



*Close-up on sectional door technology*

## Six steps to a satisfactory door purchase

Select a track system



Configure the sections



Select windows and glazing



Match the door leaf to the building façade



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## Select a wicket door



## Select the drive and type of operation

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# Configuring the door



## Choosing a track system

### Durable and efficient solutions

The choice of track system (T 240, T 340, T 400, T 400 hF, T 450, T 500, T 500 hF) is determined by the headroom available above the door opening. The shape and dimensions of the space required for installation are determined by the type of track system used. Select the track system that offers the least loss of space inside the building.

In practical terms, this means that the track system should be mounted as close to the wall and roof as possible. The opening should be completely unobstructed when the door is in the fully open position.

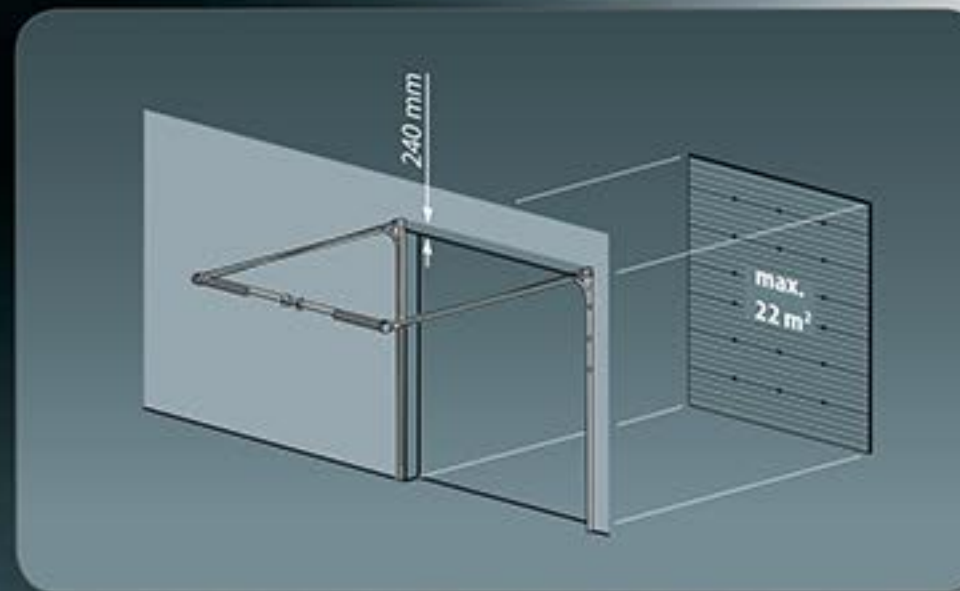
\*CH= Clear opening height

	T 240	T 340	T 450	T 400	T 400 hf	T 500	T 500 hF
Headroom above the opening	240 mm	340 mm	430-700mm	700-3400 mm	1675-3400 mm	CH*+ 500	CH*+ 330
Max. Max. door surface area	22 m <sup>2</sup>	22 m <sup>2</sup>	50 m <sup>2</sup>	50 m <sup>2</sup>	20 m <sup>2</sup>	35 m <sup>2</sup>	20 m <sup>2</sup>
Roof angle	0° - 30°	0° - 30°	0° - 30°	0° - 30°	0° - 30°		
Spring assembly mounted to the wall	No	No	Yes	Yes	No	Yes	No



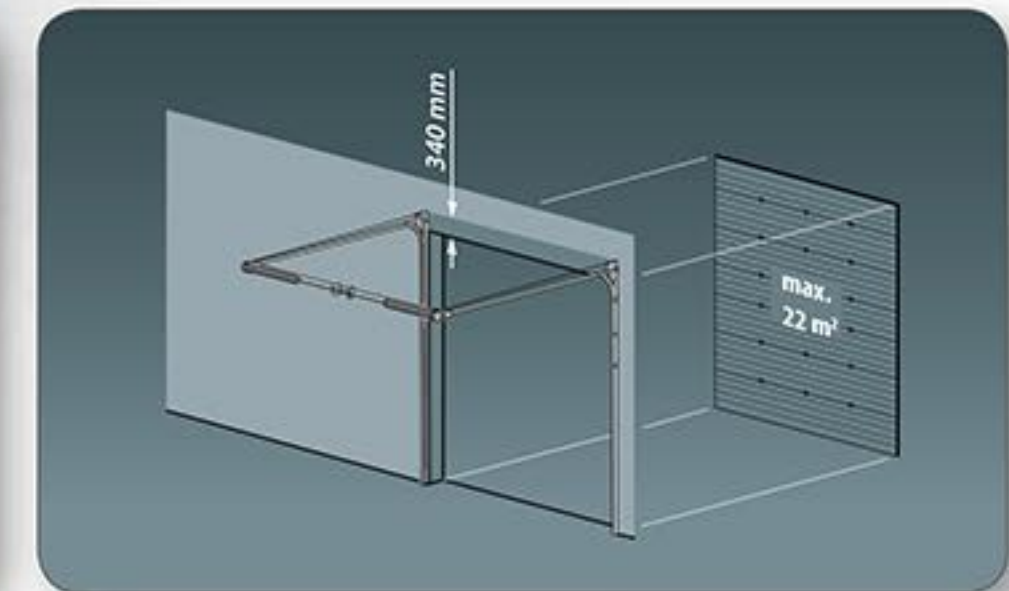
## Track variants

A track variant is available for all site situations. We have only included general guidelines here in order to help you select the right track system. Please consult our brochure entitled "Track systems, dimensions and installation criteria" for exact dimensions and details of all the track systems.



### T 240 track system

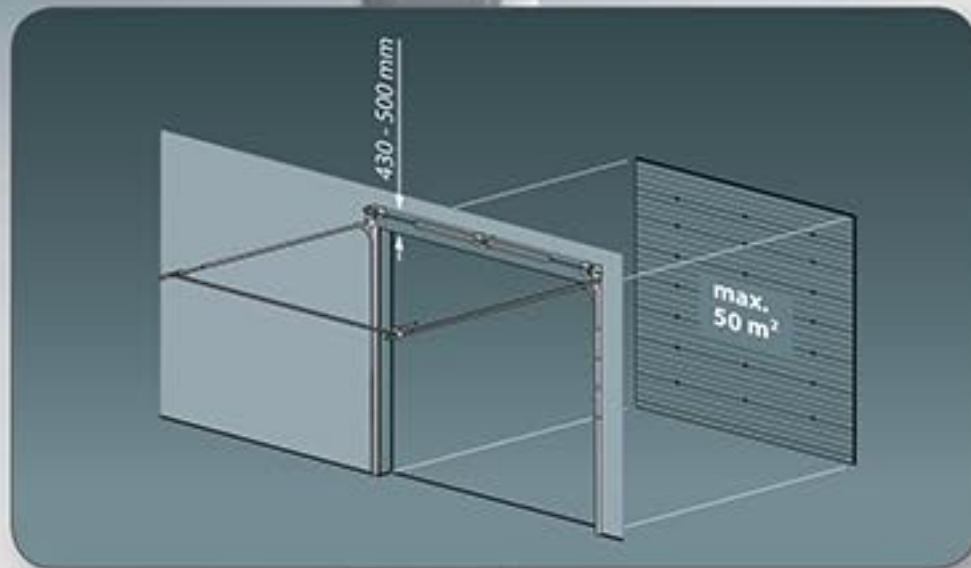
The T 240 system is normally used when a headroom of 240 mm is available above the clear opening. A rectangular tube profile is mounted at the rear of the horizontal tracks. The spring assembly is fastened to this tube. This system can also be used if the headroom above the clear opening is less than 240 mm. In such cases, the sectional door will remain visible in the clear opening when the door is fully open.



### T 340 track system

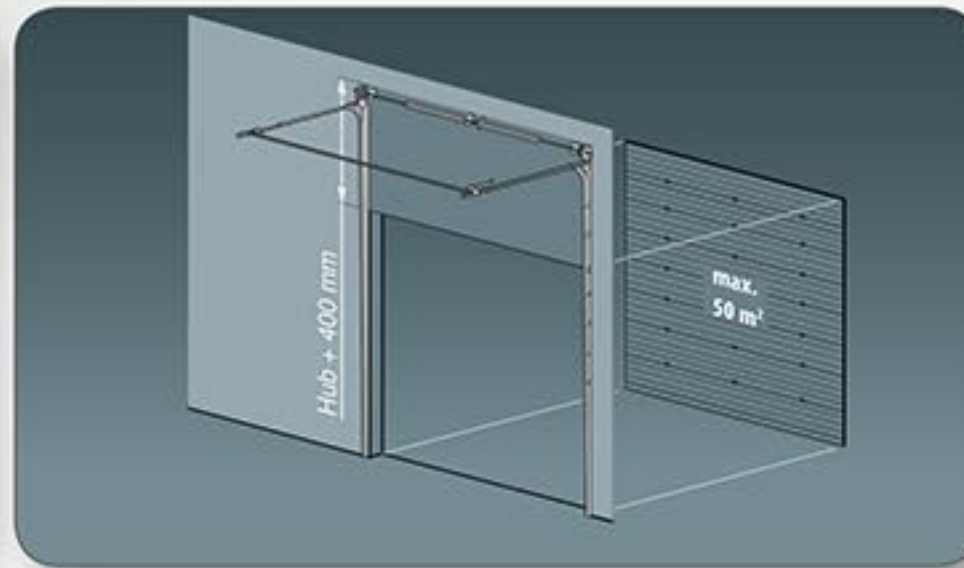
The T 340 system is suitable for standard situations. This system is used when a headroom of 340 mm is available above the clear opening. A rectangular tube profile is mounted at the rear of the horizontal tracks. The spring assembly is fastened to this tube. This type of track system is an excellent solution in cases when the available headroom of 340 mm is not suitable for other track systems. For example, if a glazed element is located above the clear opening or the wall above the opening is constructed from cellular concrete. In the first instance, the spring assembly would be visible from the outside. In the second instance, the material above the opening is not robust enough to carry the weight of the spring assembly. It is best to ask the dealer for advice in exceptional circumstances.





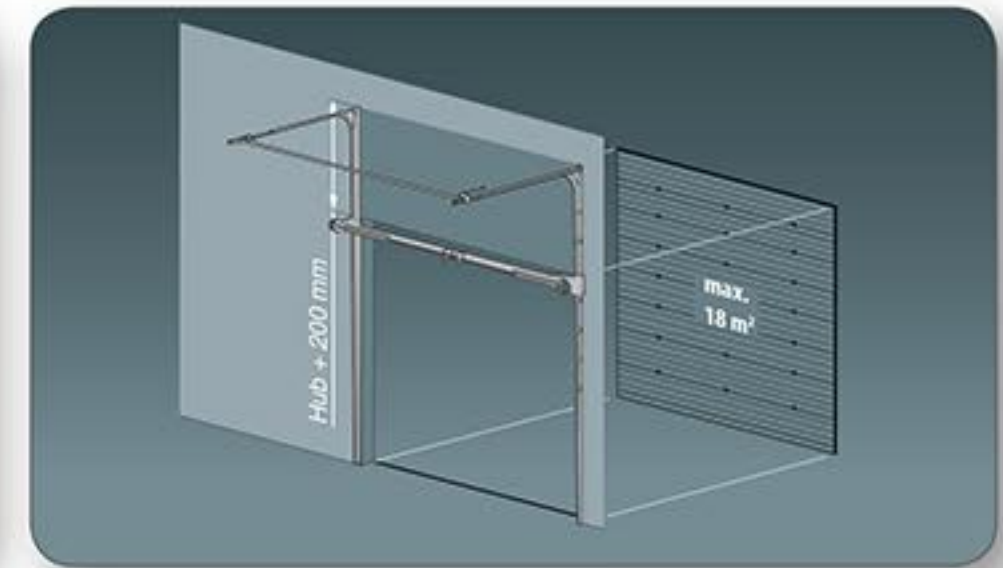
#### T 450 track system

The T 450 system is used as standard when a headroom of 430 to 700 mm is available above the clear opening. The spring assembly is fixed to the building wall in this case.



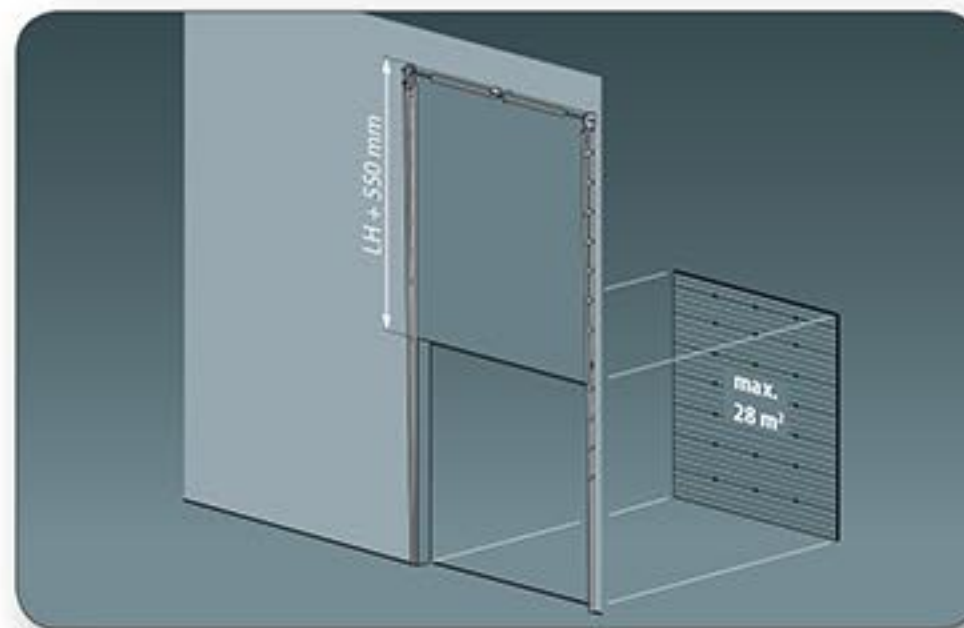
#### T 400 track system

The T 400 system is used when a headroom of 700 to 3,400 mm is available above the clear opening. The vertical tracks follow the wall line until the roof is reached and then curve through the appropriate angle to lie parallel to the roof. The spring assembly is mounted to the vertical wall just under the roof.



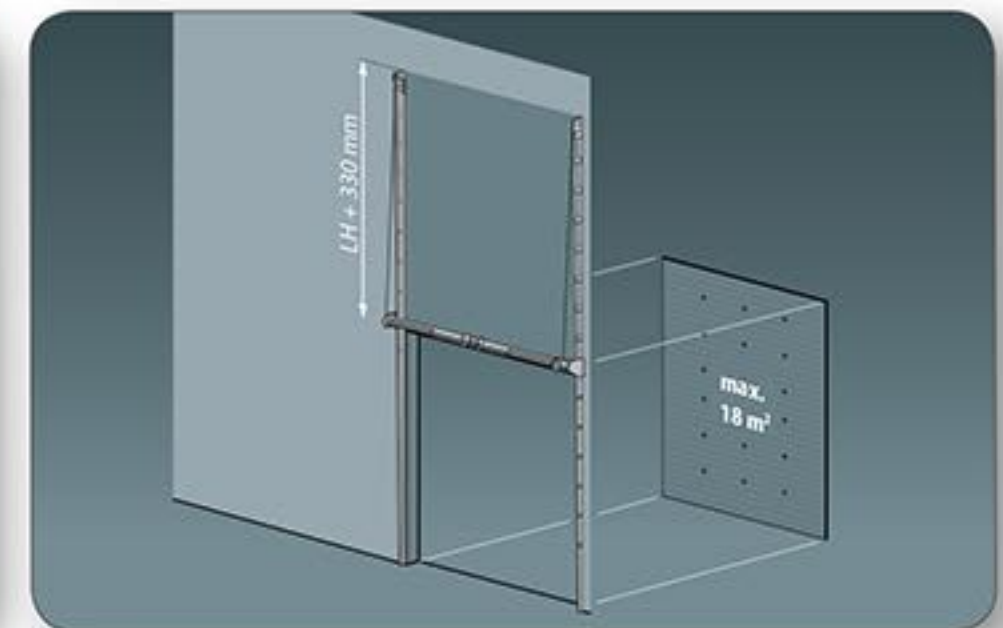
#### Track System T400hf

The T400hf track system can be selected when you have a headroom of 1700 mm up to a 4500 mm. The vertical tracks will follow the wall up to the roofline. The springs are pre-assembled and pre-mounted on to a spring beam and positioned 500 mm above the clear opening height. The advantages of this system is faster installation and easy access for future repair and maintenance. A minimum high-lift of 1375 mm and a maximum door width of 4500 mm are the systems parameters.



#### T 500 track system

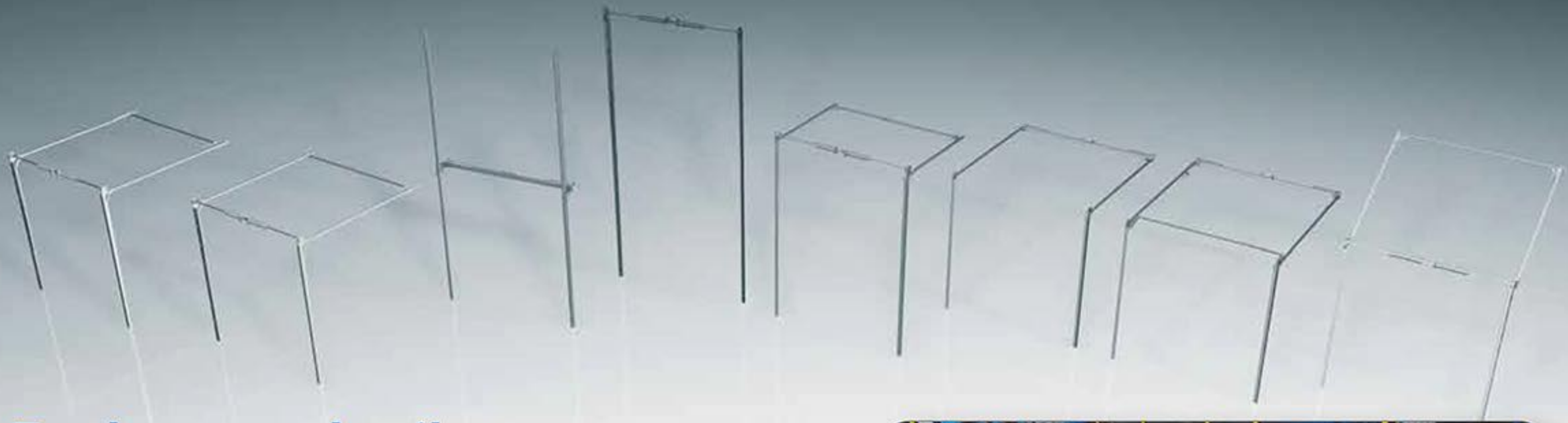
This track system is used when the available headroom is sufficient to allow the sectional door to open vertically. The spring assembly is fixed to the wall at the top of the tracks.



#### T 500 hF track system

This track system is used when the available headroom is sufficient to allow the sectional door to open vertically. The spring assembly is fixed to a mounting arrangement at approx. 500 mm above the clear opening. The door width may not exceed 4,000 mm when this system is used. The low-level spring assembly simplifies drive and spring arrangement maintenance and repairs.





## Track system details

Refer to the brochure entitled "Track systems, dimensions and installation criteria" for more detailed information regarding installation.

The track systems are unique in terms of profile, choice of materials and finish. Operator safety, durability and reliability were primary considerations when designing the track systems. Furthermore, dealer feedback is used to continually optimise the designs.

This is an ongoing process, which, for example, has resulted in a design that makes it impossible for operators or bystanders to insert their fingers into the tracks.

