

## Sky-Frame

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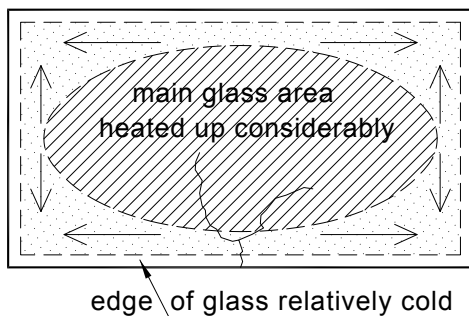
## Sky-Frame

### Glass

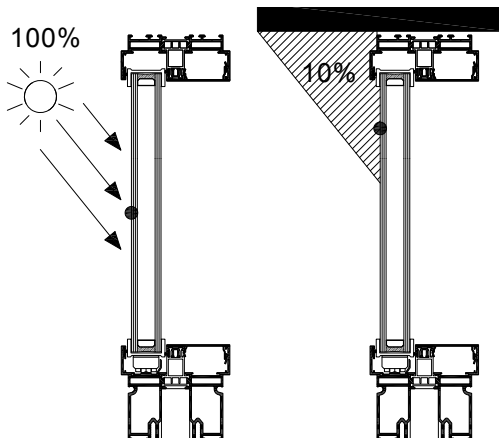
#### Thermal shock basics

#### Thermal shock basics

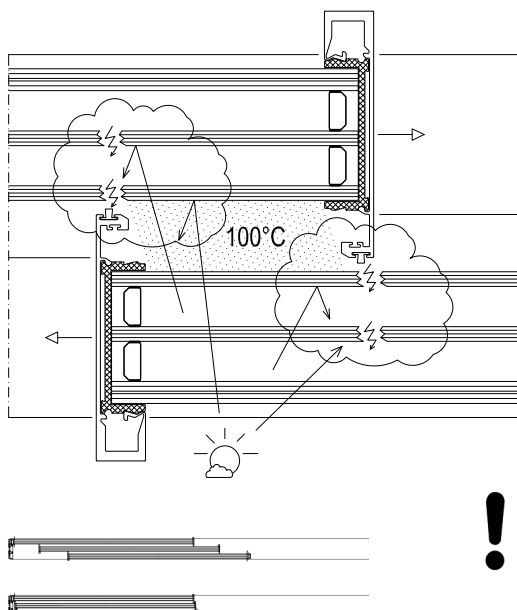
1)



2)



3)



Special attention must be paid to the problem of thermal shock with sliding glass panels.

#### 1) Glass zone heating:

With large areas of glass the central area heats up much more in summer than the edge area, which is often embedded in the frame.

#### 2) Partial shading:

Partial shading because of an awning or side wall also leads to areas that are colder than the areas that are exposed to direct sunlight.

#### 3) Package heating:

Extremely high temperatures also occur in the intermediate spaces between partially and fully open panes of glass that are behind each other.

#### -> Tension differences:

This causes extremely high temperature differences inside the glazing, and appropriately high tension differences.

#### => Avoiding thermal shock:

In order to prevent spontaneous breakages because of possible tension spikes, **low iron glass** (heats up less, stronger) or even **HS** (heat strengthened) glass must be used for the laminated glass.

#### ATTENTION!

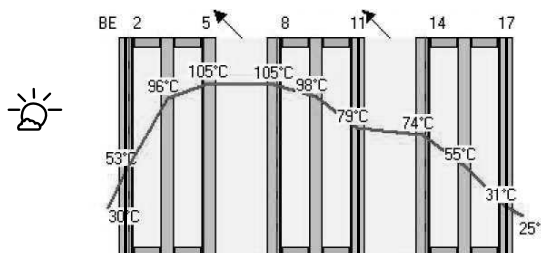
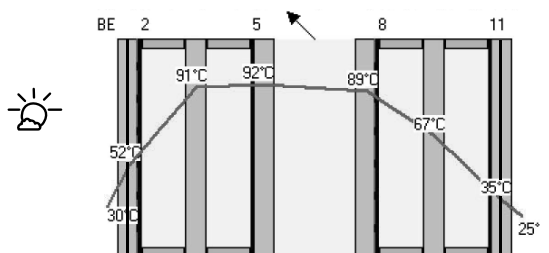
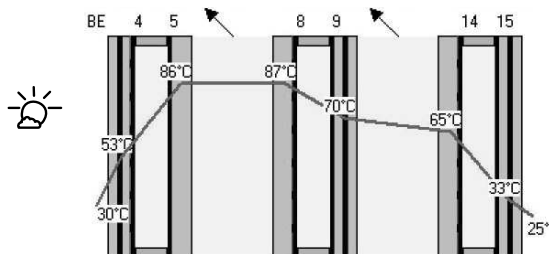
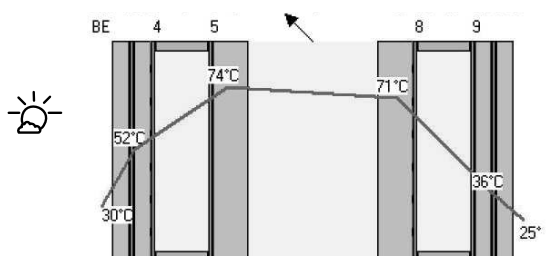
Objects must be placed **at least 30cm** away from the glazing!

## Sky-Frame

### Glass

### Preventing thermal shock

#### Preventing thermal shock



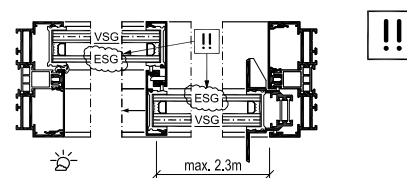
Making the correct choice and using the glass correctly minimises the occurrence of thermal shock considerably.

#### ATTENTION!

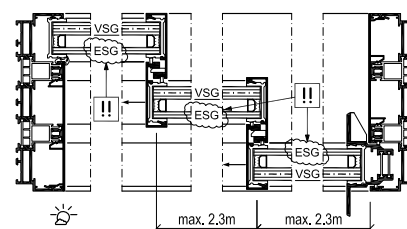
Erroneous arrangement of the glass can cause thermal tension cracks! The outer two units must have the (ESG) TSG-H FACING EACH OTHER.

#### Sky-Frame 2 with double-glazing (2-IG):

LSG made from float glass (VSG-F) is suitable if correctly installed.



**Typ A**  
ESG-H 8  
VSG-F 8-2\*(P)  
[ 40 kg/m<sup>2</sup> ]  
R<sub>w,P,Glas</sub> = 40 dB

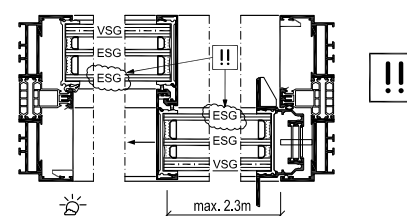


**Typ B**  
ESG-H 6  
VSG-F 8-2\*  
[ 35 kg/m<sup>2</sup> ]

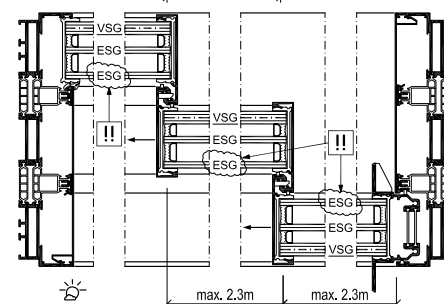
[Pg.3.3.3.1]

#### Sky-Frame 3 with tripple-glazing (3-IG):

LSG is ALWAYS made from low iron glass (VSG-WG), since it is more transparent, stronger and collects less solar energy.



