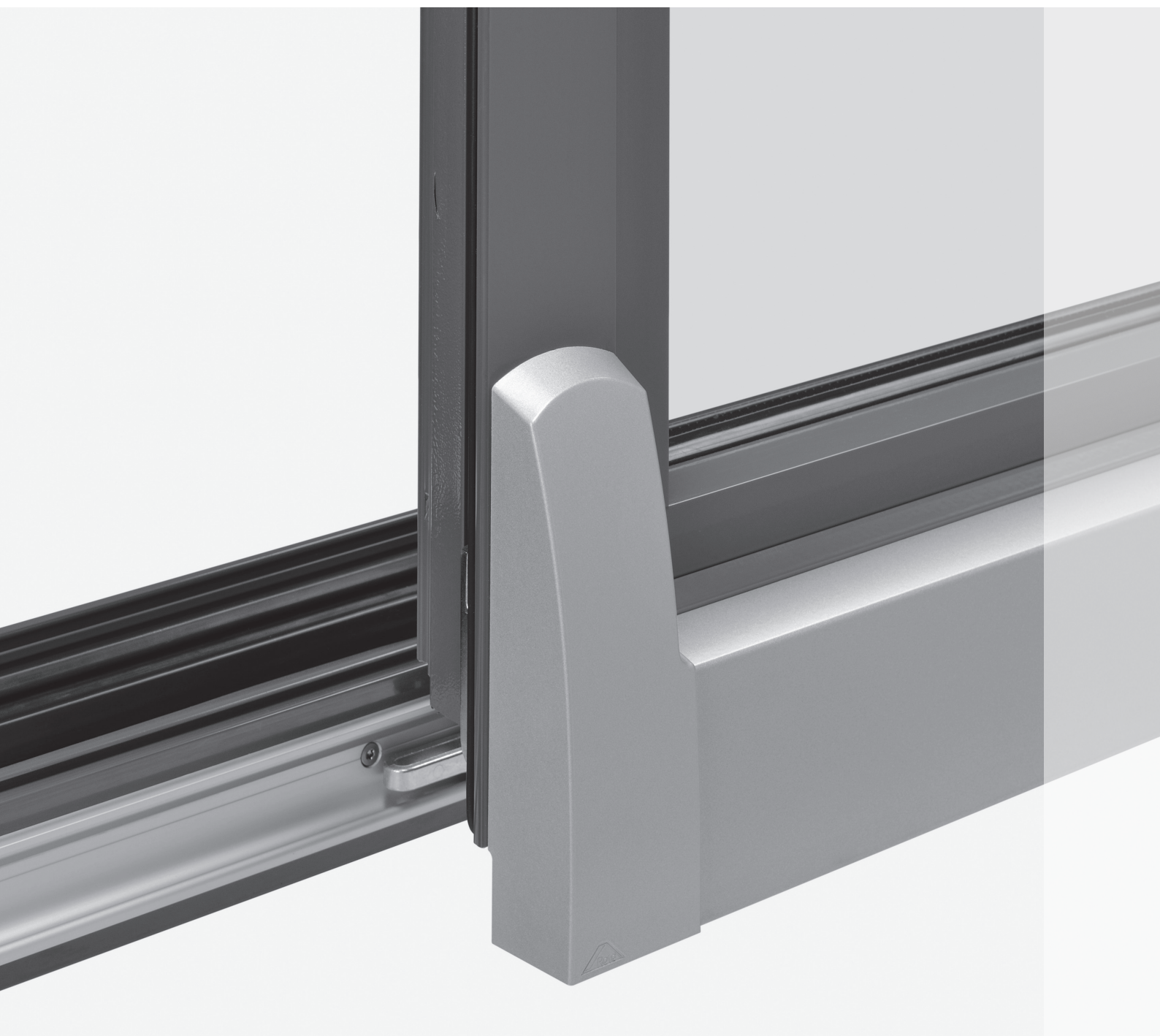


Roto Patio Z

The standard hardware with positive control
for Tilt&Slide windows and doors up to 200 kg

Installation, maintenance and operation instructions
for aluminium profiles



Imprint

Copyright: May 2012

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This manual contains important information, instructions and application diagrams (maximum sash sizes and sash weights) as well as installation instructions regarding the further work of the hardware.

Also, this manual contains binding guidelines to ensure the duty to instruct through to the end-user.

The information and instructions in this manual refer to the products of the Roto Patio hardware system.

Apart from these installation, maintenance and operation instructions, the following documents apply:

- Directives VHBH of the Quality Assurance Association: Locks and Hardware (Richtlinie VHBH der Gütegemeinschaft Schlösser und Beschläge e. V.)
- Directives VHBE of the Quality Assurance Association: Locks and Hardware (Richtlinie VHBE der Gütegemeinschaft Schlösser und Beschläge e. V.)

This manual should be stored in such a manner that it can be quickly used, if needed.

Additional markings

To highlight handling directives, results, lists, references and other elements, the following signs are used in this manual:

Marking	Explanation
	Sash
	Frame
	Drilling-holes
	Hardware components
	Action steps
	First level of the hierarchy in a list
	Unordered list (second level of the hierarchy)
	(Cross) reference in tables
	(Cross) reference in the text

Abbreviation	Explanation
SW	Sash width
SH	Sash height
S.kg	Sash weight

All dimensions stated in mm.

Protection of copyright

The contents of this manual are protected by copyright. In the framework of the hardware manufacturing, the use of the contents is allowed. Any other or further use is not permitted without written permission of the manufacturer.

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

Hardware dealers

The “hardware dealers” target group includes all companies/persons who purchase hardware from the hardware manufacturer to resell it without the hardware being modified or subject to further work.

Manufacturers of windows and balcony doors

The “manufacturers of windows and balcony doors” target group includes all companies/persons who purchase hardware from the hardware manufacturer or the hardware dealer and build it into windows and balcony doors.

Building element dealers/Installation company

The “building element dealers” target group includes all companies/persons who purchase windows and balcony doors from the manufacturer of windows and balcony doors in order to sell these on and to install them into a building development, without the windows or balcony doors being modified.

The “installation company” target group includes all companies/persons who purchase windows and balcony doors from the manufacturer of windows and balcony doors, or from a building element dealer, in order to sell these and to install them into a building development, without the windows or balcony doors being modified.

Builder

The “builder” target group includes all companies/persons who order windows and/or balcony doors for installation into their building project.

End-users

The “end-users” target group includes all persons who operate the installed windows and/or balcony doors.

**NOTE:**

Every target group must fully comply with its instruction obligation.

Unless defined otherwise in the following, the documents and information may be transmitted e.g. as printed documents, CD-ROM, or via Internet access.

Responsibility of the hardware dealer

The hardware dealer must transmit the following documents to the manufacturer of windows and balcony doors:

- Catalogue
- Installation, Maintenance and Operation instructions
- Guidelines/advice on the product and on liability (VHBH)
- Guidelines/advice for end-users (VHBE)

Responsibility of the manufacturer of windows and balcony doors

The manufacturer of windows and balcony doors must transmit the following documents to the building element dealer or to the builder, even when a subcontractor (installation operation) is acting as an intermediary:

- Installation, Maintenance and Operation instructions
- Guidelines/advice on the product and on liability (VHBH)
- Guidelines/advice for end-users (VHBE)

He must ensure that the end-user is provided with the documents and information intended for him, in printed format.

