Glazing uPVC windows and Doors

03/25/2024 5:05 pm EDT

When glazing uPVC the following information can be helpful.

For a list of part numbers of glazing blocks available from Starke see here: Glazing Blocks and Packers List

08 E. Glazing Blocks

08 E 1. The importance of glazing blocks

Glazing blocks fulfil the following tasks:

- load transfer
- sash mobility
- ensuring an circumferential vapour pressure compensation (drainage / ventilation)
- protection of insulated glass edge sealant
- avoiding contact between glass and frame
- fixing of glazing (i.e. no shifting of the pane)
- relieving of glass edges

The proper use of glazing blocks is crucial for a window`s long-lasting durability and functionality, since it constitutes the only contact between glazing and frame.

The correct assembly of glazing blocks means:

- protection of glass edges against damages
- ensuring perfect operation: Frame and sash are fixed in the proper position, and thus warping and canting is avoided.
- Depending on the sash`s way of opening, glazing blocks also have a load bearing function and ensure constraint-free installation.
- distribution and balance of glass loads in the frame; exclusion of additional loads due to temperature, wind pressure, wind suction and operation
- load transfer via spacers to the load bearing hardware elements and further on to the permanent fixing points and supporting parts of the window
- Frames must be dimensioned solid enough to properly bear the glass unit`s weight.

If the glass unit is supposed to stabilise the frame construction, the glass manufacturer must be consulted! Generally, glass units must not fulfil a load bearing function.

In the case of glazing with a sealant-free rebate region (e.g. dry glazing), spacers must be installed save from shifting and slipping.

On principle, glass edges must not be overloaded. In addition to the proper spacer arrangement, width, length, stability, material compatibility and hardness of the material are relevant factors.

A later sinking of the sash is often caused by inadequate use of glazing blocks.

Spacers that are installed incorrectly or that slipped out of place (see fig. 5) lose their function and then interfere with other functions, e.g.:

- A sash cannot be shut or locked properly anymore.
- Drainage opening is closed and hence unusable.

To bonding of pane, special guidelines according to chapter 08 J Bonding of Pane apply.

08 E 2. Definition of Glazing Blocks

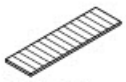
According to the installation situation and function, the following terms are used:

Packers:
Packers transfer the weight of the glass unit to the frame construction.

Spacers:
Spacers ensure the distance between glass edge and rebate floor and guarantee a constraint-free installation. In the case that a sash changes its function, they temporarily assume the task of packers.

Glazing Packers:
Glazing packers guarantee (lengthwise) circumferential vapour pressure compensation in flat glazing rebates. Glazing packers are the basis for the tested block material (packers or spacers). Moreover, they prevent packers or spacers from slipping out of place during assembly.
Glazing packers do not substitute packers or spacers and must not be used as such!

Compensating Blocks:
Compensating blocks bridge the height difference between glazing rebate floor and the upper edge of the glazing bead and provide a flat platform for packers or spacers. Moreover, they fulfil the function of glazing packers. **Compensating blocks do not substitute packers or spacers and must not be used as such!** Alternatively, aluplast offers compensating blocks with integrated 5mm-packers. Accordingly, these may be used as packers (see examples).



example for:
packer (load carrying) /
spacer (distance providing)

example for:
compensating block

example for:
compensating block
with integrated packer

aluplast offers clampable compensating blocks developed especially for the respective system. Mostly, they are provided with frontal flaps that prevent the glazing block resting on it from slipping out of place; partially, they have gaps to allow for an easy screwing to the frame.

08 E 3. Block material

Only plastic blocks consisting of a suitable material (**aluplast**-glazing blocks) may be used. They must feature a sufficient compressive strength and ageing resistance and must not cause chipping at the glass edges.

The glazing block must not change its material properties: In the case of humidity, contact with other materials (e.g. multilayer glass with PVB-foil lamination, cast resin or sealing profiles and sealants etc.) or other influences, a test is recommended.

Material compatibility with contact material must be verified to make sure that the insulated glass will not be damaged in the contact area (e.g. dissolution of glazing edge seal, turbidity etc.)

Wooden glazing blocks are not permitted.

Only glazing blocks tested for durable material compatibility are permitted.

08 E 4. Additional Requirements

Do not use adhesives to fix glazing blocks. Preferably, use clampable blocks. Packers and spacers must get protected against slipping (e.g. by sealing).

