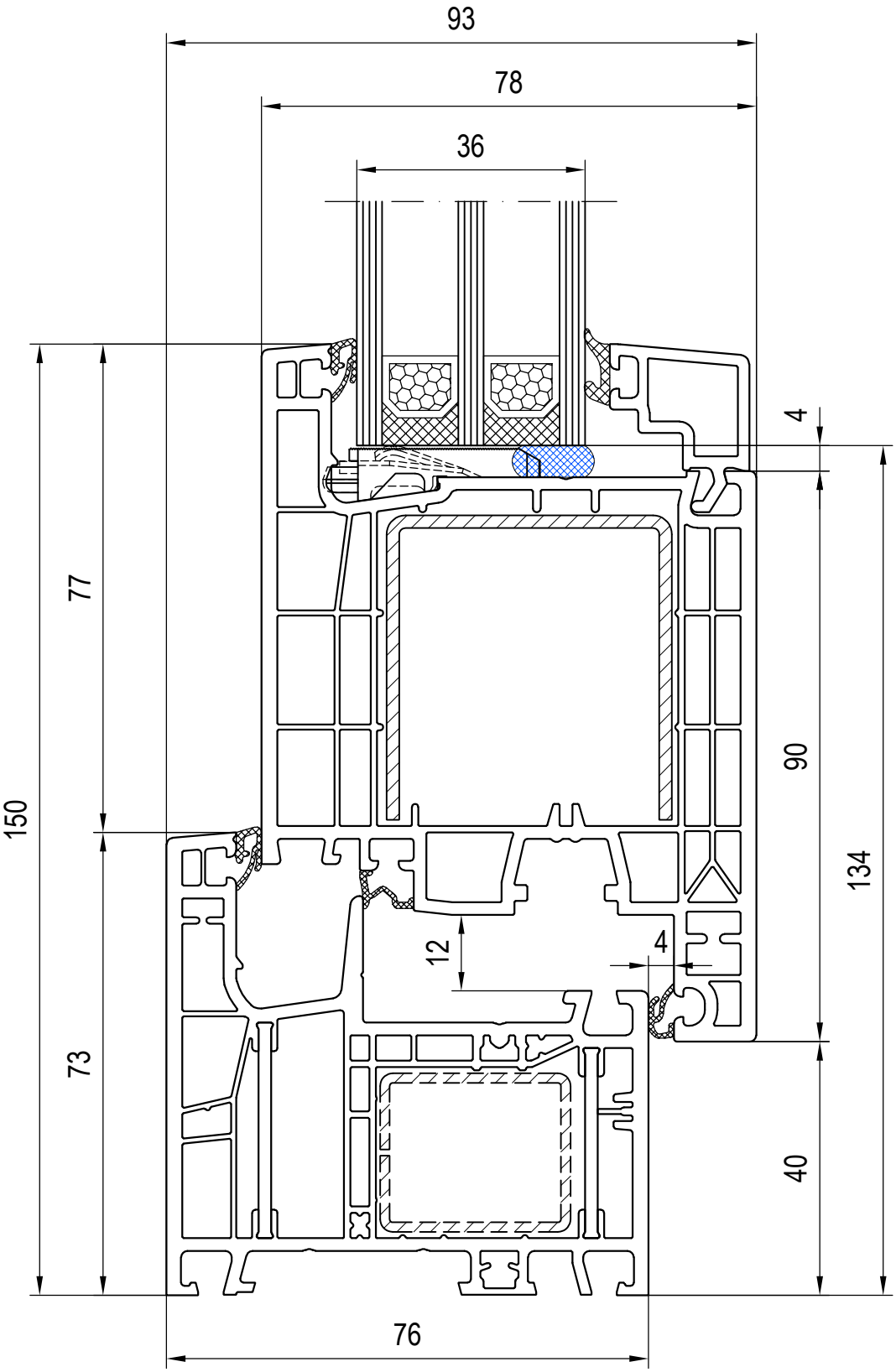
Example ~



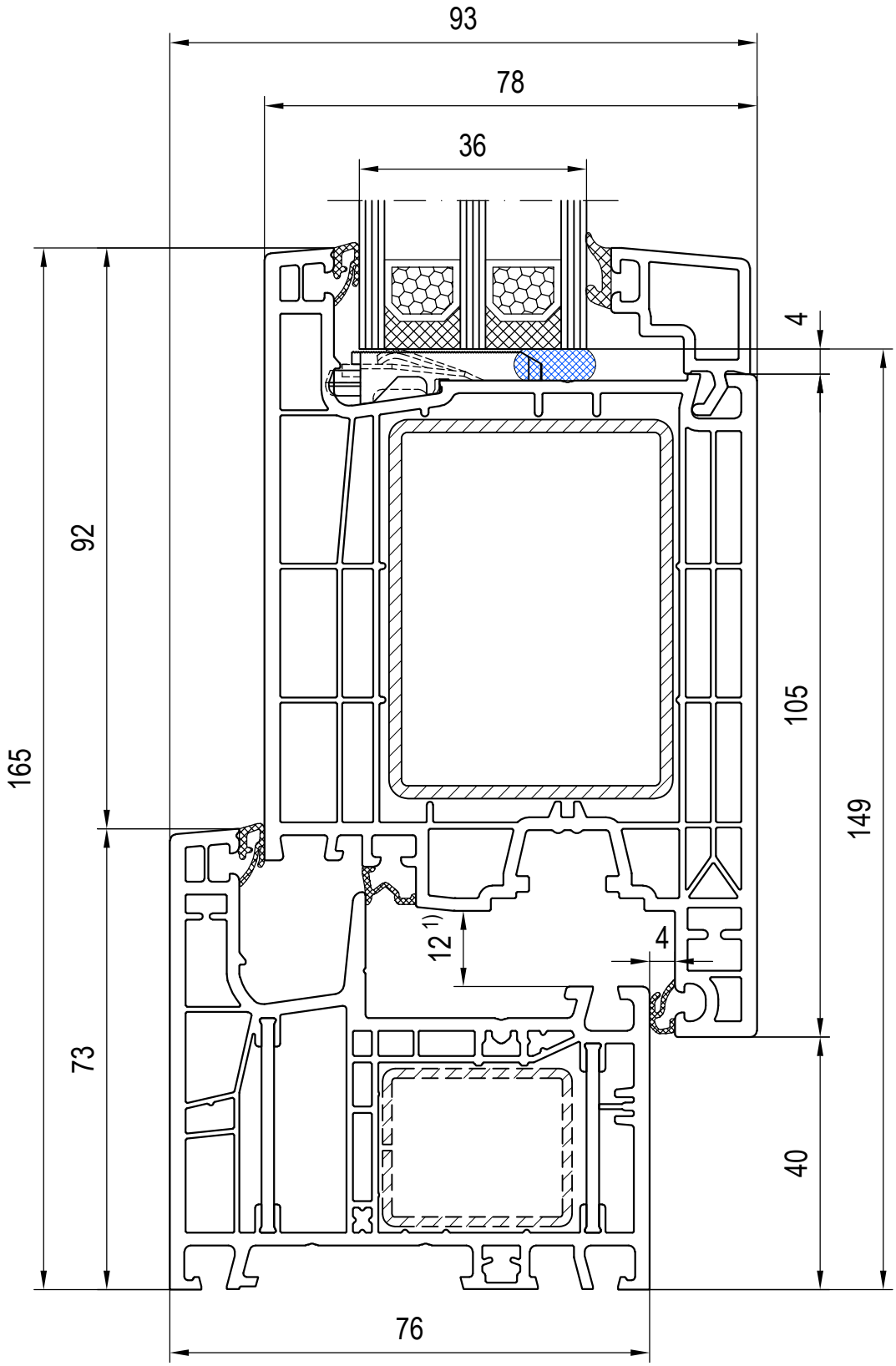
Example ~



Example ~

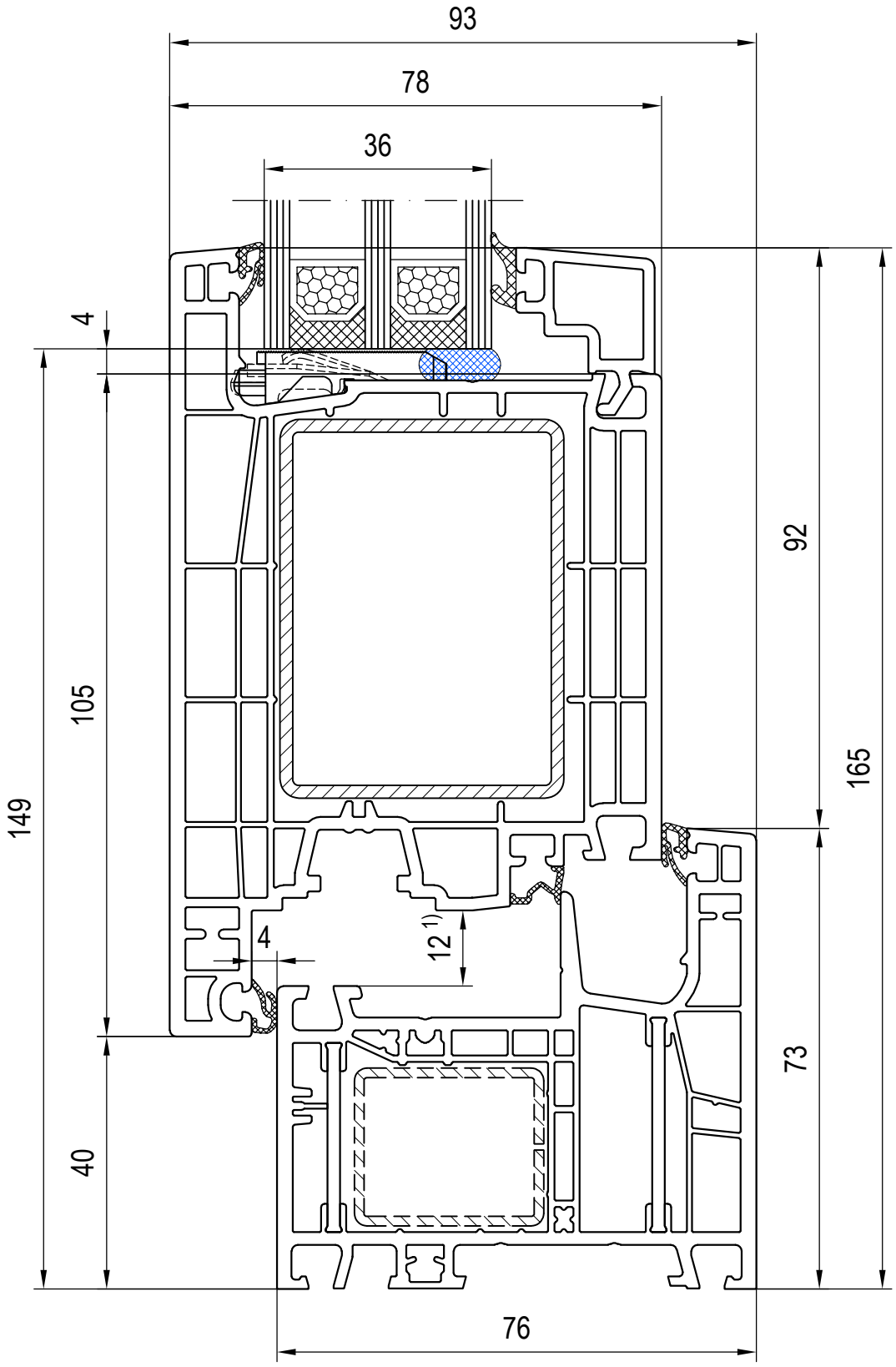


Example ~



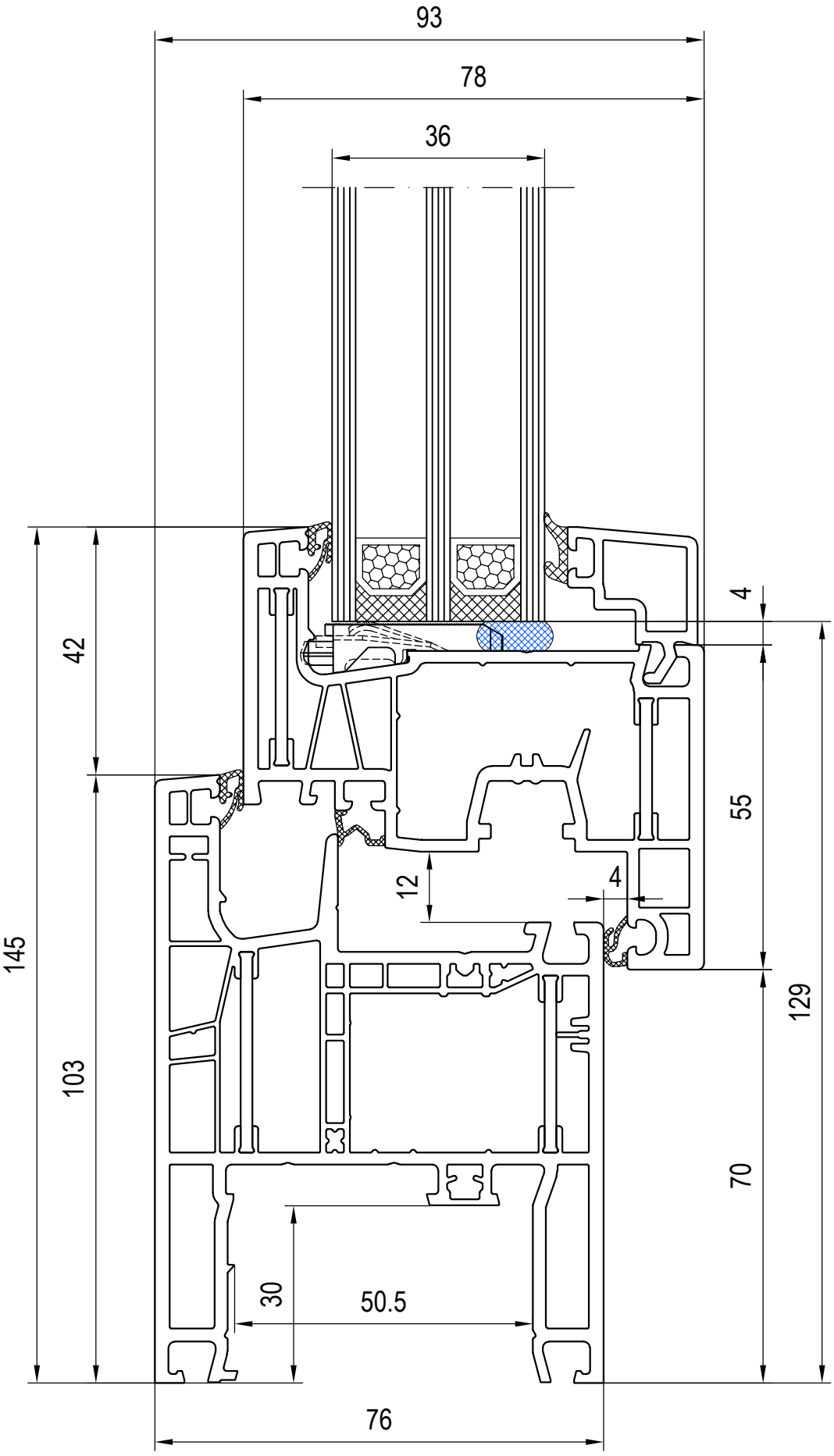
Example ~

1) Rebate clearance of main entrance door on left and right side = 13 mm

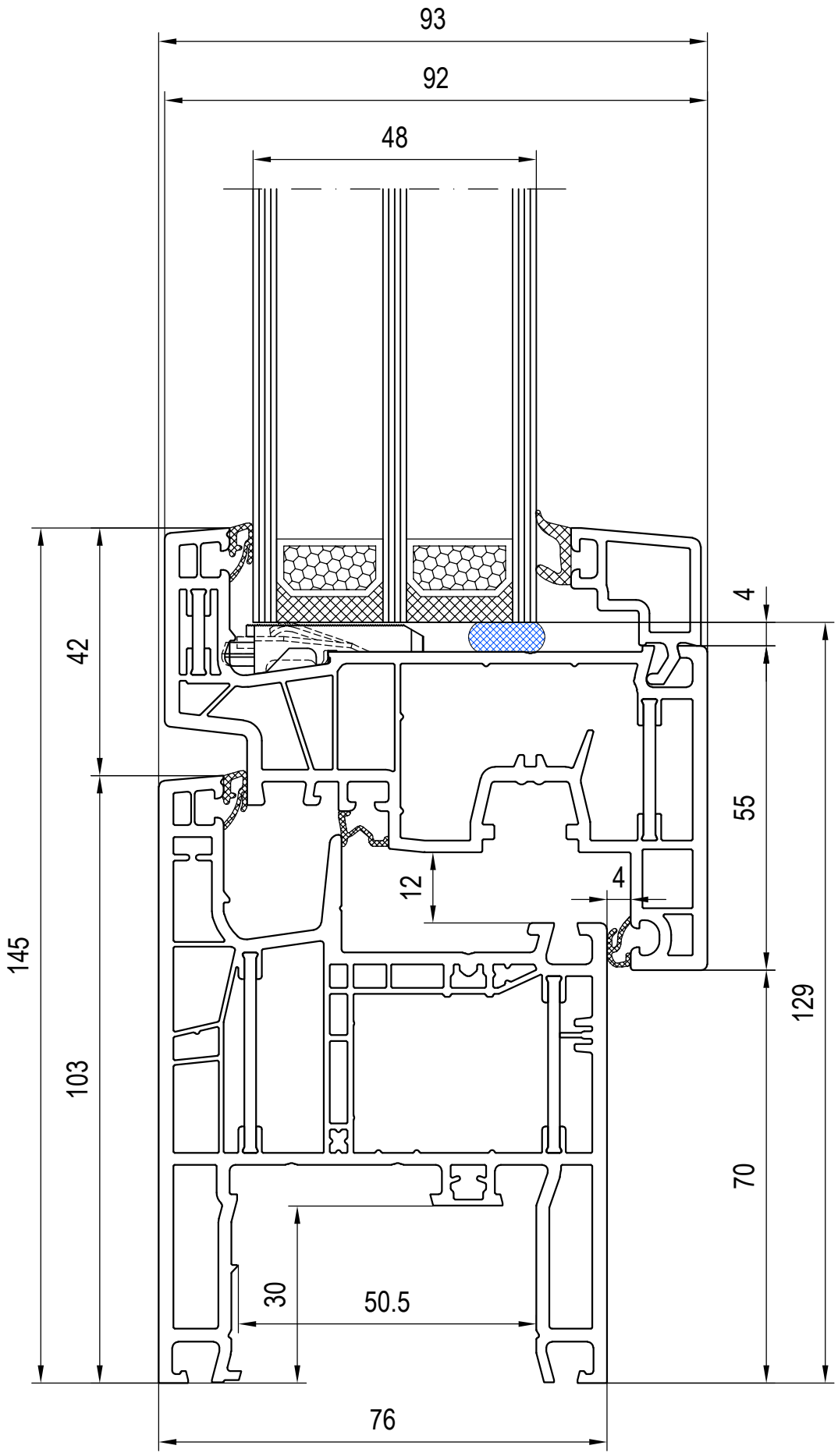


Example ~

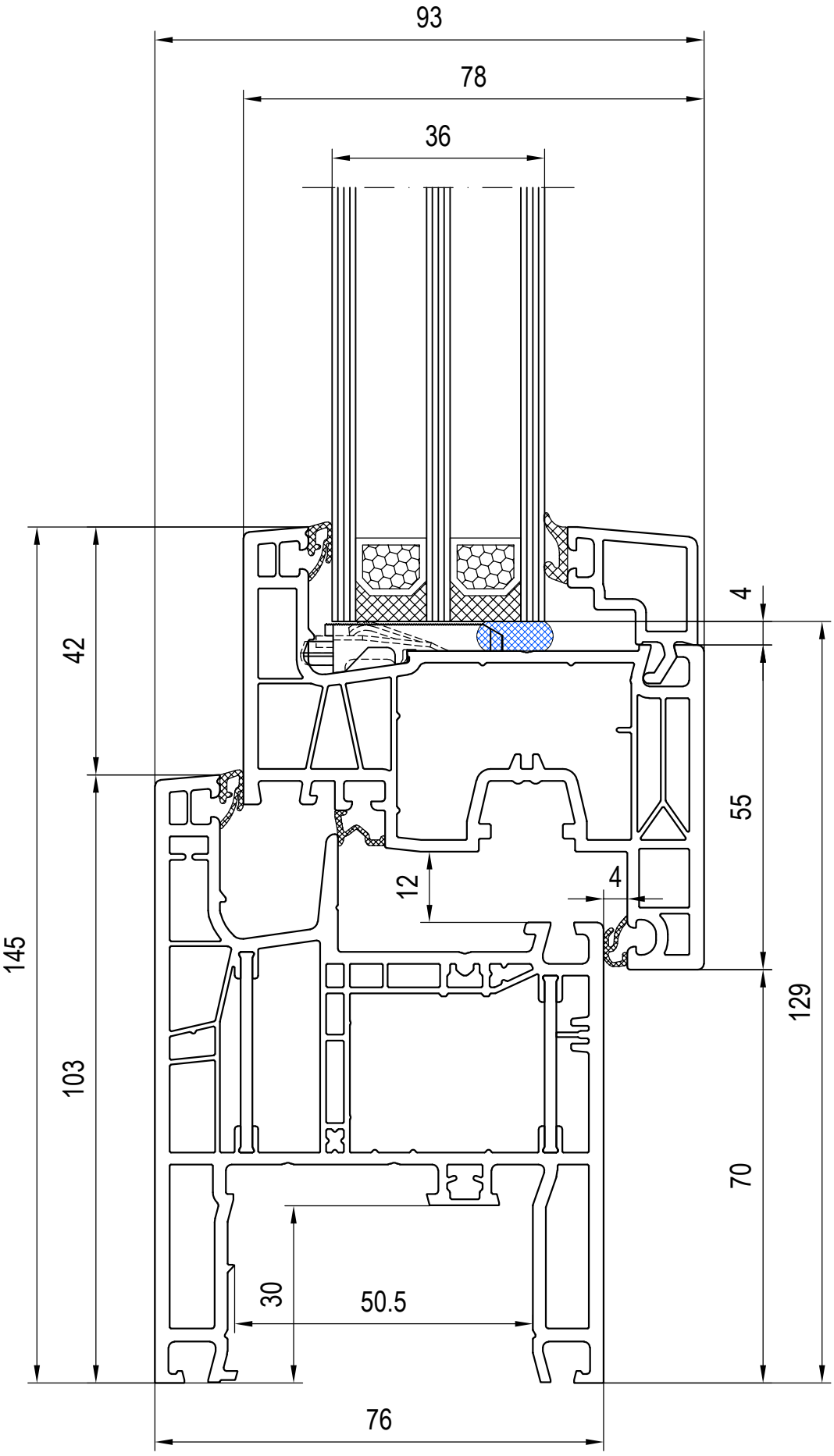
1) Rebate clearance of main entrance door on left and right side = 13 mm



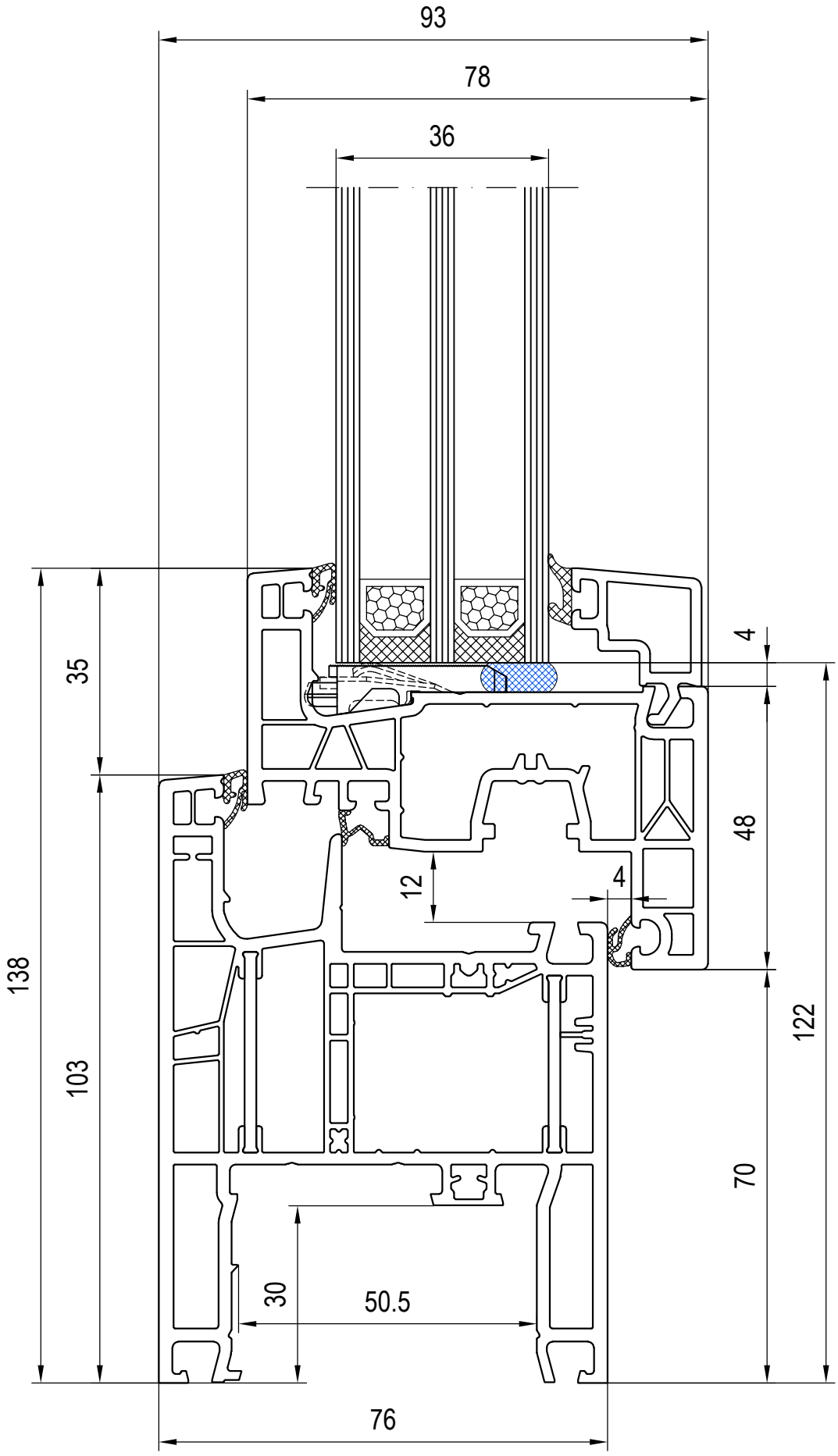
Example ~



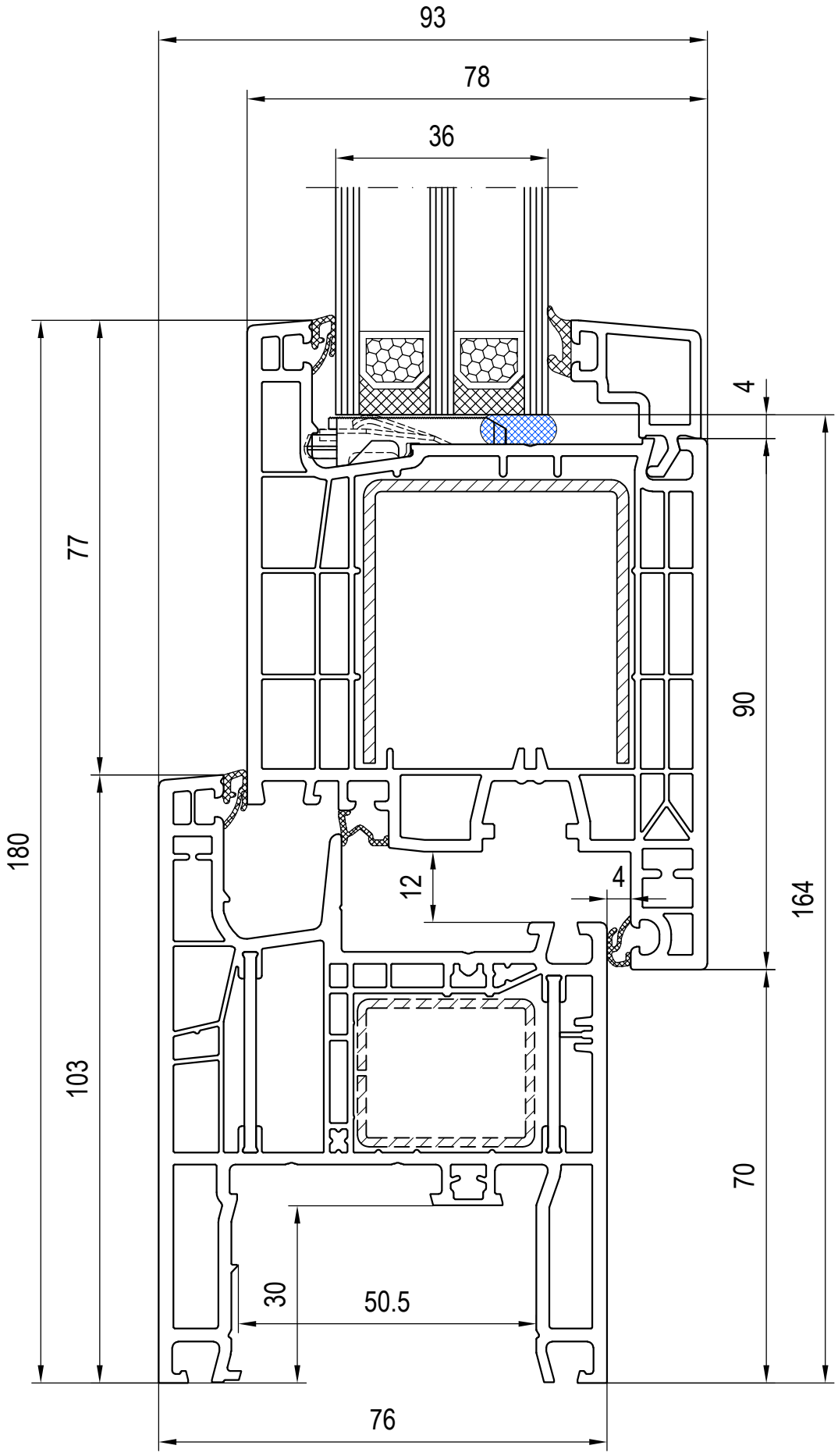
Example ~



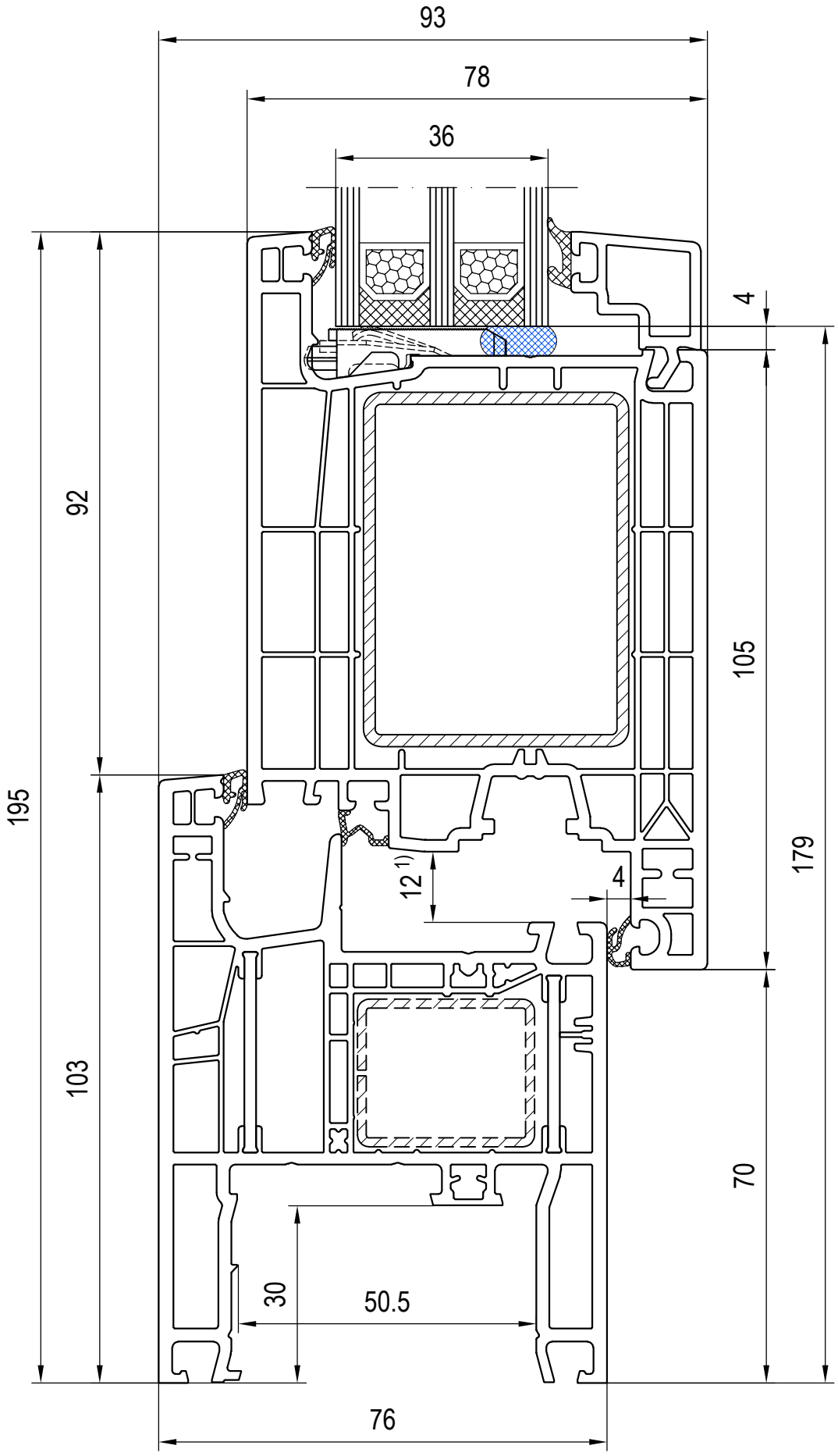
Example ~



Example ~

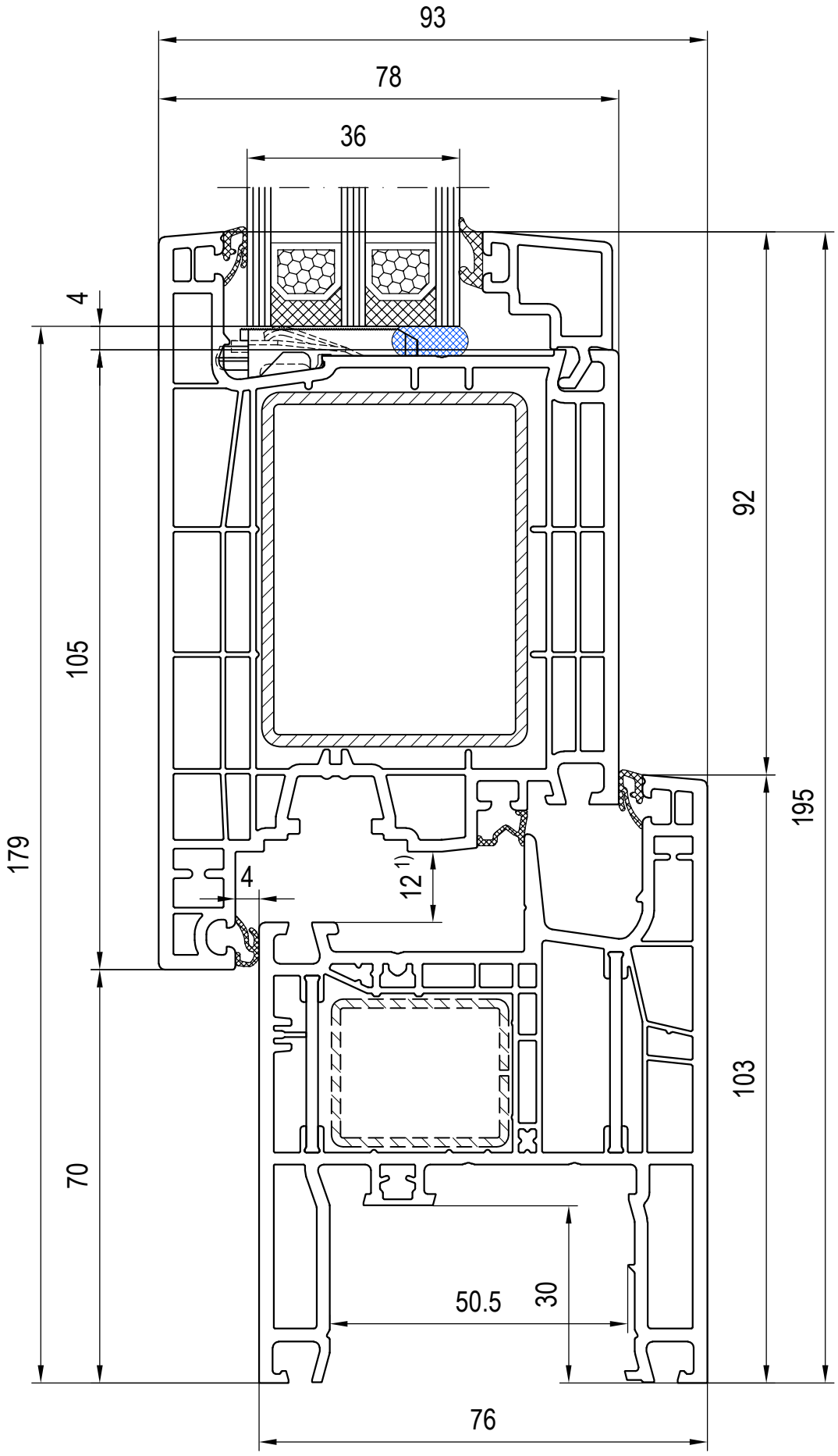


Example ~



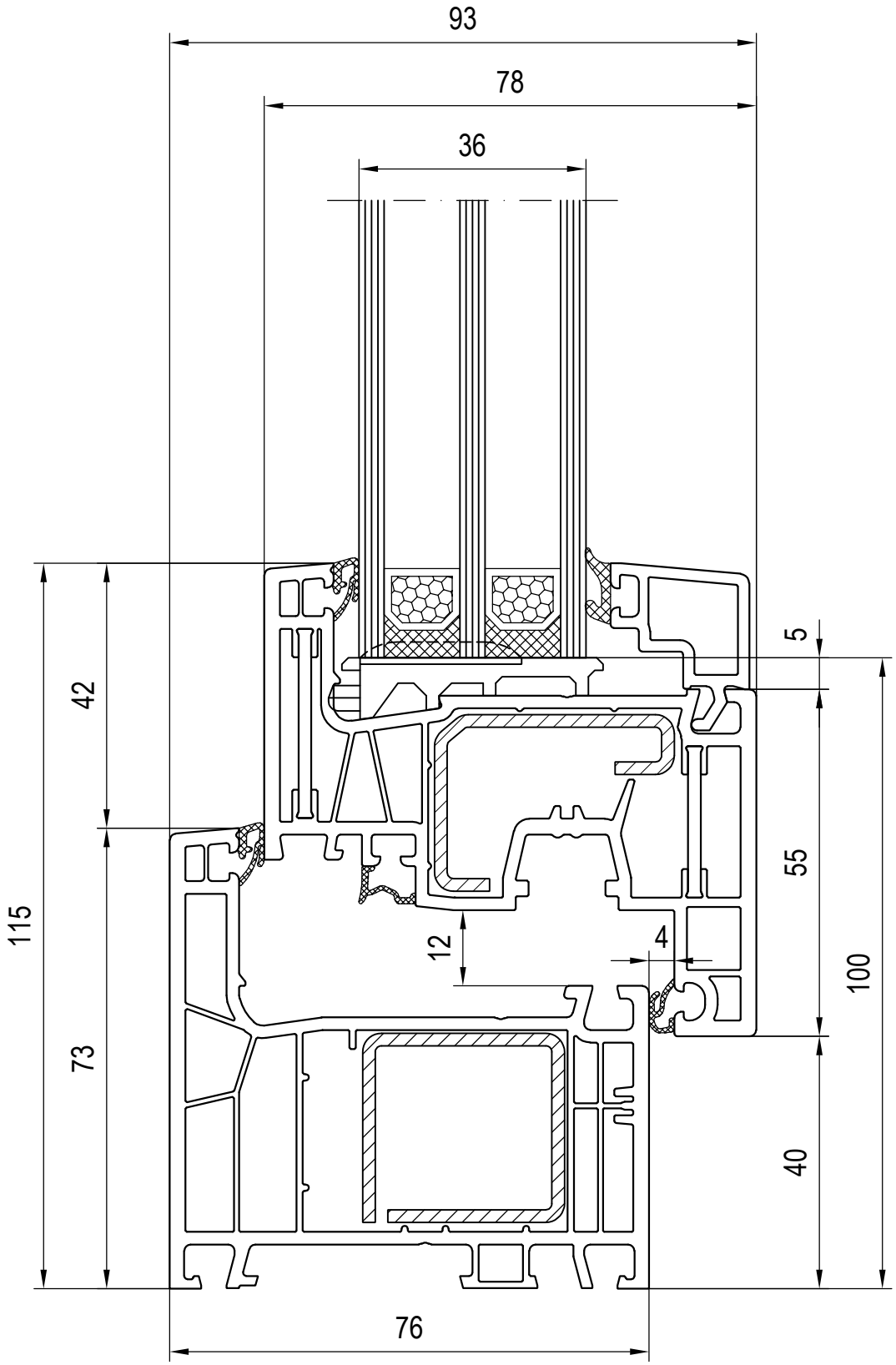
Example ~

1) Rebate clearance of main entrance door on left and right side = 13 mm

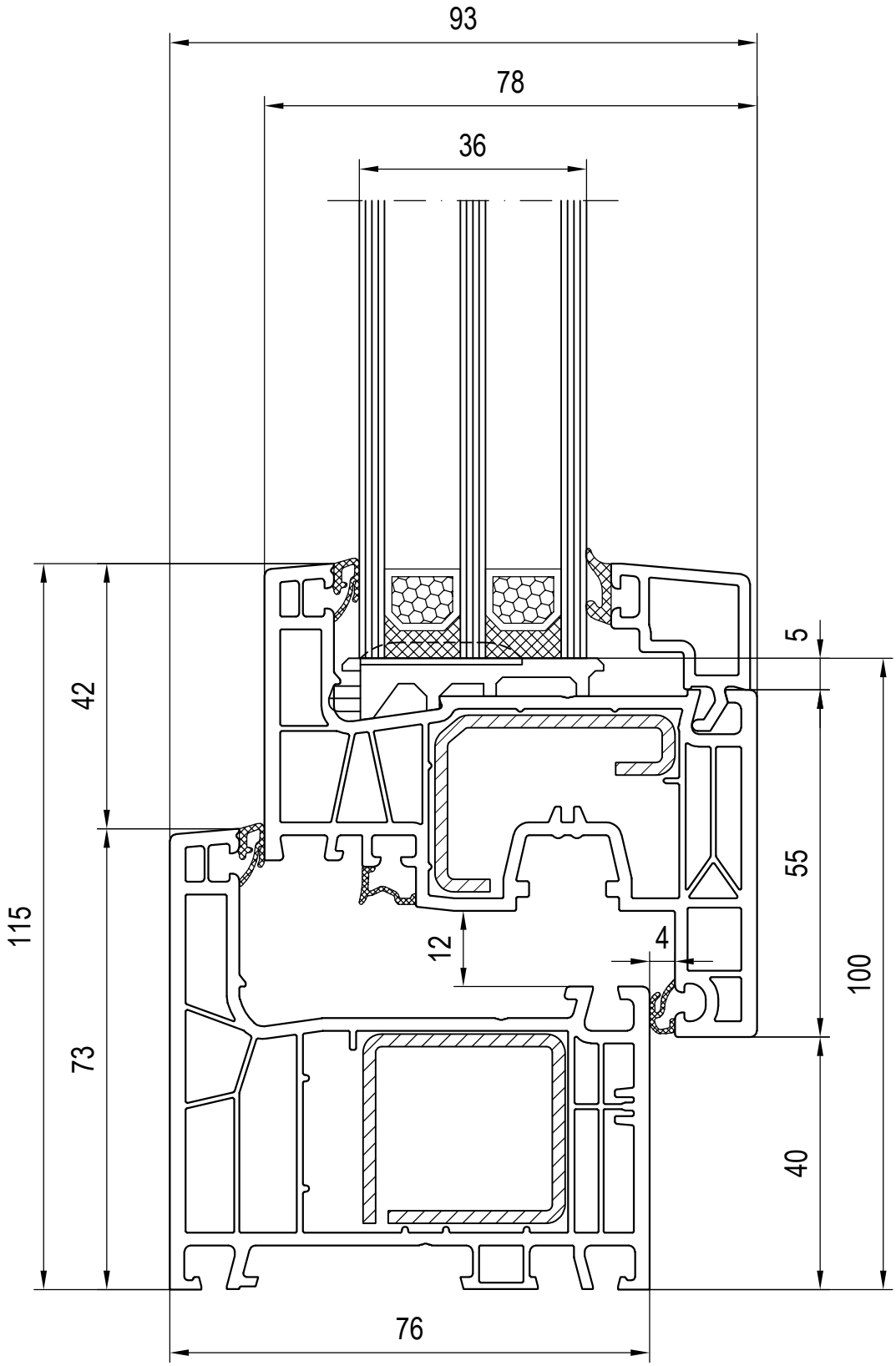


Example ~

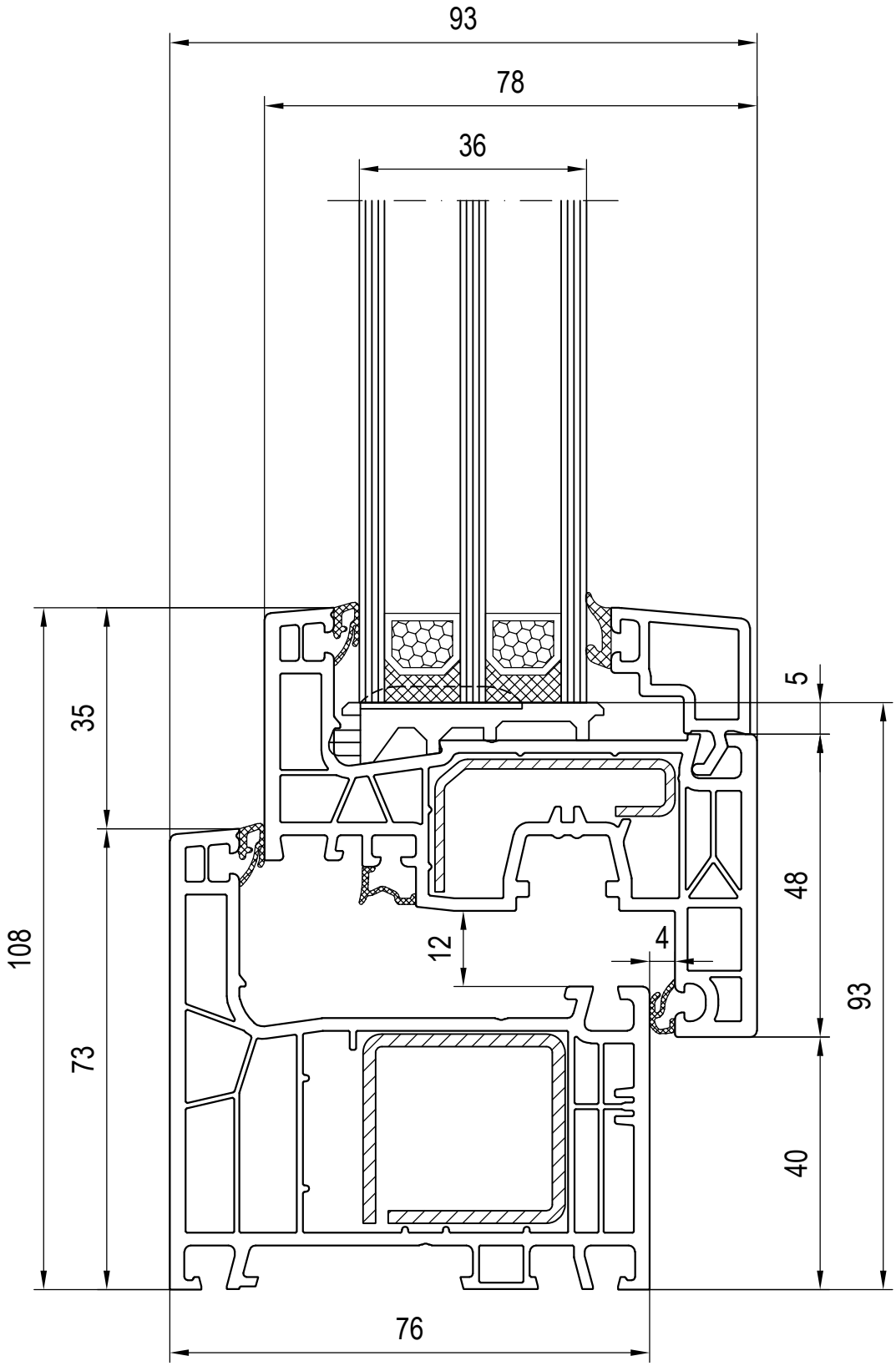
1) Rebate clearance of main entrance door on left and right side = 13 mm



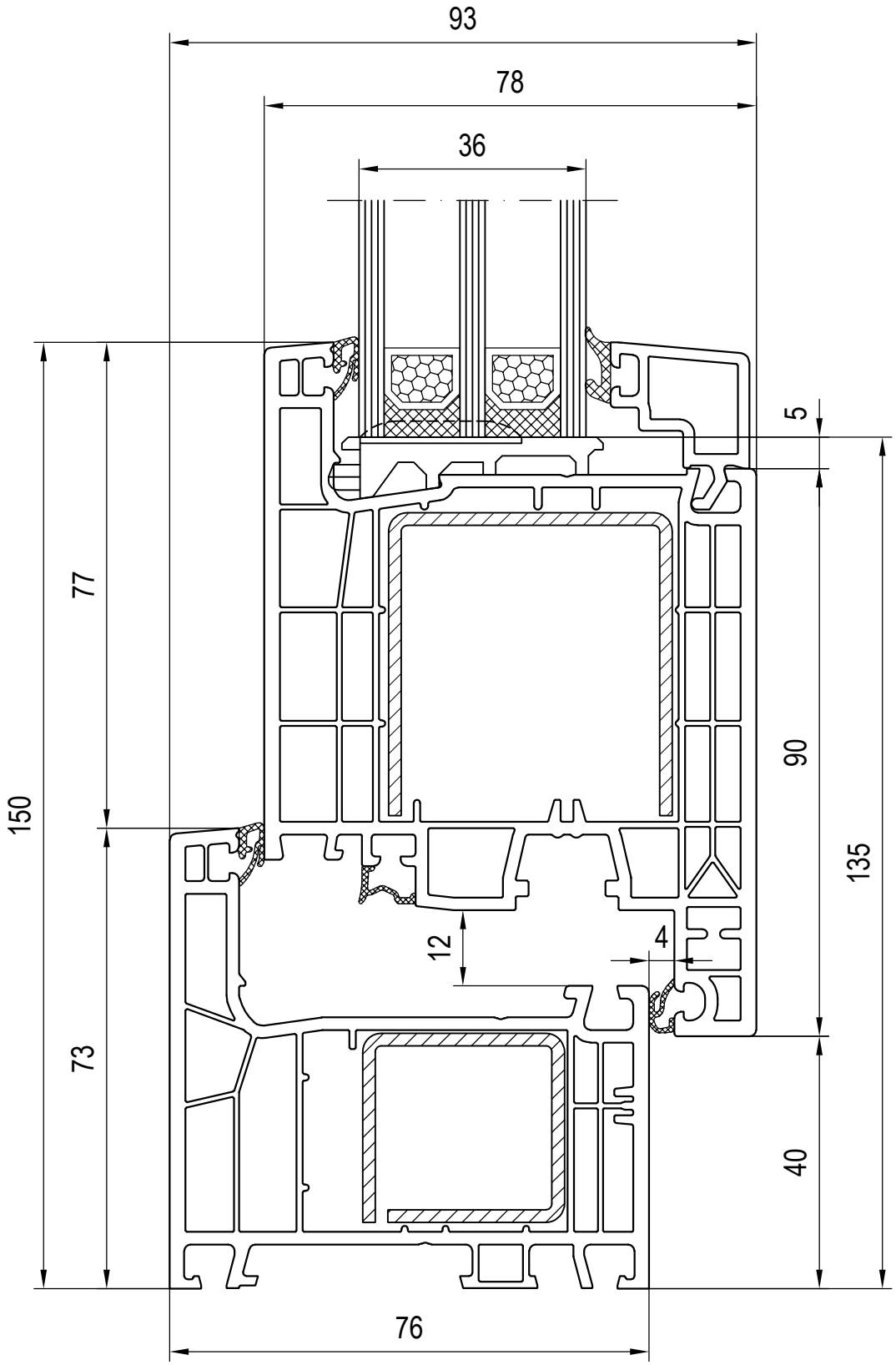
Example ~



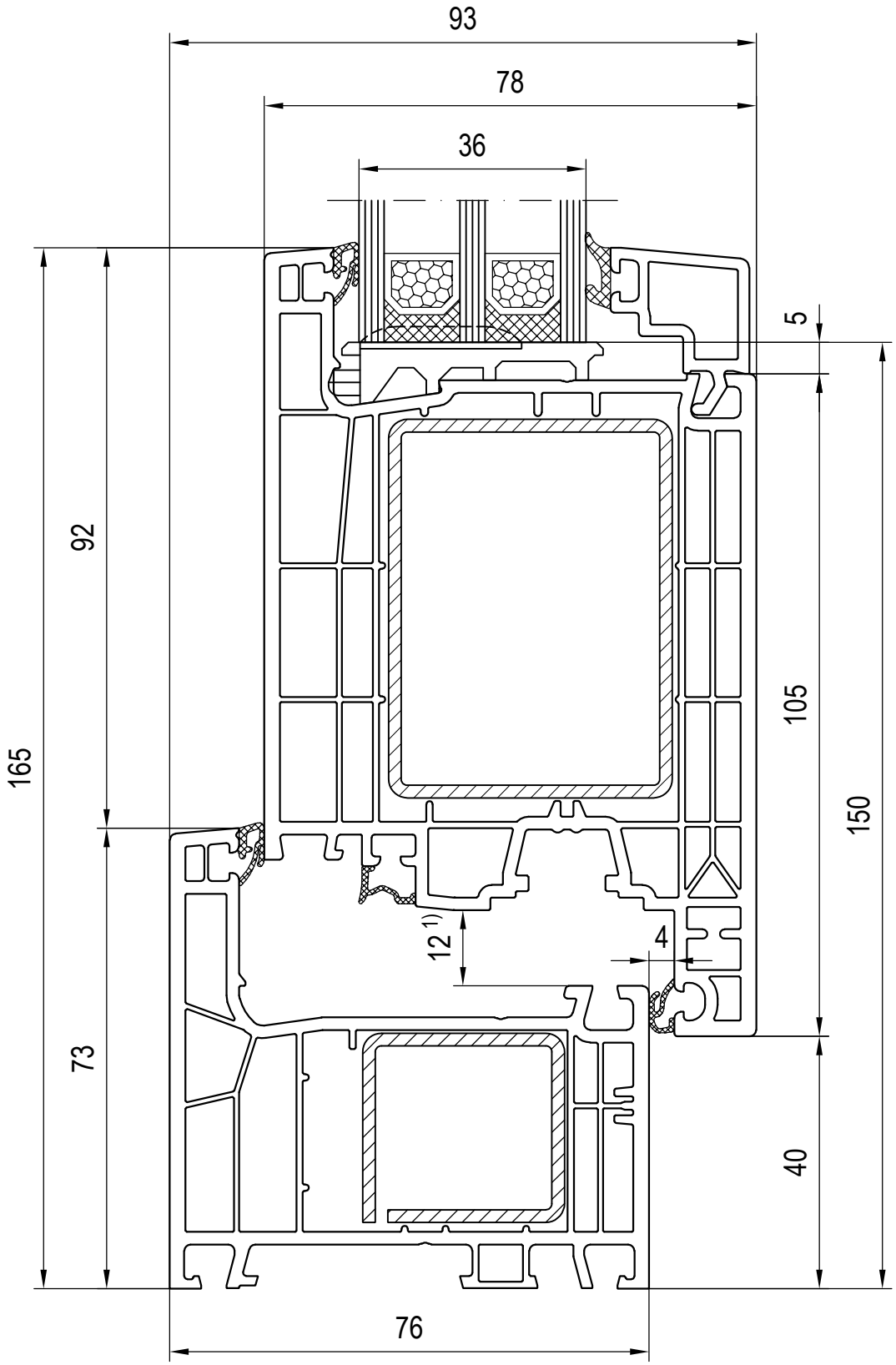
Example ~



Example ~

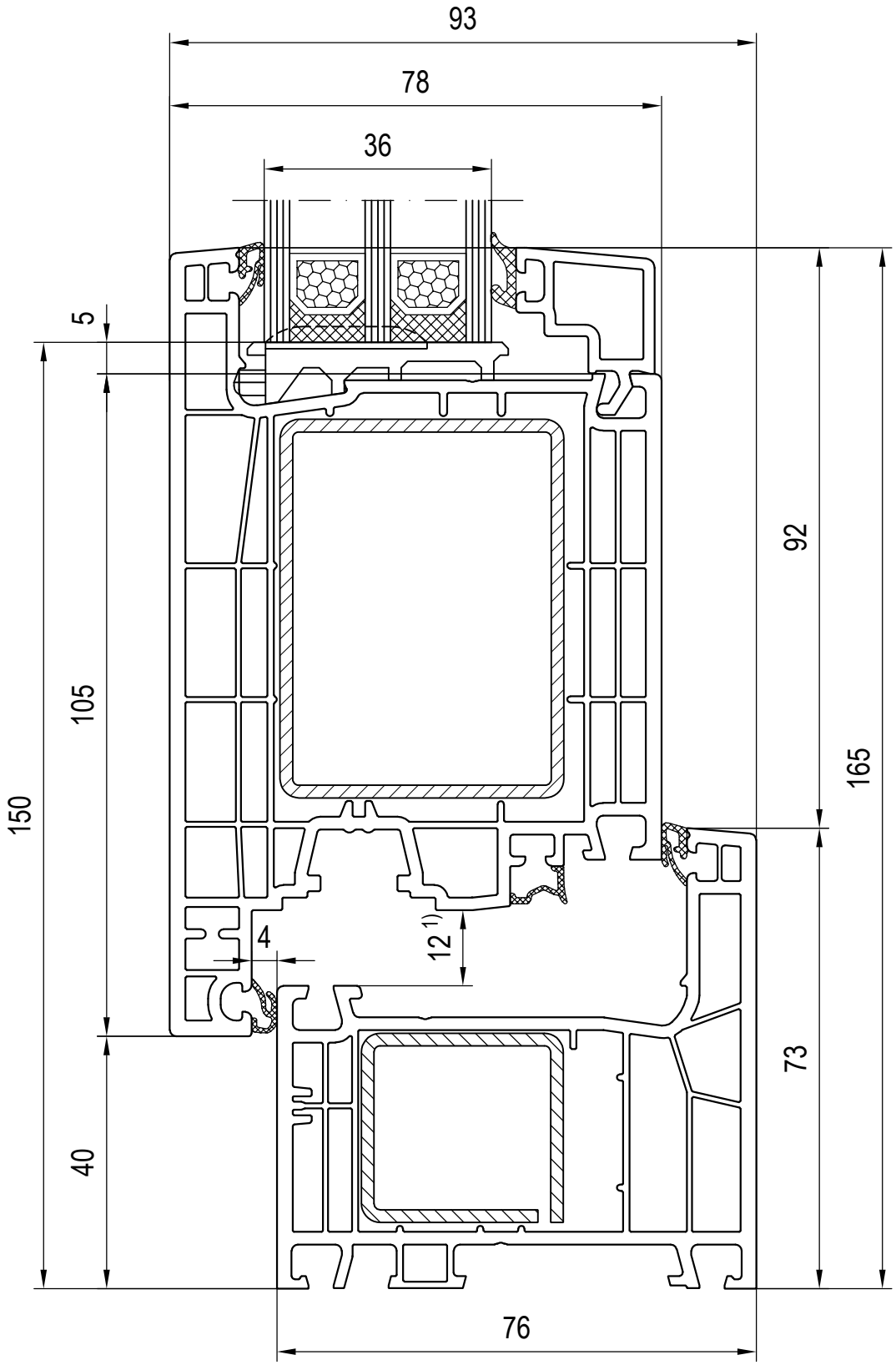


Example ~



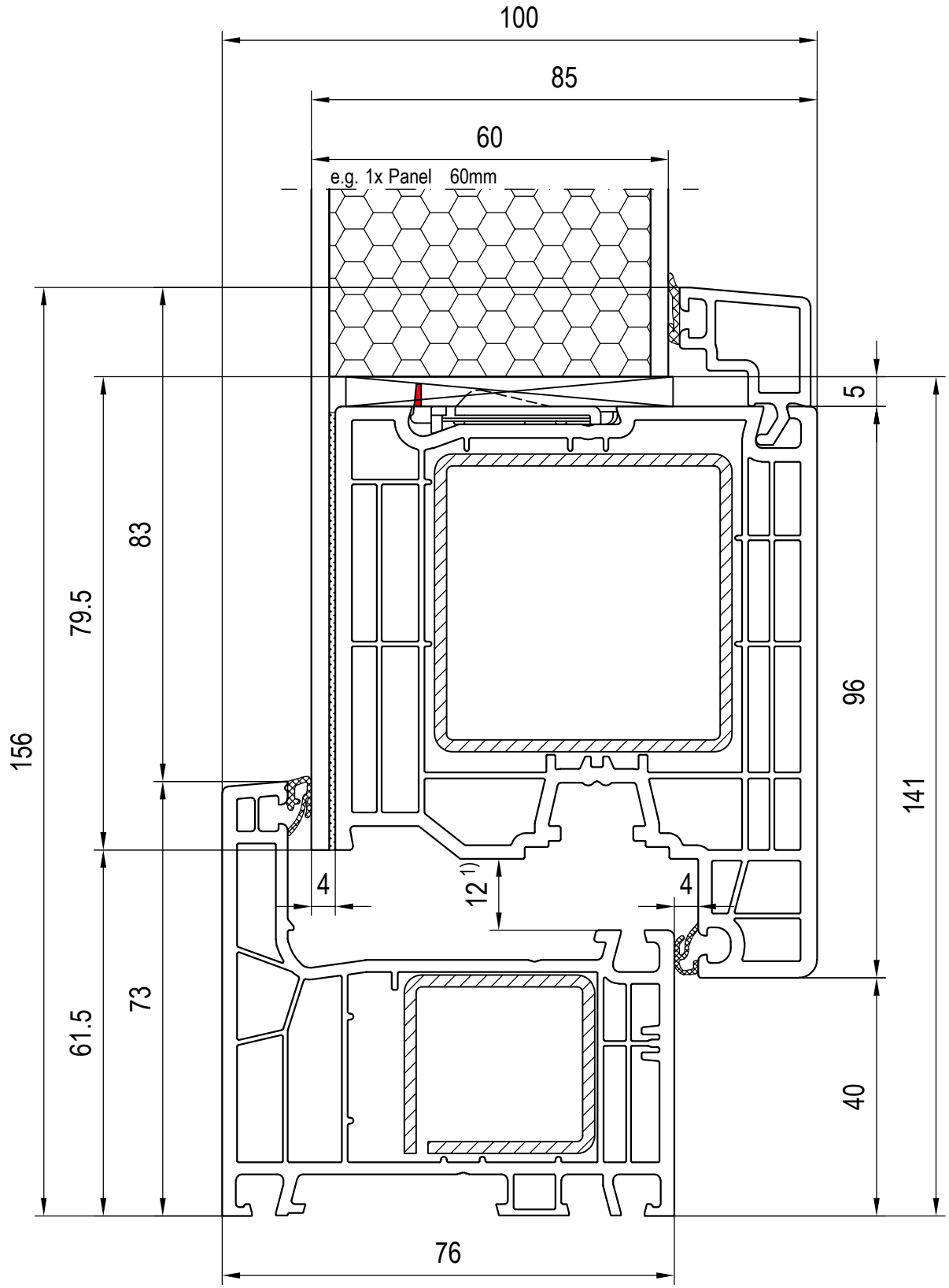
Example ~

1) Rebate clearance of main entrance door on left and right side = 13 mm



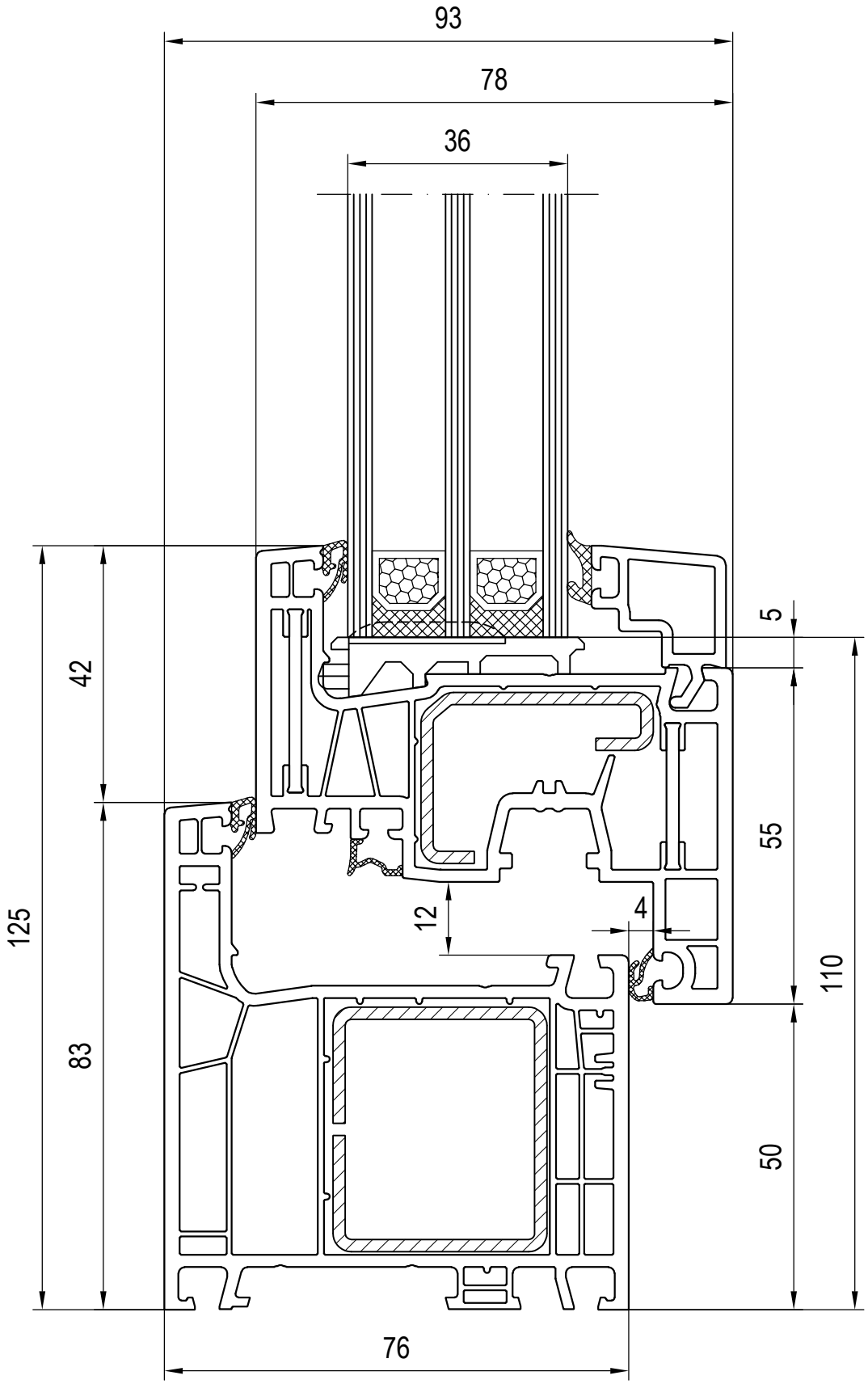
Example ~

1) Rebate clearance of main entrance door on left and right side = 13 mm

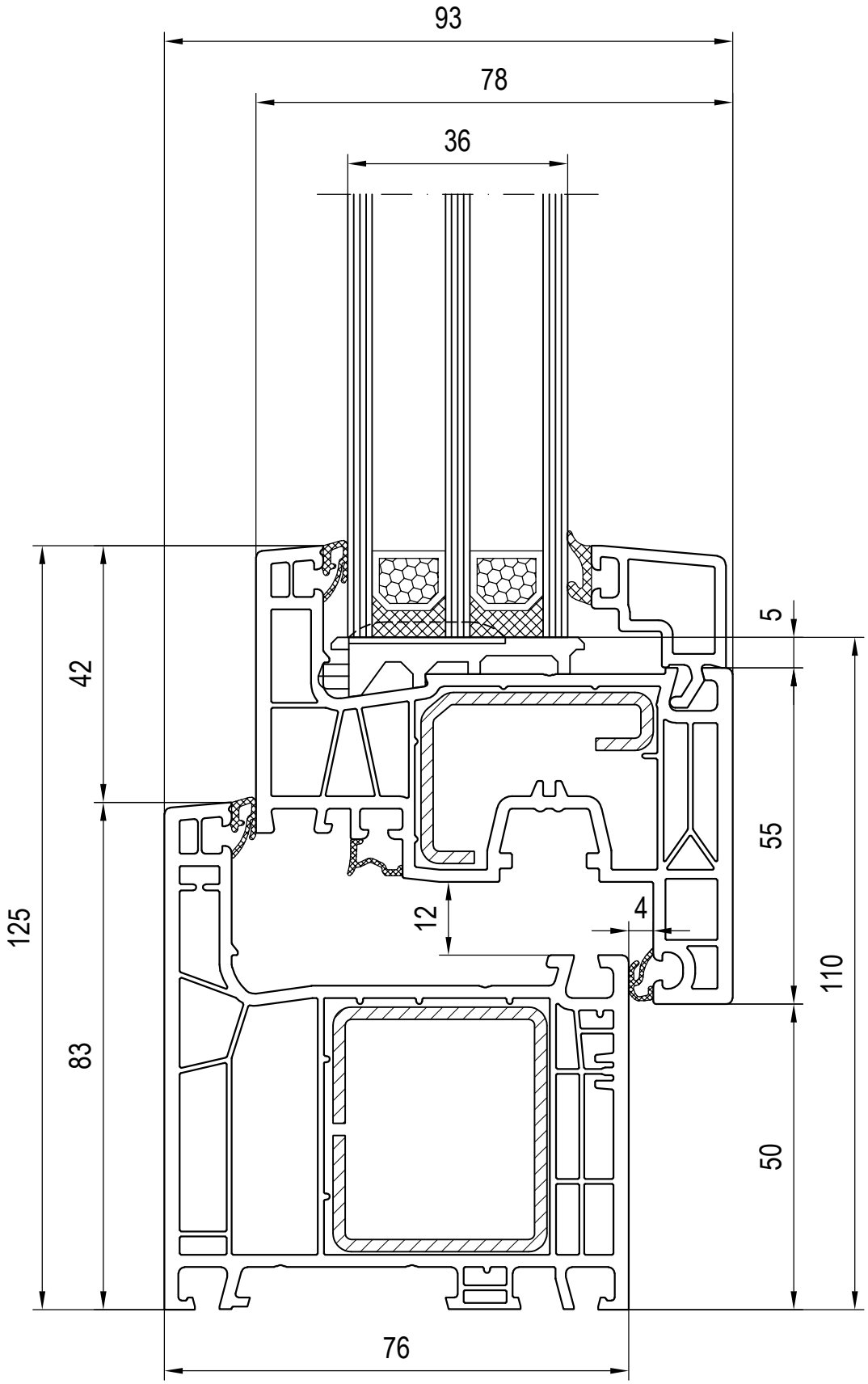


Example ~

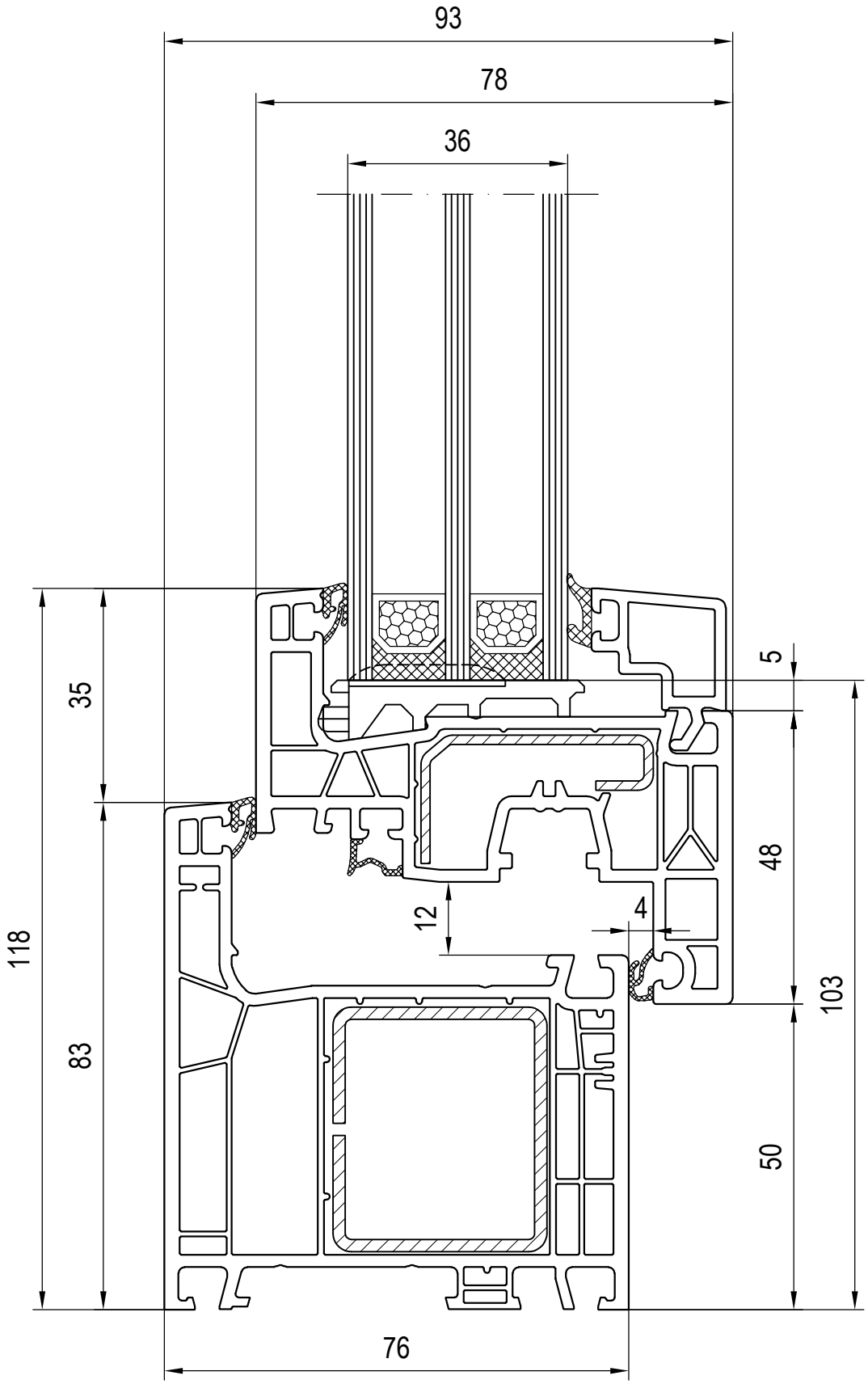
1) Rebate clearance of main entrance door on left and right side = 13 mm



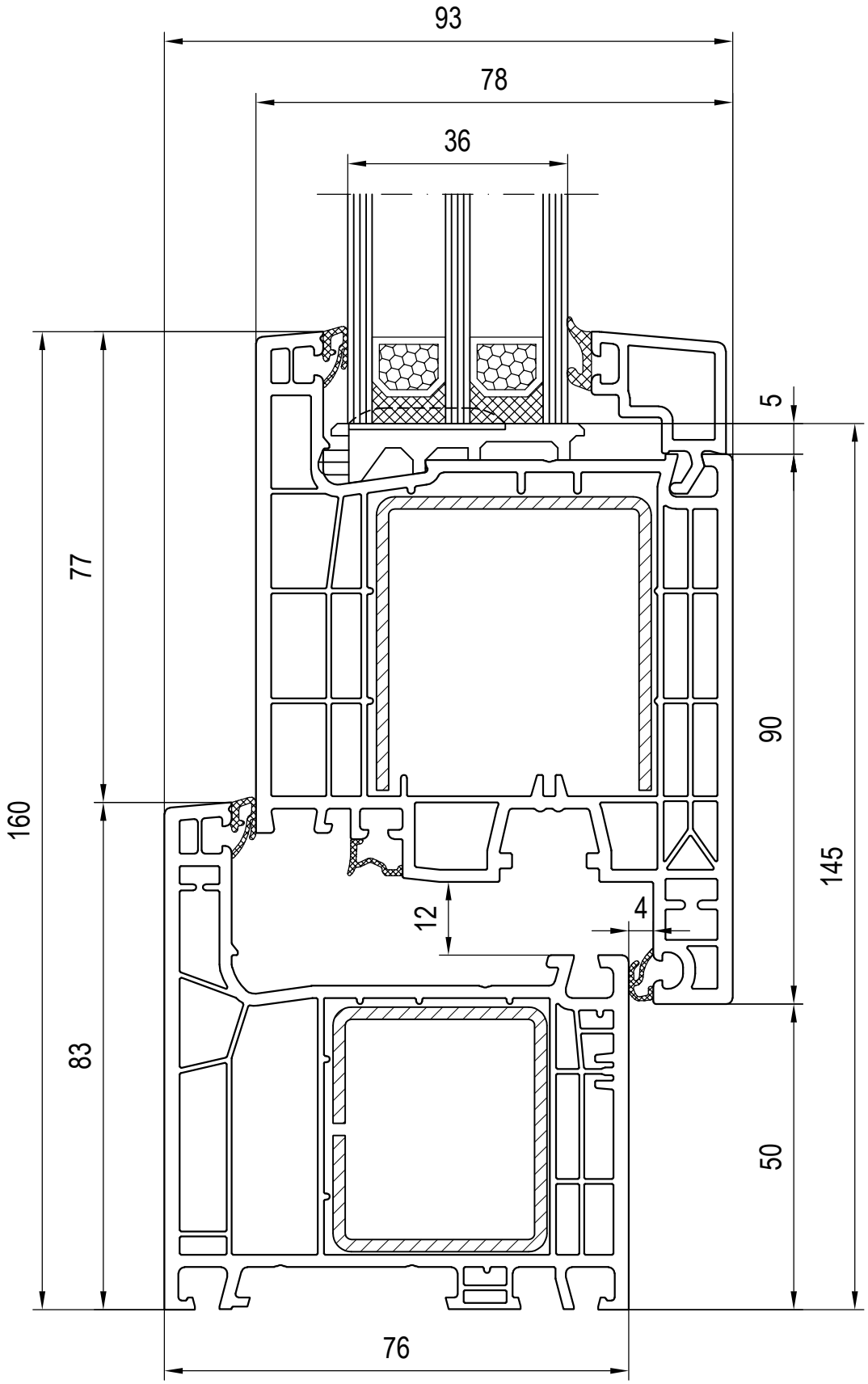
Example ~



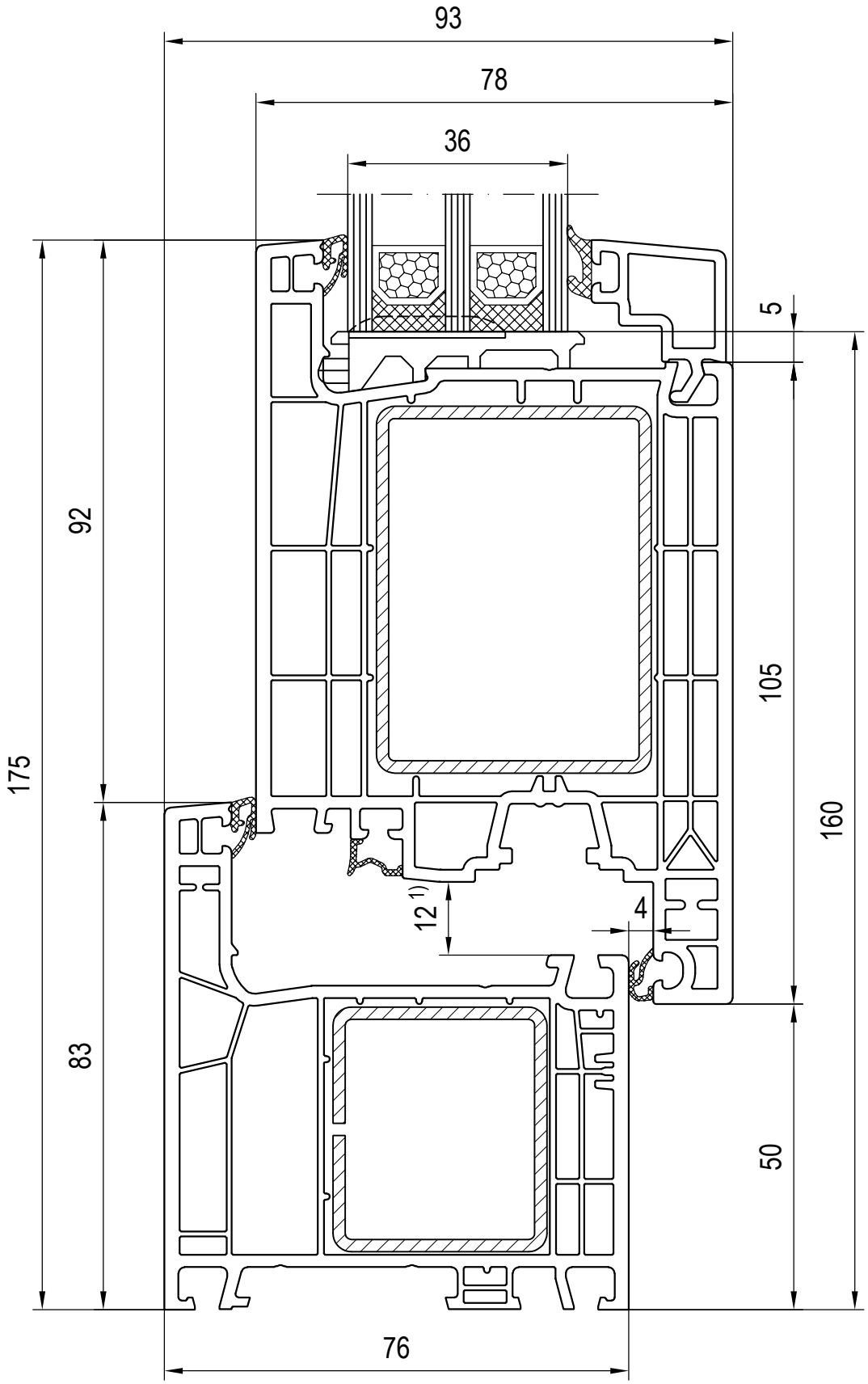
Example ~



Example ~

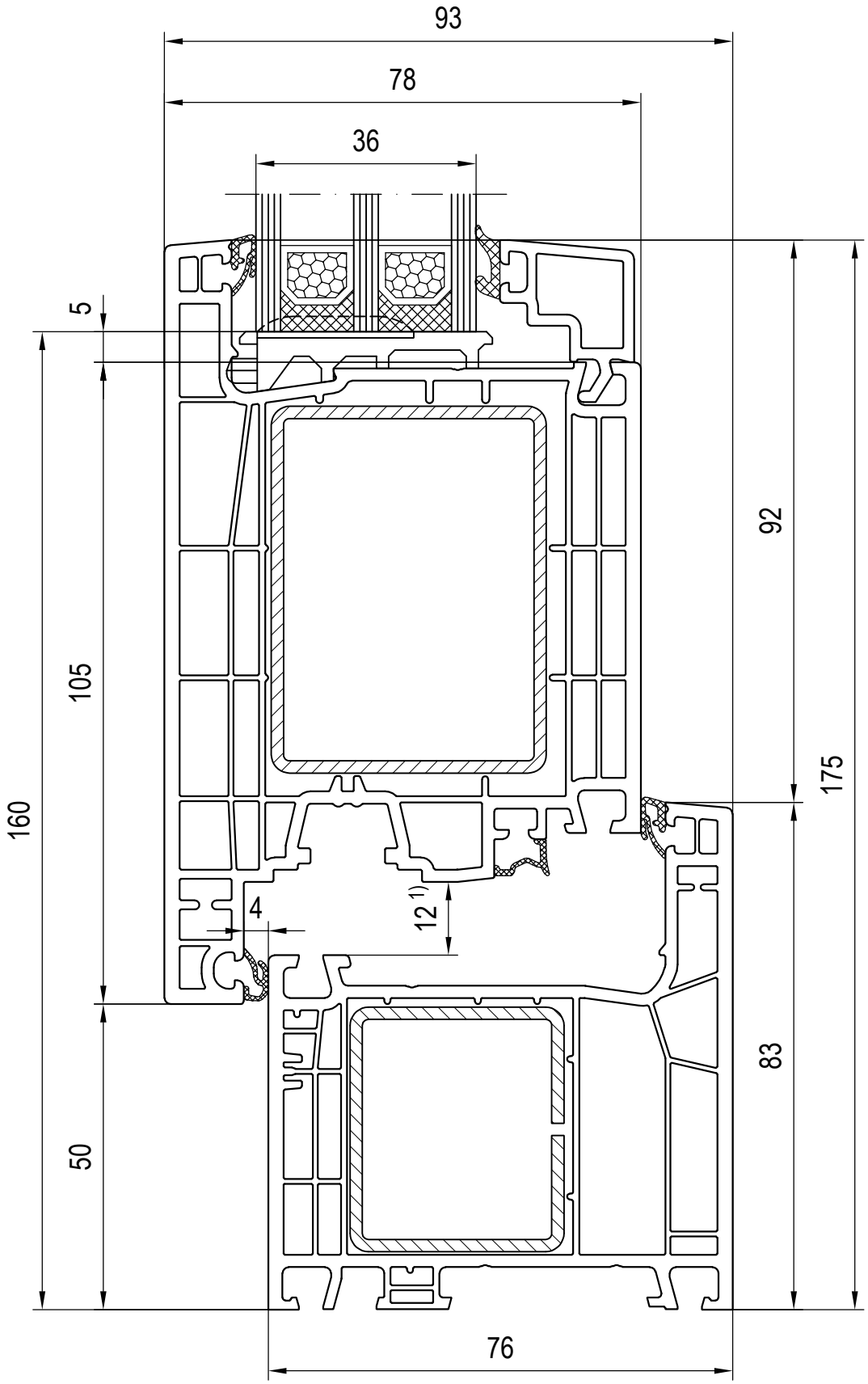


Example ~



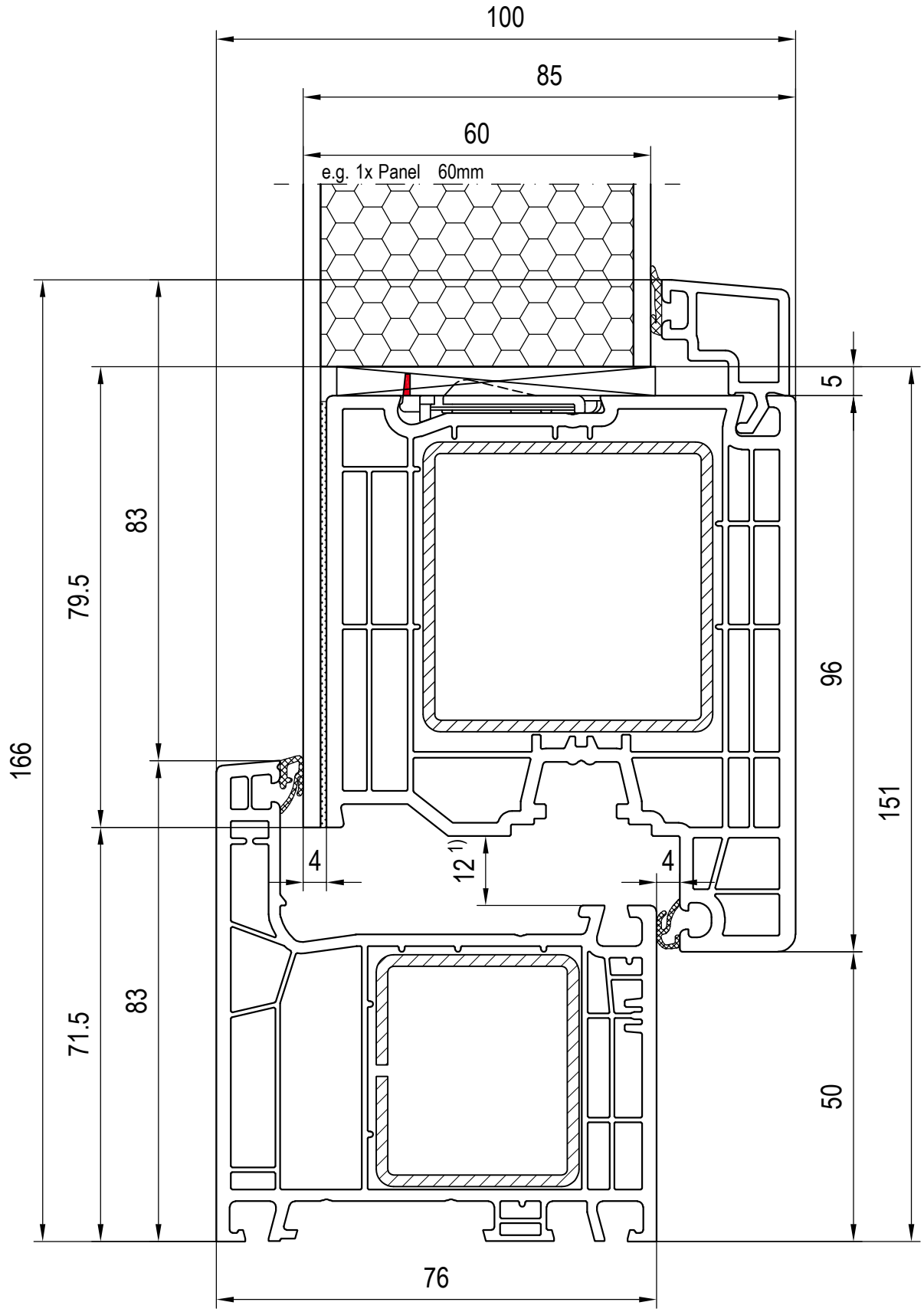
Example ~

1) Rebate clearance of main entrance door on left and right side = 13 mm



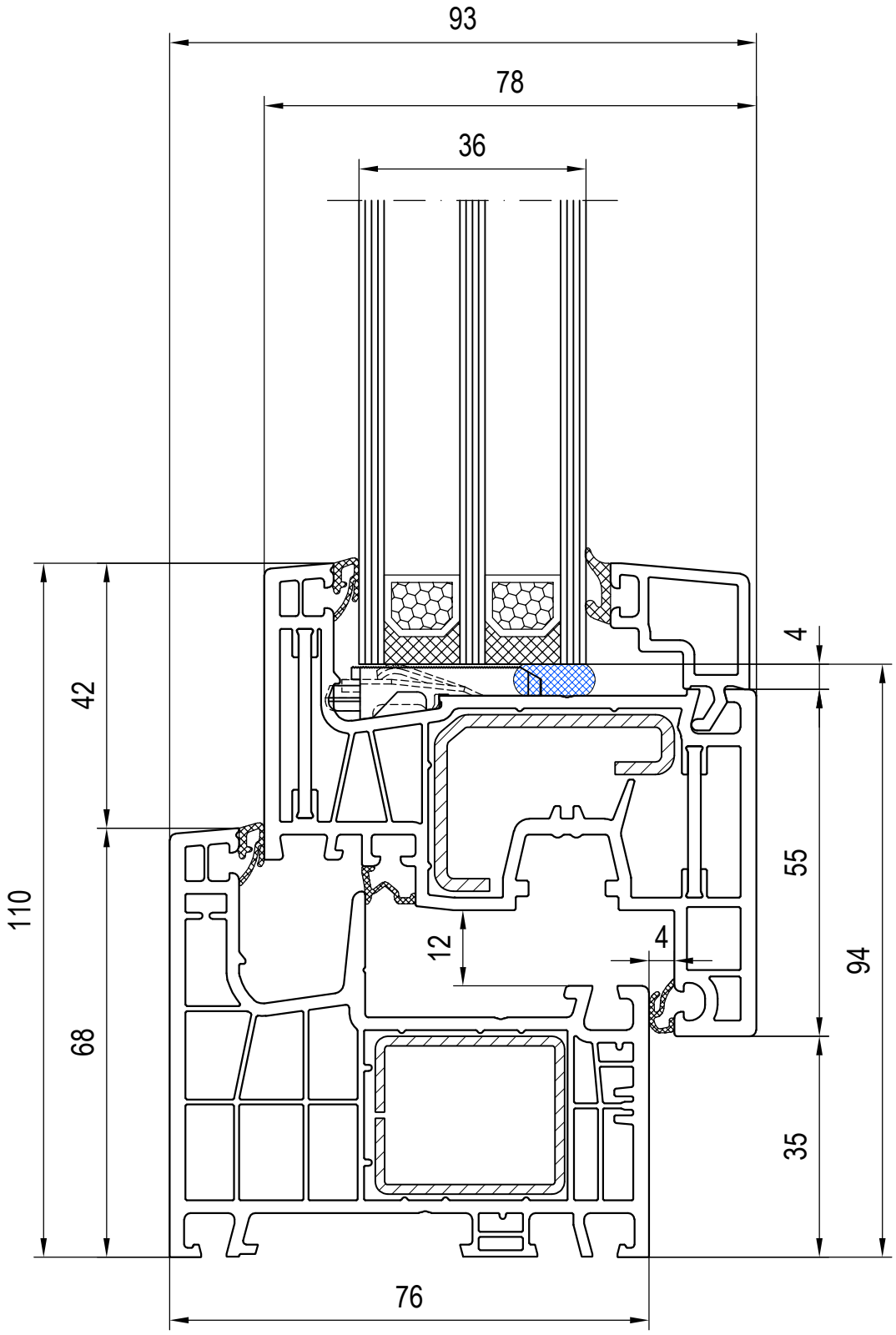
Example ~

1) Rebate clearance of main entrance door on left and right side = 13 mm

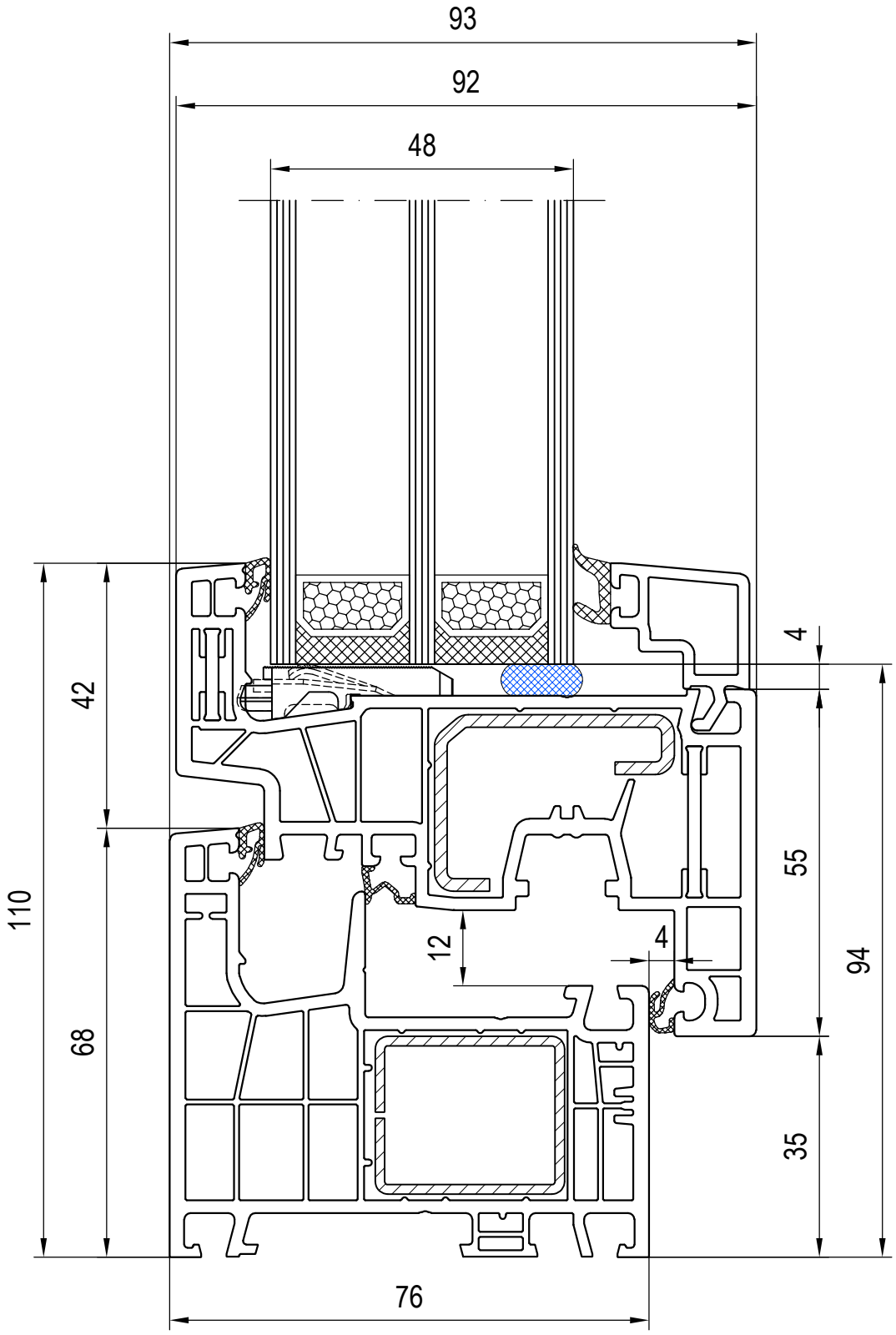


Example ~

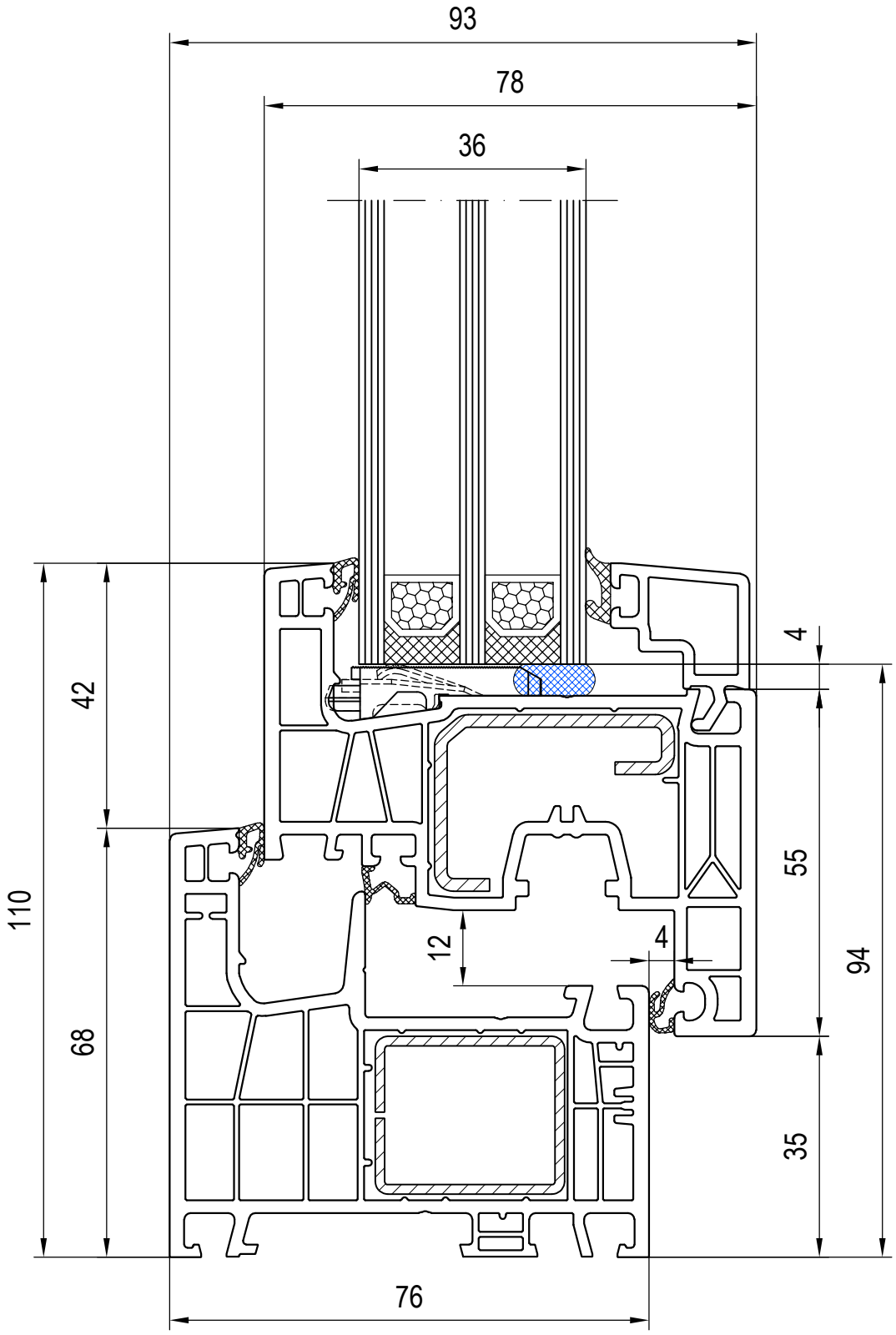
1) Rebate clearance of main entrance door on left and right side = 13 mm



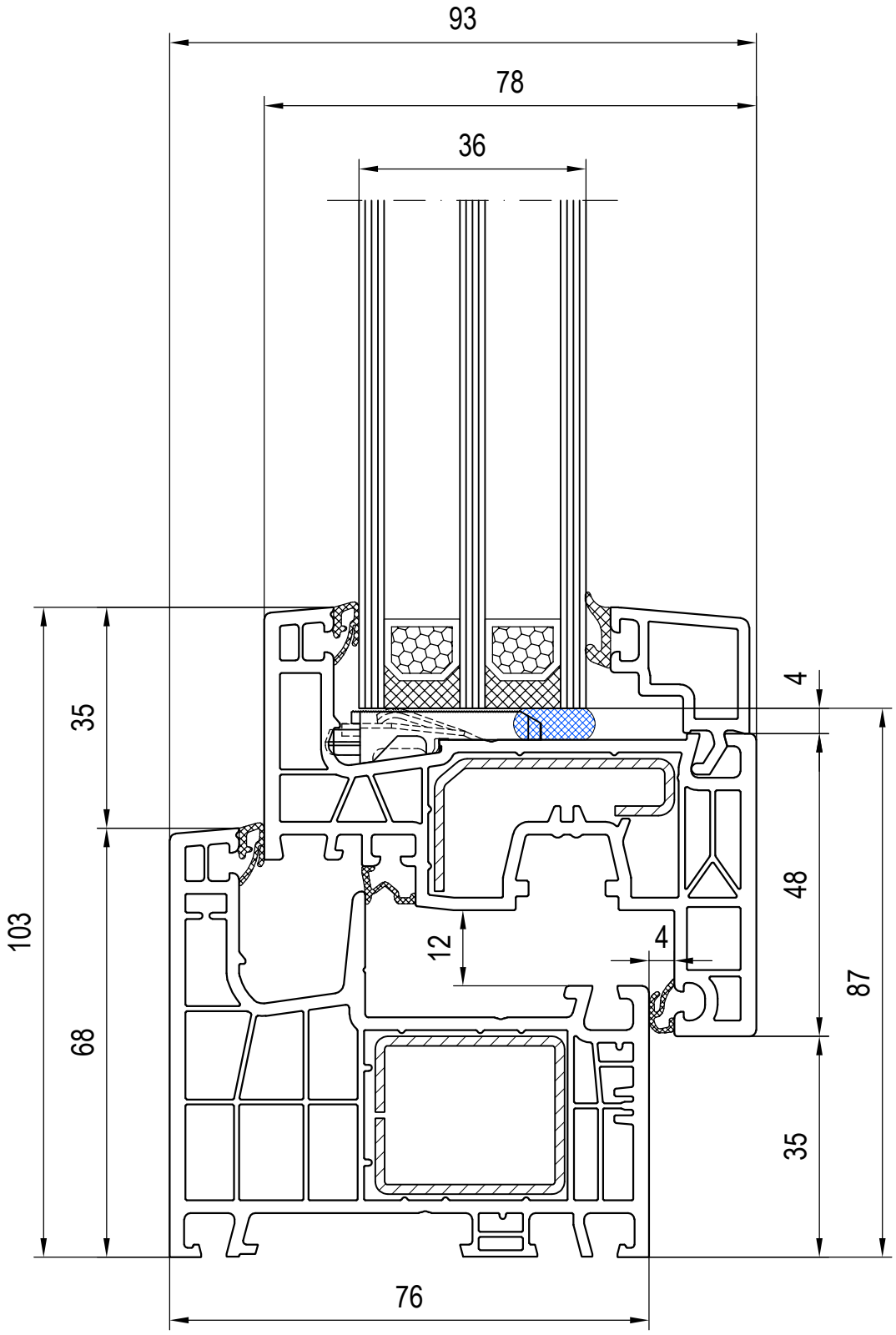
Example ~



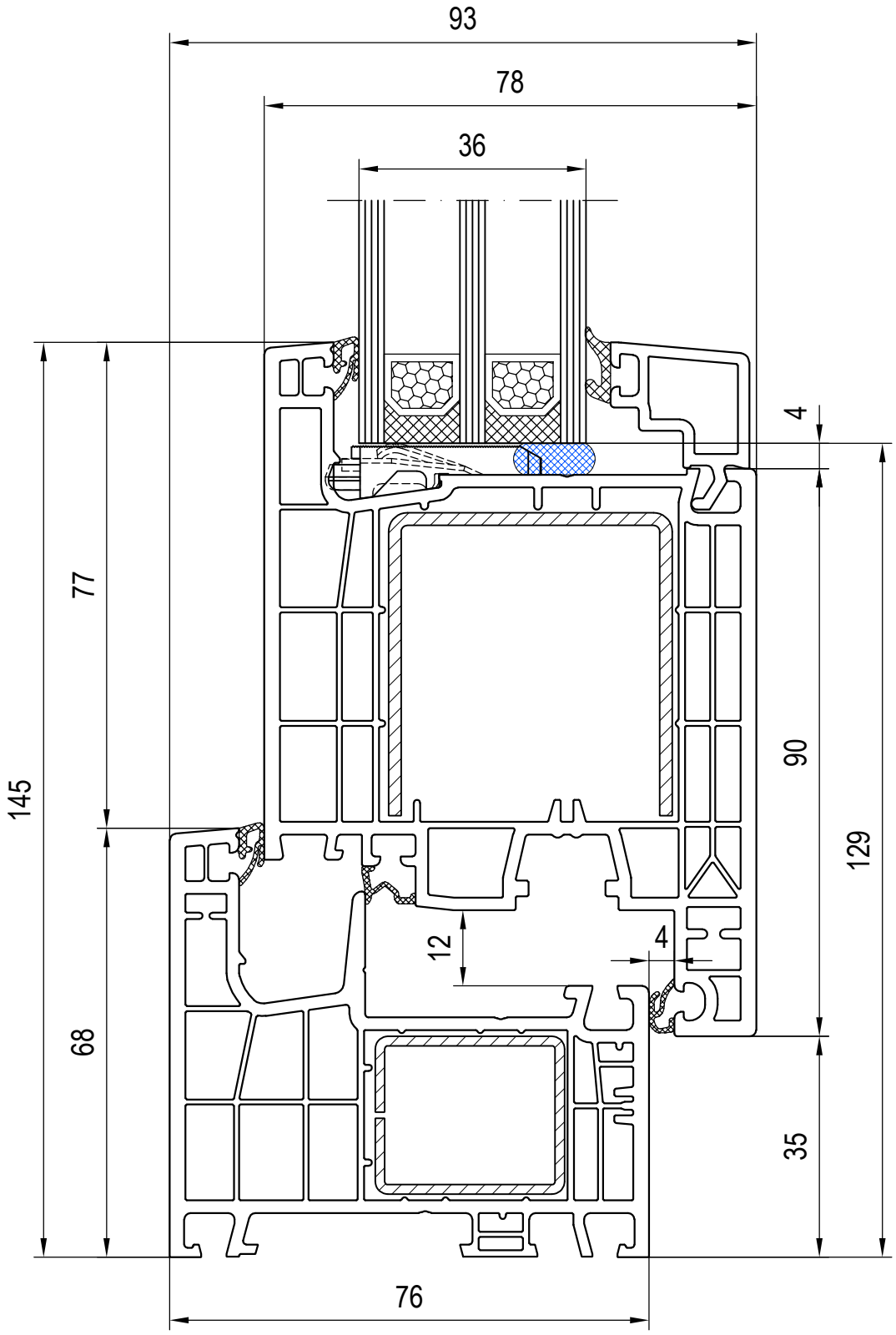
Example ~



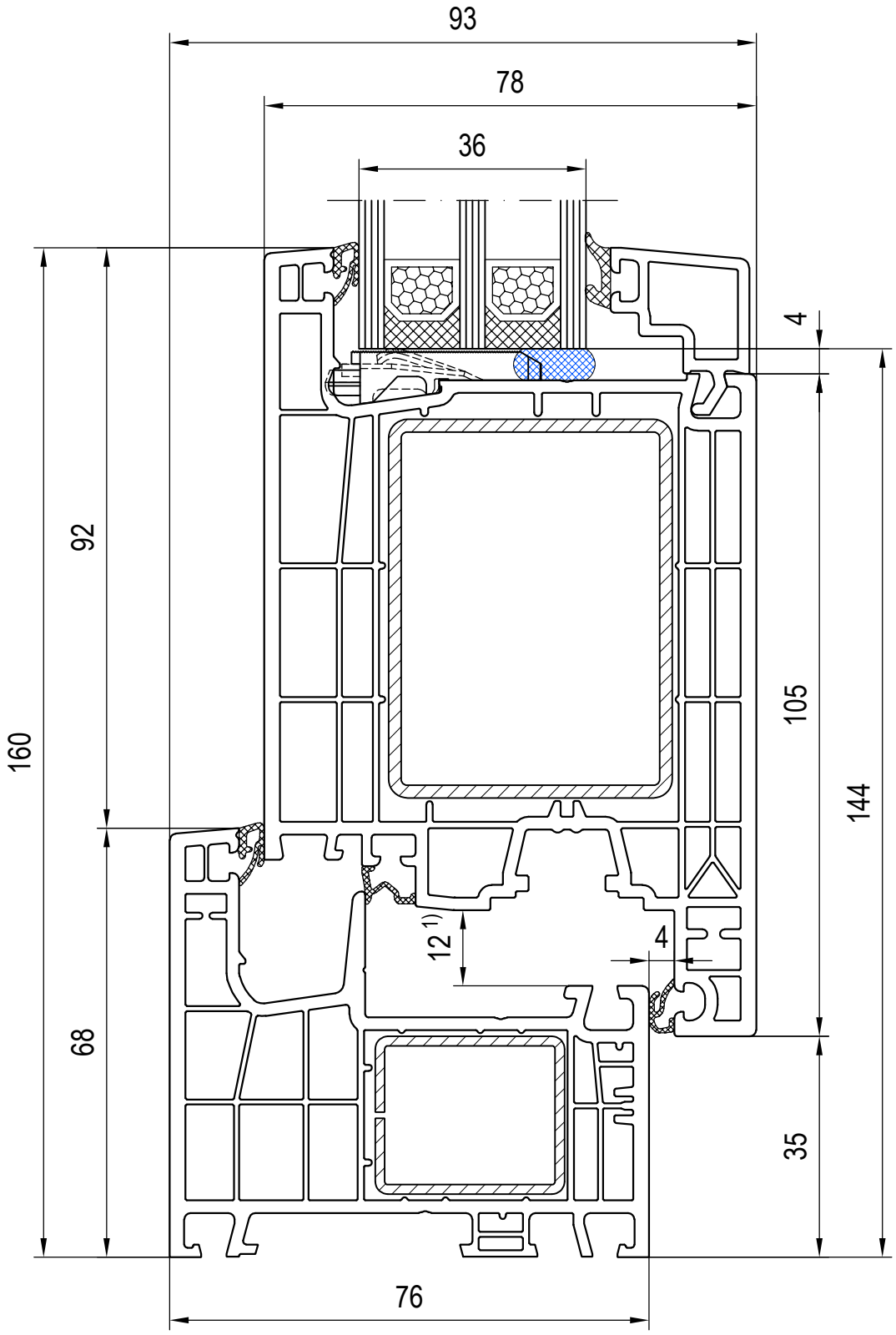
Example ~



Example ~

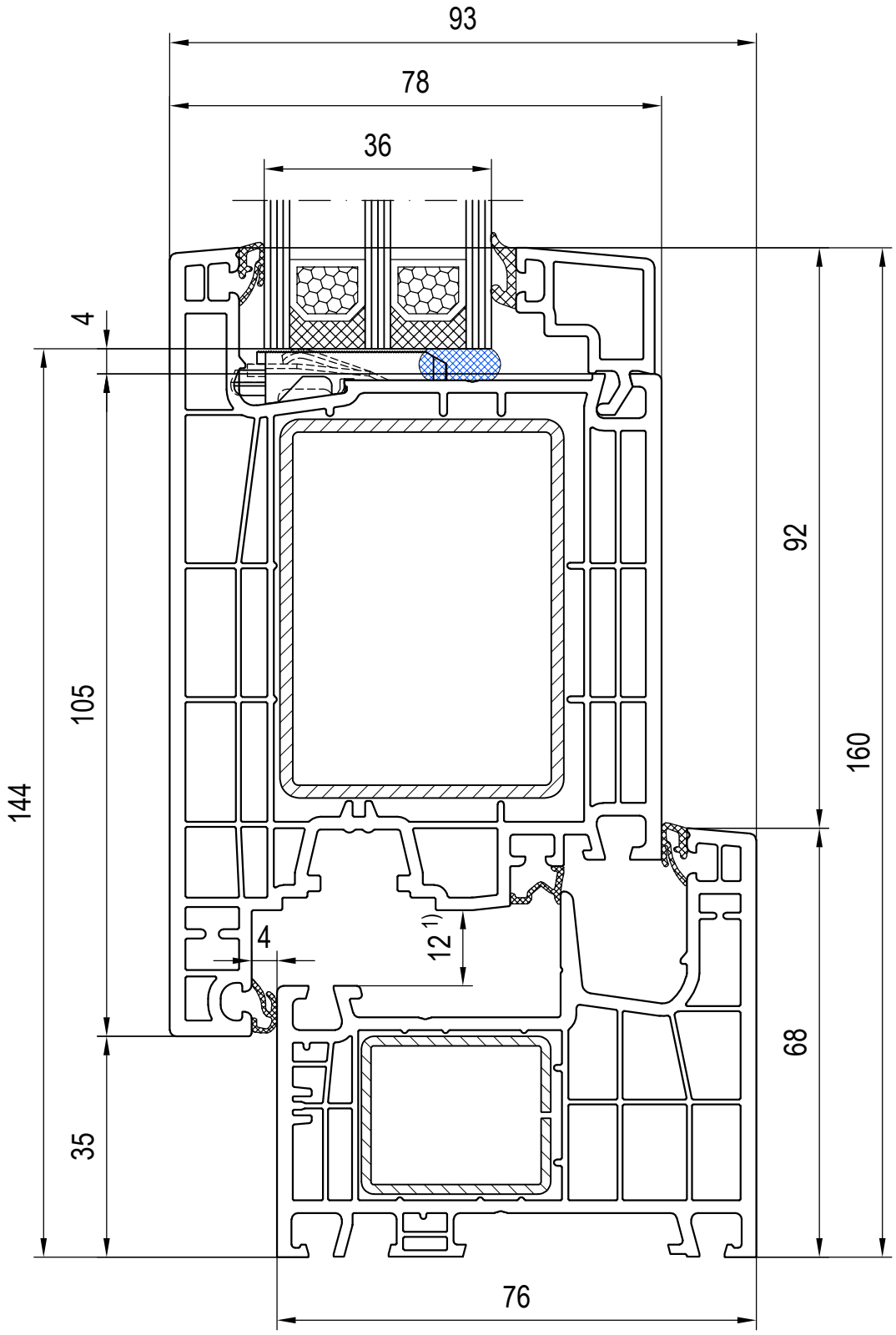


Example ~



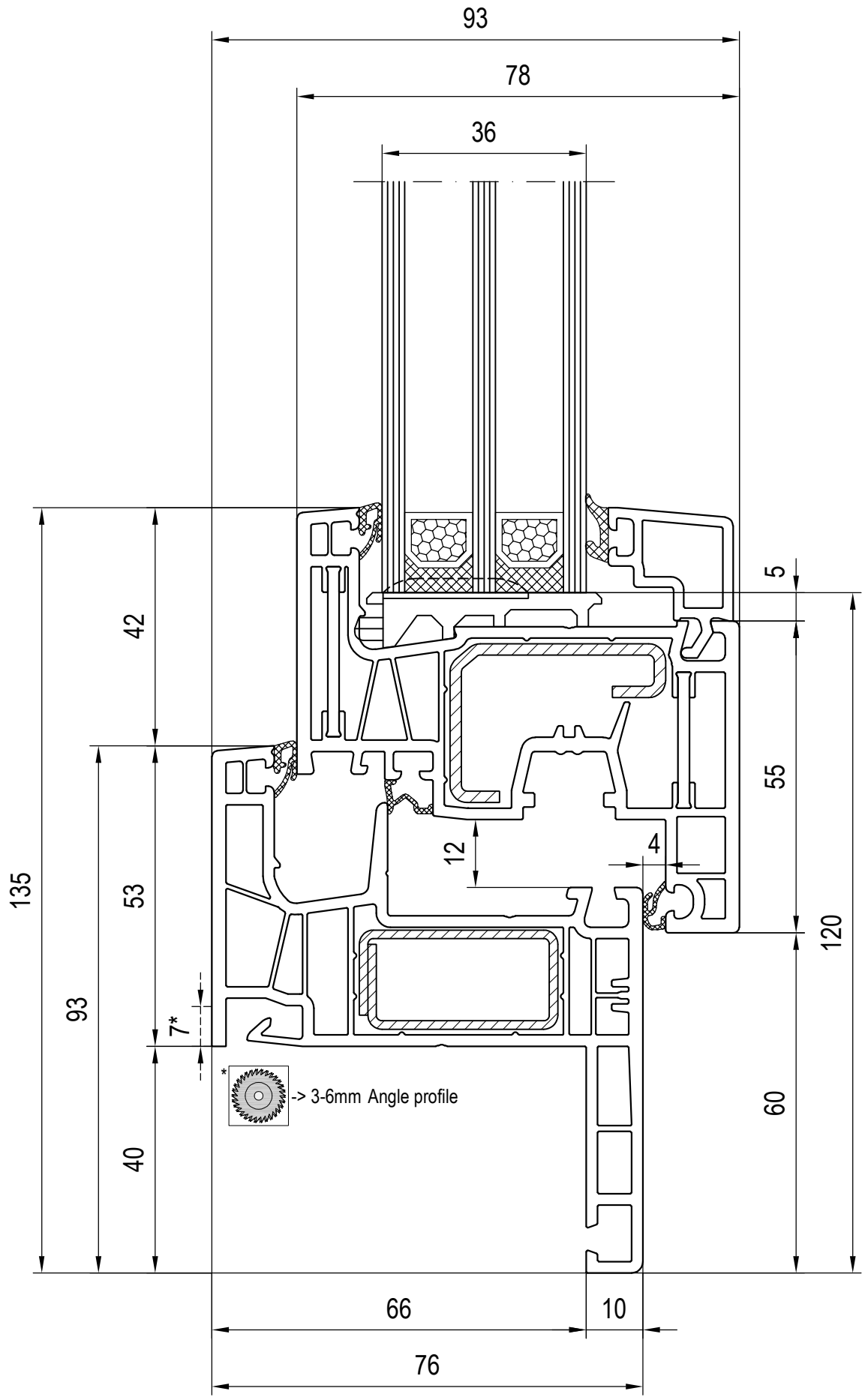
Example ~

1) Rebate clearance of main entrance door on left and right side = 13 mm

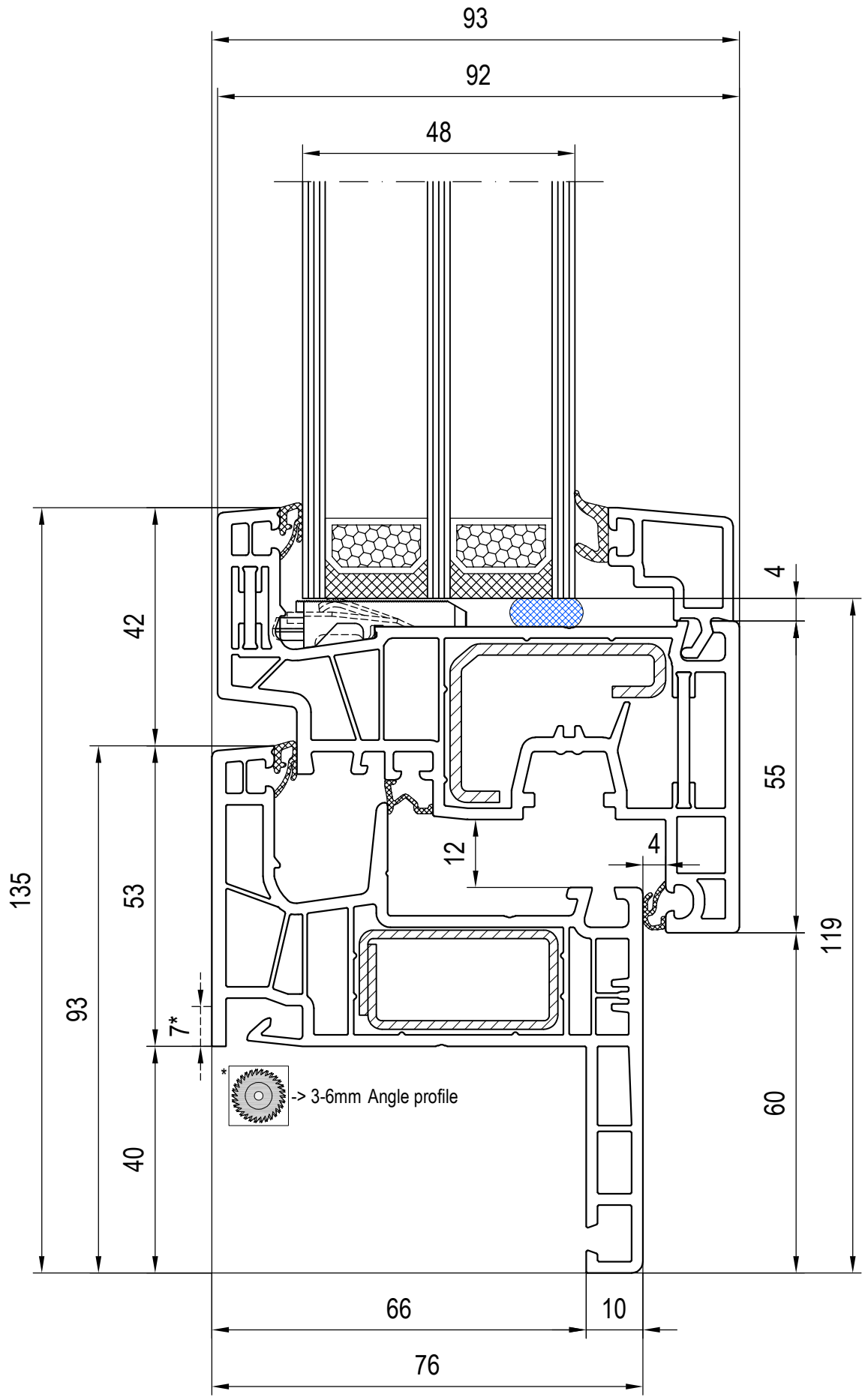


Example ~

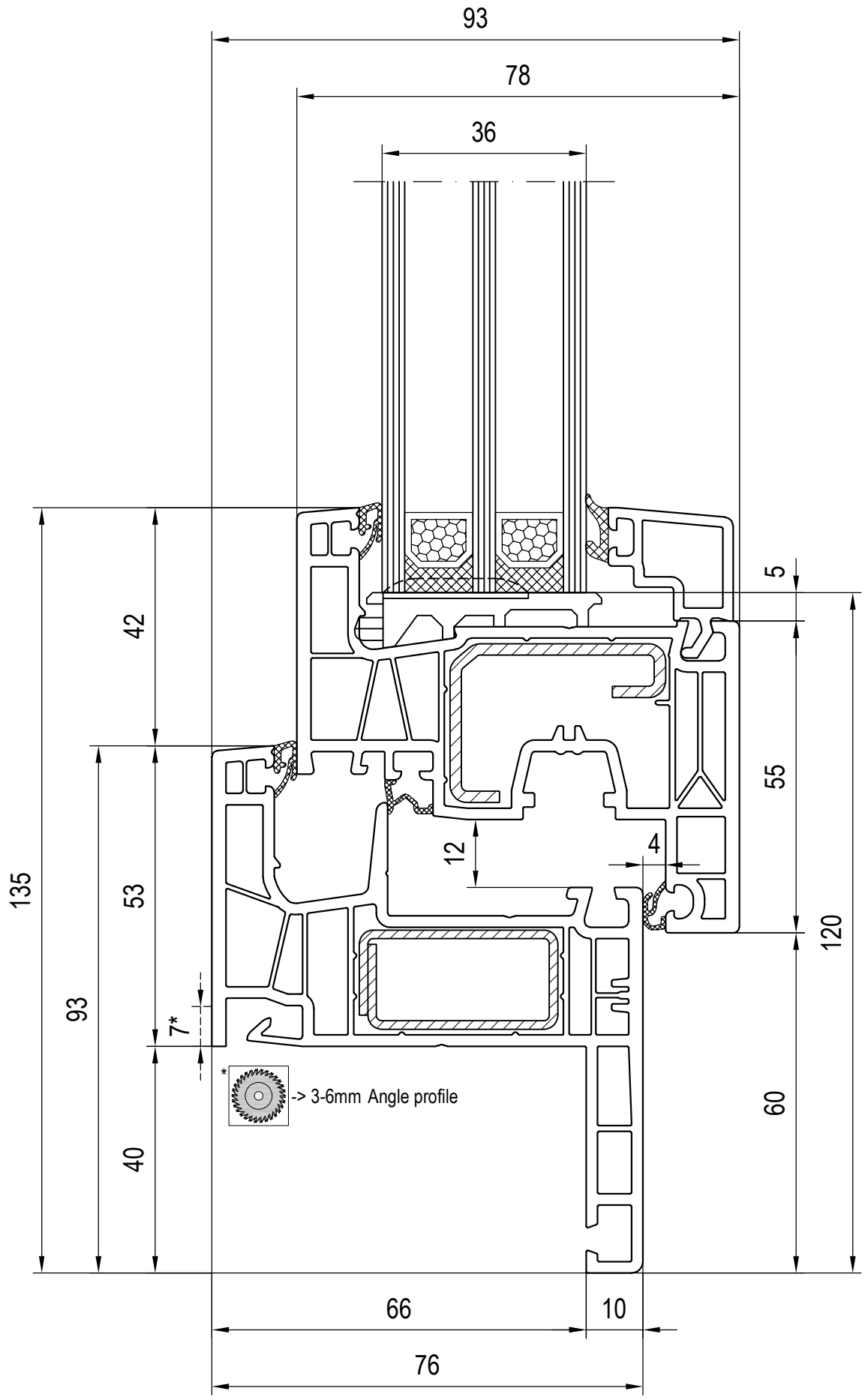
1) Rebate clearance of main entrance door on left and right side = 13 mm


93
78
36
5
42
55
135
53
12
4
120
93
7*
* -> 3-6mm Angle profile
40
60
66
10
76

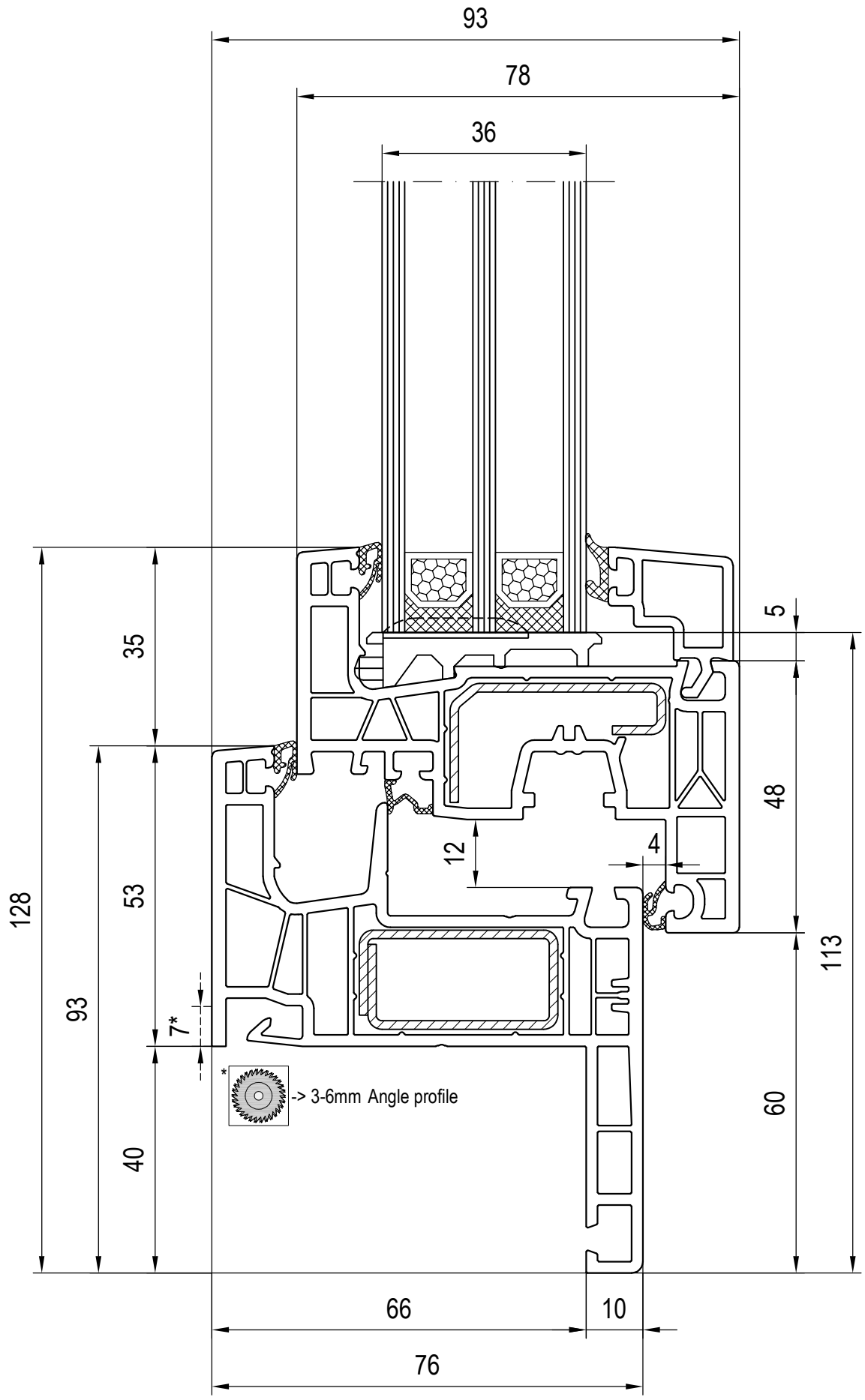
Example ~


93
92
48
4
42
55
12
4
135
53
119
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7*
* -> 3-6mm Angle profile
40
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76

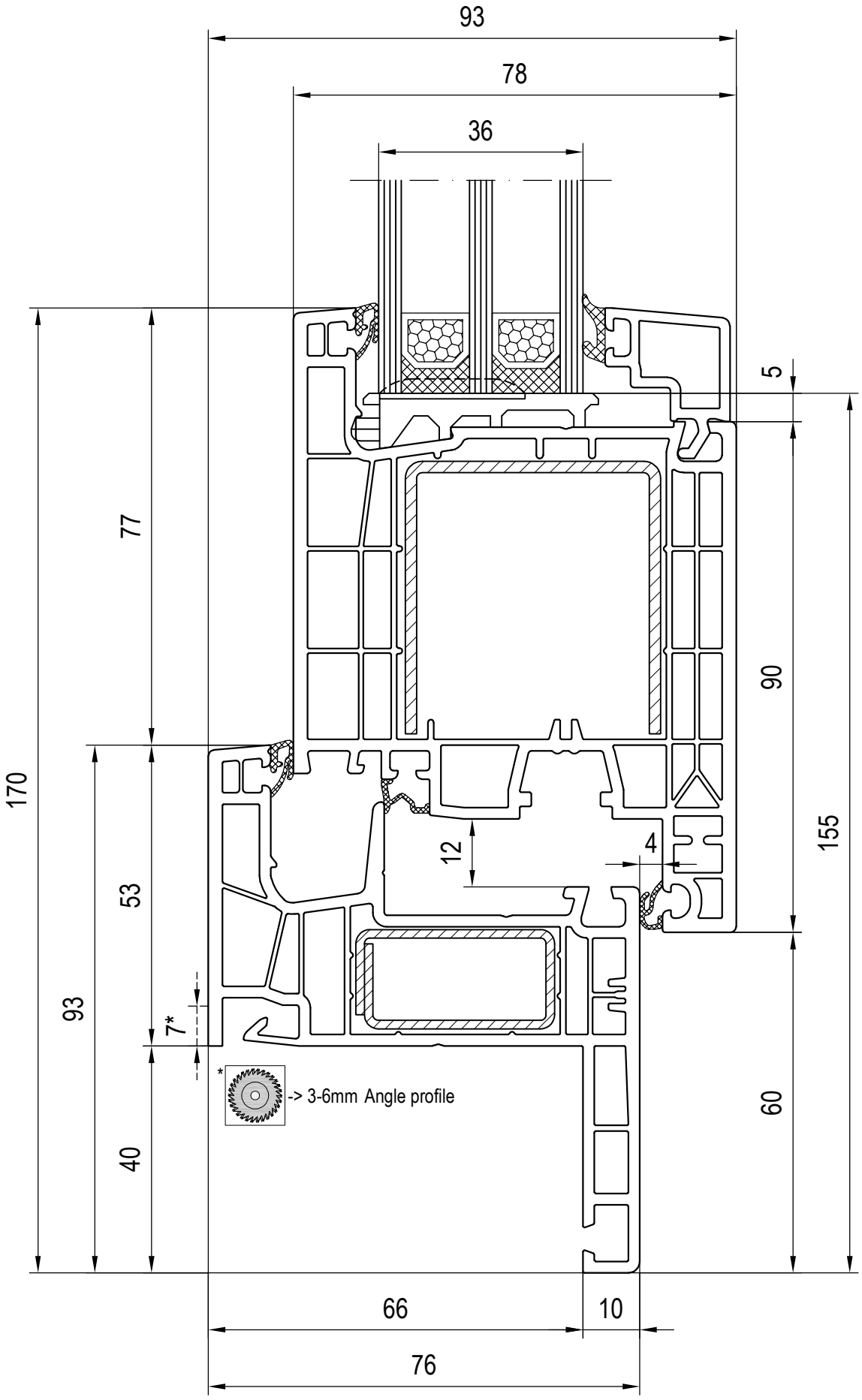
Example ~


93
78
36
5
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12
4
120
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7*
* -> 3-6mm Angle profile
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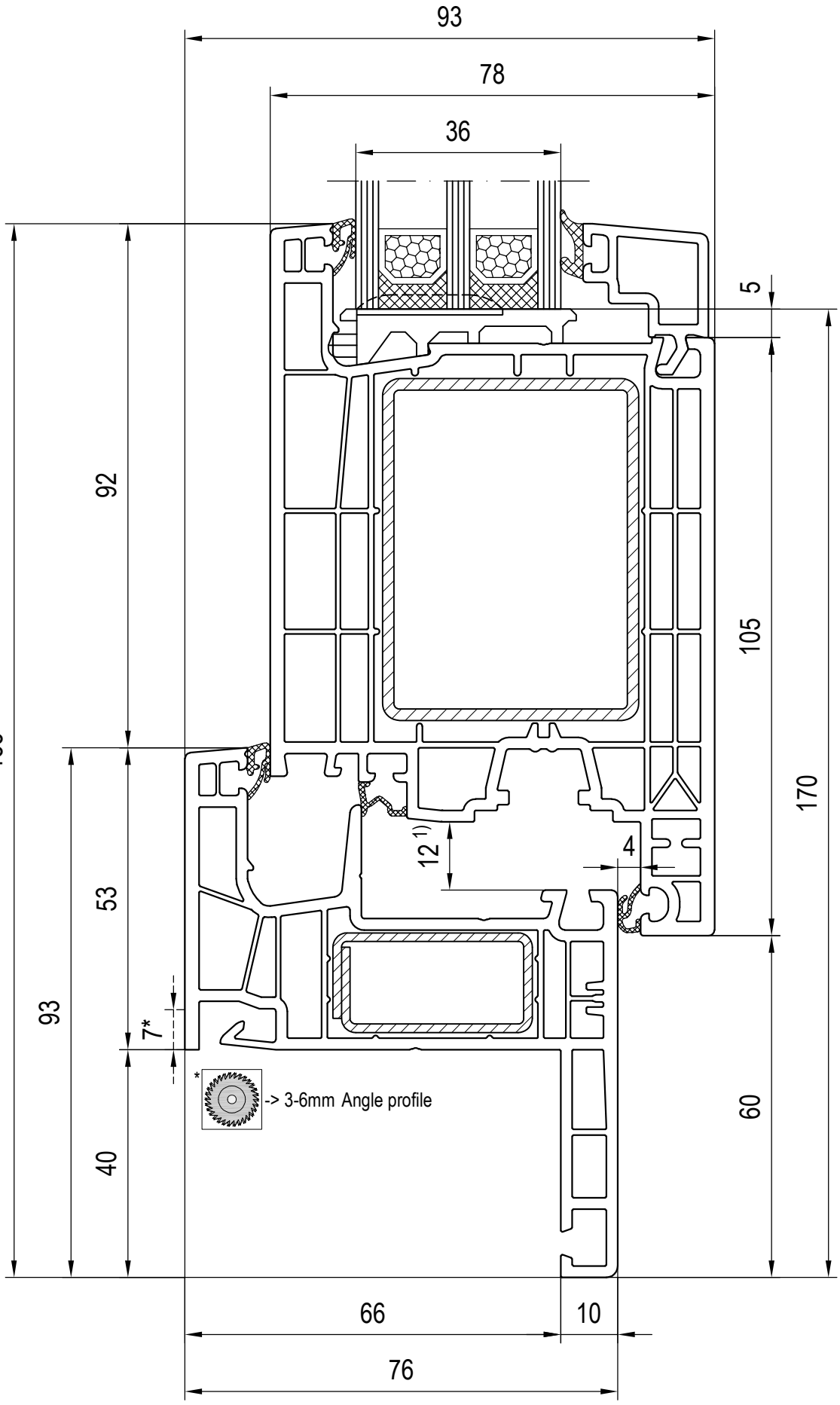
Example ~


93
78
36
5
35
48
12
4
128
53
113
93
7*
60
40
* -> 3-6mm Angle profile
66
10
76

Example ~

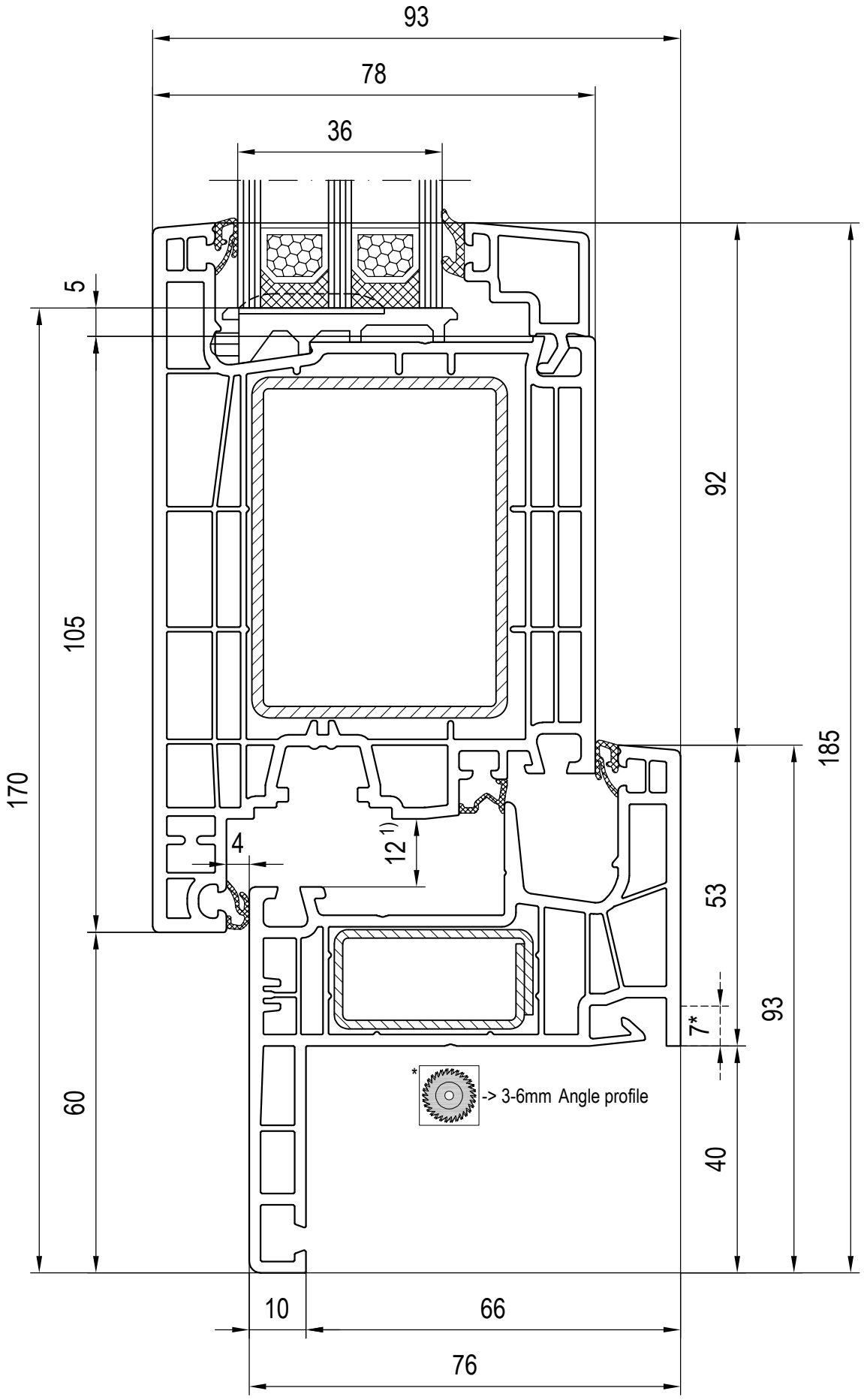

93
78
36
5
77
90
170
155
53
12
4
93
7*
-> 3-6mm Angle profile
60
40
66
10
76

Example ~



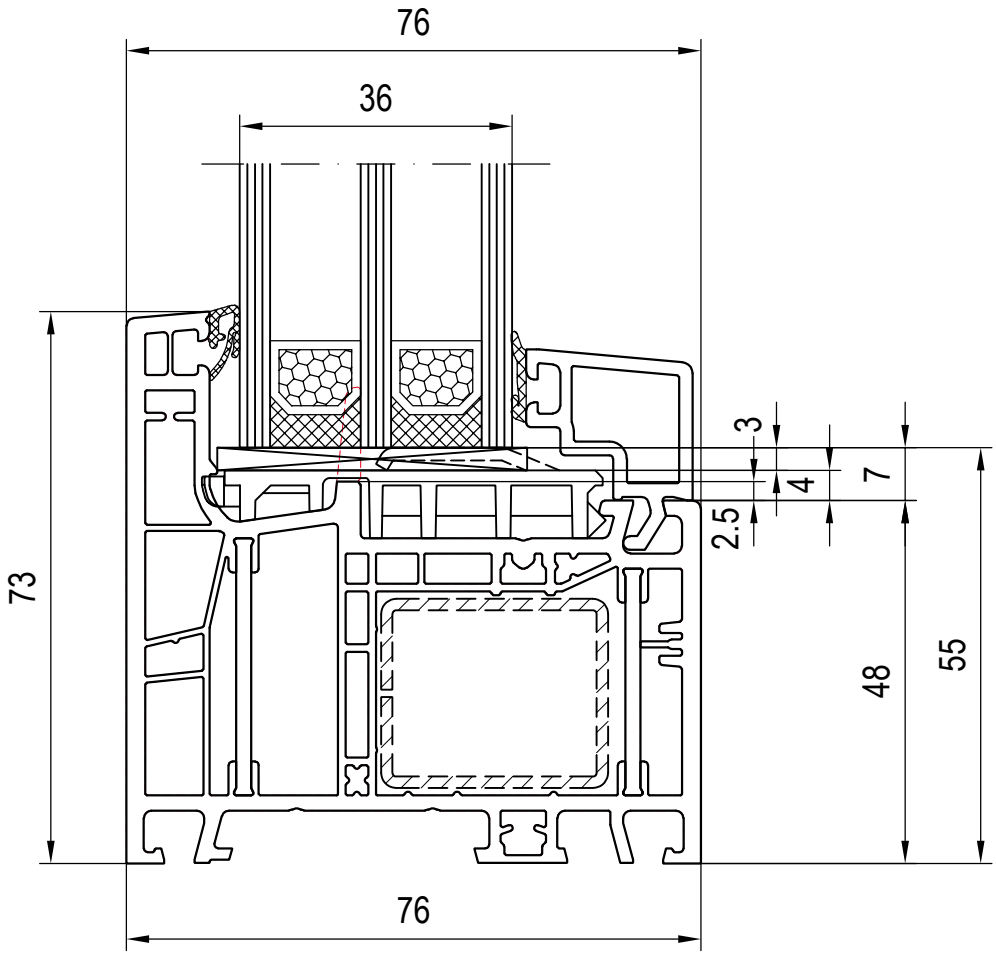
Example ~

1) Rebate clearance of main entrance door on left and right side = 13 mm

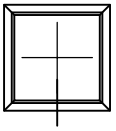


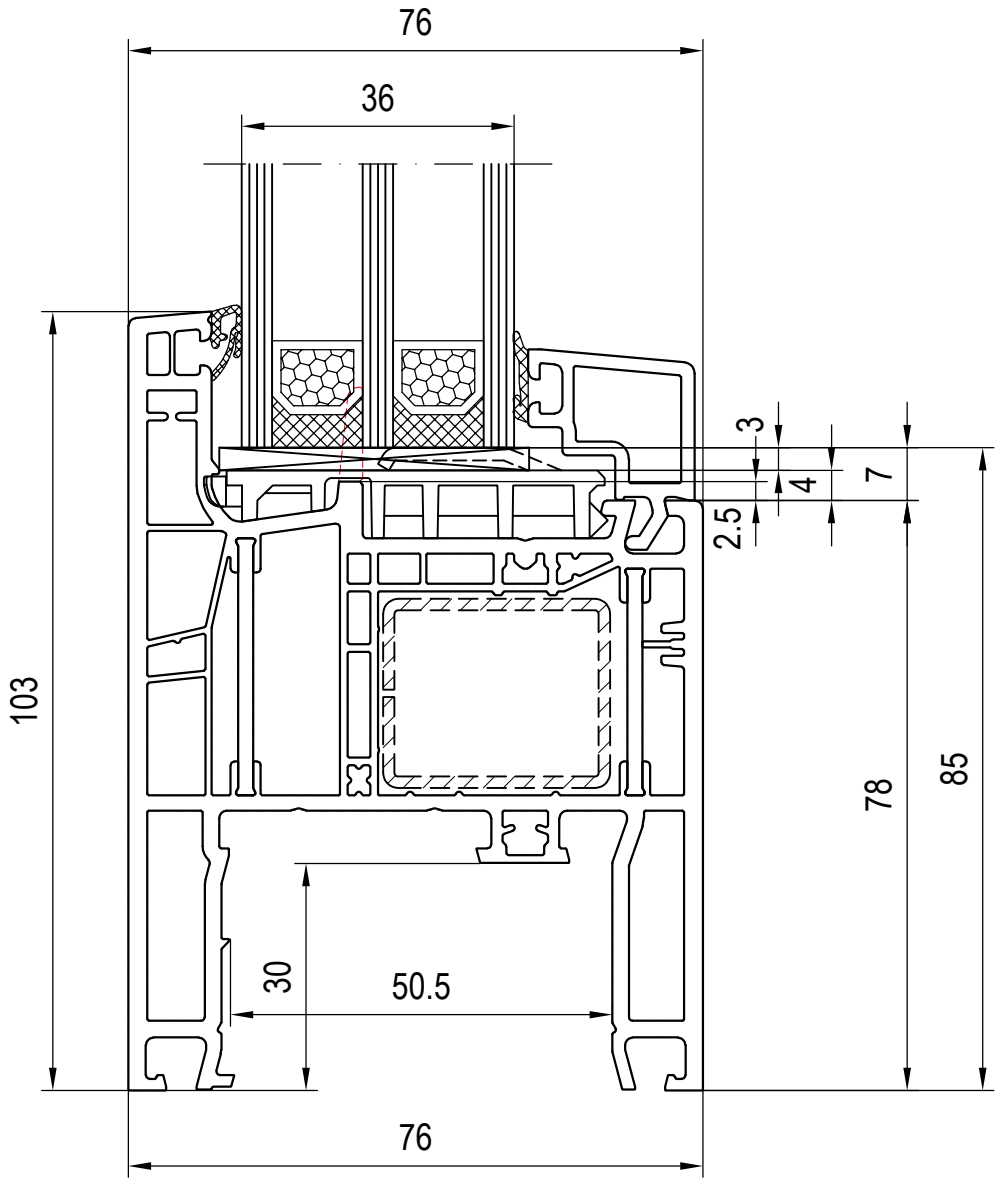
Example ~

1) Rebate clearance of main entrance door on left and right side = 13 mm

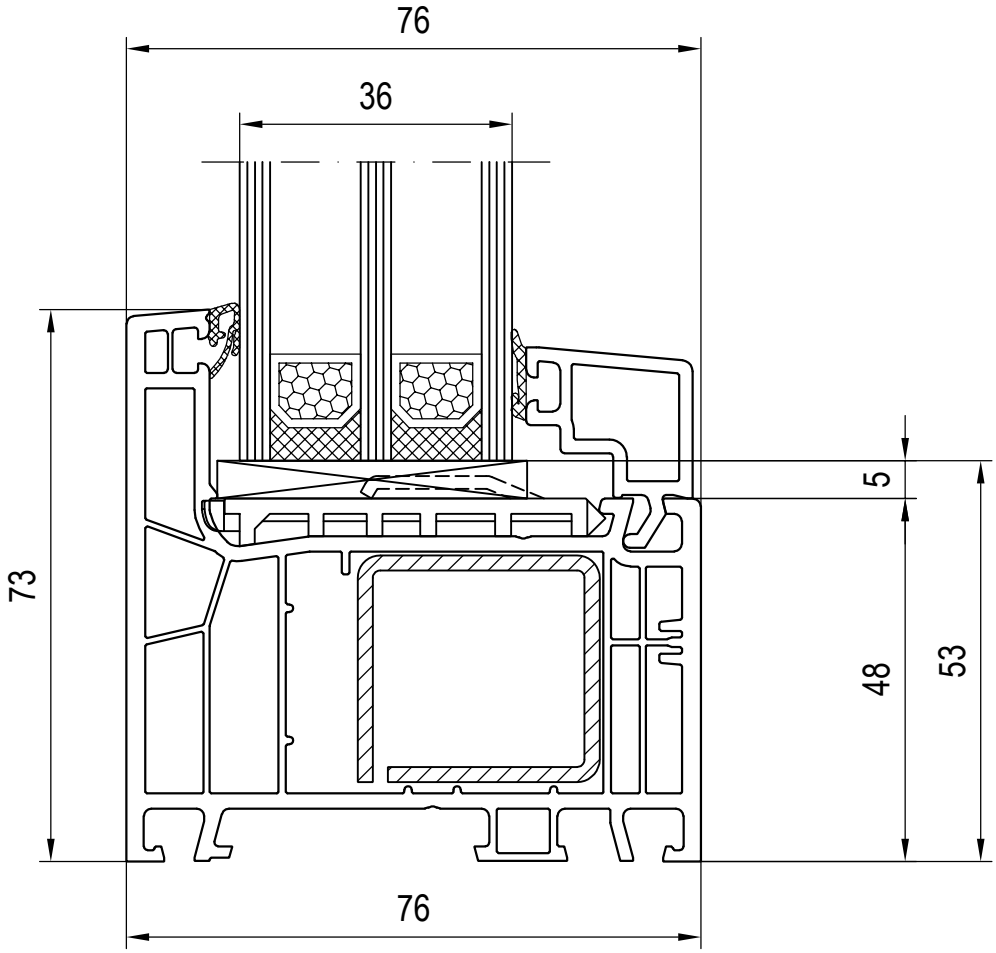


Example ~

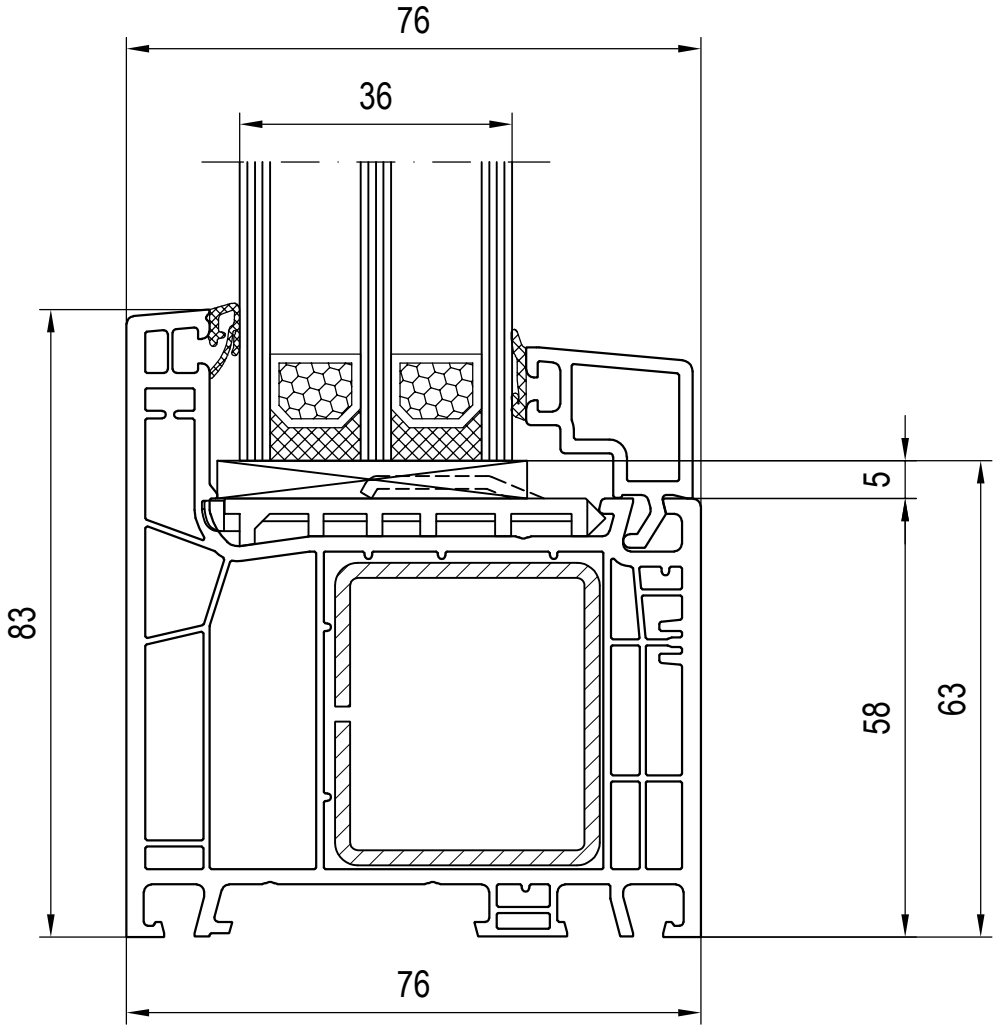




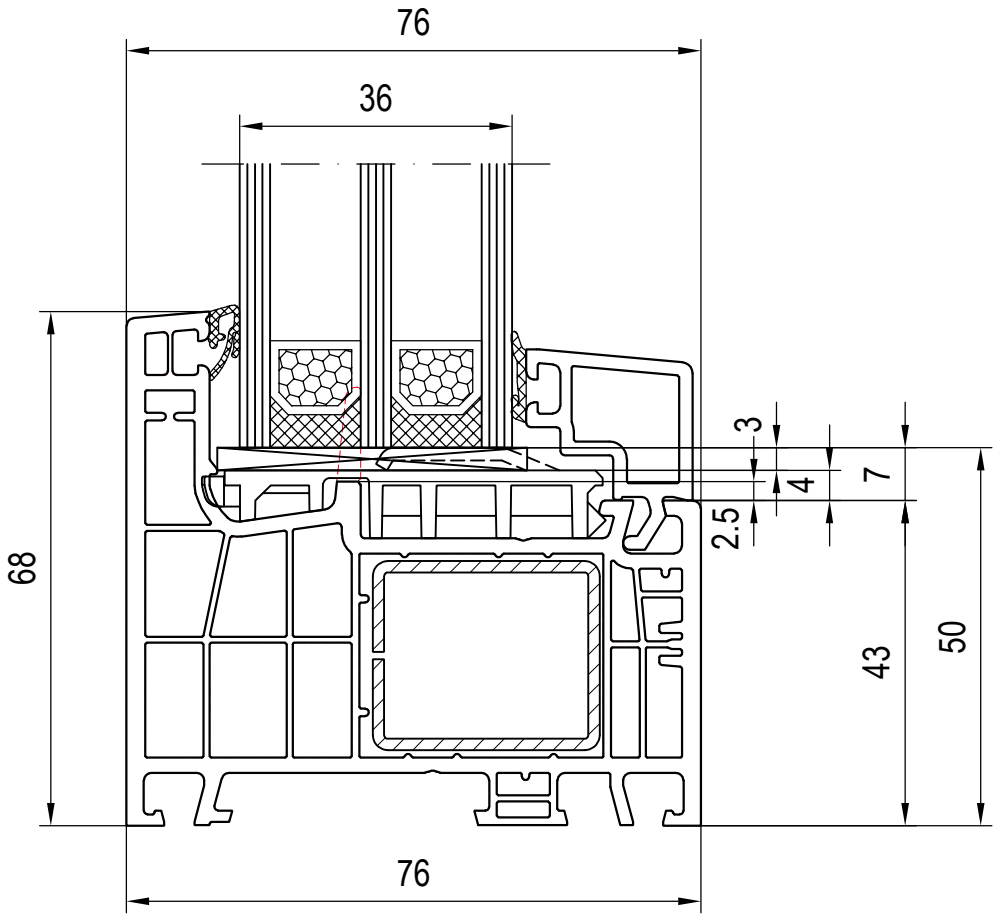
Example ~



Example ~

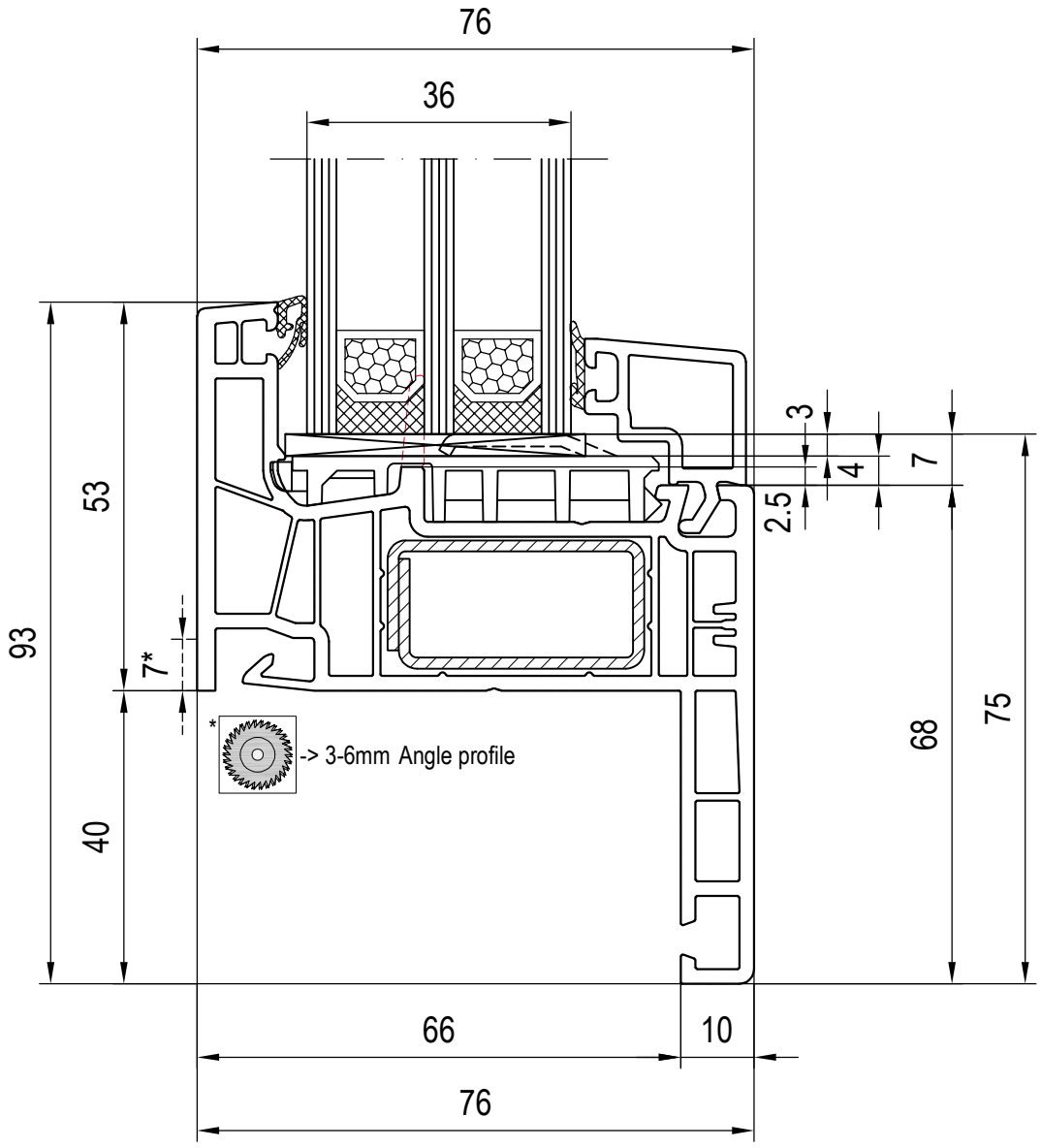


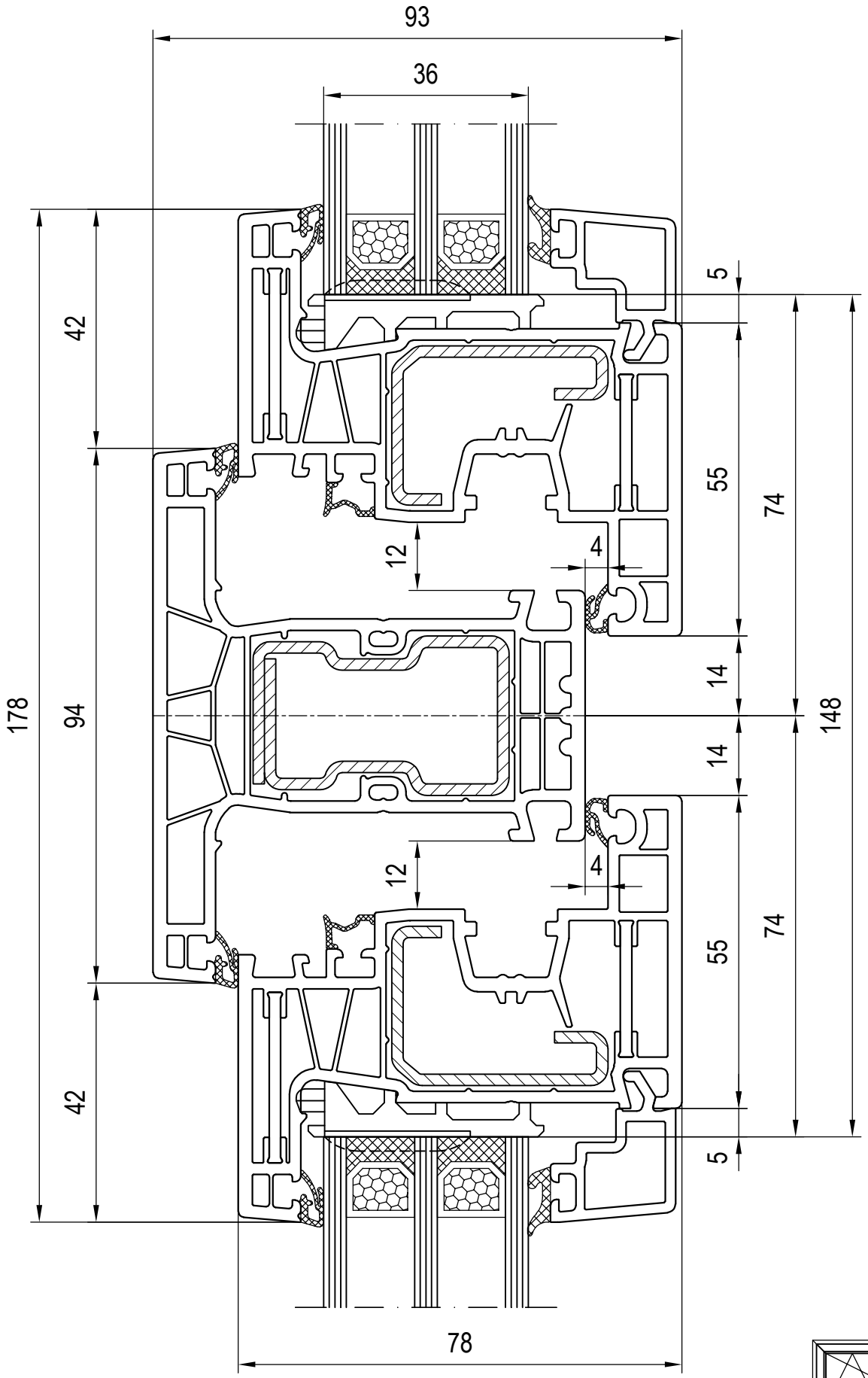
Example ~



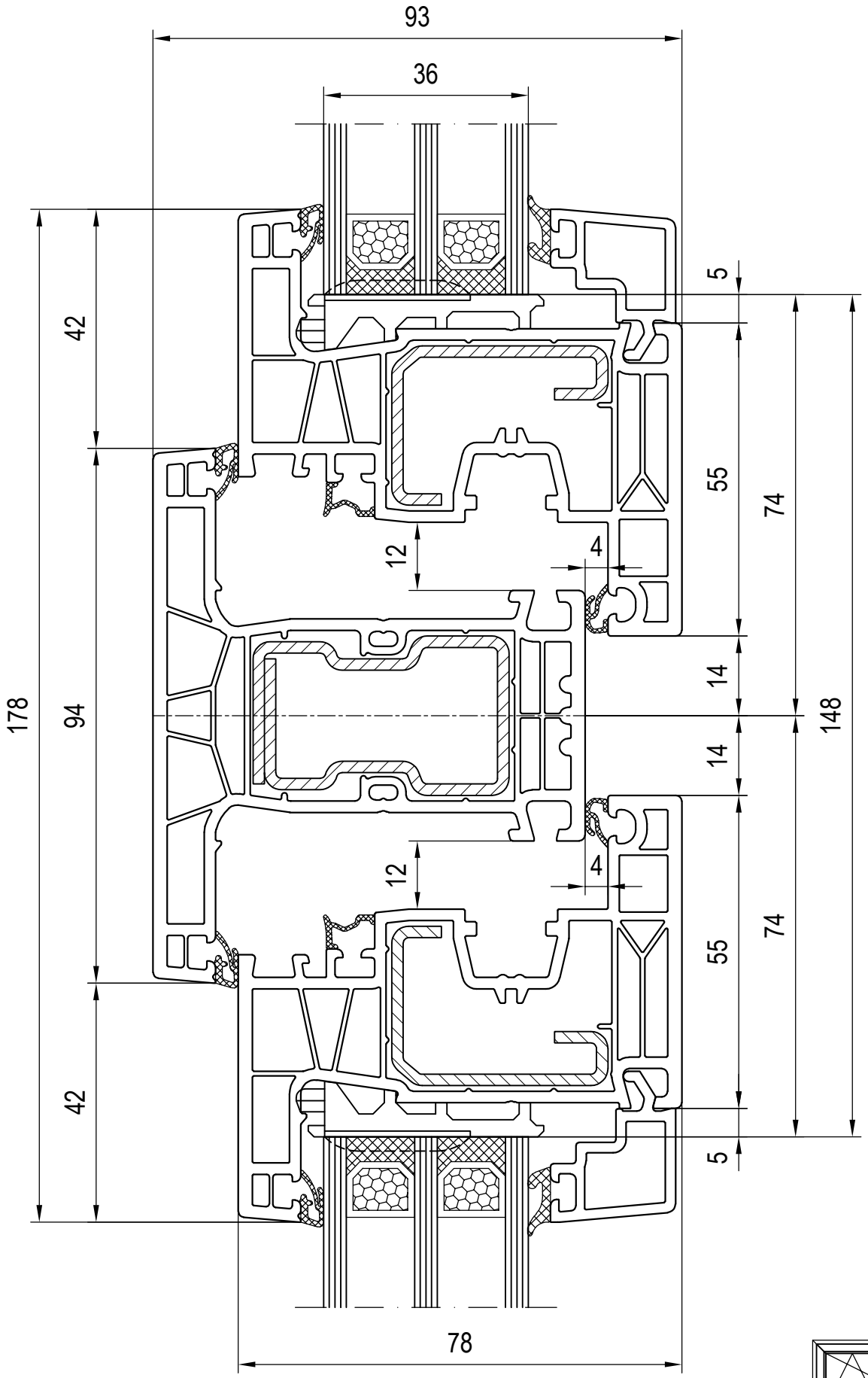
Example ~

Example ~

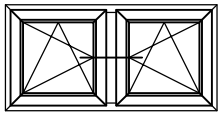


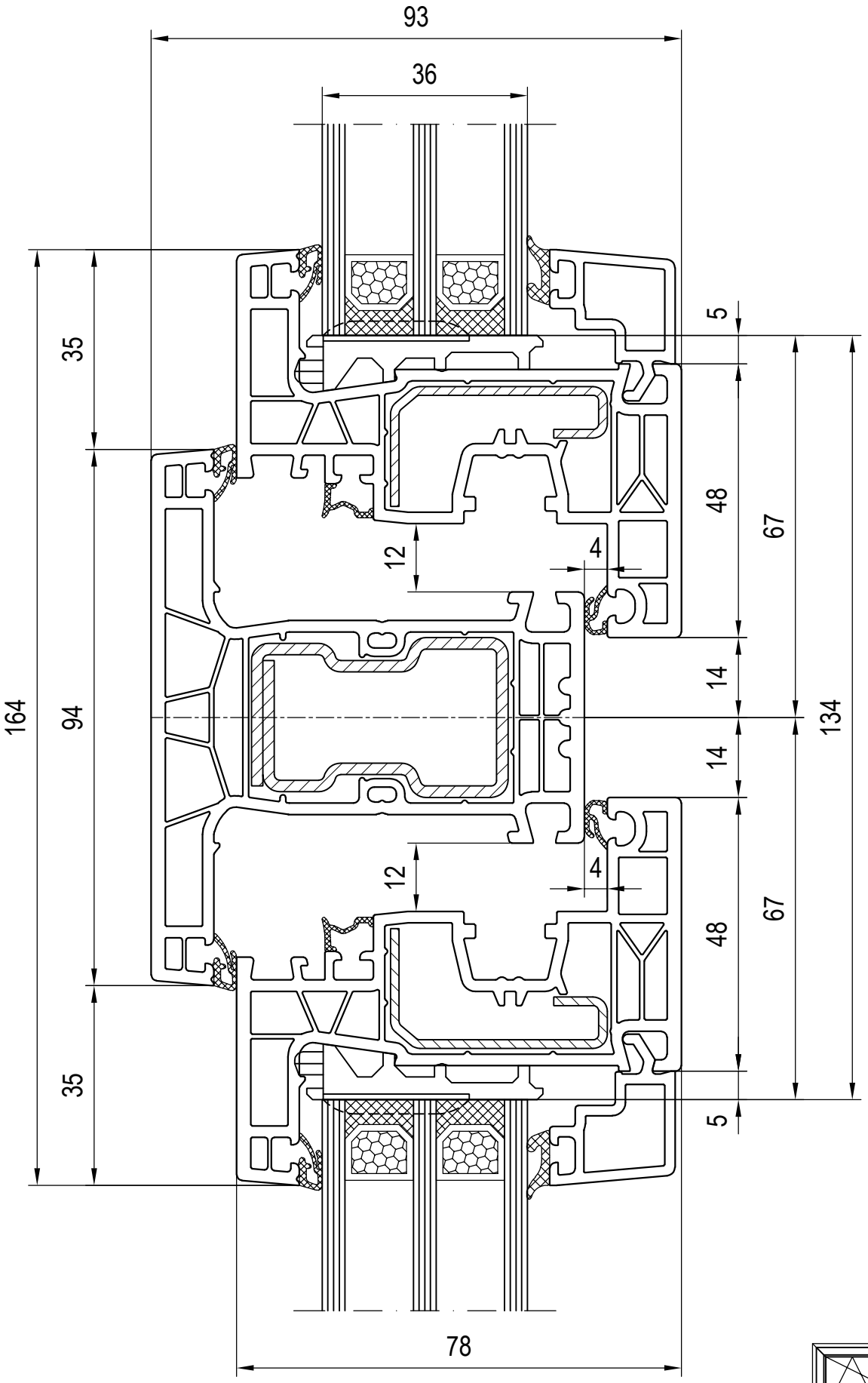


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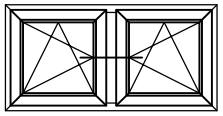


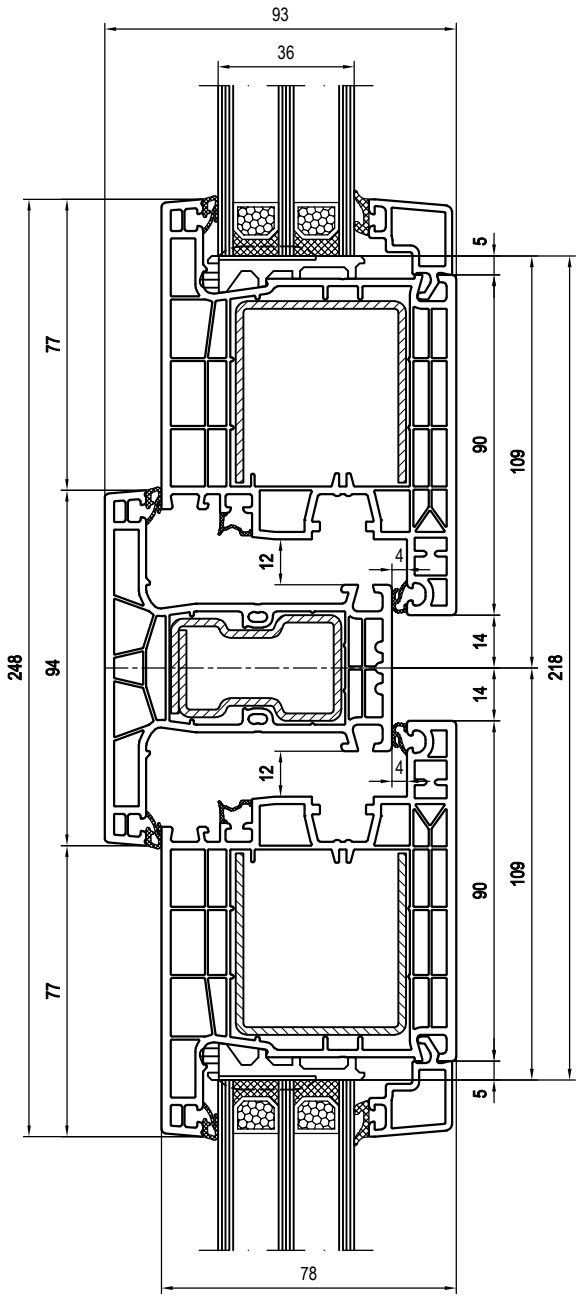
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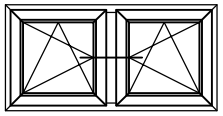


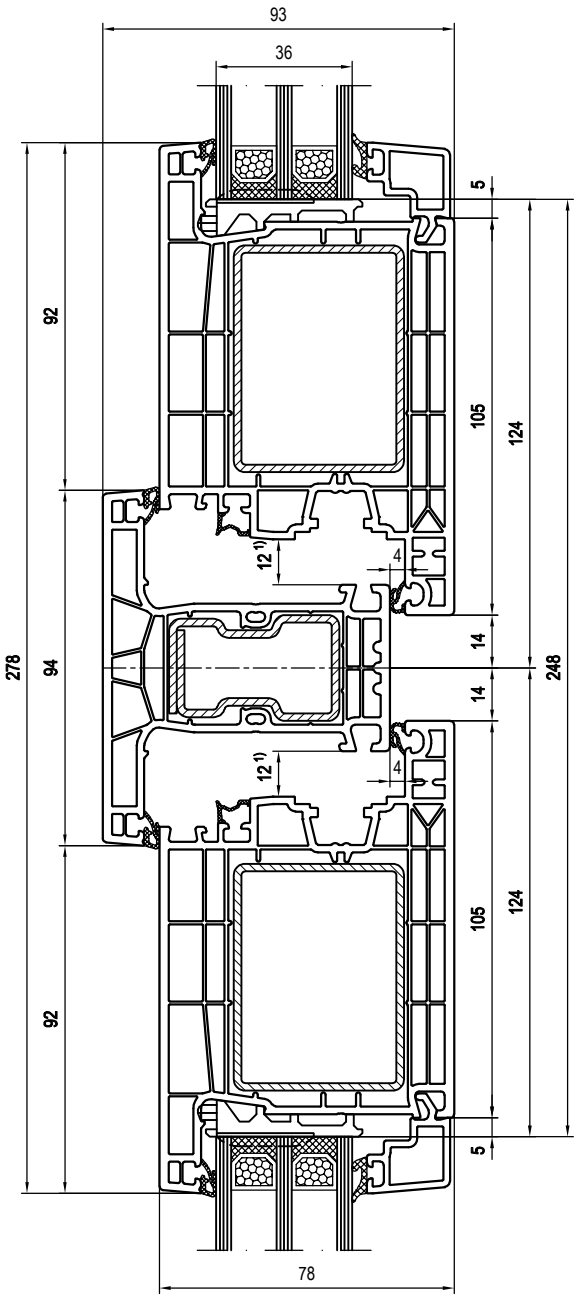
Example ~





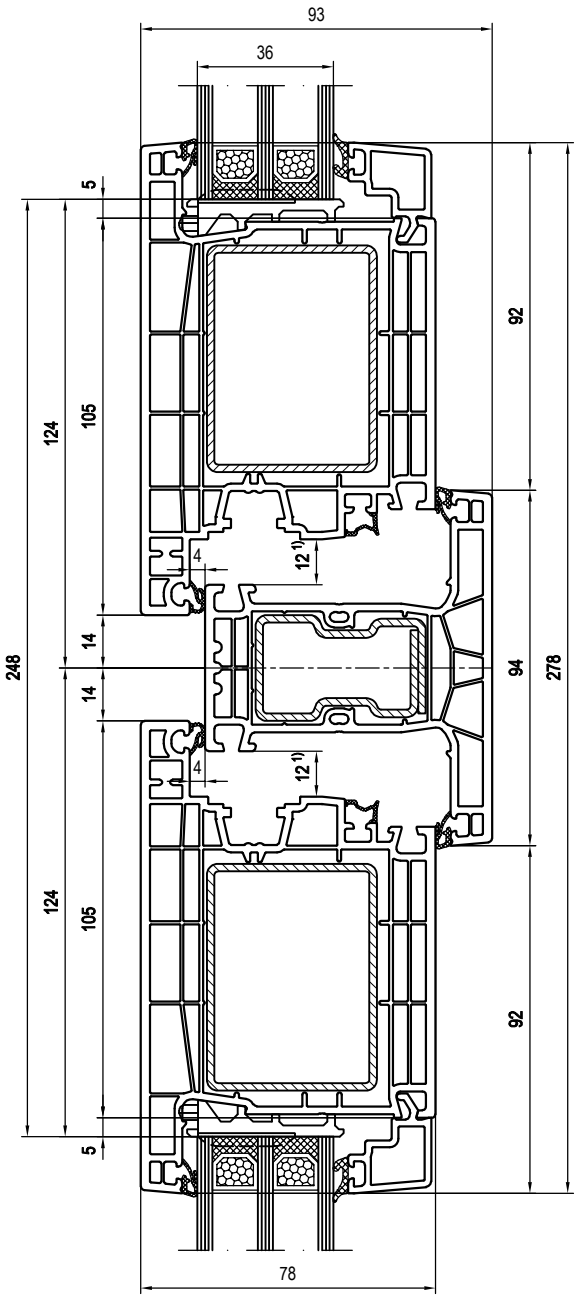
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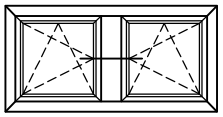


Example ~

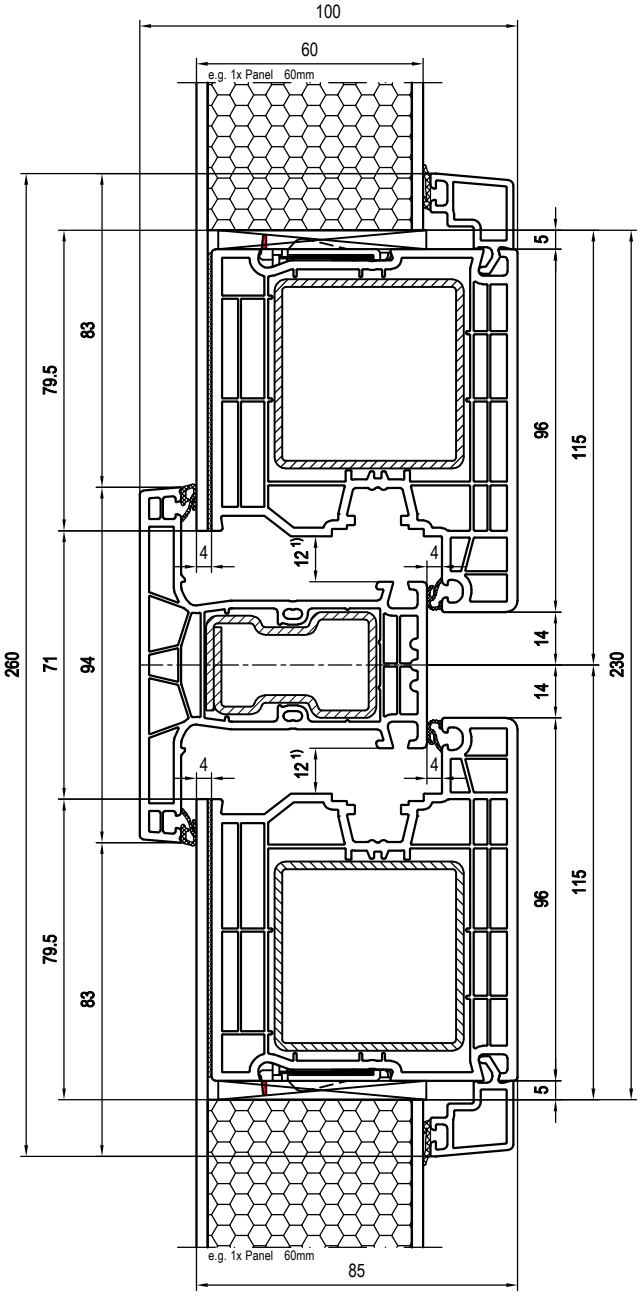
1) Rebate clearance of main entrance door on left and right side = 13 mm



Example ~

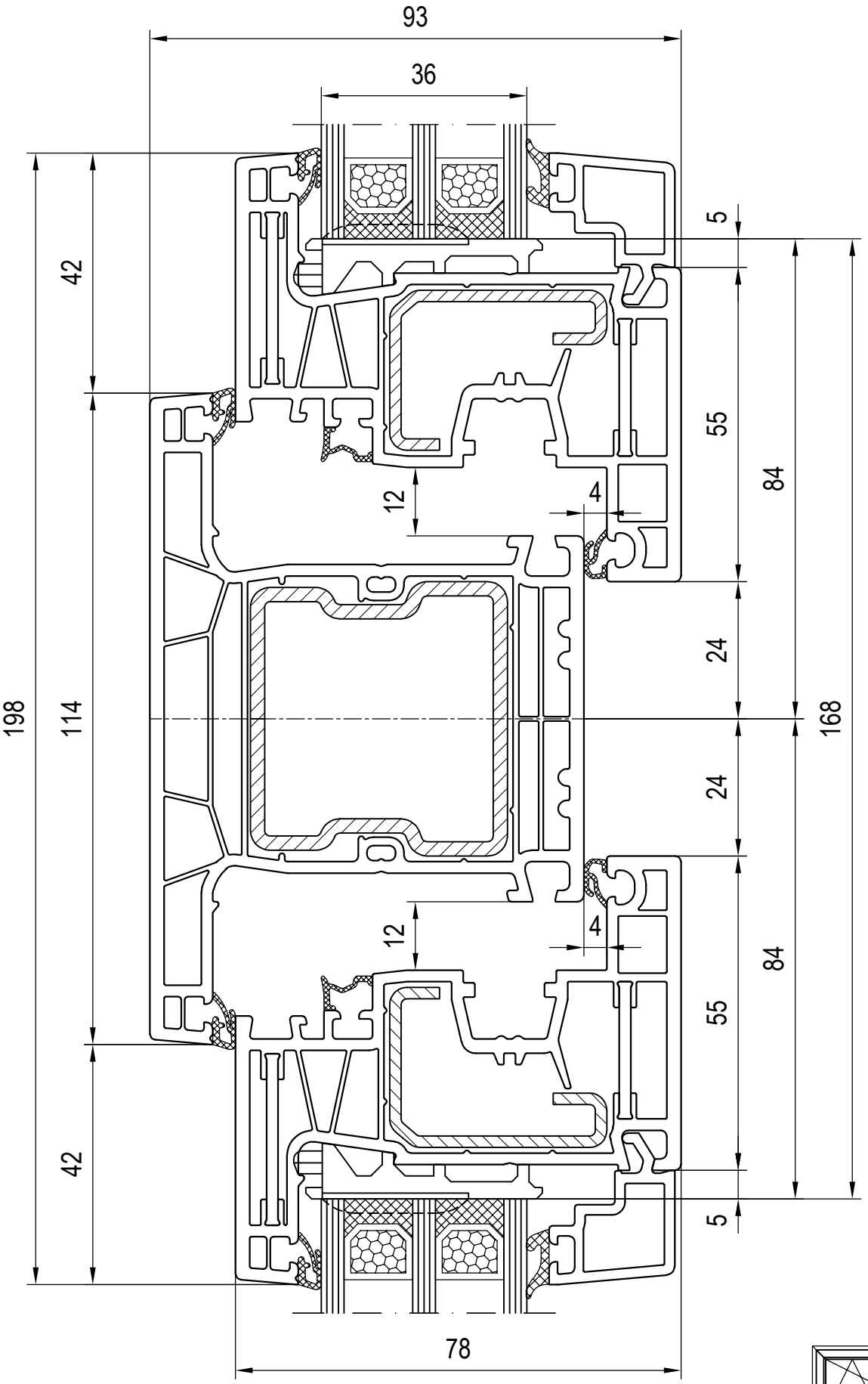


1) Rebate clearance of main entrance door on left and right side = 13 mm

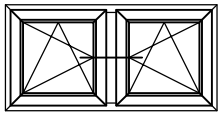


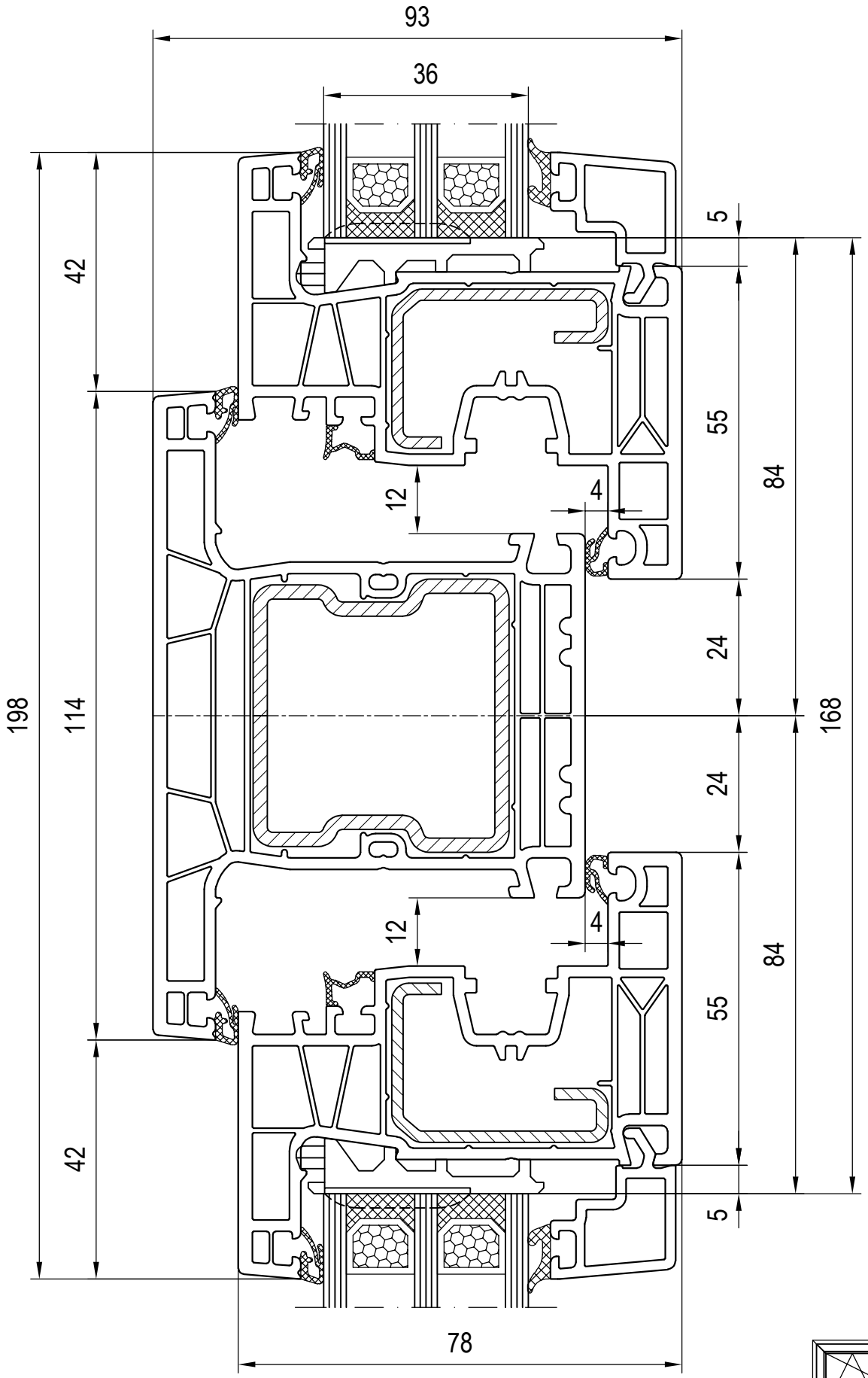
Example ~

1) Rebate clearance of main entrance door on left and right side = 13 mm

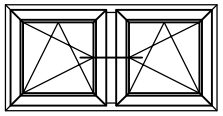


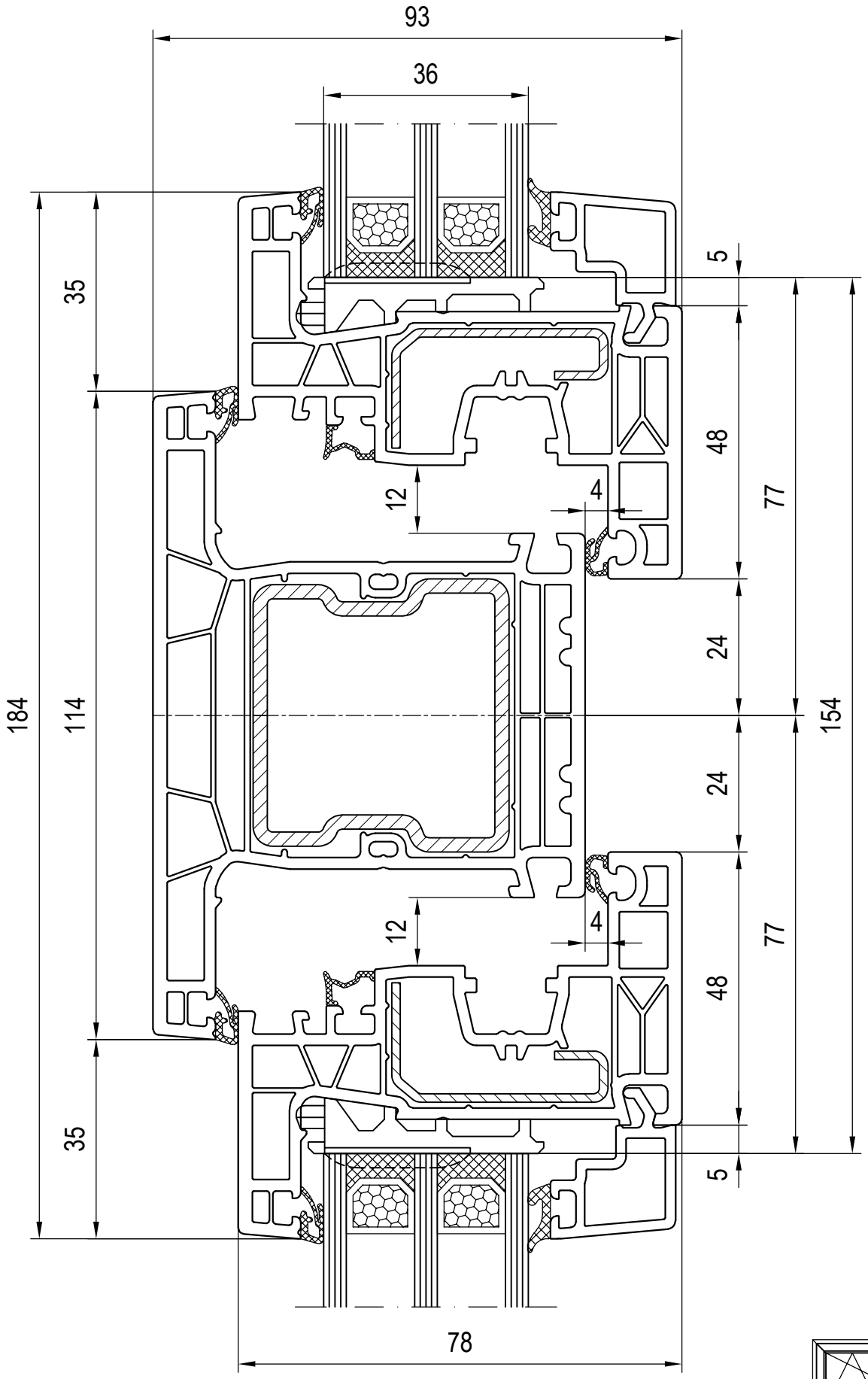
Example ~



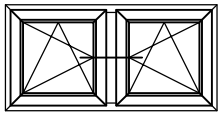


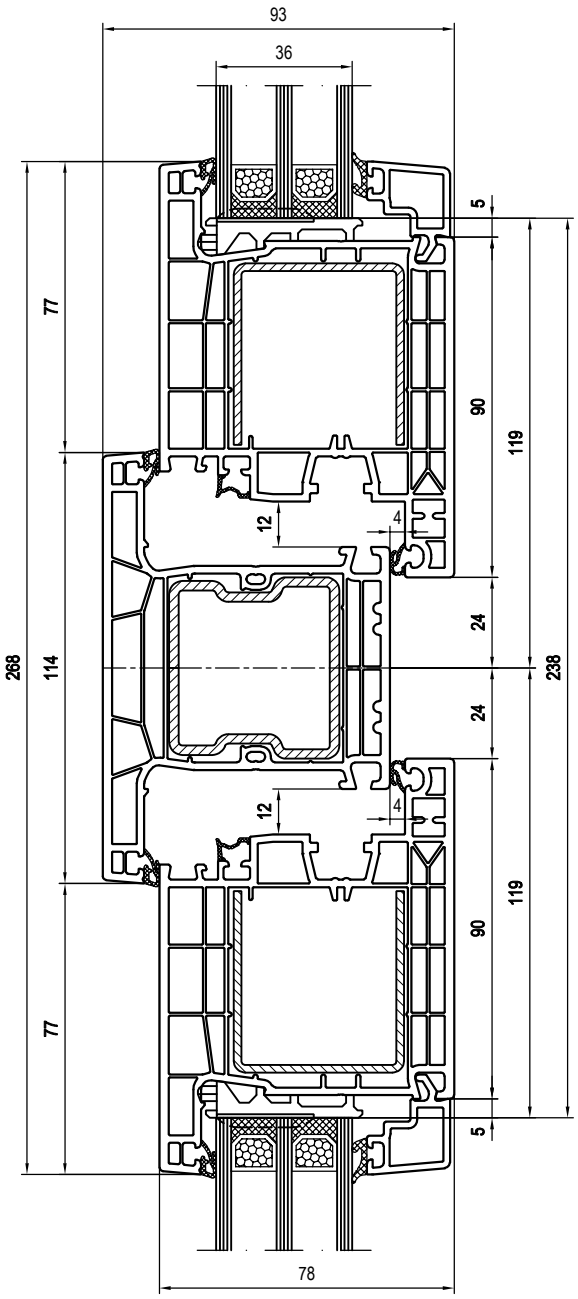
Example ~



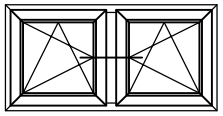


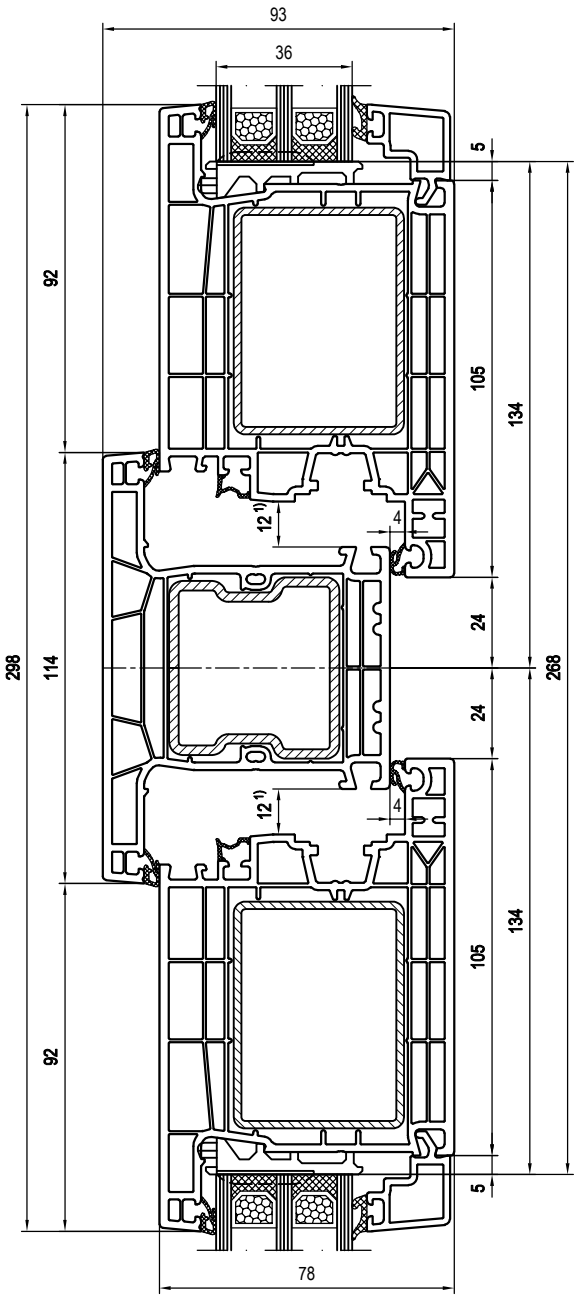
Example ~





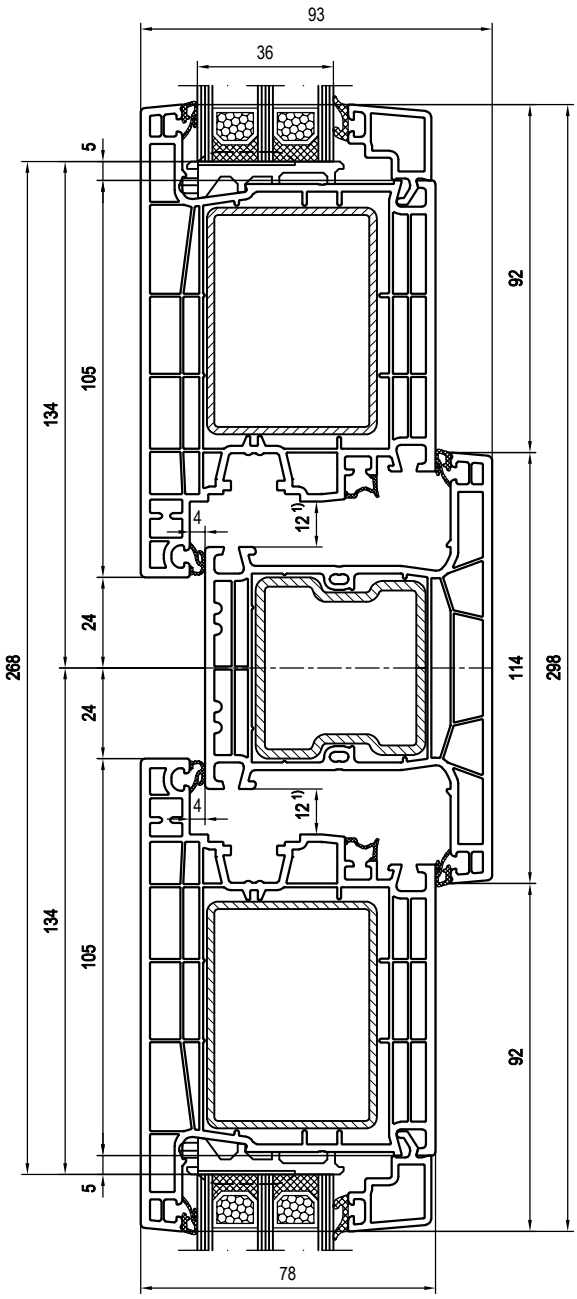
Example ~



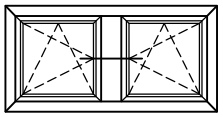


Example ~

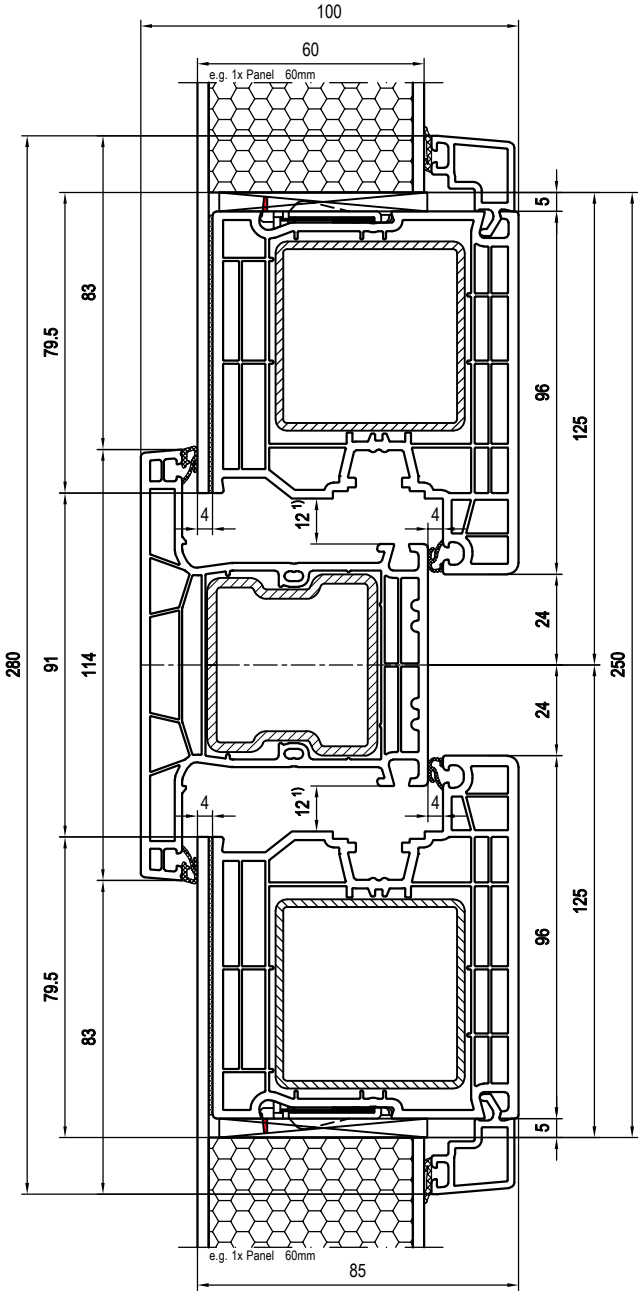
1) Rebate clearance of main entrance door on left and right side = 13 mm



