

TECHNICAL DOCUMENTATION

GENERAL INSTRUCTIONS FOR INSULATED JOINERY ASSEMBLY

These general installation instructions refer to the design and method of making connections to the walls of the building, in order to guarantee the long-term functionality of a window.

The quality of a window also depends to a large extent on the way it is installed. The proper configuration of the joint joints is very important. From this point of view, all the physical forces acting on a window must be taken into account (Fig. 1).

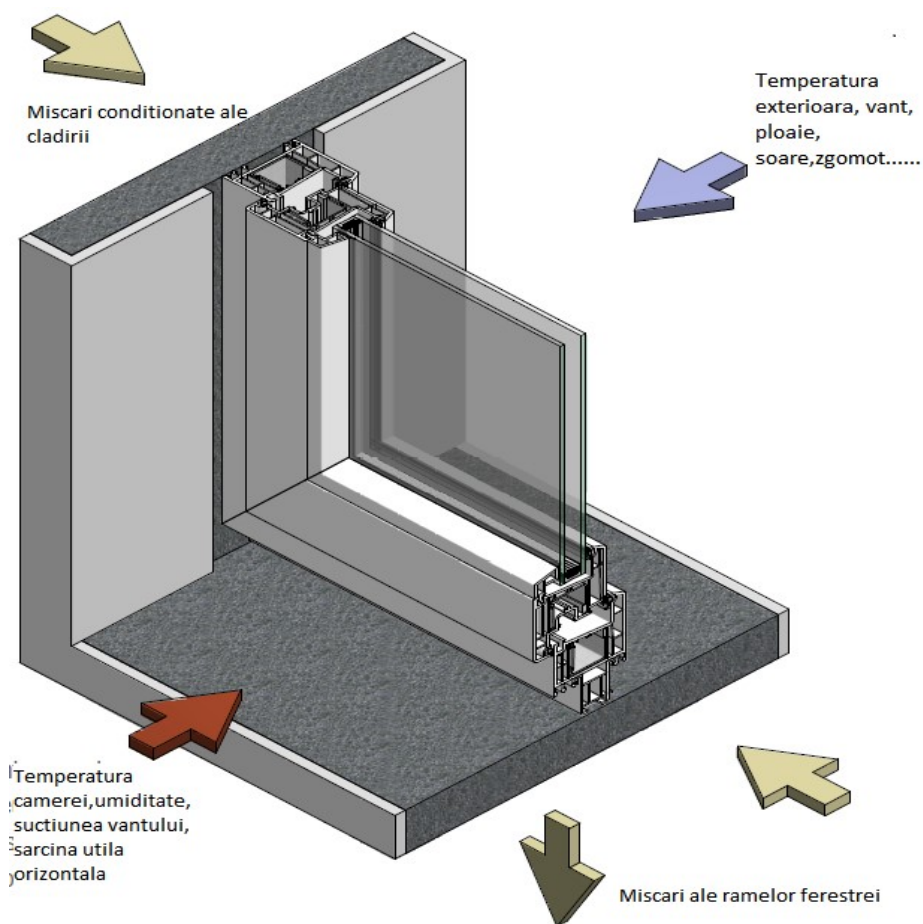


Fig.1-Influences on the window, respectively on the assembly joint

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1. Fixing joinery elements

In order to guarantee the long-term functionality of windows/doors, all forces acting on the window/door must be transmitted to the load-bearing structure. Thus, we consider the following important factors:

- The load exerted by the action of the wind
- Horizontal and vertical payload stress (+ user-induced stress) Self-weight stress
-

In addition to the loads already mentioned, the forces that may occur are influenced by:

- thermal differences between inside and outside,
- thermal expansion of materials

1.2 Task forwarding

Wind loads and horizontal/vertical live loads

The selection of appropriate fasteners depends primarily on the loads and stresses that may occur, the existing construction situation, as well as the type of wall mounting system.

The fastening elements ensure, first of all, the transmission of loads determined by wind action, as well as horizontal loads to the construction element.

 Polyurethane foam, injectable sealing materials, as well as other insulation and sealing materials, are not considered, according to current technical regulations, as fastening means.

 The fastening must be done mechanically!

The arrangement and distances between the fixing elements will be carried out, in the case of PVC/RAU-FIPRO windows, according to the general assembly diagram (Fig 2.)

