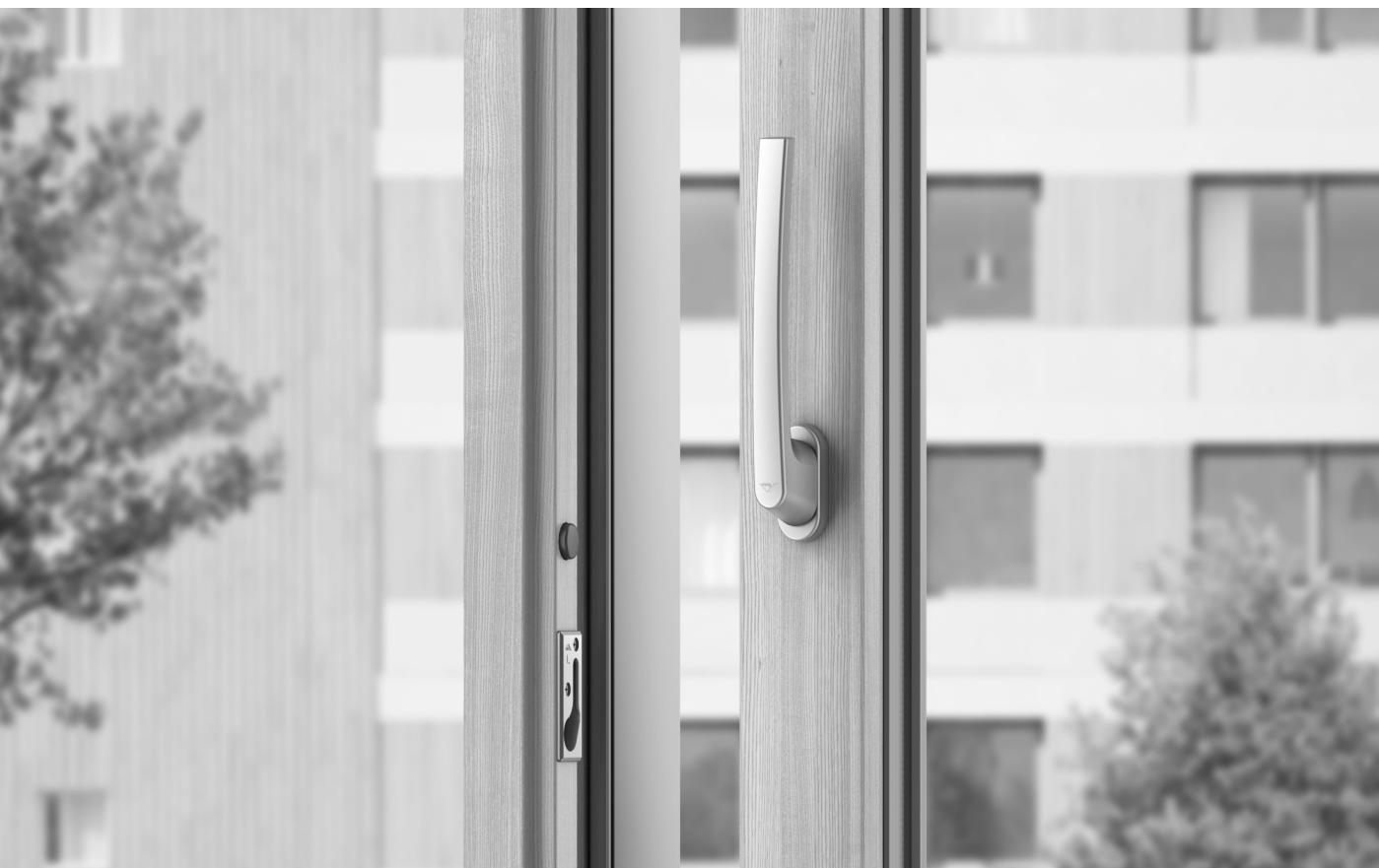




Roto Patio Inowa | Max

Intelligent hardware for tightly sealed sliding systems

Contact

Roto Frank

Fenster- und Türtechnologie GmbH

Wilhelm-Frank-Platz 1
70771 Leinfelden-Echterdingen
Germany
Phone +49 711 7598 0
Fax +49 711 7598 253
info@roto-frank.com
www.roto-frank.com

DEVENTER

Member of Roto Group Profile GmbH
Rauchstraße 42
13587 Berlin
Germany
Phone +49 30 355907 31
www.deventer-profile.com

GUTMANN

Bausysteme GmbH
Nürnberger Straße 57
91781 Weißenburg in Bayern
Germany
Phone +49 171 9115035
www.gutmann.de

Leitz

GmbH & Co. KG
Leitzstraße 2
73447 Oberkochen
Germany
Phone +49 178 5806707
www.leitz.org



1	General information	8
1.1	Version history	8
1.2	Instructions	8
1.3	Symbols	9
1.4	Pictographs	10
1.5	Product features	11
1.6	Abbreviations	12
1.7	Target groups	13
1.8	Target groups' obligation to give instructions	13
1.9	Copyright protection	14
1.10	Limitation of liability	14
1.11	Preserving the surface finish	15



2	Security	16
2.1	Presentation and structure of warning instructions	16
2.2	Security levels of warning instructions	16
2.3	Stipulated use	16
2.3.1	Misuse	17
2.3.2	Usage restriction	17
2.4	Stipulated use for end users	17
2.4.1	Misuse	18
2.5	Basic safety information	18
2.5.1	Installation	18
2.5.2	Use	19
2.5.3	Ambient conditions	20
2.6	Operation	20



3	Information on the product	22
3.1	General hardware characteristics	22
3.2	Application ranges	22
3.3	Application diagrams	23
3.3.1	400 kg	23
3.4	Profile sections	24
3.4.1	Horizontal cross section	24
3.4.2	Vertical cross section	27

	3.5	Design variants	33
	3.5.1	Overview	33
	3.6	Hardware groove dimensions	33
	3.7	Dimensions of the roller track	34
	3.8	Component dimensions	34
	4	Hardware overviews	36
	4.1	Diagram A, K	38
	4.2	Diagram A, K RC 2 / RC 2 N	44
	4.3	Diagram C	50
	5	Jigs / tools	56
	5.1	Drilling jigs	56
	5.1.1	Roller unit / stabilisation unit/ control unit	56
	5.1.2	Centre closer	56
	5.1.3	Strikers	56
	5.1.4	Drilling aid	57
	5.1.5	Threshold	57
	5.2	Positioning jigs	57
	5.2.1	Activator	57
	5.2.2	Stopper	58
	5.2.3	Pivot clip holders	58
	5.3	Tools	58
	5.3.1	Hex key	58
	5.3.2	Extractor handle	59
	5.3.3	Tensioning tool	59
	5.4	Punches	60
	5.4.1	Pneumatic punch – PS 100	60
	5.4.2	Hydropneumatic punch – DUO	61
	6	Accessories	62
	6.1	Control unit set with Soft function	62
	6.2	Activator spare part for control unit with Soft function	63
	6.3	Rubber buffer	64
	6.4	End stop with packer	64
	6.5	Label	65



7 Brief instructions 67

7.1	Diagram A, K	67
-----	--------------	----



8 Installation 69

8.1	Processing instructions	69
8.2	Screw connections	70
8.2.1	Overview	71
8.3	Drilling and routing dimensions	72
8.3.1	VT espagnolette	72
8.3.2	VT espagnolette, lockable	73
8.3.3	External recessed grip	73
8.3.4	Striker, can be routed in	74
8.3.5	Rubber buffer	74
8.4	Sash	75
8.4.1	Force-fit connection	75
8.4.2	Cropping the hardware components	76
8.4.3	Installation sequence	77
8.4.4	Corner drive	78
8.4.5	Centre locks	78
8.4.6	VT espagnolette	79
8.4.7	Handle and recessed grip	80
8.4.8	Roller unit	81
8.4.9	Stabilisation unit	83
8.4.10	Control unit	84
8.4.11	Centre closer	86
8.4.12	Centre closer for anti-pushback function	88
8.4.13	Rubber buffer	90
8.4.14	Sealing component	91
8.4.15	Sash sealing elements	92
8.4.16	Components in the floating mullion	93
8.4.17	Striker, diagram C	94
8.4.18	Installing the operating sequence control	95
8.5	Frame	96
8.5.1	Gasket strip (IV78 timber / IV92 timber)	96
8.5.2	Operator track	97

8.5.3	Compensation profile	99
8.5.4	Threshold	101
8.5.5	Pivot clip holders	103
8.5.6	Sealing elements	104
8.6	Joining the sash and frame	107
8.6.1	Inserting the sash	108
8.6.2	Frame component positions	110
8.6.3	MUL striker	114
8.6.4	SEC MUL striker	115
8.6.5	Striker for anti-pushback function	117
8.6.6	Activator and packer	118
8.6.7	Tensioning the control unit with soft function	122
8.6.8	End stop with packer	123
8.6.9	Operator track stopper	123
8.6.10	Rubber buffer	124
8.6.11	Anti-slip protection	125
8.6.12	Weather profile strip (IV 78 timber)	126
8.6.13	Notes on final assembly	126
	9 Installation drawings	128
9.1	Explanation	128
9.2	Diagram A, K	129
9.3	Diagram A, K RC 2 / RC 2 N	130
9.4	Diagram C	131
	10 Adjustment	132
10.1	Striker	132
10.2	Adjusting the locking cam	133
10.3	Mullion locking cam – adjustable	134
10.4	Roller unit	135
	11 Operation	136
11.1	Operating information	136
11.1.1	Roto Patio Inowa	136
11.2	Fault assistance	136

**12 Maintenance 137**

12.1	Maintenance intervals	137
12.2	Cleaning	138
12.3	Care	138
12.3.1	Roto Patio Inowa	139
12.4	Performance test	139
12.5	Repair	140

**13 Dismantling 141**

13.1	Unhinging the sash	141
13.2	Hardware components	142

**14 Transport 143**

14.1	Transporting elements and hardware	143
14.2	Storing the hardware	144

**15 Disposal 145**

15.1	Disposing of packaging	145
15.2	Disposing of hardware	145

1 General information

1.1 Version history

Ver- sion	Date	Changes
v0	14/09/2021	
v1	04/03/2024	<p>Application ranges changed.</p> <p>Diagram K added.</p> <p>Seal set lengths and material no. changed.</p> <p>Diagram A RC 2 and diagram C added → <i>from page 44</i>.</p> <p>Installation sequence changed.</p> <p>Components in the floating mullion added → <i>from page 93</i>.</p> <p>Installation of operating sequence control added → <i>from page 95</i>.</p> <p>Position dimension for rubber buffer changed → <i>from page 90</i>.</p> <p>Seal added in the area of the fixed panel at the bottom of the frame → <i>from page 101</i>.</p> <p>Installation of RC 2 components added → <i>from page 115</i>.</p> <p>Frame component positions changed → <i>from page 110</i>.</p> <p>Installation of activator changed → <i>from page 118</i>.</p> <p>Installation drawings changed and added → <i>from page 128</i>.</p> <p>Adjustment "Adjusting the locking cam" added → <i>from page 133</i>.</p>

1.2 Instructions

This manual contains important information, instructions, application diagrams (max. sash sizes and weights) and assembly instructions for the installation, maintenance and operation of hardware.

The information and instructions contained in this document refer to products belonging to the Roto hardware system named on the front page.

All steps must be completed in sequence.

The following documents apply in addition to these instructions:

- Handles catalogue: CTL_1

Documents from other manufacturers

- Gaskets from **DEVENTER**:
 - DEVENTER catalogue
 - Processing instructions for Roto Patio Inowa sealing profiles (available upon request)
- Profile and profile-specific components from **GUTMANN MIRA contour**:
 - Sliding system catalogue. GUTMANN MIRA contour INOWA
- Profile machining tools from **leitz**:
 - leitz catalogue

The following guidelines also apply:

Gütegemeinschaft Schlösser und Beschläge e.V.

- Directive TBDK: Attachment of supporting fitting components for turn-only and tilt&turn fittings
- Directive VHBE: Hardware for windows and balcony doors – Guidelines/ advice for end-users
- Directive VHBH: Hardware for windows and balcony doors – Guidelines/ advice on the product and on liability

VFF (German Window and Facade Association)

- TLE.01: Correct handling of ready-to-install windows and external doors during transport, storage and installation
- WP.01: Maintenance of windows, facades and external doors – Maintenance, care and inspection – Information for sales
- WP.02: Maintenance of windows, facades and external doors – Maintenance, care and inspection – Measures and documents
- WP.03: Maintenance of windows, facades and external doors – Maintenance, care and inspection – Maintenance agreement

Additional guidelines

- Instructions and information issued by profile manufacturers, e.g. manufacturers of windows and balcony doors
- Instructions and information issued by screw manufacturers
- The applicable regulations, directives and national laws

Storing the instructions

These instructions are an important part of the product. The instructions must be stored so that they are always to hand.

Explanation of the markings

The manual uses the following markings for emphasis (e.g. in figures or instructions):

Marking	Meaning
	Optional / alternative components seated in the sash
	Sash / components seated in the sash
	Optional / alternative components seated in the frame
	Frame / components seated in the frame
	Drill holes, routing, screw positions
	Unaffected components / indirectly affected components
	Components, arrows or movements that have just been described
	Item number
[1]	Legend
[A]	Steps



INFO

Any dimensions without a unit in the instructions are given in millimetres (mm). Other units of measurement are clearly indicated by the presence of the differing unit.



INFO

Figures are provided in the left-hand version. The process for the right-hand version is mirror-inverted.

1.3 Symbols

Symbol	Meaning
■	First-level list
□	Second-level list
→	(Cross-)reference

Symbol	Meaning
▷	Result
►	Unnumbered step
1.	Numbered step
a.	Numbered second-level step
⇒	Requirement

1.4 Pictographs

Symbol	Meaning
	Timber-aluminium
	Sash rebate width
	Sash rebate height
	Sash weight
	Moving the handle position vertically upwards to the open sliding position
	Moving the handle position vertically downwards to the closed position
	Closed position
	Sash handle height
	Left of sash
	Top of sash
	Top right and bottom right of sash
	Top and bottom of sash
	Top left and right and bottom left and right of sash
	Right of sash
	Bottom of sash
	Left of frame
	Top left of frame
	Top of frame, mullion
	Top right of frame
	Bottom of frame



Symbol	Meaning
	Bottom left of frame
	Bottom of frame: left, mullion, right
	Bottom of frame, mullion

1.5 Product features

Symbol	Meaning
	Order quantity
	Description
	Width
	Call-out
	Backset
	Left / right version
	Colour
	Colour code, Roto
	Sash rebate width
	Sash rebate height
	Sash weight
	Fixed handle height
	Height
	Information
	Coupling dimension
	Couplable

Symbol	Meaning
	Length
	Material
Nº	Material number
	Installation type
	Position
	Profile system
	Number of locking cams
	Type of locking cams
#	Piece(s)

1.6 Abbreviations

Abbreviation	Meaning
approx.	approximately
CTL	Catalogue
L	Left-hand version
R	Right-hand version
BS	Backset
E	E cam
IMO	Installation instructions
SRW	Sash rebate width
SRH	Sash rebate height
S.kg	Sash weight
K	K cam
KU	Couplable
kg	Kilograms
KSR	Vertical tilting
L	Length
Max.	Maximum
MUL	Mullion
Min.	At least
mm	Millimetres
CL	Centre lock
Nm	Newton metres
Not sh.	Not shown
FIW	Frame internal width
Pc. / pcs	Piece(s)
V	V cam
e.g.	For example

1.7 Target groups

The information in this document is directed at the following target groups:

Hardware dealers

The “hardware dealers” target group includes all companies and individuals that purchase hardware from hardware manufacturers for resale, without modifying or further processing the hardware.

Window and balcony door manufacturers

The “window and balcony door manufacturers” target group includes all companies and individuals that purchase hardware from hardware manufacturers or hardware dealers and further process the hardware by integrating it in windows and balcony doors.

Building element dealers or installation companies

The “building element dealers or installation companies” target group includes all companies and individuals that purchase windows and balcony doors from window and balcony door manufacturers for resale and for installation in construction projects, without modifying the windows or balcony doors.

Builders

The “builders” target group includes all companies and individuals who place orders for the manufacture of windows and balcony doors for installation in their construction projects.

End users

The “end users” target group includes all individuals who use the installed windows and balcony doors.

1.8 Target groups’ obligation to give instructions



INFO

Each target group must fulfil their obligation to give instructions in full.

Unless specified otherwise in the text below, documents and information can be passed on as a printed document, on a data storage device or via the Internet.

Responsibility of hardware dealers

Hardware dealers must pass the following documents on to the window and balcony door manufacturer:

- Catalogue
- Installation, maintenance and operation instructions
- Directive on attachment of supporting fitting components for turn-only and tilt&turn fittings (TBDK)
- Guidelines/advice on the product and on liability (VHBH)
- Guidelines/advice for end-users (VHBE)

Responsibility of the window and balcony door manufacturer

The window and balcony door manufacturer must pass the following documents on to building element dealers or the builder, even if a subcontractor (installation company) is involved:

- Installation, maintenance and operation instructions
- Directive on attachment of supporting fitting components for turn-only and tilt&turn fittings (TBDK)
- Guidelines/advice on the product and on liability (VHBH)

- Guidelines/advice for end-users (VHBE)

They must ensure that the end users are provided with the documents and information intended for them in printed format.

Responsibility of building element dealers and the installation company

Building element dealers must pass the following documents on to the builder, even if a subcontractor (installation company) is involved:

- Installation, maintenance and operation instructions (with a focus on hardware)
- Guidelines/advice on the product and on liability (VHBH)
- Guidelines/advice for end-users (VHBE)

Responsibility of the builder

The builder must pass the following documents on to the end user:

- Installation, maintenance and operation instructions (with a focus on hardware)
- Guidelines/advice for end-users (VHBE)

1.9 Copyright protection

The contents of this document are copyright-protected. This content can be used when working with the hardware. Any other use is not permitted without written permission of the manufacturer.

1.10 Limitation of liability

All information and instructions contained in this document have been compiled in consideration of the applicable standards and regulations, the latest developments in technology and many years of knowledge and experience.

The hardware manufacturer assumes no liability for damage caused by:

- Failure to comply with this document and all product-specific documents and other applicable directives (see the chapters entitled "Security" and "Stipulated use").
- Improper use / misuse (see the chapters entitled "Security" and "Stipulated use").
- Insufficient invitation to tender, non-compliance with installation specifications and non-compliance with the application diagrams (where available).
- Increased contamination.

Claims made by third parties against the hardware manufacturer on account of damage resulting from misuse or failure to comply with the obligation to give instructions on the part of hardware dealers, window, door and balcony door manufacturers and building element dealers or the builder are passed on accordingly.

The obligations agreed in the delivery contract, the general terms and conditions, the hardware manufacturer's terms and conditions of delivery and the legal provisions applicable when the contract was concluded shall apply.

The warranty only covers original Roto components.

We reserve the right to make technical changes as part of improvement to performance characteristics and further development.

1.11 Preserving the surface finish



ATTENTION

Surface treatments may cause property damage.

Surface treatments (e.g. painting and varnishing) on elements can damage components or prevent them from working properly.

- ▶ For masking, only use adhesive tape that does not damage the paint coats. Consult the manufacturer if in doubt.
- ▶ Protect components against direct contact with the surface treatment.
- ▶ Protect components against contamination.



ATTENTION

Using incorrect cleaning agents and sealing compounds may cause property damage.

Cleaning agents and sealing compounds may damage the surfaces of components and gaskets.

- ▶ Do not use aggressive or flammable liquids, acidic cleaners or abrasive cleaners.
- ▶ Only use mild, pH-neutral cleaning agents that have been diluted.
- ▶ Apply a thin protective film to the components, for example using a cloth soaked in oil.
- ▶ Avoid aggressive vapours (e.g. produced by formic acid, acetic acid, ammonia, amine compounds, ammonia compounds, aldehyde, carboric acid, chlorine, tannic acid) around the element.
- ▶ Do not use any acetic acid-crosslinking or acid-crosslinking sealing compounds or those with the aforementioned constituents as both direct contact with the sealing compound and its fumes can corrode the surface of the components.



ATTENTION

Contamination may cause property damage.

Contamination prevents components working properly.

- ▶ Remove deposits and contamination caused by construction materials (e.g. plaster, gypsum).
- ▶ Keep components free of deposits and contaminants.



ATTENTION

(Permanently) damp room air may cause property damage.

Damp room air can lead to mould growth and corrosion caused by condensation.

- ▶ Provide adequate ventilation for components, particularly during the construction phase.
- ▶ Intensively air out the room several times per day by opening all elements for approximately 15 minutes. If intensive airing is not an option, place the elements in the tilt position and provide airtight masking inside the room, e.g. if there is fresh screed that cannot be walked on or must not be exposed to draughts. Discharge any humidity present in the room air to the outside using condensation dryers.
- ▶ Establish a ventilation plan for more complex construction projects if necessary.
- ▶ Provide adequate ventilation during holiday periods as well.

2 Security

This manual contains instructions relating to safety. The principal safety information in this chapter includes information and instructions relevant to the safe use or maintaining the safe condition of the product. Warning instructions that relate to handling warn of residual risks and are located before steps that are relevant to safety.

- Follow all of the instructions in order to prevent personal injury and property and environmental damage.

2.1 Presentation and structure of warning instructions

The warning instructions relate to individual actions and are structured as follows with a warning symbol:



DANGER

Nature and source of the danger.

Explanation and description of the danger and the implications.

- Measures to take to avert the danger.

2.2 Security levels of warning instructions

The warning instructions that relate to handling are identified differently according to the severity of the associated danger. The signal words and the associated warning symbols used are clarified below.



DANGER

Immediate risk of death or serious injuries.

- Observe these warning instructions to avoid personal injuries.



WARNING

Potential risk of death or serious injuries.

- Observe these warning instructions to avoid personal injuries.



CAUTION

Risk of injuries

- Observe these warning instructions to avoid personal injuries.



ATTENTION

Reference to property or environmental damage.

- Observe these warning instructions to avoid property or environmental damage.

2.3 Stipulated use

The hardware system described in these instructions is intended for installation in sliding sashes in windows and balcony doors. The hardware system is only intended for further processing on windows and balcony door sashes for vertical installation made from the materials described in these instructions. The hardware system opens sashes in windows and balcony doors and closes them tightly.

Stipulated use also includes compliance with all safety information and specifications contained in these instructions, the other applicable documents and the applicable regulations, directives and national laws.



2.3.1 Misuse

Any use and processing of the products that goes beyond or differs from the stipulated use is considered misuse and can lead to hazardous situations.



WARNING

Misuse may pose a risk of death!

Misuse and incorrect installation of hardware can lead to serious injuries.

- ▶ Only use hardware combinations that have been approved by the hardware manufacturer.
- ▶ Only use original accessories or those that have been approved by the hardware manufacturer.
- ▶ Note the product-related documentation → *from page 8*.

2.3.2 Usage restriction

Opened sashes in windows and balcony doors, and windows and balcony door sashes that are unlocked or placed in ventilation positions, only have a shielding effect. They do not meet the following requirements:

- Joint sealing
- Driving rain impermeability
- Sound insulation
- Thermal insulation
- Burglary inhibition

2.4 Stipulated use for end users

On windows or balcony doors with sliding hardware, window sashes or balcony door sashes can be moved horizontally or vertically by operating a handle.

On special structures, various sashes can additionally be brought into a turn position and / or into a tilt position restricted by the scissor stay version.

When closing a sash and locking the hardware, the gasket counter force must generally be overcome.



WARNING

Opening and closing sashes in an uncontrolled manner may pose a risk of fatal injury!

Opening and closing the sash in an uncontrolled manner may lead to serious injuries.

- ▶ Ensure that the sash does not collide with the frame, opening restrictor (buffer) or other sashes when it is moved into the fully open or closed position.
- ▶ Ensure that the sash is slowly guided by hand throughout its entire movement range, until it has been brought into a fully closed or opening position.
- ▶ Ensure that the sash coverage at the top is so large that the sash is prevented from falling out, even if the window or hardware components is / are operated incorrectly.



ATTENTION

Opening and closing sashes in an uncontrolled manner may result in property damage.

Opening and closing the sash in an uncontrolled manner may cause the element to malfunction.

- ▶ Ensure that the sash does not collide with the frame, opening restrictor (buffer) or other sashes when it is moved into the fully open or closed position.
- ▶ Ensure that the sash is slowly guided by hand throughout its entire movement range, until it has been brought into a fully closed or opening position.

Any use and processing of the products that goes beyond or differs from the stipulated use is considered misuse and can lead to hazardous situations.

No claims of any kind can be made on account of damage resulting from failure to comply with the stipulated use.

2.4.1 Misuse

Any use and processing of the products that goes beyond or differs from the stipulated use is considered misuse and can lead to hazardous situations.



WARNING

Misuse may pose a risk of death!

Misuse and incorrect installation of hardware can lead to serious injuries.

- ▶ Only use hardware combinations that have been approved by the hardware manufacturer.
- ▶ Only use original accessories or those that have been approved by the hardware manufacturer.
- ▶ Note the product-related documentation → *from page 8*.

2.5 Basic safety information

The following hazards may arise when handling the product:

2.5.1 Installation

Incorrect installation poses an immediate risk of death or serious injuries.

Incorrect installation or assembly of hardware can lead to hazardous situations or property damage. Depending on the height of the fall, this can result in serious to life-threatening injuries and glass breakage.

- ▶ Only use hardware combinations that have been approved by the hardware manufacturer.
- ▶ Only use original accessories or those that have been approved by the hardware manufacturer.
- ▶ Always have installation performed by a specialist company.

Heavy loads pose a risk of injury.

Lifting and carrying heavy loads may lead to injuries in the event of a fall or physical overexertion.

- ▶ Note the applicable accident prevention regulations.



- ▶ Transport heavy loads with two people and use suitable transportation means (such as an industrial truck).

Physical overexertion may be harmful to health.

Moving heavy loads for extended periods leads to physical injury in the long term.

- ▶ When carrying and lifting by hand, comply with a maximum weight of 25 kg for men and 10 kg for women.
- ▶ Carry and lift even small loads with an ergonomically correct posture.

2.5.2 Use

Falls from open windows and balcony doors present an immediate risk of death and pose the risk of serious injuries.

Opened sashes of windows and balcony doors create a danger zone. Depending on the height of the fall, this can result in serious to life-threatening injuries and glass breakage.

- ▶ Take care when in the vicinity of open windows and balcony doors.
- ▶ Keep children and anyone unable to understand the risks away from the hazardous area.

Trapping body parts in the opening between sash and frame may lead to serious injuries.

Gripping between the sash and frame when closing windows and balcony doors poses the risk of crushing injuries.

- ▶ When closing windows and balcony doors, never grip between the sash and frame and always exercise caution.
- ▶ Keep children and anyone unable to understand the risks away from the hazardous area.

Opening and closing leaves improperly poses the risk of injury and property damage.

Incorrect opening and closing of leaves can result in serious injuries and substantial property damage.

- ▶ When moving the sash, ensure that it will not slam against the frame or other leaves once fully opened or closed.
- ▶ Ensure that the sash is slowly guided by hand throughout its entire movement range, until it has been brought into a fully closed or opening position.
- ▶ When closing a sash and locking the hardware, the gasket counter force must be overcome.

Misuse poses a risk of injury and property damage.

Misuse can lead to hazardous situations and may destroy the hardware, frame materials or other individual components within the windows or balcony doors.

- ▶ Do not introduce any obstacles in the opening area between the frame and window or balcony door sashes.
- ▶ Do not place additional loads on windows and balcony door sashes.
- ▶ Refrain from intentionally or uncontrollably slamming or pushing the window or balcony door sash against the window reveal or the opening restrictor.

Improper maintenance poses the potential risk of injury and property damage.

Windows and balcony doors, including the hardware, require expert maintenance (care, cleaning, maintenance and inspection) in order to guarantee their proper condition and safe use.

- ▶ Keep the hardware free of deposits and contaminants.

- ▶ Carry out care and cleaning tasks as specified in these instructions.
- ▶ Always have regular maintenance, adjustment and repair work carried out by a specialist company.

2.5.3 Ambient conditions

Physical and chemical influences may result in property damage.

Hardware components can be permanently damaged in a saline, aggressive or corrosive environment to the point that they can no longer function.

- ▶ Do not use the hardware components in a saline, aggressive or corrosive environment.
- ▶ Carry out care and cleaning tasks as specified in these instructions.
- ▶ Corrosion protection must be inspected by an authorised specialist company as part of regular maintenance work.

Moisture may cause property damage.

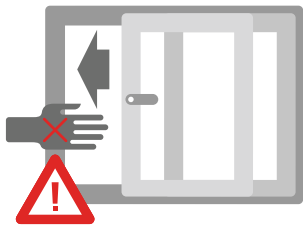
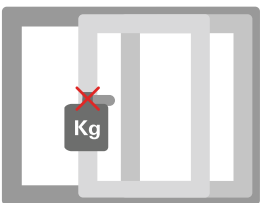
Depending on the outside temperature, relative humidity of the room air and installation situation of the windows and balcony doors, a temporary build-up of condensation may occur. This can lead to corrosion on the hardware and mould growth on the frame or wall. Ambient conditions that are too damp, particularly during the construction phase, can lead to timber elements warping.

- ▶ Avoid preventing the circulation of air (e.g. due to deep reveals, curtains and unfavourable positioning of heaters or the like).
- ▶ Intensively air out the room several times per day.
 Open all windows and balcony doors for approximately 15 minutes so that the air in the room can be completely replaced.
- ▶ Provide adequate ventilation during holiday periods as well.
- ▶ Create a ventilation plan for construction projects if necessary.

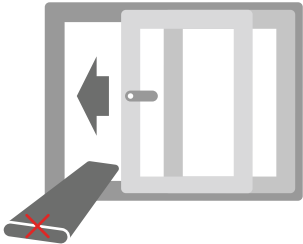
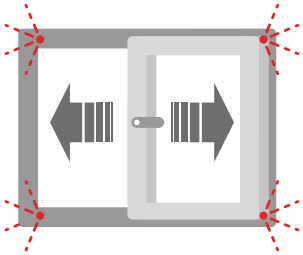
2.6 Operation

The safety symbols and markings and the associated warning instructions explained below apply to the safe operation of windows and balcony doors.

Safety symbols and markings

Symbol	Meaning
	<p>Falls from open windows and balcony doors present an immediate risk of death and pose the risk of serious injuries.</p> <p>Take care when in the vicinity of open windows and balcony doors.</p> <p>Keep children and anyone unable to understand the risks away from the hazardous area.</p>
	<p>Trapping body parts in the opening between sash and frame may lead to serious injuries.</p> <p>When closing windows and balcony doors, never grip between the sash and frame and always exercise caution.</p> <p>Keep children and anyone unable to understand the risks away from the hazardous area.</p>
	<p>Placing additional loads on the sash may lead to minor injuries and property damage.</p> <p>Do not place additional loads on windows and balcony door sashes.</p>



Symbol	Meaning
	<p>Introducing obstacles into the opening between sash and frame may result in minor injuries and property damage.</p> <p>Do not introduce any obstacles in the opening area between the frame and window or balcony door sashes.</p>
	<p>Opening and closing the sash in an uncontrolled manner may result in minor injuries and property damage.</p> <p>Ensure that the sash is slowly guided by hand throughout its entire movement range, until it has been brought into a fully closed or opening position.</p>

3 Information on the product

3.1 General hardware characteristics

- Concealed hardware
- Innovative closing movement perpendicular to the frame profile
- Circumferential gasket
- Even heavy sashes can be opened and closed with less effort because the handle is easy to use.
- Active locking points including in the mullion.
- Control unit with Soft function:
 - SoftClose (damped closing)
 - SoftOpen (damped opening)
 - SoftStop on the espagnolette side (damps in the locking direction)
 - SoftStop on the mullion side (damps in the opening direction)

3.2 Application ranges

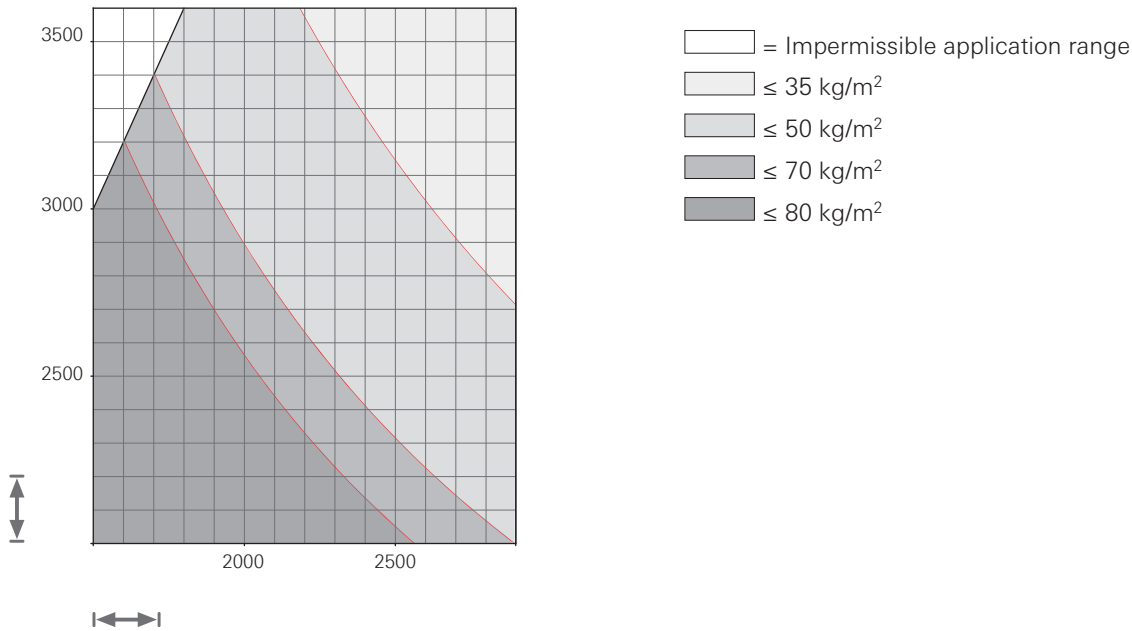
- The sash runs within the frame profile with a retracting distance of 8 mm.
- Narrow profile views possible
- SRW 710 mm – 2940 mm, exceptions:
 - Diagram A: 2 control units with Soft function SRW 920 mm – 2940 mm
 - Diagram K / C: SRW 710 mm – 1467 mm
 - Diagram K / C: 2 control units with Soft function SRW 920 mm – 1467 mm
- SRH 710 mm – 3600 mm, exceptions:
 - Diagram C: SRH 735 mm – 2935 mm
- S.kg up to max. 400 kg
- Design variant:
 - A (running inward)
 - K (running inward)
 - C (running inward)
- Basic security and RC 2 / RC 2 N resistance class
- Operating range -20 °C to +80 °C



3.3 Application diagrams

3.3.1 400 kg

SRH:SRW = max. 2:1



The specifications in the application diagram refer to the glass weight in kg/m².

