Window and Door Technology

Roto Patio Lift

Hardware for versatile use
in Lift&Slide systems

Installation, maintenance and operation instructions
for aluminium profiles

Contact

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1 General information

1.1 Version history

Version	Date	Changes
v0	28.11.2012	
v1	18.09.2020	Hardware overviews and parts lists changed. Slim versions added → *from page 24*. Optional support block component added → *from page 77*. Diagram C floor striker added → *from page 85*. Info clip accessory added. → *from page 63* Handles and recessed grips moved to CTL_1 and combinations added. Notes on final assembly added → *from page 86*. Application ranges changed. Connecting rod cropping dimensions changed → *from page 72*. Striker position dimensions changed → *from page 84*. Screw cropping dimensions for handle and recessed grip changed → *from page 79*.

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
▷	Result
▶	Unnumbered step
1.	Numbered step
a.	Numbered second-level step
⇨	Requirement

1.4 Pictographs

Symbol	Meaning
	Aluminium
	Sash width
	Sash height
	Handle position vertically upwards
	Handle position vertically downwards

1.5 Product features

Symbol	Meaning
	Lockable
	Description
	Width
	Call-out
	Backset
	Colour
	Colour code
	Sash width
	Sash height
	Sash weight
	Fixed handle height
	Information
	Length

Symbol	Meaning
	Material number
	Surface
	Roto logo
	Number of screws
	Type of screws
	Integrated night ventilation
	Piece(s)
	Packaging unit

1.6 Abbreviations

Abbreviation	Meaning
approx.	approximately
CTL	Catalogue
BS	Backset
IMO	Installation instructions
SW	Sash width
SH	Sash height
S.kg	Sash weight
HH	Handle height
kg	Kilograms
L	Left
Max.	Maximum
MUL	Mullion
Min.	At least
mm	Millimetres
R	Right
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 7*.

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 7*.

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.
- Only use hardware components with the required materials and track shapes.
- Always have installation performed by a specialist company.

- Through sufficient sash coverage, the window manufacturer must ensure that the sash cannot fall out, even if the window or hardware components is / are operated incorrectly.

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.

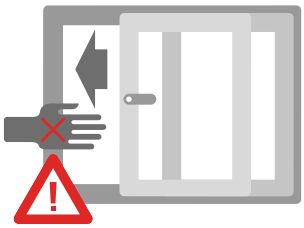
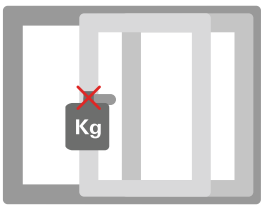
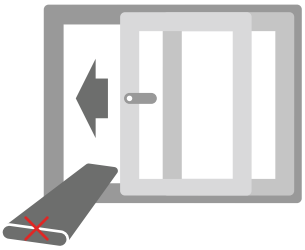
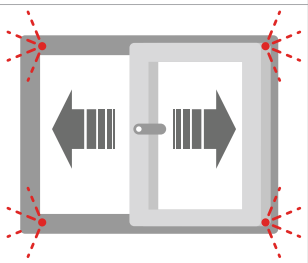
- Avoid preventing the circulation of air (e.g. due to deep reveals, curtains and unfavourable positioning of heaters or the like).
- Intensively air out the room several times per day.

  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.
	**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

- Lift&Slide system for aluminium.
- Lift&Slide system with Slim versions for narrow profiles.
- DesignLocking: espagnolette with locking cam and associated striker.
- Stainless steel Plus version for increased corrosion protection requirements.
- Quiet operation and outstanding running properties thanks to high-quality roller unit technology:
  - ball-bearing-mounted rollers
  - quiet bogies
- Durability thanks to the use of robust materials:
  - rollers made from high-quality PVC
  - roller unit side panels made from stainless steel
- Night ventilation is possible in conjunction with optional locking pin.
- Accessory: info clip for individual branding.

3.2 Application ranges

- SH:SW = max. 2.5:1
- Sash width: max. 3000 mm
- Sash height: max. 3100 mm
- Sash weight: max. 400 kg
- Sash arrangement according to diagrams A, C, D, G and K
- Operating range: -20 °C to +50 °C

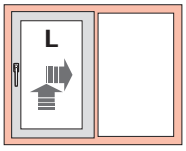
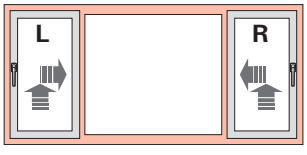
3.3 Design variants

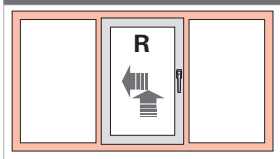
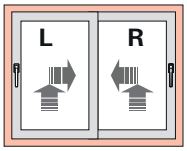
3.3.1 Note regarding the design variants

Combinations for constructing the hardware are assigned to the following diagrams.

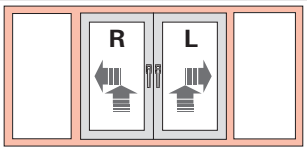
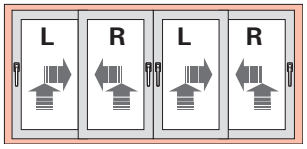
These combinations can be built in L and R.

3.3.2 Diagram A

Combinations	Further description
 1 Lift&Slide sash (L or R) 1 fixed glazing element	Diagram A
 1 Lift&Slide sash (L and R) 1 fixed glazing element	Diagram K

Combinations	Further description
 1 Lift&Slide sash (L or R) 2 fixed glazing elements	Diagram G
 2 Lift&Slide sashes (L and R)	Diagram D

3.3.3 Diagram C

Combinations	Further description
 2 Lift&Slide sashes (L and R) 2 fixed glazing elements	Diagram C
 4 Lift&Slide sashes (L and R)	Diagram F

3.3.4 Design variants – overview

Slim

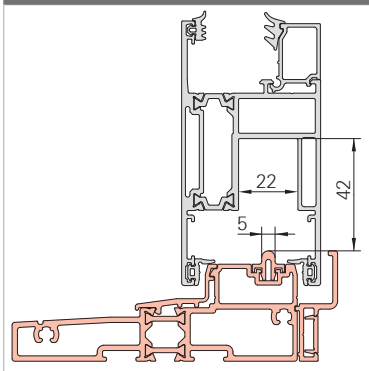
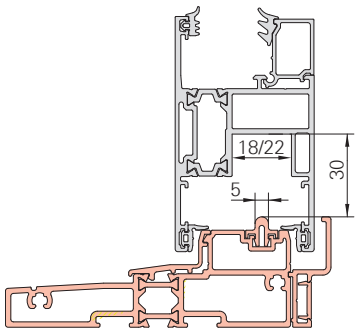
Weight	Roller unit		Roller unit upgrade set	Fixed handle height espagnolette		
	18	22		BS 25	BS 27.5	
				Without damper	Without damper	With damper
≤ 150 kg	■	■	–	■	–	–
≤ 200 kg	■	■	–	–	■	–
> 200 – ≤ 300 kg	■	■	■	–	■	–
> 300 – 400 kg	■	■	■	–	–	■

Standard

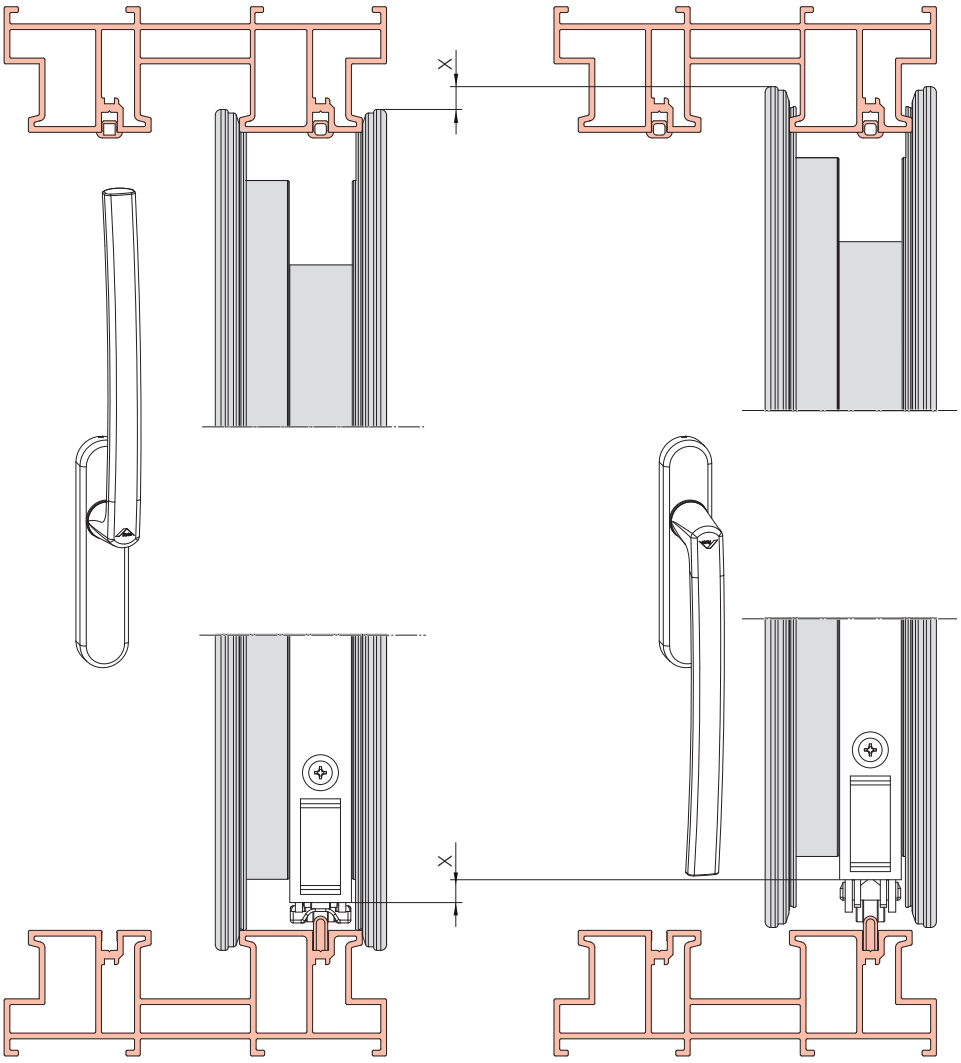
Weight	Roller unit	Roller unit upgrade set	Fixed handle height espagnolette BS 37.5	
	22		Without damper	With damper
≤ 300 kg	■	–	■	–
> 300 – 400 kg	■	■	–	■

3.4 Space requirement for hardware

Note the following space requirement:

Groove for standard version	Groove for Slim version
	

Travel illustration



X Travel max. 7 mm

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

INFO

Note the profile system assessment. The packer set for the corner roller unit and packers for the espagnolette are not essential.

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 | Slim | 150 kg

Fig. 4.1: Shown: left version; SW 1400 mm; SH 2400 mm; S.kg 150 kg

Application range

SW: 720 - 2800 mm

SH: 1801 - 2600 mm

S.kg: max. 150 kg

[*]	Roller unit set	
		№
18	–	840771
	Stainless steel Plus	734289
22	–	840193
	Stainless steel Plus	734290

[*]		#
[1]	Corner roller unit on the espagnolette side	1
[2]	Roller unit on the mullion side	1
[8]	Countersunk screw M5 x 13	1
[10]	Connecting pin	2

[*]	**Packer set** for corner roller unit	
		№
16		840774
19		840775
20.5		840776
23		840777
25		840778
30		840779

[*]		#
[3]	Packer	1
[9]	Self-tapping screw ST4.8 x 20	1

[4]	Espagnolette – fixed handle height				
					№
25	max. 150 kg	1801 – 2200	965	2185	633426
		2201 – 2600	965	2375	633427

[*]	Lock casing set	
		№
max. 150 kg		631368

[*]		#
[12]	Lock casing	1
	Spring pin 5 x 22	2

[13]	Profile cylinder escutcheon								
									№
43	R01.1	Natural silver	anod.	N	–	–	10 Piece(s)	494466
	R01.3	Titanium	anod.	N	–	–	10 Piece(s)	228260
	R05.3	Medium bronze	anod.	N	–	–	10 Piece(s)	494467
	R07.2	Traffic white	powd-c	N	–	–	10 Piece(s)	258952

[5]	Espagnolette packer	
		№
16		595654
19		600513
20.5		600512
23		601952
25		636526
30		606766

[6a]	Locking pin without night ventilation	
		№
11		595652
13.5		639864
14.5		639863
15		595650
16		635126
17		635128
22		600508
24.5		639875
24		639896

[6b]	**Locking pin with night ventilation** (alternatively at the lowest position)	
		№
15		595651
17		639862

[7]	Connecting rod	
		№
895		634852
1200		595649
1500		634853
1800		606712
2300		634854

≤ 1400	895
1401 – 1700	1200
1701 – 2000	1500
2001 – 2300	1800
≥ 2301	2300

[16] Sliding door handle – interior handle – push-to-open (200 mm handle length) → CTL_1

Alternatively:

[18] Sliding door handle – interior handle (200 mm handle length) → CTL_1

[17] Oval recessed grip | 14 mm (43 mm distance) → CTL_1

Alternatively:

[18] As exterior handle: sliding door handle – interior handle (200 mm handle length) →

[31] End stop

	№
27	634866

4.2 Diagram A | Slim | 200 / 400 kg

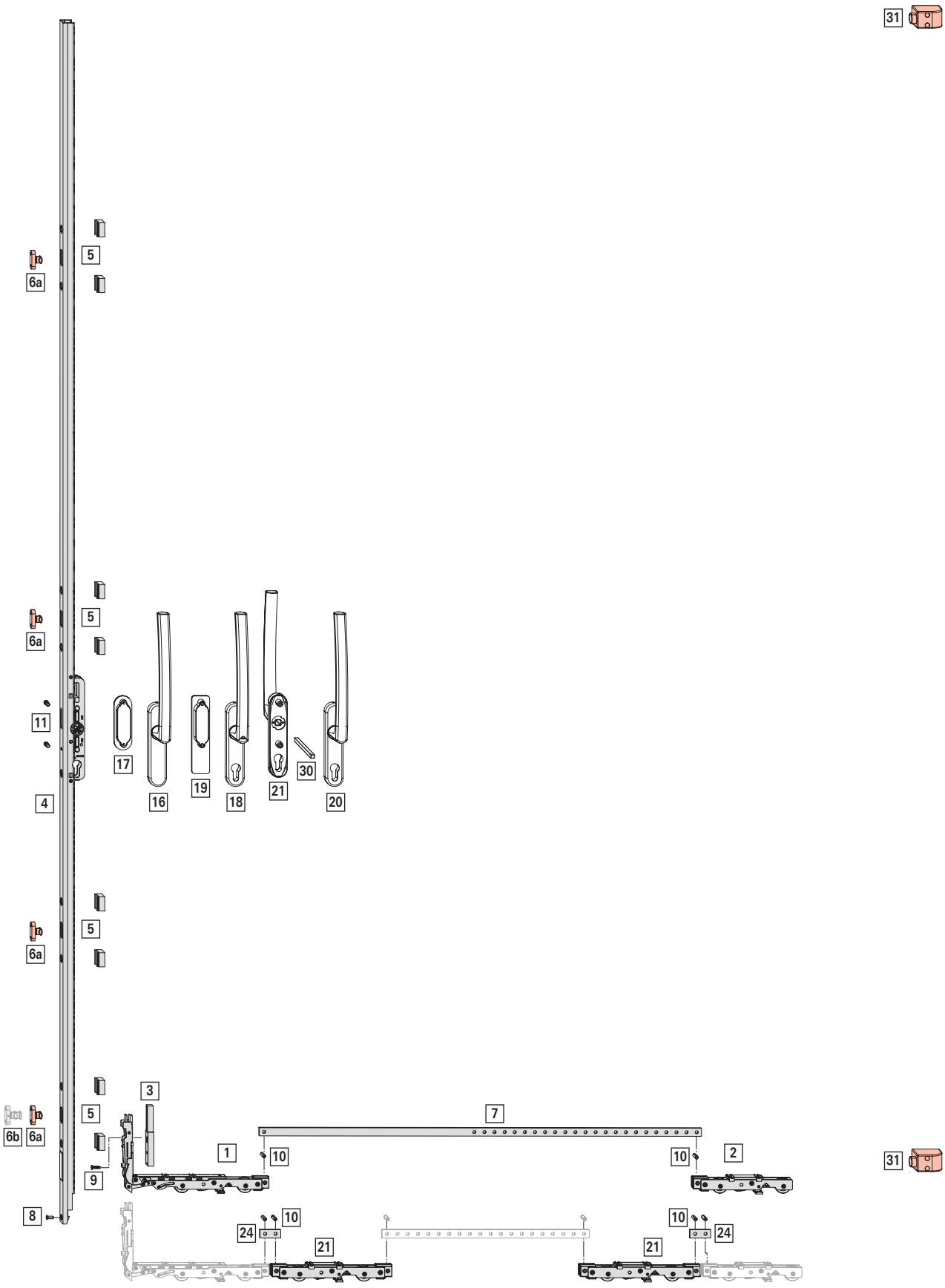


Fig. 4.2: Shown: left version; SW 1400 mm; SH 2400 mm; S.kg 200 / 400 kg

Application range

SW: 720 - 3000 mm [1]