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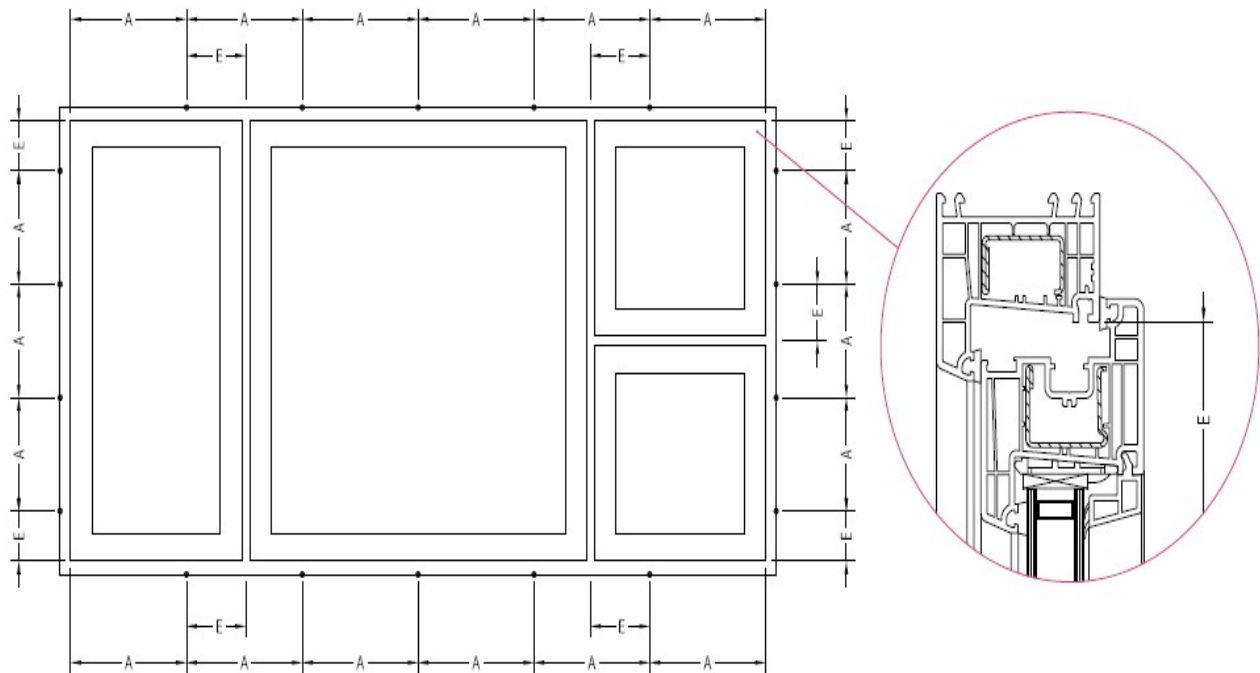


Figure 2 General window installation diagram

- -Fixing points

A. – Fixing distance approx. 700 mm

E. – Distance from the inner corner of the frame/post profile - approx. 150 mm



The fixing screws must be tightened evenly, without tensioning the window frame, in this regard it is recommended to use a screwdriver with the possibility of limiting the tightening torque!

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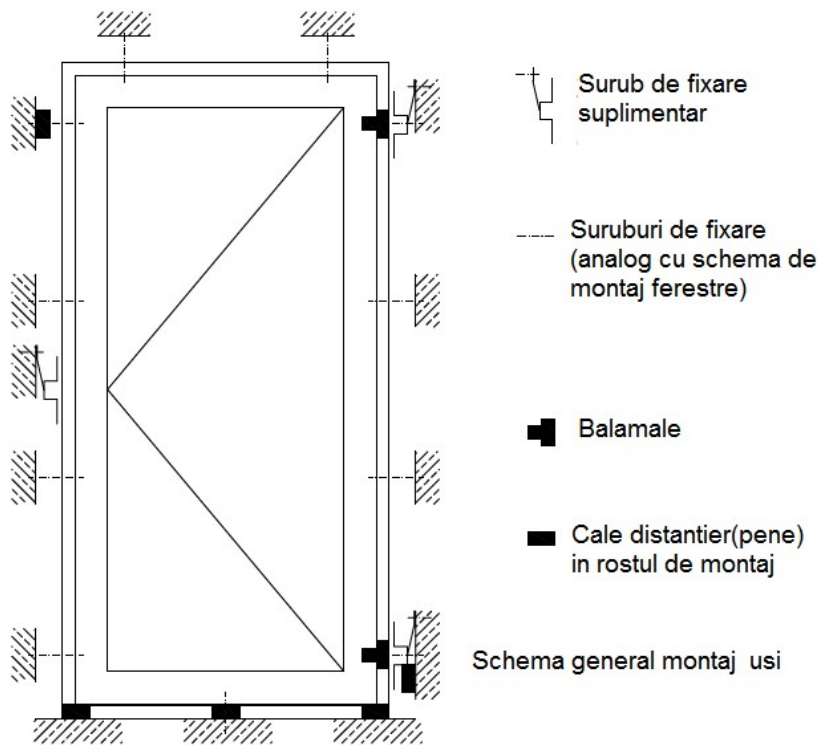


Fig.3 General diagram of door assembly

The load exerted by its own weight:

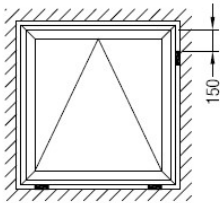
This concept includes all forces that are determined by the self-weight of the joinery elements. In order to transmit the loads, the frames must be wedged and fixed in the masonry by means of conventional fastening elements (see Fig. 3 and 4).

However, such measures are not sufficient to transmit the loads caused by one's own weight!

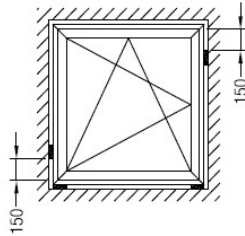
 The following will be taken into account:

- The supporting elements (e.g. mounting channels or "wedges") must be made of a suitable material (wood is not recommended)
- In order to transmit loads (in particular, the window's own weight) in the long term, it is recommended that the support elements (tracks) remain mounted in the construction joints in the lower part (see Fig. 3)
- The placement of the support elements must not influence the expansion of the joinery element.