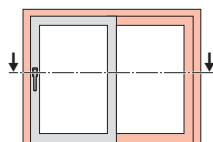
1 mm/m² glass thickness ≈ 2.5 kg

Application range		
	Sash rebate width (SRW)	710 – 2940 mm
	Sash rebate height (SRH)	600 – 3600 mm
	Sash weight (S.kg)	Max. 400 kg
–	Glass weight	Max. 80 kg/m ²

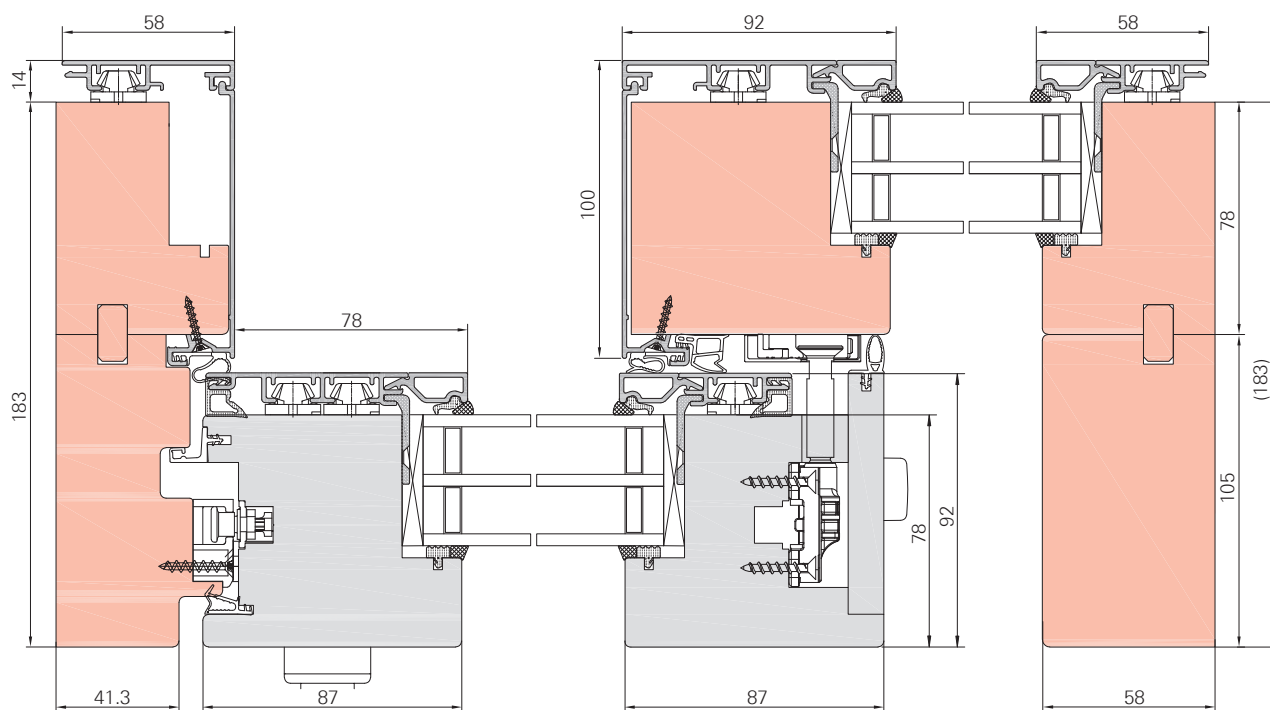
3.4 Profile sections

3.4.1 Horizontal cross section

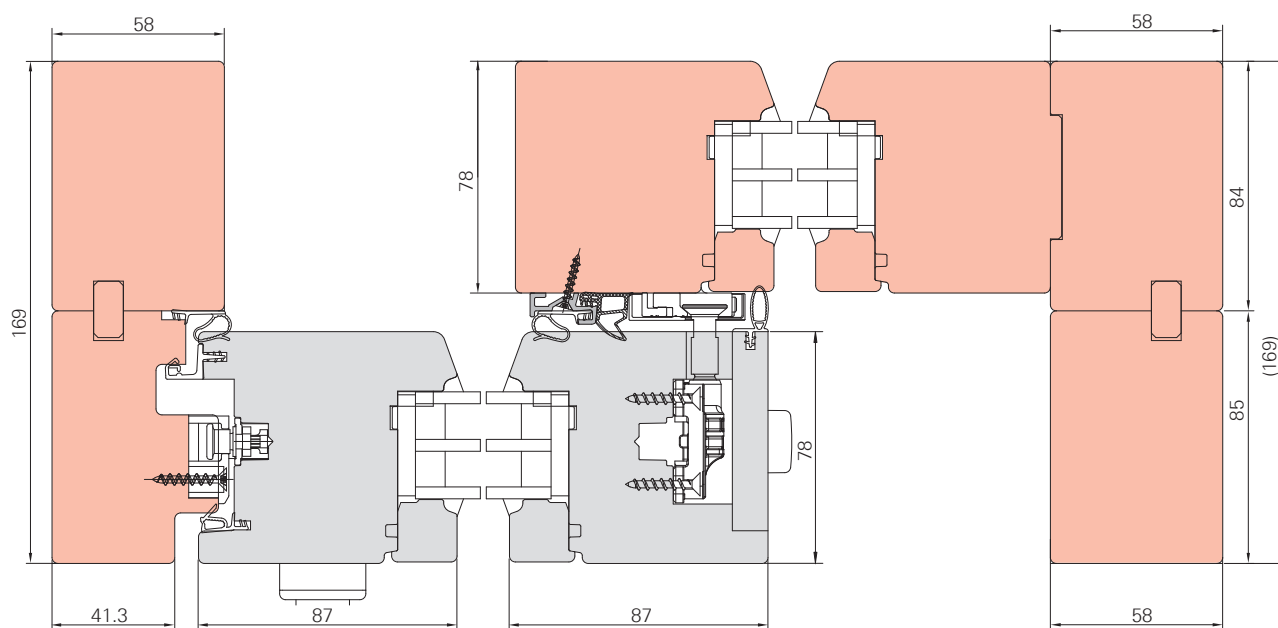
Diagram A



IV78 timber-aluminium



IV78 timber





IV92 timber

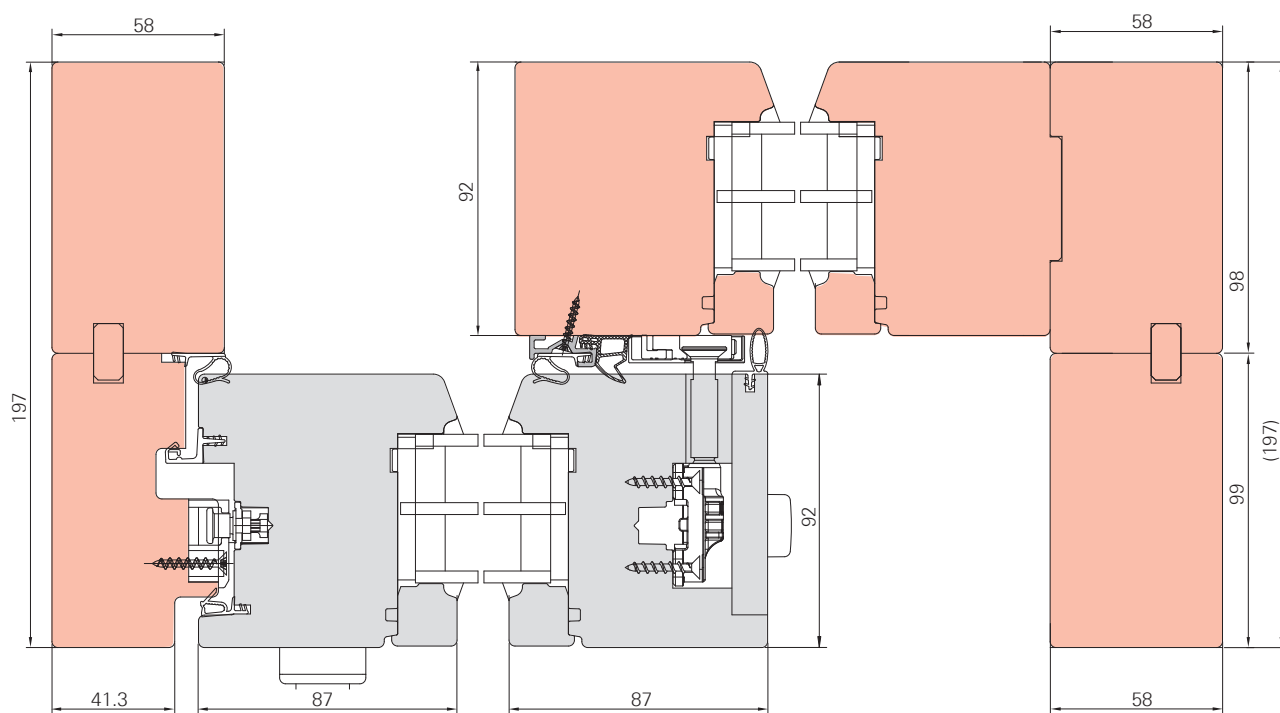
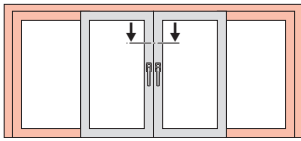
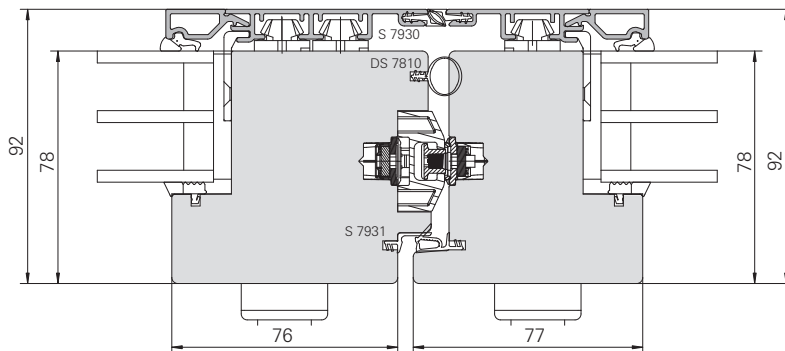


Diagram C

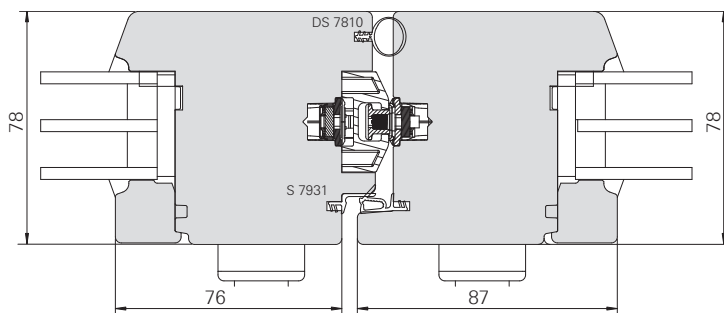
Request seals, with the specified descriptions, from Deventer directly.



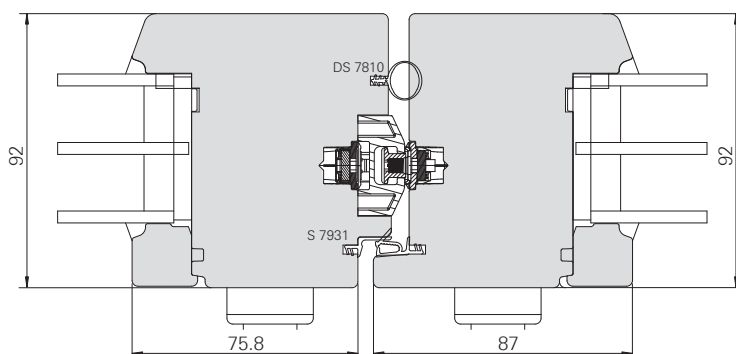
IV78 timber-aluminium



IV78 timber

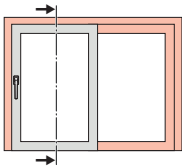


IV92 timber

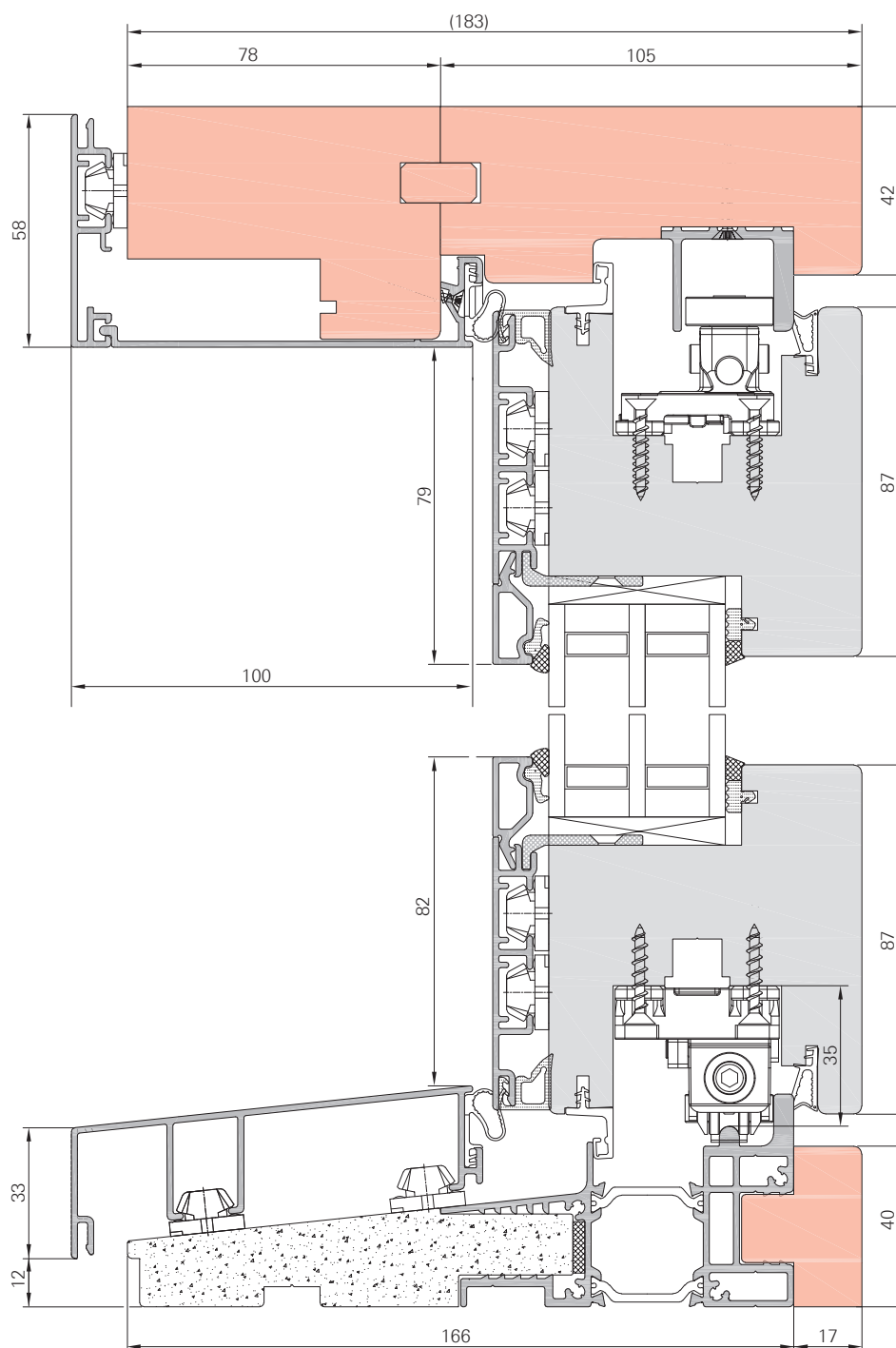


3.4.2 Vertical cross section

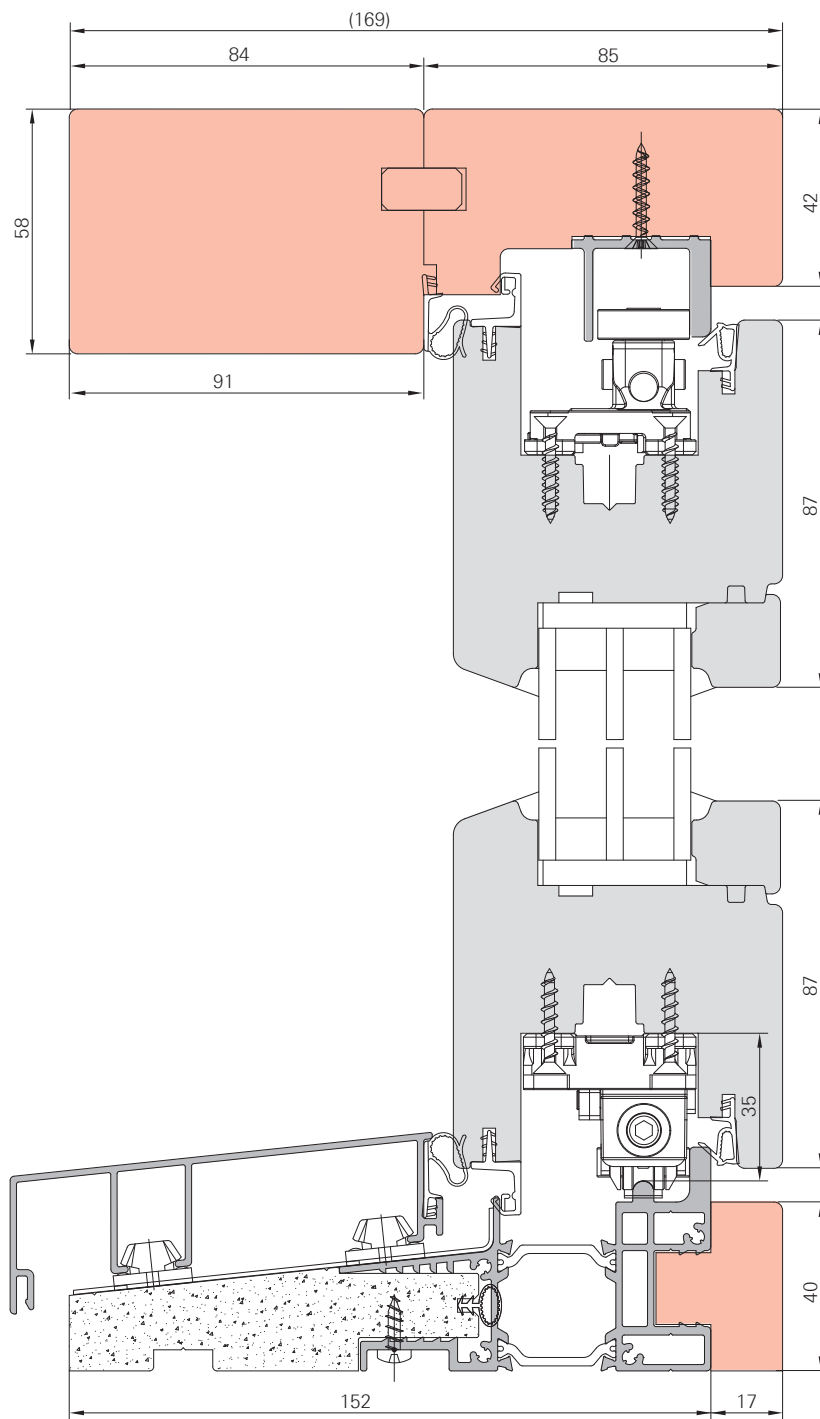
Sliding sash



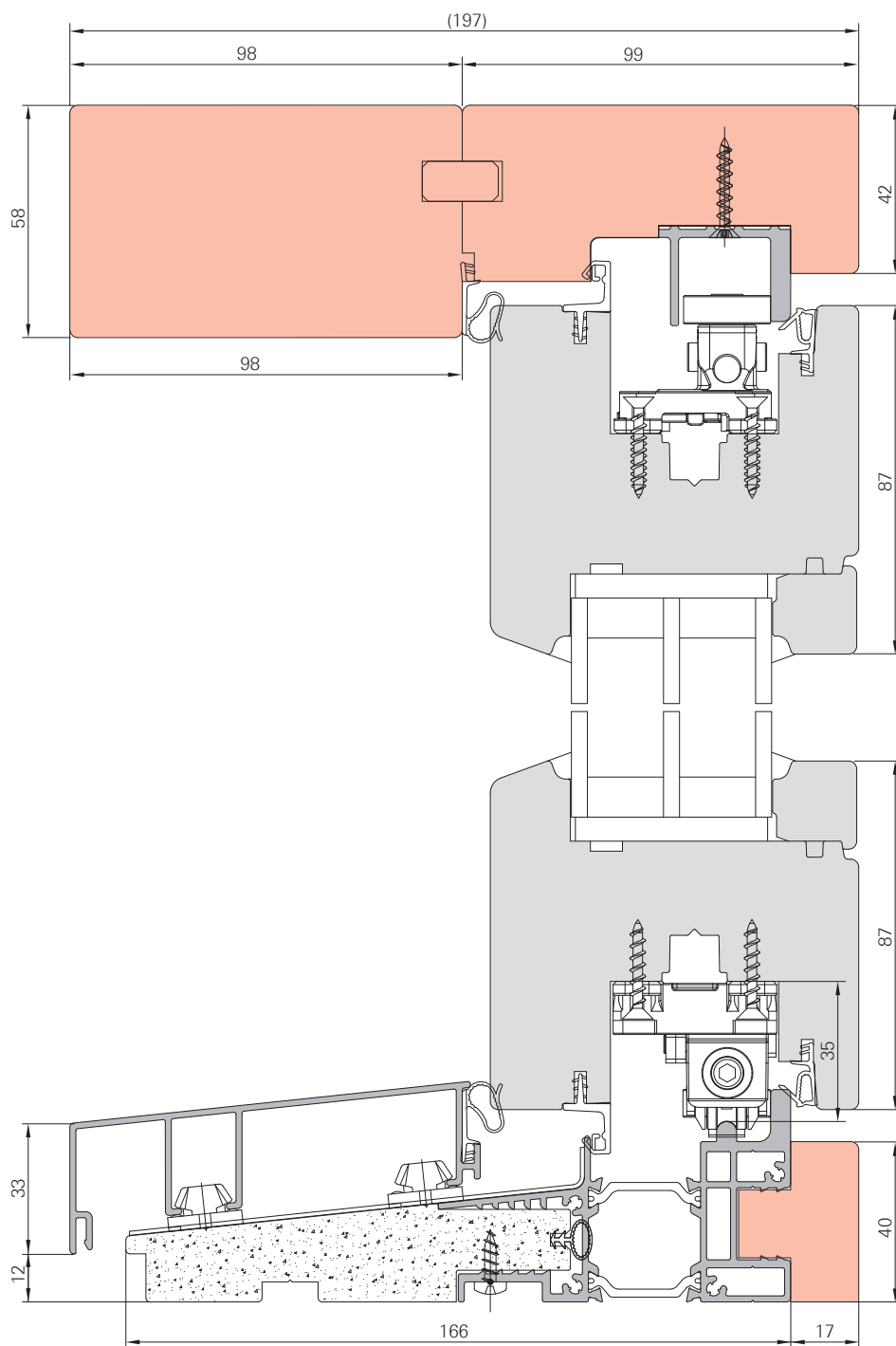
IV 78 timber-aluminium



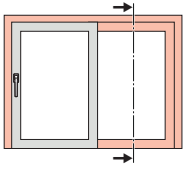
IV 78 timber



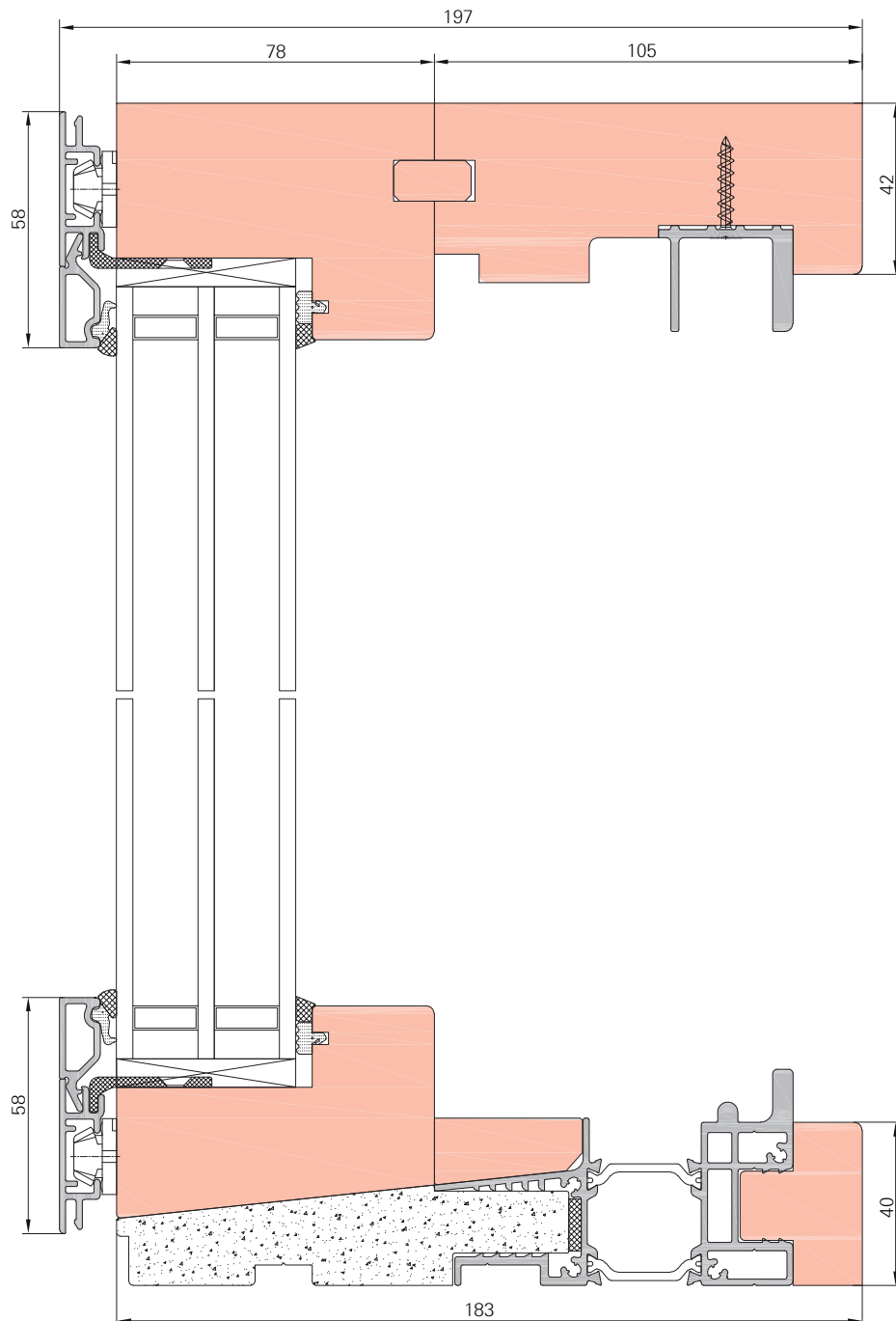
IV 92 timber



Fixed glazing

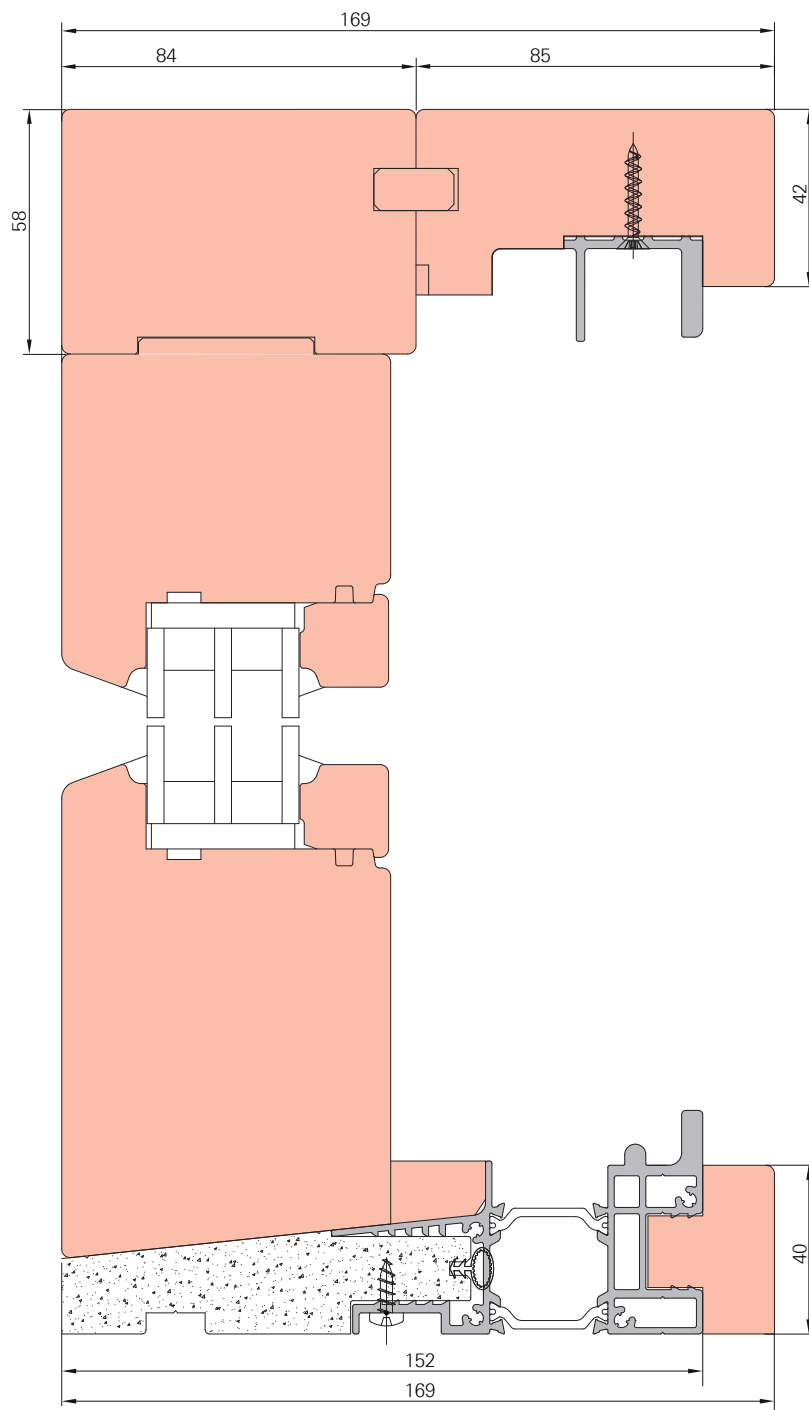


IV 78 timber-aluminium

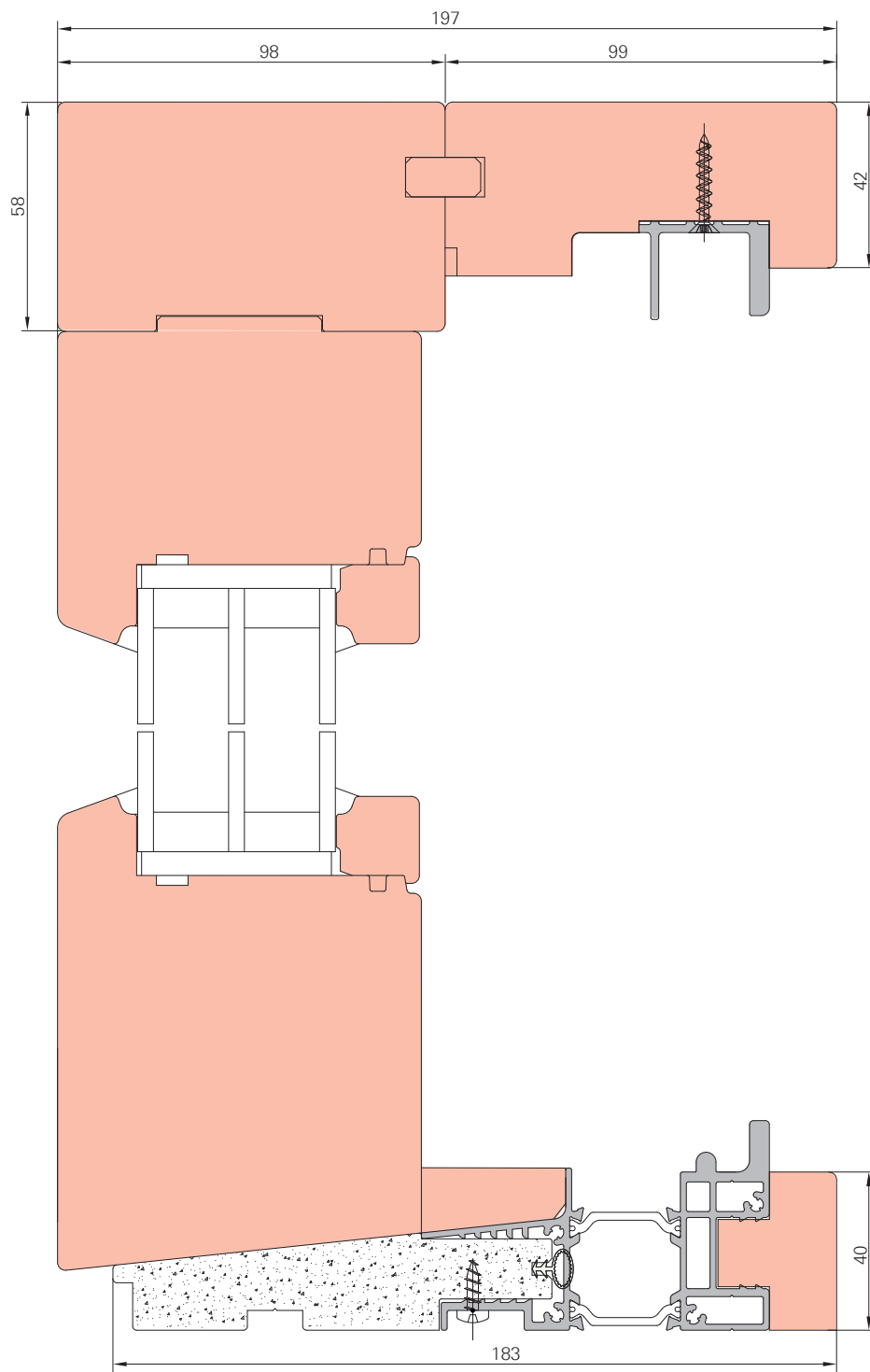




IV 78 timber



IV 92 timber





3.5 Design variants

3.5.1 Overview

Diagram A

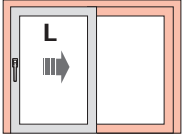
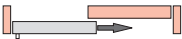
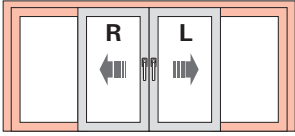
Diagram A (running on the inside)


1 sliding sash (left or right)
1 fixed glazing element

Diagram C

Diagram C (running inward)


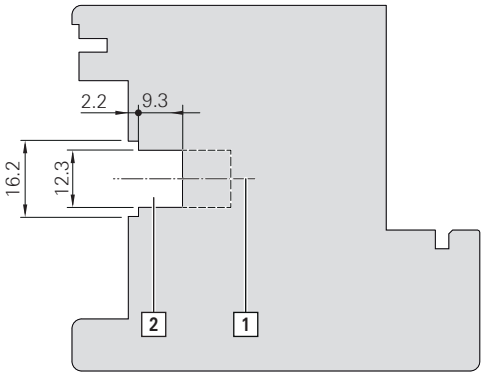
2 sliding sashes (left and right)
2 fixed glazing elements

Diagram K

Diagram K (running inward)


2 sliding sashes (left and right)
1 fixed glazing element

3.6 Hardware groove dimensions



Sash profile cross section

[1] Hardware axis

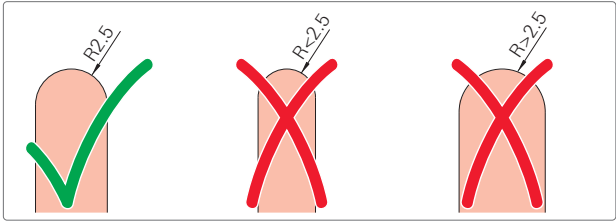
[2] Hardware groove

3.7 Dimensions of the roller track



INFO

Roller track only made from stainless steel or anodised aluminium.



Roller track shape

3.8 Component dimensions

Roller unit	Description
	Size 41
Stabilisation unit	Description
	Size 41
Control unit	Description
	Size 41



Control unit with Soft function	Description
	Size 41
Centre closer	Description
	Size 41
MUL locking cam	Description
	Adjustable L = 25 - 53.5
Pin for anti-pushback function	Description
	Adjustable L = 25 - 53.5

4 Hardware overviews

The hardware overviews on the following pages are a recommendation on the part of Roto Frank Fenster- und Türtechnologie GmbH.

The basic page layout in the hardware overviews chapter firstly shows examples of the combination of individual hardware components, and the associated parts list can be seen on the following pages.

The item numbers in the squares link the hardware overview to the parts list.

The actual composition of the hardware depends on:

- the width of the element
- the height of the element
- the weight of the element
- the profile system
- the design variant

Application range

The applicable application range [A] depends on the opening type and resistance class. The application range of the individual components [B] may differ from the applicable application range [A].

Anwendungsbereich

FFB: 290 - 1600 mm

A — **FFH:** 430 - 2800 mm

FG: max. 150 kg

[1] DK-Getriebe KSR – Griffsitz konstant, Dornmaß 15 mm

								Nº
B — 280 – 570	120	460	J	N	–	–	–	742199
511 – 710	170	600	J	J	–	–	–	795324
601 – 800	263	690	N	J	–	–	–	619591
801 – 1000	413	890	N	J	1	E	–	619592
1001 – 1200	513	1090	N	J	1	E	–	619593
1201 – 1400	563	1290	N	J	1	E	–	619594
1401 – 1600	563	1490	N	J	2	E	–	619595
1601 – 1800	563	1690	N	J	2	E	–	619596
1601 – 1800	1000	1690	N	J	2	E	–	838345
1801 – 2000	1000	1890	N	J	2	E	–	794637
2001 – 2200	1000	2090	N	J	3	E	–	794638
2201 – 2400	1000	2290	N	J	3	E	–	794639

Example

The highlighted T&T espagnolette can generally be used from a SRH of min. 280 mm [B]. With this opening type and resistance class, elements are only allowed to be constructed from an SRH of 430 mm [A] and above. The highlighted T&T espagnolette is in the specified range and can therefore be installed.



INFO

Profile properties

Design the profile optimally for the corresponding weights. Proper load transfer must be ensured by the profile manufacturer / fabricator.

Ensure that the rollers on the roller track run smoothly. Keep the roller track clean, do not powder coat or paint it.

The currently valid Roto profile assessment drawing for the specific profile and the applicable documents described in said drawing must be observed.

Please request these details from your responsible Roto sales representative.

Recommended handles can be found in the Roto Handles catalogue.

Determine the quantity of required hardware components with Roto Con Orders.