All the tracks are manufactured in house to our own designs, using the latest, highly advanced production techniques. As you would expect, the materials used are galvanised to a high standard. All track joints use nut and bolt fixings for maximum ease of maintenance and repair. The materials used and the design of the rollers ensure precisely controlled door movements with a minimum of noise nuisance.



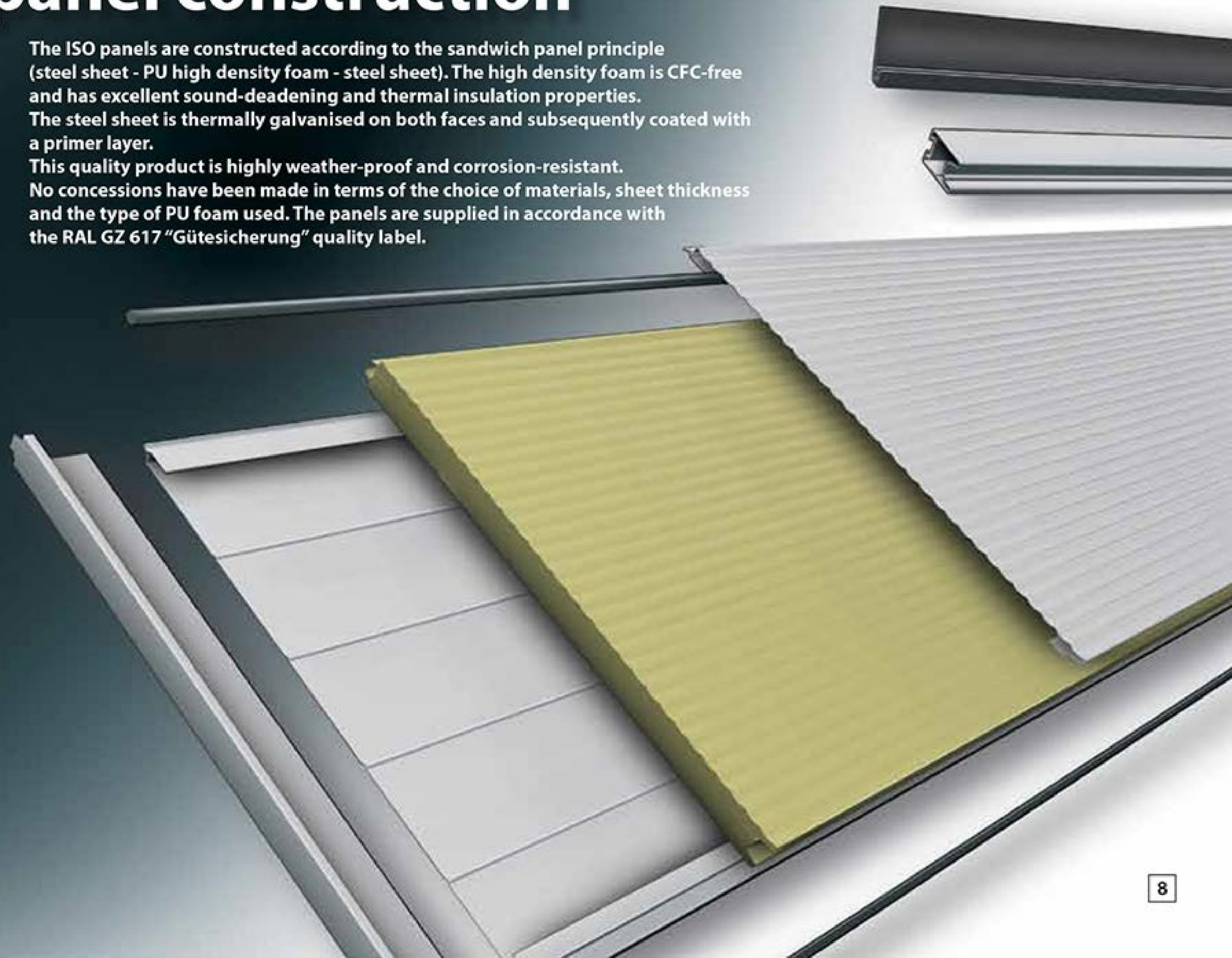






# ISO panel construction

The ISO panels are constructed according to the sandwich panel principle (steel sheet - PU high density foam - steel sheet). The high density foam is CFC-free and has excellent sound-deadening and thermal insulation properties. The steel sheet is thermally galvanised on both faces and subsequently coated with a primer layer. This quality product is highly weather-proof and corrosion-resistant. No concessions have been made in terms of the choice of materials, sheet thickness and the type of PU foam used. The panels are supplied in accordance with the RAL GZ 617 "Gütesicherung" quality label.

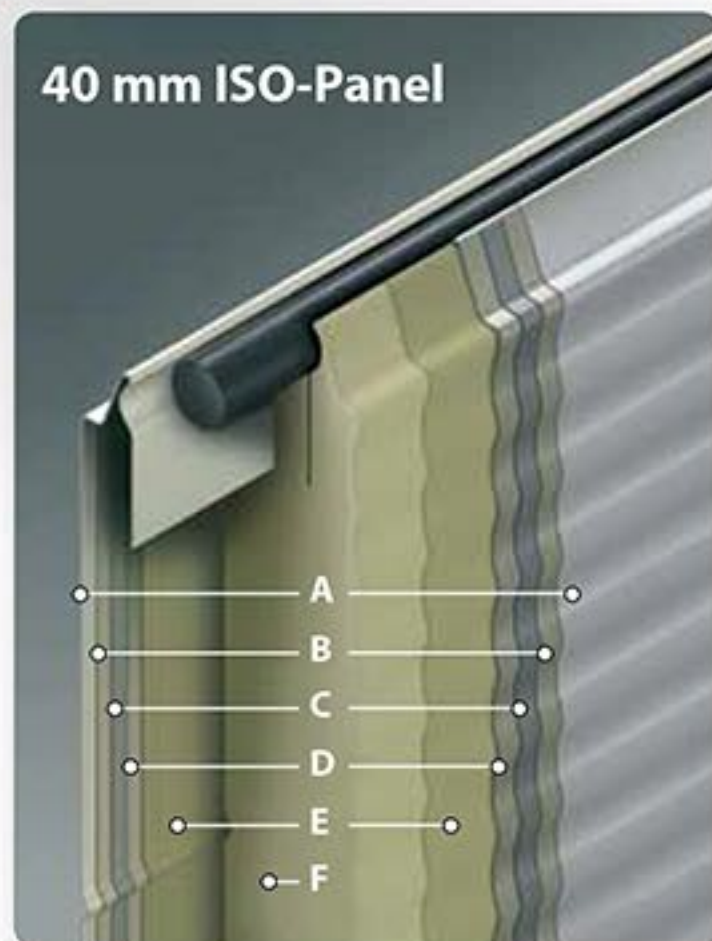




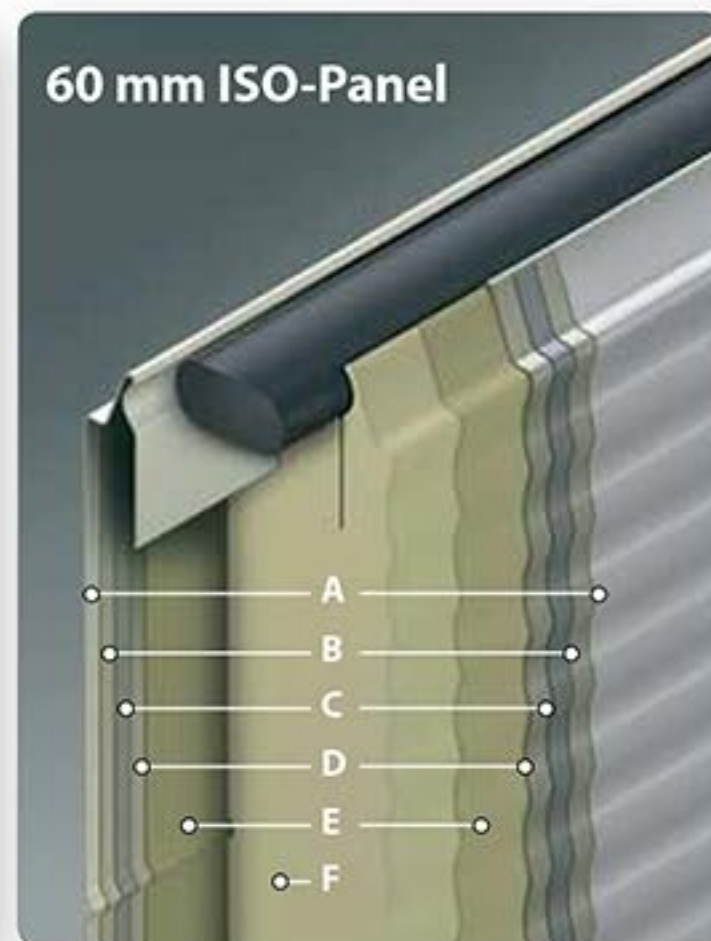
### Material choice, primer coating and RAL colours

The way a colour is perceived after application to the panel is dependent on the substrate and the way in which the paint layers have been applied. Application methods vary from manufacturer to manufacturer. This results in unavoidable shade differences within the same RAL colour. In practice, this means that there are always colour differences between building façade elements supplied by different manufacturers, even though they have been specified to the same nominal RAL colour. It is also possible to supply the panels in special colours, even if these colours have been specified using a non-standard colour system. When colour samples are supplied, the colour is approximated as closely as possible within the RAL colour system.

The use of dark colours on ISO panels that are exposed to the sun all day can lead to undesirable effects in the longer term. The panels may distort to an extent that causes problems in operation.



Panel thickness: **40 mm**  
 Thermal conductivity:  $\lambda=0.025 \text{ W/mK}$   
 Insulation value:  $k=0.55 \text{ W/m}^2\text{K}$   
 Density PU foam:  $45 \text{ kg/m}^3$



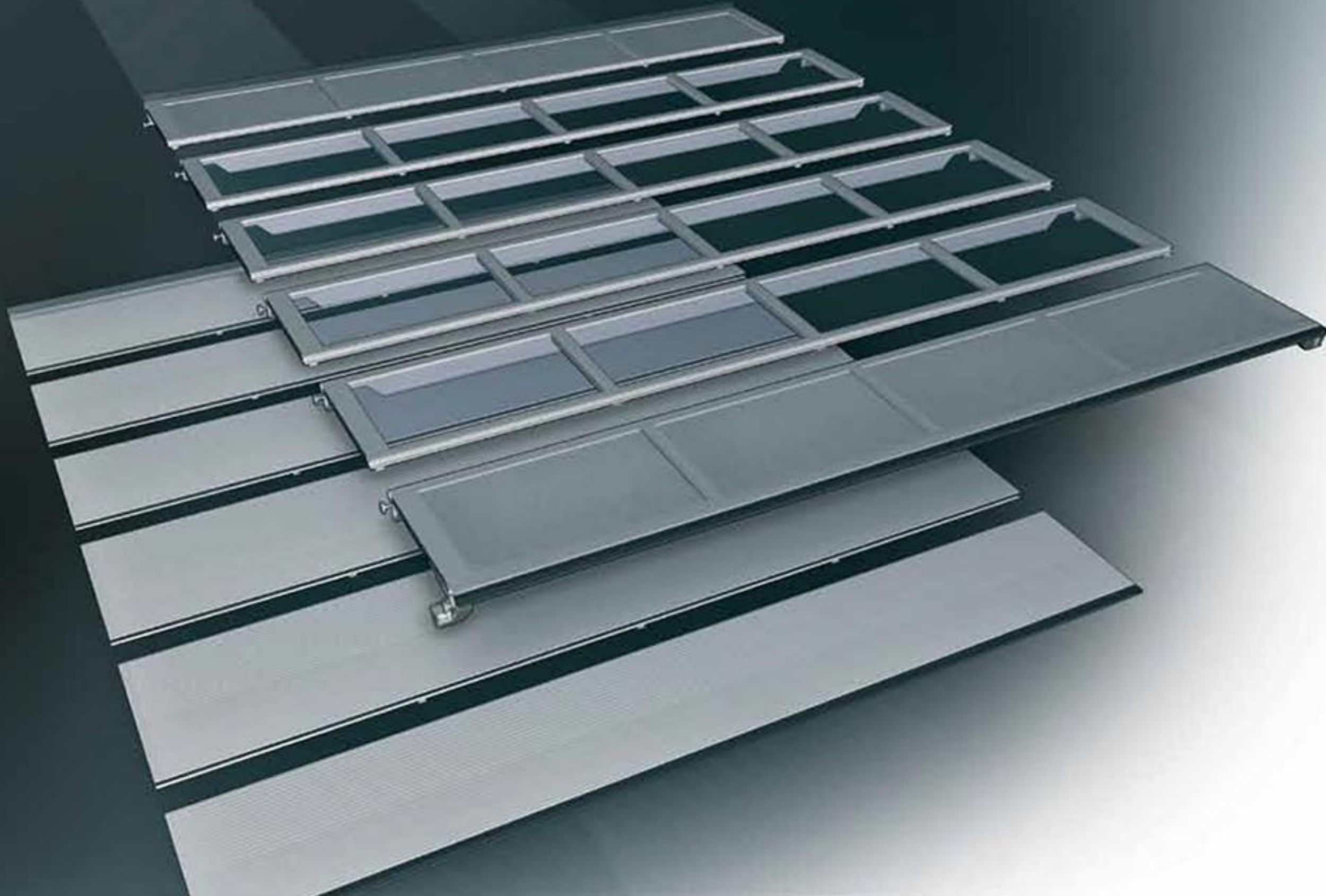
Panel thickness: **60 mm**  
 Thermal conductivity:  $\lambda=0.025 \text{ W/mK}$   
 Insulation value:  $k=0.35 \text{ W/m}^2\text{K}$   
 Density PU foam:  $45 \text{ kg/m}^3$

### Sandwich-construction ISO panel:

- |                                |   |
|--------------------------------|---|
| <b>A</b> Paint layer:          | 25 $\mu\text{m}$                                |
| <b>B</b> Zinc coating:         | 275 $\text{g/m}^2$                              |
| <b>C</b> Steel sheet:          | 0.5 mm  |
| <b>D</b> Zinc coating:         | 275 $\text{g/m}^2$                              |
| <b>E</b> Primer coating        |   |
| <b>F</b> PU high density foam: | $\rho = 45 \text{ kg/m}^3$ , CFC- and HCFC-free |
| <b>E</b> Primer coating        |   |
| <b>D</b> Zinc coating:         | 275 $\text{g/m}^2$                              |
| <b>C</b> Steel sheet:          | 0.5 mm  |
| <b>B</b> Zinc coating:         | 275 $\text{g/m}^2$                              |
| <b>A</b> Paint layer:          | 25 $\mu\text{m}$                                |



# Door leaf, sections, fields





# ISO sectional door panel types

The sections (panels) for the ISO sectional overhead door are available in 3 different heights.

These heights have been carefully chosen to avoid having to cut panels down.

The available heights are 488 mm, 610 mm and 732 mm. The table shows the relationship between panel height and door dimensions.



Microprofiled smooth



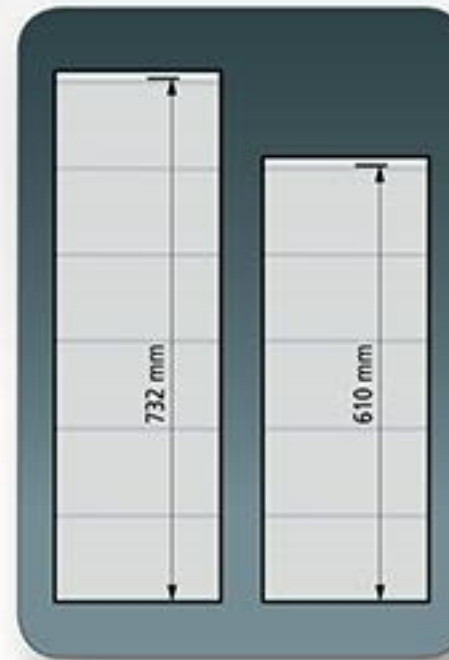
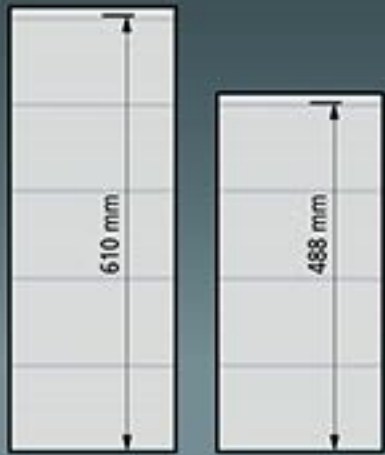
Microprofiled smooth



Inner face with horizontal grooves

Panel height	 488 mm	 RAL 9002	 RAL 7016	 RAL 9006	 RAL 9002								
	 610 mm	 RAL 1013	 RAL 1021	 RAL 2001	 RAL 3000	 RAL 5002	 RAL 5003	 RAL 5010	 RAL 6002	 RAL 6009	 RAL 7005	 RAL 9006	 RAL 9002
	 732 mm	 RAL 9002	 RAL 9006	 RAL 9002									





## ISO section height dimensions

The height of the door leaf is determined by the sections used.

The number of sections used for each door leaf height (DIh) may vary if ALU sections are incorporated in an ISO sectional door.

Section height  
488 and 610 mm



13	7440 mm
12	$6830 \leq DIh < 7440$ mm
11	$6220 \leq DIh < 6830$ mm
10	$5610 \leq DIh < 6220$ mm
9	$5000 \leq DIh < 5610$ mm
8	$4390 \leq DIh < 5000$ mm
7	$3780 \leq DIh < 4390$ mm
6	$3170 \leq DIh < 3780$ mm
5	$2560 \leq DIh < 3170$ mm
4	$1950 \leq DIh < 2560$ mm
3	$DIh < 1950$ mm
2	
1	

Section height  
610 and 732 mm\*



12	
11	
10	$6536 \leq DIh < 7268$ mm
9	$5804 \leq DIh < 6536$ mm
8	$5072 \leq DIh < 5804$ mm
7	$4340 \leq DIh < 5072$ mm
6	$3608 \leq DIh < 4340$ mm
5	$2876 \leq DIh < 3608$ mm
4	$2144 \leq DIh < 2876$ mm
3	$DIh < 2144$ mm
2	
1	

\* Only in RAL 9002 and RAL 9006, up to a maximum door width of 5000 mm.