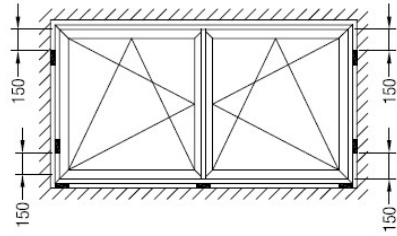
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swing with
supporting elements
under the hinges

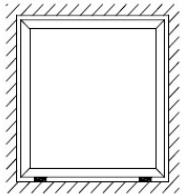


Tilt-and-turn window

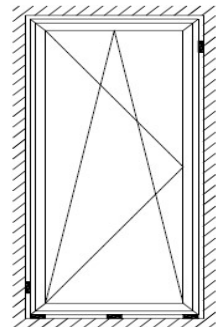
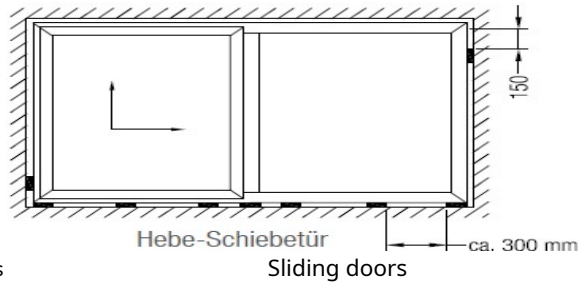


Double-leaf window, without
fixed mullion

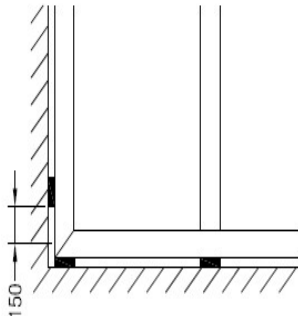
Window



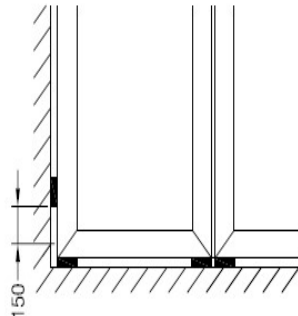
Fixed glass (supporting elements - under the glass
support channels)



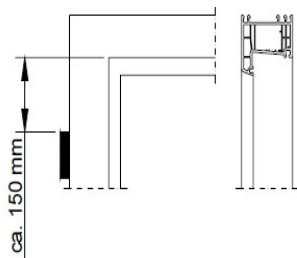
Doors/Balcony doors



upright



Frame coupling



 Window support/stiffening elements (assembly "wedges")

Figure 4

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 The window support/stiffening elements must not negatively influence subsequent work, for example, sealing of joints.

1.3 Fasteners/Fixings

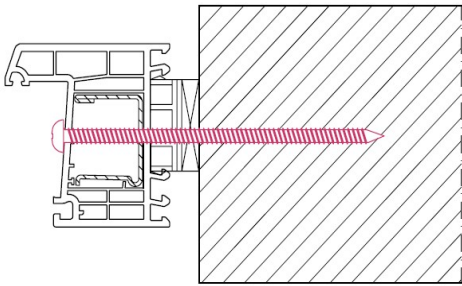
The construction situation determines the selection of the appropriate fastening means. The masonry and the fastening elements must be compatible.

 The instructions of the fastening material manufacturer must be observed!

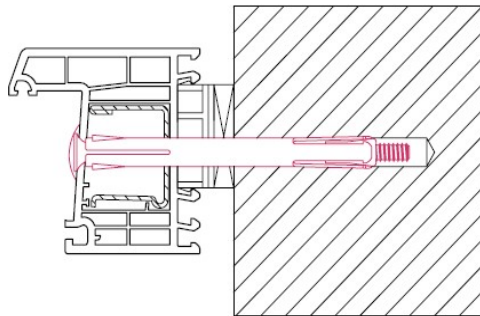
The selection of fastening means (screws, dowels, anchors, etc.) depends largely on the type of masonry.

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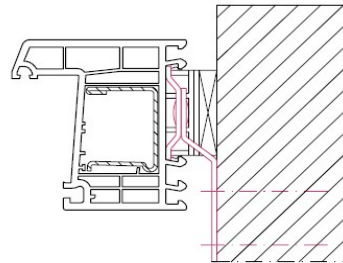
Some of the most important means/fixing elements are illustrated below:
EURO DESIGN 60, EURO DESIGN 70, BRILLANT DESIGN



Screw type Amo III ϕ 7.5 with flat head - Fa.Wurth

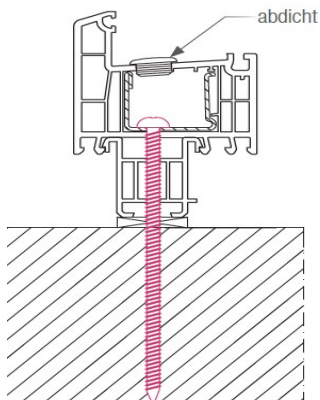


Special metal dowel with tubular frame ϕ 10

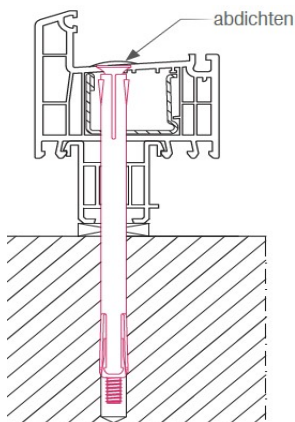


Mounting anchor (not to be used with installation of entrance doors (access))