INFO

Roto Con Orders

Efficient online hardware configurator for the custom configuration of individual window and door hardware components. All conventional shapes and opening types can be automatically configured quickly and easily. Individual parts lists, including application ranges and an exemplary hardware overview, can be ordered from your responsible sales representative.



www.roto-frank.com

4.1 Diagram A, K

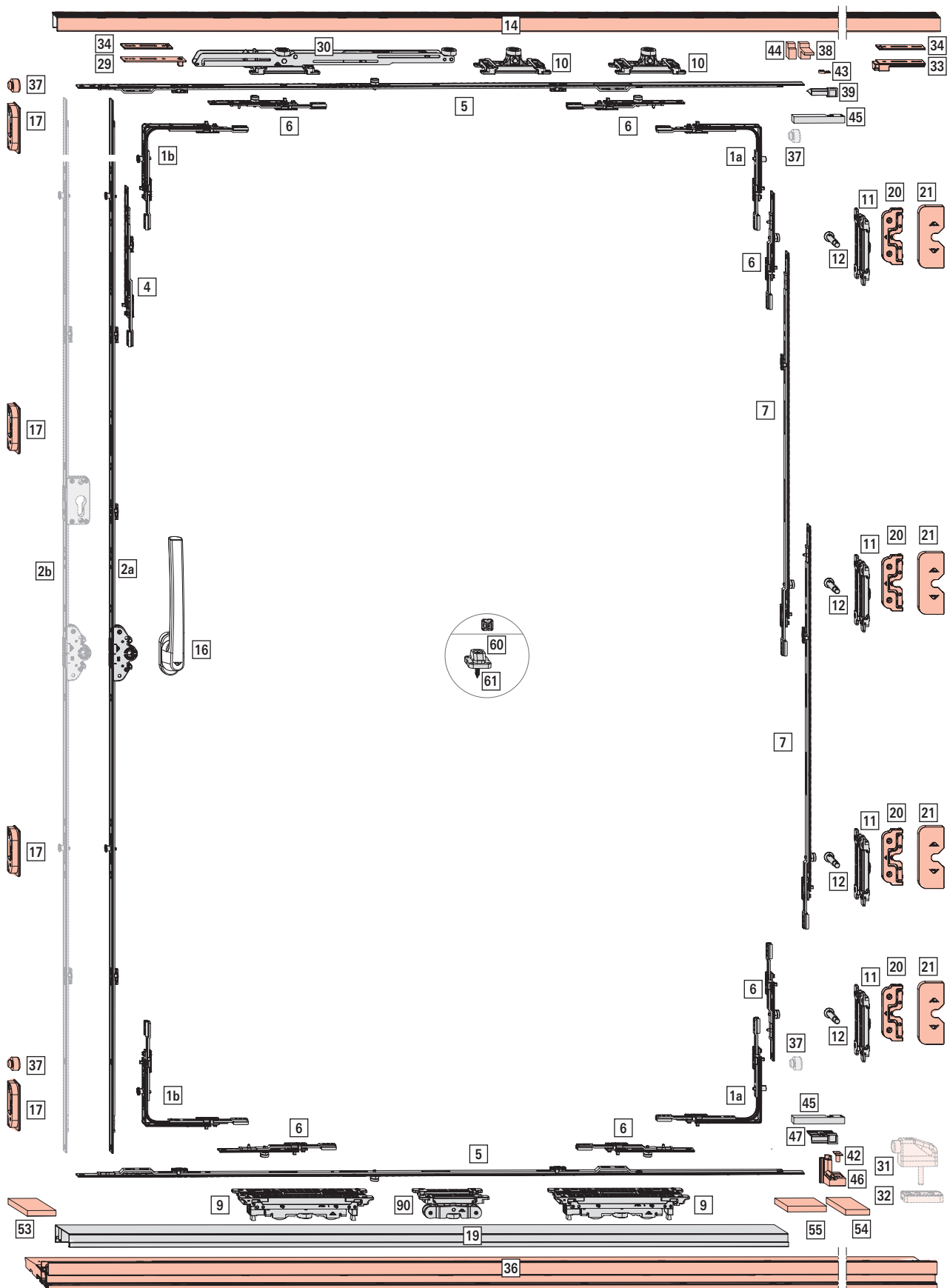




Diagram A

SRW: 710 – 2940 mm

SRH: 600 – 3600 mm

S.kg: max. 400 kg

Diagram K

SRW: 710 – 1500 mm

SRH: 600 – 3600 mm

S.kg: max. 400 kg

[1a] Corner drive	With E cam	2
[1b]	With V cam	2

		Nº
1	E	260275
1	V	260272

[2a] VT espagnolette 1

							Nº
30	600 – 800	690	200	263	–	–	785912
	801 – 1000	890	200	413	–	–	785913
	1001 – 1200	1090	200	513	1	V	785914
	1201 – 1600	1290	200	563	1	V	785915
	1601 – 1800	1690	200	563	1	V	785917
	1801 – 2400	1890	200	1000	2	V	785918
	2401 – 2500	2290	200	1000	2	V	785920

[4] Espagnolette extension, SRH > 2000 mm

				Nº
200	Y	–	–	308267
400	Y	–	–	297858
600	Y	1	V	337711

Size-specific combinations:

				Nº
1400 – 1600	200 KU	–	–	308267
1601 – 2000	–	–	–	–
2001 – 2200	200 KU	–	–	308267
2201 – 2400	400 KU	–	–	297858
2401 – 2600	200 KU	–	–	308267
2601 – 2800	400 KU	–	–	297858
2801 – 3000	600 KU	1	V	337711
3001 – 3200	200 KU	–	–	308267
	600 KU	1	V	337711
3201 – 3400	400 KU	–	–	297858
	600 KU	1	V	337711
> 3400	600 KU	1	V	337711
	600 KU	1	V	337711

Centre lock (CL)

[5] Centre lock component, horizontal 2

				Nº
200	Y	–	–	308267
344	Y	1	V	572665
480	Y	–	–	245729
590	Y	–	–	603442
790	Y	1	K	862353
990	Y	1	K	862354
1190	Y	1	K	862360
1440	Y	1	K	862361

				Nº
1790	Y	2	K	862362
2190	Y	2	K	862363

Size-specific combinations:

					Nº
≤ 760	344	344	1	V	572665
761 – 860	480	480	–	–	245729
861 – 1060	590	590	–	–	603442
1061 – 1260	790	790	1	K	862353
1261 – 1460	990	990	1	K	862354
1461 – 1660	1190	1180	1	K	862360
1661 – 1910	1440	1430	1	K	862361
1911 – 2110	1440	1430	1	K	862361
	200	200	–	–	308267
2111 – 2260	1790	1780	2	K	862362
2261 – 2460	1790	1780	2	K	862362
	200	200	–	–	308267
2461 – 2660	2190	2180	2	K	862363
2661 – 2860	200	200	–	–	308267
	2190	2180	2	K	862363
> 2860	400	400	–	–	297858
	2190	2180	2	K	862363

[6] CL component 130, horizontal and vertical 6

				Nº
130	Y	1	K	862364

[7] CL component, vertical, on the mullion

				Nº
200	Y	–	–	308267
400	Y	–	–	297858
600	Y	1	K	862366

Size-specific combinations:

				Nº
1401 – 2000	600 KU	1	K	862366
2001 – 2200	200 KU	–	–	308267
	600 KU	1	K	862366
2201 – 2400	400 KU	–	–	297858
	600 KU	1	K	862366
2401 – 2600	600 KU	1	K	862366
	600 KU	1	K	862366
2601 – 2800	600 KU	1	K	862366
	200 KU	–	–	308267
	600 KU	1	K	862366
2801 – 3000	200 KU	–	–	308267
	600 KU	1	K	862366
	200 KU	–	–	308267
	600 KU	1	K	862366
3001 – 3200	400 KU	–	–	297858
	600 KU	1	K	862366
	200 KU	–	–	308267
	600 KU	1	K	862366

				Nº
3201 – 3400	400 KU	–	–	297858
	600 KU	1	K	862366
	400 KU	–	–	297858
	600 KU	1	K	862366
> 3400	600 KU	1	K	862366
	400 KU	–	–	297858
	600 KU	1	K	862366
	600 KU	1	K	862366

[9] Roller unit 2

		Nº
41	Left	862367
	Right	862368

[90] Stabilisation unit

		Nº
41	Left	891368
	Right	891369

	
≤ 1060	–
1061 – 2110	1
> 2110	2

[10] Control unit, on the mullion side and in the centre → *from page 62*  1-3
Alternatively (on the mullion side):
Control unit set with Soft function (incl. activator) → *from page 62*  1

		Nº
41	Left	862371
	Right	862372

[*] Control unit set with Soft function, on the locking side → *from page 62*  1
Alternatively:
[10] Control unit

Contents:

[*]		#
[29]	Activator	1
[30]	Control unit with Soft function	1

[11] Centre closer, adjustable

		Nº
41	Left	862395
	Right	862396

	
≤ 1700	3
1701 – 2100	4
2101 – 2700	5

	
2701 – 3300	6
> 3300	7

[12] MUL locking cam, adjustable

		Nº
IV78 Holz	35.5	858628
IV78 Holz-Aluminium	49	895974
IV92 Holz		

	
≤ 1700	3
1701 – 2100	4
2101 – 2700	5
2701 – 3300	6
> 3300	7

[14] Guide track 1

	Nº
3000	814906
6000	814907

[16] Handle (200 mm handle length) → CTL_1  1
Recessed grip (43 mm distance), not sh. → CTL_1  1

[17] Striker

		Nº
Can be routed in	Left	798224
	Right	798245

	
≤ 1000	2
1001 – 1800	3
1801 – 2800	4
2801 – 3400	5
> 3400	6

[19] Anti-slip protection 1

		Nº
IV78 Holz	1500	834375
	3000	834376
IV78 Holz-Aluminium	1500	814894
	3000	814905

[20] MUL striker

	Nº
Screw-on	793493

	
≤ 1700	3
1701 – 2100	4
2101 – 2700	5
2701 – 3300	6
> 3300	7



[21] Cover cap for MUL striker		
		Nº
R01.1	Natural silver	819632
R05.3	Medium bronze	819631
R06.2	Jet black	798979
R07.2	Traffic white	808054

	
≤ 1700	3
1701 – 2100	4
2101 – 2700	5
2701 – 3300	6
> 3300	7

[33] Stopper , cannot be used in conjunction with a control unit with SoftOpen and Soft-Stop on the mullion. 	
Alternatively:	
[37] Rubber buffer , on the mullion → <i>from page 64</i> 	2
[31] End stop → <i>from page 64</i> 	1
[32] Packer end stop → <i>from page 64</i> 	1

	Nº
Stopper	800196

[34] Packer (without packer for activator) 	
	Nº
Packer	800197

	
Without control unit with Soft function	5
With one control unit with soft function	11
With two control units with soft function	17

[36] Threshold 		
		Nº
IV78 Holz	3000	895678
	6000	895679
IV78 Holz-Aluminium	3000	814892
IV92 Holz	6000	814893

[37] Rubber buffer , on the espagnolette 	
	Nº
17.5	798249

Gasket strip, vertical, on the mullion side (not sh.) 		
		Nº
IV78 Holz	3000	834378
IV92 Holz	3700	2002440

Weather profile strip (not sh.) 			
			Nº
IV78 Holz	1500 – 2000	2000	834379
	2001 – 2940	4000	834385

Installation accessories

[*] Compensation profile set 	
	Nº
IV78 Holz	833227
IV78 Holz-Aluminium	823226
IV92 Holz	857199

Contents:

IV78 timber-aluminium

[*]		#
[53]	Compensation profile, 45 mm	1
[54]	Compensation profile, 38 mm	1
[55]	Compensation profile, 61 mm	1

IV78 / IV92 timber

[*]		#
[54]	Compensation profile, 58 mm	2
[55]	Compensation profile, 61 mm	2

[60] Pivot clip holders	
For threshold anti-slip protection 	(SRW/100)+2
For weather profile strip 	SRW/200
	Nº
IV78 Holz	819881
IV78 Holz-Aluminium	
IV92 Holz	

[61] Pivot clip holder screws	
For threshold anti-slip protection 	(SRW/100)+2
For weather profile strip 	SRW/200
	Nº
IV78 Holz	819882
IV78 Holz-Aluminium	
IV92 Holz	

Sealing elements

Seal set; max. SRW x SRH = 3000 x 3600 (individual spools from 120 m → CTL_128) 	
	Nº
Graphite grey	2002071
Black	2002072

Contents:

			#
Deventer stop seal (S7721)	13200		1
Deventer inner seal (S7722)	9600		1
Deventer mullion seal 1 (S7723)	3700		1
Deventer mullion seal 2 (S7724)	3700		1
Deventer overlap seal (SP7603)	9600		1

[*] Gasket pad set 		
		Nº
IV78 Holz	–	839699
IV78 Holz-Aluminium	Left	822376
	Right	822968
IV92 Holz	Left	856679
	Right	856704

Contents:

IV78 timber-aluminium

[*]		#
[38]	Gasket pad 1, top of frame	1
[39]	Gasket pad, sash L	1
[42]	Gasket pad sleeve	1
[43]	Gasket pad retainer	1
[44]	Gasket pad 2, top of frame	1
[46]	Gasket pad, frame R	1
[47]	Gasket pad, sash R	1

IV78 timber

[*]		#
[38]	Gasket pad, top of frame	1
[40]	Gasket pad, frame	1
[41]	Gasket pad, top of sash L	1
[42]	Gasket pad sleeve	1
[43]	Gasket pad retainer	1
[48]	Gasket pad, top of sash R	1

IV92 timber

[*]		#
[38]	Gasket pad, top of frame	1
[39]	Gasket pad, sash L	1
[42]	Gasket pad sleeve	1
[43]	Gasket pad retainer	1
[46] / [40]	Gasket pad, frame R / L	1
[47]	Gasket pad, sash R	1

[45] Sealing component 	
	Nº
IV78 Holz-Aluminium	819883

Alternatively

[2b] VT espagnolette, lockable (alternative to 2a) 									
									Nº
IV78 Holz-Aluminium	25	1801 – 2400	1890	200	1000	2	V		798285
		2401 – 2500	2290	200	1000	2	V		798286
IV78 Holz IV92 Holz	30	1801 – 2400	1890	200	1000	2	V		798287
		2401 – 2500	2290	200	1000	2	V		798288

Components from other manufacturers



INFO

Obtain other components directly from the manufacturer. For points of contact, see contact → *from page 8*.



4.2 Diagram A, K | RC 2 / RC 2 N

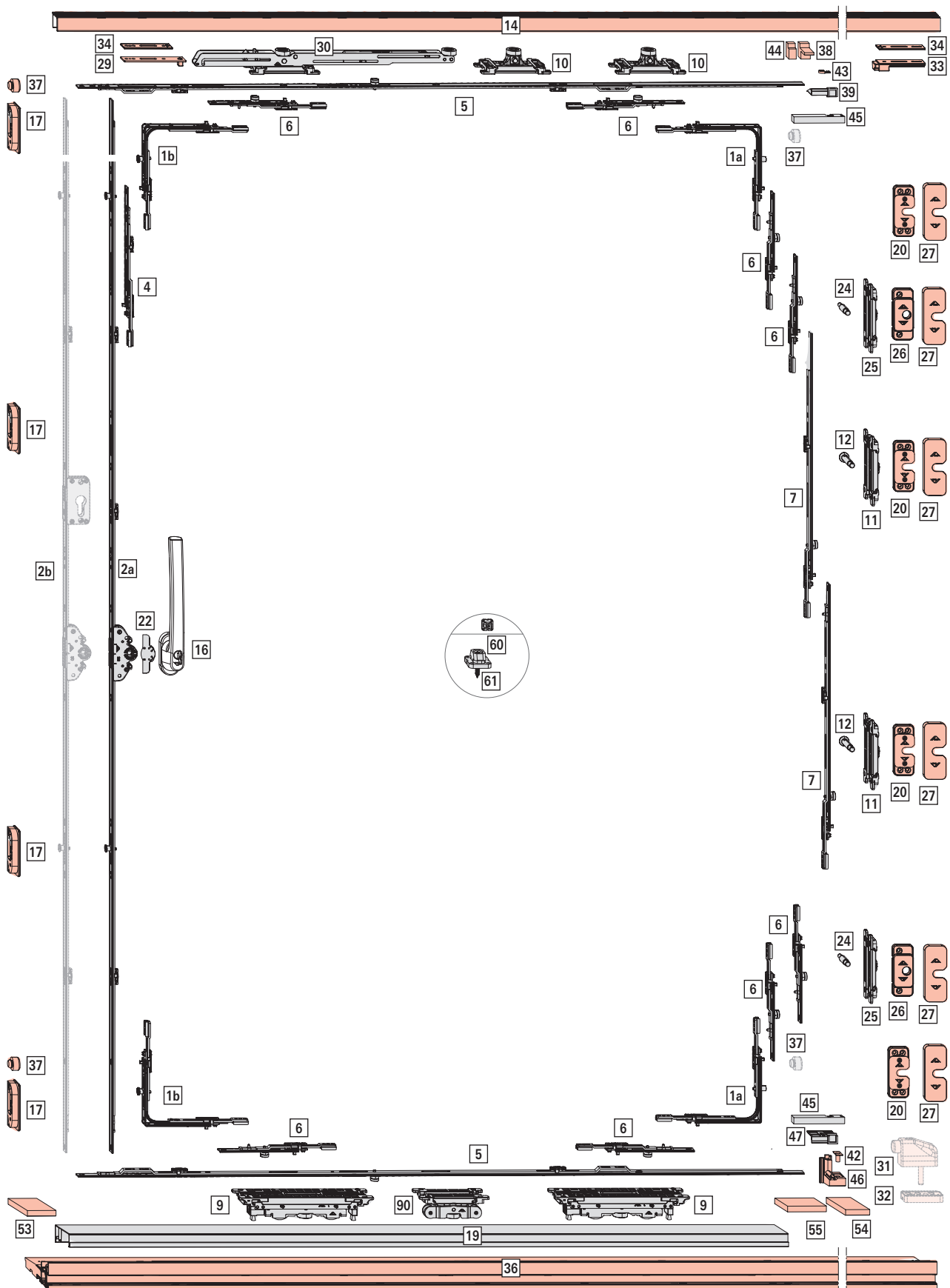




Diagram A

SRW: 710 – 2940 mm

SRH: 1072 – 3600 mm

S.kg: max. 400 kg

Diagram K

SRW: 710 – 1500 mm

SRH: 1072 – 3600 mm

S.kg: max. 400 kg

[1a] Corner drive	With E cam	2
[1b]	With V cam	2

		Nº
1	E	260275
1	V	260272

[2a] VT espagnolette								Nº
30	1001 – 1200	1090	200	513	1	V		785914
	1201 – 1600	1290	200	563	1	V		785915
	1601 – 1800	1690	200	563	1	V		785917
	1801 – 2400	1890	200	1000	2	V		785918
	2401 – 2500	2290	200	1000	2	V		785920

[4] Espagnolette extension, SRH > 2000 mm					Nº
200	Y	–	–		308267
400	Y	–	–		297858
600	Y	1	V		337711

Size-specific combinations:

				Nº
1400 – 1600	200 KU	–	–	308267
1601 – 2000	–	–	–	–
2001 – 2200	200 KU	–	–	308267
2201 – 2400	400 KU	–	–	297858
2401 – 2600	200 KU	–	–	308267
2601 – 2800	400 KU	–	–	297858
2801 – 3000	600 KU	1	V	337711
3001 – 3200	200 KU	–	–	308267
	600 KU	1	V	337711
3201 – 3400	400 KU	–	–	297858
	600 KU	1	V	337711
> 3400	600 KU	1	V	337711
	600 KU	1	V	337711

Centre lock (CL)

[5] Centre lock component, horizontal				Nº
200	Y	–	–	308267
344	Y	1	V	572665
480	Y	–	–	245729
590	Y	–	–	603442
790	Y	1	K	862353
990	Y	1	K	862354
1190	Y	1	K	862360
1440	Y	1	K	862361
1790	Y	2	K	862362
2190	Y	2	K	862363

Size-specific combinations:

					Nº
≤ 760	344	344	1	V	572665
761 – 860	480	480	–	–	245729
861 – 1060	590	590	–	–	603442
1061 – 1260	790	790	1	K	862353
1261 – 1460	990	990	1	K	862354
1461 – 1660	1190	1180	1	K	862360
1661 – 1910	1440	1430	1	K	862361
1911 – 2110	1440	1430	1	K	862361
	200	200	–	–	308267
2111 – 2260	1790	1780	2	K	862362
2261 – 2460	1790	1780	2	K	862362
	200	200	–	–	308267
2461 – 2660	2190	2180	2	K	862363
2661 – 2860	200	200	–	–	308267
	2190	2180	2	K	862363
> 2860	400	400	–	–	297858
	2190	2180	2	K	862363

[6] Centre lock component 130, horizontal and vertical				Nº
130	Y	1	K	862364

[7] CL component, vertical, on the mullion				Nº
400	Y	1	K	862365
600	Y	1	K	862366

Size-specific combinations:

				Nº
≤ 1500	400 KU	1	K	862365
1501 – 1700	600 KU	1	K	862366
1701 – 1900	400 KU	1	K	862365
	400 KU	1	K	862365
1901 – 2100	400 KU	1	K	862365
	600 KU	1	K	862366
2101 – 2300	400 KU	1	K	862365
	400 KU	1	K	862365
	400 KU	1		862365
2301 – 2500	400 KU	1	K	862365
	400 KU	1	K	862365
	600 KU	1	K	
2501 – 2700	400 KU	1	K	862365
	600 KU	1	K	862366
	600 KU	1	K	862366
2701 – 2900	400 KU	1	K	862365
	600 KU	1	K	862366
	400 KU	1	K	862365
	400 KU	1	K	862365
2901 – 3100	400 KU	1	K	862365
	600 KU	1	K	862366
	600 KU	1	K	862366
	400 KU	1	K	862365

				Nº
3101 – 3300	400 KU	1	K	862365
	600 KU	1	K	862366
	600 KU	1	K	862366
	600 KU	1	K	862366
3301 – 3500	400 KU	1	K	862365
	600 KU	1	K	862366
	600 KU	1	K	862366
	400 KU	1	K	862365
> 3500	400 KU	1	K	862365
	600 KU	1	K	862366
	600 KU	1	K	862366
	600 KU	1	K	862366
> 3500	400 KU	1	K	862365
	400 KU	1	K	862365

[9] Roller unit

		Nº
41	Left	862367
	Right	862368

[90] Stabilisation unit

		Nº
41	Left	891368
	Right	891369

	
≤ 2110	1
> 2110	2

[10] Control unit, on the mullion side and in the centre → from page 62

Alternatively (on the mullion side):

Control unit set with Soft function (incl. activator) → from page 62



		Nº
41	Left	862371
	Right	862372

[*] Control unit set with Soft function, on the locking side → from page 62

Alternatively:

[10] Control unit

Contents:

		#
[29]	Activator	1
[30]	Control unit with Soft function	1

[11] Centre closer, adjustable

		Nº
41	Left	862395
	Right	862396

	
≤ 1700	3
1701 – 2100	4
2101 – 2700	5
2701 – 3300	6
> 3300	7

[12] MUL locking cam, adjustable

		Nº
IV78 Holz	35.5	858628
IV78 Holz-Aluminium	49	895974
IV92 Holz		

	
≤ 1700	3
1701 – 2100	4
2101 – 2700	5
2701 – 3300	6
> 3300	7

[14] Guide track

	Nº
3000	814906
6000	814907

[16] Handle, lockable (200 mm handle length) → CTL_1**Recessed grip (43 mm distance), not sh. → CTL_1****[17] SEC striker**

		Nº
Can be routed in	Left	798224
	Right	798245

	
≤ 1800	3
1801 – 2800	4
2801 – 3400	5
> 3400	6

[19] Anti-slip protection

		Nº
IV78 Holz	1500	834375
	3000	834376
IV78 Holz-Aluminium	1500	814894
	3000	814905

IV78 timber-aluminium

[*]		#
[53]	Compensation profile, 45 mm	1
[54]	Compensation profile, 38 mm	1
[55]	Compensation profile, 61 mm	1

IV78 / IV92 timber

[*]		#
[54]	Compensation profile, 58 mm	2
[55]	Compensation profile, 61 mm	2

[60] Pivot clip holders

For threshold anti-slip protection  (SRW/
100)+2
For weather profile strip  SRW/200



Nº

IV78 Holz 819881
IV78 Holz-Aluminium
IV92 Holz

[61] Pivot clip holder screws

For threshold anti-slip protection  (SRW/
100)+2
For weather profile strip  SRW/200



Nº

IV78 Holz 819882
IV78 Holz-Aluminium
IV92 Holz

Sealing elements

Seal set; max. SRW x SRH = 3000 x 3600 
(individual spools from 120 m → CTL_128)



Nº

Graphite grey 2002071
Black 2002072

Contents:

			#
Deventer stop seal (S7721)	13200		1
Deventer inner seal (S7722)	9600		1
Deventer mullion seal 1 (S7723)	3700		1
Deventer mullion seal 2 (S7724)	3700		1
Deventer overlap seal (SP7603)	9600		1

[*] Gasket pad set 1



Nº

IV78 Holz	–	839699
IV78 Holz-Aluminium	Left	822376
	Right	822968
IV92 Holz	Left	856679
	Right	856704

Contents:

IV78 timber-aluminium

[*]		#
[38]	Gasket pad 1, top of frame	1
[39]	Gasket pad, sash L	1
[42]	Gasket pad sleeve	1
[43]	Gasket pad retainer	1
[44]	Gasket pad 2, top of frame	1
[46]	Gasket pad, frame R	1
[47]	Gasket pad, sash R	1

IV78 timber

[*]		#
[38]	Gasket pad, top of frame	1
[40]	Gasket pad, frame	1
[41]	Gasket pad, top of sash L	1
[42]	Gasket pad sleeve	1
[43]	Gasket pad retainer	1
[48]	Gasket pad, top of sash R	1

IV92 timber

[*]		#
[38]	Gasket pad, top of frame	1
[39]	Gasket pad, sash L	1
[42]	Gasket pad sleeve	1
[43]	Gasket pad retainer	1
[46] / [40]	Gasket pad, frame R / L	1
[47]	Gasket pad, sash R	1

[45] Sealing component 2



Nº

IV78 Holz-Aluminium 819883

Alternatively

[2b] VT espagnolette, lockable (alternative to 2a) 1



							Nº
IV78 Holz-Aluminium	25	1801 – 2400	1890	200	1000	2	V 798285
		2401 – 2500	2290	200	1000	2	V 798286
IV78 Holz IV92 Holz	30	1801 – 2400	1890	200	1000	2	V 798287
		2401 – 2500	2290	200	1000	2	V 798288



Components from other manufacturers



INFO

Obtain other components directly from the manufacturer. For points of contact, see contact → *from page 8*.

4.3 Diagram C

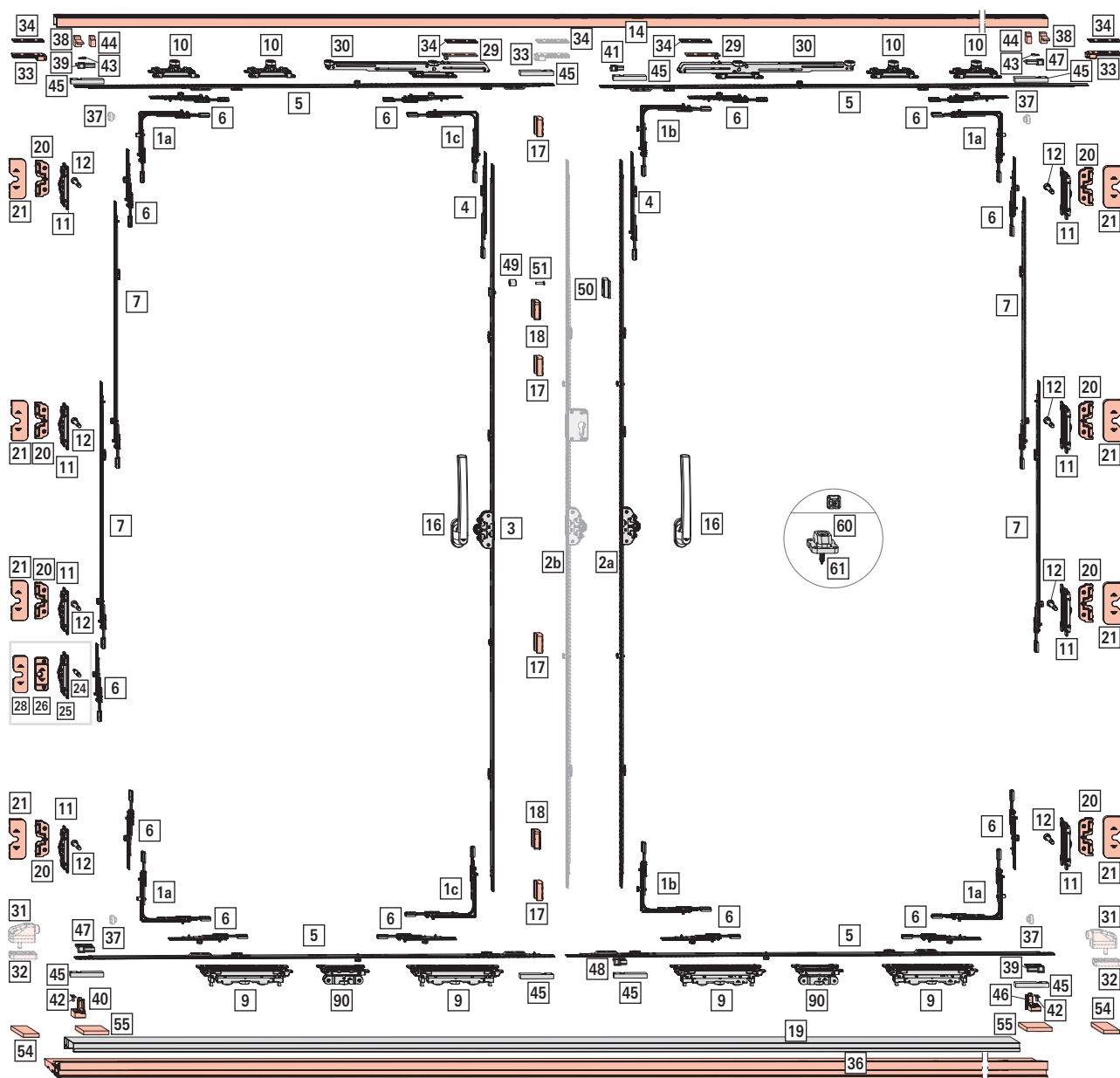


Fig. 4.1: Shown: timber-aluminium; first opening sash L version, espagnolette BS 25, second opening sash R version, espagnolette BS 30; SRW 1500 mm; SRH 2500 mm



Application range

SRW: 710 – 1467 mm

SRH: 735 – 2935 mm

S.kg: max. 400 kg

[1a] Corner drive	With E cam	 4
[1b]	With V cam	 2
[1c]	Without cam	 2

		Nº
1	E	260275
1	V	260272
–	–	339785

[2a] VT espagnolette

									Nº
IV78 Holz-Aluminium	25	600 – 800	690	200	263	–	–	–	793942
		801 – 1000	890	200	413	–	–	–	793943
		1001 – 1200	1090	200	513	1	V	–	793944
		1201 – 1600	1290	200	563	1	V	–	793975
		1601 – 1800	1690	200	563	1	V	–	793977
		1801 – 2400	1890	200	1000	2	V	–	793978
		2401 – 2500	2290	200	1000	2	V	–	793980
IV78 Holz IV92 Holz	30	600 – 800	690	200	263	–	–	–	785912
		801 – 1000	890	200	413	–	–	–	785913
		1001 – 1200	1090	200	513	1	V	–	785914
		1201 – 1600	1290	200	563	1	V	–	785915
		1601 – 1800	1690	200	563	1	V	–	785917
		1801 – 2400	1890	200	1000	2	V	–	785918
		2401 – 2500	2290	200	1000	2	V	–	785920

[3] VT espagnolette, second opening sash

							Nº
30	600 – 800	690	200	263	–	–	785912
	801 – 1000	890	200	413	–	–	785913
	1001 – 1200	1090	200	513	–	–	809654
	1201 – 1600	1290	200	563	–	–	809685
	1601 – 1800	1690	200	563	–	–	809687
	1801 – 2400	1890	200	1000	–	–	809688
	2401 – 2500	2290	200	1000	–	–	809690

[4] Espagnolette extension, SRH > 1400 mm

				Nº
200	Y	–	–	308267
400	Y	–	–	297858
600	Y	1	V	337711

Size-specific combinations:

First opening sash

				Nº
1400 – 1600	200 KU	–	–	308267
1601 – 2000	–	–	–	–
2001 – 2200	200 KU	–	–	308267
2201 – 2400	400 KU	–	–	297858
2401 – 2600	200 KU	–	–	308267
2601 – 2800	400 KU	–	–	297858
> 2800	600 KU	1	V	337711

Second opening sash

				Nº
1400 – 1600	200 KU	–	–	308267
1601 – 2000	–	–	–	–
2001 – 2200	200 KU	–	–	308267
2201 – 2400	400 KU	–	–	297858
2401 – 2600	200 KU	–	–	308267
2601 – 2800	400 KU	–	–	297858
> 2800	200 KU	–	–	308267
	400 KU	–	–	297858

Centre lock (CL)

[5] Centre lock component, horizontal

				Nº
344	Y	1	V	572665
480	Y	–	–	245729
590	Y	–	–	603442
790	Y	1	K	862353
990	Y	1	K	862354
1190	Y	1	K	862360

Size-specific combinations:

					Nº
≤ 760	344	344	1	V	572665
761 – 860	480	480	–	–	245729
861 – 1060	590	590	–	–	603442
1061 – 1260	790	790	1	K	862353
1261 – 1460	990	990	1	K	862354
> 1460	1190	1180	1	K	862360

[6] Centre lock component 130, horizontal and vertical

				Nº
130	Y	1	K	862364

[7] CL component, vertical, on the mullion

				Nº
200	Y	–	–	308267
400	Y	–	–	297858
600	Y	1	K	862366

Size-specific combinations:

First and second opening sashes:

				Nº
1401 – 2000	600 KU	1	K	862366
2001 – 2200	200 KU	–	–	308267
	600 KU	1	K	862366
2201 – 2400	400 KU	–	–	297858
	600 KU	1	K	862366
2401 – 2600	600 KU	1	K	862366
	600 KU	1	K	862366
2601 – 2800	600 KU	1	K	862366
	200 KU	–	–	308267
	600 KU	1	K	862366
> 2800	200 KU	–	–	308267
	600 KU	1	K	862366
	200 KU	–	–	308267
	600 KU	1	K	862366

[9] Roller unit 			
		Nº	
41	Left	862367	
	Right	862368	

[90] Stabilisation unit		
		Nº
41	Left	891368
	Right	891369
		
≤ 1060		—
> 1060		2

[10] Control unit, on the mullion side and in the centre → <i>from page 62</i> 			
Alternatively (on the mullion side):			
Control unit set with Soft function (incl. activator) → <i>from page 62</i> 			
		Nº	
41	Left	862371	
	Right	862372	

[*] Control unit set with Soft function, on the locking side → <i>from page 62</i> 			
Alternatively:			
[10] Control unit			

Contents:

[*]		#
[29] Activator		1
[30] Control unit with Soft function		1

[11] Centre closer, adjustable

		Nº
41	Left	862395
	Right	862396
		
≤ 1400		4
1401 – 2400		6
> 2400		8

[12] MUL locking cam, adjustable

		Nº
IV78 Holz	35.5	858628
IV78 Holz-Aluminium	49	895974
IV92 Holz		
		
≤ 1400		4
1401 – 2400		6
> 2400		8

**[14] Guide track **

	Nº
3000	814906
6000	814907

[16] Handle (200 mm handle length) → CTL_1 	
Recessed grip (43 mm distance), not sh. → CTL_1 	

[17] Striker, diagram C

	Nº
Screw-on	806824
	
≤ 1000	2
1001 – 1800	3
1801 – 2800	4
> 2800	5

**[19] Anti-slip protection **

		Nº
IV78 Holz	1500	834375
	3000	834376
IV78 Holz-Aluminium	1500	814894
IV92 Holz	3000	814905



[20] MUL striker		
		Nº
IV78 Holz IV78 Holz-Aluminium IV92 Holz	Screw-on	793493
		
≤ 1400		4
1401 – 2400		6
> 2400		8

[21] Cover cap for MUL striker, only in combination with MUL striker, screw-on.		
		Nº
R01.1	Natural silver	819632
R05.3	Medium bronze	819631
R06.2	Jet black	798979
R07.2	Traffic white	808054
		
≤ 1400		4
1401 – 2400		6
> 2400		8

[24] Pin, adjustable, for anti-pushback function		
		Nº
IV78 Holz	35.5	858629
IV78 Holz-Aluminium IV92 Holz	49	896005

[25] Centre closer, adjustable, for anti-pushback function		
		Nº
41	Left	862395
	Right	862396

i INFO
L version: order right components.
R version: order left components.

[26] Striker for anti-pushback function	
	Nº
Striker for anti-pushback function	810279

[27] Cover cap for striker for anti-pushback function		
		Nº
R01.1	Natural silver	828482
R05.3	Medium bronze	828483
R06.2	Jet black	809717
R07.2	Traffic white	819351

[33] Stopper, cannot be used in conjunction with a control unit with SoftOpen and SoftStop on the mullion side.	
Alternatively:	
[37] Rubber buffer, on the mullion side → from page 64	2-4
[31] End stop → from page 64	2
[32] Packer end stop → from page 64	2
	Nº
Stopper	800196

[34] Packer (without packer for activator)	
	Nº
Packer	800197
	
Without control unit with Soft function	10
With one control unit with Soft function	16
With two control units with Soft function	22
With three control units with Soft function	28
With four control units with Soft function	34

[36] Threshold		
		Nº
IV78 Holz	3000	895678
	6000	895679
IV78 Holz-Aluminium IV92 Holz	3000	814892
	6000	814893

[*] Operating sequence control set, profile-related	
	Nº
14	833203

Contents:

[*]		#
[49]	Bolt	1
[50]	Stop, routed	1
[51]	Countersunk screw, M5 x 20	1
[18]	Striker with buffer	2

Gasket strip, vertical, on the mullion side (not sh.)		
		Nº
IV78 Holz	3000	834378
IV92 Holz	3700	2002440

Weather profile strip (not sh.)			
			Nº
IV78 Holz	1500 – 2000	2000	834379
	2001 – 2940	4000	834385

Installation accessories

[*] Compensation profile set 		1	
		Nº	
			
IV78 Holz-Aluminium		894117	
IV78 Holz		894118	
IV92 Holz		894119	

Contents:

GUTMANN MIRA contour IV78 timber-aluminium

[*] 		#	
[54]	Compensation profile, 38 mm	2	
[55]	Compensation profile, 61 mm	2	

GUTMANN MIRA contour IV78 / IV92 timber

[*] 		#	
[54]	Compensation profile, 58 mm	2	
[55]	Compensation profile, 61 mm	4	

[60] Pivot clip holders			
For threshold anti-slip protection  (SRW/100)+2			
For weather profile strip  SRW/200			
		Nº	
IV78 Holz		819881	
IV78 Holz-Aluminium			
IV92 Holz			

[61] Pivot clip holder screws			
For threshold anti-slip protection  (SRW/100)+2			
For weather profile strip  SRW/200			
		Nº	
IV78 Holz		819882	
IV78 Holz-Aluminium			
IV92 Holz			

Sealing elements

Seal set; max. SRW x SRH = 3000 x 3600 (individual spools from 120 m → CTL_128) 		1	
		Nº	
			
Graphite grey		2002071	
Black		2002072	

Contents:

[*] 				#
Deventer stop seal (S7721)	13200			1
Deventer inner seal (S7722)	9600			1
Deventer mullion seal 1 (S7723)	3700			1
Deventer mullion seal 2 (S7724)	3700			1
Deventer overlap seal (SP7603)	9600			1

[*] Gasket pad set 		1	
		Nº	
			
IV78 Holz-Aluminium		858403	
IV78 Holz		894801	
IV92 Holz		894955	

Contents:

GUTMANN MIRA contour IV78 timber-aluminium

[*] 		#	
[38]	Gasket pad 1, top of frame	2	
[39]	Gasket pad, sash L	2	
[40]	Gasket pad, frame L	1	
[41]	Gasket pad, top of sash L	1	
[42]	Gasket pad sleeve	2	
[43]	Gasket pad retainer	2	
[44]	Gasket pad 2, top of frame	2	
[46]	Gasket pad, frame R	1	
[47]	Gasket pad, sash R	2	
[48]	Gasket pad, top of sash R	1	

GUTMANN MIRA contour IV78 timber

[*] 		#	
[38]	Gasket pad, top of frame	2	
[40]	Gasket pad, frame	2	
[41]	Gasket pad, top of sash L	3	
[42]	Gasket pad sleeve	2	
[43]	Gasket pad retainer	2	
[48]	Gasket pad, top of sash R	3	

GUTMANN MIRA contour IV92 timber

[*] 		#	
[38]	Gasket pad, top of frame	2	
[39]	Gasket pad, sash L	3	
[40]	Gasket pad, frame L	1	
[42]	Gasket pad sleeve	2	
[43]	Gasket pad retainer	2	
[46]	Gasket pad, frame R	1	
[47]	Gasket pad, sash R	3	



[45] Sealing component 	
	Nº
IV78 Holz-Aluminium	819883

Optional

[33] Stopper, cannot be used in conjunction with a control unit with SoftOpen and Soft-Stop on the locking side. 	
	Nº
Stopper	800196

[34] Packer 	
	Nº
Packer	800197

Alternatively

[2b] VT espagnolette, lockable (alternative to 2a) 	
	       Nº
IV78 Holz-Aluminium	25 1801 – 2400 1890 200 1000 2 V 798285
	2401 – 2500 2290 200 1000 2 V 798286
IV78 Holz	30 1801 – 2400 1890 200 1000 2 V 798287
IV92 Holz	2401 – 2500 2290 200 1000 2 V 798288

Components from other manufacturers



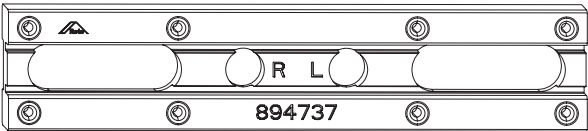
INFO

Obtain other components directly from the manufacturer. For points of contact, see contact → *from page 8*.