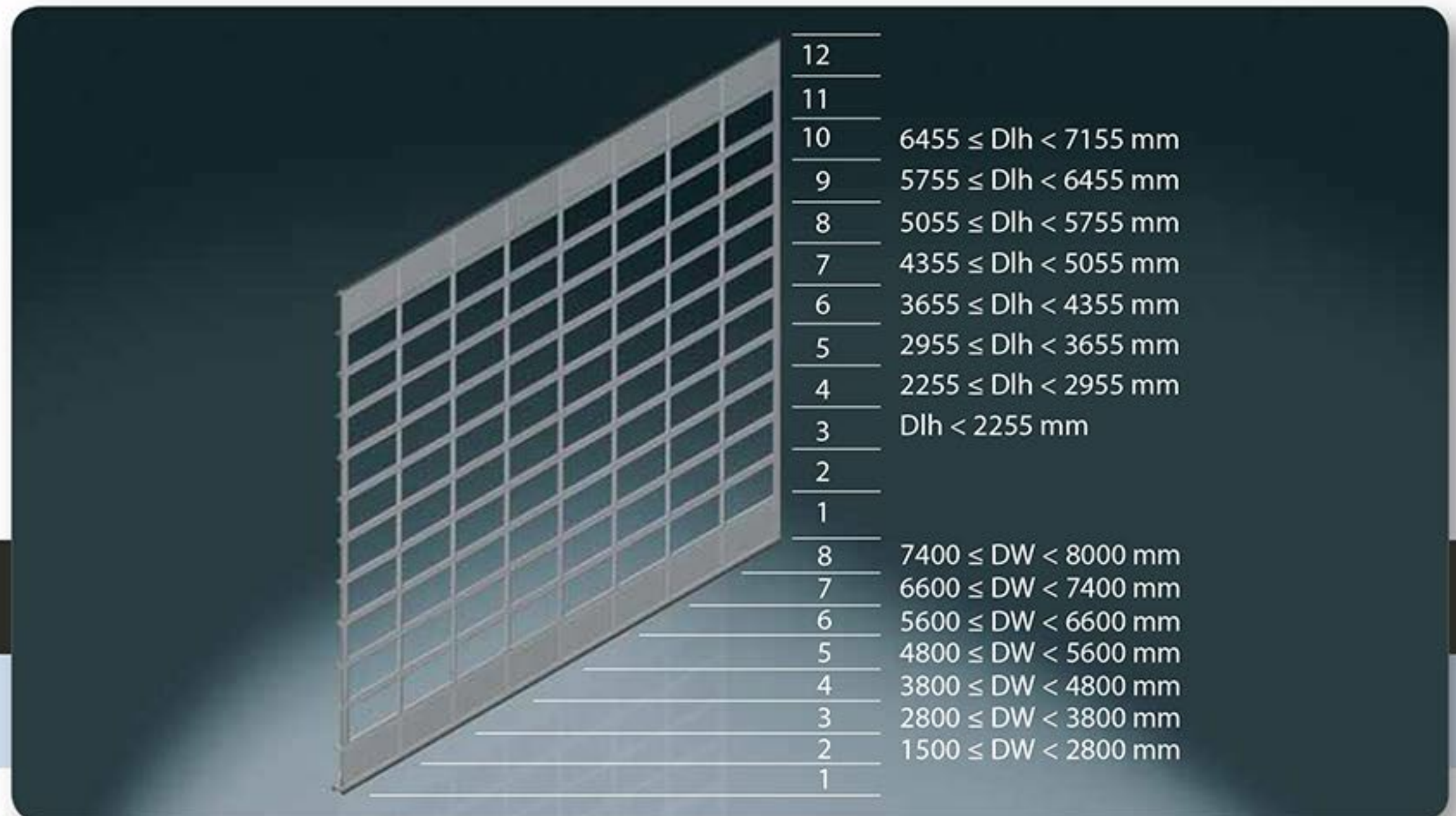


# ALU sectional door height and width dimensions

The illustration indicates how the ALU sectional door is configured. As standard\*, the ALU sectional door is configured so that all the infill sections are dimensionally identical. However, it is possible to engineer non-standard door leaf configurations. Non-standard door leaf configurations may be required for projects where multiple sectional doors of differing sizes are

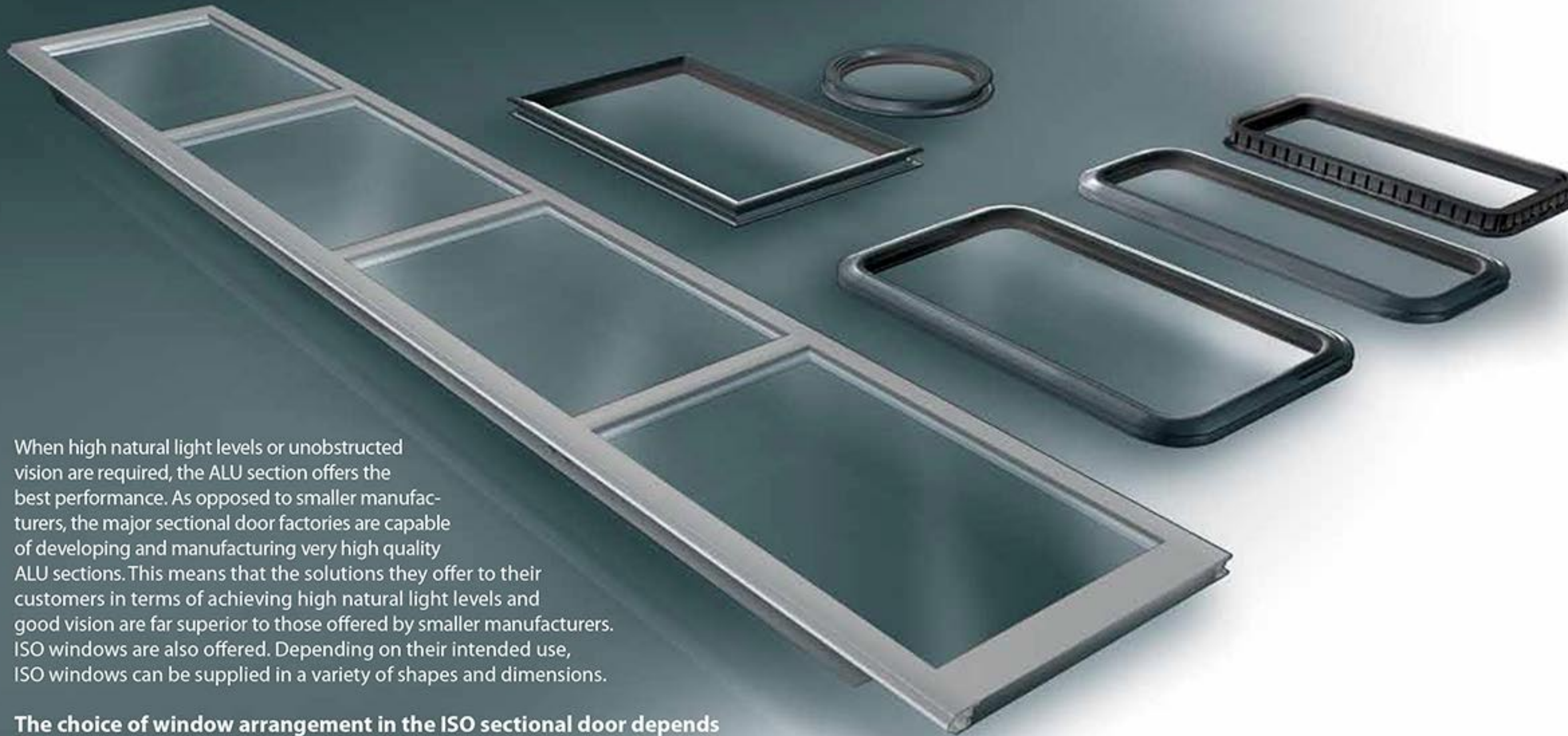
mounted next to each other in the building façade and the door configurations need to be identical. Additionally, non-standard door configurations arise when a wicket door of a particular minimum height needs to be engineered into the door leaf.

\*The number of sections may vary when ISO sections are incorporated in an ALU sectional door.





# Windows and glazing Options



When high natural light levels or unobstructed vision are required, the ALU section offers the best performance. As opposed to smaller manufacturers, the major sectional door factories are capable of developing and manufacturing very high quality ALU sections. This means that the solutions they offer to their customers in terms of achieving high natural light levels and good vision are far superior to those offered by smaller manufacturers. ISO windows are also offered. Depending on their intended use, ISO windows can be supplied in a variety of shapes and dimensions.

**The choice of window arrangement in the ISO sectional door depends on 4 different criteria:**





### 1. Requirement for natural light

The requirement for natural light influences the position and number of windows used. It is often preferable to use fully transparent ALU sections when a high level of natural light is required. This is more cost-effective and the use of ALU sections gives the door a more harmonious appearance. A single ALU section allows the same amount of light to pass as three ISO window sections.



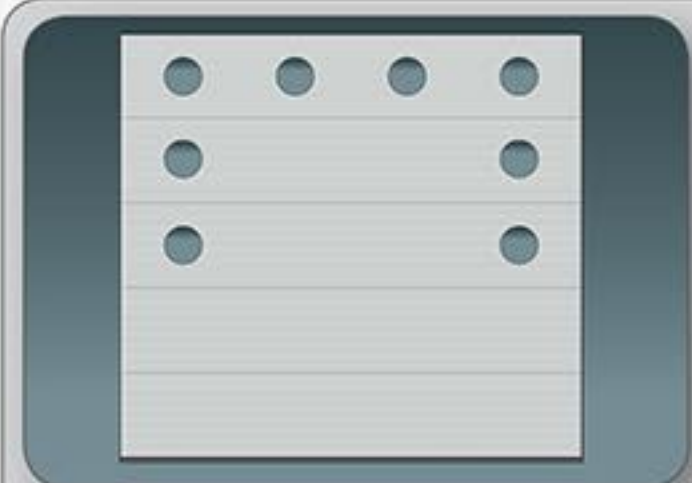
### 2. Thermal properties

If thermal insulation (insulation performance/U value to EN12428) is the most important criterion when selecting the type of glazing, ISO windows are the better choice.



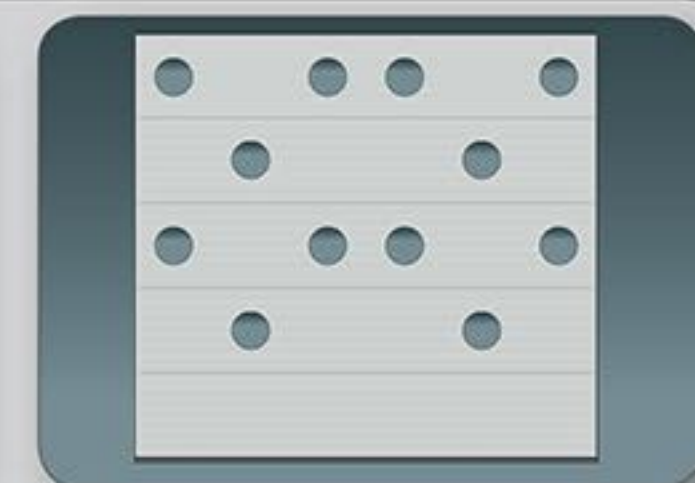
### 3. Intruder prevention

If maximum intruder prevention is the primary concern when specifying the type of glazing/windows, ISO windows of restricted height are the best choice.



### 4. Design

In cases where image and appearance are important aspects, round ISO windows, which can be installed in the door leaf in an almost infinite variety of patterns, are a common choice.



A window section that has been included in the door leaf in order to let in natural light may not necessarily also be used for vision. If the door height allows, this window section could be installed well about the normal line of sight in the door leaf.

In practice, it may be necessary to select the window type based on two or more of these criteria. In such cases, our extensive experience allows us to recommend the best possible window solution for your needs.

#### High natural light ingress:

ALU sections from the 3rd section

#### Vision + intruder prevention:

Restricted-height ISO windows

#### Natural light + vision + maximum insulation:

ISO windows with rounded or rectangular corners

#### Natural light + maximum insulation:

High-mounted ISO windows with rounded or rectangular corners

#### Vision + intruder prevention:

ALU sections from the 4th section

The standard installation dimensions can be identified once the choice of window type has been decided.

We suggest that you analyse whether your choice of glazing corresponds to the intended purpose of the door. Consult the dealer to verify whether your choice is technically feasible and will achieve the desired result.



# Window positioning

A broad range of options is available for vision and natural light ingress. Various types of ISO windows can be incorporated in the ISO door leaf. It is also possible to combine ISO and ALU sections in a door leaf. Or the door leaf can be constructed entirely from ALU sections. In short, more than enough options to choose from.

The ISO sections are supplied in different styling variants.

Depending on the selected panel variant, one, two or three heights are available (488 mm, 610 mm and 732 mm).

## Mounting heights for ALU sections and ISO windows

The centreline of the windows (in the horizontal plane), measured from the underside of the door leaf, is determined by the height of the sections used from the bottom of the door up to and including the window section. In practice, sections of different heights are often used to construct the bottom part of the door leaf.

### ISO windows

In the case of panels that are only available with a height of 610 mm\*, the window centreline is positioned at 1575 mm. The window centreline position varies between 1270 mm and 1575 mm (increasing in steps of 122 mm) when panels are used that are available in heights of 488 mm\* or 610 mm\*. Alternatively, the window centreline position varies between 1575 mm and 1819 mm (increasing in steps of 122 mm) when panels are used that are available in heights of 610 mm\* or 732 mm\*.

\*Refer to the panel chart.

These dimensions obviously influence the height at which ALU sections and ISO windows can be mounted. Generally, windows are not mounted in the bottom two sections of the ISO sectional door. ISO windows are positioned centrally in the section relative to the height of the section. Consequently, the mounting height from the underside of the door is a function of the dimensions of the various ISO window options and the panel height. The illustration shows the various standard mounting heights for ALU sections and ISO windows with rounded corners.

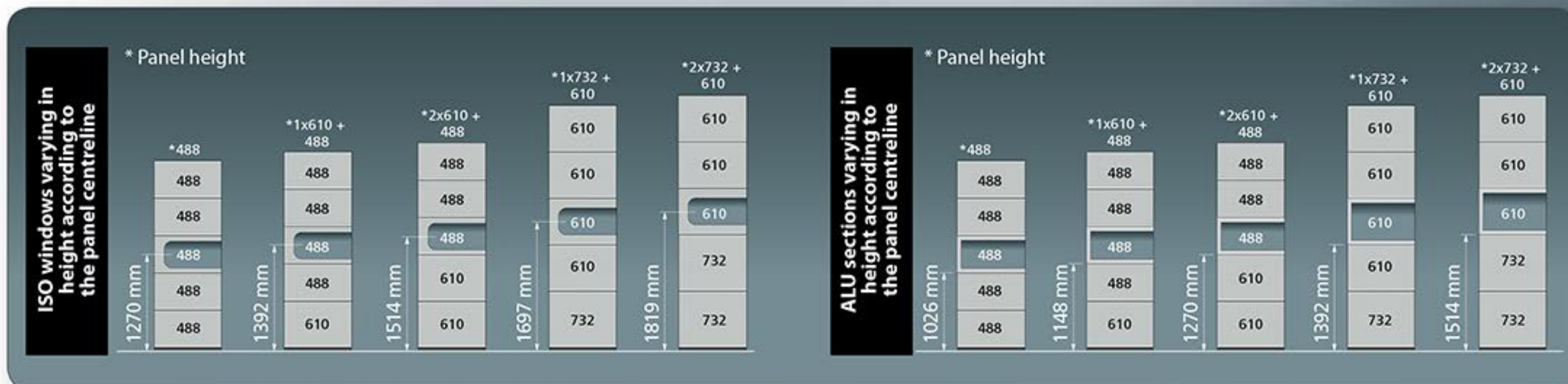
### ALU section positioning

In the case of panels that are only available with a height of 610 mm\*, the bottom profile of the ALU section is always positioned at 1270 mm from the bottom of the door. The bottom profile of the ALU section is positioned between 1026 mm and 1270 mm (increasing in steps of 122 mm) from the underside of the door when panels are used that are available in heights of 488 mm\* or 610 mm\*. Alternatively, the bottom profile of the ALU section is positioned between 1270 mm and 1514 mm (increasing in steps of 122 mm) from the underside of the door when panels are used that are available in heights of 610 mm\* or 732 mm\*.

\*Refer to the panel chart.

The ALU sections themselves will vary in height between 488 mm and 732 mm depending on door configuration.

Note: as standard, the ISO windows and ALU sections are positioned in the door leaf at the heights indicated in the illustrations. However, the exact position is determined by the manufacturer. It may be possible to position ISO windows and ALU sections differently from standard, although choosing to do so may result in extra costs.



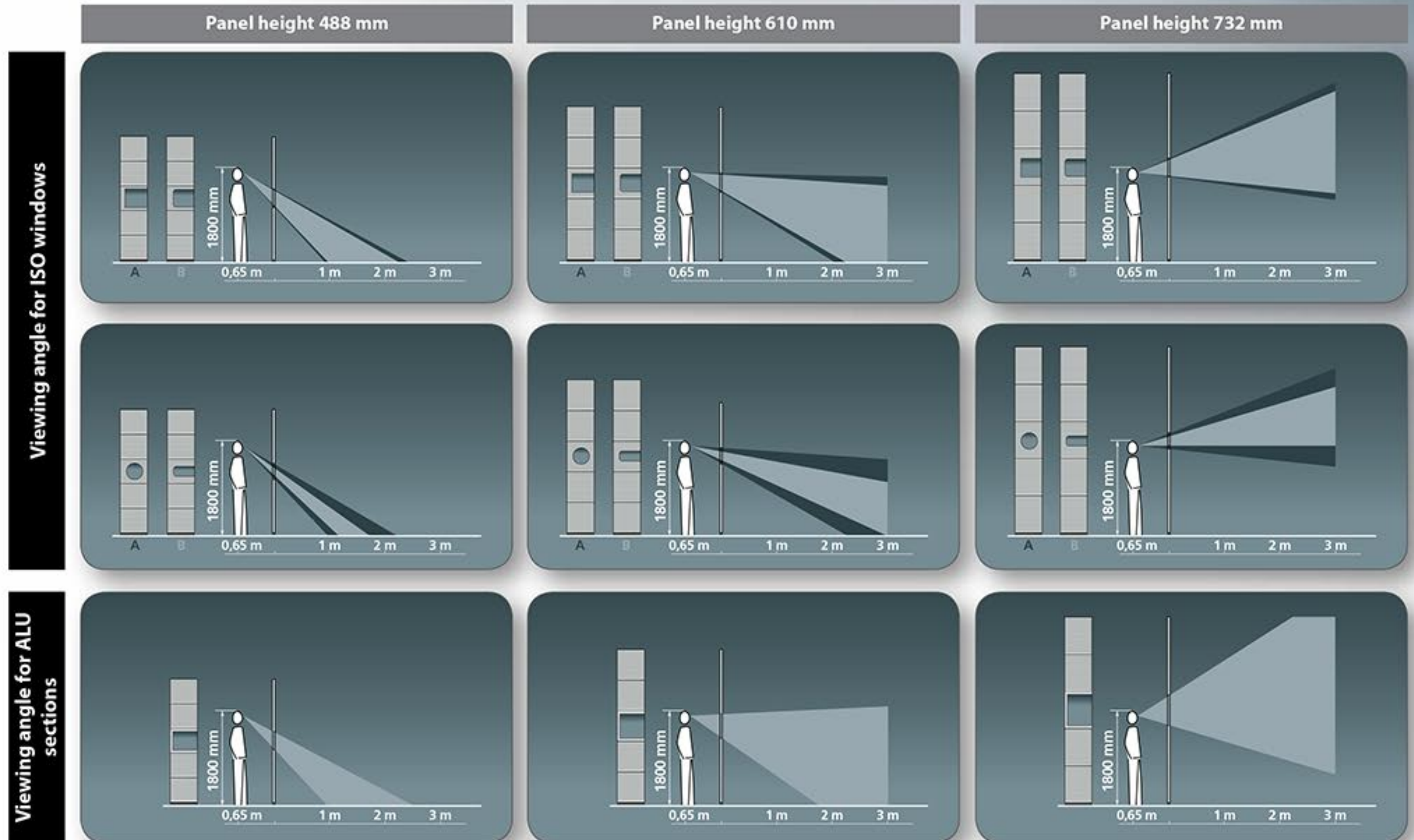


# Windows and the field of vision

Windows are not always specified in order to ensure high levels of natural light. If vision is the most important criterion, ISO windows or ALU sections can be installed in the 3rd section at viewing height.

The manufacturer determines the most efficient panel configuration based on the sectional door specification. Specific requirements, such as alignment with other elements in the building façade, must be clearly identified.

This may result in extra costs if the resulting manufacturing efficiency is lower than that of the standard panel configuration.