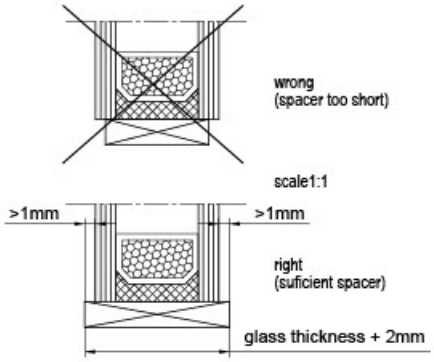
If sealing is required, make sure to use sealing compounds whose compatibility with uPVC is verified by the sealant manufacturer. Before assembly, profiles must be treated with an appropriate bonding agent (primer).

To guarantee vapour pressure compensation, use glazing packers also for flat rebate floors.

No enclosed air gaps may develop and sufficient drainage and / or ventilation must be provided. Moreover, glazing blocks must not obstruct or barricade the vapour pressure compensation (drainage and / or ventilation) (**aluplast** glazing blocks are provided with slots).

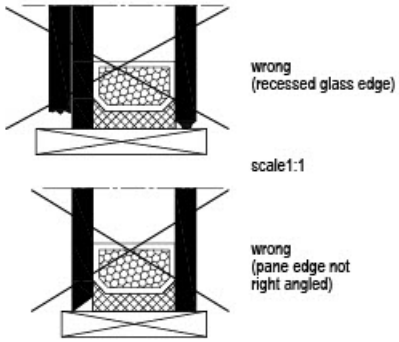
For fire-resistant glazing use the block material indicated in the approval certificate.

fig.1: spacer width
see also fig.3



Risk of glass breakage due to too short spacers.
Better distribution of load and better load transfer to a greater surface at a minimum protrusion of 2mm.
(see also fig.3)

fig.2: spacer stability



Unfavourable loads due to inaccurate glass edges can render the spacer unusable and affect the window's functionality.

08 E 5. Glazing block dimensioning

If not specified otherwise for certain glass articles or glazing by glass the manufacturer, packers and spacers should at least be 2mm wider than the glazing unit's overall thickness (see fig. 1 + 2)(see also fig. 3: glazing block until stop).

The length is determined by the load bearing capacity of the glazing block material and by the pane weight. The length should amount to 100mm to decrease point loading and reduce the risk of breakage of the insulated glass unit. (The supporting surface of a glazing block with a block length of 80mm is 25% smaller than the supporting surface of a 100mm block).

The thickness is determined by the dimensions of the glass unit, the glazing rebate height and the rebate formation and should amount to at least 5mm. The thickness of glazing blocks for small panes (edge length up to approx. 500mm) can exceptionally be reduced to 3mm.

For **aluplast**-profiles, 5mm-glazing blocks are used generally. Exceptions are indicated in the system drawing.

aluplast-blocks are marked by the following colours:

glazing block thickness d [mm]	colour code
1	white
2	blue
3	red
4	yellow
5	green

Attention: Other glazing block manufacturers may use a different colour code.

08 E 6. Further information

The present information does not substitute generally recognized regulations. It constitutes only a proposal that shall contribute to show approved solutions for professional blocking.

Many years of practical knowledge show that the insertion of glazing blocks often requires compromises. For this reason, consult the respective insulated glass manufacturer and the glazing block- and window manufacturer as well as renowned test institutes.

- Technical guidelines and operating instructions:
  - Glazier trade
  - Insulated glass manufacturers
  - Sealant manufacturers
  - Glazing block manufacturers
- Renowned test institutes
- VOB part C DIN 18361 Glazing Work, current status
- DIN 18545 "Sealing of Glazing"
- Technical Rules for the Use of Glazing with Linear Supports, German Institute for Building Technology, Berlin, current status

08 E 7. Glazing block arrangement

The glazing block arrangement depends on the way of opening. See the examples on the following pages.

The glazing block must always be straight and parallel to the glass edge. (See fig. 3)

To guarantee an optimal load transfer, the glazing block must receive the glass unit in its entire thickness (glazing + min. 2mm). (See fig. 1 + 3)

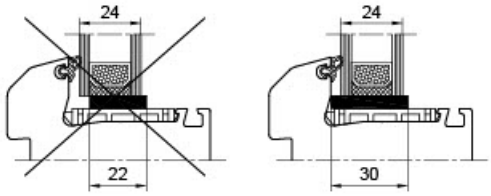
Distance of packers to the glass unit`s corners: as per drawing (see fig. 6).