5 Jigs / tools

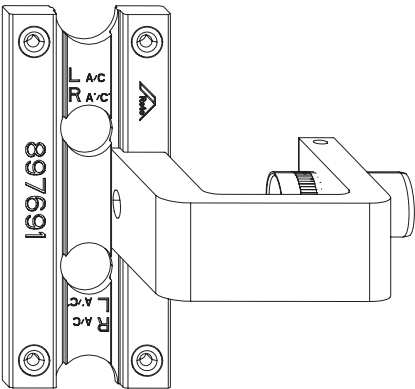
5.1 Drilling jigs

5.1.1 Roller unit / stabilisation unit/ control unit



	Nº
41	894737

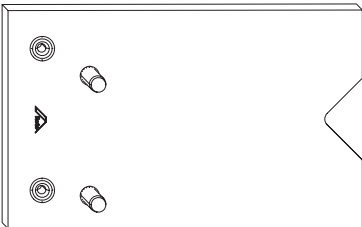
5.1.2 Centre closer



	Nº
41	897691

5.1.3 Strikers

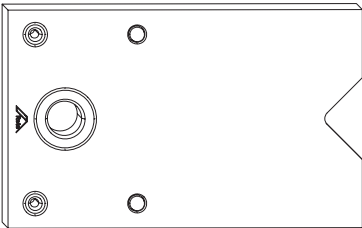
Mullion striker



	Nº
IV78 Holz IV92 Holz	2003725
IV78 Holz-Aluminium	816106



Mullion security striker / striker for anti-pushback function



	Nº
IV78 Holz IV92 Holz	895804
IV78 Holz-Aluminium	896025

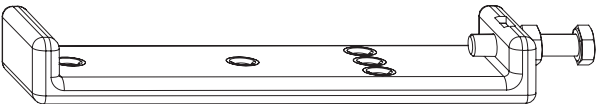
5.1.4 Drilling aid

For activator and stopper positioning jigs



	Nº
Drilling aid for roller track and guide track	778521

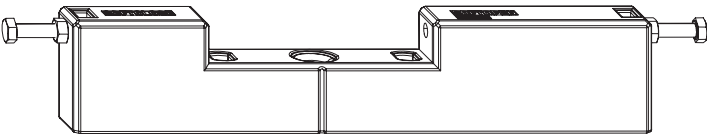
5.1.5 Threshold



	Nº
Drilling jig for threshold	839898

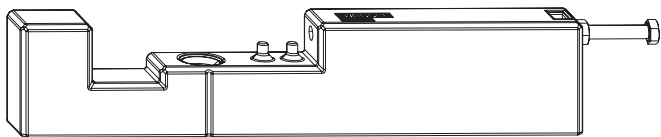
5.2 Positioning jigs

5.2.1 Activator



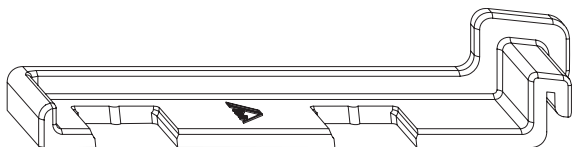
		Nº
Drilling jig for activator	Can be used with a centre screw fixing	2005536

5.2.2 Stopper



		Nº
Drilling jig for stopper	Can be used with a centre screw fixing	2005537

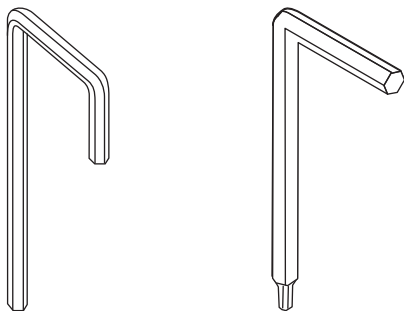
5.2.3 Pivot clip holders



	Nº
IV78 Holz	833226
IV78 Holz-Aluminium IV92 Holz	857804

5.3 Tools

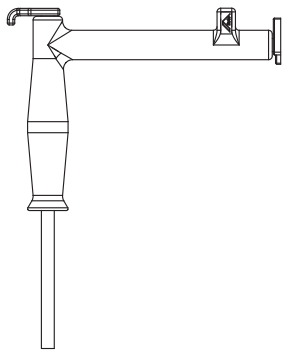
5.3.1 Hex key



	Nº
4 mm hex key	208609
Hex key: 2.5 / 4.0 mm	230764



5.3.2 Extractor handle



		Nº
Extractor handle for stay-bearing pin		899630
Replacement blade		230765

5.3.3 Tensioning tool

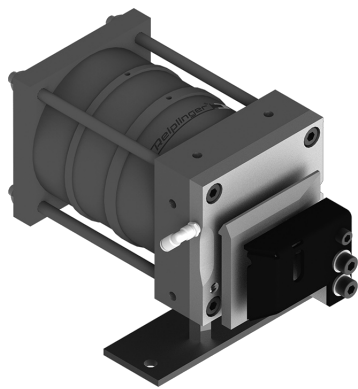
For control unit with soft function



		Nº
Tensioning tool	For control unit with soft function	837763

5.4 Punches

5.4.1 Pneumatic punch – PS 100



			Nº
Pneumatic punch – PS 100	For offset cuts	Left	553992
		Right	553993

Accessories

		Nº
Foot control for pneumatic punch	–	554096
Hand control for pneumatic punch	–	554097

		Nº
Ruler	Left	230758
	Right	230759
VT calliper	Left	632972
	Right	632973



5.4.2 Hydropneumatic punch – DUO



			Nº
Hydropneumatic punch – DUO	For offset cuts	Left	262155
		Right	262156

Accessories

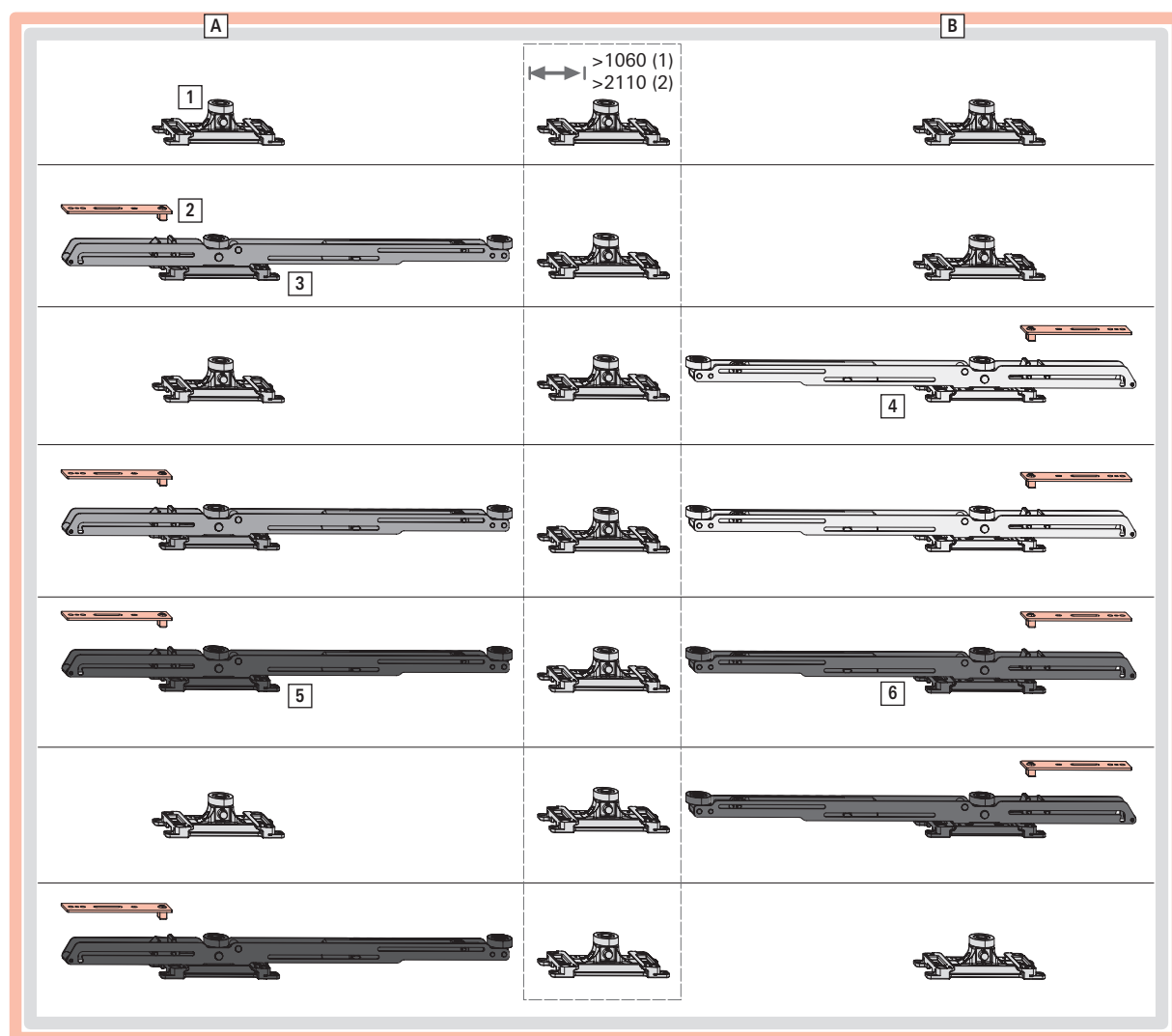
		Nº
Foot control for hydropneumatic punch	–	230760
Hand control for hydropneumatic punch	–	230761

		Nº
Ruler	Left	230758
	Right	230759
VT calliper	Left	632972
	Right	632973

6 Accessories

6.1 Control unit set with Soft function

Positioning options for the control unit



[A] On the locking side

[B] On the mullion side

[1] Control unit without Soft function

[2] Activator for control unit with Soft function

[3] Control unit with SoftClose

[4] Control unit with SoftOpen

[5] Control unit with SoftStop on the locking side

[6] Control unit with SoftStop on the mullion side

Control unit	S.kg	Min. SRW	Alignment	Position	Function
Without Soft function	≤ 400 kg	710	–	On the espagnolette side, on the mullion side	–
		1060 (1 pc.) / > 2110 (2 pcs)	–	Centred	Supports the sash
With SoftClose	≤ 200 kg	710* / 920**	Additional control roller faces towards the centre of the sash	On the locking side	Damps the movement of the sash in the locking direction and draws it slowly closed.
With SoftOpen	≤ 200 kg	710* / 920**	Additional control roller faces towards the centre of the sash	On the mullion side	Damps the movement of the sash in the opening direction and draws it slowly into the final position.



Control unit	S.kg	Min. SRW	Alignment	Position	Function
With SoftStop	> 200 kg	710* / 920**	Additional control roller faces towards the centre of the sash	On the locking side	Damps the movement of the sash in the locking direction.
			Additional control roller faces towards the centre of the sash	On the mullion side	Damps the movement of the sash in the opening direction.

* Min. SW with one control unit with Soft function

** Min. SW with two control units with Soft function

Control unit set with SoftClose (incl. activator)

Installation position: at the top of the locking side

S.kg ≤ 200 kg

				Nº
Espagnolette side	41	200 kg	Left	895788
			Right	895789

Control unit set with SoftOpen (incl. activator)

Installation position: at the top of the mullion side

S.kg ≤ 200 kg

				Nº
Mullion side	41	200 kg	Left	895792
			Right	895793

Control unit set with SoftStop (incl. activator)

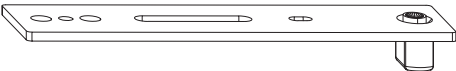
Installation position: at the top of the mullion side / at the top of the locking side

S.kg > 200 kg

					Nº
Espagnolette side	41	250 kg	> 200 kg to 250 kg	Left	837237
	41	250 kg	> 200 kg to 250 kg	Right	837154
	41	400 kg	> 250 kg	Left	894398
	41	400 kg	> 250 kg	Right	894399
Mullion side	41	250 kg	> 200 kg to 250 kg	Left	838571
	41	250 kg	> 200 kg to 250 kg	Right	838568
	41	400 kg	> 250 kg	Left	894402
	41	400 kg	> 250 kg	Right	894403

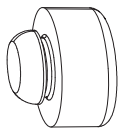
6.2 Activator spare part for control unit with Soft function

The activator for a centre screw fixing is included in the control unit set.



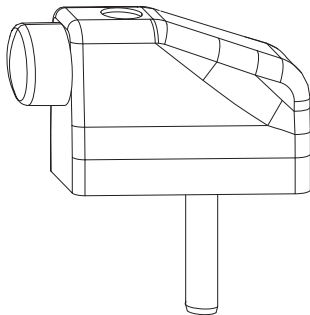
		Nº
Activator for soft function	Can be used with a centre screw fixing	837318

6.3 Rubber buffer



	Nº
17.5	798249

6.4 End stop with packer



End stop

			Nº
End stop	RAL 7004	Signal grey	2006569
	RAL 9005	Jet black	349600



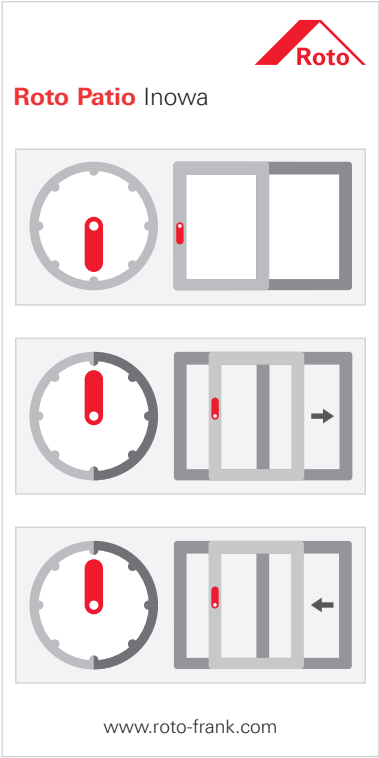
Packer end stop

			Nº
Packer	RAL 7004	Signal grey	2007421
	RAL 9005	Jet black	477263



6.5 Label

Diagram A



		Nº
Label indicating the operating sequence, diagram A		811486

Diagram C

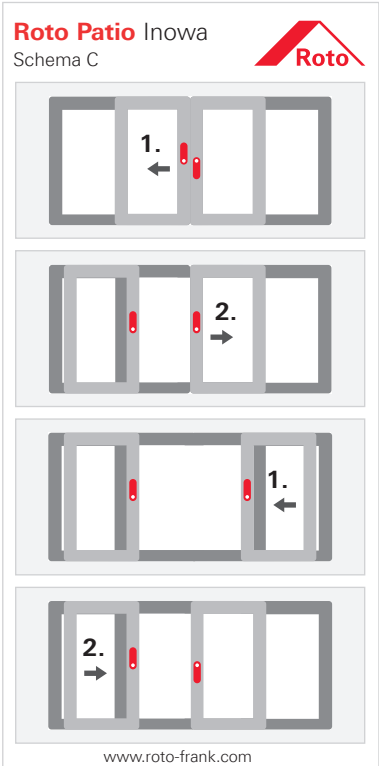


Fig. 6.1: Figure for installation of left version of first opening sash

Label indicating the operating sequence, diagram C			Nº
		Left	823251
		Right	823250



7 Brief instructions

7.1 Diagram A, K

Summary of IMO 557

	Installation sequence	Note	Page reference
Sash	Crop the hardware components.		→ from page 76
	Install the corner drives.	Align the cam vertically.	→ from page 78
	Install the centre lock, vertical on the espagnolette side.	Size-dependent	→ from page 78
	Install the espagnolette.	Insert with the arrow pointing up.	→ from page 79
	Install the centre locks.	CL, vertical on the mullion (size-dependent)	→ from page 78
		CL 130, horizontal at the top, bottom and on the mullion side	→ from page 78
		CL, horizontal at the top and bottom (size-dependent)	→ from page 78
	Install the handle and recessed grip.		→ from page 80
	Install the roller units.	Must not be pushed into the timber. Adapt the torque if necessary.	→ from page 81
	Install the stabilisation unit.	For SRW > 2110 mm, a second stabilisation unit is required.	→ from page 83
	Install the control unit.	Alternatively: install the control unit with Soft function → from page 62.	→ from page 84
		For SRW > 2110 mm, a fourth control unit is required.	
	Install the centre closers with mullion locking cams.	Must not be pushed into the timber. Adapt the torque if necessary.	→ from page 86
	Install the cover on the mullion side.		
	Install the pivot clip holders.	See GUTMANN documentation	
	Install the aluminium profiles.	See GUTMANN documentation	
	Install the sealing component.		→ from page 91
	Install the gasket pads.	Install first the top and then the bottom gasket pad.	
	Install the seals.	See DEVENTER documentation	
Frame	Install the frame profiles.		
	Install the pivot clip holders on the frame.	See GUTMANN documentation	
	Install the aluminium profiles.	See GUTMANN documentation	
	Install the gasket strip.		→ from page 96
	Install the operator track.	Length: $(FIW - 2) / 2$	→ from page 97
		Screw down in the access area.	
	Install the compensation profile.		
	Join the frame and threshold.	Cut the threshold to the frame width.	→ from page 101
		Predrill through-holes.	
		Use flat-headed screws.	
	Install the pivot clip holders on the threshold.	In the fixed panel: one screw every 200 mm	→ from page 103
	Install the frame component gasket pads.		→ from page 104
	Install the seals.	See DEVENTER documentation	

	Installation sequence	Note	Page reference
Joining the sash and frame	Place the sash on the roller track.	Move the handle to the sliding position.	→ from page 108
	Install the strikers on the locking side.		→ from page 110
	Install the mullion strikers.		→ from page 114
	Install the activator.	Only with control unit with Soft function.	→ from page 118
	Tension the control unit with Soft function.	Only tension the control unit with Soft function using a tensioning tool.	→ from page 122
	Install the operator track.	Length: (FIW - 2) / 2 Screw down in the fixed glazing area.	→ from page 97
	Install the stopper or rubber buffer.	Operator track stopper Sash rubber buffer: place pressure-proof packers under the cover on the mullion.	→ from page 124
	Install the anti-slip protection.		→ from page 125
	Install the weather profile strip.		→ from page 126
	Install the timber strip on the front of the threshold.	Optional	→ from page 126
	Install the fixed glazing timber strip.		
Final acceptance	Install the element.	Place supports under the threshold every 300 mm across its entire area. Max. permitted unevenness of the entire threshold: 3 mm. We recommended that you place supports under the threshold across its entire area.	→ from page 126
	Adjust the hardware.		→ from page 132
	Lubricate the hardware.		→ from page 139
	Check the handle operating torque.	Operating torque ≤ 10 Nm	
	Remove all protective films on aluminium profiles.		



8 Installation

8.1 Processing instructions

Maximum sash sizes and weights

The specifications, application diagrams and component assignments which can be found in the hardware manufacturer's product-specific documents provide information on the maximum permitted sash sizes and weights. The component with the lowest permitted load bearing capacity determines the maximum permitted sash weight.

- Before using electronic data records and implementing them in window fabrication programs in particular, check that they match the specifications, application diagrams and component assignments.
- Never exceed the maximum permitted sash sizes and weights. If any points are unclear, contact the hardware manufacturer.

Specifications from profile manufacturers

The element manufacturer must comply with all specified system dimensions (e.g. gasket gap dimensions or locking distances).

They must continue to ensure and check this on a regular basis, especially when new hardware components are used for the first time, during production and on a continuous basis, up to and including element installation.



INFO

The hardware components are always designed in such a way that any system dimensions affected by the hardware can be adjusted. The hardware manufacturer shall not be liable for any additional expenses incurred if a deviation from these dimensions is not discovered until after the element has been installed.

Combining hardware

Burglar inhibiting elements need hardware which meets special requirements.

Elements for wet rooms and those for use in environments with aggressive, corrosive constituents in the air require hardware that meets special requirements.

The resistance of elements to wind loads when they are closed and locked depends on the individual design of the element. The hardware system is capable of handling wind loads specified by legislation and standards (for example in accordance with EN 12210 – especially test pressure P3).

Coordinate suitable hardware combinations and installation procedures in elements with the hardware manufacturer and profile manufacturer for the areas listed above, and conclude a separate agreement for them.



INFO

The hardware manufacturer's specifications on the combination of hardware (e.g. the use of additional scissor stays, the design of hardware for burglar-inhibiting elements, etc.) are binding.

Installation surfaces

The frame and sash grooves must be free from construction materials (such as plaster, gypsum). The sash groove must be free from welding residue to ensure an optimum supporting surface for the hardware components.

Specifications relating to installation and care



ATTENTION

Sealing compounds that contain silicone may cause property damage.

Sealing compounds that contain silicone may considerably reduce the sealing effect near the threshold after three to five years.

- Only use silicone-free sealing compounds to seal the threshold.

Remove excess sealing compound after installation.



ATTENTION

Using incorrect cleaning agents and sealing compounds may cause property damage.

Cleaning agents and sealing compounds may damage the surfaces of components and gaskets.

- ▶ Do not use aggressive or flammable liquids, acidic cleaners or abrasive cleaners.
- ▶ Only use mild, pH-neutral cleaning agents that have been diluted.
- ▶ Apply a thin protective film to the components, for example using a cloth soaked in oil.
- ▶ Avoid aggressive vapours (e.g. produced by formic acid, acetic acid, ammonia, amine compounds, ammonia compounds, aldehyde, carbolic acid, chlorine, tannic acid) around the element.
- ▶ Do not use any acetic acid-crosslinking or acid-crosslinking sealing compounds or those with the aforementioned constituents as both direct contact with the sealing compound and its fumes can corrode the surface of the components.

8.2 Screw connections



DANGER

Incorrectly installed or screwed-in hardware components present a risk of death.

Incorrectly installed and screwed-in hardware components may lead to hazardous situations and cause serious or fatal accidents.

- ▶ During installation and screwdriving work, observe the specifications provided by the profile manufacturer; contact the profile manufacturer if necessary.
- ▶ Use the recommended screws.
- ▶ Select the length of the screws according to the profiles used.
- ▶ Ensure that the hardware components are adequately secured; contact the screw manufacturer if necessary.



ATTENTION

Using incorrect screw material may cause property damage.

Using the wrong screws may damage the components.

- ▶ Only use galvanised zinc-plated and passivated steel screws.
- ▶ Use screws with additional sealing in more challenging climatic conditions.
- ▶ Use stainless-steel screws on stainless-steel components only.
- ▶ For aluminium components, use screws made of steel (coated with zinc-nickel or zinc flakes) or stainless steel.



ATTENTION

Improper screw fixings may cause property damage.

Improper screw fixings may damage the components and the element as a whole, and stop them from working properly.

- ▶ Unless stated otherwise, turn screws in straight.
- ▶ Tighten screw heads until they are flush with the surface.
- ▶ Do not over-tighten screws. Note the torque. Choose a torque that will not deform the hardware and profile. Define profile-specific torques on the basis of the demo assembly.
- ▶ Use the recommended screws.
- ▶ Select the length of the screws according to the profiles used.



8.2.1 Overview



WARNING

Incorrect screw connections may pose a risk of death!

Hardware components can be pulled out of the sash if they are not screwed through a profile wall that is at least 6 mm thick in total or screwed down using rivet nuts.

- ▶ Select the length of the screws so that they will hold in the aluminium profile. Alternatively, insert additional aluminium profiles.



WARNING

Incorrect screw connections may pose a risk of death!

Short screws will not reach the steel reinforcement and will therefore not hold. Hardware components can be pulled out of the sash if they are not screwed into the steel reinforcement.

- ▶ Select the length of the screws so that they will hold in the steel reinforcement.



ATTENTION

Property damage due to choosing the wrong screws!

Self-drilling screws may damage important functional elements of a component when screwed in.

- ▶ Use screws without a self-tapping thread.



ATTENTION

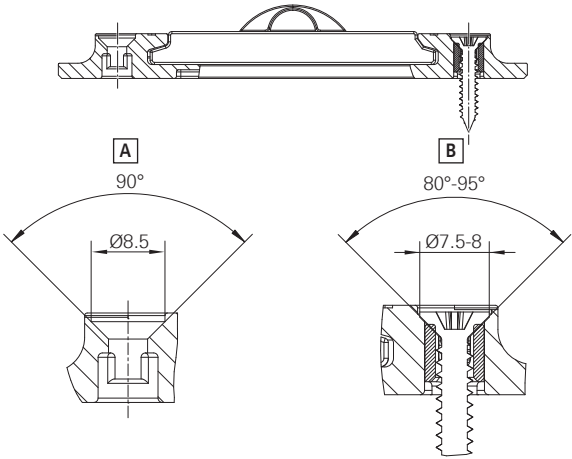
Protruding screw heads may cause property damage.

Protruding screw heads can damage adjoining materials.

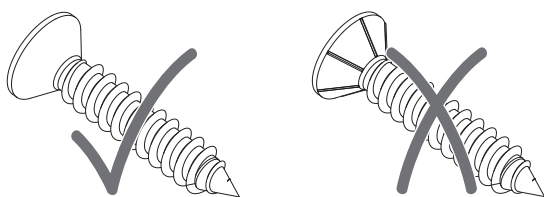
- ▶ Tighten screw heads until they are flush with the surface.

Components	Quantity	Size	Diameter to be drilled	Drive
Roller unit	6	ST4.0 x ...	3.0	Not specified
Control unit	4	ST4.0 x ...	3.0	Not specified
Centre closer	4	ST4.0 x ...	3.0	Not specified
Stabilisation unit	4	ST4.0 x ...	3.0	Not specified
Mullion striker	2	ST4.0 x ...	3.0	Not specified
Striker	3	ST4.0 x ...	3.0	Not specified
Activator / stopper	3	ST4.0 x ...	3.0	Not specified
Threshold with frame post	8	ST6 x 130	6.5 / 14.0	Not specified
Threshold with fixed panel frame component, horizontal	...	ST5 x 40	5.5	Not specified
Roto Line handle	2	M5 x ...	10.0 / 12.0	Cross-head

Specifications for selecting screws



- [A] Specifications relating to the countersink
[B] Specifications relating to the screw head for selecting screws



ATTENTION

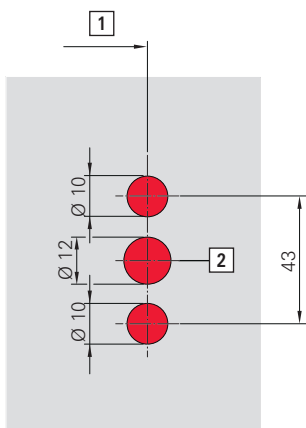
Property damage due to inserting screws with ribs on the underside of the screw head!

Ribs on the underside of the screw head may damage important functional elements of a component when screwed in.

- Use screws with screw heads which do not have ribs on the underside.

8.3 Drilling and routing dimensions

8.3.1 VT espagnolette

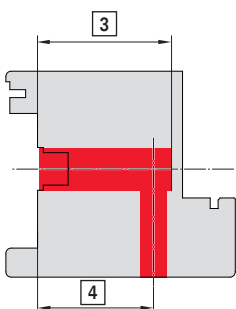
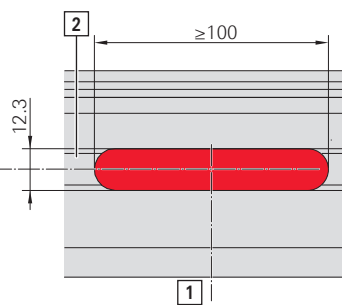


Drill holes for the handle's sprocket and lugs

[1] Backset

[2] Handle height

Drilling depth = overlap height + 16 (for countersunk screws in accordance with ISO 7046-1 M5 x ...)



Gearbox routing

[1] Centre of gearbox

[2] Hardware groove

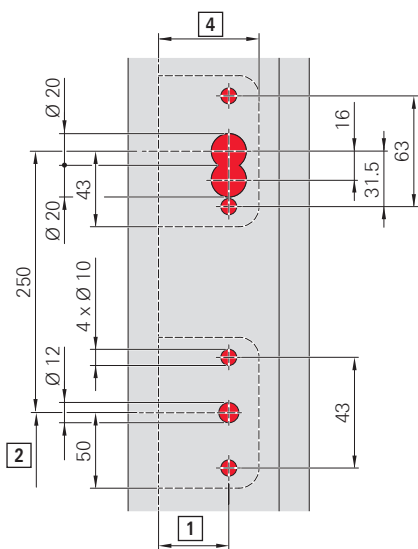
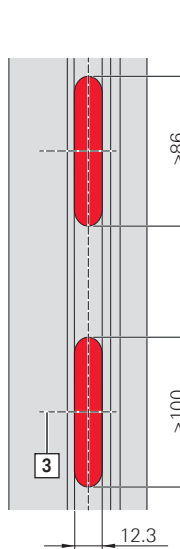
[3] Gearbox routing depth:

BS + 17 (e.g. 30 + 17 = 47 mm)

[4] Backset (BS)



8.3.2 VT espagnolette, lockable



Drill holes for Roto Line handle and profile cylinder for lockable espagnolettes

[1] Backset

[2] Handle height

[3] Centre of gearbox

[4] Min. routing depth

Drill holes: at the bottom for the square spindle and handle mount, at the top for the profile cylinder and profile cylinder escutcheon mount

Routing for gearbox and lock casing

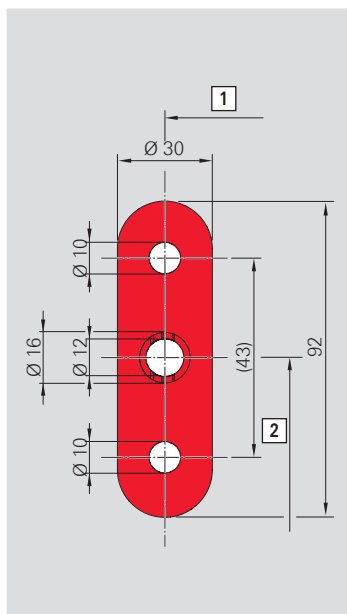
Routing: at the bottom for the gearbox, at the top for the lock casing

Gearbox / lock casing routing depth:

BS 25 = 42 mm

BS 30 = 47 mm

8.3.3 External recessed grip



Recessed grip routing

Routing depth = 10 mm

[1] Backset

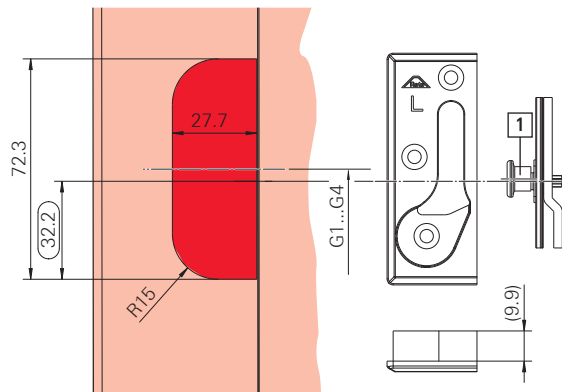
[2] Handle height

Installation

Drilling and routing dimensions

Striker, can be routed in

8.3.4 Striker, can be routed in



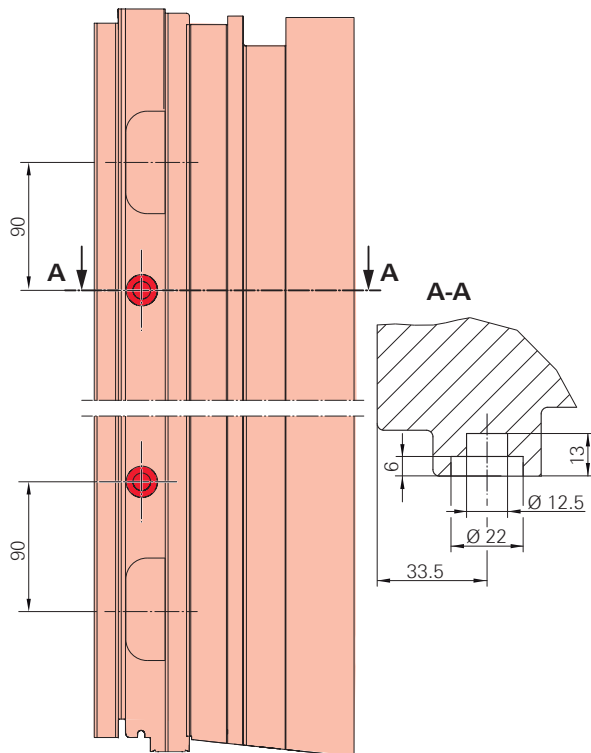
Routing for striker, can be routed in

Refer to the "Frame component positions" table for the quantity and position of the striker, which can be routed in → *from page 110*.

Routing depth = 10 mm

[1] Cam (VT espagnolette)

8.3.5 Rubber buffer



Create a stepped hole with a spade drill.

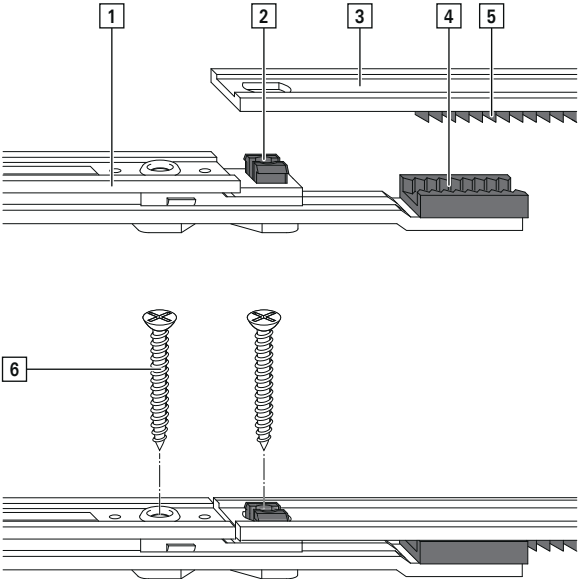
1. Drill to a depth of 6 mm with Ø 22 mm.
2. Drill to a depth of 13 mm with Ø 12.5 mm.



8.4 Sash

8.4.1 Force-fit connection

Couplable hardware components always require a force-fit connection.



Assignment	Description
[1]	Component A
[2]	Screw guide with clamp
[3]	Component B
[4]	Component A toothed segment
[5]	Component B toothed segment
[6]	Screw

Force-fit connections are formed by screwing down components A and B so that forces and movements are transferred without loss.



INFO

All couplable components are delivered attached in the centre.

8.4.2 Cropping the hardware components



ATTENTION

Incorrect cropping methods may result in property damage.

Do not insert the hardware components into the sash before they have been cropped. The screw guide engages and can be destroyed when it is removed.

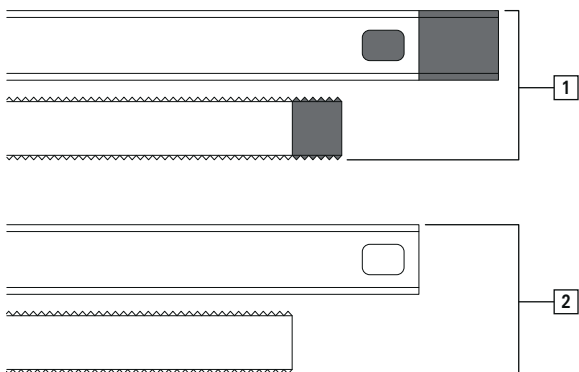
- Only lay out the hardware components and do not insert them into the sash before they have been cropped.

The following hardware components are cropped:

- Espagnolette
- Centre locks

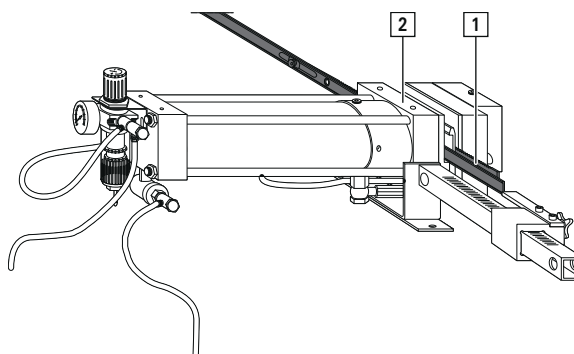
Cropping with a pneumatic punch (hole punching)

Hardware components are delivered 10 mm longer than the nominal dimension.



Assignment	Description
[1]	Hardware delivery state
[2]	Hardware, cropped

1. Place the hardware component in the required position.
2. Mark the length on the hardware component.
3. Insert the hardware component [1] into the pneumatic punch [2].