Example ~

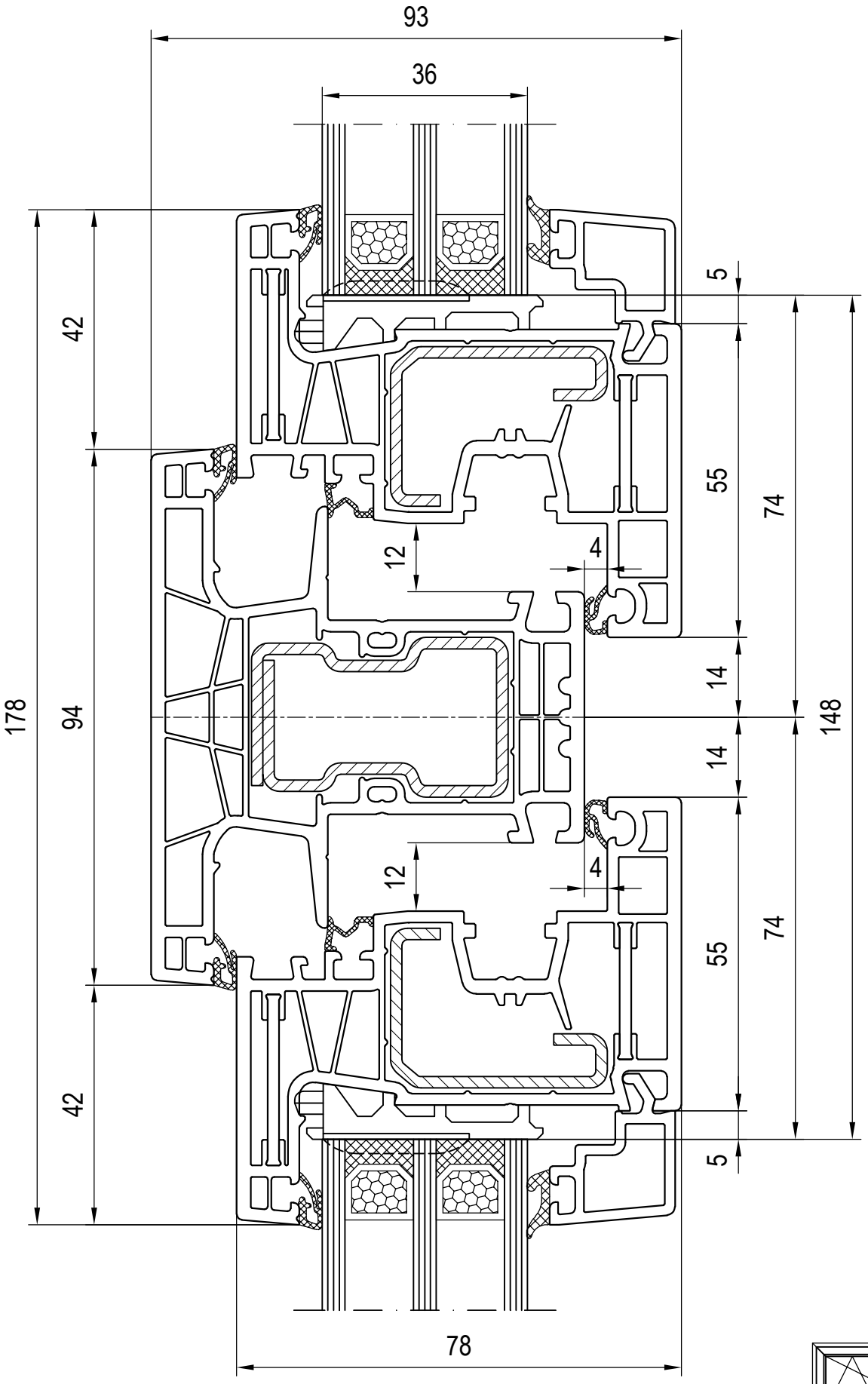


1) Rebate clearance of main entrance door on left and right side = 13 mm

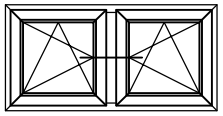


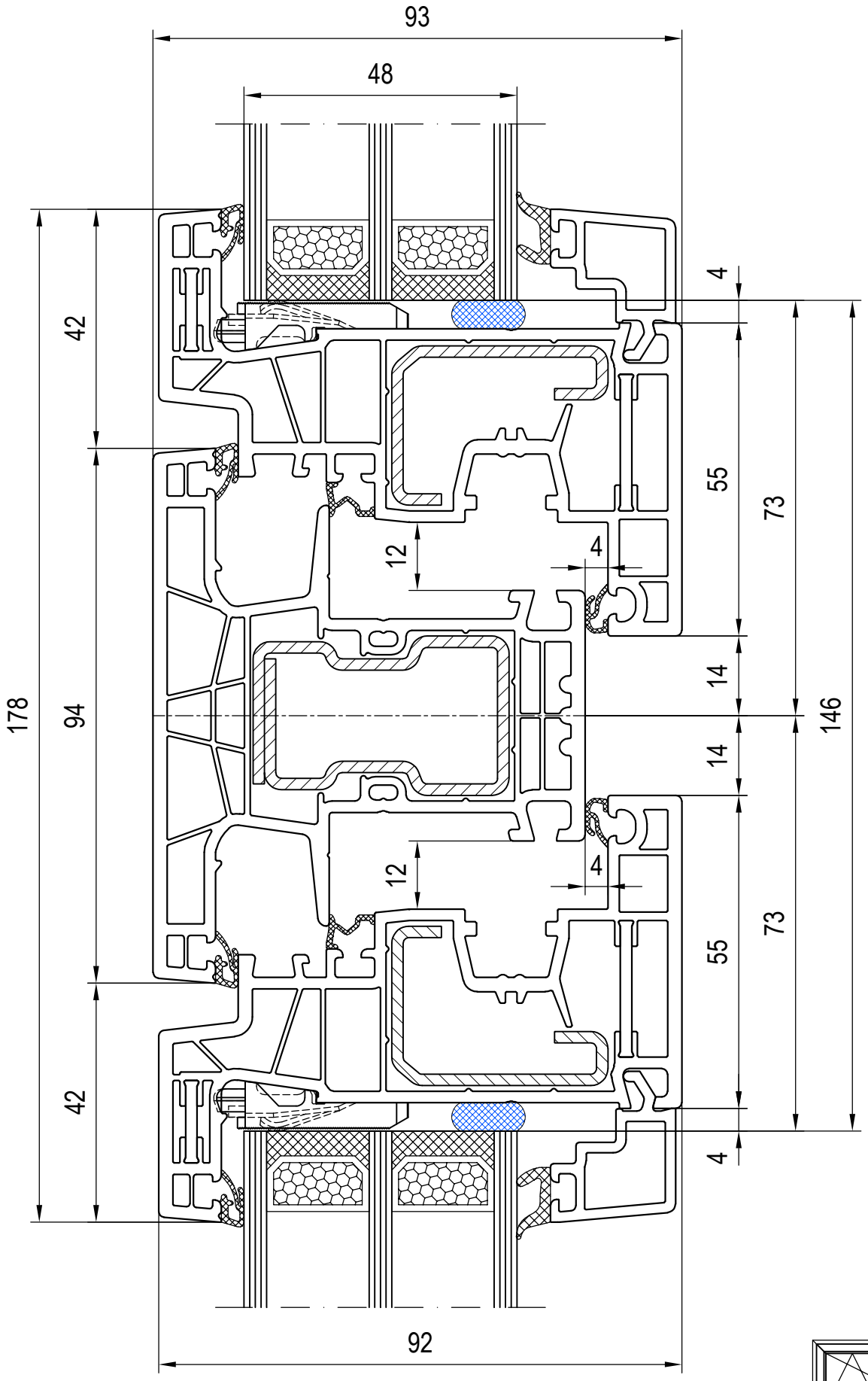
Example ~

1) Rebate clearance of main entrance door on left and right side = 13 mm

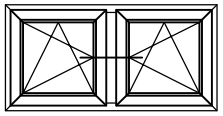


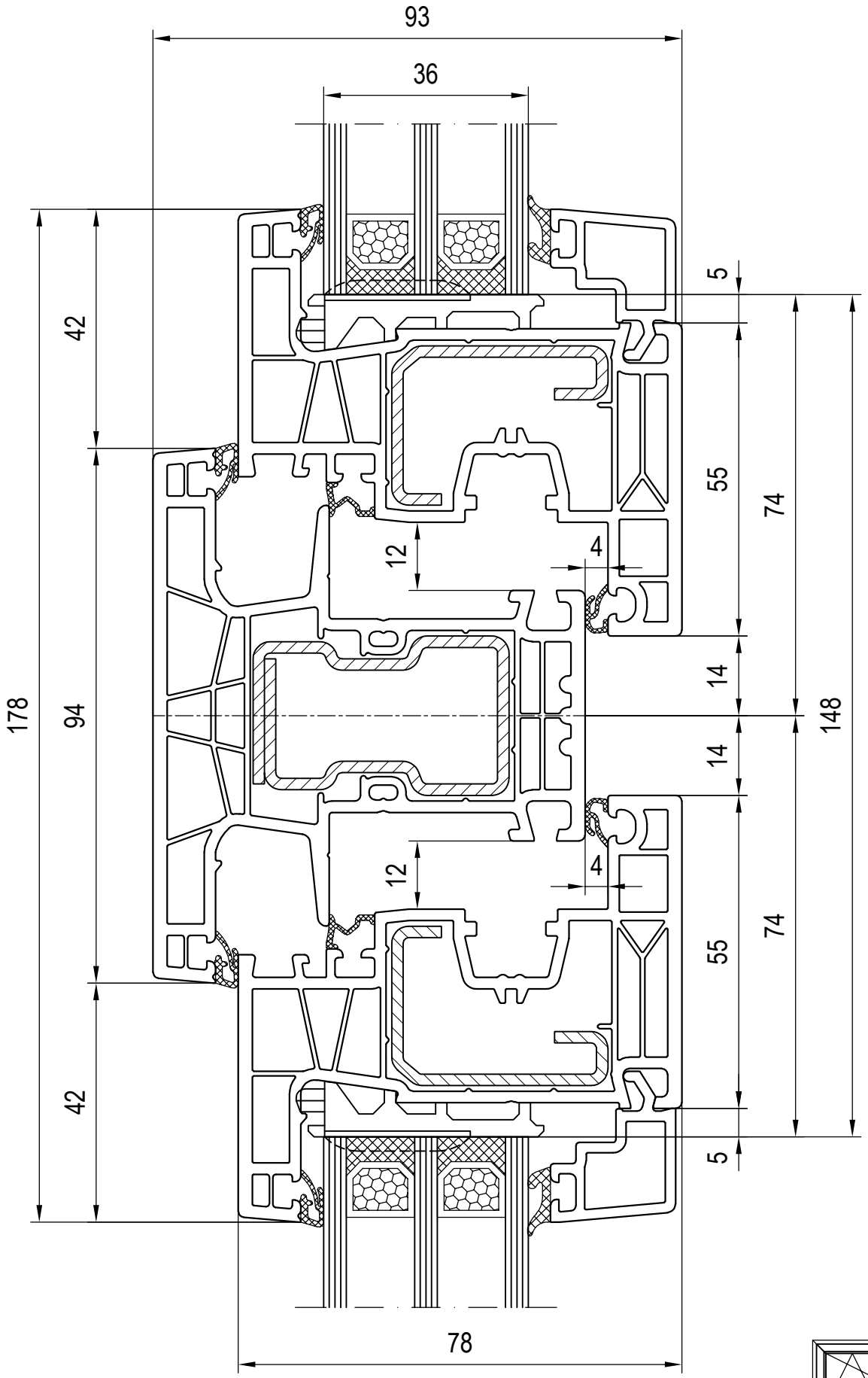
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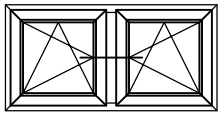


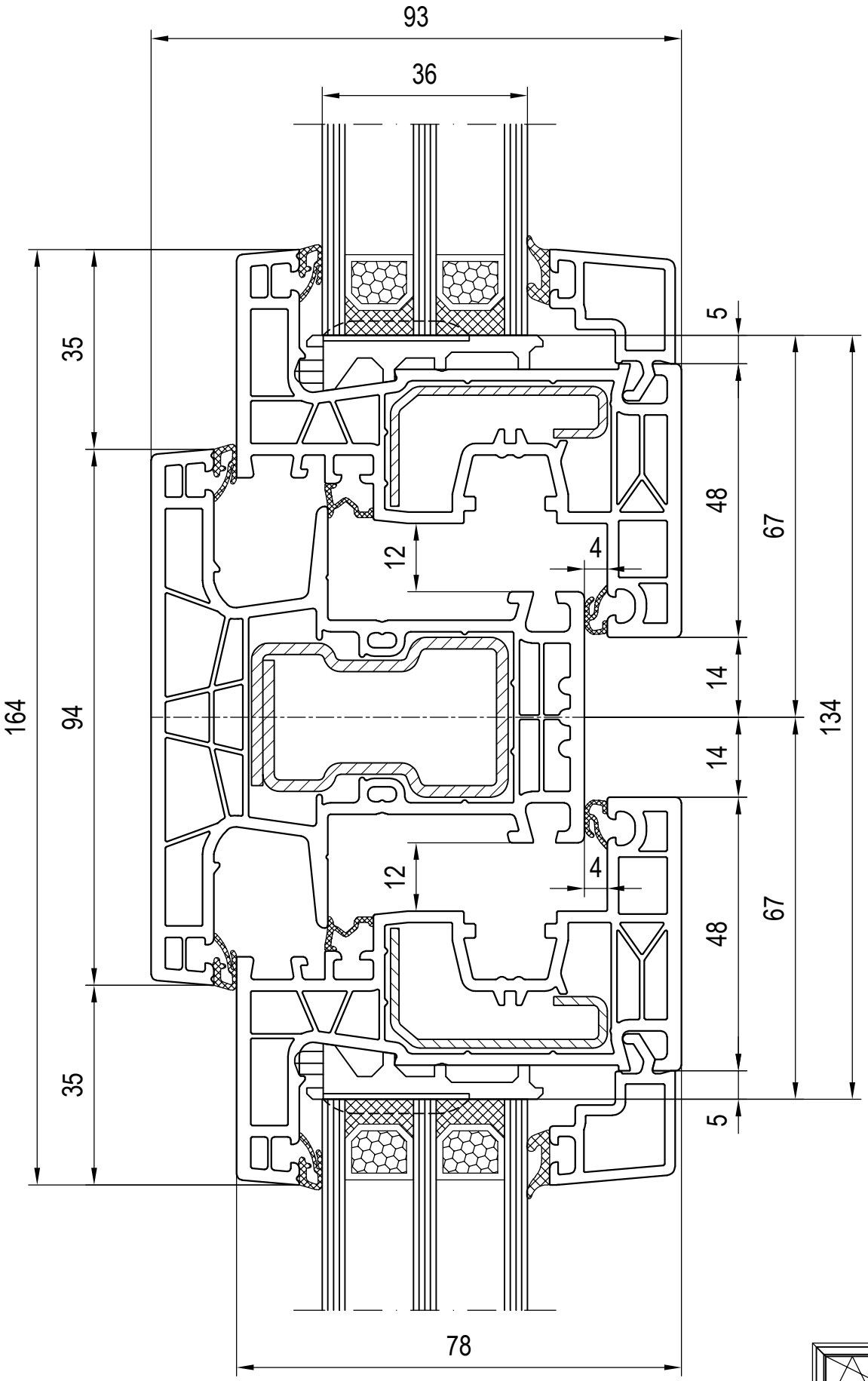
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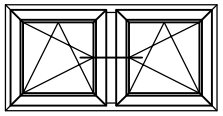


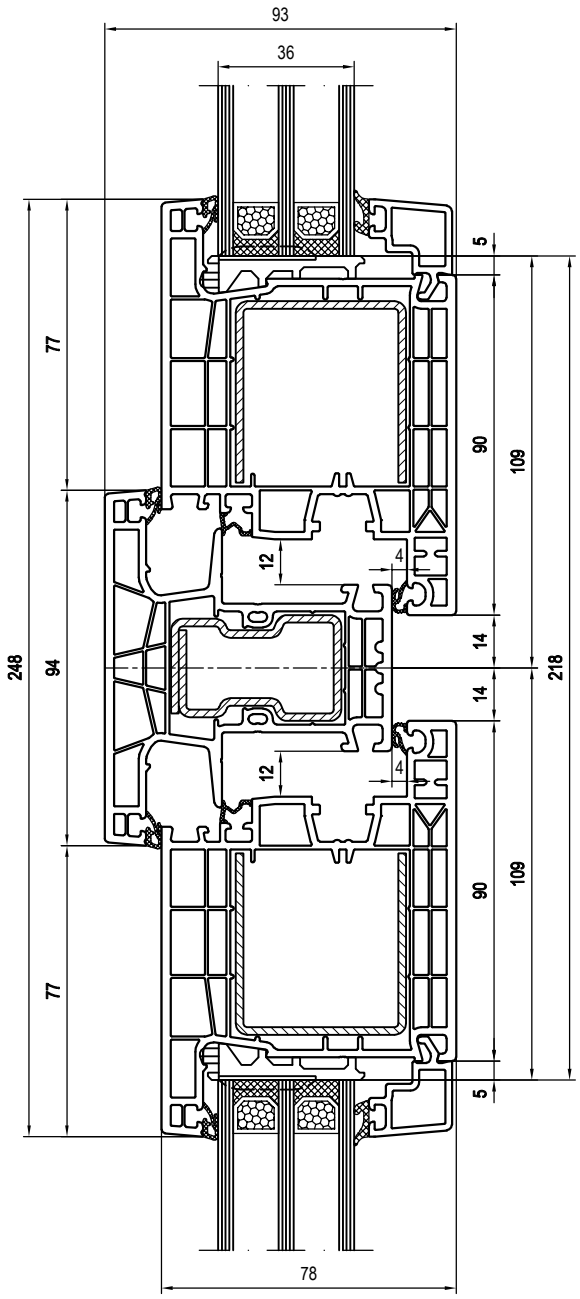
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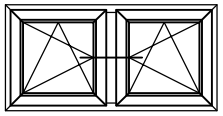


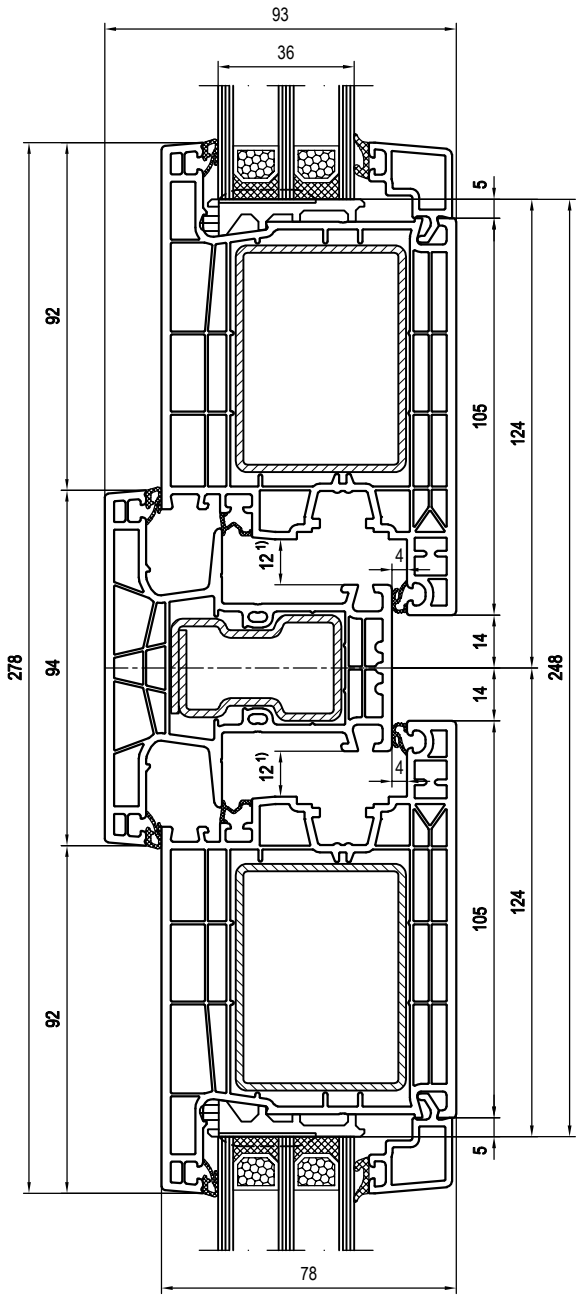
Example ~





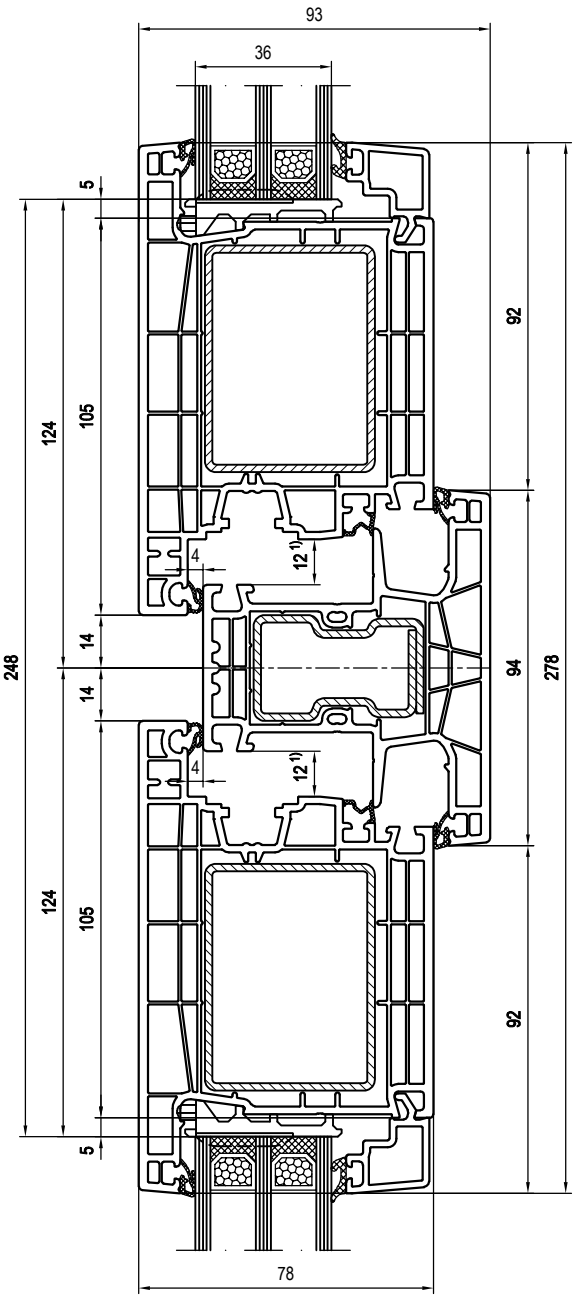
Example ~



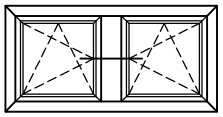


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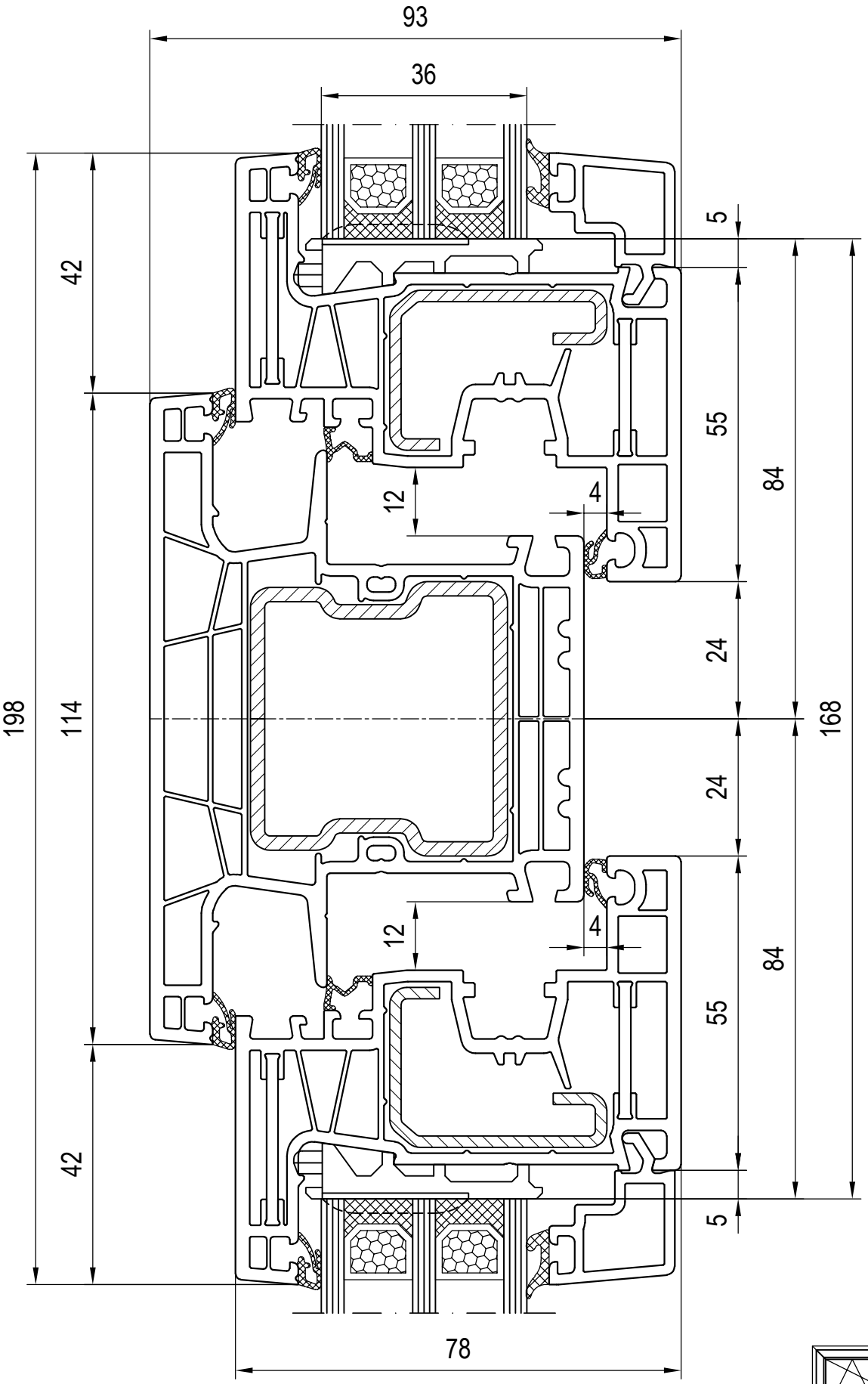
1) Rebate clearance of main entrance door on left and right side = 13 mm



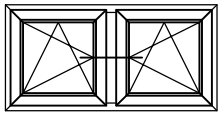
Example ~

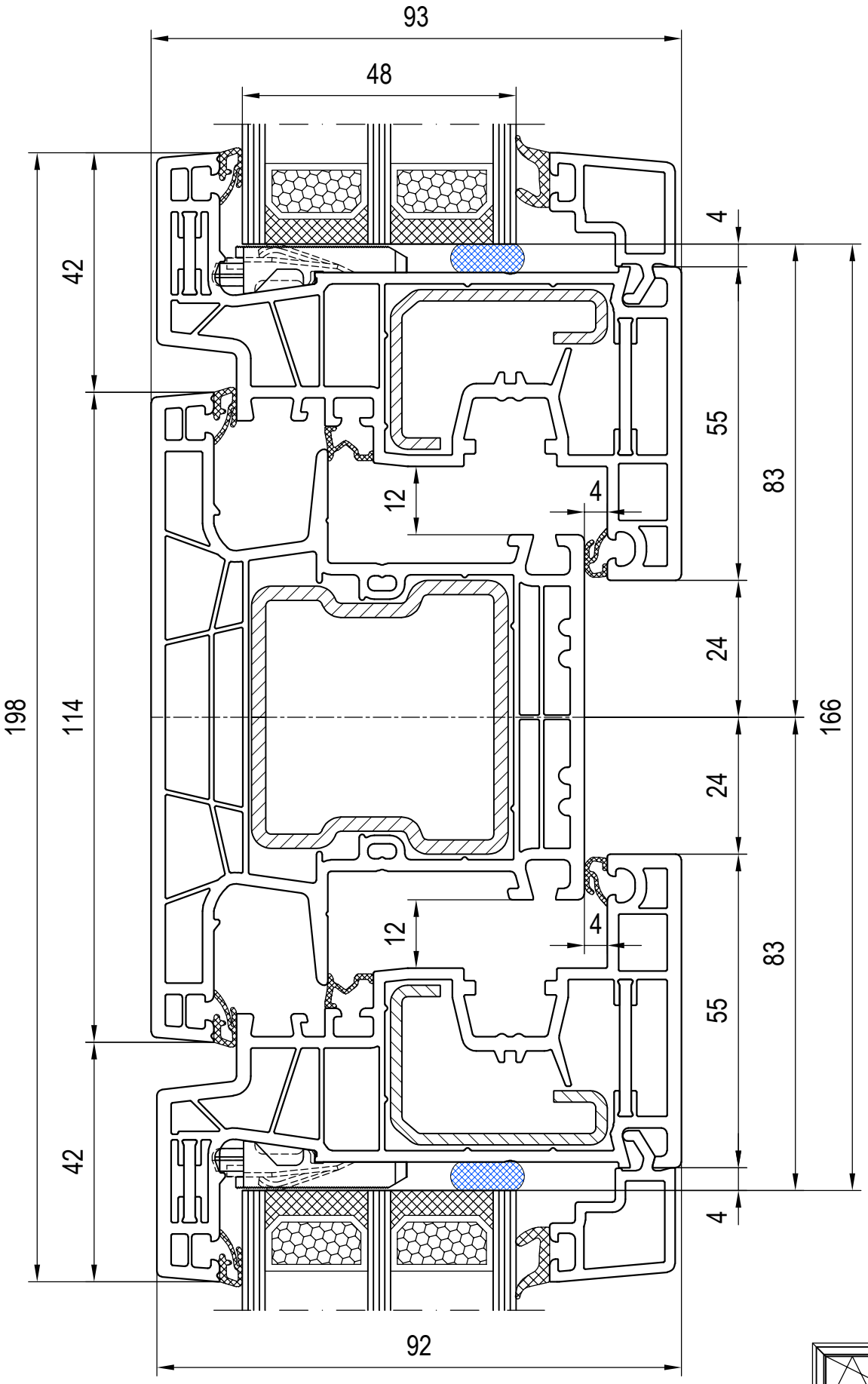


1) Rebate clearance of main entrance door on left and right side = 13 mm

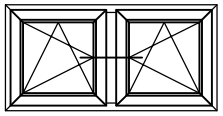


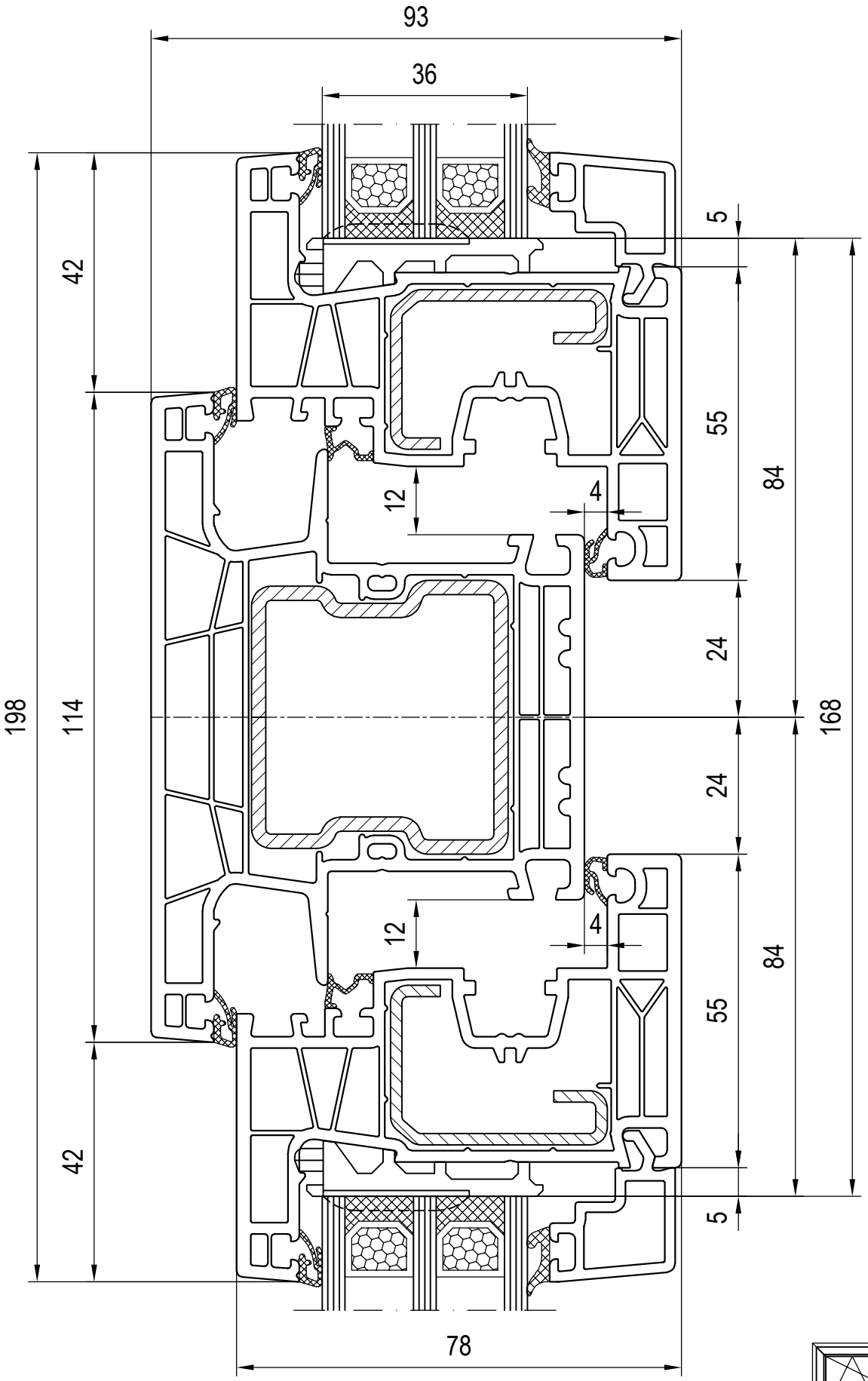
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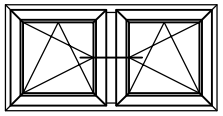


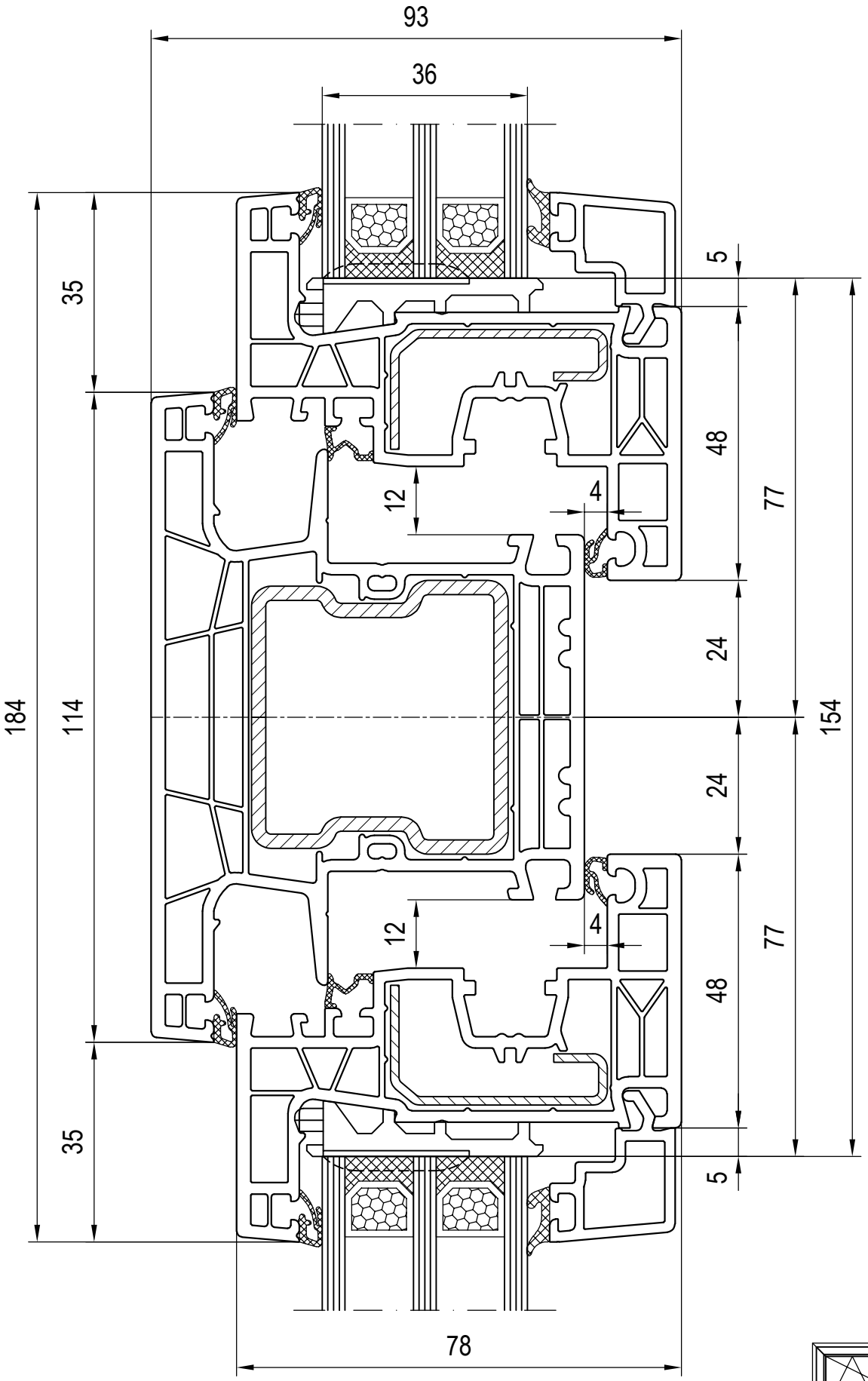
Example ~



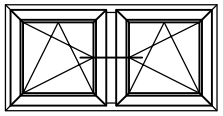


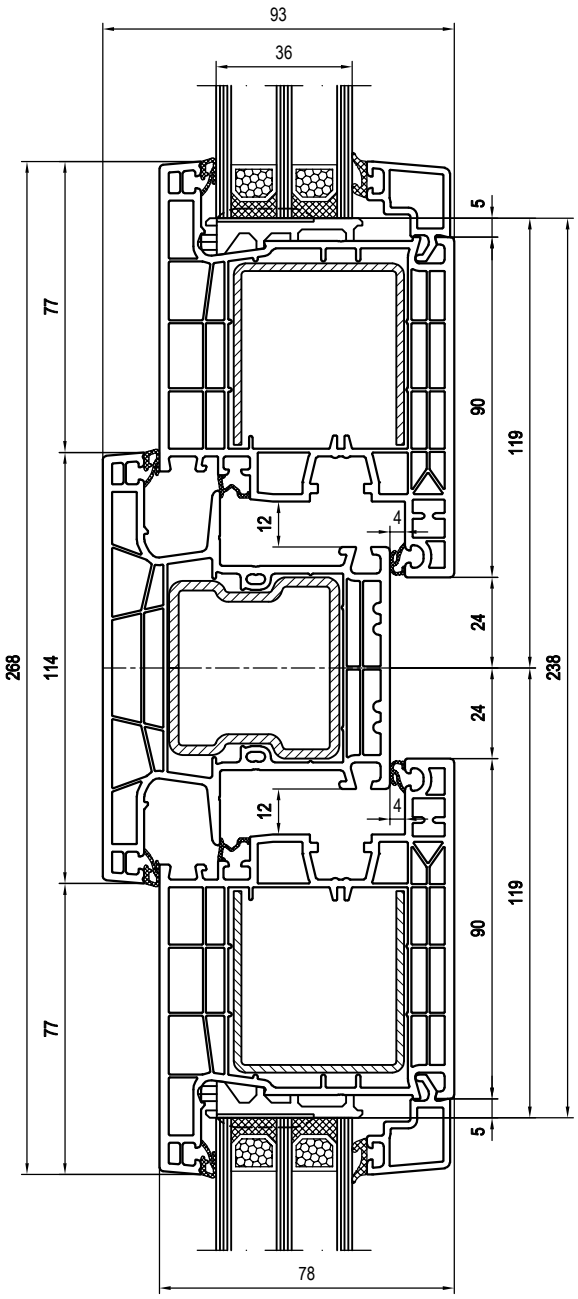
Example ~



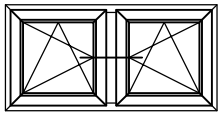


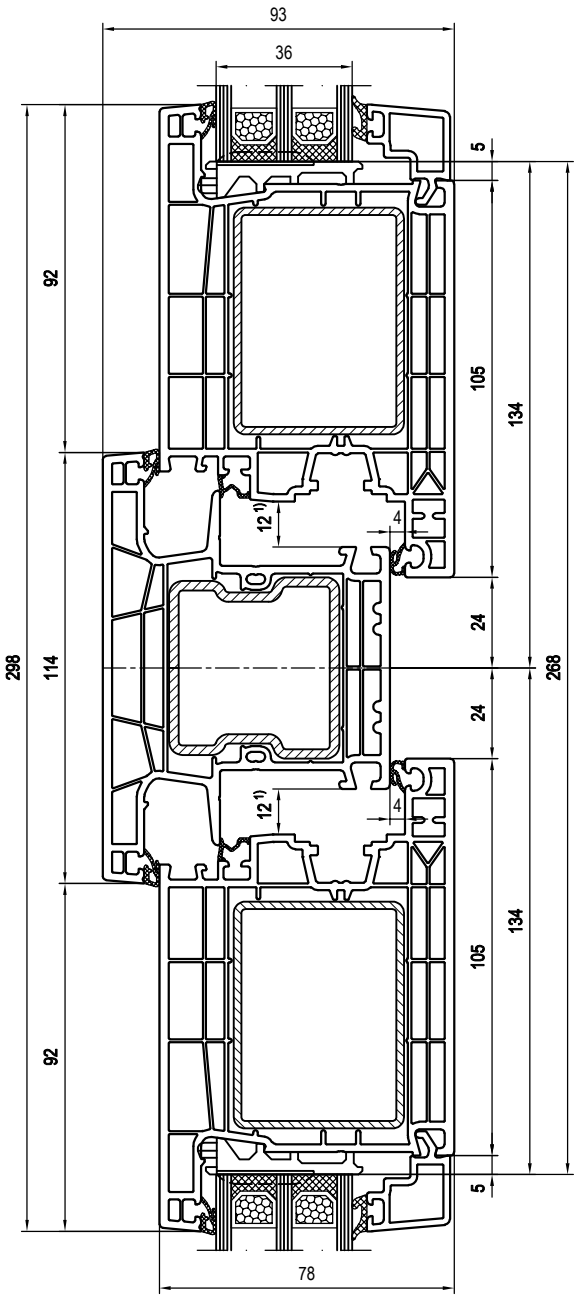
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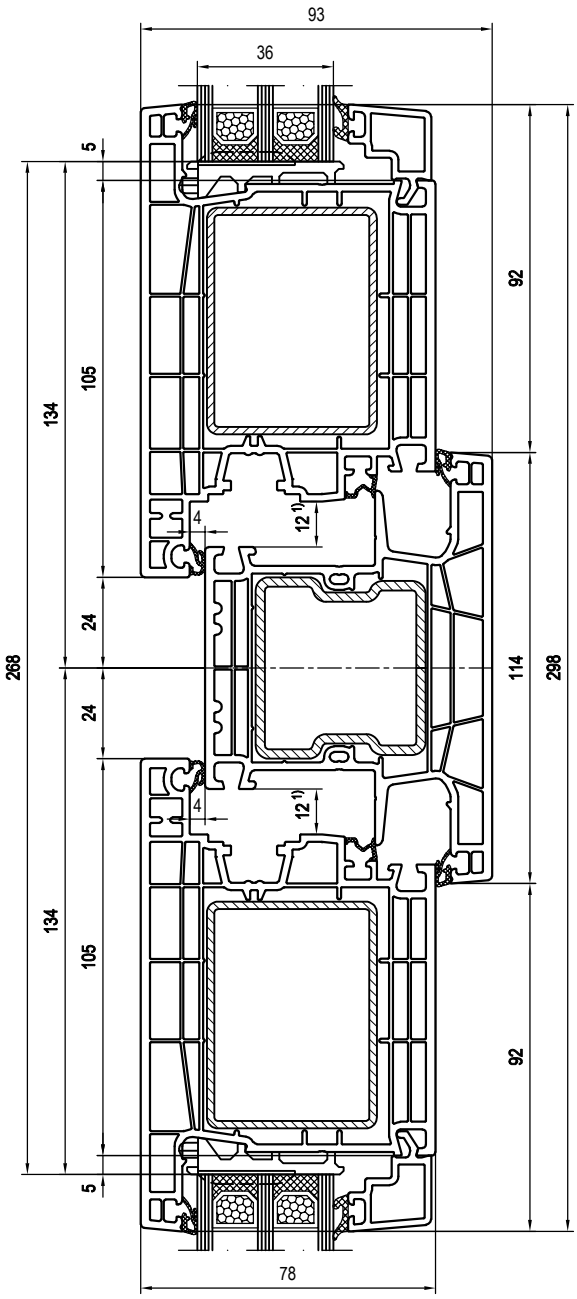
Example ~



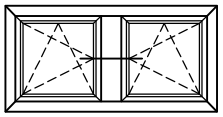


Example ~

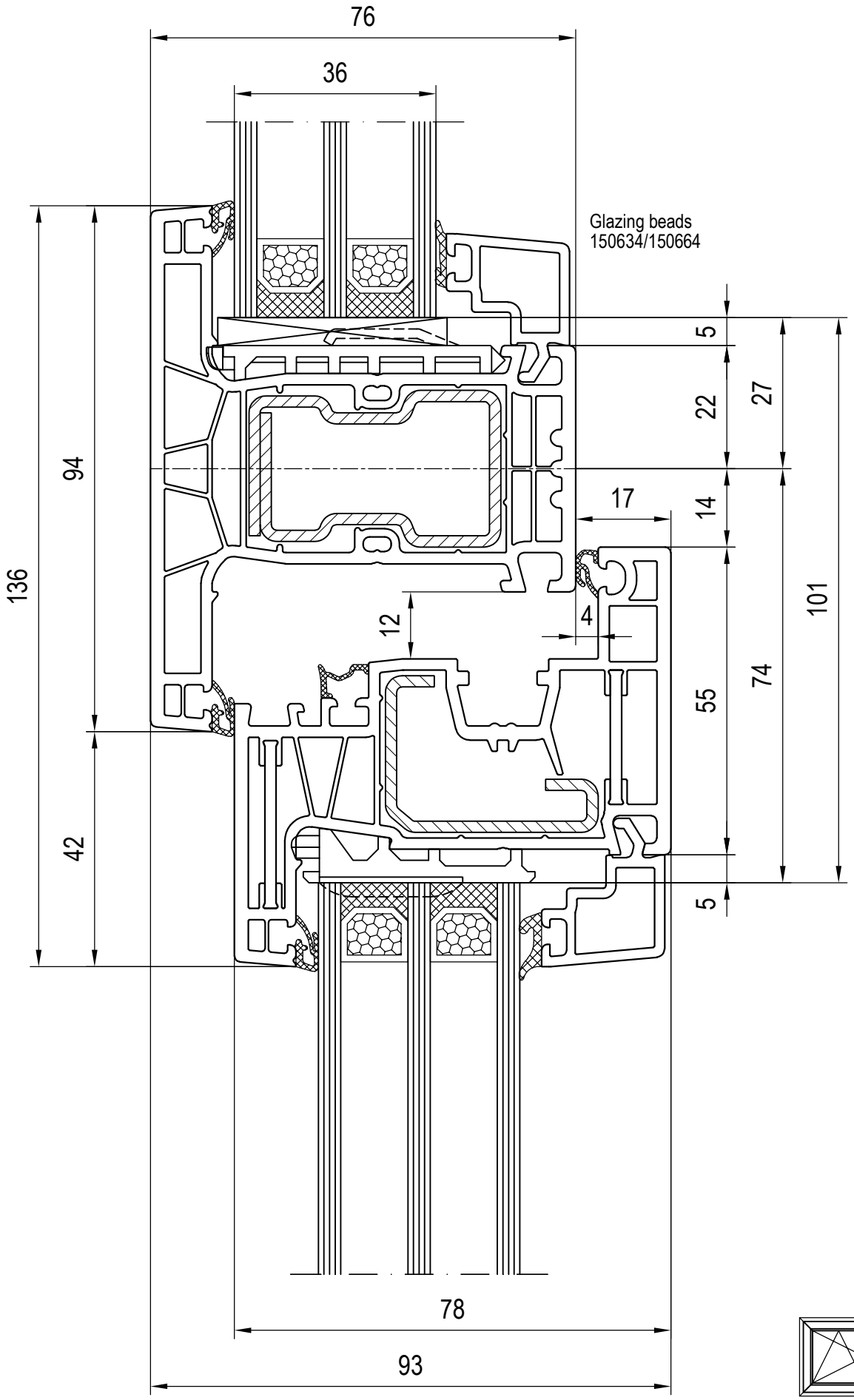
1) Rebate clearance of main entrance door on left and right side = 13 mm



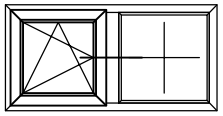
Example ~

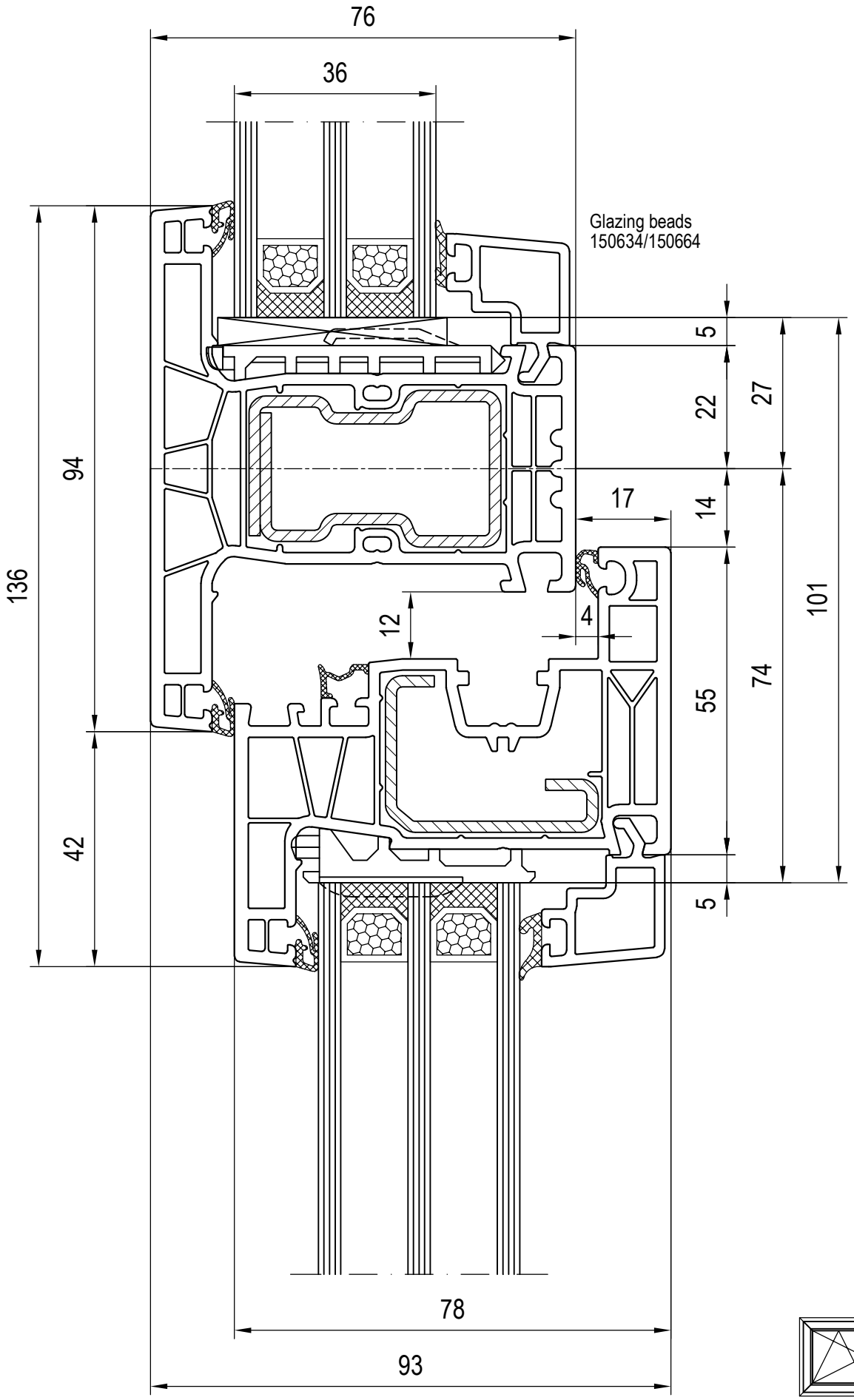


1) Rebate clearance of main entrance door on left and right side = 13 mm

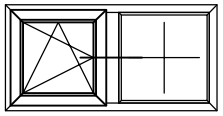

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Glazing beads
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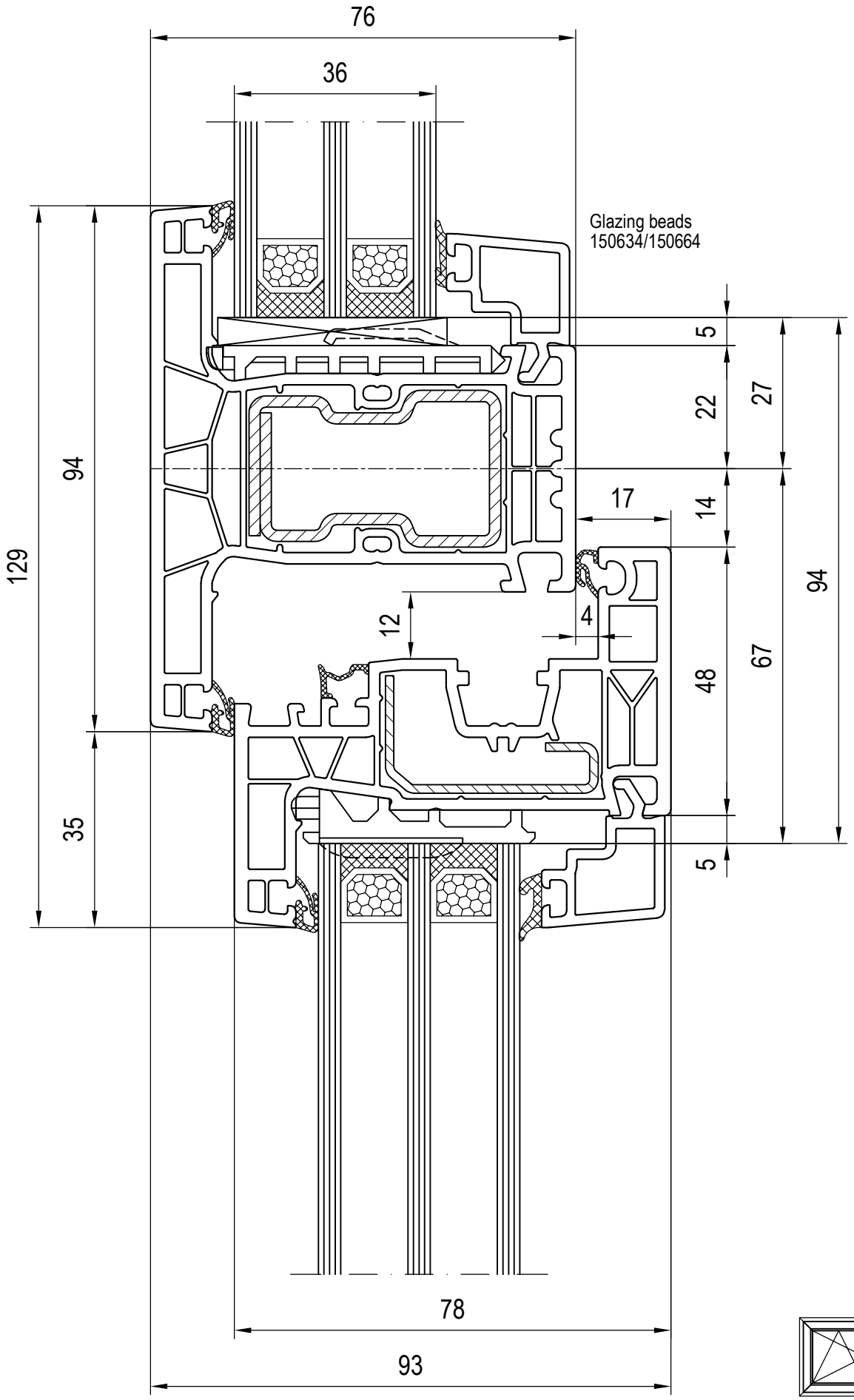
Example ~



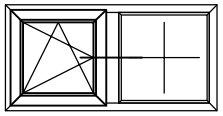

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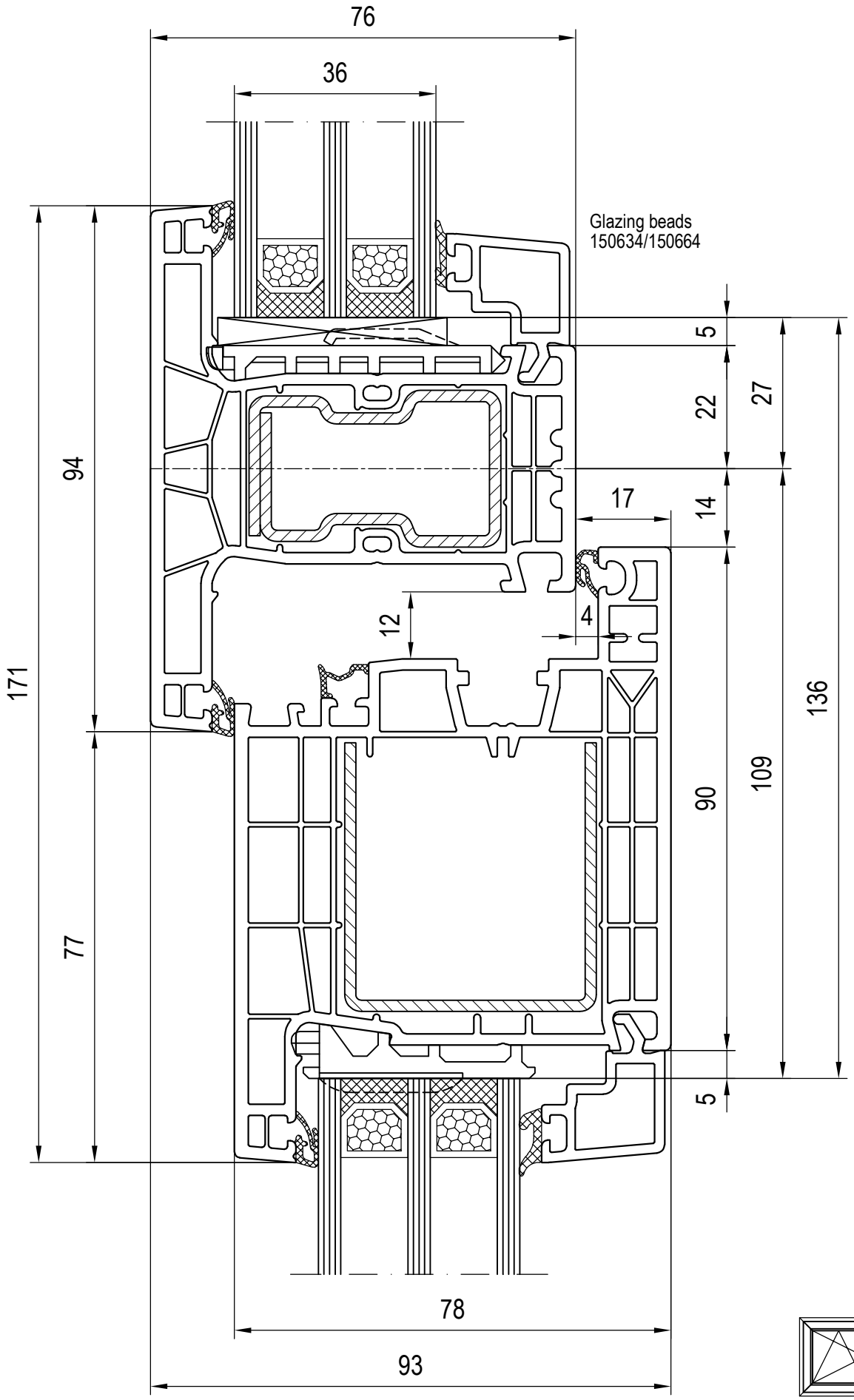
Example ~



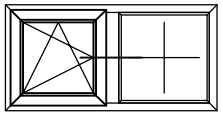

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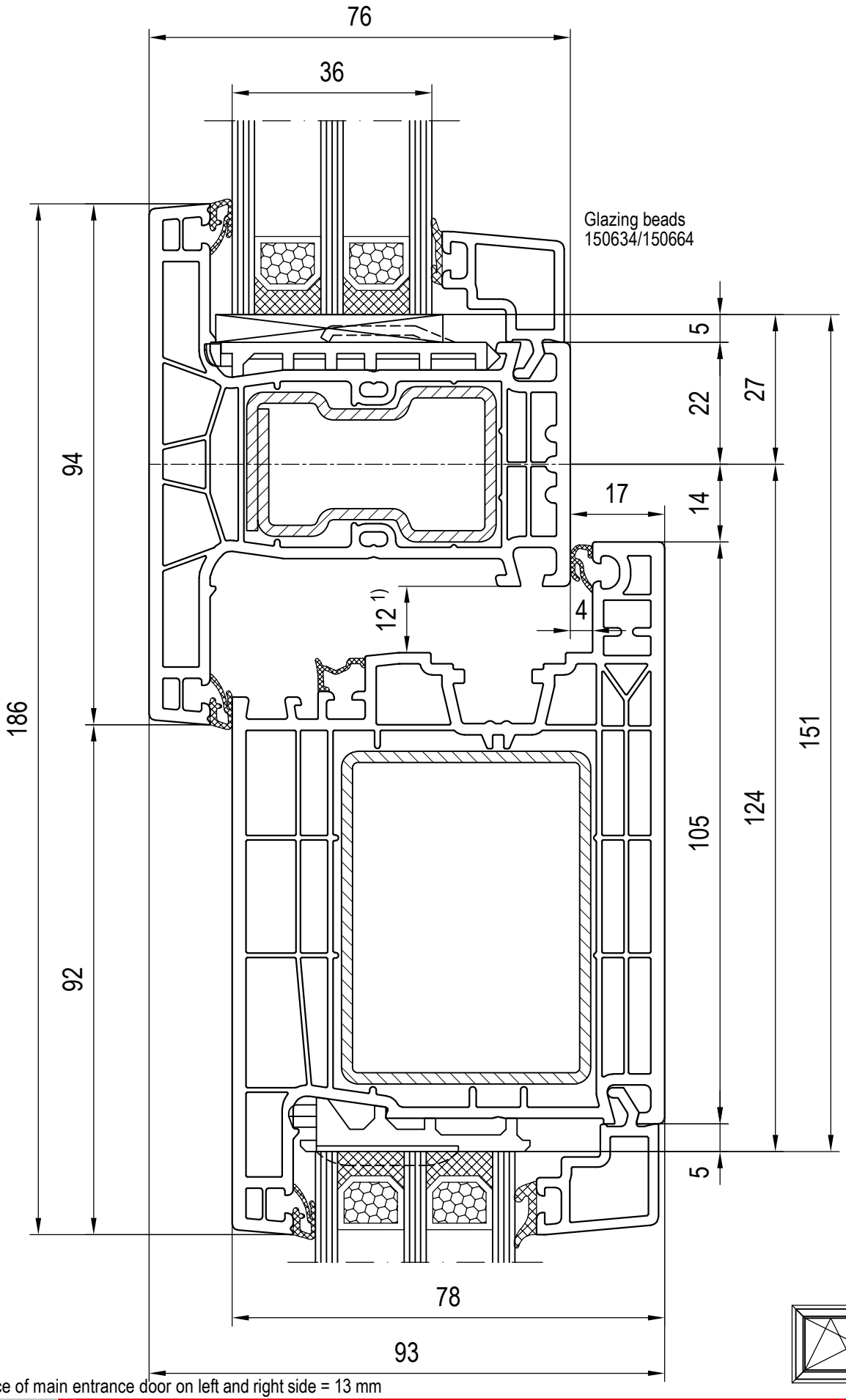
Example ~




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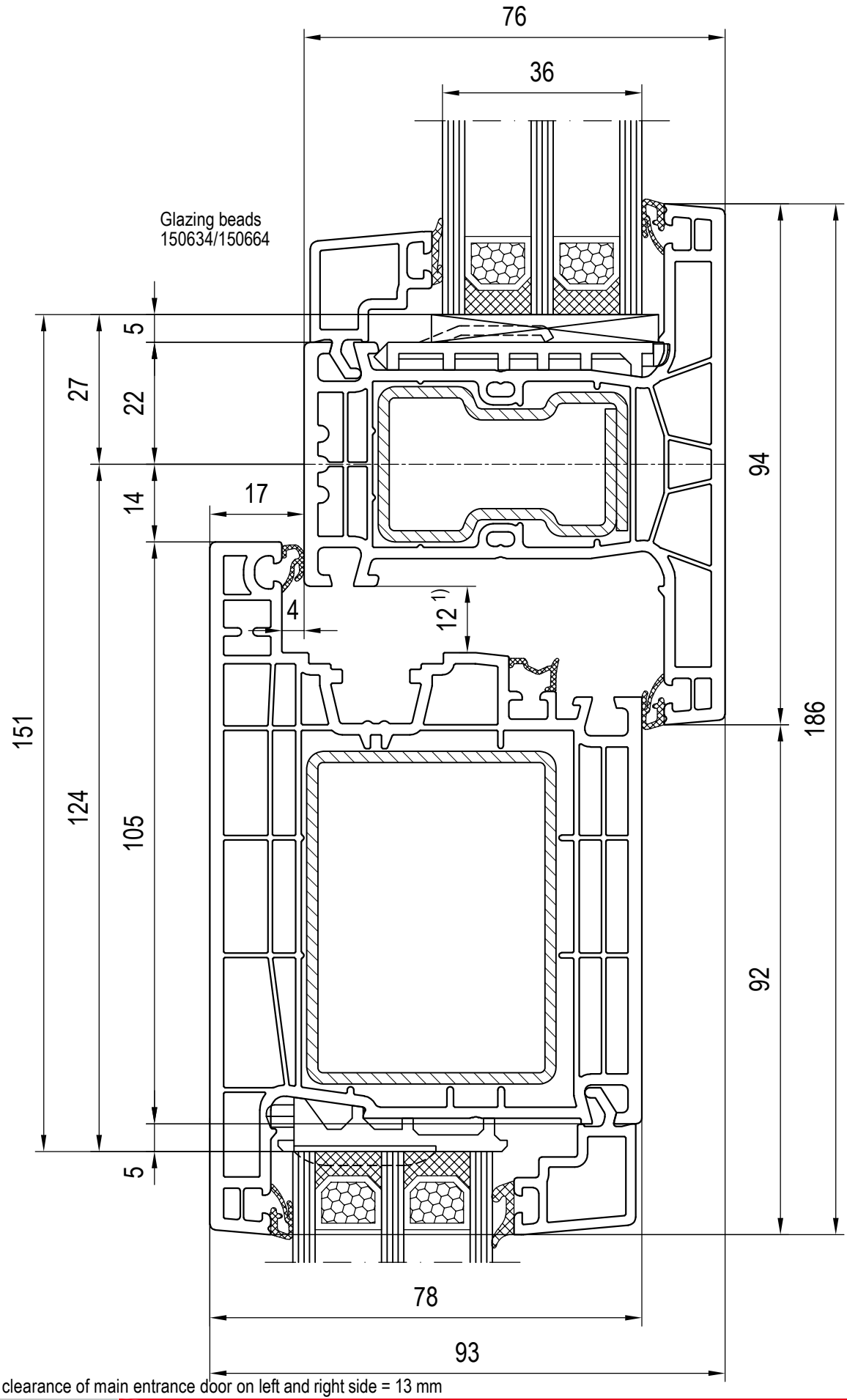
Example ~





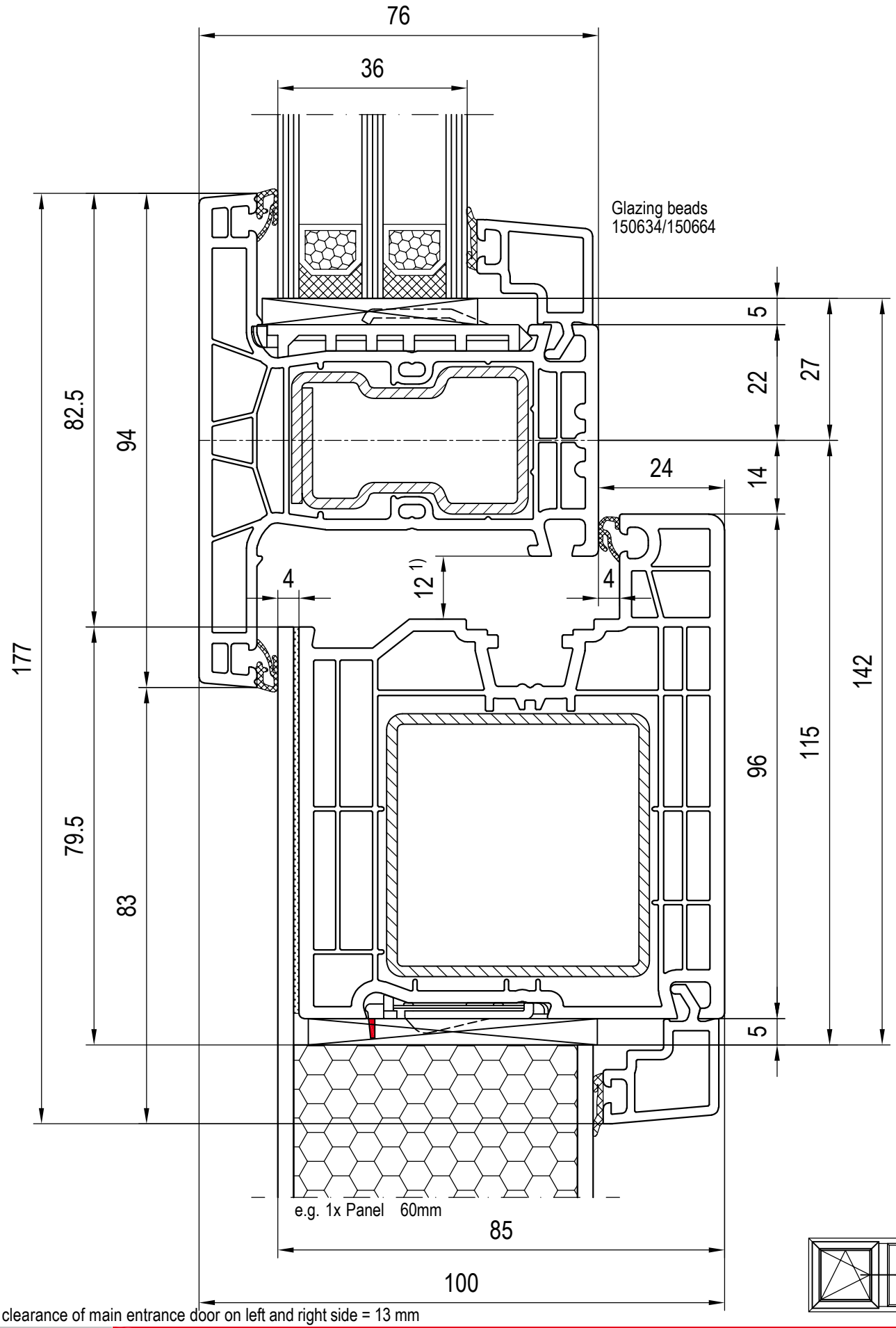
Example ~

1) Rebate clearance of main entrance door on left and right side = 13 mm



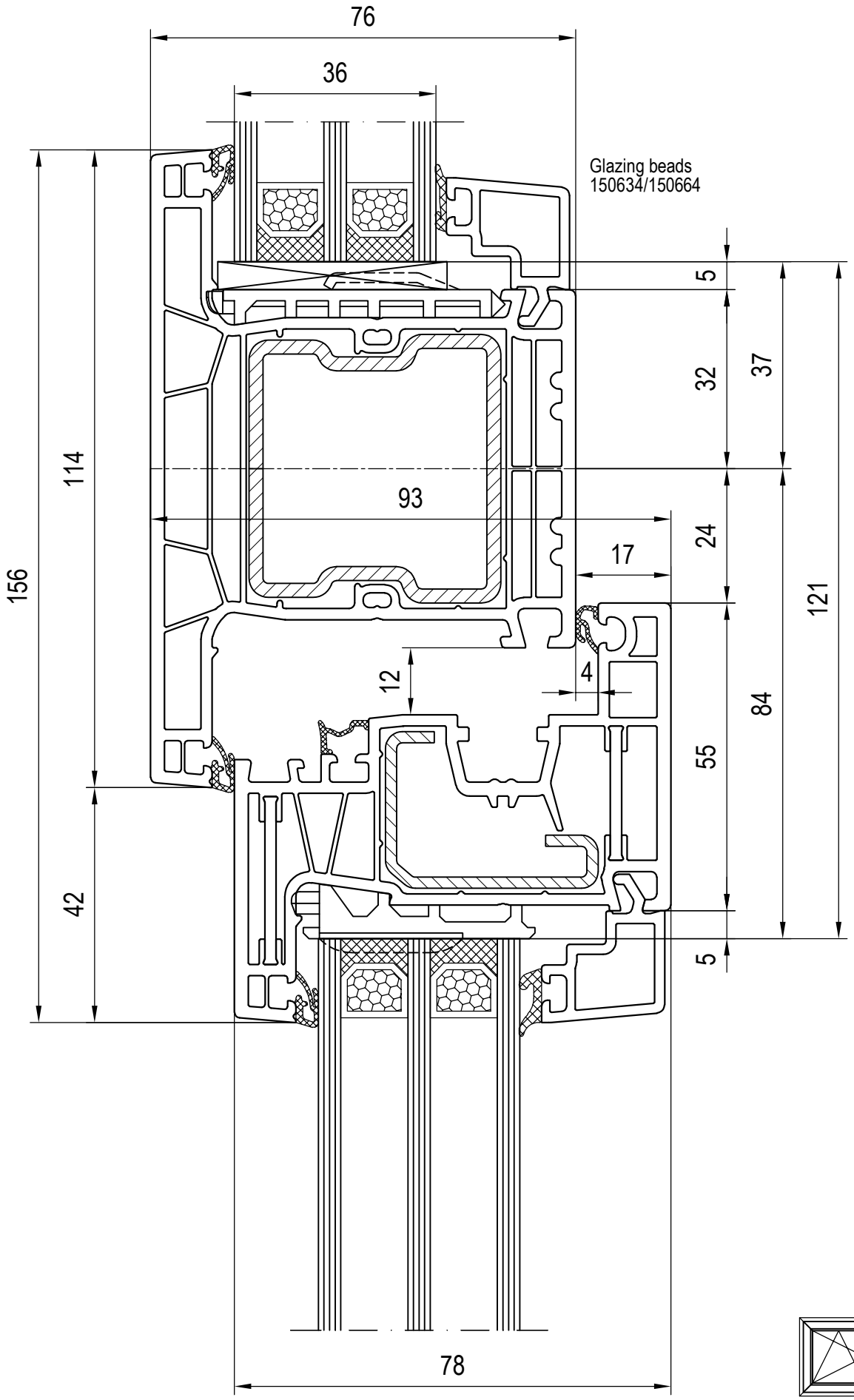
Example ~

1) Rebate clearance of main entrance door on left and right side = 13 mm

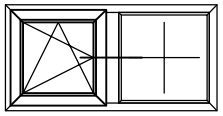


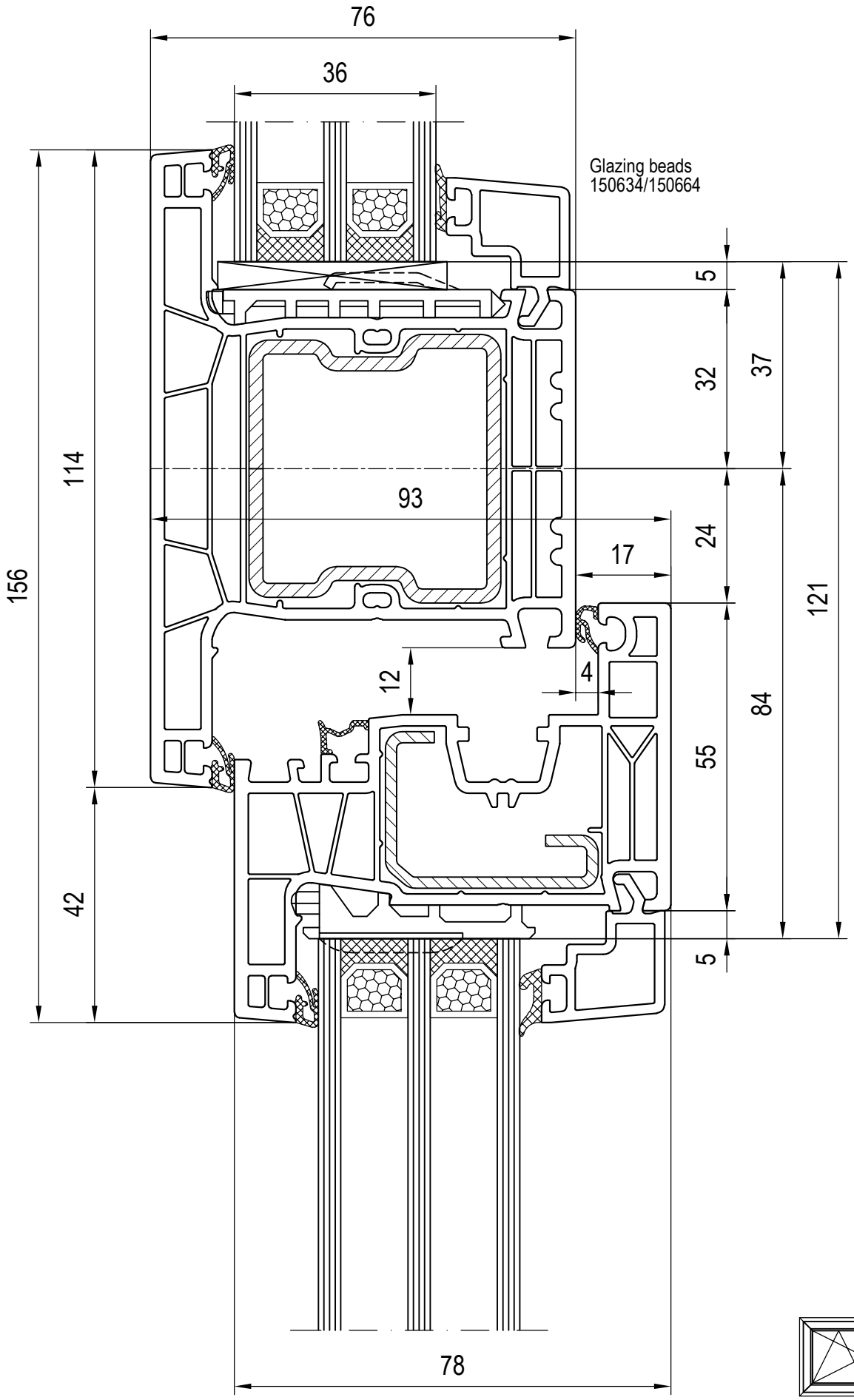
Example ~

1) Rebate clearance of main entrance door on left and right side = 13 mm

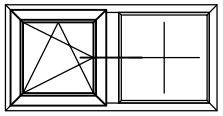

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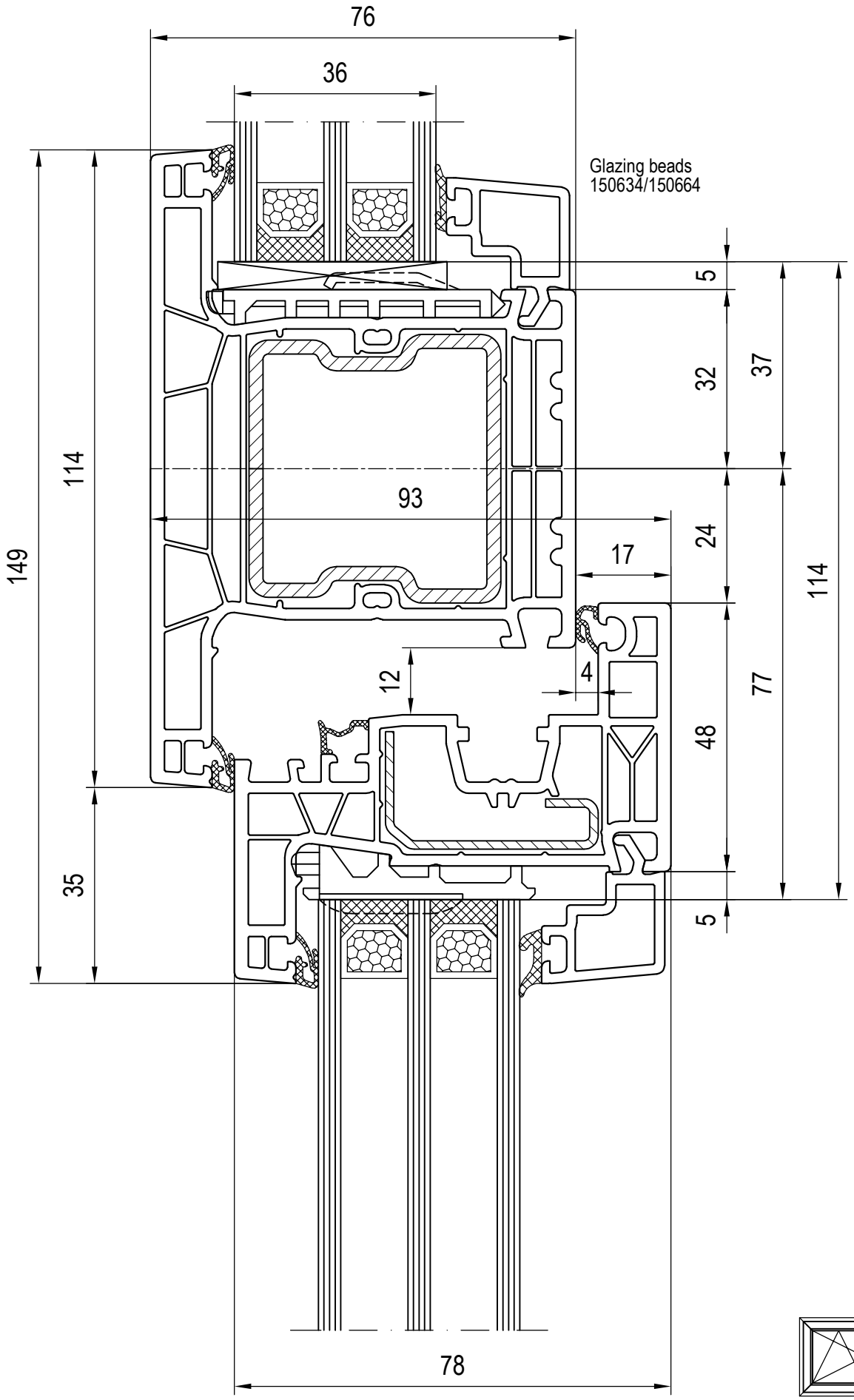
Example ~



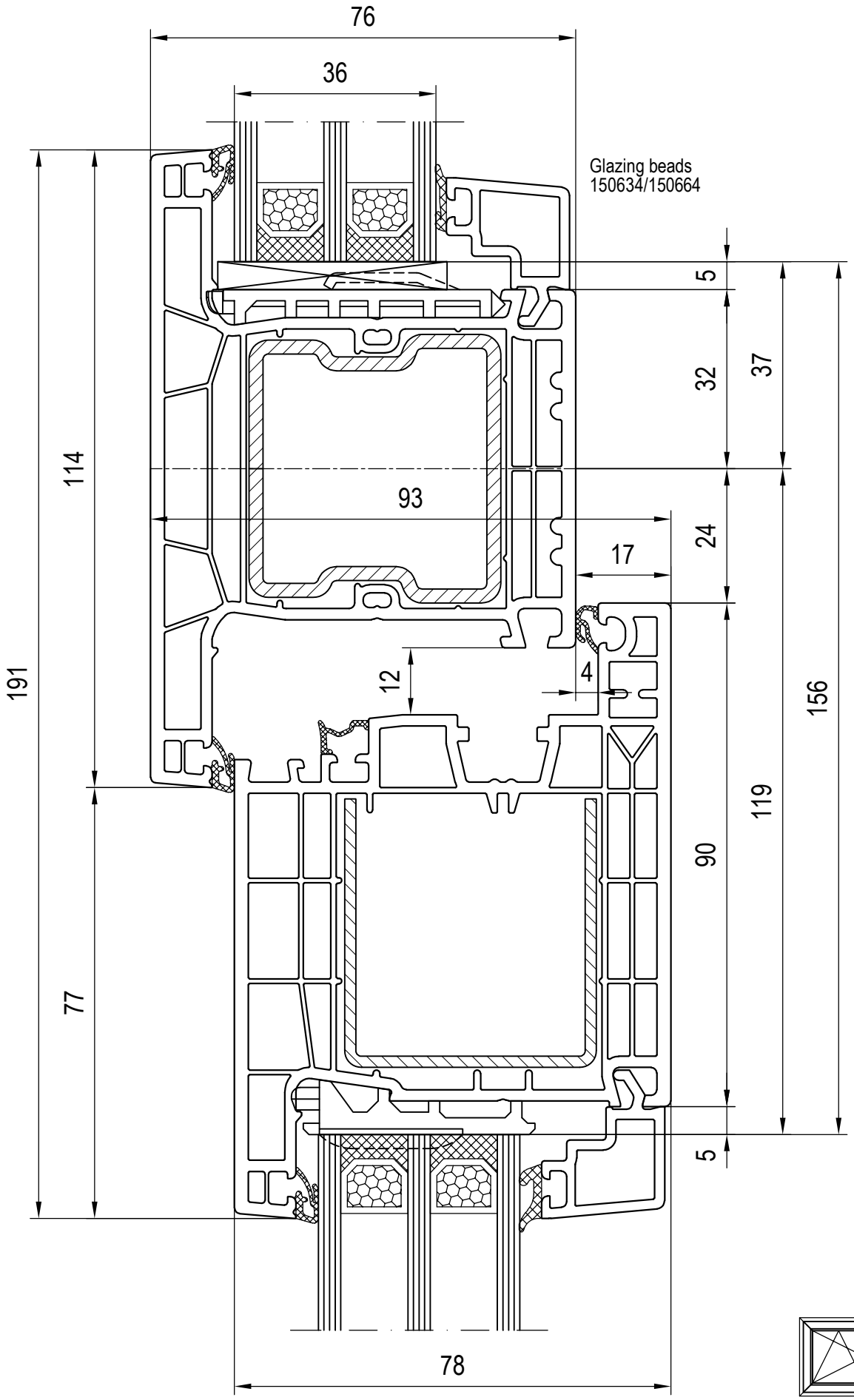

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Example ~

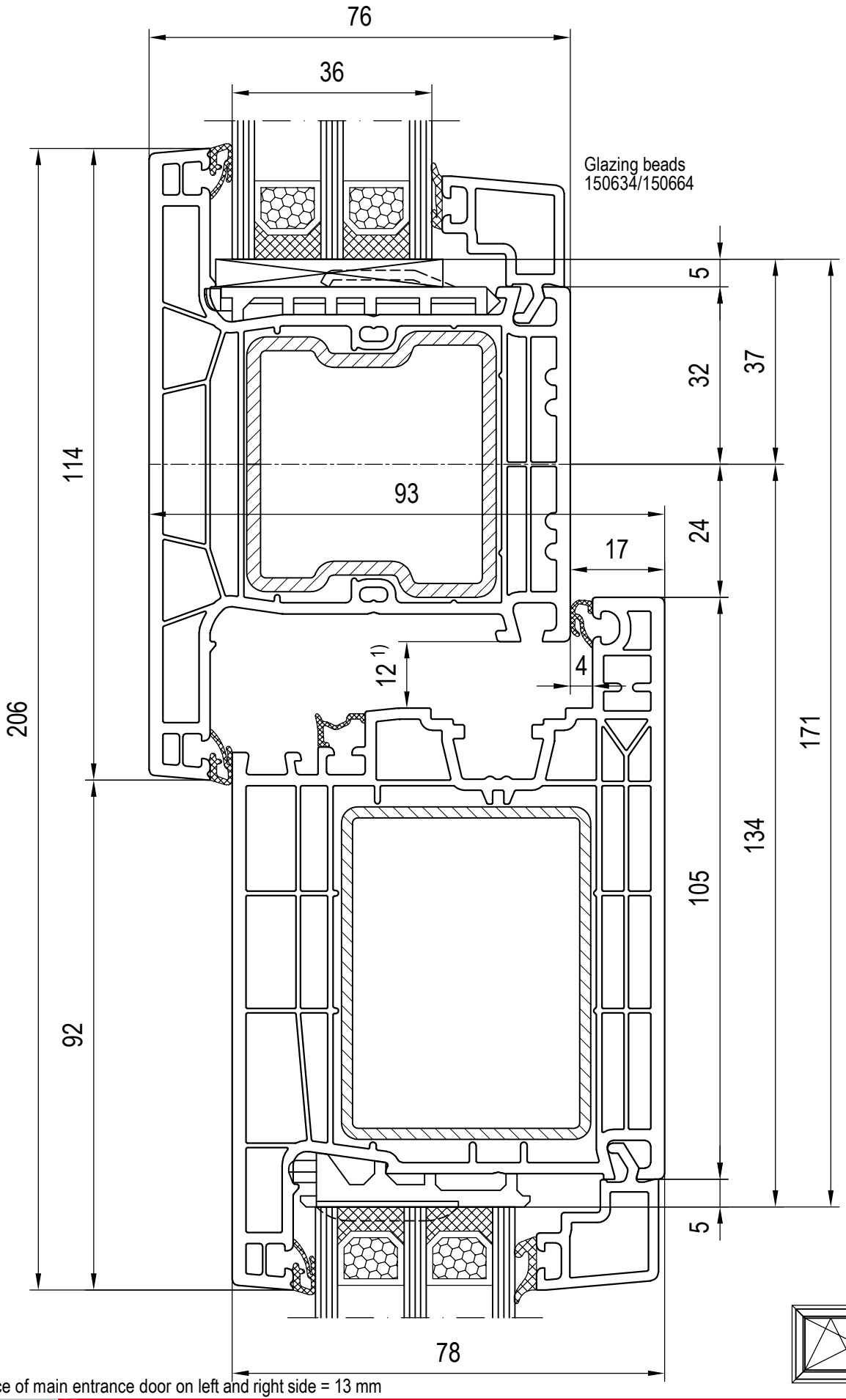



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Example ~

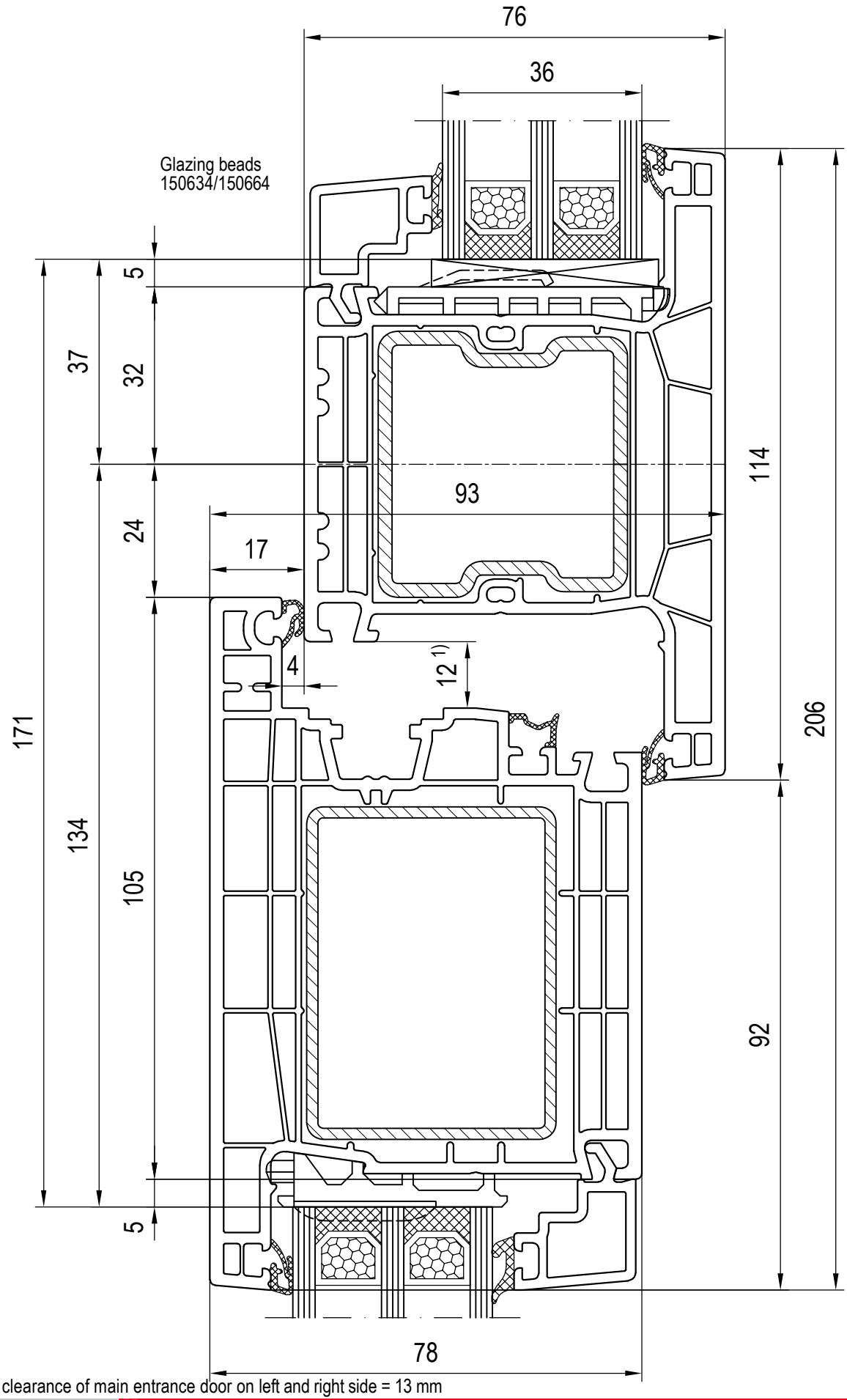

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Example ~



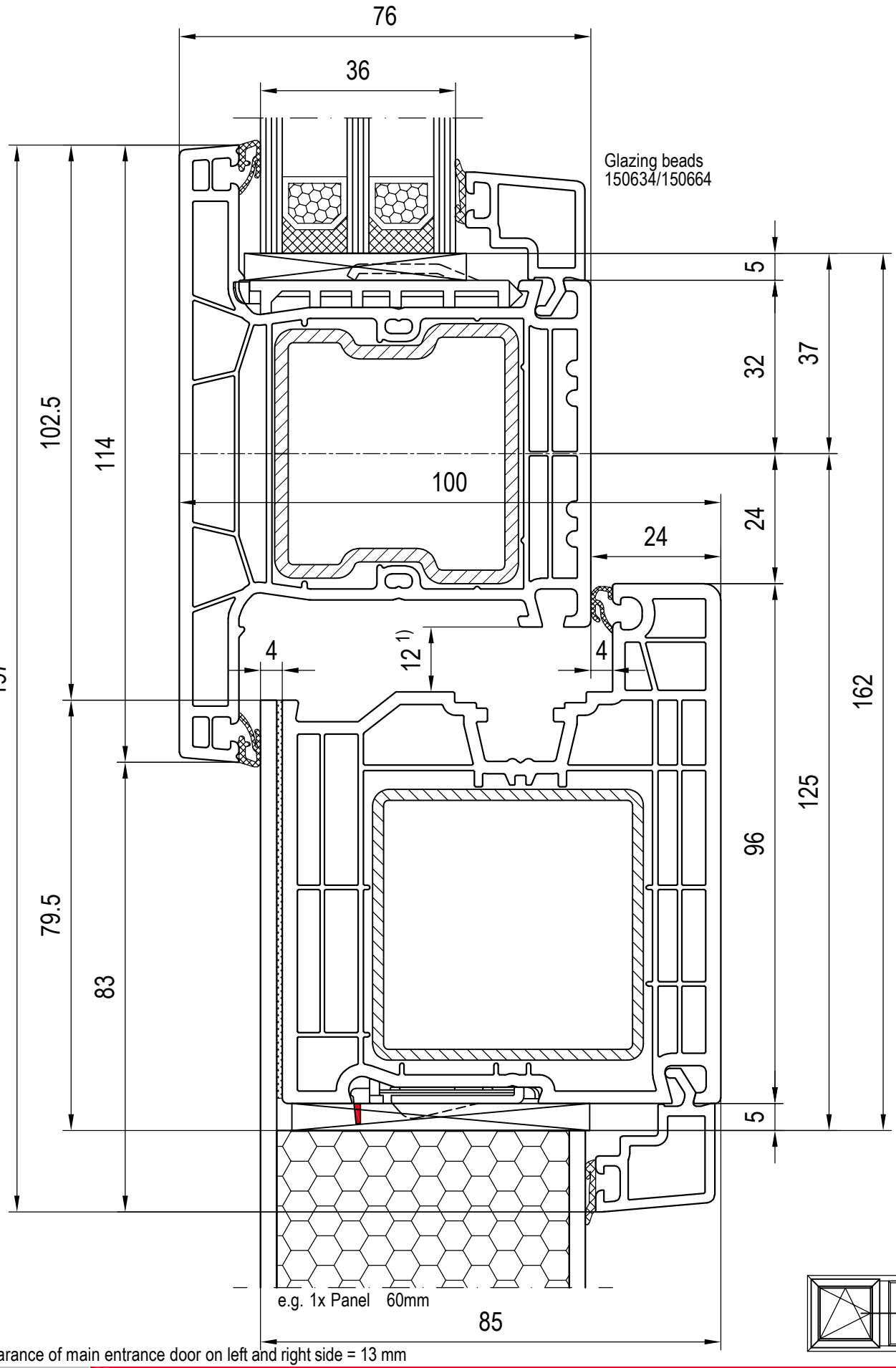
Example ~

1) Rebate clearance of main entrance door on left and right side = 13 mm



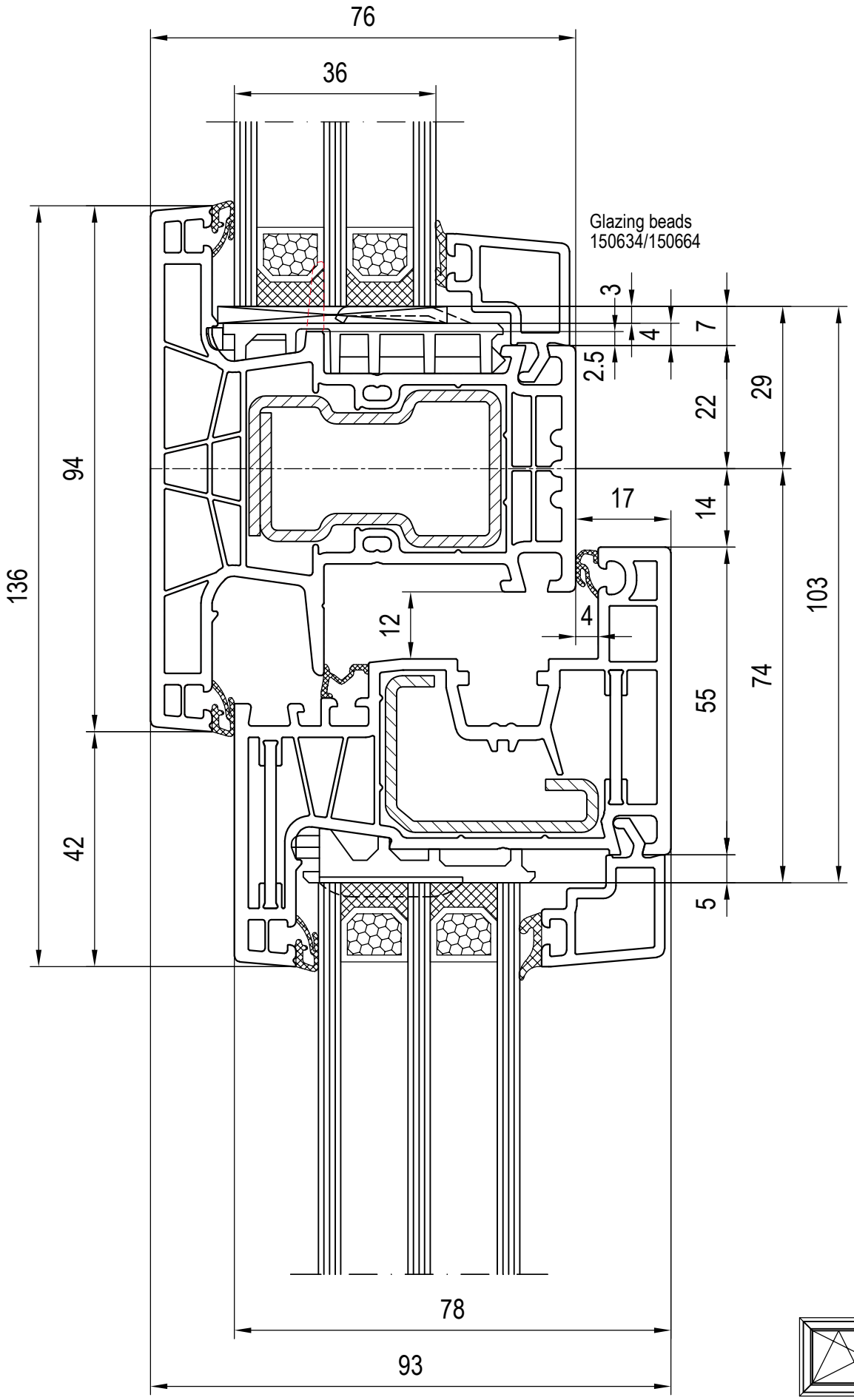
Example ~

1) Rebate clearance of main entrance door on left and right side = 13 mm

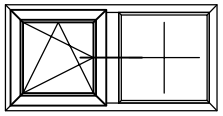


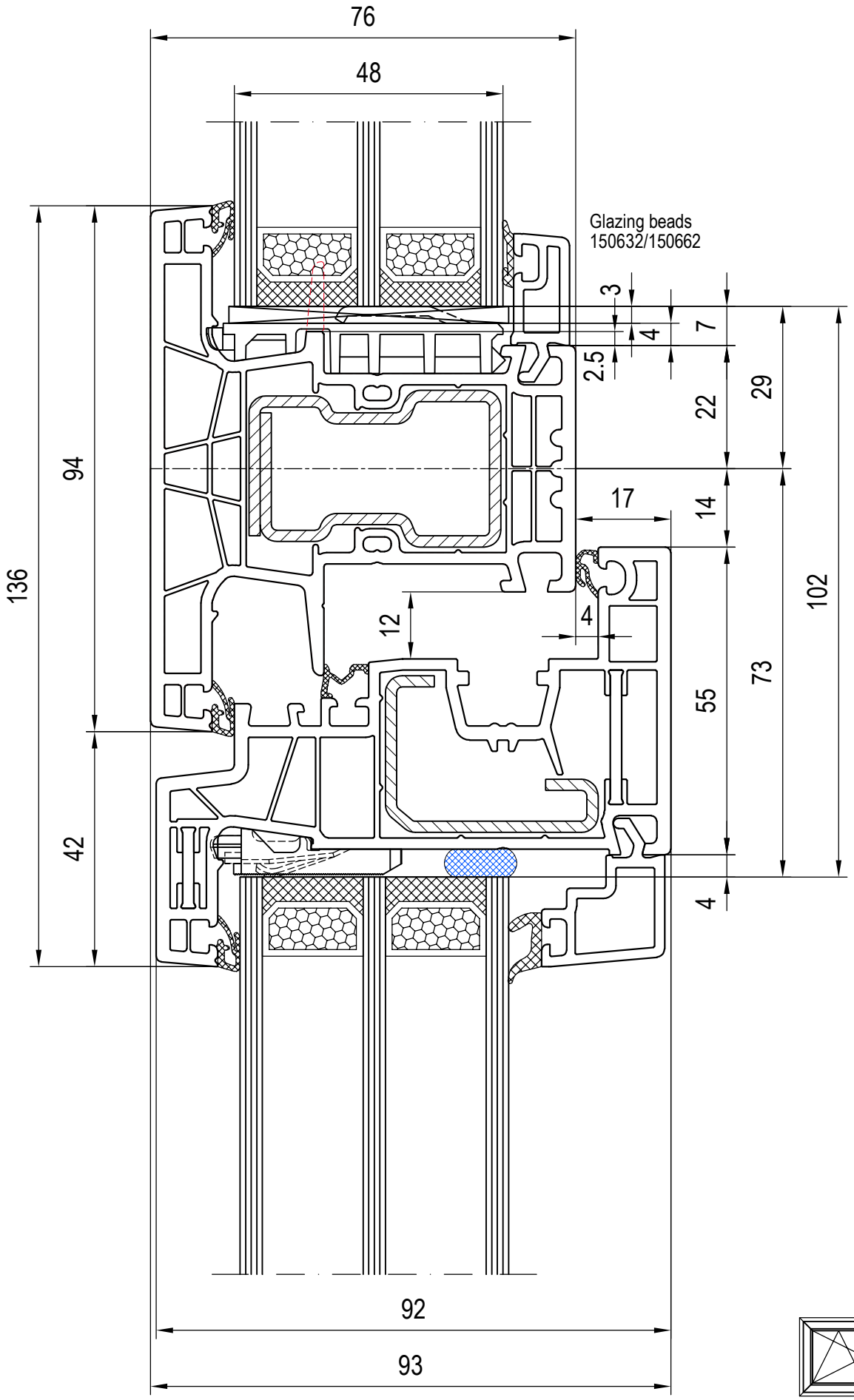
Example ~

1) Rebate clearance of main entrance door on left and right side = 13 mm

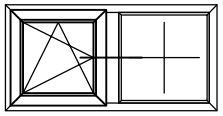

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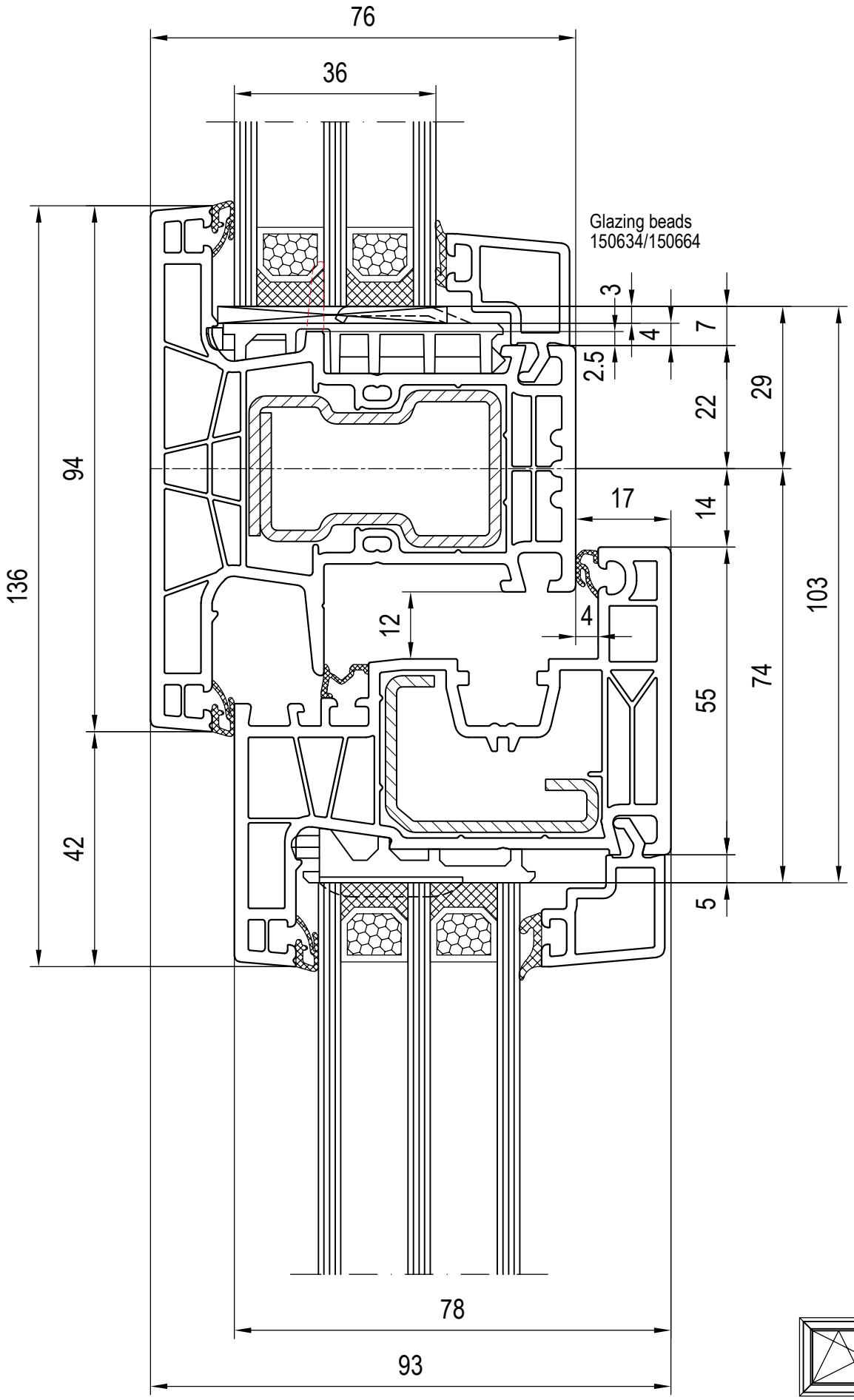
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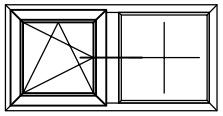

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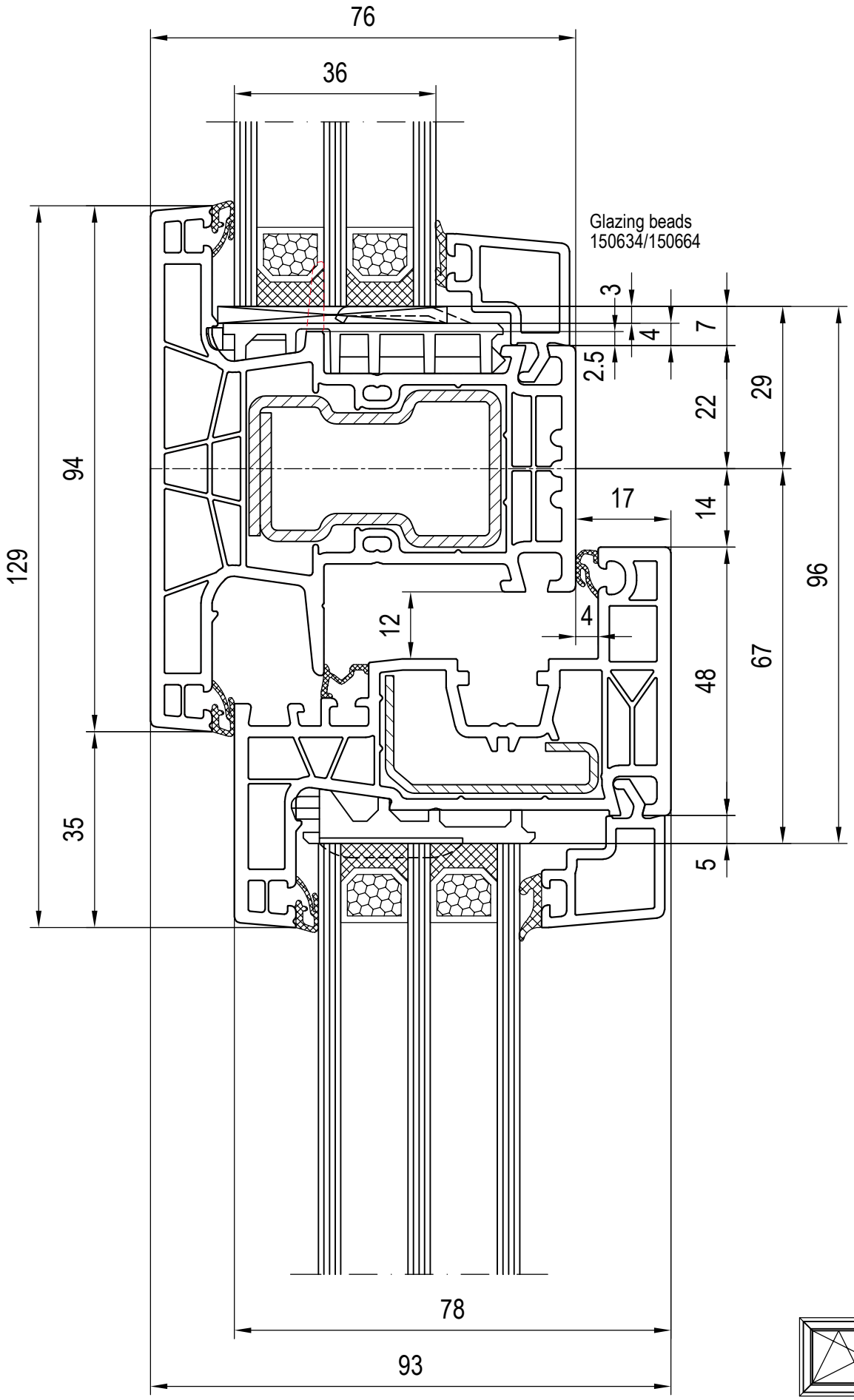
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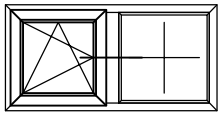

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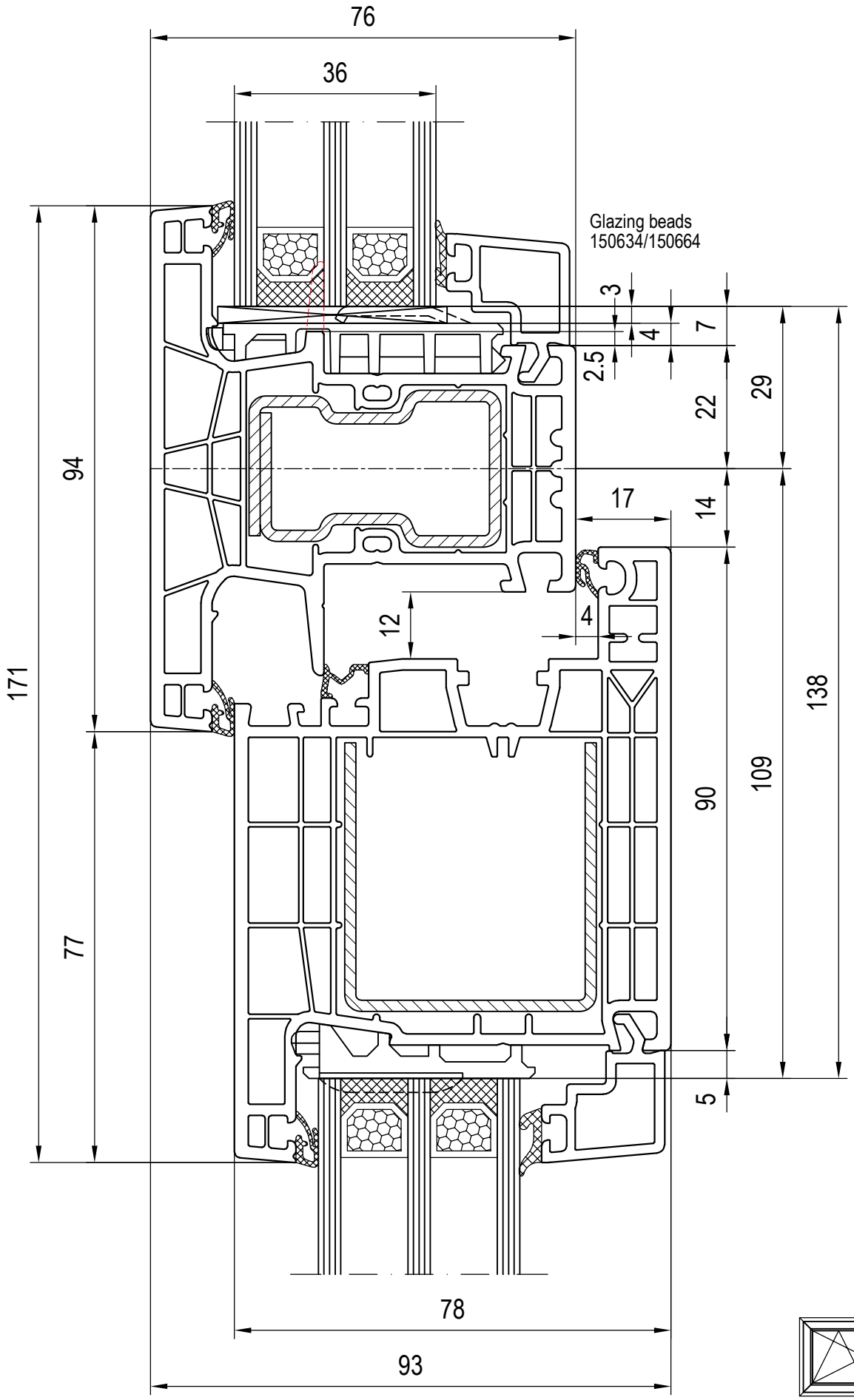
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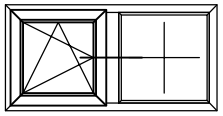

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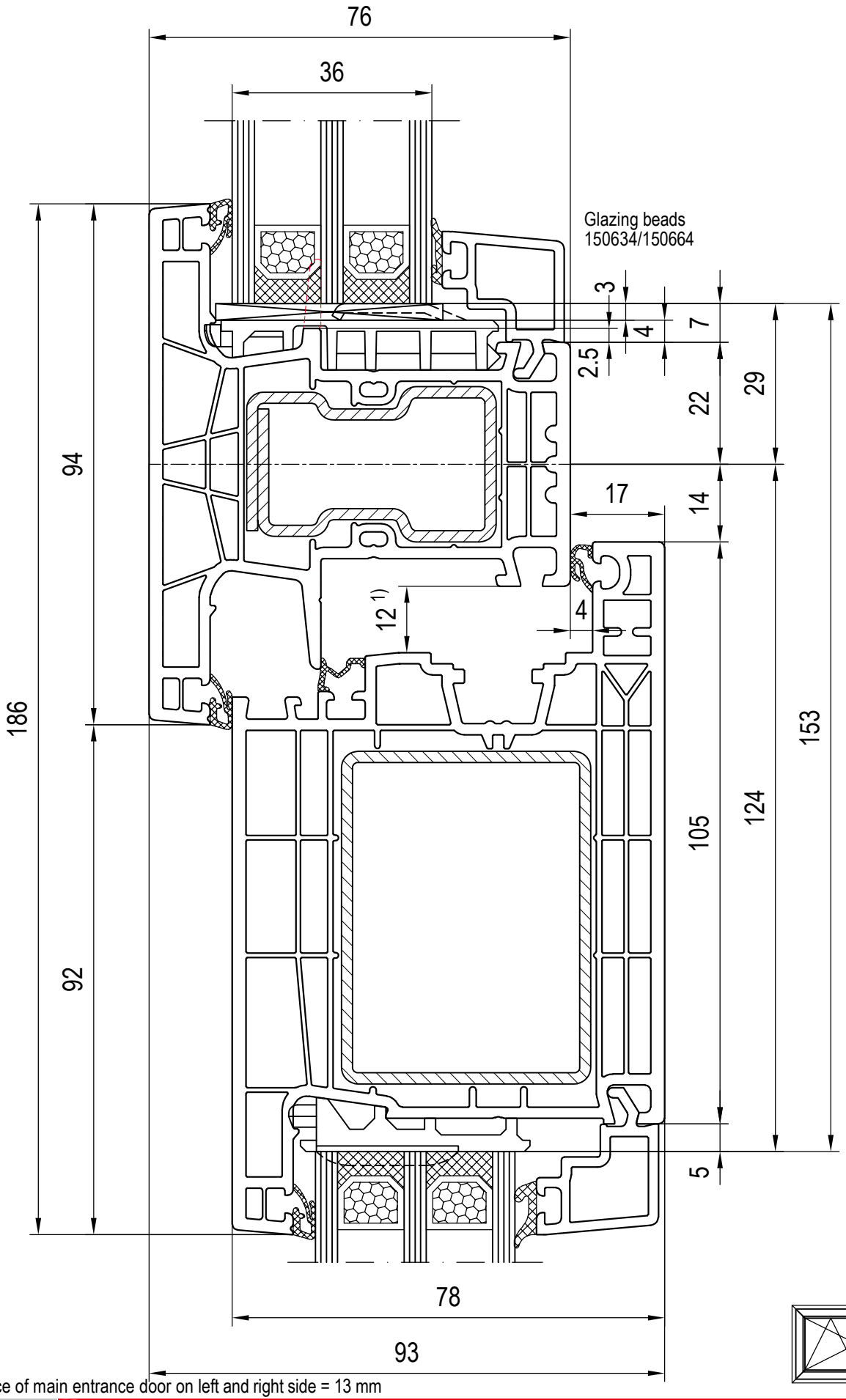
Example ~




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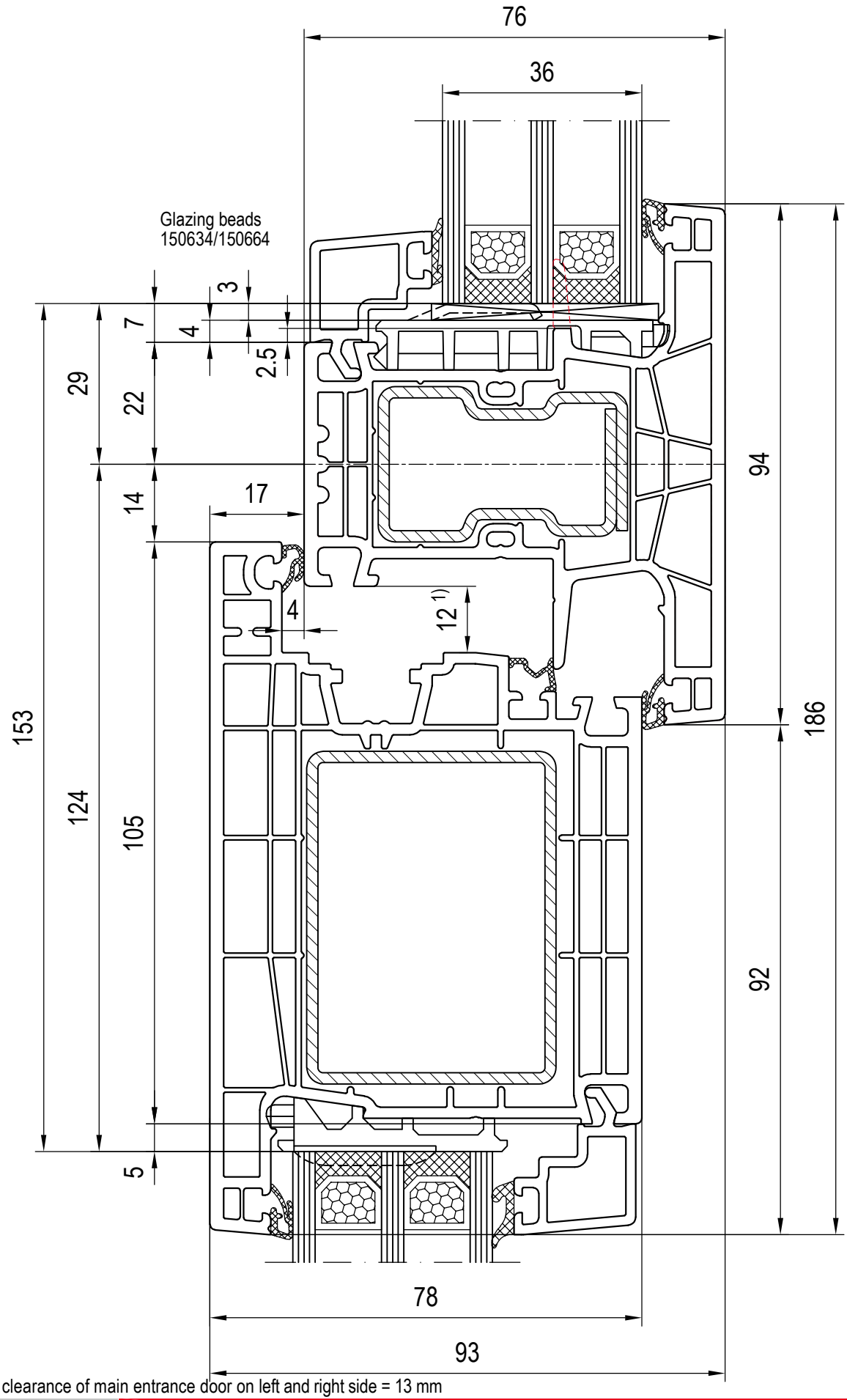
Example ~





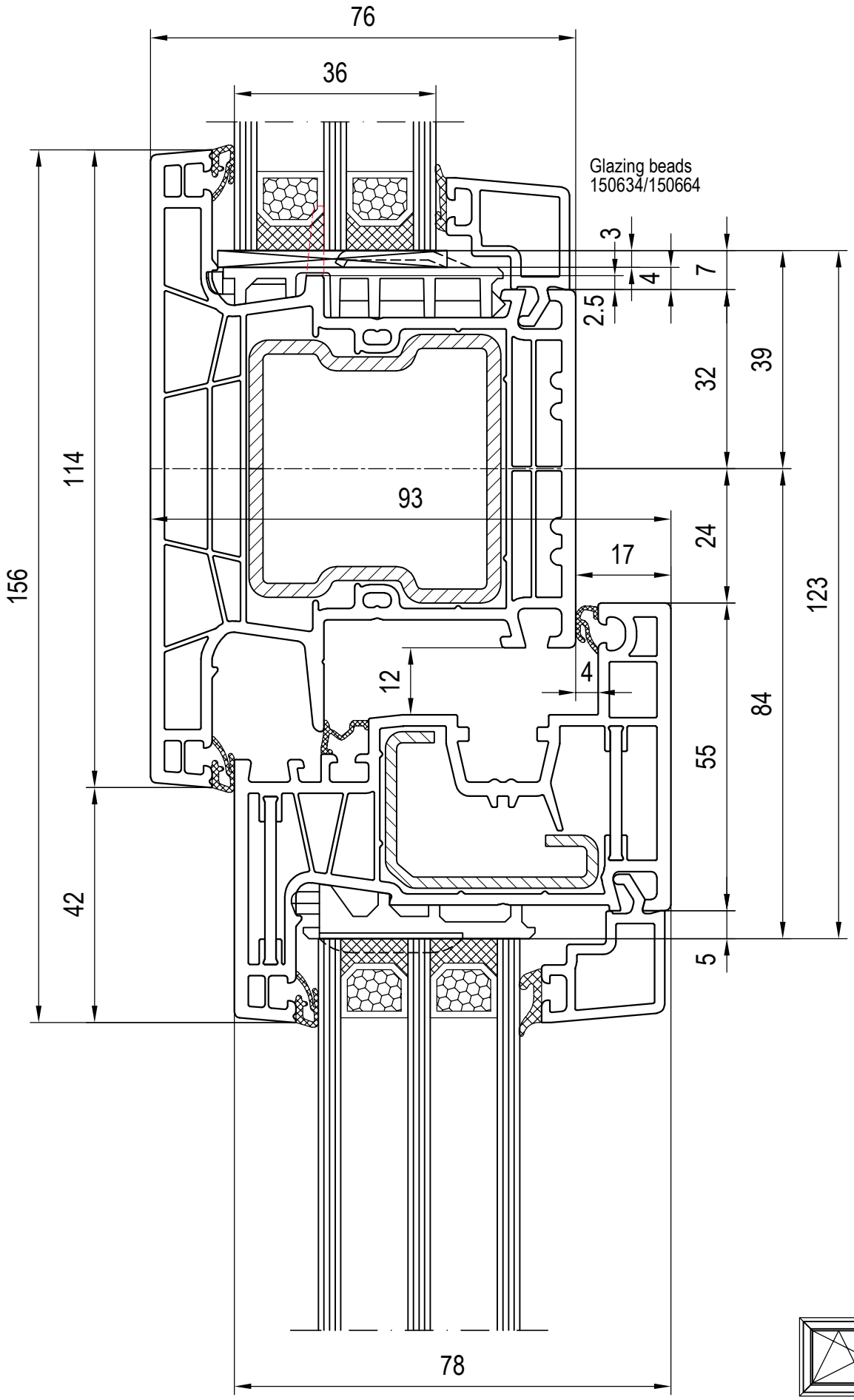
Example ~

1) Rebate clearance of main entrance door on left and right side = 13 mm

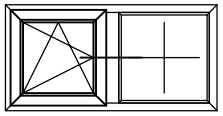


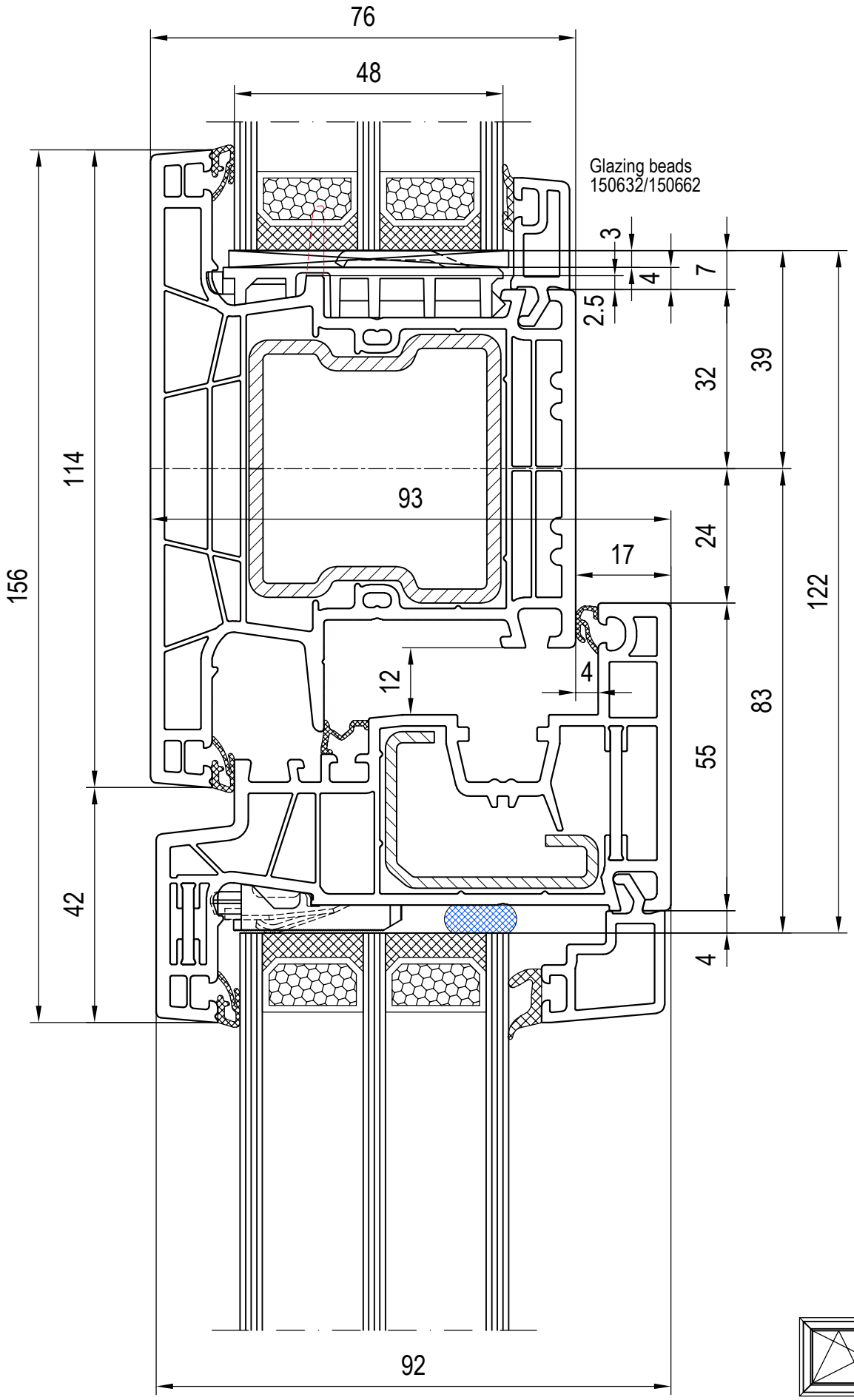
Example ~

1) Rebate clearance of main entrance door on left and right side = 13 mm

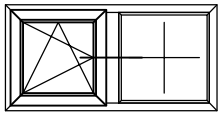

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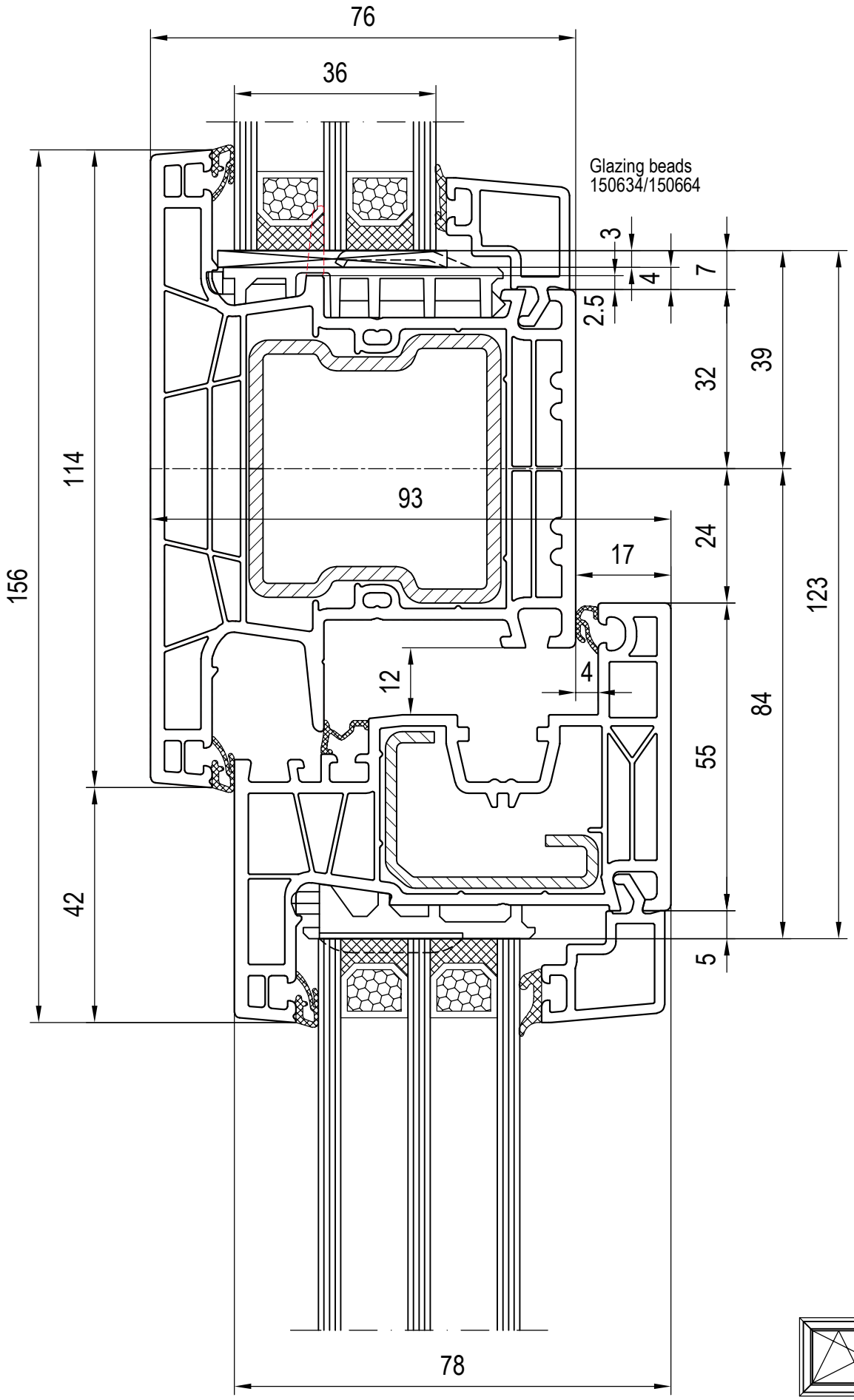
Example ~



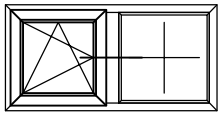

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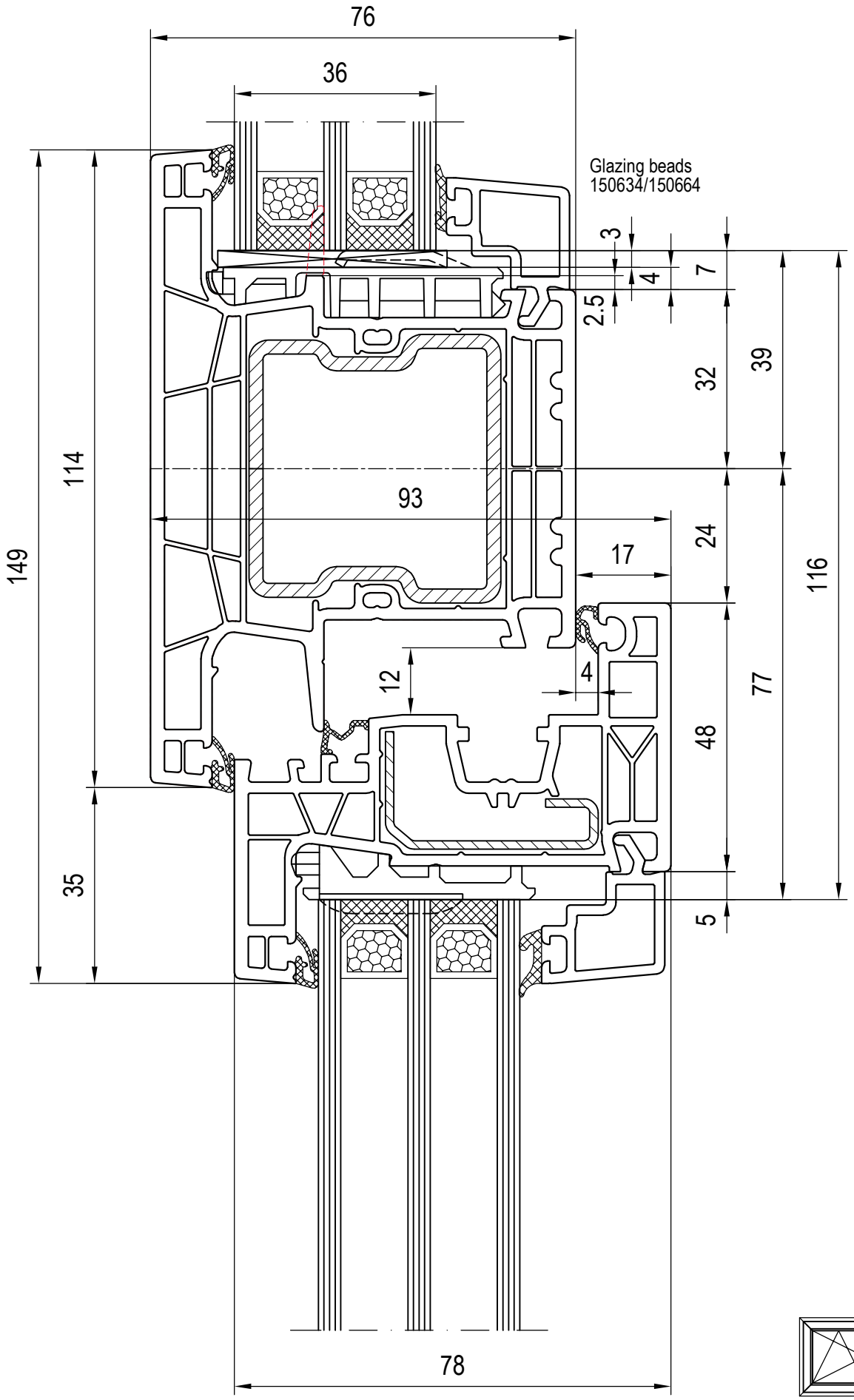
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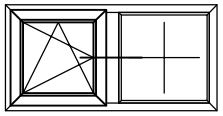

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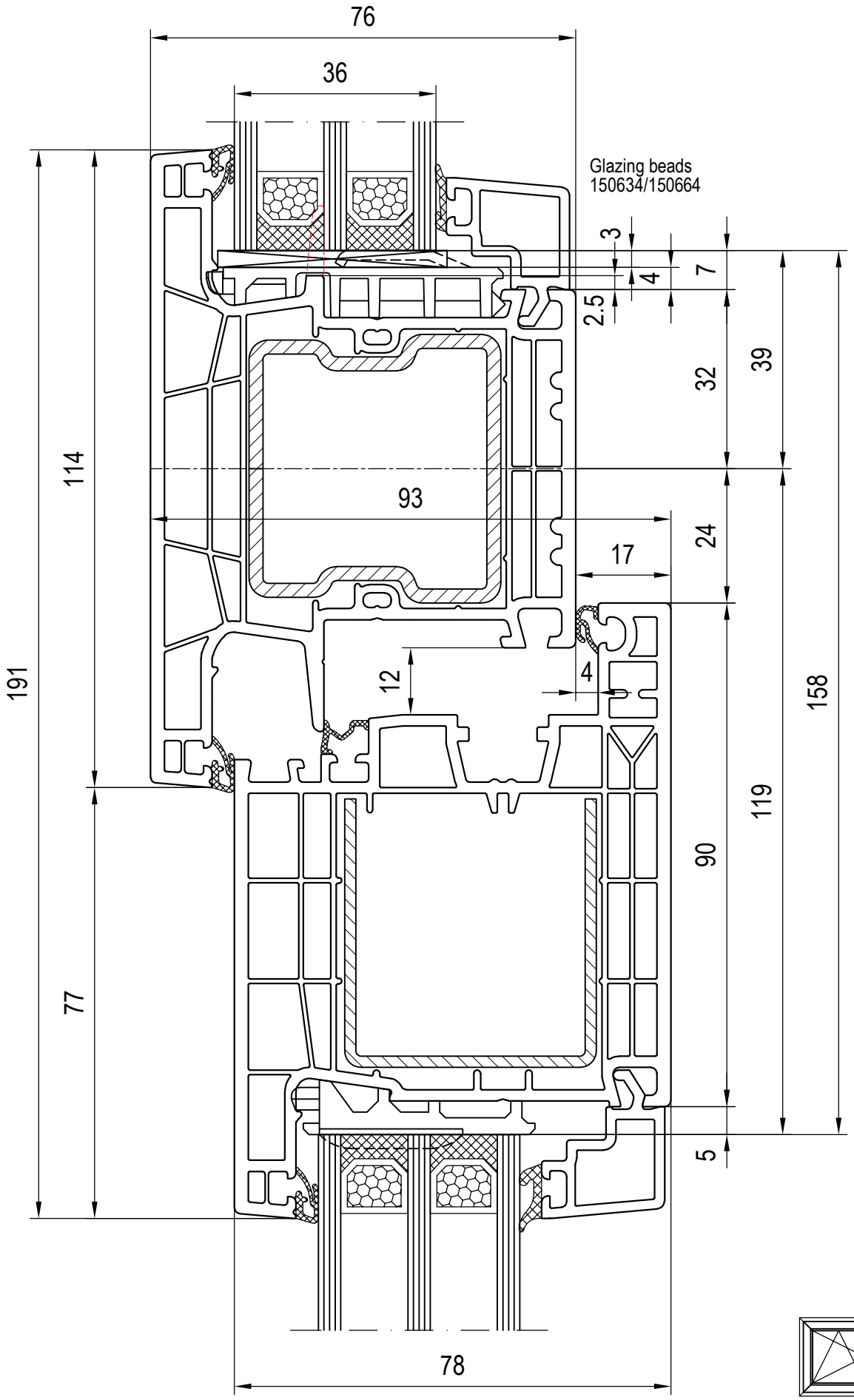
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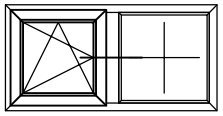

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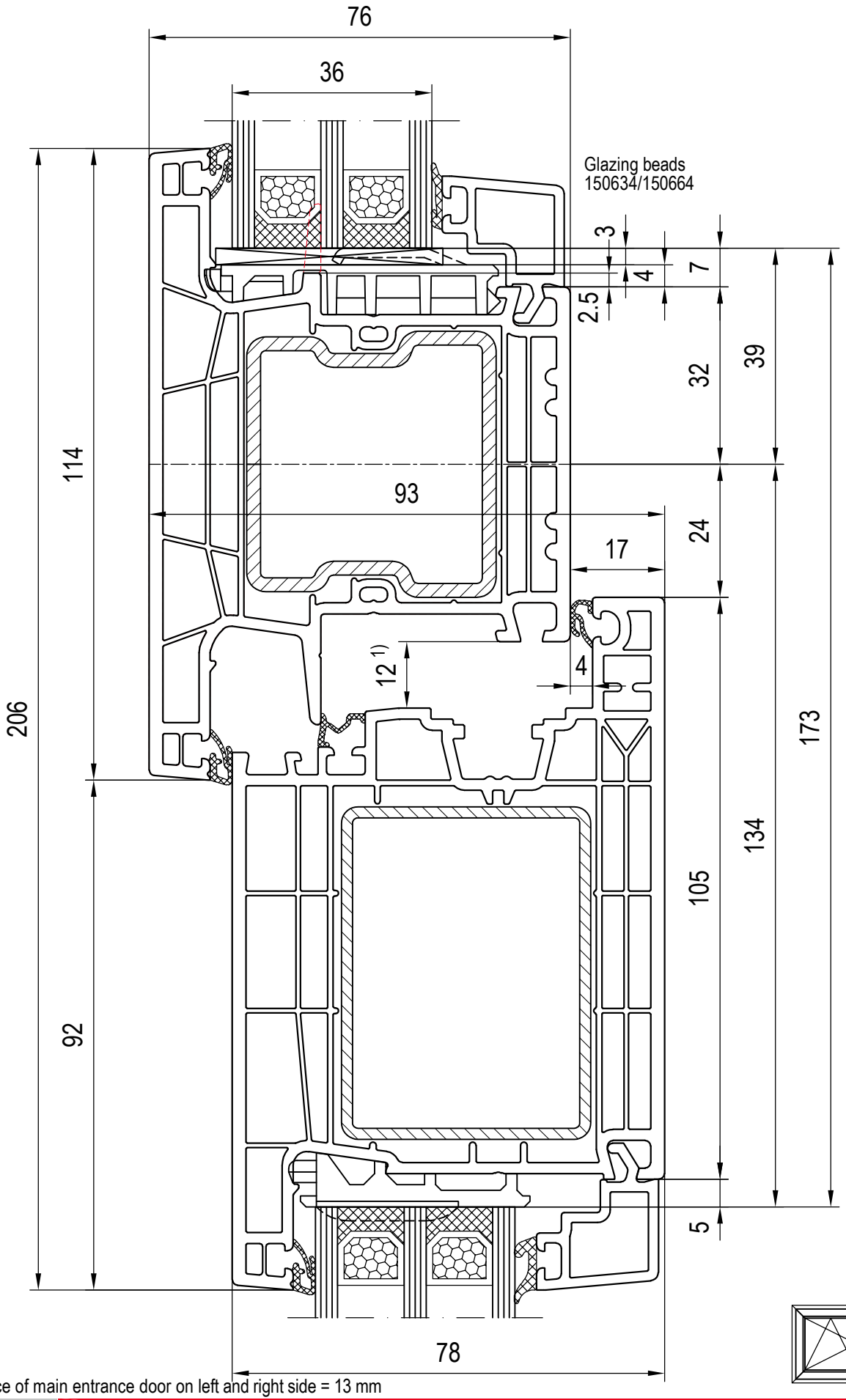
Example ~




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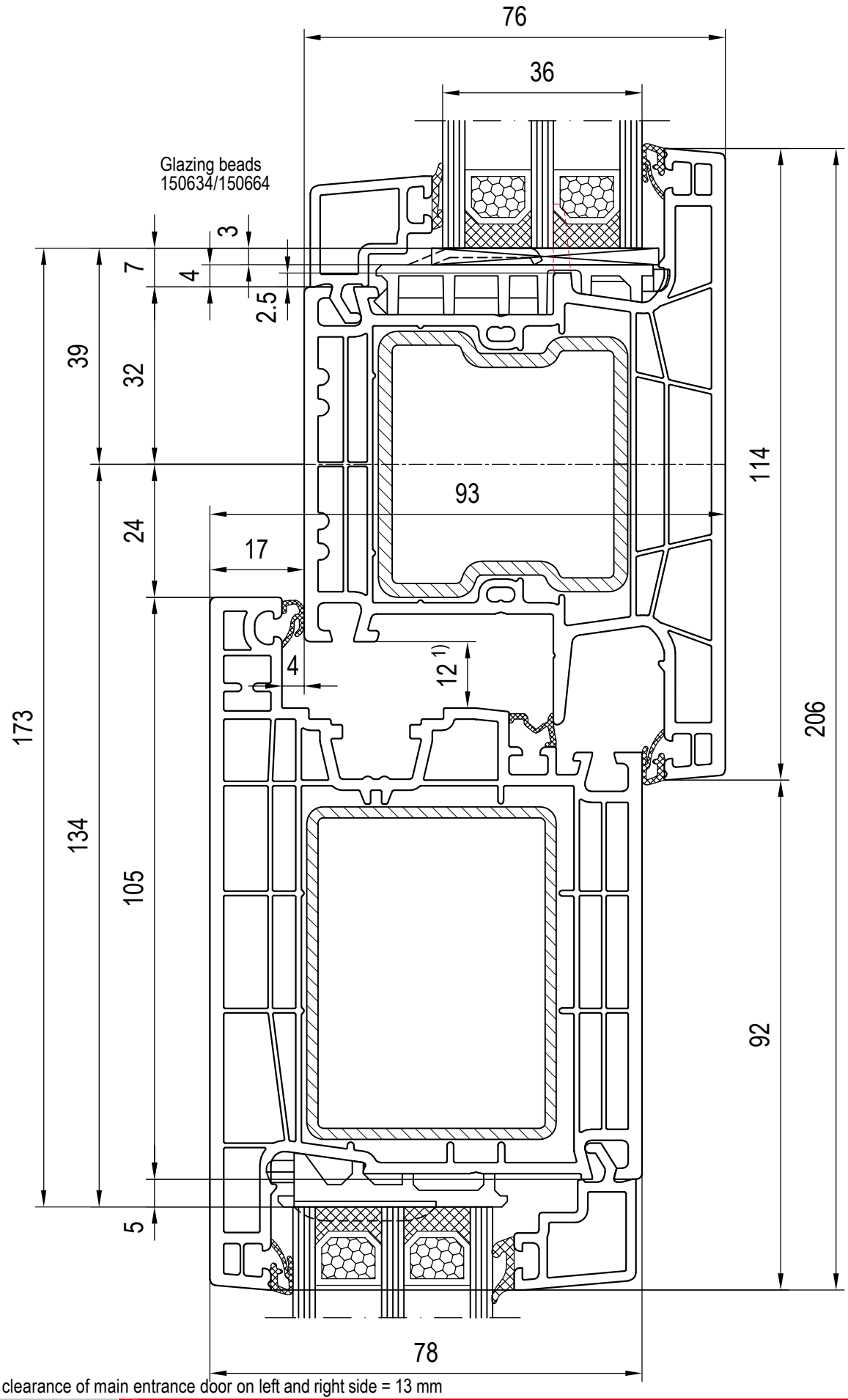
Example ~





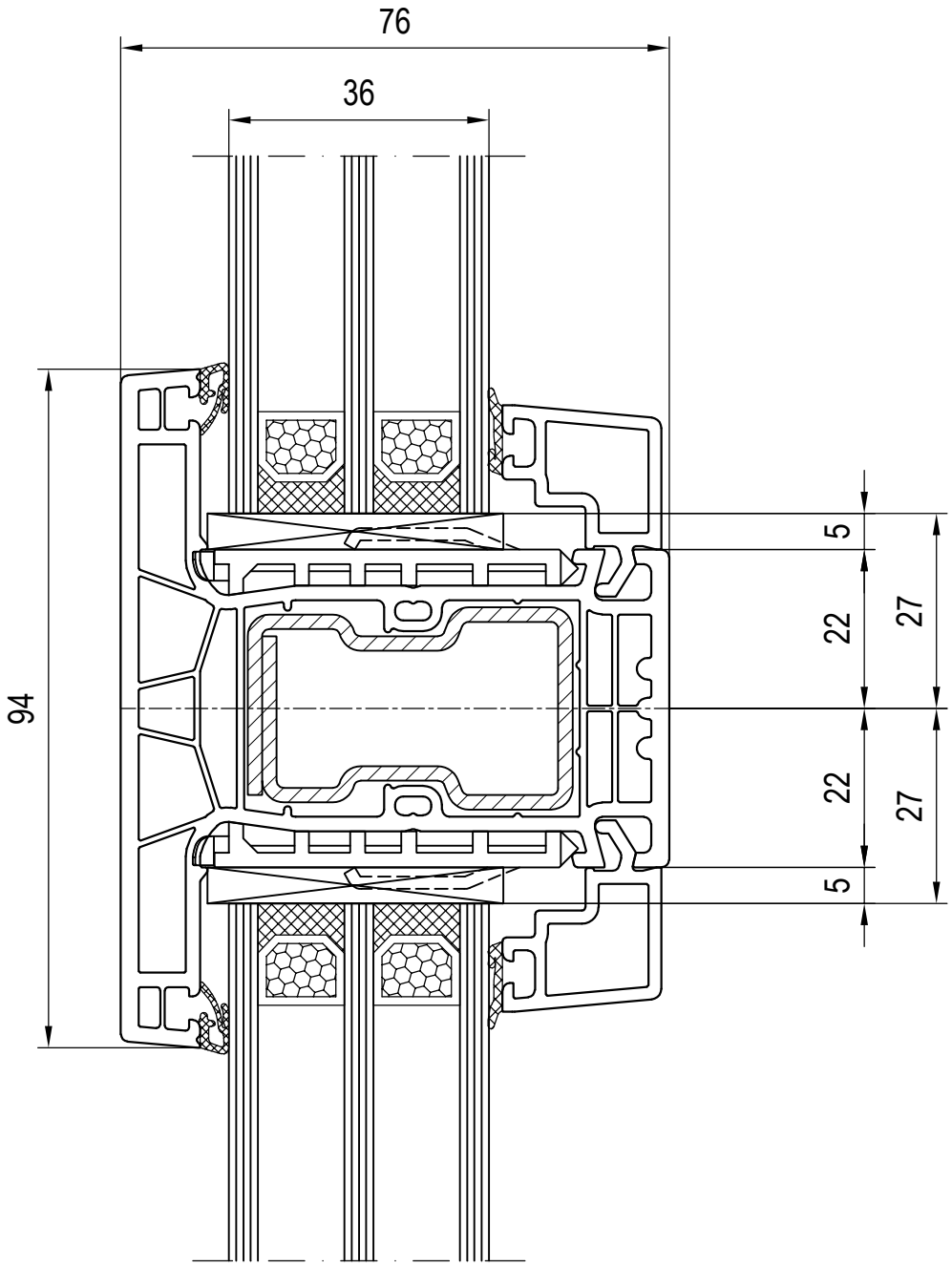
Example ~

1) Rebate clearance of main entrance door on left and right side = 13 mm



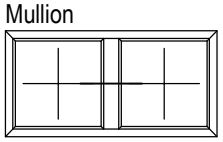
Example ~

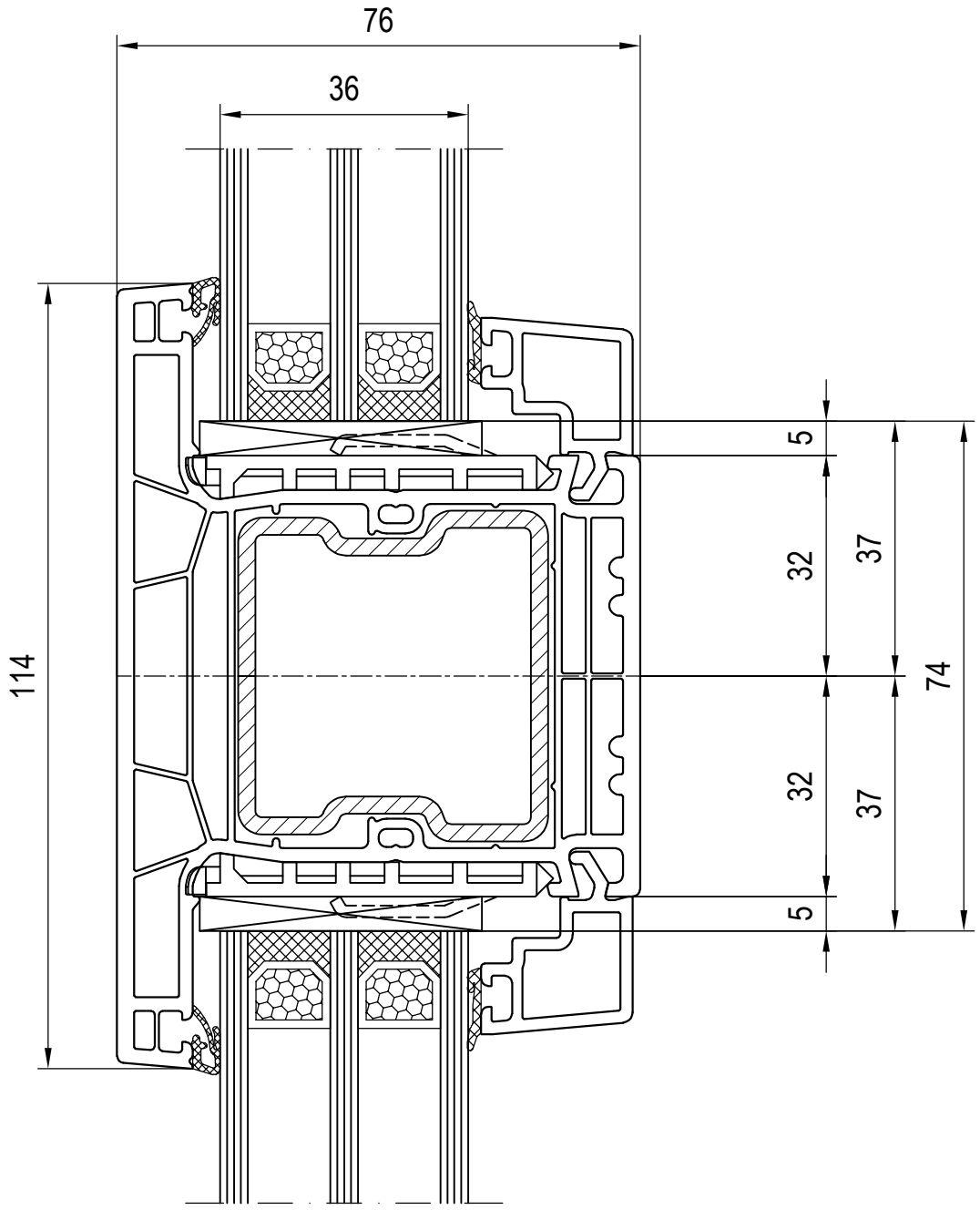
1) Rebate clearance of main entrance door on left and right side = 13 mm



Example ~

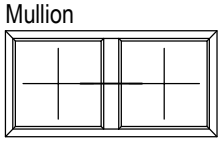
Mullion

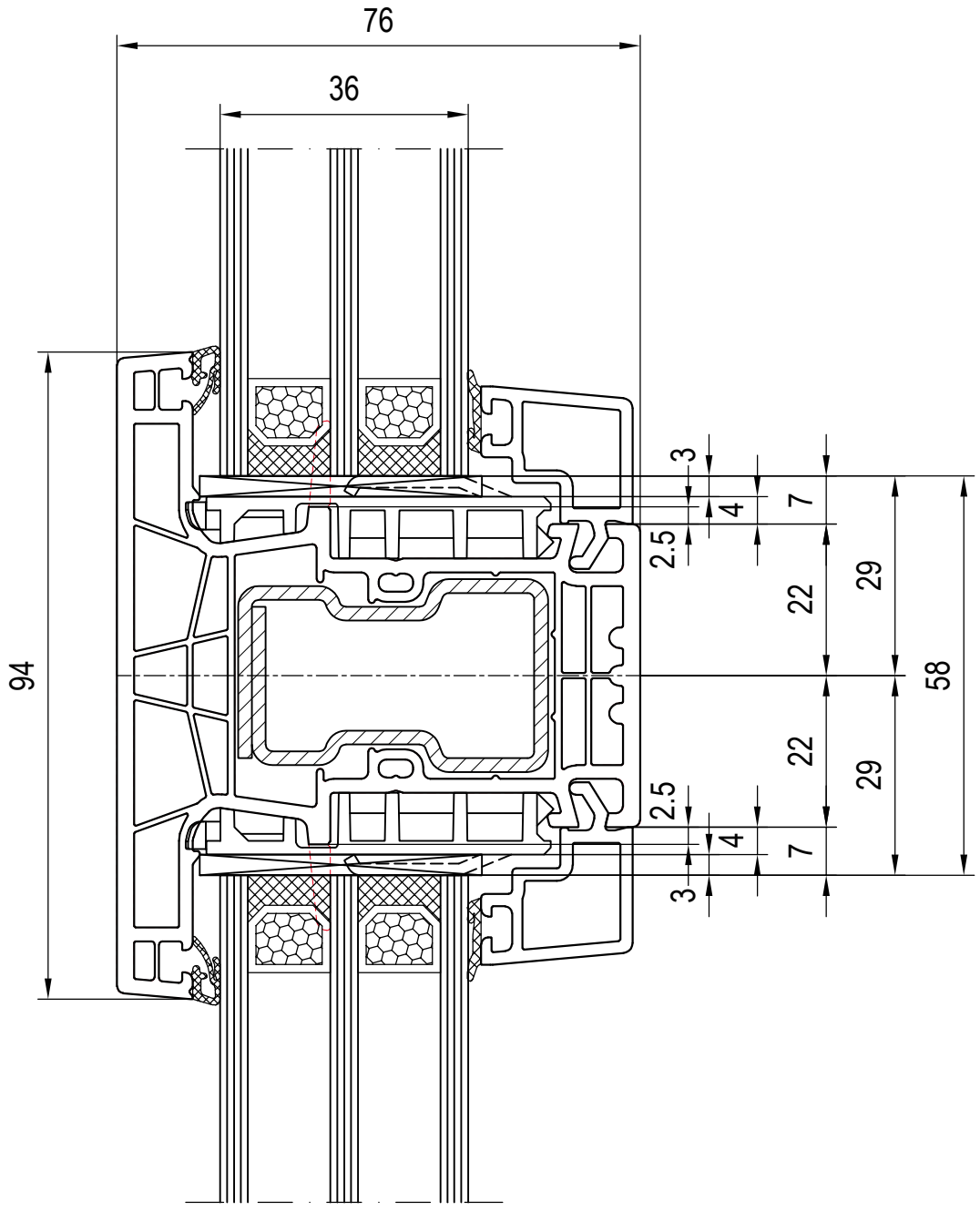




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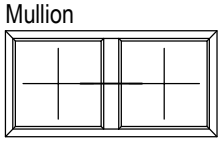
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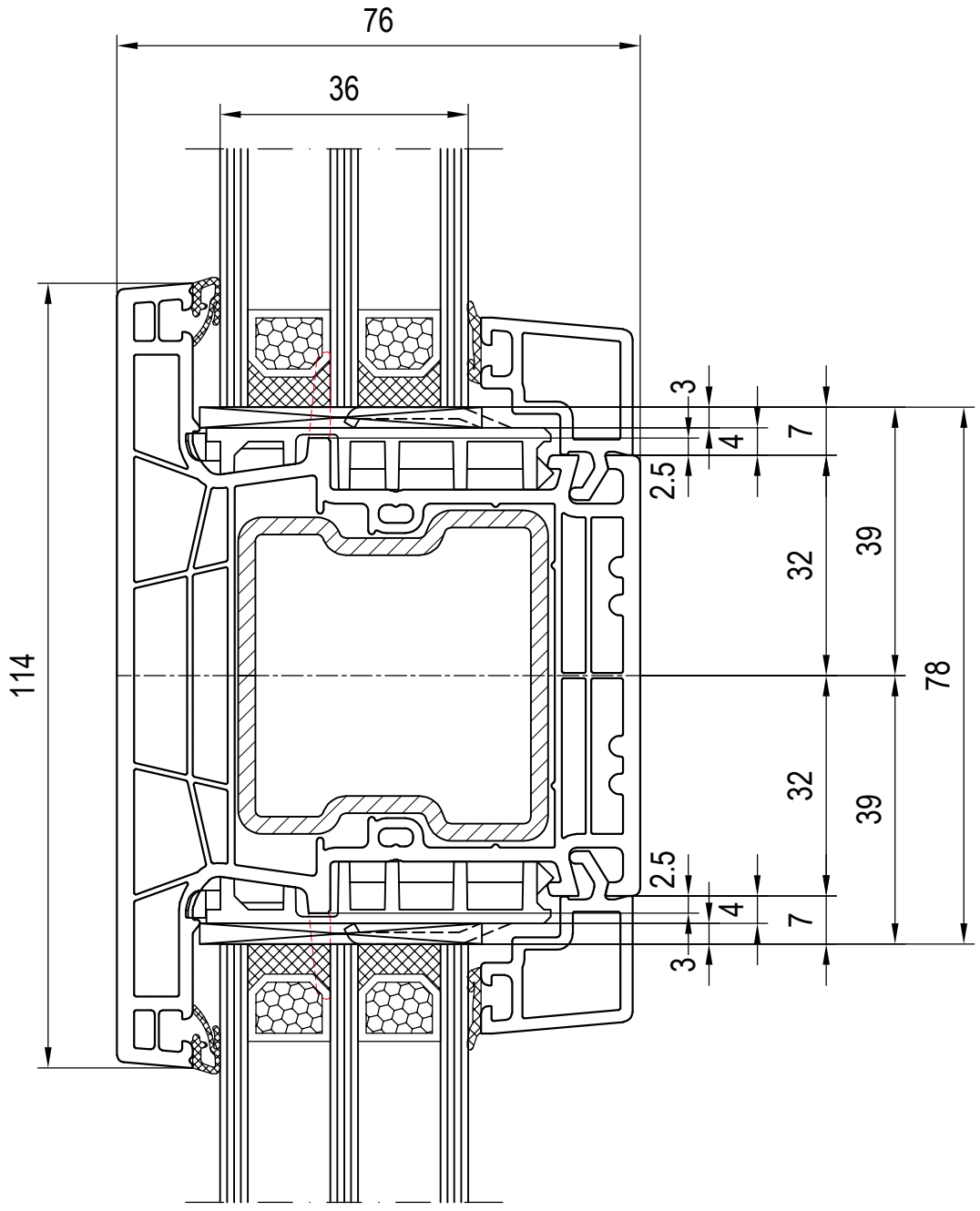




Example ~

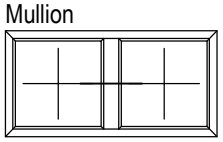
Mullion



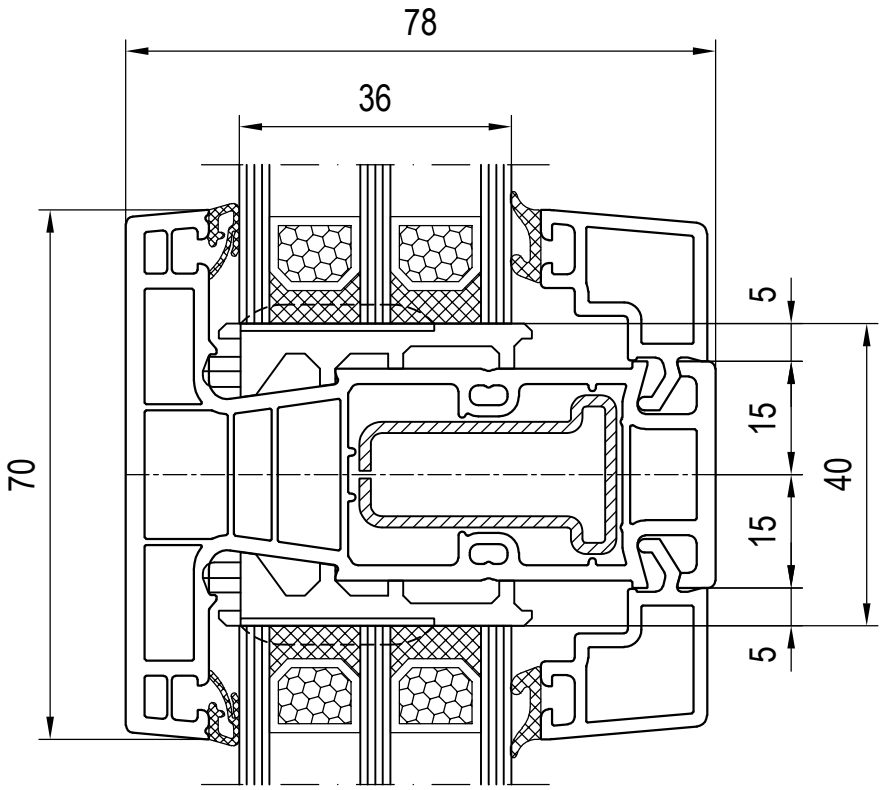


Example ~

Mullion



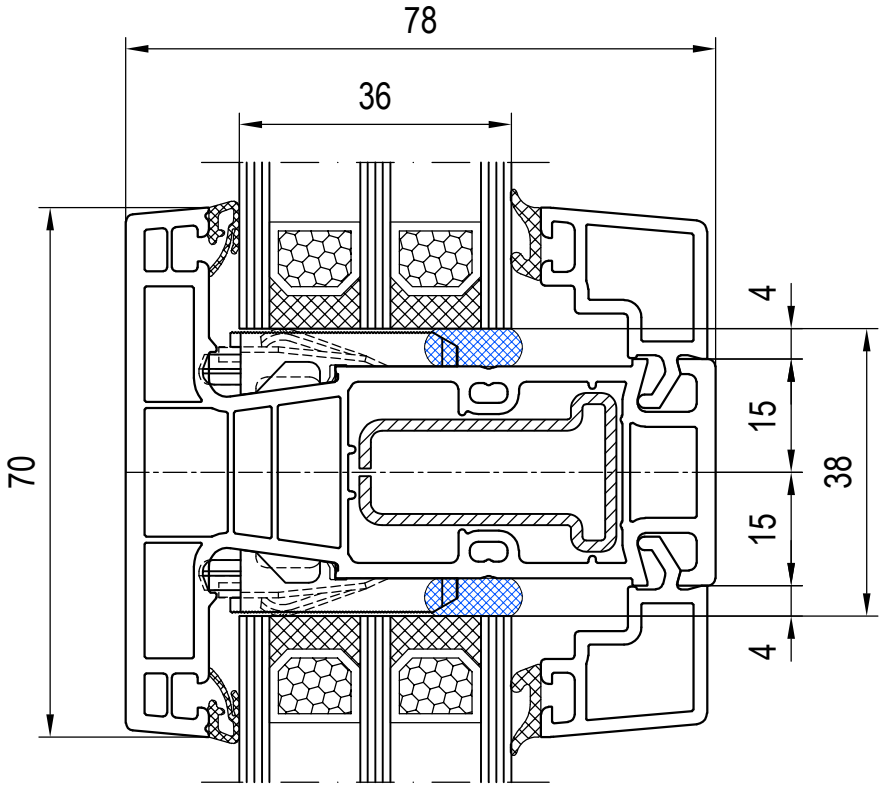
Example ~



Transom

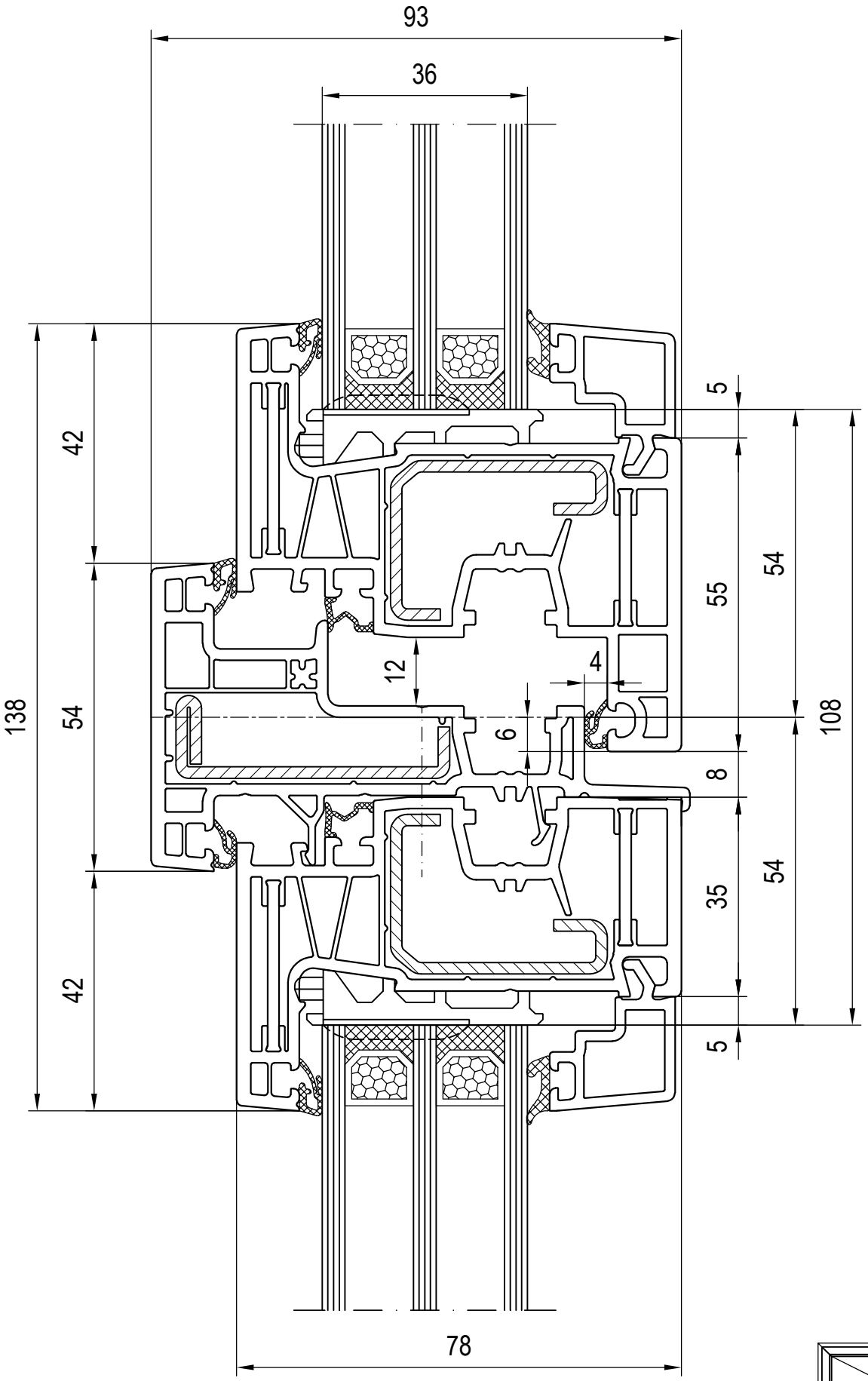
Spacer

Example ~

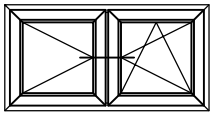


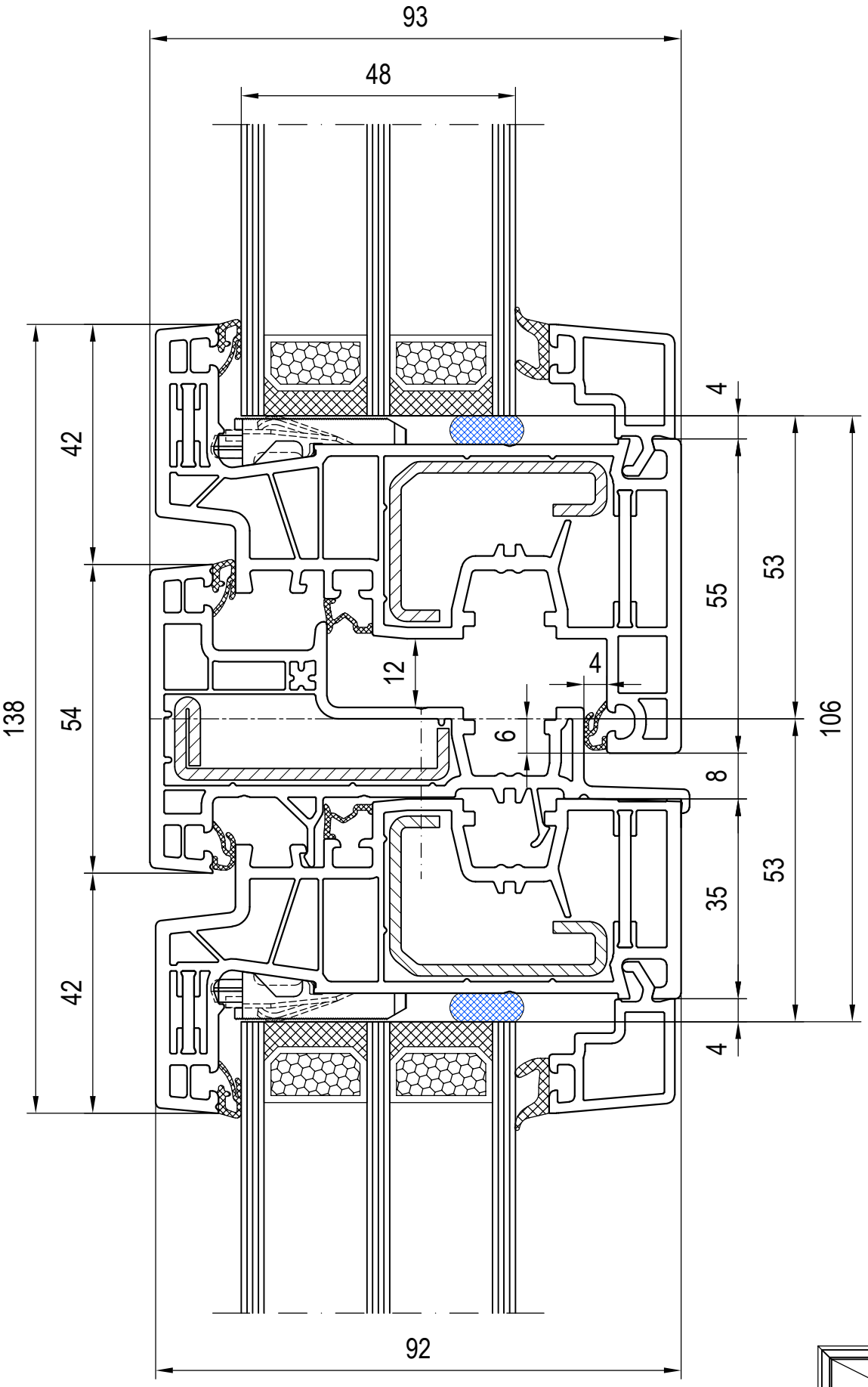
Transom

Bonding of pane

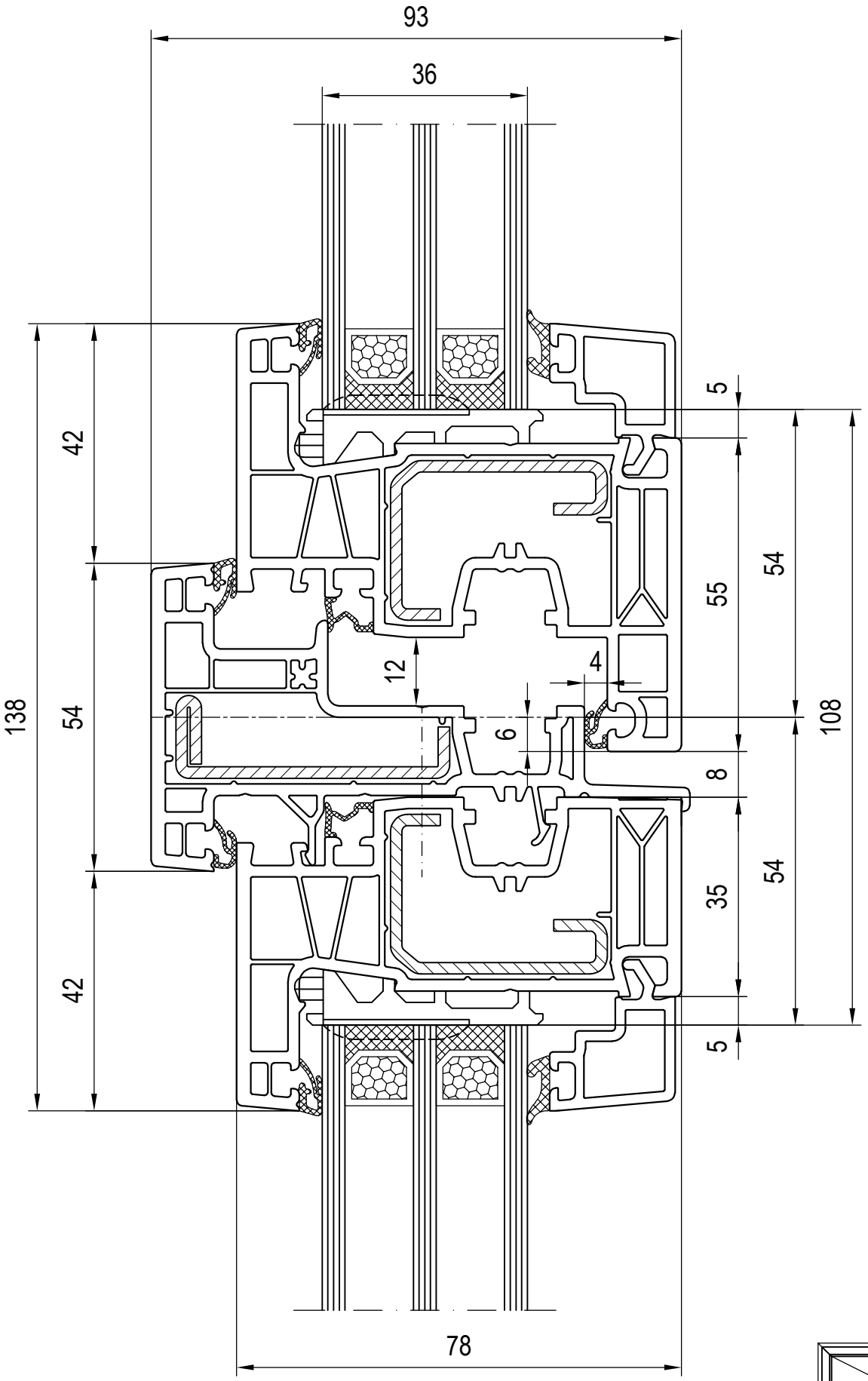


Example ~

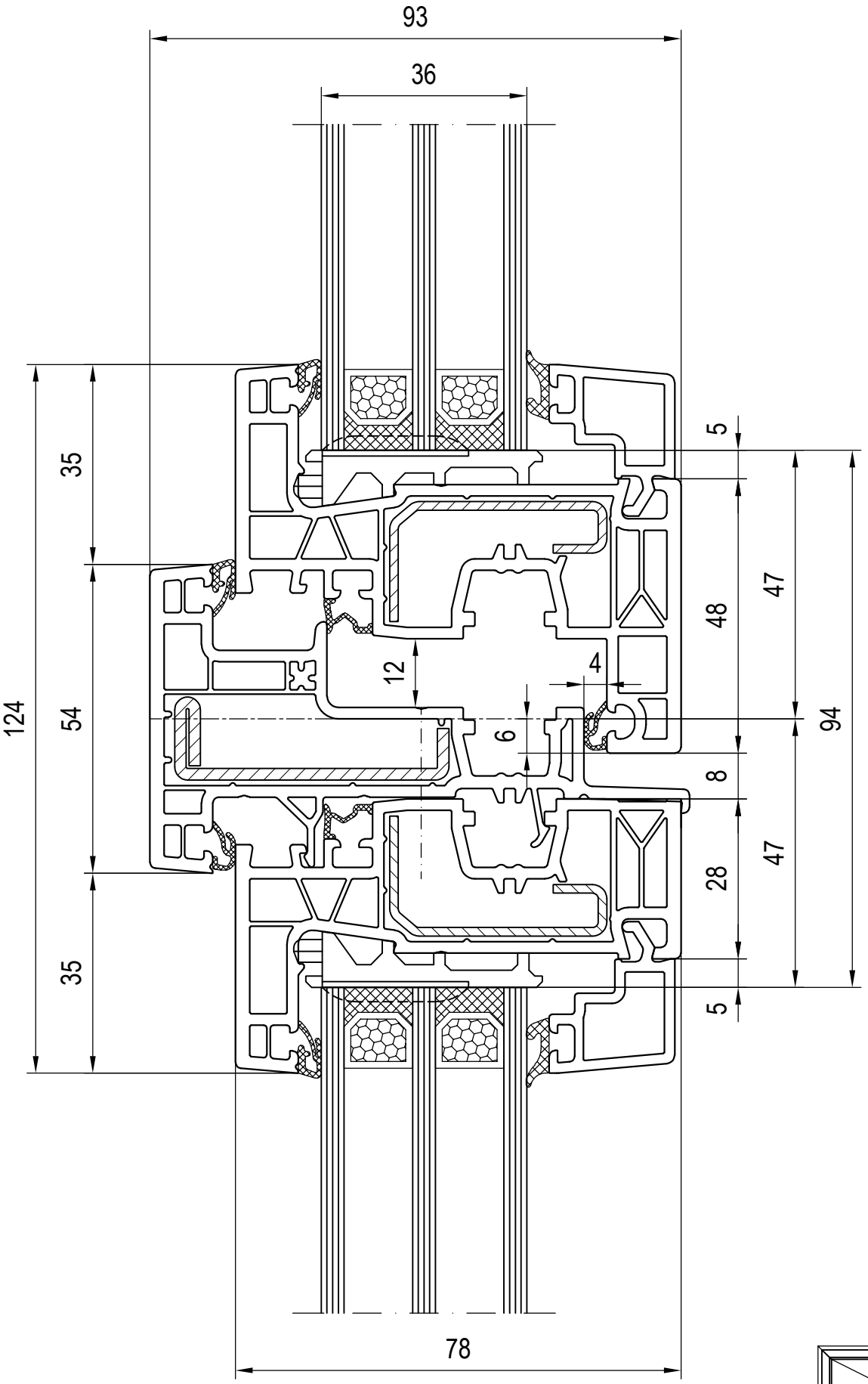




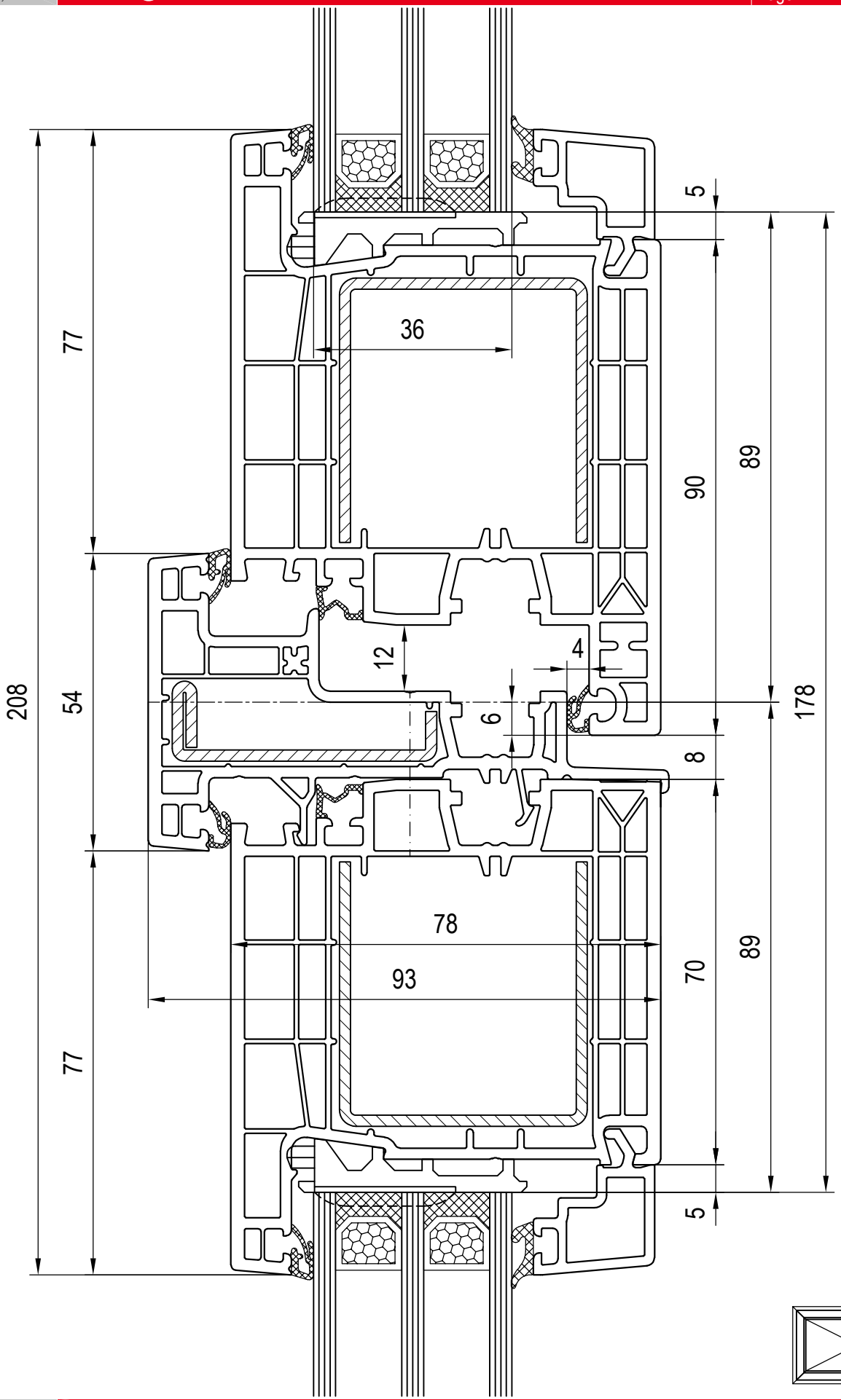
Example ~



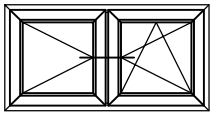
Example ~

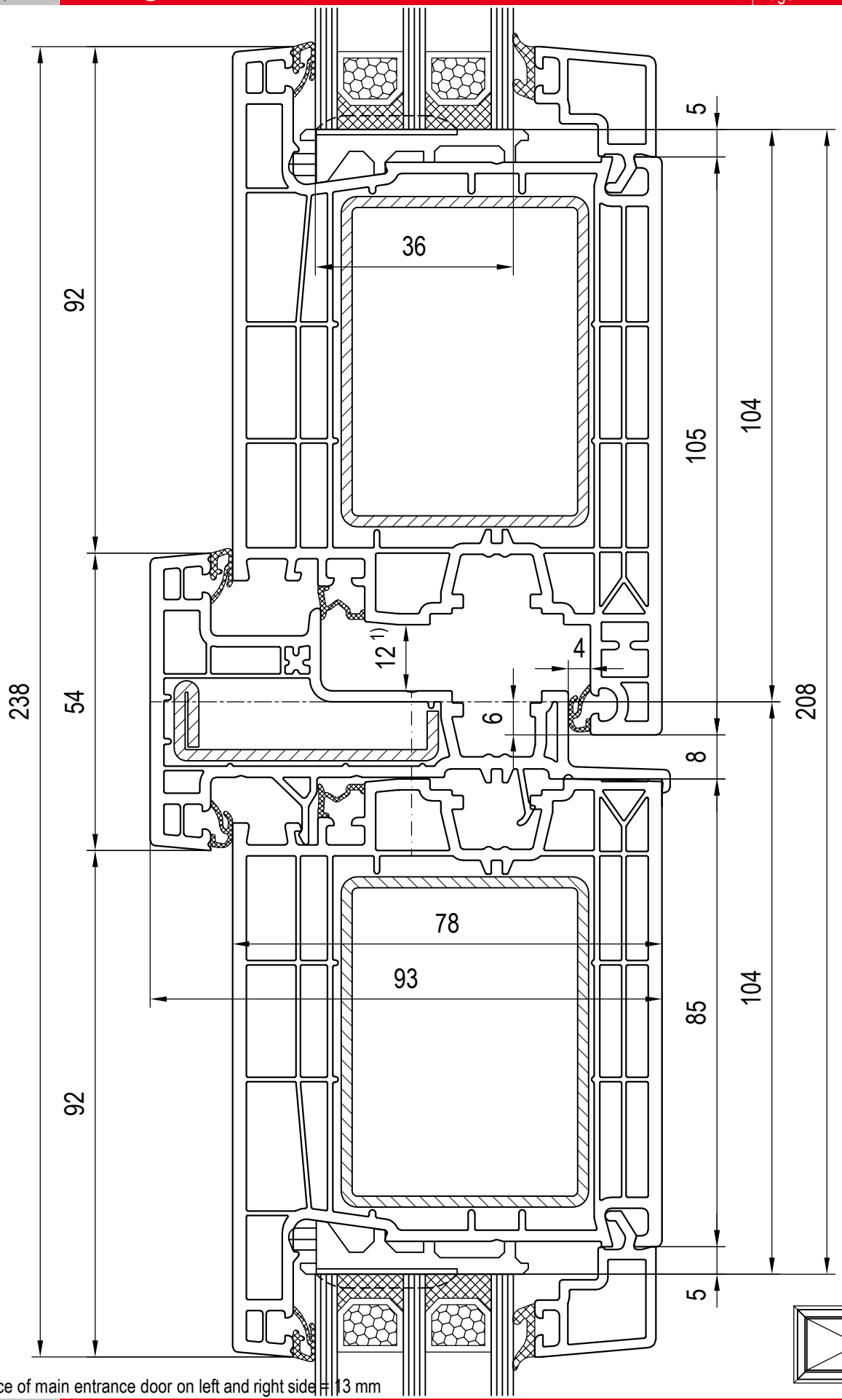


Example ~



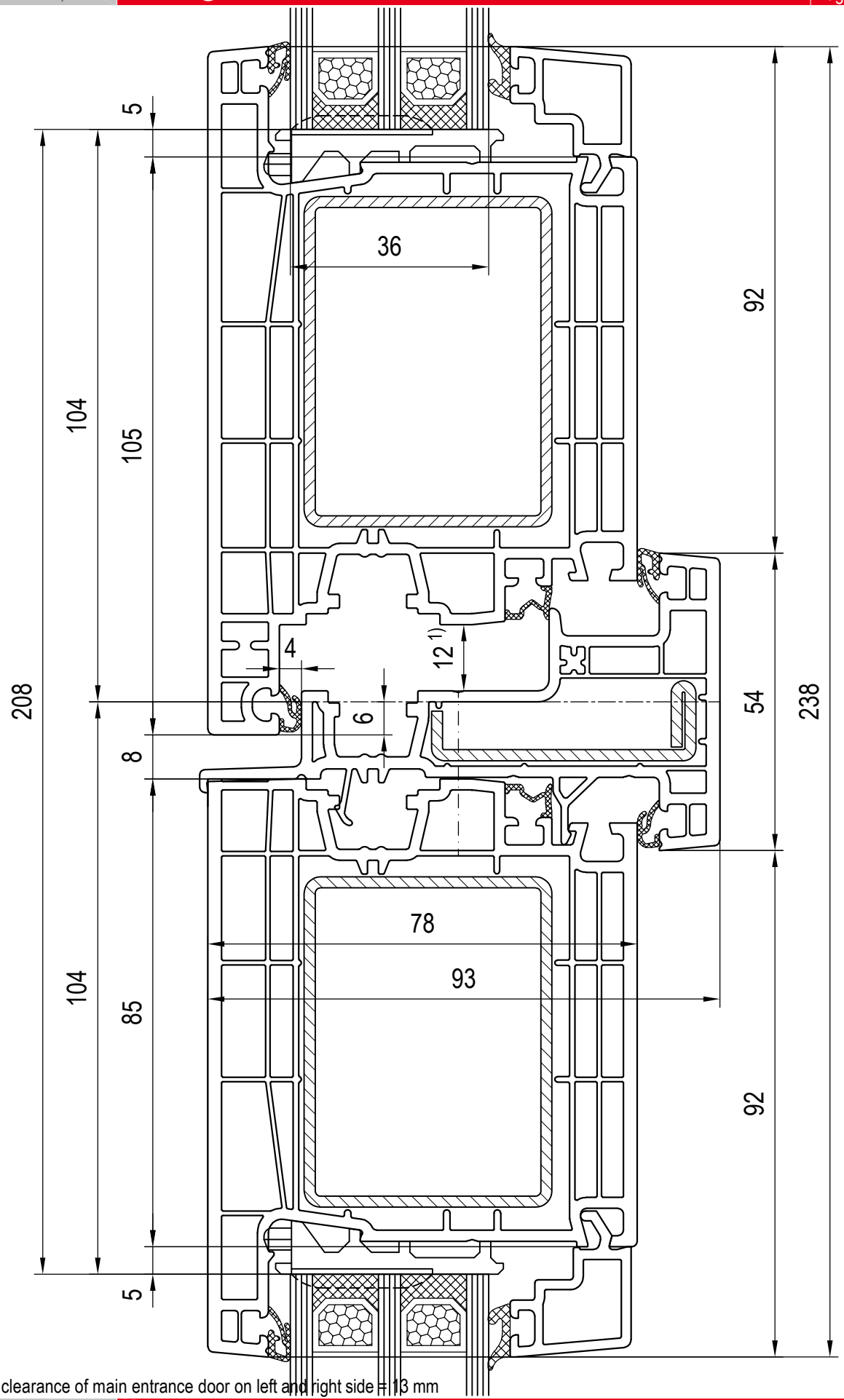
Example ~





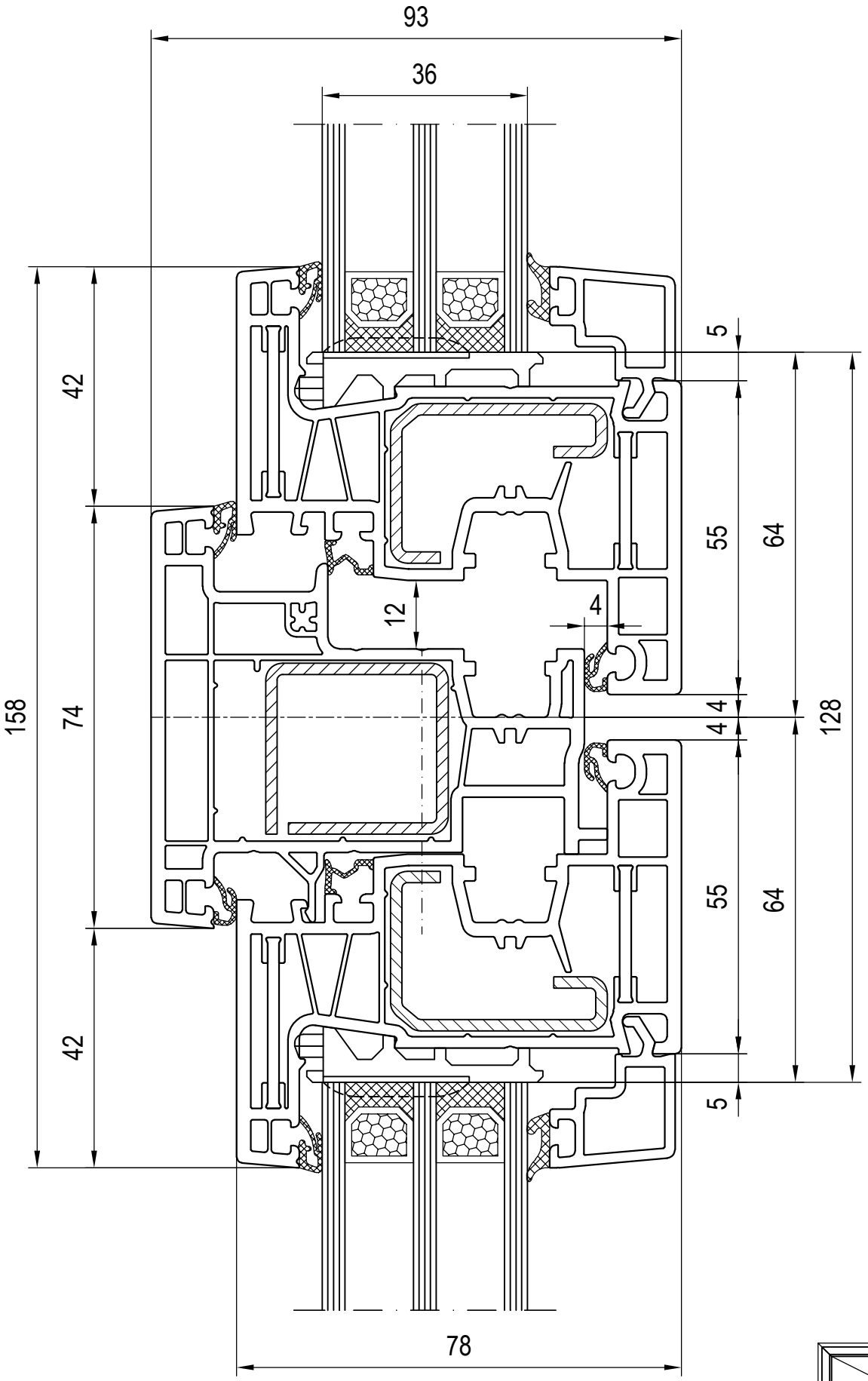
Example ~

1) Rebate clearance of main entrance door on left and right side = 13 mm

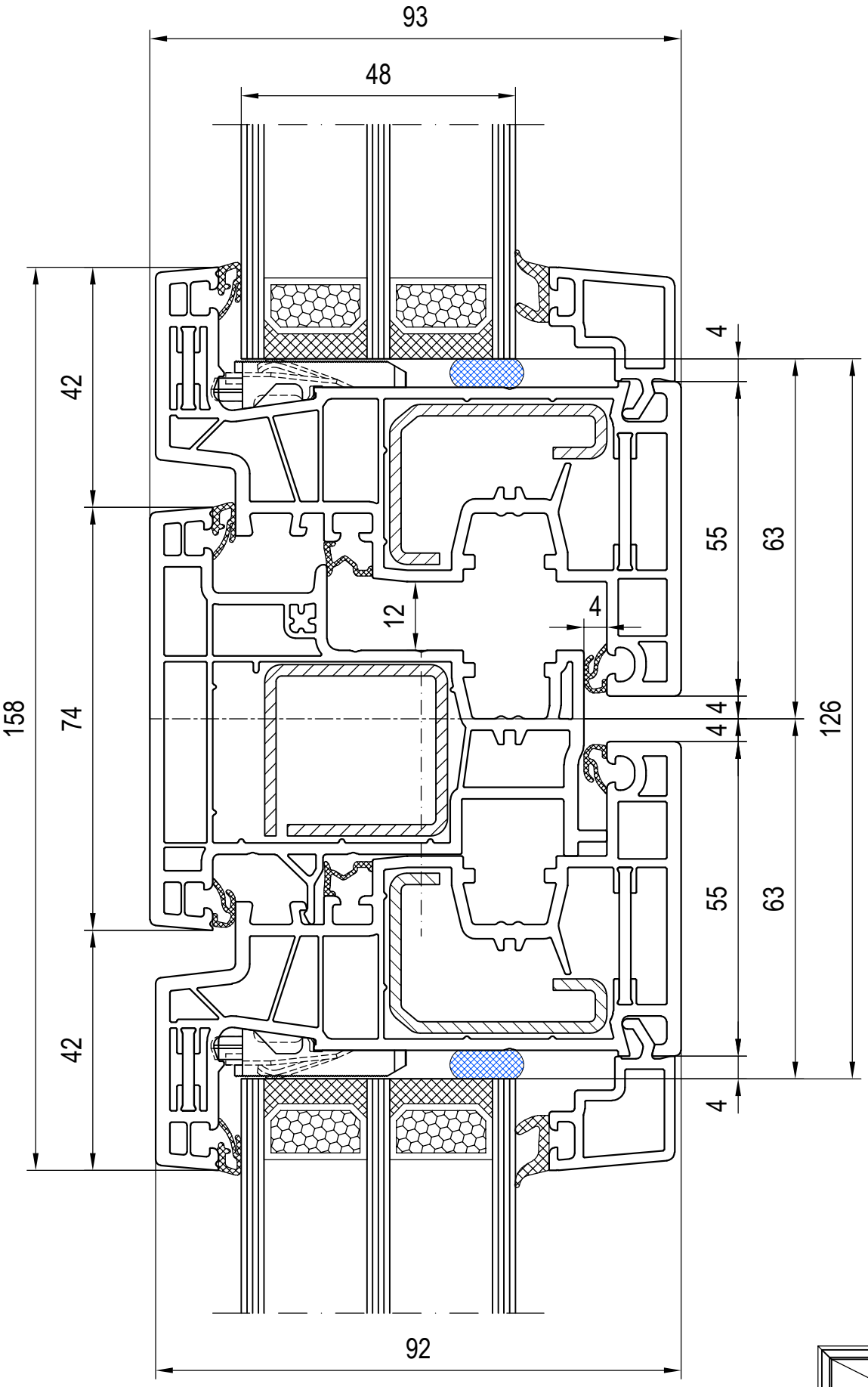


Example ~

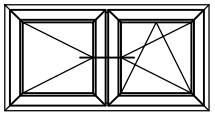
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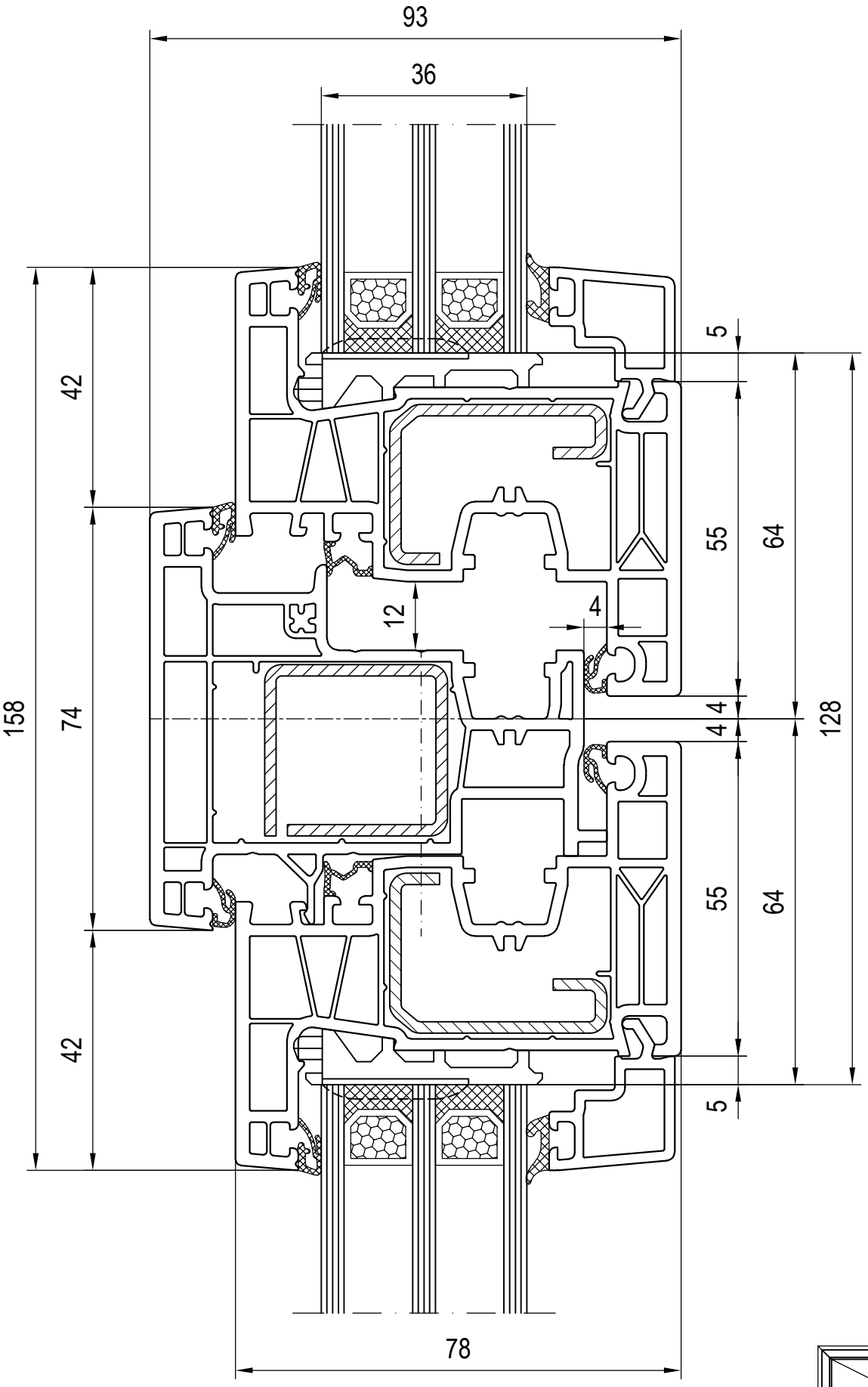


