

PORTAL

FS Plus

For fold and slide elements made of PVC, timber and aluminium

Window systems

Door systems

Comfort systems

Inhalt

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1 General notes

1.1 Target group of this documentation

This documentation is addressed exclusively to specialist companies.

All work described in this documentation may only be carried out by qualified specialist personnel who are trained and experienced in the assembly, commissioning and maintenance of SIEGENIAL hardware. The appropriate and safe assembly of the SIEGENIA hardware is not possible without specialised expertise.

Keep these assembly instructions in a safe place so that you will be able to access them quickly in case of requirement.

1.2 Copyright

The contents of these instructions are protected by copyright. Their use is permissible in the scope of further processing of the hardware components. Any use beyond this without the written consent of the producer is prohibited.

1.3 Guidelines of the German Association of Quality for Locks and Hardware (in German Richtlinien der Gütegemeinschaft Schlösser und Beschläge e. V.)

You can find everything worth knowing about the proper use and maintenance of hardware for windows and patio doors in the "Guidelines of the German Association of Quality for Locks and Hardware" (in German Richtlinien der Gütegemeinschaft Schlösser und Beschläge e. V.).

We prescribe the mandatory observation of these guidelines.

You can find the current guidelines in different languages here:
<http://www.beschlagindustrie.en/ggsb/richtlinien.asp>



VHBH – Hardware for windows and patio doors

Specifications and notes on the product and on liability

VHBH – Hardware for windows and patio doors
Specifications and notes for end users



The VHBH guideline also contains information on „Instruction obligation“. The „Instruction obligation“ gives information on which documents and information must be passed on from/to the relevant target groups.

1.4 Information and instruction obligations

The following documents, in particular, are available for the execution of the information and instruction obligations, which must be passed on via every (intermediary) retailer and fabricator till the end customer as well as for the performance of the maintenance work:

- planning documents
- product catalogue
- assembly instructions
- SI construction drawings
- maintenance and service instructions
- operating instructions

You can find the current documents in different languages here:
<https://downloads.siegenia.com/en/>



You can obtain the SI construction drawings from the SIEGENIA Customer Service.

Observe your obligations to inform your customers extending to the end user!
All our product information that is directed to building owners and/or end users e.g. maintenance instructions, must also be passed on to the end user. Our liability is excluded if defects or damage are caused by a violation of our product information.

1.5 Dimensions

All specified dimensions are nominal dimensions and include the general tolerances (formerly „free size tolerances“). All nominal dimensions are defined in mm.

2 Safety

2.1 Intended use

The PORTAL FS hardware is designed exclusively for use in fold & slide windows or patio doors with a maximum sash weight of 80 kg.

The fold and slide elements made of timber, PVC, aluminium or steel and of corresponding material combinations must be installed vertically and never in a diagonal position.

Fold and slide elements must be equipped with a suitable drainage system. If there is no drainage system, the elements may only be installed to be weatherproof.

Intended use also includes the adherence to all information in the product-specific documents such as:

- these assembly instructions
- product catalogue
- Information, information from the profile manufacturer (e. g. for PVC or aluminium profiles)
- Guidelines VHBE of the German Association of Quality for Locks and Hardware (in German Richtlinien der Gütegemeinschaft Schlösser und Beschläge e. V.)
- valid national laws and directives

Any use beyond the defined intended use is regarded as improper use.

2.2 Improper use

- when obstacles are placed within the opening area, thus preventing the intended use
- when window sashes and patio door sashes are pressed improperly or in an uncontrolled manner (e.g. by wind) or even banged against window reveals in such a way that the hardware or the frame material or miscellaneous parts of windows or patio doors are damaged or destroyed or if subsequent damage could be caused
- when window sashes or patio door sashes are subjected to additional loads (for example, children rocking on the window or door sashes)
- when you put your hand into the rebate between the frame and the sash when you close the sash (danger of injury)

2.3 Safety notes

The PORTAL FS hardware must not be used in the following cases:

- in wet rooms
- in environments with aggressive, corrosive air
- in environments with saline air

Fold and slide elements for wet rooms and for use in environments with aggressive, corrosive air need hardware that meets special requirements.

If this is the case, please contact your SIEGENIA sales consultant.

Avoid direct influence of moisture on the hardware and contact of the hardware with cleaning agents.

The complete hardware may only be composed of original SIEGENIA hardware components. We assume no liability if system accessory parts that are not original parts or not approved are used.

WARNING

Danger of injury due to misuse or inappropriate assembly of hardware.

- Only use hardware assemblies that are approved by the hardware manufacturer.
- Only use accessory parts that are either original or approved by the hardware manufacturer.

Do not use acidic sealants to seal the fold and slide elements. This could lead to corrosion of the hardware components.

Lift and slide elements may only be surface-treated prior to the assembly of the hardware components. Subsequent surface treatment can limit the functioning capability of the hardware components. We assume no liability in this case.

Keep the track of the running rail and all rebates free from

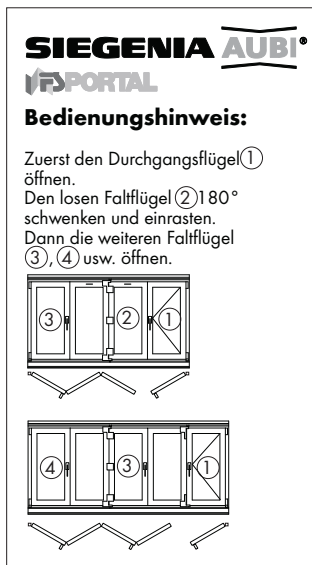
- cement or plaster residues
- deposits
- contamination

3 Operating and installation information

3.1 Handle operation

Choice of handles in PORTAL handle catalogue H4006.2705EN.

Attach the operating sticker to the installed fold & slide sash in an easily visible position. The operating sticker is located in the bogie wheels carton.



3.2 Element materials



Elementary material PVC

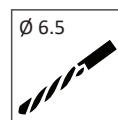


Elementary material Timber

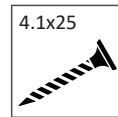


Element material ALU

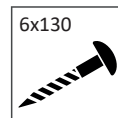
3.3 Description of symbols



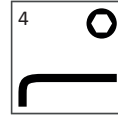
Use \varnothing 6.5 drill



Use countersunk head screw 4.1x25



Use panhead screw 6x130



Use hexagon wrench 4 mm



Use Torx countersunk head screws



Notes to be particularly observed

4 Fabrication guidelines

The components of the fold and slide elements must be stored at room temperature (20°C) for 24 hours before fabrication.

For adhesion and sealing work, we recommend

- OTTO Chemie-OTTOSEAL® S 72
- Collano Adhesives AG-Collano® A 1970
- or a similarly effective product.



System dimensions influenced by the hardware can be adjusted subsequently. If a deviation of the system dimensions is only determined after the installation of the windows, the hardware manufacturer will assume no liability for any potential additional expenditure.

4.1 Test reports

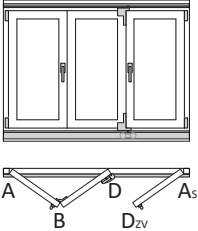
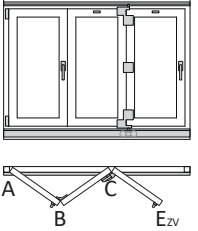
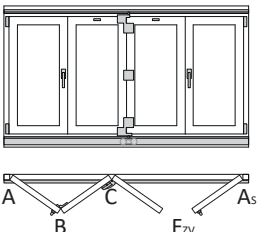
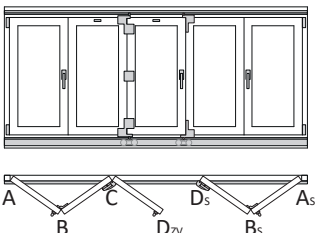
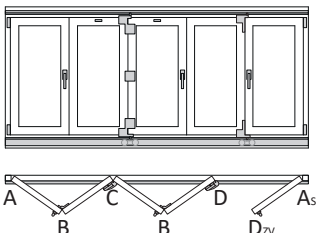
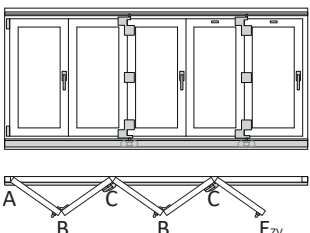
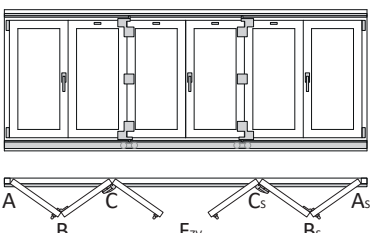
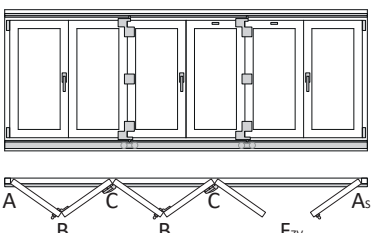
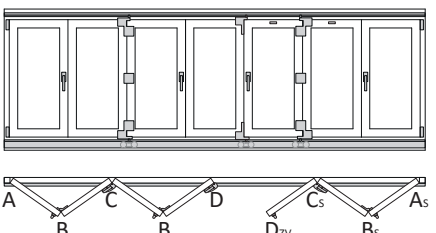
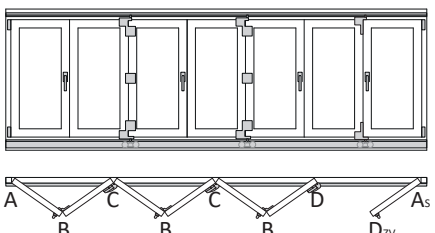
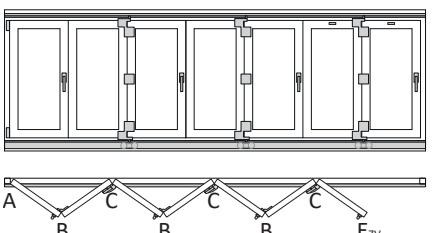
For the use of SIEGENIA test reports for PORTAL FS, a production of the fold and slide elements according to the PORTAL FS system drawings is necessary. You can obtain this from your field sales representative.

4.2 Scheme versions

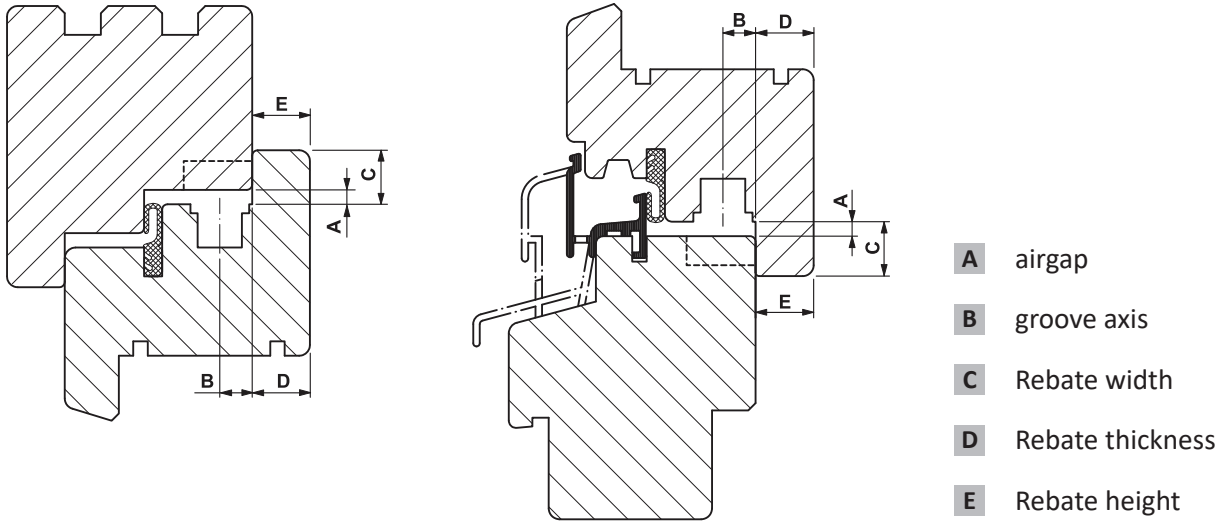
The SI construction drawings corresponding to the listed schemes are available.

All schemes can also be implemented in mirror image.

The addition „s“ (example: As) means that the intersection point A must be implemented in mirror image.

<p>321</p> 	<p>330</p> 	
<p>431</p> 		
<p>532</p> 	<p>541</p> 	<p>550</p> 
<p>633</p> 	<p>651</p> 	
<p>743</p> 	<p>761</p> 	<p>770</p> 

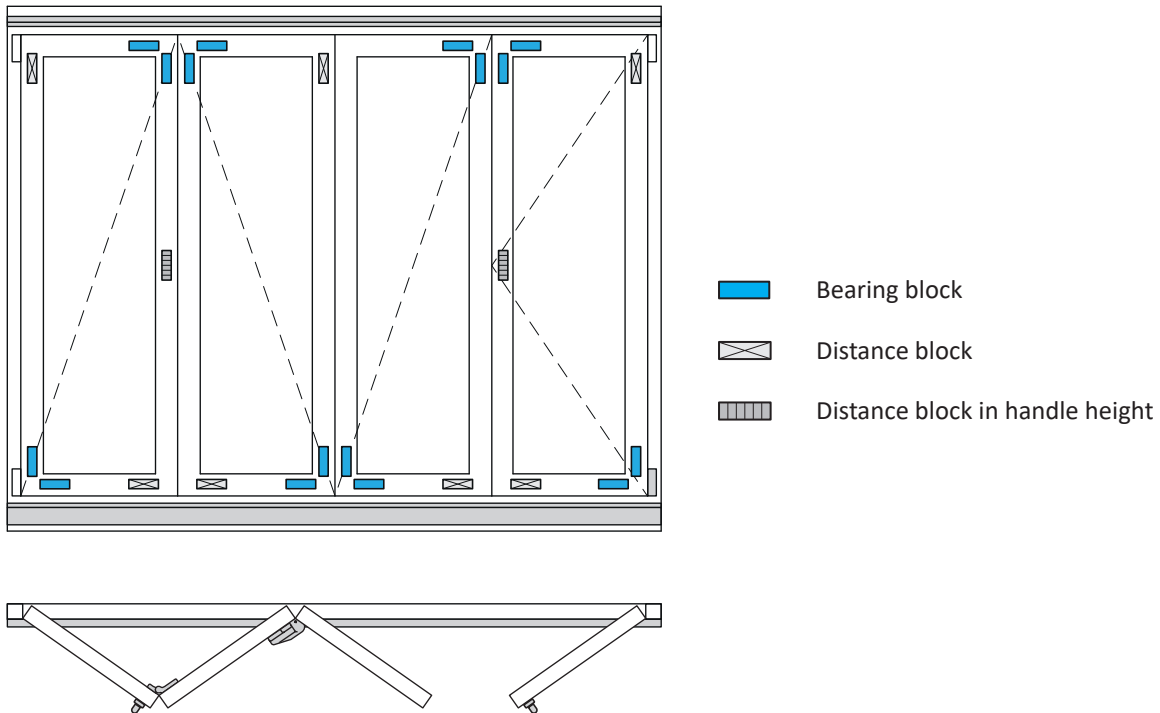
4.3 System dimensions on the profile



4.4 Block setting guideline

Always block set towards the load bearing side.

Example: scheme 431



4.5 Size ranges

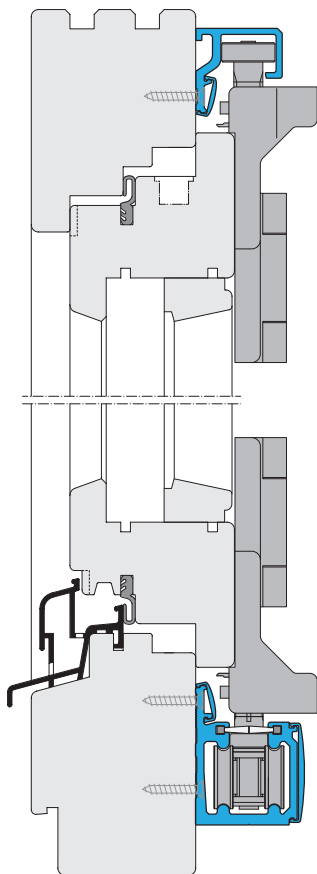
The size ranges can deviate according to the profile system.

Sash rebate width (FFB)	330 – 900
Sash rebate height (FFH)	840 – 2360
Frame outer width (RAB)	depends on profile system; determined by the sash rebate width
Sash weight	max. 80 kg
groove axis	9 and 13
Rebate height	7 to 24

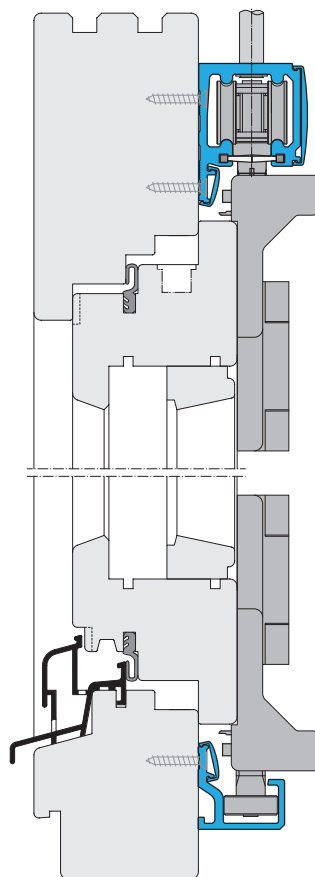
Sash rebate width (FFB) for sash providing access should be larger than 600 mm.

4.6 Assembly versions

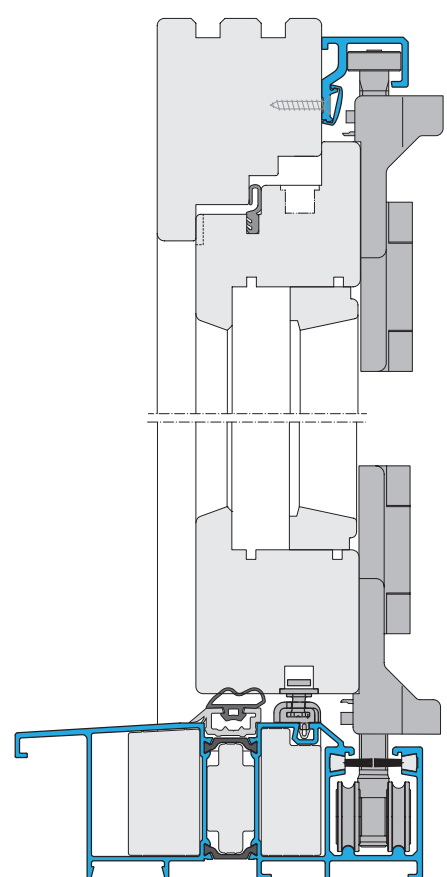
Bottom elements



Top elements



Barrier-free

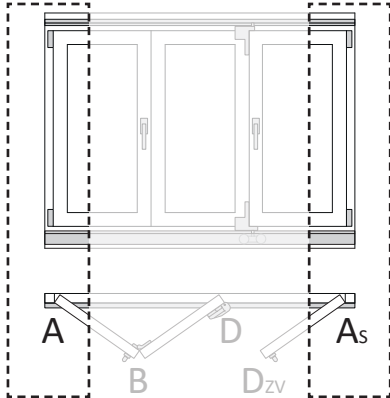




5 Hardware components interior

5.1 Timber elements 12 mm airgap

5.1.1 Intersection point A - hinge side Titan

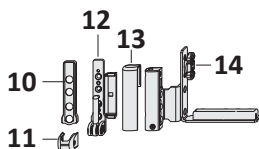
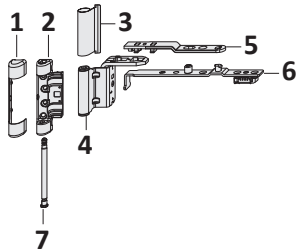


Required intersection point sets per scheme

Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	2	1	2	2	2	1	2	2	2	2	1

Intersection point **As** mirror-reversed version

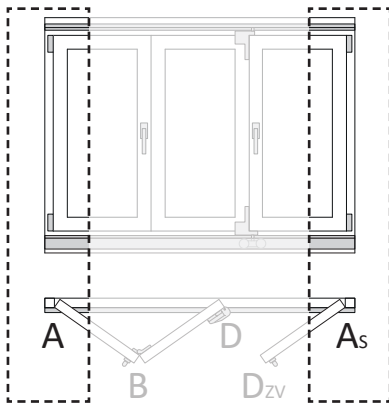
Listed component colours as standard selection.
Further colours on request.



Item	Material description	Colour	Material number
1	Cover cap S	Silver RAL 9003 RAL 8022	TKSL0020-L2401_ TKSL0020-00201_ TKSL0020-01201_
2	Top hinge	see profile data sheet TBSL81	
3	Cover cap H	Silver RAL 9003 RAL 8022	TKWB7010-L2401_ TKWB7010-00201_ TKWB7010-01201_
4	Stay hinge DH	see profile data sheet TBWB81	
5	Stay arm DF	TSAD0010-10001_	
6	Stay sash part DF/MN	TSSD0020-10001_	
7	Top hinge pin	TBSB6020-10001_	
8	Frame part MV	see profile data sheet ZRZM01	
9	Sash part MV	see profile data sheet ZFMV01	
10	Cover cap EL O MB	Silver RAL 9003 RAL 8022	TKEO0010-L2401_ TKEO0010-00201_ TKEO0010-01201_
11	Cover cap EL U	Silver RAL 9003 RAL 8022	TKEU0010-L2401_ TKEU0010-00201_ TKEU0010-01201_
12	Bottom hinge	see profile data sheet TBEL81	
13	Cover cap rebate corner hinge right	Silver RAL 9003 RAL 8022	TKFE7011-L2401_ TKFE7011-00201_ TKFE7011-01201_
	Cover cap rebate corner hinge left*	Silver RAL 9003 RAL 8022	TKFE7012-L2401_ TKFE7012-00201_ TKFE7012-01201_
14	Rebate corner hinge H	see profile data sheet TBFE81	
for barrier-free elements			
14	Rebate corner hinge H A0245	see profile data sheet TBFE85	



5.1.2 Intersection point A - hinge side FS-PORTAL



Required intersection point sets per scheme

Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	2	1	2	2	2	1	2	2	2	2	1

Intersection point **As** mirror-reversed version

Listed component colours as standard selection.
 Further colours on request.

Sash hinge FS PLUS	Pin length sash hinge		Colour	Material number
	narrow	wide		
	25 mm	17/38	Titanium silver	PMFG0030-10001_
		17/48	Titanium silver	PMFG4000-10001_
		27/48	Titanium silver	PMFG4020-10001_
	50 mm	17/38	Titanium silver	PMFG4040-10001_
		17/48	Titanium silver	PMFG4050-10001_
		27/48	Titanium silver	PMFG4060-10001_
	50 mm	17/38	Titanium silver	PMFG4090-10001_
		17/48	Titanium silver	PMFG4100-10001_
		27/48	Titanium silver	PMFG4110-10001_
Contents			15	3x sash hinge, narrow
			16	3x hinge pin
			17	3x sash hinge, wide

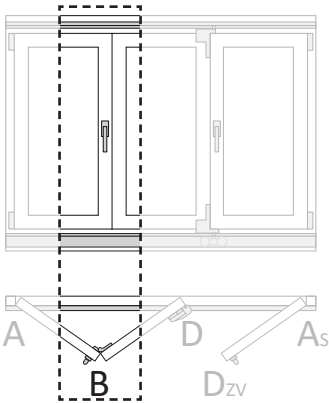
Bag cover caps sash hinge FS	Version	Colour	Material number
	17/38	RAL 8022	PMAG0010-01201_
		RAL 9003	PMAG0010-00201_
		SI-silver	PMAG0010-02501_
	17/48	RAL 8019	PMAG0050-01101_
		RAL 9003	PMAG0050-00201_
		SI-silver	PMAG0050-02501_
	27/48	RAL 8022	PMAG0020-01201_
		RAL 9003	PMAG0020-00201_
		SI-silver	PMAG0020-02501_
Contents		18	3x cover cap FB, narrow
		19	3x cover cap FB, wide

Distance piece FS	1 piece required per sash hinge	H (mm)	Material number	
			silver	RAL 9003
		13	-	826379
		14	852965	826416
		15	852972	826454
		16	852989	826492
		17	852996	826539
		18	853009	826577
		19	853016	826614
		20	853023	826652
		21	853030	826690
		22	853047	826737
		Contents		20

Dowel pin Ø 6x50	2 piece required per distance piece	Material number
	required for distance piece FS size 19-22	KDNA0180-00001_
	Contents	21

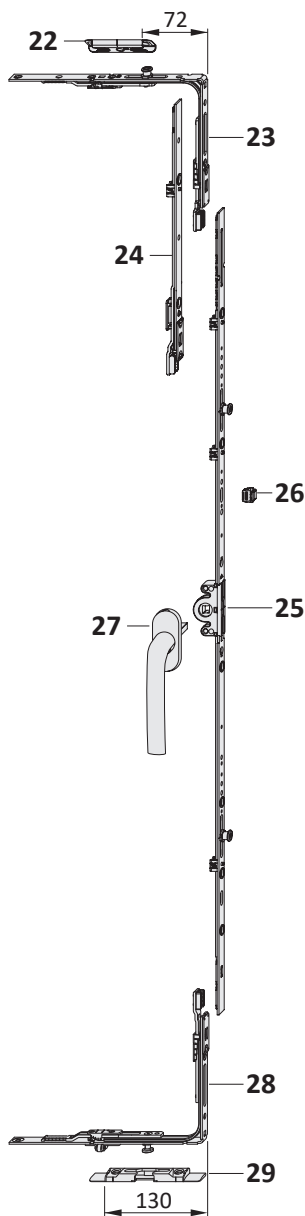


5.1.3 Intersection point B - central locking gear (ZV)



Required intersection point sets per scheme

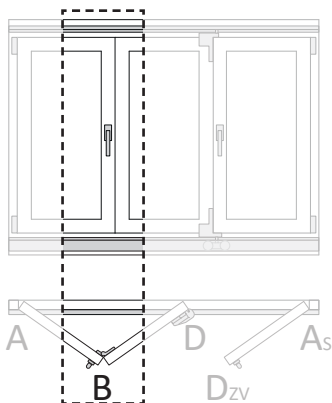
Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	1	1	1	2	2	2	2	2	3	3	3



Item	Material description	FFH	Material number
22	Striker plate		see profile data sheet TRSN
23	Corner drive AF VSO/K+ DF 1RS		TEUL4110-10001_
24	Linkage AF size 1	2200-2400	TZZS0150-10001_
25	Gear 15 AF backset 15 Size 60/handle position 300 Size 80/handle position 400 1RS Size100/handle position 500 1RS Size120/handle position 600 1RS Size140/handle position 700 2RS Size160/handle position 700 2RS Size180/handle position 1000 2RS Size200/handle position 1000 3RS	601- 800 801-1000 1001-1200 1201-1200 1401-1600 1601-1800 1801-2000 2001-2200	TGKK4030-10001_ TGKK4050-10001_ TGKK4060-10001_ TGKK4070-10001_ TGKK4080-10001_ TGKK4090-10001_ TGKK4100-10001_ TGKK4110-10001_
26	Travel restrictor		TFHB0020-09901_
27	Handle Globe		see EBS ZHGS
28	Corner drive AF VSU/K+ FH 1S		TEUL5010-10001_
29	Tilt lock bearing		see profile data sheet TRKF/TRSK



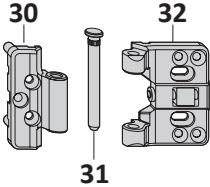
5.1.4 Intersection point B - hinge side

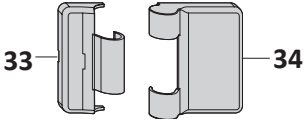


Required intersection point sets per scheme

Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	1	1	1	2	2	2	2	2	3	3	3

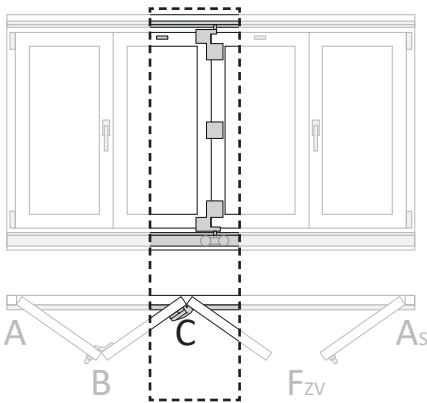
Listed component colours as standard selection.
 Further colours on request.

Sash hinge FS PLUS	Pin length sash hinge			Colour	Material number	
	narrow		wide			
	25 mm	17/38	25 mm	Titanium silver	PMFG0030-10001_	
		17/48		Titanium silver	PMFG4000-10001_	
		27/48		Titanium silver	PMFG4020-10001_	
	50 mm	17/38	25 mm	Titanium silver	PMFG4040-10001_	
		17/48		Titanium silver	PMFG4050-10001_	
		27/48		Titanium silver	PMFG4060-10001_	
	50 mm	17/38	50 mm	Titanium silver	PMFG4090-10001_	
		17/48		Titanium silver	PMFG4100-10001_	
		27/48		Titanium silver	PMFG4110-10001_	
	Contents				30	3x sash hinge, narrow
					31	3x hinge pin
					32	3x sash hinge, wide

Bag cover caps sash hinge FS	Version	Colour	Material number	
	17/38	RAL 8022	PMAG0010-01201_	
		RAL 9003	PMAG0010-00201_	
		SI-silver	PMAG0010-02501_	
	17/48		RAL 8019	PMAG0050-01101_
			RAL 9003	PMAG0050-00201_
			SI-silver	PMAG0050-02501_
	27/48		RAL 8022	PMAG0020-01201_
			RAL 9003	PMAG0020-00201_
			SI-silver	PMAG0020-02501_
Contents		33	3x cover cap FB, narrow	
		34	3x cover cap FB, wide	



5.1.5 Intersection point C



Required intersection point sets per scheme

Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	-	1	1	1	1	2	2	2	2	2	3

Listed component colours as standard selection.
Further colours on request.

Bogie wheels D FS PLUS	Version	Sash rebate heights	Material number	
	Spindle 25 mm	13 - 19	PMLG0130-10001_	
		18 - 24	PMLG0140-10001_	
	for barrier-free elements			
	Spindle 25 mm	13 - 19	PMLG0160-10001_	
Contents		35 1x bottom hinge D, RH 36 2x supporting plate 37 1x guide PLUS 38 2x cheese head screw M8 x 12 39 3x hinge pin TS 40 3x sash hinge, wide 38 41 1x sash hinge, narrow 17 42 1x bottom hinge D, LH 43 1x bogie wheels PLUS		

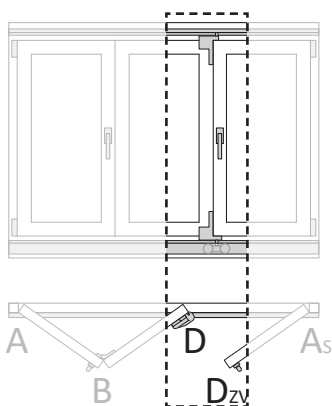
Cover caps bogie wheels D FS	Colour	Material number
	RAL 8022	PMAG0040-01201_
	RAL 9003	PMAG0040-00201_
	SI-silver	PMAG0040-02501_
	Contents	44 1x cover cap ED, RH 45 1x cover cap FB, wide 38 46 1x cover cap FB, narrow 17 47 1x cover cap ED, LH

To secure the free-running sash on the counter sash

Bag supporting piece FS	Colour	Material number
	RAL 8022	PMZG0020-01201_
	RAL 9003	PMZG0020-00201_
	Contents	48 1x supporting piece F 49 4x closing cap 50 1x supporting piece D

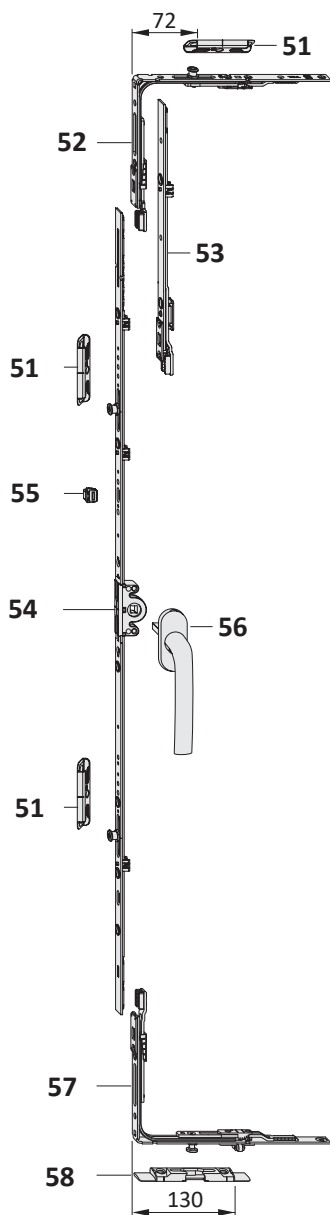


5.1.6 Intersection point D - central locking gear (ZV)



Required intersection point sets per scheme

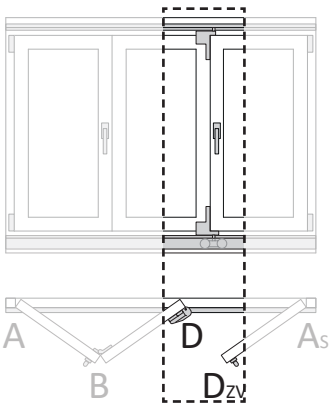
Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	1	-	-	1	1	-	-	-	1	1	-



Item	Material description	FFH	Material number
51	Striker plate		see profile data sheet TRSN
52	Corner drive AF VSO/K+ DF 1RS		TEUL4110-10001_
53	Linkage AF size 1	2200-2400	TZZS0150-10001_
54	Gear 15 AF backset 15 Size 60/handle position 300 Size 80/handle position 400 1RS Size100/handle position 500 1RS Size120/handle position 600 1RS Size140/handle position 700 2RS Size160/handle position 700 2RS Size180/handle position 1000 2RS Size200/handle position 1000 3RS	601- 800 801-1000 1001-1200 1201-1200 1401-1600 1601-1800 1801-2000 2001-2200	TGKK4030-10001_ TGKK4050-10001_ TGKK4060-10001_ TGKK4070-10001_ TGKK4080-10001_ TGKK4090-10001_ TGKK4100-10001_ TGKK4110-10001_
55	Travel restrictor		TFHB0020-09901_
56	Handle Globe		see EBS ZHGS
57	Corner drive AF VSU/K+ FH 1S		TEUL5010-10001_
58	Tilt lock bearing		see profile data sheet TRAL/TRSK



5.1.7 Intersection point D - hinge side



Required intersection point sets per scheme

Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	1	-	-	1	1	-	-	-	1	1	-

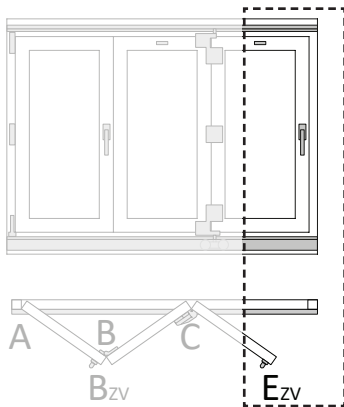
Listed component colours as standard selection.
Further colours on request.