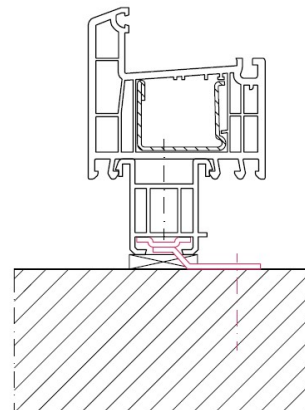
Fixing at the bottom



Fixing at the bottom



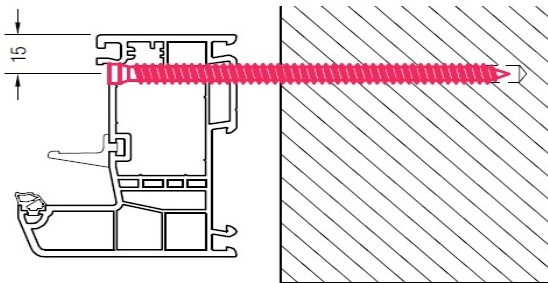
Metal dowel (ϕ 10mm)



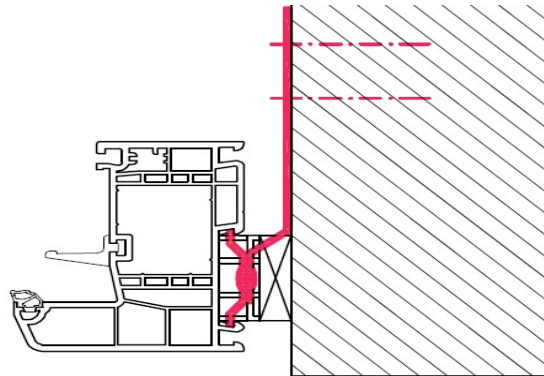
Mounting anchor

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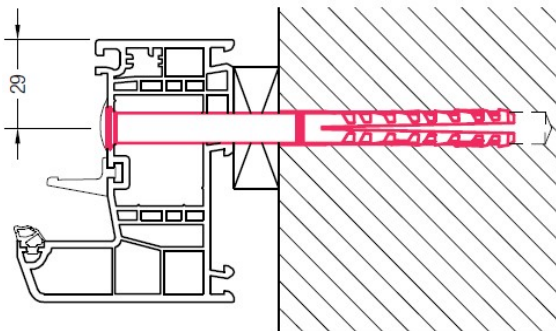
Special case: Geneo System (without metal reinforcement)



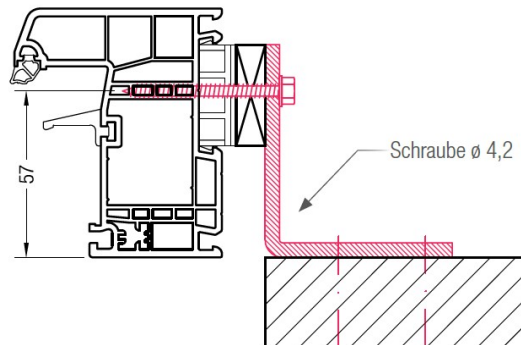
Screw type Amo III ϕ 7.5 with AW 25 Fa. Wurth



Mounting anchor (not to be used on heavy traffic access/entrance doors)

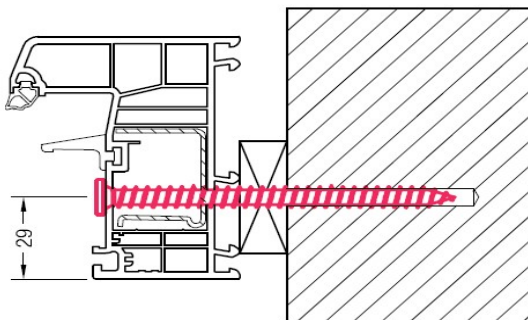


Special metal dowel with tubular frame ϕ 10



Steel bracket (installation outside the masonry)

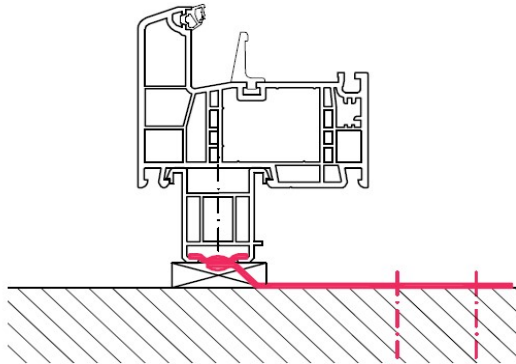
GENEO (armed)



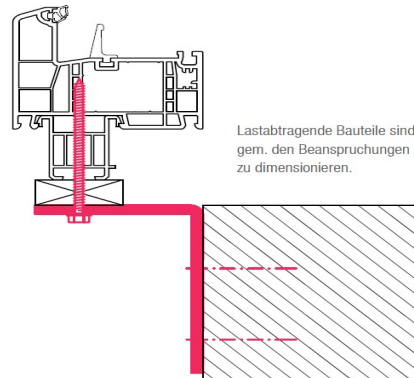
Screw type Amo III ϕ 7.5 with flat head - Fa. Wurth

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Fixing at the bottom

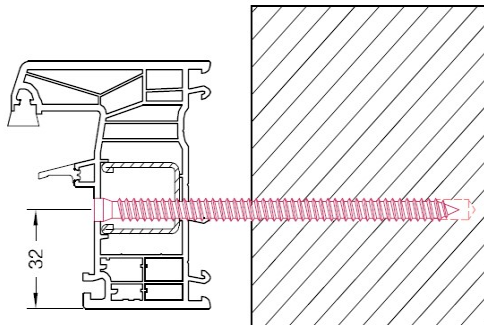


Mounting anchor (bottom)