Responsibility of the building element dealer/installation company

The building element dealer must transmit the following documents to the builder, even when a subcontractor (installation company) is acting as an intermediary:

- Maintenance and operating instructions (with the 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 transmit the following documents to the end-user:

- Maintenance and operating instructions (with the focus on hardware)
- Guidelines/advice for end-users (VHBE)

In this instructions, safety information is indicated by a symbol. The safety information is introduced by a key word that indicates the severity of the danger.



DANGER!

This symbol in conjunction with the signal word indicates an imminently hazardous situation, which could result in death or serious damage to health if it is not avoided.



WARNING!

This symbol in conjunction with the signal word indicates a potentially dangerous situation, which could result in death or serious damage to health if it is not avoided.



CAUTION!

This symbol in conjunction with the signal word indicates a potentially dangerous situation, which may lead to minor or light injuries if it is not avoided.



NOTE:

This symbol in conjunction with the signal word indicates a potentially dangerous situation, which may lead to property or environmental damage if it is not avoided.

All details and instructions in this document were compiled taking into account the relevant standards and regulations, the state of the art, and also many years of knowledge and experience.

The hardware manufacturer accepts no liability for damages resulting from:

- Failure to comply with this document and all product-specific documents and related applicable directives (refer to the chapters Safety and Stipulated use).
- Operation other than that stipulated/misuse (refer to the chapters Safety and Stipulated use).
- Insufficient invitation to tender, failure to adhere to the installation instructions or application drawings.
- Increased soiling.

Claims by third parties against the hardware manufacturer on the ground of damages resulting from misuse or failure to follow the instruction obligation on the part of the hardware dealer, the manufacturer of windows and balcony doors, and of the building element dealer or the builder are transferred accordingly.

The undertakings agreed in the delivery contract, the general conditions of business and the delivery conditions of the hardware manufacturer, and the legal regulations applicable at the time of concluding a contract are effective.

The warranty covers only original Roto components.

The right to technical modifications for the improvement of performance characteristics and for further development is reserved.

Sliding hardware is hardware for sliding sashes for windows and balcony doors that are mainly used as glazed exterior structures.

In combination with the sliding sashes, fixed-glazing-units and/or further sashes can be situated in a window element.

Sliding hardware is equipped with a locking mechanism that fastens the sliding sash. Sliding hardware is equipped with rollers that are mainly located on the bottom horizontal plane of the sliding sash.

In addition, scissor stay-arms for tilting and mechanisms to lift and/or parallel-retract the sashes can be specified. By means of the hardware, the sashes are locked, brought into the ventilation position and pushed to the side.

Sliding hardware is solely used for further processing of vertically installed windows and balcony door sashes made of timber, PVC or aluminium, and their corresponding material combinations.



NOTE!

Depending on the outside temperature, relative air humidity of the ambient air, as well as the application location of the sliding element, a temporary formation of condensation water on the aluminium tracks on the inside may occur. This is particularly promoted when the air circulation is hindered; for example due to deep reveals, curtains as well as unfavourable radiator positioning and the like.

Correct use also includes adhering to all the specifications in the product-specific documents, such as:

- These installation, maintenance and operation instructions
- Product catalogues
- Information and specifications of the profile manufacturer (e.g. PVC or light metal profiles etc.)
- The relevant directives VHBH and VHBE of the Quality Assurance Association: Locks and Hardware (Gütegemeinschaft Schlösser und Beschläge e. V.)
- The valid national laws and directives

Any type of use that goes beyond or differs from the defined correct use shall be regarded as misuse.



WARNING!

Danger from misuse!

Misuse and incorrect installation of hardware can result in hazardous situations.

- Never use hardware combinations that have not been approved by the hardware manufacturer.
 - Never use accessories that are not original products or that have not been approved by the hardware manufacturer.
-



On windows or balcony doors with sliding hardware the sashes can be moved horizontally or vertically by operating a 'hand-lever' (handle). On special constructions the sashes additionally can be folded by sliding (like an accordion – Fold&Slide windows). On special constructions some of the sashes additionally can be brought into a turning position and/or into a limited tilting position in the case of the scissors (sash-stay) version. When a sash is closed and the hardware is locked, the resistance of a gasket usually needs to be overcome.

**WARNING!****Danger of injury and material damage from incorrect closing and opening the sash!**

Incorrect closing and opening of sashes can result in serious injuries and significant material damage.

Therefore:

- Ensure that when opening or closing the sash, it does not collide with the frame or with another sash.
- Ensure that the sash is guided slowly by hand throughout the entire range of movement as far as the fully opened or closed position, and that it is brought very slowly towards the frame, the opening restrictor or another sash (technical value – maximum reference speed of the closing edge $v \leq 0.2$ m/s).

Any use beyond or other than the stipulated application and installation of the products is deemed to be misuse and can result in dangerous circumstances.

**WARNING!****Danger from misuse!**


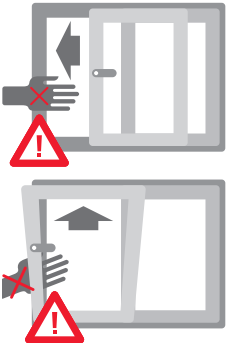
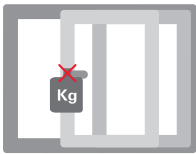

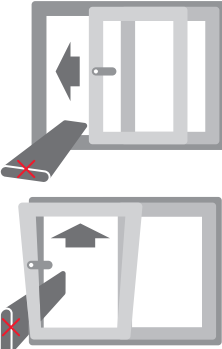
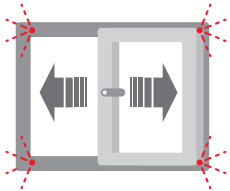
Misuse of windows and balcony doors can result in dangerous circumstances.

In particular, avoid the following applications:

- insertion of obstacles in the opening area between the frame and the window and balcony door sashes.
- the deliberate or negligent application of excessive loads on windows and balcony doors,
- deliberate or uncontrolled slamming or pushing of windows and balcony doors against the window reveal. This can destroy the hardware, frame materials, or other individual components of the windows or balcony doors.


Claims for damages of any type whatsoever resulting of operation other than that stipulated are excluded.

Comply with the following symbols and their meanings in order to avoid accidents, injuries and material damage.

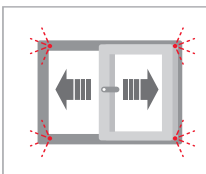
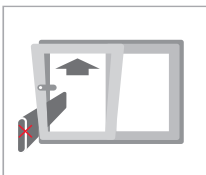
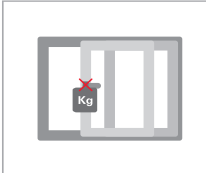


Symbol	Meaning
	<p>DANGER! Danger of injury from falling through open windows and balcony doors.</p> <ul style="list-style-type: none"> – Behave with care near to open windows and balcony doors. – Keep children and people who cannot estimate the dangers away from the point of danger.
	<p>WARNING! Danger of injury through trapping of body parts in the opening gap between sash and frame.</p> <ul style="list-style-type: none"> – When closing windows and balcony doors, never reach between sash and frame, and always act with care. – Keep children and people who cannot estimate the dangers away from the point of danger.
	<p>WARNING! Danger of injury and material damage from overloading the sash</p> <ul style="list-style-type: none"> – Do not overload the sash.
	<p>CAUTION! Danger of injury from the effect of wind</p> <ul style="list-style-type: none"> – Prevent wind from acting on the open sash. – During wind and drafts, close and lock windows and balcony door sashes.
	<p>CAUTION! Danger of injury and material damage from insertion of obstructions into the opening gap between sash and frame</p> <ul style="list-style-type: none"> – Do not insert obstructions into the opening gap between sash and frame.
	<p>CAUTION! Injury and property damage from uncontrolled opening and closing of the sash</p> <ul style="list-style-type: none"> – Ensure that the sash is guided slowly by hand throughout the entire range of movement as far as the fully opened or closed position.



