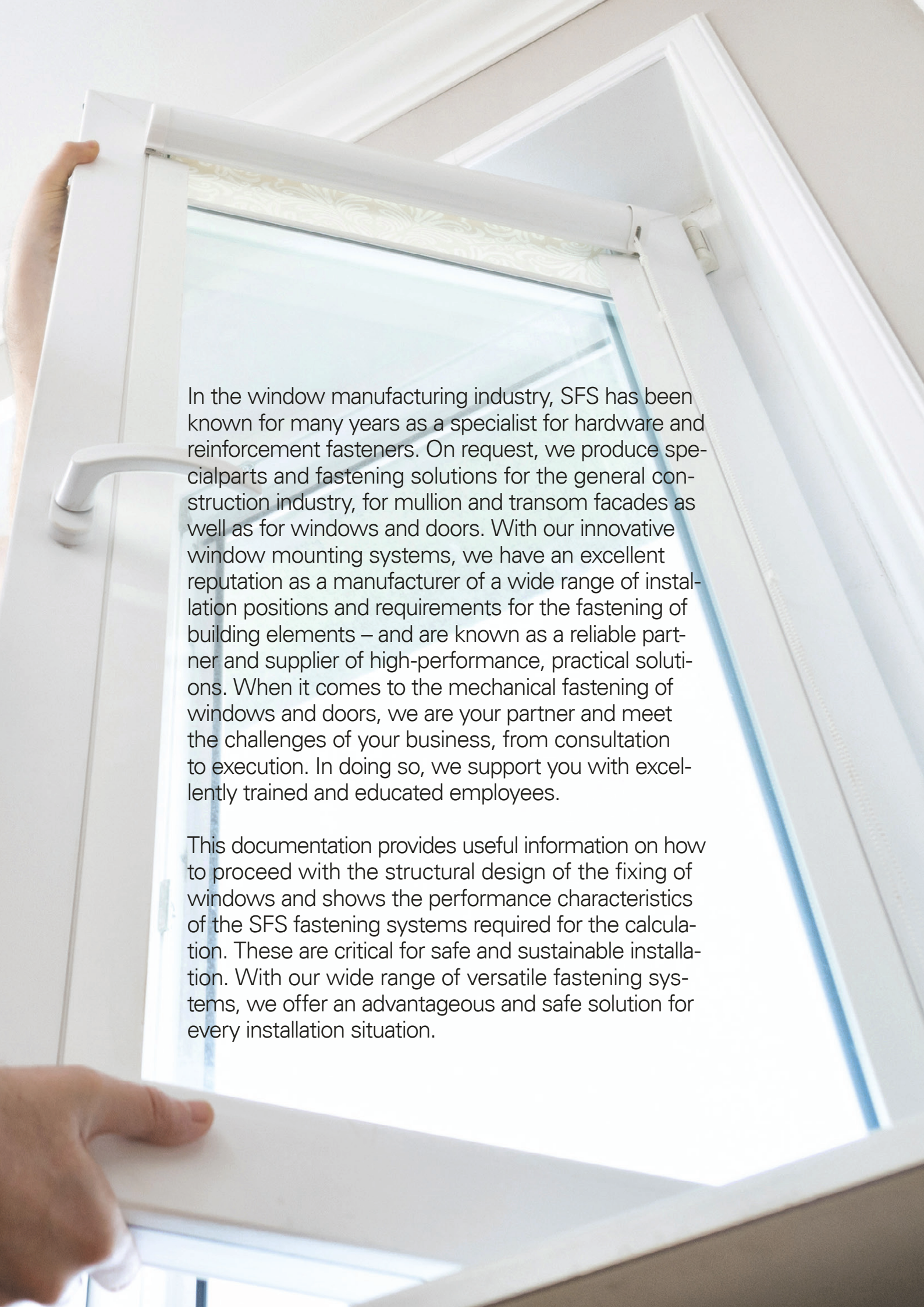


Dimensioning of Windows and Front Doors

GfI
2020



In the window manufacturing industry, SFS has been known for many years as a specialist for hardware and reinforcement fasteners. On request, we produce special parts and fastening solutions for the general construction industry, for mullion and transom facades as well as for windows and doors. With our innovative window mounting systems, we have an excellent reputation as a manufacturer of a wide range of installation positions and requirements for the fastening of building elements – and are known as a reliable partner and supplier of high-performance, practical solutions. When it comes to the mechanical fastening of windows and doors, we are your partner and meet the challenges of your business, from consultation to execution. In doing so, we support you with excellently trained and educated employees.

This documentation provides useful information on how to proceed with the structural design of the fixing of windows and shows the performance characteristics of the SFS fastening systems required for the calculation. These are critical for safe and sustainable installation. With our wide range of versatile fastening systems, we offer an advantageous and safe solution for every installation situation.

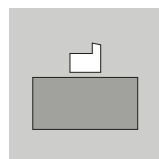
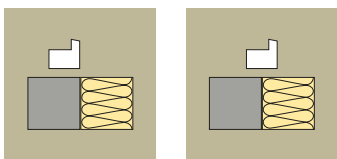
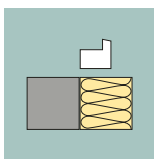
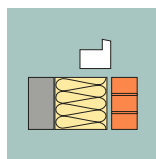




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General Information



Overview of Installation Situations and Fastening Solutions

Single skin masonry	Insulated masonry	In front of wall installation	Double-skin masonry
<p>In the wall</p> 	<p>0–40 mm at/above the edge</p> 	<p>In front of wall installation</p> 	<p>In front of wall installation</p> 
	 <p>JB-D/L-P plate JB-D/L-A bracket</p>	 <p>JB-W/XL Winkel</p> <p>JB-D-U console +</p>	 <p>JB-D-R console</p>

FB/FL fastener JB-W bracket JB-W/XL bracket JB-A bracket

Zertifikat / Certificate



Zertifikatsnr. / Certificate No.: 188-8002779-1-5

Baukörperanschlusssysteme Structure fitting systems

Produktfamilien
product families

**Befestigungssystem FB, FL, JB-D/L, JB-D, JB-W/XL,
JB-D® PLUS / JB-D®/FA PLUS**

Einsatzbereich
field of application

Befestigungssysteme für Fenster und Außentüren
Fixing systems for windows and pedestrian doors

Hersteller
manufacturer

SFS Group Germany GmbH
In den Schwarzwiesen 2, DE 61440 Oberursel



Produktionsstandort
production site

SFS Group Schweiz AG
Rosenbergsaust. 10, CH 9435 Heerbrugg

Grundlage(n) /
Basis:

ift-Zertifizierungsprogramm für
Baukörperanschlusssysteme
nach der ift-Richtlinie MO-02
ift-certification scheme for
hardware for structure fitting
systems according to the ift-
guideline
MO-02
ift-Zertifizierung QM360:2018-01



Baukörperanschlusssysteme
structure fitting systems



MO-02/1

Befestigungssysteme
fixing systems

Mit diesem Zertifikat wird bescheinigt, dass das benannte Bauprodukt den Anforderungen des zugrundeliegenden ift-Zertifizierungsprogramms in der aktuellen Fassung entspricht.

This certificate attests that the building product mentioned fulfils the requirements of the underlying ift-certification scheme in its current version.

- Erstellung von Produktfamilien des aufgeführten Bauproduktes und Erstprüfung durch eine akkreditierte Prüfstelle nach der ift-Richtlinie MO-02/1:2015
- Einführung und Aufrechterhaltung einer werkseigenen Produktionskontrolle durch den Hersteller
- Erstinspektion des Werkes und der werkseigenen Produktionskontrolle durch ift-Zert
- kontinuierliche Fremdüberwachung des Werkes und der werkseigenen Produktionskontrolle durch ift-Zert

- compilation of product families of the building product listed and initial type-testing by an accredited testing body as per ift-guideline MO-02/1:2015
- implementation and maintenance of a factory production control by the manufacturer
- initial inspection of the production site and the factory production control by ift-Zert
- continuous third-party control of the production site and the factory production control by ift-Zert

Dieses Zertifikat wurde erstmals am 26.10.2017 ausgestellt. Die aktuelle Version gilt bis zum 29.01.2026, wenn sich zwischenzeitlich die Festlegungen in der oben angeführten technischen Spezifikation oder die Herstellbedingungen im Werk oder in der werkseigenen Produktionskontrolle selbst nicht wesentlich verändert haben.

This certificate was first issued on 26.10.2017. The current version is valid until 29.01.2026, as long as neither the conditions laid down in the technical specification listed above nor the manufacturing conditions in the production site nor the factory production control itself are modified significantly.

Das Zertifikat darf nur unverändert vervielfältigt werden. Alle Änderungen der Voraussetzungen für die Zertifizierung sind dem ift-Zert mit den erforderlichen Nachweisen unverzüglich schriftlich anzuzeigen.

The reproduction of the certificate without any change from the original is permitted. Any changes to the prerequisites applicable to certification shall be immediately communicated in writing to ift-Zert accompanied by the necessary evidence.

Das Unternehmen ist berechtigt, das benannte Bauprodukt gemäß der ift-Zeichensatzung mit dem „ift-zertifiziert“-Zeichen zu kennzeichnen.

The company is authorized to affix the "ift-certified"-mark to the building product mentioned according to the ift-rules for use of the "ift-certified"-mark.

Dieses Zertifikat enthält 1 Anlage.

This certificate contains 1 annex.

ift Rosenheim
30.01.2023

Christian Kehrer

Christian Kehrer
Leiter der ift-Zertifizierungs- und Überwachungsstelle
Head of ift Certification and Surveillance Body



Gültig bis /
Valid until:

26.01.2026

Vertragsnr. /
Contract No.:

188 8002779



Identitäts-Check
Identity check



www.ift-rosenheim.de/
ift-zertifiziert
ID: 78E-78CB6

Ve-Zer-5162-de / 01.03.2022

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Inspektion – EN ISO/IEC 17020
Zertifizierung Produkte – EN ISO/IEC 17065
Zertifizierung Managementsysteme – EN ISO/IEC 17021



General information

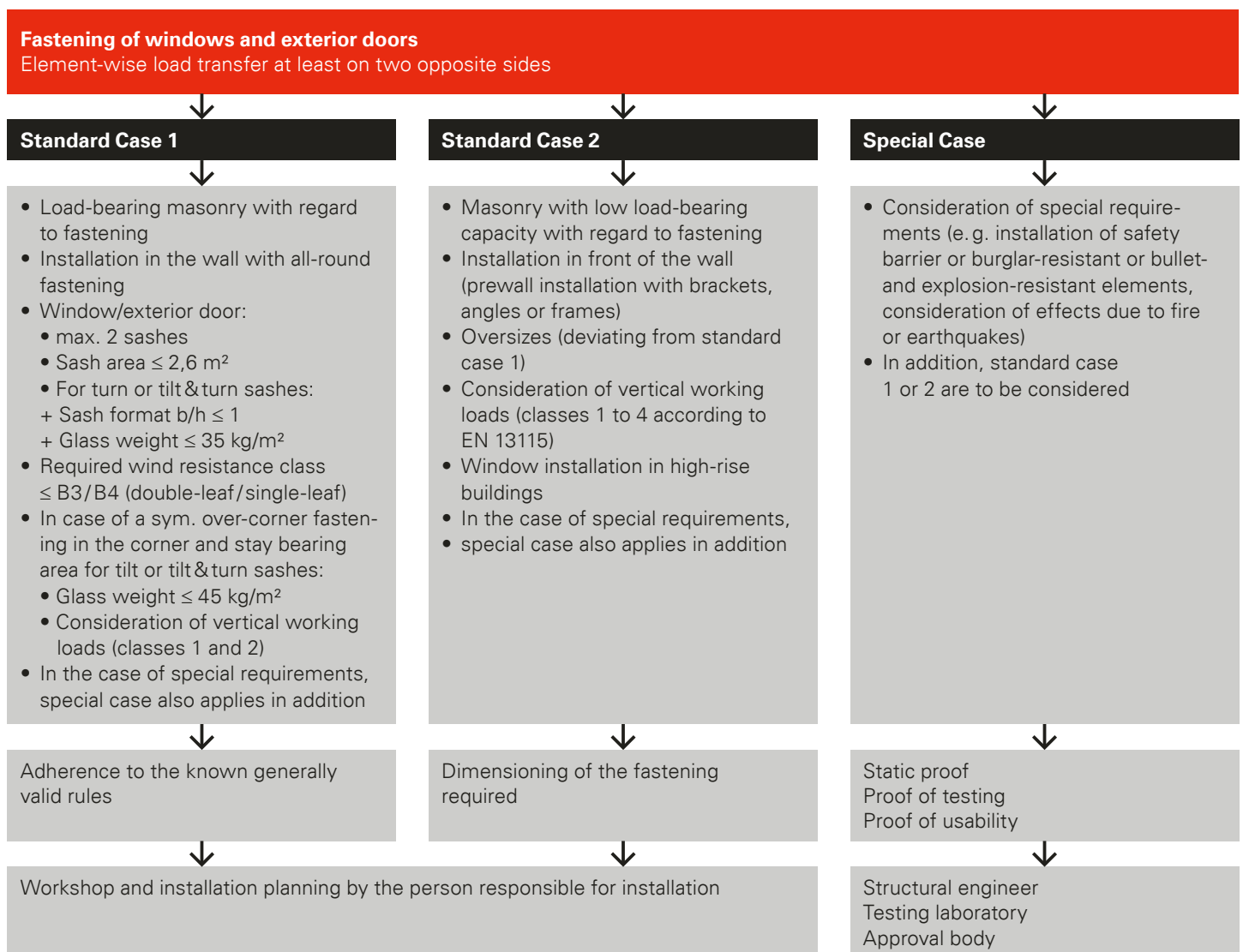
Various loads act on windows when they are installed. In addition to their own weight, these loads result, among other things, from the effects of wind, mechanical stresses during use and from extraordinary loads (e.g. during break-in attempts). These loads must be permanently transferred by the fastening to the load-bearing structure and the building foundation.

The following criteria must therefore be ensured for the window in the design:

- Stability
- Safety in use
- Limitation of deformations (serviceability)



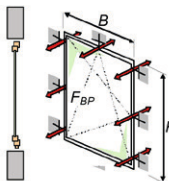
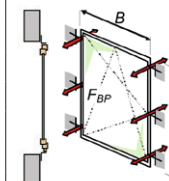
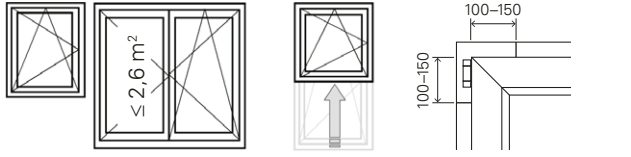
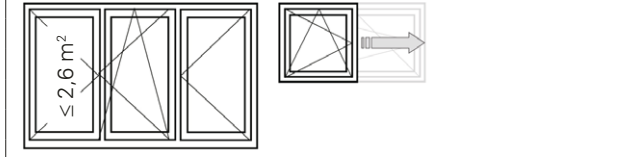
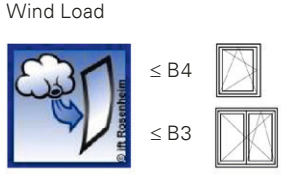
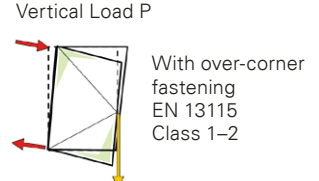
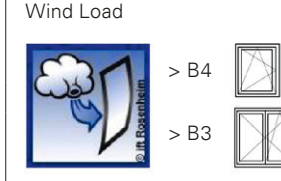
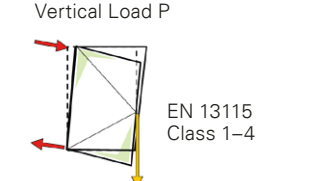
In the past, the design of the fastening was primarily based on recognised rules of technology (arrangement of support and spacer blocks, fastening distances, etc.). Due to changes in construction technology (heavier windows, more porous and thus less load-bearing building materials, as well as the shift of the window position to the outside), a more precise consideration is unavoidable.

The "Guidelines for Planning and Execution of the Installation of Windows and Front Doors for New Buildings and Renovations", hereinafter referred to as the "Guidelines for Installation" (GfI), distinguishes between three cases in chapter 5 "Fastening and Load Transfer":



Source: "Guidelines for Installation" (GfI), Edition 2020-03

The following explanations help to define more clearly the criteria mentioned in the overview table in the GfI:

Standard Case 1	Outer Wall	Standard Case 2
<p>Special soffit stones</p>  <p> $\geq C12/15$ $DFK \geq 12$ at $DFK < 12$ $DFK \geq 4$ </p>		<p>High-heat insulating filigree/filled bricks</p>  <p>($DFK \geq 12$) without special soffit stones</p>
<p>Installation in the wall and circumferential fastening</p> 	<p>Installation Situation</p>	<p>In front of the wall mounting or mounting not circumferential</p> 
 <p> $n_{sash} \leq 2$ and $A_{sash} \leq 2,6 \text{ m}^2$ and $b/h \leq 1$ (upright to square sash format) and glass weight $\leq 35 \text{ kg/m}^2$ </p> <p>or for over-corner fastening: Glass weight $\leq 45 \text{ kg/m}^2$</p>	<p>Window Structure</p>	 <p> $n_{sash} > 2$ or $A_{sash} > 2,6 \text{ m}^2$ or $b/h > 1$ (horizontal sash format) or Glass weight $> 35 \text{ kg/m}^2$ resp. $> 45 \text{ kg/m}^2$ </p>
<p>Wind Load</p>  <p> $\leq B4$ $\leq B3$ </p> <p>Vertical Load P</p>  <p>With over-corner fastening EN 13115 Class 1-2</p>	<p>Performance Characteristics</p>	<p>Wind Load</p>  <p> $> B4$ $> B3$ </p> <p>Vertical Load P</p>  <p>EN 13115 Class 1-4</p>

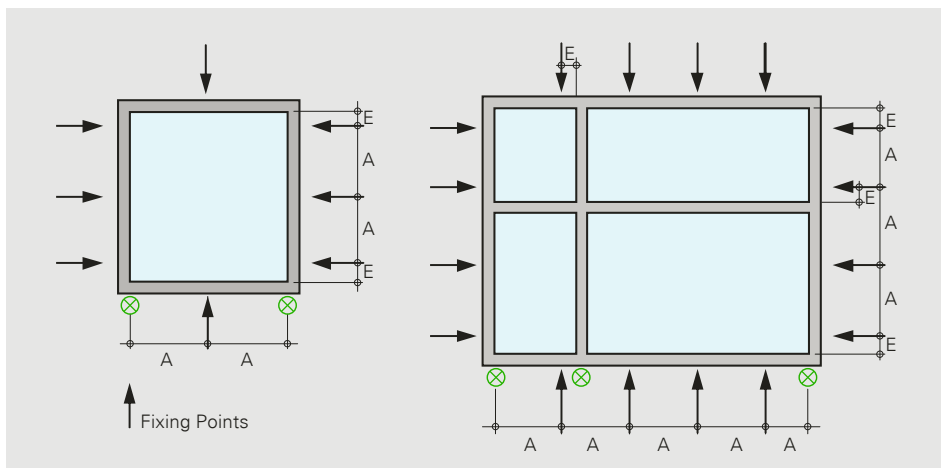
Special Case

Specific requirements, as:



Source: "Guidelines for Installation" (GfI), Edition 2020-03

Determination of the Fixing Points



A Spacing

- For Aluminium windows max. 800 mm
- For timber windows max. 800 mm
- For PVCu windows max. 700 mm

E Distance from the inside corner

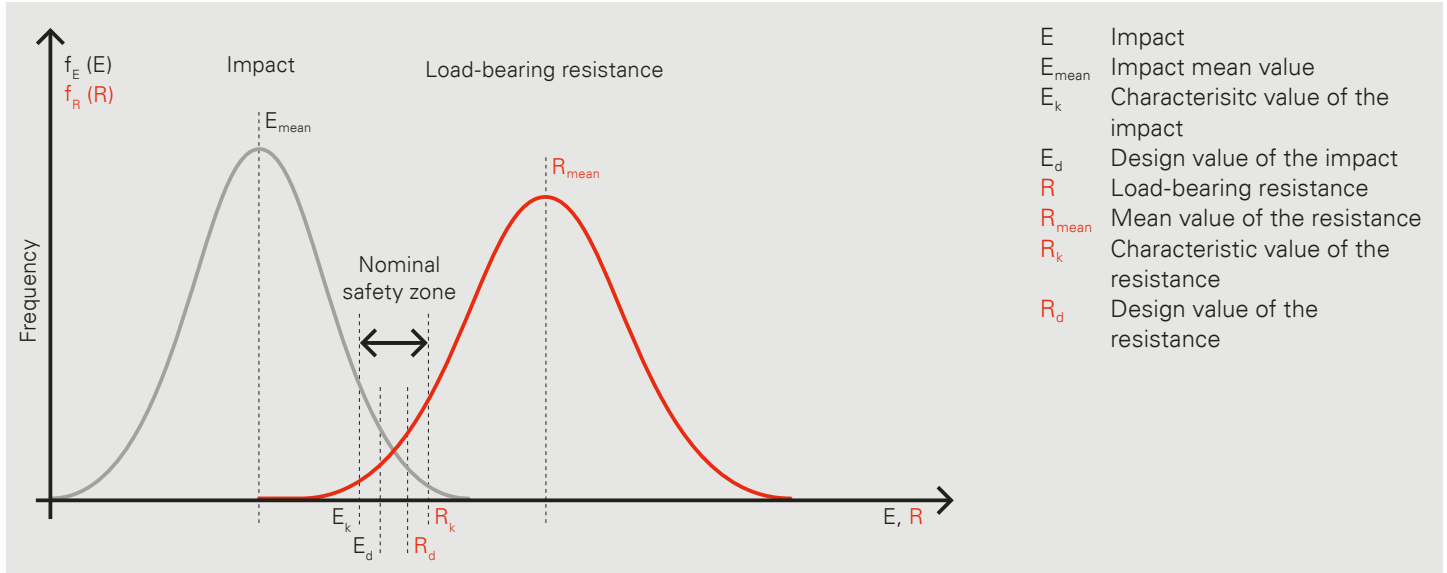
Distance from the **inside** corner of the frame and, for mullions a. transoms, from the inside of the profile 100 to 150 mm

- ⊗ Additional fastening point for load transfer in the window plane for projecting installation in front of the loadbearing wall construction. Replaces the support blocks. In the lateral area depending on the type of opening.

Design Basics

In the design, the acting forces (actions) are compared with the load-bearing resistance of the component or fastener.

Factorization by means of coefficients takes account of the variation in order to ensure the load-bearing capacity with sufficient safety.

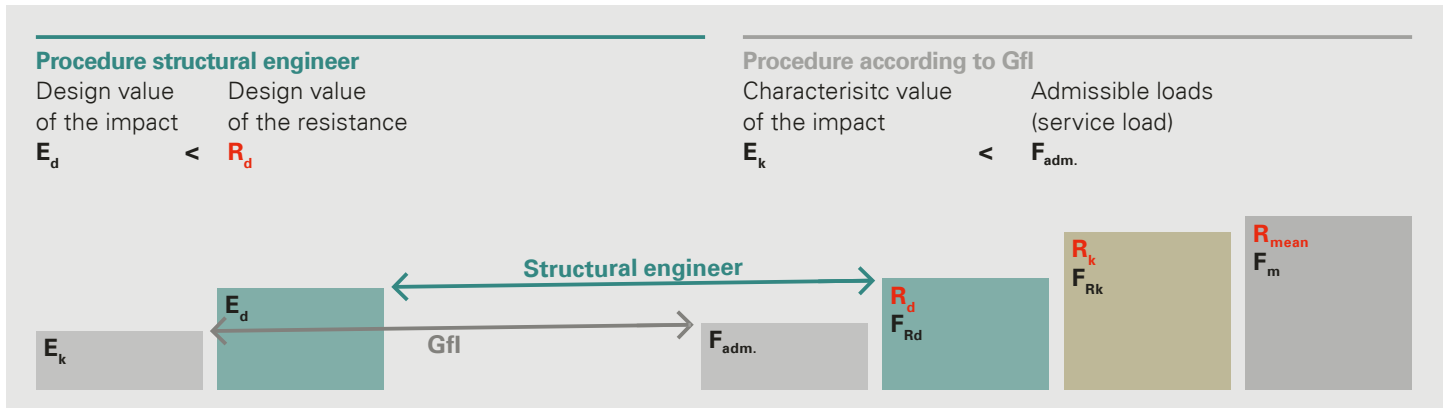


Procedure structural engineer

Typically, the structural engineer performs his verification at design level, i.e. with design values on the side of the impact and load-bearing resistances (**Special Case**).

Procedure according to Gfl

In contrast, the Gfl chooses a simplified method for the verification by the executing company in **Standard Case 2**. The characteristic forces (actions) are compared with the admissible loads (service load) for the fastening systems:

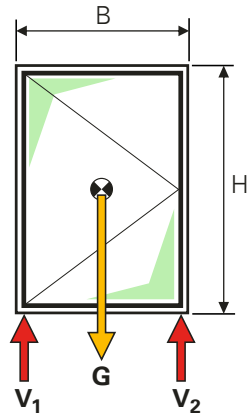


For this reason, our data sheets show both the design loads and recommended loads, leaving it up to the user to decide on the level of verification.