Bogie wheels FS PLUS	Version	Sash rebate heights	Material number	
	Spindle 25 mm	13 - 19	PMLG0110-10001_	
		18 - 24	PMLG0120-10001_	
	for barrier-free elements			
	Spindle 25 mm	13 - 19	PMLG0170-10001_	
Contents		59 1x bottom hinge, RH 60 2x supporting plate 61 1x guide PLUS 62 2x cheese head screw M8 x 12 63 1x bottom hinge, LH 64 1x bogie wheels PLUS		

Cover caps SET bogie wheels FS	Colour	Material number
	RAL 8022	PMAG0030-01201_
	RAL 9003	PMAG0030-00201_
	SI-silver	PMAG0030-02501_
	Contents	65 1x cover cap E, RH 66 1x cover cap E, LH

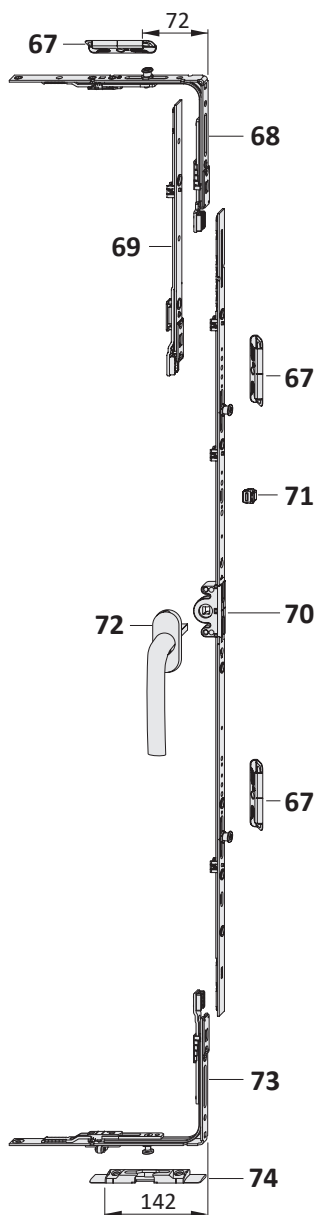


5.1.8 Intersection point E - central locking gear (ZV)



Required intersection point sets per scheme

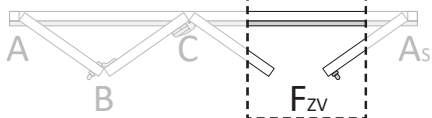
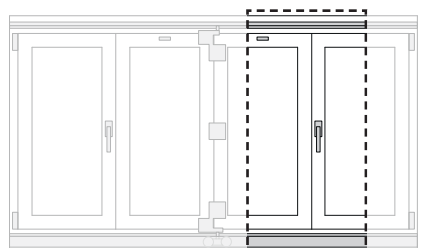
Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	-	1	-	-	-	1	-	-	-	-	1



Item	Material description	FFH	Material number
67	Striker plate		see profile data sheet TRSN
68	Corner drive AF VSO/K+ DF 1RS		TEUL4110-10001_
69	Linkage AF size 1	2200-2400	TZZS0150-10001_
70	Gear 15 AF backset 15 Size 60/handle position 300 Size 80/handle position 400 1RS Size100/handle position 500 1RS Size120/handle position 600 1RS Size140/handle position 700 2RS Size160/handle position 700 2RS Size180/handle position 1000 2RS Size200/handle position 1000 3RS	601- 800 801-1000 1001-1200 1201-1200 1401-1600 1601-1800 1801-2000 2001-2200	TGKK4030-10001_ TGKK4050-10001_ TGKK4060-10001_ TGKK4070-10001_ TGKK4080-10001_ TGKK4090-10001_ TGKK4100-10001_ TGKK4110-10001_
71	Travel restrictor		TFHB0020-09901_
72	Handle Globe		see EBS ZHGS
73	Corner drive AF VSU/K+ FH 1S		TEUL5010-10001_
74	Tilt lock bearing		see profile data sheet TRAL/TRSK

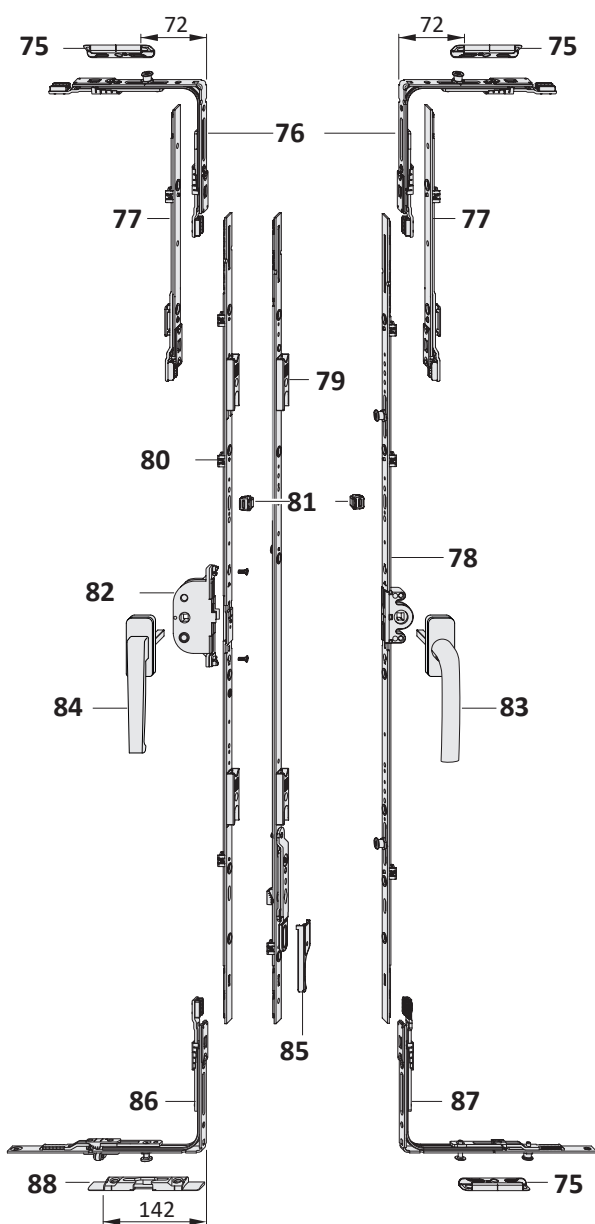


5.1.9 Intersection point F - central locking gear (ZV)

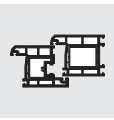


Required intersection point sets per scheme

Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	-	-	1	-	-	-	1	1	-	-	-

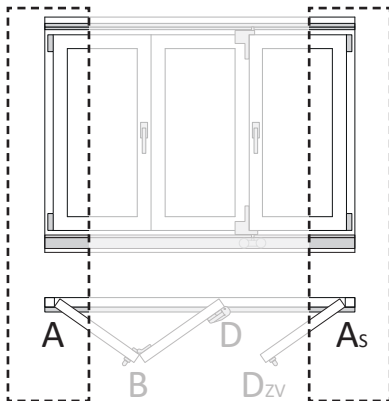


Item	Material description	FFH	Material number
75	Striker plate		see profile data sheet TRSN
76	Corner drive AF VSO/K+ DF 1RS		TEUL4110-10001_
77	Linkage AF size 1	2200-2400	TZZS0150-10001_
78	Gear 15 AF backset 15 Size 60/handle position 300 Size 80/handle position 400 1RS Size100/handle position 500 1RS Size120/handle position 600 1RS Size140/handle position 700 2RS Size160/handle position 700 2RS Size180/handle position 1000 2RS Size200/handle position 1000 3RS	601- 800 801-1000 1001-1200 1201-1200 1401-1600 1601-1800 1801-2000 2001-2200	TGKK4030-10001_ TGKK4050-10001_ TGKK4060-10001_ TGKK4070-10001_ TGKK4080-10001_ TGKK4090-10001_ TGKK4100-10001_ TGKK4110-10001_
79	Gear secondary sash 16 Size 60/handle position 300 Size 80/handle position 400 1RS Size100/handle position 500 1RS Size120/handle position 600 1RS Size140/handle position 700 2RS Size160/handle position 700 2RS Size180/handle position 1000 2RS Size200/handle position 1000 3RS	601- 800 801-1000 1001-1200 1201-1200 1401-1600 1601-1800 1801-2000 2001-2200	TGKS4030-10001_ TGKS4050-10001_ TGKS4060-10001_ TGKS4070-10001_ TGKS4080-10001_ TGKS4090-10001_ TGKS4100-10001_ TGKS4110-10001_
80	Gear OS-AF Size 60/handle position 300 Size 80/handle position 400 1RS Size100/handle position 500 1RS Size120/handle position 600 1RS Size140/handle position 700 2RS Size160/handle position 700 2RS Size180/handle position 1000 2RS Size200/handle position 1000 3RS	601- 800 801-1000 1001-1200 1201-1200 1401-1600 1601-1800 1801-2000 2001-2200	TGKK0650-10001_ TGKK0660-10001_ TGKK0670-10001_ TGKK0680-10001_ TGKK0760-10001_ TGKK0770-10001_ TGKK0720-10001_ TGKK0730-10001_
81	Travel restrictor		TFHB0020-09901_
82	Gear set backset 30 M5 Gear set backset 35 M5 Gear set backset 40 M5 Gear set backset 45 M5 Gear set backset 50 M5 Gear set backset 55 M5		TMSL4300-10001_ TMSL4350-10001_ TMSL4400-10001_ TGKK4450-10001_ TGKK4500-10001_ TGKK4550-10001_
83	Handle Globe		see EBS ZHGS
84	Handle flat FS		PHIG0010-50201_
85	Handle VL secondary sash RH Handle VL secondary sash LH		THVL0011-10001_ THVL0012-10001_
86	Corner drive AF VSU/K+ FH 1S		TEUL5010-10001_
87	Corner drive AF VSU/K 56+ 1S 1RS		TEUL5030-10001_
88	Tilt lock bearing		see profile data sheet TRKF



5.2 PVC elements

5.2.1 Intersection point A - hinge side Titan

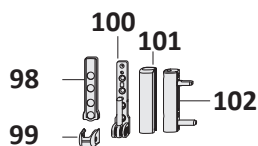
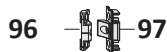
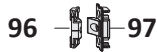
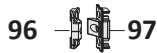
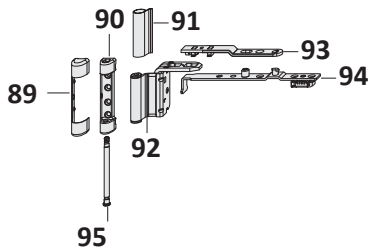


Required intersection point sets per scheme

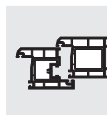
Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	2	1	2	2	2	1	2	2	2	2	1

Intersection point **As** mirror-reversed version

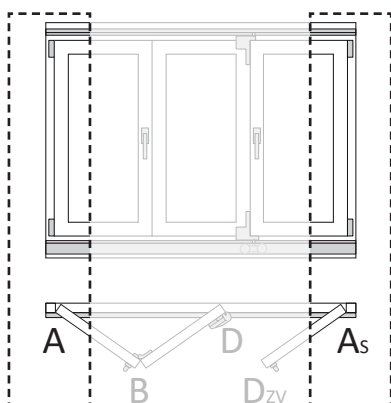
Listed component colours as standard selection.
 Further colours on request.



Item	Material description	Colour	Material number
89	Cover cap S	Silver RAL 9003 RAL 8022	TKSL0020-L2401_ TKSL0020-00201_ TKSL0020-01201_
90	Top hinge DH		see profile data sheet TBSL61
91	Cover cap W H	Silver RAL 9003 RAL 8022	TKWB0010-L2401_ TKWB0010-00201_ TKWB0010-01201_
92	Stay hinge DH		see profile data sheet TBWB61
93	Stay arm DF		TSAD0010-10001_
94	Stay sash part DF/MN		TSSD0020-10001_
95	Top hinge pin Poly		TBSB6020-10001_
96	Frame part MV		see profile data sheet ZRZM01
97	Sash part MV		see profile data sheet ZFMV01
98	Cover cap EL O MB	Silver RAL 9003 RAL 8022	TKEO0010-L2401_ TKEO0010-00201_ TKEO0010-01201_
99	Cover cap EL U	Silver RAL 9003 RAL 8022	TKEU0010-L2401_ TKEU0010-00201_ TKEU0010-01201_
100	Bottom hinge		see profile data sheet TBEL02
101	Cover cap EB	Silver RAL 9003 RAL 8022	TKEB0020-L2401_ TKEB0020-00201_ TKEB0020-01201_
102	Corner hinge PVC		see profile data sheet TBEB61



5.2.2 Intersection point A - hinge side FS-PORTAL



Required intersection point sets per scheme

Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	2	1	2	2	2	1	2	2	2	2	1

Intersection point **As** mirror-reversed version

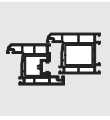
Listed component colours as standard selection.
 Further colours on request.

Sash hinge FS PLUS	Pin length sash hinge			Colour	Material number	
	narrow		wide			
	25 mm	17/38	25 mm	Titanium silver	PMFG0030-10001_	
		17/48		Titanium silver	PMFG4000-10001_	
		27/48		Titanium silver	PMFG4020-10001_	
	50 mm	17/38	25 mm	Titanium silver	PMFG4040-10001_	
		17/48		Titanium silver	PMFG4050-10001_	
		27/48		Titanium silver	PMFG4060-10001_	
	50 mm	17/38	50 mm	Titanium silver	PMFG4090-10001_	
		17/48		Titanium silver	PMFG4100-10001_	
		27/48		Titanium silver	PMFG4110-10001_	
	Contents				103	3x sash hinge, narrow
					104	3x hinge pin
					105	3x sash hinge, wide

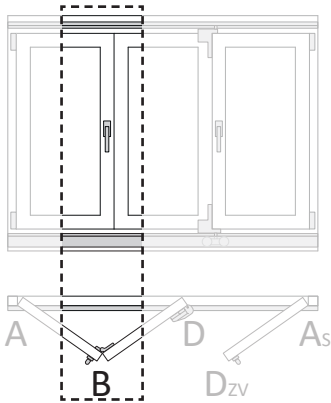
Bag cover caps sash hinge FS	Version	Colour	Material number
	17/38	RAL 8022	PMAG0010-01201_
		RAL 9003	PMAG0010-00201_
		SI-silver	PMAG0010-02501_
	17/48	RAL 8019	PMAG0050-01101_
		RAL 9003	PMAG0050-00201_
		SI-silver	PMAG0050-02501_
	27/48	RAL 8022	PMAG0020-01201_
		RAL 9003	PMAG0020-00201_
		SI-silver	PMAG0020-02501_
Contents		106	3x cover cap FB, narrow
		107	3x cover cap FB, wide

Distance piece FS	1 piece required per sash hinge	H (mm)	Material number	
			silver	RAL 9003
		13	–	826379
		14	852965	826416
		15	852972	826454
		16	852989	826492
		17	852996	826539
		18	853009	826577
		19	853016	826614
		20	853023	826652
		21	853030	826690
		22	853047	826737
Contents		108	1x distance piece	

Dowel pin Ø 6x50	2 piece required per distance piece	Material number
	required for distance piece FS size 19-22	KDNA0180-00001_
	Contents	109

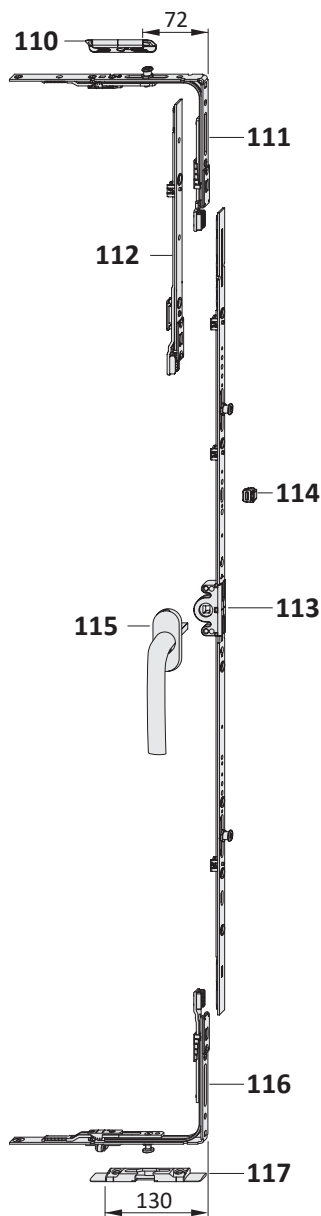


5.2.3 Intersection point B - central locking gear (ZV)

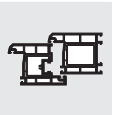


Required intersection point sets per scheme

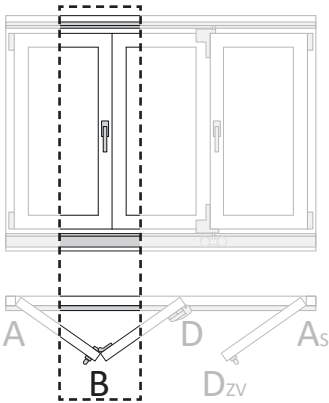
Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	1	1	1	2	2	2	2	2	3	3	3



Item	Material description	FFH	Material number
110	Striker plate		see profile data sheet TRSN
111	Corner drive AF VSO/K+ DF 1RS		TEUL4110-10001_
112	Linkage AF size 1	2200-2400	TZZS0150-10001_
113	Gear 15 AF backset 15 Size 60/handle position 300 Size 80/handle position 400 1RS Size100/handle position 500 1RS Size120/handle position 600 1RS Size140/handle position 700 2RS Size160/handle position 700 2RS Size180/handle position 1000 2RS Size200/handle position 1000 3RS	601- 800 801-1000 1001-1200 1201-1200 1401-1600 1601-1800 1801-2000 2001-2200	TGKK4030-10001_ TGKK4050-10001_ TGKK4060-10001_ TGKK4070-10001_ TGKK4080-10001_ TGKK4090-10001_ TGKK4100-10001_ TGKK4110-10001_
114	Travel restrictor		TFHB0020-09901_
115	Handle Globe		see EBS ZHGS
116	Corner drive AF VSU/K+ FH 1S		TEUL5010-10001_
117	Tilt lock bearing		see profile data sheet TRKF/TRSK



5.2.4 Intersection point B - hinge side



Required intersection point sets per scheme

Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	1	1	1	2	2	2	2	2	3	3	3

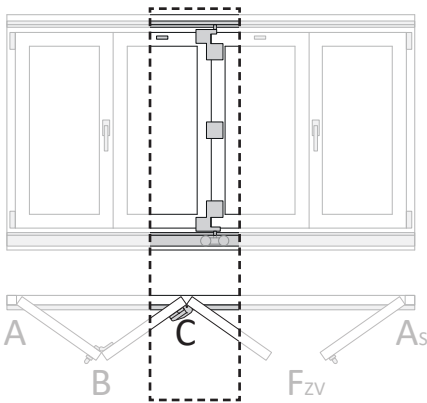
Listed component colours as standard selection.
 Further colours on request.

Sash hinge FS PLUS	Pin length sash hinge			Colour	Material number	
	narrow		wide			
	25 mm	17/38	25 mm	Titanium silver	PMFG0030-10001_	
		17/48		Titanium silver	PMFG4000-10001_	
		27/48		Titanium silver	PMFG4020-10001_	
	50 mm	17/38	25 mm	Titanium silver	PMFG4040-10001_	
		17/48		Titanium silver	PMFG4050-10001_	
		27/48		Titanium silver	PMFG4060-10001_	
	50 mm	17/38	50 mm	Titanium silver	PMFG4090-10001_	
		17/48		Titanium silver	PMFG4100-10001_	
		27/48		Titanium silver	PMFG4110-10001_	
	Contents				118	3x sash hinge, narrow
					119	3x hinge pin
					120	3x sash hinge, wide

Bag cover caps sash hinge FS	Version	Colour	Material number
	17/38	RAL 8022	PMAG0010-01201_
		RAL 9003	PMAG0010-00201_
		SI-silver	PMAG0010-02501_
	17/48	RAL 8019	PMAG0050-01101_
		RAL 9003	PMAG0050-00201_
		SI-silver	PMAG0050-02501_
	27/48	RAL 8022	PMAG0020-01201_
		RAL 9003	PMAG0020-00201_
		SI-silver	PMAG0020-02501_
Contents		121	3x cover cap FB, narrow
		122	3x cover cap FB, wide



5.2.5 Intersection point C - PVC



Required intersection point sets per scheme

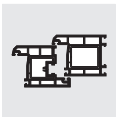
Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	–	1	1	1	1	2	2	2	2	2	3

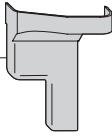
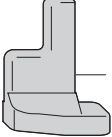
Listed component colours as standard selection.
 Further colours on request.

Sash hinge FS PLUS	Pin length sash hinge		Colour	Material number	
	narrow	wide			
	25 mm	25 mm	17/38	Titanium silver	PMFG0030-10001_
			17/48	Titanium silver	PMFG4000-10001_
			27/48	Titanium silver	PMFG4020-10001_
	50 mm	25 mm	17/38	Titanium silver	PMFG4040-10001_
			17/48	Titanium silver	PMFG4050-10001_
			27/48	Titanium silver	PMFG4060-10001_
50 mm	50 mm	17/38	Titanium silver	PMFG4090-10001_	
		17/48	Titanium silver	PMFG4100-10001_	
		27/48	Titanium silver	PMFG4110-10001_	
Contents			123	3x sash hinge, narrow	
			124	3x hinge pin	
			125	3x sash hinge, wide	




Bag cover caps sash hinge FS	Version	Colour	Material number
	17/38	RAL 8022	PMAG0010-01201_
		RAL 9003	PMAG0010-00201_
		SI-silver	PMAG0010-02501_
	17/48	RAL 8019	PMAG0050-01101_
		RAL 9003	PMAG0050-00201_
		SI-silver	PMAG0050-02501_
	27/48	RAL 8022	PMAG0020-01201_
		RAL 9003	PMAG0020-00201_
		SI-silver	PMAG0020-02501_
Contents		126	3x cover cap FB, narrow
		127	3x cover cap FB, wide

Bogie wheels FS PLUS	Version	Sash rebate heights	Material number	
	Spindle 25 mm	13 - 19	PMLG0110-10001_	
		18 - 24	PMLG0120-10001_	
	Spindle 50 mm	13 - 19	PMLG0400-10001_	
		18 - 24	PMLG0410-10001_	
	for barrier-free elements			
	Spindle 25 mm		13 - 19	PMLG0170-10001_
Contents			128	1x bottom hinge, RH
			129	2x supporting plate
			130	1x guide PLUS
			131	2x cheese head screw M8 x 12
			132	1x bottom hinge, LH
			133	1x bogie wheels PLUS



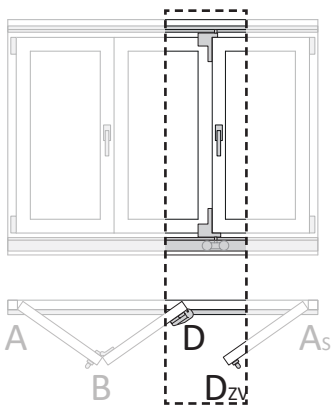
Cover caps SET bogie wheels FS		Colour	Material number
 134  135		RAL 8022	PMAG0030-01201_
		RAL 9003	PMAG0030-00201_
		SI-silver	PMAG0030-02501_
		Contents	134 1x cover cap E, RH 135 1x cover cap E, LH

To secure the free-running sash on the counter sash

Bag supporting piece FS		Colour	Material number
 136  137  138		RAL 8022	PMZG0020-01201_
		RAL 9003	PMZG0020-00201_
		Contents	136 1x supporting piece F 137 4x closing cap 138 1x supporting piece D

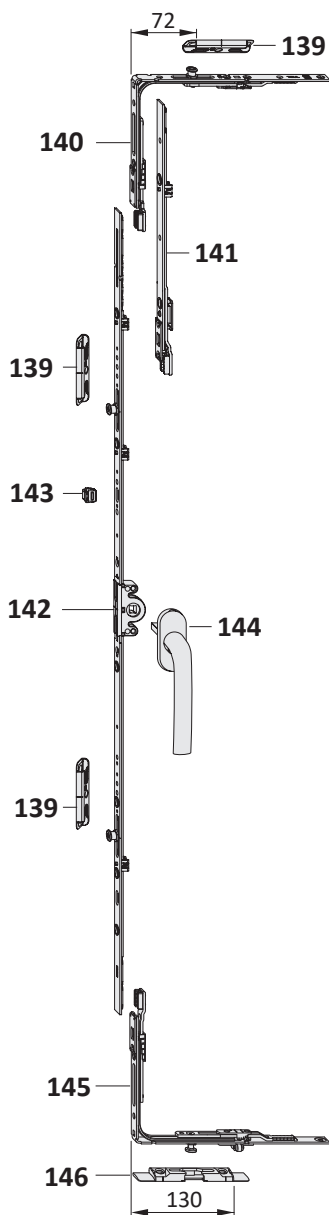


5.2.6 Intersection point D - central locking gear (ZV)

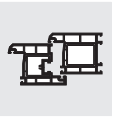


Required intersection point sets per scheme

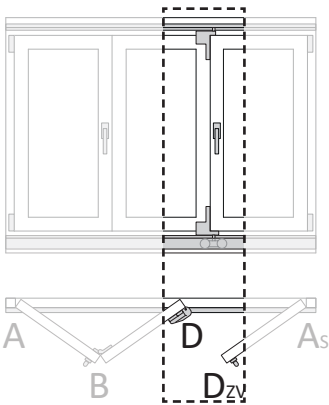
Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	1	-	-	1	1	-	-	-	1	1	-



Item	Material description	FFH	Material number
139	Striker plate		see profile data sheet TRSN
140	Corner drive AF VSO/K+ DF 1RS		TEUL4110-10001_
141	Linkage AF size 1	2200-2400	TZZS0150-10001_
142	Gear 15 AF backset 15 Size 60/handle position 300 Size 80/handle position 400 1RS Size100/handle position 500 1RS Size120/handle position 600 1RS Size140/handle position 700 2RS Size160/handle position 700 2RS Size180/handle position 1000 2RS Size200/handle position 1000 3RS	601- 800 801-1000 1001-1200 1201-1200 1401-1600 1601-1800 1801-2000 2001-2200	TGKK4030-10001_ TGKK4050-10001_ TGKK4060-10001_ TGKK4070-10001_ TGKK4080-10001_ TGKK4090-10001_ TGKK4100-10001_ TGKK4110-10001_
143	Travel restrictor		TFHB0020-09901_
144	Handle Globe		see EBS ZHGS
145	Corner drive AF VSU/K+ FH 1S		TEUL5010-10001_
146	Tilt lock bearing		see profile data sheet TRKF/TRSK



5.2.7 Intersection point D - hinge side



Required intersection point sets per scheme

Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	1	-	-	1	1	-	-	-	1	1	-

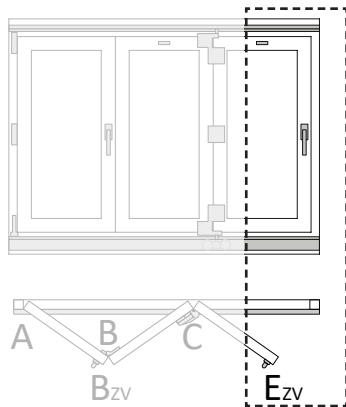
Listed component colours as standard selection.
 Further colours on request.

Bogie wheels FS PLUS	Version	Sash rebate heights	Material number	
	Spindle 25 mm	13 - 19	PMLG0110-10001_	
		18 - 24	PMLG0120-10001_	
	Spindle 50 mm	13 - 19	PMLG0400-10001_	
		18 - 24	PMLG0410-10001_	
	for barrier-free elements			
	Spindle 25 mm	13 - 19	PMLG0170-10001_	
Contents		147 1x bottom hinge, RH 148 2x supporting plate 149 1x guide PLUS 150 2x cheese head screw M8 x 12 151 1x bottom hinge, LH 152 1x bogie wheels PLUS		

Cover caps SET bogie wheels FS	Colour	Material number
	RAL 8022	PMAG0030-01201_
	RAL 9003	PMAG0030-00201_
	SI-silver	PMAG0030-02501_
	Contents	

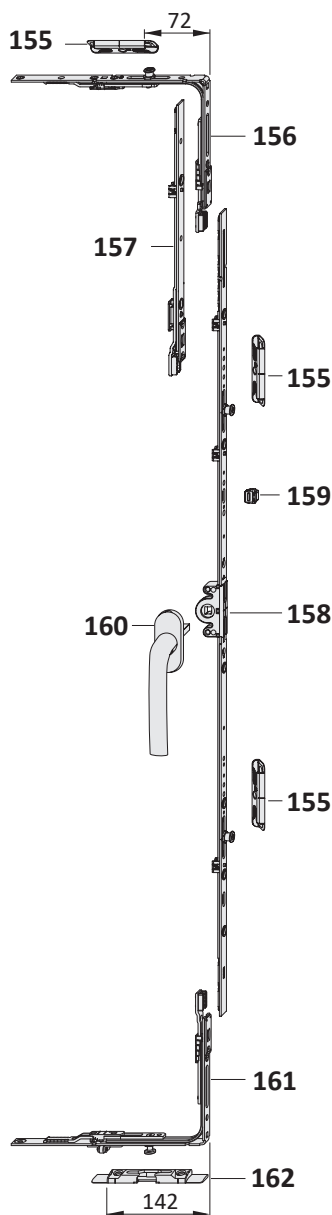


5.2.8 Intersection point E

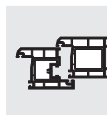


Required intersection point sets per scheme

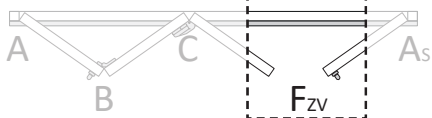
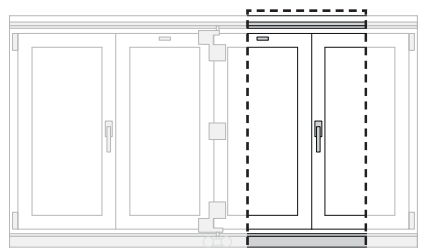
Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	–	1	–	–	–	1	–	–	–	–	1



Item	Material description	FFH	Material number
155	Striker plate		see profile data sheet TRSN
156	Corner drive AF VSO/K+ DF 1RS		TEUL4110-10001_
157	Linkage AF size 1	2200–2400	TZZS0150-10001_
158	Gear 15 AF backset 15 Size 60/handle position 300 Size 80/handle position 400 1RS Size100/handle position 500 1RS Size120/handle position 600 1RS Size140/handle position 700 2RS Size160/handle position 700 2RS Size180/handle position 1000 2RS Size200/handle position 1000 3RS	601– 800 801–1000 1001–1200 1201–1200 1401–1600 1601–1800 1801–2000 2001–2200	TGKK4030-10001_ TGKK4050-10001_ TGKK4060-10001_ TGKK4070-10001_ TGKK4080-10001_ TGKK4090-10001_ TGKK4100-10001_ TGKK4110-10001_
159	Travel restrictor		TFHB0020-09901_
160	Handle Globe		see EBS ZHGS
161	Corner drive AF VSU/K+ FH 1S		TEUL5010-10001_
162	Tilt lock bearing		see profile data sheet TRKF/TRSK

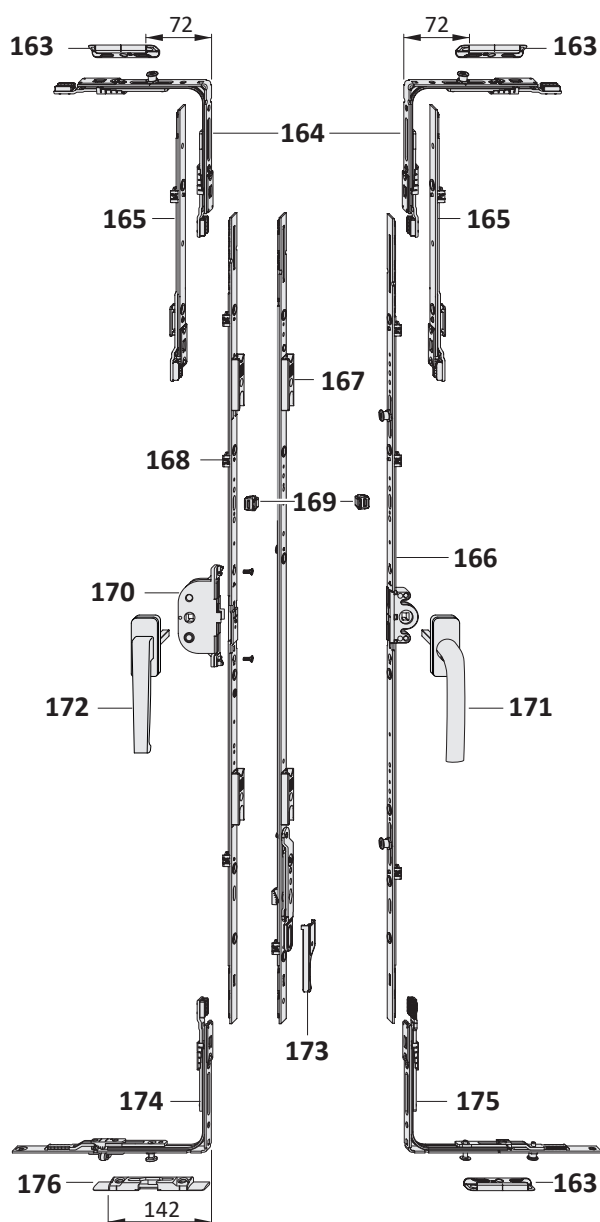


5.2.9 Intersection point F - central locking gear (ZV)



Required intersection point sets per scheme

Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	-	-	1	-	-	-	1	1	-	-	-

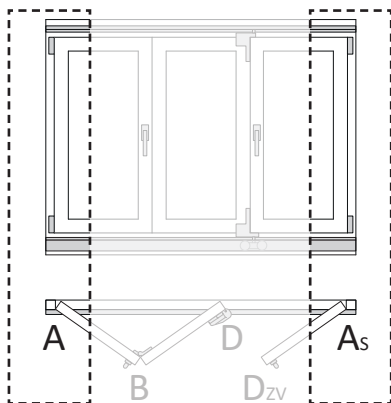


Item	Material description	FFH	Material number
163	Striker plate		see profile data sheet TRSN
164	Corner drive AF VSO/K+ DF 1RS		TEUL4110-10001_
165	Linkage AF size 1	2200-2400	TZZS0150-10001_
166	Gear 15 AF backset 15 Size 60/handle position 300 Size 80/handle position 400 1RS Size100/handle position 500 1RS Size120/handle position 600 1RS Size140/handle position 700 2RS Size160/handle position 700 2RS Size180/handle position 1000 2RS Size200/handle position 1000 3RS	601- 800 801-1000 1001-1200 1201-1200 1401-1600 1601-1800 1801-2000 2001-2200	TGKK4030-10001_ TGKK4050-10001_ TGKK4060-10001_ TGKK4070-10001_ TGKK4080-10001_ TGKK4090-10001_ TGKK4100-10001_ TGKK4110-10001_
167	Gear secondary sash 16 Size 60/handle position 300 Size 80/handle position 400 1RS Size100/handle position 500 1RS Size120/handle position 600 1RS Size140/handle position 700 2RS Size160/handle position 700 2RS Size180/handle position 1000 2RS Size200/handle position 1000 3RS	601- 800 801-1000 1001-1200 1201-1200 1401-1600 1601-1800 1801-2000 2001-2200	TGKS4030-10001_ TGKS4050-10001_ TGKS4060-10001_ TGKS4070-10001_ TGKS4080-10001_ TGKS4090-10001_ TGKS4100-10001_ TGKS4110-10001_
168	Gear OS-AF Size 60/handle position 300 Size 80/handle position 400 1RS Size100/handle position 500 1RS Size120/handle position 600 1RS Size140/handle position 700 2RS Size160/handle position 700 2RS Size180/handle position 1000 2RS Size200/handle position 1000 3RS	601- 800 801-1000 1001-1200 1201-1200 1401-1600 1601-1800 1801-2000 2001-2200	TGKK0650-10001_ TGKK0660-10001_ TGKK0670-10001_ TGKK0680-10001_ TGKK0760-10001_ TGKK0770-10001_ TGKK0720-10001_ TGKK0730-10001_
169	Travel restrictor		TFHB0020-09901_
170	Gear set backset 30 M5 Gear set backset 35 M5 Gear set backset 40 M5 Gear set backset 45 M5 Gear set backset 50 M5 Gear set backset 55 M5		TMSL4300-10001_ TMSL4350-10001_ TMSL4400-10001_ TGKK4450-10001_ TGKK4500-10001_ TGKK4550-10001_
171	Handle Globe		see EBS ZHGS
172	Handle flat FS		PHIG0010-50201_
173	Handle VL secondary sash RH Handle VL secondary sash LH		THVL0011-10001_ THVL0012-10001_
174	Corner drive AF VSU/K+ FH 1S		TEUL5010-10001_
175	Corner drive AF VSU/K 56+ 1S 1RS		TEUL5030-10001_
176	Tilt lock bearing		see profile data sheet TRKF



5.3 Aluminium elements

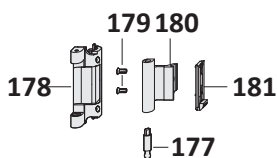
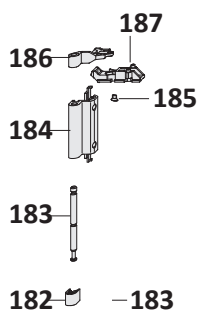
5.3.1 Intersection point A - hinge side for aluminium



Required intersection point sets per scheme

Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	2	1	2	2	2	1	2	2	2	2	1

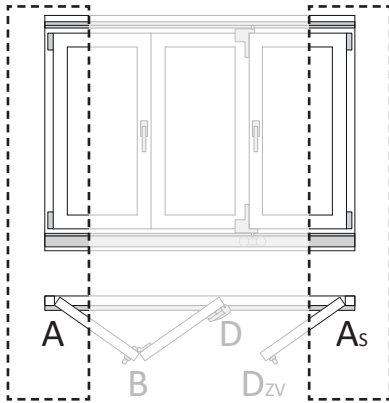
Listed component colours as standard selection.
 Further colours on request.