The following symbols can be used on windows and balcony doors to protect the end-user. Always keep these symbols in a clearly legible state. Please order stickers separately (OPR_17_EN_v0).



Safety advice
Tilt&Slide hardware
with positive control



02/2012 OPR_17_EN_v0

Maximum sash sizes and weights

The technical data, application diagrams, and component classifications in the product-specific documentation of the hardware manufacturer give instructions on the maximum permitted sash sizes and weights. Here, the component with the smallest permitted load bearing capacity decides the maximum permitted sash weight.

- Check compliance of the technical data, application diagrams, and component classifications before the use of electronic data sets, and especially their use in fenestration programs.
- The maximum permitted sash sizes and weights must never be exceeded. In the case of uncertainty contact the hardware manufacturer.

Guidelines from the profile manufacturer

The manufacturer of windows and/or balcony doors must comply with all specified system-related dimensions (e.g. gasket gap dimension or locking separations). Furthermore, he must check these regularly and make certain of them, especially on the first use of new hardware components, during manufacture, in an ongoing manner up to and including the window installation.



NOTE!

The hardware components should in principle be designed in such a manner, that the system-related dimensions can be adjusted to the extent that they are affected by the hardware. If a deviation from these dimensions is noticed only after the installation of the windows, the hardware manufacturer is not responsible for any possible additional work arising.

Composition of hardware

Burglary inhibiting windows and balcony doors require hardware which fulfils particular requirements.

Windows and balcony doors for damp rooms, and those for use in environments with aggressive and corrosive air components require hardware which fulfils particular requirements.

The resistance of windows and balcony doors to wind loads when closed and locked depends on the actual designs of the windows and balcony doors. Wind loads prescribed by law and standards (e.g. as per EN 12210 – especially test pressure P3) can be dissipated by the hardware system.

The hardware combinations and installations appropriate for windows and balcony doors in the previously mentioned areas should be specifically selected and agreed with the hardware manufacturer and the profile manufacturer.



NOTE!

The guidelines of the hardware manufacturer relating to the combination of the hardware (e.g. the use of additional stay arms, the design of hardware for burglary-inhibiting sashes for windows and balcony doors, etc.) are binding.



- The hardware components described in these installation, maintenance and operation instructions are made of steel, colourless passivated and sealed according to DIN EN 12329.
- The hardware components may only be used with aluminium profiles.
- The hardware components may not be used in environments with salty, aggressive or corrosion-promoting air.

- The guide track and the roller track must not be painted.
- Surface-treating of Tilt&Slide elements may only be carried out before installation. A subsequent surface treatment may restrict the functioning of the hardware components.

- If in some cases it is expected (due to operation in hotels, schools, kindergartens etc.) that the element will be excessively used, this must be prevented by adequate measures. Also in movable objects like trains or ships there may occur disorders caused by the object movement.



DANGER!

Danger to life from incorrectly installed and threaded hardware components!

Incorrect installation and threading of hardware components can result in dangerous circumstances and cause severe accidents, even including death.

Therefore:

- For installation and especially for threaded components, observe the product-specific documentation and the information of the hardware manufacturer.

- For Roto Patio Z for aluminium hardware the application ranges on page 18–20 apply.
- Information with respect to screwing speed and torque are binding. (Do not overtighten the screws!)
- Fasten the hardware components with the included screws.
- Install all hardware components properly in accordance with these instructions.
- For the glazing packers the Technical Guidelines of the Glazing Trade, no. 3 “Packing of Glazing Units” must be observed.

Fixing screws for hardware components (included in delivery scope)

For components	Quantity	Size	Diameter to be drilled	drive unit
Bogies, cover support brackets	12 (24)	4.8 x 50	4.2	Torx 25
Roller track, guide track	40	3.9 x 45	3.2	Torx 15
Stay-connecting profile	10	3.9 x 9.5	3.2	Torx 15
Reinforcement brackets	4	M5x25	7.1 (for riveting nut)	Torx 25
Corner drives, scissor stays	10	M5x25	3.5	Torx 25
Connector AG	2	M5x8	–	Torx 25
Surface mounted positive-control handle	4	4.8x50	4.2	Torx 25
	2	M5x25	5.2	Torx 25
RotoLine handle	2	M5x50	10/12	⊕
RotoLine handle, inside and outside operation	4	M5x110	10/12	⊕



General hardware characteristics

- Positive-controlled central locking system for automatic starting and stopping of the tilt function
- Concealed central locking system
- Integrated mishandling device
- Sash arrangement according to diagram A, B, C, D, G, K
- Internal and external aesthetics like Tilt&Turn windows: narrow profiles, no offset glazing in the facade, handle position when the door is closed “downwards”
- Retracting distance: max. 117 mm
- Sash width: max. 2000 mm
- Sash height: max. 2700 mm
- Sash weight: max. 200 kg
- Clearance 11.5 + 0.5 mm
- Min. overlap height 7 mm
- Frame groove V.01/V.02
- Sash groove 15/20
- Sash thickness max. 87 mm
(for sash thicknesses of more than 87 mm, technical examination is necessary)

Application diagram

Patio 100Z Aluminium

Limitation of sash formats depending on the glass thickness

Application range

Sash width **SW**670–1280 mm

Sash height **SH**930–2380 mm

Sash weight **S.kg** max. 100 kg

Sash thickness max. 87 mm

(for sash thicknesses of more than 87 mm,
technical examination is necessary)

Glass weightmax. 60 kg / m²

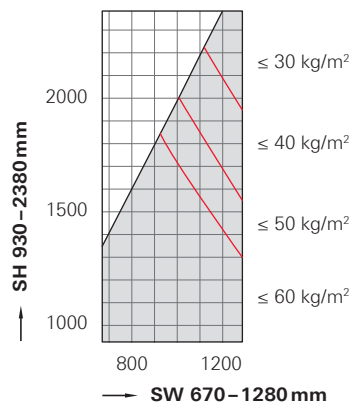
SH : SW = max. 2 : 1

The information in the application diagram refers
to the glass weight in kg / m².

1 mm/m² glass thickness = 2.5 kg

 = Impermissible application range

No spring scissor needed.





Application diagram

Patio 160Z Aluminium

Limitation of sash formats depending on the glass thickness

Application range

Sash width **SW** 670–2000 mm

Sash height **SH** 930–2700 mm

Sash weight **S.kg** max. 160 kg

Sash thickness max. 87 mm

(for sash thicknesses of more than 87 mm, technical examination is necessary)

Glass weight max. 60 kg / m²

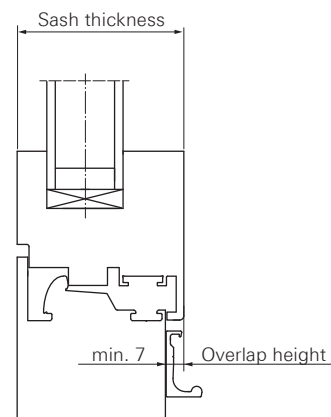
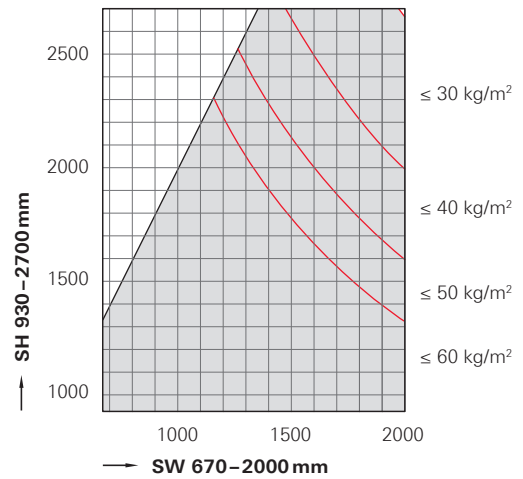
SH : SW = max. 2 : 1

The information in the application diagram refers to the glass weight in kg / m².