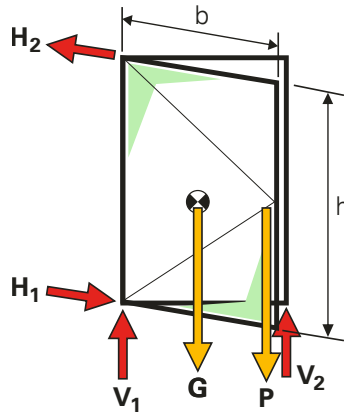


Acting and resulting Forces

Forces acting in window plane

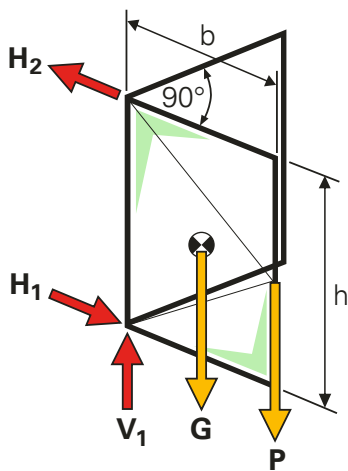


Dead weight: closed sash

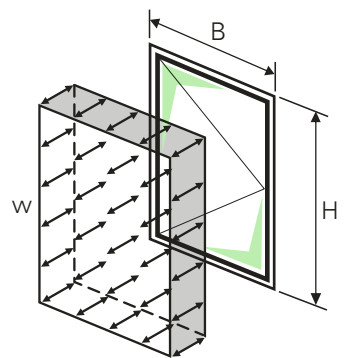


Dead weight and vertical live load: minimum open sash

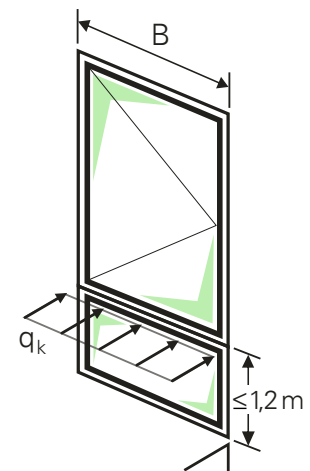
Forces acting perpendicular to the window plane



Dead weight and vertical live load: sash 90° open



Wind loads (pressure + suction)



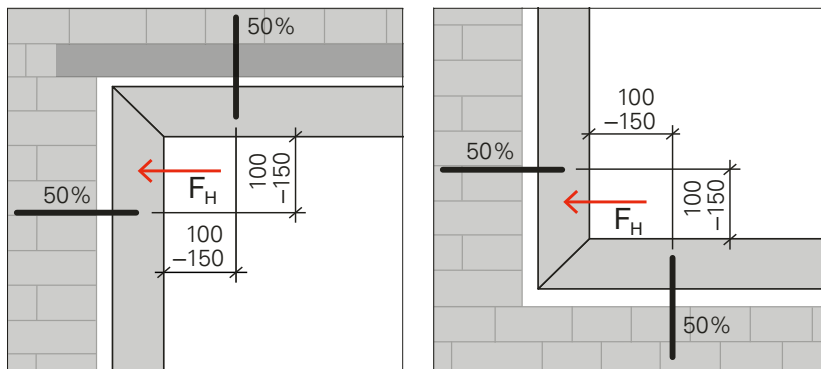
Horizontal live loads

Distribution of Load Concentrations over several Fixing Points

If the applied forces exceed the load-bearing capacity of one fastening point, it is possible to divide them among several fastening points by means of a group fastening in the form of a cross-corner fastening or a double fastening.

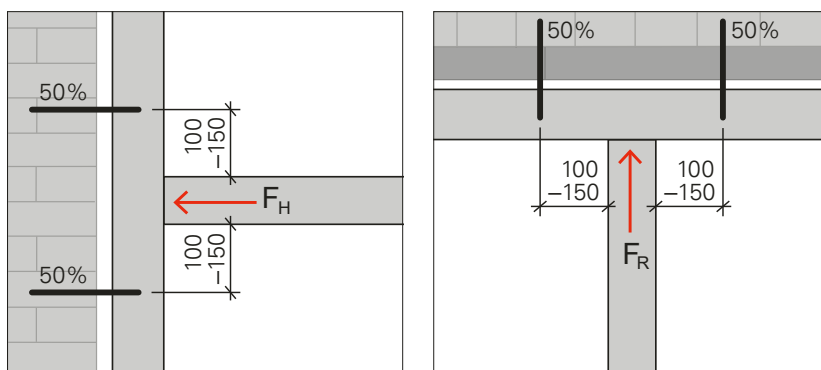
1) Fastening across the corner

If two fixing points are fitted at a distance of 100–150 mm from the inner corner of the frame, the load can be distributed between them in a ratio of 50% to 50%.



2) Double attachment symmetrical

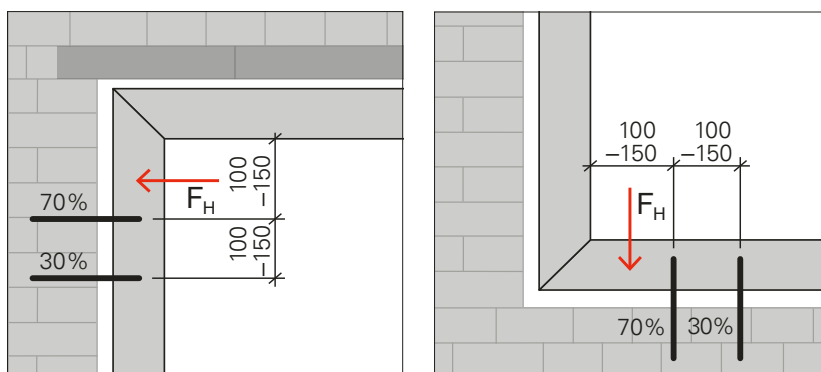
In this case, too, the load can be distributed to both in a ratio of 50% to 50%.



3) Two grouped fixing points

With two grouped fixing points, the load can be applied to the side as well as at the bottom in a ratio of 70% (fixing point near the corner of the frame) to 30%. This leads to an increase in performance of 43% compared to the installation with only one fixing point. The following distances must be observed:

- Distance to inner corner of frame: max. 100–150 mm
- Spacing: 100–150 mm



All dimensions in mm

Building Materials, Notices and Definitions

Values from tests according to guideline MO-02/1

The correspondingly marked values were determined in tests according to guideline MO-02/1 of ift Rosenheim, June 2015 edition, on individual bricks and with the specified edge distances.

Concrete

Values for concrete were determined in tests with sand-lime bricks and confirmed by means of reference testing. The class C20/25, which is usually stated, corresponds to the quality commonly used in building construction.

Lime sandbrick

The values were determined with bricks of density strength class (DFK) 20, partly in small formats (type 3DF, 240×175×113 mm), partly in XL format (type 14 DF, 248×200×498 mm). In the case of lime sandbricks, any finger holes must be taken into account.

Poroton vertically perforated clay blocks

All tests were carried out with Poroton vertically perforated clay blocks from Wienerberger. The values shown can be applied to blocks from other suppliers, provided they are equivalent (strength class, wall thicknesses and hole pattern). Due to common approvals, this is the case e.g. for bricks of the company Schlagmann with the corresponding designation.

Smooth coat rendering for Poroton vertically perforated bricks

Smooth coat rendering for Poroton vertically perforated bricks. The values were determined according to the practice-relevant situation partly with, partly without smooth coat rendering, see notes on the individual table sheets.

Smooth coat type: Lightweight plaster type 1
Compressive strength class according to DIN EN 998-1: CS II (2,5–5 N/mm²). The smooth coat fills the profile of the block in the layup. In individual cases, an increased thickness of 10–12 mm was selected in the tooth base, which is noted on the corresponding table page. Values without smooth coating can also be used for applications with smooth coating, as the smooth coating leads to a higher load-bearing capacity.

Aerated concrete

Depending on the application, the values were determined with bricks of the typical building strength classes (PP).

Values from German general building approvals/general construction type approvals (abZ/aBG)

The general conditions of the corresponding abZ/aBG with regard to building materials, application limits (edge and intermediate distances, etc.) and processing must be taken into account.

Examples of tested block types



HLz-Plan-T acc. to Z-17.1-868



Plan-T8 acc. to Z-17.1-108



Poroton-T8-P acc. to Z-17.1-982



Poroton-T10 acc. to Z-17.1-889

Special Case

Fastening building components with special characteristics

Special requirements as well as the installation of windows in high-rise buildings are to be carried out in accordance with the requirements for the special case.

These exist, among others, for:

- Building components with burglary-resistant characteristics
- Building components with safety barrier characteristics
- Doors in escape routes and emergency exits
- Fire safety elements

Building components with burglary-resistant characteristics

Our fastening systems have been tested for their burglar-resistant properties in various application variants. The test certificates are listed in the corresponding chapters.

Building components with safety barrier characteristics

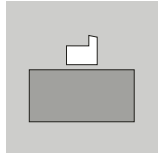
The requirements for safety barrier component fastening are described in the Guidelines for Installation (Gfl), chapter 5.3.2. The focus is on the protection of life and limb. Nowadays, french balconies are increasingly fastened directly to the window element and thus by the window installer. Even fixed glazed window elements must be secured against falling, depending on the height of the sill.

SFS provides you with complete systems for high-performance, safety barrier fastening. We have an extensive product range for the secure installation of windows and exterior doors, the suitability of which has been proven for the most varied wall substrates and window positions.

Liability Disclaimer

All information is non-binding and without guarantee. Before using the products, all specifications and calculations must be checked by a suitably qualified person and local regulations must be observed. This document is subject to revision. We reserve the right to make technical changes.





Installation in the Wall

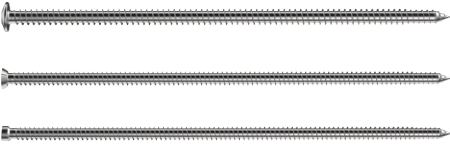


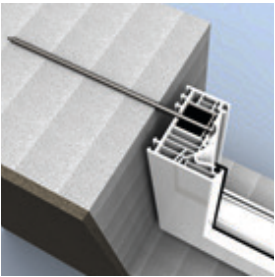








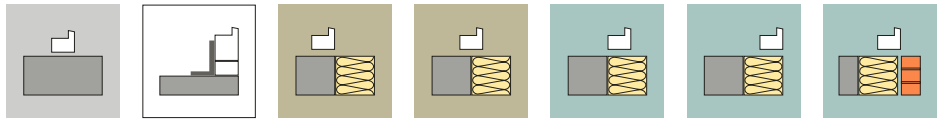
Tested according to:

- ✓ RC2 acc.to DIN EN 1627
 - ✓ RC3 acc.to DIN EN 1627
 - ✓ Component test acc. to MO-02/1
-

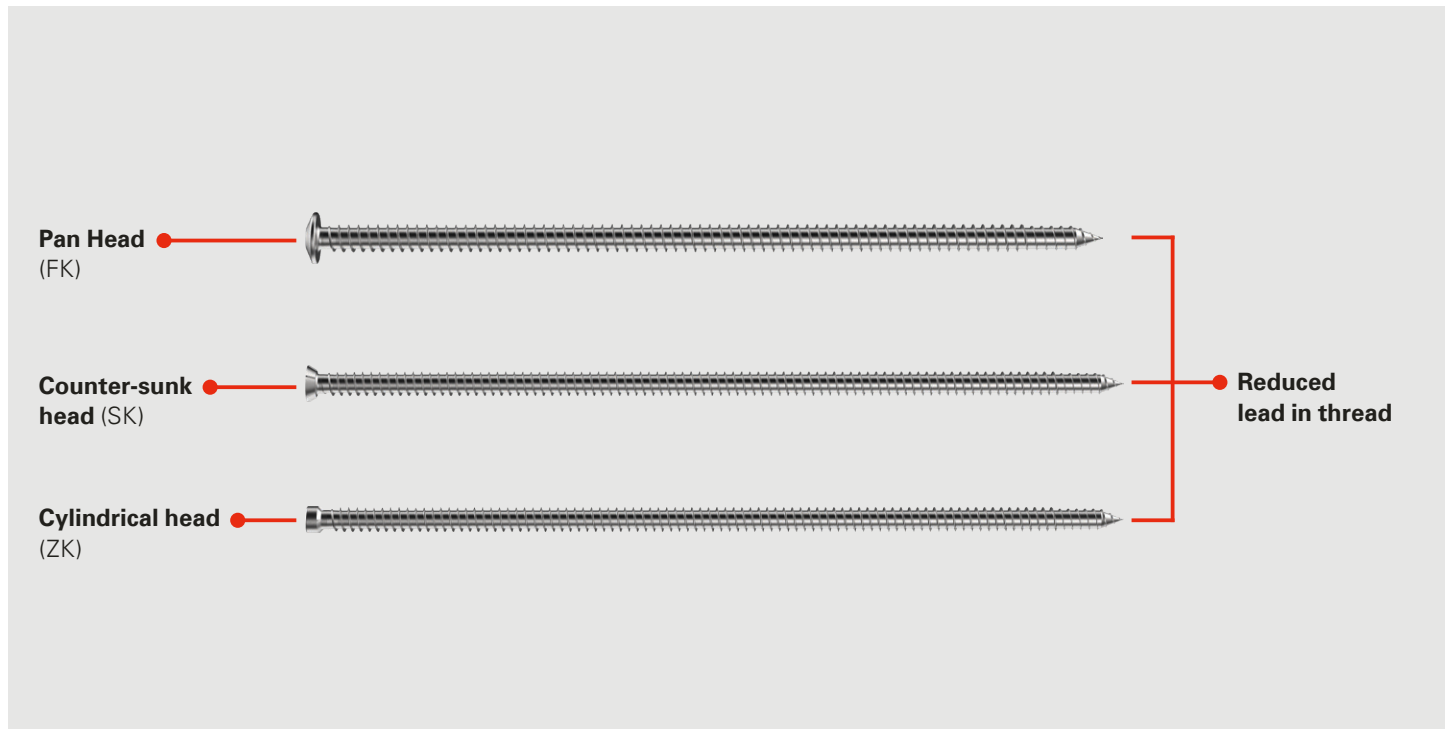
General Information

Product Overview

System	Application	
FB 		Universal frame anchor for various substrates in three head styles
FL 		Special frame fastener for aerated concrete and vertically perforated bricks with low load-bearing capacity
JB-W 		Mounting bracket for threshold fastening with low to medium height
JB-W/XL 		Mounting bracket for threshold fastening up to medium heights and for increased performance requirements
JB-A 		Heavy-duty mounting bracket for high floor constructions/threshold heights



Product Benefits System FB



The solution – universal mounting fastener FB

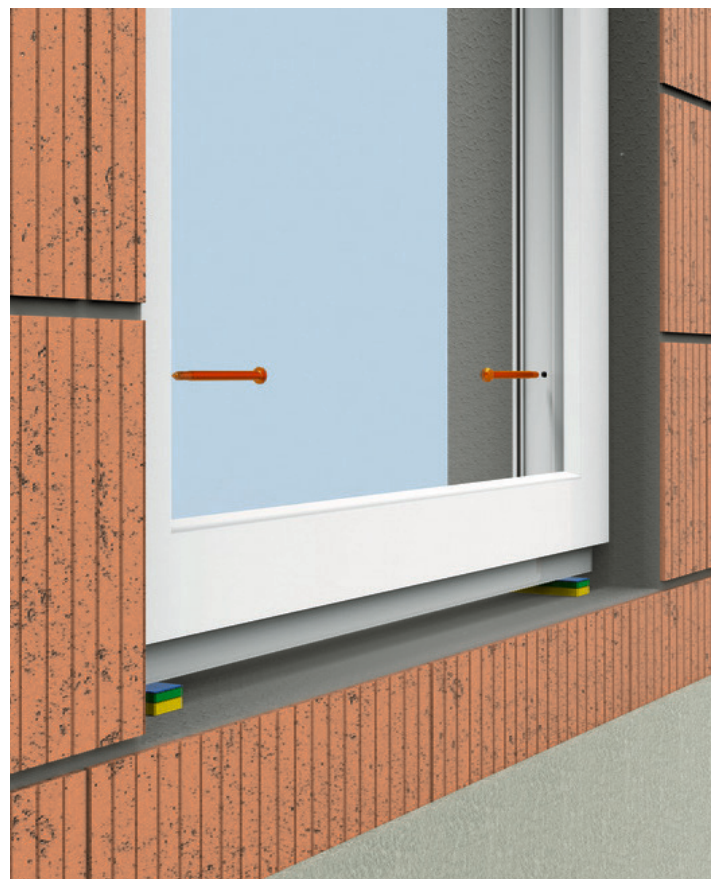
The most common form of mounting is through-hole mounting with mounting fasteners. The FB fastener type covers a wide range of different substrates. With our product, you can fix to most substrates and have a secure fixing. Our range of fasteners includes extensive variants, starting with three head shapes and a wide range of lengths. Extensive test documentation and services round off the range for you. This type of fastener is compatible and tested with all our other assembly systems.

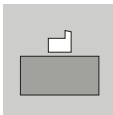
Product benefits at a glance

- Tested and approved up to RC3
- Design values available, MO-02 tested
- Various lengths
- Tapered inlet thread, supports an easy installation
- Highest quality level in straightness and forming
- Tested in combination with all systems of the SFS JB product family
- Clear characteristic & performance values for processing
- Attractive pan head for the "FK" variant

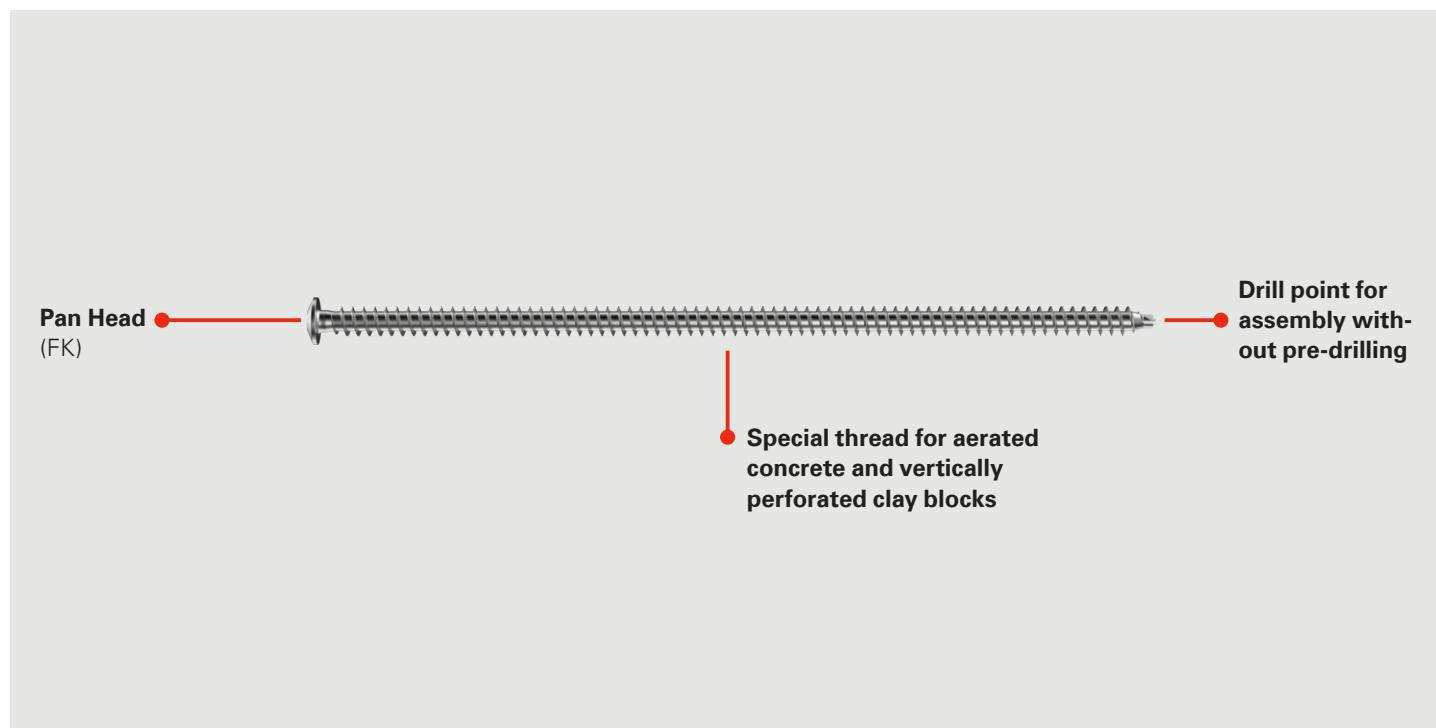
Tested according to:

- ✓ ift-certified
- ✓ Resistance class RC2 + RC3
- ✓ Serviceability acc. to MO-02/1
- ✓ Fastening acc. to ONORM B 5320





Product Benefits System FL



The solution – Frame Fastener FL

The fastening of windows always poses new challenges for the fabricators. Especially with weak wall substrates such as aerated concrete PP2 or vertically perforated bricks, where the standard solutions can reach their limits. With the FL frame fastener, you achieve a high load-bearing capacity and work quickly and safely.

Product benefits at a glance

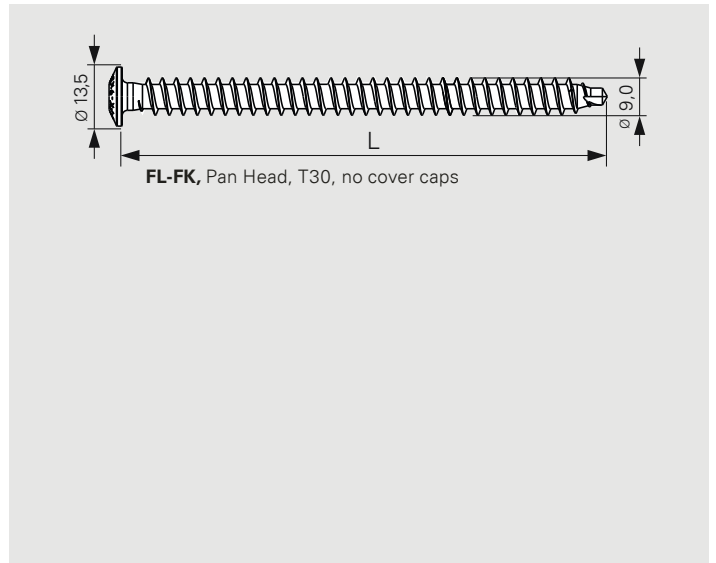
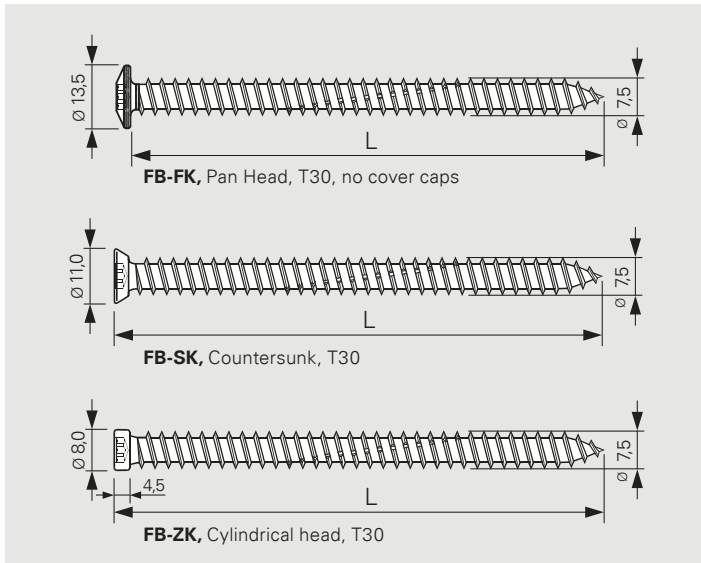
- Load-bearing fastening for critical wall substrates
- RC2-tested and passed
- Design values available, MO-02 tested
- Can be installed without pre-drilling (PP2)
- Highly corrosion-resistant surface
- Attractive pan head type “FK”
- Window frame pre-drilling with standard drill 6 mm

Tested according to:

- ✓ ift-certified
- ✓ Resistance class RC2
- ✓ Serviceability acc. to MO-02/1
- ✓ Fastening acc. to ÖNORM B 5320



Description and Installation Instructions for FB and FL Systems



FB Fastener

Material	Carbon steel, case hardened
Coating	White zinc plated
Cover caps	RAL-colors (only for FB-SK)
Packaging	Carton of 50/100 pieces (depending on length)
Processing	Electric or pneumatic screwdriver, Speed 700 rpm. Power over 500 W
Tip shape	Threaded tip
Application	Fastening in various substrates

FL Fastener

Material	Carbon steel, case hardened
Coating	HP special surface for increased corrosion protection
Cover caps	–
Packaging	Carton of 50 pieces
Processing	Electric or pneumatic screwdriver, Speed 700 rpm. Power over 500 W
Tip shape	Drill point
Application	Special fastener for aerated concrete and vertically perforated clay blocks

Setting torque and over-torque of fasteners

General conditions

Pre-drilling diameter and type:
Depending on the substrate, see "Processing instructions".

These values are not relevant for through-fixing, as the fixing is made at a distance. Accordingly, only the value for fixing brackets or consoles with FB to concrete is shown below.

To ensure sufficient assembly safety, the following condition must be fulfilled in accordance with MO-02:

$$(T_u/T_{inst.})_{Rk} \geq 1,3$$

This condition was met in the applications tested.

Remarks

Testing and evaluation were carried out in accordance with MO-02/1, June 2015 edition. The fasteners have been tested in conjunction with SFS bracket and fastening systems. A transfer of the values to other systems and own constructions must be checked on site.

Substrate	Type/ Class	Insertion depth
		ET (mm)
Concrete	C20/25	40 to 60


Testing and evaluation were carried out in accordance with MO-02/1, June 2015 edition. The fasteners have been tested in conjunction with SFS bracket and fastening systems. A transfer of the values to other systems and own constructions must be checked on site.

