Always precise

Product Catalogue
04/2020

For PVC-u windows

activPilot Select

Fully-concealed turn-tilt fittings.

winkhaus.com

Complementary range activPilot Select

This catalogue is to provide detailed information on the activPilot Select product range.
The activPilot Select turn-tilt fitting range is a complement to our extensive activPilot portfolio. You can find the standard activPilot components in our activPilot Concept product catalogue. In case you do not have it available, please ask us for our catalogue. We are always glad to help you.

The processing details regarding burglary-resistant window units can be gathered from the DIN EN 1627 - 1630 system documentation. The lists of fittings in this catalogue are merely intended to give application examples. Please get in touch with your Winkhaus contact partner.

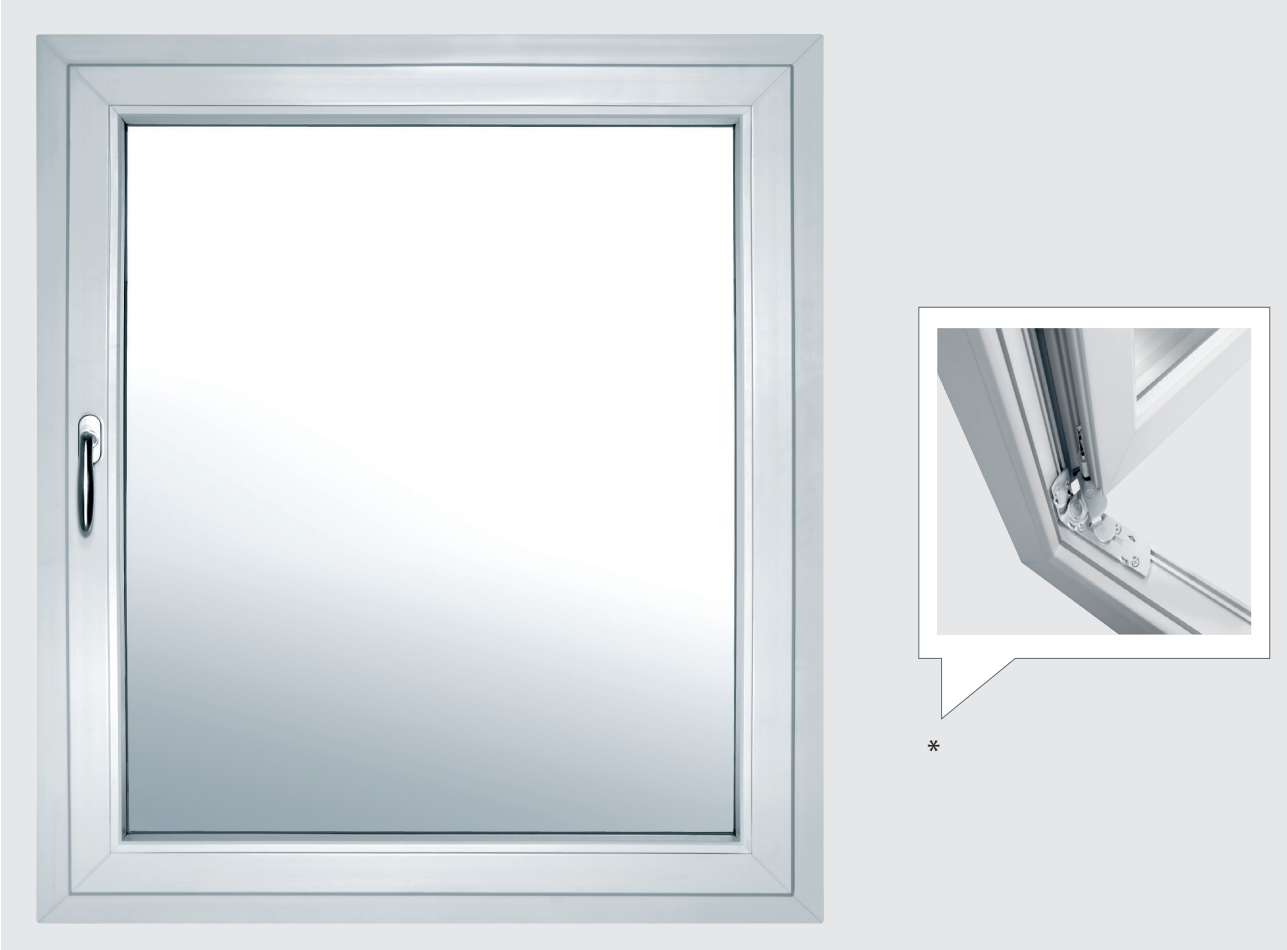
The following information and illustrations reflect the current state of our development and manufacturing of these products. In order to achieve customer satisfaction and reliability of the hardware components we reserve the right to change the product. Any information given in this document has been compiled and verified with the greatest care. Some of the indicated dimensions are rounded measures! Due to the constant technical progress, changes in legislation and other inevitable changes, we cannot accept any responsibility for the accuracy and completeness of the contents. We are always thankful for suggestions and comments. Taking into account the information and facts given here with regard to windows (and doors), the fitting system can easily be installed.

Page

1

activPilot Select

The fully concealed turn-tilt fitting system.



* Powerful mechanics. Up to 100 kg sash weight without needing additional components.

*In case of PVC-U windows it is important to observe the weight transfer and processing instructions given by the system suppliers.

Product features

+ Fully-concealed turn-tilt fittings
+ No visible hinge parts
+ Free choice of colour for window sashes and frames
+ Certified according to QM 328
+ Additional functions can be retrofitted at any time

Application area

+ Meets the demanding aesthetic requirements of modern architecture
+ Suitable for door and window sashes up to 3 m^2 and 150 kg*
+ For burglar-resistant windows according to DIN EN 1627-1630
+ 3-sash windows can be implemented without central post

Innovative technology adding hidden strength:

- Aesthetic window design without visible fitting parts – even for large and heavy window sashes
- Patented technology
- Stability and high durability demonstrated in test series and in practice

Elegant strength – up to 150 kg sash weight.

- With just two add-on components – a sash hinge rail and adapter plate – you can increase the load bearing capacity from 100 kg to up to 150 kg*

Advantages of the fitting system

+ Efficient production without the need for special drilling action, time-consuming routings or special tools
+ Quick installation due to fewer components
+ Simple height and side adjustment
+ Retrofit possible from 100 kg to 150 kg* without additional treatment of the sash and the frame
+ Quick and easy installation of the sash
+ Opening angle > 95° (without turn limiter)
+ Increased weather tightness of windows due to continuous overlap seal

1

activPilot Select

Fully-concealed fittings for timber, PVC-U and aluminium windows (with a 16 mm eurogroove)

This is a new fitting system which uses established activPilot Concept solutions and combines them with today's requirements for increased energy efficiency in larger / heavier windows and modern architecture, characterised by slimmer profile widths. This market trend induced us to develop a visually appealing, concealed and resistant fitting system which is designed to withstand sashes weighing up to 150 kg. Due to the system's modular design, it only takes a few additional components for the standard sash bearing capacity of 100 kg to be increased to 150 kg. The system also focuses on both the needs of manufacturers for an easy-to-install system and those of end users for an easy-to-operate fitting.

Modular design

activPilot optimises window construction. For the window builder, less components and multifunctionality mean uncomplicated and fast processing and rational mounting. Premounted components and the unique design furthermore ensure that additional functions and safety classes can be achieved easily by retrofitting. activPilot thus sets the scene for sustainably cutting your production, warehousing, logistics and administration costs.

The locking system with octagonal locking bolts

activPilot enhances comfort. The functionally perfect locking mechanism not only guarantees precise entry of the locking bolt into the frame keep, but also a perfect seal. This is ensured by the excellent air gap tolerance and the octagonal locking bolt which allows easy adjustment of the contact pressure. Even adjusting forces and the non-positive and positive system fit of the components give this fitting the required stability and long-term functionality.

Add-on functions

activPilot gives you the ability to react flexibly to customer requests. Innovative multi-purpose components make it easy to retrofit features at any time. The use of a duo and/or tri functional element makes it simple to add a fail safe device with integrated limiter support and balcony door catch. The variable tilt device supports different sash tilt angles and thus fast, easily adjustable ventilation settings.

Design

activPilot offers you and your customers real added value. Surprising details, discreet accents, ergonomic design and comprehensive functions characterise the overall concept of the fitting system. In short, its attractive design will be a crucial factor when it comes to your customers making a purchase decision. activPilot also offers other convincing arguments such as outstanding durability, easy-to-clean surfaces, intuitive operation and, last but not least, aesthetically pleasing windows.

Surface

activPilot fittings feature a surface refinement finish based on nanotechnology, which is applied in our in-house electroplating facility. This surface stands out due to its very high resistance to all environmental influences. This is verified by quality controls consisting of alternate climate and salt spray testing according to DIN EN ISO 9227 and is certified on a regular basis by tests. Winkhaus also carries out tests in outside areas, thus testing component behaviour under realistic conditions. This enables Winkhaus to offer a ten-year warranty for functions and surfaces.

Effective security

Thanks to the unique modular system, any window can be modified to achieve the required security standard – easily, quickly and cost-efficiently. There is no need for custom parts. Depending on the number and type of keeps, various security levels are achievable using the same platform.
At our works, comprehensive and strict tests – along with ongoing functional monitoring – ensure maximum security for customers. Approval marks and certificates by independent test authorities confirm our results. You can therefore be sure that activPilot meets the requirements customers place on a secure fitting system. Locking bolts are made of high-strength steel; even standard types guarantee effective basic security. Depending on the number and type of keeps, the fitting system can be enhanced for compliance with stricter security classes – including burglar protection to DIN EN 1627-1630, resistance class 2 (RC 2).

Quality standard

The Winkhaus group successfully passed a group certification of production sites according to DIN EN ISO 9001:2015 / DIN EN ISO 50001:2011. The group certification ensures that we use the same criteria and procedures in all Winkhaus subsidiaries und thus we can always offer consistent quality for our customers.

Zertifikat

Zertifikatsnummer: 791IFT+796-7019950-1-3

ROSENHEIM

Umfang

Qualitätsmanagementsystem DIN EN ISO 9001:2015
Energiemanagementsystem DIN EN ISO 50001:2011

Unternehmen

Aug. Winkhaus GmbH & Co. KG
August-Winkhaus-Str. 31
D - 48291 Telgte

Geltungsbereich

Entwicklung, Herstellung und Vertrieb von:
- Beschlägen für Fenster und Fenstertüren,
- Sicherheitstürverriegelungen und Schließanlagen,
- mechanischen und elektronischen Schließzylindern, elektronischen Fluchtwegsicherungssystemen, mechanischen Sicherheitseinrichtungen, Zutrittskontrolle und Zeitwirtschaft

Zweigstelle(n)

Aug. Winkhaus GmbH & Co. KG
Berkeser Strasse 6, D-98617 Meiningen

Aug. Winkhaus GmbH & Co. KG
Hessenweg 9, D-48157 Münster

Winkhaus Polska Beteiligungs sp. z o.o. sp.k.
ul. Przemysłowa 1, PL-64-130 Rydzyna

Zweigstellen-Bestimmungen

Dieses Zertifikat wurde im Rahmen der Zweigstellenregelung erteilt. Die übergeordnete Firma (Zentrale) trägt die Verantwortung für die Aufrechterhaltung und Weiterentwicklung des Qualitätsmanagementsystems sowie die Steuerung der zentralen Aufgaben.

Grundlagen

Im Zertifizierungsaudit wurde der Nachweis erbracht, dass das Unternehmen inklusive aller auf diesem Zertifikat benannten Zweigstellen Managementsysteme im benannten Umfang eingeführt hat und anwendet.

Prof. Ulrich Sieberath
Institutsleiter

ift Rosenheim
22. Dezember 2017

Christian Kehrer
Leiter der ift-Zertifizierungs- und Überwachungsstelle

Zertifizierungsaudit: September 2012
Vertragsnummer: 791+796 7019950
Gültig bis: 21. Dezember 2020

QM17 / 2016-12 / 1145

Grundlage(n):
ISO 9001
ISO 50001

Gültigkeit

Die Gültigkeitsdauer des Zertifikates beträgt drei Jahre. In dieser Zeit wird die Firma durch jährlich stattfindende Audits überwacht. Das Zertifikat ist nur in Verbindung mit dem dazugehörenden Zertifizierungs- und Überwachungsvertrag gültig. Alle Änderungen der Voraussetzungen für die Zertifizierung sind dem ift Q-Zert mit den erforderlichen Nachweisen unverzüglich schriftlich anzuzeigen.

Veröffentlichungshinweise

Das Zertifikat darf nur unverändert vervielfältigt werden. Es gelten die Bestimmungen der „Allgemeinen Bedingungen für die Zertifizierung von Managementsystemen"

Das Unternehmen ist berechtigt, das „ift-zertifiziert"-Zeichen gemäß der ift-Zeichensatzung zu nutzen.

ZERTIFIZIERT
CERTIFIED

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Prüfung und Kalibrierung – EN ISO/IEC 17025
Inspektion – EN ISO/IEC 17020
Zertifizierung Produkte – EN ISO/IEC 17065
Zertifizierung Managementsysteme – EN ISO/IEC 17021

Notified Body 0757

DAkkS

Winkhaus has successfully passed the demanding QM 328 certification.

Winkhaus' activPilot fittings are certified in accordance with QM 328. The turn-only and turn-tilt fittings for windows and French doors undergo a large number of tests in the stringent certification programme, which verifies aspects such as durability and quality control mechanisms. The certificate stands as a testament to Winkhaus' long tradition in high quality products.

Endurance testing

Winkhaus activPilot is certified in accordance with EN 13126-8:2017 (endurance test for turn-only and turn-tilt fittings) and EN 1191 (endurance test for windows and doors). The fitting system thus complies with the latest EN standards. Winkhaus' own permanent control in accordance with established production control guidelines as well as regular external monitoring by ift Rosenheim ensure outstanding product quality guaranteed on a long-term basis. The activPilot Concept fitting series were tested for sash weights of up to 130/150 kg, for activPilot Select up to 150 kg. As a result they clearly exceeded the required load values. The fittings of both series may now bear the ift Q certification mark.

Your partner for service

Our services are solution-oriented, reliable and precisely geared to match your requirements – just as you would expect from your partner. We are always at your service. With application engineers on site, professional help from our product data service, and innovative software solutions to help optimise your workflow we safeguard and extend your capacity to act. On top of this, our comprehensive product information system and sophisticated logistics service guarantee fast delivery at all times.

Proper screw fixing in terms of load of security-relevant fitting components

In order to ensure the endurance and operating safety of windows and balcony doors over their expected service life, major importance must be attached to the installation of security-relevant fitting components! Manufacturers of windows and balcony doors are responsible for fixing the fitting elements on the sash and the frame in a professional way and they must make sure that the specifications are adhered to. Important: Please observe these guidelines! Use only screws that are long enough to bear the loads.

Basic technical features of the activPilot fitting system

In the following section you will find the general features that apply to all activPilot fitting components in the sash area, unless otherwise described on the corresponding product pages.

- Face plate width of sash fitting parts: 16 mm
- Overlapping system linkage without connecting plates
- Delivery state of sash fitting parts: centre fixed in turn position
- Safety locking pin as an adjustable octagonal bolt
- Sash fitting parts can be used right/left, unless otherwise stated.

1

Zertifikat / *Certificate*

Zertifikatsnr. / *Certificate No.:* 228-7019950-1-17

Dreh- und Drehkippbeschläge für Fenster und Fenstertüren

Turn and tilt-turn hardware for windows and casement doors

Produkt *product*	**activPilot, proPilot**
max. Flügelgewicht *max. casement weight*	**max 200 kg**
Einsatzbereich *field of application*	**Systeme mit entsprechender Beschlagaufnahmenut** *Systems with suitable hardware groove*
Hersteller *manufacturer*	**Aug. Winkhaus GmbH & Co. KG** August-Winkhaus-Str. 31, D 48291 Telgte
Produktionsstandort *production site*	**Aug. Winkhaus GmbH & Co. KG** August-Winkhaus-Str. 31, D 48291 Telgte

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

- Erstellung von Produktfamilien des aufgeführten Bauproduktes und Erstprüfung durch eine akkreditierte Prüfstelle nach EN 13126-8:2017 unter Berücksichtigung der Anwendungsdiagramme
- Einführung und Aufrechterhaltung einer werkseigenen Produktionskontrolle durch den Hersteller
- Erstinspektion des Werkes und der werkeigenen Produktionskontrolle durch ift-Q-Zert
- kontinuierliche Fremdüberwachung des Werkes und der werkseigenen Produktionskontrolle durch ift-Q-Zert

Dieses Zertifikat wurde erstmals am 18. November 2008 ausgestellt und gilt 5 Jahre, 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.

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

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

Dieses Zertifikat enthält 2 Anlage/n.

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

- compilation of product families of the building product listed and initial type-testing by an accredited testing body as per EN 13126:8:2017 based on the application diagrams
- implementation and maintenance of a factory production control by the manufacturer
- initial inspection of the production site and the factory production control by ift-Q-Zert
- continuous third-party control of the production site and the factory production control by ift-Q-Zert

This certificate was first issued on 18. November 2008 and will remain valid for 5 years, 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.

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-Q-Zert accompanied by the necessary evidence.

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.

This certificate contains 2 annexes.

ift Rosenheim 25. März 2019	**Christian Kehrer** **Leiter der ift-Zertifizierungs- und Überwachungsstelle** *Head of ift Certification and Surveillance Body*	**Prof. Ulrich Sieberath** **Institutsleiter** *Director of Institute*
Gültig bis / *Valid until:*	**10. Oktober 2023**	**228 7019950**

ift Rosenheim · akkreditierte Zertifizierungsstelle · PZ EN 17065

2018-01 / 797

Grundlage(n) / *Basis:*

ift-Zertifizierungsprogramm für Beschläge *ift-certification scheme for hardware* (QM 328) Ausgabe/*issue* 2018

EN 1191
EN 12400
bis Klasse 3 *up to class 3*

Dauerfunktion *resistance to repeated opening and closing*

EN ISO 9227
EN 1670
bis Klasse 5 *up to class 5*

Korrosionsschutz *corrosion protection*

ZERTIFIZIERT CERTIFIED

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

Notified Body 0757
PÜZ-Stelle: BAY 18

DAkkS Deutsche Akkreditierungsstelle D-ZE-11349-01-00

You will find further certificates and updates at www.winkhaus.com

Anlage / *annex* 1 **Seite** / *page* 1 **von** / *of* 3
Hersteller / *manufacturer:* **Aug. Winkhaus GmbH & Co. KG**
Ausgabedatum / *date of issue:* **25. März 2019**

Zertifikatsnr. / *Certificate No.:* 228-7019950-1-17

In der Zertifizierung enthaltene Produktfamilien für Fenster- und Fenstertürsysteme mit geeigneter Beschlagaufnahmenut.

Product families for window and casement door systems with groove designed for accommodation of hardware, covered by certification.

lfd. Nr./ *no.*	Ausführung Bandseite/ *type hinge side*	Ausführung Flügelbeschlag/ *type casement hardware*	Beschreibung der Ausführung der blendrahmenseitigen Beschlagausführung *detail description of frame member hardware type*				Klassifizierung nach EN 13126-8:2017 *classification as per EN 13126-8:2017*			
			Winkelband/ *top stay connecting part*	Scherenlager/ *stay arm support*	Eckband/ *corner hinge*	Ecklager/ corner pivot	1 Dauerfunktionsfähigkeit/ durability	2 Masse (in kg)/ *mass*	3 Korrosionsbeständigkeit/ *corrosion resistance*	4 Prüfgrößen (in mm)/ *test sizes*
1	activPilot K 100	activPilot K 100	SK2.20-13	SL.KS.3-6	FL.K. 20-6-20	EL.K. 6-3-16	H2	100	5	1300 mm x 1200 mm
2	activPilot K 100	activPilot K 100	SK2.20-13	SL.KS.3-6	FL.K. 20-6-20	EL.K. 6-3-16	H2	100	5	900 mm x 2300 mm
3	activPilot K 130 S	activPilot K 130 S	SK2.20-13	SL.K.3-6.130	FL.K. 20-6-28.130	ESV 6-3-16	H3	100	5	1300 mm x 1200 mm
4	activPilot Comfort PADK 100	activPilot Comfort PADK 100	SK2.PA.20-13	SL.KS.3-6	FL.E.FWPA 20-13	ESV 6-3-16	H2	100	5	1300 mm x 1200 mm
5	activPilot Comfort PADK 100	activPilot Comfort PADK 100	SK2.PA.20-13	SL.KS.3-6	FL.E.FWPA 20-13	ESV 6-3-16	H2	100	5	900 mm x 2300 mm
6	activPilot Comfort PADM 100	activPilot Comfort PADM 100	SK2.PAD. 20-13	SL.KS.3-6	FL.E.FPAD 20-13	ESV 6-3-16	H2	100	5	1300 mm x 1200 mm
7	activPilot Comfort PADM 100	activPilot Comfort PADM 100	SK2.PAD. 20-13	SL.KS.3-6	FL.E.FPAD 20-13	ESV 6-3-16	H2	100	5	900 mm x 2300 mm
8	activPilot C 130	activPilot C 130	SC2.20-13	SL.C.3-6	FL.C-W. 20-13	EL.CS. 6-3-22	H3	130	5	1400 mm x 1550 mm
9	activPilot K 130	activPilot K 130	SK2.20-13	SL.KB.3-6	FWV 20-13	ESVW 6-3-16	H2	130	5	1300 mm x 1200 mm

Anlage / *annex* 1 **Seite** / *page* 2 **von** / *of* 3
Hersteller / *manufacturer:* **Aug. Winkhaus GmbH & Co. KG**
Ausgabedatum / *date of issue:* **25. März 2019**

Zertifikatsnr. / *Certificate No.:* 228-7019950-1-17

10	activPilot K 130	activPilot K 130	SK2.20-13	SL.KB.3-6	FWV 20-13	ESVW 6-3-16	H2	130	5	900 mm x 2300 mm
11	activPilot ALU 130	activPilot ALU 130	SK2.20-13	SL.KB.3-6	FWV 20-13	ESVW 6-3-16	H2	130	5	1300 mm x 1200 mm
12	activPilot ALU 130	activPilot ALU 130	SK2.20-13	SL.KB.3-6	FWV 20-13	ESVW 6-3-16	H2	130	5	900 mm x 2300 mm
13	activPilot K 130 S	activPilot K 130 S	SK2.20-13	SL.K.3-6.130	FL.K. 20-6-28.130	ESV 6-3-16	H2	130	5	1300 mm x 1200 mm
14	activPilot K 130 S	activPilot K 130 S	SK2.20-13	SL.K.3-6.130	FL.K. 20-6-28.130	ESV 6-3-16	H2	130	5	900 mm x 2300 mm
15	activPilot H 130	activPilot H 130	SH2.T. 18-13-12	SL.HT.18-12	FL.HT. 18-13-12	EL.HT.Z. 18-12	H3	130	5	1300 mm x 1200 mm
16	activPilot H 150	activPilot H 150	SH2.T. 18-13-12	SL.HT.18-12	FL.HT. 18-13-12	EL.HT.Z. 18-12	H3	150	5	900 mm x 2300 mm
17	activPilot Giant	activPilot Giant	SXL.20-13	SL.XL	FL.XL	EL.XL	H3	200	5	1550 mm x 1400 mm
18	activPilot Giant	activPilot Giant	SXL.20-13	SL.XL	FL.XL	EL.XL	H2	200	5	900 mm x 2300 mm
19	activPilot Select K 100	activPilot Select K 100	SK.SE	ohne *without*	FL.SE	EL.K.SE	H2	100	5	1300 mm x 1200 mm
20	activPilot Select H 130	activPilot Select H 130	SH.SE. 20-9.Z.	ohne *without*	FL.SE	EL.H.SE. 20-9.Z. mit/*with* FLS.SE	H2	130	5	1300 mm x 1200 mm
21	activPilot Topstar	activPilot Topstar	SH.IF.24-13	ohne without	FL.IF	EL.H.IF. 24-13	H2	130	5	1300 mm x 1200 mm

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Anlage / *annex* **1**
***Hersteller** / manufacturer:*
Ausgabedatum / *date of issue:*

Seite / *page* **3 von** / *of* **3**
Aug. Winkhaus GmbH & Co. KG
25. März 2019

Zertifikatsnr. / *Certificate No.:* 228-7019950-1-17

22	activPilot Topstar	activPilot Topstar	SH.IF.24-13	ohne without	FL.IF	EL.H.IF. 24-13	H2	130	5	900 mm x 2300 mm
23	activPilot Select K 150	activPilot Select K 150	SK.SE	ohne without	FL.SE	EL.K.SE mit/with FLS.SE	H2	150	5	1550 mm x 1400 mm
24	activPilot Select K 150	activPilot Select K 150	SK.SE	ohne without	FL.SE	EL.K.SE mit/with FLS.SE	H2	150	5	900 mm x 2300 mm
25	activPilot Select ALU 150	activPilot Select ALU 150	SK.SE	ohne without	FL.SE	EL.K.SE mit/with FLS.SE	H2	150	5	1550 mm x 1400 mm
26	activPilot Select H 150	activPilot Select H 150	SH.SE.29-13	ohne without	FL.SE	EL.H.SE. 29-13 mit/with FLS.SE	H2	150	5	1550 mm x 1400 mm
27	proPilot	proPilot	SK.U.2.20-13	SL.K.U.3-3	FL.K.U.6	EL.K.U.3-3	H2	70	4	1300 mm x 1200 mm
28	proPilot	proPilot	SK.U.2.20-13	SL.K.U.3-3	FL.K.U.6. 100	EL.K.U.3-3	H2	100	4	1300 mm x 1200 mm
29	activPilot C 150	activPilot C 150	SC2.20-13	SL.C.3-6	FL.C-W-20-13	EL.CS.6-3-22	H3	150	5	900 mm x 2300 mm
30	activPilot C 150	activPilot C 150	SC2.20-13	SL.C.3-6	FL.C.20-6-28	EL.C.6-3-22	H3	150	5	900 mm x 2300 mm
31	activPilot C 130	activPilot C 130	SC2.20-13	SL.C.3-6	FL.C.20-6-28	EL.C.6-3-22	H3	130	5	1400 mm 1550 mm

Die Ergebnisse sind auf folgende Ausführungsvarianten übertragbar: Beschlagausführung links/rechts, alle zulässigen Größen gemäß Anwendungsdiagramm sowie andere Falz- und Profilgeometrien. Die technische Dokumentation des Beschlagherstellers, insbesondere die entsprechenden Anwendungsdiagramme, ist zu beachten.

The results can be applied to the following design variants: hardware type left/right, all permissible sizes in accordance with the application diagram as well as other rebate and profile geometries. Observe technical documents of hardware manufacturer, in particular the relevant diagrams.

Obligations regarding information and instructions

This document comprises important information and details regarding different fittings and their further processing. The information in this document is particularly intended for window and patio door manufacturers and fitting and structural component retailers. Accidents and physical damage can be avoided if you observe the information given here. For this reason, you must always make sure to pass on the relevant documents when submitting fittings over to somebody else. Information and documents should be handed over in printed form, on a CD ROM or online, for example.

Guidelines for the use of locking systems and fittings

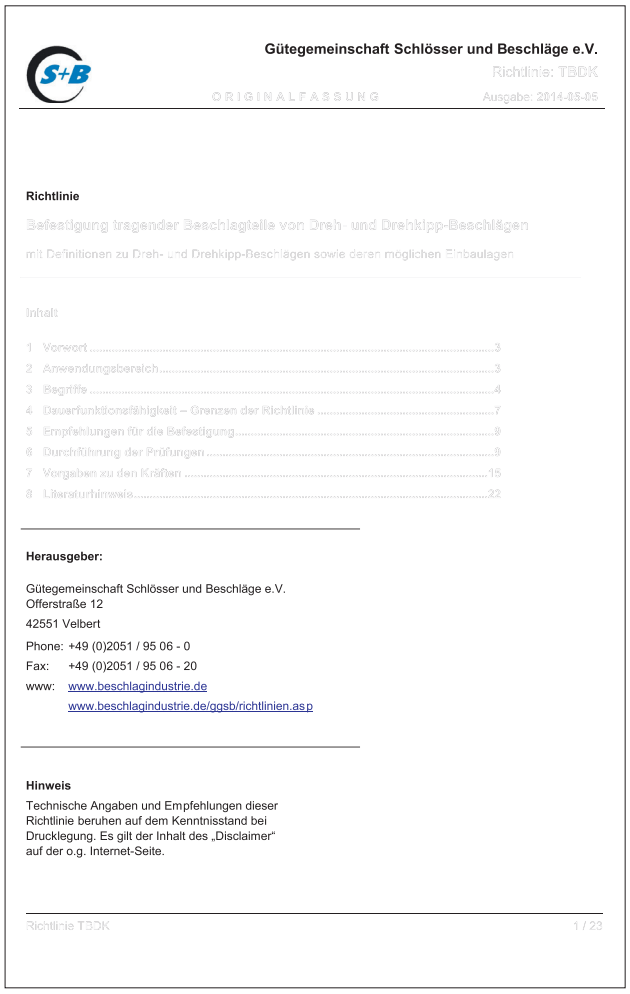
Gütegemeinschaft Schlösser und Beschläge e.V., Velbert issues guidelines offering assistance for the use of locking systems and fittings for windows, doors and patio doors. These guidelines are established in cooperation with the trade association of the locks and fittings industry in Velbert as well as the testing institute PIV which is also based in Velbert. If required, they are agreed with the VFF technical committee and ift Rosenheim. As a result the experience and test findings of several decades are considered. The guidelines provide information about the intended use and maintenance of fittings for windows and patio doors. It is mandatory to observe these guidelines. The current guidelines can be accessed in different languages at the following Internet address: http://www.beschlagindustrie.de/ggsb/richtlinien.asp

As an alternative to using the www address, you can also scan the QR Code with your smartphone!

Follow this link to find the applicable and binding guidelines on the following topics:

- VHBH - Fittings for windows and patio doors [with guidelines / instructions on the product and liability]
- VHBE - Fittings for windows and patio doors [with guidelines / instructions for end users]
- TBDK - Attachment of supporting fitting components of turn and turn-tilt fittings [with definitions of turn and turn-tilt fittings as well as their possible mounting positions]
- FPKF - Safety and cleaning shears for tilt sashes and tilting fanlights [use of safety and cleaning shears]
- FPDF - Sash limiters for variable turn position of sashes [sash limiters controlled by central locking system – definitions and tests]

The VHBH guideline among others contains the chapter “Obligation to give instructions”. A schematic illustration shows the documents and information to be submitted to the different target groups. The builder is obliged to pass the documents listed in this chapter on to the end user.



Gütegemeinschaft Schlösser und Beschläge e.V.
Richtlinie: TBDK
ORIGINALFASSUNG
Ausgabe: 2014-05-05

Richtlinie

Befestigung tragender Beschlagteile von Dreh- und Drehkipp-Beschlägen
mit Definitionen zu Dreh- und Drehkipp-Beschlägen sowie deren möglichen Einbaulagen

Inhalt

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Hinweis

Technische Angaben und Empfehlungen dieser Richtlinie beruhen auf dem Kenntnisstand bei Drucklegung. Es gilt der Inhalt des „Disclaimer“ auf der o.g. Internet-Seite.

Richtlinie TBDK 1 / 23

1

Product liability guidelines

Turn and turn-tilt fittings for windows and patio doors

According to the current product liability legislation dealing with a manufacturer's liability for his products please observe the following information on turn and turn-tilt fittings for window and patio door sashes. The manufacturer will not accept any liability for noncompliance with these specifications.

1. Product Information and intended use

Turn and turn-tilt fittings within the meaning of this definition are single handle turn-tilt fittings for windows and patio doors as used in building applications. These interact with a manually operated handle to bring windows and window sashes into a turn or a tilt position as defined by the design of the shears. Turn and turn-tilt fittings are used on vertical installation windows and patio doors made of wood, PVC-U, aluminium or steel and corresponding combinations of materials. Standard turn-tilt fittings within the meaning of this definition are used for securing window and patio door sashes and to position them in different ventilation positions. Normally it is necessary to overcome the counter force of a seal when closing. Any other type of usage is not in accordance with the intended application. Windows and patio doors for special applications (i.e. burglar-resistance or for installation in humid conditions / in environments with corrosive atmospheric substances) require special fittings with separately agreed performance criteria, designed for the particular application. Open window and patio door sashes only have a protective function and do not meet requirements in terms of joint sealing, watertightness under heavy rain, sound proofing, heat insulation or burglar resistance. When it is windy or draughty, windows and window sashes need to be closed and locked. Windy or draughty as used in this definition means conditions when window or patio door sashes open or close unexpectedly by themselves as a result of air pressure or suction. A fixed open position of the window or patio door sashes can only be achieved by means of supplementary locking fittings. Resistance to loads imposed by wind on closed and locked windows depends on the design and construction of the individual windows / patio doors concerned. If wind stresses to DIN EN 12210 (pressure level p3 in particular) have to be withstood, suitable combinations of fittings must be designed and agreed separately for the design of window and frame material concerned. In general, the turn and turn-tilt fittings are able to meet the requirements to DIN 18025 relating to low-threshold design of flats. However, in this case special combinations and assembly of fittings are needed which must be adjusted and approved separately.

2. Misuse

Misuse – i.e. the use of a product in a manner contrary to the manufacturer's instructions – of turn-tilt fittings for windows and patio doors occurs

- if obstacles are placed in the opening area preventing the intended use.
- if sashes of window / patio doors are pushed or hit against the window reveal, either contrary to the manufacturer's instructions or in an uncontrolled way (e.g. by wind), that the fittings, the frame materials or other individual parts of the window sash or the patio door sash are damaged or destructed or subsequent damage occurs.
- if additional loads act on the sashes of windows or patio doors (e. g. children swinging on them).
- if someone grasps in the gap between the frame and sash when closing the window (risk of injury).

3. Liability

All fittings must be selected from the original Winkhaus activPilot fitting component range. We accept no liability in case of use of third party or non-approved system components.
Attention: The screw / clamping connection of fitting components, such as corner, shear and sash hinges, must be designed according to the TBDK guidelines. Please adapt the fixing procedure to the load situation.

4. Product Capabilities - Application instructions of the manufacturer

The maximum sash weights for the individual types of fitting must not be exceeded. The component with the lowest permissible loading capacity determines the maximum weight of the sash. Please observe the diagrams and component installation instructions.

4.1 Sash sizes and areas of application

The graphs in the application diagram show the permitted sash rebate height to width ratios, as determined by different weights of glass and/or overall glass thicknesses. The resulting sash rebate dimensions or sash formats (portrait / landscape) and the maximum sash weight must under no circumstances be exceeded.

4.2 Application diagram for determination of the permissible sash sizes

The application diagrams for this fitting series for the determination of permissible sash sizes are described and explained separately on the following pages.

4.3 Composition of fittings

You must comply with the manufacturer's specifications regarding the configuration of fittings (e.g. the use of additional shears, the layout of fittings for burglary-resistant windows and patio door sashes, etc.).

5. Product maintenance

Security-relevant fitting parts are to be inspected at least once a year to check for wear and to ensure they are firmly secured in position. Fastening screws must be tightened and faulty components must be replaced as required. Maintenance work and cleaning must also be carried out at least once a year. All mobile parts and locking points for fittings should be greased and tested for function. Only oils and greases not affecting the materials of the fitting may be used. The only cleaning and maintenance materials to be used are those which will not adversely affect the corrosion-resistant properties of the fittings components.

Adjustment work to the fittings – particularly in the area of the corner drive and the shears – as well as the replacement of parts and mounting and removal of opening sashes must be carried out by a trained specialist.

5.1 Maintaining surface quality

- The fittings and rebate spaces must be adequately ventilated, particularly during the construction stage, so that they are not exposed to the direct effects of moisture or condensation. It must be ensured in any case by appropriate measures that there is no possibility for (permanently) humid room air to condense in the rebate area.
- The fittings must be kept free from deposits and soiling due to building materials (building dust, gypsum plaster, cement etc). Possible soiling from plaster, mortar etc. must be removed prior to bonding with water.
- Corrosive vapours (e.g. formic acid, acetic acid, ammonia, amine and ammonia compounds, aldehydes, phenols, chlorine, tannic acid etc.) in the rebate space combined with even a small amount of condensation can cause rapid corrosion of the fittings. Therefore, such exhalations in the area of the windows must be avoided.
- Furthermore no sealants that cure with acetic or other acids, or sealants containing any of the above-mentioned substances, must be used. Both direct contact with the sealant and vapours released from it can damage the surface.
- Only use a mild and pH neutral detergent to clean the fittings. Under no circumstances use aggressive acidic cleaners or scouring agents containing the substances listed above.

6. Obligations to give information and instructions

For the implementation of information and instruction obligations as well as for the maintenance work the following documents are available. They must be submitted to (intermediate) dealers and manufacturers and to the end customer.

Planning documentation
Product catalogues
Mounting instructions
Maintenance and care instructions as well as
operating instructions

7. Use of type-related fittings

The variants for the individual fitting systems (e.g. tilt and top-hung sash fittings or parallel action fittings providing an additional ventilation position by means of a circumferential gap all around the sash) must be used considering the product information, intended use, misuse, product capabilities, product maintenance and the obligations regarding the information and instruction.

8. Storage

Before the fitting components are assembled, they must be stored on a dry, protected and level surface.

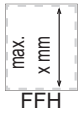
1

Declaration of symbols

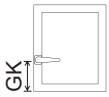
Sash weight max. x kg

Max. sash size: x m²

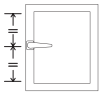
Max. sash rebate width (FFB): x mm



Max. sash rebate height (FFH): x mm



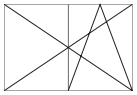
Constant handle height



Central handle height

Turn sash (D)

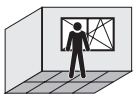
Turn-tilt sash (DK)



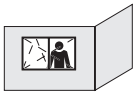
Turn/Turn-tilt double sash (D/DK-Stulp)

Design of centre turn sash (D) (3-sash units)

Parallel action



Interior view



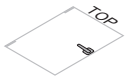
Exterior view

Basic set of fittings

Optional fittings

Size-dependent fittings depending on sash rebate width (FFB)

Size-dependent fittings depending on sash rebate height (FFH)



“TOP” marks the upper edge of the window.

Pot hinge version

Rebate hinge version

Item for use on PVC-U windows

Item for use on wooden windows with 12 mm airgap

Item for use in wooden windows with 4 mm frame-to-sash clearance and 15 mm overlap

Item for use in wooden windows with 4 mm frame-to-sash clearance and 18 mm overlap

Item for use on aluminium windows

Packing key in the Winkhaus logistics system

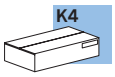
The shipping units were chosen in a way that our products can be handled without any problems at your works, ranging from cardboard packaging to complete pallet units. For instance, we provide KLTs (small load carriers) in different sizes which are eco-friendly and facilitate logistics. The reusable packaging units, which can be stacked on a europallet, have a bar code and enable optimal stock organisation and easy transport to the relevant workstations. The packaging used for the products in question can be found on the corresponding product pages.

BL Goods packed in PE bags with bar code

KT Goods packed in cardboard boxes with bar code

BD Tied goods with barcode

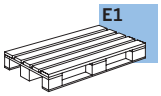
K3 Small cardboard box with bar code Dim.: 395 x 295 x 205 mm



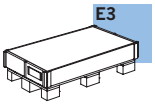
K4 Big cardboard box with bar code Dim: 595 x 395 x 205 mm

KK Small KLT 4321 Dim: 400 x 300 x 214 mm with cover, bar code, sealed, stackable

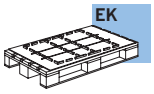
GK Big KLT 6412 Dim: 600 x 400 x 214 mm with cover, bar code, sealed, stackable



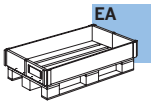
E1 europallet with KLT Pallet size 800 x 1,200 mm



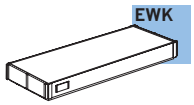
E3 One-way pallet with cover box and bar code



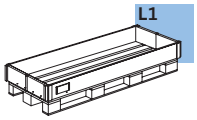
EK Europallet with KLT and fixing plate (avoids shifting of goods) Pallet size 800 x 1,200 mm



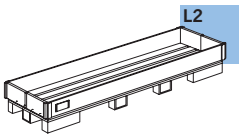
EA Europallet with frame and bar code Pallet size 800 x 1,200 mm



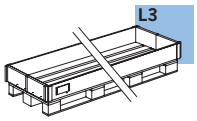
EWK Disposable cardboard box E3, L6 or L7



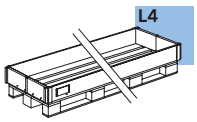
L1 Reusable pallet for long goods with frame and bar code Pallet size 800 x 1,800 mm



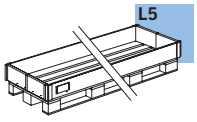
L2 Reusable pallet II for long goods with frame and bar code Pallet size 800 x 2,400 mm



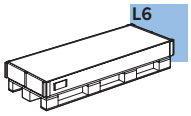
L3 Reusable pallet III for long goods with frame and bar code Pallet size 800 x 3,500 mm



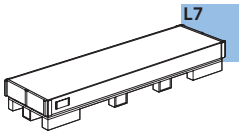
L4 Reusable pallet IV for long goods with frame and bar code Pallet size 800 x 4,200 mm



L5 Reusable pallet V for long goods with frame and bar code Pallet size 800 x 6,500 mm



L6 One-way pallet with cover box for long goods with bar code Pallet size 800 x 1,800 mm



L7 One-way pallet with cover box for long goods with bar code Pallet size 800 x 2,400 mm

1

Glossary

Code

AB.G.D	Drilling protection
ADS	Cover strip
ADP	Adapter
AKR	Automatic shootbolt
AL...	Support plate
ANS	Mounting element
AP.HH	Fitting punch, lever
AP...SE	Adapter plate, activPilot Select
AS.DSL	Mini ventilation unit (turn position)
AS.SBA	Mini vent keep
ASP ER-A	End plate
ASS AR	Corner drive
AWDR	Blocking plate
BK	Balcony door catch
BK.KR	Catch bolt
BO	Catch bolt
BS	Ground sill
BST AP/FS	Punch
D	Backset
DB	Turn limiter
DBG	Turn limiter
DFE	Dual function element
DL	Turn hinge insert
DL...ET	Turn hinge, 1 piece
DLW ERW	Turn hinge bracket
DML	Turn middle hinge
DS	Window lock
E	Corner drive
E1.A	Corner drive for studio windows
E1.MSL	Corner drive with variable tilt device
E1.SBS	Corner drive for double-sash window
EL	Corner hinge
ELK	Corner hinge cap
FBP	Window limiter
FH ...	Sash lifter
FL	Sash hinge
FL...PADS	Sash hinge, PADS
FL...PAD/ PADM	Sash hinge PAD/PADM
FL...PADK	Sash hinge, PADK
FLK	Sash hinge cover
FLS.SE	Sash hinge rail, activPilot Select
FSA	Fail safe device FSA
FSF	Fail safe device FSF
FSR	Rebate shear
FT	Adapter
GAK	Drive rod, constant handle position
GAKA	Drive rod, constant handle position, lockable
GAM	Drive rod, central handle position
GAMA	Drive rod, central handle position, lockable
GASK	Double sash drive rod, constant handle position
GASM	Double sash drive rod, central handle position
GAVM	Locking drive rod activPilot, central handle position
GG	Handle set
GK	Constant handle position
GRT.RB	Round arch set
HC	Timber windows, rebate version
HFG	Window Handle Case HFG
HT	Timber windows, pot hinge version
IF	activPilot Topstar
K.EL	Corner hinge cap
K.FL	Sash hinge cover
K.SB	Shear hinge cap, timber
K.SK	Shear band cap
K.SL	Shear hinge cover
KB	Tilt hinge
KBG	Tilt limiter
KE	Coupling element
KLB	Tilt hinge
KR	Shootbolt
KUE-T1	Cable transition, separable
LE.B	Drilling jig
LE.FR	Milling jig
LE.N	Jig
LIN AP/FS	Ruler of fittings press
LM-RG	Round handle
M	Interlocking rod
MK	Interlocking rod, extendable
MS.SO	Interlocking rod, double sash, keep top
MS.SU	Interlocking rod, double sash, keep bottom
MSL.OS	Variable tilt device top rod
NML	Groove centre position
OBV	Opening limiter
OS	Top rod
OS...PA...	Top rod, PADK
OS. ...E	Top rod (turn before tilt)
OS.A	Screw clip
PA	Parallel action
PAD	Parallel action, turn
PADK	Parallel action, turn-tilt
RA.DB.SE	Frame connection turn limiter
RT.DFE-TFE	Frame part, dual/triple function element
RT.DFE-TFE.S	Frame part, dual/triple function element, double-sash windows
RT.MSL	Frame part, variable tilt device

S.FL	Sash hinge plug
SA	Run-up block
SB SZV	Keep, pull-in device
SBA...	Keep, contact pressure
SBA...T	Mini vent keep
SBK	Security tilt keep
SBK...E	Tilt keep (tilt before turn)
SBK...PA	Tilt keep (with slider), PADK
SBK...SP	Security tilt keep with gap locking device
SBS...	Security keep
SBS...PA	Security keep, PADK
SBS...PAB	Security keep PAB, PADK
SBS...PAD	Security keep PAD
SC	Shear, rebate hinge
SC...A	Shear studio window
SC...E	Shear (tilt before turn)
SC...PA...	Shear, PADK
SC...PAD...	Shear PAD
SCO	Shear, without turn restriction
SE	activPilot Select
SH...T	Shear, pot hinge
SL	Shear hinge
SL.HC	Shear hinge, timber rebate hinge
SLK	Shear hinge cap, rebate hinge
SNH	Faceplate fastener
SP R	Faceplate
SR	Control unit SR
SZP	Geared cover plate
TFE	Triple function element
UEB	Overlap
UF	Packer
V	Distance between locking points
VBST	Connection piece
V.AK	Extension rod
VK.AK	Extension rod, extendable
VS R	Connection rod
VS RB	Connection rod round-arch window
XL	Components from activPilot Giant range
ZSR	Additional shear
ZSRE	Additional shear (tilt before turn)
ZSS	Anti-slam device
ZV...	Pull-in device
ZV.RT	Pull-in device, frame part

Item description

...LS	Fitting direction left
...RS	Fitting direction right
...AGR	anthracite grey (similar to RAL 7016)
...BR	brown (similar to RAL 8019)
...BZ-AM	bronze – antique brass
...BZ-CU	bronze – coppery
...BZ-RB	bronze – red brown
...CW	creme white (similar to RAL 9001)
...EV1	anodised silver
...F1	silver coloured
...F1 anodised	(similar to F1) anodised silver
...F3	gold coloured
...F3-MG	gold mat
...F9	titanium coloured
...LBR	clay brown
...PW	pearl white (similar to RAL 1013)
...SG	silver-grey (similar to RAL 7001)
...SGB	grey (similar to RAL 9006)
...SGR	grey (similar to RAL 7037)
...SL	silver look (zinc galvanised)
...SW	jet black
...WS	white (similar to RAL 9016)

1

Guidelines for using application diagrams

- Prerequisites

- When fixing load-bearing components, please consider the TBDK guidelines. The tractive forces shown in the table have to be achieved. The suitable proof must be provided by the window manufacturer.
- The values given here apply to the shear hinge. An extra test of the corner hinge is not necessary in case the fixing situation is identical to that of the shear hinge.

m [kg]	F [N]
50	1400
60	1650
70	1900
80	2200
90	2450
100	2710
110	3000
120	3250
130	3525
140	3900
150	4200

m [kg] = max. sash weight in kg
F [N] = tractive force on the shear hinge in N

- Please control:

- Are window dimensions within the range highlighted in grey?
- Is the intersection point to be determined located to the left of the limiting curve of the glass weight?

