

ALUPLAST Installation Manual

Vertical Sliding Door

These instructions shall facilitate the planning and execution of building connections of a vertical sliding door.

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A1: Execution of building connections

Requirements

When installing windows or doors, interlocking joints as the joint parts of the wall and windows/doors must meet stringent requirements:

Tightness of joints:

All joints on the premises must have full and sustainable air tightness under the current state of technology.

Humidity may affect interlocking joints in a number of ways:

- Water vapour diffusion:

The joint has a diffusion flux occurring inside it due to the pressure differential of water vapour from the premises, which can cause condensation precipitation in the outer (cooler) space of joints in the cold season.

- Humidity accumulation:

If the sealing material of joints on the side of the premises is loose here and there, warm air containing moisture can penetrate through the joint channel system even at a very low pressure difference between indoor air and warm outdoor air.

If the airflow comes into contact with colder surfaces, it can cool down below the dew point.

Thus, condensation may form inside the joint to a large extent.

Heat insulation:

Excludes adverse thermal bridges in connection areas.

Soundproofing:

Sufficient sound absorption as required.

Force transfer:

Forces present in the window should be transferred safe enough to the building structure material.

Waterproofing:

Rainwater ingress in the building and uncontrolled ingress in the building structure should be avoided.

The exposure of joints to solar UV emission and high temperatures causes aging of the outer waterproofing layer, which may cause defects. Waterproofing defects, the rupture of edges or cracking of construction material can result in the ingress of water to joints.

In this case, particularly problematic are capillary joints having the size of about a few tenths of a millimetre.

Wind action can further enhance the ingress of water since rainwater can enter unsound spots of the outer waterproofing layer under pressure.

The requirements stated above must be met both in terms of temperature-dependent changes in the length of window elements and in terms of the deformation of the building structure material.

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A2: Fastening and load distribution

Requirements

According to the requirements of local codes of practice (Landesbauordnungen, LBO), the anchoring of window and door elements in the building structure should neither pose a threat to human life and health nor cause damage to public safety.

The window or window type door are affected by the following forces:

- Perpendicular window planes (e.g. wind load):

These forces are transferred to the building structure through fasteners, for example, bolting, dowels, anchors or screws;

- Parallel window planes (e.g. deadweight of the mounting element):

The transfer of these forces requires load-bearing pads and other suitable accessories.

The window itself should **not** experience any load on the side of the building structure, i.e. the mobility of the window and the building structure should be borne in mind when determining the overall size of the window.

Avoid fixing any window elements in the building structure when anchoring.

The required freedom of movement of different fasteners has to be ensured by providing a sufficient distance to the case corners, and for large-sized elements the building structure is distributed (bound) in such a way that the moving portion could be located inside the building structure.

Common fasteners in window manufacturing are generally not suitable for the distribution of the window's deadweight.

Therefore, it is necessary to prop up window elements (load-bearing pads). However, this must be carried out in such a way that they do not interfere with further works and cannot be replaced or removed.

Therefore, a support should be carefully prepared and installed.

Retraction of Forces Acting Perpendicularly to the Window Plane

Anchoring points must be determined so as to ensure the proper transfer of forces generated in the building structure. Typically, distances between anchoring points shown in Fig. 01 are taken.

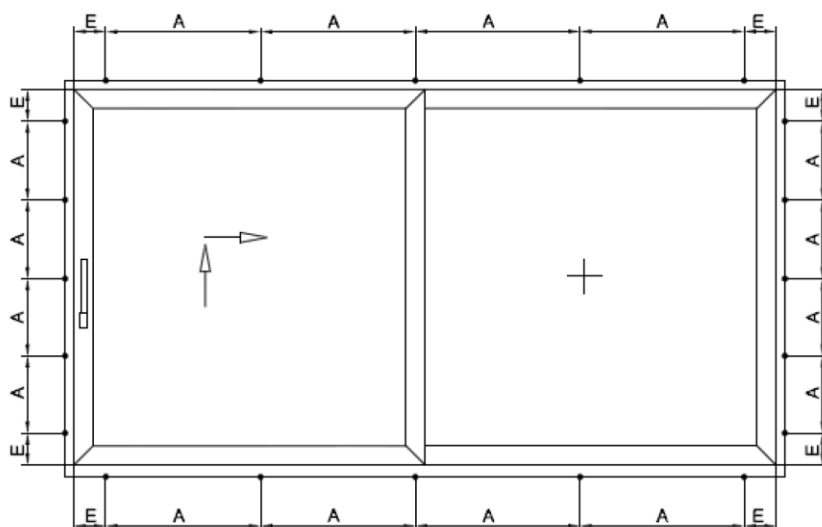
In special cases, additional anchoring points may be required. Oftentimes the position of mounting holes for case anchors (through anchors) is set in advance for state-of-the-art manufacturing facilities; nevertheless, it must meet our guidelines.