Pre-drilling Ø and insertion depth in various substrates

Substrate	Class	Fastener	Drill hole Ø (mm)	Rotary drilling	Impact drilling
Concrete	–	FB-7,5xL	6,0	–	x
Lime sandstone	≥ FKL 12		6,0	–	x
Poroton vertical	< FKL 12		5,5	x	–
perf. brick	≥ FKL 12		5,0	x	–
Aerated concrete	PP2	FL-9xL*	no pre-drilling	–	–
	≥ PP4		5 mm**	x	–
Timber	–	FB-7,5xL	no pre-drilling	–	–
			6,0	x	–
Steel	–	FB-7,5xL	6,0	x	–

** Drilling depth: min. 50 mm

* Pre-drilling-Ø für FL-9xL per reinforcement thickness

t (mm)	Ø  (mm)
1,5	6,0
2,0	6,5
3,0	7,5

Edge distances

As a recognised rule of technology, the GfI basically specifies a **minimum edge distance (C_{min}) of 60 mm** for all substrates. Especially for substrates with low load-bearing capacity, such as vertically perforated bricks, an increase is necessary to achieve a permanently load-bearing connection. The specific edge distance for which the performance values were determined for each substrate is shown in the tables and must be observed.

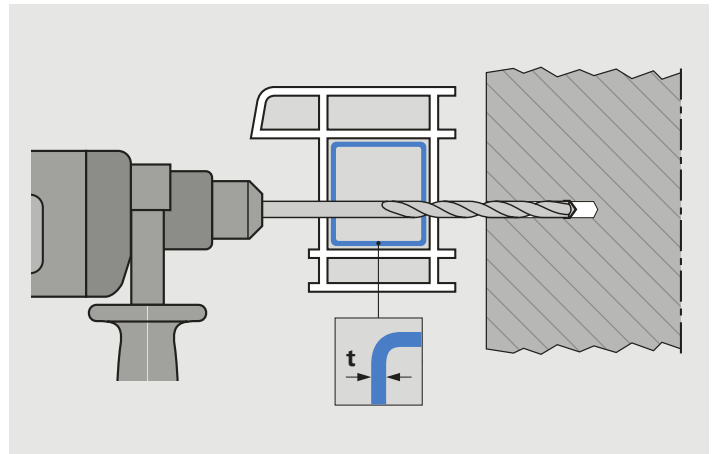
Cleaning of the drill holes

Drilling dust or other dirt must be removed from the drill holes.

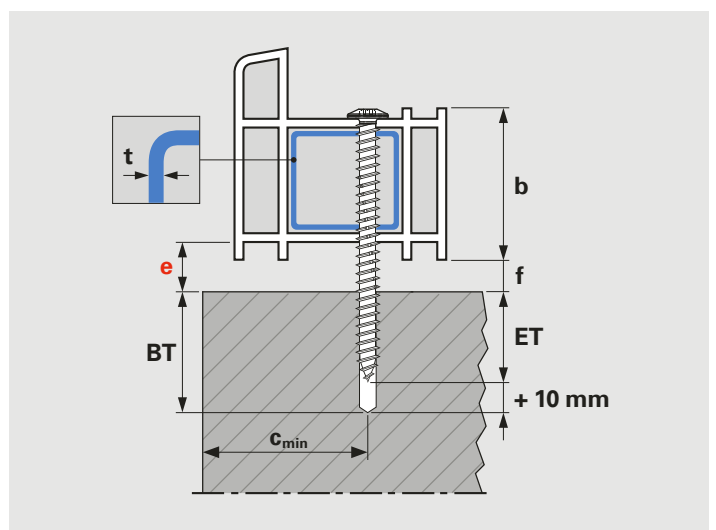
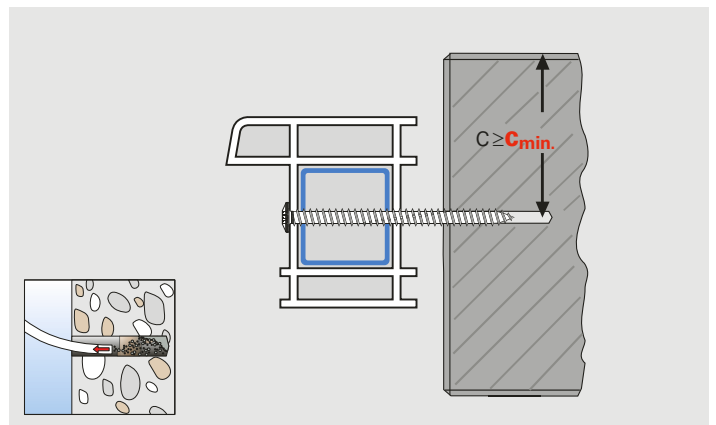
Free fastener length, determination of correct fastener length and drilling depth

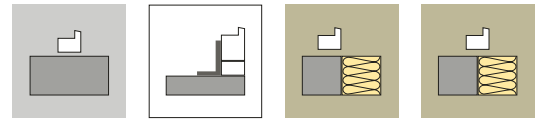
The free fastener length " e " corresponds to the joint width plus any profiling of the frame or masonry. It is recommended to check the minimum drilling depth before setting the fasteners. The correct drilling depth without impurities must be observed. Minimum fastener length and minimum drilling depth are determined according to the following sketch:

- b** Frame width variable
- f** Joint width Frame to wall 10–20 mm (rec.)
- BT** Drilling depth Fastener-in depth + 10 mm
- ET** Fastener-in depth
- C_{min}** Minimum edge distance of 60 mm

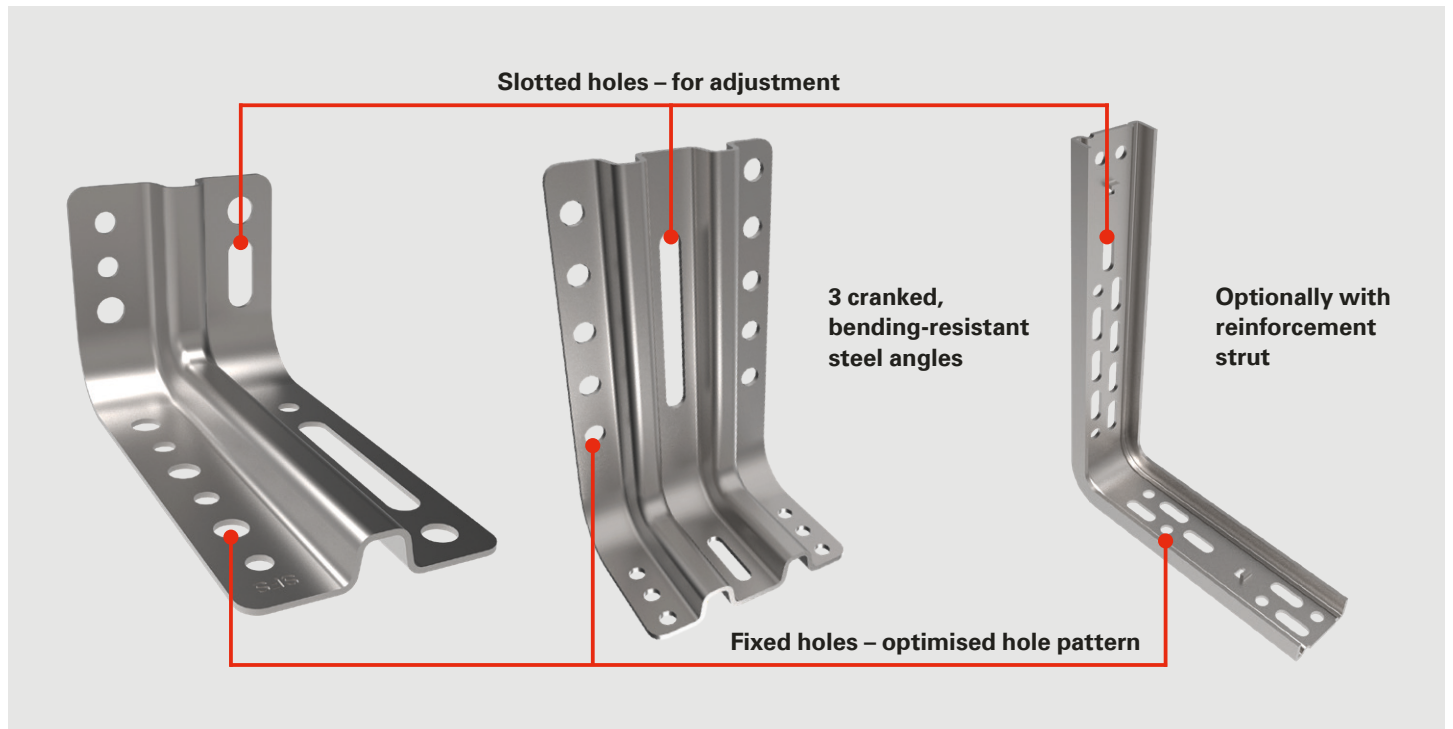


- Inserting and aligning of the window frame
- Drill holes through the pre-drilled window frames in the substrate
- Observe borehole diameter and depth!
- Drilling dust, dirt, etc. must be removed from the borehole with suitable tools





Product Benefits JB-W, JB-W/XL and JB-A



The solution – mounting brackets JB-W, JB-W/XL and JB-A

Mounting brackets are used regularly in daily practice and are indispensable for craftsmen and fitters. We have developed a wide variety of mounting brackets for the most diverse needs and requirements. Whether for the force-locking installation of substructure profiles or the bottom connection on the window sill. As always, tested quality from SFS with clear application descriptions and load characteristics.



Description of Systems JB-W, JB-W/XL and JB-A

With the SFS bracket range, all threshold heights can be securely fastened.

Floor structures are getting higher and higher. With floor-to-ceiling window elements, this makes it necessary to install higher threshold profiles. However, several coupled profiles act statically like a joint. To ensure the stability of the threshold and a safe transfer of the wind and service loads of windows, suitable fasteners must be used.

Product advantages at a glance

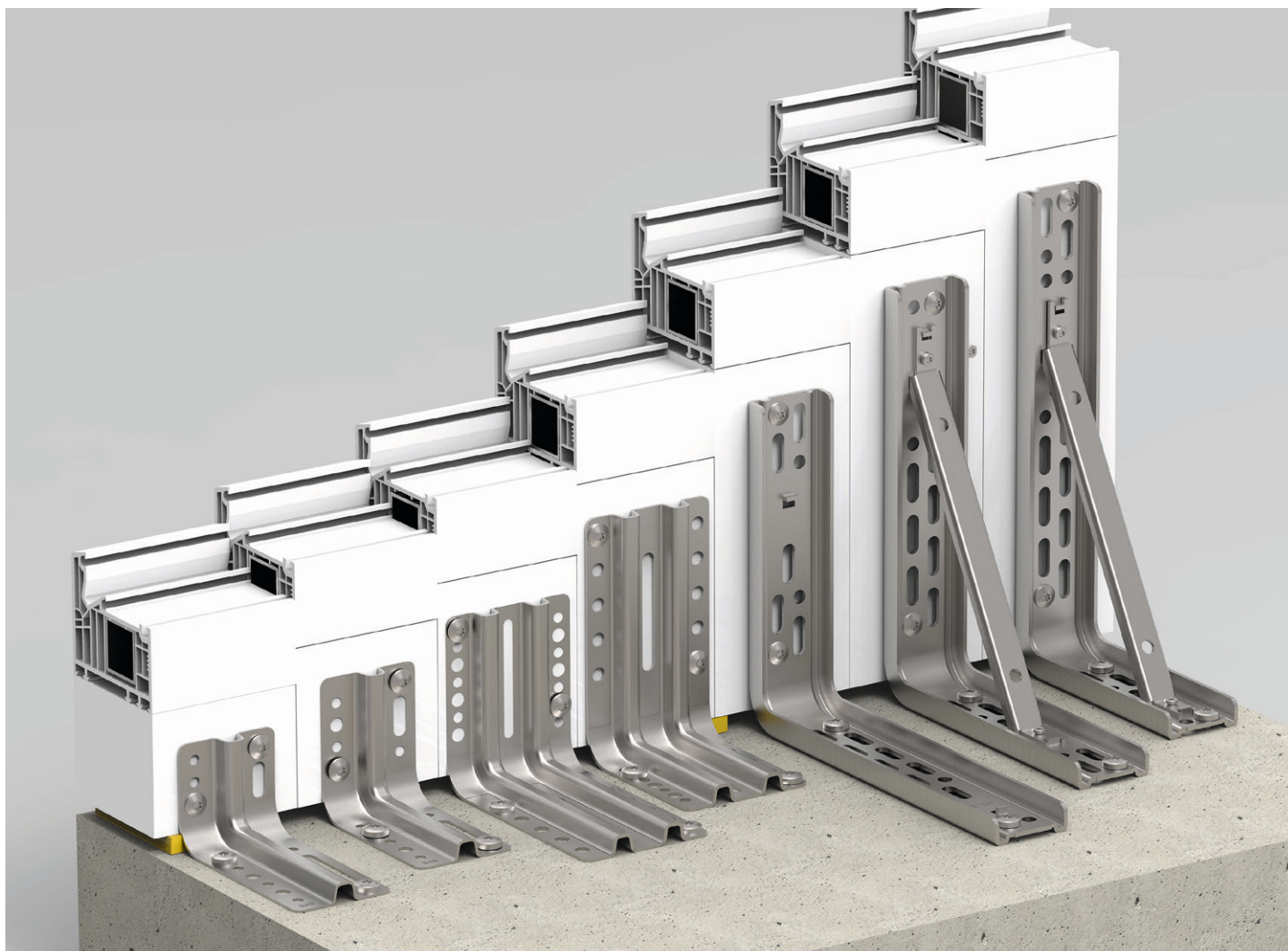
- Efficient, secure fastening of the profiles
- High flexibility due to offset fixing hole pattern
- Angles can be used on both sides
- Low stock keeping
- Tested and safe

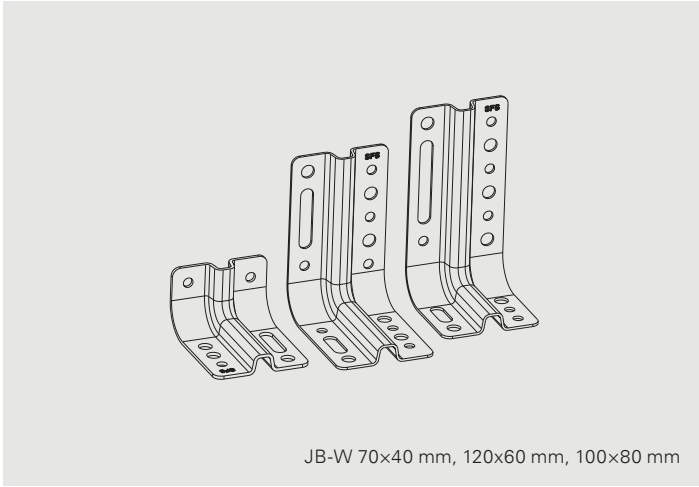
The complete bracket range from SFS

- Tested safety for floor-level elements in any installation situation
- Designed for all threshold heights and even suitable for XXL heights (> 300 mm)
- Developed for stable, durable connections
- Designed for the highest loads
- Increased load transfer thanks to optional reinforcement struts

Tested

- ✓ ift-Guideline MO-02/1
 - ✓ ETB-Guideline
 - ✓ RC2 acc. to DIN EN 1627
-

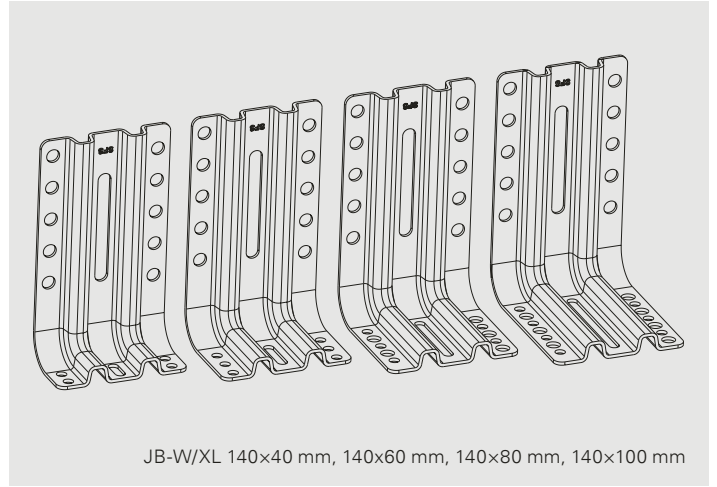




JB-W 70x40 mm, 120x60 mm, 100x80 mm

JB-W Mounting bracket

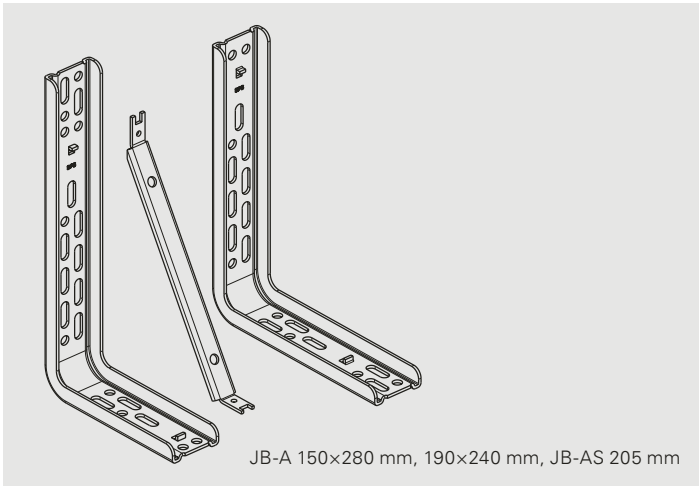
Material	Carbon steel S235
Coating	White zinc plated
Thickness	1,5 mm
Width	60 mm
Corrugation	10 mm
Hole Pattern	Ø 8/6 mm
Packaging	Carton of 50 pieces
Application	Carbon steel mounting bracket for secure fixing during window installation



JB-W/XL 140x40 mm, 140x60 mm, 140x80 mm, 140x100 mm

JB-W/XL Mounting bracket

Material	Carbon steel S235
Coating	White zinc plated
Thickness	2 mm
Width	80 mm
Corrugation	12 mm
Hole Pattern	Ø 8/6 mm
Packaging	Carton of 50 pieces
Application	Carbon steel mounting brackets for a safe load transfer, for in front of the wall mounting and threshold fastening

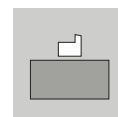


JB-A 150x280 mm, 190x240 mm, JB-AS 205 mm

JB-A Mounting bracket

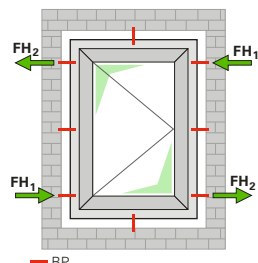
Material	Carbon steel S235
Coating	White zinc plated
Thickness	2,5 mm
Width	47 mm
Corrugation	15 mm
Hole pattern	Ø 8 mm
Packaging	Carton of 25 pieces
Application	Carbon steel mounting brackets for safe load transfer for floor-to-ceiling window elements

Design Values Systems **FB and FL** In Window Plane



Constraints

Free fastener length (e)	Up to 20 mm (joint width + any profiling depth)
Pre-drilling diameter and type	Depending on the substrate, see "Installation instructions"
Of blocking	In lime sandstone, concrete and aerated concrete \geq PP 4, no blocking is required. For all other substrates, blocking is required
Profile extensions	Must be rigidly attached to frame profile, extension must be reinforced
Masonry strength classes	Values can be used for higher strength classes



Fastening to the sides and the top

Arrangement and force direction	In the substrate						Compression and traction		
	Building material	Type/Class	Fastening	Min. screw-in depth ET _{min.} (mm)	Min. edge distance c _{min.} (mm)	Tested acc. to	Permissible load F _{empf.} (kN)	Design load F _{Rd} (kN)	
	Concrete	C20/25	FB-7,5xL	40 1)	50	MO-02/1	0,85	1,19	
	Lime sandstone	FKL 20		40					
	Clay block Poroton-T8	FKL 6		235	100				
	Clay block Poroton-T8-P								
	Clay block Poroton-T10	FKL 8		120/235					
	Clay block Poroton-T12	FKL 10							
	Aerated concrete	PP 2	FL-9xL	160	60	MO-02/1	1,63	2,28	
					100				
		PP 4			60				
	Timber	C24	FB-7,5xL	40	90	MO-02/1	0,60	0,84	
40					2,48				3,48
1) For concrete, the screw-in depth (ET) is min. 40 mm to max. 60 mm. 2) The load is transferred via suitable support blocks									
	In the window frame					Compression and traction			
	Building material	Type/Class	Fastening	Tested acc. to	Permissible load F _{empf.} (kN)	Design load F _{Rd} (kN)			
	PVCu reinforced	1,5 mm	FB-7,5xL	MO-02/1	2,37	3,32			
	PVCu reinforced square	1,5 mm	FL-9xL						
	PVCu, unreinforced	3)							
	Softtimber SPF 4)	400 kg/m ³							
	Aluminium 6)	1,5 mm	FB-7,5xL				MO-02/1	1,20	1,68
	Aluminium 7)								
							2,39	3,35	

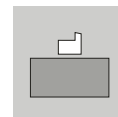
- 3) Profile Type: Aluplast energeto® 8000
- 4) Profile Type: Salamander evoCore+
- 5) Required insertion depth in timber: at least 41 mm
- 6) Predrilled hole diameter: Stepped hole 6/8 mm in the frame profile
- 7) Predrilled hole diameter: 6 mm
- 8) The application-dependent influence factors A₁, A₂ and A₃ must be considered.

Remarks

Testing and evaluation were carried out in accordance with MO-02/1, June 2015 edition.
 In the case of a penetrating downward fastening, the frame profile must be adequately sealed.
 Concrete: Values determined in tests in lime sandbrick DFK 20.
 Poroton: Values determined with smooth coat rendering (except soffit bricks). Clay block supplier: Wienerberger.

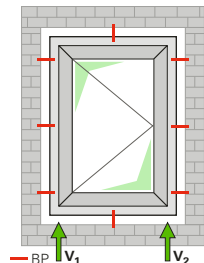
All information is non-binding and without guarantee.

Design Values Systems **FB and FL** In Window Plane



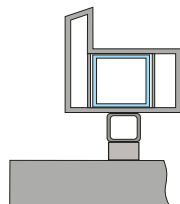
Constraints

Free fastener length (e)	Up to 20 mm (joint width + any profiling depth)
Pre-drilling diameter and type	Depending on the substrate, see "Installation instructions"
Of blocking	In lime sandstone, concrete and aerated concrete \geq PP 4, no blocking is required. For all other substrates, blocking is required
Profile extensions	Must be rigidly attached to frame profile, extension must be reinforced
Masonry strength classes	Values can be used for higher strength classes



Fastening to the bottom

Arrangement and force direction



In the substrate

The load is transferred via suitable support blocks

Remarks

Testing and evaluation were carried out in accordance with MO-02/1, June 2015 edition.

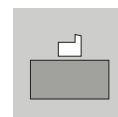
In the case of a penetrating downward fastening, the frame profile must be adequately sealed.

Concrete: Values determined in tests in lime sandbrick DFK 20.

Poroton: Values determined with smooth coat rendering (except soffit bricks). Clay block supplier: Wienerberger.

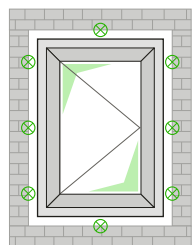
All information is non-binding and without guarantee.

Design Values Systems **FB and FL** 90° to the Window Plane



Constraints

Free fastener length (e)	Up to 20 mm (joint width + any profiling depth)
Pre-drilling diameter and type	Depending on the substrate, see "Installation instructions"
Of blocking	In lime sandstone, concrete and aerated concrete ≥ PP 4, no blocking is required. For all other substrates, blocking is required
Profile extensions	Must be rigidly attached to frame profile, extension must be reinforced
Masonry strength classes	Values can be used for higher strength classes



⊗BP

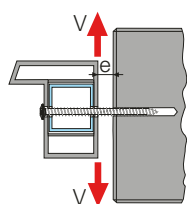


FB

FL

Fastening **umlaufend**

Arrangement and force direction



Arrangement and force direction	In the substrate						Transverse load		
	Building material	Type/Class	Fastening	Min. screw-in depth ET _{min.} (mm)	Min. edge distance c _{min.} (mm)	Tested acc. to	Permissible load F _{empf.} (kN)	Design load F _{Rd} (kN)	
	Concrete	C20/25	FB-7,5xL	40 1)	50	MO-02/1	1,69	1,90	
					60		1,91	1,91	
	Lime sandstone	FKL 20		40	50		0,88	1,23	
					60		1,90	1,90	
	Clay block Poroton-T8	FKL 6		235	100		0,59	0,63	
	Clay block Poroton-T8-P						0,38	0,38	
	Clay block Poroton-T10	FKL 8		120			0,37	0,52	
				235			0,72	1,01	
	Clay block Poroton-T12	FKL 10		120			0,38	0,53	
							235	0,66	0,93
	Aerated concrete	PP 2		FL-9xL	160	60		0,37	0,52
						100		0,48	0,60
PP 4			60	0,75	0,77				
			FB-7,5xL	90	80		0,56	0,78	
Timber	C24			40	40		0,95	0,95	

1) For concrete, the screw-in depth (ET) is min. 40 mm to max. 60 mm.

If the ET for concrete is higher than 60 mm, pre-drilling with D = 6.5 mm is recommended. Please note that the load values change when increasing the drill diameter. Please send your enquiry for the application separately.

Arrangement and force direction	In the window frame				ransverse load	
	Building material	Type/Class	Fastening	Tested acc. to	Permissible-load F _{empf.} (kN)	Design load F _{Rd} (kN)
	PVCu reinforced	1,5 mm	FB-7,5xL	MO-02/1	2,39	2,39
	PVCu reinforced square	1,5 mm	FL-9xL		2,60	2,60
	PVCu, unreinforced	2) 4)			1,39	1,39
	PVCu, unreinforced	3) 4)			1,14	1,24
	Softtimber SPF 3)	400 kg/m ³			2,31	2,31
	Aluminium	1,5 mm	FB-7,5xL		1,78	1,92

2) Profile Type: Aluplast energeto® 8000

3) Profile Type: Salamander evoCore+

4) The application-dependent influence factors A₁, A₂ and A₃ must be considered.