**Typ A**  
ESG-H 8  
ESG-H 8  
VSG-WG 8-2  
[ 60 kg/m<sup>2</sup> ]



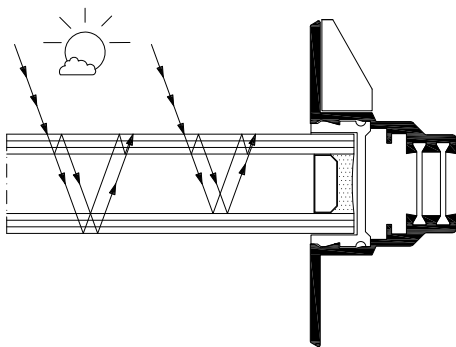
**Typ B**  
ESG-H 6  
ESG-H 6  
VSG-WG 8-2  
[ 50 kg/m<sup>2</sup> ]

**Typ C = A**  
(spez) VSG 12-2  
ESG-H 8  
ESG-H 8  
[Pg.3.3.3.1]

## Sky-Frame

### Glass Properties

#### Physical features



Excluded from evaluation and therefore **no reason for complaint are:**

- **Interference phenomena**  
(spectral colour phenomena because of light wave overlaying, caused by parallel panes of glass)
- **Double pane effect**  
(concave or convex visual distortion, caused by air pressure fluctuations)
- **Anisotropies**  
(appearance of dark rings/marks when looking through polarised lenses, with heat-treated panes of glass)
- **Uneven wetting of glass surfaces**  
(due to rolling during production or stickers on the glass)
- **Condensation on the outer surfaces**  
(dew formation on extremely efficiently insulating panes of glass)

#### Inherent colour

All of the materials used in glass products have raw material-related inherent colours, which can become more distinctive as the glass becomes thicker. Coated glass also has an inherent colour. This can manifest itself in different ways when looking through or at the glass. Fluctuations in the colour impression are possible because of the ferrous content of the glass, the coating and because of variations in glass thickness and pane structure, and cannot be avoided.

#### Edge connection

In the visible area of the edge connection and therefore outside the internal glass surfaces, manufacturing-related features may be discernible in insulated glass on the glass and the spacing frame.

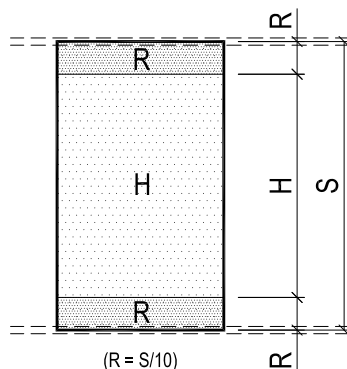
The permitted deviations in the parallelism of the spacer in relation to the straight edge of the glass can be a total of 4mm up to a limit edge length of 2.5m, and 6mm for longer edge lengths.

#### Outer surface

In the event of mechanical or chemical outer surface damage that is detected after glazing has taken place, the cause must be determined from case to case.

## Sky-Frame

### Glass Tolerances



#### Tolerances

Individual irregularities can occur during the manufacture of large panes of insulating glass. Sky-Frame provides you with better glass quality by means of stricter criteria compared to the usual guidelines

Visibility from inside to outside from a distance of at least 1m through the glass is generally decisive, whereby complaints cannot be accepted. Testing takes place in diffused daylight (cloudy sky) without direct sunlight or artificial lighting.

<b>Sky-Frame Tolerance Table:</b> (not valid for curved glass) <b>Insulating glass with float glass, PPG/TVG, TSG/ESG (coated / uncoated)</b>			
Zone:	Permitted area:	Sky-Frame 2 (2-IG)	Sky-Frame 3 (3-IG)
<b>R</b>	<b><u>Inclusions, bubbles, spots, marks:</u></b> Window area $\leq 1\text{m}^2$ Window area $> 1\text{m}^2$	max.2 pcs. @ $\leq 3\text{ mm } \varnothing$ max.1 pc. @ $\leq 3\text{ mm}^* \varnothing$ (* = per metre of edge length)	max.3 pcs. @ $\leq 3\text{ mm } \varnothing$ max.1 pc. @ $\leq 3\text{ mm}^* \varnothing$ (* = per metre of edge length)
	<b><u>Residue (punctual) in intermediate window space (IWS):</u></b> Window area $\leq 1\text{m}^2$ Window area $> 1\text{m}^2$	max.2 pcs. @ $\leq 3\text{ mm } \varnothing$ max.1 pc. @ $\leq 3\text{ mm}^* \varnothing$ (* = per metre of edge length)	max.3 pcs. @ $\leq 3\text{ mm } \varnothing$ max.1 pc. @ $\leq 3\text{ mm}^* \varnothing$ (* = per metre of edge length)
	<b><u>Residue (punctual) in IWS:</u></b> whitish grey or transparent	max.1 pc. $\leq 2\text{ cm}^2$	max.1 pc. $\leq 3\text{ cm}^2$
	<b><u>Scratches:</u></b> Individual length = Sum total of individual lengths =	max. 15 mm max. 45 mm	max. 25 mm max. 70 mm
	<b><u>Hairline scratches:</u></b>	not grouped** $\leq 0.5\text{ mm } \varnothing$	not grouped** $\leq 0.5\text{ mm } \varnothing$
<b>H</b>	<b><u>Inclusions, bubbles, spots, marks:</u></b> Window area $\leq 1\text{m}^2$ $1\text{m}^2 < \text{window area} \leq 2\text{m}^2$ Window area $> 2\text{m}^2$	max.1 pc. @ $\leq 2\text{ mm } \varnothing$ max.2 pcs. @ $\leq 2\text{ mm } \varnothing$ max.3 pcs. @ $\leq 2\text{ mm } \varnothing$	max.2 pcs. @ $\leq 2\text{ mm } \varnothing$ max.3 pcs. @ $\leq 2\text{ mm } \varnothing$ max.4 pc. @ $\leq 2\text{ mm } \varnothing$
	<b><u>Scratches:</u></b> Individual length = Sum total of individual lengths =	max. 8 mm max. 23 mm	max. 12 mm max. 35 mm
	<b><u>Hairline scratches:</u></b>	not grouped** $\leq 0.5\text{ mm } \varnothing$	not grouped** $\leq 0.5\text{ mm } \varnothing$
<b>R+H</b>	<b><u>Same max. amount blemishes as zone R</u></b> Inclusions, bubbles, dots, marks etc. of $0.5 < 1.0\text{ mm}$ are permissible without an area limit, except for groupings**. ** = Grouped: grouping exists if there are at least 3 inclusions, bubbles, spots, marks etc. within a circle with a diameter of $\leq 20\text{ cm}$ .		
<b><u>Notes:</u></b> Complaints about blemishes $\leq 0.5\text{ mm } \varnothing$ are not taken into consideration. Existing blemishes (accumulation) must not be bigger than $3\text{ mm } \varnothing$ .		<b><u>Tolerances for insulating glass with laminated glass:</u></b> 50% increase in limits for zones R and H.	

## Sky-Frame Arc

### Glass

#### Tolerances of curved glass

##### Curved glass

Curved glass is made by a hot bending process (600°C) into the desired shape. This technically demanding operation has impacts on the visual quality.

The other types of geometry has an impact on both the sound insulation as well as the anti-fall protection.

Derived from: Guide to thermally curved glass in construction (BF leaflet 009/2011)

##### Visual quality



In addition to the Sky-Frame glass tolerances, coating defects and surface impressions are permitted in curved glass. The assessment of quality is made from 3m distance.

The color impression and the review are influenced by the curvature of the glass, which can lead to differences from plan glasses.

The optical quality is highly dependent on the interaction of development length, bend radius and length of the glass. As general rule for the acceptable range of quality, following parameters are mentioned:

- Height of the glass: min. 1.5m - max. 3m
- Glass-radius: min. 2.5m - max. 10m
- Glass processing length: min. 1m - max. 2m

With different parameters, we recommend the creation of glass models to assess the visual quality.

##### Sound insulation

As a guideline, values can be used from flat glass. For precise statement testing is necessary.

##### Anti-fall protection

The evidence of shock resistance (TRAV) does not apply to curved glass.

##### Storage and transport

Glazing must be stored without glass-stress in a vertical position. Transportation must be carried out so that all glasses are kept evenly.

##### Glass structures and sizes

Application situation, sizes and glass specifications should be verified by Sky-Frame.

## Sky-Frame

### Glass Condensation

#### External condensation



The external glass is in a direct "radiation exchange" with the sky. Depending on the installation situation, this radiation exchange can now lead to considerable cooling of the external glass (particularly on clear nights).

If the temperature of the outer glass surface drops below the temperature of the adjacent outside air, this will result in the formation of condensation on the outer surface of the glass (even ice in certain cases).