Figure 01:

Figure captions:

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Fenster Gewicht	Weight of Window
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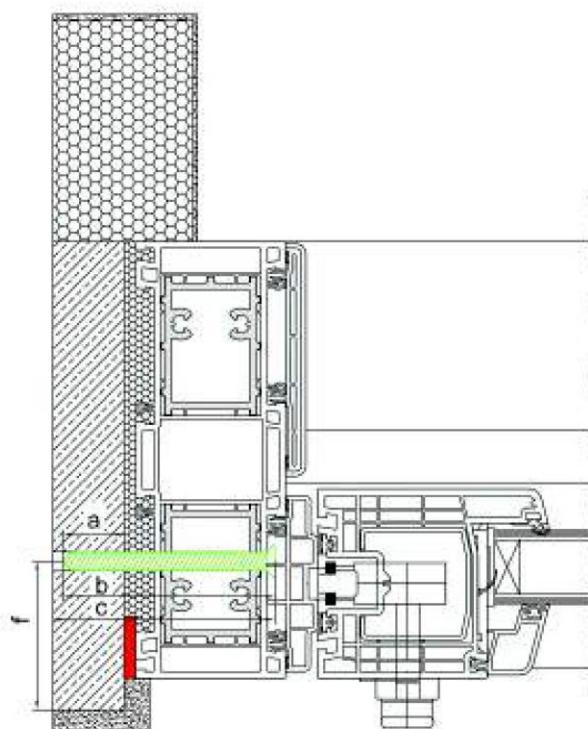
Figure 02: Anchoring Points



• = anchoring points
A = distance between anchoring is about 500 mm, max. 700 mm
E = distance to profile's inner angle is about 150 mm

Compliance with these distances prevents the deformation of the composite case (frame) by anchorage, which can cause cracking in the composite case (frame) in extreme cases.

Figure 03: Anchors



a = minimum depth of anchorage
b = anchor length
c = minimum hole depth
f = possible distance from edge

For compound outer walls and in the case of direct anchoring through the composite case, the distance required by the manufacturer is typically not sufficient. This often requires support structures, for example angles, frames, etc.

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Anchoring requires strict observance of the required distance from the edge for anchor mounting holes in the outer mounting element. It depends on the specific construction material and is specified by the anchor manufacturer.

This also applies to the depth of anchorage in the wall.

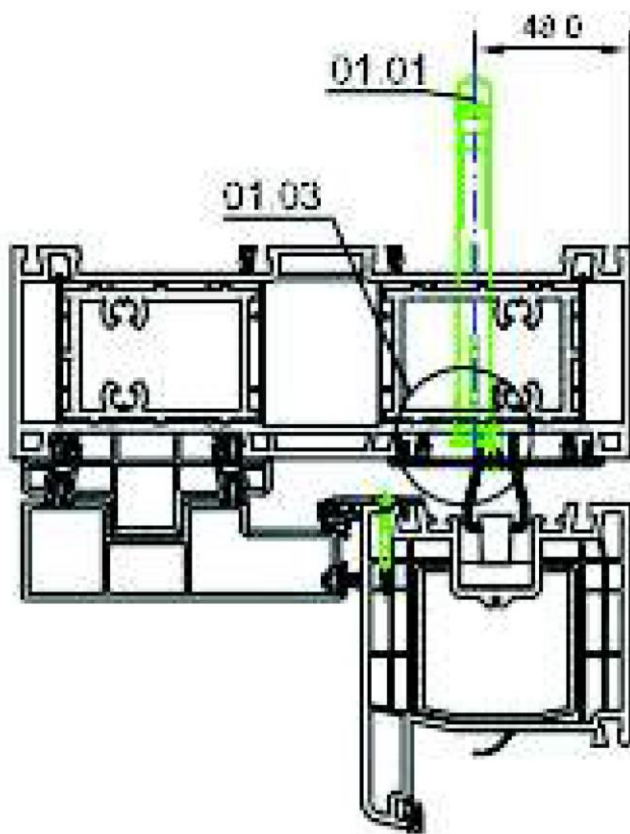
Furthermore, the installation of burglar retardant windows requires a strong supporting material to be provided between the composite frame and the building structure.

The supporting material is to be installed close to anchoring and lock points.

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B1: Position of Anchor Mounting Holes

Figure 04: Anchoring Points



Anchor mounting holes can be drilled in a free frame.

