Window and Door Technology

Roto Patio Inowa

Intelligent hardware
for tightly sealed sliding systems

Installation, maintenance and operation instructions
for timber and PVC profiles



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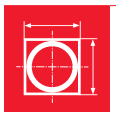
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1 General information

1.1 Version history

Version	Date	Changes
v0	16.11.2015	
v1	11.12.2015	
v2	03.03.2016	
v3	10.12.2017	General information, Security, Maintenance, Transport and Disposal chapters added. Installation of frame components, end stop, guide track stop and packer added. Jigs changed. Centre closers changed. Hardware overviews and parts lists changed.
v4	22.10.2018	Brief instructions added → *from page 64*. Notes on final assembly added → *from page 121*. Routing pattern for timber MUL striker removed. Incorrect material no. amended. Installation of roller unit, control unit and centre closer; assignment of drilling jig to diagram amended. Installation of diagram C components Frame component positions changed → *from page 93*.
v5	13.06.2019	Diagram C / C' CL component vertical, on the mullion: combinations added. Diagram C instruction sticker added. Incorrect material no. amended. Dimensions for installing components in the mullion amended. Pin for anti-pushback function amended. Installation dimensions for guide track stopper amended. Diagram C installation drawings amended.
v6	06.09.2019	Hardware overview with RC 2 parts list for PVC added . Installation of SEC MUL striker added → *from page 112*. Installation of anti-pushback function added → *from page 102*. Installation drawing diagram A – RC 2 / RC 2 N – PVC added . Incorrect material no. amended. Routing depth for VT gearbox amended → *from page 68*. Assignment of dimensions in the first opening sash and figure showing the position of the anti-lifting device amended → *from page 89*. Table of strikers, on the locking side, can be routed in, changed → *from page 93*.

Version	Date	Changes
v7	31.10.2019	Frame component positions for RC and striker for anti-pushback function added → *from page 93*. All hardware overviews amended. In parts lists, size-dependent combinations for CL component, vertical, amended. Drilling jig for SEC MUL striker amended → *from page 55* → *from page 112*. Drilling jig for striker for anti-pushback function amended → *from page 55* → *from page 102*. Drilling pattern for timber striker, can be routed in: dimensions amended → *from page 70*. Components in the floating mullion – PVC: positions in the second opening sash amended → *from page 89*. Frame component positions amended → *from page 93*. Striker to prevent incorrect operation: dimensional drawings in the open sliding position amended → *from page 100*. Guide track stopper position amended → *from page 120*. All installation drawings amended (dimensioning of the sizes rounded up) → *from page 122*.
v8	23.04.2021	Centre fixing is undone by being screwed down. Changed for roller unit, control unit and centre closer. Roller unit, control unit and centre closer changed. Installation drawings changed → *from page 122*. Component drawings added → *from page 26*. Components with Soft function added → *from page 60*. MUL locking cam added – is now also adjustable. Adjustment of adjustable components added → *from page 127*. Operation changed → *from page 129*.

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

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
	Sash
	Frame
	Drill holes, routing or screw positions
	Unaffected components Indirectly affected components
	Components that have just been described Arrows or movements
1	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

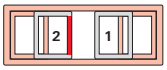
Figures are provided in the left-hand version. The process for the right-hand version is mirror-inverted.

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 / PVC
	Timber
	PVC
	Sash rebate width
	Sash rebate height
	Handle position vertically upwards
	Handle position vertically downwards
	Sash handle height (centre-left)
	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
	Sash diagram C, second opening sash, right
	Left of frame
	Bottom left of frame
	Top left of frame

Symbol	Meaning
	Top right of frame
	Top and bottom right of frame
	Bottom of frame
	Bottom left of frame

1.5 Product features

Symbol	Meaning
	Cropping range
	Width
	Description
	Backset
	Installation DIN left / right
	Colour
	Colour code, Roto
	Sash width
	Sash height
	Sash weight
	Fixed handle height
	Information
	couplable
	Length

Symbol	Meaning
	Material
	Material number
	Installation type
	Surface
	Number of locking cams
	Type of locking cams

1.6 Abbreviations

Abbreviation	Meaning
approx.	approximately
CTL	Catalogue
BS	Backset
E	E cam
IMO	Installation instructions
SRW	Sash rebate width
SRH	Sash rebate height
S.kg	Sash weight
T / PVC	Timber / PVC
KU	couplable
kg	Kilograms
KSR	Vertical tilting
L	Left
Max.	Maximum
MUL	Mullion
Min.	At least
mm	Millimetres
CL	Centre lock
Nm	Newton metres
Not sh.	Not shown
P	Mushroom cam
R	Right
RC	Resistance class
SW	Key size
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, 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.

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 death!

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.

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 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 strain may cause damage 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 sashes improperly poses the risk of injury and property damage.

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

- When moving the sash, ensure that it will not slam against the frame or other sashes 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.

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 to the point that they can no longer function in a saline, aggressive or corrosive environment.

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

Symbol	Meaning
	Trapping body parts in the opening between sash and frame may lead to serious 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.
	Placing additional loads on the sash poses a risk of injury and property damage. Do not attach additional loads to windows and balcony door sashes.
	Introducing obstacles into the opening between sash and frame poses a risk of injury and property damage. Do not introduce any obstacles in the opening area between the frame and window or balcony door sashes.
	Opening and closing the sash in an uncontrolled manner poses a risk of injury and property damage. 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.

3 Information on the product

3.1 General hardware characteristics

- Circumferential gasket
- Concealed hardware
- Intuitive, simple operation
- Even heavy sashes can be opened with less effort because the handle is easy to use.
- Ease of closing thanks to the smooth automatic retraction of the sash into the frame.
- Innovative closing movement perpendicular to the frame profile.
- Active locking points including in the mullion.
- PVC RC 2 / RC 2 N: SKG**-certified
- Control unit with soft function:
  - SoftClose (damped closing)
  - SoftOpen (damped opening)

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 – 2000 mm

  SRW differs for two control units with Soft function 920 mm – 2000 mm
- SRH 600 mm – 2500 mm
- S.kg max. 200 kg
- Opening diagrams:

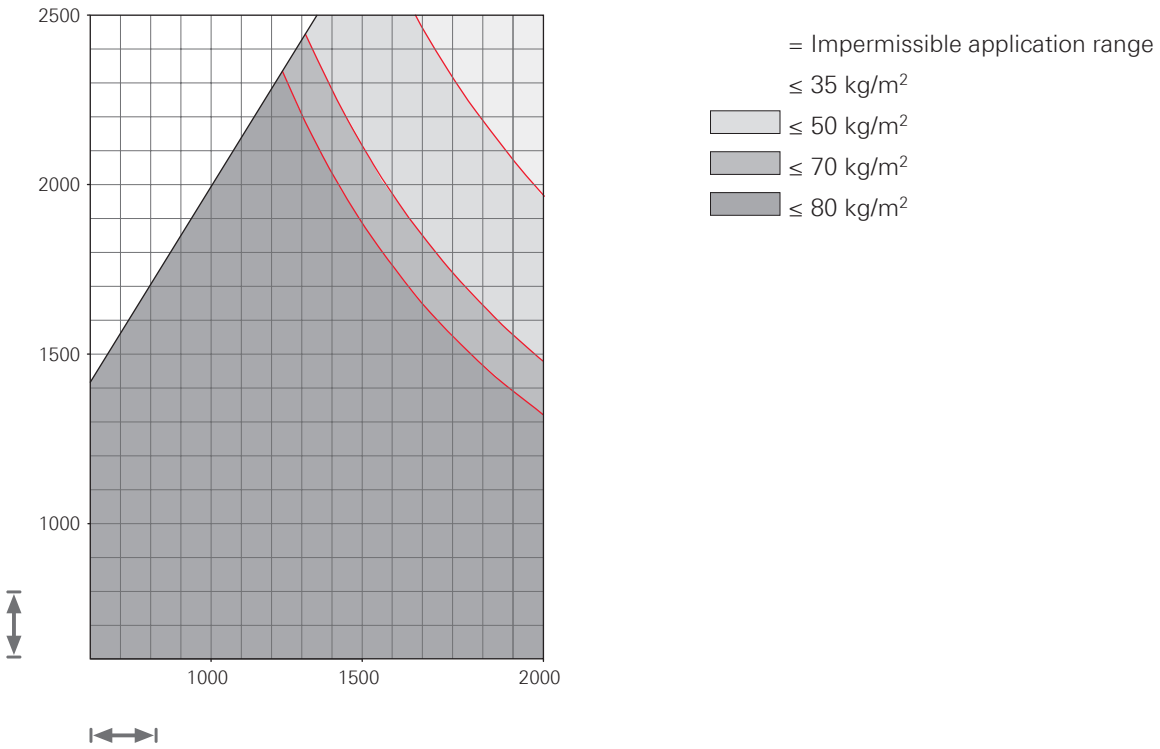
  A and A' (running inward or outward)

  K and K' (running inward or outward)

  C and C' (running inward or outward)
- Resistance class basic security and RC 2 / RC 2 N
- Operating range: -20 °C to +80 °C

3.3 Application diagrams

3.3.1 200 kg



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

1 mm/m² glass thickness ≙ 2.5 kg

SRH:SRW = max. 2:1

			Application range
	Sash rebate width (SRW)	Control unit without soft function	710 – 2000 mm
		1 control unit with soft function	710 – 2000 mm
		2 control units with soft function	920 – 2000 mm
	Sash rebate height (SRH)		600 – 2500 mm
	Sash weight (S.kg)		Max. 200 kg
–	Glass weight		Max. 80 kg/m²

INFO

When using control units with soft function:

S.kg > 20 kg

3.4 Design variants

3.4.1 Overview

Diagram A

Diagram A (running on the inside)	Diagram A' (running on the outside)
1 sliding sash (left or right) 1 fixed glazing element	1 sliding sash (left or right) 1 fixed glazing element

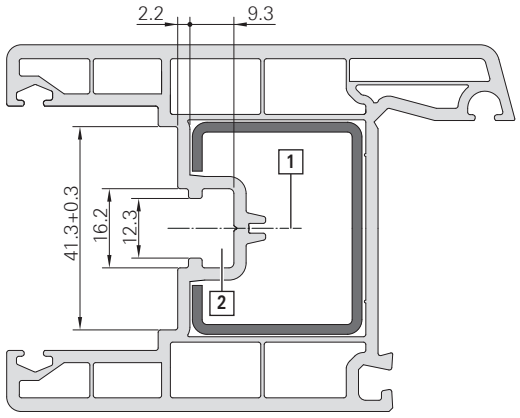
Diagram C

Diagram C (running on the inside)	Diagram C' (running on the outside)
2 sliding sashes (left and right) 2 fixed glazing elements	2 sliding sashes (left and right) 2 fixed glazing elements

Diagram K

Diagram K (running on the inside)	Diagram K' (running on the outside)
2 sliding sashes (left and right) 1 fixed glazing element	2 sliding sashes (left and right) 1 fixed glazing element

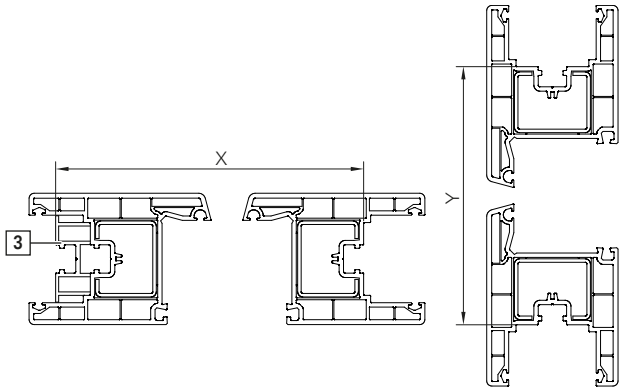
3.5 Hardware groove dimensions



Sash profile cross section

[1] Hardware axis

[2] Hardware groove



X = SRW (including assembly profile [3])

Y = SRH

3.6 Component dimensions

MUL locking cam	Description
	L = 17.4 - 62.4
	Adjustable L = 19.8 - 53.5

Pin for anti-pushback function	Description
	L = 20.0 - 46.5
	Adjustable L = 35.5 - 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 height of the element
- The width of the element
- The weight of the element
- Profile system
- Variation

INFO

Note the profile system assessment.

Recommended handles can be found in the 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



Application range

SRW: 710 - 2000 mm

SRH: 600 - 2500 mm

S.kg: max. 200 kg

[1a] **Corner drive**	with E cam	
[1b]	with V cam	
#		№
1	E	260275
1	V	260272

[2a] VT espagnolette → *from page 51*

[2b] VT espagnolette, lockable → *from page 51*

Espagnolette extension, (SRH > 1401 mm; not sh.)

		#		№
200	Y	–	–	308267
400	Y	–	–	297858

Size-specific combinations:

		#		№
≤ 1400	–	–	–	–
1401 – 1600	200 KU	–	–	308267
1601 – 2000	–	–	–	–
2001 – 2200	200 KU	–	–	308267
2201 – 2400	400 KU	–	–	297858
2401 – 2500	200 KU	–	–	308267

[5] CL component, horizontal

	#		№
200	–	–	308267
344	1	V	572665
480	–	–	245729
590	–	–	603442
790	1	E	603444
990	1	E	603447
1190	1	E	603462
1440	1	E	603466

[6] CL component 130, horizontal

		#		№
130	Y	1	E	764350

CL component 200, (SRW > 1910 mm; not sh.)

		#		№
200	Y	–	–	308267

Size-specific combinations:

		#		№
≤ 760	130	1	E	764350
	344	1	V	572665
	130	1	E	764350
761 – 860	130	1	E	764350
	490	–	–	765636
	130	1	E	764350
861 – 1060	130	1	E	764350
	590	–	–	603442
	130	1	E	764350
1061 – 1260	130	1	E	764350
	790	1	E	603444
	130	1	E	764350
1261 – 1460	130	1	E	764350
	990	1	E	603447
	130	1	E	764350
1461 – 1660	130	1	E	764350
	1190	1	E	603462
	130	1	E	764350
1661 – 1910	130	1	E	764350
	1440	1	E	603466
	130	1	E	764350
≥ 1911	130	1	E	764350
	1440	1	E	603466
	200	–	–	308267
	130	1	E	764350

[7] CL component, vertical, on the mullion

		#		№
600	N	1	E	255281
200	Y	–	–	308267
200	Y	1	E	450821
400	Y	–	–	297858
600	Y	1	E	255282

Size-specific combinations:

		#		№
1201 – 1800	600	1	E	255281
1801 – 2000	200 KU	–	–	308267
	600	1	E	255281
2001 – 2200	400 KU	–	–	297858
	600	1	E	255281
2201 – 2400	200 KU	1	E	450821
	400 KU	–	–	297858
	600	1	E	255281
2401 – 2500	200 KU	–	–	308267
	600 KU	1	E	255282
	200 KU	–	–	308267
	600	1	E	255281

[9] Roller unit[1]

		№
41	Left	821686
	Right	823733

[1] For SRW > 1060 mm, a third roller unit is required. No spacer blocking for load transfer via the roller unit in this area.

[10] Control unit[2]
Alternatively:
Control unit with SoftOpen → *from page 60*

		№
41	Left	821685
	Right	823730

[*] Control unit set with SoftClose; SRW ≥ 710 mm
Alternatively:
[10] Control unit

				№
Espagnolette side	41	100 kg	Left	837235
			Right	837152
		200 kg	Left	837236
			Right	837153

Contents:

[*]		#
[40]	Control unit with SoftClose	1
[41]	Activator for control units with soft function	1

[11] Centre closer

		№
41	Left	821687
	Right	823736

[12] MUL locking cam

	№
17.4	809611
20	808632
21.9	809613
23.9	794770
24.6	775929
30	814786
31.5	809772
32.8	809612
33.5	819884
34.4	771375
37.5	836782
38.4	809614
41.4	798976
46	817228
47.5	806839
62.4	809625

[15] Striker to prevent incorrect operation

	№
Striker to prevent incorrect operation	822789

[16] Handle (200 mm handle length) → CTL_1

Recessed grip (43 mm distance), not sh. → CTL_1

[17] Striker

			№
Timber PVC	Screw-on	–	744579
Timber	Can be routed in	Left	798224
		Right	798245

[18] Stop

	№
14	635307

[20] MUL striker

		№
Timber PVC Aluminium	Screw-on	793493
Timber	Can be routed in	798223

[21] Cover cap for MUL striker [3]

		№
R01.1	Natural silver	819632
R05.3	Medium bronze	819631
R06.2	Jet black	798979
R07.2	Traffic white	808054

[31] End stop, depending on the profile system

	№
End stop	349600

[32] End stop packer, depending on the profile system

	№
Packer	477263

[33] Stopper [4]

	№
Stopper	800196

[34] Packer; quantity depends on the profile [5]

	№
Packer	800197

Optional

[11] Centre closer, adjustable

		№
41	Left	823751
	Right	823752

[2] For SRW > 1060 mm, a third control unit is required.

[3] Can only be screwed on in combination with MUL striker.

[4] Cannot be used in conjunction with a control unit with SoftOpen.

[5] Only use the number of packers that is specified in the profile assessment.

[12] MUL locking cam, adjustable

		№
Gasket compression adjustable	19.8	786728
	25	895955
	26	895966
	27	895970
	35.5	858628
	36	895972
	37.5	895974
	39.5	839047
	44	895973
	45.8	791838
	47.8	788696
	53.5	839045

[35] Brush holder

	№
Brush holder	809520

[37] Rubber buffer

	№
16.5	780647
17.5	798249

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



Application range

SRW: 710 - 2000 mm

SRH: 1072 - 2500 mm

S.kg: max. 200 kg

[1a] Corner drive with E cam
[1b] with V cam

#		№
1	E	260275
1	V	260272

[2a] VT espagnolette → *from page 51*

Espagnolette extension, (SRH > 1401 mm; not sh.)

		#		№
200	Y	–	–	308267
400	Y	–	–	297858

Size-specific combinations:

		#		№
≤ 1400	–	–	–	–
1401 – 1600	200 KU	–	–	308267
1601 – 2000	–	–	–	–
2001 – 2200	200 KU	–	–	308267
2201 – 2400	400 KU	–	–	297858
2401 – 2500	200 KU	–	–	308267

[5] CL component, horizontal

	#		№
200	–	–	308267
344	1	V	572665
480	–	–	245729
590	–	–	603442
790	1	E	603444
990	1	E	603447
1190	1	E	603462
1440	1	E	603466

[6] CL component 130, horizontal

		#		№
130	Y	1	E	764350

CL component 200, (SRW > 1910 mm; not sh.)

		#		№
200	Y	–	–	308267

Size-specific combinations:

		#		№
≤ 760	130	1	E	764350
	344	1	V	572665
	130	1	E	764350
761 – 860	130	1	E	764350
	490	–	–	765636
	130	1	E	764350
861 – 1060	130	1	E	764350
	590	–	–	603442
	130	1	E	764350
1061 – 1260	130	1	E	764350
	790	1	E	603444
	130	1	E	764350
1261 – 1460	130	1	E	764350
	990	1	E	603447
	130	1	E	764350
1461 – 1660	130	1	E	764350
	1190	1	E	603462
	130	1	E	764350
1661 – 1910	130	1	E	764350
	1440	1	E	603466
	130	1	E	764350
≥ 1911	130	1	E	764350
	1440	1	E	603466
	200	–	–	308267
	130	1	E	764350

[7] CL component, vertical, on the mullion

		#		№
200	Y	1	E	450821
400	Y	1	E	280346
400	N	1	E	255280
600	N	1	E	255281

Size-specific combinations:

		#		№
≤ 1300	200 KU	1	E	450821
1301 – 1500	400	1	E	255280
1501 – 1700	400 KU	1	E	280346
	200 KU	1	E	450821
1701 – 1900	400 KU	1	E	280346
	400	1	E	255280
1901 – 2100	400 KU	1	E	280346
	600	1	E	255281
2101 – 2300	400 KU	1	E	280346
	400 KU	1	E	280346
	400	1	E	255280
2301 – 2500	400 KU	1	E	280346
	400 KU	1	E	280346
	600	1	E	255281

[9] Roller unit[6]

		№
41	Left	821686
	Right	823733

[6] For SRW > 1060 mm, a third roller unit is required. No spacer blocking for load transfer via the roller unit in this area.

[10] Control unit[7]
Alternatively:
Control unit with SoftOpen → *from page 60*

		№
41	Left	821685
	Right	823730

[*] Control unit set with SoftClose; SRW ≥ 710 mm
Alternatively:
[10] Control unit

				№
Espagnolette side	41	100 kg	Left	837235
			Right	837152
		200 kg	Left	837236
			Right	837153

Contents:

[*]		#
[40]	Control unit with SoftClose	1
[41]	Activator for control units with soft function	1

[11] Centre closer

		№
41	Left	821687
	Right	823736

[12] MUL locking cam

	№
17.4	809611
20	808632
21.9	809613
23.9	794770
24.6	775929
30	814786
31.5	809772
32.8	809612
33.5	819884
34.4	771375
37.5	836782
38.4	809614
41.4	798976
46	817228
47.5	806839
62.4	809625

[15] SEC striker to prevent incorrect operation

	№
SEC striker to prevent incorrect operation	822796

[16] Handle, lockable (200 mm handle length) → CTL_1

Recessed grip (43 mm distance), not sh. → CTL_1

[17] SEC striker

		№
PVC	Screw-on	798226

[18] Stop

	№
14	635307

[20] SEC MUL striker

	№
31.6	833688
34.2	828318

[22] Drilling protection

	№
Drilling protection	770965

[24] Pin for anti-pushback function

	№
20	816147
33	835372
34	822393
37.5	837714
38	820048
46.5	833594

[25] Centre closer for anti-pushback function

		№
41	Left	821687
	Right	823736

INFO
DIN L: order right components.

DIN R: order left components.

[26] Striker for anti-pushback function

	№
Striker for anti-pushback function	810279

[27] Cover cap for SEC MUL striker

			№
31.6	Natural silver	R01.1	828482
	Medium bronze	R05.3	828483
	Jet black	R06.2	809717
	Traffic white	R07.2	819351
34.2	Natural silver	R01.1	858400
	Medium bronze	R05.3	858402
	Jet black	R06.2	858401
	Traffic white	R07.2	858338

[7] For SRW > 1060 mm, a third control unit is required.

[28] Cover cap for anti-pushback function

		№
R01.1	Natural silver	828482
R05.3	Medium bronze	828483
R06.2	Jet black	809717
R07.2	Traffic white	819351

[31] End stop, depending on the profile system

	№
End stop	349600

[32] End stop packer, depending on the profile system

	№
Packer	477263

[33] Stopper [8]

	№
Stopper	800196

[34] Packer; quantity depends on the profile [9]

	№
Packer	800197

Optional

[11] Centre closer, adjustable

		№
41	Left	823751
	Right	823752

[12] MUL locking cam, adjustable

		№
Gasket compression adjustable	19.8	786728
	25	895955
	26	895966
	27	895970
	35.5	858628
	36	895972
	37.5	895974
	39.5	839047
	44	895973
	45.8	791838
	47.8	788696
	53.5	839045

[25] Centre closer, adjustable, for anti-pushback function

		№
41	Left	823751
	Right	823752

[8] Cannot be used in conjunction with a control unit with SoftOpen.

[9] Only use the number of packers that is specified in the profile assessment.

INFO

DIN L: order right components.

DIN R: order left components.