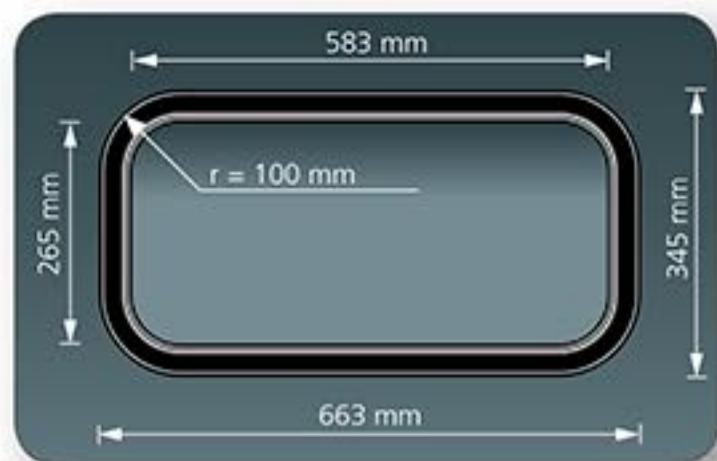








# Window element specifications: ISO windows



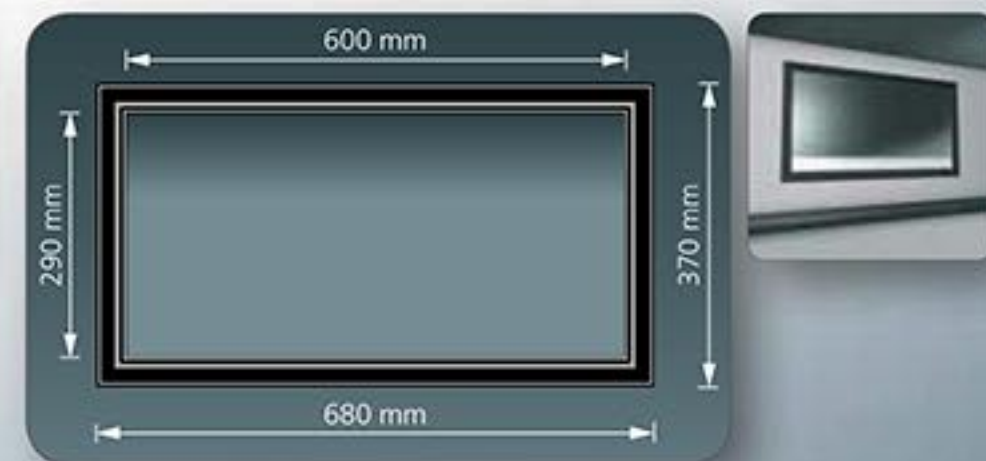
## ISO window with rounded corners

- Pane design: Double pane
- Pane thickness: 2 - 25 - 3 mm
- Pane material: Plastic
- Window frame material: Moulded black plastic
- Insulation value:  $k = 2.8 \text{ W/m}^2\text{K}$
- Transparency: 100%
- Transparent surface area:  $0.15 \text{ m}^2$



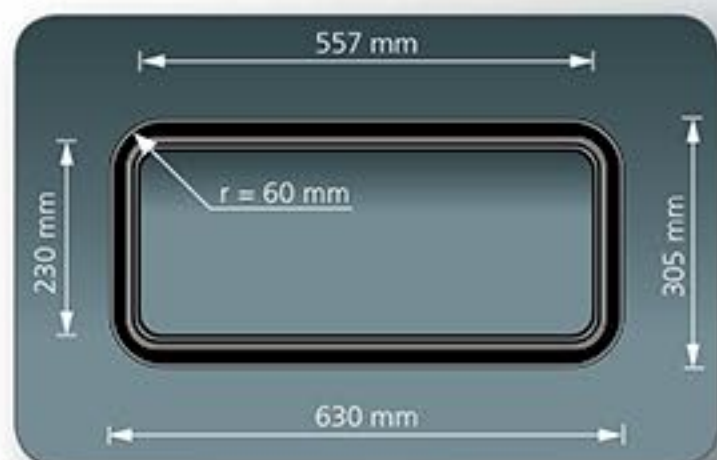
## Restricted-height ISO windows

- Pane design: Double pane
- Pane thickness: 2 - 25 - 3 mm
- Pane material: Plastic
- Window frame material: Moulded black plastic
- Insulation value:  $k = 2.8 \text{ W/m}^2\text{K}$
- Transparency: 100%
- Transparent surface area:  $0.046 \text{ m}^2$



## ISO window with rectangular corners

- Pane design: Double pane
- Pane thickness: 2 - 25 - 3 mm
- Pane material: Plastic
- Window frame material: Moulded black plastic
- Insulation value:  $k = 2.8 \text{ W/m}^2\text{K}$
- Transparency: 100%
- Transparent surface area:  $0.17 \text{ m}^2$



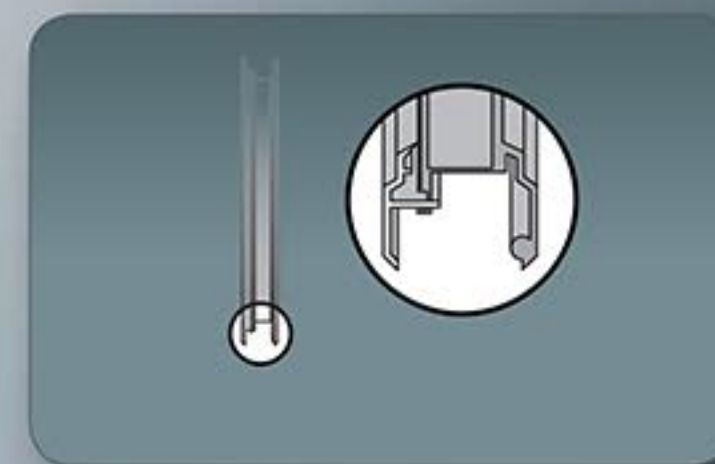
## ISO window with rounded corners

- Pane design: Double pane
- Pane thickness: 2 - 25 - 3 mm
- Pane material: Plastic
- Window frame material: Moulded black plastic
- Insulation value:  $k = 2.8 \text{ W/m}^2\text{K}$
- Transparency: 100%
- Transparent surface area:  $0.13 \text{ m}^2$



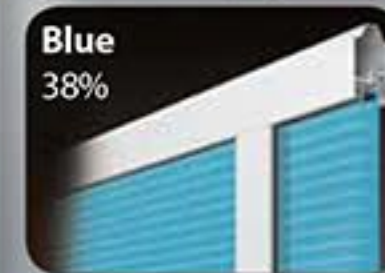
## Round ISO windows

- Pane design: Double pane
- Pane thickness: 2 - 25 - 3 mm
- Pane material: Plastic
- Window frame material: Moulded black plastic
- Insulation value:  $k = 2.8 \text{ W/m}^2\text{K}$
- Transparency: 100%
- Transparent surface area:  $0.051 \text{ m}^2$





# Window element specifications: ISO and ALU sectional doors (ALU sections)



## Single pane transparent infill material

- Infill design: Single pane
- Infill material: Acrylic/polycarbonate\*/ safety glass\*
- Infill material thickness: 2.5 , 3.0 or 4.0 mm
- Window bead: Aluminium
- Section material: Anodised aluminium profile (E6/EV1)
- Section height: 488 – 732 mm
- Insulation value:  $k = 5.5 \text{ W/m}^2\text{K}$
- Transparent surface area: Dependent on section height
- Transparency: 100%

\*Optional

## Double pane transparent infill material

- Infill design: Double pane
- Infill material: Acrylic/Polycarbonate\*
- Infill material thickness: 2.5 - 15 - 2.5 or 3 - 14 - 3 mm
- Window bead: Aluminium
- Section material: Anodised aluminium profile (E6/EV1)
- Section height: 488 – 732 mm
- Insulation value:  $k = 3.5 \text{ W/m}^2\text{K}$
- Transparent surface area: Dependent on section height
- Transparency: 2 x 100%

\*Optional

## Double pane partially transparent infill material

- Infill design: Double pane
- Infill material: Acrylic
- Infill material thickness: 2.5 - 15 - 2.5 mm
- Window bead: Aluminium
- Section material: Anodised aluminium profile (E6/EV1)
- Section height: 488 – 732 mm
- Insulation value:  $k = 3.5 \text{ W/m}^2\text{K}$
- Transparent surface area: Dependent on section height
- Transparency: Outer pane frosted, inner pane 100% transparent

## Double Chamber, transparent 5 sided infill

- Infill Material: Polycarbonate
- Infill Thickness 2.5 -15- 2.5 / 3-14-3 mm
- Glazing beads:Aluminium
- Panel Material: Anodised Aluminium Profile (E6 EV1)
- Panel Height 488 -732 mm
- U Value:  $1.7 \text{ W/m}^2\text{K}$
- Transparent surface: is depending on panel height
- Transparency: 5-38-42-50-63% depending on the colour of the infill



# Window element specifications: only applicable to ALU sectional doors

The fields (frame partitions) in the ALU sectional door can be equipped with double or single walled infill materials that are either opaque, partially or completely transparent, or perforated sheet.



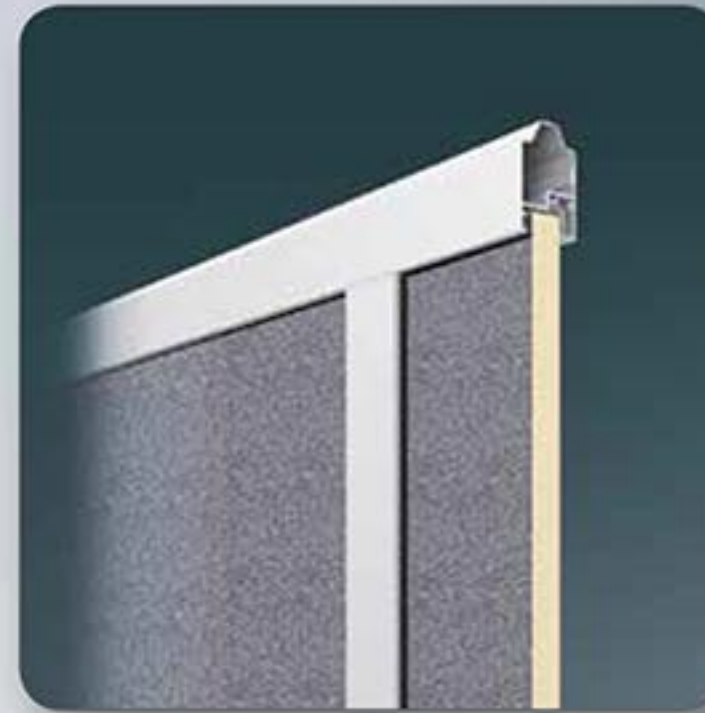
**Single wall perforated infill (round hole)**

- Infill design: Single wall sheet
- Infill material: Smooth perforated aluminium sheet
- Sheet thickness: 2 mm
- Perforations: Ø10 mm, pitch 15 mm, open surface area 40%
- Bead material: Aluminium
- Section material: Anodised aluminium profile (E6/EV1)
- Section height: 488 – 732 mm



**Single wall perforated infill (square hole)**

- Infill design: Single wall sheet
- Infill material: Smooth perforated aluminium sheet
- Sheet thickness: 2 mm
- Perforations: Square 10 x 10 mm, open surface area 70%
- Bead material: Aluminium
- Section material: Anodised aluminium profile (E6/EV1)
- Section height: 488 – 732 mm



**Double walled opaque infill**

- Infill design: "Sandwich" construction
- Infill material: Stucco
- Infill thickness: 20 mm
- Bead material: Aluminium
- Section material: Anodised aluminium profile (E6/EV1)
- Section height: 488 – 732 mm
- Insulation value:  $k = 3.1 \text{ W/m}^2\text{K}$



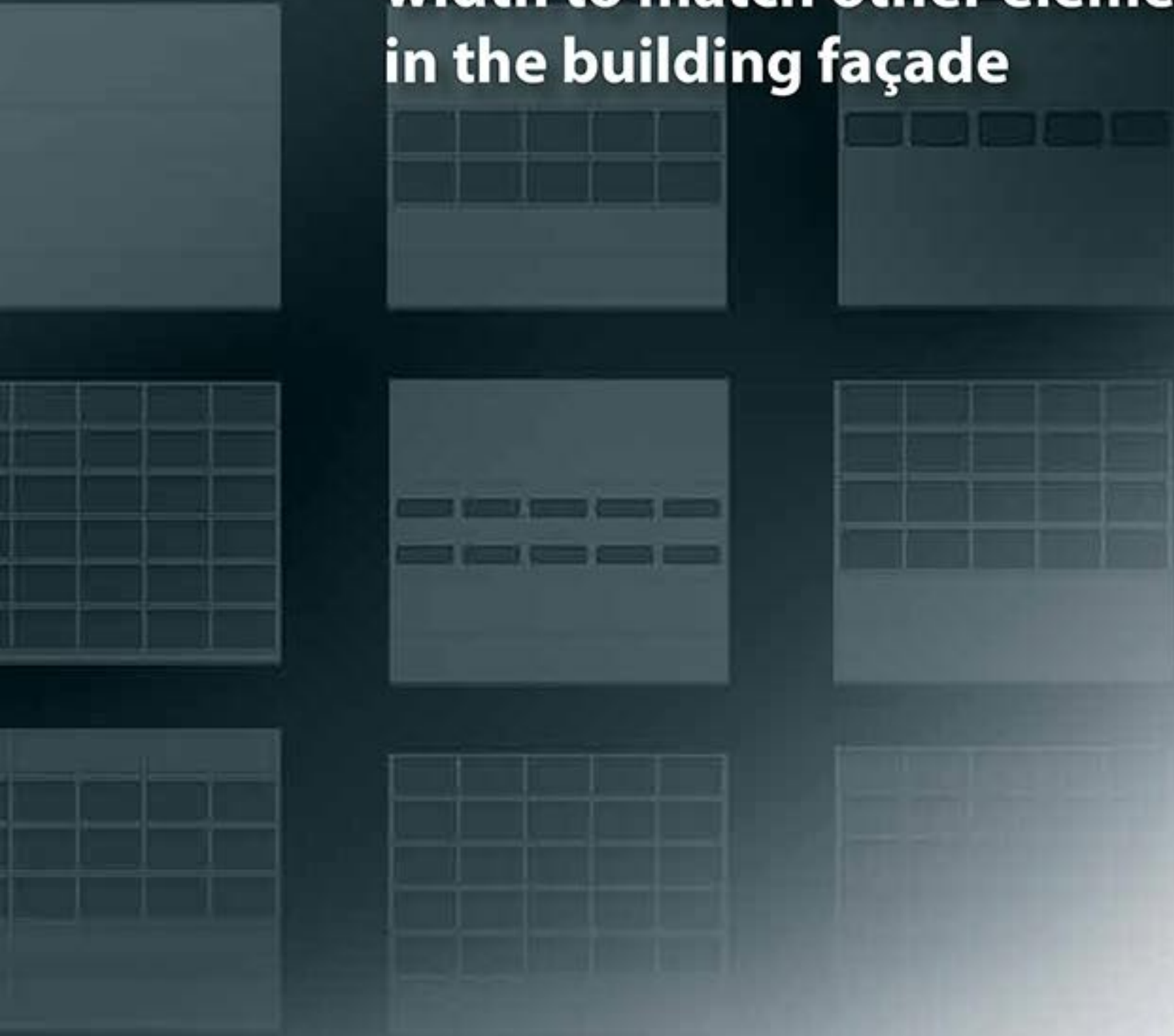
**Double Chamber, Closed infill**

- Construction Infill: Sandwich
- Infill Material: Stucco
- Infill thickness: 20 mm
- Outside: Alu smooth plated
- Glazing bead: Aluminium
- Panel Material: Anodised Aluminium Profile (E6 EV1)
- Panel Height: 488 mm-732 mm
- U Value:  $3.1 \text{ W/m}^2\text{K}$



# Aligning the section height and field (section partition)

width to match other elements in the building façade





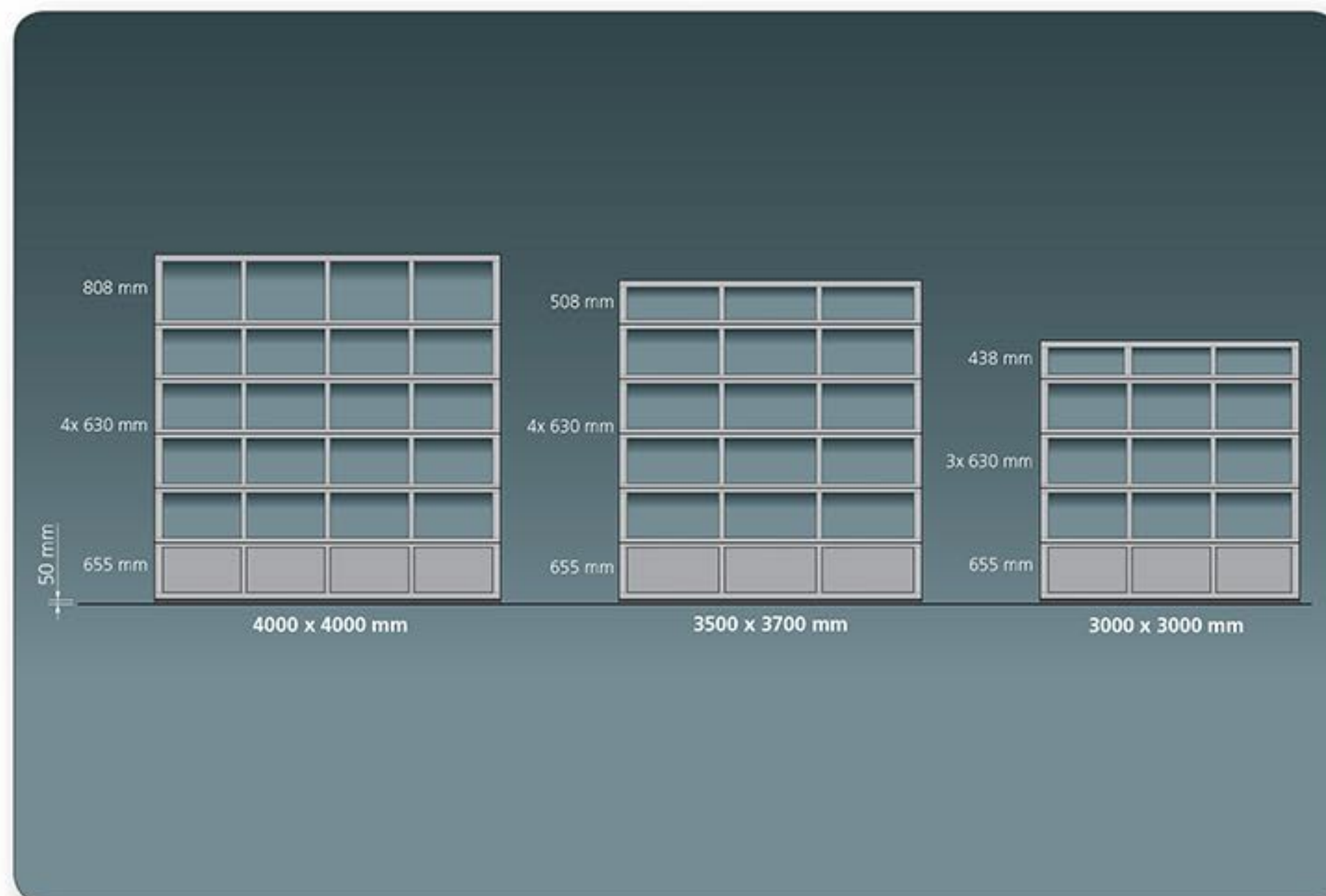
## Made-to-measure door leaf

Ideally, the ALU sectional door is made up of sections of an identical height. Any height adjustment required is achieved by modifying the height of the bottom or top sections. The field width (the width of the partitions in the sections) can, within limits, also be adjusted to match windows that are already present in the building façade.

In cases where multiple ALU sectional doors of different sizes are installed alongside each other in the same building façade, the door leaves can be constructed from sections of the same height. Only the top section has to be made to the exact required size in each case.