For distances between holes in the frame, see the figures below.

In the frame, vertical holes have to be drilled following the respective facing profile. In the upper horizontal plane, holes have to be covered with a guide rail (**01.01**).

Frame fixing requires long accessories for screws to avoid damage to fixed doors (e.g. drill chucks).

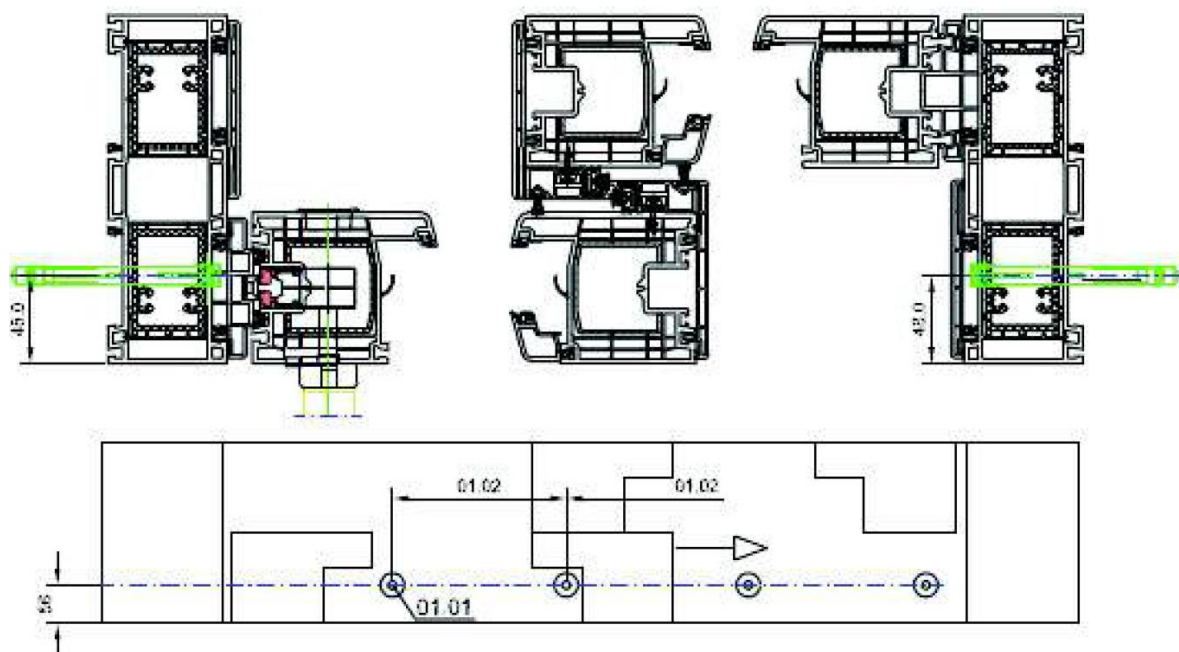
The sill plate below should be supported so as to prevent the lowering of the sill plate/vertical sliding door. The sill plate should be fixed to the floor using conventional seat angles. Suitable mounting fittings are also available upon request.

The maximum distance between the anchoring points shall not exceed 700 mm.

ALUPLAST recommends 500 mm (**01.02**).

01.03: Leave free space for support legs near anchor mounting holes.