[24] Pin, adjustable, for anti-pushback function

		№
Gasket compression adjustable	25 mm	895977
	27 mm	895989
	32 mm	895994
	36 mm	858629
	36 mm	895999
	40 mm	839049
	44 mm	896002
	49 mm	896005
	54 mm	839048

[35] Brush holder

	№
Brush holder	809520

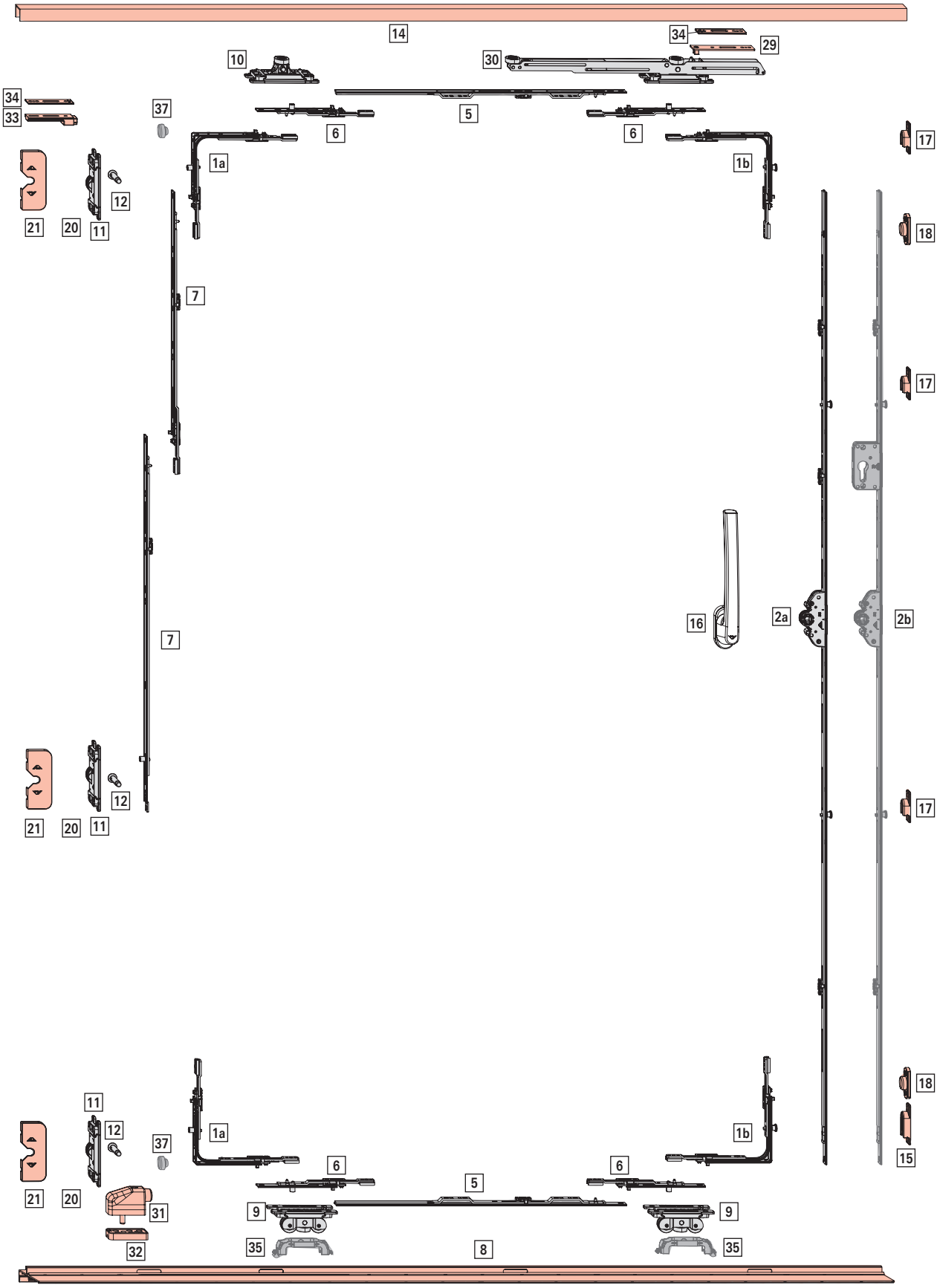
[37] Rubber buffer

	№
16.5	780647
17.5	798249

SKG** info clip

				№
SKG** info clip	For clipping onto the gearbox	R07.2	Traffic white	331459

4.3 Diagram A', K'



Application range

SRW: 710 - 2000 mm

SRH: 600 - 2500 mm

S.kg: max. 200 kg

[1a] **Corner drive**	with E cam	
[1b]	with V cam	
#		№
1	E	260275
1	V	260272

[2a] VT espagnolette → *from page 51*

[2b] VT espagnolette, lockable → *from page 51*

Espagnolette extension, (SRH > 1401 mm; not sh.)

		#		№
200	Y	–	–	308267
400	Y	–	–	297858

Size-specific combinations:

		#		№
≤ 1400	–	–	–	–
1401 – 1600	200 KU	–	–	308267
1601 – 2000	–	–	–	–
2001 – 2200	200 KU	–	–	308267
2201 – 2400	400 KU	–	–	297858
2401 – 2500	200 KU	–	–	308267

[5] CL component, horizontal

	#		№
200	–	–	308267
344	1	V	572665
480	–	–	245729
590	–	–	603442
790	1	E	603444
990	1	E	603447
1190	1	E	603462
1440	1	E	603466

[6] CL component 130, horizontal

		#		№
130	Y	1	E	764350

CL component 200, (SRW > 1910 mm; not sh.)

		#		№
200	Y	–	–	308267

Size-specific combinations:

		#		№
≤ 760	130	1	E	764350
	344	1	V	572665
	130	1	E	764350
761 – 860	130	1	E	764350
	490	–	–	765636
	130	1	E	764350
861 – 1060	130	1	E	764350
	590	–	–	603442
	130	1	E	764350
1061 – 1260	130	1	E	764350
	790	1	E	603444
	130	1	E	764350
1261 – 1460	130	1	E	764350
	990	1	E	603447
	130	1	E	764350
1461 – 1660	130	1	E	764350
	1190	1	E	603462
	130	1	E	764350
1661 – 1910	130	1	E	764350
	1440	1	E	603466
	130	1	E	764350
≥ 1911	130	1	E	764350
	1440	1	E	603466
	200	–	–	308267
	130	1	E	764350

[7] CL component, vertical, on the mullion

		#		№
600	N	1	E	255281
200	Y	–	–	308267
200	Y	1	E	450821
400	Y	–	–	297858
600	Y	1	E	255282

Size-specific combinations:

		#		№
1201 – 1800	600	1	E	255281
1801 – 2000	200 KU	–	–	308267
	600	1	E	255281
2001 – 2200	400 KU	–	–	297858
	600	1	E	255281
2201 – 2400	200 KU	1	E	450821
	400 KU	–	–	297858
	600	1	E	255281
2401 – 2500	200 KU	–	–	308267
	600 KU	1	E	255282
	200 KU	–	–	308267
	600	1	E	255281

[8] Roller track

		№
Timber	3200	807733
	6400	807734

[9] Roller unit[10]

		Nº
41	Left	821686
	Right	823733

INFO

DIN L: order right components.

DIN R: order left components.

[10] Control unit[11]

Alternatively:

Control unit with SoftOpen → *from page 60*

		Nº
41	Left	821685
	Right	823730

INFO

DIN L: order right components.

DIN R: order left components.

[*] Control unit set with SoftClose; SRW ≥ 710 mm

Alternatively:

[10] Control unit

				Nº
Espagnolette side	41	100 kg	Left	837235
			Right	837152
		200 kg	Left	837236
			Right	837153

INFO

DIN L: order right components.

DIN R: order left components.

Contents:

[*]		#
[40]	Control unit with SoftClose	1
[41]	Activator for control units with soft function	1

[11] Centre closer

		Nº
41	Left	821687
	Right	823736

INFO

DIN L: order right components.

DIN R: order left components.

[12] MUL locking cam

	Nº
17.4	809611
20	808632
21.9	809613
23.9	794770
24.6	775929
30	814786
31.5	809772
32.8	809612
33.5	819884
34.4	771375
37.5	836782
38.4	809614
41.4	798976
46	817228
47.5	806839
62.4	809625

[14] Guide track

		Nº
Timber	3200	782921
	6400	782922

[15] Striker to prevent incorrect operation

	Nº
Striker to prevent incorrect operation	822789

[16] Handle (200 mm handle length) → CTL_1

Recessed grip (43 mm distance), not sh. → CTL_1

[17] Striker

			Nº
Timber PVC	Screw-on	–	744579
Timber	Can be routed in	Left	798224
		Right	798245

[18] Stop

	Nº
14	635307

[20] MUL striker

		Nº
Timber PVC Aluminium	Screw-on	793493
Timber	Can be routed in	798223

[21] Cover cap for MUL striker [12]

		Nº
R01.1	Natural silver	819632

[10] For SRW > 1060 mm, a third roller unit is required. No spacer blocking for load transfer via the roller unit in this area.

[11] For SRW > 1060 mm, a third control unit is required.

[12] Can only be screwed on in combination with MUL striker.

		№
R05.3	Medium bronze	819631
R06.2	Jet black	798979
R07.2	Traffic white	808054

[31] End stop, depending on the profile system

	№
End stop	349600

[32] End stop packer, depending on the profile system

	№
Packer	477263

[33] Stopper [13]

	№
Stopper	800196

[34] Packer; quantity depends on the profile [14]

	№
Packer	800197

Optional

[11] Centre closer, adjustable

		№
41	Left	823751
	Right	823752

[12] MUL locking cam, adjustable

		№
Gasket compression adjustable	19.8	786728
	25	895955
	26	895966
	27	895970
	35.5	858628
	36	895972
	37.5	895974
	39.5	839047
	44	895973
	45.8	791838
	47.8	788696
	53.5	839045

[35] Brush holder

	№
Brush holder	809520

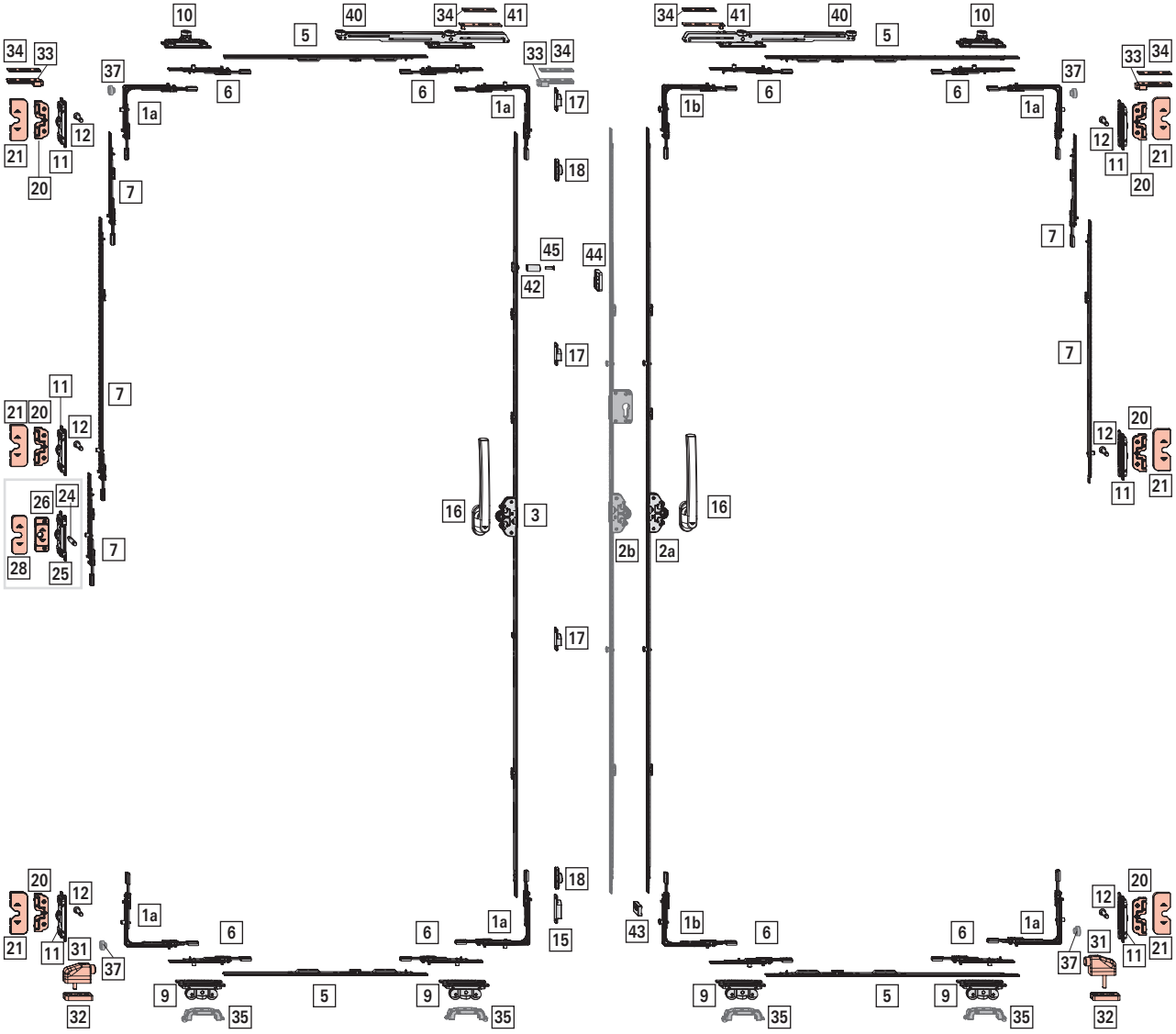
[37] Rubber buffer

	№
16.5	780647
17.5	798249

[13] Cannot be used in conjunction with a control unit with SoftOpen.

[14] Only use the number of packers that is specified in the profile assessment.

4.4 Diagram C | PVC



Application range

SRW: 710 - 2000 mm

SRH: 600 - 2500 mm

S.kg: max. 200 kg

[1a] Corner drive with E cam
[1b] with V cam

		№
1	E	260275
1	V	260272

[2a] VT espagnolette → *from page 51*

[2b] VT espagnolette, lockable → *from page 51*

[3] VT espagnolette, second opening sash → *from page 51*

Espagnolette extension, (SRH > 1401 mm; not sh.)

				№
200	Y	–	–	308267
400	Y	–	–	297858

Size-specific combinations:

				№
≤ 1400	–	–	–	–
1401 – 1600	200 KU	–	–	308267
1601 – 2000	–	–	–	–
2001 – 2200	200 KU	–	–	308267
2201 – 2400	400 KU	–	–	297858
2401 – 2500	200 KU	–	–	308267

[5] CL component, horizontal

			№
200	–	–	308267
344	1	V	572665
480	–	–	245729
590	–	–	603442
790	1	E	603444
990	1	E	603447
1190	1	E	603462
1440	1	E	603466

[6] CL component 130, horizontal

				№
130	Y	1	E	764350

CL component 200, (SRW > 1910 mm; not sh.)

				№
200	Y	–	–	308267

Size-specific combinations:

				№
≤ 760	130	1	E	764350
	344	1	V	572665
	130	1	E	764350
761 – 860	130	1	E	764350
	490	–	–	765636
	130	1	E	764350
861 – 1060	130	1	E	764350
	590	–	–	603442
	130	1	E	764350
1061 – 1260	130	1	E	764350
	790	1	E	603444
	130	1	E	764350
1261 – 1460	130	1	E	764350
	990	1	E	603447
	130	1	E	764350
1461 – 1660	130	1	E	764350
	1190	1	E	603462
	130	1	E	764350
1661 – 1910	130	1	E	764350
	1440	1	E	603466
	130	1	E	764350
≥ 1911	130	1	E	764350
	1440	1	E	603466
	200	–	–	308267
	130	1	E	764350

[7] CL component, vertical, on the mullion

				№
600	N	1	E	255281
200	Y	–	–	308267
200	Y	1	E	450821
400	Y	–	–	297858
600	Y	1	E	255282

Size-specific combinations:

First opening sash:

				№
1201 – 1800	600	1	E	255281
1801 – 2000	200 KU	–	–	308267
	600	1	E	255281
2001 – 2200	400 KU	–	–	297858
	600	1	E	255281
2201 – 2400	200 KU	1	E	450821
	400 KU	–	–	297858
	600	1	E	255281
2401 – 2500	200 KU	–	–	308267
	600 KU	1	E	255282
	200 KU	–	–	308267
	600	1	E	255281

Second opening sash:

				№
600 – 1200	200 KU	1	E	450821
1201 – 1800	600 KU	1	E	255282
	200 KU	1	E	450821
1801 – 2000	200 KU	–	–	308267
	600 KU	1	E	255282
	200 KU	1	E	450821
2001 – 2200	400 KU	–	–	297858
	600 KU	1	E	255282
	200 KU	1	E	450821
2201 – 2400	200 KU	1	E	450821
	400 KU	–	–	297858
	600 KU	1	E	255282
	200 KU	1	E	450821
2401 – 2500	200 KU	–	–	308267
	600 KU	1	E	255282
	200 KU	–	–	308267
	600 KU	1	E	255282
	200 KU	1	E	450821

[9] Roller unit[15]

		№
41	Left	821686
	Right	823733

[10] Control unit[16]

Alternatively:
Control unit with SoftOpen → *from page 60*

		№
41	Left	821685
	Right	823730

[*] Control unit set with SoftClose;

SRW ≥ 710 mm
Alternatively:
[10] Control unit

				№
Espagnolette side	41	100 kg	Left	837235
			Right	837152
		200 kg	Left	837236
			Right	837153

Contents:

[*]		#
[40]	Control unit with SoftClose	1
[41]	Activator for control units with soft function	1

[11] Centre closer

		№
41	Left	821687
	Right	823736

[12] MUL locking cam

	№
17.4	809611
20	808632
21.9	809613
23.9	794770
24.6	775929
30	814786
31.5	809772
32.8	809612
33.5	819884
34.4	771375
37.5	836782
38.4	809614
41.4	798976
46	817228
47.5	806839
62.4	809625

[15] Striker to prevent incorrect operation

	№
Striker to prevent incorrect operation	822789

[16] Handle (200 mm handle length) → CTL_1

Recessed grip (43 mm distance), not sh. → CTL_1

[17] Striker

		№
PVC	Screw-on	744579

[18] Stop

	№
14	635307

[20] MUL striker

		№
Timber PVC Aluminium	Screw-on	793493

[21] Cover cap for MUL striker [17]

		№
R01.1	Natural silver	819632
R05.3	Medium bronze	819631
R06.2	Jet black	798979
R07.2	Traffic white	808054

[15] For SRW > 1060 mm, a third roller unit is required. No spacer blocking for load transfer via the roller unit in this area.

[16] For SRW > 1060 mm, a third control unit is required.

[17] Can only be screwed on in combination with MUL striker.

[*] Operating sequence control set
SRH ≥1200 mm, depending on the profile system

	№
14	861110
31.3	833201
31.7	833202
39.5	858557

[*]		#
[42]	Adapter	1
[43]	Anti-lifting device	1
[44]	Stop, first opening sash	1
[45]	Countersunk screw	1

[24] Pin for anti-pushback function

	№
20	816147
33	835372
34	822393
37.5	837714
38	820048
46.5	833594

[25] Centre closer for anti-pushback function

		№
41	Left	821687
	Right	823736

INFO

DIN L: order right components.

DIN R: order left components.

[26] Striker for anti-pushback function

	№
Striker for anti-pushback function	810279

[28] Cover cap for anti-pushback function

		№
R01.1	Natural silver	828482
R05.3	Medium bronze	828483
R06.2	Jet black	809717
R07.2	Traffic white	819351

[31] End stop, depending on the profile system

	№
End stop	349600

[32] End stop packer, depending on the profile system

	№
Packer	477263

[33] Stopper [18]
Alternatively:
[37] Rubber buffer

	№
Stopper	800196

[34] Packer; quantity depends on the profile [19]

	№
Packer	800197

Optional

[11] Centre closer, adjustable

		№
41	Left	823751
	Right	823752

[12] MUL locking cam, adjustable

		№
Gasket compression adjustable	19.8	786728
	25	895955
	26	895966
	27	895970
	35.5	858628
	36	895972
	37.5	895974
	39.5	839047
	44	895973
	45.8	791838
	47.8	788696
	53.5	839045

[25] Centre closer, adjustable, for anti-pushback function

		№
41	Left	823751
	Right	823752

INFO

DIN L: order right components.

DIN R: order left components.

[24] Pin, adjustable, for anti-pushback function

		№
Gasket compression adjustable	25 mm	895977
	27 mm	895989
	32 mm	895994
	36 mm	858629
	36 mm	895999
	40 mm	839049

[18] Cannot be used in conjunction with a control unit with SoftOpen and SoftStop on the mullion.

[19] Only use the number of packers that is specified in the profile assessment.

		№
	44 mm	896002
	49 mm	896005
	54 mm	839048

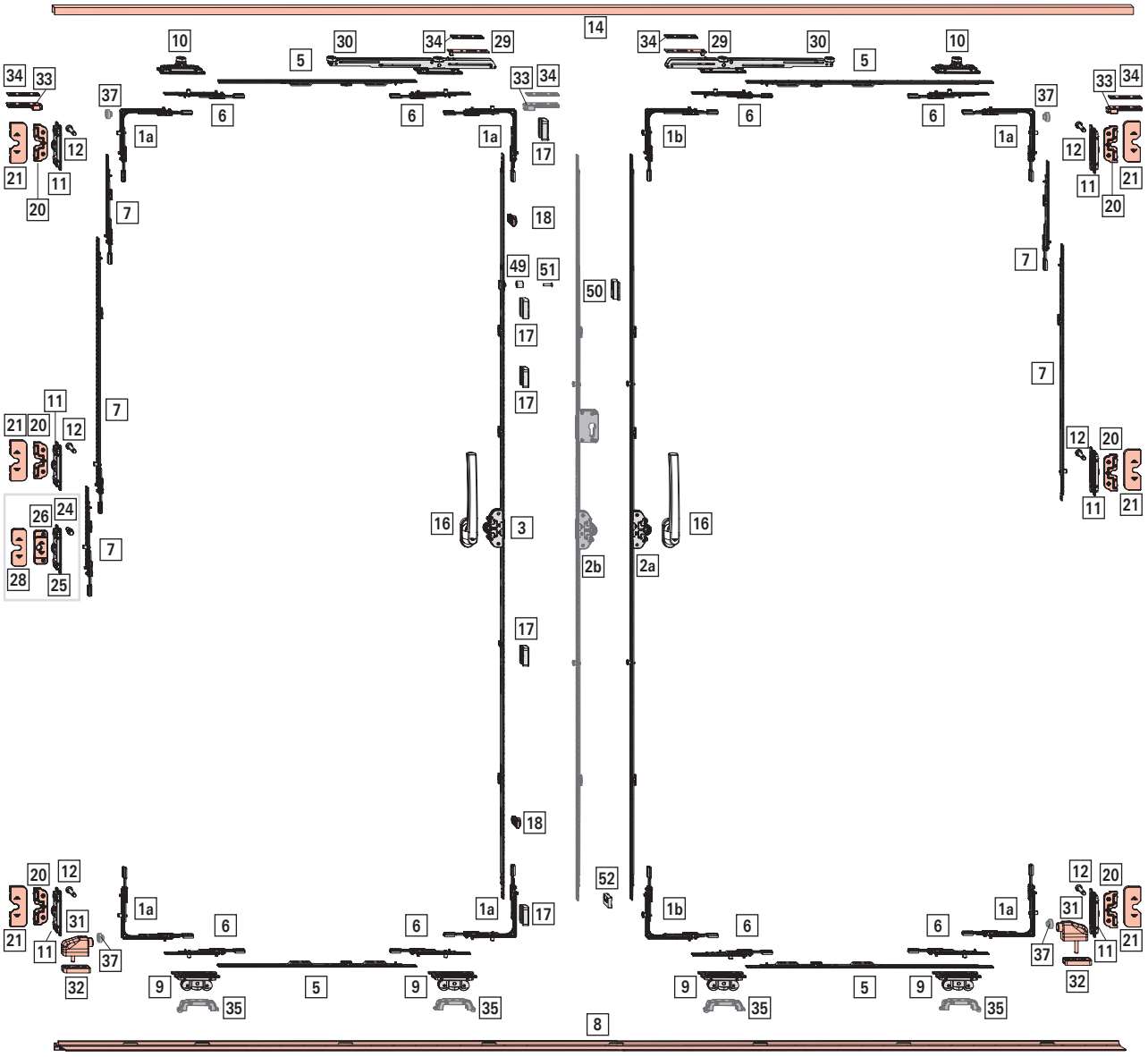
[35] Brush holder

	№
Brush holder	809520

[37] Rubber buffer

	№
16.5	780647
17.5	798249

4.5 Diagram C′ | Timber



Application range

SRW: 710 - 2000 mm

SRH: 600 - 2500 mm

S.kg: max. 200 kg

[1a] Corner drive [1b] with E cam / with V cam

#		№
1	E	260275
1	V	260272

[2a] VT espagnolette → *from page 51*

[2b] VT espagnolette, lockable → *from page 51*

[3] VT espagnolette, second opening sash → *from page 51*

Espagnolette extension, (SRH > 1401 mm; not sh.)