To adjust the main profiles` glazing rebate floor, clampable **aluplast**-compensating blocks are pressed in (fig. 4). They must not cap drainage and / or ventilation openings.

example based on IDEAL 4000

fig.3: glazing block until stop

scale1:2



wrong
(spacer too short)

right
(spacer until stop)

The glazing block should reach the stop to make sure
that also the non-visible glass edge region is supported
and that the block rests straight and parallel to the glass edge.

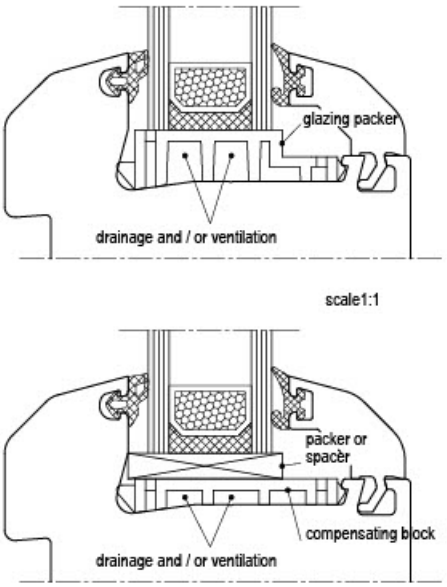
After inserting the glazing blocks, check the sash`s functionality. If the sash cannot be opened and closed properly, the glazing blocks must be exchanged. After that, glazing beads are to be inserted preferably mitre fitted.

To rule out the danger of corner breakage, insert glazing beads without excess length.

Use a dead blow plastic hammer to drive in the glazing beads.

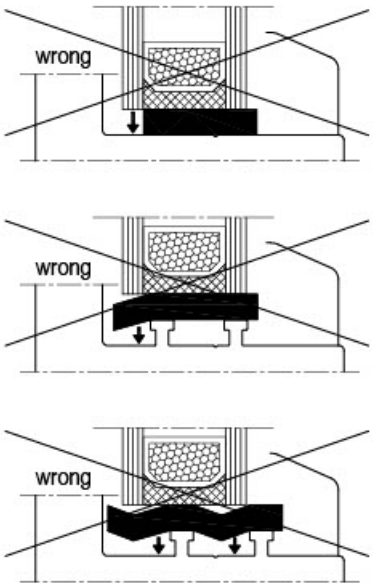
example based on IDEAL 4000

fig.4: correct glazing block position



In the case of security alarm glasses, take care not to jam or damage cables and cable connections when inserting the glazing blocks.

fig.5: wrong glazing block position



Such constructions can cause glass breakage or damage the glass edge sealant since glazing blocks often are arranged inconsiderately or wrongly.

Note:

The **aluplast**-guidelines are only a suggestion and do not enclose any warranty.

The **aluplast**-guidelines do not relieve you from your responsibility to plan and effect the proper glazing block arrangement.

All specifications concerning glazing blocks are based on general knowledge and experience.

As working conditions in this regard are beyond our sphere of influence, we recommend ensuring suitability for your processing purpose.