Remarks

Testing and evaluation were carried out in accordance with MO-02/1, June 2015 edition.

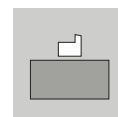
In the case of a penetrating downward fastening, the frame profile must be adequately sealed.

Concrete: Values determined in tests in lime sandbrick DFK 20.

Poroton: Values determined with smooth coat rendering (except soffit bricks). Clay block supplier: Wienerberger.

All information is non-binding and without guarantee.

Design Values Systems **JB-W** 90° to the Window Plane



Boundary conditions

Distance top edge angle to frame

Up to 20 mm

Tested profile extensions

Veka Softline 82 mm, reinforced square 1,5 mm
Stadur FrameTec 82 mm

Connection profile extensions

Must be designed to be bend-resistant. Selected:

- PVCu: 4 × SPC4-5,5×L, screwing from the extension into the frame, distance 40/200 mm
- Stadur: 4 × BS-4,8×L, screwing from the extension into the frame, distance 40/200 mm

The profile extensions must have sufficient load-bearing capacity. PVCu profiles must be reinforced
PVCu reinforced: 2 × FB-FK-7,5×42

Bracket attachment

Stadur: 2 × FB-FK-7,5×62

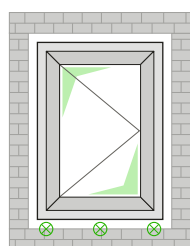
Concrete: 6 mm, impact drilling

Pre-drill diameter and type

PVCu: 4,3 mm for SPC4 into the extension, rotary drilling

Stadur: 5 mm, into the extension, rotary drilling

The values shown are valid within these framework conditions



BP



JB-W 70×40



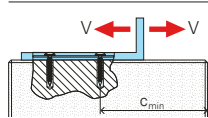
JB-W 120×60



JB-W 100×80

Fastening to the bottom

Arrangement and force direction

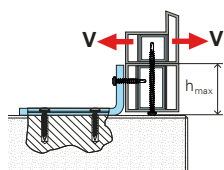


In the substrate

Building material	Type/Class	Fastening	Min. edge distance c_{min} (mm)	Tested acc. to	Transverse load			
					Permissible load $F_{empf.}$ (kN)		Design load F_{Rd} (kN)	
					Tension 3)	Compr. 4)	Tension 3)	Compr. 4)
Concrete	C20/25	2 × MMS-plus-P-7,5×50	50	MO-02/1	1)	1)	1)	1)
Lime sandstone	DFK 20							

1) Failure in the JB-W or in the window frame

In the window frame



Building material	Construction height 2) h_{max} (mm)	Type/Class	Fastening	Tested acc. to	Transverse load			
					Permissible load $F_{empf.}$ (kN)		Design load F_{Rd} (kN)	
					Tension 3)	Compr. 4)	Tension 3)	Compr. 4)
PVCu reinf. square + PVC reinforced	80	1,5 mm	2 × FB-FK-7,5×42	MO-02/1	1.69	1.09	1.69	1.09
	120				1.09	0.62	1.09	0.62
PVCu reinf. square + Stadur	80	1,5 mm	2 × FB-FK-7,5×62		1.45	1.14	1.45	1.14
	120				0.86	0.71	0.86	0.71

2) Extension incl. possible underblocking

3) Outwards

4) Inwards

5) The application-dependent influence factors A_1 , A_2 and A_3 must be considered.

Remarks

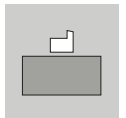
Testing and evaluation were carried out in accordance with MO-02/1, June 2015 edition.

In the case of a penetrating downward fastening, the frame profile must be adequately sealed.

Concrete: Values determined in tests in lime sandstone DFK 20.

All information is non-binding and without guarantee.

Design Values Systems **JB-W/XL** 90° to the Window Plane



Boundary conditions

Distance top edge angle to frame

Up to 20 mm

Tested profile extensions

Veka Softline 82 mm, reinforced rectangular tube 1.5 mm, Stador FrameTec 70/82×150 mm
Rodenberg Porta FRAME RV 70×150 mm

Connection profile extensions

Must be designed to be bend-resistant. Selected:

- PVC reinforced, construction height 120 mm: 4×SPC4-5.5×125, connection from the extension into the frame, distance 60 and 200 mm from the central axis of the angle. Predrilled hole 5.5 mm in the extension.
- PVC reinforced, construction height 160 mm: 3×FB-FK-7.5×182, connection from the frame into the extension, distance 200 mm. Predrilled hole 6 mm in the extension.
- Stador: 4×FB-FK-7.5×132, connection from the frame into the extension, predrilled hole 6 mm. Or 4×BS-4.8×170 or BS-4.8×130 (construction height 120 mm), connection from the profile extension into the frame, predrilled hole 5 mm in the extension. Distance 40 and 200 mm from the central axis of the angle.
- Rodenberg: 4×BS-4.8×170, connection from the profile extension into the frame, distance 40 and 200 mm from the central axis of the angle. Predrilled hole 5 mm in the extension.

The profile extensions must be structurally adequate. PVC profiles must be reinforced.

Bracket attachment

PVCu reinforced: 2×FB-FK-7,5×42, 6 mm predrilled hole

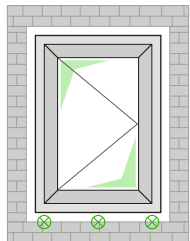
at the profile processor works

Stador and Rodenberg: 3×FB-FK-7.5×62, no predrilled holes

Predrilled hole diameter and type

Concrete: 6 mm, hammer drill

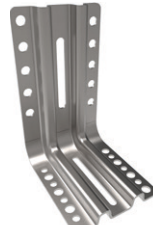
The documented values apply within these boundary conditions



⊗BP



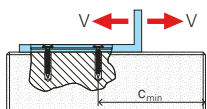
JB-W/XL 140×80



JB-W/XL 140×100

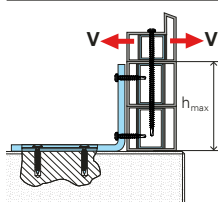
Fastening to the bottom

Arrangement and force direction



Building material	Type/Class	Fastening	Min. edge distance c_{min} (mm)	Tested acc. to	Transverse load			
					Permissible load $F_{empf.}$ (kN)		Design load F_{Rd} (kN)	
					Tension 3)	Compr. 4)	Tension 3)	Compr. 4)
Concrete	C20/25	2×MMS-plus-P-7,5×50	50	MO-02/1	1)	1)	1)	1)
Lime sandstone	DFK 20							

1) Failure in the JB-W/XL or in the window frame



Building material	Construction height 2) h_{max} (mm)	Type/Class	Fastening	Tested acc. to	Transverse load			
					Permissible load $F_{empf.}$ (kN)		Design load F_{Rd} (kN)	
					Tension 3)	Compr. 4)	Tension 3)	Compr. 4)
PVC reinf. square. + PVCu reinforced	120	1,5 mm	2×FB-FK-7,5×42	MO-02/1	1,43	1,21	1,43	1,21
	160				0,72	0,59	0,72	0,59
PVC reinf. square + Stador 5)	120		3×FB-FK-7,5×62		1,53	1,63	1,53	1,63
	160				0,67	0,87	0,67	0,87
PVCu reinforced + Rodenberg 5)					0,94	0,47	0,94	0,47

2) Extension incl. possible underblocking

3) Outwards

4) Inwards

5) The application-dependent influence factors A_1 , A_2 and A_3 must be considered.

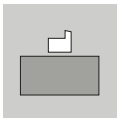
Remarks

Testing and evaluation were carried out in accordance with MO-02/1, June 2015 edition.

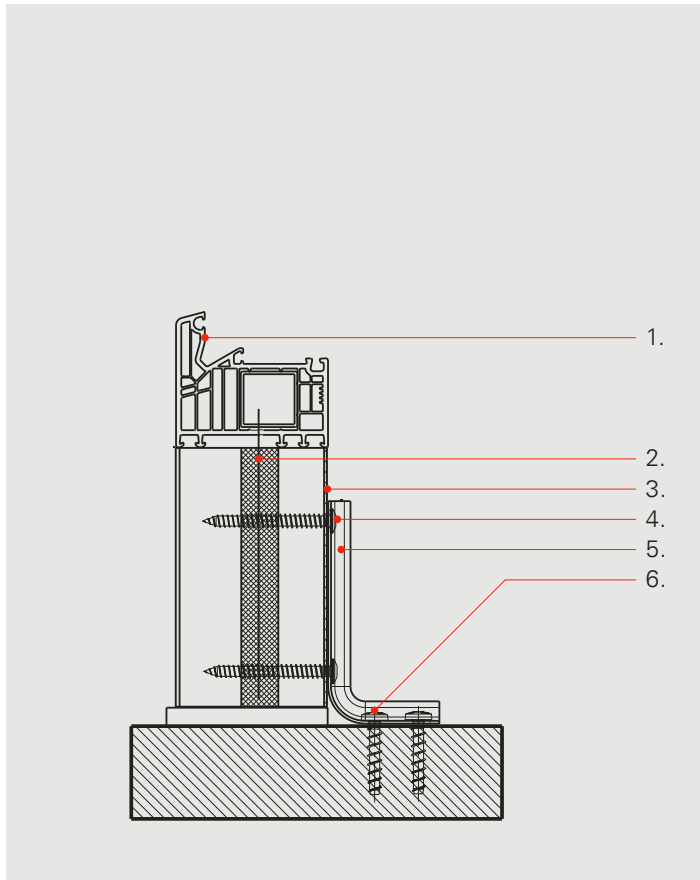
In the case of a penetrating downward fastening, the frame profile must be adequately sealed.

Concrete: Values determined in tests in lime sandstone DFK 20.

All information is non-binding and without guarantee.

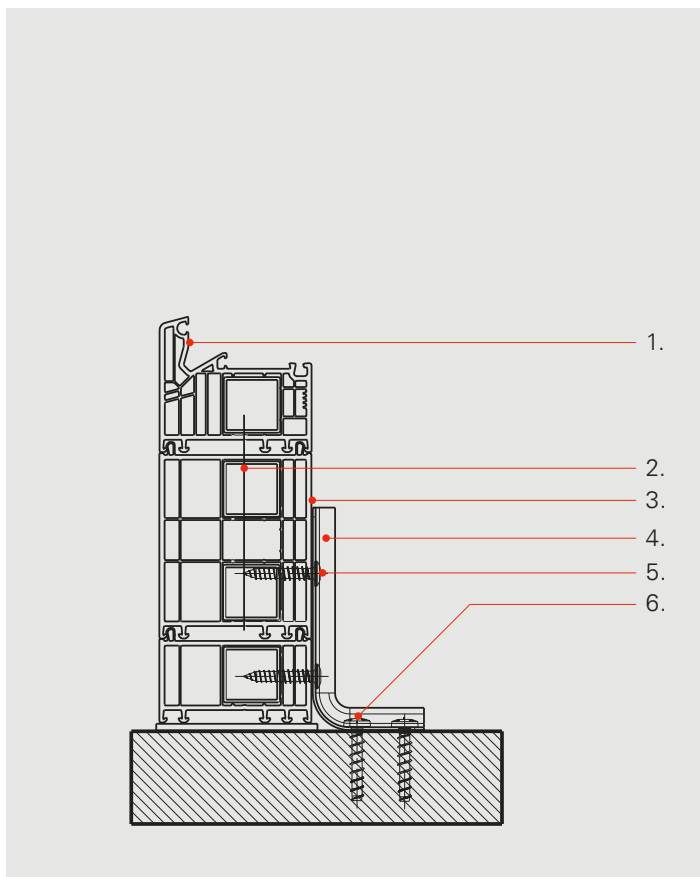


Installation Situations JB-W and JB-W/X



Description

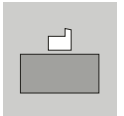
1. Window frame
2. Fastener BS-4,8xL/BS-6,1xL/FB-FK 7,5xL
3. Additional profile extension Stadur Frame Tec
4. Fastener FB-FK 7,5xL
5. Bracket JB-W/JB-W/XL
6. Fastener Multi Monti-plus 7,5xL



Description

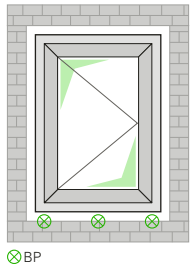
1. Window frame
2. Fastener SPC-5,5xL/FB-FK 7,5xL
3. Additional profile
4. Winkel JB-W/JB-W/XL
5. Fastener FB-FK 7,5xL
6. Fastener Multi Monti-plus 7,5xL

Design Values Systems JB-A 90° to the Window Plane



Boundary conditions

Distance top edge of angle to window frame	Up to 20 mm
Approved profile extensions	Veka Softline 2×100 mm + 1×45 mm, reinforced 1.5 mm, Stador Frame Tec 70×290 mm Rodenberg Porta FRAME RV 70×290 mm
Connection profile extensions	<ul style="list-style-type: none"> • PVC reinforced: 2×SPC4-5.5×75 (extension into profile) and 2 x SPC4-5.5×125 mm (extensions to one another) • Stador: 4×FB-FK-7.5×132, connection from the frame into the extension, distance 40 and 200 mm from the central axis of the angle. • Rodenberg 4×BS-4.8×300, connection from the profile extension into the frame, distance 40 and 200 mm from the central axis of the angle.
Connection angle at the profile processor works	PVC reinforced: 2 × FB-FK-7,5×42, 6 mm hole predrilled Stador: 4 × FB-FK-7,5×72, not predrilled Rodenberg: 4 × FB-FK-7,5×62, not predrilled
Predrilled hole diameter and type	Concrete: 6 mm, hammer drill
Use reinforcement strut	For all applications except with leg height 150 mm to the window frame. The documented values apply within these boundary conditions



⊗BP



JB-A 150/280 +
JB-AS-205



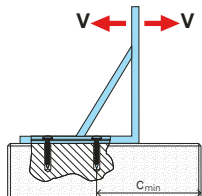
JB-A 190/240 +
JB-AS-205



JB-A 150/280

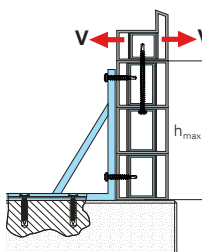
Fastening to the bottom

Arrangement and force direction



In the substrate					Transverse load			
Building material	Type/ Class	Fastening	Min. edge distance c _{min} (mm)	Tested acc. to	Permissible load F _{empf.} (kN)		Design load F _{Rd} (kN)	
					Tension 3)	Compr. 4)	Tension 3)	Compr. 4)
Concrete	C20/25	2 × FC-7,2×45	60	MO-02/1	1)	1)	1)	1)
		2 × MMS-plus-P-7,5×50	50					

1) Failure in the JB-A or in the window frame



In the window frame					Transverse load			
Building material	Type/ Class	Construct. height 2) h _{max} (mm)	Fastening	Tested acc. to	Permissible load F _{empf.} (kN)		Design load F _{Rd} (kN)	
					Tension 3)	Compr. 4)	Tension 3)	Compr. 4)
PVCu reinforced + PVCu reinforced	1,5 mm	260	3 × FB-FK-7,5×42	MO-02/1	0,92	0,61	0,92	0,61
			4 × FB-FK-7,5×72					
		4 × FB-FK-7,5×62						
PVCu reinforced + Stador		300			0,53	0,35	0,53	0,35
PVCu reinforced + Rodenberg 5)					0,55	0,39	0,55	0,39

2) Extension incl. possible underblocking

3) Outwards

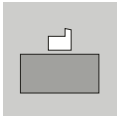
4) Inwards

5) The application-dependent influence factors A₁, A₂ and A₃ must be considered.

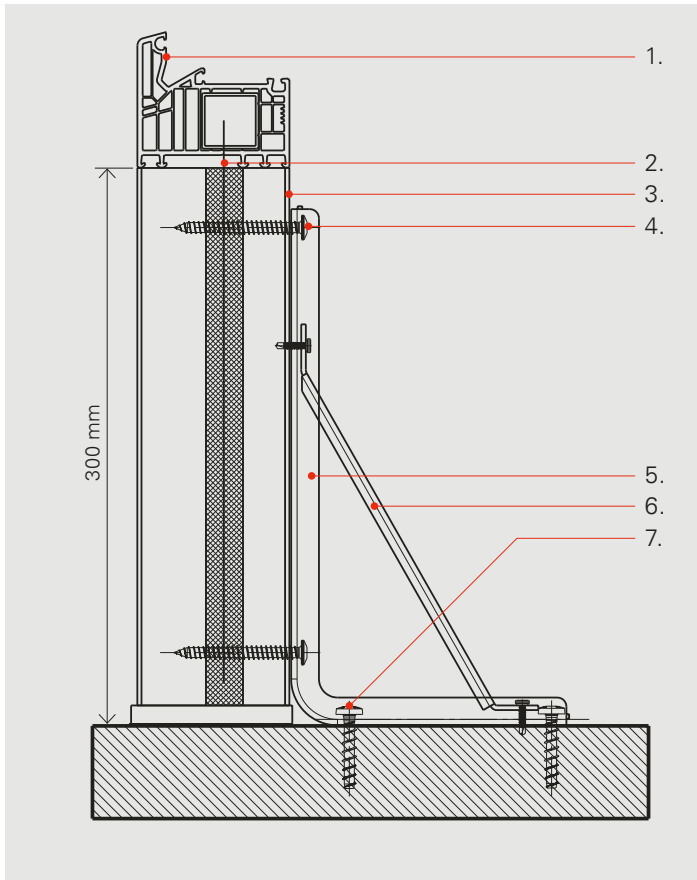
Remarks

Testing and evaluation were carried out in accordance with MO-02/1, June 2015 edition.
In the case of a penetrating downward fastening, the frame profile must be adequately sealed.
Concrete: Values determined in tests in lime sandstone DFK 20.

All information is non-binding and without guarantee.

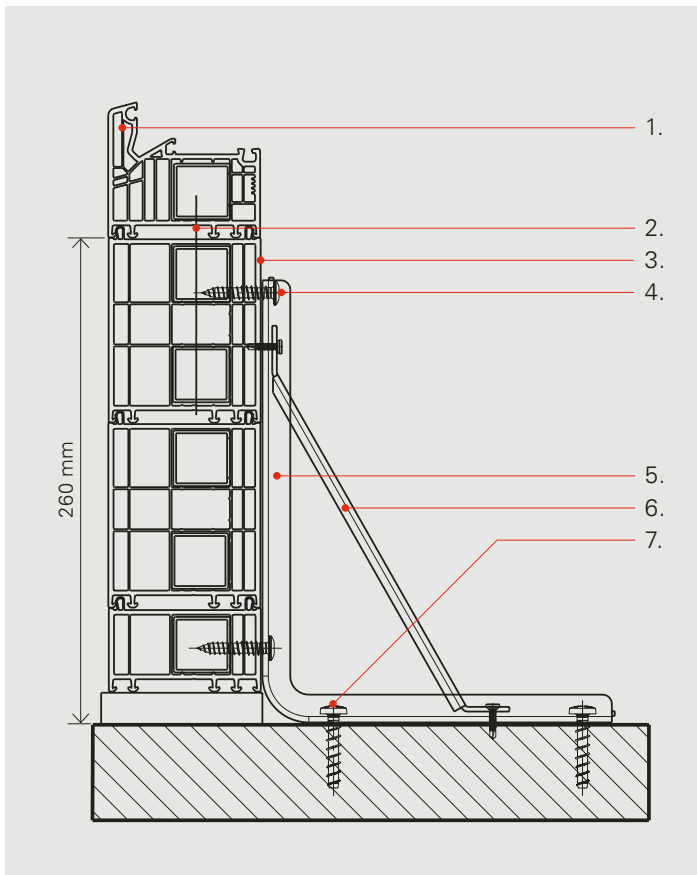


Installation Situations JB-A



PVCu reinforced + Stadurlon





1. Window frame
2. Fastener FB-FK 7,5xL
3. Additional profile extension Stadur
4. Fastener FB-FK 7,5xL
5. Bracket JB-A
6. Strut JB-AS 205
7. Fastener Multi Monti-plus 7,5xL



PVCu reinforced






1. Window frame
2. Fastener SPC4-5,5xL/FB-FK-7,5xL
3. Additional profile
4. Fastener FB-FK 7,5xL
5. Bracket JB-A
6. Strut JB-AS 205
7. Fastener Multi Monti-plus 7,5xL

Test Reports and Installations Instructions Systems FB and FL

Application	System	What	Substrate/Remark	Institut	No.	Year	Link	QR-Code
Installation in the wall, Standard	FB	Component testing acc. to MO-02/1	Vertical perforated clay block Plan-T10-30.0-10DF	ift	14-004099-PR02	2015	www.sfs.com/bc_141	
Installation in the wall, Break-in resistance	FB	RC2 acc. to DIN EN 1627:2011	Brick work ≥ DFK12, with back lining	ift	18-002193-PR02	2018	www.sfs.com/bc_143	
Installation in the wall, Standard	FL	Installation instruction	Aerated concrete PP2	–	–	2020	www.sfs.com/bc_154	
Installation in the wall, Break-in resistance	FL	RC2 acc. to DIN EN 1627:2011		ift	18-002501-PR01	2018	www.sfs.com/bc_155	





Further test reports and installation manuals available in German Language


Test Reports and Installations Instructions Systems JB-W, JB-W/XL and JB-A

Application	System	What	Substrate/Remark	Institut	No.	Year	Link	QR-Code
Safety Barrier	JB-W, JB-W/XL, JB-A	Proof	ETB	ift Rosen- heim	19-004079- PR01 20-001405- PR01	2020	www.sfs.com/ bc_107	
Threshold fastening	JB-A	Installation manual	Concrete/ Limesandstone	–	–	2020	www.sfs.com/ bc_108	
Threshold fastening	JB-W	Installation manual	Concrete/ Limesandstone	–	–	2020	www.sfs.com/ bc_109	
Threshold fastening	JB-W/XL	Installation manual	Concrete/ Limesandstone	–	–	2021	www.sfs.com/ bc_113	
Threshold fastening	JB-A	Proof	MO-02	ift Rosen- heim	19-002573- PR04	2020	www.sfs.com/ bc_110	











Further test reports and installation manuals available in German Language

Delivery Range FB and FL





Product	Designation	Code	Recess	Ø (mm)	Length (mm)	PU (pcs.)	Item no.						
	FB Universal frame anchor Type FK	FB-FK-7,5xL	T30	7,5	42	100	1117989						
					62		1117987						
					72		1115791						
					82		1115795						
					92		1117985						
					102		1117984						
					112		1117982						
					122		1115797						
					132		1089936						
					152		1115545						
					182		1115546						
					212		1117981						
					252		1322555						
					300		1175443						
					350		1563818						
					400		1563819						
	FB Universal frame anchor Type ZK	FB-ZK-7,5xL	T30	7,5	42	100	533628						
					62		533630						
					72		533631						
					82		533633						
					92		533634						
					102		533635						
					112		533636						
					122		533637						
					132		533641						
					152		533647						
					182		533648						
					212		533649						
					252		1504218						
					300		1504217						
							FB Universal frame anchor Type SK	FB-SK-7,5xL	T30	7,5	42	100	1622825
											62		1622827
72	1622828												
82	1622841												
92	1622843												
102	1622844												
112	1622846												
122	1622848												
132	1622849												
152	1622855												
182	1622857												
212	1622858												
252	1504216												
300	1107630												
	FL Special frame fastener Type FK	FL-FK-9xL	T30	9,0		245					50		1580711
						300							1580718





Product	Designation	Code	Ø (mm)	Colour	PU (pcs.)	Item no.
	Cover caps, only for Type SK	CC-FB-RAL9010	10,5	White	100	283394
		CC-FB-RAL1015		Beige		633956
		CC-FB-RAL7035		Grey		935450
		CC-FB-RAL8014		Chestnut		633957
		CC-FB-RAL9005		Black		839147