SH: 1801 - 3100 mm

S.kg: max. 400 kg

[*] Roller unit set

		№
18	–	840771
	Stainless steel Plus	734289
22	–	840193
	Stainless steel Plus	734290

[*]		#
[1]	Corner roller unit on the espagnolette side	1
[2]	Roller unit on the mullion side	1
[8]	Countersunk screw M5 x 13	1
[10]	Connecting pin	2

[*] Packer set for corner roller unit

	№
16	840774
19	840775
20.5	840776
23	840777
25	840778
30	840779

[*]		#
[3]	Packer	1
[9]	Self-tapping screw ST4.8 x 20	1

[*] Roller unit upgrade set; S.kg > 200 kg

		№
18	–	840773
	Stainless steel Plus	840772
22	–	840243
	Stainless steel Plus	840242

[*]		#
[10]	Connecting pin	4
[21]	Auxiliary roller unit, central	2
[24]	Connecting plate	2

[4] Espagnolette – fixed handle height

							№
27.5	–	max. 300 kg	1801 – 2200	965	2185	Y	840251
			2201 – 2600	965	2375	Y	840252
			2601 – 3100	965	3000	Y	840253
	Min. 300 kg	Max. 400 kg	1801 – 2200	965	2185	Y	840248
			2201 – 2600	965	2375	Y	840249
			2601 – 3100	965	3000	Y	840250

[11] Threaded insert, for espagnolette

	№
27.5	840782

[5] Espagnolette packer

	№
16	595654
19	600513
20.5	600512
23	601952
25	636526
30	606766

≤ 2600	8
> 2600	10

[6a] Locking pin without night ventilation

	№
11	595652
13.5	639864
14.5	639863
15	595650
16	635126
17	635128
22	600508
24.5	639875
24	639896

≤ 2600	4
> 2600	5

[6b] Locking pin with night ventilation (alternatively at the lowest position)

	№
15	595651
17	639862

[7] Connecting rod

	№
895	634852
1200	595649
1500	634853
1800	606712
2300	634854

Weight-dependent choice:

≤ 200 kg

≤ 1400	895
1401 – 1700	1200
1701 – 2000	1500
2001 – 2300	1800

[1] ≤ 200 kg: $SW_{max.}$ = 2800 mm

≥ 2301	2300

> 200 kg with roller unit upgrade set

1080 – 1900	895
1901 – 2200	1200
2201 – 2500	1500
2501 – 2800	1800
≥ 2801	2300

[16] Lift&Slide door handle – interior handle without profile cylinder hole (240 mm handle length) and without square spindle → CTL_1

Alternatively:

[18] Lift&Slide door handle – interior handle with profile cylinder hole (240 mm handle length) and without square spindle → CTL_1

[20] Handle set (240 mm handle length) → CTL_1

[21] or

As exterior handle: Lift&Slide door handle – interior handle (240 mm handle length) → CTL_1

[17] Oval recessed grip | 14 mm (43 mm distance) → CTL_1

Alternatively:

[19] Square recessed grip | 7 / 11 mm → CTL_1

[30] Square spindle (10 x 10 mm) → CTL_1

[31] End stop

	№
27	634866

4.3 Diagram A | Slim | DesignLocking | 200 / 400 kg

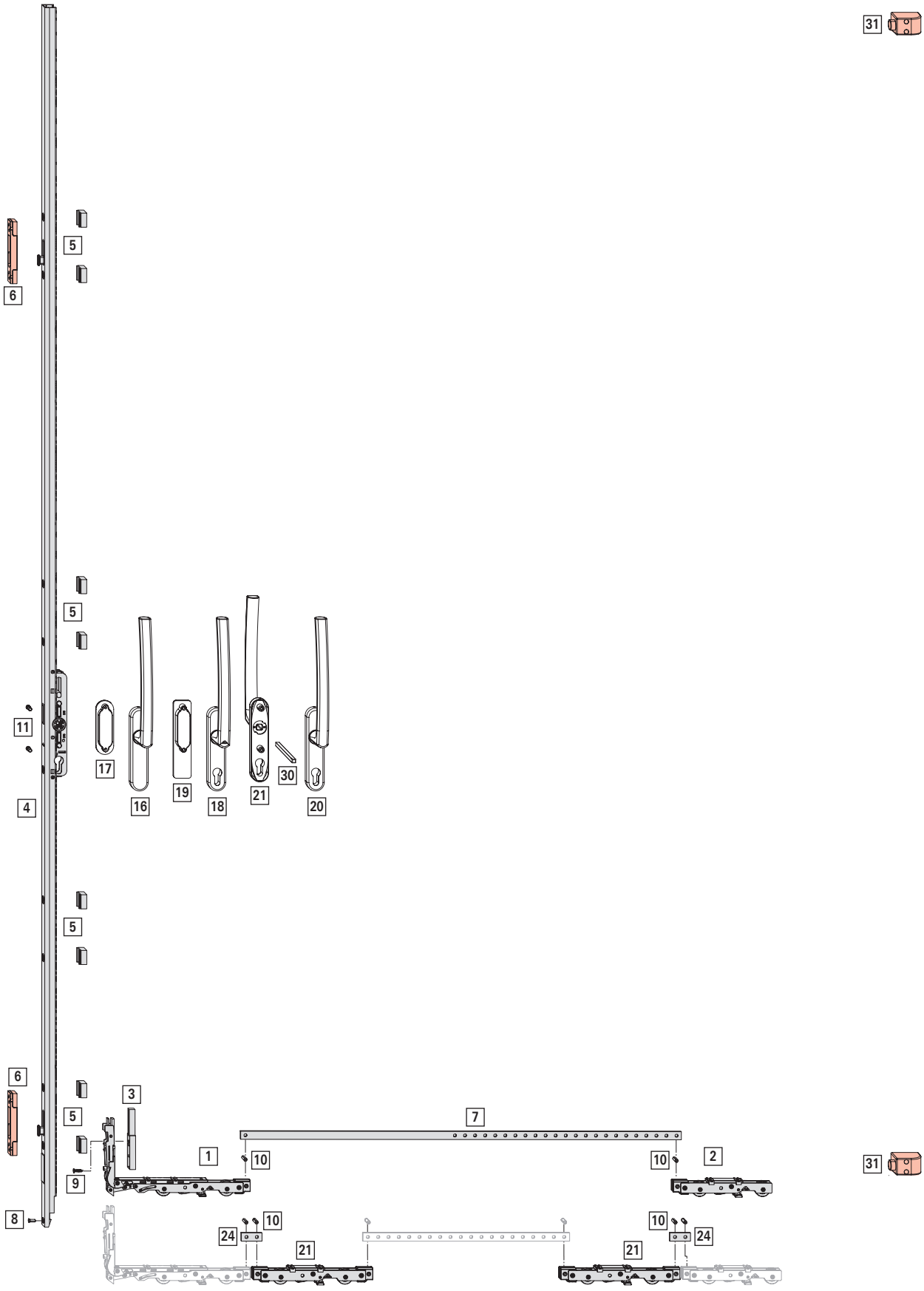


Fig. 4.3: Shown: left version; SW 1400 mm; SH 2400 mm; S.kg 200 / 400 kg

Application range

SW: 720 - 3000 mm [2]

SH: 1801 - 3100 mm

S.kg: max. 400 kg

[*] Roller unit set

		№
18	–	840771
	Stainless steel Plus	734289
22	–	840193
	Stainless steel Plus	734290

[*]		#
[1]	Corner roller unit on the espagnolette side	1
[2]	Roller unit on the mullion side	1
[8]	Countersunk screw M5 x 13	1
[10]	Connecting pin	2

[*] Packer set for corner roller unit

	№
16	840774
19	840775
20.5	840776
23	840777
25	840778
30	840779

[*]		#
[3]	Packer	1
[9]	Self-tapping screw ST4.8 x 20	1

[*] Roller unit upgrade set; S.kg > 200 kg

		№
18	–	840773
	Stainless steel Plus	840772
22	–	840243
	Stainless steel Plus	840242

[*]		#
[10]	Connecting pin	4
[21]	Auxiliary roller unit, central	2
[24]	Connecting plate	2

[4] Espagnolette – fixed handle height

							№
27.5	–	max. 200 kg	1801 – 2200	965	2185	Y	840254
			2201 – 2600	965	2375	Y	840255
			2601 – 3100	965	3000	Y	840256
	Min. 300 kg	Max. 400 kg	1801 – 2200	965	2185	Y	840257
			2201 – 2600	965	2375	Y	840258
			2601 – 3100	965	3000	Y	840390

[11] Threaded insert, for espagnolette

	№
27.5	840782

[5] Espagnolette packer

	№
16	595654
19	600513
20.5	600512
23	601952
25	636526
30	606766

≤ 2600	8
> 2600	10

[6] Striker

	№
20	814852

[7] Connecting rod

	№
895	634852
1200	595649
1500	634853
1800	606712
2300	634854

Weight-dependent choice:

≤ 200 kg

≤ 1400	895
1401 – 1700	1200
1701 – 2000	1500
2001 – 2300	1800
≥ 2301	2300

> 200 kg with roller unit upgrade set

1080 – 1900	895
1901 – 2200	1200
2201 – 2500	1500
2501 – 2800	1800
≥ 2801	2300

[16] Lift&Slide door handle – interior handle without profile cylinder hole (240 mm handle length) and without square spindle → CTL_1

Alternatively:

[18] Lift&Slide door handle – interior handle with profile cylinder hole (240 mm handle length) and without square spindle → CTL_1

[2] ≤ 200 kg: $SW_{max.}$ = 2800 mm

[20] Handle set (240 mm handle length) → CTL_1

[21] or

As exterior handle: Lift&Slide door handle – interior handle (240 mm handle length) → CTL_1

[17] Oval recessed grip | 14 mm (43 mm distance) → CTL_1

Alternatively:

[19] Square recessed grip | 7 / 11 mm → CTL_1

[30] Square spindle (10 x 10 mm) → CTL_1

[31] End stop

	№
27	634866

4.4 Diagram A | Standard | 300 / 400 kg

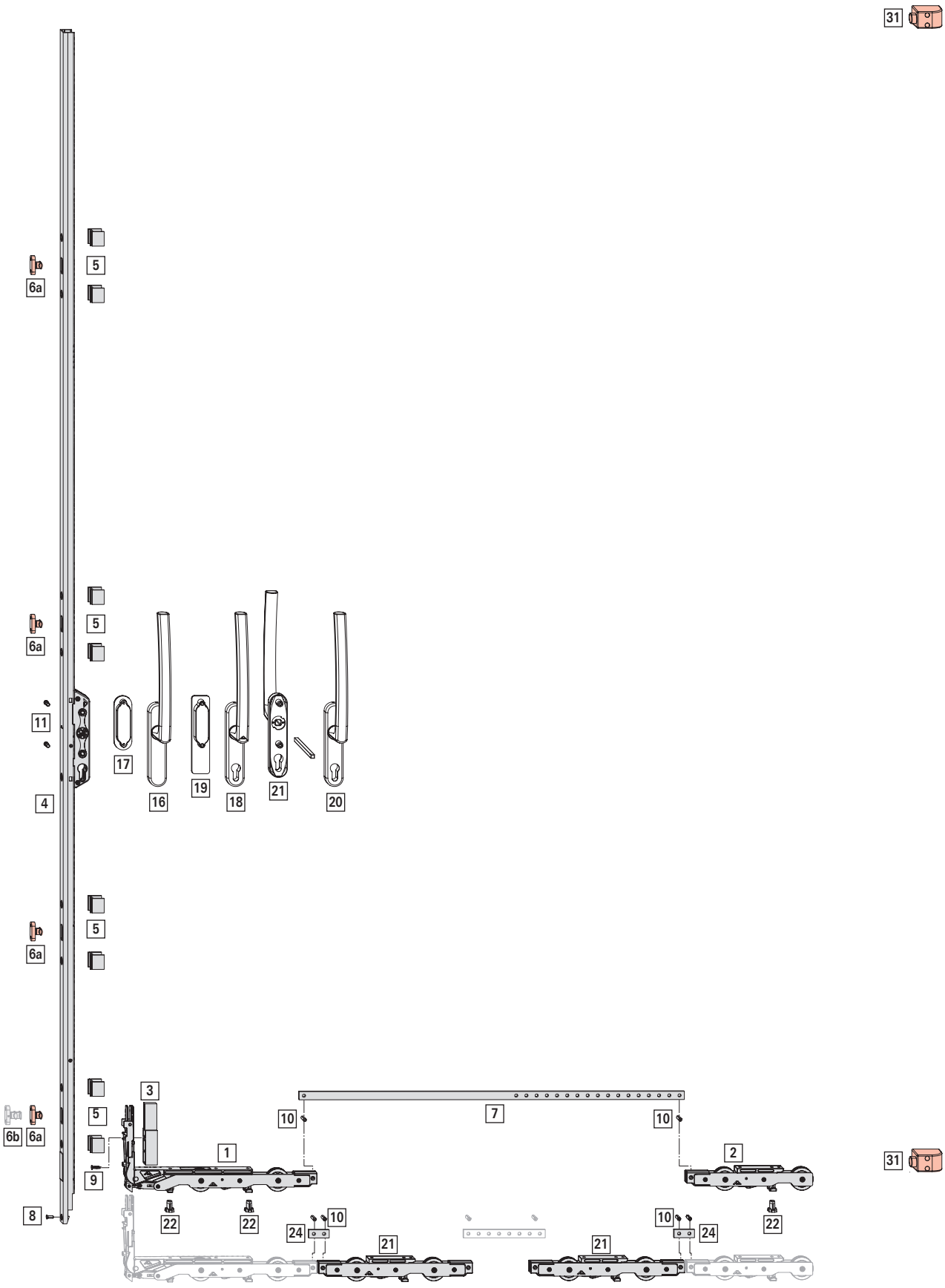


Fig. 4.4: Shown: left version; SW 1400 mm; SH 2400 mm; S.kg 300 / 400 kg

Application range

SW: 720 - 3000 mm

SH: 1000 - 3100 mm [3]

S.kg: max. 400 kg

[*] Roller unit set

		№
22	–	840245
	Stainless steel Plus	734288

[*]		#
[1]	Corner roller unit on the espagnolette side	1
[2]	Roller unit on the mullion side	1
[8]	Countersunk screw M5 x 13	1
[10]	Connecting pin	2

[*] Packer set for corner roller unit

	№
16	840774
19	840775
20.5	840776
23	840777
25	840778
30	840779

[*]		#
[3]	Packer	1
[9]	Self-tapping screw ST4.8 x 20	1

[22] Support block

	№
Max. 400 kg	762901

[*] Roller unit upgrade set; S.kg > 300 kg

			№
22	Max. 400 kg	–	794776
		Stainless steel Plus	626567

[*]		#
[10]	Connecting pin	4
[21]	Auxiliary roller unit, central	2
[24]	Connecting plate	2

[4] Espagnolette – fixed handle height

							№
–	max. 300 kg	37.5	1000 – 1800	349	1700	N	840816
			1801 – 2200	953	2185	Y	840378
			2201 – 2600	953	2375	Y	840379
			2601 – 3100	953	3000	Y	840382
Min. 300 kg	Max. 400 kg		1801 – 2200	953	2185	Y	840391
			2201 – 2600	953	2375	Y	840392
			2601 – 3100	953	3000	Y	840393

[3] > 300 kg: $SH_{min.}$ = 1801 mm

[11] Threaded insert, for espagnolette

	№
37.5	635152

[5] Espagnolette packer

	№
16	595654
19	600513
20.5	600512
23	601952
25	636526
30	606766

≤ 1800	6
1801 – 2600	8
> 2600	10

[6a] Locking pin without night ventilation

	№
11	595652
13.5	639864
14.5	639863
15	595650
16	635126
17	635128
22	600508
24.5	639875
24	639896

≤ 1800	3
1801 – 2600	4
> 2600	5

[6b] Locking pin with night ventilation (alternatively at the lowest position)