- Example:

Intended window dimensions:

- FFB = 1.100 mm
- FFH = 1.800 mm
- GG = 40 kg/m² (corresponds to the cyan curve)

The intersection point “S” is located in the area highlighted in grey and to the left of the limiting curve of the filling weight (GG = 40 kg/m²), i. e. in the permitted area.

- General notes:

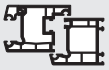
On the establishment of application diagrams, the following values were considered:

- Glass weight GG ~ 2.5 kg/m² mm
- Profile weight ~ 3.25 kg/RM

Please find more detailed information on the website http://www.ift-service.de/awd/ift/start.faces as well as on http://www.fvsb.de/ggsb/richtlinien.asp.

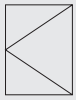
activPilot Select

Application diagram for ascertaining the admissible sash sizes – Max. sash weight 100 kg



PVC

For PVC-U windows with 12 mm airgap



Turn sash (D)

Turn-tilt sash (DK)

Width-to-height ratio and additional load

Value calculated without additional load for a width-to-height ratio of 2:1. The application diagrams have been established without considering additional loads. For ascertaining the max. sash sizes with additional loads, please ask your authorised contact partner for comprehensive advice!

Advice for use

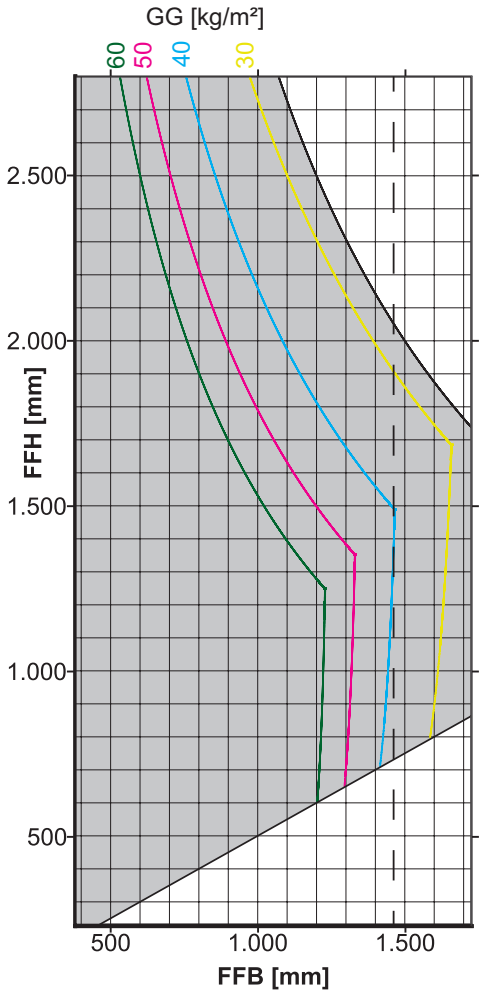
The permissible application range for using Winkhaus fittings is marked grey in the application diagrams. However, please do not take into account the complete grey surface, but only the part which is on the left side of the "filling weight GG" curve.

Application range

All fittings must be selected from the original Winkhaus activPilot fitting component range. We accept no liability in case of use of third party or non-approved system components.

- Min. sash rebate width 380 mm
- Max. sash rebate width 1725 mm
- From 1475 mm sash rebate width with additional shear ZSR
- Min. sash rebate height 230 mm
- Max. sash rebate height 2,800 mm
- Max. sash size 3 m²
- Max. sash weight 100 kg
- Ratio between sash rebate width : sash rebate height ≤ 2:1
- Airgap at horizontal top and bottom side 12 +1 mm

Important: The load-bearing fitting components, such as corner, shear and sash hinges, must be designed according to the TBDK guidelines. Please adapt the drill diameter of the fixing screws, the screw diameter and the screw length to the load situation.



AWD_01.50_NR20_DK_100 kg_ohne_Zusatzlast_2_m

Conditions for using the application diagram

Proof of fixing the load-bearing components on the window system by the window manufacturer according to the TBDK guideline and with the following forces:

- For a max. sash weight of 100 kg
- On the shear hinge: 2710 N
- On the corner hinge: 2890 N

Abbreviations

- FFB = Sash rebate width [mm]
- FFH = Sash rebate height [mm]
- GG = Glass weight per square metre [kg/m²]
- ZSR = Additional shear (section on right of interrupted line)

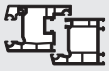
Observe instructions on window profile

You must specifically take into account information provided by the profile manufacturer or system owner when determining the maximum sash sizes and sash weights!

1

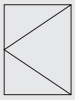
activPilot Select

Application diagram for ascertaining the admissible sash sizes – Max. sash weight 150 kg



PVC

For PVC-U windows with 12 mm airgap



Turn sash (D)

Turn-tilt sash (DK)

Width-to-height ratio and additional load

Value calculated without additional load for a width-to-height ratio of 2:1. The application diagrams have been established without considering additional loads. For ascertaining the max. sash sizes with additional loads, please ask your authorised contact partner for comprehensive advice!

Advice for use

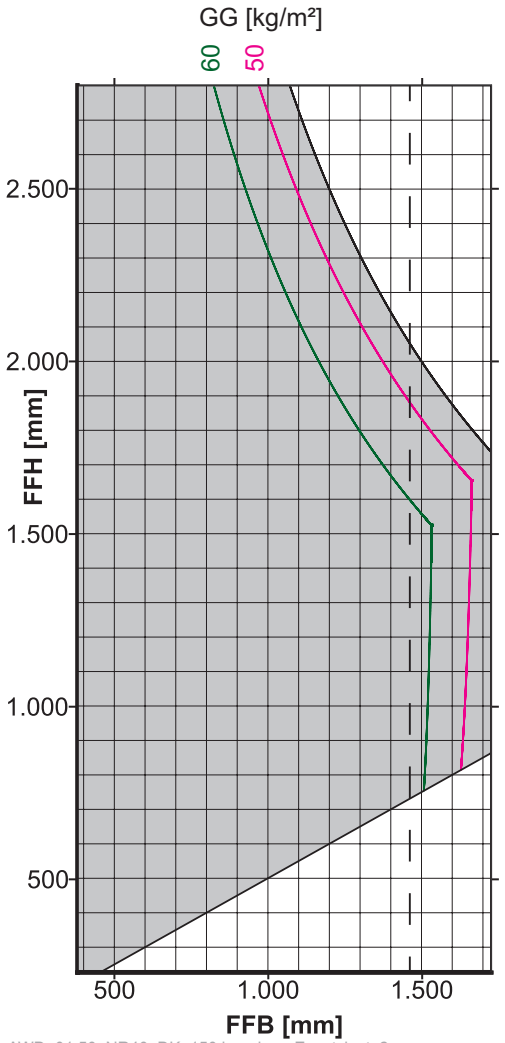
The permissible application range for using Winkhaus fittings is marked grey in the application diagrams. However, please do not take into account the complete grey surface, but only the part which is on the left side of the "filling weight GG" curve.

Application range

All fittings must be selected from the original Winkhaus activPilot fitting component range. We accept no liability in case of use of third party or non-approved system components.

- Min. sash rebate width 380 mm
- Max. sash rebate width 1725 mm
- From 1475 mm sash rebate width with additional shear ZSR
- Min. sash rebate height 230 mm
- Max. sash rebate height 2,800 mm
- Max. sash size 3 m²
- Max. sash weight 150 kg
- Ratio between sash rebate width : sash rebate height ≤ 2:1
- Airgap at horizontal top and bottom side 12 +1 mm

Important: The load-bearing fitting components, such as corner, shear and sash hinges, must be designed according to the TBDK guidelines. Please adapt the drill diameter of the fixing screws, the screw diameter and the screw length to the load situation.



AWD_01.50_NR40_DK_150 kg_ohne_Zusatzlast_2_m

Conditions for using the application diagram

Proof of fixing the load-bearing components on the window system by the window manufacturer according to the TBDK guideline and with the following forces:

- For a max. sash weight of 150 kg
- On the shear hinge: 4200 N
- On the corner hinge: 4340 N

Abbreviations

- FFB = Sash rebate width [mm]
- FFH = Sash rebate height [mm]
- GG = Glass weight per square metre [kg/m²]
- ZSR = Additional shear (section on right of interrupted line)

Observe instructions on window profile

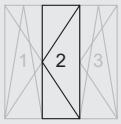
You must specifically take into account information provided by the profile manufacturer or system owner when determining the maximum sash sizes and sash weights!

activPilot Select

Application diagram for ascertaining the admissible sash sizes - Max. sash weight: 80 kg

PVC

For PVC-U windows with 12 mm airgap



Design of centre turn sash (D) (3-sash units)

Width-to-height ratio and additional load

Value calculated without additional load for a width-to-height ratio of 2:1. The application diagrams have been established without considering additional loads. For ascertaining the max. sash sizes with additional loads, please ask your authorised contact partner for comprehensive advice!

Advice for use

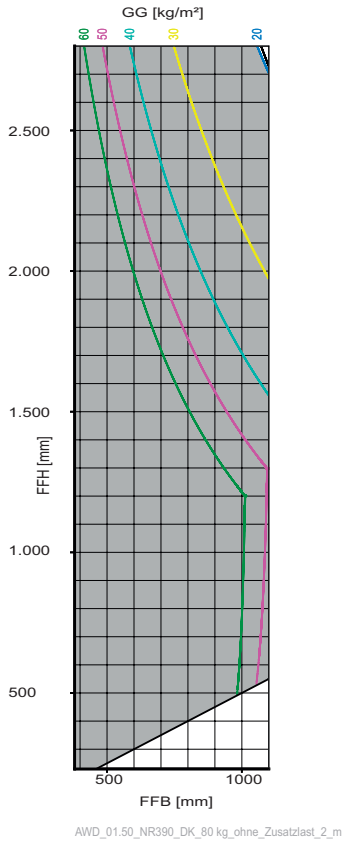
The permissible application range for using Winkhaus fittings is marked grey in the application diagrams. However, please do not take into account the complete grey surface, but only the part which is on the left side of the “filling weight GG” curve.

Application range

All fittings must be selected from the original Winkhaus activPilot fitting component range. We accept no liability in case of use of third party or non-approved system components.

- Min. sash rebate width 380 mm
- Max. sash rebate width 1,100 mm
- Min. sash rebate height 230 mm
- Max. sash rebate height (FFH): 2800 mm
- Max. sash size 3 m²
- Max. sash weight: 80 kg
- Ratio between sash rebate width : sash rebate height ≤ 2:1
- Airgap at horizontal top and bottom side 12 +1 mm

Important: The load-bearing fitting components, such as corner, shear and sash hinges, must be designed according to the TBDK guidelines. Please adapt the drill diameter of the fixing screws, the screw diameter and the screw length to the load situation.



Conditions for using the application diagram

Proof of fixing the load-bearing components on the window system by the window manufacturer according to the TBDK guideline and with the following forces:

- For a max. sash weight of 80 kg
- At the shear: 2200 N
- On the corner hinge: 2310 N

Abbreviations

- FFB = Sash rebate width [mm]
- FFH = Sash rebate height [mm]
- GG = Glass weight per square metre [kg/m²]

Observe instructions on window profile

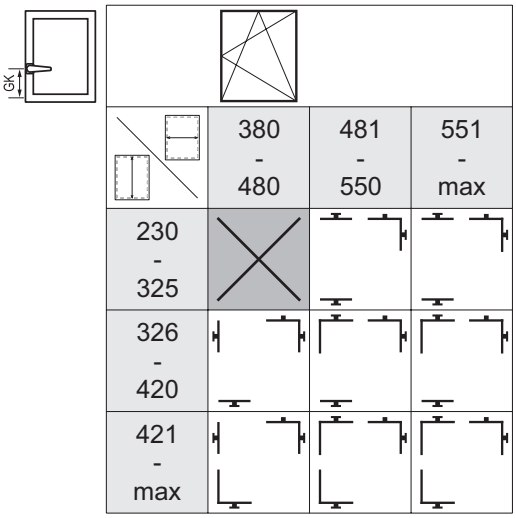
You must specifically take into account information provided by the profile manufacturer or system owner when determining the maximum sash sizes and sash weights!

1

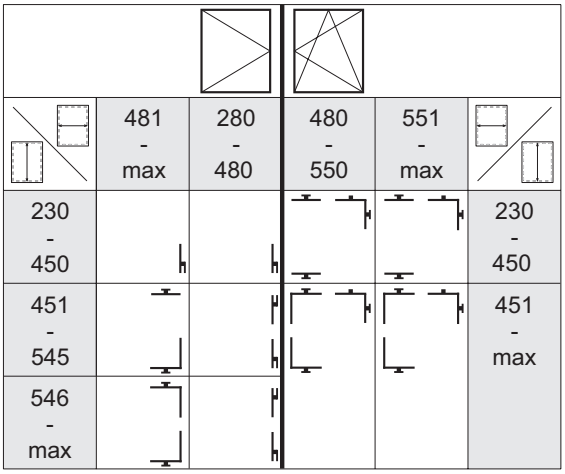
Overview of min. dimensions for drive rods D = 15.5 mm

The following overview shows the applications supported by corner drives. Use depends on the variant “turn-tilt” or “turn double sash”, and the window size. Depending on the application, other elements can be used as alternatives to corner drives.
The sash hinge rail FLS.SE is not considered in the overviews. If the sash rebate height is smaller than 750 mm, the airgap in the shear area must be 12 mm at least.

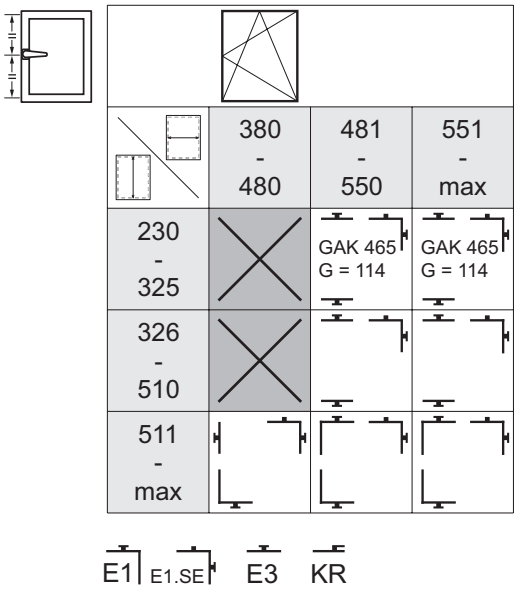
Turn-tilt type, constant, single sash



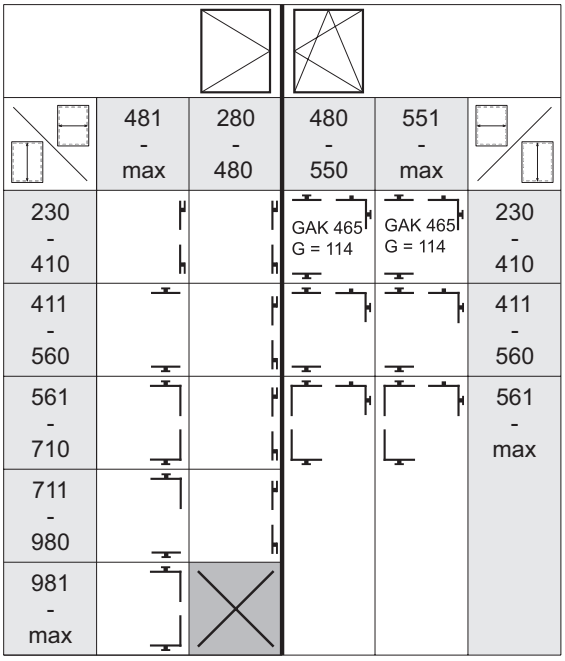
Turn/Turn-tilt double sash type, constant



Turn-tilt type, central, single sash



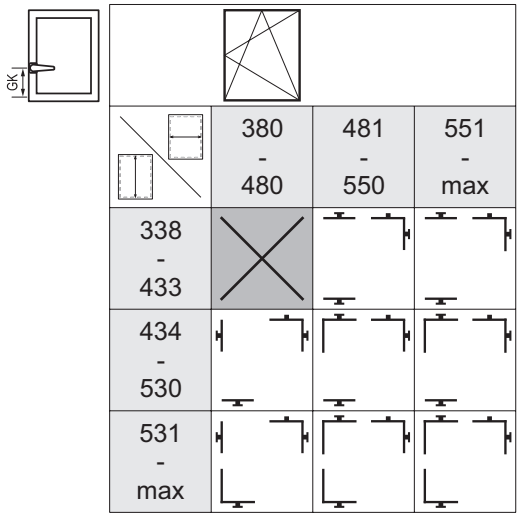
Turn/Turn-tilt double sash type, central



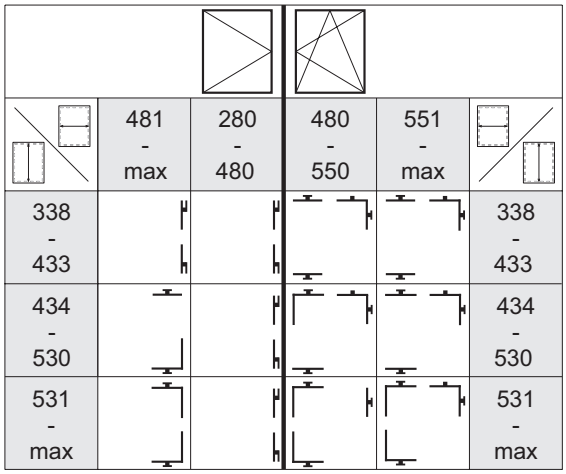
Overview of min. dimensions for drive rods D = 7.5 mm

The following overview shows the applications supported by corner drives. Use depends on the variant “turn-tilt” or “turn double sash”, and the window size. Depending on the application, other elements can be used as alternatives to corner drives.
The sash hinge rail FLS.SE is not considered in the overviews. If the sash rebate height is smaller than 750 mm, the airgap in the shear area must be 12 mm at least.

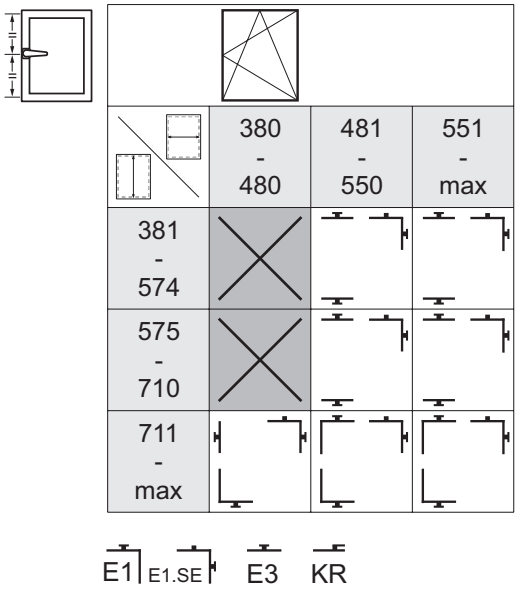
Turn-tilt type, constant, single sash



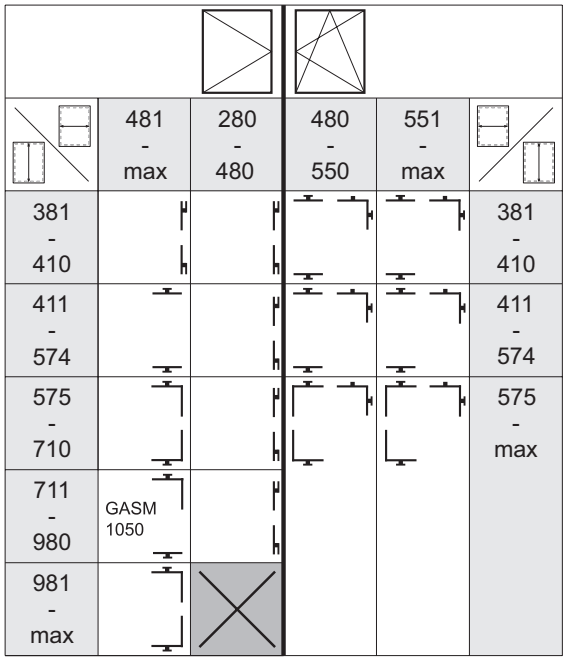
Turn/Turn-tilt double sash type, constant



Turn-tilt type, central, single sash



Turn/Turn-tilt double sash type, central

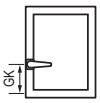


1

Overview of max. dimensions for drive rods D = 15.5 and 7.5 mm

This overview shows how the gear side is designed when tall windows up to 2,725/2,800 mm are involved. The maximum sash height depends on the position of the window handle, central or constant.
The sash hinge rail FLS.SE is not considered in the overviews.

Turn-tilt type, constant, single sash

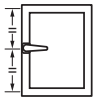


	min - max*
2226 - 2475	MK.250-1 + GAK.2225-...
2476 - 2725	MK.500-1 + GAK.2225-...

Turn/Turn-tilt double sash type, constant

	min - max*	min - max*	
2226 - 2475	MS.SO.250-1 + GASK.2225-...	MK.250-1 + GAK.2225-...	2226 - 2475
2476 - 2725	MS.SO.500-1 + GASK.2225-...	MK.500-1 + GAK.2225-...	2476 - 2725

Turn-tilt type, central, single sash



	min - max*
2301 - 2800	MK.250-1 + GAM.2300-3 + MK.250-1

Turn/Turn-tilt double sash type, central

	min - max*	min - max*	
2301 - 2800	MS.SO.250-1 + GASM.2300-3 + MS.SU.250-1	MK.250-1 + GAM.2300-3 + MK.250-1	2301 - 2800

* Please observe the “Diagrams to determine permissible sash sizes”!

Lists of profiles

In order to ensure easy and secure installation, all hinge parts have a profile adjustment. The attribution of individual items to various profiles is depicted in the following table.

Aluplast NML 13 mm
Ideal 2000 - 3000 UEB 20 mm

EL		SK		DL		RA	
EL.K.SE.166.LS	4938490	SK.SE.166.LS	4930374	DL.K.SE.166.LS	4930376	RA.DB.K.SE.166.LS	4930378
EL.K.SE.166.RS	4938489	SK.SE.166.RS	4930373	DL.K.SE.166.RS	4930375	RA.DB.K.SE.166.RS	4930377
		SK.SE.E.166.LS	5022371				
		SK.SE.E.166.RS	5022370				

Aluplast NML 13 mm
Ideal 4000 - 8000, Energeto UEB 20 mm

EL		SK		DL		RA	
EL.K.SE.161.LS	4938661	SK.SE.161.LS	4932614	DL.K.SE.161.LS	4932652	RA.DB.K.SE.161.LS	4932701
EL.K.SE.161.RS	4938660	SK.SE.161.RS	4932611	DL.K.SE.161.RS	4932650	RA.DB.K.SE.161.RS	4932700
EL.K.SE.3.161.LS	5010639	SK.SE.E.161.LS	5022367	DL.K.SE.3.161.LS	5010664		
EL.K.SE.3.161.RS	5010638	SK.SE.E.161.RS	5022366	DL.K.SE.3.161.RS	5010650		

Brügmann / Salamander NML 13 mm
System AD UEB 20 mm

EL		SK		DL		RA	
EL.K.SE.152.LS	4938642	SK.SE.152.LS	4931885	DL.K.SE.152.LS	4931889	RA.DB.K.SE.152.LS	4931901
EL.K.SE.152.RS	4938496	SK.SE.152.RS	4931884	DL.K.SE.152.RS	4931888	RA.DB.K.SE.152.RS	4931869
		SK.SE.E.152.LS	5022365				
		SK.SE.E.152.RS	5022364				

Brügmann / Salamander NML 13 mm
System MD UEB 20 mm

EL		SK		DL		RA	
EL.K.SE.152.LS	4938642	SK.SE.152.LS	4931885	DL.K.SE.152.LS	4931889	RA.DB.K.SE.152.LS	4931901
EL.K.SE.152.RS	4938496	SK.SE.152.RS	4931884	DL.K.SE.152.RS	4931888	RA.DB.K.SE.152.RS	4931869
		SK.SE.E.152.LS	5022365				
		SK.SE.E.152.RS	5022364				

Deceuninck NML 13 mm
Arcade, Prestige, Deluxe, Elite, MD100, Eforte UEB 21 mm

EL		SK		DL		RA	
EL.K.SE.192.LS	4993254	SK.SE.192.LS	4993250	DL.K.SE.192.LS	4993367	RA.DB.K.SE.192.LS	4993349
EL.K.SE.192.RS	4993253	SK.SE.192.RS	4993209	DL.K.SE.192.RS	4993366	RA.DB.K.SE.192.RS	4993348

Deceuninck NML 13 mm
Zendow, Elegante UEB 20 mm

EL		SK		DL		RA	
EL.K.SE.169.LS	5012924	SK.SE.169.LS	5012920	DL.K.SE.169.LS	5012888	RA.DB.K.SE.169.LS	5012886
EL.K.SE.169.RS	5012923	SK.SE.169.RS	5012889	DL.K.SE.169.RS	5012887	RA.DB.K.SE.169.RS	5012836
		SK.SE.E.205.LS	5022373	DL.K.SE.205.LS	4932638	RA.DB.K.SE.205.LS	4932697
		SK.SE.E.205.RS	5022372	DL.K.SE.205.RS	4932634	RA.DB.K.SE.205.RS	4932696

Gealan NML 13 mm
3000 UEB 20 mm

EL		SK		DL		RA	
EL.K.SE.162.LS	4938663	SK.SE.162.LS	4932618	DL.K.SE.162.LS	4932657	RA.DB.K.SE.162.LS	4932703
EL.K.SE.162.RS	4938662	SK.SE.162.RS	4932616	DL.K.SE.162.RS	4932656	RA.DB.K.SE.162.RS	4932702
		SK.SE.E.162.LS	5022369				
		SK.SE.E.162.RS	5022368				

2

Gealan NML 13 mm
6000, 7000, 8000, 9000 UEB 20 mm

EL		SK		DL		RA	
EL.K.SE.162.LS	4938663	SK.SE.162.LS	4932618	DL.K.SE.162.LS	4932657	RA.DB.K.SE.162.LS	4932703
EL.K.SE.162.RS	4938662	SK.SE.162.RS	4932616	DL.K.SE.162.RS	4932656	RA.DB.K.SE.162.RS	4932702
		SK.SE.E.162.LS	5022369				
		SK.SE.E.162.RS	5022368				

KBE (Profine) NML 13 mm
70 AD / 70 MD / 88+ UEB 20 mm

EL		SK		DL		RA	
EL.K.SE.205.LS	4938647	SK.SE.205.LS	4932603	DL.K.SE.205.LS	4932638	RA.DB.K.SE.205.LS	4932697
EL.K.SE.205.RS	4938646	SK.SE.205.RS	4932601	DL.K.SE.205.RS	4932634	RA.DB.K.SE.205.RS	4932696
		SK.SE.E.205.LS	5022373				
		SK.SE.E.205.RS	5022372				

KBE (Profine) NML 13 mm
76 AD, 76 MD UEB 20 mm

EL		SK		DL		RA	
EL.K.SE.205.LS	4938647	SK.SE.205.LS	4932603	DL.K.SE.205.LS	4932638	RA.DB.K.SE.205.LS	4932697
EL.K.SE.205.RS	4938646	SK.SE.205.RS	4932601	DL.K.SE.205.RS	4932634	RA.DB.K.SE.205.RS	4932696

Kömmerling (Profine) NML 13 mm
76 AD, 76 MD UEB 20 mm

EL		SK		DL		RA	
EL.K.SE.205.LS	4938647	SK.SE.205.LS	4932603	DL.K.SE.205.LS	4932638	RA.DB.K.SE.205.LS	4932697
EL.K.SE.205.RS	4938646	SK.SE.205.RS	4932601	DL.K.SE.205.RS	4932634	RA.DB.K.SE.205.RS	4932696

Kömmerling (Profine) NML 13 mm
Classic, Elegance, Avantgarde, 88+ UEB 20 mm

EL		SK		DL		RA	
EL.K.SE.144.LS	4938649	SK.SE.144.LS	4932608	DL.K.SE.144.LS	4932649	RA.DB.K.SE.144.LS	4932699
EL.K.SE.144.RS	4938648	SK.SE.144.RS	4932606	DL.K.SE.144.RS	4932645	RA.DB.K.SE.144.RS	4932698
		SK.SE.E.144.LS	5022363				
		SK.SE.E.144.RS	5022362				

LB.Profile NML 13 mm
PAD / PMD / PCD UEB 20 mm

EL		SK		DL		RA	
EL.K.SE.152.LS	4938642	SK.SE.152.LS	4931885	DL.K.SE.152.LS	4931889	RA.DB.K.SE.152.LS	4931901
EL.K.SE.152.RS	4938496	SK.SE.152.RS	4931884	DL.K.SE.152.RS	4931888	RA.DB.K.SE.152.RS	4931869
		SK.SE.E.152.LS	5022365				
		SK.SE.E.152.RS	5022364				

Plustec NML 13 mm
Plustec UEB 20 mm

EL		SK		DL		RA	
EL.K.SE.205.LS	4938647			DL.K.SE.205.LS	4932638	RA.DB.K.SE.205.LS	4932697
EL.K.SE.205.RS	4938646			DL.K.SE.205.RS	4932634	RA.DB.K.SE.205.RS	4932696

Rehau NML 13 mm
Geneo, Synego UEB 20 mm

EL		SK		DL		RA	
EL.K.SE.60.LS	5019223	SK.SE.60.LS	5019221	DL.K.SE.60.LS	5019225	RA.DB.K.SE.60.LS	5019229
EL.K.SE.60.RS	5019222	SK.SE.60.RS	5019220	DL.K.SE.60.RS	5019224	RA.DB.K.SE.60.RS	5019228

Rehau NML 13 mm
S735, Brillant, Thermo-Design, Brillant-Design, Basic-Design UEB 20 mm

EL		SK		DL		RA	
EL.K.SE.60.LS	5019223	SK.SE.60.LS	5019221	DL.K.SE.60.LS	5019225	RA.DB.K.SE.60.LS	5019229
EL.K.SE.60.RS	5019222	SK.SE.60.RS	5019220	DL.K.SE.60.RS	5019224	RA.DB.K.SE.60.RS	5019228

Roplasto NML 13 mm
7001 AD, 7001 MD UEB 22 mm

EL		SK		DL		RA	
EL.K.SE.205.LS	4938647	SK.SE.205.LS	4932603	DL.K.SE.205.LS	4932638	RA.DB.K.SE.205.LS	4932697
EL.K.SE.205.RS	4938646	SK.SE.205.RS	4932601	DL.K.SE.205.RS	4932634	RA.DB.K.SE.205.RS	4932696
		SK.SE.E.205.LS	5022373				
		SK.SE.E.205.RS	5022372				

Salamander NML 13 mm
2D / 3D / MD / Streamline UEB 20 mm

EL		SK		DL		RA	
EL.K.SE.28.LS	4938665	SK.SE.28.LS	4935095	DL.K.SE.28.LS	4935083	RA.DB.K.SE.28.LS	4935085
EL.K.SE.28.RS	4938664	SK.SE.28.RS	4935090	DL.K.SE.28.RS	4935082	RA.DB.K.SE.28.RS	4935084
		SK.SE.E.28.LS	5022361				
		SK.SE.E.28.RS	5022360				

Salamander NML 13 mm
bluEvolution 82 / 92 UEB 20 mm

EL		SK		DL		RA	
EL.K.SE.28.LS	4938665	SK.SE.28.LS	4935095	DL.K.SE.28.LS	4935083	RA.DB.K.SE.28.LS	4935085
EL.K.SE.28.RS	4938664	SK.SE.28.RS	4935090	DL.K.SE.28.RS	4935082	RA.DB.K.SE.28.RS	4935084
		SK.SE.E.28.LS	5022361				
		SK.SE.E.28.RS	5022360				

Schüco NML 13 mm
Corona 60 UEB 20 mm

EL		SK		DL		RA	
EL.K.SE.161.LS	4938661	SK.SE.161.LS	4932614	DL.K.SE.161.LS	4932652	RA.DB.K.SE.161.LS	4932701
EL.K.SE.161.RS	4938660	SK.SE.161.RS	4932611	DL.K.SE.161.RS	4932650	RA.DB.K.SE.161.RS	4932700
EL.K.SE.3.161.LS	5010639	SK.SE.E.161.LS	5022367	DL.K.SE.3.161.LS	5010664		
EL.K.SE.3.161.RS	5010638	SK.SE.E.161.RS	5022366	DL.K.SE.3.161.RS	5010650		

Schüco NML 13 mm
Corona 70 / Corana SI 82 UEB 20 mm

EL		SK		DL		RA	
EL.K.SE.166.LS	4938490	SK.SE.166.LS	4930374	DL.K.SE.166.LS	4930376	RA.DB.K.SE.166.LS	4930378
EL.K.SE.166.RS	4938489	SK.SE.166.RS	4930373	DL.K.SE.166.RS	4930375	RA.DB.K.SE.166.RS	4930377
		SK.SE.E.166.LS	5022371				
		SK.SE.E.166.RS	5022370				

Schüco NML 13 mm
Livlng UEB 20 mm

EL		SK		DL		RA	
EL.K.SE.166.LS	4938490	SK.SE.166.LS	4930374	DL.K.SE.166.LS	4930376	RA.DB.K.SE.166.LS	4930378
EL.K.SE.166.RS	4938489	SK.SE.166.RS	4930373	DL.K.SE.166.RS	4930375	RA.DB.K.SE.166.RS	4930377
		SK.SE.E.166.LS	5022371				
		SK.SE.E.166.RS	5022370				

2

Trocal (Profine) NML 13 mm
76 AD, 76 MD UEB 20 mm

EL		SK		DL		RA	
EL.K.SE.205.LS	4938647	SK.SE.205.LS	4932603	DL.K.SE.205.LS	4932638	RA.DB.K.SE.205.LS	4932697
EL.K.SE.205.RS	4938646	SK.SE.205.RS	4932601	DL.K.SE.205.RS	4932634	RA.DB.K.SE.205.RS	4932696

Trocal (Profine) NML 13 mm
InnoNova 2000 / 88+ UEB 20 mm

EL		SK		DL		RA	
EL.H.SE.25-13.Z.LS	4938674	SH.SE.25-13.Z.LS	4932889	DL.H.SE.25-13.Z.LS	4932882	RA.DB.H.SE.25-13.LS	4932868
EL.H.SE.25-13.Z.RS	4938675	SH.SE.25-13.Z.RS	4932886	DL.H.SE.25-13.Z.RS	4932880	RA.DB.H.SE.25-13.RS	4932867

Trocal (Profine) NML 13 mm
InnoNova A5 / M5 UEB 20 mm

EL		SK		DL		RA	
EL.K.SE.226.LS	4938641	SK.SE.226.LS	4931887	DL.K.SE.226.LS	4931891	RA.DB.K.SE.226.LS	4931903
EL.K.SE.226.RS	4938640	SK.SE.226.RS	4931886	DL.K.SE.226.RS	4931890	RA.DB.K.SE.226.RS	4931902
		SK.SE.E.226.LS	9931887				
		SK.SE.E.226.RS	9931886				

Veka NML 13 mm
Softline 70 AD/MD, Softline 82 AD/MD, Softline 76 AD/MD Artline UEB 20 mm

EL		SK		DL		RA	
EL.K.SE.152.LS	4938642	SK.SE.152.LS	4931885	DL.K.SE.152.LS	4931889	RA.DB.K.SE.152.LS	4931901
EL.K.SE.152.RS	4938496	SK.SE.152.RS	4931884	DL.K.SE.152.RS	4931888	RA.DB.K.SE.152.RS	4931869
EL.K.SE.3.152.LS	4997657	SK.SE.E.152.LS	5022365	DL.K.SE.3.152.LS	4997682		
EL.K.SE.3.152.RS	4997656	SK.SE.E.152.RS	5022364	DL.K.SE.3.152.RS	4997658		

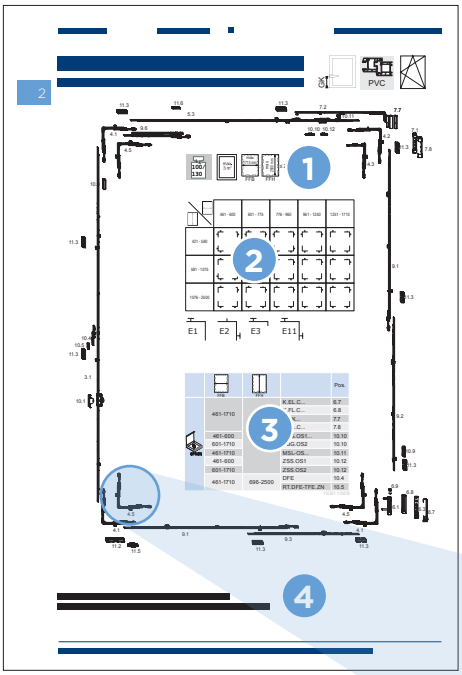
Lists of fittings

Explanation of fitting lists

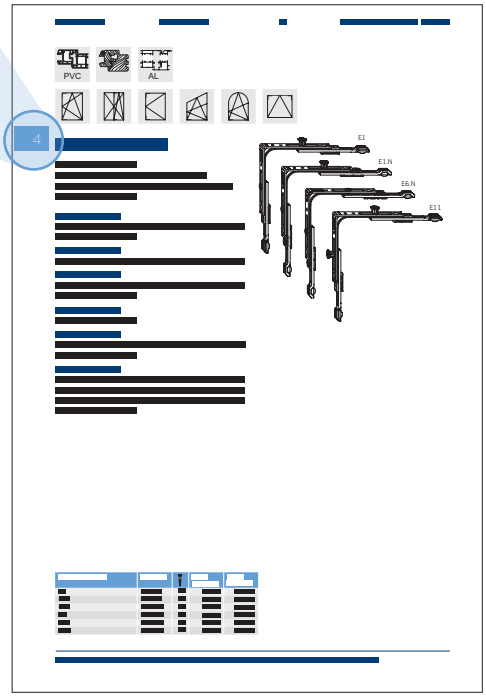
The fitting lists consist of two pages each. The first page shows the visual fitting composition whereas the second page includes a possible fitting configuration in the shape of a tabular list.

The processing details regarding burglary-resistant window units can be gathered from the DIN EN 1627 - 1630 system documentation. The lists of fittings in this catalogue are merely intended to give application examples. Please get in touch with your Winkhaus contact partner.

Our register system allows you to quickly allocate the listed component to the item in the fitting overview drawing.

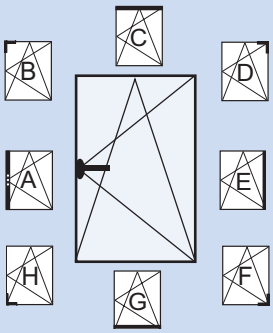


4.5



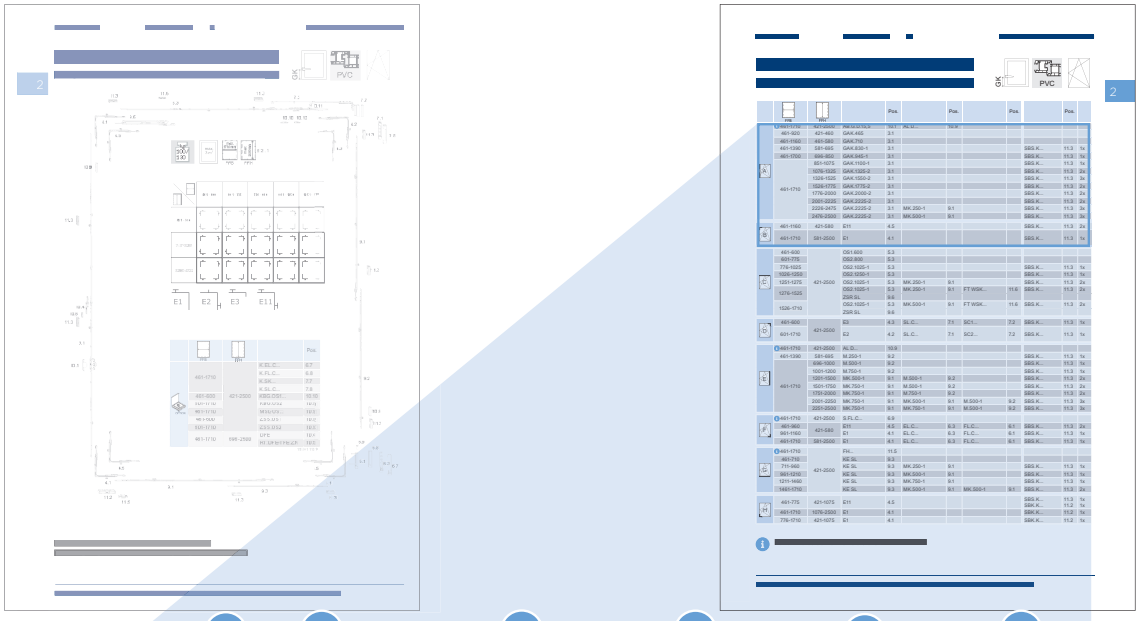
1. Maximum application ranges
2. Overview min./max. dimensions
3. Optional components
4. Applied distance between locking points

Explanation of sub-areas



For the tabular list of fitting parts the window or door sash is divided into eight sections (A-H). The sections include the four sides and four corners of the unit.

The window or door unit is divided into 8 sections (4 corners, 4 sides). In order to determine a complete fitting set of a certain sash size, it is necessary to ascertain items from all the sections (1). In any section (1) it is possible to read the items to be used (4) and their position numbers (5), depending on the application ranges FFB (2) and FFH (3). Furthermore the types of frame parts (6) and their position numbers (7) and amounts (8) are added. The position numbers refer to the location of the component within the fitting list on the first page.



	2 FFB	3 FFH	4	5 Pos.	4	5 Pos.	4	5 Pos.	6	7 Pos.	8
9	ⓘ 461-1710	421-2500	AB.G.D.15,5	10.1	AL D...	10.9					
	461-920	421-460	GAK.465	3.1							
	461-1160	461-580	GAK.710	3.1							
	461-1390	581-695	GAK.830-1	3.1					SBS.K...	11.3	1x
	461-1700	696-850	GAK.945-1	3.1					SBS.K...	11.3	1x
A	461-1710	851-1075	GAK.1100-1	3.1					SBS.K...	11.3	1x
		1076-1325	GAK.1325-2	3.1					SBS.K...	11.3	2x
		1326-1525	GAK.1550-2	3.1					SBS.K...	11.3	3x
		1526-1775	GAK.1775-2	3.1					SBS.K...	11.3	2x
		1776-2000	GAK.2000-2	3.1					SBS.K...	11.3	2x
1		2001-2225	GAK.2225-2	3.1					SBS.K...	11.3	2x
		2226-2475	GAK.2225-2	3.1	MK.250-1	9.1			SBS.K...	11.3	3x
		2476-2500	GAK.2225-2	3.1	MK.500-1	9.1			SBS.K...	11.3	3x
B	461-1160	421-580	E11	4.5					SBS.K...	11.3	2x
	461-1710	581-2500	E1	4.1					SBS.K...	11.3	1x

1 Section (A-H)

2 Sash rebate width (FFB) (application ranges on items level)

3 Sash rebate height (FFH) (application ranges on items level)

4 Items to be used

5 Position number of items

6 Type of frame part

7 Position number of frame parts

8 Number of frame parts

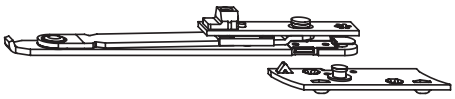
9 ⓘ marks a line with items that are always used, regardless of size

Applying additional components for patio doors and windows subject to particular stress

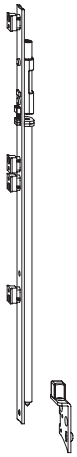
2

The fittings lists document the versions up to a sash weight of 100 kg without optional (greyed out) additional components.
However, in case of heavier sash weights or special applications it is necessary to use additional components.

The instructions given on these pages apply to all fitting compositions if one or several of the following applications occur.



Turn limiter DB.SE.1 + frame connection RA.DB...SE



Sash hinge rail FLS.SE + Adapter AP...SE

Applications:

Depending on weight

If the sash exceeds a weight of 100 kg, it is mandatory to use sash hinge rail FLS.SE and a turn limiter DB.SE.1. In this way the admissible sash weight can be enhanced to a maximum of 150 kg.

Depending on reveal

If the reveal depth is below a value of 120 mm, it is necessary to use a turn limiter DB.SE.1 in order to prevent the sash from colliding with the masonry.

Depending on dimension

If the sash rebate width (FFB) exceeds 1250 mm, it is vital to use a turn limiter DB.SE.1.

As a passage

If the unit in question serves as a passageway, a sash hinge rail FLS.SE and a turn limiter DB.SE.1 must be used. In this way sash weights of 150 kg are possible.

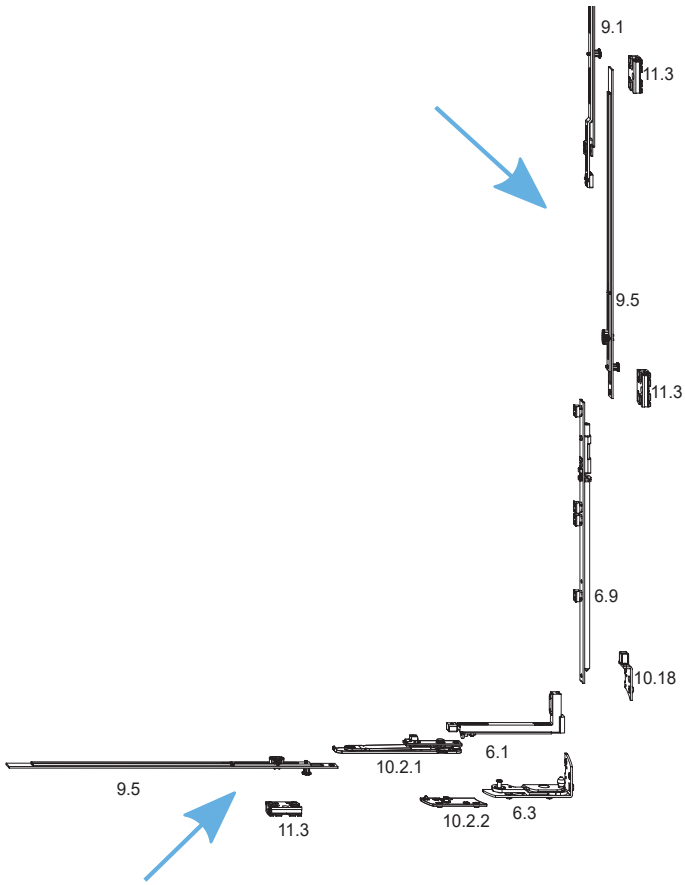
The sash hinge rail is combined with an adapter plate AP...SE.
The turn limiter is combined with a frame connection RA.DB...SE.
For installation please observe the instructions.