Example ~

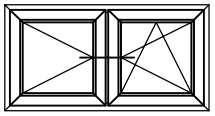


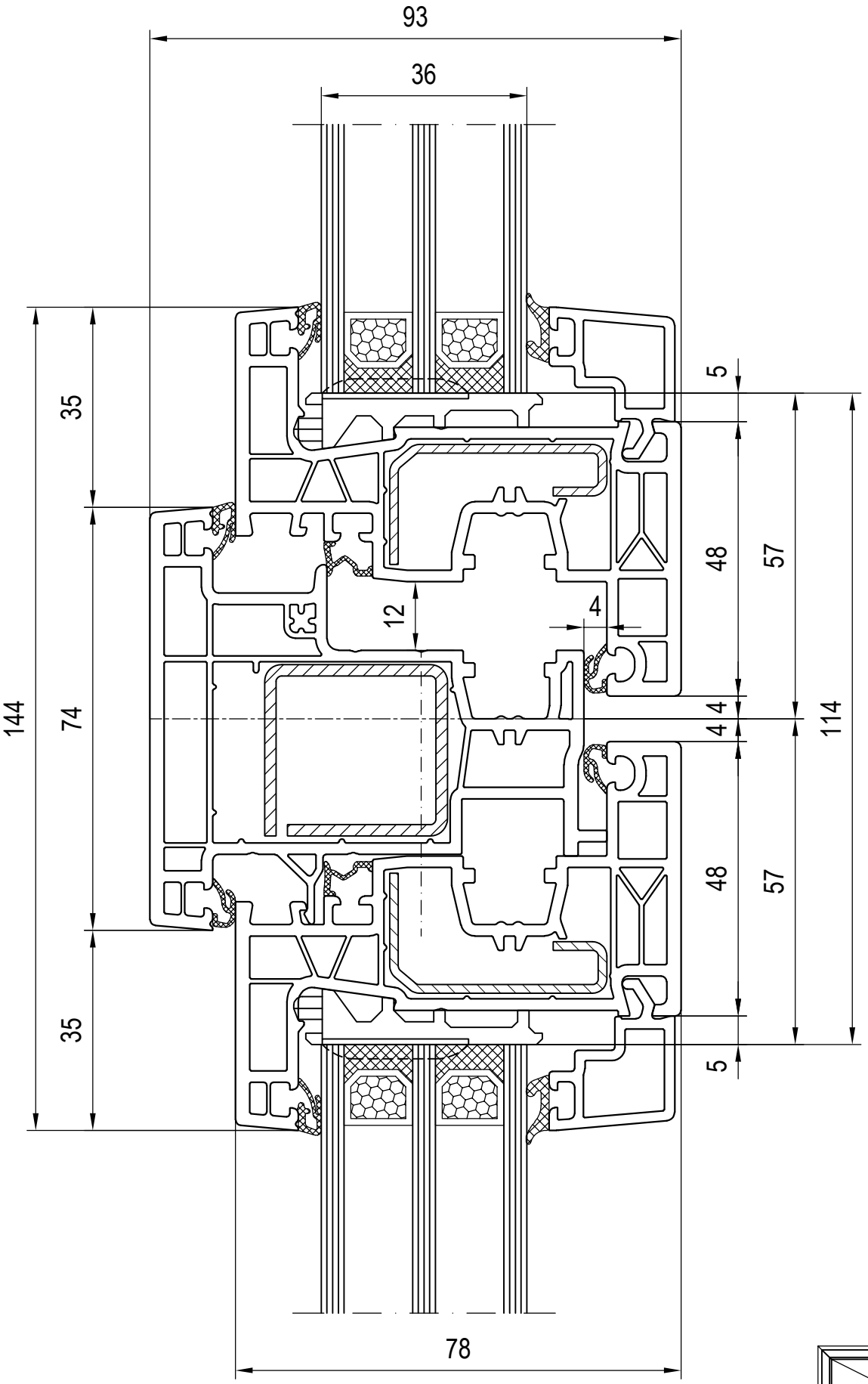
Example ~



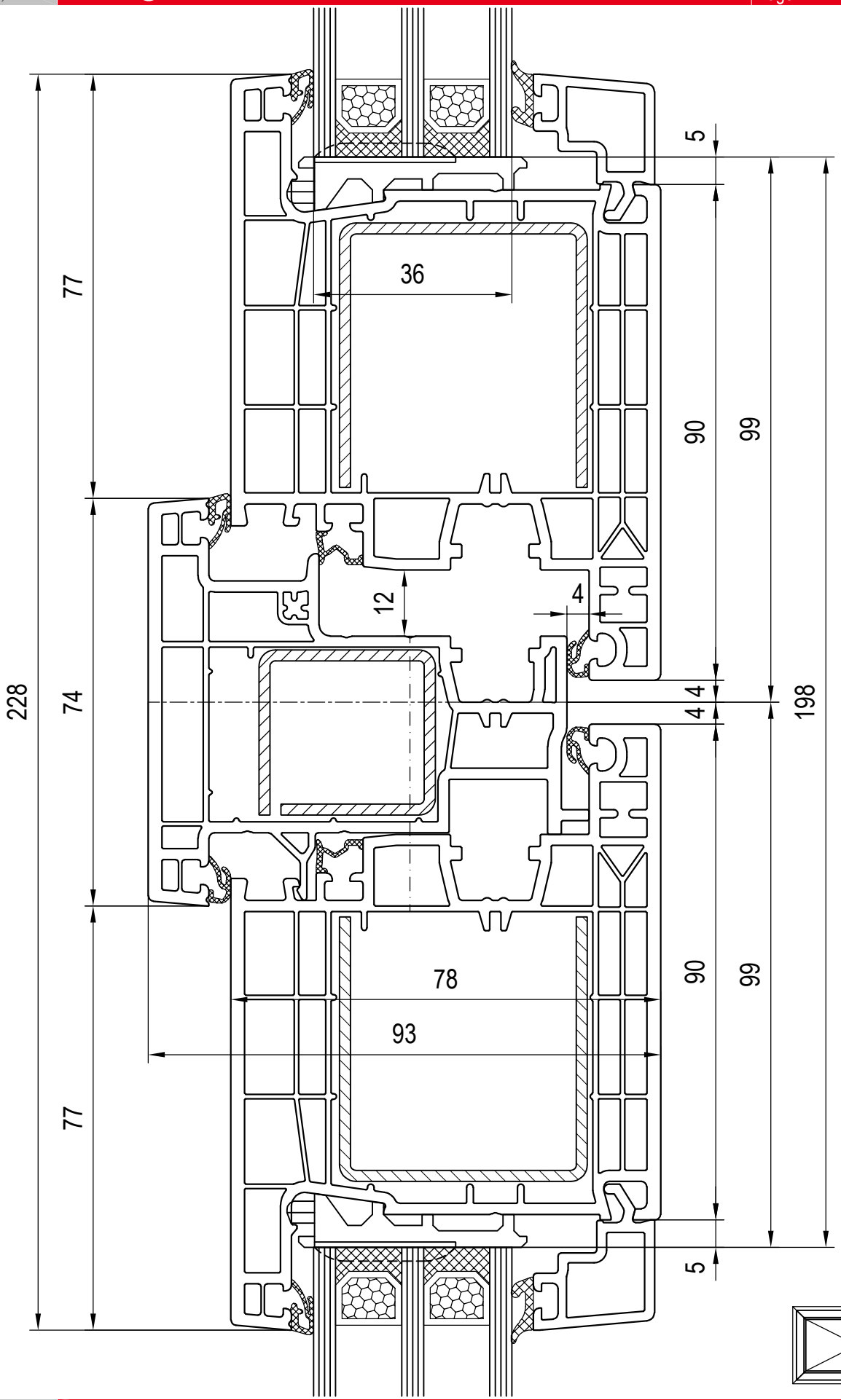


Example ~

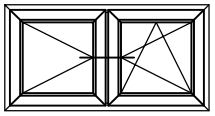


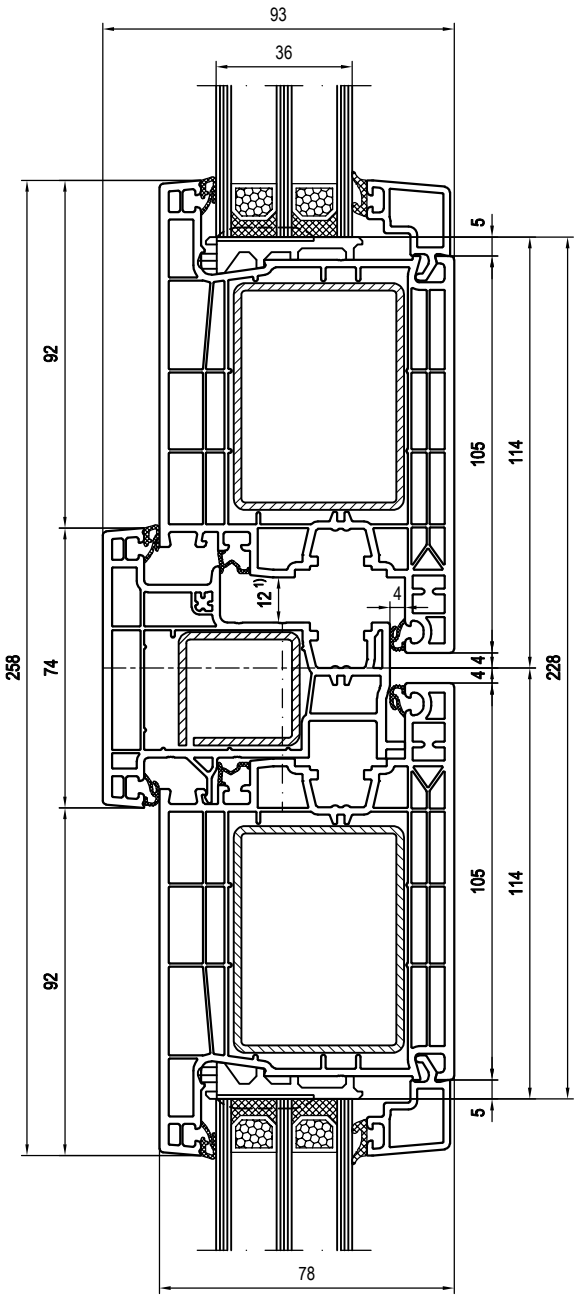


Example ~



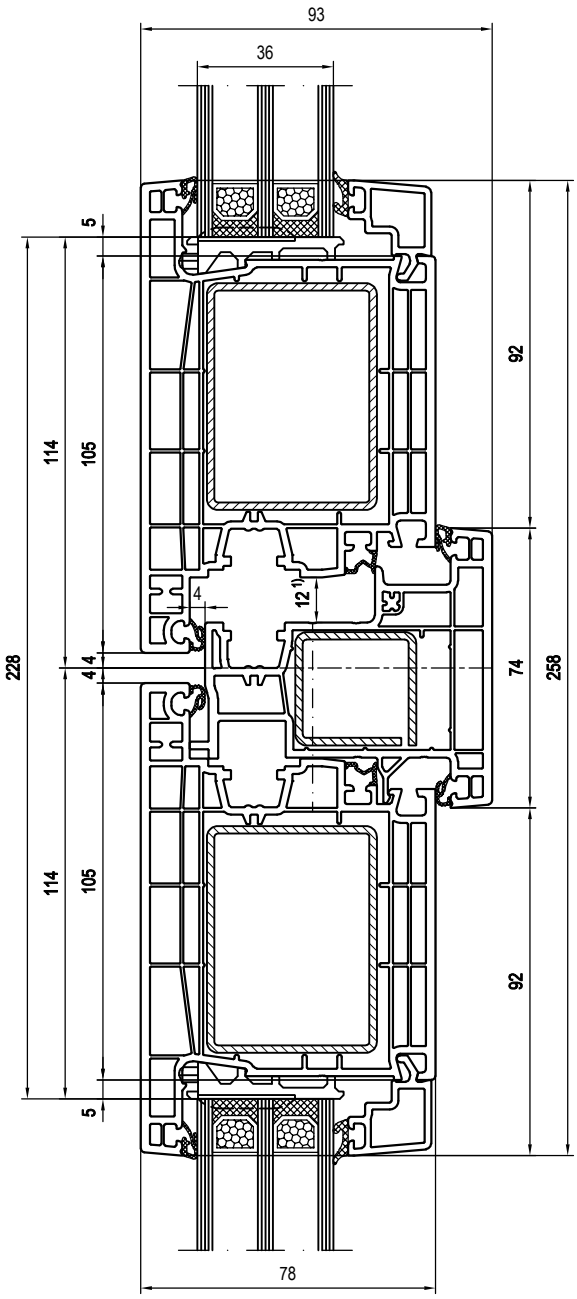
Example ~



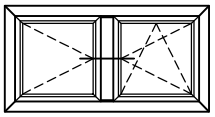


Example ~

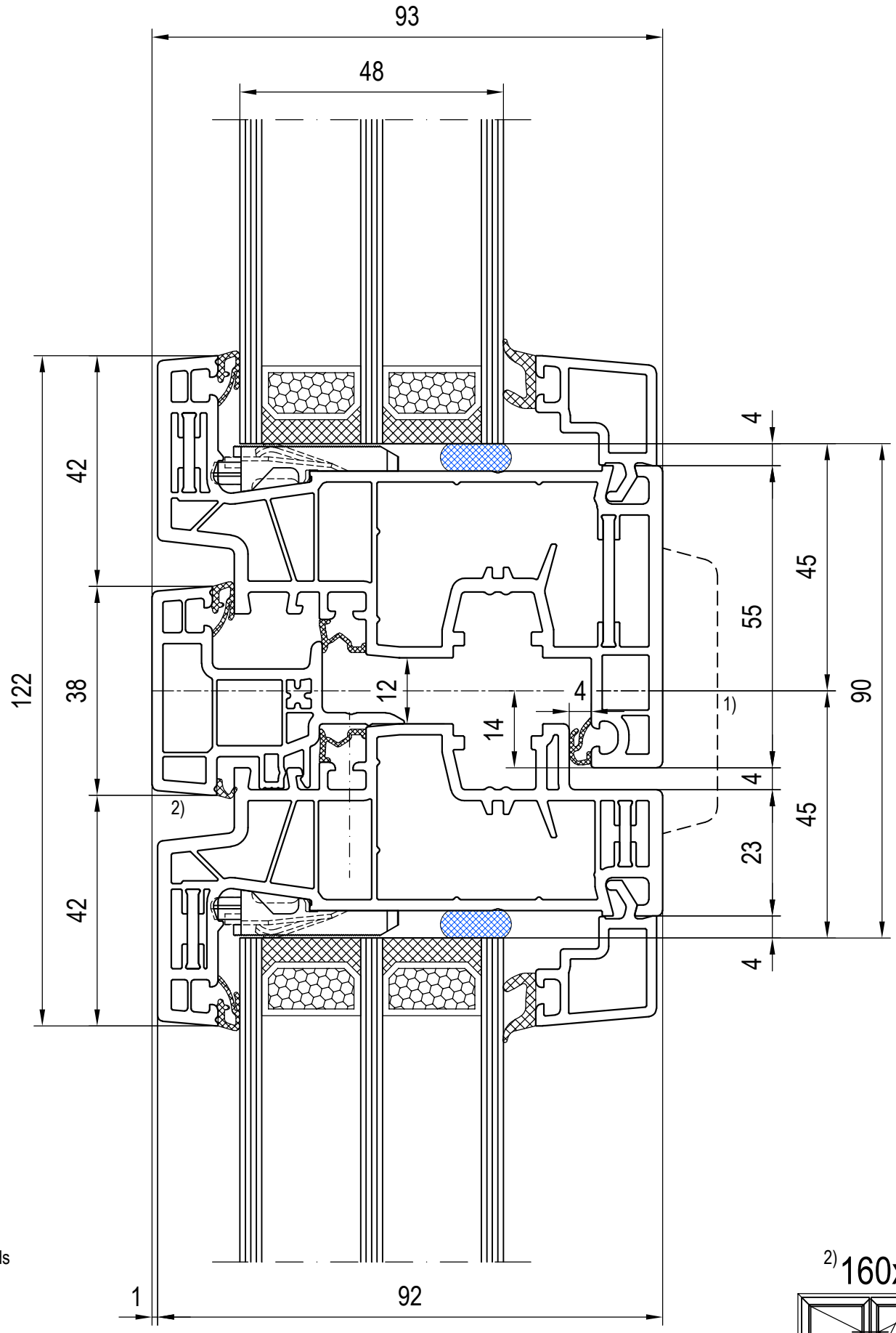
1) Rebate clearance of main entrance door on left and right side = 13 mm



Example ~



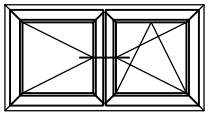
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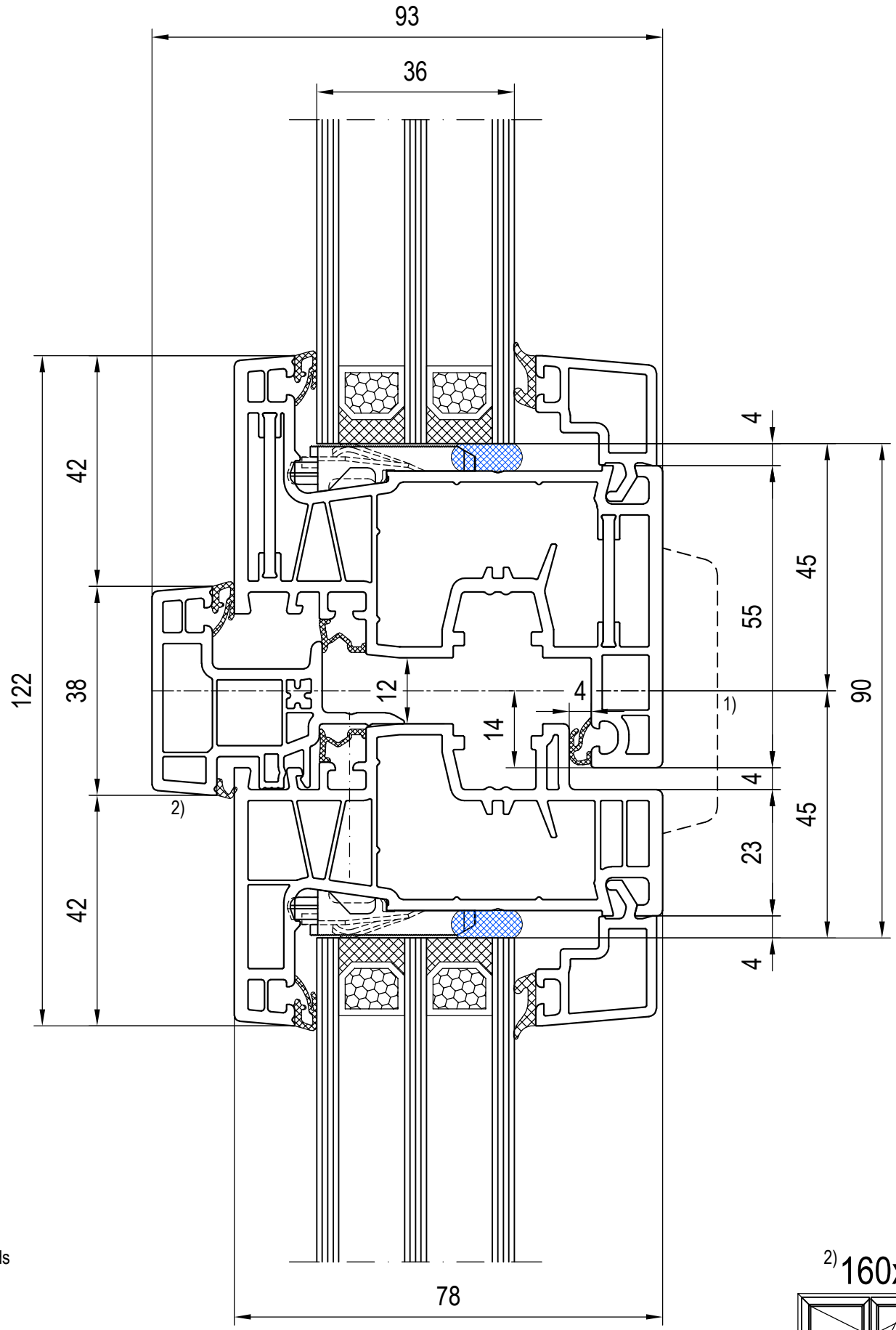


Example ~

1) Stop beads refer to Chapter 04 P

2) 160x97

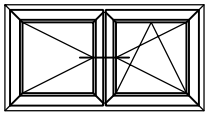


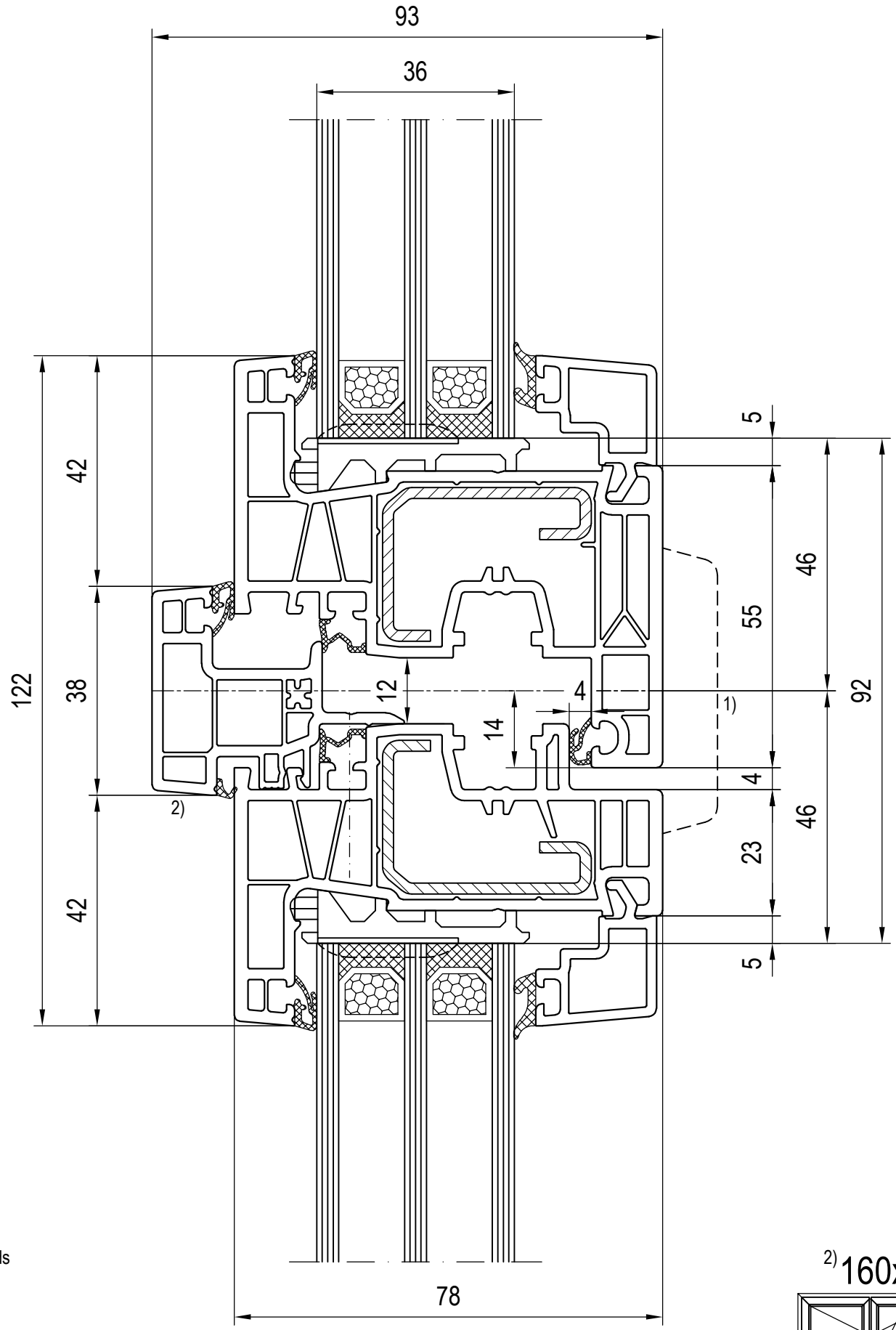


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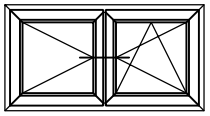


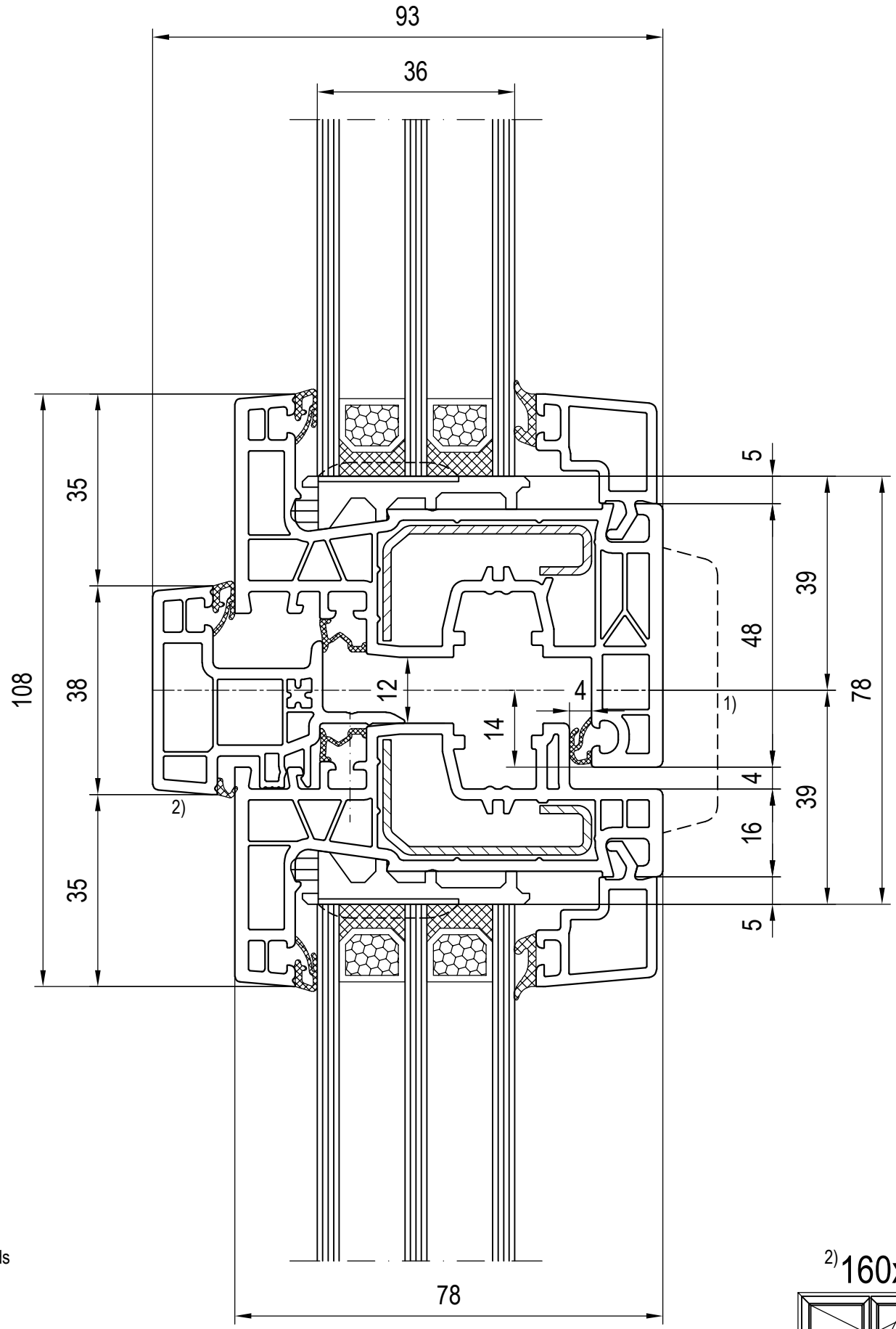


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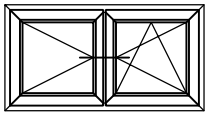


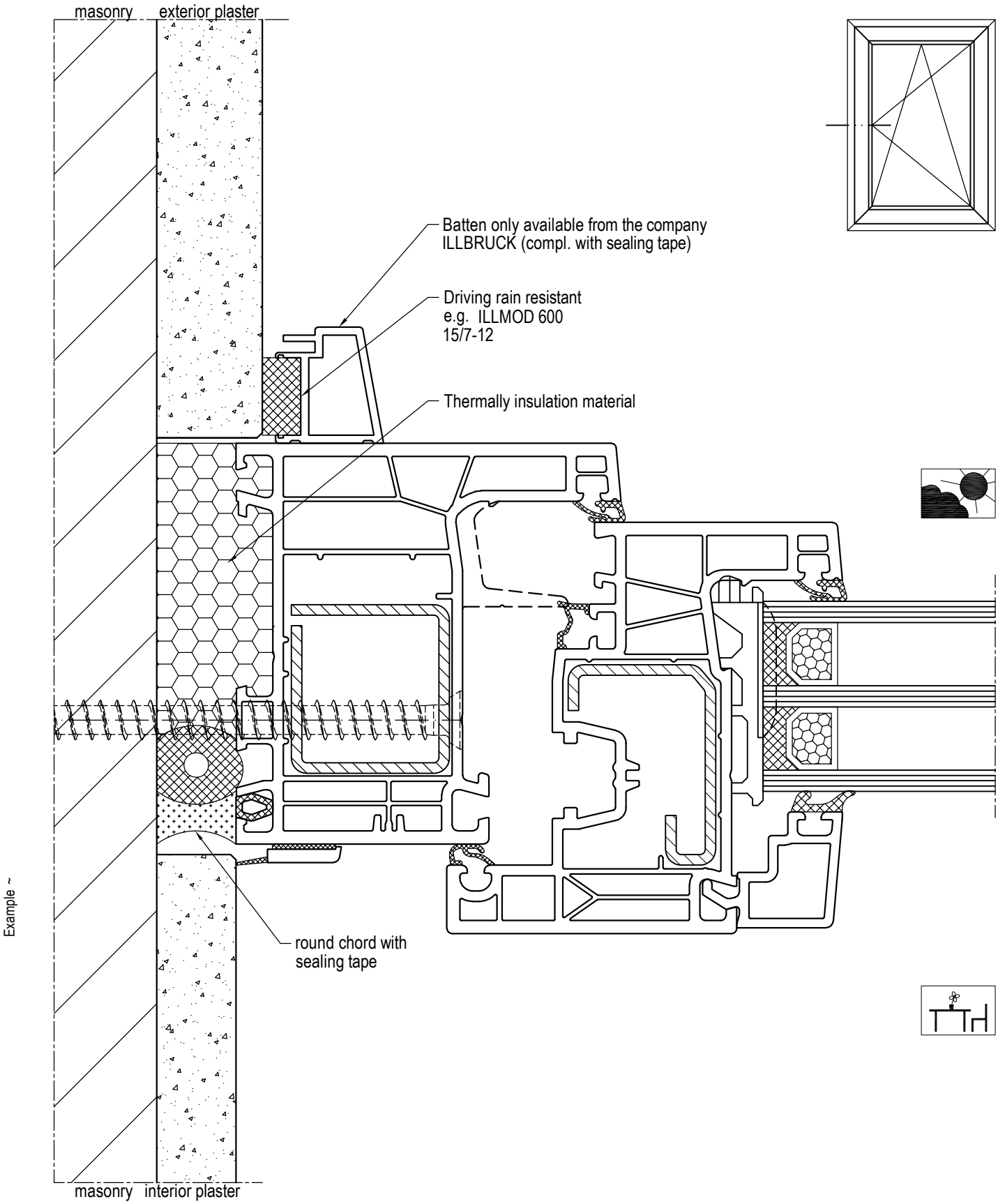


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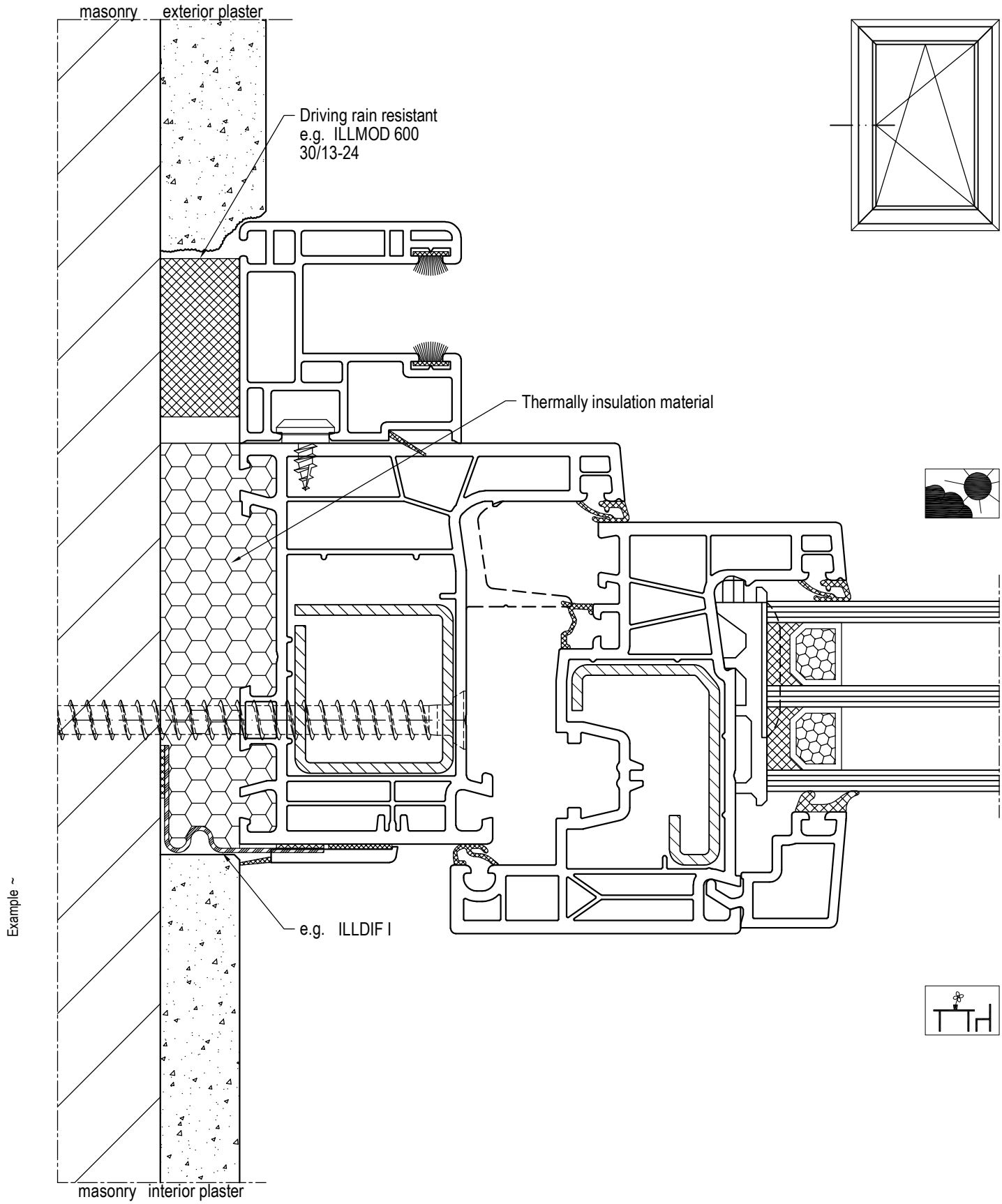
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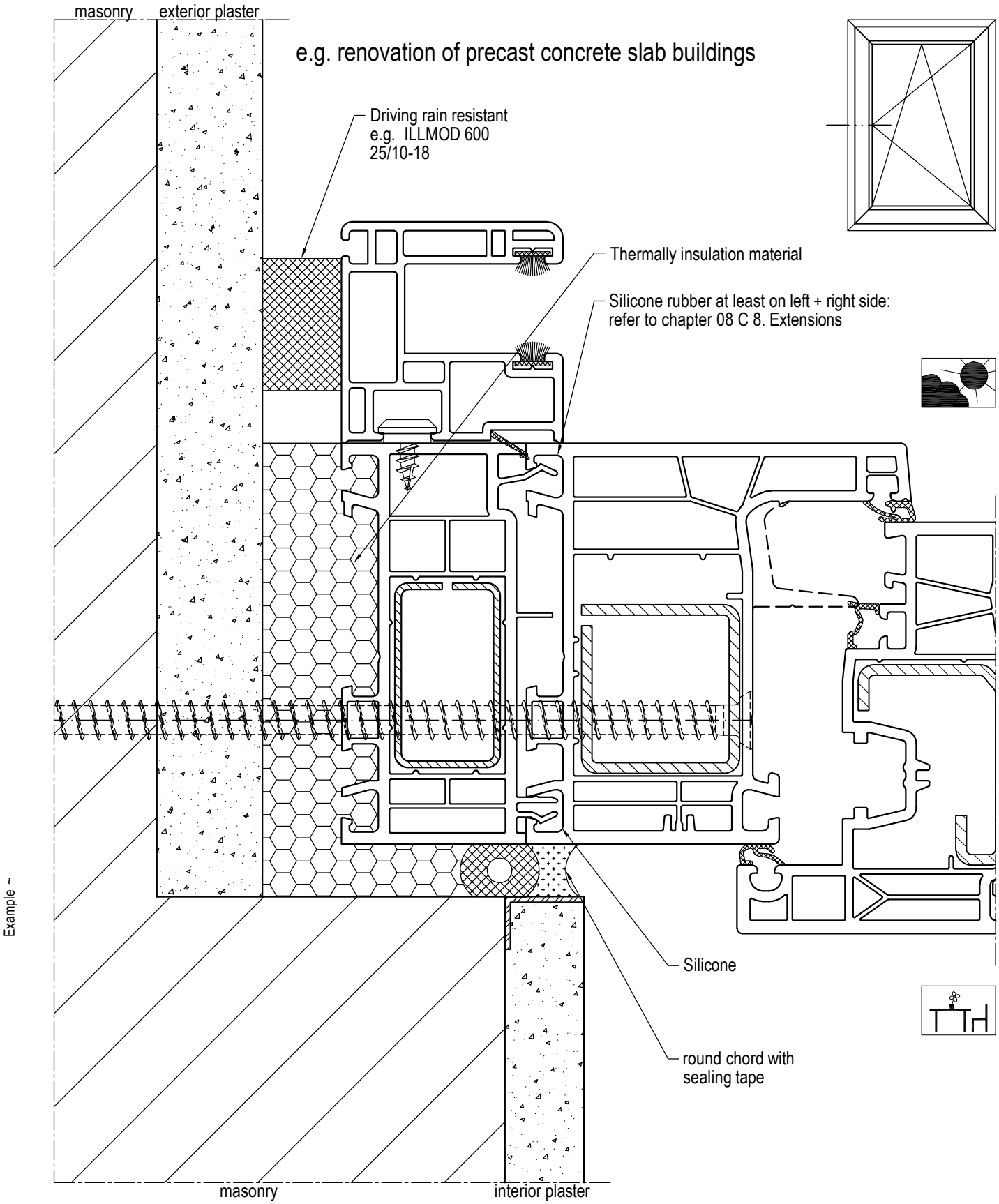
Example ~

Attention:
Basically, the following applies: the inside shall be more impermeable (to vapour diffusion) than the outside.
Inside = vapour barrier (vapour shall diffuse to the outside) / airtight
Outside = watertight and permeable to vapour (to the outside)
Fabrication and installation according to state of the art.
Respect the gasket manufacturer's specifications.



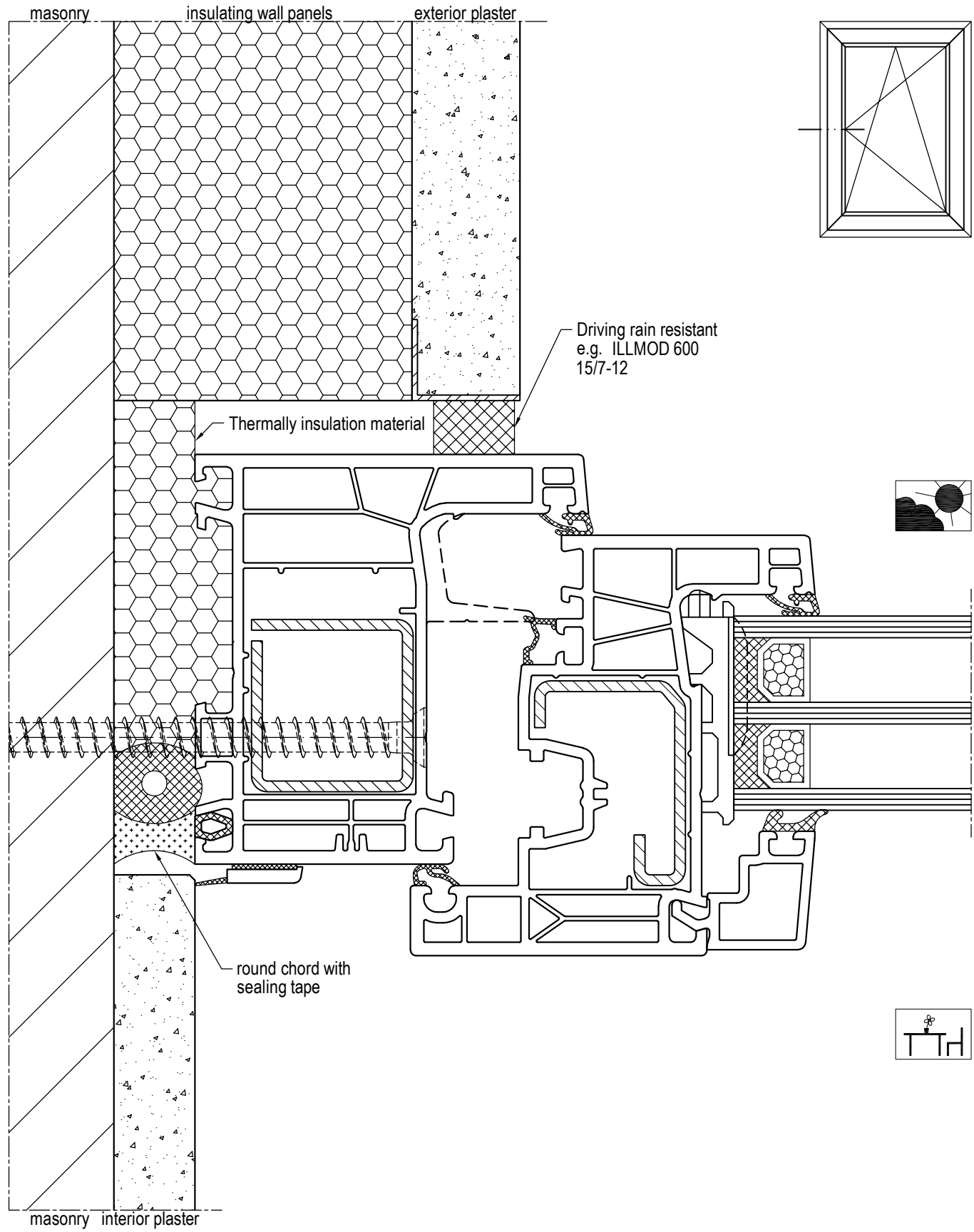
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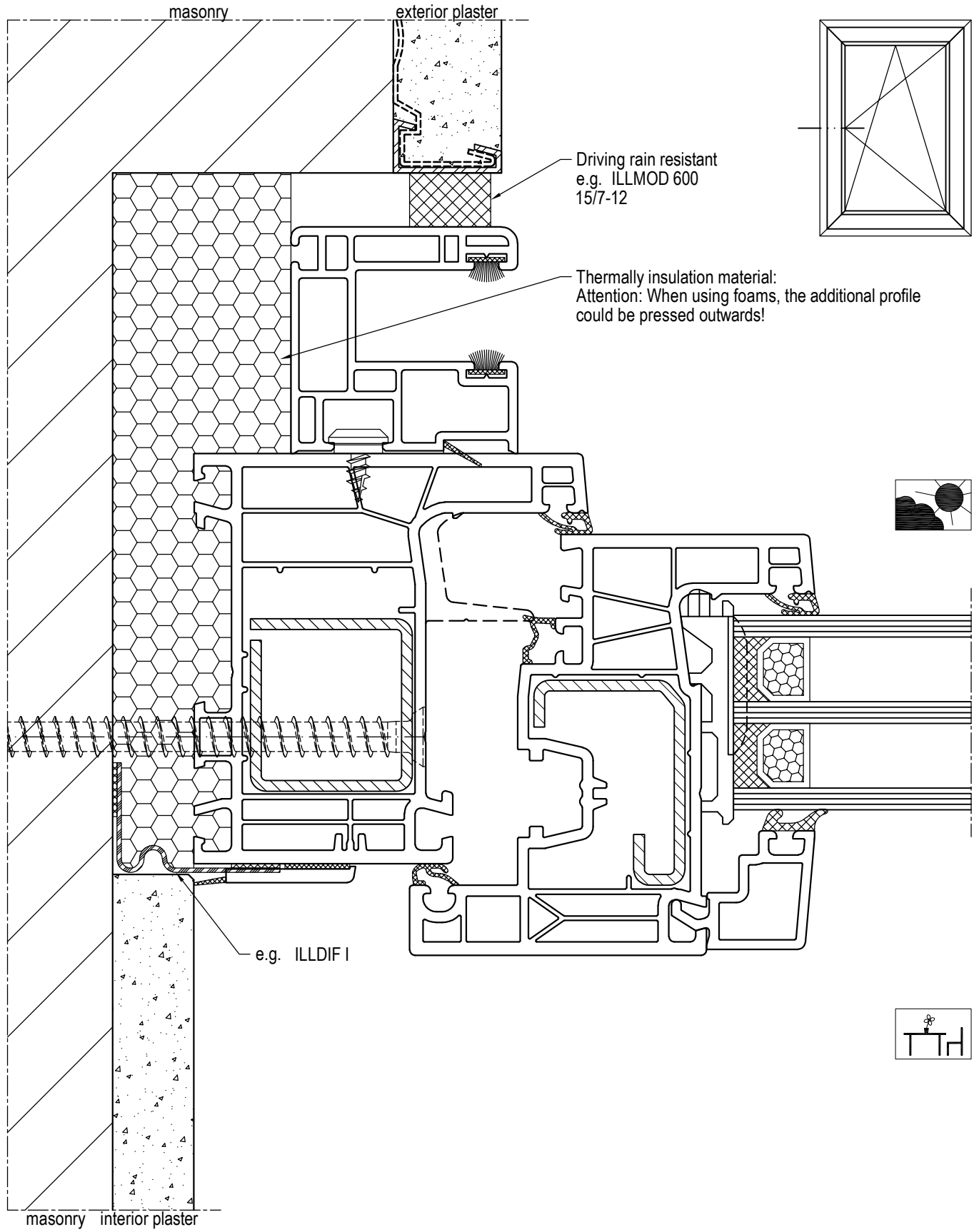
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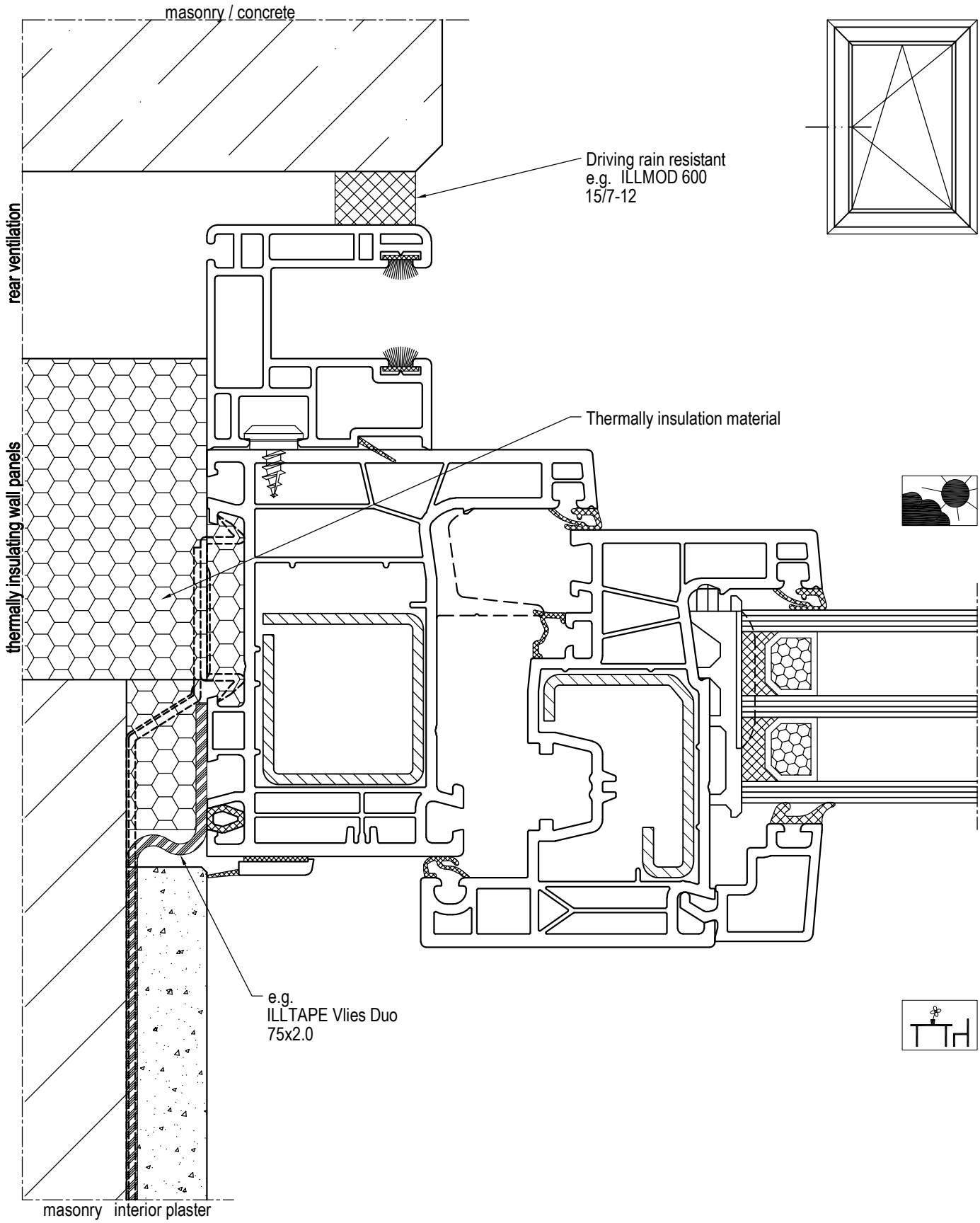
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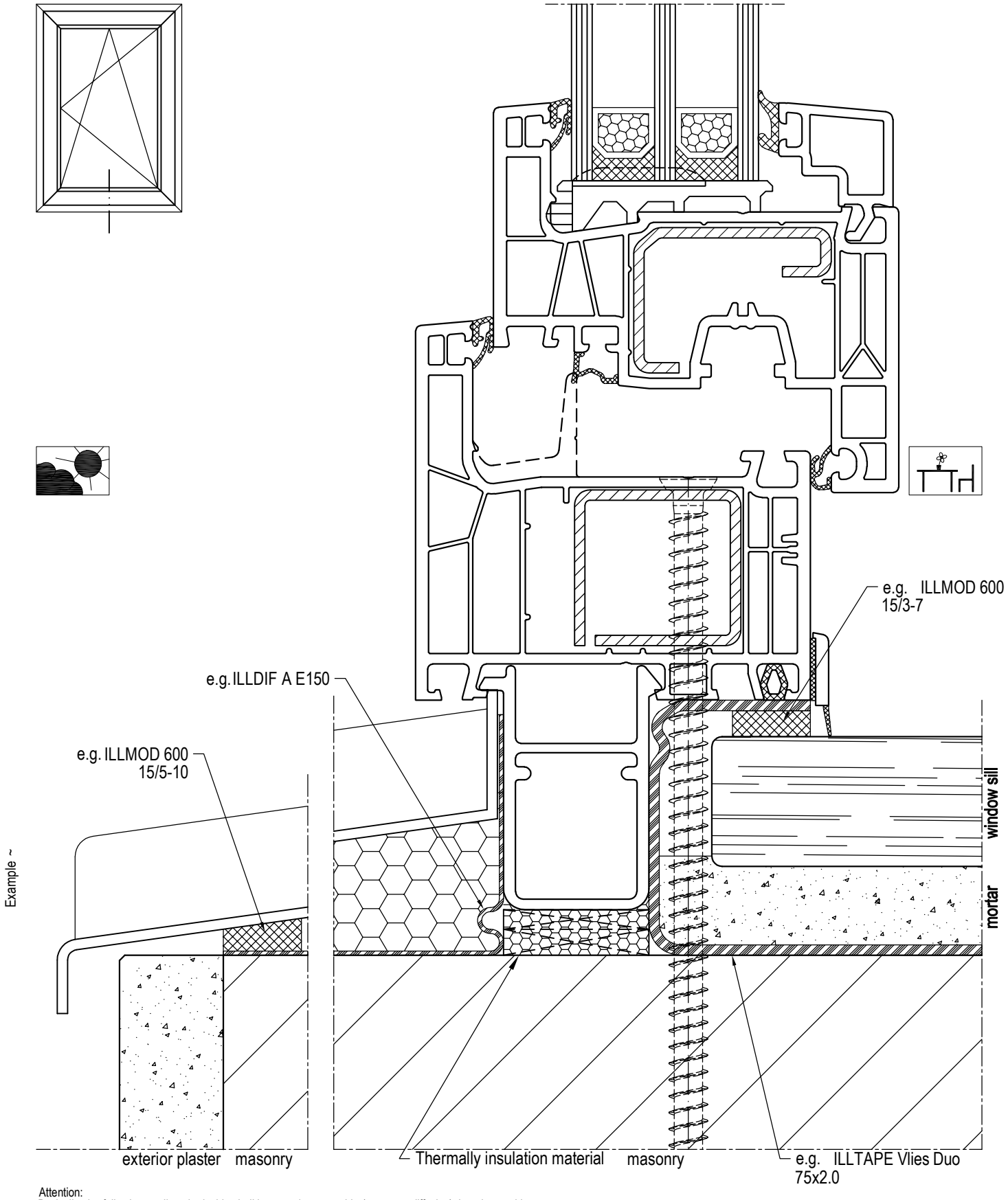
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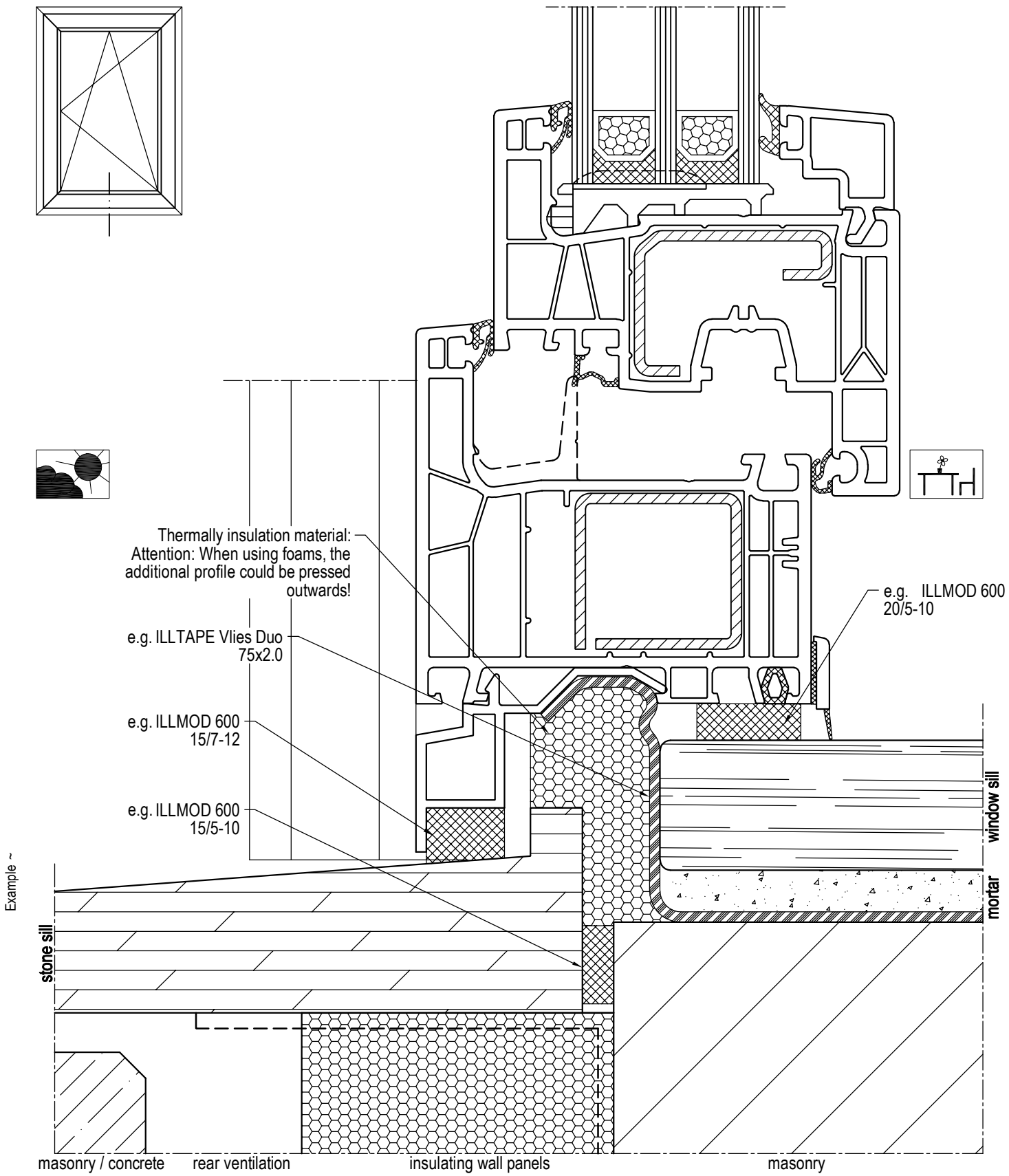


Example ~

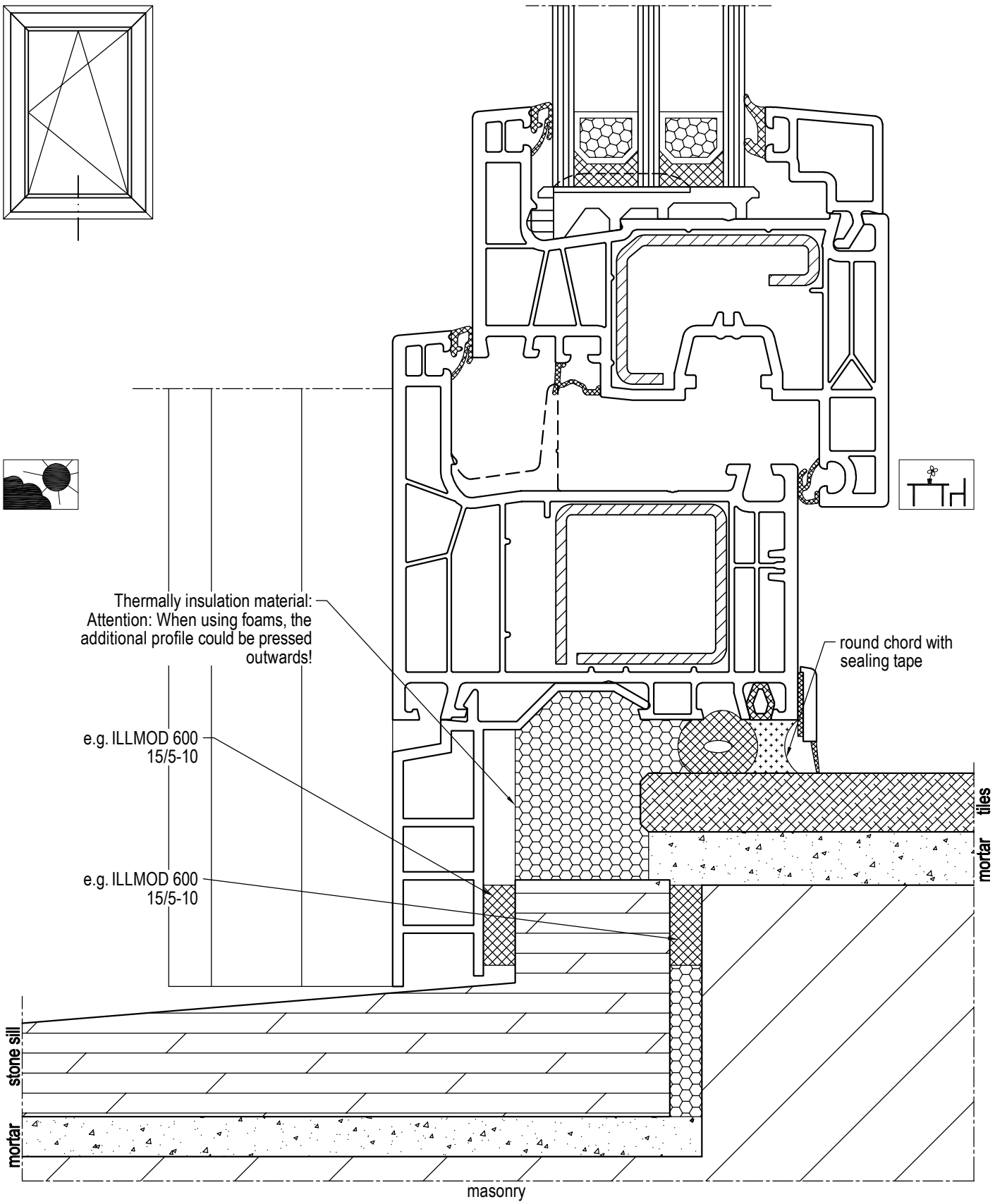
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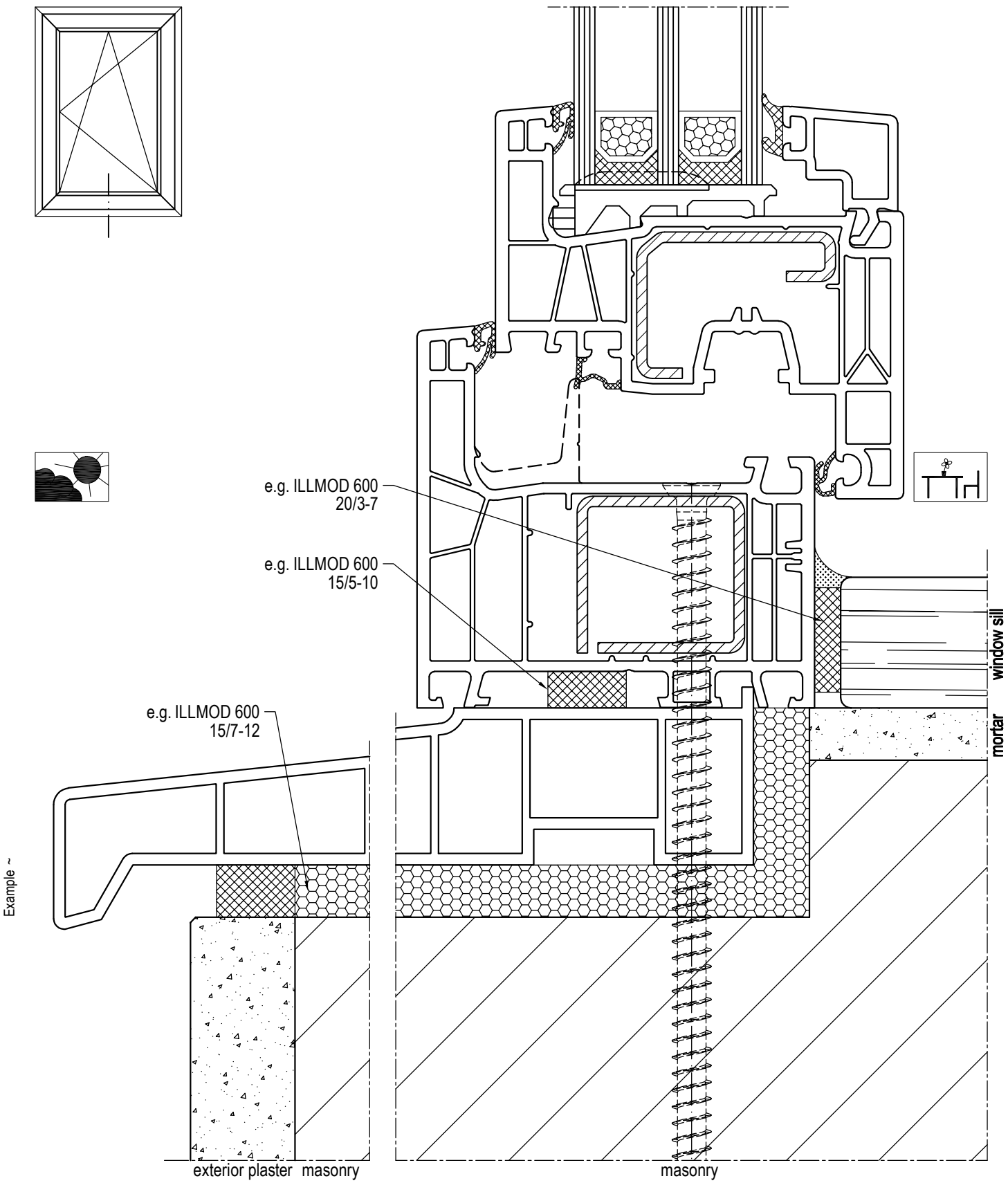


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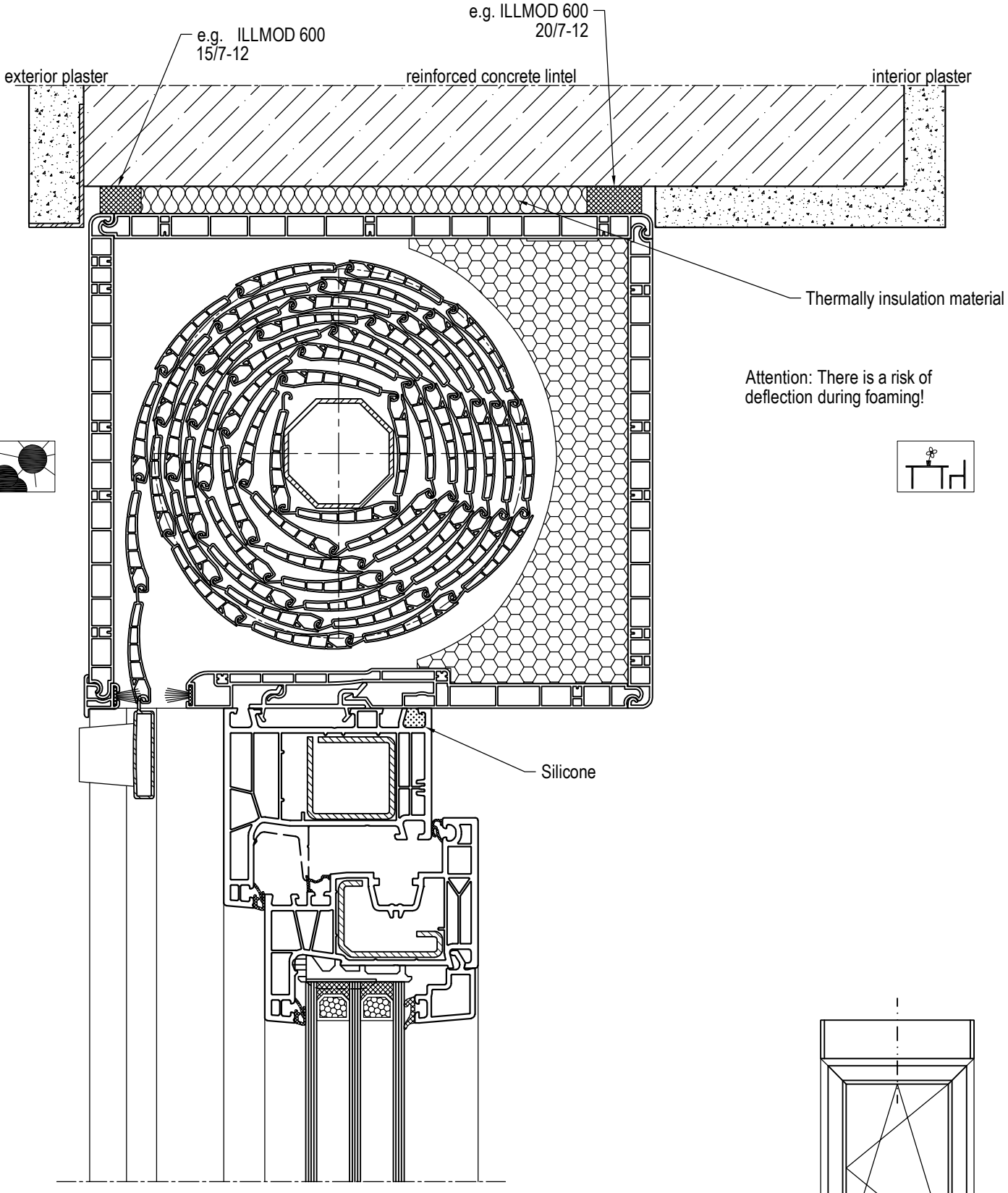
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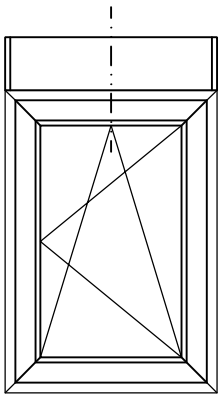


Example ~

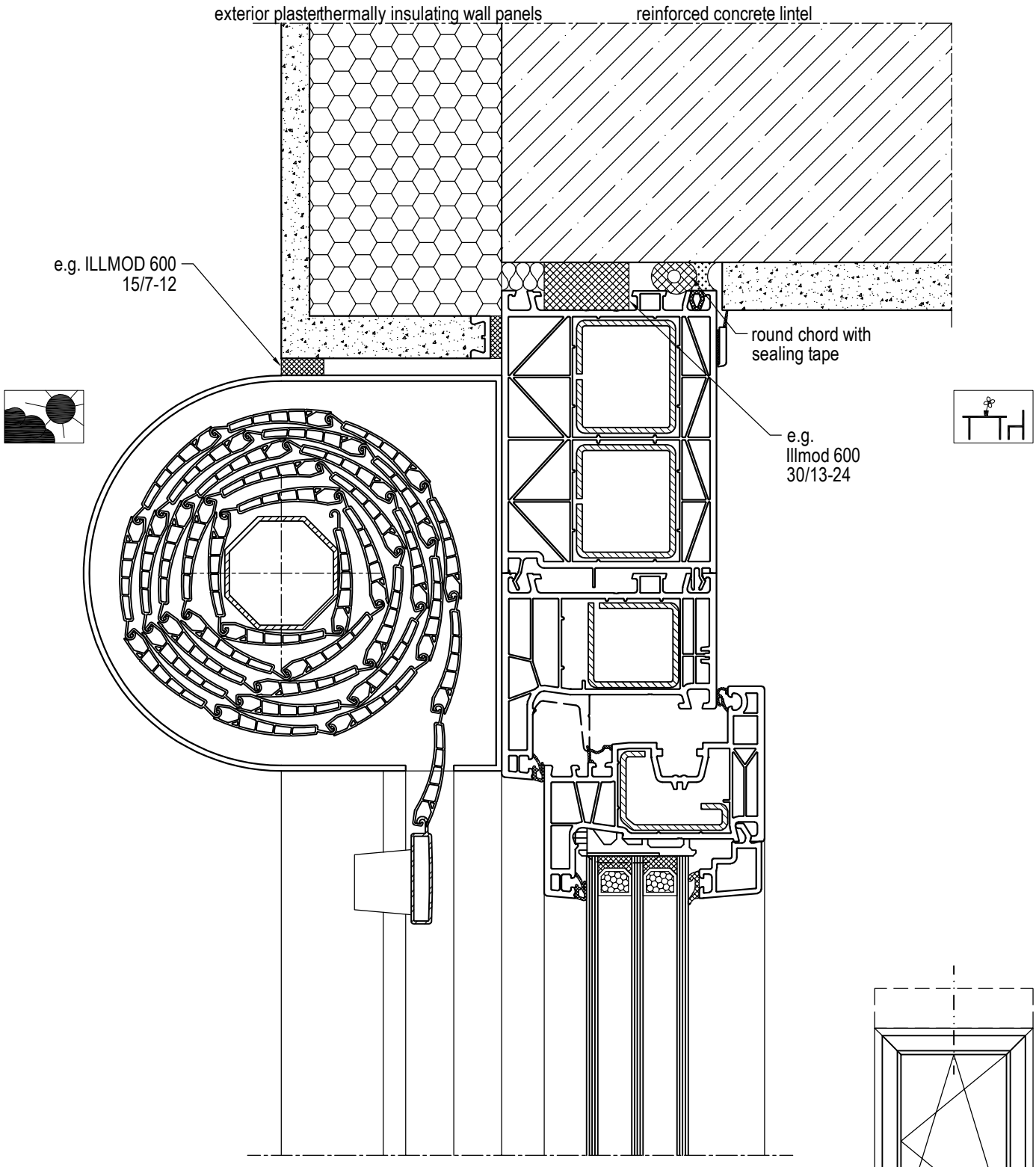
Attention:
Basically, the following applies: the inside shall be more impermeable (to vapour diffusion) than the outside.
Inside = vapour barrier (vapour shall diffuse to the outside) / airtight
Outside = watertight and permeable to vapour (to the outside)
Fabrication and installation according to state of the art.
Respect the gasket manufacturer's specifications.



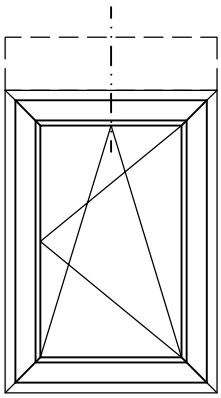
Example ~



Attention:
Basically, the following applies: the inside shall be more impermeable (to vapour diffusion) than the outside.
Inside = vapour barrier (vapour shall diffuse to the outside) / airtight
Outside = watertight and permeable to vapour (to the outside)
Fabrication and installation according to state of the art.
Respect the gasket manufacturer's specifications.



Example ~



Attention:
Basically, the following applies: the inside shall be more impermeable (to vapour diffusion) than the outside.
Inside = vapour barrier (vapour shall diffuse to the outside) / airtight
Outside = watertight and permeable to vapour (to the outside)
Fabrication and installation according to state of the art.
Respect the gasket manufacturer's specifications.

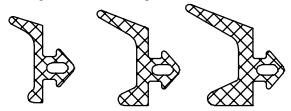
|X| Gaskets 1:1
Gaskets - Juntas - Joints - Guarnizioni

bl black ~ RAL 9005
black - negro
noir - nero

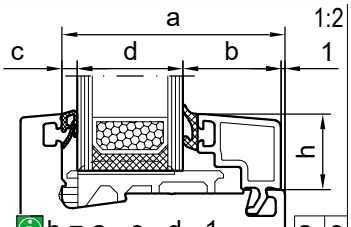
pw papyrus-white ~ RAL 9018
papyrus-white - blanco papiro
gris clair - bianco papiro

Replacement
Replacement - Reemplazo
Remplacement - Sostituzione

-> [2] ~ xxx6xx
-> [3-4] ~ xxx8xx
-> [6] ~ xxx7xx



|X| 429310 bl
|X| 429311 bl
|X| 429312 bl



b = a - c - d - 1

76 mm

		a	c
	energeto neo [1]	1 67	4
	energeto neo + 14 [1]	2 81	4
AD	energeto neo [2]	3 65	4
MD	energeto neo [2]	4 65	4
	170x39 [1] [3]	5 85	-
	170x39 [1] [4]	6 81	-

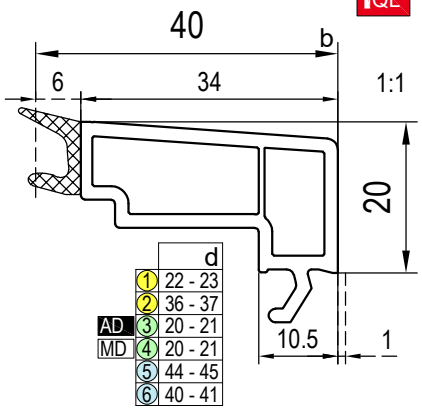
[1] Sash
Sash - Hoja - Ouvrant - Anta
[2] Frame
Frame - Marco - Dormant - Telaio
[3] 85
[4] 81

d ≥ 24mm
Ⓜ ➡ |J|

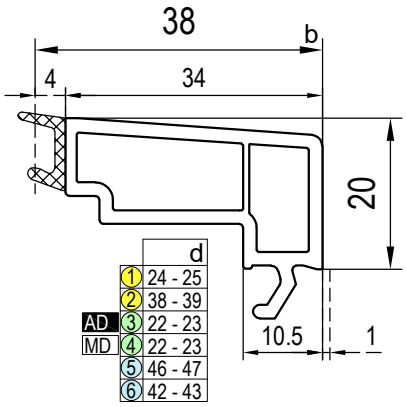
AM 03 A

■ coloured
coloured - colorado - en couleur - colorato
▨ white
white - blanco - blanc - bianco

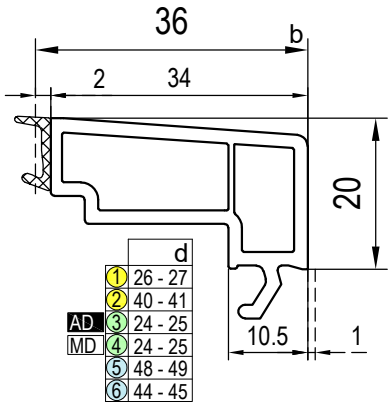
(QL) Qube-line



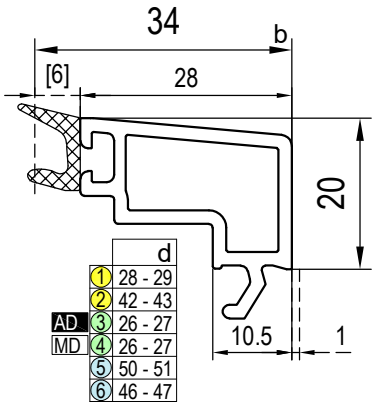
■ 150736 bl
▨ 150766 pw



■ 150836 bl
▨ 150866 pw

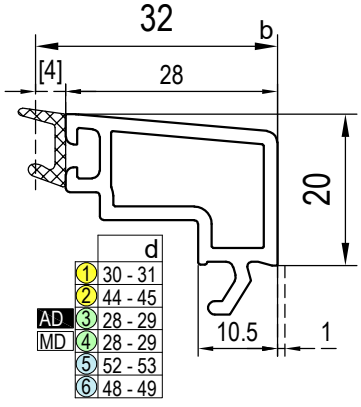


■ 150636 bl
▨ 150666 pw

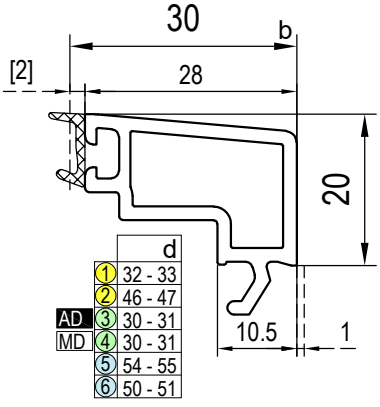


■ 150735 bl
▨ 150765 pw

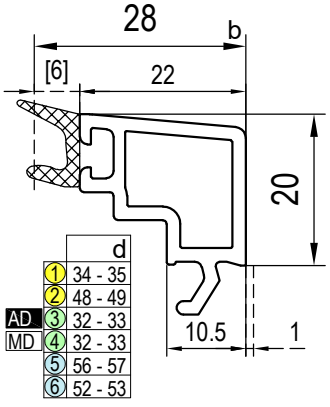
Example ~



■ 150835 bl
▨ 150865 pw



■ 150635 bl
▨ 150665 pw



■ 150734 bl
▨ 150764 pw

Glazing beads - Junquillos - Parcloses - Fermavetri

|X| Gaskets 1:1

Gaskets - Juntas - Joints - Guarnizioni

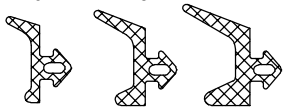
bl black ~ RAL 9005
black - negro
noir - nero

pw papyrus-white ~ RAL 9018
papyrus-white - blanco papiro
gris clair - bianco papiro

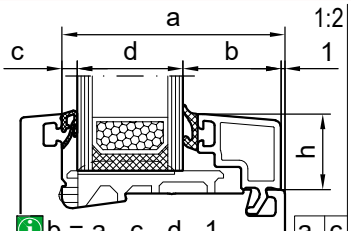
Replacement

Replacement - Reemplazo
Remplacement - Sostituzione

-> [2] ~ xxx6xx
-> [3-4] ~ xxx8xx
-> [6] ~ xxx7xx



|X| 429310 bl
|X| 429311 bl
|X| 429312 bl



b = a - c - d - 1

76 mm

		a	c
	energeto neo [1]	1 67	4
	energeto neo + 14 [1]	2 81	4
AD	energeto neo [2]	3 65	4
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	170x39 [1] [3]	5 85	-
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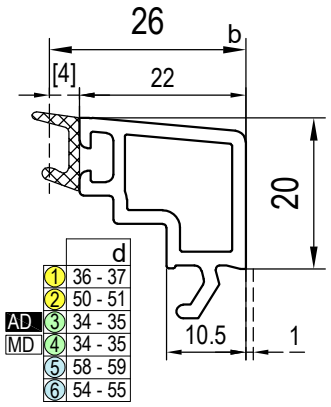
[1] Sash
Sash - Hoja - Ouvrant - Anta
[2] Frame
Frame - Marco - Dormant - Telaio
[3] 85
[4] 81

d ≥ 24mm Ⓜ ➡ |J|

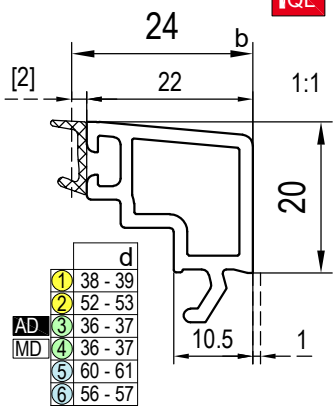
AM 03 A

■ coloured
coloured - colorado - en couleur - colorato
▨ white
white - blanco - blanc - bianco

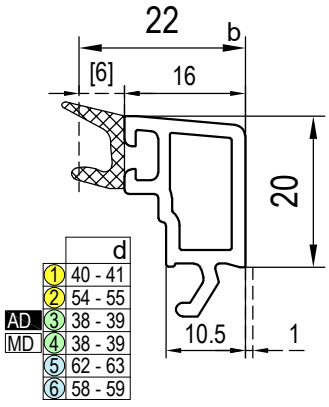
(QL) Qube-line



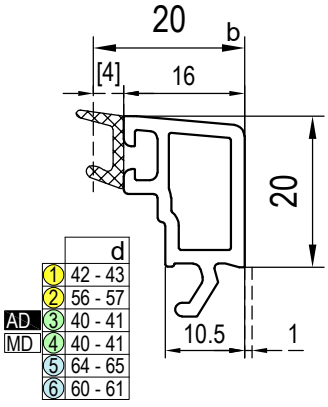
■ 150834 bl
▨ 150864 pw



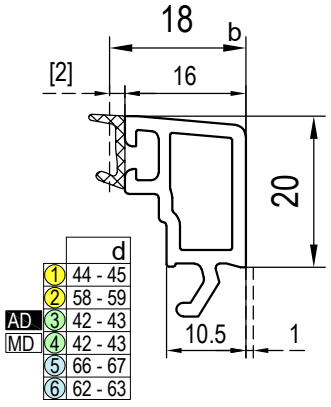
■ 150634 bl
▨ 150664 pw



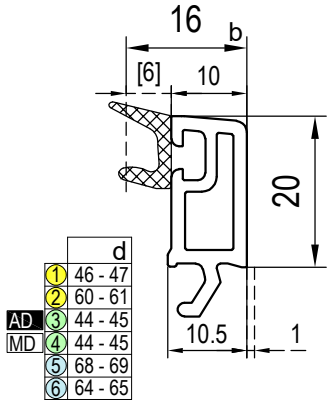
■ 150733 bl
▨ 150763 pw



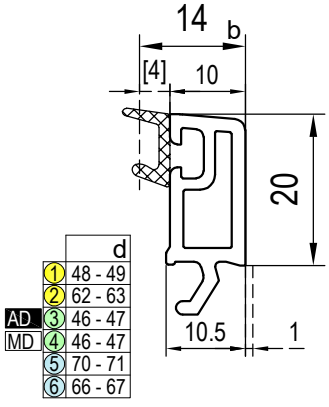
■ 150833 bl
▨ 150863 pw



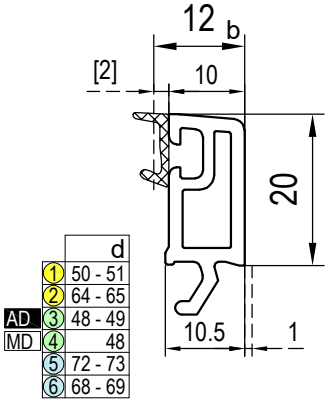
■ 150633 bl
▨ 150663 pw



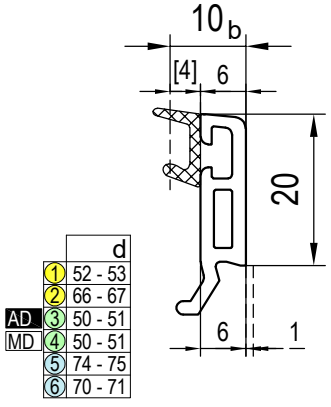
■ 150732 bl
▨ 150762 pw



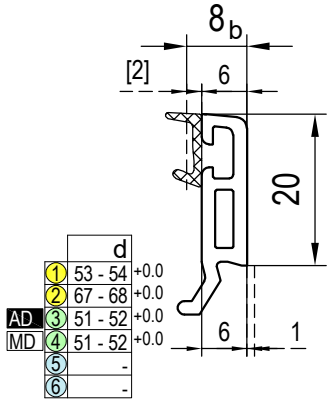
■ 150832 bl
▨ 150862 pw



■ 150632 bl
▨ 150662 pw



■ 150831 bl
▨ 150861 pw



■ 150631 bl
▨ 150661 pw

Glazing beads - Junquillos - Parcloses - Fermavetri

Example ~

|X| Gaskets 1:1
Gaskets - Juntas - Joints - Guarnizioni

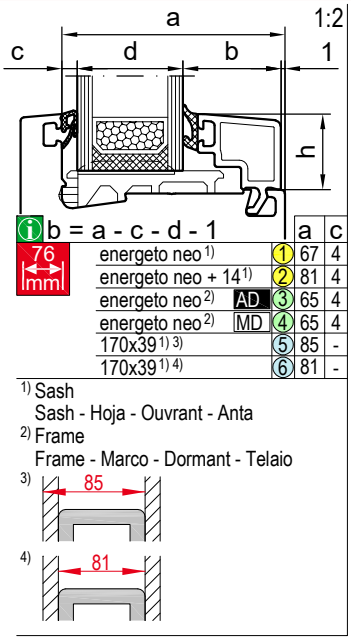
bl black ~ RAL 9005
black - negro
noir - nero

pw papyrus-white ~ RAL 9018
papyrus-white - blanco papiro
gris clair - bianco papiro

Replacement
Replacement - Reemplazo
Remplacement - Sostituzione

-> [2] ~ xxx6xx
-> [3-4] ~ xxx8xx
-> [6] ~ xxx7xx

|X| 429310 bl
|X| 429311 bl
|X| 429312 bl



		a	c
1		67	4
2		81	4
3	AD	65	4
4	MD	65	4
5		85	-
6		81	-

d ≥ 24mm
Ⓜ ➡ |J|

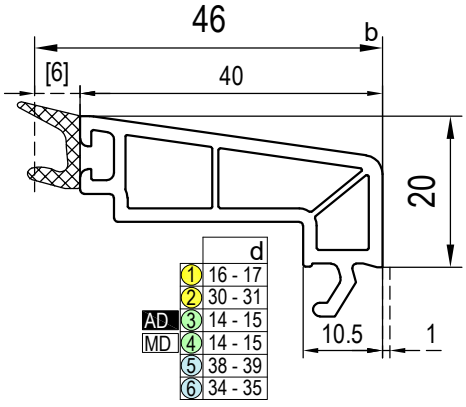
AM 03 A

■ coloured
coloured - colorado - en couleur - colorato
▨ white
white - blanco - blanc - bianco

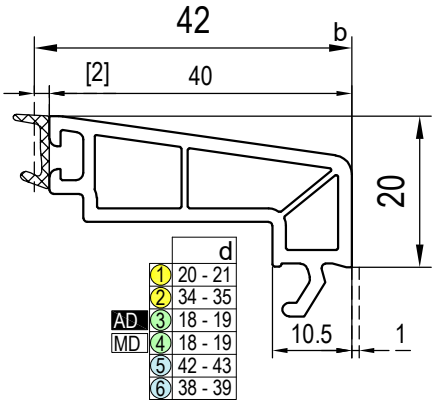
(CL) Classic-line

1:1

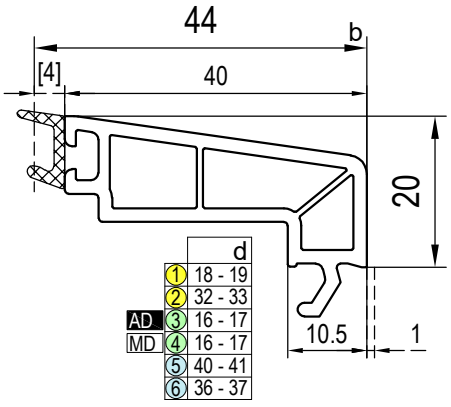
Example ~



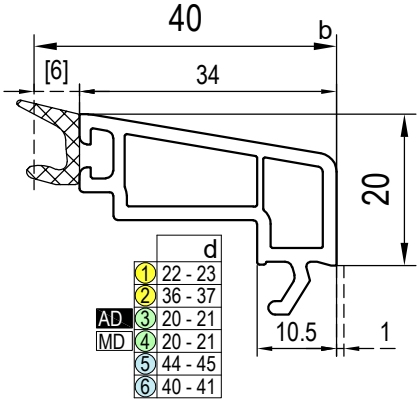
■ 140741 bl
▨ 140771 pw



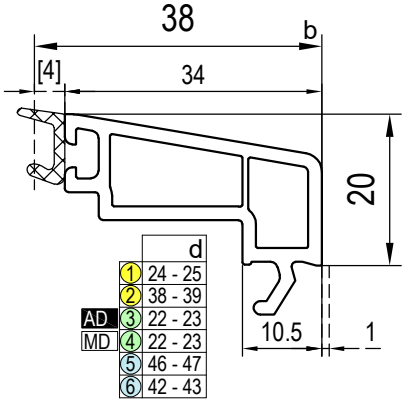
■ 140641 bl
▨ 140671 pw



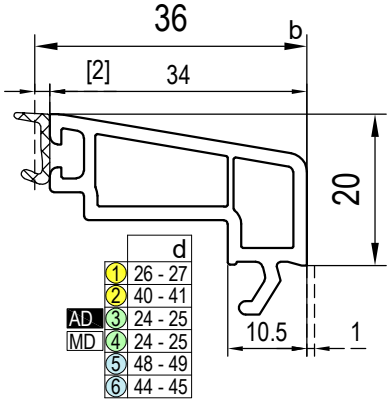
■ 140841 bl
▨ 140871 pw



■ 120740 bl
▨ 120770 pw



■ 120840 bl
▨ 120870 pw



■ 120640 bl
▨ 120670 pw

Glazing beads - Junquillos - Parcloses - Fermavetri

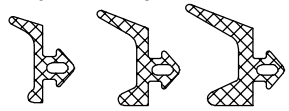
|X| Gaskets 1:1
Gaskets - Juntas - Joints - Guarnizioni

bl black ~ RAL 9005
black - negro
noir - nero

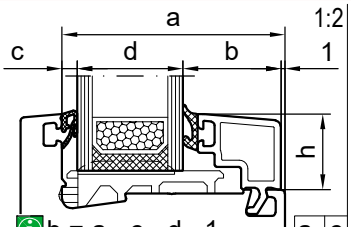
pw papyrus-white ~ RAL 9018
papyrus-white - blanco papiro
gris clair - bianco papiro

Replacement
Replacement - Reemplazo
Remplacement - Sostituzione

-> [2] ~ xxx6xx
-> [3-4] ~ xxx8xx
-> [6] ~ xxx7xx



|X| 429310 bl
|X| 429311 bl
|X| 429312 bl



b = a - c - d - 1

76 mm

		a	c
	energeto neo [1]	1 67	4
	energeto neo + 14 [1]	2 81	4
AD	energeto neo [2]	3 65	4
MD	energeto neo [2]	4 65	4
	170x39 [1] [3]	5 85	-
	170x39 [1] [4]	6 81	-

[1] Sash
Sash - Hoja - Ouvrant - Anta
[2] Frame
Frame - Marco - Dormant - Telaio
[3] 85
[4] 81

d ≥ 24mm
Ⓜ ➡ |J|

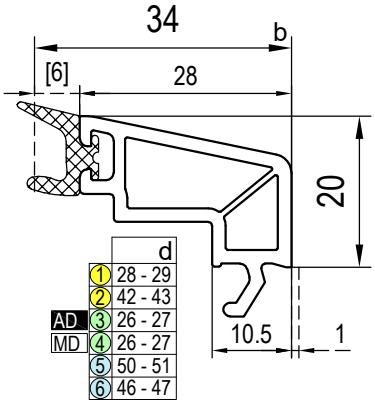
AM 03 A

■ coloured
coloured - colorado - en couleur - colorato
▨ white
white - blanco - blanc - bianco

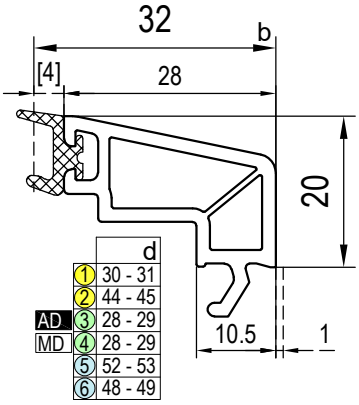
(CL) Classic-line

1:1

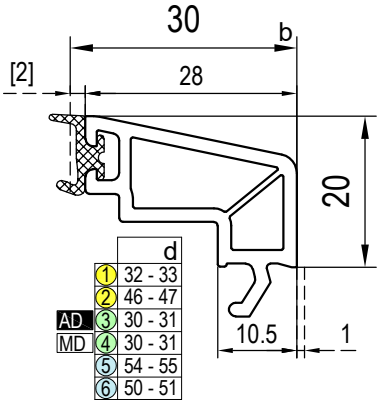
Example ~



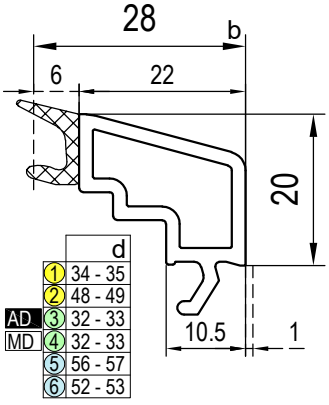
■ 120738 bl
▨ 120768 pw



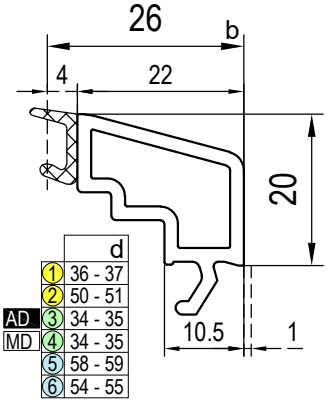
■ 120838 bl
▨ 120868 pw



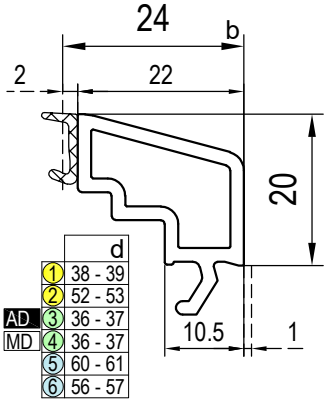
■ 120638 bl
▨ 120668 pw



■ 120736 bl
▨ 120766 pw



■ 120836 bl
▨ 120866 pw



■ 120636 bl
▨ 120666 pw

Glazing beads - Junquillos - Parcloses - Fermavetri

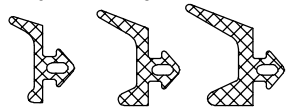
|X| Gaskets 1:1
Gaskets - Juntas - Joints - Guarnizioni

bl black ~ RAL 9005
black - negro
noir - nero

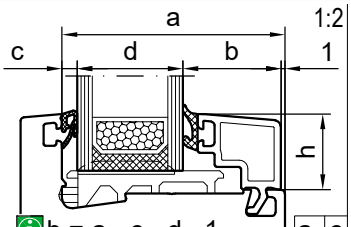
pw papyrus-white ~ RAL 9018
papyrus-white - blanco papiro
gris clair - bianco papiro

Replacement
Replacement - Reemplazo
Remplacement - Sostituzione

-> [2] ~ xxx6xx
-> [3-4] ~ xxx8xx
-> [6] ~ xxx7xx



|X| 429310 bl
|X| 429311 bl
|X| 429312 bl



1:2

b = a - c - d - 1

76 mm

		a	c
	energeto neo [1]	1 67	4
	energeto neo + 14 [1]	2 81	4
AD	energeto neo [2]	3 65	4
MD	energeto neo [2]	4 65	4
	170x39 [1] [3]	5 85	-
	170x39 [1] [4]	6 81	-

[1] Sash
Sash - Hoja - Ouvrant - Anta
[2] Frame
Frame - Marco - Dormant - Telaio
[3] 85
[4] 81

d ≥ 24mm
Ⓜ ➡ |J|

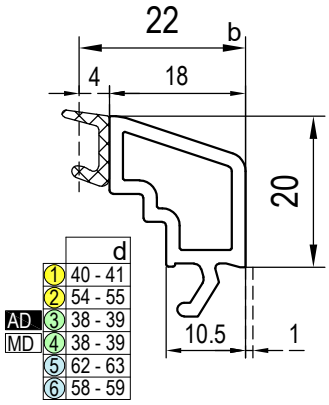
AM 03 A

■ coloured
coloured - colorado - en couleur - colorato
▨ white
white - blanco - blanc - bianco

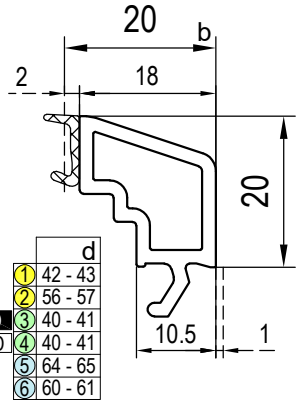
(CL) Classic-line

1:1

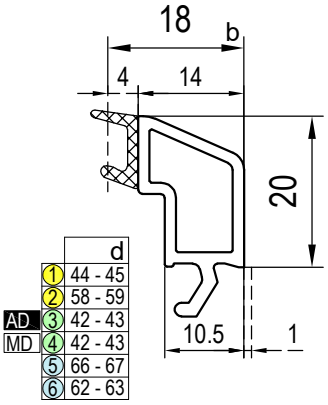
Example ~



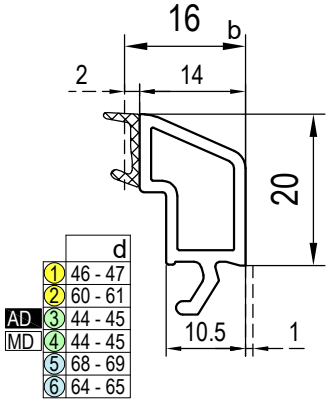
■ 120835 bl
▨ 120865 pw



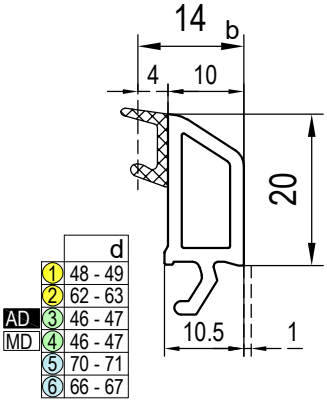
■ 120635 bl
▨ 120665 pw



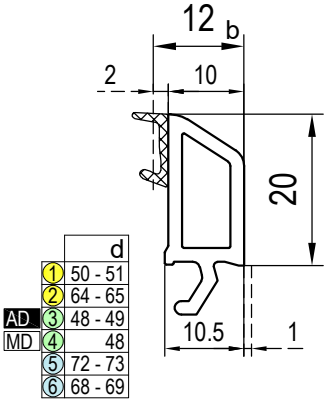
■ 120833 bl
▨ 120863 pw



■ 120633 bl
▨ 120663 pw



■ 120832 bl
▨ 120862 pw



■ 120632 bl
▨ 120662 pw

Glazing beads - Junquillos - Parcloses - Fermavetri

|X| Gaskets 1:1

Gaskets - Juntas - Joints - Guarnizioni

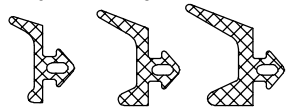
bl black ~ RAL 9005
black - negro
noir - nero

pw papyrus-white ~ RAL 9018
papyrus-white - blanco papiro
gris clair - bianco papiro

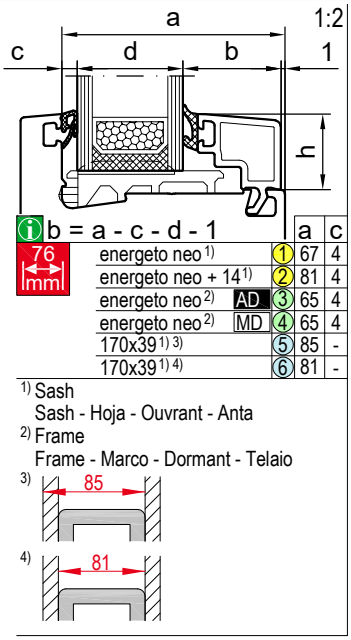
Replacement

Replacement - Reemplazo
Remplacement - Sostituzione

-> [2] ~ xxx6xx
-> [3-4] ~ xxx8xx
-> [6] ~ xxx7xx



|X| 429310 bl
|X| 429311 bl
|X| 429312 bl

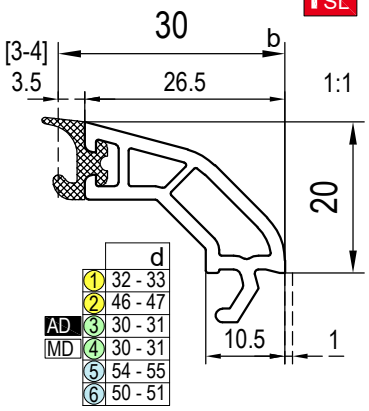


d ≥ 24mm
Ⓜ ➡ |J|

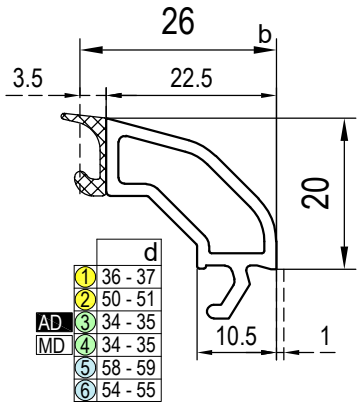
■ coloured
coloured - colorado - en couleur - colorato
▨ white
white - blanco - blanc - bianco

AM 03 A

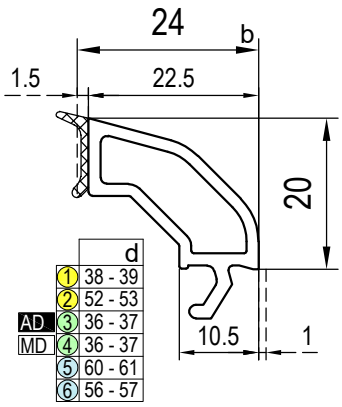
(SL) Soft-line



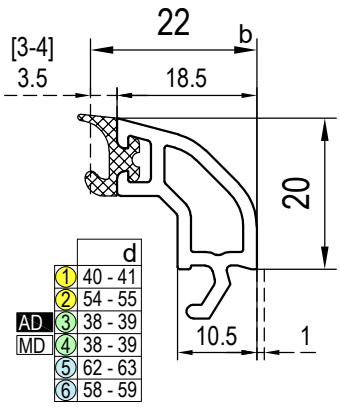
■ 120855 bl
▨ 120885 pw



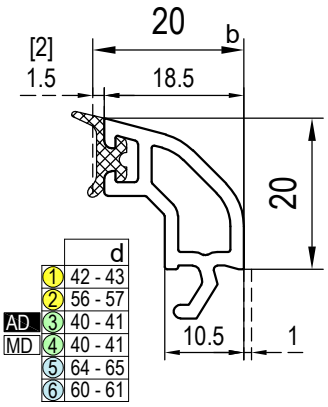
■ 120846 bl
▨ 120876 pw



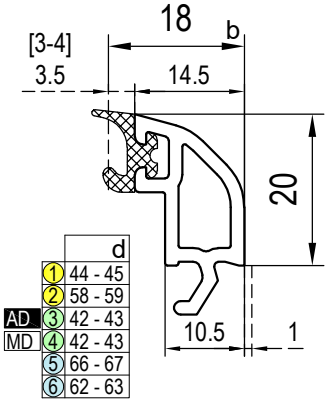
■ 120646 bl
▨ 120676 pw



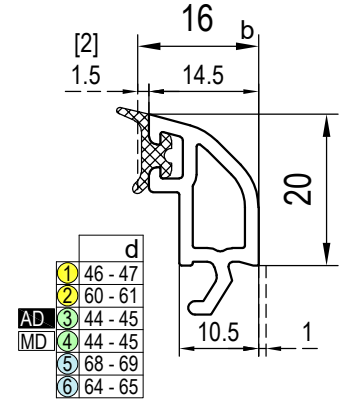
■ 120847 bl
▨ 120877 pw



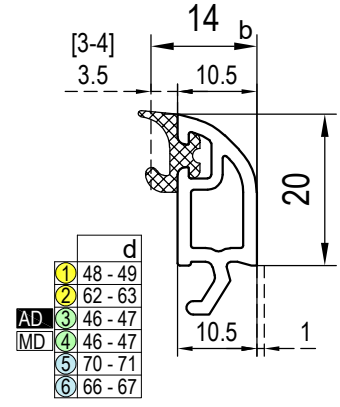
■ 120647 bl
▨ 120677 pw



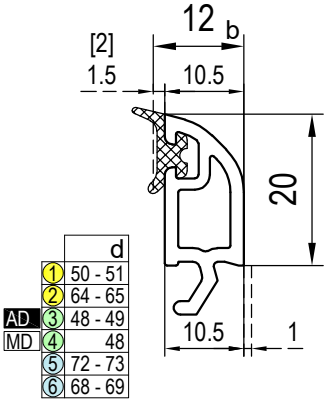
■ 120851 bl
▨ 120881 pw



■ 120651 bl
▨ 120681 pw



■ 120849 bl
▨ 120879 pw



■ 120649 bl
▨ 120679 pw

Example ~

Glazing beads - Junquillos - Parcloses - Fermavetri

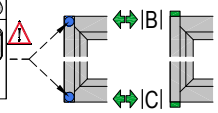
|B| Inlet funnel 1:5
Inlet funnel - Embocadura guía persiana
Tulipe de coulisse - Bocchettone

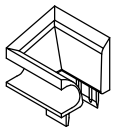
|C| End caps 1:5
End caps - Tapas de remate
Embouts - Tappi

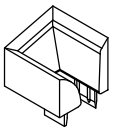
|G| Nipple screw / Clip 1:1
Nipple screw / Clip - Tornillo para clip / Clip
Vis clip / Clip - Vite clip / Clip

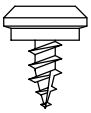
|Y| Brush seals 1:1
Brush seals - Juntas de felpillo
Joints à brosse - Guarnizioni a spazzola

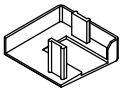
bl
black
black
negro
noir
nero



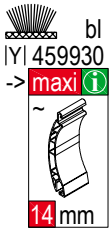

|B| 620044
-> 04 C
120230


|B| 620042

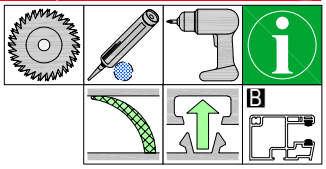

|G| 652923

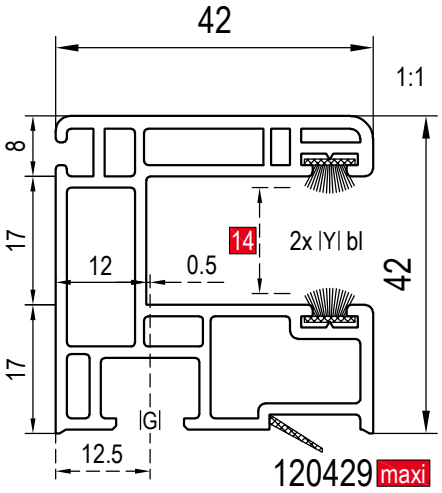

|C| 620032

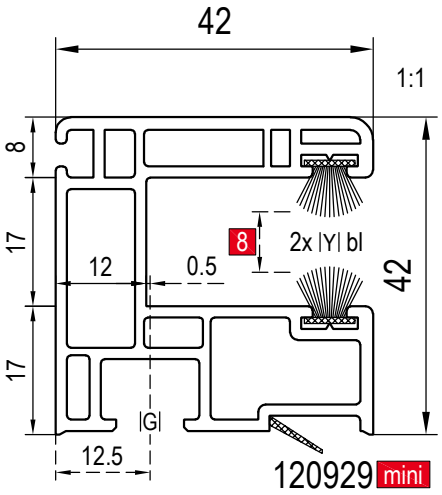
Replacement
Replacement - Reemplazo
Remplacement - Sostituzione



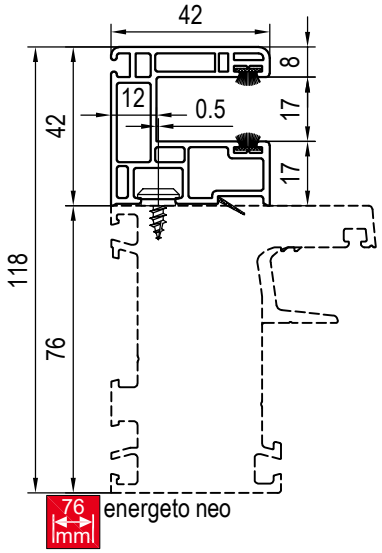








Example ~



1:2

Roller shutter guides - Guías de persiana - Coulisse de volet roulant - Guide avvolgibili

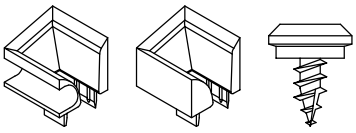
|B| Inlet funnel 1:5
Inlet funnel - Embocadura guía persiana
Tulipe de coulisse - Bocchettone

|C| End caps -
End caps - Tapas de remate
Embouts - Tappi

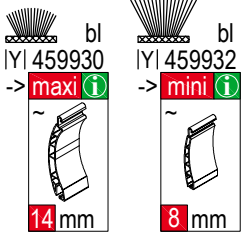
|G| Nipple screw / Clip 1:1
Nipple screw / Clip - Tornillo para clip / Clip
Vis clip / Clip - Vite clip / Clip

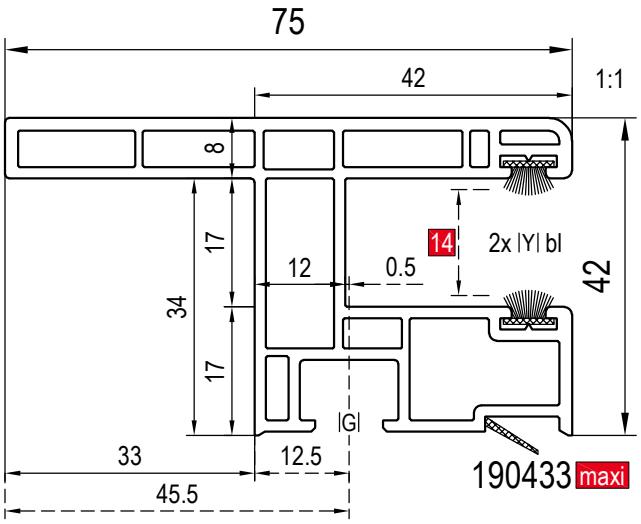
|Y| Brush seals 1:1
Brush seals - Juntas de felpillo
Joints à brosse - Guarnizioni a spazzola

bl
black
black
negro
noir
nero



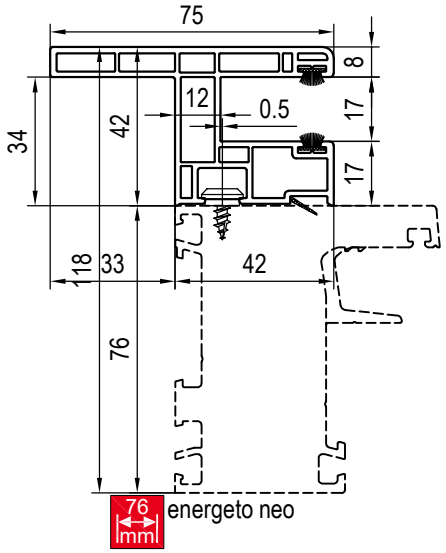
Replacement
Replacement - Reemplazo
Remplacement - Sostituzione





190433 - |Y| 459930 + |Y| 459932 ~ mini

Example ~



1:2

Roller shutter guides - Guías de persiana - Coulisse de volet roulant - Guide avvolgibili

|B| Inlet funnel 1:5
Inlet funnel - Embocadura guía persiana
Tulipe de coulisse - Bocchettone

|C| End caps 1:5
End caps - Tapas de remate
Embouts - Tappi

|G| Nipple screw / Clip 1:1
Nipple screw / Clip - Tornillo para clip / Clip
Vis clip / Clip - Vite clip / Clip

|Y| Brush seals 1:1
Brush seals - Juntas de felpillo
Joints à brosse - Guarnizioni a spazzola

bl
black
black
negro
noir
nero

AI 05 R 260406

|B| 620038

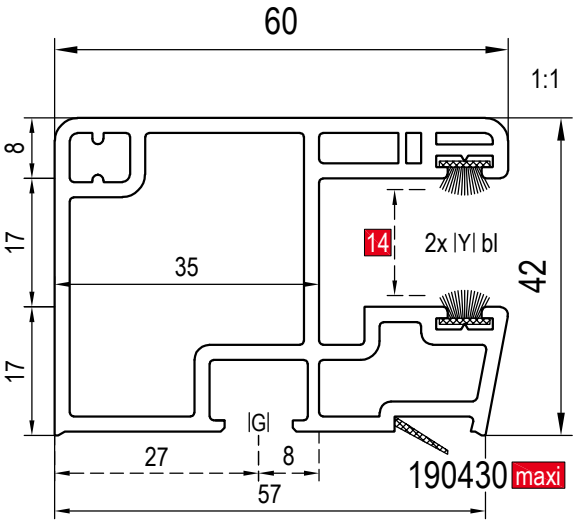
|G| 652923

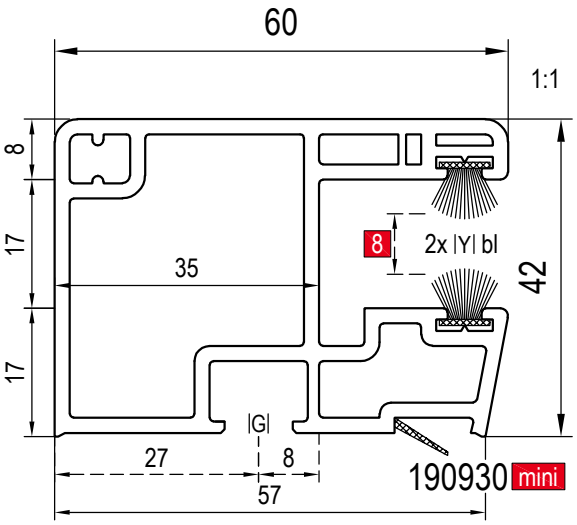
|C| 690030

Replacement
Replacement - Reemplazo
Remplacement - Sostituzione

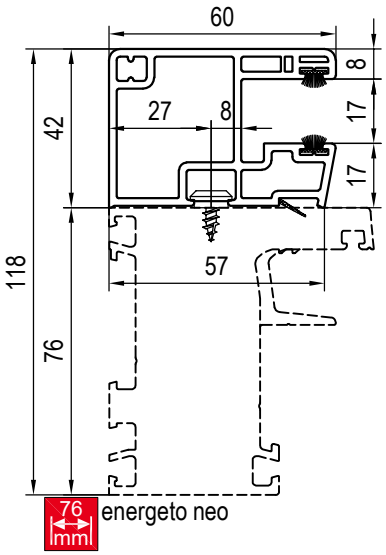
|Y| 459930 bl -> maxi 14 mm

|Y| 459932 bl -> mini 8 mm





Example ~



1:2

Roller shutter guides - Guías de persiana - Coulisse de volet roulant - Guide avvolgibili

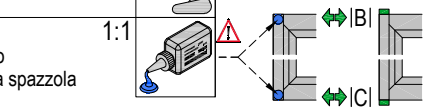
|B| Inlet funnel 1:5
Inlet funnel - Embocadura guía persiana
Tulipe de coulisse - Bocchettone

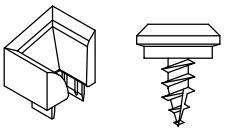
|C| End caps 1:5
End caps - Tapas de remate
Embouts - Tappi

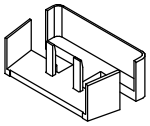
|G| Nipple screw / Clip 1:1
Nipple screw / Clip - Tornillo para clip / Clip
Vis clip / Clip - Vite clip / Clip

|Y| Brush seals 1:1
Brush seals - Juntas de felpillo
Joints à brosse - Guarnizioni a spazzola

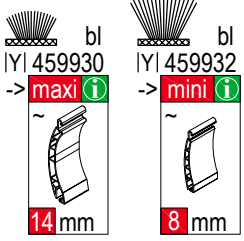
bl
black
black
negro
noir
nero

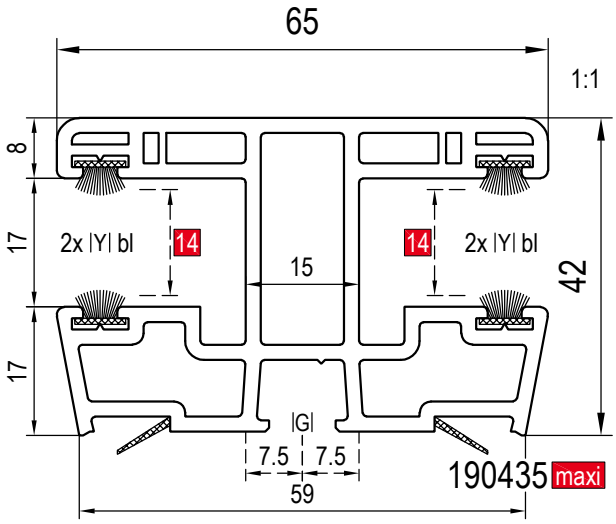


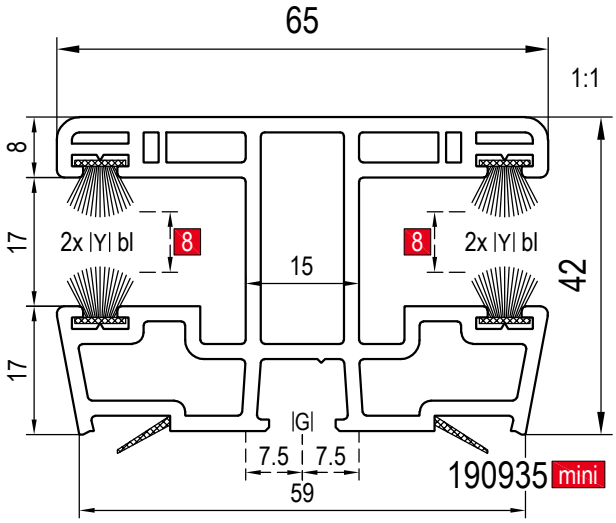




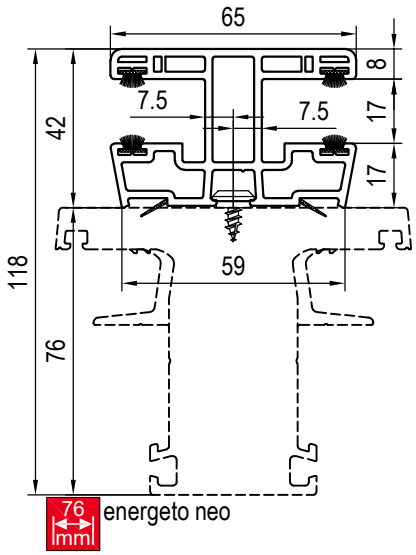
Replacement
Replacement - Reemplazo
Remplacement - Sostituzione





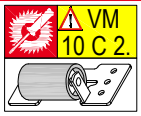


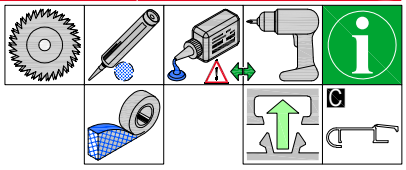
Example ~

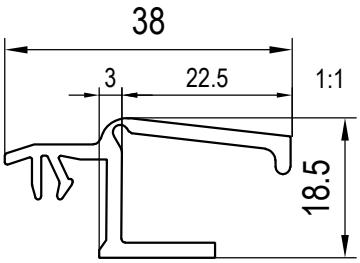


1:2

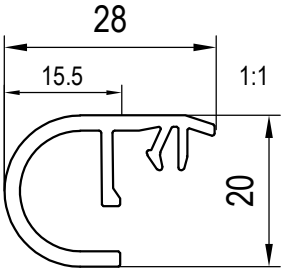
Roller shutter guides - Guías de persiana - Coulisse de volet roulant - Guide avvolgibili





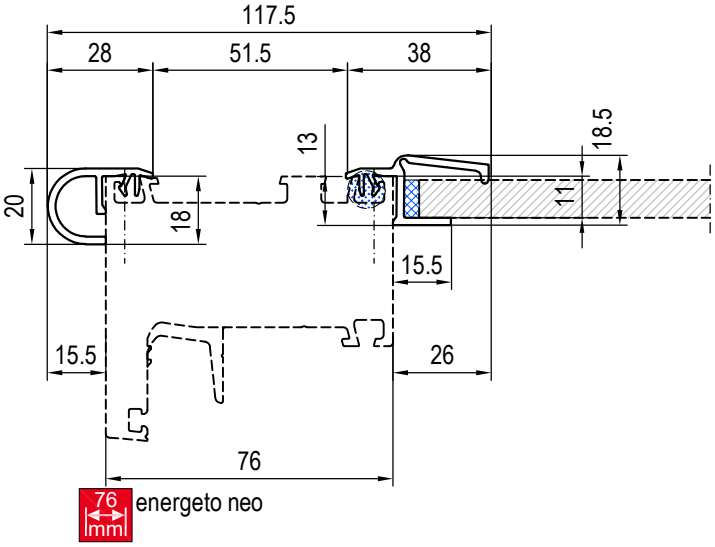


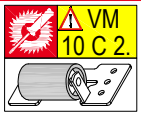
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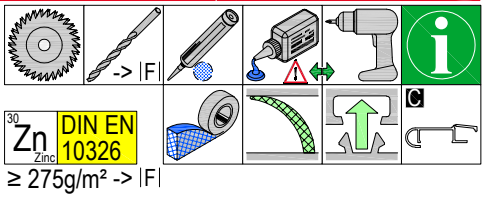


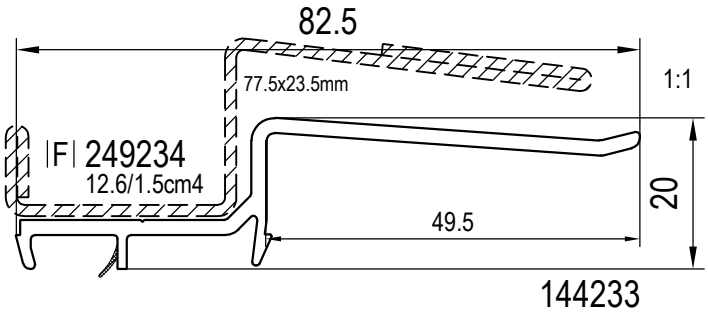
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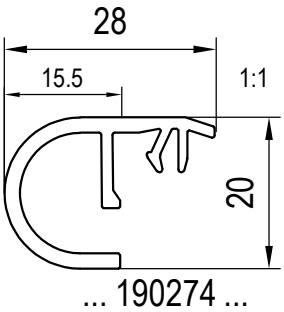
Example ~



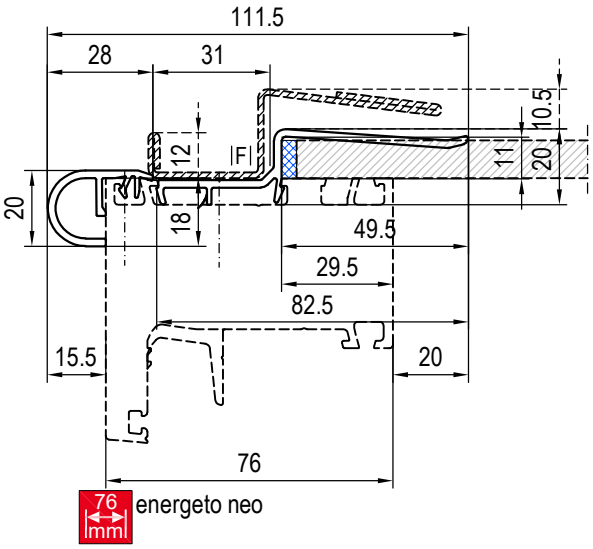

VM
10 C 2.

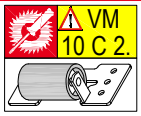

-> |F|
30 Zn Zinc DIN EN 10326
≥ 275g/m² -> |F|

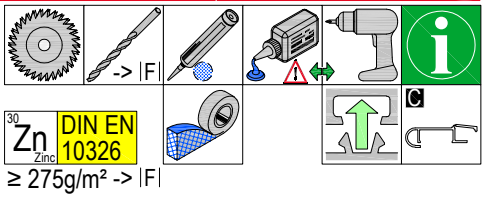

82.5
77.5x23.5mm
1:1
|F| 249234
12.6/1.5cm4
49.5
20
144233

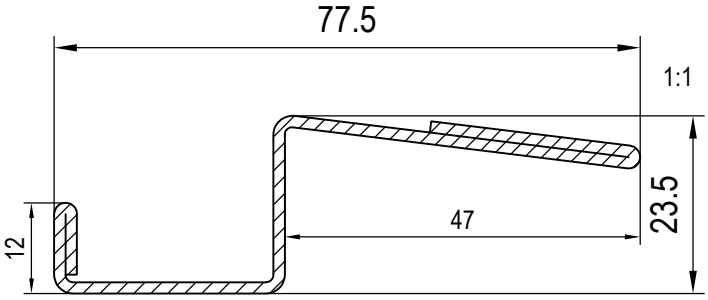

28
15.5
1:1
20
... 190274 ...

Example ~

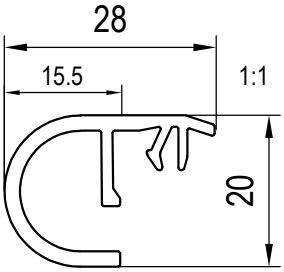

111.5
28
31
10.5
12
|F|
11
20
20
18
49.5
29.5
82.5
15.5
20
76
76
lmml
energeto neo



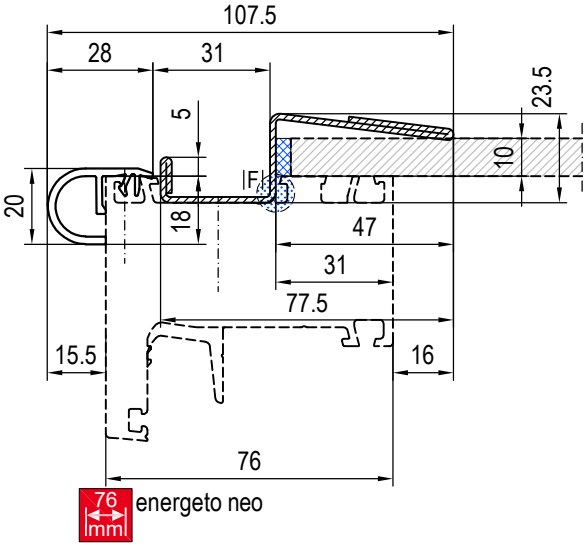




|F| 249234
12.6/1.5cm4

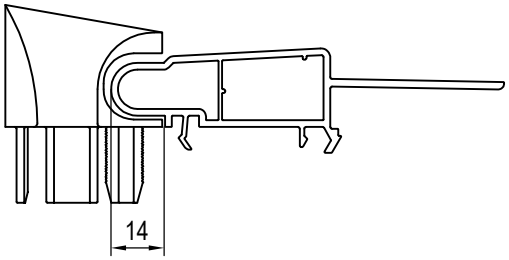


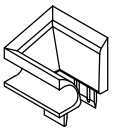
... 190274



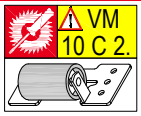
Example ~

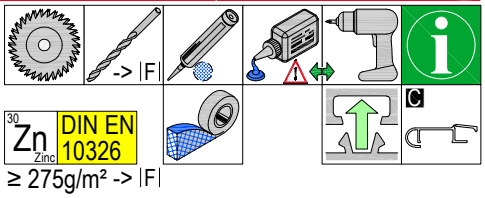
|B| Inlet funnel 1:2, 1:5
Inlet funnel - Embocadura guía persiana
Tulipe de coulisse - Bocchettone

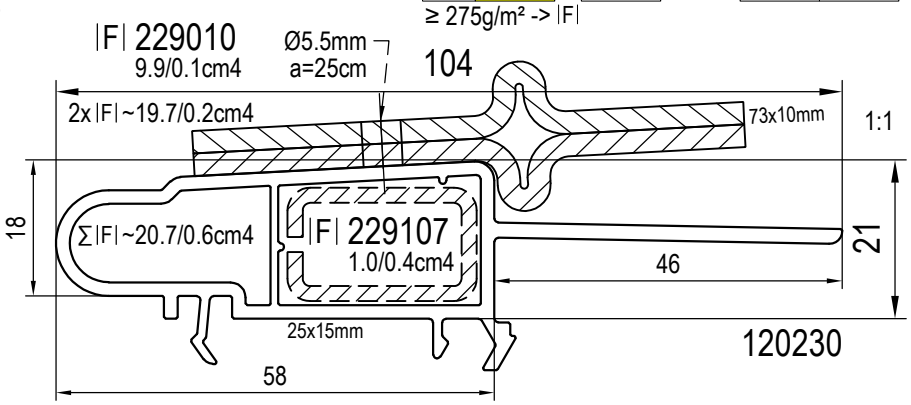


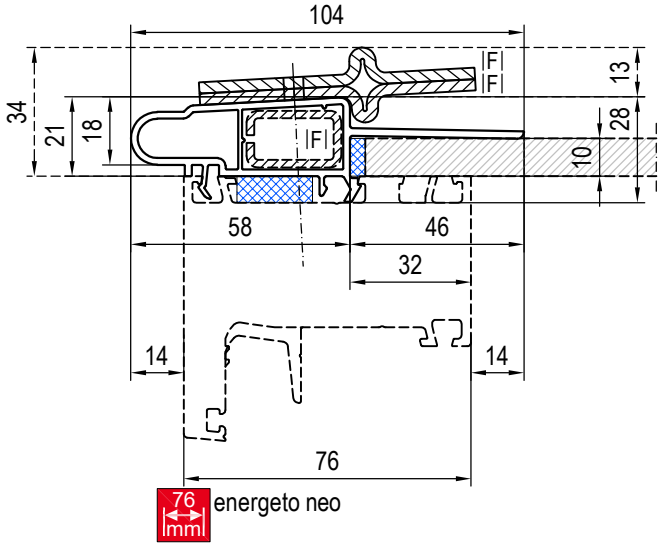


|B| 620044
-> 04 B
120429/120929,
190433



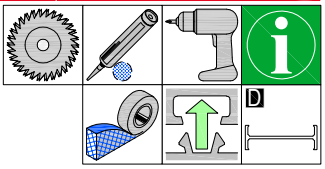


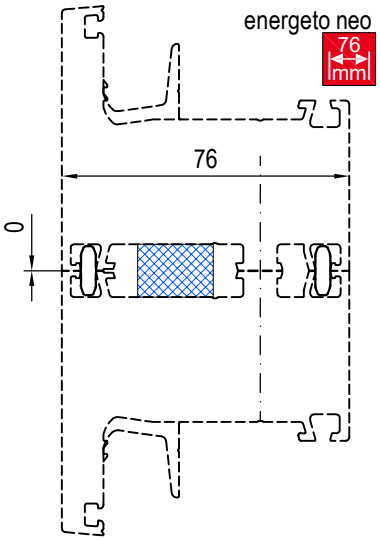


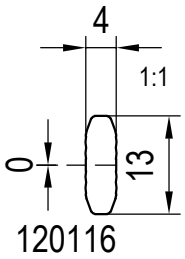


Example ~

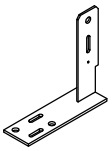
VM 08 C 8.





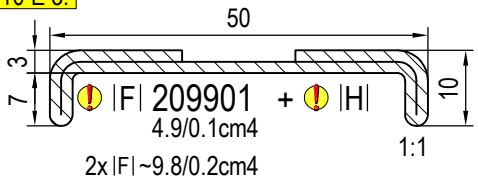


Example ~

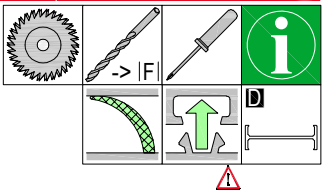


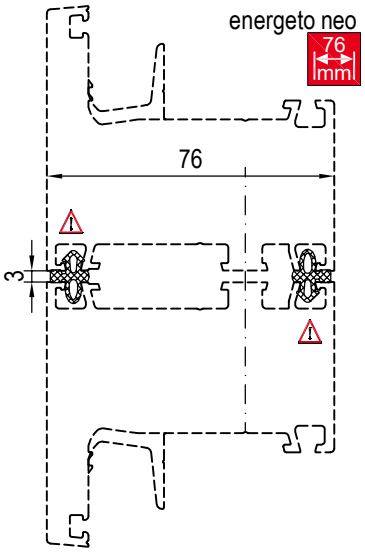
|H| 682338 -> |F| 209901
Installation / Mounting anchor
Installation / Mounting anchor
Montaje / Anclaje para montaje
Montage / Patte de fixation murale
Montaggio / Bullone di montaggio

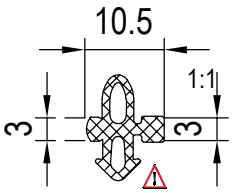
VM 10 E 3.



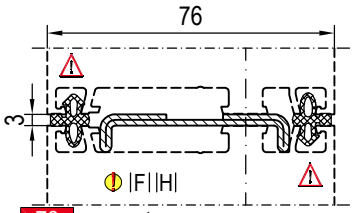
VM 08 C 8.
VM 06 A-Z
Statics
Statics - Estática
Statique - Statica



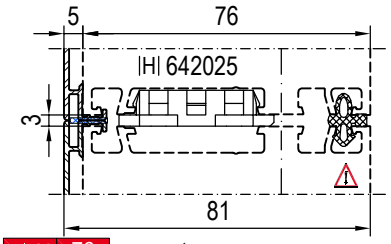




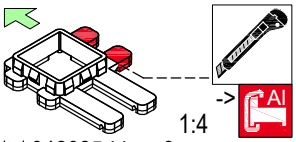
|X| 449140 bl
|X| 447140 pw
Gaskets
Gaskets - Juntas
Joints - Guarnizioni



Al VM 08 L 7.



Al 76 mm energeto neo
|P| **aluskin**



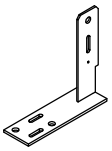
|H| 642025 bl

Example ~

bl	pw
black	papyrus-white
black	papyrus-white
negro	blanco papiro
noir	gris clair
nero	bianco papiro

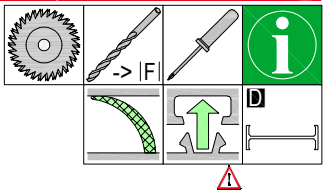
1:2

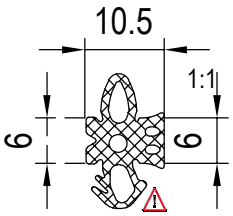
Couplings - Acoplamientos - Couplages - Accoppiamenti



|H| 682338 -> |F| 209901
Installation / Mounting anchor
Installation / Mounting anchor
Montaje / Anclaje para montaje
Montage / Patte de fixation murale
Montaggio / Bullone di montaggio

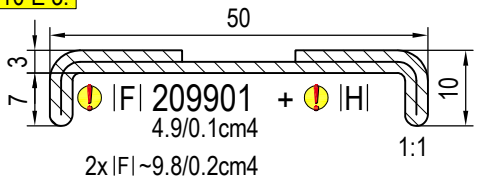
VM 08 C 8.
VM 06 A-Z
Statics
Statics - Estática
Statique - Statica



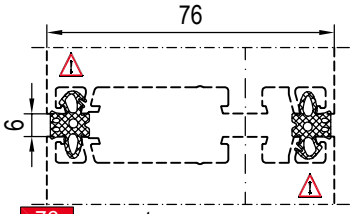


|X| 449141 bl
Gaskets
Gaskets - Juntas
Joints - Guarnizioni

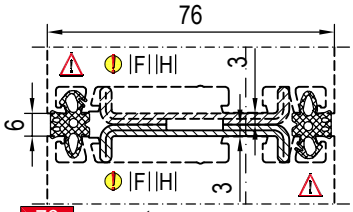
VM 10 E 3.



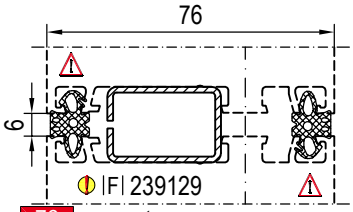
2x |F| ~9.8/0.2cm4



76 mm energeto neo

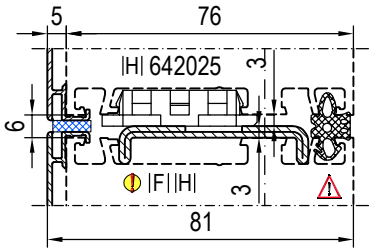


76 mm energeto neo

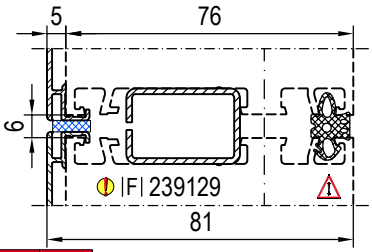


76 mm energeto neo

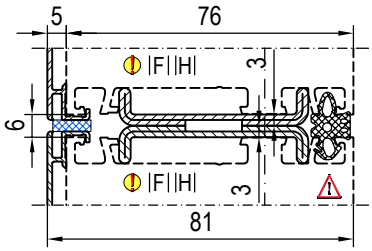
Example ~



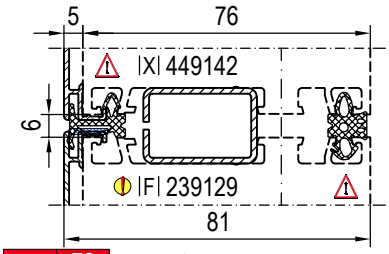
Al 76 mm energeto neo
|P| aluskin



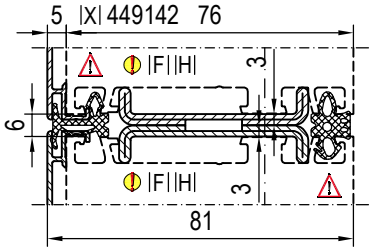
Al 76 mm energeto neo
|P| aluskin



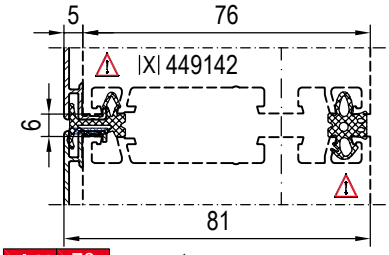
Al 76 mm energeto neo
|P| aluskin



Al 76 mm energeto neo
|P| aluskin

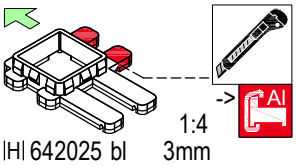


Al 76 mm energeto neo
|P| aluskin

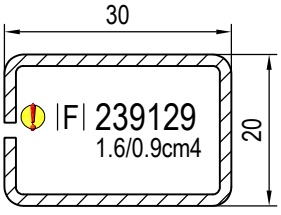


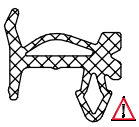
Al 76 mm energeto neo
|P| aluskin

Al VM 08 L 7.



|H| 642025 bl



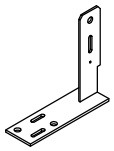


|X| 449142 bl
Gaskets 1:1
Gaskets - Juntas
Joints - Guarnizioni

bl
black
black
negro
noir
nero

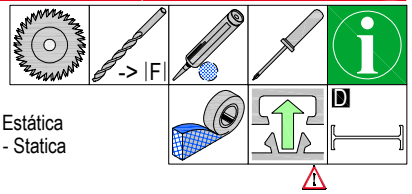
1:2

Couplings - Acoplamientos - Couplages - Accoppiamenti

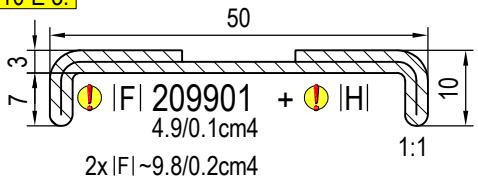


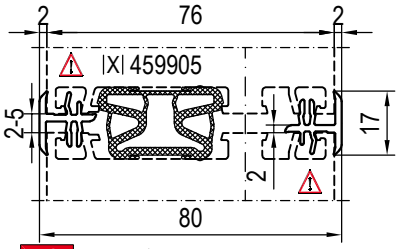
|H| 682338 -> |F| 209901
Installation / Mounting anchor
Installation / Mounting anchor
Montaje / Anclaje para montaje
Montage / Patte de fixation murale
Montaggio / Bullone di montaggio

VM 08 C 8.
VM 06 A-Z
Statics
Statics - Estática
Statique - Statica

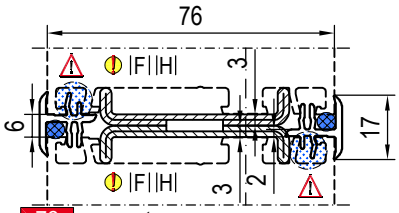


VM 10 E 3.

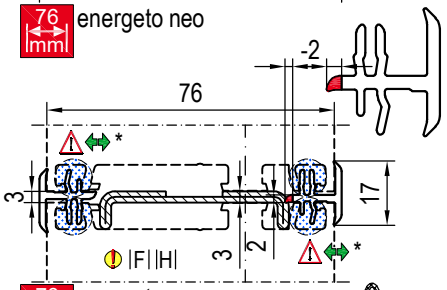




76 mm energeto neo



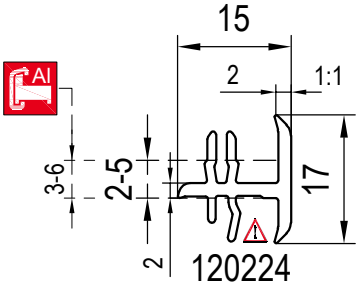
76 mm energeto neo

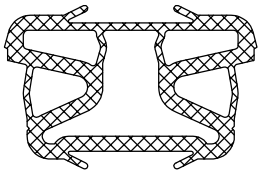


76 mm energeto neo



*|X| 449140 bl
|X| 447140 pw

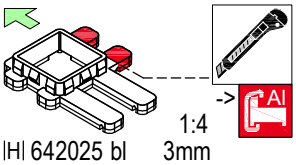




|X| 459905 bl
Gaskets 1:1
Gaskets - Juntas
Joints - Guarnizioni

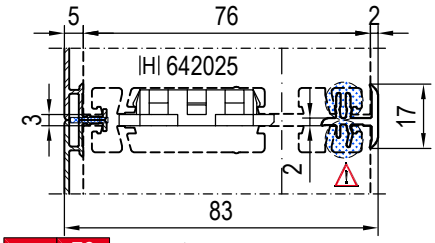
Ø5mm, EPDM:
Round chord
Round chord - Cuerda de obduración
Fond de joint - Cordella di guarnizione

AI VM 08 L 7.

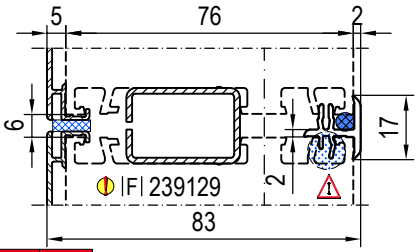


1:4
|H| 642025 bl 3mm
|H| 645050 gn 5mm

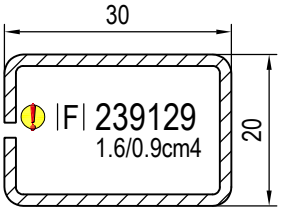
Example ~

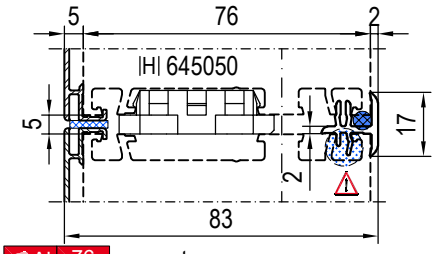


AI 76 mm energeto neo |P| aluskin

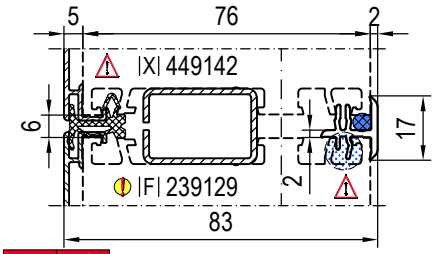


AI 76 mm energeto neo |P| aluskin

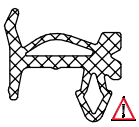




AI 76 mm energeto neo |P| aluskin



AI 76 mm energeto neo |P| aluskin

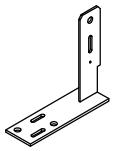
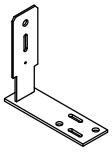
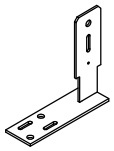


|X| 449142 bl
Gaskets 1:1
Gaskets - Juntas
Joints - Guarnizioni

bl	gn
black	green
black	green
negro	verde
noir	vert
nero	verde

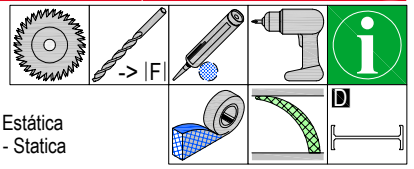
1:2

Couplings - Acoplamientos - Couplages - Accoppiamenti

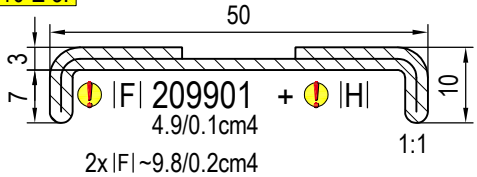
|H| 682338 -> |F| 209901 |H| 682330, 682331 -> |F| 209900, 289018

VM 08 C 8.
VM 06 A-Z
Statics
Statics - Estática
Statique - Statica

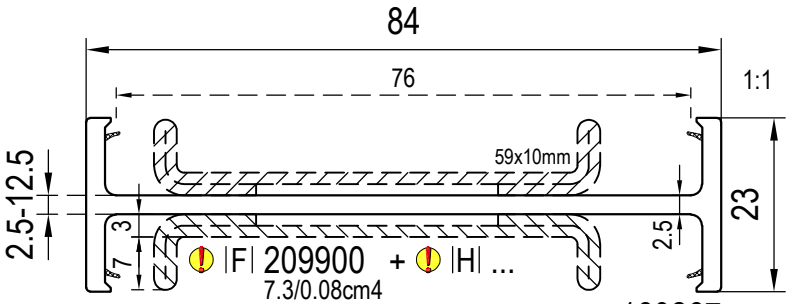


Installation / Mounting anchor
Installation / Mounting anchor
Montaje / Anclaje para montaje
Montage / Patte de fixation murale
Montaggio / Bullone di montaggio

VM 10 E 3.



2x |F| ~9.8/0.2cm4

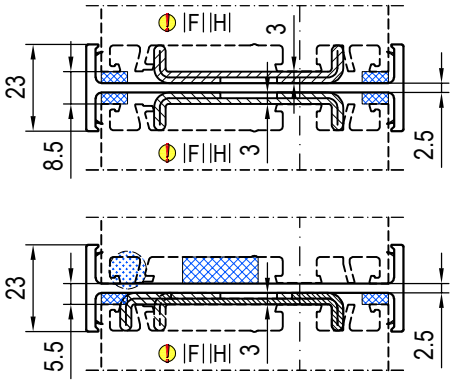


1x |F| 209900
+ 1x |F| 209901
~12.2/0.9cm4

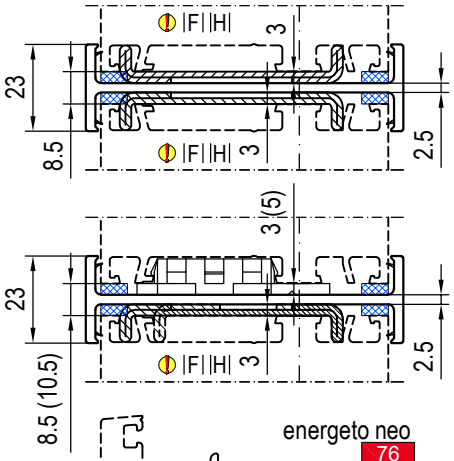
2x |F| ~14.6/0.2cm4

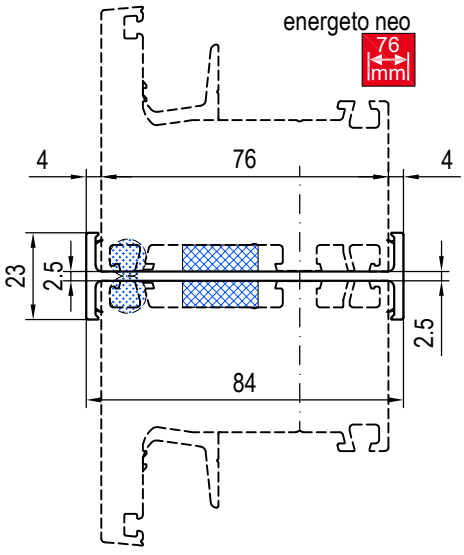
Example ~

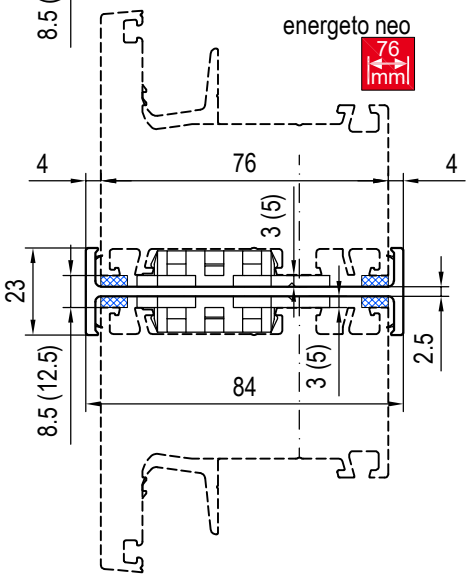
~ 2x |F| 209901

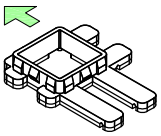


~ 2x |F| 209900









-> 76 |mm|

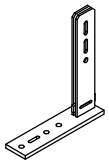
1:4

|H| 642025 bl 3mm
|H| 645050 gn 5mm (...)

bl	gn
black	green
black	green
negro	verde
noir	vert
nero	verde

1:2

Couplings - Acoplamientos - Couplages - Accoppiamenti

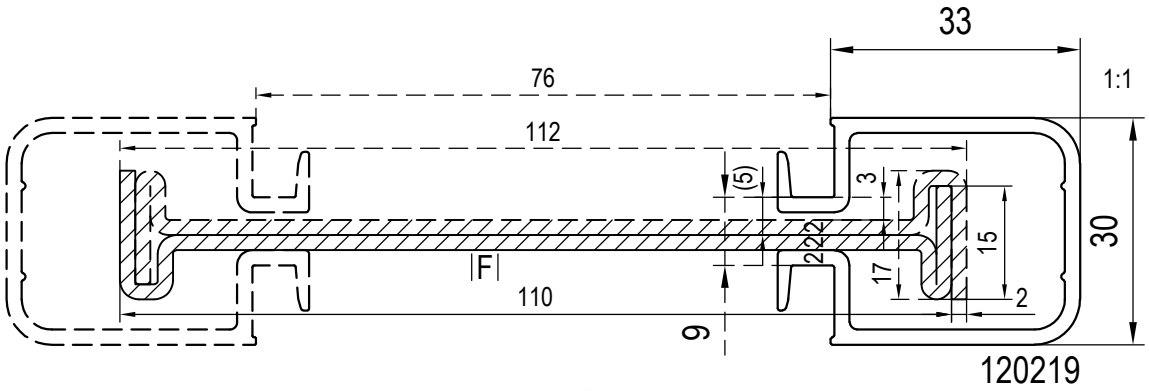


|H| 622019 -> |F| 229019

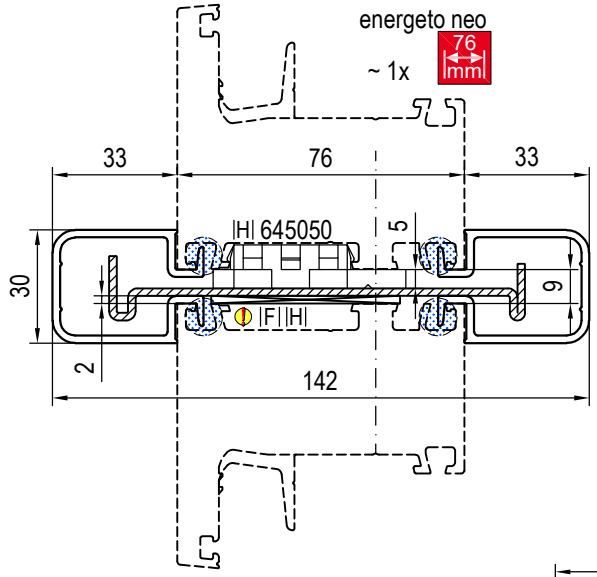
Installation / Mounting anchor
Installation / Mounting anchor
Montaje / Anclaje para montaje
Montage / Patte de fixation murale
Montaggio / Bullone di montaggio

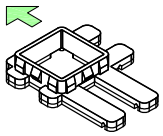
VM 10 E 3.

VM 08 C 8.
VM 06 A-Z
Statics
Statics - Estática
Statique - Statica

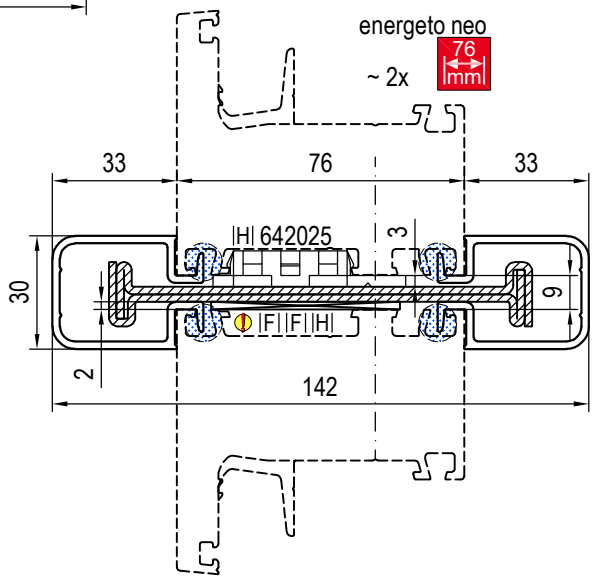


|F| 229019 + |H| ...
1x |F| 43.3/0.2cm4
2x |F| ~86.6/0.4cm4



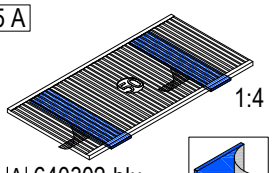


1:4
-> 76 mm
|H| 642025 bl 3mm
|H| 645050 gn 5mm



Example ~

~ 05 A



1:4

|A| 640302 blu
2x50x100mm

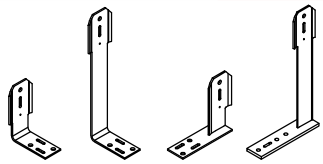




blu	bl	gn
blue	black	green
blue	black	green
azul	negro	verde
bleu	noir	vert
blu	nero	verde

1:2

Couplings - Acoplamientos - Couplages - Accoppiamenti



|H| 622338, 622354, 682332, 682335 -> |F| 229018, 289218

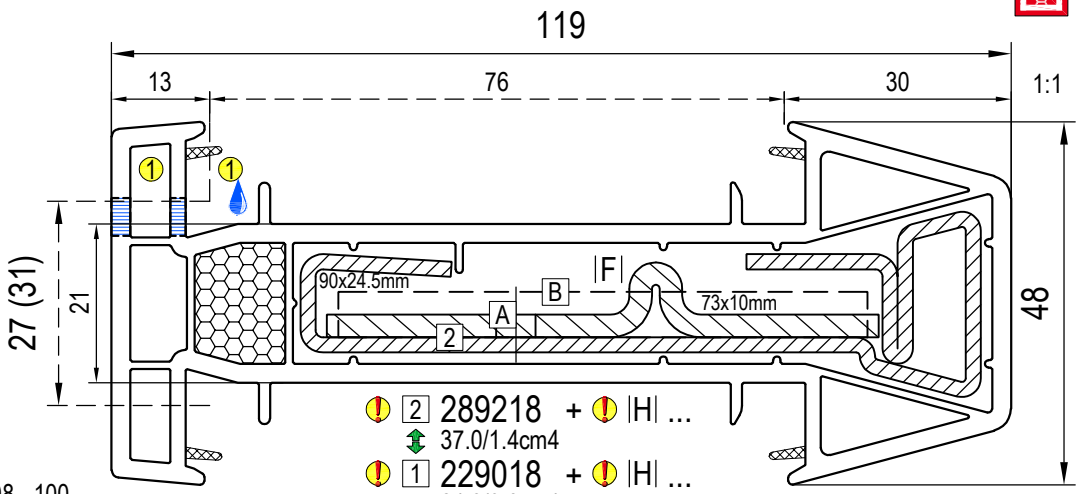
Installation / Mounting anchor
Installation / Mounting anchor
Montaje / Anclaje para montaje
Montage / Patte de fixation murale
Montaggio / Bullone di montaggio

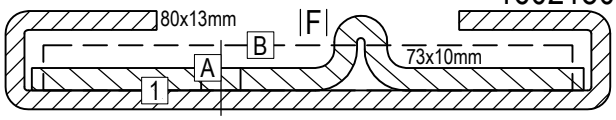
VM 10 E 3.

~30mm

VM 08 C 8.
VM 06 A-Z

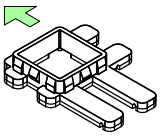
Statics
Statics - Estática
Statique - Statica





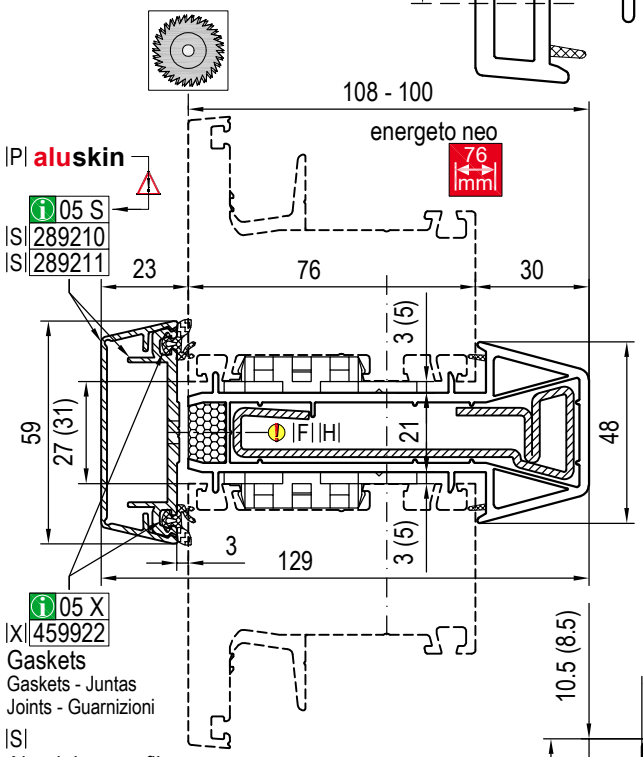
A 229010
9.9/0.1cm4
B 70x6mm*
17.1/0.1cm4
* Steel
Steel - Acero
Acier - Acciaio

|F|	+	|F|	~Ix/Iy
1	229018			~24.8/0.8cm4
1	229018	+ A	229010	~34.7/0.9cm4
2	289218			~37.0/1.4cm4
1	229018	+ B	70x6mm*	~41.9/0.9cm4
2	289218	+ A	229010	~46.9/1.5cm4
2	289218	+ B	70x6mm*	~54.1/1.5cm4



1:4 -> 76 mm

|H| 642025 bl 3mm
|H| 645050 gn 5mm (...)

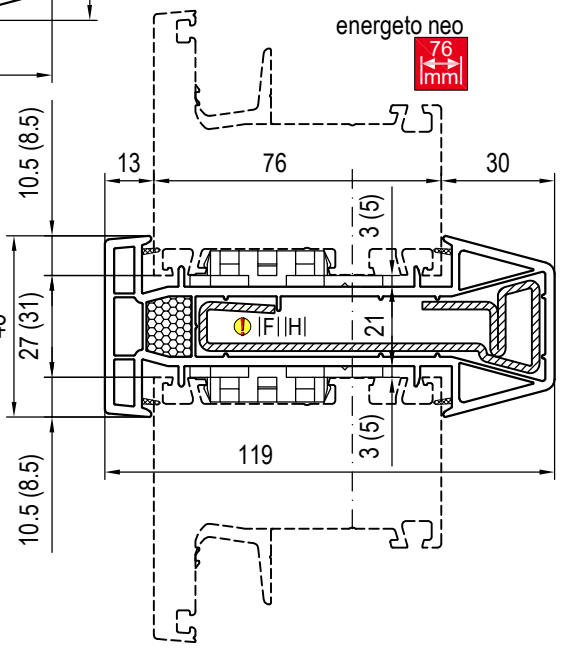


05 X
|X| 459922
Gaskets
Gaskets - Juntas
Joints - Guarnizioni

|S|
Aluminium profiles
Aluminium profiles - Perfiles de aluminio
Profilés aluminium - Profili in alluminio

Al VM 08 L 7.

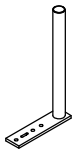
Example ~



bl	gn
black	green
black	green
negro	verde
noir	vert
nero	verde

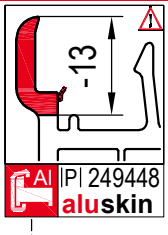
1:2

Couplings - Acoplamientos - Couplages - Accoppiamenti



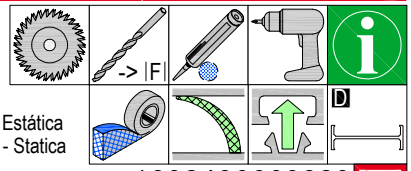
|H| 622041 -> |F| 229040
Installation / Mounting anchor
Installation / Mounting anchor
Montaje / Anclaje para montaje
Montage / Patte de fixation murale
Montaggio / Bullone di montaggio

VM 10 E 3.

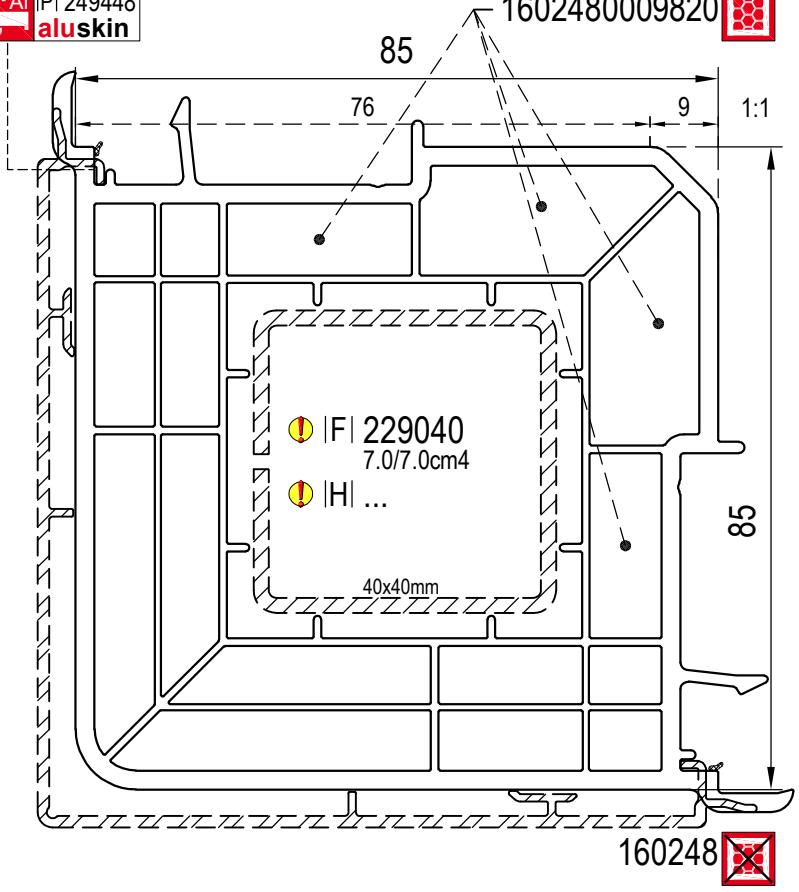


VM 08 C 8.
VM 06 A-Z

Statics
Statics - Estática
Statique - Statica

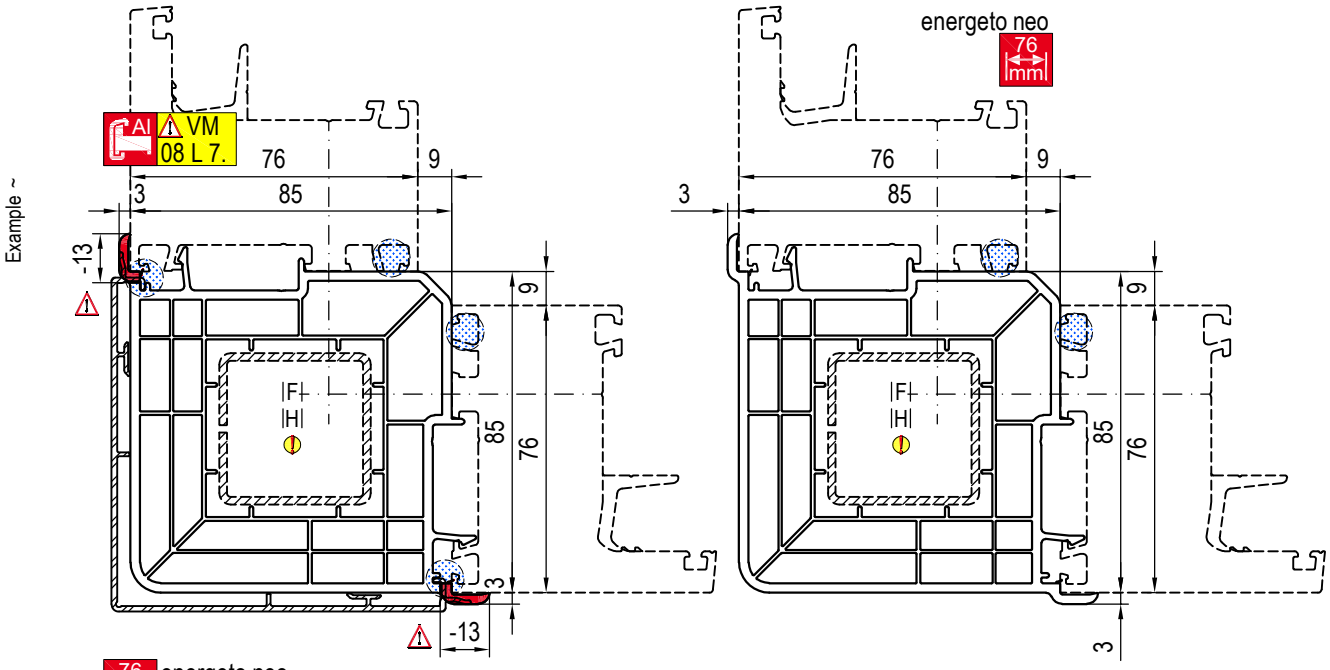


1602480009820



160248

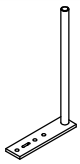
Example ~



76 mm energeto neo
|P| aluskin

1:2

Couplings - Acoplamientos - Couplages - Accoppiamenti



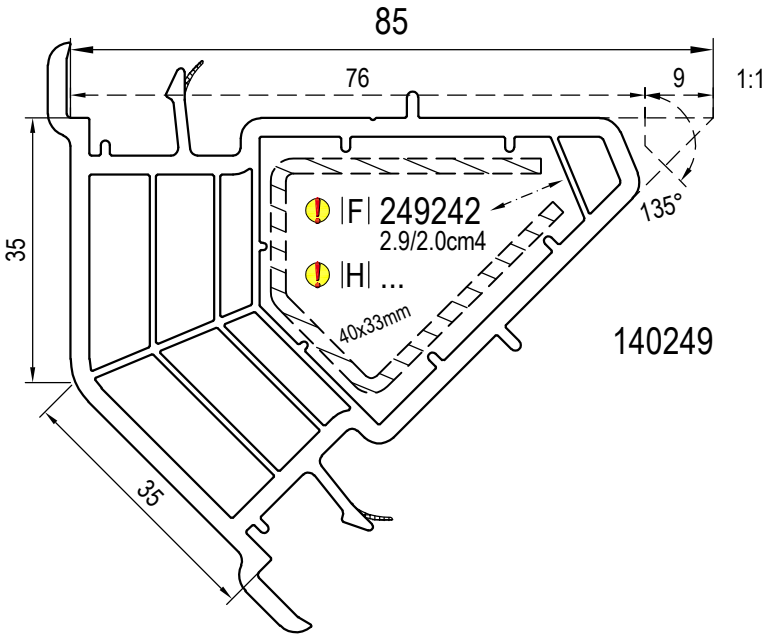
|H| 622142 -> |F| 249242

Installation / Mounting anchor
Installation / Mounting anchor
Montaje / Anclaje para montaje
Montage / Patte de fixation murale
Montaggio / Bullone di montaggio

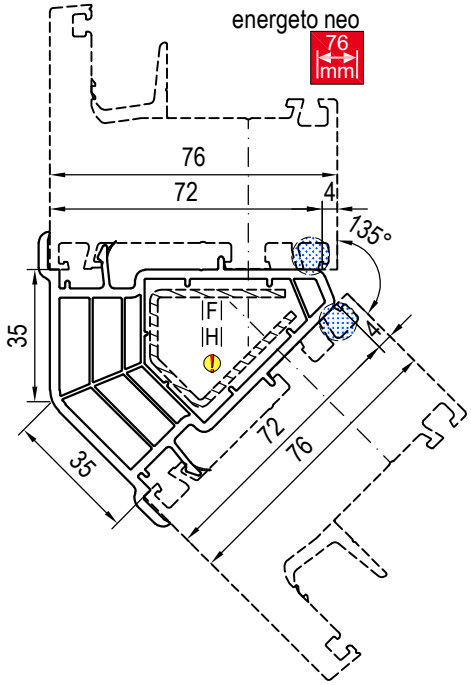
VM 10 E 3.

VM 08 C 8.
VM 06 A-Z

Statics
Statics - Estática
Statique - Statica



Example ~





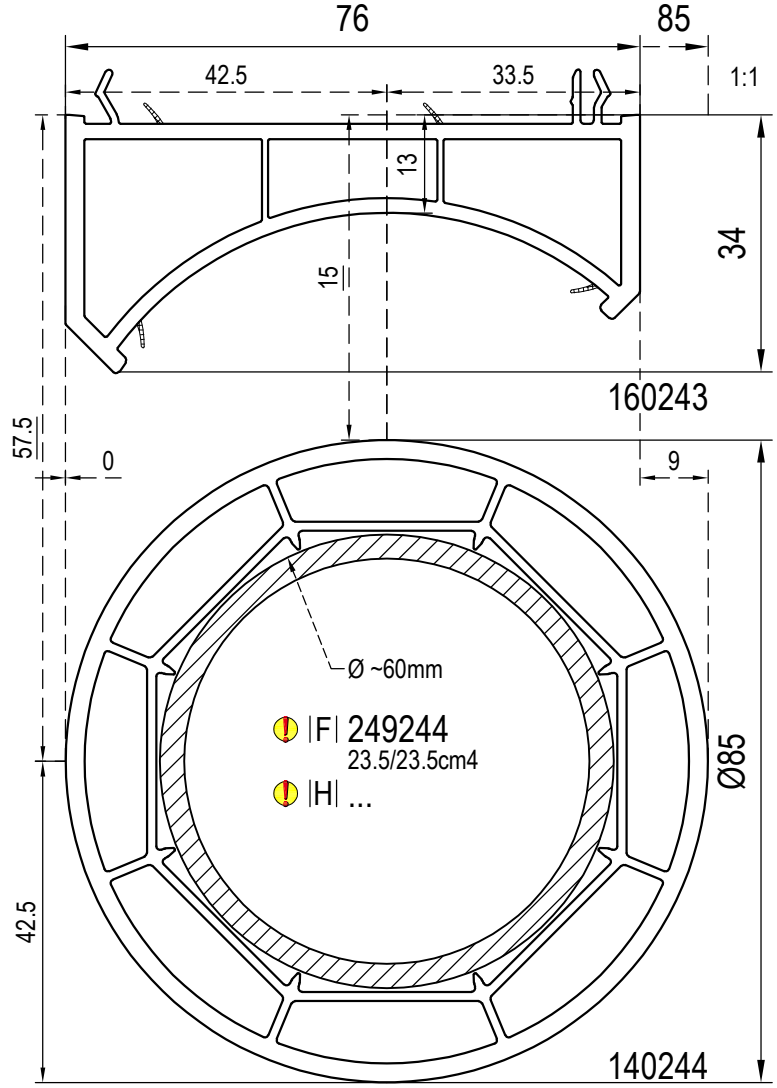
|H| 622333 -> |F| 249244

Installation / Mounting anchor
Installation / Mounting anchor
Montaje / Anclaje para montaje
Montage / Patte de fixation murale
Montaggio / Bullone di montaggio

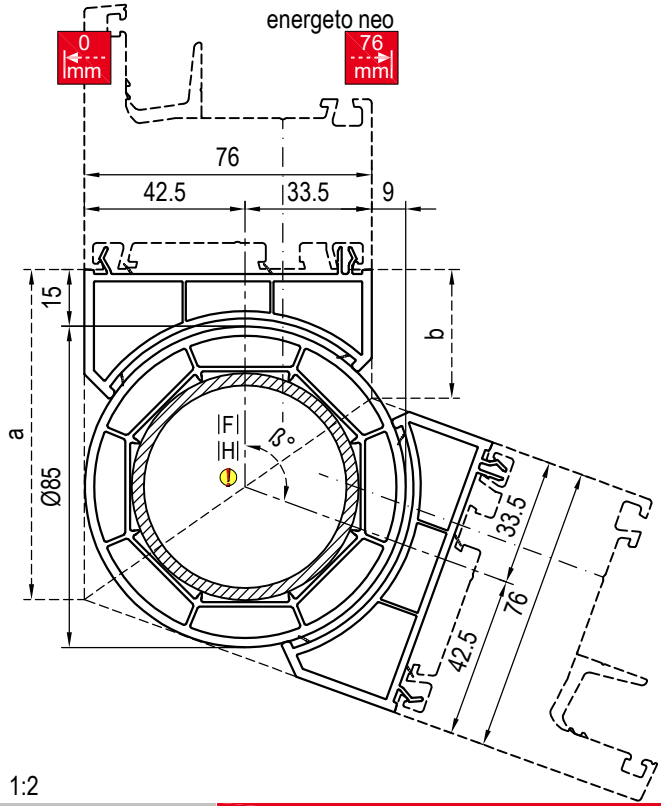
VM 10 E 3.