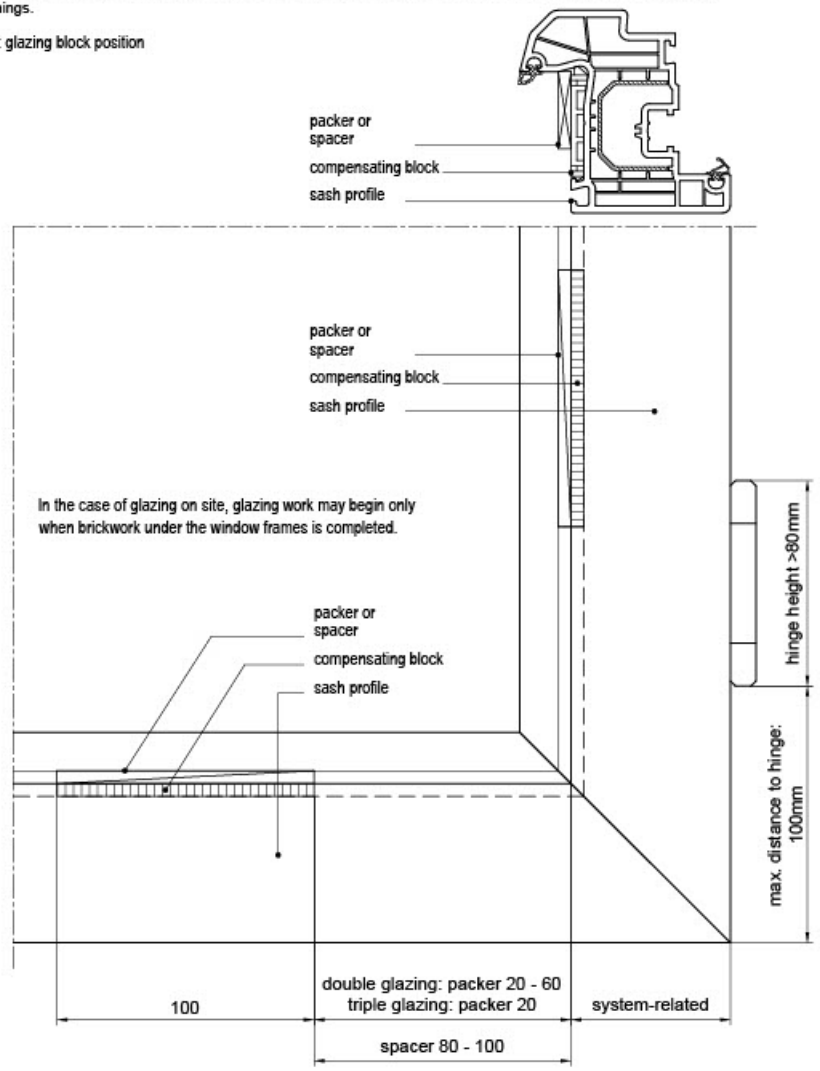
Any warranty claim against the glass manufacturer can only be asserted if all glazing and glazing block guidelines have always been respected.

Our instructions or a verbal consultation do not incur any liability except in case of intent and gross negligence.

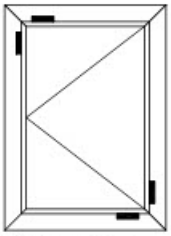
Example based on IDEAL 4000

The distance from the packers to the glass unit's corners should amount to 20 - 60mm in the case of double glazing, and to 20mm in the case of triple glazing. The distance of the spacers should amount to approximately 1 block length (approx. 100mm) (see fig. 6). In the case of very wide fixed glazing, this distance can be increased to 250mm.
In this case, packers must be placed over a fixing point of the frame and must not cap drainage and / or ventilation openings.

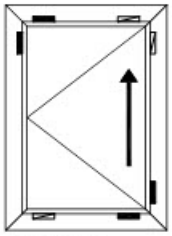
fig.6: glazing block position

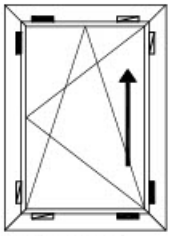


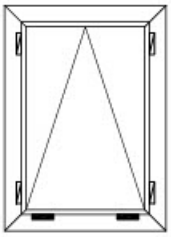
Suggestions for the application of glazing blocks in even glass panes

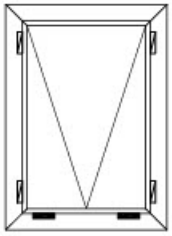

single-opening sash

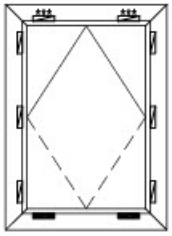

tilt + turn sash

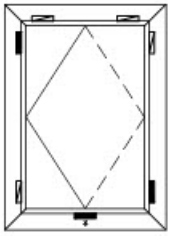

lift + turn sash


lift- tilt + turn sash

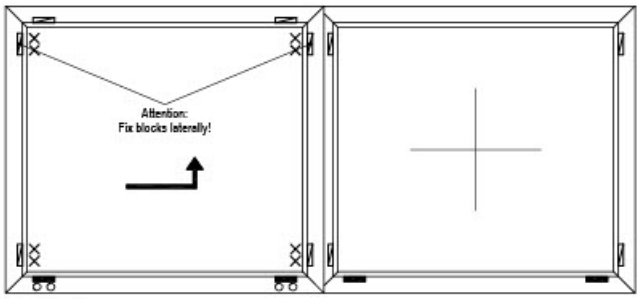

bottom-hung sash


top-hung sash


pivot sash
(horizontal)