		#		№
200	Y	–	–	308267
400	Y	–	–	297858

Size-specific combinations:

		#		№
≤ 1400	–	–	–	–
1401 – 1600	200 KU	–	–	308267
1601 – 2000	–	–	–	–
2001 – 2200	200 KU	–	–	308267
2201 – 2400	400 KU	–	–	297858
2401 – 2500	200 KU	–	–	308267

[5] CL component, horizontal

#		№
200	–	308267
344	1	V 572665
480	–	– 245729
590	–	– 603442
790	1	E 603444
990	1	E 603447
1190	1	E 603462
1440	1	E 603466

[6] CL component 130, horizontal

		#		№
130	Y	1	E	764350

CL component 200, (SRW > 1910 mm; not sh.)

		#		№
200	Y	–	–	308267

Size-specific combinations:

		#		№
≤ 760	130	1	E	764350
	344	1	V	572665
	130	1	E	764350
761 – 860	130	1	E	764350
	490	–	–	765636
	130	1	E	764350
861 – 1060	130	1	E	764350
	590	–	–	603442
	130	1	E	764350
1061 – 1260	130	1	E	764350
	790	1	E	603444
	130	1	E	764350
1261 – 1460	130	1	E	764350
	990	1	E	603447
	130	1	E	764350
1461 – 1660	130	1	E	764350
	1190	1	E	603462
	130	1	E	764350
1661 – 1910	130	1	E	764350
	1440	1	E	603466
	130	1	E	764350
≥ 1911	130	1	E	764350
	1440	1	E	603466
	200	–	–	308267
	130	1	E	764350

[7] CL component, vertical, on the mullion

		#		№
600	N	1	E	255281
200	Y	–	–	308267
200	Y	1	E	450821
400	Y	–	–	297858
600	Y	1	E	255282

Size-specific combinations:

First opening sash:

		#		№
1201 – 1800	600	1	E	255281
1801 – 2000	200 KU	–	–	308267
	600	1	E	255281
2001 – 2200	400 KU	–	–	297858
	600	1	E	255281
2201 – 2400	200 KU	1	E	450821
	400 KU	–	–	297858
	600	1	E	255281
2401 – 2500	200 KU	–	–	308267
	600 KU	1	E	255282
	200 KU	–	–	308267
	600	1	E	255281

Second opening sash:

				№
600 – 1200	200 KU	1	E	450821
1201 – 1800	600 KU	1	E	255282
	200 KU	1	E	450821
1801 – 2000	200 KU	–	–	308267
	600 KU	1	E	255282
	200 KU	1	E	450821
2001 – 2200	400 KU	–	–	297858
	600 KU	1	E	255282
	200 KU	1	E	450821
2201 – 2400	200 KU	1	E	450821
	400 KU	–	–	297858
	600 KU	1	E	255282
	200 KU	1	E	450821
2401 – 2500	200 KU	–	–	308267
	600 KU	1	E	255282
	200 KU	–	–	308267
	600 KU	1	E	255282
	200 KU	1	E	450821

[8] Roller track

		№
Timber	3200	807733
	6400	807734

[9] Roller unit[20]

		№
41	Left	821686
	Right	823733

INFO

DIN L: order right components.

DIN R: order left components.

[10] Control unit[21]

Alternatively:

Control unit with SoftOpen → *from page 60*

		№
41	Left	821685
	Right	823730

INFO

DIN L: order right components.

DIN R: order left components.

[*] Control unit set with SoftClose;

SRW ≥ 710 mm

Alternatively:

[10] Control unit

				№
Espagnolette side	41	100 kg	Left	837235
			Right	837152
		200 kg	Left	837236
			Right	837153

INFO

DIN L: order right components.

DIN R: order left components.

Contents:

[*]		#
[40]	Control unit with SoftClose	1
[41]	Activator for control units with soft function	1

[11] Centre closer

		№
41	Left	821687
	Right	823736

INFO

DIN L: order right components.

DIN R: order left components.

[12] MUL locking cam

	№
17.4	809611
20	808632
21.9	809613
23.9	794770
24.6	775929
30	814786
31.5	809772
32.8	809612
33.5	819884
34.4	771375
37.5	836782
38.4	809614
41.4	798976
46	817228
47.5	806839
62.4	809625

[14] Guide track

		№
Timber	3200	782921
	6400	782922

[15] Striker to prevent incorrect operation

	№
Striker to prevent incorrect operation	822789

[20] For SRW > 1060 mm, a third roller unit is required. No spacer blocking for load transfer via the roller unit in this area.

[21] For SRW > 1060 mm, a third control unit is required.

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

[17] Striker

		№
Timber	Screw-on	806824

[18] Stop

	№
14	635307

[20] MUL striker

		№
Timber PVC Aluminium	Screw-on	793493
Timber	Can be routed in	798223

[21] Cover cap for MUL striker [22]

		№
R01.1	Natural silver	819632
R05.3	Medium bronze	819631
R06.2	Jet black	798979
R07.2	Traffic white	808054

[*] Operating sequence control set
SRH ≥1200 mm, depending on the profile system

	№
Timber Timber-aluminium	833203

Contents:

[*]		#
[49]	Bolt	1
[50]	Striker, routed	1
[51]	Countersunk screw, M5 x 20	1
[52]	Anti-lifting device	1

[24] Pin for anti-pushback function

	№
20	816147
33	835372
34	822393
37.5	837714
38	820048
46.5	833594

[25] Centre closer for anti-pushback function

		№
41	Left	821687
	Right	823736

[26] Striker for anti-pushback function

	№
Striker for anti-pushback function	810279

[28] Cover cap for anti-pushback function

		№
R01.1	Natural silver	828482
R05.3	Medium bronze	828483
R06.2	Jet black	809717
R07.2	Traffic white	819351

[31] End stop, depending on the profile system

	№
End stop	349600

[32] End stop packer, depending on the profile system

	№
Packer	477263

[33] Stopper [23]

	№
Stopper	800196

[34] Packer; quantity depends on the profile [24]

	№
Packer	800197

Optional

[11] Centre closer, adjustable

		№
41	Left	823751
	Right	823752

[12] MUL locking cam, adjustable

		№
Gasket compression adjustable	19.8	786728
	25	895955
	26	895966
	27	895970
	35.5	858628
	36	895972
	37.5	895974
	39.5	839047
	44	895973
	45.8	791838
	47.8	788696
	53.5	839045

[22] Can only be screwed on in combination with MUL striker.

[23] Cannot be used in conjunction with a control unit with SoftOpen.

[24] Only use the number of packers that is specified in the profile assessment.

[25] Centre closer, adjustable, for anti-pushback function

		№
41	Left	823751
	Right	823752

INFO

DIN L: order right components.

DIN R: order left components.

[24] Pin, adjustable, for anti-pushback function

		№
Gasket compression adjustable	25 mm	895977
	27 mm	895989
	32 mm	895994
	36 mm	858629
	36 mm	895999
	40 mm	839049
	44 mm	896002
	49 mm	896005
	54 mm	839048

[35] Brush holder

	№
Brush holder	809520

[37] Rubber buffer

	№
16.5	780647
17.5	798249

5 Espagnolettes

5.1 T&T espagnolettes

5.1.1 Backset 25, 30, 35, 40, 50 mm

Basic security



					#			№
25	600 – 800	690	200	263	–	–	Roto Sil	793942
	801 – 1000	890	200	413	–	–	Roto Sil	793943
	1001 – 1200	1090	200	513	1	V	Roto Sil	793944
	1201 – 1600	1290	200	563	1	V	Roto Sil	793975
	1601 – 1800	1690	200	563	1	V	Roto Sil	793977
	1801 – 2400	1890	200	1000	2	V	Roto Sil	793978
	2401 – 2500	2290	200	1000	2	V	Roto Sil	793980
30	600 – 800	690	200	263	–	–	Roto Sil	785912
	801 – 1000	890	200	413	–	–	Roto Sil	785913
	1001 – 1200	1090	200	513	1	V	Roto Sil	785914
	1201 – 1600	1290	200	563	1	V	Roto Sil	785915
	1601 – 1800	1690	200	563	1	V	Roto Sil	785917
	1801 – 2400	1890	200	1000	2	V	Roto Sil	785918
	2401 – 2500	2290	200	1000	2	V	Roto Sil	785920
35	600 – 800	690	200	263	–	–	Roto Sil	799045
	801 – 1000	890	200	413	–	–	Roto Sil	798027
	1001 – 1200	1090	200	513	1	V	Roto Sil	798028
	1201 – 1600	1290	200	563	1	V	Roto Sil	798030
	1601 – 1800	1690	200	563	1	V	Roto Sil	798031
	1801 – 2400	1890	200	1000	2	V	Roto Sil	798032
	2401 – 2500	2290	200	1000	2	V	Roto Sil	798033
40	600 – 800	690	200	263	–	–	Roto Sil	792143
	801 – 1000	890	200	413	–	–	Roto Sil	792144
	1001 – 1200	1090	200	513	1	V	Roto Sil	792185
	1201 – 1600	1290	200	563	1	V	Roto Sil	792188
	1601 – 1800	1690	200	563	1	V	Roto Sil	792190
	1801 – 2400	1890	200	1000	2	V	Roto Sil	792191
	2401 – 2500	2290	200	1000	2	V	Roto Sil	792193
50	600 – 800	690	200	263	–	–	Roto Sil	785921
	801 – 1000	890	200	413	–	–	Roto Sil	785922
	1001 – 1200	1090	200	513	1	V	Roto Sil	785923
	1201 – 1600	1290	200	563	1	V	Roto Sil	785924
	1601 – 1800	1690	200	563	1	V	Roto Sil	785926
	1801 – 2400	1890	200	1000	2	V	Roto Sil	785927
	2401 – 2500	2290	200	1000	2	V	Roto Sil	785929

Lockable



					#			Nº
25	1801 – 2400	1890	200	1000	2	V	Roto Sil	798285
	2401 – 2500	2290	200	1000	2	V	Roto Sil	798286
30	1801 – 2400	1890	200	1000	2	V	Roto Sil	798287
	2401 – 2500	2290	200	1000	2	V	Roto Sil	798288
35	1801 – 2400	1890	200	1000	2	V	Roto Sil	798034
	2401 – 2500	2290	200	1000	2	V	Roto Sil	798055
40	1801 – 2400	1890	200	1000	2	V	Roto Sil	795603
	2401 – 2500	2290	200	1000	2	V	Roto Sil	795604
50	1801 – 2400	1890	200	1000	2	V	Roto Sil	798218
	2401 – 2500	2290	200	1000	2	V	Roto Sil	798219

Second opening sash



					#			Nº
25	600 – 800	690	200	263	–	–	Roto Sil	793942
	801 – 1000	890	200	413	–	–	Roto Sil	793943
	1001 – 1200	1090	200	513	–	–	Roto Sil	809691
	1201 – 1600	1290	200	563	–	–	Roto Sil	809692
	1601 – 1800	1690	200	563	–	–	Roto Sil	809694
	1801 – 2400	1890	200	1000	–	–	Roto Sil	809695
	2401 – 2500	2290	200	1000	–	–	Roto Sil	809697
30	600 – 800	690	200	263	–	–	Roto Sil	785912
	801 – 1000	890	200	413	–	–	Roto Sil	785913
	1001 – 1200	1090	200	513	–	–	Roto Sil	809654
	1201 – 1600	1290	200	563	–	–	Roto Sil	809685
	1601 – 1800	1690	200	563	–	–	Roto Sil	809687
	1801 – 2400	1890	200	1000	–	–	Roto Sil	809688
	2401 – 2500	2290	200	1000	–	–	Roto Sil	809690
35	600 – 800	690	200	263	–	–	Roto Sil	799045
	801 – 1000	890	200	413	–	–	Roto Sil	798027
	1001 – 1200	1090	200	513	–	–	Roto Sil	809658
	1201 – 1600	1290	200	563	–	–	Roto Sil	809662
	1601 – 1800	1690	200	563	–	–	Roto Sil	809668
	1801 – 2400	1890	200	1000	–	–	Roto Sil	809669
	2401 – 2500	2290	200	1000	–	–	Roto Sil	809653
40	600 – 800	690	200	263	–	–	Roto Sil	792143
	801 – 1000	890	200	413	–	–	Roto Sil	792144
	1001 – 1200	1090	200	513	–	–	Roto Sil	809645
	1201 – 1600	1290	200	563	–	–	Roto Sil	809646
	1601 – 1800	1690	200	563	–	–	Roto Sil	809648
	1801 – 2400	1890	200	1000	–	–	Roto Sil	809649
	2401 – 2500	2290	200	1000	–	–	Roto Sil	809651
50	600 – 800	690	200	263	–	–	Roto Sil	785921
	801 – 1000	890	200	413	–	–	Roto Sil	785922
	1001 – 1200	1090	200	513	–	–	Roto Sil	809604
	1201 – 1600	1290	200	563	–	–	Roto Sil	809605
	1601 – 1800	1690	200	563	–	–	Roto Sil	809607
	1801 – 2400	1890	200	1000	–	–	Roto Sil	809608
	2401 – 2500	2290	200	1000	–	–	Roto Sil	809610

6 Jigs / tools

6.1 Drilling jigs

6.1.1 Roller unit / control unit

Timber	41	836948
PVC	41	836947

6.1.2 Centre closer

INFO
Use of a drilling jig with Ø 14.0 is mandatory for the centre closer, adjustable.

For centre closer: 4 x Ø 3.0 / 1 x Ø 12.0

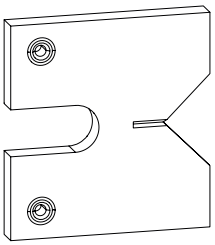
Timber	41	893971
PVC	41	893970

For centre closer, adjustable: 4 x Ø 3.0 / 1 x Ø 14.0

Timber	41	836943
PVC	41	836942

6.1.3 Strikers

MUL striker



			№
Aluplast SmartSlide	Fixed mullion MUL 140041	–	811973
	Fixed mullion MUL 140045	–	807972
Gealan Smoovio	Fixed mullion MUL 5862	–	809328
Rehau	Synego Slide	–	836201
Viking	Timber	–	797967

SEC MUL striker

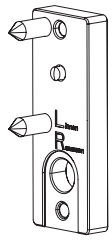
		№
Aluplast SmartSlide	Fixed mullion MUL 140045	834696
Gealan Smoovio	Fixed mullion MUL 5862	834689
Rehau	Synego Slide	838582

Striker for anti-pushback function

		№
Aluplast SmartSlide	Fixed mullion MUL 140045	834697
Gealan Smoovio	Fixed mullion MUL 5862	834695
Rehau	Synego Slide	838582

Other jigs are available upon request.

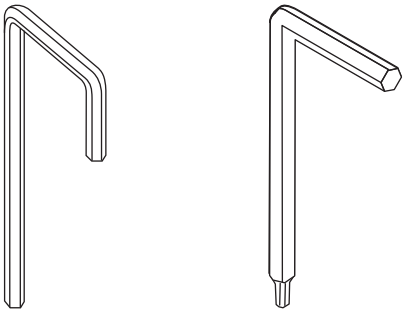
6.1.4 Marker



			№
Marker for striker T / PVC, screw-on	–	–	772626

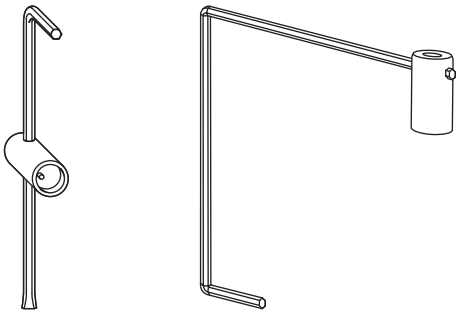
6.2 Tools

6.2.1 Hex keys



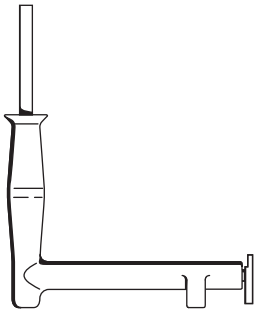
	№
Hex key: E and P locking cams	208609
Hex key: readjustment (2.5 / 4.0 mm)	230764

6.2.2 Adjustment tools



	№
Adjustment tool: V locking cam	258191
	381574

6.2.3 Extractor handle



	№
Extractor handle for stay-bearing pin	740068
Replacement blade	230765

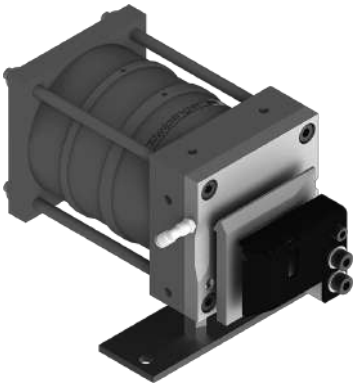
6.2.4 Tensioning tool

For control unit with soft function

		№
Tensioning tool	For control unit with soft function	837763

6.3 Punches

6.3.1 Pneumatic punch – PS 100



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

Accessories

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

		№
Ruler	Left	230758
	Right	230759
Calliper with centre fixing	Left	324020
	Right	324021
VT calliper	Left	632972
	Right	632973

6.3.2 Hydropneumatic punch – DUO



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

Accessories

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

		№
Ruler	Left	230758
	Right	230759
Calliper with centre fixing	Left	324020
	Right	324021
VT calliper	Left	632972
	Right	632973

7 Accessories

7.1 Activator spare part for control unit with soft function

The activator is included in the control unit set.



	№
Activator for soft function	837318

7.2 Control unit with Soft function

Control unit set with SoftClose (incl. activator)

SRW ≥ 710 mm

Installation position: at the top of the espagnolette side

				№
Espagnolette side	41	100 kg	Left	837235
			Right	837152
		200 kg	Left	837236
			Right	837153

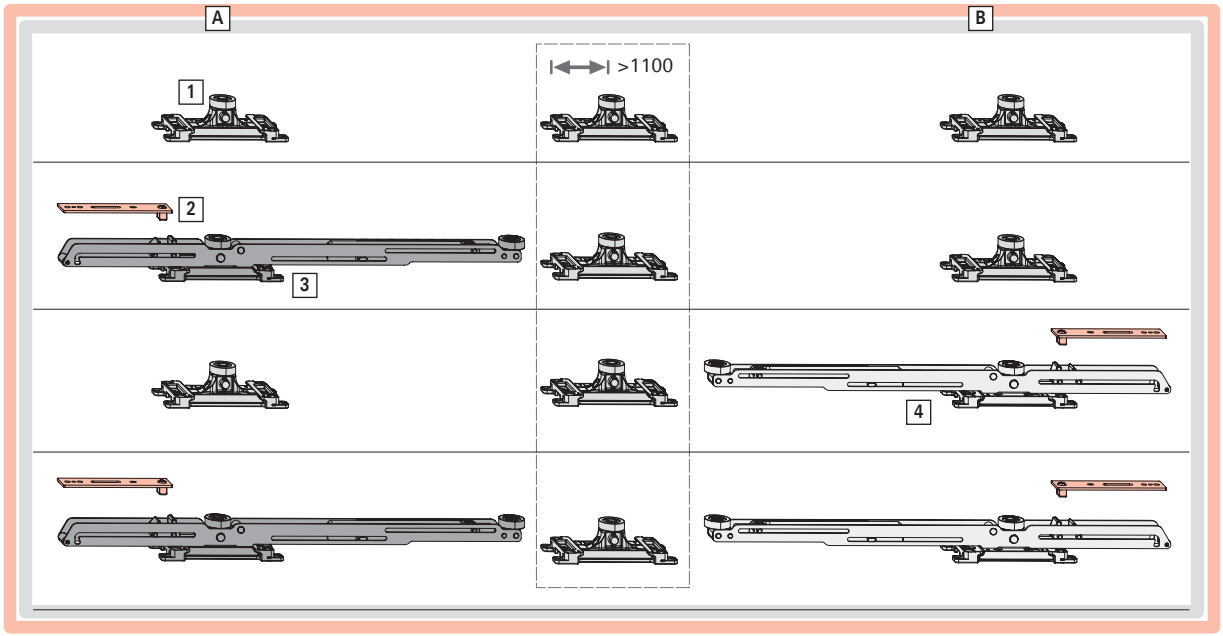
Control unit set with SoftOpen (incl. activator)

S.kg ≤ 200 kg

Installation: at the top of the mullion side

				№
Mullion side	41	100 kg	Left	838569
			Right	838566
		200 kg	Left	838570
			Right	838567

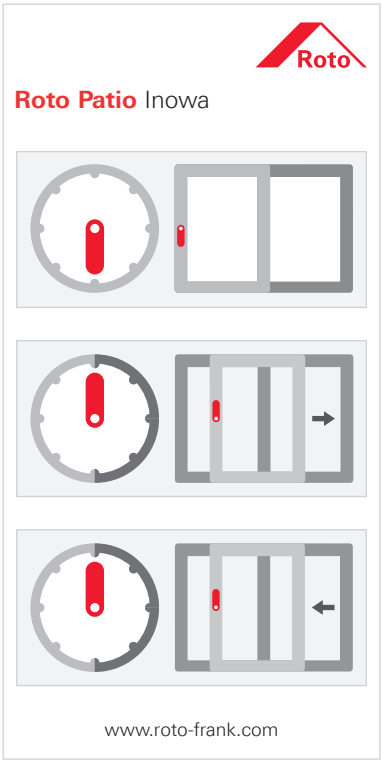
Positioning options for the control unit



[A] On the espagnolette 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

Control unit	Min. SRW	Alignment	Position	Function
Without Soft function	710	–	On the espagnolette side, on the mullion side	–
	1100	–	Centred	Supports the sash from SW > 1100
With SoftClose	710 / 920	Additional control roller faces towards the centre of the sash	On the espagnolette side	Damps the movement of the sash in the locking direction and draws it slowly closed.
With SoftOpen	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.