VM 08 C 8.
VM 06 A-Z

Statics
Statics - Estática
Statique - Statica



Example ~

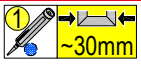


1:2

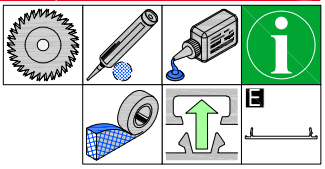
ß°	a	0 mm	76 mm	b	
90°	100.0	24.0	✓		
95°	96.4	26.8	✓		
100°	93.2	29.4	✓		
105°	90.1	31.8	✓		
110°	87.3	34.0	✓		
115°	84.6	36.2	✓		
120°	82.0	38.2	✓		
125°	79.6	40.1	✓		
130°	77.3	41.9	✓		
135°	75.1	43.6	✓		
140°	73.0	45.3	✓		
145°	70.9	46.9	✓		
150°	68.9	48.5			
155°	66.9	50.1			
160°	65.0	51.6			
165°	63.1	53.1			
170°	61.2	54.6			
175°	59.4	56.0			
180°	57.5	57.5			

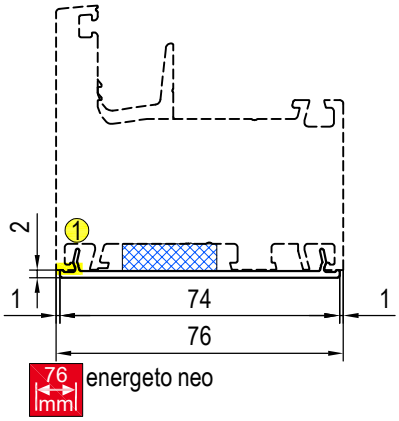
white	coloured
white	coloured
blanco	colorado
blanc	en couleur
bianco	colorato

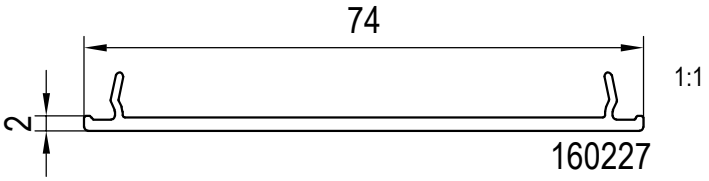
-> 160243/140244 Couplings - Acoplamientos - Couplages - Accoppiamenti



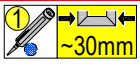




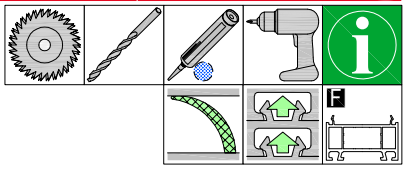


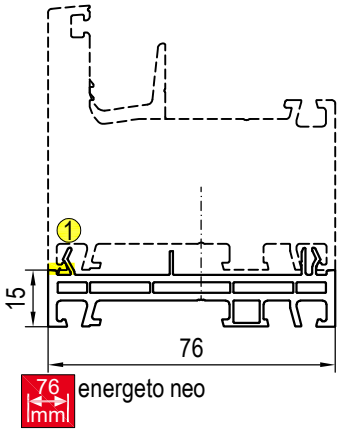


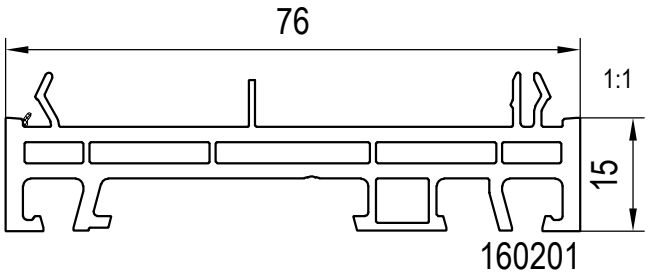
Example ~







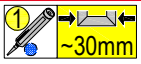




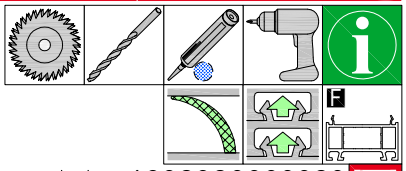
Example ~

1:2

Extensions - Prolongaciones - Élargisseurs - Allargatori

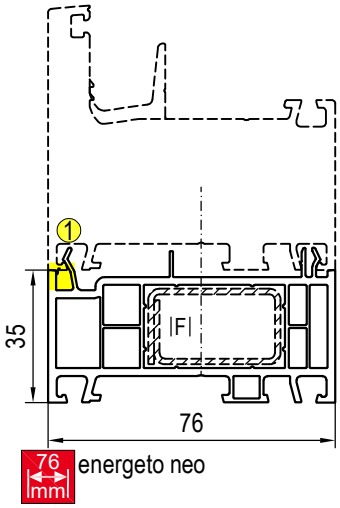


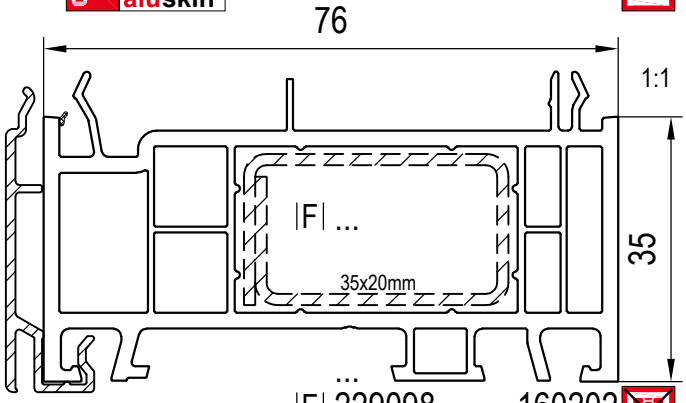






|F| ⇔ 1602020000020



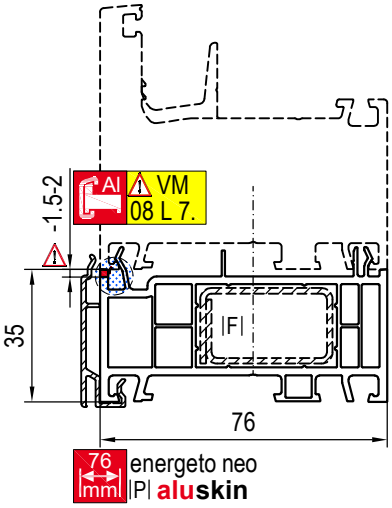


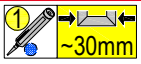
|F| 229098 160202
4.1/1.5cm4

|F| 229100
2.0/0.8cm4

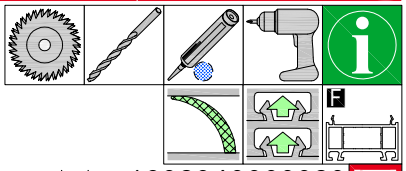
|F| 229101
2.8/1.0cm4

Example ~

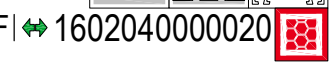


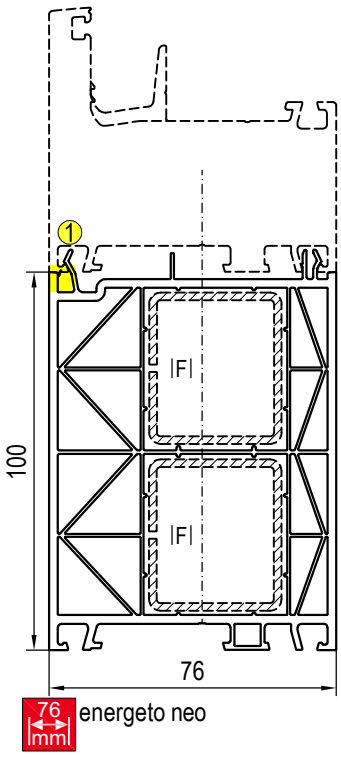


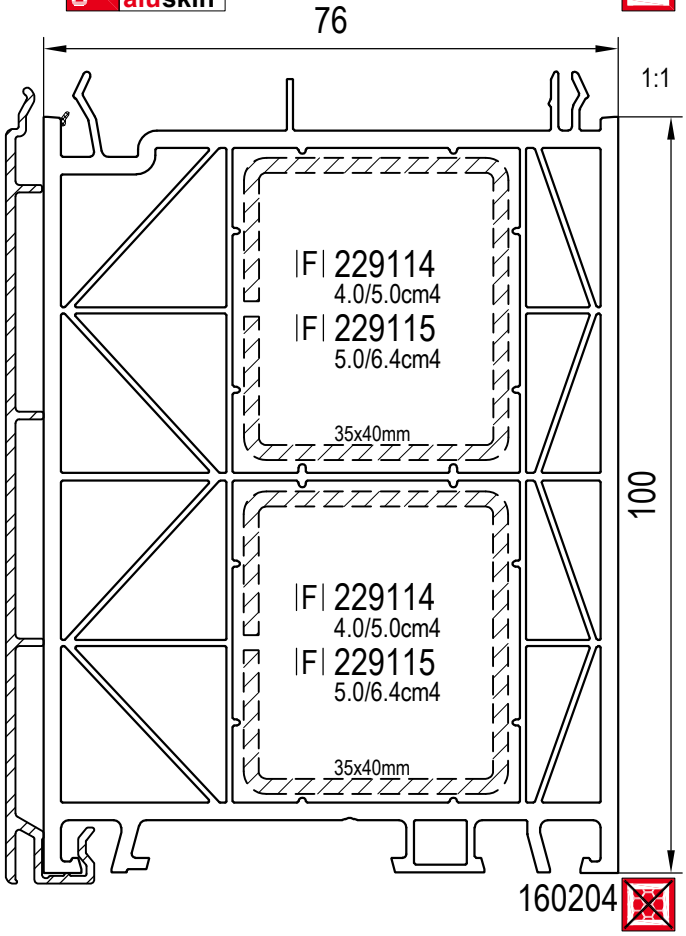




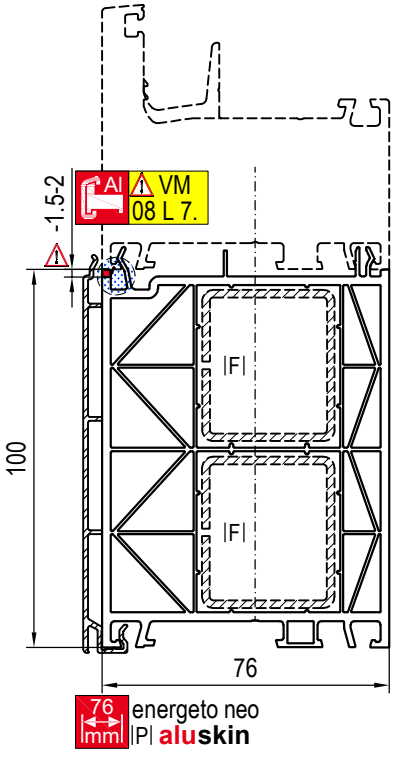






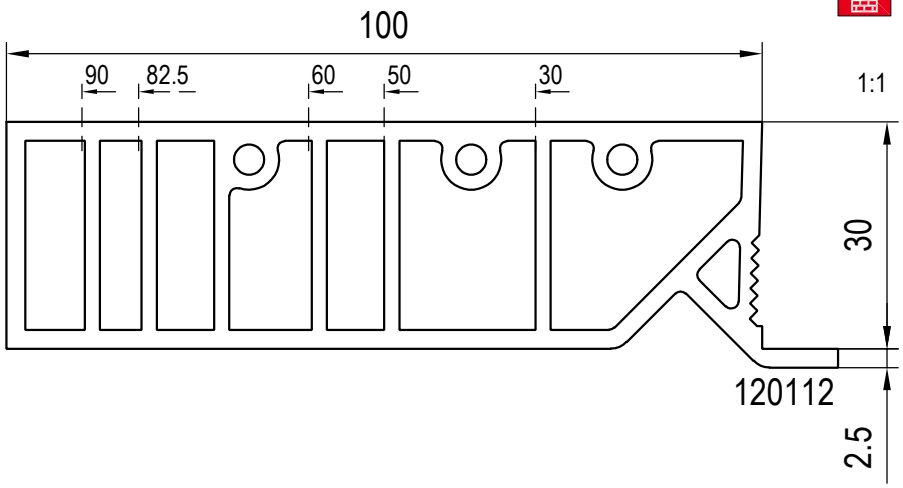


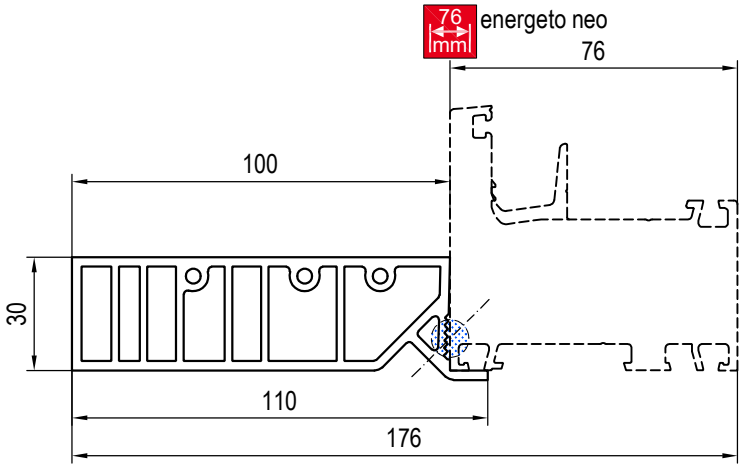
Example ~



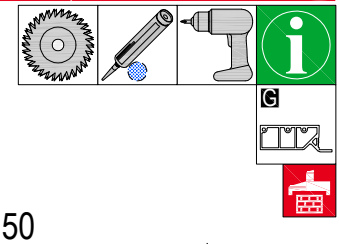
1:2

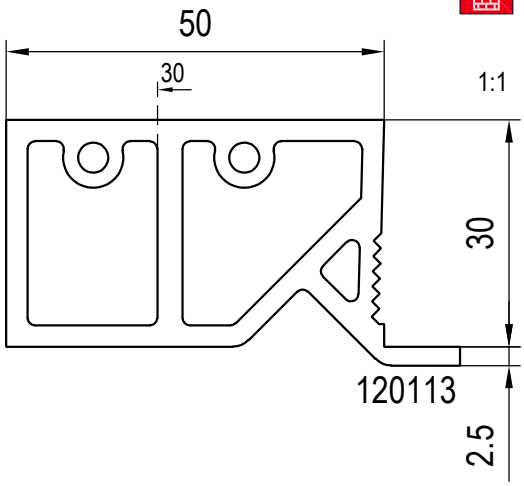
Extensions - Prolongaciones - Élargisseurs - Allargatori

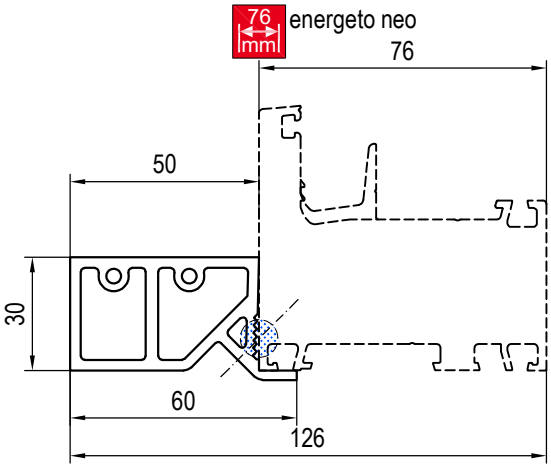

100
90
82.5
60
50
30
1:1
30
120112
2.5


76 mm
energeto neo
76
100
30
110
176

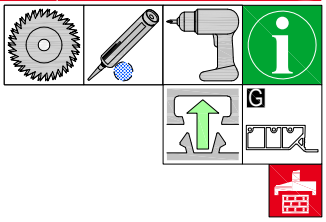
Example ~

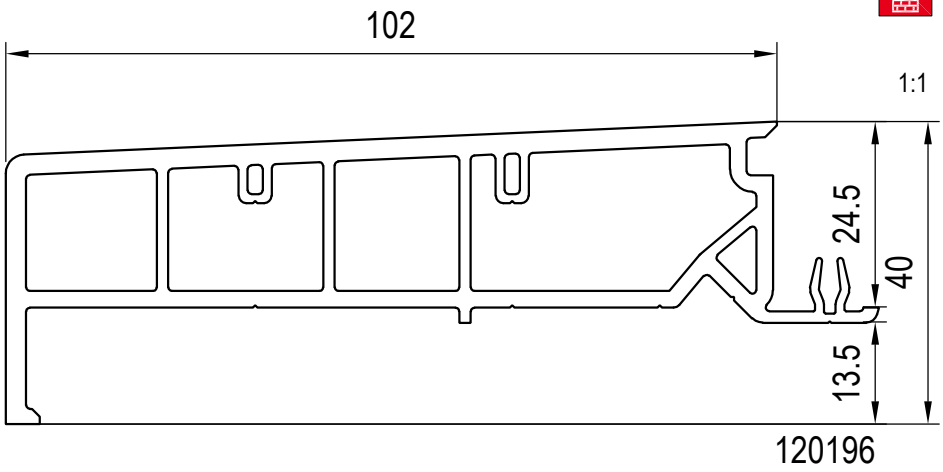




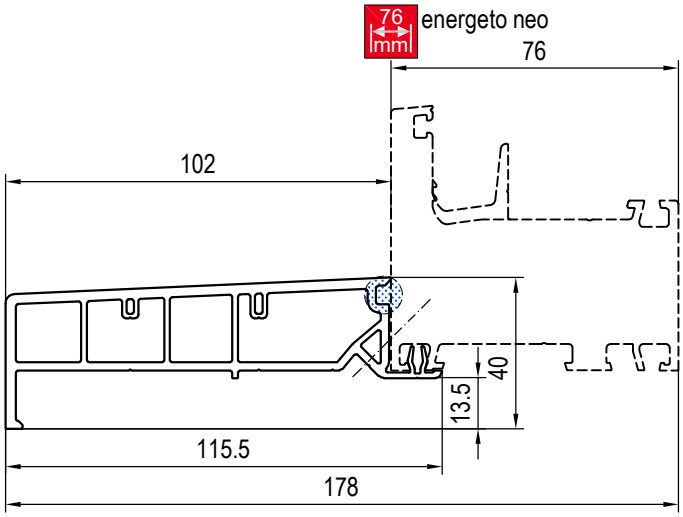


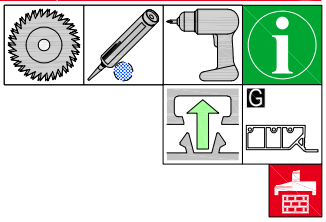
Example ~

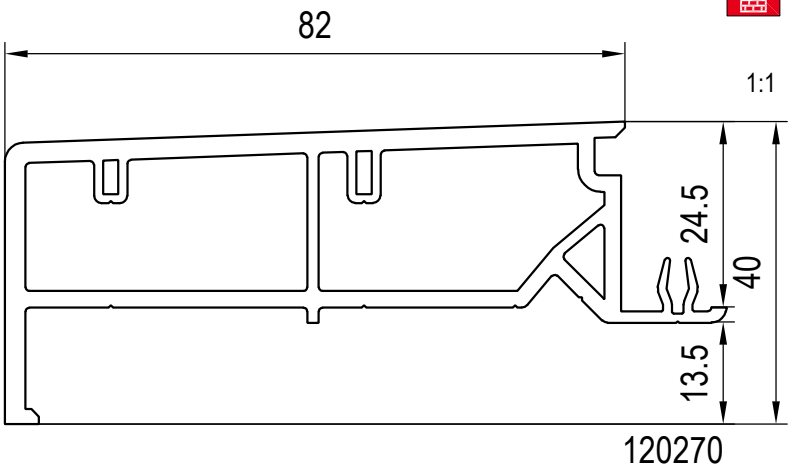



102
1:1
24.5
40
13.5
120196

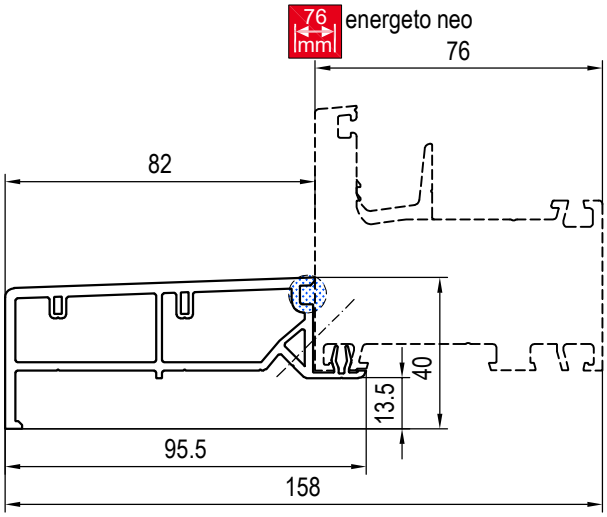
Example ~

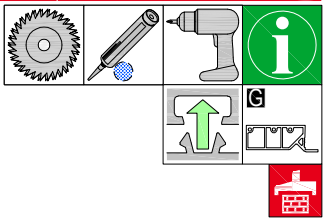

76 mm
energeto neo
76
102
40
13.5
115.5
178

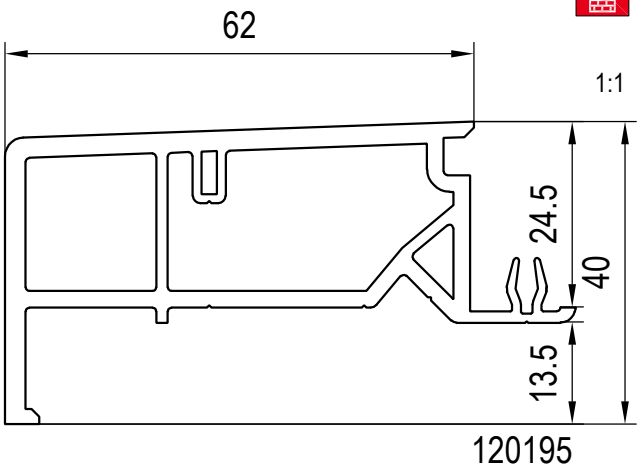




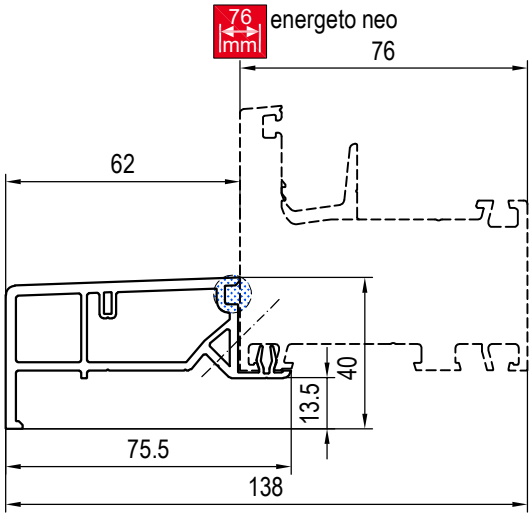
Example ~

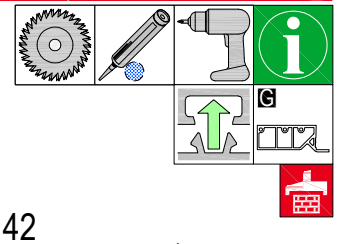


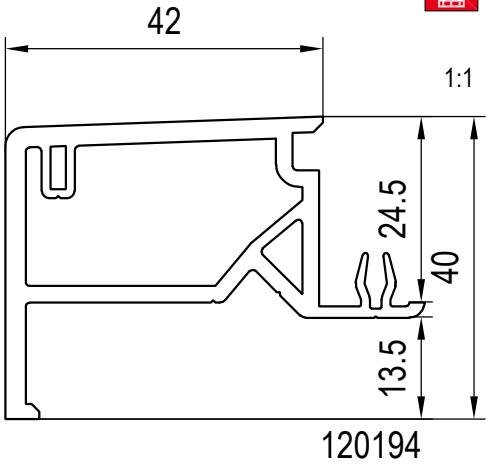




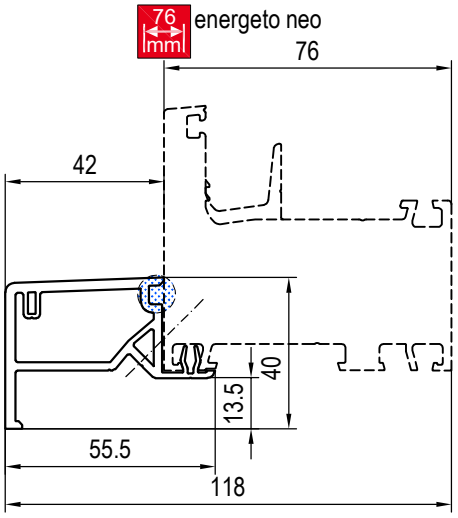
Example ~

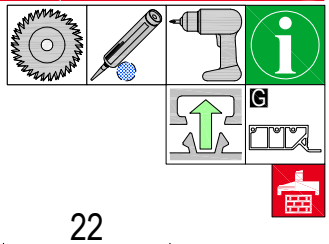


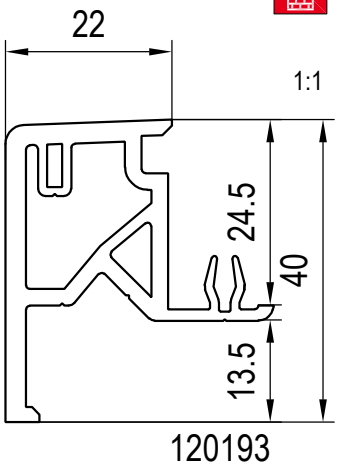




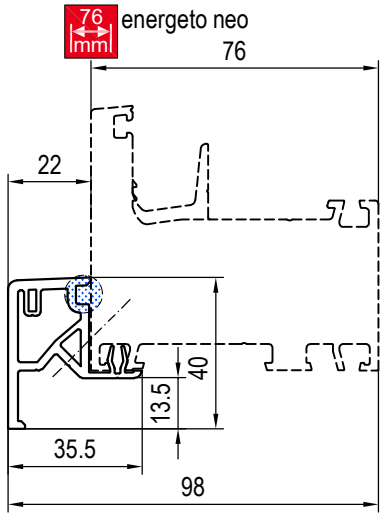
Example ~



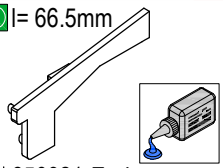




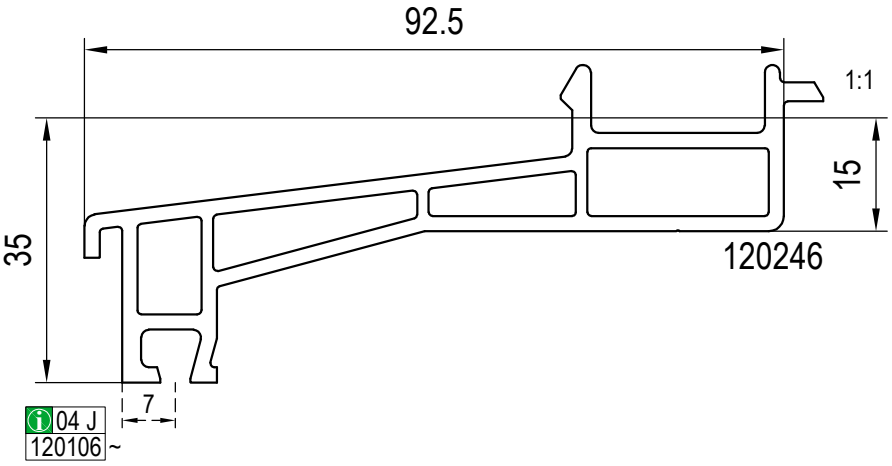
Example ~

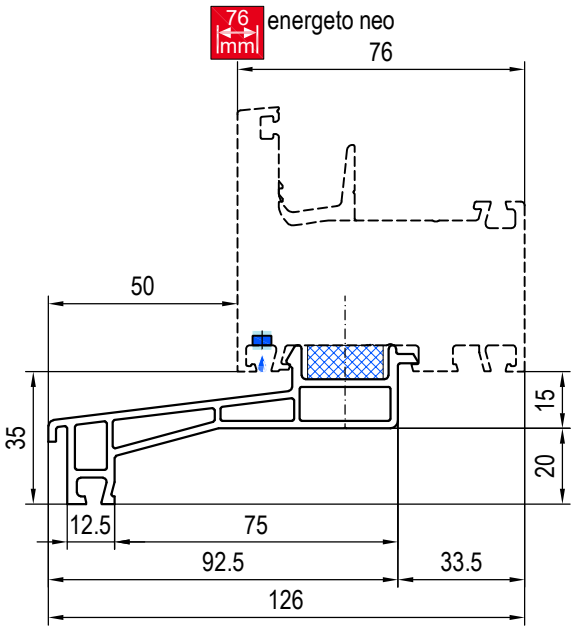


l= 66.5mm



|C| 650921 End caps
End caps - Tapas de remate - Embouts - Tappi



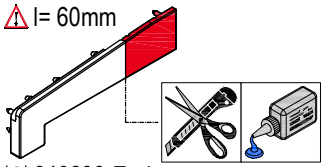


Example ~

1:2

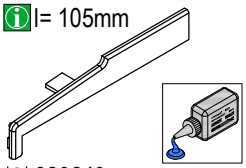
Exterior window sills - Vierteaguas exterior - Appuis de fenêtre exterieur - Davanzali esterni

⚠ l= 60mm

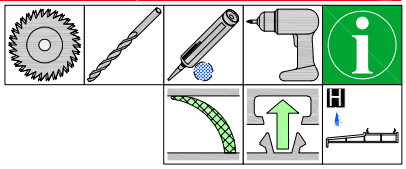


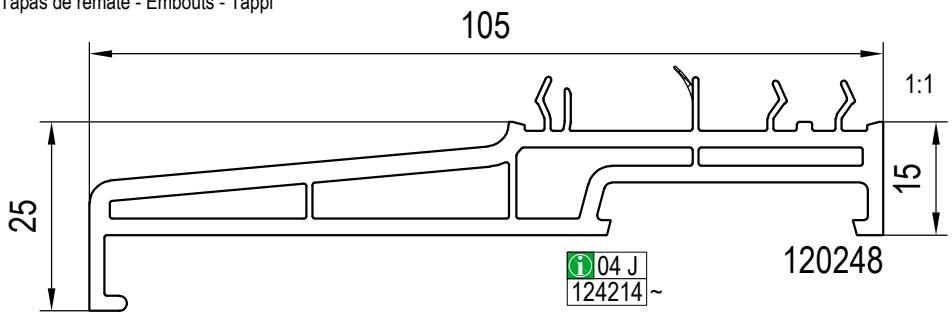
|C| 640238 End caps
End caps - Tapas de remate - Embouts - Tappi

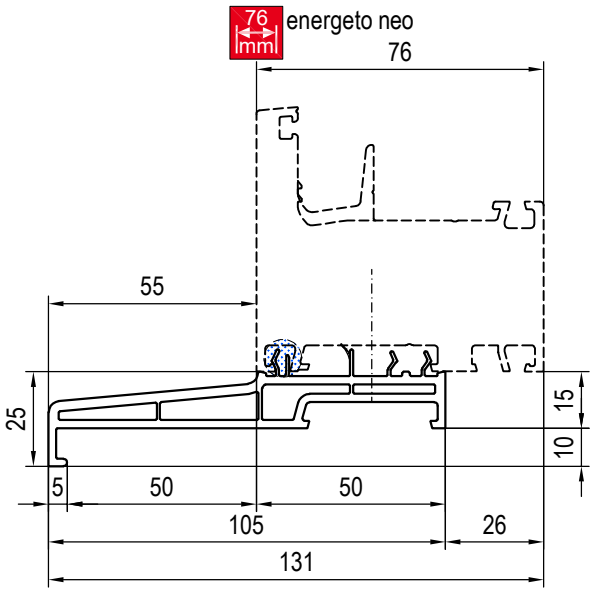
ⓘ l= 105mm



|C| 620249 End caps
End caps - Tapas de remate - Embouts - Tappi



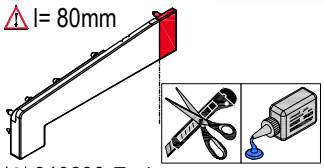


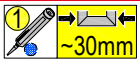


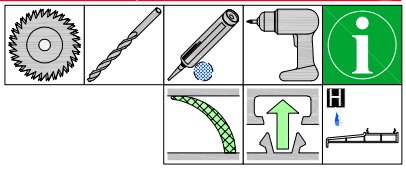
Example ~

1:2

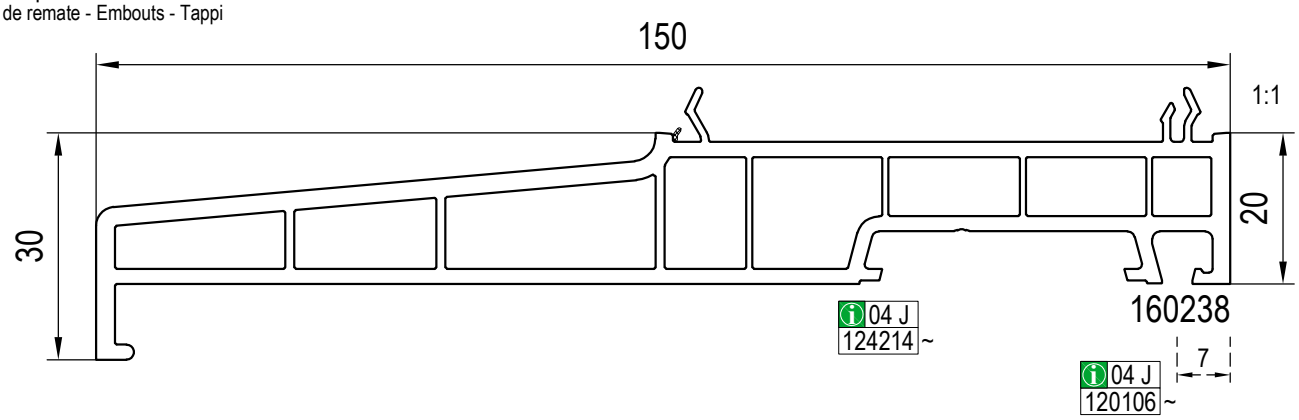
Exterior window sills - Vierteaguas exterior - Appuis de fenêtre exterieur - Davanzali esterni

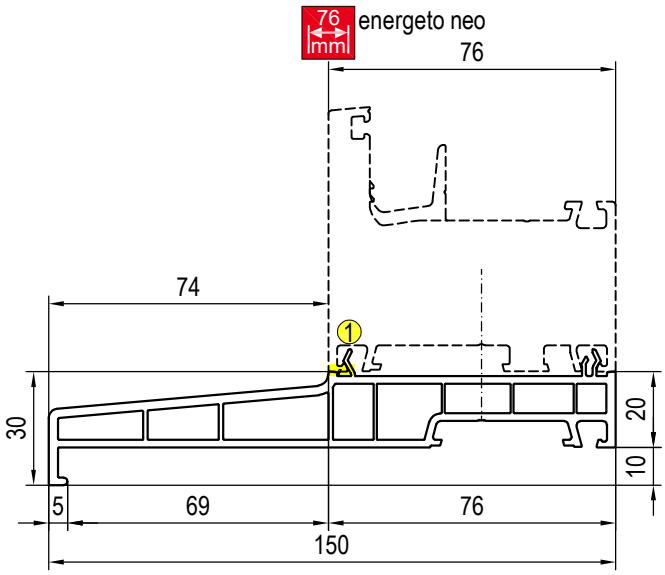




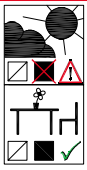


|C| 640238 End caps
End caps - Tapas de remate - Embouts - Tappi

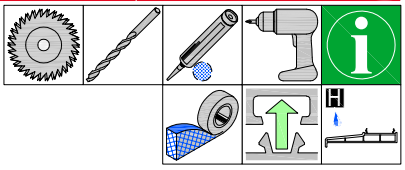


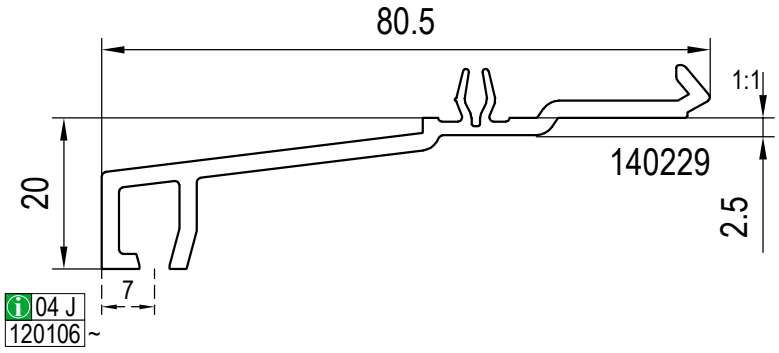


Example ~

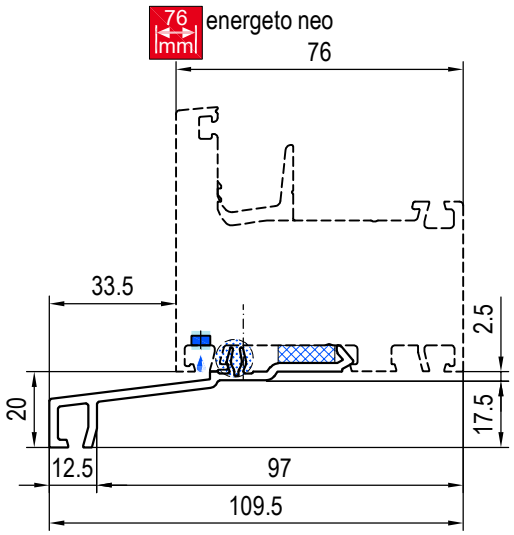


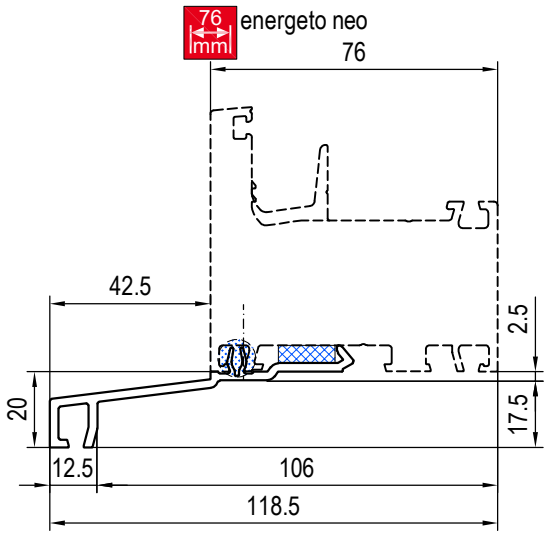
white	coloured
white	coloured
blanco	colorado
blanc	en couleur
bianco	colorato

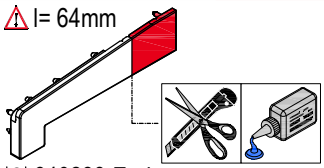




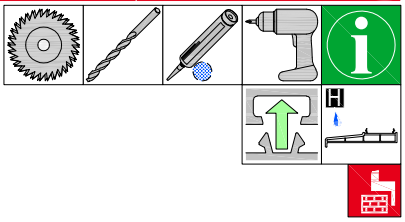
Example ~

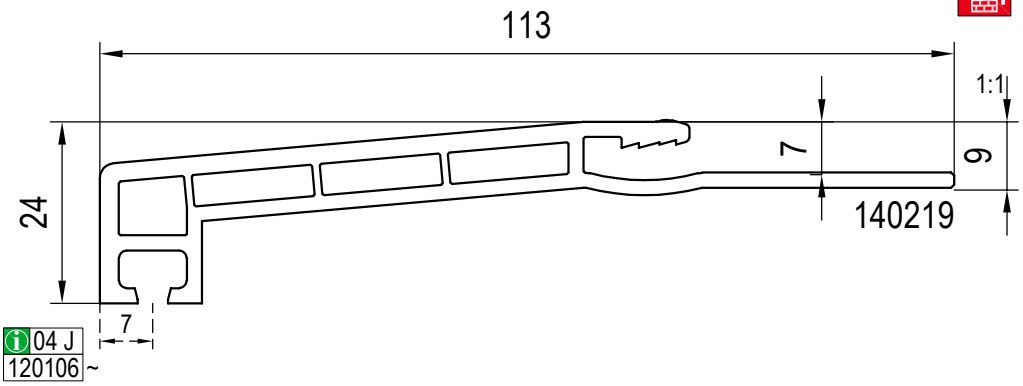


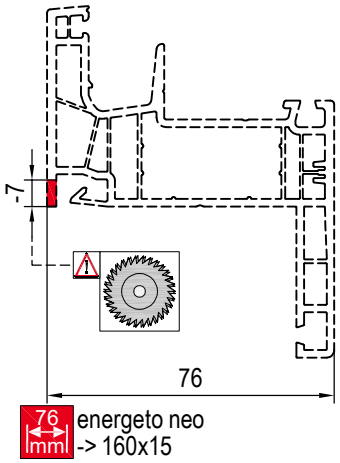


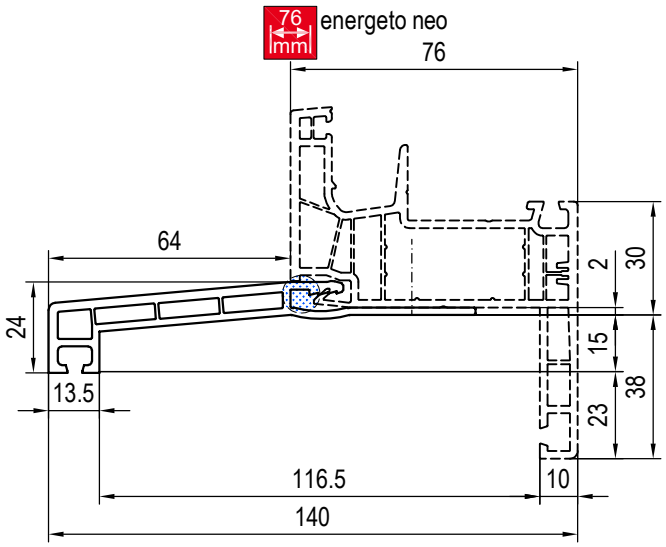


|C| 640238 End caps
End caps - Tapas de remate - Embouts - Tappi

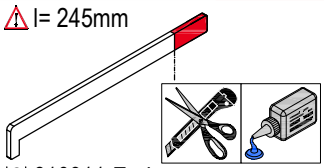


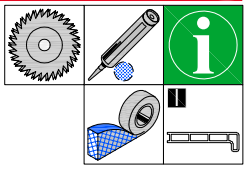




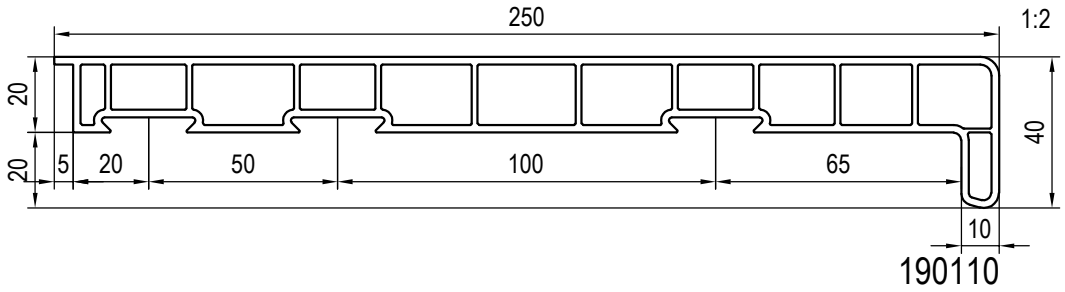


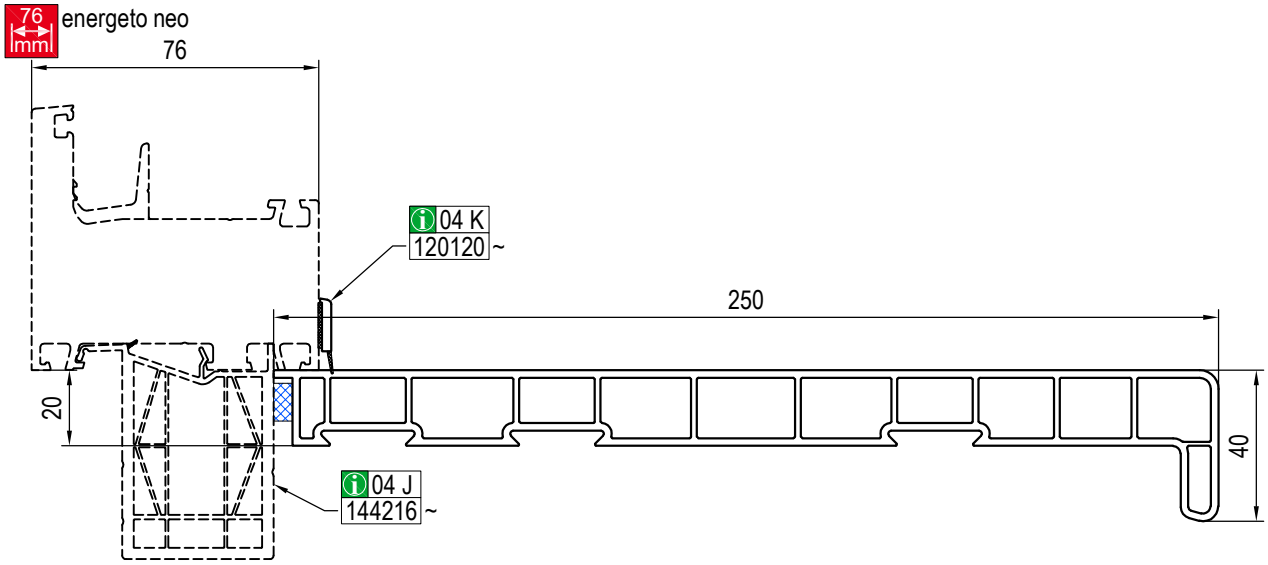
Example ~



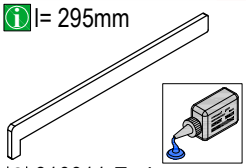


|C| 610911 End caps
End caps - Tapas de remate - Embouts - Tappi

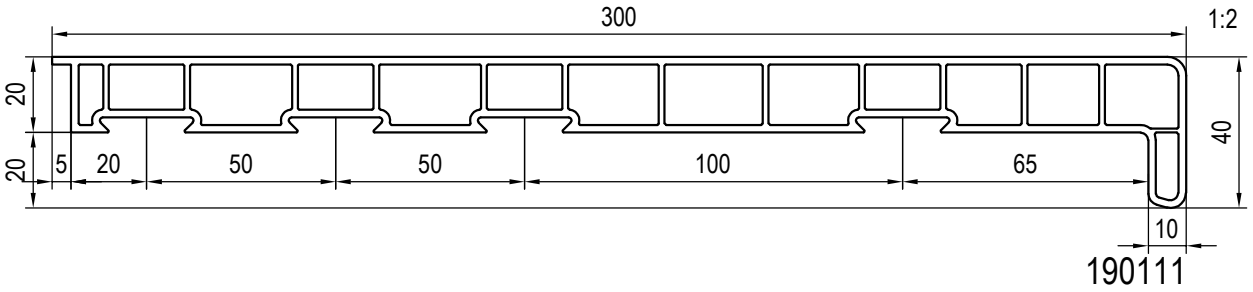




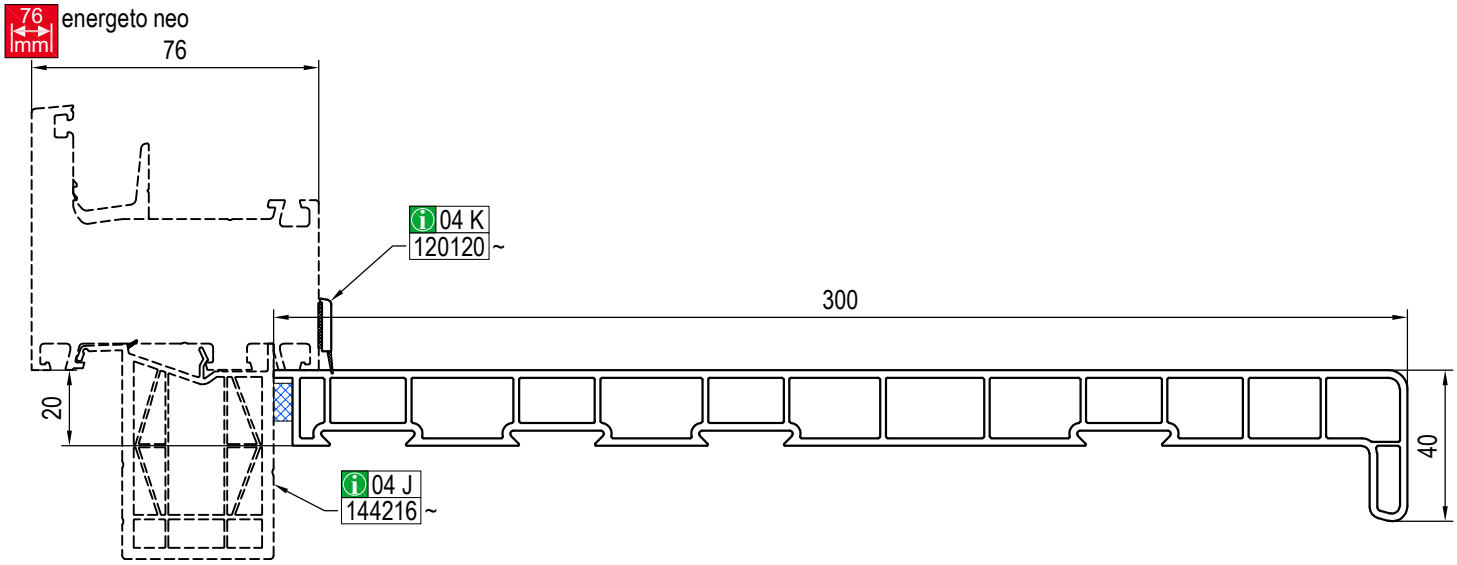
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|C| 610911 End caps
End caps - Tapas de remate - Embouts - Tappi



76 |mm| energeto neo

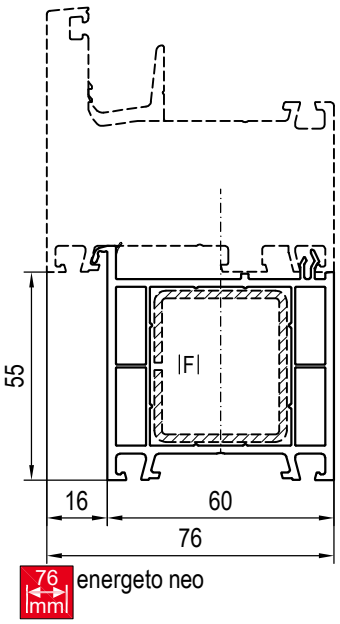


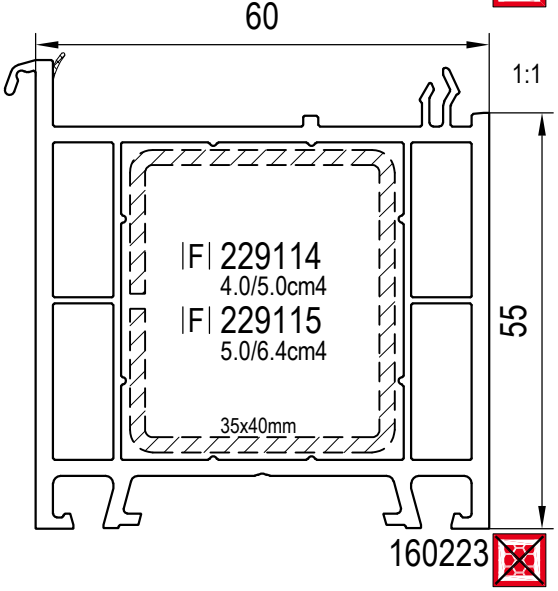
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Interior window sills - Repisas interiores - Appuis de fenêtre intérieur - Davanzali interni

VM 08 C 8.

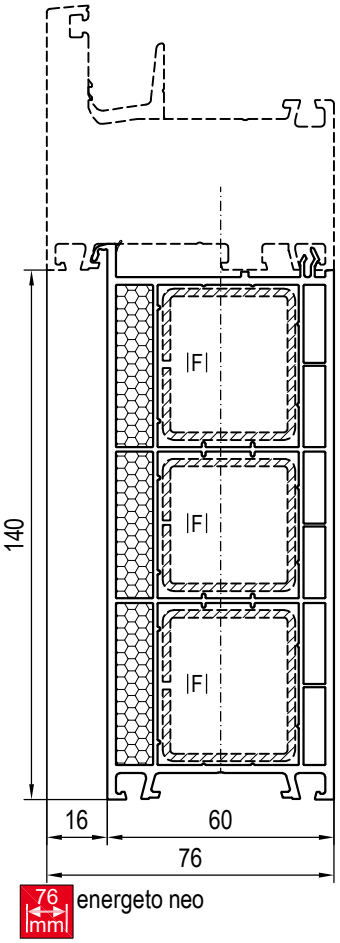
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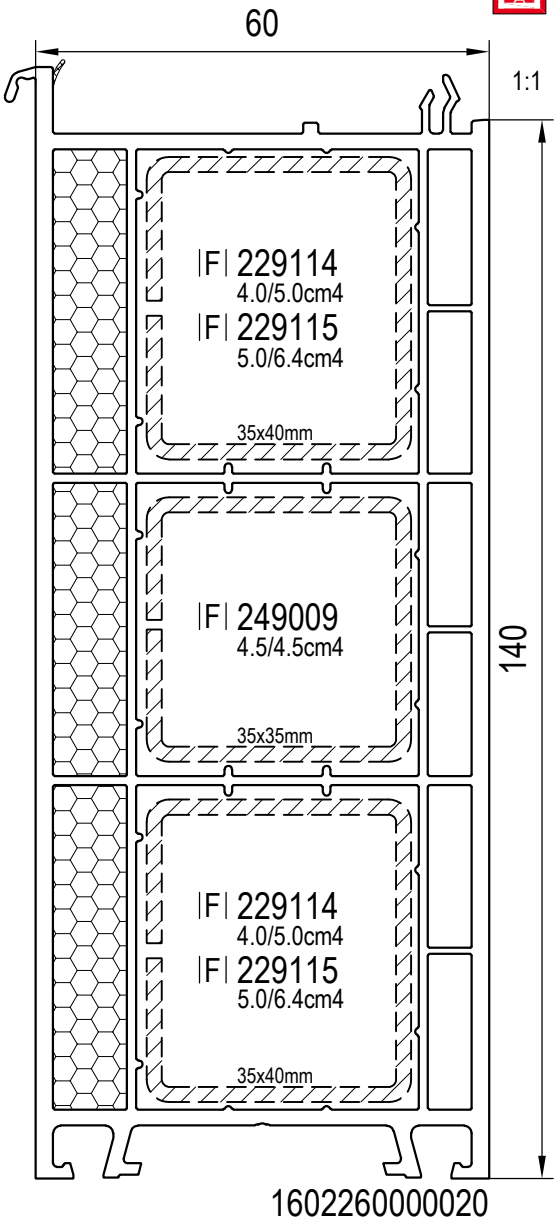




Example ~

VM 08 C 8.



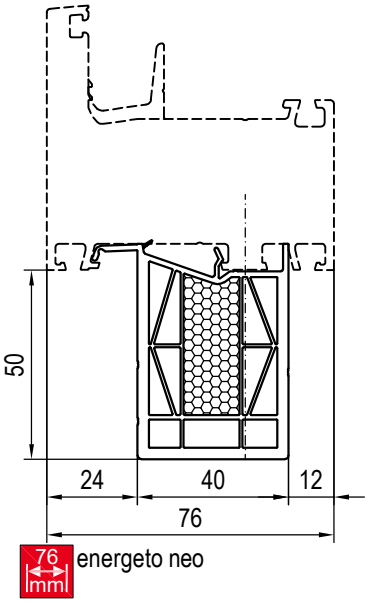


Example ~

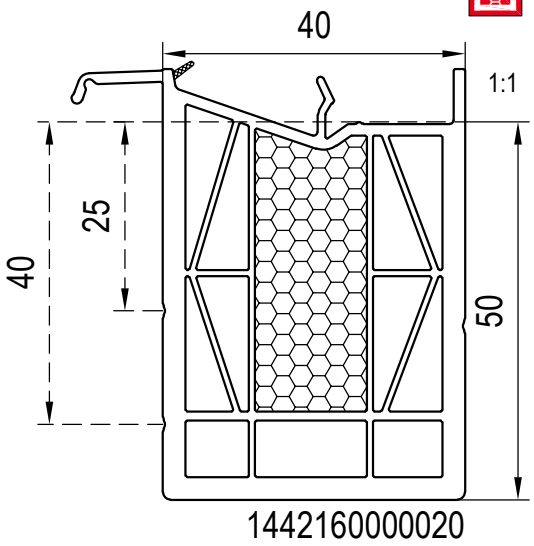
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Sill connector - Perfil de conexión a vierteaguas - Appuis - Collegamenti davanzale

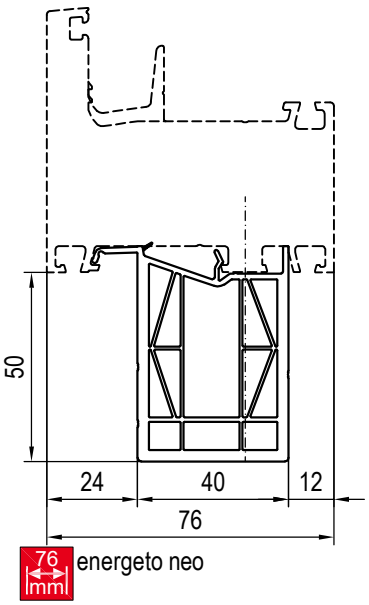
VM 08 C 8.



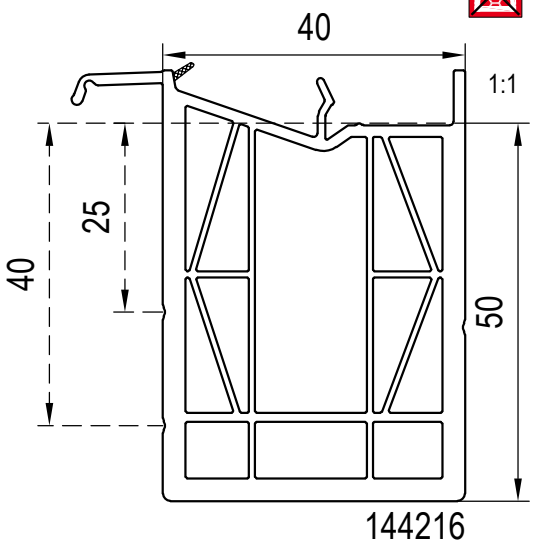
76 [mm] energeto neo



Example ~



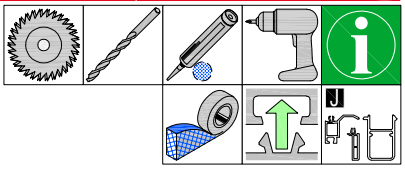
76 [mm] energeto neo

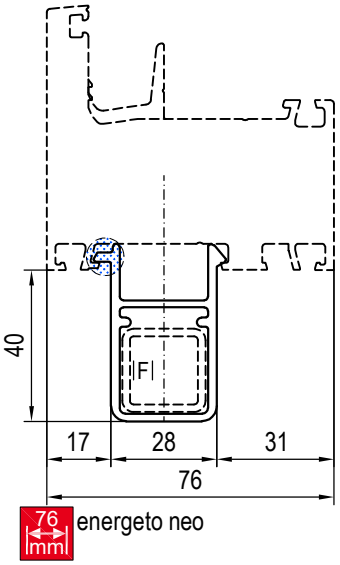


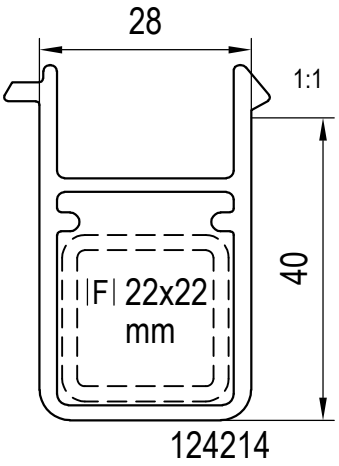
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Sill connector - Perfil de conexión a vierteaguas - Appuis - Collegamenti davanzale

VM 08 C 8.

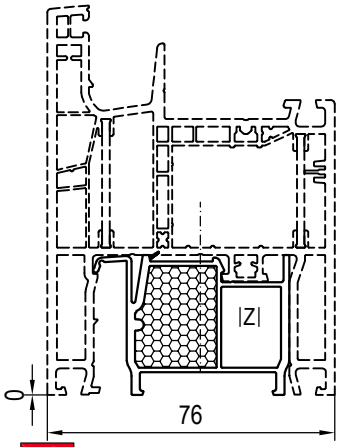




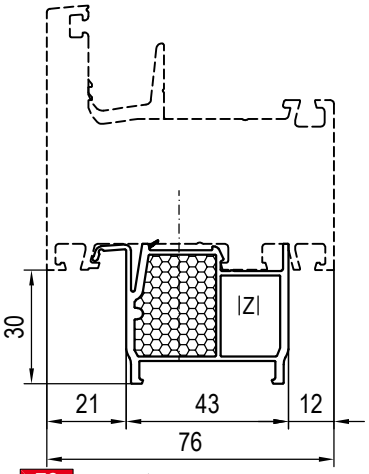


Example ~

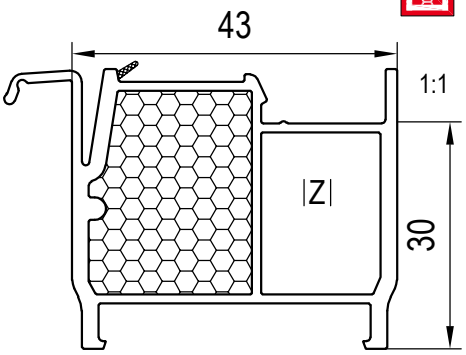
VM 08 C 8.



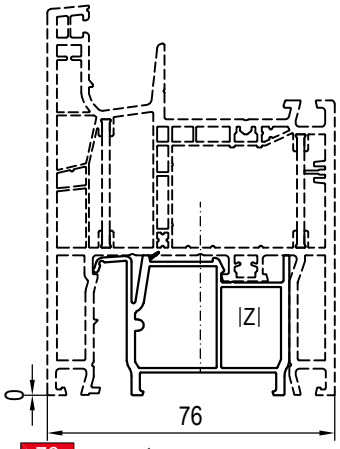
76 lmml energeto neo -> 060x08



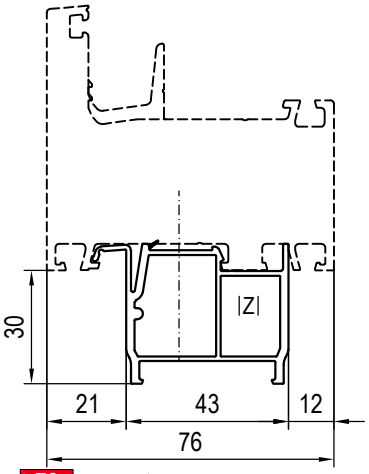
76 lmml energeto neo



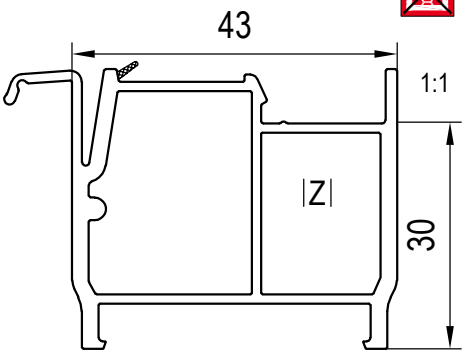
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76 lmml energeto neo -> 060x08

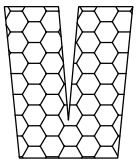


76 lmml energeto neo



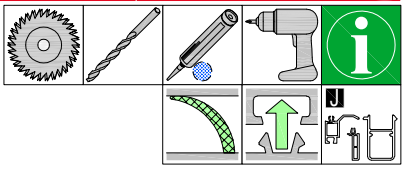
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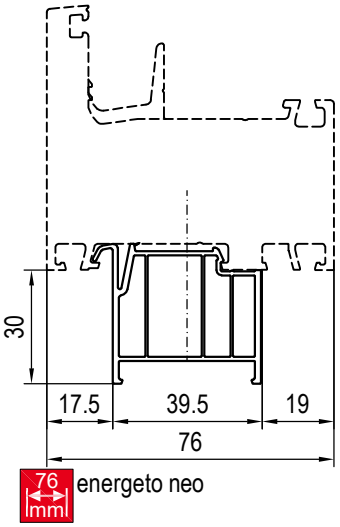
Example ~



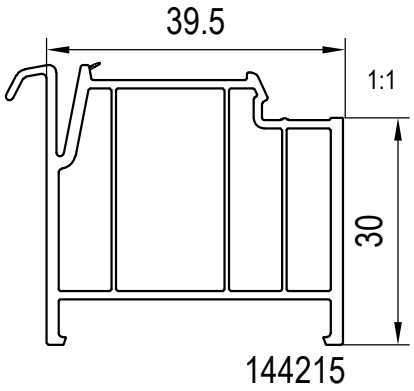
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~13/17x20x1000mm
Special accessories
Special accessories
Accesorios especiales
Accessoires spécial
Accessori speciali

VM 08 C 8.



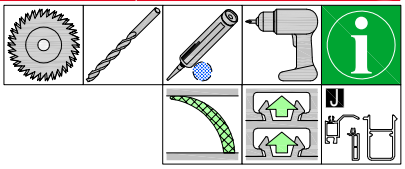


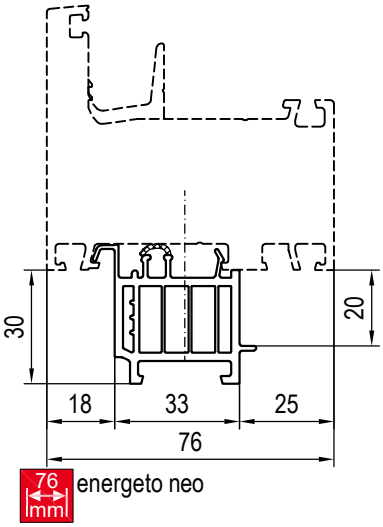
76 lmml energeto neo

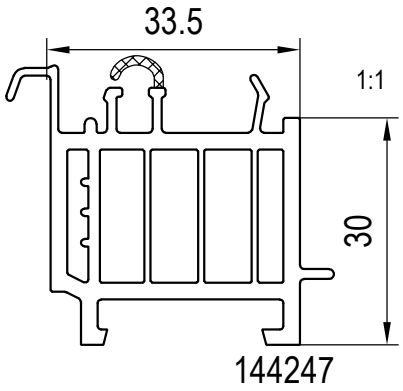


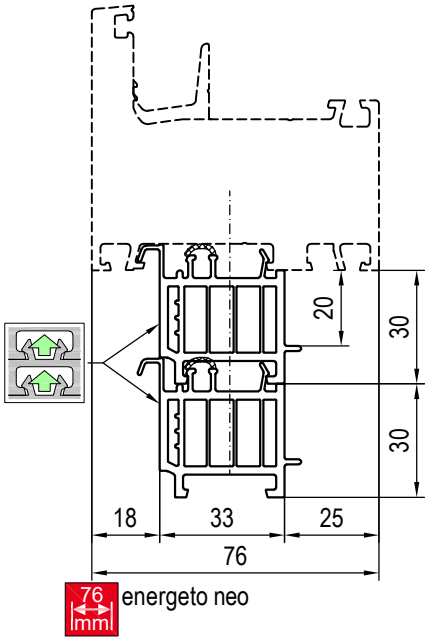
Example ~

VM 08 C 8.







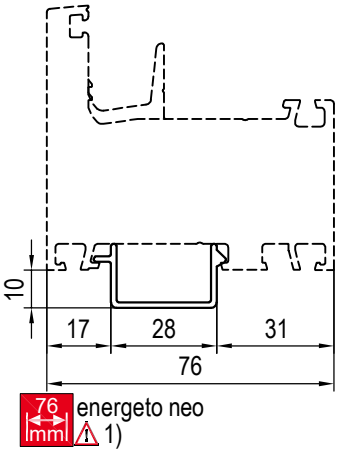


Example ~

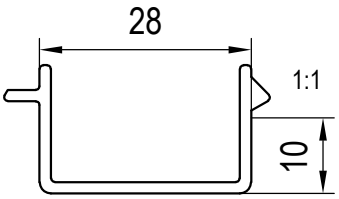
1:2

Sill connector - Perfil de conexión a vierteaguas - Appuis - Collegamenti davanzale

1) ⚠
Transport protection
Transport protection
Protección para transporte
Protection de transport
Protezione trasporto



76 [mm] energeto neo ⚠ 1)



124211 ⚠ 1)

Example ~

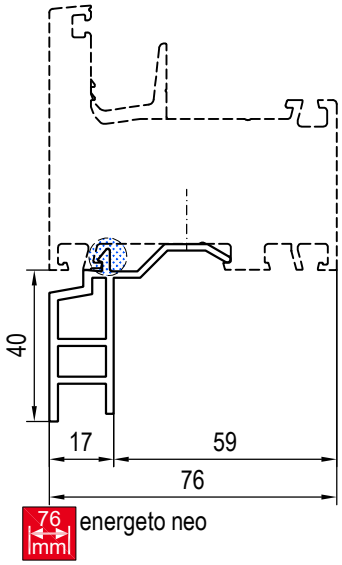
1) ⚠ Transport protection
Transport protection
Protección para transporte
Protection de transport
Protezione trasporto
124211 ↔ 04 J 140277

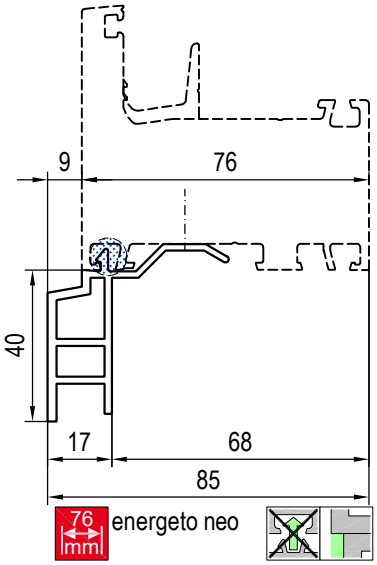
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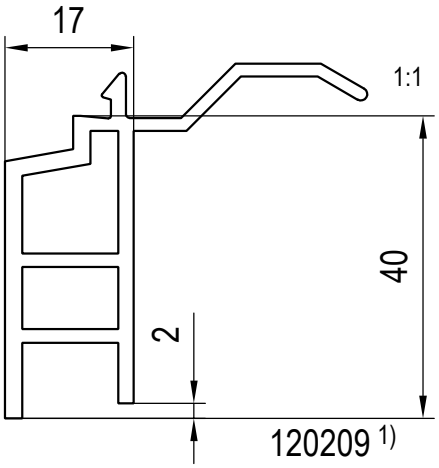
Sill connector - Perfil de conexión a vierteaguas - Appuis - Collegamenti davanzale

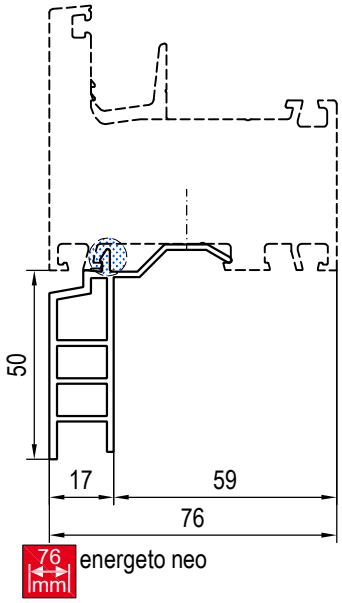
->
Stone sill
Stone sill
Repisa de piedra
Appui de fenêtre pierre
Davanzali pietra

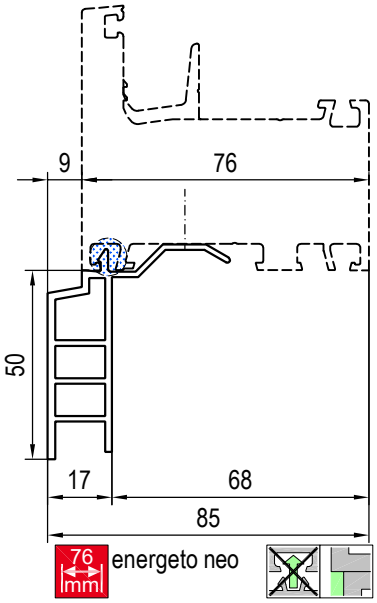
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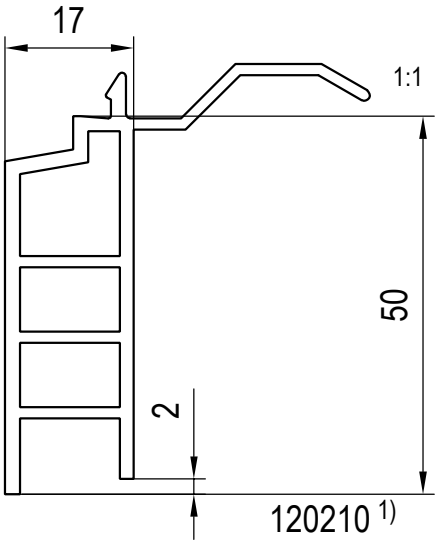












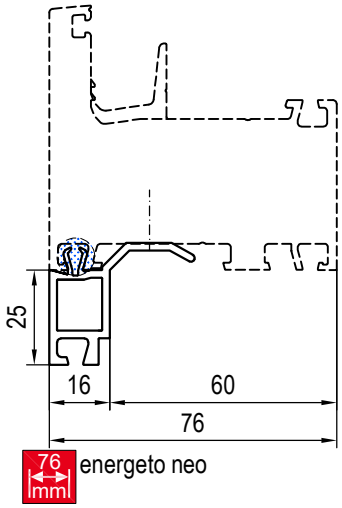
Example ~

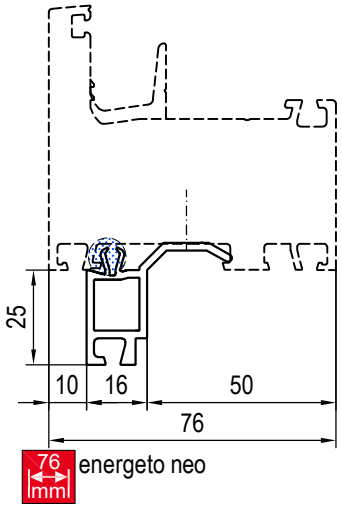
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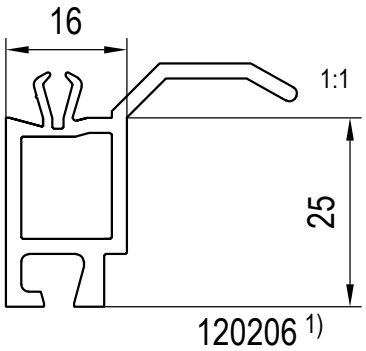
Sill connector - Perfil de conexión a vierteaguas - Appuis - Collegamenti davanzale

->
Aluminium sill
Aluminium sill
Repisa de aluminio
Appui de fenêtre alu
Davanzali in alluminio

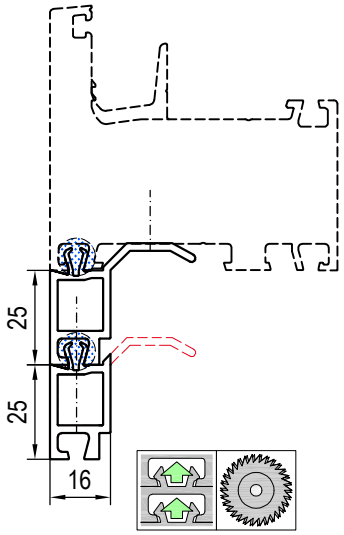
1)







120206 1)



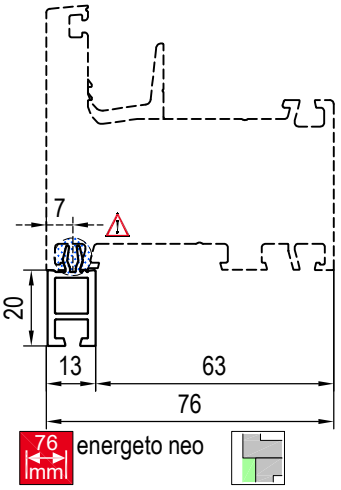
Example ~

1:2

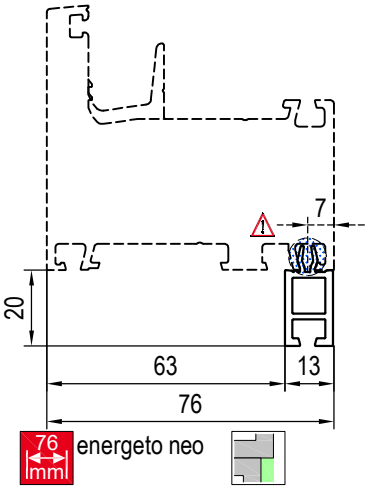
Sill connector - Perfil de conexión a vierteaguas - Appuis - Collegamenti davanzale

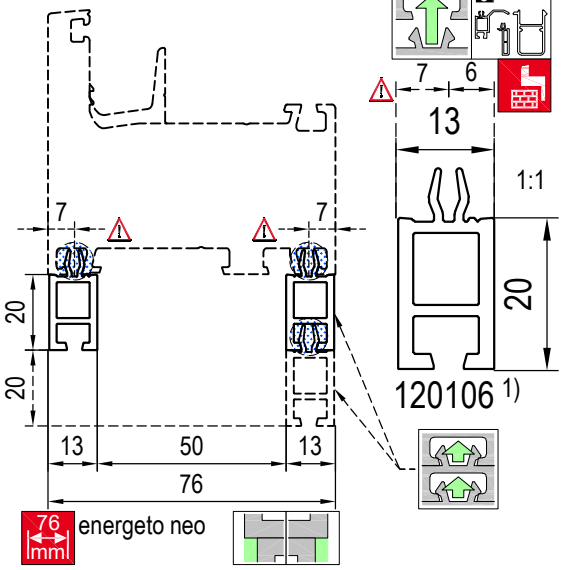
->
Aluminium sill
Aluminium sill
Repisa de aluminio
Appui de fenêtre alu
Davanzali in alluminio

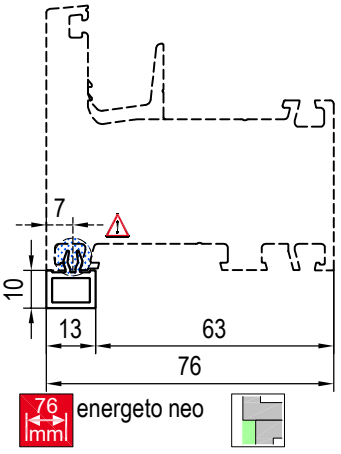
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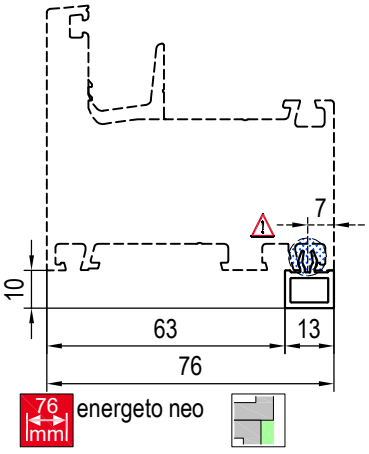


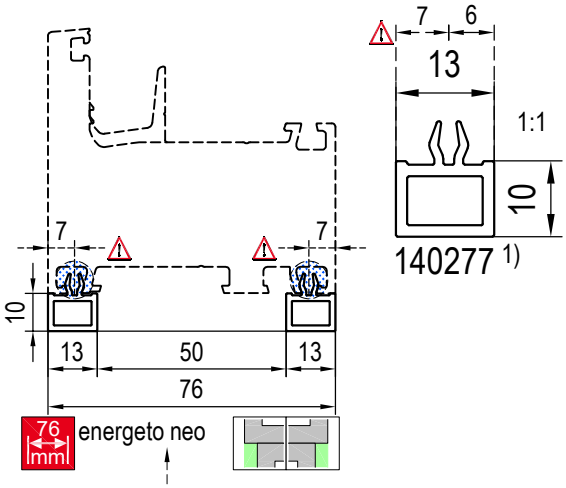
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Frame connecting profile
Frame connecting profile
Perfil de conexión al marco
Dormant profil à connexion
Telaio profilo di collegamento



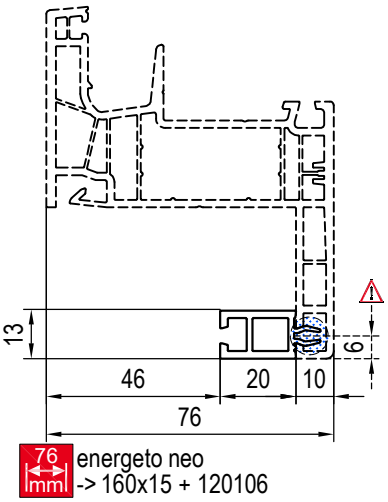


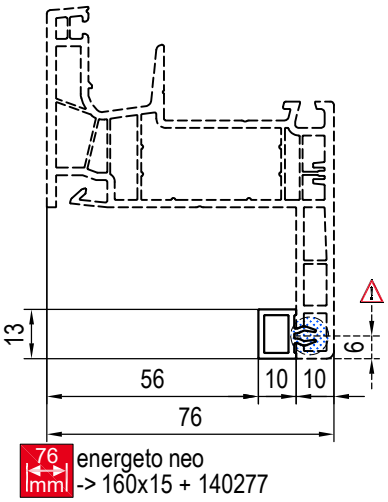






Example ~





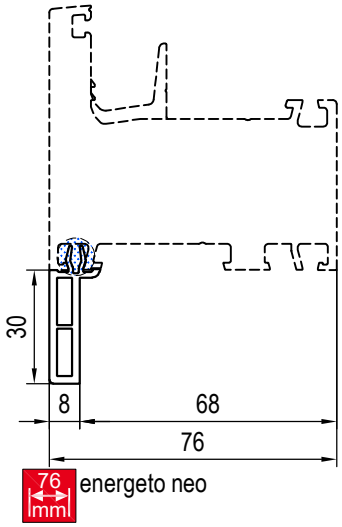
Transport protection
Transport protection
Protección para transporte
Protection de transport
Protezione trasporto
2x 140277 ↔ 04 J 124211

1:2

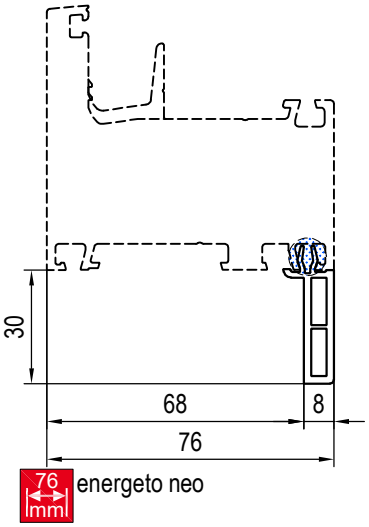
Sill connector - Perfil de conexión a vierteaguas - Appuis - Collegamenti davanzale

1)

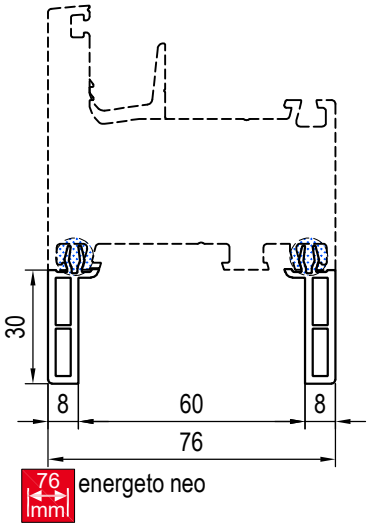
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Frame connecting profile
Frame connecting profile
Perfil de conexión al marco
Dormant profil à connexion
Telaio profilo di collegamento



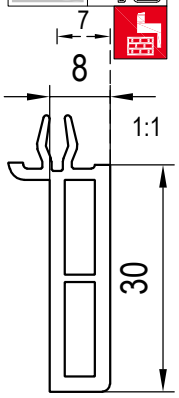
76 energeto neo



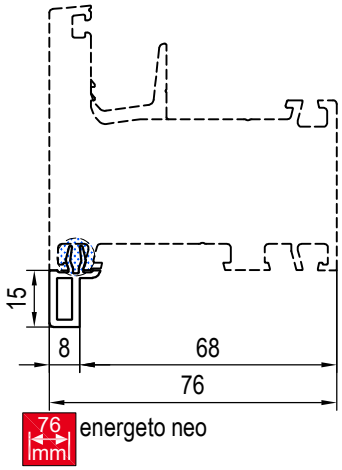
76 energeto neo



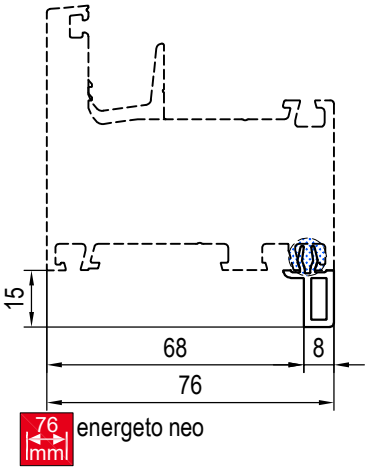
76 energeto neo



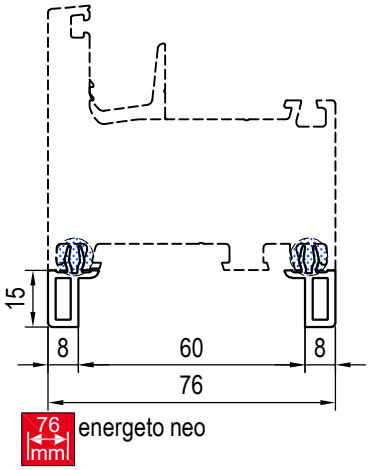
120237 1)



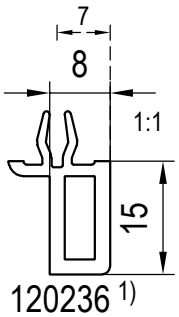
76 energeto neo



76 energeto neo



76 energeto neo



120236 1)

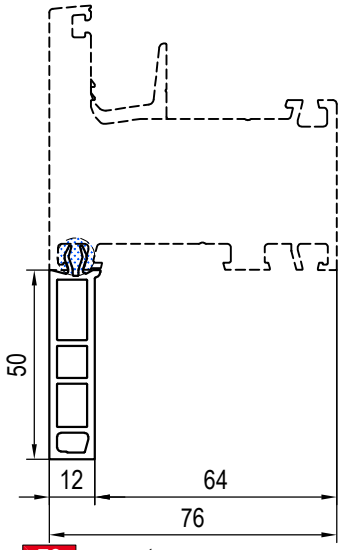
Example ~

1:2

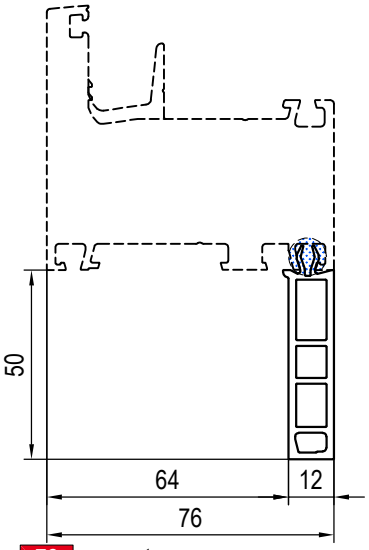
Sill connector - Perfil de conexión a vierteaguas - Appuis - Collegamenti davanzale

1)

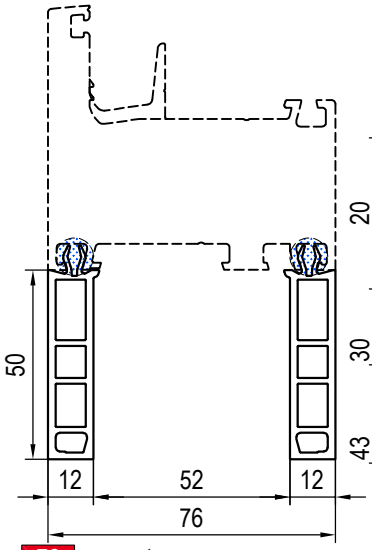
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Frame connecting profile
Frame connecting profile
Perfil de conexión al marco
Dormant profil à connexion
Telaio profilo di collegamento



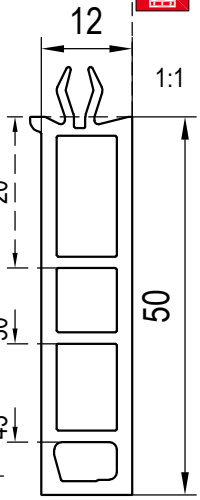
76 mm energeto neo



76 mm energeto neo

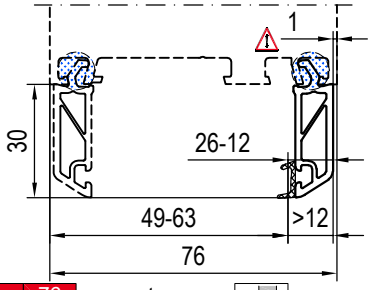


76 mm energeto neo

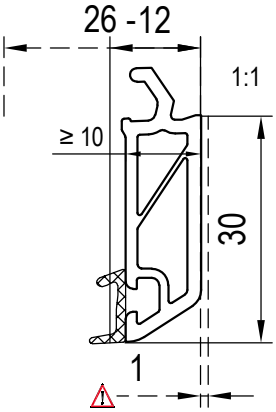


120102 1)

01 P Glazing beads
Glazing beads - Junquillo
Parcloses - Fermavetri



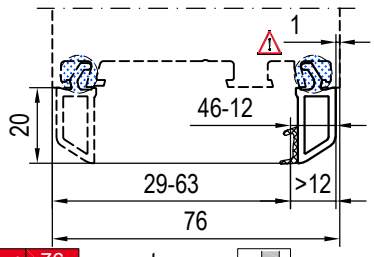
CL 76 mm energeto neo



... 130653 1)
130683
~ (CL) Classic-line CL

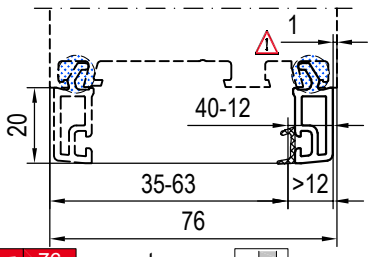
Example ~

01 P Glazing beads
Glazing beads - Junquillo
Parcloses - Fermavetri

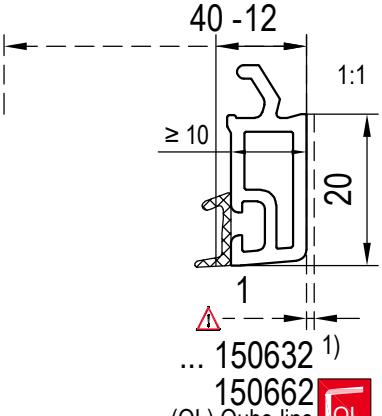


CL 76 mm energeto neo

01 P Glazing beads
Glazing beads - Junquillo
Parcloses - Fermavetri



QL 76 mm energeto neo



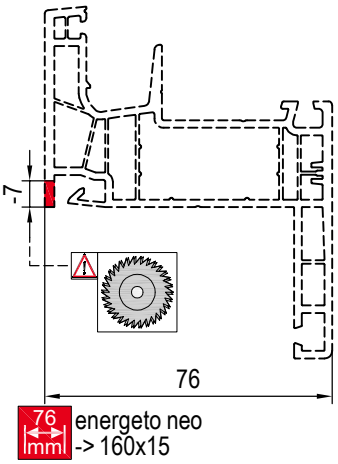
... 150632 1)
150662
~ (QL) Qube-line QL

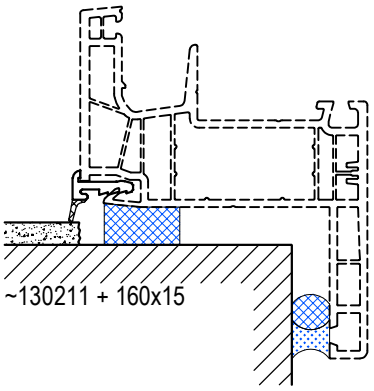
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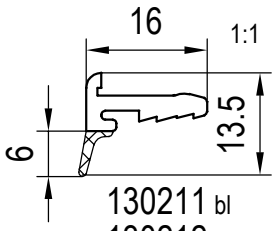
Sill connector - Perfil de conexión a vierteaguas - Appuis - Collegamenti davanzale

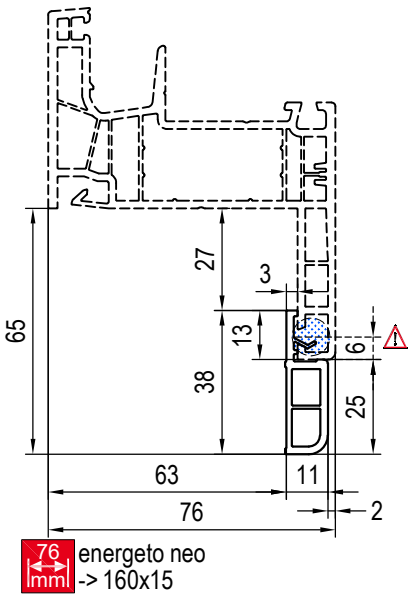
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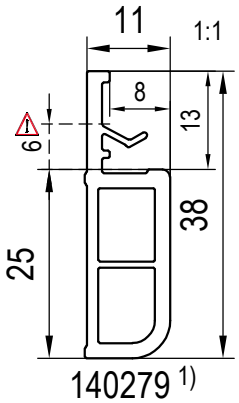
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Frame connecting profile
Frame connecting profile
Perfil de conexión al marco
Dormant profil à connexion
Telaio profilo di collegamento











Example ~

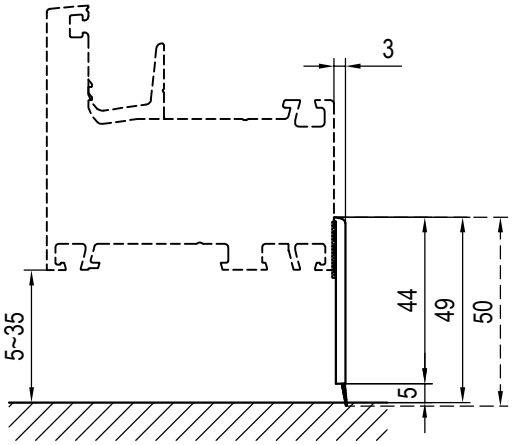
bl	pw
black	papyrus-white
black	papyrus-white
negro	blanco papiro
noir	gris clair
nero	bianco papiro

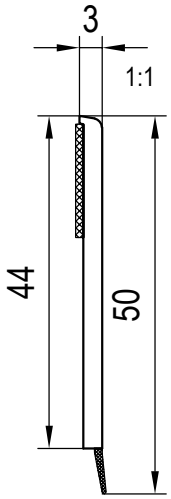
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Sill connector - Perfil de conexión a vierteaguas - Appuis - Collegamenti davanzale

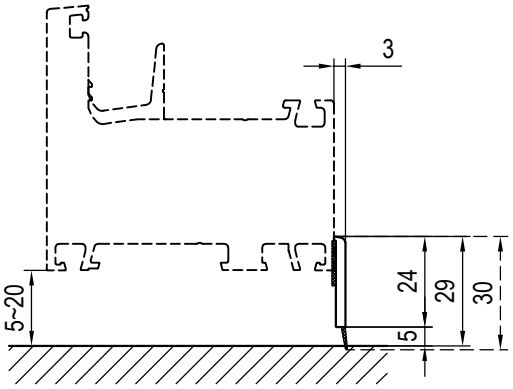
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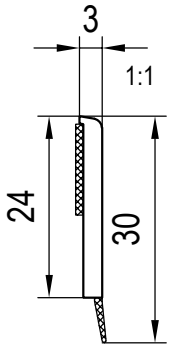
Cover trim with gasket lip
Cover trim with gasket lip
Tapajuntas con junta labiada
Baguette de recouvrement avec joint à lèvre
Listello di copertura con guarnizione a linguetta





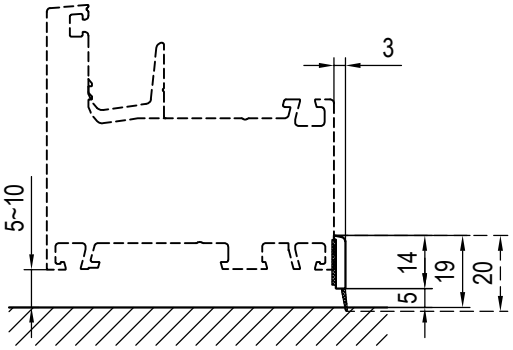
120283

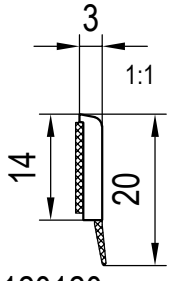




120121

Example ~

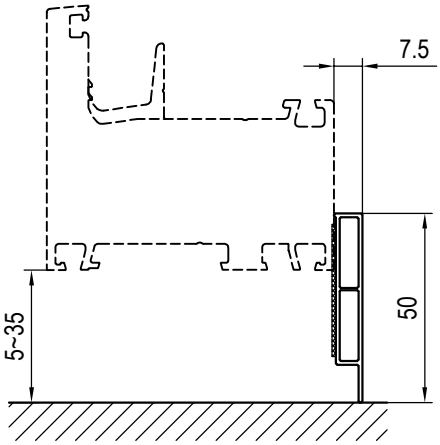


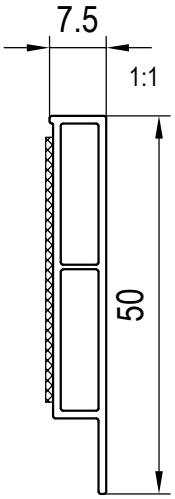


120120

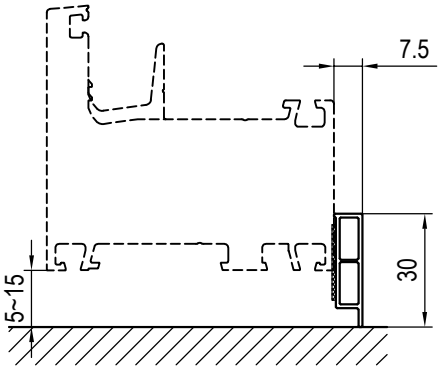
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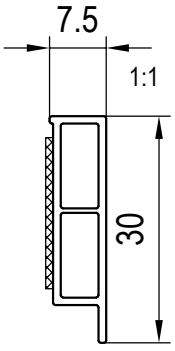
Cover trim
Cover trim
Tapajuntas
Baguette de recouvrement
Listello di copertura





120288

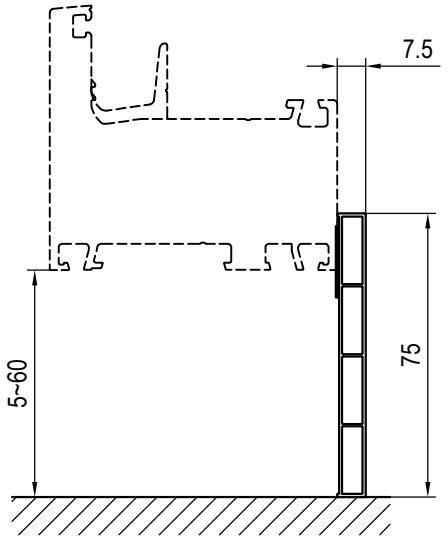


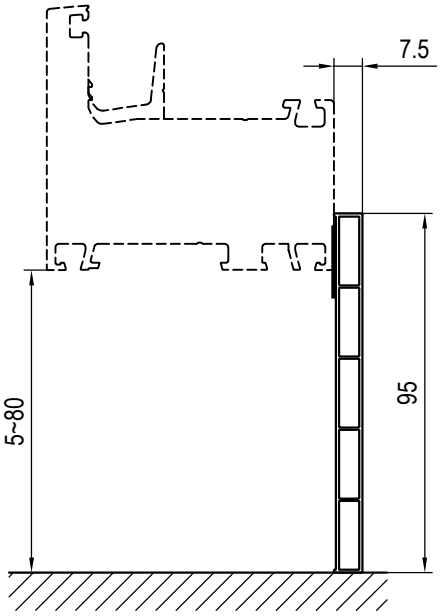


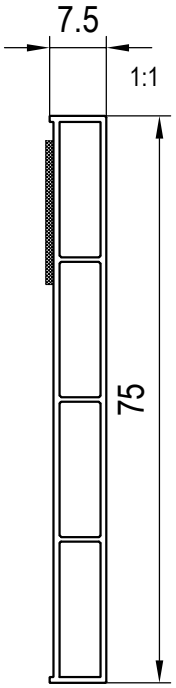
120286

Example ~

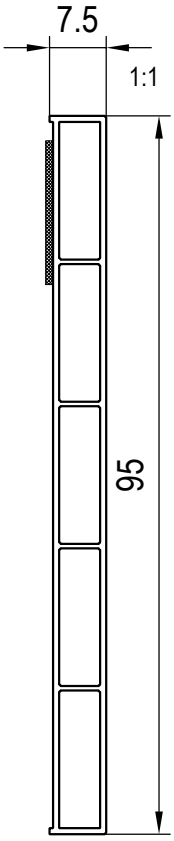
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Cover trim
Cover trim
Tapajuntas
Baguette de recouvrement
Listello di copertura





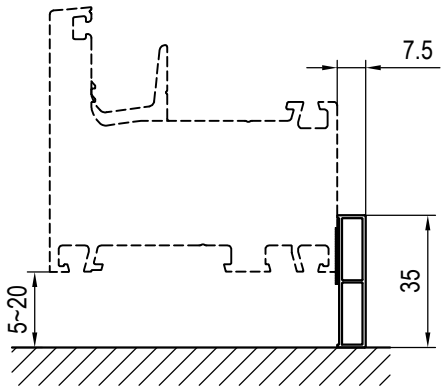


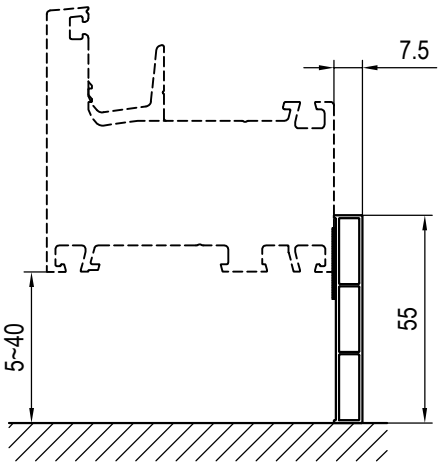
150283

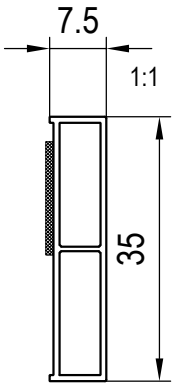


150284

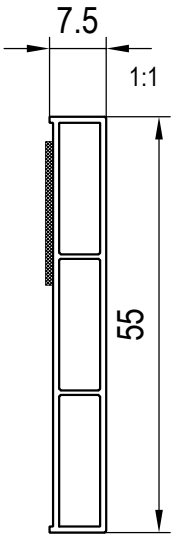
Example ~





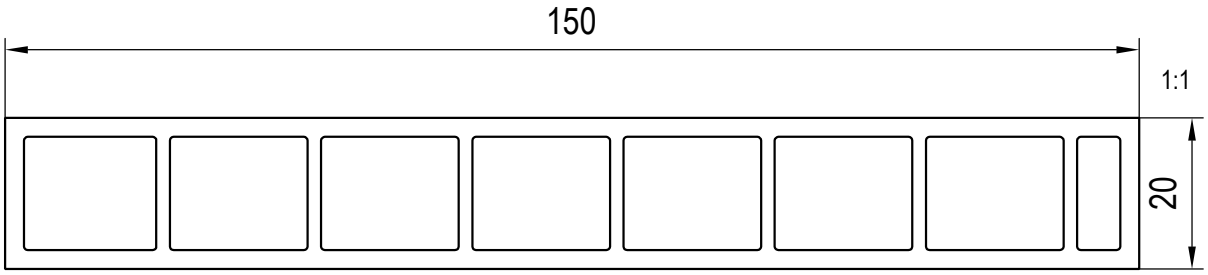


150281

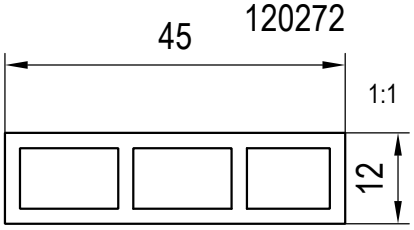


150282

~
Cover / Fill profile
Cover / Fill profile
Perfil de recubrimiento / relleno
Profilé de recouvrement / remplissage
Coprifilo / Profilo di riempimento

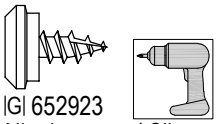


120272

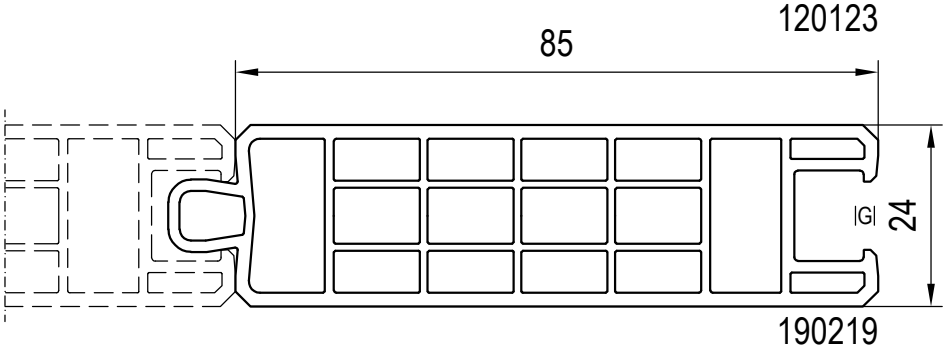


120123

~
Tongue and groove profile
Tongue and groove profile
Perfil machihembrado
Profil de languette et rainure
Profil a linguetta scanalatura

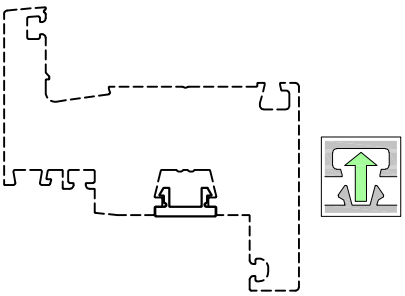


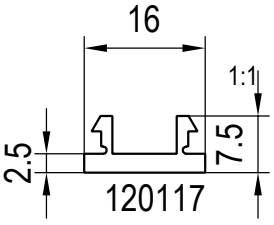
|G| 652923
Nipple screw / Clip
Nipple screw / Clip
Tornillo para clip / Clip
Vis clip / Clip
Vite clip / Clip



190219

Euro groove cover
Euro groove cover
Tapa de ranura Euro
Recouvrement de la rainure Euro
Copertura della scanalatura Euro

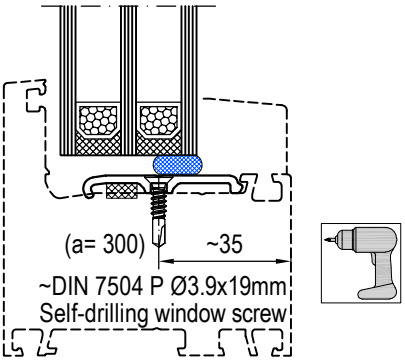


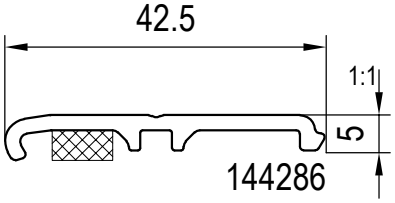


120117

Example ~

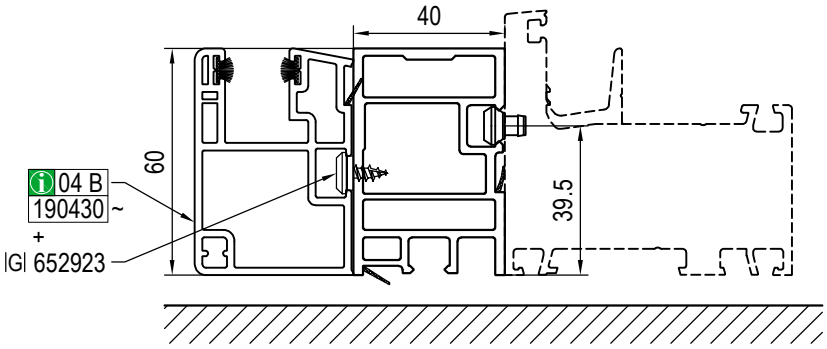
-> AD 24 - 52mm
+
Bonding of pane
Bonding of pane - Sellado de vidrios
Vitrage collé - Incollaggio vetro
VM
08 J

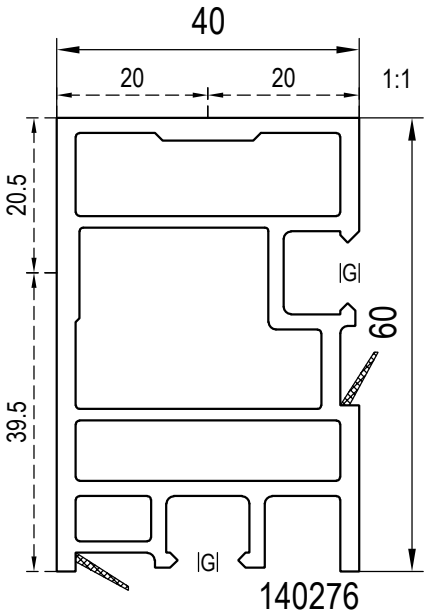


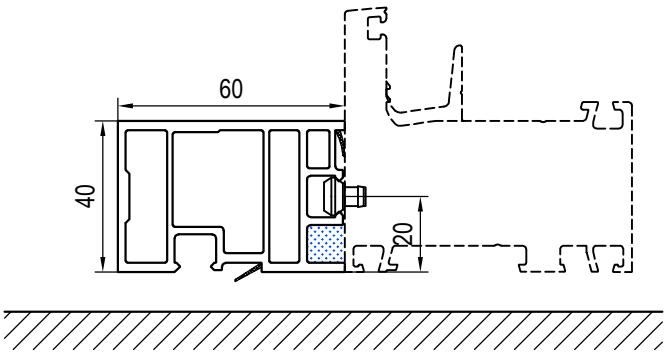


144286

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Connecting profile
Connecting profile
Perfil de conexión
Profilé de raccordement
Profilo di collegamento

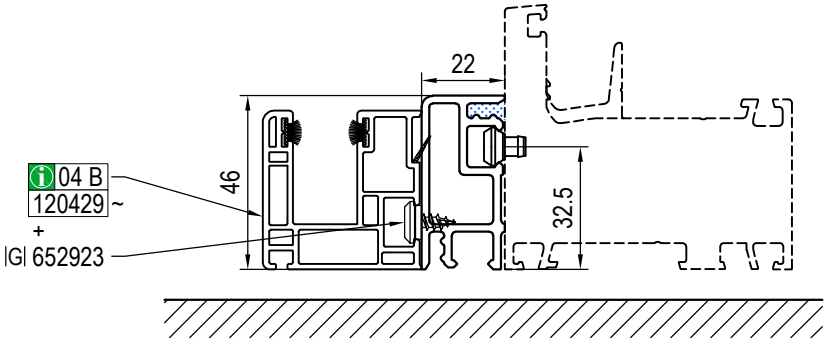


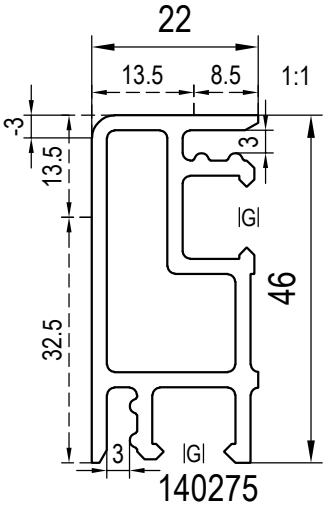


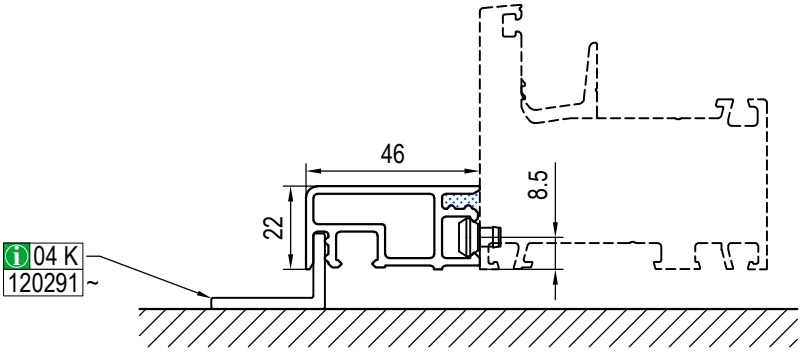



|G| 610004
Nipple screw / Clip
Nipple screw / Clip
Tornillo para clip / Clip
Vis clip / Clip
Vite clip / Clip

Example ~





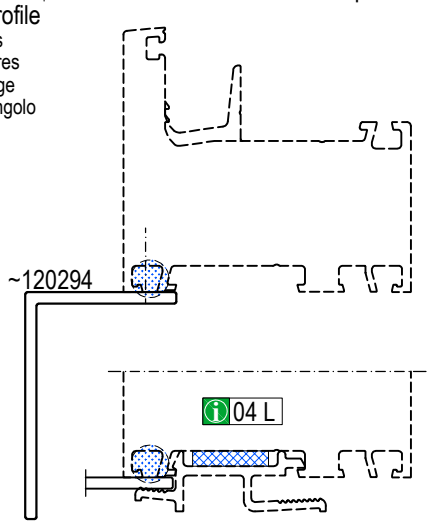


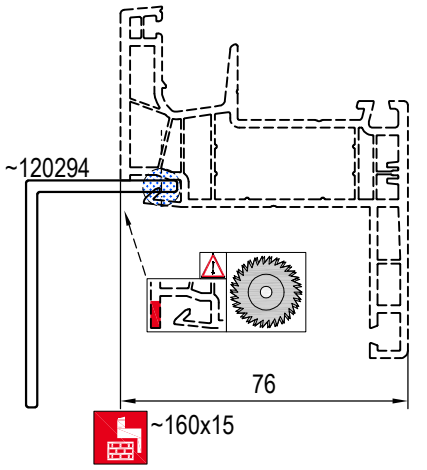

|G| 610004
Nipple screw / Clip
Nipple screw / Clip
Tornillo para clip / Clip
Vis clip / Clip
Vite clip / Clip

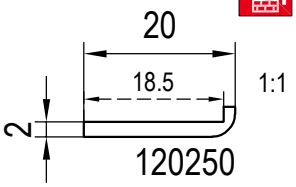
04 L 114245 1:4
->3(6)/3mm
04 L 124245 1:4
->6/3mm

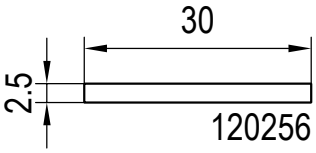
Angle connection profile
Angle connection profiles
Perfiles de unión angulares
Cornière-profils d'habillage
Profili di collegamento angolo

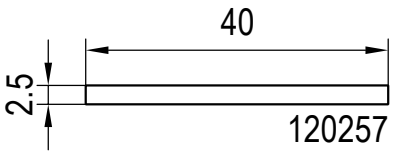
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Flat profile / Angle profile
Flat profile / Angle profile
Pletina / Perfil de ángulo
Profilé plat / Cornière
Profilo piatto / Profilo angolare

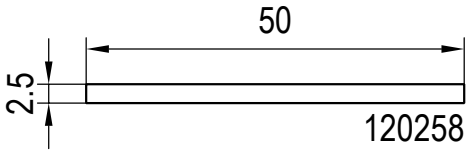


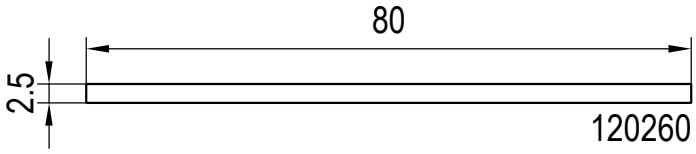


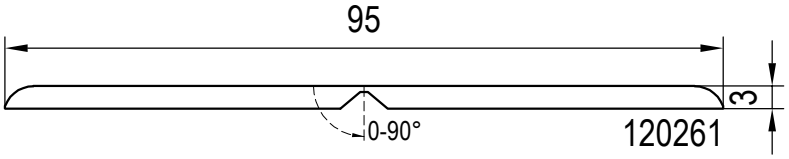


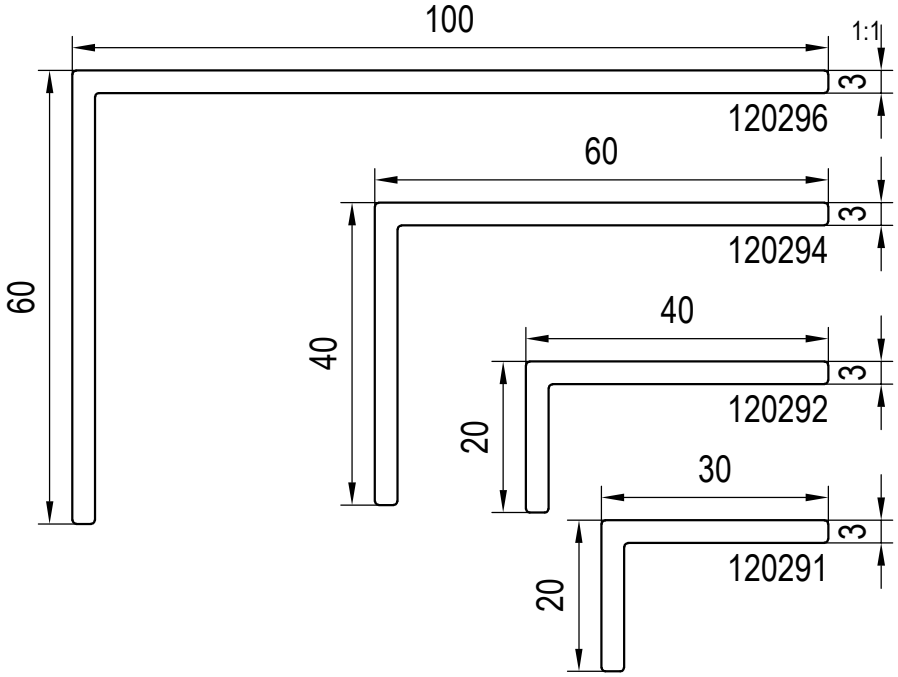












Example ~

1:2

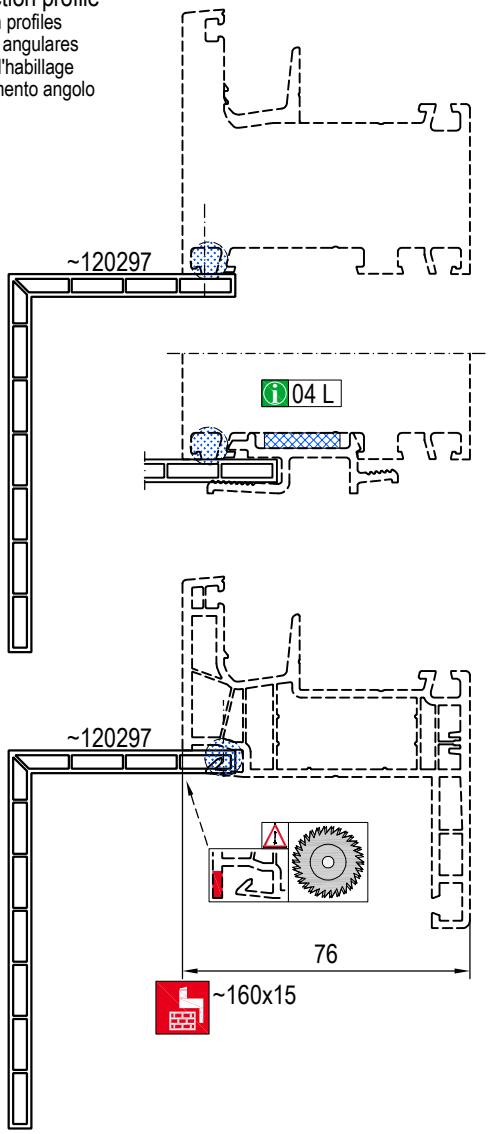
Cover profiles - Perfiles de recubrimiento - Profilés de recouvrement - Coprofili

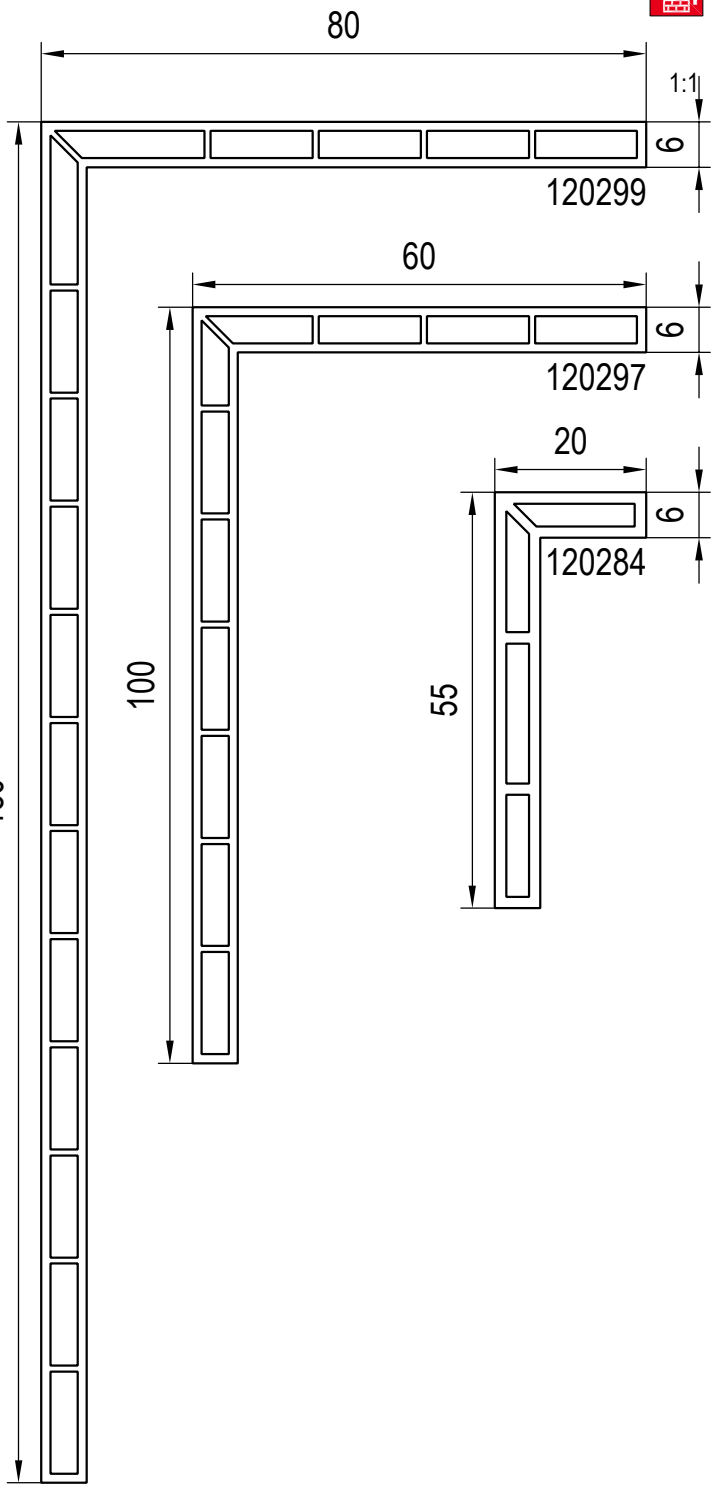
04 L 114245 1:4
->3(6)/3mm
04 L 124245 1:4
->6/3mm

Angle connection profile
Angle connection profiles
Perfiles de unión angulares
Cornière-profils d'habillage
Profili di collegamento angolo

~
Angle profile
Angle profile
Perfil de ángulo
Cornière
Profilo angolare

VM 08 K





Example ~

1:2

Cover profiles - Perfiles de recubrimiento - Profilés de recouvrement - Coprofili

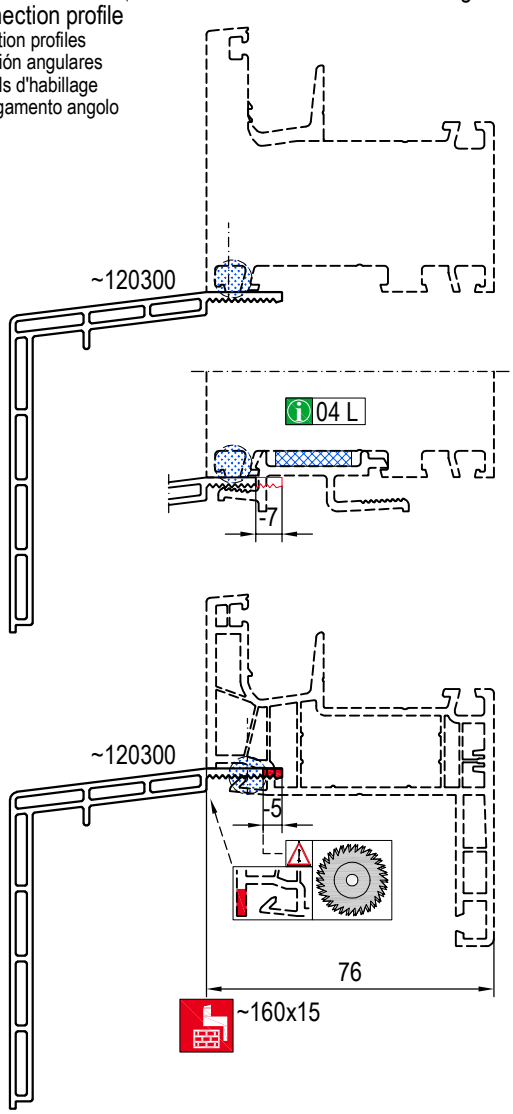
04 L 1:4
114245
->3(6)/3mm

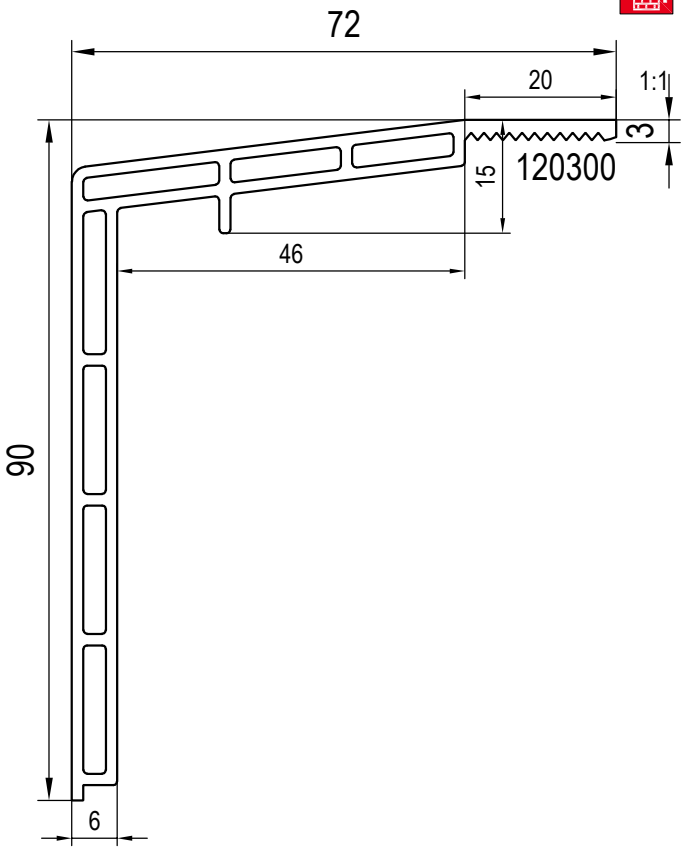
04 L 1:4
124245
->6/3mm

Angle connection profile
Angle connection profiles
Perfiles de unión angulares
Cornière-profils d'habillage
Profili di collegamento angolo

~
Angle profile
Angle profile
Perfil de ángulo
Cornière
Profilo angolare

VM 08 K





Example ~

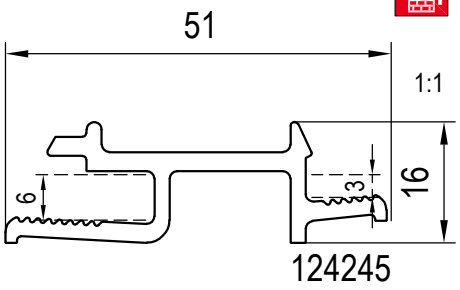
1:2

Cover profiles - Perfiles de recubrimiento - Profilés de recouvrement - Coprifili

04 K 1:2
120294 ~
3mm

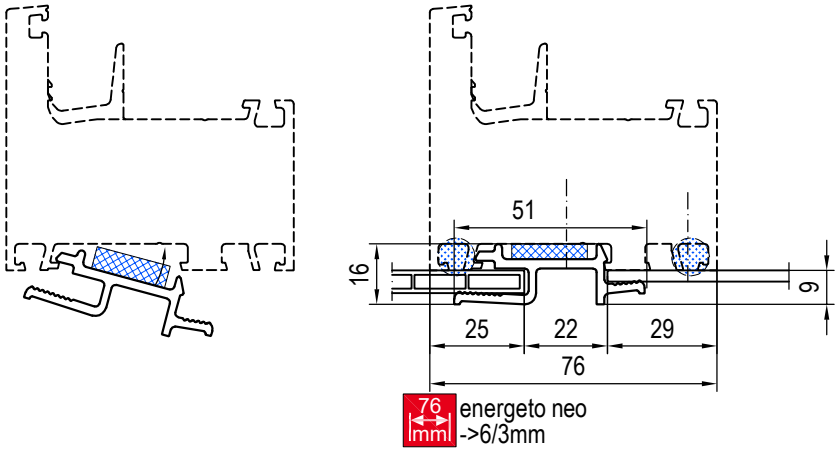
04 K 1:2
120297 ~
6mm

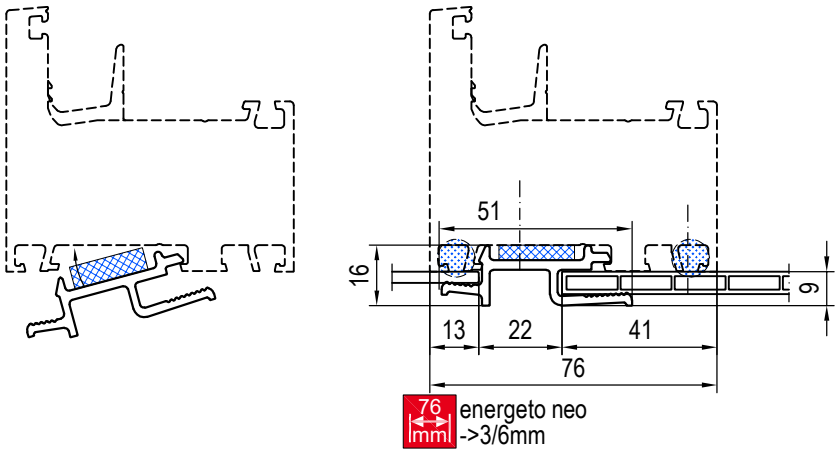
Flat profile / Angle profile
Flat profile / Angle profile
Pletina / Perfil de ángulo
Profilé plat / Cornière
Profilo piatto / Profilo angolare



124245

Example ~





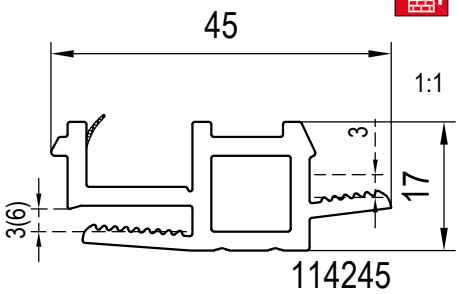
1:2

Angle connection profiles - Perfiles de unión angulares - Cornière-profils d'habillage - Profili di collegamento angolo

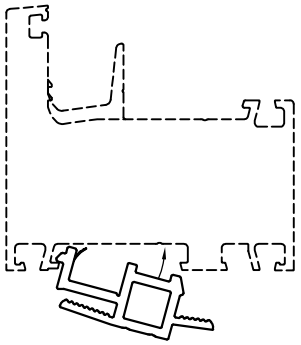
04 K 1:2
120294 ~
3mm
04 K 1:2
120297 ~
6mm

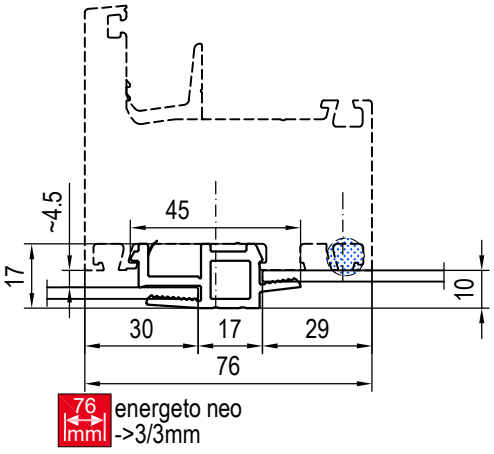
Flat profile / Angle profile

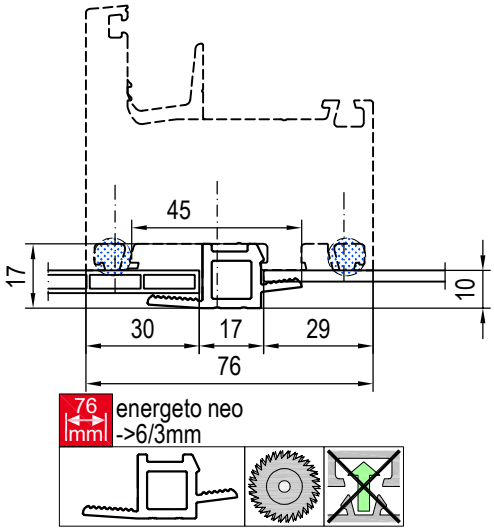
Flat profile / Angle profile
Pletina / Perfil de ángulo
Profilé plat / Cornière
Profilo piatto / Profilo angolare

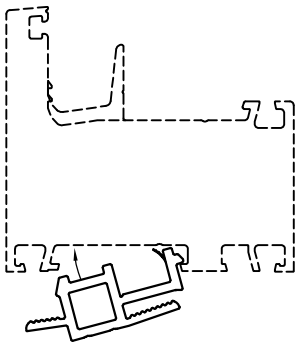


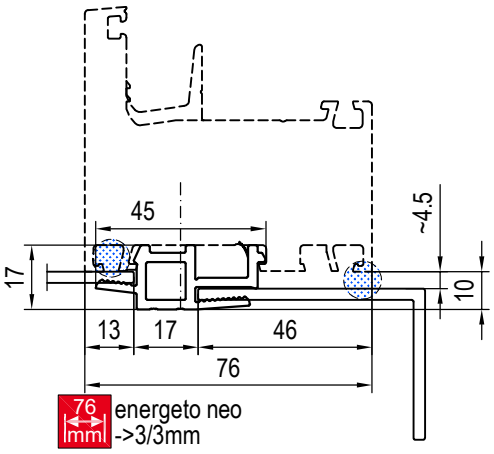
Example ~

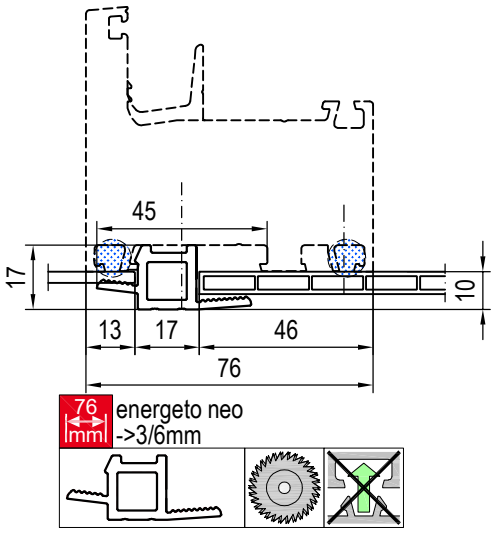








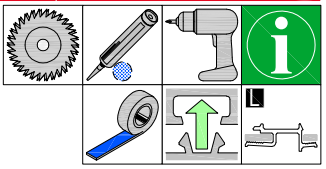


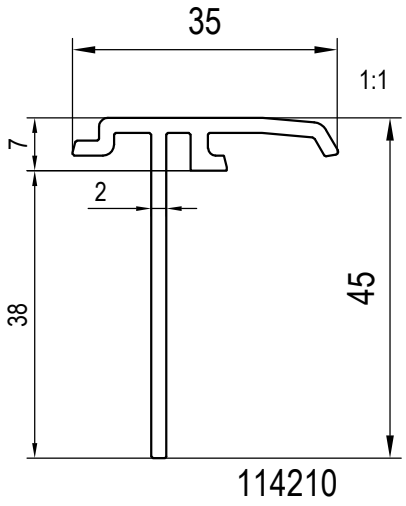


1:2

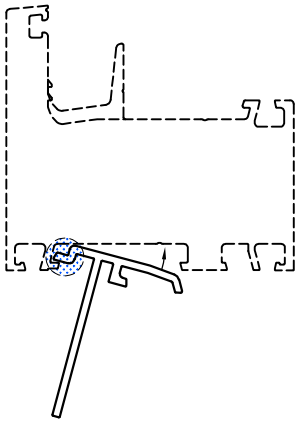
Angle connection profiles - Perfiles de unión angulares - Cornière-profils d'habillage - Profili di collegamento angolo

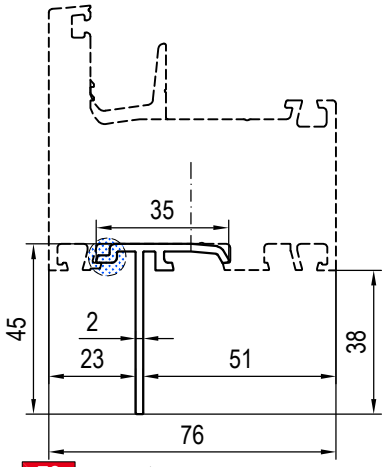
~
Nailing fin
Nailing fin
Aleta de sujeción
Baguette pour clouage
Listello per inchiodare

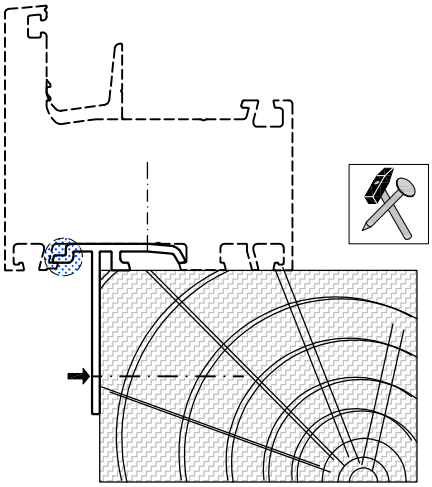


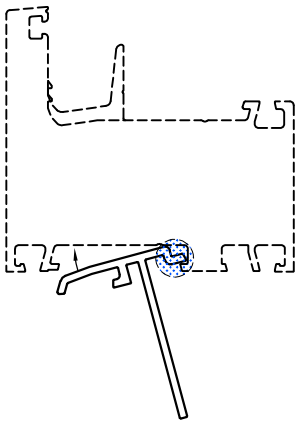


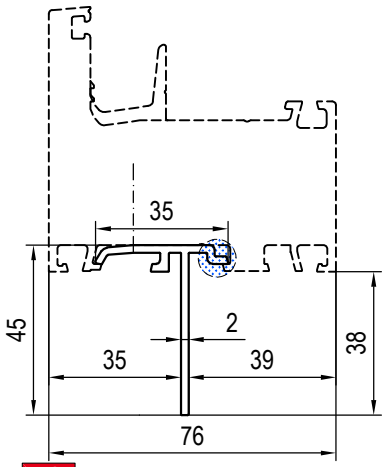
Example ~

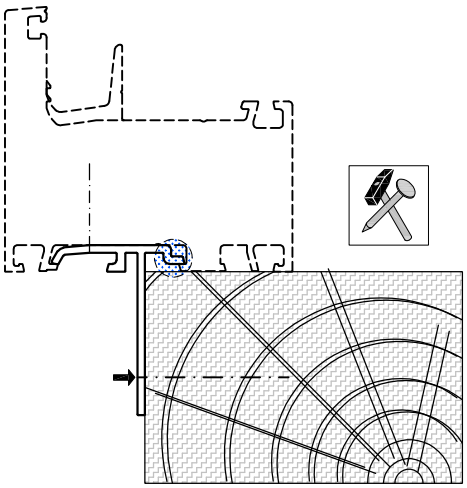












1:2

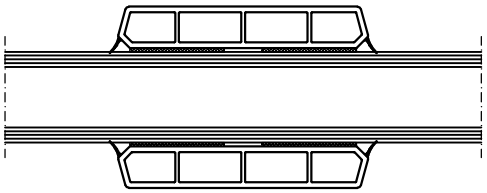
Angle connection profiles - Perfiles de unión angulares - Cornière-profils d'habillage - Profili di collegamento angolo

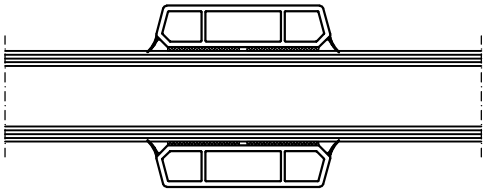
bl	pw
black	papyrus-white
black	papyrus-white
negro	blanco papiro
noir	gris clair
nero	bianco papiro

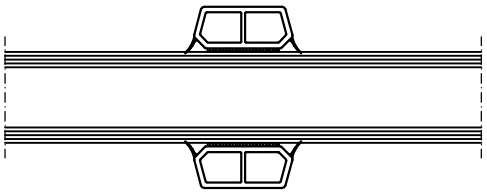
VM 08 I

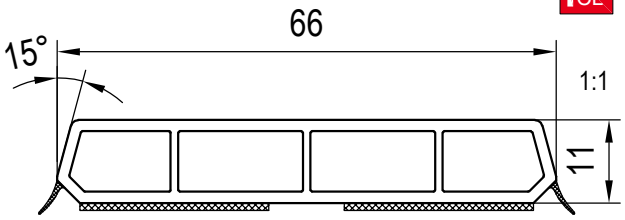
Georgian bars
Georgian bars
Barrotillos autoadhesivos
Croisillons adhésifs
Inglesine adesiva

(CL) Classic-line

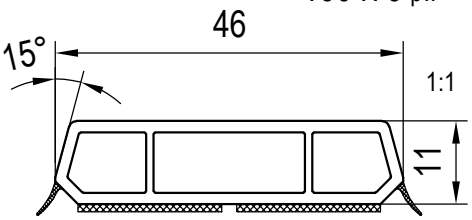




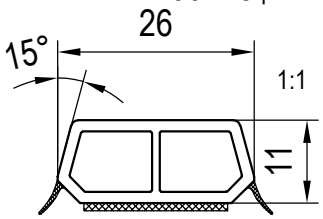




160379 bl
160479 pw



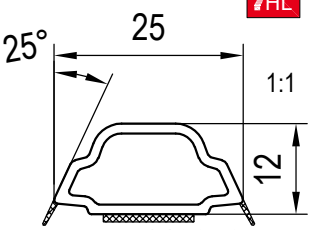
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160478 pw



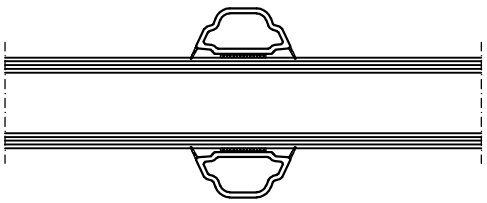
160376 bl
160476 pw

Example ~

(HL) Historik-line



140373 bl
140473 pw

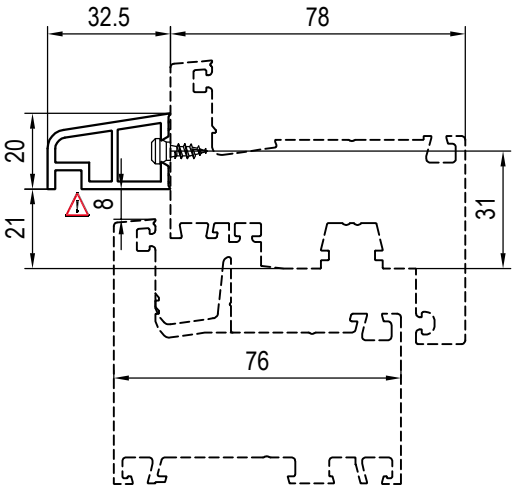


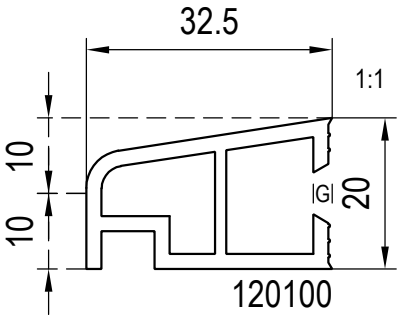
1:2

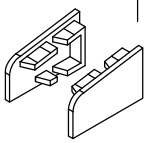
|C| End caps 1:3
End caps - Tapas de remate
Embouts - Tappi

|G| Nipple screw / Clip 1:1
Nipple screw / Clip - Tornillo para clip / Clip
Vis clip / Clip - Vite clip / Clip

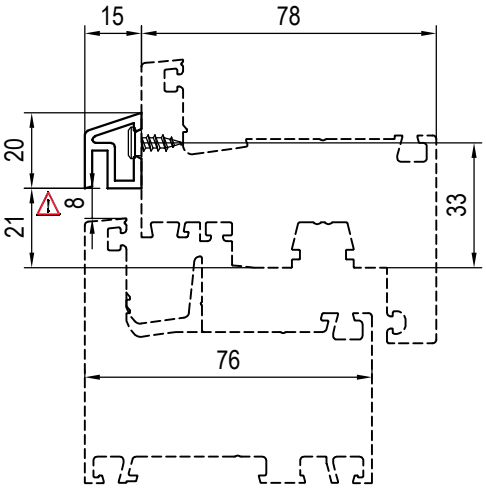
VM 08 K

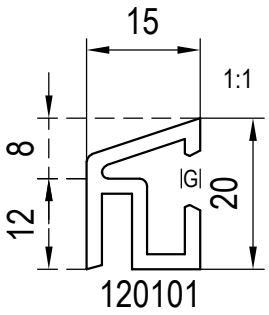


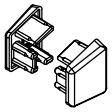


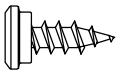

|C| 650914

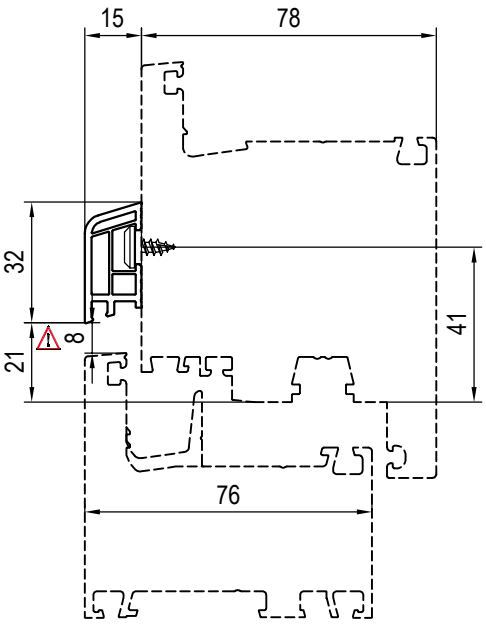

|G| 659918



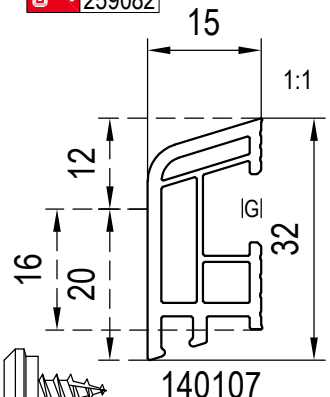


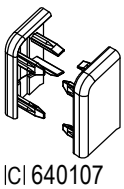

|C| 650932

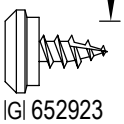

|G| 659939



AI 05 T 259082




|C| 640107


|G| 652923

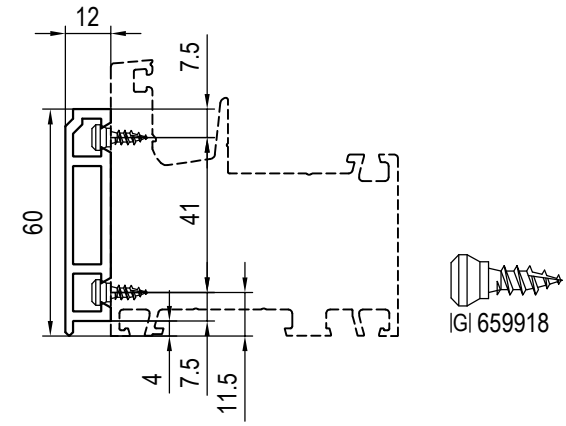
Example ~

1:2

Weather bar - Vierteaguas - Rejet d'eau - Gocciolatoio

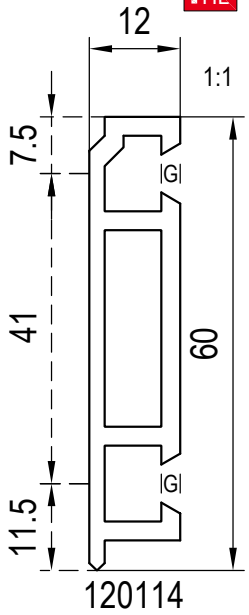
VM 08 K

|G| Nipple screw / Clip 1:1
Nipple screw / Clip - Tornillo para clip / Clip
Vis clip / Clip - Vite clip / Clip



|G| 659918

(HL) Historik-line



Example ~

|C| End caps 1:3
End caps - Tapas de remate
Embouts - Tappi

|G| Nipple screw / Clip 1:1
Nipple screw / Clip - Tornillo para clip / Clip
Vis clip / Clip - Vite clip / Clip

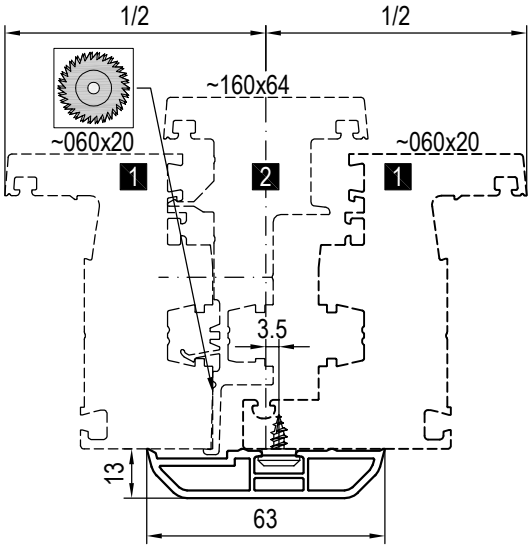
1 Sash
Sash - Hoja - Ouvrant - Anta

2 False mullion
False mullion - Batiente - Battement - Scambio battuta

3 False mullion sash
False mullion sash - Hoja batiente - Battement intégré - Anta-scambio battuta

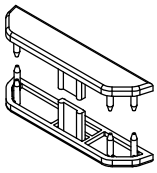
VM 09 Z

(SL) Soft-line

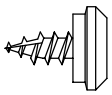


AM 03 L

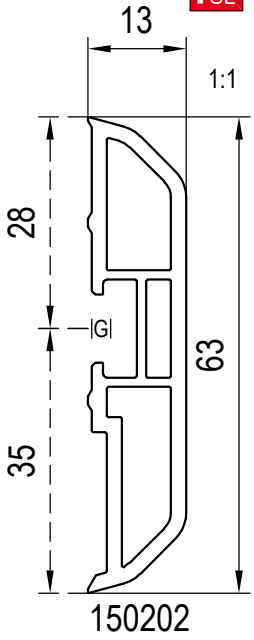
76 mm 2 energeto neo 160x64

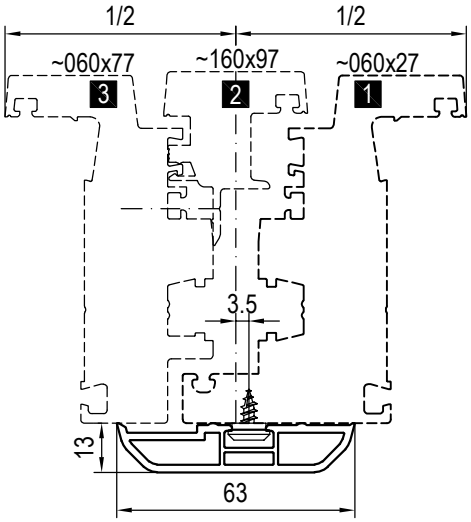


|C| 650202



|G| 652923





AM 03 M

76 mm 2 energeto neo 160x97

Example ~

1:2

Stop bead - Remates interior batiente - Couvre-joints - Profili di battuta

|C| End caps 1:3
End caps - Tapas de remate
Embouts - Tappi

|G| Nipple screw / Clip 1:1
Nipple screw / Clip - Tornillo para clip / Clip
Vis clip / Clip - Vite clip / Clip

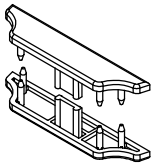
1 Sash
Sash - Hoja - Ouvrant - Anta

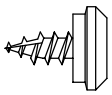
2 False mullion
False mullion - Batiente - Battement - Scambio battuta

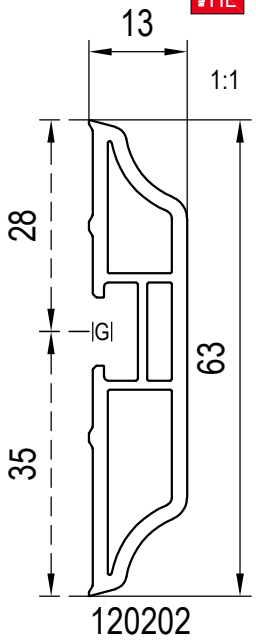
3 False mullion sash
False mullion sash - Hoja batiente - Battement intégré - Anta-scambio battuta

VM 09 Z

(HL) Historik-line

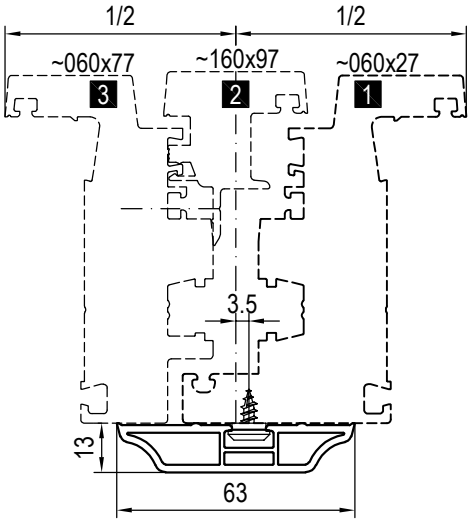

|C| 620202


|G| 652923



AM 03 M

76 mm energeto neo 2 160x97



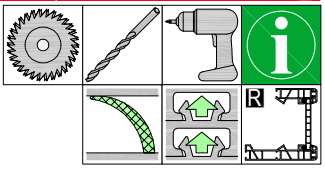
Example ~

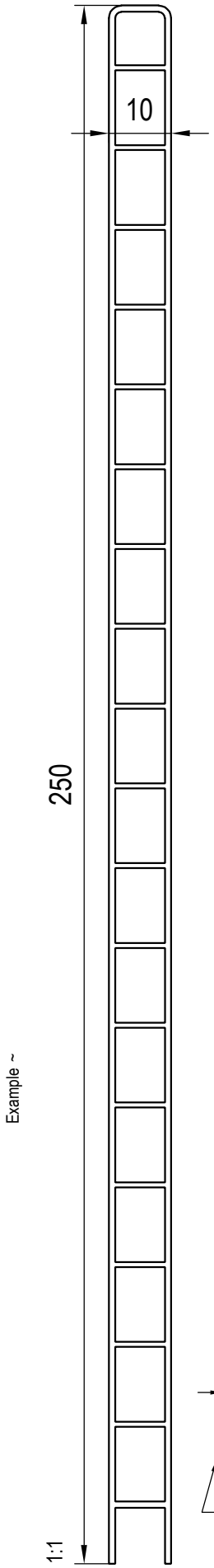
1:2

Stop bead - Remates interior batiente - Couvre-joints - Profili di battuta

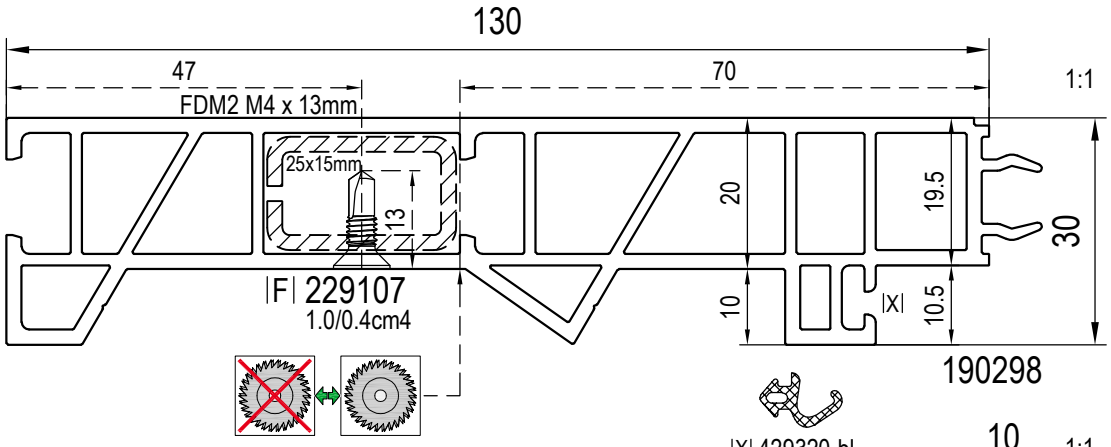
Main profiles: Overview

Main profiles: Overview - Perfiles Principales: Resumen
Profilés principaux: Aperçu - Profili principali: Vista generale





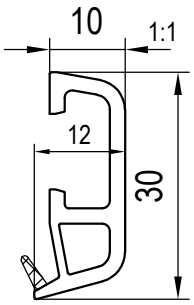
Example ~



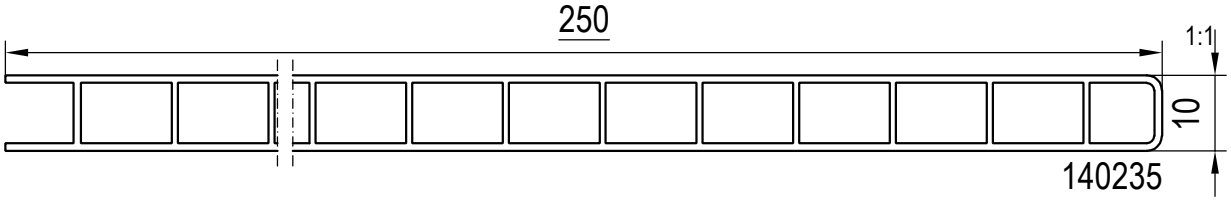
190298

|X| 429320 bl
Gaskets
Gaskets - Juntas
Joints - Guarnizioni

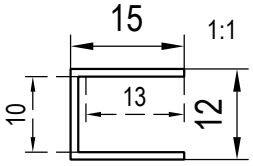
bl
black
black
negro
noir
nero



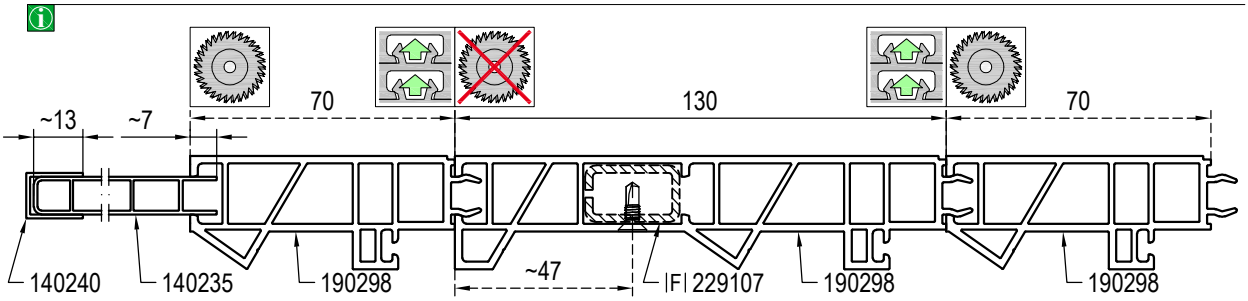
190299
->190298



140235



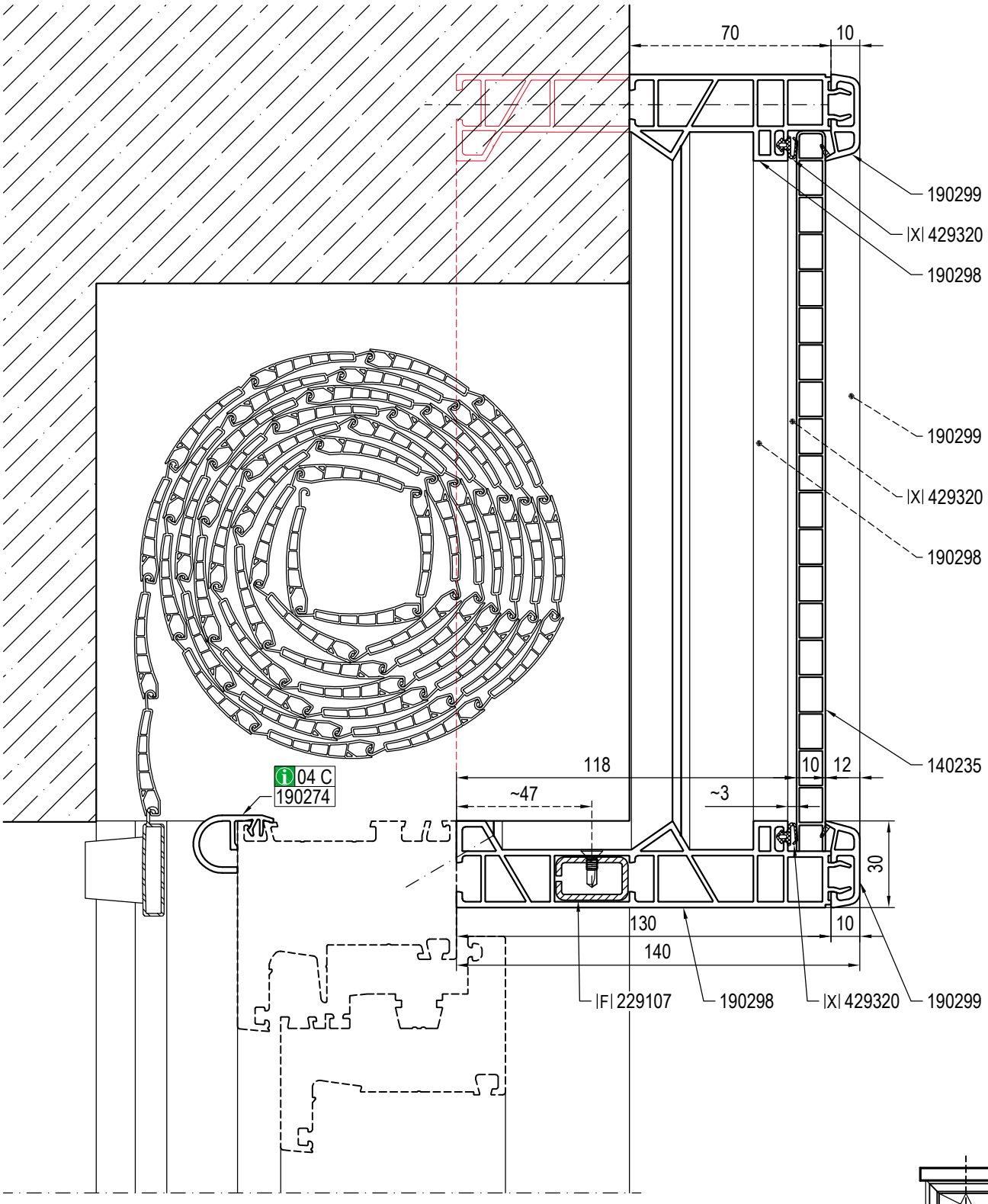
140240
->140235



1:2

Renovation box - Cajón de renovación - Coffre de rénovation - Cassonetto ristrutturazione

Examples for the connection to the wall
Examples for the Connection to the Wall - Ejemplos de Montaje en Obra
Exemples de Connexion structurelle - Esempi di Collegamento strutturali



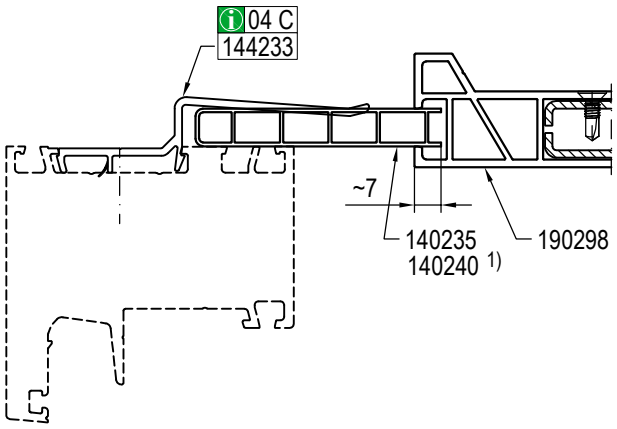
Example ~

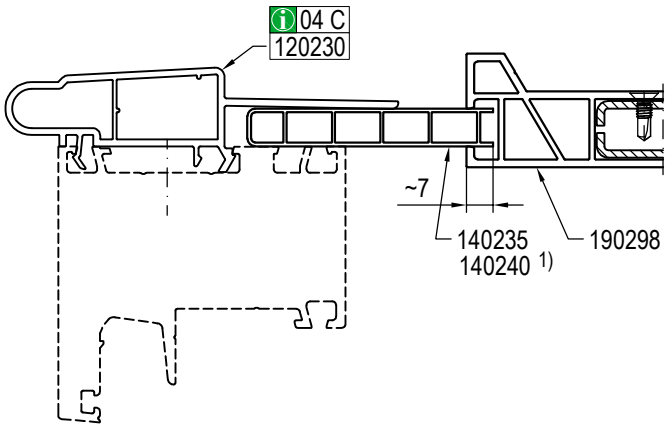
1:2

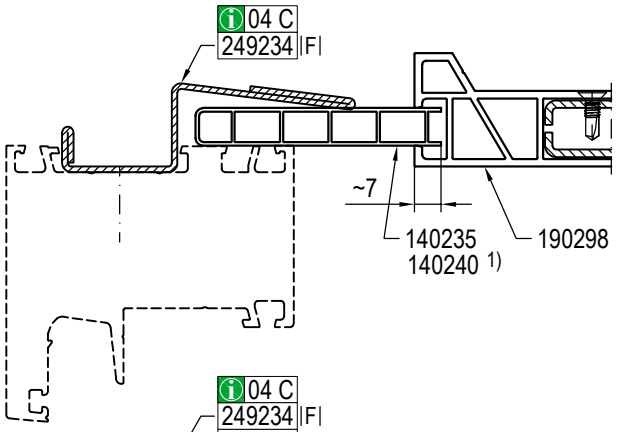
Renovation box - Cajón de renovación - Coffre de rénovation - Cassonetto ristrutturazione

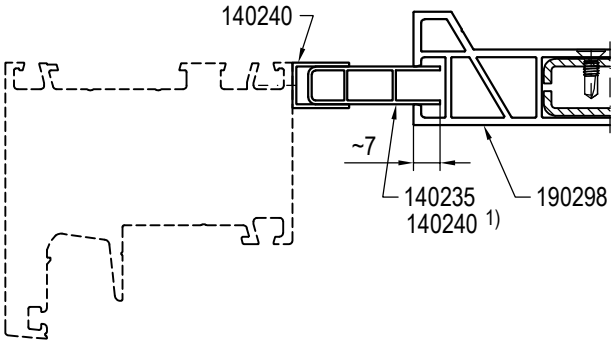
Examples for the connection to the wall
Examples for the Connection to the Wall - Ejemplos de Montaje en Obra
Exemples de Connexion structurelle - Esempi di Collegamento strutturali

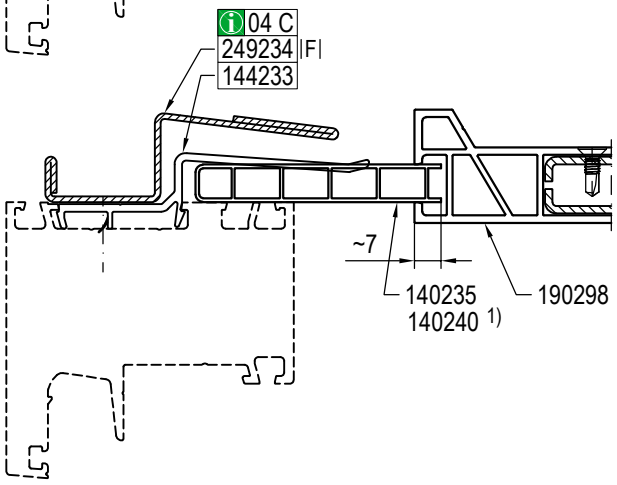
Roller shutter traverses
Roller shutter traverses - Resbalónes de persiana - Traverses de volet roulant - Traversi per avvolgibili

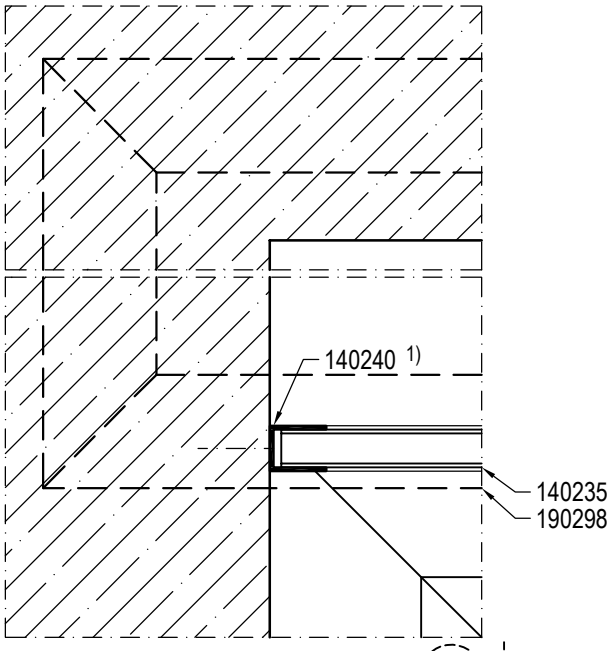


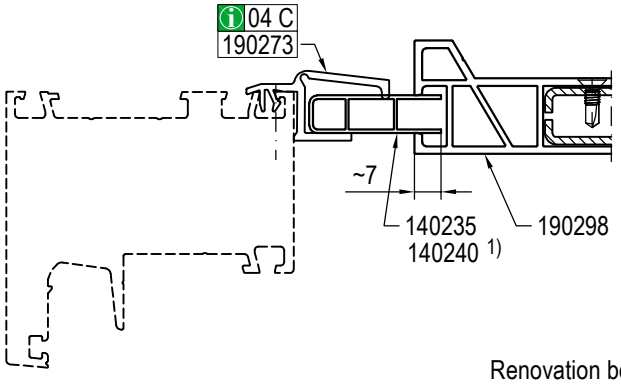








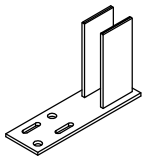




Example ~

1:2

Renovation box - Cajón de renovación - Coffre de rénovation - Cassonetto ristrutturazione



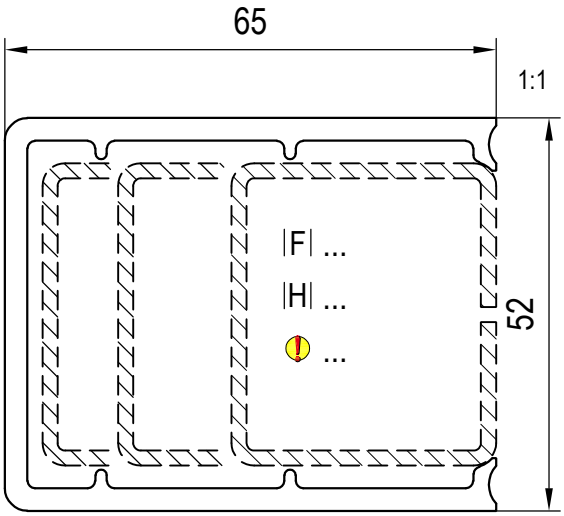
|H| 622104 -> |F| 229125, 259926

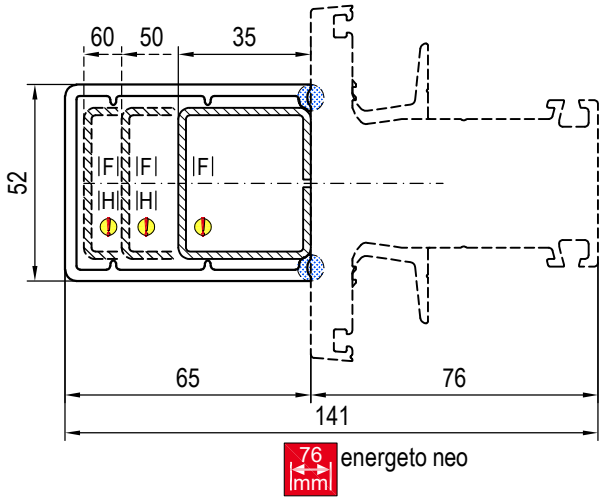
Installation / Mounting anchor

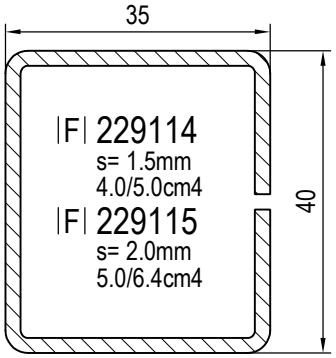
Installation / Mounting anchor
Montaje / Anclaje para montaje
Montage / Patte de fixation murale
Montaggio / Bullone di montaggio

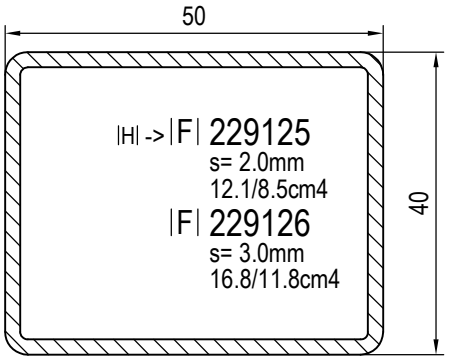
VM 10 E 3.

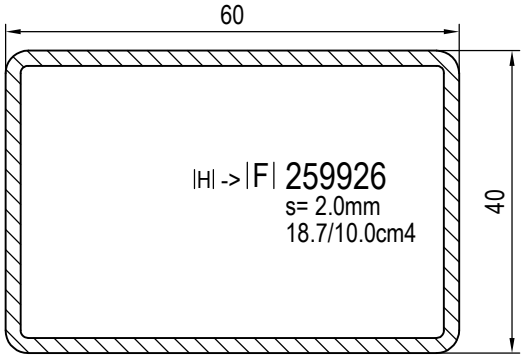
VM 06 A-Z Statics
Statics - Estática
Statique - Statica











Example ~

1:2 Pilasters, Rectangular profiles - Recubrimiento, Perfiles rectangulares - Profil U, Profils rectangulaire - Lesena, Profilati rettangolari

energeto neo
-> Ⓜ 67 |2||4| 16 - 38mm
76 mm
41.5
5
1:2
0
|A| 655251 gn
1:3
03 A

energeto neo
-> Ⓜ 67 |2||4| 16 - 48mm
76 mm
51.5
5
1:2
0
|A| 685251 gn
1:3
03 A

VM 08 E

|A| Spacer
Spacer - Calzo de acristalamiento
Cale de vitrage - Spessore vetro
|A|

|1| Frame
Frame - Marco - Dormant - Telaio
02 B

|2| Sash
Sash - Hoja - Ouvrant - Anta
02 C

|3| Mullion
Mullion - Poste - Meneau - Montante
02 D

|4| Transoms
Transoms - Travesaños - Traverses - Inglesine
02 D

energeto neo
-> Ⓜ 67 |2||4| 16 - 20mm
76 mm
23.5
1
1:2
4
|A| 620250 red
1:3
03 A

energeto neo
-> Ⓜ 67 |2||4| 16 - 35mm
76 mm
38.5
1
1:2
4
|A| 650252 red
1:3
03 A

energeto neo
-> Ⓜ 67 |2||4| 16 - 44mm
76 mm
47.5
1
1:2
4
|A| 680250 red
1:3
03 A

energeto neo
-> AD |1||3| 14 - 52mm
76 mm
48
0
1:2
5
|A| 660301 red
1:3
03 A

energeto neo
-> |2| 170x39 d_1 34 - 71mm d_2 38 - 75mm
76 mm
28.5
4
d_1
d_2
0
1:2
5
|A| 620301 red
1:3
03 A

energeto neo
-> Ⓜ 67 |2||4| 16 - 54mm (≤ 50)*
76 mm
28.5
1
1:2
* 6
5
1
|A| 650250 red
1:3
03 A

energeto neo
-> MD |1||3| 14 - 48mm
76 mm
50
4
1:2
3
|A| 665016 gn
1:3
03 A

energeto neo
-> MD |1||3| 50 - 51mm 1)
-> MD |1||3| 51 - 52mm 2)
76 mm
54
4
1:2
1) 150831/150861
2) 150631/150661
3
|A| 662017 bl
1:3
03 A

t [mm]

1 wh white
white - blanco - blanc - bianco

2 blu blue
blue - azul - bleu - blu

3 red red
red - rojo - rouge - rosso

4 ye yellow
yellow - amarillo - jaune - giallo

5 gn green
green - verde - vert - verde

6 bl black
black - negro - noir - nero

0

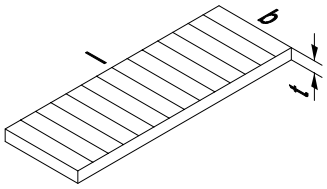
required
required - es necesario - nécessaire - necessario

Example ~

VM 08 E

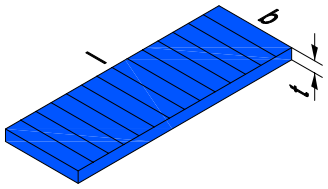
|A| Spacer
Spacer - Calzo de acristalamiento
Cale de vitrage - Spessore vetro

1



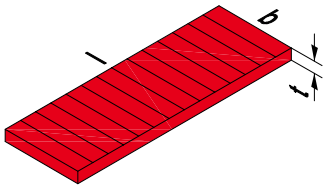
[mm]	t	b	l		
	1	25	90	|A|	659905 wh

2



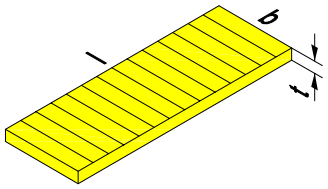
[mm]	t	b	l		
	2	50	100	|A|	640306 blu
	2	40	100	|A|	660945 blu
	2	34	100	|A|	659935 blu
	2	28	100	|A|	669912 blu
	2	25	90	|A|	659906 blu
	2	20	100	|A|	660916 blu
	2	12	100	|A|	660911 blu

3



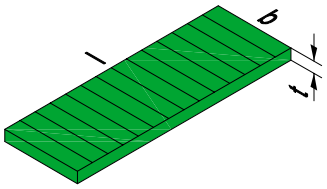
[mm]	t	b	l		
	3	50	100	|A|	640303 red
	3	40	100	|A|	660946 red
	3	34	100	|A|	659936 red
	3	28	100	|A|	669911 red
	3	20	100	|A|	669919 red
	3	12	100	|A|	669922 red

4



[mm]	t	b	l		
	4	50	100	|A|	640304 ye
	4	40	100	|A|	660947 ye
	4	34	100	|A|	659937 ye
	4	28	100	|A|	669910 ye
	4	20	100	|A|	669920 ye

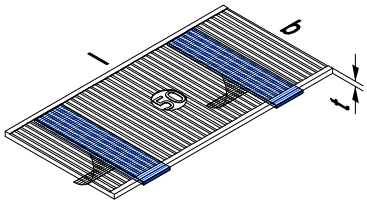
5



[mm]	t	b	l		
	5	50	100	|A|	640305 gn
	5	40	100	|A|	660948 gn
	5	34	100	|A|	659938 gn
	5	28	100	|A|	659908 gn
	5	25	90	|A|	659907 gn
	5	12	100	|A|	669944 gn

Example ~

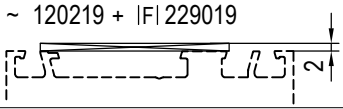
2



1:3

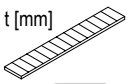
[mm]	t	b	l		
	2	50	100	|A|	640302 blu

-> Couplings 04 D
Couplings - Acoplamientos - Couplages - Accoppiamenti
~ 120219 + |F| 229019



1:2

t [mm]



1 wh white
white - blanco - blanc - bianco
2 blu blue
blue - azul - bleu - blu
3 red red
red - rojo - rouge - rosso
4 ye yellow
yellow - amarillo - jaune - giallo
5 gn green
green - verde - vert - verde
6 bl black
black - negro - noir - nero

cw cream white
cream white - blanco crema - blanc crème - bianco crema

bl black
black - negro - noir - nero

wh white
white - blanco - blanc - bianco

Set
Set - Juego - Kit - Set

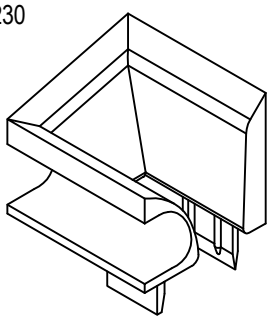
|B| Inlet funnel
Inlet funnel - Embocadura guía persiana
Tulipe de coulisse - Bocchettone

|1| Roller shutter guides
Roller shutter guides - Guías de persiana
Coulisse de volet roulant - Guide avvolgibili
04 B

|2| Roller shutter traverses
Roller shutter traverses - Resbalónes de persiana
Traverses de volet roulant - Traversi per avvolgibili
04 C

|R| Aluminium roller shutter guides
Aluminium roller shutter guides
Guías de persiana de aluminio
Coulisse de volet roulant alu
Guide avvolgibili in alluminio
05 R

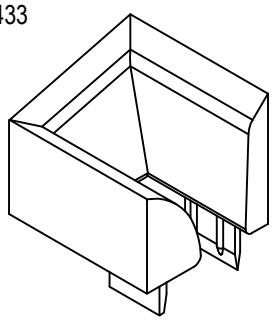
-> |1| 120429,
120929
-> |1| 190433
-> |2| 120230



|C| 622044 bl
|C| 620044 wh

1:2

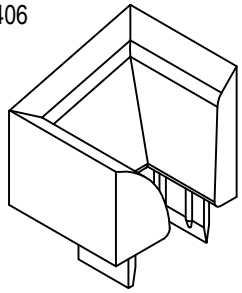
-> |1| 120429,
120929
-> |1| 190433



|C| 628042 cw
|C| 622042 bl
|C| 620042 wh

1:2

-> |1| 190430,
190930
-> |1| 190435,
190935
-> |R| 260406



|C| 622038 bl
|C| 620038 wh

1:2

Example ~

|C| End caps
End caps - Tapas de remate
Embouts - Tappi

energeto neo 76 mm

gr grey
grey - gris - gris - grigio

bl black
black - negro - noir - nero

br brown
brown - marrón - brun - marrone

wh white
white - blanco - blanc - bianco

Set
Set - Juego - Kit - Set

(QL) Qube-line

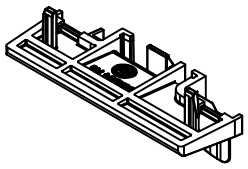
|1| False mullion 02 E
False mullion - Batiente
Battement - Scambio battuta

|2| False mullion sash 02 E
False mullion sash - Hoja batiente
Battement intégré - Anta-scambio battuta

|P| Aluminium shells aluskin 05 P
Aluminium shells - Recubrimientos exteriores de aluminio
Capotage alu - Cappottini in Alluminio

Example ~

energeto neo + |P| **aluskin**
-> |1| 160x64 (QL)
|C| 660464

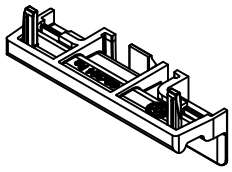


|C| 662564 bl
|C| 661564 br
|C| 660564 wh

09 Z

1:2

energeto neo
-> |1| 160x64 (QL)
|C| 660464

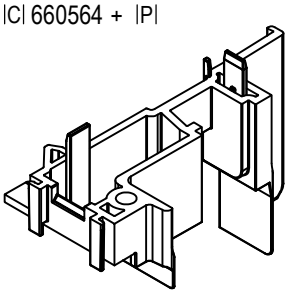


|C| 662364 bl
|C| 661364 br
|C| 660364 wh

09 Z

1:2

energeto neo
-> |1| 160x64 (QL)
|C| 660364
|C| 660564 + |P|

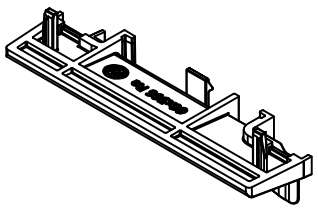


|C| 662464 bl
|C| 661464 br
|C| 660464 wh

09 Z

1:2

energeto neo + |P| **aluskin**
-> |1| 160x66 (QL)
|C| 660466

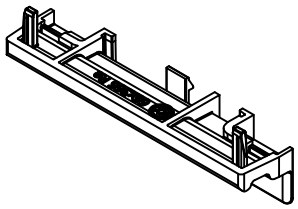


|C| 662566 bl
|C| 661566 br
|C| 660566 wh

09 Z

1:2

energeto neo
-> |1| 160x66 (QL)
|C| 660466

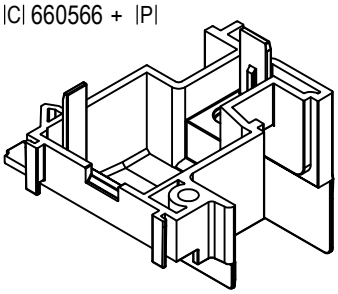


|C| 662366 bl
|C| 661366 br
|C| 660366 wh

09 Z

1:2

energeto neo
-> |1| 160x66 (QL)
|C| 660366
|C| 660566 + |P|

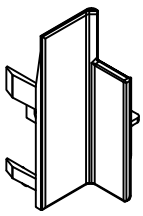


|C| 662466 bl
|C| 661466 br
|C| 660466 wh

09 Z

1:2

energeto neo
-> |2| 060x77 (QL)
-> |2| 160x70 (QL)
-> |2| 160x74 (QL)

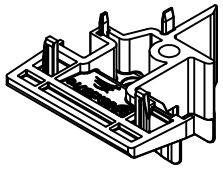


|C| 666077 gr
|C| 661077 br
|C| 660077 wh

09 Z

1:2

energeto neo + |P| **aluskin**
-> |1| 160x97 (QL)

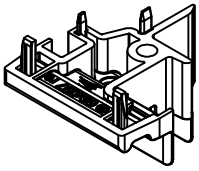


|C| 662597 gr
|C| 661597 br
|C| 660597 wh

09 Z

1:2

energeto neo
-> |1| 160x97 (QL)

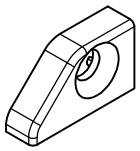


|C| 662097 bl
|C| 661097 br
|C| 660097 wh

09 Z

1:2

-> |T| 257052



|C| 646052 gr

1:1

cw cream white
cream white - blanco crema - blanc crème - bianco crema
lgr light grey
light gray - gris claro - gris clair - grigio chiaro
gr grey
grey - gris - gris - grigio
oc ochre
ochre - ocre - ocre - caramello
bl black
black - negro - noir - nero
br brown
brown - marrón - brun - marrone
wh white
white - blanco - blanc - bianco
09 J
Set
Set - Juego - Kit - Set

(CL) Classic-line
(SL) Soft-line
(HL) Historik-line

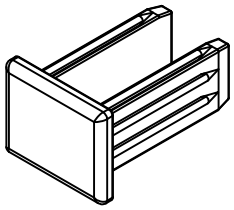
|C| End caps
End caps - Tapas de remate
Embouts - Tappi

|1| Stop beads 04 P
Stop bead - Remates interior batiente
Couvre-joints - Profili di battuta

|2| Weather bar 04 N
Weather bar - Vierteaguas
Rejet d'eau - Gocciolatoio

|T| Aluminium weather bar 05 T
Aluminium weather bar - Vierteaguas de aluminio
Rejet d'eau de aluminium - Gocciolatoio in alluminio

-> |T| 267073



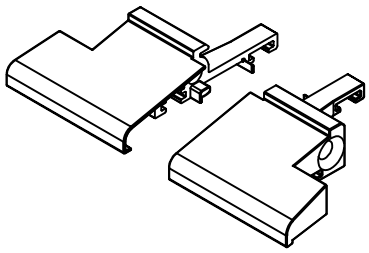
|C| 666073 gr

09 J

1:1

-> |T| 267055

~ False mullion
False mullion - Batiente
Battement - Scambio battuta

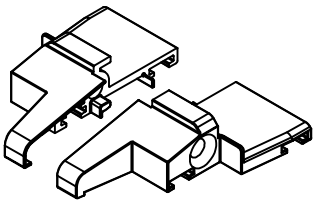


|C| 666056 gr

09 J

1:2

-> |T| 267055

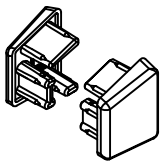


|C| 666055 gr

09 J

1:2

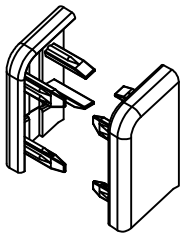
-> |2| 120101 (CL)



|C| 650932 wh

1:2

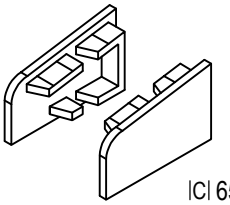
-> |2| 140107 (CL)



|C| 643107 oc
|C| 641107 br
|C| 640107 wh

1:2

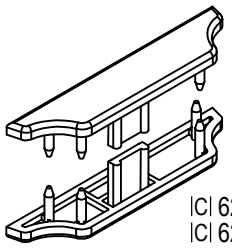
-> |2| 120100 (CL)



|C| 652914 br
|C| 650914 wh

1:2

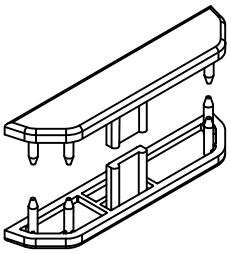
-> |1| 120202 (HL)



|C| 628202 cw
|C| 626202 lgr
|C| 622202 bl
|C| 621202 br
|C| 620202 wh

1:2

-> |1| 150202 (SL)



|C| 652202 bl
|C| 651202 br
|C| 650202 wh

1:2

Example ~

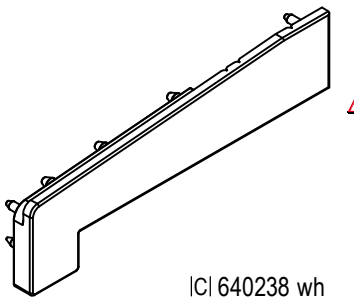
|C| End caps
End caps - Tapas de remate
Embouts - Tappi

|1| Exterior window sills 04 H
Exterior window sills - Vierteaguas exterior
Appuis de fenêtre exterieur - Davanzali esterni

|2| Interior window sills 04 I
Interior window sills - Repisas interiores
Appuis de fenêtre intérieur - Davanzali interni

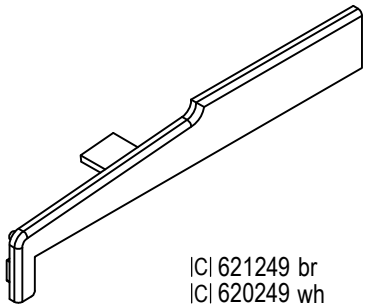
br brown
brown - marrón - brun - marrone
wh white
white - blanco - blanc - bianco
Set
Set - Juego - Kit - Set

-> |1| 120248 l= 60mm
-> |1| 140219 l= 64mm
-> |1| 160238 l= 80mm



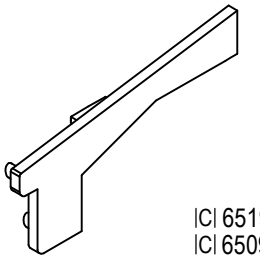
|C| 640238 wh
1:2

-> |1| 120248 l= 105mm



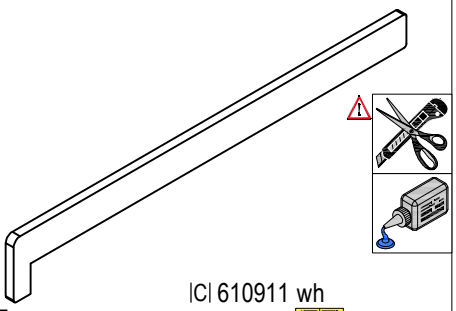
|C| 621249 br
|C| 620249 wh
1:2

-> |1| 120246 l= 66.5mm



|C| 651921 br
|C| 650921 wh
1:2

-> |2| 190110 l= 245mm
-> |2| 190111 l= 295mm



|C| 610911 wh
1:5

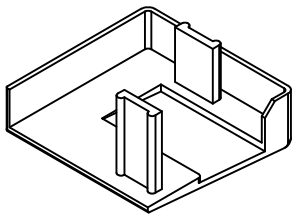
Example ~

|C| End caps
End caps - Tapas de remate
Embouts - Tappi

|1| Roller shutter guides 04 B
Roller shutter guides - Guías de persiana
Coulisse de volet roulant - Guide avvolgibili

bl black
black - negro - noir - nero
br brown
brown - marrón - brun - marrone
wh white
white - blanco - blanc - bianco
Set
Set - Juego - Kit - Set

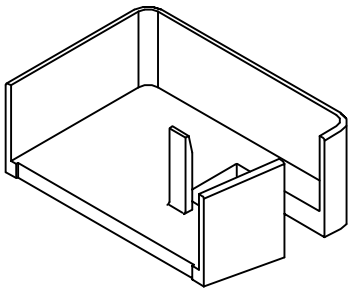
-> |1| 120429
-> |1| 120929



|C| 622032 bl
|C| 621032 br
|C| 620032 wh

1:2

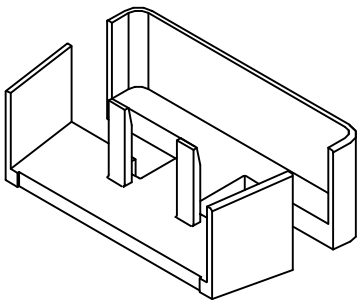
-> |1| 190430
-> |1| 190930



|C| 692030 bl
|C| 691030 br
|C| 690030 wh

1:2

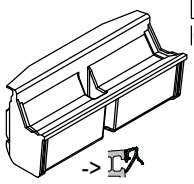
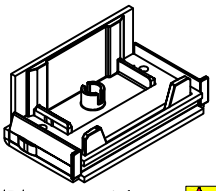
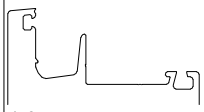
-> |1| 190435
-> |1| 190935

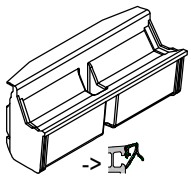
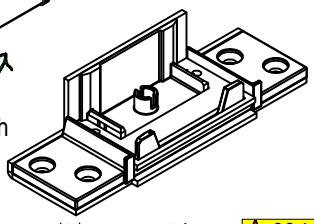
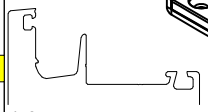


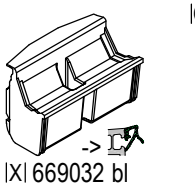
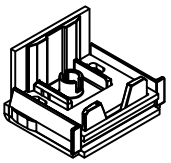
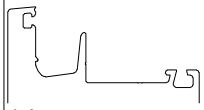
|C| 692035 bl
|C| 690035 wh

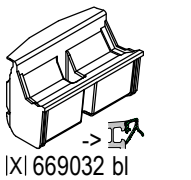
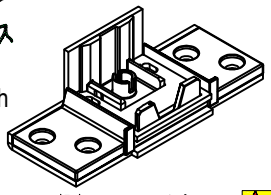
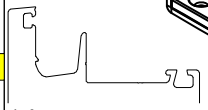
1:2

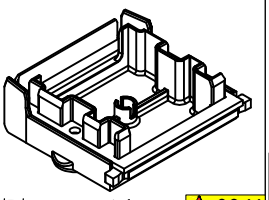
Example ~

energeto neo [1)]
-> 160x46 MD
1:6
76 mm
|O| 660950 |1|

->
|X| 669034 bl
|X| 660034 wh


|D| - tsi
|Ø| 667146 tsi
09 H
1:3

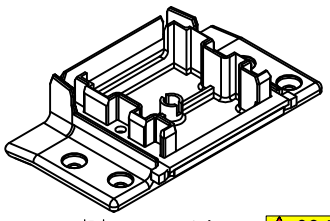
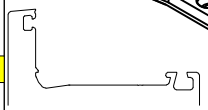
energeto neo [1)]
-> 160x46 MD
1:6
76 mm
|O| 660950 |1|

->
|X| 669034 bl
|X| 660034 wh


|D| - tsi
|Ø| 667046 tsi
09 H
1:3

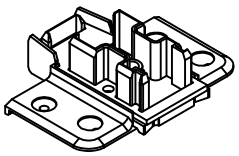
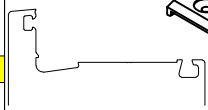
energeto neo [1)]
-> 160x45 MD
1:6
76 mm
|O| 660950 |1|

->
|X| 669032 bl
|X| 660032 wh


|D| - tsi
|Ø| 667145 tsi
09 H
1:3

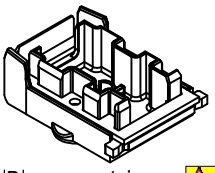
energeto neo [1)]
-> 160x45 MD
1:6
76 mm
|O| 660950 |1|

->
|X| 669032 bl
|X| 660032 wh


|D| - tsi
|Ø| 667045 tsi
09 H
1:3

energeto neo [1)]
-> 160x43 AD
1:6
76 mm
|O| 660950 |1|


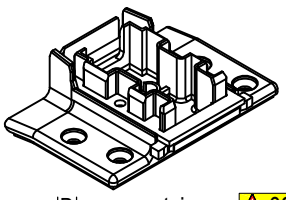
|D| - tsi
|Ø| 667143 tsi
09 H
1:3

energeto neo [1)]
-> 160x43 AD
1:6
76 mm
|O| 660950 |1|


|D| - tsi
|Ø| 667043 tsi
09 H
1:3

energeto neo [2)]
-> 160x48
-> Ⓜ 67
76 mm


|D| - tsi
|Ø| 667048 tsi
09 H
1:3

energeto neo [1)]
-> 160x41 AD
1:6
76 mm
|O| 660950 |1|


|D| - tsi
|Ø| 667141 tsi
09 H
1:3

energeto neo [1)]
-> 160x41 AD
1:6
76 mm
|O| 660950 |1|


|D| - tsi
|Ø| 667041 tsi
09 H
1:3

|1| Drilling jig
Drilling jig - Plantilla de taladro
Gabarit de perçage - Dima per foratura

|D| Connector
Connector - Uniones mecánicas
Assemblage - Giunzione
|D|

|Ø| Connector without knobs
Connector without knops - Conectores sin centradores
Assemblage sans plots - Giunzione senza rilievi

|O| Auxiliary parts 05 O
Auxiliary parts - Material auxiliar
Accessoires - Mezzi

|X| Gaskets 05 X
Gaskets - Juntas - Joints - Guarnizioni

[1)] Mullion 02 D
Mullion - Poste - Meneau - Montante

[2)] Transoms 02 D
Transoms - Travesaños - Traverses - Inglesine

bl black
black - negro - noir - nero

wh white
white - blanco - blanc - bianco

tsi titanium silver
titanium silver - titanio plateado - argent titane - argento titanio

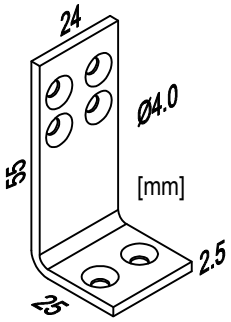
Metal
Metal - Metálico - Métal - Metallo

required
required - es necesario - nécessaire - necessario

Example ~

energeto neo
-> General

76 mm



|D| 642140

1:2

|1| Drilling jig
Drilling jig - Plantilla de taladro
Gabarit de perçage - Dima per foratura

|D| Connector
Connector - Uniones mecánicas
Assemblage - Giunzione



|Ø| Connector without knobs
Connector without knops - Conectores sin centradores
Assemblage sans plots - Giunzione senza rilievi

|O| Auxiliary parts
Auxiliary parts - Material auxiliar
Accessoires - Mezzi
05 O

|U| Aluminium thresholds
Aluminium thresholds - Umbrales de aluminio
Seuil de alu - Alluminio soglia
05 U

1) Mullion
Mullion - Poste - Meneau - Montante
02 D

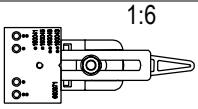
3) Frame
Frame - Marco - Dormant - Telaio
02 B

Example ~

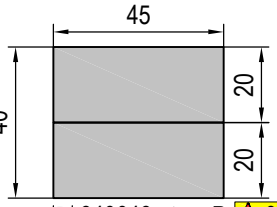
energeto neo 1)
-> 160x43 AD
-> 160x46 MD

1:6

76 mm



|O| 660971 |1|
-> |U|



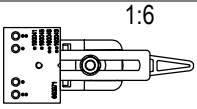
L ~1000mm |D| 640046 st P 09 J
2x

1:2

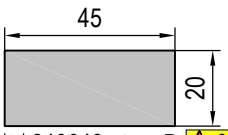
energeto neo 1)
-> 160x41 AD
-> 160x45 MD

1:6

76 mm



|O| 660971 |1|
-> |U|



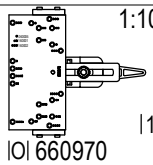
L ~1000mm |D| 640046 st P 09 J

1:2

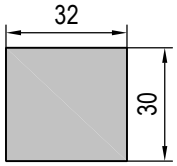
energeto neo 3)
-> 160x01 AD

1:10

76 mm



|1|
|O| 660970
-> |U|



L ~1000mm |D| 640047 st P 09 J

1:2

st stained
stained - policromo - multicolore - multicolore

P Plastic
Plastic - Plástico - Plastique - Plastica

Metal
Metal - Metálico - Métal - Metallo

required
required - es necesario - nécessaire - necessario

VM 09 J

|E| Corner connector
Corner connector - Ensamblaje angular
Assemblage d'angle - Giunzione angolare

|1| Sash 02 C
Sash - Hoja - Ouvrant - Anta

|F| Reinforcements 01 P
Reinforcements - Refuerzos - Renforts - Rinforzi

|O| Auxiliary parts 05 O
Auxiliary parts - Material auxiliar
Accessoires - Mezzi

Example ~

-> |F| 229135
-> |F| 229137
(50x50x2mm)

1:10 ~

energeto neo
-> |1| 170x39

|O| 640938

76 mm

|O|
09 J

|E| 640038

1:5 ~

-> |F| 269033
-> |F| 269034
(45x60x2mm)

1:10 ~

energeto neo
-> |1| 160x33
-> |1| 160x35

|O| 640938

76 mm

|O|
09 J

|E| 660033

1:5 ~

-> |1| 120429,
120929
-> |1| 190430,
190930
-> |1| 190433
-> |1| 190435,
190935
-> |2| 190219
-> |3| 140107
-> |5| 120202
-> |5| 150202


1)

|G| 652923

1:1

-> |2| 140275
-> |2| 140276


2)

|G| 610004

1:1

-> |3| 120101


1)

|G| 659939

1:1

-> |P| 269504 -> Al


1) A2

|G| 654930

1:1

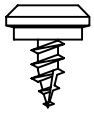
-> |3| 120100
-> |4| 120114


1)

|G| 659918

1:1

-> |R| 260406 -> Al
-> |T| 259082


2)
+
1)

|G| 659923

1:1

1) Steel
Steel - Acero
Acier - Acciaio

2) Plastic
Plastic - Plástico
Plastique - Plastica

|G| Nipple screw / Clip
Nipple screw / Clip - Tornillo para clip / Clip
Vis clip / Clip - Vite clip / Clip

|1| Roller shutter guides 04 B
Roller shutter guides - Guías de persiana
Coulisse de volet roulant - Guide avvolgibili

|2| Cover profiles 04 K
Cover profiles - Perfiles de recubrimiento
Profilés de recouvrement - Coprifili

|3| Weather bar 04 N
Weather bar - Vierteaguas
Rejet d'eau - Gocciolatoio

|4| Decorative profiles 04 O
Decorative profiles - Perfiles decorativos
Profils décoratifs - Profili decorativi

|5| Stop beads 04 P
Stop beads - Remates interior batiente
Couvre-joints - Profili di battuta

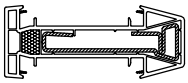
|P| Aluminium shells aluskin 05 P
Aluminium shells - Recubrimientos exteriores de aluminio
Capotage alu - Cappottini in Alluminio

|R| Aluminium roller shutter guides 05 R
Aluminium roller shutter guides
Guías de persiana de aluminio
Coulisse de volet roulant alu
Guide avvolgibili in alluminio

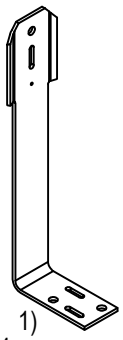
|T| Aluminium weather bar 05 T
Aluminium weather bar - Vierteaguas de aluminio
Rejet d'eau de aluminium - Gocciolatoio in alluminio

Example ~

-> |F| 229018
-> |F| 289018
-> |2| 1602180000020
1:5

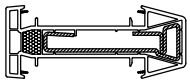


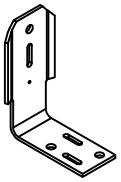
+ Roller shutter box
Roller shutter box
Cajón de persiana
Coffre de volet roulant
Cassonetto



1)
|H| 622354
1:10 ~

-> |F| 229018
-> |F| 289018
-> |2| 1602180000020
1:5





1)
|H| 622338
1:10 ~

1) Steel
Steel - Acero
Acier - Acciaio

2) Plastic
Plastic - Plástico
Plastique - Plastica

|H| Installation / Mounting anchor
Installation / Mounting anchor
Montaje / Anclaje para montaje
Montage / Patte de fixation murale
Montaggio / Bullone di montaggio

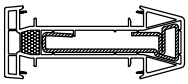
|H|

VM 10 E 3.