	№
15	595651
17	639862

[7] Connecting rod

	№
895	634852
1200	595649
1500	634853
1800	606712
2300	634854

Weight-dependent choice:

≤ 300 kg

≤ 1500	895
1501 – 1800	1200

1801 – 2100	1500
2101 – 2400	1800
≥ 2401	2300

> 300 kg with roller unit upgrade set

1326 – 2100	895
2101 – 2400	1200
2401 – 2700	1500
≥ 2701	1800

[16] Lift&Slide door handle – interior handle without profile cylinder hole (240 mm handle length) with square → CTL_1

Alternatively:

[18] Lift&Slide door handle – interior handle with profile cylinder hole (240 mm handle length) with square → CTL_1

[20] Lift&Slide door handle – interior handle with profile cylinder hole (240 mm handle length) and square 190 mm (for use with exterior handle) → CTL_1

[17] Oval recessed grip | 7 mm (43 mm distance) → CTL_1

Alternatively:

[19] Square recessed grip | 7 / 11 mm → CTL_1

[21] Lift&Slide door handle – exterior handle (240 mm handle length) → CTL_1

[31] End stop

	№
27	634866

4.5 Diagram A | Standard | DesignLocking | 300 / 400 kg

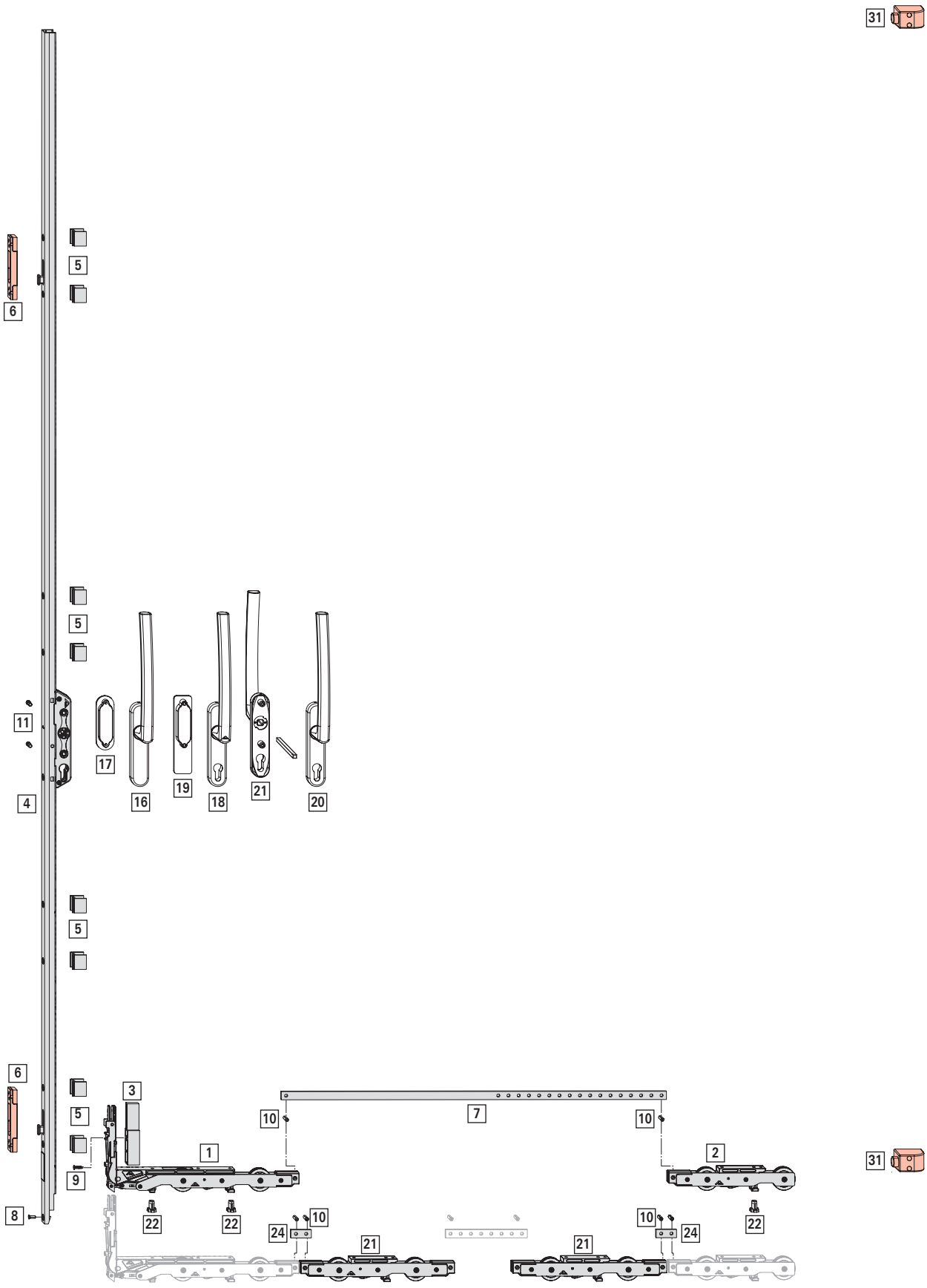


Fig. 4.5: Shown: left version; SW 1400 mm; SH 2400 mm; S.kg 300 / 400 kg

Application range

SW: 720 - 3000 mm

SH: 1000 - 3100 mm [4]

S.kg: max. 400 kg

[*] Roller unit set

		№
22	–	840245
	Stainless steel Plus	734288

[*]		#
[1]	Corner roller unit on the espagnolette side	1
[2]	Roller unit on the mullion side	1
[8]	Countersunk screw M5 x 13	1
[10]	Connecting pin	2

[*] Packer set for corner roller unit

	№
16	840774
19	840775
20.5	840776
23	840777
25	840778
30	840779

[*]		#
[3]	Packer	1
[9]	Self-tapping screw ST4.8 x 20	1

[22] Support block

	№
Max. 400 kg	762901

[*] Roller unit upgrade set; S.kg > 300 kg

			№
22	Max. 400 kg	–	794776
		Stainless steel Plus	626567

[*]		#
[10]	Connecting pin	4
[21]	Auxiliary roller unit, central	2
[24]	Connecting plate	2

[4] Espagnolette – fixed handle height

							№
–	max. 300 kg	37.5	1801 – 2200	953	2185	Y	771969
			2201 – 2600	953	2375	Y	771970
			2601 – 3100	953	3000	Y	771971
Min. 300 kg	Max. 400 kg		1801 – 2200	953	2185	Y	840784
			2201 – 2600	953	2375	Y	840799
			2601 – 3100	953	3000	Y	840815

[4] > 300 kg: $SH_{min.}$ = 1801 mm

[11] Threaded insert, for espagnolette

	№
37.5	635152

[5] Espagnolette packer

	№
16	595654
19	600513
20.5	600512
23	601952
25	636526
30	606766

≤ 1800	6
1801 – 2600	8
> 2600	10

[6] Striker

	№
20	814852

[7] Connecting rod

	№
895	634852
1200	595649
1500	634853
1800	606712
2300	634854

Weight-dependent choice:

≤ 300 kg

≤ 1500	895
1501 – 1800	1200
1801 – 2100	1500
2101 – 2400	1800
≥ 2401	2300

> 300 kg with roller unit upgrade set

1326 – 2100	895
2101 – 2400	1200
2401 – 2700	1500
≥ 2701	1800

[16] Lift&Slide door handle – interior handle without profile cylinder hole (240 mm handle length) with square → CTL_1

Alternatively:

[18] Lift&Slide door handle – interior handle with profile cylinder hole (240 mm handle length) with square → CTL_1

[20] Lift&Slide door handle – interior handle with profile cylinder hole (240 mm handle length) and square 190 mm (for use with exterior handle) → CTL_1

[17] Oval recessed grip | 7 mm (43 mm distance) → CTL_1

Alternatively:

[19] Square recessed grip | 7 / 11 mm → CTL_1

[21] Lift&Slide door handle – exterior handle (240 mm handle length) → CTL_1

[31] End stop

	№
27	634866

4.6 Diagram A | Slim | 150 kg

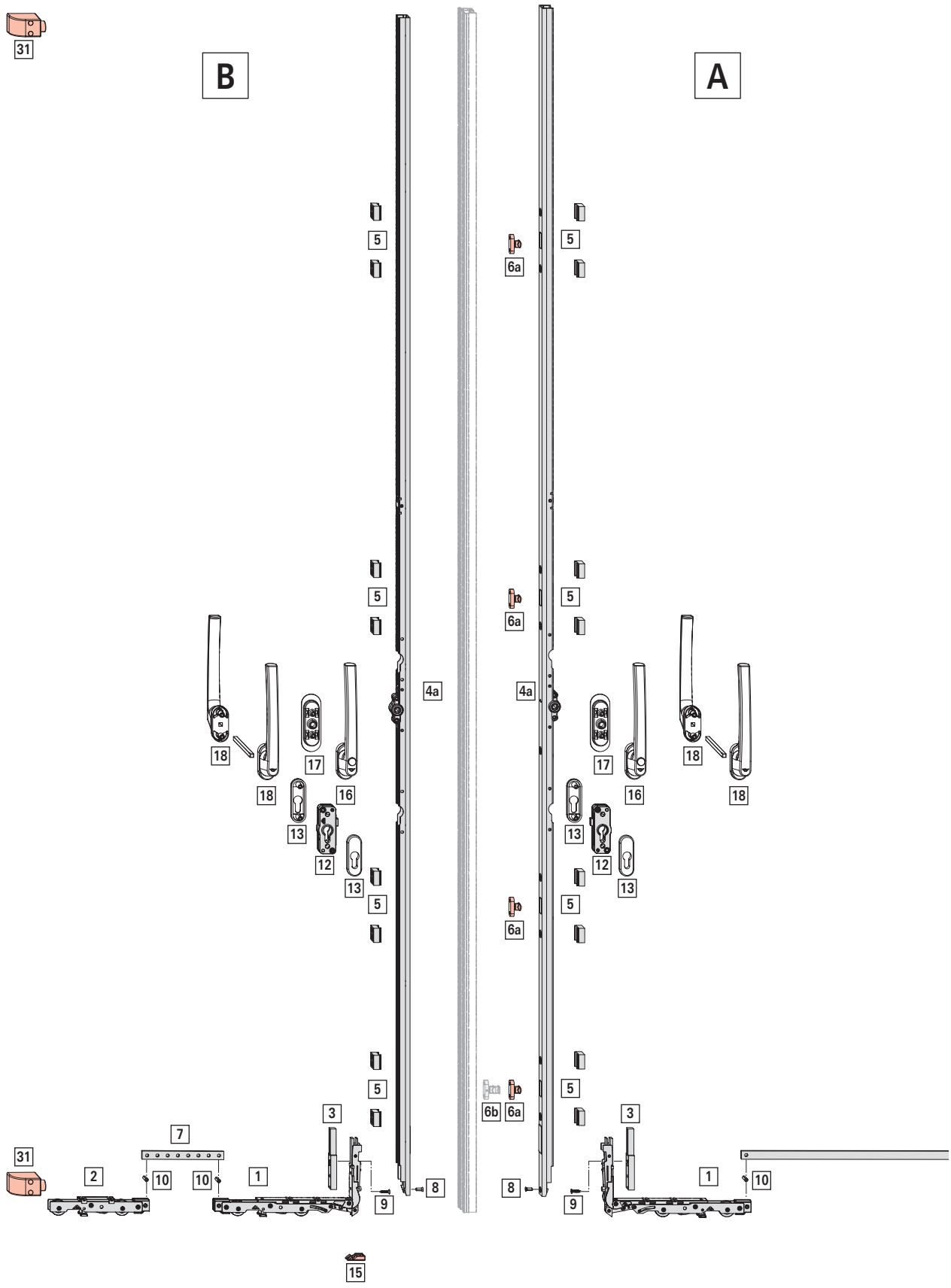


Fig. 4.6: Shown: S.kg 150 kg; [A] First opening sash: section of right version; SW 1400 mm; SH 2400 mm; [B] Second opening sash: left version; SW 1400 mm; SH 2400 mm;

Application range

SW: 720 - 2800 mm

SH: 1801 - 2600 mm

S.kg: max. 150 kg

INFO
First opening sash: for a complete hardware overview, see diagram A.

[*] Roller unit set

		№
18	–	840771
	Stainless steel Plus	734289
22	–	840193
	Stainless steel Plus	734290

[*]		#
[1]	Corner roller unit on the espagnolette side	1
[2]	Roller unit on the mullion side	1
[8]	Countersunk screw M5 x 13	1
[10]	Connecting pin	2

[*] Packer set for corner roller unit

	№
16	840774
19	840775
20.5	840776
23	840777
25	840778
30	840779

[*]		#
[3]	Packer	1
[9]	Self-tapping screw ST4.8 x 20	1

[4a] Espagnolette – fixed handle height

					№
25	max. 150 kg	1801 – 2200	965	2185	633426
		2201 – 2600	965	2375	633427

[*] Lock casing set

	№
max. 150 kg	631368

[*]		#
[12]	Lock casing	1
	Spring pin 5 x 22	2

[13] Profile cylinder escutcheon

								№
43	R01.1	Natural silver	anod.	N	–	–	10 Piece(s)	494466
	R01.3	Titanium	anod.	N	–	–	10 Piece(s)	228260
	R05.3	Medium bronze	anod.	N	–	–	10 Piece(s)	494467
	R07.2	Traffic white	powd-c	N	–	–	10 Piece(s)	258952

[5] Espagnolette packer

	№
16	595654
19	600513
20.5	600512
23	601952
25	636526
30	606766

[6a] Locking pin without night ventilation

	№
11	595652
13.5	639864
14.5	639863
15	595650
16	635126
17	635128
22	600508
24.5	639875
24	639896

[6b] Locking pin with night ventilation (alternatively at the lowest position)

	№
15	595651
17	639862

[7] Connecting rod

	№
895	634852
1200	595649
1500	634853
1800	606712
2300	634854

≤ 1400	895
1401 – 1700	1200
1701 – 2000	1500
2001 – 2300	1800
≥ 2301	2300

[15] Floor striker

	№
Screw-on	840783

[16] Sliding door handle – interior handle – push-to-open (200 mm handle length) → CTL_1

Alternatively:

[18] Sliding door handle – interior handle (200 mm handle length) → CTL_1

[17] Oval recessed grip | 14 mm (43 mm distance) → CTL_1

Alternatively:

[18] As exterior handle: sliding door handle – interior handle (200 mm handle length) →

[31] End stop

	№
27	634866

4.7 Diagram C | Slim | 200 / 400 kg

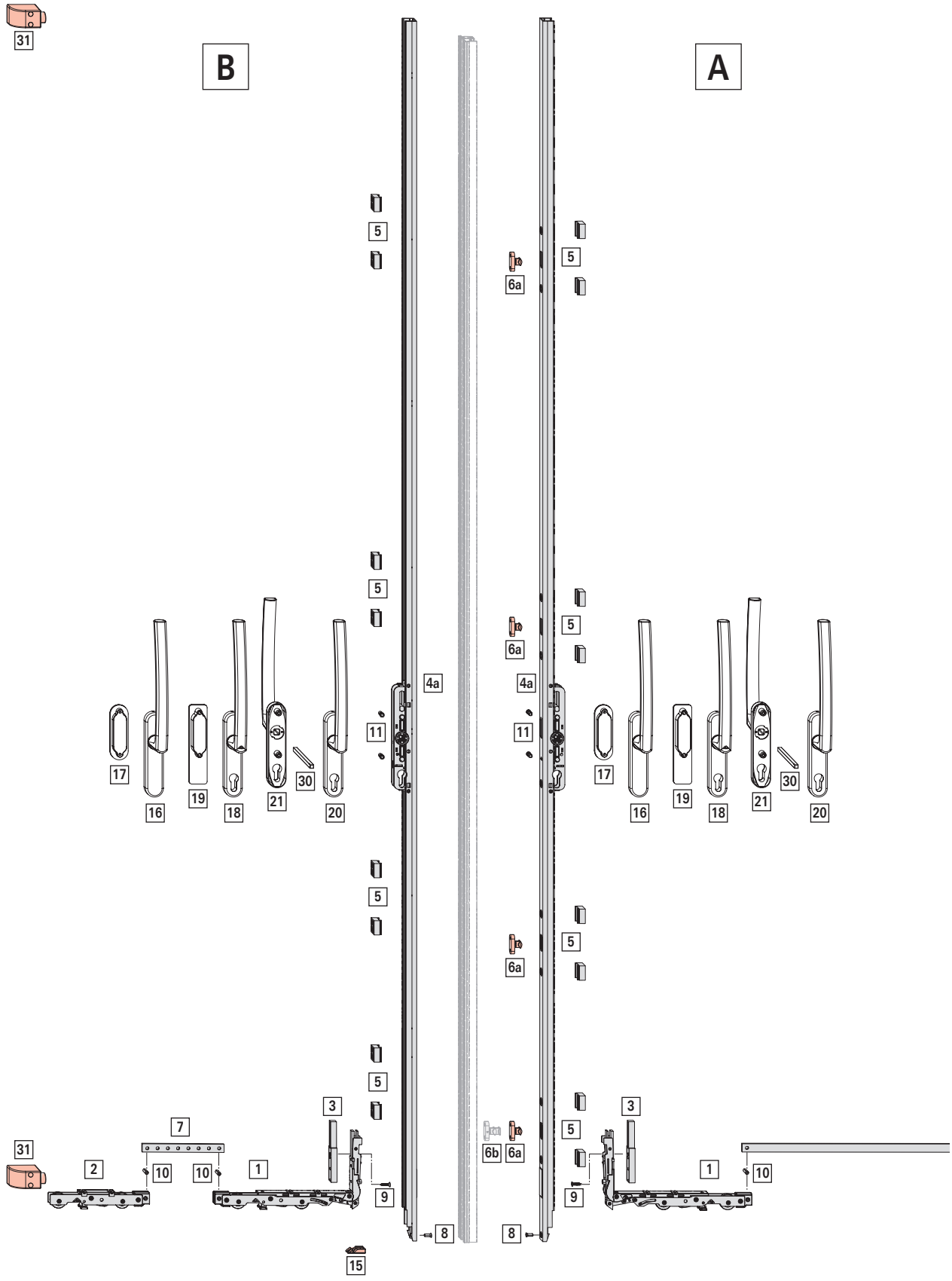


Fig. 4.7: Shown: S.kg 200 kg; [A] First opening sash: section of right version; SW 1400 mm; SH 2400 mm; [B] Second opening sash: left version; SW 1400 mm; SH 2400 mm; dashed in grey: profile-related floating-mullion profile

Application range

SW: 720 - 3000 mm [5]

SH: 1801 - 3100 mm

S.kg: max. 400 kg

INFO
First opening sash: for a complete hardware overview, see diagram A.