Applying additional components for patio doors and windows subject to particular stress

If sash hinge rail is used:

In case of burglary-resistant units according to RC2 / RC2 N the fitting configuration will change for areas E and F.

	FFB	FFH		Pos.		Pos.		Pos.		Pos.	
E	601-1475	721-2500	FLS.SE	6.9	AP.K.SE...	10.18					
	601-1475	721-970	V.AK.450-1	9.5					SBS.K...	11.3	1x
		971-1220	MK.250-1	9.1	V.AK.450-1	9.5			SBS.K...	11.3	2x
		1221-1470	MK.500-1	9.1	V.AK.450-1	9.5			SBS.K...	11.3	2x
		1471-1720	MK.750-1	9.1	V.AK.450-1	9.5			SBS.K...	11.3	2x
		1721-1970	MK.500-1	9.1	MK.500-1	9.1	V.AK.450-1	9.5	SBS.K...	11.3	3x
		1971-2220	MK.750-1	9.1	MK.500-1	9.1	V.AK.450-1	9.5	SBS.K...	11.3	3x
		2221-2470	MK.750-1	9.1	MK.750-1	9.1	V.AK.450-1	9.5	SBS.K...	11.3	3x
		2471-2500	MK.750-1	9.1	MK.500-1	9.1	MK.500-1	9.1	SBS.K...	11.3	4x
			V.AK.450-1	9.5							
F	601-1475	721-2500	FL.SE.1	6.1	EL.K.SE...	6.3					



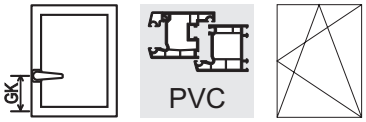
If turn limiter is used:

Modification of area G:

	FFB	FFH		Pos.		Pos.		Pos.		Pos.	
G	601-1475	721-2500	FH...	11.5	DB.SE.1	10.2.1	RA.DB.K.SE...	10.2.2			
	601-850		V.AK.450-1	9.5					SBS.K...	11.3	1x
	851-1100		V.AK.450-1	9.5	MK.250-1	9.1			SBS.K...	11.3	2x
	1101-1350		V.AK.450-1	9.5	MK.500-1	9.1			SBS.K...	11.3	2x
	1351-1475		V.AK.450-1	9.5	MK.750-1	9.1			SBS.K...	11.3	2x

Turn-tilt fitting – constant handle position

Basic equipment



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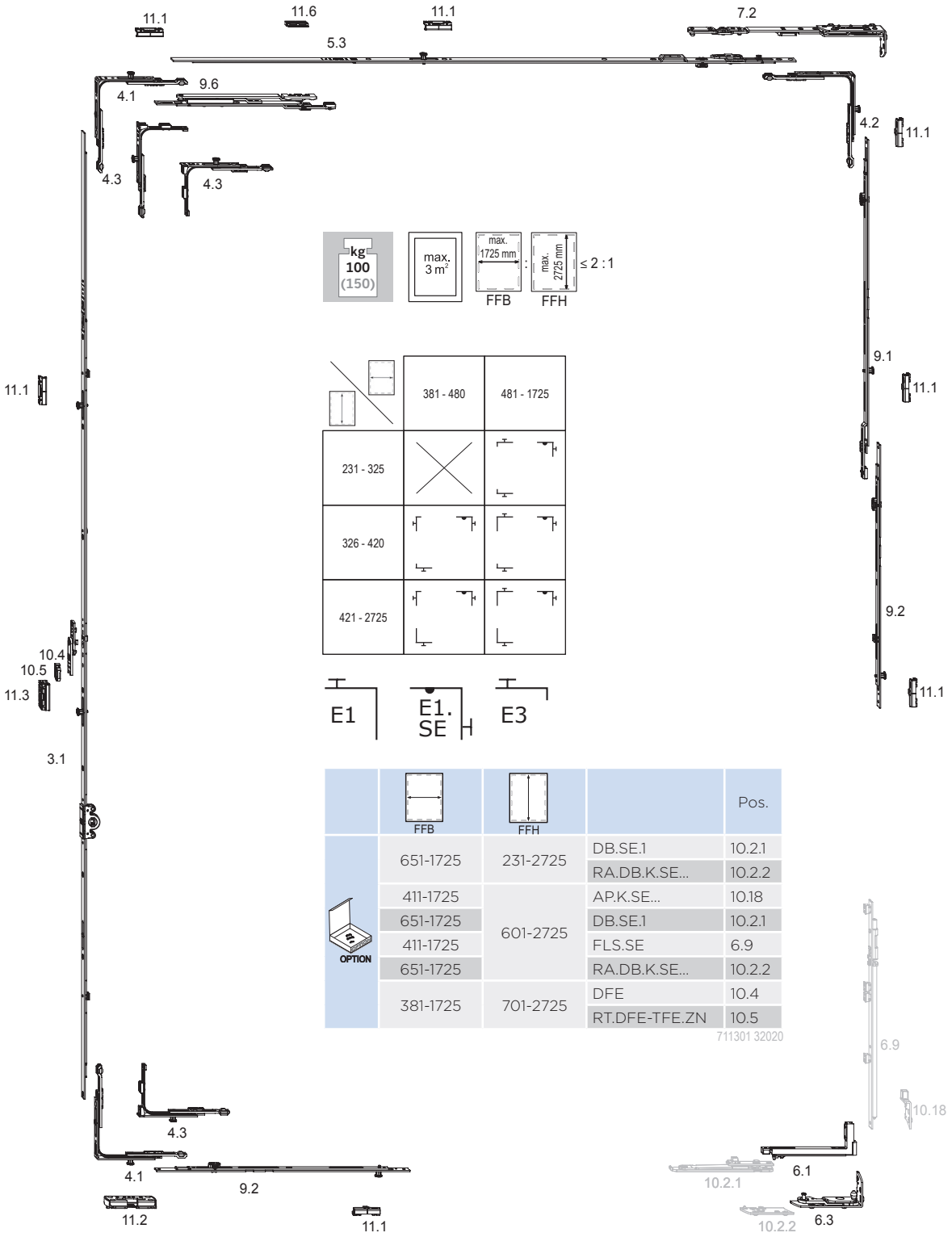


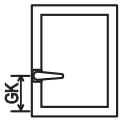
The illustrated distance between locking points is 800 mm.

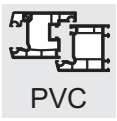
The distances between locking points must be agreed with the system supplier.

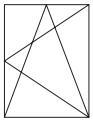
The use of the optional components shown in grey (sash hinge rail, turn limiter etc.) depends not only on heavier sash weights but also on the installation situation, for instance. A precise description of when the use of these components is mandatory can be found in the summary of application areas at the beginning of the chapter Lists of Fittings or in the installation instructions.

Turn-tilt fitting – constant handle position

Basic equipment



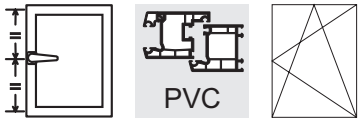




	FFB	FFH		Pos.		Pos.		Pos.		Pos.	
A	481-650	231-325	GAK.465	3.1			GK = 114				
	381-840	326-420	GAK.465	3.1			GK = 114				
	381-920	421-460	GAK.465	3.1			GK = 210				
	381-1400	461-700	GAK.710	3.1			GK = 210				
	381-1700	701-850	GAK.945-1	3.1			GK = 260		SBS.K...	11.3	1x
	381-1725	851-1100	GAK.1100-1	3.1			GK = 375		SBS.K...	11.3	1x
		1101-1325	GAK.1325-1	3.1			GK = 550		SBS.K...	11.3	1x
		1326-1550	GAK.1550-1	3.1			GK = 550		SBS.K...	11.3	1x
		1551-1775	GAK.1775-2	3.1			GK = 550		SBA.K... SBS.K...	11.1 11.3	1x 1x
		1776-2000	GAK.2000-2	3.1			GK = 1050		SBS.K... SBA.K...	11.3 11.1	1x 1x
		2001-2225	GAK.2225-2	3.1			GK = 1050		SBS.K... SBA.K...	11.3 11.1	1x 1x
		2226-2475	GAK.2225-2	3.1	MK.250-1	9.1	GK = 1050		SBA.K... SBS.K...	11.1 11.3	2x 1x
		2476-2725	GAK.2225-2	3.1	MK.500-1	9.1	GK = 1050		SBA.K... SBS.K...	11.1 11.3	2x 1x
B	381-480	326-2725	E3	4.3					SBA.K...	11.1	1x
	481-650	231-325	E3	4.3					SBA.K...	11.1	1x
	481-1725	326-2725	E1	4.1					SBA.K...	11.1	1x
C	381-550	326-2725	OS.SE.550	5.3							
	481-550	231-325	OS.SE.550	5.3							
	551-800	231-2725	OS.SE.800	5.3							
	801-1025		OS.SE.1025-1	5.3					SBA.K...	11.1	1x
	1026-1250		OS.SE.1250-1	5.3					SBA.K...	11.1	1x
	1251-1475		OS.SE.1250-1	5.3	MK.250-0	9.1			SBA.K...	11.1	1x
	1476-1500		OS.SE.1025-1	5.3	MK.250-1	9.1	ZSR SL	9.6	FT WSK... SBA.K...	11.6 11.1	1x 2x
	1501-1725		OS.SE.1250-1	5.3	MK.250-1	9.1	ZSR SL	9.6	FT WSK... SBA.K...	11.6 11.1	1x 2x
D	381-1725	326-2725	E1.SE	4.2	SK.SE...	7.2			SBA.K...	11.1	1x
	481-650	231-325	E1.SE	4.2	SK.SE...	7.2			SBA.K...	11.1	1x
E	381-1725	861-1285	M.500-1	9.2					SBA.K...	11.1	1x
		1286-1535	M.750-1	9.2					SBA.K...	11.1	1x
		1536-1785	MK.500-1	9.1	M.500-1	9.2			SBA.K...	11.1	2x
		1786-2035	MK.750-1	9.1	M.500-1	9.2			SBA.K...	11.1	2x
		2036-2285	MK.750-1	9.1	M.750-1	9.2			SBA.K...	11.1	2x
		2286-2535	MK.750-1	9.1	MK.500-1	9.1	M.500-1	9.2	SBA.K...	11.1	3x
		2536-2725	MK.750-1	9.1	MK.750-1	9.1	M.500-1	9.2	SBA.K...	11.1	3x
F	481-650	231-325	FL.SE.1	6.1	EL.K.SE...	6.3					
	381-1725	326-2725	FL.SE.1	6.1	EL.K.SE...	6.3					
G	841-1250	231-2725	M.500-1	9.2					SBA.K...	11.1	1x
	1251-1500		M.750-1	9.2					SBA.K...	11.1	1x
	1501-1725		MK.500-1	9.1	M.500-1	9.2			SBA.K...	11.1	2x
H	381-840	326-420	E3	4.3					SBK.K...	11.2	1x
	381-1725	421-2725	E1	4.1					SBK.K...	11.2	1x
	481-650	231-325	E3	4.3					SBK.K...	11.2	1x

Turn-tilt fitting – central handle position

Basic equipment



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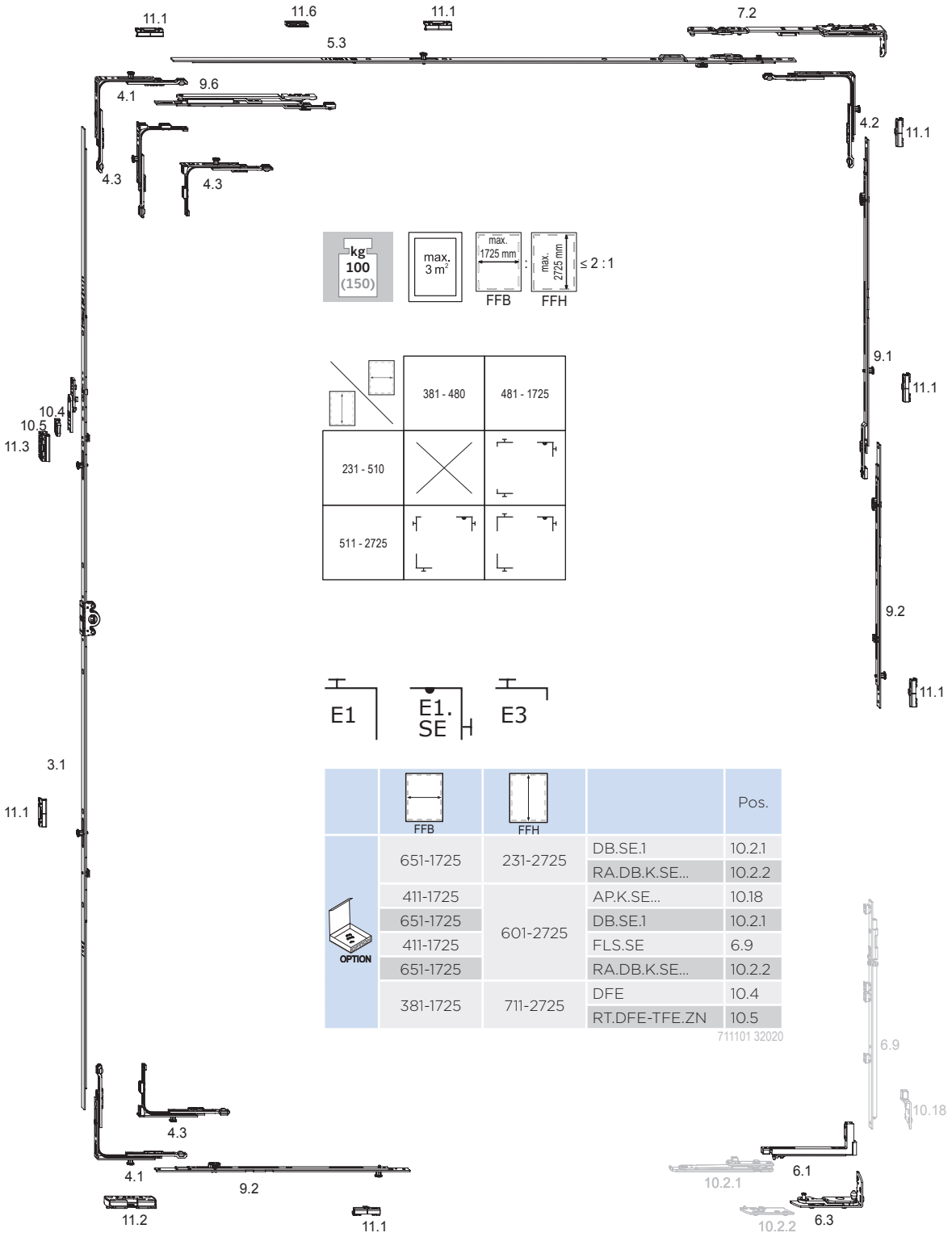


	FFB	FFH		Pos.
OPTION	651-1725	231-2725	DB.SE.1	10.2.1
			RA.DB.K.SE...	10.2.2
	411-1725	601-2725	AP.K.SE...	10.18
	651-1725		DB.SE.1	10.2.1
	411-1725		FLS.SE	6.9
	651-1725		RA.DB.K.SE...	10.2.2
	381-1725	711-2725	DFE	10.4
			RT.DFE-TFE.ZN	10.5

711101 32020

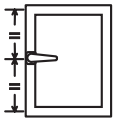
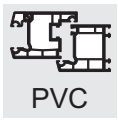
The illustrated distance between locking points is 800 mm.

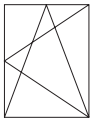
The distances between locking points must be agreed with the system supplier.

The use of the optional components shown in grey (sash hinge rail, turn limiter etc.) depends not only on heavier sash weights but also on the installation situation, for instance. A precise description of when the use of these components is mandatory can be found in the summary of application areas at the beginning of the chapter Lists of Fittings or in the installation instructions.

Turn-tilt fitting – central handle position

Basic equipment

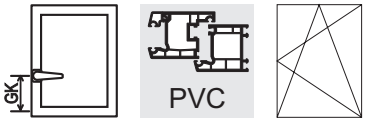





	FFB	FFH		Pos.		Pos.		Pos.		Pos.	
A	481-650	231-325	GAK.465	3.1			GK = 114				
	481-1020	326-510	GAM.800	3.1							
	381-1420	511-710	GAM.800	3.1							
	381-1725	711-980	GAM.1050-1	3.1					SBA.K... SBS.K...	11.1 11.3	1x 1x
		981-1400	GAM.1400-1	3.1					SBS.K...	11.3	1x
		1401-1800	GAM.1800-2	3.1					SBS.K... SBA.K...	11.3 11.1	1x 1x
		1801-2000	GAM.2300-3	3.1					SBA.K... SBS.K...	11.1 11.3	2x 1x
		2001-2300	GAM.2300-3	3.1					SBS.K... SBA.K...	11.3 11.1	1x 2x
		2301-2725	GAM.2300-3	3.1	MK.250-1	9.1	MK.250-1	9.1	SBS.K... SBA.K...	11.3 11.1	1x 4x
B	381-480	511-2725	E3	4.3					SBA.K...	11.1	1x
	481-1020	231-510	E3	4.3					SBA.K...	11.1	1x
	481-1725	511-2725	E1	4.1					SBA.K...	11.1	1x
C	381-550	511-2725	OS.SE.550	5.3							
	481-550	231-510	OS.SE.550	5.3							
	551-800	231-2725	OS.SE.800	5.3							
	801-1025		OS.SE.1025-1	5.3					SBA.K...	11.1	1x
	1026-1250		OS.SE.1250-1	5.3					SBA.K...	11.1	1x
	1251-1475		OS.SE.1250-1	5.3	MK.250-0	9.1			SBA.K...	11.1	1x
	1476-1500		OS.SE.1025-1	5.3	MK.250-1	9.1	ZSR SL	9.6	FT WSK... SBA.K...	11.6 11.1	1x 2x
	1501-1725		OS.SE.1250-1	5.3	MK.250-1	9.1	ZSR SL	9.6	FT WSK... SBA.K...	11.6 11.1	1x 2x
D	381-1725	511-2725	E1.SE	4.2	SK.SE...	7.2			SBA.K...	11.1	1x
	481-1020	231-510	E1.SE	4.2	SK.SE...	7.2			SBA.K...	11.1	1x
E	381-1725	861-1285	M.500-1	9.2					SBA.K...	11.1	1x
		1286-1535	M.750-1	9.2					SBA.K...	11.1	1x
		1536-1785	MK.500-1	9.1	M.500-1	9.2			SBA.K...	11.1	2x
		1786-2035	MK.750-1	9.1	M.500-1	9.2			SBA.K...	11.1	2x
		2036-2285	MK.750-1	9.1	M.750-1	9.2			SBA.K...	11.1	2x
		2286-2535	MK.750-1	9.1	MK.500-1	9.1	M.500-1	9.2	SBA.K...	11.1	3x
		2536-2725	MK.750-1	9.1	MK.750-1	9.1	M.500-1	9.2	SBA.K...	11.1	3x
F	481-1020	231-510	FL.SE.1	6.1	EL.K.SE...	6.3					
	381-1725	511-2725	FL.SE.1	6.1	EL.K.SE...	6.3					
G	841-1250	231-2725	M.500-1	9.2					SBA.K...	11.1	1x
	1251-1500		M.750-1	9.2					SBA.K...	11.1	1x
	1501-1725		MK.500-1	9.1	M.500-1	9.2			SBA.K...	11.1	2x
H	381-1725	511-2725	E1	4.1					SBK.K...	11.2	1x
	481-1020	231-510	E3	4.3					SBK.K...	11.2	1x

Turn-tilt fitting – constant handle position

Suitable for burglary-resistant windows RC2 / RC2 N



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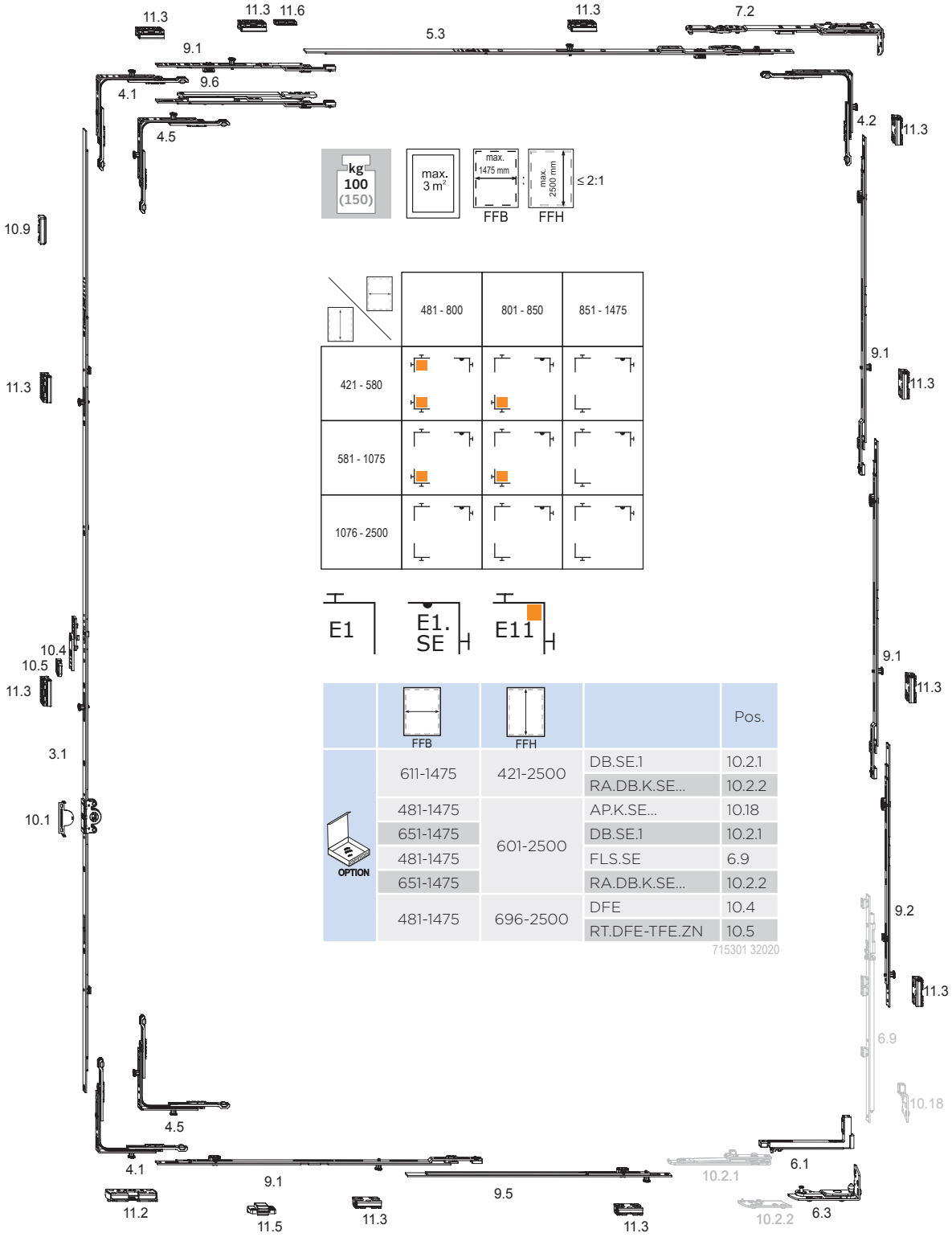

	FFB	FFH		Pos.
OPTION	611-1475	421-2500	DB.SE.1	10.2.1
			RA.DB.K.SE...	10.2.2
	481-1475	601-2500	AP.K.SE...	10.18
	651-1475		DB.SE.1	10.2.1
	481-1475		FLS.SE	6.9
	651-1475		RA.DB.K.SE...	10.2.2
	481-1475	696-2500	DFE	10.4
			RT.DFE-TFE.ZN	10.5

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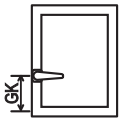
The illustrated distance between locking points is 800 mm.

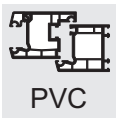
The distances between locking points must be agreed with the system supplier.

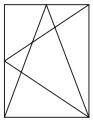
The use of the optional components shown in grey (sash hinge rail, turn limiter etc.) depends not only on heavier sash weights but also on the installation situation, for instance. A precise description of when the use of these components is mandatory can be found in the summary of application areas at the beginning of the chapter Lists of Fittings or in the installation instructions.

Turn-tilt fitting – constant handle position

Suitable for burglary-resistant windows RC2 / RC2 N







	FFB	FFH		Pos.		Pos.		Pos.		Pos.	
	ℹ 481-1475	421-2500	AB.G.D.15,5	10.1	AL D...	10.9					
	481-920	421-460	GAK.465	3.1			GK = 210				
	481-1160	461-580	GAK.710	3.1			GK = 210				
	481-1390	581-695	GAK.830-1	3.1			GK = 260		SBS.K...	11.3	1x
A	481-1475	696-850	GAK.945-1	3.1			GK = 260		SBS.K...	11.3	1x
		851-1075	GAK.1100-1	3.1			GK = 375		SBS.K...	11.3	1x
		1076-1325	GAK.1325-2	3.1			GK = 550		SBS.K...	11.3	2x
		1326-1525	GAK.1550-2	3.1			GK = 550		SBS.K...	11.3	3x
		1526-1775	GAK.1775-2	3.1			GK = 550		SBS.K...	11.3	2x
		1776-2000	GAK.2000-2	3.1			GK = 1050		SBS.K...	11.3	2x
		2001-2225	GAK.2225-2	3.1			GK = 1050		SBS.K...	11.3	2x
		2226-2475	GAK.2225-2	3.1	MK.250-1	9.1	GK = 1050		SBS.K...	11.3	3x
		2476-2500	GAK.2225-2	3.1	MK.500-1	9.1	GK = 1050		SBS.K...	11.3	3x
B	481-800	421-580	E11	4.5					SBS.K...	11.3	2x
	481-1475	581-2500	E1	4.1					SBS.K...	11.3	1x
	801-1160	421-580	E1	4.1					SBS.K...	11.3	1x
C	481-550	421-2500	OS.SE.550	5.3							
	551-800		OS.SE.800	5.3							
	801-1025		OS.SE.1025-1	5.3					SBS.K...	11.3	1x
	1026-1275		OS.SE.1025-1	5.3	MK.250-1	9.1			SBS.K...	11.3	2x
	1276-1475		OS.SE.1025-1	5.3	MK.250-1	9.1	ZSR SL	9.6	FT WSK... SBS.K...	11.6 11.3	1x 2x
D	481-1475	421-2500	E1.SE	4.2	SK.SE...	7.2			SBS.K...	11.3	1x
E	481-1170	421-585	M.250-1	9.2					SBS.K...	11.3	1x
	481-1475	586-1000	M.500-1	9.2					SBS.K...	11.3	1x
		1001-1200	M.750-1	9.2					SBS.K...	11.3	1x
		1201-1550	MK.500-1	9.1	M.500-1	9.2			SBS.K...	11.3	2x
		1551-1720	MK.750-1	9.1	M.500-1	9.2			SBS.K...	11.3	2x
		1721-1970	MK.500-1	9.1	MK.500-1	9.1	M.500-1	9.2	SBS.K...	11.3	3x
		1971-2220	MK.750-1	9.1	MK.500-1	9.1	M.500-1	9.2	SBS.K...	11.3	3x
		2221-2470	MK.750-1	9.1	MK.750-1	9.1	M.500-1	9.2	SBS.K...	11.3	3x
		2471-2500	MK.750-1 M.500-1	9.1 9.2	MK.500-1	9.1	MK.500-1	9.1	SBS.K...	11.3	4x
F	481-1475	421-2500	FL.SE.1	6.1	EL.K.SE...	6.3					
G	ℹ 481-1475	421-2500	FH...	11.5							
	481-850		V.AK.450-1	9.5					SBS.K...	11.3	1x
	851-1100		V.AK.450-1	9.5	MK.250-1	9.1			SBS.K...	11.3	2x
	1101-1350		V.AK.450-1	9.5	MK.500-1	9.1			SBS.K...	11.3	2x
	1351-1475		V.AK.450-1	9.5	MK.750-1	9.1			SBS.K...	11.3	2x
H	481-850	421-1075	E11	4.5					SBS.K... SBK.K...	11.3 11.2	1x 1x
	481-1475	1076-2500	E1	4.1					SBK.K...	11.2	1x
	851-1475	421-1075	E1	4.1					SBK.K...	11.2	1x

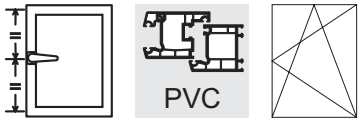
ℹ For system-specific details please see the RC2 system documents.

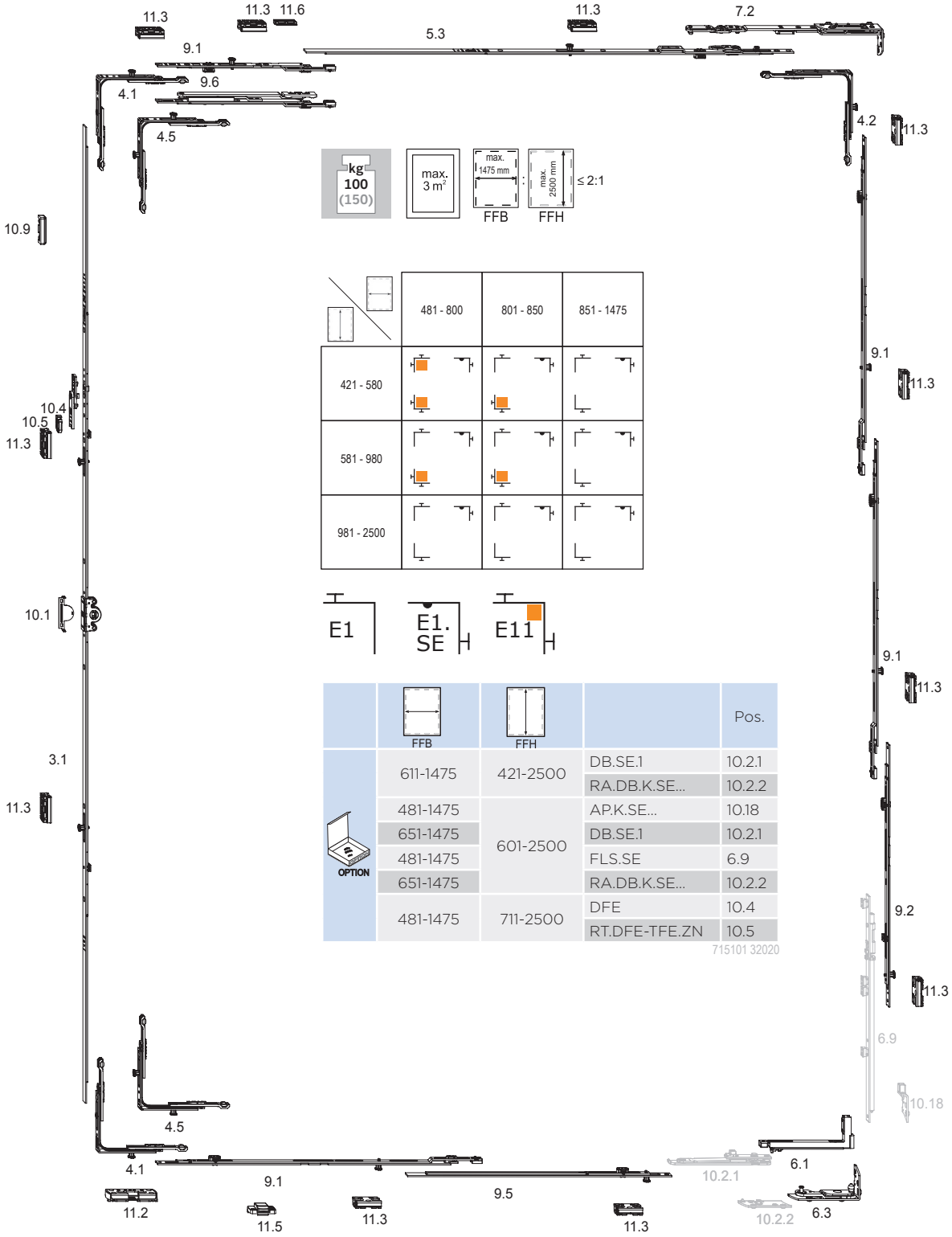
ℹ marks a line with items that are always used, regardless of size

2

Turn-tilt fitting – central handle position

Suitable for burglary-resistant windows RC2 / RC2 N





	FFB	FFH		Pos.
OPTION	611-1475	421-2500	DB.SE.1	10.2.1
			RA.DB.K.SE...	10.2.2
	481-1475	601-2500	AP.K.SE...	10.18
	651-1475		DB.SE.1	10.2.1
	481-1475		FLS.SE	6.9
	651-1475		RA.DB.K.SE...	10.2.2
	481-1475	711-2500	DFE	10.4
			RT.DFE-TFE.ZN	10.5

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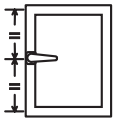
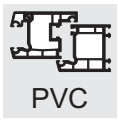
The illustrated distance between locking points is 800 mm.

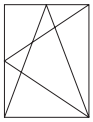
The distances between locking points must be agreed with the system supplier.

The use of the optional components shown in grey (sash hinge rail, turn limiter etc.) depends not only on heavier sash weights but also on the installation situation, for instance. A precise description of when the use of these components is mandatory can be found in the summary of application areas at the beginning of the chapter Lists of Fittings or in the installation instructions.

Turn-tilt fitting – central handle position

Suitable for burglary-resistant windows RC2 / RC2 N



	FFB	FFH		Pos.		Pos.		Pos.		Pos.	
A	ℹ 481-1475	421-2500	AB.G.D.15,5	10.1	AL D...	10.9					
	481-920	421-460	GAK.465	3.1			GK = 210				
	481-1160	461-580	GAK.710	3.1			GK = 210				
	481-1420	581-710	GAK.830-1	3.1			GK = 260		SBS.K...	11.3	1x
	481-1475	711-980	GAM.1050-1	3.1					SBS.K...	11.3	2x
		981-1400	GAM.1400-2	3.1					SBS.K...	11.3	2x
		1401-1800	GAM.1800-2	3.1					SBS.K...	11.3	2x
		1801-2300	GAM.2300-3	3.1					SBS.K...	11.3	3x
		2301-2500	GAM.1800-2	3.1	MK.500-1	9.1	MK.500-1	9.1	SBS.K...	11.3	4x
B	481-800	421-580	E11	4.5					SBS.K...	11.3	2x
	481-1475	581-2500	E1	4.1					SBS.K...	11.3	1x
	801-1160	421-580	E1	4.1					SBS.K...	11.3	1x
C	481-550	421-2500	OS.SE.550	5.3							
	551-800		OS.SE.800	5.3							
	801-1025		OS.SE.1025-1	5.3					SBS.K...	11.3	1x
	1026-1275		OS.SE.1025-1	5.3	MK.250-1	9.1			SBS.K...	11.3	2x
	1276-1475		OS.SE.1025-1	5.3	MK.250-1	9.1	ZSR SL	9.6	FT WSK... SBS.K...	11.6 11.3	1x 2x
D	481-1475	421-2500	E1.SE	4.2	SK.SE...	7.2			SBS.K...	11.3	1x
E	481-1170	421-585	M.250-1	9.2					SBS.K...	11.3	1x
	481-1475	586-1000	M.500-1	9.2					SBS.K...	11.3	1x
		1001-1200	M.750-1	9.2					SBS.K...	11.3	1x
		1201-1550	MK.500-1	9.1	M.500-1	9.2			SBS.K...	11.3	2x
		1551-1720	MK.750-1	9.1	M.500-1	9.2			SBS.K...	11.3	2x
		1721-1970	MK.500-1	9.1	MK.500-1	9.1	M.500-1	9.2	SBS.K...	11.3	3x
		1971-2220	MK.750-1	9.1	MK.500-1	9.1	M.500-1	9.2	SBS.K...	11.3	3x
		2221-2470	MK.750-1	9.1	MK.750-1	9.1	M.500-1	9.2	SBS.K...	11.3	3x
		2471-2500	MK.750-1 M.500-1	9.1 9.2	MK.500-1	9.1	MK.500-1	9.1	SBS.K...	11.3	4x
F	481-1475	421-2500	FL.SE.1	6.1	EL.K.SE...	6.3					
G	ℹ 481-1475	421-2500	FH...	11.5							
	481-850		V.AK.450-1	9.5					SBS.K...	11.3	1x
	851-1100		V.AK.450-1	9.5	MK.250-1	9.1			SBS.K...	11.3	2x
	1101-1350		V.AK.450-1	9.5	MK.500-1	9.1			SBS.K...	11.3	2x
	1351-1475		V.AK.450-1	9.5	MK.750-1	9.1			SBS.K...	11.3	2x
H	481-850	421-980	E11	4.5					SBS.K... SBK.K...	11.3 11.2	1x 1x
	481-1475	981-2500	E1	4.1					SBK.K...	11.2	1x
	851-1475	421-980	E1	4.1					SBK.K...	11.2	1x

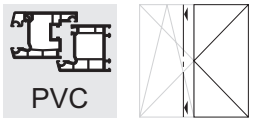
ℹ For system-specific details please see the RC2 system documents.

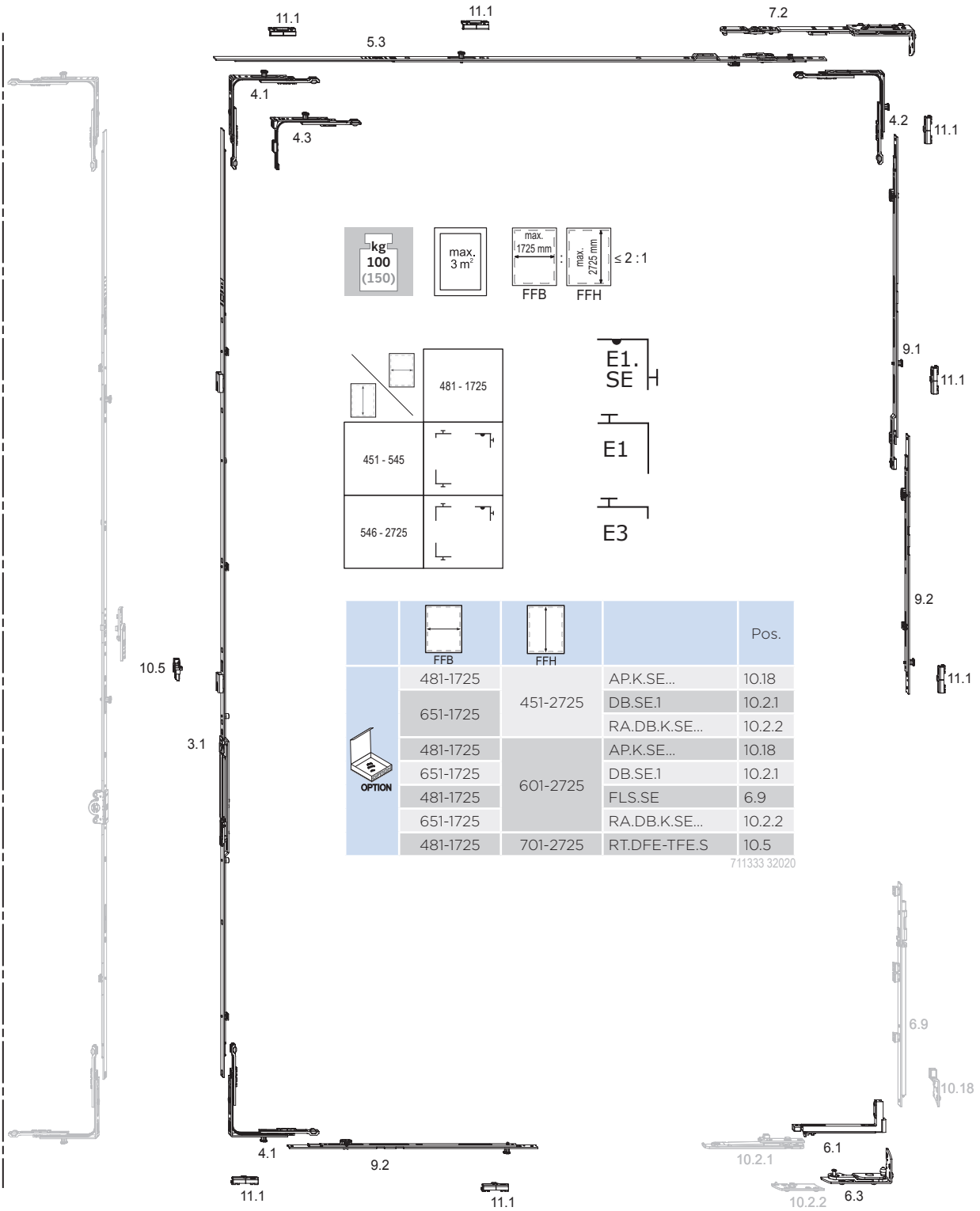
ℹ marks a line with items that are always used, regardless of size

Turn double sash fitting – constant handle position

Basic equipment with circumferential locking points

2





	FFB	FFH		Pos.
OPTION	481-1725	451-2725	AP.K.SE...	10.18
	651-1725		DB.SE.1	10.2.1
			RA.DB.K.SE...	10.2.2
	481-1725	601-2725	AP.K.SE...	10.18
	651-1725		DB.SE.1	10.2.1
	481-1725		FLS.SE	6.9
	651-1725		RA.DB.K.SE...	10.2.2
	481-1725	701-2725	RT.DFE-TFE.S	10.5

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The illustrated distance between locking points is 800 mm.

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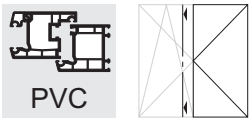
The use of the optional components shown in grey (sash hinge rail, turn limiter etc.) depends not only on heavier sash weights but also on the installation situation, for instance. A precise description of when the use of these components is mandatory can be found in the summary of application areas at the beginning of the chapter Lists of Fittings or in the installation instructions.

Turn double sash fitting – constant handle position

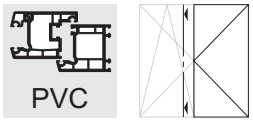
Basic equipment with circumferential locking points



	FFB	FFH		Pos.		Pos.		Pos.		Pos.	
A	481-1400	451-700	GASK.710	3.1			GK = 210				
	481-1700	701-850	GASK.945-1	3.1			GK = 260				
	481-1725	851-1100	GASK.1100-1	3.1			GK = 375				
		1101-1325	GASK.1325-1	3.1			GK = 550				
		1326-1550	GASK.1550-1	3.1			GK = 550				
		1551-1775	GASK.1775-2	3.1			GK = 550				
		1776-2000	GASK.2000-2	3.1			GK = 1050				
		2001-2225	GASK.2225-2	3.1			GK = 1050				
		2226-2475	GASK.2225-2	3.1	MS.SO.250-1	9.3	GK = 1050				
		2476-2725	GASK.2225-2	3.1	MS.SO.500-1	9.3	GK = 1050				
B	481-1090	451-545	E3	4.3					SBA.K...	11.1	1x
	481-1725	546-2725	E1	4.1					SBA.K...	11.1	1x
C	481-550	451-2725	OS.SE.550	5.3							
	551-800		OS.SE.800	5.3							
	801-1025		OS.SE.1025-1	5.3					SBA.K...	11.1	1x
	1026-1250		OS.SE.1250-1	5.3					SBA.K...	11.1	1x
	1251-1475		OS.SE.1250-1	5.3	MK.250-0	9.1			SBA.K...	11.1	1x
	1476-1500		OS.SE.1025-1	5.3	MK.500-1	9.1			SBA.K...	11.1	2x
	1501-1725		OS.SE.1250-1	5.3	MK.500-1	9.1			SBA.K...	11.1	2x
D	481-1725	451-2725	E1.SE	4.2	SK.SE...	7.2			SBA.K...	11.1	1x
E	481-1725	861-950	M.250-1	9.2					SBA.K...	11.1	1x
		951-1285	M.500-1	9.2					SBA.K...	11.1	1x
		1286-1535	M.750-1	9.2					SBA.K...	11.1	1x
		1536-1785	MK.500-1	9.1	M.500-1	9.2			SBA.K...	11.1	2x
		1786-2035	MK.750-1	9.1	M.500-1	9.2			SBA.K...	11.1	2x
		2036-2285	MK.750-1	9.1	M.750-1	9.2			SBA.K...	11.1	2x
		2286-2535	MK.750-1	9.1	MK.500-1	9.1	M.500-1	9.2	SBA.K...	11.1	3x
		2536-2725	MK.750-1	9.1	MK.750-1	9.1	M.500-1	9.2	SBA.K...	11.1	3x
F	481-1725	451-2725	FL.SE.1	6.1	EL.K.SE...	6.3					
G	841-1250	451-2725	M.500-1	9.2					SBA.K...	11.1	1x
	1251-1500		M.750-1	9.2					SBA.K...	11.1	1x
	1501-1725		MK.500-1	9.1	M.500-1	9.2			SBA.K...	11.1	2x
H	481-1725	451-2725	E1	4.1					SBA.K...	11.1	1x

Turn double-sash fitting – central handle position

Basic equipment with circumferential locking points



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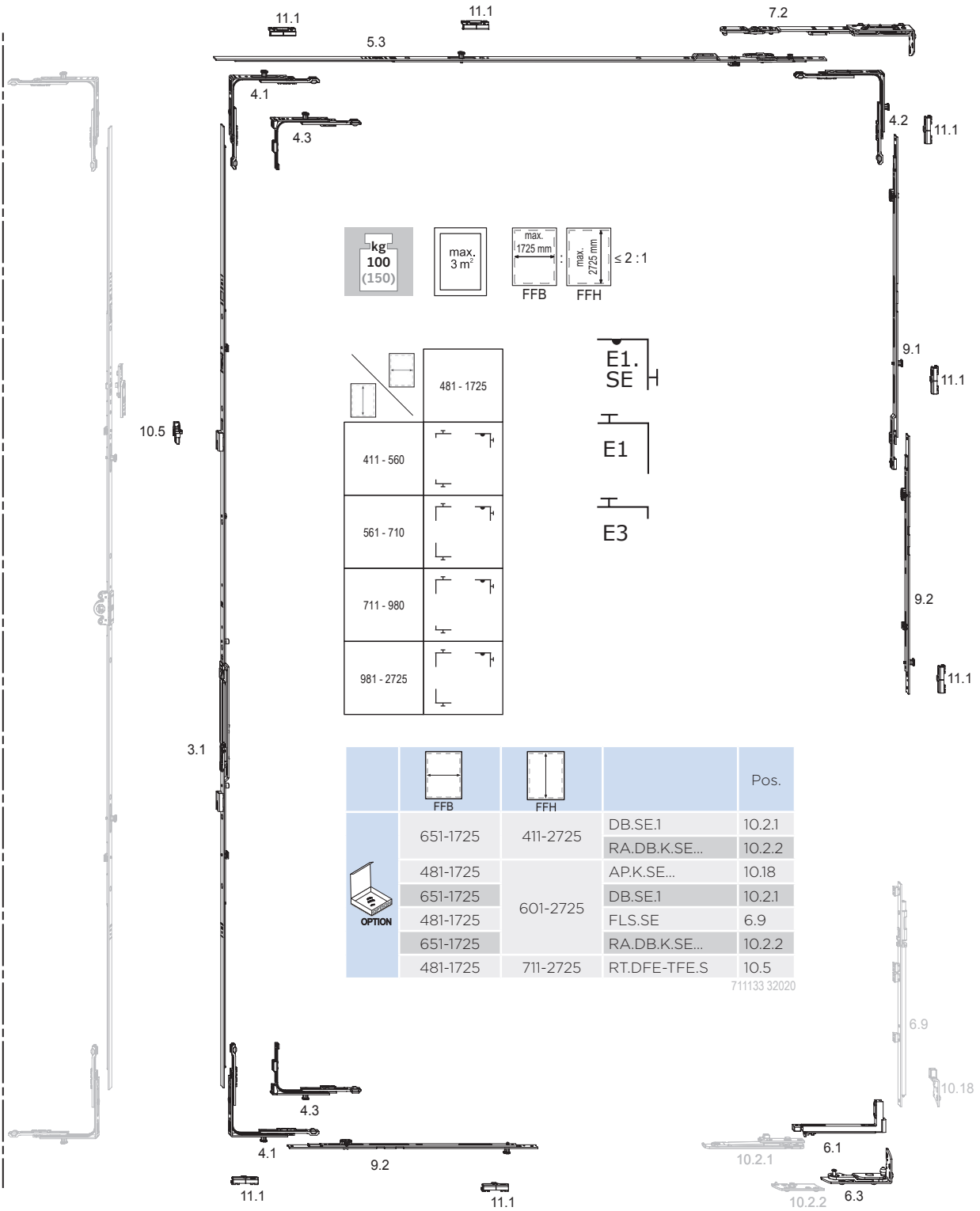


	FFB	FFH		Pos.
OPTION	651-1725	411-2725	DB.SE.1	10.2.1
			RA.DB.K.SE...	10.2.2
	481-1725	601-2725	AP.K.SE...	10.18
	651-1725		DB.SE.1	10.2.1
	481-1725		FLS.SE	6.9
	651-1725		RA.DB.K.SE...	10.2.2
	481-1725	711-2725	RT.DFE-TFE.S	10.5

711133 32020

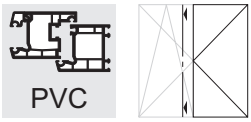
The illustrated distance between locking points is 800 mm.