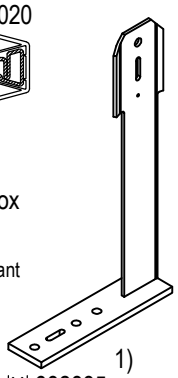
|1| Frame 02 B
Frame - Marco - Dormant - Telaio

|2| Couplings 04 D
Couplings - Acoplamientos - Couplages - Accoppiamenti

-> |F| 229018
-> |F| 289018
-> |2| 1602180000020
1:5

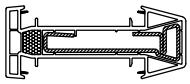


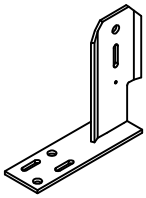
+ Roller shutter box
Roller shutter box
Cajón de persiana
Coffre de volet roulant
Cassonetto



1)
|H| 682335
1:10 ~

-> |F| 229018
-> |F| 289018
-> |2| 1602180000020
1:5





1)
|H| 682332
1:10 ~

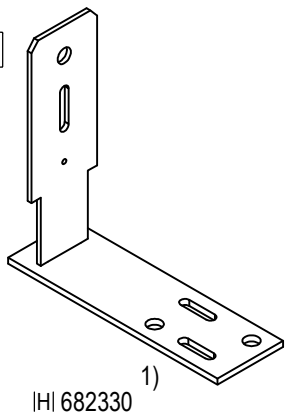
|F| Reinforcements 01 P
Reinforcements - Refuerzos - Renforts - Rinforzi

gn green
green - verde - vert - verde

bl black
black - negro - noir - nero

-> |F| 209900
-> |2| 160267
1:5

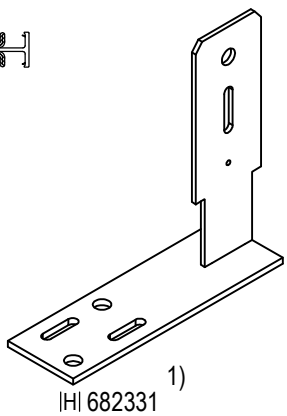




1)
|H| 682330
1:5 ~

-> |F| 209900
-> |2| 160267
1:5

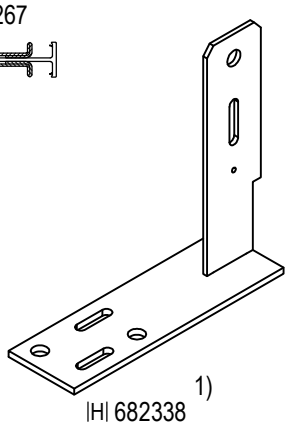




1)
|H| 682331
1:5 ~

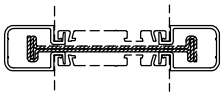
-> |F| 209901
-> |2| 160267
1:5

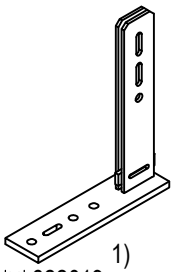




1)
|H| 682338
1:5 ~

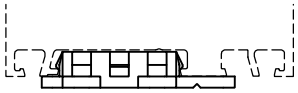
-> |F| 229019
-> |2| 120219
1:5

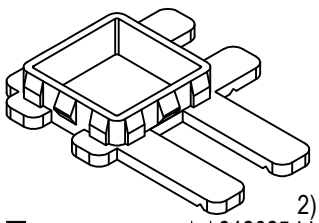




1)
|H| 622019
1:10 ~

-> |1| + |2|
1:2

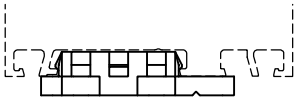


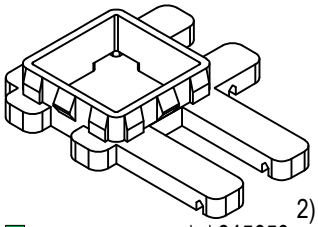




2) PS
|H| 642025 bl 3mm
1:2

-> |1| + |2|
1:2







2) PS
|H| 645050 gn 5mm
1:2

Example ~

-> |1| |3|
1:2
≤
100 kg 30mm
60 kg 50mm
30 kg 70mm
1)
|H| 640331 250mm
1:5 ~

-> |1| |3|
1:2
1)
|H| 620410
1:5 ~

1) Steel
Steel - Acero
Acier - Acciaio

|H| Installation / Mounting anchor
Installation / Mounting anchor
Montaje / Anclaje para montaje
Montage / Patte de fixation murale
Montaggio / Bullone di montaggio
VM 10 E 3.

|1| Frame 02 B
Frame - Marco - Dormant - Telaio

|2| Couplings 04 D
Couplings - Acoplamientos - Couplages - Accoppiamenti

|3| Extensions 04 F
Extensions - Prolongaciones - Élargisseurs - Allargatori

|4| Pilaster, Rectangular profiles 04 S
Pilasters, Rectangular profiles
Recubrimiento, Perfiles rectangulares
Profil U, Profils rectangulaire
Lesena, Profilati rettangolari

|F| Reinforcements 01 P
Reinforcements - Refuerzos - Renforts - Rinforzi

|X| Gaskets 05 X
Gaskets - Juntas
Joints - Guarnizioni

-> |1| |3| energeto neo, IDEAL 5000/7000/8000
1:2
1)
|H| 282017 250mm
1:5 ~

-> |F| 229125
-> |F| 259926
-> |4| 120109
1:5
1)
|H| 622104
1:5 ~

bl black
black - negro - noir - nero

-> |F| 249244
-> |2| 140244
1:5
1)
|H| 622333
1:10 ~

-> |F| 249242
-> |2| 140249
1:5
1)
|H| 622142
1:10 ~

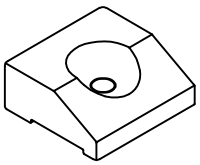
-> |F| 229040
-> |2| 160248
1:5
1)
|H| 622041
1:10 ~

-> |3| ~
1:5
VM 08 C 8.
TPE
1:5
|X| 469299 bl
1:10
|X| 762299 bl
1)
|H| 644299
1:5 ~

-> |3| ~
1:5
VM 08 C 8.
1)
|H| 682333
1:5 ~

Example ~

-> Sash
Sash - Hoja - Ouvrant - Anta
02 C

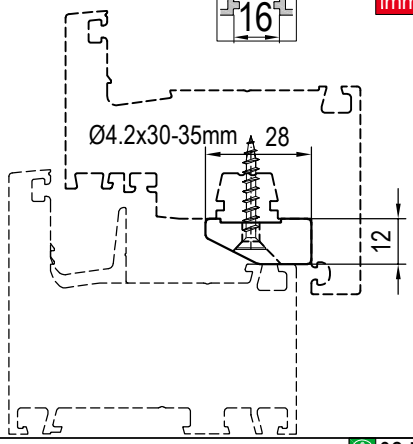


621440 br
620440 wh

1:2

energeto neo -> 16

76 mm



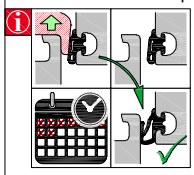
1:2

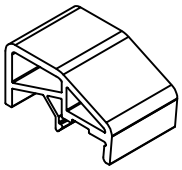
Lifter
Lifter - Pieza de elevación
Cale de distance - Piedino di centratura

br brown
brown - marrón - brun - marrone
wh white
white - blanco - blanc - bianco

-> Frame
Frame - Marco - Dormant - Telaio
02 B

Transport protection
Transport protection - Protección para transporte
Protection de transport - Protezione trasporto



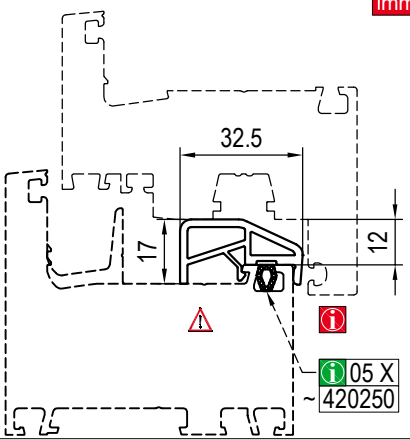


640012 wh

1:2

energeto neo

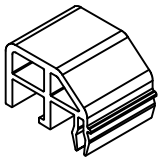
76 mm



1:2

-> Frame
Frame - Marco - Dormant - Telaio
02 B

Transport protection
Transport protection - Protección para transporte
Protection de transport - Protezione trasporto

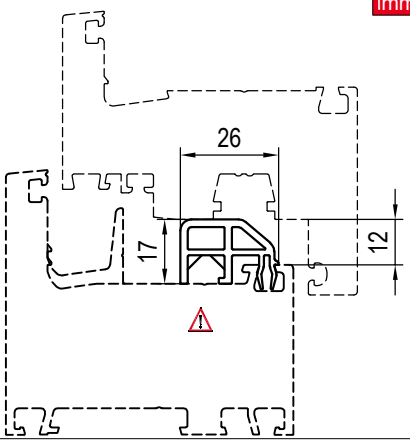


640015 wh

1:2

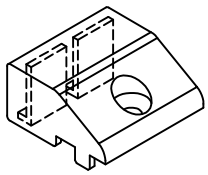
energeto neo

76 mm



1:2

-> Frame
Frame - Marco - Dormant - Telaio
02 B

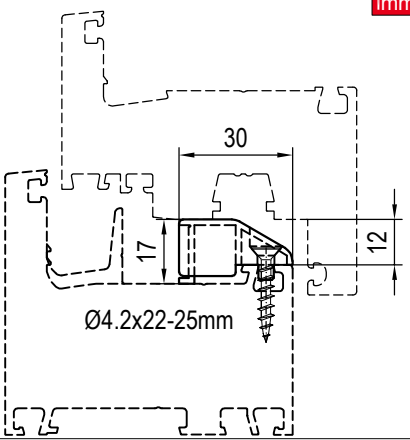


640441 wh

1:2

energeto neo

76 mm



1:2

Example ~

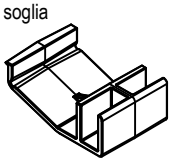
-> Sash
Sash - Hoja - Ouvrant - Anta

02 C

Auxiliary parts
Auxiliary parts - Material auxiliar
Accessoires - Mezzi

-> |U| Aluminium thresholds
Aluminium thresholds - Umbrales de aluminio
Seuil de alu - Alluminio soglia

05 U

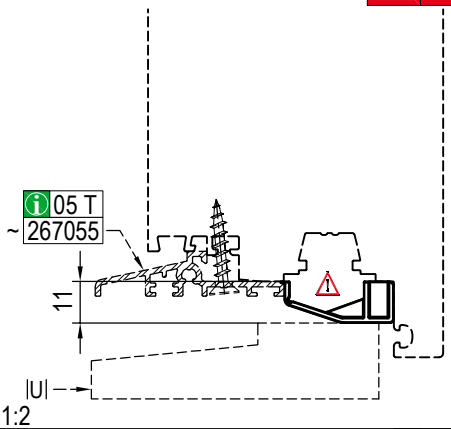


11mm |J| 640020 red

1:2

energeto neo

76 mm



1:2

VM 08 J

|J| Bonding of pane
Bonding of pane - Sellado de vidrios
Vitrage collé - Incollaggio vetro

wh white
white - blanco - blanc - bianco

red red
red - rojo - rouge - rosso

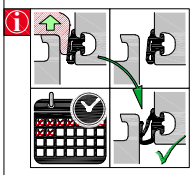
ye yellow
yellow - amarillo - jaune - giallo

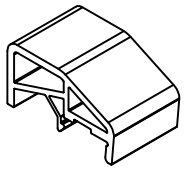
Example ~

-> Frame
Frame - Marco - Dormant - Telaio

02 B

Auxiliary parts
Auxiliary parts - Material auxiliar
Accessoires - Mezzi



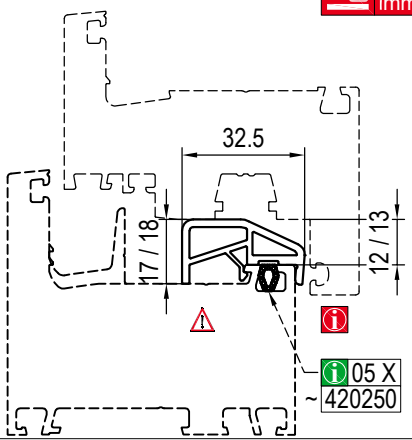


13/18mm |J| 640013 red
12/17mm |J| 640012 wh

1:2

energeto neo

76 mm

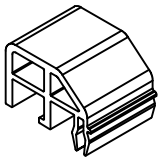


1:2

-> Frame
Frame - Marco - Dormant - Telaio

02 B

Auxiliary parts
Auxiliary parts - Material auxiliar
Accessoires - Mezzi

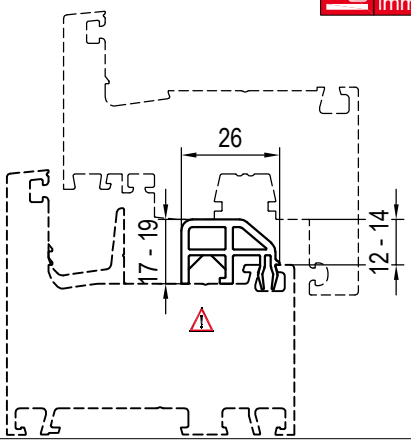


14/19mm |J| 640019 ye
13/18mm |J| 640014 red
12/17mm |J| 640015 wh

1:2

energeto neo

76 mm

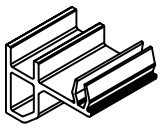


1:2

-> Frame
Frame - Marco - Dormant - Telaio

02 B

Auxiliary parts
Auxiliary parts - Material auxiliar
Accessoires - Mezzi

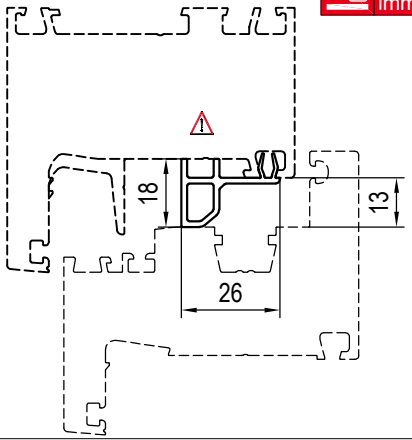


13/18mm |J| 640113 red

1:2

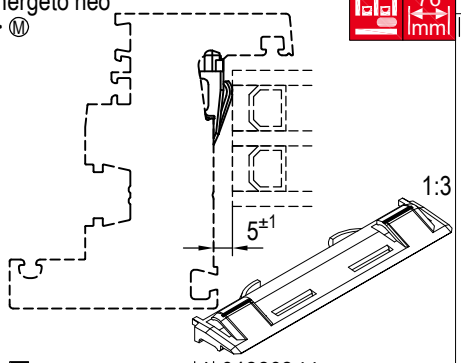
energeto neo

76 mm



1:2

-> Sash
Sash - Hoja - Ouvrant - Anta
02 C
energeto neo
-> Ⓜ
76 mm



■ |J| 642262 bl
1:2

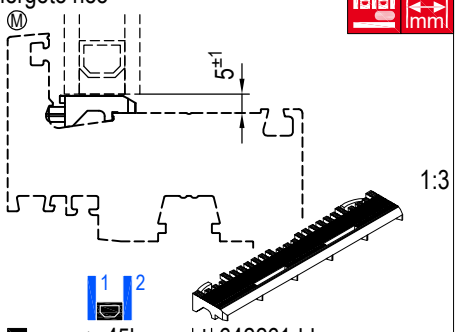
VM 08 J

|J| Bonding of pane
Bonding of pane - Sellado de vidrios
Vitrage collé - Incollaggio vetro

|J|

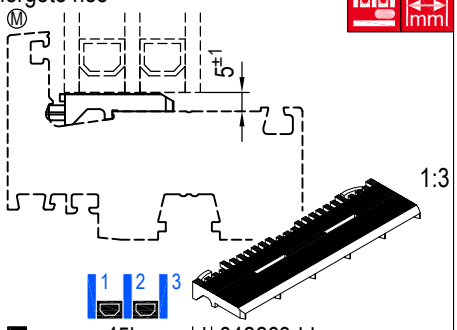
gr grey
grey - gris - gris - grigio
red red
red - rojo - rouge - rosso
ye yellow
yellow - amarillo - jaune - giallo
gn green
green - verde - vert - verde
bl black
black - negro - noir - nero

-> Sash
Sash - Hoja - Ouvrant - Anta
02 C
energeto neo
-> Ⓜ
76 mm



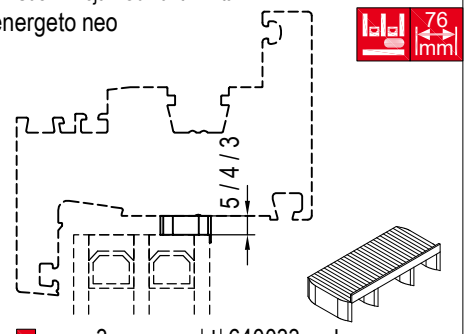
■ > 45kg |J| 642261 bl
■ < 45kg |J| 646265 gr
1:2

-> Sash
Sash - Hoja - Ouvrant - Anta
02 C
energeto neo
-> Ⓜ
76 mm



■ > 45kg |J| 642263 bl
■ < 45kg |J| 646266 gr
1:2

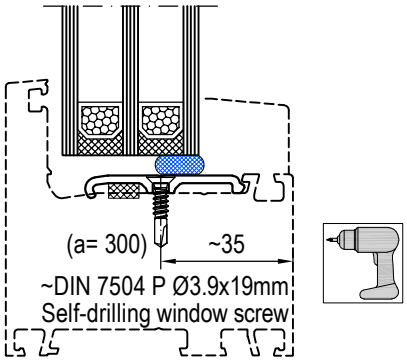
-> Sash
Sash - Hoja - Ouvrant - Anta
02 C
energeto neo
76 mm

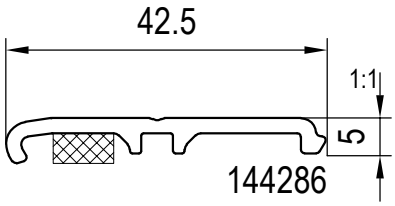


■ 3mm |J| 640033 red
■ 4mm |J| 640034 ye
■ 5mm |J| 640035 gn
1:2

Example ~

-> AD 24 - 52mm
+
Bonding of pane
Bonding of pane - Sellado de vidrios
Vitrage collé - Incollaggio vetro
VM 08 J





VM 08 D

|K| Drain slot caps / Drainage profile

Drain slot caps / Drainage profile
Tapas / Tubo de desagüe
Bonnets / Rainure de drainage
Tappi di drenaggio / Canalino per scarico acqua

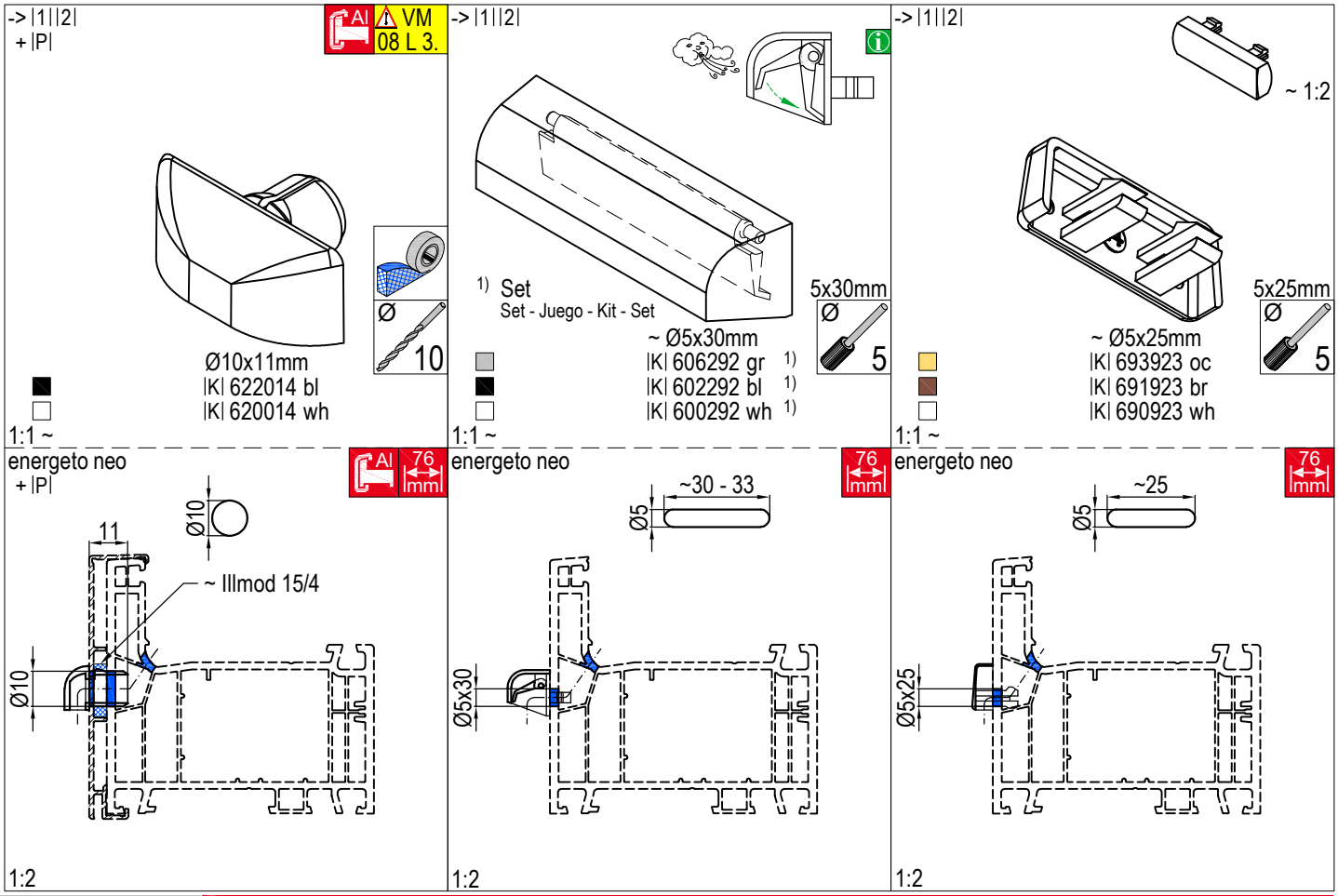
|1| Frame — 02 B
Frame - Marco - Dormant - Telaio

|2| Mullion — 02 D
Mullion - Poste - Meneau - Montante

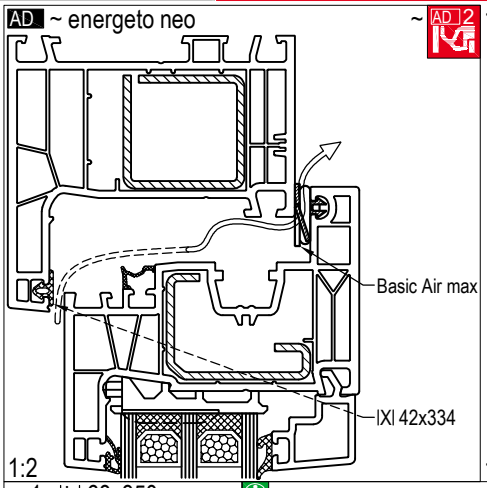
|P| Aluminium shells aluskin — 05 P
Aluminium shells - Recubrimientos exteriores de aluminio
Capotage alu - Cappottini in Alluminio

- wh white — white - blanco - blanc - bianco
- bl black — black - negro - noir - nero
- br brown — brown - marrón - brun - marrone
- gr grey — grey - gris - gris - grigio
- oc ochre — ochre - ocre - ocre - caramello

Example ~



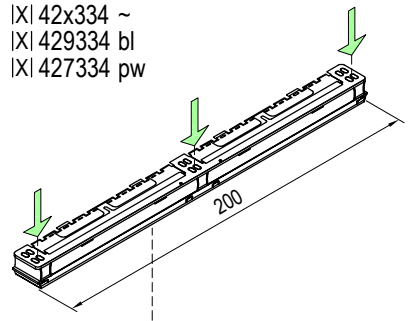
AD ~ energeto neo ~ AD 2



1:2

1:1

|X| 42x334 ~
|X| 429334 bl
|X| 427334 pw



~ 1x Basic Air max

|L| 68x350 ~
|L| 689350 bl
|L| 687350 pw

1:4

|L| Ventilation systems
Ventilation systems - Sistemas de ventilación
Systéme d'aération - Sistema di aerazione

Basic Air max

|X| Gaskets 05 X
Gaskets - Juntas
Joints - Guarnizioni

bl black
black - negro - noir - nero

pw papyrus-white
papyrus-white - blanco papiro - gris clair - bianco papiro

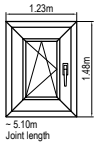
Example ~

1x |L| 68x350

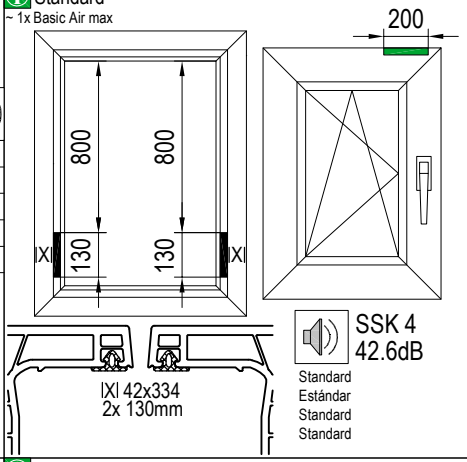
Air flow rate
Air flow rate - Caudal de aire
Débit volumique d'air - Portata d'aria

Differential pressure
Differential pressure - Presión diferencial - Différential pression - Pressione differenziale

AD 2		
2	2.4	2.2
3	3.0	2.8
4	3.5	3.3
5	4.0	3.7
8	5.1	4.8
[Pa] DIN 1946-6	[m³/h] DIN EN 13 141-1, T1	[m³/h]

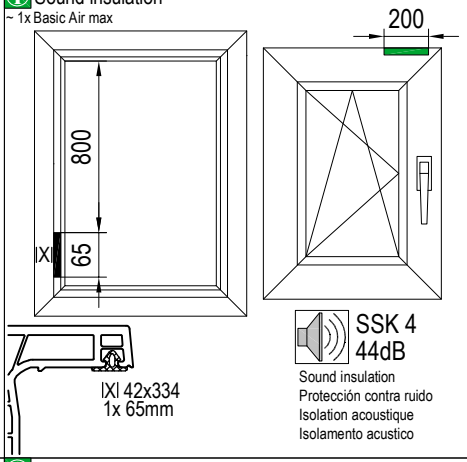


Standard ~ 1x Basic Air max



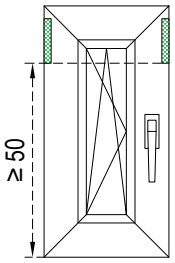
SSK 4
42.6dB
Standard
Estándar
Standard
Standard

Sound insulation ~ 1x Basic Air max



SSK 4
44dB
Sound insulation
Protección contra ruido
Isolation acoustique
Isolamento acustico

Option Option - Opción Option - Opzione
✓ Basic Air max

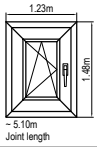


2x |L| 68x350

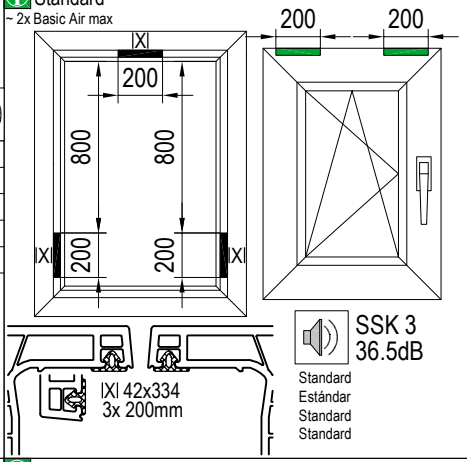
Air flow rate
Air flow rate - Caudal de aire
Débit volumique d'air - Portata d'aria

Differential pressure
Differential pressure - Presión diferencial - Différential pression - Pressione differenziale

AD 2		
2	4.5	3.6
3	5.5	4.4
4	6.3	5.2
5	7.1	5.9
8	9.0	7.6
[Pa] DIN 1946-6	[m³/h] DIN EN 13 141-1, T1	[m³/h]

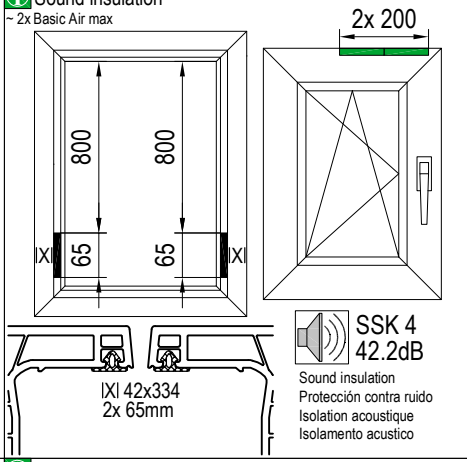


Standard ~ 2x Basic Air max



SSK 3
36.5dB
Standard
Estándar
Standard
Standard

Sound insulation ~ 2x Basic Air max



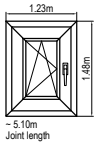
SSK 4
42.2dB
Sound insulation
Protección contra ruido
Isolation acoustique
Isolamento acustico

3x |L| 68x350

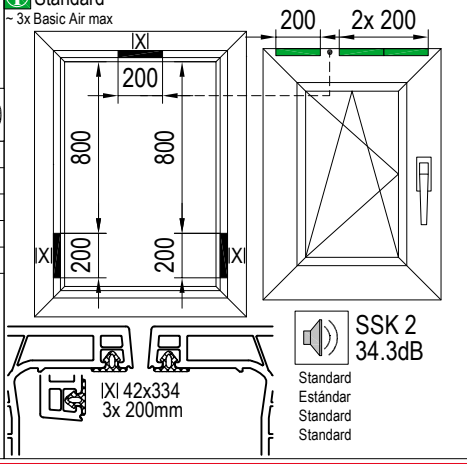
Air flow rate
Air flow rate - Caudal de aire
Débit volumique d'air - Portata d'aria

Differential pressure
Differential pressure - Presión diferencial - Différential pression - Pressione differenziale

AD 2		
2	5.8	4.2
3	7.2	5.2
4	8.3	6.2
5	9.3	7.0
8	11.9	9.2
[Pa] DIN 1946-6	[m³/h] DIN EN 13 141-1, T1	[m³/h]

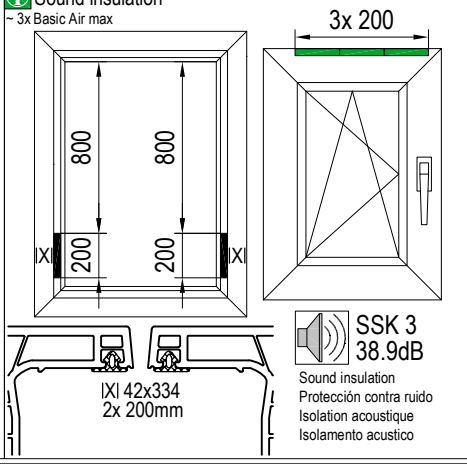


Standard ~ 3x Basic Air max



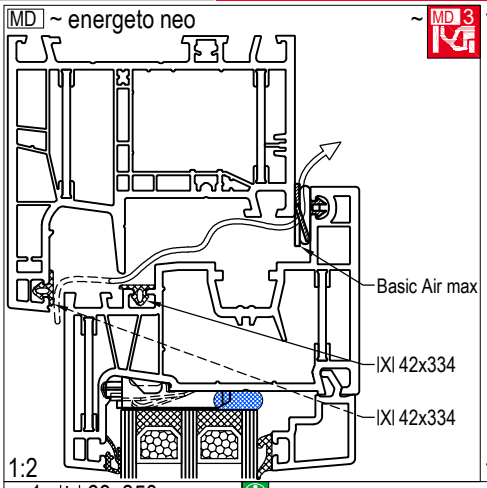
SSK 2
34.3dB
Standard
Estándar
Standard
Standard

Sound insulation ~ 3x Basic Air max



SSK 3
38.9dB
Sound insulation
Protección contra ruido
Isolation acoustique
Isolamento acustico

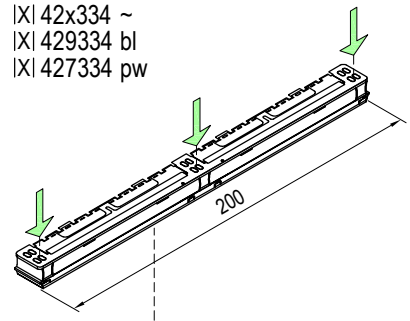
MD ~ energeto neo ~ MD 3



1:2

1:1

|X| 42x334 ~
|X| 429334 bl
|X| 427334 pw



~ 1x Basic Air max

|L| 68x350 ~
|L| 689350 bl
|L| 687350 pw

1:4

|L| Ventilation systems
Ventilation systems - Sistemas de ventilación
Systéme d'aération - Sistema di aerazione

Basic Air max

|X| Gaskets
Gaskets - Juntas
Joints - Guarnizioni
05 X

bl black
black - negro - noir - nero

pw papyrus-white
papyrus-white - blanco papiro - gris clair - bianco papiro

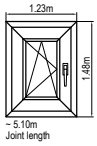
1x |L| 68x350

Air flow rate
Air flow rate - Caudal de aire
Débit volumique d'air - Portata d'aria

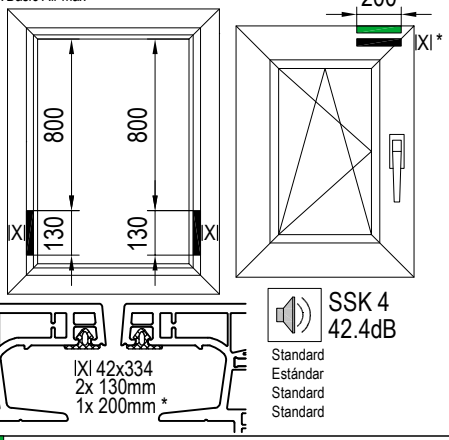
Differential pressure
Differential pressure - Presión diferencial - Pression différentielle - Pressione differenziale

MD 3		
2	2.2	2.0
3	2.8	2.5
4	3.3	3.0
5	3.7	3.4
8	4.8	4.4
[Pa] DIN 1946-6	[m³/h] DIN EN 13 141-1, T1	[m³/h]

* -> MD:
|X| 42x334

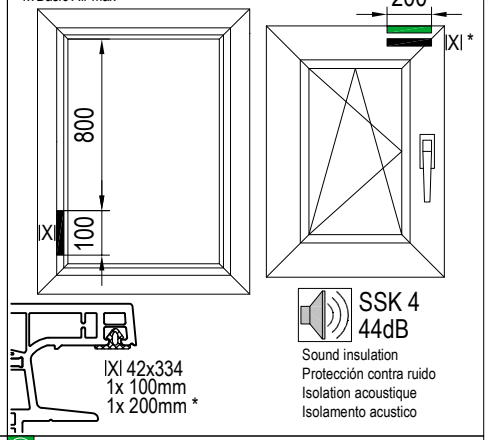


Standard
~ 1x Basic Air max



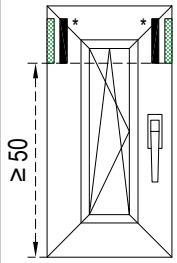
SSK 4
42.4dB
Standard
Estándar
Standard
Standard

Sound insulation
~ 1x Basic Air max



SSK 4
44dB
Sound insulation
Protección contra ruido
Isolation acoustique
Isolamento acustico

Option
Basic Air max
Option - Opción
Option - Opzione



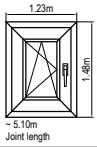
2x |L| 68x350

Air flow rate
Air flow rate - Caudal de aire
Débit volumique d'air - Portata d'aria

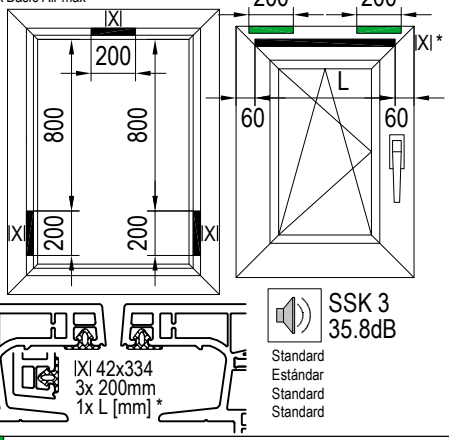
Differential pressure
Differential pressure - Presión diferencial - Pression différentielle - Pressione differenziale

MD 3		
2	4.5	3.1
3	5.5	3.9
4	6.4	4.6
5	7.2	5.2
8	9.3	6.8
[Pa] DIN 1946-6	[m³/h] DIN EN 13 141-1, T1	[m³/h]

* -> MD:
|X| 42x334

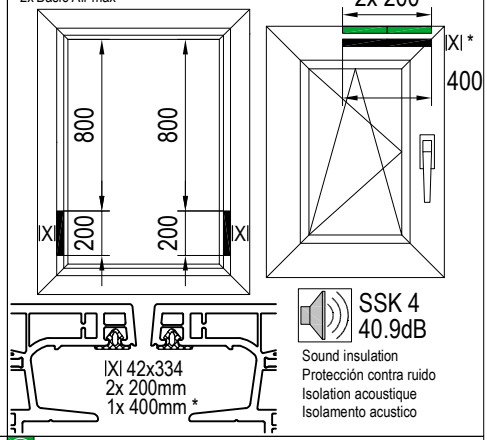


Standard
~ 2x Basic Air max



SSK 3
35.8dB
Standard
Estándar
Standard
Standard

Sound insulation
~ 2x Basic Air max



SSK 4
40.9dB
Sound insulation
Protección contra ruido
Isolation acoustique
Isolamento acustico

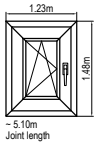
3x |L| 68x350

Air flow rate
Air flow rate - Caudal de aire
Débit volumique d'air - Portata d'aria

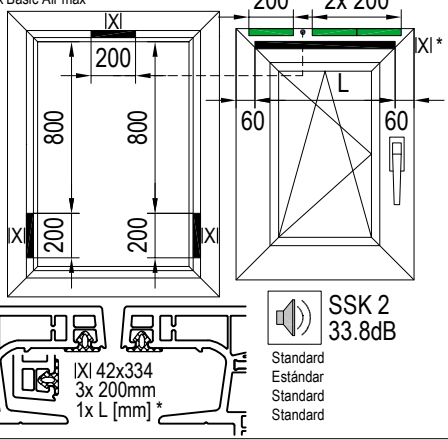
Differential pressure
Differential pressure - Presión diferencial - Pression différentielle - Pressione differenziale

MD 3		
2	5.4	3.3
3	6.7	4.2
4	7.8	5.0
5	8.8	5.8
8	11.4	7.7
[Pa] DIN 1946-6	[m³/h] DIN EN 13 141-1, T1	[m³/h]

* -> MD:
|X| 42x334

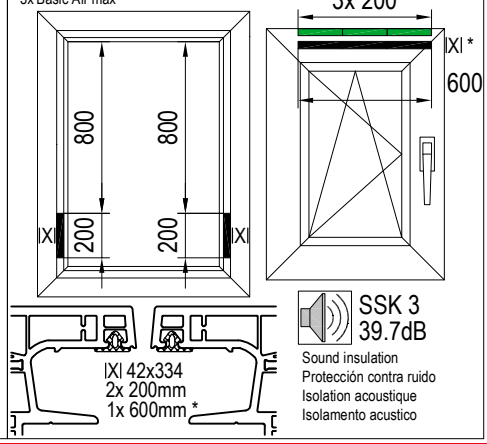


Standard
~ 3x Basic Air max



SSK 2
33.8dB
Standard
Estándar
Standard
Standard

Sound insulation
~ 3x Basic Air max

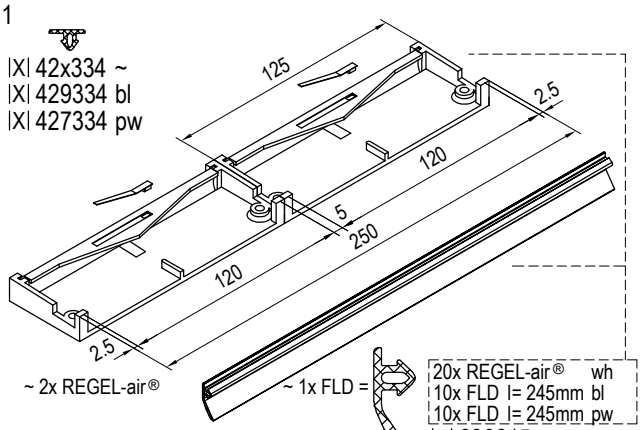


SSK 3
39.7dB
Sound insulation
Protección contra ruido
Isolation acoustique
Isolamento acustico

Example ~

1:1

|X| 42x334 ~
|X| 429334 bl
|X| 427334 pw



~ 2x REGEL-air®

~ 1x FLD =

20x REGEL-air® wh
10x FLD l= 245mm bl
10x FLD l= 245mm pw
|L| 630315 Set
Set - Juego - Kit - Set

-> 1x
2x Ø3.9x25mm

|L| Ventilation systems
Ventilation systems - Sistemas de ventilación
Système d'aération - Sistema di aerazione

REGEL-air®

|X| Gaskets 05 X
Gaskets - Juntas
Joints - Guarnizioni

wh white
white - blanco - blanc - bianco
bl black
black - negro - noir - nero
pw papyrus-white
papyrus-white - blanco papiro - gris clair - bianco papiro

1:4 1:4 1:1

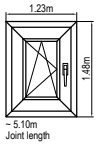
1x |L| 630315 Set
Set - Juego - Kit - Set

Air flow rate
Air flow rate - Caudal de aire
Débit volumique d'air - Portata d'aria

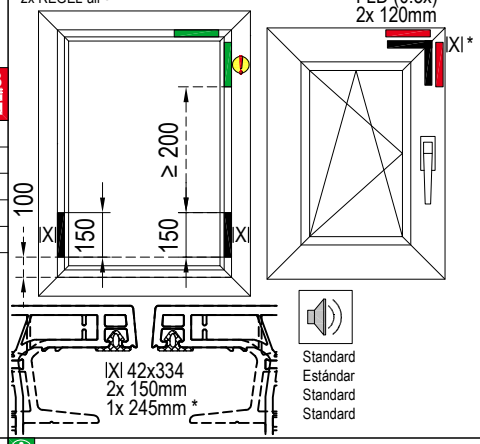
Differential pressure
Differential pressure - Presión diferencial - Pression différentielle - Pressione differenziale

	AD 2	MD 3
2	3.0	3.0
3	3.3	3.4
4	3.7	3.8
5	4.0	4.0
8	5.0	4.9
[Pa] DIN 1946-6	[m³/h]	[m³/h] DIN EN 13 141-1, T1

* -> MD:
|X| 42x334

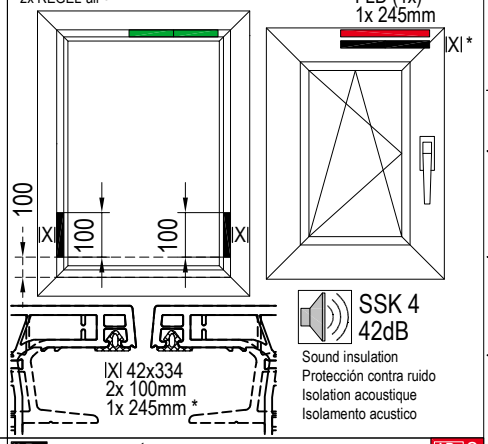


Standard
~ 2x REGEL-air®



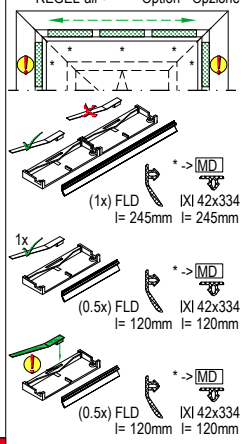
Standard
Estándar
Standard
Standard

Sound insulation
~ 2x REGEL-air®



SSK 4
42dB
Sound insulation
Protección contra ruido
Isolation acoustique
Isolamento acustico

Option
Option - Opción
Option - Opzione
REGEL-air®



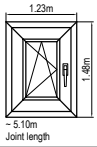
1.5x |L| 630315 Set
Set - Juego - Kit - Set

Air flow rate
Air flow rate - Caudal de aire
Débit volumique d'air - Portata d'aria

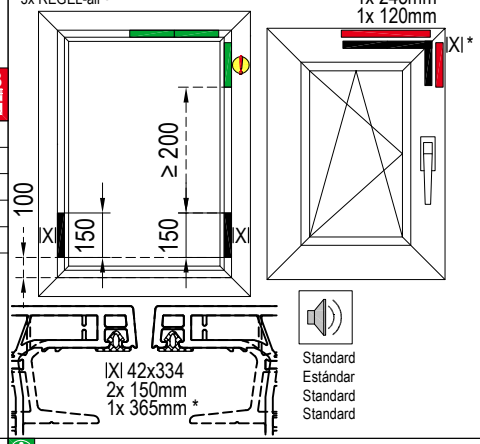
Differential pressure
Differential pressure - Presión diferencial - Pression différentielle - Pressione differenziale

	AD 2	MD 3
2	3.6	3.9
3	4.0	4.3
4	4.5	4.8
5	5.0	5.2
8	6.2	6.0
[Pa] DIN 1946-6	[m³/h]	[m³/h] DIN EN 13 141-1, T1

* -> MD:
|X| 42x334

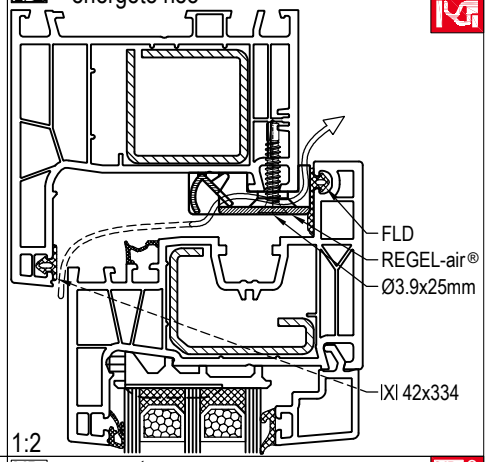


Standard
~ 3x REGEL-air®



Standard
Estándar
Standard
Standard

AD ~ energeto neo



1:2

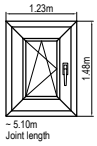
2x |L| 630315 Set
Set - Juego - Kit - Set

Air flow rate
Air flow rate - Caudal de aire
Débit volumique d'air - Portata d'aria

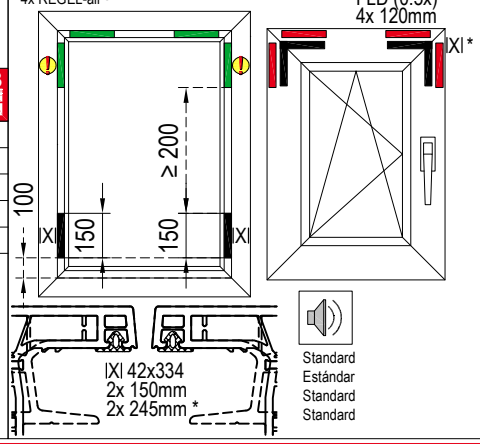
Differential pressure
Differential pressure - Presión diferencial - Pression différentielle - Pressione differenziale

	AD 2	MD 3
2	4.4	4.8
3	5.0	5.3
4	5.6	5.8
5	6.2	6.1
8	7.8	7.2
[Pa] DIN 1946-6	[m³/h]	[m³/h] DIN EN 13 141-1, T1

* -> MD:
|X| 42x334

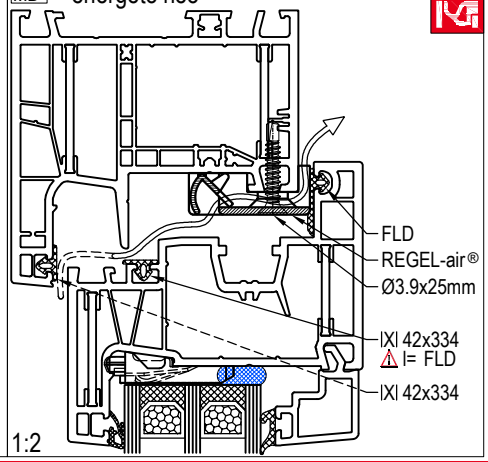


Standard
~ 4x REGEL-air®



Standard
Estándar
Standard
Standard

MD ~ energeto neo



1:2

Example ~

|M| Panels (PVC / Sandwich)
Panels (PVC / Sandwich)
Placas (PVC / sándwich)
Plaques (PVC / sandwich)
Pannelli (PVC / sandwich)

laminated
Laminated - Folio decorativo - Décor - Rivestimento

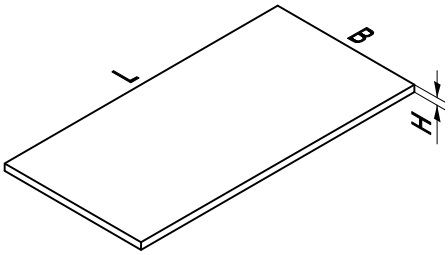
■ 1xx double sided
double sided - dos caras
des deux côtés - bilaterale

◩ 2xx on one side
on one side - en una cara
d'un côté - unilaterale

▨ wh white
white - blanco - blanc - bianco

not laminated
not laminated - sin folio decorativo
sans décor - senza rivestimento

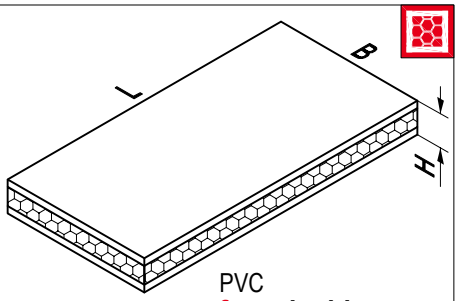
Example ~



PVC

B x L		H
◩ 1300x3050mm	|M| 620321 2xx	3mm
▨ 1500x3000mm	|M| 620321 wh	3mm

~



PVC
foam inside
PVC

B x L		H
■ 1150x3050mm	|M| 620320 1xx	24mm
◩ 1150x3050mm	|M| 620320 2xx	24mm
▨ 1500x3000mm	|M| 620320 wh	24mm

~

|1| Drilling jig
Drilling jig - Plantilla de taladro
Gabarit de perçage - Dima per foratura

|O| Auxiliary parts
Auxiliary parts - Material auxiliar
Accessoires - Mezzi

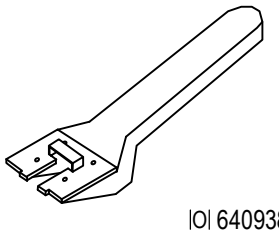
|D| Connector — 05 D
Connector - Uniones mecánicas
Assemblage - Giunzione

|Ø| Connector without knobs — 05 D
Connector without knops - Conectores sin centradores
Assemblage sans plots - Giunzione senza rilievi

Example ~

|E| Corner connector — 05 E
Corner connector - Ensamblaje angular
Assemblage d'angle - Giunzione angolare

energeto neo
-> |E| 660033



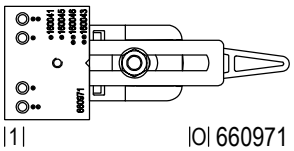
|O| 640938

09 J

1:4 ~

|U| Aluminium thresholds — 05 U
Aluminium thresholds - Umbrales de aluminio
Seuil de alu - Alluminio soglia

energeto neo -> |U| + Mullion



Ø 4.5

09 J

|1| |O| 660971

1:4

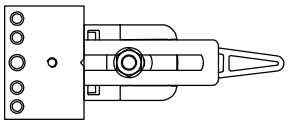
energeto neo
-> |Ø| 667041
-> |Ø| 667043
-> |Ø| 667045
-> |Ø| 667046
-> |Ø| 667141
-> |Ø| 667143
-> |Ø| 667145
-> |Ø| 667146

76 mm

Ø 5.0

Ø 6.5

09 H

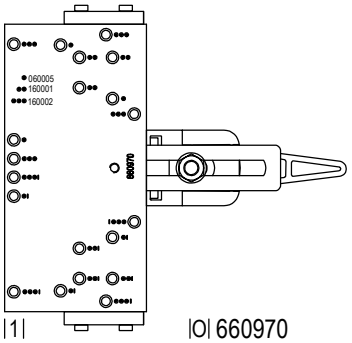


|1| |O| 660950

1:4

|U| Aluminium thresholds — 05 U
Aluminium thresholds - Umbrales de aluminio
Seuil de alu - Alluminio soglia

energeto neo -> |U| + Frame



Ø 4.5

09 J

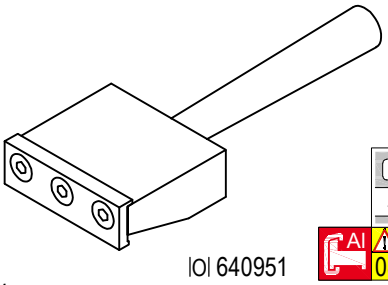
|1| |O| 660970

1:4

|P| Aluminium shells aluskin — 05 P
Aluminium shells - Recubrimientos exteriores de aluminio
Capotage alu - Cappottini in Alluminio

energeto neo
-> |P| **aluskin**

Al

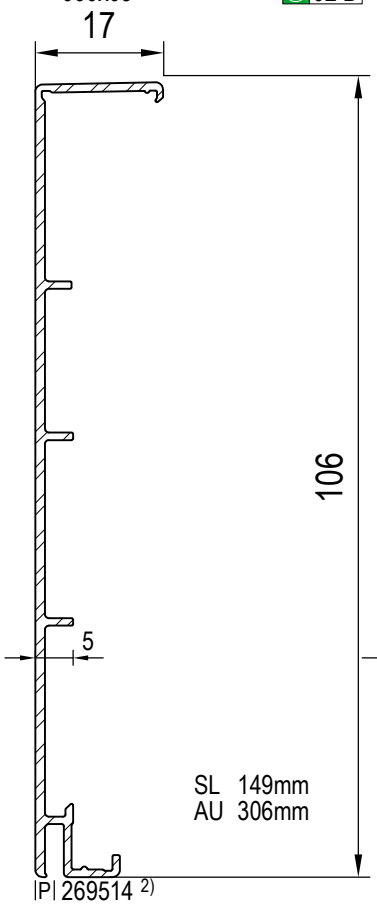


|O| 640951

Al VM 08 L 4.

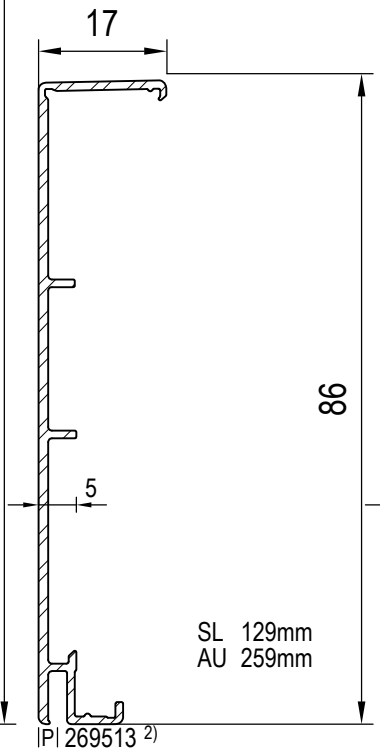
1:4 ~

-> 060x08 02 B



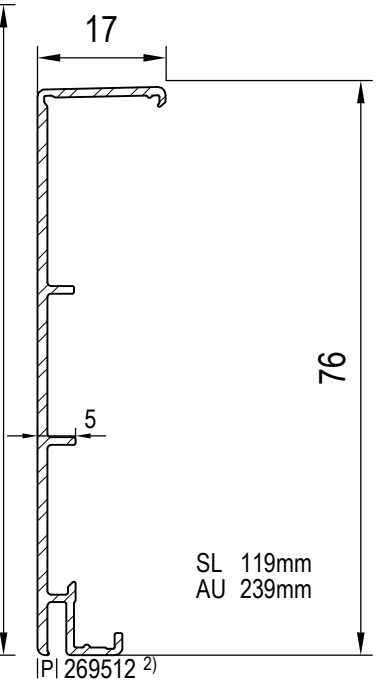
|P| 269514 2)

-> 160x02 02 B



|P| 269513 2)

-> 060x05
-> 160x01 02 B



|P| 269512 2)

SL AU

|P|

VM 08 L 1) 2) Al

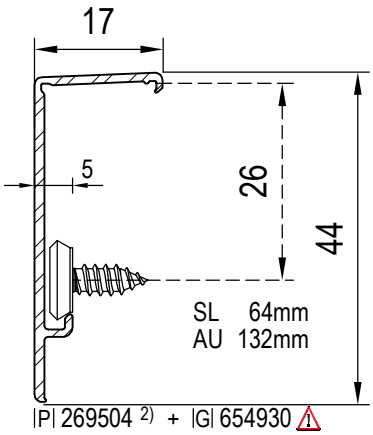
|P| aluskin 1:1
Frame 02 B
Frame - Marco - Dormant - Telaio

-> 76mm - Frame 02 B
Frame - Marco - Dormant - Telaio

|G| Nipple screw / Clip 1:1
Nipple screw / Clip
Tornillo para clip / Clip
Vis clip / Clip
Vite clip / Clip



Example ~



|P| 269504 2) + |G| 654930

(QL) Qube-line

Aluminium shells - Recubrimientos exteriores de aluminio - Capotage alu - Cappottini in Alluminio

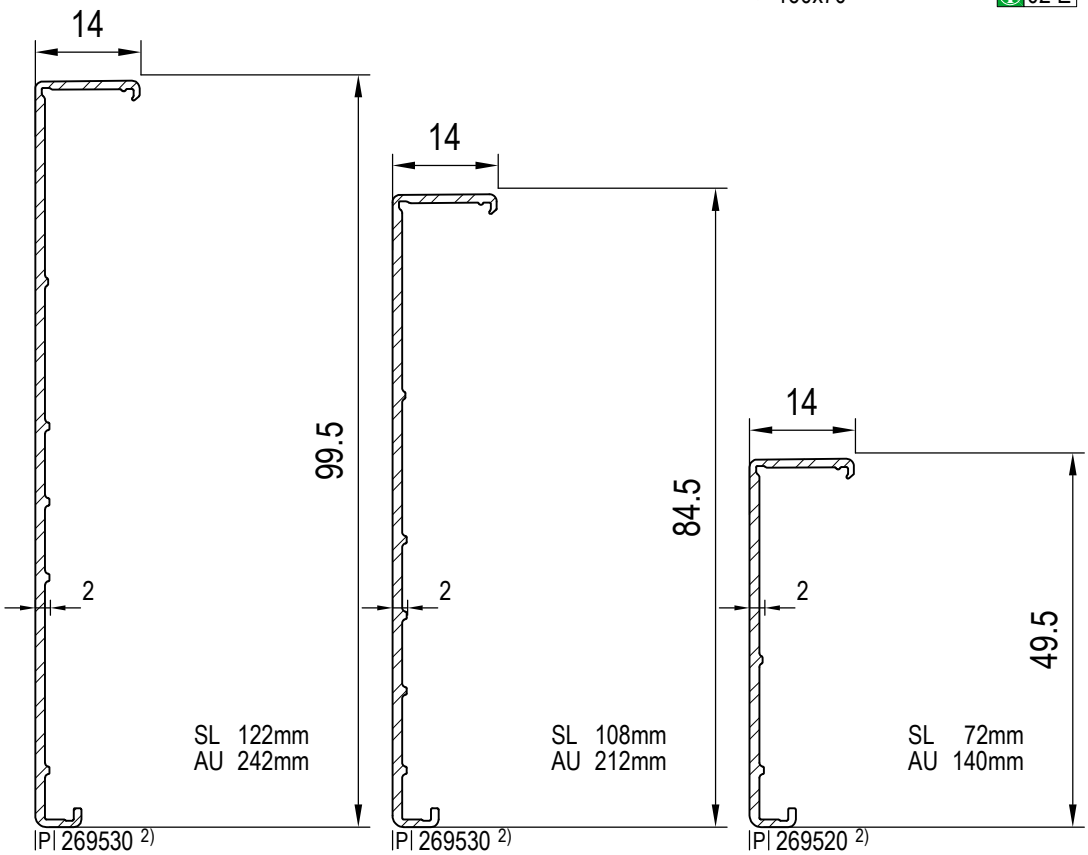
-> 160x33 02 C
-> 160x30 02 C
-> 060x20 02 C
-> 160x20
-> 160x70 02 E

SL AU

|P| aluskin 1:1

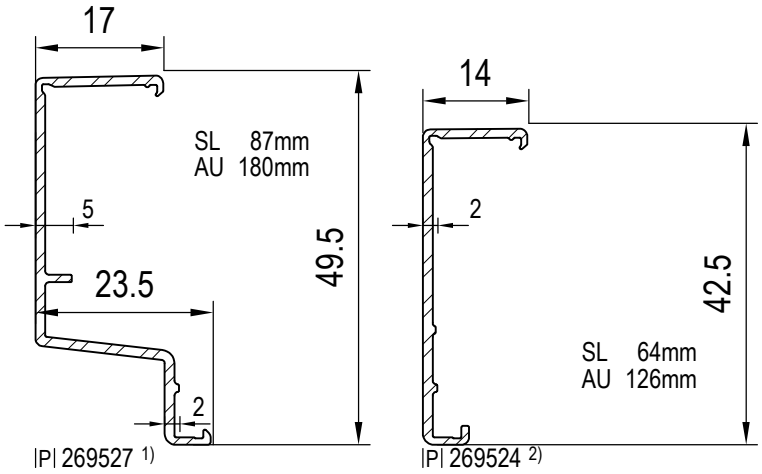
Sash 02 C
Sash - Hoja - Ouvrant - Anta

False mullion sash 02 E
False mullion sash - Hoja batiente
Battement intégré - Anta-scambio battuta



-> 060x27 02 C
-> 060x77 02 E
-> 160x24 02 C
-> 160x74 02 E

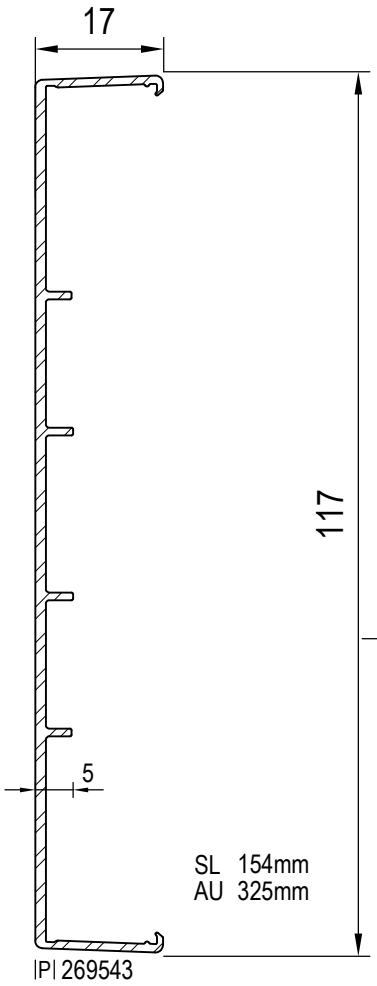
Example ~



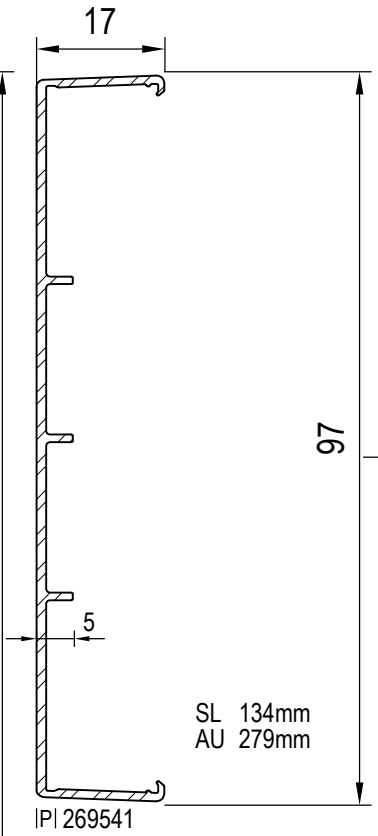
(QL) Qube-line

Aluminium shells - Recubrimientos exteriores de aluminio - Capotage alu - Cappottini in Alluminio

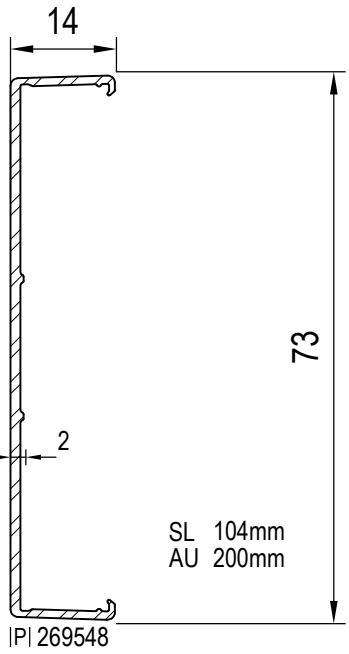
-> 160x43 02 D
-> 160x46

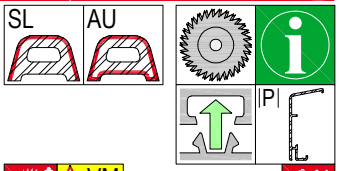


-> 160x41 02 D
-> 160x45



-> 160x48 02 D





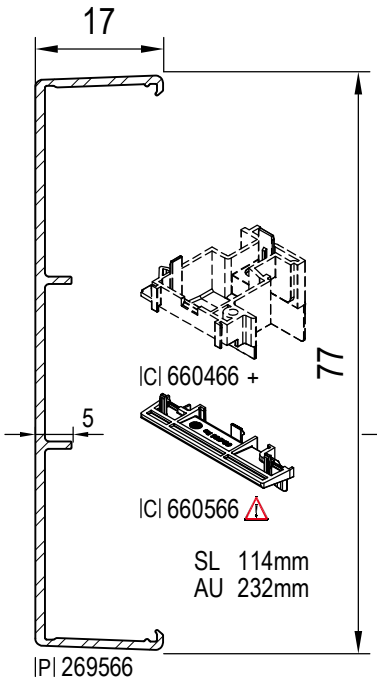
VM 08 L
|P| aluskin 1:1

Mullion 02 D
Transoms
Mullion / Transoms - Poste / Travesaños
Meneau / Traverses - Montante / Inglesine

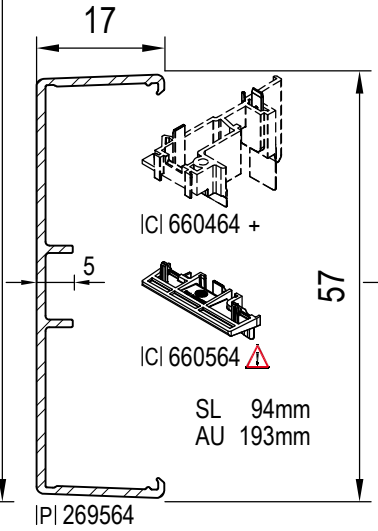
False mullion 02 E
False mullion - Batiente
Battement - Scambio battuta

|C| End caps 05 C
End caps - Tapas de remate
Embouts - Tappi

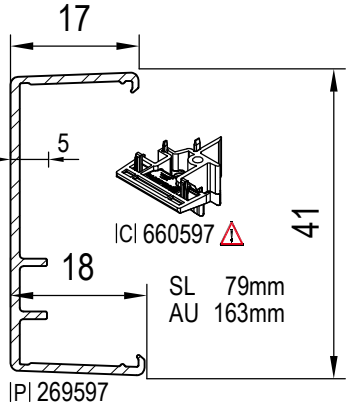
-> 160x66 02 E



-> 160x64 02 E



-> 160x97 02 E

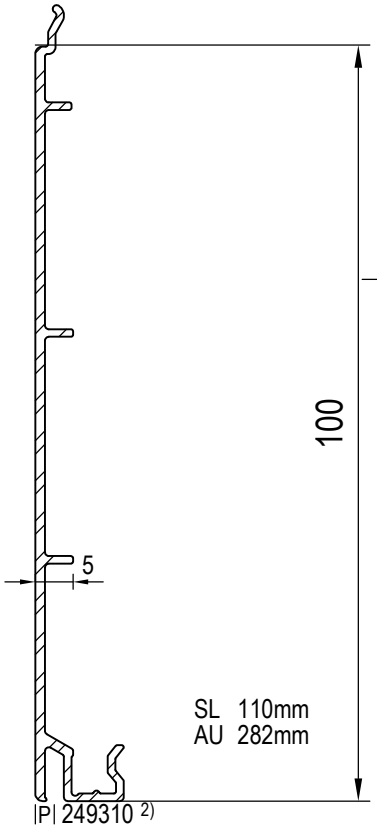


Example ~

(QL) Qube-line

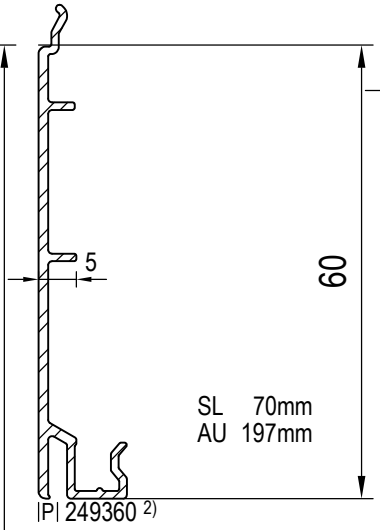
Aluminium shells - Recubrimientos exteriores de aluminio - Capotage alu - Cappottini in Alluminio

-> 160202 04 F



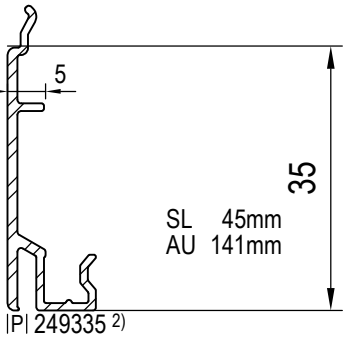
|P| 249310 2)

-> 120221 04 F



|P| 249360 2)

-> 120242 04 F
-> 160204



|P| 249335 2)

SL AU

|P| aluskin 1:1

Couplings 04 D
Couplings - Acoplamientos
Couplages - Accoppiamenti

Extensions 04 F
Extensions - Prolongaciones
Élargisseurs - Allargatori

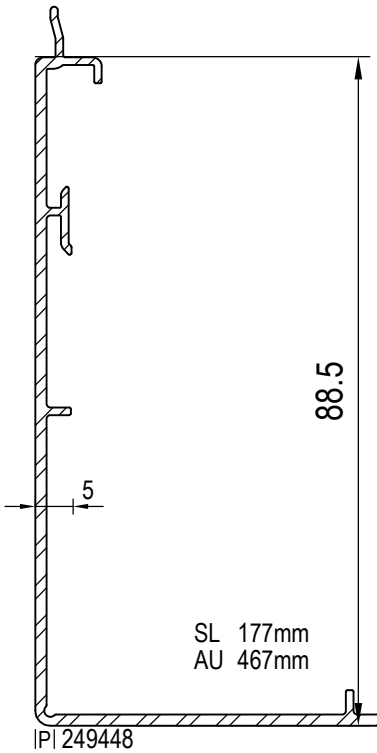
✓ Option
Option - Opción - Option - Opzione

|H| Installation / Mounting anchor
Installation / Mounting anchor
Montaje / Anclaje para montaje
Montage / Patte de fixation murale
Montaggio / Bullone di montaggio

bl black
black - negro - noir - nero

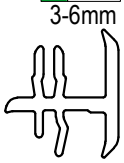
gn green
green - verde - vert - verde

-> 160248 04 D
90°

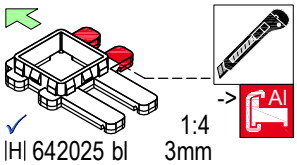


|P| 249448

-> |P| aluskin + 04 D
3-6mm



120224

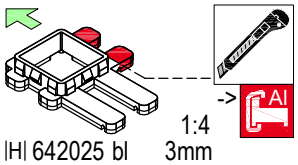


✓ |H| 642025 bl 3mm
|H| 645050 gn 5mm

-> |P| aluskin + 04 D
3mm

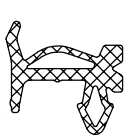


|X| 449140 bl
|X| 447140 pw

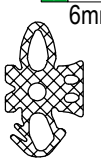


|H| 642025 bl 3mm

-> |P| aluskin + 04 D
6mm



✓ |X| 449142 bl
|X| - pw

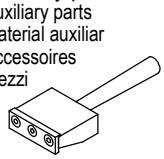


|X| 449141 bl
|X| - pw

-> Frame 02 B
Frame - Marco
Dormant - Telaio

Mullion 02 D
Mullion - Poste
Meneau - Montante

|O| Auxiliary parts 1:10
Auxiliary parts
Material auxiliar
Accessoires
Mezzi



|O| 640951 -> |P| aluskin

|X| Gaskets 1:1
Gaskets - Juntas - Joints - Guarnizioni

bl black ~ RAL 9005
black - negro - noir - nero

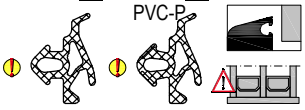
pw papyrus-white ~ RAL 9018
papyrus-white - blanco papiro
gris clair - bianco papiro



|X| 459951 ⇔ 449986 bl
|X| - 449986 pw



|X| 429320 bl
|X| - pw
2mm 2mm



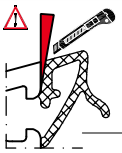
PVC-P

|X| 449338 ⇔ 449348 bl
|X| - 447348 pw

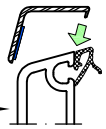
Aluminium shells - Recubrimientos exteriores de aluminio - Capotage alu - Cappottini in Alluminio

Example ~

1)



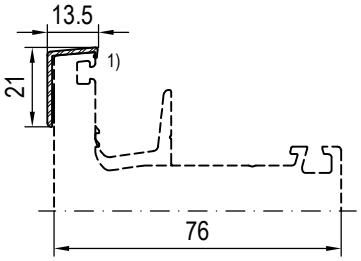
Gaskets
Gaskets
Juntas
Joints
Guarnizioni



|Q|



76 |mm| energeto neo



1:2

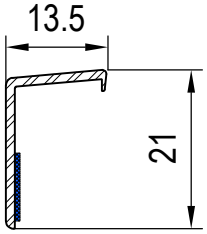
E6/EV1 *
Anodizing
Anodizing
Anodizado
Anodisation
Anodizzazione



(QL) Qube-line



1:1



|Q| 267501 1) * silver
silver - plata - argent - argento

Example ~

Aluminium step protection - Protección inferior alu - Protection de alu - Protezione in alluminio

|B| Inlet funnel 1:5
Inlet funnel - Embocadura guía persiana
Tulipe de coulisse - Bocchettone

|C| End caps -
End caps - Tapas de remate
Embouts - Tappi

|G| Nipple screw / Clip 1:1
Nipple screw / Clip - Tornillo para clip / Clip
Vis clip / Clip - Vite clip / Clip

|Y| Brush seals 1:1
Brush seals - Juntas de felpillo
Joints à brosse - Guarnizioni a spazzola

bl
black
black
negro
noir
nero

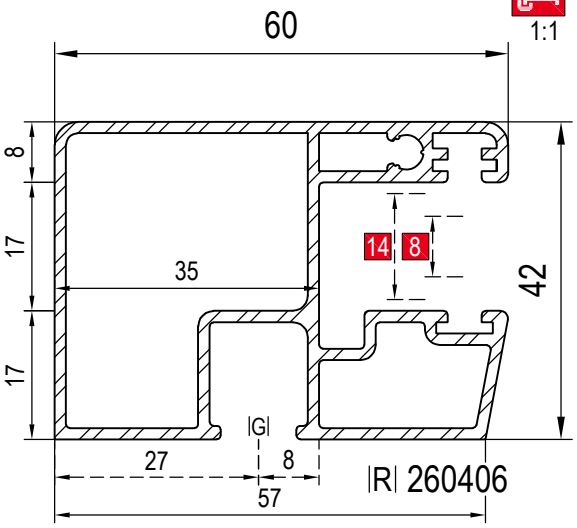
SL AU GU
SL 100mm
AU 333mm
GU 579mm

04 B
190430

|R|

Al

1:1



|R| 260406

|B| 620038

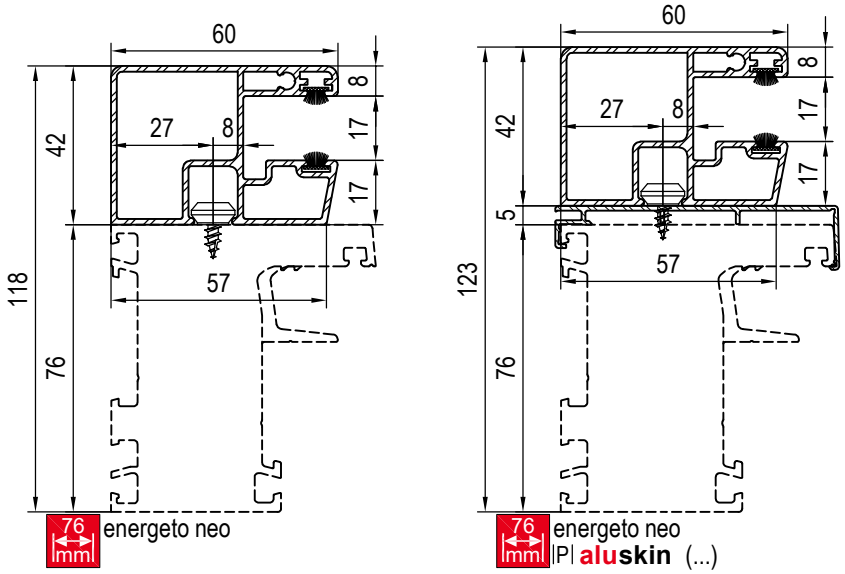
|G| 659923

|Y| 459930 bl
-> maxi
14 mm

|Y| 459932 bl
-> mini
8 mm

|C| -

Example ~



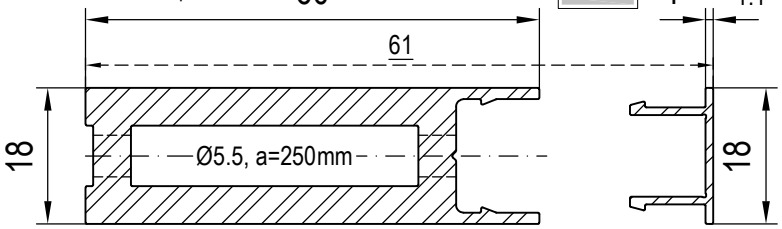
1:2 Aluminium roller shutter guides - Guías de persiana de aluminio - Coulisse de volet roulant alu - Guide avvolgibili in alluminio

SL AU GU

|S|

VM 10 E 3. Installation / Mounting anchor
Installation / Mounting anchor
Montaje / Anclaje para montaje
Montage / Patte de fixation murale
Montaggio / Bullone di montaggio

VM 06 A-Z Statics
Statics - Estática
Statique - Statica



~
5.5/0.8cm4
Steel
Steel - Acero
Acier - Acciaio

16.5/2.5cm4
Aluminium
aluminium - aluminio
alu - alluminio

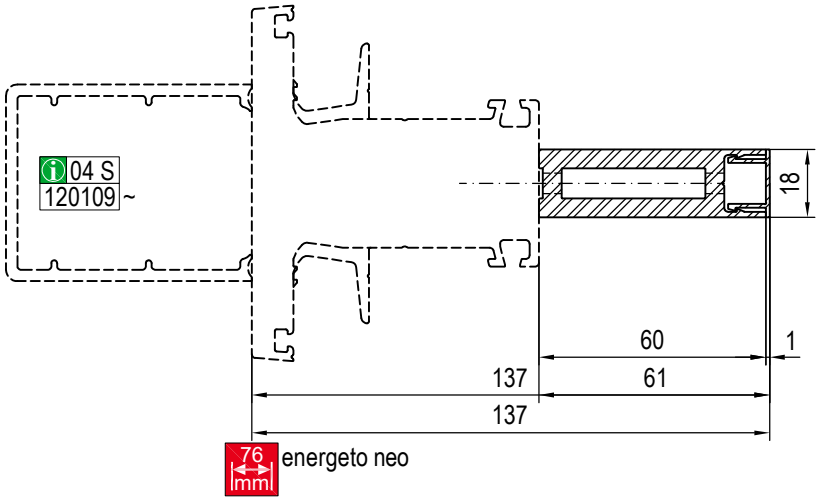
|S| 270044 + |S| 270045 wh
|S| 279044 + |S| 279045 -

SL	123mm
AU	180mm
GU	272mm

SL	22mm
AU	80mm
GU	-mm

wh white
white - blanco - blanc - bianco

Example ~



Pilaster, Rectangular profiles
Pilaster, Rectangular profiles - Recubrimiento, Perfiles rectangulares
Lices, profilés rectangulaires - Lesena, Profili rettangolari

1:2

Aluminium profiles - Perfiles de aluminio - Profilés aluminium - Profili in alluminio

SL AU GU

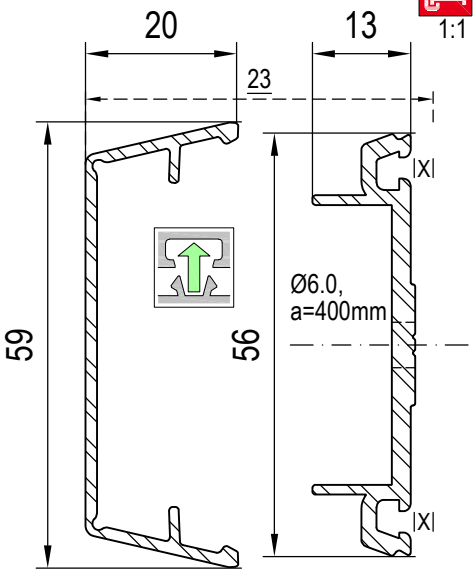
-> |F|

|S|

VM 10 E 3. Installation / Mounting anchor
Installation / Mounting anchor
Montaje / Anclaje para montaje
Montage / Patte de fixation murale
Montaggio / Bullone di montaggio

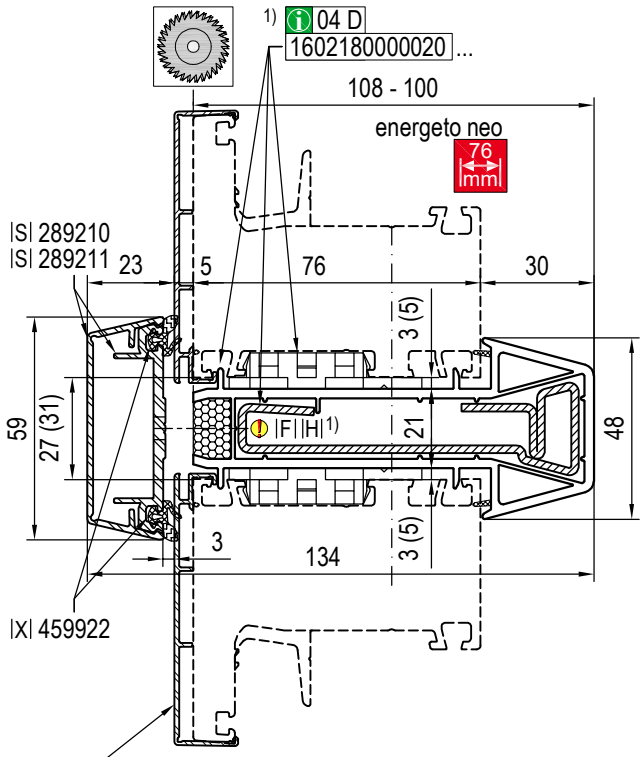
VM 06 A-Z Statics
Statics - Estática
Statique - Statica

1:1



|S| 289210 + |S| 289211

SL 99mm	SL 102mm
AU 201mm	AU 181mm
GU -mm	GU -mm



Example ~

|P| aluskin
AI VM 08 L 7.



|X| 459922 bl
Gaskets
Gaskets - Juntas
Joints - Guarnizioni

bl
black
black
negro
noir
nero

VM 08 C 8.
Couplings
Couplings - Acoplamientos
Couplages - Accoppiamenti

Pilaster, Rectangular profiles
Pilaster, Rectangular profiles - Recubrimiento, Perfiles rectangulares
Lices, profilés rectangulaires - Lesena, Profili rettangolari

1:2

Aluminium profiles - Perfiles de aluminio - Profilés aluminium - Profili in alluminio

|U| Aluminium thresholds 05 U
Aluminium thresholds - Umbrales de aluminio
Seuils de aluminium - Soglie in alluminio

gr	bl
grey	black
grey	black
gris	negro
gris	noir
grigio	nero

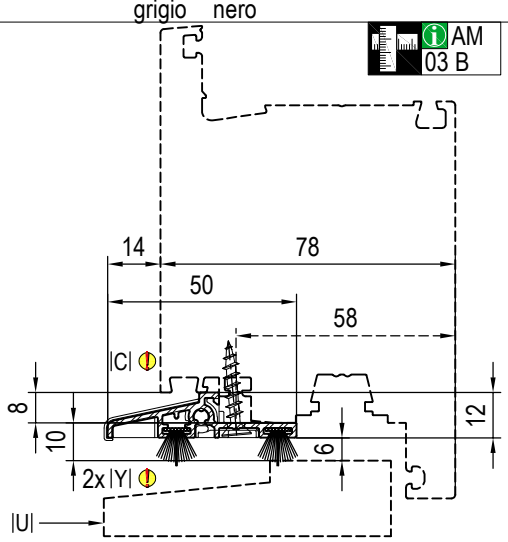
SL AU

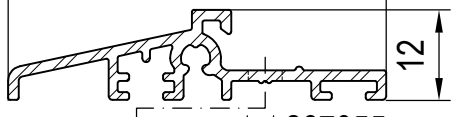
|T|

76 lmml energeto neo — AM 03 B

SL 31mm
AU 190mm

AI





1:1

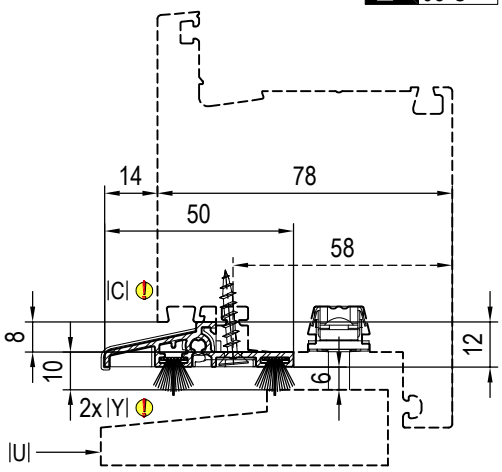
E6/EV1 *
Anodizing
Anodizing
Anodizado
Anodisation
Anodizzazione

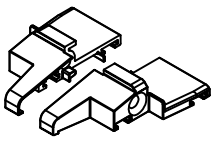
* silver
silver - plata
argent - argento

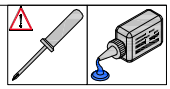
|T| 267055 *
l= 2400mm
9x Ø4.5, a=147mm

V2A 4.1x25mm
V2A 4.2x25mm

76 lmml energeto neo — AM 03 C



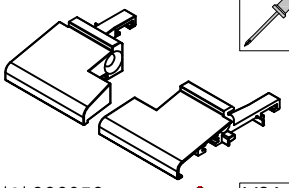


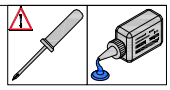


1:3

|C| 666055 gr
End caps
End caps - Tapas de remate
Embouts - Tappi

V2A 4.1x30mm
V2A 4.2x30mm





1:3

76 lmml energeto neo — VM 09 J

|C| 666056 gr
End caps
End caps - Tapas de remate
Embouts - Tappi

~ False mullion
False mullion - Batiente
Battement - Scambio battuta

V2A 4.1x35mm
V2A 4.2x35mm





1:1

|Y| 459933 bl 2x
Brush seals
Brush seals - Juntas de felpillo
Joints à brosse - Guarnizioni a spazzola

Example ~

required
required - requerido - nécessaire - necessario

1:2

Aluminium weather bar - Vierteaguas de aluminio - Rejet d'eau de aluminium - Gocciolatoio in alluminio

|U| Aluminium thresholds 05 U
Aluminium thresholds - Umbrales de aluminio
Seuils de aluminium - Soglie in alluminio
-> opening outwards
opening outwards - apertura exterior
vers l´extérieur - apertuna esterna

gr	bl
grey	black
grey	black
gris	negro
gris	noir
grigio	nero

SL AU

|T|

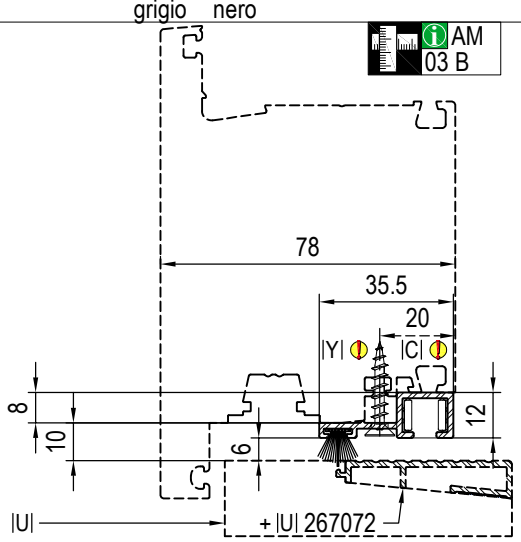
76 lmml energeto neo

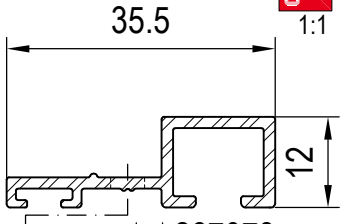
AM 03 B

SL 13mm
AU 140mm

Al

1:1





E6/EV1 *
Anodizing
Anodizing
Anodizado
Anodisation
Anodizzazione

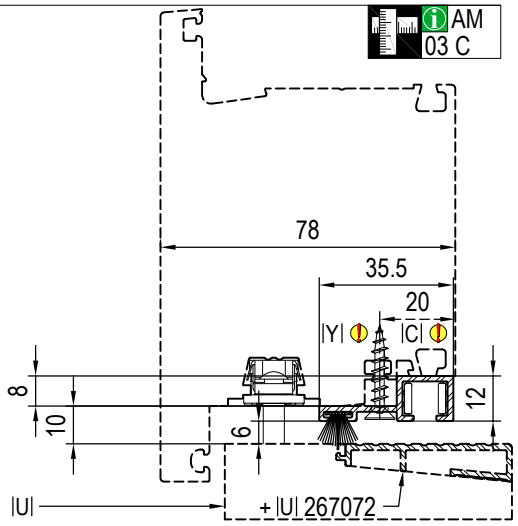
* silver
silver - plata
argent - argento

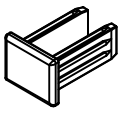
|T| 267073 *
l= 1200mm
9x Ø4.5, a=147mm

V2A 4.1x25mm
V2A 4.2x25mm

76 lmml energeto neo

AM 03 C





1:2

|C| 666073 gr
End caps
End caps - Tapas de remate
Embouts - Tappi

76 lmml energeto neo

VM 09 J



1:1

|Y| 459933 bl
Brush seals
Brush seals - Juntas de felpillo
Joints à brosse - Guarnizioni a spazzola

Example ~

required
required - requerido - nécessaire - necessario

1:2 Aluminium weather bar - Vierteaguas de aluminio - Rejet d'eau de aluminium - Gocciolatoio in alluminio

|U| Aluminium thresholds 05 U
Aluminium thresholds - Umbrales de aluminio
Seuils de aluminium - Soglie in alluminio

gr
grey
grey
gris
gris
grigio

SL AU

|T|

76 lmm AD 2

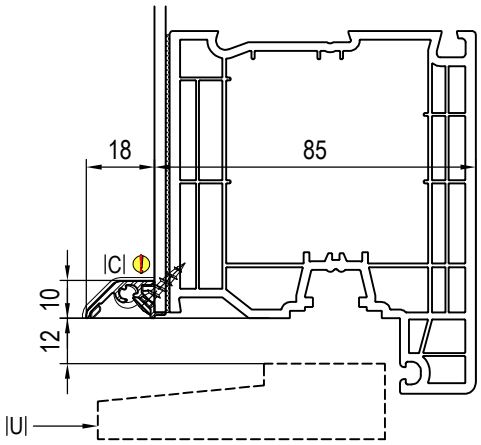
energeto neo
170x39 ~

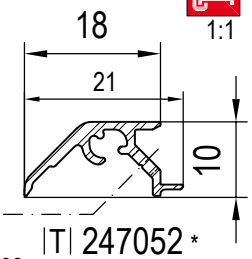
AM 03 B

SL 23mm
AU 84mm

AI

1:1





E6/EV1 *
Anodizing
Anodizing
Anodizado
Anodisation
Anodizzazione

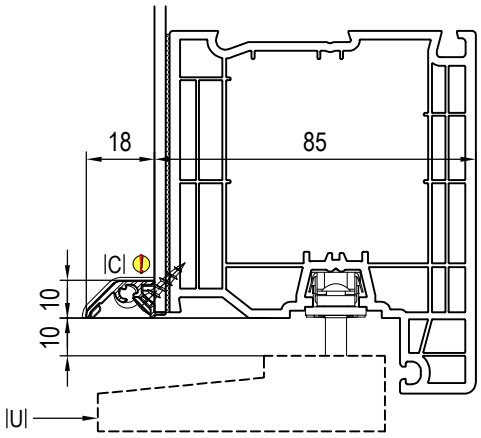
* silver
silver - plata
argent - argento

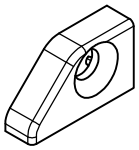
|T| 247052 *
l= 1200mm
9x Ø3.5, a=147mm
+
9x Spax 3.5x16mm
=
Set
Set - Juego - Kit - Set

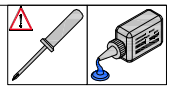
76 lmm AD 2

energeto neo
170x39 ~

AM 03 C







1:1

|C| 646052 gr
End caps
End caps - Tapas de remate
Embouts - Tappi

FD2 3.9x16mm
FD21 3.9x19mm

76 lmm

energeto neo
170x39 ~

VM 09 J

Example ~

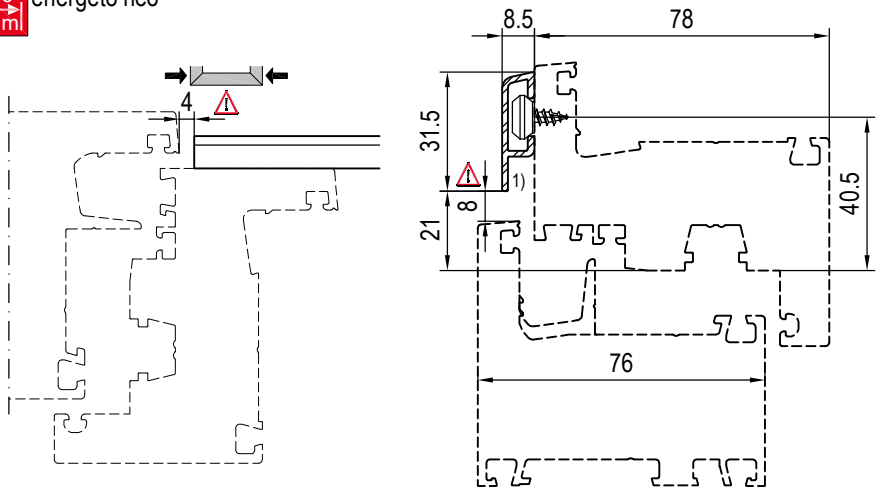
required
required - requerido - nécessaire - necessario

1:2

Aluminium weather bar - Vierteaguas de aluminio - Rejet d'eau de aluminium - Gocciolatoio in alluminio

SL AU

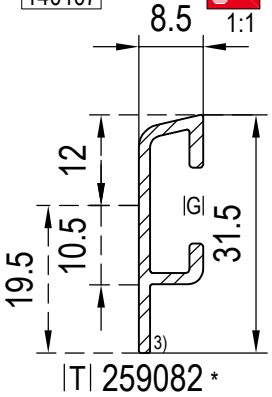
76 |mm| energeto neo



SL 40mm
AU 106mm

04 N
140107

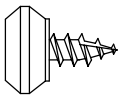
Al



|T| 259082 *

E6/EV1 *
Anodizing
Anodizing
Anodizado
Anodisation
Anodizzazione

* silver
silver - plata
argent - argento



1:1

|G| 659923
Nipple screw / Clip
Nipple screw / Clip
Tornillo para clip / Clip
Vis clip / Clip
Vite clip / Clip

Example ~

1:2

Aluminium weather bar - Vierteaguas de aluminio - Rejet d'eau de aluminium - Gocciolatoio in alluminio

1 Residential door thresholds
Residential door thresholds - Umbrales de puerta de calle
Porte d'entrée: Seuils - Soglie portoncino

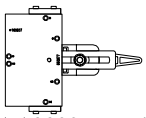
AM 03 B

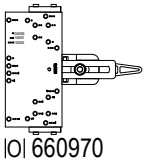
Balcony / Patio door thresholds
Balcony / Patio door thresholds - Umbral Puerta Balconera / de Entrada Lateral
Porte de balcon/entrée secondaire: Seuils - Soglie porta balcone / portoncino secondario

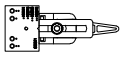
2 Tilt-and-turn door thresholds
Tilt-and-turn door thresholds - Umbrales puerta abatible
Porte oscillo-battante: Seuils - Soglie porta anta ribalta

AM 03 C

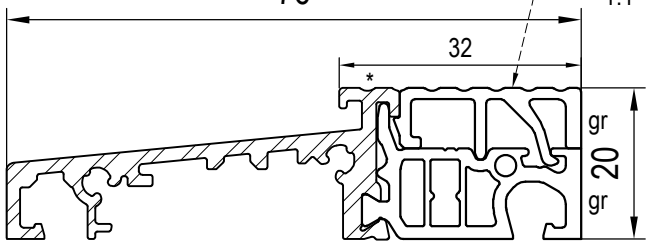
|O| Auxiliary parts 05 O
Auxiliary parts
Material auxiliar
Accessoires
Mezzi


|O| 660977 -> 160x07

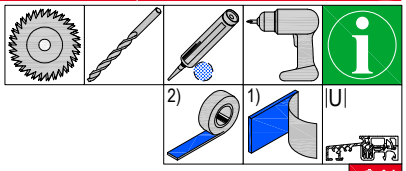

|O| 660970 -> Frame
Frame - Marco
Dormant - Telaio


|O| 660971 -> Mullion
Mullion - Poste
Meneau - Montante

E6/EV1 *
Anodizing
Anodizing
Anodizado
Anodisation
Anodizzazione

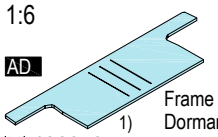


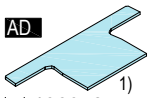
|U| 267070 * / gr

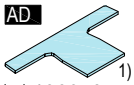


186111 ~ l= 5.9m
Al
1:1

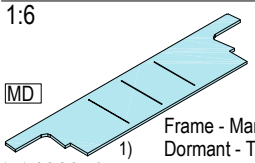
|X| Gaskets 05 X
Gaskets - Juntas - Joints - Guarnizioni
1:6

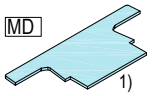
AD

1) Frame - Marco
Dormant - Telaio
|X| 466070 gr -> Frame

AD

1)
|X| 466072 gr -> 160x43

AD

1)
|X| 466073 gr -> 160x41

1:6

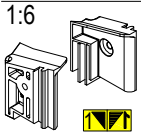
MD

1) Frame - Marco
Dormant - Telaio
|X| 466071 gr -> Frame

MD

1)
|X| 466075 gr -> 160x46

MD

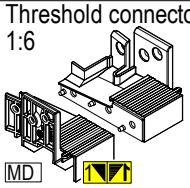
1)
|X| 466074 gr -> 160x45

1:6


1
|X| 466055 gr

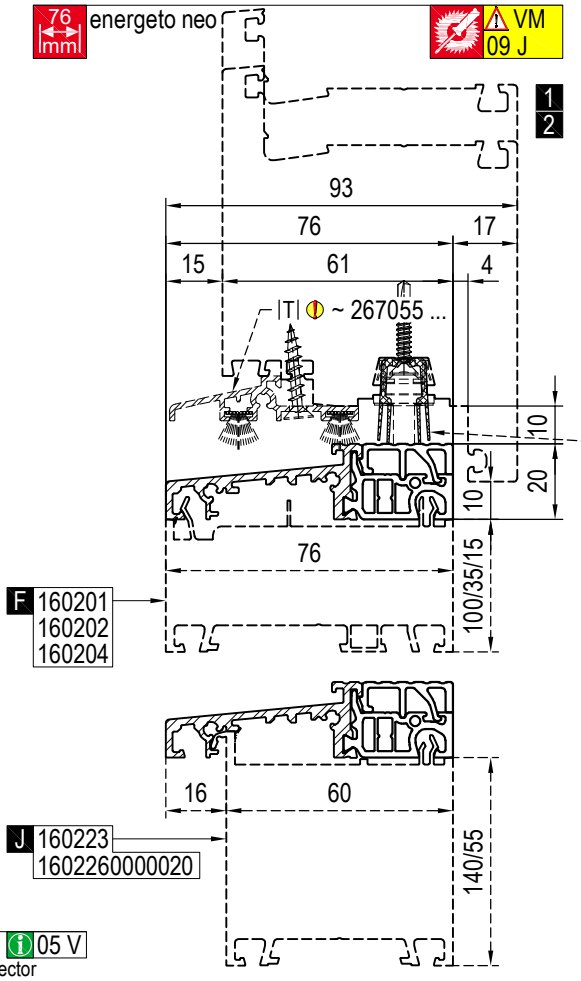

|X| 466057 gr

|V| Threshold connector 05 V
1:6
Threshold connector
Soporte de umbral
Embout de seuil
Supporto soglia


MD 1
|V| 666371 gr -> |U| 267070

1 Set
Set - Juego - Kit - Set

76 mm energeto neo
VM 09 J



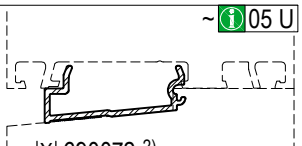
F 160201
160202
160204

J 160223
1602260000020

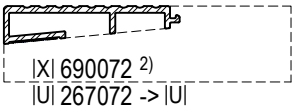
1:2

*	gr	bl	wh
silver	grey	black	white
silver	grey	black	white
plata	gris	negro	blanco
argent	gris	noir	blanc
argento	grigio	nero	bianco

-> Frame
Frame - Marco
Dormant - Telaio
-> F
~ 05 U

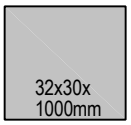

|X| 690072 2)
Adapter |U| 267071 -> |U|
Adapter - Adaptador - Adapteur - Adattatore 1:2

-> opening outwards ~ 05 U
opening outwards - apertura exterior
vers l´extérieur - apertuna esterna

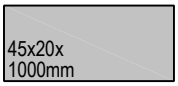

|X| 690072 2)
Adapter |U| 267072 -> |U|
Adapter - Adaptador - Adapteur - Adattatore 1:2

|X| 496912 gr -> 1 05 X
|D| Connector 05 D
Connector - Uniones mecánicas
Assemblage - Giunzione

(Plastic - Plastic - Plástico - Plastique - Plastica)



|D| 640047 -> 160x01



|D| 640046 -> 160x41, 160x45
2x -> 160x43, 160x46 1:2

F Extensions 04 F
Extensions - Prolongaciones - Élargisseurs - Allargatori

J Sill connector 04 J
Sill connector - Perfil de conexión a vierteaguas
Appuis - Collegamenti davanzale

|T| Aluminium weather bar 05 T
Aluminium weather bar - Vierteaguas de aluminio
Rejet d'eau de aluminium - Gocciolatoio in alluminio

required
required - requerido - nécessaire - necessario

Example ~

Aluminium thresholds - Umbrales de aluminio - Seuils de aluminium - Soglie in alluminio

1 Residential door thresholds
Residential door thresholds - Umbrales de puerta de calle
Porte d'entrée: Seuils - Soglie portoncino

AM 03 B

Balcony / Patio door thresholds
Balcony / Patio door thresholds - Umbral Puerta Balconera / de Entrada Lateral
Porte de balcon/entrée secondaire: Seuils - Soglie porta balcone / portoncino secondario

2 Tilt-and-turn door thresholds
Tilt-and-turn door thresholds - Umbrales puerta abatible
Porte oscillo-battante: Seuils - Soglie porta anta ribalta

AM 03 C

186111 ~ l= 5.9m

Al 1:1

85

32

gr 20 gr

|U| 277070 * / gr

|O| Auxiliary parts
05 O
Auxiliary parts
Material auxiliar
Accessoires
Mezzi

|O| 660977 -> 160x07

|O| 660970 -> Frame
Frame - Marco
Dormant - Telaio

|O| 660971 -> Mullion
Mullion - Poste
Meneau - Montante

E6/EV1 *
Anodizing
Anodizing
Anodizado
Anodisation
Anodizzazione

|X| Gaskets
05 X
Gaskets - Juntas - Joints - Guarnizioni

1:6

AD
Frame - Marco
Dormant - Telaio
|X| 466070 gr -> Frame

AD |X| 466072 gr -> 160x43

AD |X| 466073 gr -> 160x41

1:6

MD
Frame - Marco
Dormant - Telaio
|X| 466071 gr -> Frame

MD |X| 466075 gr -> 160x46

MD |X| 466074 gr -> 160x45

1:6

|X| 466055 gr

|X| 466057 gr

Set
Set - Juego - Kit - Set

Example ~

76 mm energeto neo

VM 09 J

1 2

102
85
17
24
61
4
|T| ~ 267055 ...
10
5
10
20
9
76
100/35/15

F 160201
160202
160204

25
60
J 160223
1602260000020
85
140/55
100/60/35/15

F 180209
180201
180203
180204
IDEAL 7000/8000

1:2

*	gr	bl	wh
silver	grey	black	white
silver	grey	black	white
plata	gris	negro	blanco
argent	gris	noir	blanc
argento	grigio	nero	bianco

-> Frame
Frame - Marco
Dormant - Telaio
-> F
~ 05 U
|X| 690072 2)
Adapter |U| 267071 -> |U|
Adapter - Adaptador - Adapteur - Adattatore
1:2

-> opening outwards
opening outwards - apertura exterior
vers l´extérieur - apertuna esterna
~ 05 U
|X| 690072 2)
Adapter |U| 267072 -> |U|
Adapter - Adaptador - Adapteur - Adattatore
1:2

|X| 496912 gr -> 1 05 X

|D| Connector 05 D
Connector - Uniones mecánicas
Assemblage - Giunzione

(Plastic - Plastic - Plástico - Plastique - Plastica)

32x30x 1000mm
|D| 640047 -> 160x01

45x20x 1000mm
|D| 640046 -> 160x41, 160x45
2x -> 160x43, 160x46

1:2

F Extensions 04 F
Extensions - Prolongaciones - Élargisseurs - Allargatori

J Sill connector 04 J
Sill connector - Perfil de conexión a vierteaguas
Appuis - Collegamenti davanzale

|T| Aluminium weather bar 05 T
Aluminium weather bar - Vierteaguas de aluminio
Rejet d'eau de aluminium - Gocciolatoio in alluminio

required
required - requerido - nécessaire - necessario

Aluminium thresholds - Umbrales de aluminio - Seuils de aluminium - Soglie in alluminio

1 Residential door thresholds
Residential door thresholds - Umbrales de puerta de calle
Porte d'entrée: Seuils - Soglie portoncino

AM 03 B

Balcony / Patio door thresholds
Balcony / Patio door thresholds - Umbral Puerta Balconera / de Entrada Lateral
Porte de balcon/entrée secondaire: Seuils - Soglie porta balcone / portoncino secondario

2 Tilt-and-turn door thresholds
Tilt-and-turn door thresholds - Umbrales puerta abatible
Porte oscillo-battante: Seuils - Soglie porta anta ribalta

AM 03 C

186111 ~ l= 5.9m

1:1

120

E6/EV1 *
Anodizing
Anodizing
Anodizado
Anodisation
Anodizzazione

32

gr
20
gr

|U| 287070 * / gr

|O| Auxiliary parts
05 O
Auxiliary parts
Material auxiliar
Accessoires
Mezzi

|O| 660977 -> 160x07

|O| 660970 -> Frame
Frame - Marco
Dormant - Telaio

|O| 660971 -> Mullion
Mullion - Poste
Meneau - Montante

|X| Gaskets
05 X
Gaskets - Juntas - Joints - Guarnizioni

1:6

AD
Frame - Marco
Dormant - Telaio
|X| 466070 gr -> Frame

AD
|X| 466072 gr -> 160x43

AD
|X| 466073 gr -> 160x41

1:6

MD
Frame - Marco
Dormant - Telaio
|X| 466071 gr -> Frame

MD
|X| 466075 gr -> 160x46

MD
|X| 466074 gr -> 160x45

1:6

Set
|X| 466055 gr

|X| 466057 gr

Set
Set - Juego - Kit - Set

76 mm energeto neo

VM 09 J

1
2

137
120
17
59
61
4
|T| ~ 267055 ...
10
5
10
20
44
76
100/35/15

F 160201
160202
160204

60
60
J 160223
1602260000020
35
85
140/55
100/60/35/15

F 180209
180201
180203
180204
IDEAL 7000/8000

1:2

*	gr	bl	wh
silver	grey	black	white
silver	grey	black	white
plata	gris	negro	blanco
argent	gris	noir	blanc
argento	grigio	nero	bianco

-> Frame
Frame - Marco
Dormant - Telaio
-> F
~ 05 U
|X| 690072 2)
Adapter |U| 267071 -> |U|
Adapter - Adaptador - Adapteur - Adattatore
1:2

-> opening outwards
opening outwards - apertura exterior
vers l´extérieur - apertuna esterna
~ 05 U
|X| 690072 2)
Adapter |U| 267072 -> |U|
Adapter - Adaptador - Adapteur - Adattatore
1:2

|X| 496912 gr -> 1
05 X
|D| Connector
05 D
Connector - Uniones mecánicas
Assemblage - Giunzione

(Plastic - Plastic - Plástico - Plastique - Plastica)

32x30x 1000mm
|D| 640047 -> 160x01

45x20x 1000mm
|D| 640046 -> 160x41, 160x45
2x -> 160x43, 160x46

1:2

Example ~

F Extensions 04 F
Extensions - Prolongaciones - Élargisseurs - Allargatori

J Sill connector 04 J
Sill connector - Perfil de conexión a vierteaguas
Appuis - Collegamenti davanzale

|T| Aluminium weather bar 05 T
Aluminium weather bar - Vierteaguas de aluminio
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required - requerido - nécessaire - necessario

Aluminium thresholds - Umbrales de aluminio - Seuils de aluminium - Soglie in alluminio

1 Residential door thresholds
Residential door thresholds - Umbrales de puerta de calle
Porte d'entrée: Seuils - Soglie portoncino

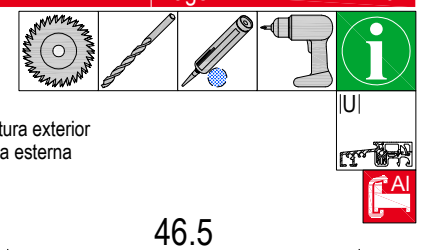
Balcony / Patio door thresholds
Balcony / Patio door thresholds - Umbral Puerta Balconera / de Entrada Lateral
Porte de balcon/entrée secondaire: Seuils - Soglie porta balcone / portoncino secondario

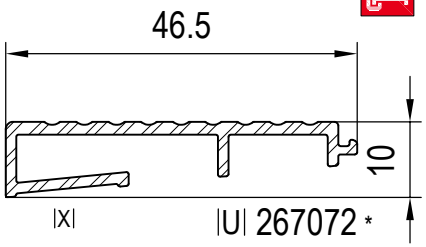
2 Tilt-and-turn door thresholds
Tilt-and-turn door thresholds - Umbrales puerta abatible
Porte oscillo-battante: Seuils - Soglie porta anta ribalta

AM 03 B
AM 03 C

Adapter
Adapter - Adaptador
Adapteur - Adattatore

-> opening outwards
opening outwards - apertura exterior
vers l´extérieur - apertuna esterna





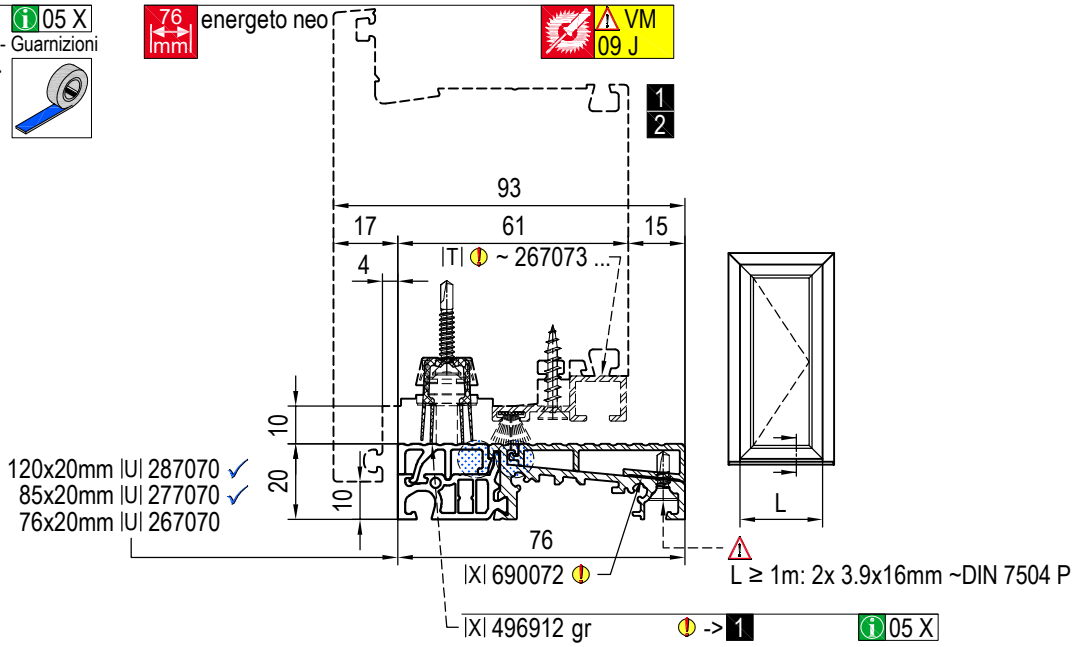
E6/EV1 *
Anodizing
Anodizing
Anodizado
Anodisation
Anodizzazione

✓ Option
Option - Opción
Option - Opzione

|X| Gaskets 05 X
Gaskets - Juntas - Joints - Guarnizioni
1:1 |X| ~

|X| 690072
12x0.6mm x 50m

76 mm energeto neo



Example ~

1:2

*	bl	wh
silver	black	white
silver	black	white
plata	negro	blanco
argent	noir	blanc
argento	nero	bianco

|T| Aluminium weather bar 05 T
Aluminium weather bar - Vierteaguas de aluminio
Rejet d'eau de aluminium - Gocciolatoio in alluminio

required
required - requerido - nécessaire - necessario

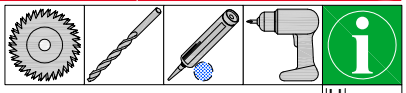
Aluminium thresholds - Umbrales de aluminio - Seuils de aluminium - Soglie in alluminio

1 Residential door thresholds
Residential door thresholds - Umbrales de puerta de calle
Porte d'entrée: Seuils - Soglie portoncino
AM 03 B

Balcony / Patio door thresholds
Balcony / Patio door thresholds - Umbral Puerta Balconera / de Entrada Lateral
Porte de balcon/entrée secondaire: Seuils - Soglie porta balcone / portoncino secondario

2 Tilt-and-turn door thresholds
Tilt-and-turn door thresholds - Umbrales puerta abatible
Porte oscillo-battante: Seuils - Soglie porta anta ribalta
AM 03 C

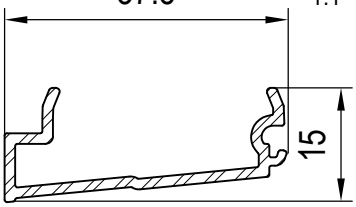
Adapter
Adapter - Adaptador
Adapteur - Adattatore
-> F / Frame
Frame - Marco
Dormant - Telaio



|U|

Al

1:1



|X| |U| 267071 *

E6/EV1 *
Anodizing
Anodizing
Anodizado
Anodisation
Anodizzazione

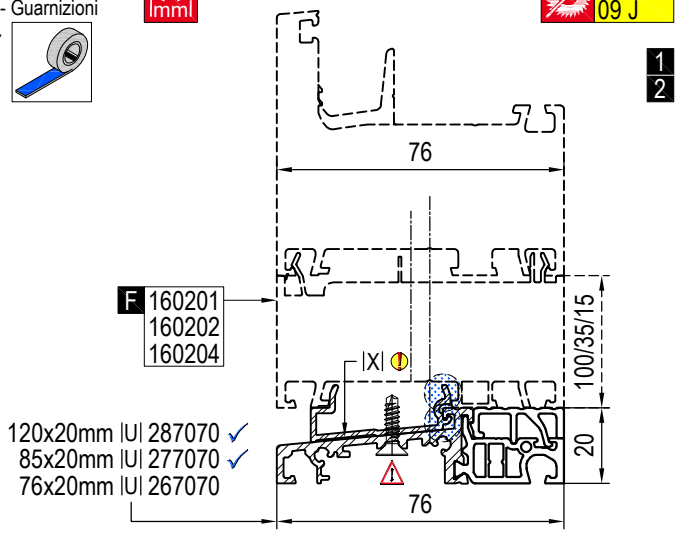
✓ Option
Option - Opción
Option - Opzione

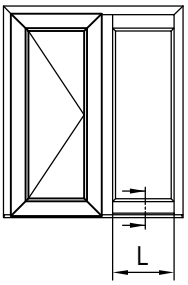
|X| Gaskets 05 X
Gaskets - Juntas - Joints - Guarnizioni
1:1 |X| ~

|X| 690072
12x0.6mm x 50m

76 mml energeto neo VM 09 J

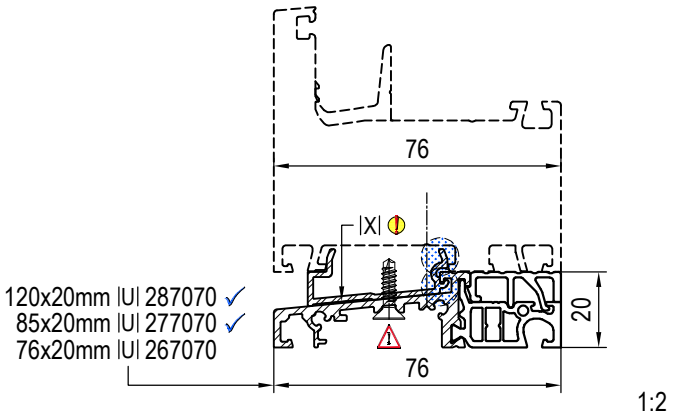
1
2





⚠ L ≥ 1m: 2x 3.9x16mm ~DIN 7504 P

Example ~



1:2

F Extensions 04 F
Extensions - Prolongaciones - Élargisseurs - Allargatori

* silver
silver
plata
argent
argento

! required
required - requerido - nécessaire - necessario

Aluminium thresholds - Umbrales de aluminio - Seuils de aluminium - Soglie in alluminio

Tilt-and-turn door thresholds
Tilt-and-turn door thresholds - Umbrales puerta abatible
Porte oscillo-battante: Seuils - Soglie porta anta ribalta

AM 03 D

~ Balcony / Patio door thresholds
Balcony / Patio door thresholds - Umbral Puerta Balconera / de Entrada Lateral
Porte de balcon/entrée secondaire: Seuils - Soglie porta balcone / Portoncino secondario

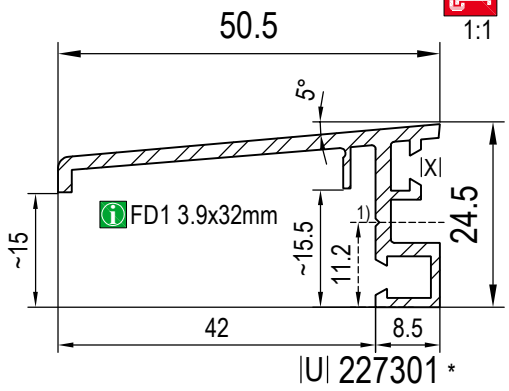
1) Ø4

|U|

AI

E6/EV1 *
Anodizing
Anodizing
Anodizado
Anodisation
Anodizzazione

✓ Option
Option - Opción
Option - Opzione

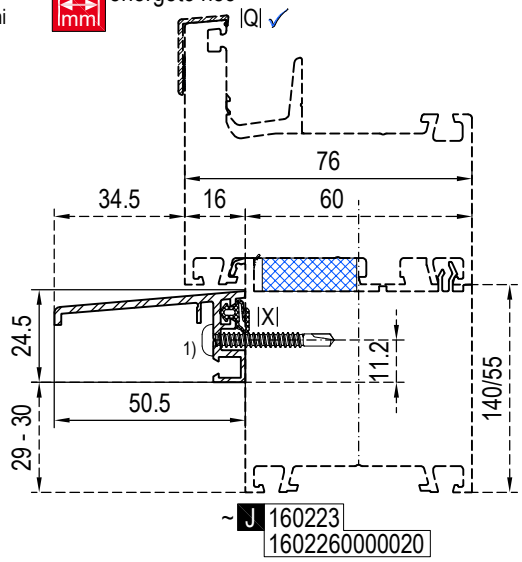


|X| Gaskets
05 X
Gaskets - Juntas - Joints - Guarnizioni
1:1
|X|



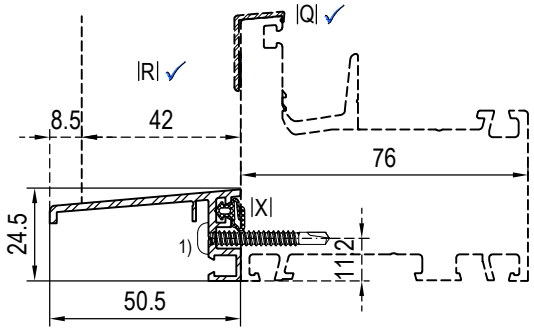
|X| 429340 bl
|X| 420340 pw

76 mm energeto neo



~ J 160223
1602260000020

Example ~



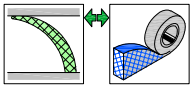
1:2

|Q| Aluminium step protection 05 Q
Aluminium step protection - Protección inferior alu
Protection de alu - Protezione in alluminio

|R| Aluminium roller shutter guides 05 R
Aluminium roller shutter guides
Guías de persiana de aluminio
Coulisse de volet roulant alu
Guide avvolgibili in alluminio

Roller shutter guides 04 B
Roller shutter guides - Guías de persiana
Coulisse de volet roulant - Guide avvolgibili

J Sill connector 04 J
Sill connector - Perfil de conexión a vierteaguas
Appuis - Collegamenti davanzale



*	bl	pw
silver	black	papyrus-white
silver	black	papyrus-white
plata	negro	blanco papiro
argent	noir	gris clair
argento	nero	bianco papiro

Aluminium thresholds - Umbrales de aluminio - Seuils de aluminium - Soglie in alluminio

Tilt-and-turn door thresholds
Tilt-and-turn door thresholds - Umbrales puerta abatible
Porte oscillo-battante: Seuils - Soglie porta anta ribalta

AM 03 D

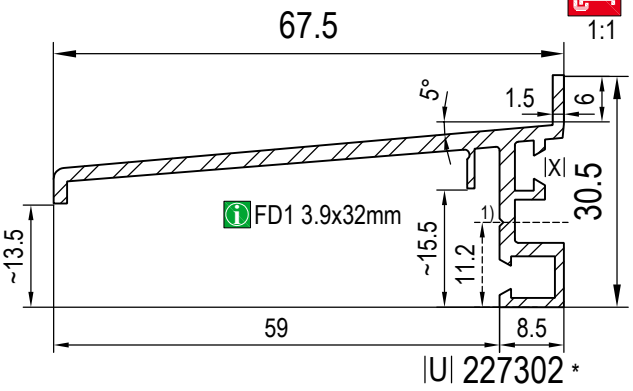
~ Balcony / Patio door thresholds
Balcony / Patio door thresholds - Umbral Puerta Balconera / de Entrada Lateral
Porte de balcon/entrée secondaire: Seuils - Soglie porta balcone / Portoncino secondario

1) Ø4

|U|

AI

1:1



|U| 227302 *

E6/EV1 *
Anodizing
Anodizing
Anodizado
Anodisation
Anodizzazione

✓ Option
Option - Opción
Option - Opzione

|X| Gaskets
05 X
Gaskets - Juntas - Joints - Guarnizioni

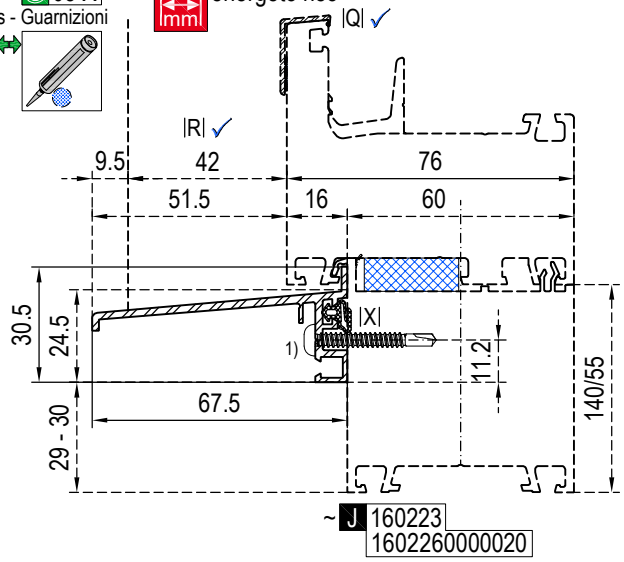
1:1



|X| 429340 bl
|X| 420340 pw

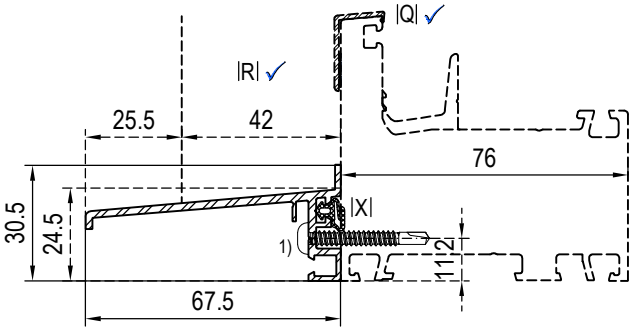
|X|

76 mm energeto neo



~ J 160223
1602260000020

Example ~

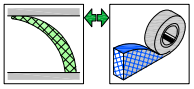


|Q| Aluminium step protection 05 Q
Aluminium step protection - Protección inferior alu
Protection de alu - Protezione in alluminio

|R| Aluminium roller shutter guides 05 R
Aluminium roller shutter guides
Guías de persiana de aluminio
Coulisse de volet roulant alu
Guide avvolgibili in alluminio

Roller shutter guides 04 B
Roller shutter guides - Guías de persiana
Coulisse de volet roulant - Guide avvolgibili

J Sill connector 04 J
Sill connector - Perfil de conexión a vierteaguas
Appuis - Collegamenti davanzale



1:2

*	bl	pw
silver	black	papyrus-white
silver	black	papyrus-white
plata	negro	blanco papiro
argent	noir	gris clair
argento	nero	bianco papiro

Aluminium thresholds - Umbrales de aluminio - Seuils de aluminium - Soglie in alluminio

Tilt-and-turn door thresholds
Tilt-and-turn door thresholds - Umbrales puerta abatible
Porte oscillo-battante: Seuils - Soglie porta anta ribalta

AM 03 D

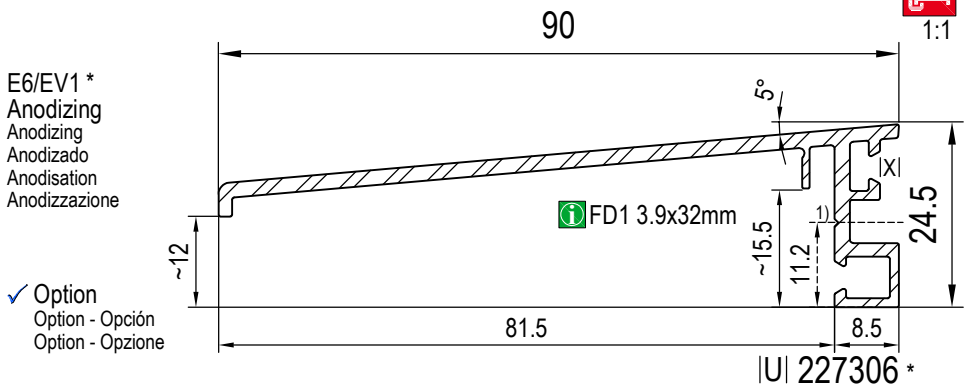
~ Balcony / Patio door thresholds
Balcony / Patio door thresholds - Umbral Puerta Balconera / de Entrada Lateral
Porte de balcon/entrée secondaire: Seuils - Soglie porta balcone / Portoncino secondario

1) Ø4

|U|

AI

1:1



E6/EV1 *
Anodizing
Anodizing
Anodizado
Anodisation
Anodizzazione

✓ Option
Option - Opción
Option - Opzione

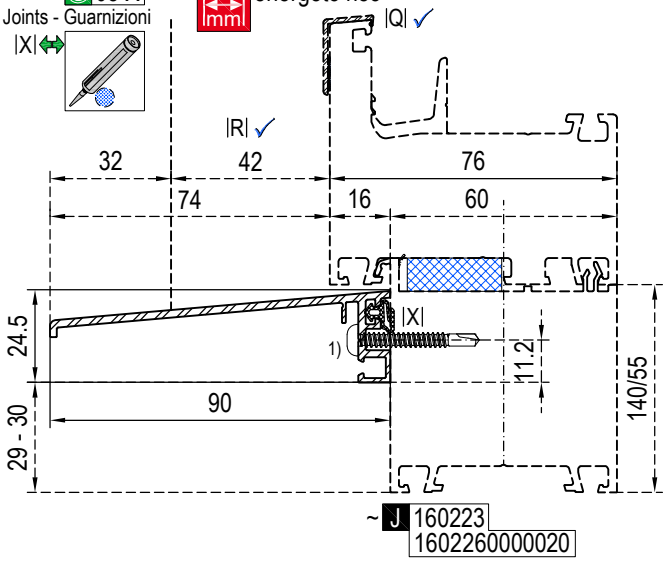
|X| Gaskets
Gaskets - Juntas - Joints - Guarnizioni

05 X

1:1

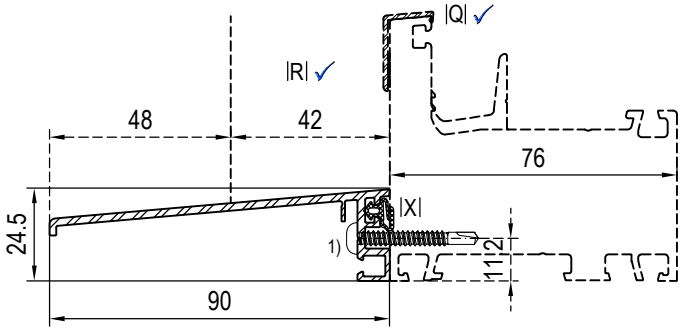
|X| 429340 bl
|X| 420340 pw

76 mm energeto neo



~ J 160223
1602260000020

Example ~

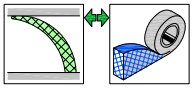


|Q| Aluminium step protection 05 Q
Aluminium step protection - Protección inferior alu
Protection de alu - Protezione in alluminio

|R| Aluminium roller shutter guides 05 R
Aluminium roller shutter guides
Guías de persiana de aluminio
Coulisse de volet roulant alu
Guide avvolgibili in alluminio

Roller shutter guides 04 B
Roller shutter guides - Guías de persiana
Coulisse de volet roulant - Guide avvolgibili

J Sill connector 04 J
Sill connector - Perfil de conexión a vierteaguas
Appuis - Collegamenti davanzale



1:2

*	bl	pw
silver	black	papyrus-white
silver	black	papyrus-white
plata	negro	blanco papiro
argent	noir	gris clair
argento	nero	bianco papiro

Aluminium thresholds - Umbrales de aluminio - Seuils de aluminium - Soglie in alluminio

VM 09 J

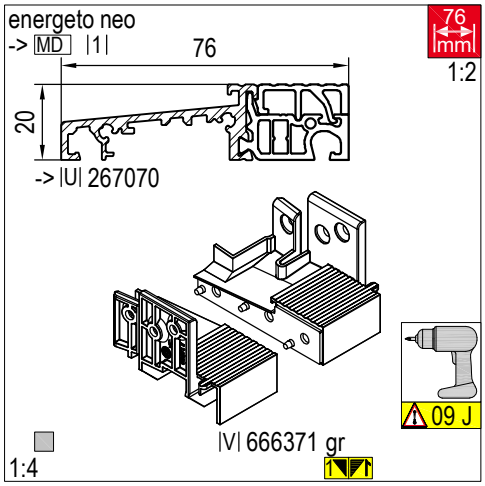
|V| Threshold connector
Threshold connector - Soporte de umbral
Embouts de seuil - Supporto soglia

Set
Set - Juego - Kit - Set

|1| Frame
Frame - Marco - Dormant - Telaio
02 B

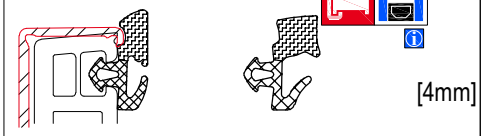
|U| Aluminium thresholds
Aluminium thresholds - Umbrales de aluminio
Seuils de aluminium - Soglie in alluminio
05 U

Example ~



gr grey
grey - gris - gris - grigio

-> |1||2||3||4||5||6| + |P|



[4mm]

■ EPDM |X| 459951 bl

1:1 ⚠ 08 L

-> |1||2||3||4||5||6|



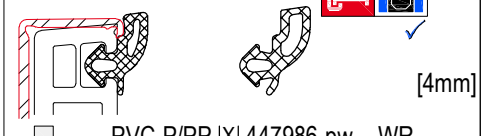
[4-4.5mm]

☐ EPDM |X| 477025 pw WR

■ EPDM |X| 479025 bl WR

1:1

-> |1||2||3||4||5||6| + |P|



[4mm]

☐ PVC-P/PP |X| 447986 pw WR

■ PVC-P/PP |X| 449986 bl WR

1:1 ⚠ 08 L

-> |1||2||3||4||5||6|



[4-4.5mm]

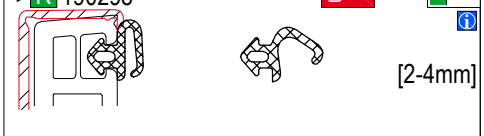
☐ TPE |X| 477015 pw WR

■ TPE |X| 479015 bl WR

1:1

-> |1||3||6| + |P|

-> R 190298



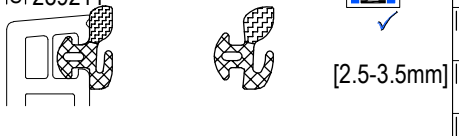
[2-4mm]

■ EPDM |X| 429320 bl

1:1 ⚠ 08 L

-> |1||2||3||4||5|

-> |S| 289211

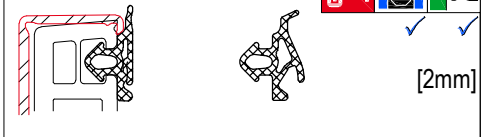


[2.5-3.5mm]

■ EPDM |X| 459922 bl WR

1:1

-> |1||3| + |P|



[2mm]

■ EPDM |X| 449338 bl

1:1 ⚠ 08 L

-> |1||2||3||4||5|



[3-5mm]

☐ EPDM |X| 450925 pw

■ EPDM |X| 459925 bl

1:1

-> |1||3| + |P|



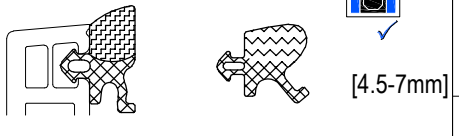
[2mm]

☐ PVC-P |X| 447348 pw

■ PVC-P |X| 449348 bl

1:1 ⚠ 08 L

-> |1||2||3||4||5|



[4.5-7mm]

■ EPDM |X| 459923 bl

1:1

-> |2|



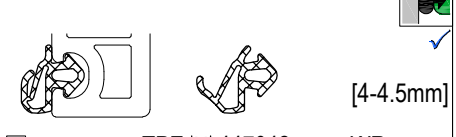
[4-4.5mm]

☐ EPDM |X| 447340 pw WR

■ EPDM |X| 449340 bl WR

1:1

-> |2|



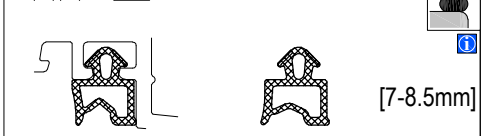
[4-4.5mm]

☐ TPE |X| 447042 pw WR

■ TPE |X| 449042 bl WR

1:1

-> |2||5| + MD



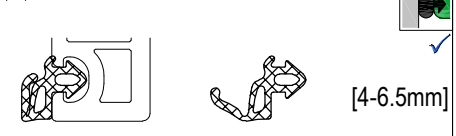
[7-8.5mm]

☐ PVC-P |X| 467019 pw WR

■ PVC-P |X| 469019 bl WR

1:1

-> |2|



[4-6.5mm]

☐ EPDM |X| 447343 pw

■ EPDM |X| 449343 bl

1:1

Example ~

⚠ 08 G

|X| Gaskets
Gaskets - Juntas
Joints - Guarnizioni

Repair gaskets
Repair gaskets - Juntas de reparación
Joints de réparation - Guarnizioni di riparazione

-> Glazing
Glazing - Acristalamiento - Vitrage - Vetraggio

-> Stop
Stop - Tope - Frappe - Battuta

[...] Compression
Compression - Presión
Compression - Compressione

|1| Frame 02 B
Frame - Marco - Dormant - Telaio

|2| Sash 02 C
Sash - Hoja - Ouvrant - Anta

|3| Mullion 02 D
Mullion - Poste - Meneau - Montante

|4| Transoms 02 D
Transoms - Travesaños - Traverses - Inglesine

|5| False mullion sash 02 E
False mullion sash - Hoja batiente
Battement intégré - Anta-scambio battuta

|6| False mullion 02 E
False mullion - Batiente - Battement - Scambio battuta

R Renovation box 04 R
Renovation box - Cajón de renovación
Coffre de rénovation - Cassonetto ristrutturazione

|P| Aluminium shells aluskin 05 P
Aluminium shells - Recubrimientos exteriores de aluminio - Capotage alu - Cappottini in Alluminio

|S| Aluminium profiles 05 S
Aluminium profiles - Perfiles de aluminio
Profilés aluminium - Profili in alluminio

winding direction - sentido de enrollamiento
sens d'enroulement - direzione di avvolgimento
WR winding direction clockwise
clockwise - derecha - à droite - a destra

not weldable - no soldable - non soudable - non saldabile
EPDM (DIN 7863) not weldable

weldable - soldable - soudable - saldabile
TPE (RAL-GZ 716/1 II) weldable
PVC-P Plasticised PVC weldable
plasticised PVC - PVC blando - PVC souple - PVC morbido

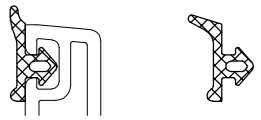
Standard
Standard - Estándar - Standard - Standard

✓ Option
Option - Opción - Option - Opzione

☐ pw papyrus-white
papyrus-white - blanco papiro - gris clair - bianco papiro

■ bl black
black - negro - noir - nero

-> A xxx6xx

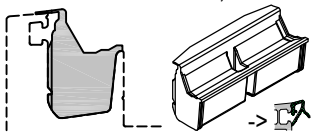


[2mm]

EPDM |X| 429310 bl

1:1

-> |3| 160x46 + |Ø| 667046, 667146 -> |1||3| MD



1:2

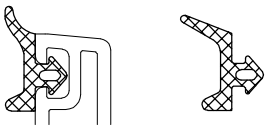
TPE |X| 660034 wh

TPE |X| 669034 bl

1:4

09 H

-> A xxx8xx

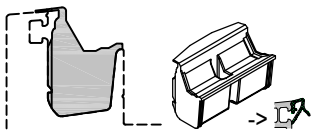


[3-4mm]

EPDM |X| 429311 bl

1:1

-> |3| 160x45 + |Ø| 667045, 667145 -> |1||3| MD



1:2

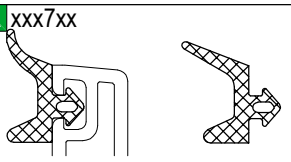
TPE |X| 660032 wh

TPE |X| 669032 bl

1:4

09 H

-> A xxx7xx

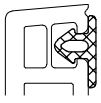


[6mm]

EPDM |X| 429312 bl

1:1

-> |1||2| + |L| 630315 REGEL-air®





l= 200m

TPE |X| 429334 pw WR

EPDM |X| 427334 bl

1:1

Example ~

08 G

|X| Gaskets
Gaskets - Juntas
Joints - Guarnizioni

-> Glazing
Glazing - Acristalamiento - Vitrage - Vetraggio

-> Stop
Stop - Tope - Frappe - Battuta

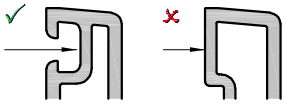
[...] Compression
Compression - Presión
Compression - Compressione

|1| Frame 02 B
Frame - Marco - Dormant - Telaio

|2| Sash 02 C
Sash - Hoja - Ouvrant - Anta

|3| Mullion 02 D
Mullion - Poste - Meneau - Montante

A Glazing beads 04 A
Glazing Beads - Junquillos - Parcloses - Fermavetri



Repair gaskets
Repair gaskets - Juntas de reparación
Joints de réparation - Guarnizioni di riparazione

|D| Connector 05 D
Connector - Uniones mecánicas
Assemblage - Giunzione

|Ø| Connector without knobs 05 D
Connector without knops - Conectores sin centradores
Assemblage sans plots - Giunzione senza rilievi

|L| Ventilation systems 05 L
Ventilation systems - Sistemas de ventilación
Systéme d'aération - Sistema di aerazione

winding direction - sentido de enrollamiento
sens d'enroulement - direzione di avvolgimento
WR winding direction clockwise
clockwise - derecha - à droite - a destra

not weldable - no soldable - non soudable - non saldabile
EPDM (DIN 7863) not weldable

weldable - soldable - soudable - saldabile
TPE (RAL-GZ 716/1 II) weldable

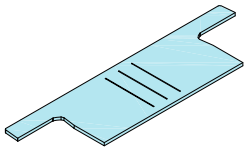
✓ Option
Option - Opción - Option - Opzione

pw papyrus-white
papyrus-white - blanco papiro - gris clair - bianco papiro

wh white
white - blanco - blanc - bianco

bl black
black - negro - noir - nero

-> AD |1| + |U|

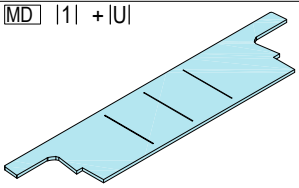


166mm

Foam |X| 466070 gr

1:5 09 J

-> MD |1| + |U|



206mm

Foam |X| 466071 gr

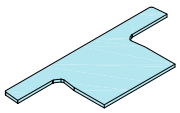
1:5 09 J

08 G

|X| Gaskets
Gaskets - Juntas
Joints - Guarnizioni

-> Doors / Thresholds
Doors / Thresholds - Puertas / Umbrales
Portes / Seuils - Porte / Soglie

-> AD |3| 160x43 + |U|

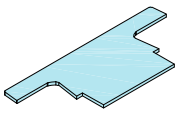


114mm

Foam |X| 466072 gr

1:5 09 J

-> MD |3| 160x46 + |U|



114mm

Foam |X| 466075 gr

1:5 09 J

[...] Compression
Compression - Presión
Compression - Compressione

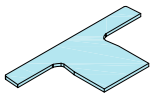
|1| Frame
Frame - Marco - Dormant - Telaio
02 B

|2| Sash
Sash - Hoja - Ouvrant - Anta
02 C

|3| Mullion
Mullion - Poste - Meneau - Montante
02 D

|U| Aluminium thresholds
Aluminium thresholds - Umbrales de aluminio
Seuils de aluminium - Soglie in alluminio
05 U

-> AD |3| 160x41 + |U|

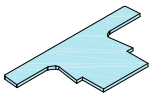


94mm

Foam |X| 466073 gr

1:5 09 J

-> MD |3| 160x45 + |U|

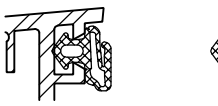


94mm

Foam |X| 466074 gr

1:5 09 J

-> |U| 227301, 227302, 227306

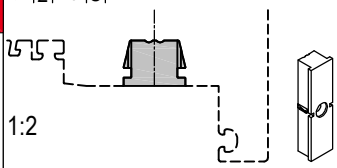


[2.5-3.5mm]

EPDM |X| 420340 pw WR
EPDM |X| 429340 bl WR

1:1

-> |2| + |U|



1:2

TPE |X| 466057 gr

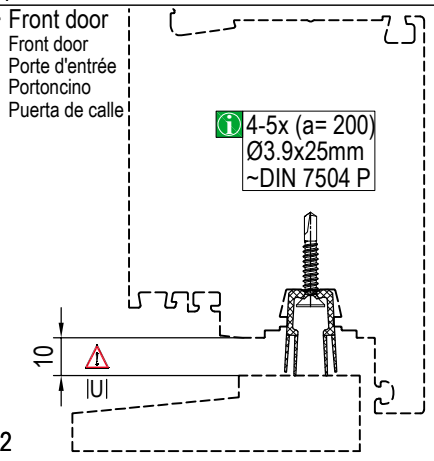
1:5 09 J

winding direction - sentido de enrollamiento
sens d'enroulement - direzione di avvolgimento
WR winding direction clockwise
clockwise - derecha - à droite - a destra

not weldable - no soldable - non soudable - non saldabile
EPDM (DIN 7863) not weldable

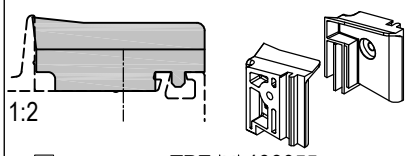
weldable - soldable - soudable - saldabile
TPE (RAL-GZ 716/1 II) weldable
PVC-P Plasticised PVC weldable
plasticised PVC - PVC blando - PVC souple - PVC morbido
PVC-H uPVC weldable
unplasticised PVC - PVC rígido - PVC dur - PVC rigido

-> Front door
Front door
Porte d'entrée
Portoncino
Puerta de calle



1:2

-> |1| |3| + |U|

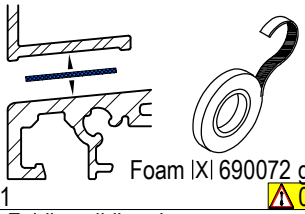


1:2

TPE |X| 466055 gr

1:5 09 J

-> |U| 267071, 267072 + |U|

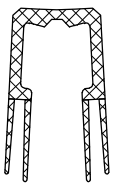


12x0.6mm
l~ 50m

Foam |X| 690072 gr

1:1 09 J

-> |2| + |U|



[8-10mm]

TPE |X| 496912 gr

1:1 03 B

-> Folding sliding door
Fold-and-slide door
Puerta corredera plegable
Portes pliantes
Porta scorrevole a libro

[3-5mm]

Foam |X| 420330 wh
Foam |X| 429330 bl

1:1

gr grey
grey - gris - gris - grigio

pw papyrus-white
papyrus-white - blanco papiro - gris clair - bianco papiro

wh white
white - blanco - blanc - bianco

bl black
black - negro - noir - nero

Example ~

Scale 1:5, 1:2, 1:1
05_X_01_neo*
May be subject to change and errors excepted! en

Accessories
Gaskets

= D
l= 200m
[6mm]
EPDM |X| 449141 bl
1:1

= D
l= 250m
[3mm]
EPDM |X| 447140 pw
EPDM |X| 449140 bl
1:1

08 G
|X| Gaskets
Gaskets - Juntas
Joints - Guarnizioni

energeto neo ~
6
1:2

energeto neo ~
3
1:2

[...] Compression
Compression - Presión
Compression - Compressione

|1| Frame 02 B
Frame - Marco - Dormant - Telaio

energeto neo ~ + |P| + |F| 239129
6
1:2
08 L

energeto neo ~ + |P| + |H| 642025
3
1:2
08 L

|3| Mullion 02 D
Mullion - Poste - Meneau - Montante

D Couplings 04 D
Couplings - Acoplamientos - Couplages - Accoppiamenti

F Extensions 04 F
Extensions - Prolongaciones - Élargisseurs - Allargatori

|H| Installation / Mounting anchor 05 H
Installation / Mounting anchor
Montaje / Anclaje para montaje
Montage / Patte de fixation murale
Montaggio / Bullone di montaggio

energeto neo ~ + |P| + |F| 239129
6
1:2
08 L

-> D 120224
l= 250m
[14-20mm]
EPDM |X| 459905 bl
1:1

|P| Aluminium shells aluskin 05 P
Aluminium shells - Recubrimientos exteriores de aluminio - Capotage alu - Cappottini in Alluminio

= D -> |P|
l= 200m
[6mm]
EPDM |X| 449142 bl
1:1
08 L

energeto neo ~
2-5
16-19
1:2

-> |1||3| F
1:2
~70
EPDM-Foam |X| 449251 bl
1:1
08 L

Groove cover
Groove cover - Cubrecanal
Recouvrement rainure - Copertura scanalatura

energeto neo ~
1:2
-> |1||3| F
l= 200m
PVC-P |X| 423250 oc
PVC-P |X| 421250 br
PVC-P |X| 420250 wh
PVC-P |X| 429250 bl
1:1

energeto neo
-> F 76mm
+ |H| 644299
l~ 30m
TPE |X| 469299 bl
1:2
08 C

energeto neo
-> F 76mm
+ |H| 644299
PolySoft |X| 762299 bl
1:5
08 C

energeto neo
-> F 76mm
150
76x150mm
l~ 24m
|X| 690076 wh
~
08 C

not weldable - no soldable - non soudable - non saldable
EPDM (DIN 7863) not weldable
weldable - soldable - soudable - saldable
TPE (RAL-GZ 716/1 II) weldable
PVC-P Plasticised PVC weldable
plasticised PVC - PVC blando - PVC souple - PVC morbido

Standard
Standard - Estándar - Standard - Standard
✓ Option
Option - Opción - Option - Opzione

oc ochre
ochre - ocre - ocre - caramello
br brown
brown - marrón - brun - marrone
pw papyrus-white
papyrus-white - blanco papiro - gris clair - bianco papiro
wh white
white - blanco - blanc - bianco
bl black
black - negro - noir - nero

Example ~

|Y| Brush seals
Brush seals - Juntas de felpillo
Joints à brosse - Guarnizioni a spazzola

|1| Roller shutter guides 04 B
Roller shutter guides - Guías de persiana
Coulisse de volet roulant - Guide avvolgibili

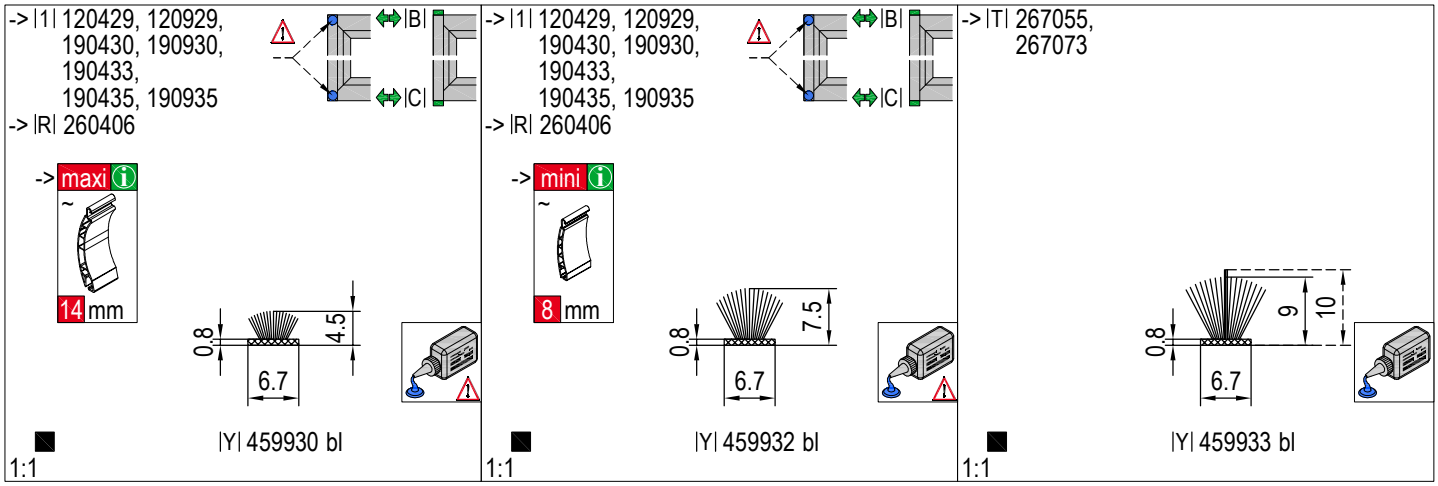
|B| Inlet funnel 05 B
Inlet funnel - Embocadura guía persiana
Tulipe de coulisse - Bocchettone

|C| End caps 05 C
End caps - Tapas de remate - Embouts - Tappi

|R| Aluminium roller shutter guides 05 R
Aluminium roller shutter guides
Guías de persiana de aluminio
Coulisse de volet roulant alu
Guide avvolgibili in alluminio

|T| Aluminium weather bar 05 T
Aluminium weather bar - Vierteaguas de aluminio
Rejet d'eau de aluminium - Gocciolatoio in alluminio

Example ~



■ bl black
black - negro - noir - nero

|Z| Special accessories
Special accessories - Accesorios especiales
Accessoires spécial - Accessori speciali

required
required - es necesario - nécessaire - necessario

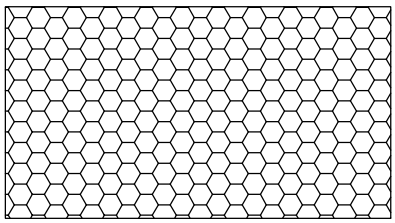
|1| Frame 02 B
Frame - Marco - Dormant - Telaio

|2| Sash 02 C
Sash - Hoja - Ouvrant - Anta

|3| Sill connector 04 J
Sill connector - Perfil de conexión a vierteaguas
Appuis - Collegamenti davanzale

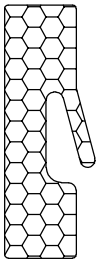
Example ~

energeto neo
-> |1| 060x08



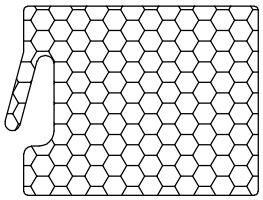
~51x28mm |Z| 660289 |= 1000mm
1:1

energeto neo
-> |1| 060x05
-> |1| 060x08



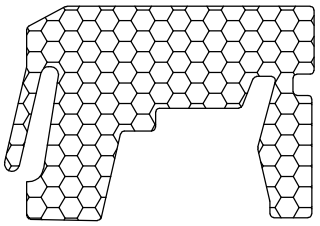
~9.5x33.5mm |Z| 660291 |= 1000mm
1:1

energeto neo
-> |1| 060x05
-> |1| 060x08



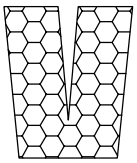
~31x25mm |Z| 660290 |= 1000mm
1:1

energeto neo
-> |2| 060x20
-> |2| 060x27



~38x28.5mm |Z| 660292 |= 1000mm
1:1

energeto neo
-> |3| 184247



~13/17x20mm |Z| 680299 |= 1000mm
1:1

06 A Reinforcement Guidelines

06 A 1. The importance of reinforcement in PVC profiles

Due to the material properties of rigid PVC, PVC window profiles must be reinforced with reinforcements made of corrosion-protected steel profiles or fibre-reinforced plastic (powerdur) under certain stresses and circumstances, as well as from a specified profile length.

The correct reinforcement of window profiles by means of reinforcements is one of the decisive factors for the long-term durability and functionality of a window, as they absorb the greatest forces acting on a window due to strong weather conditions, wind, temperature and service loads.

06 A 2. Reinforcement

06 A 2.1. Reinforcement with steel

The steel reinforcements are butt cut and are min. 10mm and max. 40mm shorter than the distance between the inner mitres (Fig. 1.). The aluplast reinforcements are matched in shape and dimensions to the corresponding profile inner cross-section of the respective aluplast profiles and are screwed max. every 30cm for white profiles and max. every 25cm for coloured profiles (for more details on profiles with foiling or lacquering: see chapter 08 C Decors and colours: Coloured profiles).

When using welding corner brackets, the regulations according to the processing manual apply for cutting and screwing the reinforcement: Chapter 09 J Individual processing: Thresholds / Doors -> Welding corner brackets.
Deviating designs and their requirements must be agreed with aluplast Systemtechnik!

The corresponding reinforcement diagrams for profile lengths on the following pages apply.

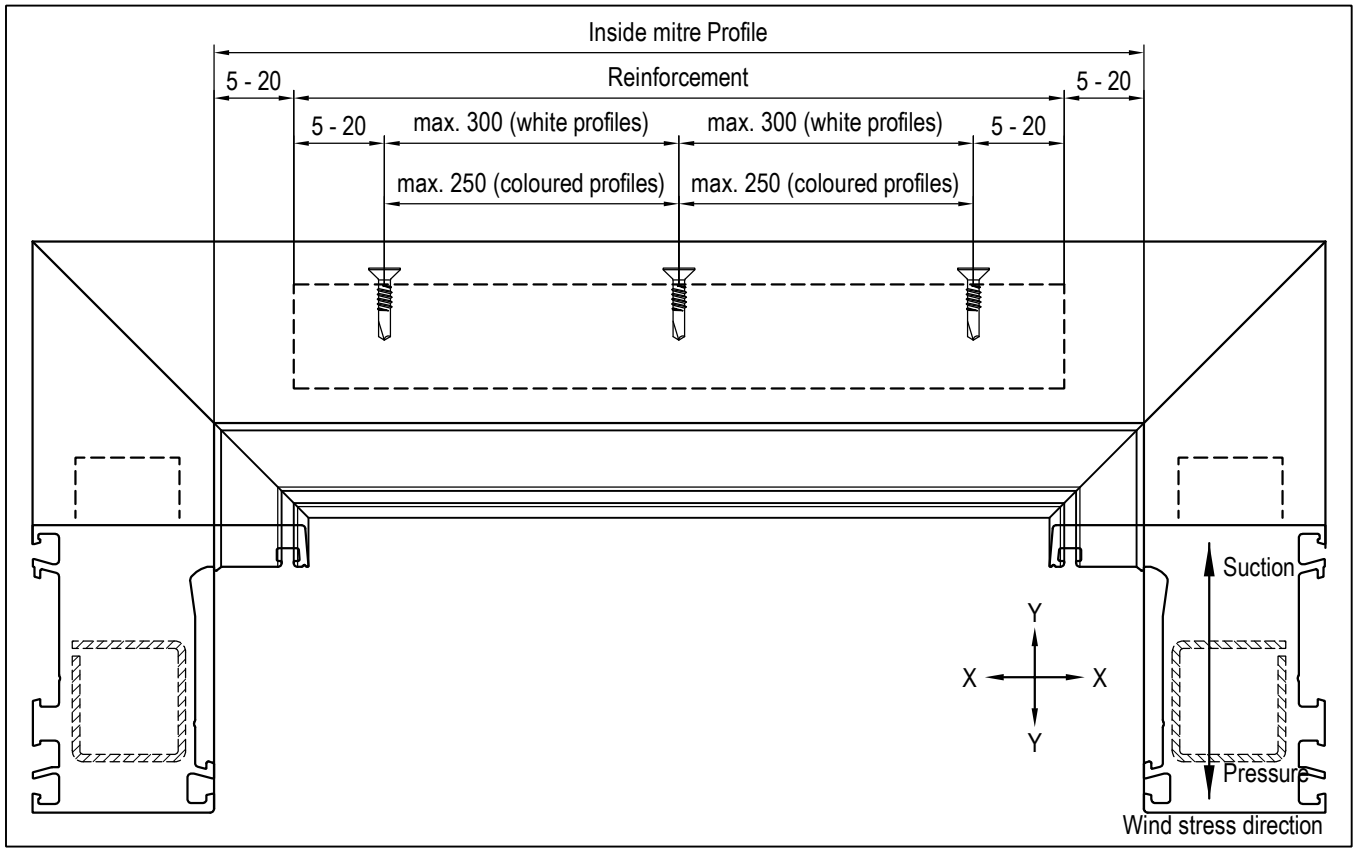


Figure 1: Internal mitre profile with steel reinforcement

Example energeto neo

06 A 2.2. Reinforcement with steel for coloured profiles

Irrespective of the window dimensions, profiles with coloured surfaces (e.g. aluskin, coating,...) are to be reinforced with the associated steel profiles and screwed to the plastic profile at a distance of max. 25cm. The following minimum requirements apply to the reinforcement in relation to the length of the individual profile (frame, sash, mullion, etc.):

Length single profile	Minimum steel thickness s:	Reinforcements to be preferred for	
		Sash1)	Frames, Mullions/Transoms
≤ 1.2m	s ≥ 1.25mm	U-Reinforcements	Square reinforcements
≤ 2.5m	s ≥ 1.5mm		
> 2.5m	s ≥ 1.5mm		

Table 1: Minimum steel thickness

1) In addition, the respective size diagrams (maximum dimensions) - especially for the horizontal sash reinforcements - as well as any other requirements (wind load, glass weight, fall protection, etc.) must be included.

(House) doors: additional processing instructions: see **Chapter 08 K 12**.

06 A 2.3. Reinforcement with powerdur inside

Powerdur inside or fibre-reinforced profiles is the term aluplast uses to describe the connection of specially designed profiles with factory-integrated fibre reinforcement strips on the outside and inside, which were developed by aluplast for this application.

Additional reinforcement, e.g. with steel reinforcement, is not usually necessary in frame profiles with powerdur inside and is only required for certain requirements, e.g. in the area of fall protection, installation in accordance with DIN 18008, burglary protection, pre-wall installation, etc.

Due to the integration of the fibre reinforcement strips - in contrast to the steel reinforcements - a separate cut to and from them is not necessary. These fibre reinforcement strips go all the way into the mitre, i.e. they are present all around the profile (see Fig. 02).

Due to the absence of the steel reinforcement as a thermal bridge, the thermal insulation of the profiles is significantly improved compared to a profile with existing steel reinforcement. Furthermore, additional chambers in the profiles further optimise the thermal insulation and significantly increase the inherent strength.

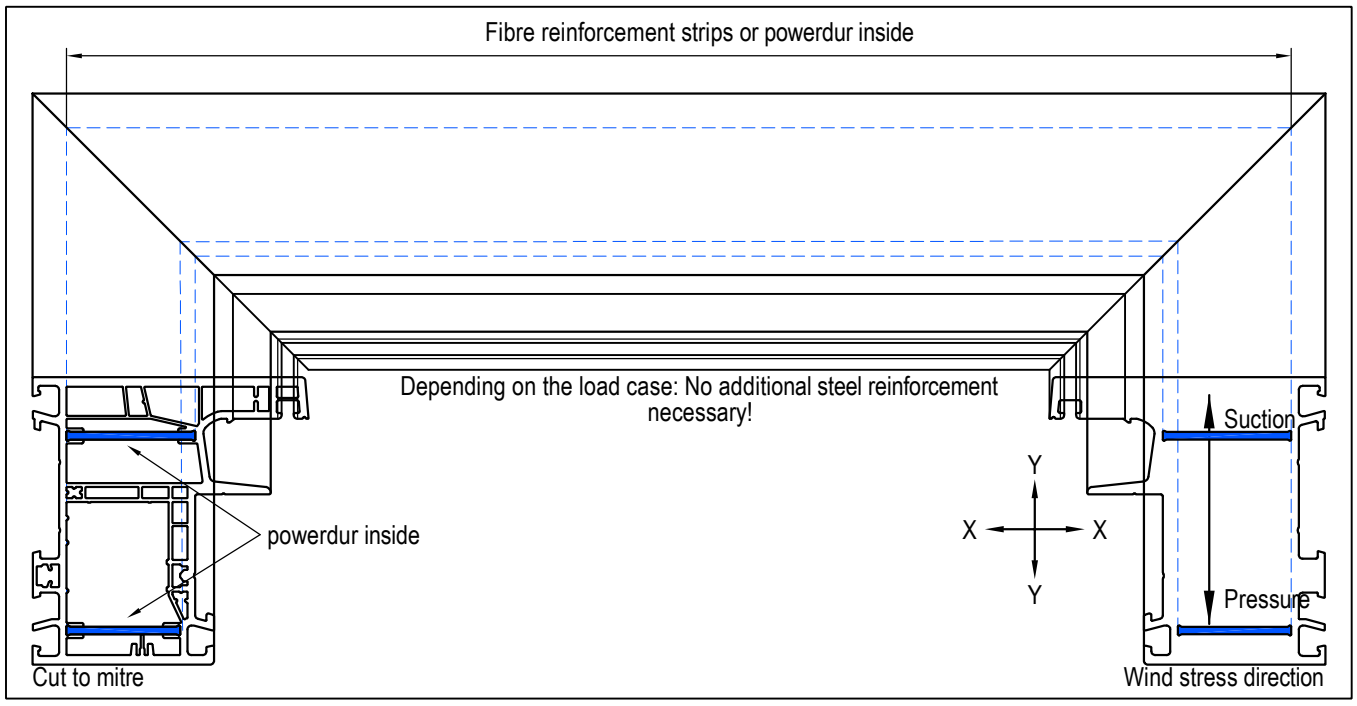


Figure 2: Inside mitre profile with powerdur inside

Example energeto neo

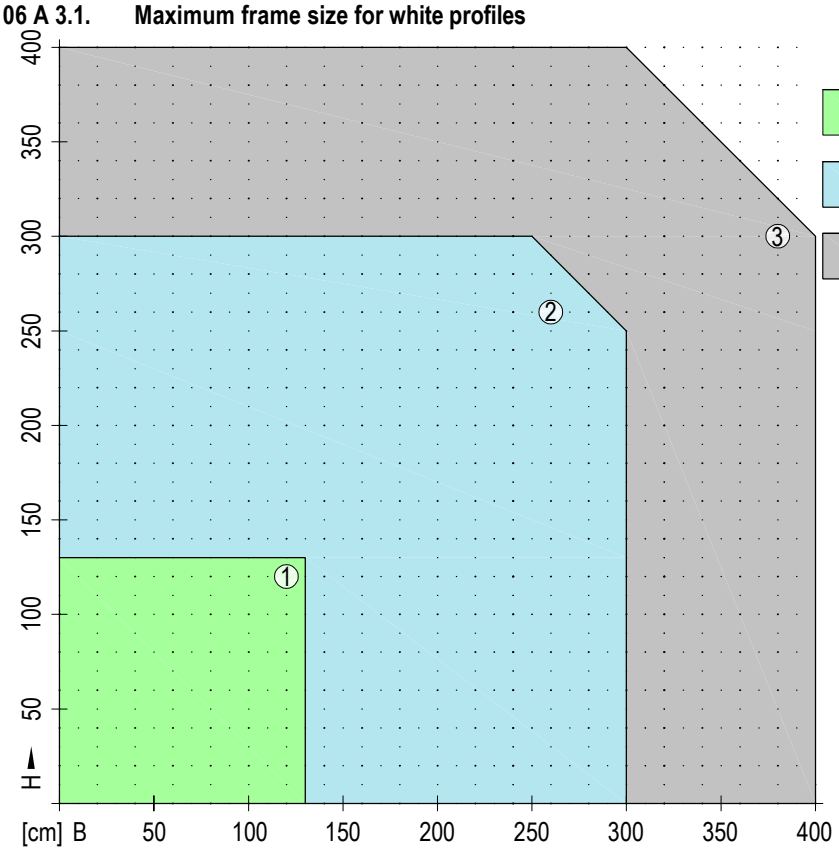
Procedure window statics - design:

1. Frame
   (Compliance with max. size depending on profile selection)
2.a Inside the frame
   (Sash size)
2.b Inside the frame
   (Mullion/false mullion layout)
3. Outside the frame
   (Traverse, extension, sill connector, coupling, etc.)

1

06 A 3. Maximum dimensions of individual frame elements

06 A 3.1. Maximum frame size for white profiles



	with powerdur inside	without powerdur inside
①	without steel	without steel
②	without steel	with steel [1] s ≥ 1.25mm
③	with steel [1] s ≥ 1.25mm	with steel [1] s ≥ 1.25mm

[1] If a steel is used, the fastening to the masonry must be made through the steel (observe screw axis!)

All free frame lengths, such as the upper cross piece under roller shutter boxes or couplings of elements, are to be reinforced according to the static requirements.

Frames with powerdur inside require, for example, a statically dimensioned crossbar steel.

Upper adjacent construction in the roller shutter area: Refer to chapter 06 A 12. (and chapter 10 C 2.).

Table 2: White profiles: max. frame size		max. size	max. surface	max. glass weight for fixed glazing	Coupling	Roller shutter box	T-connections **
WHITE	① without reinforcement	130x130cm	1.69m²	< 80kg	-	only with static profile (e.g. traverse steel)	-
	② with powerdur without steel	300x300cm	7.5m²	200kg *	Design according to wind load	only with static profile (e.g. traverse steel)	permissible with tested T-connector (Product program aluplast)
	② without powerdur with steel s ≥ 1.25mm					dimension statically	
	③ with powerdur with steel s ≥ 1.25mm	400x400cm	12m²				
	③ without powerdur with steel s ≥ 1.25mm						

* Maximum glass weight with and without vertical pitch per panel at 200kg (or according to the table). Fixed glazing with a glass weight of more than 200kg (up to 300kg) must be carried out in accordance with the specifications for heavy-duty blocking (see chapter 09 F Glazing / Blocking).

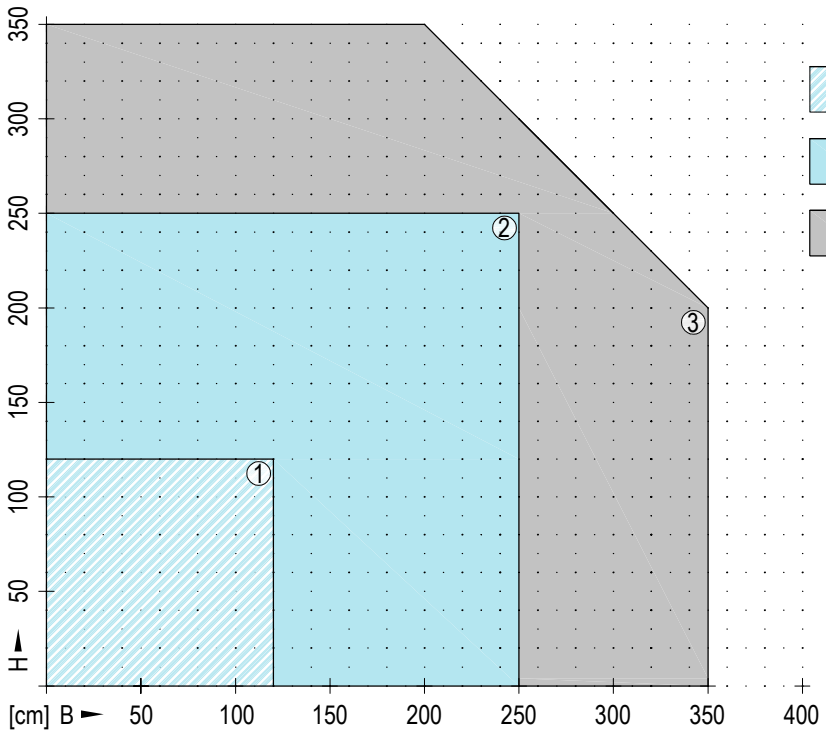
** T-joints of all types, such as mullions, transoms, (horizontal) mullion etc.

In the case of a horizontal division (e.g. skylights) with a free span length without a glass-dividing vertical mullion, the max. glass weights are limited to 100kg.

Frame profiles must always be fixed to the building structure every 70 cm.

1

06 A 3.2. Maximum frame size for coloured profiles and profiles with aluskin



	with powerdur inside	without powerdur inside
①	without steel	with steel 1) s ≥ 1.25mm
②	without steel	with steel 1) s ≥ 1.5mm
③	with steel 1) s ≥ 1.25mm	with steel 1) s ≥ 1.5mm

1) If a steel is used, the fastening to the masonry must be made through the steel (observe screw axis!)

All free frame lengths, such as the upper cross piece under roller shutter boxes or couplings of elements, are to be reinforced according to the static requirements.

Frames with powerdur inside require, for example, a statically dimensioned crossbar steel.

Upper adjacent construction in the roller shutter area: Refer to chapter 06 A 12. (and chapter 10 C 2.).

Table 3: Coloured profiles: max. frame size		max. size	max. surface	max. glass weight for fixed glazing	Coupling	Roller shutter box	T-connections **
Coloured profiles and profiles with aluskin	① with powerdur without steel	120x120cm	1.44m²	200kg *	Design according to wind load	only with static profile (e.g. traverse steel)	permissible with tested T-connector (Product program aluplast)
	① without powerdur with steel s ≥ 1.25mm					dimension statically	
	② with powerdur without steel	250x250cm	6.25m²			only with static profile (e.g. traverse steel)	
	② without powerdur with steel s ≥ 1.5mm						
	③ with powerdur with steel s ≥ 1.25mm	350x350cm	7.5m²			dimension statically	
	③ without powerdur with steel s ≥ 1.5mm						

* Maximum glass weight with and without vertical pitch per panel at 200kg (or according to the table). Fixed glazing with a glass weight of more than 200kg (up to 300kg) must be carried out in accordance with the specifications for heavy-duty blocking (see chapter 09 F Glazing / Blocking).

** T-joints of all types, such as mullions, transoms, (horizontal) mullion etc.

In the case of a horizontal division (e.g. skylights) with a free span length without a glass-dividing vertical mullion, the max. glass weights are limited to 100kg.

Frame profiles must always be fixed to the building structure every 70 cm.

1

06 A 4. Attachment of scissor bearing according to TBDK

On the hinge side in the frame, the TBDK specifications must also be taken into account. The maximum sash weights must be checked individually by the window manufacturer in accordance with the TBDK guideline using the existing hardware, screw and profile components as a permanent factory check, e.g. the number of screws in the reinforcement for corner and scissor positions with the specifications of the screw, hardware and profile system manufacturer.

The following information is intended as a recommendation and is in no way a substitute for continuous monitoring of the TBDK guideline.

The following information must be observed:

- Pre-drilled with Ø3.0mm,
- Minimum steel thickness d=1.5mm,
- Steel from aluplast product range,
- Screws: Material steel case-hardened, coating e.g. GS08, A2K
- Use window screw without shank

The maximum sash weights vary depending on the fitting. The obligatory factory production control based on the TBDK guideline with the components to be used is always decisive.

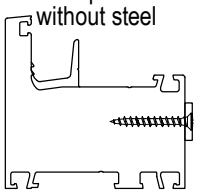
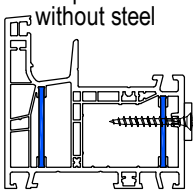
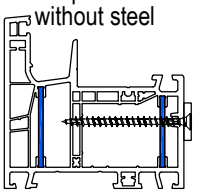
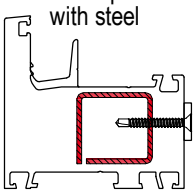
Example Illustration	 without powerdur without steel	 with powerdur without steel	 with powerdur without steel	 without/with powerdur with steel
	4 Screws into uPVC	4 Screws into uPVC with PD	4 Screws into uPVC with PD	4 Screws (3x into steel)
Position	4 times d x 35mm	4 times d x 35mm	2 times d x 55mm 2 times d x 35mm	4 times d x 35mm
(A)	4.1/4.2x35mm	4.1/4.2x35mm	4.1/4.2x55mm	4.1/4.2x35mm (into uPVC)
(B)	4.1/4.2x35mm	4.1/4.2x35mm	4.1/4.2x55mm	4.1/4.2x35mm (into steel)
(C)	4.1/4.2x35mm	4.1/4.2x35mm	4.1/4.2x35mm	4.1/4.2x35mm (into steel)
(D)	4.1/4.2x35mm	4.1/4.2x35mm	4.1/4.2x35mm	4.1/4.2x35mm (into steel)
max. FG	≤ 30kg *	≤ 70kg *	≤ 100kg *	100-130kg *

Table 4: Fastening according to TBDK

* The maximum sash weights are guide values and must be individually tested or verified by the fabricator in the respective combination of screw used, tightening torque, profile, hardware components, etc. according to TBDK and suitability for long-term use. Depending on the processing and the components used, it is possible to fall below the values specified in the TBDK guideline and this must be taken into account in the design.

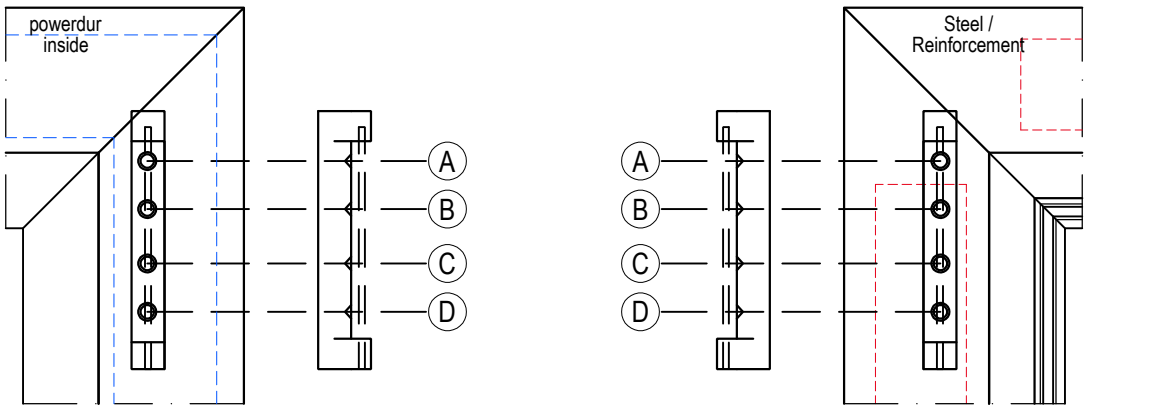


Figure 3: Fastening according to TBDK

Legend:
d Screw diameter
FG Sash weight
PD Powerdur

Example energeto neo

2.a

06 A 5. Sash reinforcement

06 A 5.1. Sash reinforcement

All white sashes without powerdur inside or without bonding inside with widths over 90cm, heights over 110cm and with a pane weight over 30kg/m² must be stiffened with the corresponding steel profiles.

The corresponding reinforcement diagrams for profile lengths on the following pages for side-hung/tilt-turn windows, front doors and parallel slide and tilt windows/doors apply.

06 A 5.2. Glass weight - Sash weight

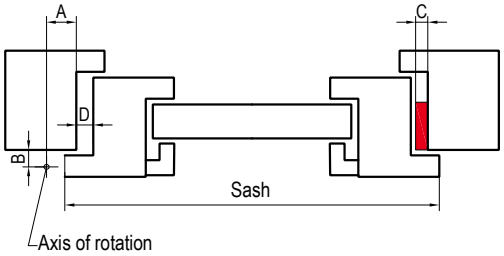
Difference between glass weight and sash weight:

Sash weights are important for the design of the hardware technology (maximum sash weight, TBDK, etc). The sash weight is made up of the glass weight (length of pane [m] x width of pane [m] x glass thickness [mm] x 2.5 = GG [kg]) and the profile weight incl. reinforcement and hardware.

The glass weight is relevant for the design of the lower, horizontal sash profile or the lower reinforcement (I_y-value of the reinforcement), which sometimes absorbs the glass weight downwards. This ensures the durability of the operability and function of the sash.

06 A 6. Smallest sash dimensions

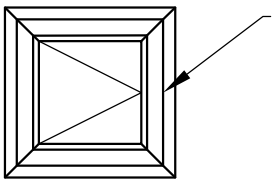
Based on the standard turn-tilt fittings available on the market, the following minimum dimensions according to the table are possible for the production of small sashes. The axial dimensions A and B are based on the specifications of the hardware manufacturer. If you have any further questions, please contact your hardware manufacturer or aluplast customer support.



A | B = axis of rotation (depending on fitting)
C = Striker height
D = Rebate clearance

System	Rebate clearance D	Locking piece height C	Minimum size without aluminium shell	Minimum size with aluminium shell
IDEAL 4000	12mm	8 - 9mm	355 - 420mm	490 - 640mm
IDEAL 5000	12mm	8 - 9mm	225 - 270mm	275 - 295mm
energeto neo	12mm	8 - 9mm	325 - 390mm	325 - 390mm
IDEAL 7000	12mm	8 - 9mm	480 - 565mm	665 - 840mm
IDEAL 8000	12mm	8 - 9mm	285 - 350mm	325 - 350mm

Table 5: Minimum sash dimensions (fitting-dependent)



Note:
The critical point here is the outer edge of the sash when it is turned out on the gearbox side --> this then brushes against the closing parts or, when tilting, the outer edge of the sash also brushes against the closing parts.

2.b

06 A 7. Mullion / traverse and transom reinforcement

Mullions, traverses and glass-dividing transoms must always be reinforced in accordance with the static requirements of DIN EN 1991-1 Part 4 (or National Annex).

Mullions, traverse profiles and glass-dividing transoms must always be reinforced even if they have no static function.

06 A 8. False mullion reinforcement

White false mullion profiles must always be reinforced in accordance with the structural requirements of DIN EN 1991-1 Part 4 (or National Annex), i.e. white false mullion profiles can also be processed without steel reinforcement as long as the sash profiles have the required structural strength.

Coloured false mullion profiles must always be reinforced with a steel reinforcement. The steel reinforcements must always be designed according to the static requirements of DIN EN 1991-1 Part 4.

False mullion sashes are to be treated like sash profiles.

06 A 9. Other element reinforcements

Other elements - such as couplings - are to be reinforced according to the static calculation according to DIN 1055-4:2005-03.

06 A 10. Extensions

If extensions are used for load transfer (e.g. dead weight of a window element), they must be reinforced with the corresponding steel profiles.

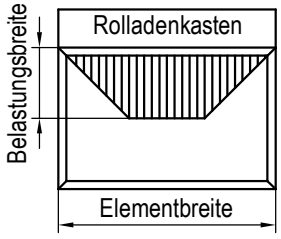
06 A 11. Decorative profiles / lacquered or non-white profiles

The specifications for frame, sash, mullion and transom profiles also apply!

06 A 12. Upper adjacent construction in the roller shutter area

If windows are installed in conjunction with a roller shutter box, the top fastening is problematic regardless of the construction of the box (top box or lintel box). In this case, the upper frame must be statically verified according to DIN 1055-4:2005-03. To do this, consider the upper frame as a traverse with a half-sided load. The roller shutter box must not be taken into account here unless there is a specially designed structure for this purpose. Depending on the load and element size (especially element width), additional reinforcements must be fitted in the upper connection area when roller shutters are arranged.

Required Ix values for the upper crossbar area with wall box or similar above: see table(s) on the following pages.



Notes:

In addition to the specifications, the information provided by the hardware manufacturers must be observed, as the weight of the panes influences the load-bearing capacity of the hardware.

The aluplast guidelines are only a recommendation and do not include any warranty claims. The aluplast guidelines do not relieve you of the responsibility to plan and execute the required reinforcement. All information on reinforcements is based on general knowledge and experience.

Due to working conditions beyond our control, we recommend ensuring suitability for processing purposes.

No liability can be established on the basis of our advice or verbal consultation, except in the case of intent or gross negligence.

The values given in the following table are based on the wind load determination according to DIN 1055-4:2005-03 and ift guideline FE-05/2.
The determined values only apply to building heights up to 25m and ground heights up to 800m above zero.
For buildings over 25m high, the static proof must be provided by a structural engineer.
Required Ix values can be determined with our calculation file based on DIN 1055-4:2005-03 (wind load determination).

2.b

06 A 13. Resistance to wind load (stress groups / wind loads)

Windows, doors and window elements are mainly loaded by wind pressure and wind suction.

Wind loads according to DIN EN 12210 (Windows and doors: Resistance to wind load - classification): This quantity makes a statement about the stiffness (deflection) of windows under wind load.

Classification of wind load according to DIN EN 12210

Class	Test pressure (Pa) P1	P2 [1]	P3
0	Not tested		
1	400	200	600
2	800	400	1200
3	1200	600	1800
4	1600	800	2400
5	2000	1000	3000
Exxxx [2]	xxxx		

1) this pressure have to be repeated 50x

2) Test specimens with wind stress tested above class 5 are classified as Exxxx, where xxxx is the actual test pressure P1 (e.g. 2350 etc.).

According to DIN EN 12211 (Windows and doors - Resistance to wind load - Test method) the tests of the individual classes P1 (deflection), P2 (wind pressure-wind suction alternating load) and P3 (safety test) are carried out, whereby positive and negative test pressures must be taken into account in the tests. The overall classification "resistance to wind load" results from the lowest rating of the respective individual class.

The test pressure P1 is used to determine the deflection using the following table and is composed of the deflection classification and the wind load classification:

Classification of deflection under wind load according to DIN EN 12210 with P1

Class	Relative frontal deflection
A	< 1/150
B	< 1/200
C	< 1/300

The measurement of the deflection can be dispensed with due to the presupposed circumferential interlocking and interlocking distance, since a deformation of > 1/200 is not to be expected for any frame part under the specified wind loads and one can therefore basically assume class C-.

Example: for P1, a deflection of < 1/300 (class C-) with the lowest evaluation from positive and negative test pressures of > 1600 Pa (class -4) results in the individual classification: C4

When using insulating glass, the maximum deflection is limited to 15mm.
(BF-Merkblatt 002/2008, Bundesverband Flachglas e.V.)

2.b

Criteria	Installation of the windows in the middle area			
	Building height 0 - 10 m			
Wind load zone	Terrain category			
	Inland	Coast and islands of the Baltic Sea	North Sea coast	Island of the North Sea
1	B2 - 4A - 2	x	x	x
Wind load in kN/m²	0,50	x	x	x
2	B2 - 4A - 2	B2 - 4A - 2	x	x
Wind load in kN/m²	0,65	0,85	x	x
3	B2 - 4A - 2	B3 - 7A - 2	x	x
Wind load in kN/m²	0,80	1,05	x	x
4	B2 - 4A - 2	B3 - 7A - 2	B3 - 7A - 2	B3 - 7A - 2
Wind load in kN/m²	0,95	1,25	1,25	1,40

Criteria	Installation of the outer doors in the middle area
	Building height 0 - 10 m
Wind load zone 1 - 4	B2 - 3A - 2

Criteria	Installation of the windows in the middle area			
	Building height > 10 - 18 m			
Wind load zone	Terrain category			
	Inland	Coast and islands of the Baltic Sea	North Sea coast	Island of the North Sea
1	B2 - 4A - 3	x	x	x
Wind load in kN/m²	0,65	x	x	x
2	B2 - 4A - 3	B3 - 7A - 3	x	x
Wind load in kN/m²	0,80	1,00	x	x
3	B3 - 7A - 3	B3 - 7A - 3	x	x
Wind load in kN/m²	0,95	1,20	x	x
4	B3 - 7A - 3	B3 - 7A - 3	B3 - 7A - 2	Calculation required
Wind load in kN/m²	1,15	1,40	1,40	

Criteria	Installation of the outer doors in the middle area	
	Building height > 10 - 18 m	
Wind load zone 1 - 4	B2 - 3A - 2	separate determination required

Criteria	Installation of the windows in the middle area			
	Building height > 18 - 25 m			
Wind load zone	Terrain category			
	Inland	Coast and islands of the Baltic Sea	North Sea coast	Island of the North Sea
1	B2 - 4A - 3	x	x	x
Wind load in kN/m²	0,75	x	x	x
2	B2 - 4A - 3	B3 - 7A - 3	x	x
Wind load in kN/m²	0,90	1,10	x	x
3	B3 - 7A - 3	B3 - 7A - 3	x	x
Wind load in kN/m²	1,10	1,30	x	x
4	B3 - 7A - 3	B4 - 9A - 3	B4 - 9A - 3	Calculation required
Wind load in kN/m²	1,30	1,55	1,55	

Criteria	Installation of the outer doors in the middle area
	Building height > 18 - 25 m
Wind load zone 1 - 4	separate determination required

Recommendations for use with windows

Above a building height of 25m and above 800m above sea level, a separate verification of the wind loads according to DIN 1055-4: 2005-03 must be provided.

The values given are reference values!

The values given only apply to the middle area of a wall surface. In the corner and edge area, the wind load values must be increased to 1.7 times. The corner and edge area is defined as 1/5 of the width of the building. The middle area covers the entire remaining surface.

The value is assumed to be 1m² load bearing area and a height/width ratio greater than or equal to 5 for the worst case.

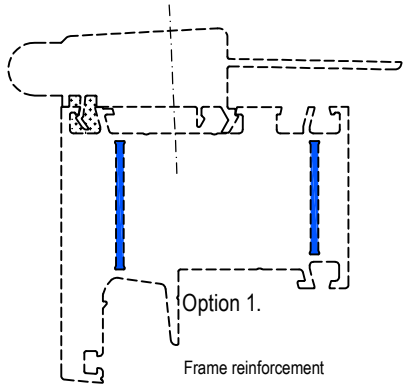
3

	Area	Building height	Range of application of the window in the	Window width or window height [cm]																		
				110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290
Wind zone 1	Inland	h≤10 m	middle wall area	0,40	0,57	0,78	1,06	1,41	1,83	2,34	2,95	3,67	4,52	5,51	6,66	7,97	9,46	11,16	13,62	16,50	19,85	23,71
			Corner/edge area (1/5 of the wall)	0,67	0,96	1,33	1,80	2,39	3,11	3,98	5,02	6,25	7,69	9,37	11,31	13,54	16,09	18,97	23,16	28,05	33,74	40,31
		10m<h≤18m	middle wall area	0,51	0,74	1,02	1,38	1,83	2,38	3,04	3,84	4,78	5,88	7,17	8,65	10,36	12,30	14,51	17,71	21,45	25,80	30,82
			Corner/edge area (1/5 of the wall)	0,88	1,25	1,73	2,35	3,11	4,04	5,17	6,52	8,12	10,00	12,18	14,71	17,61	20,91	24,67	30,11	36,47	43,86	52,40
		18m<h≤25m	middle wall area	0,59	0,85	1,18	1,59	2,11	2,74	3,51	4,43	5,51	6,79	8,27	9,98	11,95	14,19	16,74	20,43	24,75	29,77	35,57
			Corner/edge area (1/5 of the wall)	1,01	1,44	2,00	2,71	3,59	4,66	5,97	7,52	9,37	11,54	14,06	16,97	20,31	24,13	28,46	34,74	42,08	50,60	60,46
Wind zone 2	Inland	h≤10 m	middle wall area	0,51	0,74	1,02	1,38	1,83	2,38	3,04	3,84	4,78	5,88	7,17	8,65	10,36	12,30	14,51	17,71	21,45	25,80	30,82
			Corner/edge area (1/5 of the wall)	0,88	1,25	1,73	2,35	3,11	4,04	5,17	6,52	8,12	10,00	12,18	14,71	17,61	20,91	24,67	30,11	36,47	43,86	52,40
		10m<h≤18m	middle wall area	0,63	0,91	1,26	1,70	2,25	2,93	3,74	4,72	5,88	7,24	8,82	10,65	12,75	15,14	17,86	21,80	26,40	31,75	37,94
			Corner/edge area (1/5 of the wall)	1,08	1,54	2,13	2,89	3,83	4,97	6,36	8,03	9,99	12,30	14,99	18,10	21,67	25,74	30,36	37,05	44,88	53,98	64,50
		18m<h≤25m	middle wall area	0,71	1,02	1,41	1,91	2,53	3,29	4,21	5,31	6,61	8,14	9,92	11,98	14,34	17,03	20,09	24,52	29,70	35,72	42,68
			Corner/edge area (1/5 of the wall)	1,21	1,73	2,40	3,25	4,30	5,60	7,16	9,03	11,24	13,84	16,87	20,36	24,38	28,96	34,15	41,68	50,49	60,73	75,56
	Baltic Sea coast/islands	h≤10 m	middle wall area	0,67	0,96	1,33	1,80	2,39	3,11	3,98	5,02	6,25	7,69	9,37	11,31	13,54	16,09	18,97	23,16	28,05	33,74	40,31
			Corner/edge area (1/5 of the wall)	1,14	1,63	2,27	3,07	4,06	5,28	6,76	8,53	10,62	13,07	15,93	19,23	23,02	27,35	32,25	39,37	47,69	57,35	68,53
		10m<h≤18m	middle wall area	0,79	1,13	1,57	2,12	2,81	3,66	4,68	5,90	7,35	9,05	11,03	13,31	15,93	18,93	22,32	27,24	33,00	39,69	47,42
			Corner/edge area (1/5 of the wall)	1,35	1,92	2,67	3,61	4,78	6,22	7,95	10,03	12,49	15,38	18,74	22,63	27,09	32,17	37,95	46,32	56,10	67,47	80,62
		18m<h≤25m	middle wall area	0,87	1,24	1,73	2,34	3,09	4,02	5,15	6,49	8,08	9,95	12,13	14,64	17,53	20,82	24,55	29,97	36,30	43,66	52,17
			Corner/edge area (1/5 of the wall)	1,48	2,12	2,93	3,97	5,26	6,84	8,75	11,04	13,74	16,92	20,62	24,89	29,79	35,39	41,75	50,95	61,71	74,22	88,68
Wind zone 3	Inland	h≤10 m	middle wall area	0,63	0,91	1,26	1,70	2,25	2,93	3,74	4,72	5,88	7,24	8,82	10,65	12,75	15,14	17,86	21,80	26,40	31,75	37,94
			Corner/edge area (1/5 of the wall)	1,08	1,54	2,13	2,89	3,83	4,97	6,36	8,03	9,99	12,30	14,99	18,10	21,67	25,74	30,36	37,05	44,88	53,98	64,50
		10m<h≤18m	middle wall area	0,75	1,07	1,49	2,02	2,67	3,47	4,45	5,61	6,98	8,60	10,47	12,64	15,14	17,98	21,21	25,88	31,35	37,71	45,05
			Corner/edge area (1/5 of the wall)	1,28	1,83	2,53	3,43	4,54	5,91	7,56	9,53	11,87	14,61	17,81	21,50	25,73	30,57	36,05	44,00	53,30	64,10	76,59
		18m<h≤25m	middle wall area	0,87	1,24	1,73	2,34	3,09	4,02	5,15	6,49	8,08	9,95	12,13	14,64	17,53	20,82	24,55	29,97	36,30	43,66	52,17
			Corner/edge area (1/5 of the wall)	1,48	2,12	2,93	3,97	5,26	6,84	8,75	11,04	13,74	16,92	20,62	24,89	29,79	35,39	41,75	50,95	61,71	74,22	88,68
	Baltic Sea coast/islands	h≤10 m	middle wall area	0,83	1,19	1,65	2,23	2,95	3,84	4,91	6,20	7,72	9,50	11,58	13,98	16,73	19,87	23,44	28,61	34,65	41,67	49,79
			Corner/edge area (1/5 of the wall)	1,41	2,02	2,80	3,79	5,02	6,53	8,35	10,53	13,12	16,15	19,68	23,76	28,44	33,78	39,84	48,63	58,91	70,85	84,65
		10m<h≤18m	middle wall area	0,95	1,36	1,88	2,55	3,38	4,39	5,61	7,08	8,82	10,86	13,23	15,97	19,12	22,71	26,79	32,69	39,60	47,63	56,91
			Corner/edge area (1/5 of the wall)	1,62	2,31	3,20	4,33	5,74	7,46	9,55	12,04	14,99	18,46	22,49	27,15	32,50	38,61	45,54	55,58	67,32	80,97	96,74
		18m<h≤25m	middle wall area	1,03	1,47	2,04	2,67	3,66	4,75	6,08	7,67	9,55	11,76	14,33	17,30	20,71	24,60	29,02	35,42	42,90	51,60	61,65
			Corner/edge area (1/5 of the wall)	1,75	2,50	3,47	4,69	6,22	8,08	10,34	13,04	16,24	20,00	24,37	29,42	35,21	41,83	49,33	60,21	72,93	87,71	104,80
Wind zone 4	Inland	h≤10 m	middle wall area	0,75	1,07	1,49	2,02	2,67	3,47	4,45	5,61	6,98	8,60	10,47	12,64	15,14	17,98	21,21	25,88	31,35	37,71	45,05
			Corner/edge area (1/5 of the wall)	1,28	1,83	2,53	3,43	4,54	5,91	7,56	9,53	11,87	14,61	17,81	21,50	25,73	30,57	36,05	44,00	53,30	64,10	76,59
		10m<h≤18m	middle wall area	0,91	1,30	1,80	2,44	3,23	4,21	5,38	6,79	8,45	10,40	12,68	15,31	18,32	21,76	25,67	31,33	37,95	45,64	54,54
			Corner/edge area (1/5 of the wall)	1,55	2,21	3,07	4,15	5,50	7,15	9,15	11,54	14,37	17,69	21,55	26,02	31,15	37,00	43,64	53,26	64,52	77,59	92,71
		18m<h≤25m	middle wall area	1,03	1,47	2,04	2,67	3,66	4,75	6,08	7,67	9,55	11,76	14,33	17,30	20,71	24,60	29,02	35,42	42,90	51,60	61,65
			Corner/edge area (1/5 of the wall)	1,75	2,50	3,47	4,69	6,22	8,08	10,34	13,04	16,24	20,00	24,37	29,42	35,21	41,83	49,33	60,21	72,93	87,71	104,80
	Coast of the North Sea/Baltic Sea and islands of the Baltic Sea	h≤10 m	middle wall area	0,99	1,41	1,96	2,65	3,52	4,57	5,85	7,38	9,19	11,31	13,78	16,64	19,92	23,66	27,90	34,06	41,25	49,61	59,28
			Corner/edge area (1/5 of the wall)	1,68	2,40	3,33	4,51	5,98	7,77	9,94	12,54	15,62	19,23	23,43	28,28	33,86	40,22	47,43	57,89	70,13	84,34	100,77
		10m<h≤18m	middle wall area	1,11	1,58	2,20	2,97	3,94	5,12	6,55	8,26	10,29	12,67	15,44	18,63	22,31	26,50	31,25	38,14	46,20	55,57	66,39
			Corner/edge area (1/5 of the wall)	1,89	2,69	3,73	5,05	6,69	8,70	11,14	14,05	17,49	21,53	26,24	31,68	37,92	45,04	53,13	64,84	78,54	94,46	112,87
		18m<h≤25m	middle wall area	1,23	1,75	2,43	3,29	4,36	5,67	7,25	9,15	11,39	14,02	17,09	20,63	24,70	29,33	34,60	42,23	51,15	61,52	73,51
			Corner/edge area (1/5 of the wall)	2,09	2,98	4,14	5,59	7,41	9,64	12,33	15,55	19,36	23,84	29,05	35,07	41,98	49,87	58,82	71,79	86,96	104,58	124,96
	North Sea Islands	h≤10 m	middle wall area	1,11	1,58	2,20	2,97	3,94	5,12	6,55	8,26	10,29	12,67	15,44	18,63	22,31	26,50	31,25	38,14	46,20	55,57	66,39
			Corner/edge area (1/5 of the wall)	1,89	2,69	3,73	5,05	6,69	8,70	11,14	14,05	17,49	21,53	26,24	31,68	37,92	45,04	53,13	64,84	78,54	94,46	112,87
		10m<h≤18m	-	exact determination procedure according to DIN 1055-4:2005 required																		
			-																			
		18m<h≤25m	-																			
			-																			
				required Ix value [cm4]																		

3

Required reinforcement for the upper truss area with wall box or similar above.

Depending on the frame profile used, reinforcements must be selected that correspond at least to the required Ix value in the table on the previous page.



Option 1.
Traverse profile: 120230
Traverse steel: -
Frame steel: individual

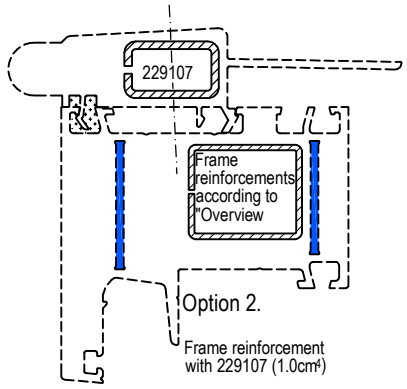
I_x = I_x-frame steel or powerdur
1.1cm⁴

Example:
Window width: 230cm, wind zone 2, inland, building height 10m, middle wall area*

-> required I_x value: min. 10.36cm⁴*
-> Frame profile 160x01 selected
-> Reinforcement 259105 (2.2cm⁴) selected
-> 3rd option selected: I_x= 9.9cm⁴
= Frame reinforcement 259105 (2.2cm⁴)+ truss reinforcement 229010 (9.9cm⁴)
= 12.1cm⁴ > 10.36cm⁴

*see table on previous page

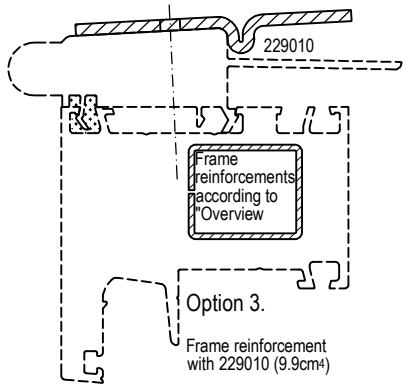
Option 1. -> without reinforcement truss or general
Option 2. to 3. -> with truss 120230 and reinforcement
Option 4. -> with reinforcement crossbar 249234
Option 5. -> with crossbar 120230 and reinforcement



Option 2.
Traverse profile: 120230
Traverse steel: 229107 (1.0cm⁴)
Frame steel: individual

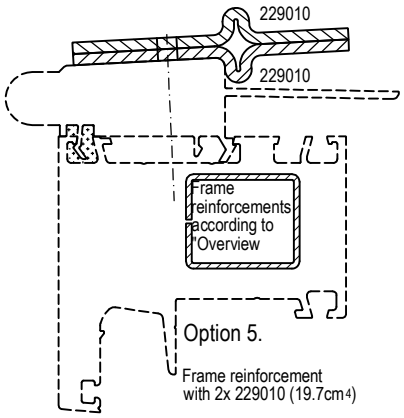
I_x = I_x-frame steel or powerdur
1.1cm⁴ + 1.0cm⁴

Options	I_x-values	Sum of:		
Option 1. 120230 without steel	-	+	powerdur inside 1.1cm⁴ and / or Frame reinforcements according to "Overview	= I_x Traverses Section
Option 2. 120230 with 229107	1.0cm⁴			
Option 3. 120230 with 229010	9.9cm⁴			
Option 4. (144233) with 249234	12.6cm⁴			
Option 5. 120230 with 2x 229010	19.7cm⁴			



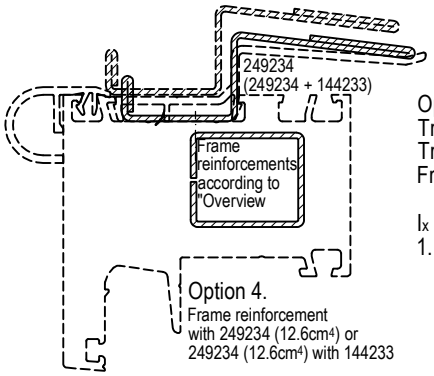
Option 3.
Traverse profile: 120230
Traverse steel: 229107 (9.9cm⁴)
Frame steel: individual

I_x = I_x-frame steel or powerdur
1.1cm⁴ + 9.9cm⁴



Option 5.
Traverse profile: 120230
Traverse steel: 2x 229107 (19.7cm⁴)
Frame steel: individual

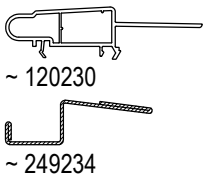
I_x = I_x-frame steel or powerdur
1.1cm⁴ + 19.7cm⁴



Option 4.
Traverse profile: 144233
Traverse steel: 249234
Frame steel: individual

I_x = I_x-frame steel or powerdur
1.1cm⁴ + 12.6cm⁴

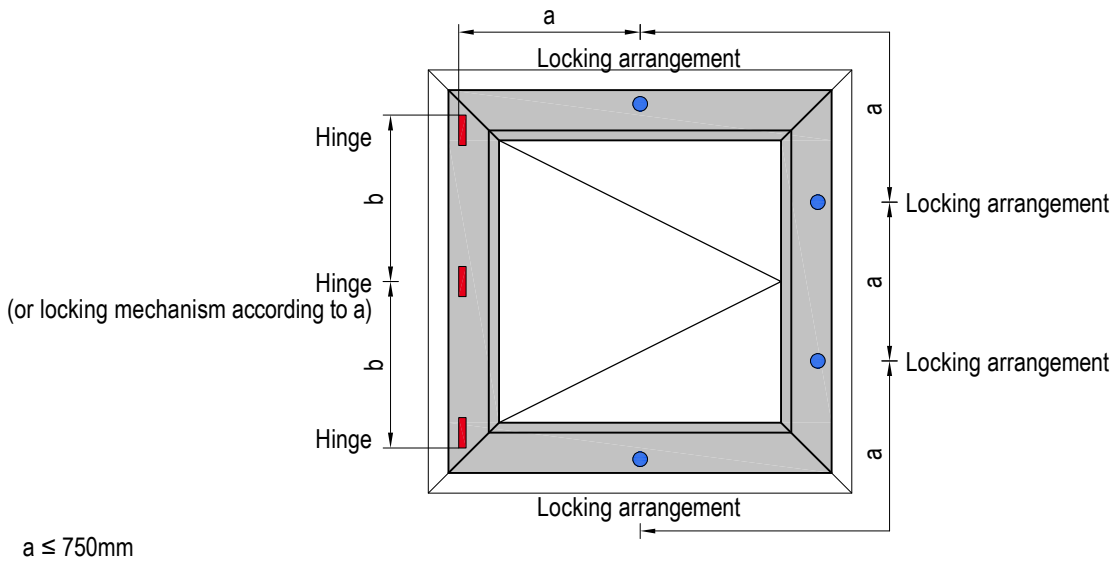
see chapter 04 C Roller shutter traverses



Example energeto neo

06 D Locking arrangement

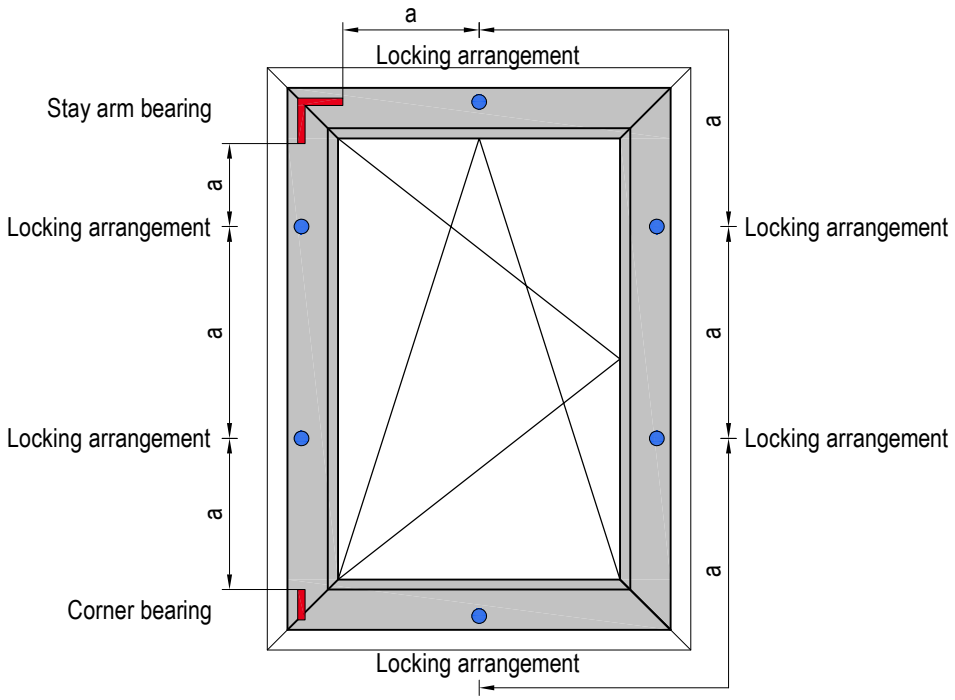
Example



a ≤ 750mm
b ≤ 1000mm

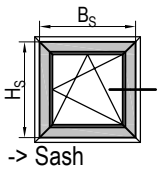
Turn window / Turn balcony door

Example

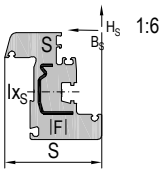


a ≤ 750mm

Tilt-and-turn window / Tilt-and-turn balcony door



B_S = Exterior sash width
H_S = Exterior sash height



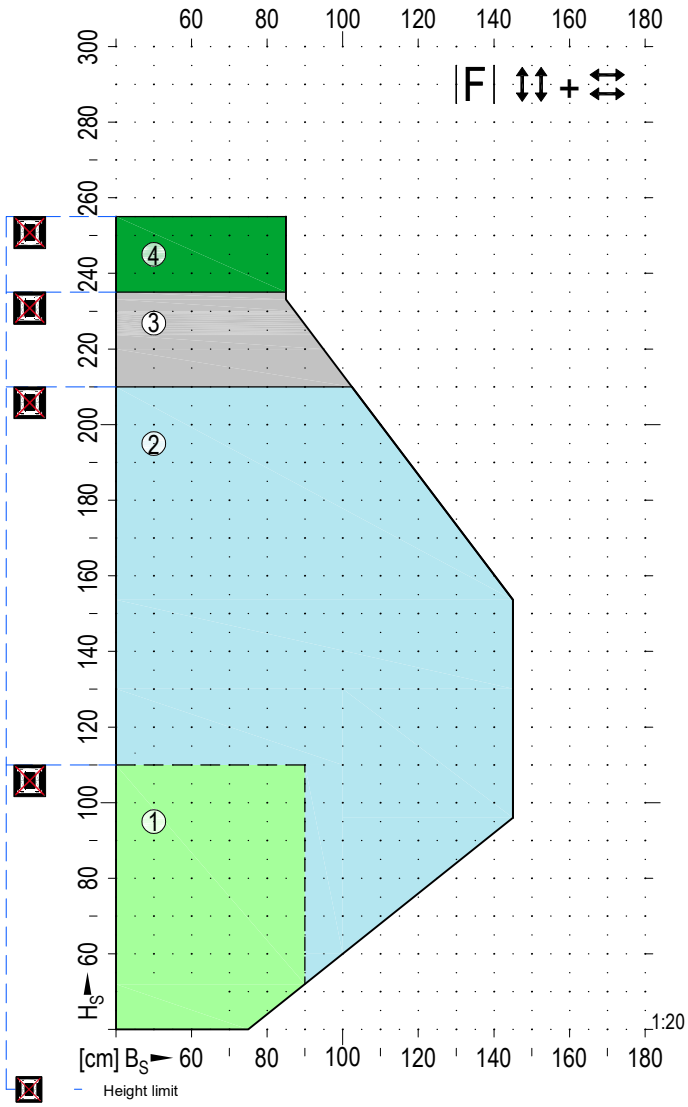
S=68mm

160x24

2.a

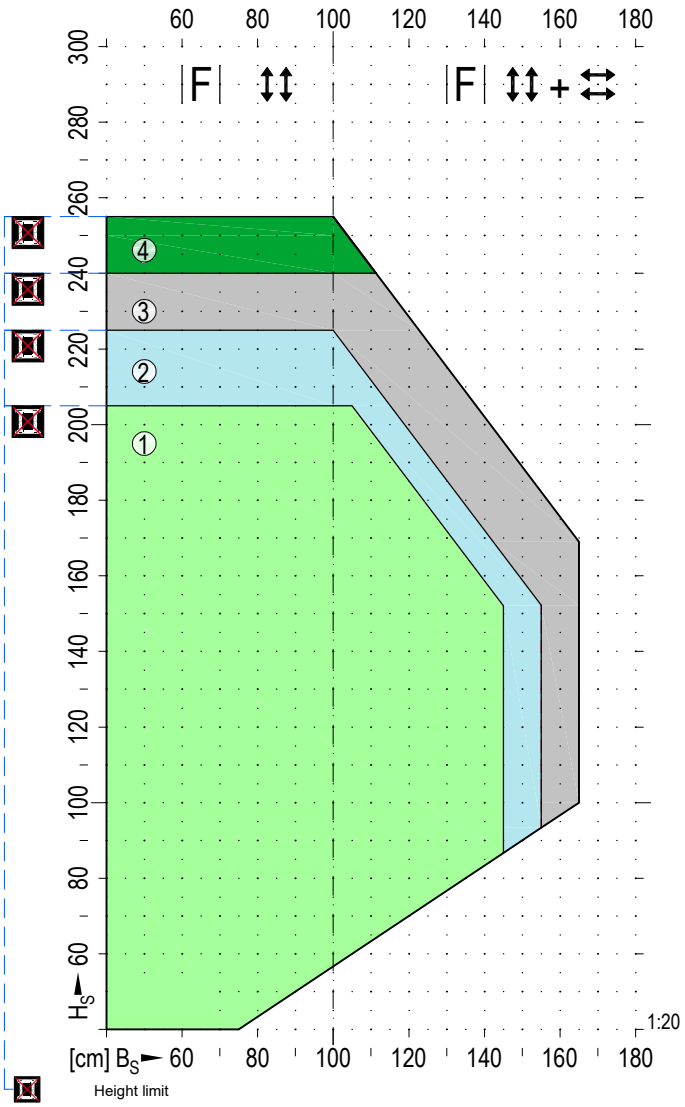
Turn/tilt
Diagrams valid for white profiles and profiles with aluskin function

|A| Spacer
conventional
white



without powerdur	Reinforcement always circumferential	
①	without steel	30kg
②	269036 (2.0)	65kg
③	269037 (3.0)	70kg
④	269038 (4.9)	80kg

|J| Bonding of pane (bonding inside)
d 4 + 4 + 4, 4 + 4 [mm] d ≥ 24mm
white



without powerdur	Reinforcement as per diagram	
①	without steel	100kg
②	269036 (2.0)	
③	269037 (3.0)	
④	269038 (4.9)	

Width limitation for false mullion/false mullion sash

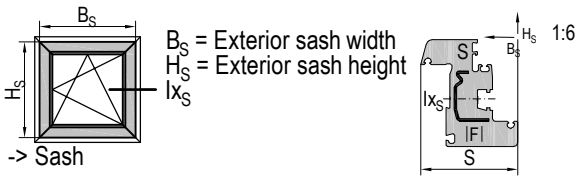


$B_S$max = 120cm
$B_S$max = 130cm
··· False mullion

Symbols:

4	max. glass weight
(3.0)	Ix-value [cm^4]
|F|	Reinforcement
↕ + ⇄	vertical + horizontal

⚠ The general implementation regulations and limitations according to the processing guideline must also be observed!



S=68mm

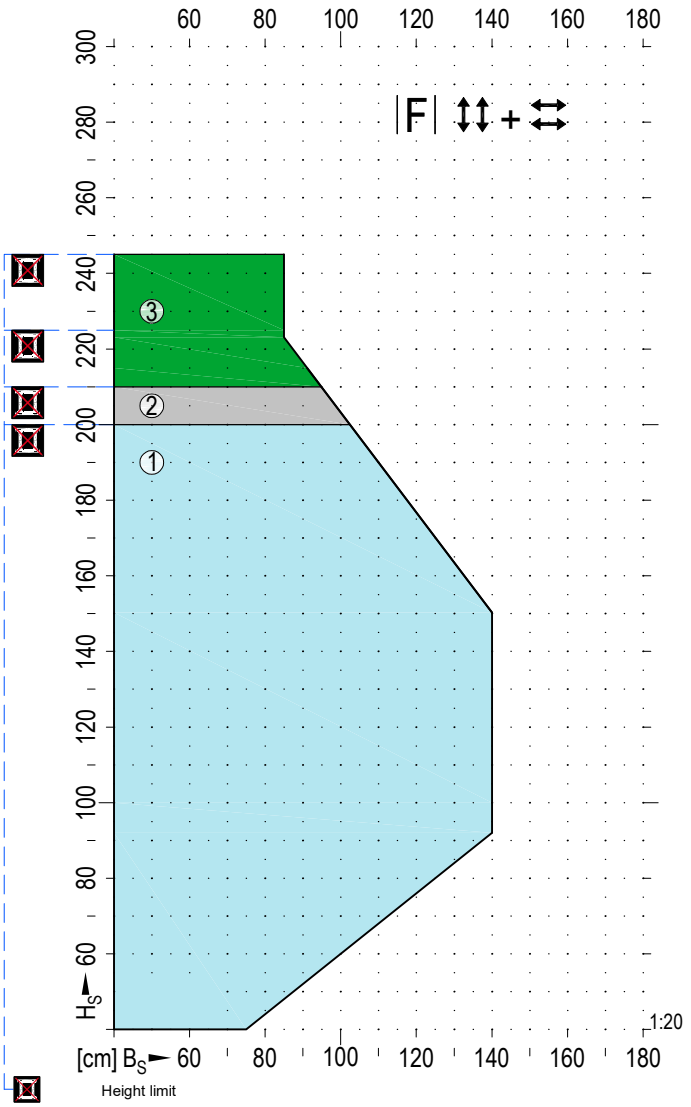
160x24

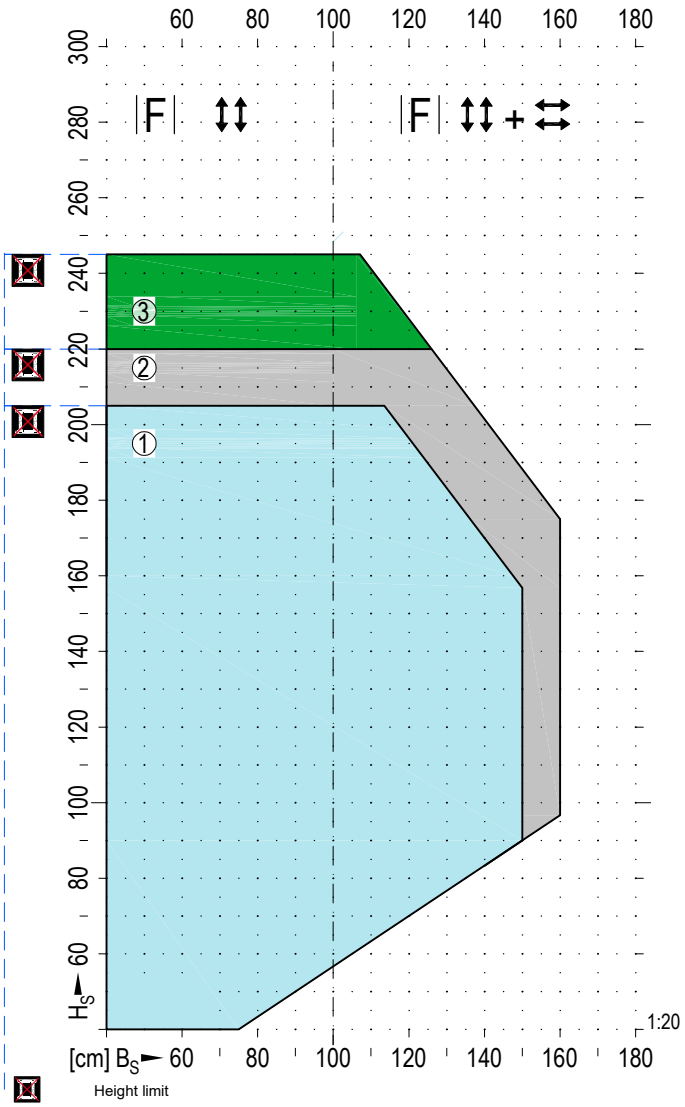
2.a

Turn/tilt
Diagrams valid for coloured profiles and profiles with aluskin

|A| Spacer
conventional
coloured Al

|J| Bonding of pane (bonding inside)
d 4 + 4 + 4, 4 + 4 [mm] d ≥ 24mm
coloured Al





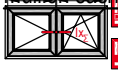
without powerdur

	Reinforcement always circumferential	
1	269036 (2.0)	65kg
2	269037 (3.0)	70kg
3	269038 (4.9)	80kg

without powerdur

	Reinforcement always circumferential	
1	269036 (2.0)	100kg
2	269037 (3.0)	
3	269038 (4.9)	

Width limitation for false mullion/false mullion sash

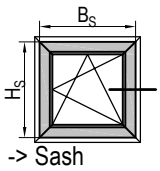


$B_S$max = 120cm
$B_S$max = 130cm
··· False mullion

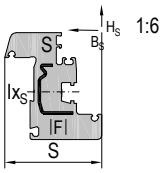
Symbols:

	max. glass weight
(3.0)	Ix-value [cm^4]
|F|	Reinforcement
↕ + ⇄	vertical + horizontal

⚠ The general implementation regulations and limitations according to the processing guideline must also be observed!



B_S = Exterior sash width
H_S = Exterior sash height
Ix_S



S=75mm

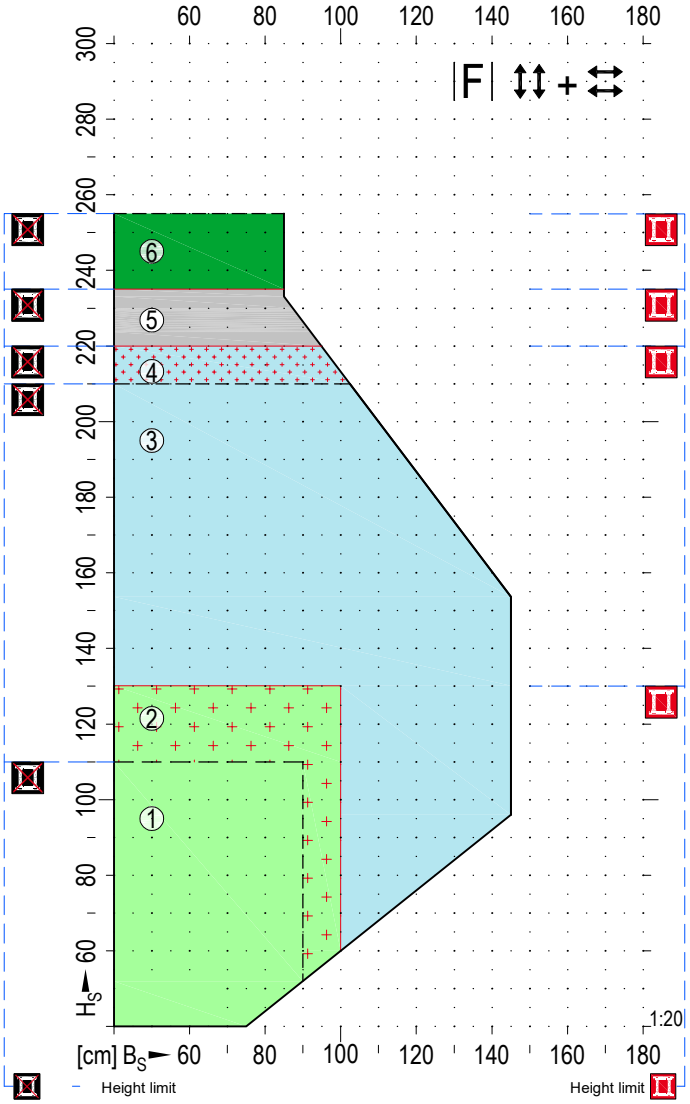
060x20, 060x27*, 160x20
*only valid with bonding inside

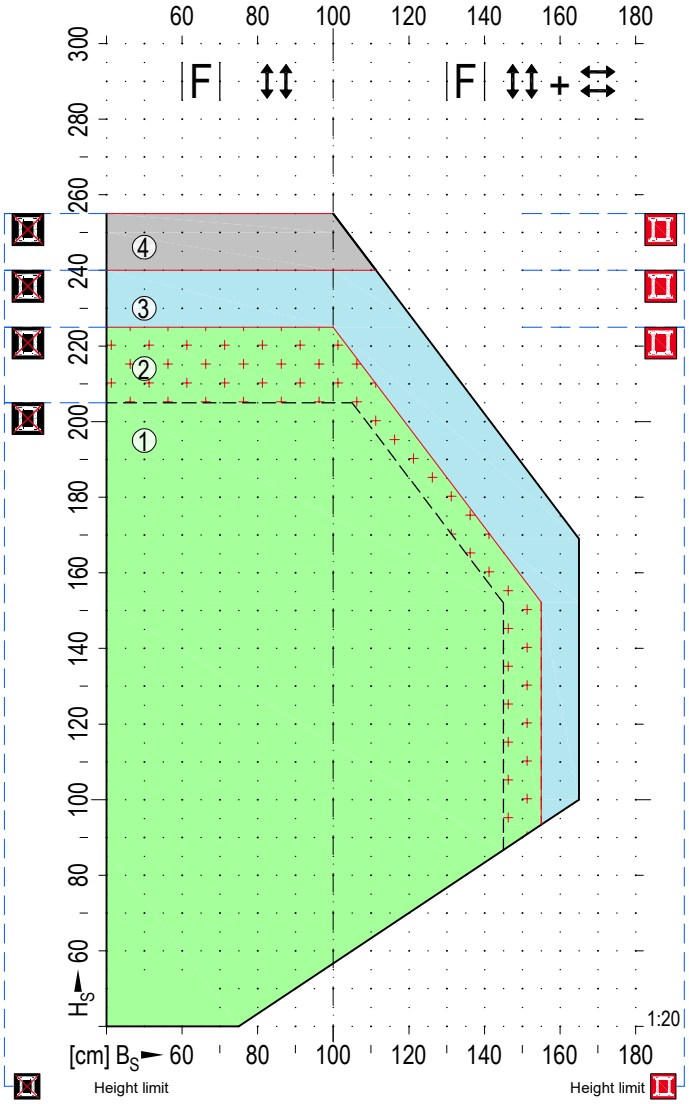
2.a

Turn/tilt
Diagrams valid for white profiles and profiles with aluskin function

|A| Spacer conventional
white

|J| Bonding of pane (bonding inside)
d 4 + 4 + 4, 4 + 4 [mm] d ≥ 24mm
white





without powerdur	Reinforcement always circumferential	
①	without steel	30kg
②	269020 (2.0), 269021 (2.3)	65kg
③	269022 (3.1)	70kg
④	269024 (5.8)	80kg
⑤		
⑥		

with powerdur	Reinforcement always circumferential	
①	without steel	40kg
②	269020 (2.0), 269021 (2.3)	75kg
③	269022 (3.1)	85kg
④	269024 (5.8)	90kg
⑤		
⑥		

without powerdur	Reinforcement as per diagram	
①	without steel	100kg
②	269020 (2.0), 269021 (2.3)	
③	269022 (3.1)	
④	269024 (5.8)	

with powerdur	Reinforcement as per diagram	
①	without steel	110kg*
②	269020 (2.0), 269021 (2.3)	
③	269022 (3.1)	
④		

*Exceeding the sash weight F_{max} = 130kg possible!

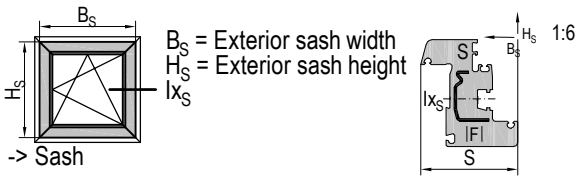
Width limitation for false mullion/false mullion sash



$B_S$max = 120cm
$B_S$max = 130cm
··· False mullion

Symbols:
Added value powerdur
max. glass weight
(3.1) Ix-value [cm^4]
|F| Reinforcement
↕ + ⇄ vertical + horizontal

⚠ The general implementation regulations and limitations according to the processing guideline must also be observed!