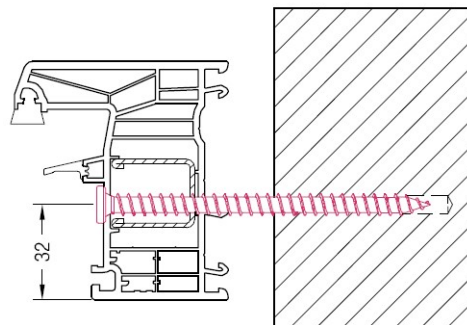


Steel bracket/console (installation outside the masonry - lower part)

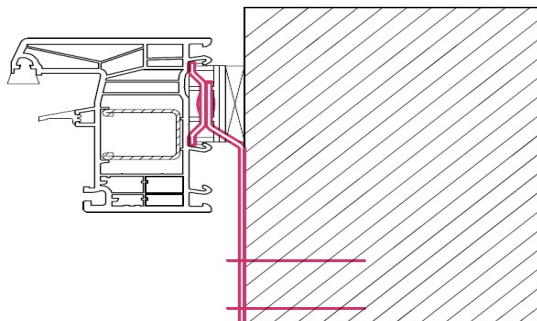
Synego



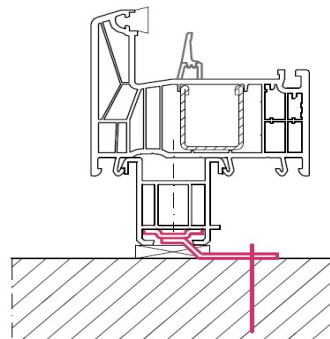
Amo® III-Schraube $\varnothing 7,5$ mit AW 25 Fa. Würth



Amo® III Typ 3-Schraube $\varnothing 7,5$ mit Flachkopf Fa. Würth



Mounting anchors
(Not recommended for door installation!)



Fixing at the bottom

2. Sealing and insulation

2.1 Sealing joints

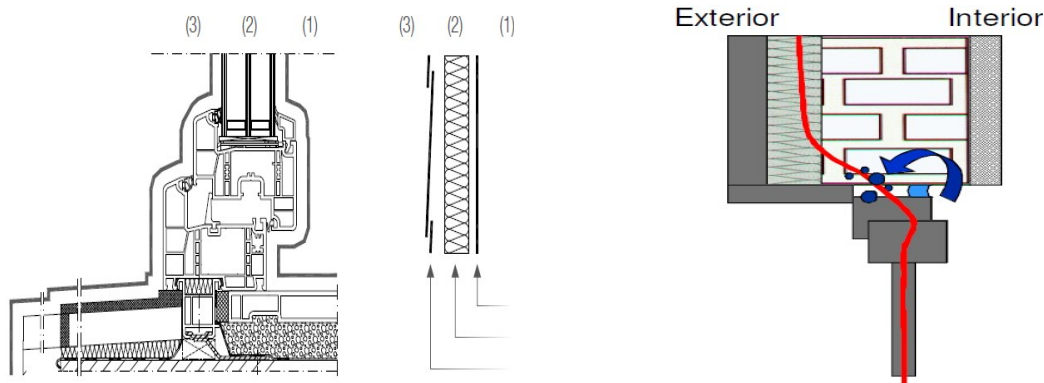
Windows and doors, including the joints, must withstand the long-term forces shown in Figure 1. In order to meet this requirement, the formation of construction joints, in terms of joint geometry, insulation and sealing, is very important.

Water is omnipresent and, in the different forms it can appear in (gaseous, liquid or solid), is responsible for much of the damage caused to a building, whether it is through penetration from the outside (for example, in the case of rainwater) or the formation of condensation (from the inside).

Windows and window joints are exposed to rain from the outside and have to cope with relatively high humidity and the resulting condensation from the inside. Therefore, the following must be taken into account for proper sealing of window joints:

- protection against rainwater must be provided on the exterior of the building. Water must not penetrate the joints and, at the same time, moisture that has penetrated the joints must be able to be removed to the outside. It is recommended to use, on the exterior, an Al rainscreen with end caps (to prevent water from penetrating the masonry)
- through appropriate sealing on the inside, the penetration of condensation and moist air must be prevented.

To comply with these principles, the construction of the sealing joints must be carried out according to the indications in the figure below.



Red line – isotherm of 10°C(dew point)

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1. Interior

Moisture and vapor barrier

2. Thermal and acoustic insulation

3. Exterior

Resistance/sealing to torrential rain

Possibility of eliminating vapors from the inside to the outside

Functional area 1:

Climate separation between inside and outside: hermetic, tighter in terms of moisture diffusion than the external seal. The separation zone must be on the inner surface of the external wall and must not be interrupted. Its temperature must be above the dew point temperature (10 °C at 50% int. humidity, int. temp.+20°C, outside temp.-5°C).

Functional area 2:

Thermal and sound insulation area.

This area must provide thermal and acoustic insulation. To guarantee these functions, this area must remain dry and be separated from the interior space.

Functional area 3:

External sealing – weather protection: long-term waterproof against rain, open to allow condensation to escape from the inside. This weather protection area must prevent rainwater from entering from the outside and also have a drainage function (any moisture in the joinery joint must be able to escape to the outside).