[*] Roller unit set

		№
18	–	840771
	Stainless steel Plus	734289
22	–	840193
	Stainless steel Plus	734290

[*]		#
[1]	Corner roller unit on the espagnolette side	1
[2]	Roller unit on the mullion side	1
[8]	Countersunk screw M5 x 13	1
[10]	Connecting pin	2

[*] Packer set for corner roller unit

	№
16	840774
19	840775
20.5	840776
23	840777
25	840778
30	840779

[*]		#
[3]	Packer	1
[9]	Self-tapping screw ST4.8 x 20	1

[*] Roller unit upgrade set; S.kg > 200 kg

		№
18	–	840773
	Stainless steel Plus	840772
22	–	840243
	Stainless steel Plus	840242

[*]		#
[10]	Connecting pin	4
[21]	Auxiliary roller unit, central	2
[24]	Connecting plate	2

[4a] Espagnolette – fixed handle height

							№
27.5	–	max. 300 kg	1801 – 2200	965	2185	Y	840251
			2201 – 2600	965	2375	Y	840252
			2601 – 3100	965	3000	Y	840253
	Min. 300 kg	Max. 400 kg	1801 – 2200	965	2185	Y	840248
			2201 – 2600	965	2375	Y	840249
			2601 – 3100	965	3000	Y	840250

[11] Threaded insert, for espagnolette

	№
27.5	840782

[5] Espagnolette packer

	№
16	595654
19	600513
20.5	600512
23	601952
25	636526
30	606766

≤ 2600	8
> 2600	10

[6a] Locking pin without night ventilation

	№
11	595652
13.5	639864
14.5	639863
15	595650
16	635126
17	635128
22	600508
24.5	639875
24	639896

≤ 2600	4
> 2600	5

[6b] Locking pin with night ventilation (alternatively at the lowest position)

	№
15	595651
17	639862

[7] Connecting rod

	№
895	634852
1200	595649
1500	634853
1800	606712
2300	634854

Weight-dependent choice:

[5] ≤ 200 kg: $SW_{max.}$ = 2800 mm

≤ 200 kg

≤ 1400	895
1401 – 1700	1200
1701 – 2000	1500
2001 – 2300	1800
≥ 2301	2300

> 200 kg with roller unit upgrade set

1080 – 1900	895
1901 – 2200	1200
2201 – 2500	1500
2501 – 2800	1800
≥ 2801	2300

[15] Floor striker

	№
Screw-on	840783

[16] Lift&Slide door handle – interior handle without profile cylinder hole (240 mm handle length) and without square spindle → CTL_1

Alternatively:

[18] Lift&Slide door handle – interior handle with profile cylinder hole (240 mm handle length) and without square spindle → CTL_1

[20] Handle set (240 mm handle length) → CTL_1

[21] or

As exterior handle: Lift&Slide door handle – interior handle (240 mm handle length) → CTL_1

[17] Oval recessed grip | 14 mm (43 mm distance) → CTL_1

Alternatively:

[19] Square recessed grip | 7 / 11 mm → CTL_1

[30] Square spindle (10 x 10 mm) → CTL_1

[31] End stop

	№
27	634866

4.8 Diagram C | Slim | DesignLocking | 200 / 400 kg

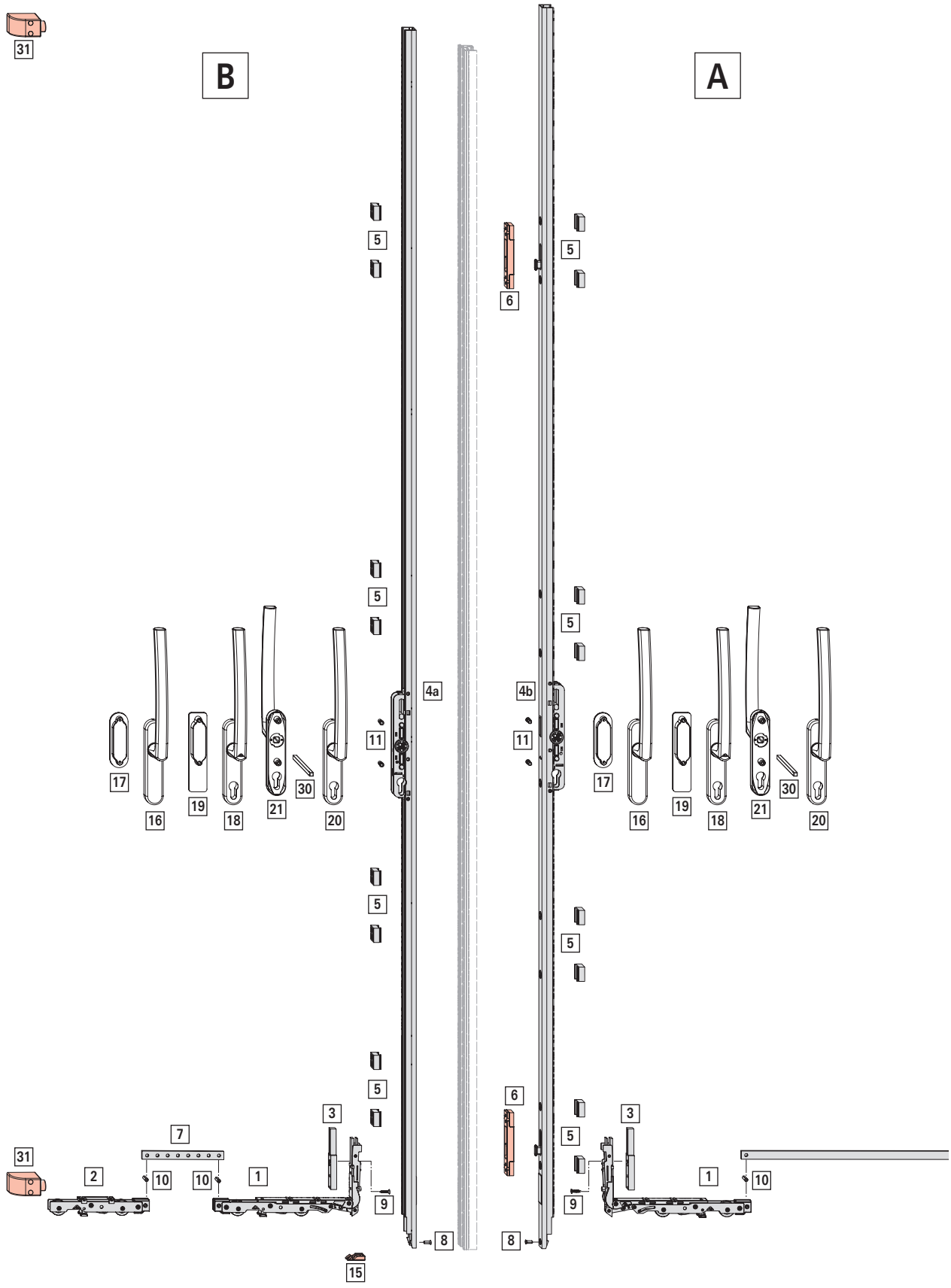


Fig. 4.8: Shown: S.kg 200 kg; [A] First opening sash: section of right version; SW 1400 mm; SH 2400 mm; [B] Second opening sash: left version; SW 1400 mm; SH 2400 mm; dashed in grey: profile-related floating-mullion profile

Application range

SW: 720 - 3000 mm [6]

SH: 1801 - 3100 mm

S.kg: max. 400 kg

INFO
First opening sash: for a complete hardware overview, see diagram A.

[*] Roller unit set

		№
18	–	840771
	Stainless steel Plus	734289
22	–	840193
	Stainless steel Plus	734290

[*]		#
[1]	Corner roller unit on the espagnolette side	1
[2]	Roller unit on the mullion side	1
[8]	Countersunk screw M5 x 13	1
[10]	Connecting pin	2

[*] Packer set for corner roller unit

	№
16	840774
19	840775
20.5	840776
23	840777
25	840778
30	840779

[*]		#
[3]	Packer	1
[9]	Self-tapping screw ST4.8 x 20	1

[*] Roller unit upgrade set; S.kg > 200 kg

		№
18	–	840773
	Stainless steel Plus	840772
22	–	840243
	Stainless steel Plus	840242

[*]		#
[10]	Connecting pin	4
[21]	Auxiliary roller unit, central	2
[24]	Connecting plate	2

[4a] Espagnolette – fixed handle height

							№
27.5	–	max. 300 kg	1801 – 2200	965	2185	Y	840251
			2201 – 2600	965	2375	Y	840252
			2601 – 3100	965	3000	Y	840253
	Min. 300 kg	Max. 400 kg	1801 – 2200	965	2185	Y	840248
			2201 – 2600	965	2375	Y	840249
			2601 – 3100	965	3000	Y	840250

[4b] Espagnolette – fixed handle height; for first opening sash

							№
27.5	–	max. 200 kg	1801 – 2200	965	2185	Y	840254
			2201 – 2600	965	2375	Y	840255
			2601 – 3100	965	3000	Y	840256
	Min. 300 kg	Max. 400 kg	1801 – 2200	965	2185	Y	840257
			2201 – 2600	965	2375	Y	840258
			2601 – 3100	965	3000	Y	840390

[11] Threaded insert, for espagnolette

	№
27.5	840782

[5] Espagnolette packer

	№
16	595654
19	600513
20.5	600512
23	601952
25	636526
30	606766

≤ 2600	8
> 2600	10

[6] Striker

	№
20	814852

[7] Connecting rod

	№
895	634852
1200	595649
1500	634853
1800	606712
2300	634854

Weight-dependent choice:

≤ 200 kg

≤ 1400	895
1401 – 1700	1200
1701 – 2000	1500
2001 – 2300	1800
≥ 2301	2300

[6] ≤ 200 kg: $SW_{max.}$ = 2800 mm

> 200 kg with roller unit upgrade set

1080 – 1900	895
1901 – 2200	1200
2201 – 2500	1500
2501 – 2800	1800
≥ 2801	2300

[15] Floor striker

	№
Screw-on	840783

[16] Lift&Slide door handle – interior handle without profile cylinder hole (240 mm handle length) and without square spindle → CTL_1

Alternatively:

[18] Lift&Slide door handle – interior handle with profile cylinder hole (240 mm handle length) and without square spindle → CTL_1

[20] Handle set (240 mm handle length) → CTL_1

[21] or

As exterior handle: Lift&Slide door handle – interior handle (240 mm handle length) → CTL_1

[17] Oval recessed grip | 14 mm (43 mm distance) → CTL_1

Alternatively:

[19] Square recessed grip | 7 / 11 mm → CTL_1

[30] Square spindle (10 x 10 mm) → CTL_1

[31] End stop

	№
27	634866

4.9 Diagram C | Standard | 300 / 400 kg

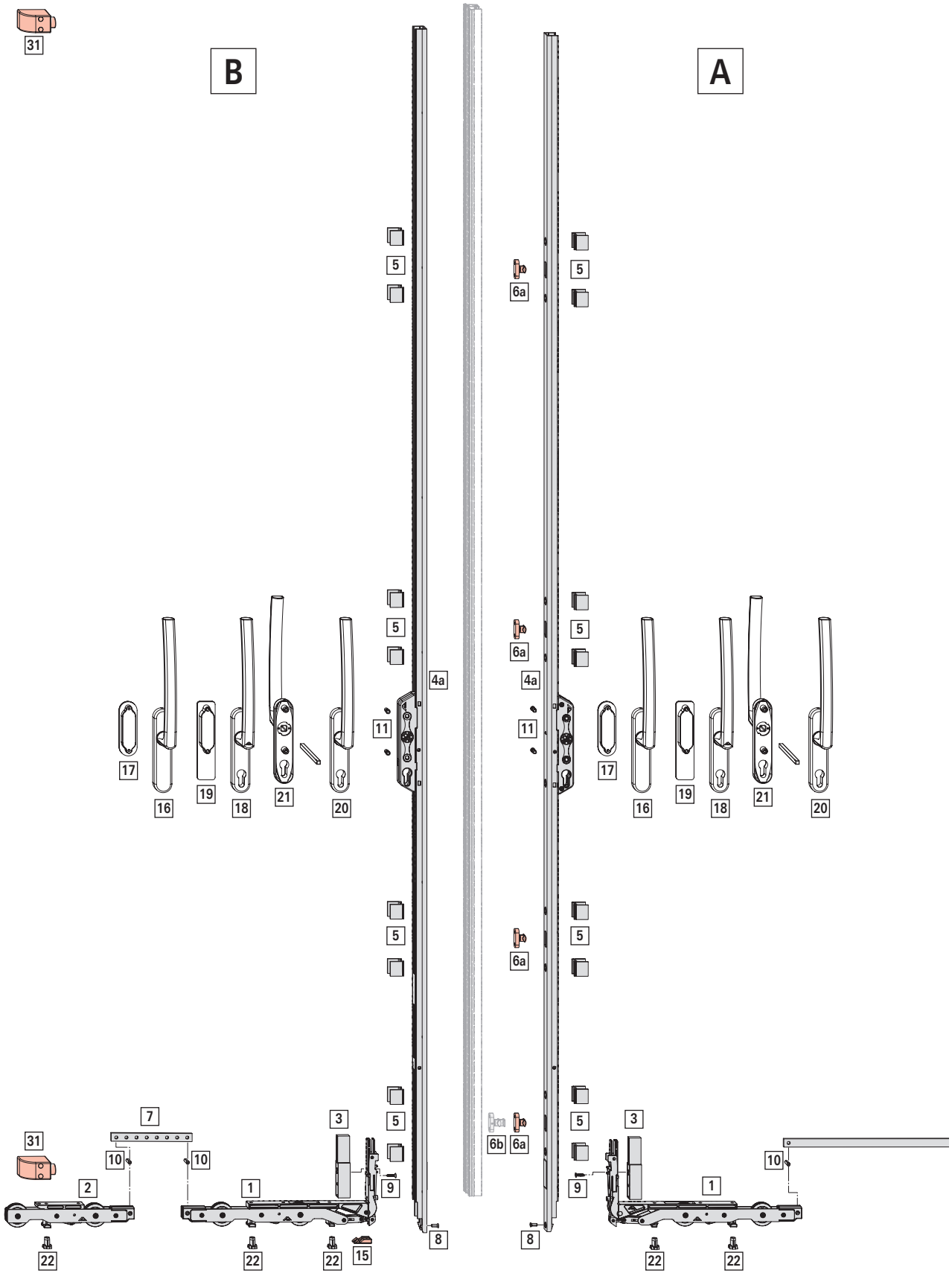


Fig. 4.9: Shown: S.kg 300 kg; [A] First opening sash: section of right version; SW 1400 mm; SH 2400 mm; [B] Second opening sash: left version; SW 1400 mm; SH 2400 mm; dashed in grey: profile-related floating-mullion profile

Application range

SW: 720 - 3000 mm

SH: 1000 - 3100 mm [7]

S.kg: max. 400 kg

INFO
First opening sash: for a complete hardware overview, see diagram A.