S=75mm

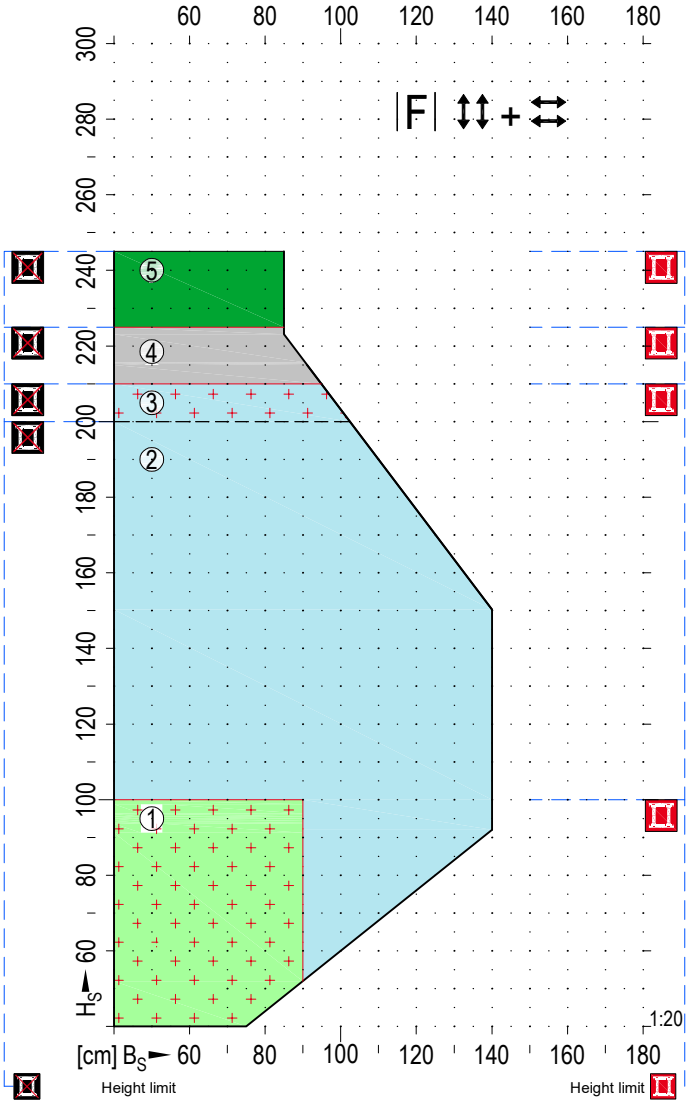
060x20, 060x27*, 160x20
*only valid with bonding inside

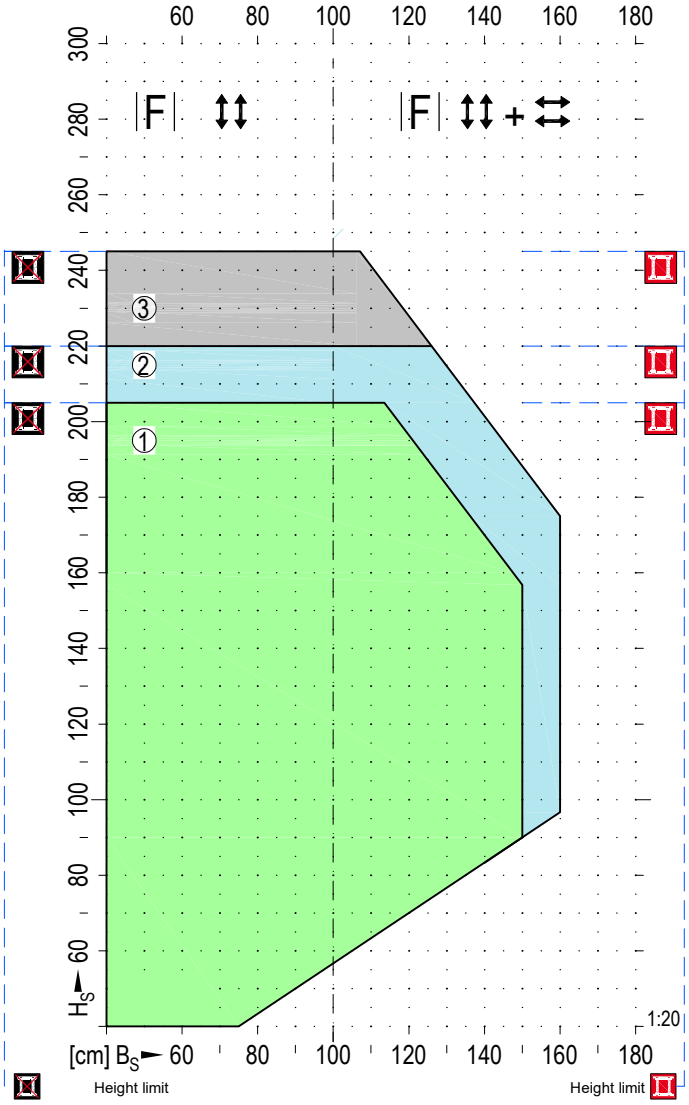
2.a

Turn/tilt
Diagrams valid for coloured profiles and profiles with aluskin

|A| Spacer conventional
coloured

|J| Bonding of pane (bonding inside)
d 4 + 4 + 4, 4 + 4 [mm] d ≥ 24mm
coloured





without powerdur	Reinforcement always circumferential	
①	269020 (2.0), 269021 (2.3)	65kg
②	269022 (3.1)	70kg
③	269024 (5.8)	80kg
④		
⑤		

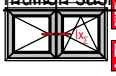
with powerdur	Reinforcement always circumferential	
①	without steel	40kg
②	269020 (2.0), 269021 (2.3)	75kg
③	269022 (3.1)	85kg
④	269024 (5.8)	90kg
⑤		

without powerdur	Reinforcement always circumferential	
①	269020 (2.0), 269021 (2.3)	100kg
②	269022 (3.1)	
③	269024 (5.8)	

with powerdur	Reinforcement as per diagram	
①	without steel	110kg*
②	269020 (2.0), 269021 (2.3)	
③	269022 (3.1)	

*Exceeding the sash weight F_{max} = 130kg possible!

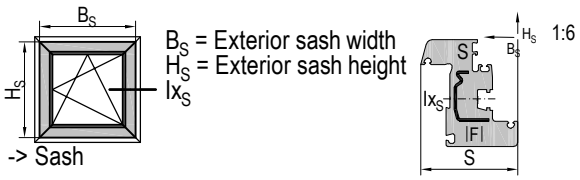
Width limitation for false mullion/false mullion sash



$B_S$max = 120cm
$B_S$max = 130cm
··· False mullion

Symbols:
Added value powerdur
max. glass weight
(3.1) I_x-value [cm^4]
|F| Reinforcement
↕ + ⇄ vertical + horizontal still under examination

⚠ The general implementation regulations and limitations according to the processing guideline must also be observed!

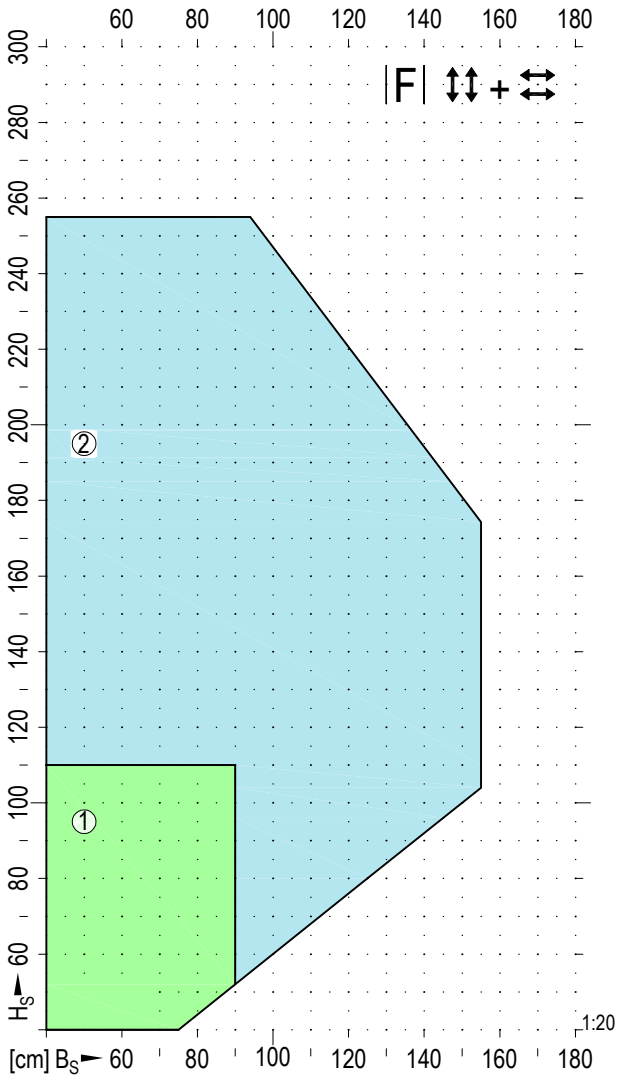


S=110mm 160x30

2.a

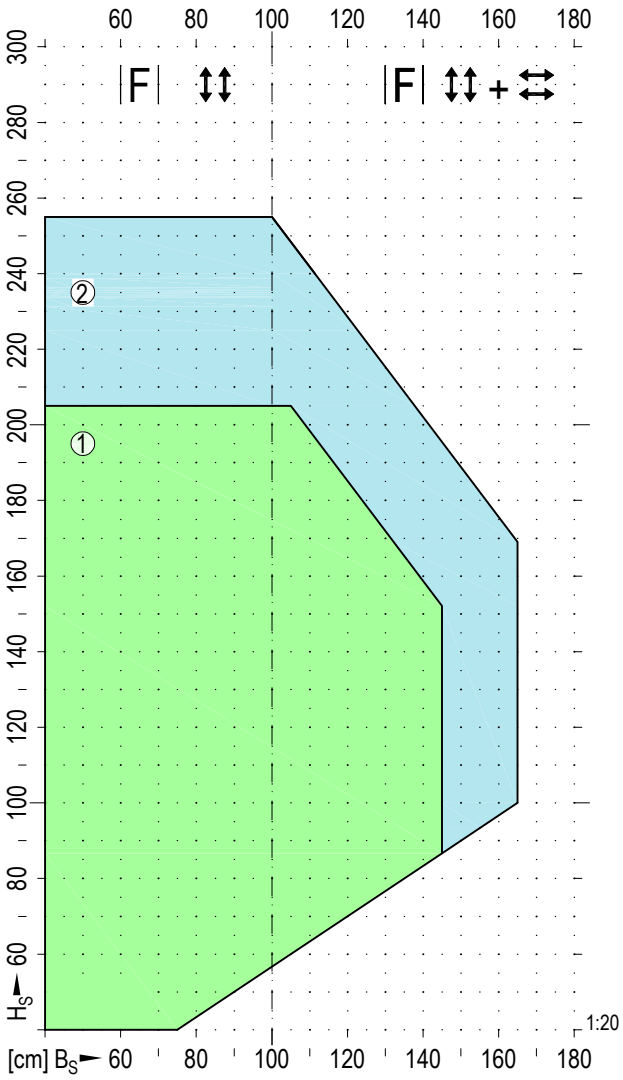
Turn/tilt
Diagrams valid for white profiles and profiles with aluskin function

|A| Spacer
conventional
white



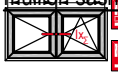
	without powerdur	
	Reinforcement always circumferential	
①	ohne Stahl	30kg
②	269030 (9.9)	80kg

|J| Bonding of pane (bonding inside)
d 4 + 4 + 4, 4 + 4 [mm] d ≥ 24mm
white



	without powerdur	
	Reinforcement as per diagram	
①	without steel	110kg*
②	269030 (9.9)	

Width limitation for false mullion/false mullion sash



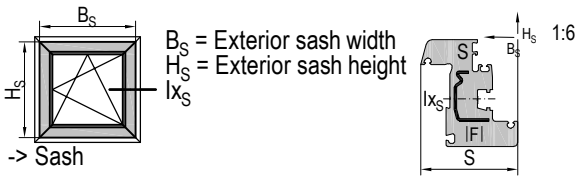
$B_S$max = 120cm
$B_S$max = 130cm
··· False mullion

Symbols:

	max. glass weight
(3.1)	I_x-value [cm^4]
|F|	Reinforcement
↕ + ⇄	vertical + horizontal

*Exceeding the sash weight F_{max} = 130kg possible!

⚠ The general implementation regulations and limitations according to the processing guideline must also be observed!

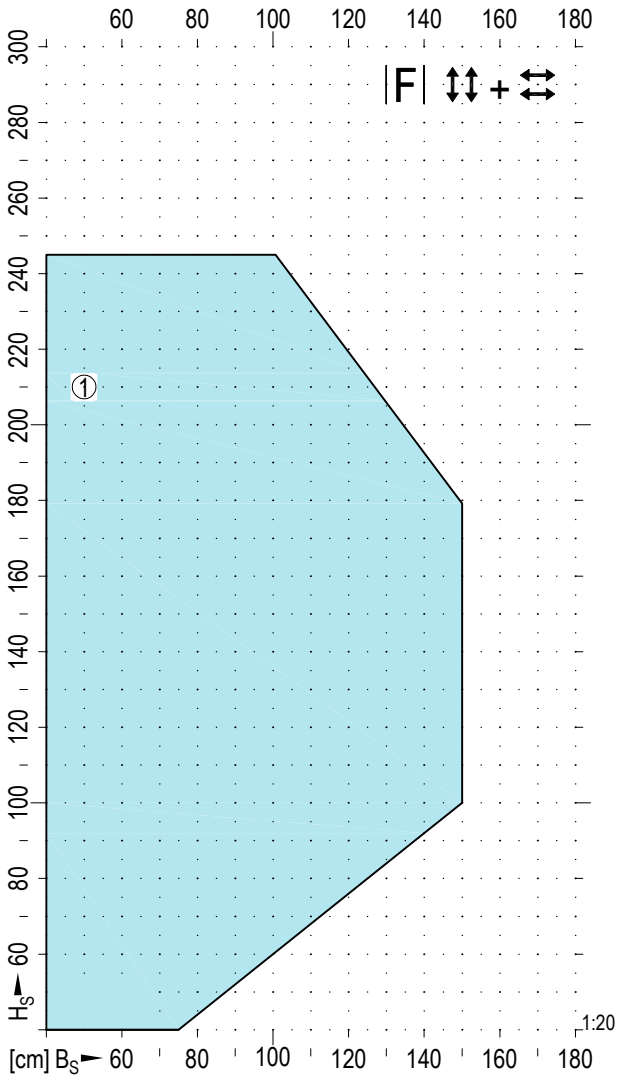


S=110mm 160x30

2.a

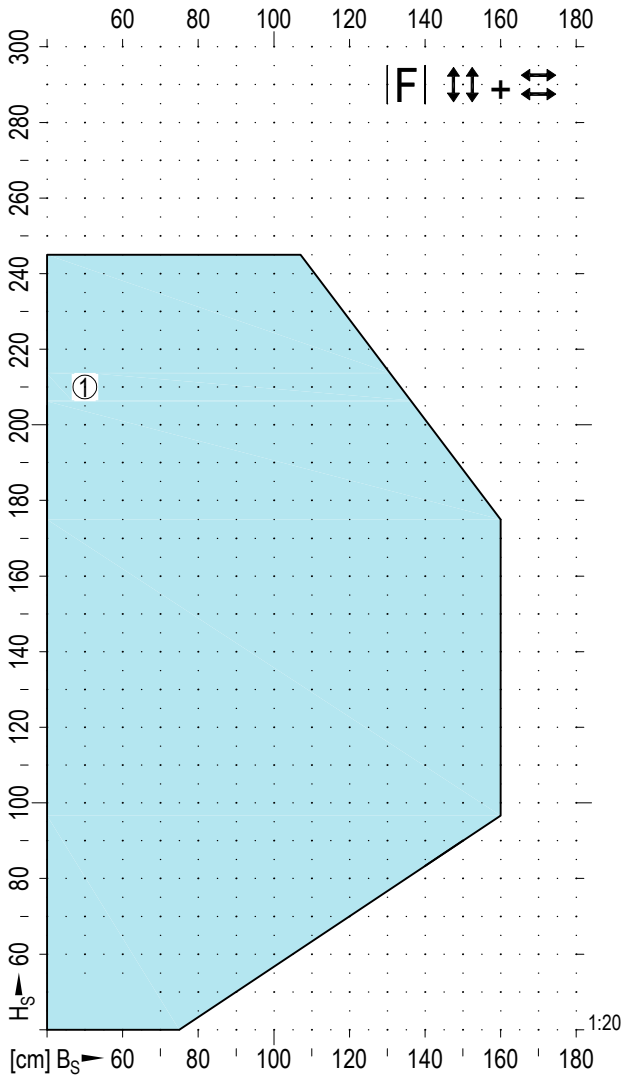
Turn/tilt
Diagrams valid for coloured profiles and profiles with aluskin

|A| Spacer
conventional
coloured Al



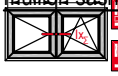
	without powerdur	
	Reinforcement always circumferential	
1	269030 (9.9)	80kg

|J| Bonding of pane (bonding inside)
d 4 + 4 + 4, 4 + 4 [mm] d ≥ 24mm
coloured Al



	without powerdur	
	Reinforcement always circumferential	
1	269030 (9.9)	110kg*

Width limitation for false mullion/false mullion sash



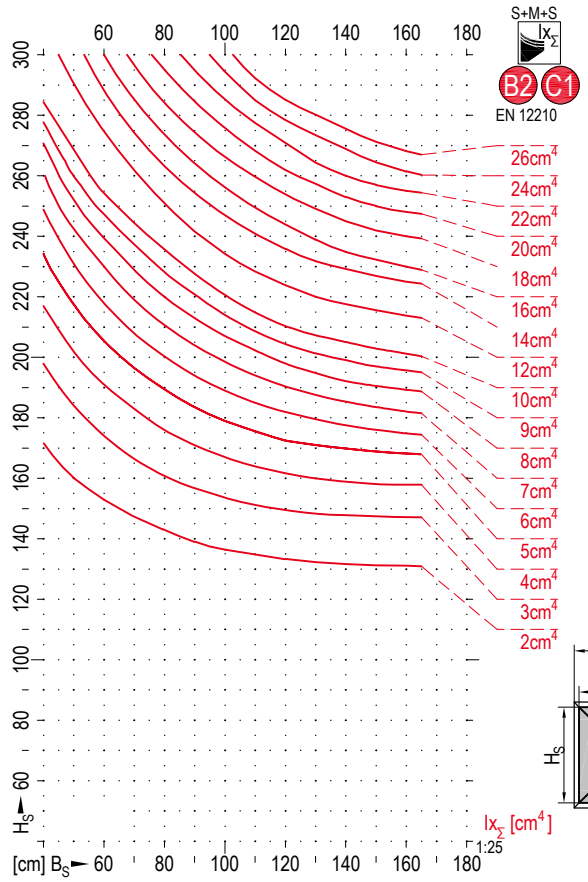
$B_S$max = 120cm
$B_S$max = 130cm
··· False mullion

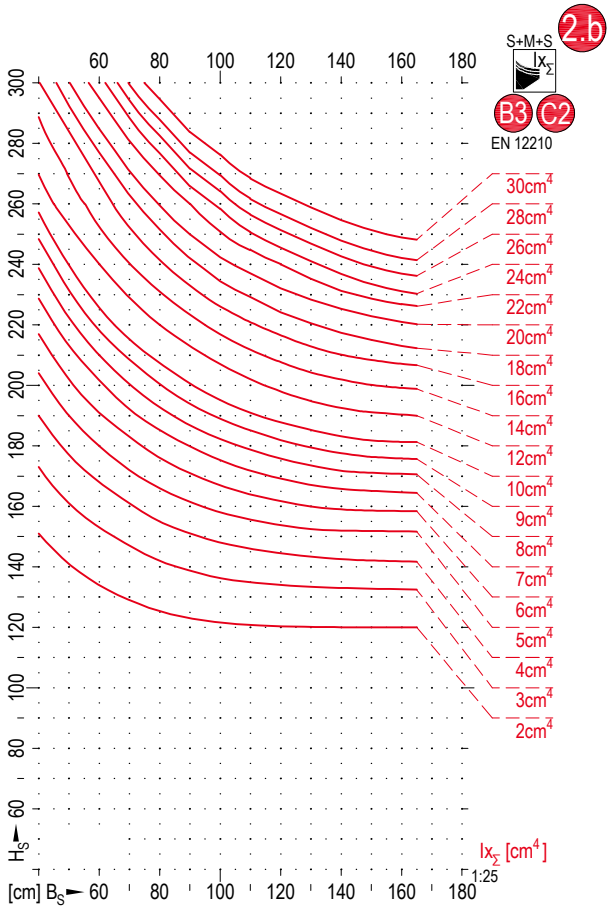
Symbols:

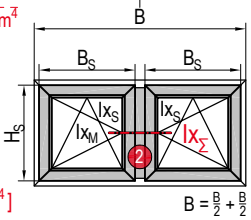
4	max. glass weight
(3.1)	Ix-value [cm^4]
|F|	Reinforcement
↕ + ↔	vertical + horizontal

*Exceeding the sash weight F_{max} = 130kg possible!

⚠ The general implementation regulations and limitations according to the processing guideline must also be observed!

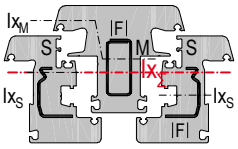


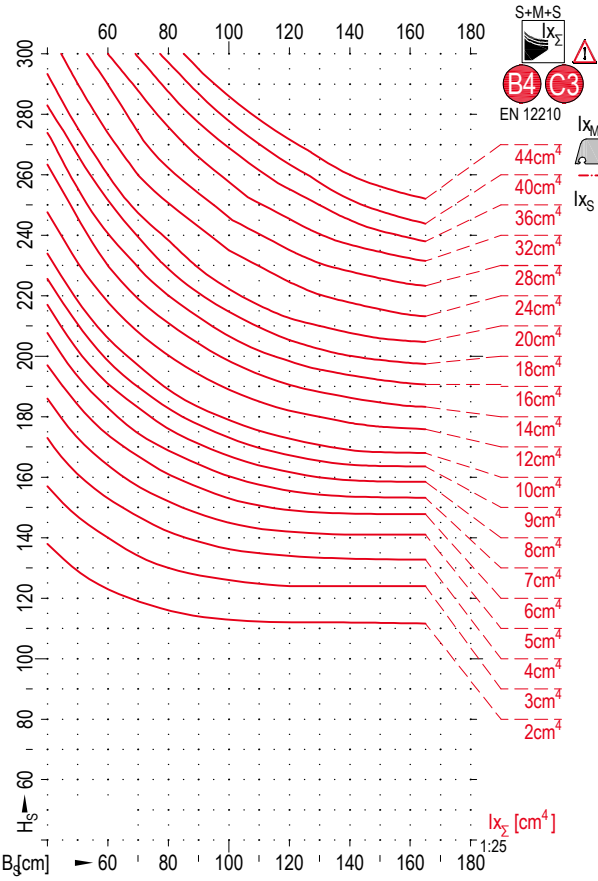


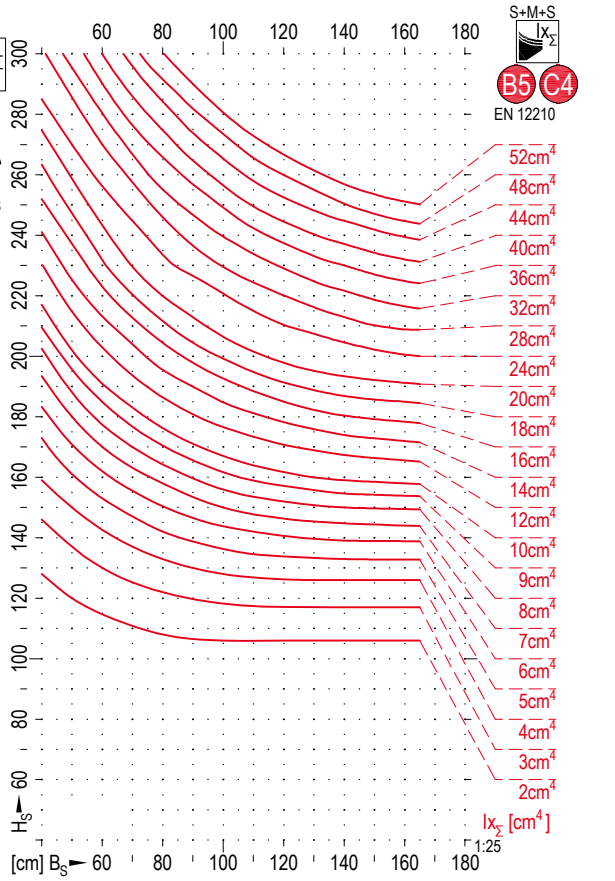


... Mullion
False mullion
Coupling
Centre section

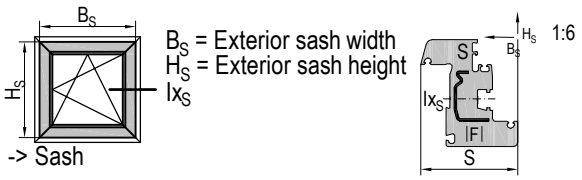
⚠ $Ix_S + Ix_M + Ix_S = Ix_\Sigma$







⚠ The general implementation regulations and limitations according to the processing guideline must also be observed! This is only intended as a guide to a standard symmetrically divided design without skylight. The centre section is considered here in the sum of the existing Ix values of mullion/false mullion and sash profiles. The recommendation is a precise calculation of the loads in the individual case for the building project, e.g. using our P&A software.



PSK

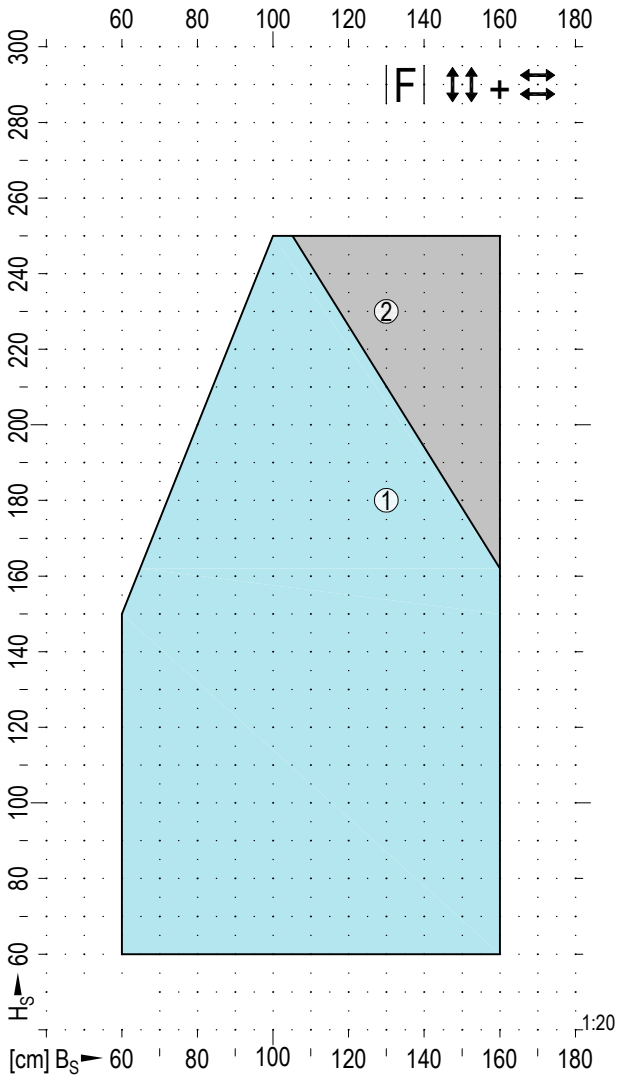
2.a

060x20, 160x20, 160x30

Parallel slide and tilt
Diagram on the left valid for white profiles and with aluskin function
Diagram on the right valid for profiles with decor and aluskin

|A| Spacer conventional

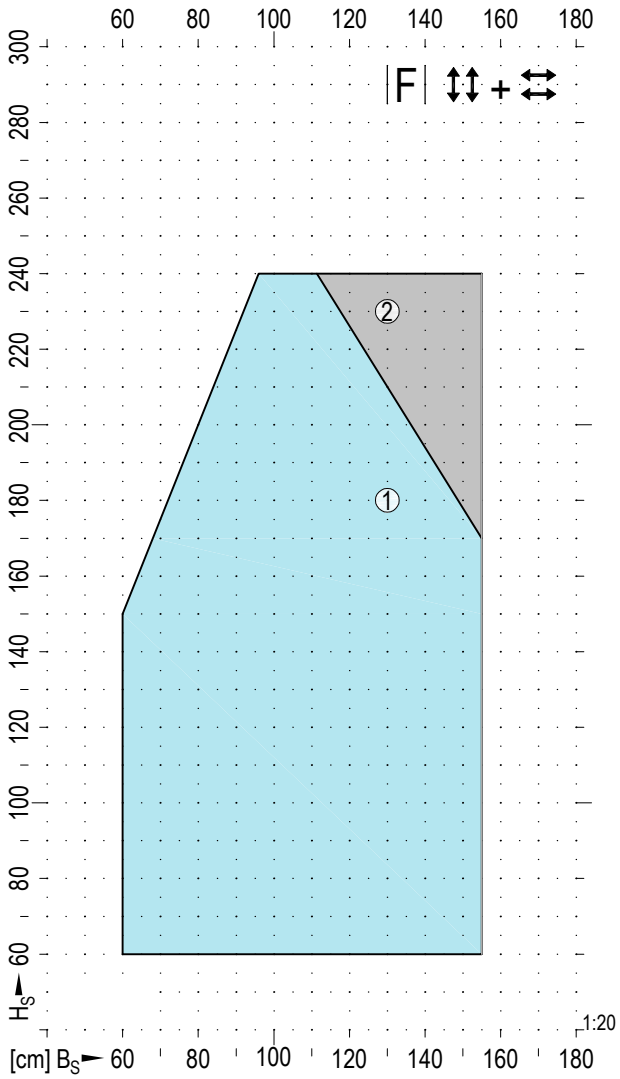
white



	without powerdur	GD
	Reinforcement always circumferential	
①	269024 (5.8)	110kg
②	269030 (9.9)	120kg

|A| Spacer conventional

coloured

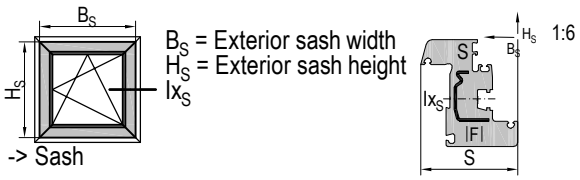


	without powerdur	GD
	Reinforcement always circumferential	
①	269024 (5.8)	100kg
②	269030 (9.9)	110kg

Symbols:

- max. glass weight
- (3.1) I_x-value [cm^4]
- |F| Reinforcement
- ↕ + ↔ vertical + horizontal

⚠ The general implementation regulations and limitations according to the processing guideline must also be observed!

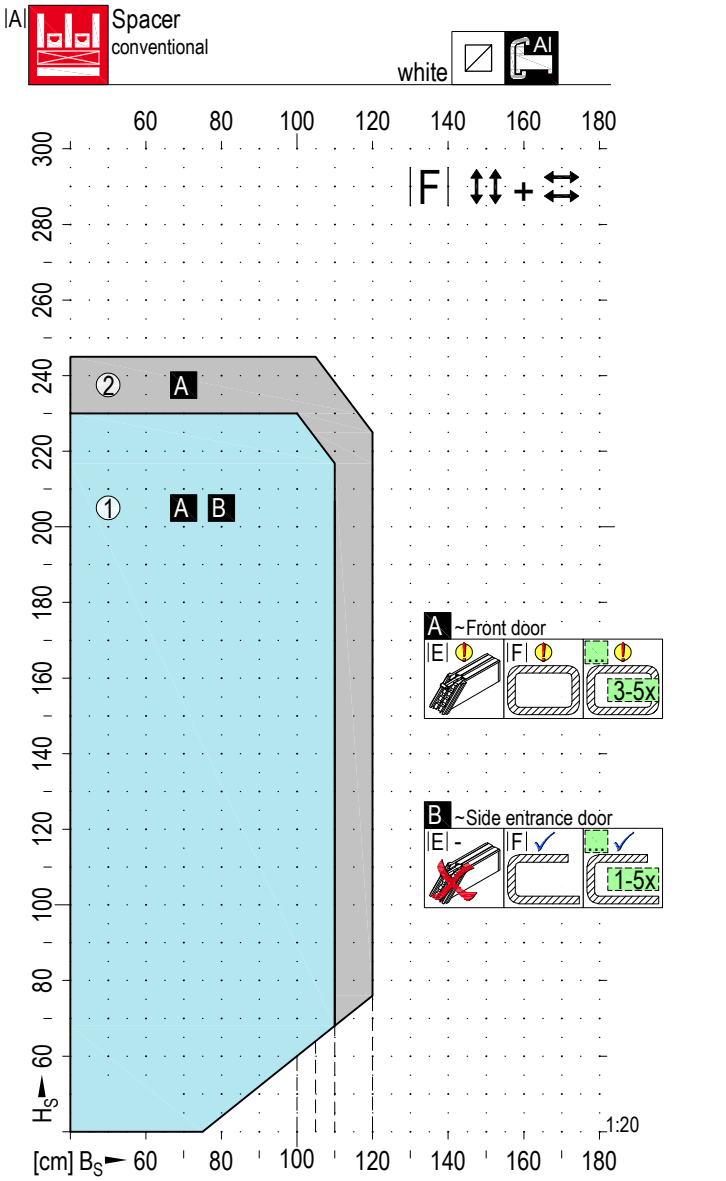


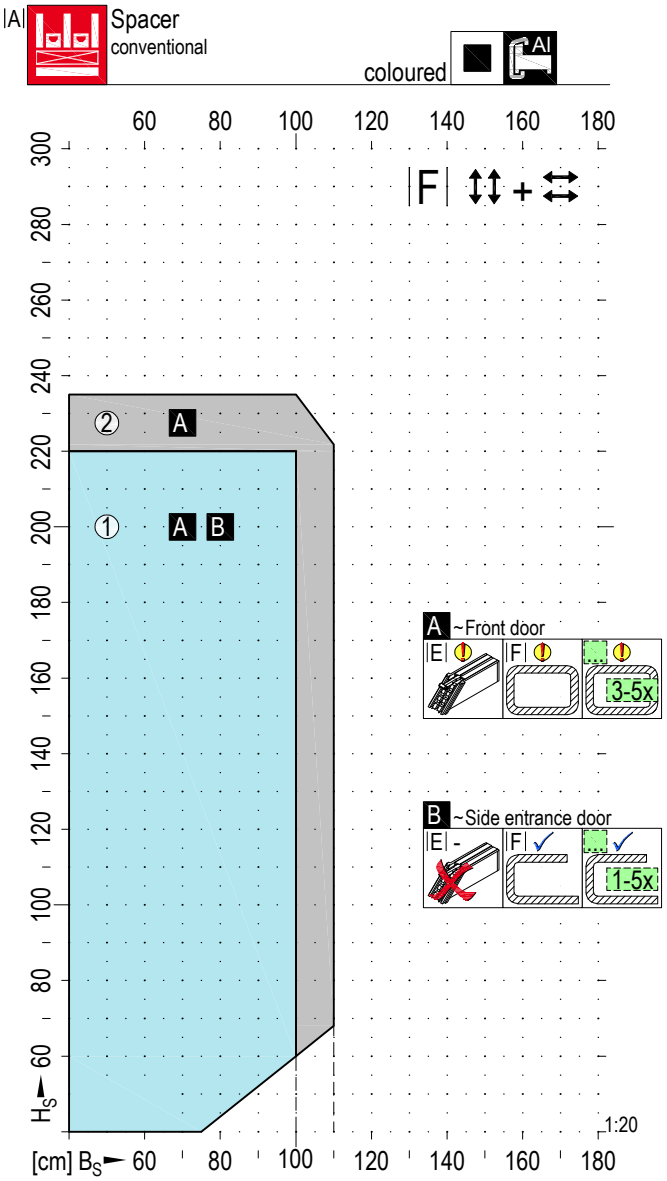
Front door
Side entrance door

2.a

160x30, 160x33

Diagram on the left valid for white profiles and with aluskin function
Diagram on the right valid for profiles with decor and aluskin





without powerdur

	Reinforcement always circumferential	
①	269030 (9.9),	75kg
②	269033 (13.0)	120kg

⚠ Recommendation: 3 ribbons per sash
3 latch locks per sash

Symbols:

- 4 — max. glass weight
- (3.1) — I_x-value [cm^4]
- |F| — Reinforcement
- ↕ + ⇄ — vertical + horizontal

⚠ The general implementation regulations and limitations according to the processing guideline must also be observed!

These processing guidelines apply to the machining and processing of PVC window profiles that meet the requirements of the "GKV Test and Evaluation Standard for PVC Window Profiles".

The quality of the profiles, assured according to the quality assurance RAL-RG 716/1 and the professional processing according to the following guidelines, are the basis and prerequisite for high-quality PVC-U windows.

08 A Storage

08 A 1. Storage of PVC profiles

Proper storage can prevent severe deflection, scratches, soiling and deformation due to heat or cold.

Outdoor storage of the profiles must be avoided. The profiles must be protected against humidity and direct sunlight – even if the profiles are stored near heaters, radiant heaters, air heaters or behind transparent panes.

Profile packs wrapped in PE-foil must be opened at the ends of the packs to avoid condensation.

The profiles must be stored lying flush on each other to prevent deformation. The maximum stacking height is one metre.

Underlays treated with impregnating agents or other chemicals are not permitted since they can cause stains or discolouration on the profiles.

To ensure safe processing of the profiles, they may only be processed with an intrinsic temperature of 17° C. If the processing temperature is too low "during the welding process", material stresses are generated which can later lead to cracks forming.

Cold profiles need a period of one hour to increase temperature by 1° C. Therefore, they must be stored in good time before processing at a minimum room temperature of 17° C. Storage should not exceed 3 months in non-air-conditioned rooms.

When tanking single profile bars from the stack, remove them only sidewise to avoid scratches and other damages.

08 A 2. Cut-to-size PVC profiles

Store the cut aluminium shells such a way that the mitre gets neither dusty nor damaged. Due to moisture absorption, all cut profiles should be welded on the same day or after 2 working days at the latest.

08 A 3. Storage of aluminium profiles

Aluminium profiles must be unpacked immediately after delivery and stored in a dry room. If necessary, remove condensed water. Store the aluminium shells on a soft underground, e.g. on plastic or non-impregnated wood. Any possible deformation of the aluminium shells due to wrong storage must be avoided.

08 A 4. Bearing of steel profiles

When storing outdoors, cover the profiles with tarpaulins to prevent white rust from forming. They must be stored in such a way that no bending can occur.

08 B Profile processing

08 B 1. Cutting to size

08 B 1.1. Cutting PVC profiles to size

An exact and clean cut surface is decisive for the quality of the weld.
Therefore, only saws are used on which only PVC profiles are cut.

Choose the proper carbide tipped saw blade according to the following criteria:

Saw blade diameter	300 - 500 mm
Tooth shape	trapezoidal-flat
Tooth pitch	8 - 12 mm
Speed	3000 - 4000 rpm
Cutting speed approx.	50 m/s

It is essential to ensure that the cutting tools are sharp, otherwise increased frictional heat on the saw blade will cause a lubricating film to form, which will have an unfavourable effect on the cutting quality and welding.

For all cutting processes, the profiles must be clamped and cut accurately in the correct angle; tilting must be avoided.
As a support, the widest profile surface and a clean cut surface - free of oil, grease, water, silicone, chips or similar. - is decisive for the quality of the weld seam.

The individual cutting dimensions depend on the profile. For the welding itself, an allowance of 2.5mm per corner is to be provided. The actual welding allowance required must be determined for each machine in the test. The cutting quality is to be ensured by the factory's own production control.

Glazing beads: refer to chapter 08 C 5. Glazing beads.

Additional profiles and glazing beads are cut to size with special saws.

08 B 1.2. Cutting aluminium profiles to size

For the cutting of the aluminium, use the same saw blade type as for uPVC. However, the saw blade may then be used exclusively for this purpose.

08 B 1.3. Cutting steel profiles to size

The steel reinforcements are cut to size using special saws with a lower cutting speed (approx. 0.4 - 0.5 m/s). If necessary, use a suitable coolant.

The cut surfaces must be protected against corrosion.

08 B 2. Milling and drilling

These working processes require high-speed machines.

For each purpose, special machines with HSS milling cutters and HSS drills are available for the processing of all the materials.

Carbide tipped milling cutters also have a long service life when processing uPVC.

08 C Frame production

Preliminary remark: All information depends on the local conditions and the available machines!

Content:
08 C 1 Welding
08 C 2 Fitting installation
08 C 3 Glazing
08 C 4 Glazing beads
08 C 5 False mullion
08 C 6 Mullions / Transoms
08 C 7 Clip profiles
08 C 8 Connecting profiles
08 C 9 Couplings

08 C 1. Welding of PVC profiles

The corner connection of the PVC frames is made by the heating element butt welding method.
The parts to be joined are plasticised at the heating element and pressed with pressure.

Machines with different numbers of heads are offered, on which both one and four corners can be welded at the same time.
Depending on the design, T-joints, crosses and different angles can be made.

Heating level temperature, adjustment time, adjustment pressure, joining pressure and joining time are parameters that must be adjusted to the profile.
The weld bead limitation also influences the strength of the welded joint.
Exact setting data depends on the machine and must be determined by test welding.

The machine settings must be checked at regular intervals.
The welding mirror must always be clean.

A weld is considered good when it has a creamy bright to slightly rough weld bead.
A yellowish or even brown-coloured welding bead indicates incipient burning of the material as a result of excessive heat or too long a time at the welding surface and is not permissible.

Accelerated cooling of the weld seam after welding by compressed air or placing it on an extremely cold floor is not permissible, as it can lead to the formation of uncontrollable stresses.
Before further processing of white profiles, the frames must cool down for at least 1 minute.

The guideline DVS 2207, part 25 of the German Welding Society is part of this processing guideline.

The technical guideline "Welding of uPVC profiles" of RAL Gütegemeinschaft Kunststoff-Fensterprofilsysteme e.V. is part of this processing guideline.

Check-up list as an example with setting sizes (machine-dependent): see next page

The aluplast application technology is available with advice and support.

08 C 1.1. Cleaning the heatsealing band

Both coated and covered welding mirrors must not show any damage.

To prevent the weld seam from being disturbed during subsequent welding, all residues such as sawdust that adhere to the mirror during the welding process must be removed using linen cloth, crepe paper or similar synthetic-free fabric.
In the case of oil-containing soiling, the specifications of the welding foil manufacturer must be observed.

08 C 1.2. Cleaning the weld seams

Today, the removal of weld beads on the visible surfaces of the profiles is mainly done by machine using automatic cleaning machines. Here, a visible groove is cut into the profile by knives above the weld seam. Make sure that the groove depth is shallow.

Inside and outside corners are removed mechanically by milling, drilling and cutting. When working by hand, ensure that there is no reduction in corner strength due to notching.

CHECK - UP

when welding window profiles made of uPVC
(based on the currently valid guidelines according to the current state of the art e.g. guideline "Welding of uPVC profiles" of the GKFP)

Valid for all profiles with and without powerdur in white and decor

All values given are guide values which may vary individually depending on the machine manufacturer.

1. Requirements

1.1 Processing temperature of the profiles ≥ 17°C

1.2 Fitting parts true to size

1.3 Contact or welding surfaces free of dirt, grease, chips and moisture

2. Welding

2.1 Setting the welding parameters

2.2 Checking the functional capability of the welding machine (temperature measurement on the welding plate by means of a contact sensor)

2.3 The surface of the sealing film must be free of residues and damage

2.4 Use of suitable welding plates to match the profile/machine type

2.5 Keeping a welding log

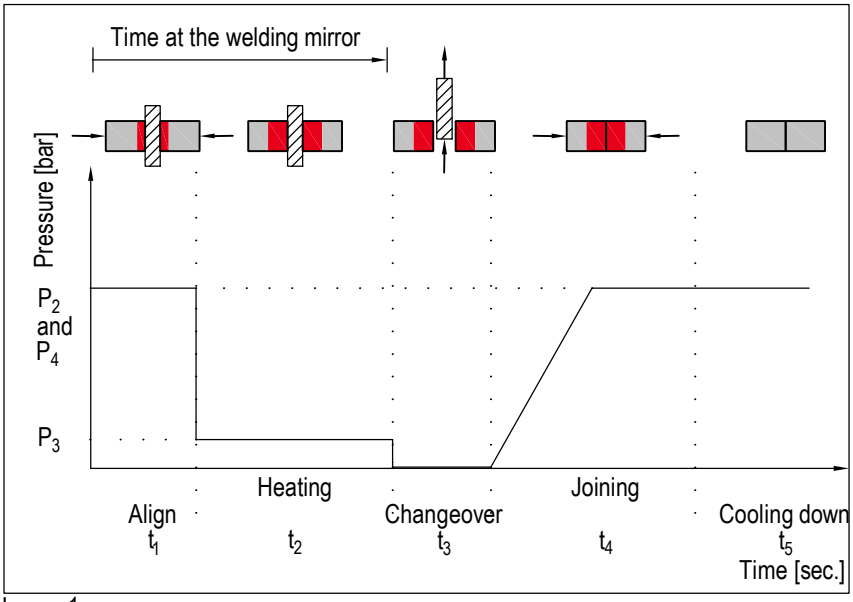


Image 1

Welding parameters

Check heater temperature 255°C ±3°C

Working pressures:

Clamping	P_1	6-7 bar
Adjust	P_2	3 bar
Heating	P_3	machine-dependent
Joining	P_4	3 bar

Welding times

Adjust	t_1	Profile/machine dependent*
Heating	t_2	10 s ±2 s
Change	t_3	max. 2s
Joining time	t_4	30 - 40s

Weld bead limit 0.2mm - 2mm
The lower the limitation, the more important the compliance with the other parameters, as this can influence the corner strength. A regular check of the corner strength is recommended.

These values are guide values based on a standard 4-head welding machine and apply to all machines with a heating element butt welding process. The welding parameters may differ depending on the type of machine used.

Lift-and-slide door / Main entrance door / Side entrance door
(with welding corner bracket)
Due to the larger profile cutting surfaces, the time at the welding plate is extended. Parameters must be adjusted individually.

3. Reworking of the welded joints

3.1. **Cooling before plastering**
no accelerated cooling: cooling time t_5 of at least 60 s

3.2 **Plastering**
Avoiding notches in the inner corner and grooving too deep
Groove depth max. 0.4mm

4. Checking the welded joints

According to DIN EN 14351-1: Carrying out of the regular factory process control for the traceability of the quality according to the CE marking or according to the RAL quality monitoring

* e.g. standard sash with 75mm FL height approx. 6-8s. / e.g. powerdur sash with 75mm FL height approx. 14-16s

08 C 1.3. Note on factory production control

Process control template					
No.	**Property to be tested**			**OK**	**Not OK**
1	Clean and undamaged sealing film	Visual method	Without cracks and scratches		
2	Temperature at the heatsealing band	Contact probe	255°C		
3	Parameter settings				
4	Dimensional check on the finished frame	Measurement	Order documents +/- 1mm		
5	Uniform weld bead formation	Visual check	Symmetrical equal over mitre		
6	Colour of the weld bead	Visual check	No yellow discolouration		
7	Flexibility and integrity of the seal	Visual check	No cracks or open spots		
...					

Table 1

Intervals of inspections: The frequency of inspections is to be determined individually by the window manufacturer. If the manufacturer is subject to quality control, its specifications must be complied with.
In principle, we recommend carrying out a check when starting up the systems and when changing parameters.

Corner strength test template						
No.	Machine type: Manufacturer:		Date:		Operators:	
	Coinage	Welding mirror temperature	Target strength of 80%	Verified corner break value	OK	Not OK
Sample (1)						
Sample (2)						
Sample (3)						
Sample (4)						

Table 2

08 C 1.4. Combination welding

Combination welding with an 80 and 100 frame or 73 and 103 frame instead of an extension.

Extensions create a shadow gap (image 2), combination welding avoids a shadow gap with a 45° weld (image 3).

The following must be observed:
- welding shims must be used during the welding process
- after each combi-weld, the closedness of the chambers must be checked
- the corner strength values must be complied with (the corner strength of the profile with the smaller cross-section is decisive)
- when mounting, pay attention to the approved free screw length
- If the inner chamber is still open, seal with sealing tape
  690070 for 70mm construction depth (IDEAL 4000 / 5000),
  690076 for 76mm construction depth (energeto neo),
  690085 for 85mm construction depth (IDEAL 8000)
  seal or seal with sprayable sealant.

Combination welding is only permitted with the following profiles / combinations:

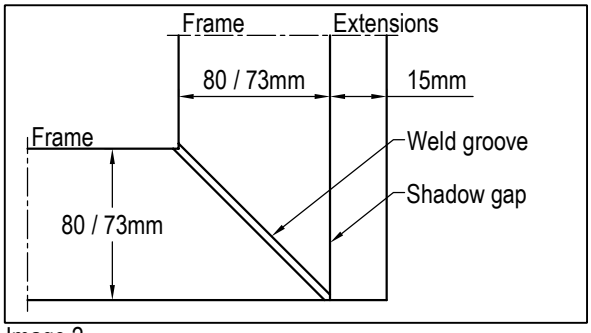


Image 2

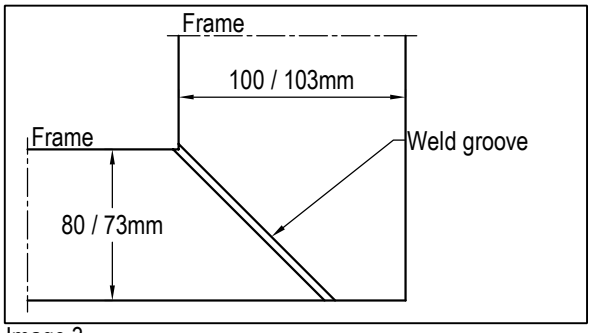
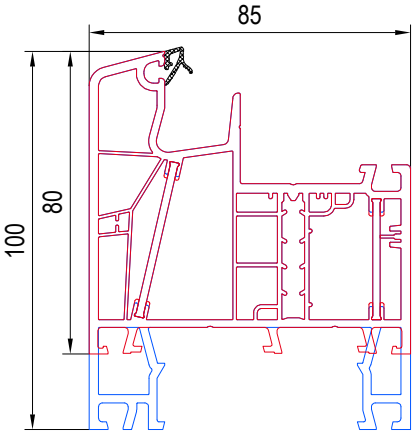
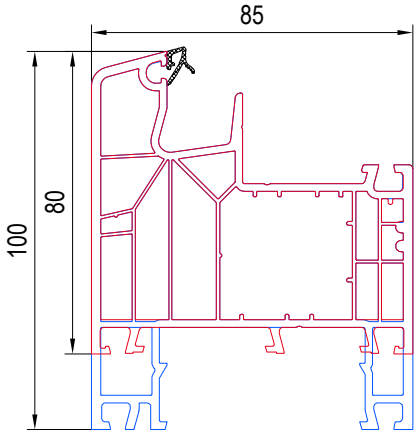


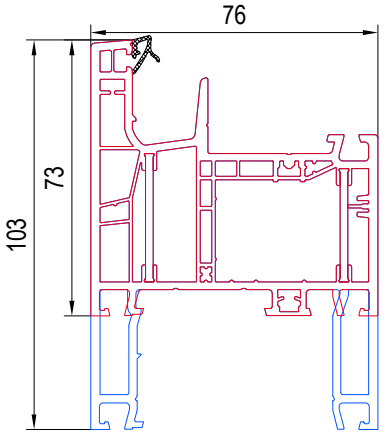
Image 3



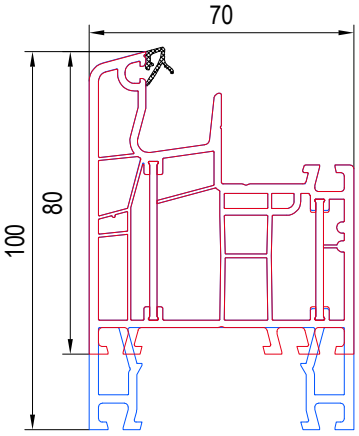
080x04 + 080x05
(IDEAL 8000)



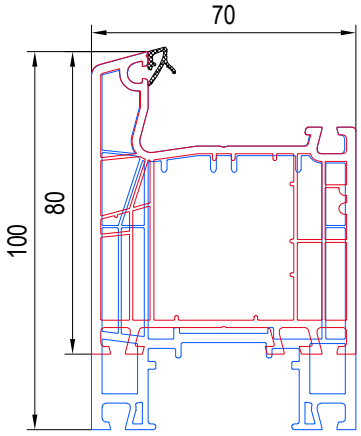
180x04 + 180x05
(IDEAL 8000)



060x08 + 060x05
(energeto neo)



050x04 + 050x03
(IDEAL 5000)



140x81 + 140x03 *
(IDEAL 4000)

* With this combination, special attention must be paid to the closedness of the chambers!

08 C 2. Fitting installation

As a matter of principle, only those fittings should be used that have been specially developed for PVC-U windows and are matched to the PVC-U window system. Commercially available machines are available for the necessary hardware routing, which are available from hardware dealers.

The technical specifications of the hardware manufacturer must be observed.

Use 16mm faceplate fittings with an installation depth of 20mm. The chamber size is 12mm.

All moving hardware parts must be provided with acid-free grease.

08 C 2.1. Turn / Tilt and turn fittings

For side-hung and tilt-and-turn windows, the maximum hardware load capacity of the respective hardware manufacturer must be observed.

Furthermore, for wider than high window sashes, overrun brackets should be used on the locking side (see chapter 05 I Lifter).

The hardware manufacturers prescribe that the width of the sash must not exceed 1.25 times the height of the sash. On the basis of samples of bolted corner and stay bearings taken from production, the suitability in relation to the maximum sash weights (with the respective components) can be determined according to the TBDK guideline of the hardware industry on the basis of the determined pull-out values.

08 C 2.2. Bottom hung window - skylight

For fanlight sashes with a sash below, abutting hinges are to be used.

All commercially available surface-mounted fanlight openers can be used. From a sash width of 1200mm, use middle edge pressure. Observe the frame clearance (from the outer edge of the sash to the clear plaster edge or cover strip) of the hardware manufacturer for the attack side (hand lever).

All concealed skylight openers with 20mm installation depth can be used. From a sash width of 1200mm, a second stay (closer) must be used. The frame clearance of the hardware manufacturer must be observed.

08 C 2.3. Doors

For balcony doors, a hinge-side locking distance or hinge spacing of max. 700mm must be maintained. In order to precisely maintain the chamber dimension for balcony doors, we recommend fitting an overrun block on the lock side (see chapter 05 I Lifter).

08 C 2.4. Other window types - Fitting variants

Observe the specifications, guidelines and instructions of the hardware and fastener manufacturers! If you have any further questions, please contact the system support.

Pivot
Due to the hardware situation and the swing radius, pivoting windows can be manufactured with a selection of the main profiles from the IDEAL 2000, IDEAL 4000 and IDEAL 7000 series with an additional interchangeable profile. The feasibility of a pivoting window is highly dependent on hardware. For drainage, a horizontal groove must be made at the bottom of the exchangeable profile. The 5x25mm slotted hole must be offset.

Sidelights / Spandrel (apron wall)
Window elements with spandrel (apron wall) must comply with additional requirements. Depending on the installation position and height, the spandrel (apron wall) serves as fall protection. DIN 18008 must be complied with here. This requires static calculations and usually the involvement of a structural engineer. Depending on the building project, the glazing, the attachment of the glazing, the mullions as well as the connection of mullions to the frame, the fall protection properties of the window frame and the attachment of the window frame to the building structure must be taken into account. This chain of evidence must always be adhered to. Depending on the model building code / state building code, the specifications of the minimum enclosure height also differ here.

Parallel slide-and-tilt doors
Parallel sliding and tilting doors are possible with the IDEAL 2000, IDEAL 4000, IDEAL 5000, IDEAL 7000, IDEAL 8000 and energeto neo series. To ensure long-term serviceability, the frame profile and the sash profile must be stiffened all around with steel. Maximum frame and sash sizes in chapter 06 must be complied with.

Folding sliding door
Folding sliding doors are possible in the IDEAL 2000, IDEAL 4000, IDEAL 5000 and IDEAL 8000 profile series. To ensure long-term serviceability, the frame profile and the sash profile must be stiffened all around with steel. The fitting can be top-running or bottom-running. Bottom-running fittings are recommended. The application range extends from sash widths between 330-900mm and sash rebate heights of 840-3360mm, with a maximum sash weight of 80kg.

08 C 2.5. Screws

In PVC window construction, special screws are usually used for fastening the fittings.

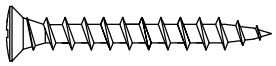
With powerdur profiles, it is also important not to use self-drilling screws or screws with metric threads or similar.

For fitting powerdur profiles, use window screws for plastic profiles or Spax screws.

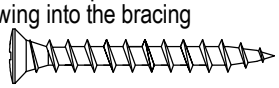
More details about the TBDK can be found in chapter 06.

The following are examples of the different types of bolting depending on the profile type:

- A Window construction screw for powerdur profiles (pre-drill with 3mm)
  e.g. 4.1x35mm



- B Window construction screw for profiles without reinforcement or positions without screwing into the bracing
  e.g. 4.1x35mm



- C Screw with drill point for profiles with reinforcement
  e.g. 3.9x32mm



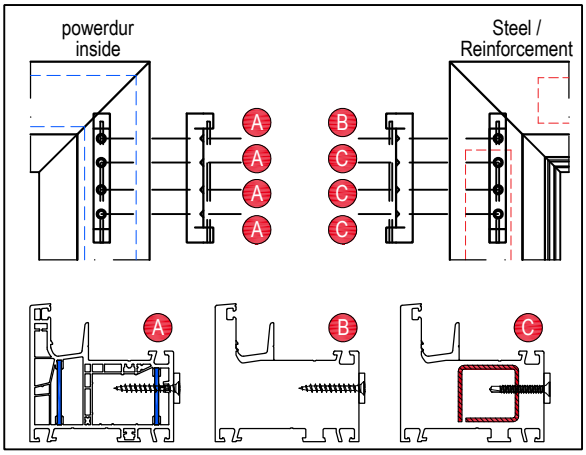


Image 4

In principle, the specifications and application recommendations of the screw and fitting manufacturers must always be observed. The maximum sash weights vary depending on the hardware and selected components. The mandatory factory production control based on the TBDK guideline is always decisive.

08 C 2.6. Corner bearing holes

When fixing to post profiles, only corner bearings with short pins (cog) may be used.

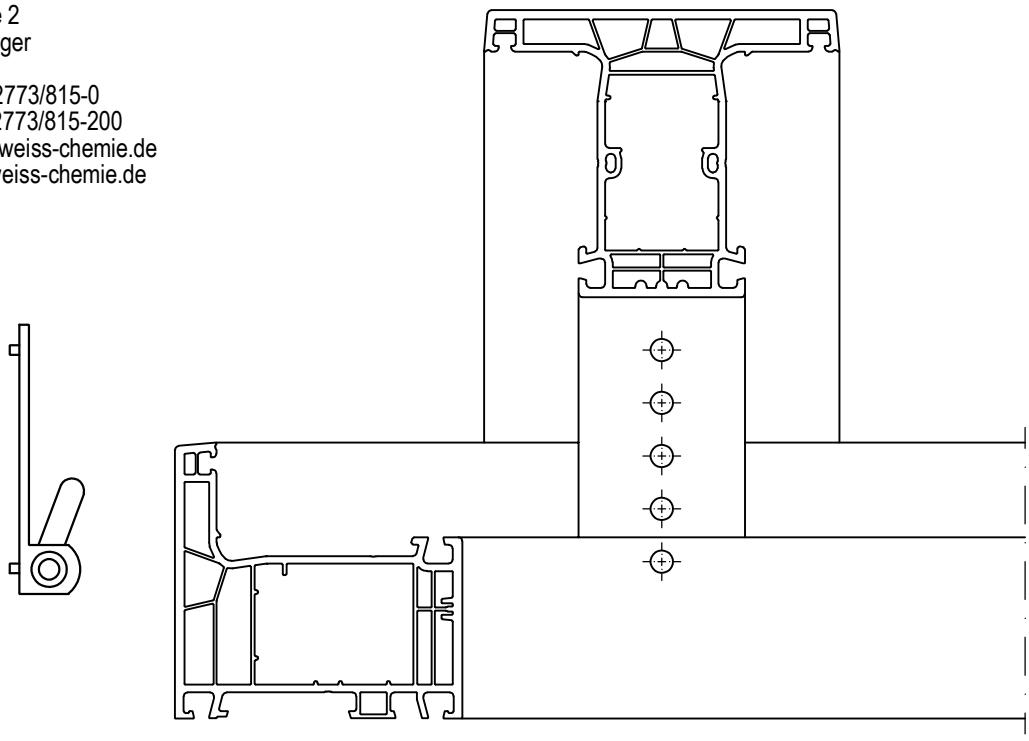
If cogs are used that are too long or if the holes are too deep (max. 10mm), water may enter the reinforcement chamber or the room side in some profiles.

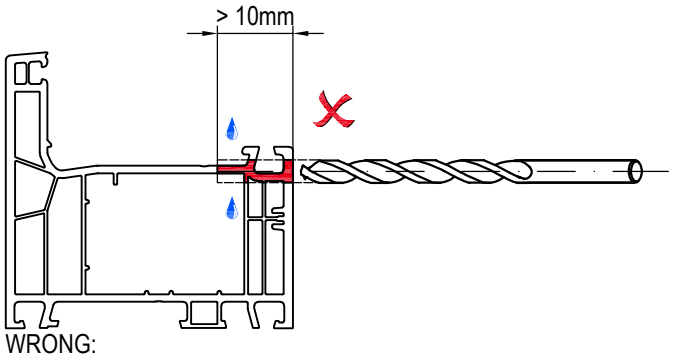
If the borehole is too deep, the borehole must be sealed before inserting the corner bearing.

The product **COSMOFEN VKD 874** (2-K-PUR-Verguss-Klebe-Dichtmasse) is e.g. according to the statement and the processing instructions of the manufacturer **Weiss Chemie + Technik GmbH & Co.KG** suitable for sealing. For processing instructions, it is necessary for copyright reasons to request the current Technical Data Sheet for the product directly from the manufacturer:

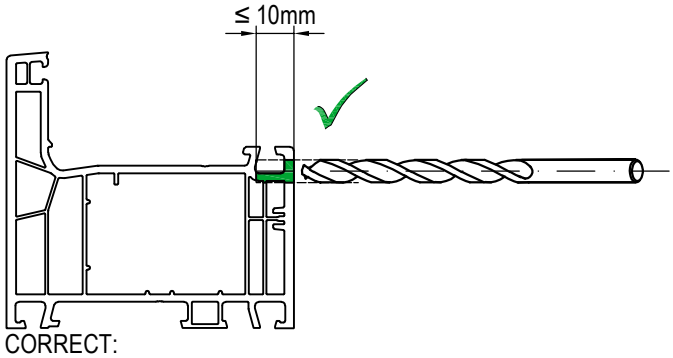
Weiss Chemie + Technik GmbH & Co.KG
Geschäftsbereich Chemie
Hansastraße 2
D-35708 Haiger

Tel. +49 (0)2773/815-0
Fax +49 (0)2773/815-200
E-Mail: ch@weiss-chemie.de
http://www.weiss-chemie.de





WRONG:
The ammunition chamber is drilled out!
Water can penetrate the chamber!



CORRECT:
The ammunition chamber is not drilled out!
Water cannot penetrate the chamber!

Example energeto neo

08 C 3. Glazing

Glazing is carried out in accordance with the aluplast glazing guidelines
refer to chapter 08 E Blocking
refer to chapter 08 G Stop and glazing gaskets

The guidelines of the insulating glass manufacturers must also be observed.

08 C 4. Glazing beads

The glazing beads of the various widths are snapped into the grooves provided in the main profiles. In principle, all glazing beads should be mitred.

The glazing bead feet must be cut off at both ends at an angle of 45° downwards so that they do not interfere with installation in the unplastered corner area (Detail B, Fig. 5).

To achieve a clean mitred seal, the glazing beads are cut with a length allowance or oversize depending on the length.

< 1m glazing bead length - addition of 0.5mm
1m - 2m glazing bead length - addition of 1.0mm
> 2m glazing bead length - addition of 1.5mm

In the case of mitred glazing beads, the shorter beads are inserted first, the longer beads are bent slightly and pressed into the mitre or driven in with light blows (rubber mallet, soft hammer) starting from the centre.

The sash profile may be deformed when the glazing beads are driven in. The deformation is reversed by swinging the sash back in the direction of the glazing bead.

With very short or high and inflexible glazing beads (e.g. fixed glazing of middle sealing systems) or with high glass weights, it can be very difficult to use the last or even the last two glazing beads, as these are very difficult to bend over short lengths.

In order to obtain this deflection for inserting the glazing beads also in the described application cases, the following must be carried out:

The glazing beads are cut at very short intervals at the base and in the later invisible area to the glazing bead with a saw, e.g. chop saw, at the bottom (Detail A, Fig. 5).

The smaller or higher the glazing bead is, the more slots must be made there by cutting.

With large glazing bead bases, cutting in without damaging the visible surfaces is hardly possible. We therefore recommend butt mounting or contacting our application technology department.

For window sash elements as well as fixed glazing, the aluplast guidelines regarding reinforcements must be observed.

An overlap of the seals in the corners of glazing beads is very often found on window elements for manufacturing reasons.

Such an overlap results from the circumstances that when cutting the glazing beads with integrated gaskets, there is no contact pressure from the pane pressing against it later here and the gasket is thus cut along in the saw angle. If the counter-pressure of the pane is then active when the glazing bead is inserted, the gaskets position themselves accordingly and can overlap slightly in the corner area.

This situation still corresponds to the state of the art today, as only very few window manufacturing companies are able to simulate a glass pressure during the cutting process in order to prevent this as far as possible.

However, the function of the window is not affected by the circumstance described above.

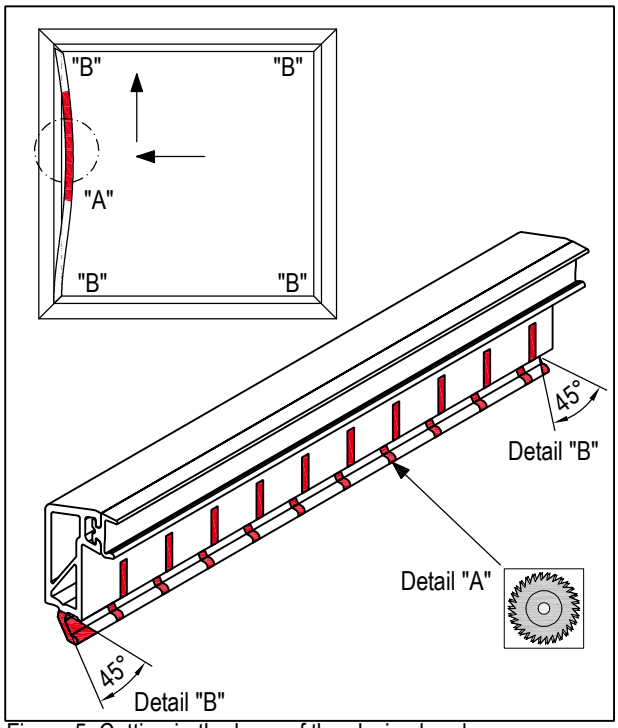


Figure 5: Cutting in the base of the glazing bead

08 C 5. False mullion

White profiles: false mullion profiles must be glued or sealed with silicone and screwed (see chapter 08 C 7. Clip-on profiles), false mullion end caps must be glued or sealed with silicone and screwed if a screw channel is present.

Coloured profiles: false mullion profiles must be glued or sealed with suitable adhesive and screwed (see chapter 08 C Decors and colours: Coloured profiles), false mullion end caps must be glued or sealed with suitable adhesive (see chapter 08 C Decors and colours: Coloured profiles) and screwed if a screw channel is present.

When screwing the end cap for false mullion to the false mullion profile, make sure that the surfaces are flat in the plane of the rebate seals (from the rebate sash).

Detailed information on the cutting and screwing of the false mullion and end caps is shown in chapter 09 Z Cutting dimensions false mullion of the individual profile series.

08 C 6. Mullions / Transoms

Mullion and transom profiles are counter-milled and screwed to the frame / sash profile or mullion / transom profile with special connectors.

The term mullion is used by aluplast to describe dividing profiles in the frame. The term "transom" is used by aluplast to describe dividing profiles in the sash. Depending on the profile series / sealing system / contour / rebate or connector, these dividing profiles can be used only as mullions in the frame, only as transoms in the sash (e.g. centre sealing systems) or as mullions in the frame and transoms in the sash (e.g. rebate sealing systems).

Using the accessories overview plan, you can select the right connectors for the installation situation (rebate) with any available drilling jig for the mullions / transoms.

When using a mullion, the frame must be braced and when using a glass-dividing transom, the sash must be braced.

Further processing instructions can be found in chapter 09 H Mechanical connections and chapter 09 I Milling patterns.

08 C 7. Clip profiles

Basically, clipable (white) profiles (e.g. weather bars) are to be fixed every 250mm, the distance to the edge is max. 50mm.

Possible exceptions to this rule are described in detail in the respective processing guidelines (e.g. in the processing guidelines 08 C 8. Connection profiles).

Note: When dismantling clip-on profiles, damage may occur to the profiles themselves and in the case of filigree clip-on profiles, these may be destroyed.

08 C 8. Connecting profiles (Extensions, Sill connectors, etc.)

08 C 8.1. Reinforcement

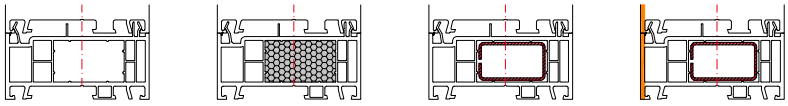
If connection profiles are used for load transfer (e.g. own weight of the element), these must be stiffened and bolted with the corresponding steel profiles from 100kg/m element weight (PVC profiles, steel reinforcement, glass, fittings, etc.).

White connection profiles with steel stiffeners or alternatively with foamed hollow chambers can be used for load transfer up to a panel weight of max. 200kg/m.

If coloured connection profiles are used for load transfer (e.g. dead weight of the element), these profiles must always be stiffened and bolted with steel profiles. The connection profiles can be used for load transfer up to a panel weight of max. 100kg/m.

All steel stiffeners must be screwed to the connection profile. Alternatively, the complete connection profile can be screwed through to the main profile. The minimum sufficient and maximum possible screw length must be observed individually and that the basic screw connection is only made after the sealed connection profile has been inserted.

Example



Profile colour	white	white	white	coloured
Steel reinforcement	without	without	with	with
Foam	without	with	without	with
Element weight	≤ 99kg/m	100 - 200kg/m	100 - 200kg/m	≤ 100kg/m

08 C 8.2. Sealing

Without seals, air can flow between the profiles, which, if driving rain occurs at the same time, can also draw water with it, cause it to escape and thus lead to damage to the structure. With mechanically connected profiles, no or only minimal movements can occur. The resulting capillary joints must be permanently sealed to the exterior (to the outside or into the structure).

Connection profiles must be watertight to the outside and airtight to the inside.
If a constructive solution on the profile (e.g. sealing lip or double clip) does not fulfil these two conditions, the connection profile must be sealed with silicone or, depending on the construction, with a pre-compressed sealing tape, or another individual sealing solution must be implemented. For bench connections, these conditions must also be met depending on the application or installation planning.

It should be noted here that the basic screw connection is only made after the sealed connection profile has been inserted and helps to maintain the sealing function.

If there is no constructive solution on the profile (e.g. sealing lip on the outside or double clip), the connection profile (e.g. with single clip) must be sealed over the entire length with sprayable sealant (Fig. 6).

When using the sealing lip or double clips on the outside, the end face (open groove or chamber on the outside) must be sealed to a depth of 2-3 cm towards the building structure connection with sprayable sealant (Fig. 7).

When using a central compressor tape or a central seal, seal at least at the end face (open groove or chamber outside to central seal) with sprayable sealant to a depth of 2-3 cm (Fig. 7) and in case of doubt or depending on the region (e.g. on the coast) over the entire length (Fig. 6).

Sealing at joint of connection profiles horizontal / vertical: see next page

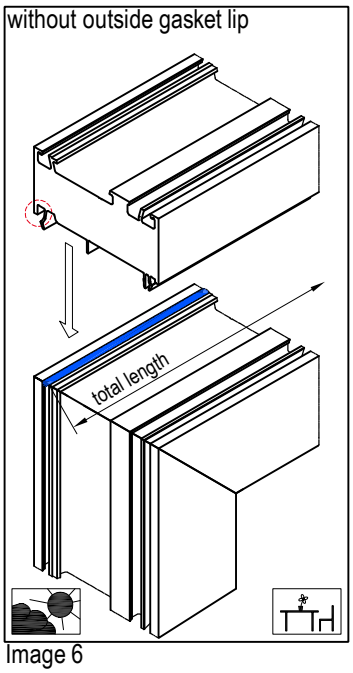


Image 6

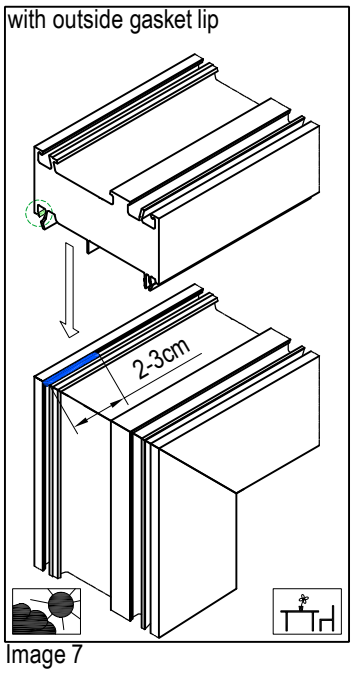
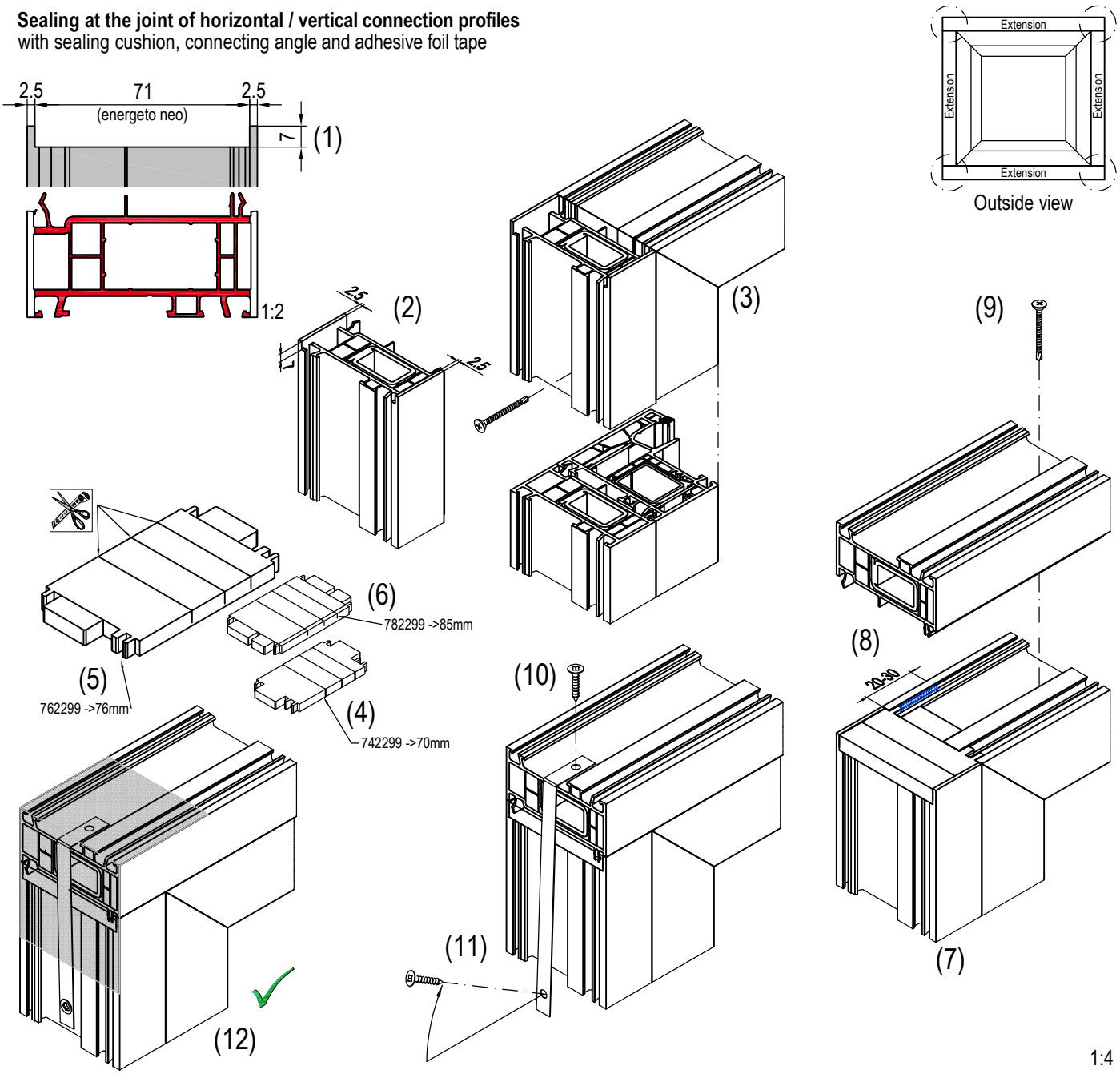


Image 7

Example energeto neo

Sealing at the joint of horizontal / vertical connection profiles
with sealing cushion, connecting angle and adhesive foil tape



Outside view

Mill out vertical extensions on the front sides (1) + (2).

Seal vertical connection profiles in preparation (see previous page) (2), clip flush onto the frame and screw (3).

Insert sealing pad (4) 742299 ->70mm, (5) 762299 ->76mm or (6) 782299 ->85mm. If necessary, cut off the sealing pad at the cut line (7). Alternatively, fold over onto the front side of the horizontal connection profile.

Seal horizontal connection profiles in preparation (see previous page) (8), clip flush onto the frame incl. vertical connection profiles and screw (9).

Screw the connecting bracket 644299 with the short lug into the horizontal connecting profile (10), screw the long lug into the vertical connecting profile at an angle (11).

Seal the horizontal (open-faced) connection profile with adhesive foil tape 690060 ->60mm, 690070 ->70mm, 690076 ->76mm or 690085 ->85mm (12).

Example energeto neo

08 C 8.3. Screw connection

The clip feet of the connection profiles are only an installation aid that can pop out or a gap can form in the event of a load without a corresponding screw connection. To prevent this from happening and to ensure that the sealing done beforehand is not damaged, connection profiles must always be screwed to the window elements. This applies to white and coloured profiles.

The minimum sufficient (A) and maximum possible (B) screw length must be observed individually (Fig. 8).

The connection profiles must be screwed at a max. distance of 300mm and a max. edge distance of 150mm (Fig. 9).

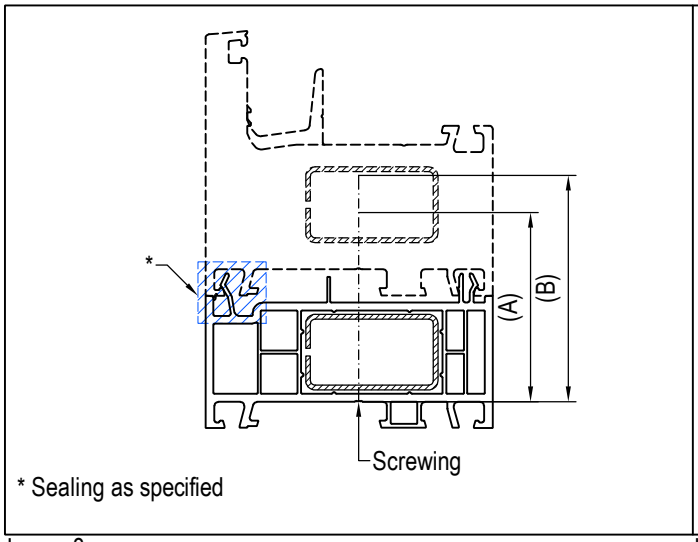


Image 8

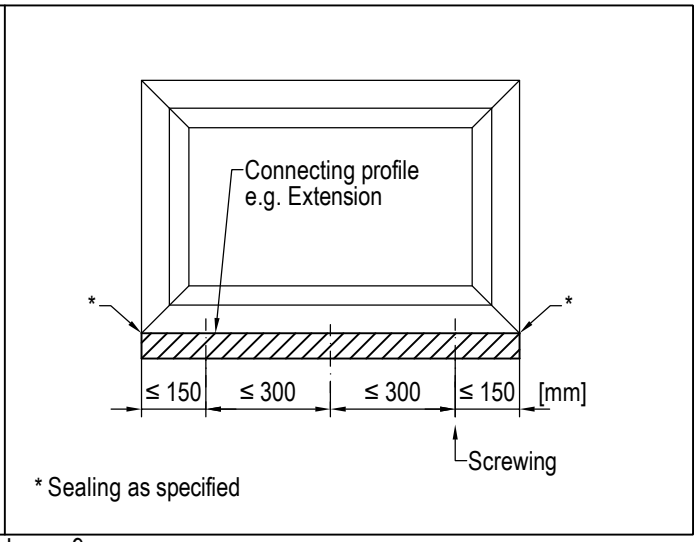


Image 9

08 C 8.4. Additional processing and installation instructions

In addition to the general installation guidelines, the following points must also be observed:

- If additional static requirements have to be met, e.g. via unsupported lengths, steel stiffeners must be used in accordance with the calculated statics.
- The transfer of loads from the window elements must be carried out under the extensions to the building structure with at least 50mm wide glass blocks, which must have at least the depth of the extensions.
- No drainage channels or similar may be attached to the extensions in a load-bearing manner.
- If, due to the installation, it is necessary to work with fixing brackets from the extension to the building structure, a steel reinforcement must be inserted and screwed into the chambers in which bolting takes place, depending on the specifications of the approved system used (SFS, Knelsen,...).
- As soon as the extension or the extension packages (stacked) exceed 60mm face width, they must be reinforced with a steel stiffener and additionally fastened to the building structure by means of a bracket, mounting angle or similar to ensure sufficient load transfer. The max. distance between the brackets is 700mm, the edge distance 50mm. If this is not done, the fitness for use may be impaired.
- No other traffic loads (e.g. driving over with vehicles) may act on the elements except for short-term personal loads.

Example energeto neo

08 C 9. Couplings

refer to chapter 04 D Couplings

08 C 9.1. Reinforcement

Depending on the coupling, reinforcement with steel reinforcement is technically not possible (e.g. spring coupling 120116) or not necessary (e.g. H-coupling 160267). However, according to the static calculation, it may be necessary to use a coupling with corresponding steel reinforcement. Thus, the selection of a suitable coupling with steel reinforcement is mainly based on the static calculation. Depending on the profile series / construction depth, several coupling options or steel stiffeners are available.

As soon as a coupling steel is used, the matching assembly anchors must always be used as well. These must be designed as floating and fixed bearings.

08 C 9.2. Drainage

As soon as horizontal couplings are used, the sensitive areas must be protected, e.g. with a weather bar, or drainage must be made possible if possible, depending on the coupling variant. When draining by milling or drilling, care must be taken not to damage existing stiffening chambers (Fig. 10).

08 C 9.3. Sealing

Depending on the coupling, additional sealing is required. Coupling seals, couplings with retractable seals or couplings with integrated seals on the outside and inside fulfil the purpose of sealing by design. All other couplings must be sealed accordingly with sprayable sealant or pre-compressed sealing tape, depending on the possibility.

After or before installing coupled window elements, it is recommended to make an airtight seal in the upper and lower end area of the coupling profiles used. On-site sealing can be realised using suitable building materials such as silicone, flexible foams, etc. In line with the connection profiles, at least the water-bearing rebates and chambers must be sealed on the front side by approx. 3 cm when used horizontally (Fig. 10).

08 C 9.4. Screw connection

The screw connection with a diameter of at least 5.5 mm is made through the frame in the assembly axis (groove, see chapter 02 B Frame) (Fig. 10) at a distance of max. 700 mm and with an edge distance from the corners (also with pitch) of at least 150 mm (Fig. 11).

08 C 9.5. Additional processing and installation instructions

Couplings with rigid bolting take away the possibility of expansion of the elements and are to be considered as one element with regard to temperature expansion. For element sizes within the ap processing guidelines of the maximum frame sizes, the expansion can be absorbed by the structural connection, which must be designed accordingly.

For very large elements outside the ap processing guidelines, such as vertical or horizontal window strips, the movements in the construction are too large and must be additionally compensated for by expansion joint couplings. The use of spacer blocks such as expansion plates or glazing blocks at the screw connection points results in free space for the expansion of the elements (Fig. 10) (Fig. 11).

To avoid later complaints due to limited serviceability, aluplast always recommends an expansion joint in the building connection and an expansion joint in couplings.

If you have any further questions, please do not hesitate to contact the system support.

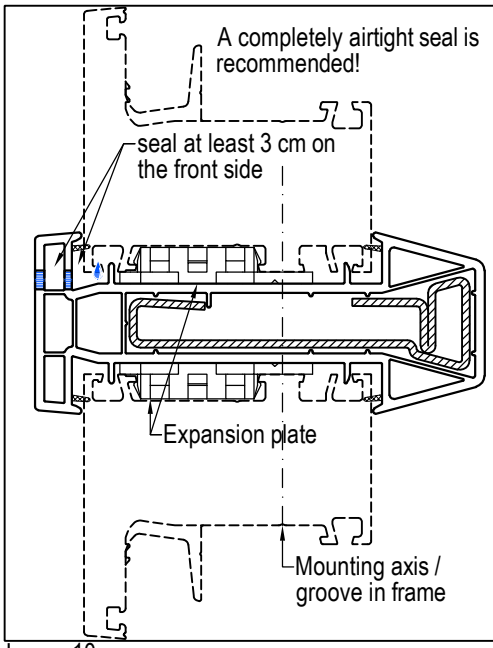


Image 10

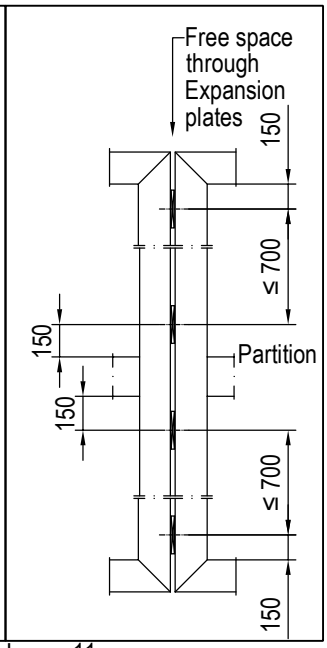


Image 11

Example energeto neo

08 D Drainage and glazing rebate ventilation

IMPORTANT: Do not damage the wall of the reinforcement chamber when drilling or milling the drainage and air equalisation openings!

(...) Position of the openings: see examples on the following pages.

08 D 1. (1) and (2): Drainage

Drainage in the frame (also with fixed glazing in the frame) and in transoms (transoms) is done with slots, alternatively to the outside and at the front with holes.

(1) In the rebate, the distance from the openings to the inner corners shall be about 50mm; the distance from one opening to the other shall be 700mm or less. The drain slots in the rebate shall amount to at least 5x25mm. In the case of a 2-leaf mullioned window, the frame is considered to be one window field; in the case of a 2-leaf mullioned window, one must assume 2 window fields.

(2) Drainage to the outside is at least 2x in the frame.
In the case of a 2-leaf sash window with a frame width > 1.2m, drainage is also provided in the centre.
In the case of a 2-leaf window with mullions, each window field with a frame width > 1.2 m must be regarded as a single field and drained twice.
Water is drained either through concealed drainage to the bottom or through visible face drainage to the front. The drainage openings must be milled/drilled in an offset pattern, 50mm recessed to the rebate opening. The distance from one drainage opening to the other must not exceed 900mm.
The openings to the outside and to the front can alternatively be drilled with a minimum drill diameter ø10mm or the standard drainage opening is a drain slot of 5x25mm.
Drainage cap 690923 can be used with drainage slots 5x25mm outwards and forwards, other openings are required with optional drainage cap/tubes.

08 D 2. (3) and (4): Pressure equalisation openings for exposed positions

Window frames that are installed in buildings with a height of more than 20m (exposed locations, formerly stress group C) must be provided with 1x 5x20mm slots on the right and x on the left (standard for energeto neo, alternative for IDEAL 2000 - 8000) or ø8mm pressure compensation holes (standard for IDEAL 2000 - 8000, alternative for (3) in the rebate for energeto neo) in the upper, outer frame stop. Generally, alternatively, the lip of the stop seal in the frame can be cut out at the two upper corners at a distance of about 50mm from the mitre corner over a length of 50mm; this corresponds to a cut-out of the seal between (3) to (4).

To ensure that the elements always have the higher driving rain tightness regardless of the installation position, it is recommended that pressure equalisation is always carried out in all window elements. This design offers a further advantage in the winter months, as condensation formed in the rebate space is ventilated again (by the cooling of penetrating warm and humid interior air) and thus only occurs to a greatly reduced extent. This measure also reduces the risk of mould forming in the rebate space, which could occur if the windows have not been cleaned for a long time due to dust and dirt deposits in combination with the condensate in the rebate space.

Example ~ energeto neo

08 D 3. (5) to (8): Pressure equalisation openings in glazings

(5) and (7) Glazing rebates must be ventilated adequately via two openings both in the bottom (5) and in the (7) top traverse according to the guidelines of the insulated glass manufacturer. The slotted grooves are to be made for vapour pressure compensation (min. 5x20mm) with a distance to the inner corner of approx. 50mm.

(6) and (8) To the outside, the vapour pressure compensation is effected via the antechambers of the sash either alternatively with IDEAL 2000 - 8000 through holes (min. ø8mm diameter) approx. 50mm offset to the rebate opening or generally as standard through slots 5x20mm. A distance of approx. 40mm between (8) and (3) must be maintained, insofar as pressure equalisation openings are provided for exposed layers.

Attention: The openings in the glazing rebate must not be covered by glazing packers or compensating blocks.

08 D 4. Additional venting for decor, lacquered or through-coloured profiles

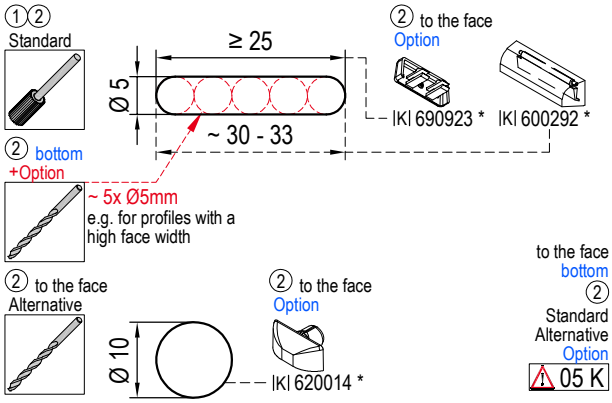
Refer to chapter 08 K Lamination and Colour: Coloured profiles.

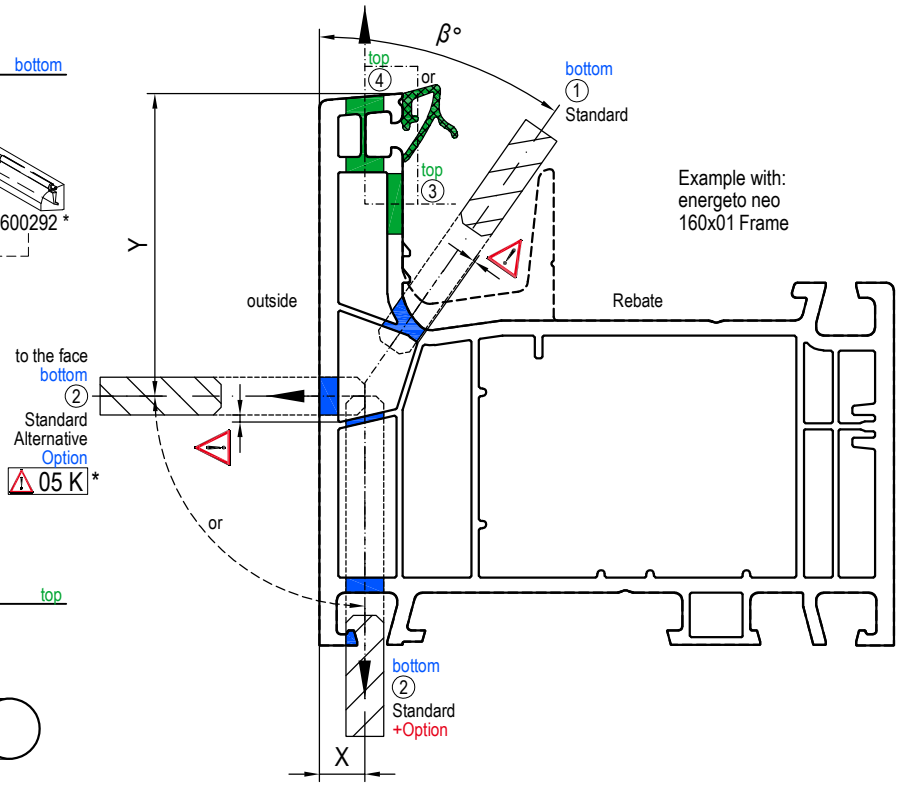
Detailed specifications and dimensions for milling and drilling for the individual profiles can be found in the files **BM**_ from the category "Single profile machining" in the customer login.

Processing

Example with: Frame bottom

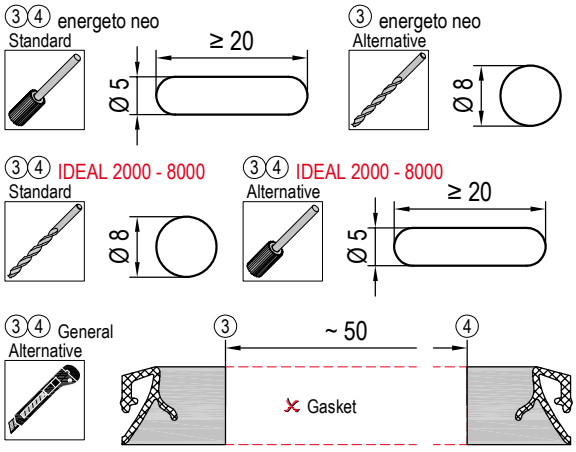
Drainage

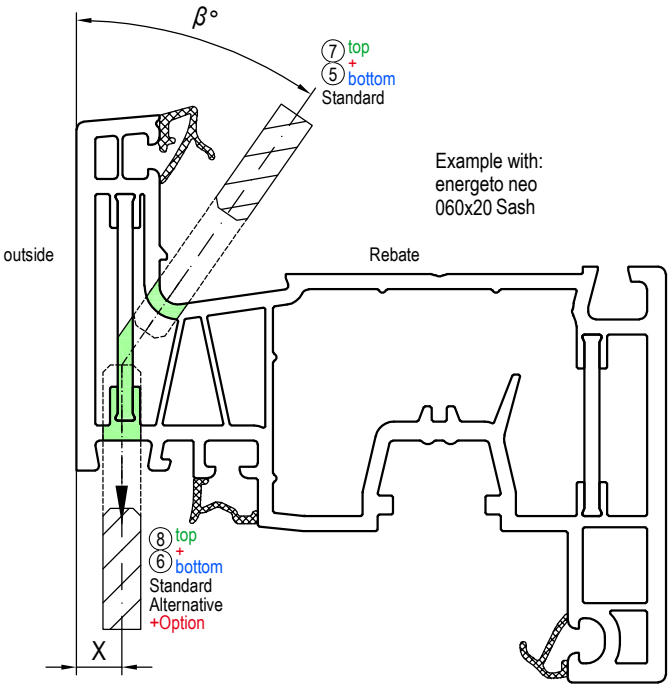




Example with: Frame top

Pressure equalisation in exposed position

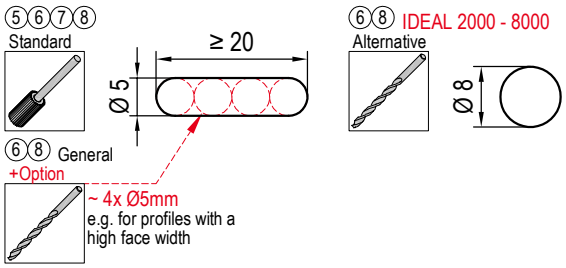




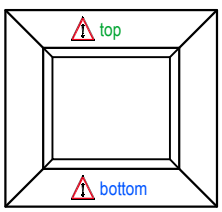
Example ~ energeto neo

Example with: Sash top + bottom

Air equalisation with glazing



Description	Standard	Alternative	Location	~	Position
Air equalisation for glazing	5x20mm	--- (IDEAL 2000 - 8000: Ø8mm)	outside	8	top
		---	Rebate	7	
		--- (IDEAL 2000 - 8000: Ø8mm)	outside	6	bottom
		---	Rebate	5	
Air equalisation with exposed position	5x20mm (Ø8mm)	Cut out 50mm gasket	outside	4	top
			Rebate	3	
Drainage	5x25mm	Ø10mm to the face	outside	2	bottom
		---	Rebate	1	



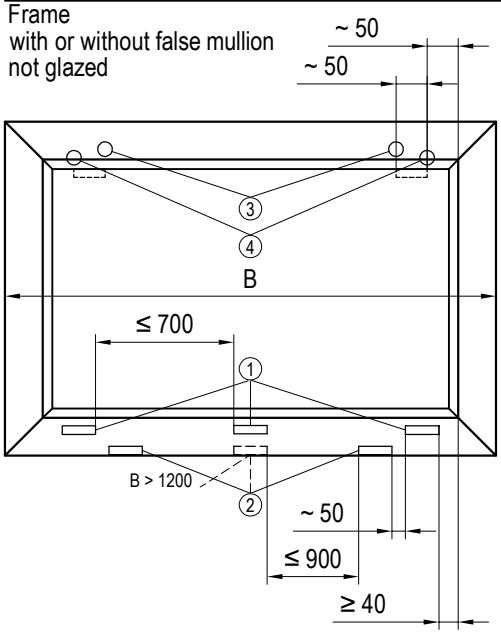
X Y β°

Detailed specifications and dimensions for milling and drilling for the individual profiles can be found in the files **BM_** from the category "Single profile machining" in the customer login.

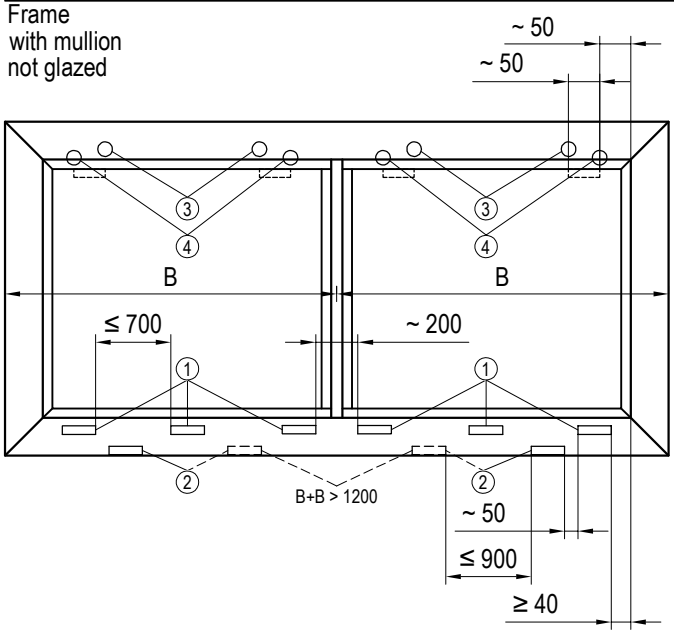
* 05 K Drain slot caps / Drainage profile

Frame - Sash

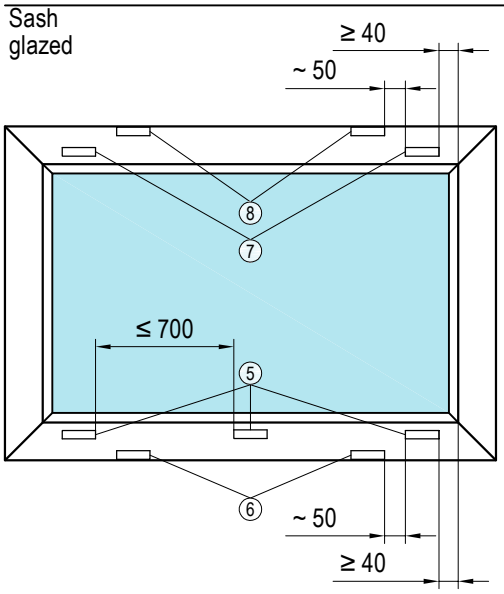
Frame
with or without false mullion
not glazed

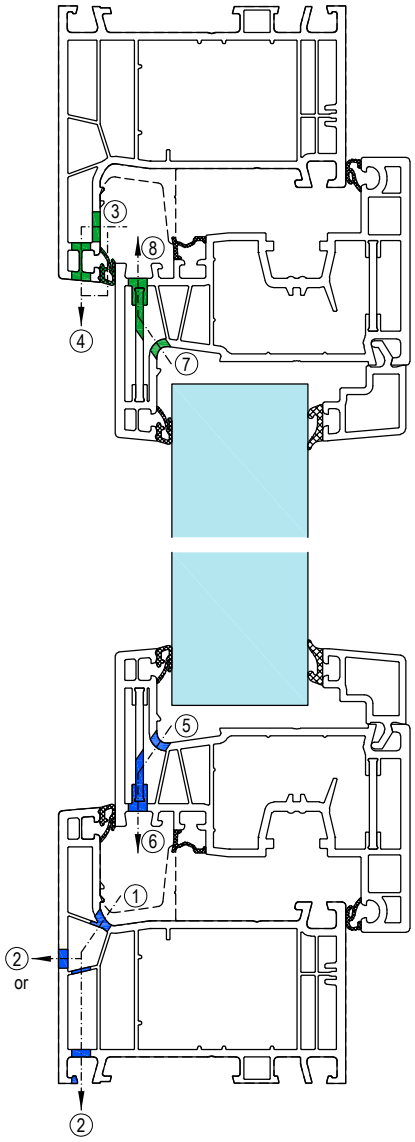


Frame
with mullion
not glazed



Sash
glazed





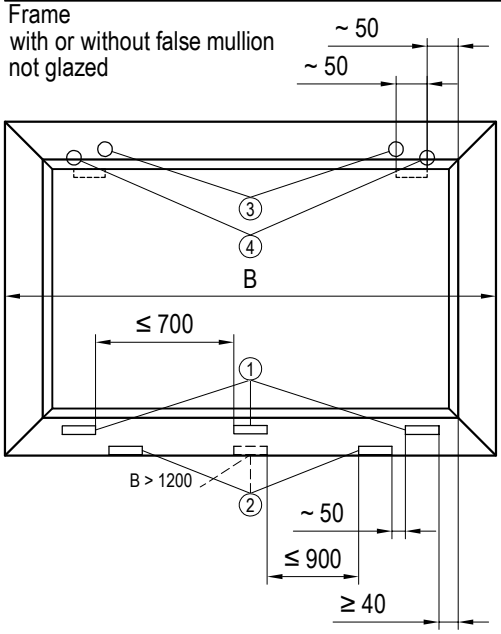
Example ~ energeto neo

Description	Standard	Alternative	Location	~	Position
Air equalisation for glazing	5x20mm	--- (IDEAL 2000 - 8000: Ø8mm)	outside	8	top
		---	Rebate	7	
		--- (IDEAL 2000 - 8000: Ø8mm)	outside	6	bottom
		---	Rebate	5	
Air equalisation with exposed position	5x20mm (Ø8mm)	Cut out 50mm gasket	outside	4	top
			Rebate	3	
Drainage	5x25mm	Ø10mm to the face	outside	2	bottom
		---	Rebate	1	

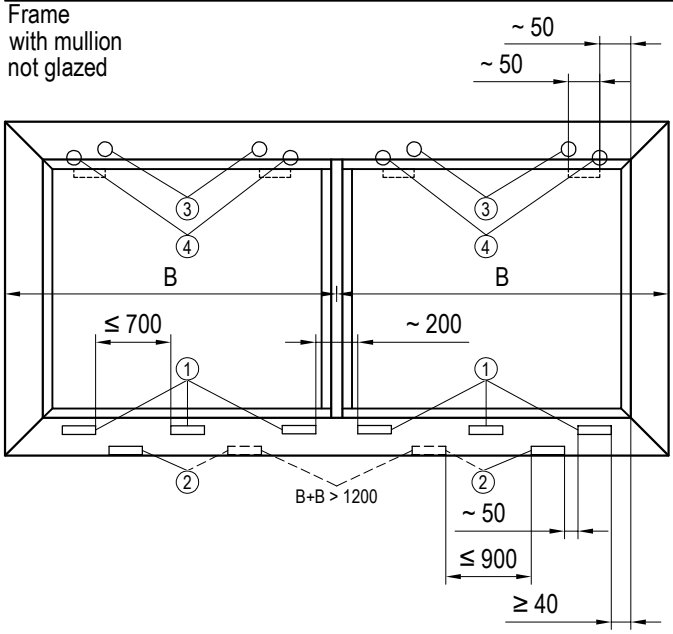
Detailed specifications and dimensions for milling and drilling for the individual profiles can be found in the files **BM_** from the category "Single profile machining" in the customer login.

Frame - Sash, open-out

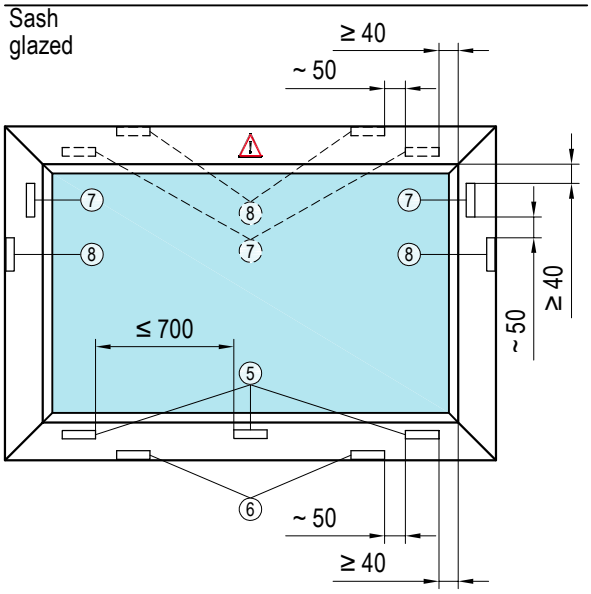
Frame
with or without false mullion
not glazed

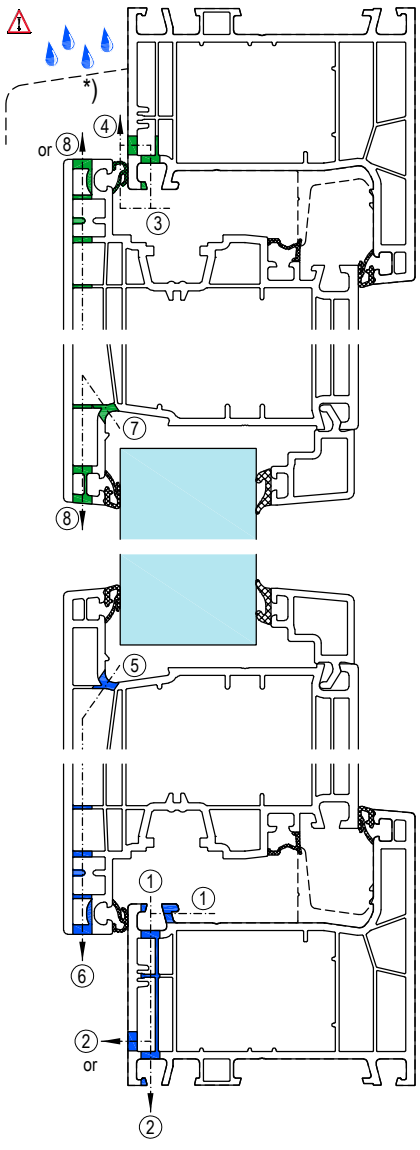


Frame
with mullion
not glazed



Sash
glazed





Description	Standard	Alternative	Location	~	Position
Air equalisation for glazing	5x20mm	--- (IDEAL 2000 - 8000: Ø8mm)	outside	8	top
		---	Rebate	7	
		--- (IDEAL 2000 - 8000: Ø8mm)	outside	6	bottom
		---	Rebate	5	
Air equalisation with exposed position	5x20mm (Ø8mm)	Cut out 50mm gasket	outside	4	top
			Rebate	3	
Drainage	5x25mm	Ø10mm to the face	outside	2	bottom
		---	Rebate	1	

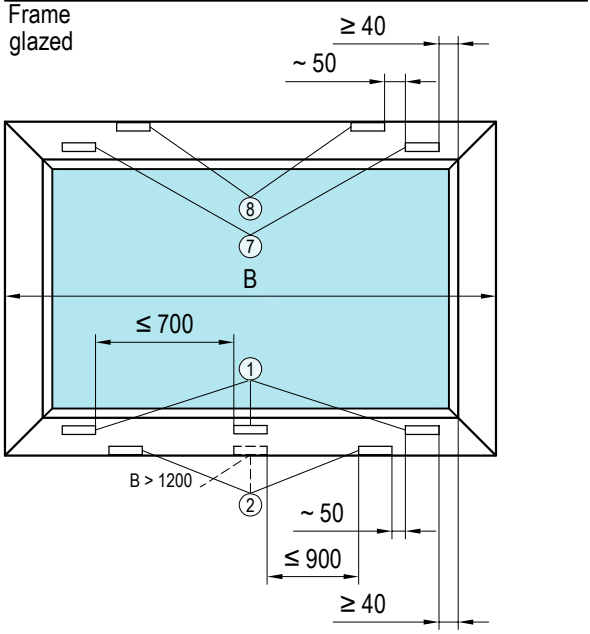
⚠ *With driving rain resistance, pressure equalisation is possible at the top. If this is not the case, the pressure must be equalised laterally!

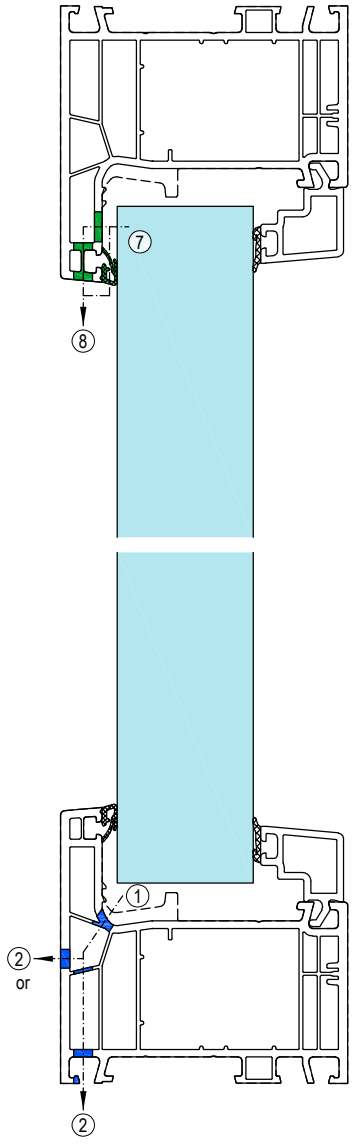
Detailed specifications and dimensions for milling and drilling for the individual profiles can be found in the files **BM_** from the category "Single profile machining" in the customer login.

Example ~ energeto neo

Frame - Fixed glazing

Frame glazed





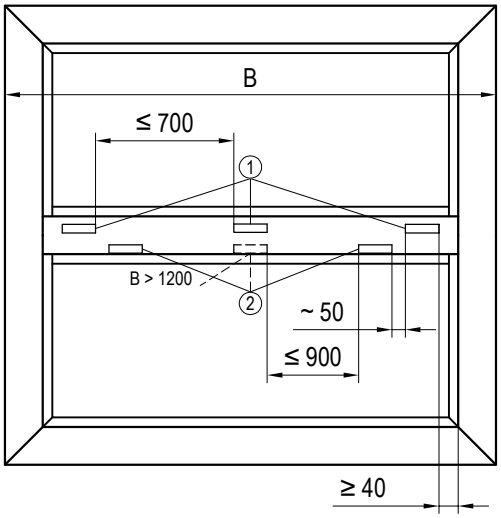
Example ~ energeto neo

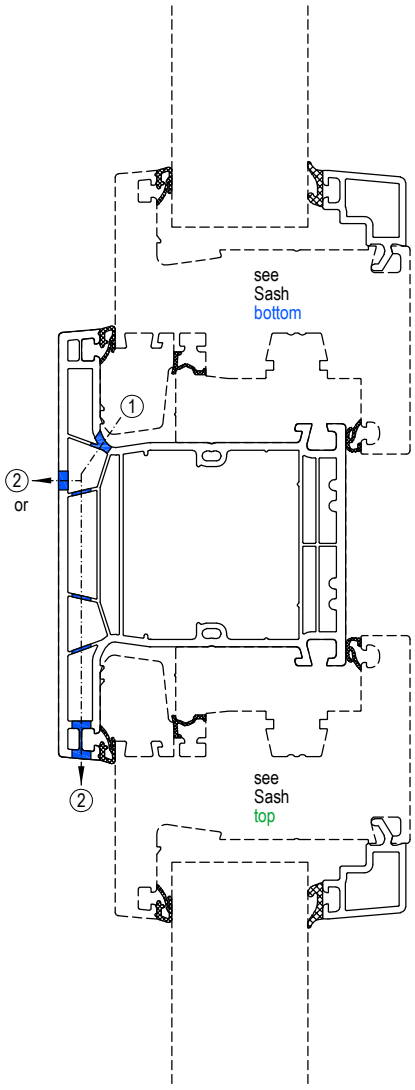
Description	Standard	Alternative	Location	~	Position
Air equalisation for glazing	5x20mm	--- (IDEAL 2000 - 8000: Ø8mm)	outside	8	top
		---	Rebate	7	
		Alternatively for (7) and (8) with fixed glazing in the frame: Leave 50mm of seal out.			
Drainage	5x25mm	Ø10mm to the face	outside	2	bottom
		---	Rebate	1	

Detailed specifications and dimensions for milling and drilling for the individual profiles can be found in the files **BM_** from the category "Single profile machining" in the customer login.

Cross-bar (Mullion horizontal)

(horizontal) mullion
not glazed





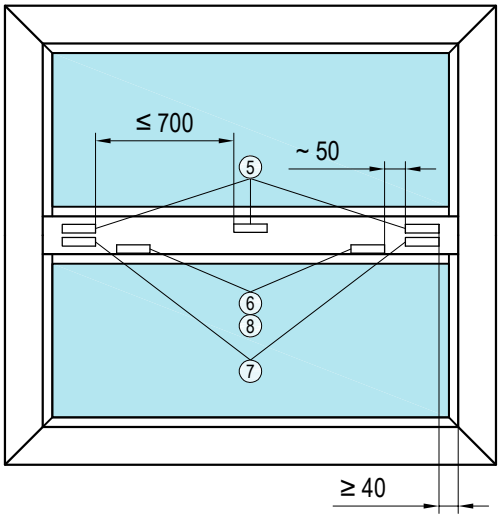
Example ~ energeto neo

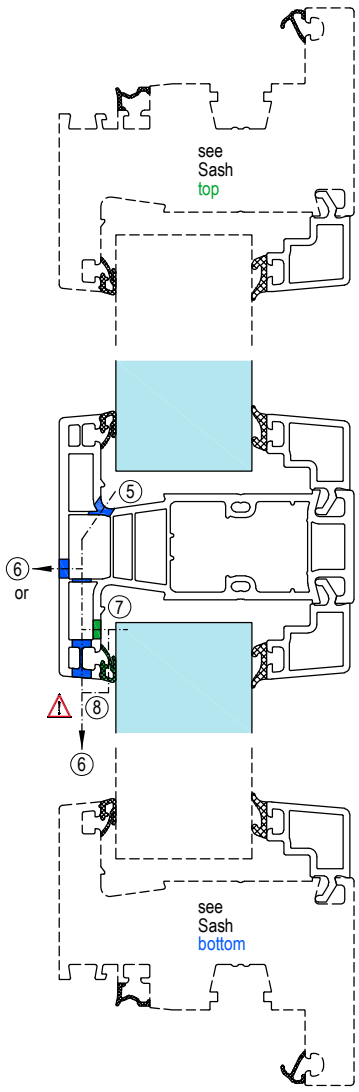
Description	Standard	Alternative	Location ~	Position
Drainage	5x25mm	Ø10mm to the face	outside (2)	bottom
		---	Rebate (1)	

Detailed specifications and dimensions for milling and drilling for the individual profiles can be found in the files **BM**_ from the category "Single profile machining" in the customer login.

Transom glass-dividing
horizontal

Transom
glazed





Example ~ energeto neo

Description	Standard	Alternative	Location	~	Position
Air equalisation for glazing	5x20mm	--- (IDEAL 2000 - 8000: Ø8mm)	outside	8	top
		---	Rebate	7	
		--- (IDEAL 2000 - 8000: Ø8mm)	outside	6	bottom
		---	Rebate	5	

⚠ For glass-splitting transoms: For downward pressure compensation (6), the pressure compensation (7) and (8) must be made via the seal; for forward pressure compensation (6), the pressure compensation (7) and (8) can alternatively be made via the seal: Leave out 50mm of the seal.

Detailed specifications and dimensions for milling and drilling for the individual profiles can be found in the files **BM_** from the category "Single profile machining" in the customer login.

08 E Blocking

08 E 1. The importance of blocking glazing units

The blocking has the following tasks:

- Load transfer
- Movement of the sash
- Ensuring circumferential vapour pressure equalisation (drainage / ventilation)
- Protection of the insulating glazing at the edge sealant
- Avoid contact between glass and frame
- Fixation of the glazing (i.e. no slipping)
- Relief of the glass edges

Proper blocking is one of the decisive factors for the lasting durability and functionality of a window, as it forms the only contact between the glazing and the frame.

When installed, this means:

- Protection of the glass edges from damage.
- Ensuring proper function: frame and sash are held in the correct position, thus preventing twisting and canting.
- Depending on the sash opening type, the spacer blocks also take on a load-bearing function and ensure constraint-free installation.
- Distribution and balancing of glass loads in the frame and exclusion of additional stresses from temperature, wind pressure, wind suction and operation.
- Load transfer via the blocks to the supporting hardware parts and further to the permanent fixing points and supporting parts of the window.
- The frames must be dimensioned in such a stable way that the weight of the glazing units is supported perfectly.

If the frame construction is to be stabilised by the glass unit, consultation with the glass manufacturer is required in any case! In principle, glazing units must not take on a load-bearing function.

For glazing with a sealant-free rebate space (e.g. dry glazing), the blocks must be secured against shifting or slipping.

It is important to ensure that the glass edge is not overstressed. The width, length, stability, material compatibility and hardness contribute to this in addition to the arrangement of the blocks.

Subsequent sinking of the sash is often due to inadequate blocking.

Slipped or incorrectly inserted blocks (see also figure 5) lose their function and thus hinder other functions, e.g.:

- A sash can no longer be opened or closed optimally.
- Drainage is concealed and thus unusable.

For bonding of pane, special guidelines apply according to **Chapter 08 J Bonding of pane**.

08 E 2. Definition of the blocks

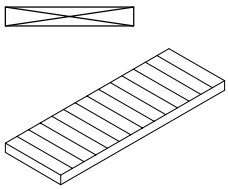
The following terms apply according to the installation situation or function:

Packers:
Transfer the weight of the glazing unit to the frame construction.

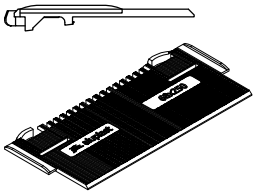
Spacers:
Secure the distance between the glass edge and rebate base and guarantee constraint-free installation. They temporarily take over the task of supporting blocks when the sash´s function changes.

Block bridges or block bridges:
Ensure (longitudinal) circumferential vapour pressure equalisation with a flat glazing rebate. The blocking bridges or blocking bridges form the substrate for the tested blocking material (support blocks or spacer blocks). They also prevent the support blocks or spacer blocks on them from slipping during assembly.
Block bridges or blocking bridges are not a substitute for support blocks or spacer blocks and must not be used as such!

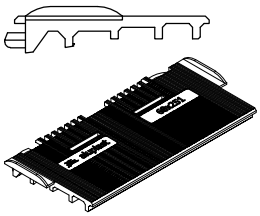
Compensating blocks:
Bridge the height difference between the glazing rebate base and the upper edge of the glazing bead support and thus provide a level support for the support blocks or spacer blocks. They also take over the function of the block bridges or block bridges. Compensating blocks are also no substitute for support blocks or spacer blocks and must not be used as such! Alternatively, glass rebate inserts with integrated 5mm support block / spacer block are also available from aluplast and may accordingly also be used as support block or spacer block. (see example figures)



Example for:
Support block or distance block



Example for:
Block bridge / Glass rebate insert



Example for:
Block bridge / Glass rebate insert
with integrated support / distance block

The glass rebate inserts from aluplast are available in a clampable version and are specially developed for the respective system. Most of them have tabs on the front side to prevent the glazing block from slipping and some have recesses to allow unhindered frame screwing.

08 E 3. Material of the blocks

Only plastic blocks made of suitable material (aluplast glazing blocks) may be used. They must have sufficient fatigue strength, be resistant to ageing and must not cause chipping at the glass edges.

The block must not change its properties: in case of humidity, contact with other materials (e.g. glass composites with PVB film, casting resin or sealing profiles and sealants, etc.), or other influences, a test is recommended.

Compatibility with the contact materials must be proven so that the insulating glass cannot be damaged in this area (e.g. dissolution of the edge seal, clouding, etc.)

Blocks made of wood are not permitted.

Only blocks that have been tested for permanent compatibility of materials should be used.

08 E 4. Additional requirements

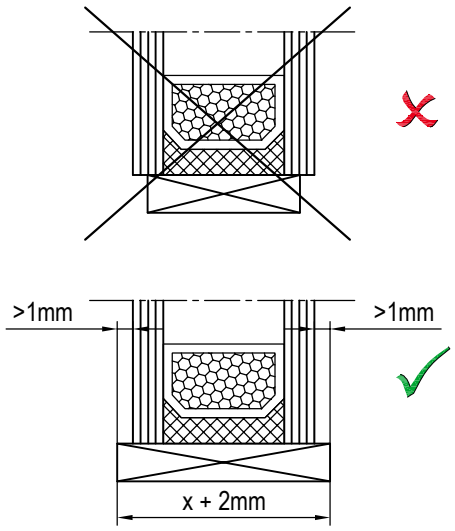
Do not use adhesives to fix glazing blocks. Blocks with self-clamping properties should preferably be used. Otherwise, support blocks and spacer blocks must be secured against slipping (e.g. by sealing).

If sealing is necessary, make sure that sealing compounds are used for which the compatibility with PVC hard has been proven by the sealant manufacturer. Before installation, the profiles must be treated with a suitable bonding agent (primer).

To ensure vapour pressure equalisation, block bridges must be used even with a smooth rebate base.

There must be no enclosed air gaps and sufficient drainage and/or ventilation must be provided. Likewise, no obstruction or blockage of the vapour pressure equalisation (drainage and / or ventilation) may be caused by the block (aluplast blocks have longitudinal recesses).

For fire-resistant glazing, the block material specified in the approval notice must be used.

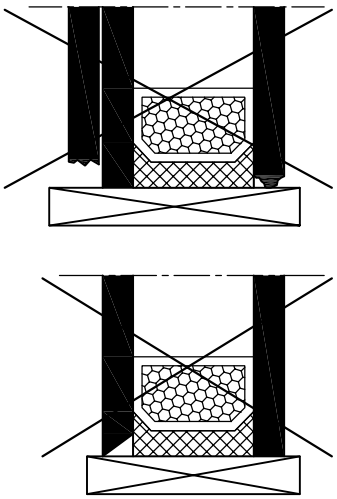


With ≥ 2mm protrusion, the load is better distributed and transferred over a larger area.

Danger of glass breakage if blocks are too short.

(see also figure 3)

Figure 1: Block width (see also figure 3)



(Glass edge offset)

(not right-angled pane edge)

If the glass edges are not accurate, the block can be subjected to an unfavourable load and thus render it unusable or impair the functionality of the window.

Figure 2: Stability of the blocks

08 E 5. Dimensioning of the blocks

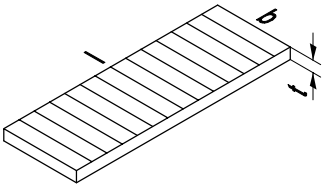
Unless otherwise specified by the glass manufacturers for certain glass products or glazing, the support and spacer blocks should be at least 2mm wider than the thickness of the glazing unit.
(see figure 1 + 2, see also figure 3: stop blocking)

The length depends on the load-bearing capacity of the block material, as well as the pane weight, and should be 100mm to reduce point loading and thus the risk of breakage of the insulating glass unit (a block length of 80mm has a 25% smaller bearing surface).

The thickness depends on the dimensions of the glazing units, the glazing rebate height and the rebate design and should be at least 5mm. For small-format panes (edge length up to approx. 500mm), the block thickness can be reduced to 3mm as an exception.

For aluplast profiles, blocks with 5mm are generally used, special cases are shown in the system drawings.

The aluplast blocks are identified by the following colours:



Block thickness t [mm]	Colour code		
1	white	~ 1	aluplast
2	blue	~ 2	aluplast
3	red	~ 3	aluplast
4	yellow	~ 4	aluplast
5	green	~ 5	aluplast
6	black	~ 6	General

Attention: Other block manufacturers may use different colour markings.

08 E 6. Further information

The information given here is not a substitute for the recognised rules. They are intended to help demonstrate proven solutions for professional blocking.

Years of practical experience have shown that compromises have to be planned for, especially in the case of blocking. Therefore, consultation should be held with the insulating glass, block and window manufacturers, as well as the known testing institutes.

- Technical guidelines and work instructions:
  - Glazier trade
  - Insulating glass manufacturer
  - Sealant manufacturer
  - Block manufacturer
- recognised testing institutes
- VOB Part C DIN 18361 Glazing work, current status
- DIN 18545 "Sealing of glazing"
- DIN 18008 Part 4 "Glass in building and construction rules"

08 E 7. Arrangement of the blocks

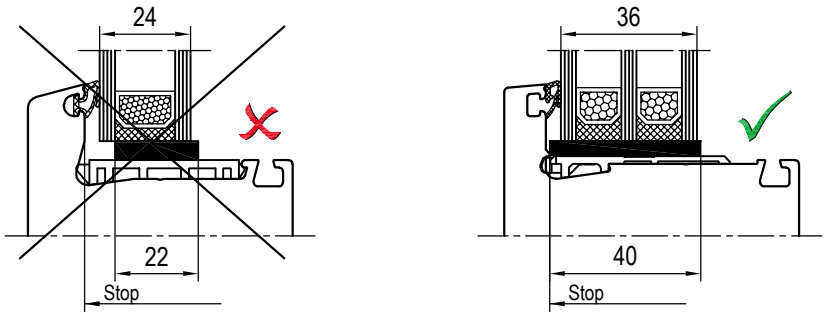
The arrangement of the blocks depends on the opening type. Examples are shown on the following pages.

The block must always be aligned straight and parallel to the edge of the glass (see figure 3).

To ensure optimum load transfer, the block must take up the full thickness of the glazing unit (glazing + min. 2mm). (see figure 1 + 3)

Distance of the blocks from the corners: according to the illustration (see figure 6).

In order to level out the glazing rebate base of the main profiles, clampable aluplast glazing rebate inserts are pressed in (Fig. 4 + 5). These must also not cover the drainage and/or ventilation openings.



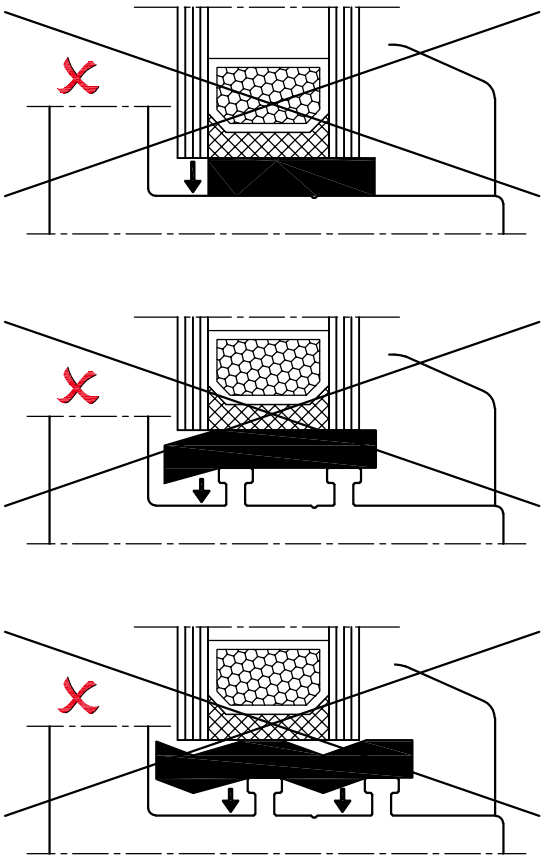
WRONG!
Block too short

RIGHT!
Block to the stop

The stop blocking ensures that the non-visible glass edge area is also supported and that the arrangement is parallel and straight to the glass edge.

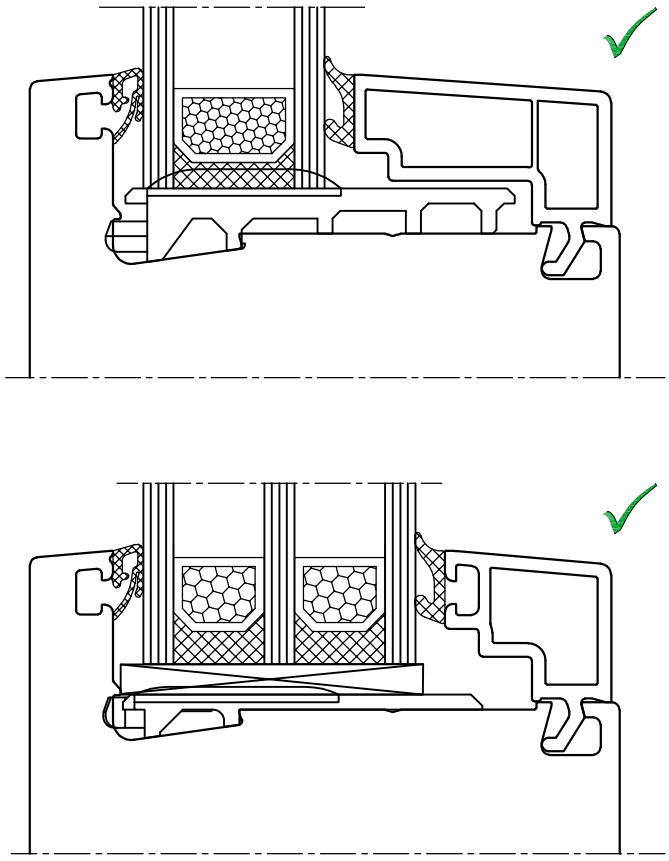
Fig. 3: Stop blocking (example: Multifalz)

After clogging, check the sash's aisle. If the leaves do not open and close properly, the blocks must be replaced. Afterwards, the glazing beads are preferably mitred (see chapter 08 C Glazing beads).



Such constructions can cause glass breakage or destruction of the edge seal, as the blocks are often arranged carelessly or incorrectly.

Figure 4: Wrong block layers



When blocking alarm glasses, make sure that the cables and cable connections are not pinched or damaged.

Figure 4: Correct block layers

Note:

The aluplast guidelines are only a recommendation and do not include any warranty claims.

The aluplast guidelines do not relieve you of the responsibility to plan and execute the blocking.

All information on blocking is based on general knowledge and experience.

Due to working conditions beyond our control, we recommend ensuring suitability for processing purposes.

Warranty claims can only be made against the glass manufacturer if his glazing and blocking guidelines have been adhered to.

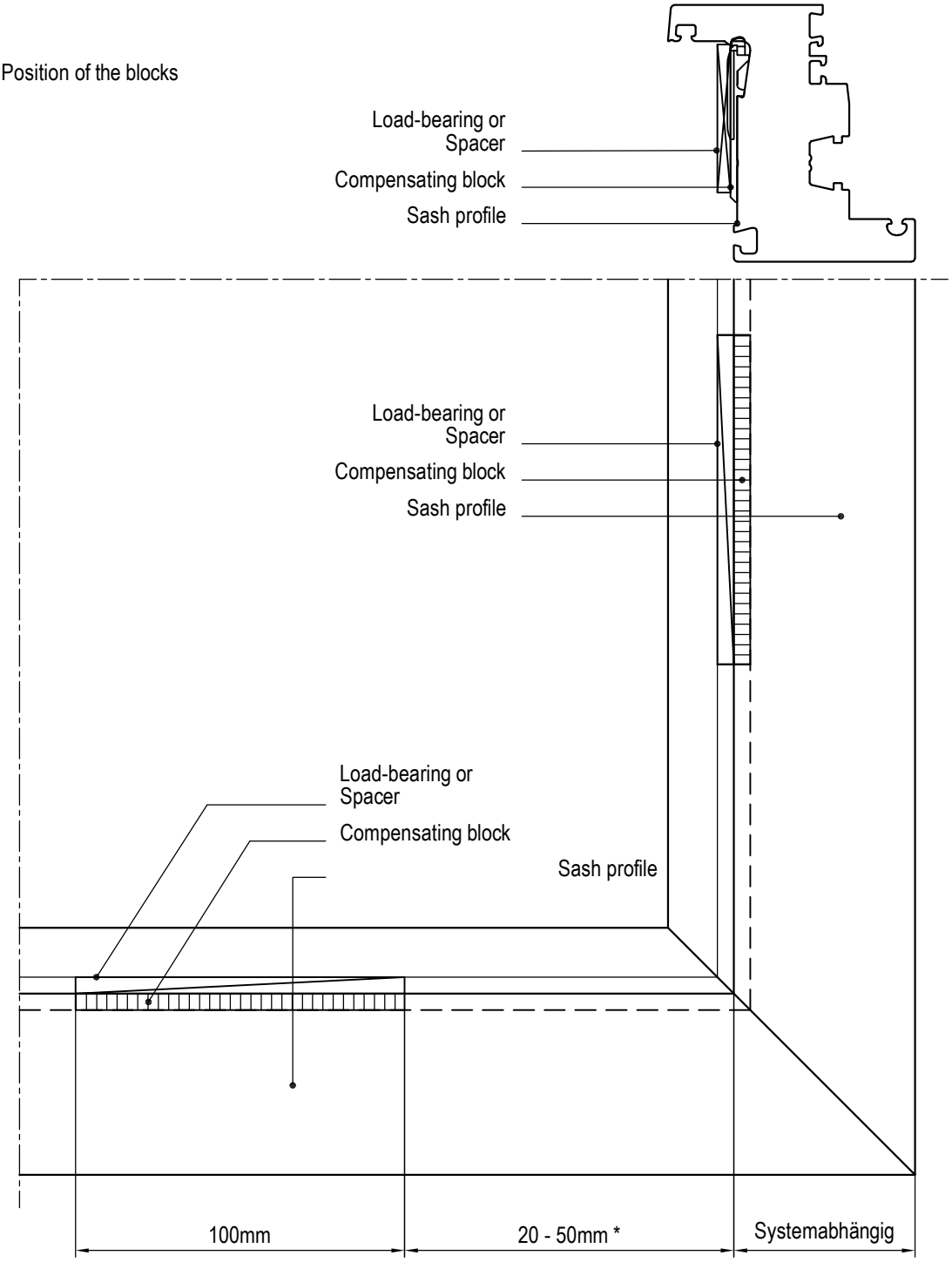
No liability can be established on the basis of our advice or verbal consultation, except in the case of intent or gross negligence.

The distance of the support blocks from the corners of the glazing unit should be 20mm, the distance of the distance blocks about one block length (approx. 100mm) (see figure 6).

For very wide fixed glazing, it can be increased to 250mm. The support blocks must be positioned over a fixing point of the frame and must not cover the drainage and/or ventilation openings.

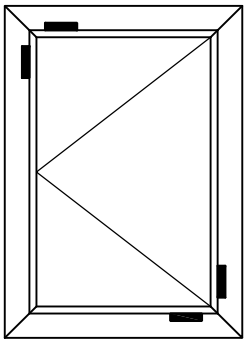
Restrictions of the glass industry have to be considered additionally!

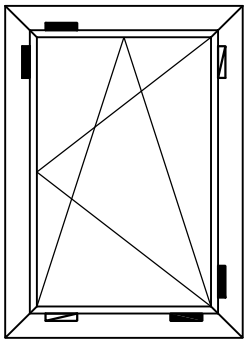
Figure 6: Position of the blocks

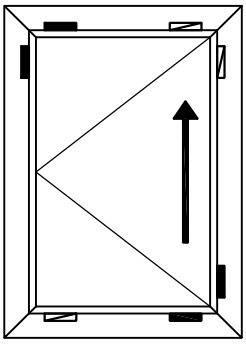


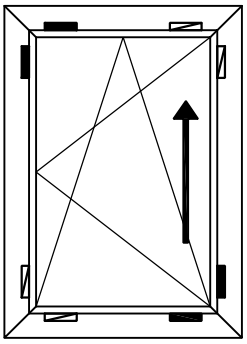
* Recommendation: Glass weight >80kg = reduce distance to 20mm

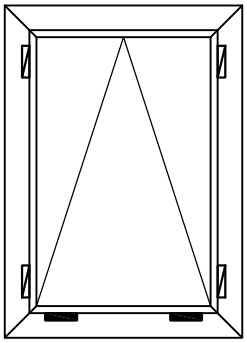
Blocking suggestions for flat glass panes

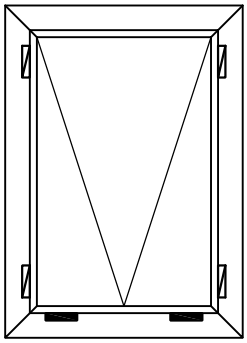

Turn sash

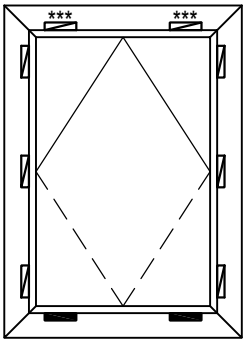

Tilt-and-turn sash


Lift-turn sash

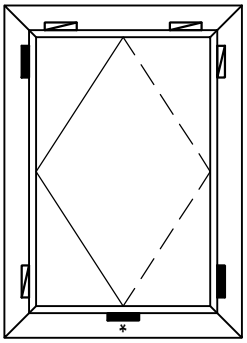

Lift-tilt-and-turn sash


Tilt sash

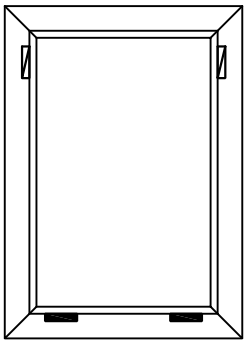

Top-hung sash

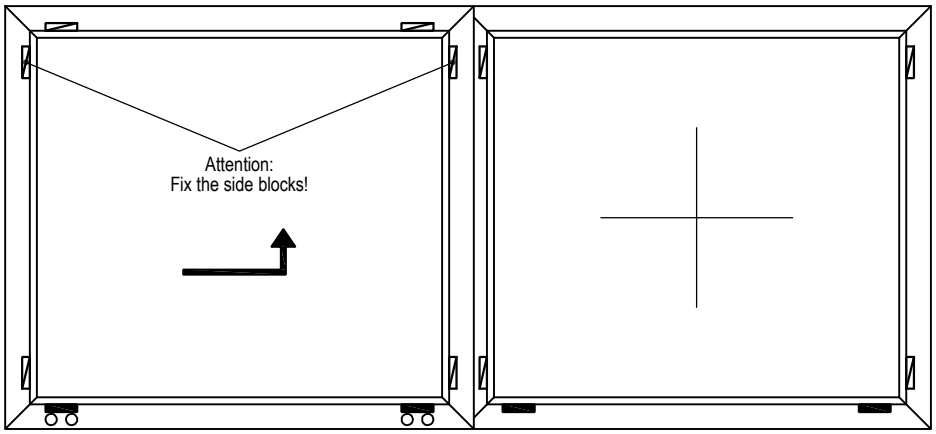


Pivot sash [1)]



Reversible sash [1)]


Fixed glazing



Lift-and-slide doors

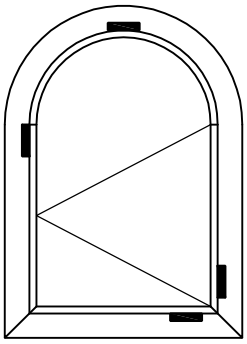
Packers Support blocks over rollers Spacers

* For glazing units over 1m wide, 2 support blocks at least 100mm long should be above the pivot bearing.

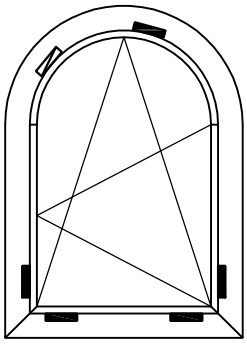
*** Spacer blocks become support blocks when the sash is turned over

1) IDEAL 7000, IDEAL 4000, IDEAL 2000 (not possible with energeto neo)

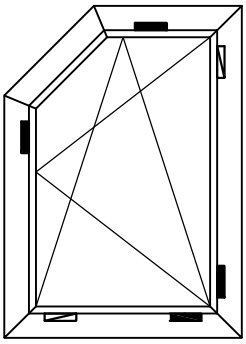
Blocking suggestions for special cases



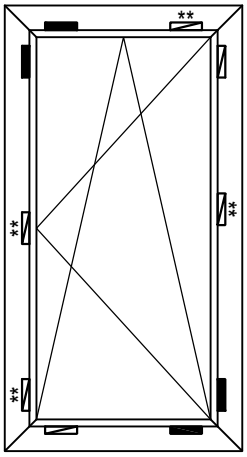
Turn sash[1)]



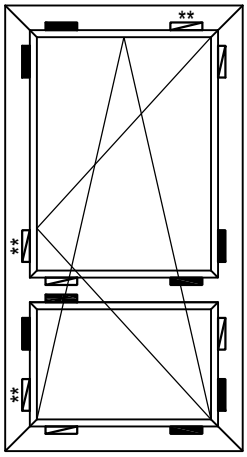
Tilt-and-turn sash[1)]



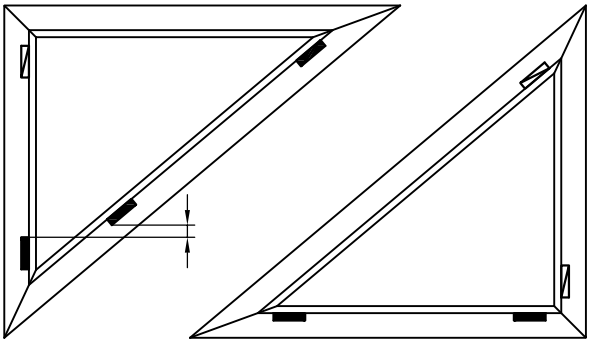
Tilt-and-turn sash



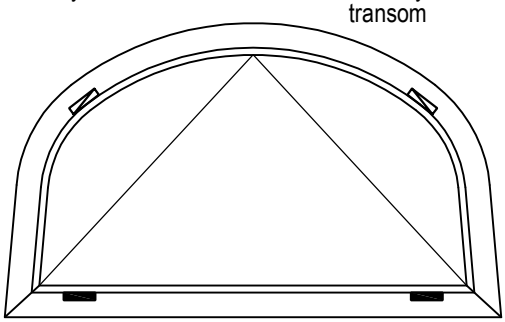
Tilt-and-turn sash
Balcony door



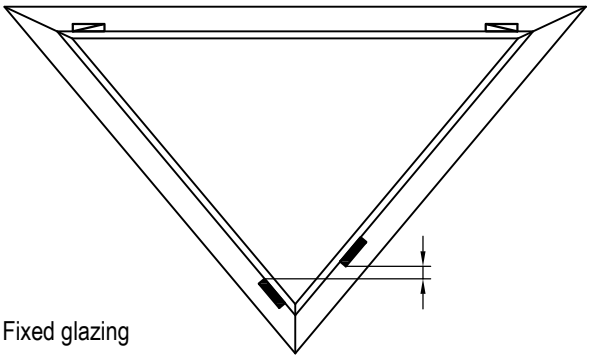
Tilt-and-turn sash
Balcony door with transom



Fixed glazing



Tilt sash [1)]



Fixed glazing

Note:
The possibilities listed here are only a few examples. Constructions not listed are to be decided on a case-by-case basis. The general clogging guidelines should be followed.

Packers

Spacers

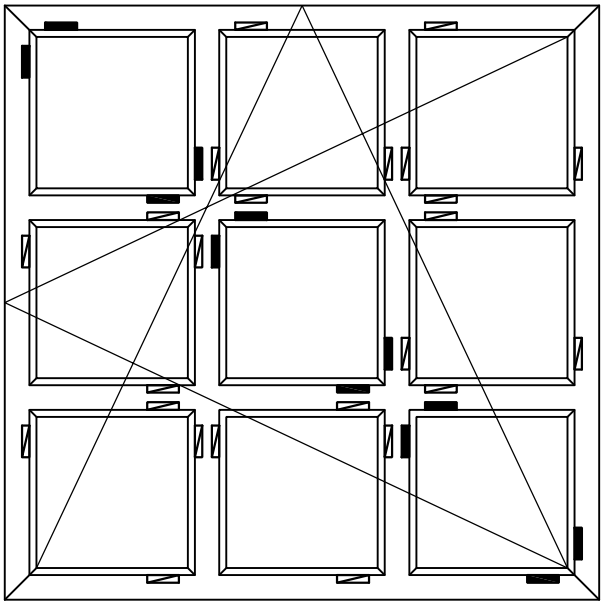
** Locking point blocks = distance blocks
(higher stability and to support burglar resistance)

1) Not possible with energeto neo or powerdur

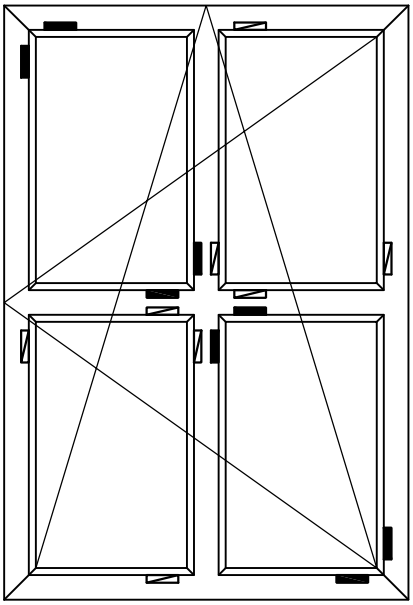
Blocking suggestions for transom windows

For glazing with glazing bar subdivisions, each field must be blocked individually, starting with the diagonal according to the opening type.

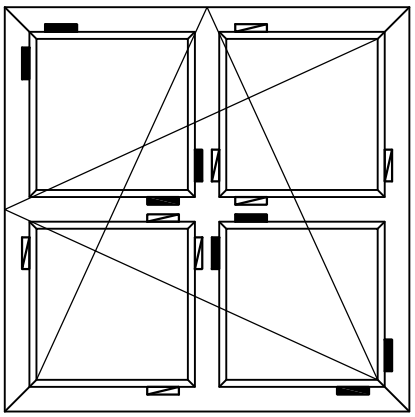
With transom windows, one must distinguish between evenly and unevenly distributed fields. In the case of evenly distributed squares (example 1 - 3), all squares located in the diagonal are blocked according to their opening type. In the case of unevenly distributed squares (example 4), squares lying next to the diagonal are also stressed and receive the same blocking as the squares in the area of the diagonal.



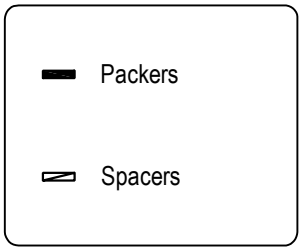
Example 1:
uniform field distribution

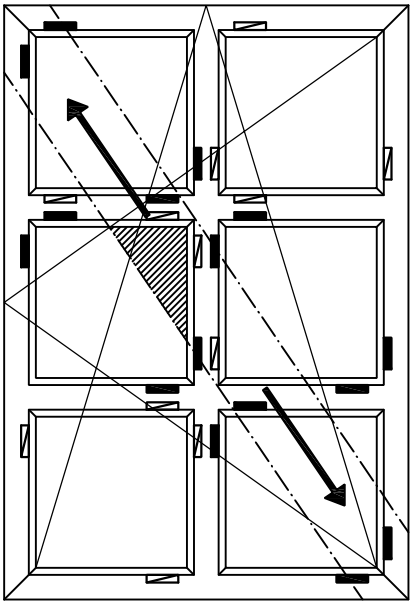


Example 2:
uniform field distribution



Example 3:
uniform field distribution

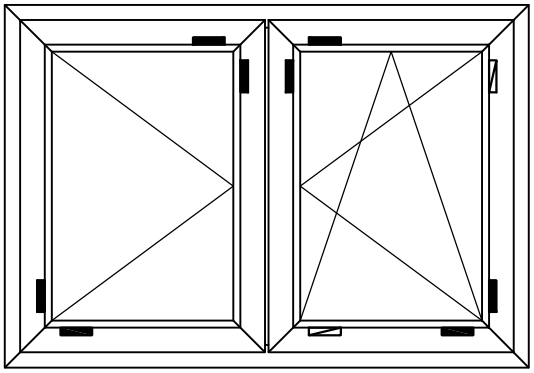




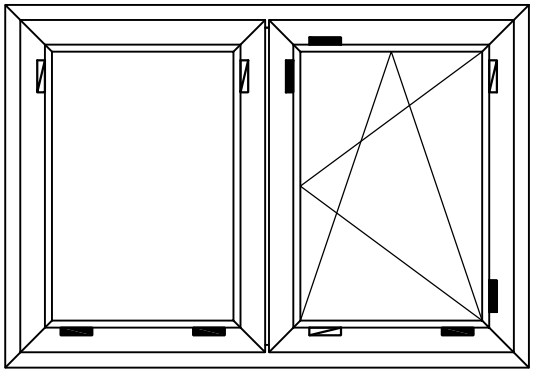
Example 4:
uneven field distribution

Blocking proposals for composite windows

A composite window is a coupling of two sashes in one frame.
The sashes are both to be chunked according to their opening type.



Composite windows:
Turn sash / Tilt-and-turn sash



Composite windows:
Fixed glazing / Tilt-and-turn sash

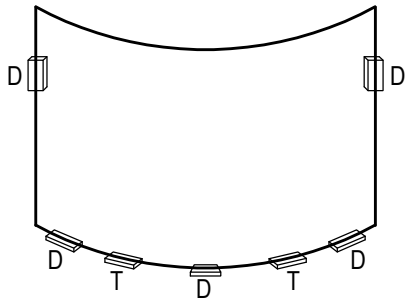
Packers Spacers

Blocking suggestions for curved single or insulating glasses

Curved single or insulating glass units must be blocked like flat glass panes.

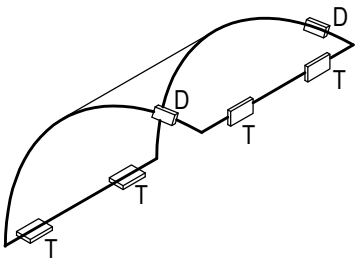
T = support blocks | D = distance blocks

System 1



With system 1, the weight of the glass is transferred to the lower curved edge of the glass via the support blocks to the frame construction and then on to the retaining construction.

System 2



With system 2, the glass weight and wind load are distributed over the edge of the glass. This must be given special attention when outsourcing. Tolerances from bending must be accommodated.

Blocking proposals for sloped or overhead glazing

The glass weight must be removed above the block (Fig. 7). The glass edges must not be overstressed and contact between glass and metal or glass and glass must be avoided.

Spacer blocks must be used to prevent the panes from slipping. The distance between the rebate base and the edge of the pane should also be at least 5 mm. Due to the special requirements, elastic mounting of the pane edge is recommended.

For construction details, please refer to the technical rule "Overhead glazing",
German Institute for Structual Engineering, Berlin

Furthermore, the special regulations of the glass manufacturers must be taken into account.

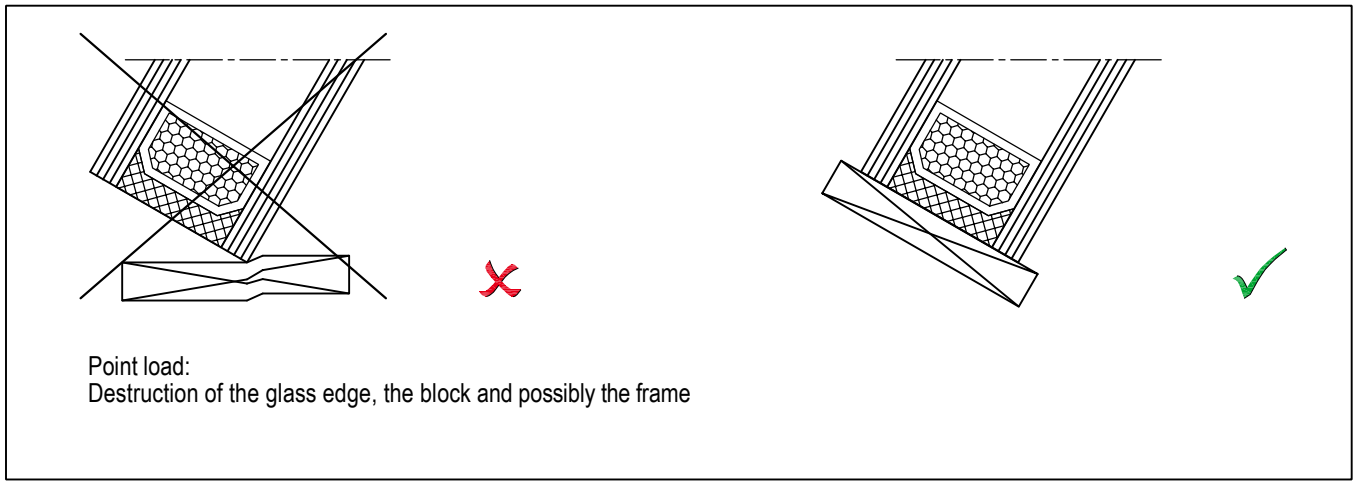


Figure 7: Sloped or overhead glazing

Higher stability and burglar resistance

For greater stability with PVC windows, you can also use spacer blocks above the closing points (with / or corresponding compensating block), which reduces the risk of levering open. (Figure 8)

The locking point blocking is carried out at the end. Care should be taken to ensure that
the glass edge is not overstressed or damaged (observe basic requirements).

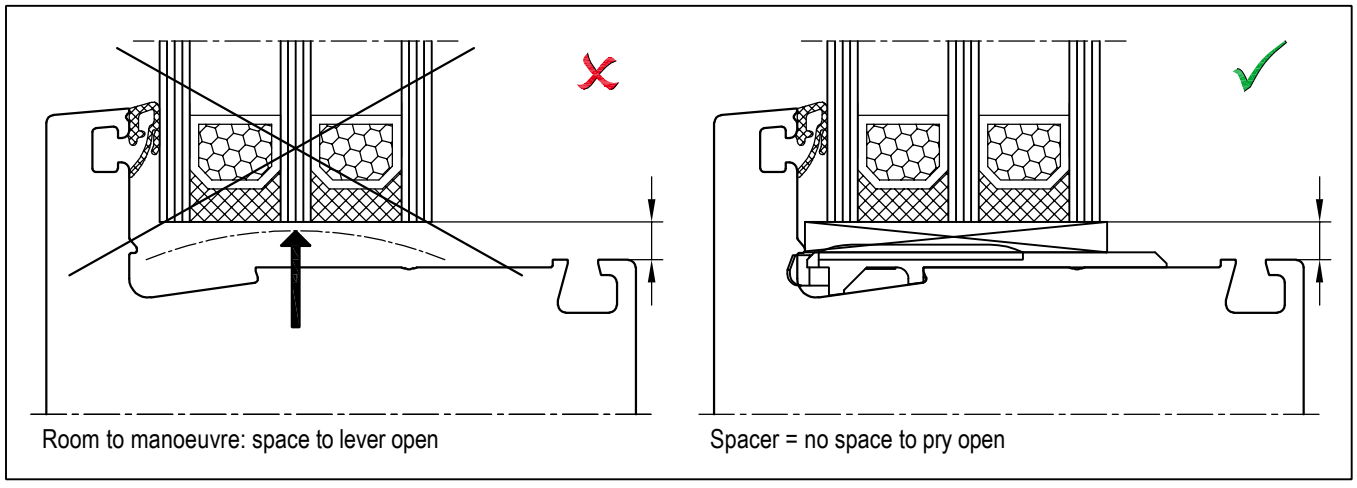
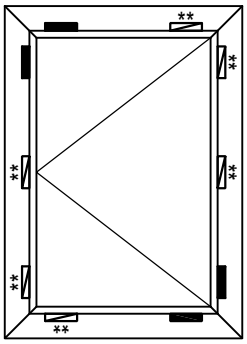
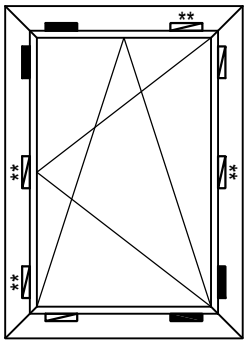
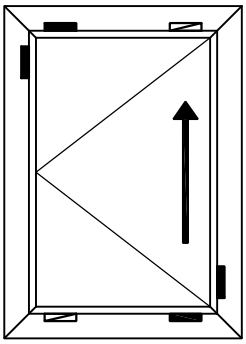


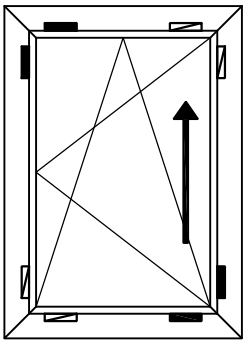
Figure 8: Burglar resistance (example based on energeto neo)

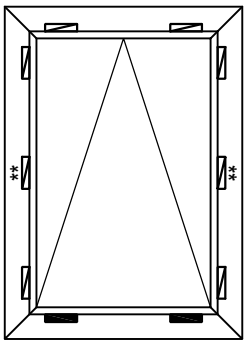
Blocking proposals for increased stability and to support burglar resistance

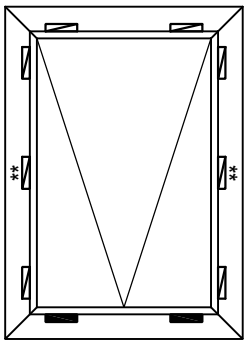

Turn sash

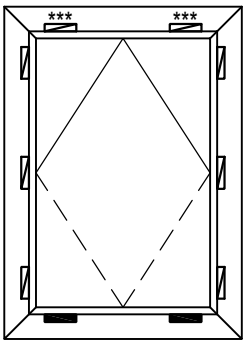

Tilt-and-turn sash

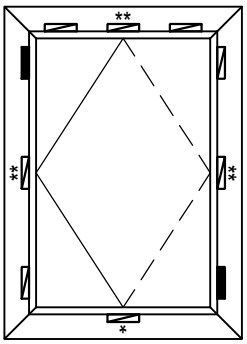

Lift-turn sash

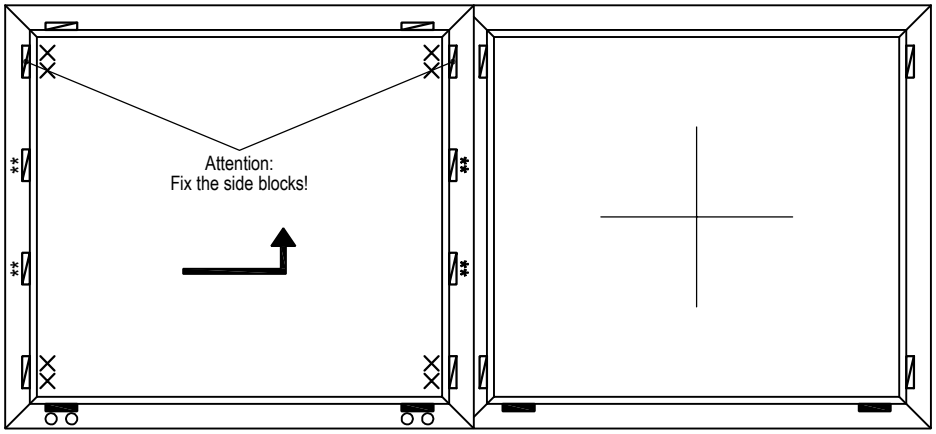

Lift-tilt-and-turn sash


Tilt sash


Top-hung sash


Pivot sash [1)]


Reversible sash [1)]



Lift-and-slide doors

Packers

Packers via castors

Spacers

Locking point blocks = distance blocks (higher stability and to support burglary resistance)

Locking point blocks = distance blocks (higher stability and to support burglary resistance)

Spacer blocks become support blocks when the sash is not curved

1) IDEAL 7000, IDEAL 4000, IDEAL 2000 (not possible with energeto neo)

08 G Stop and glazing gaskets

08 G 1. General Information

08 G 1.1. Designations

Glazing gaskets:	VD	Use with glazing, e.g. sashes, transoms, frames, mullions
Backstop gaskets:	AD	Use for rebate from profile to profile, e.g. sash, frame, mullion, false mullion profil
Centre gaskets:	MD	Use of an AD with centre stop, e.g. sash (centre gasket systems)

Backstop gasket systems:	IDEAL 2000	60mm construction depth
	IDEAL 4000	70mm construction depth
	energeto neo®	76mm construction depth
	IDEAL 7000	85mm construction depth
Centre gasket systems:	IDEAL 5000	70mm construction depth
	energeto neo®	76mm construction depth
	IDEAL 8000	85mm construction depth

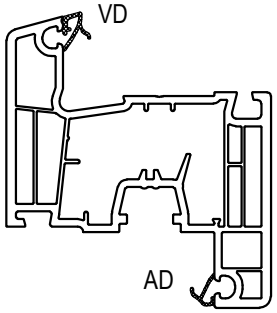
For the centre gasket systems **IDEAL 5000** and **IDEAL 8000**, AD and MD are identical as repair gasket: MD = AD.
For the centre gasket system **energeto neo**®, AD and MD are different as a repair gasket: MD ≠ AD.
With factory-integrated gaskets on the outside (fixed glazing frame, mullions/transoms), AD can be used as VD: AD = VD.
(**see also chapter 05 X Gaskets**)

08 G 1.2. Glazing thicknesses

The selection of the appropriate glazing gasket and the corresponding glazing bead with factory-integrated gasket depends on the glazing thickness used.

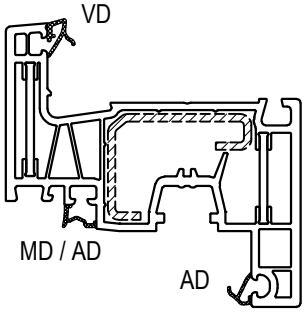
See also **Chapter 04 A Glazing beads, Chapter 05 X Gaskets** or the overview plan "**Glazing beads**".

Examples of profiles with factory-integrated gaskets
(Availability according to price list or on request)



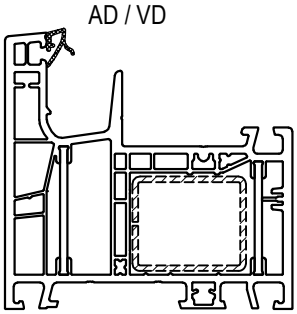
140420 xxx papyrus white
140320 xxx black
...

IDEAL 4000 [1)]



060420 xxx papyrus white
060320 xxx black
...

energeto neo [2)]



060405 xxx papyrus white
060305 xxx black
...

energeto neo [2)]

VD = Glazing gasket
AD = Backstop gasket
MD = Centre gasket

[1)] Example for backstop gasket system
[2)] Example for centre gasket system

08 G 2. Pre-inserted gaskets

08 G 2.1. General Information

aluplast profiles can also be delivered with factory-integrated gaskets as per price list.

These glazing or stop and centre gaskets* are already integrated into the outer sash or frame rebates and the centre* sash rebate during profile manufacture. Likewise, some false mullion, mullion and transom profiles are available with factory-integrated gaskets.

Note:
Both the type of integration (anextrusion, single extrusion, subsequent retraction / rolling-in) and the shape and appearance of the factory-integrated gaskets can vary and do not have to correspond to the shape and appearance of the subsequently retractable gaskets (so-called repair gaskets)! Likewise, the representations of the gaskets in the various publications are not binding with regard to form, appearance, function, etc.!

*only in the sash with centre gasket systems

IDEAL 2000: TPE: can be welded, thermoplastic elastomer according to RAL-GZ 716/1 paragraph II
Base profile colour / lamination / integrated gasket: see valid price list or plans of profiles

IDEAL 4000 bis 8000, energeto neo: TPE: can be welded, thermoplastic elastomer according to RAL-GZ 716/1 paragraph II				
Main Profiles: **Base profile colour**	white		brown	dark grey
	similar to RAL 9016		similar to RAL 8019	similar to RAL 7021
laminated	not laminated	on one side	on both sides	on both sides
pre-inserted Gasket	papyrus white	black		

Additional base body colours and profiles with gaskets according to price list or on request!

Profiles with factory-integrated gaskets have a calculated compression that corresponds to the compression of the standard gasket of the respective systems:

3mm IDEAL 2000
4mm IDEAL 2000 (M), IDEAL 4000 - 8000, energeto neo

See also the "Glazing beads" overview plan.

Note:
The factory-integrated gaskets on the outside (frame, mullion, etc.) can be used both as AD and VD (e.g. for fixed glazing in the frame). (see also **Chapter 05 X Gaskets**)

08 G 2.2. Processing instructions

The profiles are cut to size with the gaskets, the profiles are welded together and the weld beads are plastered by machine.

If the gasket is damaged, it can be pulled completely out of the grooves and replaced with a new retractable or repair gasket. To do this, only remove the weld seam in the mitre joints in the gasketing groove area. Extruded gaskets must be removed with a suitable tool (e.g. chisel, chisel) and replaced with a repair gasket after removing the remnants.
(For processing of retractable gaskets / repair gaskets see **Chapter 08 G 3**)

08 G 3. Retractable gaskets / Repair gaskets

08 G 3.1. General Information

For profiles without factory-integrated gaskets, optionally available glazing or stop and centre gaskets* can be drawn in either in papyrus white or black.
They are made of aging and weather resistant EPDM (APTK) material
(see also **Chapter 05 X Gaskets**)

Note:
The representations of the gaskets in the various publications are not binding with regard to form, appearance, function, etc.

*only in the sash with centre gasket systems

IDEAL 2000 - 8000, energeto neo: EPDM: cannot be welded, moulding compound according to DIN 7863
IDEAL 4000 to 8000, energeto neo: Also available retractable on request: TPE: can be welded, thermoplastic elastomer according to RAL-GZ 716/1 paragraph II

Retractable gaskets / repair gaskets have a calculated compression that corresponds to the compression of the standard gasket of the respective systems (see also **chapter 05 X Gaskets**):

3mm	(optional: 2.5 to 7mm)	IDEAL 2000, multi-slide, easy-slide, mono-slide
4mm	(optional: 2.5 to 7mm)	IDEAL 2000 (M), IDEAL 4000 - 8000, energeto neo, Nord-line, lift-slide, smart-slide
5mm	(optional: 2.5 to 7mm)	mono-slide

See also the "Glazing beads" overview plan.

08 G 3.2. Processing instructions

After frame fabrication and removal of all visible weld beads, the weld beads must also be removed in the area of the gasketing channels using tools suitable for this purpose (e.g. finger cutters).

To facilitate retraction, we recommend clamping the gasketing rolls onto special unwinding devices. This also prevents tangling and soiling of the gaskets.

The gaskets are pressed into the grooves by hand or with a gasket roller.
They must not be stretched or excessively stowed, but only drawn in with an addition of approx. 1%. To avoid hard gasket corners, the gasket foot can be cut in the mitre area (for TPE roll-in gaskets before welding).

The EPDM gaskets are drawn in circumferentially - from the centre of the upper (fascia or sash) frame cross piece - and butt-jointed in the upper cross piece of the frame or sash with EPDM adhesive.

They are to be carefully guided around the corners. It is not necessary to cut the gasket in the mitre corner.

08 G 4. Cleaning and care of the gaskets

When cleaning windows, you should always remove dust and dirt from the gaskets.

The weatherproof and ageing-resistant synthetic rubber gaskets must not come into contact with concentrated cleaning agents or oily substances.

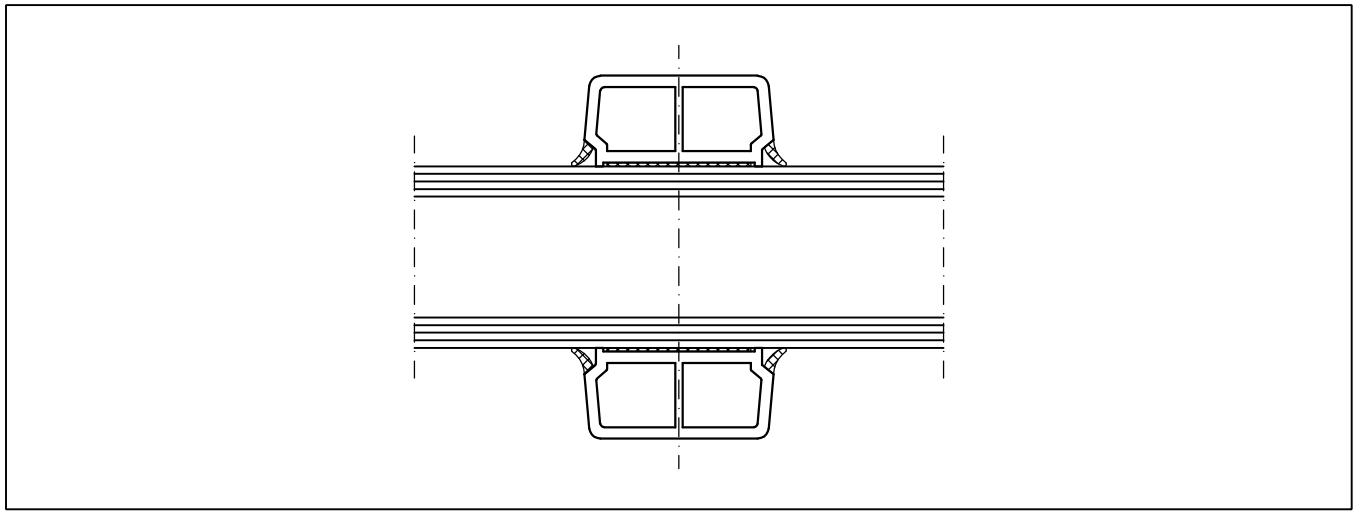
The sticking effect caused by soiling over time can be eliminated by applying silicone oil or silicone paste.

08 I uPVC-Georgian bars

08 I 1. Properties / Preparation

08 I 1.1. General information

Overview of uPVC-Georgian bars: see **Chapter 04 M Transom profiles**.



The PVC transoms are made of impact-resistant, weatherproof PVC-hard, partly with soft PVC sealing lips. They have a PE foam adhesive tape with ageing and weather-resistant acrylate adhesive (proven applications also in the automotive and glass industries).

Decorative sheathing (laminations / coloured profiles) are made with weather-resistant decorative foil. uPVC-Georgian bars with decorative sheathing must be cut off approx. 20 mm at the profile rod ends, as the film bonding may not be perfect at these points due to technical influences. Ventilation of the coloured glazing bars takes place through the front sides. (see **Chapter 08 I 1.5. Cut**).

08 I 1.2. Storage before processing

The profiles must not be stored outdoors. In particular, condensation should be avoided, e.g. when the materials to be joined come from cold storage rooms into warm production rooms.

The storage room temperature should be approx. +18°C to +35°C with normal humidity of approx. 50%. The profiles must rest fully on a level surface so that no impermissible deformations occur. Excessive loading due to excessive profile stacks or other weights is not permitted. The profiles should be processed within 6 months and the longer stored (and thus temperature-adjusted) profiles should be used first.

Since glass has a strong tendency to form condensation, the glass panes to be glued must be stored for at least 24 hours under the same conditions as the glazing bar profiles, i.e. the glass panes must have the same processing temperature as the adhesive glazing bar profiles.

08 I 1.3. Working temperature

The most favourable processing temperatures (object temperature and processing temperature), are between +18°C and +30°C. Bonding below these temperatures is not recommended.
When applied at a minimum of +18°C, the initial adhesive strength is lower than at higher temperatures.

The temperature resistance of the glued PVC glazing bars is between -40 and +90 °C.

08 I 1.4. Maximum lengths

The uPVC-Georgian bars must not exceed the following maximum lengths:
White profiles: max. 1.40m
Decor / colour: max. 1.20m

08 I 1.5. Cut

When preparing the uPVC-Georgian bars, make sure that the protective film of the adhesive tape is not peeled off. First, the uPVC-Georgian bars are cut to length and adjusted at the ends of the rollover slope. Be sure to use a sharp saw blade, otherwise the foam may split (foam tape tears) when cutting the tape. Make sure that a corresponding gap is taken into account for the linear expansion (**Fig. 1**) and that an additional 5° to the angle of the abutting profile (**Fig. 2**) must be deducted. A larger gap should be selected for coloured profiles:

White profiles: 0.5 - 1.0mm per side and metre
Decor / colour: 0.8 - 1.0mm per side and metre

In the joint area with adjoining profiles with seals, the adhesive transom seal must be cut back until the seals cannot overlap. (**Figure 3**)

For cross transoms, the adhesive transoms of the smallest lengths (height or width of the window) are to be inserted continuously, the longer transoms parts are divided and butt-fitted to the continuous transom (note length expansion!). (**Figure 4**)

After cutting, the surface of the glass panes must be cleaned.

Consider distance per side and metre (l):

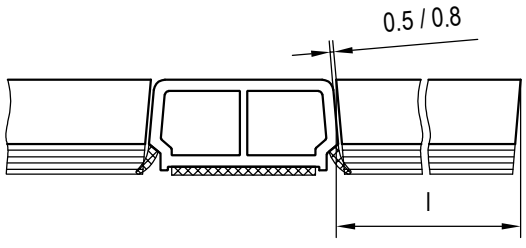


Figure 1

Consider profile slope +5°:

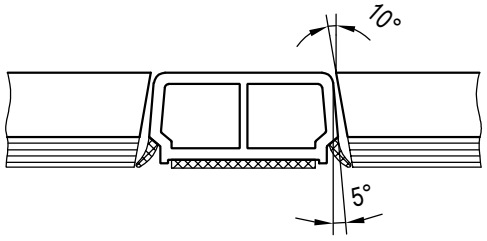


Figure 2

Sealing lips must not overlap:

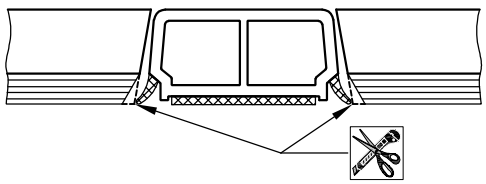


Figure 3

smallest length (l1) continuous: l1<l2

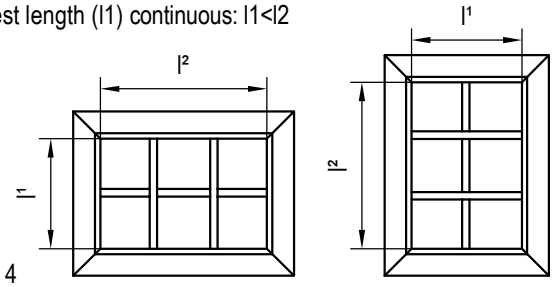


Figure 4

08 I 2. Cleaning / preparation

08 I 2.1. General information

The surfaces must be dry, free from dust, oil, oxides, separating agents and other impurities.
The adhesive surfaces must not come into contact with fingers.

For plastics and lacquers, check the solvent compatibility (stress cracking, absorption of solvents). When handling solvents and chemicals, it is essential to observe the safety instructions of the manufacturer.

Use clean, lint-free disposable cloths to clean the surfaces.

08 I 2.2. Pre-treatment of glass surfaces

The pane must be cleaned of grease, dirt and other impurities before the glazing bars are bonded. This requires pre-cleaning the pane with isopropanol (70%) (no glass cleaner or spirit!). Then allow the glass to flash off for at least 5 minutes. The pane must be dry and at room temperature. (Isopropanol extracts evaporation heat from the pane, so that the pane cools down by a few degrees Celsius.)

It is characteristic of glass surfaces that, due to their chemical structure, they very easily bind (absorb) moisture on the surface, which can hinder the formation of adhesive forces. Basically, the **Sika® Cleaner-205 (aluplast Art. No. 699923)** must be used before applying the uPVC-Georgian bars. This enables a durable bond and prevents moisture infiltration between the glass and adhesive in outdoor areas. The **Sika® Cleaner-205** is applied in a very thin layer to the pre-cleaned surface.

Application of **ap Cleaner - cleaner for Georgian bars**:

1. Moisten a clean, lint-free cloth or absorbent paper (e.g. disposable cloths) with **ap Cleaner**. Change cloth/paper after each wipe.
2. Apply the **ap Cleaner** very thinly (!) in one direction to the surface to be bonded.
3. Dry the pane with a hot air blower (maximum 50°C).
4. The adhesive glazing bars must be glued to the glass surface within 5 minutes after pre-treatment with an even contact pressure of 2 - 3 kg/cm².

(see **Chapter 08 I 3.: Installation Processing**) To achieve an even contact pressure, we recommend using a pressure roller. No guarantee can be given for the use of other products for cleaning Georgian bars.

Notes:
Tightly reseal the container immediately after use. With persistent humidity, **ap Cleaner** becomes cloudy and thus inactive. The milky product must no longer be used. Remove accidental splashes of **ap Cleaner** on adjacent areas immediately with a clean, dry cloth or paper.

Attention:
Increasingly, glass coatings are being used that have "non-stick" properties. However, this positive glass property, e.g. with regard to pane contamination, has a negative effect on the bondability when using adhesive tapes or adhesives. For coated panes, the pane manufacturer should be consulted.

08 I 3. Installation / Processing

08 I 3.1. After cleaning

Reminder: Cleaned surfaces must be covered quickly (within max. 5 min.) to avoid re-contamination (e.g. by dust or fingerprints).

After using cleaning agents and primers (adhesion promoters), these must be allowed to flash off sufficiently. The evaporation of the solvents used for cleaning cools the glass surface (evaporation cold), which in turn leads to increased moisture adsorption (water film) in the area of the bonding points. It is therefore advisable to heat the areas to be pasted with a hair dryer after cleaning. The increased temperature also positively influences the anchoring of the adhesive to the glass.

08 I 3.2. Installation

Immediately after previous heating of the surface (see **08 I 3.1. After cleaning**), for pre-assembly and alignment, first remove the protective film from the adhesive tape only at the ends of the uPVC-Georgian bars (**Fig. 5**), then align and lightly press on the adhesive transoms. Then pull the protective film away from under the pre-glued adhesive transom.
The entire length and width of the adhesive transom must be pressed on so that the adhesive tape makes contact with the glass everywhere.

Caution: With trial splices, the transom can usually only be removed again by destroying the adhesive tape. (see **Chapter 08 I 3.4. Notes in case of necessary disassembly**)

When fixing the adhesive transom with the adhesive tape, make sure that no distortions (bending) occur when pressing it on. The strength of the bond is directly dependent on the contact that the adhesive has with the surfaces to be bonded. A short high and even pressure of 2 to 3 kg/cm² ensures a good surface contact (e.g. with a pressure roller or pressure device etc.).

08 I 3.3. Final adhesive strength

The final adhesive strength of the glass / adhesive transom bond at min. +18°C is achieved after approx. 24 hours. For this reason, it is essential that the finished windows are stored stress-free at room temperature for 24 hours before shipping and installation.
Depending on the adhesive system, the dwell time until the final adhesive strength is reached can also be up to 72 hours. By applying pressure and / or heating, the final adhesive strength can be achieved more quickly, as these additional measures result in better flow behaviour of the viscoelastic adhesive tapes.
(see **Chapter 08 I 3.2. Assembly**)

08 I 3.4. Notes in case of necessary disassembly

Split the foam tape with thin wire or a knife. Then you can swell the adhesive residues with organic solvents or ethyl acetate and scrape them off with a knife blade.

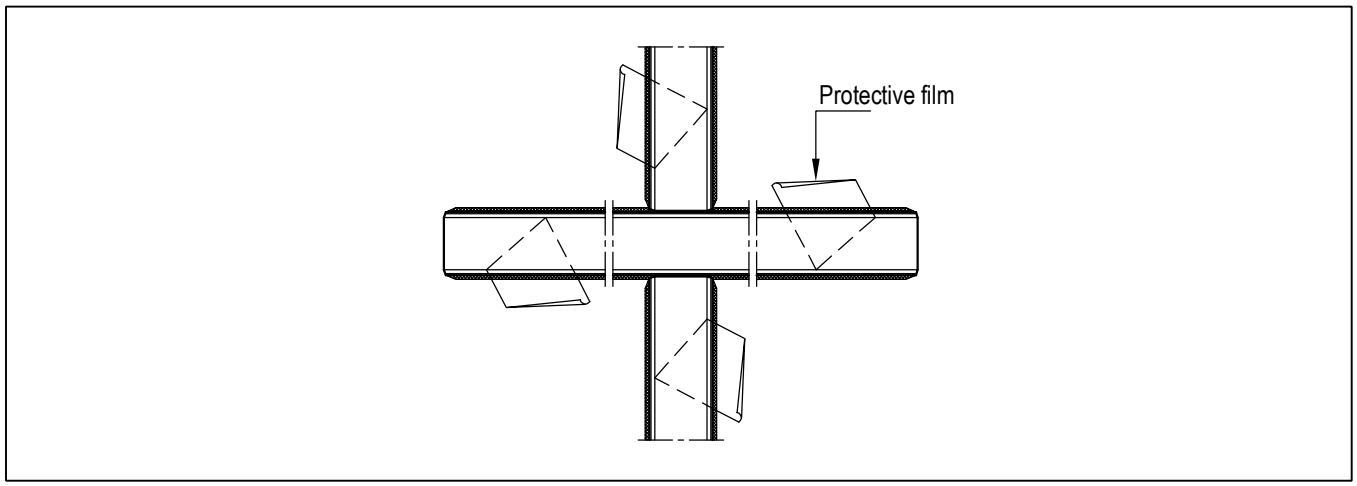


Figure 5

08 I 4. Possible mistakes when applying the adhesive transoms to glazing

Adhesive transom is cut too long:
The adhesive transom is clamped in, the adhesive tape does not quite come to rest
(Adhesive transom must be shortened: see **08 I 1.5. Cut** / angle +5° to the abutted profile.)

Sealing lips of adjacent profiles overlap:
The pressure on the counter seal prevents the tape from coming to rest properly.
(Adjacent sealing lips must not overlap and must be cut back)

Glass pane is dirty:
Never use methylated spirits for cleaning.
(Use isopropanol (70%) for cleaning.)

No adhesive effect present / bonding on cold or damp glass:
The tape has little or no initial adhesion.
(The glazing and profiles to be used must have a minimum temperature of +18°C during processing)
Moisture (and dirt: see above) can impair the adhesive effect (also subsequently).
(Pre-treatment with **Sika® Cleaner-205 (aluplast art. no. 699923)** is absolutely necessary.)

Curing time for final adhesive strength was not considered:
The tape has little or no adhesion.
(The processed windows must be stored for at least 24 hours at a minimum of +18°C)

08 I 5. Note

The aluplast guidelines are only a recommendation and do not include any warranty claims. Our processing instructions are based on experience. We have tried to comment as extensively as possible on a wide range of issues.

Due to working conditions beyond our control, we recommend ensuring suitability for processing purposes.

No liability can be established on the basis of our advice or verbal consultation, except in the case of intent or gross negligence.

We reserve the right to make changes in the interest of or resulting from technical progress.

08 J Bonding of pane

08 J 1. General Information

Bonding of pane in the rebate base is defined by aluplast as the bonding of specially designed profiles, approved by aluplast for this purpose, and insulating glass panes with edge seal of at least 24mm glazing thickness with an adhesive suitable and approved for this purpose according to **Chapter 08 J 2. Scope**.

Some profiles are additionally fibre-reinforced (powerdur inside) or have a stiffening chamber for additional stiffening in order to be able to produce even larger elements.

Even when installed, the bonding can be cut open for repair (e.g. in the event of glass breakage) so that a new insulating glass pane can be inserted and re-bonded on site.

08 J 2. Scope

The processing guidelines for pane bonding profiles apply to all aluplast plastic window profiles that are suitable for pane bonding. **(refer to image 01)**

The "General Processing Guidelines" for aluplast plastic window profiles and, mutatis mutandis, the regulations of the "GKV Processing Guidelines for White Profiles" apply, unless they are restricted or supplemented by the following additions.

When using the adhesives ap.bond 2K or 1K, the current processing guidelines according to the manual **ap.bond** must be observed.

All of the following articles and materials must be suitable for glazing bonding and approved by the respective manufacturer for this application. You will find an overview of aids (accessories) in the **Chapter 05 J Auxiliary parts Bonding of pane**.

Please note the specifications for insulating glass panes with edge seal of at least 24mm glazing thickness, starting from at least 2x 4mm glass thickness **(see Image 02)**. Other glazing on request or according to the size diagrams (**see chapter 06 J Maximum dimensions - Bonding of pane - bonding inside**).

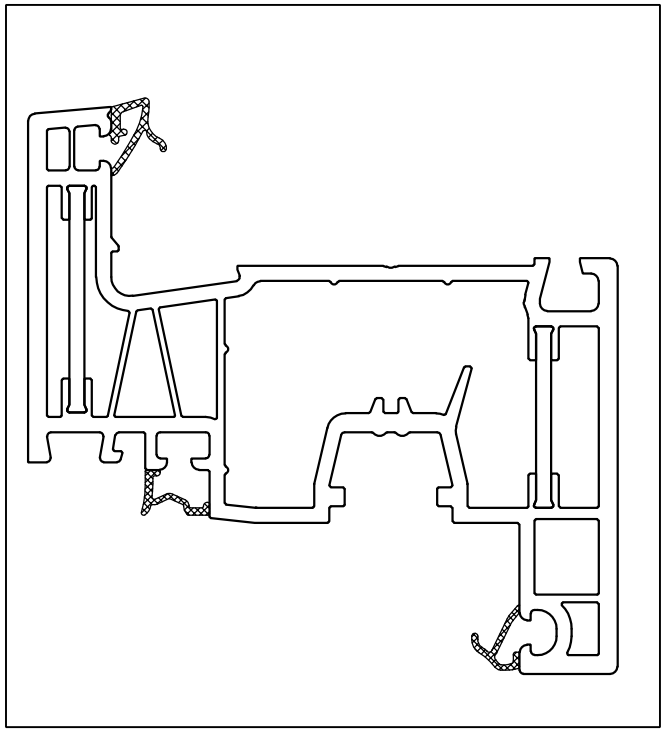


Image 01: Example for profile for bonding of pane

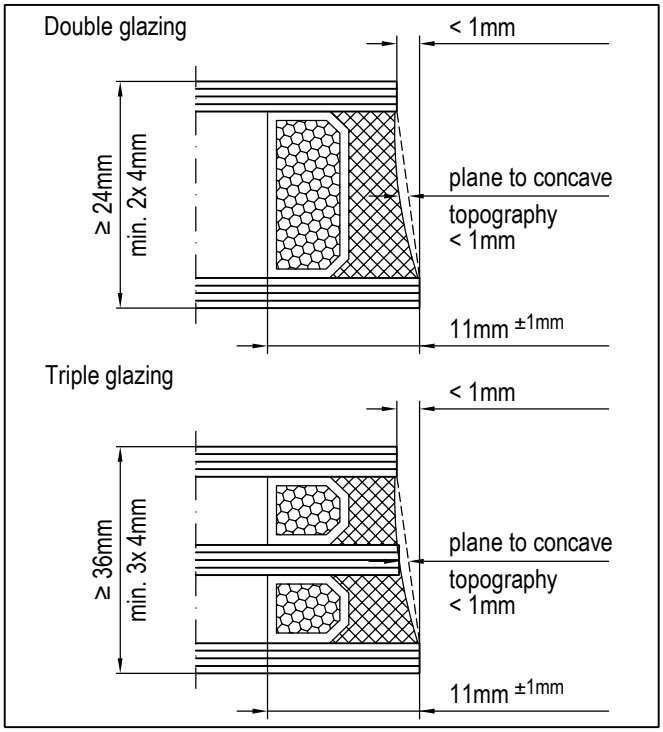


Image 02: Specifications for insulated glazing with glass edge seal

Notes on insulating glass panes / adhesive:

- Only insulating glass panes may be used whose primary and secondary sealant (edge seal) has been tested for adhesion and compatibility with the adhesive system in accordance with RAL-GZ 716/II (guarantee by sealant or adhesive manufacturer).
- In the case of functional panes (laminated safety glass, etc.), the compatibility of the film with the adhesive and the glass manufacturer must be ensured.

08 J 3. Field of application

For pane-bonded profiles, the range of application is limited to:

- **Germany or similar climatic regions / zones**

In order that the warranty claims do not become invalid, the written consent of aluplast must be obtained in case of doubt or outside the above-mentioned scope of application. We will be happy to support you in project planning and implementation.

08 J 4. Profile processing

08 J 4.1. Profile pre-treatment

According to the specifications of the adhesive manufacturer / supplier, the glass rebate should preferably be treated by machine, either before or after cutting, depending on the operating sequence.

The bonding surface must be determined in advance on the basis of these processing instructions. (**see image 03**)
The pre-treated surface should protrude at least 2mm per side over the previously planned adhesive surface. (**see image 04**)

08 J 4.2. Pressure equalisation holes of the outer antechambers

Drainage and air equalisation openings must always be provided.
See **Chapter 08 D Drainage and glazing rebate ventilation**.

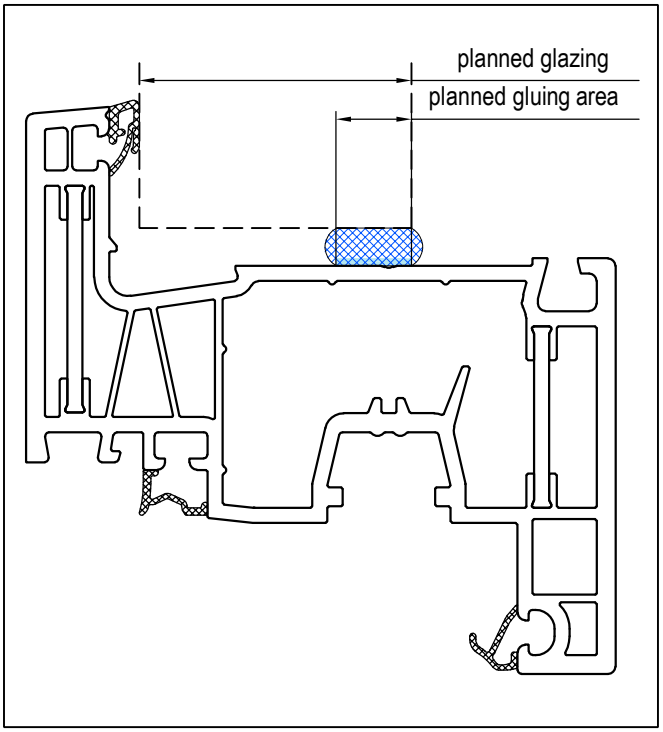


Image 03: Determining the bonding surface

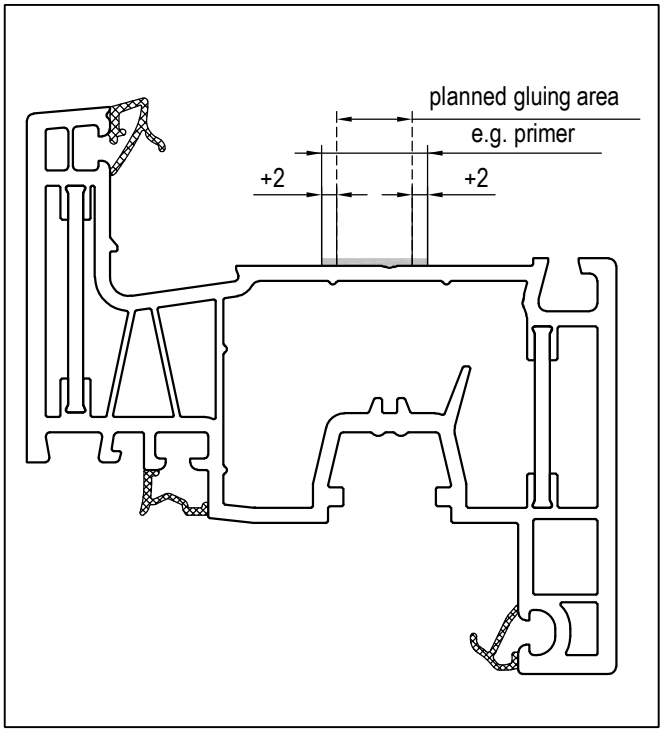


Image 04: Pre-treatment

08 J 4.3. Frame: Preparation before hanging the sash

To maintain the circumferential fitting clearance during processing or before bonding, the spacer blocks described below must be inserted before the sash is hung in the frame.

Spacer blocks with 12mm height (640012 or 640015, white) are to be used as a processing aid and all around. They prevent deformation of the sash profiles when the glazing beads are hammered in. If required, the spacer 640014 with 13mm (red) can be used. Depending on the format, when using the distance block (above), make sure that the movement of the sash is not restricted. (**see Image 05**)

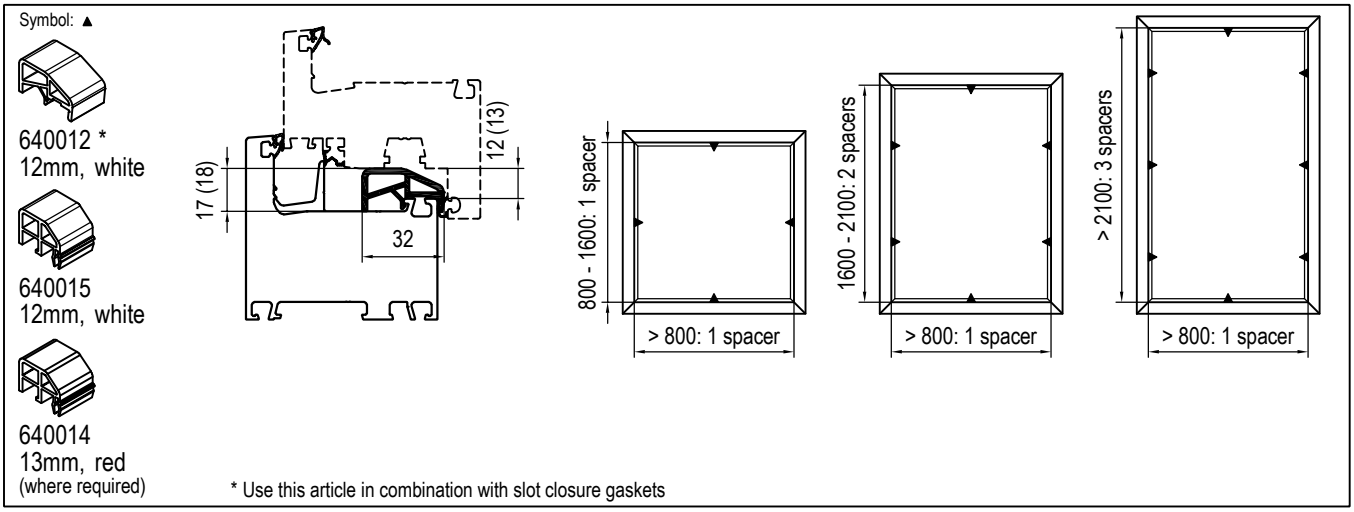


Image 05: Spacer 12(13)mm as mounting aid

Spacer blocks with a height of 13mm (640013 or 640014, red) are to be used as a processing aid on the side of the olive depending on the opening type in the lower frame at a distance of approx. 50mm from the inside corner. If required, the spacer 640019 with 14mm (yellow) can be used. They are used to compensate for the fitting play of the scissors. For weights >100kg, the use of two distance blocks may be necessary. (**see Image 06**)

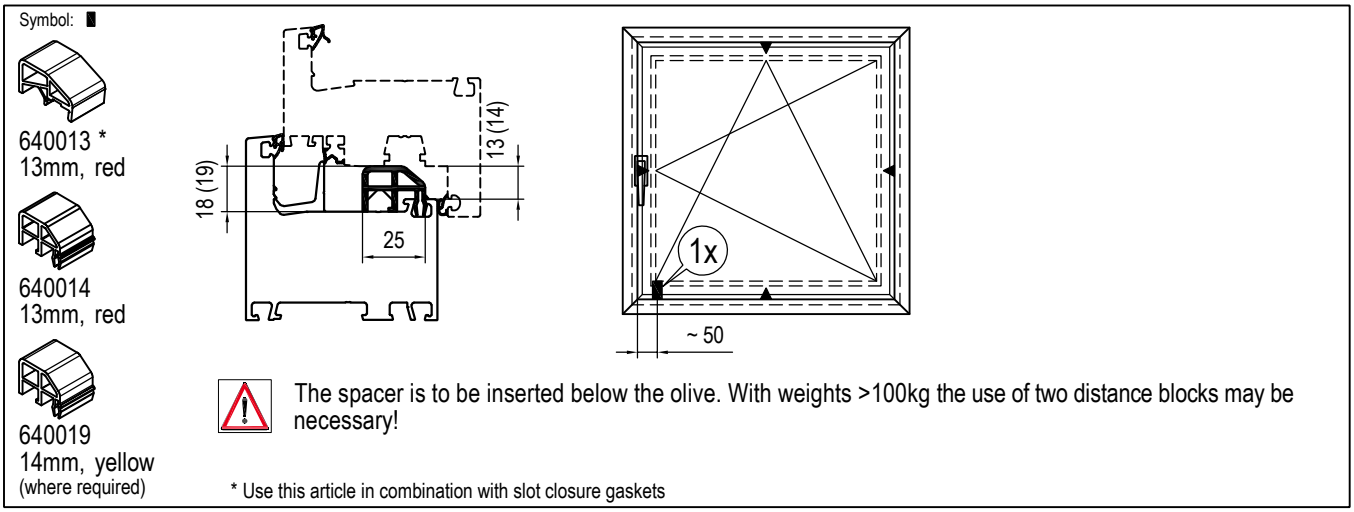


Image 06: Olive-side spacer 13(14)mm as a processing aid

Cut-out spacer blocks with a height of 13mm (640113, red) are to be inserted as a processing aid in the scissor area at the top of the frame at a distance of approx. 50 to 100mm from the inside corner, depending on the type of opening. They serve as a counter support so that the sash is not only lifted but the desired temporary fixation is also achieved. (**see Image 07**)

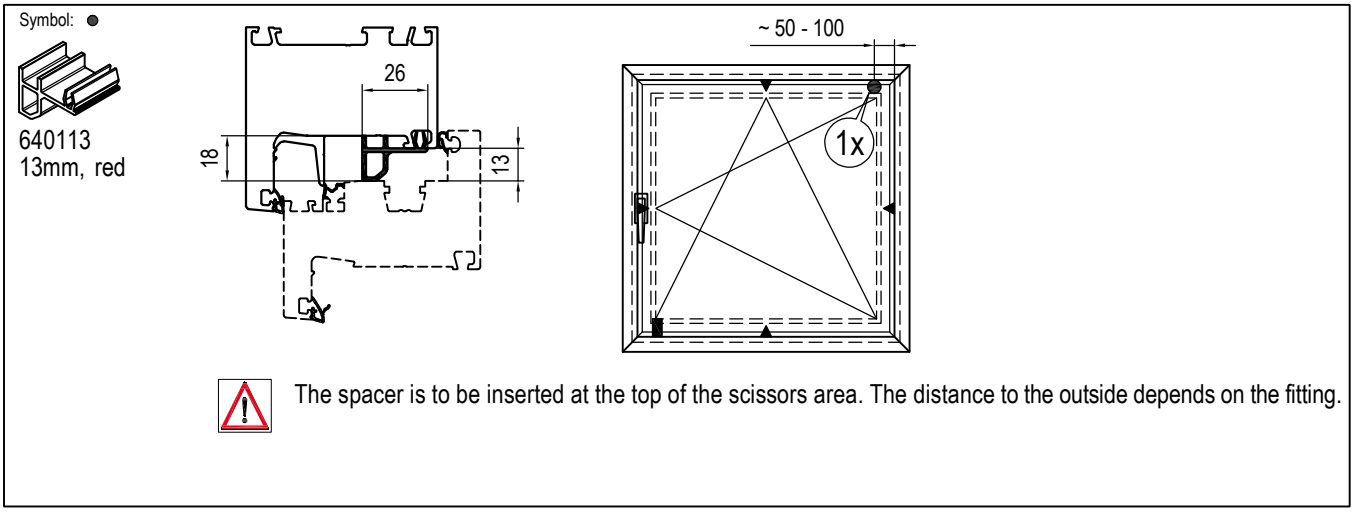


Image 07: Scissor-side spacer 13mm or 14mm as processing aid

08 J 5. Glazing

Insulating glass panes with edge seal are suitable according to **Chapter 08 J 2. Scope.** (**see image 02**)

The material compatibility and adhesion between edge seal and adhesive must be proven.
Approval can only be given jointly by the edge seal and adhesive manufacturer.
The manufacturer's or supplier's processing guidelines regarding pre-treatment of glass and glass rebate must be observed.

08 J 5.1. Preparation before glazing

In the case of upright glazing, the insulating glass pane is placed on special support elements at the bottom to carry the load of the outer / middle pane. These special (rebate) support elements are inserted before the glazing and remain in the window element. (**see image 08**)

For glazing to be inserted in the horizontal element: see **chapter 08 J 5.1.3.**

08 J 5.1.1. Rebate support elements

The rebate support element for 2-fold glass or for 3-fold glass is fixed in the rebate.(**see Image 09**)

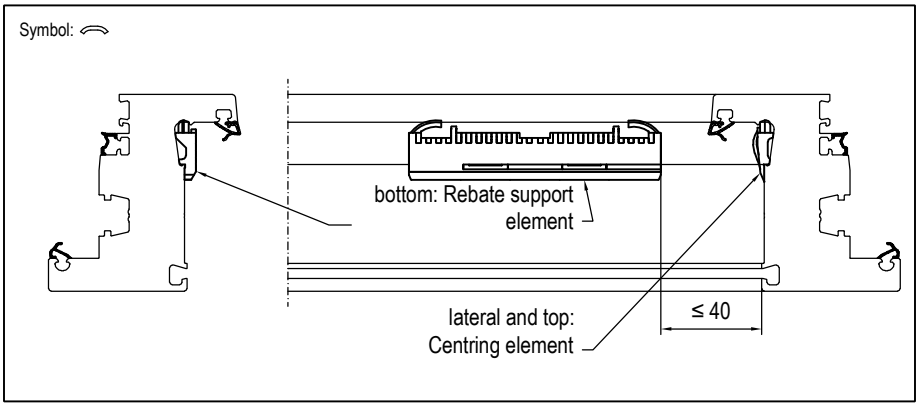


Image 08: Rebate support element - outer pane

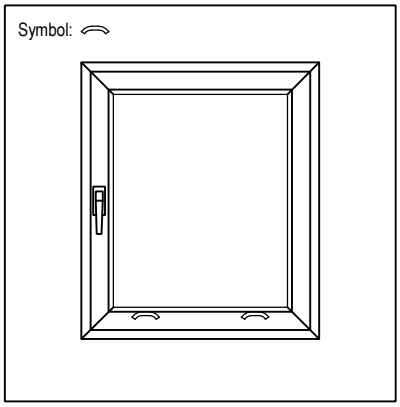


Image 09: Rebate support element
-> standing element
-> standing glazing

08 J 5.1.2. Centring elements

In order to create an even gluing gap all around, appropriate centring elements must be inserted laterally and, depending on the profile (**see Image 12**), at the top. (**see image 10**)

Before bonding, check the gap dimension in the lower corner area on the left and right and adjust if necessary.

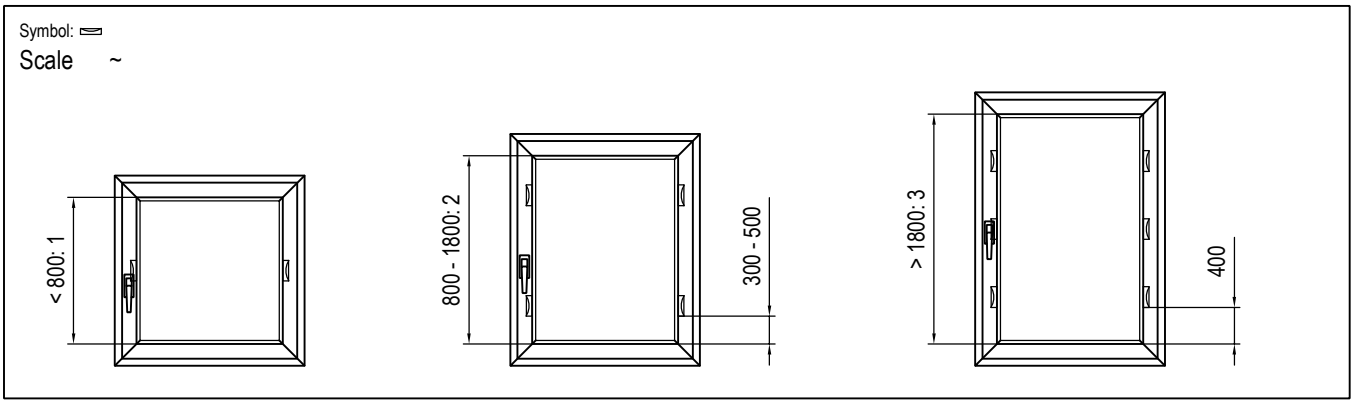


Image 10: Amount of centring elements depending on the sash dimensions

08 J 5.1.3. Supplement - Lying Element

Especially for high doors with and without threshold, elements with underlight / skylight and very narrow doors, it may be necessary to carry out the glazing / bonding horizontally. For this purpose, the arrangement of the supporting and centring elements must be adjusted to avoid transport damage and to ensure the function. (**see Image 11**)

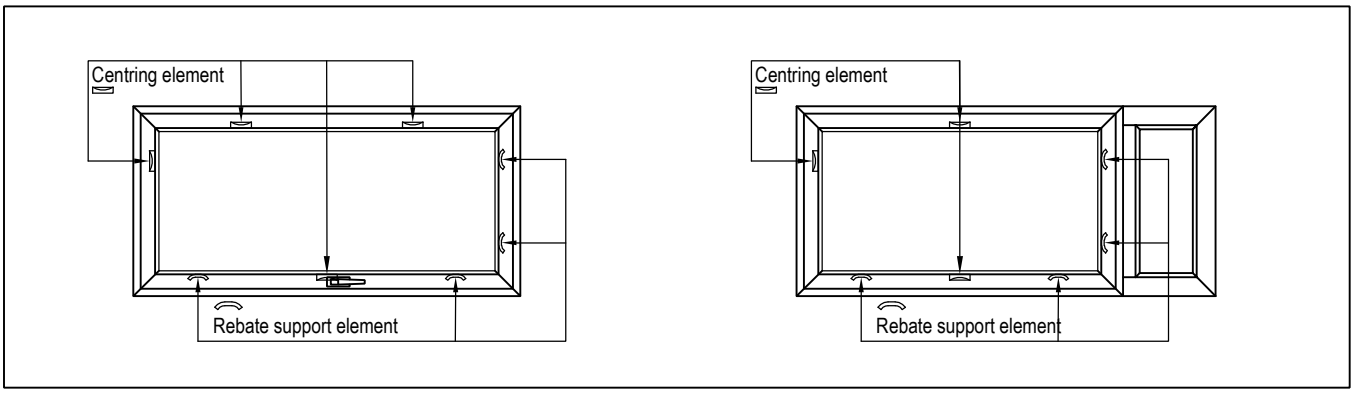


Image 11: Examples of horizontal glazing (e.g. door / fixed glazing with skylight)

08 J 5.2. Fold support and centring elements

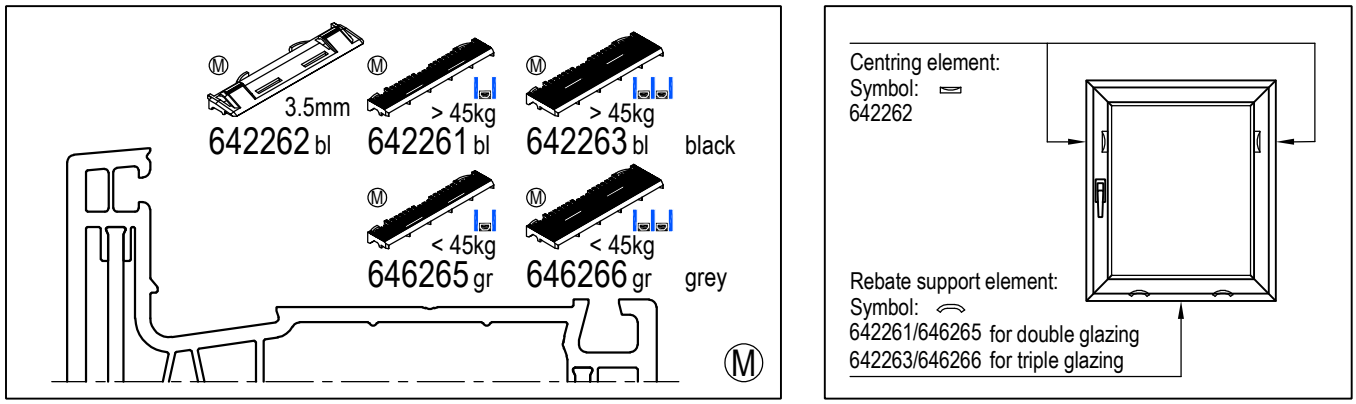


Image 12: Centring elements and rebate support elements in the Multifalz

The rebate support element 642261 in conjunction with double glazing or 642263 in conjunction with triple glazing must be used with a pane weight > 45kg to ensure the necessary adhesive gap!