Delivery Range Systems JB-W, JB-W/XL and JB-A

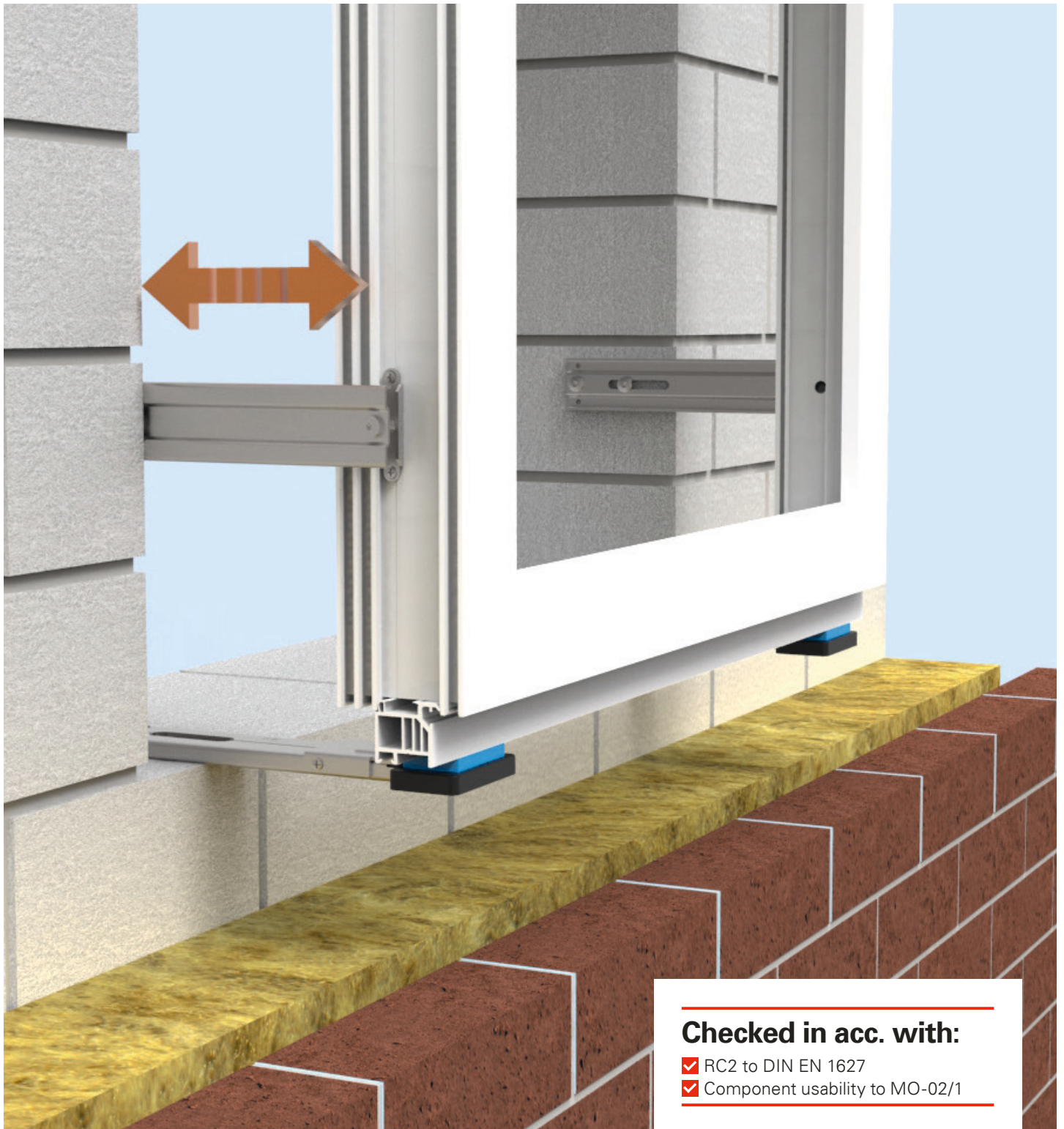
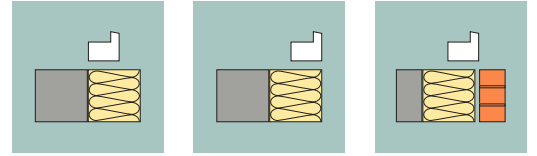
Product	Designation	Code	Length/s (mm)	Width (mm)	PU (pcs.)	Item no.
	JB-W Mounting bracket	JB-W-70×40	70/40	55	50	1653825
		JB-W-120×60	120/60			1653826
		JB-W-100×80	100/80			1653872
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>140×40</p>  </div> <div style="text-align: center;"> <p>140×60</p>  </div> </div>	JB-W/XL Mounting bracket	JB-W/XL-140×40	140/40	80	50	1573530
		JB-W/XL-140×60	140/60			1573575
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>140×80</p>  </div> <div style="text-align: center;"> <p>140×100</p>  </div> </div>		JB-W/XL-140×80	140/80			1691959
		JB-W/XL-140×100	140/100			1691946
	JB-A Mounting bracket	JB-A-150×280	150/280	47	25	1548812
		JB-A-190×240	190/240			1548789
	JB-A Strut	JB-AS-205	205	20		1548811

Accessories for Systems FB, FL, JB-W, JB-W/XL, JB-A

Product	Designation	Code	Recess	Ø (mm)	Length (mm)	PU (pcs.)	Item no.				
	Drill fastener BS	BS-4,8xL	T25	4,8	70	250	1261140				
					100		1261144				
					120		1261146				
					170		1261151				
					220		1261154				
					300		1261157				
					BS-6,1xL		70	1352562			
		100		1352565							
		120		1351286							
		170		1352567							
		220		1352579							
		300		1352583							
				Coupling fastener SPC			SPC4-5,5xL	T25	5,5	45	100
					55					1133777	
65	1133778										
75	1133779										
85	1133780										
95	1133782										
105	1133783										
125	1384747										
150	1384501										
	VAP mounting fastener for timber and PVCu, not reinforced		VAP-6,0x40		T30	6,0				40	
				MULTI-MONTI-plus-P for concrete and limesandstone			MMS-plus-P-7,5x50	T30	7,5		50
P-7,5x60	60		1480042								

Product	Designation	Code	Recess	Ø (mm)	Length (mm)	PU (pcs.)	Item no.
	Bit T25	T25-25-Hex¼"	T25	¼"	25	10	24008
	Bit T30	T30-50-Hex¼"	T30	¼"	50	1	57539
	Bit T30	T30-90-Hex¼"	T30	¼"	90	1	654613
	Special drill for vertical perforated clay block	ZSD-5,0x400/300		5,0	400	1	1514297
		ZSD-5,5X400/300		5,5			1488880

Installation in front of the wall



General information

Product overview

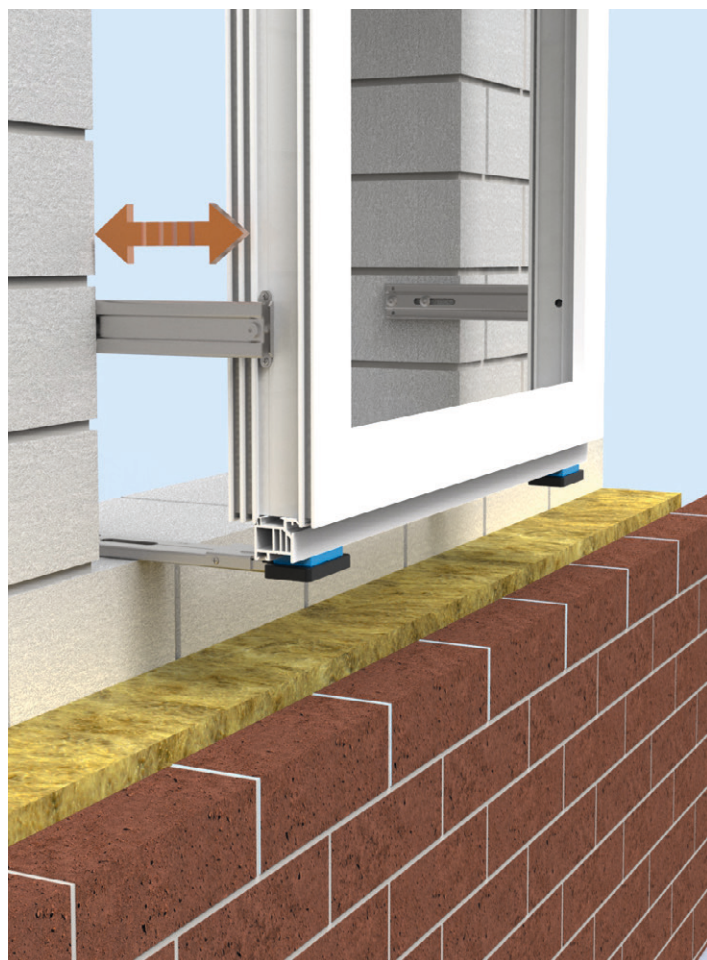
System	Application		
JB-D®-U			<p>In front of wall installation using bracket, side with bolt, bottom with plate</p>
JB-D®-R			<p>In front of wall installation using bracket, for large cantilevers and high loads, side with bolt, bottom with plate</p>
JB-D®-CB			<p>Additional bracket for fastening to substrates with low load capacity or to hollow bricks</p>
JB-D®-W			<p>Angle for transferring horizontal loads bottom</p>
JB-W/XL			<p>Edge fastening on the outside, also for use with windows deeper than the reveal opening</p>

The solution – JB-D® PLUS bracket system

From now on, window installation in front of load-bearing wall constructions will be simpler, quicker and safer than ever before: the JB-D® PLUS fastening system for in front of the wall installation – suitable for use for load transfer and safety barrier – has a National Technical Approval (abZ). Specially designed for transferring large loads, the structurally certified system solution with documented component load capacities provides the best basis for durable, safe assembly and installation. Manufactured out of the non-combustible material steel in accordance with the provisions of DIN 4102-1 class A, the system can satisfy high requirements for safety against fire. High quality is also assured by ift certification, proof of burglar resistance and thermal calculations.

Consistently designed for added value

The high capabilities of the JB-D® PLUS create additional advantages for fabricators, assemblers and installers. All the forces acting on the window are transferred as point loads through rigid brackets which can be also be used for cantilevers up to 150 mm. Thus providing the greatest possible flexibility. For compliant fabrication and assembly. This greatly increased scope of application means the system can be used with all common frame materials, frame extensions and wall substrates.



Further Added Value comes from the rectangular cross section specially designed for long cantilevers: ensuring the highest load capacity without additional support angles, forming the ideal solution for installation in double-skinned masonry with wall opening edging strips. JB-D PLUS® installation does not necessarily require any change in the sequence of traditional construction operations around the opening.

Fusing cost-effectiveness and efficiency

High cost-effectiveness, efficient installation and low fabrication costs – the JB-D® PLUS system has inherent advantages when it comes to saving time and money. They extend from easy 3D adjustment and robust load transfer during installation to trouble-free interfaces with subsequent trades such as ETICS installation. Other great benefits include the ability to install from inside the building and the consistent implementation of a well-designed modular system, versatility and reduced warehousing requirements.

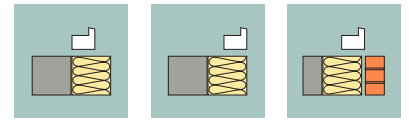
Product advantages at a glance

- A fastening system for in front of the wall installation with national technical approval – which also satisfies building components with safety barrier characteristics
- Reduced number of fastening points required due to this solution catering for both load transfer and the installation of safety barriers (e.g. Juliet balconies)
- Structurally certifiable solution with documented component load capacities
- Point load transfer of all the forces from the installed elements through rigid brackets
- 3D adjustability for simple and quick alignment
- Suitable for use on all cantilevers up to 150 mm
- Universal application, including double-skin brick wall with wall opening edge strips
- Flexible installation – can be installed from the interior of the building
- Steel-based system, non-combustible material in accordance with DIN 4102-1 class A

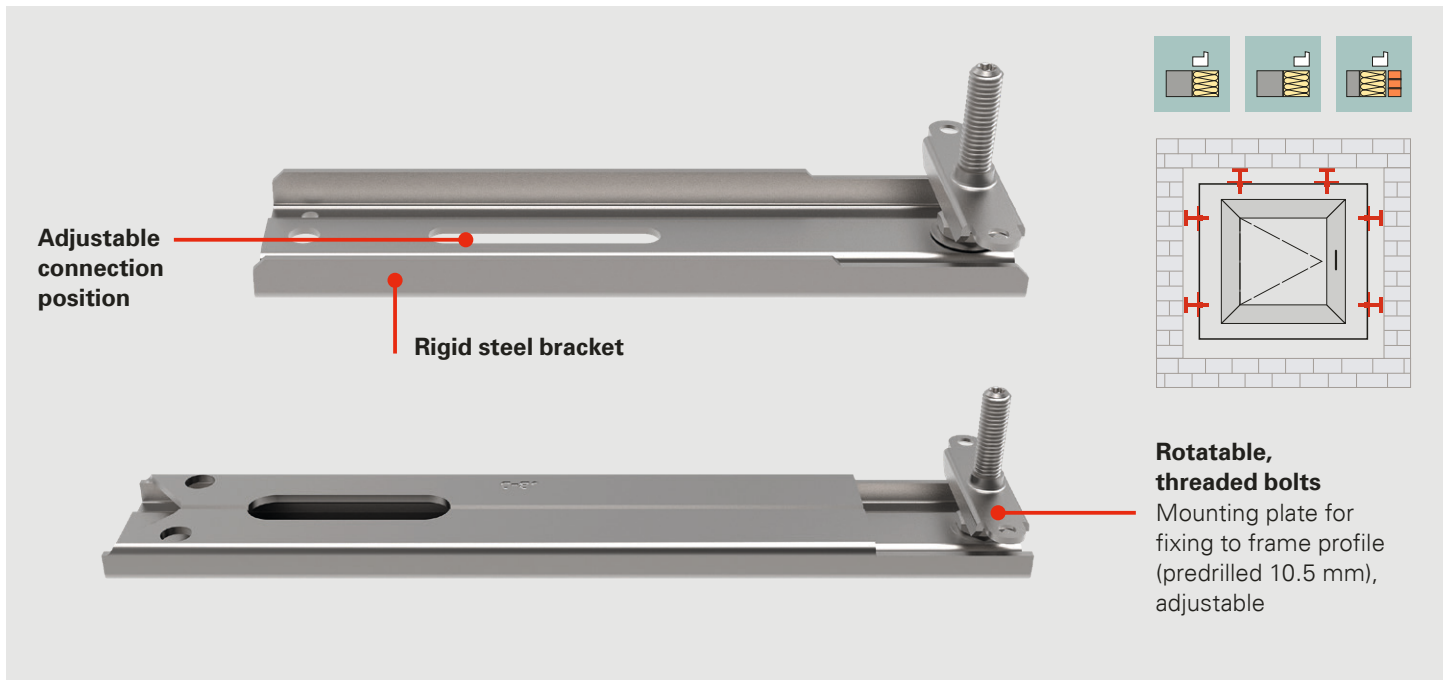
Tested and approved

- ✓ National Technical Approval (abZ), Z-14.4-806 (DIBt)
- ✓ MO-02/1 – usability in accordance with ift guideline
- ✓ Fastenings in accordance with Austrian standard ÖNORM B 5320
- ✓ ift certified
- ✓ RC2 - Burglary resistance class in acc. with DIN EN 1627





JB-D® PLUS system advantages – connection at the sides and top



JB-D® PLUS – efficient fastening

JB-D® PLUS clearly demonstrates its strengths with fastenings at the sides and top of the window element. In addition to the high load capacity of the rigid steel brackets, they are infinitely adjustable and can be pre-assembled at the factory. Furthermore, the ability to connect to all commonly available frame materials increases flexibility of use.

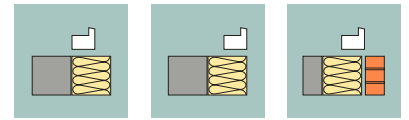
Simple to use, even in Double-skinned walls

When used in double-skin walls, both the installer and the fabricator benefit from significant time and cost savings: Importantly, the JB-D design is practice-proven and does not require any change to the traditional sequence of construction work on site.

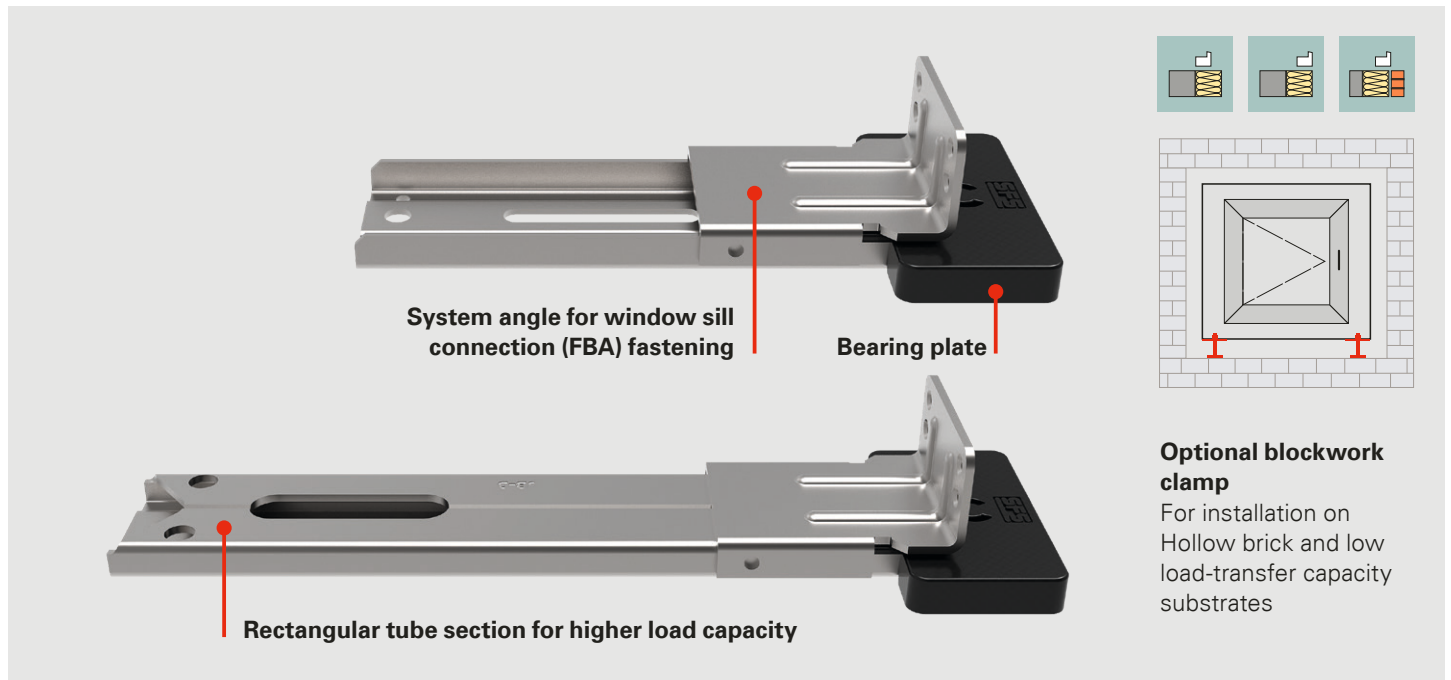
Product advantages at a glance

- High load capacity through rigid steel brackets
- Ideal for installation in double-skin walls
- Cantilever variably adjustable
- Pre-assembly in the factory possible
- Suitable for connection to all commonly available frame materials





JB-D® PLUS system advantages – connection at bottom



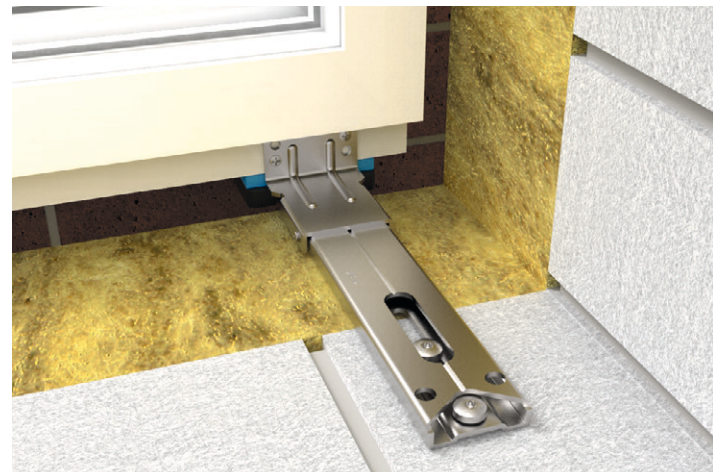
JB-D® PLUS – high load capacity

When fitted at the bottom of the window opening, the JB-D® PLUS is an efficient system with high load-bearing capacity. Furthermore, the high strength of the rectangular tube makes the use of an additional support angle unnecessary, even for large cantilevers. The same is true for both hollow brick and weak wall substrates. These carefully designed clamp solutions ensure longterm, safe load transfer.

The simple way of adjusting the height of the JB-D® PLUS using commonly available spacer blocks and the stable, flat bearing surface for load transfer prove extremely practical during installation, as does the attachment of the window sill connection (FBA) profile using system angles. Subsequent Follow-on trades benefit from considerable time and cost savings As a result of the connection assembly lying flat on the reveal and having a low profile.

Product advantages at a glance

- Highest possible load transfer capacity ensured by the rectangular tube, even with large cantilevers
- As the fastener connection boasts a low profile and sits flat on the reveal leaves the optimum conditions for the completion of follow-on-trades such as sealing and ETICS installation.
- The stable and flat bearing surface transmits loads from the installed windows
- Simple height adjustment using commonly available spacers, similar to soffit mounting
- Quick and secure attachment of window sill connection (FBA) profile using system angles
- Increased load transfer capacity from brackets for perforated blocks and weak wall substrates



Direct attachment

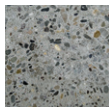






Attachment with clamp

Connection at the sides and top




Window in front of the wall



		Cantilever AK_B																
Wall type / width (mm)		0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
Concrete  Min. C20/C25	160			15	20		50					85	22/24		120			
							45	21		80						125	23/25	150
	170		5	20			50				75	22/24		120				
						35	21		80					115	23/25		150	
	180		0	20			50			70	22/24		120					
						30	21		80					110	23/25		150	
	200		0	20			50			70	22/24		120					
						30	21		80					110	23/25		150	
Lime-sand stone block (KS)/XL 	175		10	20			50				80	22/24		120				
							40	21		80					120	23/25	150	
	200		0	20			50			70	22/24		120					
						30	21		80					110	23/25		150	
	240		0	20			50			70	22/24		120					
						30	21		80					110	23/25		150	
Timber 	160				35	20	50							22/24				
									65	21	80							23/25
	180		15	20			50					85	22/24		120			
						45	21		80							125	23/25	150
	200		0	20			50			70	22/24		120					
						30	21		80					110	23/25		150	
	220		0	20			50			70	22/24		120					
						30	21		80					110	23/25		150	
	240		0	20			50			70	22/24		120					
						30	21		80					110	23/25		150	
Aerated concrete 	175		10	20			50				80	22/24		120				
							40	21		80					120	23/25	150	
	200		0	20			50			70	22/24		120					
						30	21		80					110	23/25		150	
	240		0	20			50			70	22/24		120					
						30	21		80					110	23/25		150	
Hollow brick clay block (HLZ) 	175		10	20			50				80	22/24		120				
							40	21		80					120	23/25	150	
	200		0	20			50			70	22/24		120					
						30	21		80					110	23/25		150	
	240		0	20			50			70	22/24		120					
						30	21		80					110	23/25		150	

Product and ordering code for # 20–25, see following page, column #

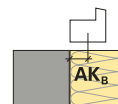
Programme overview side and top

Wall type	Product	Ordering code	#	PU	Art No.	Application example
Concrete, lime sand stone (KS), vertically perforated clay block (HLZ), aerated concrete class PP2/4/6, timber		JB-D-U155	20	50	1651506	
		JB-D-U185	21		1651529	
		JB-D-U225	22		1651505	
		JB-D-U265	23		1651504	
		JB-D-R225	24	25	1651503	
		JB-D-R265	25		1651502	

Side/top: for safety barrier requirements

- Can be attached directly to concrete, lime sand stone XL and timber substrates. Solutions and application range for other substrates: see JB-D/FA PLUS

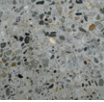





Joint width up to 35 mm
 Cantilever AK_B = distance of the fastening point from the reveal edge



Connection at bottom

Window in front of the wall







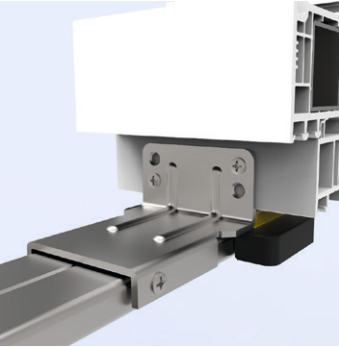


		Cantilever AK_B																
Wall type / width (mm)		0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
Bottom, direct	Concrete  Min. C20/C25	160		15	26		50					85	28/30	120				
							45	27		80						125	29/31	150
		170	5	26			50				75	28/30			120			
						35	27			80					115	29/31		150
		180	0	26			50			70	28/30			120				
						30	27			80				110	29/31		150	
		200	0	26			50			70	28/30			120				
						30	27			80				110	29/31		150	
		Lime sand stone (KS)/XL 	175		10	26		50				80	28/30	120				
							40	27		80					120	29/31	150	
	200		0	26			50			70	28/30			120				
						30	27			80				110	29/31		150	
	240	0	26			50			70	28/30			120					
					30	27			80				110	29/31		150		
	Timber 	160				35	26	50						28/30				
										65	27	80					29/31	
		180		15	26			50					85	28/30	120			
							45	27		80						125	29/31	150
		200	0	26			50			70	28/30			120				
						30	27			80				110	29/31		150	
	Aerated concrete  PP2/4/6	175		10	26		50				80	28/30	120					
							40	27		80					120	29/31	150	
200		0	26			50			70	28/30			120					
						30	27			80			110	29/31		150		
	240	0	26			50			70	28/30			120					
					30	27			80				110	29/31		150		
Bottom, clamp	Aerated concrete  PP2	175	5	32+26			50				75	32+28/30	120					
							35	32+27		80					115	32+29/31	150	
		200	0	33+26			50			70	33+28/30			120				
						30	33+27			80				110	33+29/31		150	
		240	0	34+26			50			70	34+28/30			120				
						30	34+27			80				110	34+29/31		150	
		Vertically perforated clay block (HLZ) 	175	5	32+26			50				75	32+28/30	120				
								35	32+27		80				115	32+29/31	150	
	200		0	33+26			50			70	33+28/30			120				
							30	33+27			80			110	33+29/31		150	
		240	0	34+26			50			70	34+28/30			120				
						30	34+27			80				110	34+29/31		150	

Product and ordering code for # 26–34, see following page, column #

A window sill connection (FBA) angle #35 or #36 must be used as an additional component for the connection to the profile

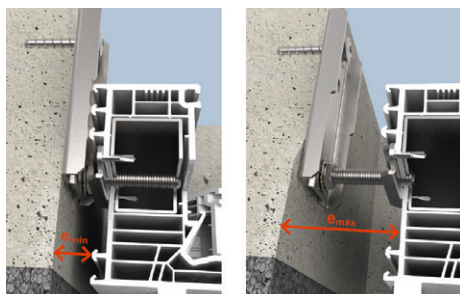
Programme overview connection bottom

Wall type	Product	Ordering code	#	PU	Art No.	Application example	
Concrete, lime sand stone (KS), aerated concrete PP2/4/6, timber		JB-DK-U155	26	50	1651501		
		JB-DK-U185	27		1651496		
		JB-DK-U225	28		1651493		
		JB-DK-U265	29		1772128		
	Rectangular tube		JB-DK-R225	30	25		1651494
			JB-DK-R265	31			1651495
Vertically perforated clay block (HLZ), aerated concrete class PP2		JB-D-CB175	32	25	1651497		
		JB-D-CB200	33		1651499		
		JB-D-CB240	34		1651500		
Window sill connection (FBA) angle		JB-D-W32/47	35	25	1644746		
		JB-D-W65/47	36		1644747		

Cantilever AK_B = distance of the fastening point from the reveal edge

Fabrication instructions

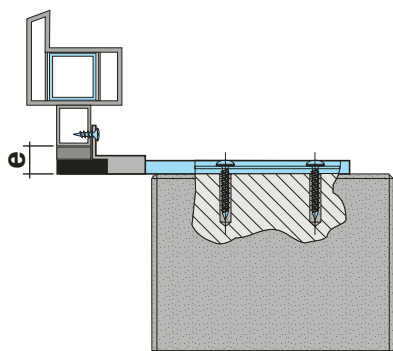
Joint width "e" sides and top



Frame material	Joint width "e" (mm)	
	e _{min}	e _{max}
PVC	10	35
Timber, with AM8-UD	17	
Timber, with AM8-T	12	25
Aluminium, with AM8-UD	17	35
Aluminium, with AM8-T, surface mounted	12	
Aluminium, with AM8-T, inserted	10	

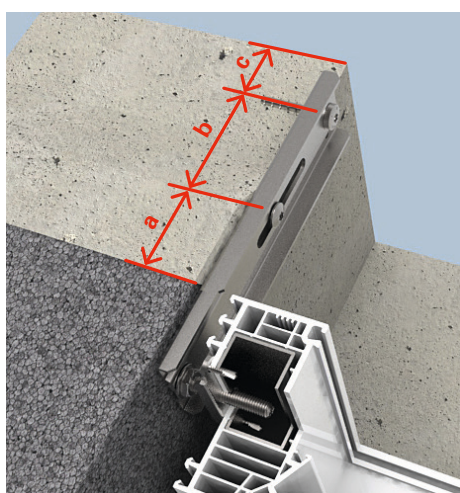
All rails come supplied with AM8-UD as standard.
The AM8-T can be ordered separately. See product list.
Processing window frame profile: hole Ø 10.5 mm.