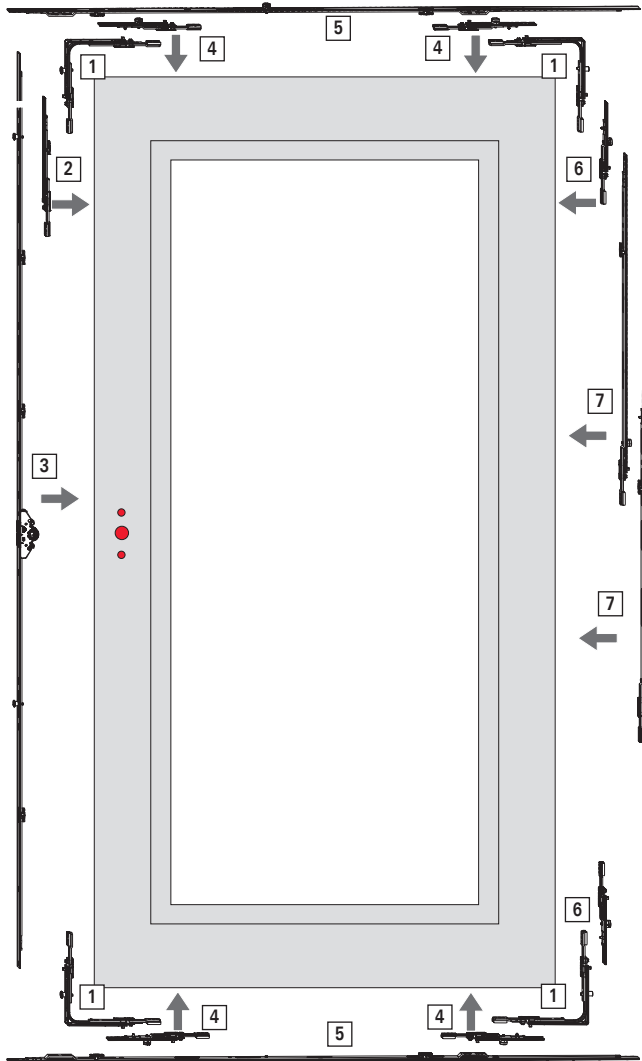


4. Align the hardware component.
5. Crop the hardware component.



8.4.3 Installation sequence

8.4.3.1 Diagram A



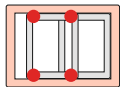
- [1] Corner drives
- [2] Espagnolette extension (size-dependent)
- [3] Espagnolette
- [4] Centre locks CL 130, horizontal at the top and bottom
- [5] Centre locks, horizontal at the top and bottom (size-dependent)
- [6] Centre locks CL 130, vertical on the mullion side
- [7] Centre locks, vertical on the mullion side (size-dependent)



INFO

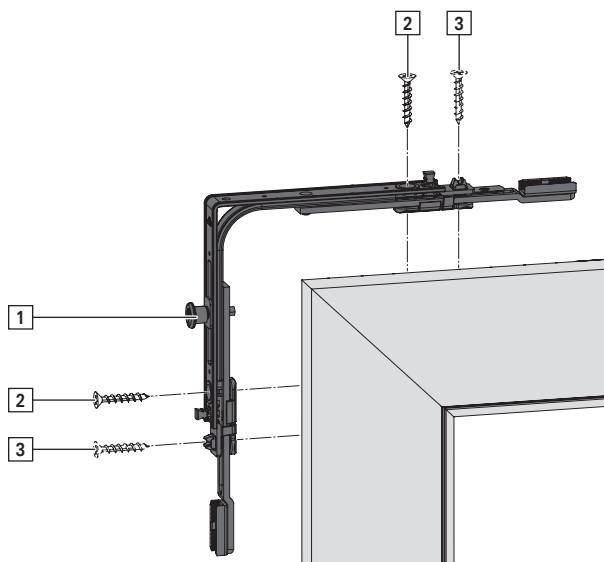
After installation, break the centre fixing on the espagnolette by turning the handle 180°.
Turn the handle to the open sliding position.

8.4.4 Corner drive



Installing the corner drive

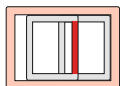
1. Insert the corner drive with vertical cam position [1] and secure with two screws [2].



2. After all of the connector components have been installed, screw down the corner drives with a further two screws [3]. → 8.4.1 "Force-fit connection" from page 75

8.4.5 Centre locks

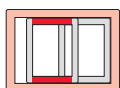
8.4.5.1 Centre lock, vertical



Installing the vertical centre lock

1. Insert the centre lock on the mullion side and create a force-fit connection → 8.4.1 "Force-fit connection" from page 75.

8.4.5.2 Centre lock, horizontal

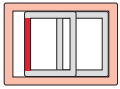


Installing the horizontal centre lock

1. Insert the centre lock at the bottom and top on the locking side and create a force-fit connection → 8.4.1 "Force-fit connection" from page 75.

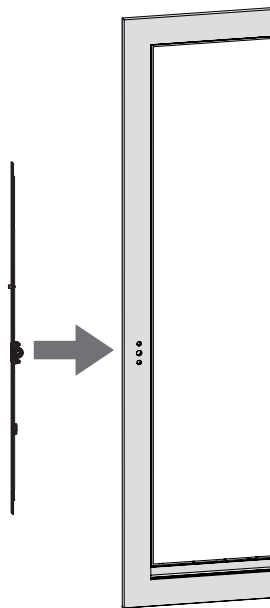


8.4.6 VT espagnolette



Installing the VT espagnolette

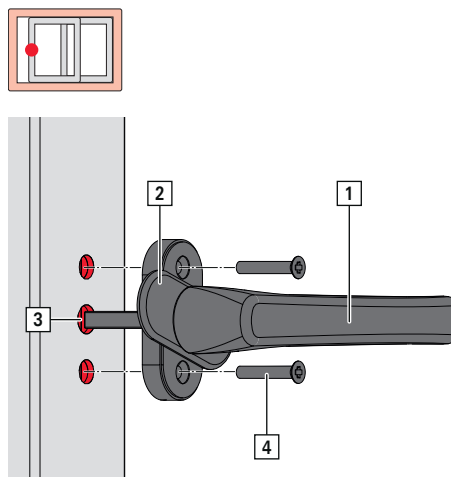
1. Place the espagnolette in the required position, mark the length on one side, remove and crop → *8.4.2 "Cropping the hardware components" from page 76.*
2. Insert the espagnolette.
Create a force-fit connection → *8.4.1 "Force-fit connection" from page 75.*



8.4.7 Handle and recessed grip

Installing the handle and recessed grip

1. Move the handle [1] to the 90° position → 11.1.1 *"Roto Patio Inowa" from page 136.*
2. Turn the escutcheon cover [2] in order to expose the screw holes.



3. Insert the handle into the sash [3].
4. Insert the recessed grip into the sash on the opposite side.
5. Screw the recessed grip through the handle with two screws [4].
6. Turn the escutcheon cover in order to expose the screw holes.



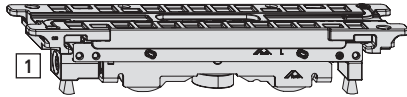
8.4.8 Roller unit



INFO

The roller unit must not be pushed into the timber. Adapt the torque if necessary.

For the roller unit, ensure that the adjusting screw [1] is facing towards the handle when installed.



Positioning the drilling jig

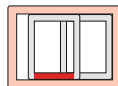
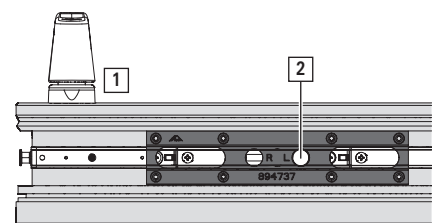
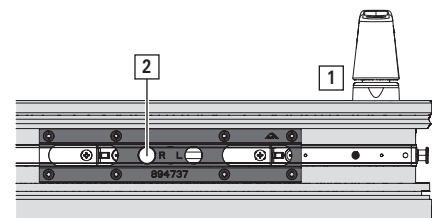


ATTENTION

Improper drilling work may cause property damage.

An incorrect handle position and incorrect alignment of the drilling jig damage the sash during drilling.

- The handle must be in the sliding position [1].



Attach the drilling jig to the cam [2].

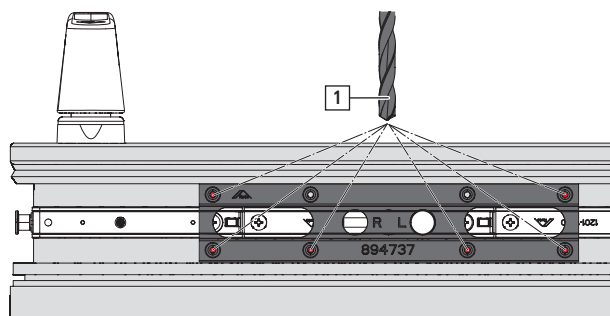
For profiles with just one mounting surface, align the drilling jig so that it is parallel with this surface when drilling.



Refer to the installation drawing for the position → *from page 128*.

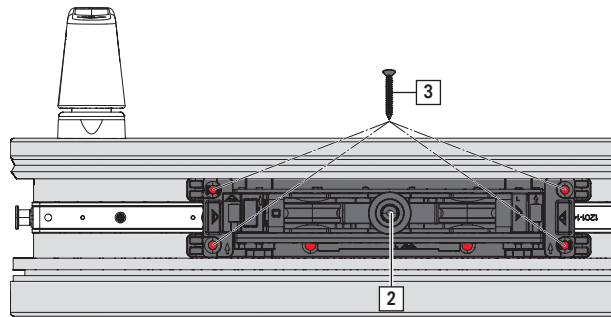
Installing roller units

1. Drill six holes.
Drill [1]: Ø 3.0
Shown: diagram A, L version

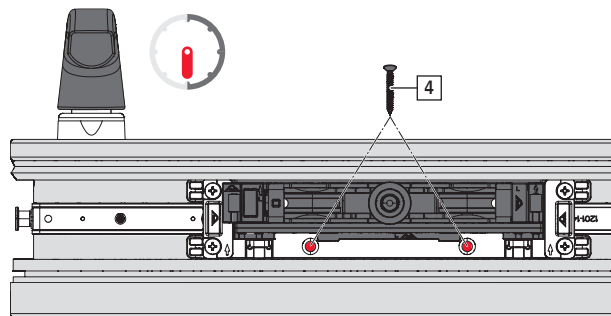


Installation
Sash
Roller unit

2. Insert the roller unit [2] and fasten with outer screws [3].



3. Move the handle to the closed position.
Fasten the roller unit with two inner screws [4].





8.4.9 Stabilisation unit



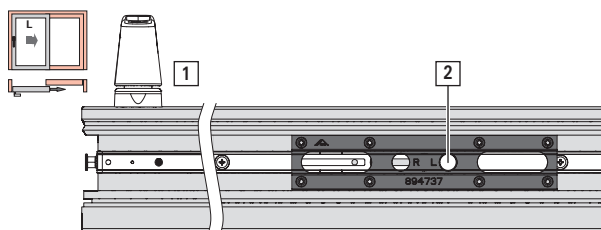
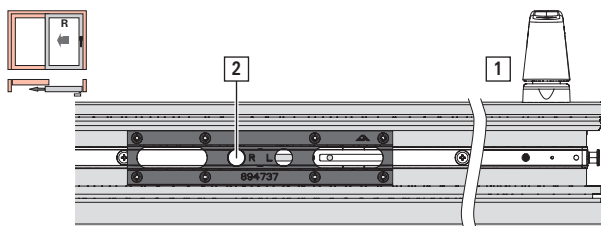
ATTENTION **Improper drilling work may cause property damage.**

An incorrect handle position and incorrect alignment of the drilling jig damage the sash during drilling.

- The handle must be in the sliding position [1].

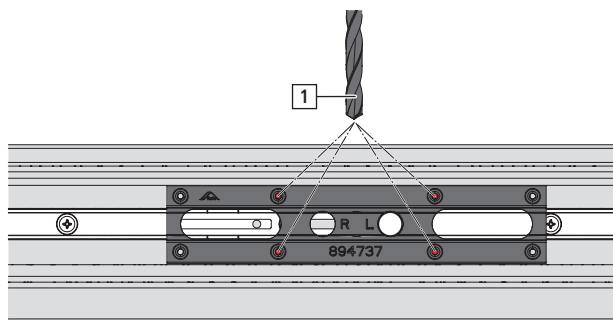
Attach the drilling jig to the control cam [2].

Refer to the installation drawing for the position → *from page 128.*

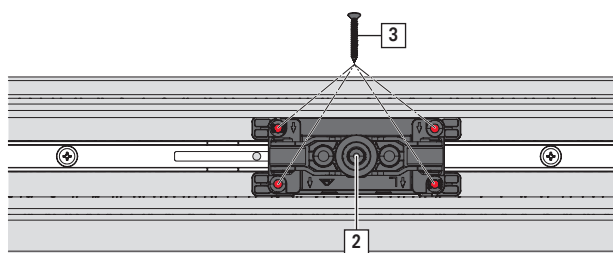


Installing the stabilisation unit

1. Drill four holes.
 Drill [1]: Ø 3.0
 Shown: diagram A, L version



2. Insert the stabilisation unit [2] and fasten with screws [3].

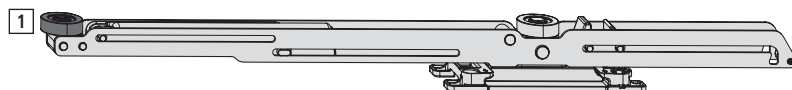


8.4.10 Control unit



INFO

For control units with Soft function, ensure that the additional control roller [1] is facing towards the centre of the sash when installed.



Positioning the drilling jig



ATTENTION

Improper drilling work may cause property damage.

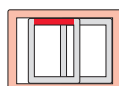
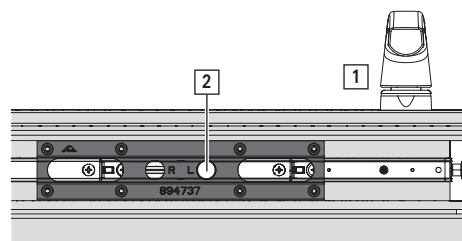
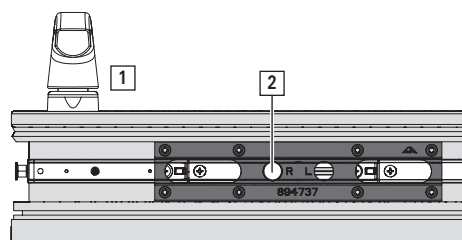
An incorrect handle position and incorrect alignment of the drilling jig damage the sash during drilling.

- The handle must be in the sliding position [1].

Attach the drilling jig to the cam [2].

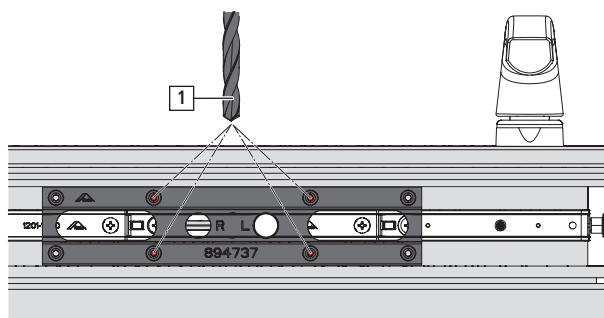
For profiles with just one mounting surface, align the drilling jig so that it is parallel with this surface when drilling.

Refer to the installation drawing for the position → *from page 128*.



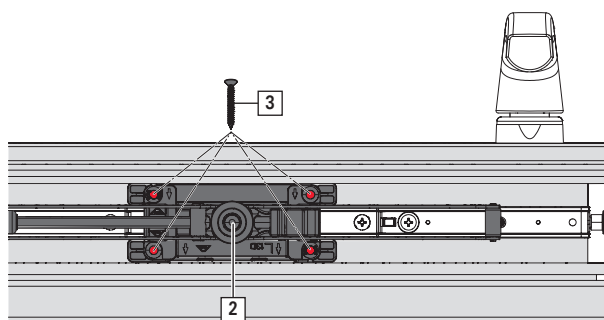
Installing the control unit

1. Drill four holes.
Drill [1]: Ø 3.0
Shown: diagram A, L version





2. Insert the control unit [2] and fasten with screws [3].



8.4.11 Centre closer



INFO

The centre closer must not be pushed into the timber. Adapt the torque if necessary.

Positioning the drilling jig



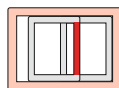
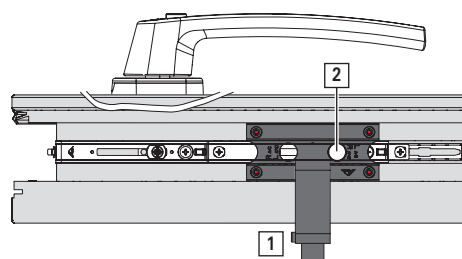
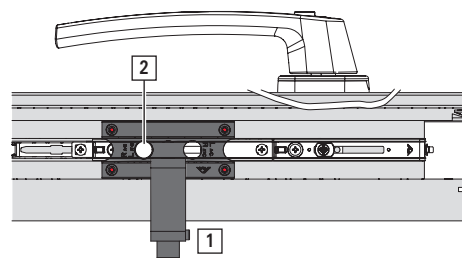
ATTENTION

Improper drilling work may cause property damage.

An incorrect handle position and incorrect alignment of the drilling jig damage the sash during drilling.

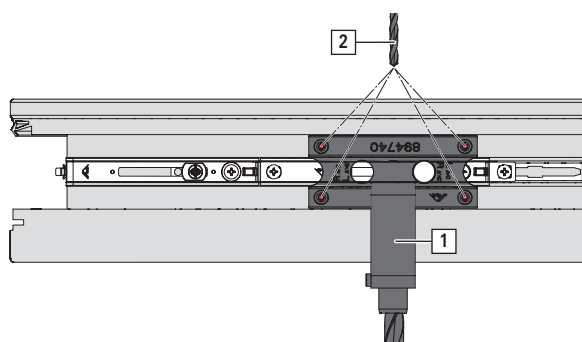
- ▶ The handle must be in the open sliding position [1].
- ▶ Position the drilling jig so that the side with the Ø 14.0 drill hole [2] is **facing away** from the handle.

Refer to the installation drawing for the position → *from page 128.*



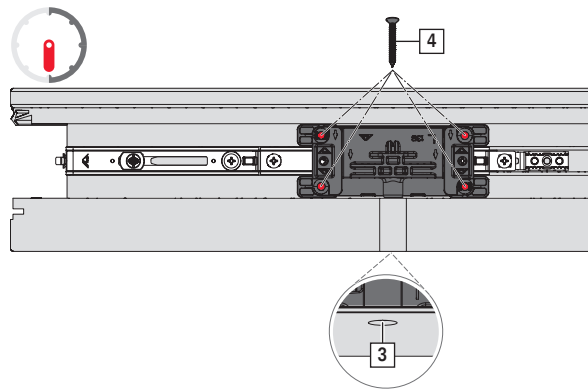
Installing centre closers

1. Drill one hole.
Drill [1]: Ø 14.0
Drill four holes.
Drill [2]: Ø 3.0
Shown: diagram A, L version

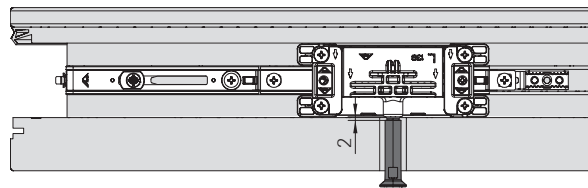




2. Move the handle to the closed position.
Insert the centre closer so that the MUL locking
cam mount is facing the drill hole [3] on the outer
side of the sash.
Fasten with four screws [4].



3. Fasten the MUL locking cam at a distance of
2 mm from the centre closer.
Tool: size 8 open-end spanner / size 4 hex key



8.4.12 Centre closer for anti-pushback function



INFO

Diagram C: install right components for L version; install left components for R version.

The centre closer must not be pushed into the timber. Adapt the torque if necessary.

Positioning the drilling jig



ATTENTION

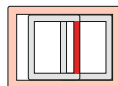
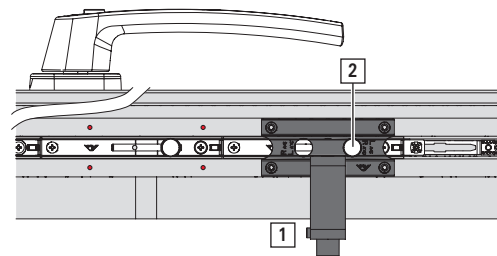
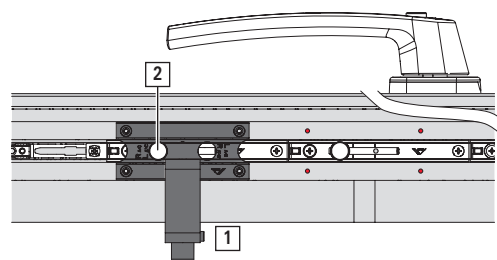
Improper drilling work may cause property damage.

An incorrect handle position and incorrect alignment of the drilling jig damage the sash during drilling.

- ▶ The handle must be in the open sliding position.
- ▶ **Inward running sashes:** position the drilling jig so that the side with the Ø 14.0 drill hole [1] is facing **away** from the handle.
- ▶ **Outward running sashes:** position the drilling jig so that the side with the Ø 14.0 drill hole [1] is facing **towards** the handle.

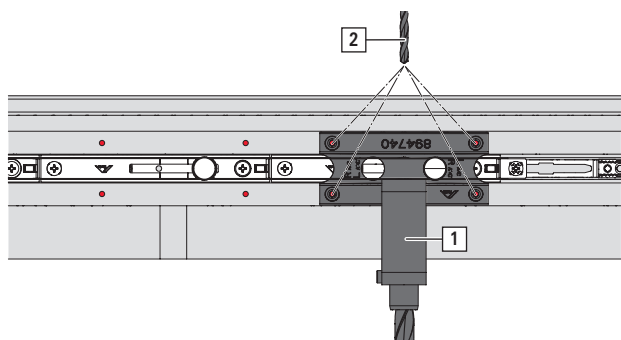
Attach the drilling jig to the control cam [2].

Refer to the RC installation drawing or diagram C for the position → *from page 128*.



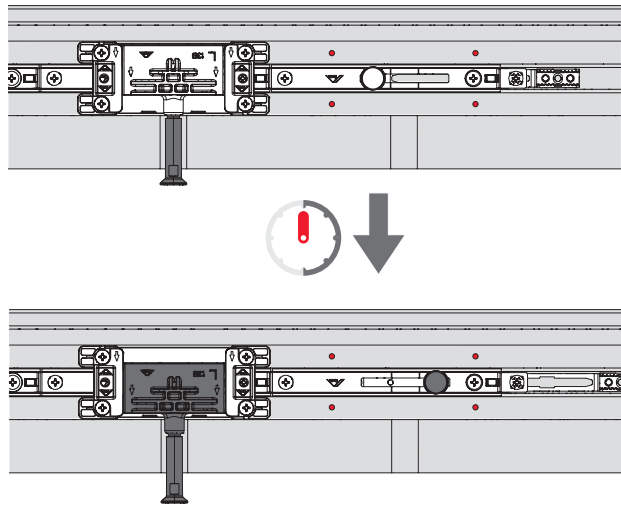
Installing the centre closer for anti-pushback function

1. Drill one hole.
Drill [1]: Ø 14.0
Drill one hole.
Drill [2]: Ø 3.0
Shown: diagram A, L version

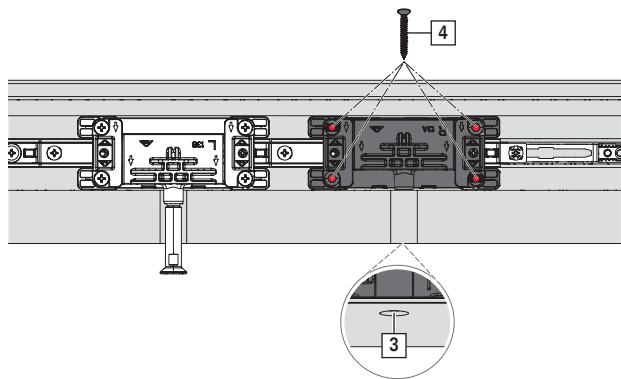




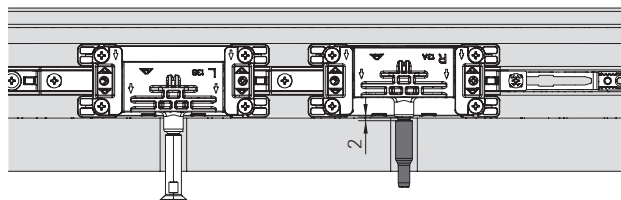
2. Install the centre closer → *from page 86*.



3. Insert the centre closer so that the mullion locking cam mount is facing the drill hole [3] on the outer side of the sash.
Fasten with four screws [4].



4. Fasten the pin for anti-pushback function [5] at a distance of 2 mm from the centre closer.
Tool: size 3 hex key



8.4.13 Rubber buffer

Alternatively: install the rubber buffer in the frame → 8.6.10 "Rubber buffer" from page 124.

Installing the rubber buffer

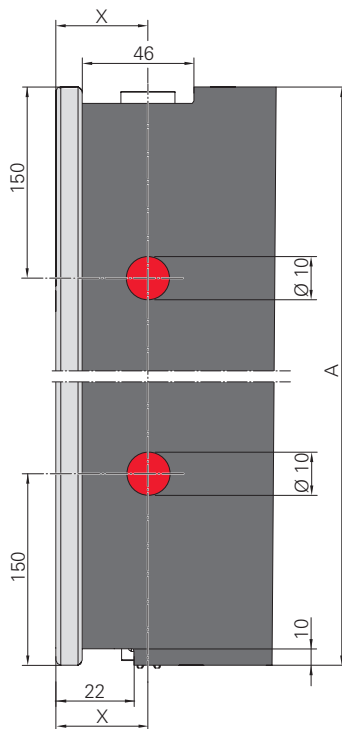
1. Crop the cover to SRH (A). Notch at the top and bottom.

Drill two Ø 10 mm holes for rubber buffers at the top and bottom of the cover.

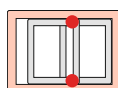


INFO

The dimension X for the drill hole position is profile-related.

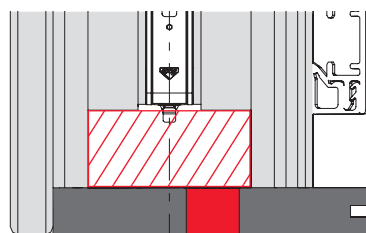


2. Install the profile-related cover on the mullion side. Ensure that the operator track and roller track are running smoothly.

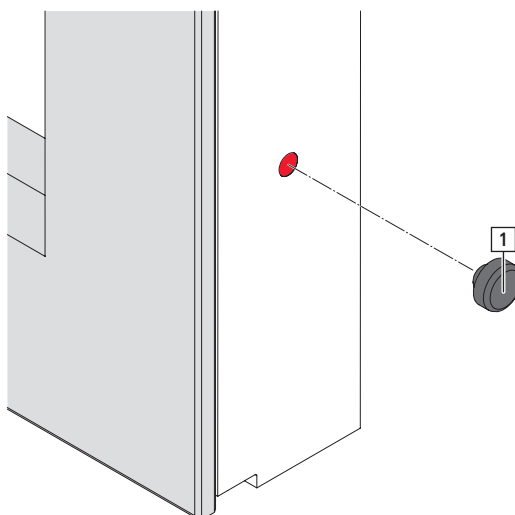


INFO

Place pressure-proof packers underneath the cover at the top and bottom in the hatched area for installing the rubber buffer. Ensure that the cam on the corner drive is running smoothly.

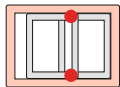


3. Insert the rubber buffer [1].





8.4.14 Sealing component



ATTENTION

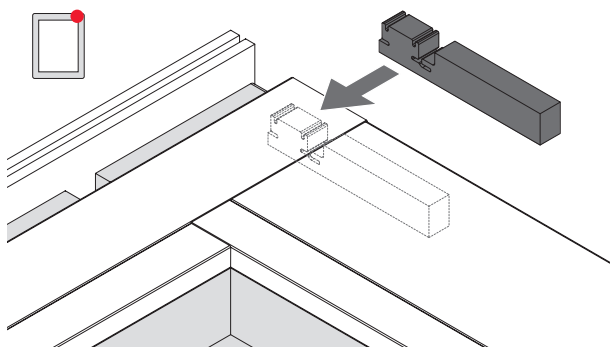
Sealing compounds that contain silicone may cause property damage.

Sealing compounds that contain silicone may considerably reduce the sealing effect near the threshold after three to five years.

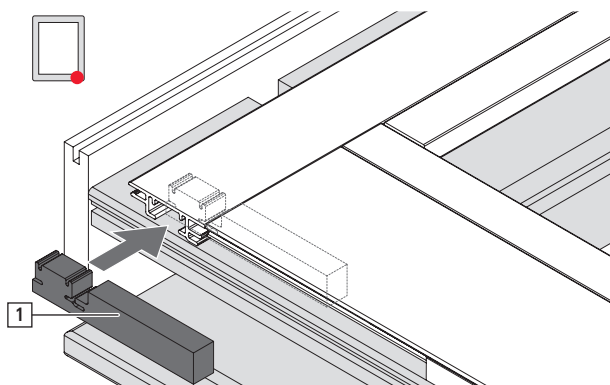
- Only use silicone-free sealing compounds to seal the threshold.

Installing the sealing component

1. Push the sealing component as far as it will go into the aluminium profile at the top of the sash.



2. Push the sealing component [1] as far as it will go into the aluminium profile at the bottom of the sash.

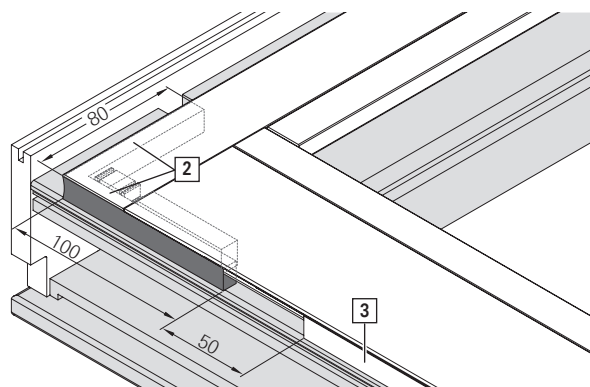


3. Seal the aluminium profile on the open sides in the area of the sealing component at the bottom of the sash [2]. Leave a 50 mm-wide opening to the gasket [3] to allow water to run off at the bottom.



INFO

Immediately install the sash component gasket pad at the bottom in the sealing compound which has not yet set .



8.4.15 Sash sealing elements



ATTENTION

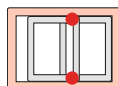
Sealing compounds that contain silicone may cause property damage.

Sealing compounds that contain silicone may considerably reduce the sealing effect near the threshold after three to five years.

- Only use silicone-free sealing compounds to seal the threshold.

Sash gasket pad, diagram A

1. Apply sealing compound to the sash gasket pad [1], in the area where it is in contact with the sash.

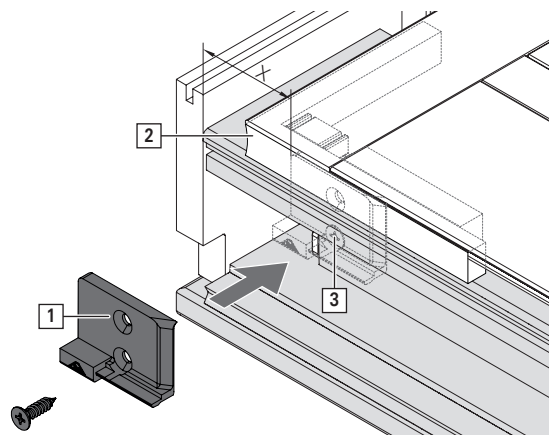


Position the gasket pad, in the case of timber-aluminium profiles in the sealing compound which has not yet set [2].

- IV 78 timber-aluminium: $X = 42.5 \pm 0.25$
- IV 78 timber / IV 92 timber: $X = 32.5 \pm 0.25$

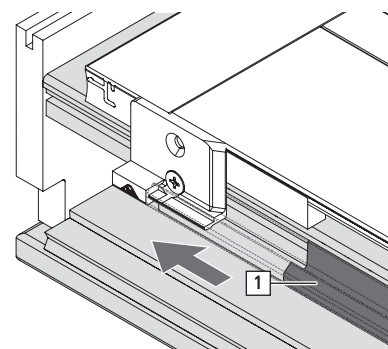
Secure the gasket pad.

- IV 78 timber-aluminium: secure with one screw [3].
- IV 78 timber / IV 92 timber: secure with two screws.



Installing the central gasket

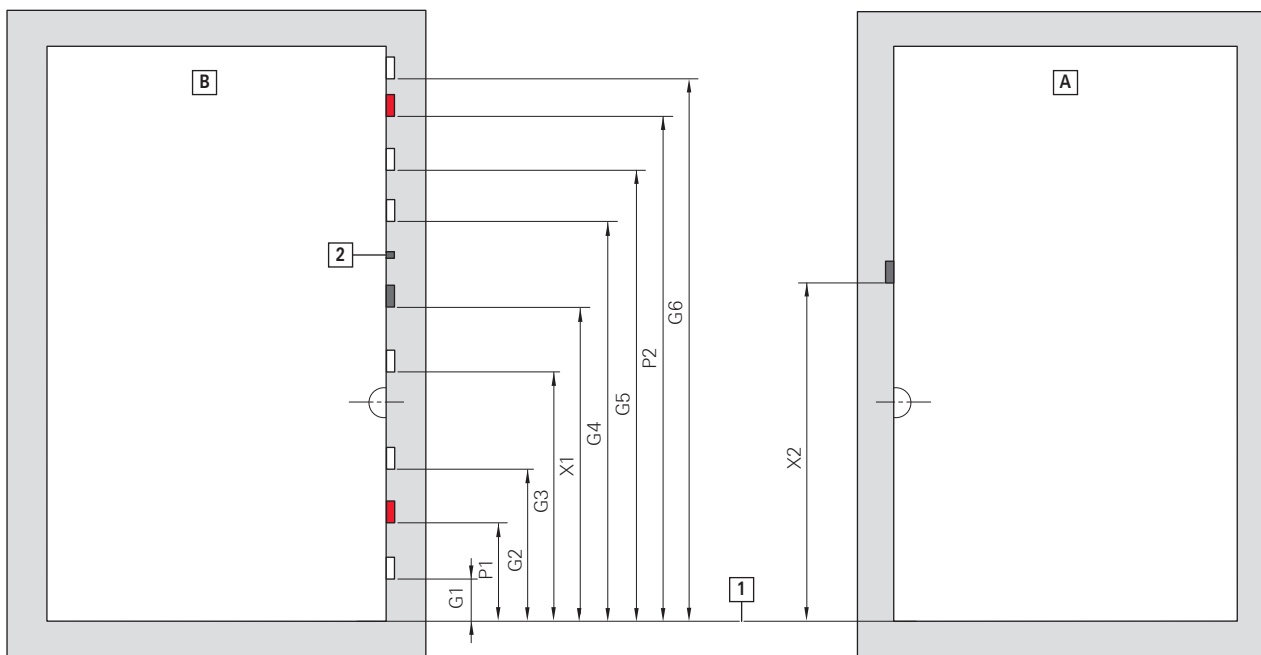
1. Apply sealing compound to the gasket pad at the top and bottom of the sash, in the area where it is in contact with the central gasket.
2. Place the central gasket [1] in the profile, push it onto the sash gasket pad as far as it will go and adhere it.



3. Remove excess sealing compound and adhesive.



8.4.16 Components in the floating mullion



[1] Sash rebate edge; [A] First opening sash; [B] Second opening sash

□ Striker, diagram C

■ Operating sequence control: [2] Bolt, [X1] Striker with buffer (anti-lifting device), [X2] Stop, routed

■ [P1] Striker with buffer

First opening sash

SRH [mm]	X2
≤ 1000	–
1001 – 1200	733
1201 – 1600	820
1601 – 1800	1206
1801 – 2400	1552
> 2400	1596

Second opening sash

SRH [mm]	G1	G2	G3	G4	G5	G6	P1	P2	X1
≤ 1000	51	SRH – 59	–	–	–	–	150	SRH – 160	–
1001 – 1200	51	675	SRH – 59	–	–	–	150	SRH – 160	688
1201 – 1600	51	675	SRH – 59	–	–	–	150	SRH – 160	775
1601 – 1800	51	675	SRH – 59	–	–	–	150	SRH – 160	1162
1801 – 2400	51	675	1345	SRH – 59	–	–	150	SRH – 160	1507
2401 – 2800	51	675	1745	SRH – 59	–	–	150	SRH – 160	1551
> 2800	51	675	1745	SRH – 658	SRH – 59	–	150	SRH – 160	1551

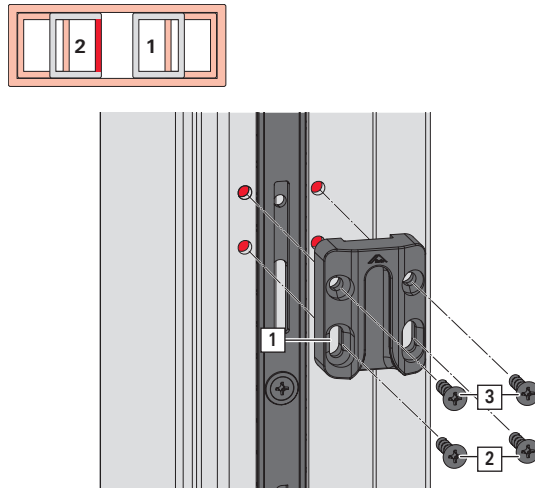
8.4.17 Striker, diagram C

Drilling the holes for striker, diagram C

Installing the striker, diagram C

⇒ Note the drilling specifications .

1. Pre-position the striker, diagram C [1] with two screws [2] in the slots.
Check the position and fasten with an additional two screws [3].





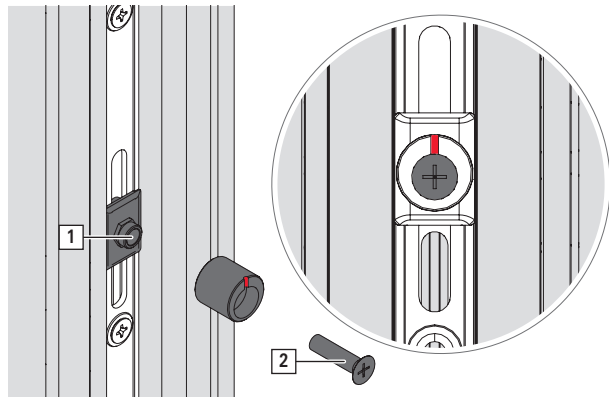
8.4.18 Installing the operating sequence control

Alternatively: position of the components according to installation of components in the floating mullion → *from page 93.*

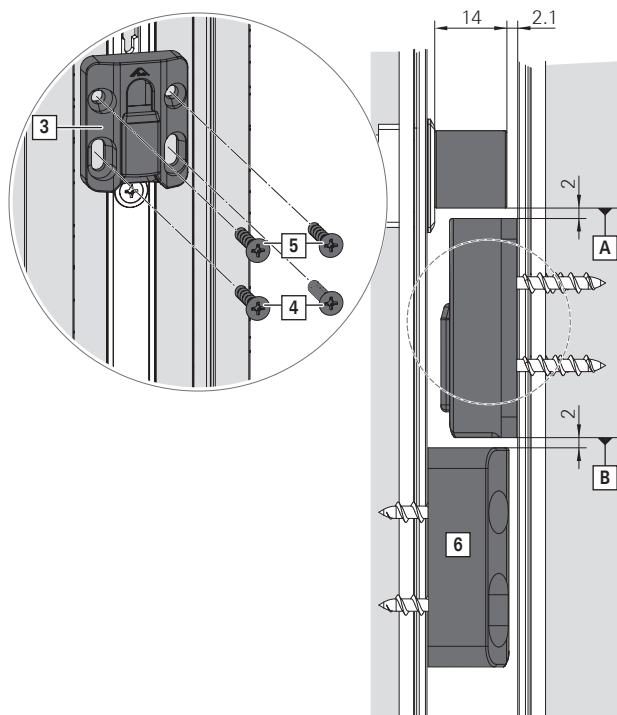
1. Move the handle of the second opening sash to the closed position.