[*] Roller unit set

		№
22	–	840245
	Stainless steel Plus	734288

[*]		#
[1]	Corner roller unit on the espagnolette side	1
[2]	Roller unit on the mullion side	1
[8]	Countersunk screw M5 x 13	1
[10]	Connecting pin	2

[*] Packer set for corner roller unit

	№
16	840774
19	840775
20.5	840776
23	840777
25	840778
30	840779

[*]		#
[3]	Packer	1
[9]	Self-tapping screw ST4.8 x 20	1

[22] Support block

	№
Max. 400 kg	762901

[*] Roller unit upgrade set; S.kg > 300 kg

			№
22	Max. 400 kg	–	794776
		Stainless steel Plus	626567

[*]		#
[10]	Connecting pin	4
[21]	Auxiliary roller unit, central	2
[24]	Connecting plate	2

[4a] Espagnolette – fixed handle height

							№
–	max. 300 kg	37.5	1000 – 1800	349	1700	N	840816
			1801 – 2200	953	2185	Y	840378
			2201 – 2600	953	2375	Y	840379
			2601 – 3100	953	3000	Y	840382
Min. 300 kg	Max. 400 kg		1801 – 2200	953	2185	Y	840391
			2201 – 2600	953	2375	Y	840392
			2601 – 3100	953	3000	Y	840393

[7] > 300 kg: $SH_{min.}$ = 1801 mm

[11] Threaded insert, for espagnolette

	№
37.5	635152

[5] Espagnolette packer

	№
16	595654
19	600513
20.5	600512
23	601952
25	636526
30	606766

≤ 1800	6
1801 – 2600	8
> 2600	10

[6a] Locking pin without night ventilation

	№
11	595652
13.5	639864
14.5	639863
15	595650
16	635126
17	635128
22	600508
24.5	639875
24	639896

≤ 1800	3
1801 – 2600	4
> 2600	5

[6b] Locking pin with night ventilation (alternatively at the lowest position)

	№
15	595651
17	639862

[7] Connecting rod

	№
895	634852
1200	595649
1500	634853
1800	606712

	№
2300	634854

Weight-dependent choice:

≤ 300 kg

≤ 1500	895
1501 – 1800	1200
1801 – 2100	1500
2101 – 2400	1800
≥ 2401	2300

> 300 kg with roller unit upgrade set

1326 – 2100	895
2101 – 2400	1200
2401 – 2700	1500
≥ 2701	1800

[15] Floor striker

	№
Screw-on	840783

[16] Lift&Slide door handle – interior handle without profile cylinder hole (240 mm handle length) with square → CTL_1

Alternatively:

[18] Lift&Slide door handle – interior handle with profile cylinder hole (240 mm handle length) with square → CTL_1

[20] Lift&Slide door handle – interior handle with profile cylinder hole (240 mm handle length) and square 190 mm (for use with exterior handle) → CTL_1

[17] Oval recessed grip | 7 mm (43 mm distance) → CTL_1

Alternatively:

[19] Square recessed grip | 7 / 11 mm → CTL_1

[21] Lift&Slide door handle – exterior handle (240 mm handle length) → CTL_1

[31] End stop

	№
27	634866

4.10 Diagram C | Standard | DesignLocking | 300 / 400 kg

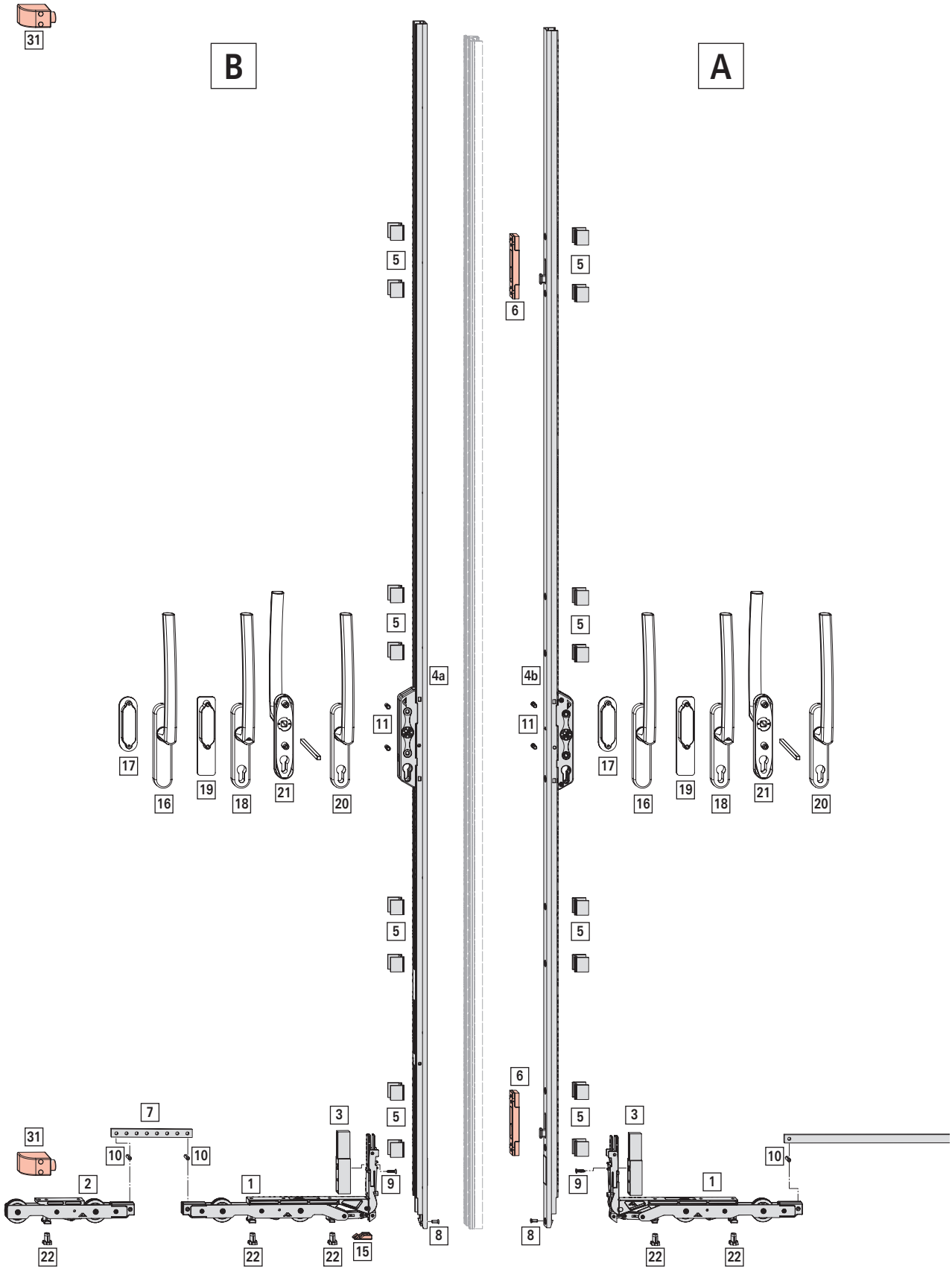


Fig. 4.10: Shown: S.kg 300 kg; [A] First opening sash: section of right version; SW 1400 mm; SH 2400 mm; [B] Second opening sash: left version; SW 1400 mm; SH 2400 mm; dashed in grey: profile-related floating-mullion profile

Application range

SW: 720 - 3000 mm

SH: 1000 - 3100 mm [8]

S.kg: max. 400 kg

INFO
First opening sash: for a complete hardware overview, see diagram A.

[*] Roller unit set

		№
22	–	840245
	Stainless steel Plus	734288

[*]		#
[1]	Corner roller unit on the espagnolette side	1
[2]	Roller unit on the mullion side	1
[8]	Countersunk screw M5 x 13	1
[10]	Connecting pin	2

[*] Packer set for corner roller unit

	№
16	840774
19	840775
20.5	840776
23	840777
25	840778
30	840779

[*]		#
[3]	Packer	1
[9]	Self-tapping screw ST4.8 x 20	1

[22] Support block

	№
Max. 400 kg	762901

[*] Roller unit upgrade set; S.kg > 300 kg

			№
22	Max. 400 kg	–	794776
		Stainless steel Plus	626567

[*]		#
[10]	Connecting pin	4
[21]	Auxiliary roller unit, central	2
[24]	Connecting plate	2

[4a] Espagnolette – fixed handle height

							№
–	max. 300 kg	37.5	1801 – 2200	953	2185	Y	771969
			2201 – 2600	953	2375	Y	771970
			2601 – 3100	953	3000	Y	771971

[8] > 300 kg: $SH_{min.}$ = 1801 mm

							№
Min. 300 kg	Max. 400 kg		1801 – 2200	953	2185	Y	840784
			2201 – 2600	953	2375	Y	840799
			2601 – 3100	953	3000	Y	840815

[4b] Espagnolette – fixed handle height; for first opening sash

							№
–	max. 300 kg	37.5	1000 – 1800	349	1700	N	840816
			1801 – 2200	953	2185	Y	840378
			2201 – 2600	953	2375	Y	840379
			2601 – 3100	953	3000	Y	840382
Min. 300 kg	Max. 400 kg		1801 – 2200	953	2185	Y	840391
			2201 – 2600	953	2375	Y	840392
			2601 – 3100	953	3000	Y	840393

[11] Threaded insert, for espagnolette

	№
37.5	635152

[5] Espagnolette packer

	№
16	595654
19	600513
20.5	600512
23	601952
25	636526
30	606766

≤ 1800	6
1801 – 2600	8
> 2600	10

[6] Striker

	№
20	814852

[7] Connecting rod

	№
895	634852
1200	595649
1500	634853
1800	606712
2300	634854

Weight-dependent choice:

≤ 300 kg

≤ 1500	895
1501 – 1800	1200
1801 – 2100	1500

2101 – 2400	1800
≥ 2401	2300

> 300 kg with roller unit upgrade set

1326 – 2100	895
2101 – 2400	1200
2401 – 2700	1500
≥ 2701	1800

[15] Floor striker

	№
Screw-on	840783

[16] Lift&Slide door handle – interior handle without profile cylinder hole (240 mm handle length) with square → CTL_1

Alternatively:

[18] Lift&Slide door handle – interior handle with profile cylinder hole (240 mm handle length) with square → CTL_1

[20] Lift&Slide door handle – interior handle with profile cylinder hole (240 mm handle length) and square 190 mm (for use with exterior handle) → CTL_1

[17] Oval recessed grip | 7 mm (43 mm distance) → CTL_1

Alternatively:

[19] Square recessed grip | 7 / 11 mm → CTL_1

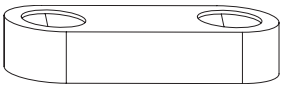
[21] Lift&Slide door handle – exterior handle (240 mm handle length) → CTL_1

[31] End stop

	№
27	634866

5 Accessories

5.1 Locking pin



Locking pin packer

	№
7	600509

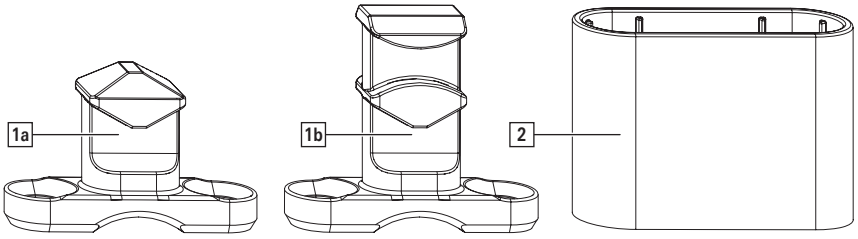


Fig. 5.1: [1a] Locking pin without night ventilation; [1b] Locking pin with night ventilation; [2] Packer

Locking pin set

		№
35	N	642769
	Y	642770

Contents:

	#
Locking pin; height 14 mm	1
Packer; height 3 – 21 mm; can be shortened (max. 18 mm)	1

ATTENTION

Using incorrect locking pins from the set may cause property damage.

Installing the locking pin without a packer may damage the installed locking pin when closing, with the result that it may not even close at all.

1. Only use the locking pin from the set in conjunction with the packer from the set.

5.2 Info clip

For attaching information (e.g. company logo and similar) to the espagnolette.

	№
Signal grey	634865

6 Jigs / tools

6.1 Drilling jigs

6.1.1 Locking pin

	№
Drilling jig locking pin	635157

7 Brief instructions

7.1 Roto Patio Lift

Summary of IMO 245

	Installation sequence	Note	Page reference	Diagram A	Diagram C
Sash	Carry out the drilling and routing work.	Deburr the drill holes and routed areas.	→ *from page 69*	■	■
	Prepare the connecting rod.	The length of the connecting rod depends on the version used  Can be shortened from the left / right depending on SW.	→ *from page 72*	■	■
	Install the roller unit set.	Screw the corner roller unit onto the packer. Connect the corner roller unit and the roller unit with the connecting rod. Slim S.kg ≥ 200 kg; standard S.kg ≥ 300 kg: install the auxiliary set	→ *from page 75*	■	■
	Install the espagnolette.	Crop the espagnolette. Break the caps from the espagnolette. Install the packers on the espagnolette. Move the espagnolette to the closed position.	→ *from page 78*	■	■
	Install the handle.		→ *from page 79*	■	■
Joining the sash and frame	Hinge the sash.		→ *from page 82*	■	■
	Install the strikers / locking pins.		→ *from page 83*	■	■
	Install diagram C striker.		→ *from page 85*	–	■
	Install the end stop.	Diagram D: shorten the end stop bolt.	→ *from page 85*	■	■
Final acceptance	Lubricate the hardware.		→ *from page 89*	■	■

8 Installation

8.1 Processing instructions

Maximum sash sizes and weights

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

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

Specifications from profile manufacturers

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

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

INFO

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

Combining hardware

Burglar inhibiting elements need hardware which meets special requirements.

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

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

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

INFO

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

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 → *10.3 "Care" from page 89*.

The number of screws for installation may vary.

8.2 Screw connections

DANGER

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

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

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

ATTENTION

Using incorrect screw material may cause property damage.

Using the wrong screws may damage the components.

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

ATTENTION

Improper screw fixings may cause property damage.

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

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

8.2.1 Overview

Aluminium

WARNING

Incorrect screw connections may pose a risk of death!

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

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

Components	Quantity	Size	Diameter to be drilled	Type of screw	Drive
Roller unit	5	ST4.2 x ...	3.5	Countersunk-head self-tapping screw	Cross-head
Roller unit auxiliary set	4	ST4.2 x ...	3.5	Countersunk-head self-tapping screw	Cross-head
Espagnolette	...	ST4.2 x ...	3.5	Countersunk-head self-tapping screw	Cross-head
Locking pin	2	ST4.2 x ...	3.5	Countersunk-head self-tapping screw	Cross-head
Striker	4	ST4.2 x ...	3.5	Countersunk-head self-tapping screw	Cross-head
End stop	2	ST4.2 x ...	3.5	Countersunk-head self-tapping screw	Cross-head

Components	Quantity	Size	Diameter to be drilled	Type of screw	Drive
Roto Line handle without recessed grip and exterior handle	2	M5 x ...	10.0 / 12.0	Countersunk-head self-tapping screw	Cross-head

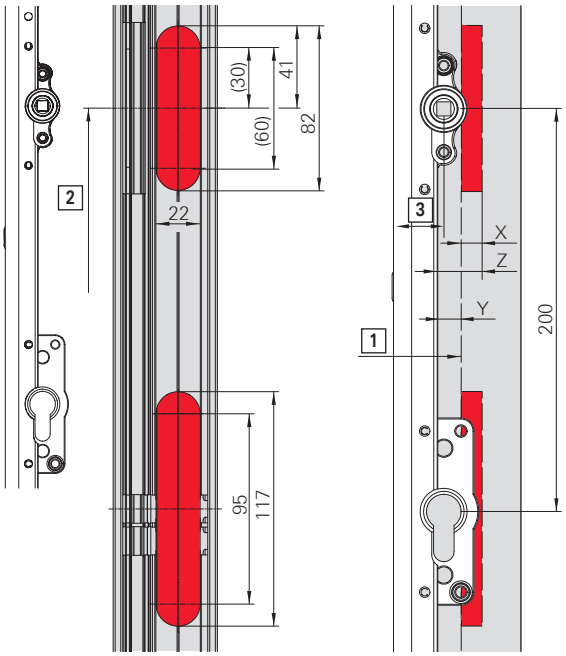
INFO

If the first screw fixing level is < 2 mm, use inlays or rivet nuts on site.