08 J 5.3. Inserting the insulating glass pane

When inserting the insulating glass pane, press it against the outer glazing gasket under pressure to overcome the resistance of the lateral and upper centring elements. This aligns the sash frame with the pane all the way around. This creates an evenly circumferential adhesive gap.

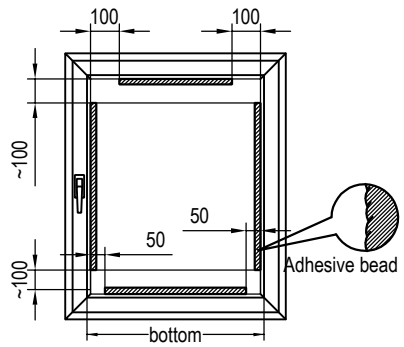
08 J 6. Bonding

Bonding is usually carried out in a glazing press with the sash already hung in the frame. After the preliminary work, the gap between the glazing and the sash rebate can be filled according to the aluplast processing guidelines. For this purpose, the adhesive is applied in the correct ratio of discharge rate, pressure and feed speed using the nozzles specially developed by aluplast.

08 J 6.1. Glue joint area / glue gap

For the position and adhesive joint width of the upper, lateral and lower adhesive joint, see **Image 14, Image 15 and Image 16**). The adhesive gap must be between 4 - 5 mm all around (This corresponds to a theoretical glass removal dimension of 9mm).

Adhesive joint position
for Multifalz
Adhesive joint in the lower area with distance to the outer edge



Double glazing (see image 15)
Triple glazing (see image 16)

Image 14: Adhesive joint position Multifalz

IMPORTANT: The glazing beads are to be wrapped immediately after bonding according to the adhesive manufacturer's instructions. If the glazing beads are inserted too late, this can cause the adhesive to tear off the profile or pane. To maintain the quality of the approved adhesives, the quality assurance specifications of the adhesive manufacturers must be observed and the results must be documented.

For RC bonding, follow the corresponding instructions in the aluplast RC installation and production instructions.

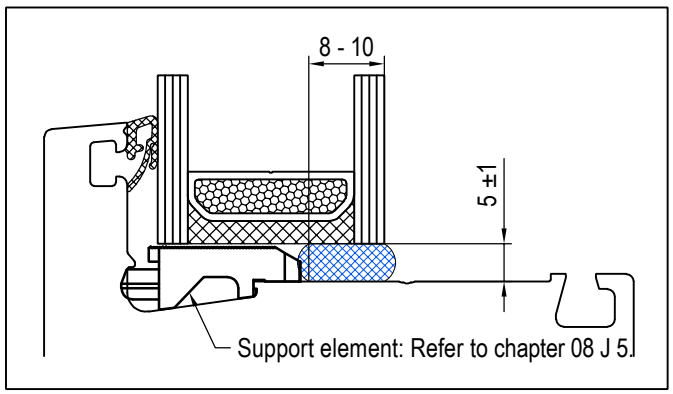


Image 15: Circumferential for 2-pane glass: Adhesive joint area / Adhesive gap

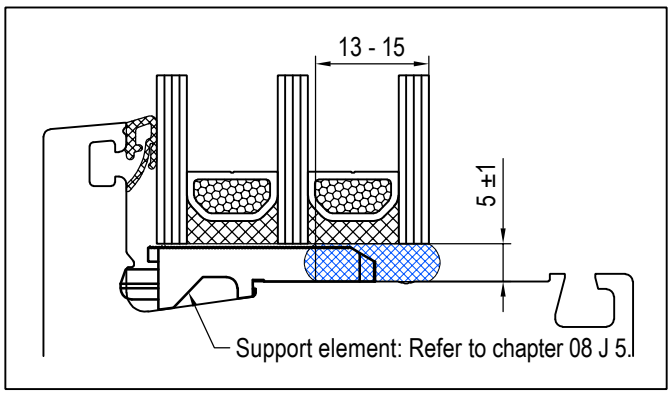


Image 16: Circumferential for 3-pane glass: Adhesive joint area / Adhesive gap

08 J 7. Required support elements after bonding

When using glass suction cups to transport the element or to lift the element after gluing, the required support blocks must be inserted at a distance of approx. 100mm to the left and right of the mitres in the upper transverse area. Alternatively, these can also be used to compensate for top-centre or side-centre waists. When lifting with suction cups, the pane could otherwise be pressed upwards into the adhesive mass by its own weight and damage it. (**see Image 17 and Image 18**)

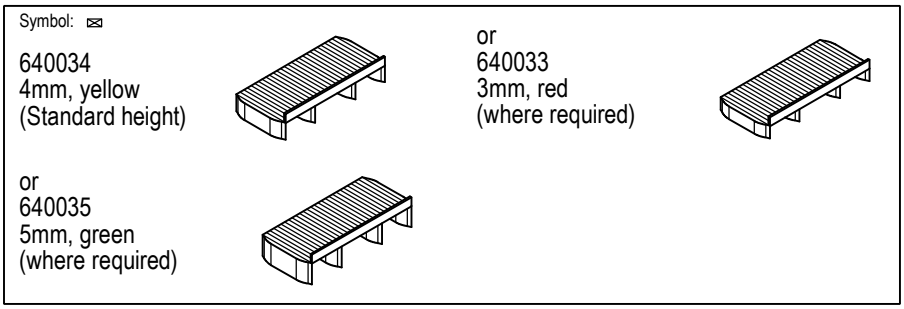


Image 17: Supporting blocks ->inner pane

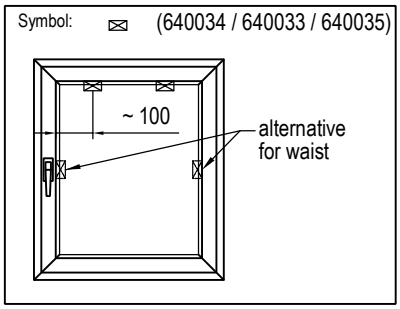


Image 18: Supporting blocks

08 J 8. Curing

Curing times, storage and transport conditions must be agreed with the adhesive manufacturer.

Basically, until the bonding has cured, make sure that the window elements are stored on a straight and horizontal surface. The lashing of the elements must be carried out according to the adhesive manufacturer's instructions. When using ap.bond: see manual **ap.bond**. Securing the elements is recommended.

08 J 9. After installation

After the window element installation and after foaming the construction connection joints, the spacer blocks inserted in the frame as a processing aid must be removed. (**see Image 19**)

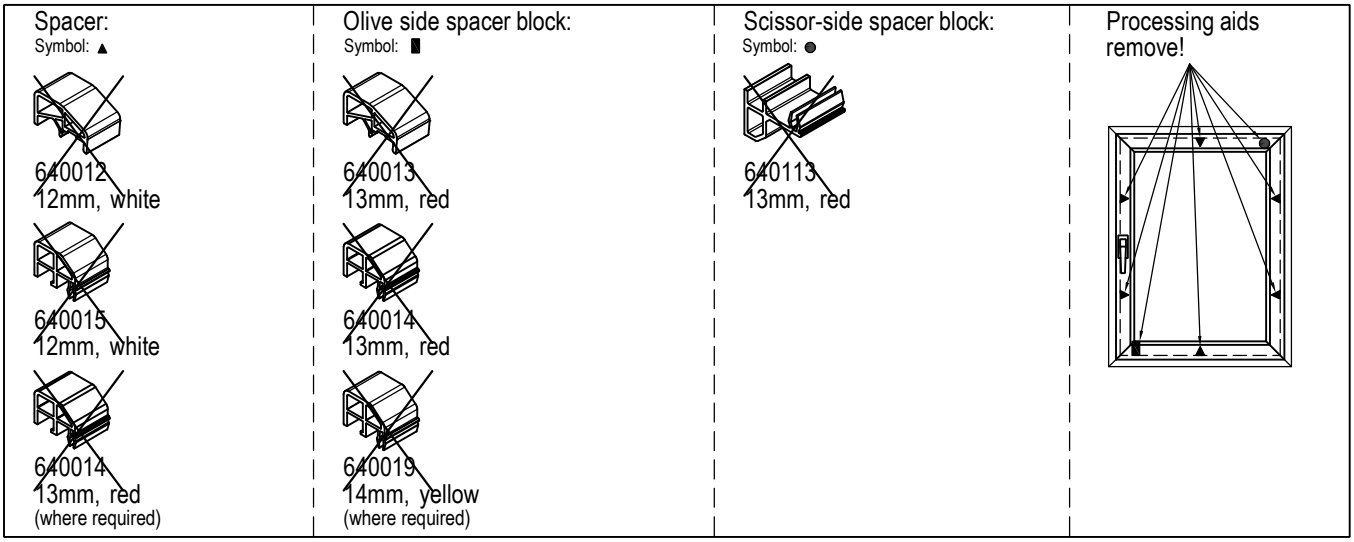


Image 19: The spacer blocks used as processing aids must be removed

Irrespective of the removal of the spacer blocks as a processing aid, screwable lifter for sashes or frames can be used subsequently. See also **Chapter 05 I Lifter**.

08 J 10. Glass replacement

For subsequent replacement of the panes, e.g. in the event of glass breakage, the bonding joint can be cut open after dismantling the glazing beads using commercially available cutting devices and the defective pane removed. The adhesive residues must be removed with appropriate equipment.

For the subsequent processing of the new pane, the entire regulations - described in this **chapter 08 J Bonding of pane - bonding inside** - apply in particular!

In the case of glass replacement and subsequent bonding, the processing instructions of the adhesive manufacturer must also be taken into account (e.g.: cleaning, primer, etc.).

Only approved adhesives may be used for repair glazing, which must be chemically compatible with the edge seal, among other things.

When using ap.bond 1K, the current processing guidelines according to the manual **ap.bond** must be observed.

A film on this process is also available on the aluplast homepage.

08 J 11. Notes

The aluplast guidelines are only a recommendation and do not include any warranty claims. Our processing instructions are based on experience. We have tried to comment as extensively as possible on a wide range of issues.

Due to working conditions beyond our control, we recommend ensuring suitability for processing purposes.

No liability can be established on the basis of our advice or verbal consultation, except in the case of intent or gross negligence.

We reserve the right to make changes in the interest of or resulting from technical progress.

08 K Decors and colours: Coloured profiles

08 K 1. General Information

High demands are placed on windows and (house) doors in terms of sound insulation, burglary protection, tightness, thermal insulation, etc.

In order to permanently guarantee these system-given properties even with coloured windows and doors, it must be taken into account that coloured surfaces, in contrast to white (surfaces), heat up much more when exposed to sunlight.

The surface temperature / heat absorption caused by solar radiation can reach values above 75 °C depending on the colour scheme.

This must be taken into account accordingly in the construction, design and manufacture of coloured windows and (house) doors (material expansion / ventilation), as the linear expansion of the materials used increases significantly due to the larger temperature range.

With (house) doors - especially the coloured door panels - distortion phenomena can occur which negatively influence the functionality of the (house) door.

For the construction of windows and front doors, only profiles and reinforcements or fillings approved by aluplast for this purpose may be used.

The following processing instructions must be observed.

08 K 2. Colours

For the current colour palette for decorative lamination and the corresponding current basic body colours, please refer to the valid price or decor list (aluplast natura, woodec, aludec).

For decor on one side, the basic body colour is white, similar to RAL 9016.
With decor on both sides, the basic body colour is brown, similar to RAL 8019 or anthracite.

08 K 3. Scope of application

The processing guidelines for coloured profiles apply to all aluplast plastic window profiles with foil-laminated surfaces on the weather side (outside) and also to white profiles with tropical mix for correspondingly hot countries. No distinction is made as to which colour the base body is. This concerns all main and additional profiles.

If plastic profiles (exterior) are coated with paint on the weathering side, these additional guidelines must also be observed.

The "General Processing Guidelines" for aluplast plastic window profiles and, mutatis mutandis, the regulations of the "GKV Processing Guidelines for White Profiles" apply, unless they are restricted or supplemented by the following additions.

The size limits for coloured windows must be observed. (see chapter 06)
Please also refer to chapter 06 Reinforcement guidelines / Statics.

08 K 4. Field of application

For foil-laminated or colour-coated profiles, the area of application is limited to Germany and similar climatic regions.

In order that the warranty claims do not become invalid, the written consent of aluplast must be obtained in case of doubt.

08 K 5. Surface protection

Surface damage (e.g. scratches, sanding marks and pressure marks) is more noticeable on coloured profiles than on white ones. Special care is therefore required when storing, transporting and handling the profiles.

All main profiles (e.g. frame, sash, mullion) and some additional profiles are additionally equipped with a protective film on the decorative visible surfaces. This is to protect the surfaces from any damage in the workshop, during transport and during assembly.

The protective film must be removed immediately after installing the window on the building site, as the film adhesive may leave residues on the film surface due to sunlight.

08 K 6. Processing instructions

08 K 6.1. Storage and transport

For all coloured profiles, intermediate storage outdoors in sunlight must be ruled out.
The profiles can warp in the event of heat accumulation.

As damage such as scratches and sanding marks are clearly visible on coloured surfaces, the utmost care must be taken during storage, processing and transport.

08 K 6.2. Trimming

With foil-laminated profiles, deviations in the grain and colouring cannot be ruled out and must be accepted. Therefore, the window elements are to be cut to size from a profile delivery on a commission basis, if possible.

Basically, the cutting is the same as for the white profiles. When cutting to size, please note that approx. 20mm of the profile cannot be used at either end due to the production process. This statement is especially important when optimising the cut.

08 K 6.3. Profile dimensions

The tolerances according to the quality and test regulations for PVC-U windows RAL-RG 716/1 apply to the dimensions of the basic profile bodies.

Since the decorative foils are approx. 0.3 mm thick on each side of the profile, the profile dimensions change. These dimensional deviations must be taken into account especially during production (e.g. when setting up the corner plaster cutter).

08 K 6.4. Reinforcement

Steels with sufficient moment of inertia must be used for reinforcement.
The specified maximum heights must be observed (see chapter 06).

(House) doors: additional processing instructions: see **Chapter 08 K 12**.

08 K 6.5. Welding

Welding is done in the same way as for white profiles.
Care must be taken to ensure that the welding temperature, welding pressure and melting time are precisely maintained. Regular checking of the corner strength by means of a fracture test ensures consistent welding quality.

The welding machines must be equipped with a 2mm weld bead limitation.
Because of the sharp drop in corner strength, a tighter limit is not recommended.

Accelerated cooling of the weld seam after welding by compressed air or placing it on an extremely cold floor is not permissible, as it can lead to the formation of uncontrollable stresses. Before further processing of foil-laminated profiles, the frames must be allowed to cool completely for at least 4 minutes.

08 K 6.6. Corner processing

Foil-laminated blind and sash frames are processed with automatic corner cleaning machines. Due to the changed profile dimensions (see **chapter 08 K 6.3. Profile dimensions**), make sure that the corner plaster cutter is correctly adjusted.

Special grooving knives are required to optimally execute the edges of the shadow grooves in the mitre area. We therefore advise you to consult the machine manufacturer or our application technology. When removing the welding protrusions in the inner corners, make sure not to remove too much film.

The groove base can be darkened with hot air. If this is to be colour-coordinated with the decorative film, we recommend using a colour-adjusted fibre-tip pen.

08 K 6.7. Pressure equalisation holes of the outer antechambers

Dark profiles absorb more heat (e.g. due to solar radiation) than white profiles. The surface temperature on the (exterior) weather side of laminated profiles – and accordingly also the temperature in the thermally insulating outer chambers – can increase to over 75 °C under extreme conditions. The immense heat can cause an excessive pressure in the outer chamber which may deform the profile wall.

Drainage and air equalisation openings must always be provided. For the corresponding handling instructions please refer to chapter 08 D Drainage and glazing rebate ventilation.

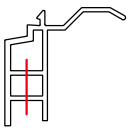
In addition, for all coloured main and additional profiles - whether large or small - pressure equalisation holes must be drilled in the outer antechambers (see leaflet next page).

A drill diameter of 5.0mm is sufficient. All chambers are to be drilled twice per profile length. It is important that the pressure equalisation openings are freely accessible even after glazing and after complete window or (house) door installation.

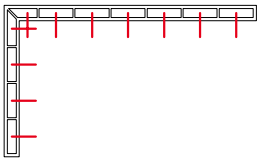
For coloured profiles: Vent holes in all outer chambers
Examples based on some additional profiles and accessories / other profiles are to be drilled analogously.



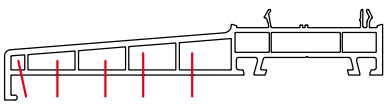
e.g.: weather bar



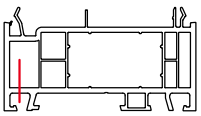
e.g.: sill connector



e.g.: angle profile



e.g.: window sill

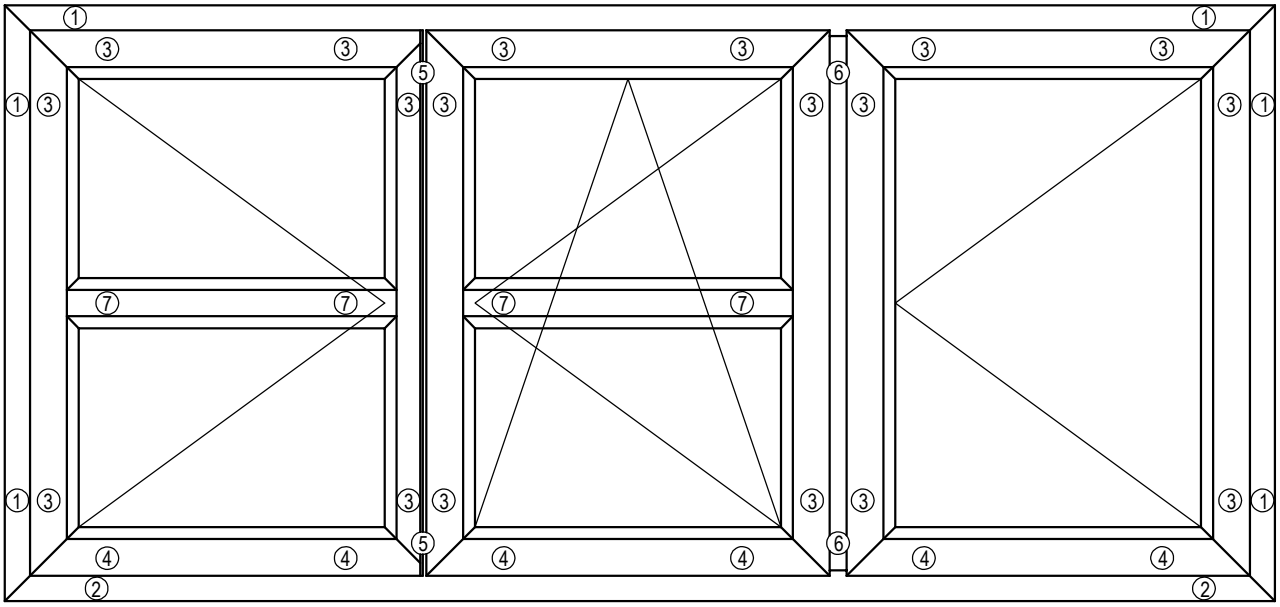


e.g.: extensions

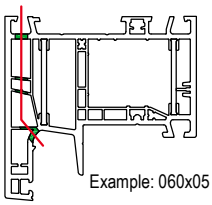
Bore guide Ø5mm

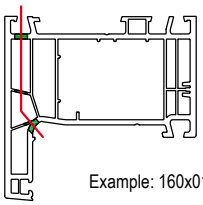
For coloured profiles: Vent holes in all outer chambers
Examples using a sample combination and energeto neo / other profiles are to be drilled analogously.

Interior view

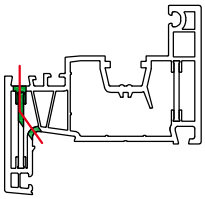


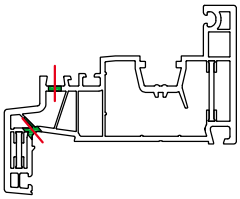
① Frame top & lateral



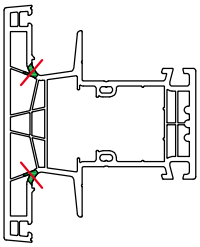


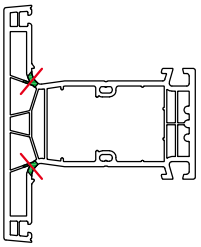
③ Sash top & lateral



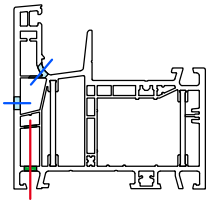


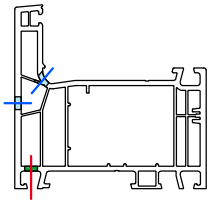
⑥ Mullion / transom profile vertical



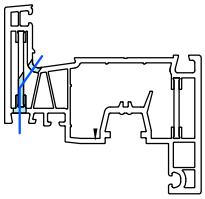


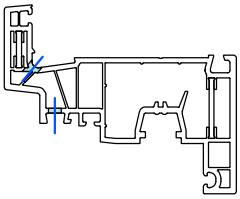
② Frame bottom
With face drainage

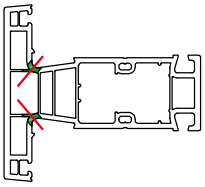




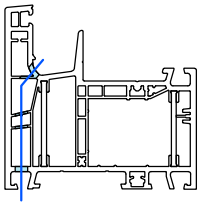
④ Sash bottom

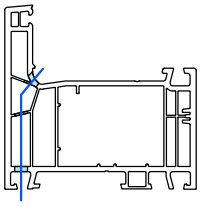




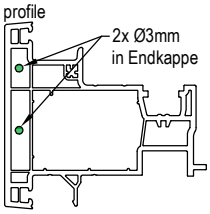


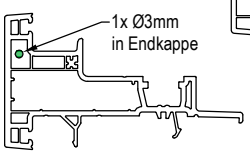
② Frame bottom
With drainage to the bottom





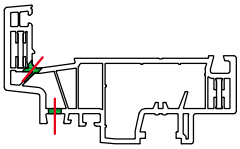
⑤ False mullion profile

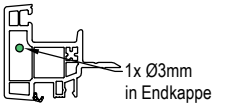




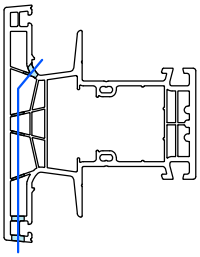
Only at the bottom!

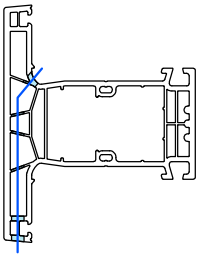
⑤ False mullion sash profile

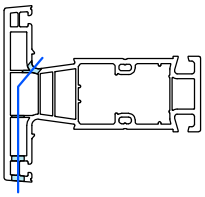




⑦ Mullion / transom profile horizontal







Bore guide Ø5mm
Drainage = Air equalisation

08 K 6.8. Fastening of coloured clip profiles

Fasten all clip profiles (e.g. weather bars) every 150mm.

In addition, the side exposed to sunlight must be glued (see chapter 8 K 6.9.) to avoid distortion and warping in the clip area.

NOTE: When multiple profiles with foil on one side (e.g. extensions) are snapped on (stacked), an oversize may build up on the foil side due to the thickness of the foil.

08 K 6.9. Bonding of uPVC profiles on lamination foils (laminated elements)

The lamination foil presents different material properties than PVC. For this reason, do not use standard PVC-adhesives but only adhesive agents suitable for lamination foils when processing laminated elements!

According to the statements and technical information given by the manufacturer Weiss Chemie + Technik GmbH & Co.KG, e.g. the product COSMO CA-500.130 is suitable for this purpose.

For processing instructions, it is necessary for copyright reasons, to request the current technical data sheet of COSMO CA-500.130 directly from the manufacturer:

Weiss Chemie + Technik GmbH & Co.KG
Geschäftsbereich Chemie
Hansastraße 2
D-35708 Haiger
Tel. +49 (0)2773/815-0
Fax +49 (0)2773/815-200
E-Mail: ch@weiss-chemie.de
http://www.weiss-chemie.de

08 K 6.10. Fitting installation

Due to the different expansion of coloured profiles compared to white window profiles, the largest possible chamber dimension should be aimed for when installing the fittings.

(House) doors: additional processing instructions: see **Chapter 08 K 12**.

08 K 6.11. Adjacent materials outside

If there are fixed restraints to the film in the outdoor area due to adjacent materials (e.g. attached fittings, roller shutter guides, stone window sills, mullion joints, etc.), this may cause the film to detach from the profile and/or wrinkle. The film must be given the opportunity to stretch with the profiles by cutting the film along the contour with a sharp knife for outer attachments.

In the case of window sills, it must be taken into account that, depending on the installation location and the material used, there will be additional solar radiation on the film due to reflections. Therefore, in the case of dark foils, depending on the installation position, the window sills should be white, light anodised, made of natural stone or have a similar active protection against reflections.

08 K 6.12. Glazing

Please refer to **Chapter 08 K 6.7. Pressure equalisation holes of the outer antechambers** and the specifications for glazing according to **Chapter 08 D Drainage and glazing rebate ventilation**.

When glazing coloured PVC window frames, make sure that the contact pressure is not too high.

Before starting glazing, it is advisable to check the pane thickness and, if necessary, select the next thinner glass seal.

(House) doors: additional processing instructions: **see chapter 08 K 12**.

08 K 7. Cleaning and care

refer to Chapter 10 R Cleaning, 10 S Maintenance, 10 T Ventilation

We recommend the aluplast plastic window cleaner for coloured profiles Art. No. 699920.

Profiles with wood texture design are resistant to corrosive agents as hard plaster, chlorinated lime and cement. Do not treat these profiles with alcohol, nitrocellulose lacquer, lacquer diluents, and organic solvents.

08 K 8. Adhesion of sealants

Laminated surfaces must not come into contact with Thiokol rubber sealants (PVC-adhesives etc.).

Check the compatibility of the sealant and the lamination materials. For the required information see the manufacturer's handling guidelines.

08 K 9. Element assembly

Basically, the **installation guidelines (chapter 10)** must be observed for white PVC-U windows.

Coloured PVC windows and (house) doors have a higher expansion. The frames must always be fixed in such a way that expansion movements are possible. Connection joints must also be designed as expansion joints. We recommend using anchors as fastening elements.

Foiled profiles must allow the materials adjacent to the foil surfaces during installation to stretch with the foils. If there are fixed clamps to the film and the film cannot expand with the profile, the film can detach from the profile or wrinkle.

For plastering work, the laminated window surfaces can be covered with self-adhesive films. However, these must not leave any detachments on the profile surfaces. Suitability must therefore be checked in good time.

Attention: The protective film must be removed immediately after installation:
The protective film must be removed immediately after the window has been installed on the building site, as under certain circumstances the Sunlight, the film adhesive can leave residues on the film surface.

The window manufacturer should specifically point out this circumstance to his contractual partner.

08 K 10. Connection joints

Basically, the installation guidelines (chapter 10) for white PVC-U windows must be observed.

The construction connection joints must be sufficiently dimensioned for the expansion that occurs. Sealants must be able to absorb the elongation and be resistant at higher temperatures.

The regulations and recommendations of the sealant manufacturers must be observed.

For further information on the design, please refer to chapter 10 B Joint formation.

08 K 11. Fabrication of Arched Profiles

As a rule, foil-laminated or colour-coated profiles must be stored for 6 weeks at 20° storage temperature before bending.

Foil-laminated profiles can be bent by heating, just like white profiles.

However, this usually results in an increased surface gloss.
To achieve a gloss match with the non-curved profile, rub the glossy surface with fine steel wool soaked in water using light wiping movements in the longitudinal direction of the profile. Rinse immediately with clean water. Firm pressing and rubbing must not take place.

08 K 12. (House) doors

Supplementary processing instructions
Note: Compliance with these processing instructions is also recommended for white front doors.

08 K 12.1. Reinforcement

Steels with sufficient moment of inertia must be used for reinforcement.
The specified maximum heights must be observed (see chapter 06).

When building the front door, make sure that the reinforcement (e.g. by milling out the lock area) is not weakened more than necessary. The reinforcement must be continuous and must not be completely cut at any point.

Reinforcements with prefabricated openings are preferable to unfinished reinforcements due to their easier workability and with regard to avoiding errors during milling (e.g. complete cut-through).

The reinforcements should preferably be mitred in the corner area. Corner weld connectors are to be used. Additional corner brackets must be used for special requirements.

08 K 12.2. Hardware

The distance between the tapes must not exceed 1000mm.

Locking systems with multiple locking and engaging locking parts are to be preferred.

The use of 3 straps and 3 latch locks are recommended.

In addition, the specifications of the hardware manufacturer must be observed and complied with.

08 K 12.3. (coloured) door panels

Top layer and core foam
Due to the described increased heat absorption of coloured surfaces, the cover layer material (carrier layer of the exterior surface) must be adapted to the expected conditions (installation orientation, colour, solar radiation, etc.). The use of a carrier layer with a coefficient of linear thermal expansion < 50x10-6 [1/K] is recommended.

The core foam used must be dimensionally stable at the temperatures mentioned above.
The density of the foam should be at least 70kg/m³. CFC-free foam shall be used.
The core foam must be protected against moisture damage (if necessary). The moisture absorption of the top coat must not exceed 1%.

The connection between the top layer and the foam must be made over the entire surface and without air pockets (blowholes).

The warranty is provided by the door panel manufacturer.

Additional parts (glazing, ornamental frames, etc.)
The filling must permanently fulfil the requirements placed on entrance doors with regard to air permeability, driving rain tightness and resistance to wind load. This applies in particular to entrance door panels with inserted glass panes.

Glazing with sealant-free glass rebate base must have openings for vapour pressure equalisation to the outside.

The seal between the glazing and the filling must be permanently elastic. The maintenance of elasticity and functionality must be guaranteed by the filling manufacturer for 10 years.

Door elements and ornamental frames are to be executed in such a way that no permanent damage is caused by slight external pressure or by expanding air inside the cavities. This can be achieved, for example, by filling the cavities with dimensionally stable foam.

Technical properties
In case of a possible deformation of the front door panel, the force transferred to the profile in the upper corner on the closing side must not exceed 100 N. In case of doubt, the suitability of the materials used must be proven by suitable testing by the filling manufacturer.

The deformation in the centre of the filling must not exceed 10mm when installed for visual reasons.

The surface design of the filling must allow for permanent tightness in terms of air permeability and driving rain, even if deformations occur.

The functionality of the door must be guaranteed without filling. The door leaf should not "hang down" due to its own weight.

The infill must be blocked diagonally (set support blocks diagonally). Make sure that the lower support block is fitted on the hinge side and the upper support block on the closing side.
(see Chapter 08 E Blocking Guidelines).

Spacer blocks must not be inserted with increased tension (over-blocking).

08 K 13. Notes

The aluplast guidelines are only a recommendation and do not include any warranty claims. Our processing instructions are based on experience. We have tried to comment as extensively as possible on a wide range of issues.

Due to working conditions beyond our control, we recommend ensuring suitability for processing purposes.

No liability can be established on the basis of our advice or verbal consultation, except in the case of intent or gross negligence.

We reserve the right to make changes in the interest of or resulting from technical progress.

It is essential to observe the following standards and guidelines:

DIN 18361 Glazing work

Standard Performance Book Glazier Work 032 (White Print)

Information leaflets
Published by: Institut des Glaserhandwerks für Verglasungstechnik und Fensterbau, Hadamar:
Document 1 Sealants for glazing
Document 3 Blocking guidelines for flat glass panes
Document 7 Technical Regulations for Glazing and Window Construction Work
Document 13 Glazing with rubber sealing profiles
Document 16 Windows and window walls for indoor swimming pools

Table for determining the stress groups for glazing windows
Published by the Institut für Fenstertechnik e.V., Rosenheim

Plastic windows
Quality assurance RAL-RG 716/1, edition February 1985
RAL: Committee for Delivery Conditions and Quality Assurance

GKV test and evaluation standard for PVC window profiles made of PVC

Special processing recommendations for plastic window profiles
Published by the specialist group for plastic roller shutters, windows and building profiles.

08 L Aluminium shells

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	08 L 3	Drainage milling / Drilling	1 - 2
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08 L 1 General Information

aluskin classic or aluskin = aluplast aluminium shells for the following aluplast profile series:
IDEAL 4000, IDEAL 5000, IDEAL 7000, IDEAL 8000, energeto neo, lift-slide
(lift-slide: refer to the corresponding processing manual)

Generally, the processing guidelines according to chapter 08 L Aluminium shells apply unless specifically restricted or complemented by special chapters, e.g. chapter 08 L 8 Butt-joined aluminium shells.

08 L 1.1. Storage of aluminium shells

Unpack the aluminium shells with gloves immediately after delivery and store them in a dry, dust-free and ventilated room. If necessary, remove condensed water.

Store the aluminium shells on a soft underground, e.g. on plastic or non-impregnated wood. Any possible deformation of the aluminium shells due to wrong storage must be avoided.

Proper storage avoids strong deflection, scratches, soiling and deformation due to heat.

Outdoor storage of the profiles must be avoided. The profiles must be protected against humidity and direct sunlight – even if the profiles are stored near heaters, radiant heaters, air heaters or behind transparent panes.

Profile packs wrapped in PE-foil must be opened at the ends of the packs to avoid condensation.

The profiles must be stored lying flush on each other to prevent deformation. The maximum stacking height is one metre.

Underlays treated with impregnating agents or other chemicals are not permitted since they can cause stains or discolouration on the profiles.

When tanking single profile bars from the stack, remove them only sidewise to avoid scratches and other damages.

For further directories and processing guidelines, please refer to: www.alu-verlag.de

08 L 1.2. Cut aluminium shells

Store the cut aluminium shells such a way that the mitre gets neither dusty nor damaged.

08 L 1.3. Cleaning and Care

Clean and maintain the aluminium shells as specified by the surface finishing company.

Refer also to **Chapter 10 R Cleaning, 10 S Maintenance, and 10 T Ventilation**.

08 L 1.4. Surface Finishing

The uncoated aluminium shells can be coloured individually.
In addition to organic coatings (polyester, powder coating), there still is the possibility to colour the shells by means of anodic oxidation (anodisation).

Please observe the processing guidelines for the coating of profiles published by:

Aluminium Zentrale e.V.
Postfach 101262
40003 Düsseldorf
Tel.: +49/211/47960

to note.

Note:

After coating, check the clips.

Lacquer tends to accumulate in this area.

If necessary, these lacquer accumulations must be removed and reworked with a sharp pointed tool to avoid that the aluminium shells get loose after the installation. (**Fig. 1.1**)

For safety reasons, the aluminium shells must also be bonded at points approx. every 30 cm over the entire length with a suitable adhesive (e.g. aluplast ap.bond 2K or equivalent). The adhesive effect of the adhesive agent must be approved by the manufacturer for PVC and aluminium. (Fig. 1.1) (refer to chapter **08 L 4 Installation**)

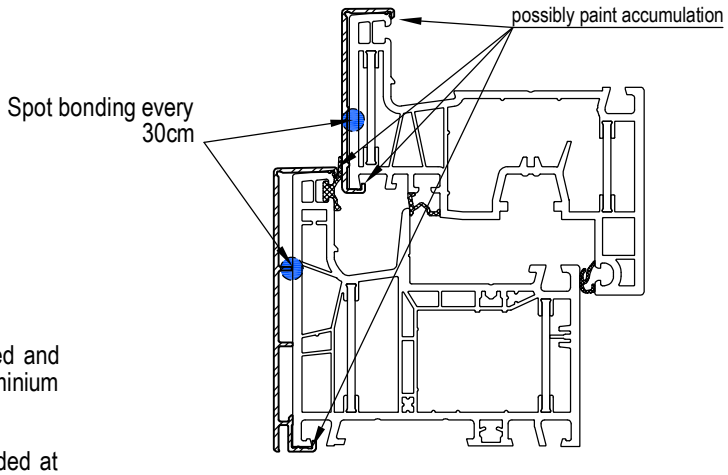


Fig. 1.1
Example with:
energeto neo (060x05 - 060x20)
Scale 1:2

08 L 1.4.1. Corrosion protection for increased requirements (industrial atmosphere, proximity to the sea)

With regard to filiform corrosion, the requirements of VFF bulletin AL.01 should be noted and complied with.

08 L 1.5. Size limitations

Observe the following for the different aluplast systems:

IDEAL 4000, 5000, 7000, 8000: energeto neo:	Fitting rebate clearance: 12mm (+1.0 / -0.5) Note: For smaller element sizes (FB <600mm), a touching between aluminium shell and hardware elements is possible! 13mm minimum Hardware rebate clearance.
IDEAL 4000, 7000 entrance door energeto neo entrance door:	Fitting rebate clearance: 13mm (+0.5 / -0.5)
IDEAL 2000, 4000 folding door:	Fitting rebate clearance: 13mm (+0.5 / -0.5) Turning radii must be checked!

	Window: FB <600mm		Window: FB >600mm					Front door		
Figure	Fig. 1.2	Fig. 1.6	Fig. 1.2	Fig. 1.3	Fig. 1.4	Fig. 1.5	Fig. 1.6	Fig. 1.7	Fig. 1.8	Fig. 1.9
IDEAL / energeto	4000, 5000, neo, 7000, 8000		4000	5000	neo	7000	8000	4000	neo	7000
Rebate clearance	13mm		12mm					13mm		
Tolerances	+ 0.5mm / -0.5mm		+ 1.0mm / -0.5mm					+ 0.5mm / -0.5mm		

In matters of maximum element sizes, the general instructions, corresponding to the chosen profile system or profile combination and specified in the manual "Processing", apply.
(refer to **chapter 06 Reinforcement Guidelines / Statics**)

Fig. 1.2 IDEAL 4000

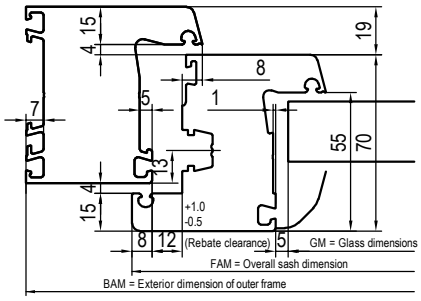


Fig. 1.3 IDEAL 5000

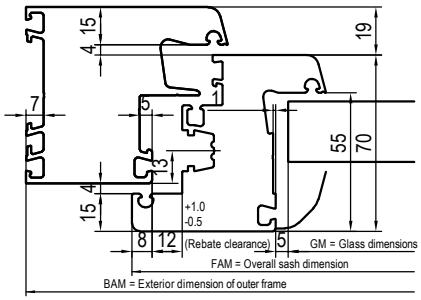


Fig. 1.4 energeto neo

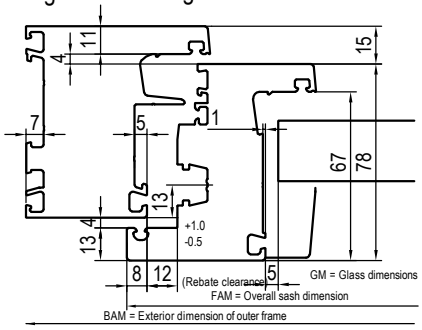


Fig. 1.5 IDEAL 7000

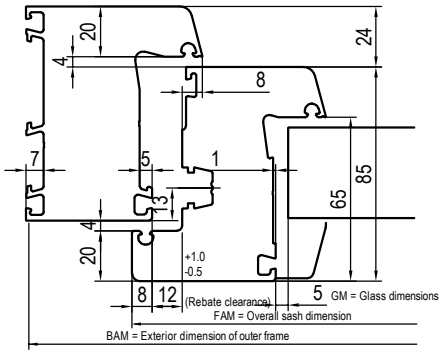


Fig. 1.7 IDEAL 4000 Front door

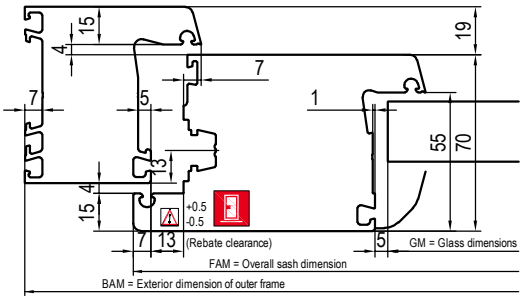


Fig. 1.6 IDEAL 8000

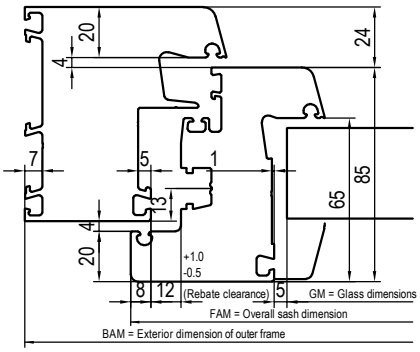


Fig. 1.8 energeto neo - Haustür

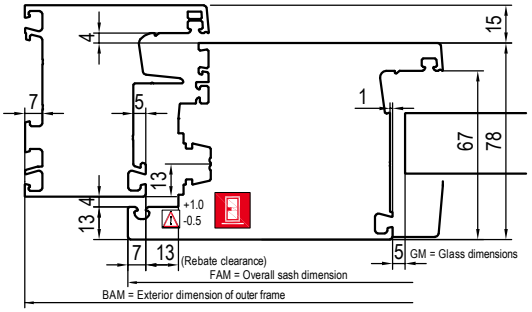
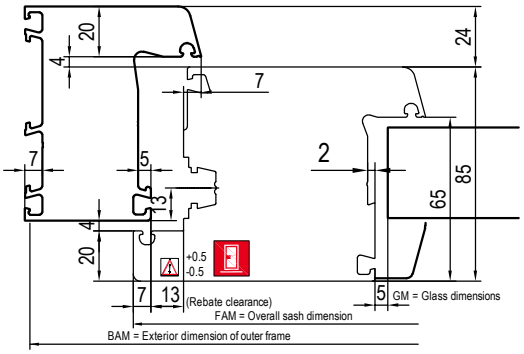


Fig. 1.9 IDEAL 7000 Front door



08 L 2 Profile processing

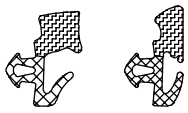
08 L 2.1. Gaskets

When processing profiles equipped with exterior gaskets integrated in factory, remove these gaskets before clicking the aluminium shells into place. The factory-integrated rebate seals on the inside of the sash and, if present, the factory-integrated centre seal do not have to be removed.

After clicking the aluminium shells into place, special insertable gaskets or repair gaskets are to be attached on the outside (see table “Gaskets” and fig. 2.1). The interior backstop gasket and the centre gasket (if provided) are standard gaskets.

EPDM not weldable:
Moulding compound according to DIN 7863

energeto neo **aluskin**
+ |P| Aluminium shells
Standard
-> Glazing
Ⓐ Ⓑ

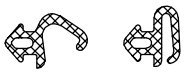


1)

Compression 4mm

EPDM |X| 459951 black
|X| Gaskets

energeto neo **aluskin**
+ |P| Aluminium shells
Standard
-> Stop
Ⓒ
IDEAL 2000



1)

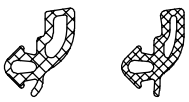
Compression 3.5mm

EPDM |X| 429320 black
|X| Gaskets

or

PVC-P weldable: plasticised PVC

energeto neo **aluskin**
+ |P| Aluminium shells
Option
-> Glazing
Ⓐ Ⓑ

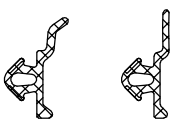


1)

Compression 4mm

WR PVC-P/PP |X| 449986 black
|X| Gaskets |X| 449986 papyrus-white

energeto neo **aluskin**
+ |P| Aluminium shells
Option
-> Stop
Ⓒ



1)

Compression 2mm

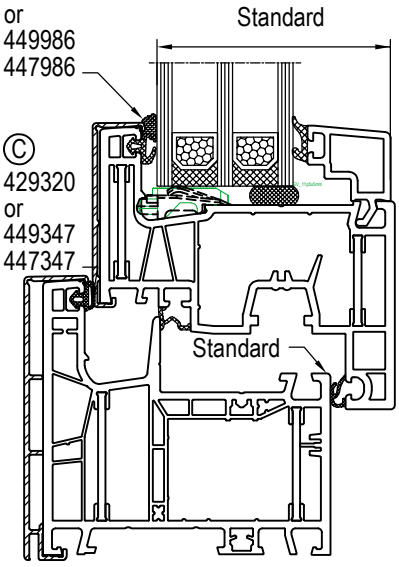
WR TPE |X| 449347 black
|X| Gaskets |X| 447347 papyrus-white

Fig. 2.1

Frame - Sash

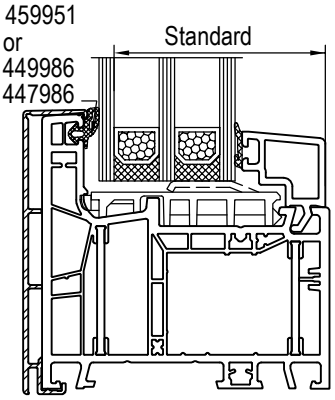
Ⓐ
459951
or
449986
447986

Ⓒ
429320
or
449347
447347

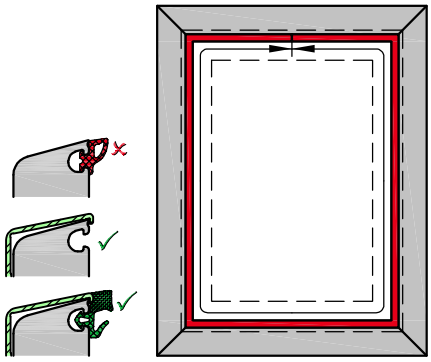


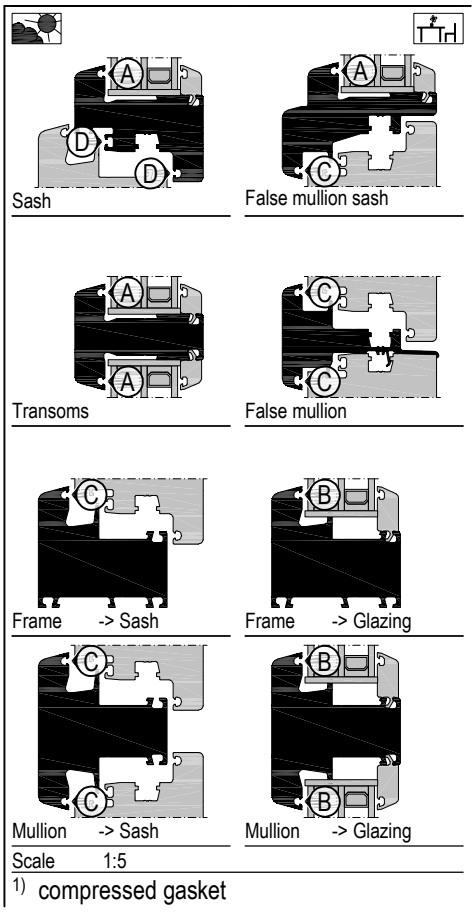
Frame - Fixed glazing

Ⓑ
459951
or
449986
447986



Example with:
energeto neo (060x05 - 060x20 - 150134)
Scale 1:2





Scale 1:5

1) compressed gasket

08 L 2.2. Cutting of the aluminium shells

For the cutting of the aluminium shells, use the same saw blade type as for uPVC.
However, the saw blade may then be used exclusively for this purpose.

An exact and clean cut surface is crucial for the quality of the mitre.
Double mitre saws (controlled hydraulically or pneumatically) with adjustable feed and cutting speed are recommended to guarantee an accurate cutting in the correct angle and according to the required dimensions.

Choose the proper carbide tipped saw blade according to the following criteria:

Double mitre saw

Cutting material	HM
Saw blade diameter	300 - 500 mm
Tooth shape	trapezoidal-flat
Tooth pitch fine	8 - 12 mm
Speed	3000 - 4000 rpm
Cutting speed	approx. 50 – 60 m/s

For all cutting processes, the profiles must be clamped and cut accurately in the correct angle; tilting must be avoided. To achieve a good quality of the mitre cut, rest the profile on the widest profile face while cutting and make sure that the cut surface is clean:

- Use clean supports and clamping tables to avoid scratches.
- Angle-correct clamping and cutting due to saw inserts, which provide pretensioning as on PVC profiles. (Fig. 2.2)
- The use of coolants or lubricants and sharp cutters reduce the cutting forces (advantageous to avoid deformation of the aluminium shells). Do not cut other metals with this cutting tool.

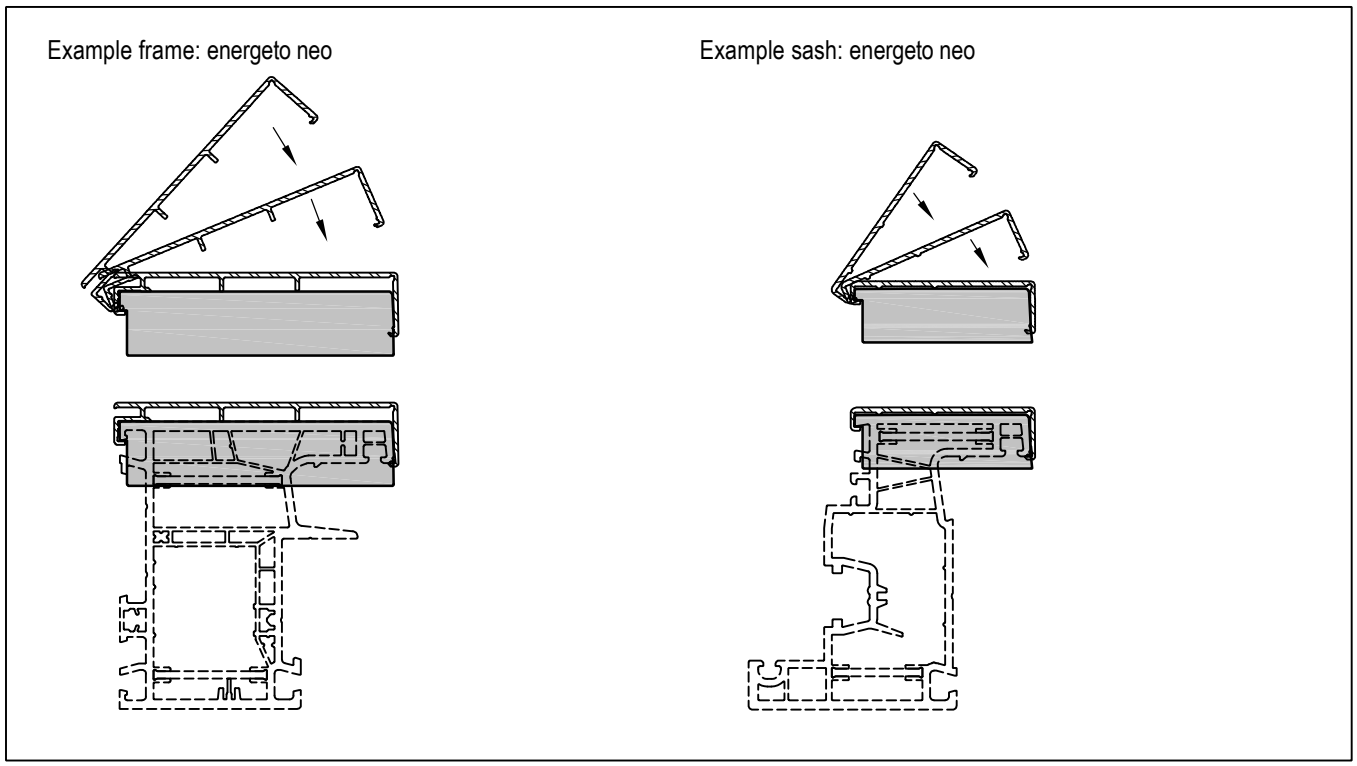


Fig. 2.2 Frame / sash clamping situation

Cut the aluminium shells according to the figure or table:

Figure	IDEAL	4000 / 7000	energeto neo	5000 / 8000
Fig. 2.3	Overall sash dimension (FAM)	- 40mm	- 54mm	- 61mm
Fig. 2.4	Sash projection	2x 1.5mm		
Fig. 2.6	Overall frame dimension RAM	+ 3mm		
Fig. 2.7	Frame projection	2x 1.5mm		

After cutting, deburr the aluminium shells in the inner area of the mitre corners (Fig. 2.5 + 2.8) to avoid damages in these areas during assembly and to guarantee the clip function.

Fig. 2.3 Cutting dimensions sash

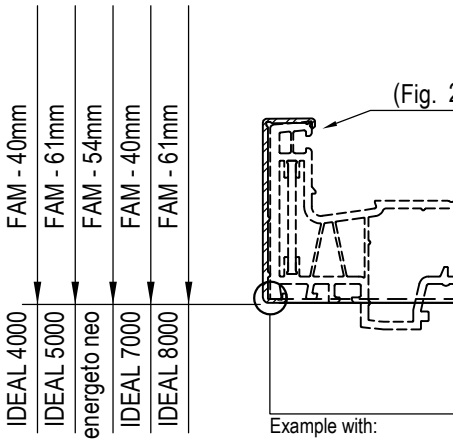


Fig. 2.4

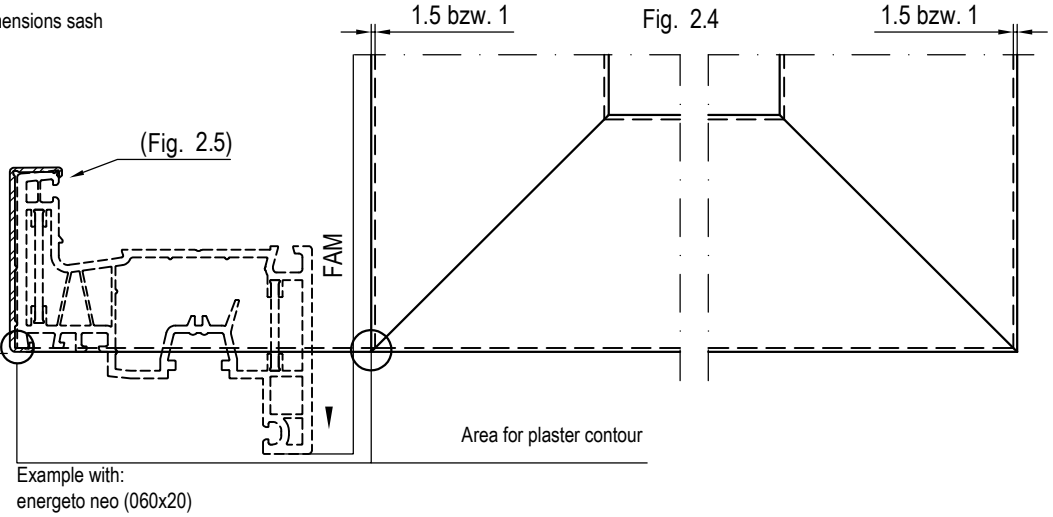


Fig. 2.6 Cutting dimensions frame

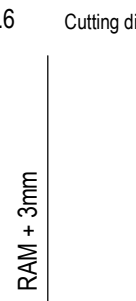
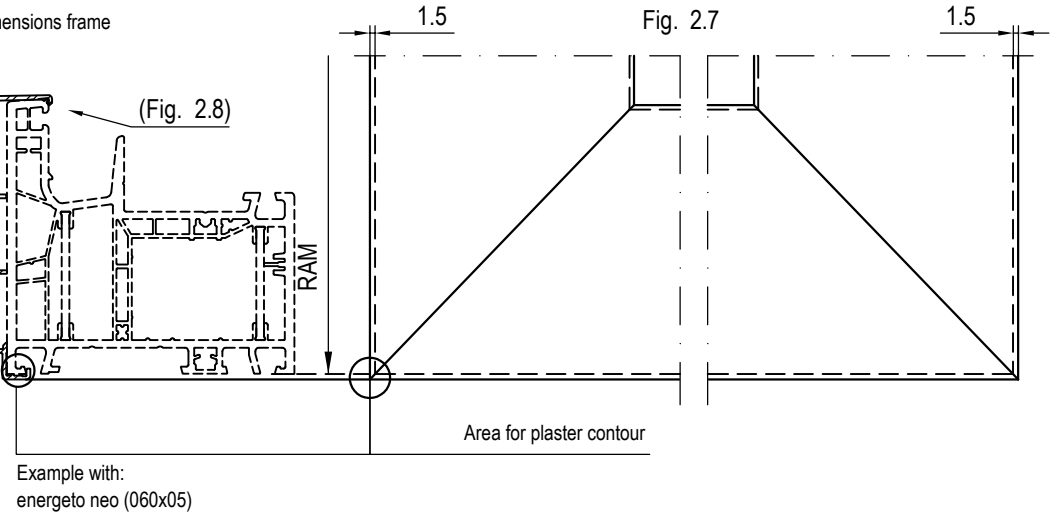


Fig. 2.7



08 L 2.3. Milling and drilling

These working processes require high-speed machines.

For each purpose, special machines with HSS milling cutters and HSS drills are available for the processing of all the materials.

Carbide tipped milling cutters also have a long service life when processing aluminium.

08 L 3 Milling / drilling of drainage openings

08 L 3.1. Drainage to the bottom

For this method, make sure not to cap the bottom drainage openings in the frame when mounting the aluminium shells or installing the aluminium elements respectively. For this reason, use suitable sill connectors that allow for the concealed drainage to the bottom. (Fig. 3.1)

The order of the work steps for the manufacturing of PVC windows with aluminium shells is the same as for PVC windows without aluminium shells. Install the aluminium shells afterwards.

For information concerning the process of milling / drilling please see:
Chapter 08 D Drainage and Air Equalisation in the Glazing Rebate.

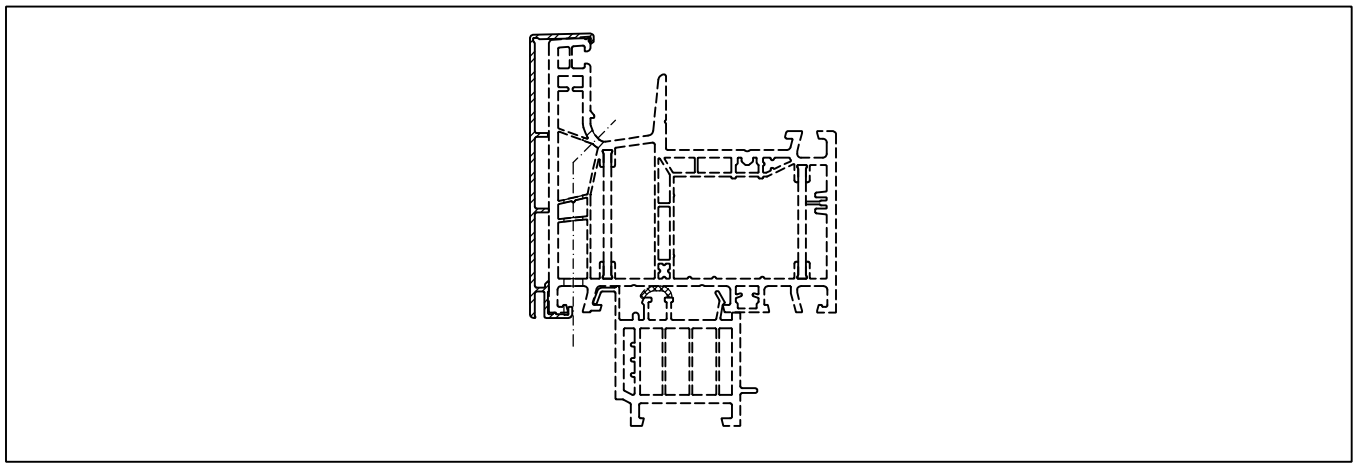


Fig. 3.1 Sill connector (example based on energeto neo, 060x05 - 144247)

Use face drainage if the concealed drainage to the bottom is not possible (e.g. due to horizontal mullion) (Fig. 3.2). For this purpose, use drain tubes / caps appropriate to the system.

See **Chapter 08 L 3.2. Face drainage**

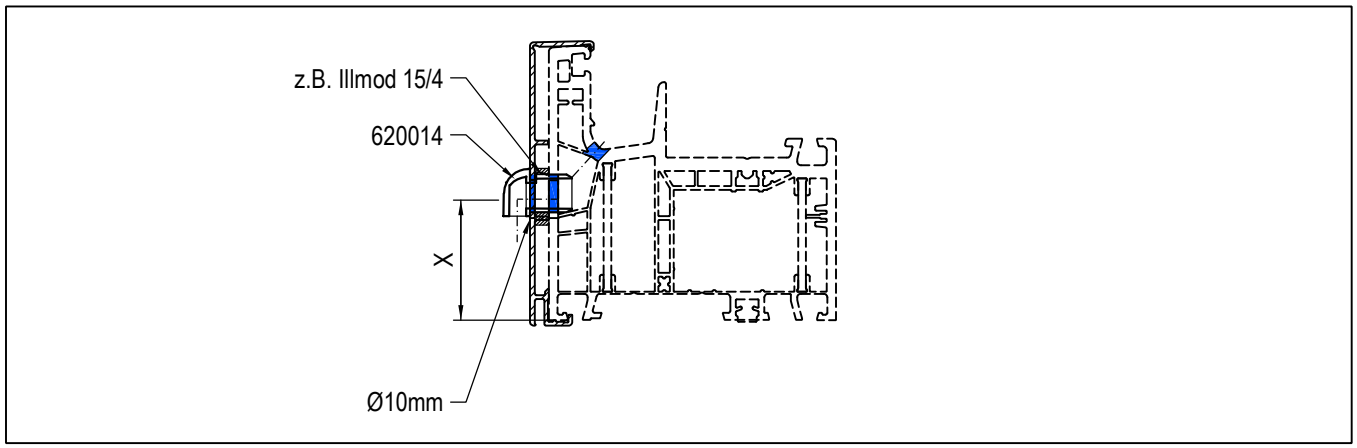


Fig. 3.2 Drainage / Sealing (example based on energeto neo (060x05)

08 L 3.2. Face drainage

(please also refer to Fig. 3.2 on the previous page)

If drainage to the bottom is not possible (e.g. horizontal mullion (Fig. 3.3 + 3.4)), it must be carried out to the front. For this purpose, use drain tubes / caps appropriate to the system.

ATTENTION: This drainage method requires a different work procedure since the holes for the pipe caps are to be drilled when the aluminium shells have already been installed.

For the work procedure for PVC keep in mind that drainage in the frame is not realised via drain slots. Furthermore, avoid ingress of water from the inside between the aluminium shell and the PVC profile (e.g. use sealing tape or silicone rubber to seal the aluminium shell and the PVC profile in the area of the drainage drill hole).

The sequence of operations for PVC windows with aluminium shells is identical to that of PVC windows and is carried out for the routing / drilling in the rebate area of the PVC profile before the installation of the aluminium shells.

Milled drain slots and drill holes that lead to the outside are to be milled/drilled after the installation of the aluminium shells.
For this purpose, mill / drill directly through the already assembled aluminium shell.

For information concerning the process of milling / drilling please see:
Chapter 08 D Drainage and Air Equalisation in the Glazing Rebate.

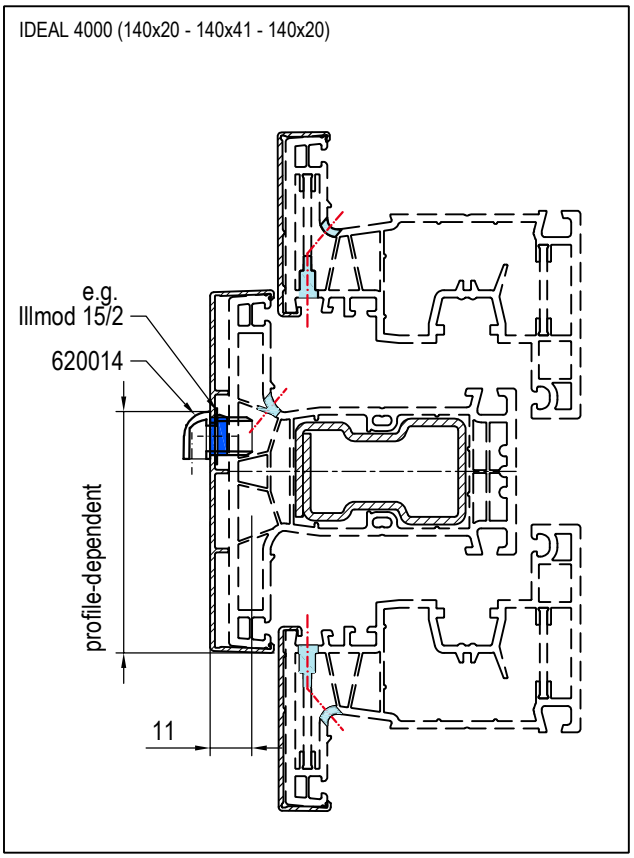


Fig. 3.3 Drainage

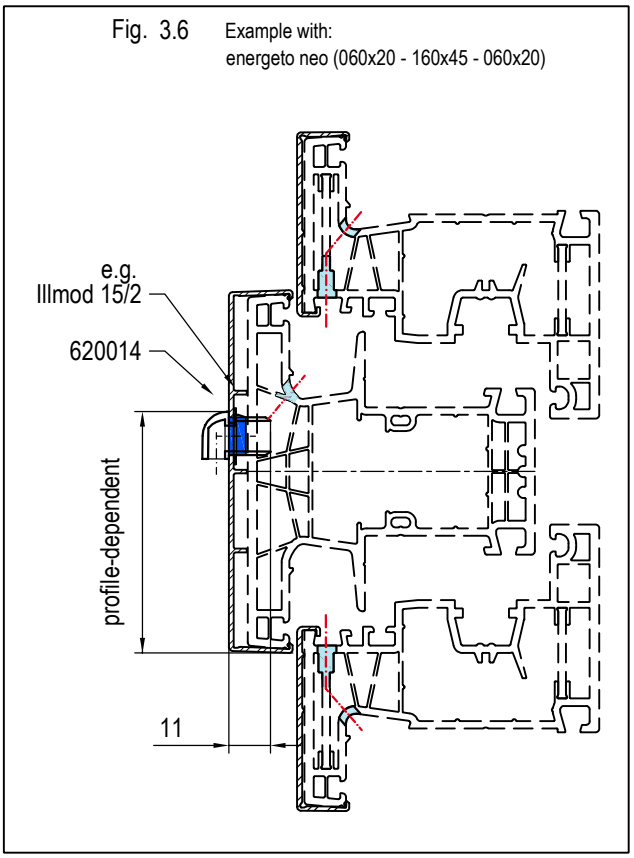


Fig. 3.4 Drainage

08 L 4 Installation

08 L 4.1. Before installation starts

a) In the area where the aluminium shells are first hung, make sure that the inner rebate corner area on the frame or the area of the drip nose on the sash is exposed when plastering the PVC profiles. (Fig. 4.1)

This is absolutely necessary to achieve a closed mitre joint.

b) To seal against driving rain, apply adhesive silicone to the mitres of the PVC profiles shortly before installing the aluminium shells. (Fig. 4.2)

For reasons of safety, additionally fix the aluminium shells pointwise with silicone adhesive approximately every 30 cm over the entire length shortly before installation.

(see also **Chapter 08 L 1.4. Surface finishing (Fig. 1.1)**)

Fig. 4.1

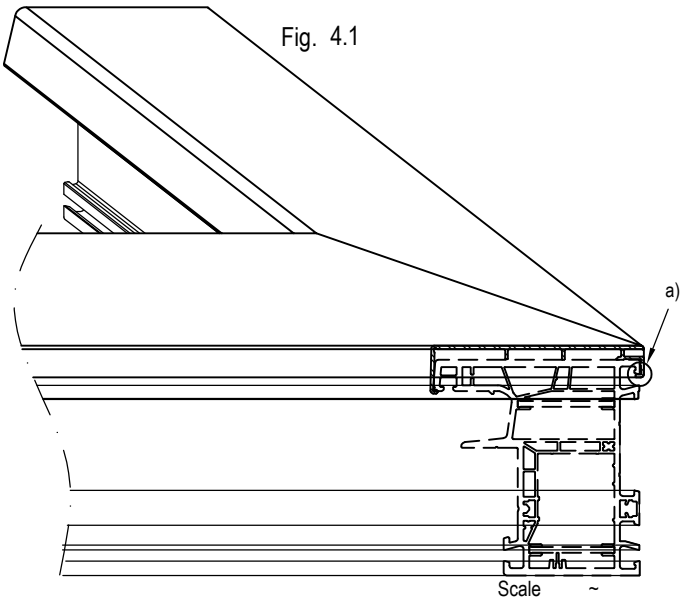
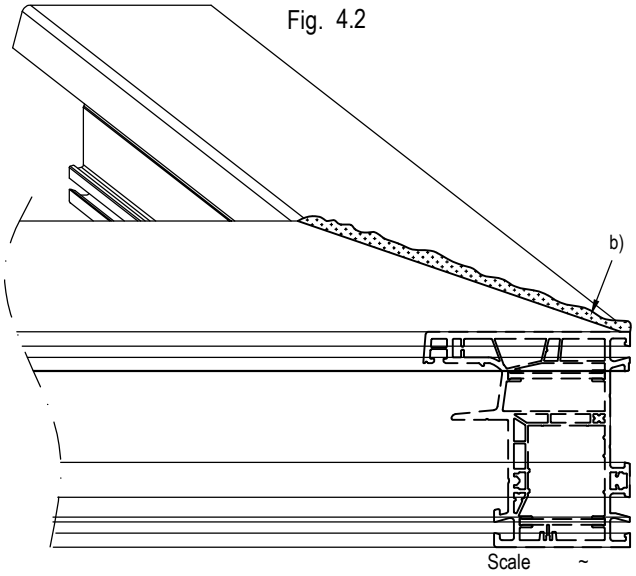


Fig. 4.2



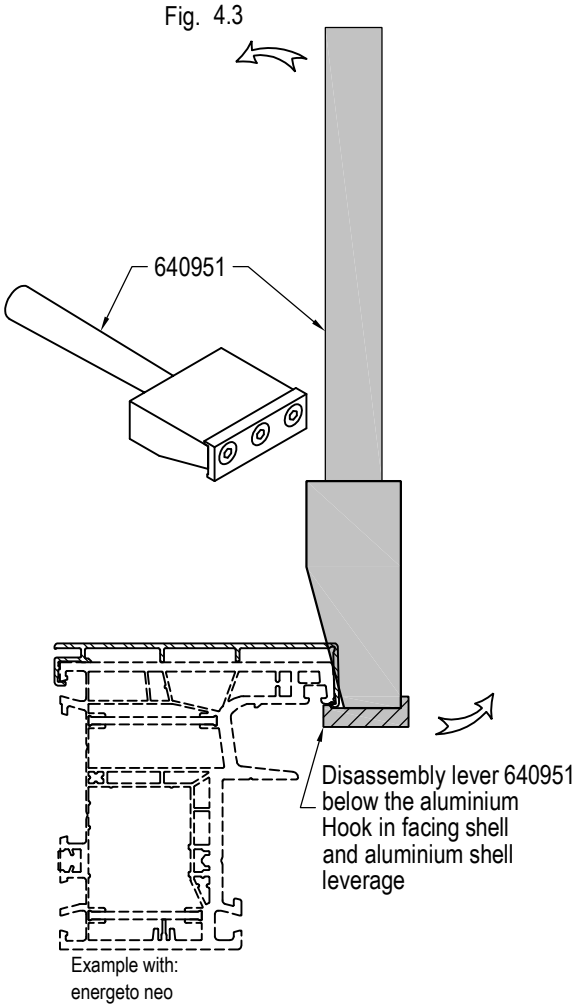
For an easy installation of the aluminium shells, we recommend using an assembly lever.

The installation sequence is roughly illustrated on the following page.

Note/Disassembly: Use the disassembly tool 640951 to demount the aluminium shells. (Fig. 4.3)

The disassembly of the aluminium shells - even with the proper disassembly tool - mostly results in the deformation of the shells.

Fig. 4.3

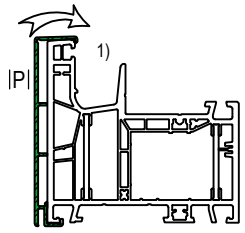


Alu-VSS = Aluminium shells

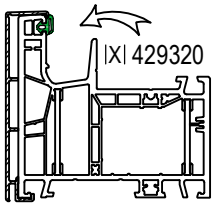
Rough assembly sequence

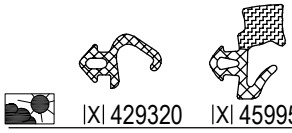
Combinations: frame - sash

1. Alu-VSS



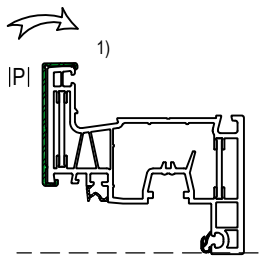
2. Gaskets



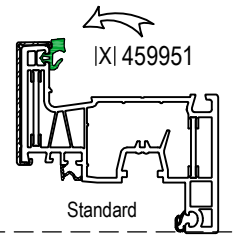


EPDM not weldable:
Moulding compound according to DIN 7863

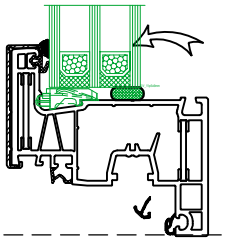
3. Alu-VSS



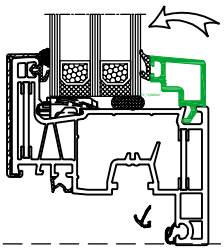
4. Gaskets

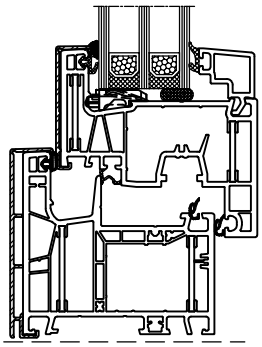


5. Glazing



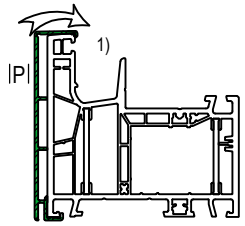
6. Glazing beads



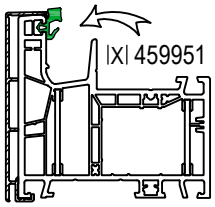


Combinations: sash - fixed glazing

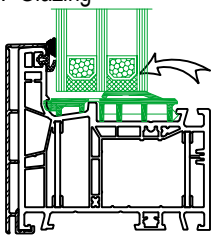
1. Alu-VSS



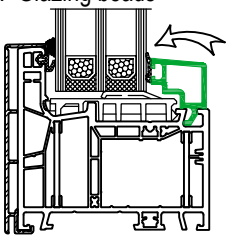
2. Gaskets

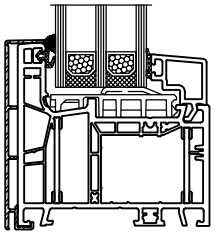


3. Glazing



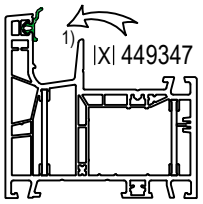
4. Glazing beads



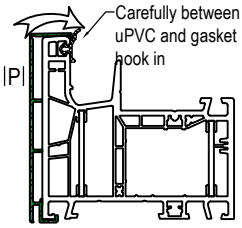


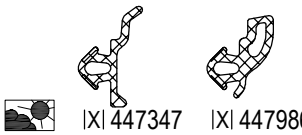
Combinations: frame - sash

1. Gaskets
Before welding!



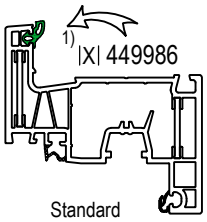
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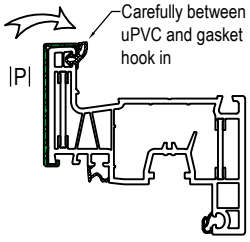


TPE weldable
PVC-P weldable: plasticised PVC

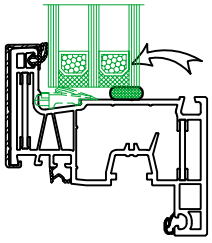
3. Gaskets
Before welding!



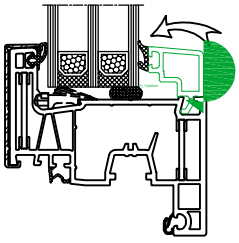
4. Alu-VSS

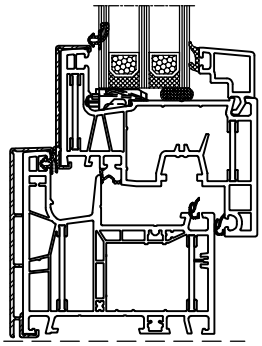


5. Glazing



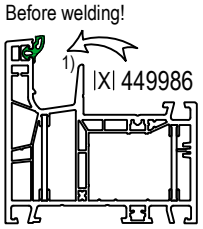
6. Glazing beads



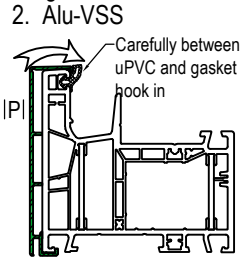


Combinations: sash - fixed glazing

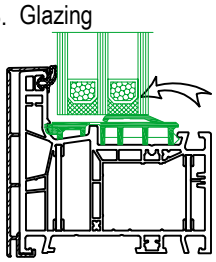
1. Gaskets
Before welding!



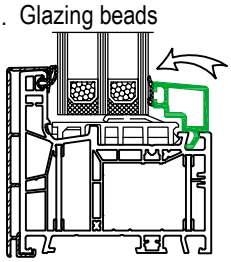
2. Alu-VSS

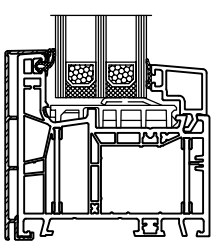


3. Glazing



4. Glazing beads





1) NOTE: the factory-integrated seal on the outside must be removed!

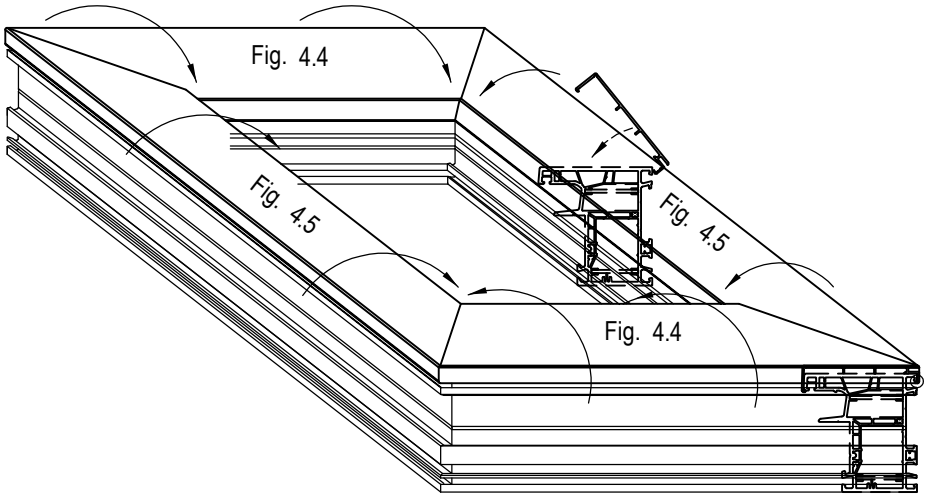
Example with:
energeto neo (060x05, 060x20, 150134)

08 L 4.2. Installation: Version A

1. First, the aluminium shells are hung on the short sides of the element: (Fig. 4.4) for the frame in the outer groove of the wall connection side, for the sash along the drip nose. After centring the aluminium shells, they can be snapped onto the sash or glass stop.

2. The long sides of the element are then clad. After hanging and centring the aluminium shells, they are initially only snapped on at the corners. (max. 15cm). Now the aluminium shells can be clipped along the entire length of the PVC rod. (Fig. 4.5)

Version A



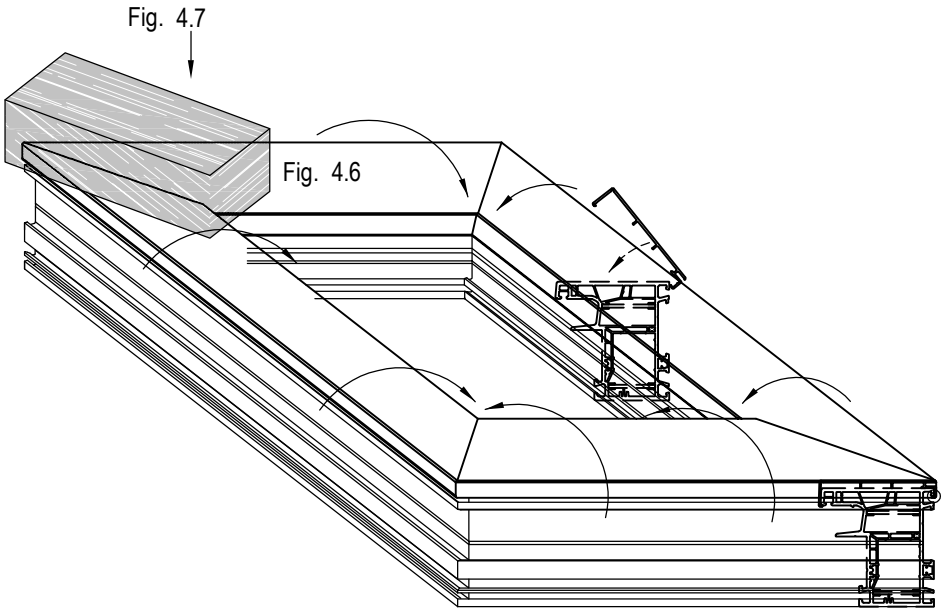
08 L 4.3. Installation: Version B

First, hook the aluminium shells onto all 4 sides of the element. (Fig. 4.6)

Then, in the mitre corners, press two corresponding aluminium shells at the same time onto the PVC profile using for example wooden blocks, and hook them onto the profile in the corners only (Fig. 4.7). Make sure that the aluminium shells are flush to each other when clicking them into place on the PVC profile.

Only when all 4 corners of the aluminium shells are properly clicked into place, the shells can be locked into place over the entire profile length.

Variant B



08 L 5 Installation with mullion / transom

08 L 5.1. General information

For the installation of horizontal mullions or transoms, drill/mill openings to the front side for face drainage and use drain tube caps.
(**see chapter 08 L 3.2.**)

We recommend using the following machines for processing mullion elements with aluminium shells (except for Round-line):

1. Copy router with a clamping device for frame or sash aluminium frames facing shells (required to notch aluminium shells in the area the 13° slope or 1° or 2° slope for the abutting mullion profile)

2. Adjustable cutting saw for 13° cut or 1° or 2° cut of mullion-aluminium shells.

08 L 5.2. Profile processing and installation

Figure	Fig. 5.1	Fig. 5.2	Fig. 5.3
IDEAL	4000 / 5000	energeto neo	7000 / 8000
Cutting angle	13°	1°/2°	13°

The installation on the mullion / transom is carried out according to the guidelines of **chapter 08 L 4**.

08 L 5.2.1 IDEAL 4000, 5000, 7000, 8000, energeto neo, or Classic-line / Soft-line / Qube-line

Use a special notch-milling cutter for aluminium shells with mullions / transoms.
(refer also to the milling patterns for PVC profiles on the following pages)

After finishing the processing of the PVC profiles and once the mullion / transom connections are completed, take the measurements to cut the aluminium shells for the mullion / transom area.

Cutting according to the above-mentioned guidelines.

Then the corresponding aluminium shells are cut at an angle of 13° or 1° or 2°.
(see Fig. 5.1 + 5.2 + 5.3)

Attention: When positioning the aluminium shells, make sure that they do not lock into place yet: The subsequently necessary removal of the aluminium shells can deform the aluminium shells! (see also **Chapter 08 L 4**)

Mounting on the (fascia / sash) frame is carried out according to the guidelines at **Chapter 08 L 4**.

For the mullion / transom profile, cut the aluminium shells to the required size:

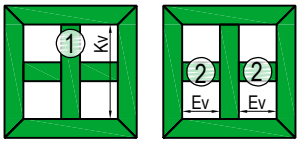


Fig. 5.1 IDEAL 4000, IDEAL 5000
Example with:
140x20 - 140x45 - 140x20
150x20 - 140x45 - 150x20

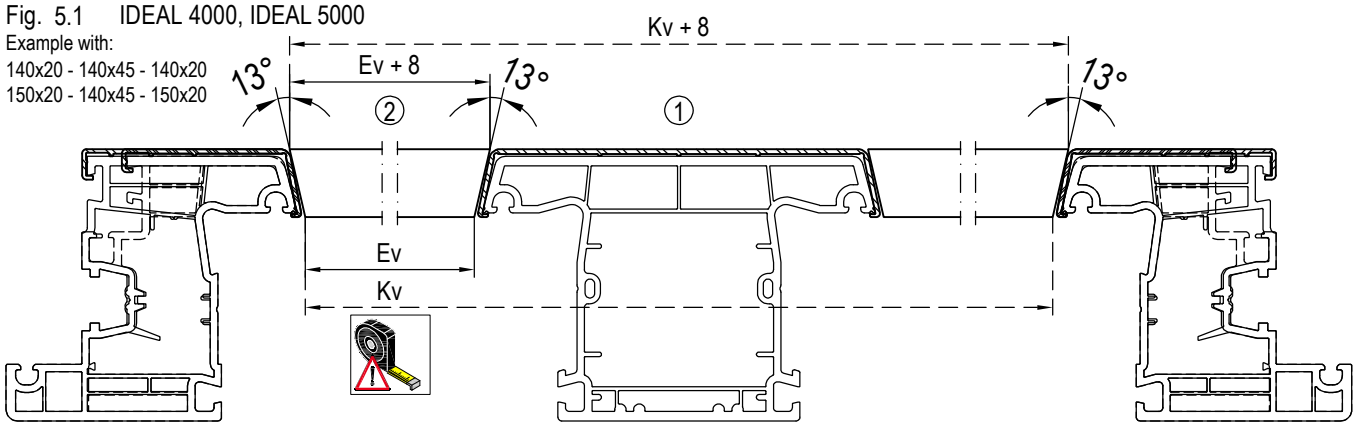


Fig. 5.2 energeto neo
Example with:
060x20 - 160x41 - 060x20
060x20 - 160x45 - 060x20

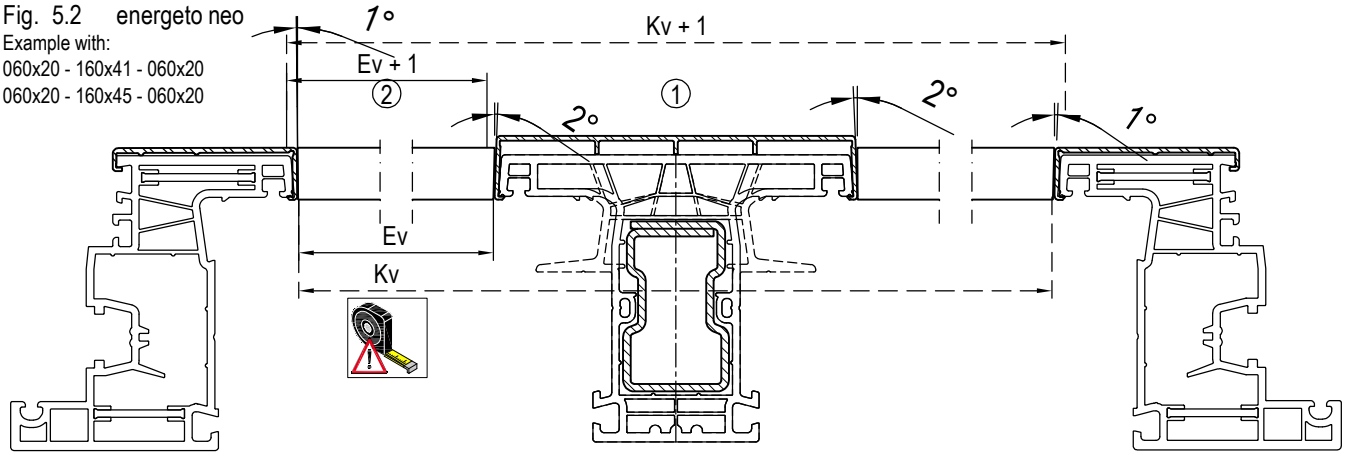
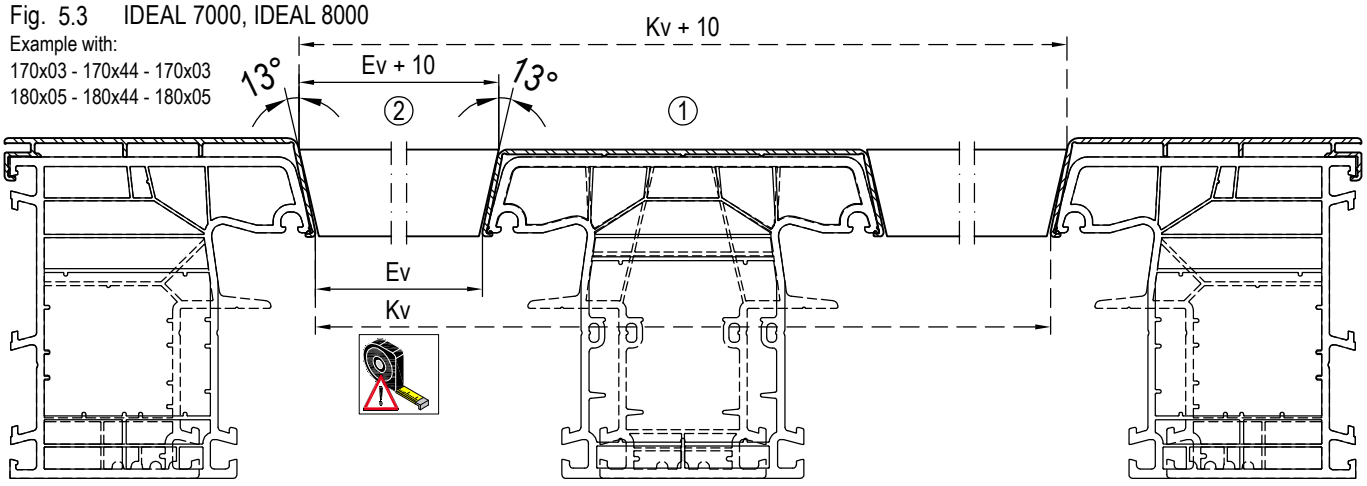


Fig. 5.3 IDEAL 7000, IDEAL 8000
Example with:
170x03 - 170x44 - 170x03
180x05 - 180x44 - 180x05



08 L 6 Installation with false mullion

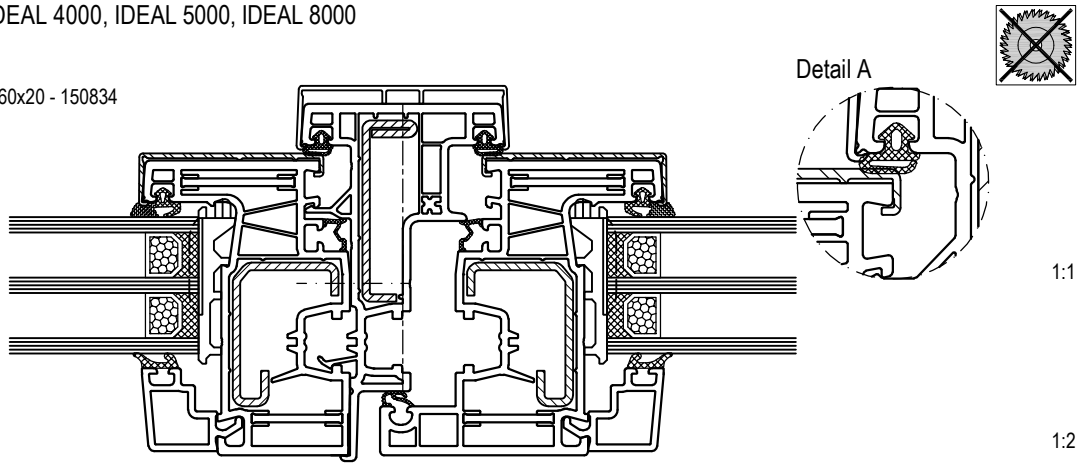
08 L 6.1. Profile processing and installation

Processing and assembly of the aluminium shells on the sash frame profile shall be done according to the guidelines specified in chapter 08 L 4 and before the installation of the false mullion profile.

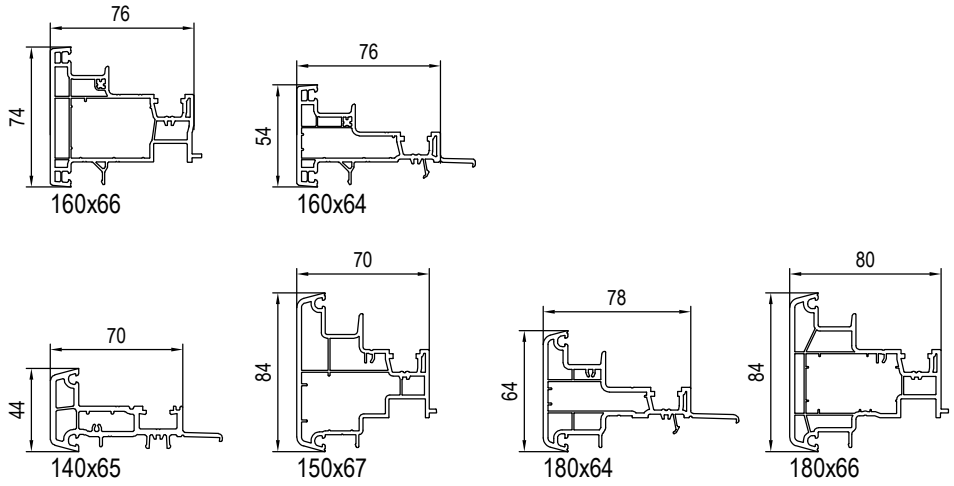
Deburring of the protrusion (20mm-protrusion) as well as any other profile processing of the sash profile must be completed before the installation of the aluminium shells to prevent any damage to the shells. In the energeto neo profile series, the trimming of the faceplate profile isn't necessary.

After cutting the uPVC false mullion profile to length, proceed as follows:
Chapter 08 L6.1 Processing IDEAL

Fig. 6.2 energeto neo, IDEAL 4000, IDEAL 5000, IDEAL 8000
without seaming
Example with:
060x20 - 160x64 - 060x20 - 150834



Valid for



08 L 7 Additional profiles and accessories

General: Storage, cutting etc. is carried out according to the general processing and assembly guidelines as described in chapter 08 L Aluminium shells.

08 L 7.1. Aluminium shells: Additional profiles

08 L 7.1.1 Aluminium shells for couplings

refer to chapter 08 L 7.5.

For additional information please refer to
Chapter 04 D Couplings and chapter 05 S Aluminium Profiles (shown with aluminium shells)

08 L 7.1.2 Aluminium shells for extensions

refer to chapter 08 L 7.7.

For additional information please refer to
Chapter 04 F Extensions

08 L 7.2. Aluminium shells: Accessories

08 L 7.2.1 Aluminium shells: Main profiles / additional profiles

For additional information please refer to
Chapter 05 P aluskin aluminium shells

08 L 7.2.2 Aluminium roller shutter guides

For additional information please refer to
Chapter 05 R aluminium roller shutter guides

08 L 7.2.3 Aluminium sill connector / window sill / angles / couplings ...

For additional information please refer to
Chapter 05 S Aluminium profiles

08 L 7.2.4 Aluminium weather bars

For additional information please refer to
Chapter 05 T Aluminium weather bars

08 L 7.3. Aluminium shells: Lift-and-slide door

For additional information please refer to
the manual "Lift-and-slide door"

08 L 7.4. Aluminium shells: Roller shutter box

For additional information please refer to
the manual "Roller shutter box"

08 L 7.5. Clip screw

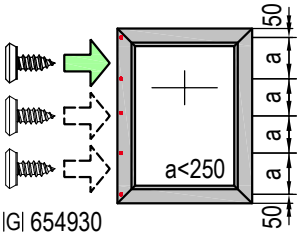
The clip screw 654930 is required for aluminium shells without clip function such as e.g. aluminium shells for old building frames or their use with standard frames.
The clip screw 654930 is not required for aluminium shells with clip function.

08 L 7.5. Clip screw

Depending on the installation situation, for some aluminium shells (e.g. for frames) the clip screw 654930 replaces the clip function that is missing due to cutting by means of a corresponding bracket on the aluminium shells. (Fig. 7.2) The clip screw 654930 is required for aluminium shells without clip function such as e.g. aluminium shells for renovation frames or their use with standard frames.
The clip screw is not required for aluminium shells with clip function. The distance between the clip
Screw as in Fig. 7.1.

The screw connection should not be the inner webs of the PVC profiles.

Take additional information
Please select from
Chapter 05 P aluskin aluminium shells



|G| 654930
Nipple screw / Clip
-> |P| 259404 Fig. 7.1

08 L 7.6. Couplings

For vertical couplings of frames / extensions, several options are available depending on the gap. (Fig. 7.4 - 7.8)

In the area of the coupling screws, click the expansion plate 642025 (3mm) or 645050 (5mm) into place so that these screws can pass through the centre of the opening of the expansion plates. (Fig. 7.3)

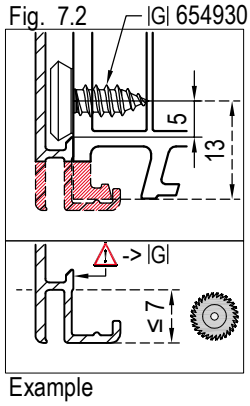
All the aluplast profile series, independent of their differing profile depths, All the aluplast profile series have an identical foot contour. For this reason, this coupling type can be used analogously with other profile depths.

Seals 447140/449140, 447141/449141, 449142 are approved for vertical couplings (no cross couplings) up to 300 Pa.

For horizontal couplings or in case of high static requirements for vertical couplings, static profiles with aluminium shells are available.

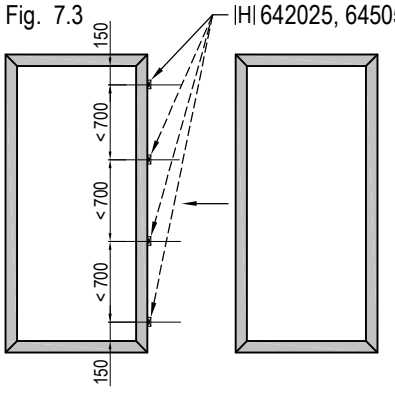
For additional information please refer to
Chapter 04 D Couplings and chapter 05 S Aluminium Profiles (shown with aluminium shells)

Fig. 7.2 |G| 654930



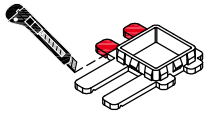
Example

Fig. 7.3 |H| 642025, 645050 4)



|F| Reinforcements
|G| Nipple screw / Clip
|H| Installation / Mounting anchor
|X| Gaskets

1) Pre-compressed sealing tape
2) Silicone rubber
3) Ø5mm, EPDM: Round chord
4)



|H| 642025, 645050

Example with:
energeto neo Frame

Fig. 7.4 (3mm)

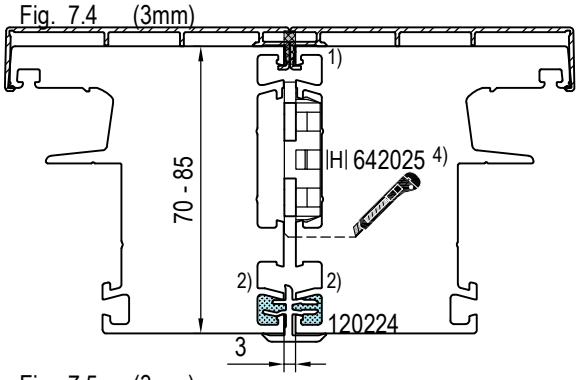


Fig. 7.5 (3mm)

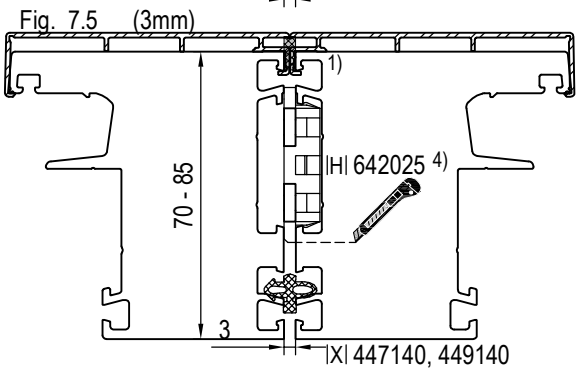


Fig. 7.6 (5mm)

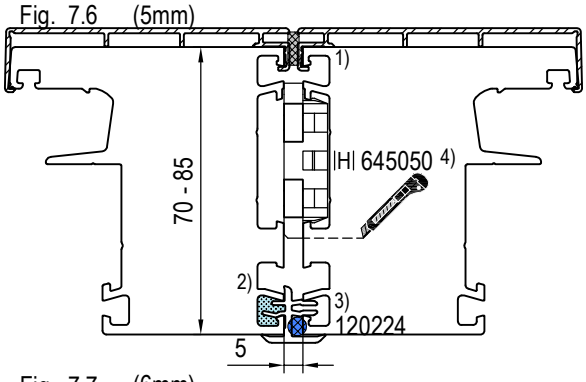


Fig. 7.7 (6mm)

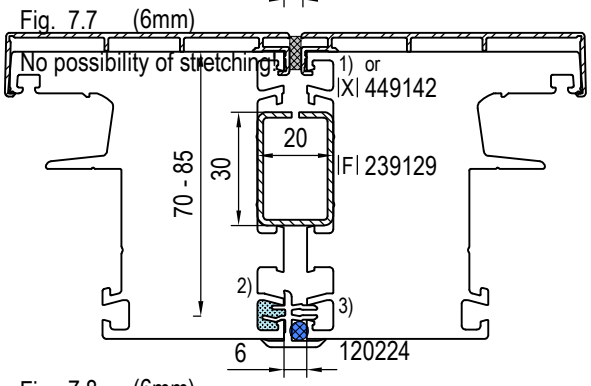
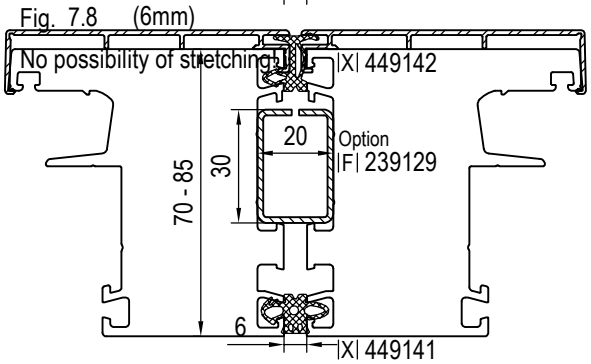
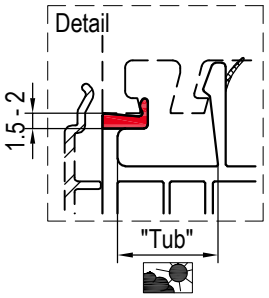


Fig. 7.8 (6mm)



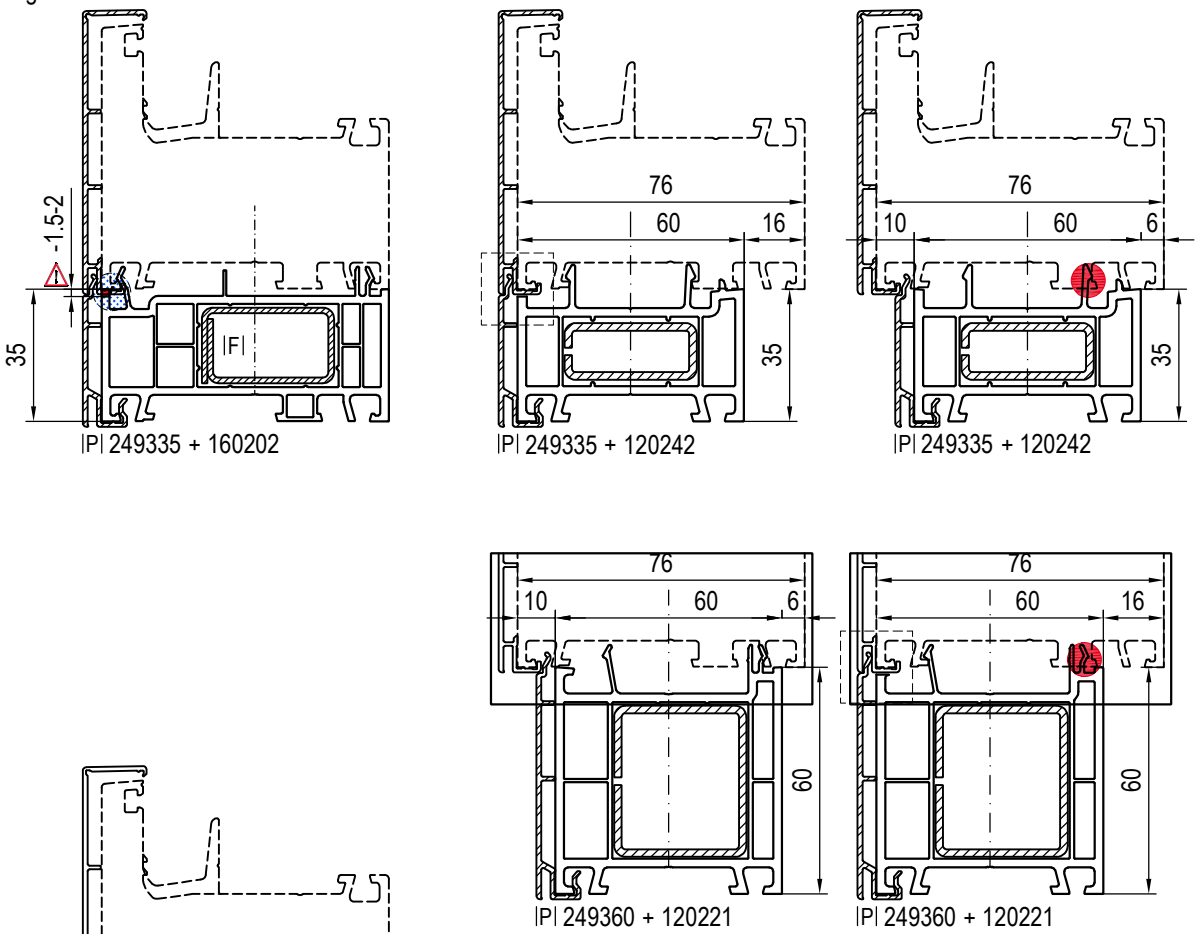
08 L 7.7. Extensions

Extensions	h= 35mm	h= 60mm	h= 100mm	energeto neo
b= 60mm -> 76mm	120242	120221	-	
b= 76mm	160202	-	160204	
Aluminium shells	249335	249360	249310	(Abb. 7.8)



Principle: With the extensions, the "tub" must be on the outside! (Detail)

Fig. 7.8 Overview

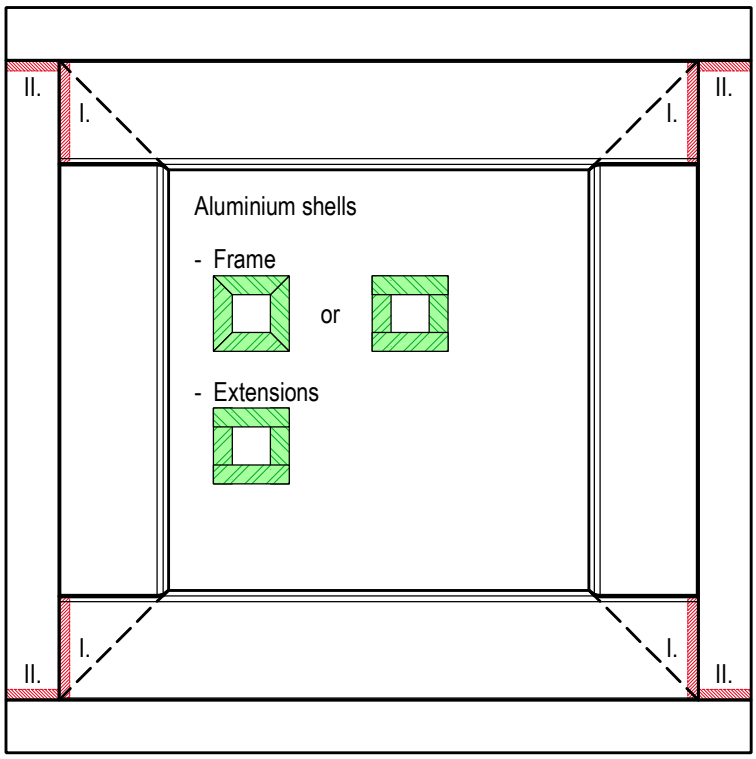


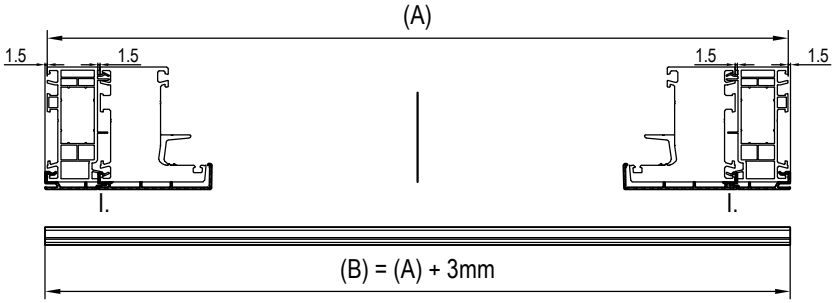
Additional specifications, screw joints, sealing etc.: refer to chapter 08 C 8.

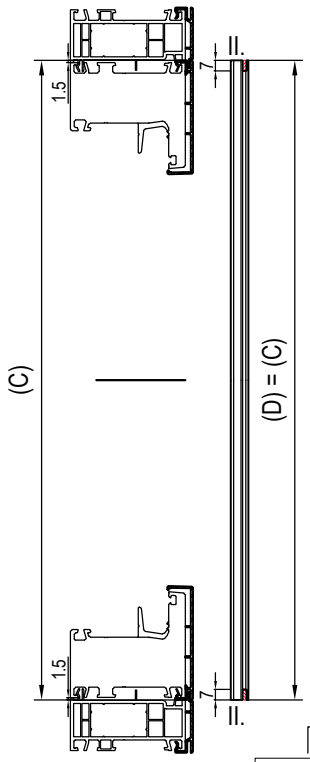
Rough assembly sequence

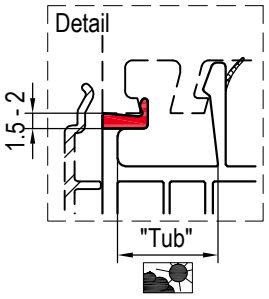
Principle: With the extensions, the "tub" must be on the outside! (Detail)

Outside view

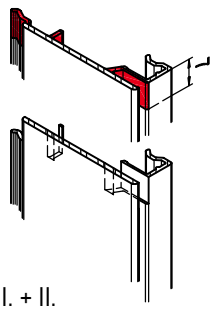




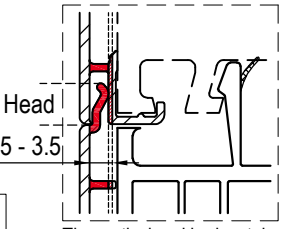




Example
II.



I. + II.

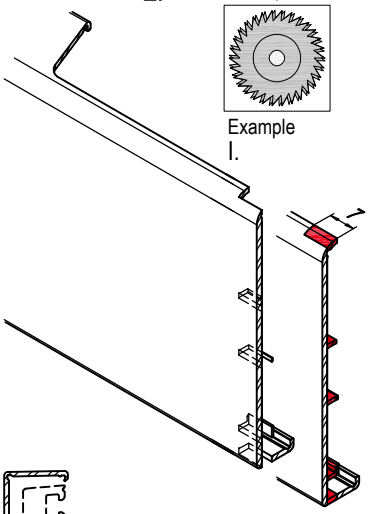


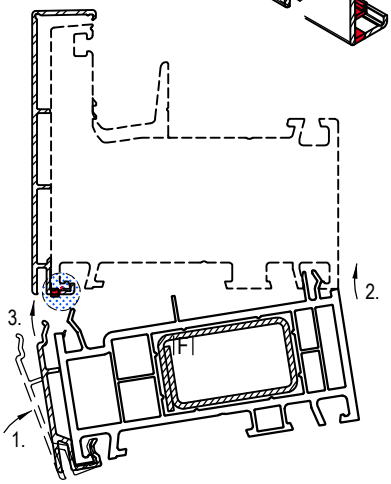
The vertical and horizontal aluminium shells collide in the area of the head of the aluminium shells of the extension.

The contrasting bars must therefore be cleared by 7mm over the entire height.

In the example, the aluminium shells of I. Frame horizontally and from II. Extension vertically affected.

Example
I.





Attention: Depending on the installation situation, the aluminium shells must be cleared from the frame (see I.) or the extension (see II.) by 7mm on the front side!

Generally, the required dimensions should be determined only on the basis of the completed element, i.e. when all the required work steps have been completed!

Shorten the lower extension on the outside of the "tub" by 1.5 - 2mm from the calculated upper edge of the extension (detail).

Carry out the sealing of the extension (chapter 08 C 8. and sealing of the aluminium shells (chapter 08 L) and clip the aluminium shells into the base of the extension from below.

Clip the sealed extension with glued / sealed / mounted aluminium shell into the frame starting on the inside and snap in on the outside, e.g. with the help of a wooden block.

Extensively seal lateral (left, right, top, bottom) cut-outs.



Before / during / after each work step, the resulting connections and (lateral) clearances must be completely sealed!

Additional specifications, screw joints, sealing etc.: refer to chapter 08 C 8.

Example with:
energeto neo

08 L 8. Butt joint

08 L 8.1. General Information

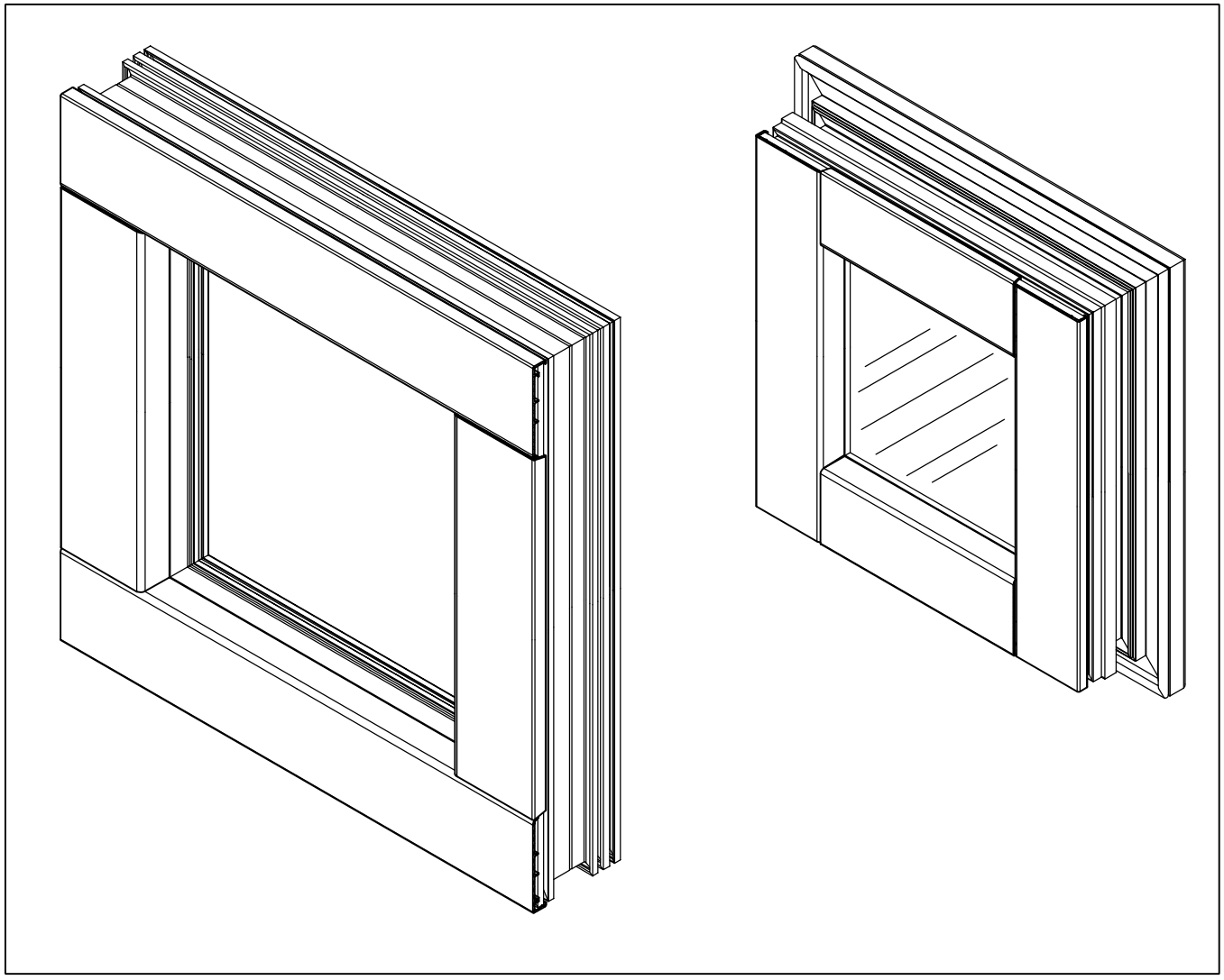
Generally, the processing guidelines according to chapter 08 L Aluminium shells apply unless explicitly restricted or complemented here.

Instead of a mitre joint, the aluminium shells can alternatively be butt-joined in the corners, provided that the shells are of Classic-line design (CL) and arranged recessed (in one plane).

Suitable aluminium shells are marked in the wall chart “aluskin”.

The markings **(A)** to (...) in this chapter roughly illustrate the installation sequence or details; they are described in detail on the following pages.

Due to the differing orientation of the continuous and the non-continuous aluminium shells on frames and sashes, a clear distinction must be made between the processing of frames and the processing of sashes with regard to the vertical and horizontal orientation of the shells, the sealing and the different sequence of work steps.



Frame / sash (Outside view)

08 L 8.2. Supplements to and restrictions of the processing guidelines

...

08 L 2.2. Cutting aluminium shells to size

...
Cut the aluminium shells as specified on the following pages.

Please pay special attention to additional work steps as punching/milling and chamfering.

In principle, the required cutting dimensions should only be determined on the basis of the finished components or after the corresponding work steps.
...

08 L 4.1. Before assembly

...
b) To seal against driving rain, apply silicone to the centre of the butt joint and the otherwise open end faces shortly before installing the aluminium shells.
...

08 L 4.2. (not applicable)

08 L 4.3. (not applicable)

08 L 4.4. Assembly: Variant C (butt joint)

The assembly of the aluminium shells on the frame and sash is carried out according to the rough assembly sequence on the following pages.

08 L 5 Assembly for mullions / transoms

...

08 L 5.2. Profile machining and assembly

The installation on the mullion / transom is to be done according to the guidelines specified in chapter 08 L 4.
...
For the mullions / transoms, the notching cutter contour and processing is used as standard according to chapter 09 H Mechanical connections, as the aluminium shell to be butted is punched out/milled out in each case in the end area of the mullions / transoms. This applies analogously to cross connections, whereby continuous mullions / transoms should also receive continuous aluminium shells.

The assembly of the aluminium shells on mullions and transoms is carried out according to the rough assembly sequence on the following pages.
...

08 L 5.2.1 (not applicable)

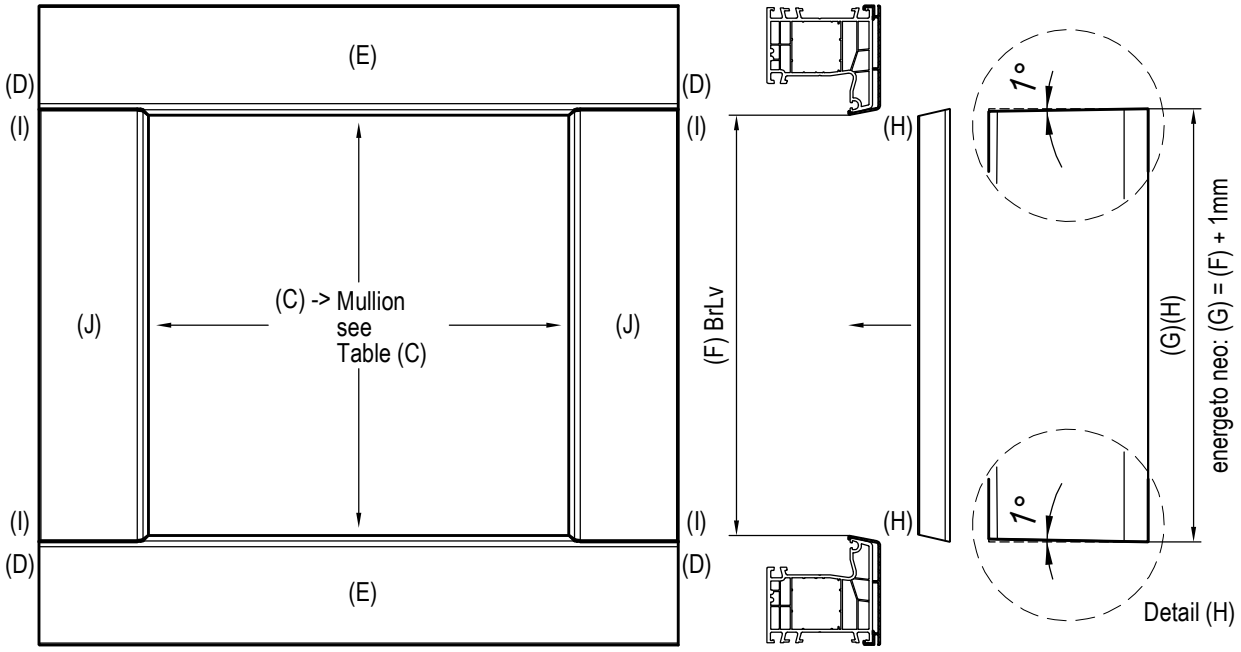
08 L 5.2.2 (not applicable)

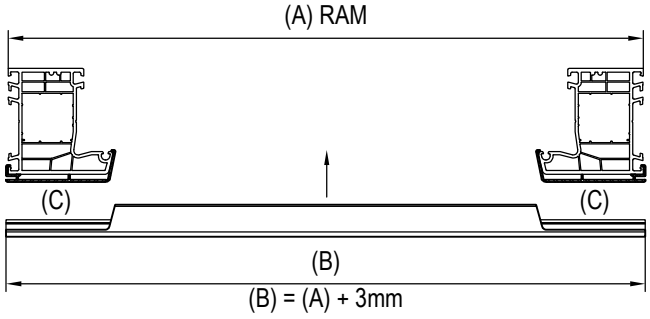
...

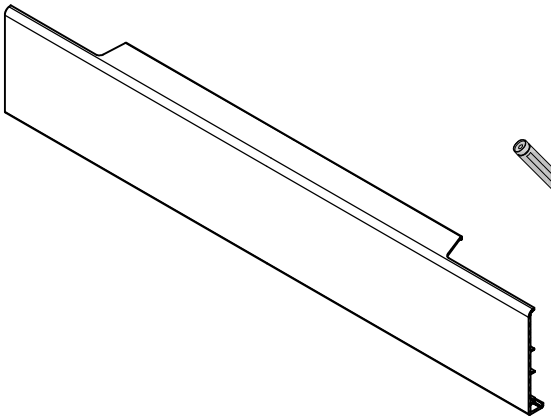
Frame

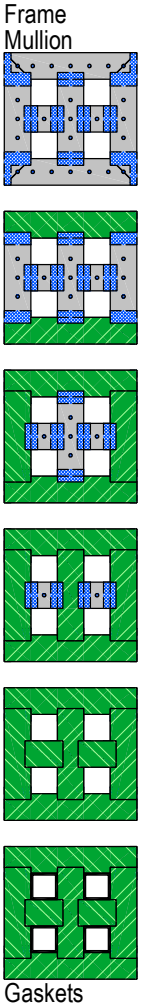
Rough assembly sequence

Outside view









Generally, the required dimensions should be determined only on the basis of the completed element, i.e. when all the required work steps have been completed!

Horizontal aluminium shells (top / bottom) of the frame are continuous:
(A) Measure: Measure RAM (frame outer dimension).
(B) Cutting to size: Cut the aluminium shells to size.
(C) Punching or milling: Punch out or mill out cut-to-size aluminium shells at the end faces. Table (C)
(D) Caulking: Apply sealings to the frame. Detail (D)
(E) Mounting: Mount the processed aluminium shells in a sealed manner.

Vertical aluminium shells (left / right) of the frame are noncontinuous:
(F) Measure: Measure BrLv (frame: clear dimension) between the horizontally (top/bottom) mounted aluminium shells.
(G) Cutting to size: Cut aluminium shells to size, possibly cut off at the same time according to (H).
(H) Cut off: Cut off the aluminium shells at an angle at the end faces. Detail (H)
(I) Sealing: Sealing on the frame has already been done according to (D). Detail (D)
(J) Mounting: Mount the machined aluminium shells in a sealed manner.

Tables (C) and Detail (D): see the following pages.

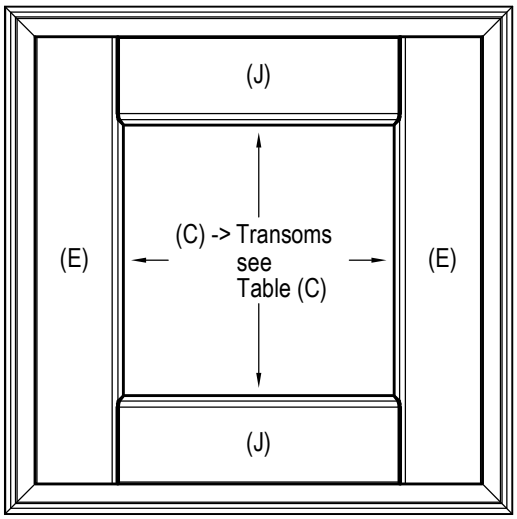
Mullion

(F) - (G) - (H) - (I) - (J) (vertical and horizontal) apply analogously to mullions in the frame.

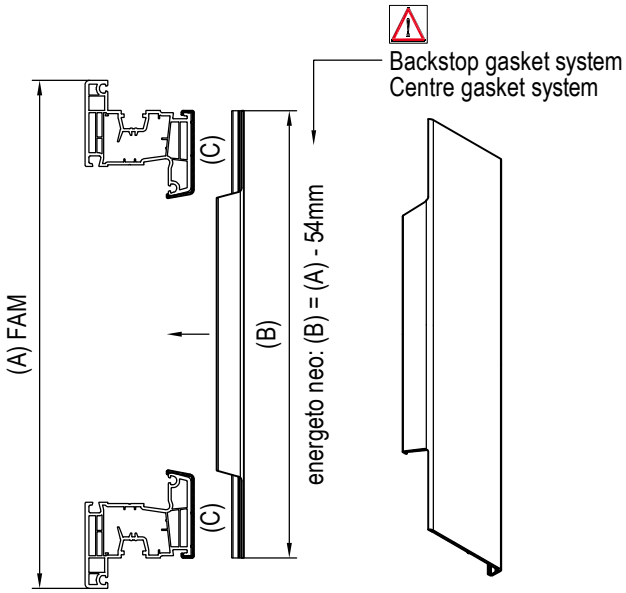
Example with:
energeto neo

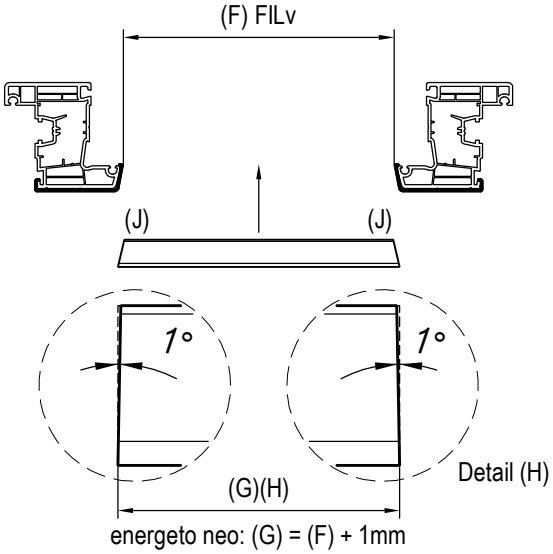
Sash

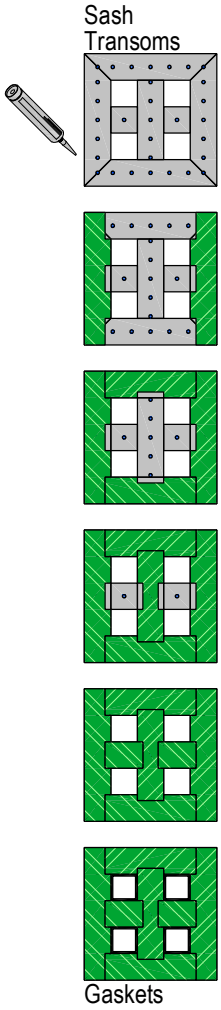
Outside view



Rough assembly sequence







Generally, the required dimensions should be determined only on the basis of the completed element, i.e. when all the required work steps have been completed!

Vertical aluminium shells (left / right) of the sash are continuous:
(A) Measure: Measure FAM (sash outer dimension).
(B) Cutting to size: Cut the aluminium shells to size.
(C) Punching or milling: Punch out or mill out cut-to-size aluminium shells at the end faces. Table (C)
(E) Mounting: Mount machined aluminium shells.

Horizontal aluminium shells (top / bottom) of the sash are noncontinuous:
(F) Measure: Measure FILv (sash: clear dimension) between the vertically (left/right) mounted aluminium shells.
(G) Cutting to size: Cut aluminium shells to size, possibly cut off at the same time according to (H).
(H) Cut off: Cut off the aluminium shells at an angle at the end faces. Detail (H)
(J) Mounting: Mount machined aluminium shells.

Tables (C): see the following pages.

Transoms

(F) - (G) - (H) - (J) (vertical and horizontal) apply analogously to sash transoms.

Example with:
energeto neo

08 L 9. aluskin function - Functional bonding

08 L9.1 General

Generally, the processing guidelines according to chapter **08 L Aluminium shells** apply, unless explicitly restricted or complemented here.

As an alternative to the securing bonding of the aluminium shell, the aluminium shell can also be functionally bonded. aluskin function serves to improve the static properties of the entire window sash by creating an almost shear-resistant connection between the aluminium shell and the PVC sash. The thermal behaviour, especially the shrinkage behaviour, is also significantly improved. The clipping of the aluminium shell to the sash is only used for correct positioning during installation.

A distinction must be made between the frame and the sash during installation. As only the PVC sash profile is functionally bonded to the aluminium shell, it is recommended that the PVC frame profile is secured with adhesive in accordance with **Chapter 08 L 1.4** or **08 L 4.1** . The processing of the wing is explained in more detail below.

08 L 9.2 Additions or restrictions to the individual guidelines

...

08 L 1.4 Surface finishing

...

Note:
For safety reasons, the aluminium shell of the frame must also be glued in points approx. every 30 cm over the entire length with a suitable adhesive (e.g. aluplast ap.bond 2K or equivalent). The adhesive effect of the adhesive agent must be approved by the manufacturer for PVC and aluminium. (Fig.: 9.1 or 9.2)

To increase the stability of the window sash, the aluminium shells must be functionally bonded. This is done by a continuous, wavy Ø4mm adhesive bead on the previously primed PVC profile. By attaching and thus pressing the cleaned aluminium shell to the PVC profile, the bead is distributed sufficiently over the entire width of the profile. (Fig.: 9.1 or 9.2) (see also **chapter 08 L4 assembly**)

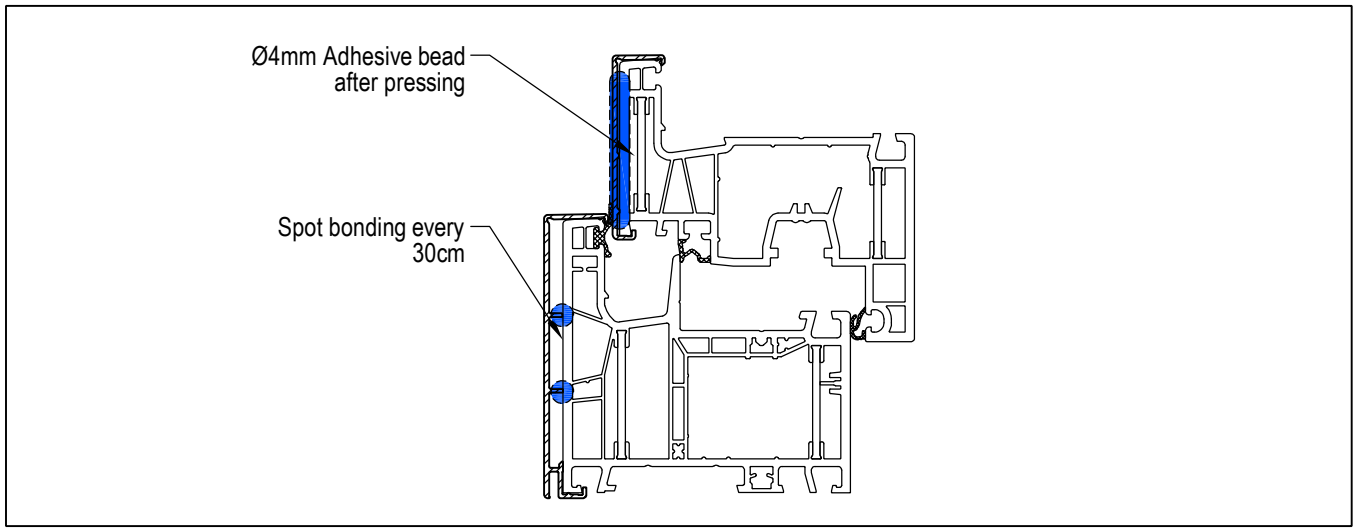


Fig. 9.1 (Example based on energeto neo, 060x05 - 060x20)

08 L 4 Installation

08 L 4.1 Before assembly

....
To increase the stability of the window sash, the aluminium shells must be functionally bonded with a continuous wave-shaped Ø 4mm adhesive bead shortly before installation (see also chapter 08 L 1.4 Surface finishing (Fig.1.2)).
...

08 L 4.2 (not applicable)

08 L 4.3 (not applicable)

08 L 4.4 (not applicable)

08 L 4.5 Installation: Variant C (functional bonding - aluskin function)

The installation of the aluminium shells on the frame and sash is carried out according to chapter 08 L 4.2 or 4.3 (mitred) or chapter 08 L 4.5 (butt joint) depending on the design variant. The additional assembly steps to be followed are listed on the following pages.

08 L 5 Assembly for mullions / transoms

...

08 L 5.2 Profile machining and assembly

Profile machining depending on design variant (mitred or butted)
...

Frame:

Before mounting, make sure that the surfaces are free of dust and grease. No further pre-treatment is required for securing bonding. Commercially available silicone can be used as an adhesive.
The adhesive is applied over the entire length of the PVC frame profile at intervals of 300mm. These glue dots should have a diameter of at least 30mm. For side lengths <500mm, a glue dot should be placed in both corner areas (see Fig.: 9.2).

Sash:

Before mounting, the surfaces of the individual profiles must be pre-treated according to the table below. After that, the appropriate adhesive can be applied. Preferably, the adhesive should be applied to the PVC sash profile. The adhesive bead of Ø4mm is applied in waves and, if possible, uninterrupted along the entire length of the profile. By attaching the aluminium shell and the resulting compression of the bead to a height of 0.7mm, the adhesive is distributed sufficiently over the width of the profile.

To Fig:. 9.2

a) Inner rebate corner area must be exposed
b) Apply adhesive silicone to the mitre to seal against driving rain
c) Securing bonding to protect against incorrect installation
d) Functional bonding - aluskin function to improve the static properties

Adhesive	**1K ap.bond**	**2K ap.bond**	**Ottocoll Allbert**
uPVC profile	ap.prime rot	ap.prime 121	P1225
aluminium profile	ap.clean	ap.prime 121	P1225
How to handle	Compressed air / battery gun	Compressed air / special gun / static mixer	Hand pistol
Durability	9 months	6 months	12 months

Grid: Surface pretreatment

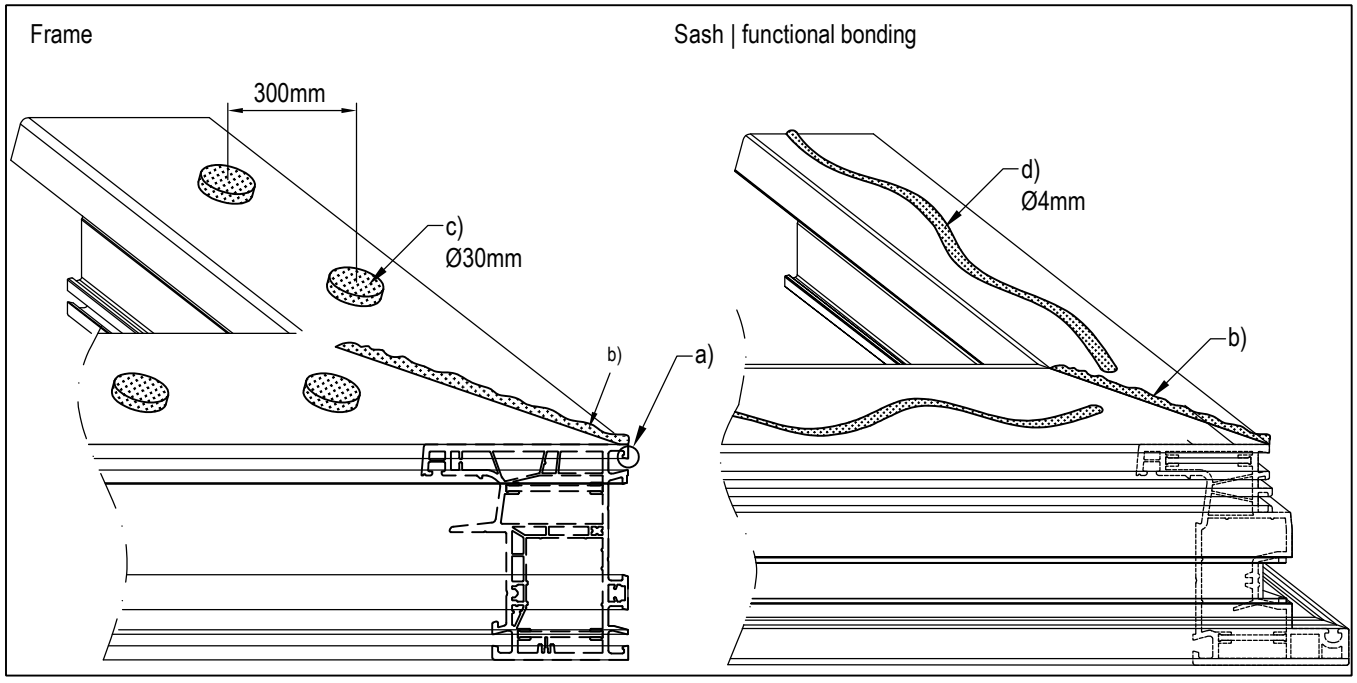
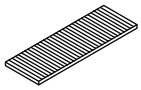
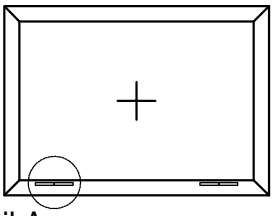


Fig. 9.2 Bonding to frame and sash

03 A Construction Dimensions
= Standard-Glazing / Blocking

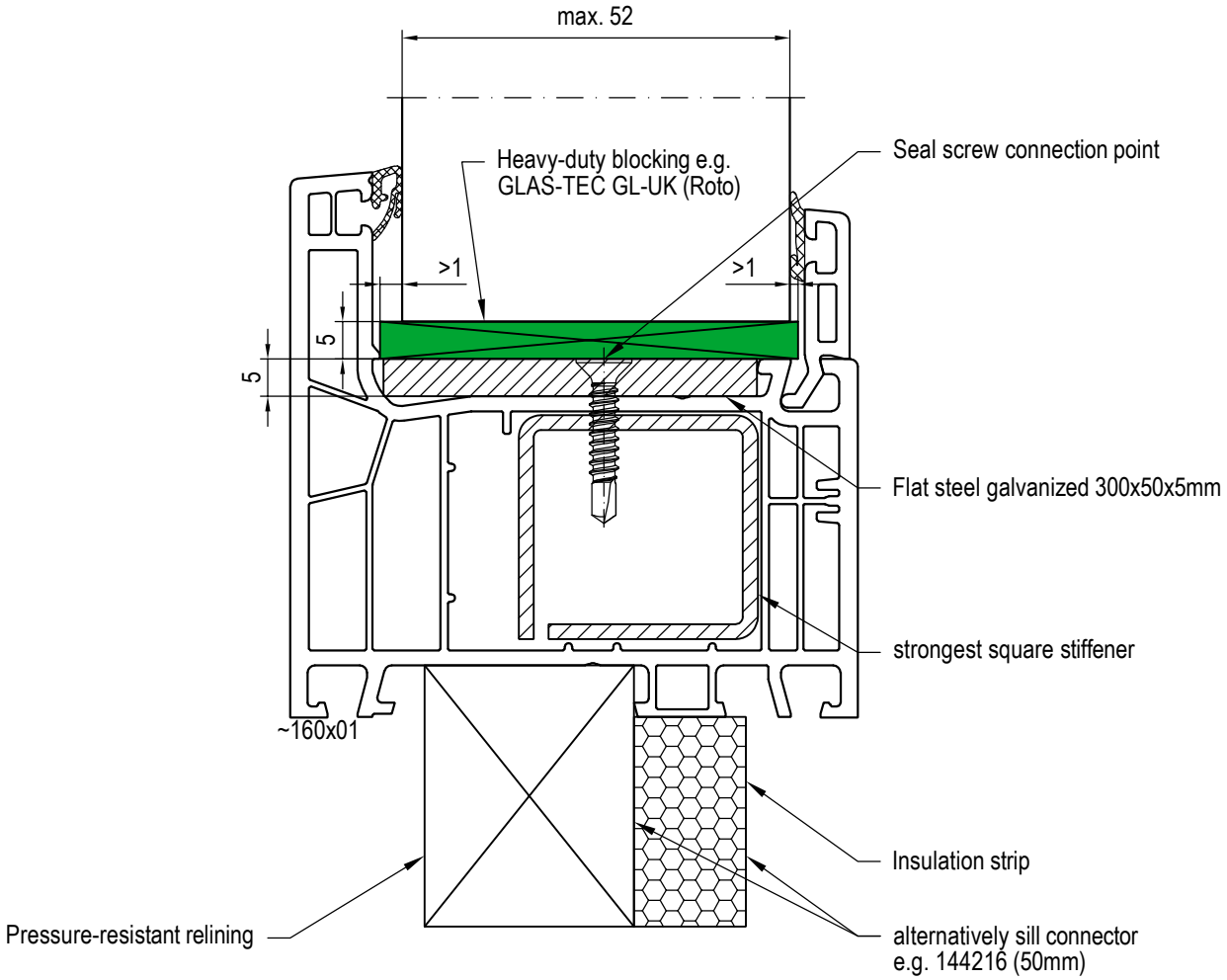


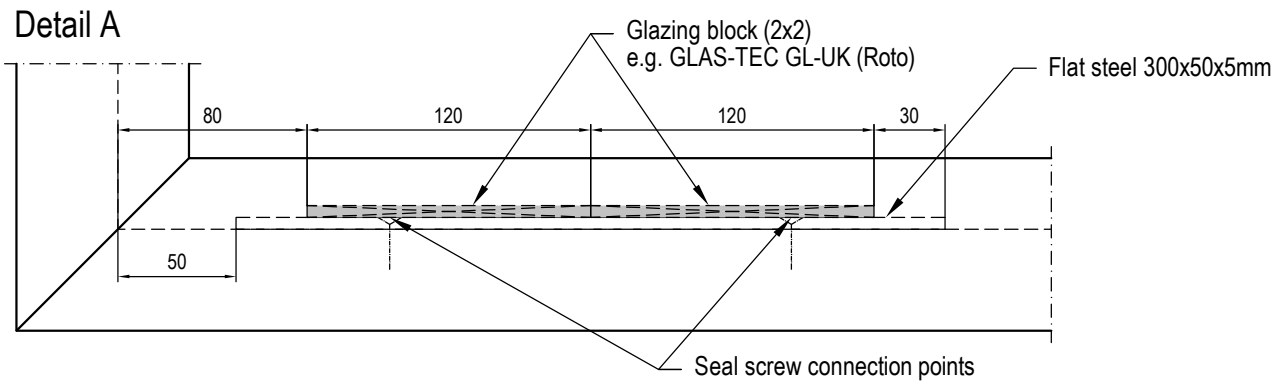


Detail A

- Recommended use:
  GLAS-TEC GL-UK (Roto).
  From a disc weight >200 kg.
  Alternatively, shims with elastic support.
  E.g. hardness 80 Shore "A" (GU).
- However, maximum total pane weight for one glass panel: 300kg.
- For a pane weight of up to 200 kg: Execution according to aluplast processing guidelines.
- Observe the maximum frame dimension.

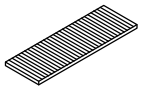
Example ~

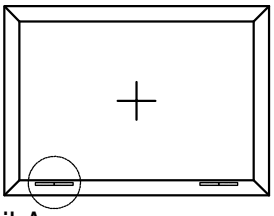




AD

03 A Construction Dimensions
= Standard-Glazing / Blocking

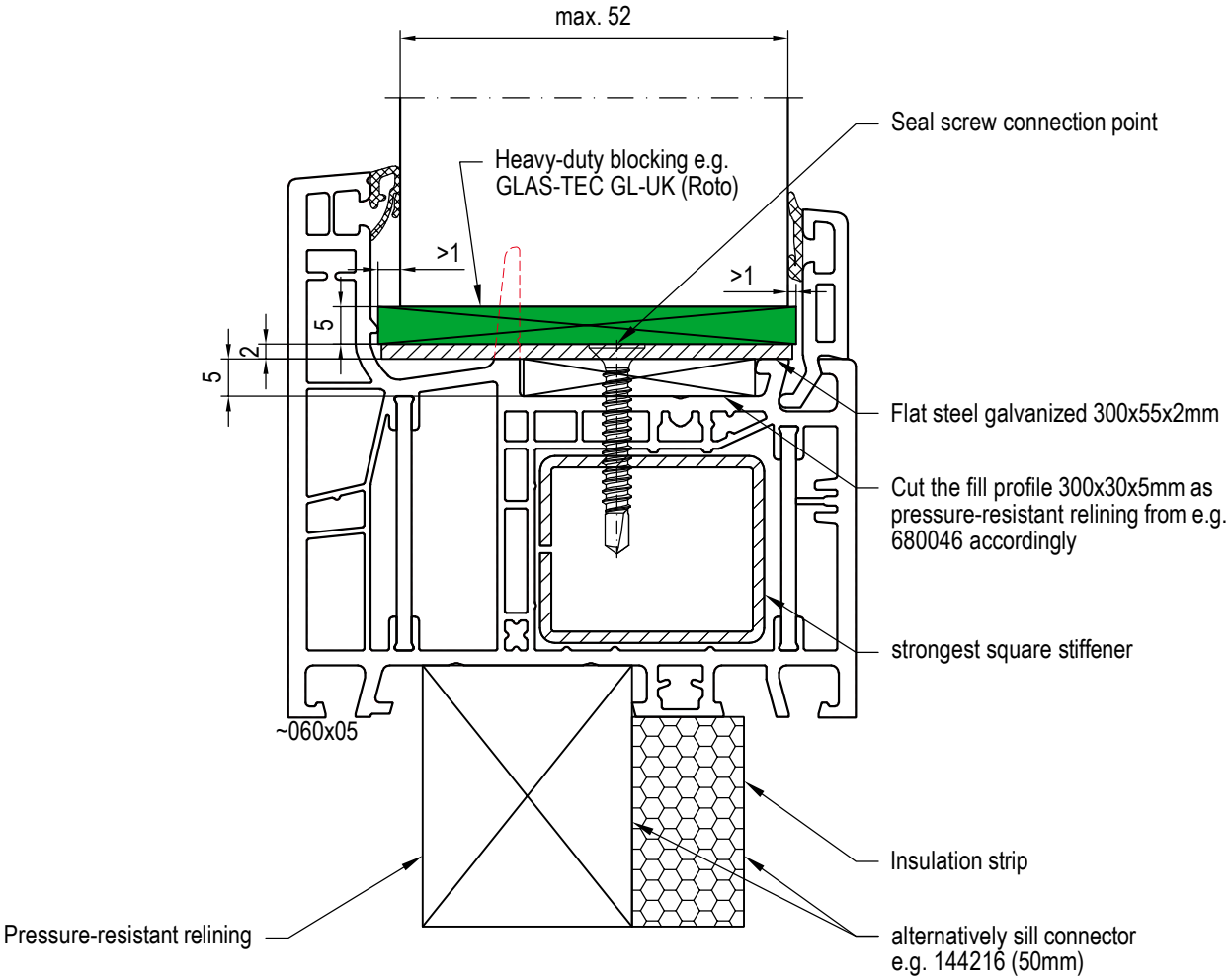


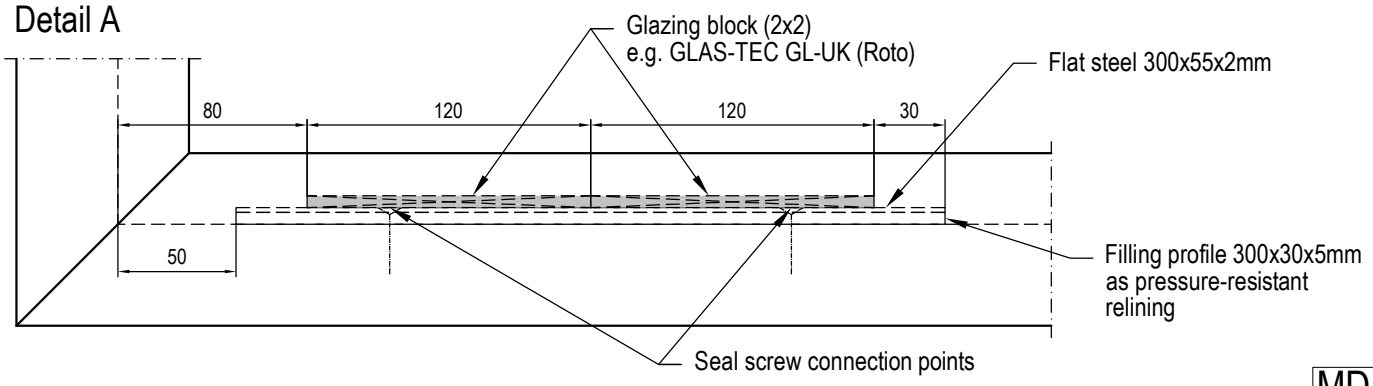


Detail A

- Recommended use:
  GLAS-TEC GL-UK (Roto).
  From a disc weight >200 kg.
  Alternatively, shims with elastic support.
  E.g. hardness 80 Shore "A" (GU).
- However, maximum total pane weight for one glass panel: 300kg.
- For a pane weight of up to 200 kg: Execution according to aluplast processing guidelines.
- Observe the maximum frame dimension.
- As far as possible, use energeto neo AD because of its simple design.

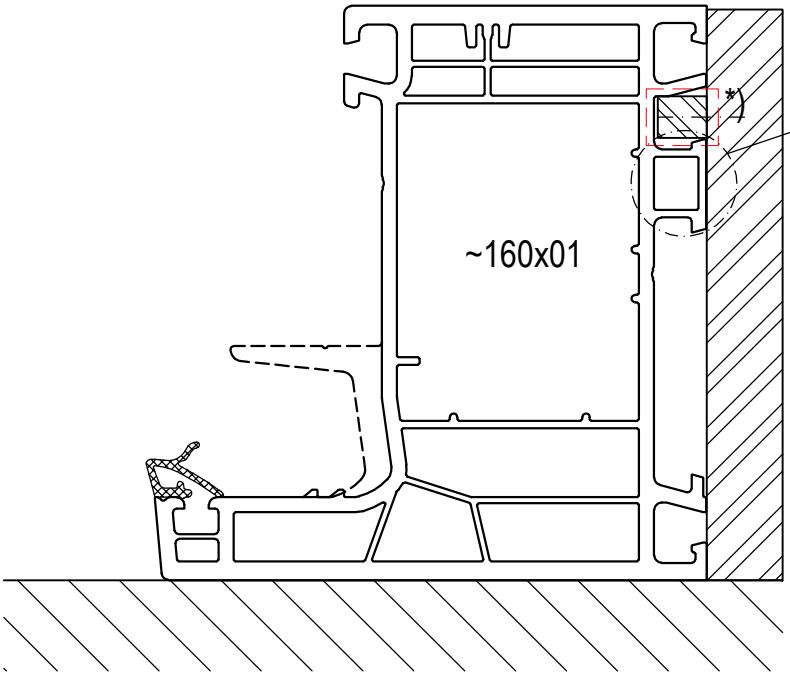
Example ~





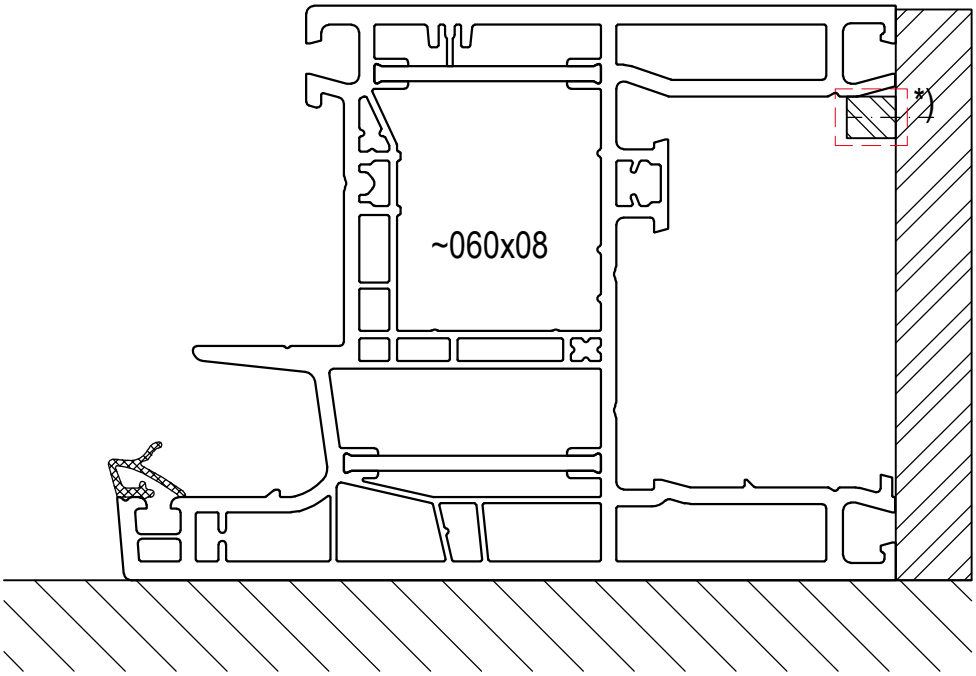
MD

Welding supplement for frame profiles



*) Optionally 6x5mm

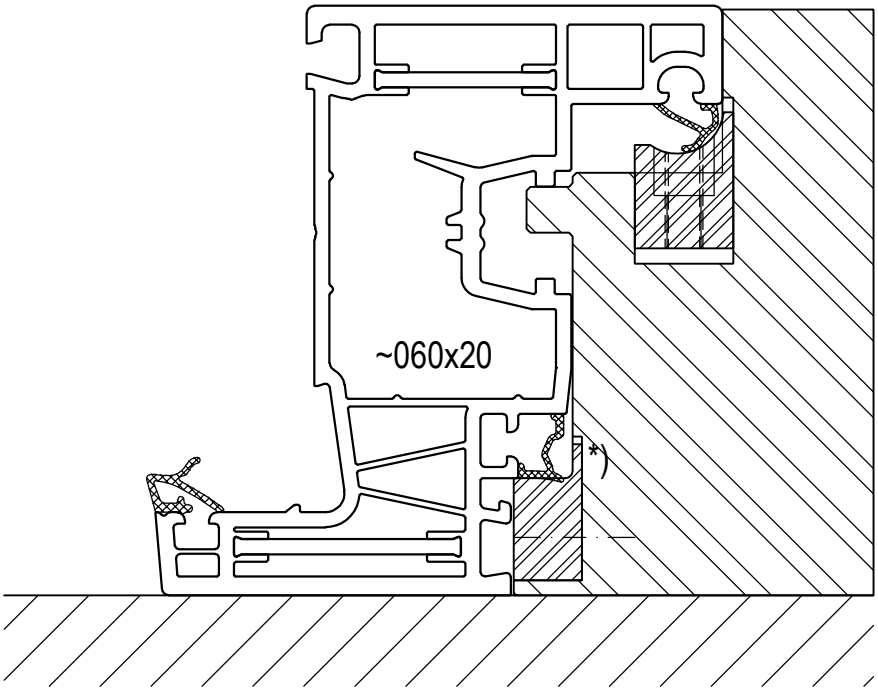
Note: When plastering the frame back, the chamber of the hollow chamber foot can be opened.



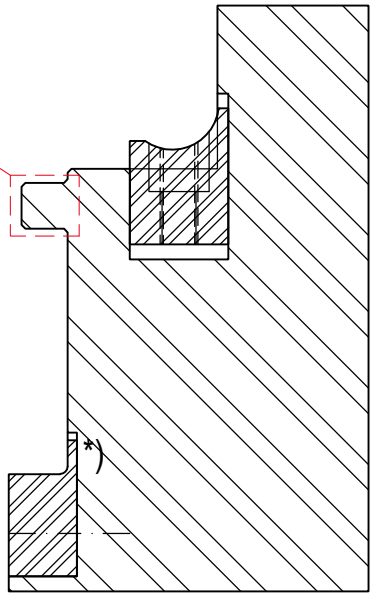
*) Optionally 6x5mm

Example ~

Welding supplement sash profiles re.



Gearbox groove support recommended! **

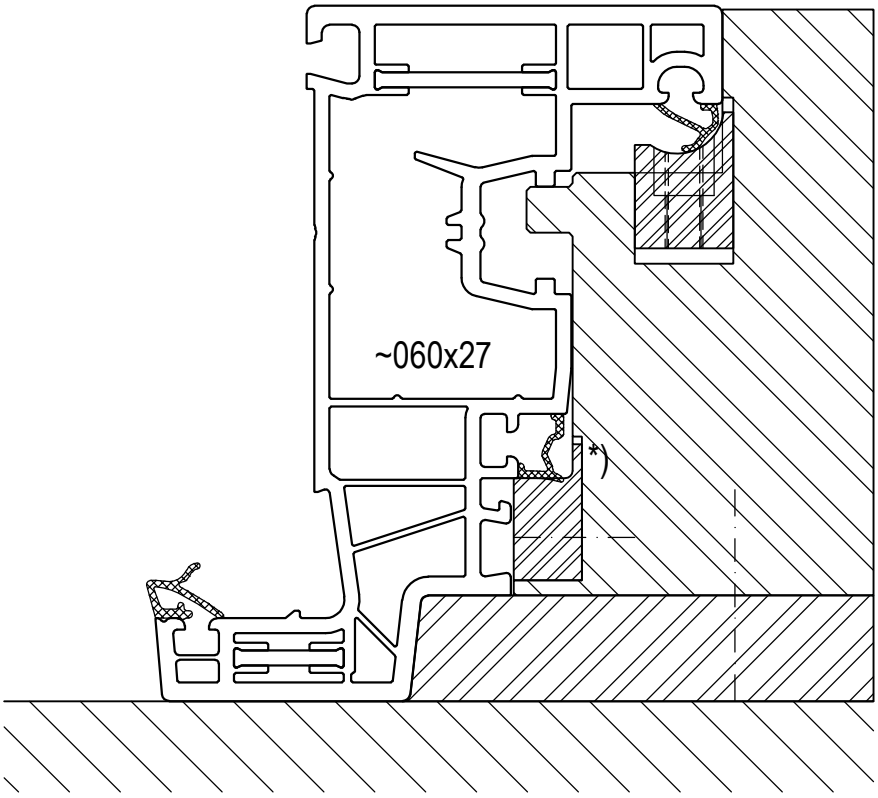


Example ~

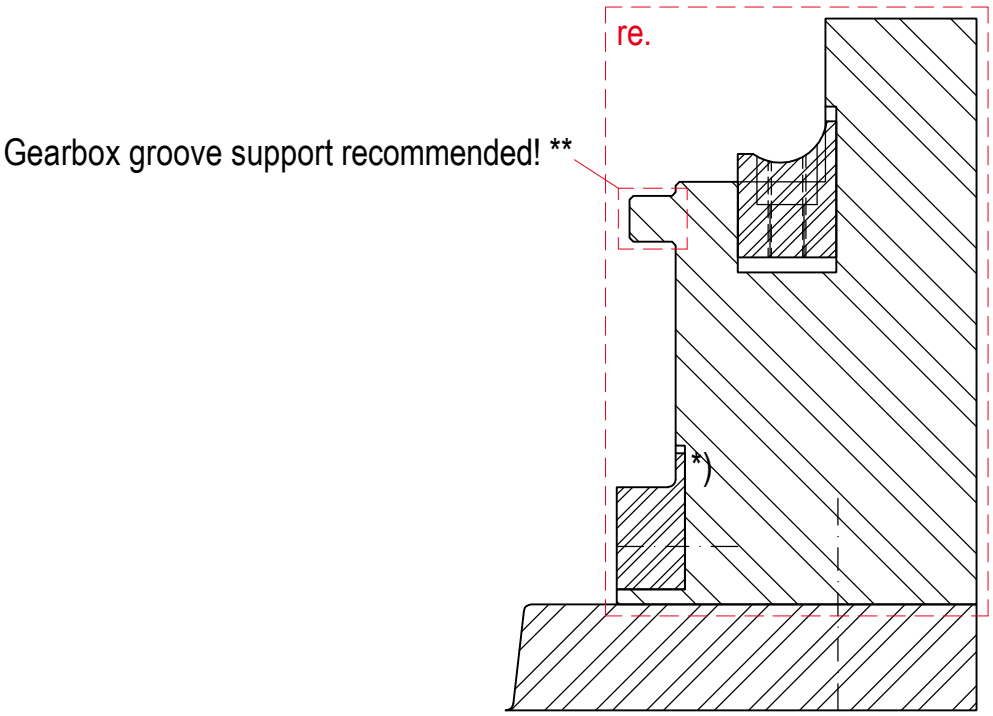
*) Note: The blade setting of the centre seal is independent of the setting of the stop seal. The limiting dimension in the area of the centre seal is usually larger than for the stop seal.

**) Note: Gear groove support necessary when machining false mullion sash e.g. 060x27

Welding supplement sash profiles fl.



Example ~



*) Note: The blade setting of the centre seal is independent of the setting of the stop seal. The limiting dimension in the area of the centre seal is usually larger than for the stop seal.

**) Note: Gear groove support necessary when machining false mullion sash e.g. 060x27

09 H Mechanical Connections

Note: Choose the compatible connector and the corresponding drilling jig or drilling pattern from chapter 02 D (Main Profiles) Mullions / Transoms.

09 H 1 Mechanical Mullion and Transom Connections

Mullion and transom profiles are counter-milled (unless they get welded with the other profiles) and screwed to the frame / sash profile or mullion / transom profile with special zink-diecast connectors.

Use all the screws shown in the assembly drawings for all connection.

09 H 2 Cleaning and Care after the installation

Refer to Chapter 10 R Cleaning, 10 S Maintenance, and 10 T Ventilation.

It is normal that windows get soiled during the window manufacturing process, for example when installing the hardware (grease) or due to ancillary marks (do not use felt markers as they often leave stubborn stains and therefore are not recommended for marking). Plastic window profiles can be cleaned easily using water and commercially-available mild cleansing agents (e.g. washing-up liquid, curd soap, soft soap). Solvents or abrasive cleansing agents must not be used.

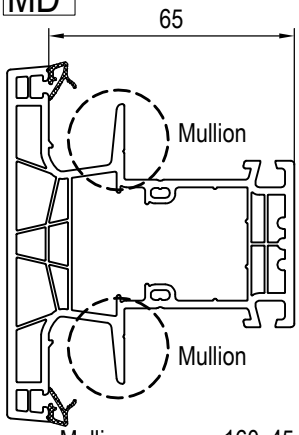
We recommend using the aluplast PVC window cleaner, item number 699919 (for laminated profiles: 699920). The cleansing agent has been developed especially for surfaces of white colour or wood texture design. It keeps the recently cleaned profiles or windows clean for a considerably longer time. The cleansing agent is suitable only for profile surfaces. Do not apply on other surfaces.

Apply the cleansing agent with a dry, clean cloth. Remove heavy soiling applying soft pressure. Wipe the profile surfaces with a damp cloth. Shake the bottle well before using the cleansing agent.

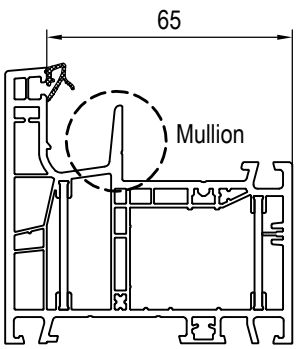
Profiles with wood texture design are resistant to corrosive agents as hard plaster, chlorinated lime and cement. Do not treat these profiles with alcohol, nitrocellulose lacquer, lacquer diluents, and organic solvents.

Example ~

MD



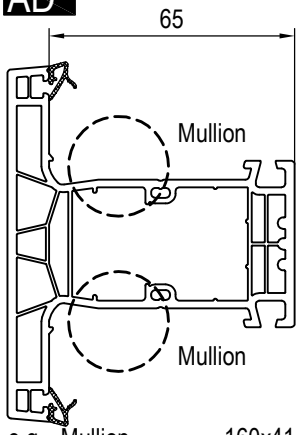
e.g. Mullion ~160x45



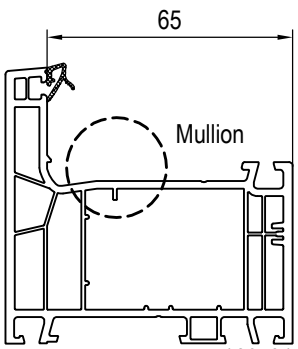
e.g. Frame ~060x05

-> Mullion

AD



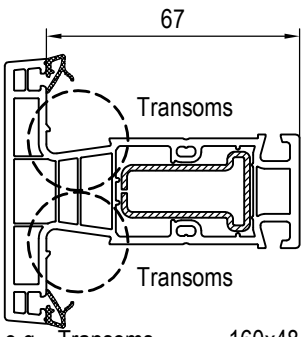
e.g. Mullion ~160x41



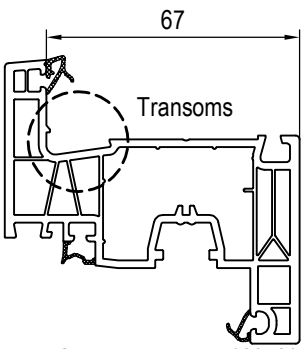
e.g. Frame ~160x01

-> Mullion

Ⓜ



e.g. Transoms ~160x48

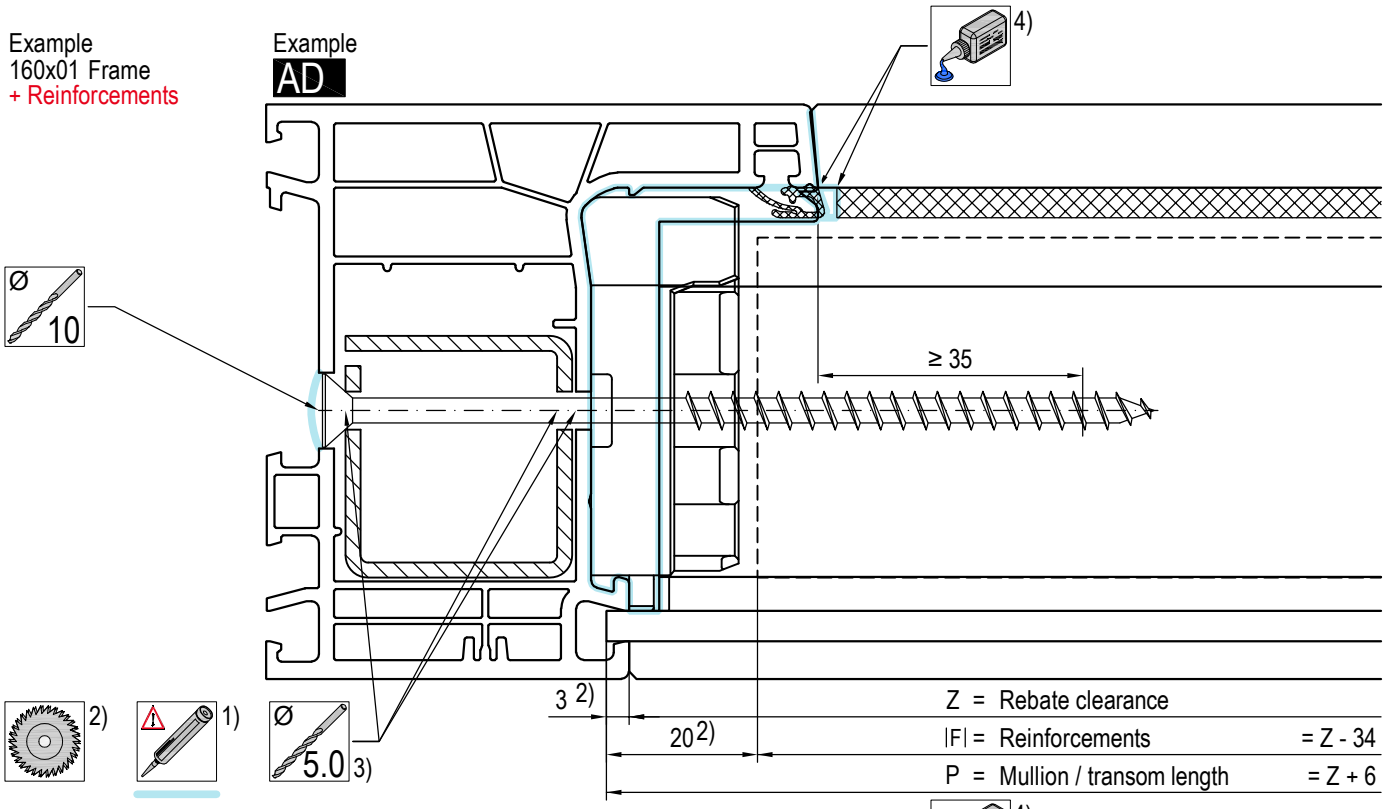


e.g. Sash ~160x20

-> Transoms

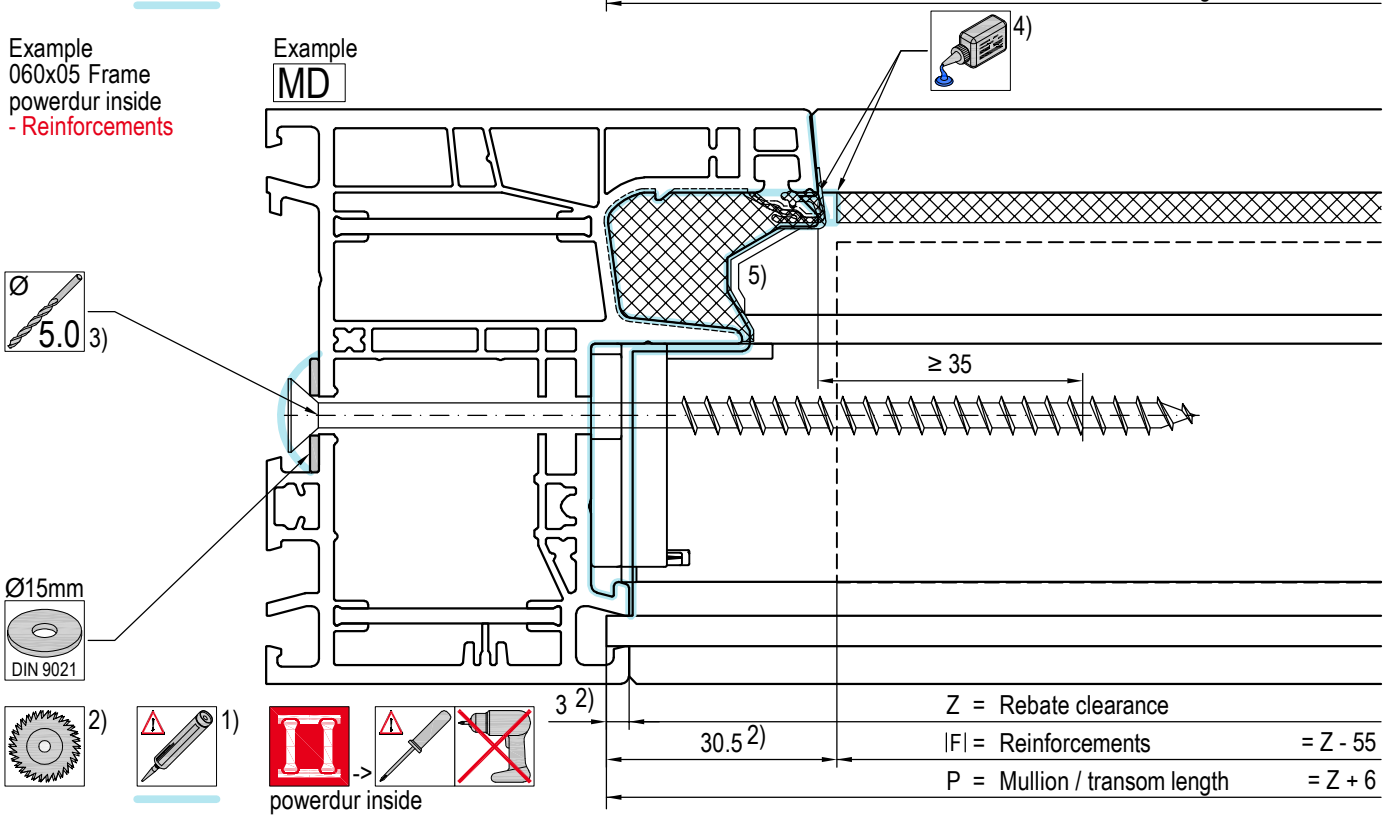
Example
160x01 Frame
+ Reinforcements

Example
AD



Example
060x05 Frame
powerdur inside
- Reinforcements

Example
MD



Example ~

Mullion on frame/mullion: The screw shall project the profile edge by approximately 35mm. Drill a ø5mm hole through the reinforcement. We recommend drilling a blind hole of ø10mm into reinforced frames and mullions (drill diameter depends on screw head, required when connectors with knobs are used).

1) Seal all drill holes (or screws / washers) after screwing!
2) Milling patterns upon request only. For further information contact the application engineering team (AWT).
3) Bore up to Ø6mm possible with machining BAZ.

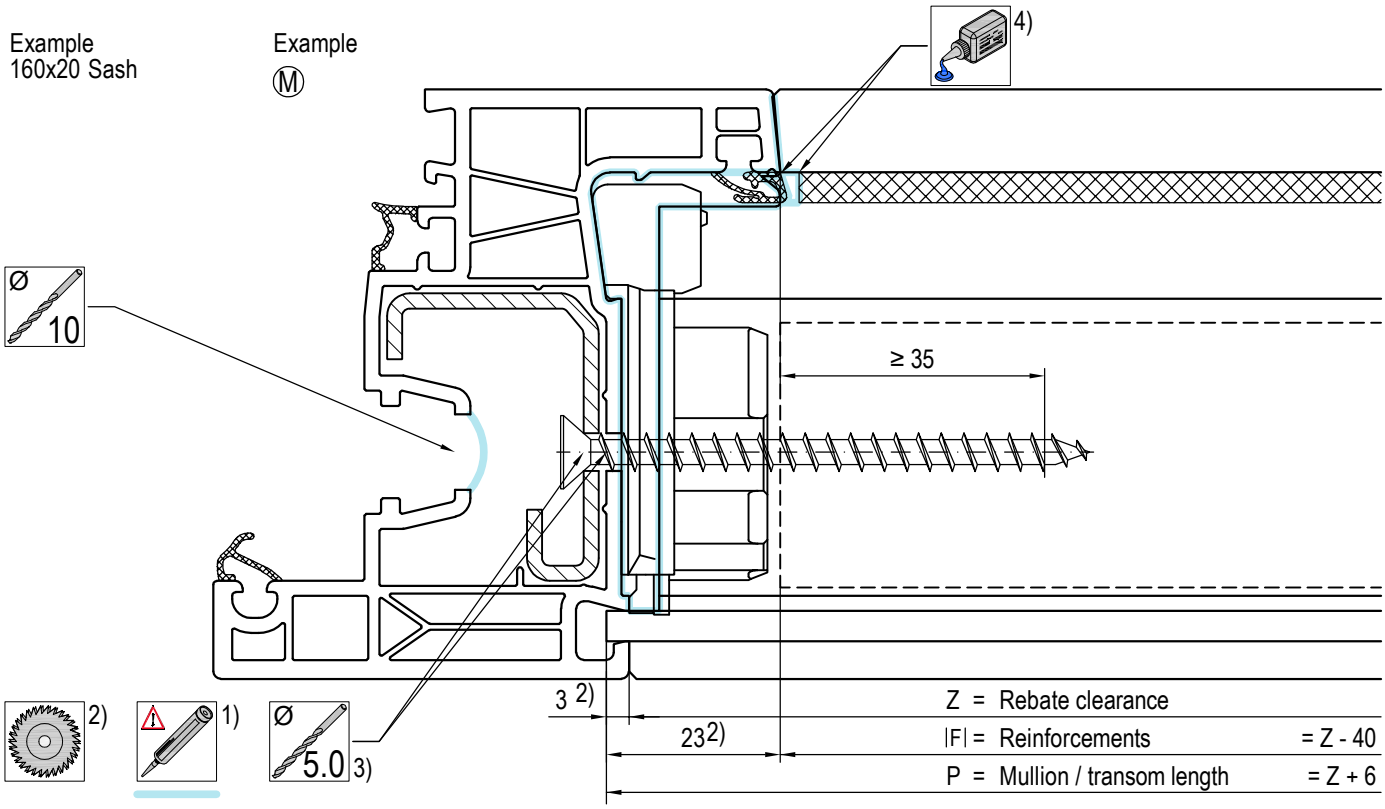
4) -> |X| ... Gaskets

5) ->
-> |X| 669032 bl
|X| 660032 wh
Gaskets
-> 160x45

-> |X| 669034 bl
|X| 660034 wh
Gaskets
-> 160x46

Example
160x20 Sash

Example
Ⓜ

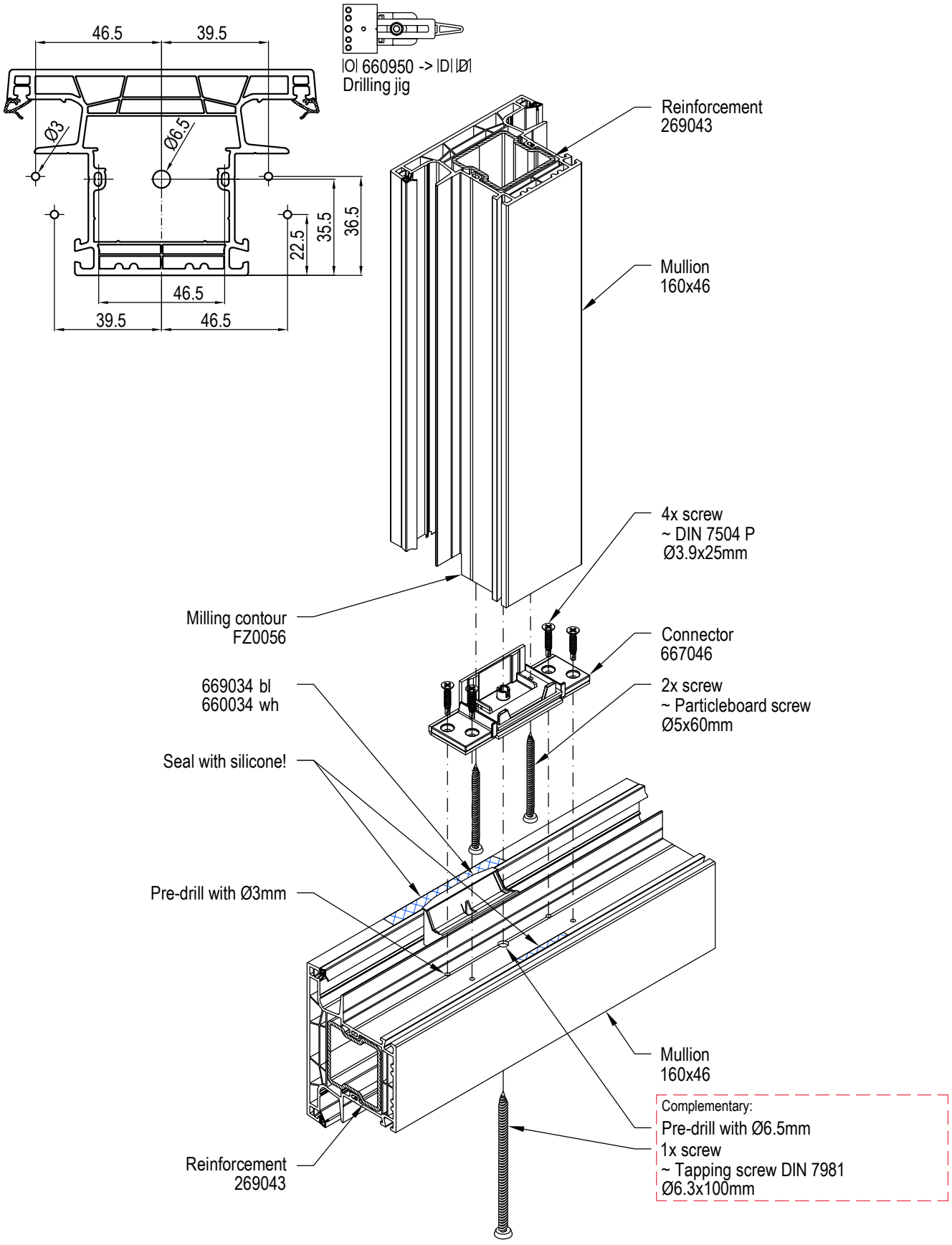


Example ~

Transom on sash/transom: The screw shall project the profile edge by approximately 35mm. We recommend drilling a blind hole of ø10mm into reinforced sashes and transoms (drill diameter depends on screw head, required when connectors with knobs are used), and a through-hole ø5mm in the steel channel. (comparable with drilling in the frame).

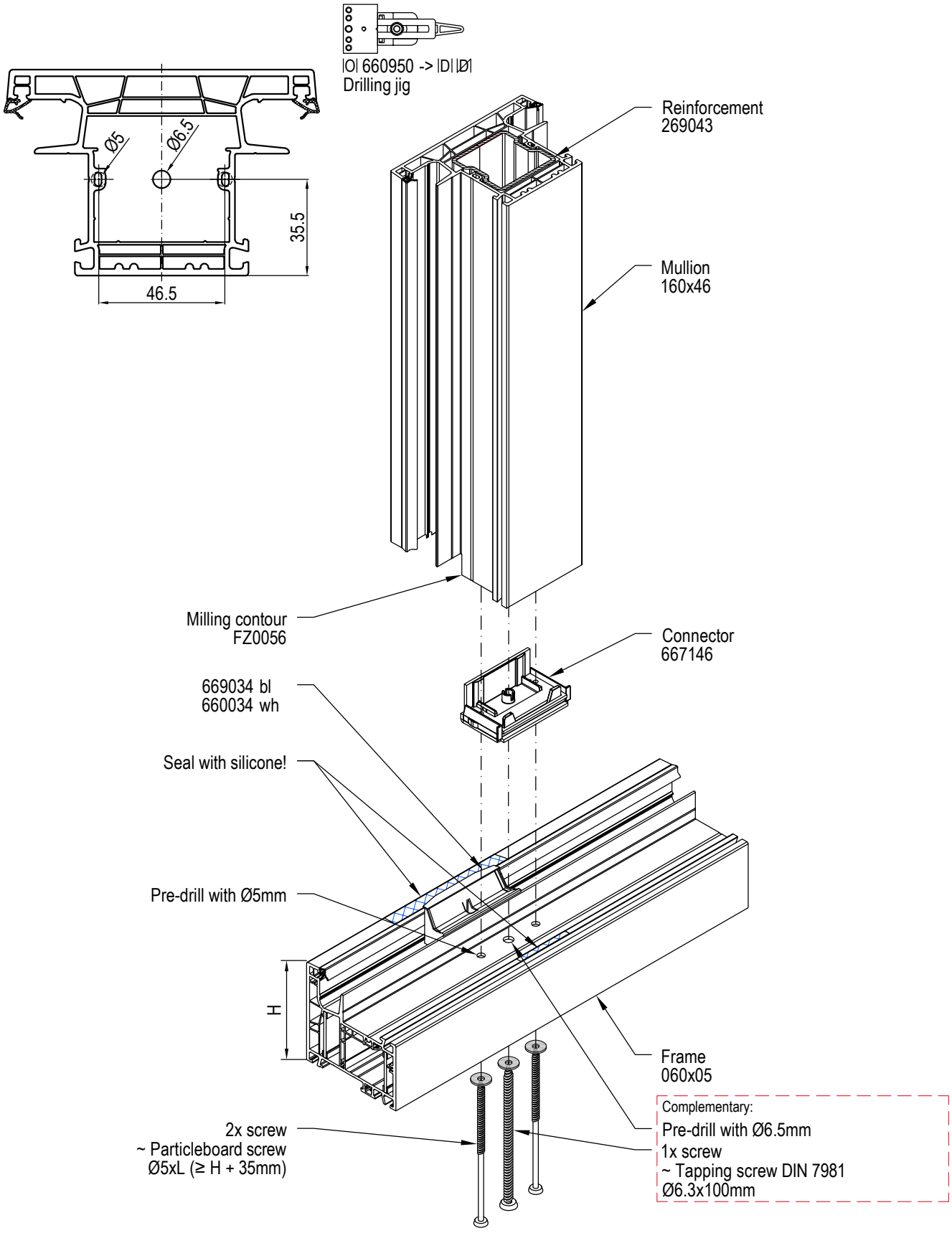
1) Seal all drill holes (or screws / washers) after screwing!
2) Milling patterns upon request only. For further information contact the application engineering team (AWT).
3) Bore up to Ø6mm possible with machining BAZ.

4) -> |X| ... Gaskets


46.5
39.5
Ø3
Ø6.5
22.5
35.5
36.5
46.5
39.5
46.5
|O| 660950 -> |D| |Ø|
Drilling jig
Reinforcement
269043
Mullion
160x46
4x screw
~ DIN 7504 P
Ø3.9x25mm
Milling contour
FZ0056
Connector
667046
669034 bl
660034 wh
2x screw
~ Particleboard screw
Ø5x60mm
Seal with silicone!
Pre-drill with Ø3mm
Mullion
160x46
Complementary:
Pre-drill with Ø6.5mm
1x screw
~ Tapping screw DIN 7981
Ø6.3x100mm
Reinforcement
269043

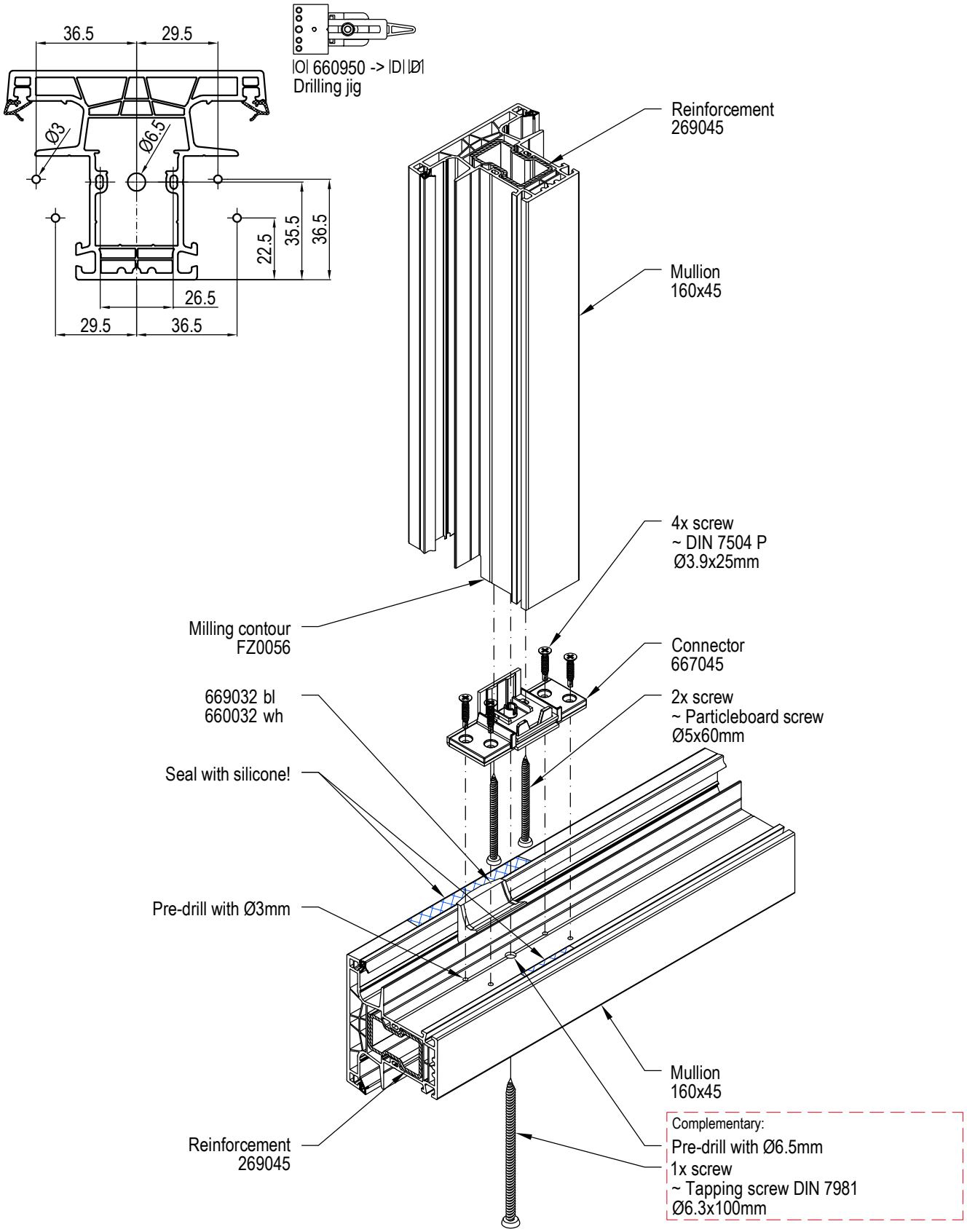
Example ~

MD


|O| 660950 -> |D| |Ø|
Drilling jig
Ø5
Ø6.5
35.5
46.5
Reinforcement
269043
Mullion
160x46
Milling contour
FZ0056
Connector
667146
669034 bl
660034 wh
Seal with silicone!
Pre-drill with Ø5mm
H
Frame
060x05
2x screw
~ Particleboard screw
Ø5xL (≥ H + 35mm)
Complementary:
Pre-drill with Ø6.5mm
1x screw
~ Tapping screw DIN 7981
Ø6.3x100mm

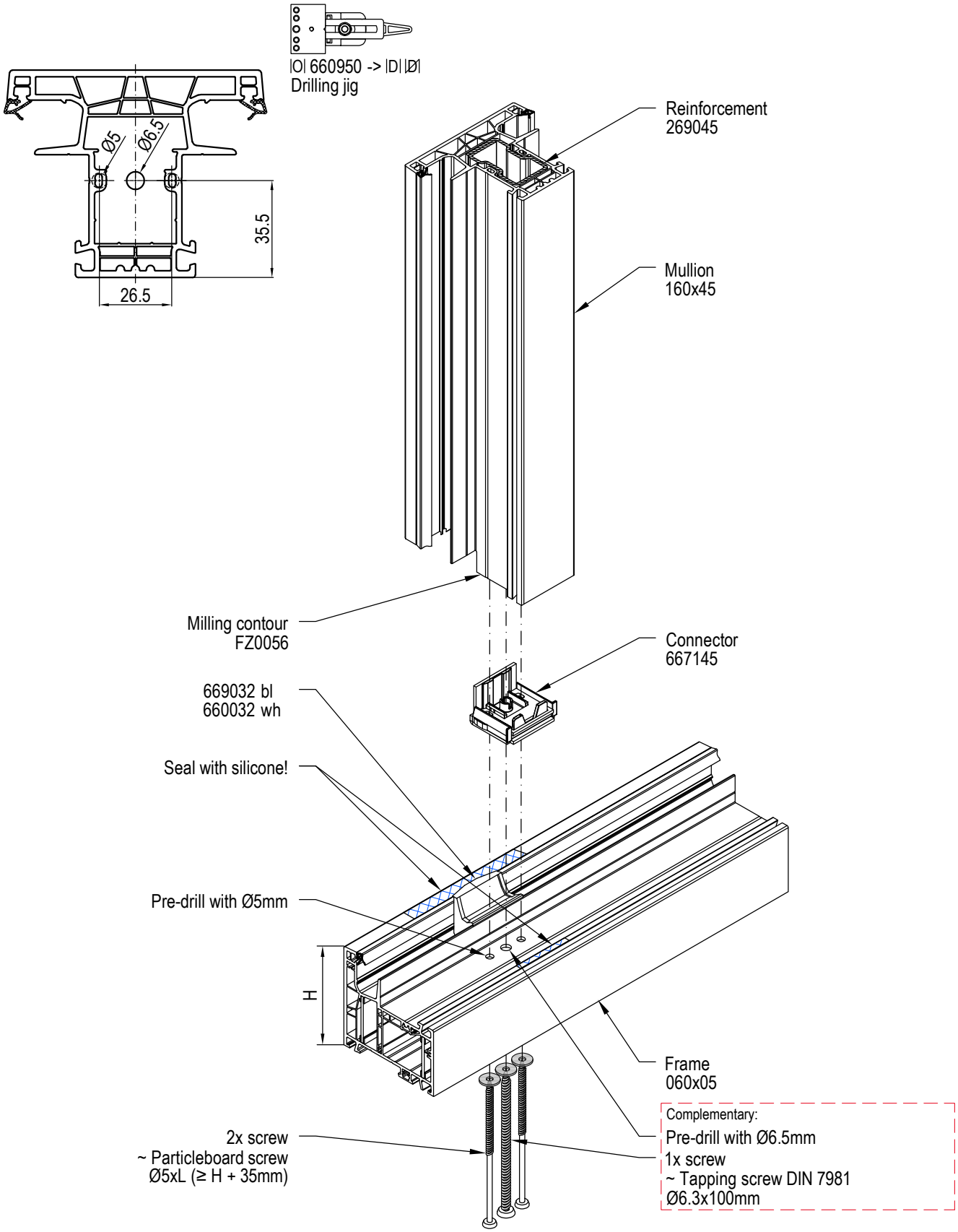
Example ~

MD


36.5
29.5
Ø3
Ø6.5
22.5
35.5
36.5
26.5
29.5
36.5
|O| 660950 -> |D| |Ø|
Drilling jig
Reinforcement
269045
Mullion
160x45
4x screw
~ DIN 7504 P
Ø3.9x25mm
Milling contour
FZ0056
Connector
667045
669032 bl
660032 wh
2x screw
~ Particleboard screw
Ø5x60mm
Seal with silicone!
Pre-drill with Ø3mm
Mullion
160x45
Reinforcement
269045
Complementary:
Pre-drill with Ø6.5mm
1x screw
~ Tapping screw DIN 7981
Ø6.3x100mm

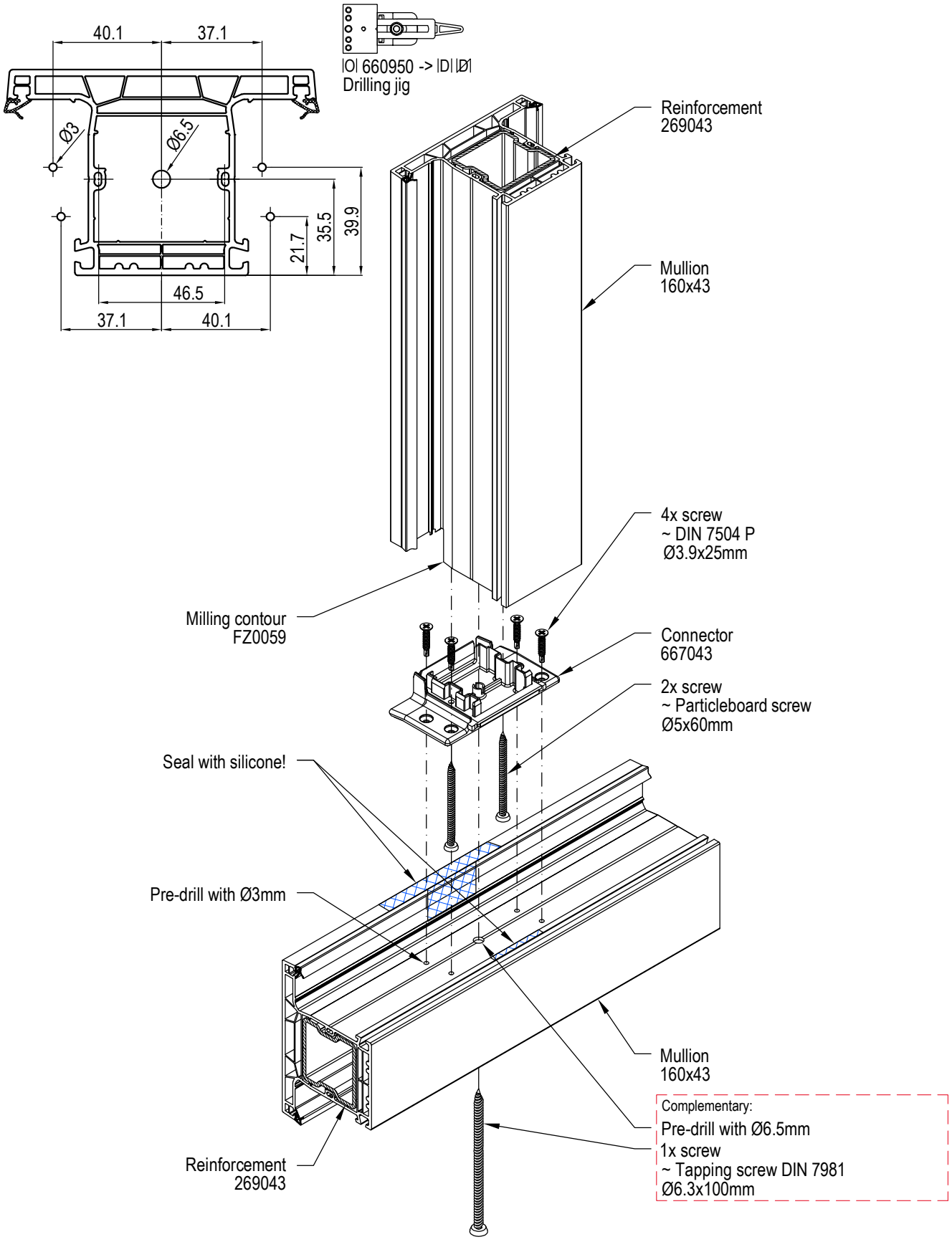
Example ~

MD


|O| 660950 -> |D| |Ø|
Drilling jig
Ø5
Ø6.5
35.5
26.5
Reinforcement
269045
Mullion
160x45
Milling contour
FZ0056
Connector
667145
669032 bl
660032 wh
Seal with silicone!
Pre-drill with Ø5mm
H
Frame
060x05
Complementary:
Pre-drill with Ø6.5mm
1x screw
~ Tapping screw DIN 7981
Ø6.3x100mm
2x screw
~ Particleboard screw
Ø5xL (≥ H + 35mm)

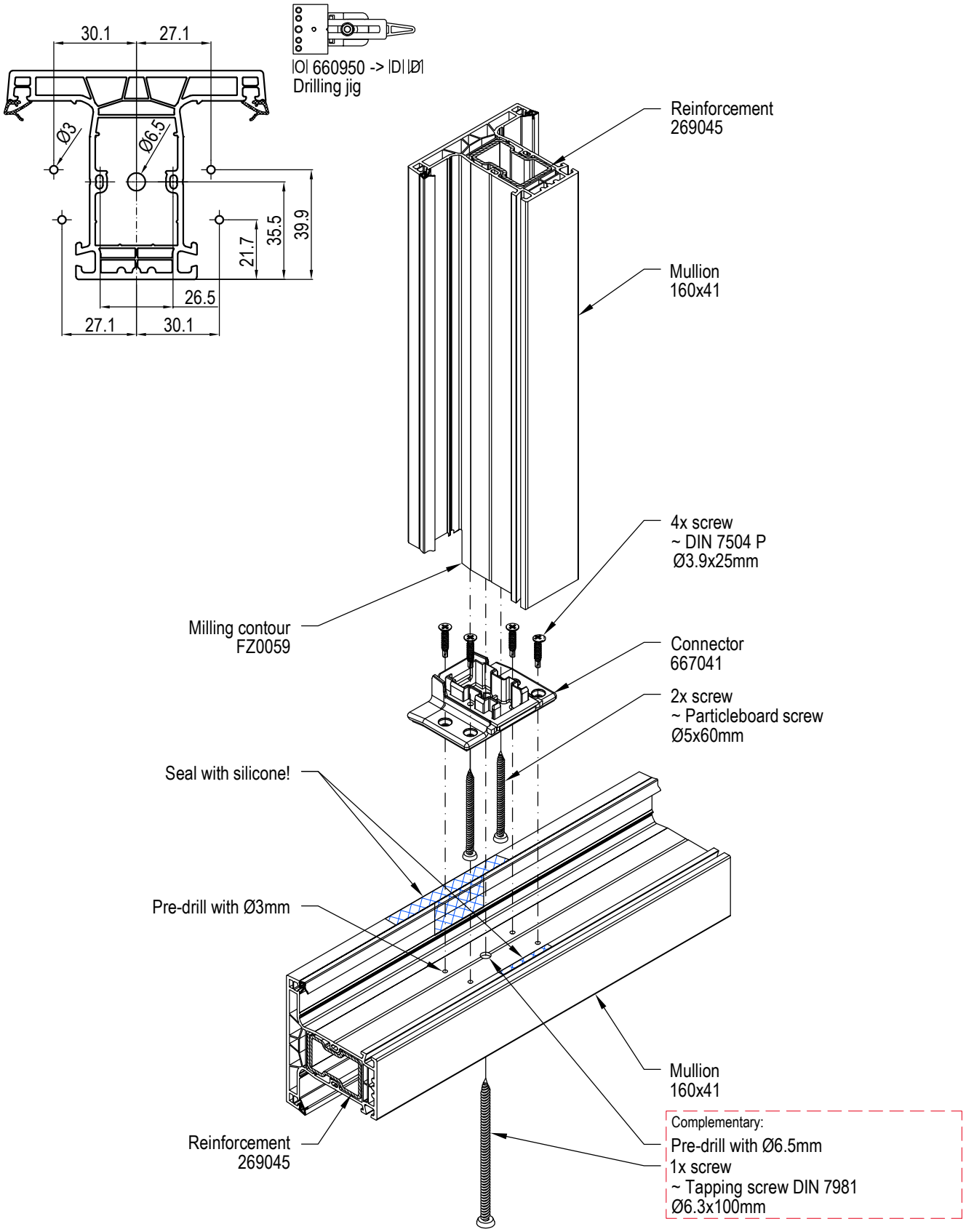
Example ~

MD


40.1
37.1
Ø3
Ø6.5
21.7
35.5
39.9
46.5
37.1
40.1
|O| 660950 -> |D| |Ø|
Drilling jig
Reinforcement
269043
Mullion
160x43
4x screw
~ DIN 7504 P
Ø3.9x25mm
Milling contour
FZ0059
Connector
667043
2x screw
~ Particleboard screw
Ø5x60mm
Seal with silicone!
Pre-drill with Ø3mm
Mullion
160x43
Complementary:
Pre-drill with Ø6.5mm
1x screw
~ Tapping screw DIN 7981
Ø6.3x100mm
Reinforcement
269043

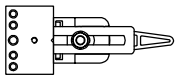
Example ~

AD

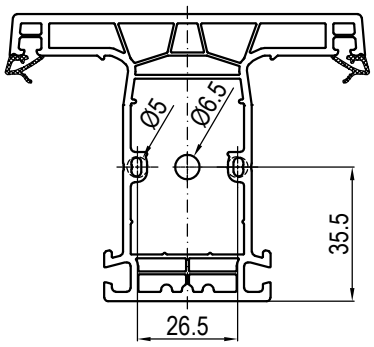

30.1
27.1
Ø3
Ø6.5
21.7
35.5
39.9
26.5
27.1
30.1
|O| 660950 -> |D| |Ø|
Drilling jig
Reinforcement
269045
Mullion
160x41
4x screw
~ DIN 7504 P
Ø3.9x25mm
Milling contour
FZ0059
Connector
667041
2x screw
~ Particleboard screw
Ø5x60mm
Seal with silicone!
Pre-drill with Ø3mm
Mullion
160x41
Reinforcement
269045
Complementary:
Pre-drill with Ø6.5mm
1x screw
~ Tapping screw DIN 7981
Ø6.3x100mm

Example ~

AD

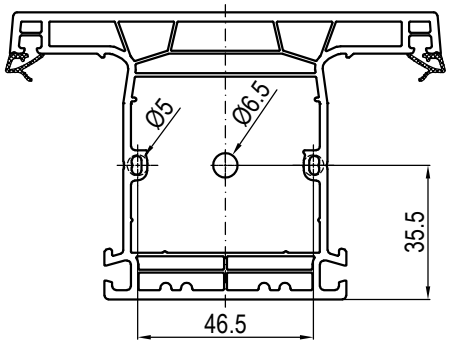


|O| 660950 -> |D| |Ø|
Drilling jig

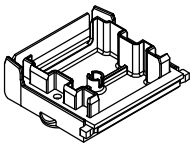


Reinforcement
269045

Mullion
160x41 (small)
160x43 (large)



Connector
667141 (small)
667143 (large)



Milling contour
FZ0059

Seal with silicone!