Based on this knowledge, the following principle is formulated:

"Tighter on the inside than on the outside"

Window joints are critical areas for the entire construction for the following reasons:

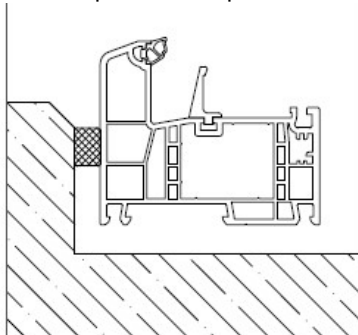
- Energy losses
- Moisture
- Noise from outside
- Water ingress from outside
- Vapor condensation
- Mold development
- Thermal bridges
- Area with different displacements

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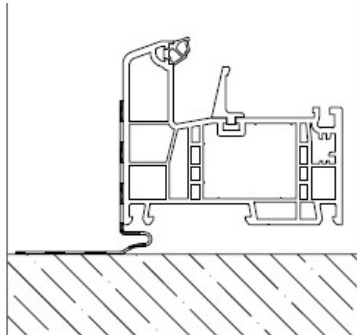
The selection of the sealing materials to be used is determined by the external wall system and the construction connection method. The selection criteria are both the geometry of the joints and the material from which the masonry is made. The indications from the manufacturer of sealing materials to be used, for example, processing regulations for the proper use of injection sealants. This principle applies in particular to the humidity of the external surfaces, pressure resistance, temperature, material compatibility and adhesion to external surfaces. If necessary, the areas concerned must be pre-treated.

Examples of exterior joint sealing

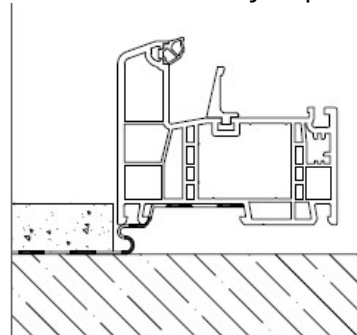
Pre-compressed strips



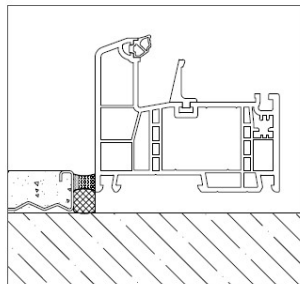
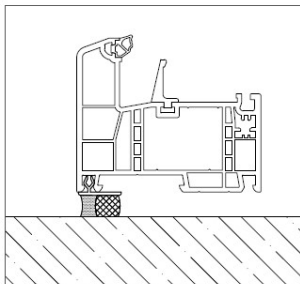
Exterior foil



Plasterable butyl tape

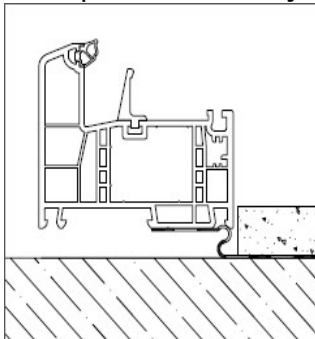


Injectable sealant (silicone)

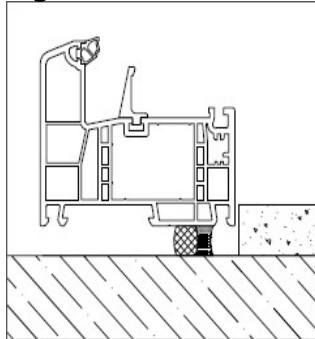


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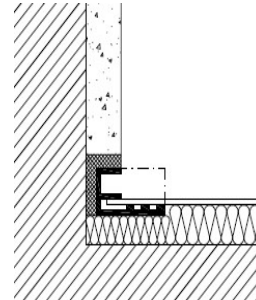
Examples of interior joint sealing



Interior foil

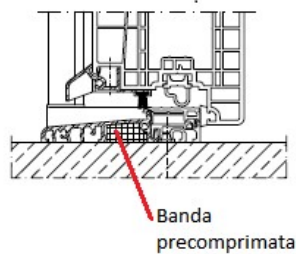
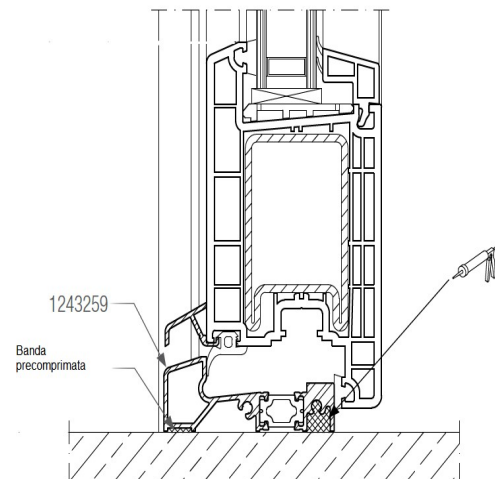
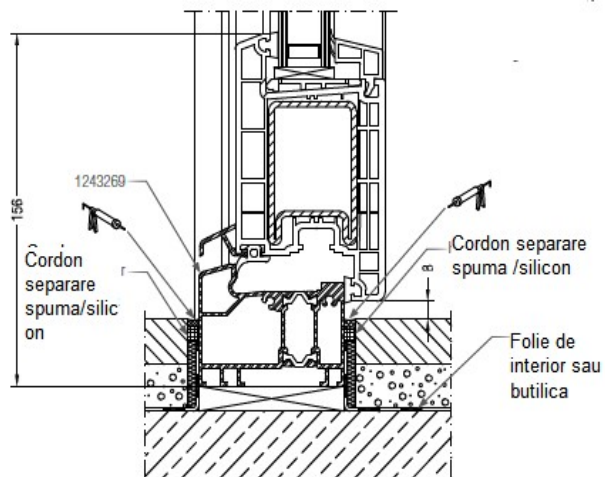


Injectable material (silicone, etc.)