This procedure is generally known in nature as dew or hoar frost formation.

Heating of the outer surface and the outside air (by the morning sun, for example) will cause the condensation to disappear again.

This phenomenon is not a malfunction, but is **an indication of the outstanding heat insulation** and the functionality of the insulating glass that is used.



#### **The following generally applies to any insulating glass:**

The lower the heat transmission (the smaller the  $U_g$  value or also: the better the insulating glass) the warmer the glass remains at the room side and therefore the colder the outside glass, which may become fogged.

Because of the improved insulation of triple-glazed units, condensation is more likely to form on the surface of the outer glass layer more frequently than with double-glazed units.

#### Internal condensation

The formation of dew on the room-side pane of glass is assisted if the air circulation is blocked (protruding soffits, curtains, unfavourable radiator arrangement, lack of ventilation) and the ambient air is too humid.

The ambient humidity must be adapted to the situation accordingly (dehumidifier, convector).

## Sky-Frame

### Glass Cleaning and care

#### Cleaning and care



As part of the facade, glass is subject to natural soiling. In order to provide problem-free use, certain points must be adhered to during cleaning and care.

Normal soiling is not a problem for glass. Plenty of clean water should be used in order to avoid a scouring effect caused by dirt particles.

Suitable tools:

- Soft, clean sponges
- Leather / cloths
- Rubber wiper

The cleaning effect can be assisted by using cleaning agents that are as neutral as possible or normal commercial household glass cleaner.

If the soiling consists of grease or sealant residue, normal commercial solvents such as white spirit or isopropanol can be used for cleaning.

#### Non-permissible materials

Float

TSG-HST

Of the chemical cleaning agents that are available, do NOT use alkaline solutions, acids or materials containing fluoride.

The use of pointed, sharp metal objects (blades and knives) or scraping off with a glass scraper can cause surface damage and deep scratches, and is not permitted! Scratches may only become visible after a certain time with TSG-H due to its surface tension.

#### IMPORTANT NOTES

The following points must be observed during glass cleaning:

- Use normal commercial glass cleaning products
- Rinse cloths as often as possible
- Grains of dirt in cloths can scratch the glass
- Do not use abrasive or scouring materials
- Do not use alkalis (lyes)
- **Pay attention to the information on the glass adhesive**



#### **CAUTION!**

**NEVER use metal blades!!**

These can cause severe damage to TSG-HST glass!



## Sky-Frame

### Structural situation Ceiling lowering

#### Building connections

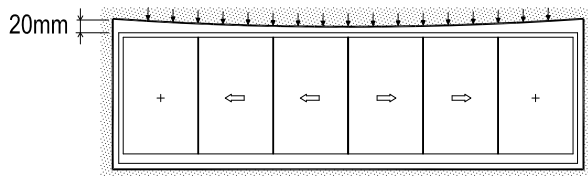


A considerable amount of attention is paid to the building connections with Sky-Frame.

Because of the fact that the element frames are installed flush all round, as well as the base detail, it is particularly important to provide the possibility of absorbing any tolerances and subsequently occurring ceiling lowering as far as the soffit connection is concerned. For structural reasons, the element frame is screwed directly to the building - it is not possible to have a floating ceiling connection.

In order to make it possible to have long span widths in spite of this, a system for subsequent height adjustment has been developed for Sky-Frame that has proven to be extremely good.

#### Ceiling lowering

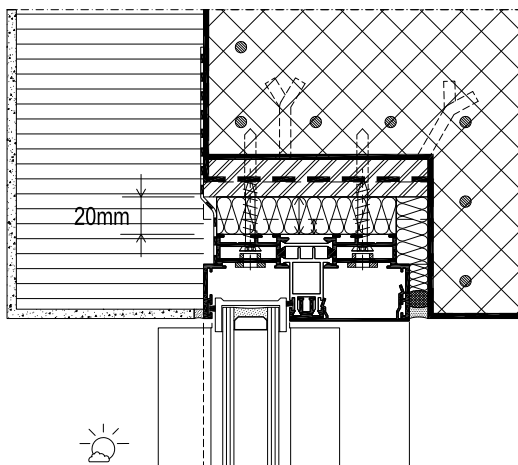


The majority of the lowering of concrete ceilings takes place during the first two weeks after stripping. We therefore recommend that the dimensions should not be measured immediately after stripping.

It is advisable to install the Sky-Frame frame after introducing the permanent loads, when the majority of ceiling lowering has taken place.

In spite of this, the soffit may lower slightly over the course of several years because of the "concrete creeping".

#### Solution



It is advisable to adhere to the following points:

- Embed solid core panels in the formwork
- Measure dimensions 2 weeks after stripping
- Do not install frame until permanent loads have been attached
- Height of soffit profile must be adjustable  
(use **soft filler material** for the adjusting height)

If lowering occurs after installation, the soffit frame profile can be re-adjusted upwards through the screw locking mechanisms.

Lowering that occurs can be compensated for due to the soft, 20mm thick insulation layer between the solid core panel and the frame profile.

## Sky-Frame

### Structural situation No thresholds

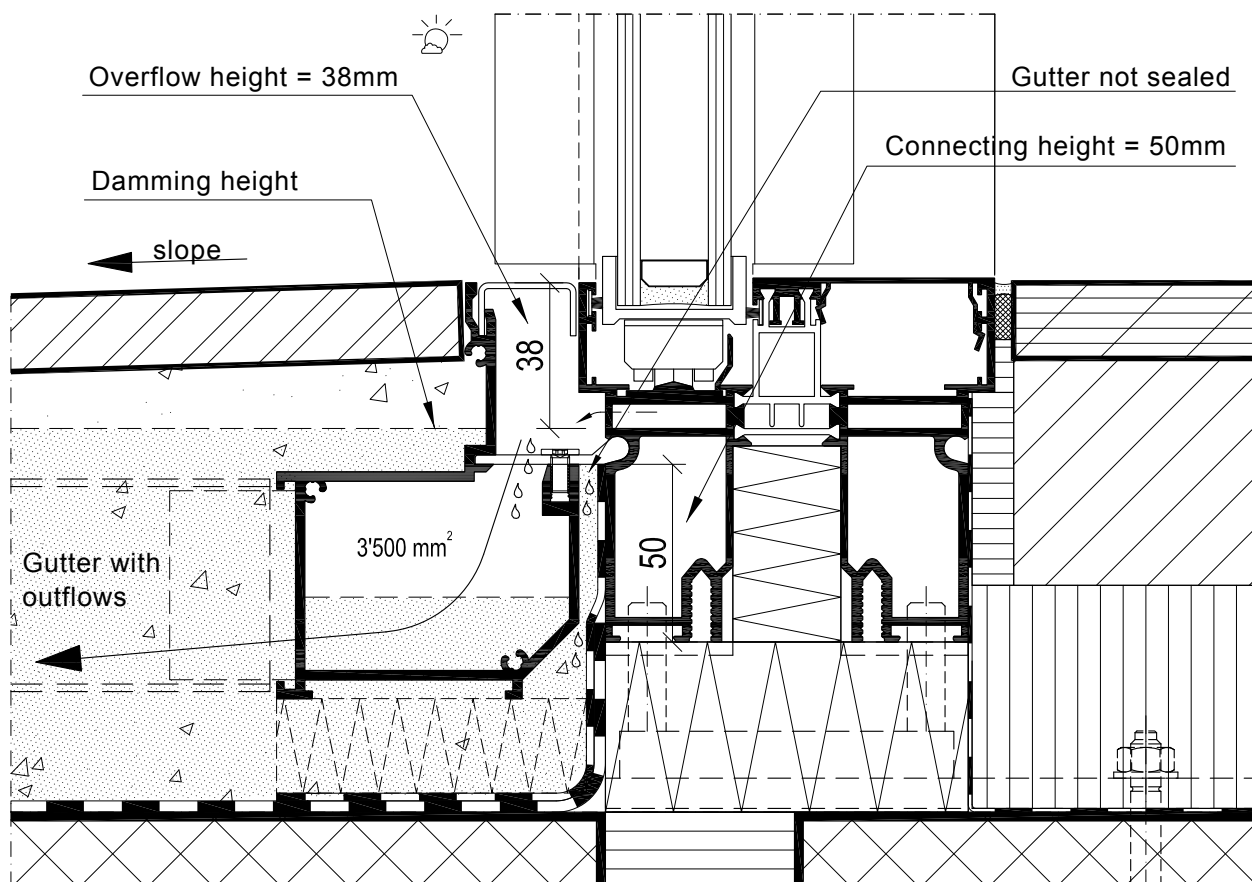
#### No threshold



The optimum space effect of Sky-Frame requires the formation of threshold-less transitions. In order to make these comply with regulations, the following points must be adhered to (all of which are complied with by Sky-Frame).