1 mm/m² glass thickness = 2.5 kg

 = Impermissible application range

A spring scissor is needed for sash thicknesses between 75 mm and 87 mm. In this case, the minimum sash width (SW) is 830 mm.



Application diagram

Patio 200Z Aluminium

Heavy-duty bogie from 160 kg

Limitation of sash formats depending on the glass thickness

Application range

Sash width **SW** 1080–2000 mm

Sash height **SH** 930–2700 mm

Sash weight **S.kg** max. 200 kg

Sash thickness max. 87 mm

(for sash thicknesses of more than 87 mm, technical examination is necessary)

Glass weight max. 60 kg / m²

SH : SW = max. 2 : 1

The information in the application diagram refers to the glass weight in kg / m².

1 mm/m² glass thickness = 2.5 kg

 = Impermissible application range

A spring scissor must always be used.

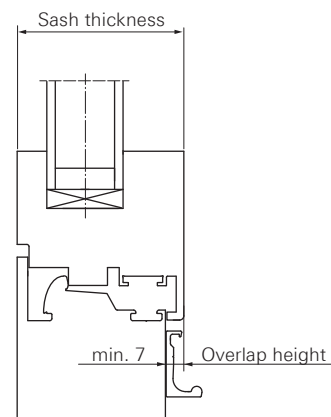
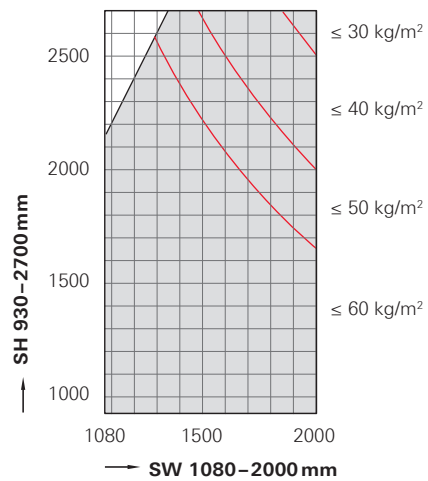




Diagram A

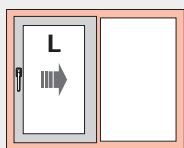


Diagram A
1 sliding sash (L or R)
1 fixed glazing

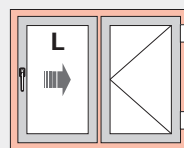


Diagram A
1 sliding sash (L or R)
1 Turn-Only sash

Diagram B

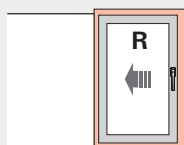


Diagram B
1 sliding sash (L or R)
Inside frame flush with the wall

Diagram C

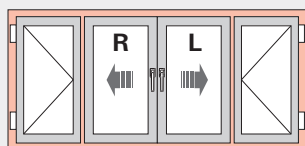


Diagram C
2 sliding sashes (L or R) with/without centre post
2 Turn-Only sashes (alternatively fixed glazing)

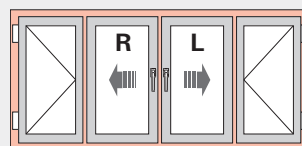


Diagram C
2 sliding sashes (L or R) with fixed centre post
2 Turn-Only sashes (alternatively fixed glazing)

Diagram D

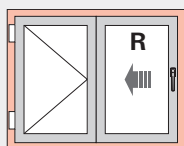


Diagram D
1 sliding sash (L or R) with/without centre post profile, slidable guide block required
(Installation situation of guide block see page 67).
1 Turn-Only sash

Diagram G

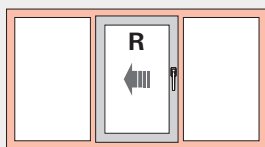


Diagram G
1 sliding sash (L or R)
2 fixed glazings

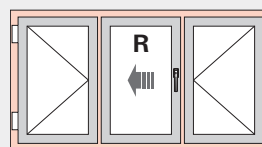


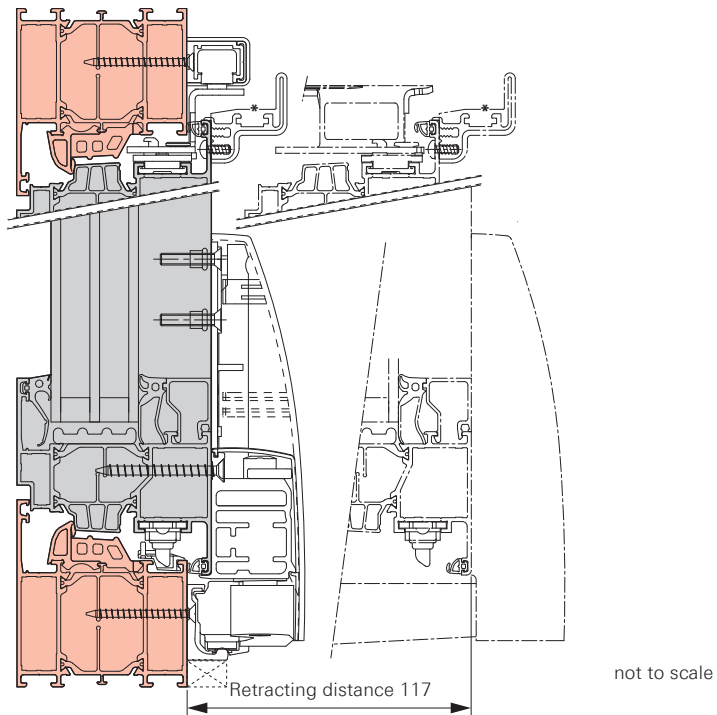
Diagram G
1 sliding sash (L or R)
2 Turn-Only sashes