Lateral area of the outer sill

Doors with threshold



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As the hard PVC material is subject to thermal loading caused by expansion/compression, the construction joints must be designed in such a way that the sealing materials are able to absorb the movements of the frame profile without being detached from the sealing area. Also, cracks in the area of the welded profile corners are not allowed.

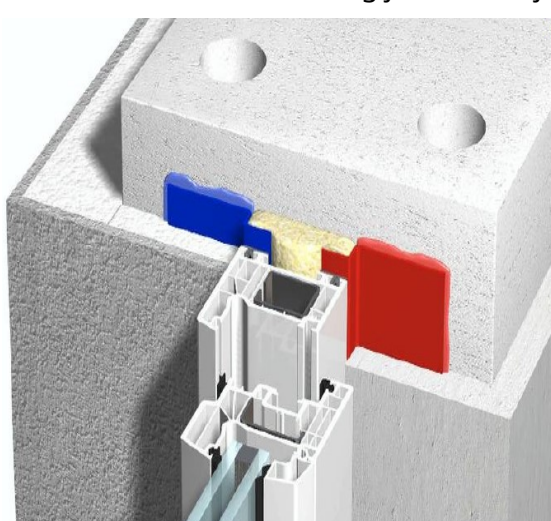
The minimum width of a joint depends largely on the chosen sealing system, according to tables no. 2 and no. 3. When observing the minimum joint dimensions, the following indications must also be taken into account: manufacturers of sealing materials and tapes.

	Construction of joints with sealing tape depending on the length of the element						
	(image)				(image)		
	< 1.5m	< 2.5m	< 3.5m	< 4m	< 2.5m	< 3.5m	< 4m
white profile	8mm	8mm	10mm	10mm	8mm	8mm	8mm
colored profile	8mm	10mm	10mm	-	8mm	8mm	-

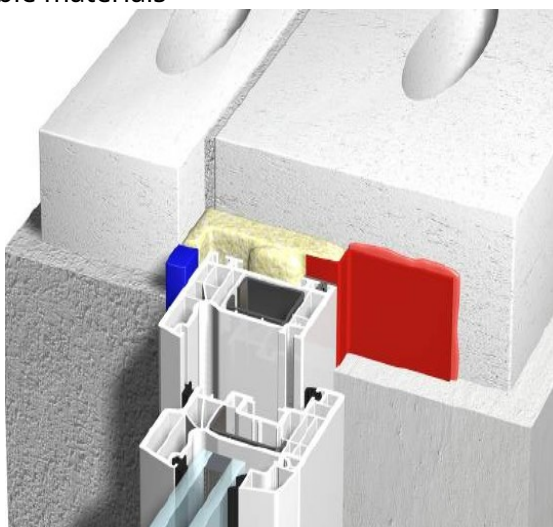
Table No. 2: Minimum width of sealing joints for sealing strips

	Joint construction depending on the length of the element						
	(image)				(image)		
	< 1.5m	< 2.5m	< 3.5m	< 4m	< 2.5m	< 3.5m	< 4m
white profile	10mm	15 mm	20 mm	25 mm	10mm	10mm	15 mm
colored profile	10mm	20 mm	25 mm	-	10mm	15 mm	-

Table.3 Min. width of sealing joints for injectable materials



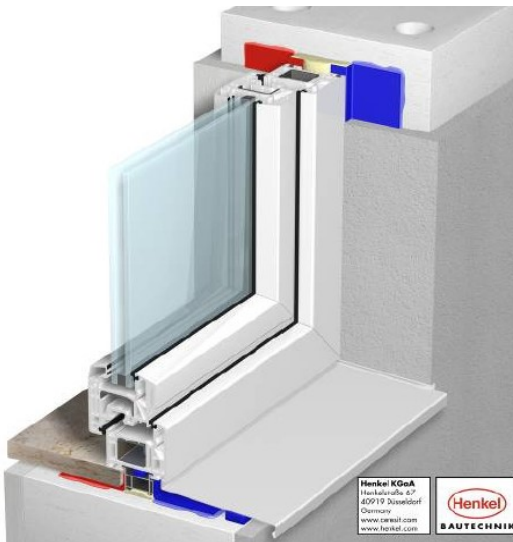
External foil-foam-interior foil



Pre-compressed tape-foam -interior foil

Note: In the case of replacing old joinery (renovation/rehabilitation), for the option of using and applying sealing foils, the sills (masonry) where the new joinery will be installed must be finished after dismantling the old joinery!

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the bottom of the window

3. Sizing

In order to avoid errors, the actual situation on site must be checked. This includes the actual construction situation, as well as the dimensioning of all window sills. The contractor is responsible for inspecting the installation site, having the possibility of drawing up, with the beneficiary, a written report on the identified state of affairs. In order to check the installation site, as well as to provide possible instructions to the designer or beneficiary regarding the repair of defects, the following procedure is recommended:

- the execution method of the exterior walls, as well as the construction materials used, constitute the main criterion for selecting the appropriate means of fastening. Requires consultation with the manufacturer of the fastening means!

- depending on the type, shape and condition of the wall covering (plaster, tiles, etc.), the sealing system for the interior and exterior will be selected.

Requires consultation with the sealant manufacturer!