Item	Material description	Material number	
	BS LM 4200	SI-silver RAL 9016 SI-brown	MMBS0010-52502_ MMBS0010-50402_ MMBS0010-53302_
177	Bottom hinge pin		
178	Bottom hinge		
179	Countersunk screw M5 x 8.5		
180	Corner hinge		
181	Clamping piece E		
182	Retainer		
183	Top hinge pin		
184	Top hinge		
185	Countersunk screw M5 x 7.5		
186	Stay hinge		
187	Stay LM 4200 D Stay LM 4200 DK	Turn Turn and tilt	857106 884782
	MV LM 4200-D VS/BS MV LM 4200-DK	from FH 1250 mm Turn Turn and tilt	857052 857045
188	Bottom hinge pin		
189	Bottom hinge		



5.3.2 Intersection point A - hinge side FS-PORTAL



Required intersection point sets per scheme

Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	2	1	2	2	2	1	2	2	2	2	1

Listed component colours as standard selection.
 Further colours on request.

Sash hinge FS PLUS	Pin length sash hinge		Colour	Material number
	narrow	wide		
	7 mm	17/38	Titanium silver	PMFG0700-10001_
		17/38	Titanium silver	PMFG0030-10001_
	25 mm	17/48	Titanium silver	PMFG4000-10001_
		27/48	Titanium silver	PMFG4020-10001_
Contents			190 3x sash hinge, narrow 191 3x hinge pin 192 3x sash hinge, wide	

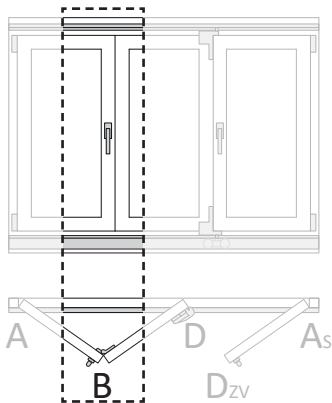
Bag cover caps sash hinge FS	Version	Colour	Material number
	17/38	RAL 8022	PMAG0010-01201_
		RAL 9003	PMAG0010-00201_
		SI-silver	PMAG0010-02501_
	17/48	RAL 8019	PMAG0050-01101_
		RAL 9003	PMAG0050-00201_
		SI-silver	PMAG0050-02501_
	27/48	RAL 8022	PMAG0020-01201_
		RAL 9003	PMAG0020-00201_
		SI-silver	PMAG0020-02501_
Contents		193 3x cover cap FB, narrow 194 3x cover cap FB, wide	

Distance piece FS	1 piece required per sash hinge	H (mm)	Material number	
			silver	RAL 9003
		13	-	826379
		14	852965	826416
		15	852972	826454
		16	852989	826492
		17	852996	826539
		18	853009	826577
		19	853016	826614
		20	853023	826652
		21	853030	826690
		22	853047	826737
		Contents		195

Dowel pin Ø 6x50	2 piece required per distance piece	Material number
	required for distance piece FS size 19-22	KDNA0180-00001_
	Contents	196 1x dowel pin Ø 6x50

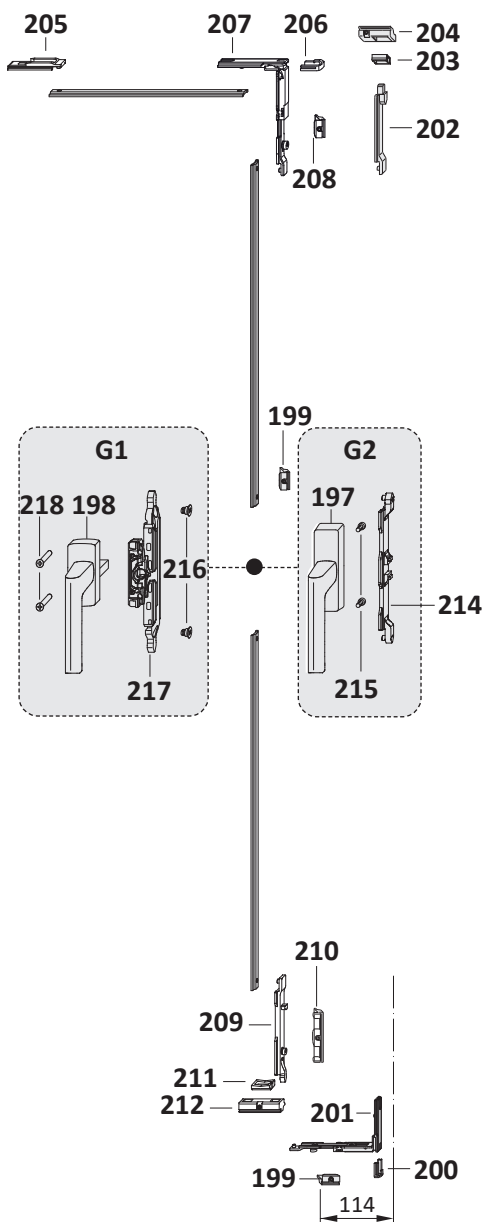


5.3.3 Intersection point B - central locking gear (ZV)



Required intersection point sets per scheme

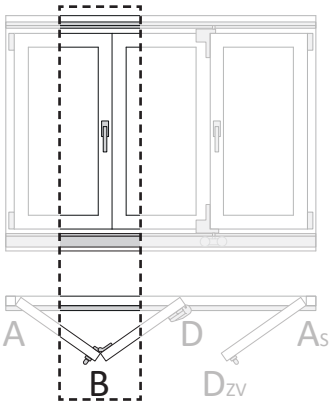
Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	1	1	1	2	2	2	2	2	3	3	3



Item	Material description	Material number	
197	Si-line LM handle	see handle overview LM im Planning manual aluminium Document Nr. LMen1337	
198	Window handle $\square 7 \times 25$, cam $\varnothing 10$		
	VS LM-DK KPS	Turn, turn and tilt	MMVS0440-10001_
199	Striker		
200	Clamping piece EUL		
201	VSO corner drive		
202	Deadbolt		
203	Pressure piece		
204	Striker DS RH		
	ALU DK FBS-G KPS locking side	Turn and tilt	MMVS0250-10001_
205	Locking bolt DK		
206	Clamping piece EUL		
207	VSO corner drive		
208	Striker		
209	Tilt lock cam, 10		
210	E striker cam 10		
211	Run-up block		
212	Tilt locking part		
	Coupling set Lm FBS-G for handle Si-line LM rebate height (UHS) see AA LM 4200-DK in the planning manual Aluminium	9 mm 10 mm USH 12 mm	MMKL0030-10001_ MMKL0010-10001_ MMKL0040-10001_
213	Coupling set LM-D for handle Si-line LM	MMKL0020-10001_	
214	Coupling bracket LM		
215	Cheese head screw M5x12		
	Gear set FBS M6 Trial/RR for window handle $\square 7 \times 25$, cam $\varnothing 10$	MMGI0080-10001_	
	M6 Trial/RR gear set for window handle $\square 7 \times 25$, cam $\varnothing 10$	MMGI0090-10001_	
216	Coupling screw M6		
217	LM M6 ESG		
218	Countersunk screw PZ M5x35		



5.3.4 Intersection point B - hinge side



Required intersection point sets per scheme

Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	1	1	1	2	2	2	2	2	3	3	3

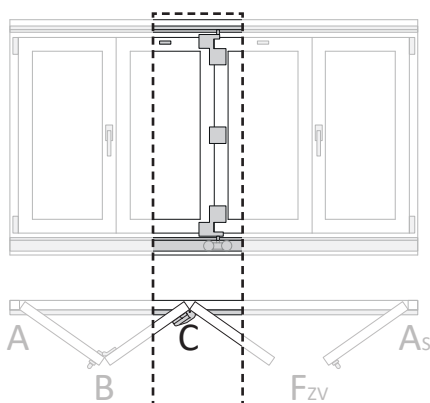
Listed component colours as standard selection.
 Further colours on request.

Sash hinge FS PLUS	Pin length sash hinge		Colour	Material number	
	narrow	wide			
	7 mm	7 mm	Titanium silver	PMFG7000-10001_	
	25 mm	17/38	25 mm	Titanium silver	PMFG0030-10001_
		17/48		Titanium silver	PMFG4000-10001_
		27/48		Titanium silver	PMFG4020-10001_
Contents			219 3x sash hinge, narrow 220 3x hinge pin 221 3x sash hinge, wide		

Bag cover caps sash hinge FS	Version	Colour	Material number
	17/38	RAL 8022	PMAG0010-01201_
		RAL 9003	PMAG0010-00201_
		SI-silver	PMAG0010-02501_
	17/48	RAL 8019	PMAG0050-01101_
		RAL 9003	PMAG0050-00201_
		SI-silver	PMAG0050-02501_
	27/48	RAL 8022	PMAG0020-01201_
		RAL 9003	PMAG0020-00201_
		SI-silver	PMAG0020-02501_
Contents		222 3x cover cap FB, narrow 223 3x cover cap FB, wide	



5.3.5 Intersection point C



Required intersection point sets per scheme

Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	–	1	1	1	1	2	2	2	2	2	3

Listed component colours as standard selection.
 Further colours on request.

Bogie wheels D FS LM	Material number
	PMLH7030-10001_
	224 1x bottom hinge D, RH
	225 2x supporting plate FS LM
	226 1x guide PLUS
	227 2x cheese head screw M8 x 12
	228 3x hinge pin TS
	229 3x sash hinge, wide 38
	230 1x sash hinge, narrow 17
	231 1x bottom hinge D, LH
	232 1x bogie wheels PLUS
233 4x sleeve	

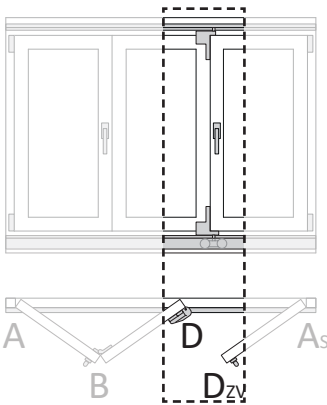
Cover caps bogie wheels D FS	Colour	Material number
	RAL 8022	PMAG0040-01201_
	RAL 9003	PMAG0040-00201_
	SI-silver	PMAG0040-02501_
	234 1x cover cap ED, RH	
	235 1x cover cap FB, wide 38	
	236 1x cover cap FB, narrow 17	
237 1x cover cap ED, LH		

To secure the free-running sash on the counter sash

Bag supporting piece FS-LM	Colour	Material number
	F77	127704
	RAL 9003	127711
	F01	151129
	238 1x supporting piece F	
	239 4x closing cap	
	240 1x supporting piece D	
241 4x countersunk screw DIN965 A2K M5x12		
242 4x pop rivet nut		

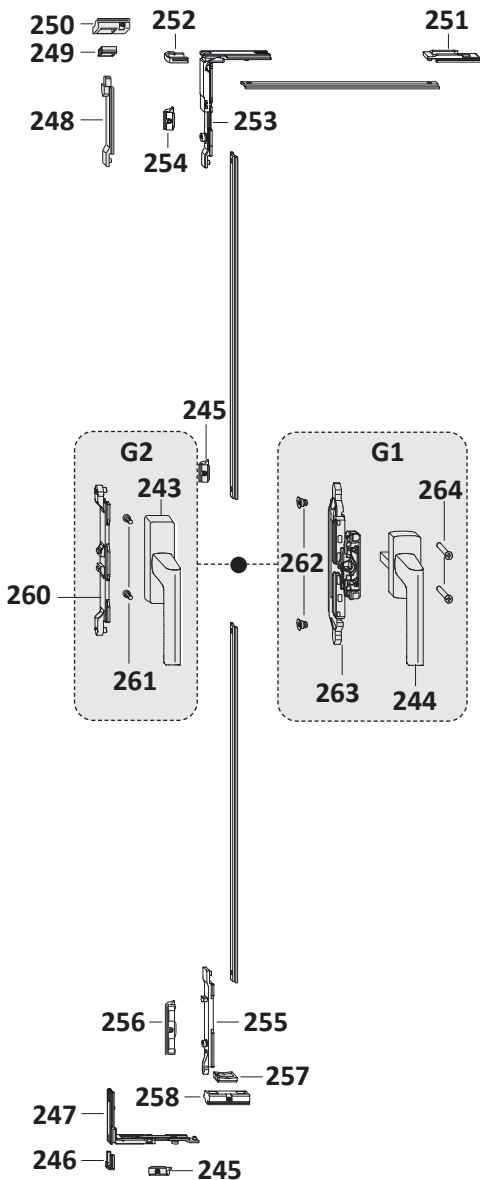


5.3.6 Intersection point D - central locking gear (ZV)



Required intersection point sets per scheme

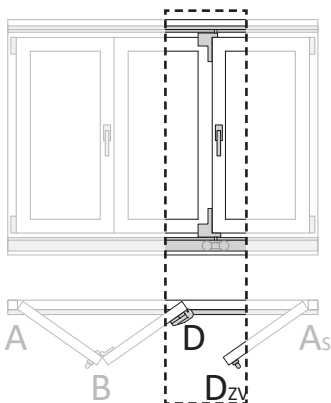
Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	1	-	-	1	1	-	-	-	1	1	-



Item	Material description	Material number	
243	Si-line LM handle	see handle overview LM im Planning manual aluminium Document Nr. LMen1337	
244	Window handle □7 x 25, cam Ø10		
	Locking side ALU D FS	Turn	MMVS0440-10001_
245	Striker		
246	Clamping piece EUL		
247	VSO corner drive		
248	Deadbolt		
249	Pressure piece		
250	Striker DS RH		
	ALU DK FBS-G KPS locking side	Turn and tilt	MMVS0250-10001_
251	Locking bolt DK		
252	Clamping piece EUL		
253	VSO corner drive		
254	Striker		
255	Tilt lock cam, 10		
256	E striker cam 10		
257	Run-up block		
258	Tilt locking part		
	Coupling set Lm FBS-G for handle Si-line LM rebate height (UHS) see AA LM 4200-DK in the planning manual Aluminium	9 mm 10 mm USH 12 mm	MMKL0030-10001_ MMKL0010-10001_ MMKL0040-10001_
259	Coupling set LM-D for handle Si-line LM	MMKL0020-10001_	
260	Coupling bracket LM		
261	Cheese head screw M5x12		
	Gear set FBS M6 Trial/RR for window handle □7 x 25, cam Ø10	MMGI0080-10001_	
	M6 Trial/RR gear set for window handle □7 x 25, cam Ø10	MMGI0090-10001_	
262	Coupling screw M6		
263	LM M6 ESG		
264	Countersunk screw PZ M5x35		



5.3.7 Intersection point D - hinge side



Required intersection point sets per scheme

Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	1	-	-	1	1	-	-	-	1	1	-

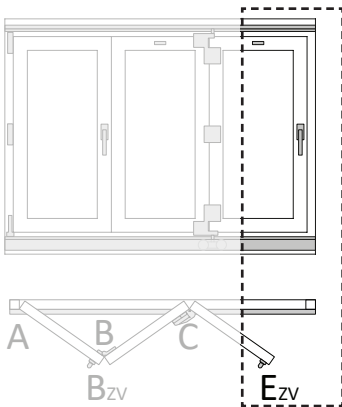
Listed component colours as standard selection.
 Further colours on request.

Bogie wheels FS PLUS		Material number
		PMLH7010-10001_
		265 1x bottom hinge, RH
		266 2x supporting plate
		267 1x guide PLUS
		268 2x cheese head screw M8 x 12
		269 1x bottom hinge, LH
		270 1x bogie wheels PLUS

Cover caps SET bogie wheels FS		Colour	Material number
		RAL 8022	PMAG0030-01201_
		RAL 9003	PMAG0030-00201_
		SI-silver	PMAG0030-02501_
		271 1x cover cap E, RH	
		272 1x cover cap E, LH	

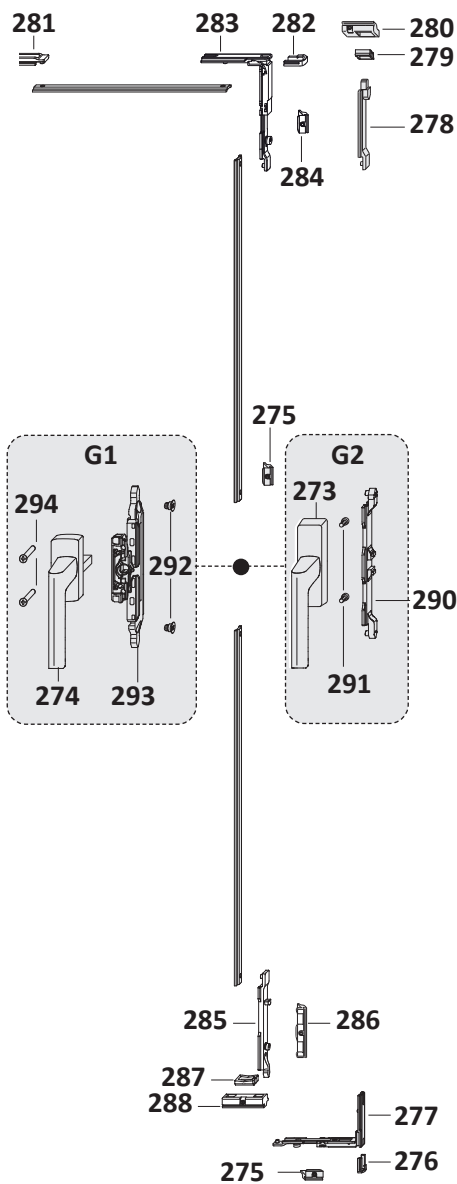


5.3.8 Intersection point E



Required intersection point sets per scheme

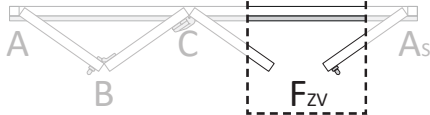
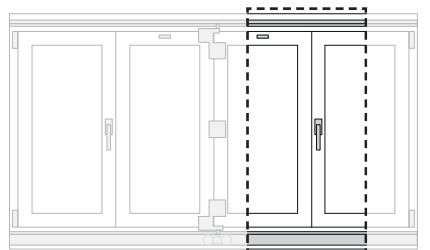
Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	-	1	-	-	-	1	-	-	-	-	1



Item	Material description	Material number	
273	Si-line LM handle	see handle overview LM im Planning manual aluminium Document Nr. LMen1337	
274	Window handle $\square 7 \times 25$, cam $\varnothing 10$		
	Locking side ALU D FS	Turn	MMVS0440-10001_
275	Striker		
276	Clamping piece EUL		
277	VSO corner drive		
278	Deadbolt		
279	Pressure piece		
280	Striker DS RH		
	ALU DK FBS-G KPS locking side	Turn and tilt	MMVS0250-10001_
281	Locking bolt DK		
282	Clamping piece EUL		
283	VSO corner drive		
284	Striker		
285	Tilt lock cam, 10		
286	E striker cam 10		
287	Run-up block		
288	Tilt locking part		
	Coupling set Lm FBS-G for handle Si-line LM rebate height (UHS) see AA LM 4200-DK in the planning manual Aluminium	9 mm 10 mm USH 12 mm	MMKL0030-10001_ MMKL0010-10001_ MMKL0040-10001_
289	Coupling set LM-D for handle Si-line LM		MMKL0020-10001_
290	Coupling bracket LM		
291	Cheese head screw M5x12		
	Gear set FBS M6 Trial/RR for window handle $\square 7 \times 25$, cam $\varnothing 10$		MMGI0080-10001_
	M6 Trial/RR gear set for window handle $\square 7 \times 25$, cam $\varnothing 10$		MMGI0090-10001_
292	Coupling screw M6		
293	LM M6 ESG		
294	Countersunk screw PZ M5x35		

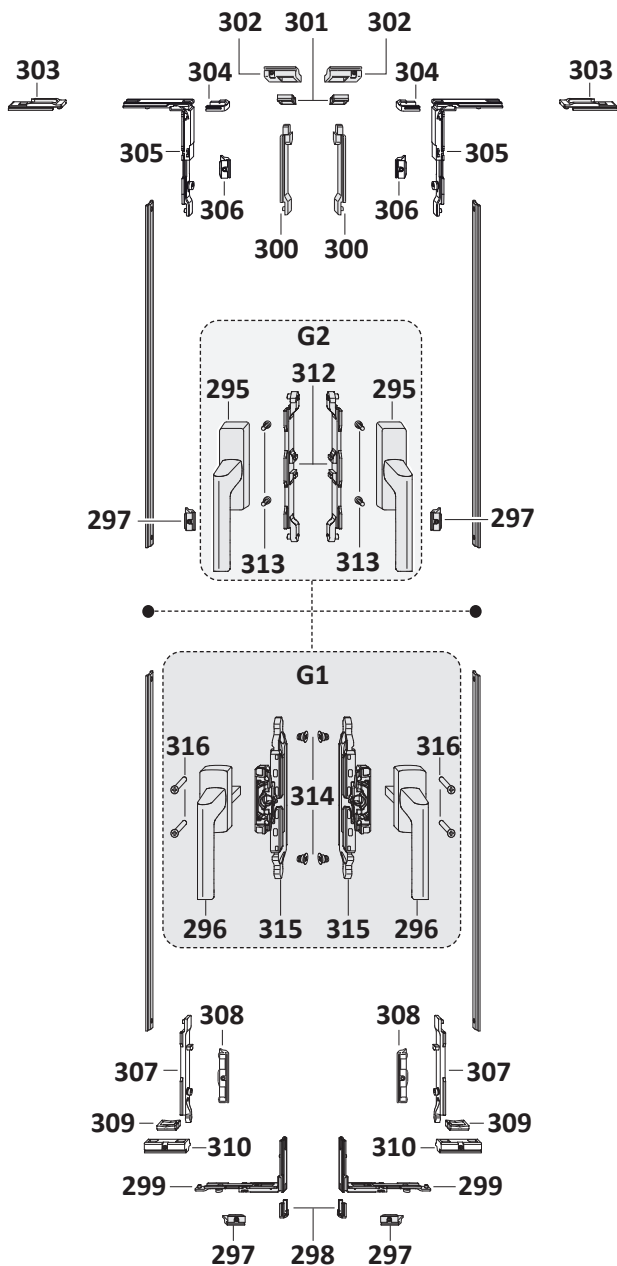


5.3.9 Intersection point F

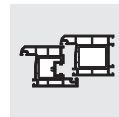


Required intersection point sets per scheme

Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	-	-	1	-	-	-	1	1	-	-	-



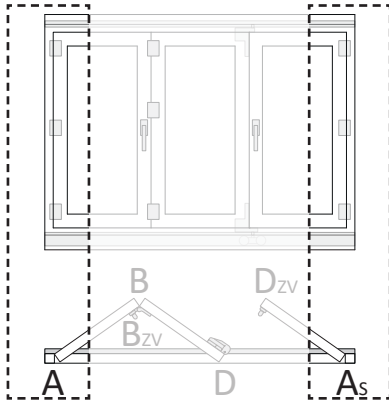
Item	Material description	Material number	
295	Si-line LM handle	see handle overview LM im Planning manual aluminium Document Nr. LMen1337	
296	Window handle $\square 7 \times 25$, cam $\varnothing 10$		
	VS LM-DK KPS	Turn	MMVS0440-10001_
297	Striker		
298	Clamping piece EUL		
299	VSO corner drive		
300	Deadbolt		
301	Pressure piece		
302	Striker DS RH		
	ALU DK FBS-G KPS locking side	Turn and tilt	MMVS0250-10001_
303	Locking bolt DK		
304	Clamping piece EUL		
305	VSO corner drive		
306	Striker		
307	Tilt lock cam, 10		
308	E striker cam 10		
309	Run-up block		
310	Tilt locking part		
	Coupling set Lm FBS-G for handle Si-line LM rebate height (UHS) see AA LM 4200-DK in the planning manual Aluminium	9 mm 10 mm USH 12 mm	MMKL0030-10001_ MMKL0010-10001_ MMKL0040-10001_
311	Coupling set LM-D for handle Si-line LM		MMKL0020-10001_
312	Coupling bracket LM		
313	Cheese head screw M5x12		
	Gear set FBS M6 Trial/RR for window handle $\square 7 \times 25$, cam $\varnothing 10$		MMGI0080-10001_
	M6 Trial/RR gear set for window handle $\square 7 \times 25$, cam $\varnothing 10$		MMGI0090-10001_
314	Coupling screw M6		
315	LM M6 ESG		
316	Countersunk screw PZ M5x35		



6 Hardware components external

6.1 Timber elements and PVC elements

6.1.1 Intersection point A outside



Required intersection point sets per scheme

Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	2	1	2	2	2	1	2	2	2	2	1

Intersection point **As** mirror-reversed version

Listed component colours as standard selection.
Further colours on request.

Sash hinge FS outward-opening	Pin length sash hinge		Colour	Material number
	narrow	wide		
	25 mm	25 mm	Titanium silver	PMFG0040-10001_
			Titanium silver	PMFG0050-10001_
	50 mm	25 mm	Titanium silver	PMFG4070-10001_
			Titanium silver	PMFG4080-10001_
Contents			317 3x sash hinge, narrow outside 318 3x hinge pin outside 319 3x sash hinge, wide 320 18x countersunk head screw 5x45 TX25 321 12x ball 3.5 322 3x grub screw M6x4	

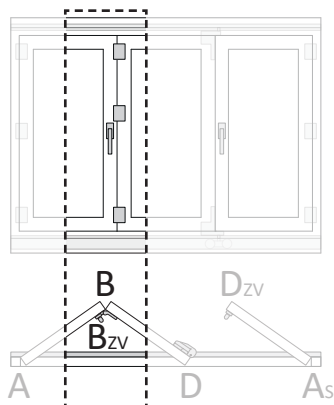
Bag cover caps sash hinge FS	Version	Colour	Material number
	17/48	RAL 8019	PMAG0050-01101_
		RAL 9003	PMAG0050-00201_
		SI-silver	PMAG0050-02501_
	27/48	RAL 8022	PMAG0020-01201_
		RAL 9003	PMAG0020-00201_
		SI-silver	PMAG0020-02501_
Contents		323 3x cover cap FB, narrow 324 3x cover cap FB, wide	

Distance piece FS	1 piece required per sash hinge	H (mm)	Material number	
			silver	RAL 9003
		13	–	826379
		14	852965	826416
		15	852972	826454
		16	852989	826492
		17	852996	826539
		18	853009	826577
		19	853016	826614
		20	853023	826652
		21	853030	826690
		22	853047	826737
		Contents		325

Dowel pin Ø 6x50	2 piece required per distance piece	Material number
	required for distance piece FS size 19-22	KDNA0180-00001_
	Contents	326 1x dowel pin Ø 6x50

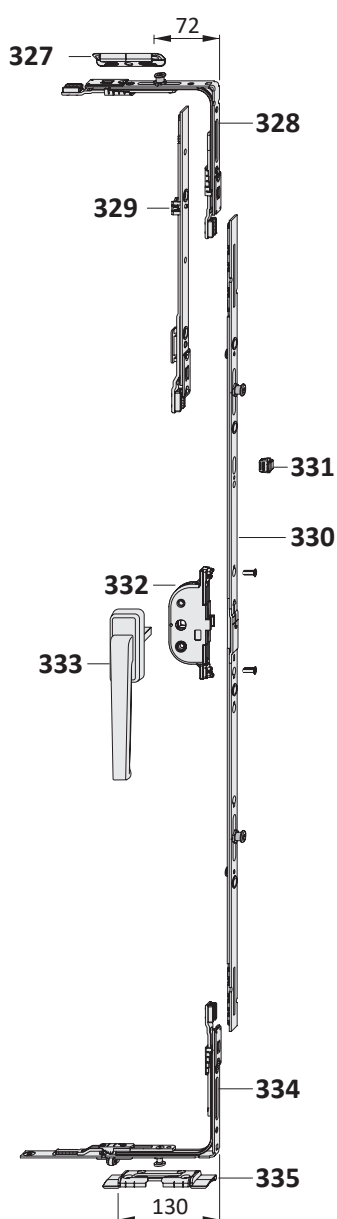


6.1.2 Intersection point B - central locking gear (ZV) outside

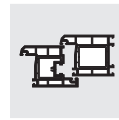


Required intersection point sets per scheme

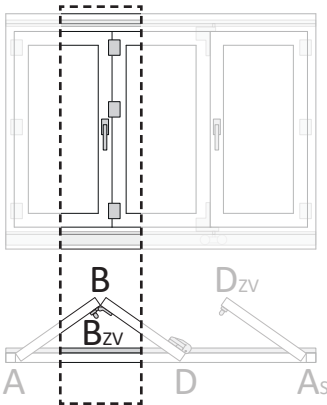
Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	1	1	1	2	2	2	2	2	3	3	3



Item	Material description	FFH	Material number
327	Striker plate		see profile data sheet TRSN
328	Corner drive AF VSO/K+ DF 1RS		TEUL4110-10001_
329	Linkage AF size 1	2200-2400	TZZS0150-10001_
330	Gear OS AF Size 80/handle position 400 1RS Size100/handle position 500 1RS Size120/handle position 600 1RS Size140/handle position 700 2RS Size160/handle position 700 2RS 70 Size180/handle position 1000 2RS 70 Size200/handle position 1000 3RS 70	801-1000 1001-1200 1201-1200 1401-1600 1601-1800 1801-2000 2001-2200	TGKK0550-10001_ TGKK0560-10001_ TGKK0570-10001_ TGKK0580-10001_ TGKK0750-10001_ TGKK0620-10001_ TGKK0630-10001_
331	Travel restrictor		TFHB0010-09901_
332	Gear set backset 30 M5 Gear set backset 35 M5 Gear set backset 40 M5 Gear set backset 45 M5 Gear set backset 50 M5 Gear set backset 55 M5		TMSL4300-10001_ TMSL4350-10001_ TMSL4400-10001_ TGKK4450-10001_ TGKK4500-10001_ TGKK4550-10001_
333	Handle flat FS		PHIG0010-53001_
334	Corner drive AF VSU/K+ FH 1S		TEUL5010-10001_
335	Tilt lock bearing		see profile data sheet TRKF/TRSK



6.1.3 Intersection point B outside



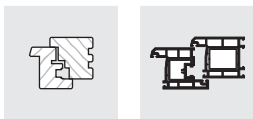
Required intersection point sets per scheme

Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	1	1	1	2	2	2	2	2	3	3	3

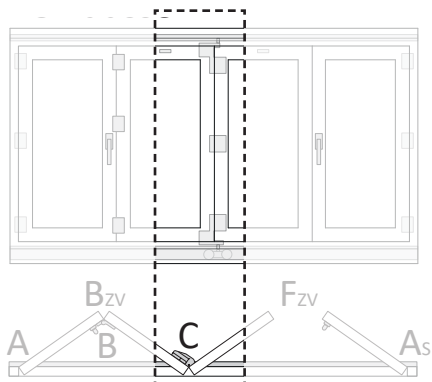
Listed component colours as standard selection.
Further colours on request.