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B2: Installation

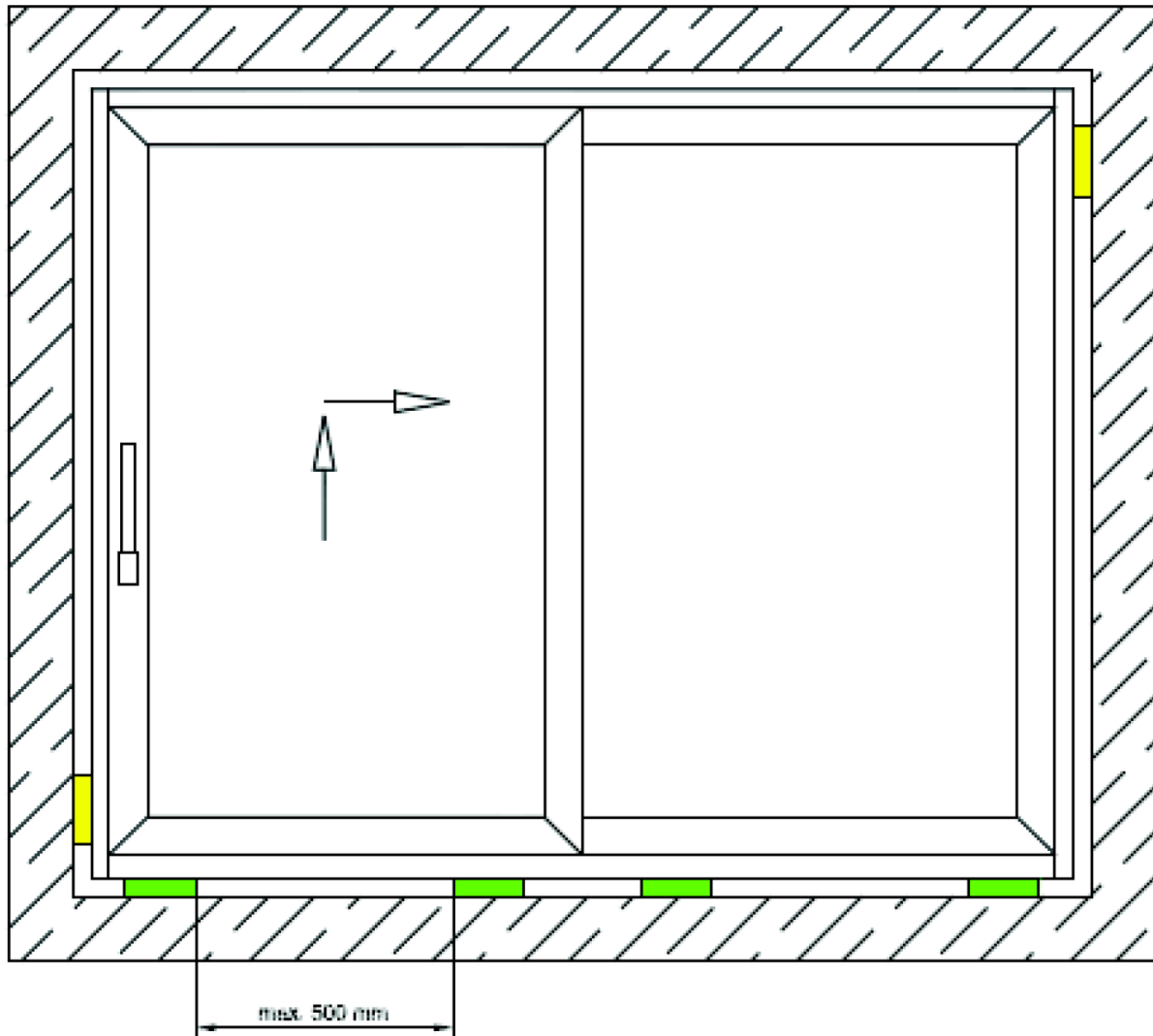
1. It is necessary to set a horizontal lower sill plate profile supported throughout its length.
2. **Install the horizontal top frame profile. It is important to ensure perfect serviceability of running sashes. Observe the distance between anchoring points, see figure in page 4.**
3. Vertical frame profiles must be installed vertically.
Anchor the fixing frame to the building structure by means of a suitable fastener.
The maximum distance between the anchoring points shall not exceed 700 mm.
4. Check the perpendicular state of the window aperture.
5. Set the sliding doors in the frame.
6. Align the sliding door with the locking/closing side and prop up with struts.
7. Insert the glass in the sliding and fixed doors.

Figure 05: Positioning of Load-bearing and Spacing Pads

Install approximately 150 mm from the corners.

Figure caption:

<i>Distanzklotz</i>		<i>Spacing pad</i>
<i>Tragklotz</i>		<i>Load-bearing pad</i>
<i>max. 500 mm</i>		<i>max. 500 mm</i>



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B3: Glazing and Installation of Mounting Pads

Observe Engineering Order No. 3 for the glass industry!
 “Fixing Glass Units”

For glazing, see also Chapter 07 in “General Guidelines for Production”.

Installation of Mounting Pads for Vertical Sliding Door:

1. Snap the fold seam insert in the fold seam zone.
2. Install supporting material for glass in the fold seam insert at the bottom.
3. Inserting glass on the bottom pad. Insert the glass and gently push towards the sash/frame.
4. Maintain a gap between the fold seam and glass.
5. Support the glass using pads (see Guidelines for Mounting Pad Installation).
6. Install glazing fillets.

 Secure the distance between the glass edge and the fold seam base; provide free installation.