- the wall construction influences the selection of the type of joint and the installation area.
- the expected movements of the windows (e.g. expansion joints, etc.) and the walls of the building play a determining role in the selection of joint/coupling profiles and the construction of expansion joints.
- are there thermal bridges and deep wet areas?
- is the surface of the joints or bricks closed by smoothing?

The dimensions of the window openings will be determined directly on site. The dimensions of the gaps will be measured in height (left, middle, right) as well as in width (top, middle, bottom) three times. The lowest rate will be taken into account!

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If modifications or additional measures are required as a result of exceeding tolerances or deviations from the indicated construction situation, these will be established before the start of assembly. Any objections will be made in writing.

In the case of entrance doors/balcony doors, the construction of the thresholds, respectively the dimensioning of the assembly gap, will be discussed and established in advance.

4. Transportation and storage

During transportation and storage of elements, the following factors must be taken into account:

- ensuring safe and stable fixing of the elements,
- during transport and storage, the elements will be kept in a vertical position,
- the profiles must be protected against possible damage caused by sliding, rotating, chamfering or bending of the elements,
- the profiles must be protected against mechanical damage and dirt,
- avoid direct overlapping of profiles,
- the hardware, in the case of larger elements (e.g. doors, etc.), must not be subjected to weight pressure; therefore, use supporting profiles during transport, Art.1561780.

5. Additional assembly instructions

In case of installation (in winter) at temperatures under 5°C the specific properties of the materials used must be taken into account. Direct impacts on the profile frame and the sashes must be avoided. Avoid drilling the frame (for the mounting screws) by using the percussion function!

In the case of all profiles, the protective film must be removed immediately after installation, respectively the exterior finish (but no later than

It is important to determine who is responsible for protecting the installed windows from damage until the time of acceptance. It is recommended to agree with the beneficiary on individual measures, for example, on protection in case of removal of excess foam. When carrying out masonry repairs, the profiles must be protected.

After the installation is completed, the functionality of all opening elements will be checked and recorded in writing.

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6. Construction control before starting assembly:

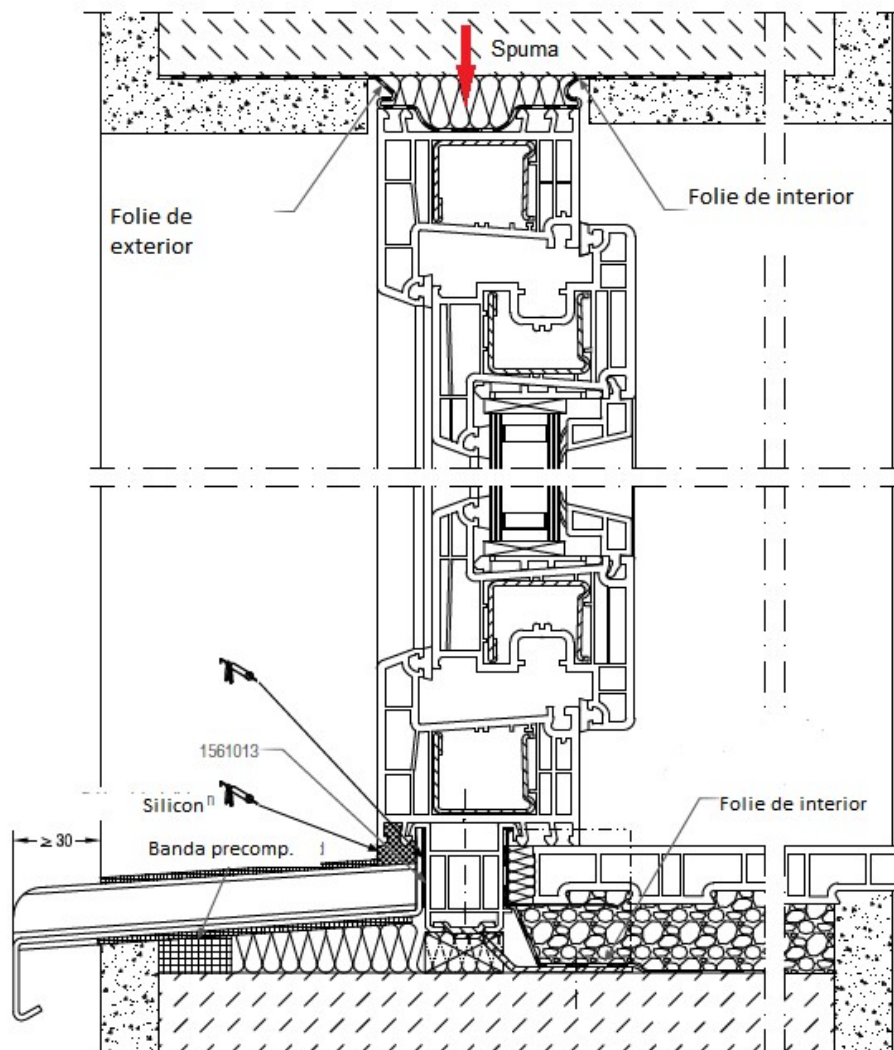
- are there any masonry tolerances?
- are the walls straight?
- if using sealing foils, is the surface of the window sills finished?
- is there unsafe plaster on the walls?
- does it have defective connecting/coupling elements?
- check that the dimensions correspond before starting the assembly!
- is a trial installation necessary?

Reception of works:

- the works must be received in any situation.

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Example: assembly detail at the bottom of the window (sohlbank)



REHAU POLYMER
WS TECHNICAL DEPARTMENT