Sash hinge FS PLUS	Pin length sash hinge		Colour	Material number	
	narrow	wide			
	25 mm	17/48	25 mm	Titanium silver	PMFG4000-10001_
		27/48		Titanium silver	PMFG4020-10001_
	50 mm	17/48	25 mm	Titanium silver	PMFG4050-10001_
		27/48		Titanium silver	PMFG4060-10001_
	50 mm	17/48	50 mm	Titanium silver	PMFG4100-10001_
		27/48		Titanium silver	PMFG4110-10001_
Contents			336	3x sash hinge, narrow	
			337	3x hinge pin	
			338	3x sash hinge, wide	

Bag cover caps sash hinge FS	Version	Colour	Material number
	17/48	RAL 8022	PMAG0050-01201_
		RAL 8019	PMAG0050-01101_
		SI-silver	PMAG0050-02501_
	27/48	RAL 8022	PMAG0020-01201_
		RAL 9003	PMAG0020-00201_
		SI-silver	PMAG0020-02501_
Contents		339	3x cover cap FB, narrow
		340	3x cover cap FB, wide



6.1.4 Intersection point C outside



Required intersection point sets per scheme

Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	–	1	1	1	1	2	2	2	2	2	3

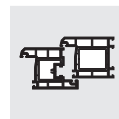
Listed component colours as standard selection.
 Further colours on request.

Sash hinge FS outward-opening	Pin length sash hinge		Colour	Material number
	narrow	wide		
	25 mm	17/48	Titanium silver	PMFG0040-10001_
		27/48	Titanium silver	PMFG0050-10001_
	50 mm	17/48	Titanium silver	PMFG4070-10001_
		27/48	Titanium silver	PMFG4080-10001_
Contents			341 3x sash hinge, narrow outside 342 3x hinge pin outside 343 3x sash hinge, wide 344 18x countersunk head screw 5x45 TX25 345 12x ball 3.5 346 3x grub screw M6x4	




Bag cover caps sash hinge FS	Version	Colour	Material number
	17/48	RAL 8019	PMAG0050-01101_
		RAL 9003	PMAG0050-00201_
		SI-silver	PMAG0050-02501_
	27/48	RAL 8022	PMAG0020-01201_
		RAL 9003	PMAG0020-00201_
		SI-silver	PMAG0020-02501_
Contents		347 3x cover cap FB, narrow 348 3x cover cap FB, wide	

Bogie wheels FS PLUS	Version	Sash rebate heights	Material number
	Spindle 25 mm	13 - 19	PMLG0150-10001_
		18 - 24	PMLG0180-10001_
	Contents		349 1x bottom hinge, RH 350 2x supporting plate 351 1x guide PLUS 352 2x cheese head screw M8 x 12 353 1x bottom hinge, LH 354 1x bogie wheels PLUS 355 6x countersunk head screw 5x45 TX25 356 4x ball 3.5 DIN 5401 357 1x grub screw DIN 913 M6x4

Cover caps SET bogie wheels FS	Colour	Material number
	RAL 8022	PMAG0030-01201_
	RAL 9003	PMAG0030-00201_
	SI-silver	PMAG0030-02501_
	Contents	

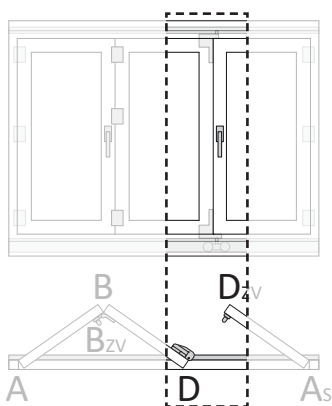


To secure the free-running sash on the counter sash

Bag supporting piece FS	Colour	Material number
 360  361	RAL 8022	PMZG0020-01201_
 362	RAL 9003	PMZG0020-00201_
<p>Contents</p>	<p>360 361 362</p>	<p>1x supporting piece F 4x closing cap 1x supporting piece D</p>

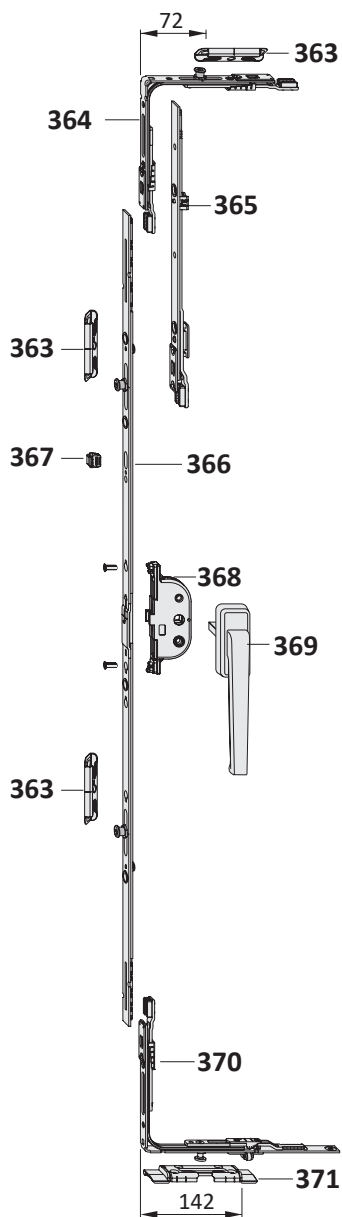


6.1.5 Intersection point D ZV outside

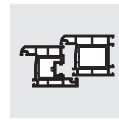


Required intersection point sets per scheme

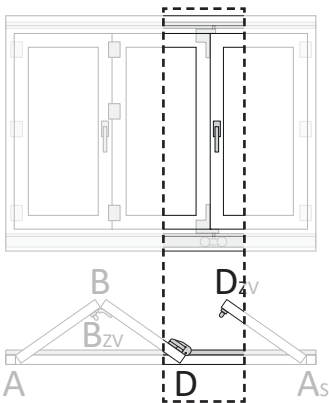
Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	1	-	-	1	1	-	-	-	1	1	-



Item	Material description	FFH	Material number
363	Striker plate		see profile data sheet TRSN
364	Corner drive AF VSO/K+ DF 1RS		TEUL4110-10001_
365	Linkage AF size 1	2200-2400	TZZS0150-10001_
366	Gear OS AF Size 80/handle position 400 1RS Size100/handle position 500 1RS Size120/handle position 600 1RS Size140/handle position 700 2RS Size160/handle position 700 2RS 70 Size180/handle position 1000 2RS 70 Size200/handle position 1000 3RS 70	801-1000 1001-1200 1201-1200 1401-1600 1601-1800 1801-2000 2001-2200	TGKK0550-10001_ TGKK0560-10001_ TGKK0570-10001_ TGKK0580-10001_ TGKK0750-10001_ TGKK0620-10001_ TGKK0630-10001_
367	Travel restrictor		TFHB0010-09901_
368	Gear set backset 30 M5 Gear set backset 35 M5 Gear set backset 40 M5 Gear set backset 45 M5 Gear set backset 50 M5 Gear set backset 55 M5		TMSL4300-10001_ TMSL4350-10001_ TMSL4400-10001_ TGKK4450-10001_ TGKK4500-10001_ TGKK4550-10001_
369	Handle Globe		see EBS ZHGS
370	Corner drive AF VSU/K+ FH 1S		TEUL5010-10001_
371	Tilt lock bearing		see profile data sheet TRKF/TRSK



6.1.6 Intersection point D outside



Required intersection point sets per scheme

Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	1	-	-	1	1	-	-	-	1	1	-

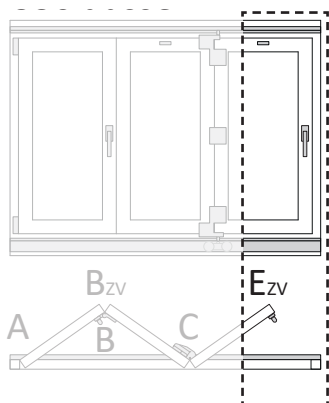
Listed component colours as standard selection.
Further colours on request.

Bogie wheels FS PLUS	Version	Sash rebate heights	Material number
	Spindle 25 mm	13 - 19	PMLG0150-10001_
		18 - 24	PMLG0180-10001_
	Spindle 50 mm	13 - 19	PMLG4020-10001_
		18 - 24	PMLG4030-10001_
	Contents	372	1x bottom hinge, RH
		373	2x supporting plate
		374	1x guide PLUS
		375	2x cheese head screw M8 x 12
		376	1x bottom hinge, LH
		377	1x bogie wheels outward-opening
378	6x countersunk head screw 5x45 TX25		
379	4x ball 3.5 DIN 5401		
380	1x grub screw DIN 913 M6x4		

Cover caps SET bogie wheels FS	Colour	Material number
	RAL 8022	PMAG0030-01201_
	RAL 9003	PMAG0030-00201_
	SI-silver	PMAG0030-02501_
	Contents	381
382		1x cover cap E, LH

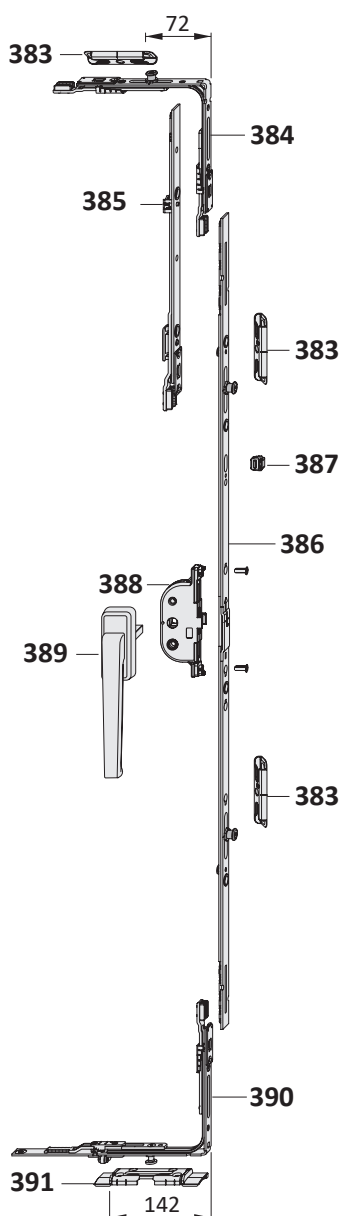


6.1.7 Intersection point E ZV outside

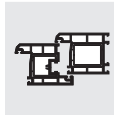


Required intersection point sets per scheme

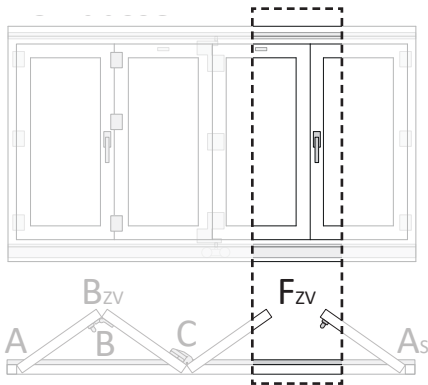
Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	1	-	-	1	1	-	-	-	1	1	-



Item	Material description	FFH	Material number
383	Striker plate		see profile data sheet TRSN
384	Corner drive AF VSO/K+ DF 1RS		TEUL4110-10001_
385	Linkage AF size 1	2200-2400	TZZS0150-10001_
386	Gear OS AF Size 80/handle position 400 1RS Size100/handle position 500 1RS Size120/handle position 600 1RS Size140/handle position 700 2RS Size160/handle position 700 2RS 70 Size180/handle position 1000 2RS 70 Size200/handle position 1000 3RS 70	801-1000 1001-1200 1201-1200 1401-1600 1601-1800 1801-2000 2001-2200	TGKK0550-10001_ TGKK0560-10001_ TGKK0570-10001_ TGKK0580-10001_ TGKK0750-10001_ TGKK0620-10001_ TGKK0630-10001_
387	Travel restrictor		TFHB0010-09901_
388	Gear set backset 30 M5 Gear set backset 35 M5 Gear set backset 40 M5 Gear set backset 45 M5 Gear set backset 50 M5 Gear set backset 55 M5		TMSL4300-10001_ TMSL4350-10001_ TMSL4400-10001_ TGKK4450-10001_ TGKK4500-10001_ TGKK4550-10001_
389	Handle Globe		see EBS ZHGS
390	Corner drive AF VSU/K+ FH 1S		TEUL5010-10001_
391	Tilt lock bearing		see profile data sheet TRKF/TRSK

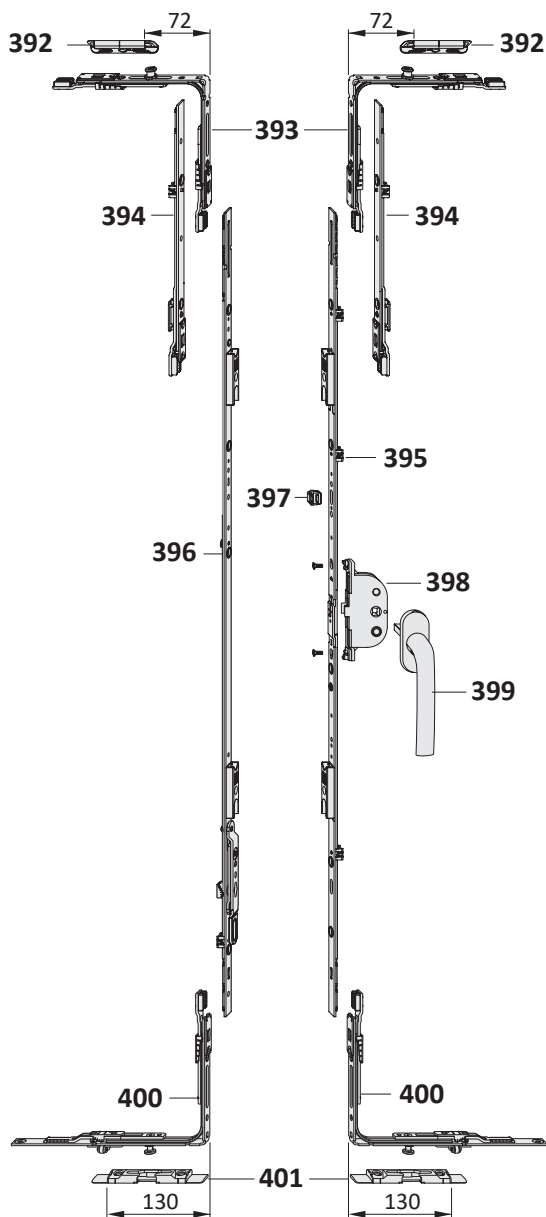


6.1.8 Intersection point F ZV outside

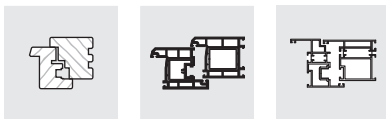


Required intersection point sets per scheme

Scheme	321	330	431	532	541	550	633	651	743	761	770
Piece	-	-	1	-	-	-	1	1	-	-	-

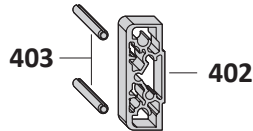


Item	Material description	FFH	Material number
392	Striker plate		see profile data sheet TRSN
393	Corner drive AF VSO/K+ DF 1RS		TEUL4110-10001_
394	Linkage AF size 1	2200-2400	TZZS0150-10001_
395	Gear secondary sash 16 Size 60/handle position 300 Size 80/handle position 400 1RS Size100/handle position 500 1RS Size120/handle position 600 1RS Size140/handle position 700 2RS Size160/handle position 700 2RS Size180/handle position 1000 2RS Size200/handle position 1000 3RS	601- 800 801-1000 1001-1200 1201-1200 1401-1600 1601-1800 1801-2000 2001-2200	TGKS4030-10001_ TGKS4050-10001_ TGKS4060-10001_ TGKS4070-10001_ TGKS4080-10001_ TGKS4090-10001_ TGKS4100-10001_ TGKS4110-10001_
396	Gear OS-AF Size 60/handle position 300 Size 80/handle position 400 1RS Size100/handle position 500 1RS Size120/handle position 600 1RS Size140/handle position 700 2RS Size160/handle position 700 2RS Size180/handle position 1000 2RS Size200/handle position 1000 3RS	601- 800 801-1000 1001-1200 1201-1200 1401-1600 1601-1800 1801-2000 2001-2200	TGKK0650-10001_ TGKK0660-10001_ TGKK0670-10001_ TGKK0680-10001_ TGKK0760-10001_ TGKK0770-10001_ TGKK0720-10001_ TGKK0730-10001_
397	Travel restrictor		TFHB0020-09901_
398	Gear set backset 30 M5 Gear set backset 35 M5 Gear set backset 40 M5 Gear set backset 45 M5 Gear set backset 50 M5 Gear set backset 55 M5		TMSL4300-10001_ TMSL4350-10001_ TMSL4400-10001_ TGKK4450-10001_ TGKK4500-10001_ TGKK4550-10001_
399	Handle Globe		see EBS ZHGS
400	Corner drive AF VSU/K+ FH 1S		TEUL5010-10001_
401	Tilt lock bearing		see profile data sheet TRKF



7 Hardware accessories

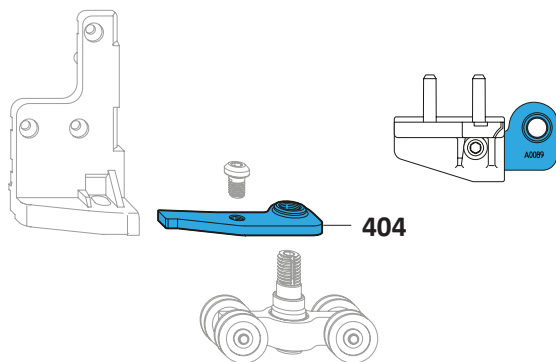
7.1 Distance piece



- Only for sash hinge 17 narrow
- Further colours on request

Item	Material description	H (mm)	Material number		
			silver	RAL 9003	RAL 8019
402	Distance piece	8	PDZG0110-52401_	–	–
	1 piece required per sash hinge 	13	–	826379	826386
		14	852965	826416	826423
		15	852972	826454	826461
		16	852989	826492	826508
		17	852996	826539	826546
		18	853009	826577	826584
		19	853016	826614	826621
		20	853023	826652	826669
		21	853030	826690	826706
		22	853047	826737	826744
403		Dowel pin \varnothing 6x50	required for distance piece FS 19-22	KDNA0180-00001_	

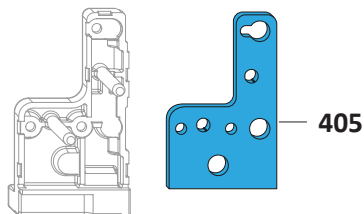
7.2 Supporting plate A0089



- For rebate heights 19 - 24 mm

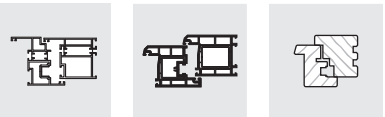
Item	Material description	Material number
404	Supporting plate	PLZG0030-10001_

7.3 Packer E



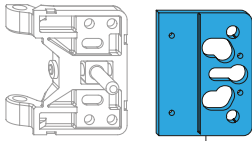
- For bottom hinge and bottom hinge D
- Material thickness 3 mm
- For rebate heights 7 - 10 mm
- Further colours on request

Item	Material description	Material number		
		silver	RAL 9003	RAL 8019
405	Packer E	895603	800775	800799



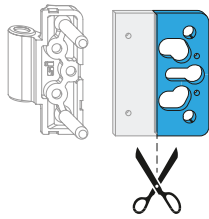
7.4 Packer FB

Sash hinge 38



405

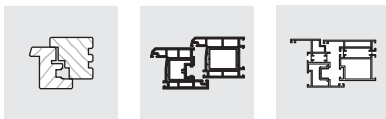
Sash hinge 17



405




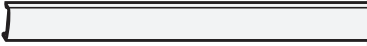
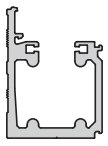
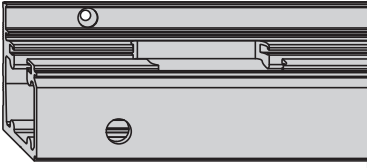


- For sash hinges 17/38
- Material thickness 3 mm
- Further colours on request



Item	Material description	Material number		
		silver	RAL 9003	RAL 8019
406	Packer FB	861219	800782	800805


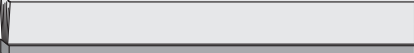







8 Profile sets

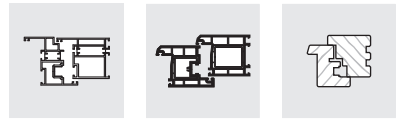
8.1 Hardware components profile set standard

Profile set FS PLUS				Item	Length	RAB	Colour	Material number
	407				2500	- 2500	silver RAL 8022 RAL 9003	PMPG0200-52501_ PMPG0200-51201_ PMPG0200-50201_
	408				3500	2501 - 3500	silver RAL 8022 RAL 9003	PMPG0210-52501_ PMPG0210-51201_ PMPG0210-50201_
	409				4500	3501 - 4500	silver RAL 8022 RAL 9003	PMPG0220-52501_ PMPG0220-51201_ PMPG0220-50201_
	410				6700	4501 - 6500	silver RAL 8022 RAL 9003	PMPG0230-52501_ PMPG0230-51201_ PMPG0230-50201_
				407	1x guiding rail PLUS			
				408	2x cover rail PLUS F			
				409	1x running rail PLUS			
				410	1x cover rail PLUS L			


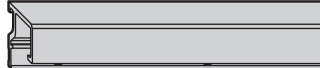

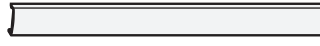







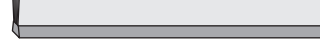




Screws for aluminium elements				Item	Size	Material number
	411		412		M4x20 M5x18	PZUJ0100-00006_ PZUJ0090-00006_
				411	100x Flowdrill screw	
					4.2x19	KDNA0370-20004_
				412	25x countersunk tapping screw - B4.2x19	

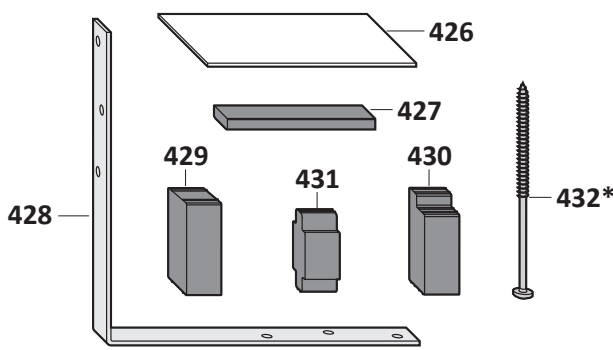
Sealing brush FS PLUS				Item	Size	Length	Material number
	413				9M 14M	9000 14000	PPDG0030-09901_ PPDG0040-09901_
				413	2x sealing brush		

Bag of cover caps - FS PLUS				Item	Colour	Material number
	414		415		silver RAL 8022 RAL 9003	PMAG0060-02501_ PMAG0060-01201_ PMAG0060-00201_
	416			414	1x end cap F FS LH	
				415	1x end cap F FS RH	
				416	2x cover cap L FS	
				417	1x end cap L FS LH	
				418	1x end cap L FS RH	
	417		418			

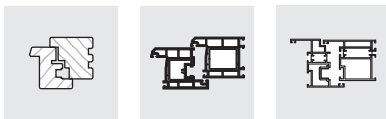


8.2 Hardware components profile set barrier-free

Profile set FS PLUS barrier-free					
	Item	Length	RAB	Colour	Material number
 419 		2500	- 2500	silver	PMBG0110-52401_
		3500	2501 - 3500		PMBG0120-52401_
		4500	3501 - 4500		PMBG0130-52401_
		6700	4501 - 6500		PMBG0140-52401_
 420 	419	1x guiding rail PLUS			
 421 	420	1x cover rail PLUS F			
 422 	421	1x seal FS			
 423 	422	1x sealing strip FS			
 424 	423	1x beading strip			
 425 	424	2x sealing brush			
 425 	425	1x threshold FS			

Carton frame corner connection FS						
	Item				Material number	
					PMRG0010-00001_	
	426	2x sealing plate				PZUB0400-19403_
	427	2x sealing piece				
	428	2x cover angle FS				
	429	2x supporting part FS 1				
	430	2x supporting part FS 2				
431	2x supporting part FS 3					
432*	6x chipboard screw 6x130					

*Not included in frame corner connection FS carton

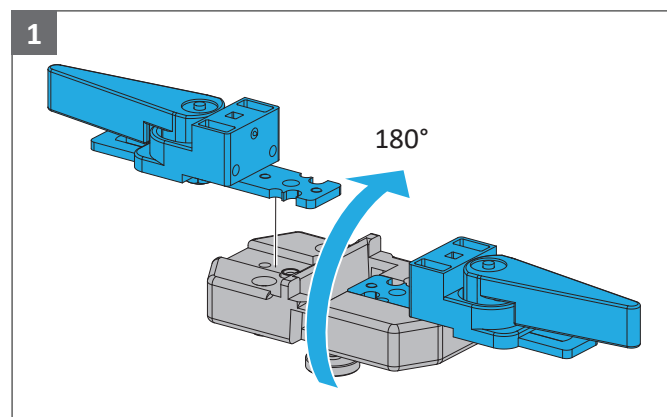


9 Assembly

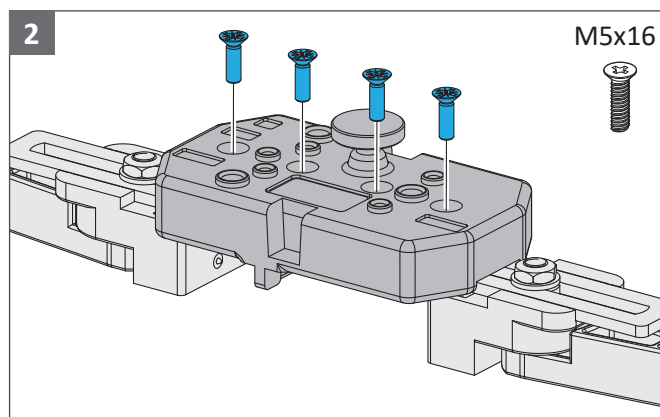
9.1 Installation preparation

9.1.1 Fixing tensioners to jig

Jig for sash hinge

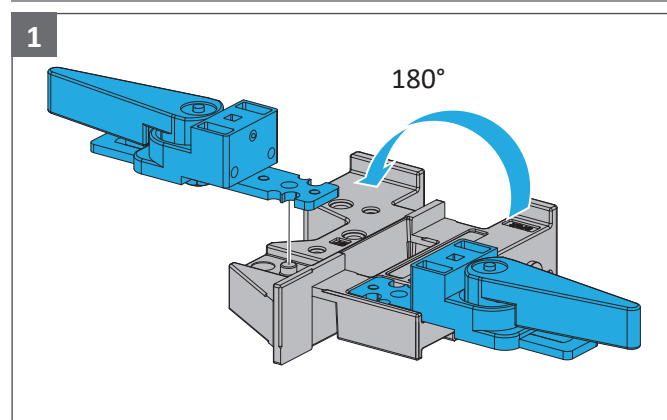


1
Position two tensioners on the bottom side of the jig.
Turn the jig by 180°.

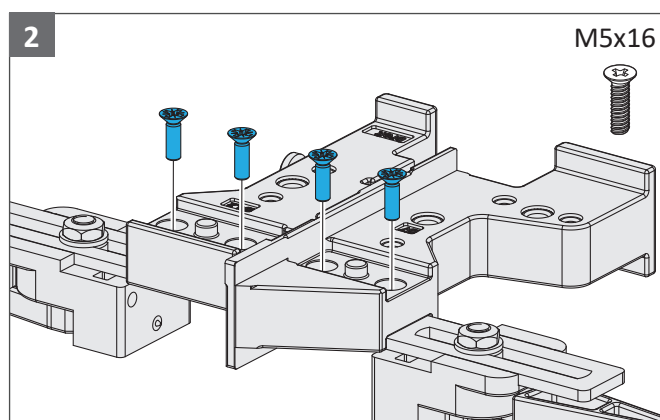


2
Fix tensioners to jig with screws. Screw in screws from the top side of the jig.

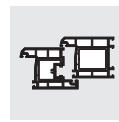
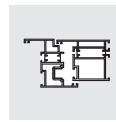
Jig for bottom hinge



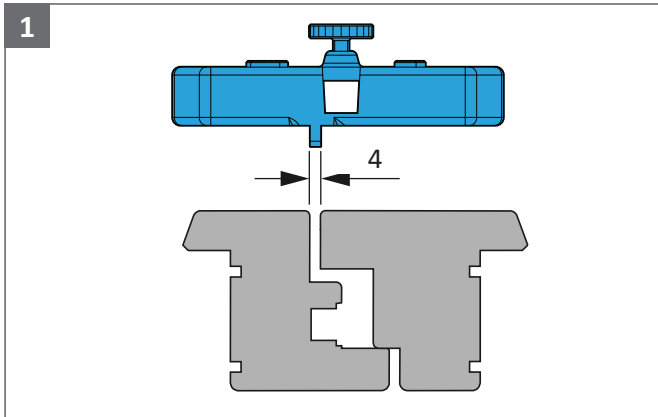
1
Position two tensioners on the bottom side of the jig.
Turn the jig by 180°.



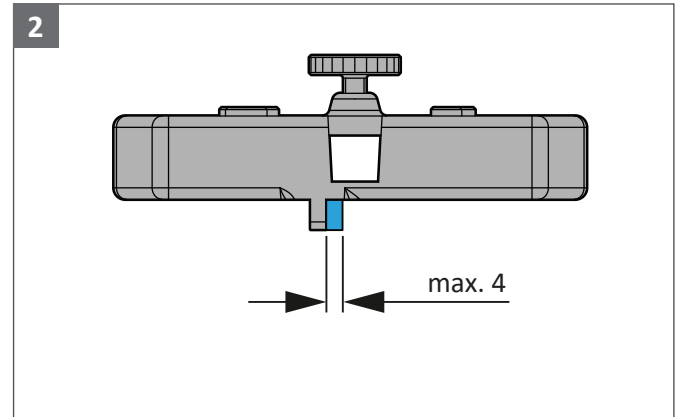
2
Fix tensioners to jig with screws. Screw in screws from the top side of the jig.



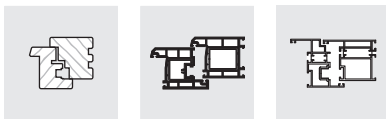
9.1.2 Adapt jigs to sash distance



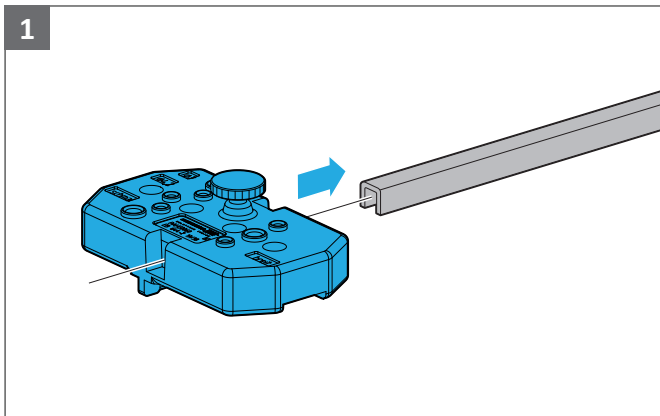
The jigs are adjusted to a sash distance of 4mm.



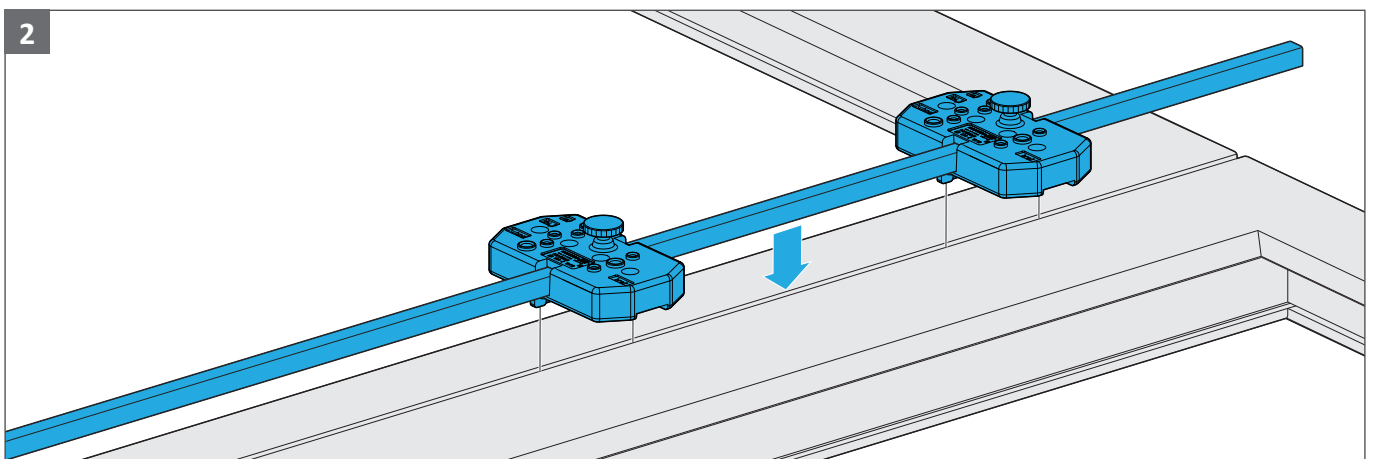
According to profile system, stick on a corresponding distance piece. Max. 4mm.



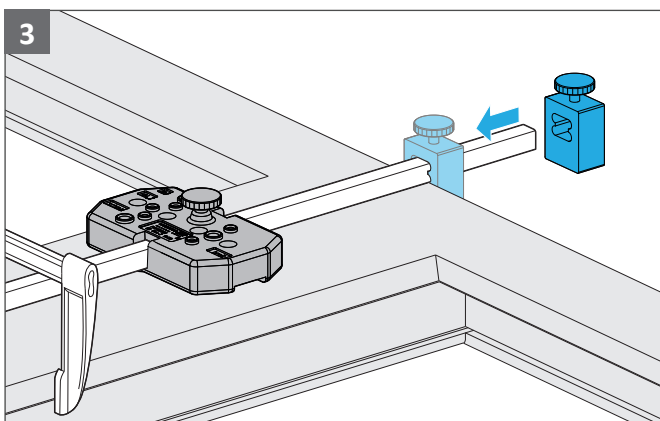
9.2 Use sash hinge jig



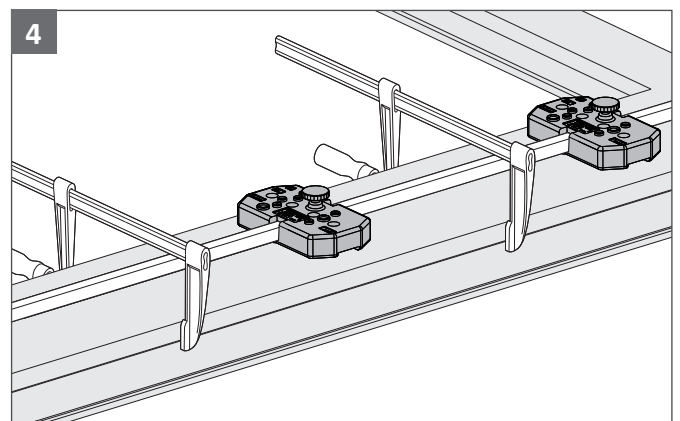
1
Push jigs for sash hinge onto adjustment rod.