* Spacing pads (an elastomeric plastic of a Shore scale hardness of 60-80 recommended)

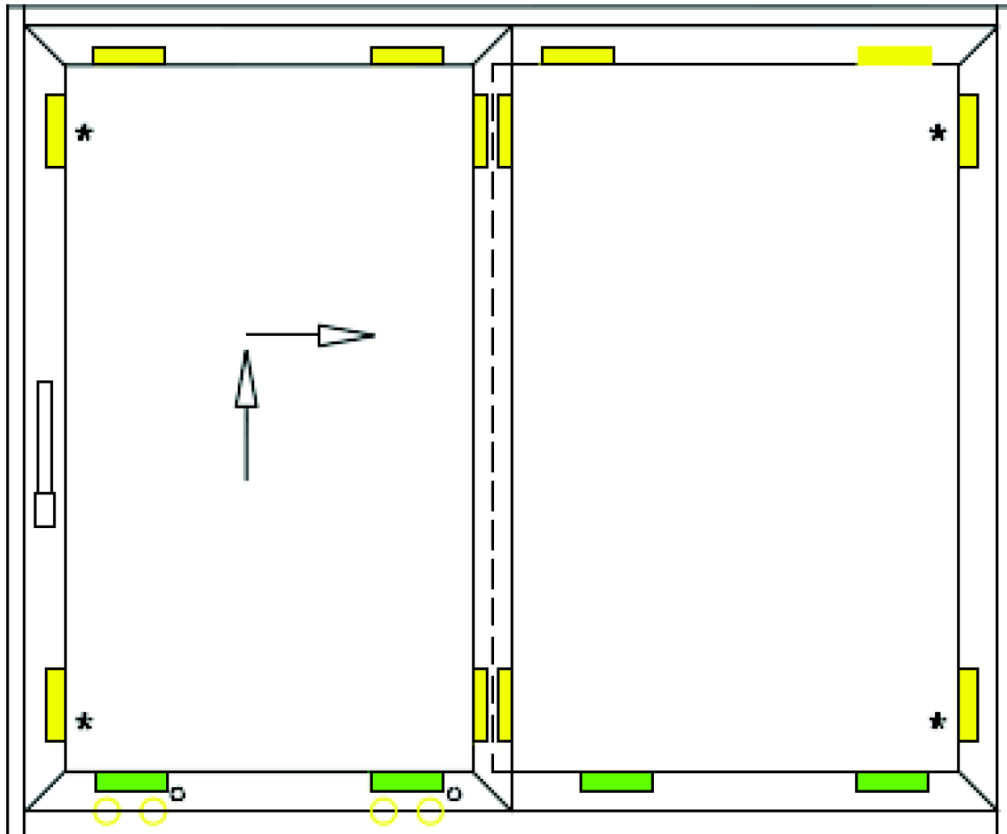
 Load-bearing Pads

Transfer glazing weight to the frame structure.

In running sashes, load-bearing pads should be placed above rollers.

Figure 06: Installation of Load-bearing Pads

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o Slide (rollers)

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B4: Fasteners

The selection of the right fasteners depends on the specific mounting situation.

Fasteners must correspond to the walling material.

The manufacturer's instructions must be strictly observed!

Before Anchoring

- Determine the distance between anchoring points (see page 4).
- The selection of the required anchors, screws, bolting, dowels depends on the wall material (possibly, special anchors for hollow wall blocks or aerated concrete).
- Provide anchorage all the way around, including for blinds (perhaps using special accessories).

All fasteners must be protected from corrosion as a minimum. In wet areas (indoor swimming pools, etc.) fasteners of stainless steel should be used. When marking deadweight should be borne in mind, for example, the deadweight of elements, additional and dynamic loads, including wind load and additional loads (weight of people sitting on the sill, impact load when opening and closing).

During Anchoring

Anchorage must be mechanical. Avoid foam, glue and the like for the anchoring of windows.

The vertical sliding door should be mounted horizontally, vertically and on a plane adjusted for water tolerance level. This corresponds to a dimensional defect of 0.15 mm per meter.

However, overall size deviation should not exceed 3 mm.

(Source: Engineering Order of the Institute of Glass and Glass Machinery, Hadamar, Guide No. 20, 2002/6)

- Correct drilling, avoid using a pneumatic hammer (other than drilling concrete).

For case anchors use an elongated drill -> beware of damage to the overlying surface by the drill chuck. Use a protective PVC angle for edges, if necessary.