7.3 Label



	№
Label indicating the operating sequence, diagram A	811486

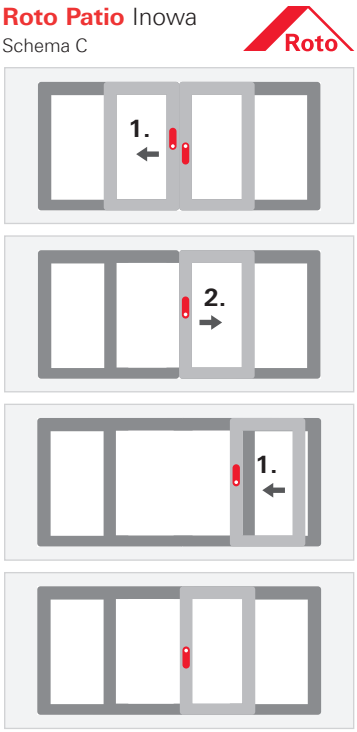


Fig. 7.1: Figure for installation DIN right

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

8 Brief instructions

8.1 Diagram A, A', K, K'

Summary of IMO 403

	Installation sequence	Note	Page reference	Timber	PVC
Sash	Crop the hardware components.		→ *from page 73*	■	■
	Install the corner drives.	Align the cam vertically.	→ *from page 75*	■	■
	Install the centre lock, vertical on the locking side.	Size-dependent		■	■
	Install the espagnolette.	Insert with the arrow pointing up.	→ *from page 76*	■	■
	Install the centre locks.	CL 130, horizontal at the top and bottom. Horizontal at the top and bottom (size-dependent). Vertical on the mullion (size-dependent).	→ *from page 76*	■	■
	Install the handle.		→ *from page 77*	■	■
	Install the roller unit.	Timber: must not be pressed into the timber. Adapt the insertion torque if necessary.		■	■
	Install the control unit.	Alternatively: install the control unit with Soft function → *from page 60*. Timber: must not be pressed into the timber. Adapt the insertion torque if necessary.		■	■
	Install the centre closer with MUL locking cam.	Timber: must not be pressed into the timber. Adapt the insertion torque if necessary.		■	■
Frame	Install strikers.	Note the point of entry.	→ *from page 93*	■	■
	Install the striker to prevent incorrect operation.		→ *from page 100*	■	■
	Install the roller track.	Timber: length: FIW - 2 mm	→ *from page 104*	■	■
	Install the guide track.	Timber: length: (FIW - 2 mm)/2, screw down in the access area.		■	■
Joining the sash and frame	Install the guide track.	Timber: length: (FIW - 2 mm)/2, screw down in the fixed glazing area.		■	■
	Place the sash on the roller track.	Move the handle to the sliding position.	→ *from page 107*	■	■
	Install the MUL strikers.		→ *from page 111*	■	■
	Install the stop.		→ *from page 117*	■	■
	Install the end stop with packer.		→ *from page 117*	■	■
	Install the stopper.		→ *from page 120*	■	■
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 packers under the threshold across its entire area.	→ *from page 121*	■	■
	Adjust the hardware.		→ *from page 126*	■	■
	Lubricate the hardware.		→ *from page 132*	■	■
	Check the handle operating force.	Operating force ≤ 10 Nm		■	■

9 Installation

9.1 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.

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.

Lubricating the hardware

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.

Ease of movement is improved by lubricating or adjusting the hardware. All functional hardware components must be lubricated after installation in accordance with the specifications in the "Maintenance" chapter.

Recommended lubricants

- Roto NX / NT grease

For recommended lubrication points, see the "Maintenance" chapter → *13.3 "Care" from page 131*.

The number of screws for installation may vary.

9.2 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.

9.2.1 Overview

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.

Timber

Components	Quantity	Size	Diameter to be drilled	Drive
Roller unit	4	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
MUL striker / striker for anti-pushback function	2	ST4.0 x ...	3.0	Not specified
Striker / stop	2	ST4.0 x ...	3.0	Not specified
Activator / stopper	3	ST4.0 x ...	3.0	Not specified
Roto Line handle	2	M5 x ...	10.0 / 12.0	Cross-head

PVC

Components	Quantity	Size	Diameter to be drilled	Drive
Roller unit	4	ST3.9 - 4.1 x ...	3.5	Not specified
Control unit	4	ST3.9 - 4.1 x ...	3.5	Not specified
Centre closer	4	ST3.9 - 4.1 x ...	3.5	Not specified
MUL striker / striker for anti-pushback function	2	ST3.9 - 4.1 x ...	3.5	Not specified
Striker / stop	2	ST3.9 - 4.1 x ...	3.5	Not specified
SEC striker	2	ST3.9 - 4.1 x ...	3.5	Not specified
Activator / stopper	3	ST3.9 - 4.1 x ...	3.5	Not specified

Components	Quantity	Size	Diameter to be drilled	Drive
Roto Line handle	2	M5 x ...	10.0 / 12.0	Cross-head

Specifications for selecting screws

[A] Specifications relating to the countersink

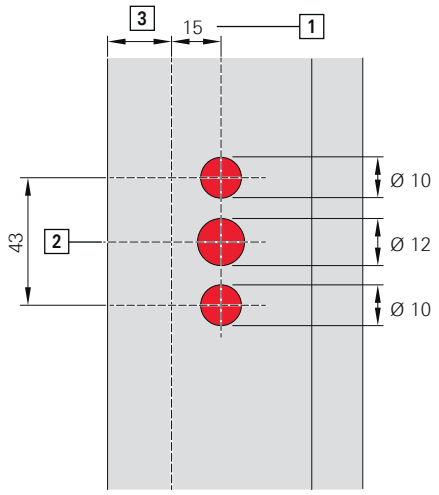
[B] Specifications relating to the screw head for selecting screws

INFO

Routing grooves or V-shaped grooves may damage the fixing when screwing it in and prevent it from releasing.

9.3 Drilling and routing dimensions

9.3.1 VT espagnolette



Drill holes for the handle's sprocket and lugs

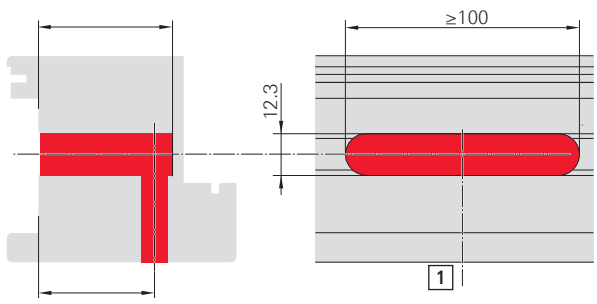
[1] Backset

[2] Handle height

[3] Overlap width

Drill hole Ø 10: drilling depth = overlap height + 16 mm for countersunk screws (ISO 7046-1 M5 x ...)

Drill hole Ø 12: drilling depth = overlap height + 16 mm for countersunk screws (ISO 7046-1 M5 x ...)



Gearbox routing

[1] Centre of gearbox

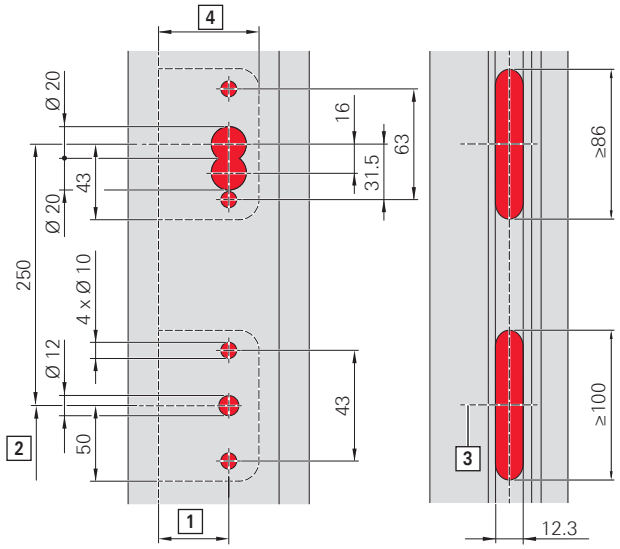
[2] Hardware groove

[3] Gearbox routing depth:

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

[4] Backset (BS)

9.3.2 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 and handle mount, at the top for the profile cylinder and profile cylinder escutcheon mount

Overlap height

Drill hole Ø 10: drilling depth = overlap height + 16 mm for countersunk screws (ISO 7046-1 M5 x …)

Drill hole Ø 12: drilling depth = overlap height + 16 mm for countersunk screws (ISO 7046-1 M5 x …)

Routing for gearbox and lock casing

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

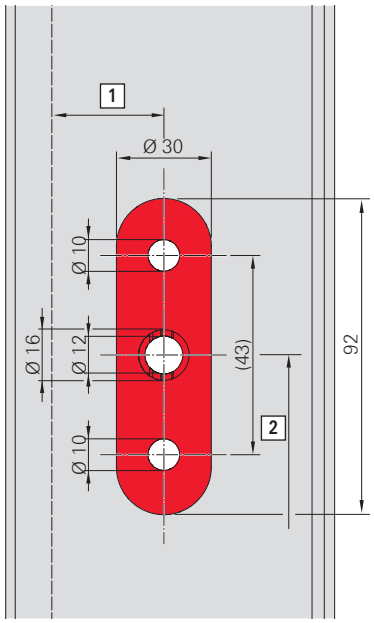
Gearbox routing depth:

BS 30 = 47 mm

Lock casing routing depth:

BS 30 = 47 mm

9.3.3 External recessed grip



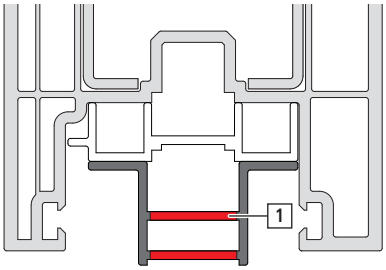
Recessed grip routing

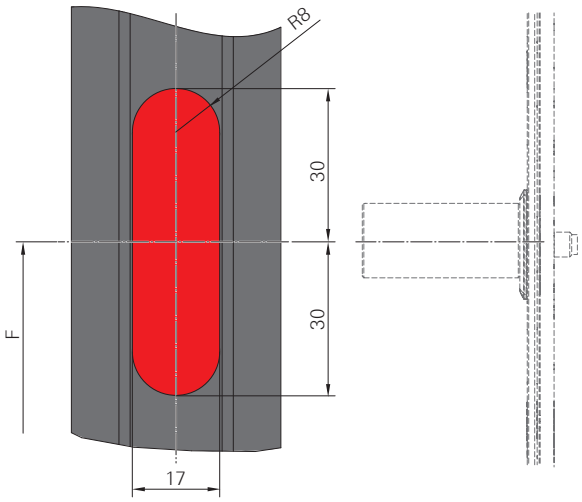
Routing depth = 10 mm

[1] Backset

[2] Handle height

9.3.4 Operating sequence control cam



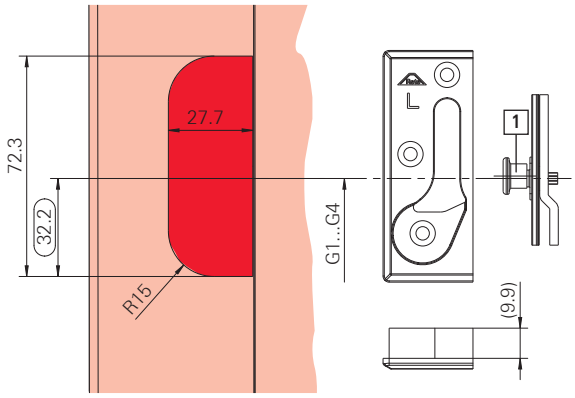


Routing for cam

Routing depth = through adapter profile [1]

F = Operating sequence control cam in open sliding position → *9.5.12 "Components in the floating mullion" from page 89*

9.3.5 Striker H, can be routed in

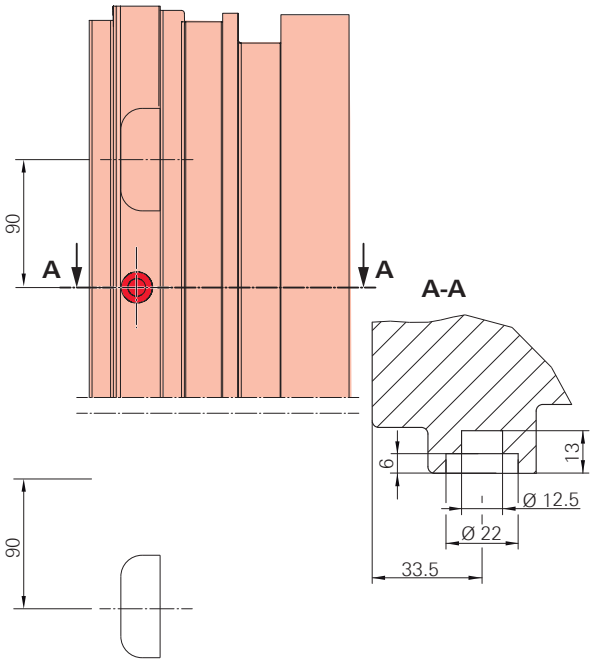


Routing for striker H, can be routed in

Routing depth = 10 mm

[1] Cam (VT espagnolette)

9.3.6 Rubber buffer

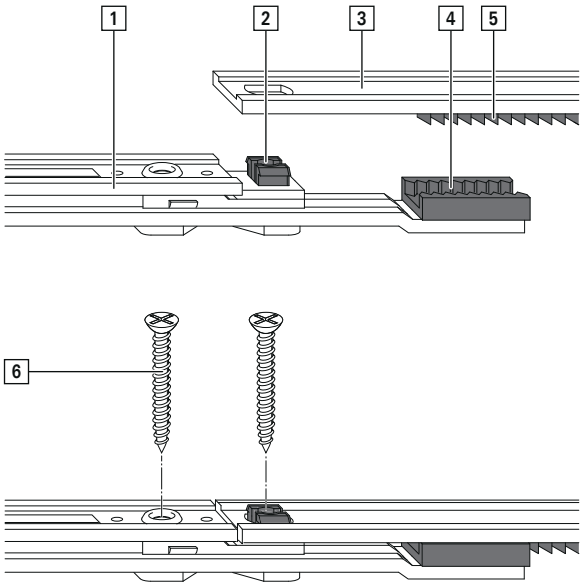


Create a stepped hole with a spade drill.

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.

9.4 Force-fit connection

Coupleable 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 coupleable components are delivered attached in the centre.

9.5 Sash

9.5.1 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.

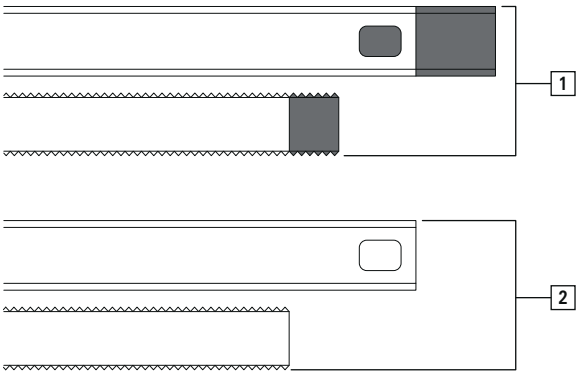
- Only lay out the hardware components and do not insert them into the sash before they have been cropped.

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.

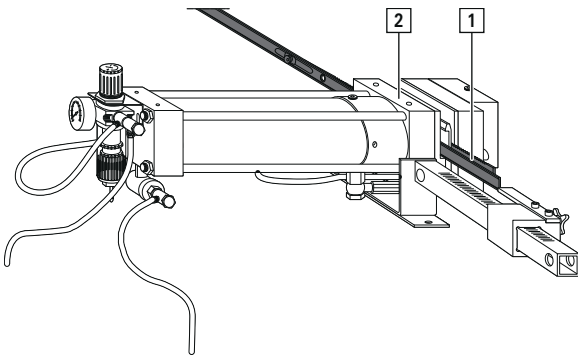


Assignment	Description
[1]	Hardware delivery state
[2]	Hardware, cropped

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].

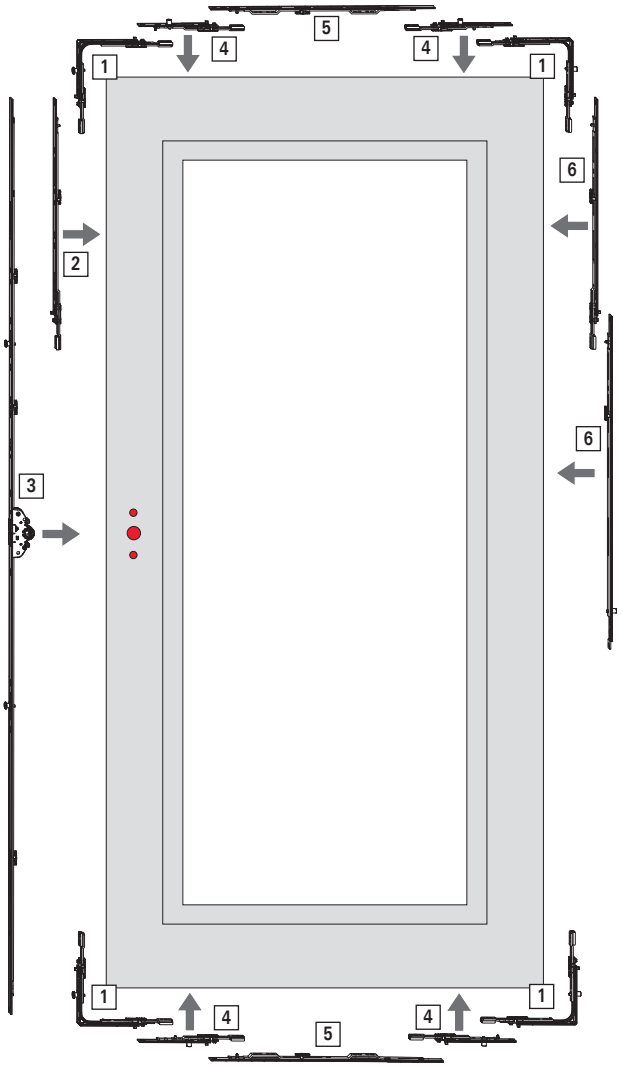


4. Align the hardware component.

5. Crop the hardware component.

9.5.2 Installation sequence

9.5.2.1 Diagram A



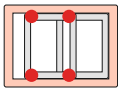
[1] Corner drives
[2] Centre lock, vertical on the locking side (size-dependent)
[3] Espagnolette
[4] Centre locks CL 130, horizontal at the top and bottom
[5] Centre locks, horizontal at the top and bottom (size-dependent)
[6] Centre locks, vertical on the mullion (size-dependent)

INFO

After installation, break the centre fixing on the espagnolette by turning the handle 180°.

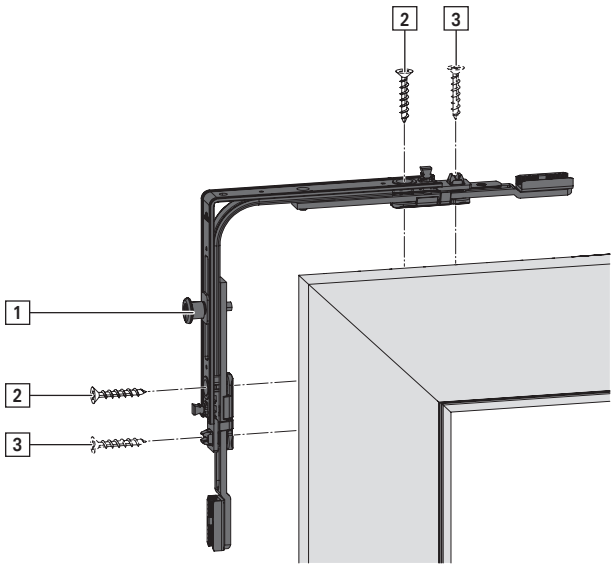
Turn the handle to the open sliding position.

9.5.3 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]. → *9.4 "Force-fit connection" from page 72*

INFO

Diagram C / C' – second opening sash: insert the corner drives (with E cam) horizontally on the locking side with cam position and secure with screws.

9.5.4 Centre locks

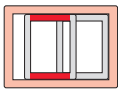
9.5.4.1 Centre lock, vertical

Installing the vertical centre lock

1. Place the centre lock in the required position on the hinge side, mark the length on one side, remove it and crop it. → *9.5.1 "Cropping the hardware components" from page 73*

2. Insert the centre lock with the cropped side facing downwards and create a force-fit connection. → *9.4 "Force-fit connection" from page 72*

9.5.4.2 Centre lock, horizontal

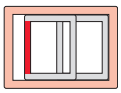


Installing the centre lock, horizontal

1. Place the centre lock at the bottom on the hinge side and at the top on the locking side, mark the length on one side, remove it and crop it → *9.5.1 "Cropping the hardware components" from page 73*.

2. Insert the centre locks and create a force-fit connection → *9.4 "Force-fit connection" from page 72*.

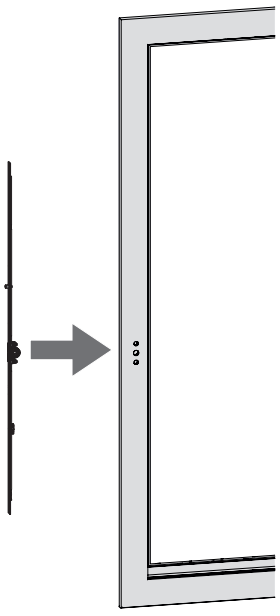
9.5.5 VT espagnolette



Installing the VT espagnolette

1. Place the espagnolette in the required position, mark the length on one side, remove and crop → *9.5.1 "Cropping the hardware components" from page 73*.

2. Insert the espagnolette.
   Create a force-fit connection → *9.4 "Force-fit connection" from page 72*.

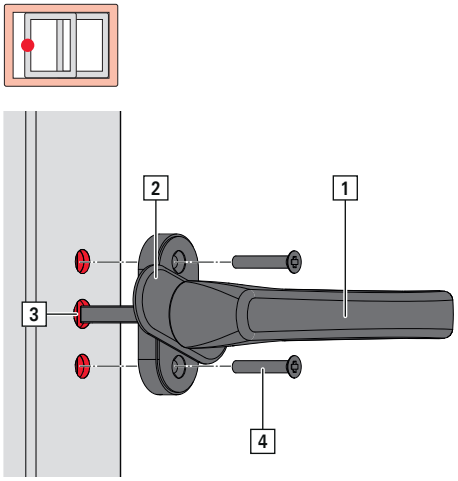


9.5.6 Handle and recessed grip

Installing the handle and recessed grip

1. Move the handle [1] to the 90° position → *12.1.1 "Roto Patio Inowa" from page 129*.

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].

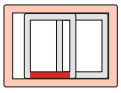
6. Turn the escutcheon cover in order to expose the screw holes.

9.5.7 Roller unit

INFO

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

Positioning the drilling jig



ATTENTION

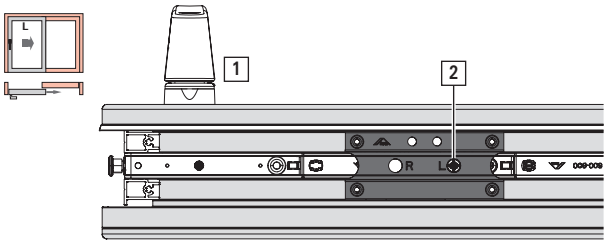
Improper drilling work may cause property damage.