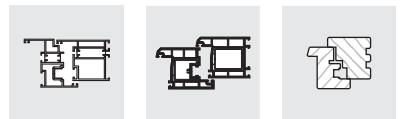
2
Position jigs with adjustment rod on the profile.



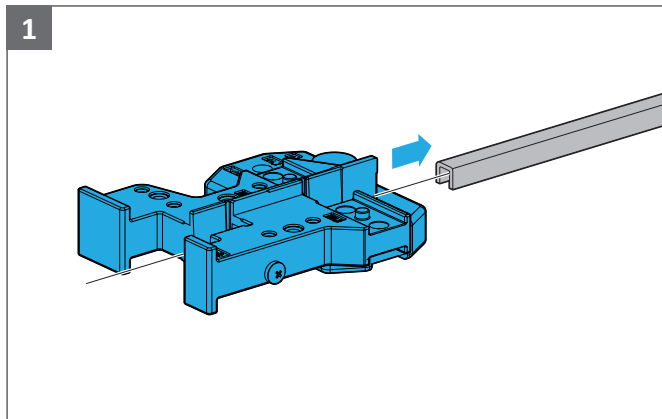
3
Secure the jigs against shifting by fixing of the stop on the adjustment rod



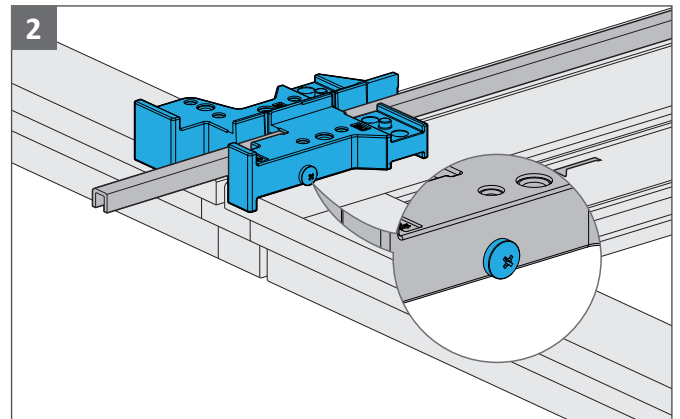
4
Fix jigs between the sash profiles using appropriate pressure.



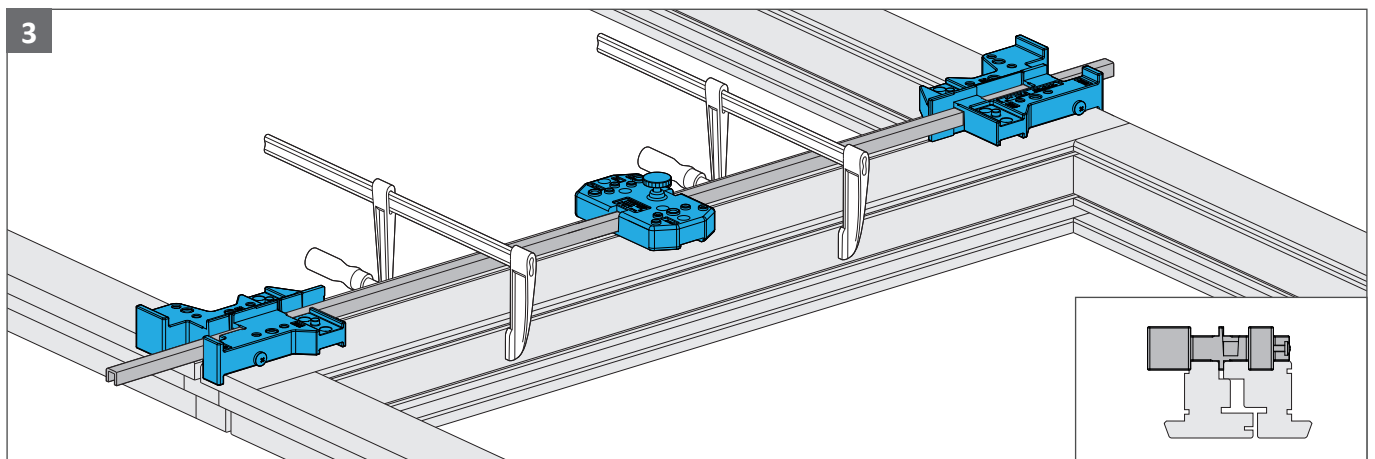
9.3 Use bottom hinge jig



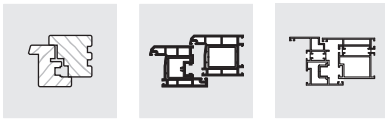
1 Push jigs for bottom hinge onto adjustment rod.



2 After profile assembly, fix jigs for bottom hinge on the adjustment rod.

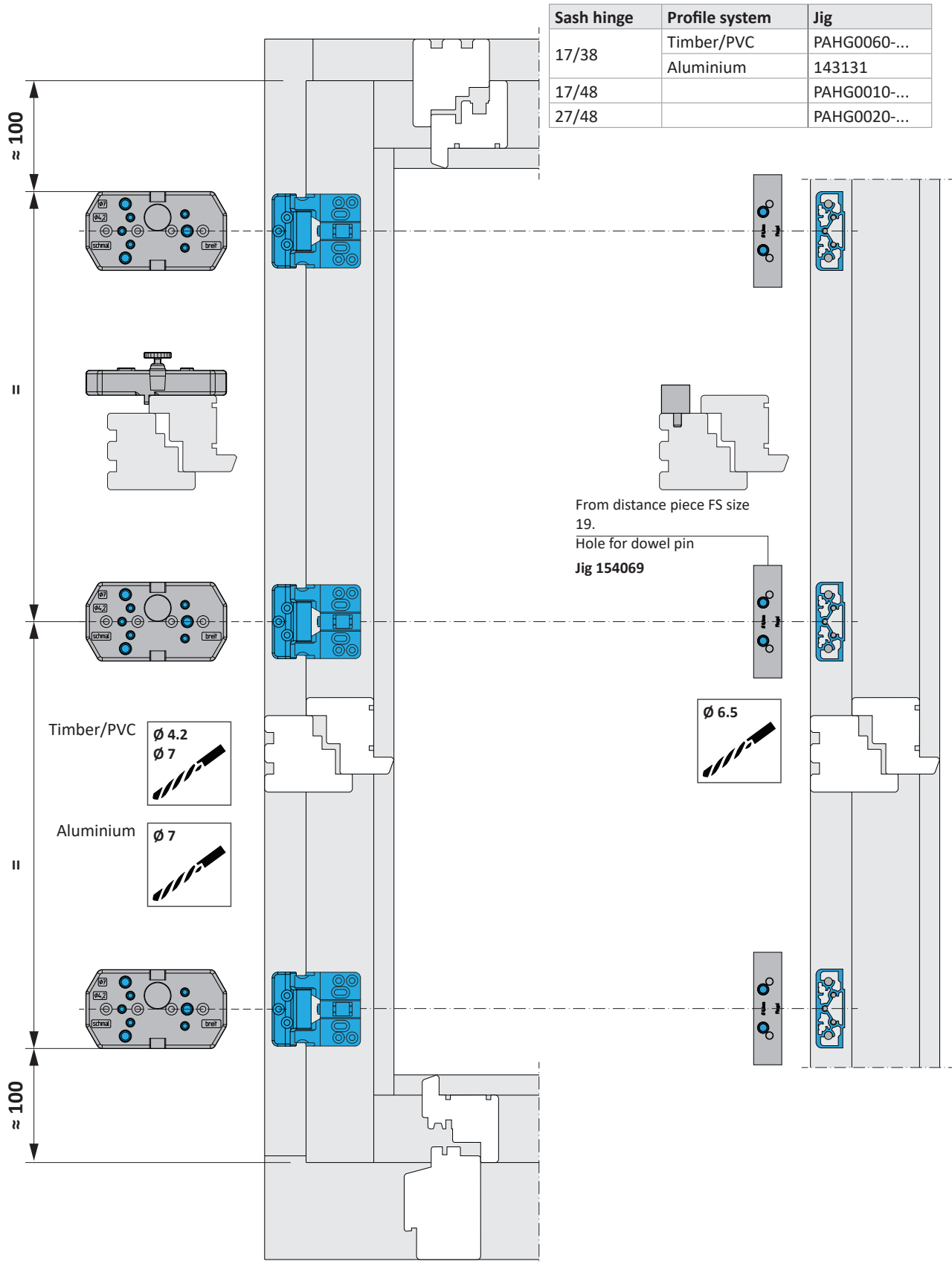


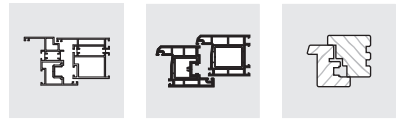
3 Fix jigs between the sash profiles using appropriate pressure.



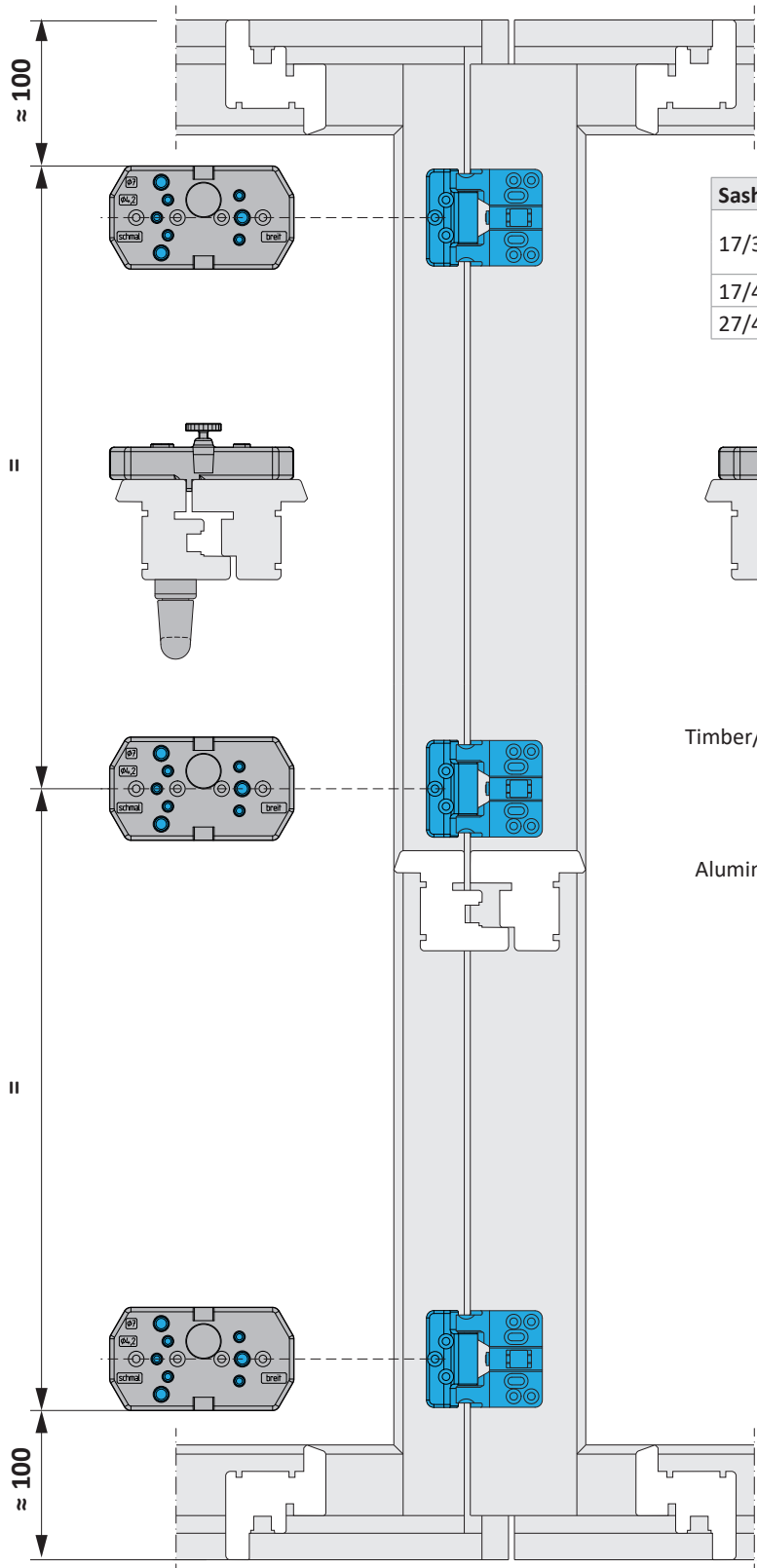
9.4 Positioning the jigs

9.4.1 Intersection point A

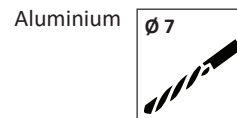
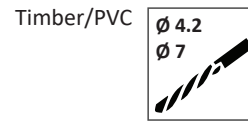
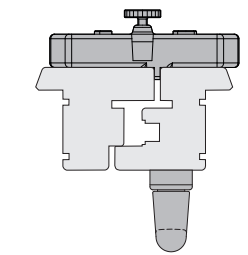


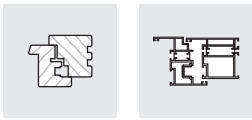


9.4.2 Intersection point B



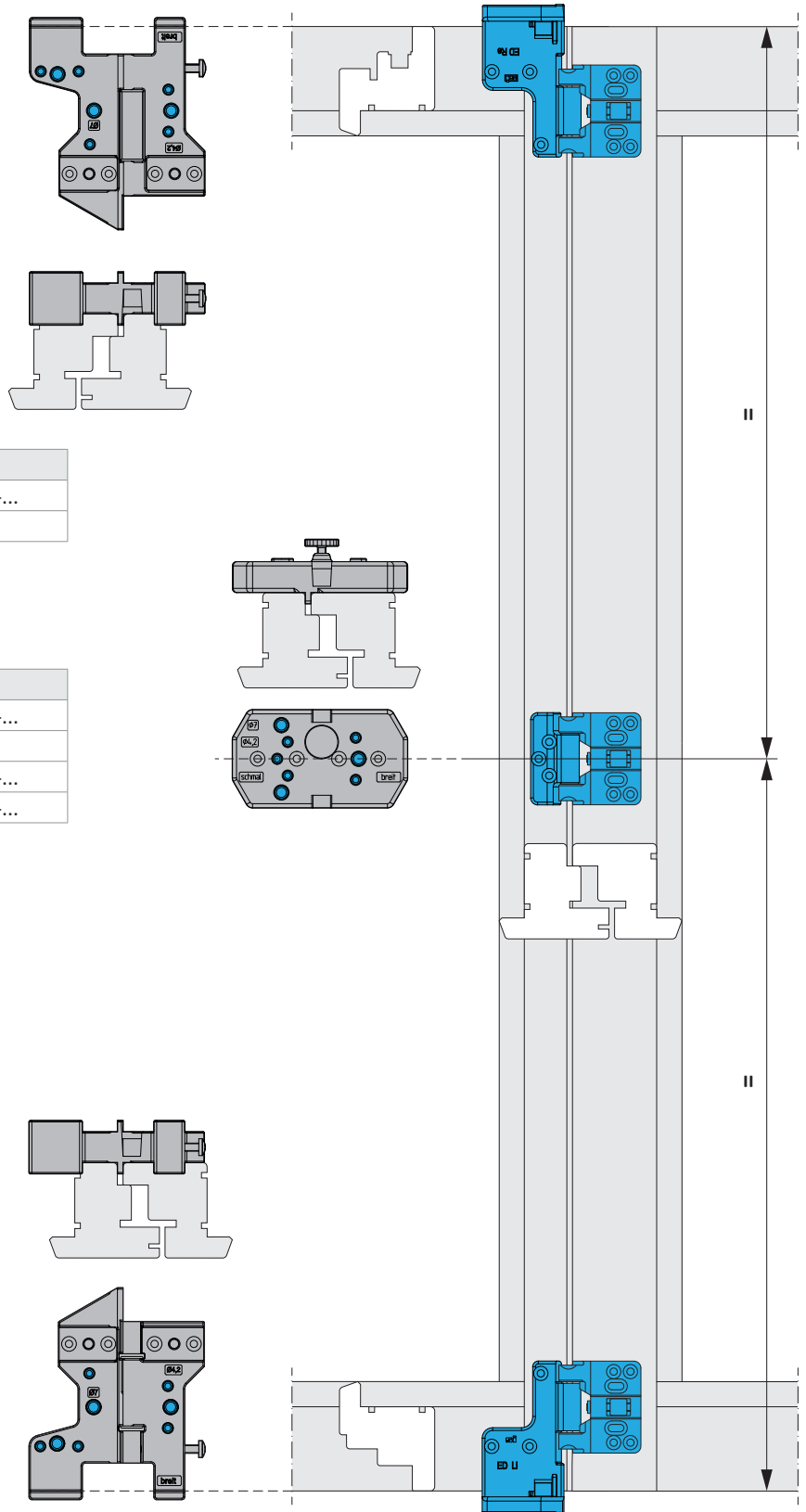
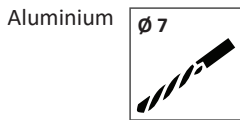
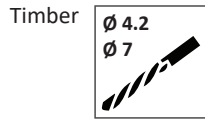
Sash hinge	Profile system	Jig
17/38	Timber/PVC	PAHG0060-...
	Aluminium	143131
17/48		PAHG0010-...
27/48		PAHG0020-...





9.4.3 Intersection point C

Timber and aluminium elements

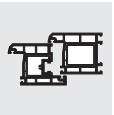


Bottom hinge

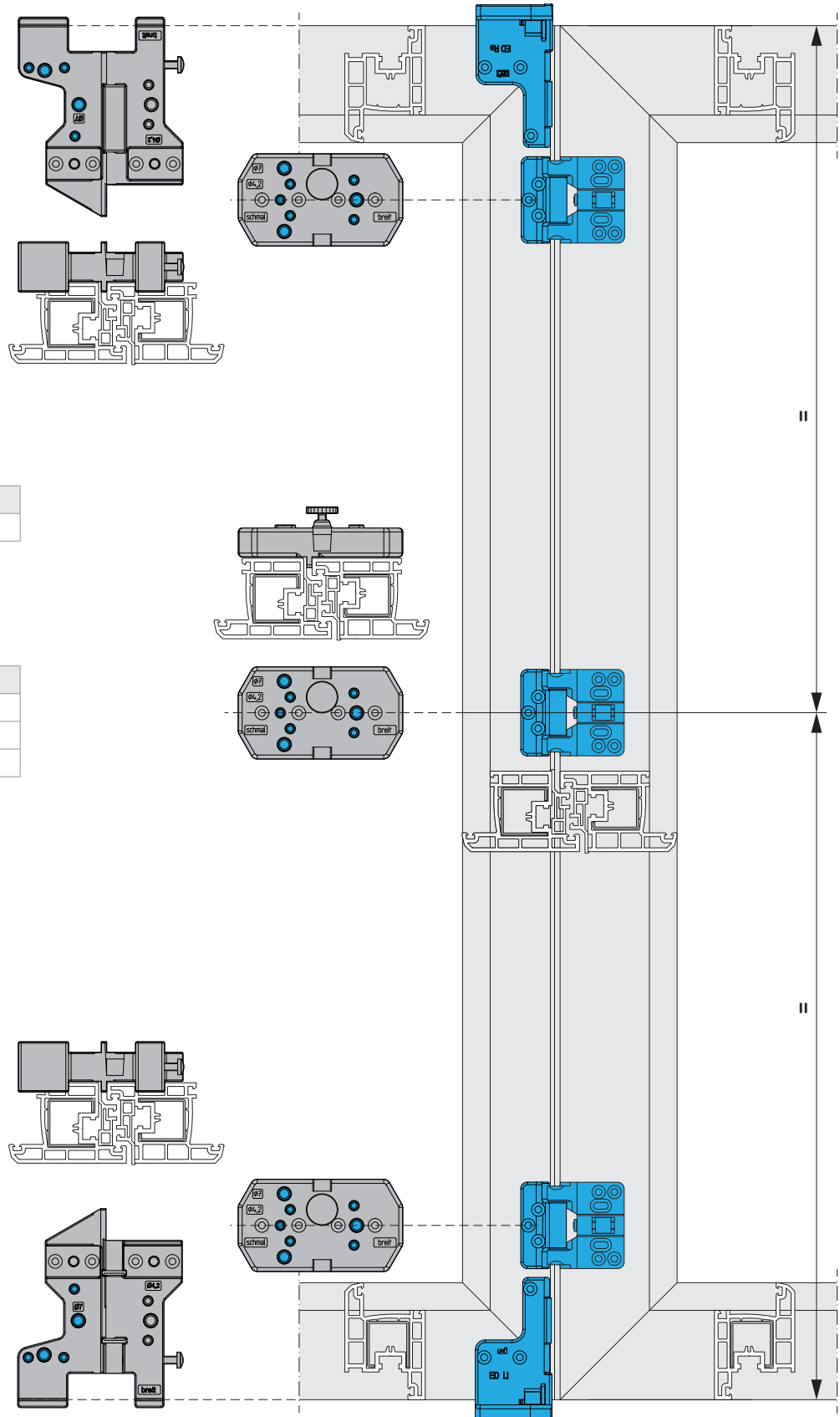
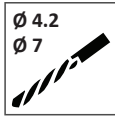
Version	Profile system	Jig
17/38	Timber	PAHG0070-...
	Aluminium	143124

Sash hinge

Version	Profile system	Jig
17/38	Timber	PAHG0060-...
	Aluminium	143131
17/48		PAHG0010-...
27/48		PAHG0020-...

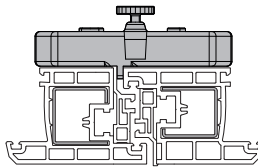


PVC elements



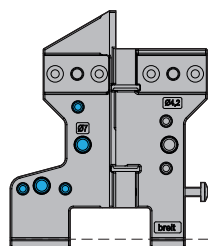
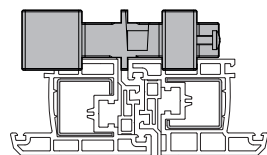
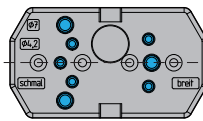
Bottom hinge

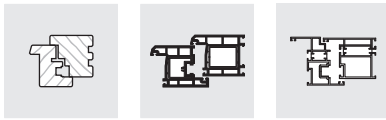
Version	Jig
17/38	PAHG0070-...



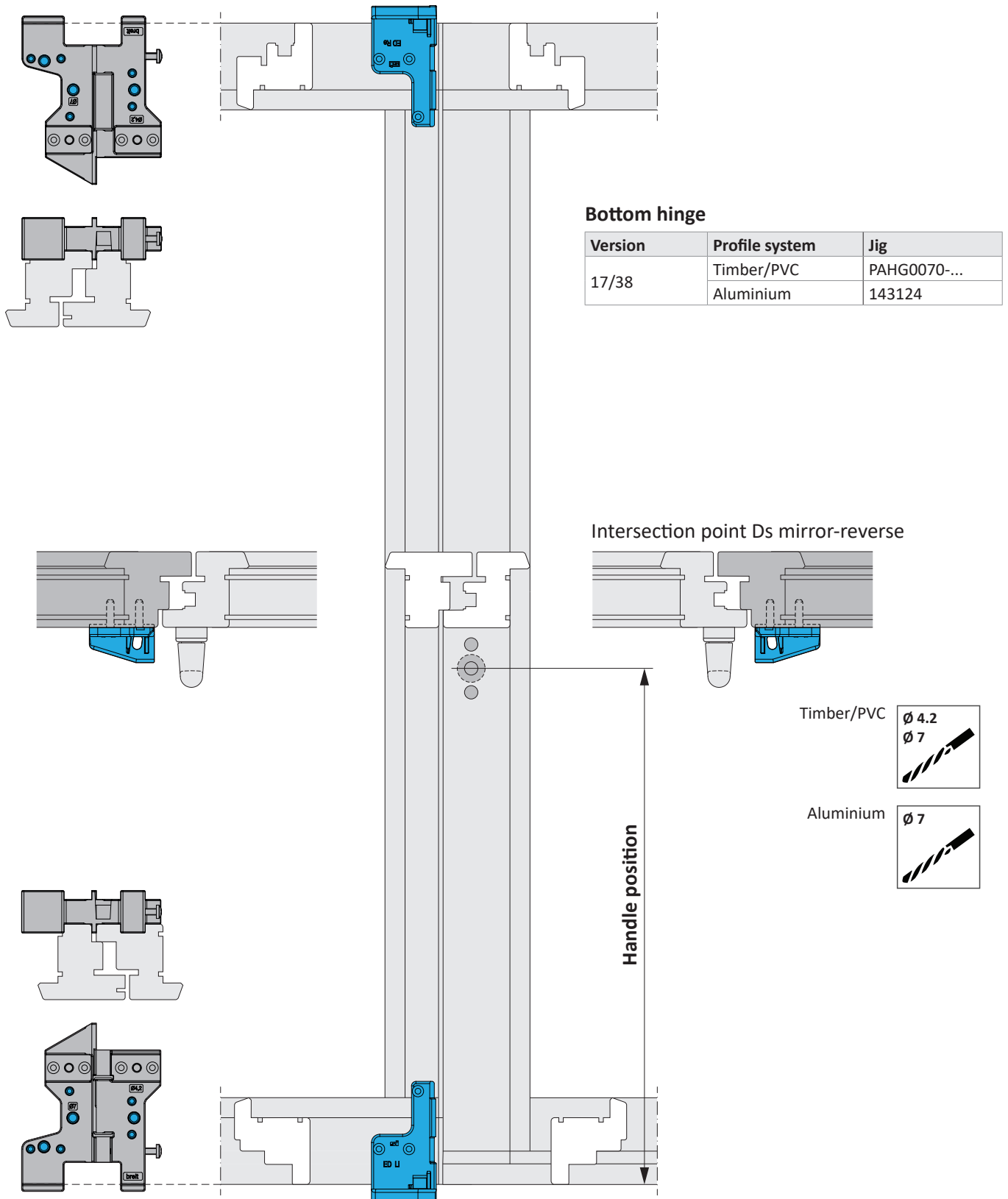
Sash hinge

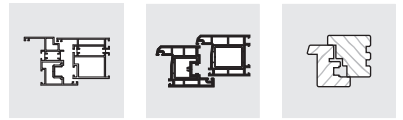
Version	Jig
17/38	PAHG0060-...
17/48	PAHG0010-...
27/48	PAHG0020-...



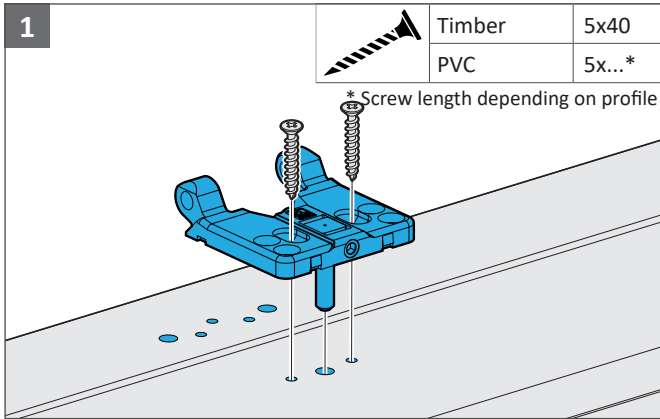


9.5 Sash intersection point D

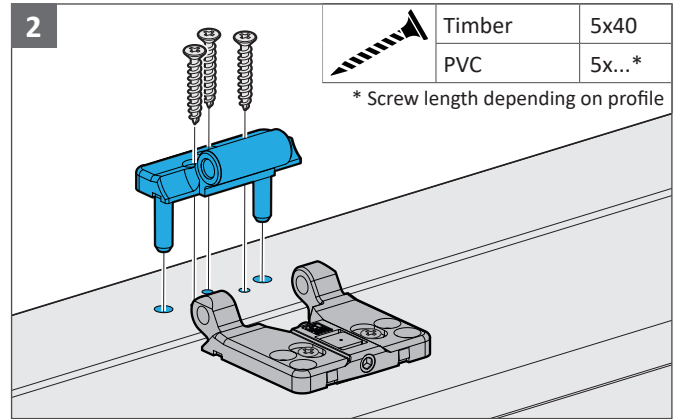




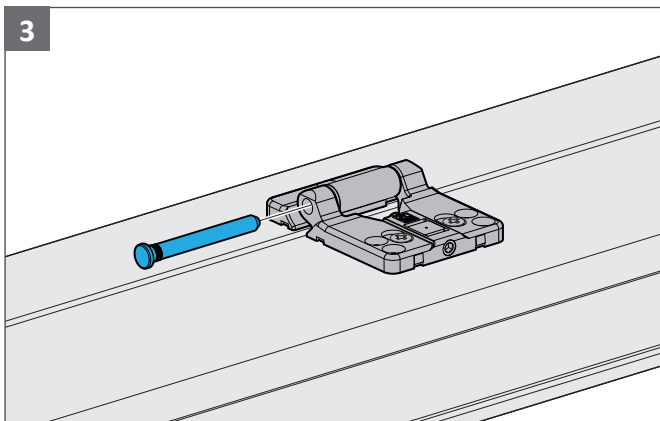
9.6 Fixing the sash hinge



Position wide sash hinges with centering pins in the position holes on the sash profile and fix with screws.

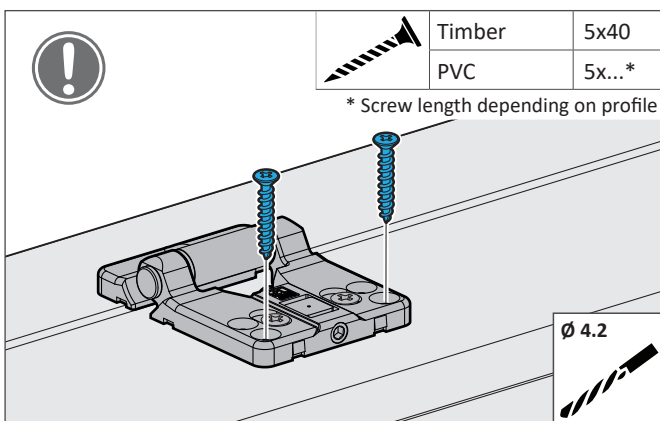


Position narrow sash hinges with centering pins in the position holes on the sash profile and fix with screws.

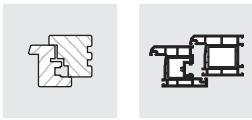


Insert top hinge pin from the bottom.

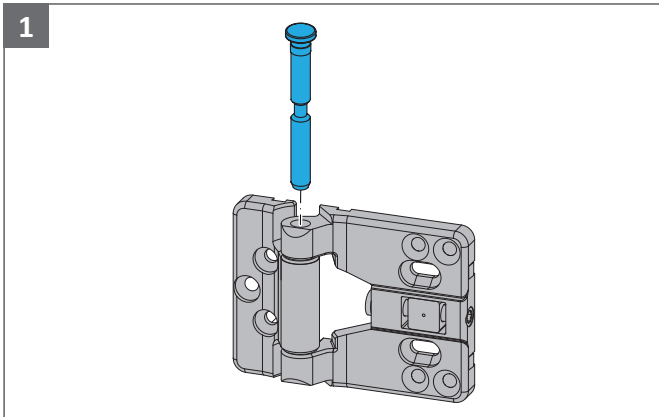
Work step after element assembly



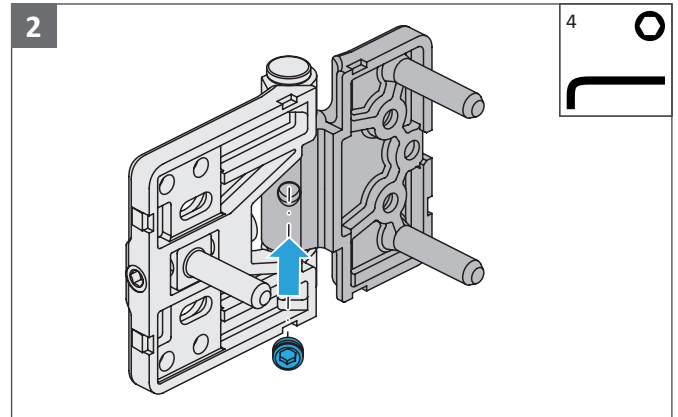
After the element assembly and adjustment. Fix wide sash hinges in the end position. Drill the fixing holes. Pre-drill the screw holes.



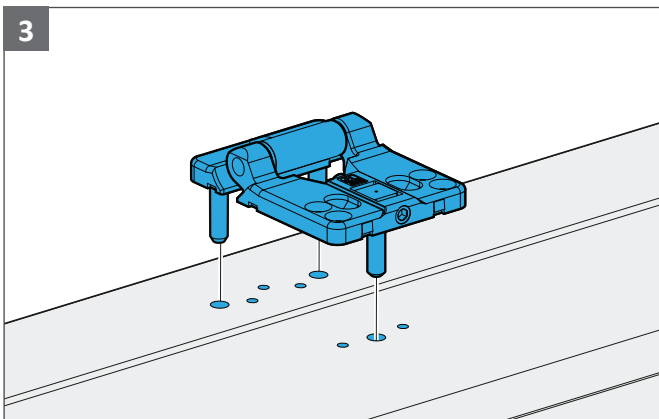
9.7 Fixing the outside sash hinge



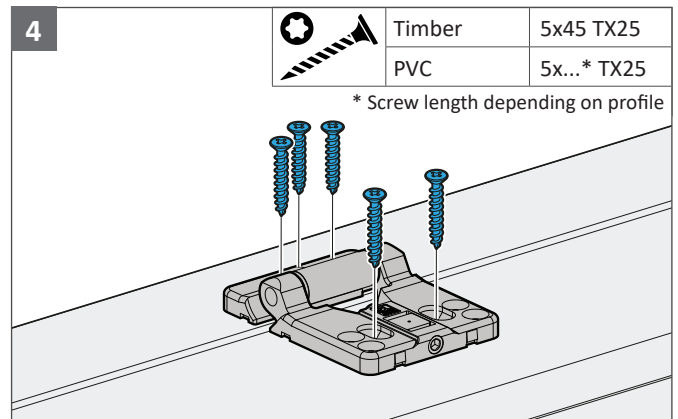
Insert top hinge pin to connect the sash hinges.



Screw grub screw M6x4 into the back of the narrow sash hinges. Secures the top hinge pin.

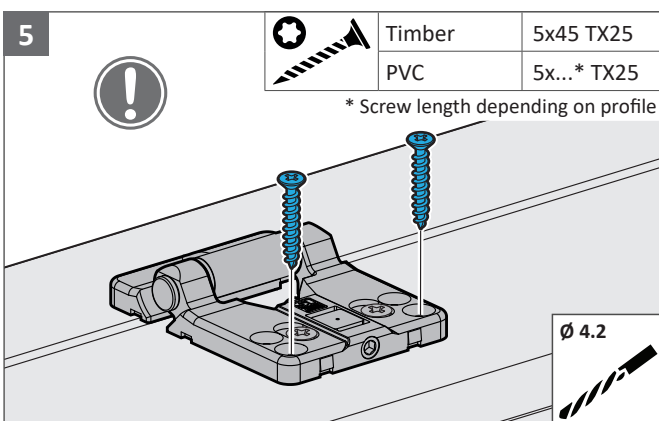


Position sash hinges with centering pins in the position holes on the sash profile.