Any requirement for alignment of the section heights and field widths to other elements in the building façade must be clearly indicated on the order. It is important that the information on the order indicates which doors (elements in the building façade) are to be installed alongside each other and the type of alignment that is required.

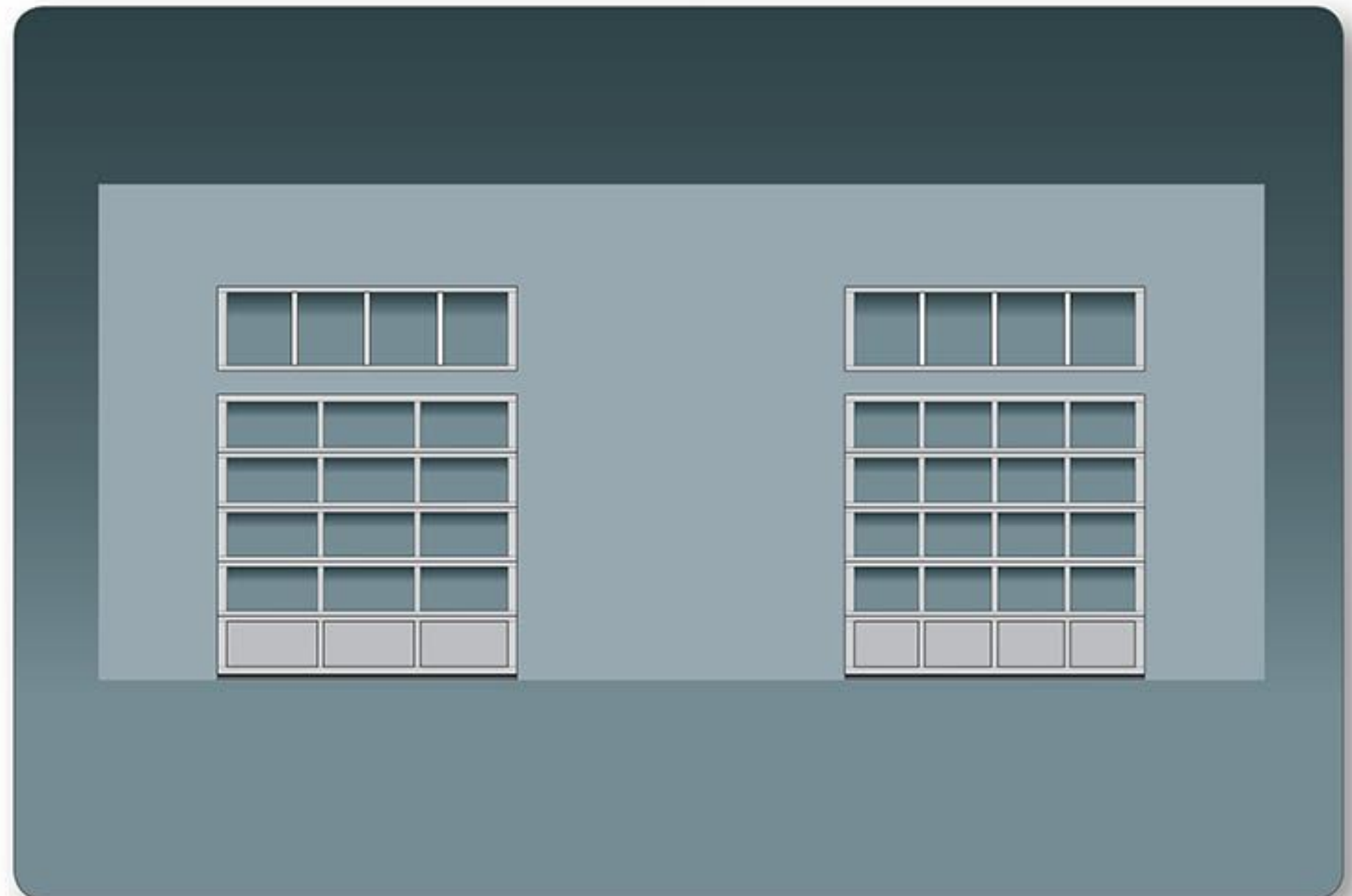
This may incur extra costs as it may be necessary to supply more panels than standard.





## Vertical alignment

In cases where a window array is mounted above the ALU sectional door, the same partitioning pattern can be incorporated in the sectional door. The left-hand illustration depicts a window array above an ALU sectional door with the standard door leaf configuration. The right-hand illustration depicts a window array above an ALU sectional door where the door leaf configuration has been aligned to the windows. This results in a more harmonious appearance.





## Horizontal alignment

The height of the sections used to construct the ALU sectional door can be adjusted\* in order to align the section height configuration of the sectional door as neatly as possible to any windows that are already present in the building façade. The left-hand illustration depicts a building façade with existing window arrays on each side of an ALU sectional door with the standard door leaf configuration. The right-hand illustration depicts a building façade with existing window arrays on each side of an ALU sectional door with a door leaf configuration that has been aligned to the windows. This results in a more harmonious appearance.

Obviously, a non-standard door configuration can affect pricing. It may for example be necessary to add extra sections, build an asymmetric door leaf, etc.

\* It may not be possible to modify the section heights if the sectional door is equipped with an integral wicket door. The wicket door must comply with a free passage height requirement, which may make alignment impossible.





# Profiles

The aluminium profiles that are used to construct the ISO and ALU sectional doors are anodised as standard (E6/EV1). Their dimensioning and design depends on the application and door width.





# ISO sectional door profiles

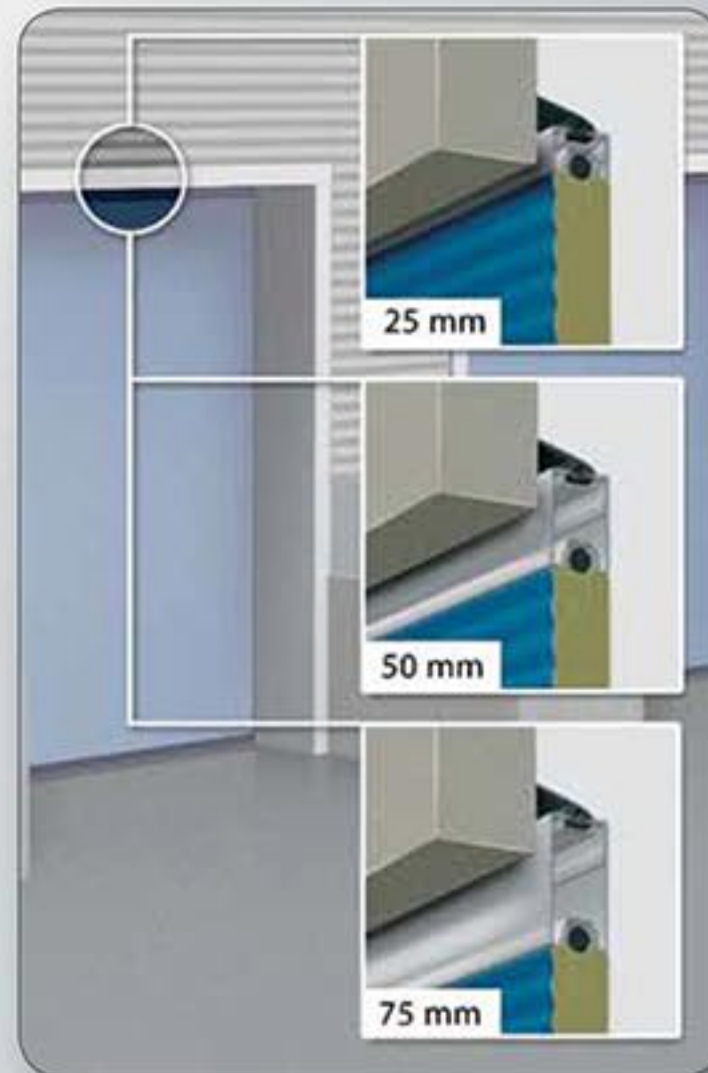
Gaps between the ISO sectional door and the door lintel can be compensated for by using top profiles of varying heights. The top profile is available in heights of 25, 50 and 75 mm. The profiles are fitted with a rubber seal at the top edge.

These aluminium profiles are supplied in a silver anodised finish. This is the most attractive finish in terms of colour coordination with the different standard panel variants. The aluminium profile on the bottom face of the door carries the bottom rubber seal.

This profile is designed and constructed in such a way that it is not visible on the outside. The endcaps on the end of the panels are made from galvanized steel. This improves door appearance and contributes to the durability of the product. The panel stiffeners are galvanized with a height of 82 mm and 110 mm and are supplied where necessary and depend on the configuration of the door.

The brace design used is of course always matched to the application and door configuration. The door rollers are available in standard and heavy-duty designs. The door width determines the choice of roller design. The designs differ in terms of the number of fixing points and rigidity.

The standard design has 6 fixing points. The heavy-duty design has 12 fixing points. The standard roller offers adequate stability and precise, low-noise door guidance up to a door width of 5000 mm. The heavy-duty design is used when the door width exceeds 5000 mm.





# ALU sectional door

A brace is fitted to every other section when the door width lies between 4200 mm and 5000 mm. When the door width exceeds 5000 mm, a brace is fitted to each section.

The brace profiles are either 3 mm or 5 mm thick. The dimensions and type of use of the ALU sectional door determine the choice of brace profile thickness.

The door rollers are available in standard and heavy-duty designs.

The door width determines the choice of roller design. The designs differ in terms of the number of fixing points and rigidity. The standard design has 6 fixing points.

The heavy-duty design has 12 fixing points.

The standard roller offers adequate stability and precise, low-noise door guidance up to a door width of 5000 mm. The heavy-duty design is used when the door width exceeds 5000 mm.

The shape and dimensions of the profiles used to construct the frames for the ALU sections have been developed to suit the range of sizes available and the final door applications.

Growth in order volume has made it possible to increasingly design the ALU sectional door profiles to suit specific door sizes and door applications. Today, because the ALU sectional door is tailor-made in every aspect, it has evolved into a customer-specific product.

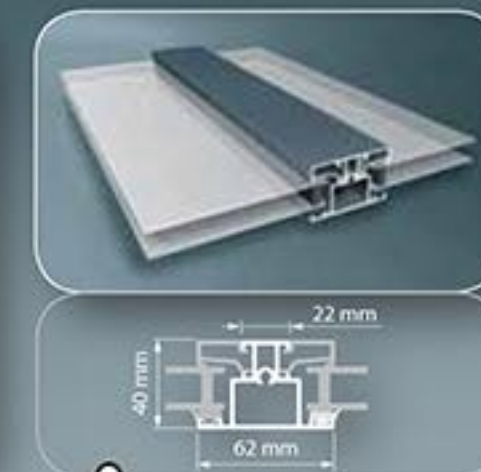
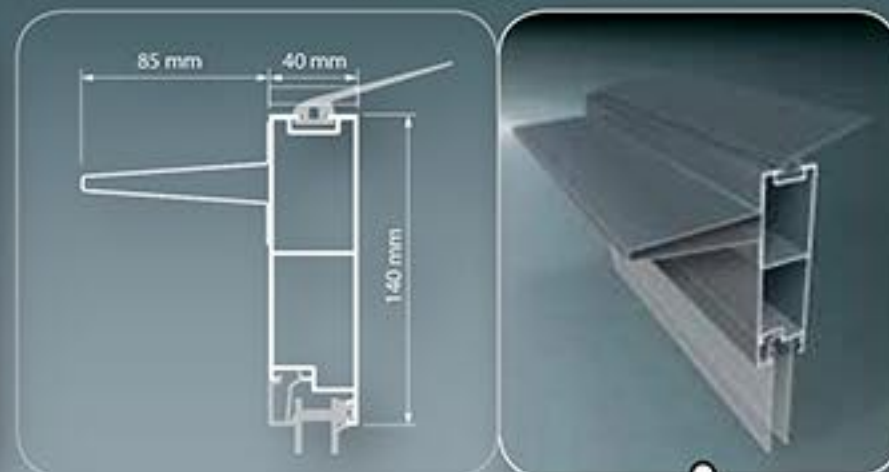
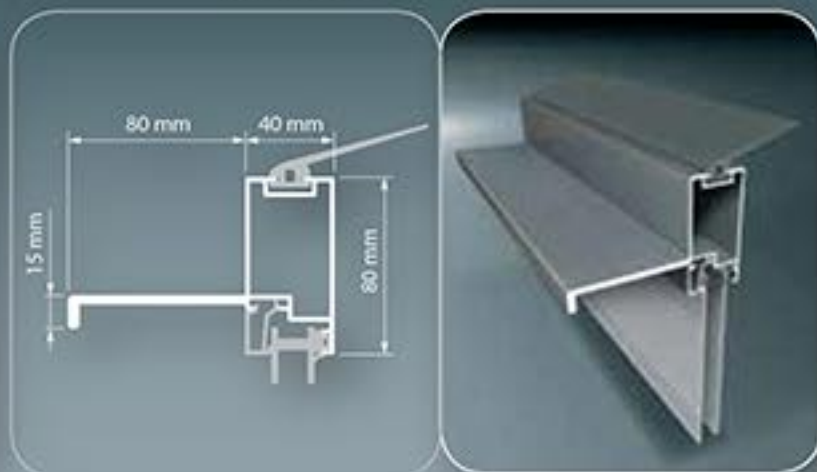
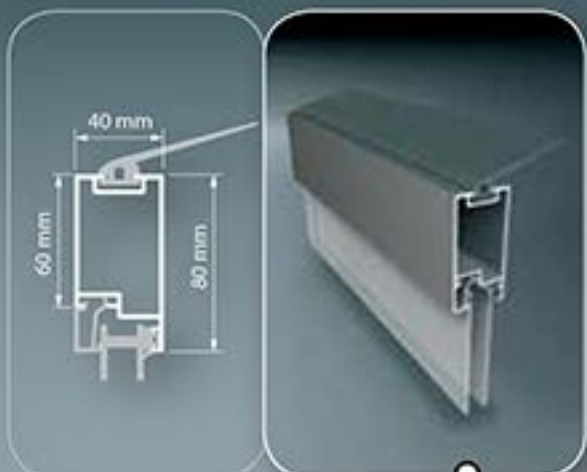




Up to DW 4000 mm

From DW 4000 mm to 7200 mm

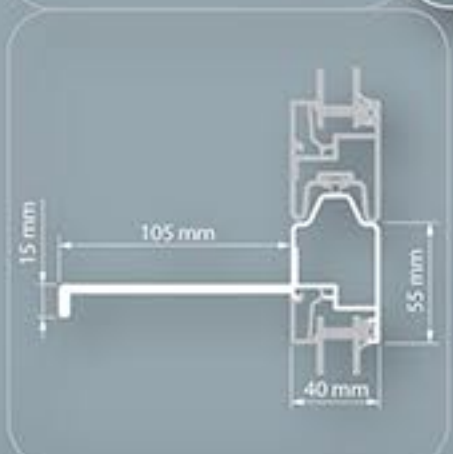
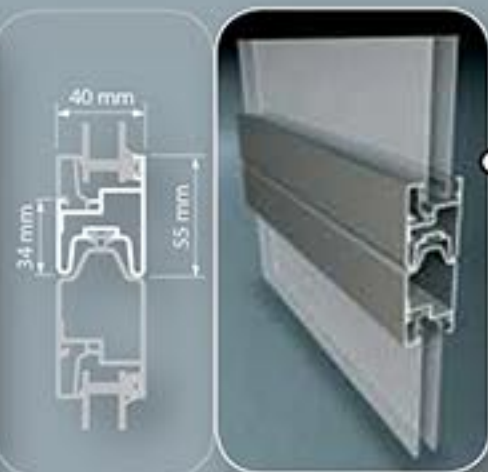
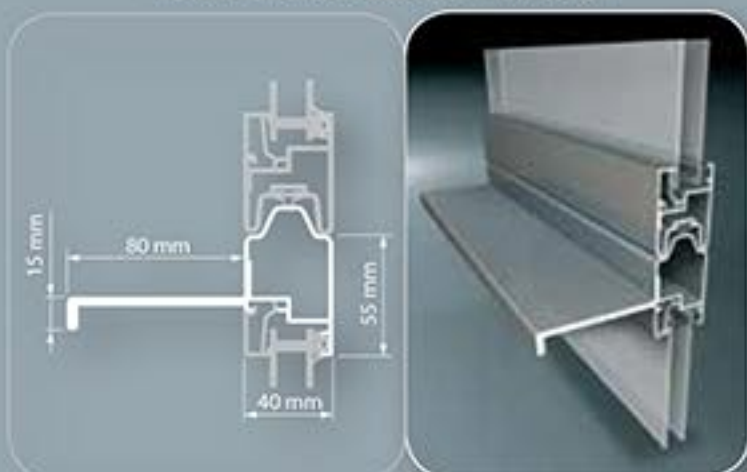
From DW 7200 mm



From DW 4200 mm on every second section  
From DW 5000 mm on all sections

Up to DW 4200 mm

Finger-pinch protection  
up to DH = 2500 mm

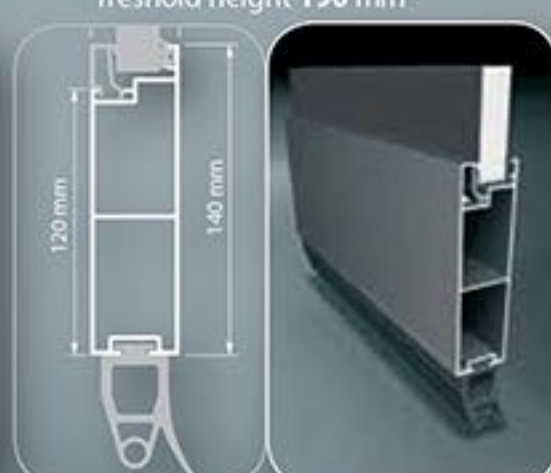
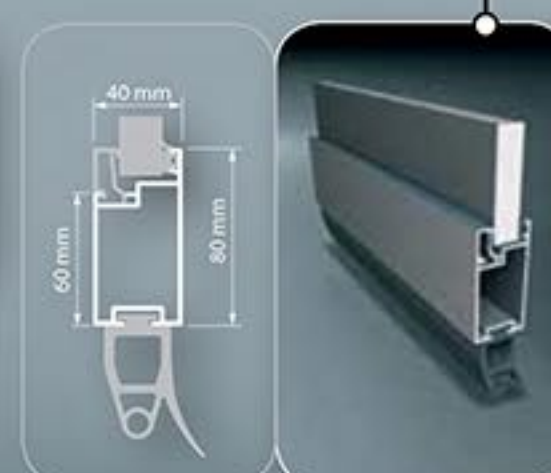
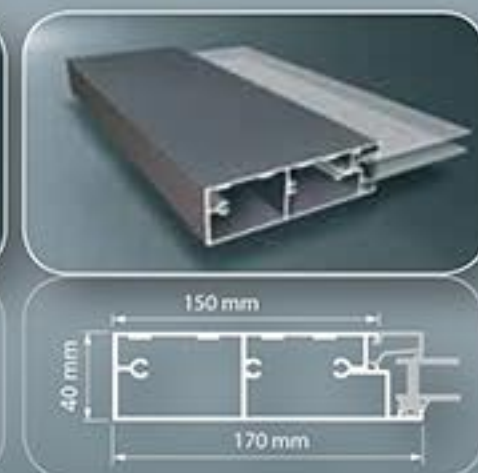
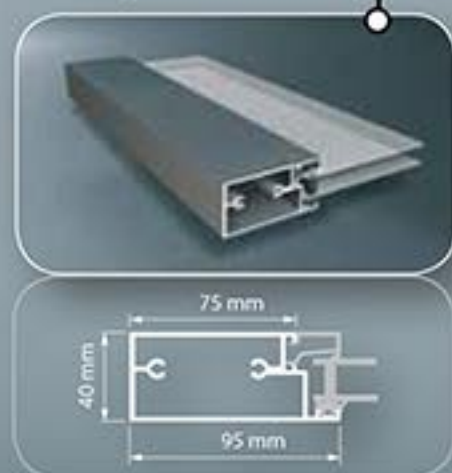


Up to DW 5000 mm

From DW 5000 mm

Up to DW 4000 mm

From 4000 mm and when  
a wicket door is present  
Threshold height 190 mm



\*DW = Door Width



# Physical door characteristics





Sectional door/General  
 Maintenance and an inspection should be performed at least once a year by a specialised door expert. Regularly check the cables, re-tension the springs if required, check the shaft coupling, hinges and all fasteners.