#### Standard: SIA 271, Point 5.2 (Switzerland)

- Building seal attached to the outside of the base profile (e.g. with liquid plastic, sealed by specialist company)
- Slope of outside surface away from the element
- Drainage channel in front of base profile
- Drainage cross-section at least 2,000mm<sup>2</sup>  
OR wooden deck with at least 5% joints, width ≥ 8mm
- Connect gutter to drainage system separately  
OR lead outside the building and drain
- Grills to be removable for cleaning
- Seal must have connecting height of at least 50mm
- Overflow height must be at least 25mm



## Sky-Frame

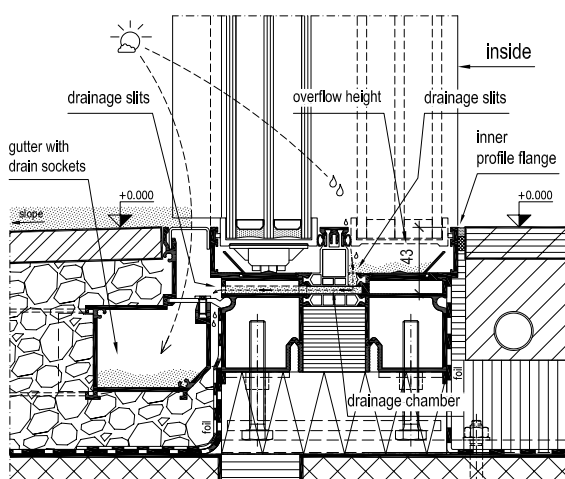
### Structural situation Resistance to heavy rain

#### Resistance to heavy rain

During the development of the Sky-Frame sliding window system, special attention was paid to leak tightness and this was tested thoroughly (-> next page). Water in the inner track is led away in a controlled manner during strong rain and wind (driving rain). This is part of the drainage concept, and is not a defect.

#### Causes and remedies

Possible causes of water in the inner track:

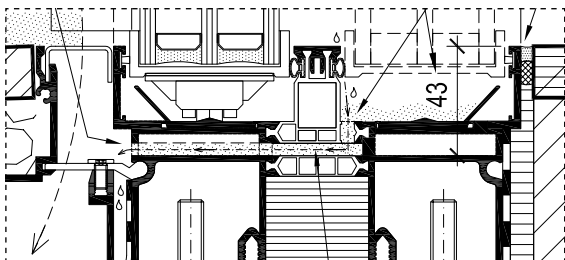


- 1) Blocked drains in the outer gutter, leaving large quantities of water on the forecourt.  
-> Lift gutter covers and check permeability of drain sockets
- 2) Blocked drainage slits in base profile, which are preventing the system water from flowing away.  
-> Lift gutter covers and check front drainage slits.  
-> Check drainage slits in base profile for permeability (vacuum out with a vacuum cleaner and test permeability with water)
- 3) In the event of extremely heavy rain in combination with strong wind, water may get in through the brush and rubber seals that are normally used in sliding windows. The water has difficulty flowing away against the strong wind and remains on the inner track. Since the base profile must not have a slope (sliding window), puddles can form because of the water adhesion that subsequently evaporate.

**In spite of the water in the track, there is no risk of structural damage.**

Rust cannot form because all parts are made from rust-proof stainless steel, aluminium or plastic.

#### Base profile and leaktightness



The leak tightness of the base profile is guaranteed:

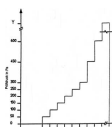
- The internal profile drainage of the tracks leads through a special, leaktight drainage chamber.
- The base profile is sealed with water-impermeable film at Sky-Frame both outside and inside.
- The water would have to cross the inner profile flange (overflow height) before the building structure could become damaged.

## Sky-Frame

### Structural situation

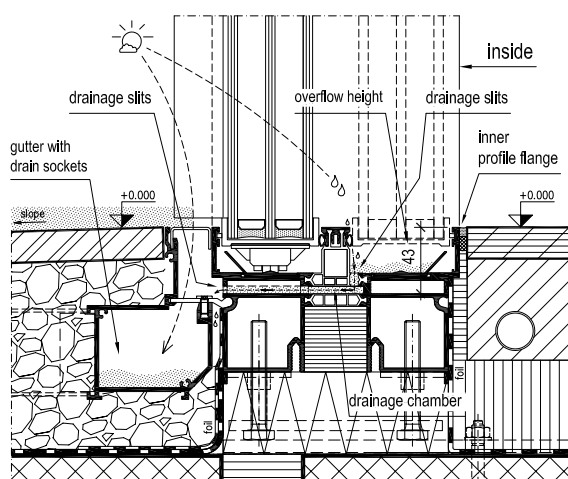
#### Test of resistance to heavy rain

#### Test of resistance to heavy rain



During the test of resistance to heavy rain according to EN 1027, the test item is sprayed with water using nozzles and subjected to high static pressure at the same time. The window is classified according to the pressure at which water penetration did not yet occur.

#### Water penetration and overflow height



According to point 3.3 of the EN 1027:2000 standard, water penetration is considered to be “continuous or repeated wetting of the inside of the test object or parts of the test object that are not allowed to become wet when the water returns to the outside”. The inside of the test object corresponds to the inside of the frame profile, i.e. the location where the building connection (e.g. the floor) adjoins.

If water penetrates the structure, which cannot always be prevented completely with windows and is not a defect, it is important for the water to be able to be led away again in a controlled manner according to plan. No water must reach the inside.

All Sky-Frame frame profiles have an overflow height of several centimetres, which the water has to overcome before it reaches the inside and could cause damage. The high pressure acts against the flow direction of the water.

### Classification

Extract from test report:

pressure [Pa]	classification (test method A)	test result / comment
0	1A	no water entry
50	2A	no water entry
100	3A	no water entry
150	4A	no water entry
200	5A	no water entry
250	6A	no water entry
300	7A	no water entry
450	8A	no water entry
600	9A	no water entry

The Sky-Frame systems have been tested in accordance with the EN 1027 standard and achieved the following leaktightness:

#### Resistance to heavy rain\* up to class 9A (EN 12208)

This class means 55 minutes of rain at an exposed (unprotected) location with an intensity of 240 mm/h and continuously increasing outside pressure up to 600 Pa. In German-speaking countries 17 mm/h or more of rain are considered to be driving rain – and rain like this usually only lasts for several minutes. On the other hand, tropical storms reach values of 130 mm/h.