Diagram K

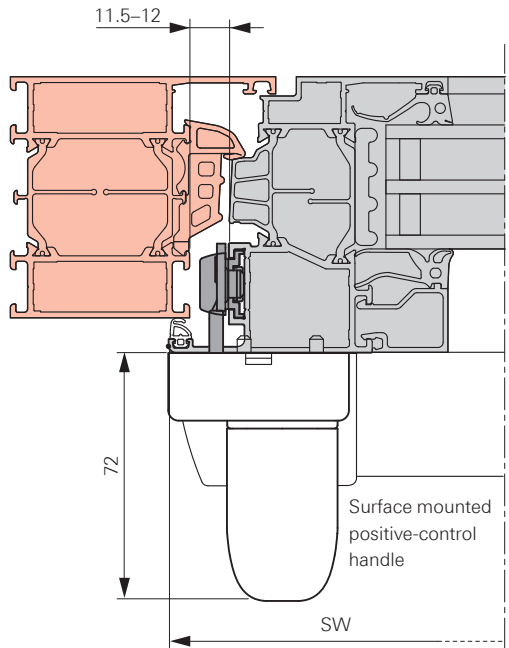


Diagram K
2 sliding sashes (L and R)
1 fixed glazing

Vertical cross section, top

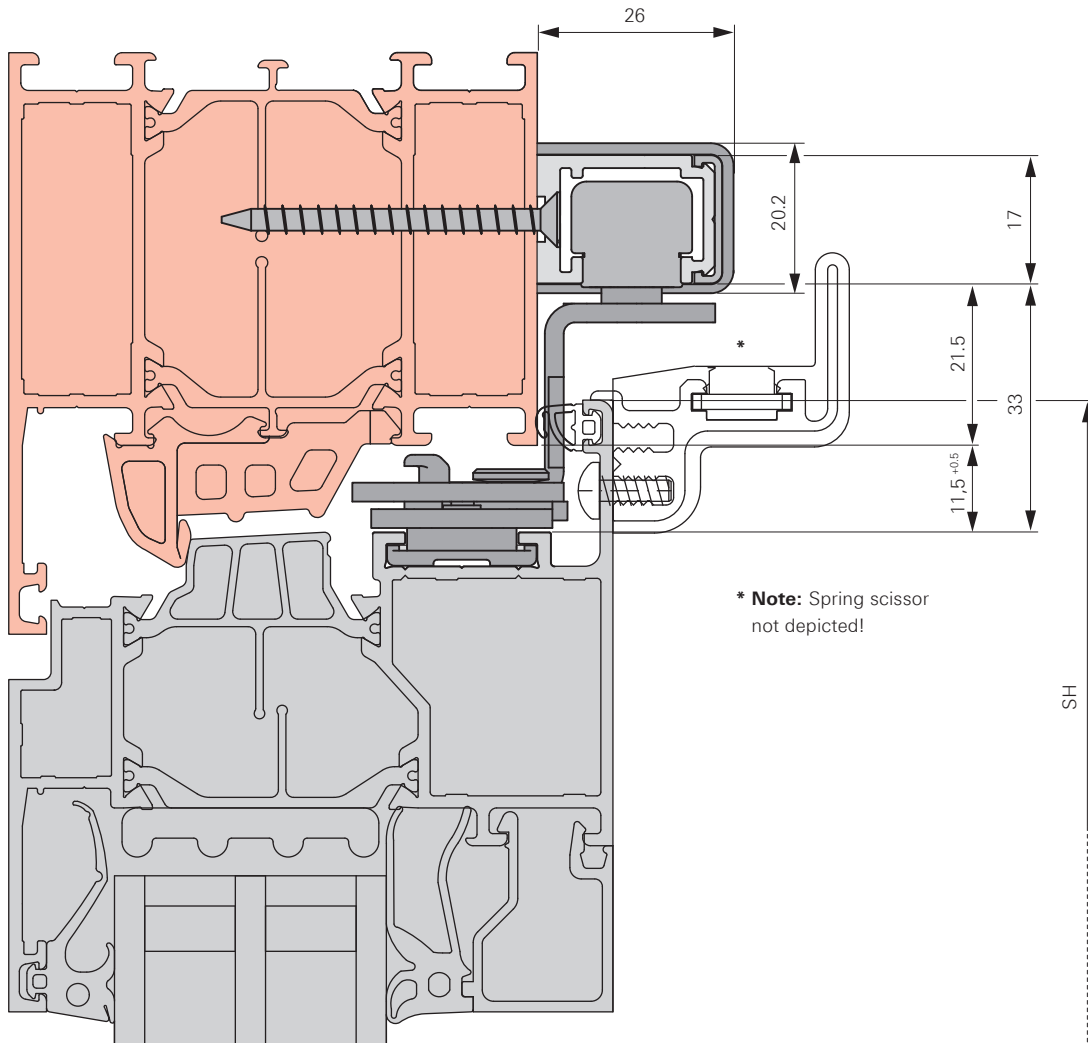


Horizontal cross section, handle



Vertical cross section, top

Scale 1:1

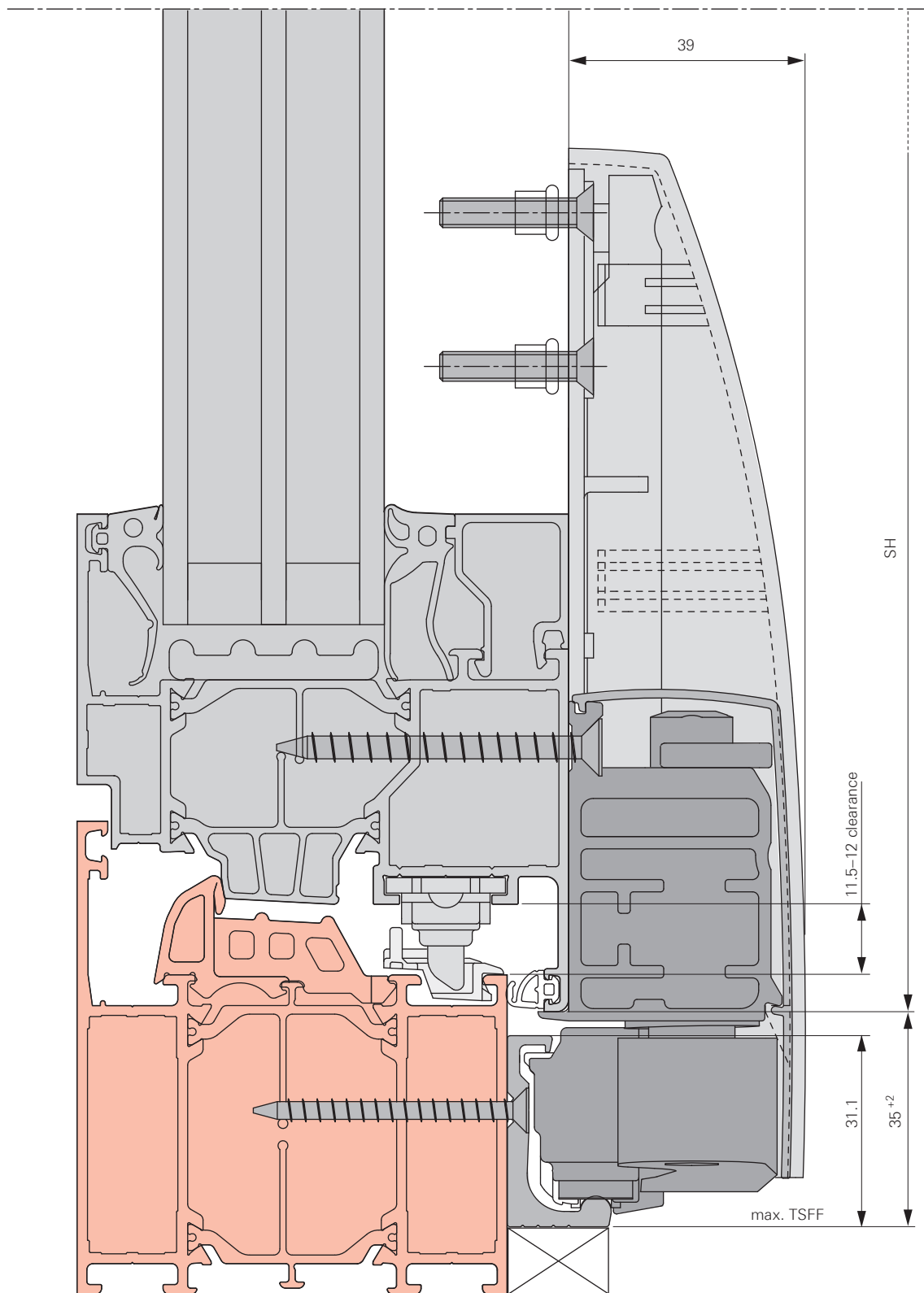


All dimensions stated in mm.