Door with chain hoist operation  
 - do not operate incorrectly.  
 - open the door fully to free the opening.  
 - always secure the chain in the holder.

Door with electric drive  
 - comply with operating instructions.  
 - have the door checked every 4000 cycles.

Year of manufacture	: 2006
Door type	: ISO/ALU
Order number	: 123456
Production no.	: 2060111
Door leaf weight	: 25.6 kg
RW spring	: 95.4 10.0 L=255mm
LW spring	: 95.4 10.2 L=225mm
Number of turns	: 5.4
Drive	: SE 9.24 25.4 970

Next inspection



**2006**

EN 13241-1

Electric / Manual

214566

Resistance to water ingress	
Class:	2
Resistance to wind load	
Class:	3
Thermal transmittance:	U = 2
	W (m <sup>2</sup> .K)
Air permeability	
Class:	2

**CE**

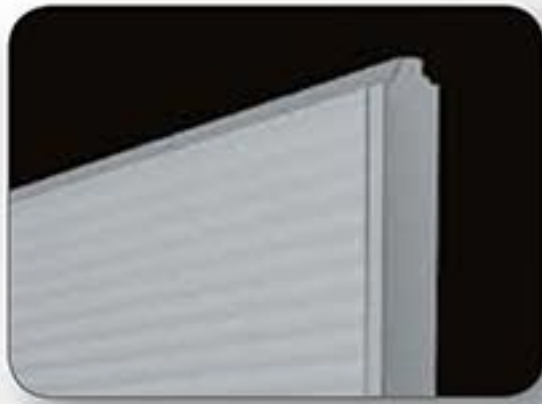
(89/106/EWG; 98/37/EG; 89/336/EWG)

Sectional doors must be constructed in accordance with the EN13241-1 norm. This is an important consideration in the decision-making process when purchasing sectional doors. The norm describes the legal requirements that the sectional door must satisfy. Amongst other things, sectional doors are assessed on their;

- Resistance to wind load
- Resistance to water ingress
- Air permeability
- Sound insulation
- Thermal transmittance
- Safety of use

A classification is indicated for all these criteria based on tests carried out by TÜV NORD. This makes it easier to compare equivalent products proposed by different manufacturers. Each sectional door is supplied with a label indicating the classifications that apply for the sectional door concerned. One should be seriously concerned if sectional doors designs are unable to better a 0 classification in all the categories... Our calculation program, which corresponds to the information in this brochure, generates a classification table at the time when door specifications are configured. The EN13241-1 norm stipulates that sectional doors up to a height of 2500 mm, where the sections are within normal reach as they hinge open and closed, must be fitted with "finger-pinch protection". Sectional doors that are supplied with T 240, T 340 and T 450 track systems should also be supplied with panels that feature finger-pinch protection. A limited range of this design of panel is available. Please contact us for more information! A CE Declaration for the sectional door in question will not be provided if standard panels are specified for applications of this nature.





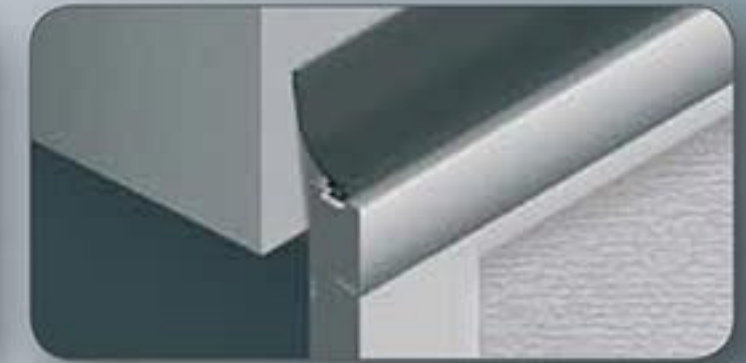
ISO panel cross-section



ALU panel cross-section



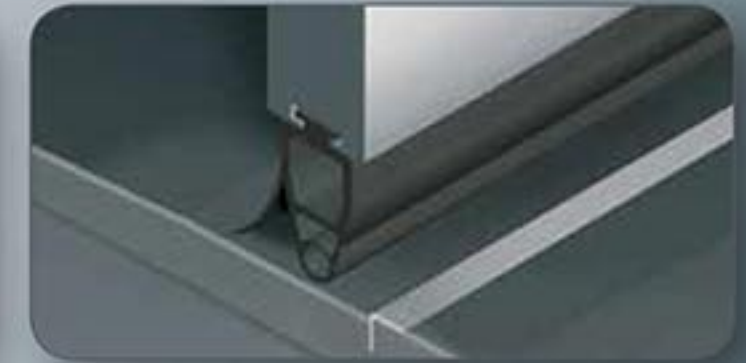
ISO panel top seal



ALU panel top seal



ISO panel floor seal



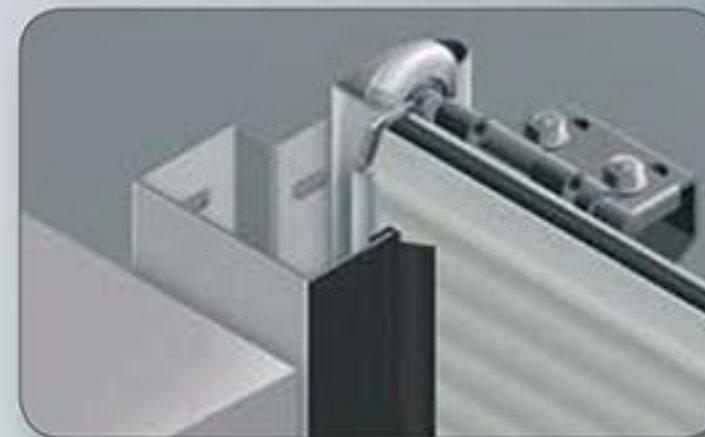
ALU panel floor seal



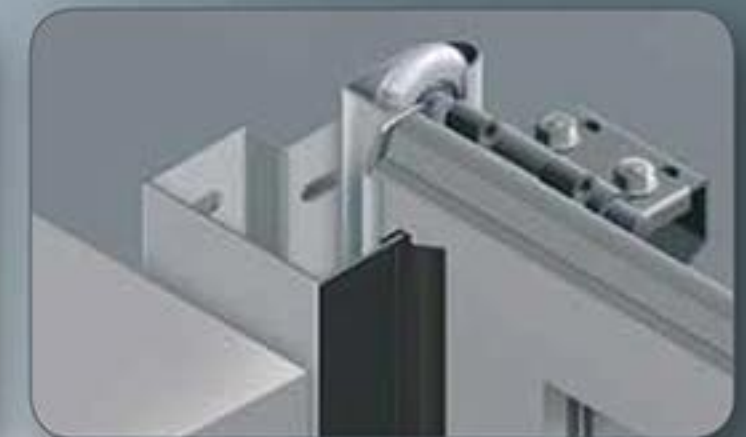
ISO panel lateral seal



ALU panel lateral seal



Mounting surface ISO-panel ZHK



Mounting surface ALU-panel ZHK

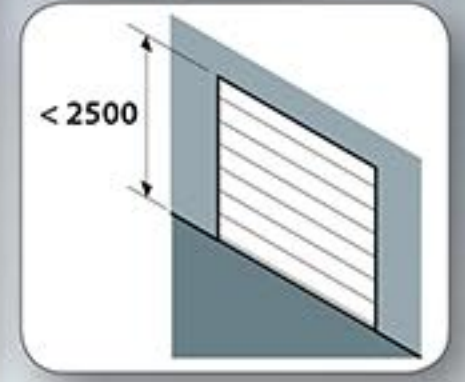
Energy, safety and environmental aspects play an ever greater role in today's society. The demands placed on sealing are becoming increasingly severe as energy concerns continue to grow. We have developed special seals for our sectional doors, which offer maximum protection against the influence of unfavourable weather conditions (moisture, draughts). The seals contribute significantly to door insulation performance. Sectional doors must also function safely when subjected to high wind loads. The manufacturer has developed door-specific solutions in order to resist high wind loads.

If you would like more information, ask for the physical specifications of the sectional door that has been configured for your application. All our products have been tested by TÜV NORD. If requested to do so, we can supply certificates and test reports to substantiate the door performance values we claim.





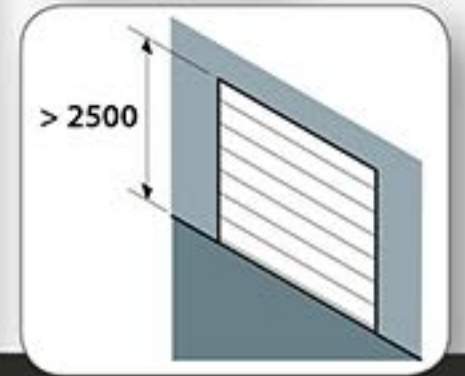
ISO brace profiles



Panel with finger-pinch protection, used up to a door height of 2500 cm



Integrated ALU brace profile

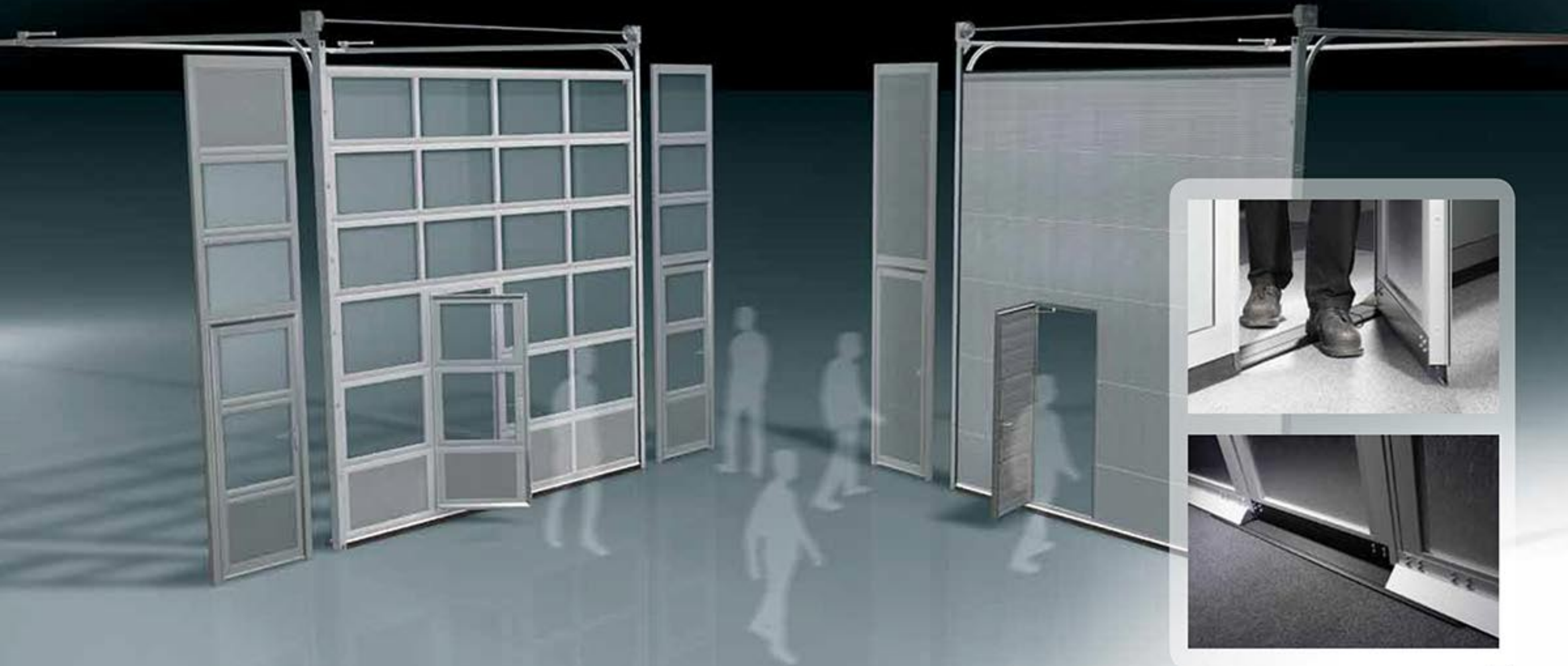


Panel without finger-pinch protection, used from a door height of 2500 cm



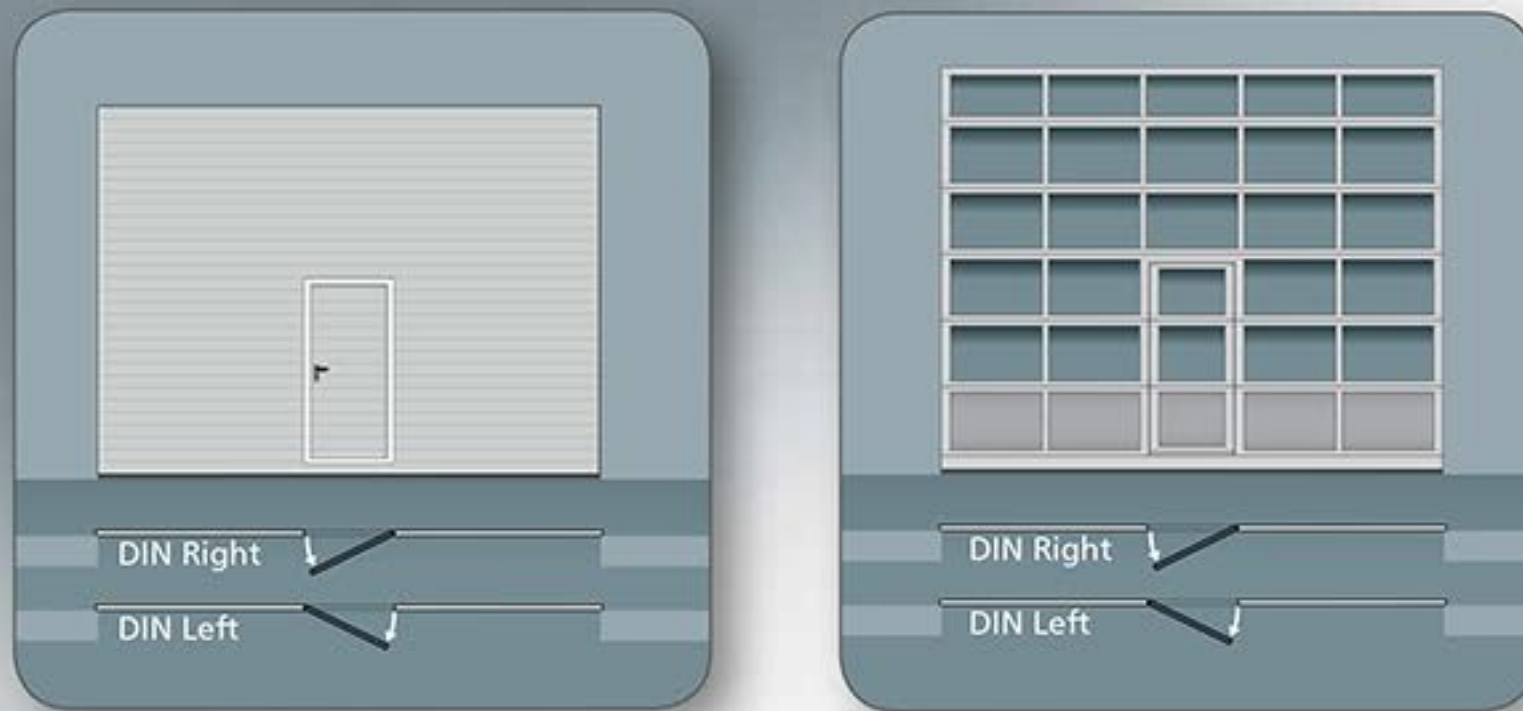
# Wicket doors and side doors

The wicket door is integrated in the sectional door. The side door is placed in a separate side frame. If the door opening is large enough, we recommend the use of a side door in a separate frame.

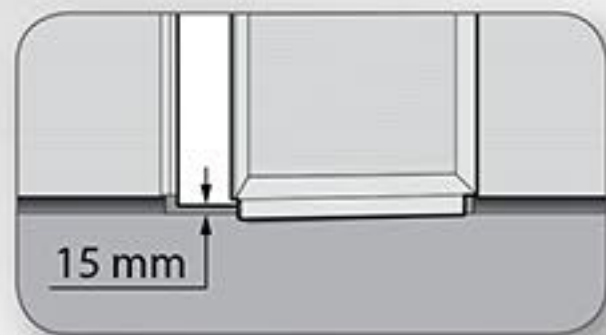




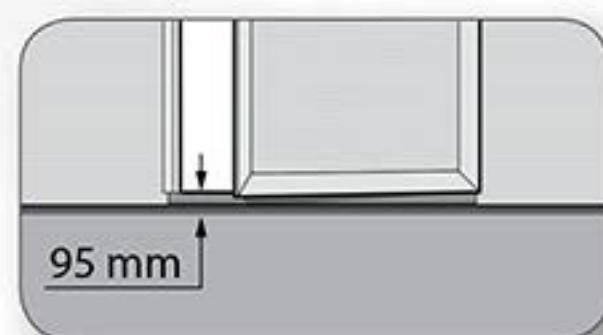
# Wicket door integrated in the door leaf



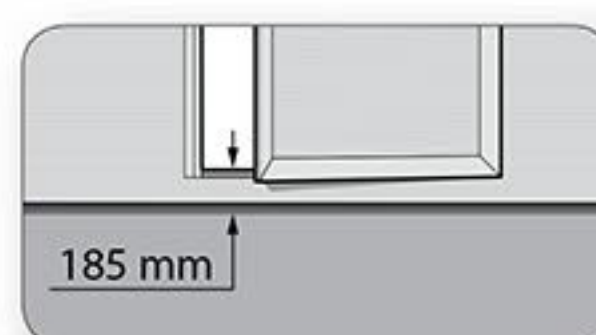
The integrated pass door always opens out and can be delivered right or left handed. As standard a high quality door closer with sliding arm and lever handles is supplied. The lever handles are selected to suit the track system. IE: The clearance between the door leaf and lintel. A variety of different threshold heights are available.



- **15 mm** for safety and comfort. NB: for a good seal the floor must be even and level.