The distances between locking points must be agreed with the system supplier.

The use of the optional components shown in grey (sash hinge rail, turn limiter etc.) depends not only on heavier sash weights but also on the installation situation, for instance. A precise description of when the use of these components is mandatory can be found in the summary of application areas at the beginning of the chapter Lists of Fittings or in the installation instructions.

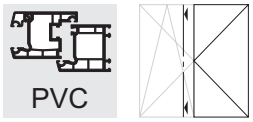
Turn double-sash fitting – central handle position

Basic equipment with circumferential locking points



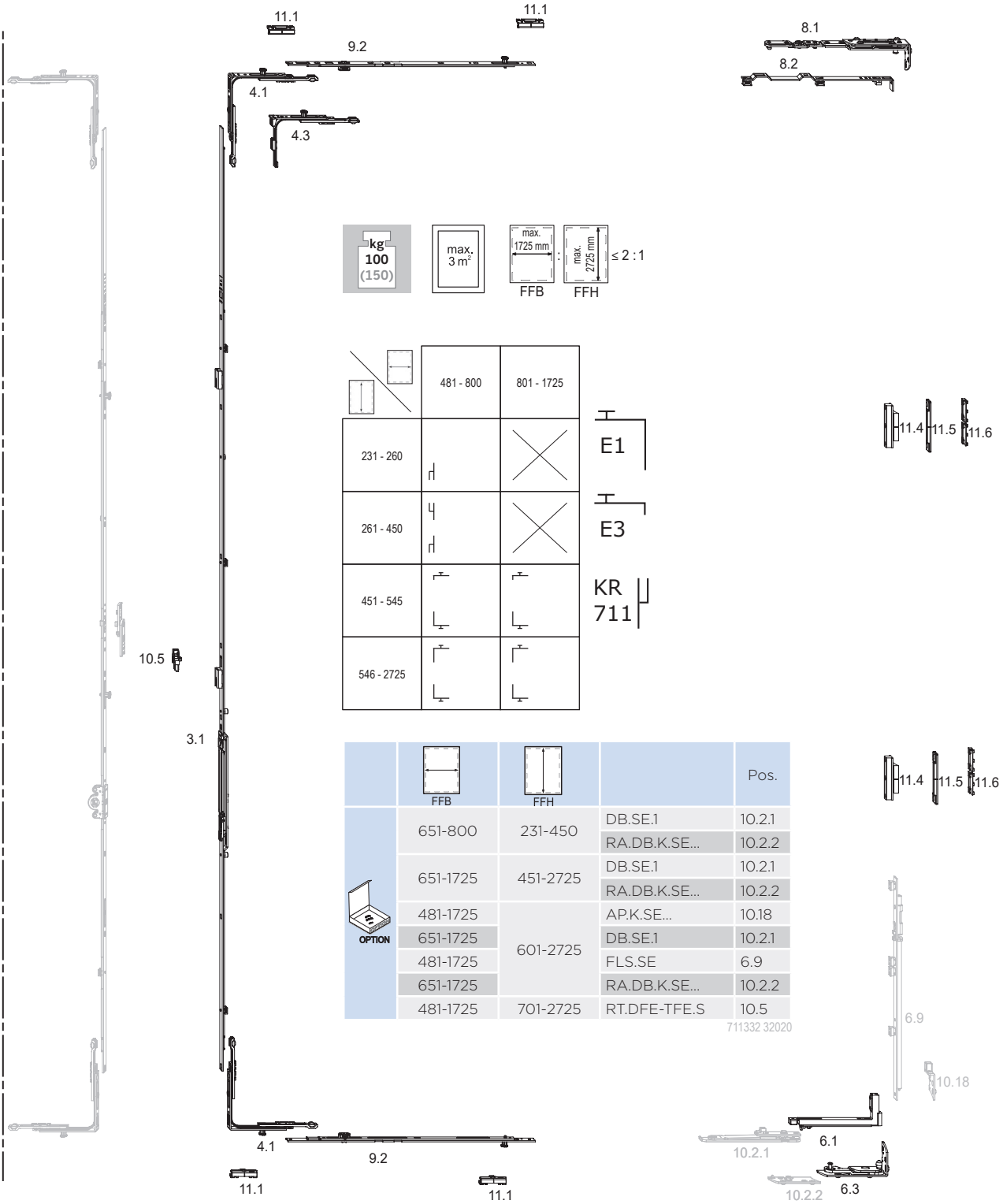
	FFB	FFH		Pos.		Pos.		Pos.		Pos.	
A	481-1420	411-710	GASM.800	3.1							
	481-1725	711-980	GASM.1050-1.E3	3.1							
		981-1400	GASM.1400-1	3.1							
		1401-1800	GASM.1800-2	3.1							
		1801-2300	GASM.2300-3	3.1							
		2301-2725	GASM.2300-3	3.1	MS.SU.250-1	9.3	MS.SO.250-1	9.3			
B	481-1120	411-560	E3	4.3					SBA.K...	11.1	1x
	481-1725	561-2725	E1	4.1					SBA.K...	11.1	1x
C	481-550	411-2725	OS.SE.550	5.3							
	551-800		OS.SE.800	5.3							
	801-1025		OS.SE.1025-1	5.3					SBA.K...	11.1	1x
	1026-1250		OS.SE.1250-1	5.3					SBA.K...	11.1	1x
	1251-1475		OS.SE.1250-1	5.3	MK.250-0	9.1			SBA.K...	11.1	1x
	1476-1500		OS.SE.1025-1	5.3	MK.500-1	9.1			SBA.K...	11.1	2x
	1501-1725		OS.SE.1250-1	5.3	MK.500-1	9.1			SBA.K...	11.1	2x
D	481-1725	411-2725	E1.SE	4.2	SK.SE...	7.2			SBA.K...	11.1	1x
E	481-1725	861-1285	M.500-1	9.2					SBA.K...	11.1	1x
		1286-1535	M.750-1	9.2					SBA.K...	11.1	1x
		1536-1785	MK.500-1	9.1	M.500-1	9.2			SBA.K...	11.1	2x
		1786-2035	MK.750-1	9.1	M.500-1	9.2			SBA.K...	11.1	2x
		2036-2285	MK.750-1	9.1	M.750-1	9.2			SBA.K...	11.1	2x
		2286-2535	MK.750-1	9.1	MK.500-1	9.1	M.500-1	9.2	SBA.K...	11.1	3x
		2536-2725	MK.750-1	9.1	MK.750-1	9.1	M.500-1	9.2	SBA.K...	11.1	3x
F	481-1725	411-2725	FL.SE.1	6.1	EL.K.SE...	6.3					
G	841-1250	411-2725	M.500-1	9.2					SBA.K...	11.1	1x
	1251-1500		M.750-1	9.2					SBA.K...	11.1	1x
	1501-1725		MK.500-1	9.1	M.500-1	9.2			SBA.K...	11.1	2x
H	481-1120	411-560	E3	4.3					SBA.K...	11.1	1x
	481-1420	561-710	E1	4.1					SBA.K...	11.1	1x
	481-1725	711-980	E3	4.3					SBA.K...	11.1	1x
		981-2725	E1	4.1					SBA.K...	11.1	1x

Turn double sash fitting – constant handle position



2

Basic equipment with centre lock

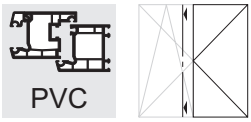


The illustrated distance between locking points is 800 mm.

The distances between locking points must be agreed with the system supplier.

The use of the optional components shown in grey (sash hinge rail, turn limiter etc.) depends not only on heavier sash weights but also on the installation situation, for instance. A precise description of when the use of these components is mandatory can be found in the summary of application areas at the beginning of the chapter Lists of Fittings or in the installation instructions.

Turn double sash fitting – constant handle position



Basic equipment with centre lock

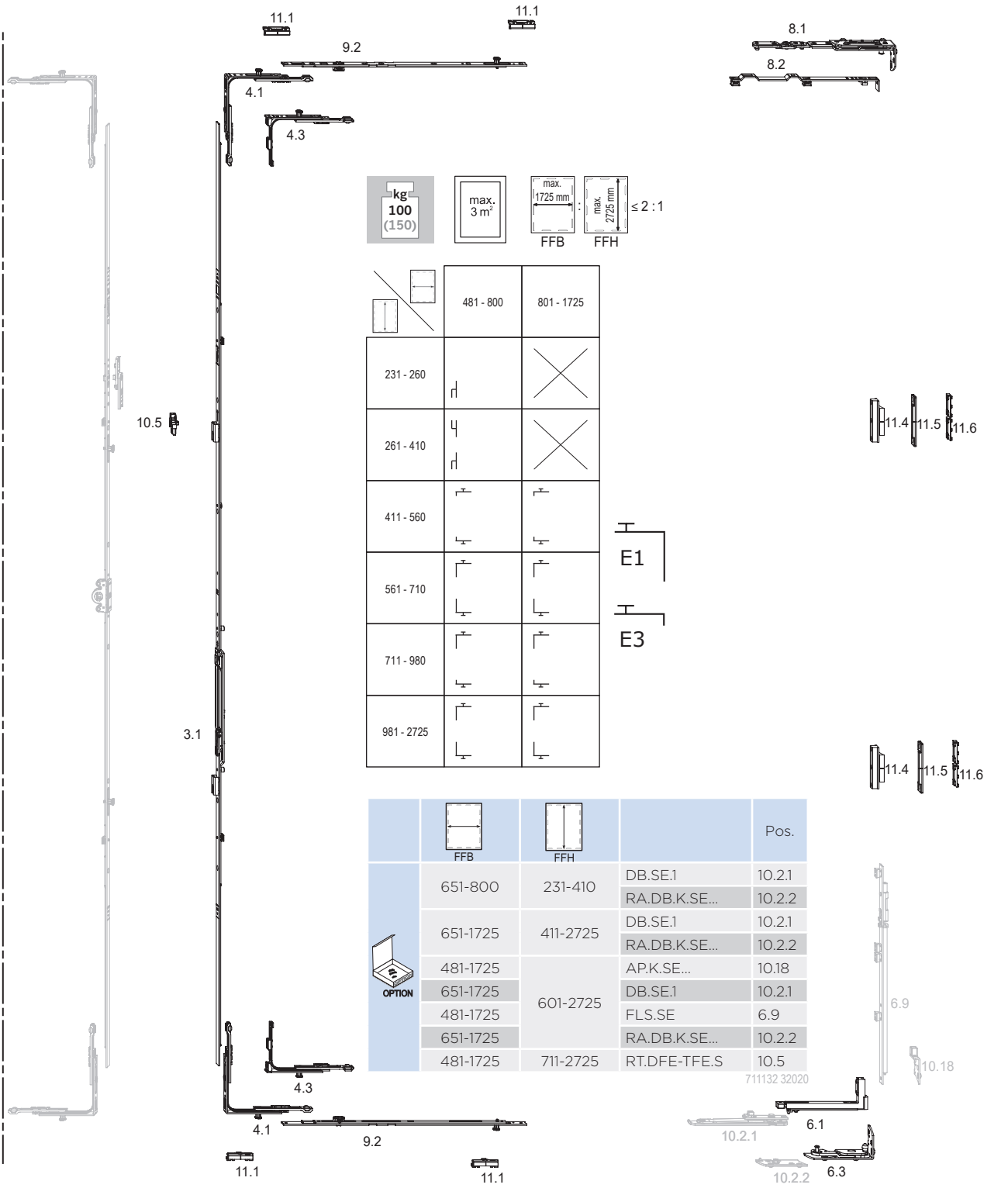
	FFB	FFH		Pos.		Pos.		Pos.		Pos.	
A	481-1400	451-700	GASK.710	3.1			GK = 210				
	481-1700	701-850	GASK.945-1	3.1			GK = 260				
	481-1725	851-1100	GASK.1100-1	3.1			GK = 375				
		1101-1325	GASK.1325-1	3.1			GK = 550				
		1326-1550	GASK.1550-1	3.1			GK = 550				
		1551-1775	GASK.1775-2	3.1			GK = 550				
		1776-2000	GASK.2000-2	3.1			GK = 1050				
		2001-2225	GASK.2225-2	3.1			GK = 1050				
		2226-2475	GASK.2225-2	3.1	MS.SO.250-1	9.3	GK = 1050				
		2476-2725	GASK.2225-2	3.1	MS.SO.500-1	9.3	GK = 1050				
B	481-800	261-450	KR F 711.C...	10.10					SA...	11.6	1x
	481-1090	451-545	E3	4.3					SBA.K...	11.1	1x
	481-1725	546-2725	E1	4.1					SBA.K...	11.1	1x
C	841-1250	451-2725	M.500-1	9.2					SBA.K...	11.1	1x
	1251-1500		M.750-1	9.2					SBA.K...	11.1	1x
	1501-1725		MK.500-1	9.1	M.500-1	9.2			SBA.K...	11.1	2x
D	481-1725	231-2725	DLS.K.SE.9-13	8.2							
	481-800	231-450	DL.K.SE...	8.1							
	481-1725	451-2725	DL.K.SE...	8.1							
E	481-1725	801-1600	ZV SL	11.4					FT WSK... SB SZV-WSK SL	11.6 11.5	2x 1x
		1601-2400	ZV SL	11.4	ZV SL	11.4			FT WSK... SB SZV-WSK SL	11.6 11.5	4x 2x
		2401-2725	ZV SL	11.4	ZV SL	11.4	ZV SL	11.4	FT WSK... SB SZV-WSK SL	11.6 11.5	6x 3x
F	481-800	231-450	FL.SE.1	6.1	EL.K.SE...	6.3					
	481-1725	451-2725	FL.SE.1	6.1	EL.K.SE...	6.3					
G	841-1250	451-2725	M.500-1	9.2					SBA.K...	11.1	1x
	1251-1500		M.750-1	9.2					SBA.K...	11.1	1x
	1501-1725		MK.500-1	9.1	M.500-1	9.2			SBA.K...	11.1	2x
H	481-800	231-450	KR F 711.C...	10.10					SA...	11.6	1x
	481-1725	451-2725	E1	4.1					SBA.K...	11.1	1x

Turn double-sash fitting – central handle position

Basic equipment with centre lock

2

PVC



	FFB	FFH		Pos.
OPTION	651-800	231-410	DB.SE.1	10.2.1
			RA.DB.K.SE...	10.2.2
	651-1725	411-2725	DB.SE.1	10.2.1
			RA.DB.K.SE...	10.2.2
	481-1725	601-2725	AP.K.SE...	10.18
	651-1725		DB.SE.1	10.2.1
	481-1725		FLS.SE	6.9
	651-1725		RA.DB.K.SE...	10.2.2
	481-1725	711-2725	RT.DFE-TFE.S	10.5

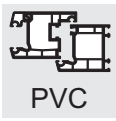
The illustrated distance between locking points is 800 mm.

The distances between locking points must be agreed with the system supplier.

The use of the optional components shown in grey (sash hinge rail, turn limiter etc.) depends not only on heavier sash weights but also on the installation situation, for instance. A precise description of when the use of these components is mandatory can be found in the summary of application areas at the beginning of the chapter Lists of Fittings or in the installation instructions.

Turn double-sash fitting – central handle position

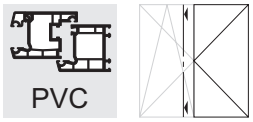
Basic equipment with centre lock

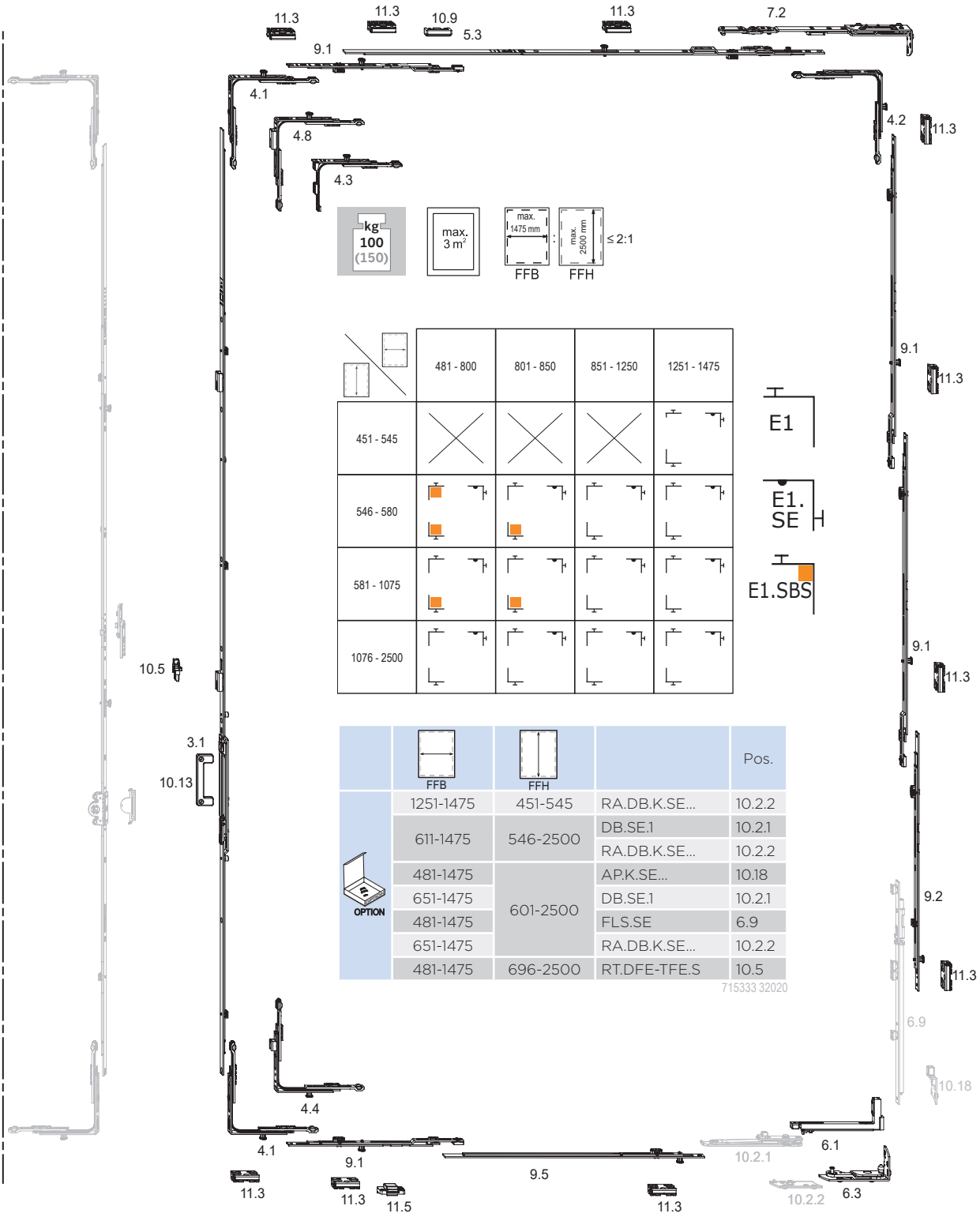


	FFB	FFH		Pos.		Pos.		Pos.		Pos.	
A	481-1420	411-710	GASM.800	3.1							
	481-1725	711-980	GASM.1050-1.E3	3.1							
		981-1400	GASM.1400-1	3.1							
		1401-1800	GASM.1800-2	3.1							
		1801-2300	GASM.2300-3	3.1							
		2301-2725	GASM.2300-3	3.1	MS.SU.250-1	9.3	MS.SO.250-1	9.3			
B	481-800	261-410	KR F 711.C...	10.10					SA...	11.6	1x
	481-1120	411-560	E3	4.3					SBA.K...	11.1	1x
	481-1725	561-2725	E1	4.1					SBA.K...	11.1	1x
C	841-1250	411-2725	M.500-1	9.2					SBA.K...	11.1	1x
	1251-1500		M.750-1	9.2					SBA.K...	11.1	1x
	1501-1725		MK.500-1	9.1	M.500-1	9.2			SBA.K...	11.1	2x
D	481-1725	231-2725	DLS.K.SE.9-13	8.2							
	481-800	231-410	DL.K.SE...	8.1							
	481-1725	411-2725	DL.K.SE...	8.1							
E	481-1725	801-1600	ZV SL	11.4					FT WSK... SB SZV-WSK SL	11.6 11.5	2x 1x
		1601-2400	ZV SL	11.4	ZV SL	11.4			FT WSK... SB SZV-WSK SL	11.6 11.5	4x 2x
		2401-2725	ZV SL	11.4	ZV SL	11.4	ZV SL	11.4	FT WSK... SB SZV-WSK SL	11.6 11.5	6x 3x
F	481-800	231-410	FL.SE.1	6.1	EL.K.SE...	6.3					
	481-1725	411-2725	FL.SE.1	6.1	EL.K.SE...	6.3					
G	841-1250	411-2725	M.500-1	9.2					SBA.K...	11.1	1x
	1251-1500		M.750-1	9.2					SBA.K...	11.1	1x
	1501-1725		MK.500-1	9.1	M.500-1	9.2			SBA.K...	11.1	2x
H	481-800	231-410	KR F 711.C...	10.10					SA...	11.6	1x
	481-1120	411-560	E3	4.3					SBA.K...	11.1	1x
	481-1420	561-710	E1	4.1					SBA.K...	11.1	1x
	481-1725	711-980	E3	4.3					SBA.K...	11.1	1x
		981-2725	E1	4.1					SBA.K...	11.1	1x

Turn double sash fitting – constant handle position

Suitable for burglary-resistant windows RC2 / RC2 N





	FFB	FFH		Pos.
OPTION	1251-1475	451-545	RA.DB.K.SE...	10.2.2
	611-1475	546-2500	DB.SE.1	10.2.1
			RA.DB.K.SE...	10.2.2
	481-1475	601-2500	AP.K.SE...	10.18
	651-1475		DB.SE.1	10.2.1
	481-1475		FLS.SE	6.9
	651-1475		RA.DB.K.SE...	10.2.2
	481-1475	696-2500	RT.DFE-TFE.S	10.5

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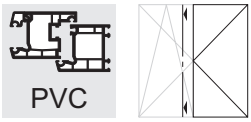
The illustrated distance between locking points is 800 mm.

The distances between locking points must be agreed with the system supplier.

The use of the optional components shown in grey (sash hinge rail, turn limiter etc.) depends not only on heavier sash weights but also on the installation situation, for instance. A precise description of when the use of these components is mandatory can be found in the summary of application areas at the beginning of the chapter Lists of Fittings or in the installation instructions.

Turn double sash fitting – constant handle position

Suitable for burglary-resistant windows RC2 / RC2 N



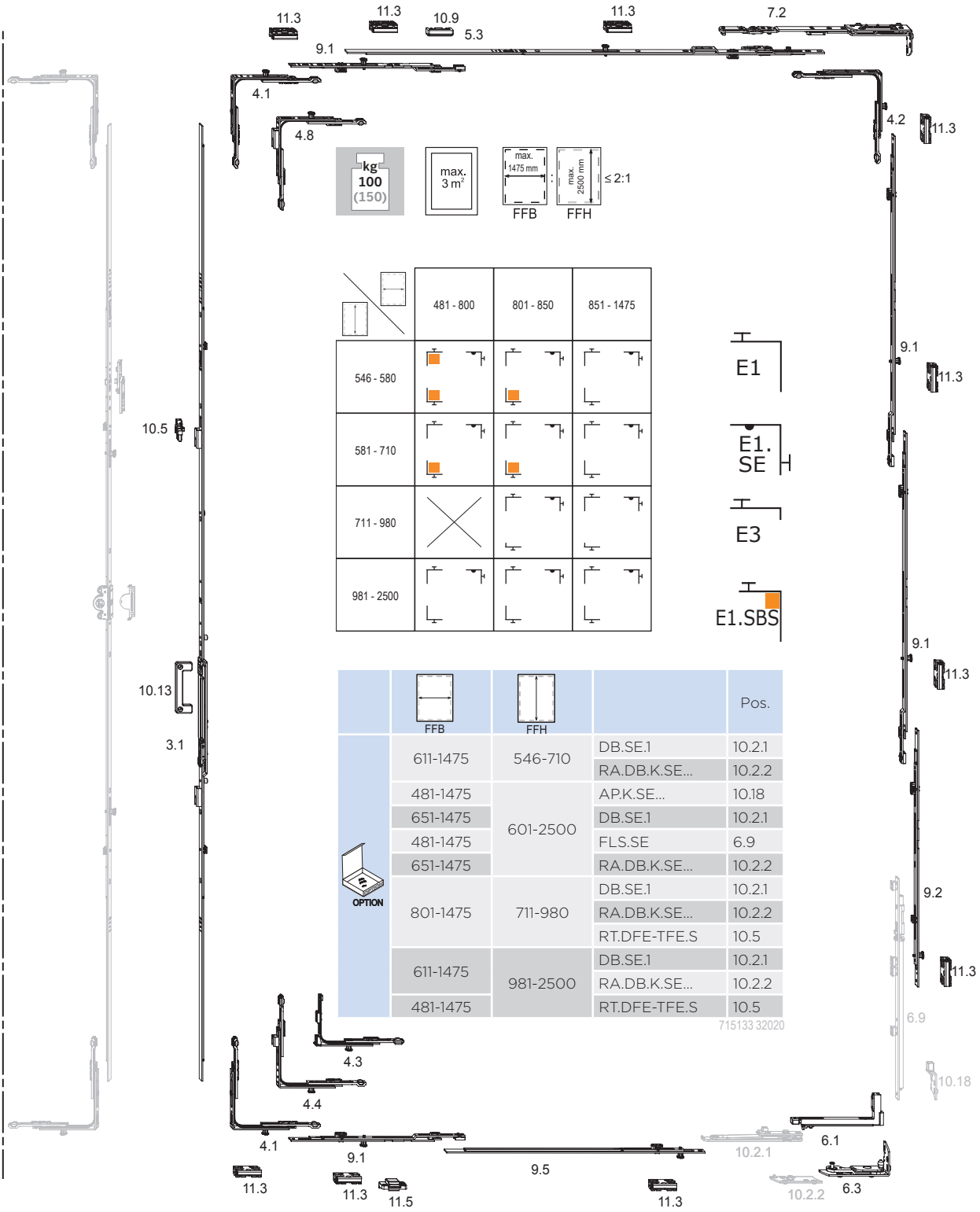
	FFB	FFH		Pos.		Pos.		Pos.		Pos.	
A	481-1475	451-2500	SNH.AGR	10.13							
		546-580	GASK.710	3.1							
	481-1390	581-695	GASK.830-1	3.1							
	481-1475	696-850	GASK.945-1	3.1							
		851-1075	GASK.1100-1	3.1							
		1076-1325	GASK.1325-2	3.1							
		1326-1525	GASK.1550-2	3.1							
		1526-1775	GASK.1775-2	3.1							
		1776-2000	GASK.2000-2	3.1							
		2001-2225	GASK.2225-2	3.1							
		2226-2475	GASK.2225-2	3.1	MS.SO.250-1	9.3					
		2476-2500	GASK.2225-2	3.1	MS.SO.500-1	9.3					
B	481-800	546-580	E1.SBS.O...	4.8					SBS.K...	11.3	1x
	481-1475	581-2500	E1	4.1					SBS.K...	11.3	1x
	801-1160	546-580	E1	4.1					SBS.K...	11.3	1x
C	481-1475	451-2500	AL D...	10.9							
	481-550	546-2500	OS.SE.550	5.3							
	551-800		OS.SE.800	5.3							
	801-1025		OS.SE.1025-1	5.3					SBS.K...	11.3	1x
	1026-1275		OS.SE.1025-1	5.3	MK.250-1	9.1			SBS.K...	11.3	2x
	1276-1475	451-2500	OS.SE.1025-1	5.3	MK.250-0	9.1	MK.250-1	9.1	SBS.K...	11.3	2x
D	481-1475	546-2500	E1.SE	4.2	SK.SE...	7.2			SBS.K...	11.3	1x
E	481-1475	546-585	M.250-1	9.2					SBS.K...	11.3	1x
		586-1000	M.500-1	9.2					SBS.K...	11.3	1x
		1001-1200	M.750-1	9.2					SBS.K...	11.3	1x
		1201-1550	MK.500-1	9.1	M.500-1	9.2			SBS.K...	11.3	2x
		1551-1720	MK.750-1	9.1	M.500-1	9.2			SBS.K...	11.3	2x
		1721-1970	MK.500-1	9.1	MK.500-1	9.1	M.500-1	9.2	SBS.K...	11.3	3x
		1971-2220	MK.750-1	9.1	MK.500-1	9.1	M.500-1	9.2	SBS.K...	11.3	3x
		2221-2470	MK.750-1	9.1	MK.750-1	9.1	M.500-1	9.2	SBS.K...	11.3	3x
		2471-2500	MK.750-1	9.1	MK.500-1	9.1	MK.500-1	9.1	SBS.K...	11.3	4x
			M.500-1	9.2							
F	481-1475	546-2500	FL.SE.1	6.1	EL.K.SE...	6.3					
G	481-1475	451-2500	FH...	11.5							
	481-850	546-2500	V.AK.450-1	9.5					SBS.K...	11.3	1x
	851-1100		V.AK.450-1	9.5	MK.250-1	9.1			SBS.K...	11.3	2x
	1101-1350		V.AK.450-1	9.5	MK.500-1	9.1			SBS.K...	11.3	2x
	1351-1475	451-2500	V.AK.450-1	9.5	MK.750-1	9.1			SBS.K...	11.3	2x
H	481-850	546-1075	E1.SBS.U.F	4.4					SBS.K...	11.3	1x
	481-1475	1076-2500	E1	4.1					SBS.K...	11.3	1x
	851-1475	546-1075	E1	4.1					SBS.K...	11.3	1x

Turn double-sash fitting – central handle position

Suitable for burglary-resistant windows RC2 / RC2 N

PVC

2



	FFB	FFH		Pos.
OPTION	611-1475	546-710	DB.SE.1	10.2.1
			RA.DB.K.SE...	10.2.2
	481-1475	601-2500	AP.K.SE...	10.18
	651-1475		DB.SE.1	10.2.1
	481-1475		FLS.SE	6.9
	651-1475		RA.DB.K.SE...	10.2.2
	801-1475	711-980	DB.SE.1	10.2.1
			RA.DB.K.SE...	10.2.2
			RT.DFE-TFE.S	10.5
	611-1475	981-2500	DB.SE.1	10.2.1
			RA.DB.K.SE...	10.2.2
	481-1475		RT.DFE-TFE.S	10.5

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The illustrated distance between locking points is 800 mm.

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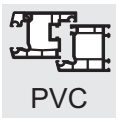
The use of the optional components shown in grey (sash hinge rail, turn limiter etc.) depends not only on heavier sash weights but also on the installation situation, for instance. A precise description of when the use of these components is mandatory can be found in the summary of application areas at the beginning of the chapter Lists of Fittings or in the installation instructions.

Turn double-sash fitting – central handle position

Suitable for burglary-resistant windows RC2 / RC2 N

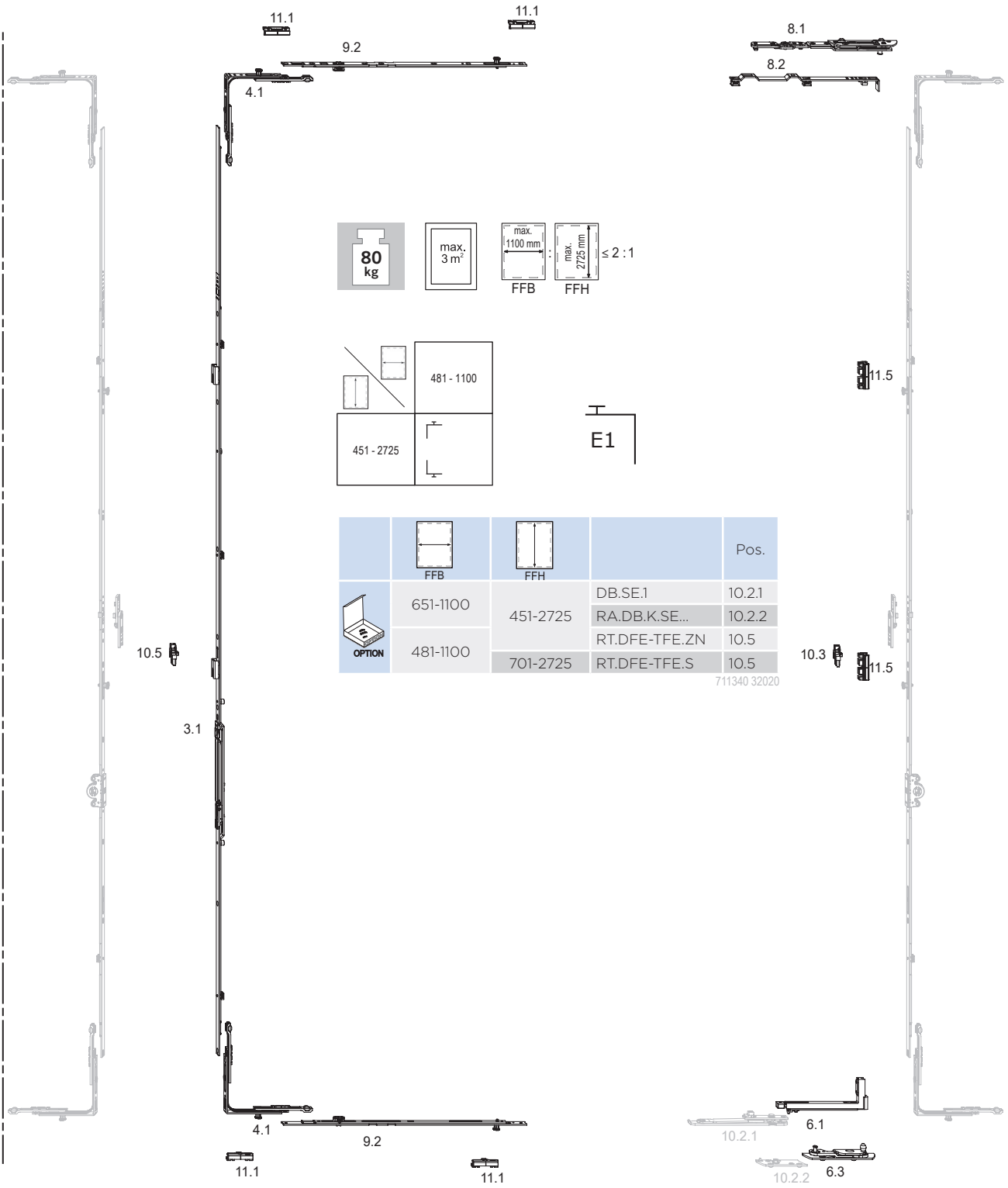


	FFB	FFH		Pos.		Pos.		Pos.		Pos.	
A	481-1475	546-2500	SNH.AGR	10.13							
	481-1160	546-580	GASK.710	3.1							
	481-1420	581-710	GASK.830-1	3.1							
	801-1475	711-980	GASM.1050-1.E3	3.1							
	481-1475	981-1400	GASM.1400-2	3.1							
		1401-1800	GASM.1800-2	3.1							
		1801-2300	GASM.2300-3	3.1							
		2301-2500	GASM.1800-2	3.1	MS.SU.500-1	9.3	MS.SO.500-1	9.3			
B	481-800	546-580	E1.SBS.O...	4.8					SBS.K...	11.3	1x
	481-1420	581-710	E1	4.1					SBS.K...	11.3	1x
	481-1475	981-2500	E1	4.1					SBS.K...	11.3	1x
	801-1160	546-580	E1	4.1					SBS.K...	11.3	1x
	801-1475	711-980	E1	4.1					SBS.K...	11.3	1x
C	481-1475	546-2500	AL D...	10.9							
	481-550	546-710	OS.SE.550	5.3							
		981-2500	OS.SE.550	5.3							
	551-800	546-710	OS.SE.800	5.3							
		981-2500	OS.SE.800	5.3							
	801-1025	546-2500	OS.SE.1025-1	5.3					SBS.K...	11.3	1x
	1026-1275		OS.SE.1025-1	5.3	MK.250-1	9.1			SBS.K...	11.3	2x
	1276-1475		OS.SE.1025-1	5.3	MK.250-0	9.1	MK.250-1	9.1	SBS.K...	11.3	2x
D	481-1420	546-710	E1.SE	4.2	SK.SE...	7.2			SBS.K...	11.3	1x
	481-1475	981-2500	E1.SE	4.2	SK.SE...	7.2			SBS.K...	11.3	1x
	801-1475	711-980	E1.SE	4.2	SK.SE...	7.2			SBS.K...	11.3	1x
E	481-1170	546-585	M.250-1	9.2					SBS.K...	11.3	1x
	481-1420	586-710	M.500-1	9.2					SBS.K...	11.3	1x
	801-1475	711-980	M.500-1	9.2					SBS.K...	11.3	1x
	481-1475	981-1000	M.500-1	9.2					SBS.K...	11.3	1x
		1001-1200	M.750-1	9.2					SBS.K...	11.3	1x
		1201-1550	MK.500-1	9.1	M.500-1	9.2			SBS.K...	11.3	2x
		1551-1720	MK.750-1	9.1	M.500-1	9.2			SBS.K...	11.3	2x
		1721-1970	MK.500-1	9.1	MK.500-1	9.1	M.500-1	9.2	SBS.K...	11.3	3x
		1971-2220	MK.750-1	9.1	MK.500-1	9.1	M.500-1	9.2	SBS.K...	11.3	3x
		2221-2470	MK.750-1	9.1	MK.750-1	9.1	M.500-1	9.2	SBS.K...	11.3	3x
		2471-2500	MK.750-1	9.1	MK.500-1	9.1	MK.500-1	9.1	SBS.K...	11.3	4x
			M.500-1	9.2							
F	481-1420	546-710	FL.SE.1	6.1	EL.K.SE...	6.3					
	801-1475	711-980	FL.SE.1	6.1	EL.K.SE...	6.3					
	481-1475	981-2500	FL.SE.1	6.1	EL.K.SE...	6.3					
G	481-1475	546-2500	FH...	11.5							
	481-850	546-710	V.AK.450-1	9.5					SBS.K...	11.3	1x
		981-2500	V.AK.450-1	9.5					SBS.K...	11.3	1x
	801-850	711-980	V.AK.450-1	9.5					SBS.K...	11.3	1x
	851-1100	546-2500	V.AK.450-1	9.5	MK.250-1	9.1			SBS.K...	11.3	2x
	1101-1350		V.AK.450-1	9.5	MK.500-1	9.1			SBS.K...	11.3	2x
	1351-1475		V.AK.450-1	9.5	MK.750-1	9.1			SBS.K...	11.3	2x
H	481-850	546-710	E1.SBS.U.F	4.4					SBS.K...	11.3	1x
	481-1475	981-2500	E1	4.1					SBS.K...	11.3	1x
	801-1475	711-980	E3	4.3					SBS.K...	11.3	1x
	851-1420	546-710	E1	4.1					SBS.K...	11.3	1x

2

Turn-tilt fitting – constant handle position
Basic equipment for triple-sash windows/doors

PVC



	FFB	FFH		Pos.
OPTION	651-1100	451-2725	DB.SE.1	10.2.1
			RA.DB.K.SE...	10.2.2
	481-1100		RT.DFE-TFE.ZN	10.5
		701-2725	RT.DFE-TFE.S	10.5

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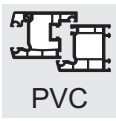
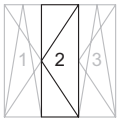
The illustrated distance between locking points is 800 mm.

The distances between locking points must be agreed with the system supplier.

Turn-tilt fitting – constant handle position
Basic equipment for triple-sash windows/doors



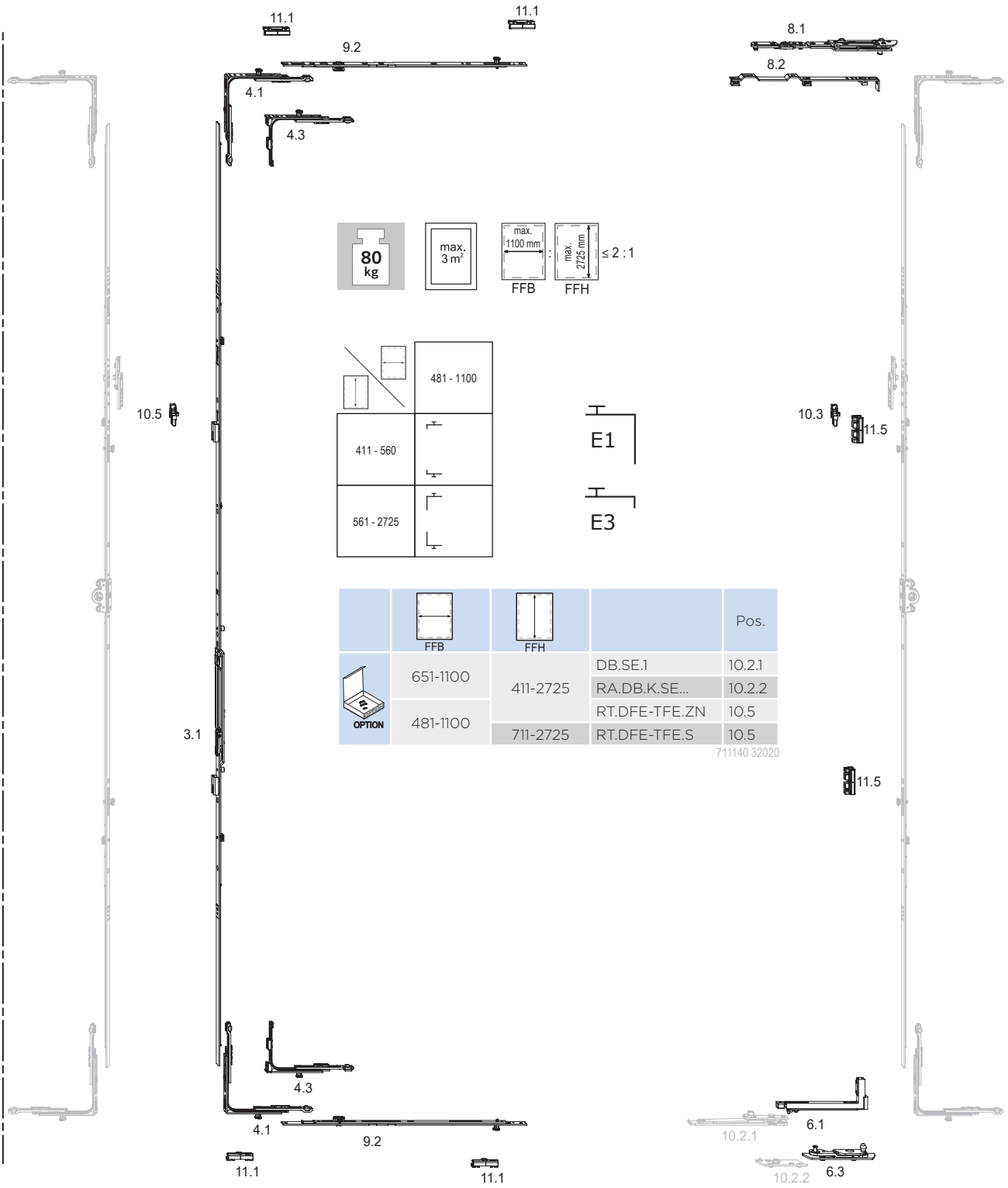


	FFB	FFH		Pos.		Pos.		Pos.		Pos.	
A	481-1100	451-700	GASK.710	3.1			GK = 210				
		701-850	GASK.945-1	3.1			GK = 260				
		851-1100	GASK.1100-1	3.1			GK = 375				
		1101-1325	GASK.1325-1	3.1			GK = 550				
		1326-1550	GASK.1550-1	3.1			GK = 550				
		1551-1775	GASK.1775-2	3.1			GK = 550				
		1776-2000	GASK.2000-2	3.1			GK = 1050				
		2001-2225	GASK.2225-2	3.1			GK = 1050				
		2226-2475	GASK.2225-2	3.1	MS.SO.250-1	9.3	GK = 1050				
		2476-2725	GASK.2225-2	3.1	MS.SO.500-1	9.3	GK = 1050				
B	481-1100	451-2725	E1	4.1					SBA.K...	11.1	1x
C	841-1100	451-2725	M.500-1	9.2					SBA.K...	11.1	1x
D	481-1100	451-2725	DLS.K.SE.9-13	8.2							
			DL.K.SE.3...	8.1							
E	481-1100	581-1550							SBA.K.BN	11.5	1x
		1551-2225							SBA.K.BN	11.5	2x
		2226-2725							SBA.K.BN	11.5	3x
F	481-1100	451-2725	FL.SE.1	6.1	EL.K.SE.3...	6.3					
G	841-1100	451-2725	M.500-1	9.2					SBA.K...	11.1	1x
H	481-1100	451-2725	E1	4.1					SBA.K...	11.1	1x

Turn-tilt fitting – central handle position
Basic equipment for triple-sash windows/doors

PVC

2



	FFB	FFH		Pos.
OPTION	651-1100	411-2725	DB.SE.1	10.2.1
			RA.DB.K.SE...	10.2.2
	481-1100		RT.DFE-TFE.ZN	10.5
		711-2725	RT.DFE-TFE.S	10.5

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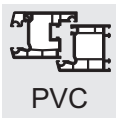
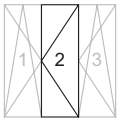
The illustrated distance between locking points is 800 mm.