pivot sash
(vertical)


fixed glazing



lift + slide door

packers
Tragklötze
cales d'appui

packers
on rollers

spacers
Distanzklötze
cales d'ecartement

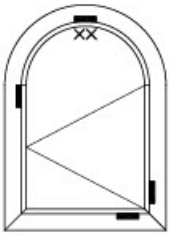
spacers or packers of
elastomeric plastic material
(60° to 80° Shore A)
Distanz- oder Tragklötze aus elastomeren Kunststoff
cales d'ecartement

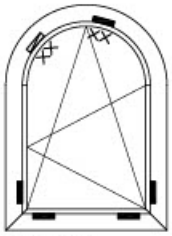
In the case of glass units wider than 1m, two packers of a length of 100mm must be placed over the rotation bearing.

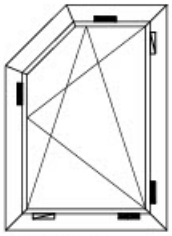
Spacers become packers when sash is pivoted.

General Handling Guidelines
Glazing Blocks

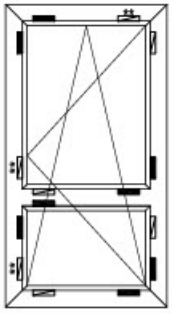
Suggestions for the application of glazing blocks in special cases

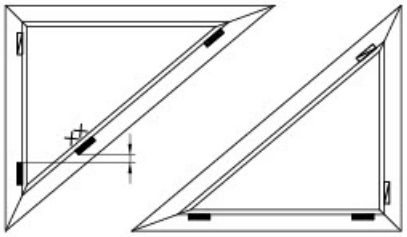

single-opening


tilt + turn sash

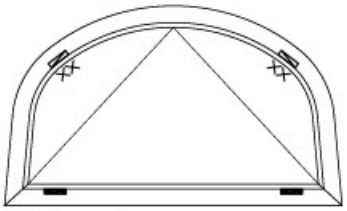

tilt + turn sash

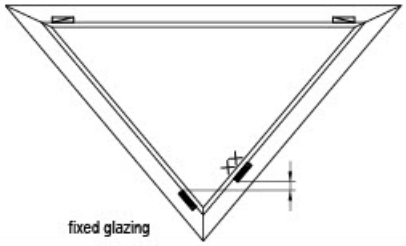

tilt + turn sash
balcony door


tilt + turn sash
balcony door with transom


fixed glazing

fixed glazing


bottom-hung sash


fixed glazing

Note:
The possibilities presented here are only examples. Constructions not presented here must be determined according to each individual case. The general guidelines for the glazing block arrangement must be respected.

packers
Tragklötze
cales d'appui

spacers
Distanzklötze
cales d'ecartement

spacers or packers of elastomeric plastic material (60° to 80° Shore A)
Distanz- oder Tragklötze aus elastomeren Kunststoff
cales d'ecartement

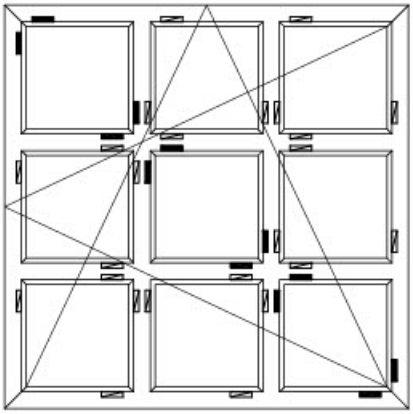
locking point blocks = spacers
(for a higher stability and burglary resistance)

General Handling Guidelines Glazing Blocks

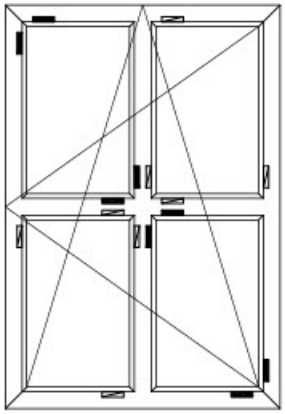
Suggestions for the application of glazing blocks in cross transom windows

If the glazing is divided by transoms, each field must be provided individually with glazing blocks, beginning with the diagonal according to the way of opening.