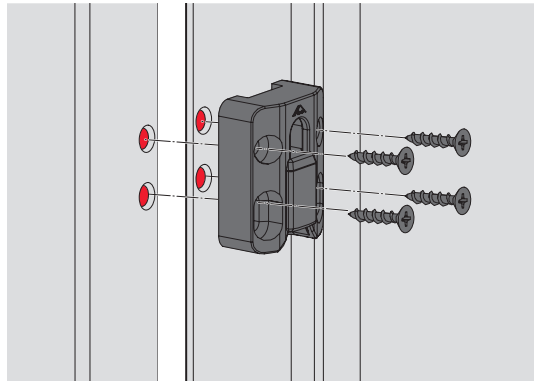
2. Attach the bolt at the position provided [1] on the espagnolette of the second opening sash. The marking (red) points up. Fasten with one screw [2].



3. Push the first opening sash shut until the lower edge [A] of the bolt can be transferred to the first opening sash. Open the first opening sash again and pre-position the stop [3] on the first opening sash with two screws [4] in slots, at an offset of 2 mm from the lower edge of the bolt. Check the position and fasten with an additional two screws [5]. Push the first opening sash shut until the lower edge [B] of the stop can be transferred to the second opening sash. Open the first opening sash again and fasten the anti-lifting device [6] to the second opening sash with four screws, at an offset of 2 mm from the lower edge of the stop.



4. Fasten each striker with buffer using four screws.



8.5 Frame

8.5.1 Gasket strip (IV78 timber / IV92 timber)



ATTENTION

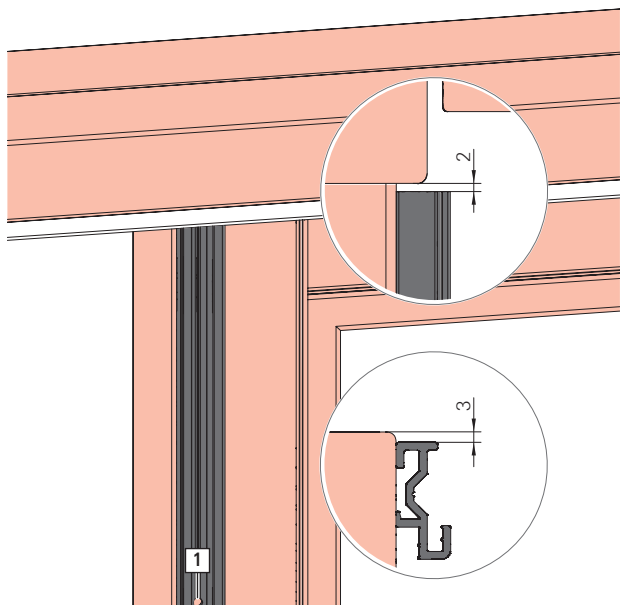
Sealing compounds that contain silicone may cause property damage.

Sealing compounds that contain silicone may considerably reduce the sealing effect near the threshold after three to five years.

- Only use silicone-free sealing compounds to seal the threshold.

Installing the gasket strip

1. Crop the gasket strip (length = SRH + 72).
2. Position the gasket strip and fasten with screws in predefined drill holes [1].





8.5.2 Operator track



ATTENTION

Protruding screw heads may cause property damage.

Protruding screw heads in the area of the activator can damage the control unit when opening the sash.

1. Do not screw the operator track in the area of the activator.



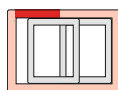
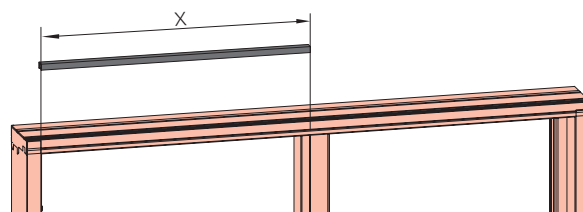
INFO

- Pay attention to the system-specific profile assessment.
 - Seal the guide track properly under your own responsibility. Prevent water from entering underneath the guide track.
 - Ensure that the guide track is securely attached.
- Adhere to a screw spacing of max. 300 mm.

Preparing the operator track – version with split operator track

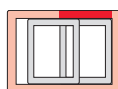
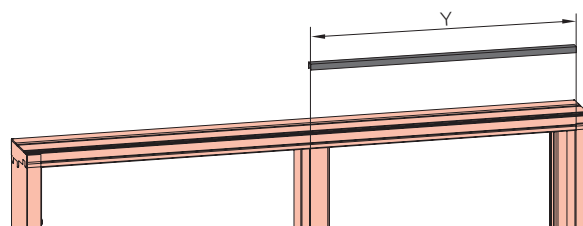
1. Cut the operator track for the access area to size and predrill it.

$$X = \text{FIW} - (\text{SRW} + 95)$$



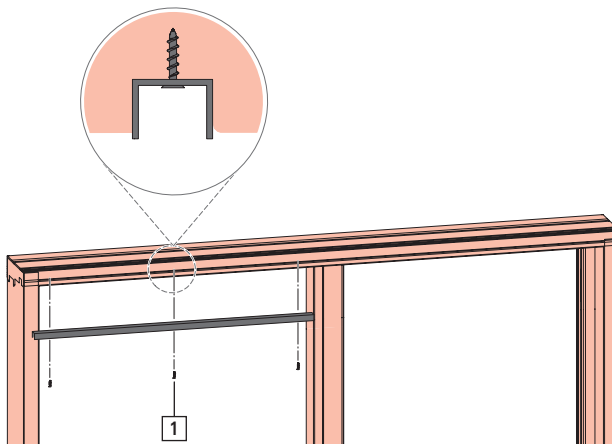
2. Cut the operator track for the fixed glazing area to size and predrill it.

$$Y = \text{FIW} - X$$



Installing the operator track in the access area – version with split operator track

1. Insert the operator track into the frame in the access area and fasten with screws [1] (screws spaced max. 300 mm apart).





INFO

Only install the operator track in the fixed glazing area once the sash has been inserted.

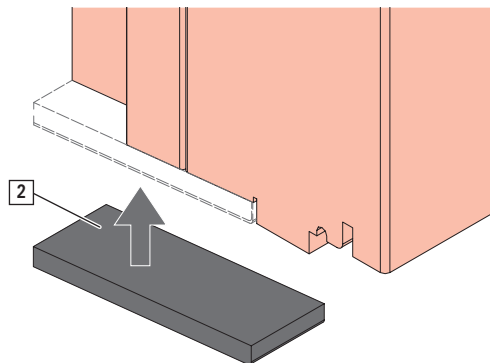


8.5.3 Compensation profile

IV 78 timber-aluminium is shown here. Refer to the table for dimensions for all other profile systems.

Installing the compensation profile

1. Place the compatible compensation profile [2] on the bottom of the frame post so that it is flush with the slot.

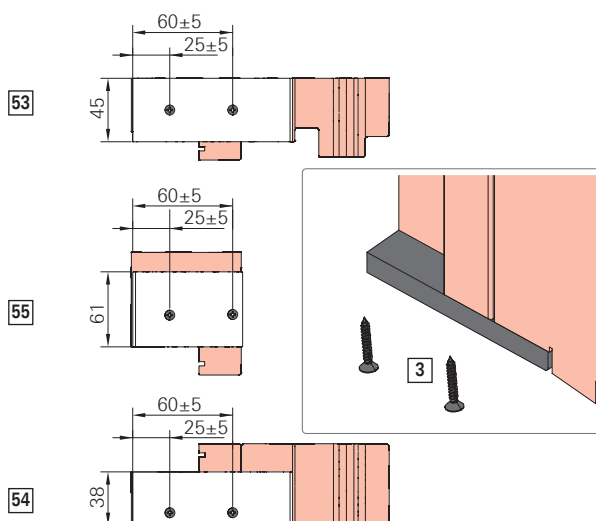


2. Fasten each with two screws [3].



INFO

Countersink the screws fully (2 mm deep).



- [53] Compensation profile, 45 mm, for left frame post
 [54] Compensation profile, 38 mm, for right frame post
 [55] Compensation profile, 61 mm, for mullion frame post

Dimensions for all profile systems

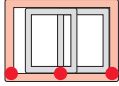
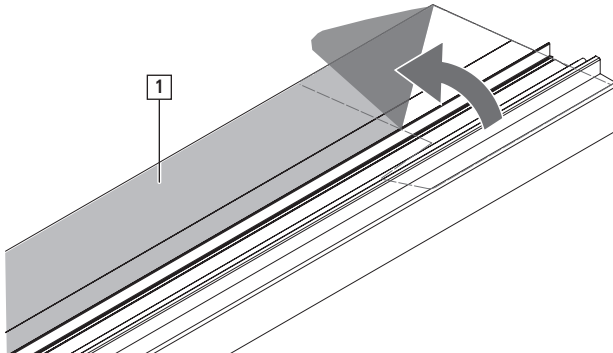
Diagram	Profile system	Dimensional drawing
Diagram A	IV 78 timber-aluminium	
	IV 78 timber	
	IV 92 timber	



8.5.4 Threshold

Installing the threshold

1. Cut the threshold to the frame width.
2. Remove the protective film [1] in the installation area.



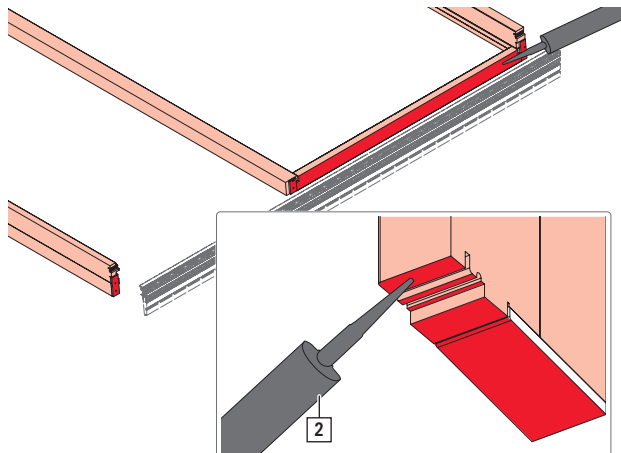
3. Apply sealing compound [2] to the bottom of the frame post and to the fixed panel at the bottom of the frame.



ATTENTION Sealing compounds that contain silicone may cause property damage.

Sealing compounds that contain silicone may considerably reduce the sealing effect near the threshold after three to five years.

- Only use silicone-free sealing compounds to seal the threshold.



INFO

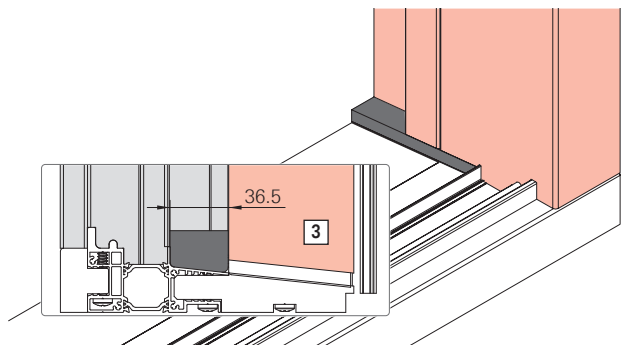
Note the protection for the end-grain timber on timber profiles.

4. Place the frame flush on the threshold.



INFO

Fix the centre post [3] into position at a distance of 36.5 mm from the threshold. Use a jig, e.g. a timber block.

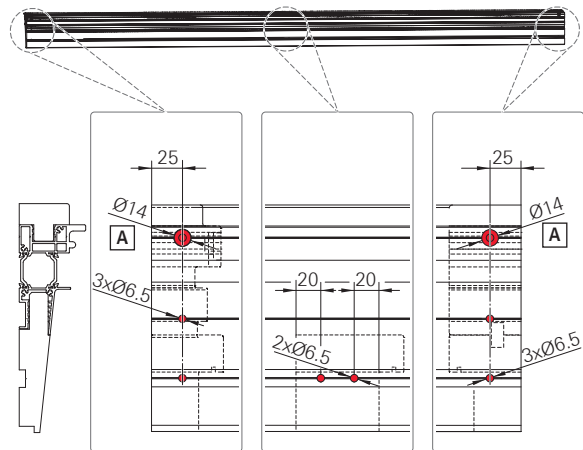


5. Predrill the threshold in the existing notches.

Drill:

8x Ø 6.5

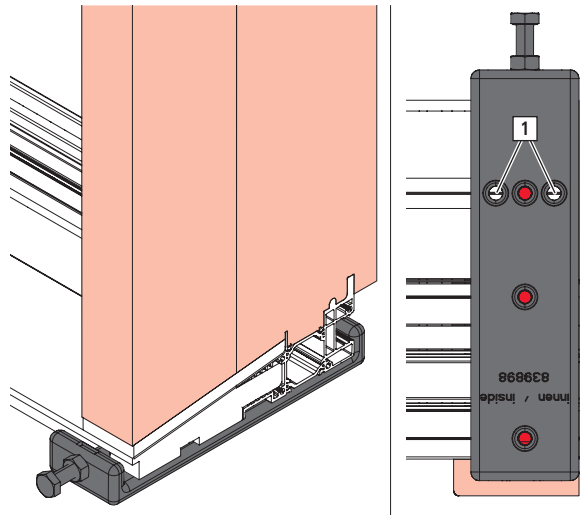
2x Ø 14 through first wall [A]



6. Alternatively: use the drilling jig for the threshold.

Three drill holes in the centre: frame external post

Two drill holes at the side [1]: frame mullion



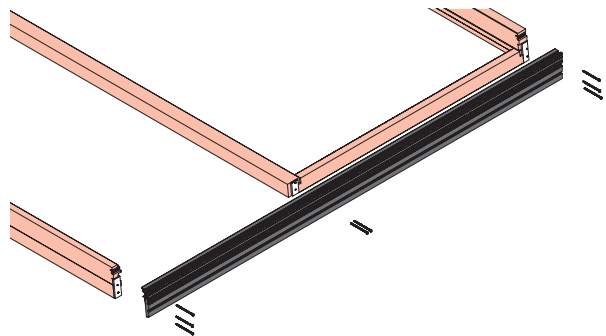
7. Fasten the frame with eight screws.



INFO

Tighten the screws without putting strain on the threshold. Tightening the screws compresses the compensation profile.

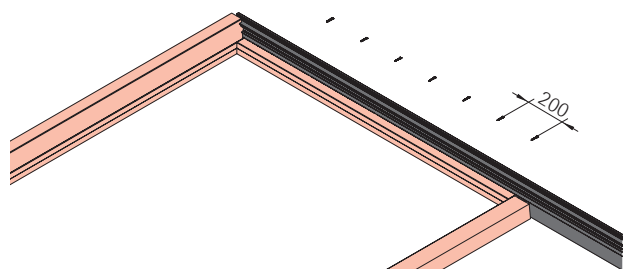
Remove excess sealing compound.



8. Predrill the threshold in the existing notch every 200 mm in the area of the fixed panel.

Drill: Ø 5.5

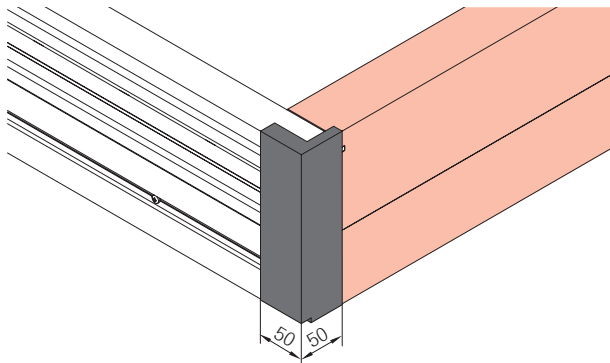
Fasten the threshold to the frame component using screws.





Sealing the corner area

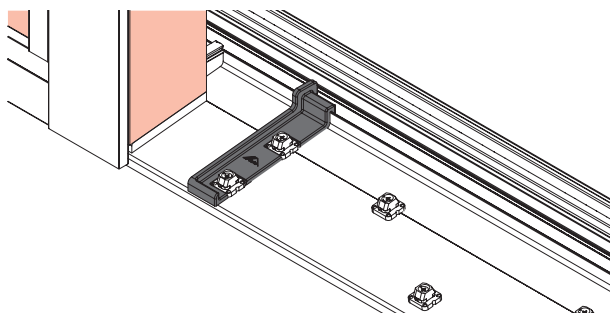
1. Seal the corner area between the frame / threshold with butyl tape (on site). While doing so, ensure that the butyl tape overlaps by 50 mm on the underside and outer side.



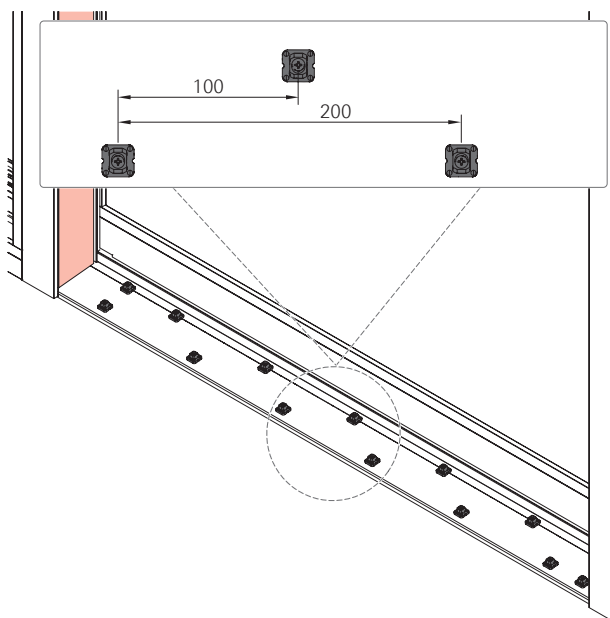
8.5.5 Pivot clip holders

Installing the pivot clip holders

1. Use a positioning jig.



2. Drill holes in two rows offset from one another.
Distance between pivot clip holders: max. 200 mm.



8.5.6 Sealing elements



ATTENTION

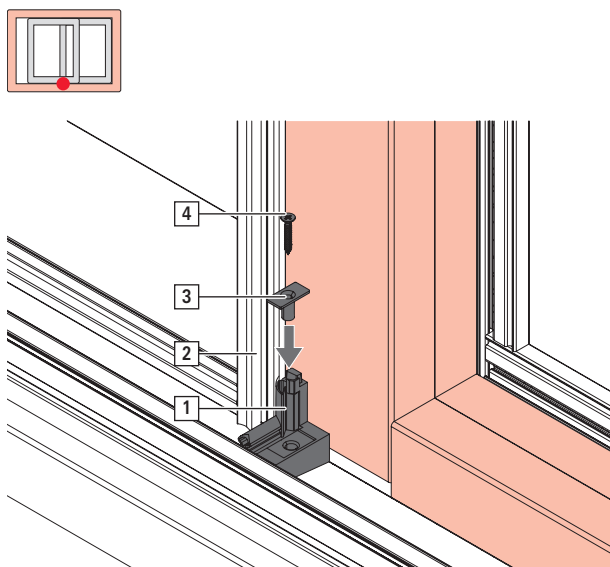
Sealing compounds that contain silicone may cause property damage.

Sealing compounds that contain silicone may considerably reduce the sealing effect near the threshold after three to five years.

- Only use silicone-free sealing compounds to seal the threshold.

Installing the frame gasket pads (IV78 timber-aluminium / IV92 timber)

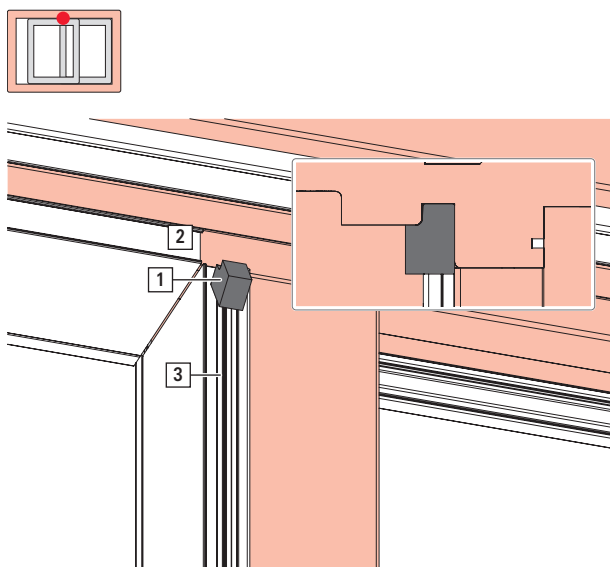
1. Apply sealing compound to the gasket pad at the bottom of the frame [1], in the area where it is in contact with the frame and threshold.
Position the gasket pad on the threshold so that it is flush with the aluminium profile [2].
Insert the sleeve [3] into the gasket pad and fasten with one screw [4].



2. Remove excess sealing compound.

Installing gasket pads 1 and 2 at the top of the frame (IV78 timber-aluminium)

1. Apply sealing compound to gasket pad 1 at the top of the frame [1], in the area where it is in contact with the frame and horizontal [2] and vertical [3] aluminium profile.
Insert gasket pad 1 at the top of the frame into the timber rebate until it is flush with the aluminium profile.



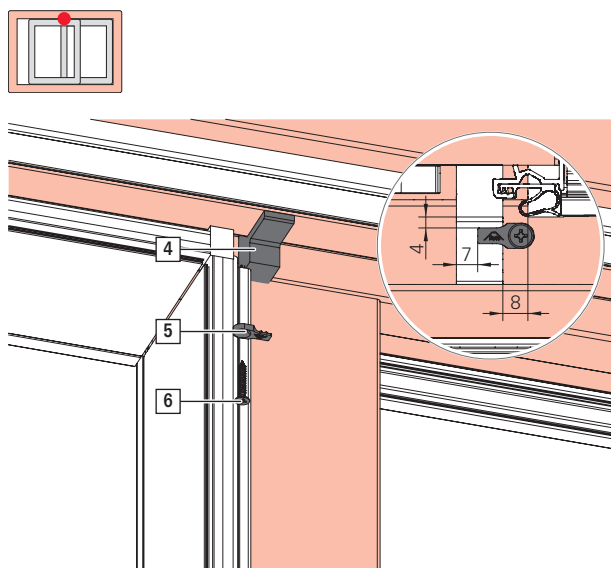
2. Insert the stop seal into the horizontal profile. Cut to size until the seal has to be gently pressed onto gasket pad 1 at the top of the frame.



3. Apply sealing compound to gasket pad 2 at the top of the frame [4], in the area where it is in contact with the frame.

Insert gasket pad 2 at the top of the frame into the timber rebate at a distance of 8 mm from gasket pad 1 at the top of the frame and fix it in place with the seal retainer [5].

Fasten with one screw [6].



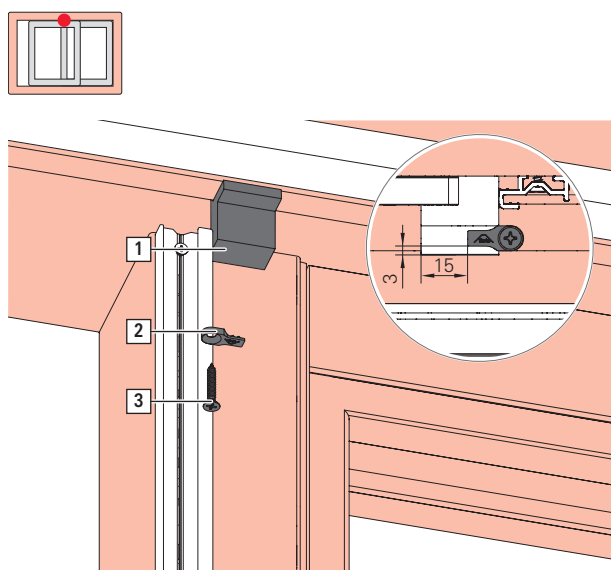
Installing the gasket pad at the top of the frame (IV78 timber / IV92 timber)

⇒ The gasket strip is installed → *from page 96*.

1. Remove the protective film from the adhesive surface on the gasket pad at the top of the frame [1].

Place the gasket pad at the top of the frame on the gasket strip [2], insert into the timber rebate and fix in place with the seal retainer [3].

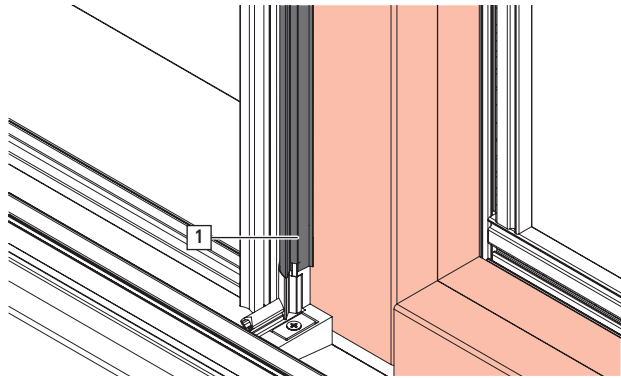
Fasten with one screw [4].



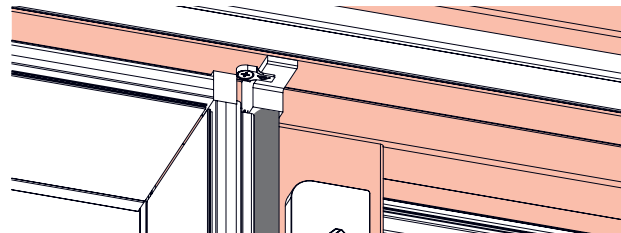
Installing the inner seal (IV78 timber-aluminium)

1. Apply sealing compound to the frame gasket pad and gasket pad 2 at the top of the frame, in the area where they are in contact with the inner seal.

2. Place the inner seal [1] in the profile, push it onto the frame gasket pad as far as it will go and adhere it.



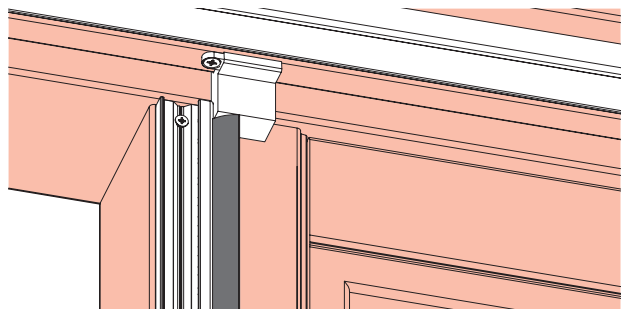
3. Place the inner seal on gasket pad 2 at the top of the frame and press them together gently.



4. Remove excess sealing compound.

Installing the inner seal (IV78 timber / IV92 timber)

1. Cutting the inner seal (length = SRH + 72)
2. Apply sealing compound to the gasket pads at the top and bottom of the frame, in the area where they are in contact with the inner seal.
3. Place the inner seal in the profile, push it onto the gasket pad at the top of the frame as far as it will go and adhere it.



4. Remove excess sealing compound.

Installing the frame gasket pads (IV78 timber)

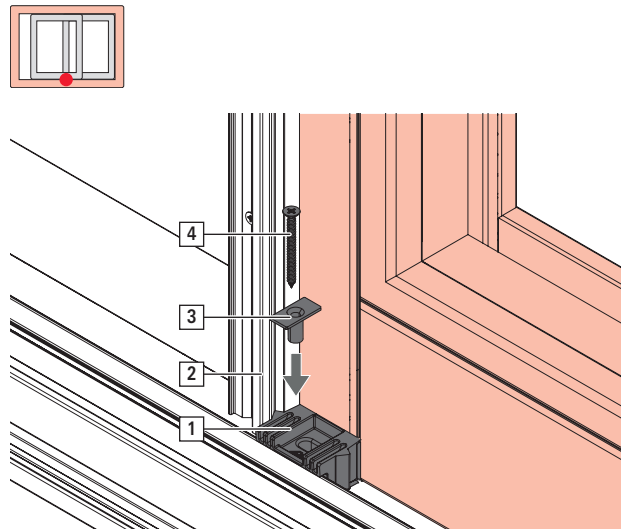
⇒ The inner seal is installed → *from page 96.*



1. Apply sealing compound to the frame gasket pad [1], in the area where it is in contact with the frame and threshold.

Position the gasket pad vertically on the threshold so that it is flush with the inner seal [2].

Insert the sleeve [3] into the gasket pad and fasten with one screw [4].



2. Remove excess sealing compound.

8.6 Joining the sash and frame



CAUTION

Heavy loads pose a risk of injury.

Lifting and carrying heavy loads in an uncontrolled manner may lead to physical injury.

- ▶ Transport and installation must be carried out by at least two people.
- ▶ Use transportation means. → 14 "Transport" from page 143
- ▶ Note the applicable accident prevention regulations.



ATTENTION

Heavy loads may cause property damage.

Lifting and carrying heavy loads in an uncontrolled manner may lead to property damage.

- ▶ Transport and installation must be carried out by at least two people.
- ▶ Use transportation means. → 14 "Transport" from page 143
- ▶ Do not rest sashes on the rollers.

8.6.1 Inserting the sash

**WARNING****An unsecured sash may pose a risk of death!**

The sash may fall during installation if it is not securely connected to the frame.

- Secure the sash to prevent it from falling, e.g. by using two people.

**INFO**

- Pay attention to the system-specific profile assessment.
- Seal the guide track properly under your own responsibility. Prevent water from entering underneath the guide track.
- Ensure that the guide track is securely attached.
Adhere to a screw spacing of max. 300 mm.

Version with split operator track, inserting the sash at the bottom

The operator track is installed in the access area.

The operator track for the fixed glazing area is prepared.

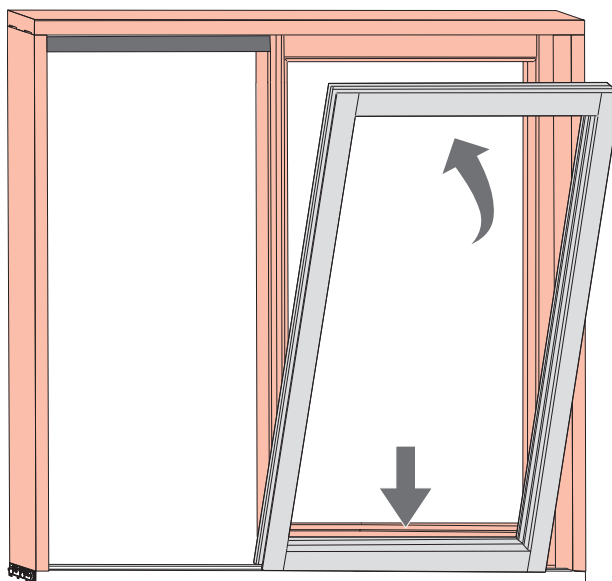
1. Move the handle to the sliding position.



2. In front of the fixed glazing area, guide the sash into the bottom of the frame and position the roller unit on the roller track without impact.

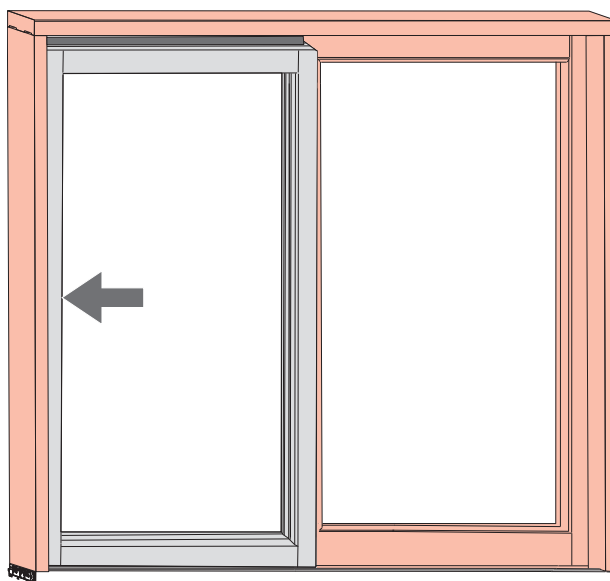
For roller tracks with just one wall, ensure that the roller unit rollers are not set down next to the roller track.

Check that the roller unit rollers are correctly positioned on the roller track by pushing the sash.





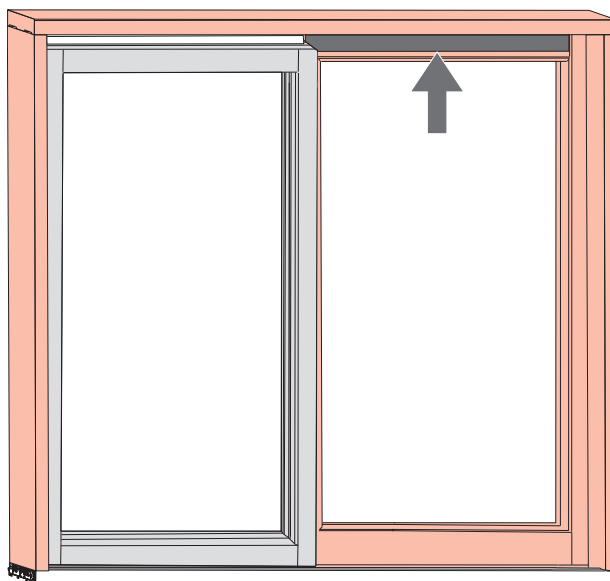
3. Push the sash onto the roller track in front of the access area in a controlled manner until all control units are located in the operator track that is already installed.



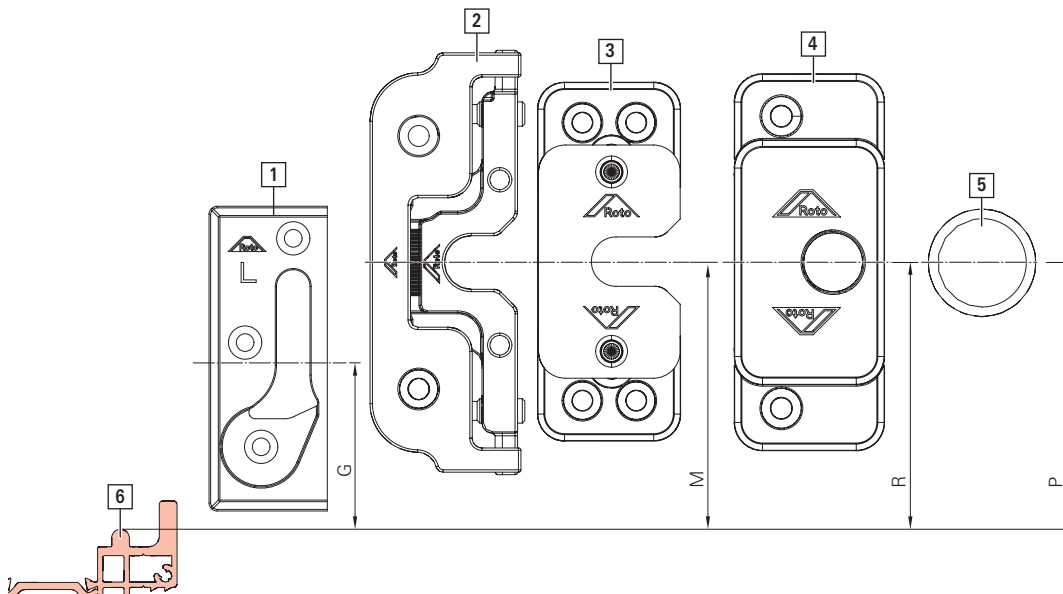
4. Move the handle to the closed position.



5. Insert the prepared operator track into the frame in the fixed glazing area and fasten with screws (screws spaced max. 300 mm apart).



8.6.2 Frame component positions



- [1] Striker (L version), can be routed in (G1 – G6)
- [2] Mullion striker (M1 – M5)
- [3] Mullion security striker (M1 – M7)
- [4] Striker for anti-pushback function (R1 – R2)
- [5] Rubber buffer (P) → *from page 124*
- [6] Roller track

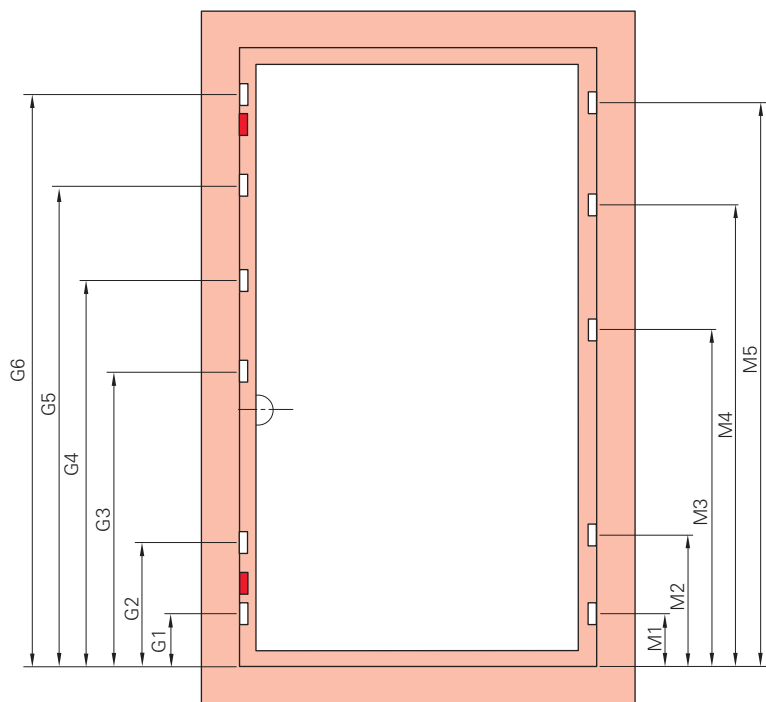


INFO

- For the striker, which can be routed in, observe the routing drawing → 8.3.4 “Striker, can be routed in” from page 74. Insert the striker, which can be routed in, in the centre of the routing.
- Align the mullion striker in the centre.
- Pay attention to the profile assessment.