8.3 Drilling and routing dimensions

8.3.1 Gearbox / lock casing

BS 25



[1] Hardware supporting surface

[2] Handle height

[3] Backset BS

Gearbox routing depth:

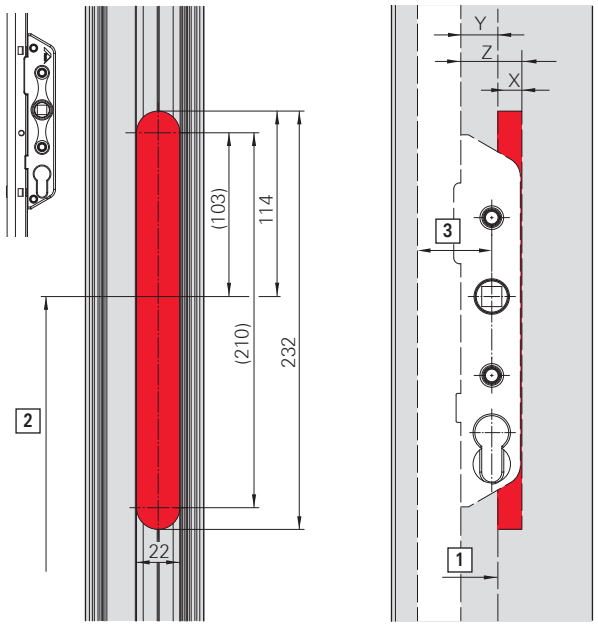
For backset of 25 without lock casing: X = 16 - Y

For backset of 25 with lock casing: X = 22 - Y

Y = packer height

Z = 16 (without locking casing) / 22 (with lock casing)

BS 27.5 / 37.5



[1] Hardware supporting surface

[2] Handle height

[3] Backset BS

Gearbox routing depth:

For backset of 27.5: X = 22 - Y

For backset of 37.5: X = 32 - Y

Y = packer height

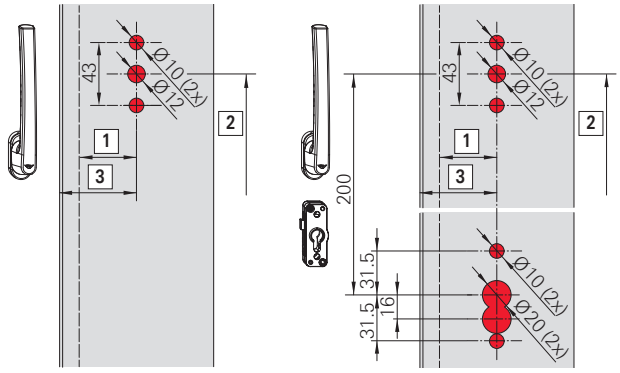
Z = 22 (BS 27.5) / 32 (BS 37.5)

8.3.2 Handle

Drill holes for the square spindle, handle lugs, with / without profile cylinder

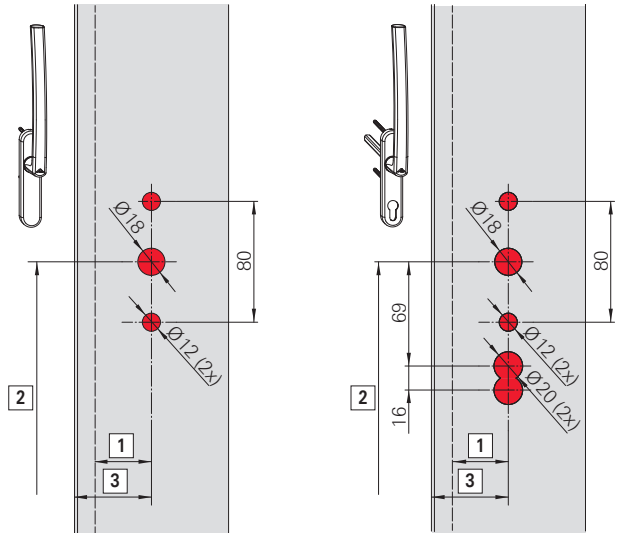
INFO
Note the profile system assessment.

BS 25



[1] Backset
[2] Handle height
[3] Drilling dimension (profile related)

BS 27.5 / 37.5

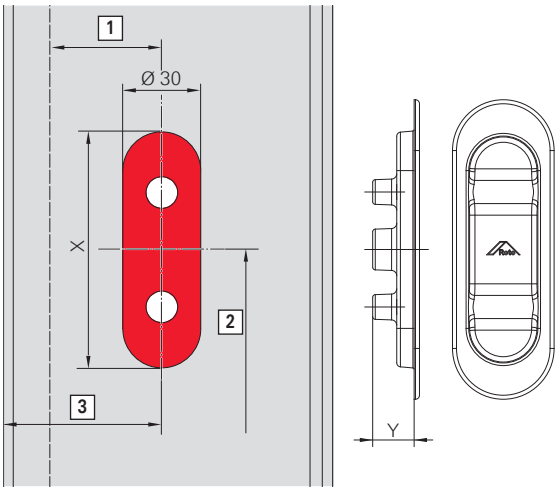


[1] Backset
[2] Handle height
[3] Drilling dimension (profile related)

8.3.3 Recessed grip

INFO
Note the profile system assessment.

BS 25



For oval recessed grip X = 90 mm

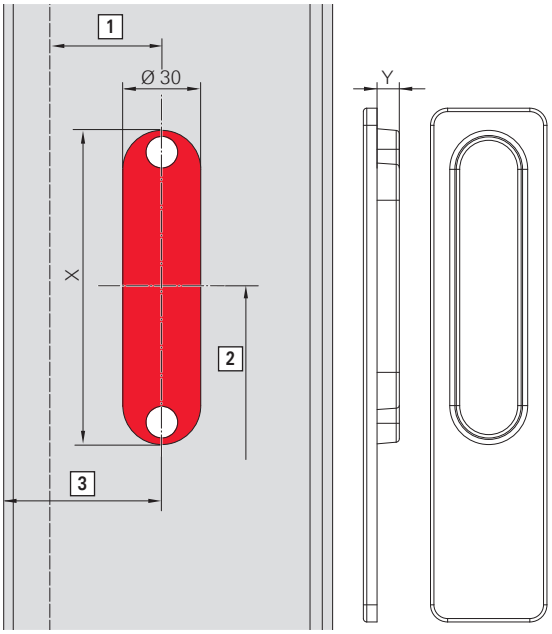
Routing depth: Y = 16 mm

[1] Backset

[2] Handle height

[3] Drilling dimension

BS 27.5 / 37.5



For square recessed grip: X = 93 mm

For oval recessed grip X = 96 mm

Routing depth: Y = 7 / 11 mm

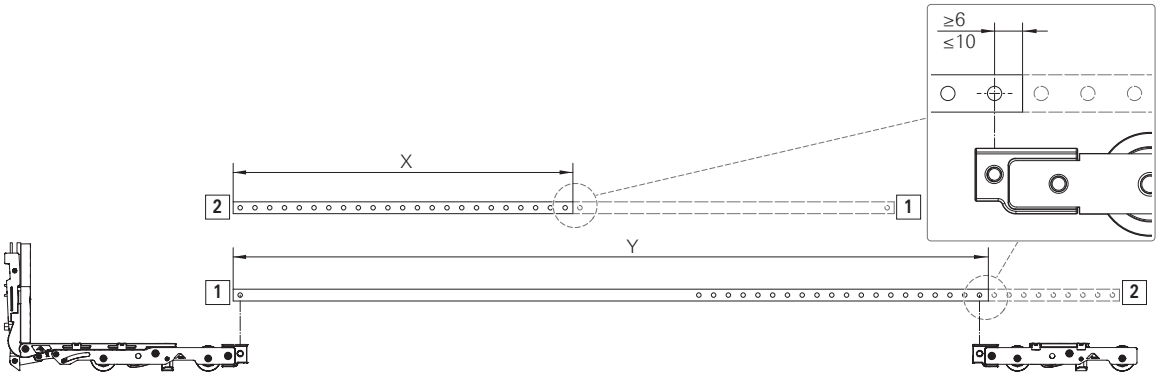
[1] Backset

[2] Handle height

[3] Drilling dimension

8.4 Preparing for installation

8.4.1 Cropping the connecting rod



INFO
The connecting rod may be shortened by the dimension of the hole spacing (20 mm).

Roller unit

1. Crop the connecting rod from side [1] or side [2] depending on the sash width and design variant.

Slim		Standard	
150 / 200 kg	400 kg	300 kg	400 kg
SW ≤ 1030: X= SW - 570	SW ≤ 1500: X= SW - 1040	SW ≤ 1140: X= SW - 680	SW ≤ 1746: X= SW - 1286
SW > 1030: Y= SW - 570	SW > 1500: Y= SW - 1040	SW > 1140: Y= SW - 680	SW > 1746: Y= SW - 1286

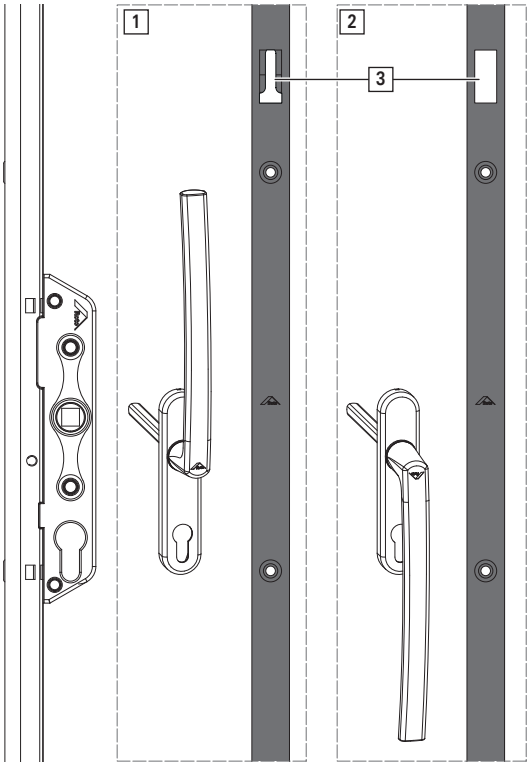
After cropping, projection from drill hole centre for pinning: min. 6 mm to max. 10 mm.

8.4.2 Preparing the espagnolette

INFO

⇨ Move the espagnolette to the closed position [1] (sliding position [2]).

Check via the inspection window [3] in the espagnolette faceplate.

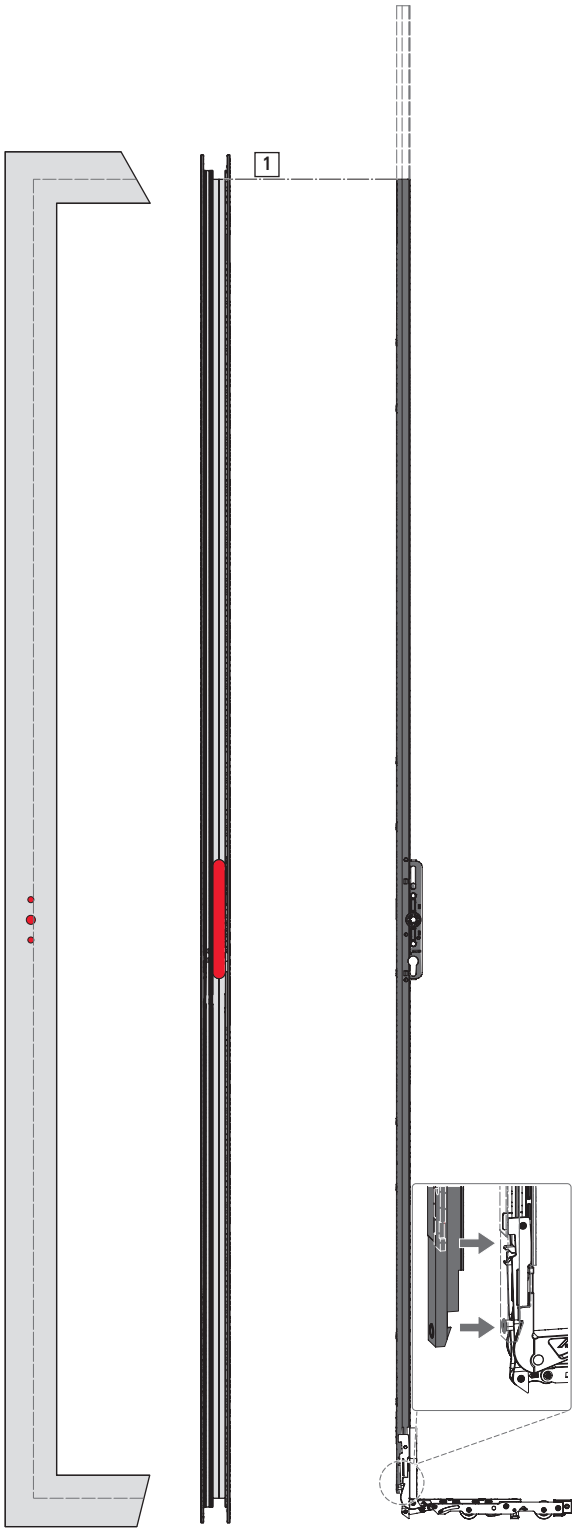


1. Mount the espagnolette in the corner roller unit in the closed position.

INFO

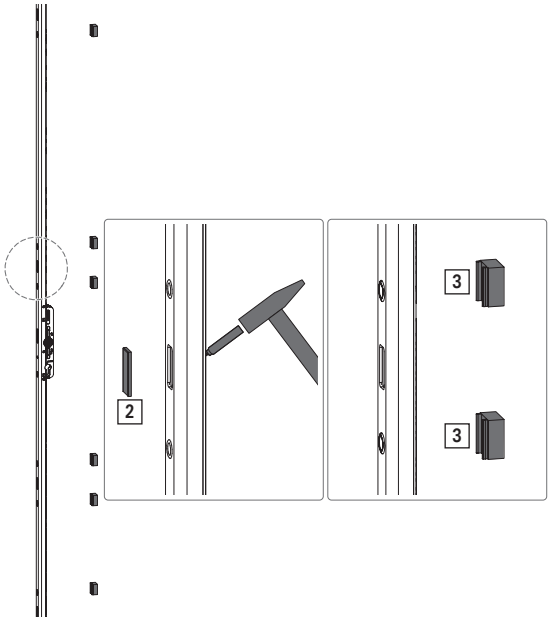
Espagnolette connecting rod engages in the groove of the corner roller unit mechanics.

2. Mark the length on the upper groove base [1].
3. Remove the espagnolette and crop it in the sliding position.



1. Break the caps [2] from the espagnolette according to the required locking points.

   Underlay the area of the locking pin mount depending on the profile. To do so, clip one packer [3] into the espagnolette under every screw hole.



8.5 Sash

8.5.1 Roller unit set

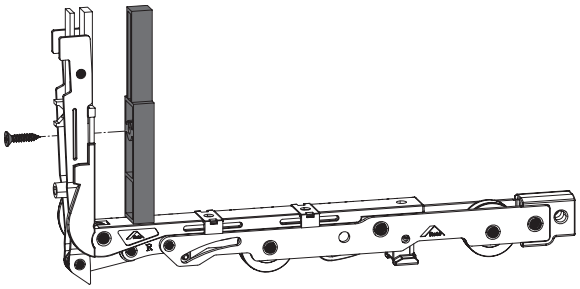
8.5.1.1 Installing the roller unit set

Slim S.kg ≤ 200 kg; standard S.kg ≤ 300 kg

Installing the packer on the corner roller unit

⇨ A packer may be required depending on the profile.

1. Secure the packer to the corner roller unit with one self-tapping screw ST4.8 x 20.

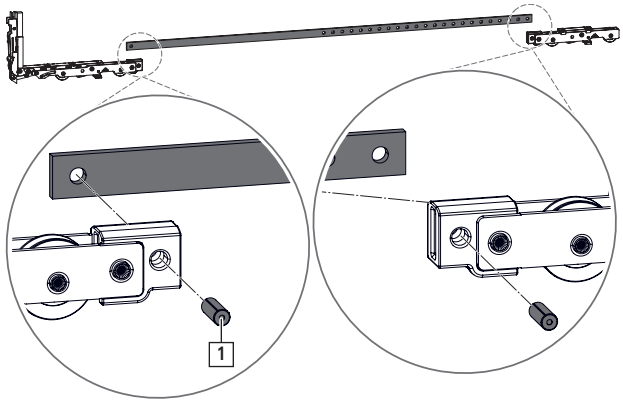


Installing the roller unit set

1. For greater sash weights: install the roller unit auxiliary set → *from page 76*.

   Insert the connecting rod into the mount for the corner roller unit and roller unit.