- In the case of hollow brick, drill into the joint filled with mortar (bottom mounting).
- Take into account the carrying capacity and anchor length.
- Use screws, anchors, bolting, etc., suitable for the anchor system.
- Clean bores.
- Be sure to observe the manufacturer's distance from the edge and distances between axes depending on the construction material. This ensures required load transfer by fasteners, as well as avoids breaking and cracking. Fasteners used for the installation of windows and doors are mostly exposed to transverse forces. Typically, this load does not cause the failure (shear failure) of unalloyed steel members. The approximation of mounting points in the direction of load action to the edge of the mounting element is very likely to cause concrete breaking at the edge of the window aperture, unless the required distance from the edge has been observed.
- Evenly tighten the screws; when tightening leave the case unstrained (use an electric screwdriver and pneumatic hammers with a torque limiter).
- Attempt to combine the uses of the load-bearing pad and the fastening element.
- Avoid driving in dowel bars, including custom-made, because it renders controlled installation impossible.

After Anchoring

Be sure to check the following:

- Horizontal and vertical states of installation and positioning on the plane (tolerances during the installation of the window)?
- Have all anchors been tightened?
- Remove levelling and clamping wedges;
- Clean the joints (remove chips from the bore); restore a joint, if necessary;
- Check the operation of the window.

Wooden wedges used at the alignment of the window are not load-bearing pads and must be removed after the installation of the window.

**The protective film must be removed from the profiles after the installation at the latest.
If removed later, the removal of the film without a trace may turn out to be impossible.**

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A problem in the case of large-sized elements of the vertical sliding door

Concrete, steel and wooden floor structures do shrink. This should be considered when marking vertical sliding elements.

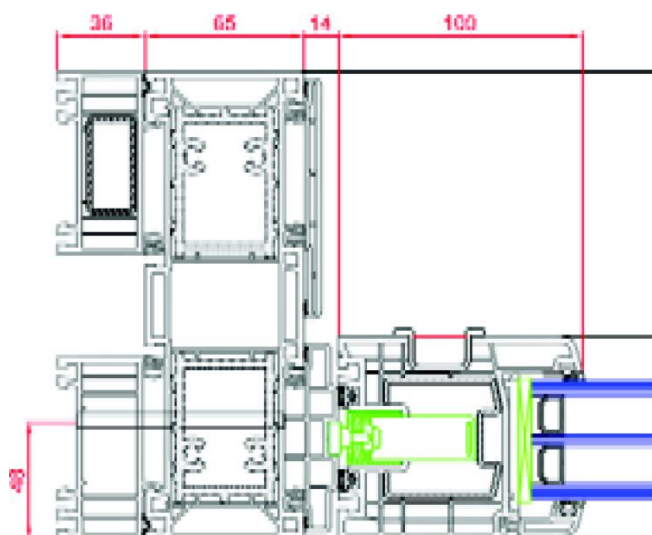
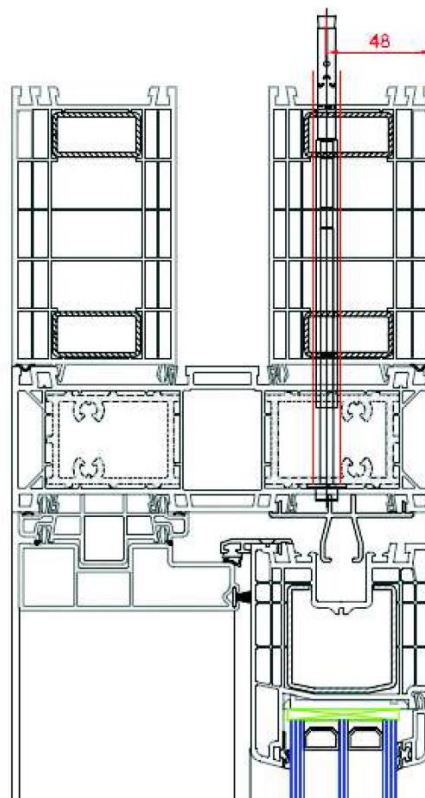
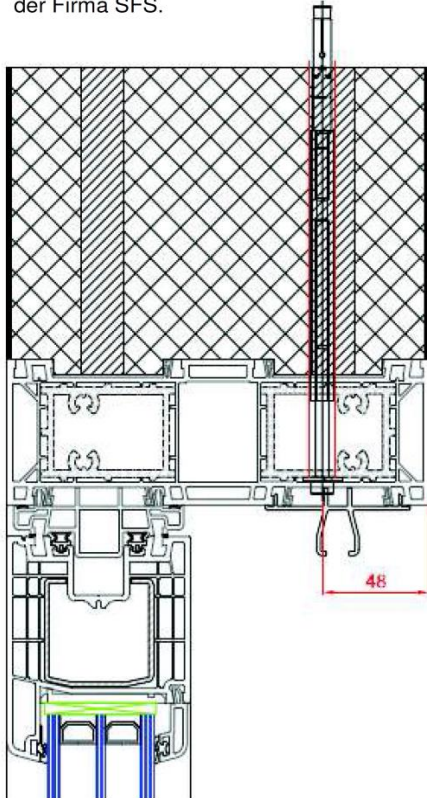
Since shrinkage can occur after the installation of the vertical sliding door, additional control of fastening elements is a great advantage.