### Maintenance



\* if in compliance with the scopes

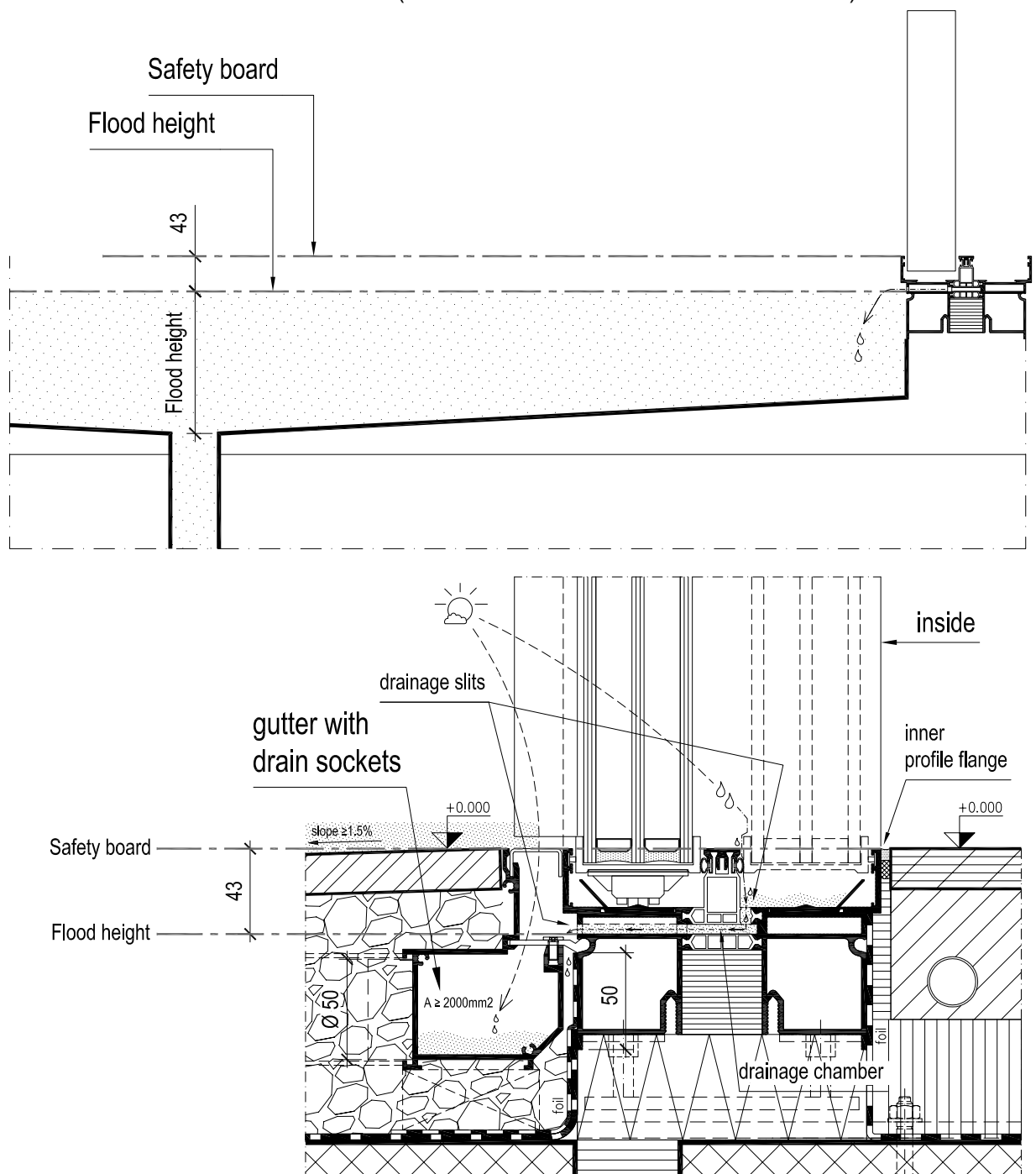
In order to ensure that the water flows away in the best possible way, the drainage holes must be kept clean at all times. This can be done using a vacuum cleaner and subsequent water drainage checking. Recommendation: 1x / month

## Sky-Frame

### Structural situation Flood height

#### Flood height

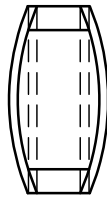
The thoughtful Sky-Frame base detail has an additional overflow security against the prescribed safety board, which must be at least 25mm above the flood height (in accordance with the standards SIA 271).



## Sky-Frame

### Structural situation Insulation glass effect 1

#### Insulation glass effect 1



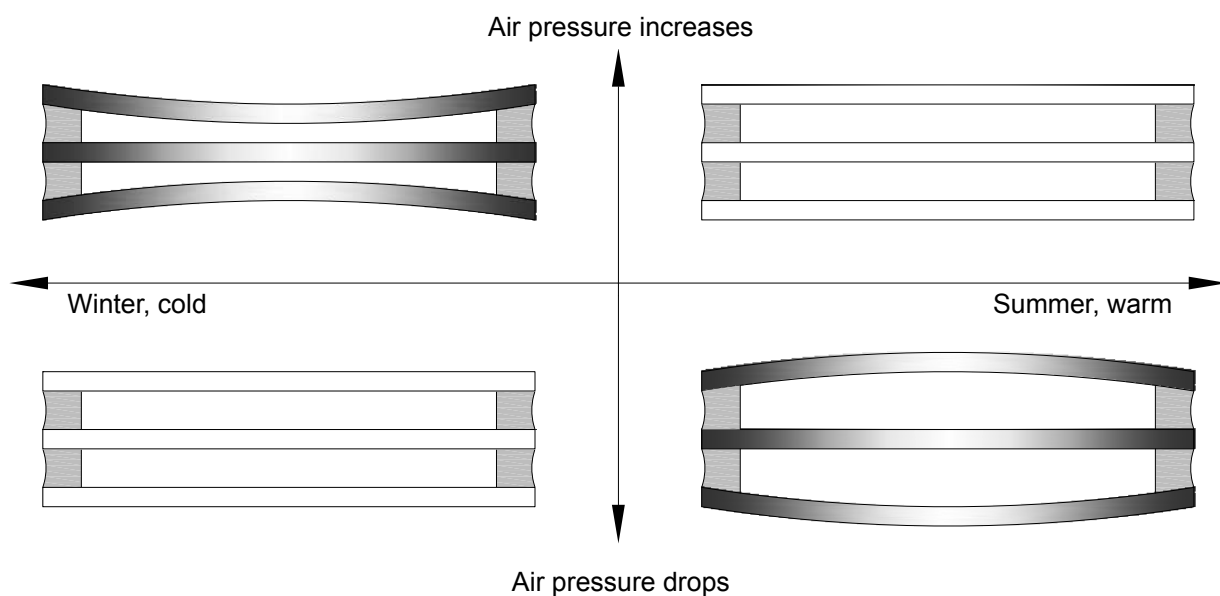
Insulation glass works in a similar way to an aneroid barometer. During the manufacture of insulation glass, a quantity of noble gas (usually argon) that is determined by the format of the panes and the size of the gap between the panes is hermetically sealed between them.

This suppresses pressure compensation between the gap between the panes and the surroundings.

If it becomes warmer, the gas in the gap between the panes expands and the panes therefore have a tendency to become convex.

On the other hand, if it becomes colder the pressure between the panes drops and the panes have a tendency to become concave.

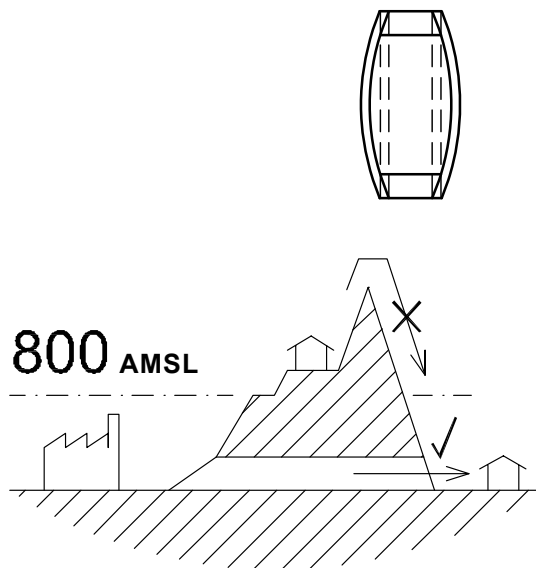
If the surrounding air pressure increases in comparison to the air pressure during production, the panes have a tendency to become concave. If the pressure drops, the panes become convex.



## Sky-Frame

### Structural situation Insulation glass effect 2

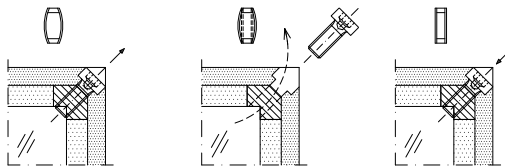
#### Insulation glass effect 2



(AMSL = Height above mean sea level, in metres)

Pressure compensating valve (>800m)  
☒ Yes ☐ No

#### Pressure compensating valve:



In addition to the outside temperature and the air pressure, other conditions can influence the glass structure:

- **Height differences** between the production location and the installation site
- Convexity of the basic panes of glass within the **production tolerances** for tempered safety glass (TSG-H) (EN 12150-1+2, EN 14179-1+2)

In order to avoid extreme glass warping and maintain the functionality of Sky-Frame, pressure compensating valves must be installed at elevations of **>800 m above sea level** if insulation glass is being used. The pressure compensation must be conducted after every change in elevation of +500m during transport and also at the installation site, and takes 5-10 minutes. The responsibility for proper pressure compensation lies with the customer.