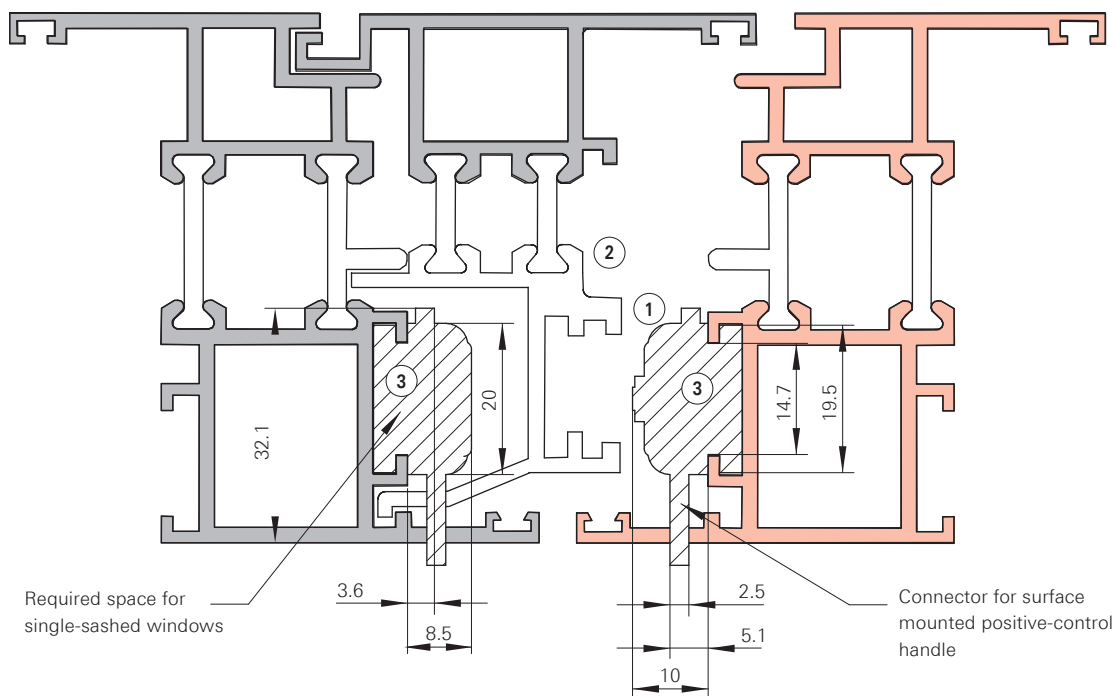


Vertical cross section, bottom

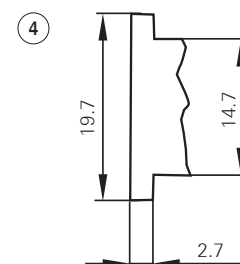
Scale 1:1



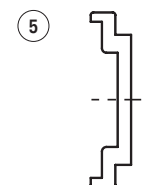
Space requirement for the hardware, diagram C



- ① It is imperative to adhere to the sash-frame alignment!
- ② No contact lip from the central gasket etc. may extend beyond the connecting-rod C-groove plane.
- ③ Required space.
Upon deviating dimensions, please consult with Roto!
All dimensions in mm.
- ④ Minimal dimensions of the connecting-rod C-groove, in which the hardware components must slide easily, even after colour coating.



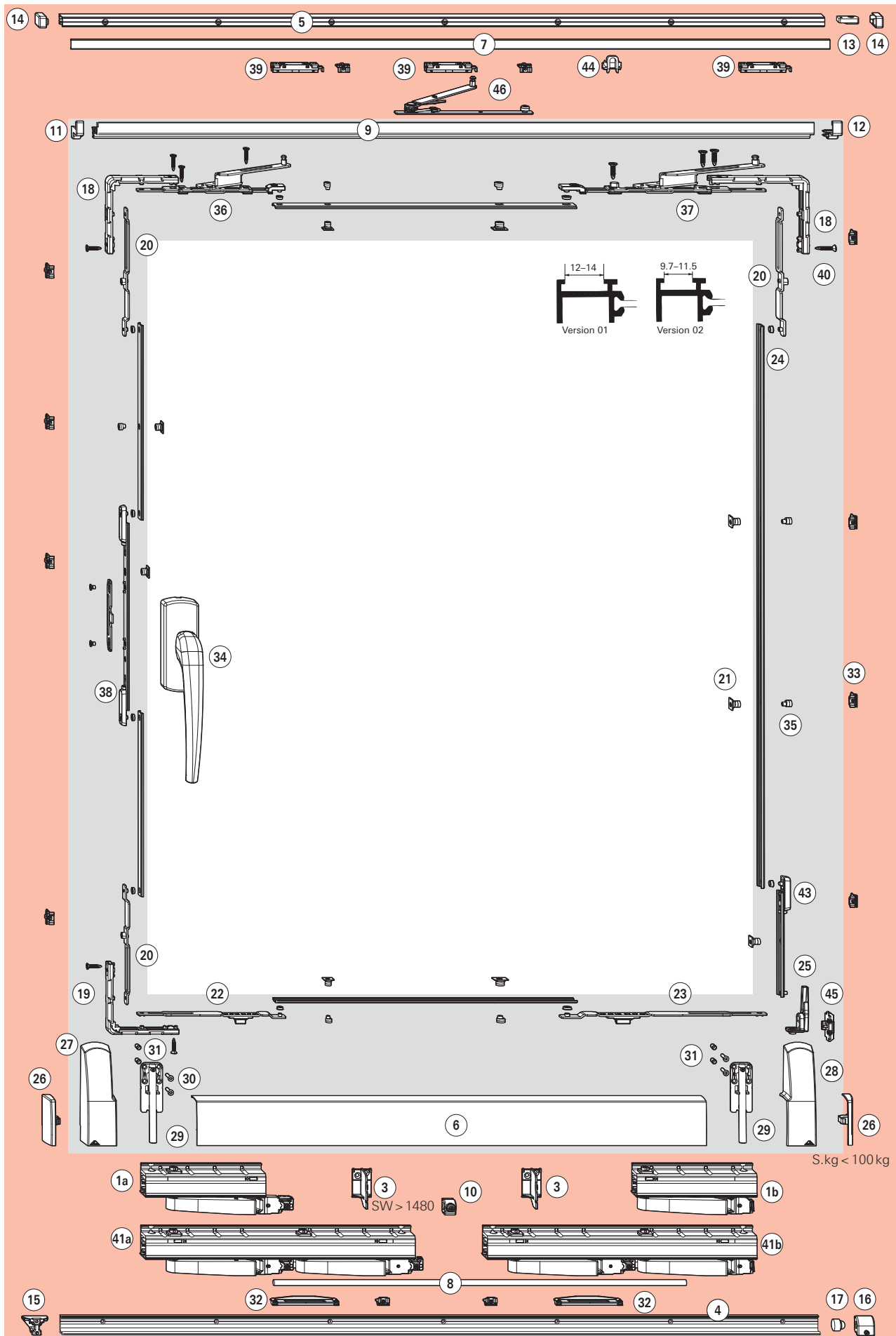
- ⑤ Specific connecting-rod profile for aluminium.