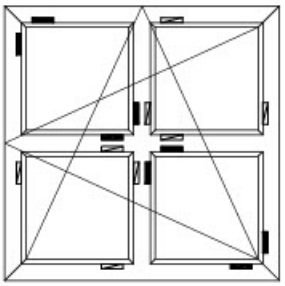
In the case of windows divided by transoms, distinction must be made between even and uneven field distribution. In the case of even field distribution (examples 1 – 3), all fields in the diagonal must be provided with glazing blocks according to their way of opening. In the case of uneven field distribution (example 4), it may occur that fields next to the diagonal are stressed, too. They require the same glazing block arrangement as the fields in the diagonal.



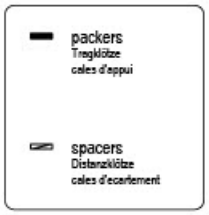
example 1:
even field distribution

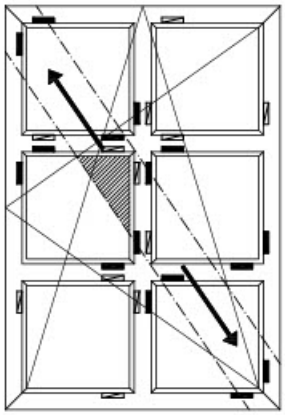


example 2:
even field distribution



example 3:
even field distribution

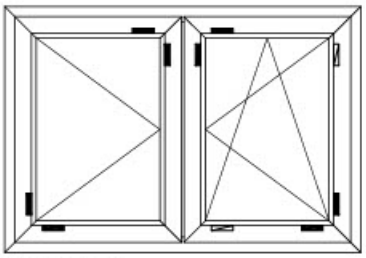




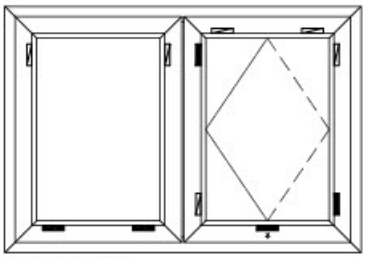
example 4:
uneven field distribution

Suggestions for the application of glazing blocks in composite windows

A composite window is a combination of two sashes within one frame.
Sashes are to be blocked according to their way of opening.



composite window
single opening / tilt + turn sash



composite window
fixed glazing / vertical pivot window

packers
Tragklötze
cales d'appui

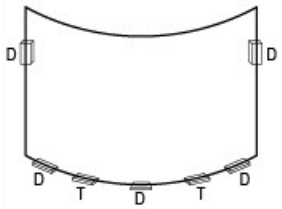
spacers
Distanzklötze
cales d'ecartement

In the case of fixed glass units wider than 1m, two packers of a minimum length of 100mm are to be placed over the rotation bearing.

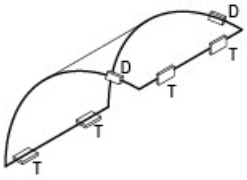
Suggestions for the application of glazing block in curved single-pane and insulated glasses

Curved single-pane and insulated glasses must be provided with glazing blocks like even glass panes.

system 1



system 2



T = packers of elastomeric plastic material (60° to 80° Shore A) prevent the pane from tilting over.

D = also made of elastomeric plastic material (60° to 80° Shore A), weight is borne only by packers

System 1: Weight is transferred to the curved bottom glass edge and from there, via the packers, to the frame construction and further on to the supporting structure.

System 2: Glass weight and wind load are distributed over the entire glass edge. Consider this fact particularly for the choice and arrangement of glazing blocks. Tolerances of curved glazing must be supported by the blocks.

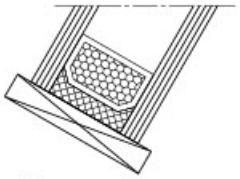
Suggestions for the application of glazing blocks in inclined glazing and overhead glazing

The glass weight must be transferred to the block (fig. 7). Glass edges must not be overloaded and contact between glass and metal or glass and glass must be avoided in any case.