In order to provide the filigree properties and high density of Sky-Frame, the profiles are close together. Because of the above-mentioned production-related tolerances, the panes of glass may need to be finely adjusted on site after installation in individual cases.

#### Fine adjustment without pressure compensating valve:

Controlled pressure compensation is carried out using a pressure relief opening at the edge of the window until the target condition has been achieved. After correction, this is concealed and hermetically sealed again.

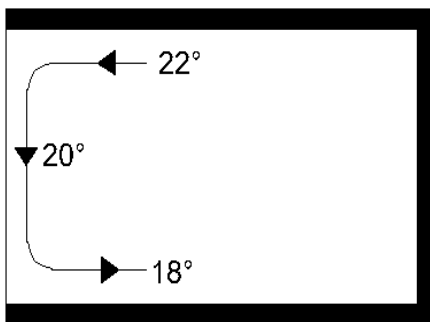
Since this corrective measure requires careful adjustment due to the large quantity and complexity of the above-mentioned influential factors, depending on the weather situation (air pressure and temperature) it may be necessary to repeat the fine adjustment later.

The procedure has been defined in close collaboration between our glass supplier and our development engineers. The corrective measures may only be carried out by our in-house specialists. This ensures that the optimum result for the end customer is achieved.

## Sky-Frame

### Structural situation Cold air drop

#### Cold air drop



With room-high glazing, attention must be paid to the cold air drop.

Warm air cools and drops down at cold glass.

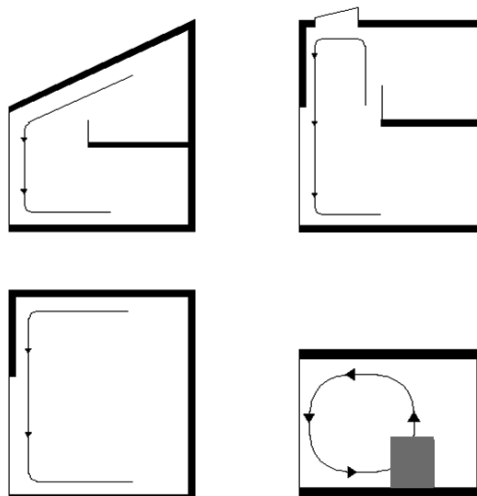
Room heights of 3m are seldom found to be uncomfortable (see diagram, with U-value of 1.0), but sensitive persons should be notified and possible countermeasures checked out.

Because of the consistent thermal break of Sky-Frame and the extremely insulated panes of glass, hardly any draughts occur.

Experience has shown that it is not really the window but the arrangement in the building (galleries, extremely high rooms, stoves) that cause cold air drops.

#### Possible countermeasures:

- Floor convectors
- Glass with a better  $U_g$  value
- Underfloor heating with tighter loops in the window area



#### Not recommended:

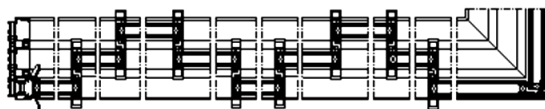
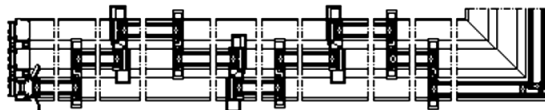
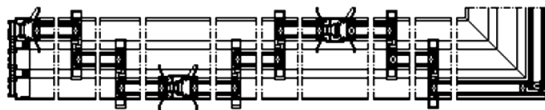
A stove in the middle of the room can accelerate room air circulation and therefore even intensify the draughts!



## Sky-Frame

### Structural situation Sliding behaviour

#### Sliding behaviour



Because of the perception of the ideal of having almost the entire front open, systems are often inquired about in which all elements but one are movable.

This system configuration is feasible in theory, but in practice it is unsatisfactory.

The panels must be moved over the entire width of the element in several stages, which affects ease of operation, particularly with heavy triple-glazed insulating glass.

#### Disadvantages:

- Pushing many panels together results in a heavy package which is difficult to move to the end position.
- When the front is closed again, all individual doors have to be repositioned several times until the final door can be closed.
- The package should not be closed in one go, otherwise the vertical profiles can become de-adjusted because of the package weight.
- A large number of joined-together panels restricts the individual opening options (lateral ventilation).

Experience has shown that even with large window fronts, only partial areas thereof are usually opened (passage to terrace, ventilation).

#### Recommendation:

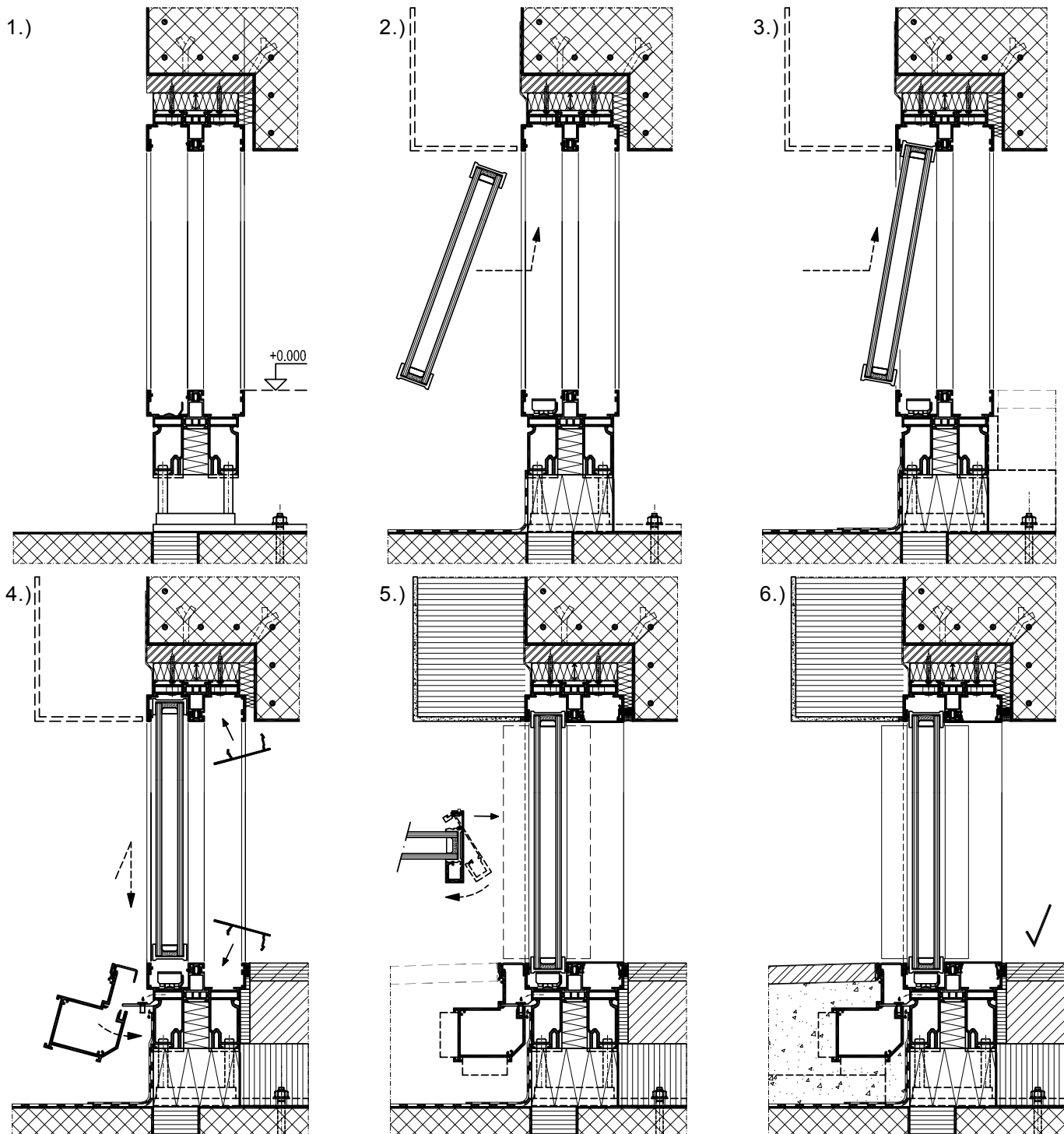
For ease of operation, it is advisable to select one of the systems shown in Chapter 2 "Opening options" and therefore create a combination with intermediate fixed panels.