Diagram A



□ Striker, can be routed in (on the espagnolette side) / mullion striker (on the mullion side)

■ Rubber buffer

Striker, can be routed in, on the locking side

SRH [mm]	G1	G2	G3	G4	G5	G6
≤ 1000	94	SRH – 16	–	–	–	–
1001 – 1800	94	718	SRH – 16	–	–	–
1801 – 2400	94	718	1388	SRH – 16	–	–
2401 – 2800	94	718	1788	SRH – 16	–	–
2801 – 3000	94	718	1788	SRH – 616	SRH – 16	–
3001 – 3200	94	718	1788	SRH – 816	SRH – 16	–
3201 – 3400	94	718	1788	SRH – 1016	SRH – 16	–
> 3400	94	718	1788	SRH – 1216	SRH – 616	SRH – 16

Mullion striker, on the mullion side

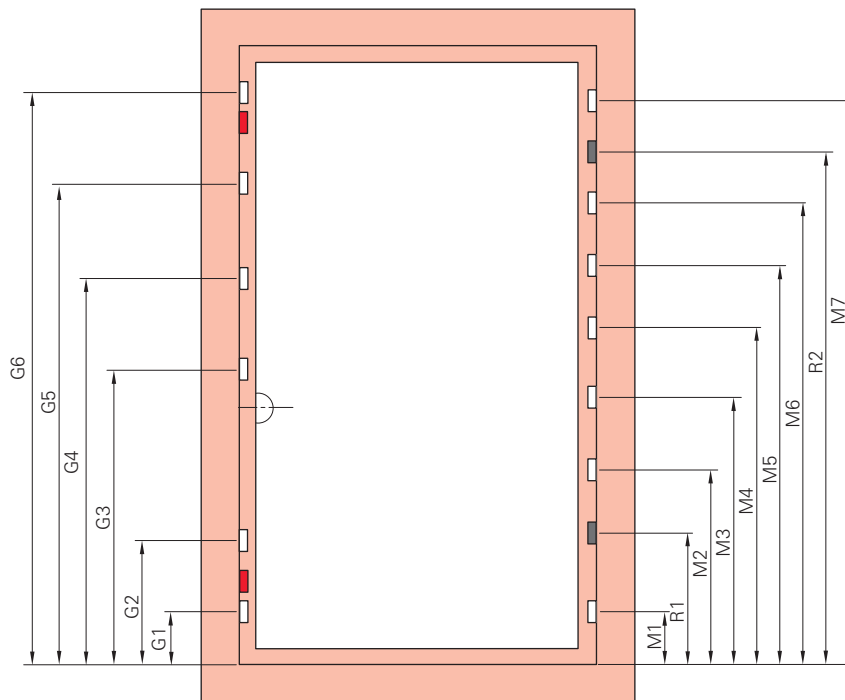
SRH [mm]	M1	M2	M3	M4	M5
≤ 1400	219	SRH – 149	–	–	–
1401 – 2000	219	SRH – 749	SRH – 149	–	–
2001 – 2200	219	SRH – 949	SRH – 149	–	–
2201 – 2400	219	SRH – 1149	SRH – 149	–	–
2401 – 2600	219	SRH – 1349	SRH – 749	SRH – 149	–
2601 – 2800	219	SRH – 1549	SRH – 749	SRH – 149	–
2801 – 3000	219	SRH – 1749	SRH – 949	SRH – 149	–
3001 – 3200	219	SRH – 1949	SRH – 1149	SRH – 149	–
3201 – 3400	219	SRH – 2149	SRH – 1149	SRH – 149	–
> 3400	219	SRH – 2349	SRH – 1749	SRH – 749	SRH – 149

Installation

Joining the sash and frame

Frame component positions

Security



□ SEC striker (on the locking side), mullion security striker (on the mullion side)

■ Striker for anti-pushback function

■ Rubber buffer

Security striker, can be routed in, on the locking side

SRH [mm]	G1	G2	G3	G4	G5	G6
≤ 1000	94	SRH – 16	–	–	–	–
1001 – 1800	94	718	SRH – 16	–	–	–
1801 – 2400	94	718	1388	SRH – 16	–	–
2401 – 2800	94	718	1788	SRH – 16	–	–
2801 – 3000	94	718	1788	SRH – 616	SRH – 16	–
3001 – 3200	94	718	1788	SRH – 816	SRH – 16	–
3201 – 3400	94	718	1788	SRH – 1016	SRH – 16	–
> 3400	94	718	1788	SRH – 1216	SRH – 616	SRH – 16

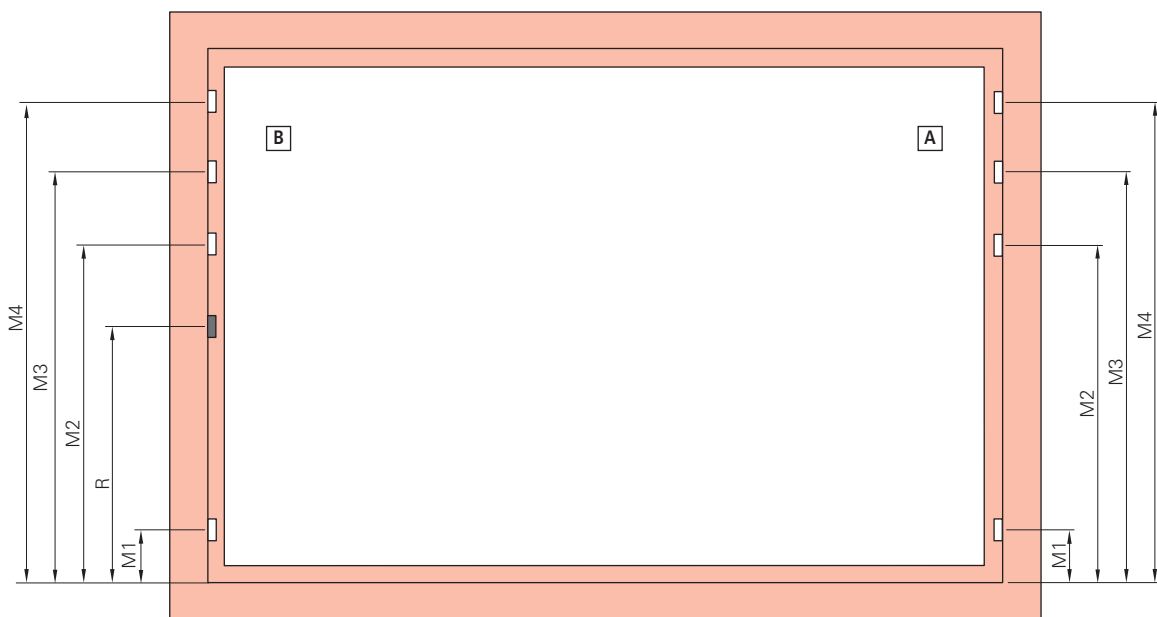
Mullion security striker and striker for anti-pushback function, on the mullion side

SRH [mm]	M1	R1	M2	M3	M4	M5	M6	R2	M7
≤ 1300	219	349	SRH – 409	–	–	–	–	SRH – 279	SRH – 149
1301 – 1500	219	349	SRH – 679	–	–	–	–	SRH – 279	SRH – 149
1501 – 1700	219	349	SRH – 879	–	–	–	–	SRH – 279	SRH – 149
1701 – 1900	219	349	SRH – 1079	SRH – 679	–	–	–	SRH – 279	SRH – 149
1901 – 2100	219	349	SRH – 1279	SRH – 679	–	–	–	SRH – 279	SRH – 149
2101 – 2300	219	349	SRH – 1479	SRH – 1079	SRH – 679	–	–	SRH – 279	SRH – 149
2301 – 2500	219	349	SRH – 1679	SRH – 1079	SRH – 679	–	–	SRH – 279	SRH – 149
2501 – 2700	219	349	SRH – 1879	SRH – 1279	SRH – 679	–	–	SRH – 279	SRH – 149
2701 – 2900	219	349	SRH – 2079	SRH – 1679	SRH – 1279	SRH – 679	–	SRH – 279	SRH – 149
2901 – 3100	219	349	SRH – 2279	SRH – 1879	SRH – 1279	SRH – 679	–	SRH – 279	SRH – 149
3101 – 3300	219	349	SRH – 2479	SRH – 1879	SRH – 1279	SRH – 679	–	SRH – 279	SRH – 149
3301 – 3500	219	349	SRH – 2679	SRH – 2279	SRH – 1879	SRH – 1279	SRH – 679	SRH – 279	SRH – 149
3501 – 3600	219	349	SRH – 2879	SRH – 2479	SRH – 1879	SRH – 1279	SRH – 679	SRH – 279	SRH – 149



Diagram C / C'

Standard



[A] First opening sash; [B] Second opening sash

□ Mullion striker

■ Striker for anti-pushback function

Mullion striker, on the mullion side

SRH [mm]	M1	M2	M3	M4
≤ 1400	219	SRH – 149	–	–
1401 – 2000	219	SRH – 749	SRH – 149	–
2001 – 2200	219	SRH – 949	SRH – 149	–
2201 – 2400	219	SRH – 1149	SRH – 149	–
2401 – 2600	219	SRH – 1349	SRH – 749	SRH – 149
2601 – 2800	219	SRH – 1549	SRH – 749	SRH – 149
> 2800	219	SRH – 1749	SRH – 949	SRH – 149

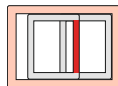
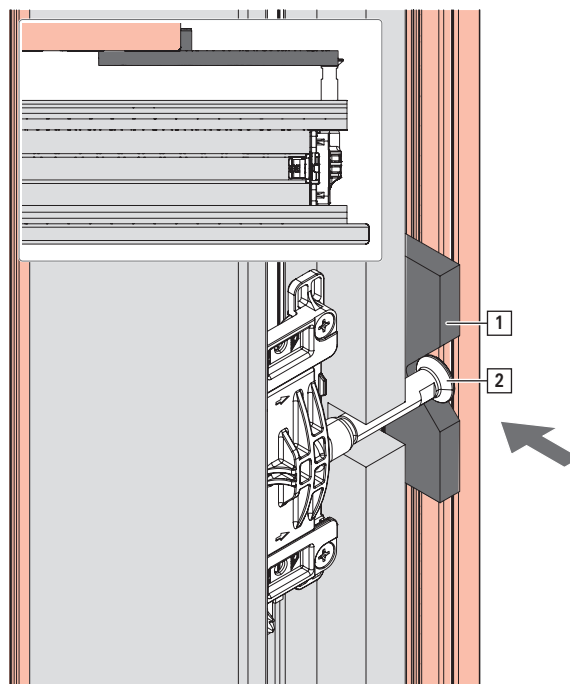
Striker for anti-pushback function, on the mullion side

SRH [mm]	R
≤ 1400	SRH – 279
1401 – 1800	SRH – 879
1801 – 2200	SRH – 1079
2201 – 2400	SRH – 1279
2401 – 2600	SRH – 1479
2601 – 2800	SRH – 1679
> 2800	SRH – 1879

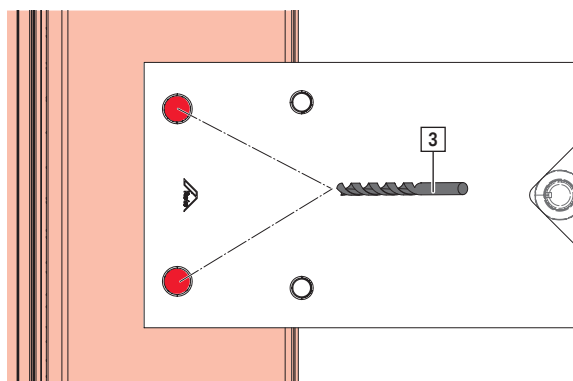
8.6.3 MUL striker

8.6.3.1 Drilling the holes for the MUL striker

1. Place the drilling jig for MUL striker [1] flush against the frame profile at the height of the locking cam [2]. Mark the position of the drilling jig.



2. Drill the holes [3].
Drill: Ø 3.0





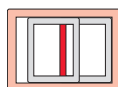
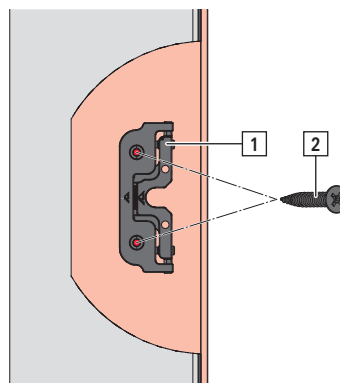
8.6.3.2 Installing the mullion striker

1. Fasten the mullion striker [1] with two screws [2].

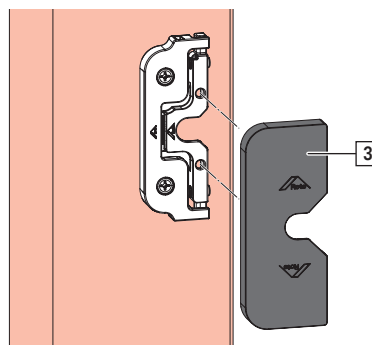


INFO

Note the drilling specifications .



2. Clip the cover cap [3] onto the mullion striker.



8.6.4 SEC MUL striker

8.6.4.1 Drilling the holes for the mullion security striker



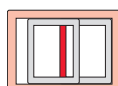
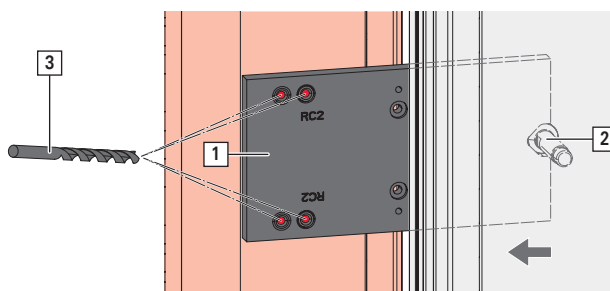
INFO

The preparations shown apply to IV78 timber-aluminium. For IV78 and IV92, two holes must be drilled at an angle, see profile assessment.

1. Place the drilling jig for the mullion security striker [1] flush against the frame profile at the height of the locking cam [2]. Mark the position of the drilling jig. For better guidance, move the sash with locking cam fitted in the direction of the arrow.

Drill the holes [3].

Drill: 4 x Ø 3.0



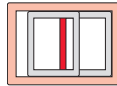
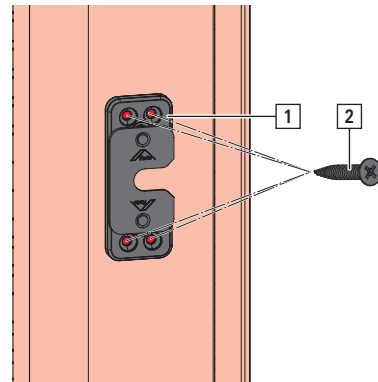
8.6.4.2 Installing the mullion security striker

**INFO**

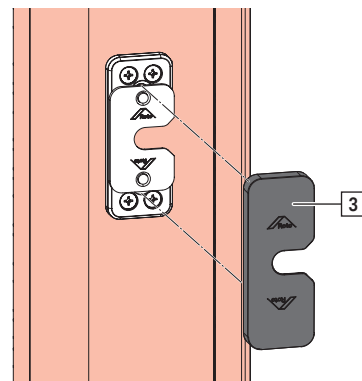
The installation steps shown apply to IV78 timber-aluminium. For IV78 and IV92, two angled screw fixings must be established, see profile assessment.

⇒ Note the drilling specifications .

1. Fasten the mullion security striker [1] with four screws [2].



2. Clip the cover cap [3] onto the mullion security striker.





8.6.5 Striker for anti-pushback function



INFO

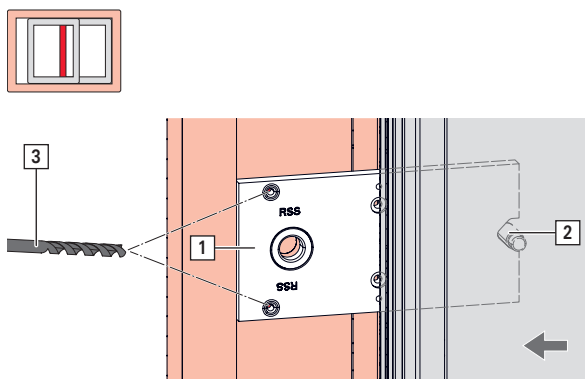
The installation steps shown apply to IV78 and IV92. For IV78 timber-aluminium, the glazing bead must then be installed and rebored, see profile assessment.

Installing the striker for anti-pushback function

1. Place the drilling jig for the striker for anti-pushback function [1] flush against the frame profile at the height of the pin [2]. For better guidance, move the sash with pin fitted in the direction of the arrow.

Drill the holes [3].

Drill: Ø 3.0 mm



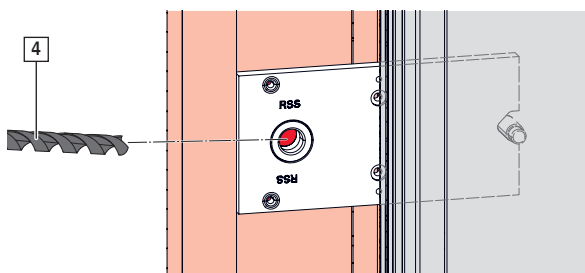
2. Drill the hole [4].

Drill: Ø 12.5 mm

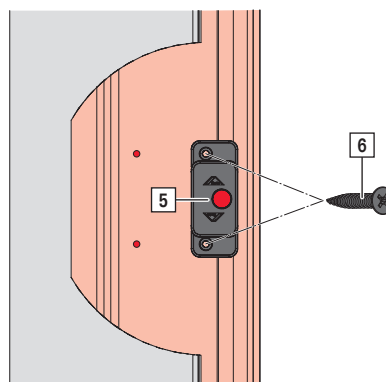


INFO

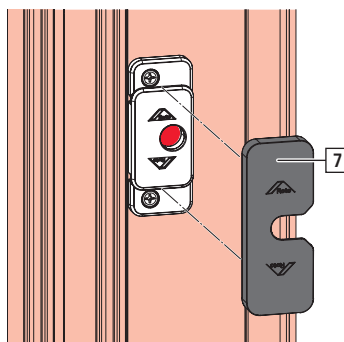
Refer to the system-specific profile assessment for the drilling depth.



3. Fasten the striker for anti-pushback function [5] with two screws [6].



4. Clip the cover cap [7] onto the striker for anti-pushback function.



Installation

Joining the sash and frame

Activator and packer

8.6.6 Activator and packer

- ⇒ The control unit with Soft function comes assembled in its delivery state (= untensioned).
- ⇒ The element is glazed.
- ⇒ Pressure-proof packers have been placed underneath the frame profile in the area of the activator.

8.6.6.1 Preparing the positioning jig

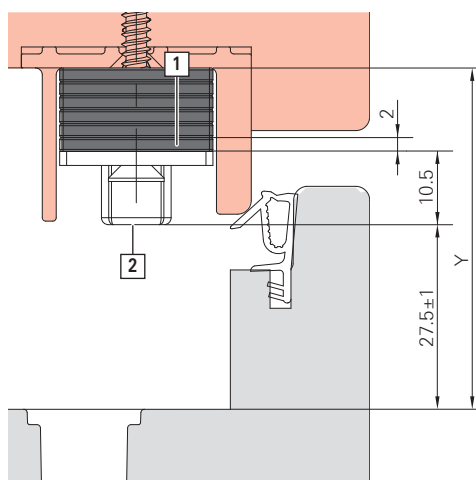
- ⇒ The control unit with Soft function comes assembled in its delivery state (= untensioned).
- ⇒ The element is glazed.
- ⇒ Pressure-proof packers have been placed underneath the frame profile in the area of the activator.

Determining the quantity of packers

1. Calculate or refer to the profile assessment for the quantity of packers required [1].

$$\text{Quantity of packers} = (Y - 38) / 2$$

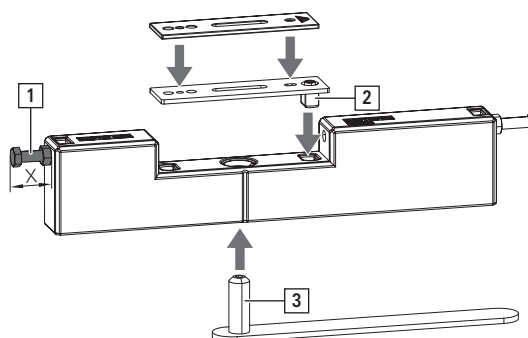
Maintain a distance of 27.5 ± 1 mm between the highest point of the activator [2] and the control unit supporting surface.



Adjusting and equipping the positioning jig for the activator with a centre screw fixing

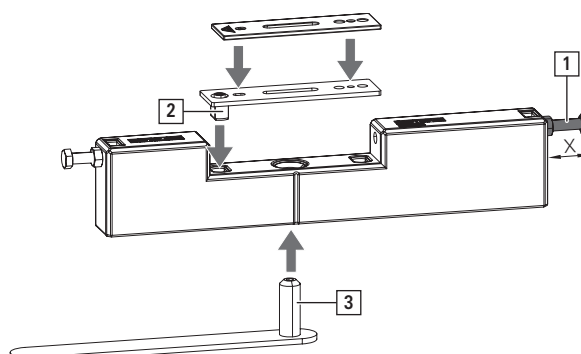
On the locking side for control unit with SoftClose

1. Adjust the screw [1] on the "SoftClose" side (X = profile-related).
2. If necessary, connect the packer to the activator using locating aids. Ensure that the slots are aligned.
3. Place everything in the positioning jig mount. The activator bolt [2] is facing towards the "SoftOpen" text.
4. Insert the drilling aid [3] into the positioning jig.



On the mullion side for control unit with SoftOpen

1. Adjust the screw [1] on the "SoftOpen" side (X = profile-related).
2. If necessary, connect the packer to the activator using locating aids. Ensure that the slots are aligned.
3. Place everything in the positioning jig mount. The activator bolt [2] is facing towards the "SoftClose" text.
4. Insert the drilling aid [3] into the positioning jig.





8.6.6.2 Diagram A



INFO

Pay attention to the profile assessment.

Installation without a positioning jig

Installing the activator with / without packer(s) on the locking side

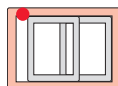
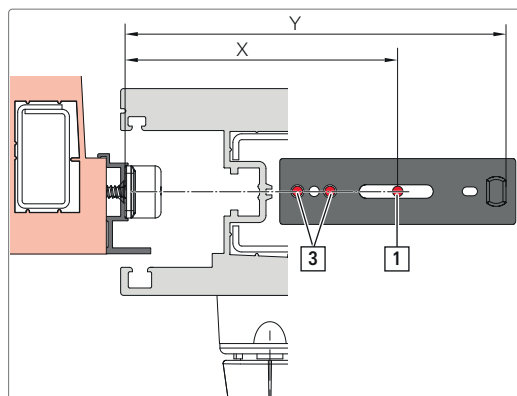
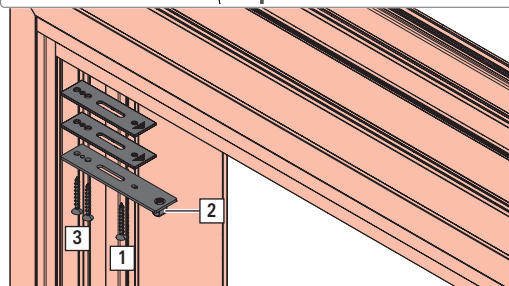
1. Predrill a hole for the screw [1] (dimension X).

Slightly tighten the activator with one screw to position it (dimension Y) so that the activator can still be moved. The activator bolt [2] is facing towards the centre of the access area.

Close the sash slowly and open it again to move the activator into the installation position.

Predrill the holes for screws [3].

Fasten the activator with three screws.



Installing the activator with / without packer(s) on the mullion side

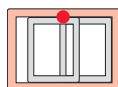
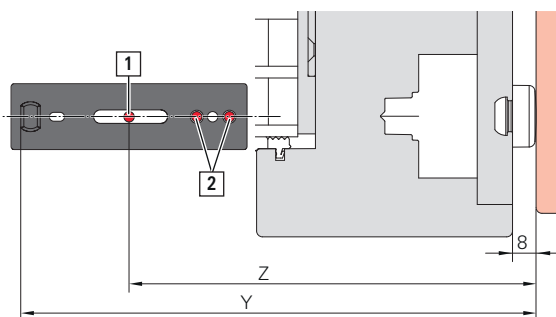
1. Predrill a hole for the screw [1] (dimension Z).

Slightly tighten the activator with one screw to position it (dimension Y) so that the activator can still be moved. The activator bolt is facing towards the centre of the access area.

Close the sash slowly and open it again to move the activator into the installation position.

Predrill the holes for screws [2].

Fasten the activator with three screws.



INFO

Control unit with SoftOpen: if the sash should not hit the buffer, move the activator screw position by at least 21 mm ($Z + 21$ and $Y + 21$).

Installation

Joining the sash and frame

Activator and packer

Installation with a positioning jig

Installing the activator with / without packer(s) using a positioning jig on the locking side

1. Insert the equipped positioning jig into the operator track and push the screw head of the adjusting screw onto the frame on the locking side until it reaches the stop.

Predrill through the drilling aid with a Ø 3.5 drill [A].

Remove the drilling aid.

Slightly tighten the activator with one screw [5] through the positioning jig to position it so that the activator can still be moved.

Remove the positioning jig.

Close the sash slowly and open it again to move the activator into the installation position.

Predrill the holes for screws [6] in the same screw axis as the first screw.

Fasten the activator with three screws.

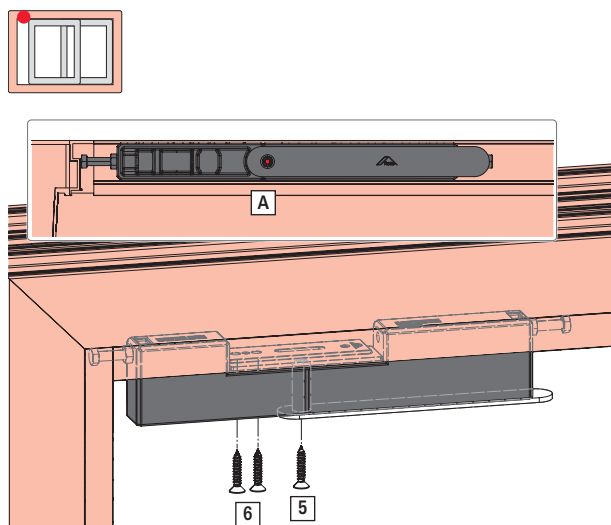


Fig. 8.2: Activator and packers with a centre screw fixing

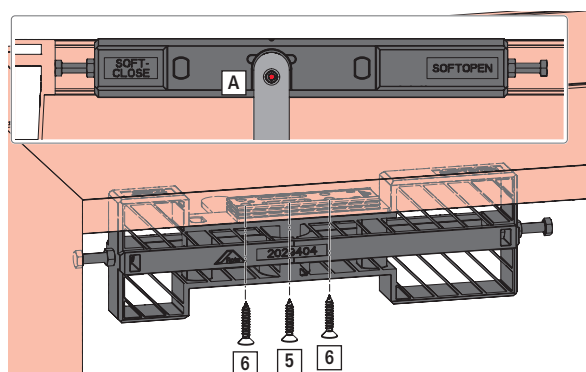


Fig. 8.3: Activator and packers with an asymmetrical screw fixing

Installing the activator with / without packer(s) using a positioning jig on the mullion side

1. Insert the equipped positioning jig into the operator track. Push the screw head of the adjusting screw onto the frame on the mullion side until it reaches the stop.

Predrill through the drilling aid with a Ø 3.5 drill [A].

Remove the drilling aid.

Slightly tighten the activator with one screw [5] through the positioning jig to position it so that the activator can still be moved.

Remove the positioning jig.

Close the sash slowly and open it again to move the activator into the installation position.

Predrill the holes for screws [6] in the same screw axis as the first screw.

Fasten the activator with three screws.

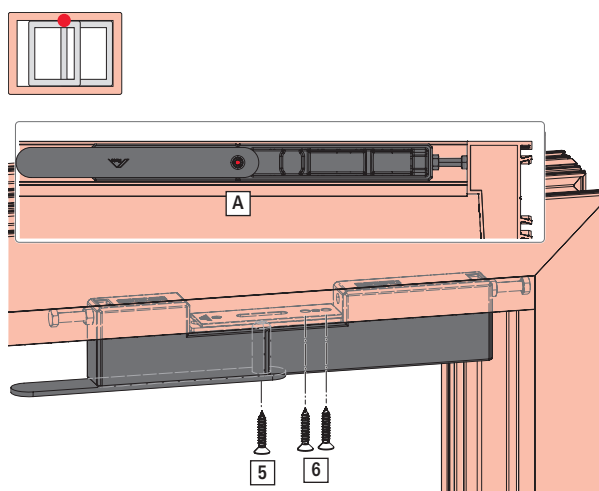
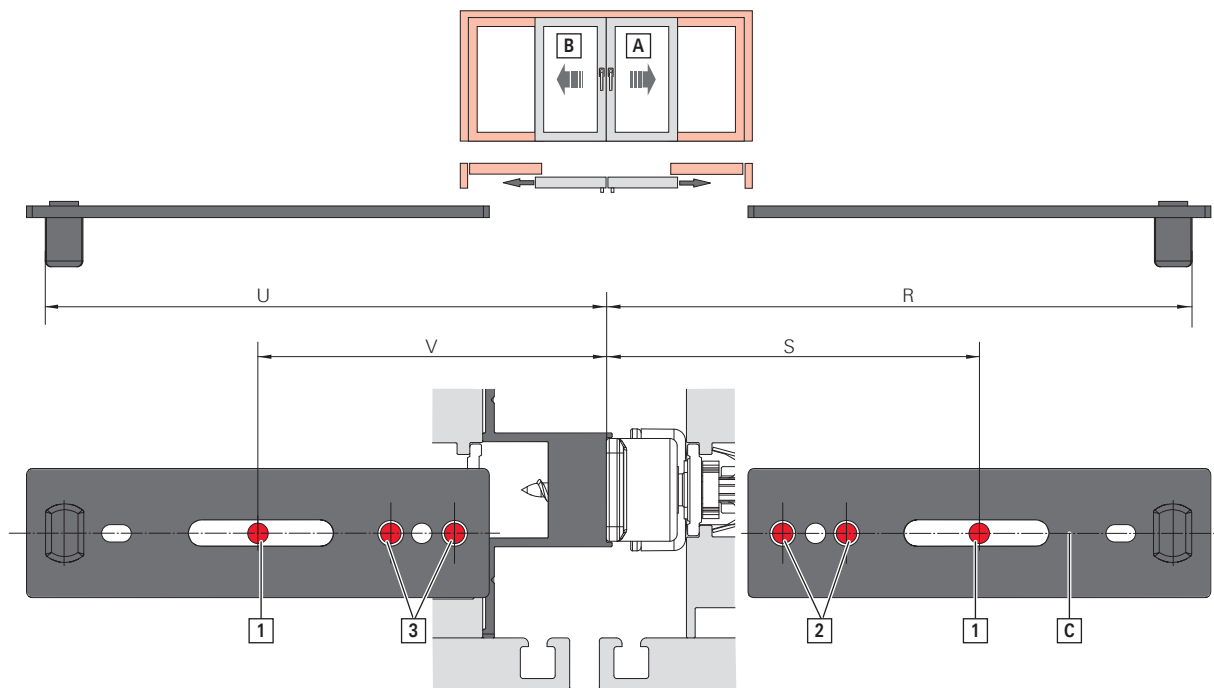


Fig. 8.4: Activator and packers with a centre screw fixing



8.6.6.3 Diagram C



- [A] First opening sash
- [B] Second opening sash
- [C] Centre of guide groove in the operator track

1. Connect the packers to the activator using locating aids. Ensure that the slots are aligned.
 Predrill a hole for the screw [1] (for the first opening sash to dimension S, for the second opening sash to dimension V, see profile assessment). Slightly tighten every activator with one screw each to position them (for dimensions R and U, see the profile assessment) so that the activator can still be moved.
 Close the second opening sash [B] slowly and open it again to move the activator into the installation position.
 Predrill the holes for screws [2].
 Fasten with three screws.
 Close the second opening sash and move the handle to the closed position.
 Close the first opening sash [A] slowly and open it again to move the activator into the installation position.
 Predrill the holes for screws [3].
 Fasten with three screws.

8.6.7 Tensioning the control unit with soft function

**CAUTION**

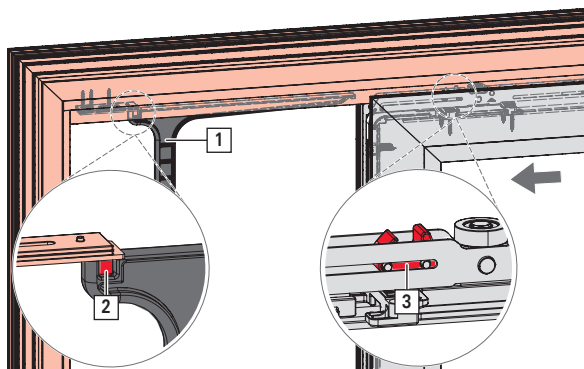
Risk of injury caused by tensioning the control unit with soft function by hand.

When installing the control unit with soft function, tensioning by hand may cause injuries due to sharp edges.

1. Only tension the control unit with soft function using a tensioning tool.

1. Mount the tensioning tool recess [1] in the activator bolt [2].

Push the element shut slowly until the connector [3] on the tensioning tool engages in the control unit with soft function.

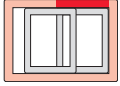


2. Open up the element slowly to activate the soft function. The connector on the tensioning tool will be released automatically.



8.6.8 End stop with packer

8.6.9 Operator track stopper

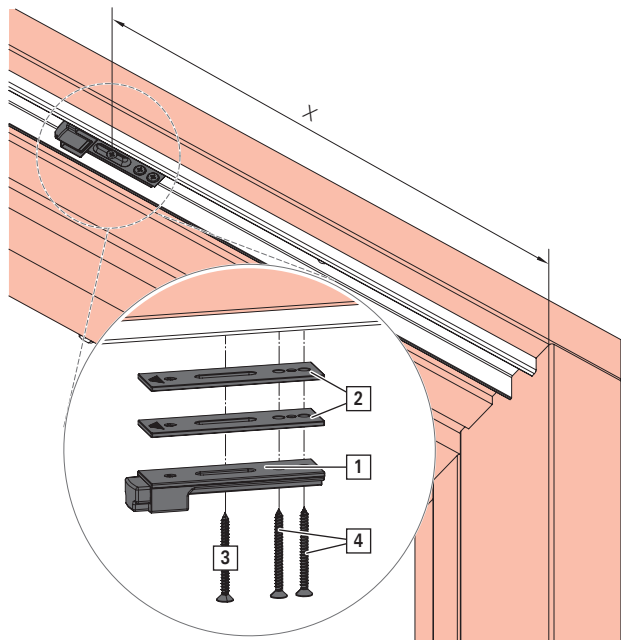


INFO

Pay attention to the profile assessment.

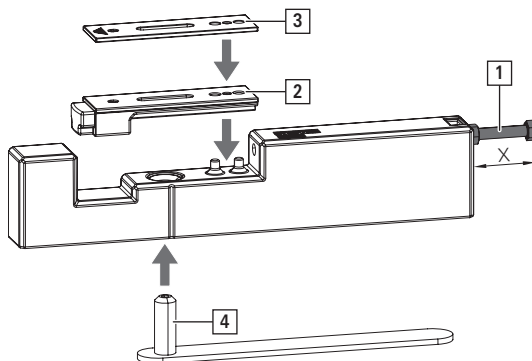
Installing the operator track stopper, diagram A

1. Insert the stopper [1] and, if required, packers [2] into the operator track.
 X = profile-related
 Fasten loosely with one screw [3] but so that it is not yet secure.
 Check the stopper position and reposition if necessary.
 Fasten the stopper with three screws (first [3], then [4]).



Installing the operator track stopper, diagram A with drilling jig

1. X = profile-related
 Insert the stopper [2] into the installation jig mount, with a packer [3] if necessary.
 Insert the drilling jig [4] into the installation jig.

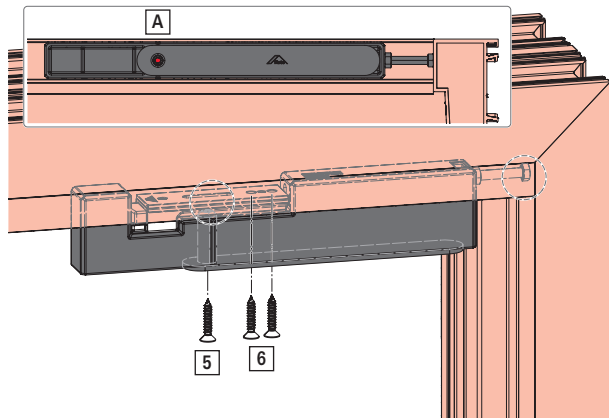


Installation

Joining the sash and frame

Rubber buffer

2. Insert the equipped installation jig into the operator track. Push the screw head of the adjusting screw onto the frame as far as it will go.
Predrill with a Ø 3.5 drill [A].
Remove the drilling jig.
Fasten loosely with one screw [5] through the installation jig but so that it is not yet secure.
Remove the installation jig.
Check the stopper position and reposition if necessary.
Fasten the stopper with three screws (first [5], then [6]).