Otherwise, further correction may be required down to the disassembly of the elements in the case of claims.

In this regard, appropriate mount systems have already been offered, for example, the SFS Planus mount system.

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B5: Hanging of Sliding Doors

- 1) Open the running sash and secure it against falling out.
- 2) Loosen the mounting screws in the guide rail.
- 3) By lifting with a screwdriver or chisel, slightly take the guide rail out of the frame (be sure not to damage the frame).
- 4) After that remove the guide rail out of the frame in full length.
- 5) Now the guide rail is in the groove of the sash window framework.
- 6) Secure the guide rail against falling out.
- 7) Carefully turn the running sash inward (toward the premises) and lift out of the guide.
- 8) Be sure not to damage the rollers when removing the running sash.

Figure 07/08: Sash Replacement

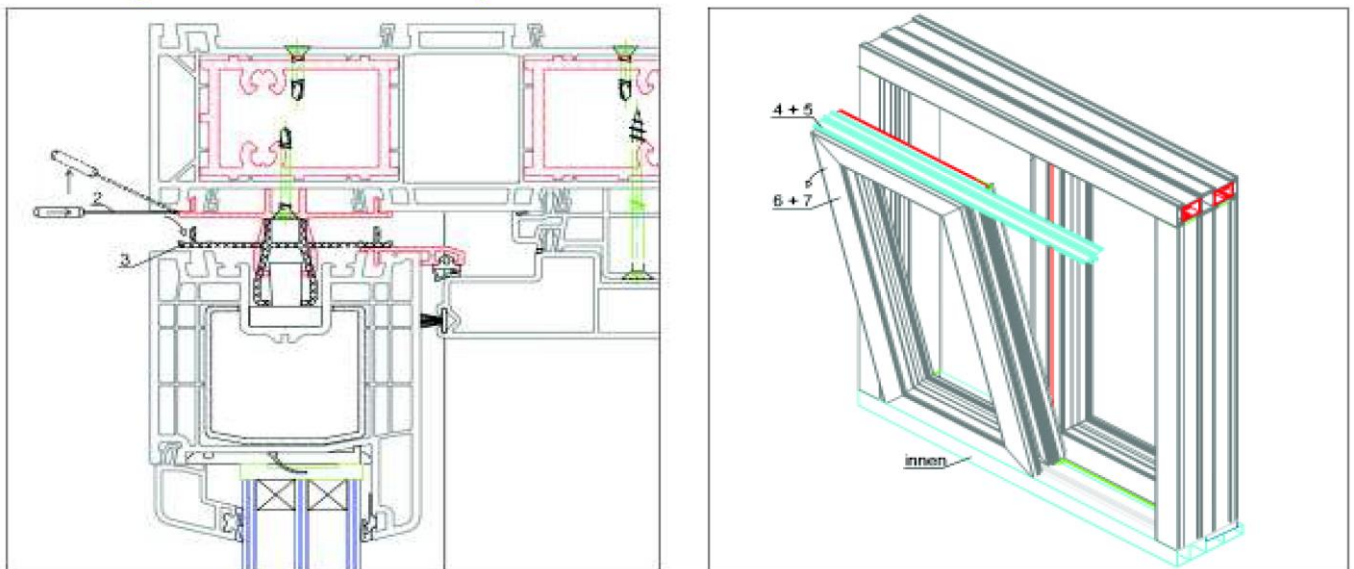
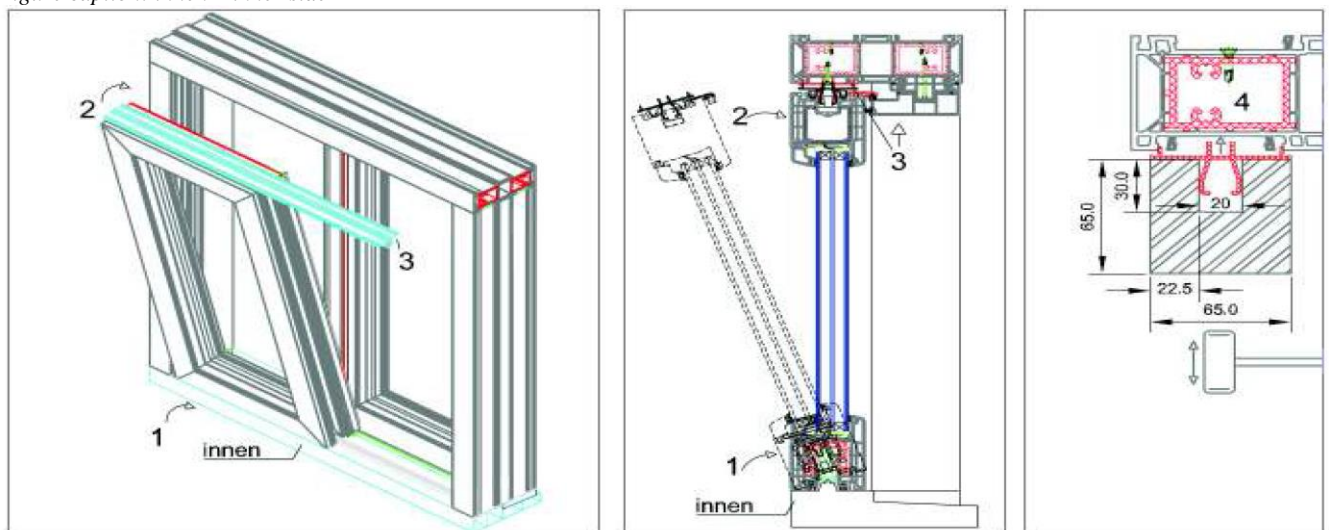