This allows solutions to be created that meet all access and ventilation requirements without affecting ease of operation.

## Sky-Frame

### Structural situation Glass insertion

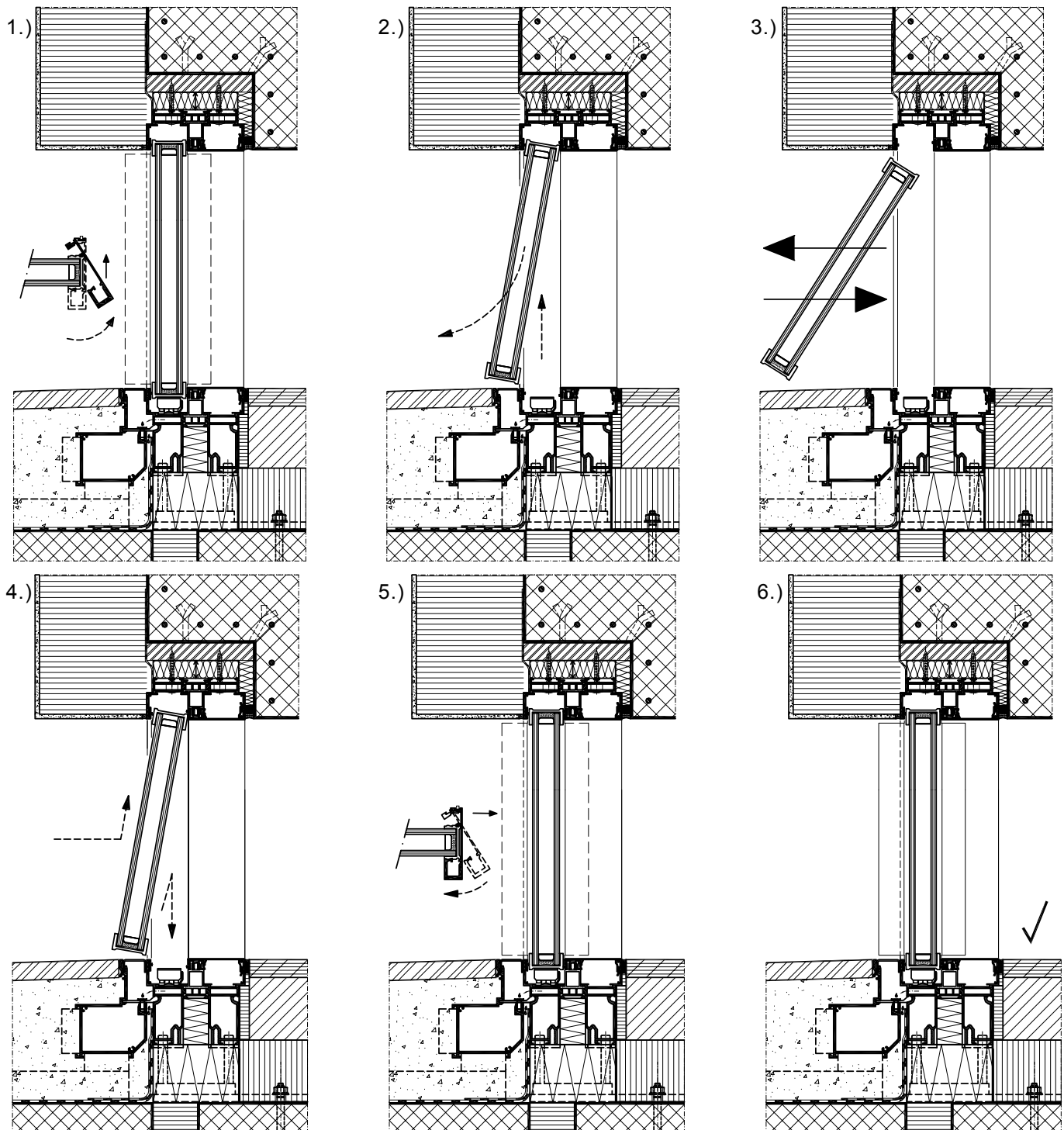
**Glass insertion** Glass insertion into a Sky-Frame frame:



## Sky-Frame

### Structural situation Glass replacement

**Glass replacement** Easy glass replacement with Sky-Frame:



## Sky-Frame

### Accessories

#### Provisional site access + protective film

##### Provisional site access

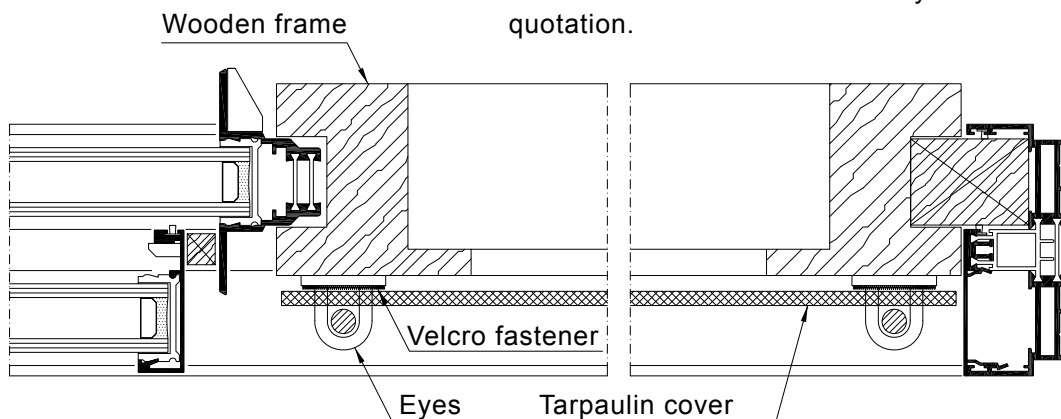


The sliding doors are unsuitable for use as site access during the construction phase.

Running tracks and rollers are often damaged by cement dust, mortar and plaster and are then almost impossible to clean.

If site access is needed, we can supply a wooden frame with a Velcro fastener and tarpaulin cover including eyes for covering by the customer.

When the order is placed, the position should be clarified with our project leaders so that this can be made to measure. Site access is normally listed as an option in the quotation.



##### Protective film

In order to protect the window during the construction work, the base area should be covered with a protective film (green) with as few air bubbles as possible. The window therefore remains free of soiling and subsequently reduces the cost of cleaning companies. The film can easily be detached from the base profile just before the glass insert, leaving no residue.

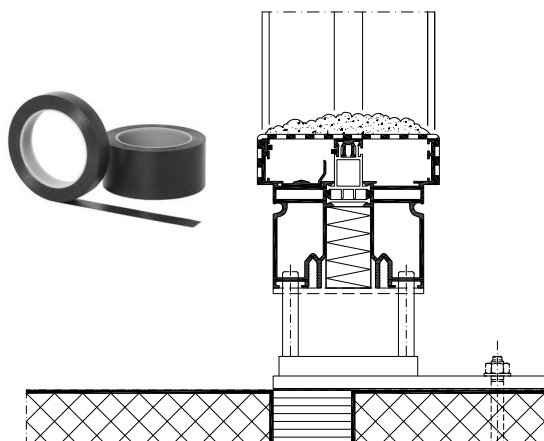
**Article no.: 137600**

W=150mm, on 33m rolls

##### Caution:

Not suitable for direct use on glass!

Through the influence of UV-light onto the adhesive, there's a risk of remaining adhesive residue on the glass.