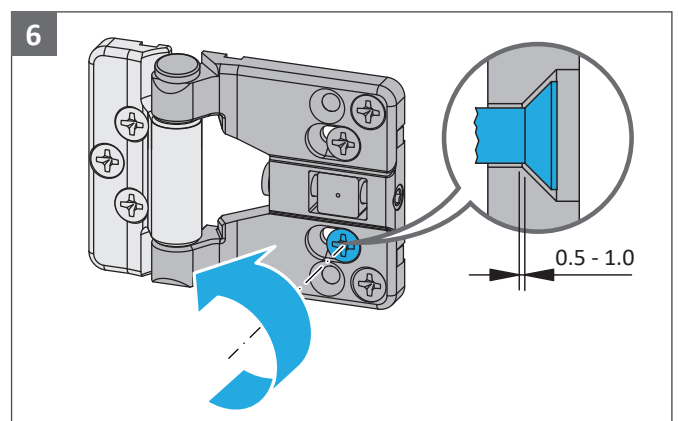


Fix the sash hinges with screws.

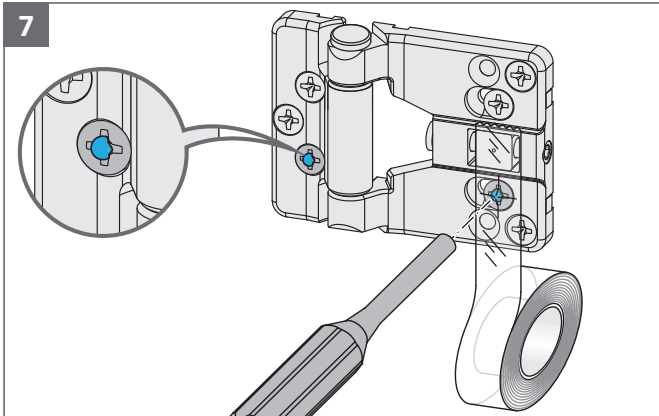
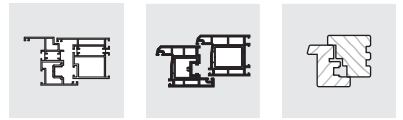
Work step after element assembly



After the element assembly and adjustment. Fix wide sash hinges in the end position. Drill the fixing holes. Pre-drill the screw holes.



Loosen one of the two inside fixing screws on the wide sash hinge. This means that subsequent adjustment is still possible.

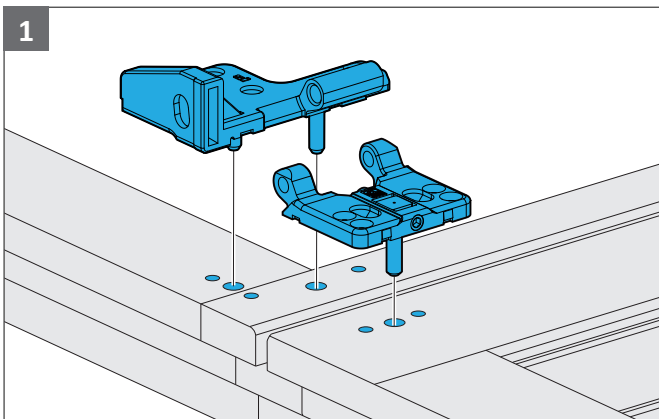


Ball-secured screws can no longer be released!

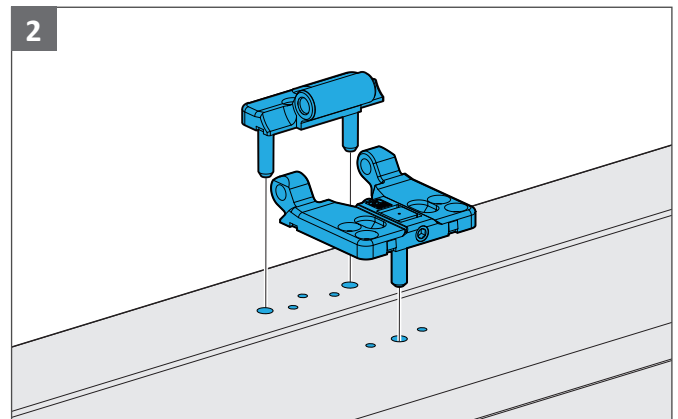
Secure fixing holes against loosening. Fix the screw head with adhesive tape and knock in with a suitable tool

- The screw that has been loosened on the wide sash hinge.
- A freely selectable screw on the narrow fixing hinge.

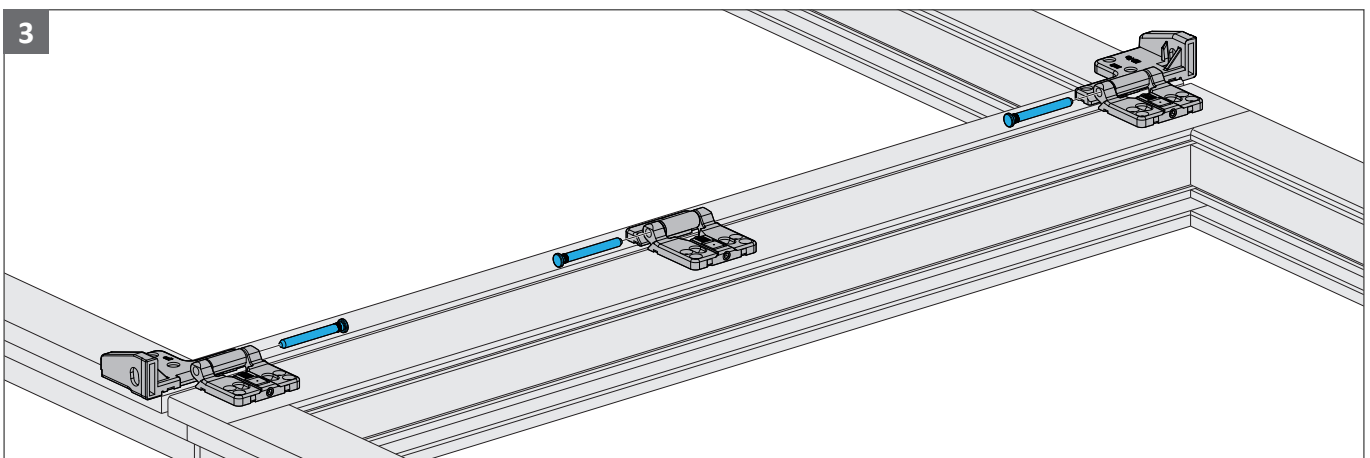
9.8 Fixing the sash hinge with bottom hinge



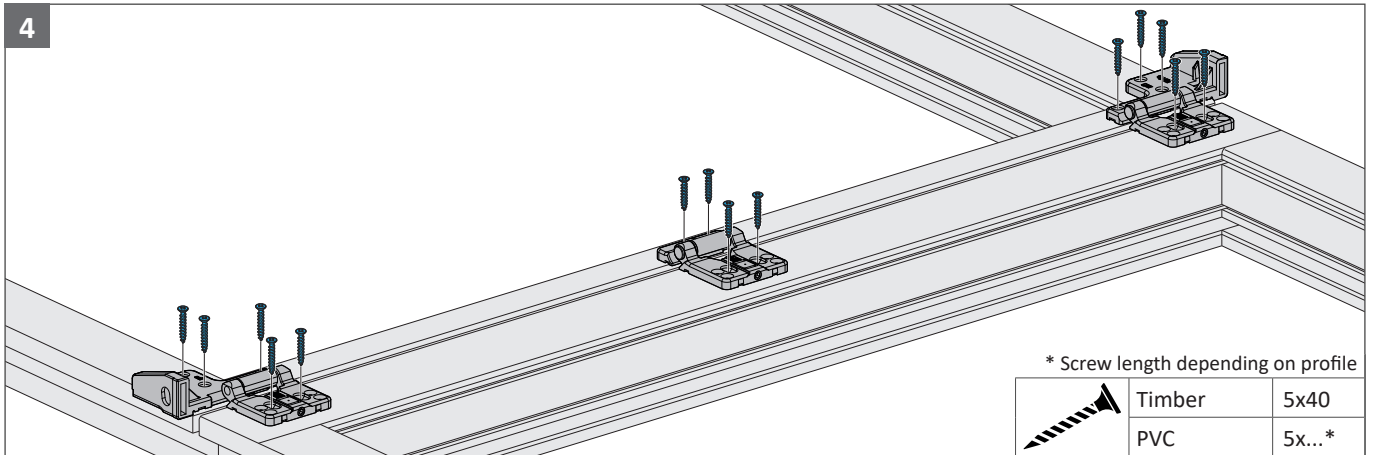
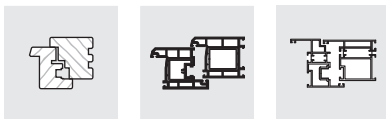
Position bottom hinges with sash hinges with centering pins in position holes on the sash profile.



Position sash hinges with centering pins in position holes on the sash profile.

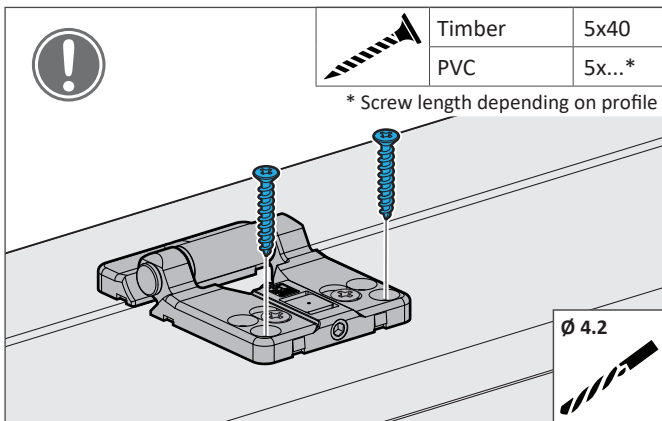


Insert top hinge pin.

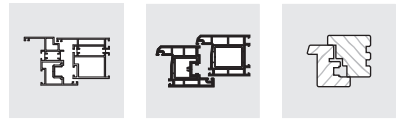


Fix the corner hinges and sash hinges with screws.

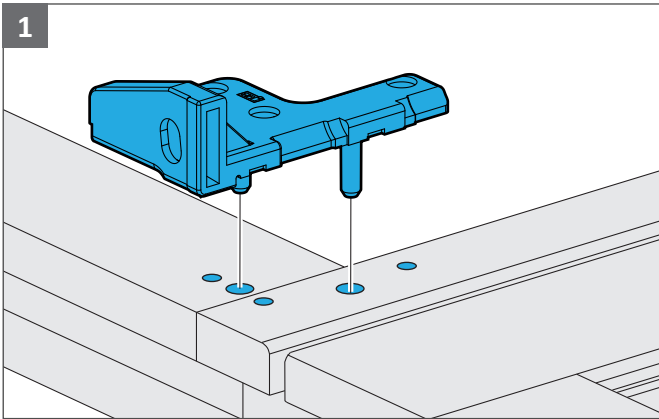
Work step after element assembly



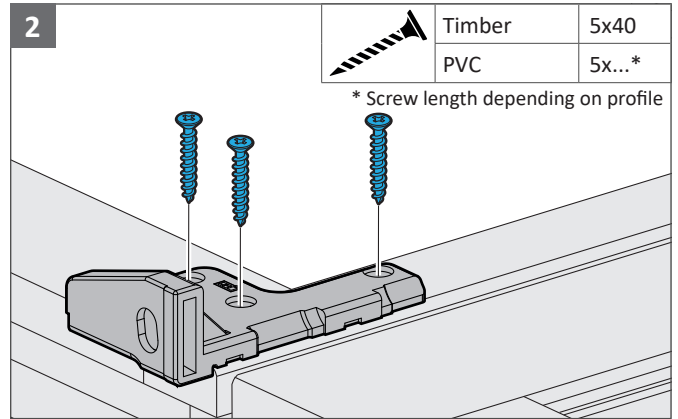
After the element assembly and adjustment. Fix wide sash hinges in the end position. Drill the fixing holes. Pre-drill the screw holes.



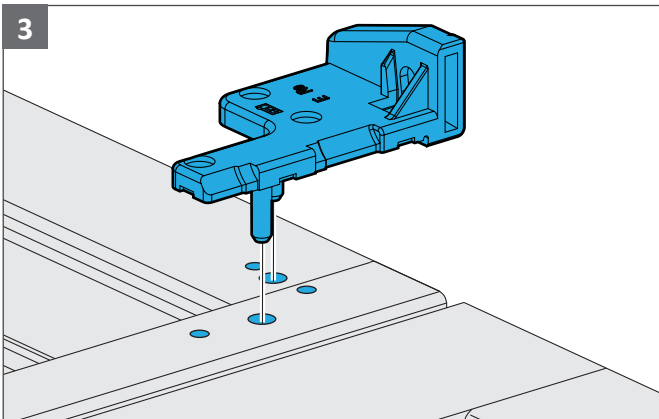
9.9 Fixing the bottom hinge



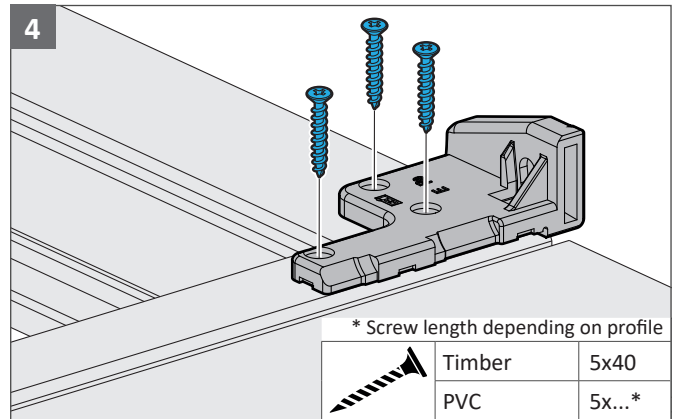
1 Position bottom hinges with centering pins in position holes on the sash profile.



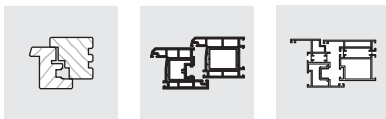
2 Fix bottom hinge with screws.



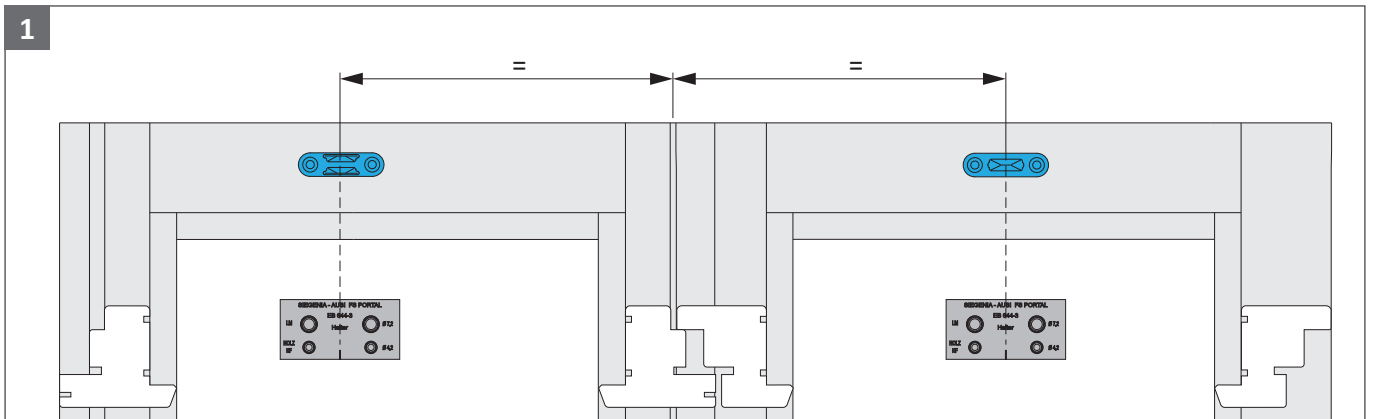
3 Position top sash hinges with centering pins in position holes on the sash profile.



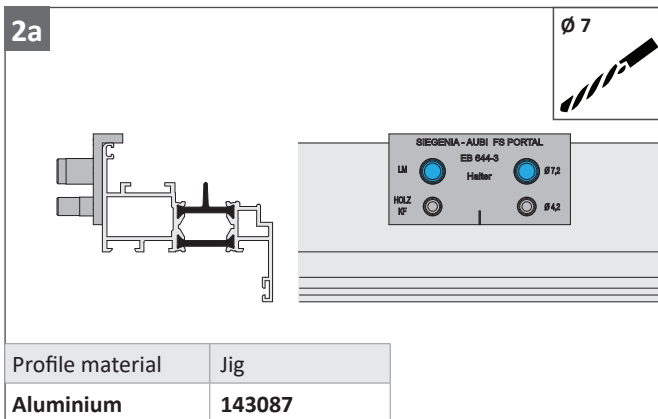
4 Fix the top hinge with screws.



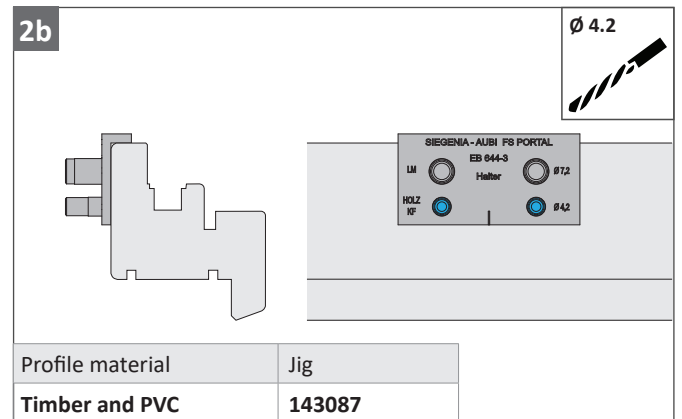
9.10 Installation of the supporting piece



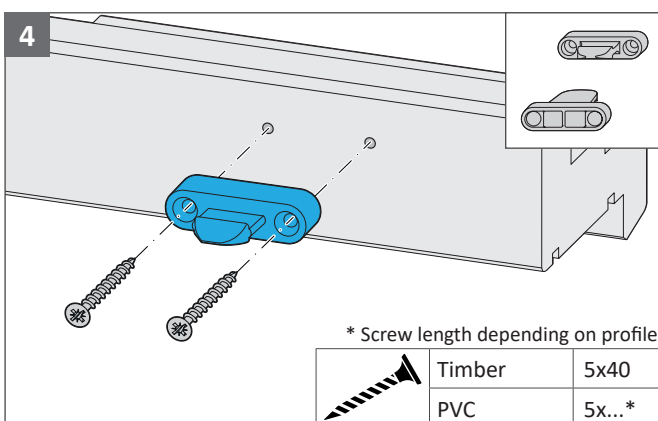
Position of supporting pieces F and D at intersection point C on the sash.



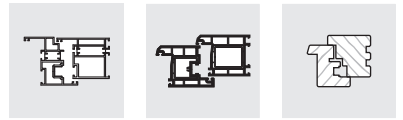
Drill fixing holes Ø 7 for LM profiles.



Drill fixing holes Ø 4.2 for timber and PVC profiles.

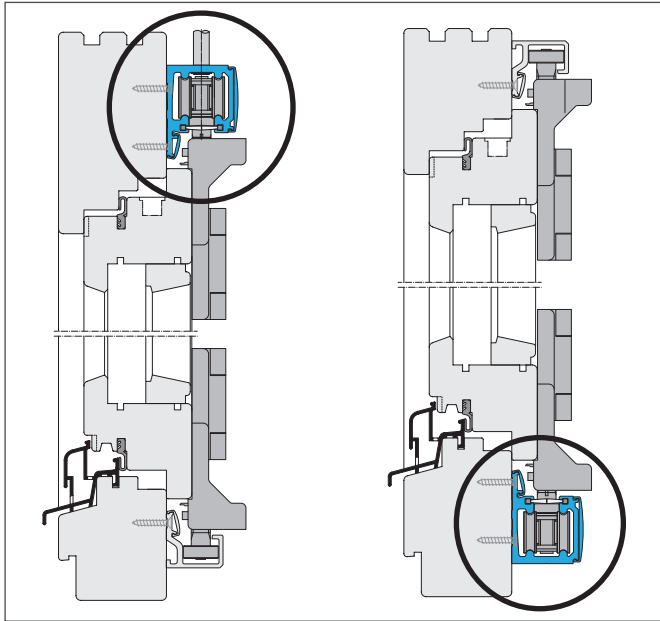


Fix supporting piece F and supporting piece D to the profile.

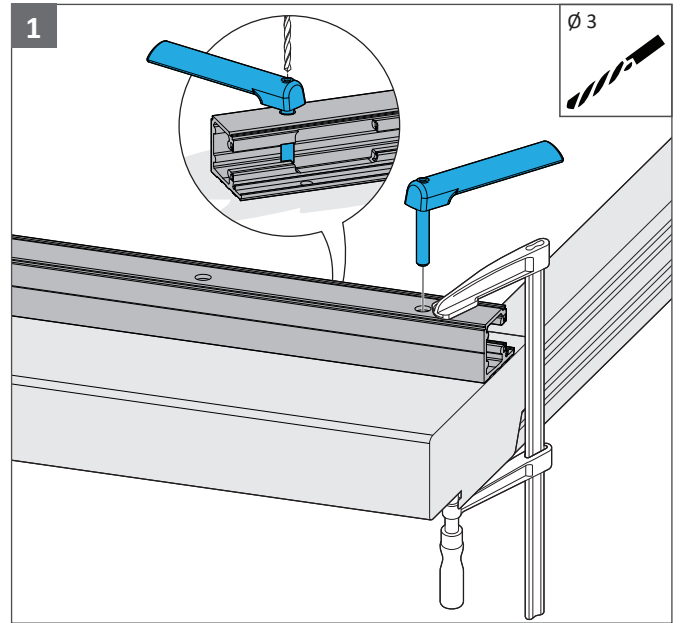


9.11 Assembly on frame

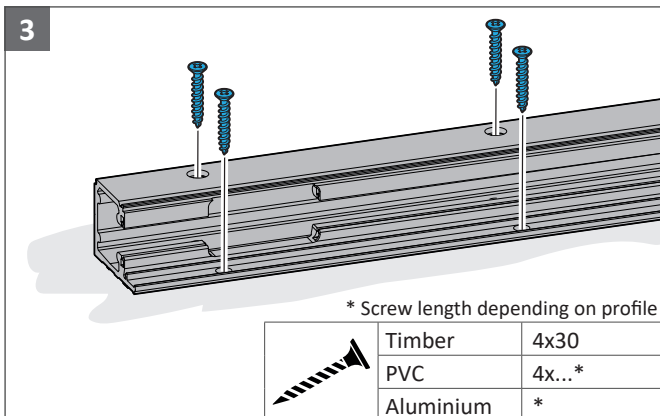
9.11.1 Assembly of running rail



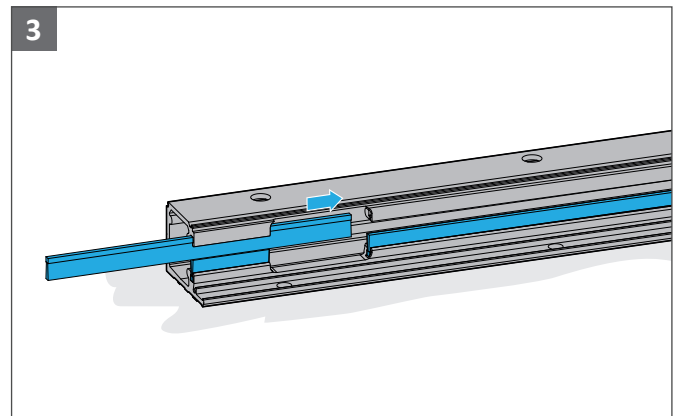
Assembly variant running rail



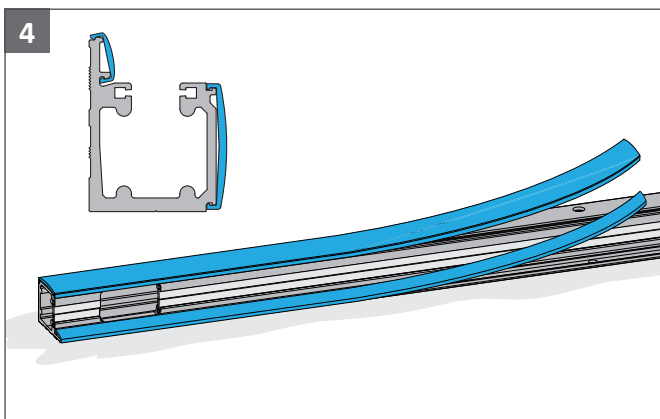
Pre-drill the screw holes. Use jig EB 644-4 to do this.



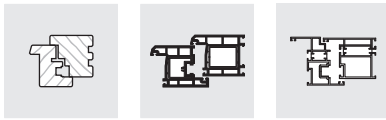
Fix running rail to frame profile with screws.



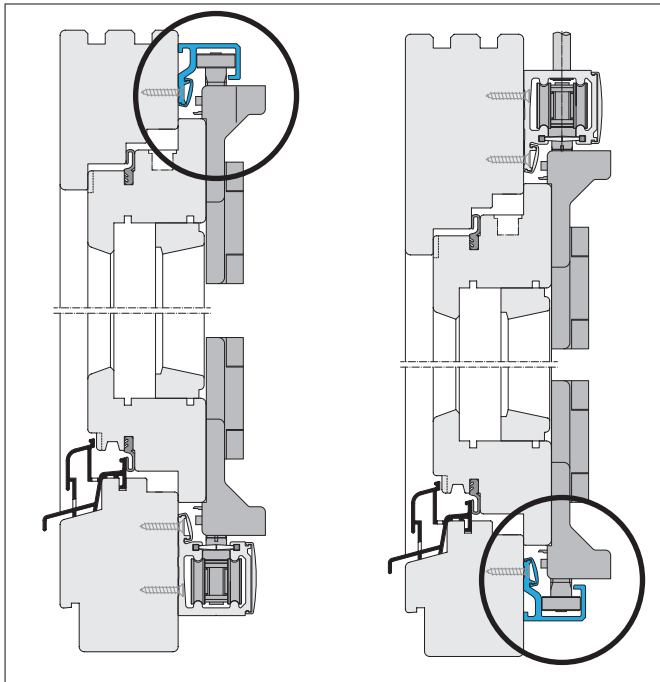
Draw sealing brush into the running rail.



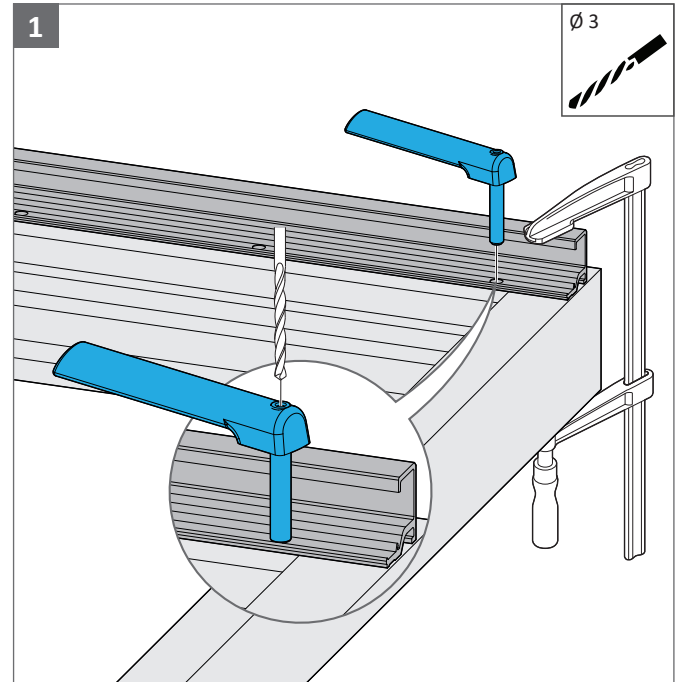
Clip or push cover rails onto the running rail.



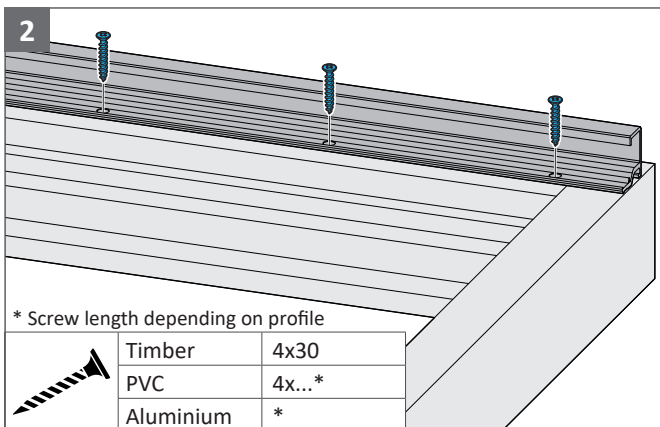
9.11.2 Assembly of guiding rail



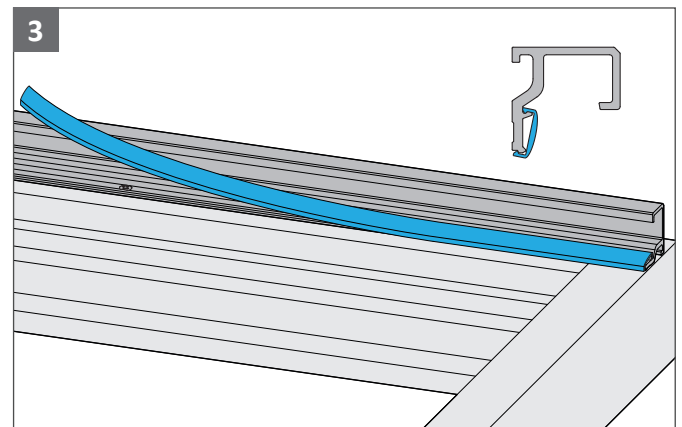
Assembly variant guiding rail



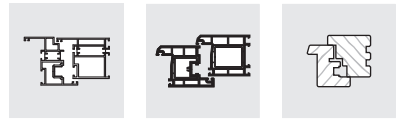
Pre-drill the screw holes. Use jig EB 644-4 to do this.



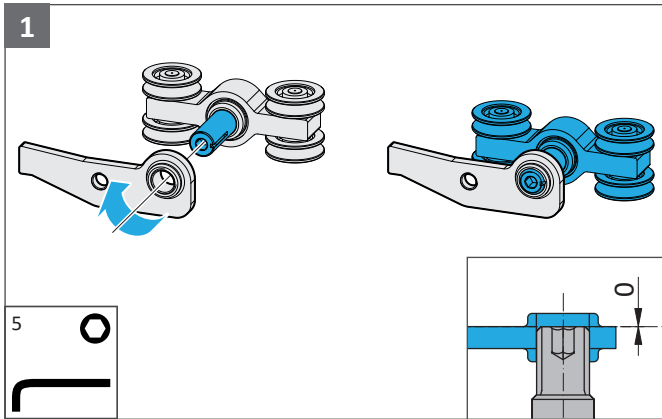
Fix guiding rail to frame profile with screws.



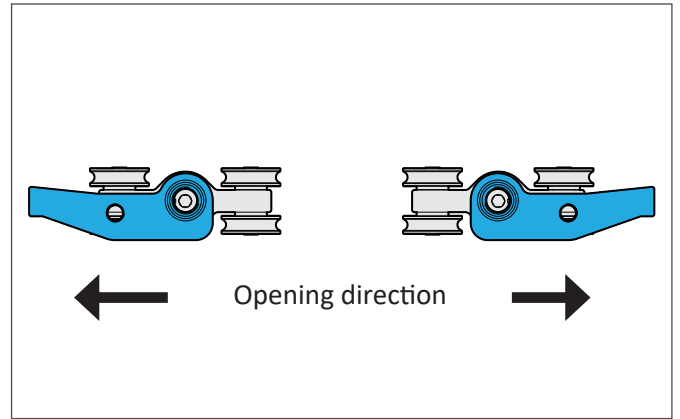
Clip cover rail onto the guiding rail.



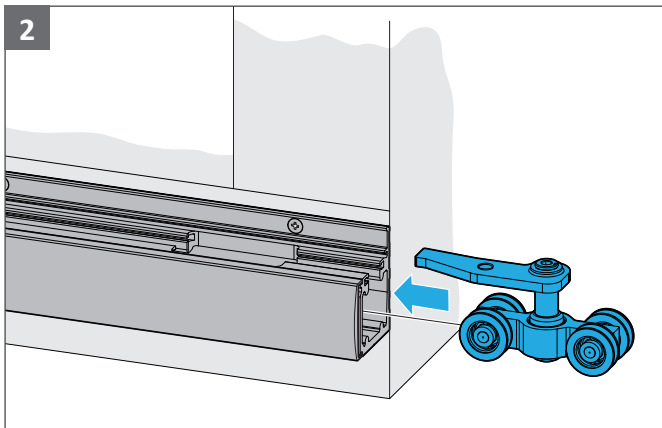
9.11.3 Push in bogie wheels



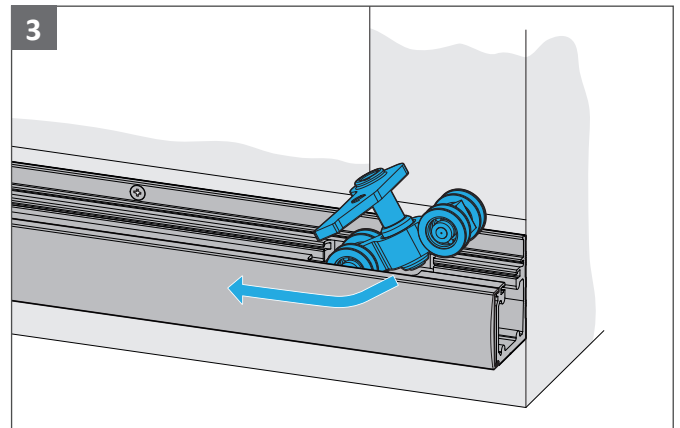
Fix supporting plate to the bogie wheels.