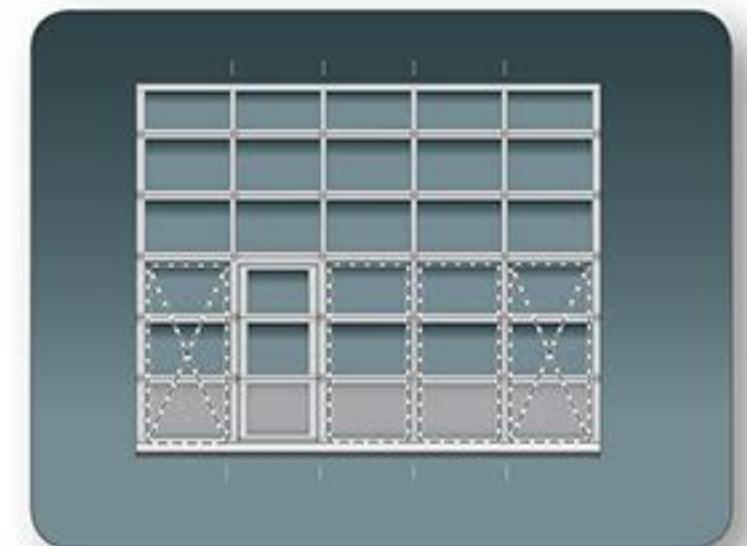
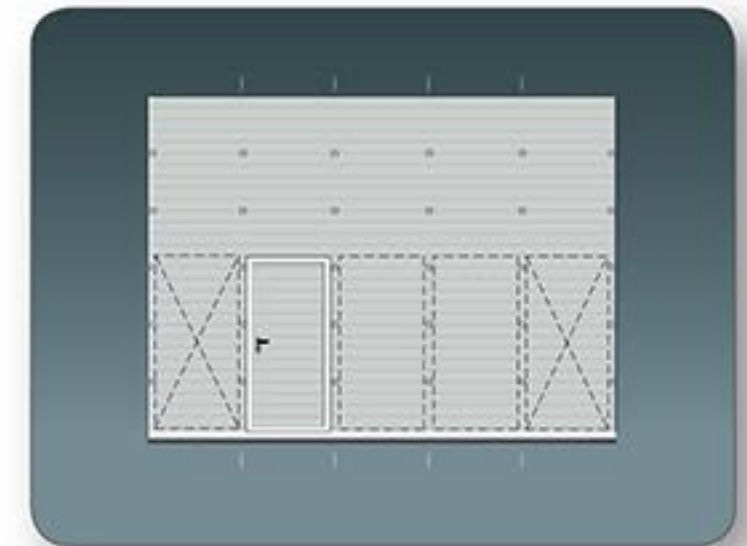
- **95 mm option** can be a good solution between optimal sealing and an acceptable threshold height.



- The **185 mm option** is the traditional solution in which there is optimal sealing and sufficient clearance as the pass door opens outwards, avoiding any floor obstacles or debris.

# Position of the wicket door in the door leaf

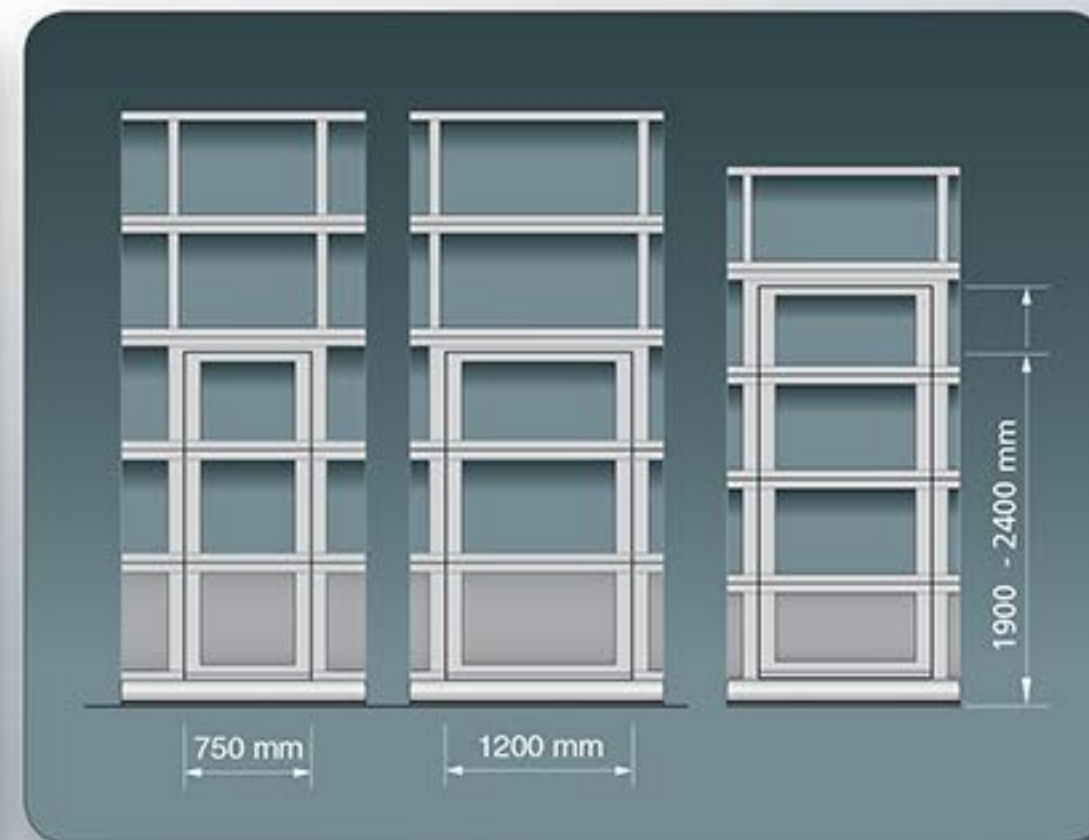
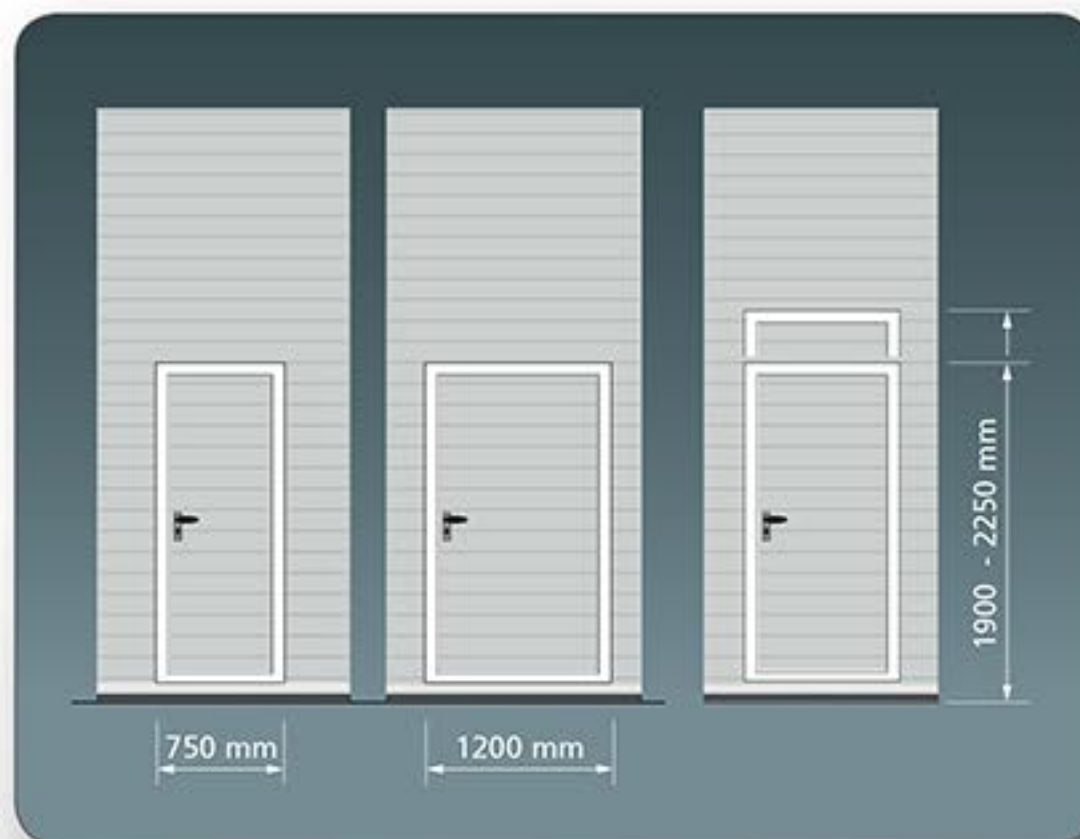
In design terms, the ISO sectional door can be divided up into fields (partitions) of equal size just like the ALU sectional door, although these fields are obviously imaginary in the case of the ISO sectional door. This makes the width of the wicket door dependent on the main door configuration. The wicket door may not be installed in the outermost fields on the extreme left and the extreme right. Wicket doors can be incorporated in the main sectional door up to a maximum door leaf width of 6000 mm.





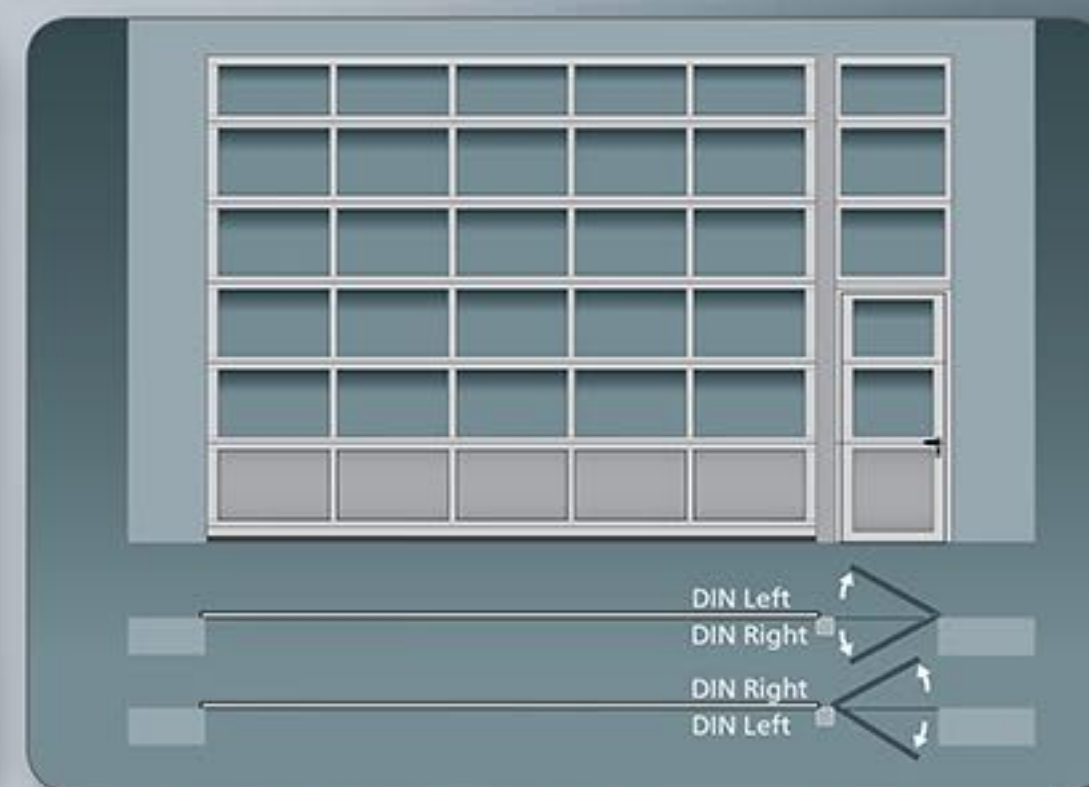
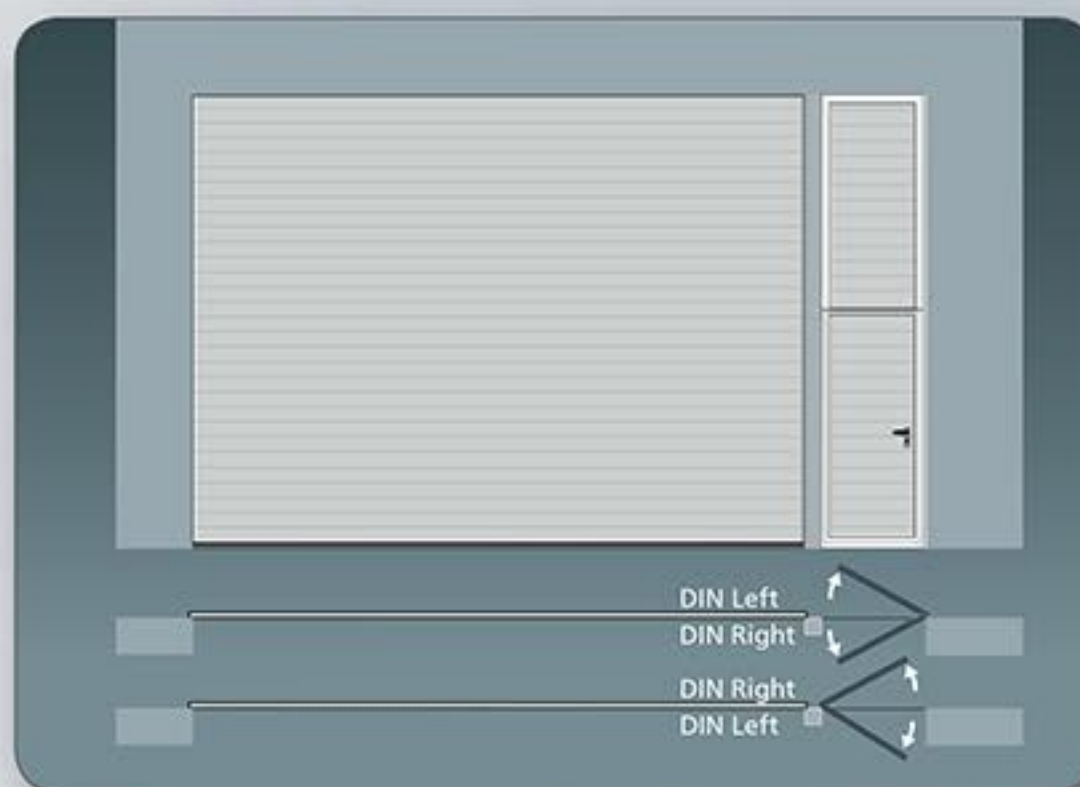
# Dimensions

The height of the wicket door depends on the height of the sections.  
The minimum wicket door height is 1900 mm, measured from the floor. This height has been functionally determined. The presence of the threshold makes it impossible for users to stand in the door opening. The maximum height of a wicket door in an ISO door leaf is 2250 mm. The maximum height of a wicket door in an ALU door leaf is 2400 mm.  
The width of the wicket door lies between 750 and 1200 mm.



# Side doors and fascias

A lateral fascia is generally the same height as the sectional door. Obviously side doors can also be supplied without a fixed upper fascia panel. Side doors open outwards or inwards and are supplied either in DIN-left or DIN-right configuration.  
The wicket doors are always fitted with a high quality, adjustable door closer and are therefore self-closing.

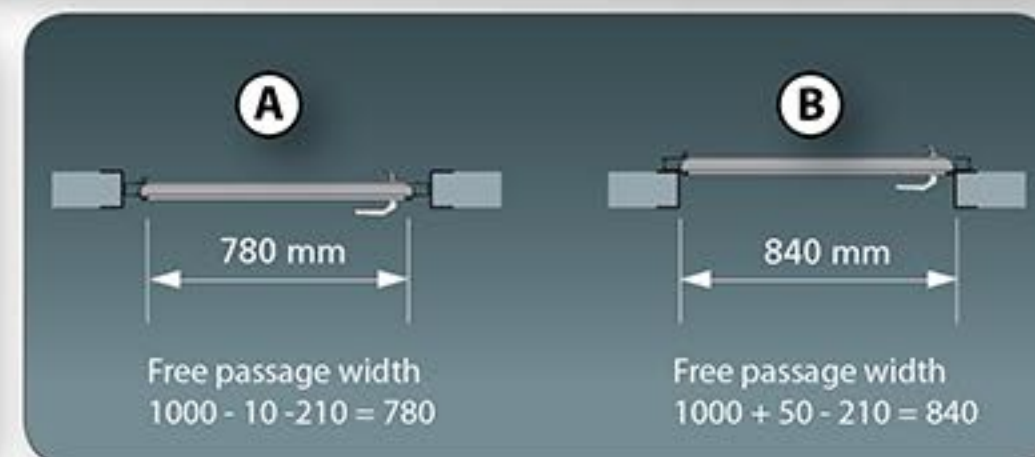
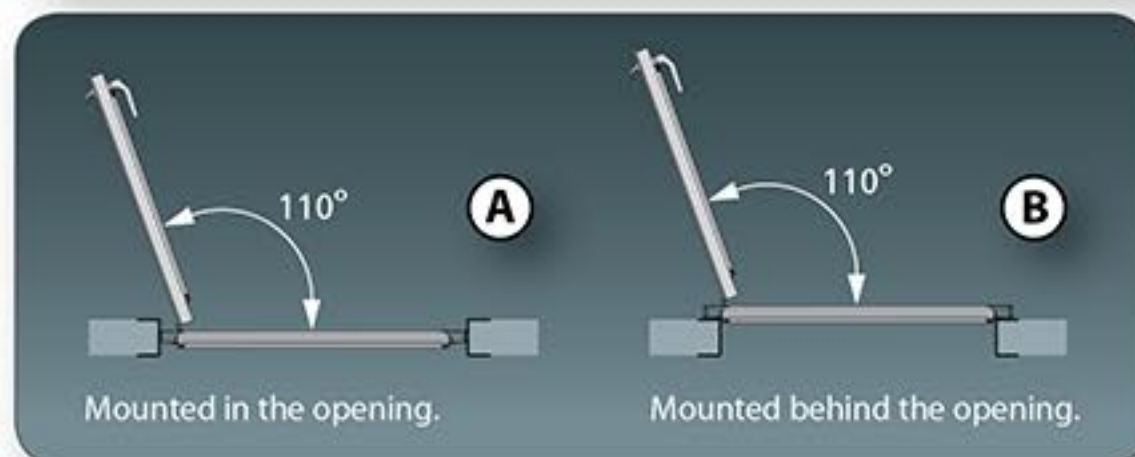
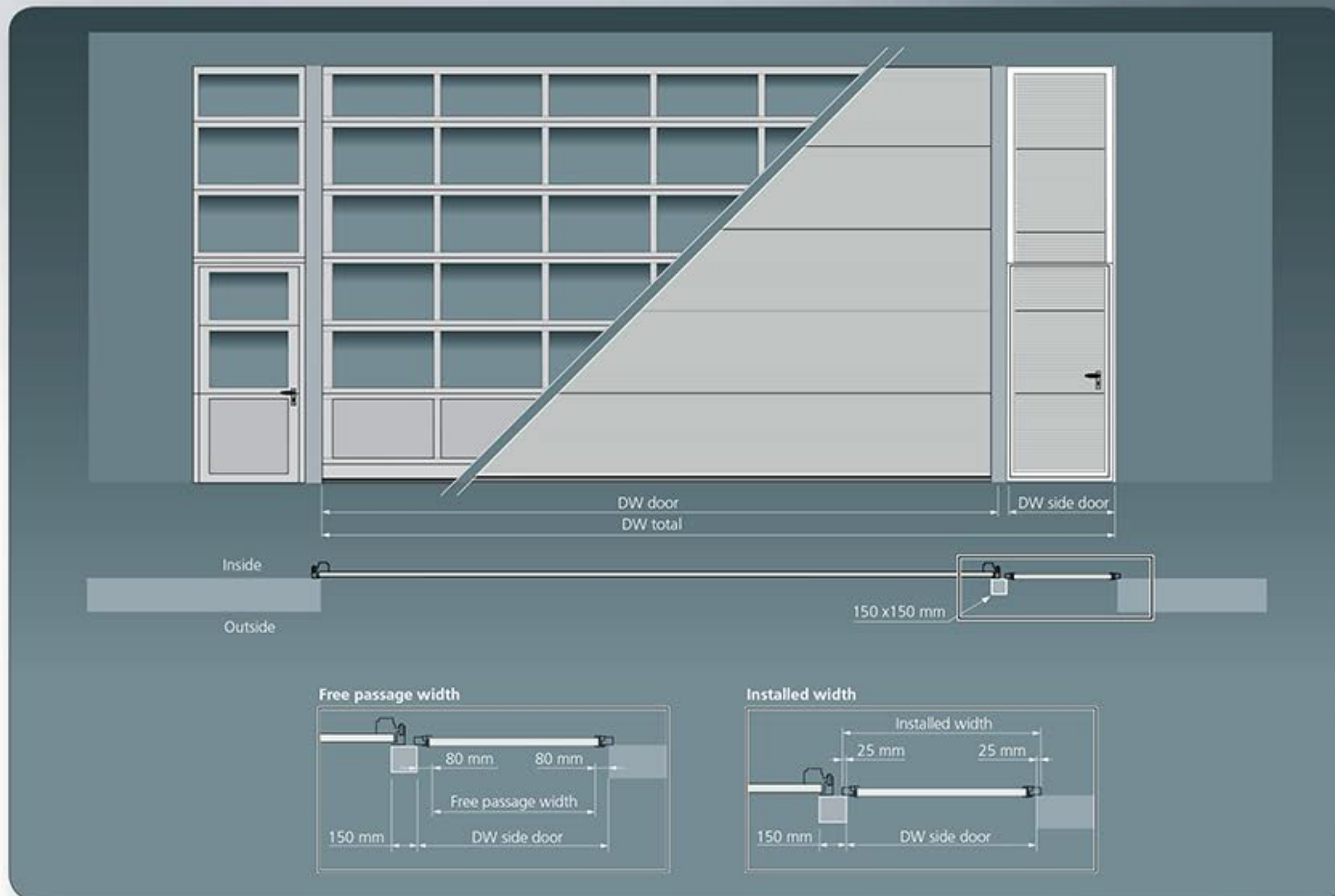




# Dimensions

Side doors alongside the sectional door are not fitted with a threshold.