8.6.10 Rubber buffer

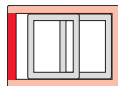
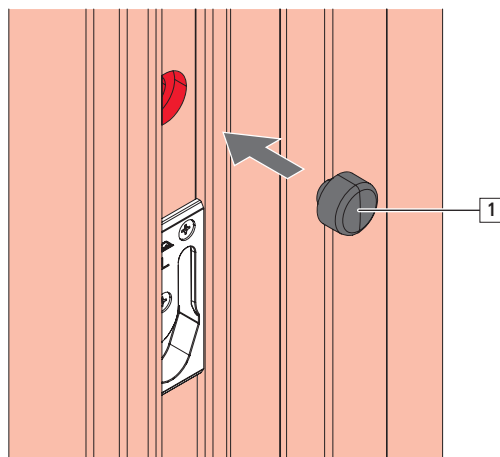
Installing the rubber buffer

1. Insert the rubber buffer [1].



INFO

Note the drilling specifications → *from page 74.*

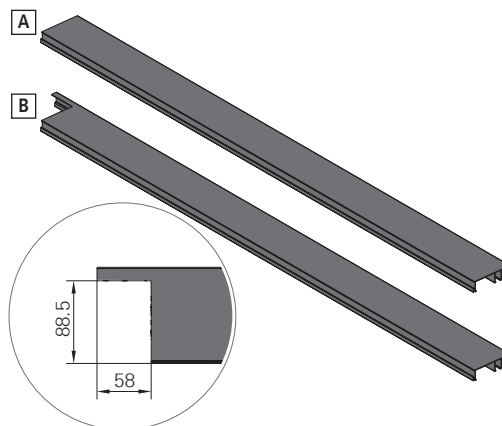




8.6.11 Anti-slip protection

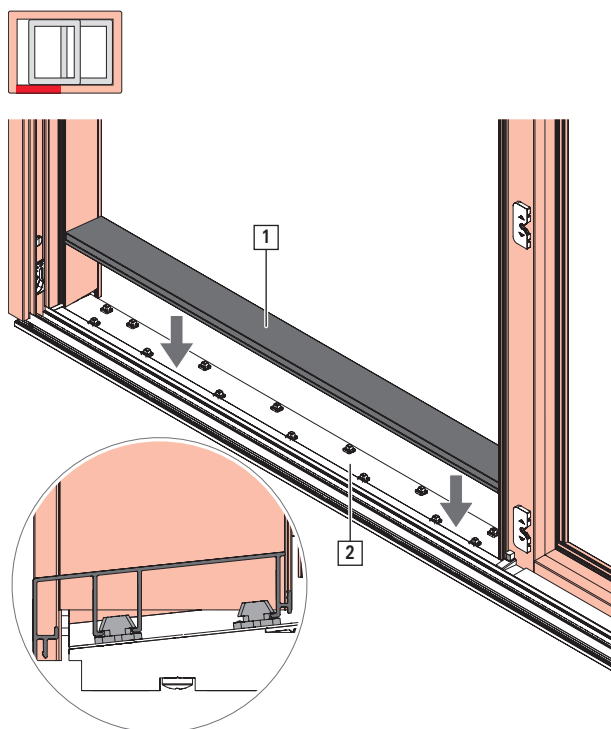
Preparing the anti-slip protection

1. Cut the anti-slip protection to size.
[A] IV78 timber-aluminium / IV92 timber:
length = FIW - 2 mm
[B] IV78 timber: length = FIW - 2 mm with recess
on the espagnolette side



Installing the anti-slip protection

1. Position the anti-slip protection [1] on the threshold [2] so that it is flush and clip it in.



Installation

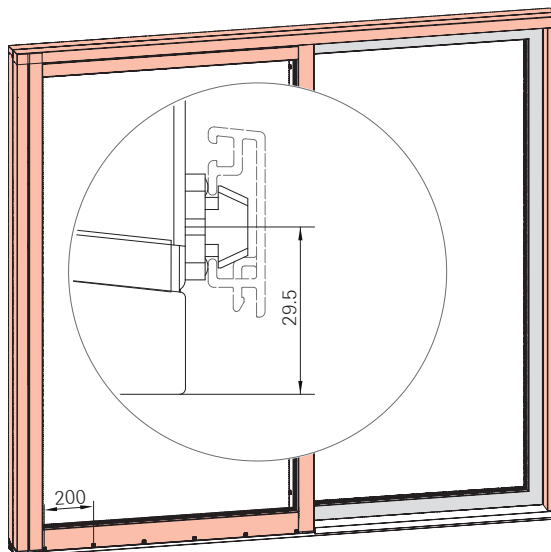
Joining the sash and frame

Weather profile strip (IV 78 timber)

8.6.12 Weather profile strip (IV 78 timber)

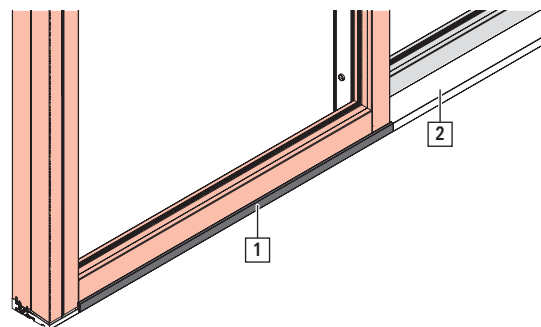
Installing the pivot clip holders

1. Install the pivot clip holders at a distance of 200 mm on the outer side of the frame in the area of the fixed panel.



Installing the weather profile strip

1. Cut the weather profile strip (length = frame external width - (SRW+ 8)).
Then clip the weather profile strip [1] onto the anti-slip protection [2].



8.6.13 Notes on final assembly



DANGER

Risk of death caused by excessive bending of the running profile.

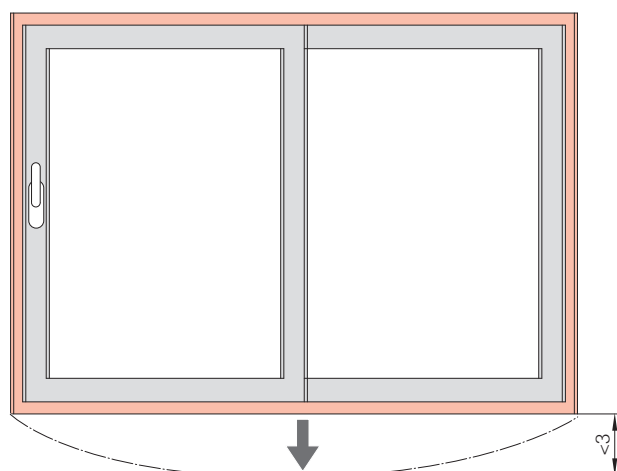
Incorrect installation of the sash in an element that bends by ≥ 3 mm may cause the sash to fall out.

1. Underlay the element so that it bends by < 3 mm.



INFO

In order to ensure the proper functioning and security of the element, the bending of the frame must not exceed 3 mm.



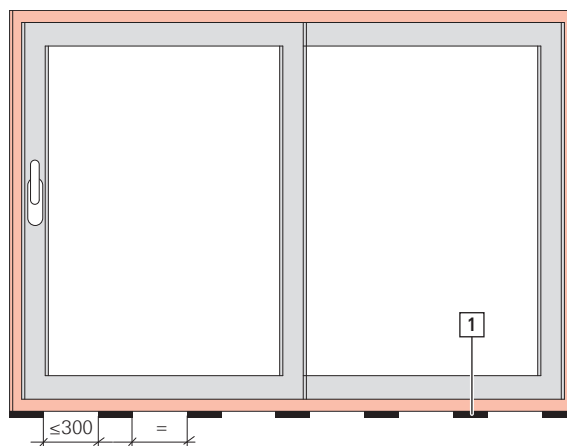


INFO

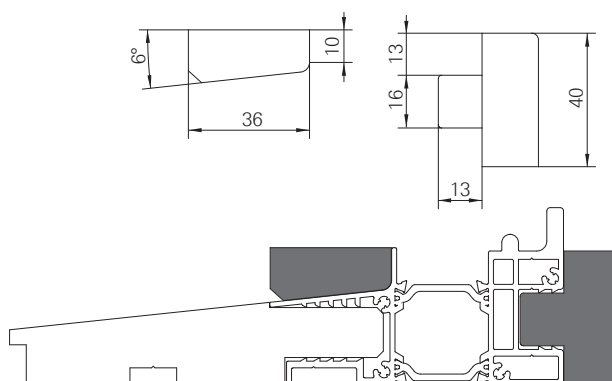
Up to 250 kg: place pressure-proof packers under the threshold every 300 mm across its entire area (see figure).

From 250 kg: place pressure-proof packers under the threshold along its entire length.

[1] Packer



Optional: produce and install a decorative strip [2] and timber cover [3] for the threshold (across the entire frame width) under your own responsibility.



9 Installation drawings

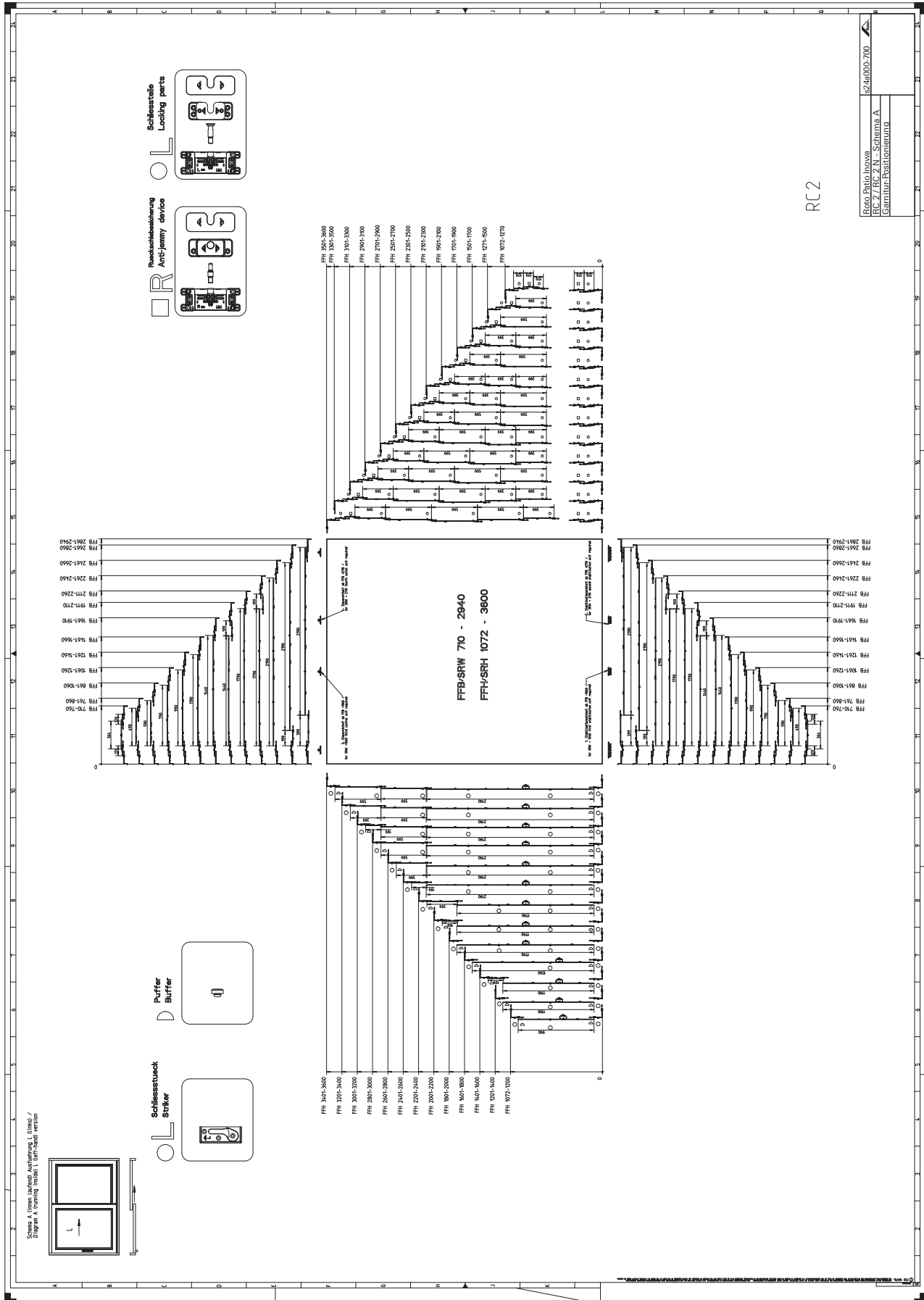
9.1 Explanation

The following markings are used in the installation drawings to emphasise references and other elements:

Marking	Meaning
1. Stabilisationseinheit ab FFB >1060	First stabilisation unit from sash rebate width > 1060 mm
2. Stabilisationseinheit ab FFB >2110	Second stabilisation unit from sash rebate width > 2110 mm
3. Steuereinheit ab FFB >1060	Third control unit from sash rebate width > 1060 mm
4. Steuereinheit ab FFB >2110	Fourth control unit from sash rebate width > 2110 mm
aktiv	First opening
Ansicht von innen	View from inside
Ausfuehrung	Version
FFB	Sash rebate width
FFH	Sash rebate height
Garnitur-Positionierung	Set positioning
innen laufend	Running inward
L	Left
Links	Left
passiv	Second opening
Puffer	Rubber buffer / striker with buffer
R	Right
RC2	RC 2
Rueckschiebesicherung	Anti-pushback function
Schaltfolgeregelung	Operating sequence control
Schema A	Diagram A
Schema C	Diagram C
Schliesstueck	Striker
Schliessteile	Locking components
Standard	Standard
Standardausfuehrung	Standard version

[illegible]

9.3 Diagram A, K | RC 2 / RC 2 N



[illegible]

10 Adjustment



INFO

Roto hardware components may only be adjusted by authorised professionals when the element is installed.

10.1 Striker

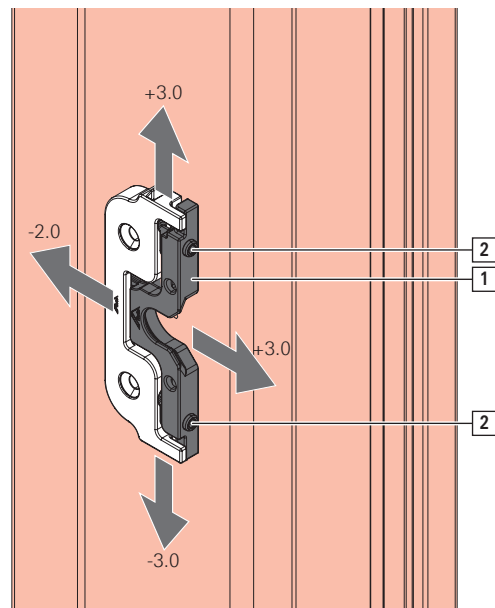
Lateral and height adjustment

1. Close the window sash (open handle position).
2. Adjust the striker [1] using two threaded pins [2] in the fastening plate.
Tool: size 2.5 hex key.



INFO

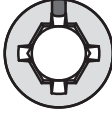
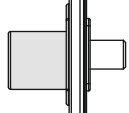
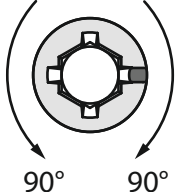
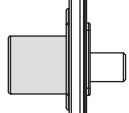
The striker features variable height adjustment, which permits an installation tolerance of ± 3 mm for the locking cam.



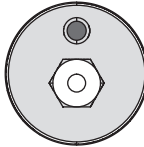
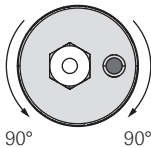
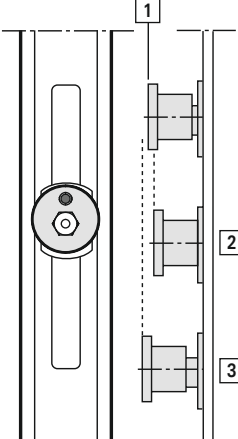
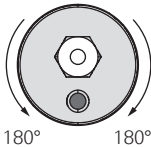
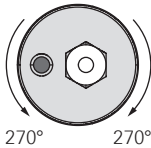
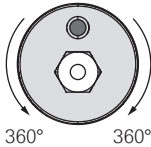


10.2 Adjusting the locking cam

E cam

E cam	Adjustment distance	Gasket compression adjustment [mm]	Height	Side view
				
	 90° 90°	±0.8 mm		

V cam

V cam	Adjustment distance	Gasket compression adjustment [mm]	Height adjustment [mm]	Side view
			+1.5 mm -0.8 mm	
	 90° 90°	±0.8 mm	±0.125 mm	 [1] 0 = initial position [2] -0.8 mm max. adjustment [3] +1.5 mm max. adjustment
	 180° 180°		±0.25 mm	
	 270° 270°	±0.8 mm	±0.375 mm	
	 360° 360°		±0.5 mm	

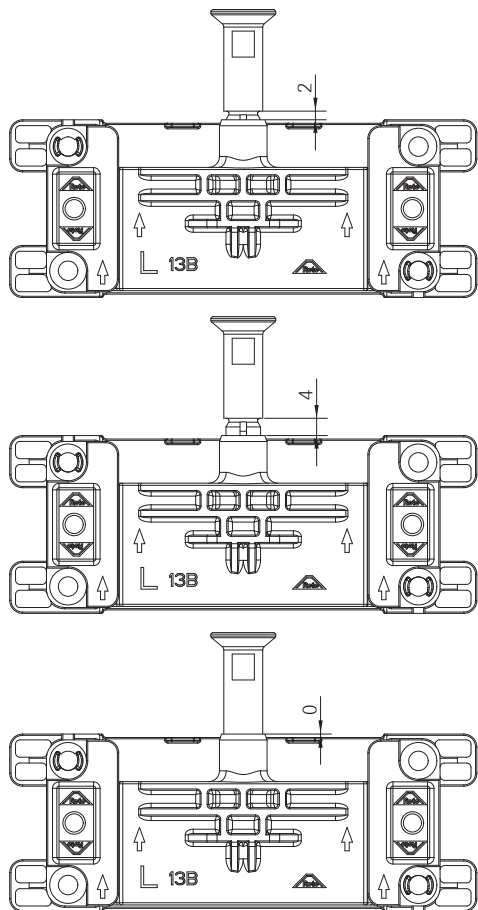
10.3 Mullion locking cam – adjustable



INFO

Roto hardware components may only be adjusted by authorised qualified personnel.

Gasket compression adjustment



Initial position



+2,0



-2,0



10.4 Roller unit



INFO

Roto hardware components may only be adjusted by authorised qualified personnel.

Height adjustment

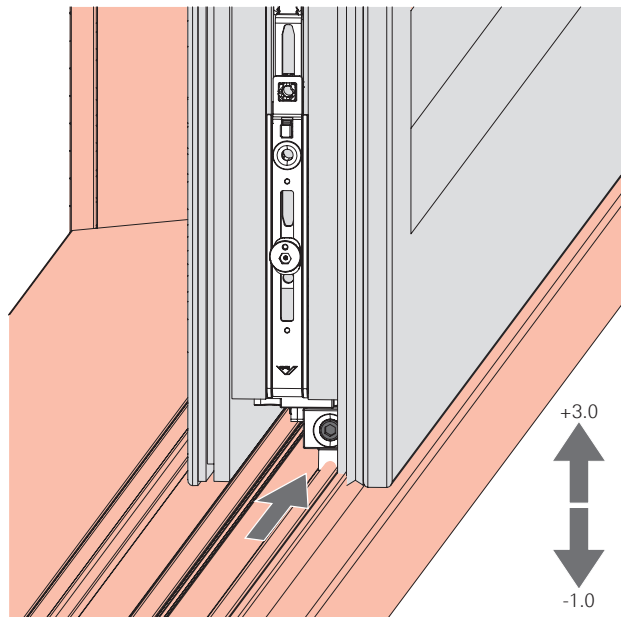
1. Open the window sash in the sliding position.
2. Adjust the roller unit using the screw.
 - Height adjustment +3 mm: turn the screw in clockwise.
 - Height adjustment -1 mm: unscrew the screw anti-clockwise.

Tool: size 4 hex key



INFO

The screw has a defined final position.
If you start to feel resistance, stop turning the screw.



11 Operation

11.1 Operating information

The windows and balcony doors are operated using a handle.

The following symbols illustrate the different handle positions and the resultant sash positions of the windows and balcony doors.

11.1.1 Roto Patio Inowa



ATTENTION

Risk of being accidentally locked out.

If the sash is in the sliding position and closes, the sash can engage and then be impossible to reopen from the outside.

- ▶ Secure the sash against accidentally engaging when in the sliding position.
- ▶ Ensure that access is possible if necessary.

Handle position	Sash position	Meaning
		Sash in closed position.
		Sash in open sliding position.
		Sash in closed sliding position.

11.2 Fault assistance

Fault	Cause	Corrective action	To be carried out by
Handle is difficult to turn.	Frame components have not been greased.	Grease the frame components.	☐
	Handle is damaged.	Replace the handle.	■
	Handle screwed into place too tightly.	Undo the screw fixing slightly.	■
	Sash components with slanting screws.	Screw the sash components in straight.	■
	Sash components are damaged.	Replace the sash components.	■
	Incorrect striker positions.	Adapt the striker positions.	■
Handle cannot be turned 180°.	Sash components hinged or installed incorrectly.	Check the setting in the turn position (potentially re-hang – start from the T&T espagnolette).	■
		Check the connecting rod and replace if necessary.	
Locking cams brush against the striker.	Sash components hinged or installed incorrectly.	Check the setting in the turn position (potentially re-hang – start from the T&T espagnolette).	■
	Incorrect striker positions.	Adapt the striker positions.	■

☐ = May be carried out by a specialist company or the end user

■ = **Must** be carried out by a specialist company



12 Maintenance



CAUTION

Performing maintenance work incorrectly can lead to injuries.

Performing maintenance incorrectly can lead to injuries.

- ▶ Ensure that there is sufficient space for installation before starting work.
- ▶ Ensure that the installation site is clean and tidy.
- ▶ Always have hardware adjustment and replacement work performed by a specialist company.
- ▶ Secure the sash against unintentionally opening or closing.
- ▶ Do not unhinge the sash for maintenance.



ATTENTION

Incorrect or improper testing may cause property damage.

Incorrect or improper testing of the hardware may cause the element to malfunction.

- ▶ Have the hardware checked by a specialist company when installed.
- ▶ If defects need to be remedied, have the element unhinged and remounted by a specialist company.



INFO

The manufacturer must draw the attention of builders and end consumers to these maintenance instructions.

Roto Frank Fenster- und Türtechnologie GmbH recommends the manufacturer conclude a maintenance agreement with their end users.

No legal claims can be derived from the following recommendations; their application is to be based on the specific individual case.

	Responsibility	
Maintenance interval	☐	→ from page 137
Cleaning		→ from page 138
Clean hardware	☐	
Care		→ from page 138
Lubricate movable parts	☐	
Lubricate locking points	☐	
Performance test		
Check that hardware components are fitted securely	☐	
Inspect hardware components for wear	☐	
Check that movable parts work properly	☐	
Check that locking points work properly	☐	
Check ease of movement	■	
Repair		→ from page 140
Retighten screws	■	
Replace damaged components	■	

☐ = May be carried out by a specialist company or the end user

■ = **Must** be carried out by a specialist company

12.1 Maintenance intervals



ATTENTION

Failure to adhere to maintenance intervals may cause property damage.

The maintenance interval for all tasks relating to the hardware components is **annually** at the least. In hospitals, schools and hotels, the maintenance interval is **six-monthly**.

Regular maintenance is necessary in order to maintain the proper and smooth-running operation of the hardware and to prevent premature wear or even defects.

- ▶ Determine and adhere to the appropriate maintenance interval in accordance with the ambient conditions.

12.2 Cleaning



ATTENTION

Using incorrect cleaning agents and sealing compounds may cause property damage.

Cleaning agents and sealing compounds may damage the surfaces of components and gaskets.

- ▶ Do not use aggressive or flammable liquids, acidic cleaners or abrasive cleaners.
- ▶ Only use mild, pH-neutral cleaning agents that have been diluted.
- ▶ Apply a thin protective film to the components, for example using a cloth soaked in oil.
- ▶ Avoid aggressive vapours (e.g. produced by formic acid, acetic acid, ammonia, amine compounds, ammonia compounds, aldehyde, carbolic acid, chlorine, tannic acid) around the element.
- ▶ Do not use any acetic acid-crosslinking or acid-crosslinking sealing compounds or those with the aforementioned constituents as both direct contact with the sealing compound and its fumes can corrode the surface of the components.

Cleaning the hardware

- ▶ Clean deposits and contaminants off the hardware using a soft cloth.
- ▶ Lubricate movable parts and locking points after cleaning. → 12.3 "Care" from page 138
- ▶ Apply a thin protective film to the hardware, for example using a cloth soaked in oil.

12.3 Care



ATTENTION

Using incorrect lubricants may cause property damage.

Substandard lubricants can prevent the hardware from working properly.

- ▶ Use high-quality lubricants.
- ▶ Only use resin-free and acid-free lubricants.
- ▶ Use appropriate lubricant in more challenging climatic conditions. Note the manufacturer specifications.



ATTENTION

Cleaning agents and lubricants may pollute the environment.

Leaking or excess cleaning agents and lubricants may pollute the environment.

- ▶ Remove any leaking or excess cleaning agents and lubricants.
- ▶ Dispose of cleaning agents and lubricants separately and properly.
- ▶ Observe the applicable directives and national laws.

Ease of movement can be improved by lubricating or adjusting the hardware. All functional hardware components must be lubricated on a regular basis.

Recommended lubricants

- Roto NX / NT grease

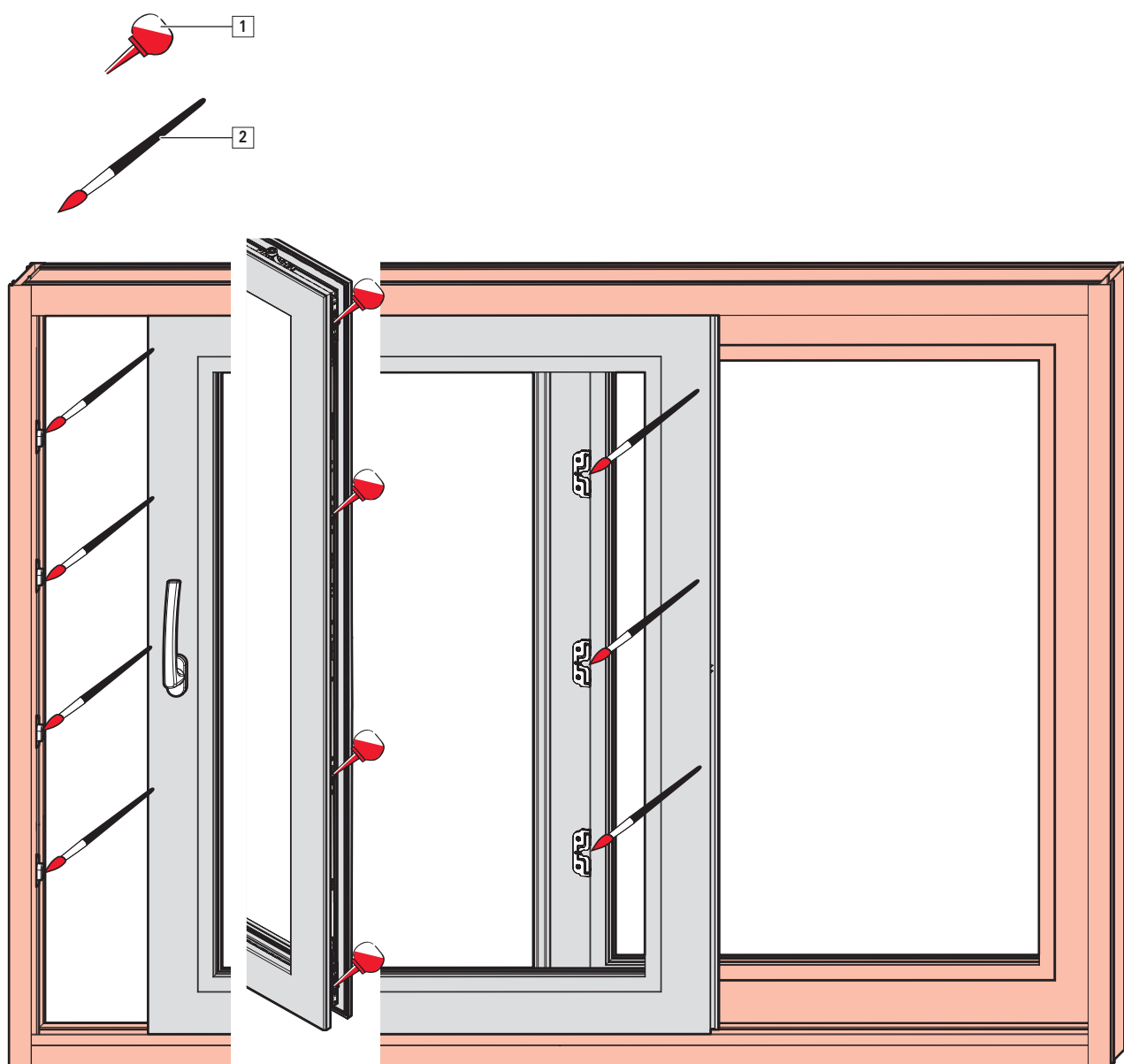


INFO

The figure displays the positioning of potential lubrication points. The figure does not necessarily match the installed hardware. The quantity of lubrication points varies depending on the size and design of the element.



12.3.1 Roto Patio Inowa



[1] Lubricant

[2] Grease

12.4 Performance test



DANGER

Risk of death caused a defective roller unit / damaged roller track!

A defective roller unit (which can be identified from scraping noises when moving the sash) or a damaged roller track may cause the sash to fall out.

1. If the sash is stiff or does not slide evenly, have it inspected by a specialist company.
2. If the roller track is visibly damaged, have the elements inspected by a specialist company.
3. If necessary, have defective / damaged components replaced.



WARNING

Improper repair work may pose a risk of death!

Improper maintenance may prevent the element from working properly and make it less safe to use.

- ▶ Always have repairs performed by a specialist company.

Check for proper operation:

- ▶ Inspect hardware components for damage, deformation and a secure fit.
- ▶ Check that the elements run smoothly by opening and closing them.
- ▶ Check the element gaskets for elasticity and fit.
- ▶ Check closed elements to ensure that they are leakproof.
- ▶ Locking and unlocking torque max. 10 Nm. The check can be performed using a torque wrench.

Have malfunctions remedied by a specialist company.

12.5 Repair



WARNING

Improper repair work may pose a risk of death!

Improper maintenance may prevent the element from working properly and make it less safe to use.

- ▶ Always have repairs performed by a specialist company.



ATTENTION

Improper screw fixings may cause property damage.

Loose or faulty screws can prevent the hardware from working properly.

- ▶ Check that the individual screws are secure and seated correctly.
- ▶ Tighten or replace loose or faulty screws.
- ▶ Use only the suggested screws.

Repair work includes replacing and repairing components and is only necessary if components have become damaged after wear or as a result of external circumstances. The hardware must be secured reliably in order to ensure that the element works properly and is safe to use.

The following tasks must only be performed by a specialist company:

- All adjustment work on the hardware,
- Replacing hardware or hardware components,
- Installing and removing windows, doors or balcony doors

The specialist company must observe the following:

- Perform the necessary repair work properly, according to generally recognised engineering practice and in accordance with the applicable regulations.
- Do not perform makeshift repairs on worn or damaged components.
- Only use original or approved spare parts for repairs.



13 Dismantling



WARNING

Improper dismantling may pose a risk of death!

The sash may fall during dismantling.

- ▶ Secure the sash to prevent it from falling, e.g. by using two people.
- ▶ Always have dismantling work performed by a specialist company.



CAUTION

Physical strain may cause injury and damage to health.

Carrying and lifting heavy loads for extended periods leads to physical injury in the long term.

- ▶ When carrying or lifting loads, maintain an ergonomically correct posture. The maximum permissible load is 25 kg for men and 10 kg for women.



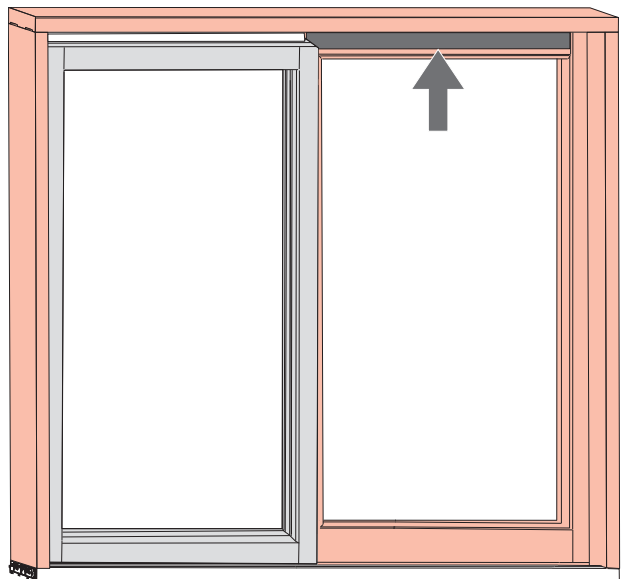
INFO

Unless otherwise stated, dismantling is performed in reverse order to installation.

13.1 Unhinging the sash

Version with split operator track

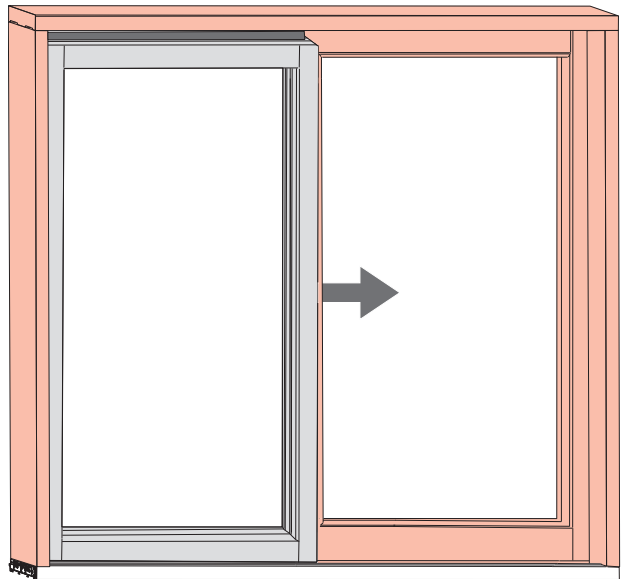
1. Remove the operator track in the fixed glazing area.



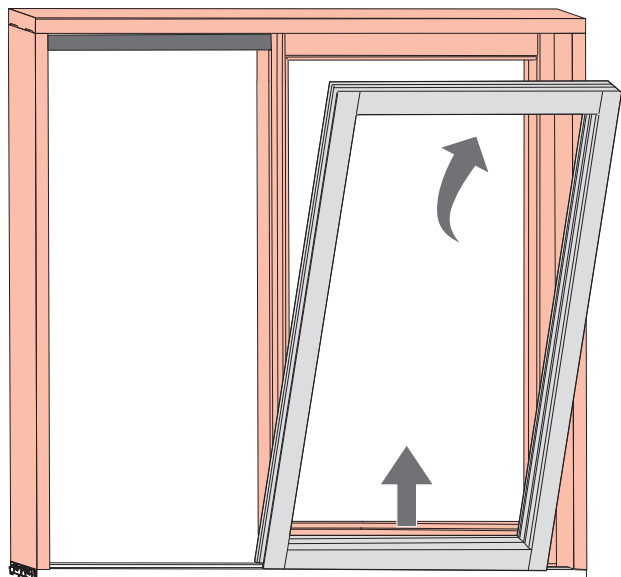
2. Move the handle to the sliding position.



3. Push the sash onto the roller track in front of the fixed glazing area in a controlled manner until the control units are exposed.



4. Remove the sash parallel to the frame.



13.2 Hardware components

Removing hardware components

1. Undo all screw connections.
2. Remove the hardware components.
3. Dispose of the hardware components properly.



14 Transport

14.1 Transporting elements and hardware



DANGER

Improper transport poses a risk of death!

Improper procedures for transporting, loading or unloading elements may cause serious injuries and glass breakage as a result of the elements swinging open, falling or becoming overloaded.

- ▶ Note the applicable accident prevention regulations.
- ▶ Note force application points and reaction forces.
- ▶ Prevent the sash from opening uncontrollably.
- ▶ Avoid jerky movements.
- ▶ Use suitable transportation means and protective devices.
- ▶ Watch out for protruding components.
- ▶ Transport heavy loads with two people and use suitable transportation means (such as an industrial truck).



CAUTION

Trapped limbs may result in injuries.

The transported goods can skid, open, close or fall during transportation tasks. This can result in limbs being trapped and seriously injured.

- ▶ Never reach near the scissor stays.
- ▶ Close the sash after installation and secure it in place for transport.
- ▶ Wear safety gloves and protective footwear.



CAUTION

Physical strain may cause injury and damage to health.

Carrying and lifting heavy loads for extended periods leads to physical injury in the long term.

- ▶ When carrying or lifting loads, maintain an ergonomically correct posture. The maximum permissible load is 25 kg for men and 10 kg for women.

Hardware is supplied to the specialist company as complete sets. The components are packaged accordingly for each scope of delivery. The instructions for safely transporting the hardware are described below.

Observe the following basic instructions when transporting hardware:

- ▶ Transport larger scopes of delivery using appropriate transportation means (such as industrial trucks).
- ▶ Note the transport weight in order to select appropriate transportation means.
- ▶ Ensure that the transport process is careful and appropriate for the material and that components are protected against dirt during transport.
- ▶ Immediately check the delivery for completeness and transport damage on receipt.



INFO

Submit a complaint about any defects as soon as they are identified. Claims for damages may only be made within the reclamation period.

Use the following transportation means for support when transporting, loading and unloading larger scopes of delivery:

- Industrial trucks, e.g. forklifts, telescopic handlers, pallet trucks
- Lifting equipment, e.g. transport nets, carry straps, round slings
- Protective devices, e.g. edge protection, spacer blocks



INFO

Industrial trucks and lifting devices may only be operated by qualified persons.



INFO

Lifting equipment and protective devices may only be used if they are in full working order.

14.2 Storing the hardware

Store all hardware components as follows until they are installed:

- Dry and protected
- On a level surface
- Protected against sunlight



15 Disposal



ATTENTION

Incorrect disposal may pollute the environment.

Pieces of hardware are raw materials.

- ▶ Dispose of hardware for environmentally friendly material re-utilisation as mixed scrap.

15.1 Disposing of packaging

The hardware is supplied as complete sets together with the packaging. Once unpacked, the installation company or builder is responsible for disposing of the packaging properly. The packaging materials are produced in accordance with current environmental protection standards. The materials can be recycled separately.

Follow the basic instructions below for the proper disposal of packaging:

- ▶ Do not dispose of packaging in household waste.
- ▶ Hand over packaging at local waste collection points or recycling centres.
- ▶ Observe the national regulations on the disposal of recyclable materials.
- ▶ Contact the local authorities if necessary.

15.2 Disposing of hardware

Once the hardware is finished with, the end user or builder is responsible for properly disposing of the windows, doors or balcony doors and the hardware, including any accessories. Hardware is produced in accordance with current environmental protection standards. The materials can be recycled separately.

Follow the basic instructions below for the proper disposal of hardware:

- ▶ Observe the information and specifications for disposal contained in the other applicable documents.
- ▶ Separate hardware components from windows, doors or balcony doors.
- ▶ Do not dispose of hardware in household waste.
- ▶ Hand over hardware at local waste collection points or recycling centres.
- ▶ Observe the national regulations on the disposal of recyclable materials.
- ▶ Contact the local authorities if necessary.



**From a single source.
Optimum hardware systems to meet all challenges.**

Window

Hardware systems for windows and balcony doors

Sliding

Hardware systems for large sliding windows and doors

Door

Matching hardware technology everything about doors

Equipment

Additional technology for windows and doors



Contact