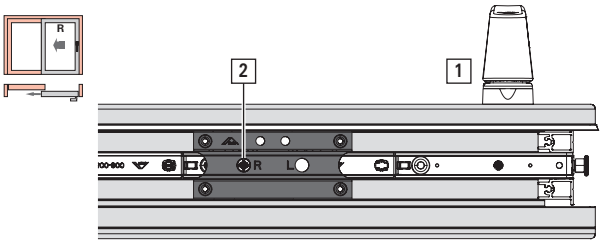
An incorrect handle position and incorrect alignment of the drilling jig damage the sash during drilling.

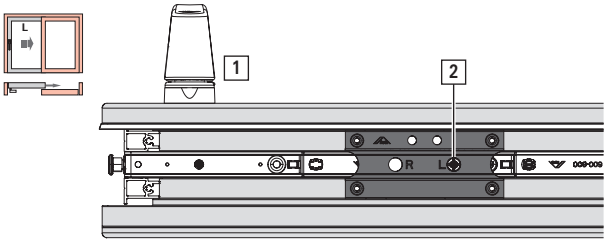
- The handle must be in the open sliding position [1].

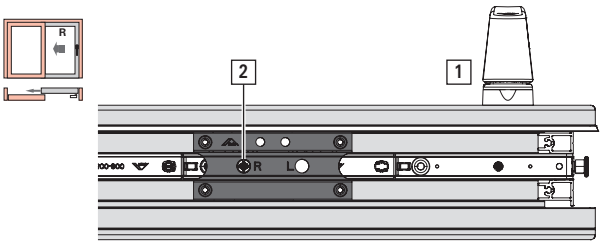
Attach the drilling jig to the cam [2].

Refer to the installation drawing for the position → *from page 122*.



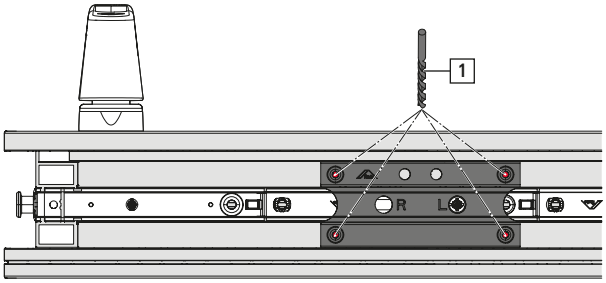




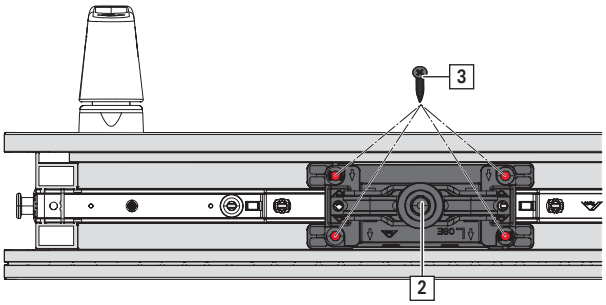


Installing roller units

1. Drill the holes [1].
   Drill: timber Ø 3.0; PVC Ø 3.5
   Shown: diagram A, DIN L

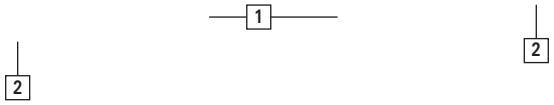


2. Insert the roller unit [2] and secure with screws [3].



Fitting the brush holder

1. Attach the brush holder [1] on the roller unit, making sure to pay attention to the opposite alignment of the brushes [2].



9.5.8 Control unit

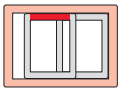
INFO

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

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

1

Positioning the drilling jig



ATTENTION

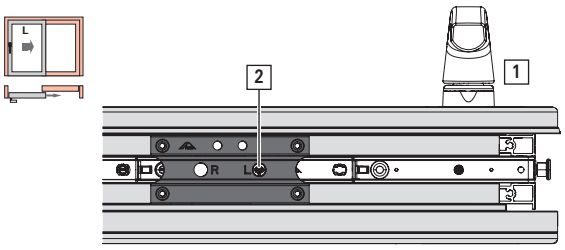
Improper drilling work may cause property damage.

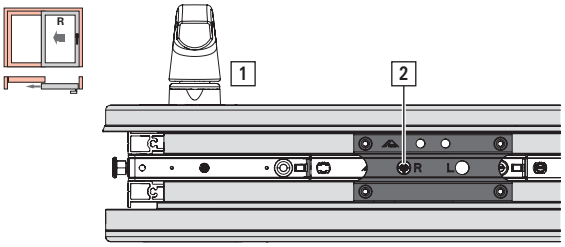
An incorrect handle position and incorrect alignment of the drilling jig damage the sash during drilling.

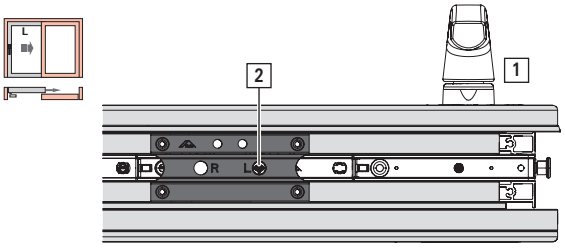
- The handle must be in the open sliding position [1].

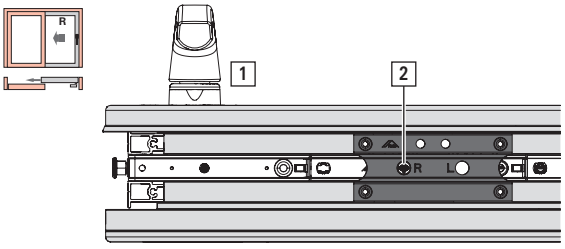
Attach the drilling jig to the cam [2].

Refer to the installation drawing for the position → *from page 122*.



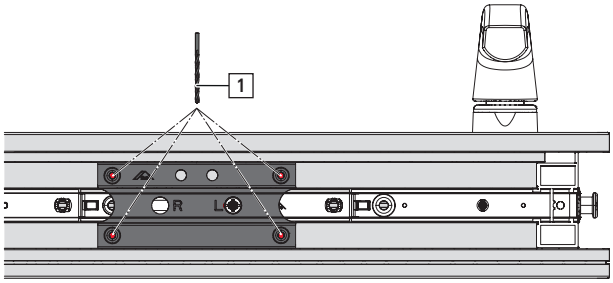




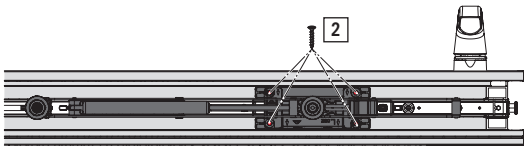


Installing the control unit

1. Drill the holes [1].
   Drill: timber Ø 3.0; PVC Ø 3.5
   Shown: diagram A, DIN L



2. Insert the control unit and secure with screws [2].



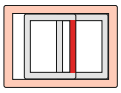
9.5.9 Centre closer

INFO

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

Figures: installation of the non-adjustable version.

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].
- **Inward running sashes**: position the drilling jig so that the side with the Ø 12.0 / 14.0 drill hole [2] is **facing away** from the handle.
- **Outward running sashes**: position the drilling jig so that the side with the Ø 12.0 / 14.0 drill hole [2] is **facing** the handle.

Attach the drilling jig to the control cam [3].

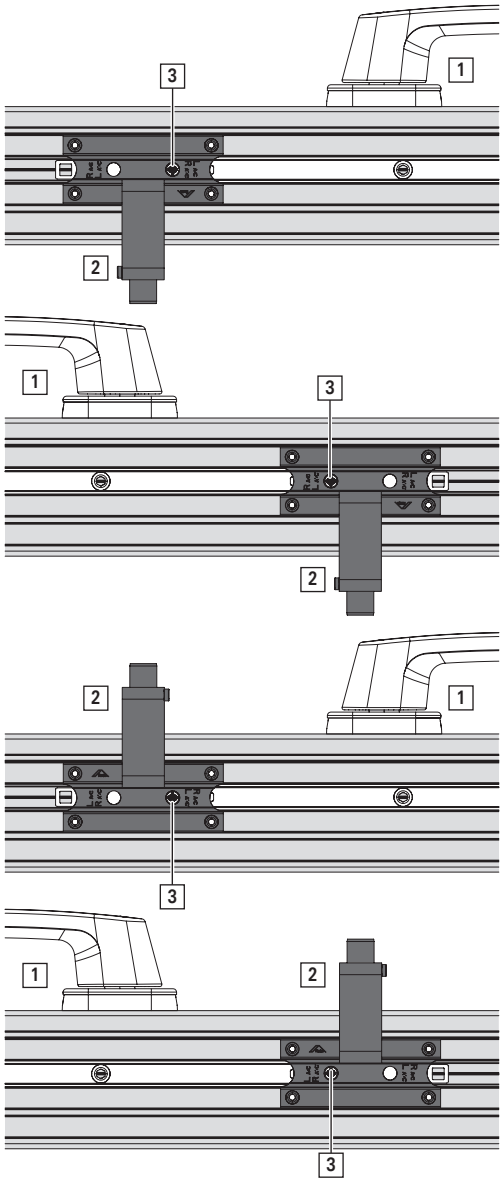
Refer to the installation drawing for the position → *from page 122*.

INFO

For both RC 2 and diagram C, drill the holes for the centre closers for anti-pushback function → *from page 85*.

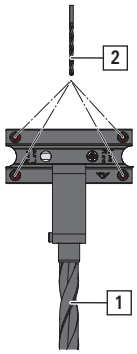




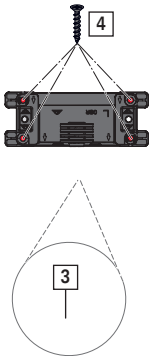


Installing centre closers

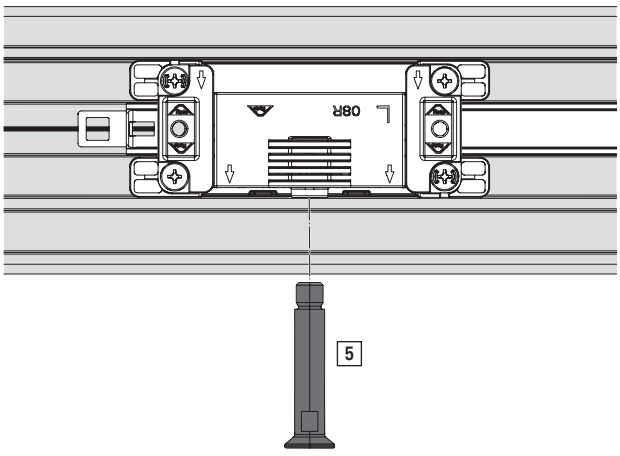
1. Drill holes.
   Drill [1]: Ø 12.0 / 14.0
   Drill [2]: timber Ø 3.0; PVC Ø 3.5
   Shown: diagram A, DIN L



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



3. Insert the MUL locking cam [5] into the cam guide.



4. Screw down the MUL locking cam.
   Tool: size 8 open-end spanner / size 4 hex key

> **INFO**
> Tighten the MUL locking cam hand-tight.

9.5.10 Centre closer for anti-pushback function

INFO

Diagram A / C: install right components for DIN L; install left components for DIN R.

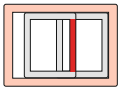
Diagram C': install left components for DIN L; install right components for DIN R.

Drilling with a drilling jig with Ø 14.0 is mandatory for the centre closer, adjustable.

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

Figures: installation of the non-adjustable version.

Positioning the drilling jig



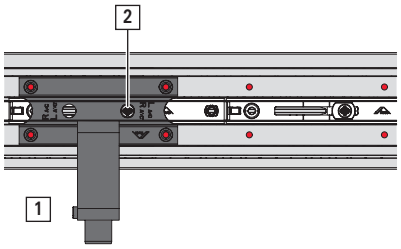
ATTENTION

Improper drilling work may cause property damage.

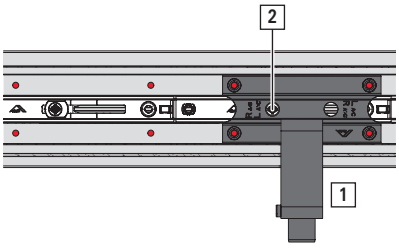
An incorrect handle position and incorrect alignment of the drilling jig damage the sash during drilling.

- The handle must be in the open sliding position.
- **Inward running sashes**: position the drilling jig so that the side with the Ø 12.0 / 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 12.0 / 14.0 drill hole [1] is **facing** the handle.





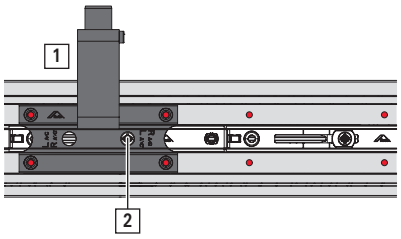




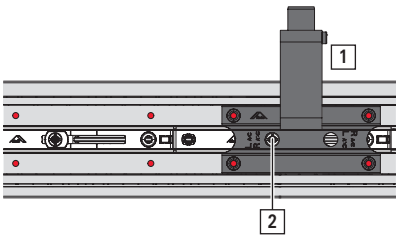
Attach the drilling jig to the control cam [2].

Refer to the installation drawing RC or diagram C for the position → *from page 122*.



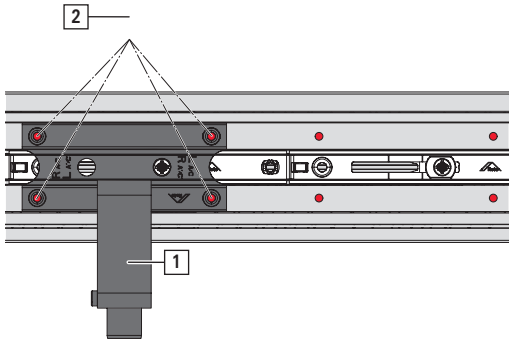






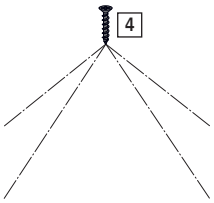
Installing the centre closer for anti-pushback function

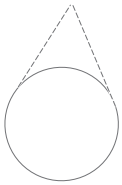
1. Drill holes.
   Drill [1]: Ø 12.0 / 14.0
   Drill [2]: timber Ø 3.0; PVC Ø 3.5
   Shown: diagram A, DIN L



2. Install the centre closer → *from page 82*.
   Move the handle to the closed position.

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





4. Insert the pin for anti-pushback function [5] into the cam guide.

5. Secure the pin for anti-pushback function.
   Tool: size 3 hex key.

> **INFO**
> Tighten the pin for anti-pushback function hand-tight.

9.5.11 Rubber buffer

INFO

Timber: install the rubber buffer in the frame → *9.6.8 "Rubber buffer" from page 106*.

Installing rubber buffers

1. Install the profile-specific cover on the mullion. Ensure that the guide track and roller track are running smoothly.

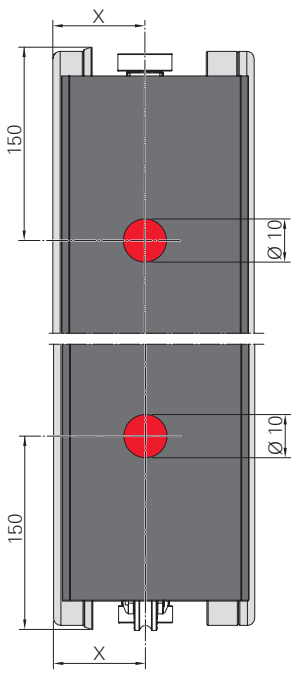
INFO

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

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

INFO

The dimensions X for the drill hole position depend on the profile.



3. Insert the rubber buffer [1].

9.5.12 Components in the floating mullion

Diagram C – PVC

[1] Sash rebate edge

Striker, for timber and PVC, screw-on: to prevent incorrect operation [1], standard [2]

Operating sequence control: striker with buffer [X2], cam [F], anti-lifting device [X1]

First opening sash

SRH / mm	X2	X1
600 - 800	–	–
801 - 1000	–	–
1001 - 1200	732	89
1201 - 1400	819	89
1401 - 1600	819	89
1601 - 1800	1206	89
1801 - 2000	1551	89
2001 - 2200	1551	89
2201 - 2400	1551	89
2401 - 2500	1595	89

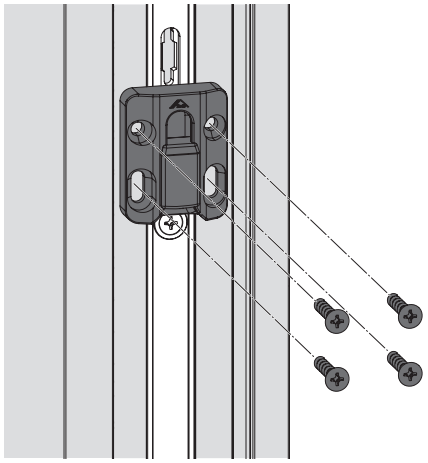
Second opening sash

SRH / mm	G1[1]	G1[2]	G2	G3	G4	F
600 - 800	51	62	SRH-48	–	–	–
801 - 1000	51	62	SRH-48	–	–	–
1001 - 1200	51	62	686	SRH-48	–	766
1201 - 1400	51	62	686	SRH-48	–	853
1401 - 1600	51	62	686	SRH-48	–	853
1601 - 1800	51	62	686	SRH-48	–	1239
1801 - 2000	51	62	686	1356	SRH-48	1585
2001 - 2200	51	62	686	1356	SRH-48	1585
2201 - 2400	51	62	686	1356	SRH-48	1585
2401 - 2500	51	62	686	1756	SRH-48	1629

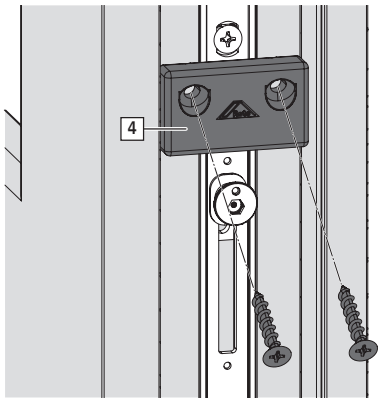
First opening sash

1. Pre-position the striker with buffer [1] in the slots with two screws [2].

   Check the position and secure with another two screws [3].



2. Position the anti-lifting device [4] and secure with two screws.



Second opening sash

1. Position the strikers and secure with two screws → *9.6.2 "T / PVC striker, screw-on" from page 96*.

2. Attach the bolt at the position provided on the espagnolette [1] so that the marking (red) points up.

   Secure with one screw [2].

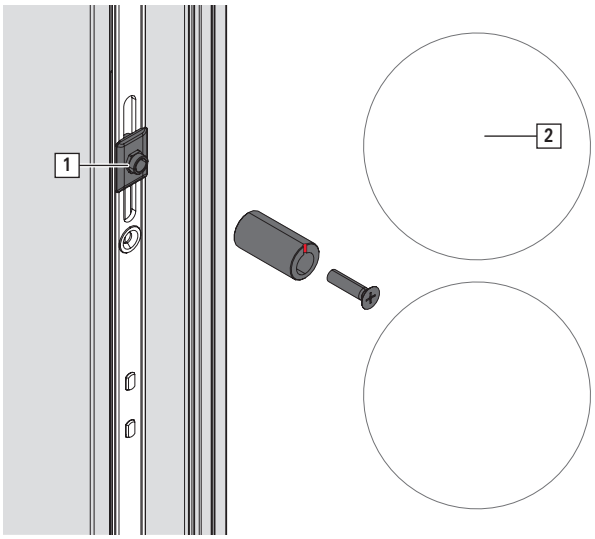
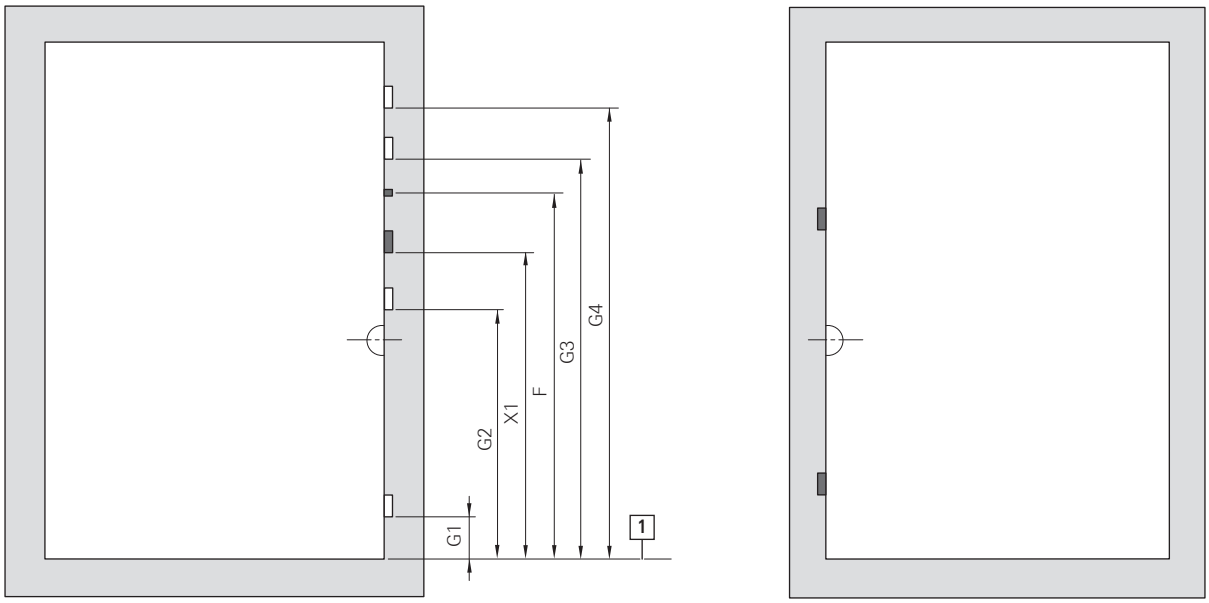


Diagram C' – timber



[1] Sash rebate edge

Striker, diagram C', standard

Operating sequence control: cam [F], anti-lifting device [X1]

Second opening sash

SRW / mm	G1	G2	G3	G4	F	X1
600 - 800	51	SRH-59	–	–	–	–
801 - 1000	51	SRH-59	–	–	–	–
1001 - 1200	51	675	SRH-59	–	766	–
1201 - 1400	51	675	SRH-59	–	853	793
1401 - 1600	51	675	SRH-59	–	853	793
1601 - 1800	51	675	SRH-59	–	1239	1180
1801 - 2000	51	675	1345	SRH-59	1585	1525
2001 - 2200	51	675	1345	SRH-59	1585	1525
2201 - 2400	51	675	1345	SRH-59	1585	1525
2401 - 2500	51	675	1745	SRH-59	1629	1569

Installing the operating sequence control

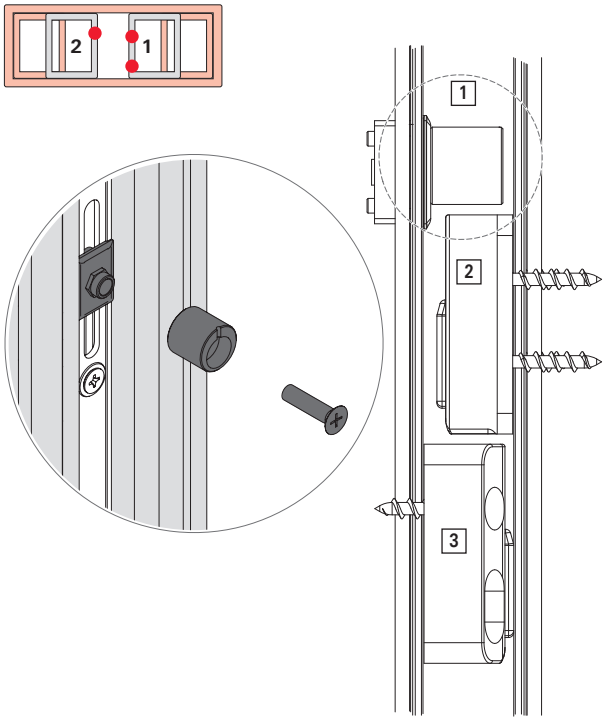
1. Position the bolt [1] on the espagnolette of the second opening sash and secure with the screw provided.