The distances between locking points must be agreed with the system supplier.

Turn-tilt fitting – central handle position
Basic equipment for triple-sash windows/doors





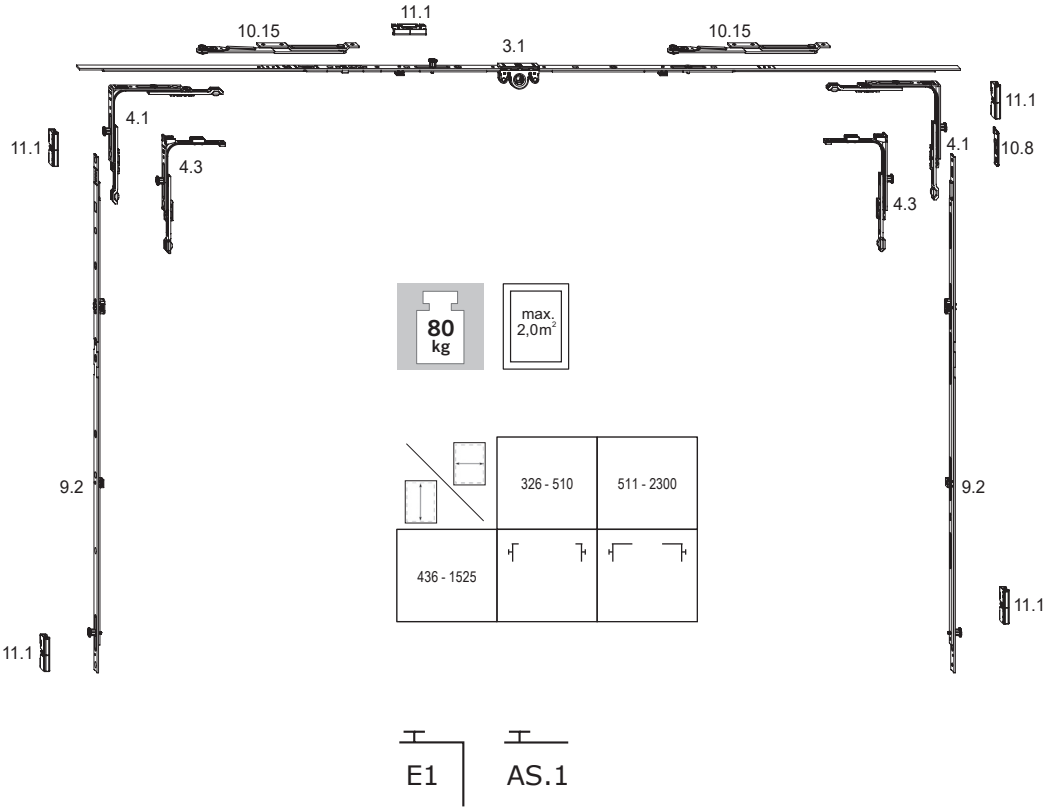
	FFB	FFH		Pos.		Pos.		Pos.		Pos.	
A	481-1100	411-710	GASM.800	3.1							
		711-980	GASM.1050-1.E3	3.1							
		981-1400	GASM.1400-1	3.1							
		1401-1800	GASM.1800-2	3.1							
		1801-2300	GASM.2300-3	3.1							
		2301-2725	GASM.2300-3	3.1	MS.SU.250-1	9.3	MS.SO.250-1	9.3			
B	481-1100	411-560	E3	4.3					SBA.K...	11.1	1x
		561-2725	E1	4.1					SBA.K...	11.1	1x
C	841-1100	411-2725	M.500-1	9.2					SBA.K...	11.1	1x
D	481-1100	411-2725	DLS.K.SE.9-13	8.2							
			DL.K.SE.3...	8.1							
E	481-1100	981-1400							SBA.K.BN	11.5	1x
		1401-1800							SBA.K.BN	11.5	2x
		1801-2300							SBA.K.BN	11.5	3x
		2301-2725							SBA.K.BN	11.5	5x
F	481-1100	411-2725	FL.SE.1	6.1	EL.K.SE.3...	6.3					
G	841-1100	411-2725	M.500-1	9.2					SBA.K...	11.1	1x
H	481-1100	411-560	E3	4.3					SBA.K...	11.1	1x
		561-2725	E1	4.1					SBA.K...	11.1	1x

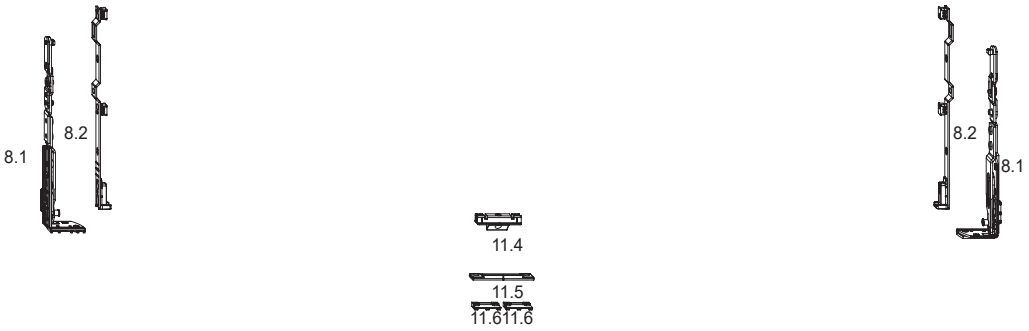
Tilt fanlight

Basic equipment

2

PVC



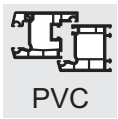


The illustrated distance between locking points is 800 mm.

The distances between locking points must be agreed with the system supplier.

Tilt fanlight

Basic equipment



	FFB	FFH		Pos.		Pos.		Pos.		Pos.	
A	326-710	436-1525	GAM.800	3.1	GRT FSR SL	10.15					
	711-1050		GAM.1050-1	3.1	GRT FSR SL	10.15			SBA.K...	11.1	1x
	1051-1400		GAM.1400-1	3.1	GRT FSR SL	10.15	GRT FSR SL	10.15	SBA.K...	11.1	1x
	1401-1800		GAM.1800-2	3.1	GRT FSR SL	10.15	GRT FSR SL	10.15	SBA.K...	11.1	2x
	1801-2300		GAM.2300-3	3.1	GRT FSR SL	10.15	GRT FSR SL	10.15	SBA.K...	11.1	3x
B	326-510	436-1525	E3	4.3					SBA.K...	11.1	1x
	511-2300		E1	4.1					SBA.K...	11.1	1x
C	326-2300	436-1525	DLS.K.SE.9-13	8.2							
		436-860	DL.K.SE...	8.1							
		861-1285	M.500-1	9.2	DL.K.SE...	8.1			SBA.K...	11.1	1x
		1286-1525	M.750-1	9.2	DL.K.SE...	8.1			SBA.K...	11.1	1x
E	741-1480	436-1525	ZV SL	11.4					FT WSK... SB SZV-WSK SL	11.6 11.5	2x 1x
	1481-2300		ZV SL	11.4	ZV SL	11.4			FT WSK... SB SZV-WSK SL	11.6 11.5	4x 2x
G	326-2300	436-1525	DLS.K.SE.9-13	8.2							
		436-860	DL.K.SE...	8.1							
		861-1285	M.500-1	9.2	DL.K.SE...	8.1			SBA.K...	11.1	1x
		1286-1525	M.750-1	9.2	DL.K.SE...	8.1			SBA.K...	11.1	1x
H	326-2300	436-1525	AWDR SL	10.8							
	326-510		E3	4.3					SBA.K...	11.1	1x
	511-2300		E1	4.1					SBA.K...	11.1	1x

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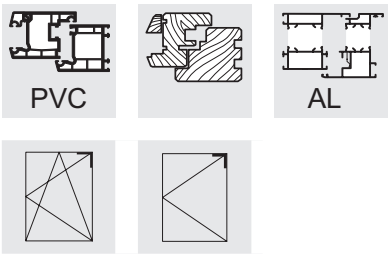
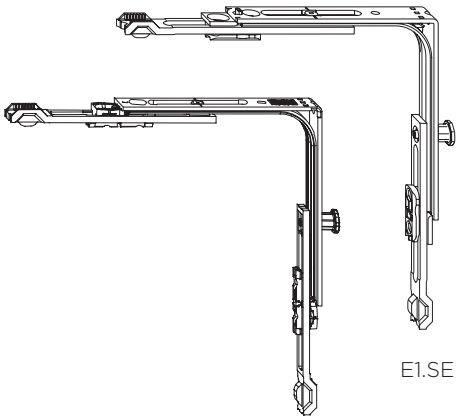
- To secure the tilting sash in 90° opening position, or during cleaning, the window must also be fitted with standard cleaning or supporting shears.
- The sashes must be secured in cleaning position to prevent excessive force acting on the hinges.
- After cleaning the window, the rebate shear must be reinserted and secured.
- Close windows in case of wind and draft. Move the fitting to locking position.



4

Corner drive E1.SE

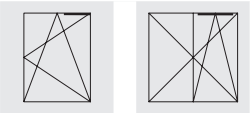
- Used in combination with shear SH / SA / SK...SE / SH.IF
- Bracket length 98.5 mm
- Automatic and manual assembly possible
- Smooth operation, due to rust-free spring steel hinges inserted in C-rail



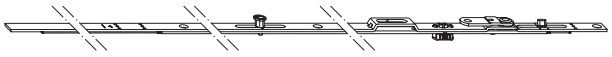
Corner drive E1.SE.N

- Same version as E1.SE, but with additional supporting element to fix to the fitting groove of the sash.

Item description	Item No.		VPA1 Qty./Typ	VPA2 Qty./Typ
E1.SE	4932051	4	100 KK	2400 EK
E1.SE.N	5060652	4	100 KK	2400 EK



Top rod OS.SE

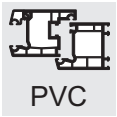


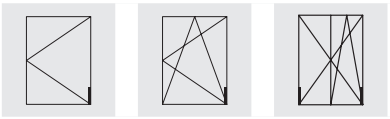
- Used with shears S... .SE / SH.IF / SK.IF
- After assembly the top rod and the shear are firmly attached to one another
- From 1475 mm sash rebate width with additional shear ZSR
- Clampable in fitting groove

Top rod OS.SE...E

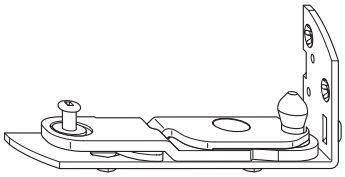
- For the type of fitting “Tilt before turn”
- In combination with shear S...SE...E / SH.IF...E
- From 1475 mm sash rebate width with additional shear ZSRE
- Other details regarding the design see above

Item description	Item No.	Scope of application		VPA1 Qty./Typ	VPA2 Qty./Typ
OS.SE.550	4934243	FFB 480 - 550	3	20 BD	800 EA
OS.SE.800	4934244	FFB 550 - 800	4	20 BD	800 EA
OS.SE.1025-1	4934245	FFB 775 - 1025	5	20 BD	500 EA
OS.SE.1250-1	4934246	FFB 1000 - 1250	6	20 BD	500 EA
OS.SE.550.E	5003250	FFB 480 - 550	3	20 BD	800 EA
OS.SE.800.E	5003251	FFB 550 - 800	4	20 BD	800 EA
OS.SE.1025-1.E	5003252	FFB 775 - 1025	5	20 BD	500 EA
OS.SE.1250-1.E	5003253	FFB 1000 - 1250	6	20 BD	500 EA





Corner hinge EL...SE

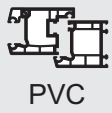


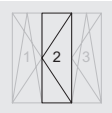
6

- Used with Sash Hinge FL.SE
- Profile-dependent, see synoptical table in chapter 1
- Groove centre position 13 mm
- Pressure adjustment: +/- 0.8 mm
- Max. sash weight (without Sash Hinge Rail FLS.SE): 100 kg
- Max. opening angle 95°
- All screws in the rear layer (axis 23.5 mm from the window frame inner edge) must be screwed into position on the frame steel reinforcement.
- See Group 15, Installation Drawings B-6-1 and B-6-2 for drilling templates
- Required airgap at horizontal bottom side 12+ 1 mm

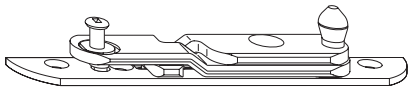
Item description	Item No.		VPA1 Qty./Typ	VPA2 Qty./Typ
EL.K.SE.28.LS	4938665	4	50 KK	400 EK
EL.K.SE.28.RS	4938664	4	50 KK	400 EK
EL.K.SE.60.LS	5019223	4	50 KK	400 EK
EL.K.SE.60.RS	5019222	4	50 KK	400 EK
EL.K.SE.144.LS	4938649	4	50 KK	400 EK
EL.K.SE.144.RS	4938648	4	50 KK	400 EK
EL.K.SE.152.LS	4938642	4	50 KK	400 EK
EL.K.SE.152.RS	4938496	4	50 KK	400 EK
EL.K.SE.161.LS	4938661	4	50 KK	400 EK
EL.K.SE.161.RS	4938660	4	50 KK	400 EK
EL.K.SE.162.LS	4938663	4	50 KK	400 EK
EL.K.SE.162.RS	4938662	4	50 KK	400 EK
EL.K.SE.166.LS	4938490	4	50 KK	400 EK
EL.K.SE.166.RS	4938489	4	50 KK	400 EK
EL.K.SE.169.LS	5012924	4	50 KK	400 EK
EL.K.SE.169.RS	5012923	4	50 KK	400 EK
EL.K.SE.192.LS	4993254	4	50 KK	400 EK
EL.K.SE.192.RS	4993253	4	50 KK	400 EK
EL.K.SE.205.LS	4938647	4	50 KK	400 EK
EL.K.SE.205.RS	4938646	4	50 KK	400 EK
EL.K.SE.226.LS	4938641	4	50 KK	400 EK
EL.K.SE.226.RS	4938640	4	50 KK	400 EK
EL.K.SE.603.LS	5025212	4	50 KK	400 EK
EL.K.SE.603.RS	5025211	4	50 KK	400 EK

RS = right, LS = left





Corner hinge EL.K.SE.3



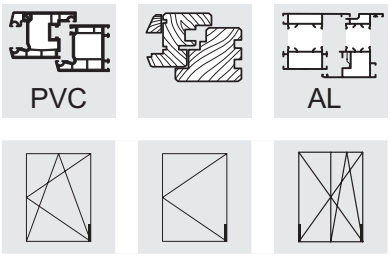
- Hinge component for the centre sash in 3-sash windows

- Used with Sash Hinge FL.SE
- Pressure adjustment: +/- 0.8 mm
- Max. opening angle 95°
- Without assisted control of the centre sash

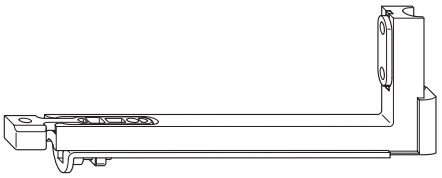
- Profile-dependent, see synoptical table in chapter 1
- Required airgap at horizontal bottom side 12+ 1 mm

Item description	Item No.		Max. sash weight (kg)	VPA1 Qty./Typ	VPA2 Qty./Typ
EL.K.SE.3.152.LS	4997657	4	80	50 KK	400 EK
EL.K.SE.3.152.RS	4997656	4	80	50 KK	400 EK
EL.K.SE.3.161.LS	5010639	4	80	50 KK	400 EK
EL.K.SE.3.161.RS	5010638	4	80	50 KK	400 EK

RS = right, LS = left

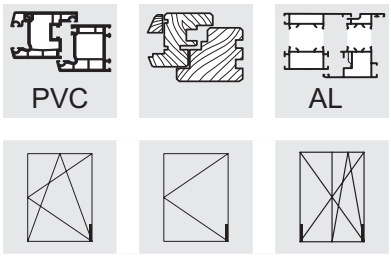


Sash hinge FL.SE



- Height adjustment + 3 mm / - 2 mm
- Side adjustment ±2 mm
- Max. sash weight (without Sash Hinge Rail FLS.SE): 100 kg
- Required airgap at horizontal bottom side 12+ 1 mm

Item description	Item No.		VPA1 Qty./Typ	VPA2 Qty./Typ
FL.SE.1	4988245	4	50 KK	400 EK

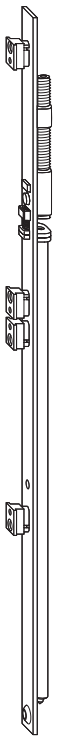


Sash Hinge Rail FLS.SE

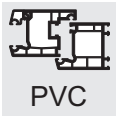
- Used with Adapter Plate AP...SE
- Height adjustment + 3 mm / - 2 mm
- Max. sash weight: 150 kg

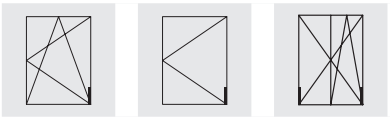
- Note: A turn limiter and a sash hinge rail (regardless of sash weight) should always be used on elements which are used as a doorway.

Please note:
- If Sash Hinge Rail FLS.SE is used, the height adjustment screw must be removed from the corner hinge before installing the sash.

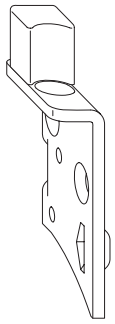


Item description	Item No.		VPA1 Qty./Typ	VPA2 Qty./Typ
FLS.SE	5007865	5	100 GK	400 EK





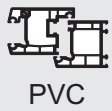
Adapter plate AP...SE

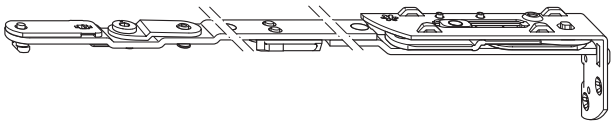


- Used to hold Sash Hinge Rail FLS.SE
- Installation above Corner Hinge EL...SE
- Profile-dependent, see synoptical table in chapter 1
- Max. sash weight when used with Sash Hinge Rail FLS.SE is 150 kg (also see table with maximum weights acc. to profile type)
- All screws in the rear layer (axis 23.5 mm from the window frame inner edge) must be screwed into position on the frame steel reinforcement.
- See Group 15, Installation Drawings B-6-2 for drilling templates
- Groove centre position 13 mm

Item description	Item No.		VPA1 Qty./Typ	VPA2 Qty./Typ	VPA3 Qty./Typ
AP.K.SE.28.LS	4935088	2	50 BL	250 KK	2000 EK
AP.K.SE.28.RS	4935086	2	50 BL	250 KK	2000 EK
AP.K.SE.60.LS	5019227	2	50 BL	250 KK	2000 EK
AP.K.SE.60.RS	5019226	2	50 BL	250 KK	2000 EK
AP.K.SE.144.LS	4932746	2	50 BL	250 KK	2000 EK
AP.K.SE.144.RS	4932745	2	50 BL	250 KK	2000 EK
AP.K.SE.152.LS	4932742	2	50 BL	250 KK	2000 EK
AP.K.SE.152.RS	4932733	2	50 BL	250 KK	2000 EK
AP.K.SE.161.LS	4932759	2	50 BL	250 KK	2000 EK
AP.K.SE.161.RS	4932758	2	50 BL	250 KK	2000 EK
AP.K.SE.162.LS	4932761	2	50 BL	250 KK	2000 EK
AP.K.SE.162.RS	4932760	2	50 BL	250 KK	2000 EK
AP.K.SE.166.LS	4931709	2	50 BL	250 KK	2000 EK
AP.K.SE.166.RS	4931706	2	50 BL	250 KK	2000 EK
AP.K.SE.169.LS	5012922	2		250 KK	2000 EK
AP.K.SE.169.RS	5012921	2		250 KK	2000 EK
AP.K.SE.192.LS	4993321	2	50 BL	250 KK	2000 EK
AP.K.SE.192.RS	4993320	2	50 BL	250 KK	2000 EK
AP.K.SE.205.LS	4932744	2	50 BL	250 KK	2000 EK
AP.K.SE.205.RS	4932743	2	50 BL	250 KK	2000 EK
AP.K.SE.226.LS	4932757	2	50 BL	250 KK	2000 EK
AP.K.SE.226.RS	4932747	2	50 BL	250 KK	2000 EK
AP.K.SE.603.LS	5025287	2	50 BL	250 KK	2000 EK
AP.K.SE.603.RS	5025286	2	50 BL	250 KK	2000 EK

RS = right, LS = left



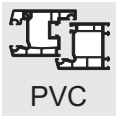


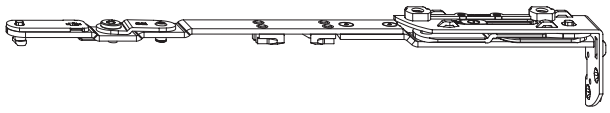
Shears
SK.SE

- Used with Top Rod OS.SE
- Profile-dependent, see synoptical table in chapter 1
- When sash is closed, it is completely concealed with no hinges visible
- Only one shear size
- Max. opening angle 95°
- Tilt opening width approx. 130 mm
- Contact pressure for shear is adjusted via E1.SE
- Adjustment to raise the sash 2.5 mm and lower it 1.5 mm
- Groove centre position 13 mm
- Airgap horizontal top side 12 + 1mm
- All screws in the rear layer (axis 23.5 mm from the window frame inner edge) must be screwed into position on the frame steel reinforcement.
- See Group 15, Installation Drawings B-6-1 and B-6-2 for drilling templates

Item description	Item No.		VPA1 Qty./Typ	VPA2 Qty./Typ	VPA3 Qty./Typ
SK.SE.28.LS	4935095	4	10 BD	60 GK	240 EK
SK.SE.28.RS	4935090	4	10 BD	60 GK	240 EK
SK.SE.60.LS	5019221	4	10 BD	60 GK	240 EK
SK.SE.60.RS	5019220	4	10 BD	60 GK	240 EK
SK.SE.144.LS	4932608	4	10 BD	60 GK	240 EK
SK.SE.144.RS	4932606	4	10 BD	60 GK	240 EK
SK.SE.152.LS	4931885	4	10 BD	60 GK	240 EK
SK.SE.152.RS	4931884	4	10 BD	60 GK	240 EK
SK.SE.161.LS	4932614	4	10 BD	60 GK	240 EK
SK.SE.161.RS	4932611	4	10 BD	60 GK	240 EK
SK.SE.162.LS	4932618	4	10 BD	60 GK	240 EK
SK.SE.162.RS	4932616	4	10 BD	60 GK	240 EK
SK.SE.166.LS	4930374	4	10 BD	60 GK	240 EK
SK.SE.166.RS	4930373	4	10 BD	60 GK	240 EK
SK.SE.169.LS	5012920	4	10 BD	60 GK	240 EK
SK.SE.169.RS	5012889	4	10 BD	60 GK	240 EK
SK.SE.192.LS	4993250	4	10 BD	60 GK	240 EK
SK.SE.192.RS	4993209	4	10 BD	60 GK	240 EK
SK.SE.205.LS	4932603	4	10 BD	60 GK	240 EK
SK.SE.205.RS	4932601	4	10 BD	60 GK	240 EK
SK.SE.226.LS	4931887	4	10 BD	60 GK	240 EK
SK.SE.226.RS	4931886	4	10 BD	60 GK	240 EK

RS = right, LS = left

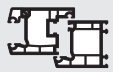


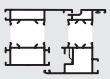


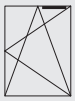
Shears
SK.SE.E

- For the type of fitting “Tilt before turn”
- In combination with top rod OS.SE...E
- Profile-dependent, see synoptical table in chapter 1
- When sash is closed, it is completely concealed with no hinges visible
- Only one shear size
- Max. opening angle 95°
- Tilt opening width approx. 130 mm
- Contact pressure for shear is adjusted via E1.SE
- Adjustment to raise the sash 2.5 mm and lower it 1.5 mm
- Groove centre position 13 mm
- Airgap horizontal top side 12 + 1mm
- All screws in the rear layer (axis 23.5 mm from the window frame inner edge) must be screwed into position on the frame steel reinforcement.
- See Group 15, Installation Drawings B-6-1 and B-6-2 for drilling templates

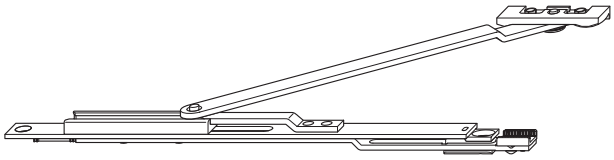
Item description	Item No.		VPA1 Qty./Typ	VPA2 Qty./Typ	VPA3 Qty./Typ
SK.SE.E.28.LS	5022361	4	10 BD	60 GK	240 EK
SK.SE.E.28.RS	5022360	4	10 BD	60 GK	240 EK
SK.SE.E.144.LS	5022363	4	10 BD	60 GK	240 EK
SK.SE.E.144.RS	5022362	4	10 BD	60 GK	240 EK
SK.SE.E.152.LS	5022365	4	10 BD	60 GK	240 EK
SK.SE.E.152.RS	5022364	4	10 BD	60 GK	240 EK
SK.SE.E.161.LS	5022367	4	10 BD	60 GK	240 EK
SK.SE.E.161.RS	5022366	4	10 BD	60 GK	240 EK
SK.SE.E.162.LS	5022369	4	10 BD	60 GK	240 EK
SK.SE.E.162.RS	5022368	4	10 BD	60 GK	240 EK
SK.SE.E.166.LS	5022371	4	10 BD	60 GK	240 EK
SK.SE.E.166.RS	5022370	4	10 BD	60 GK	240 EK
SK.SE.E.205.LS	5022373	4	10 BD	60 GK	240 EK
SK.SE.E.205.RS	5022372	4	10 BD	60 GK	240 EK
SK.SE.E.603.LS	5025183	4	10 BD	60 GK	240 EK
SK.SE.E.603.RS	5025182	4	10 BD	60 GK	240 EK





Additional shear ZSR SL



- Airgap 12 mm
- Overlap 18 to 22 mm
- For width FFB > 1475 mm
- Screw-connect-type frame plate preadjusted for insertion of WSK part (profile-dependent, see Group 11)
- Installation situation see Group 15, installation drawings B-7-4
- Profile adaption using adapters FT - WSK .... see group Frame Parts

Additional shear ZSR.13-3

- As described above
- Frame plate designed for 13 mm groove centre position and 3 mm chamfer behind the glazing bead with groove

Additional shear ZSRE SL

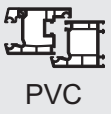
- Use in turn-tilt windows with operating sequence tilt before turn
- In all other respects construction is the same as additional shear ZSR
- Installation situation see group 15, installation drawings B-7-5

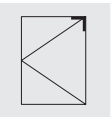
Additional shear ZSRE.13-3

- As described above
- Frame plate designed for 13 mm groove centre position and 3 mm chamfer behind the glazing bead with groove

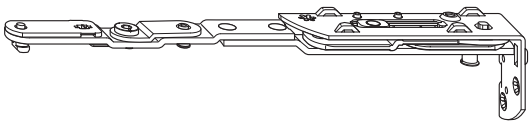
7

Item description	Item No.	Scope of application		VPA1 Qty./Typ	VPA2 Qty./Typ	VPA3 Qty./Typ
ZSR SL	5048941	FFB > 1475	4	10 BD	80 KK	640 EK
ZSR.13-3	5054240	FFB > 1475	4	10 BD	80 KK	640 EK
ZSRE SL	5048946	FFB > 1475	4	10 BD	80 KK	640 EK
ZSRE.13-3	5054241	FFB > 1475	4	10 BD	80 KK	640 EK





Turn hinges
DL.K.SE

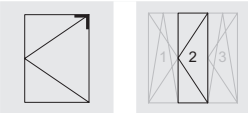


- Used to hold Turn Hinge Rail DLS.K.SE
- Installation on the frame
- Profile-dependent, see synoptical table in chapter 1
- When sash is closed, it is completely concealed with no hinges visible
- Max. opening angle 95°
- Groove centre position 13 mm
- Airgap horizontal top side 12 + 1mm
- All screws in the rear layer (axis 23.5 mm from the window frame inner edge) must be screwed into position on the frame steel reinforcement.
- See Group 15, Installation Drawings B-6-1 and B-6-2 for drilling templates

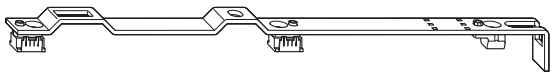
8

Item description	Item No.		VPA1 Qty./Typ	VPA2 Qty./Typ	VPA3 Qty./Typ
DL.K.SE.28.LS	4935083	4	10 BD	60 GK	240 EK
DL.K.SE.28.RS	4935082	4	10 BD	60 GK	240 EK
DL.K.SE.60.LS	5019225	4	10 BD	60 GK	240 EK
DL.K.SE.60.RS	5019224	4	10 BD	60 GK	240 EK
DL.K.SE.144.LS	4932649	4	10 BD	60 GK	240 EK
DL.K.SE.144.RS	4932645	4	10 BD	60 GK	240 EK
DL.K.SE.152.LS	4931889	4	10 BD	60 GK	240 EK
DL.K.SE.152.RS	4931888	4	10 BD	60 GK	240 EK
DL.K.SE.161.LS	4932652	4	10 BD	60 GK	240 EK
DL.K.SE.161.RS	4932650	4	10 BD	60 GK	240 EK
DL.K.SE.162.LS	4932657	4	10 BD	60 GK	240 EK
DL.K.SE.162.RS	4932656	4	10 BD	60 GK	240 EK
DL.K.SE.166.LS	4930376	4	10 BD	60 GK	240 EK
DL.K.SE.166.RS	4930375	4	10 BD	60 GK	240 EK
DL.K.SE.169.LS	5012888	4	10 BD	60 GK	240 EK
DL.K.SE.169.RS	5012887	4	10 BD	60 GK	240 EK
DL.K.SE.192.LS	4993367	4	10 BD	60 GK	240 EK
DL.K.SE.192.RS	4993366	4	10 BD	60 GK	240 EK
DL.K.SE.205.LS	4932638	4	10 BD	60 GK	240 EK
DL.K.SE.205.RS	4932634	4	10 BD	60 GK	240 EK
DL.K.SE.226.LS	4931891	4	10 BD	60 GK	240 EK
DL.K.SE.226.RS	4931890	4	10 BD	60 GK	240 EK
DL.K.SE.603.LS	5025209	3	10 BD	60 GK	240 EK
DL.K.SE.603.RS	5025208	3	10 BD	60 GK	240 EK

RS = right, LS = left



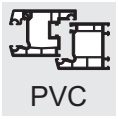
Top hinge rail DLS.K.SE.9-13

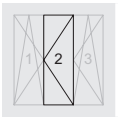


- Used with turn hinge DL...SE
- Can be used left and right hand
- Automatic and manual assembly possible
- Clampable in fitting groove

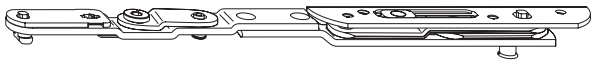
8

Item description	Item No.		VPA1 Qty./Typ	VPA2 Qty./Typ	VPA3 Qty./Typ
DLS.K.SE.9-13	4931379	3	10 BD	100 KK	800 EK





Turn hinges DL.K.SE.3

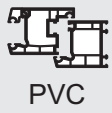


- Hinge component for the centre sash in 3-sash windows

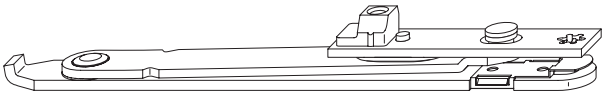
- Installation on the frame
- Profile-dependent, see synoptical table in chapter 1
- Used to hold Turn Hinge Rail DLS.K.SE
- When sash is closed, it is completely concealed with no hinges visible
- Max. opening angle 95°
- Airgap 12 +1 mm
- Without assisted control of the centre sash

Item description	Item No.		Max. sash weight (kg)	VPA1 Qty./Typ	VPA2 Qty./Typ	VPA3 Qty./Typ
DL.K.SE.3.152.LS	4997682	4	80	10 BD	60 GK	240 EK
DL.K.SE.3.152.RS	4997658	4	80	10 BD	60 GK	240 EK
DL.K.SE.3.161.LS	5010664	4	80	10 BD	60 GK	240 EK
DL.K.SE.3.161.RS	5010650	4	80	10 BD	60 GK	240 EK

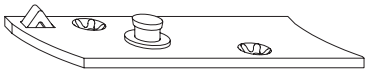
RS = right, LS = left



Turn limiter DB.SE.1



- To prevent window opening too far sideways
- Used with Frame Connection DB.K.SE
- See Mounting Instructions for range of applications of turn limiter
- Can be used left and right hand
- Airgap 12 +1 mm
- Note: Whether you use a turn limiter depends on the window installation location as well as window size and weight.
- The turn limiter is mandatory if:
  - sash weight > 100 kg and/or
  - sash rebate width > 1250 mm and/or
  - jamb depth in the surrounding masonry < 120 mm (DIN EN 13126-8 Item 4)
- Note: A turn limiter and a sash hinge rail (regardless of sash weight) should always be used on elements which are used as a doorway.

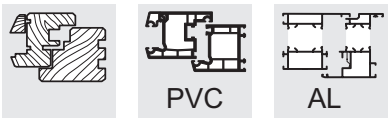


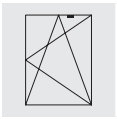
Frame connection RA.DB.K

- Non-handed
- Used with Turn Limiter DB.SE
- See Mounting Instructions for range of applications of turn limiter
- Design depending on corner hinge

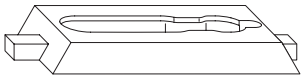
Item description	Item No.		VPA1 Qty./Typ	VPA2 Qty./Typ	VPA3 Qty./Typ
DB.SE.1	4931390	2	10 BD	100 KK	800 EK
RA.DB.K.SE.28.LS	4935085	2	50 BL	200 KK	1600 EK
RA.DB.K.SE.28.RS	4935084	2	50 BL	200 KK	1600 EK
RA.DB.K.SE.60.LS	5019229	2	50 BL	200 KK	1600 EK
RA.DB.K.SE.60.RS	5019228	2	50 BL	200 KK	1600 EK
RA.DB.K.SE.144.LS	4932699	2	50 BL	200 KK	1600 EK
RA.DB.K.SE.144.RS	4932698	2	50 BL	200 KK	1600 EK
RA.DB.K.SE.152.LS	4931901	2	50 BL	200 KK	1600 EK
RA.DB.K.SE.152.RS	4931869	2	50 BL	200 KK	1600 EK
RA.DB.K.SE.161.LS	4932701	2	50 BL	200 KK	1600 EK
RA.DB.K.SE.161.RS	4932700	2	50 BL	200 KK	1600 EK
RA.DB.K.SE.162.LS	4932703	2	50 BL	200 KK	1600 EK
RA.DB.K.SE.162.RS	4932702	2	50 BL	200 KK	1600 EK
RA.DB.K.SE.166.LS	4930378	2	50 BL	200 KK	1600 EK
RA.DB.K.SE.166.RS	4930377	2	50 BL	200 KK	1600 EK
RA.DB.K.SE.169.LS	5012886	2		200 KK	1600 EK
RA.DB.K.SE.169.RS	5012836	2		200 KK	1600 EK
RA.DB.K.SE.192.LS	4993349	2	50 BL	200 KK	1600 EK
RA.DB.K.SE.192.RS	4993348	2	50 BL	200 KK	1600 EK
RA.DB.K.SE.205.LS	4932697	2	50 BL	200 KK	1600 EK
RA.DB.K.SE.205.RS	4932696	2	50 BL	200 KK	1600 EK
RA.DB.K.SE.226.LS	4931903	2	50 BL	200 KK	1600 EK
RA.DB.K.SE.226.RS	4931902	2	50 BL	200 KK	1600 EK
RA.DB.K.SE.603.LS	5025295	2	50 BL	200 KK	1600 EK
RA.DB.K.SE.603.RS	5025294	2	50 BL	200 KK	1600 EK

RS = right, LS = left





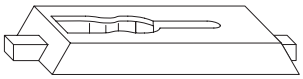
Accessories for top rod OS.SE



ZSS OP

Anti-Slam Device ZSS OP

- Prevents tilted windows slamming shut in case of light draughts and low window sashes
- For inserting into Top Rod OS.SE
- Can be used left and right hand
- Colour: white



KBG.OS.SE

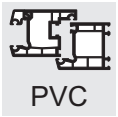
Tilt limiter KBG.OS.SE

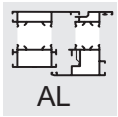
- Reduces tilt opening width by approx. 50 mm
- For inserting into Top Rod OS.SE
- Can be used left and right hand

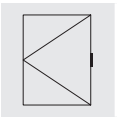
10

- The following application is recommended:
- KBG.OS.SE1 for sash rebate heights < 600 mm
- KBG.OS.SE2 for sash rebate heights < 800 mm

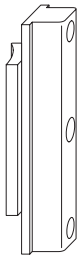
Item description	Item No.	VPA1 Qty./Typ	VPA2 Qty./Typ	VPA3 Qty./Typ
ZSS OP WS	2763095	100 BL	1000 KK	8000 EK
KBG.OS.SE.1	4969389	100 BL	1000 KK	8000 EK
KBG.OS.SE.2	4969390	100 BL	1000 KK	8000 EK





Pull-in device ZV SL



- Central locking device for turn-only windows
- Used with keep SB SVZ ...
- Adjustable for airgaps of 11 to 14 mm

Keep SB SZV SL

- Can be used right and left for frames with a smooth rebate, not intended to include spacer
- Useable for 9 mm and 13 mm groove centre position

Keep SB SZV-WSK SL

- Equal to SB SZV, but prepared to hold profile-dependent spacers FT WSK ...

Spacer FT WSK

- Adapter for combining the component with different rebate shapes
- For profile allocation see Group 11, frame parts

10

Item description	Item No.		VPA1 Qty./Typ	VPA2 Qty./Typ	VPA3 Qty./Typ
ZV SL	1791131	2	10 BL	100 KK	800 EK
SCHLIESSBLECH SZV SL	1801803	2	100 BL	800 KK	6400 EK
SB SZV-WSK SL	2410425	2	100 BL	800 GK	3200 EK

Aluplast **NML 13 mm**
Ideal 2000 - 3000 **UEB 20 mm**

SBK		SBS		SBA		AS SBA, SZV-WSK, RT.MSL	
SBK.K.61	2892209	SBS.K.61	2892129	SBA.K.61	2892073	AS SBA.K.T.13-3	4937780
SBK.K.61.V	2892170					RT.MSL.3	5007006
						SB SZV-WSK SL	2410425
SBK.K.E/PAD		**BK, FT**		**FH**		**SA, SA OF**	
SBK.K.E.3	4935945	BK 60 SL	1919553	FH.152	4949428	SA 152 SL	2366946
		BK 61 RC SL	5026717	FH.R.152	4995853	SA OF 61 SL	4940007
		FT WSK 61	1497653				

Aluplast **NML 13 mm**
Ideal 4000 - 8000, Energeto **UEB 20 mm**

SBK		SBS		SBA		AS SBA, SZV-WSK, RT.MSL	
SBK.K.161	2861621	SBS.K.161	2861672	SBA.K.161	2824071	AS SBA.K.T.13-5	4937782
SBK.K.161.V	4927435	SBS.K.161.M3	4927769	SBA.K.161.DFE-TFE.L.LS	4934013	RT.MSL.3	5007006
SBK.K.SP.161	5010275			SBA.K.161.DFE-TFE.L.RS	4934010	SB SZV-WSK SL	2410425
				SBA.K.161.DFE-TFE.LS	4935788		
				SBA.K.161.DFE-TFE.RS	4935789		
				SBA.K.161.S.40	5001559		
SBK.K.E/PAD		**BK, FT**		**FH**		**SA, SA OF**	
SBK.K.E.5	4935956	BK 61 RC SL	5026717	FH.161	4949431	SA 66 SL	2209887
SBS.K.PAD.161.LS	4995615	FT WSK 66	1530185	FH.R.161	4995855	SA OF 161 SL	5031823
SBS.K.PAD.161.RS	4995614						

Brügmann / Salamander **NML 13 mm**
System AD **UEB 20 mm**

SBK		SBS		SBA		AS SBA, SZV-WSK, RT.MSL	
SBK.K.94.P7	4927718	SBS.K.94.P7	4927717	SBA.K.94.P7	4927716	AS SBA.K.T.13-3	4937780
SBK.K.94.V.P7	4927719					RT.MSL.3	5007006
						SB SZV-WSK SL	2410425
SBK.K.E/PAD		**BK, FT**		**FH**		**SA, SA OF**	
SBK.K.E.3	4935945	BK 552 RC SL	2522321	FH.152	4949428	SA 152 SL	2366946
		FT WSK152	1787079	FH.R.152	4995853		

Brügmann / Salamander **NML 13 mm**
System MD **UEB 20 mm**

SBK		SBS		SBA		AS SBA, SZV-WSK, RT.MSL	
SBK.K.94.P7	4927718	SBS.K.94.P7	4927717	SBA.K.94.P7	4927716	AS SBA.K.T.13-3	4937780
SBK.K.94.V.P7	4927719					SB SZV-WSK SL	2410425
SBK.K.E/PAD		**BK, FT**		**FH**		**SA, SA OF**	
SBK.K.E.3	4935945	BK 552 RC SL	2522321	FH.152	4949428	SA 152 SL	2366946
		FT WSK152	1787079	FH.R.152	4995853		

Deceuninck NML 13 mm
Arcade, Prestige, Deluxe, Elite, MD100, Eforte UEB 21 mm

SBK		SBS		SBA		AS SBA, SZV-WSK, RT.MSL	
SBK.K.192	4932276	SBS.K.192	4932275	SBA.K.192	5002139	AS SBA.K.T.13-5	4937782
SBK.K.192.S12.ZN	4937573	SBS.K.192.S12.ZN	4937572	SBA.K.192.RWS	4932786	SB SZV-WSK SL	2410425
SBK.K.192.V	4932277			SBA.K.192.S12	4939192		
SBK.K.SP.192	5010276						
SBK.K.E/PAD		**BK, FT**		**FH**		**SA, SA OF**	
SBK.K.E.192	4942838	BK192 S12 RC	4939193	FH.192	4949434	SA 192 SL	1919932
SBS.K.PAD.192.LS	4995623	FT WSK 192	1330722	FH.L.192	5008876	SA OF 192 SL	4932035
SBS.K.PAD.192.RS	4995622			FH.R.192	4995858		

Deceuninck NML 13 mm
Zendow, Elegante UEB 20 mm

SBK		SBS		SBA		AS SBA, SZV-WSK, RT.MSL	
SBK.K.169	4926366	SBS.K.169	4926363	SBA.K.169	5073712	AS SBA.K.T.13-4	4937781
SBK.K.169.P7	4974642	SBS.K.169.P7	4974641	SBA.K.169+0,7	5073713	RT.MSL.3	5007006
SBK.K.169/21.P7	5042728					SB SZV-WSK SL	2410425
SBK.K.SP.169.P7	5065629						
SBK.K.E/PAD		**BK, FT**		**FH**		**SA, SA OF**	
SBK.K.E.4	4935954	BKS 169 RC-V SL	2356852	FH.205	4949429	SA 169 SL	2359447
SBS.K.PAD.169.LS	4995621	FT WSK169	2356596	FH.L.205	5002710	SA OF 169 SL	5019156
SBS.K.PAD.169.RS	4995620			FH.R.205	4995854		

Gealan NML 13 mm
3000 UEB 20 mm

SBK		SBS		SBA		AS SBA, SZV-WSK, RT.MSL	
SBK.K.162	4929797	SBS.K.162	4929798	SBA.K.162	4929796	AS SBA.K.T.13-4	4937781
SBK.K.162.P7	4964887	SBS.K.162.M3	5040828	SBA.K.62	4926222	RT.MSL.3	5007006
SBK.K.162.S.P7	5056334	SBS.K.162.P7	4964886			SB SZV-WSK SL	2410425
SBK.K.162.V.P7	4964888	SBS.K.162.S.P7	5056333				
SBK.K.62	4929831	SBS.K.169.P7	4974641				
SBK.K.E/PAD		**BK, FT**		**FH**		**SA, SA OF**	
SBK.K.E.4	4935954	BK 134 SL	2103935	FH.205	4949429	SA 62 SL6 SL	2749461
		BK 61 RC SL	5026717	FH.L.205	5002710		
		FT WSK 62	1348121	FH.R.205	4995854		

Gealan NML 13 mm
6000, 7000, 8000, 9000 UEB 20 mm

SBK		SBS		SBA		AS SBA, SZV-WSK, RT.MSL	
SBK.K.162	4929797	SBS.K.162	4929798	SBA.K.162	4929796	AS SBA.K.T.13-4	4937781
SBK.K.162.P7	4964887	SBS.K.162.M3	5040828			RT.MSL.3	5007006
SBK.K.162.S	4986548	SBS.K.162.P7	4964886			SB SZV-WSK SL	2410425
SBK.K.162.S.P7	5056334	SBS.K.162.S	4988102				
SBK.K.162.V	4929799	SBS.K.162.S.P7	5056333				
SBK.K.162.V.P7	4964888						
SBK.K.SP.162	5030281						
SBK.K.E/PAD		**BK, FT**		**FH**		**SA, SA OF**	
SBK.K.E.4	4935954	BK 134 SL	2103935	FH.205	4949429	SA 62 SL6 SL	2749461
SBS.K.PAD.162.LS	4995617	FT WSK 62	1348121	FH.L.205	5002710		
SBS.K.PAD.162.RS	4995616			FH.R.205	4995854		