Pre-drill with Ø5mm

H

Frame
160x01

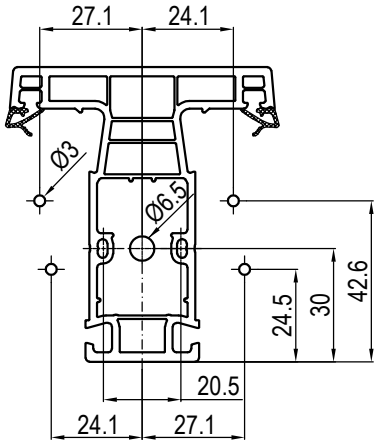
Complementary:
Pre-drill with Ø6.5mm
1x screw
~ Tapping screw DIN 7981
Ø6.3x100mm

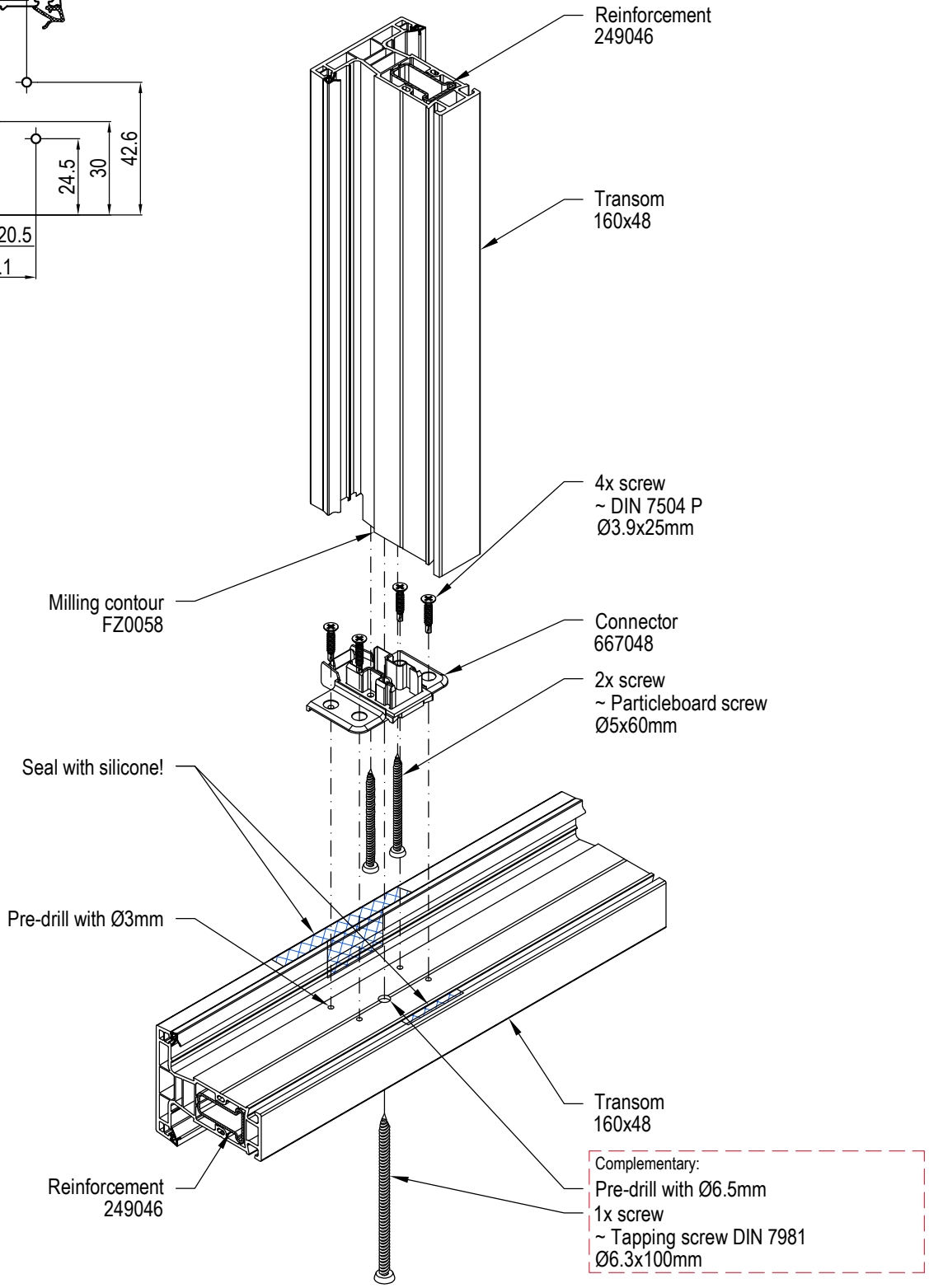
Reinforcement
259106

2x screw
~ Particleboard screw
Ø5xL (≥ H + 35mm)

Example ~

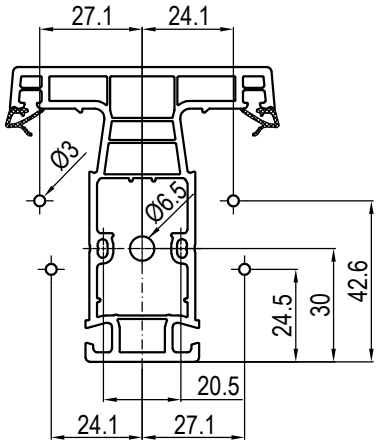
AD

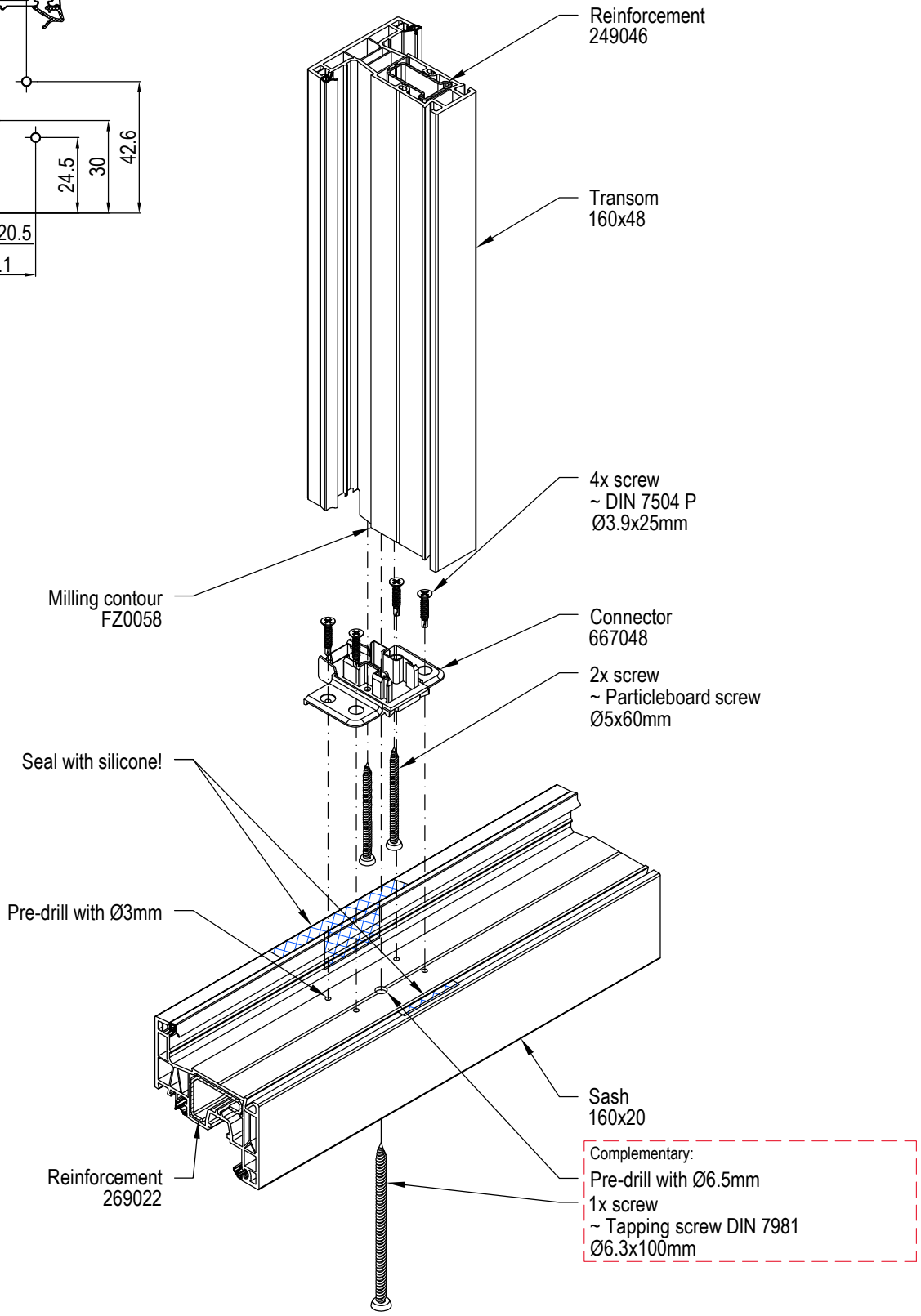

27.1
24.1
Ø3
Ø6.5
42.6
30
24.5
20.5
24.1
27.1


Reinforcement
249046
Transom
160x48
4x screw
~ DIN 7504 P
Ø3.9x25mm
Milling contour
FZ0058
Connector
667048
2x screw
~ Particleboard screw
Ø5x60mm
Seal with silicone!
Pre-drill with Ø3mm
Transom
160x48
Reinforcement
249046
Complementary:
Pre-drill with Ø6.5mm
1x screw
~ Tapping screw DIN 7981
Ø6.3x100mm

Example ~

Ⓜ


27.1
24.1
Ø3
Ø6.5
42.6
30
24.5
20.5
24.1
27.1

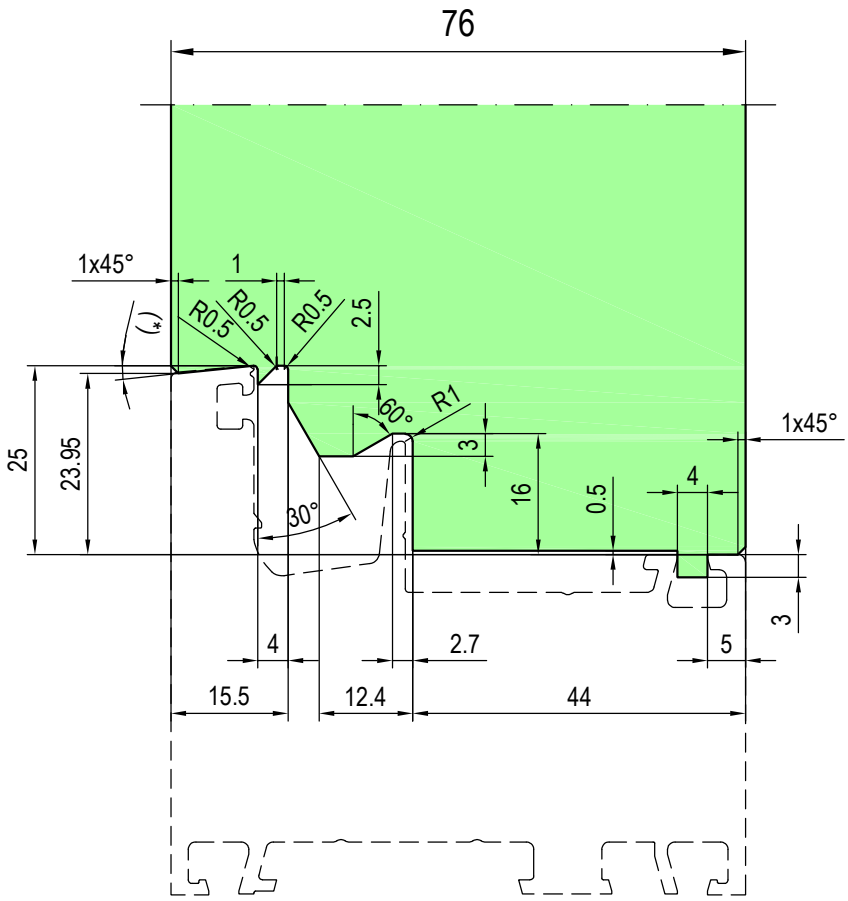

Reinforcement
249046
Transom
160x48
4x screw
~ DIN 7504 P
Ø3.9x25mm
Milling contour
FZ0058
Connector
667048
2x screw
~ Particleboard screw
Ø5x60mm
Seal with silicone!
Pre-drill with Ø3mm
Sash
160x20
Reinforcement
269022
Complementary:
Pre-drill with Ø6.5mm
1x screw
~ Tapping screw DIN 7981
Ø6.3x100mm

Example ~

Ⓜ

Milling contour Frame / Mullion MD

top
bottom



Mullion
160x45
160x46

09 H

Frame
Mullion

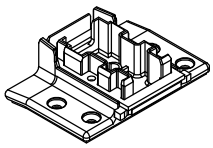
Example ~

MD

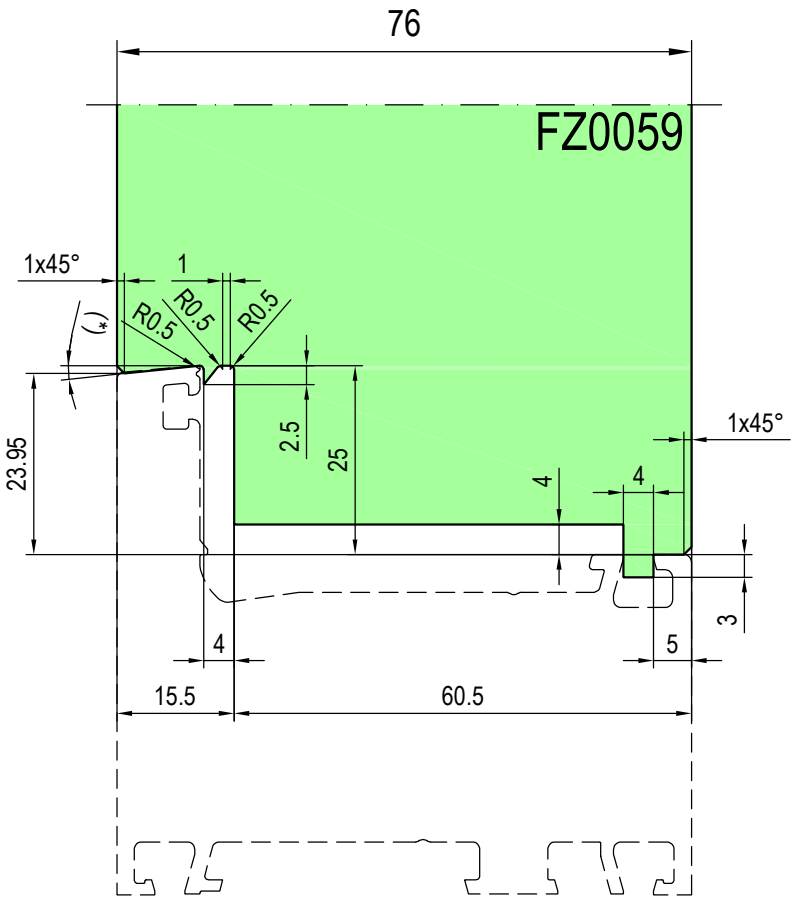
Angle or radius: measured on the profile (*)

Milling contour Frame / Mullion AD

top
bottom



|D| Connector

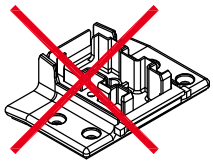


Mullion
160x41
160x43

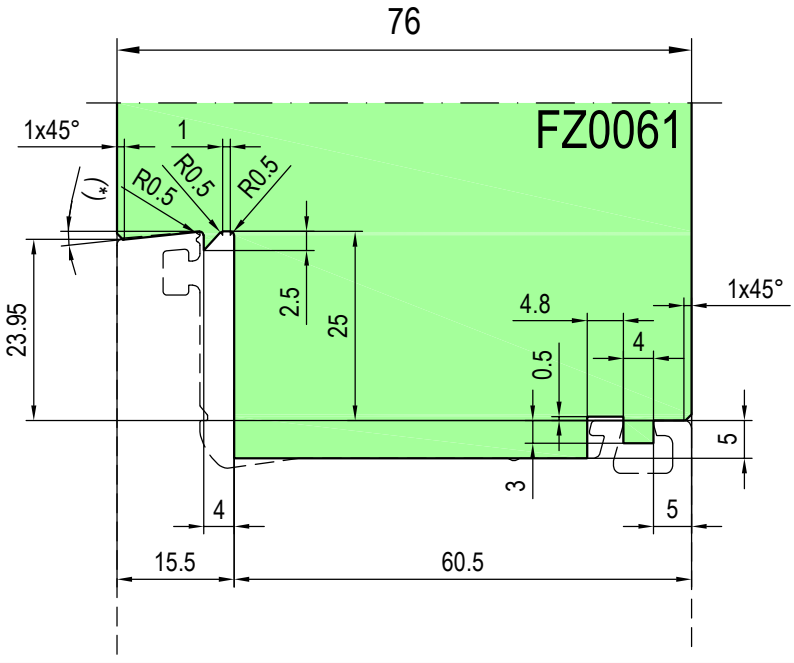
09 H

Frame
Mullion

Example ~



|D| Connector

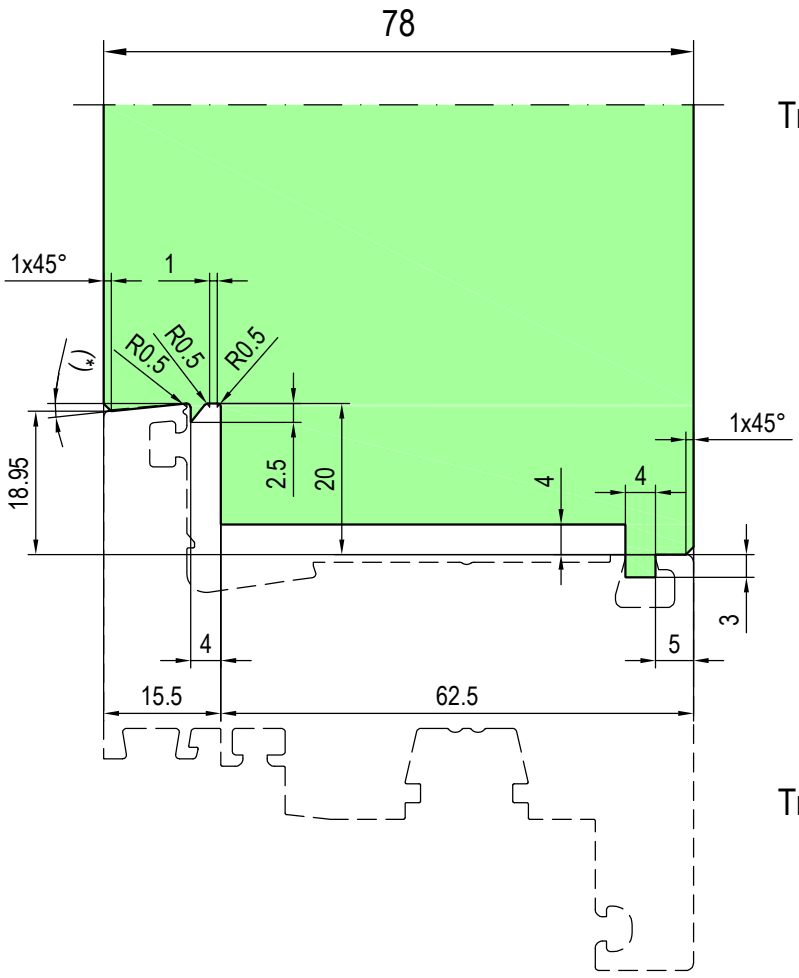


AD

Angle or radius: measured on the profile (*)

Milling contour Sash re. / Transom re.

top
bottom



Transom re.

160x46

09 H

Sash re.

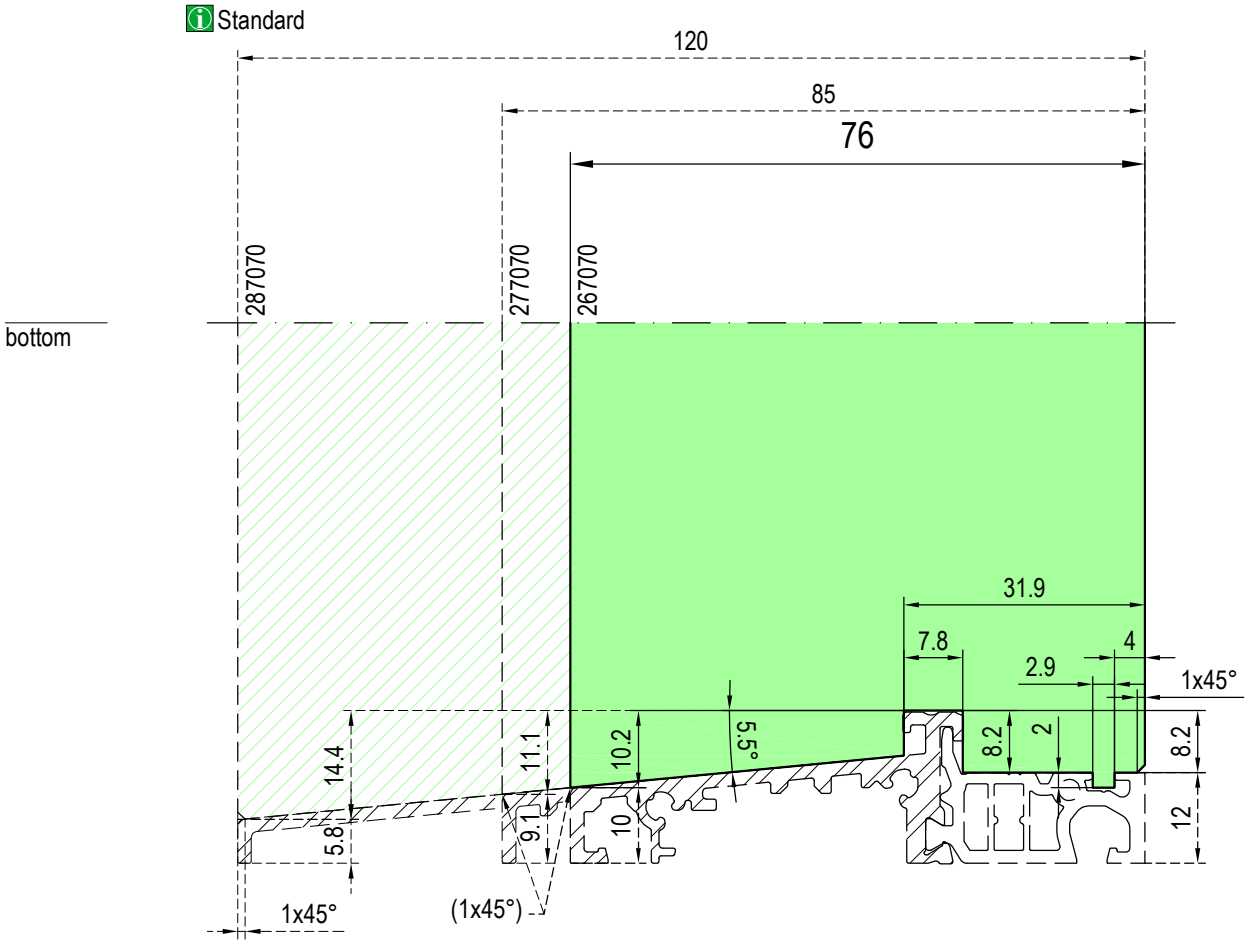
Transom re.

Example ~

Angle or radius: measured on the profile (*)

Milling contour Aluminium thresholds + Frame / Mullion

Standard



Frame

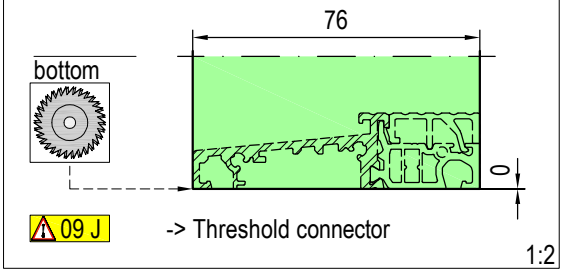
Mullion

09 J

Aluminium thresholds

Example ~

Alternative Frame MD

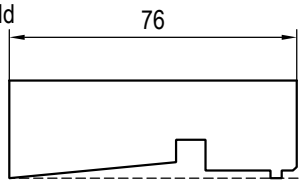


Aluminium thresholds + MD

Aluminium thresholds + AD

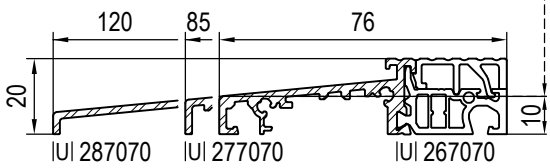
Drilling pattern threshold
FZ0062

09 I

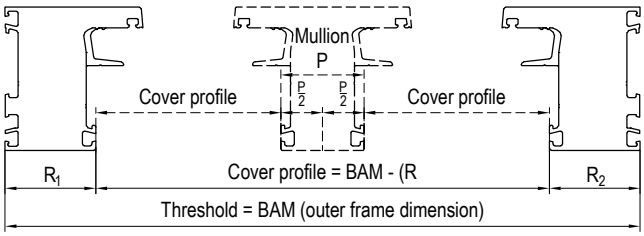


Threshold:

-> Frame, Frame + Fill profile, Mullion



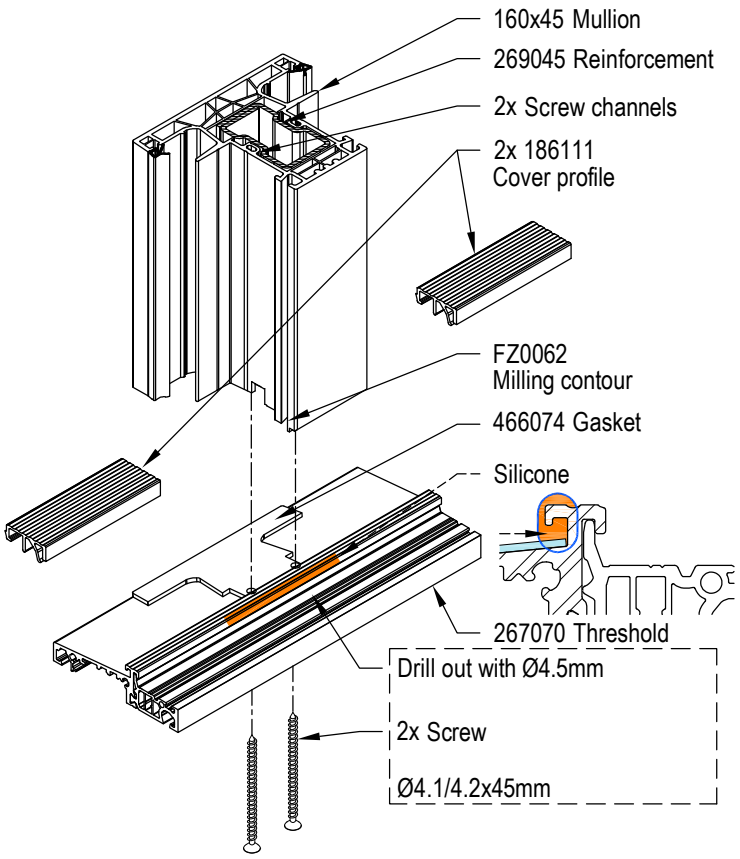
|U| 287070 |U| 277070 |U| 267070
Aluminium thresholds



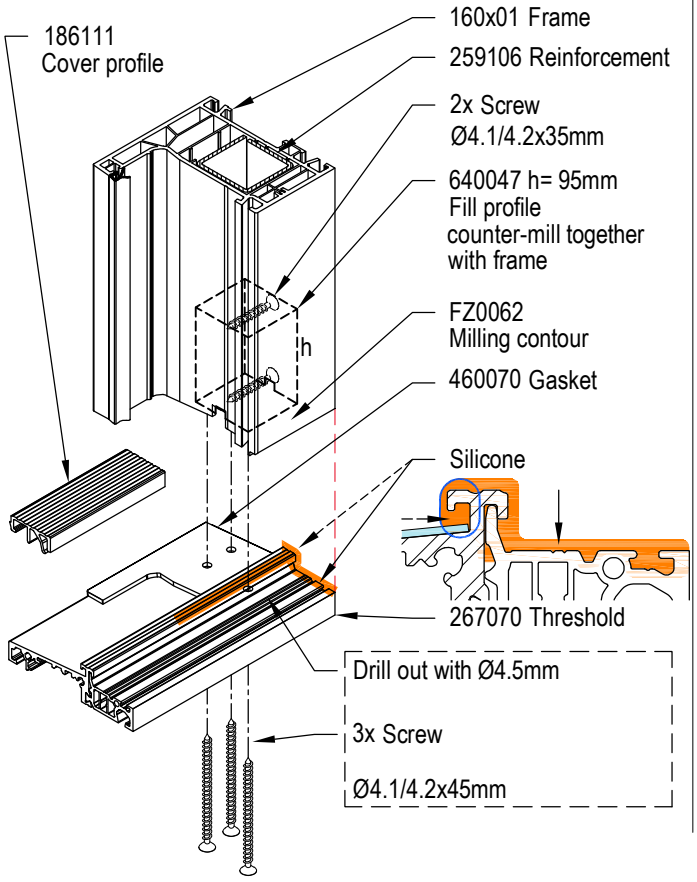
Frame	R	R_1+R_2
160x07	43mm	86mm
060x05, 160x01	48mm	96mm
160x02	58mm	116mm
060x08	78mm	156mm

Mullion	P	$\frac{P}{2}$
160x41, 160x45	44mm	22mm
160x43, 160x46	64mm	32mm

Mullion-Threshold

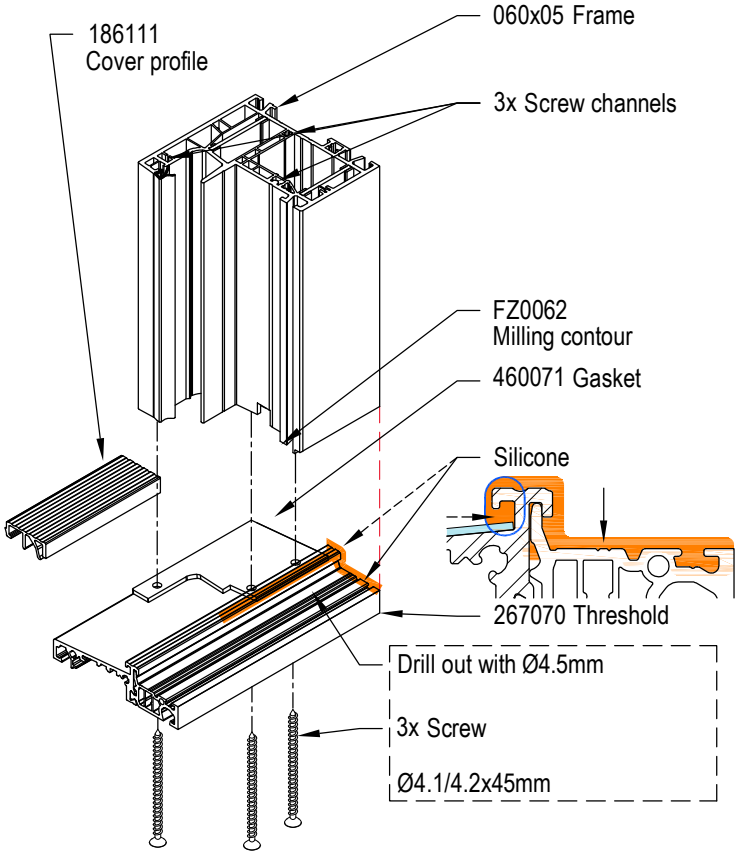


Frame-Threshold

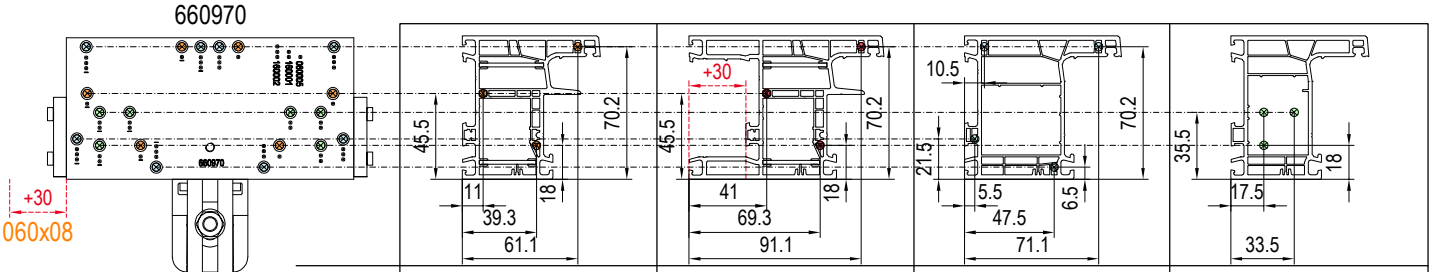


Example ~

Frame-Threshold

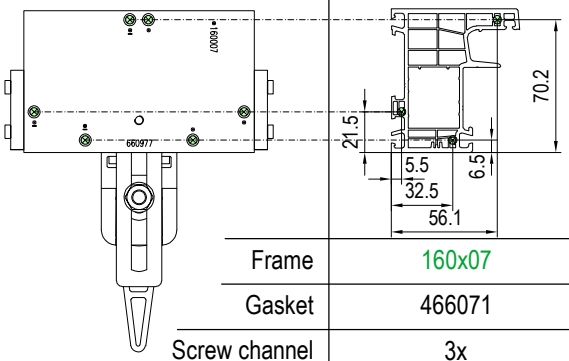


660970



Frame	060x05	060x08	160x02	160x01
Gasket	466071	466071	466070	466070
Screw channel	3x	3x	4x	-
Fill profile	-	-	-	640047
Screws	4.1/4.2x45mm (3x)	4.1/4.2x45mm (3x)	4.1/4.2x45mm (4x)	4.1/4.2x45mm (3x)

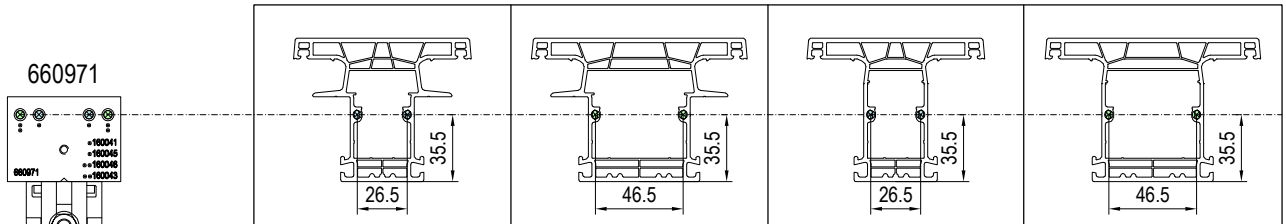
660977



Frame	160x07			
Gasket	466071			
Screw channel	3x			
Fill profile	-			
Screws	4.1/4.2x45mm (3x)			

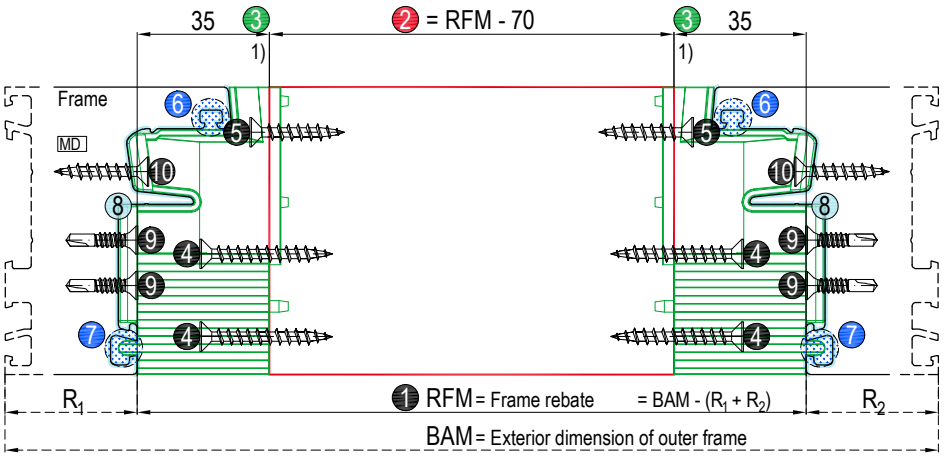
Example ~

660971

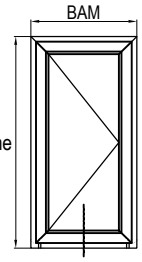


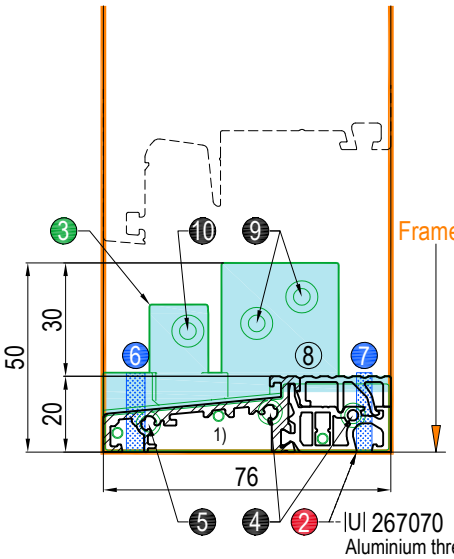
Mullion	160x45	160x46	160x41	160x43
Gasket	466074	466075	466073	466072
Screw channel	2x	2x	2x	2x
Screws	4.1/4.2x45mm (2x)	4.1/4.2x45mm (2x)	4.1/4.2x45mm (2x)	4.1/4.2x45mm (2x)

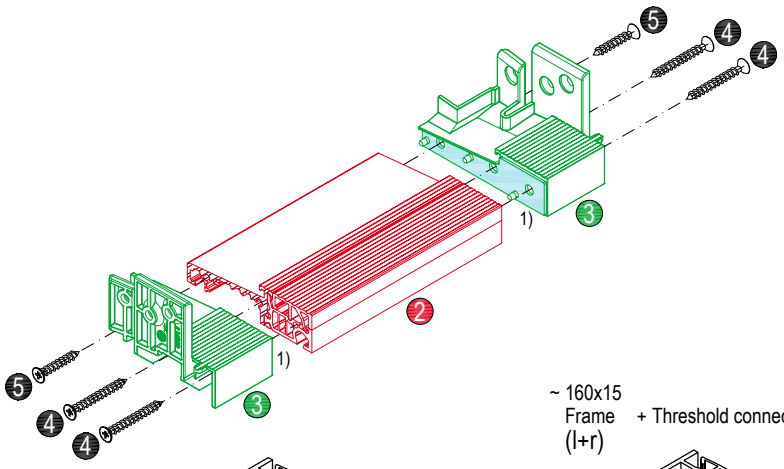
Profile series
energeto neo MD

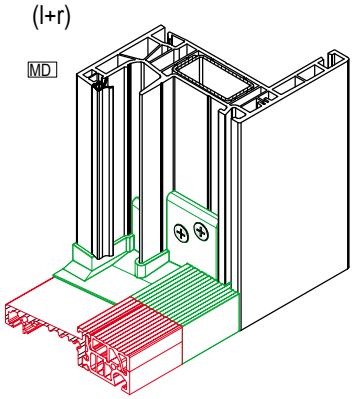


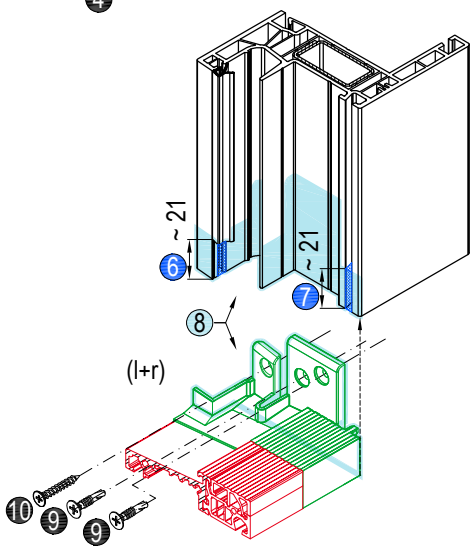
1:2









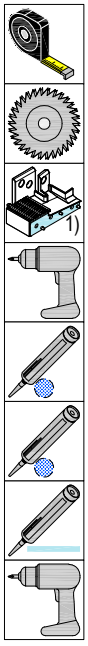


Example ~

1) Attention: Measure this dimension
RFM = Frame rebate

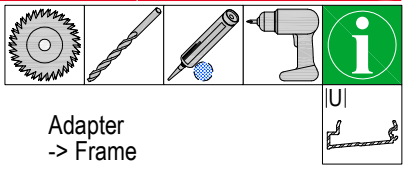
	Aluminium thresholds			
2	IU 267070	76x20mm		1x
	Threshold connector			(l+r)
3	IV 666371	35mm		~ 2x
	Screws			(l+r)
4	4.1/4.2x35mm	V2A		2x
5	4.1/4.2x25mm	V2A		1x
6	Seal laterally with Silicone!		Gasket	(l+r) ~ 2x
7	Seal laterally with Silicone!			(l+r) ~ 2x
8	Seal laterally with Silicone!			(l+r) ~ 2x
	Screws	A2F/NiRo		(l+r)
Reinforcements ->	9 3.9x19-22mm	FD21	-> IF	2x
Plastic ->	10 4.1/4.2x25mm	V2A	-> IF	1x

1) Gasket

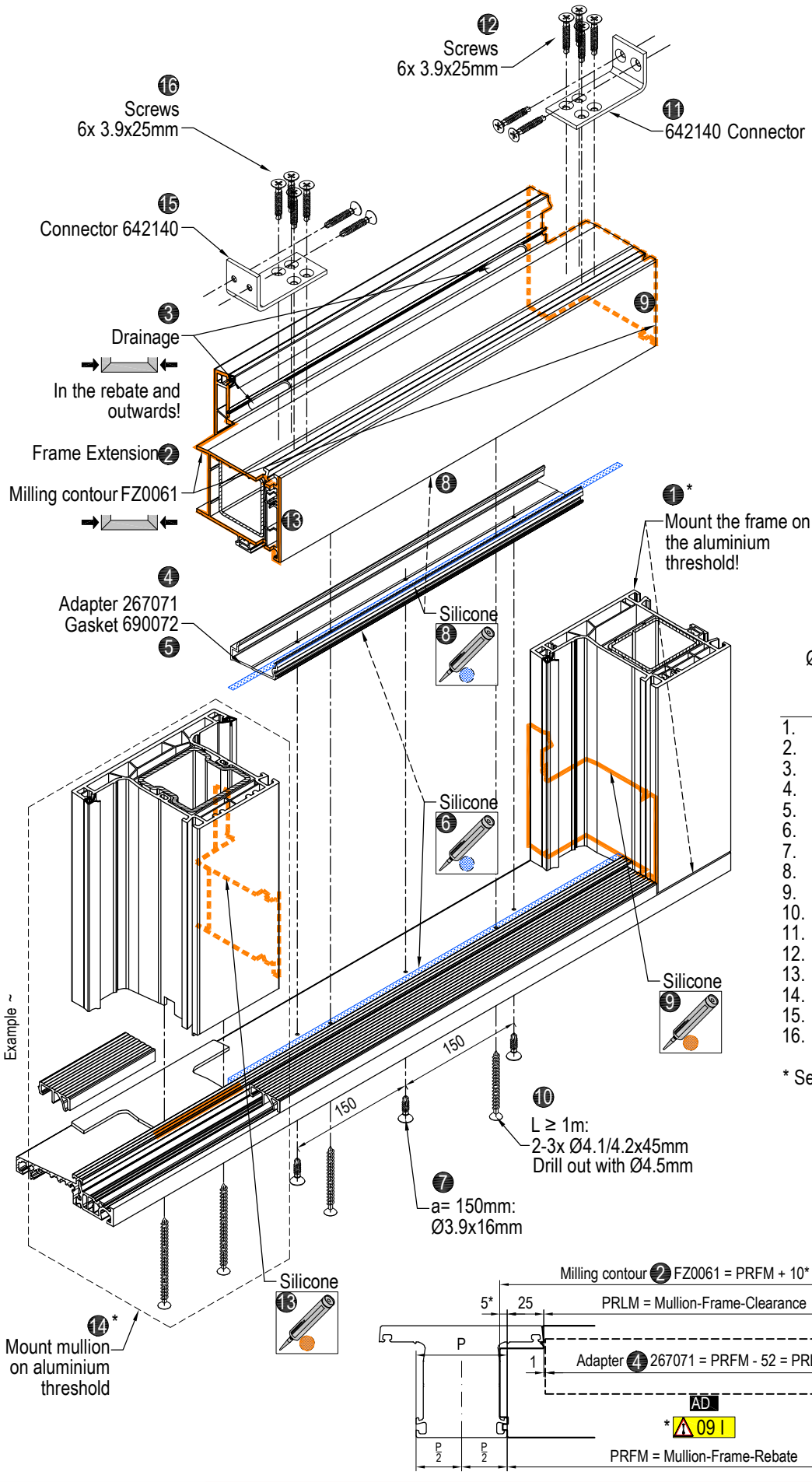


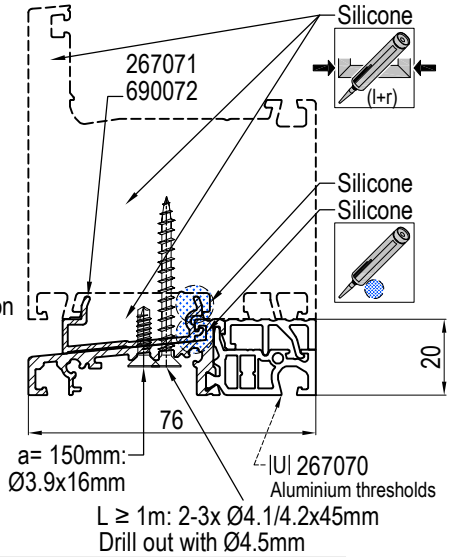
MD

1:4 1:4 1:2



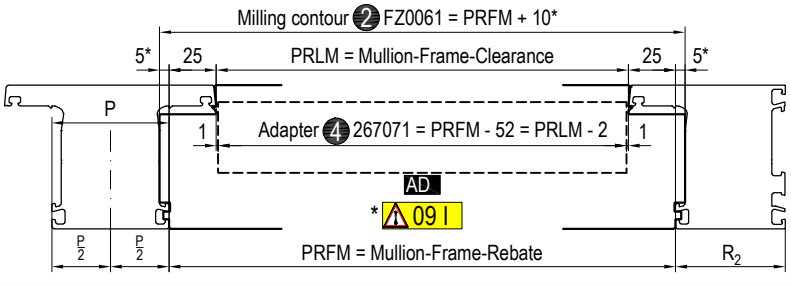
Adapter
-> Frame

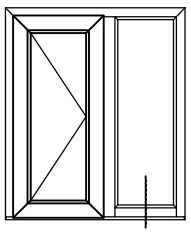


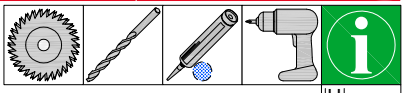


1. Mounting *
2. Cutting / Milling
3. Milling / Drilling
4. Trimming
5. Cutting / Mounting
6. Sealing / Mounting
7. Screwing
8. Sealing
9. Sealing / Mounting
10. Screwing
11. Mounting
12. Screwing
13. Sealing
14. Mounting *
15. Mounting
16. Screwing

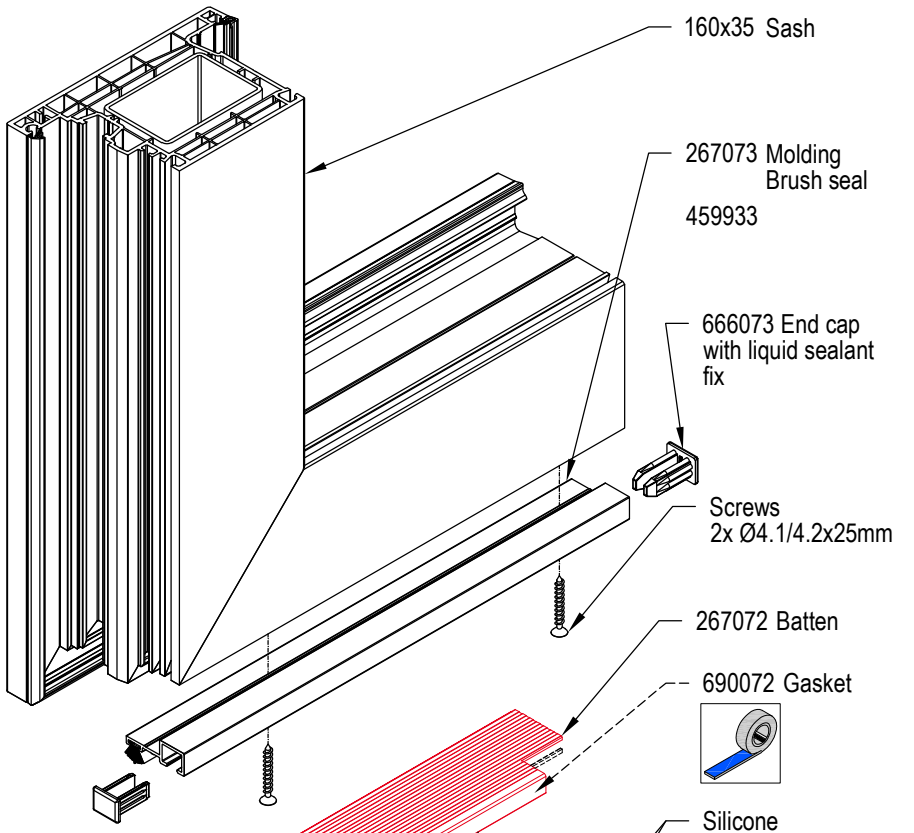
* See chapter 09 J page 01.

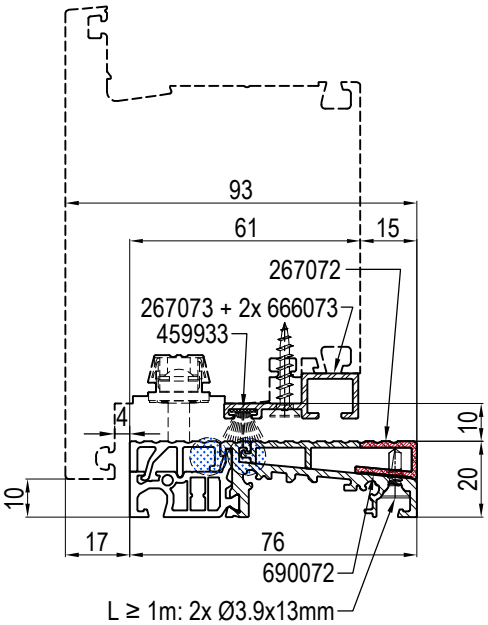






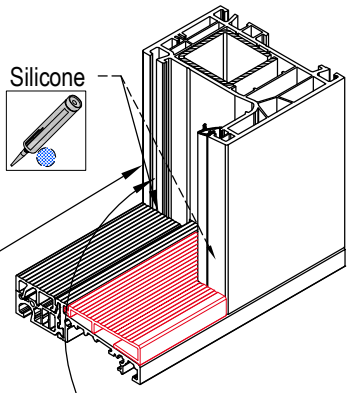
Adapter
opening outwards

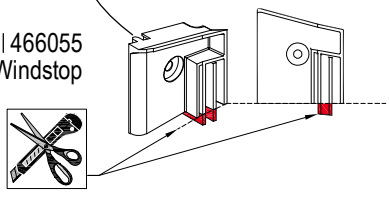


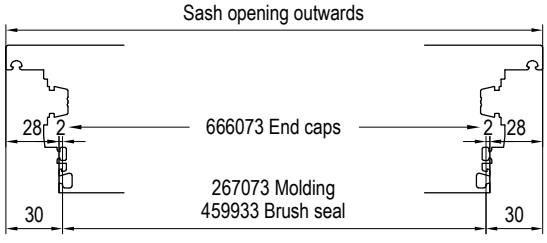


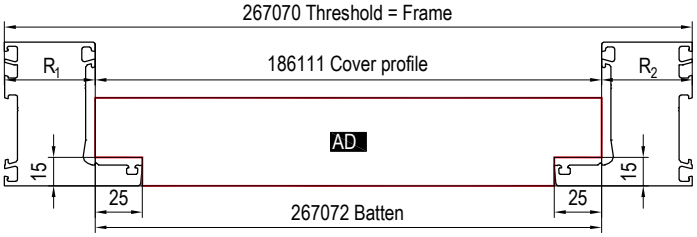
Example ~

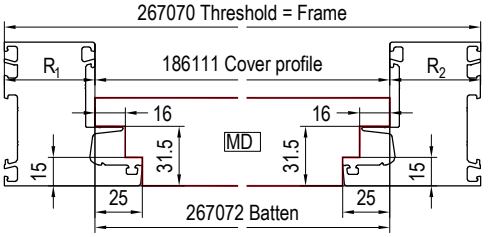
Mount frame with threshold in advance!

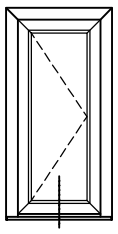








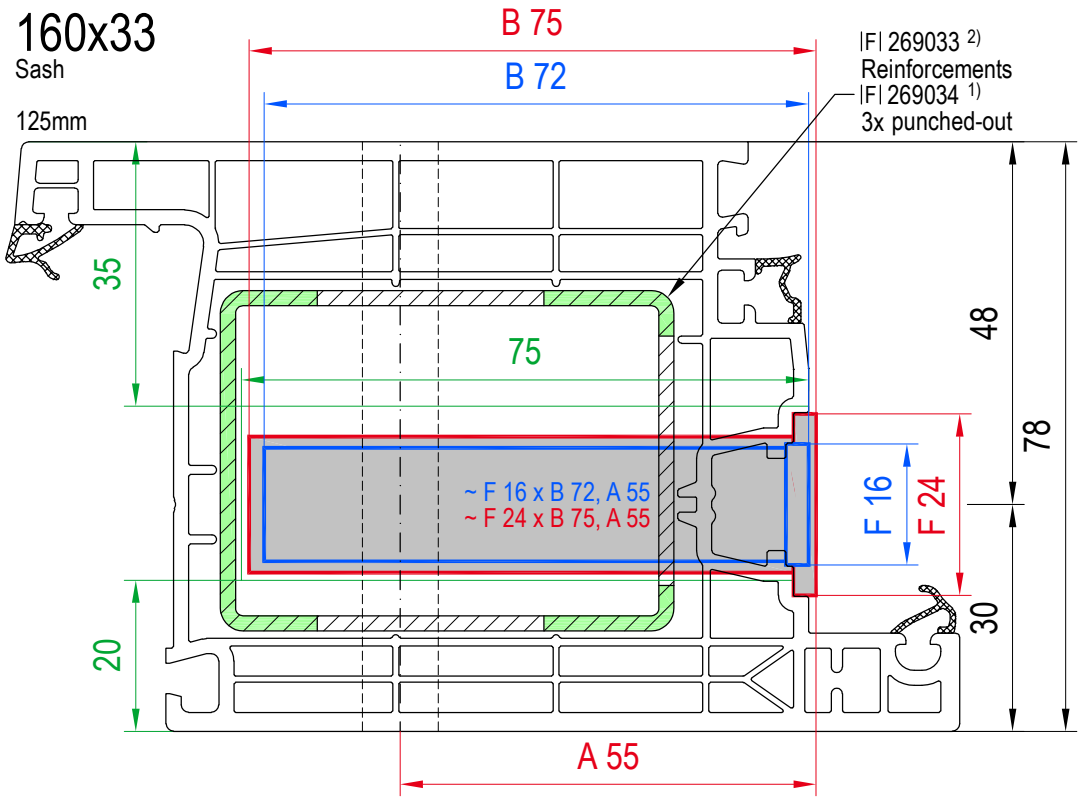




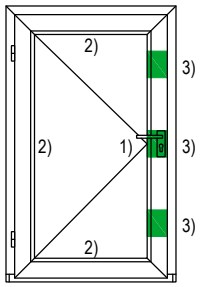
160x33

Sash

125mm

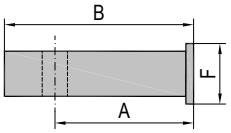


Example ~



1) Lock side
2) Hinge side

Maximum Dimensions
-> Lock side



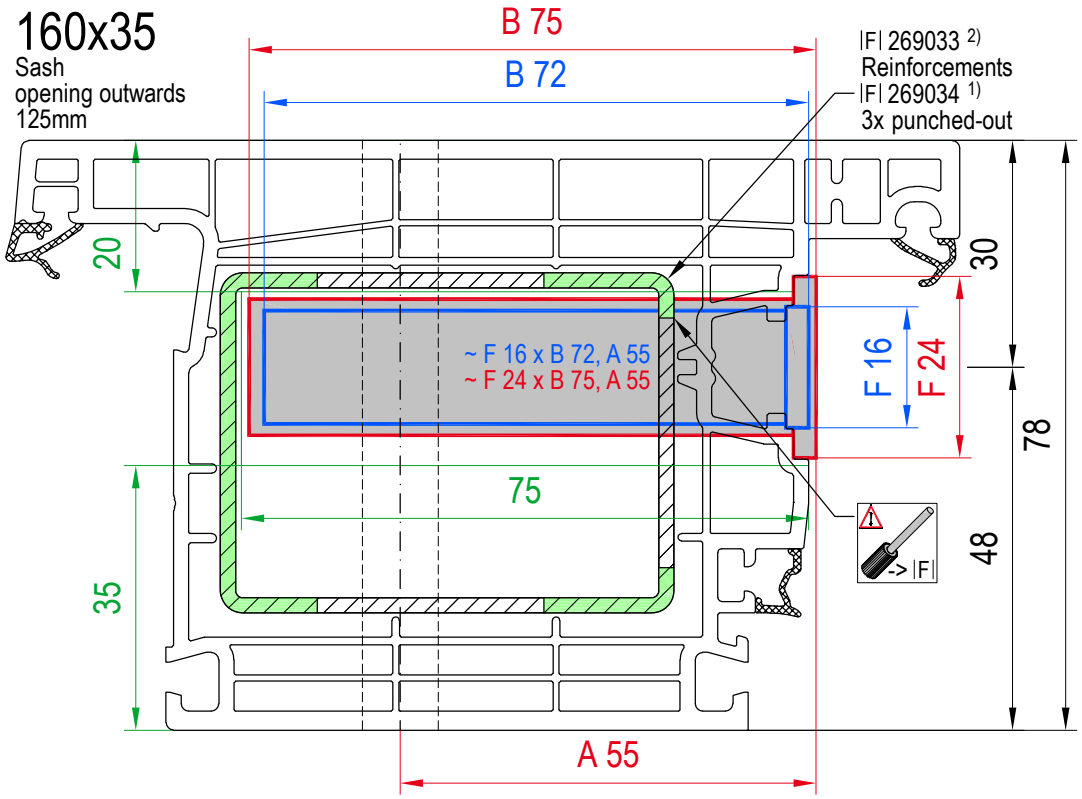
A Backset
B Lock case depth
F False mullion width

3) Recommendation: min. 3 bolt latch lock

4) Backset A 45mm: Offset door handles recommended!

160x35

Sash
opening outwards
125mm



Example ~

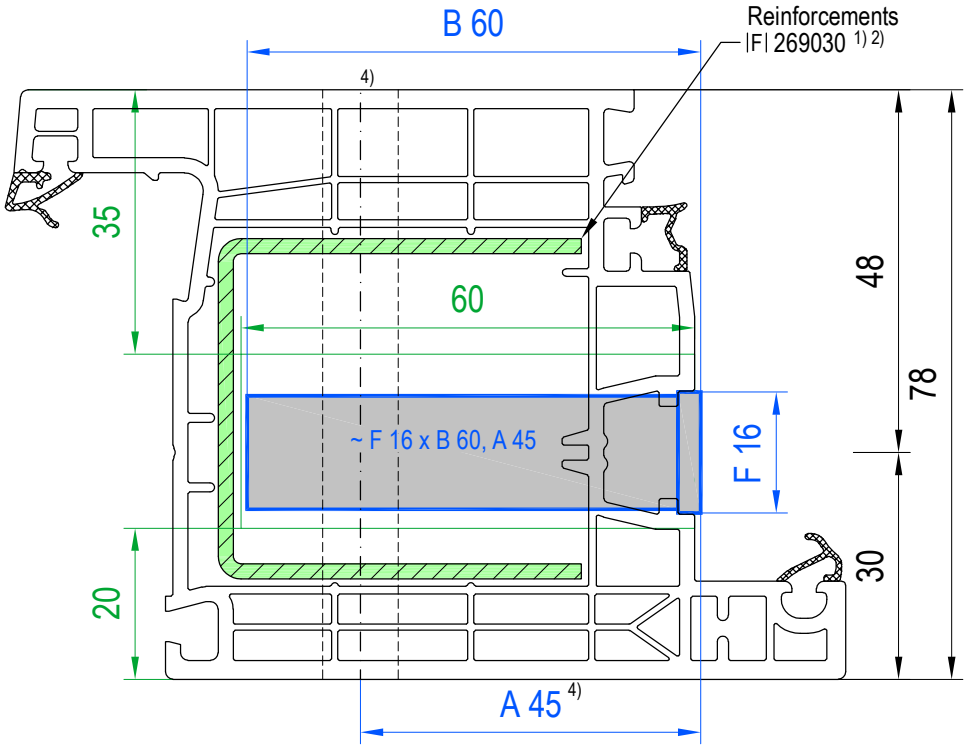
Compatible residential door hardware: Many of the customary and commercially available standard fittings for residential doors, distributed by the recognized hardware manufacturers, can be used. For detailed descriptions of the different fitting types, please refer to the corresponding hardware manual. Check the fittings' compatibility in any case! In case of doubt, please contact your hardware manufacturer!

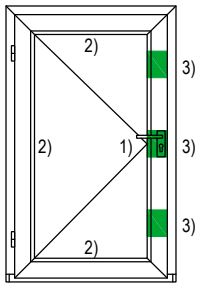
160x30

Sash

110mm

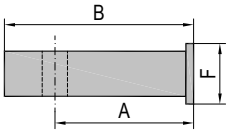
Example ~





1) Lock side
2) Hinge side

Maximum Dimensions
-> Lock side



A Backset
B Lock case depth
F False mullion width

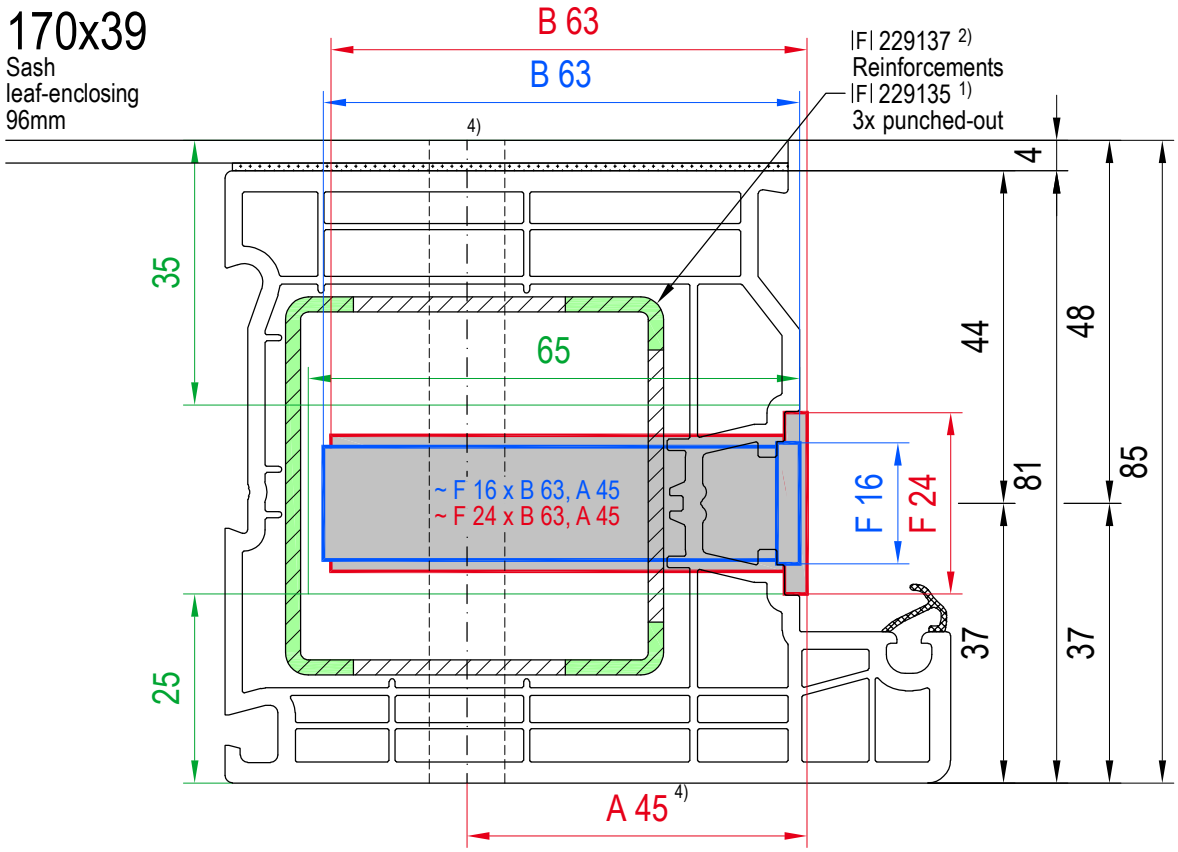
3) Recommendation: min. 3 bolt latch lock

4) Backset A 45mm: Offset door handles recommended!

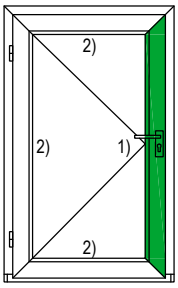
170x39

Sash
leaf-enclosing
96mm

Example ~



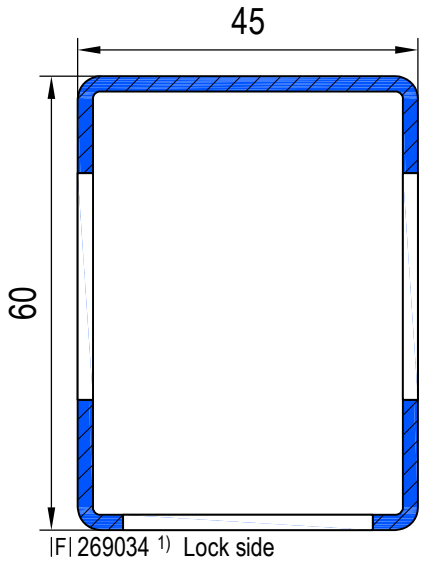
Compatible residential door hardware: Many of the customary and commercially available standard fittings for residential doors, distributed by the recognized hardware manufacturers, can be used. For detailed descriptions of the different fitting types, please refer to the corresponding hardware manual. Check the fittings' compatibility in any case! In case of doubt, please contact your hardware manufacturer!



Profile series

	Construction depth Sash	
energeto neo 76mm	160x33	|F|
	160x35	|F|

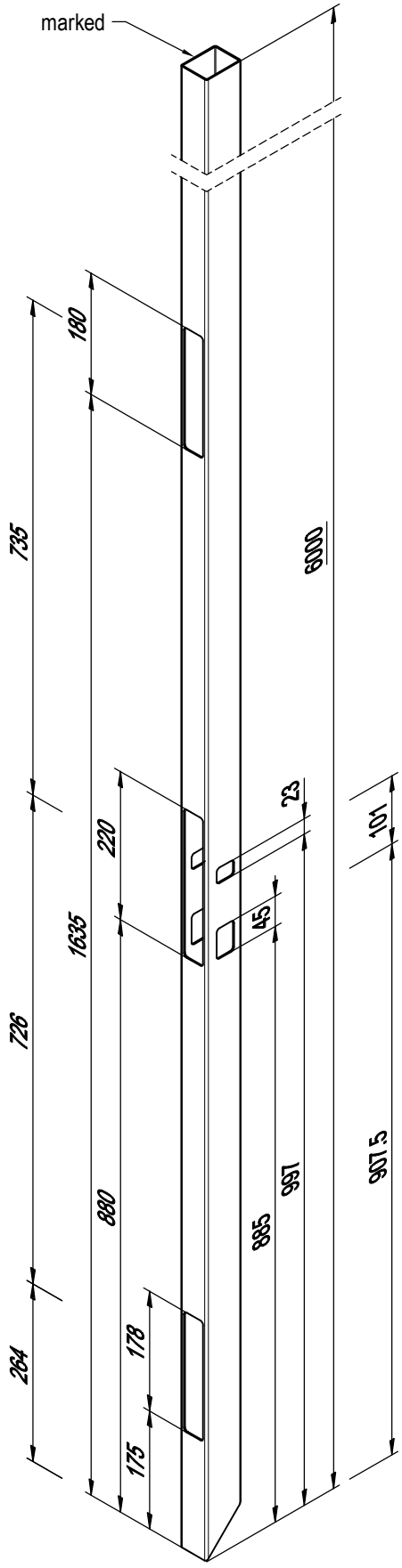
|F| Reinforcements
1) Lock side
2) Hinge side



|F| 269034 1) Lock side
3x punched-out
s= 2.0mm, Ix/Iy= 13.0/20.4cm4 *
l= 6000mm, marked in blue
universally applicable
* |F| 269033 2) Hinge side

Weldable corner connector
|E| 660033

Auxiliary parts
|O| 640938 -> |E|



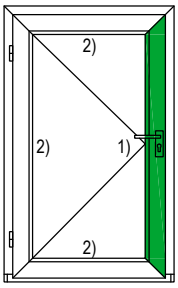
Example ~

Compatible residential door hardware:

Many of the customary and commercially available standard fittings for residential doors, distributed by the recognized hardware manufacturers, can be used.

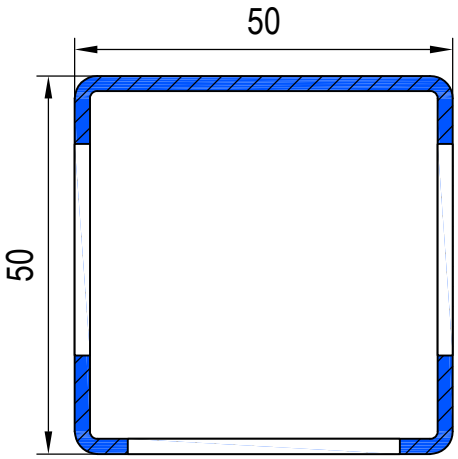
For detailed descriptions of the different fitting types, please refer to the corresponding hardware manual. Check the fittings' compatibility in any case! In case of doubt, please contact your hardware manufacturer!

Note: The false mullion possibly needs to be cut!



Profile series
Construction depth
(IDEAL 7000 85mm) Sash
energeto neo 76mm 170x39 |F|

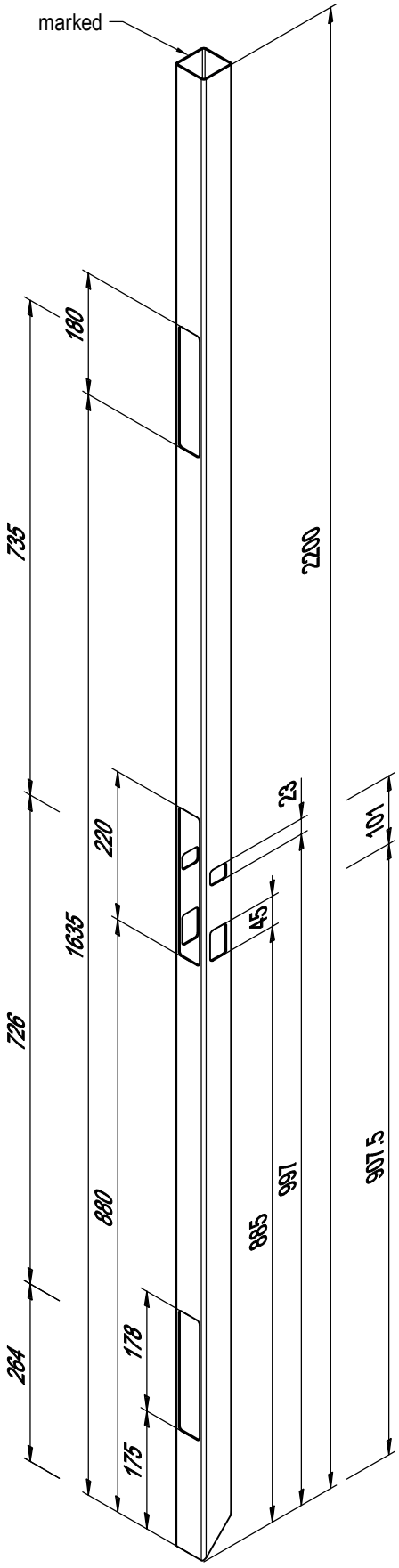
|F| Reinforcements
1) Lock side
2) Hinge side



|F| 229137 1) Lock side
3x punched-out
s= 2.0mm, Ix/Iy= 14.4/14.4cm4 *
l= 2200mm, marked in blue
universally applicable
* |F| 229135 2) Hinge side

Weldable corner connector
|E| 640038

Auxiliary parts
|O| 640938 -> |E|



Example ~

Compatible residential door hardware:

Many of the customary and commercially available standard fittings for residential doors, distributed by the recognized hardware manufacturers, can be used.

For detailed descriptions of the different fitting types, please refer to the corresponding hardware manual. Check the fittings' compatibility in any case! In case of doubt, please contact your hardware manufacturer!

Note: The false mullion possibly needs to be cut!

Assembly Instruction Corner connector

Profile series

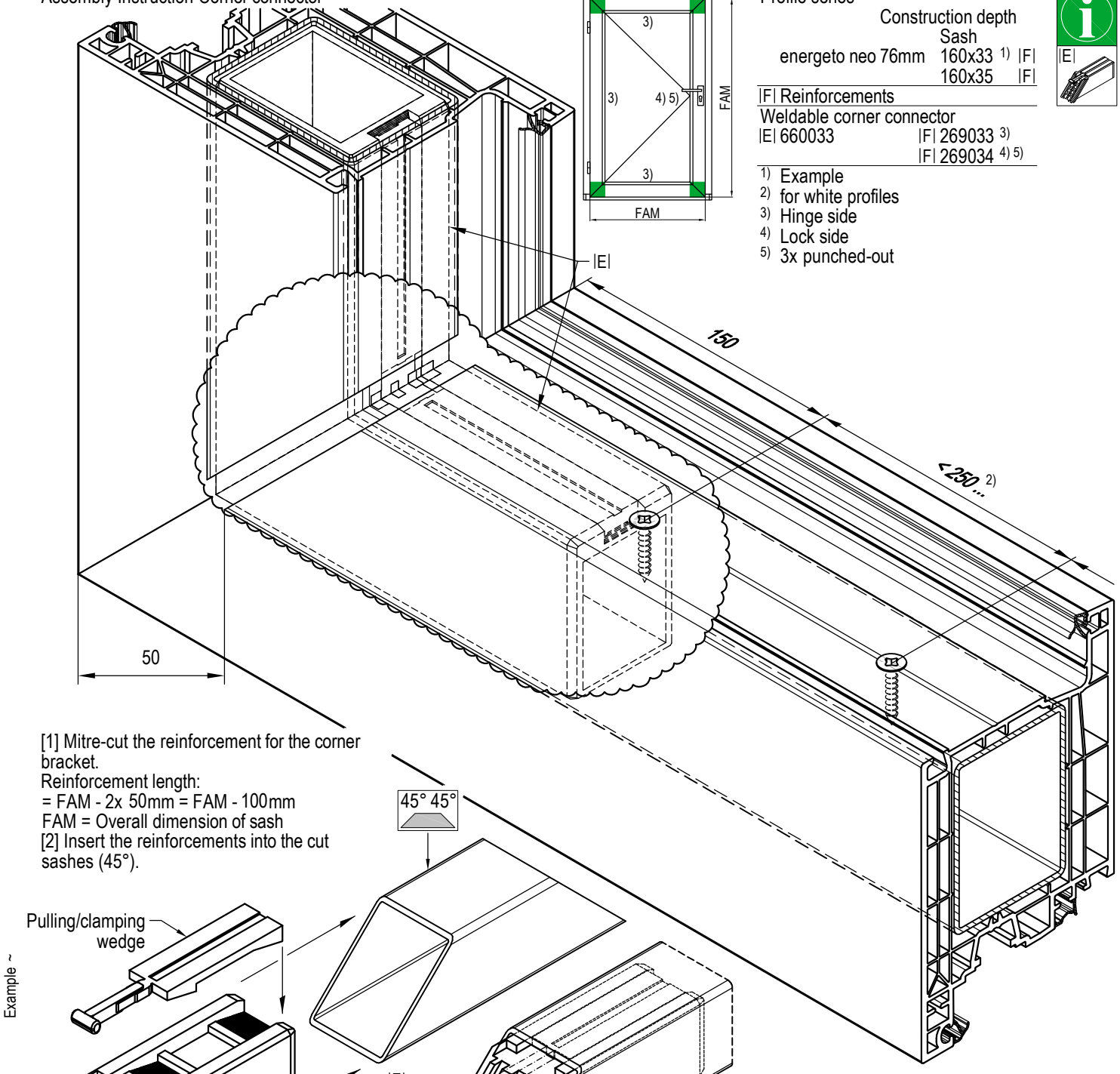
	Construction depth Sash	
energeto neo 76mm	160x33 1)	|F|
	160x35	|F|

|F| Reinforcements

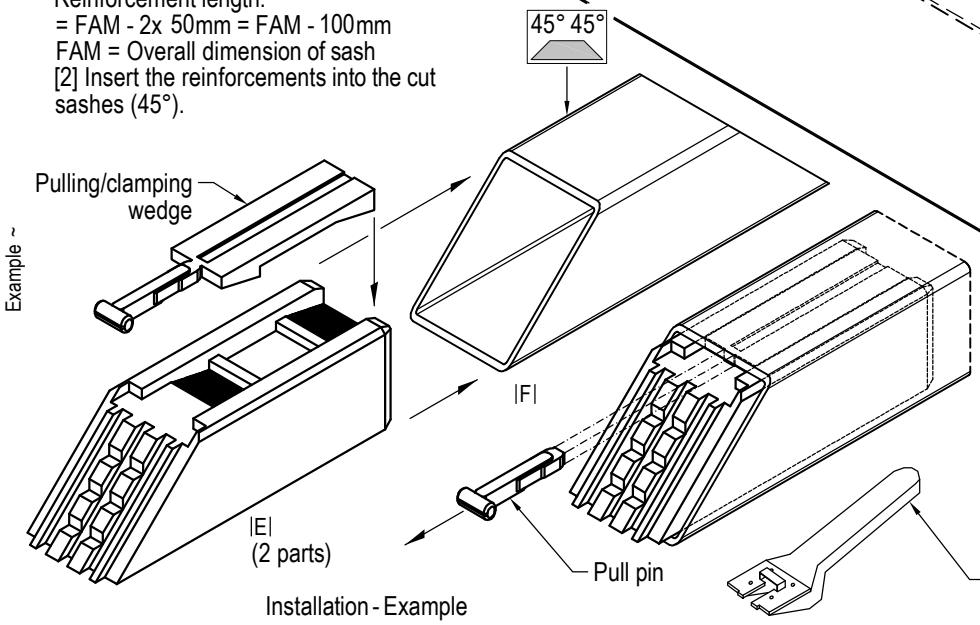
Weldable corner connector

|E| 660033 |F| 269033 3)
|F| 269034 4) 5)

1) Example
2) for white profiles
3) Hinge side
4) Lock side
5) 3x punched-out



[1] Mitre-cut the reinforcement for the corner bracket.
Reinforcement length:
= FAM - 2x 50mm = FAM - 100mm
FAM = Overall dimension of sash
[2] Insert the reinforcements into the cut sashes (45°).



Installation - Example

Auxiliary parts
|O| 640938 -> |E|
Lever

[3] Insert the corner bracket (consisting of pulling/clamping wedge and connector) into the reinforcement located in the profile.
[4] The corner connector must be flush with the sash's cutting edge.
[5] Position and fix the corner bracket on both sides in the reinforcement. Clamp the pulling/clamping wedge with the lever 640938 (give a jerk to the pull-pin) to make sure that the bracket is very tight. The pin should break off due to the jerk.
[6] Weld the sash profiles including the bracket and the reinforcement.

Assembly Instruction Corner connector

Profile series

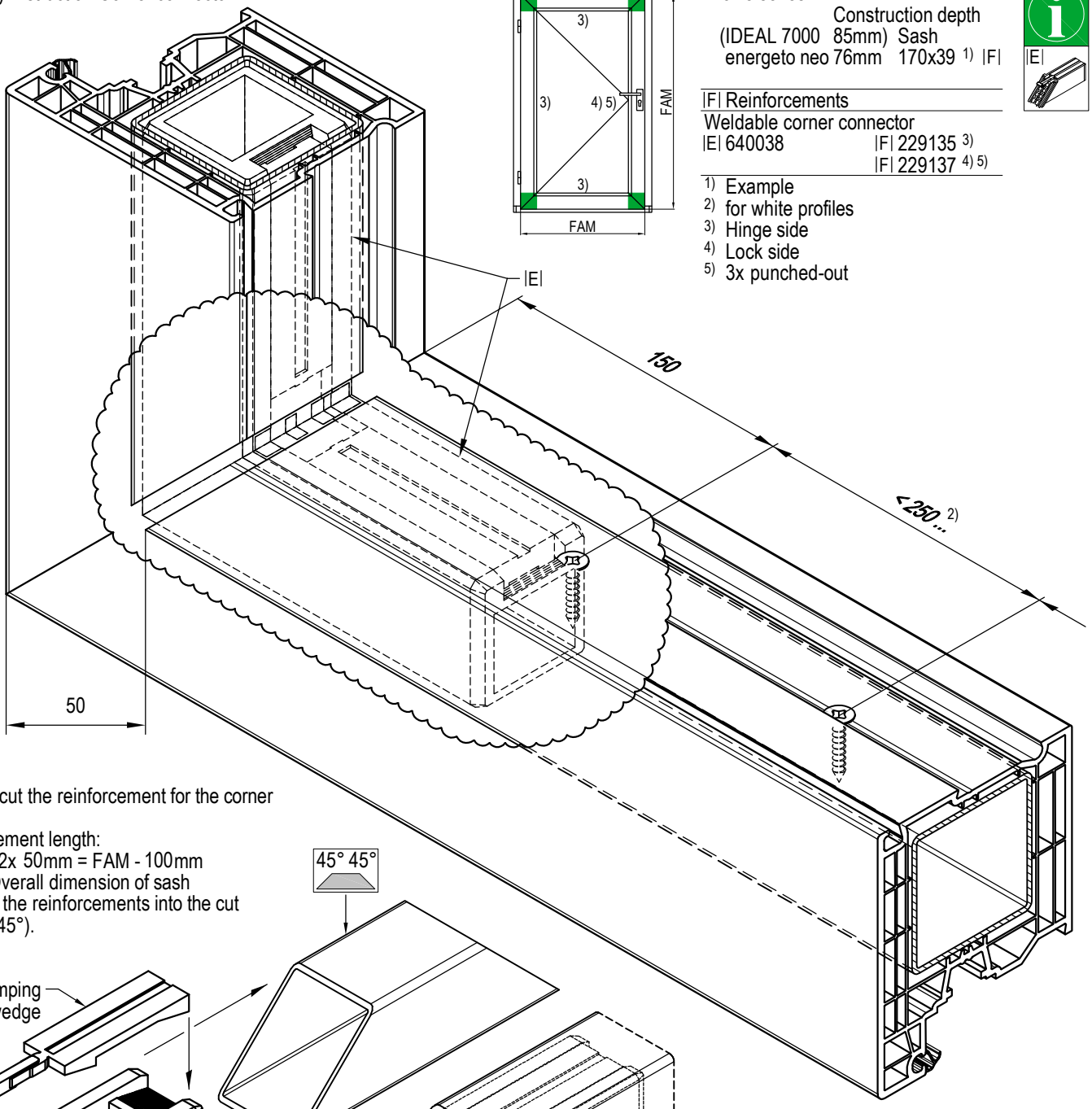
	Construction depth		
(IDEAL 7000	85mm)	Sash	
energeto neo 76mm	170x39 1)	|F|	

|F| Reinforcements

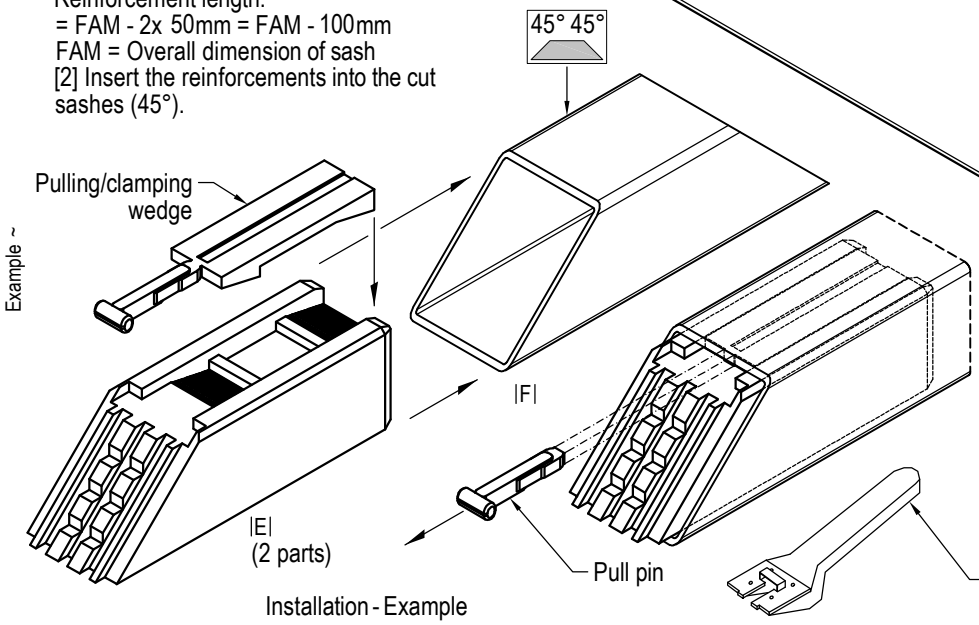
Weldable corner connector

|E| 640038	|F| 229135 3)	
	|F| 229137 4) 5)	

1) Example
2) for white profiles
3) Hinge side
4) Lock side
5) 3x punched-out



[1] Mitre-cut the reinforcement for the corner bracket.
Reinforcement length:
= FAM - 2x 50mm = FAM - 100mm
FAM = Overall dimension of sash
[2] Insert the reinforcements into the cut sashes (45°).



Installation - Example

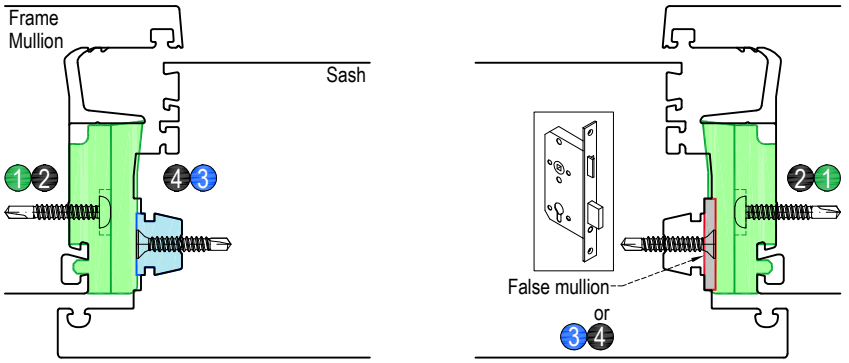
Auxiliary parts
|O| 640938 -> |E|
Lever

[3] Insert the corner bracket (consisting of pulling/clamping wedge and connector) into the reinforcement located in the profile.
[4] The corner connector must be flush with the sash's cutting edge.
[5] Position and fix the corner bracket on both sides in the reinforcement. Clamp the pulling/clamping wedge with the lever 640938 (give a jerk to the pull-pin) to make sure that the bracket is very tight. The pin should break off due to the jerk.
[6] Weld the sash profiles including the bracket and the reinforcement.

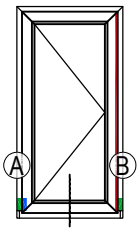
Profile series
energeto neo

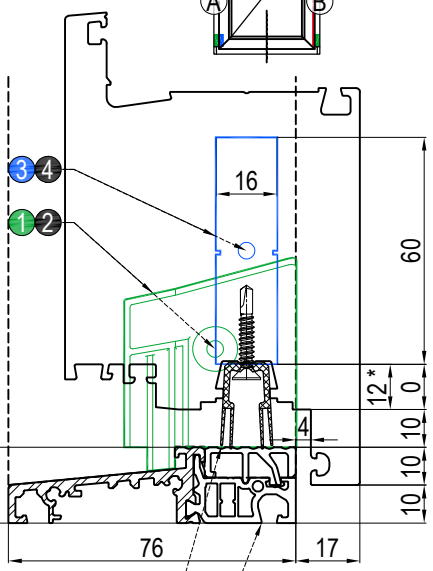
|X| 466055
|X| 466057

Ⓐ Hinge side
Ⓑ Lock side



1:2



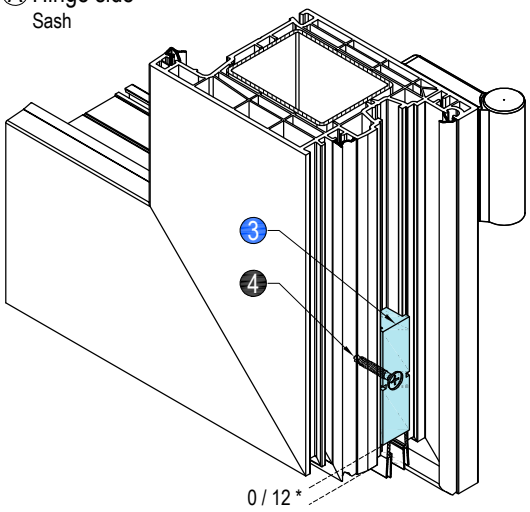


1:2

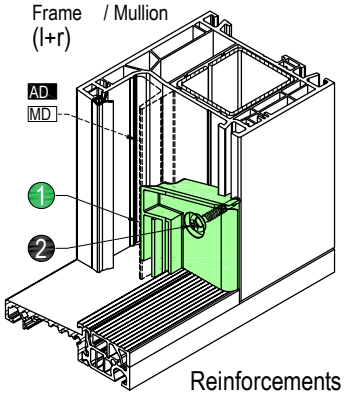
* |X| 496912 Gaskets -> Front door

|U| 267070 Aluminium thresholds

Ⓐ Hinge side
Sash



Ⓐ Hinge side
Ⓑ Lock side
Frame / Mullion
(l+r)

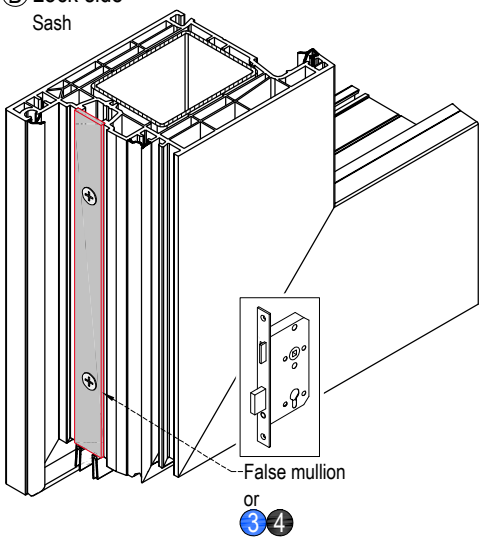


-> Frame / Mullion Gaskets			 (l+r)	~ 2x
1	|X| 466055			
Screws		A2F/NiRo		
Reinforcements -> 2	3.9x25mm	FD1	 -> |F|	2x
Plastic -> 2	4.2x25mm	ISO 7049	 -> |F|	
-> Sash Gaskets				1-2x
3	|X| 466057			
Screws				
4	3.9x25mm	FD2		1-2x



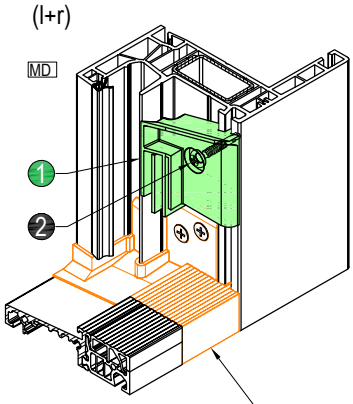


Ⓑ Lock side
Sash

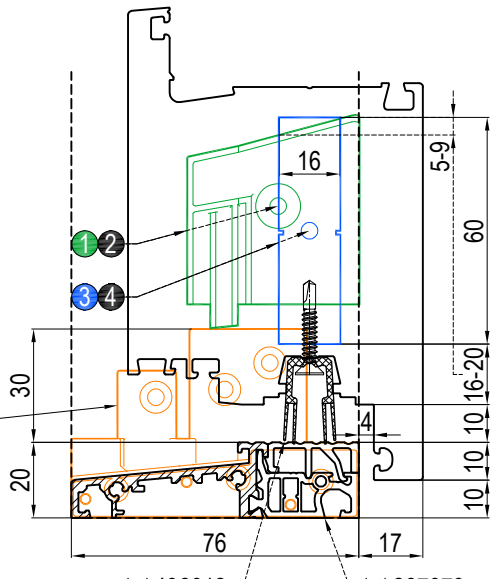


Example ~

Ⓐ Hinge side
Ⓑ Lock side
Frame + Threshold connector
(l+r)



|V| 666371
Threshold connector



|X| 496912 Gaskets

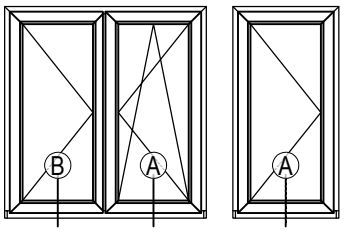
|U| 267070 Aluminium thresholds

1:4 1:4 1:2

Profile series energeto neo

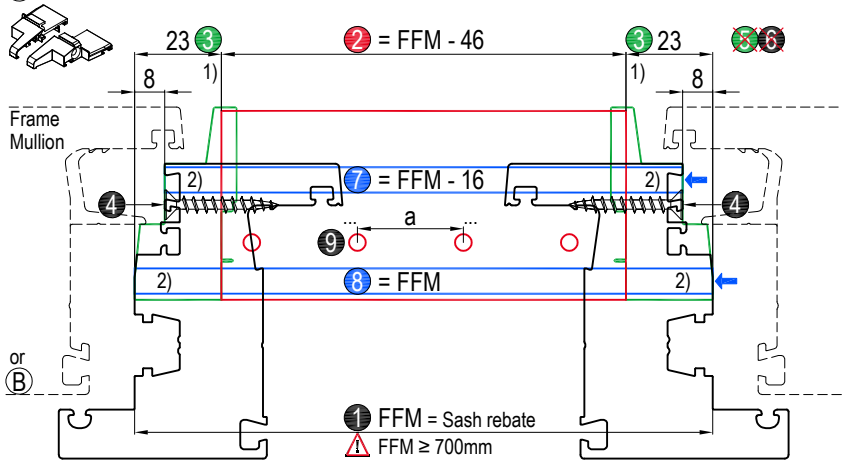
Sash 060xxx 160xxx

|T| 267055



A Sash / Tilt-and-turn sash
B Turn sash with false mullion / false mullion sash

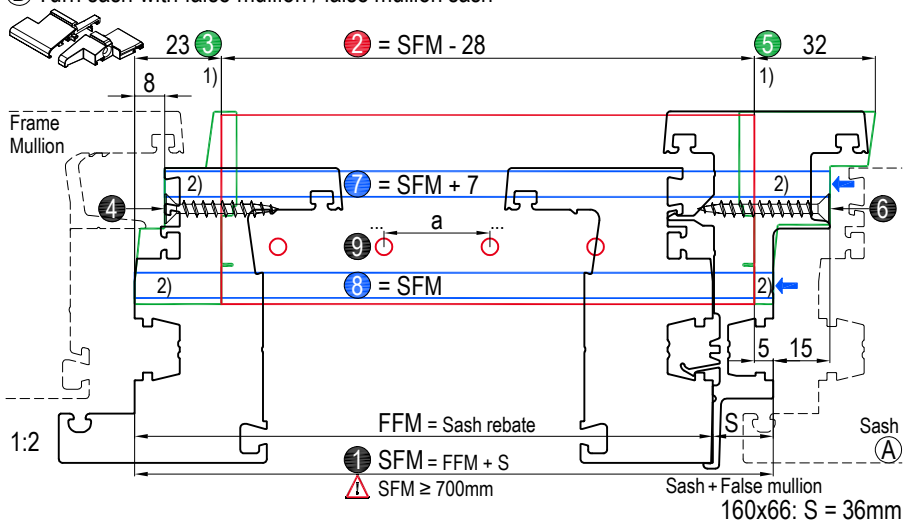
A Sash / Tilt-and-turn sash



1:2

⚠ FFM < 700mm: 2 7 8 ... - 2mm

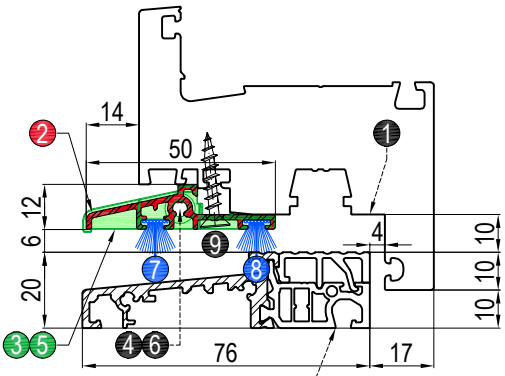
B Turn sash with false mullion / false mullion sash



1:2

⚠ SFM < 700mm: 2 7 8 ... - 2mm

160x66: S = 36mm
160x64: S = 16mm
False mullion sash + 160x97: S = 0mm



⚠ End caps protect from injuries!

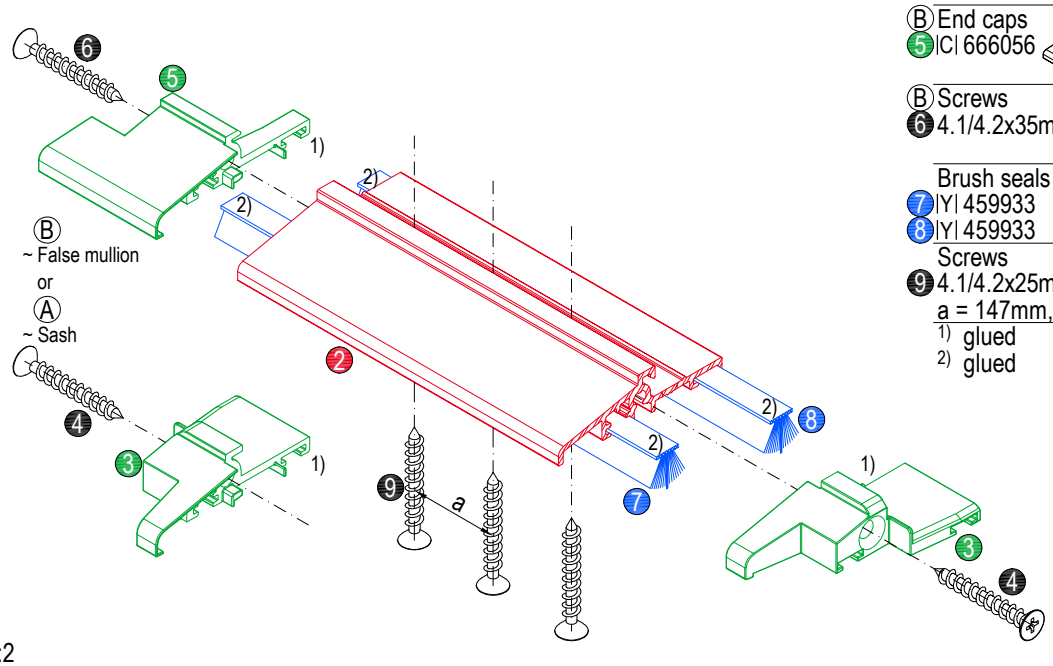
|U| 267070 Aluminium thresholds

1 Attention: Measure this dimension
A FFM = Sash rebate
B SFM = FFM + False mullion

	Aluminium weather bar			
2	|T| 267055	50x12mm		1-2x
	End caps	~ Sash		
3	|C| 666055		23mm	2-3x
	Screws			
4	4.1/4.2x30mm	V2A		2-3x
B	End caps	~ False mullion		
5	|C| 666056		32mm	1x
B	Screws			
6	4.1/4.2x35mm	V2A		1x
	Brush seals			
7	|Y| 459933			1-2x
8	|Y| 459933			1-2x
	Screws			
9	4.1/4.2x25mm	V2A		...

a = 147mm, Ø4.5mm: pierced hole
1) glued
2) glued (l+r)

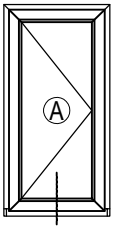
Example ~



1:2

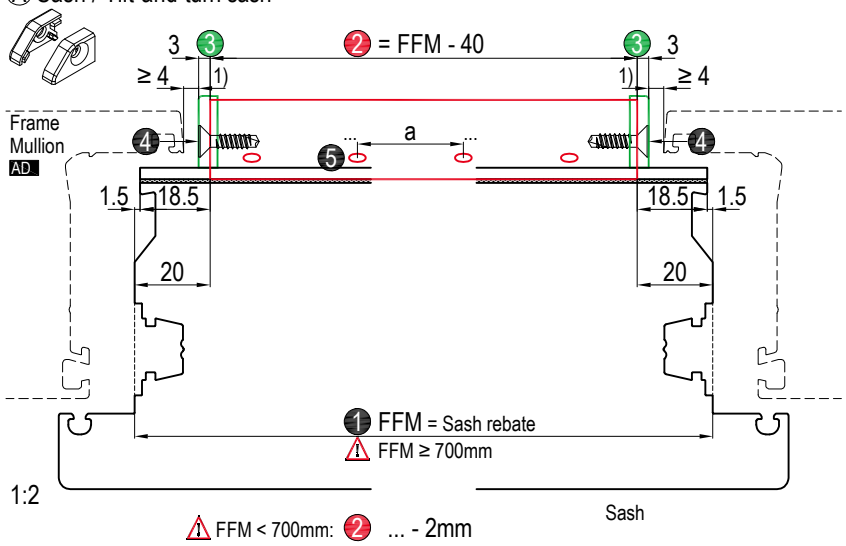
Profile series energeto neo AD

Sash 170x39



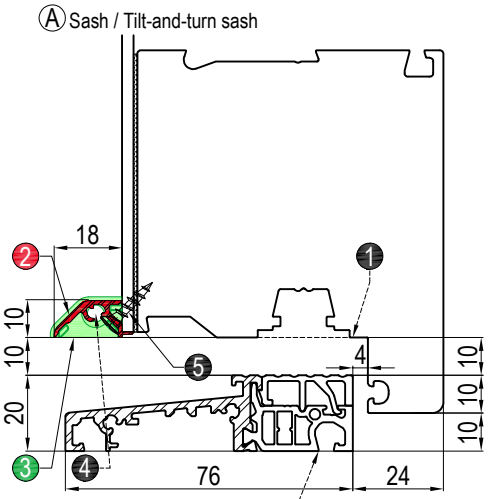
|T| 257052

Ⓐ Sash / Tilt-and-turn sash



⚠ FFM < 700mm: 2 ... - 2mm

Ⓐ Sash / Tilt-and-turn sash



⚠ End caps protect from injuries!

|U| 267070 Aluminium thresholds

1 Attention: Measure this dimension
FFM = Sash rebate

Aluminium weather bar
2 |T| 257052 18x10mm 1x
+ 5 = Set

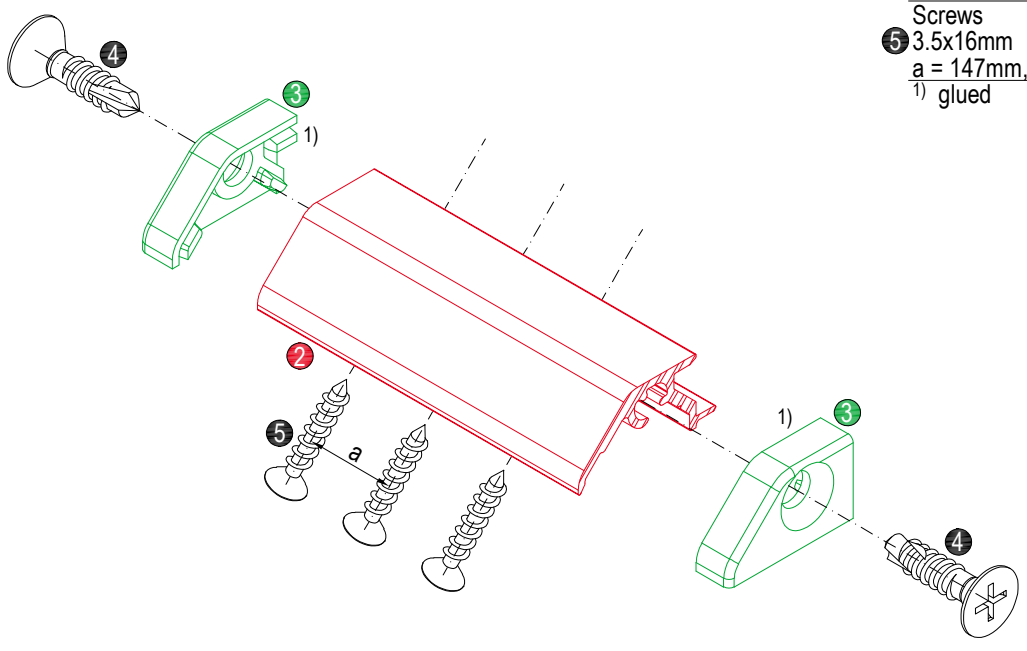
End caps
3 |C| 646052 3mm 2x

Screws
4 3.9x16mm FD2 2x
3.9x19mm FD21

Screws Set
5 3.5x16mm Spax 2 = 9x
a = 147mm, Ø3.5mm: pierced hole

1) glued = Option

Example ~



1:1

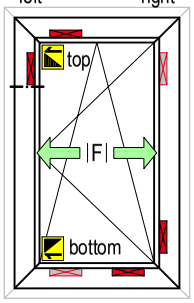
AD

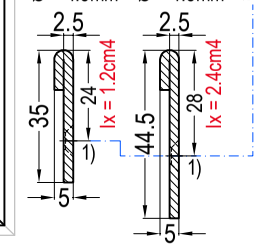
1) pierced hole

Example ~

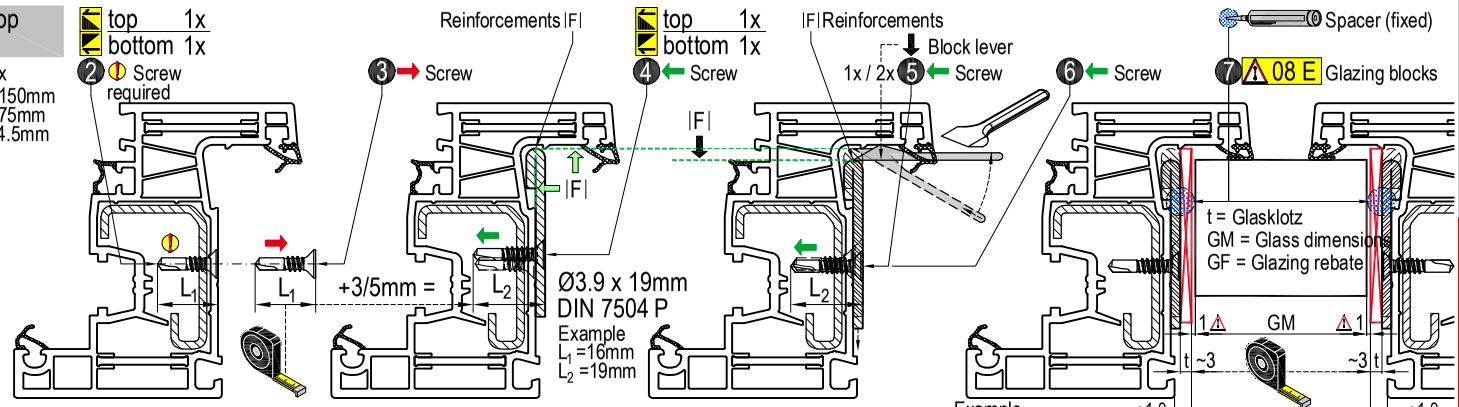
1:2

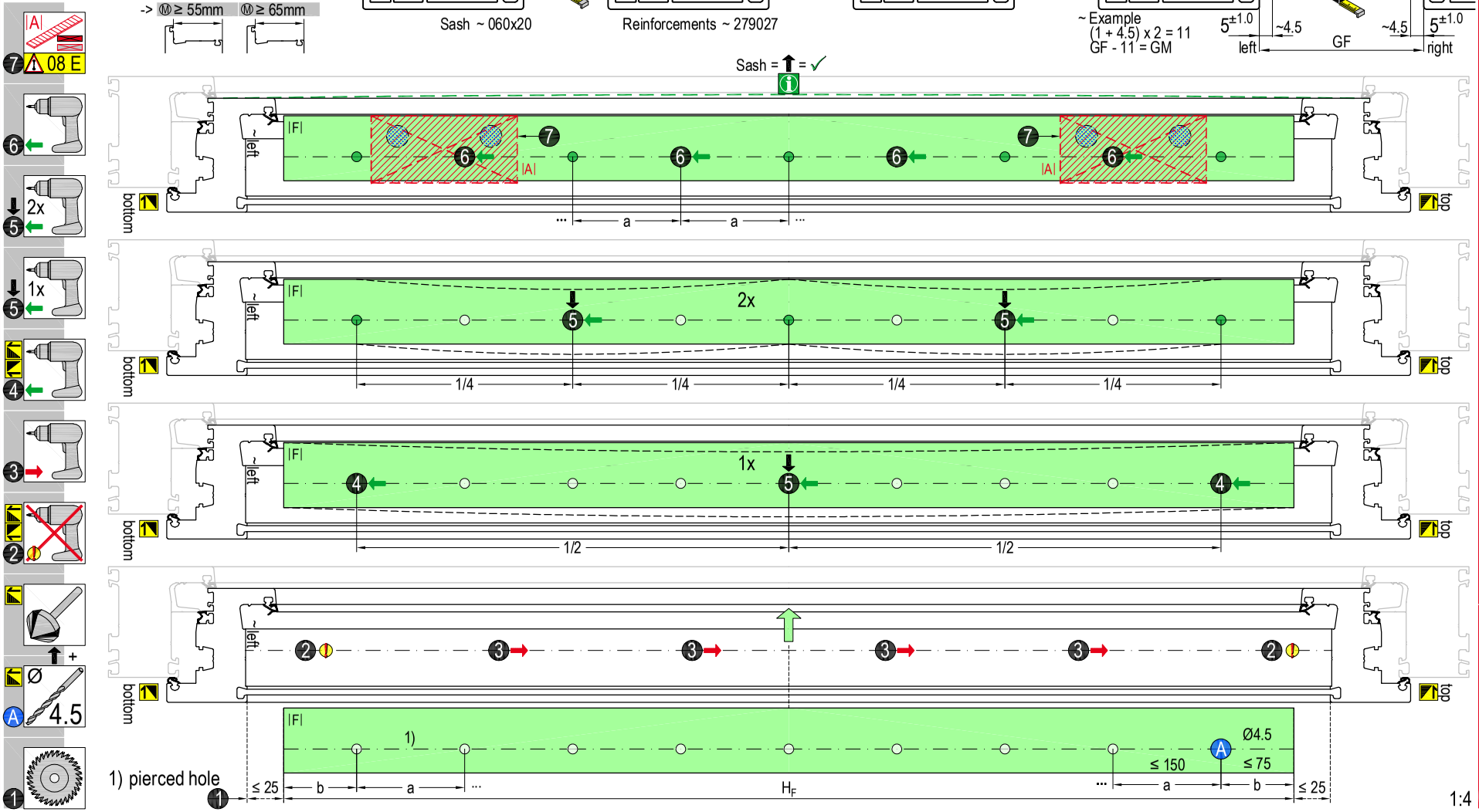
|F| Reinforcements -> Sash	249027 1)	279027 1)	top
~ left right	1 (2.4m) a = 150mm b = 75mm Ø = 4.5mm	1 (2.4m) a = 150mm b = 75mm Ø = 4.5mm	A 1x a ≤ 150mm b ≤ 75mm Ø = 4.5mm





-> Ⓜ ≥ 55mm Ⓜ ≥ 65mm

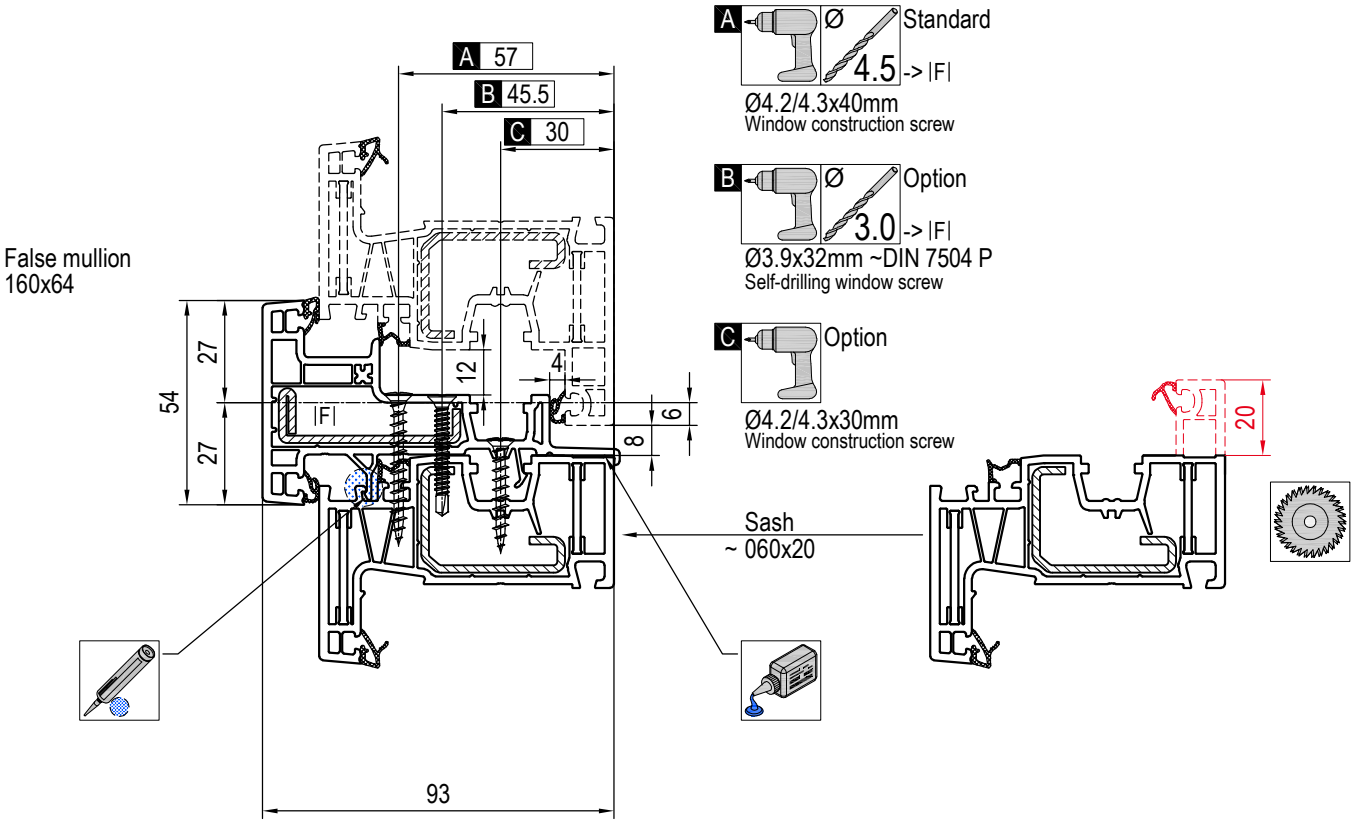




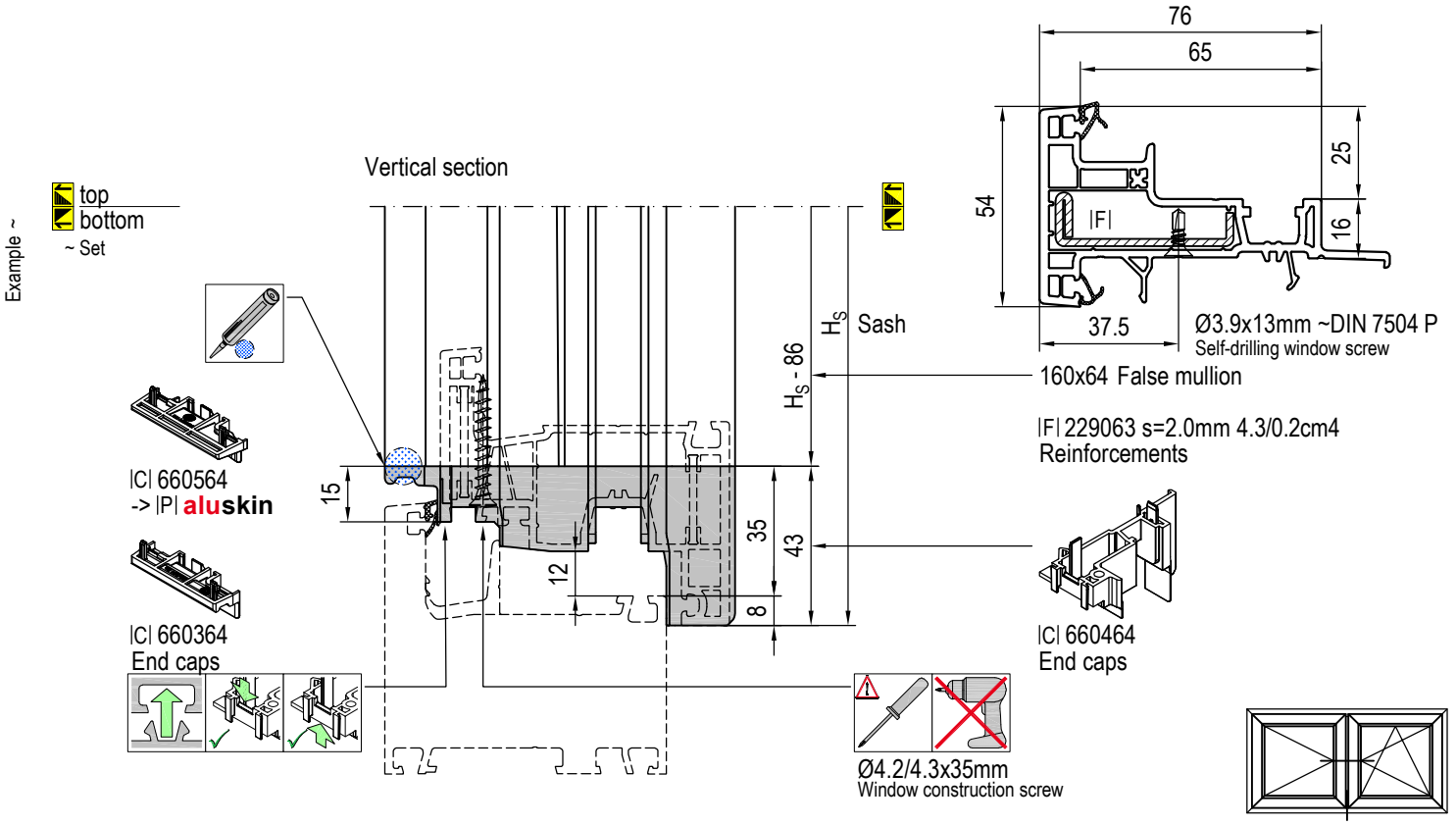
1) pierced hole

1:4

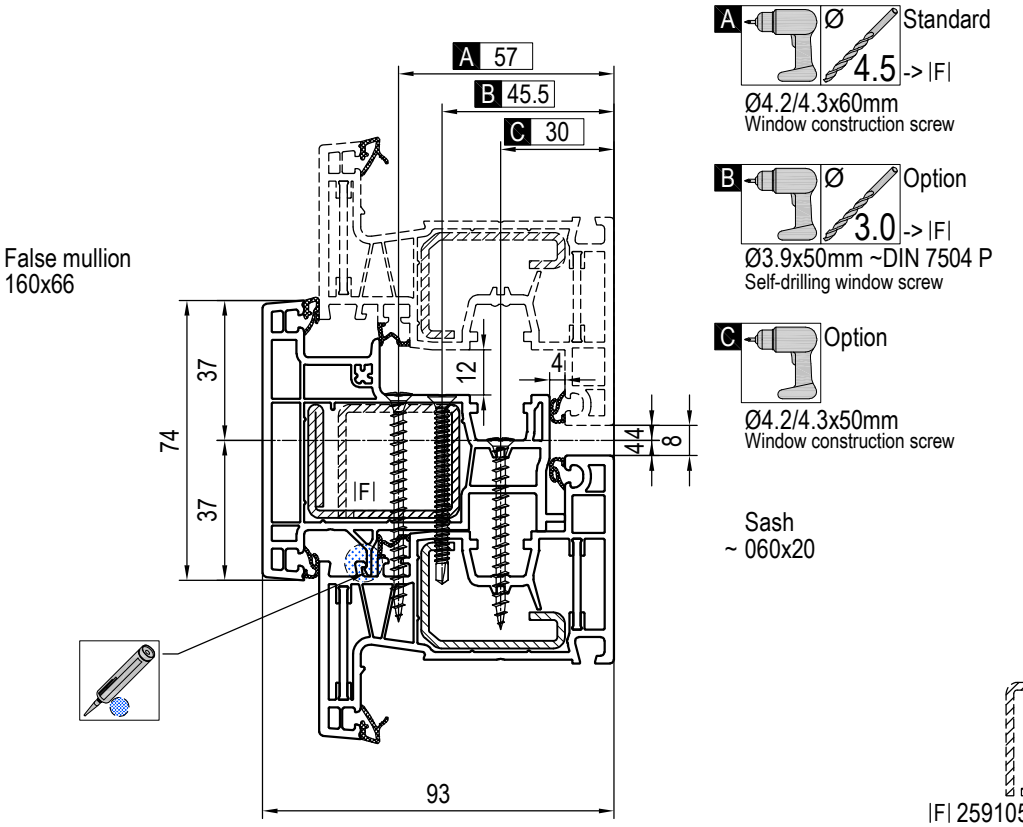
Horizontal section



Vertical section



Horizontal section

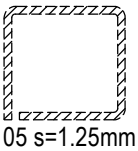


A Ø 4.5 -> |F| Standard
Ø4.2/4.3x60mm
Window construction screw

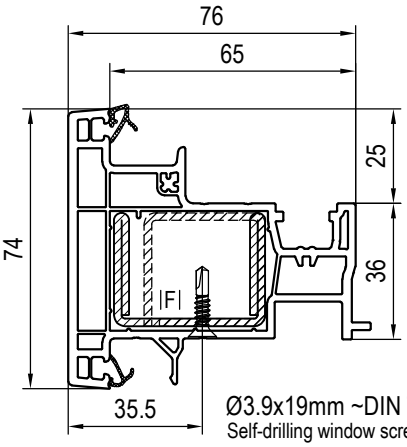
B Ø 3.0 -> |F| Option
Ø3.9x50mm ~DIN 7504 P
Self-drilling window screw

C Option
Ø4.2/4.3x50mm
Window construction screw

Sash
~ 060x20



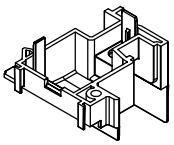
|F| 259105 s=1.25mm 2.2/1.9cm4
|F| 259106 s=2.0mm 3.2/2.9cm4
|F| 259107 s=1.5mm 2.5/2.3cm4
Reinforcements



Ø3.9x19mm ~DIN 7504 P
Self-drilling window screw

160x66 False mullion

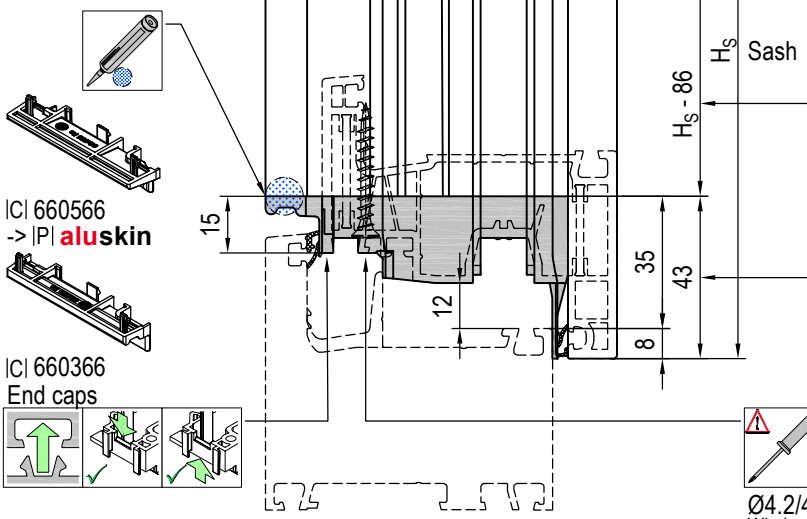
|F| 269066 s=2.0mm 8.0/2.6cm4
Reinforcements



|C| 660466
End caps

Vertical section

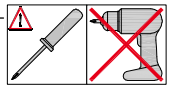
Example ~
top
bottom
~ Set



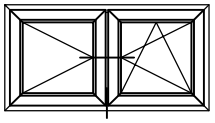
Sash

|C| 660566
-> |P| aluskin

|C| 660366
End caps

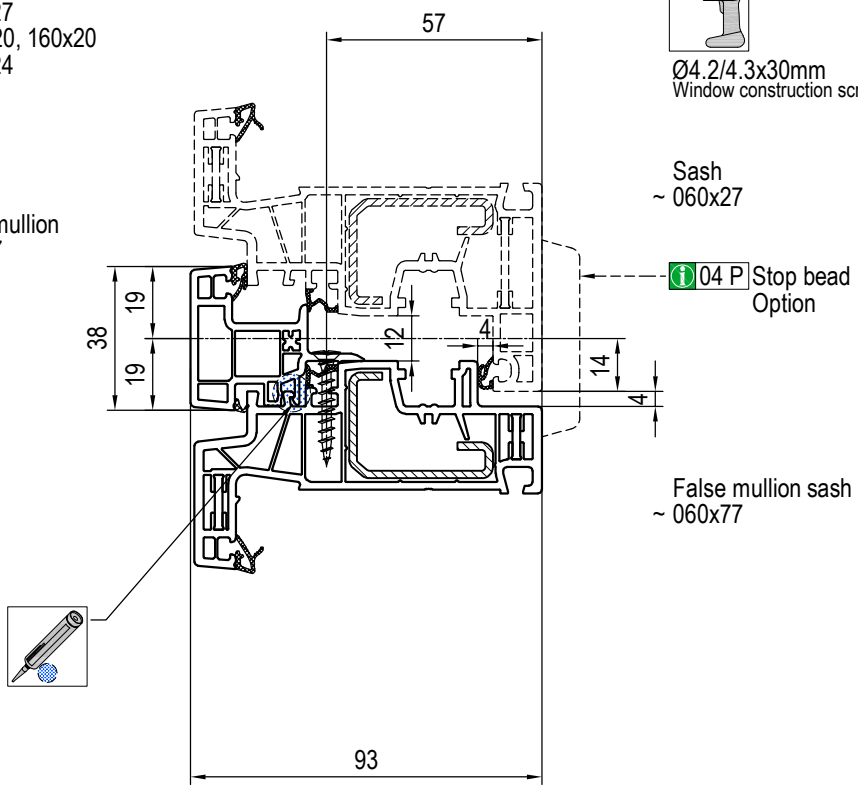


Ø4.2/4.3x35mm
Window construction screw



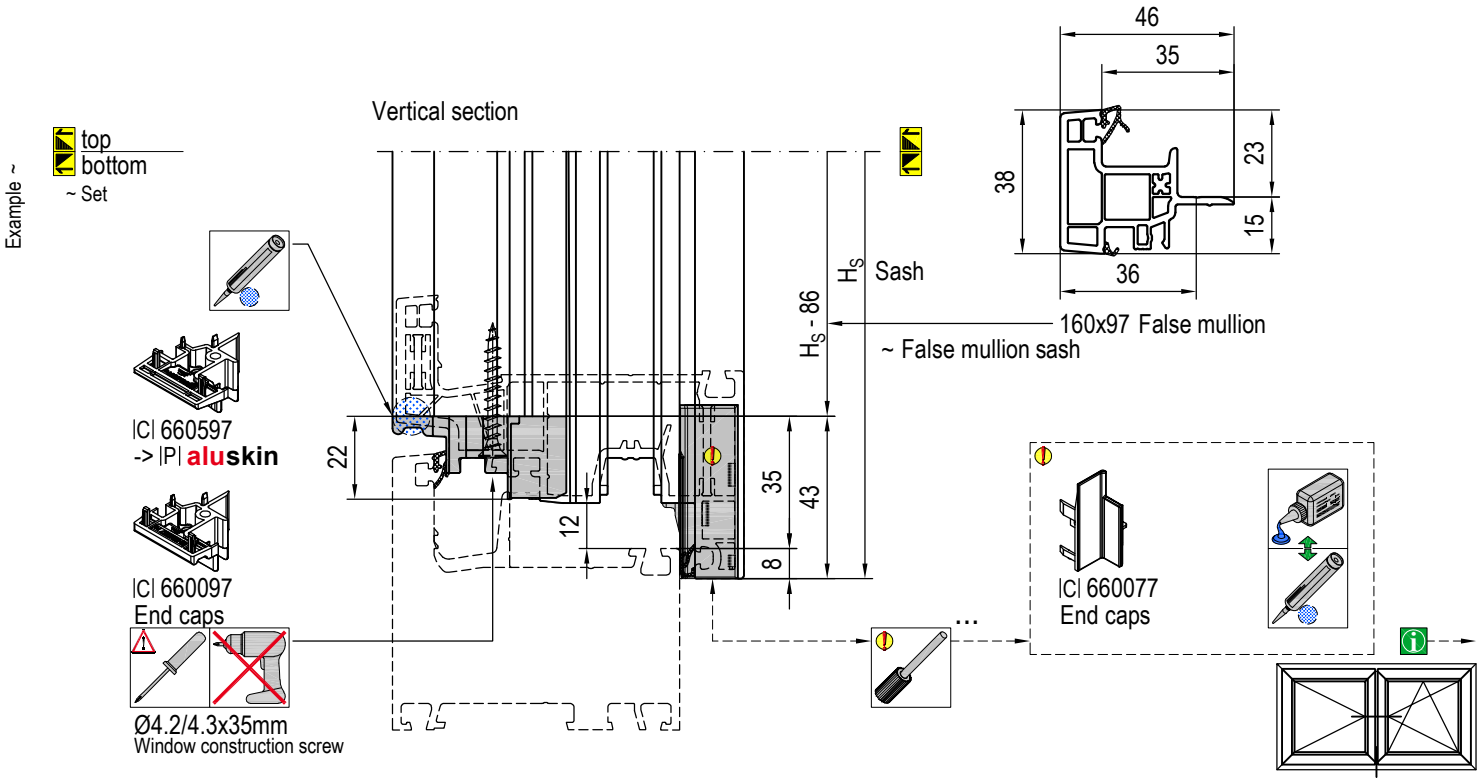
Horizontal section

Applies analogously to:
~ 060x77 - 060x27
160x70 - 060x20, 160x20
160x74 - 160x24



Vertical section

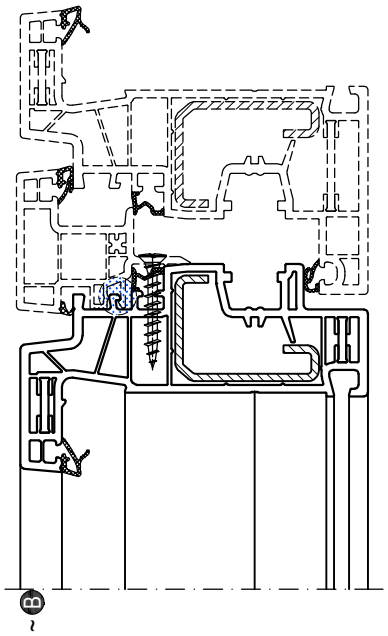
Example ~
top
bottom
~ Set



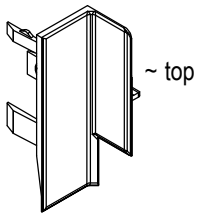
Horizontal section

Applies analogously to:
~ 060x77 - 060x27
160x70 - 060x20, 160x20
160x74 - 160x24

|3| False mullion
~ 160x97

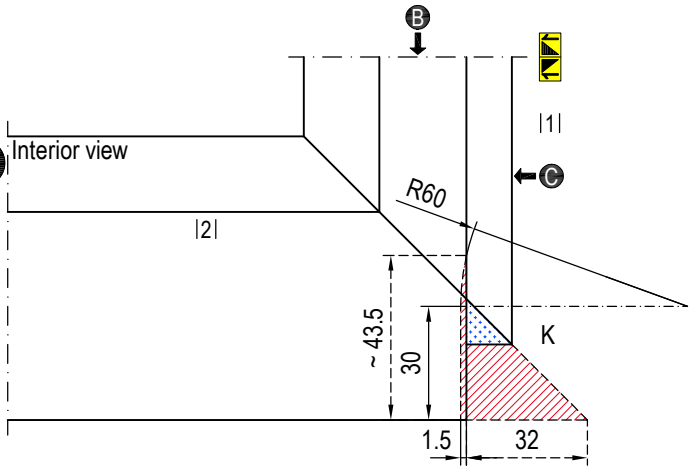


|1| False mullion sash
~ 060x77
+
|2| Sash
~ 060x27

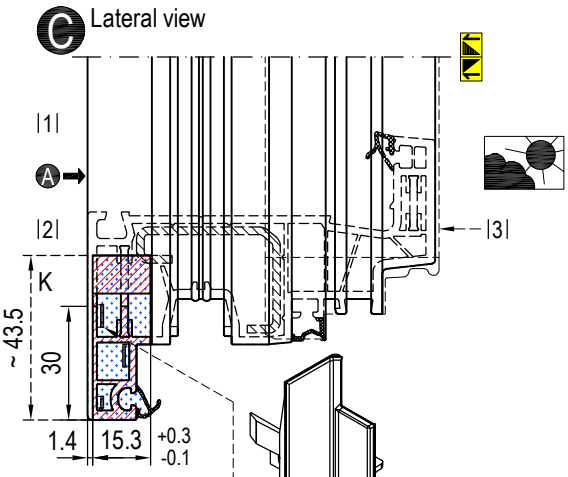


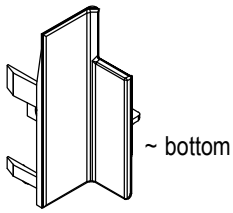
top
bottom
~ Set

A Interior view



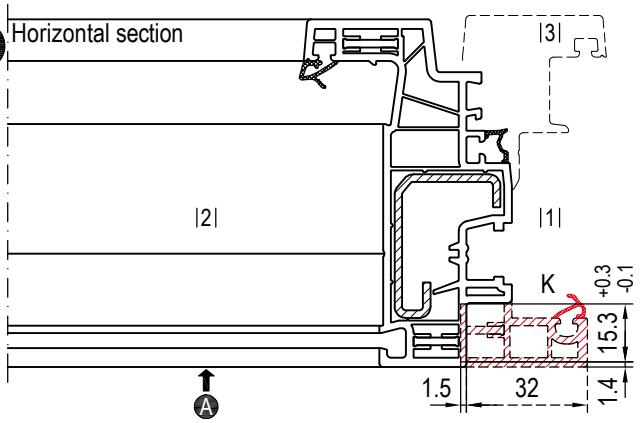
C Lateral view





Example ~

B Horizontal section

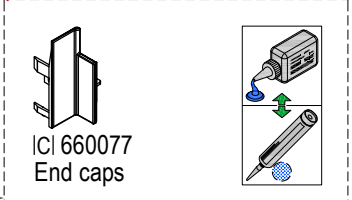


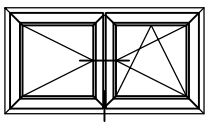
|1| False mullion sash
+
|2| Sash

Mill the contour K.
Milling cutters /
patterns upon request.
FZ0064

glued
~ Silicone rubber







The following installation guidelines for windows and French windows are also part of the RAL quality and test regulations for PVC-U windows. The installation guidelines regulate the installation of these windows by the manufacturer or an installation company. If the installation is not carried out by the window manufacturer but by an installation company, this company must be obliged to comply with these guidelines.
(see "Guide to installation", available from RAL Quality Associations Windows and Front Doors, Bockenheimer Anlage 13, 60322 Frankfurt am Main, Tel.: 069 / 95 50 54 - 0, http://www.window.de)

An installation manual for PVC-U windows and doors is available.
Publisher: Gütegemeinschaft Kunststoff-Fenstersysteme (GKF).
Please contact us by e-mail: anfrage@aluplast.de

For installation by an installation company, instructions from the window manufacturer are required, which contain all detailed information for professional installation. Special features, such as those that can occur in the renovation of old buildings, are not taken into account here.

10 A Preparations for installation

The minimum installation temperature (air temperature) for window elements should be at least 5°C!

NOTE: At temperatures below 15°C, impact and clip functions (e.g. for subsequent glazing / insertion of glazing beads) are only possible with pre-tempered profiles of min. 15°C. To ensure safe processing (e.g. in case of subsequent glazing / insertion of glazing beads) of the profiles, they should even be processed at an intrinsic temperature of 17°C, as material stresses or damage can occur or processing (clipping) is not possible at temperatures that are too low.

10 A 1. Shell openings

The building components must be approved by the client or his representative.
During the measurement or before the start of installation, it must be checked whether the agreed tolerances according to the following standards have been adhered to for the openings in the building shell:

- DIN 18202 Tolerances in building construction - Structures

- DIN 18203 Part 1 Tolerances in building construction - Prefabricated parts made of concrete, reinforced concrete and prestressed concrete

- DIN 18203 Part 2 Tolerances in building construction - Prefabricated parts made of steel

- DIN 18203 Part 3 Tolerances in building construction - Components made of wood and wood-based materials

The standards represent the "accuracy achievable with ordinary care".

If alterations or additional measures are necessary due to exceeding of tolerance dimensions or deviations from the specified construction situation, these must be agreed before the start of assembly.

The permissible dimensions for wall openings are given in Table 10 A 1.

Surface of the components	Permissible dimensional deviations		
	≤ 2.5m	2.5-5.0m	≥ 5m
not done (e.g.: masonry not yet plastered)	+/- 10mm	+/- 15mm	+/- 20mm
Done! (e.g.: plastered masonry, masonry made of facing bricks, fair-faced concrete)	+/- 5mm	+/- 10mm	+/- 15mm

Table 10 A 1: Permissible dimensions for wall openings

10 A 2. Choice of connection system

The seal between the building structure and the window must be permanently impermeable to driving rain and permeable to air.
It can be done in the same plane (figure 10 A 1) or in separate planes (figure 10 A 2).

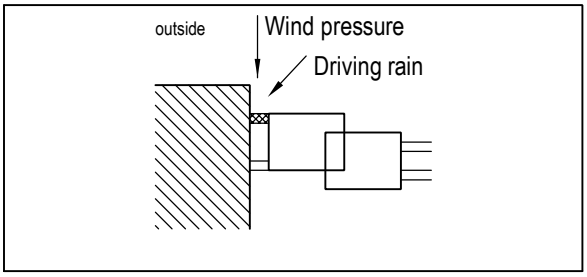


Image 10 A 1:
Single-stage sealing outside

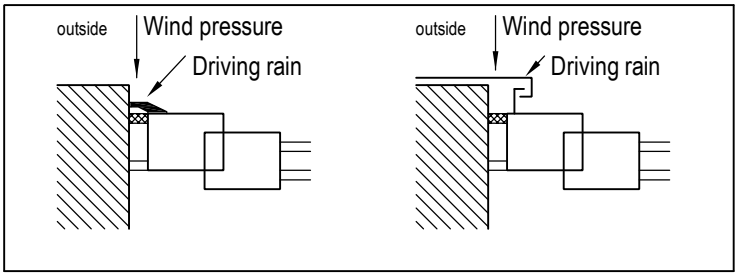


Image 10 A 2:
Two-stage sealing outside

A seal against wind is only given if the wind barrier is executed circumferentially and is not interrupted at any point. As far as possible, two-tier systems should be chosen.
Connections and fixings to the building structure, as well as connections of window elements to each other, must be carried out in such a way that the function of the window elements remains guaranteed even under temperature-related changes in length of the windows and the specified changes in shape of the building structure. The expected changes in shape of the building structure shall be indicated by the client.

The connection system is determined according to **Table 10 B 1** taking into account the loads occurring in the connection joint.

For the selection of the connection system and for the determination of the joint construction, the values for the determination of the temperature-related change in length can be taken from Table 10 A 2.

Window profile material	temperature-related change in length per joint (mm/m)
uPVC (white) (Section 1, Part 1)	1,6
PVC hard (film laminated / coated) (Section 1, Part 7)	2,4

Table 10 A 2: Temperature-related length change per joint depending on the frame material

10 A 3 Transport and storage

Finished window elements must be transported and stored upright, slip- and tip-proof on appropriate supports (e.g. wooden pallets, pallets, transport racks). They must be protected from dirt and damage. Point-shaped underlays should be avoided because of the risk of pressure marks and deflection.

If the windows are stored temporarily, the transport tensions must be released, but not the fuses. Additional pressure on the window due to stacking and tensions are to be avoided.

If the windows are stored outside for a longer period of time, they must be covered. The quality of the window element must not be negatively influenced by the covering or packaging (e.g. heat accumulation is avoided by using a white or lightly pigmented and perforated film).

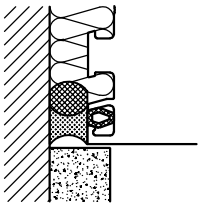
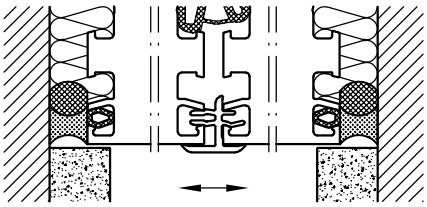
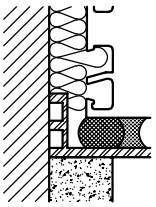
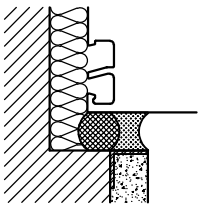
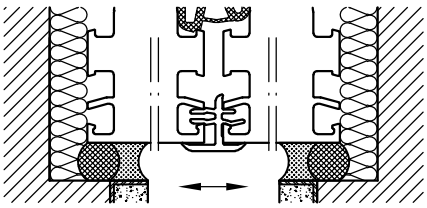
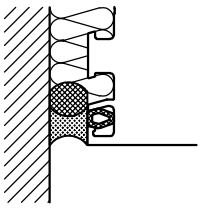
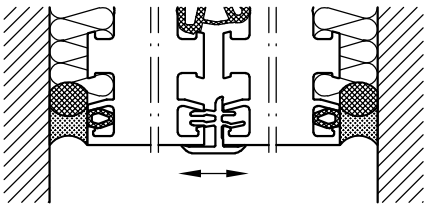
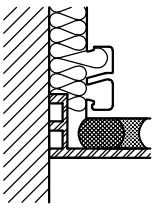
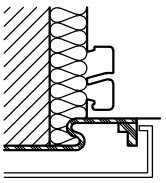
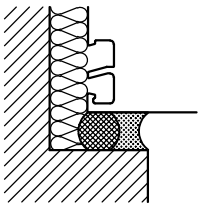
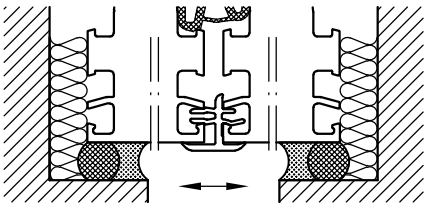
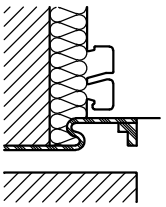
10 B Joint formation

The fabrication and installation according to state of the art.
Basically, the following applies: The inside shall be more impermeable (to vapour diffusion) than the outside.
Inside = vapour barrier (vapour shall diffuse to the outside) / airtight.
Outside = watertight and permeable to vapour (to the outside).

A distinction can be made according to stress groups as per Table 10 B 1:

10 B 1. Stress groups

Table 10 B 1:
Connection between window and building structure

Stress	Stress variables			
Joint movements to be expected	< 4 mm	> 4 mm		
Stress groups according to DIN 18055 - Windows; joint permeability, driving rain tightness and mechanical stress and testing	B, C			
Vibrations	Heavy traffic load			
Stress groups	2	3.1	3.2	3.3
Follow-up training	Sealing with joint sealant	Sealing with joint sealant and movement compensation in the construction	Connection with frame	Connection with construction sealing foil
A Plaster facade with butt stop				
B Plaster facade with interior stop				
C Facade with butt joint for exposed concrete, natural stone, metallic or ceramic building materials				
D Facade with internal stop for exposed concrete, natural stone, metallic or ceramic building materials				

10 B 1.1. Stress group 2
(Sealing with joint sealant)

Taking into account a temperature-dependent change in length according to Table 10 A 2 and assuming that no building-related movements in the joint are to be taken into account, the use of an elastic sealant with a permanent elongation of 25% (permissible total deformation) results in corresponding minimum widths according to Table 10 B 2. In the case of plastered facades, the sealant must always be applied between the shell and the window frame.

Three-flank liability is not permissible. If necessary, insert a foil or a separating cord.

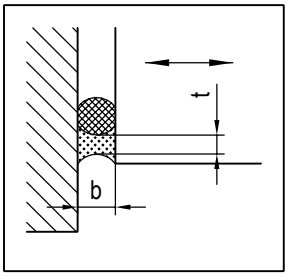


Image 10 B 1:
Sealing cross-section at the window

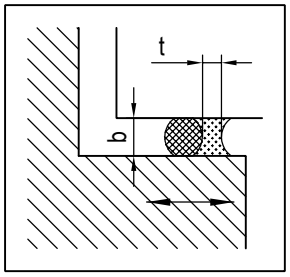


Image 10 B 2:
Sealing cross-section at the window

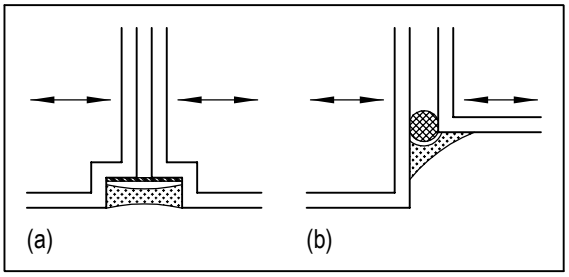


Image 10 B 3:
Arrangement of a separating film (a) or separating cord (b) to prevent three-sided adhesion

Sources of errors during execution are often three-flank adhesion, wet adhesion points, missing depth limitation, wrong joint material, non-observance of the technical guidelines of the joint compound manufacturer and wrong assumption of the direction of movement. The backfill material must be closed-cell. All joint sealants must be approved for use by the manufacturer. Avoid contact of assembly foam with the outer surfaces of the profile.

10 B 1.2. Stress group 3.1
(Sealing with joint sealant and movement compensation in the construction)

When coupling window elements, it is recommended to place the movement compensation in the construction. In the case of rigid screw connections, the coupled elements are to be considered as a coherent element in order to determine the temperature-related change in length of the window elements.

10 B 1.3. Stress group 3.2
(Connection with frame)

The construction and design of the frames must be adapted to the individual case. Care must be taken to ensure that movement compensation is guaranteed at all points (especially in the corner areas), taking tightness into account.

10 B 1.4. Stress group 3.3
(Connection with construction sealing foils)

Use sealing membranes made of polyisobutylene (PIB) or other suitable sealing membranes according to DIN 16935 with a minimum thickness of 1.0mm. They must be compatible with the adjacent building materials.

Construction and execution are carried out according to

DIN 18195 part 5
Waterproofing of buildings: Waterproofing against non-pressing water on ceiling surfaces and in wet rooms; dimensioning and execution

DIN 18195 part 9
Waterproofing of buildings: Penetrations, transitions, connections and terminations

The foils can be used to compensate for movements, as a wind barrier and to seal against non-pressing water **(Fig. 10 B 4 and 5)**. The necessity of sealing on the room side must be clarified on a case-by-case basis.

Attention: The inside shall be more impermeable than the outside!

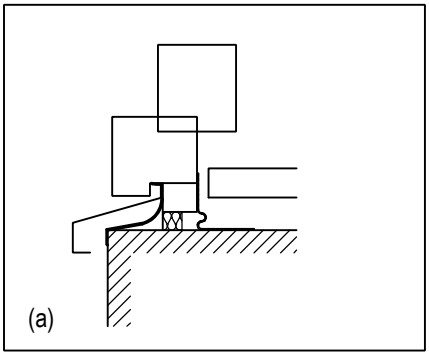


Figure 10 B 4: (a) Exterior waterproofing with plaster (a)

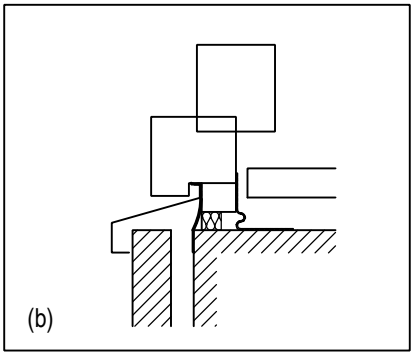


Fig. 10 B 4: (b) Exterior waterproofing for double-skin masonry with rear ventilation (b)

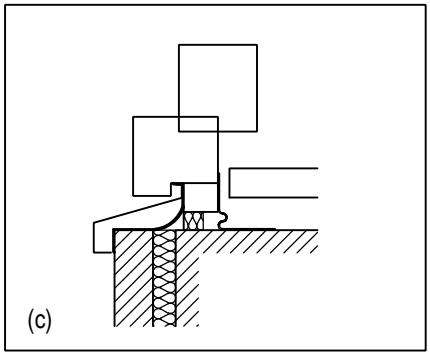


Figure 10 B 4: (c) Exterior waterproofing for double-skin masonry with insulation (c)

The position and arrangement of the foil must meet building physics requirements, especially when used with multi-layered and ventilated exterior walls. It is advisable to coordinate the exact position of the film with the client.

In the case of double-skin masonry, check whether there is sufficient protection against moisture penetration at the upper and lower connection points.
(DIN 1053 Part1 Masonry: Calculation and execution, point 5.2.1. and 5.2.2.)

The bonding surfaces must be sufficiently large, appropriately cleaned and pre-treated. The compatibility between adhesive, films and the adjacent materials must be given.
The manufacturer's processing guidelines must be observed.

Special care, both in planning and execution, is required in the joint areas at the corners and in the corner areas of the foils **(Fig. 10 B 6)**.

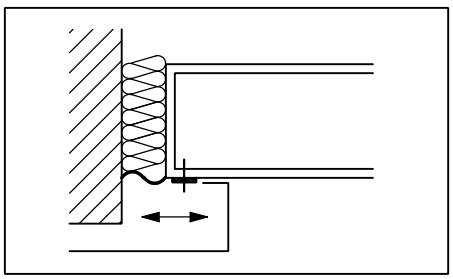


Figure 10 B 5: Movement compensation with insulation and wind barrier

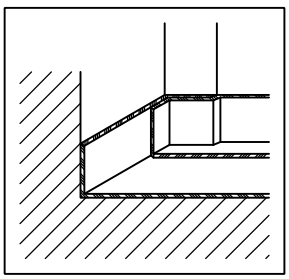


Figure 10 B 6: Building foil sealing at the lower connection of the window

10 B 2. Sealing (Insulation)

The processing guidelines of the sealant manufacturer must be observed.
This applies to the following points, among others:

- Compatibility of the joint sealant with the adjacent materials
- Cleaning the adhesive surfaces
- Priming of bonding surfaces (depending on the adjacent materials)
- Material, size and position of the backfill belt
- External conditions during processing (humidity, temperature)

In the case of construction-related tolerances in the connection area, ensure that the minimum widths in the area of greatest stress (corners, muntin and transom area) are observed.

10 B 2.1. Sealing with sealant

The joint movement can be up to 5mm for 20mm*, for example.

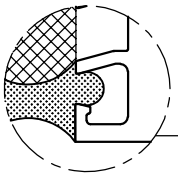
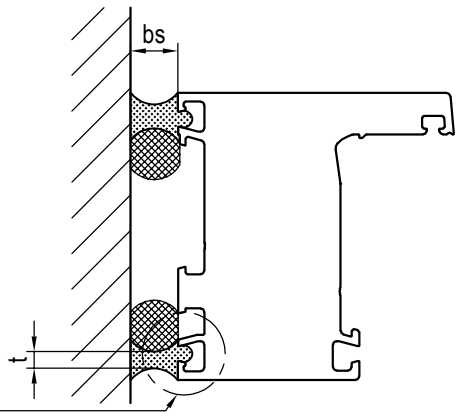
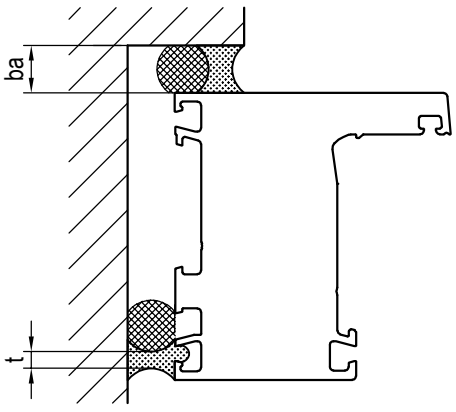
Exceeding the value of Table 10 B1 Connection formation between window and building structure (4mm for BG2) is permissible.

The joint depth t must be clarified with the sealant manufacturers depending on the joint width b.
(t = 0.5 * b = min. 6mm)

The bonding surfaces must be tested in advance for adhesion and pre-treated with primers (adhesion promoters). Only use primers recommended by the sealant manufacturer that are suitable for the joint edges.

The sealant should have a total deformation outside of 25% / inside of 15% and an elongation value of max. 0.2 N/mm² at -10 °C measuring temperature.

Table 10 B 2:
Minimum widths of connection joints when sealing with sealant

Sealing with sprayable sealant 	Outside for sealants with a total permissible deformation of 25% blunt stop  Interior stop  Inside (tighter than outside) Impregnated sealing tapes made of foam plastic according to DIN 18542. The application must be carried out in consultation with the belt manufacturer.						
Window profile material	Element length in m:						
	≤ 1.5m	≤ 2.5m	≤ 3.5m	≤ 4.5m	≤ 2.5m	≤ 3.5m	≤ 4.5m
	Minimum joint width for blunt stop bs in mm				Minimum joint width for inside stop ba in mm		
uPVC (white)	8mm	8mm	10mm	10mm	8mm	8mm	8mm
PVC hard, film laminated / coated	8mm	10mm	10mm	12mm	8mm	8mm	8mm

10 B 2.2. Sealing with impregnated foam plastic tapes
(compressible sealing tapes)

In the case of sealing against wind and driving rain by means of compressible sealing tapes, the design, constructive measures, etc. must be clarified and determined with the manufacturer in each individual case. **(Image 10 B 7)**

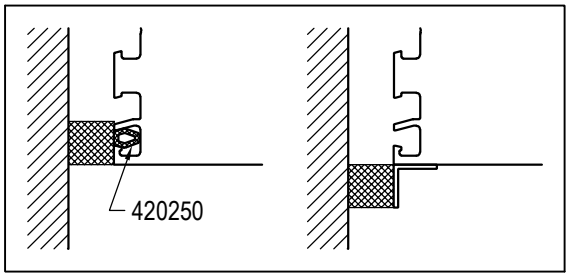


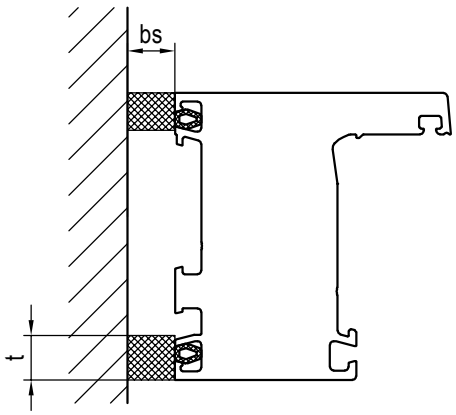
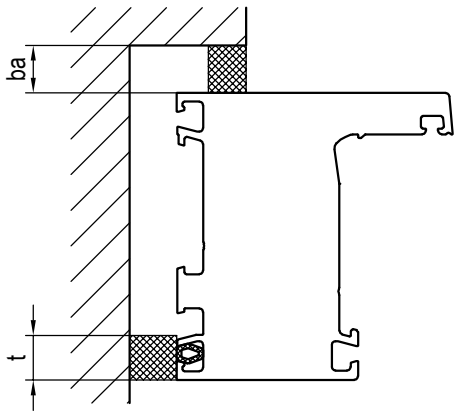
Image 10 B 7:
Possibilities for sealing with compressible sealing tapes

The joint depth t must be clarified with the sealant manufacturers depending on the joint width b.

Sealing tapes have the lowest water vapour diffusion resistance compared to the other sealing systems. This property can be used in the implementation of the building physics principle "tighter on the inside than on the outside".

Consequently, for the same joint width, the inner sealant must also be more compressed or have a smaller width than the outer one.

Table 10 B 3:
Minimum widths of connection joints when sealing with impregnated sealing tapes

Sealing with impregnated foam plastic tape	Exterior impregnated sealing tapes made of foam plastic according to DIN 18542. The insertion must be carried out in consultation with the belt manufacturer.						
	blunt stop 				Interior stop 		
	Inside (tighter than outside) Impregnated sealing tapes made of foam plastic according to DIN 18542. The application must be carried out in consultation with the belt manufacturer.						
Window profile material	Element length in m:						
	≤ 1.5m	≤ 2.5m	≤ 3.5m	≤ 4.5m	≤ 2.5m	≤ 3.5m	≤ 4.5m
	Minimum joint width for blunt stop bs in mm				Minimum joint width for inside stop ba in mm		
uPVC (white)	8mm	8mm	10mm	10mm	8mm	8mm	8mm
PVC hard, film laminated / coated	8mm	10mm	10mm	12mm	8mm	8mm	8mm

10 C Special requirements

10 C 1. Connection to roof and terrace coverings

According to DIN 18195 Part 9, Section 4.2 applies:
"The waterproofing shall normally be raised at least 150mm above the surface of a covering overlying the waterproofing". **(Image 10 C 1)**

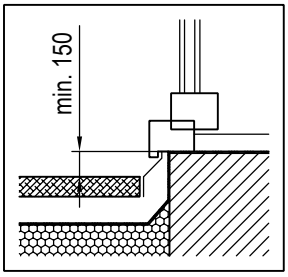


Figure 10 C 1: Connection of a French door to a terrace decking

This rule can only be deviated from if it is otherwise ensured that no moisture can penetrate into the building. However, since this cannot be achieved by measures on the window construction, the planning of such measures is the sole responsibility of the building planning authority.

Executions deviating from the standard should therefore only be carried out on the instructions of the client.

The exact scope of the sealing measures in the connection area must be agreed with the client.

10 C 2. Upper adjacent construction in the roller shutter area

If windows are installed in conjunction with a roller shutter box, the top fastening is problematic regardless of the construction of the box (top box or lintel box). In this case, the upper frame must be statically verified (see window statics). To do this, consider the upper frame as a transom with a half-sided load. The roller shutter box must not be taken into account here unless there is a specially designed structure for this purpose.

Depending on the load and element size (especially element width), additional stiffeners must be fitted in the upper connection area when roller shutters are arranged **(Fig. 10 C 2)**

See also **Chapter 06 A** "Required bracing for the upper truss area".

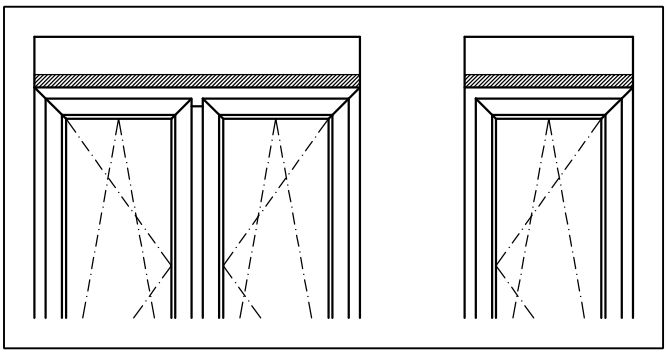


Bild 10 C 2: Versteifung von Elementen

Note:
When using roller shutter slats with other elements such as intake funnels, roller shutter traverses etc., noise must be expected depending on the design. This effect can be intensified with wider elements. The use of an impression roller on the crossbeam is recommended here.

10 D Exterior window sills

10 D 1. Exterior window sills made of moulded parts
(Stone, ceramic tiles, concrete, asbestos cement, etc.)

For the installation of the windows, the structural opening must be prepared in such a way that the window to be installed can be safely and permanently placed, fixed and sealed at the bottom.
For this purpose, it is necessary that the exterior window sills made of stone, ceramic tiles, concrete, asbestos cement or similar materials must be installed before the windows are installed. System drawings of the arrangement and position of the exterior window sills shall be submitted upon request.

10 D 2. Exterior metal sheet window sills
(Zinc sheet, aluminium sheet, copper sheet, etc.)

During installation, it must be ensured that the window is securely set up at the bottom with appropriate connection profiles and connected with the intended outer sill. A finish of exterior aluminium window sills in mill finish is permissible if anodic oxidation or a colour coating has not been agreed.

The projection of the window sill over the finished external facade should be approx. 30mm. Expansion joints in the window sill must be arranged at least every 2500mm. The end finish must be adapted to the building situation and sealed.

For projections of 150mm or more, additional brackets must be arranged. The distance between these holders should not exceed 900mm. It is recommended that the window sills are equipped with an anti-drumming material. Corresponding agreements are to be made with the client.

10 D 3. Exterior window sills made of material combinations

For special exterior window sill constructions made of material combinations, e.g. sheet metal-concrete, sheet metal-foam, etc., the guidelines of the respective manufacturers must be observed.

10 E Installing the windows

10 E 1. Insertion / Position of the windows

Windows must be installed horizontally, plumb and flush.
The exact location of the elements in the building structure is to be agreed with the client.

In the case of installation according to the metre plan, the client must ensure that the metre plan is available on each storey (max. distance from the installation point: 10m).

It is advisable to specify the main dimensions including the maximum permissible tolerance dimensions. **(refer to image 10 E 1)**

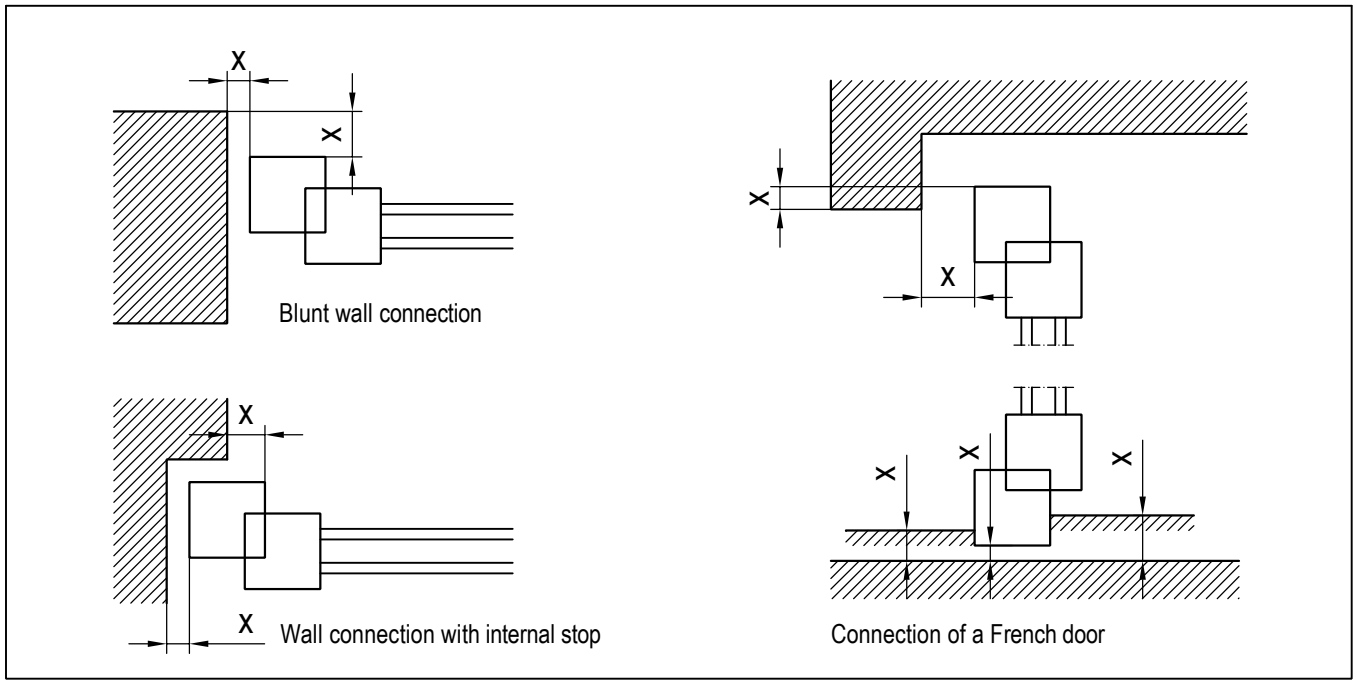


Figure 10 E 1: Position of the windows in the building structure

If a deviation from the intended alignment line and / or the intended height dimension is necessary, this may only take place if:

- the function of the window elements is not impaired
and - the consent of the client has been obtained.

When installing according to the metre plan, the height position of the elements must be aligned according to this.

The alignment and fixation of the windows and doors in the structural opening is done before fixing, e.g. by wedges, spacer blocks, etc.. After fixing, they must be removed except for those necessary to fix the frame and prevent lowering.
The remaining wedges, spacer blocks etc. must not hinder the change in length of the frame.

The maximum permissible tolerances for deviations from the perpendicular and the horizontal are as follows
< 3.0m element length 1.5mm per metre, but not more than 3mm. For elements with larger dimensions and for window sills, the occurring tolerances must not impair the function and appearance.

10 E 2. Fastening / Anchoring in the building structure

The fixing points must be determined in such a way that a perfect transmission of the occurring forces into the structure is guaranteed. These must therefore be matched to the length of the fittings (hinges, pivot bearings, catches on French doors, etc.) and to the arrangement of the blocking on fixed panels. **(refer to chapter 08 E Blocking)**

As a rule, the distance between the individual fixing points should not exceed 700mm for braced profiles. **(refer to image 10 E 2)**

For windows (doors) weighing more than 80 kg, especially with a threshold, it is recommended to provide an additional fastening to the masonry.

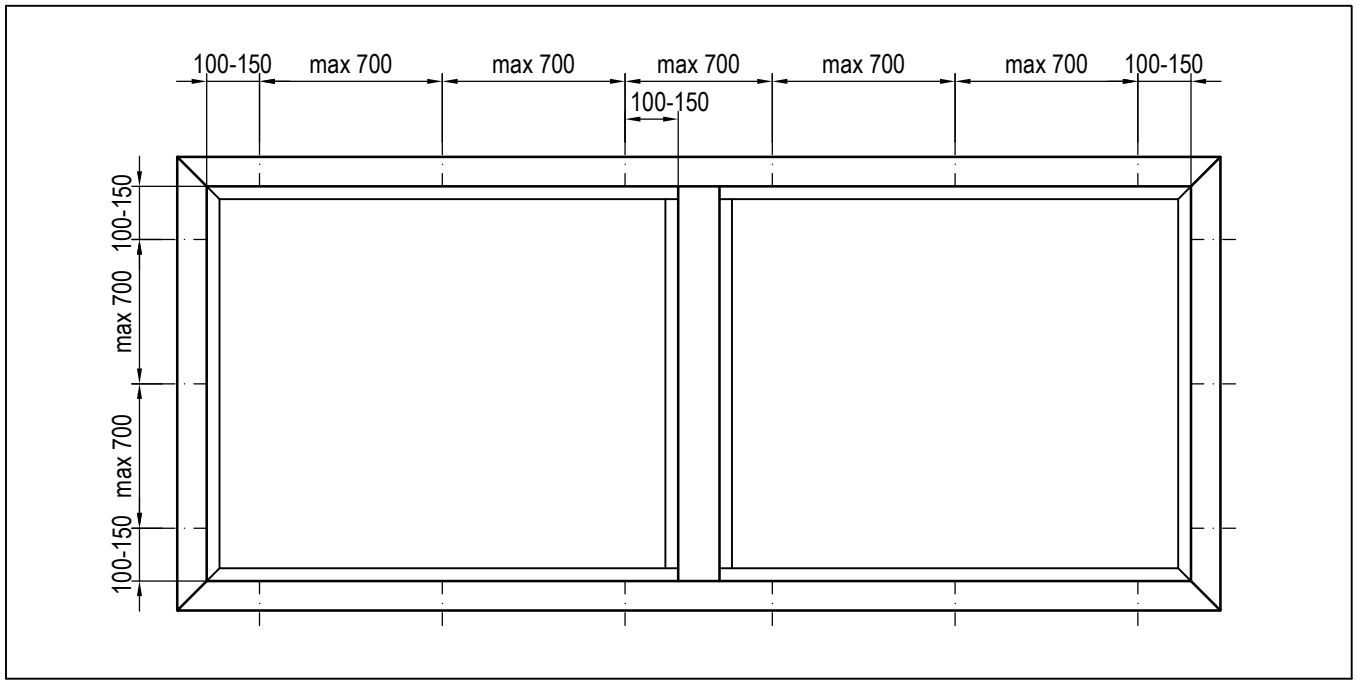


Fig. 10 E 2: Maximum fixing distances for windows (from the inside corner)

The distance from corners, mullion and transom connections should not be less than approx. 100mm - measured at the inner corner of the glass rebate. This results in a distance dimension from the outer edge of the corner to the first fixing point (e.g. 150mm for the frame h= 70mm).

For the arrangement of fixings, the schematic sketches in Figure 10 E 2 apply as a rule.
In special cases, additional fixings may be necessary.

When installing burglar-resistant windows, it is also necessary to create a pressure-resistant backfill between the frame and the building structure. The backfilling is carried out at the points of the fasteners.

When using built-in frames, the fastening between the building structure and the frame must be carried out accordingly. Sometimes, however, smaller distances of the fixing points between the frame and the window may be necessary. In any case, the specifications of the frame manufacturer must be observed. The movement compensation between window and frame (as a result of temperature-related changes in length) is taken into account in the design of some frame constructions (e.g. Lanco frames, Landshut), so that the connection joints between the building structure and frame are almost completely freed from movement absorption.

10 E 3. Fasteners

The choice of fasteners must be made taking into account the forces to be transmitted, the strength of the adjacent building components (masonry, concrete, etc.) and movements occurring in the connection joint. As a rule, dowels, anchors, lugs, slingers, bench irons, anchor rails, mounting rails or weld-on plates are used.

The following factors must be taken into account when planning and dimensioning the fasteners:

- Dead loads: Glass weights (consider sash format and opening types)
  Additional loads (sunshades, etc.)

- Traffic loads: Wind load (window size, installation height)
  Additional loads (weight of a person on the sash,
  impact load during closing and opening)

Filling foams and installation foams must not be used as fasteners for windows.

10 E 3.1. Anchor fastening

The mounting anchors (fixed irons) are engaged in the cams provided for this purpose on the frame. Anchors are placed at a distance of 700mm, whereby the outer fixing points should be approx. 100mm (for white) or 150mm (for coloured windows) away from the inner corners. (refer to image 10 E 2)

Once the anchors are in place, the window is placed in the wall opening. It is advisable to place the levelling blocks in the corners beforehand to facilitate levelling.

Now clamp the window with wooden wedges and align it plumb and level. In the case of already glazed windows, the gangability of the sashes must be taken into account in order to avoid re-blocking.

Once the window is in its correct position, the anchors are fixed to the masonry. It is recommended to anchor with 8mm anchors, whereby the anchor suitable for the respective masonry must be selected, if necessary, via the specialist advice of the anchor manufacturer.

The wooden wedges used for alignment must be removed again. Supporting blocks and pressure-resistant backfillings (e.g. for burglar-resistant windows) must not be removed. However, it must be ensured that the sealing levels are not interrupted.

10 E 3.2. Dowel fastening

The windows can also be connected to the masonry directly above the frame with special anchors (if necessary, select suitable anchors from the specialist advice of the anchor manufacturers).
Adjusting and aligning the windows is done in the same way as described for the anchor fastening. It is particularly important to work with extended drill bits to avoid damage to the frame cover by the drill chuck.

The drill hole must correspond to the dowel diameter. Dowels and drills must be precisely coordinated with each other.
(Additional edge protection for the frame overlap: PVC angle).

The screw length must in any case reach to the end of the dowel, with the support of the object to be fixed must be included.

The screw diameter must fit the dowel size in question, whereby both according to the weight of the object to be fixed.

For anchors with conventional expansion, the masonry must withstand the expansion pressure.

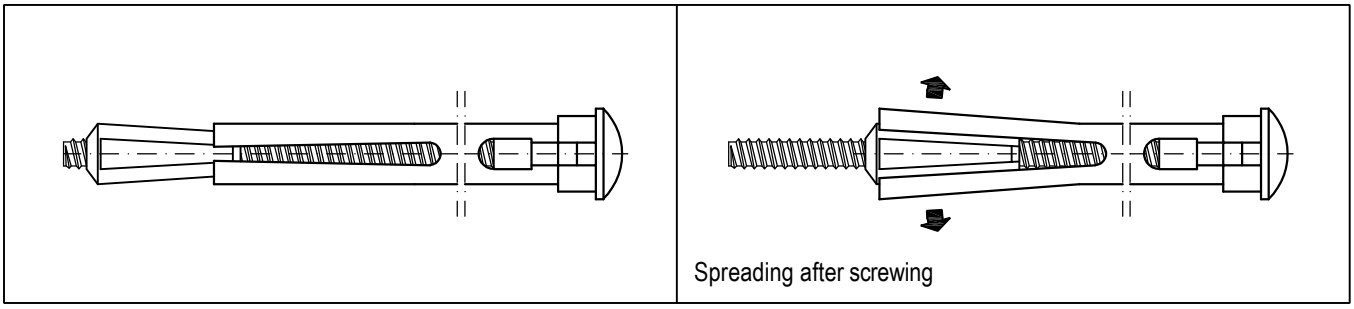


Figure 10 E 3: Metal sleeve dowel

With expansion anchors, the fastening is mainly done by expanding in the drill hole. Here, for example, the spreading can take place as an anchoring function directly with the screw or indirectly with the help of additional elements such as wedges. Spreading can be triggered either by turning (screw or nut) or by hitting.

Both the anchor design and the application result in significant differences here. Most anchor manufacturers give installation guidelines for their anchors. They also give advice and tips for professional installation.

Metal sleeve dowels have proved particularly effective. The dowel is spread by turning the screw. This pulls a cone into the dowel **(see Fig. 10 E 3)**.

The advantage is that the screw head can no longer pull the window frame further and the frame can therefore move unhindered on the metal sleeve.

All fastening parts must be at least corrosion-protected.
In damp rooms (indoor swimming pools, etc.), stainless metals must be used for fastening. Bathrooms and kitchens are not wet rooms.

For windows and window walls that fall within the scope of DIN 18056, the verifications required in the standard must be provided. The fasteners used must safely transfer the forces acting on them into the building structure. There must be no deformations that could impair the function of the window element.

10 E 3.3. Additional information about dowel fastening at powerdur

Distance mounting screws or spacer mounting screws (e.g. AMO III screws, Würth) are particularly suitable, taking into account the forces to be transmitted, the strength of the adjoining building components (masonry, concrete, etc.) and movements occurring in the connection joint.

Of great importance is the good fit of the screw threads in the plastic webs of the frame and the dimensioning of the pre-drilled dowel hole (e.g. 6mm), which should usually correspond to the upper core diameter of the screw. Large thread pitches with deeply cut threads have proven particularly effective.

Screws with heads are recommended. The diameter of the screw head should be larger than the outer diameter of the thread.

(refer to image 08)
...

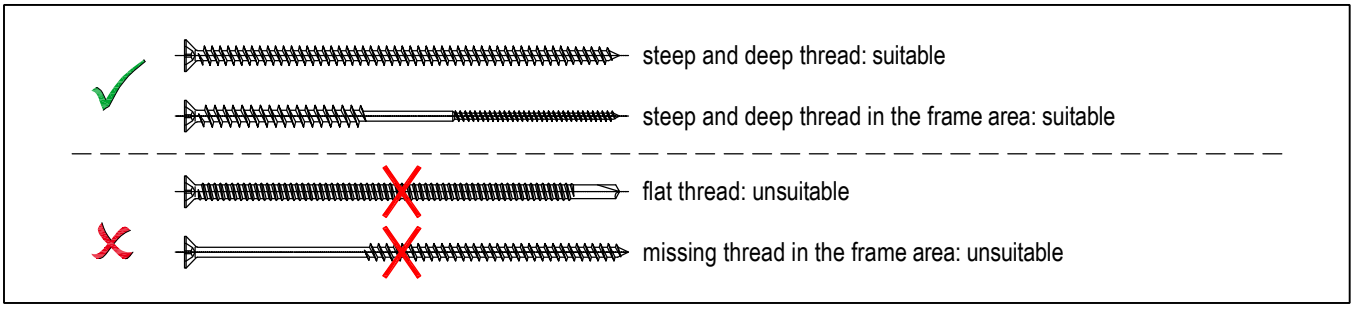


Figure 08: Examples of suitable and unsuitable screw threads for assembly screws

10 E 4. Insulation between window and building structure

The gaps remaining on the room side between the window and the building structure are to be filled with insulation material*.

Mineral wool, glass wool, foam tapes* and installation foams* are suitable as insulation material. Foams* must be compatible with the frame material and must not react. Care must be taken that no deformation of the frame occurs when using foam*.

Substances containing bitumen are not permitted.

When using assembly foams*, proven 2C foams are preferable due to their controlled foaming. One-component foams* react through air humidity and can only be used for joints up to a maximum width of 30mm. In addition to mineral wool, pre-compressed sealing tape* (e.g. from ILLBRUCK; http://www.illbruck.de) can be used as an alternative to installation foam*.

*** Filling foams and "assembly foams" must not be used as fasteners for windows.**

10 E 5. Sealing (insulation)

refer to chapter 10 B Formation of joints

10 E 6. Protection of the construction

DIN 18355 Carpentry Work applies to the protection of the work carried out.
It is advisable to agree on individual measures with the client.

10 E 7. Controls

After completion, the function of all parts to be opened must be checked for free movement.

Attention: The protective film must be removed immediately after installation:
The protective film must be removed immediately after the window has been installed on the building site, as under certain circumstances the
Sunlight, the film adhesive can leave residues on the profiles.

10 E 8. Cleaning

The cleaning of the windows includes the removal of contamination caused by the contractor until immediately after the installation of the windows. Only cleaners tested and recommended by the system manufacturer may be used.

Refer also to Chapter 10 R Cleaning, 10 S Maintenance, 10 T Ventilation

10 R Cleaning

10 R 1. General information

PVC window profiles from aluplast are made of weatherproof material that retains its value and is easy to maintain. The profiles are delivered from the factory with protective film or packed.

Proper cleaning with the correct use of approved cleaning agents is one of the deciding factors for the long-lasting durability and appearance of your windows.

Cleaning agents can have different effects on PVC profiles: before using cleaning agents over a wide area, it is therefore advisable to carry out a test on a non-visible or incisive area. In principle, cleaning agents must never be allowed to act on PVC profiles for longer than 10 minutes at a time, as otherwise damage to the surface could occur!

These cleaning instructions apply to both white and coloured windows.

If you want to do it particularly well and safely, use the special care products from aluplast.
You will find instructions for use printed directly on the containers.

You will find more information on the following pages.

10 R 2. Protective foils

Despite all care taken during storage, processing and installation, it can happen in extreme cases that protective films partially or not at all detach from the profile. According to the specification, protective films must be removed immediately after the window installation on the building site, as under certain circumstances the protective films can leave residues due to the sunlight. The longer the profiles with protective films are exposed to the sun, the more difficult it is to remove the protective films. In this worst case scenario, the cover film splits from the associated adhesive film: while the cover film can be removed, the adhesive film remains on the profiles.

Possible cleaning agents for white profiles:
- Isopropyl
- Sticker Remover HG International (Hagesan: http://www.hg.eu/de)
- MBT Special R2 (MBT PolyTapes GmbH: http://www.mbt-polytapes.de)

Possible cleaning agents for coloured profiles:
- Fenosol 20 (Fenoplast Fügetechnik GmbH: http://www.fenoplast.de)
- Cosmofen Color Special Cleaner / Cosmofen 20 (Weiss Chemie & Technik GmbH & Co KG: http://www.weiss-chemie.de)

Procedure for film residues: first loosen one corner of the film so that you can introduce a small amount of the cleaning agent between the film and the substrate. Allow the cleaning agent to act briefly and remove the film. This process is repeated until the film is completely removed.

Procedure for adhesive residues: Apply cleaning agent to the surface with a soft, lint-free cloth and remove adhesive residues.

You will find more information on the following pages.

10 R 3. Basic cleaning

The following can be said about the basic cleaning of your PVC-U windows after installation:
Despite the care taken by the craftsmen, soiling such as mortar residues, grease fingers, wallpaper paste, paint splashes etc. can occur during installation. Most soiling can be easily removed.

Mortar residues and paint splashes can usually be removed with a semi-hard spatula by carefully pushing off to the side and wiping with a damp cloth. Make sure that the sharp pebbles of the mortar do not leave scratches on the surfaces.

Adhesive residue on glass surfaces can be carefully scraped off with a razor blade set at an angle.

The use of petrol, thinner, acetic acid, nail polish remover or similar agents will destroy the surface, so these agents must never be used.

Note:
Do not use felt-tip pens for production markings, as these can leave very stubborn stains.

You will find more information on the following pages.

10 R 4. General impurities

General dirt on the smooth, non-porous and hygienic surface caused by dust and rain can be quickly removed with a light detergent solution. In case of stubborn soiling, multiple cleaning is possible.

Never use surface-destroying (dissolving) cleaners, scouring agents or chemicals such as nitro thinner, petrol or similar for cleaning. Should there ever be dirt on your windows that you cannot remove as described, be sure to contact your window specialist or us directly for advice.

You will find more information on the following pages.

10 R 5. Static charge

The PVC profile material tends to become electrostatically charged. Polishing and buffing will further enhance this.

The window fitter can remedy this by using a cleaning agent containing an antistatic agent. This ensures the reduction of the high static charge on the PVC profiles and thus reduces the tendency to resoiling.

You will find more information on the following pages.

10 R 6. Resistance of PVC to exposure to chemical agents

Chemical agents	Concentration of the chemical agent	at temperature in °C	unsuitable	conditionally stable	constant
Ethanol		40			●
Formic acid	100 %	40		◗	
Formic acid	10 %	60			●
Ammonia aqueous	concentrated	40			●
Aniline		20	◗		
Petrol-benzene mixture		20	◗		
Benzene		20	◗		
Butal	100 %	60		◗	
Chromosulphuric acid		20	◗		
Cyclonhexane		20			●
Cyclohexanol		20			●
Dekalin		60			●
Diethyl ether		20	◗		
Diesel fuel		20			●
Acetic acid	100 %	20		◗	
Acetic acid	10 %	40			●
Formalin		20			●
Glycol		60			●
Heptane		40			●
Hexane		40			●
Potash lye	10 %	60			●
Potash lye	40 %	60			●
Potassium permanganate	... 20 °C *	20			●
Potassium persulphate	... 20 °C *	20			●
Aqua regia		20		◗	
m-Cresol		20	◗		
Lacquered gasoline		20			●
Machine oil		60			●
Methanol		20			●
Sodium chloride	10 %	60			●
Sodium hydrosulphite	10 %	60			●
Sodium hypochlorite	10 %	20			●
Caustic soda	10 %	60			●
Caustic soda	40 %	60			●
Olive oil		60			●
Petroleum ether		20			●
Phosphoric acid	10 %	60			●
Phosphoric acid	85 %	60			●
Hydrochloric acid	10 %	60			●
Hydrochloric acid	35 %	60			●
Nitric acid	10 %	60			●
Sulphuric acid	10 %	60	◗		
Sulphuric acid	96 %	60	◗		
Turpentine oil		20			●
Tulol		20	◗		
Transformer oil		60			●
Xylene		20	◗		

* Saturated solution at ... C°.

10 R 7. Cleaning possibilities for certain impurities

Kind of pollution	Cleaning: scrape off with a semi-hard spatula and allow to dry	Cleaning: wipe dry with cloth	Cleaning: wash off with water	Cleaning: with non-abrasive household cleaners	Cleaning: with dry cleaning and polishing agents *
Aluminium abrasion				●	
Bitumen					●
Pencil				●	
Dispersion paint	●				
Fibre-tip				●	
organic/anorganic Fat				●	
Plaster			●		
Rubber				●	
Heating oil					●
Wood stain			●		
Wood impregnation					●
Lime mortar			●		
Putty					●
Adhesive					●
Ballpoint pen			●		
Varnish (Nitro)	●				
Linseed oil putty	●				
Oil chalk				●	
Oil varnish					●
Rust				●	
Carbon black					●
Salmiak			●		
Shellac					●
Blackboard chalk		●			
Wax (floor polish, candles or similar)	●				
Wax crayon					●
Cement mortar			●		

* Chemical cleaning and polishing agents that are expressly suitable for PVC.

10 R 8. Cleaning recommendation for laminated window profiles

The matrix below shows which cleaning agents are unsuitable, conditionally suitable or suitable for surface cleaning of aludec/woodec window profile foils for specific soiling. These classifications are based on findings from extensive cleaning tests with the listed materials and contaminants.

- unsuitable
- conditionally suitable
- suitable

Kind of pollution / Cleaning agents	#	aludec	woodec	Sand structure	Wood structure	alux decor	Notes / Surface
Multipurpose grease, pollen, fine mechanical oil							
S20 cleaner	699918						
Cleansing milk, decor	699920						
Eco-cleaner	699922	suitable	suitable	suitable	suitable	suitable	
Light detergent solution	-	suitable	suitable	suitable	suitable	suitable	
Lime mortar, gypsum, carbon black, cement mortar							Lime and cement mortar contain abrasive components, which is why the surface and the tool must always be wet when cleaning.
S20 cleaner	699918						
Cleansing milk, decor	699920						
Eco-cleaner	699922	suitable	suitable	suitable	suitable	suitable	
Light detergent solution	-	suitable	suitable	suitable	suitable	suitable	
Wood impregnation							
S20 cleaner	699918	suitable	suitable	unsuitable	unsuitable	unsuitable	
Cleansing milk, decor	699920	conditionally suitable	conditionally suitable	conditionally suitable	conditionally suitable	unsuitable	
Eco-cleaner	699922	conditionally suitable	conditionally suitable	conditionally suitable	conditionally suitable	unsuitable	
Light detergent solution	-	unsuitable	unsuitable	unsuitable	unsuitable	unsuitable	
Coating lime							
S20 cleaner	699918	suitable	suitable	suitable	suitable	suitable	
Cleansing milk, decor	699920	suitable	suitable	conditionally suitable	suitable	suitable	
Eco-cleaner	699922	suitable	suitable	conditionally suitable	suitable	unsuitable	
Light detergent solution	-	suitable	suitable	suitable	suitable	suitable	
Dispersion paint							
S20 cleaner	699918	conditionally suitable	conditionally suitable	unsuitable	unsuitable	unsuitable	
Cleansing milk, decor	699920	unsuitable	unsuitable	unsuitable	unsuitable	unsuitable	
Eco-cleaner	699922	unsuitable	unsuitable	unsuitable	unsuitable	unsuitable	
Light detergent solution	-	unsuitable	unsuitable	unsuitable	unsuitable	unsuitable	
Rust							
S20 cleaner	699918	suitable	suitable	suitable	suitable	suitable	
Cleansing milk, decor	699920	conditionally suitable	conditionally suitable	suitable	suitable	suitable	
Eco-cleaner	699922	conditionally suitable	conditionally suitable	suitable	suitable	suitable	
Light detergent solution	-	conditionally suitable	conditionally suitable	conditionally suitable	conditionally suitable	unsuitable	
Building foam							Building foam residues must be scraped off with a spatula before cleaning, as this may damage the film.
S20 cleaner	699918	conditionally suitable	conditionally suitable	unsuitable	unsuitable	conditionally suitable	
Cleansing milk, decor	699920	conditionally suitable	conditionally suitable	unsuitable	unsuitable	conditionally suitable	
Eco-cleaner	699922	conditionally suitable	conditionally suitable	unsuitable	unsuitable	conditionally suitable	
Light detergent solution	-	conditionally suitable	conditionally suitable	unsuitable	unsuitable	unsuitable	
Sun cream							
S20 cleaner	699918	suitable	suitable	suitable	suitable	suitable	
Cleansing milk, decor	699920	suitable	suitable	suitable	suitable	suitable	
Eco-cleaner	699922	suitable	suitable	suitable	suitable	suitable	
Light detergent solution	-	conditionally suitable	conditionally suitable	conditionally suitable	conditionally suitable	conditionally suitable	
Acrylic paint							
S20 cleaner	699918						
Cleansing milk, decor	699920	conditionally suitable	conditionally suitable	unsuitable	unsuitable	unsuitable	
Eco-cleaner	699922	conditionally suitable	conditionally suitable	conditionally suitable	conditionally suitable	unsuitable	
Light detergent solution	-	unsuitable	unsuitable	unsuitable	unsuitable	unsuitable	
Fibre-tip							
S20 cleaner	699918						
Cleansing milk, decor	699920	conditionally suitable	conditionally suitable	conditionally suitable	unsuitable	unsuitable	
Eco-cleaner	699922	conditionally suitable	conditionally suitable	conditionally suitable	conditionally suitable	unsuitable	
Light detergent solution	-	unsuitable	unsuitable	unsuitable	unsuitable	unsuitable	

10 S Maintenance

10 S 1. General Information

In order to ensure proper functioning of the tilt-and-turn hardware for window and door sashes for years to come, the following maintenance works should be done at least once a year:

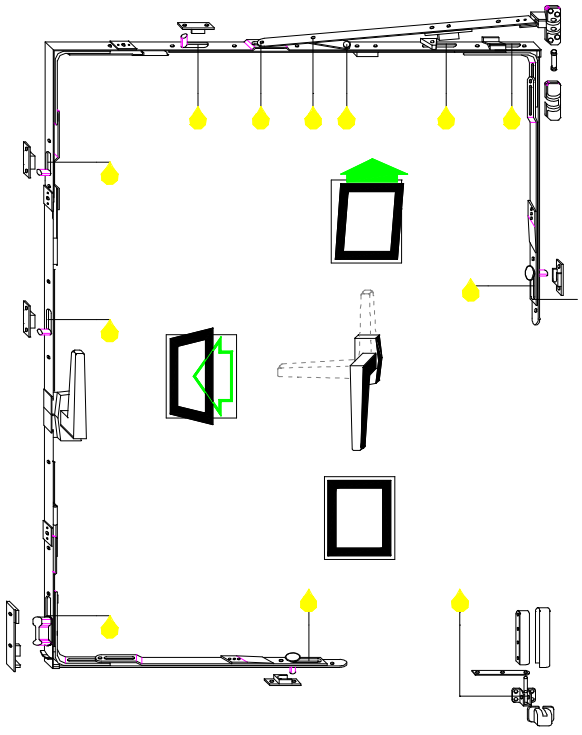
- Fitting parts that have a safety-relevant character must be checked for wear at regular intervals.
- All moving parts with a drop of oil and closing points of the fittings are to be provided with an acid-free grease or technical Vaseline.
- Only use cleaning and care products that do not impair the corrosion protection of the hardware parts.

Your windows and doors are equipped with high-quality tilt and turn hardware. Handling is easy and intuitive. Nonetheless, please read the guide carefully and follow the handling instructions.
Please also pay special attention to chapter 10 V Danger and omission notices.
Keep the operating and maintenance instructions just in case and also inform other users about the contents of these instructions.

For further information, please refer to the VHBE (Guidelines and Instructions for End Users) or VHBH (Guidelines/Instructions on the Product and Liability) of the:

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https://www.guetegemeinschaft-schloss-beschlag.de/Pruefen-Zertifizieren/Richtlinien/



10 T Ventilation

10 T 1. General information

In earlier years, windows were so leaky that there was always a natural exchange of air and dehumidification of the living spaces, creating a pleasant living climate. With old windows, this air exchange takes place unintentionally through leaky joints, among other things.

In order to reduce heating costs, draughts and noise pollution, windows were designed to take account of the new conditions. According to the Thermal Insulation Ordinance, the following applies: "The other joints in the heat-transferring enclosure surfaces must be permanently sealed impermeable to air according to the state of the art"; thus, the joint permeability was limited by ordinances.

The characteristic value for the joint permeability of the window is the joint permeability coefficient, a-value (DIN 18 055). Modern windows have a smaller a-value than 1.0.

These modern windows are so tight, both within themselves and towards the building structure, that no natural air exchange can take place. Insufficient ventilation impairs well-being. High humidity that is not aired out in time can cause structural damage.



Image 10.1.

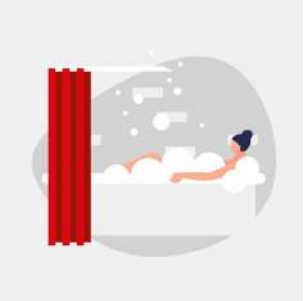


Image 10.2.



Image 10.3.



Image 10.4.

Image 10.1: Cooking produces a lot of steam
Image 10.2: A hot bath steams quite considerably
Image 10.3: Moisture already flows in with the air we breathe
Image 10.4: A human being "evaporates" about 1 litre per night!

The resulting possible over-humidification and its unpleasant after-effects (mould growth) can be easily prevented.

Accordingly, the task of ventilation is to ensure well-being and prevent hazards for people and buildings.

The high tightness of the windows requires targeted and demand-oriented ventilation behaviour.
On the other hand, the renewal of indoor air during the heating period is associated with (heat) energy loss.
These losses become more significant the better the thermal insulation of the building's exterior surface.

Differentiated, use-related ventilation planning must also be achieved,
that heat losses are kept as low as possible by ventilating.

As a technical solution, the industry today offers metering fans with and without heat recovery, which can be integrated into the window component. In the case of units with heat recovery, the energy recovered can be taken into account in the heat requirement certificate in accordance with the Heat Insulation Ordinance.

IDEAL 5000 and IDEAL 8000 can be equipped with the Basic Air plus® ventilation system in advance during window production. If required, IDEAL 2000, IDEAL 4000, IDEAL 5000 and IDEAL 8000 can be retrofitted with the Regel-air® ventilation system. See also chapter 05 L Ventilation systems.

If such technical equipment is not used, it is advisable to ventilate in the following energy-saving way:

- In the morning, air all rooms for 10 to 15 minutes (especially the bedroom).
- Air the room three to four times during the day (depending on the amount of moisture).
- Do not tilt the windows, but open them very wide; this shock ventilation guarantees an intensive exchange of air in the shortest possible time.
- Turn off the heating while airing.
- Do not let the room temperature drop below +15°C so that the room air can absorb enough moisture.

If you ensure the necessary air exchange, you can save heating costs and maintain a healthy indoor climate with modern windows.
Cross-ventilation of opposite windows is fast and effective, as an open window alone is sometimes not enough.

Therefore we recommend:

- Ventilate in an energy-saving way (see above).
- Remove obstacles to the air flow: place furniture a few centimetres from the wall; do not hang curtains directly in front of the heater, they should only reach the window sill.
- Keep doors to less heated rooms closed.
- Ventilate more frequently when additional moisture occurs due to cooking, bathing, showering, etc. This applies especially to the bedroom.
- In winter, it is better to open the windows fully several times a day for a short time than to keep them tilted for hours. That saves a lot of energy.
- Always discharge moist room air to the outside; never into other rooms.
- Heating and regular ventilation are prerequisites for a healthy indoor climate. If your window is fogged up, then it's time to ventilate.

Dry and oxygen-rich air heats up faster, heating now works better and you get a cosy warmth and atmosphere.

The rooms should be heated evenly. With increased air temperature, more moisture can be absorbed. Extreme temperature fluctuations should be avoided in rooms at risk of dampness, i.e. no switching off of the heating, no so-called flashover of the rooms.
The ventilation process should be repeated every 1-3 hours depending on the room occupancy as well as other possibilities for air exchange. This applies in particular to concrete mould infestation.

Heating without regular and sufficient ventilation can promote mould.

10 U Mould growth

10 U 1. General

Mould formation has been known for many decades in a wide variety of building sectors. For about 20 years, a sharp increase in mould formation has been registered and mainly bedrooms, children's rooms, bathrooms and also kitchens are affected.

Mould growth in the house or flat occurs when building components remain permanently damp and cannot dry off. Damp surfaces are able to bind dust particles from the air to themselves and, in combination with pollution, form a perfect breeding ground for microorganisms (mould, algae).

In addition to the visual impairment, one should not forget that the mould spores are toxic and thus represent a health hazard. In children, pre-exposed or elderly people, mould infestation can trigger or promote serious illnesses.

The cause of mould growth is usually a lack of thermal insulation or poor construction, improper interior insulation and excessive moisture.

The problem occurs in numerous refurbishments, among others. After old windows have been replaced with new ones, there are moisture problems. The reason for this problem is, for example, the improved tightness of the building due to new windows and thus the lower joint losses. This means less air exchange with the windows closed, which is quite desirable as a lot of energy can be saved. What is necessary, however, is a change in one's own ventilation behaviour. See also chapter 10 T Ventilation.

Before the window replacement, in many cases it was not necessary to deliberately ventilate at all, as the window joints alone ensured a high level of air exchange. After replacing the windows, it is important to ventilate sufficiently and properly. However, it would also be wrong to remove the seals from the new windows or to restrict their function. Uncontrolled ventilation through permanently inserted gaps results in unnecessary energy loss. On windy days, for example, much more air is exchanged than necessary, and on calm days less.

To solve this problem, self-acting fans have been developed that regulate the air exchange rate depending on the ambient conditions, thereby achieving lower energy consumption with hygienic air conditions in the room.

IDEAL 5000 and IDEAL 8000 can be equipped with the Basic Air plus® ventilation system in advance during window production. If required, IDEAL 2000, IDEAL 4000, IDEAL 5000 and IDEAL 8000 can be retrofitted with the Regel-air® ventilation system. See also chapter 05 L Ventilation systems.

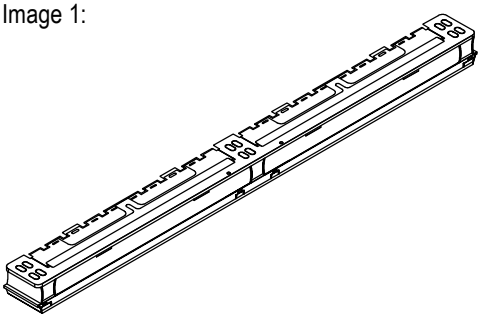
10 U 2. Causes of mould growth on windows

- New construction humidity
- Dirt in the frame rebate or glass rebate of the sash
- very tight building envelope
- non-adapted ventilation behaviour of the users
- insufficient heating
- Lack of pressure equalisation openings in the frame and sash, so that moisture in the rebate cannot escape via air circulation.
- Poorly processed seals in the welding corners, so that a continuous contact of the seal with the glass is not guaranteed and thus water and dirt can get between the glass and the seal.

10 U 3. Preventive measures to avoid mould on the window

- clean processing of the gaskets when hand-pulling or welding the profiles, so that no grooves or scores are created in the corners and thus the contact of the glass is guaranteed over the entire length of the gasket.
- Provide sashes and frames with pressure equalisation openings to allow air to circulate in the rebate and moisture to escape.
- System-dependent use of an automatically operating fan such as:
  - Basic Air max (image 1: 680350), retrofittable for IDEAL 2000 to IDEAL 8000 and energeto neo
  (refer to chapter 05 L Ventilation systems)
- Cut out the backstop gasket in the upper frame (50mm), 2 times per sash, i.e. 2 cut-outs in the single-sash window, 4 cut-outs in the double-sash window.
- Educate users about optimal ventilation behaviour (see also chapter 10 T Ventilation).
- Regular cleaning of the windows, especially the accessible rebate area in the frame.

Image 1:



680350 Basic Air max

10 V Danger and omission requirements

10 V 1. General information

A window can also become a danger to life and limb under certain unfavourable circumstances.
It is therefore necessary that users and installers are aware of the following instructions.

10 V 2. Dangers

- **Danger of entrapment!**
  Improper and unconscious actions can lead to a risk of injury by trapping body parts in the opening gap between the sash and the frame if, for example, hands, feet or similar are still in the area of the openings when the window is closed. Deliberate care should also be taken to ensure that no small children or animals are in this area.

- **Danger of falling!**
  Leaning out of the window is considered very dangerous. Adults must take care that children do not lean out of the window in any case. Carelessness, loss of balance or "jokes" can lead to a dangerous fall from a window, which, depending on the height, can result in death. Balcony doors can also pose an increased risk of falling due to the required threshold heights.

- **Danger of wind!**
  In the event that the windows slam shut in the tilt position or open or close in the turn position due to the effect of the wind due to the position, wind or suction, parts of the body may also become trapped in the opening gap between the sash and the frame. Under certain circumstances, the extreme slamming of a window can also lead to glass breakage.

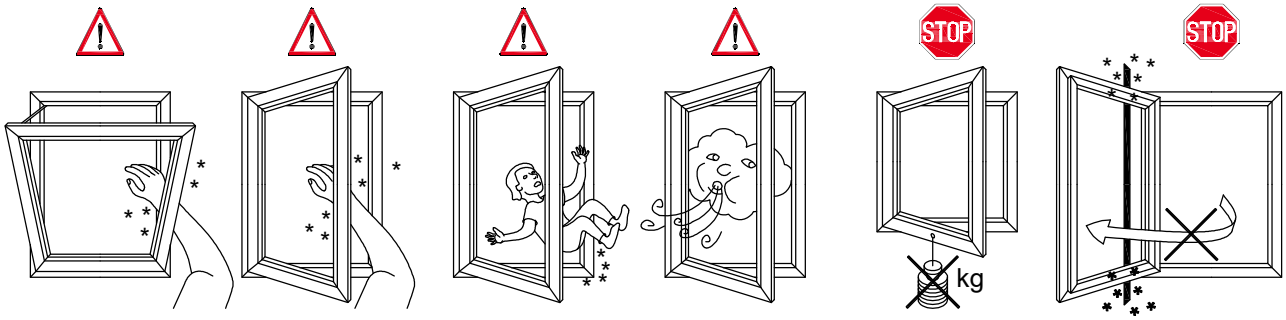
10 V 3. Omissions

- **Do not place any additional load on the sash!**
  The window must not be subjected to additional loads such as children pulling themselves up on it. The window could warp, the functions would no longer be guaranteed. In the worst case, the window could collapse and trap extremities or the window could even be destroyed if the load were too high.

- **Do not press the sash against the opening edge (wall reveal)!**
  The window and the hardware can be damaged, the functions are no longer guaranteed. Under certain circumstances, the glass may break.

- **Do not place obstacles in the opening gap between the sash and the frame!**
  All kinds of obstacles - whether toys, tools, fingers, feet, etc. - must be removed from the opening area of the windows. Hard objects can damage the window if, for example, it slams shut due to wind or carelessness and the object is still in the opening. In the case of body parts, it can lead to significant injuries.

The combination of the various hazards can lead to considerable damage to property or personal injury!



For further information, please refer to the guideline VHBE (specifications and information for end users) or VHBH (specifications/instructions on product and liability) of the Gütegemeinschaft Schlösser und Beschläge e. V., Offerstraße 12, 42551 Velbert, telephone: +49 (0)2051/9506-0, fax: +49 (0)2051/9506-25, e-mail: guete@fvsb.de, https://www.guetegemeinschaft-schloss-beschlag.de