Use spacers to prevent the pane from slipping out of place. The distance between the rebate floor and the pane edge must amount to at least 5mm. Due to the special requirements, an elastic bearing of pane edges is recommended.
For construction details please see the technical rules "Overhead Glazing" of the German institute for construction technology, Berlin (DIBt).

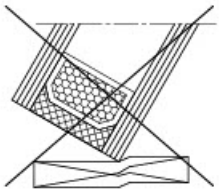
Furthermore, special guidelines of the glass manufacturer must be observed in any case.

fig.7: inclined glazing / overhead glazing



right

even load distribution in the block and frame constructions



wrong

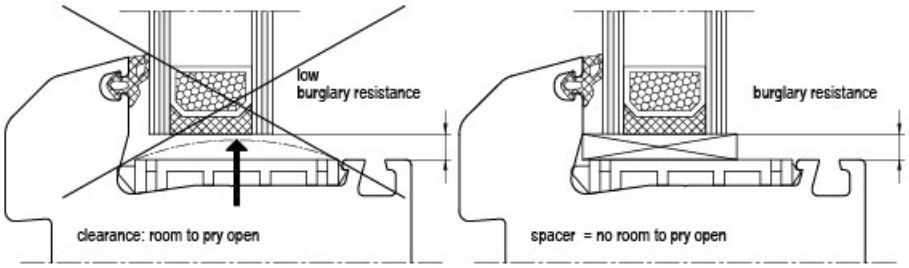
point load = damage of glass edge and glazing block, excessive load impact on frame

Higher stability and burglary resistance

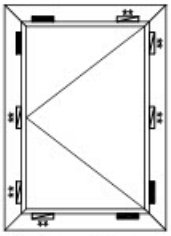
For a higher stability of uPVC windows, additional spacers can be inserted over the locking points to reduce the risk that windows are pried open. (fig. 8)

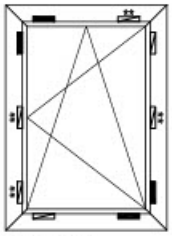
Locking points are provided with glazing blocks at the end. Take care not to overload or damage the glass edges (respect basic requirements).

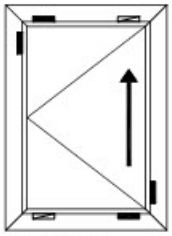
fig.8: burglary resistance (example on basis of IDEAL 4000)

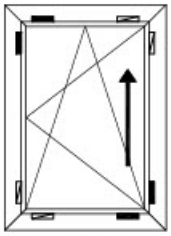


Blocking suggestions for a higher stability and burglary resistance

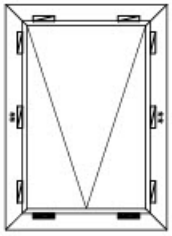

single-opening sash

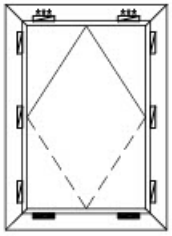

tilt + turn sash

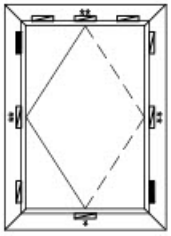

lift + turn sash

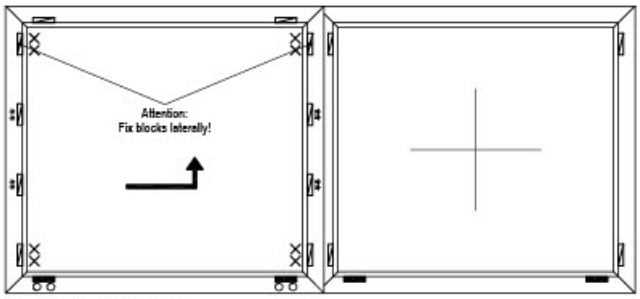

lift - tilt + turn sash


bottom-hung sash


top-hung sash


pivot sash (horizontal)


pivot sash (vertical)



lift + slide door (horizontal)

packers
Tragklötze
cales d'appui

packers on rollers

spacers
Distanzklötze
cales d'écartement

spacers and packers of elastomeric plastic material (60° to 80° Shore A)
Distanz- oder Tragklötze aus elastomeren Kunststoff
cales d'écartement

In the case of glass units wider than 1m, two packers of a length of 100mm must be placed over the rotation bearing.

Locking point blocks = spacers (for a higher stability and burglary resistance)

Spacers become packers when sash is pivoted.