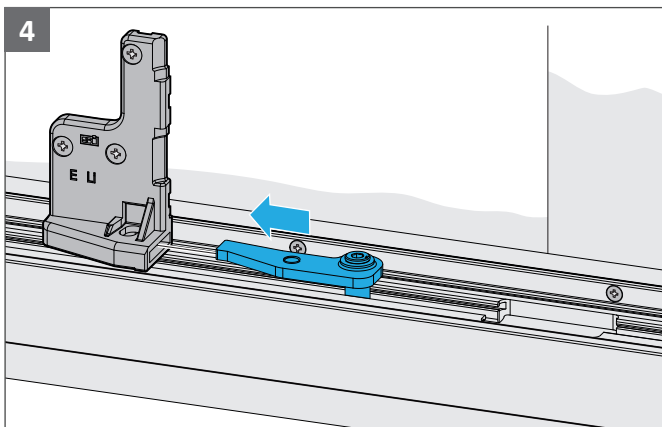
Adjustment of the supporting plate depends on the opening direction.



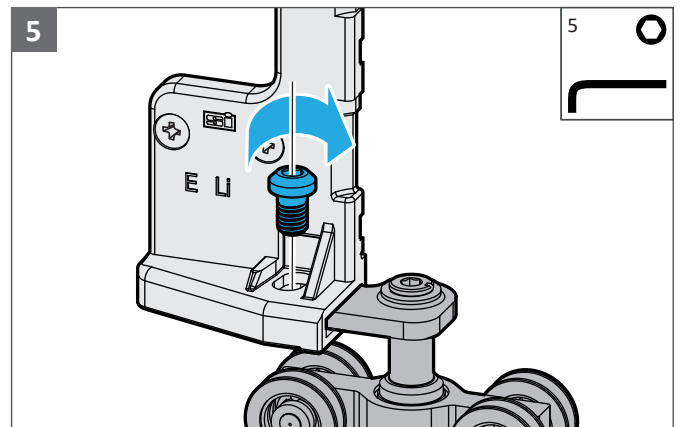
Slide the bogie wheels into the running rail from the outside.



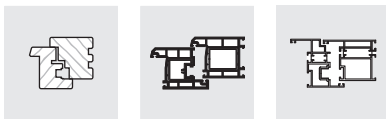
Alternatively, slide the bogie wheels into the running rail through the mounting opening.



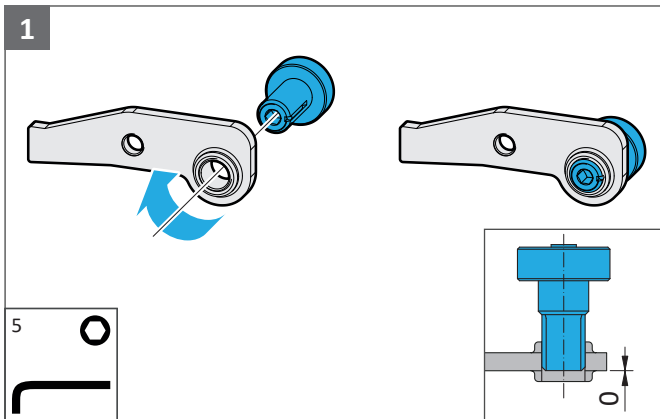
Push bogies wheels with supporting plate into the bottom hinge.



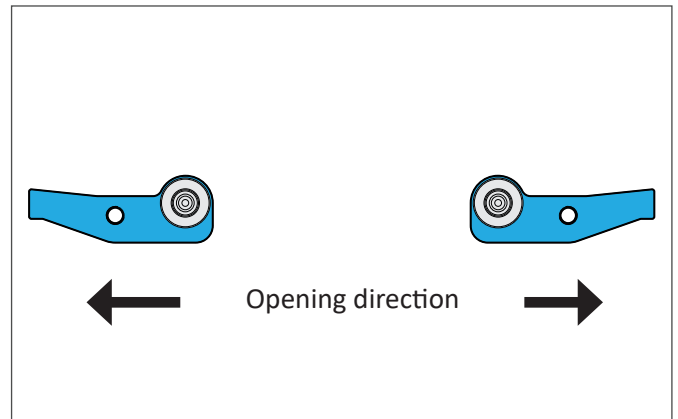
Fix the bogie wheels to the bottom hinge with cheese head screw.



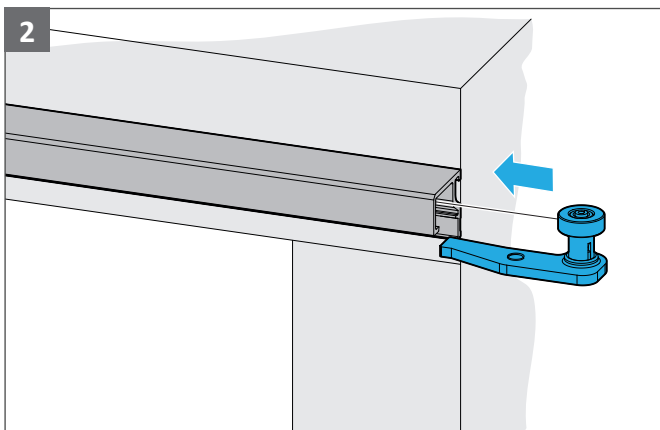
9.11.4 Push in the supporting plate



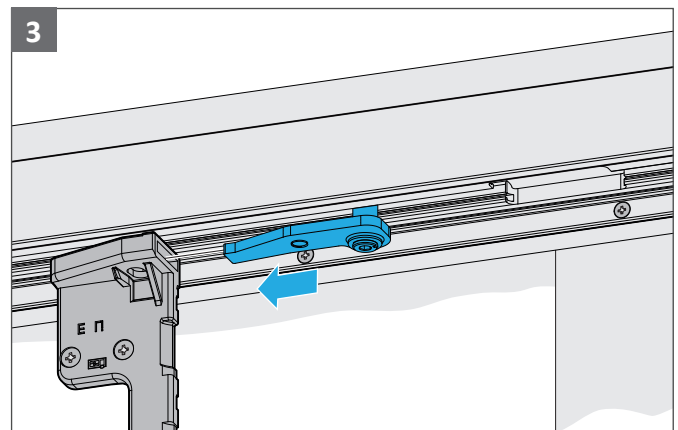
Fix supporting plate to the guide.



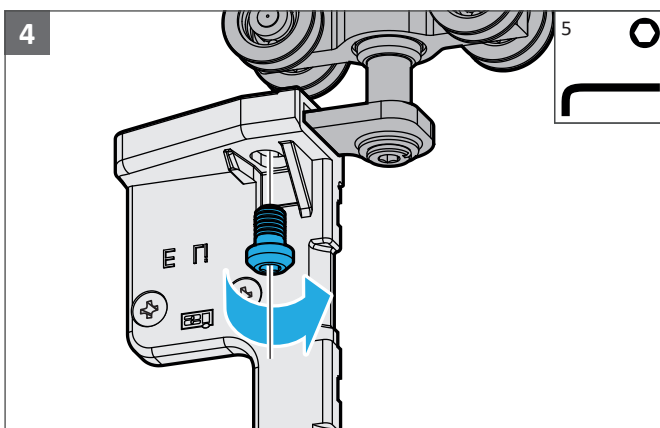
Adjustment of the supporting plate depends on the opening direction.



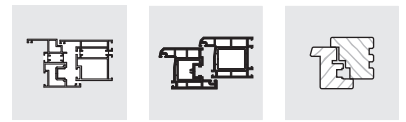
Slide the guide into the running rail from the outside.



Slide the guide with the supporting plate into the bottom hinge.

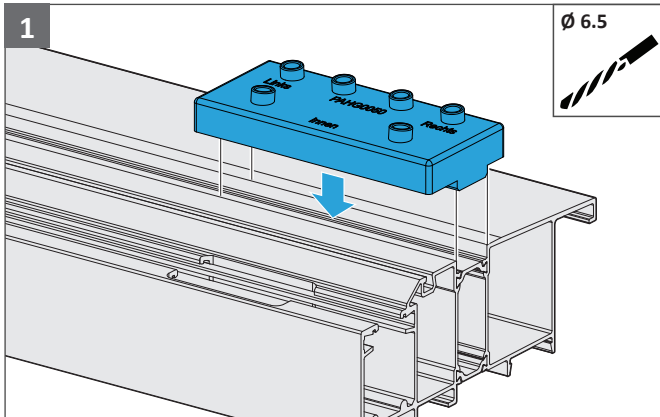


Fix the guide to the bottom hinge with cheese head screw.

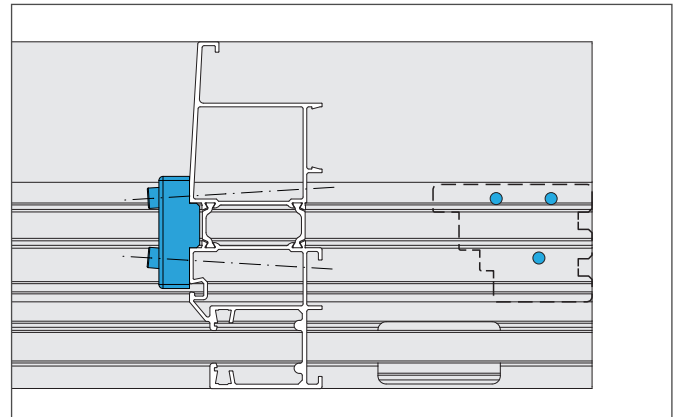


9.12 Barrier-free version

9.12.1 Drilling the screw holes

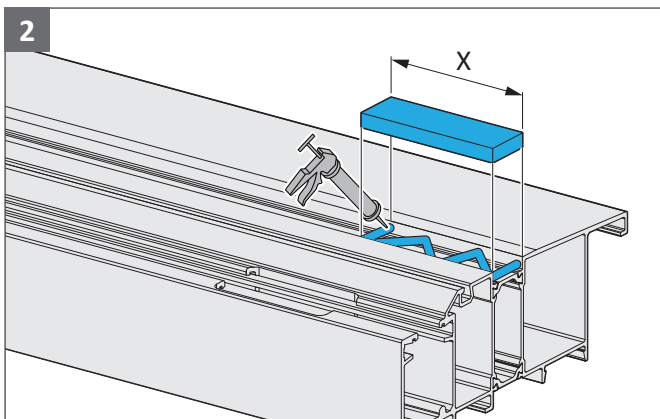


Drill the holes for the frame assembly. Use jig PAHG0050.

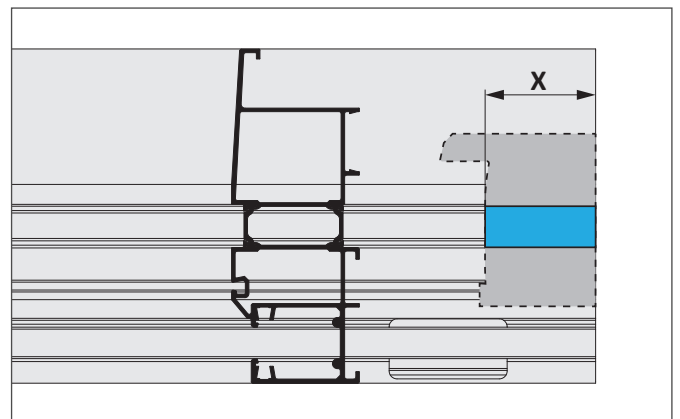


Drilling template frame corner connection.

9.12.2 Assembly of sealing piece

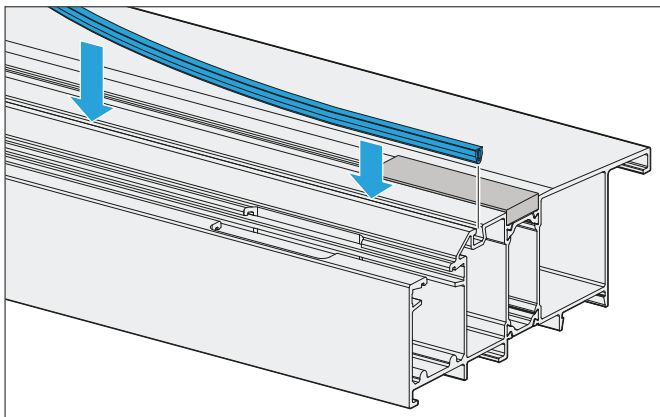


Fix the MP sealing piece to the groove on the threshold. Apply sealant to the fixing area.

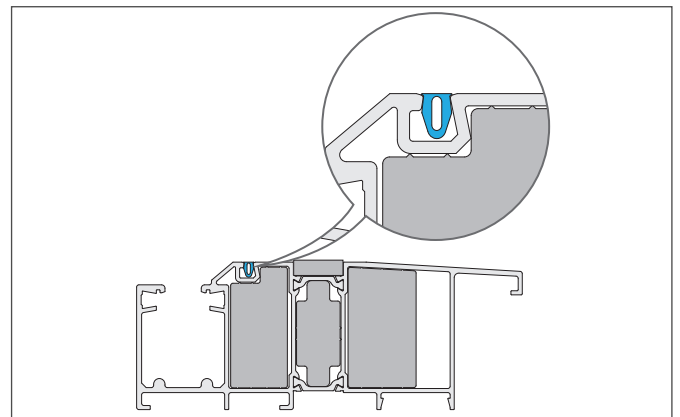


Sealing piece X depends on the frame profile.

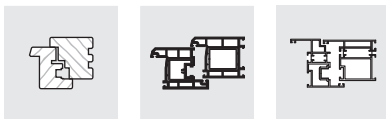
9.12.3 Assembly of beading strip



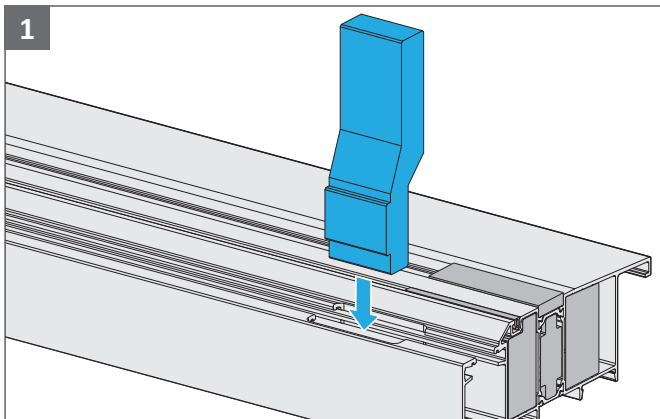
Press the beading strip into the groove along the entire length of the threshold.



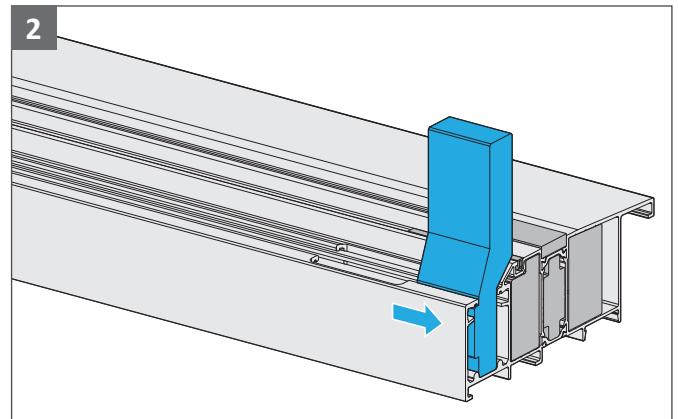
The correctly installed beading strip. The groove must be kept free with installed frame parts.



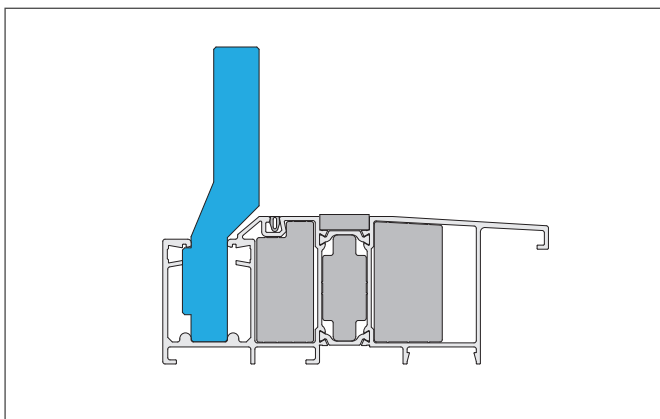
9.12.4 Connecting the threshold to the frame



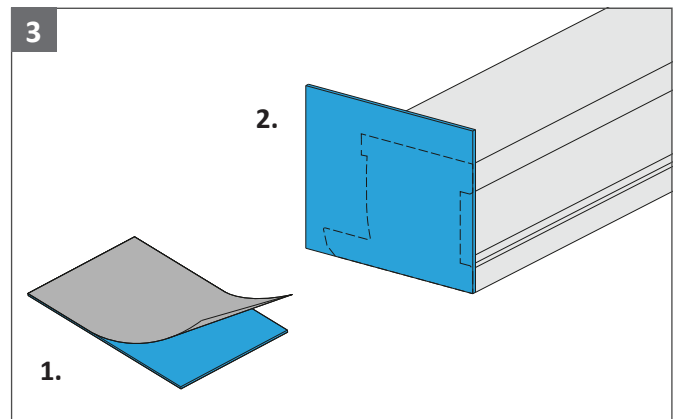
1
Insert REV jig into the bogie wheels groove.



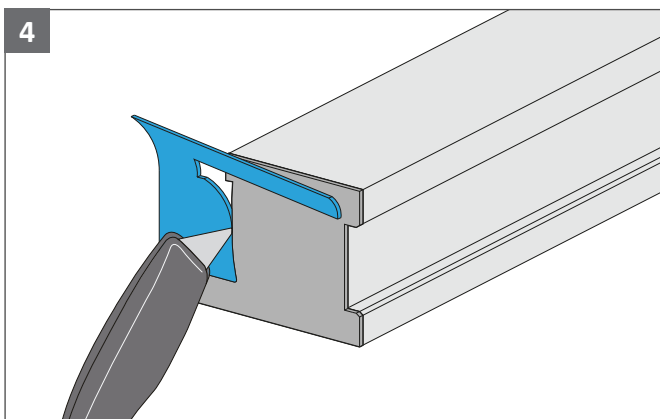
2
Push and clamp REV jig into the bogie wheels groove.



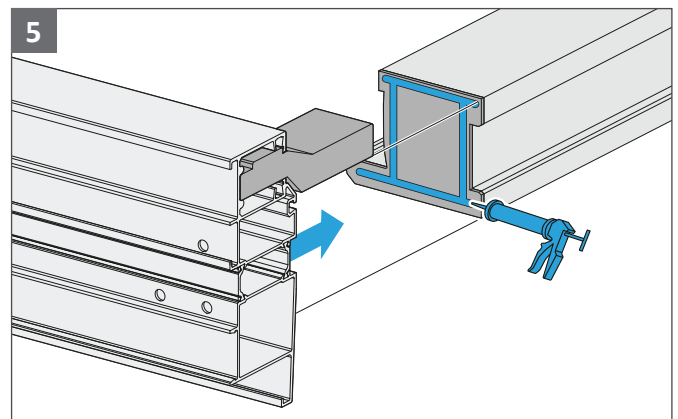
REV jig correctly positioned in the bogie wheels groove.



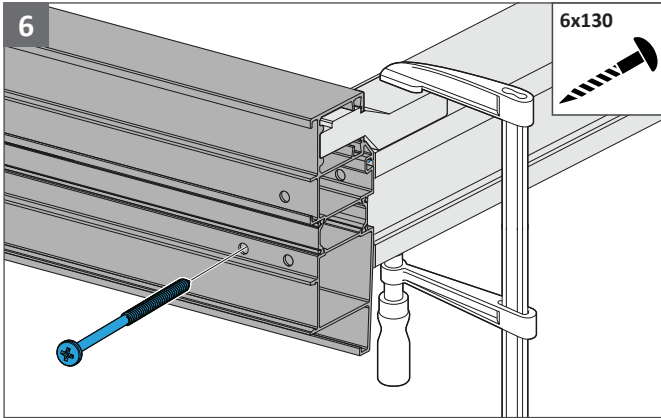
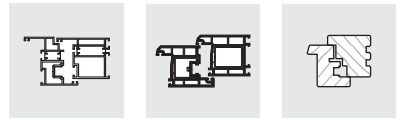
3
1. Remove the protective paper from the sealing plate FS.
2. Fix sealing plate FS to the frame profile.



4
Cut off any projecting material.



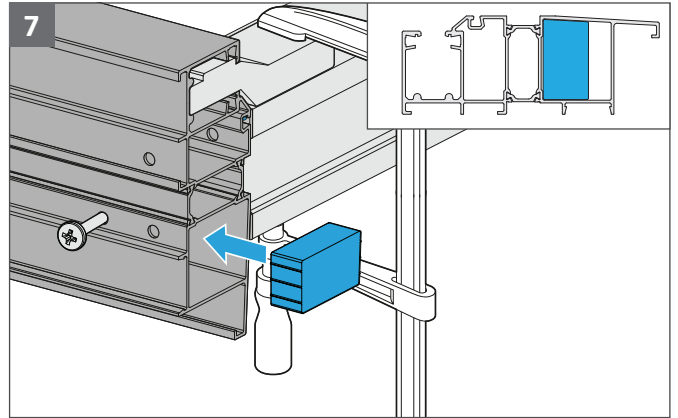
5
Apply sealing material to sealing plate FS and adjust threshold on the frame profile.



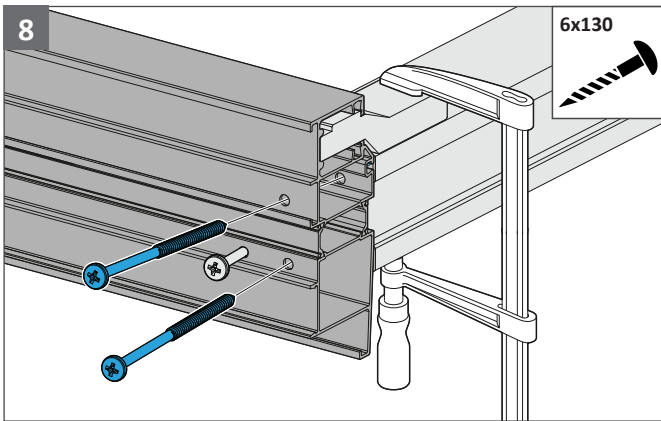
Lightly screw in the interior chipboard screw 6x130.

For timber elements:

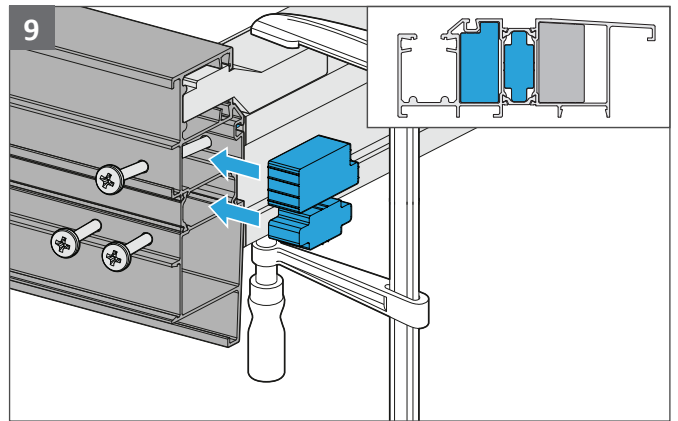
Predrill the screw holes in the frame profile max 10 mm depth.



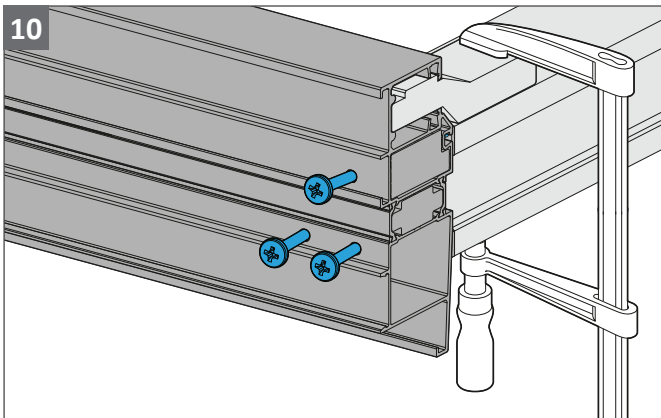
Press in supporting part FS 1 at both ends of threshold.



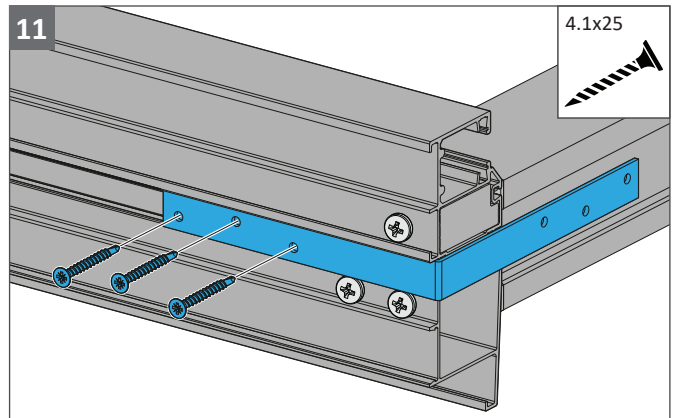
Screw in the remaining chipboard screws 6x130 loosely.



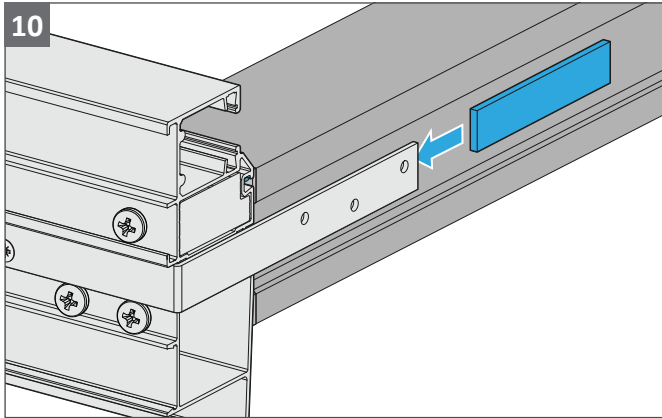
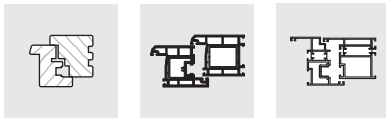
Press in supporting parts FS 2 and 3 at both ends of threshold.



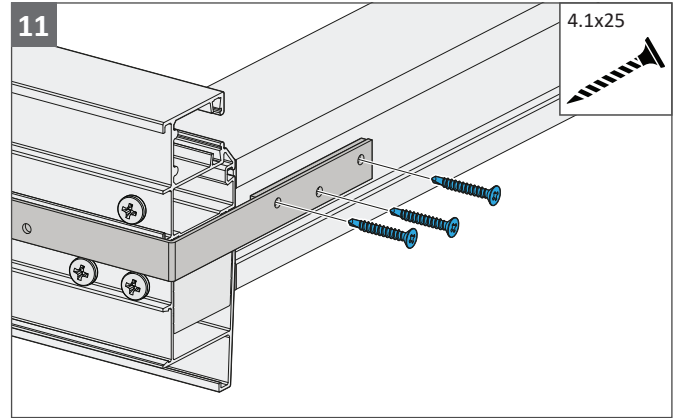
Tighten the chipboard screws.



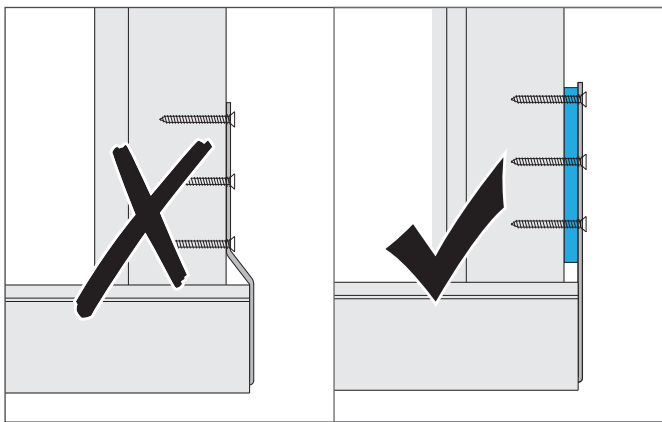
Fix cover angle FS to the bottom of the threshold with screws.



Line any free space between cover angle FS and frame profile.

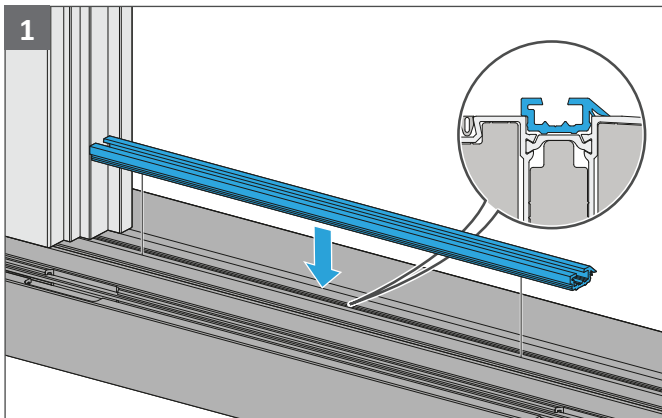


Fix cover angle FS to frame profile with screws.

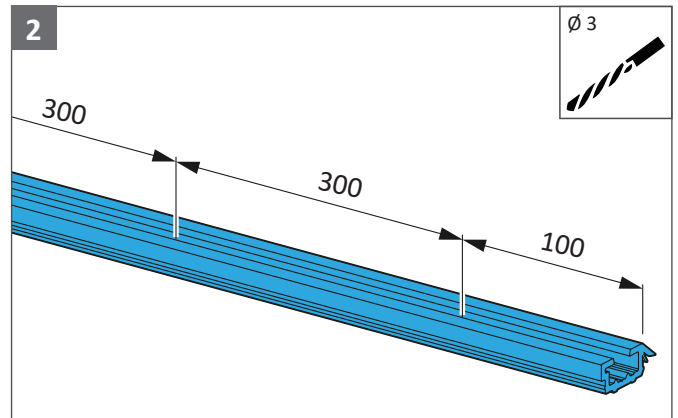


Screw on cover angle FS evenly. Adapt the screw length accordingly.

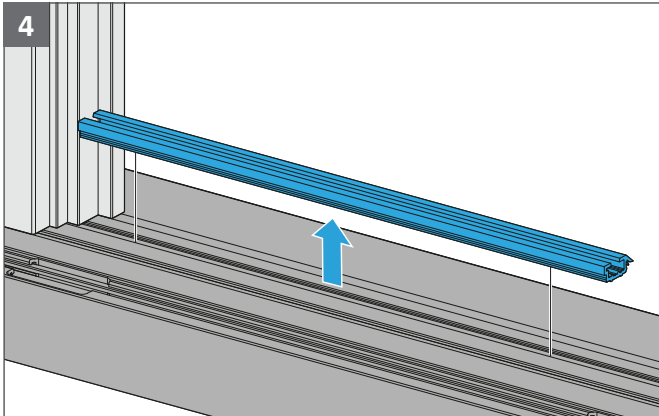
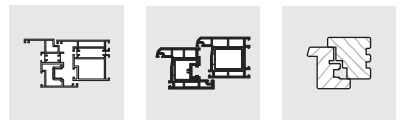
9.12.5 Assembly of sealing strip FS



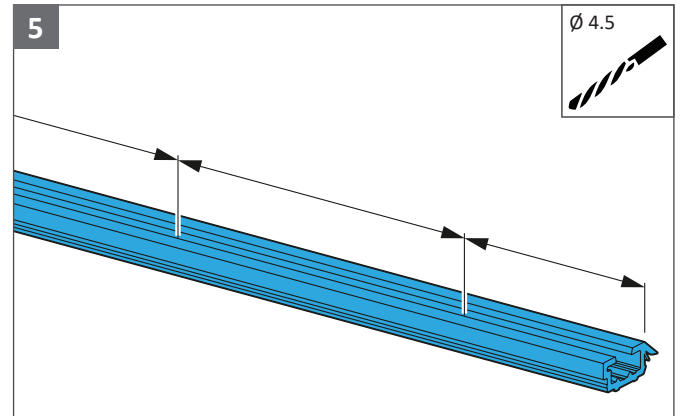
Position sealing strip FS in the threshold.



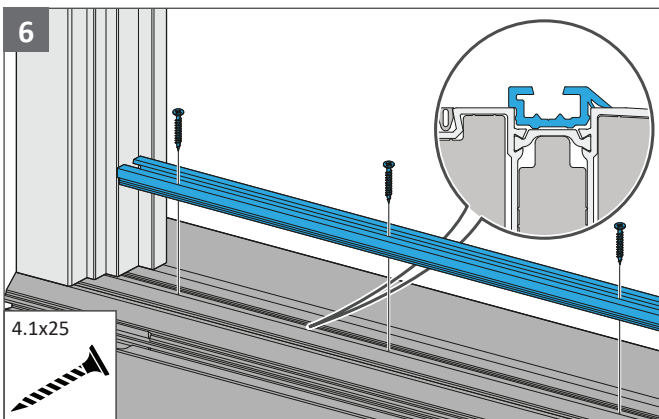
Pre-drill the screw holes with $\varnothing 3$ drill.



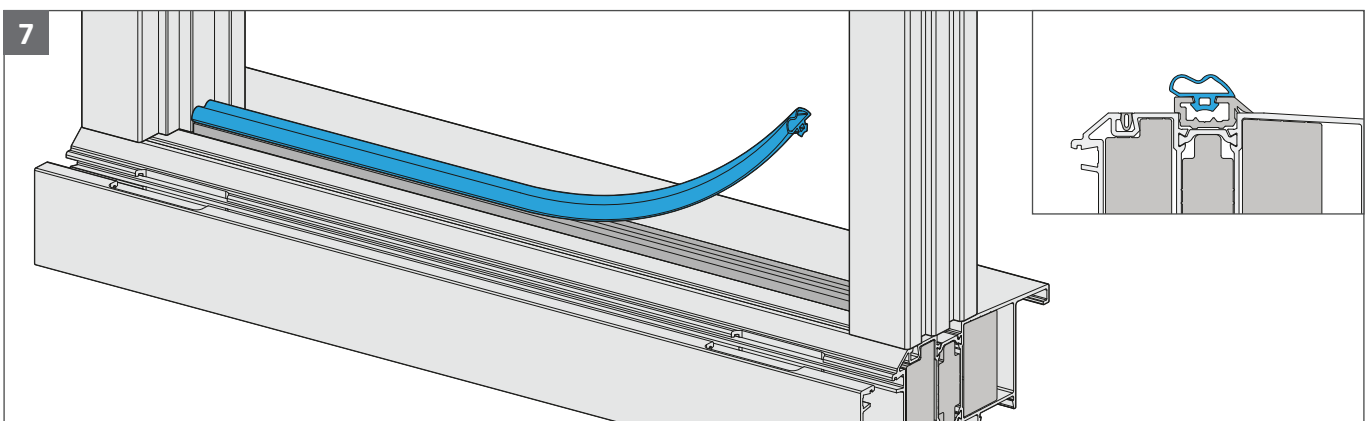
4 Remove FS sealing strip from the threshold.



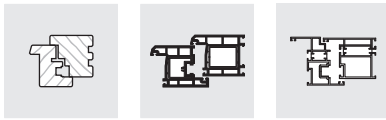
5 Drill screw holes with $\varnothing 4.5$ drill.