   Push the first opening sash shut until the lower edge [A] of the bolt can be transferred to the first opening sash.

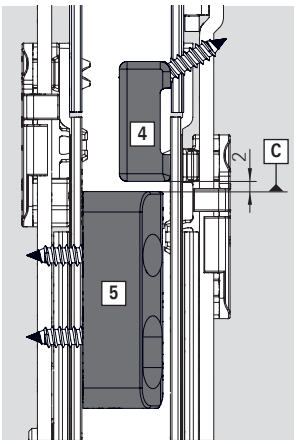
   Open the first opening sash again and secure the routed striker [2] to the first opening sash with four screws, at an offset of 2 mm from the lower edge of the bolt.

   Push the first opening sash shut until the lower edge [B] of the routed striker can be transferred to the second opening sash.

   Open the first opening sash again and secure the striker [3] to the second opening sash with four screws, at an offset of 2 mm from the lower edge of the routed striker.



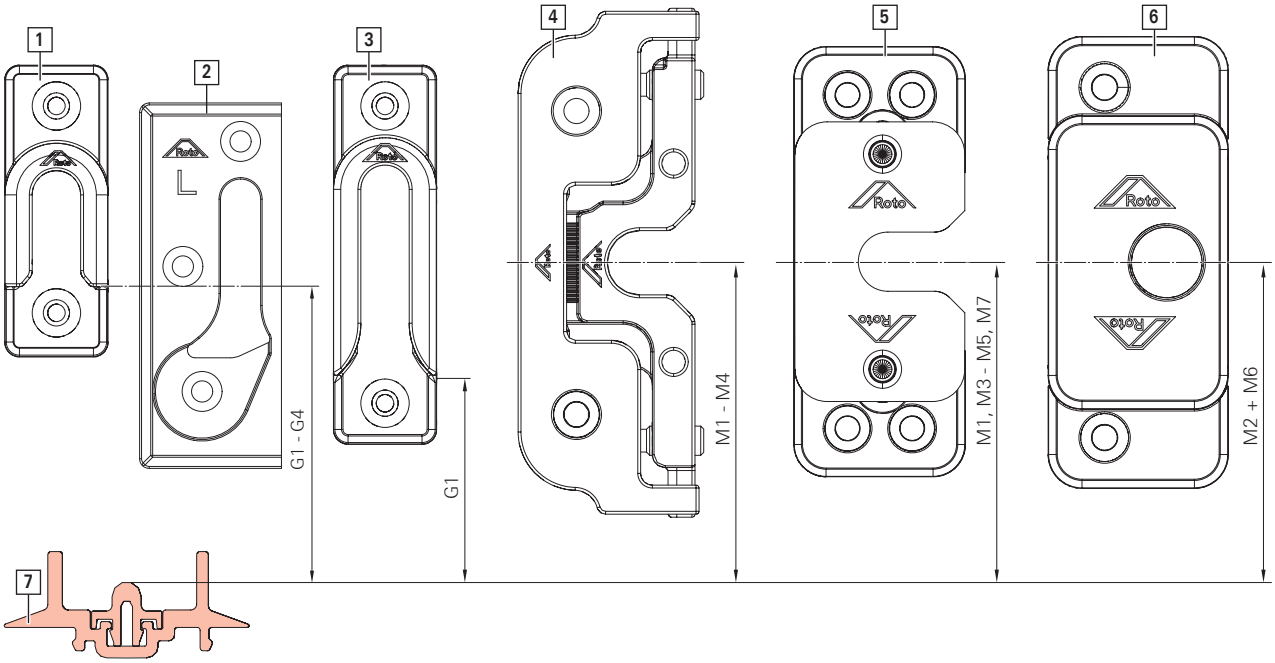
2. Secure the anti-lifting device [4] to the first opening sash above the lowest striker [5]with two screws, at an offset of 2 mm from the top edge [C] of the striker.



9.6 Frame

9.6.1 Frame component position

Diagram A



[1] Striker, for timber and PVC, screw-on (G1 - G4)
[2] Striker, for timber, can be routed in (G1 - G4)
[3] Striker to prevent incorrect operation (G1)
[4] MUL striker (M1 - M4)
[5] SEC MUL striker (M1 - M4)
[6] Striker for anti-pushback function (S1 - S2)
[7] Roller track

INFO

- Align the screw-on striker on the point of entry.
- Insert the striker, which can be routed in, in the centre of the routing.
- Align the MUL striker in the centre.
- Dimensions M1 - M4 apply to the coverage between the guide track and control unit of ≥ 9 mm.
- Pay attention to the profile assessment.

Standard

Striker

Striker, screw-on [1], striker to prevent incorrect operation [2] or striker, can be routed in

MUL striker

Striker, on the locking side, screw-on

SRH / mm	G1 [1]	G1 [2]	G2 [1]	G3 [1]	G4 [1]
600 - 800	97	86	SRH-13	–	–
801 - 1000	97	86	SRH-13	–	–
1001 - 1200	97	86	721	SRH-13	–
1201 - 1400	97	86	721	SRH-13	–
1401 - 1600	97	86	721	SRH-13	–
1601 - 1800	97	86	721	SRH-13	–
1801 - 2000	97	86	721	1391	SRH-13
2001 - 2200	97	86	721	1391	SRH-13
2201 - 2400	97	86	721	1391	SRH-13
2401 - 2500	97	86	721	1791	SRH-13

Striker, on the locking side, can be routed in

SRH / mm	G1	G2	G3	G4
600 - 800	94	SRH-16	–	–
801 - 1000	94	SRH-16	–	–
1001 - 1200	94	718	SRH-16	–
1201 - 1400	94	718	SRH-16	–
1401 - 1600	94	718	SRH-16	–
1601 - 1800	94	718	SRH-16	–
1801 - 2000	94	718	1388	SRH-16
2001 - 2200	94	718	1388	SRH-16
2201 - 2400	94	718	1388	SRH-16
2401 - 2500	94	718	1788	SRH-16

MUL striker, on the mullion

SRH / mm	M1	M2	M3	M4
600 - 800	91	SRH-21	–	–
801 - 1000	91	SRH-21	–	–
1001 - 1200	91	SRH-21	–	–
1201 - 1400	91	SRH-619	SRH-21	–

SRH / mm	M1	M2	M3	M4
1401 - 1600	91	SRH-619	SRH-21	–
1601 - 1800	91	SRH-619	SRH-21	–
1801 - 2000	91	SRH-819	SRH-21	–
2001 - 2200	91	SRH-1019	SRH-21	–
2201 - 2400	91	SRH-1219	SRH-219	–
2401 - 2500	91	SRH-1619	SRH-819	SRH-21

Security

SEC striker

SEC striker to prevent incorrect operation

SEC MUL striker

Striker for anti-pushback function

SEC striker, on the locking side, screw-on

SRH / mm	G1	G2	G3	G4
1072 - 1300	86	721	SRH-13	–
1301 - 1500	86	721	SRH-13	–
1501 - 1700	86	721	SRH-13	–
1701 - 1900	86	721	1391	SRH-13
1901 - 2100	86	721	1391	SRH-13
2101 - 2300	86	721	1391	SRH-13
2301 - 2500	86	721	1791	SRH-13

SEC MUL striker, on the mullion

SRH / mm	M1	M2	M3	M4	M5	M6	M7
1072 - 1300	219	349	SRH-478	–	–	SRH-279	SRH-149
1301 - 1500	219	349	SRH-683	–	–	SRH-279	SRH-149
1501 - 1700	219	349	SRH-843	SRH-679	–	SRH-279	SRH-149
1701 - 1900	219	349	SRH-1083	SRH-679	–	SRH-279	SRH-149
1901 - 2100	219	349	SRH-1279	SRH-679	–	SRH-279	SRH-149
2101 - 2300	219	349	SRH-1483	SRH-1079	SRH-679	SRH-279	SRH-149
2301 - 2500	219	349	SRH-1679	SRH-1079	SRH-679	SRH-279	SRH-149

9.6.2 T / PVC striker, screw-on

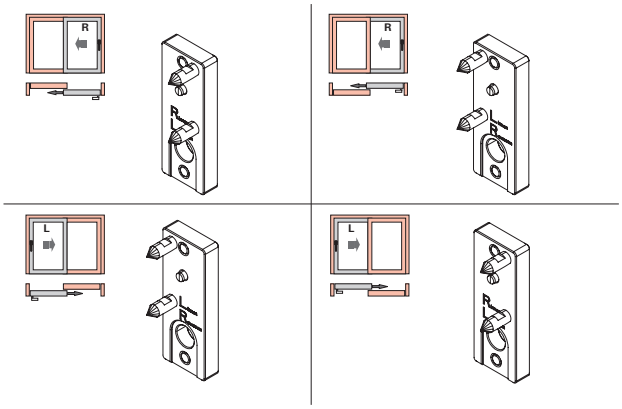
9.6.2.1 Preparing the frame for T / PVC strikers

INFO

The marker can be used for sashes that run on the inside and outside.

In its delivery state, it is suitable for:

- DIN L running on the inside
- DIN R running on the outside



Preparing the marker

1. Unscrew the tip of the marker [1].

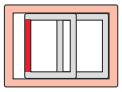
2. Turn the marker [2] and reinsert the tip of the marker on the rear.

3. Tighten the tip of the marker.

> **INFO**
> The marker is now suitable for:
>
> - DIN R running on the inside
> - DIN L running on the outside

Marking a position

1. Place the markers for T / PVC strikers, screw-on, [1] on the espagnolette side on each locking cam [2].

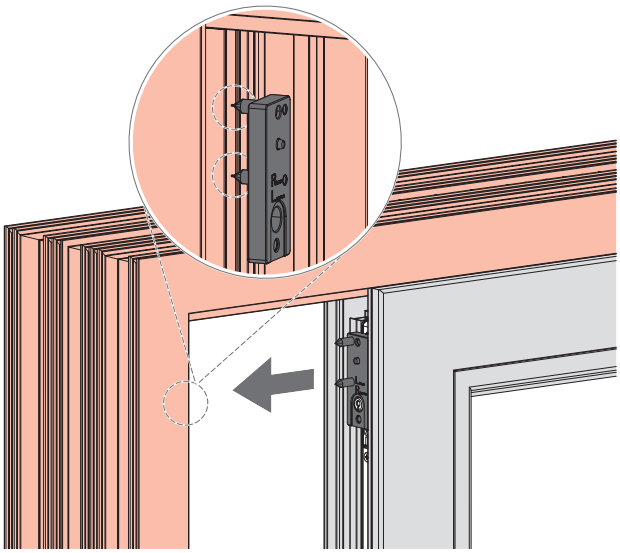


> **INFO**
> When using the marker to determine the correct drill markings, move the handle to the open position.
>
> The correct position is ensured using a magnet in the marker.

2. Close the sash with the marker fitted.

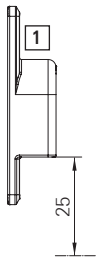
   View without sash and hardware:

   When closing the sash, the tips of the markers create two marks in the frame profile. These mark the correct drilling position for the striker in question.



9.6.2.2 Drilling the holes for the striker

Dimensional drawing in open sliding position

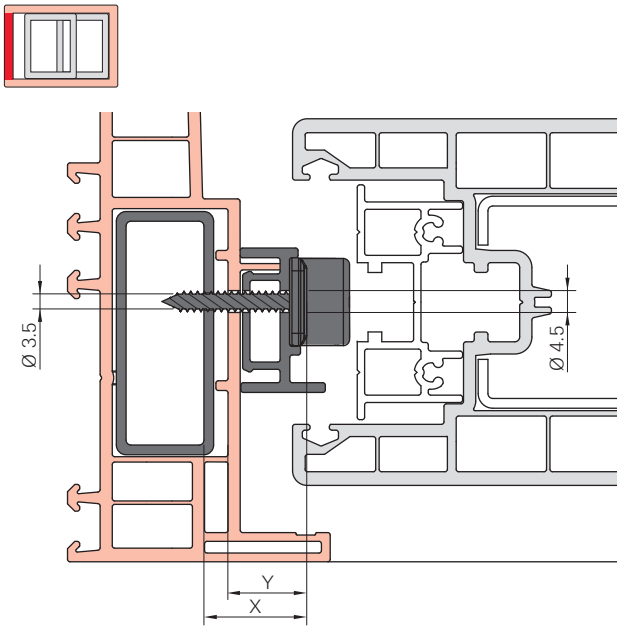


[1] T / PVC striker, screw-on
[2] Locking cam

1. Drill holes in the frame profile according to the specifications in the installation drawing.

INFO
Predrill the frame profile with steel core.
Drill: 2 x Ø 3.5 mm; depth = X

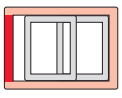
Drill: 2 x Ø 4.5 mm; depth = X



9.6.2.3 Installing the striker

1. Secure each striker [1] with two screws [2].

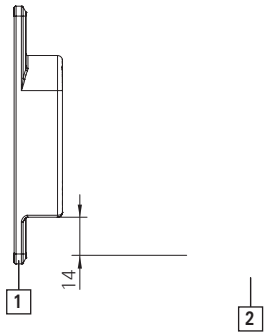
INFO
Note the drilling specifications → *9.6.2.2 "Drilling the holes for the striker" from page 99*.



9.6.3 Striker to prevent incorrect operation

9.6.3.1 Drilling the holes for the striker to prevent incorrect operation

Dimensional drawing in open sliding position



[1] Striker to prevent incorrect operation
[2] Locking cam

1. For the position of the striker to prevent incorrect operation, see the installation drawing.

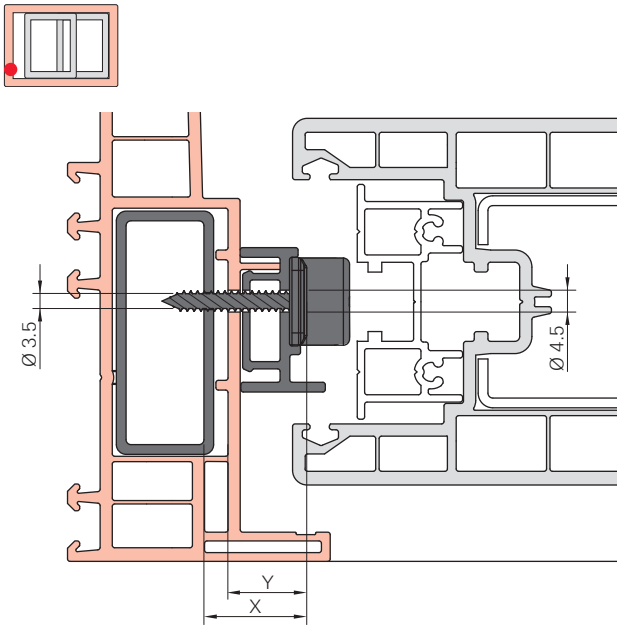
INFO

Predrill the frame profile with steel core.

Drill: 2 x Ø 3.5; depth = X

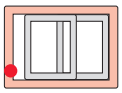
Drill holes.

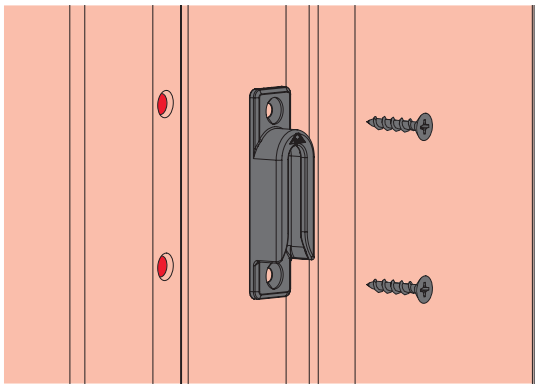
Drill: 2 x Ø 4.5; depth = Y



9.6.3.2 Installing the striker to prevent incorrect operation

1. Secure the striker to prevent incorrect operation [1] with two screws [2].





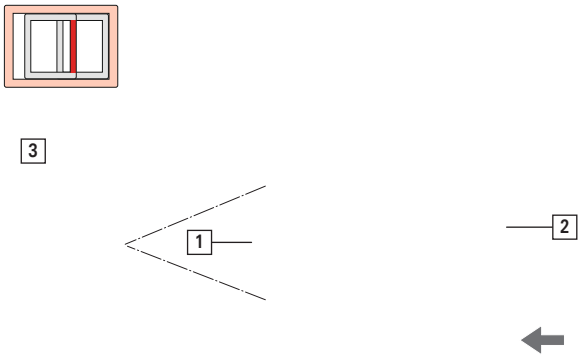
INFO

Note the drilling specifications → *9.6.3.1 "Drilling the holes for the striker to prevent incorrect operation" from page 100*.

9.6.4 Striker for anti-pushback function

Installing the striker for anti-pushback function

1. Place the drilling jig for 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: timber Ø 3.0; PVC Ø 3.5

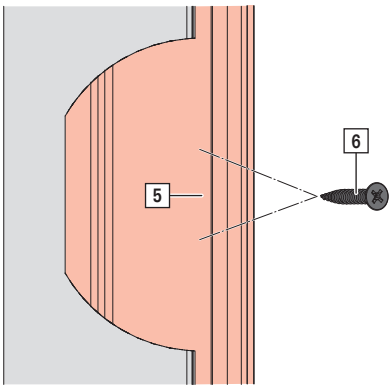


2. Drill the hole [4].
   Drill: Ø 12.5 mm

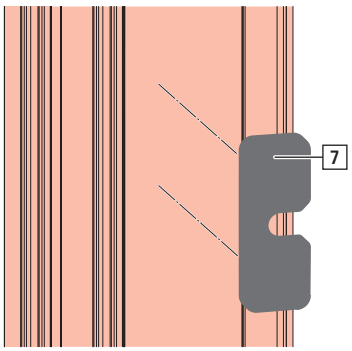


> **INFO**
> Refer to the system-specific profile assessment for the drilling depth.

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

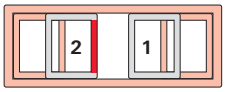


4. Clip the cover cap [7] onto the striker for anti-pushback function.



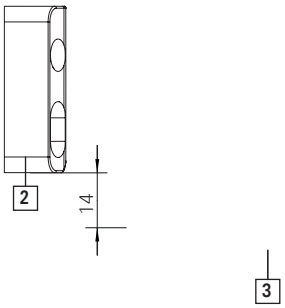
9.6.5 Striker diagram C'

9.6.5.1 Drilling the holes for striker C'



Dimensional drawing in open sliding position

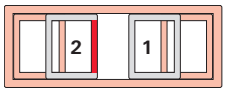
[2] Striker C'
[3] Locking cam

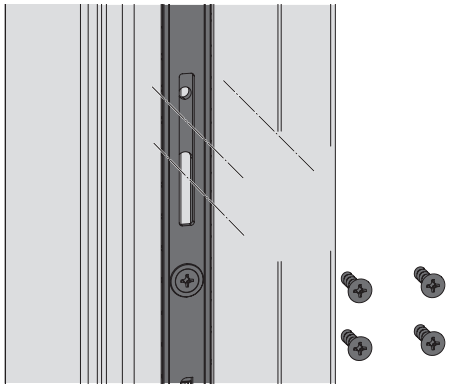


9.6.5.2 Installing striker C'

1. Pre-position the strikers [1] in the slots with two screws [2].
   Check the position and secure with another two screws [3].

> **INFO**
> Note the drilling specifications. → *9.3.4 "Operating sequence control cam" from page 70*





9.6.6 Roller track

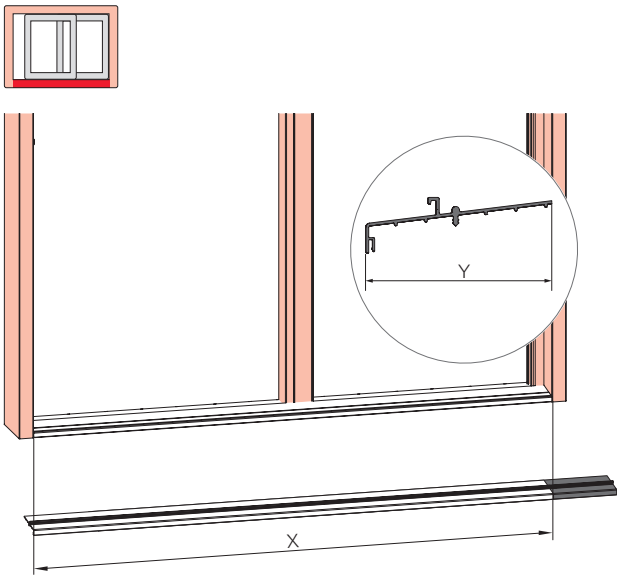
Diagram A is shown here.

INFO

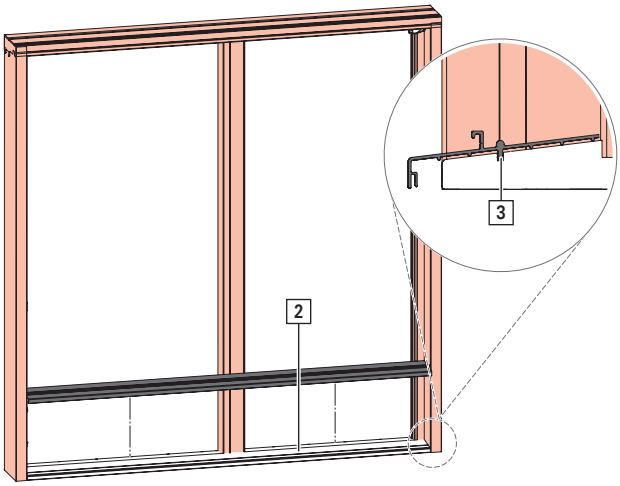
Pay attention to the system-specific profile assessment.

- Adapt the width of the roller track under your own responsibility.
- Seal the roller track properly under your own responsibility. Prevent water from entering underneath the roller track.
- Fit a water drain under your own responsibility so that water is drained away to the outside in a controlled manner.
- Ensure that the roller track is securely attached.

1. Cut the roller track [1] to size.
   X = FIW - 2 mm
   Y = profile width



2. Place the roller track on the threshold [2] and press down firmly into the threshold groove [3].



9.6.7 Guide track

ATTENTION

Protruding screw heads may cause property damage.

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

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

INFO

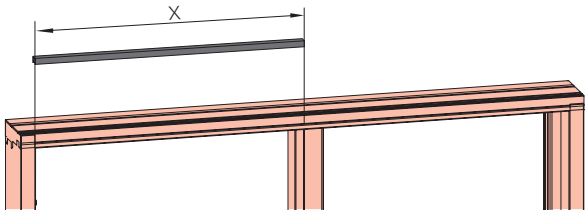
- Pay attention to the system-specific profile assessment.
- Seal the guide track properly under your own responsibility. Prevent water from entering underneath the guide track.
- Ensure that the guide track is securely attached.

  Adhere to a screw spacing of max. 300 mm.