Figure 09/10/11: Sash Installation

Figure caption: innen – inner side



Installation of the running sash in the frame together with the guide rail. Push the guide rail (Item No. 6384 52) to the upper slider (Item No. 6378 52).

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- 1) Gently rotate the sash in order to set the slide onto the carriage slides.
- 2) Install the sash in the frame together with the guide rail.
- 3) Install the guide rail in the frame. Slide the running sash in order to insert the guide rail. After that fasten the guide rail to the frame using $\varnothing 3.9 \times 32$ mm self-tapping screws.
- 4) For the secure insertion of the guide rail we recommend to use a self cut piece of wood of about 200 mm in length. **ALUPLAST** item not available.

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B6: Transportation and storage

The following should be taken into account when transporting and storing the vertical sliding door!

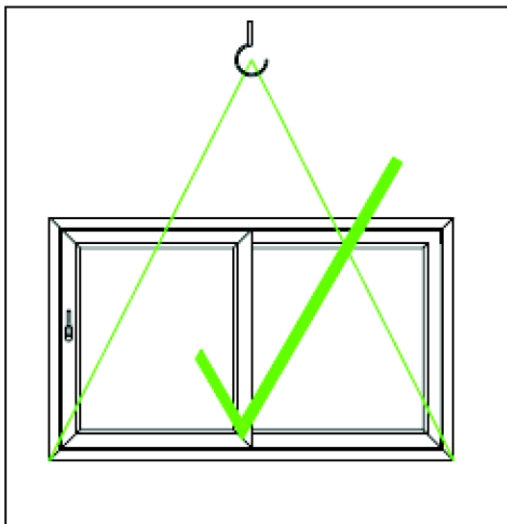
- Crane transport must be carried out by means of suitable lifting straps and eyes.
- Avoid hanging frame profiles while loading and unloading;
- The transportation and storage of elements in a vertical position.

When lifting, all elements must be secured against overturning, turning, etc.!

Figure captions:

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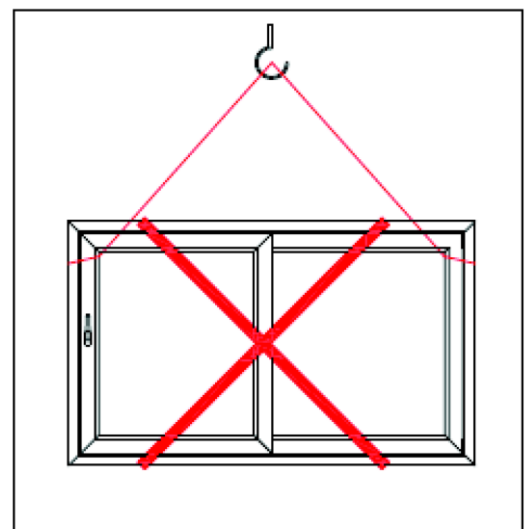
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- Rigid and fixed positions of elements;
- Protection against damage caused by:
 - 1) Slipping
 - 2) Unfolding
 - 3) Skewing
 - 4) Deflection of elements
 - 5) Mechanical damage
 - 6) Dirt
- Avoid direct opposite support;
- Do not expose glazing units to direct sunlight (broken glass)

Observe general mounting practice!

NICHT ZULÄSSIG



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