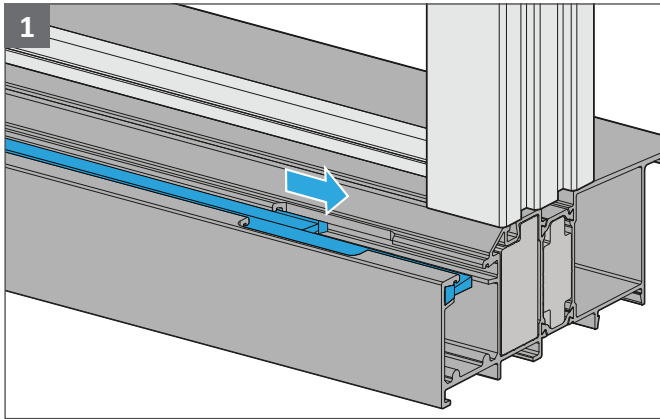
6 Fix sealing strip FS in the threshold with screws.



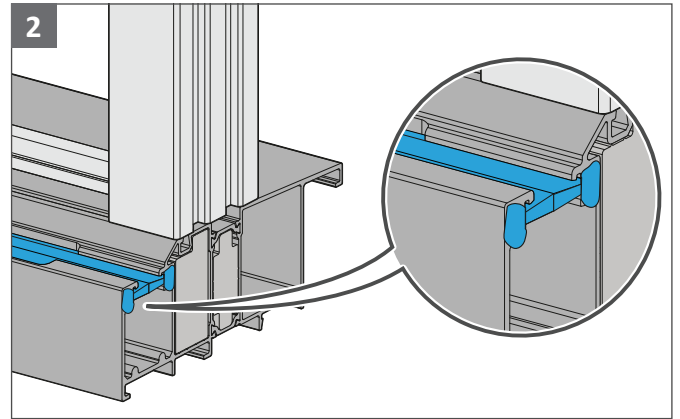
7 Press the seal into the sealing strip FS along the entire length.



9.12.6 Installation of sealing brush



1
Push sealing brushes into the threshold.



2
Caulk sealing brush at the ends.

10 Assembly drawings

10.1 Timber 12 mm


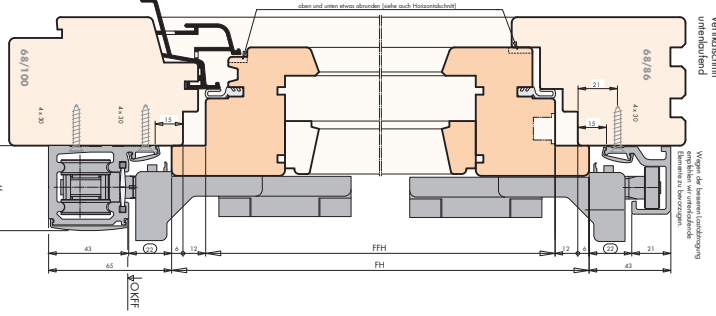
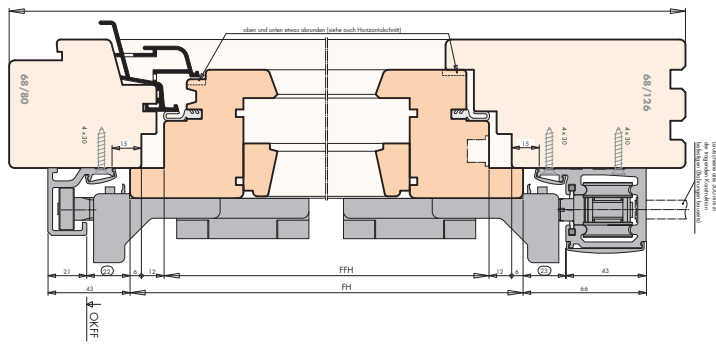
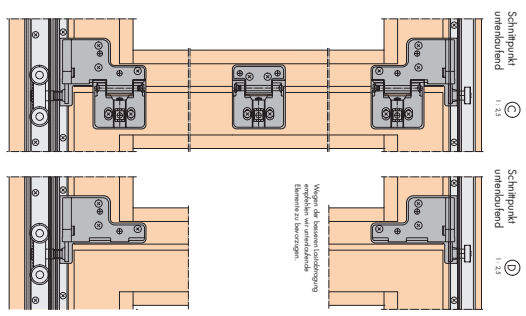
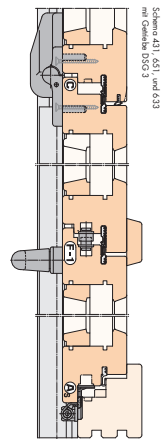
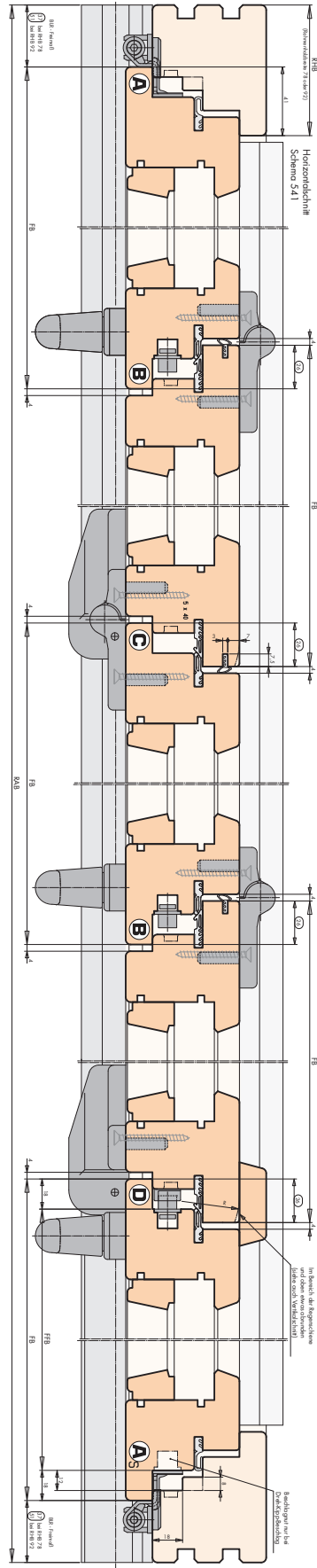
 For timber elements with 12 mm airgap, further drawings on request

Tabelle zur Ermittlung der FB
nach Bauteilartenkombinationen

Strom	Stromstärke	FB
521, 530	1750/240	21, 23
431	1750/240	4, 24
541, 550, 532	1750/240	30, 2
451, 453	1750/240	36, 2
751, 770, 743	1750/240	38, 34

Aluminium Formel
FB = 1000 / (Stromstärke x 25) (FB ist immer ganzzahlig)

Achtung: Einseitige Montage
Anschlüsse werden
auf der Seite der Montage
des Fensters



10.2 PVC

Horizontalschnitt
Schema 431

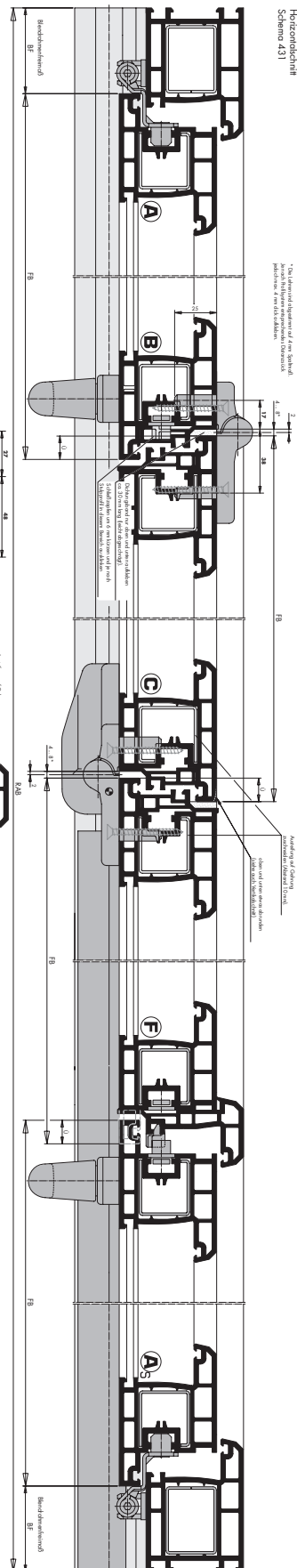


Tabelle zur Ermittlung der FB

Zimmer	FB
321/330	328/372/372/388
441	328/372/372/388
541/550/552	328/372/372/388
651/653	328/372/372/388
761/772/773	328/372/372/388
	7

Allgemeine Formel

$$FB = \text{Stützprofilhöhe} \pm 112 \pm 2 \text{ mm}$$

$$BH = \text{Stützprofilhöhe} \pm 112 \pm 2 \text{ mm}$$

$$BF = \text{Stützprofilbreite} \pm 7 \text{ mm}$$

U = Glasstärke
B = Glasbreitendicke

Achtung: Die Abstände zwischen dem Metallrahmenprofil und dem Glas sind einzuhalten.

Die Abstände zwischen dem Metallrahmenprofil und dem Glas sind einzuhalten.

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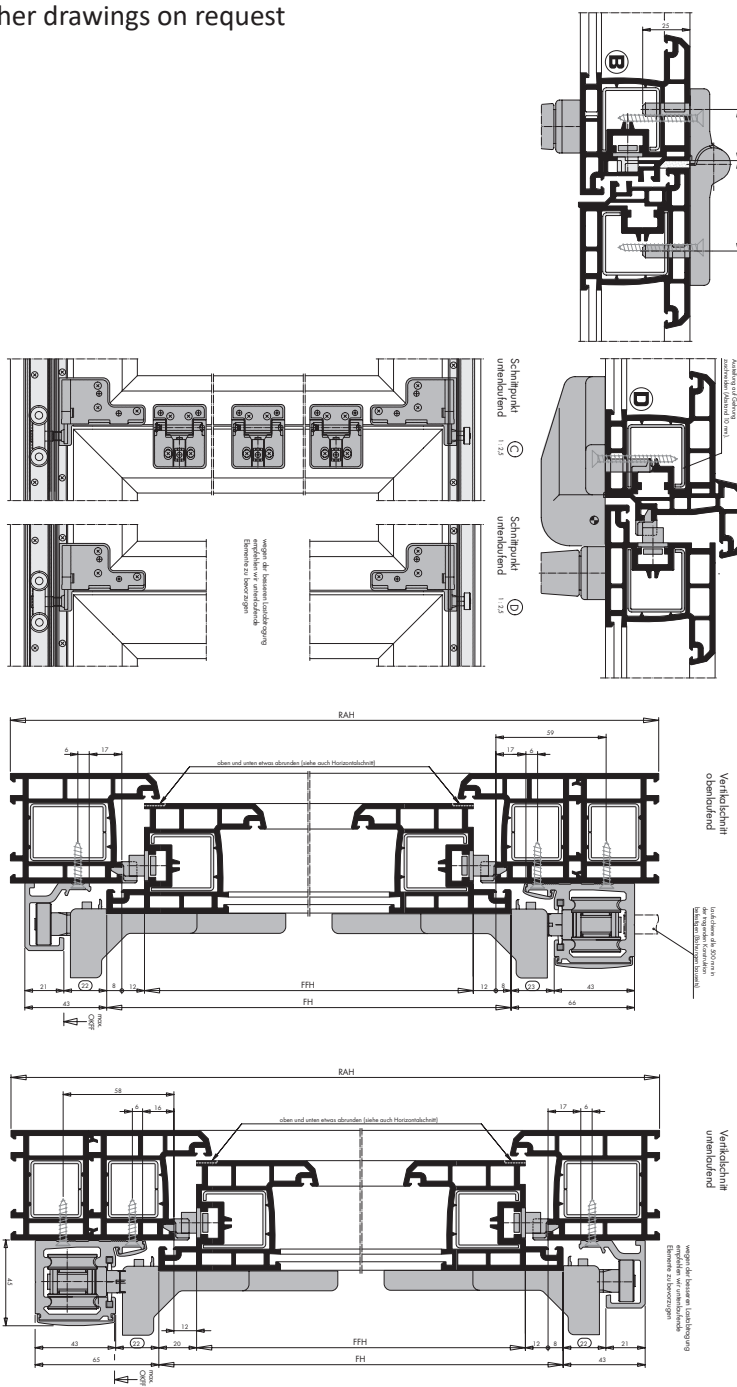
Die Abstände zwischen dem Metallrahmenprofil und dem Glas sind einzuhalten.

Die Abstände zwischen dem Metallrahmenprofil und dem Glas sind einzuhalten.

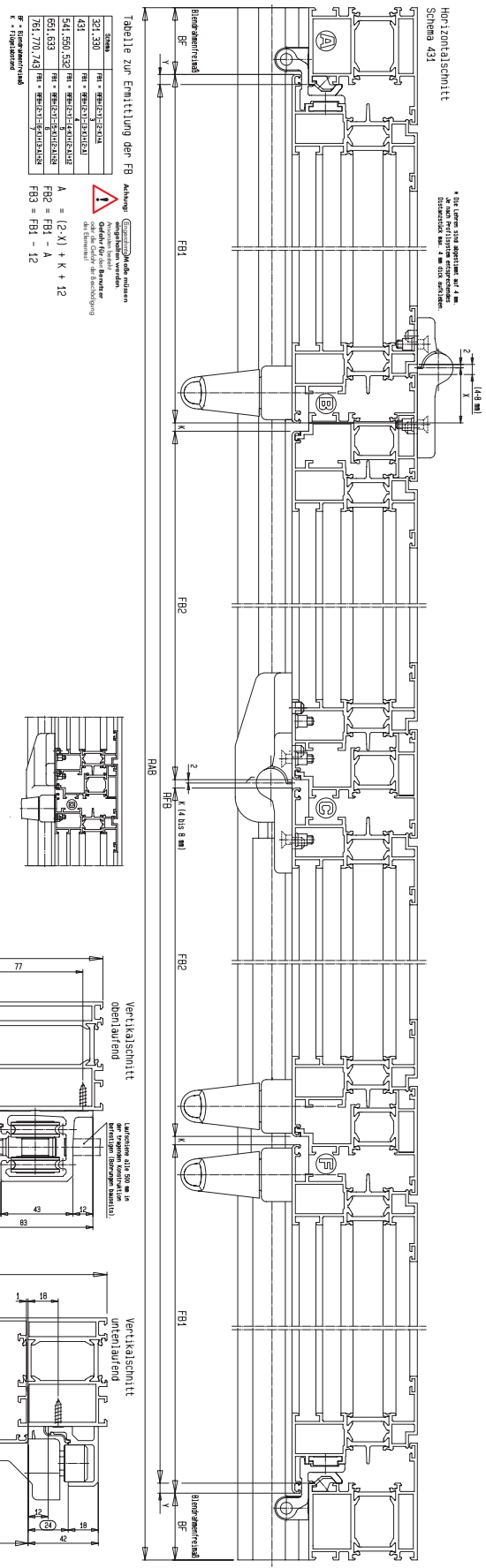
Die Abstände zwischen dem Metallrahmenprofil und dem Glas sind einzuhalten.

Die Abstände zwischen dem Metallrahmenprofil und dem Glas sind einzuhalten.

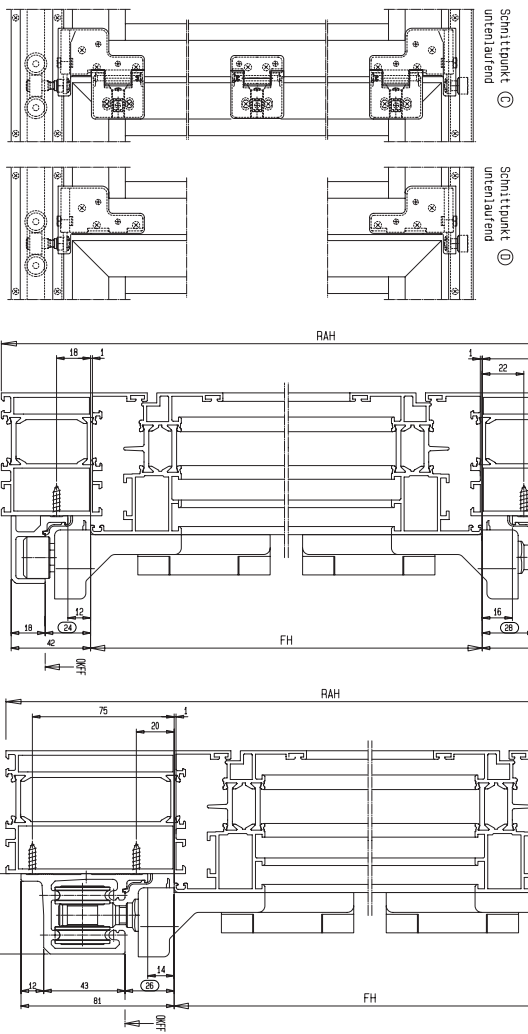
 For PVC elements with 12 mm chamber dimensions, further drawings on request



10.3 Aluminium



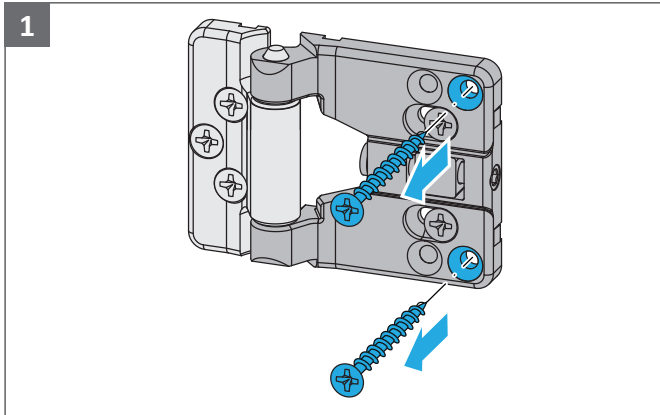
For aluminium elements with eurogroove, further drawings on request



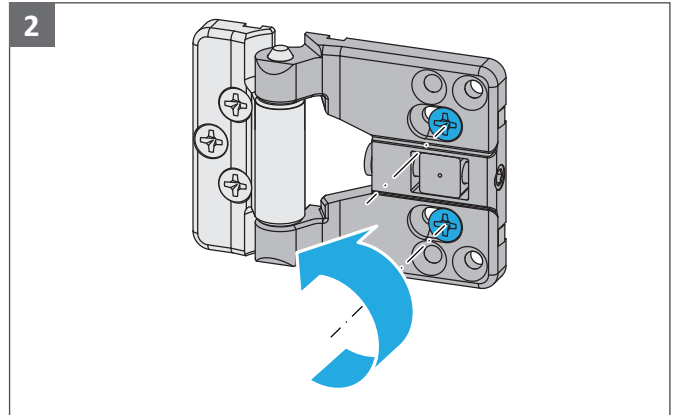
11 Adjustment

11.1 Adjustment of sash hinge

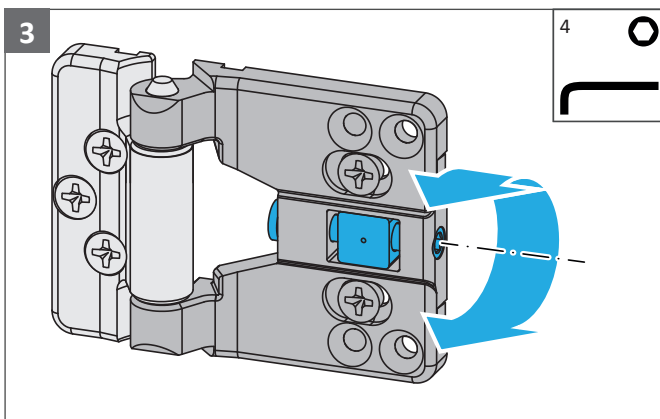
11.1.1 Adjustment of gap width



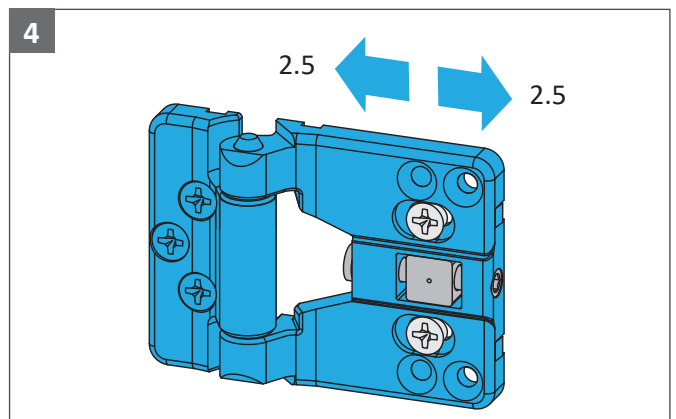
Remove top and bottom fixing screws from the sash hinge.



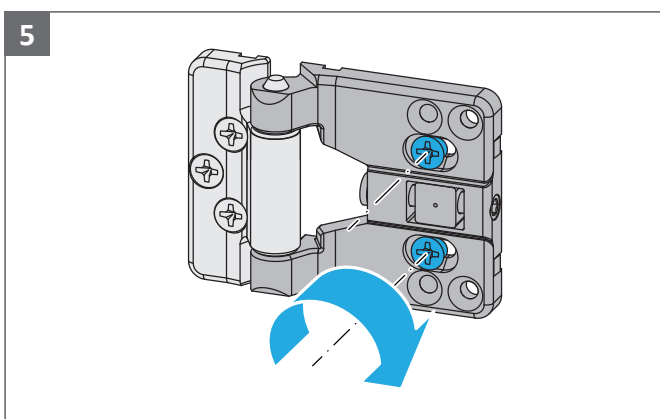
Loosen fixing screws on the wide sash hinge.



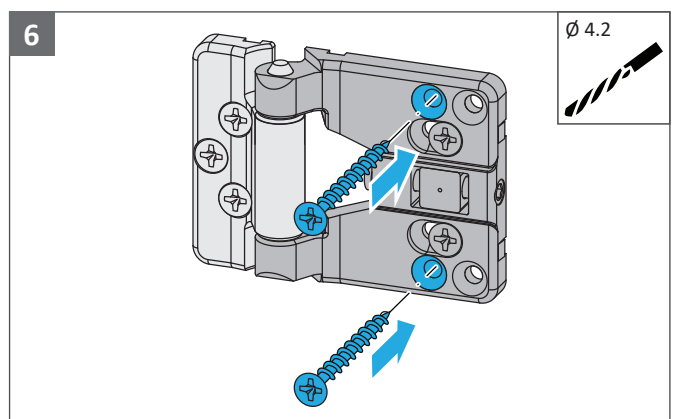
Adjust gap width between the sashes via the hexagon head screw.



Slid sash accordingly. Max. adjustment range 5 mm.



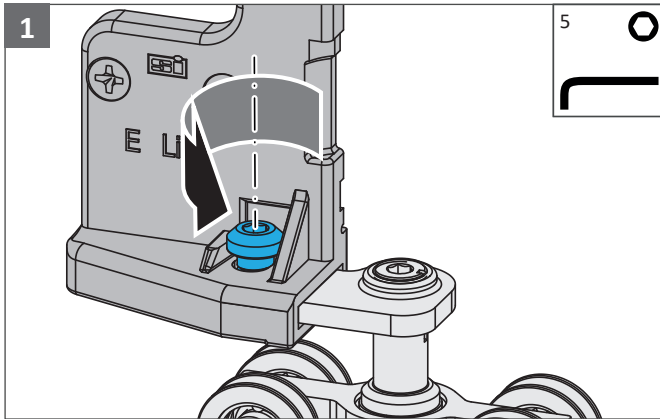
Tighten fixing screws on the sash hinge.



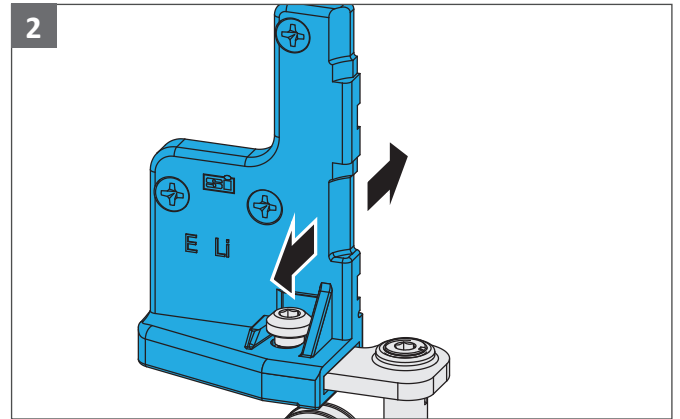
Drill new fixing holes. Retighten top and bottom fixing screws on the sash hinge.

11.2 Bottom hinge

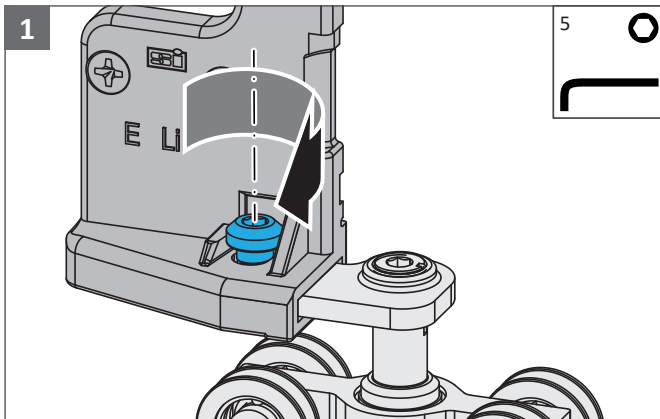
11.2.1 Sash pressure adjustment



Loosen fixing screw at the top and bottom of the bottom hinge.

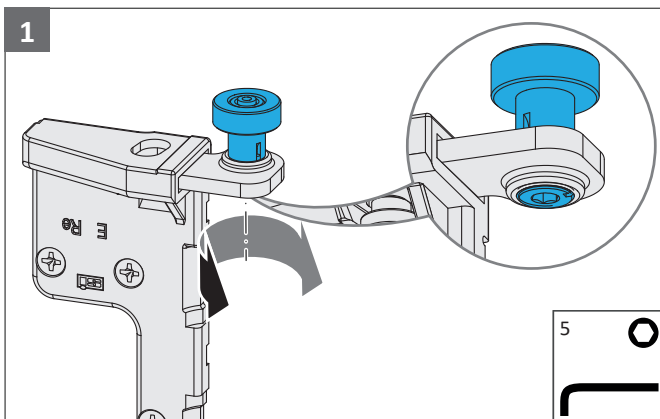


Press sash to the frame or draw away from the frame.

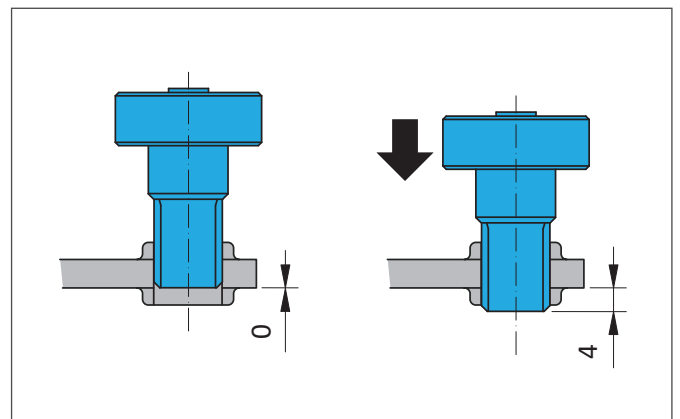


Tighten fixings screw at the top and bottom of the bottom hinge.

11.2.2 Height adjustment of guide

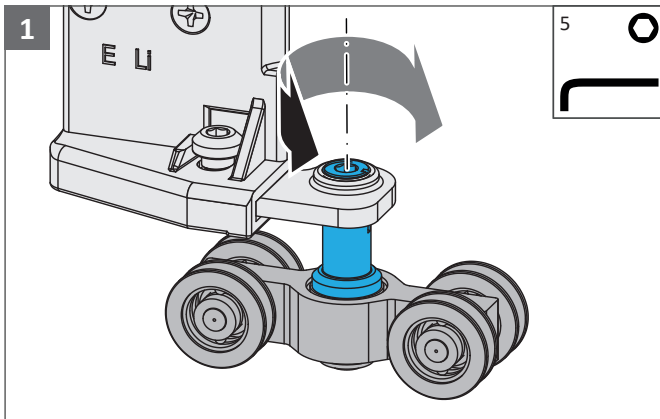


Adjust the height of the guide on the bottom hinge.
Hexagon wrench SW5.

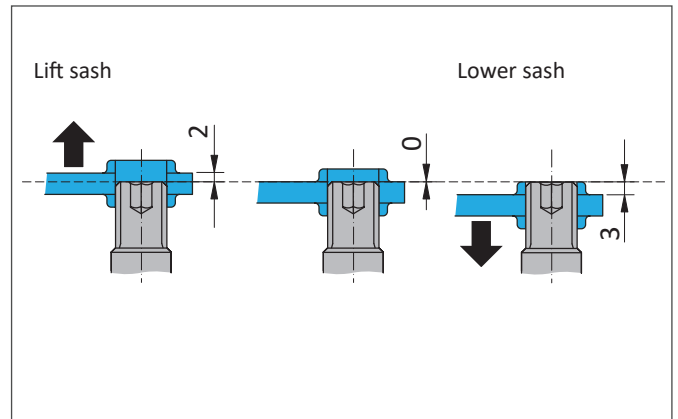


Do not exceed max. adjustment range.

11.2.3 Lifting/lowering the sash



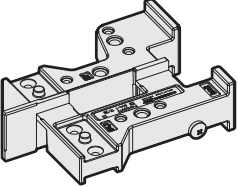
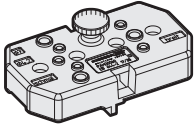
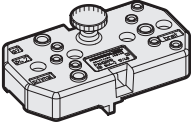
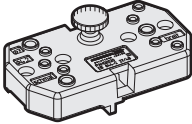
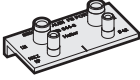
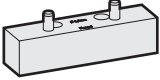
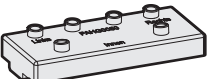
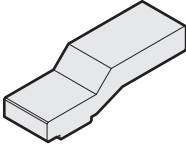
Adjust the height of the guide on the bottom hinge.
Hexagon wrench SW5.



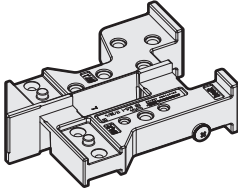
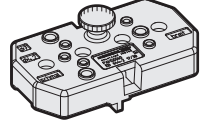
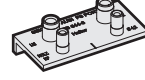
Do not exceed max. adjustment range.

12 Assembly aids

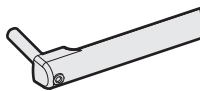
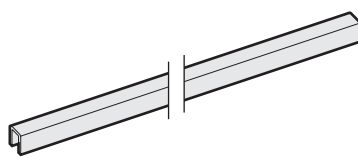

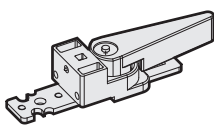
12.1 Jigs for timber or PVC profiles

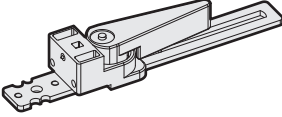

	Material description	Number required	Tooling	Material number
	Jig EB 644-1 17/38 for bottom hinge	2	Drill Ø 7.0 mm Ø 4.2 mm	PAHG0070-52101_
	Jig EB 644-2 17/38 for sash hinge 17/38	1 ... 6	Drill Ø 7.0 mm Ø 4.2 mm	PAHG0060-52101_
	Jig EB 644-2 17/48 for sash hinge 17/48	1 ... 6	Drill Ø 7.0 mm Ø 4.2 mm	PAHG0010-52101_
	Jig EB 644-2 27/48 for sash hinge 27/48	1 ... 6	Drill Ø 7.0 mm Ø 4.2 mm	PAHG0020-52101_
	Jig EB 644-3 For supporting piece FS	1	Drill Ø 4.2 mm	143087
	Jig FS/BS for distance piece BS	1	Drill Ø 6.5 mm	154069
	Jig FS/BS REV timber for drilling mounting holes vertical framing timber	1	Drill Ø 6.5 mm	PAHG0050-0D301_
	Jig REV threshold FS for positioning the thresholds to the frame profile	1		PAHG0040-0D301_

12.2 Jigs for aluminium profiles

	Material description	Number required	Tooling	Material number
	Jig EB 645-1	2		143124
	for bottom hinge		Drill Ø 7.0 mm	
	Jig EB 645-2	2		143131
	for sash hinge		Drill Ø 7.0 mm	
	Jig EB 644-3	1		143087
	For supporting piece FS		Drill Ø 7.0 mm	

12.3 Jig accessories

	Material description	Number required	Tooling	Material number
	Jig EB 644-4	1		143094
	for guiding rail and running rail		Drill Ø 3.5 mm	
	Adjusting rod	2		143117
	for jig EB 644-1 und EB 644-2			
	Adjusting rod stop	2		143100
	if using jigs EB 644-2			
	Clamping device	2		139202
	for jigs EB 644-1 and EB 644-2			

	Material description	Number required	Tooling	Material number
	Clamping device A0089	1		139219
	for jig EB 645-2 for wide profiles			
	Countersunk screw M5x16	4		801147
	for fixing the clamping device to the jig			

13 Maintenance

Maintenance must be carried out on PORTAL FS hardware at least once a year. The maintenance instructions must be observed for this purpose. If the PORTAL FS hardware is regularly exposed to extreme weather conditions, maintenance must be carried out twice a year.

14 Cleaning and maintenance

Only clean the PVC surfaces of the threshold and the sashes and frame elements with a diluted PH-neutral detergent solution.

The dosage guideline is 3 ml cleaner to 5 litre water. Most contamination can be removed with this detergent solution.

Leave the cleaning agent to react for maximum 10 minutes. After every cleaning, rinse the surface thoroughly with clear water.

These cleaners and substances damage the PVC:

- solvent-based cleaners
- chlorine-based cleaners
- acetone-based cleaners or acetone
- ester-based cleaners
- scouring-agent-based cleaners or scouring agents
- chemicals such as nitro-dilution
- benzine, alcohol or similar agents
- aids such as steel or scouring sponges, pan cleaners



The use of cleaning agents with citrus, orange or mint extracts leads to the discolouration of PVC parts!

Notice

We recommend **Cosmofen 10 Cosmo CL-300-120** as another cleaner for the PVC profiles of the threshold.

A non-acidic oil and resin-free oil or care product should be used to lubricate the hardware components. For example: „**WD 40**“

We assume no liability for defects/damage caused by the use of unsuitable cleaning agents.

You can find additional notes on cleaning in the notice sheet „Cleaning and maintenance of PVC windows“ from the German Association for the Quality of PVC window profile systems (in German Gütegemeinschaft Kunststoff-Fensterprofilsysteme e.V.):

https://www.gkfp.en/fileadmin/user_upload/Publikationen/Technische-Leitfaeden-Merkblaetter/MB_ReiniPflege_EN.pdf



Hand out this cleaning information to the end user. And have their receipt confirmed.

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