KBE (Profine) NML 13 mm
70 AD / 70 MD / 88+ UEB 20 mm

SBK		SBS		SBA		AS SBA, SZV-WSK, RT.MSL	
SBK.K.205.P5	4996028	SBS.K.205	5039488	SBA.K.205.P5	2922210	AS SBA.K.T.13-4	4937781
SBK.K.205.S.P5	5046012	SBS.K.205.P5	4996029			RT.MSL.3	5007006
SBK.K.205.V.P5	4996027	SBS.K.205.S.P5	5046011			SB SZV-WSK SL	2410425
SBK.K.E/PAD		**BK, FT**		**FH**		**SA, SA OF**	
SBK.K.E.4	4935954	BKS 169 RC-V SL	2356852	FH.205	4949429	SA 169 SL	2359447
SBS.K.PAD.205.LS	4995625	FT WSK205	1809590	FH.L.205	5002710	SA OF 169 SL	5019156
SBS.K.PAD.205.RS	4995624			FH.R.205	4995854	SA SL	1895985

KBE (Profine) NML 13 mm
76 AD, 76 MD UEB 20 mm

SBK		SBS		SBA		AS SBA, SZV-WSK, RT.MSL	
SBK.K.205.P5	4996028	SBS.K.205	5039488	SBA.K.205.P5	2922210	AS SBA.K.T.13-4	4937781
SBK.K.205.S.P5	5046012	SBS.K.205.P5	4996029			RT.MSL.3	5007006
SBK.K.205.V.P5	4996027	SBS.K.205.S.P5	5046011			SB SZV-WSK SL	2410425
SBK.K.E/PAD		**BK, FT**		**FH**		**SA, SA OF**	
SBK.K.E.4	4935954	BKS 169 RC-V SL	2356852	FH.205	4949429	SA 169 SL	2359447
SBS.K.PAD.205.LS	4995625	FT WSK205	1809590	FH.L.205	5002710	SA OF 169 SL	5019156
SBS.K.PAD.205.RS	4995624			FH.R.205	4995854	SA SL	1895985

Kömmerling (Profine) NML 13 mm
76 AD, 76 MD UEB 20 mm

SBK		SBS		SBA		AS SBA, SZV-WSK, RT.MSL	
SBK.K.205.P5	4996028	SBS.K.205	5039488	SBA.K.205.P5	2922210	AS SBA.K.T.13-4	4937781
SBK.K.205.V.P5	4996027	SBS.K.205.P5	4996029			RT.MSL.3	5007006
		SBS.K.205.S.P5	5046011			SB SZV-WSK SL	2410425
SBK.K.E/PAD		**BK, FT**		**FH**		**SA, SA OF**	
SBK.K.E.4	4935954	BKS 169 RC-V SL	2356852	FH.205	4949429	SA 169 SL	2359447
SBS.K.PAD.205.LS	4995625	FT WSK205	1809590	FH.L.205	5002710	SA OF 169 SL	5019156
SBS.K.PAD.205.RS	4995624			FH.R.205	4995854		

Kömmerling (Profine) NML 13 mm
Classic, Elegance, Avantgarde, 88+ UEB 20 mm

SBK		SBS		SBA		AS SBA, SZV-WSK, RT.MSL	
SBK.K.144	5049010	SBS.K.144	2920661	SBA.K.144	2920652	AS SBA.K.T.13-5	4937782
SBK.K.144.S	2920687	SBS.K.144.M3	5013386	SBA.K.144.DFE-TFE.LS	4935785	RT.MSL.3	5007006
SBK.K.144.V	4927432	SBS.K.144.S	4969911	SBA.K.144.DFE-TFE.RS	4935786	SB SZV-WSK SL	2410425
SBK.K.SP.144	5010272			SBA.K.144.V	4927431		
				SBA.K.244	4931453		
SBK.K.E/PAD		**BK, FT**		**FH**		**SA, SA OF**	
SBK.K.E.144	4995421	BK 144 SL	1919570	FH.144	4949433	SA 144 SL	2366911
SBS.K.PAD.144.LS	4995609	FT WSK144	1326221	FH.R.144	4995856	SA OF 144 SL	2859530
SBS.K.PAD.144.RS	4995608						

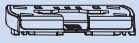
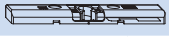
LB.Profile **NML 13 mm**
PAD / PMD / PCD **UEB 20 mm**

SBK 		**SBS** 		**SBA** 		**AS SBA, SZV-WSK, RT.MSL**	
SBK.K.12	4926374	SBS.K.12	4926373	SBA.K.12	4926372	AS SBA.K.T.13-3	4937780
SBK.K.12.V	4926375					RT.MSL.3	5007006
						SB SZV-WSK SL	2410425
SBK.K.E/PAD 		**BK, FT** 		**FH** 		**SA, SA OF**	
SBK.K.E.3	4935945	BK 60 SL	1919553	FH.152	4949428	SA SL	1895985
		FT WSK 76	1500787	FH.R.152	4995853		

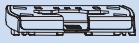
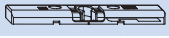
Plustec **NML 13 mm**
Plustec **UEB 20 mm**

SBK 		**SBS** 		**SBA** 		**AS SBA, SZV-WSK, RT.MSL**	
SBK.K.76.M3	4926437	SBS.K.76.M3	4926436	SBA.K.76	4926432	AS SBA.K.T.13-4	4937781
SBK.K.76.V.M3	4926438					RT.MSL.3	5007006
						SB SZV-WSK SL	2410425
SBK.K.E/PAD 		**BK, FT** 		**FH** 		**SA, SA OF**	
		BK 60 SL	1919553	FH.152	4949428	SA 60 SL	1929209
		BK 61 RC SL	5026717	FH.R.152	4995853		
		FT WSK 76	1500787				

Rehau **NML 13 mm**
Geneo, Synego **UEB 20 mm**

SBK 		**SBS** 		**SBA** 		**AS SBA, SZV-WSK, RT.MSL**	
SBK.K.160	4933118	SBS.K.160.S16.WK2	4941217	SBA.K.160	4933116	AS SBA.K.T.13-4	4937781
SBK.K.SP.60/260	5030280	SBS.K.160.WK2	4933803			RT.MSL.3	5007006
		SBS.K.60.M3	4927768			SB SZV-WSK SL	2410425
SBK.K.E/PAD 		**BK, FT** 		**FH** 		**SA, SA OF**	
SBK.K.E.4	4935954	BK 60 SL	1919553	FH.205	4949429	SA 60 SL	1929209
SBS.K.PAD.160.LS	4995613	FT WSK 60	1345393	FH.L.205	5002710		
SBS.K.PAD.160.RS	4995612			FH.R.205	4995854		

Rehau **NML 13 mm**
S735, Brillant, Thermo-Design, Brillant-Design, Basic-Design **UEB 20 mm**

SBK 		**SBS** 		**SBA** 		**AS SBA, SZV-WSK, RT.MSL**	
SBK.K.60	2861584	SBS.K.60	2861656	SBA.K.60	2824046	AS SBA.K.T.13-3	4937780
SBK.K.60.M3	4927850	SBS.K.60.M3	4927768	SBA.K.60 -0,3	4931375	RT.MSL.3	5007006
SBK.K.60.V	4927433					SB SZV-WSK SL	2410425
SBK.K.E/PAD 		**BK, FT** 		**FH** 		**SA, SA OF**	
SBK.K.E.60	4942833	BK 60 SL	1919553	FH.60	4949432	SA 60 SL	1929209
		BK 61 RC SL	5026717	FH.R.60	4995857	SA OF 60 SL	2859521
		FT WSK 60	1345393				

11

Roplasto **NML 13 mm**
7001 AD, 7001 MD **UEB 22 mm**

SBK		SBS		SBA		AS SBA, SZV-WSK, RT.MSL	
SBK.K.211	4931331	SBS.K.211	4931330	SBA.K.211	4931329	AS SBA.K.T.13-4	4937781
						RT.MSL.3	5007006
						SB SZV-WSK SL	2410425
SBK.K.E/PAD		**BK, FT**		**FH**		**SA, SA OF**	
SBK.K.E.4	4935954	BK SL	1793250	FH.205	4949429	SA 169 SL	2359447
		FT WSK205	1809590	FH.L.205	5002710	SA OF 169 SL	5019156
				FH.R.205	4995854	SA SL	1895985

Salamander **NML 13 mm**
2D / 3D / MD / Streamline **UEB 20 mm**

SBK		SBS		SBA		AS SBA, SZV-WSK, RT.MSL	
SBK.K.28	4926454	SBS.K.28	4926453	SBA.K.28	4926452	AS SBA.K.T.13-4	4937781
SBK.K.28.P5	5059940	SBS.K.28.P5	5059939	SBA.K.28.DFE-TFE. LS	4935783	RT.MSL.3	5007006
SBK.K.28.V	4926455			SBA.K.28.DFE-TFE. RS	4935784	SB SZV-WSK SL	2410425
SBK.K.SP.28	5031710			SBA.K.28.P5	5059941		
SBK.K.E/PAD		**BK, FT**		**FH**		**SA, SA OF**	
SBK.K.E.28	4942832	BK 134 SL	2103935	FH.144	4949433	SA 134 SL	2367181
SBS.K.PAD.28.LS	4995601	FT WSK134	1537651	FH.R.144	4995856		
SBS.K.PAD.28.RS	4995600						

Salamander **NML 13 mm**
bluEvolution 82 / 92 **UEB 20 mm**

SBK		SBS		SBA		AS SBA, SZV-WSK, RT.MSL	
SBK.K.128	4941002	SBS.K.128	4941001	SBA.K.28	4926452	AS SBA.K.T.13-4	4937781
SBK.K.128.V	4941004			SBA.K.28.DFE-TFE. LS	4935783	RT.MSL.3	5007006
				SBA.K.28.DFE-TFE. RS	4935784	SB SZV-WSK SL	2410425
				SBA.K.28.P5	5059941		
SBK.K.E/PAD		**BK, FT**		**FH**		**SA, SA OF**	
SBS.K.PAD.128.LS	4995607	BK 134 SL	2103935	FH.205	4949429	SA 134 SL	2367181
SBS.K.PAD.128.RS	4995606	FT WSK134	1537651	FH.L.205	5002710		
				FH.R.205	4995854		

Schüco **NML 13 mm**
Corona 60 **UEB 20 mm**

SBK		SBS		SBA		AS SBA, SZV-WSK, RT.MSL	
SBK.K.66.P5	4936142	SBS.K.66.P5	4936140	SBA.K.166	4930272	AS SBA.K.T.13-5	4937782
SBK.K.66.P7	5027282			SBA.K.66	4932001	RT.MSL.3	5007006
SBK.K.66.V.P5	4936143					SB SZV-WSK SL	2410425
SBK.K.E/PAD		**BK, FT**		**FH**		**SA, SA OF**	
		BK 60 SL	1919553	FH.161	4949431	SA 66 SL	2209887
		BK 61 RC SL	5026717	FH.R.161	4995855	SA OF 60 SL	2859521
		FT WSK 61	1497653				
		FT WSK 66	1530185				

Schüco NML 13 mm
Corona 70 / Corana SI 82 UEB 20 mm

SBK		SBS		SBA		AS SBA, SZV-WSK, RT.MSL	
SBK.K.166	4930269	SBS.K.166	4930271	SBA.K.166	4930272	AS SBA.K.T.13-3	4937780
SBK.K.166.V	4930270					RT.MSL.3	5007006
SBK.K.SP.166	5018520					SB SZV-WSK SL	2410425
SBK.K.E/PAD		**BK, FT**		**FH**		**SA, SA OF**	
SBK.K.E.3	4935945	BK 60 SL	1919553	FH.152	4949428	SA 60 SL	1929209
SBS.K.PAD.166.LS	4995619	FT WSK 61	1497653	FH.R.152	4995853		
SBS.K.PAD.166.RS	4995618						

Schüco NML 13 mm
LivIng UEB 20 mm

SBK		SBS		SBA		AS SBA, SZV-WSK, RT.MSL	
SBK.K.166	4930269	SBS.K.166	4930271	SBA.K.166	4930272	AS SBA.K.T.13-3	4937780
SBK.K.166.V	4930270					RT.MSL.3	5007006
						SB SZV-WSK SL	2410425
SBK.K.E/PAD		**BK, FT**		**FH**		**SA, SA OF**	
SBK.K.E.3	4935945	BK 60 SL	1919553	FH.152	4949428	SA 60 SL	1929209
SBS.K.PAD.166.LS	4995619	FT WSK 61	1497653	FH.R.152	4995853		
SBS.K.PAD.166.RS	4995618						

Trocal (Profine) NML 13 mm
76 AD, 76 MD UEB 20 mm

SBK		SBS		SBA		AS SBA, SZV-WSK, RT.MSL	
SBK.K.205.P5	4996028	SBS.K.205	5039488	SBA.K.205.P5	2922210	AS SBA.K.T.13-4	4937781
SBK.K.205.S.P5	5046012	SBS.K.205.P5	4996029			RT.MSL.3	5007006
SBK.K.205.V.P5	4996027	SBS.K.205.S.P5	5046011			SB SZV-WSK SL	2410425
SBK.K.E/PAD		**BK, FT**		**FH**		**SA, SA OF**	
SBK.K.E.4	4935954	BKS 169 RC-V SL	2356852	FH.205	4949429	SA 169 SL	2359447
SBS.K.PAD.205.LS	4995625	FT WSK205	1809590	FH.L.205	5002710	SA OF 169 SL	5019156
SBS.K.PAD.205.RS	4995624			FH.R.205	4995854	SA SL	1895985

Trocal (Profine) NML 13 mm
InnoNova 2000 / 88+ UEB 20 mm

SBK		SBS		SBA		AS SBA, SZV-WSK, RT.MSL	
SBK.K.126.V.P3	4998434	SBS.K.126.ZN	4926198	SBA.K.126	4926196	SB SZV-WSK SL	2410425
SBK.K.E/PAD		**BK, FT**		**FH**		**SA, SA OF**	
		FT WSK 42	1320680			SA SL	1895985

Trocal (Profine) NML 13 mm
InnoNova A5 / M5 UEB 20 mm

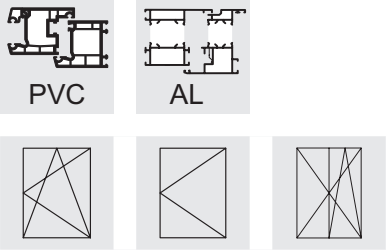
SBK		SBS		SBA		AS SBA, SZV-WSK, RT.MSL	
SBK.K.226.P5	2921217	SBS.K.226.P5	2921137	SBA.K.226	2921090	AS SBA.K.T.13-3	4937780
SBK.K.226.V.P5	2921233					RT.MSL.3	5007006
						SB SZV-WSK SL	2410425
SBK.K.E/PAD		**BK, FT**		**FH**		**SA, SA OF**	
SBK.K.E.3	4935945	BK 226 RC SL	2393055	FH.152	4949428	SA SL	1895985
SBS.K.PAD.226.LS	4995627			FH.R.152	4995853		
SBS.K.PAD.226.RS	4995626						

Veka **NML 13 mm**

Softline 70 AD/MD, Softline 82 AD/MD, Softline 76 AD/MD Artline **UEB 20 mm**

SBK 		**SBS** 		**SBA** 		**AS SBA, SZV-WSK, RT.MSL**	
SBK.K.152	4938546	SBS.K.152	4990061	SBA.K.152	5050727	AS SBA.K.T.13-3	4937780
SBK.K.152.P5	4939133	SBS.K.152.M3	4984031	SBA.K.152.DFE-TFE. LS	5050760	RT.MSL.3	5007006
SBK.K.152.V	4938547	SBS.K.152.P5	4938954	SBA.K.152.DFE-TFE. RS	5050729	SB SZV-WSK SL	2410425
SBK.K.152.V.P5	4939137	SBS.K152.S	4937038	SBA.K.152.P5.DFE-TFE.LS	4990374		
SBK.K.SP.152	5055019			SBA.K.152.P5.DFE-TFE.RS	4990373		
SBK.K.SP.152.P5	5055020			SBA.K.152+0,5	5050726		
				SBA.K.552+0,5	5050725		
SBK.K.E/PAD 		**BK, FT** 		**FH** 		**SA, SA OF**	
SBK.K.E.3	4935945	BK 552 RC SL	2522321	FH.152	4949428	SA 152 SL	2366946
SBS.K.PAD.152.LS	4995611	FT WSK152	1787079	FH.R.152	4995853	SA OF 152 SL	2859505
SBS.K.PAD.152.RS	4995610						

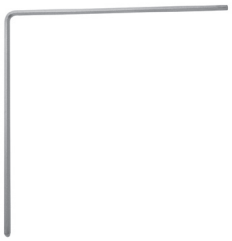
11



Adjustment tools

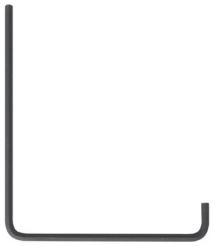
Adjustment wrench size 2.5/2.5 T10

- 90° angled adjustment tool for hexagonal screws size 2.5 and Torx T10, e. g. for adjusting overlap sash hinges (turn restriction / pressure adjustment)



Adjustment wrench 4 mm

- 90° double-angled adjustment tool for hexagonal screws size 4 mm, e. g. for adjusting overlap sash hinges (height adjustment) or for lifting and lowering shears

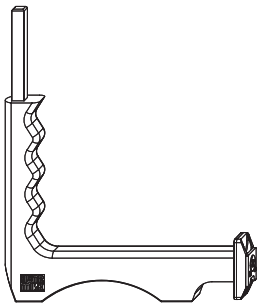


Adjusting wrench V.ST.SCH.HV-11

- Tool for adjustment of the octagonal locking bolt

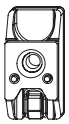
Pulling device for pin SZ.SL.C

- Square pin (assembly handle for operating the sash)
- Adapter plate for pushing / pulling out the shear hinge pin for shear hinge SL.C (with clamping spring for holding the pin) or for shear hinge SL.K



Pin extraction adapter SZ-AD.SL.C

- Adapter plate for independent replacement of the “gripper” on the existing assembly handles



Item description	Item No.	VPA1 Qty./Typ	VPA2 Qty./Typ	VPA3 Qty./Typ
JS SW2,5/2,5 T10	1469644	10 BL	300 KK	2400 EK
JS 4MM	1555331	10 BL	300 KK	2400 EK
V.ST.SCH.HV-11	5008893		200 KK	1600 EK
SZ.SL.C	5069912		100 KK	800 EK
SZ-AD.SL.C	5071395	10 BL	500 KK	4000 EK

Notes on these assembly instructions

Prerequisites

The mounting instructions are designed for mounting Winkhaus activPilot fittings for windows and glazed doors only. Fittings are designed for the following sash rebate sizes and sash weights:

- Min. sash rebate width 380 mm
- Max. sash rebate width 1725 mm
- From 1475 mm sash rebate width with additional shear ZSR
- Min. sash rebate height 230 mm
- Max. sash rebate height 2,800 mm
- Max. sash size 3 m²
- Max. sash weight 80 / 130 / 150 kg
- Ratio between sash rebate width : sash rebate height ≤ 2:1
- Airgap at horizontal top and bottom side 12 +1 mm

Note: In order to ascertain the permissible sash sizes and sash weights, please refer to the diagrams in the chapter “General Product Information”.

Observe instructions on window profile

You must specifically take into account information provided by the profile manufacturer or system owner when determining the maximum sash sizes and sash weights!

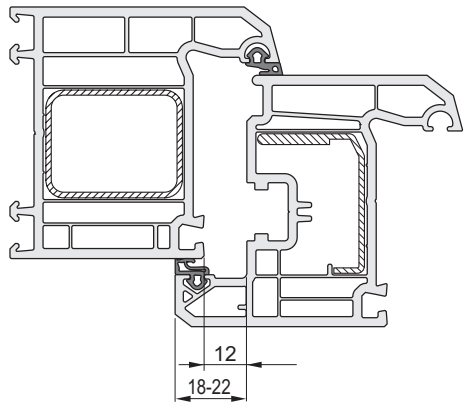
Persons involved in mounting fittings must have read and understood this fitting guide. For all work with fittings, always follow Winkhaus’ Product Liability Information. The manufacturer will accept no liability in case of failure to comply with this guide, deployment of insufficiently qualified staff and unauthorised alterations.

The respective fitting may only consist of the original Winkhaus proPilot fitting parts. We do not assume any liability in case third-party or non-approved system components are used.

Standard profile dimensions

See figure: Profile cross-section

The fitting is suitable for all PVC-U windows with standard fitting groove (eurogroove position 9 or 13 mm) and designed for an airgap of 12 mm and overlaps of 18 to 22 mm.



Profile cross-section

The activPilot Select fitting can only be used with a 13 mm Euro groove. You can find a list of the profile systems for use with activPilot Select fittings in the profile overview at the beginning of the “Mounting Instructions” section. We recommend our activPilot Elegance fittings in the case of systems with design variations.

Please observe screwing advice!

Important: The load-bearing fitting components, such as corner, shear and sash hinges, must be designed according to the TBDK guidelines. Please adapt the drill diameter of the fixing screws, the screw diameter and the screw length to the load situation.

Important: frame and sash components in water-bearing profile levels must be screwed in a way to avoid water entering into profile levels that cannot be drained afterwards. Please observe the information given by your system supplier.

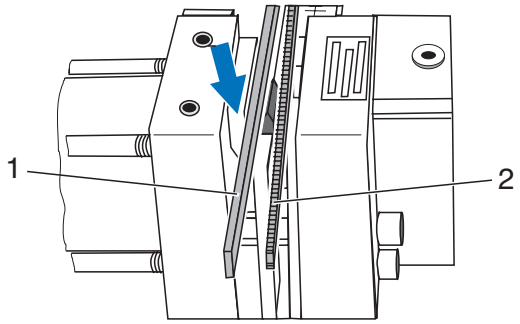
Attention! Winkhaus does not provide fastening screws for fittings assembly. Always use fastening screws suitable for the window type and window dimensions.

Shortening the fittings

A detailed description on shortening of fittings is available here. This description will be referred to in these assembly instructions.

See figure: Fittings prior to punching

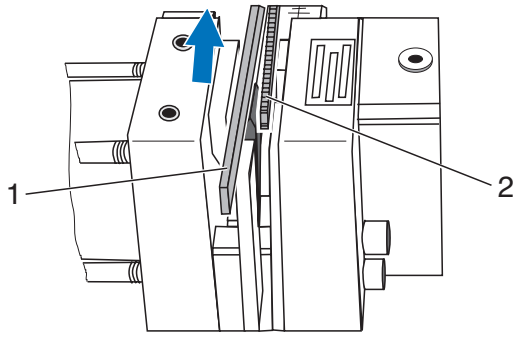
- Always insert the face plate (1) and drive rod (2) perpendicularly from the top with the face plate (1) pointing to the pressure cylinder.



Fittings prior to punching

See figure: Fittings after punching

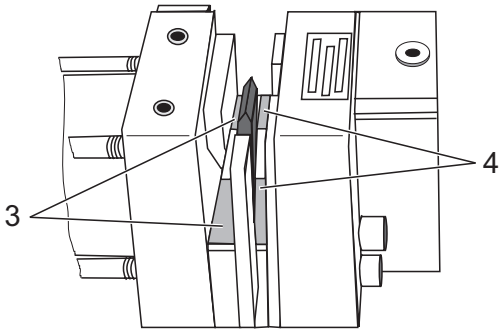
- After punching, always remove the face plate (1) and drive rod (2) perpendicularly in an upwards direction.



Fittings after punching

See figure: Cleaning the supporting surfaces

- Keep the supporting surfaces (3 and 4) clean.



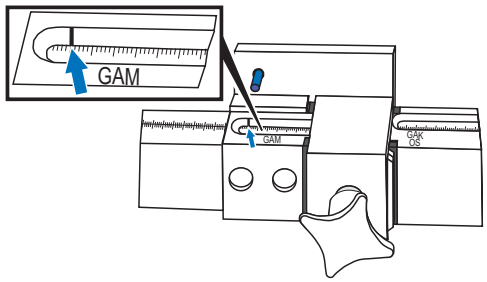
Cleaning the supporting surfaces

Shorten the drive rod GAM (central handle position)

See figure: Marking GAM

- Set measuring value FFH on the measuring device to the GAM mark.

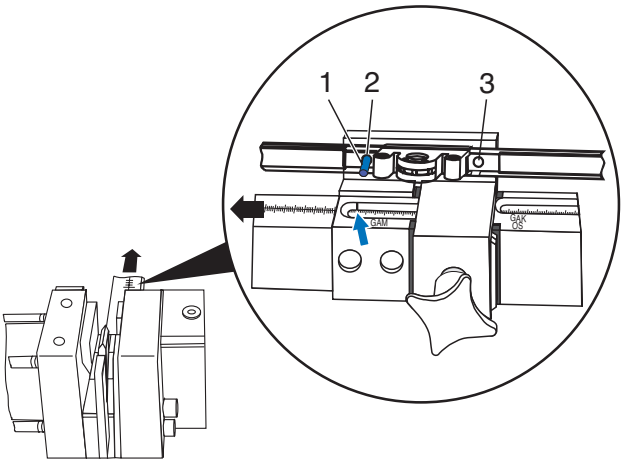
Attention! If the GAM scale is displaced by one submarking, this corresponds to a longitudinal shift of 2 mm.



Marking GAM

See figure: Position for shortening drive rod

- Position the GAM drive rod at the scale; slot drill hole (2) onto bolt (1).
- Turn the GAM drive rod around, and slot the drill hole (3) onto the bolt (1), then trim the other side.
- Shorten the drive rod using the fitting punch.



Position for shortening drive rod

13

Cutting of double sash drive rods GASM

GASM.800

See figure: Cutting instructions GASM

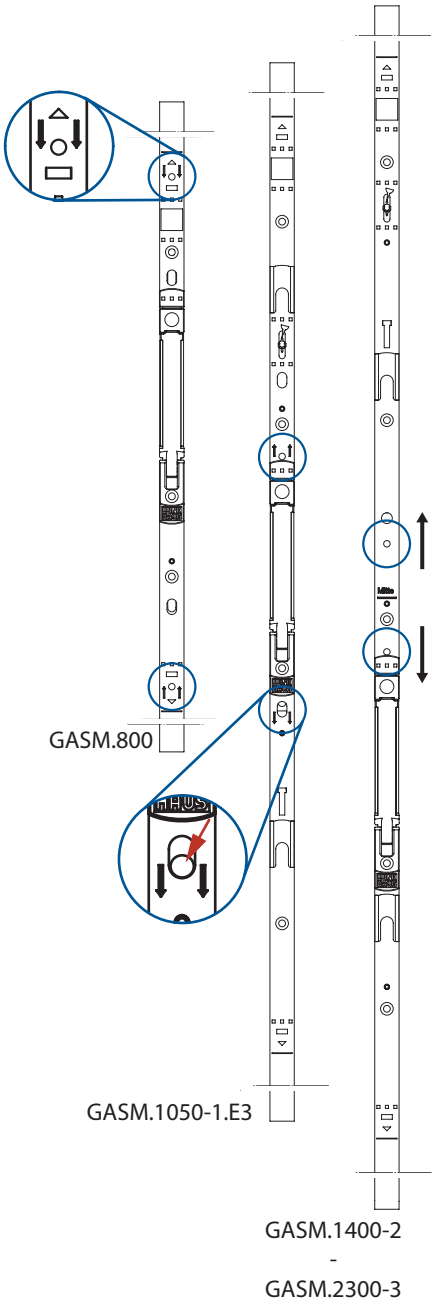
- Adjust the ruler to FFH + 400 mm (example: measured FFH = 567; adjust ruler to 567mm + 400 mm = 967 mm).
- Connect the drive to the marked hole on the ruler (arrows pointing to cutter).
- Cut off the element.

GASM.1050 – GASM.2300

See figure: Cutting instructions GASM

- Adjust the ruler to FFH (sash rebate height).
- Connect the drive to the marked hole on the ruler (arrows pointing to cutter).
- In case of GASM.1050 please make sure that the bolt in the elongated hole is positioned as indicated (red arrow).
- Cut off the element.
- GASM.1050 is always used in combination with corner drive E3.

Note: The double-sash drive rod must be trimmed before delivery.



Cutting instructions GASM

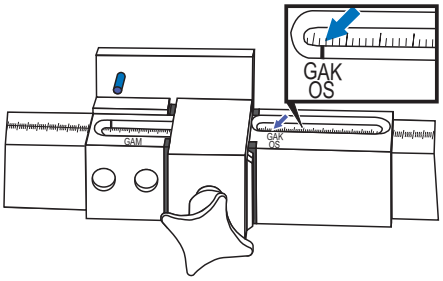
13

Shorten the GAK / GASK drive rod (constant handle position) and top rod OS

Note: The double-sash drive rod must be trimmed before delivery.

See figure: Markings GAK and OS

- Set the measuring value FFH (GAK/GASK) or FFB (OS) on the measuring device to the GAK/OS mark.

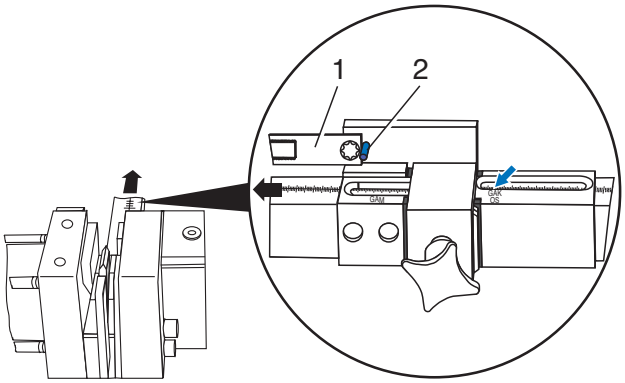


Markings GAK and OS

See figure: Position for shortening drive rod and/or top rod

- Cutting the top rod OS...

- Position the drive rod GAK/GASK (fixed handle position) (1) or the top rod OS (1) at the bolt (2).
- Shorten the drive rod (1) or the top rod (1).

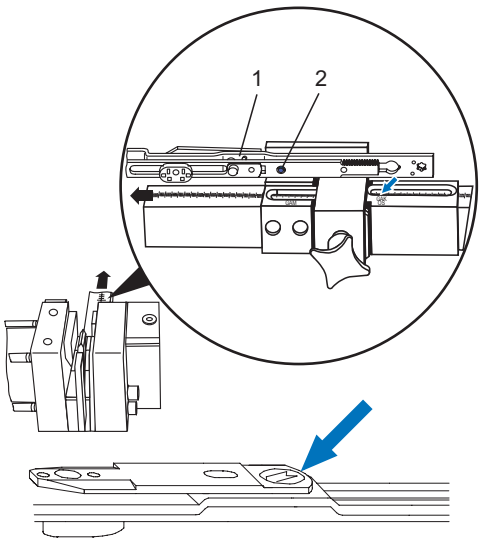


Position for shortening drive rod and/or top rod

Only applies to top rod OS1.600 (OS1.PA.600/OS.XL):

See figure: Position for shortening top rod

- Position the top rod (1) with square holes at bolt (2). Press the offset (see arrow) against the bolt (2).
- Shorten the top rod (1).



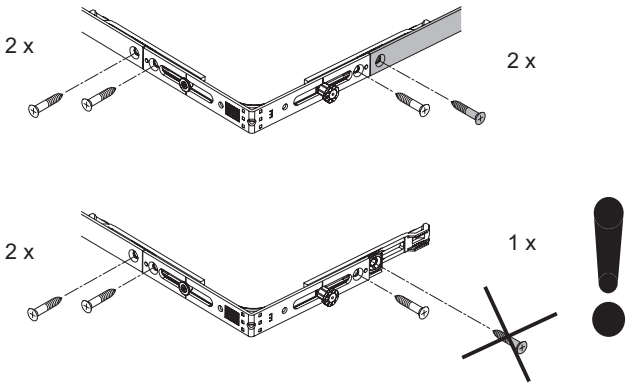
Position for shortening top rod

Mounting of fittings on sash

Utilisation of the clampable “E...N” corner drive with black clamping piece

In case the “E...N” corner hinge (with black clamping piece) is used, please keep in mind that the second (external) screw may only be applied if another component is connected (see illustration below).

If a second screw is fixed to the clamping piece and tightened without joining an additional component, the fitting system might be difficult to operate.



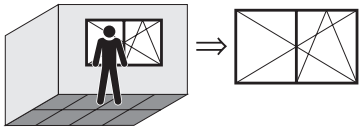
Turn-tilt type – Rectangular window

Prepare the window for fitting. Then proceed as follows:

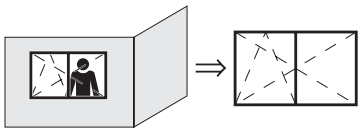
Please note: The following figures refer to a window for right-hand use. When fitting a window for left-hand use, the figures will be mirror-inverted.

The following also applies:

- When viewing the window from the inside, the symbol is depicted as a full line.



- When viewing the window from the outside, the symbol is depicted as a dotted line.

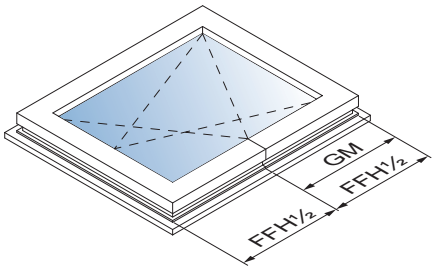


Determine the handle height:

Handle height for drive rod GAM

See figure: Sash rebate height FFH with central handle height GM

If you use a GAM drive rod ... (central handle position), the dimension GM is half the sash rebate height FFH.

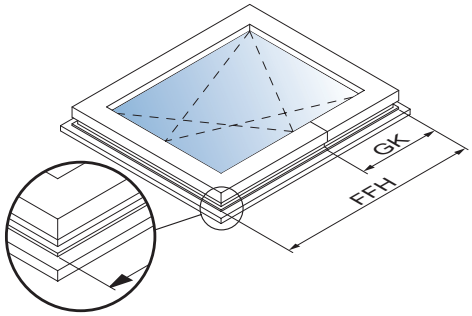


Sash rebate height FFH with central handle height GM

Handle height for drive rod GAK

See figure: Sash rebate height FFH with constant handle position GK

If you use a GAK drive rod ... (constant handle position), dimension GK changes to reflect the sash rebate height FFH. The exact dimensions are specified in the following table.



Sash rebate height FFH with constant handle position GK

See figure: Synoptical table: sash rebate height (FFH) / handle position (GK)

The table on the right gives a survey on the handle height (GK) of GAK with regard to the sash rebate height (FFH).

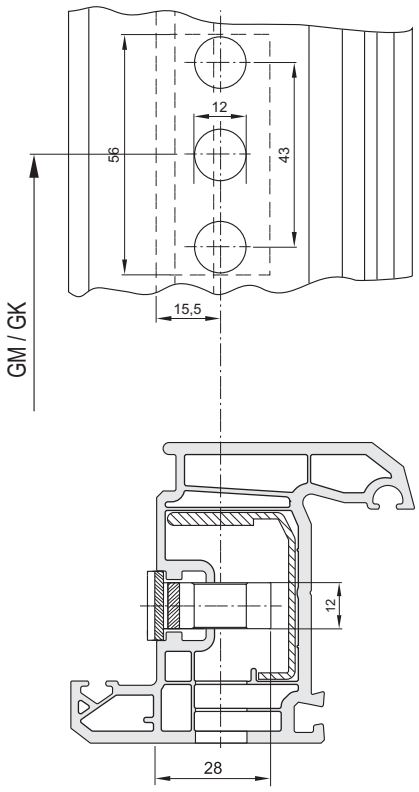
FFH	
230 – 324	GK = 114 *
325 – 420	GK = 114 *
421 – 460	GK = 210
461 – 700	GK = 210
701 – 850	GK = 260
851 – 1100	GK = 375
1101 – 1325	GK = 550
1326 – 1525	GK = 550
1526 – 1775	GK = 550
1776 – 2000	GK = 1050
2001 – 2225	GK = 1050

Synoptical table: sash rebate height (FFH) / handle position (GK)
* Requires the use of E3 corner drive

See figure: Scale drawing “Gear lock”

- Drill holes for gear case (ø 12 mm) as per scale drawing.

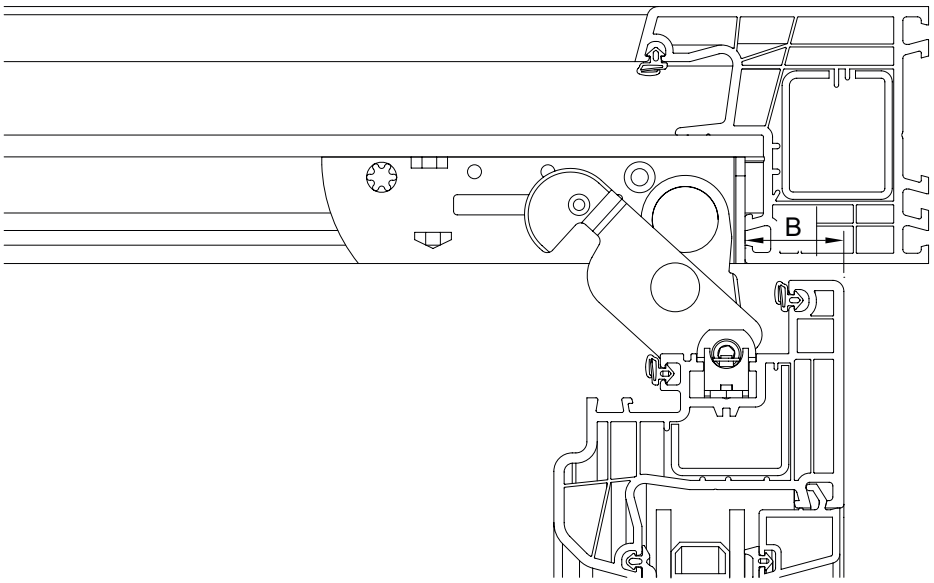
Mill the gear housing from the rebate side.



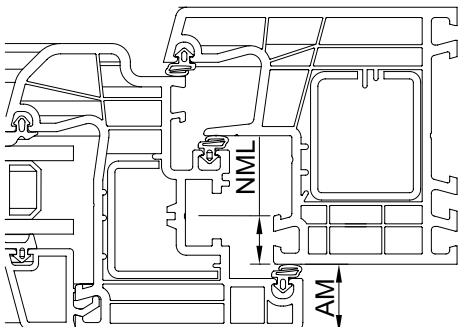
Scale drawing “Gear lock”

13

Necessary free sizes of the frame



	B [mm]	
AM [mm]	NML9 [mm]	NML13 [mm]
17	21	25
18	22	26
19	23	27
20	24	28
21	25	29
22	26	30
23	27	31
24	28	32
25	29	33



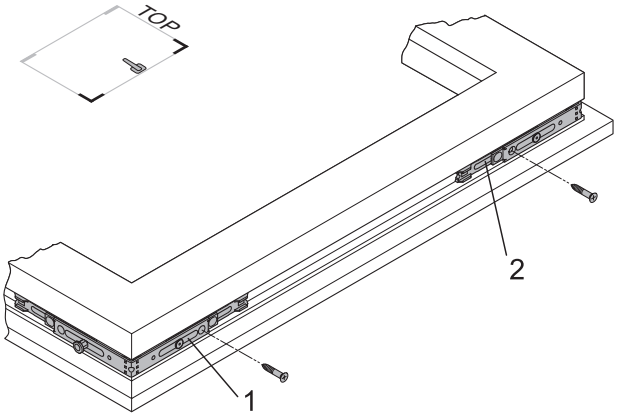
AM = overlap dimension
B = necessary width
NML = groove centre position

Remark: generally applicable illustration (independent from frame material) for units made of aluminium, timber, PVC-U and steel

See figure: Corner drive E1

- Mounting of interlocking rods:

- Fit the corner drive (2) into the fitting groove at the top of the sash so that the octagonal bolt is on the top side.
- Fit the corner drive (1) into the fitting groove at the bottom of the sash so that the octagonal bolt is on the underside.
- Fix both corner drives (1, 2) on the drive side with a single screw each.
- Measure the sash rebate height (FFH).



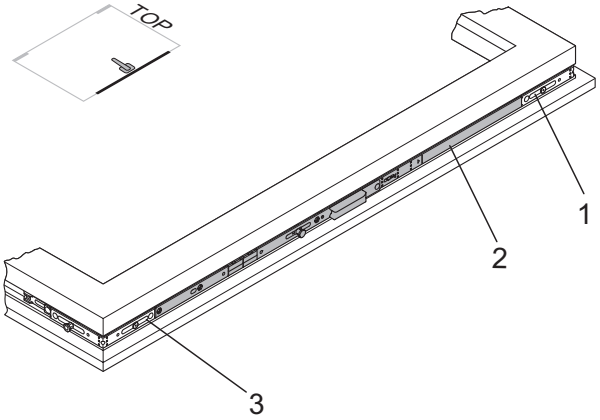
Corner drive E1

See figure: Drive rod GAM/GAK

- Cut the drive rod according to the instructions.
- Mount the drive rod:

- Abut the drive rod (2) flush against the corner drive (3).
- Allow the teeth on the drive rod to click into position on the gear rack on the corner drive.
- Clip the drive rod into the corner drive (1) in the same way.
- Press the drive rod into the eurogroove.
- Screw the drive rod from the bottom up.

Remark: Please make sure that the installation position of the drive rod is correct!



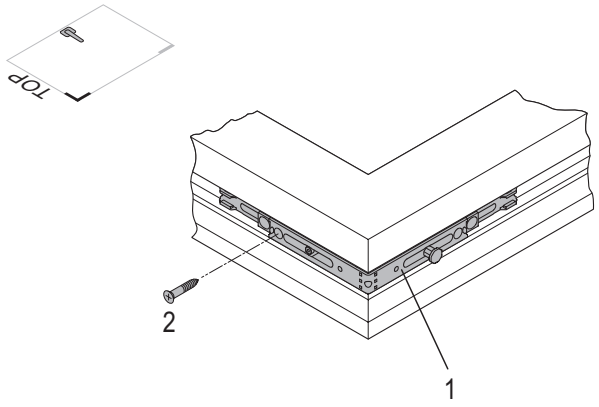
Drive rod GAM/GAK

See figure: Corner Drive E1.SE

- Fit the corner drive (1) into the fitting groove at the top of the sash so that the octagonal bolt is on the hinge side.
- Fasten the corner drive on the sash using a screw (2).
- Measure the sash rebate width (FFB).

- Cut the top rod (see chapter ‘Shortening the fittings’).

Please note: For FFH < approx. 600 mm (depending on profile), place tilt limiter on top rod OS... (2).



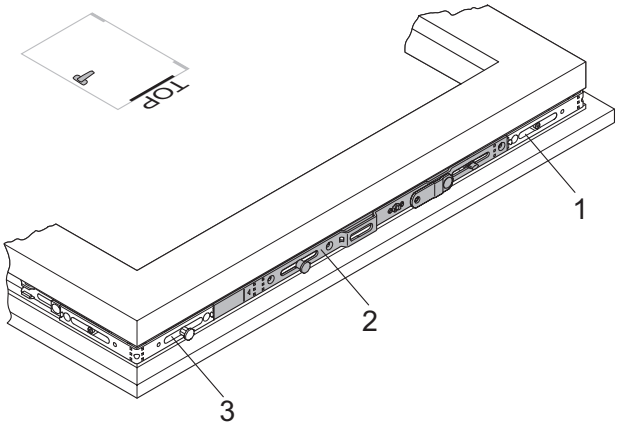
Corner Drive E1.SE

See figure: Top Rod OS.SE

- Insert the top rod and screw into position.

- Fit the top rod flush against the corner drive (1).
- Allow the gear teeth to click into place on the rack in the corner drive.
- Clip the top rod into the corner drive (3) in the same way.
- Press the top rod into the fitting groove.
- Screw the top rod from the hinge side to the drive side.

Please note: For FFH < approx. 600 mm (depending on profile), place tilt limiter on top rod OS... (2).



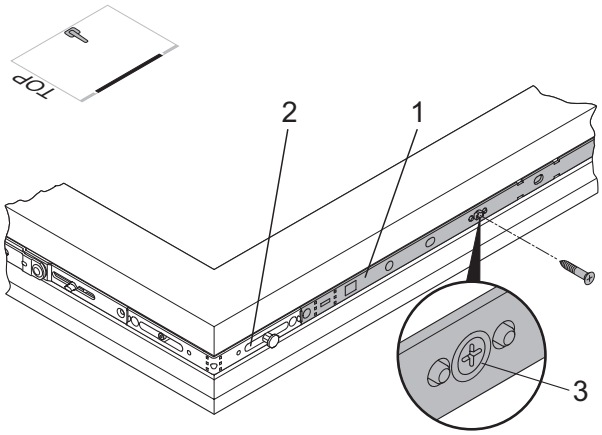
Top Rod OS.SE

See figure: Interlocking rod M/MK (hinge side)

- Install Interlocking Rod on the hinge side.

- Fit the interlocking rod (1) flush against the corner drive (2).
- Click the interlocking rod gears into the teeth of the corner drive.
- Press the interlocking rod into the fitting groove.
- Screw the interlocking rod from the top down.
- Tighten the screw (3) fully to release the central fastening.

Please note: For a sash rebate height (FFH) and/or sash rebate width (FFB) of approx 800 mm (depending on the profile) an interlocking rod should also be fitted hinge-side and/or horizontally at the bottom / top.



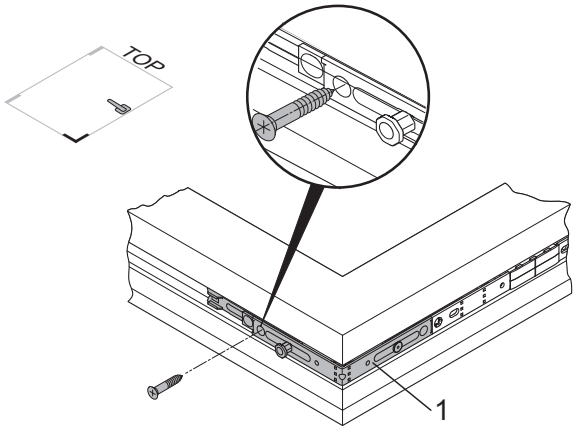
Interlocking rod M/MK (hinge side)

Attention! Damage to fittings. If the central fastening is not released, the gearing cannot be actuated. Use of force will lead to torsion of the fittings. Always insert the screw fully up to the stop.

See figure: Corner drive E1

- Screw the corner drive (1) in place.

Please note: The following step is not needed, if you do not fit an interlocking rod to the corner drive.



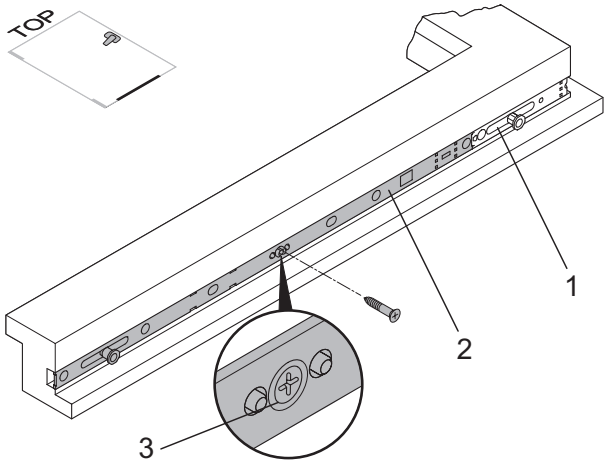
Corner drive E1

See figure: Interlocking rod M/MK (horizontal)

- Mount interlocking rod on the underside:

- Abut the interlocking rod (2) flush against the corner drive (1).
- Click the interlocking rod gears into the teeth of the corner drive.
- Press the interlocking rod into the fitting groove.
- Screw the interlocking rod from the corner drive to the centre of the window.
- Tighten the screw (3) fully to release the central fastening.