Preparing the guide track – version with split guide track

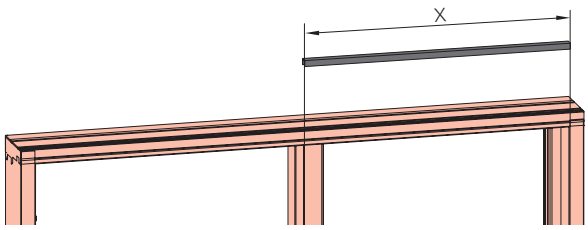
1. Cut the guide track for the access area to size and predrill it.

   X = (FIW - 2 mm)/2



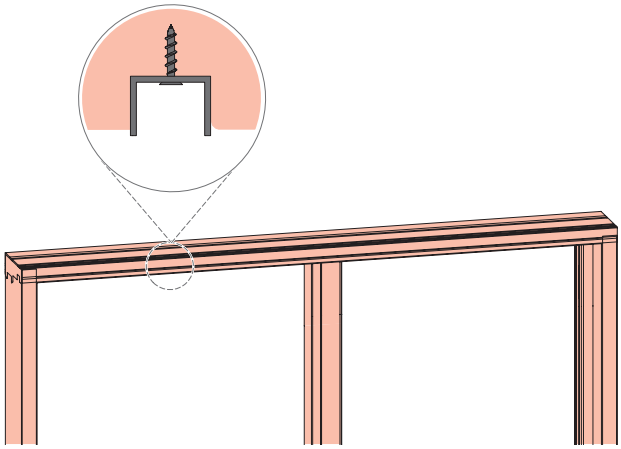
2. Cut the guide track for the fixed glazing area to size and predrill it.

   X = (FIW - 2 mm)/2



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

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



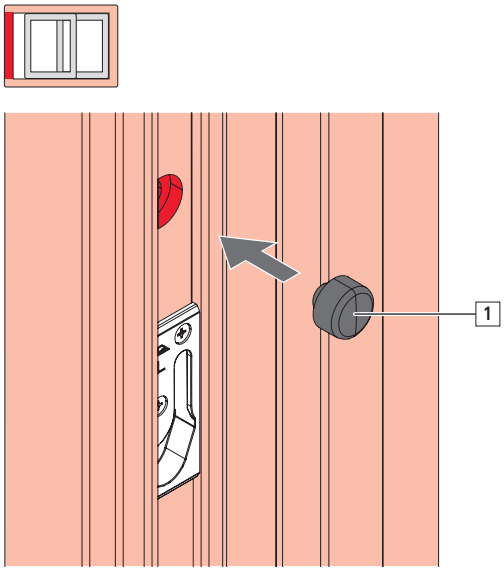
INFO
Only install the guide track in the fixed glazing area once the sash has been inserted.

9.6.8 Rubber buffer

Installing rubber buffers

1. Insert the rubber buffer [1].

INFO
Note the drilling specifications → *from page 71*.



9.7 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. → *15 "Transport" from page 138*
- 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. → *15 "Transport" from page 138*
- Do not rest sashes on the bogies.

9.7.1 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 guide track, inserting the sash at the bottom

The guide track is installed in the access area.

The guide track for the fixed glazing area is prepared .

1. Move the handle to the open sliding position

   .

2. In front of the fixed glazing area, insert the sash at the bottom of the frame until the roller unit is positioned vertically on the roller track.

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 guide track that is already installed.

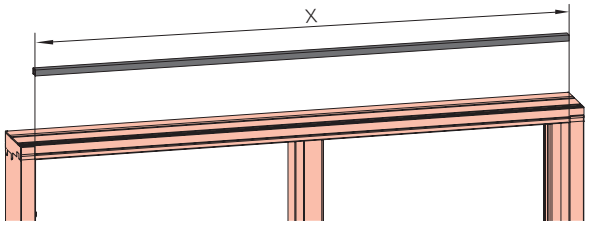
4.

   Move the handle to the closed position .

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

Version with continuous guide track, inserting the sash at the bottom

1. Cut the guide track to size.



2. Move the handle to the open sliding position

.

3. In front of the access area, insert the sash at the bottom of the frame until the roller unit is positioned vertically on the roller track.

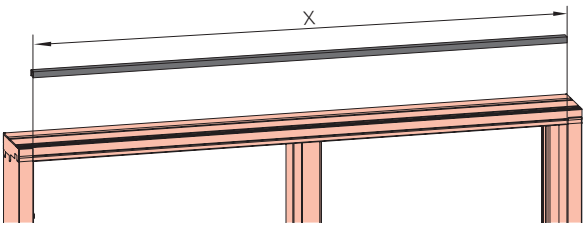
   Position the guide track on the control units at the top.

   Tilt the sash with guide track fitted inwards in a controlled manner at the top until the guide track can be installed in the frame groove provided.

4. Secure the guide track with screws [1] (screws spaced max. 300 mm apart).

Version with continuous guide track, inserting the sash at the top

1. Cut the guide track to size.



2. Secure the guide track with screws [1] (screws spaced max. 300 mm apart).

   Move the handle to the open sliding position

   .

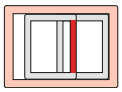
   In front of the access area, insert the sash at the top of the frame until the control units engage in the guide track.

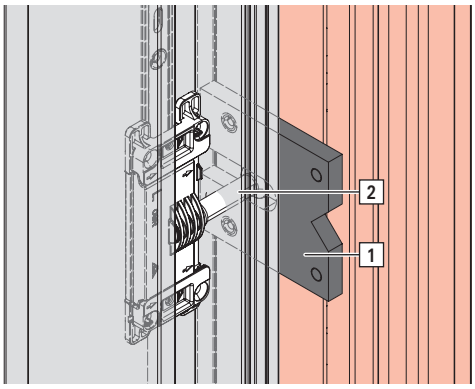
3. Tilt the sash inwards in a controlled manner at the bottom until the roller unit is positioned vertically on the roller track.

9.7.2 MUL striker

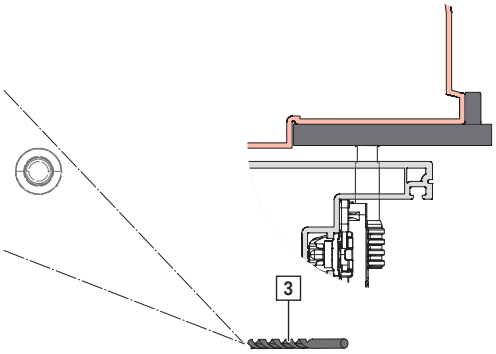
9.7.2.1 Drilling the holes for the MUL striker

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.



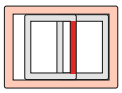


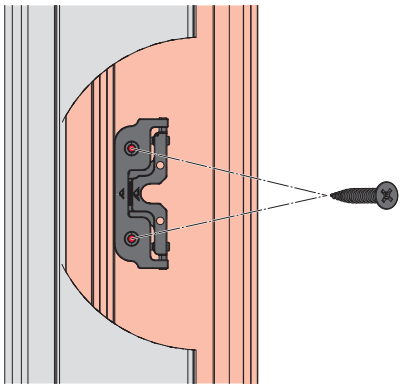
2. Drill the holes [3].
   Drill: timber Ø 3.0; PVC Ø 3.5



9.7.2.2 Installing the MUL striker

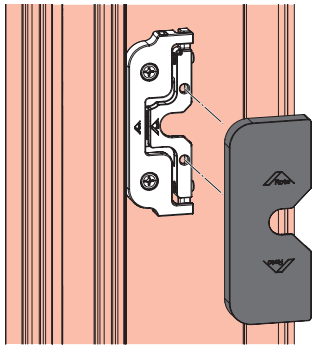
1. Secure the MUL striker [1] with two screws [2].





> **INFO**
> Note the drilling specifications → *9.7.2.1 "Drilling the holes for the MUL striker" from page 111*.

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



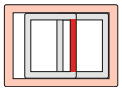
9.7.3 SEC MUL striker

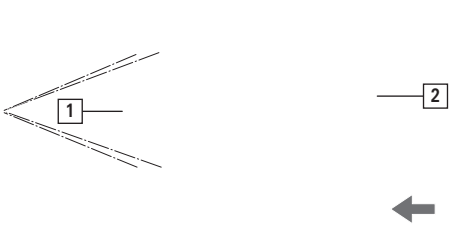
9.7.3.1 Drilling the holes for the SEC MUL striker

1. Place the SEC MUL striker drilling jig [1] flush against the frame profile at the height of the locking cam [2] as shown. 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 mm



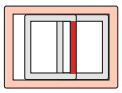


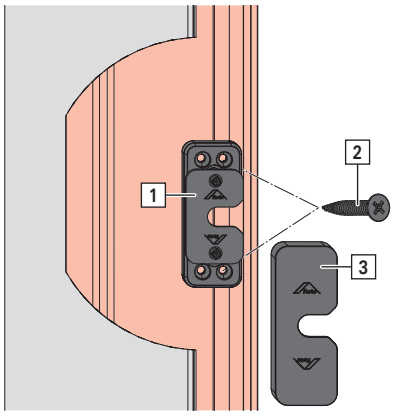
9.7.3.2 Installing the SEC MUL striker

1. Secure the SEC MUL striker [1] with four screws [2].

> **INFO**
> Note the drilling specifications → *9.7.3.1 "Drilling the holes for the SEC MUL striker" from page 112*.

Clip the cover cap [3] onto the SEC MUL striker.





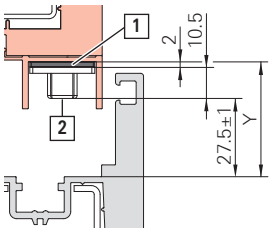
9.7.4 Activator and packer

⇨ The control unit with soft function comes assembled in its delivery state (= untensioned).

⇨ The element is glazed.

9.7.4.1 Determining the quantity of packers

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



9.7.4.2 Diagram A

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

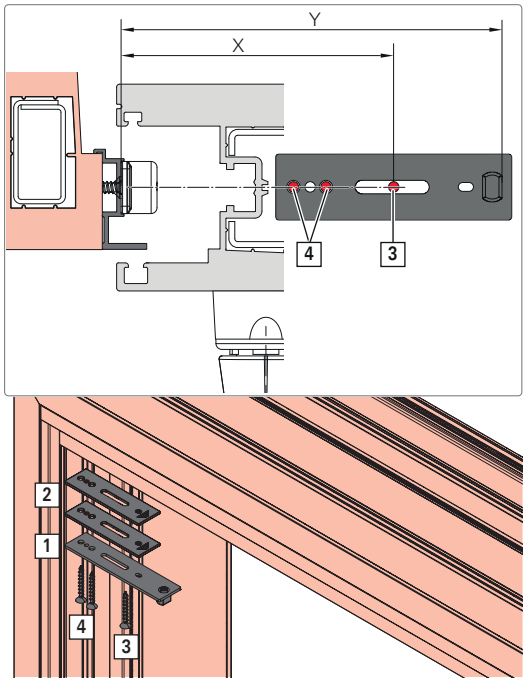
1. Connect the packers to the activator using locating aids. Ensure that the slots are aligned.

   Predrill a hole for the screw [3] (for dimension X, see the profile assessment). Slightly tighten the activator with one screw to position it (for dimension Y, see the profile assessment) so that the activator can still be moved.

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

   Predrill the holes for screws [4].

   Secure the activator with three screws.



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

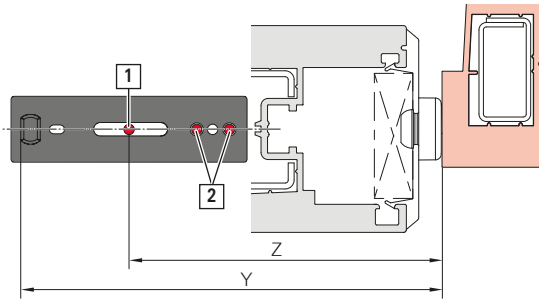
1. Connect the packers to the activator using locating aids. Ensure that the slots are aligned.

   Predrill a hole for the screw [1] (for dimension Z, see the profile assessment). Slightly tighten the activator with one screw to position it (for dimension Y, see the profile assessment) so that the activator can still be moved.

   Open the sash fully and close it again to move the activator into the installation position.

   Predrill the holes for screws [2].

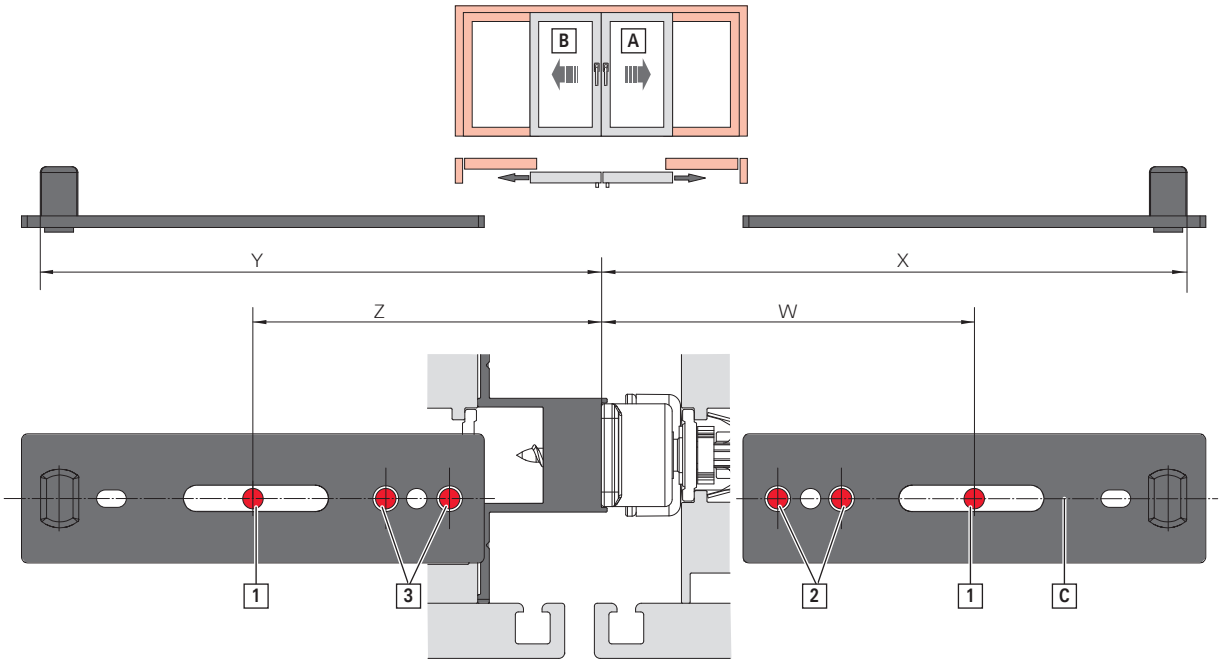
   Secure the activator with three screws.



INFO

Control unit with SoftOpen: if the sash does not come into contact with the buffer, move the activator screw position by at least 21 mm (Z + 21 and Y + 21).

9.7.4.3 Diagram C



[A] First opening sash
[B] Second opening sash
[C] Centre of guide groove in the guide 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 W, for the second opening sash to dimension Z, see profile assessment). Slightly tighten every activator with one screw each to position them (for dimensions X and Y, 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].
   Secure 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].
   Secure with three screws.

9.7.5 Tensioning the control unit with soft function

CAUTION

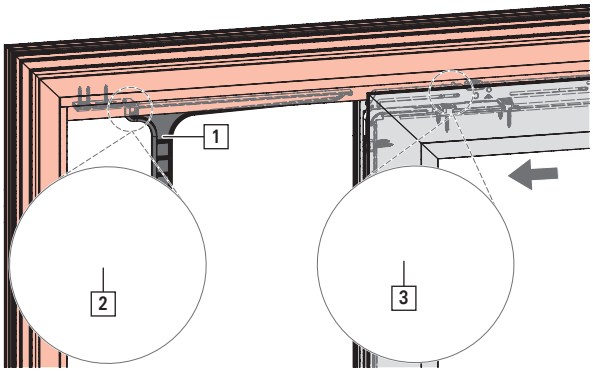
Risk of injury caused by tensioning the control unit with soft function by hand.

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.

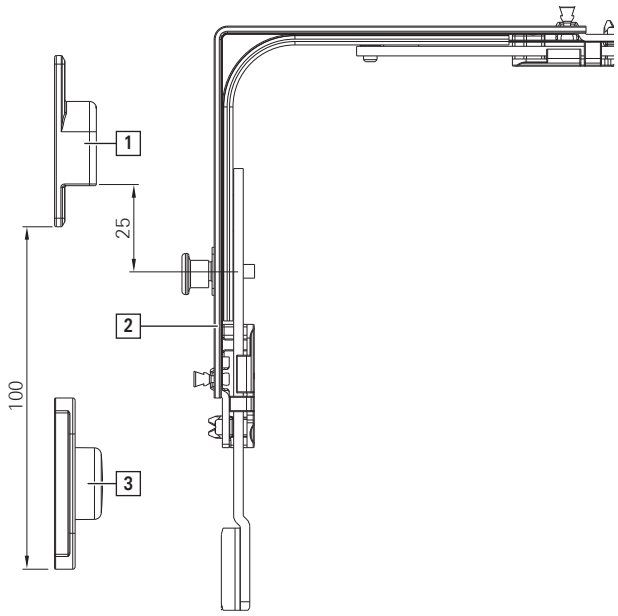


2. Open up the element slowly to activate the soft function. The connector on the tensioning tool will be released automatically.

9.7.6 Stop

9.7.6.1 Drilling the holes for the stop

Installation drawing in open sliding position



[1] T / PVC striker

[2] Corner drive

[3] Stop

INFO

The version on the bottom is mirror-inverted.

1. For the position of the run-up block, see the installation drawing. → *from page 122*

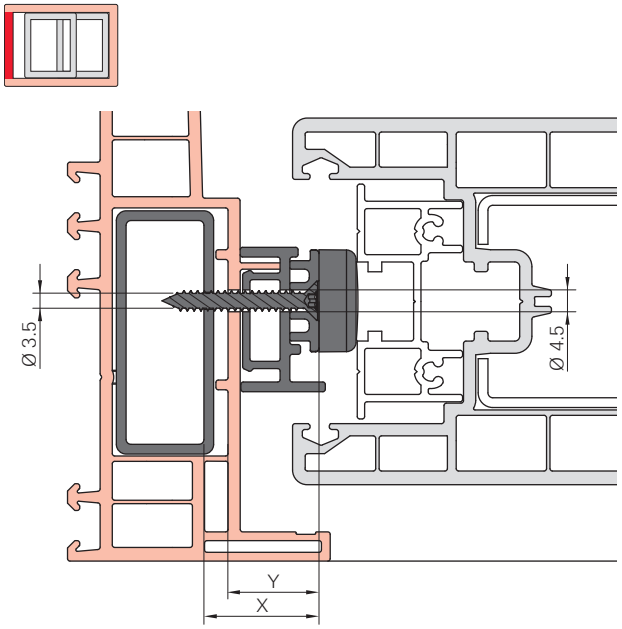
INFO

Predrill the frame profile with steel core.

Drill: 2 x Ø 3.5; depth = X

Drill holes.

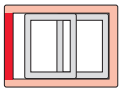
Drill: 2 x Ø 4.5; depth = Y

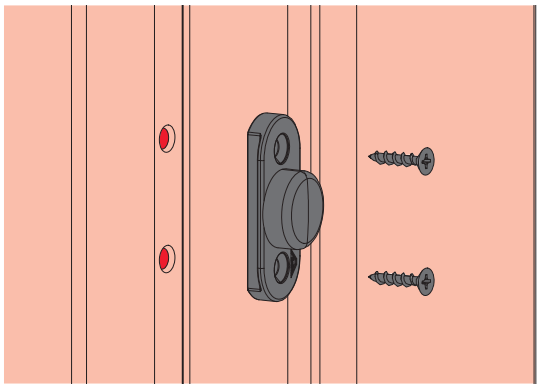


9.7.6.2 Installing the stop

1. Align the stop [1] vertically and secure with two screws [2].

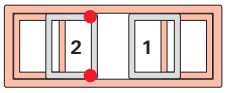
> **INFO**
> Note the drilling specifications → *9.7.6.1 "Drilling the holes for the stop" from page 117*.

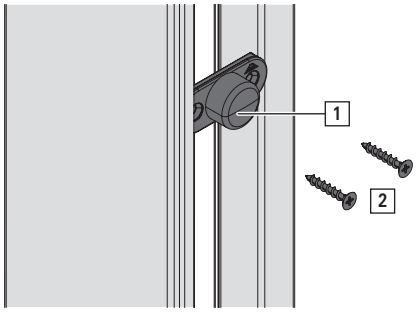




Exception: timber, diagram C'

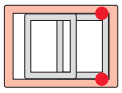
1. Align the stop [1] horizontally and secure with two screws [2].





9.7.7 End stop with packer

1. Adapt the end stop packer in line with the specific profile.



2. Place the end stop packer [1] on the roller track [2] or guide track and secure with screws.

3. Drill the holes for the end stop.
   [A]: Ø 8.0+0.2 (1x)
   [B]: predrill Ø 3.0 (1x)



4. Install the rubber buffer [3] in the end stop [4], position it on a packer, and secure with a screw [5].

9.7.8 Guide track stopper

INFO

Note the profile system assessment.

Installing the guide track stopper, diagram A

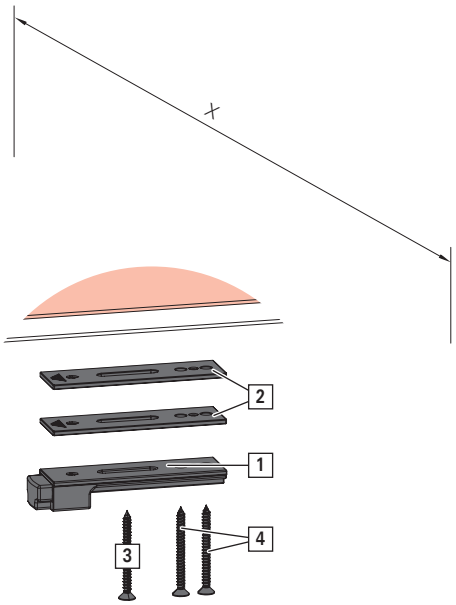
1. Insert the stopper [1] and, if required, packers [2] into the guide track.

   X = profile related

   Screw down loosely with one screw [3] but so that it is not yet secure.

   Check the stopper position and reposition if necessary.

   Secure the stopper with three screws(first [3], then [4]).

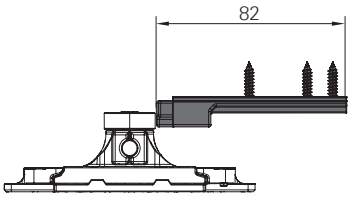


Installing the guide track stopper, diagram C

⇨ Second opening sash is on the bench: mark the position of the roller outer edge of the control unit on the espagnolette side [A].

1. Close the second opening sash.

   Transfer the marking for the “position of the roller outer edge of the control unit” from the sash to the frame and move it 82 mm towards the espagnolette side [B].