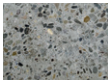




Joint width "e" bottom



Frame material	Joint width "e" (mm)	
	Direct attachment	Clamp attachment
PVC	e _{min} 12	e _{min} 15
Timber		
Aluminium		

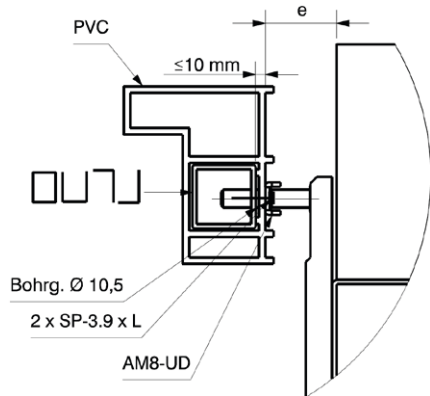
Edge distance and distance between fasteners



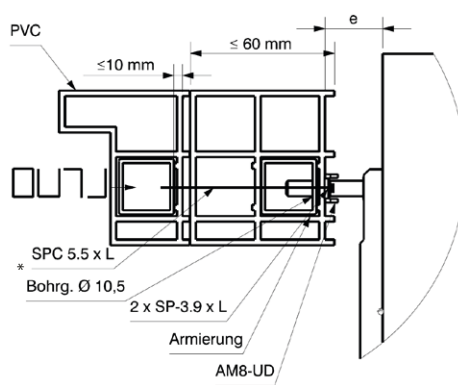
Wall type	a mm	b mm	c mm		
	50	≥ 35	≥ 40	Ø 7.5×60	Ø 6 mm, hammer drill
			≥ 50		
			≥ 60	Ø 8×80	Ø 5 mm, rotary drill
			≥ 50	Ø 7.5×132	
				Ø 8×61 Ø 9×245	No predrilling

Profile variants and connection

PVC, profile reinforced

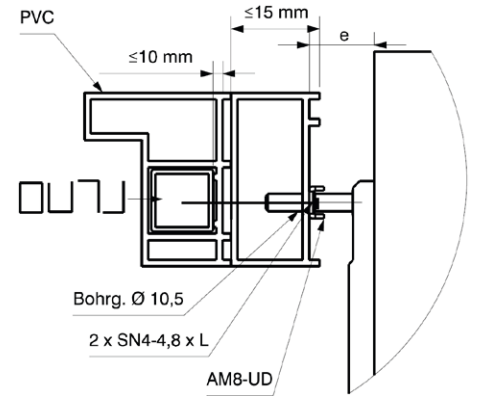


PVC with extension, profile reinforced

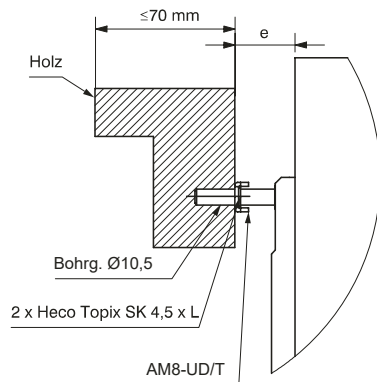


* Extensions must always be connected with two SPC fasteners at a maximum distance of 150 mm to the connection

PVC with extension, profile not reinforced

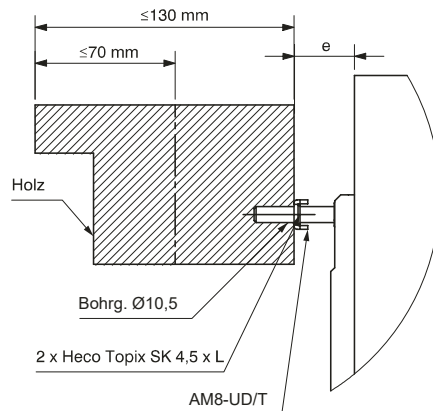


Timber

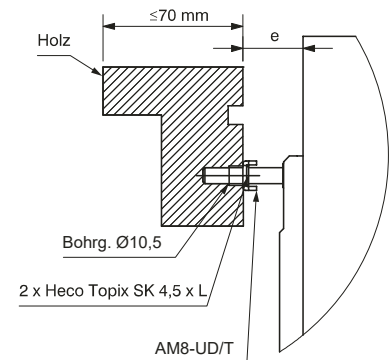


Timber

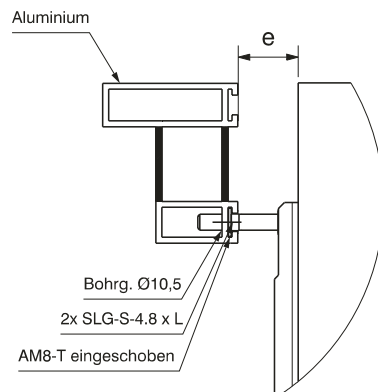
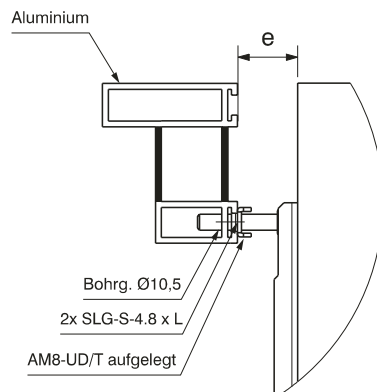
Frames with large face widths (one-part or parts structurally connected together)



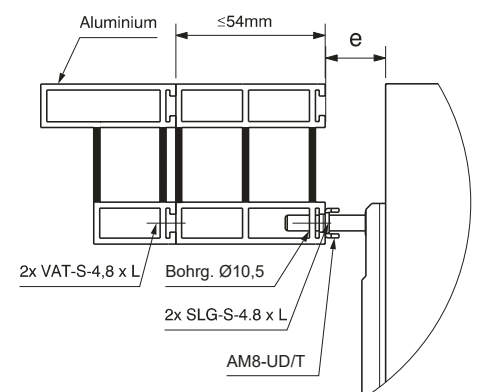
Profiled Timber



Aluminium

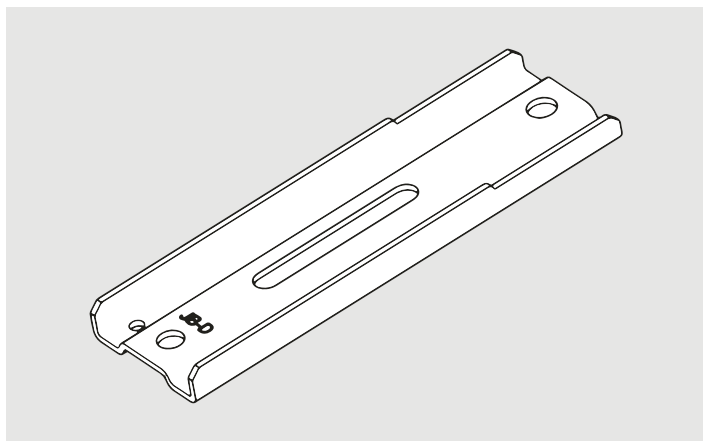


Aluminium with extension



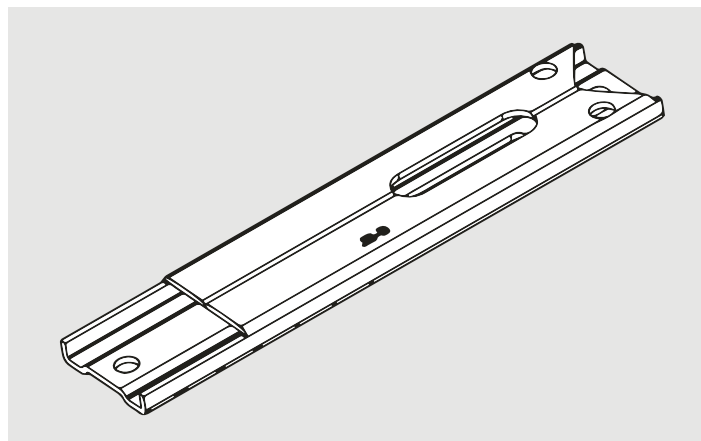
Technical data

JB-D® PLUS – Steel bracket



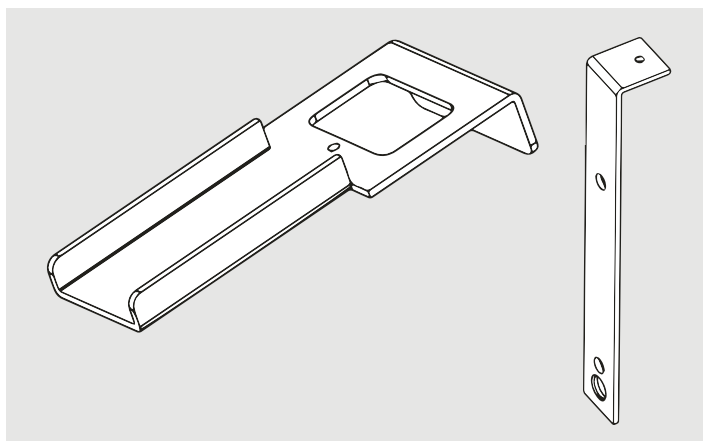
Mat.	Surface	Mat. thick (mm)	Width (mm)	Height (mm)	Length (mm)	Cross section (mm ²)	Moment of inertia (mm ⁴)
S 350 GD	Galva-nised Z275	2	47	12	155	134.9	1144
					185		
					225		
					265		

JB-D® PLUS – Rectangular tube



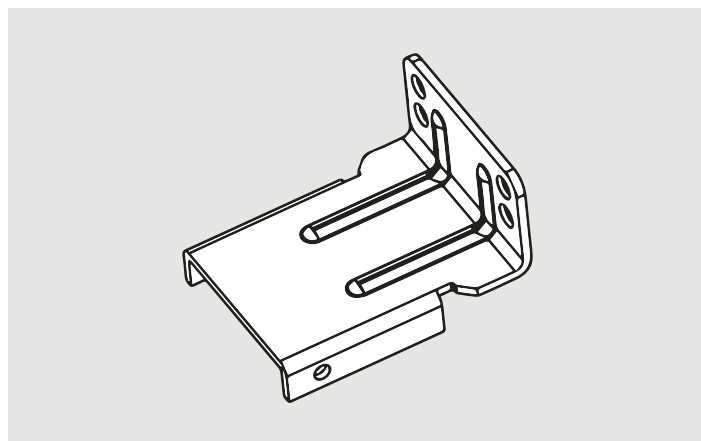
Mat.	Surface	Mat. thick (mm)	Width (mm)	Height (mm)	Length (mm)	Cross section (mm ²)	Moment of inertia (mm ⁴)
S 355 MC	Galva-nised Zinc flake	2.5	47	12	–	260.7	5395
					–		
					225		
					265		

JB-D® PLUS – Clamp, bottom



Mat.	Surface	Mat. thick (mm)	Width (mm)	Height (mm)	Length (mm)	Cross section (mm ²)	Moment of inertia (mm ⁴)
S 350 GD	Galva-nised Z275	3	74/53	28/15	171	–	–
					196		
					236		
S 350 GD	Galva-nised Z275	2.5	25	192	33	–	–

JB-D® PLUS – Window sill connection (FBA) angle

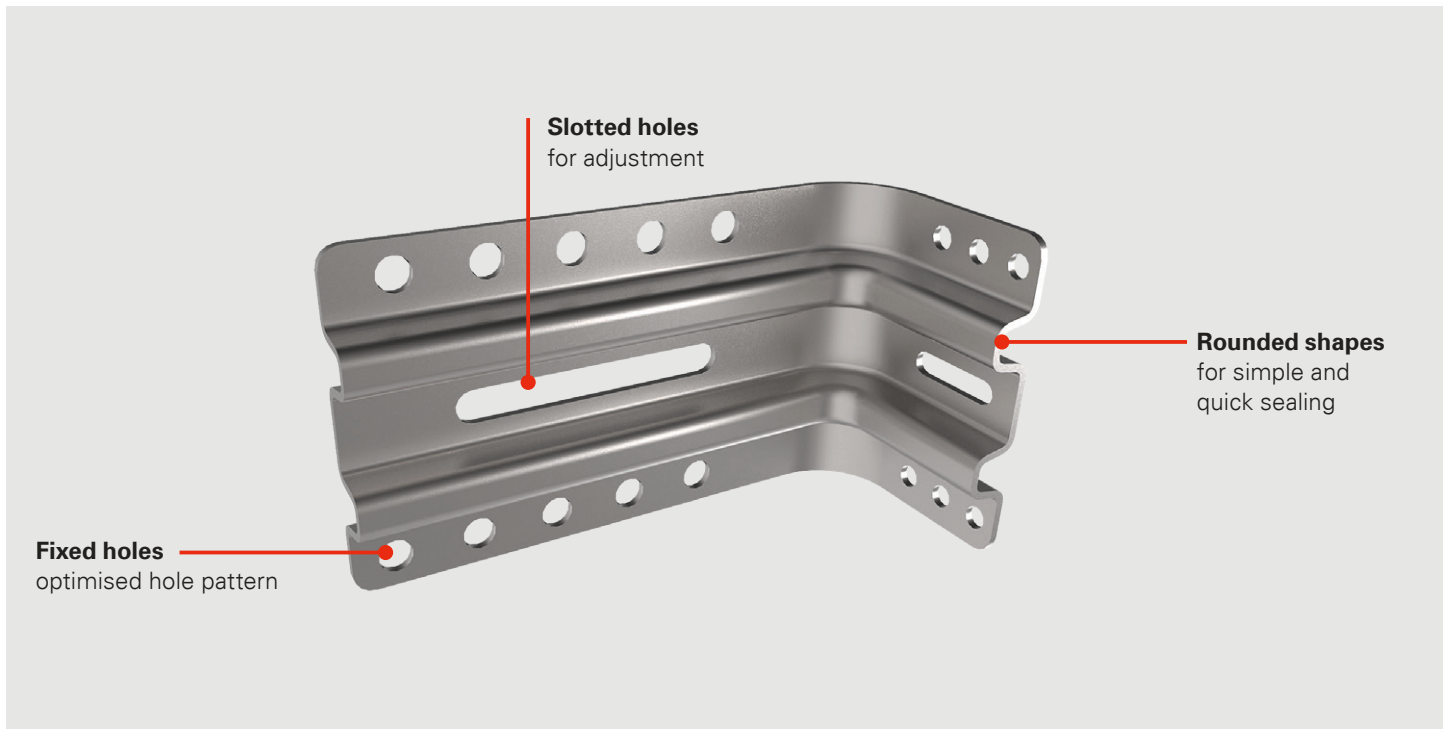


Mat.	Surface	Mat. thick (mm)	Width (mm)	Height (mm)	Length (mm)	Cross section (mm ²)	Moment of inertia (mm ⁴)
S 350 GD	Galva-nised Z275	2.5	57	32/65	70	–	–





Product Benefits System JB-W/XL



The Solution – JB-W/XL Bracket System

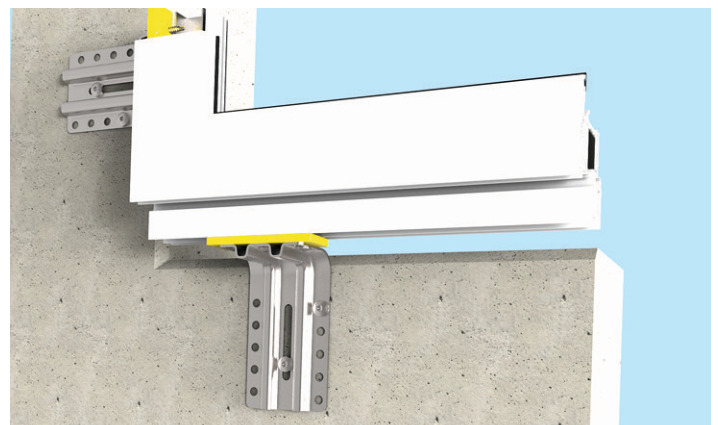
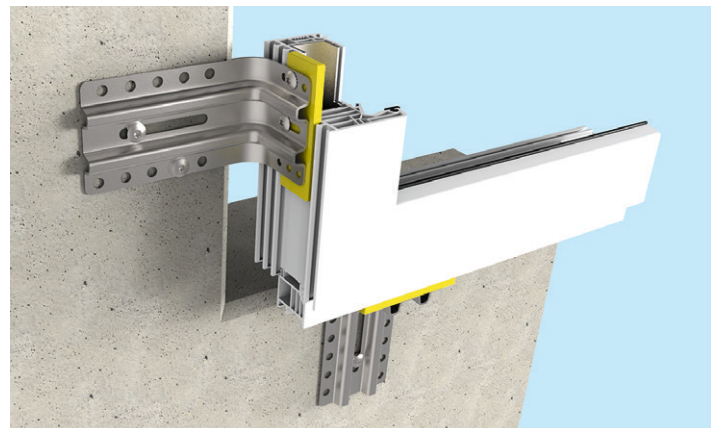
In-house designs are usually without verification and cause high process costs in operation in the event of complaints. Conventional brackets lack both the necessary rigidity and the corresponding test certificates. The JB-W/XL mounting bracket system is specially designed to meet the high demands of in front of the wall installation, and its durability and safety have been tested to the highest standards.

Product advantages at a glance

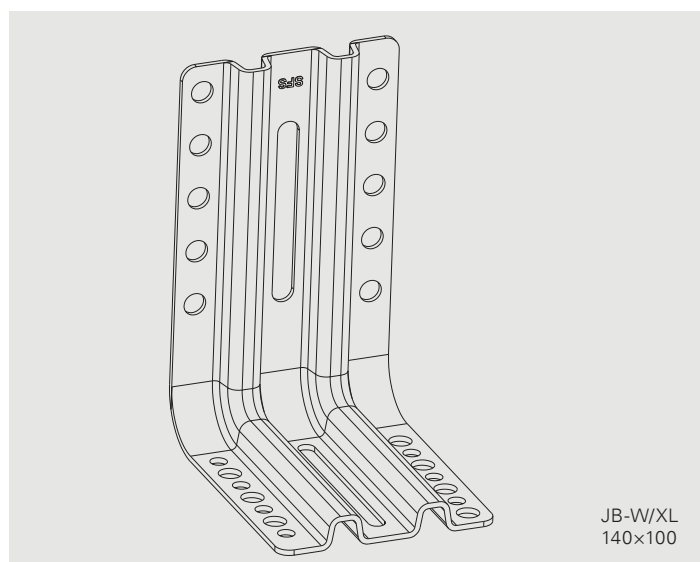
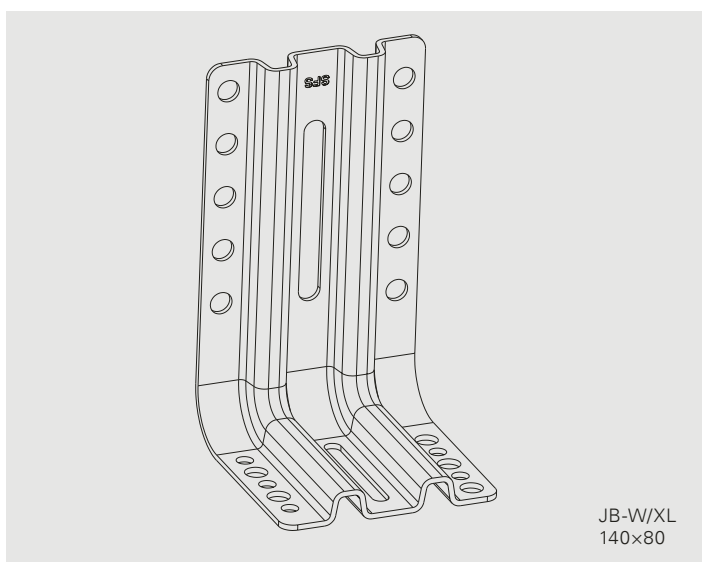
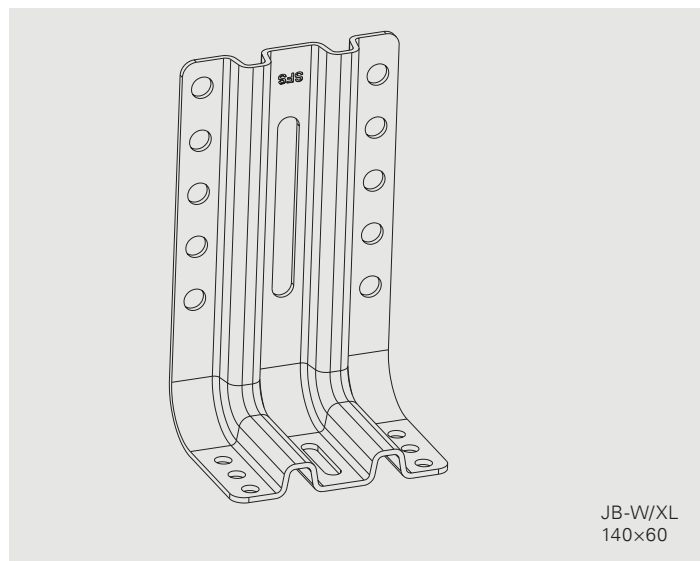
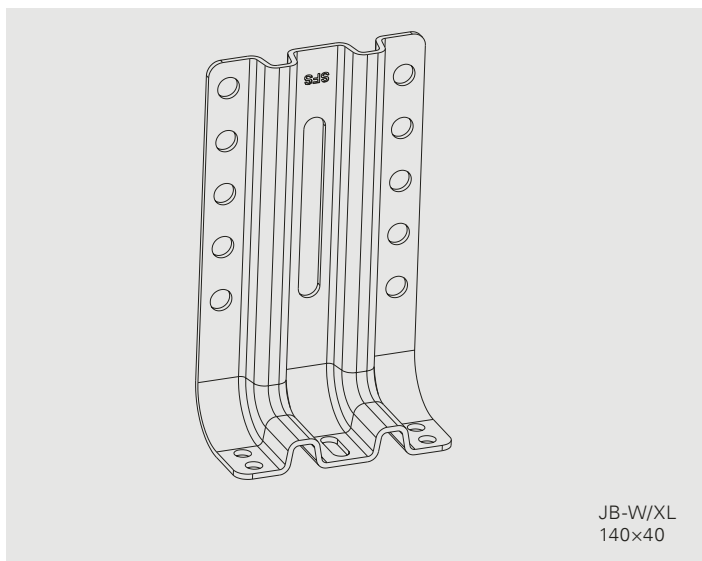
- Characteristic load capacity up to 4.800 N
- Tested according to ift test guideline MO-02/1
- Mounting bracket system with design values
- Slotted holes for quick and easy alignment
- Allows installation of large window formats at the insulation level
- Variable hole pattern for simplified and secure installation
- Rounded shape for easy sealing
- Safety due to approved fasteners
- Steel-based system, non-combustible material according to DIN 4102-1 class A

Tested according to

- ✓ ift certified
- ✓ ETB tested
- ✓ Serviceability acc. to MO-02/1



Description System JB-W/XL

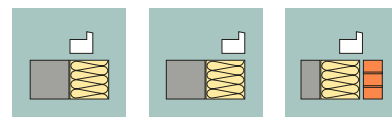


JB-W/XL Mounting bracket

Material	Carbon steel S235
Coating	White zinc plated Z275
Thickness	2 mm
Width	80 mm
Corrugation	12 mm
Hole Pattern	Ø 8/6 mm
Packaging	Carton of 50 pieces
Application	Carbon steel mounting brackets for a safe load transfer, for in front of the wall mounting and threshold fastening