Attention! Damage to fittings. If the central fastening is not released, the gearing cannot be actuated. Use of force will lead to torsion of the fittings. Always insert the screw fully up to the stop.



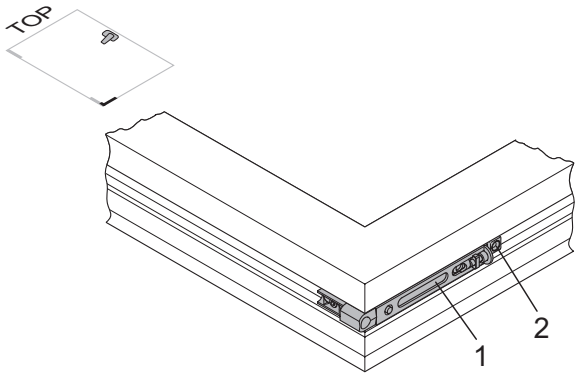
Interlocking rod M/MK (horizontal)

See figure: Sash Hinge FL.SE

- Fitting the sash hinge:

- Insert sash hinge (1) into the fitting groove on the bottom of the sash.
- Make sure the sash hinge is fitted correctly into position.
- Screw on sash hinge (1) tightly.

Note: If a turn limiter is to be connected to the sash hinge, the screw hole (2) must be exposed first.



Sash Hinge FL.SE

Note: A turn limiter and a sash hinge rail (regardless of sash weight) should always be used on elements which are used as a doorway.

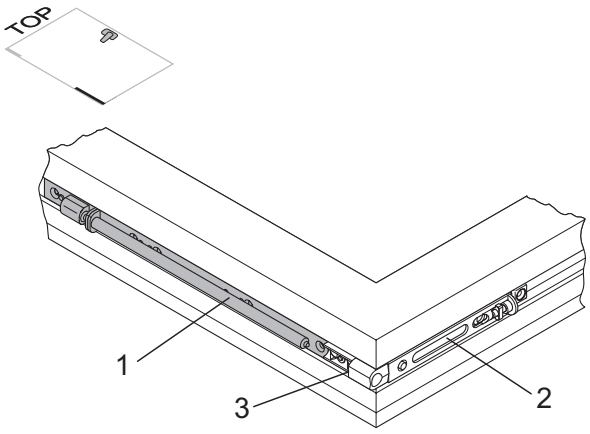
Note: If the sash weighs more than 100 kg, a sash hinge rail must also be used. The maximum permissible sash weight is 150 kg. The sash rebate must be at least 451 mm, so the sash hinge rail can be fitted.

See figure: Sash Hinge Rail FLS.SE

- Install sash hinge rail

- Insert the sash hinge rail (1) into the fitting groove and abut against the sash hinge (2).
- Screw the sash hinge rail into position from below.

Note: If the sash hinge rail is used, the turn limiter must also be used. See next section for installation. The height adjustment screw (3) in the sash hinge must be removed if Sash Hinge Rail FLS.SE is used.



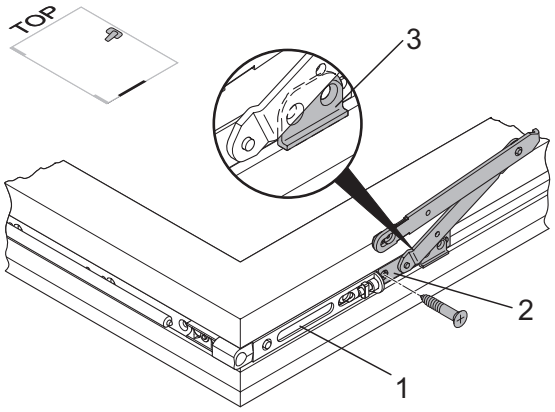
Sash Hinge Rail FLS.SE

See figure: Turn Limiter DB.SE.1

- Install turn limiter

- Insert the turn limiter (2) into the fitting groove and connect to the sash hinge (1).
- Fasten the turn limiter (2) tightly to the sash hinge (1) with a screw.
- Push the shear arm down so that the screw holes underneath are exposed.
- Screw turn limiter (2) into place.

Note: The holder (3) must point downwards with the guide edge facing the sash overlap.



Turn Limiter DB.SE.1

Using the turn limiter is imperative if:

- Sash weight > 100 kg and / or
- Sash rebate width > 1250 mm and / or
- Reveal depth of surrounding masonry < 120 mm (DIN EN 13126-8, Point 4)

Note: A turn limiter and a sash hinge rail (regardless of sash weight) should always be used on elements which are used as a doorway.

Note: Whether you use a turn limiter depends on the window installation location as well as window size and weight.

Attention! Check if all screws are fixed into place on the fitting parts.

Mounting of fittings on sash

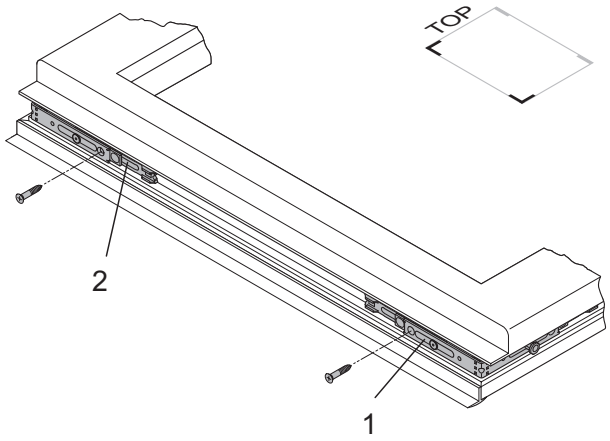
Turn double sash type – Rectangular window

Please note: The following figures refer to a window for left-hand use. When fitting a window for right hand use, the figures will be mirror-inverted.

See figure: Corner drive E1

- Mounting of interlocking rods:

- Fit the corner drive (2) into the fitting groove at the top of the sash so that the octagonal bolt is on the top side.
- Fit the corner drive (1) into the fitting groove at the bottom of the sash so that the octagonal bolt is on the underside.
- Fix both corner drives (1, 2) on the drive side with a single screw each.
- Measure the sash rebate height (FFH).



Corner drives E1

- Shorten the drive rod:

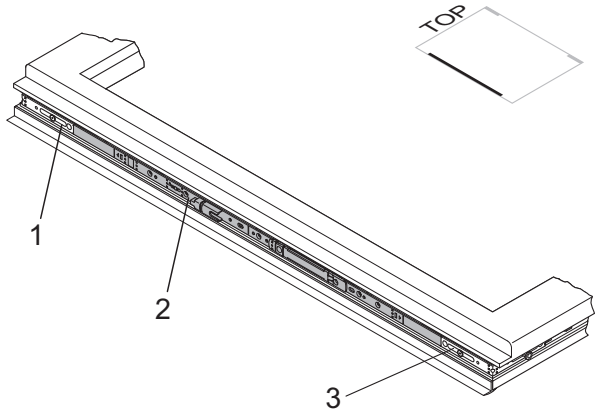
- Shorten drive rod GASM or drive rod GASK in line with description “Shortening the fittings”.

Please note: Make sure you shorten the drive rod in closed state (as delivered).

See figure: Drive rod GASM/GASK

- Mount the drive rod:

- Abut the drive rod (2) flush against the corner drive (3).
- Allow the teeth on the drive rod to click into position on the gear rack on the corner drive.
- Clip the drive rod into the corner drive (1) in the same way.
- Press the drive rod into the eurogroove.
- Screw the drive rod from the bottom up.



Drive rod GASM/GASK

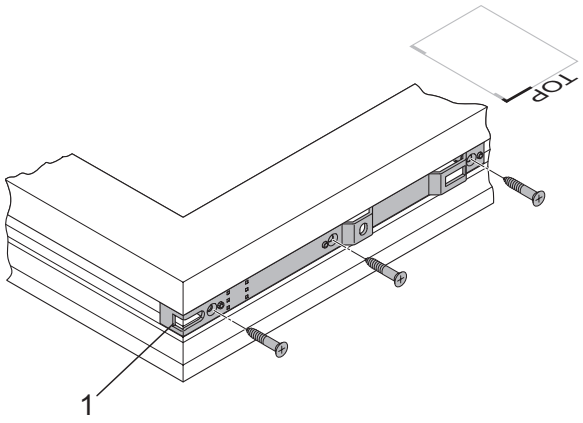
Please note: To keep a neutral position, do not perform a function test until all fittings are in place.

See figure: Top Hinge Rail DLS.K.SE.9-13

- Install turn hinge rail:

- Insert Top hinge rail (1) into the fitting groove on the top of the sash.
- Make sure the turn hinge rail is fitted correctly into position on hinge side.
- Screw top hinge rail tightly onto the sash.

Please note: From a sash rebate height or sash rebate width of approx. 800 mm (depending on profile) we recommend you to provide for an additional locking point at the hinge side and/or bottom horizontal side.



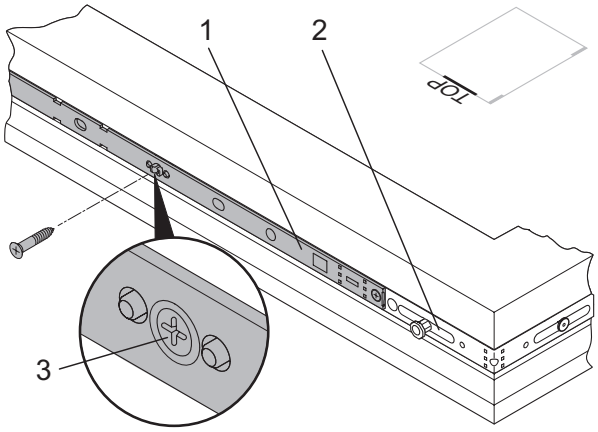
Top Hinge Rail DLS.K.SE.9-13

See figure: Interlocking rod M (top)

- Mount the interlocking rod on the top side:

- Fit the interlocking rod (1) flush against the corner drive (2).
- Click the interlocking rod gears into the teeth of the corner drive.
- Press the interlocking rod into the fitting groove.
- Screw the interlocking rod tight from the hinge side to the gear side.
- Tighten the screw (3) fully to release the central fastening.

Attention! Damage to fittings. If the central fastening is not released, the gearing cannot be actuated. Use of force will lead to torsion of the fittings. Always insert the screw fully up to the stop.

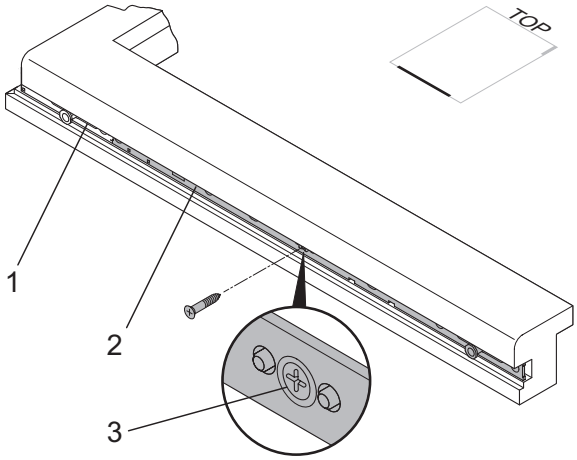


Interlocking rod M (top)

See figure: Interlocking rod M (bottom)

- Mount interlocking rod on the underside:

- See above



Interlocking rod M (bottom)

13

See figure: Pull-in device ZV (hinge side)

- Position the pull-in device (1):

- S (ZV) = sash rebate edge to centre of pull-in device ZV
- Press the pull-in device into the eurogroove and screw in place.

See figure: Sash Hinge FL.SE

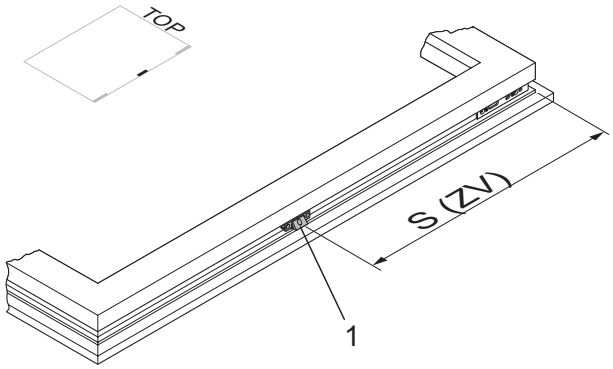
- Fitting the sash hinge:

- Insert sash hinge (1) into the fitting groove on the bottom of the sash.
- Make sure the sash hinge is fitted correctly into position.
- Screw on sash hinge (1) tightly.

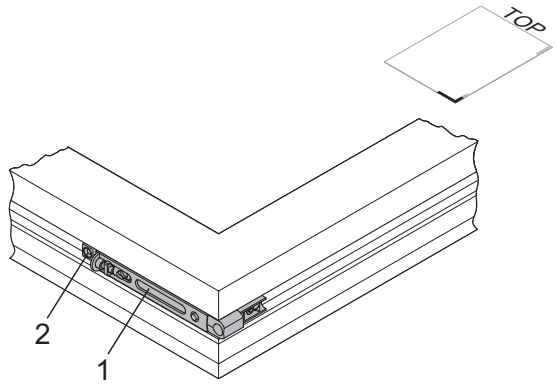
Note: If a turn limiter is to be connected to the sash hinge, the screw hole (2) must be exposed first.

Note: A turn limiter and a sash hinge rail (regardless of sash weight) should always be used on elements which are used as a doorway.

Note: If the sash weighs more than 100 kg, a sash hinge rail must also be used. The maximum permissible sash weight is 150 kg. The sash rebate must be at least 451 mm, so the sash hinge rail can be fitted.



Pull-in device ZV (hinge side)



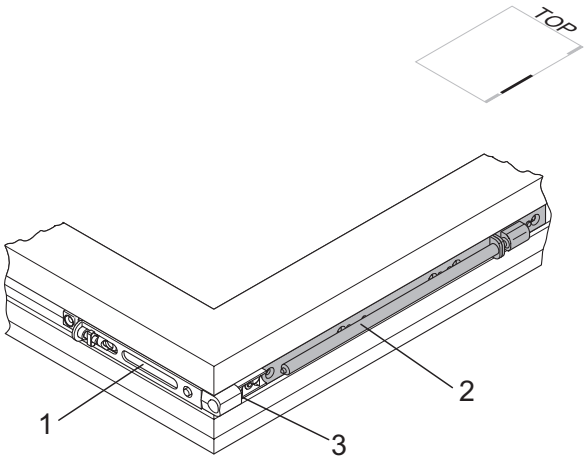
Sash Hinge FL.SE

See figure: Sash Hinge Rail FLS.SE

- Install sash hinge rail

- Insert the sash hinge rail (2) into the fitting groove and abut against the sash hinge (1).
- Screw the sash hinge rail into position from below.

Note: If the sash hinge rail is used, the turn limiter must also be used. See next section for installation. The height adjustment screw (3) in the sash hinge must be removed if Sash Hinge Rail FLS.SE is used.



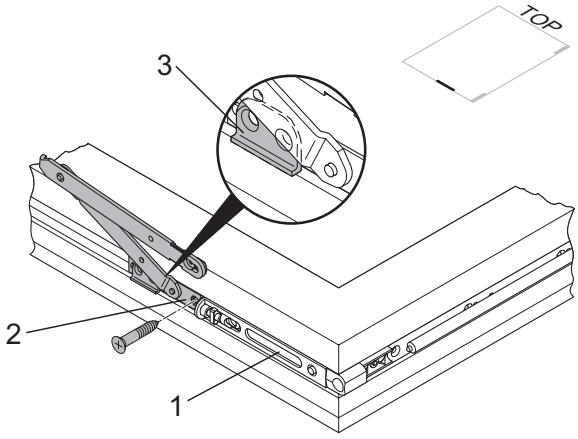
Sash Hinge Rail FLS.SE

See figure: Turn Limiter DB.SE.1

- Install turn limiter

- Insert the turn limiter (2) into the fitting groove and connect to the sash hinge (1).
- Fasten the turn limiter (2) tightly to the sash hinge (1) with a screw.
- Push the shear arm down so that the screw holes underneath are exposed.
- Screw turn limiter (2) into place.

Note: The holder (3) must point downwards with the guide edge facing the sash overlap.



Turn Limiter DB.SE.1

Using the turn limiter is imperative if:

- Sash weight > 100 kg and / or
- Sash rebate width > 1250 mm and / or
- Reveal depth of surrounding masonry < 120 mm (DIN EN 13126-8, Point 4)

Note: A turn limiter and a sash hinge rail (regardless of sash weight) should always be used on elements which are used as a doorway.

Attention! Check if all screws are fixed into place on the fitting parts.

Mounting of fittings on the window frame

Type: rectangular turn-tilt window

Keep positions

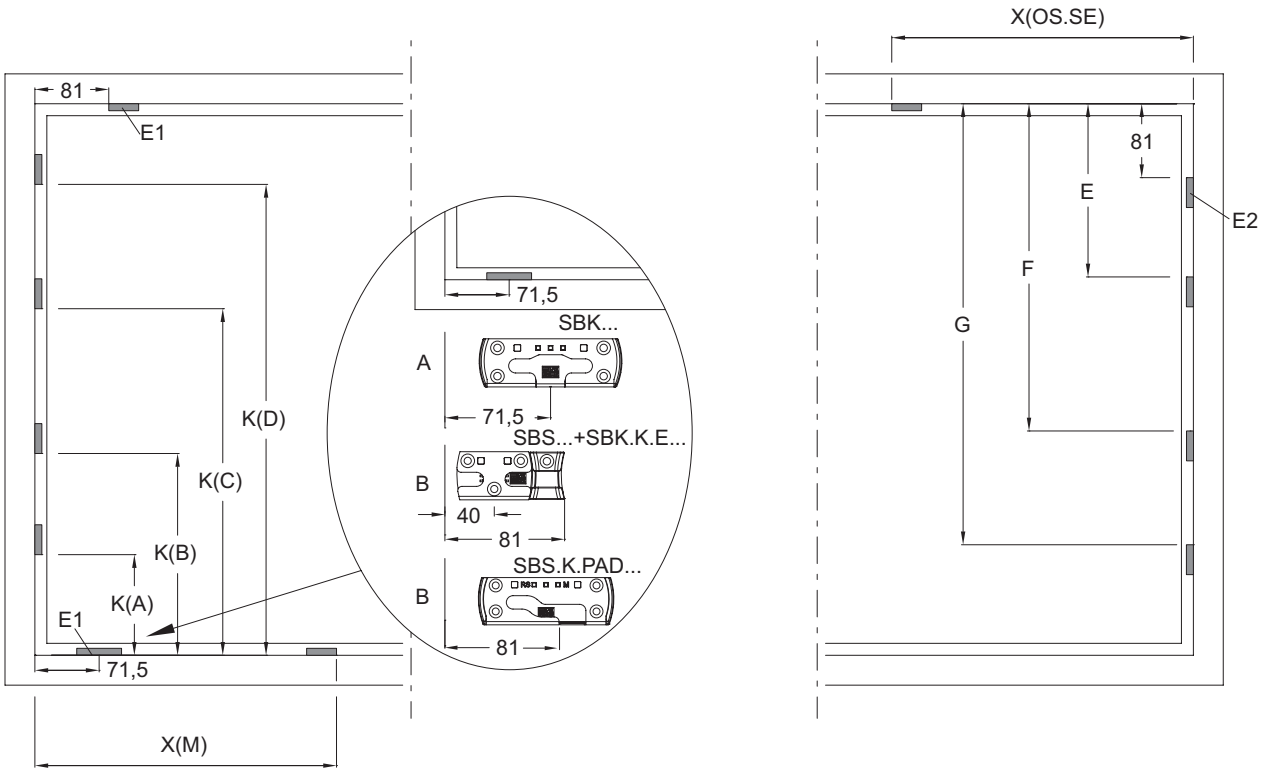
The figures show the keep position options. The number of keeps depends on the size of the window.
Only frame parts which are suitable for the profile concerned and which have been approved by Winkhaus may be used. The use of frame parts not developed especially for the frame profile concerned is not permitted and excludes us from any liability.

Please note: The dimensions in the illustrations refer to the length from the frame rebate edge to the keep profile edge! A quick and simple assembly is made possible with the help of mounting jigs.

Fitting the keeps

The keeps must be screwed in place in the frame rebate prior to the installation of the shear and the corner hinge.

Turn-tilt window
GAK



GAK...	K(A) [mm]	K(B) [mm]	K(C) [mm]	K(D) [mm]
GAK.830-1	385	-	-	-
GAK.945-1	385	-	-	-
GAK.1100-1	500	-	-	-
GAK.1195-1	750	-	-	-
GAK.1195-2	250	750	-	-
GAK.1325-1	750	-	-	-
GAK.1325-2	385	750	-	-
GAK.1550-1	750	-	-	-
GAK.1550-2	385	1000	-	-
GAK.1775-2	750	1250	-	-
GAK.1775-3	385	750	1250	-
GAK.2000-2	750	1250	-	-
GAK.2000-4	385	750	1250	1500
GAK.2225-2	750	1500	-	-
GAK.2225-4	385	750	1250	1750
GAK.2450-4	385	750	1250	1900

M...	X(M) [mm]
M.250-1	230
M.500-1	480
M.750-1	730

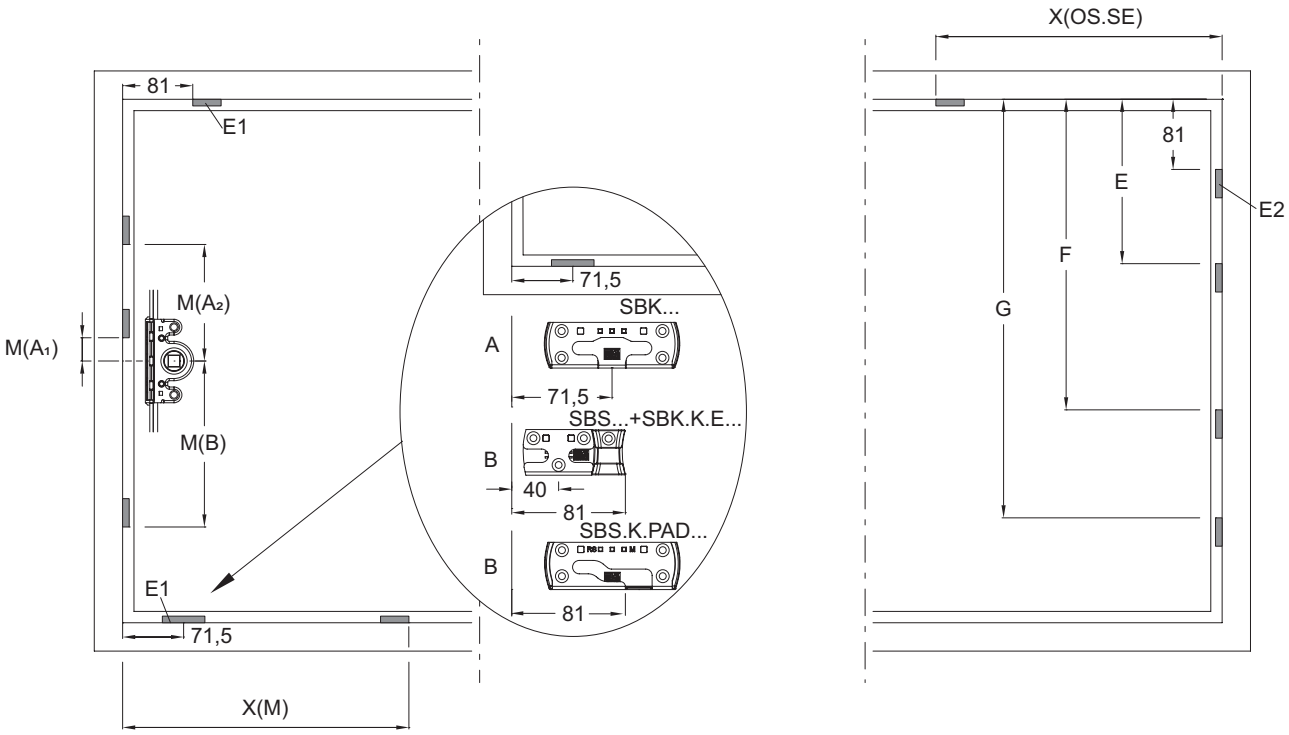
OS.SE...	X(OS.SE) [mm]
OS.SE.1025-1 / OS.SE.1025-1.E	480
OS.SE.1250-1 / OS.SE.1250-1.E	730

M...	E [mm]	F [mm]	G [mm]
M.250-1	250	-	-
M.500-1	500	-	-
	750	-	-
MK.250-1 + M.250-1	250	500	-
MK.500-1 + M.500-1	500	1000	-
MK.750-1 + M.500-1	750	1250	-
MK.750-1 + M.750-1	750	1500	-
MB.1000-2	500	1000	-
MB.1250-2	750	1250	-
MB.1450-2	750	1450	-
MB.1750-3	750	1250	1750

In case of heavy sash weights and / or unfavourable shapes of the sash (FFB > FFH) we recommend you to use support keeps.

The illustration GAM.../GAK... shows the keep positions for backsets D15.5, D7.5 and D25-50. They also apply to GAMA/GAKA drive rods.
A = Standard operating sequence turn-tilt (OS.SE...)
B = Operating sequence Tilt-before-Turn (OS.SE...E)

Turn-tilt window
GAM



GAM...	M(A₁) [mm]	M(A₂) [mm]	M(B) [mm]
GAM.1050-1	127	-	-
GAM.1400-1	127	-	-
GAM.1400-2	127	-	223
GAM.1800-2	-	260	340
GAM.2300-3	127	692	520

M...	X(M) [mm]
M.250-1	230
M.500-1	480
M.750-1	730

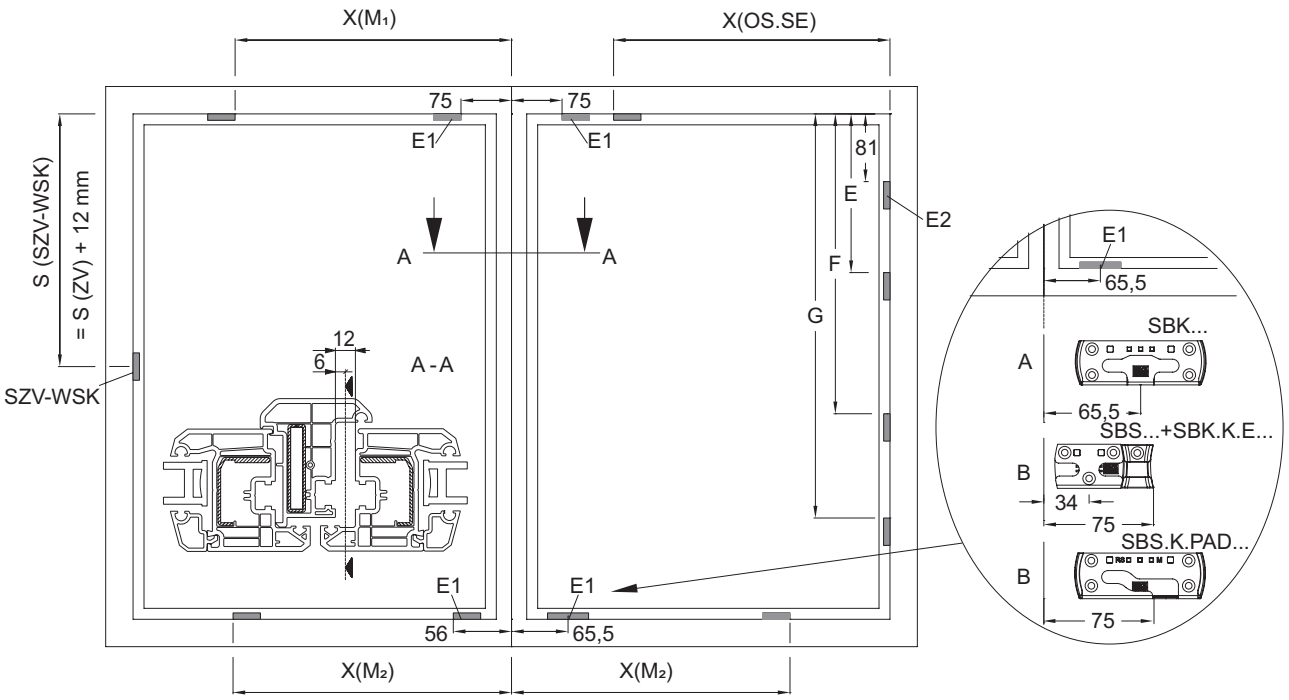
OS.SE....	X(OS.SE) [mm]
OS.SE.1025-1 / OS.SE.1025-1.E	480
OS.SE.1250-1 / OS.SE.1250-1.E	730

M...	E [mm]	F [mm]	G [mm]
M.250-1	250	-	-
M.500-1	500	-	-
M.750-1	750	-	-
MK.250-1 + M.250-1	250	500	-
MK.500-1 + M.500-1	500	1000	-
MK.750-1 + M.500-1	750	1250	-
MK.750-1 + M.750-1	750	1500	-
MB.1000-2	500	1000	-
MB.1250-2	750	1250	-
MB.1450-2	750	1450	-
MB.1750-3	750	1250	1750

In case of heavy sash weights and / or unfavourable shapes of the sash (FFB > FFH) we recommend you to use support keeps.

The illustration GAM.../GAK... shows the keep positions for backsets D15.5, D7.5 and D25-50. They also apply to GAMA/GAKA drive rods.
A = Standard operating sequence turn-tilt (OS.SE...)
B = Operating sequence Tilt-before-Turn (OS.SE...E)

Double-sash windows turn/turn-tilt



M...	X(M1) [mm]
M.250-1	244
M.500-1	494
M.750-1	744

M...	X(M2) [mm]
M.250-1	224
M.500-1	474
M.750-1	724

OS.SE...	X(OS.SE) [mm]
OS.SE.1025-1 / OS.SE.1025-1.E	480
OS.SE.1250-1 / OS.SE.1250-1.E	730

M...	E [mm]	F [mm]	G [mm]
M.250-1	250	-	-
M.500-1	500	-	-
M.750-1	750	-	-
MK.250-1 + M.250-1	250	500	-
MK.500-1 + M.500-1	500	1000	-
MK.750-1 + M.500-1	750	1250	-
MK.750-1 + M.750-1	750	1500	-
MB.1000-2	500	1000	-
MB.1250-2	750	1250	-
MB.1450-2	750	1450	-
MB.1750-3	750	1250	1750

In case of heavy sash weights and / or unfavourable shapes of the sash (FFB > FFH) we recommend you to use support keeps.

A = Standard operating sequence turn-tilt (OS.SE...)
B = Operating sequence Tilt-before-Turn (OS.SE...E)
S (ZV) = sash rebate edge to centre of pull-in device ZV
S (SZV-WSK) = frame rebate edge to centre of pull-in device ZV

Fitting the keeps

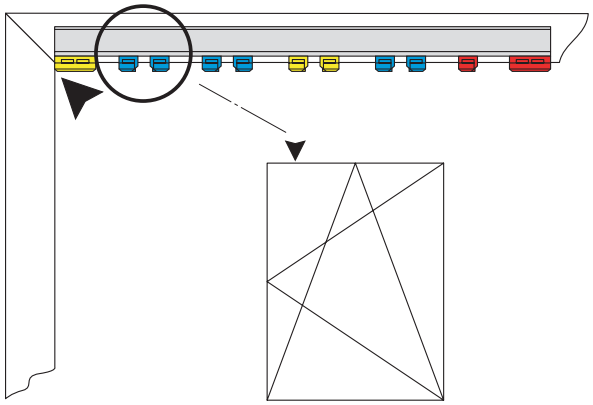
Handling of mounting jigs is explained by reference to the LE.N.K. 710-1100 mounting jig in the following. Other mounting jigs are handled in the same way. To position keeps, place the mounting jig on the frame rebate edge.

Labelling of mounting jigs

↔	Horizontal attachment = red element (for top rod and interlocking rod)
↕	Vertical attachment = yellow element (for drive rods and interlocking rods)
↕↔	Vertical / horizontal attachment = blue element (for corner drives)
→|	= Keep run-in

Keep top horizontal

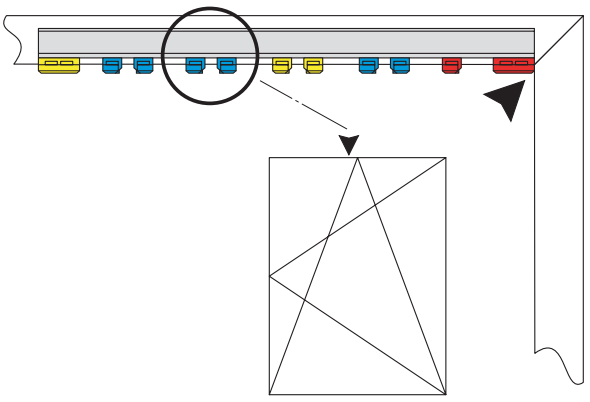
- Align the mounting jig with the yellow element in the top corner.
- Place the SBA keep on the blue element labelled “E1” and “E2” .



Keep top horizontal

Keep for top rod OS...

- Align the mounting jig with the red element in the top corner.
- Place the keep SBA on the blue element labelled “OS. ...”.

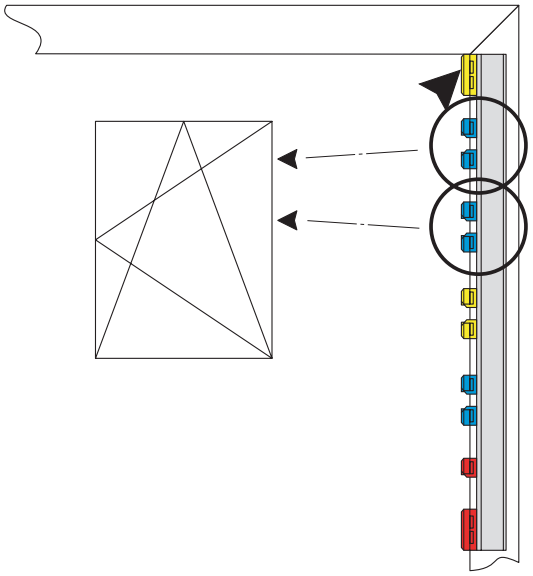


Keep for top rod OS...

Keeps hinge side

- Align the mounting jig with the yellow element in the top corner.
- Position the keep for the corner drive on the blue element.
- Position the keep for interlocking rod on the yellow element.

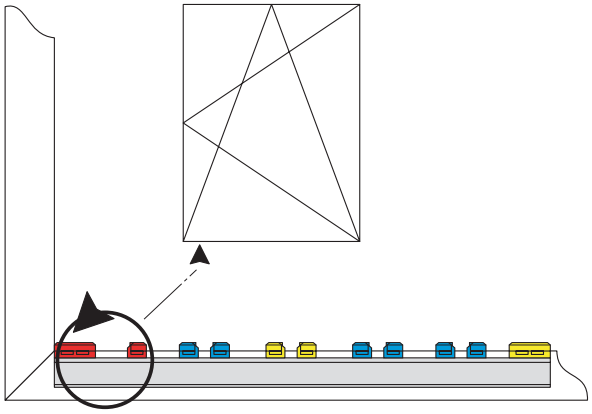
Note: The markings on the interlocking rod must match the marking on the yellow element.



Keeps hinge side

Tilt keep SBK... bottom horizontal

- Align the mounting jig with the red element in the lower corner.
- Place the SBK... keep on the red element marked “Kippblech SBK”.

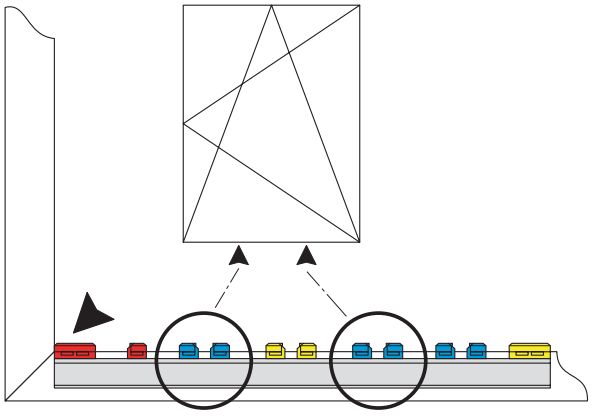


Tilt keep SBK... bottom horizontal

Interlocking Rod M..., bottom, horizontal

See figure: M bottom horizontal

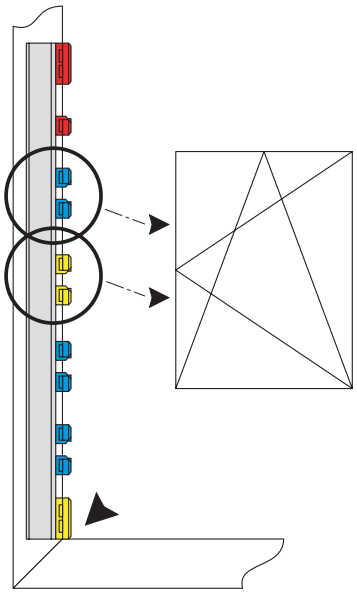
- Align the mounting jig with the red element in the lower corner.
- Position the keep on the blue element marked “M” or “MK”.



M bottom horizontal

Keeps SBA... for vertical GAK

- Align the mounting jig with the yellow element in the bottom corner.
- Place the SBA. ... keeps on the yellow and blue elements marked “GAK. ...”.



SBA... for vertical GAK

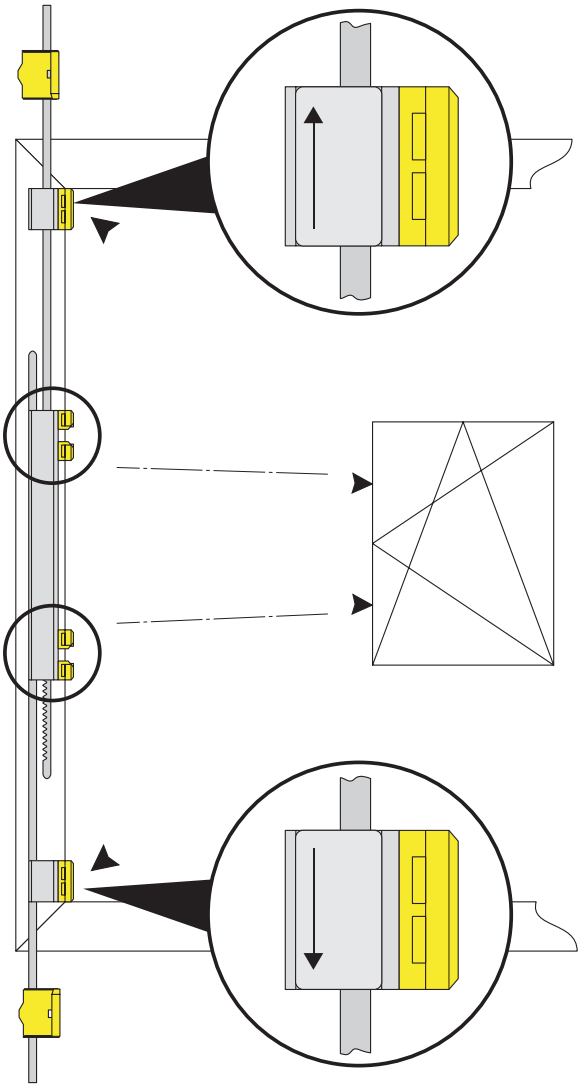
Keeps for GAM

- Attach the corresponding mounting jig labelled “top” or “bottom”.
- Fit keeps in line with the labelling on the mounting template.

There are three telescopic jigs depending on the window height:

- LE.N.T. 0710-1050 for drive rod GAM 1050-1
- LE.N.T. 1051-1800 for drive rod GAM 1400-1/2 / 1800-2
- LE.N.T. 1801-2300 for drive rod GAM 2300-3

Please note: The labelling on the drive rod must match the labelling on the yellow templates.



Keeps for GAM

Mounting of fittings on the window frame

Only frame parts which are suitable for the profile concerned and which have been approved by Winkhaus may be used. The use of frame parts not developed especially for the frame profile concerned is not permitted and excludes us from any liability. Please read the notes on the maximum sash weight in Group 1 (General Product Information).

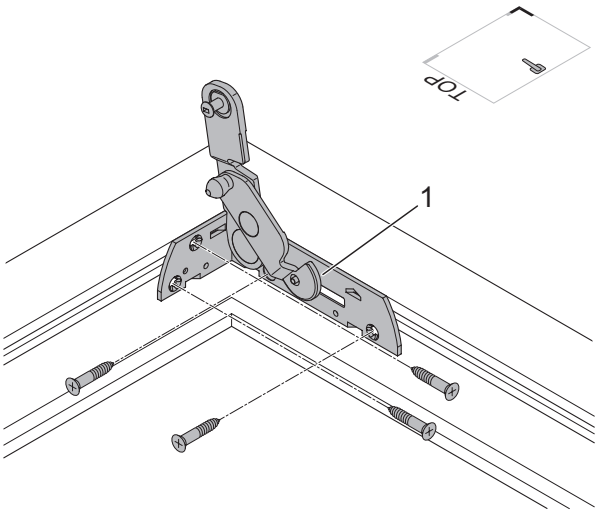
Important: The load-bearing fitting components, such as corner, shear and sash hinges, must be designed according to the TBDK guidelines. Please adapt the drill diameter of the fixing screws, the screw diameter and the screw length to the load situation.

Note: A detailed depiction of drill and screw positions can be found in chapter 15, installation drawings.

See figure: Corner Hinge EL...SE

- Fit the corner hinge EL...SE

- Insert the corner hinge (1) into the frame profile.
- Make sure the corner hinge is fitted correctly into position.
- Pre-drill screw holes.
- Screw corner hinge fully into position.

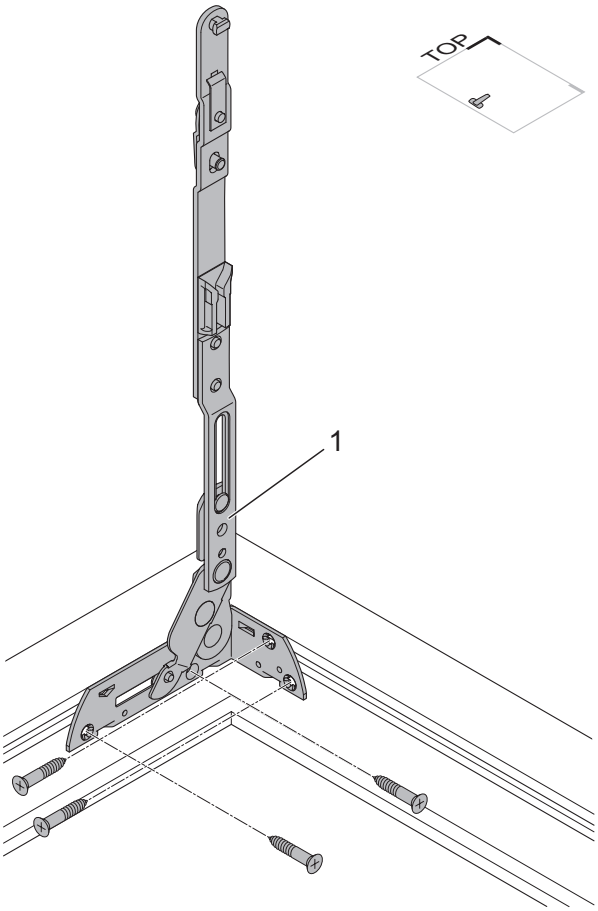


Corner Hinge EL...SE

See figure: Shear S...SE

- Mounting the shear:

- Insert the shear (1) into the frame profile.
- Make sure the shear is fitted correctly into position.
- Pre-drill screw holes.
- Screw shear fully into position.



Shear S...SE

13

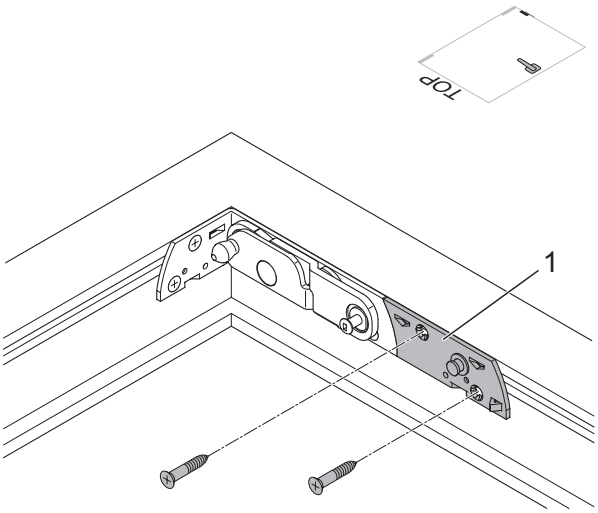
See figure: Frame connection RA.DB...SE

- Mount the frame connection

Screw frame connection into place.

- Insert the frame connection (1) into the frame profile and push against the corner hinge.
- Make sure the frame connection is positively locked.
- Pre-drill screw holes.
- Screw frame connection into place.

Note: Only fit Frame Connection if Turn Limiter DB.SE is used.

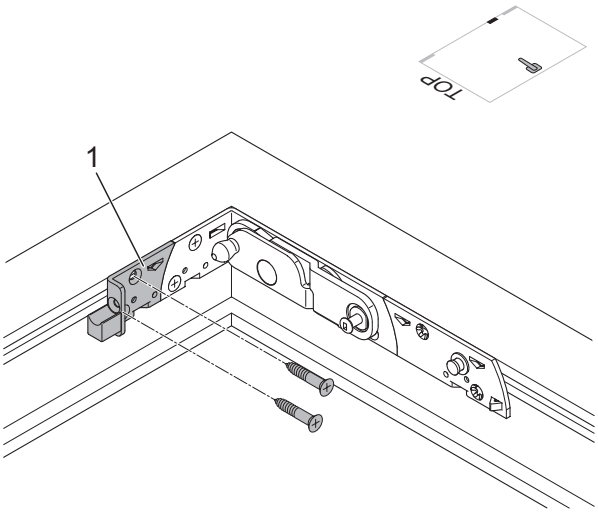


Frame connection RA.DB...SE

Only applies if Sash Hinge Rail FLS.SE is used:

- Install Adapter Plate AP...SE:

- You must ensure without fail that only adapter plates which have been especially assigned to and approved for the relevant profile system are used.
- Insert the adapter plate (1) in the frame profile and abut against the corner hinge.
- Make sure the adapter plate is positively locked.
- Pre-drill screw holes.
- Screw adapter plate into position.



Adapter Plate AP...SE

Sash installation and removal

Turn-tilt and turn double sash type

Preparing the sash:

- (If there is a fail-safe device, disconnect it.)
- Put fitting into the “tilt” position. This releases the central anchorage point.
- If Sash Hinge Rail FLS.SE is used, the height adjustment screw must be removed from the corner hinge before installing the sash.