## Sky-Frame

### Checklist counseling, project: \_\_\_\_\_

<b>Purpose</b>	This questionnaire is a constituent of the order confirmation or the service contract. Its purpose is to clarify anything that may be unclear when the contract is agreed and therefore ensure that order processing is both comprehensive and problem-free.
<b>Requirements</b>	<input type="checkbox"/> Project is certified. (e.g. Minergie, passive house, etc.) <input type="checkbox"/> Wind, rain, air, noise, burglary protection etc. test class required <input type="checkbox"/> Pool conditions or proximity to sea <input type="checkbox"/> Anti-fall protection provided
<b>Effects</b>	<input type="checkbox"/> Wind loads (specified by architect/engineer) = ____ [kN/m <sup>2</sup> ] <input type="checkbox"/> The functionality of Sky-Frame is guaranteed up to ceiling lowering of ≤ 5 mm as a result of changing loads. The statics of the supporting structure must be dimensioned accordingly. Lowering of ≤ 15 mm as a result of long-term deformation caused by permanent loads (own weight) can be compensated for by means of an appropriate ceiling connection.
<b>Cold air drop</b>	Information about this structural physics phenomenon was provided. The following customer-provided measures are planned: <input type="checkbox"/> Glass with better U <sub>g</sub> value of ≤ 0.7 W/(m <sup>2</sup> K) <input type="checkbox"/> Floor convectors (provided on site) <input type="checkbox"/> Separate heating circuit installed in window area <input type="checkbox"/> No measures required
<b>Barrier-free</b>	<input type="checkbox"/> If the base connection is designed accordingly, Sky-Frame is compliant with SIA 271. The required damming height must be specified by the customer. A minimum floor structure of 140 mm must be planned in for system engineering reasons.
<b>Frame water drainage</b>	<input type="checkbox"/> Drainage is guaranteed with a wooden grate covering with a gap proportion of ≥ 5%, since sufficient damming space is present. <input type="checkbox"/> No gutter required. <input type="checkbox"/> Covered situation, drainage layer is sufficient to guarantee drainage. No gutter required. <input type="checkbox"/> With a compressed floor covering, the system gutter ensures that the frame is drained. It is essential for the discharge to be led off separately. The discharge must not be taken into consideration during the dimensioning of the flat roof drainage.
<b>Tempered safety glass (TSG)</b>	<input type="checkbox"/> The cleaning of tempered safety glass differs from that of other glass products. Please read the provided glass cleaning leaflet from the Swiss Institute for Glass in Buildings (SIGAB) and pass this information on.
<b>Laminated glass (LG)</b>	<input type="checkbox"/> No laminated glass (LG) <input type="checkbox"/> Thermal shock situation requires white glass <input type="checkbox"/> Thermal shock situation requires partially prestressed glass <input type="checkbox"/> No special requirements
<b>Glass pressure compensation</b>	<input type="checkbox"/> In projects that are > 800 m above sea level, pressure compensating valves must be used.
<b>Thermal loading of glass</b>	To avoid glass breakage due to thermal overloading: <input type="checkbox"/> It must be ensured that no dark objects (decorations, furniture, suitcases, briefcases etc.) are placed directly behind the glass panels. Minimum clearance of 30 cm must be maintained.
<b>Insurance</b>	<input type="checkbox"/> Additional building insurance cover for glass breakage is advisable for large glazed areas.
<b>Crane</b>	<input type="checkbox"/> Construction site crane is present <input type="checkbox"/> To be organised by the supplier
<b>Scheduling situation</b>	<input type="checkbox"/> Reference has been made to the general terms of business and delivery
<b>Date and place</b>	Signature of property developer or representative

## Sky-Frame

### Checklist - Pre-acceptance report

Project: \_\_\_\_\_

Position	1	2	3	4	5	
<b>Project basis</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Item(s)
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Frame dimensions in accordance with specifications
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Elevation in accordance with specifications
<b>Building connections</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Film without diffusion barrier professionally adhered to the exterior
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Vapour-impermeable film professionally adhered to the interior
<b>Surfaces</b> (see also pre-acceptance(s))	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Frames (dents, colour deviations, scratches, ...)
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cover(s) (dents, colour deviations, scratches, ...)
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Labyrinth(s) (dents, colour deviations, scratches, ...)
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Locks (dents, colour deviations, scratches, ...)
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Glass (inclusions, discolouration, scratches, ...)
<b>Alarm components</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Magnetic contact function check
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Deadbolt monitoring function check
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Alarm spider function check
<b>Drive</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Controller function check
<b>Protective measures</b> (to be billed at cost)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Provisional site access available
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Frame profiles masked with protective film
<b>Glass cleaning</b>	<input type="checkbox"/>					"Glass cleaning" information sheet handed over

Component/item	Defect description	Deadline for rectification by date	Defect rectified Initials and date

<b>Assessment</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No defects
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Insignificant defects
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Project accepted
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Significant defects
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Project rejected

**Date and location** Signature of installer or project manager

**Date and location** Signature of builder or representative

## Sky-Frame

### Checklist - Final acceptance protocol

Project: \_\_\_\_\_

Purpose	1	2	3	4	5	
<b>Project basis</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Item(s)
<b>Building connections</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Gaps filled in professionally
<b>Surfaces</b> (see also pre-acceptance(s))	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Frames (dents, colour deviations, scratches, ...)
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cover(s) (dents, colour deviations, scratches, ...)
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Labyrinth(s) (dents, colour deviations, scratches, ...)
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Locks (dents, colour deviations, scratches, ...)
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Glass (inclusions, discolouration, scratches, ...)
<b>Functionality</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Automatic locking or catch locking operational
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Night ventilation demonstrated
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Inactive leaf locked, surrounding EPDM seal at one side
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Running properties correspond with operating requirements
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ceiling connection(s) die-cast knob present
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Frame water drainage provided
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Lock function check (Kaba / PZ, RC2)
<b>Alarm components</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Magnetic contact function check via alarm controller
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Deadbolt monitoring function check via alarm controller
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Alarm spider function check via alarm controller
<b>Drive</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Controller function check via button
<b>Primary cleaning</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Glass labels removed
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Profiles and frame connections cleaned
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Base profile and running track cleaned
<b>Glass cleaning</b>					<input type="checkbox"/>	"Glass cleaning" information sheet handed over
<b>Care and maintenance</b>					<input type="checkbox"/>	Sky-Frame "Care and Cleaning" information sheet handed over
					<input type="checkbox"/>	Lowering $\leq 15$ mm can be adjusted
					<input type="checkbox"/>	Commissioning in good time reduces consequential damage

Component/Item	Defect description	Deadline for rectification by date	Defect rectified Initials and date

<b>Assessment</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No defects
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Insignificant defects
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Project accepted
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Significant defects
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Project rejected
<b>Date and place</b>	Signature of installer or project manager					

<b>Date and place</b>	Signature of builder or representative
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## Sky-Frame

### Checklist - Installation

**Project:** \_\_\_\_\_

<b>Purpose</b>	The installation checklist helps the project manager with a structured order processing.
<b>Documentation</b>	<input type="checkbox"/> Installation plans signed by project manager <input type="checkbox"/> Contact list <input type="checkbox"/> Order discussed in advance with project manager <input type="checkbox"/> Delivery notes correctly produced and present <input type="checkbox"/> Administration costs recorded and claimed <input type="checkbox"/> Acceptance report(s)
<b>Scheduling situation</b>	<input type="checkbox"/> Installation deadline(s) and acceptance(s) coordinated and fixed <input type="checkbox"/> Order recorded in deployment planning <input type="checkbox"/> Site manager notified and ready to carry out acceptance
<b>Construction site equipment</b>	<input type="checkbox"/> Building shell prepared in accordance with approval plans <input type="checkbox"/> Access to installation situation available <input type="checkbox"/> Cutting check defined and clearly visible <input type="checkbox"/> Crane and crane driver available <input type="checkbox"/> Scaffolding present <input type="checkbox"/> Position and number of construction site accesses defined <input type="checkbox"/> Parking situation known and organised <input type="checkbox"/> Special equipment clarified and organised <input type="checkbox"/> Sky-Frame advertising board
<b>Dispatch and logistics</b>	<input type="checkbox"/> Packaging and provision organised and checked <input type="checkbox"/> Delivery organised and confirmed <input type="checkbox"/> Loading and unloading organised and confirmed <input type="checkbox"/> Return of glass frames organised