Design values **JB-D® PLUS** system

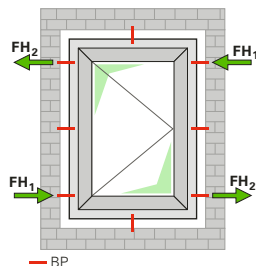
In window plane – Cantilever AK_B up to 150 mm



Limiting conditions

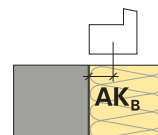
Cantilever (AK_B)
 Joint width (e)
 Predrilled hole diameter and type
 PVC reinforcement window profile
 Profile extensions and FBA
 Masonry strength classes

Projection of the fastening point beyond the reveal edge
 Up to 35 mm (joint width + profile depth if applicable)
 Dependent on substrate, see "General instructions"
 U, L or rectangular tube, min. 1.5 mm
 See separate description
 Values can be used for higher strength classes



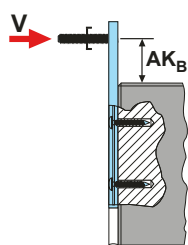
JB-D-U

JB-D-R



Fastening side and top

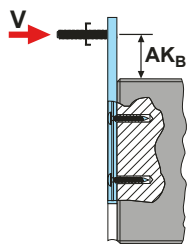
Arrangement and force direction



Arrangement and force direction	In substrate					Compression												
	Material format min. (mm)	Type/class	Brackets JB-D® PLUS	Fastener (2x in each case)	Checked in acc. with	Working load F_{emp} . (kN)						Design load F_{Rd} (kN)						
						AK_B , max. (mm)						AK_B , max. (mm)						
V						30	60	80	100	120	150	30	60	80	100	120	150	
	Concrete	C20/25	U155	MMS-plus-P-7.5x60	abZ/aBG	2.22	-	-	-	-	-	-	2.54	-	-	-	-	-
			U185			-	1.49	1.06	-	-	-	-	1.71	1.06	-	-	-	
			U225			-	-	1.14	0.80	-	-	-	-	-	0.73	-	-	
			R225			-	-	2.10	1.47	-	-	-	-	-	2.00	1.38	-	-
			U265			-	-	-	-	0.52	0.31	-	-	-	-	-	0.61	0.38
			R265			-	-	-	-	1.45	0.69	-	-	-	-	-	1.38	0.90
	Lime-sand stone small format	FKL 20	U155	MMS-plus-P-7.5x60	abZ/aBG	1.94	-	-	-	-	-	-	2.54	-	-	-	-	-
			U185			-	1.34	0.98	-	-	-	-	1.71	1.06	-	-	-	
			U225			-	-	0.77	0.57	-	-	-	-	-	0.73	0.61	-	-
			R225			-	-	1.83	1.52	1.22	-	-	-	-	2.00	1.38	1.38	-
			U265			-	-	-	-	0.32	-	-	-	-	-	-	-	0.38
			R265			-	-	-	-	0.68	-	-	-	-	-	-	-	0.90
Lime-sand stone XL 248x175x498	20/2.0	U155	MMS-plus-P-7.5x60	abZ/aBG	2.22	-	-	-	-	-	-	2.54	-	-	-	-	-	
		U185			-	1.49	1.06	-	-	-	-	1.71	1.06	-	-	-		
		U225			-	-	1.14	0.80	-	-	-	-	-	0.73	-	-		
		R225			-	-	2.1	1.47	-	-	-	-	-	2.00	1.38	-	-	
		U265			-	-	-	-	0.52	0.31	-	-	-	-	-	0.61	0.38	
		R265			-	-	-	-	1.45	0.69	-	-	-	-	-	1.38	0.90	
Plan-T 175 to 240	12/0.9	U155	FB-FK 7.5x102	abZ/aBG	1.74	-	-	-	-	-	-	2.40	-	-	-	-	-	
		U185			-	1.17	-	-	-	-	-	1.15	-	-	-	-		
		U225			-	-	0.89	0.64	-	-	-	-	-	0.82	0.65	-	-	
		R225	FB-FK 7.5x132	abZ/aBG	-	-	1.63	1.35	-	-	-	-	-	1.70	1.50	-	-	
		U265			-	-	-	-	0.38	-	-	-	-	-	0.47	-		
		R265			-	-	-	-	1.07	0.27	-	-	-	-	-	1.29	0.39	

Table continued on the next page

Arrangement and force direction



Arrangement and force direction	In substrate					Compression											
	Material format min. (mm)	Type/class	Brackets JB-D® PLUS	Fastener (2x in each case)	Checked in acc. with	Working load F _{emp.} (kN)					Design load F _{Rd} (kN)						
						AK _B , max. (mm)					AK _B , max. (mm)						
						30	60	80	100	120	150	30	60	80	100	120	150
Aerated concrete PB	2	U155	IGR-8×61	MO-02/1	0.53	-	-	-	-	-	-	0.74	-	-	-	-	-
					-	0.40	-	-	-	-	-	0.57	-	-	-	-	
					-	-	0.34	-	-	-	-	-	0.48	-	-	-	-
					-	-	-	0.08	-	-	-	-	0.11	-	-	-	-
					-	-	-	-	0.22	0.11	-	-	-	-	0.30	0.15	-
					1.55	-	-	-	-	-	1.92	-	-	-	-	-	
		-	0.92	-	-	-	-	-	1.12	-	-	-	-				
		-	-	0.78	-	-	-	-	-	0.81	-	-	-				
		-	-	-	0.62	-	-	-	-	0.74	-	-	-				
		-	-	-	-	0.67	0.37	-	-	-	-	0.67	0.42	-			
		-	-	-	-	-	-	-	-	-	-	-	-				
		4	U155	IGR-8×61	MO-02/1	1.18	-	-	-	-	-	-	1.65	-	-	-	-
	-					1.33	-	-	-	-	-	1.33	-	-	-	-	
	-					-	0.95	-	-	-	-	-	0.95	-	-	-	
	-					-	-	0.46	-	-	-	-	0.65	-	-	-	
	-					-	-	-	0.58	0.36	-	-	-	-	0.81	0.50	
	2.35					-	-	-	-	-	2.40	-	-	-	-		
	-		1.25	-	-	-	-	-	1.25	-	-	-					
	-		-	0.96	-	-	-	-	-	0.96	-	-					
	-		-	-	1.13	-	-	-	-	1.13	-	-					
	-		-	-	-	0.96	0.65	-	-	-	-	0.96	0.65				
	-		-	-	-	-	-	-	-	-	-	-					
	6		U155	IGR-8×61	abZ/aBG	1.81	-	-	-	-	-	-	2.24	-	-	-	-
		-				1.18	-	-	-	-	-	1.26	-	-	-	-	
-		-				0.94	-	-	-	-	-	0.91	-	-	-		
-		-				0.84	0.60	0.36	-	-	-	1.45	1.18	0.89			
-		-				-	-	0.67	0.26	-	-	-	-	0.92	0.47		
-		-				-	-	-	-	-	-	-	-	-			
Timber	C24	U155	HT-T-FH-FT-8×80	abZ/aBG	2.31	-	-	-	-	-	-	2.23	-	-	-	-	
					-	1.59	-	-	-	-	-	1.20	-	-	-		
					-	-	1.10	0.62	-	-	-	-	0.80	0.57	-		
					-	-	-	1.14	-	-	-	-	-	1.04	-		
					-	-	-	-	0.45	0.28	-	-	-	-	0.40	0.34	
					-	-	-	-	0.89	0.63	-	-	-	-	0.92	0.73	

Comments

abZ/aBG: Values determined on the basis of the DIBt National Technical Approval (abZ)/General Construction Technique Permit (aBG) Z-14.4-806.

MO-02/1: Values determined on the basis of tests and assessments in accordance with ift Guideline MO-02/1, Version June 2015.

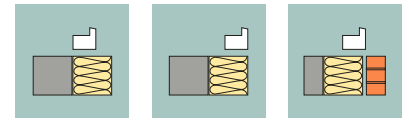
Values for concrete were determined in tests in lime-sand stone.

Intermediate values can be interpolated linearly.

All information is non-binding and given without liability.

Design values **JB-D® PLUS** system

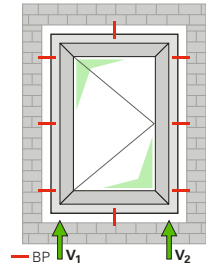
In window plane – Cantilever AK_B up to 150 mm



Limiting conditions

Cantilever (AK_B)
 Joint width (e)
 Predrilled hole diameter and type
 PVC reinforcement window profile
 Profile extensions and FBA
 Masonry strength classes

Projection of the fastening point beyond the reveal edge
 Up to 35 mm (joint width + profile depth if applicable)
 Dependent on substrate, see "General instructions"
 U, L or rectangular tube, min. 1.5 mm
 See separate description
 Values can be used for higher strength classes



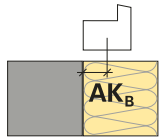
JB-D-U



JB-D-R

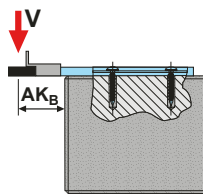


JB-D-CB



Fastening **bottom**

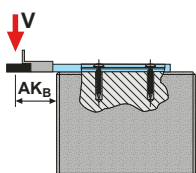
Arrangement and force direction



Arrangement and force direction	In substrate					Compression												
	Material format min. (mm)	Type/class	Brackets JB-D® PLUS	Fastener (2x in each case)	Checked in acc. with	Working load $F_{emp.}$ (kN)						Design load F_{Rd} (kN)						
						AK_B , max. (mm)						AK_B , max. (mm)						
						30	60	80	100	120	150	30	60	80	100	120	150	
Concrete	C20/25	U155	MMS-plus-P-7.5x60	abZ/aBG	2.22	-	-	-	-	-	-	2.54	-	-	-	-	-	
						1.49	1.06	-	-	-	-	1.71	1.06	-	-	-		
						-	1.14	0.80	-	-	-	-	-	0.73	-	-	-	
						-	2.10	1.47	-	-	-	-	-	2.00	1.38	-	-	
						-	-	-	0.52	0.31	-	-	-	-	-	0.61	0.38	
						-	-	-	1.45	0.69	-	-	-	-	-	1.38	0.90	
	Lime-sand stone Lime-sand stone (KS)	FKL 20	U155	MO-02/1	abZ/aBG	1.94	-	-	-	-	-	-	2.54	-	-	-	-	-
							1.34	0.98	-	-	-	-	1.71	1.06	-	-	-	
							-	-	0.57	-	-	-	-	-	0.73	0.61	-	-
							-	1.83	1.52	1.22	-	-	-	-	2.00	1.38	1.38	-
							-	-	-	0.32	-	-	-	-	-	-	-	0.38
							-	-	-	0.68	-	-	-	-	-	-	-	0.90
Lime-sand stone XL 248x175x498	20/2.0	U155	abZ/aBG	2.22	-	-	-	-	-	-	-	2.54	-	-	-	-	-	
					1.49	1.06	-	-	-	-	-	1.71	1.06	-	-			
					-	1.14	0.80	-	-	-	-	-	-	0.73	-	-		
					-	2.1	1.47	-	-	-	-	-	2.00	1.38	-	-		
					-	-	-	0.52	0.31	-	-	-	-	-	0.61	0.38		
					-	-	-	1.45	0.69	-	-	-	-	-	1.38	0.90		
Poroton-T 175 to 240	12/0.9	U155 + CB	FB-FK 7.5x132	2.14	-	-	-	-	-	-	-	2.75	-	-	-	-	-	
					1.32	0.63	-	-	-	-	-	1.21	0.64	-	-			
					-	0.81	-	-	-	-	-	-	-	-	-			
					-	1.06	0.97	-	-	-	-	-	1.00	1.00	-	-		
					-	-	-	0.88	0.49	-	-	-	-	-	1.00	0.45		
					-	-	-	-	-	-	-	-	-	-	-	-		

Table continued on the next page

Arrangement and force direction



Arrangement and force direction	In substrate					Compression													
	Material format min. (mm)	Type/class	Brackets JB-D® PLUS	Fastener (2x in each case)	Checked in acc. with	Working load F _{empf.} (kN)					Design load F _{Rd} (kN)								
						AK _B , max. (mm)					AK _B , max. (mm)								
						30	60	80	100	120	150	30	60	80	100	120	150		
Aerated concrete PB	2		U155 + CB	IGR-8x61	abZ/aBG	1.90	-	-	-	-	-	2.40	-	-	-	-	-		
			U185 + CB			-	1.10	-	-	-	-	-	0.92	-	-	-	-		
			U225 + CB			-	-	0.82	-	-	-	-	-	-	0.75	-	-	-	
			R225 + CB			-	-	1.14	0.92	-	-	-	-	-	1.06	0.97	-	-	
			R265 + CB			-	-	-	-	0.69	0.25	-	-	-	-	-	0.89	0.34	
	4			U155	IGR-8x61	MO-02/1	1.18	-	-	-	-	-	1.65	-	-	-	-	-	
				U185			-	1.33	-	-	-	-	-	1.33	-	-	-	-	
				U225			-	-	0.95	-	-	-	-	-	0.95	-	-	-	
				R225			-	-	-	0.46	-	-	-	-	-	0.65	-	-	
				U265			-	-	-	-	-	-	-	-	-	-	-	-	
					R265	FL-9x245		-	-	-	-	0.58	0.36	-	-	-	-	0.81	0.50
					U155			2.35	-	-	-	-	-	2.40	-	-	-	-	-
					U185			-	1.25	-	-	-	-	-	1.25	-	-	-	-
					U225			-	-	0.96	-	-	-	-	-	0.96	-	-	-
					R225			-	-	-	1.13	-	-	-	-	-	1.13	-	-
	6			U155	IGR-8x61	abZ/aBG	1.81	-	-	-	-	-	2.24	-	-	-	-	-	
				U185			-	1.18	-	-	-	-	-	1.26	-	-	-	-	
				U225			-	-	0.94	-	-	-	-	-	0.91	-	-	-	
				R225			-	-	0.84	0.60	0.36	-	-	-	1.45	1.18	0.89	-	
				R265			-	-	-	-	0.67	0.26	-	-	-	-	0.92	0.47	
Timber	C24		U155	HT-FH-FT-8x80	abZ/aBG	2.31	-	-	-	-	-	2.23	-	-	-	-	-		
			U185			-	1.59	-	-	-	-	-	1.20	-	-	-	-		
			U225			-	-	1.10	0.62	-	-	-	-	0.80	0.57	-	-		
			R225			-	-	-	1.14	-	-	-	-	-	1.04	-	-		
			U265			-	-	-	-	0.45	0.28	-	-	-	-	0.40	0.34		
			R265			-	-	-	-	0.89	0.63	-	-	-	-	0.92	0.73		

Comments

abZ/aBG: Values determined on the basis of the DIBt National Technical Approval (abZ)/General Construction Technique Permit (aBG) Z-14.4-806.

MO-02/1: Values determined on the basis of tests and assessments in accordance with ift Guideline MO-02/1, Version June 2015.

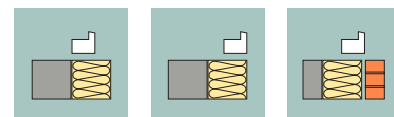
Values for concrete were determined in tests in lime-sand stone.

Intermediate values can be interpolated linearly.

All information is non-binding and given without liability.

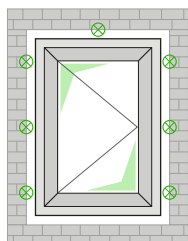
Design values **JB-D® PLUS** system

90° to window plane – Cantilever AK_B up to 150 mm



Limiting conditions

Cantilever (AK_B)	Projection of the fastening point beyond the reveal edge
Joint width (e)	Up to 35 mm (joint width + profile depth if applicable)
Predrilled hole diameter and type	Dependent on substrate, see "General instructions"
PVC reinforcement window profile	U, L or rectangular tube, min. 1.5 mm
Profile extensions and FBA	See separate description
Masonry strength classes	Values can be used for higher strength classes

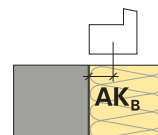


⊗BP



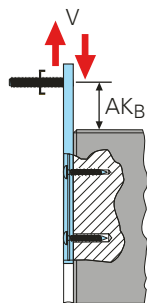
JB-D-U

JB-D-R



Fastening **side and top**

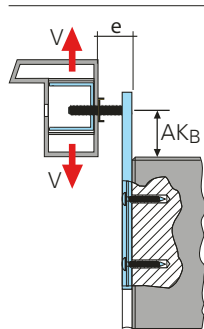
Arrangement and force direction



Arrangement and force direction	In substrate					Transverse load	
	Material	Type/class	Bracket JB-D® PLUS	Fastener (2x in each case)	Design load in acc. with	Working load $F_{emp.}$ (kN)	Design load F_{Rd} (kN)
	Concrete	C20/25	JB-D-U JB-D-R	MMS-plus-P-7.5x60	abZ/ aBG	1)	1)
	Solid lime-sand stone	FKL 20			MO-02/1	0.96	1.35
	Solid lime-sand stone XL	20/2.0			abZ/ aBG	1.01	1.41
	Poroton-T	FKL 12		FB-FK-7.5x132	MO-02/1	0.62	0.87
	Aerated concrete	PP 2		IGR-8x61		0.43	0.60
				FL-9x245		0.48	0.67
				IGR-8x61		0.82	1.14
		PP 4	FL-9x245	1.32	1.85		
		PP 6	IGR-8x61	0.62	0.87		
	Timber	C24		HT-T-FH-FT-8x80	abZ/ aBG	1)	1)

1) No verification in substrate required, connection to the frame is determinant

Arrangement and force direction



Arrangement and force direction	In window frame					Transverse load							
	Material	Type/class	Extension (mm)	Fastener (2x in each case)	Checked in acc. with	Working load $F_{Empf.}$ (kN)				Design load F_{Rd} (kN)			
						Max. joint width e (mm)				Max. joint width e (mm)			
						20	25	30	35	20	25	30	35
PVC reinforced	Rm \geq 270 N/mm ² , 1.5 mm	None	SP-3.9xL	abZ/ aBG	1.71	1.42	1.12	0.83	1.71	1.42	1.12	0.83	
		Up to 60, reinf.			1.01	0.89	0.76	0.64	1.01	0.89	0.76	0.64	
		\geq 15, Not reinf.	SN4-4.8xL		1.06	0.93	0.80	0.67	1.06	0.93	0.80	0.67	
PVC not reinforced 1) 2)	–	None	SPT/24-4.3x30	MO-02/1	0.91	–	–	–	1.27	–	–	–	
Timber	$\rho_k \geq$ 400 kg/m ³	Up to 60	HT-T-4.5xL	abZ/ aBG	1.62	1.35	1.08	0.81	1.62	1.35	1.08	0.81	
		None	HT-T-4.5xL 3)		1.55	1.28	–	–	1.55	1.28	–	–	
Timber, profiled connection surface		Up to 60	HT-T-4.5xL		1.28				1.28				
		None			HT-T-4.5xL 3)	1.26	1.26			1.26	1.26		
Aluminium	EN AW 6060 T66, $t \geq$ 1.5 mm, Rm \geq 200 N/mm ²	None	SLG-S-4.8xL		2.01	1.68	1.36	1.03	2.01	1.68	1.36	1.03	
		Up to 54			1.07	0.99	0.90	0.82	1.07	0.99	0.90	0.82	
		None	SLG-S-4.8xL 4) SLG-S-4.8xL 5)		2.01	1.64	–	–	2.01	1.64	–	–	
Steel	Rm \geq 270 N/mm ² , 1.5 mm	None	SP-3.9xL		1.71	1.42	1.12	0.83	1.71	1.42	1.12	0.83	
		Up to 60 mm			1.01	0.89	0.76	0.64	1.01	0.89	0.76	0.64	

1) Profile type: Aluplast energeto® 8000

2) The application-dependent influence factors A_1 , A_2 and A_3 must be considered.

3) With alternative connection piece AM8-T

4) With alternative connection piece AM8-T, pushed into the aluminium profile

5) With alternative connection piece AM8-T, placed on the aluminium profile

Comments

abZ/aBG: Values determined on the basis of the DIBt National Technical Approval (abZ)/General Construction Technique Permit (aBG) Z-14.4-806.

MO-02/1: Values determined on the basis of tests and assessments in accordance with ift Guideline MO-02/1, Version June 2015.

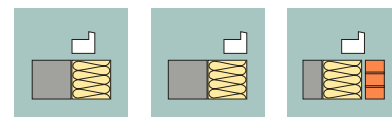
Values for concrete were determined in tests in lime-sand stone.

Intermediate values can be interpolated linearly.

All information is non-binding and given without liability.

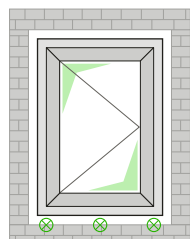
Design values **JB-D® PLUS** system

90° to window plane – Cantilever AK_B up to 150 mm



Limiting conditions

Cantilever (AK_B)	Projection of the fastening point beyond the reveal edge
Joint width (e)	Up to 35 mm (joint width + profile depth if applicable)
Predrilled hole diameter and type	Dependent on substrate, see "General instructions"
PVC reinforcement window profile	U, L or rectangular tube, min. 1.5 mm
Connection profile extensions and FBA	See separate description
Masonry strength classes	Values can be used for higher strength classes



⊗BP



JB-D-U



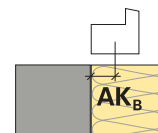
JB-D-R



JB-D-CB

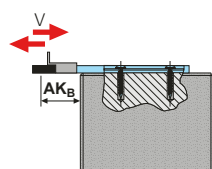


JB-D-W



Fastening **bottom**

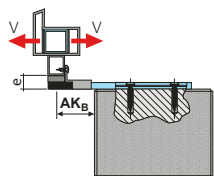
Arrangement and force direction



Arrangement and force direction	In substrate				Transverse load			
	Material	Type/class	Bracket JB-D® PLUS	Fastener (2x in each case)	Design load in acc. with	Working load $F_{emp.}$ (kN)	Design load F_{Rd} (kN)	
	Concrete	C20/25	JB-D-U JB-D-R	MMS-plus-P-7.5x60	abZ/ aBG	1)	1)	
	Solid lime-sand stone	FKL 20				MO-02/1	0.96	1.35
	Solid lime-sand stone XL	20/2.0				abZ/ aBG	1.01	1.41
	Poroton-T	FKL 12	JB-D-U/ JB-D-R	FB-FK-7.5x132	MO-02/1	0.46	0.52	
	Aerated concrete	PP 2	+ CB	IGR-8x61		0.84	0.84	
				SXRL-10x80		0.87	0.87	
		PP 4	JB-D-U	IGR-8x61		0.82	1.14	
		PP 6	JB-D-R	FL-9x245	1.32	1.85		
				IGR-8x61	0.62	0.87		
	Timber	C24		HTP-T-4.5x40	abZ/ aBG	1)	1)	

1) No verification in substrate required, connection to the frame is determinant

Arrangement and force direction



Arrangement and force direction	In window frame / window sill connection profile (FBA)					Transverse load	
	Frame material	Type/class	Connection point	Fastener (2× in each case)	Design load in acc. with:	Working load $F_{empf.}$ (kN)	Design load F_{Rd} (kN)
	PVC 1)	A	FBA PVC	SPT/19 4.3×30	MO-02/1	0.62	0.72
	Timber	400 kg/m ³	Profile	HT-T-4.5×40		0.81	0.81
	Aluminium	EN AW 6060 T66, $t \geq 1.5$ mm, $R_m \geq 200$ N/mm ²	FBA PVC, reinforced 1.5 mm rect. tube	SPE2/4.4×34		0.46	0.46

1) The application-dependent influence factors A_1 , A_2 and A_3 must be applied to the values.

Comments

abZ/aBG: Values determined on the basis of the DIBt National Technical Approval (abZ)/General Construction Technique Permit (aBG) Z-14.4-806.

MO-02/1: Values determined on the basis of tests and assessments in accordance with ift Guideline MO-02/1, Version June 2015.

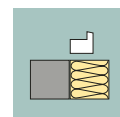
Values for concrete were determined in tests in lime-sand stone.

Intermediate values can be interpolated linearly.

All information is non-binding and given without liability.