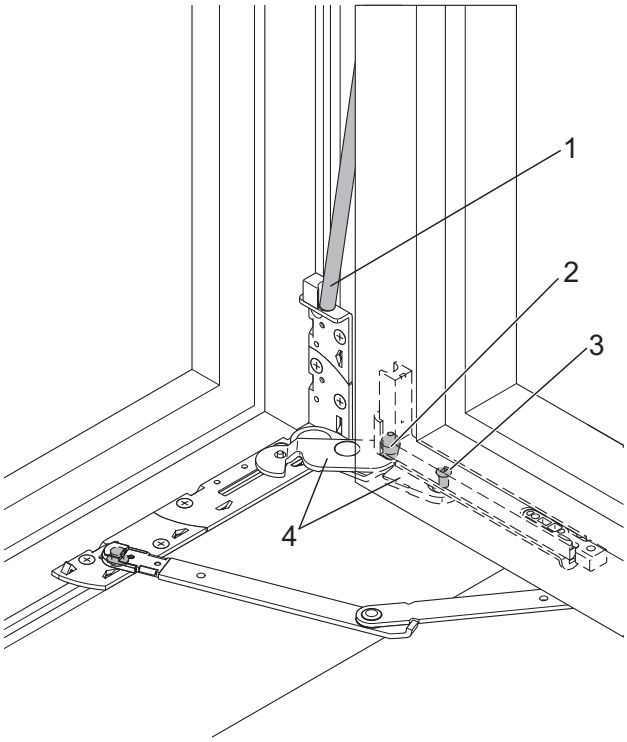
Please note: Window builders must ensure that hinges and their anchorings are designed to support the expected loads and are professionally mounted.

Installing sash at the bottom

See figure: Corner and Sash Hinges

- Open the corner hinge brackets (4) 90°.
- Lower sash onto the corner hinge brackets (4):
- Insert bolt (2) in the sash hinge top hinge point while inserting the bolt (3) in the sash hinge groove at the same time.
- Do not tilt the sash, load transfer is achieved by means of conical carrying bolts (2). Do not support sash on the guide bolt (3).
- If present, fit the sash hinge rod (1) into the slot on adapter plate.
- If there is a Turn Limiter DB.SE:
- Place the turn limiter arm on the retainer pin, so that the stop spring clicks into place behind the retainer pin.

Warning! Risk of damage to the corner hinge. The corner hinge brackets must not bear the sash weight on their own. If Sash Hinge Rail FLS.SE is used, it must bear the weight of the sash. If necessary, readjust the sash hinge rail using the height adjustment.

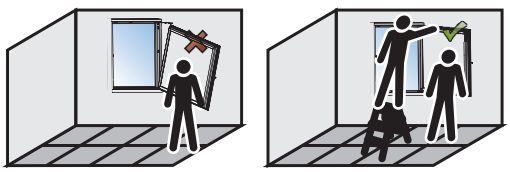


Corner and Sash Hinges

Support the sash!

In order to save the sash hinge and corner hinge from damage, sagging of the sash during assembly must be prevented (give horizontal support)!

Caution: Secure the window sash against falling. Take the heavy sash weight into account!



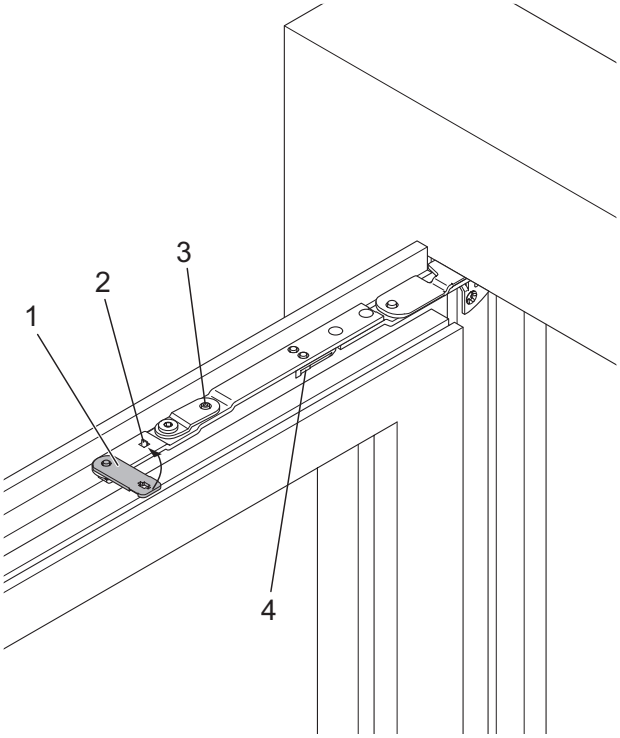
Engaging the sash at the top

See figure: Shears

- Pivot mount securing device (1) out by 90°.
- Open shear 90º and place over the retaining bolt (4) on the top rod.
- Press in the shear bolt (3) into the opening in the counter bracket.
- Press the hammer head bolt into the elongated hole on the top rod. The shear arm should be flush with the top rod.
- Swivel the mount securing device (1) into position by hand, so that the stop spring (2) clicks into place.
- Set fitting to “Turn” position. Then check whether the shear is securely fastened to the top rod and the sash hinge to the corner hinge.
- Close the window.

Note: For the “turn double sash” version it is possible to use a turn hinge instead of a shear in case of low sash rebate heights (FFH), depending on the profile system. These frame parts are identical in their function and installation.

Warning! Risk of Injury. The sash can fall out and cause injuries if the shear and top rod are not securely fastened. It is important to ensure the stop spring is firmly in position (clicking sound).

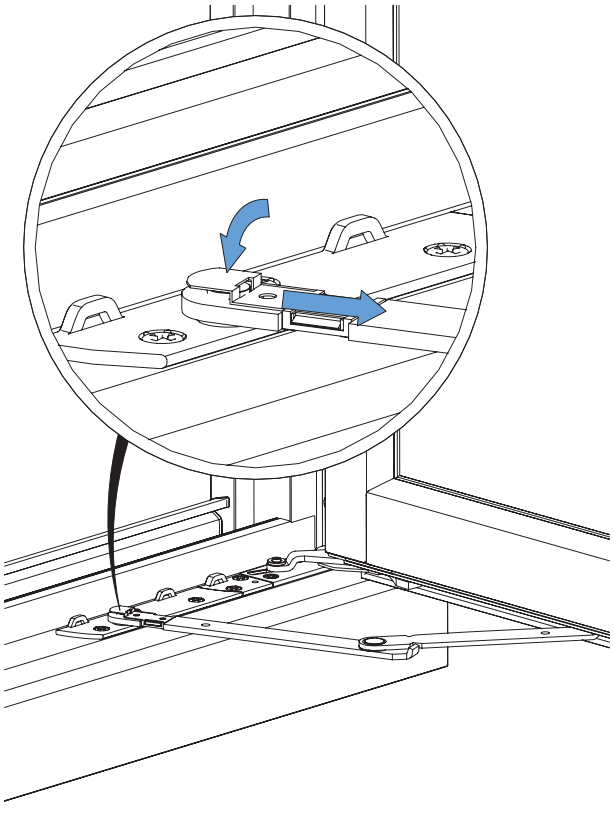


Shears

Install turn limiter

See figure: Install turn limiter

- Place the turn limiter arm on the retainer pin, so that the stop spring clicks into place behind the retainer pin.
- It is important to ensure the stop spring is firmly in position (clicking sound).



Install turn limiter

13

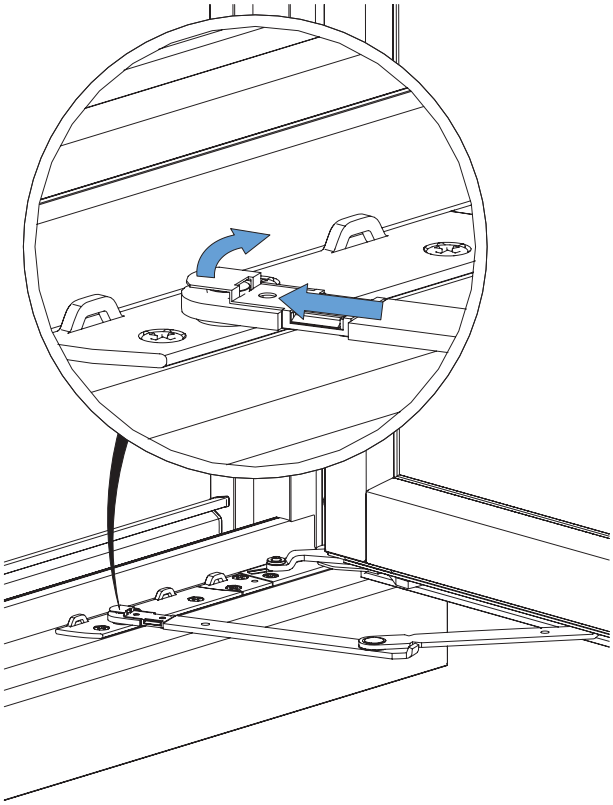
Removal of the sash

Detaching the turn limiter

See figure: Detaching the turn limiter

Preparation:

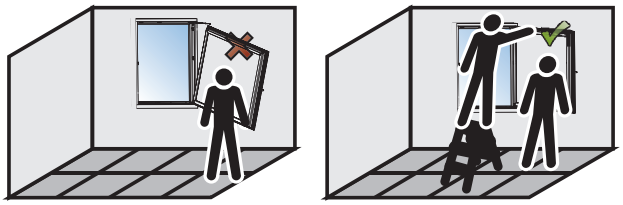
- Move the sash into the 90° turn position.
- Detaching the turn limiter



Detaching the turn limiter

Support the sash!

Open the sash to a 90° turn position and support!



Support the sash!

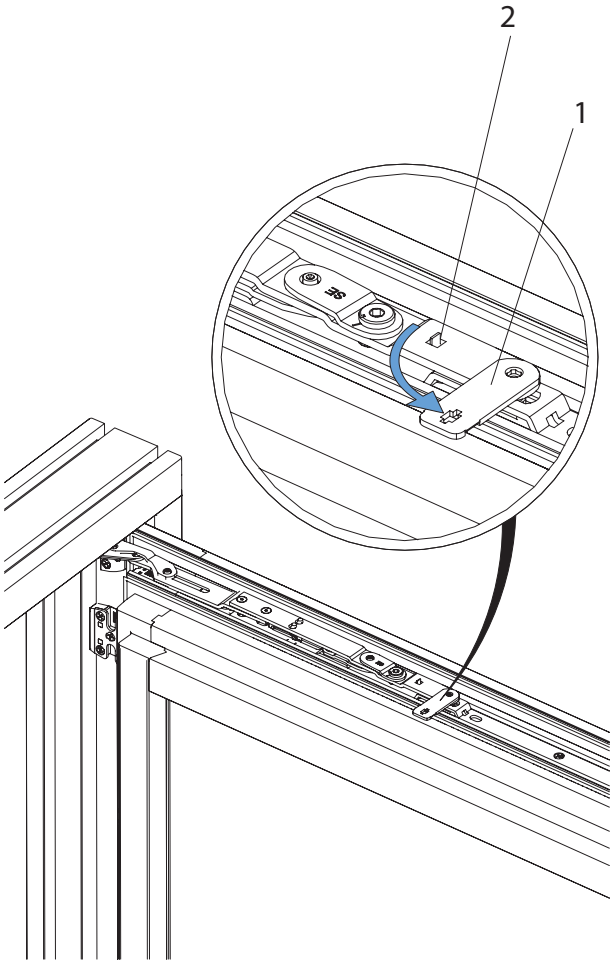
Unlocking the mount securing device

See figure: Remove the sash

Unlocking the mount securing device (1) of the shear:

- Press down the stop spring (2) with a screwdriver while swivelling the mount securing device (1) outwards 90° at the same time.

Caution: Secure the window sash against falling. Take the heavy sash weight into account! Two people should carry the sash if necessary.

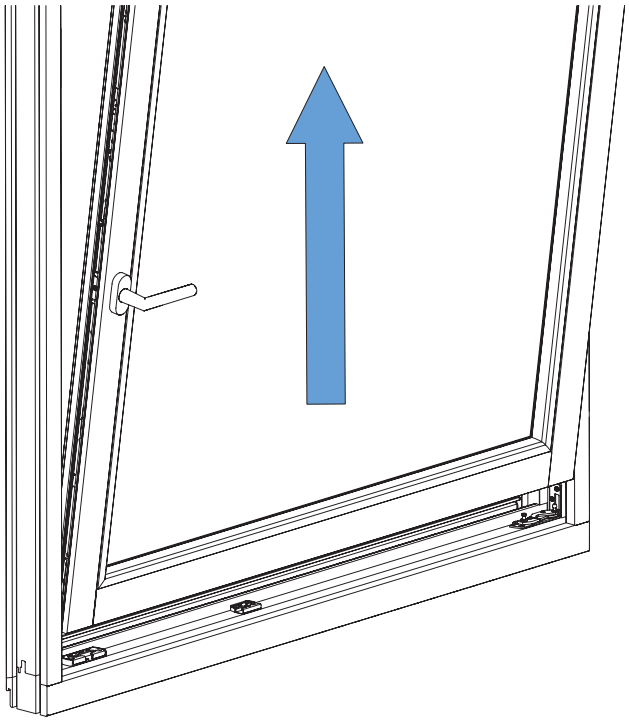


Remove the sash

Lifting the sash out of the bottom frame hinge

See figure: Removing the sash

- Pivot the uncoupled shear arm into the frame rebate.
- Move the sash (only surface-mounted on the bottom frame hinge) to a nearly closed position.
- Tilt the sash slightly and lift it up out of the bottom frame hinge.



Lifting the sash out of the bottom frame hinge

Function test / Operation

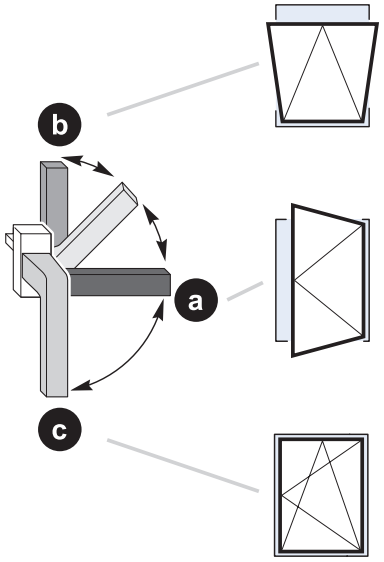
Turn-tilt type

See figure: Function test turn-tilt window

- Place the handle and operate once as follows to release the central fastening.

- Push the handle down (c). The window is closed.
- Move the handle to the central position (a). The window is unlocked; the sash can now be opened fully.
- Close sash. Push the handle up (b). The window is unlocked; the sash can now be tilted.

Please note: Initial actuation is not as easy as actuation in normal operations. A clicking noise will be heard during actuation. Keep the window closed during actuation.



Function test turn-tilt window

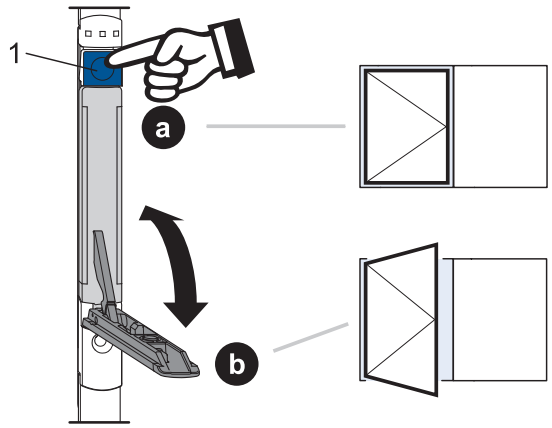
Turn double sash type

See figure: Function test turn double sash window

- Actuate the handle as follows to release the central fastening.

- Press the unlocking button (1) and press the lever down to its limit position.
- The window is unlocked; the sash can now be opened fully.

Please note: When you lift the lever for the first time, the gearing is “unblocked” and coupling to the connected fittings is established. Thus, the initial actuation is not as smooth as in normal operations. A clicking noise will be heard during initial actuation. Keep the window closed during actuation.

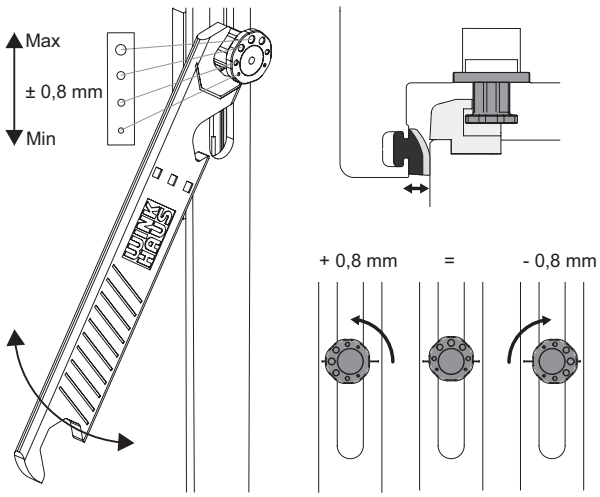


Function test turn double sash window

Adjustment options

Octagonal bolt

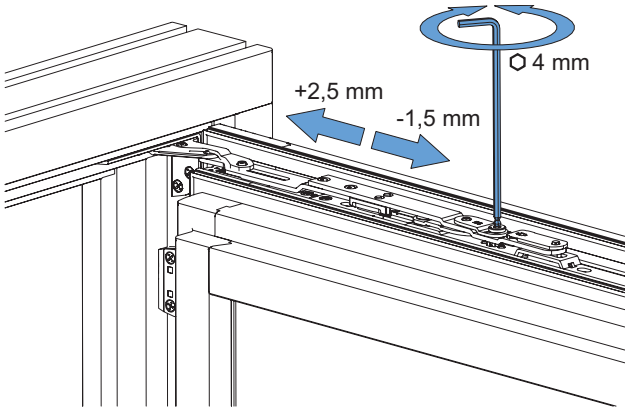
Regulate the contact pressure between the sash and the frame (± 0.8 mm) by turning the octagonal bolt. The adjustment can be carried out by means of the Winkhaus adjustment key (V.ST.SCH.HV-11) .



Octagonal bolt

Shears

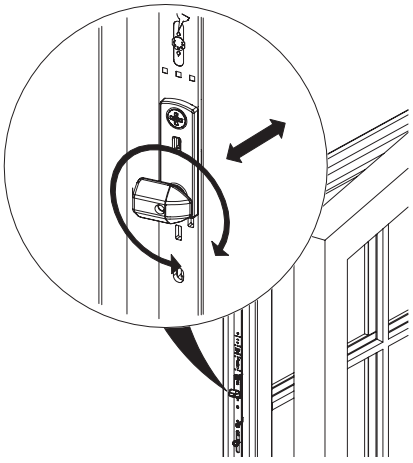
The sash is raised and lowered by adjusting the shear slideway. The sash can be raised 2.5 mm and lowered 1.5 mm.



Shears

Fail safe device FSF

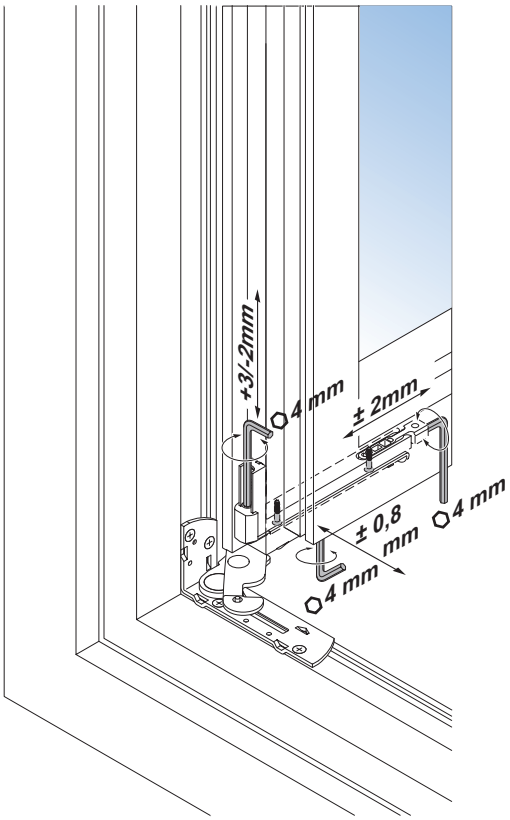
After installation the tip of the pressure piece must be directed towards the frame! For airgaps smaller or larger than 12 mm an adjustment is possible by turning the plastic part to the left or to the right!



Fail safe device FSF

Corner hinge up to a sash weight of 100 kg

Height adjustment (+ 3 mm / -2 mm) and side adjustment (± 2 mm) for the sash hinge.
Pressure adjustment ±0.8 mm

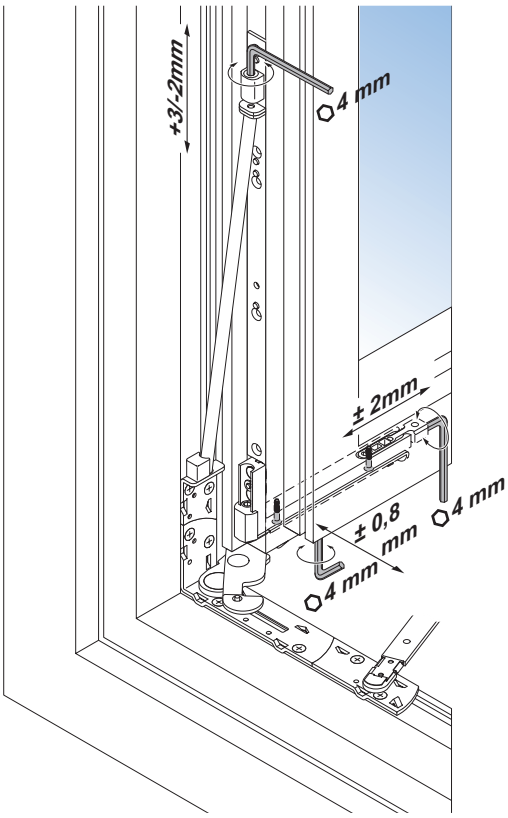


Corner hinge up to a sash weight of 100 kg

Corner hinge more than 100 kg sash weight.

Height adjustment (+ 3 mm / -2 mm) and side adjustment (± 2 mm) for the sash hinge.
Pressure adjustment ±0.8 mm

Note: The sash hinge adjusting screw must be removed first. Loads are transferred by the Sash Hinge Rail!



Corner hinge more than 100 kg sash weight.

Maintenance

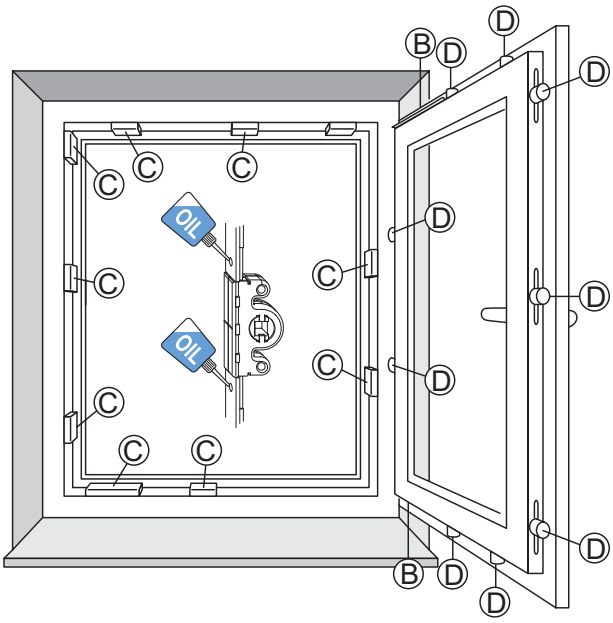
Lubrication points

See figure: Overview of lubrication points

The figure shows the location of possible lubrication points which should be lubricated at least once a year.
Positions A, C, D = lubrication points relevant to function.
Position B = safety-relevant lubrication point

Please note: The fitting schematic shown adjacent does not necessarily match the existing fitting. The number of locking positions will vary depending on size and type of the window sash.

Attention! Risk of injury. The window could fall on removal and thus injure persons. Do not remove the window for maintenance.



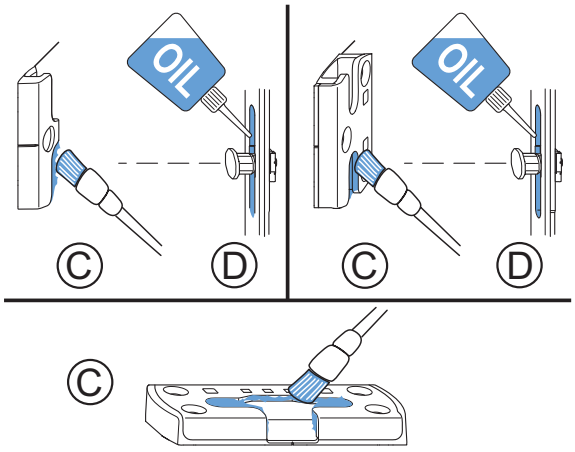
Overview of lubrication points

Keeps

See figure: Lubrication points

To keep fittings running smoothly, you must lubricate the keeps at least once a year.

- Lubricate the keeps (C) at the run-in side with technical Vaseline or any other suitable grease.
- Coat the running surfaces of the locking bolts (D) with an oil that is free of resins and acids.

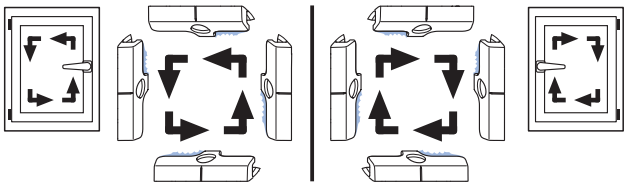


Lubrication points

Ascertaining the run-in sides

See figure: Run-in sides

- Left-handed window; handle right
- Right-handed window; handle left



Run-in sides

Lubrication points

Shear and corner hinge

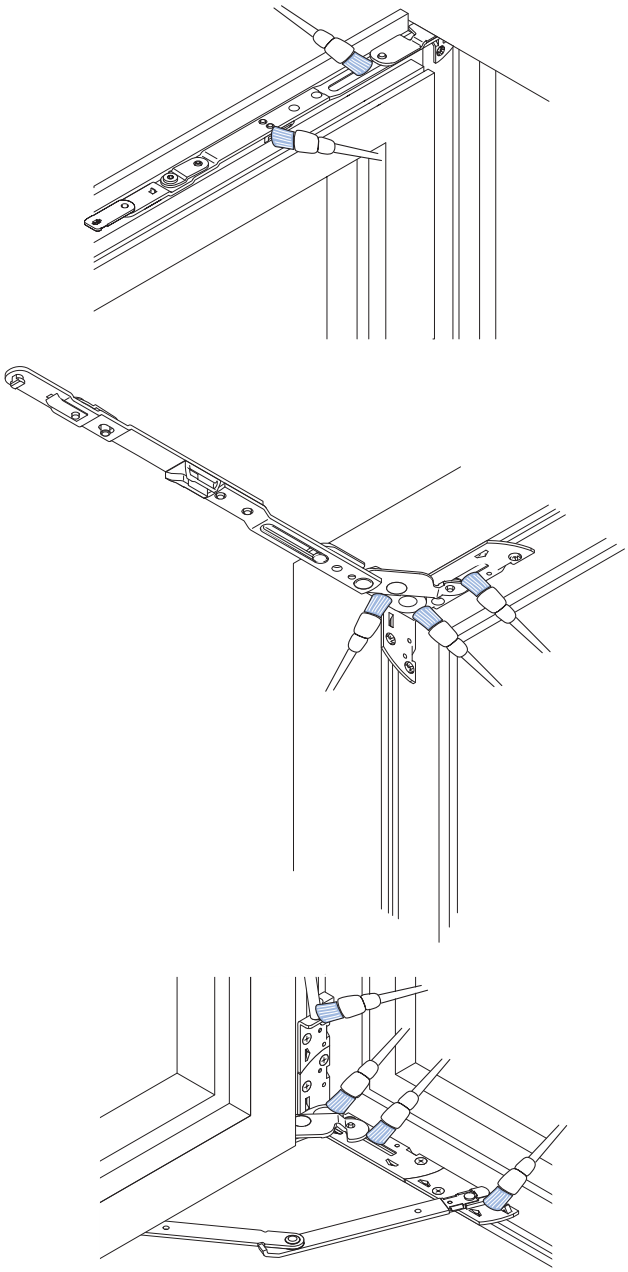
See figure: Shear (sash/frame), corner hinge, sash hinge rail

Fitting parts are to be tested regularly (at least once annually or semi-annually in school and hotel buildings) to ensure they are seated firmly and checked for wear. Fastening screws are to be retightened and parts replaced as necessary. Their functionality is to be retested afterwards.
All moving contact points on the shear and the corner hinge should be greased with a suitable lubricant at least once a year.
Coat lubricating points with non-resinous, non-corroding grease.

Attention! Risk of injury. The window could fall on removal and thus injure persons. Do not remove the window for maintenance.

Important! The fitting system must be cleaned regularly in order to grant an impeccable function and endurance!

Attention! Risk of injury. The window could fall on removal and thus injure persons. Do not remove the window for maintenance.



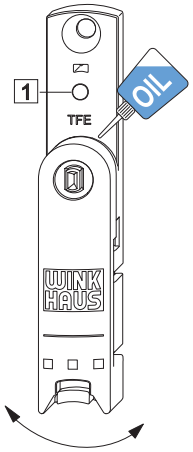
Shear (sash/frame), corner hinge, sash hinge rail

Adjustment and maintenance

Dual/triple function element

DFE/TFE activation

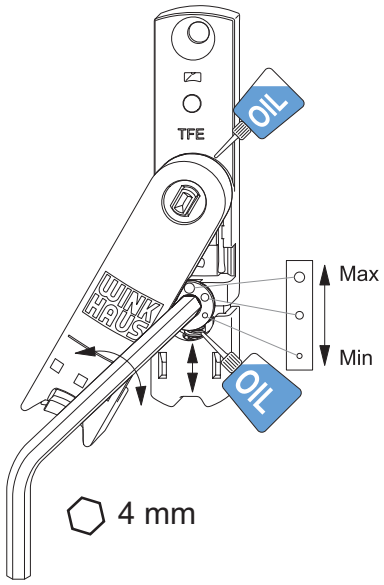
The DFE/TFE element is supplied in the neutral position. Please proceed as follows:
Drive in the protruding pin to fix in place (1).
Can be used left/right by swivelling out the lever once only.
Dribble a few drops of oil (free of resin and acid) onto lubrication points.



DFE/TFE activation

TFE – Retaining force of balcony door catch

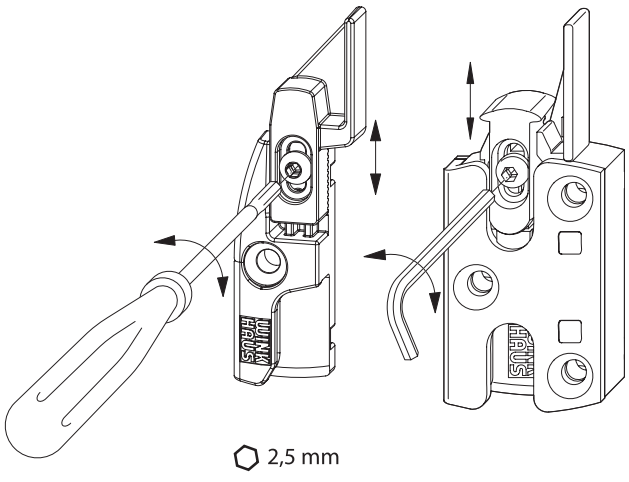
Adjusting the holding force by re-setting the eccentric cam with a 4 mm Allen key.
Dribble a few drops of oil (free of resin and acid) onto lubrication points.



TFE – Retaining force of balcony door catch

Frame part DFE/TFE

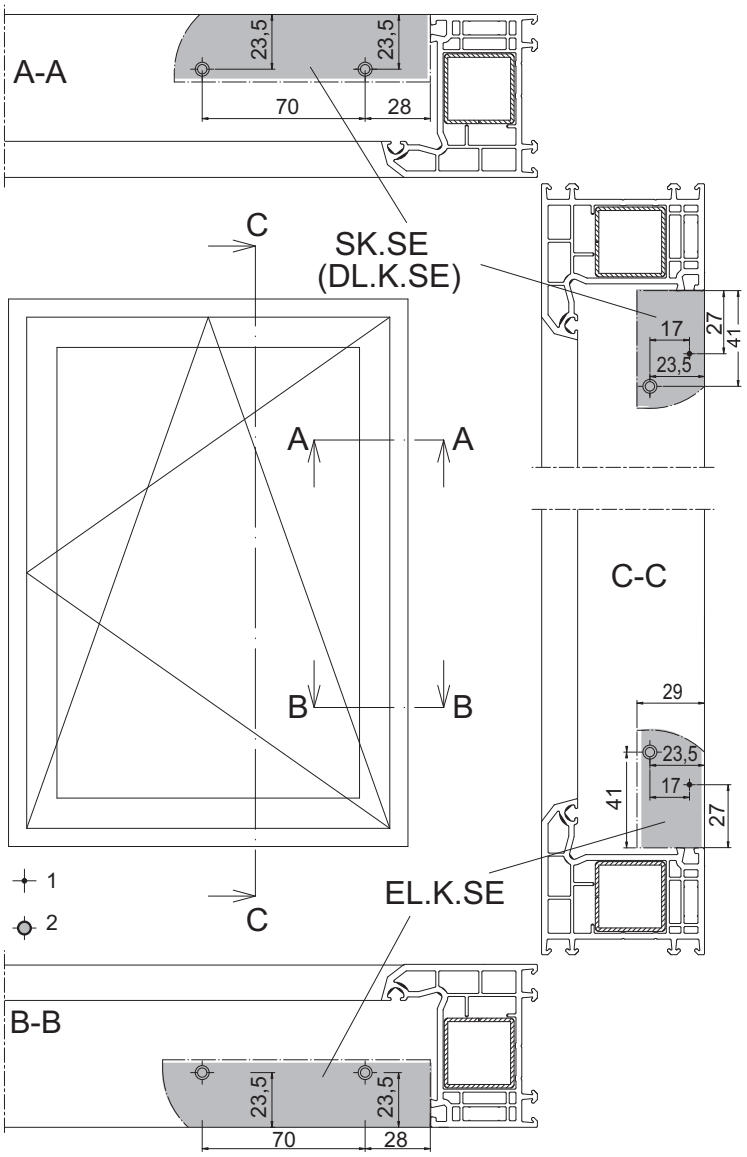
Height adjustment (+/– 3 mm) for sash support plate.
Each time fittings are adjusted, the DFE/TFE height setting should also be checked using a 2.5 mm Allen key.



Frame part DFE/TFE

Installation drawings

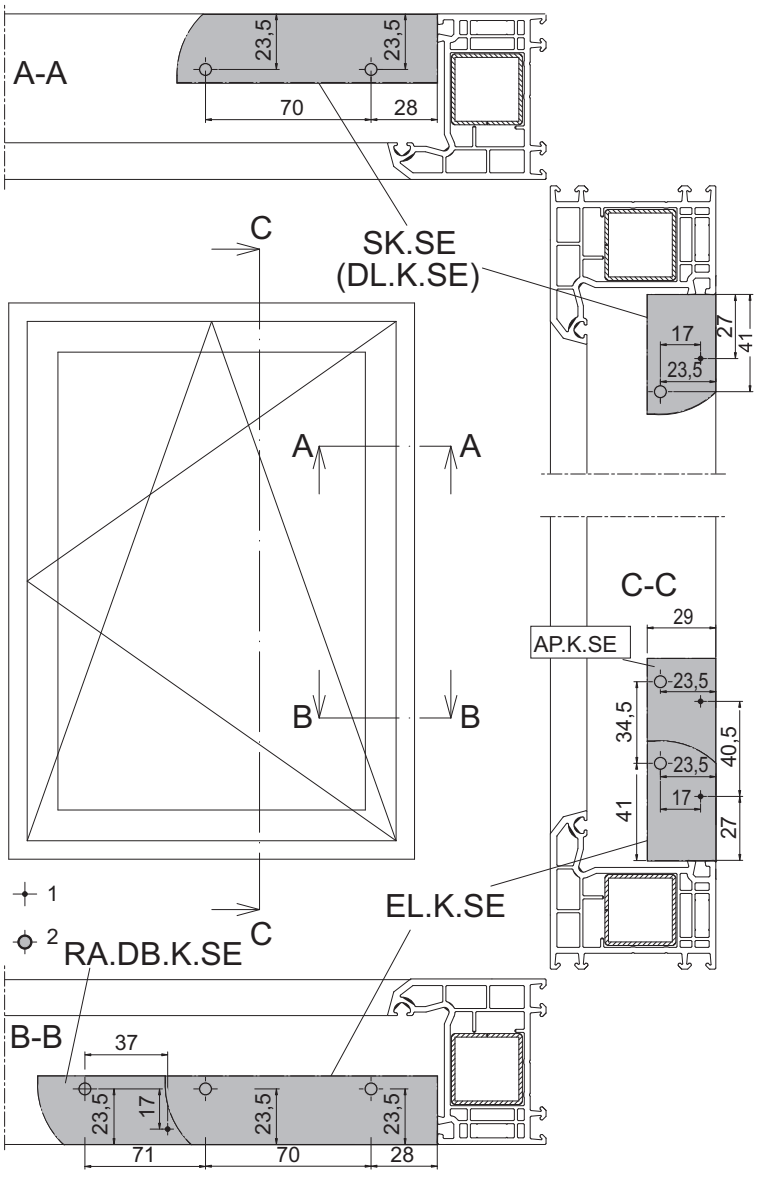
Corner hinge / shear



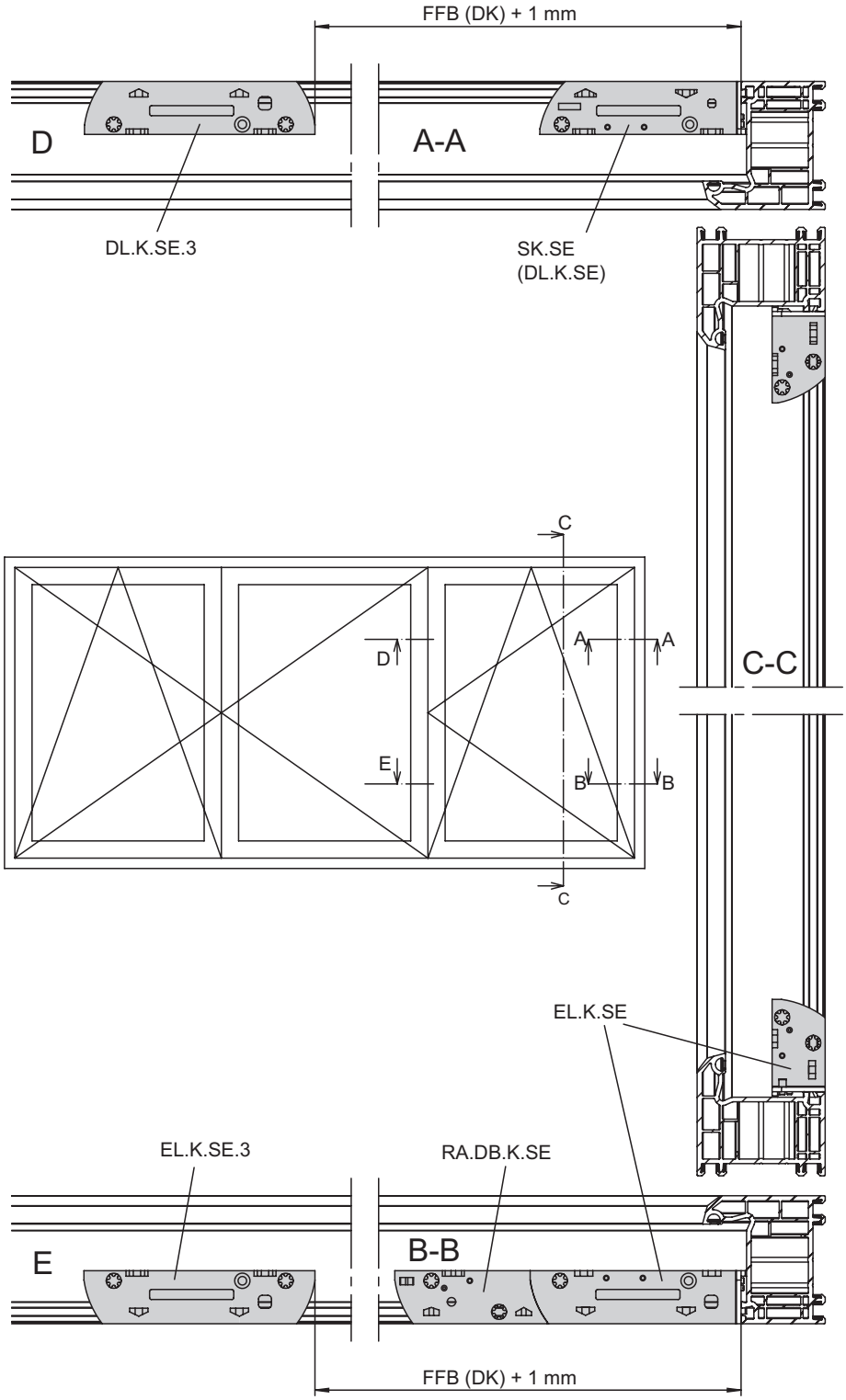
B-6-1: Drilling template 100 kg version
1 - Screw position without pre-drilling
2 - Screw position with pre-drilling
Screw fixing instructions see chapter 1: Proper screw fixing in terms of load of security-relevant fitting components

Corner hinge / shear / adapter plate / frame connection

Corner hinge / shear / frame connection
Triple sash window

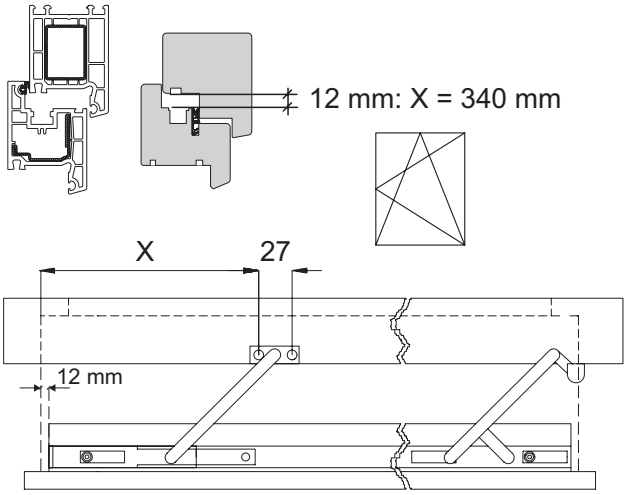


B-6-2: Drilling template 150 kg version
1 - Screw position without pre-drilling
2 - Screw position with pre-drilling
Screw fixing instructions see chapter 1: Proper screw fixing in terms of load of security-relevant fitting components

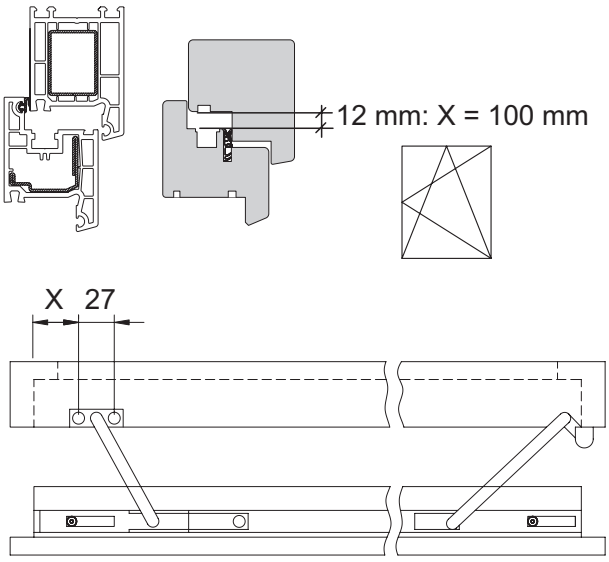


B-6-3: 29 mm rebate depth - 13 mm groove centre position

Additional shear

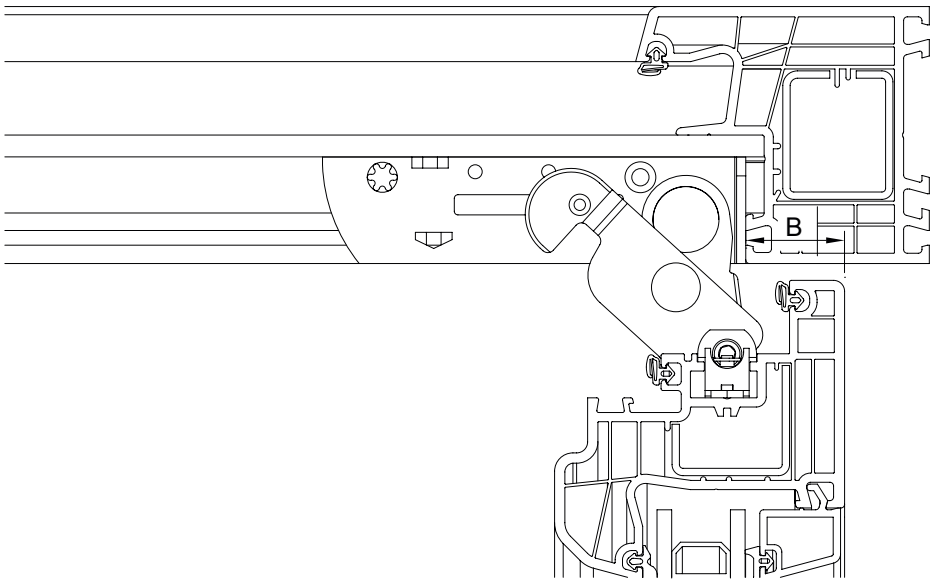


B-7-4: Installation drawing additional shear ZSR
(X with regard to frame rebate edge)

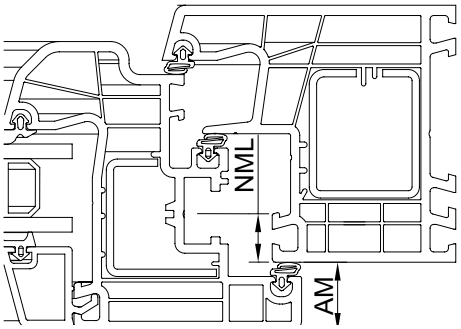


B-7-5: Installation drawing additional shear
ZSRE (for fitting type “Tilt before turn”)

Necessary free sizes of the frame



	B [mm]	
AM [mm]	NML9 [mm]	NML13 [mm]
17	21	25
18	22	26
19	23	27
20	24	28
21	25	29
22	26	30
23	27	31
24	28	32
25	29	33



AM = overlap dimension
B = necessary width
NML = groove centre position

Remark: generally applicable illustration (independent of frame material) for units made of aluminium, timber, PVC-U and steel

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