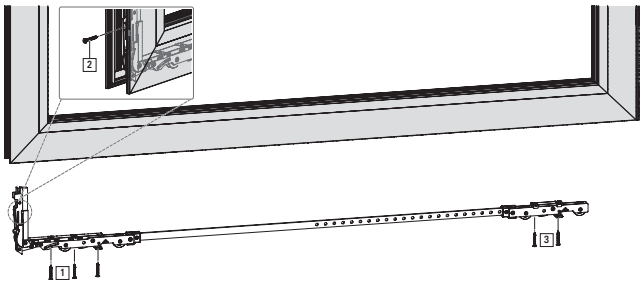
   Tap two connecting pins with visible marking [1] all the way into the corner roller unit and roller unit.



2. Insert the roller unit set with connecting rod into the sash on the espagnolette side.

   Fasten the corner roller unit on the espagnolette side with three screws [1] at the bottom and one screw [2] at the side.

   Fasten the roller unit on the mullion side with two screws [3].



INFO

The screw at the side may need to have a different length from the other screws.

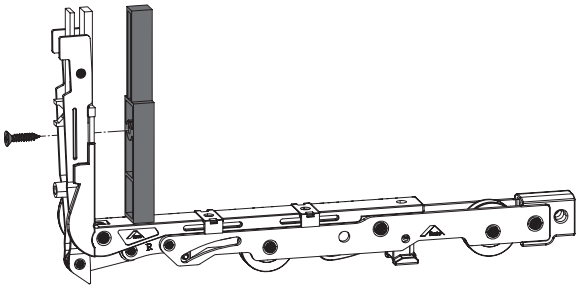
8.5.1.2 Roller unit with auxiliary set

Slim S.kg > 200 kg; standard S.kg > 300 kg

Installing the packer on the corner roller unit

⇨ A packer may be required depending on the profile.

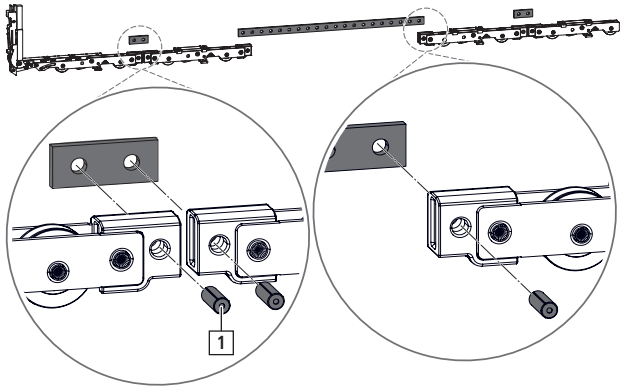
1. Secure the packer to the corner roller unit with one self-tapping screw ST4.8 x 20.



Joining the roller unit and auxiliary set

1. Insert the connecting rods into the mount for the corner roller unit, auxiliary roller unit and roller unit.

   Tap six connecting pins with visible marking [1] all the way into the corner roller unit, auxiliary roller unit and roller unit.

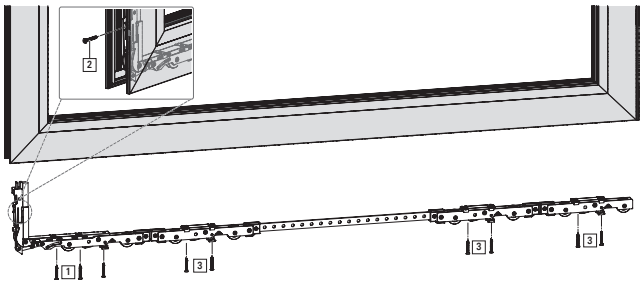


Installing the roller unit with auxiliary set

1. Insert the roller unit set with auxiliary set and connecting rod.

   Fasten the corner roller unit on the espagnolette side with three screws [1] at the bottom and one screw [2] at the side.

   Fasten the roller unit on the mullion side and in the centre with two screws in each case [3].



INFO

The screw at the side may need to have a different length from the other screws.

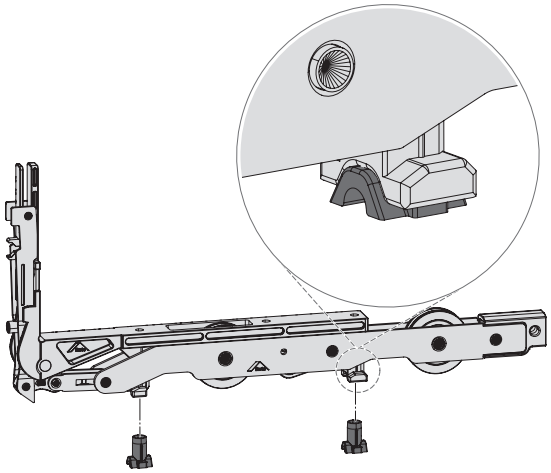
8.5.1.3 Roller unit support block

Standard | 300 / 400 kg

In the closed position, the sash is approx. 1.6 mm higher. This means that the roller units are contactless.

1. Install two support blocks in the corner roller unit on the espagnolette side and one support block in the roller unit on the mullion side. Install one support block per auxiliary roller unit, ensuring a form-fitting connection and correct alignment.

DANGER
Incorrect installation of support blocks poses a risk of death.
Incorrect installation of the support blocks may cause the sash to fall out (mainly when the sash is slid open with the handle in the closed position).
1. Install the support block so that it is form-fitting and correctly aligned.

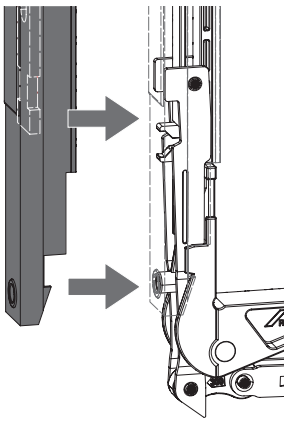


8.5.2 Espagnolette

8.5.2.1 Installing the espagnolette

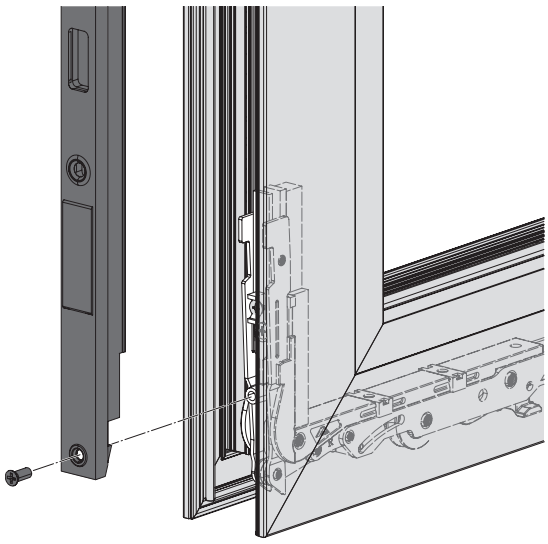
INFO
⇨ Espagnolette in closed position.

1. Mount the espagnolette in the corner roller unit.

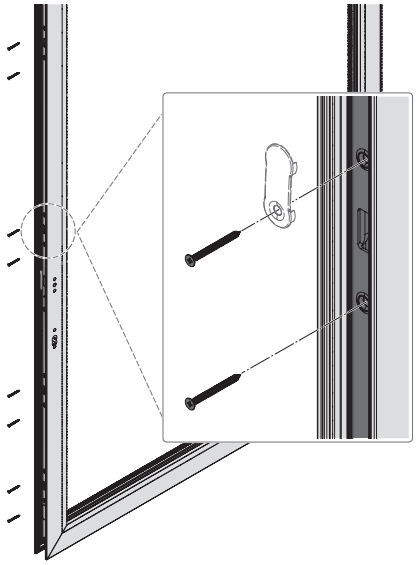


INFO
Espagnolette connecting rod engages in the groove of the corner roller unit mechanics.

2. Fasten on the corner roller unit with one countersunk screw M5 x 13.



3. Fasten the espagnolette with one screw in each screw hole.
   Also attach the optional info clip. Ensure that the area of the locking pin mount is left free.

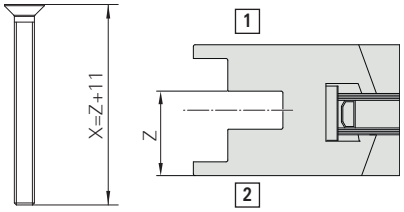


8.5.3 Handle and recessed grip

INFO
If the appropriate thread engagement length is not reached with the screws that can be shortened, choose electrogalvanised screws (countersunk screw according to DIN 965 ISO 7046 – 1 4.8 H1) with a suitable length.

Selecting the screw length

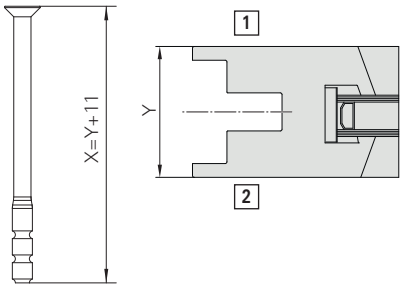
1. **Installation without recessed grip / without exterior handle:**
   Shorten the screw to X = Z + 11
   Exception: Slim | 150 kg:
   - X = Z + 8



[1] Outside

[2] Inside

2. **Installation with recessed grip / with exterior handle:**
   Shorten the screw to X = Y + 11
   Exception: Slim | 150 kg:
   - with recessed grip X = Y + 3
   - with handle set screws for exterior handle X = Y + 8
   - with handle set screws for escutcheon X = Y + 5

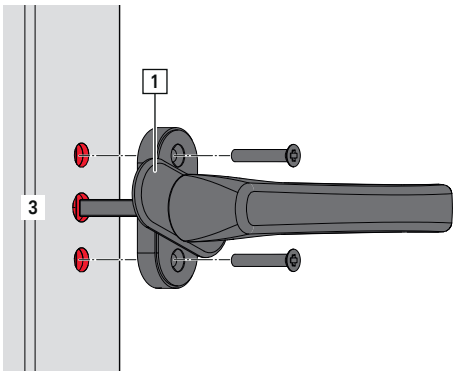


[1] Outside
[2] Inside

Installing the handle (length 200 mm) without recessed grip / without exterior handle

⇨ Espagnolette BS 25 installed.

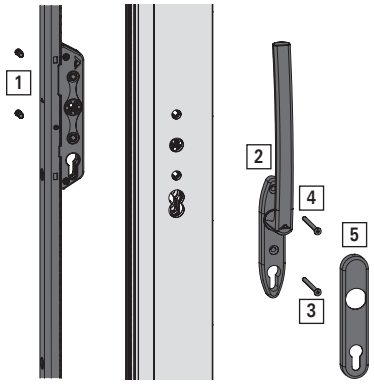
1. Insert the handle into the sash (in the closed position → *from page 87*).
2. Turn the handle 180°, thereby undoing the fixing.
3. Turn the handle so that it is horizontally aligned with the escutcheon.
4. Rotate the cover [1] on the handle 90°.
5. Screw down the handle using screws.
6. Rotate the cover on the handle.



Installing the handle (length 240 mm) without recessed grip / without exterior handle

⇨ Espagnolette BS 27.5 and 37.5 installed.

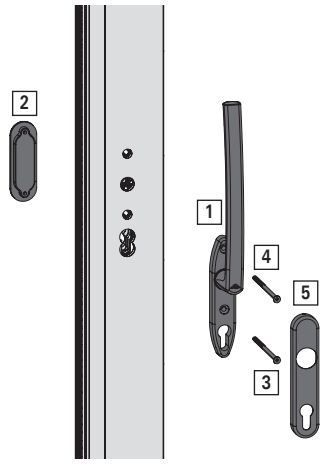
1. Insert two threaded inserts [1] into the espagnolette from the outer side.
2. Move the handle [2] to the closed position → *from page 87*.
3. Insert the handle into the sash.
4. Secure the handle in the lower screw hole with one screw [3].
5. Move the handle to the sliding position.
6. Secure the handle in the upper screw hole with one screw [4].
7. Attach the cover [5].



Installing the handle (length 240 mm) and recessed grip

⇨ Espagnolette BS 27.5 and 37.5 installed.

1. Move the handle [1] to the closed position → *from page 87*.
2. Insert the handle into the sash.
3. Insert the recessed grip [2] into the sash on the opposite side.
4. Secure the recessed grip in the lower screw hole with one screw [3].
5. Move the handle to the sliding position.
6. Secure the recessed grip in the upper screw hole with one screw [4].
7. Attach the cover [5].



8.6 Joining the sash and frame

CAUTION

Heavy loads pose a risk of injury.

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

- Transport and installation must be carried out by at least two people.
- Use transportation means. → *12 "Transport" from page 95*
- 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. → *12 "Transport" from page 95*
- Do not rest sashes on the bogies.

8.6.1 Inserting the sash

WARNING

An unsecured sash may pose a risk of death!

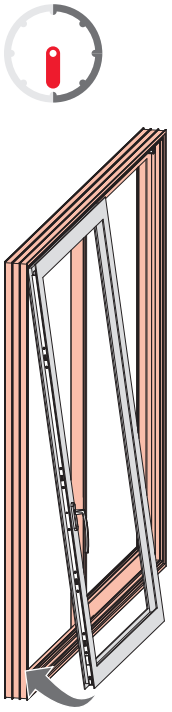
The sash may fall during installation if it is not securely connected to the frame.

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

1. Move the handle to the sliding position.

   In front of the access area, insert the sash at the top of the frame until the sash engages in the track.

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

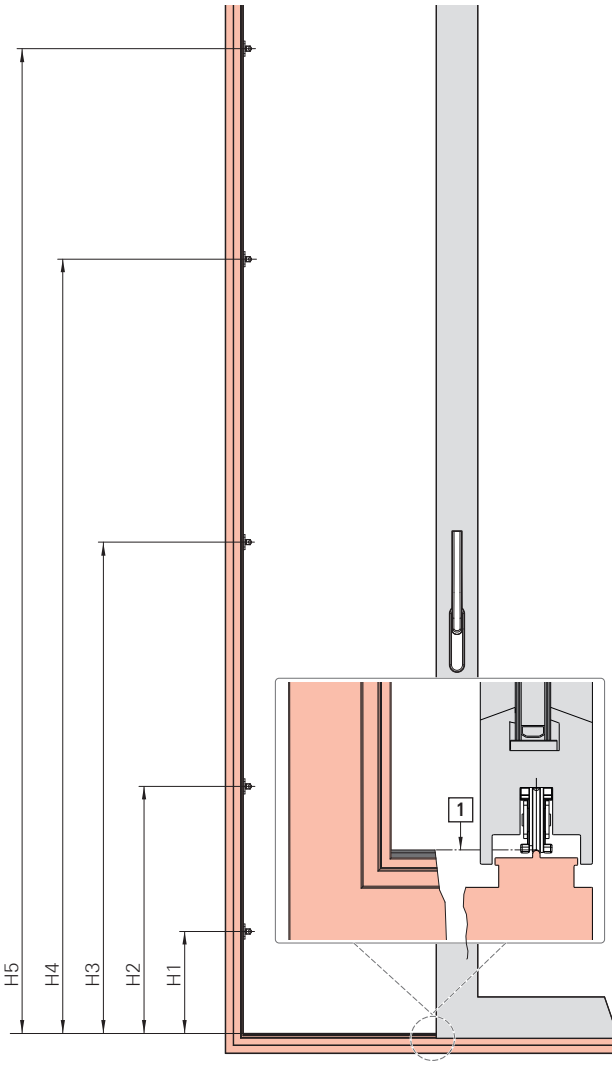


8.6.2 Locking pin

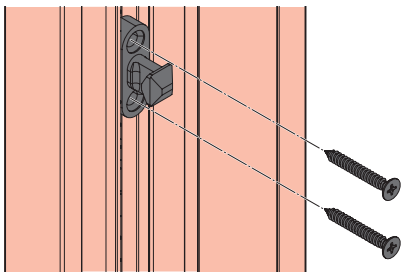
⇨ Espagnolette installed without locking cam.