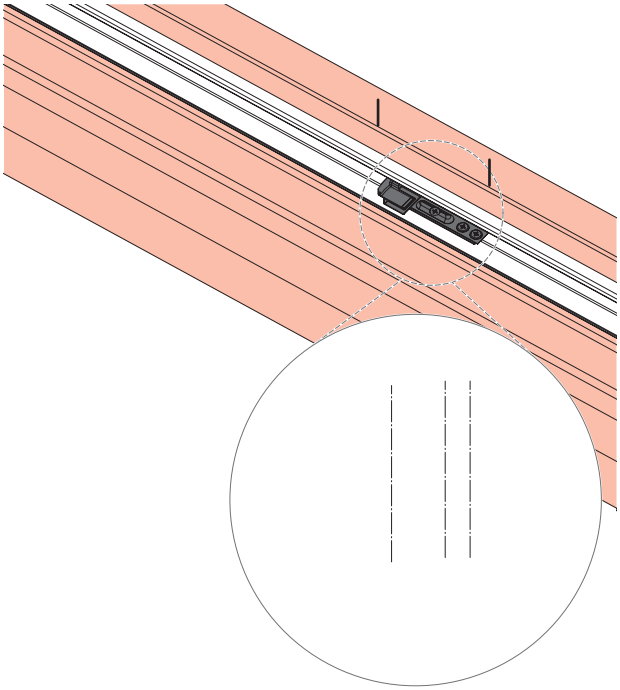
2. Insert the stopper [1] and, if required, packers [2] into the guide track.

   Move the stopper up to the marking [B].

   Screw down loosely with one screw [3] but so that it is not yet secure.

   Check the stopper position and reposition if necessary.

   Secure the stopper with three screws(first [3], then [4]).



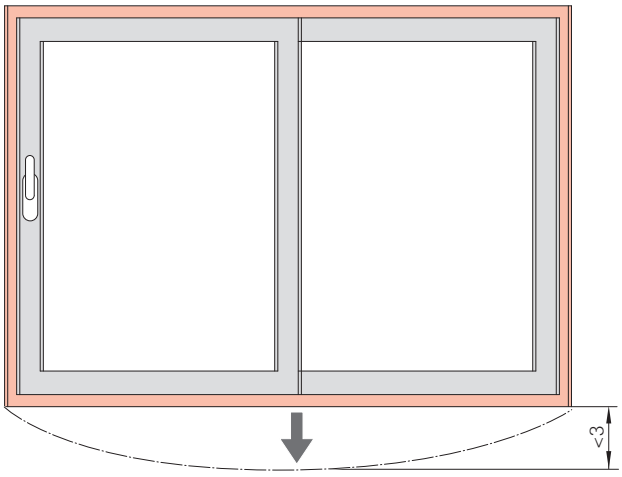
9.7.9 Notes on final assembly

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

Place supports under the threshold every 300 mm across its entire area.

[1] Packer

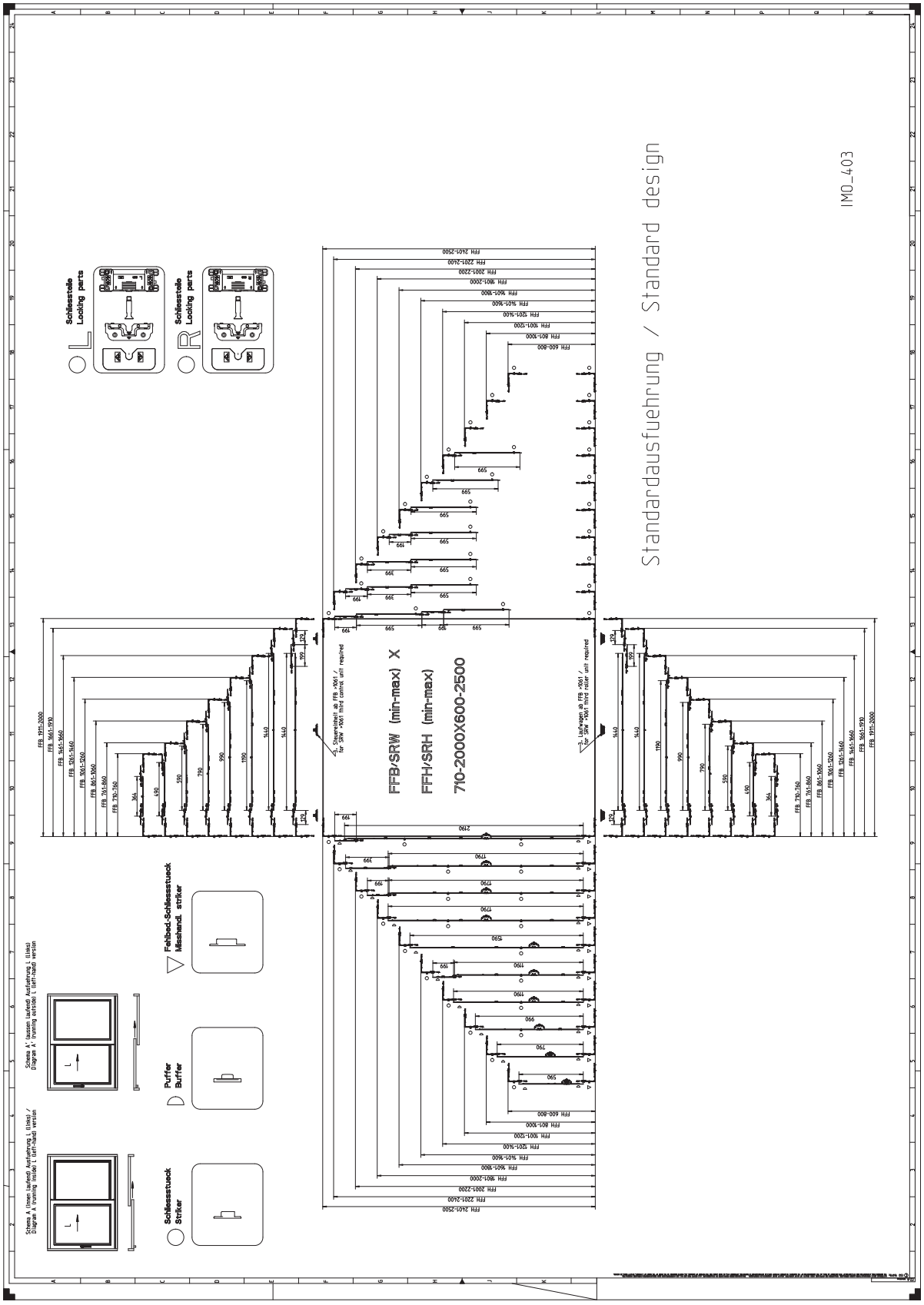
10 Installation drawings

10.1 Explanation

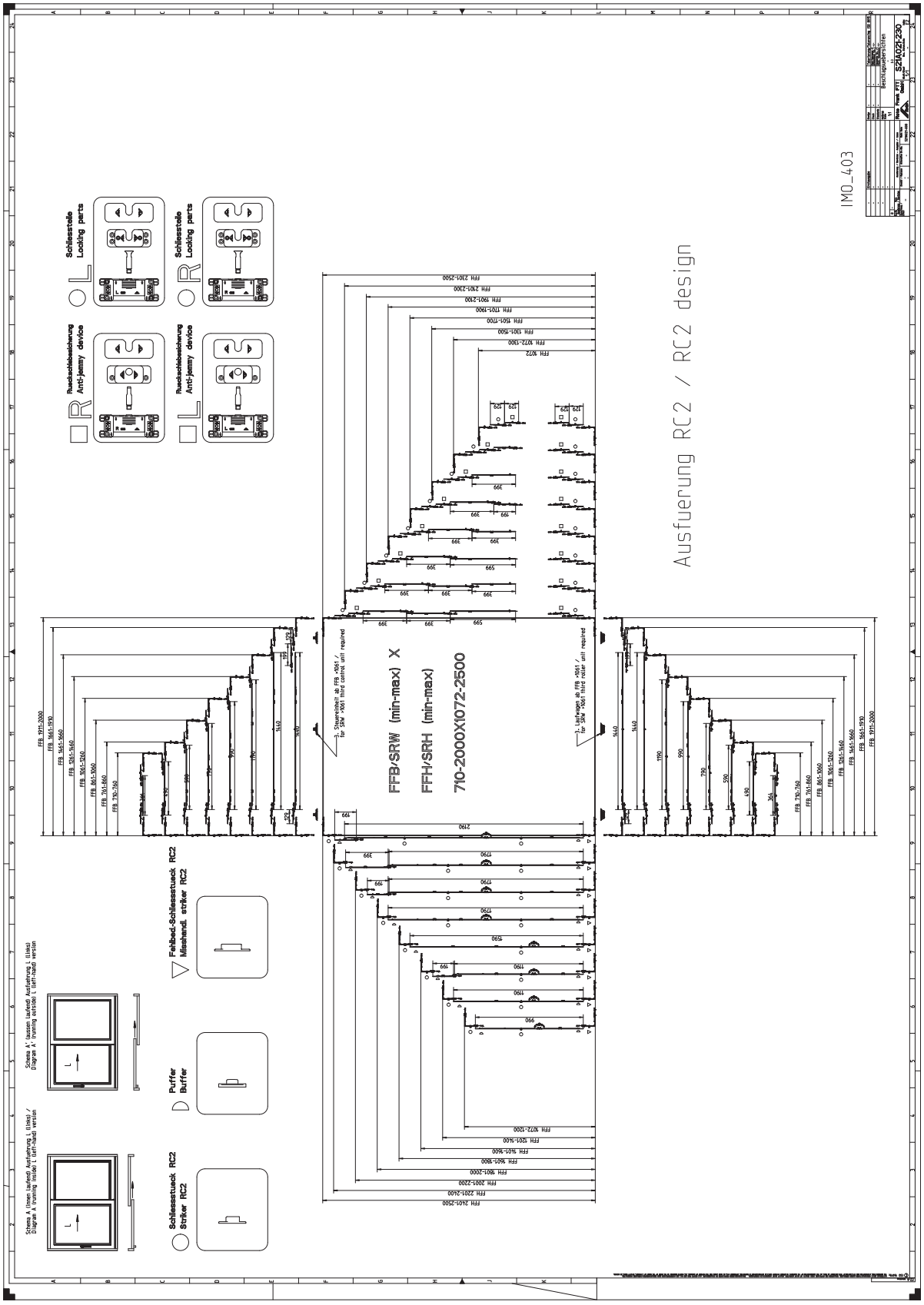
The following markings are used in the installation drawings to emphasise references and other elements:

Marking	Meaning
3.Laufwagen ab FFB >1061	Third roller unit from SRW > 1061 mm
3.Steuereinheit ab FFB >1061	Third control unit from SRW > 1061 mm
aktiv	First opening
Ansicht von innen	View from inside
Ausfuerung	Version
aussen laufend	Running outward
Beschlagteile links	Hardware components, left
Beschlagteile rechts	Hardware components, right
FFB	Sash rebate width
Fehlbed.-Schliessstueck RC2	SEC striker to prevent incorrect operation
FFH	Sash rebate height
Garnitur-Positionierung	Set positioning
innen laufend	Running inward
min	Minimum
max	Maximum
passiv	Second opening
Puffer	Stop
RC 2 / RC 2 N	RC 2 / RC 2 N
Rueckschiebesicherung	Anti-pushback function
Schaltfolgeregelung	Operating sequence control
Schema A	Diagram A
Schema A'	Diagram A’
Schema C	Diagram C
Schema C'	Diagram C’
Schliessstueck RC2	RC 2 striker
Schliessteile	Locking components
Standard	Standard
Standardausfuehrung	Standard version

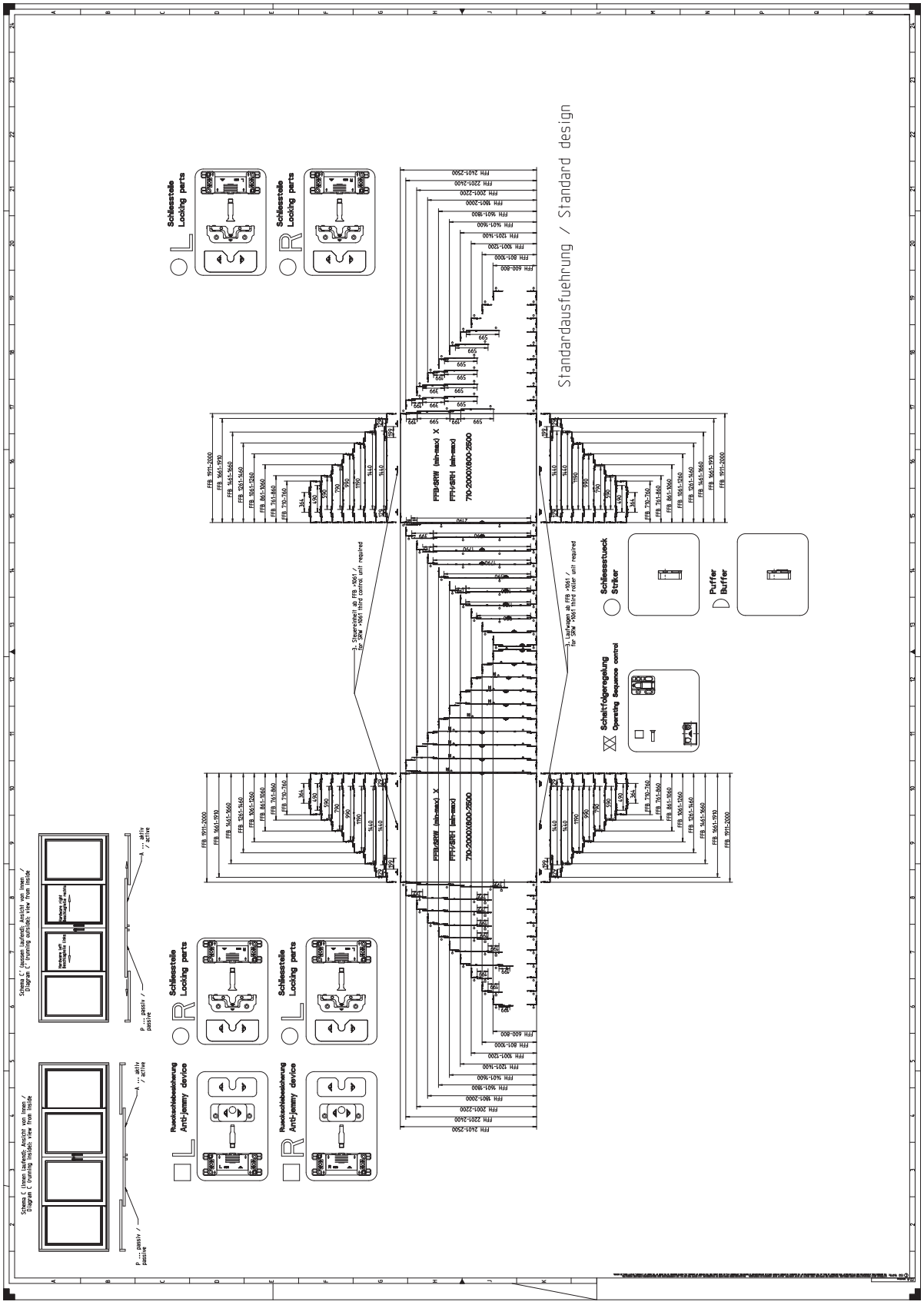
10.2 Diagram A, K, A', K'



10.3 Diagram A, K | RC 2 / RC 2 N | PVC



10.4 Diagram C, C'



11 Adjustment

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

11.1 Striker

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

Lateral adjustment

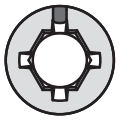
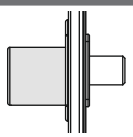
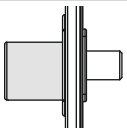
1. Close the window sash (handle position open).

2. Adjust the striker [1] using two threaded pins [2] in the fastening plate.
   Tool: hex key size 2.5.

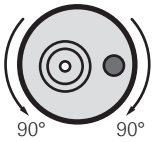
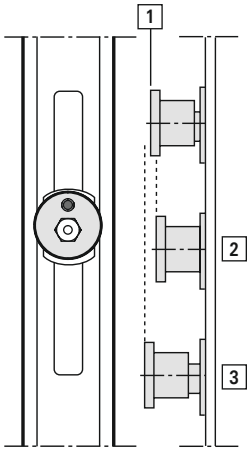
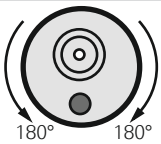
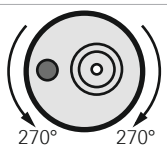
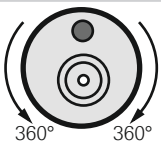
INFO
The striker has variable height adjustment, which permits an installation tolerance of ±3 mm for the locking cam.

11.2 Adjusting the locking cam

E cam

E cam	Adjustment distance	Gasket-compression adjustment / mm	Height	Profile view
				
		±0.8 mm		

V cam

V cam	Adjustment distance	Gasket-compression adjustment / mm	Height adjustment / mm	Profile view
				
	 90° 90°	±0.8 mm	±0.2 mm	 [1] 0 = initial position [2] -0.8 mm max. adjustment [3] +0.8 mm max. adjustment
	 180° 180°		±0.4 mm	
	 270° 270°	±0.8 mm	±0.6 mm	
	 360° 360°		±0.8 mm	

11.3 MUL locking cam / pin for anti-pushback function – adjustable

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

Gasket compression adjustment

Initial position

12 Operation

12.1 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.

12.1.1 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.

12.2 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 rehang – start from the T&T espagnolette).	■
Locking cams brush against the striker.	Sash components hinged or installed incorrectly.	Check the setting in the turn position (potentially rehang – 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

13 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 130*
Cleaning		→ *from page 131*
Clean hardware	☐	
Care		→ *from page 131*
Lubricate movable parts	☐	
Lubricate locking points	☐	
Performance test		→ *from page 132*
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 133*
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

13.1 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.

13.2 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. → *13.3 "Care" from page 131*
- Apply a thin protective film to the hardware, for example using a cloth soaked in oil.

13.3 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.

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.

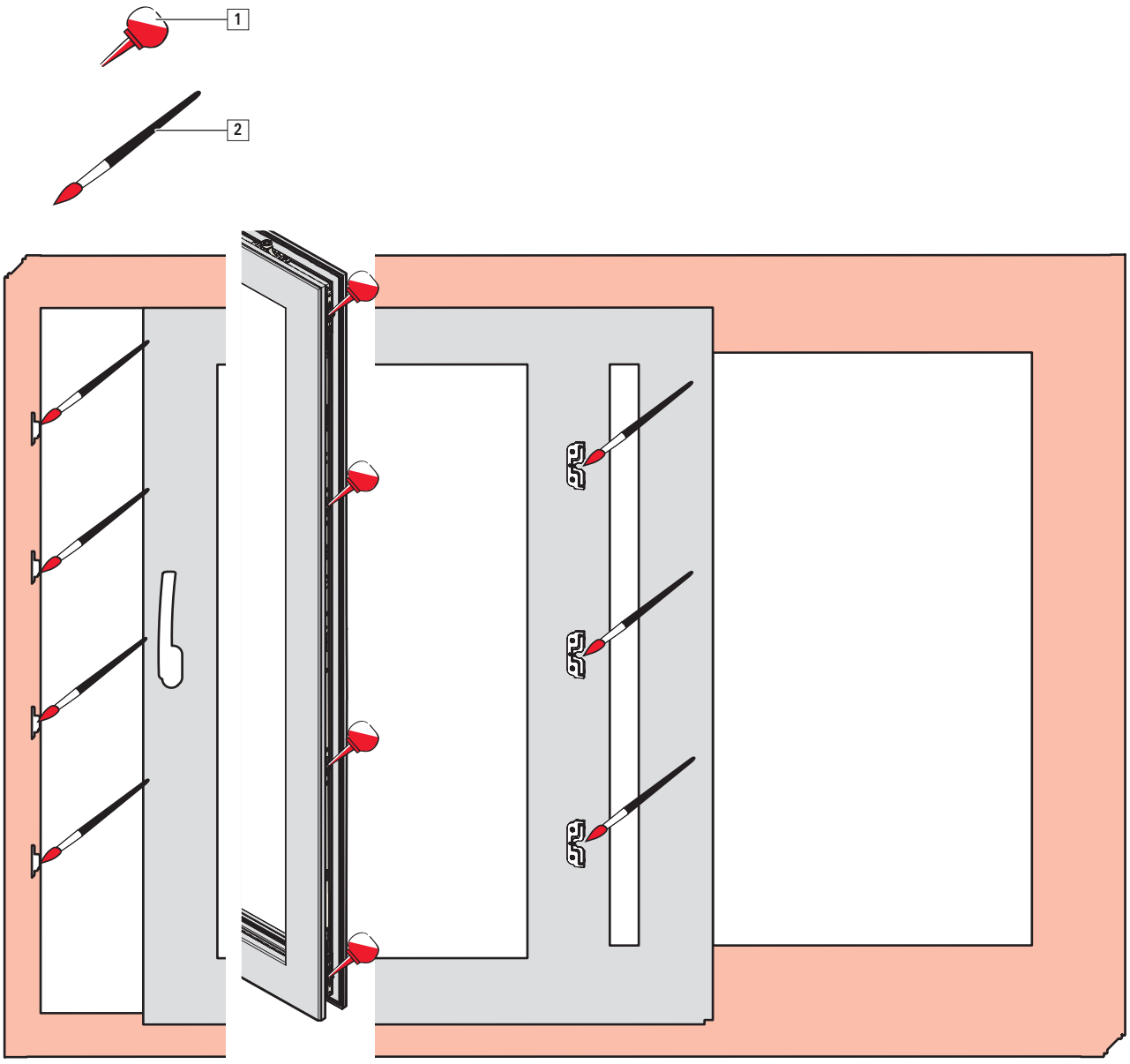
Recommended lubricants

- 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.

13.3.1 Roto Patio Inowa



[1] Lubricant
[2] Grease

13.4 Performance test

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 firm fit.
- Check that windows or balcony doors run smoothly by opening and closing them.
- Check the window or balcony door gaskets for elasticity and fit.
- Check closed windows or balcony doors to ensure that they are leakproof.

- Locking and unlocking torque max. 10 Nm. The test can be performed using a torque wrench.

Have malfunctions remedied by a specialist company.

13.5 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.

13.6 Preventative measures

These measures are intended to preserve the surface finish and durability. They aim to prevent premature wear or contamination and thereby simplify maintenance.

Protection against corrosion

Cleaning agents can corrode the surface of the hardware.

Protect the hardware:

- 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 hardware, for example using a cloth soaked in oil.
- Only use high-quality components for repairs, such as stainless-steel screws.

Protection against dirt

Contamination prevents the hardware working properly.

Protect the hardware:

- Remove deposits and contaminants caused by construction materials before they bond with water, e.g. construction dust, plaster, stucco, mortar and cement.
- Always clean using a soft cloth.

Protection against (permanently) damp room air

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

Protect the hardware:

- Provide adequate ventilation for hardware, particularly during the construction phase.
- Intensively air out the room several times per day by opening all windows or balcony doors for approximately 15 minutes.

  If intensive airing is not an option, place the windows or balcony doors 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 drafts. 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.

14 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.

14.1 Unhinging the sash

Version with split guide track

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

2. Move the handle to the open 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.

Version with continuous guide track

1. Move the handle to the open sliding position

.

2. Lift the sash and tilt it outwards at the bottom.
   Lower the sash in a controlled manner until the control units are exposed.

3. Remove the sash parallel to the frame.

14.2 Hardware components

Removing hardware components

1. Undo all screw connections.

2. Remove the hardware components.

3. Dispose of the hardware components properly.

15 Transport

15.1 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 shipment. 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.
- 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.

15.2 Storing the hardware

Store all hardware components as follows until they are installed:

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

16 Disposal

ATTENTION

Incorrect disposal may pollute the environment.

Pieces of hardware are raw materials.

- Dispose of hardware for environmentally friendly material reutilisation as mixed scrap.

16.1 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.

16.2 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.

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