Hardware overview

Patio 160Z/200Z Aluminium – Basic security

Hardware overview D10/D6





Application range

Sash rebate width **SW**.....670–2000 mm

Sash rebate height **SH**.....930–2700 mm

Sash weight **S.kg** max. 200 kg

Basic carton Patio Z Aluminium	
Patio Z Aluminium Basic carton	L 625394
Contents:	
18	2 corner drives, top
19	1 corner drive, bottom
36	1 scissor stay, handle-sided L
37	1 scissor stay L
38	1 central hinge support, adjustable
22	1 bullet catch track L
23	1 bullet catch track R
20	3 linkages with locking cams
43	1 linkage, adjustable
Misc. small components pack:	
39	2 sliders 1 tool for slider-release device (not dep.)
Misc. small components pack:	
21	2 locking cams, insertable
25	1 mishandling device
Misc. small components pack:	
24	10 reducer-bushes 10/6
Misc. small components pack:	
40	10 countersunk screws M5x25

Patio Z Aluminium Basic carton	
	R 625382
Contents:	
18	2 corner drives, top
19	1 corner drive, bottom
38	1 central hinge support, adjustable
22	1 bullet catch track L
23	1 bullet catch track R
20	3 linkages with locking cams
43	1 linkage, adjustable
	1 scissor stay, handle-sided (not dep.) R
	1 scissor stay, (not dep.) R
Misc. small components pack:	
39	2 sliders 1 tool for slider-release device (not dep.)
Misc. small components pack:	
21	2 locking cams, insertable
25	1 mishandling device
Misc. small components pack:	
24	10 reducer-bushes 10/6
Misc. small components pack:	
40	10 countersunk screws M5x25

Spring scissor	
	629603
To be used in addition for:	
■ Sash weight from 160–200 kg	
■ Sash assembly depth 75–90 mm	
Contents of the misc. small components pack:	
46	1 spring scissor
39	1 slider

Bogies	
Patio Z Aluminium bogies up to 160 kg	L 625395
Contents:	
1a	1 leading bogie
1b	1 trailing bogie
3	2 cover support brackets 12 supporting-pin countersunk tapping-screws 4.8x45 T25 (not dep.)
Patio Z Aluminium bogies up to 160 kg	R 625384
Contents:	
2a	1 leading bogie (not dep.)
2b	1 trailing bogie (not dep.)
3	2 cover support brackets 12 supporting-pin countersunk tapping-screws 4.8x45 T25 (not dep.)
Patio Z Aluminium heavy-duty bogies from 160 kg	L 625397
Contents:	
41a	1 leading heavy-duty bogie
41b	1 trailing heavy-duty bogie
3	1 cover support bracket 12 supporting-pin countersunk tapping-screws 4.8x45 T25 (not dep.)
2x	
Patio Z Aluminium heavy-duty bogies from 160 kg	R 625396
Contents:	
42a	1 leading heavy-duty bogie (not dep.)
42b	1 trailing heavy-duty bogie (not dep.)
3	1 cover support bracket 12 supporting-pin countersunk tapping-screws 4.8x45 T25 (not dep.)
2x	

Track set

Track set for sash and frame incl. misc. small components pack

Non-treated

SW / mm	Frame external width (FEW) / mm	Material no.
670 – 930	1930	625445
931 – 1080	2230	625450
1081 – 1280	2630	625455
1281 – 1480	3030	625460
1481 – 1680	3430	625465
1681 – 2000	4130	625470

R01.5 Silver

SW / mm	Frame external width (FEW) / mm	Material no.
670 – 930	1930	625442
931 – 1080	2230	625447
1081 – 1280	2630	625452
1281 – 1480	3030	625457
1481 – 1680	3430	625462
1681 – 2000	4130	625467

R05.4 Dark bronze

SW / mm	Frame external width (FEW) / mm	Material no.
670 – 930	1930	625446
931 – 1080	2230	625451
1081 – 1280	2630	625456
1281 – 1480	3030	625461
1481 – 1680	3430	625466
1681 – 2000	4130	625471

R06.2 Jet-black

SW / mm	Frame external width (FEW) / mm	Material no.
670 – 930	1930	625444
931 – 1080	2230	625449
1081 – 1280	2630	625454
1281 – 1480	3030	625459
1481 – 1680	3430	625464
1681 – 2000	4130	625469

R07.2 Traffic-white

SW / mm	Frame external width (FEW) / mm	Material no.
670 – 930	1930	625443
931 – 1080	2230	625448
1081 – 1280	2630	625453
1281 – 1480	3030	625458
1481 – 1680	3430	625463
1681 – 2000	4130	625468

Contents:

Track set:

④	1 roller track *)	
⑤	1 guide track *)	
⑥	1 cover profile	
⑦	1 PVC cover profile	
⑧	1 connecting rod	
⑨	1 stay-connecting profile	
⑩	1 connecting-rod support-block (additionally included from SW > 1480)	

Misc. small components pack:

⑪	1 cover cap for stay-connecting profile	L
⑫	1 cover cap for stay-connecting profile	R
⑬	1 buffer stop, top	
⑭	2 cover caps guide track	
⑮	1 guide block	
⑯	1 bottom buffer stop	
⑰	1 rubber buffer stop, bottom	
	10 pan-head tapping screws 3.9 x 9.5 T15 (not dep.)	
	40 supporting-pin countersunk tapping-screws 3.9 x 45 T15 (not dep.)	

*) The guide track and the roller track must not be painted.

Cover caps

⑳ Cover caps small (pair) 200Z up to 100 kg

Description	Material no.
Non-treated	625398
R01.5 Silver	625399
R05.4 Dark bronze	625402
R06.2 Jet-black	625400
R07.2 Traffic-white	625401

Cover caps large (pair) 200Z up to 200 kg

Description	Material no.
Non-treated	625403
R01.5 Silver	625404
R05.4 Dark bronze	625407
R06.2 Jet-black	625405
R07.2 Traffic-white	625406

Contents:

⑳	1 cover cap	L
㉑	1 cover cap	R
㉒	2 reinforcement brackets, adjustable	

Misc. small components pack:

㉓	4 countersunk screws M5x25 T25
㉔	4 blind rivet nuts M5

Locking plates

Locking plates V.01	625486
Locking plates V.02	625487

Contents of the misc. small components pack:

㉕	2 guide strikers
㉖	8 strikers
㉗	1 guidance
㉘	1 frame-striker, mishandling device

Profile system assignment → page 39

㉙ Locking cam, insertable D10 **625491**

Contents of the misc. small components pack:

	3 locking cams, insertable
㉚	CL cam D6 625492

Contents of the misc. small components pack:

	3 CL cams
	Locking cam D10 V.01, complementary 625493
	Locking cam D10 V.02, complementary 625494

Contents of the misc. small components pack:

㉛	10 locking cams, insertable
㉜	10 strikers

Profile system assignment → page 39

Locking cam D6 V.01, complementary **625800**

Locking cam D6 V.02, complementary **625801**

Contents of the misc. small components pack:

㉝	10 CL cams
㉞	10 strikers

Profile system assignment → page 39

Guide strikers (spare part)