Design values **JB-W/XL** system

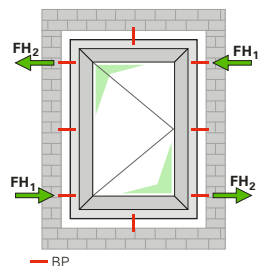
In window plane – Cantilever AK_B up to 100 mm



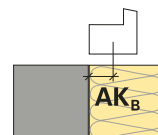
Limiting conditions

Cantilever (AK_B)
 Joint width (e)
 Predrilled hole diameter and type
 PVC reinforcement window profile
 Profile extensions and FBA
 Masonry strength classes

Projection of the fastening point beyond the reveal edge
 Up to 20 mm + up to 7 mm profile depth if appropriate
 Dependent on substrate, see "General instructions"
 U, L or rectangular tube, min. 1.5 mm
 See separate description
 Values can be used for higher strength classes

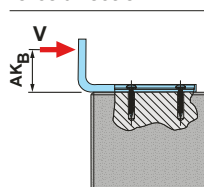


JB-W/XL



Fastening side and top

Arrangement and force direction



Arrangement and force direction	In substrate					Compression							
	Material Minimum format (mm)	Type/ class	Angle JB-W/XL	Fastener (2x in each case)	Checked in acc. with	Working load $F_{empf.}$ (kN)				Design load F_{Rd} (kN)			
						$AK_B, max.$ (mm)				$AK_B, max.$ (mm)			
						30	50	70	90	30	50	70	90
Concrete	C20/25	140x40	MMS-plus-P- 7.5x50	MO-02/1	2.42	–	–	–	–	3.39	–	–	–
						2.81	–	–	–		2.81	–	–
						–	1.99	–	–		–	1.99	–
						–	–	1.28	–		–	1.28	–
Lime-sand stone small format	FKL 20	140x40	MMS-plus-P- 7.5x50	MO-02/1	2.42	–	–	–	–	3.39	–	–	–
						2.81	–	–	–		2.81	–	–
						–	1.99	–	–		–	1.99	–
						–	–	1.28	–		–	1.28	–
Lime-sand stone XL 248x175x498	20/2.0	140x40	MMS-plus-P- 7.5x50	MO-02/1	2.42	–	–	–	–	3.39	–	–	–
						2.81	–	–	–		2.81	–	–
						–	1.99	–	–		–	1.99	–
						–	–	1.28	–		–	1.28	–
Aerated concrete PB 599x240x249 599x175x249;	4	140x40	FB-FK- 7.5x152	MO-02/1	1.85	–	–	–	–	1.85	–	–	–
						1.99	–	–	–		1.99	–	–
						–	1.03	–	–		–	1.03	–
						–	–	0.87	–		–	0.87	–
Timber	C24	140x40	FB-FK- 7.5x62	MO-02/1	1.79	–	–	–	–	1.79	–	–	–
						1.65	–	–	–		1.65	–	–
						–	1.65	–	–		–	1.65	–
						–	–	1.31	–		–	1.31	–

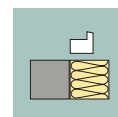
Comments

MO-02/1: Values determined on the basis of tests and assessments in accordance with ift Guideline MO-02/1, Version June 2015.
 Values for concrete were determined in tests in lime-sand stone.
 Intermediate values can be interpolated linearly.

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Design values **JB-W/XL** system

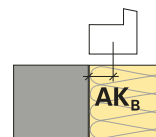
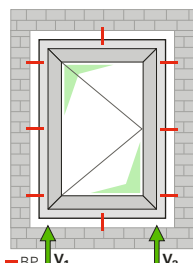
In window plane – Cantilever AK_B up to 100 mm



Limiting conditions

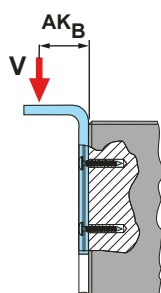
Cantilever (AK_B)
 Joint width (e)
 Predrilled hole diameter and type
 PVC reinforcement window profile
 Profile extensions and FBA
 Masonry strength classes

Projection of the fastening point beyond the reveal edge
 Up to 20 mm + up to 7 mm profile depth if appropriate
 Dependent on substrate, see "General instructions"
 U, L or rectangular tube, min. 1.5 mm
 See separate description
 Values can be used for higher strength classes



Fastening **bottom**

Arrangement and force direction



Arrangement and force direction	In substrate					Compression							
	Material Minimum format (mm)	Type/ class	Angle JB-W/XL	Fastener (2x in each case)	Checked in acc. with	Working load $F_{empf.}$ (kN)				Design load F_{Rd} (kN)			
						$AK_B, \text{max.}$ (mm)				$AK_B, \text{max.}$ (mm)			
						30	50	70	90	30	50	70	90
Concrete	C20/25	140x40	MMS-plus-P- 7.5x50	MO-02/1	2.42	–	–	–	–	3.39	–	–	–
						2.81	–	–	–		2.81	–	–
						–	1.99	–	–		–	1.99	–
						–	–	1.28	–		–	1.28	–
Lime-sand stone small format	FKL 20	140x40	MMS-plus-P- 7.5x50	MO-02/1	2.42	–	–	–	–	3.39	–	–	–
						2.81	–	–	–		2.81	–	–
						–	1.99	–	–		–	1.99	–
						–	–	1.28	–		–	1.28	–
Lime-sand stone XL 248x175x498	20/2.0	140x40	MMS-plus-P- 7.5x50	MO-02/1	2.42	–	–	–	–	3.39	–	–	–
						2.81	–	–	–		2.81	–	–
						–	1.99	–	–		–	1.99	–
						–	–	1.28	–		–	1.28	–
Aerated concrete PB 599x240x249; 599x175x249	4	140x40	FB-FK- 7.5x152	MO-02/1	1.85	–	–	–	–	1.85	–	–	–
						1.99	–	–	–		1.99	–	–
						–	1.03	–	–		–	1.03	–
						–	–	0.87	–		–	0.87	–
Timber	C24	140x40	FB-FK- 7.5x62	MO-02/1	1.79	–	–	–	–	1.79	–	–	–
						1.65	–	–	–		1.65	–	–
						–	1.65	–	–		–	1.65	–
						–	–	1.31	–		–	1.31	–

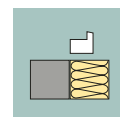
Comments

MO-02/1: Values determined on the basis of tests and assessments in accordance with ift Guideline MO-02/1, Version June 2015.
 Values for concrete were determined in tests in lime-sand stone.
 Intermediate values can be interpolated linearly.

All information is non-binding and given without liability.

Design values **JB-W/XL** system

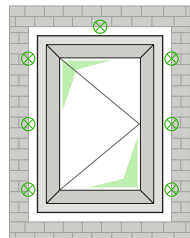
90° to window plane – Cantilever AK_B up to 100 mm



Limiting conditions

Cantilever (AK_B)
 Joint width (e)
 Predrilled hole diameter and type
 PVC reinforcement window profile
 Profile extensions and FBA
 Masonry strength classes

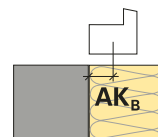
Projection of the fastening point beyond the reveal edge
 Up to 20 mm + up to 7 mm profile depth if appropriate
 Dependent on substrate, see "General instructions"
 U, L or rectangular tube, min. 1.5 mm
 See separate description
 Values can be used for higher strength classes



BP

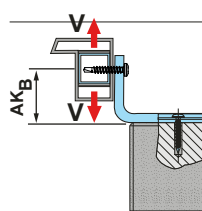
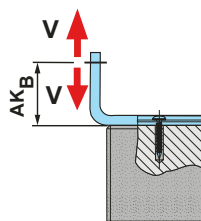


JB-W/XL



Fastening **side and top**

Arrangement and force direction



Arrangement and force direction	In substrate						Transverse load	
	Material	Minimum format (mm)	Type/class	Angle JB-W/XL	Fastener (2x in each case)	Checked in acc. with	Working load $F_{empf.}$ (kN)	Design load F_{Rd} (kN)
							Tension/compression	Tension/compression
	Concrete	–	C20/25	All	MMS-plus-P-7.5x50	MO-02/1	1.23	1.72
	Lime-sand stone	–	FKL 20					
	Lime-sand stone XL	248x175x498	20/2.0					
	Aerated concrete	500x120x300; 500x250x300	4		FB-FK-7.5x152	1.12	1.57	
	Timber	–	C24		FB-FK-7.5x62	2.57	2.57	
	In window frame						Transverse load	
	Frame material	Type/class		Angle JB-W/XL	Fastener (2x in each case)	Checked in acc. with	Working load $F_{empf.}$ (kN)	Design load F_{Rd} (kN)
							Tension/compression	Tension/compression
							Max. joint width e (mm)	Max. joint width e (mm)
							20	20
	PVC reinforced	Rectangular tube, $R_m \geq 270 \text{ N/mm}^2$, 1.5 mm		All	FB-FK-7.5x42	MO-02/1	2.17	2.17
		U, $R_m \geq 270 \text{ N/mm}^2$, 1.5 mm			SPR3/25-5.5x43		1.35	1.35
	PVC not reinforced 1)	Aluplast energeto® 8000			VAP/34-6x40	0.86	1.21	
		Salamander evoCore+				0.77	1.05	
Timber	$\rho_{0k} \geq 400 \text{ kg/m}^3$				1.12	1.12		

1) The application-dependent influence factors A_1 , A_2 and A_3 must be considered.

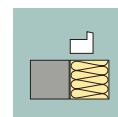
Comments

MO-02/1: Values determined on the basis of tests and assessments in accordance with ift Guideline MO-02/1, Version June 2015. Values for concrete were determined in tests in lime-sand stone. Intermediate values can be interpolated linearly.

All information is non-binding and given without liability.

Design values **JB-W/XL** system

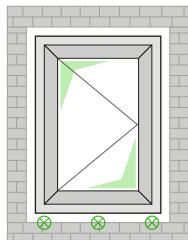
90° to window plane – Cantilever AK_B up to 100 mm



Limiting conditions

Cantilever (AK_B)
 Joint width (e)
 Predrilled hole diameter and type
 PVC reinforcement window profile
 Profile extensions and FBA
 Masonry strength classes

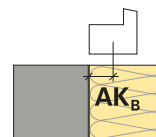
Projection of the fastening point beyond the reveal edge
 Up to 20 mm + up to 7 mm profile depth if appropriate
 Dependent on substrate, see "General instructions"
 U, L or rectangular tube, min. 1.5 mm
 See separate description
 Values can be used for higher strength classes



BP

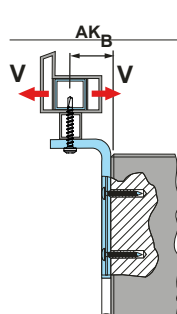
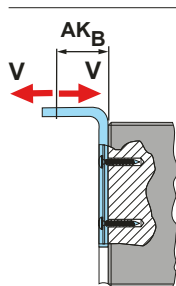


JB-W/XL



Fastening **bottom**

Arrangement and force direction



Arrangement and force direction	In substrate						Transverse load	
	Material	Minimum format (mm)	Type/class	Angle JB-W/XL	Fastener (2x in each case)	Checked in acc. with	Working load $F_{empf.}$ (kN)	Design load F_{Rd} (kN)
							Tension/compression	Tension/compression
	Concrete	–	C20/25	Alle	MMS-plus-P-7.5x50	MO-02/1	1.23	1.72
	Lime-sand stone	–	FKL 20					
	Lime-sand stone XL	248x175x498	20/2.0					
	Aerated concrete	500x120x300; 500x250x300	4		FB-FK-7.5x152	1.12	1.57	
	Timber	–	C24		FB-FK-7.5x62	2.57	2.57	
	In window frame/window sill connection profile (FBA)						Transverse load	
	Frame material	Type/class	Connection point	Fastener (2x in each case)	Checked in acc. with	Working load $F_{empf.}$ (kN)	Design load F_{Rd} (kN)	
						Tension/compression	Tension/compression	
						Max. joint width e (mm)	Max. joint width e (mm)	
						20	20	
	PVC reinforced	Rectangular tube, $R_m \geq 270 \text{ N/mm}^2$, 1.5 mm	FBA	FB-FK-7.5x72	MO-02/1	0.93	0.93	
		U, $R_m \geq 270 \text{ N/mm}^2$, 1.5 mm		SPC-5.5x55		0.88	0.88	
	PVC not reinforced 1)	Rectangular tube, $R_m \geq 270 \text{ N/mm}^2$, 1.5 mm	Profile	FB-FK-7.5x42	2.17	2.17		
		U, $R_m \geq 270 \text{ N/mm}^2$, 1.5 mm			1.56	1.56		
Timber	Aluplast energeto® 8000	FBA	SPTR-6x80	0.91	0.91			
	Salamander evoCore+			0.41	0.41			
			Profile	VAP/34-6x40		1.12	1.12	

1) The application-dependent influence factors A_1 , A_2 and A_3 must be considered.

Comments

MO-02/1: Values determined on the basis of tests and assessments in accordance with ift Guideline MO-02/1, Version June 2015. Values for concrete were determined in tests in lime-sand stone. Intermediate values can be interpolated linearly.

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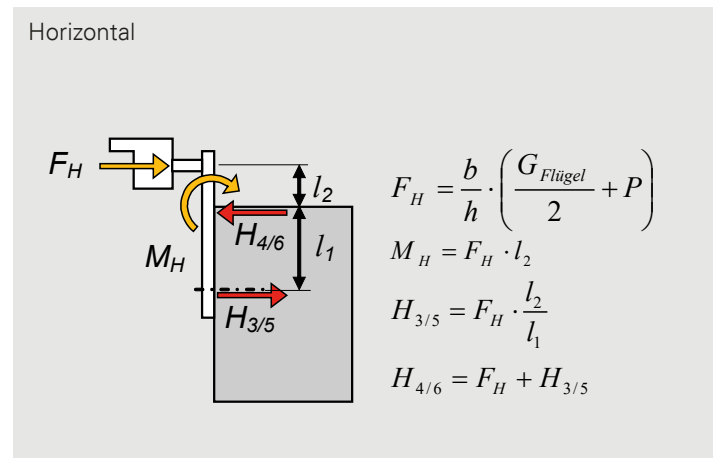
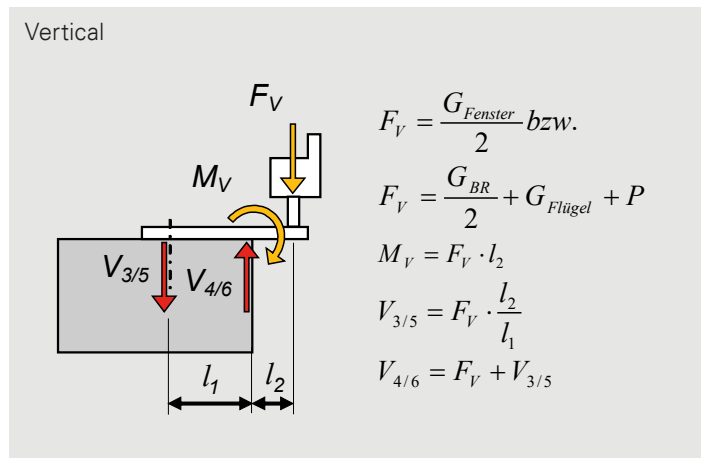
Verification calculation for the cantilevering installation with the JB-D® PLUS system

A verification calculation can be used as an alternative to using the values from the table for the cantilevering installation of the JB-D® PLUS under the following conditions:

- For the resistance to the load in the plane of the window
- Vertical attachment in the reveal (not for the use of blockwork brackets in hollow brick masonry)

Refer also to LzM, section 5.1.2.1

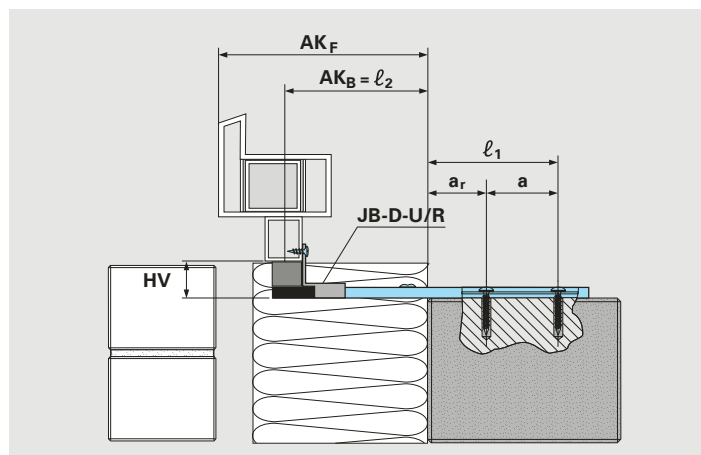
The forces and moments can be represented by the following equations:



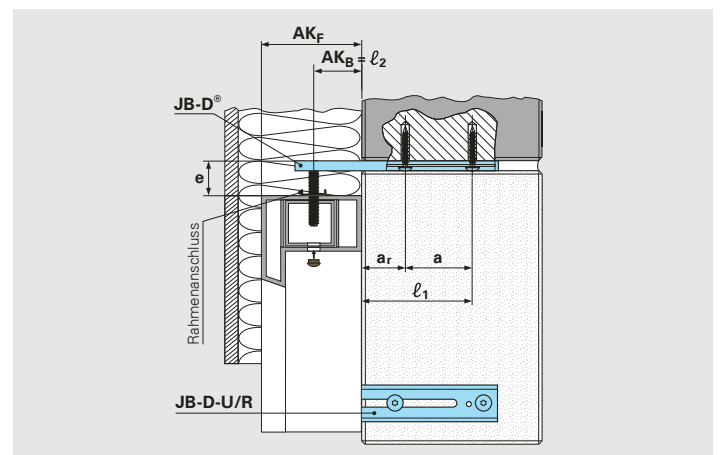
l_1 Distance to the rear fastener in the substrate (= $a_r + a$)

l_2 Cantilever: Distance to the attachment point projecting beyond reveal edge (= AK_B)

Source: Guideline for installation (LzM), edition March 2014



Fastening bottom



Fastening side

Calculation to determine l_1

$$l_1 = l_{\text{Konsole}} - 20 \text{ mm} - l_2$$

Type JB-D PLUS	l_{Konsole} (mm)	$l_1 + l_2$ (mm)
U100	100	80
U155	155	135
U185	185	165
U225/R225	225	205
U265/R265	265	245

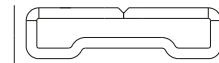
Cantilever AK l_2 (mm)

0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
Distance of fastening from the front edge l_1 (mm)															
80	70	60	–	–	–	–	–	–	–	–	–	–	–	–	–
135	125	115	105	95	85	–	–	–	–	–	–	–	–	–	–
165	155	145	135	125	115	105	95	85	–	–	–	–	–	–	–
205	195	185	175	165	155	145	135	125	115	105	95	85	–	–	–
245	235	225	215	205	195	185	175	165	155	145	135	125	115	105	95

Properties of the JB-D PLUS system



JB-D-U



JB-D-R














Strength (yield strength)	f_y	N/mm ²	390	390
E-modulus (steel)	E	N/mm ²	210,000	210,000
Section modulus	W_y	mm ³	142	839
Area moment of inertia	I_y	mm ⁴	1144	5395

Verification: Profile and fastener

	Horizontal	Vertical
Verification of stress	$\sigma_{b,H,eff} = M_H / W_{JB-D}$ Requirement: $\sigma_{b,eff} < f_y / 1.1$	$\sigma_{b,V,eff} = M_V / W_{JB-DK}$
Verification of deflection	$f_{vor} = (F_H \cdot l_2^2 \cdot (l_1 + l_2)) / (3 \cdot E \cdot I_{JB-D})$ Requirement: $f_{v,eff} < f_{max}$.	$f_{vor} = (F_V \cdot l_2^2 \cdot (l_1 + l_2)) / (3 \cdot E \cdot I_{JB-DK})$
Verification of fastener pull-out	$H_{3/5} = F_H \cdot \frac{l_2}{l_1}$ Requirement: $H_{eff} < F_{Bef}$.	$H_{3/5} = F_V \cdot \frac{l_2}{l_1}$ Requirement: $V_{eff} < F_{Bef}$.





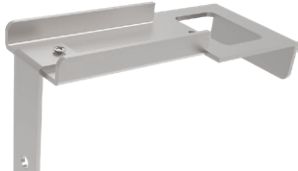

Maximum deflection f_{max} : Recommendation in LzM: 3 mm

Test reports/installation instructions JB-D® PLUS and JB-W/XL System

Use	System	What	Substrate/ note	Appro- val body	No.	Year	Link	QR- Code	
Safety barrier & load transfer	JB-D® PLUS JB-D® FA PLUS	Approval	National Technical Approval (abZ)	DIBt	Z-14.4-808	2022	www.sfs.com/bc_70		
Direct attachment	JB-D® PLUS	Installation instructions	All substrates	–	–		www.sfs.com/bc_71		
Clamp attachment		Installation instructions	Vertically perforated clay block (HLZ) and aerated concrete				www.sfs.com/bc_72		
Burglar resistance		RC2 certificate	Test report and appendices	EPH			www.sfs.com/bc_74		
Thermal performance certificate		Thermal bridge calculation		gbd Dornbirn			www.sfs.com/bc_75		
ift certification		Component test		ift			www.sfs.com/bc_76		
Suitability of use	JB-W/XL	Component test	Lime-sand stone	ift	17-003254-PR01	2018	www.sfs.com/bc_77		
Burglar resistance		RC2 certificate	Test report and appendices	EPH	EH-20-06-10-01			www.sfs.com/bc_78	
							Anlage zu EH-20-06-10-01	www.sfs.com/bc_79	
							EH-20-06-10-02	www.sfs.com/bc_80	
							Anlage zu EH-20-06-10-02	www.sfs.com/bc_81	
In front of the wall installation	Installation manual	Standard installation	–	–		www.sfs.com/bc_82			
In front of the wall installation, safety barrier					Safety barrier fastening, ETB tested ETB geprüft		www.sfs.com/bc_83		







Component range JB-D PLUS

JB-D® PLUS – Steel bracket and rectangular tube for direct attachment in concrete, lime-sand stone, timber and aerated concrete








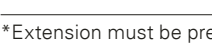

Product	Description/use	Ordering code	#	Length (mm)	Width (mm)	PU	Art No.
	JB-D® PLUS steel bracket side	JB-D-U155	20	155	47	50	1651506
		JB-D-U185	21	185			1651529
		JB-D-U225	22	225			1651505
		JB-D-U265	23	265			1651504
	JB-D® PLUS rectangular tube side	JB-D-R225	24	225	47	25	1651503
		JB-D-R265	25	265			1651502
	JB-DK® PLUS steel bracket bottom	JB-DK-U155	26	155	47	50	1651501
		JB-DK-U185	27	185			1651496
		JB-DK-U225	28	225			1651493
		JB-DK-U265	29	265			1772128
	JB-DK® PLUS rectangular tube bottom	JB-DK-R225	30	225	47	25	1651494
		JB-DK-R265	31	265			1651495
	JB-D® PLUS clamp bottom	JB-D-CB175	32	175	74	25	1651497
		JB-D-CB200	33	200			1651499
		JB-D-CB240	34	240			1651500
	JB-D® PLUS window sill connection (FBA) angle	JB-D-W32/47	35	32	57	25	1644746
		JB-D-W65/47	36	65			1644747

Component range JB-D PLUS

JB-D® PLUS – Accessories for fastenings in substrates


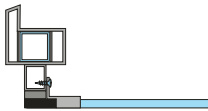
Product	Description/use	Product code	Drive bit	Ø	Length (mm)	PU	Art No.
	Concrete, lime-sand stone (KS)	MMS-plus-P-D15-7.5×60	T30	7,5	60	50	1205035
	Timber	HTP-T-FH-FT-8×80/74	T30	8	80	50	1205373
	Hollow brick/vertically perforated clay block (HLZ)	FB-FK-T30-7.5×132	T30	7,5	132	100	1089936
	Aerated concrete	IGR-FK/T25-8×61	T25	8	61	100	1407343
	PP2/hollow brick/vertically perforated clay block (HLZ) bottom with clamp	SXRL-10×80-T	T30	10	80	25	1562247
	PP2/PP4	FL-FK-T30-9×245	T30	9	245	50	1580711

JB-D® PLUS – Accessories for fastenings to window frames


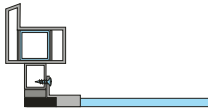
Product	Description/use	Product code	Drive bit	Ø	Length (mm)	PU	Art No.
	PVC reinforced/steel	SP3/9-M3.9×16-GSW	PH2	3.9	16	2000	1550925
	PVC with ≤15 mm extension	SN4/24-7504P-4.8×32	PH2	4.8	32	1000	689570
	Timber	HTP-T-CS-PT-4.5×40	T25	4.5	40	500	1205259
	Aluminium	SLG-S-4.8×20	HEX 8	4.8	20	100	1772647
	Connection PVC extension	SPC4/33-5.5×45-GS	T30	5.5	45	100	1133336
	Timber and aluminium, for smaller joint widths	JB-AM8-T	–	–	70	250	1346176
	Colour: White	CC-JB/10.5 RAL9010	–	–	13	100	846879
	Colour: Brown	CC-JB/10.5 RAL8011	–	–	13	100	846877
	Drive bit: T25/¼"	T25-70-HEX¼"	¼"	–	70	10	1167067

*Extension must be predrilled. / **Length of SPC fastener must be matched to the extension.





Attachment JB-D-W to the window sill connection without profile reinforcement

Product	Description/use	Product code	Drive bit	Ø	Length (mm)	PU	Art No.
		SPT/24-4.3×30	PH2	4.3	30	1000	1523991







Attachment JB-D-W to the window sill connection with profile reinforcement


Product	Description/use	Product code	Drive bit	Ø	Length (mm)	PU	Art No.
		SP3-3.9×25	PH2	3.9	25	2000	1550934

Delivery Range System JB-W/XL

Product	Designation	Product code	Length/s (mm)	Width (mm)	PU (Pcs)	Item No.
140x40 	JB-W/XL Mounting bracket	JB-W/XL-140x40	140/40	80	50	1573530
140x60 		JB-W/XL-140x60	140/60			1573575
140x80 		JB-W/XL-140x80	140/80			1691959
140x100 		JB-W/XL-140x100	140/100			1691946

System Accessories JB-W/XL

Product	Designation	Product code	Recess	Ø (mm)	Length (mm)	PU (Pcs)	Item No.
	SPR drill fastener for PVCu, reinforced	SPR3-5.5x38	T30	5.5	38	100	1607033
	SPM mounting fastener for PVC-u, reinforced	SPM3-5.5x25		5.5	25		1141761
	FB mounting fastener an- chor Type FK	FB-FK-7.5xL		7.5	42	1117989	
					62	1117987	
			72		1115791		
	VAP mounting fastener for timber and PVCu non reinforced	VAP-6.0x40	6-kant	6.0	40	500	1147091
	SDA5 for Aluminium	SDA5-5.5x20		5.5	20		1499657
	MULTI-MONTI-plus-P for concrete and masonry	MMS-plus- P-7.5x50	T30	7.5	50	100	1480041

Product	Designation	Product code	Recess	Ø (mm)	Length (mm)	PU (Pcs)	Item No.
	Bit T x 50 W	T30W-50-Hex 1/4"	T30	1/4"	50	1	57539