1. Position the locking pin (the dimensions relate to the roller track level [1]).

SH / mm	H1	H2	H3	H4	H5
≤ 1800	251	608	1209	–	–
1801 - 2200	251	608	1209	1601	–
2201 - 2600	251	608	1209	1906	–
> 2600	251	608	1209	1906	2423



2. Fasten the locking pin with two screws.

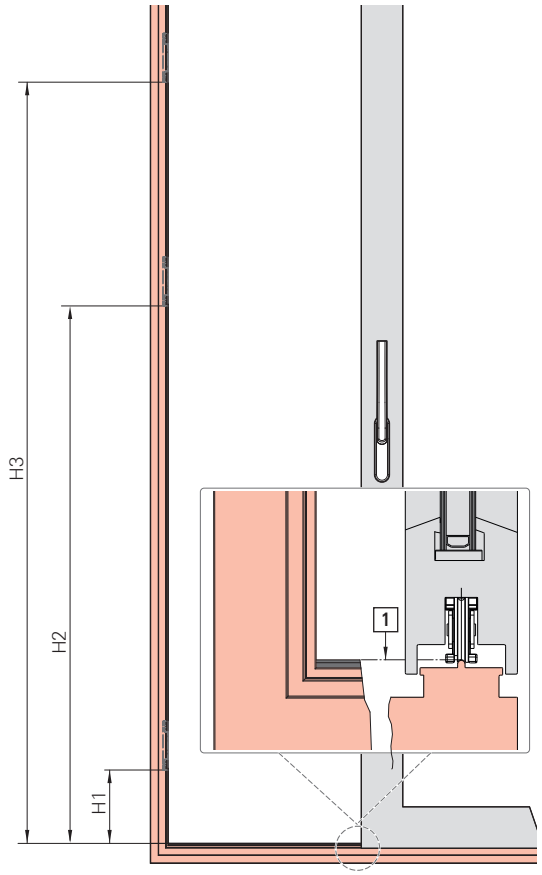


8.6.3 Striker

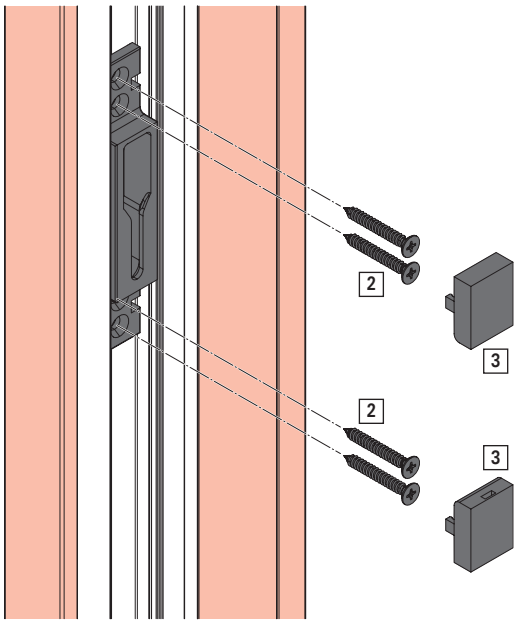
⇨ Espagnolette installed with locking cam (version for DesignLocking).

1. Position the striker (the dimensions relate to the roller track level [1]).

SH / mm	H1	H2	
≤ 2200	181.5	1531	–
2201 - 2600	181.5	1836	–
> 2600	181.5	1139	2355



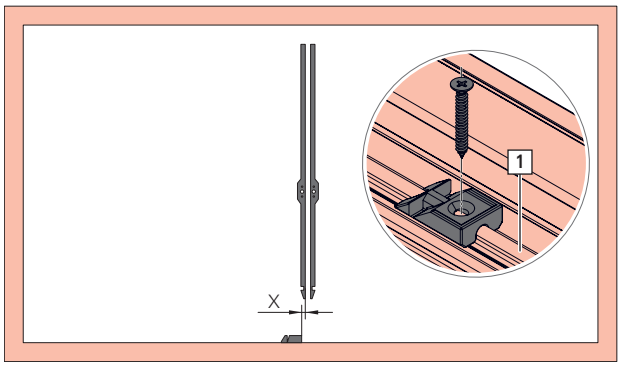
2. Fasten the striker with four screws [2].
   Clip the cover caps [3] onto the striker.



8.6.4 Floor striker

Diagram C

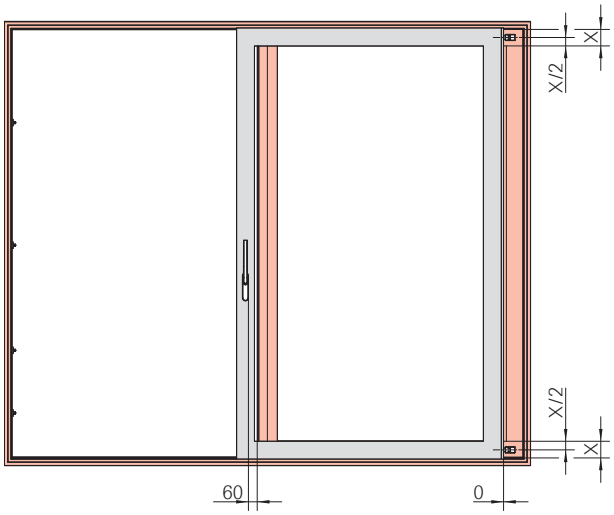
1. Position the floor striker on the roller track [1].
   X = 4 mm (distance from the outer edge of the floor striker to the outer edge of the espagnolette of the second opening sash in the closed position)
   Predrill the drill hole for mounting the floor striker.
   Fasten with one screw.



8.6.5 End stop with packer

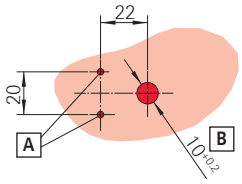
1. Define the end stop position.
   Handle distance from moving sash to opposite sash min. 60 mm.

INFO
Diagram D: before installation, shorten the end stop bolt from 15 mm to 3 mm projection. Screws must be selected so that they do not collide with the hardware.

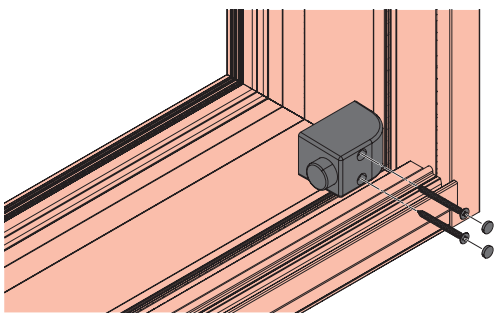


2. Drill the holes for the end stop.
   [A]: Ø 10.0+0.2 (1x)
   [B]: predrill Ø 3.5 (2x)

INFO
Note the drilling specifications for aluminium profiles.



3. Fasten the end stop with two screws.
   Fit the screw cover caps.



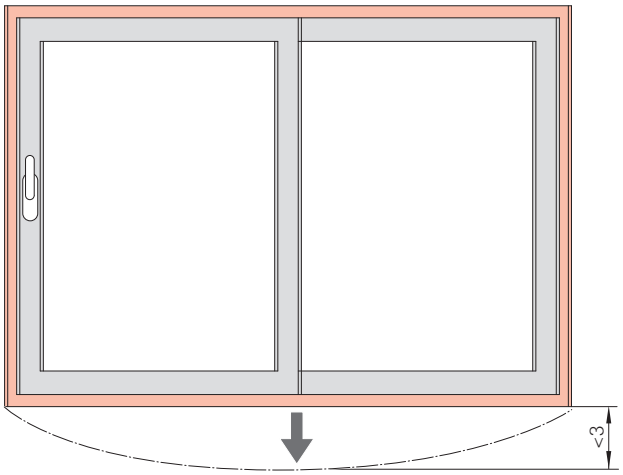
8.6.6 Notes on final assembly

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.

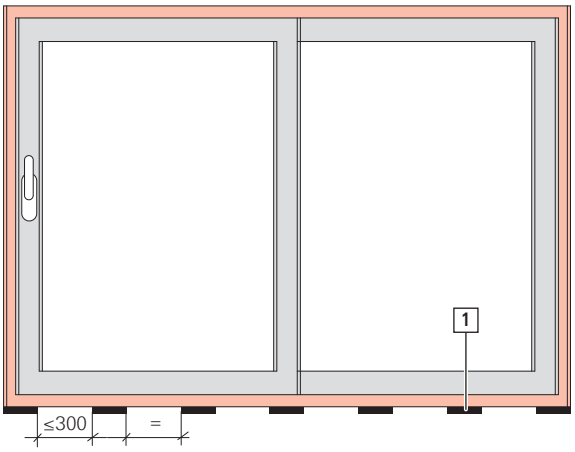


INFO

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.



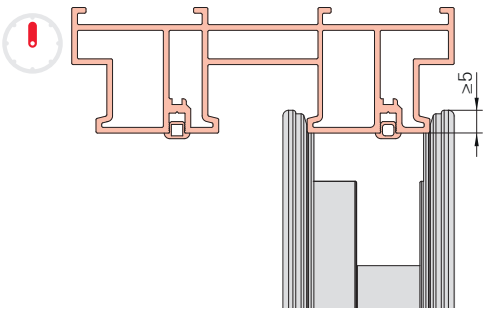
[1] Packer

DANGER

Risk of death caused by insufficient pressure-proof coverage from sash to frame in the closed position.

Incorrect installation of the sash in an element that has < 5 mm pressure-proof coverage from sash to frame may cause the sash to fall out (mainly when the sash is slid open with the handle in the closed position).

1. Construct the element so that pressure-proof coverage of ≥ 5 mm from sash to frame is ensured in all positions.



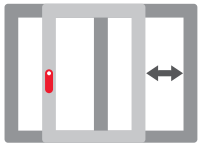
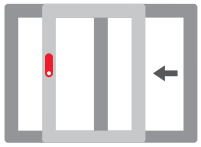
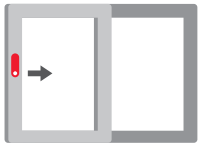
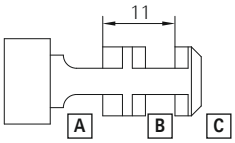
9 Operation

9.1 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.

9.1.1 Roto Patio Lift

Handle position	Sash position	Meaning
		Sash in closed position.
		Sash in sliding position.
		Sash in fixed sliding position.
		Standard: night ventilation position with sash opened by 11 mm and handle in closed position  [A] Closed position [B] Night ventilation position [C] Sliding position

9.2 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). Check the connecting rod and replace if necessary.	■
Locking cams brush against the striker.	Sash components hinged or installed incorrectly.	Check the setting in the turn position (potentially 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

10 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 88*
Cleaning		→ *from page 89*
Clean hardware	☐	
Care		→ *from page 89*
Lubricate movable parts	☐	
Lubricate locking points	☐	
Performance test		→ *from page 91*
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 91*
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

10.1 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.

10.2 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. → *10.3 "Care" from page 89*
- Apply a thin protective film to the hardware, for example using a cloth soaked in oil.

10.3 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.

10.3.1 Lubrication points

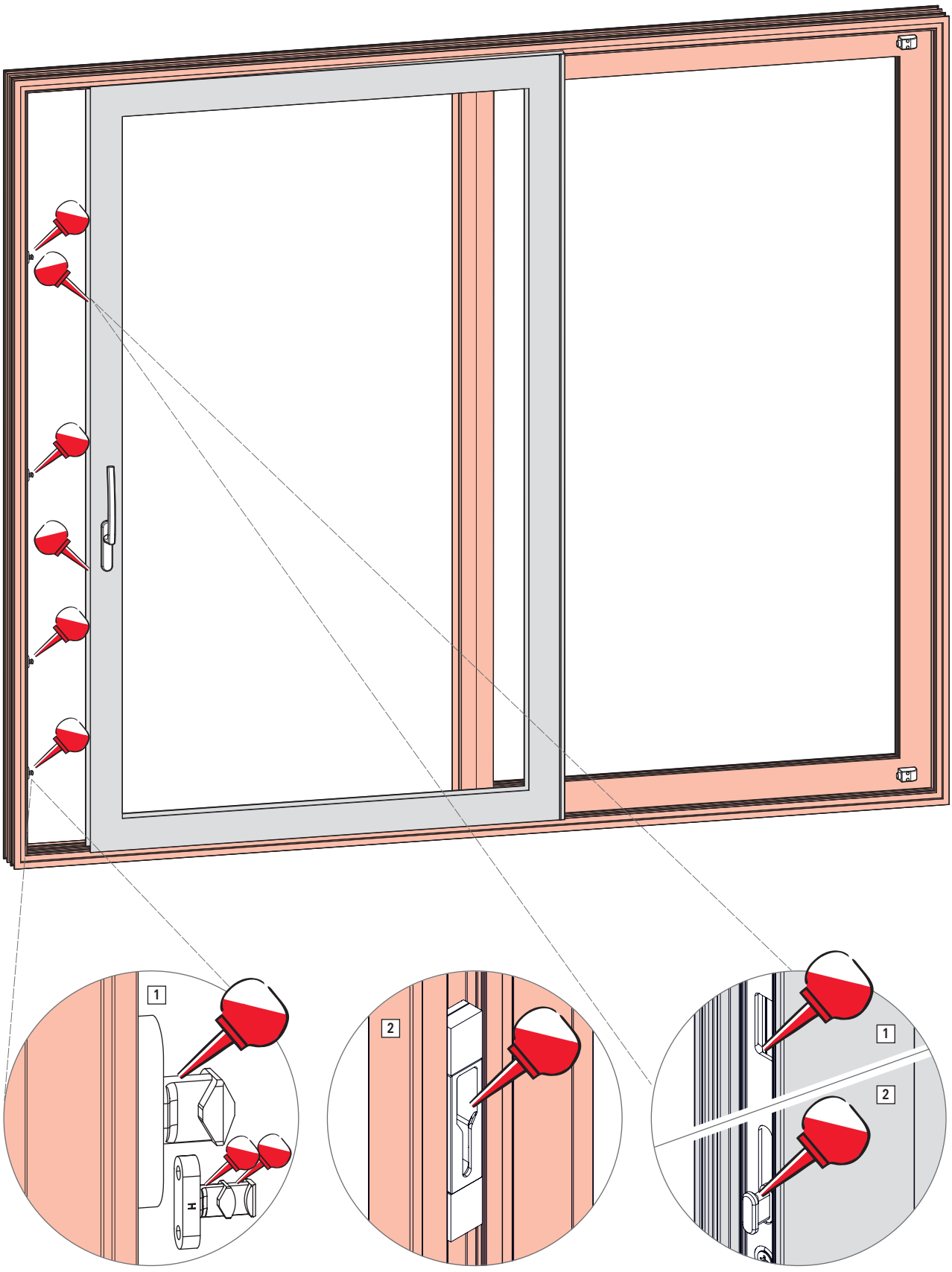


Fig. 10.1: [1] Standard; [2] DesignLocking

10.4 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 the element runs smoothly by opening and closing it.
- Check the element gaskets for elasticity and fit.
- Check the closed element to ensure that it is leakproof.

Have malfunctions remedied by a specialist company.

10.5 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.

10.6 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.

11 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.

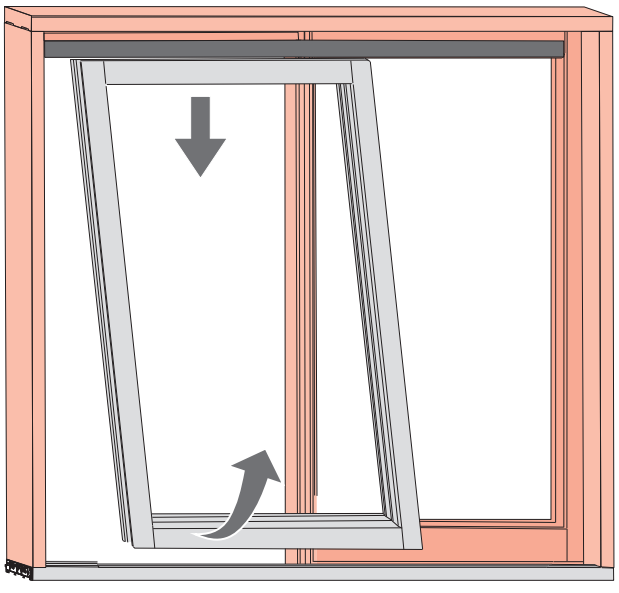
11.1 Hardware components

Removing hardware components

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

11.2 Unhinging the sash

1. Move the handle to the sliding position  .
2. Lift the sash and tilt it outwards at the bottom.
   Lower the sash in a controlled manner until the frame no longer overlaps the sash.



3. Remove the sash parallel to the frame.

12 Transport

12.1 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.

12.2 Storing the hardware

Store all hardware components as follows until they are installed:

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

13 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.

13.1 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.

13.2 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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