The recommended minimum height for a side door is 2000 mm. There are no technical constraints that dictate a minimum width. The recommended width lies between 1000 and 1250 mm.







The free passage width of the side door is determined as follows;  
 Clear opening width of the side door = total clear opening width – width of the rectangular tube – clear opening width of the sectional door.  
 The manufacturing width of a side door when mounted in the clear opening is 10 mm less than the clear opening width of the side door. If the clear opening width of a side door is 1000 mm, the free passage width of the side door is  $1000 - 10 - 210 = 780$  mm.

The manufacturing width of a side door when mounted behind the clear opening is the same as the clear width of the side door +  $2 \times 25$  mm.  
 The free passage width of the side door is 200 mm smaller than the production width.  
 If the clear opening width of a side door is 1000 mm, the free passage width of the side door is  $1000 + 50 - 210 = 840$  mm.



# Accessories for wicket doors and side doors

The range includes an extensive choice of door accessories. The following accessories are available:

- Lock with a lever on each side.
- Lock with a fixed knob on the outside and lever on the inside.
- Anti-panic lock with a fixed knob on the outside and lever on the inside.
- Anti-panic lock with a lever on each side (split spindle).
- Anti-panic lock with a fixed knob on the outside and panic bar on the inside.
- Anti-panic lock with a lever on the outside (split spindle) and panic bar on the inside.

## Anti-panic lock

The wicket door or side door can either be fitted with a normal lock or an anti-panic lock. Anti-panic locks are available in various designs. The advantage of an anti-panic lock is that the door can always be unlocked by operating the lever on the inside, even if the night latch has been engaged. Fire department regulations make the use of anti-panic locks mandatory in certain situations.

## Lever/lever anti-panic lock

An anti-panic lock of lever/lever design allows the door to be opened at all times by operating the lever on the inside, even if the night latch has been engaged. The door can also be opened by operating the lever on the outside if the night latch is not engaged.

## Panic bar

Wicket doors and side doors can be fitted with a panic bar. The panic bar is mounted across the width of the wicket door and is easier to find in emergency situations. Panic bars are mainly used in buildings that are frequented by large numbers of visitors.





# Drives and operation





## Drive variants



### **Pull-cord operation**

Pull-cord operation is suitable for sectional doors that are only operated on very rare occasions. This type of operation is suitable for sectional doors of up to 12 m<sup>2</sup> door leaf area. The disadvantage of this type of operation is that the door may not be opened fully or not opened to a sufficient height, which may lead to impact damage. It is impossible to secure the sectional door in a particular opening position. This system requires physical exertion.



### **Chain hoist operation (1:4 ratio)**

Chain hoist operation is suitable for sectional doors that are not operated very frequently. This type of operation is suitable for medium-sized sectional doors of up to 25 m<sup>2</sup> door leaf area. When used correctly, the sectional door can be fixed in the upper end position. This system requires physical exertion.

**One can choose between a pull-cord, a chain hoist and various electric drive systems for door operation.**

**The sectional door is fitted with mechanical and electrical safeties that comply with the EN13241-1, EN12453-1 and EN12604 norms.**

**The sectional door system is safe and convenient to use in all aspects.**





#### **Electric drive with semi-automatic operation**

The electric drive with semi-automatic operation is a good choice for sectional doors that are not operated very frequently. The upward movement of the door is initiated by pressing and releasing a button. The sectional door opens automatically and stops when it reaches the upper end position, which can be adjusted electronically. The appropriate button for the downward movement has to be pushed and held down during door operation (deadman operation). This type of operation is suitable for sectional doors of up to 50 m<sup>2</sup> door leaf area. Operator convenience is acceptable; but cannot be automated further.

#### **Electric drive with fully automatic operation (impulse)**

Drives with impulse operation are suitable for sectional doors that are operated very frequently. During opening and closing, the door automatically moves to the appropriate end position, which can be adjusted electronically. When in the fully open position, the entire door opening is available.

An obstacle detection system (safety edge) is incorporated in the bottom seal of the door. When the photocell beam of the safety edge system is broken by contact between the seal and an obstacle, the sectional door will stop and reverse.

The system can be automated further by adding remote control, induction loops, radar detectors or a timer system that closes the door again after a preset delay.

This very convenient drive/operating system is the most common choice and is suitable for a door leaf area of up to 50 m<sup>2</sup>.

#### **Automatic operation (impulse) in combination with variable speed control**

Electrical drives with impulse operation may also be supplied in combination with variable speed control. Just like the normal impulse system, this system can also be remotely operated. The variable speed control extends the service life of the sectional door.

Gradual acceleration and braking when the door starts to move and comes to a halt subject components to less mechanical stress. The door's ability to open faster saves time and reduces energy losses.

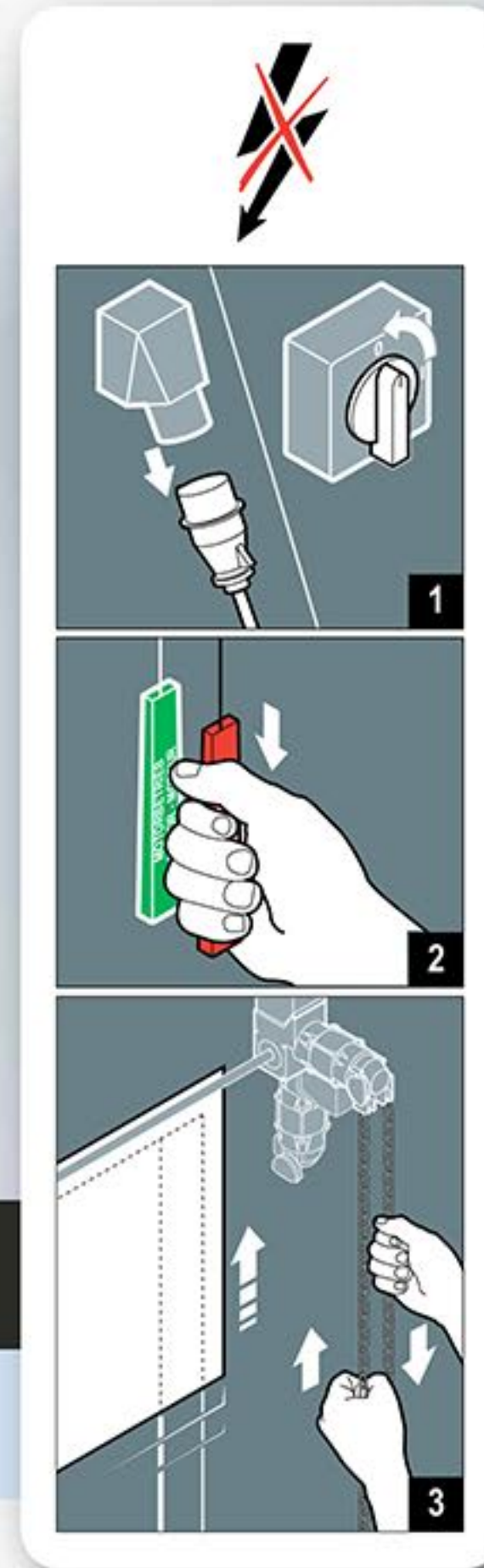
This system can be used for doors with a door leaf area of up to 25 m<sup>2</sup>.



# Emergency operation and drive-related safety devices

All drive systems are fitted with an emergency opening system in the drive gearbox. These electric drives can be operated both electrically and mechanically. The mechanical opening system allows the sectional door to be opened in the event of a power failure. The mechanical drive system is engaged and disengaged by two pull-cords on the drive. When the mechanical drive function is engaged, the drive gearbox can be operated by the emergency chain. The drive ratio of the emergency operating system is 1 : 20. The spring shaft and the drive gearbox remain connected to each other.

There is therefore no need to fit an extra spring break safety as the gearbox design effectively immobilises the spring shaft when a torsion spring breaks. Drives that can be disengaged from the spring shaft are also available. This design uses a cable-operated system to disengage the gearbox from the spring shaft, thereby allowing the sectional door to be opened faster in the event of a power failure or breakdown. Sectional doors that are fitted with this type of declutchable drive are obviously also equipped with a spring break safety.



## CE Conformity

Only drives that are suitable for the specified door configuration are supplied. The choice of drive system must therefore be determined at the time the type of sectional door is specified. The type of sectional door and the drive system are matched to each other during production and supplied with a (CE) declaration of conformity that relates to the complete system. The European Machine Directive applies to the complete door system.



1

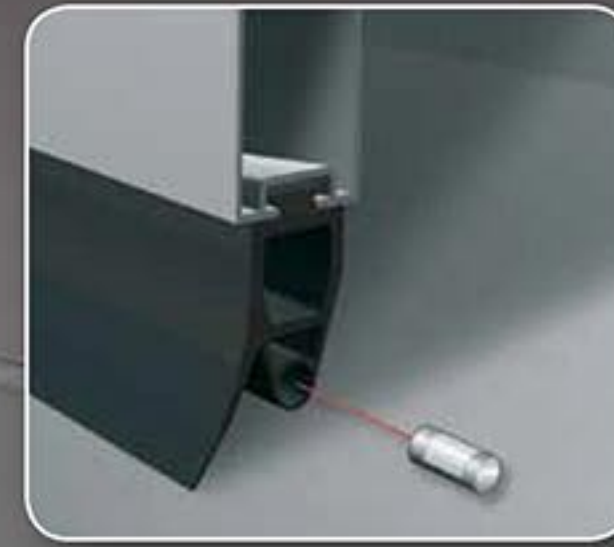


### Slack cable safety

This safety is fitted to both wire cables and immediately switches the electric drive off if one of the wire cables breaks or slackens.

This complies with EN13241-1 & EN12453-1.

This system features special plug-in connectors which facilitate fitting and prevent incorrect wiring.



2

### Obstacle detection system

The maximum force the obstacle detection system (safety edge) may exert is defined in the EN13241-1 norm.

3

### Stationary photocell

If a door has been automated to the extent that the door opening is not in the operator's direct line of sight when the door is operated, the system must be equipped with an extra stationary safety photocell.



## Accessories and safety devices

7

4

6



4

### Drive

The drive is matched to the door configuration, i.e. it is supplied with the correct

- gearbox safety brake rating.
- speed rating.
- output shaft diameter.





### 5 Running ahead optical obstacle detection system

The bottom of the sectional door is protected with an optical obstacle detector running ahead of it, with double sensors. This detector ensures contact-free reversal of motion as soon as any obstacle is detected in the door opening.

### 6 Control panel

The control panel is matched to the door configuration and can be fitted with operation and safety controls such as,

- an emergency stop button.
- a button for a 2nd opening height.
- a main isolator switch.
- a key switch that can be used to deactivate the control panel.

### Control system

The advanced electronics in the control panel include the following options:

- Electrically adjustable limit switches.
- Automatic correction of the closed door position setting to prevent extreme mechanical stresses being exerted on the bottom rubber seal when the sectional door is closed.
- Fully adjustable electronic torque limiter.
- The upward movement of the door stops if any unusual extra force (a weight hanging on the door) slows movement down.
- Programmable maintenance intervals (set by the installer).
- Control status indication in the information display.

- ### 7 Mechanical safety devices
- The sectional doors can be equipped with a mechanical spring break safety and cable break safety.

### Spring break safety

The spring break safety is designed to immobilise the spring shaft if a torsion spring breaks. This prevents the door leaf dropping down uncontrollably.

The drive gearbox fulfils this function under certain circumstances. The static unidirectional resistance of the gear system in the gearbox needs to be of a magnitude that is capable of immobilising the spring shaft if a torsion spring should break. This is the case when the drive is fitted with an emergency chain opening system.

### Cable break safety

The cable break safety is constructed in such a way that the door is immobilised in the tracks if one of the cables breaks. This prevents the door leaf dropping down uncontrollably.

A cable with a sufficiently high safety factor can fulfil this function under certain circumstances.

In such cases, the breaking strength of the cable set must equal or exceed 6 times the weight of the unbalanced door leaf. This is the standard solution. A mechanical cable break safety is supplied if the breaking strength of the cable set is insufficient to guarantee the safety of the system. The guidelines that apply to these safety devices have been laid down in the EN13241-1 and EN12604 norms. According to the EN13241-1 and EN12604 norms, the cable break safety system must be such that the door cannot drop uncontrollably if one of the cables snaps.



# Handles and locks

## Handles

Sectional doors can be fitted with handles. The range includes various types of handle that are all highly convenient, functional and durable in terms of the choice of materials and their design. A hard-wearing, high quality sticker with the dealer's name, logo and address can be incorporated in the handle.



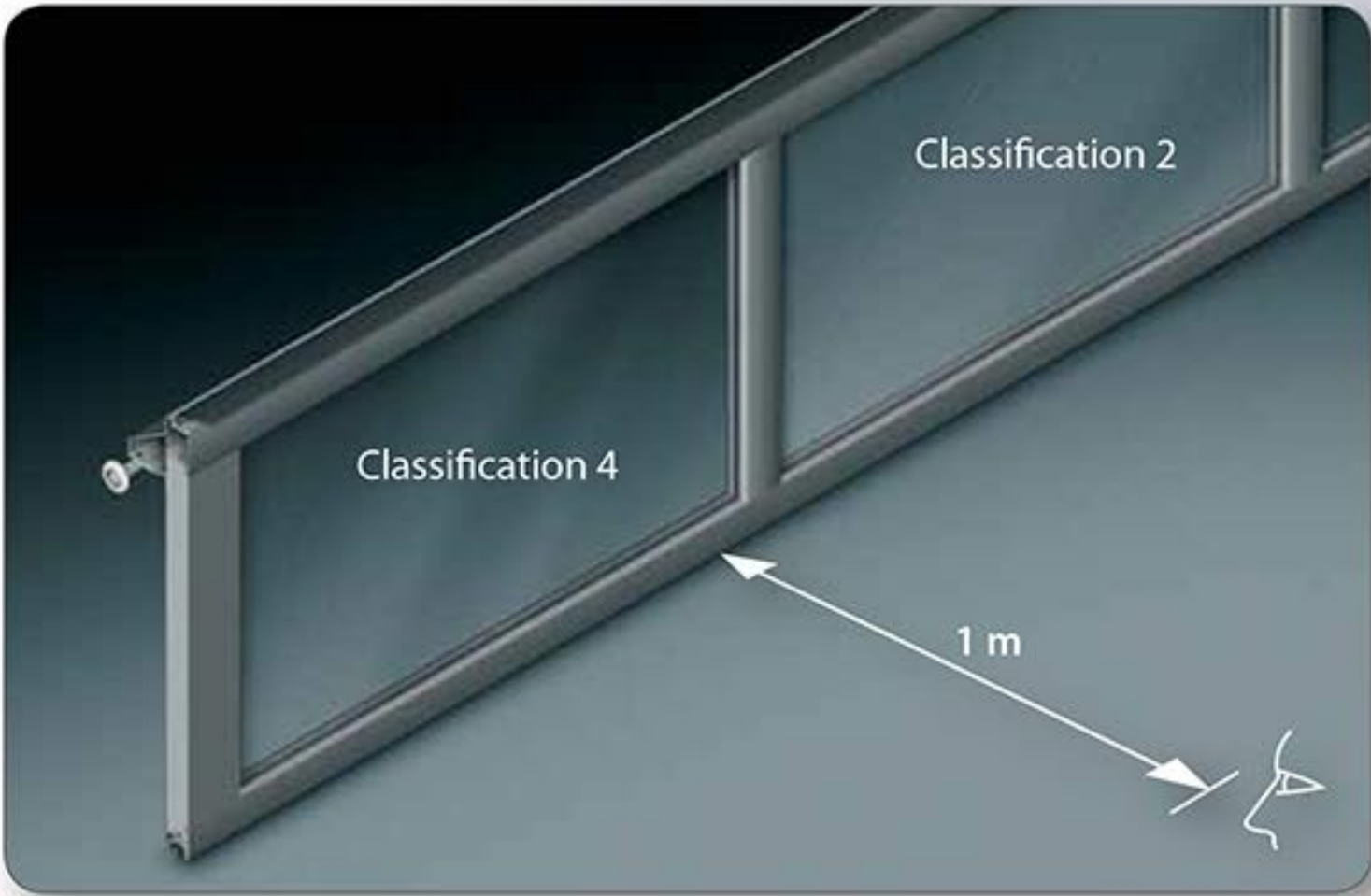
## Locking systems

There is a choice of internally and externally operated locking systems for the sectional doors. A shoot bolt is used to lock the sectional door from the inside. This spring-loaded shoot bolt is mounted to the door leaf. The bolt engages with a hole in the vertical track. When engaged in this way, the shoot bolt prevents the sectional door from being opened.

The outside lock system incorporates a profile cylinder and is sunk into the door leaf. A rotary knob operates the bolt on the rear of the lock, which engages in a hole in the vertical track. The knob is then immobilised by activating the lock cylinder. This design of lock can be operated from the outside and the inside.







# Acrylic windows

The window material for the vision panels has been selected on the basis of durability rather than low cost. The window panes are made of two acrylic sheets with an intermediate air gap of 15 mm. The acrylic sheet material is 2.5 mm thick. Recent tests performed by TÜV Rheinland to EN 530, procedure 2 indicate that our design of acrylic window maintains excellent transparency (classification 4) even after repeated cleaning at a relatively high hand pressure (12 kPa). This performance was substantially better than the SAN window, which only achieved classification 2\*\* under the same conditions.

\*Classification 4: slight scratching, good transparency, no visible scratches when viewed from a distance of 1 metre or more.

\*\*Classification 2: significant scratching, opalescent in appearance when viewed from close quarters.





# Service





## Service parts

We keep a record of the build specifications of all the sectional doors we supply for at least 15 years. This allows us to supply the right parts within a short timeframe. Parts can be delivered by post, courier or a parcel delivery service. This speed and accuracy of response helps keep our top quality products in optimum condition using only original parts.



## Documentation

Our quality standards do not just apply to the sectional door. Everything associated with the sectional door is subject to our stringent quality system. This includes documentation. The sectional door is accompanied by extensive, image-based documentation. This highly functional information package consists of;

- an installation manual
- an operator manual
- an order specification form\* that records all the relevant data for the door
- a logbook for electrically operated doors
- service and maintenance manuals
- a Declaration of Conformity for each door

The information in the documentation is designed to simplify door installation and maximise the service life of the door. We feel that you should be able to use your door without problems or failures for as long a period as possible.

\* The order specification form lists all the components required to fulfil the order. Dimensions, finishes and colours are indicated where applicable. This information ensures that parts can be ordered without unnecessary complications.