Guide strikers V.01 **625499**

Guide strikers V.02 **625500**

Contents of the misc. small components pack:

㉟	2 guide strikers
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Profile system assignment → page 39

㊱ Handles and geared-handles → page 34

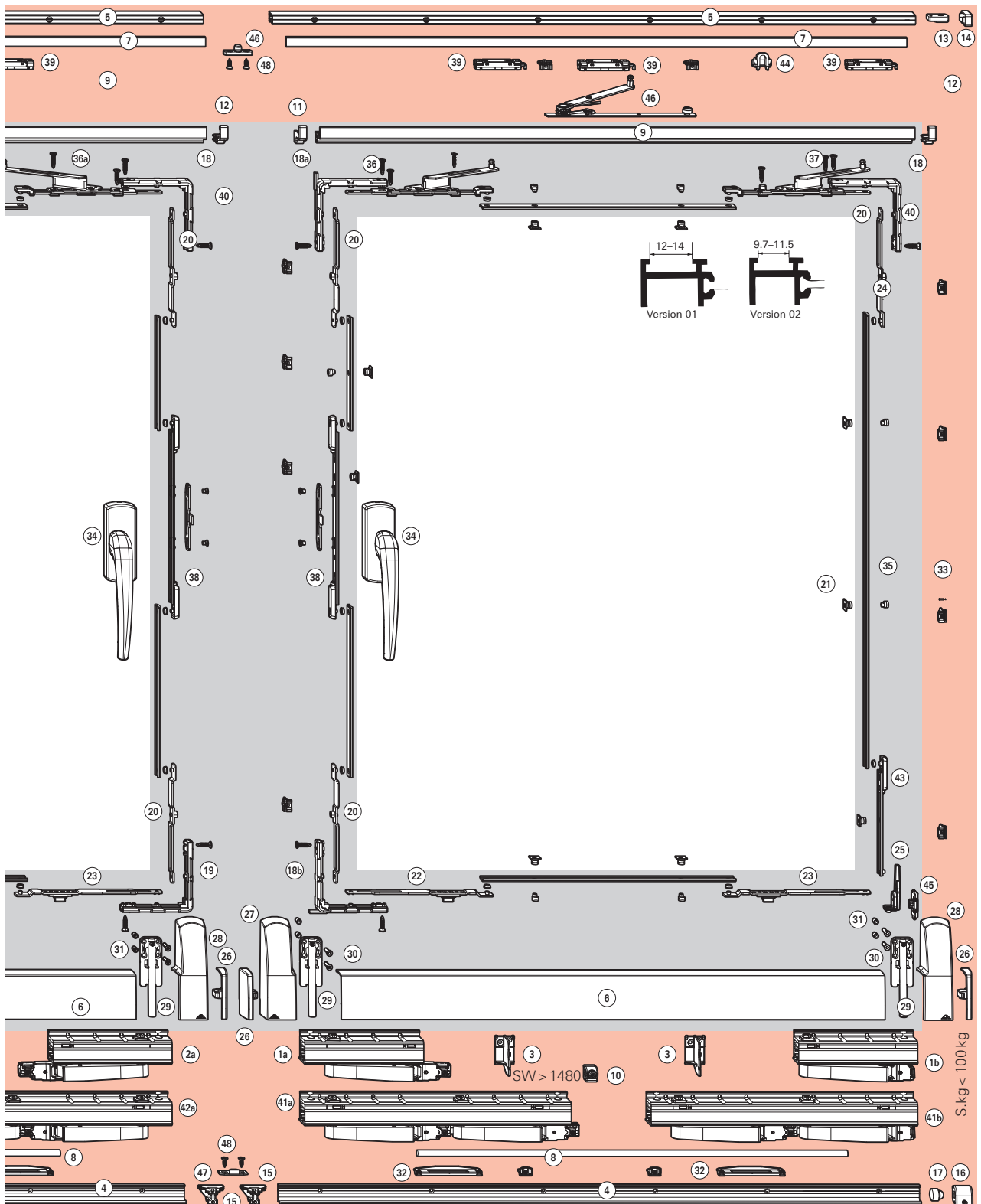
Flush-encased gearbox → page 36



Hardware overview

Patio 160Z/200Z Aluminium – Diagram C

Hardware overview D10/D6





Application range

Sash rebate width **SW**.....670–2000 mm

Sash rebate height **SH**.....930–2700 mm

Sash weight **S.kg** max. 200 kg

Basic carton Patio Z Aluminium	
Patio Z Aluminium Basic carton	L 625394
Contents:	
18	2 corner drives, top
19	1 corner drive, bottom
36	1 scissor stay, handle-sided L
37	1 scissor stay L
38	1 central hinge support, adjustable
22	1 bullet catch track L
23	1 bullet catch track R
20	3 linkages with locking cams
43	1 linkage, adjustable
Misc. small components pack:	
39	2 sliders 1 tool for slider-release device (not dep.)
Misc. small components pack:	
21	2 locking cams, insertable
25	1 mishandling device
Misc. small components pack:	
24	10 reducer-bushes 10/6
Misc. small components pack:	
40	10 countersunk screws M5x25
Patio Z Aluminium Basic carton faceplate 625383	
Contents:	
18	1 corner drive, top
18a	1 corner drive, top of faceplate
18b	1 corner drive, bottom of faceplate
36a	1 scissor stay, handle-sided R
38	1 central hinge support, adjustable
22	1 bullet catch track L
23	1 bullet catch track R
20	3 linkages with locking cams
43	1 linkage, adjustable
37a	1 scissor stay, (not dep.) R
Misc. small components pack:	
39	2 sliders 1 tool for slider-release device (not dep.)
Misc. small components pack:	
21	2 locking cams, insertable
25	1 mishandling device
Misc. small components pack:	
24	10 reducer-bushes 10/6
Misc. small components pack:	
40	10 countersunk screws M5x25
Spring scissor 629603	
To be used in addition for:	
■ Sash weight from 160–200 kg	
■ Sash assembly depth 75–90 mm	
Contents of the misc. small components pack:	
46	1 spring scissor
39	1 slider

Bogies	
Patio Z Aluminium bogies up to 160 kg	L 625395
Contents:	
1a	1 leading bogie
1b	1 trailing bogie
3	2 cover support brackets 12 supporting-pin countersunk tapping-screws 4.8x45 T25 (not dep.)
Patio Z Aluminium bogies up to 160 kg	R 625384
Contents:	
2a	1 leading bogie
2b	1 trailing bogie (not dep.)
3	2 cover support brackets 12 supporting-pin countersunk tapping-screws 4.8x45 T25 (not dep.)
Patio Z Aluminium heavy-duty bogies from 160 kg	L 625397
Contents:	
41a	1 leading heavy-duty bogie
41b	1 trailing heavy-duty bogie
3	1 cover support bracket 12 supporting-pin countersunk tapping-screws 4.8x45 T25 (not dep.)
2x	
Patio Z Aluminium heavy-duty bogies from 160 kg	R 625396
Contents:	
42a	1 leading heavy-duty bogie
42b	1 trailing heavy-duty bogie (not dep.)
3	1 cover support bracket 12 supporting-pin countersunk tapping-screws 4.8x45 T25 (not dep.)
2x	

Track Set, 1 piece per sash		
Track set for sash and frame incl. misc. small components pack		
Non-treated		
SW / mm	Frame external width (FEW) / mm	Material no.
670 – 930	1930	625445
931 – 1080	2230	625450
1081 – 1280	2630	625455
1281 – 1480	3030	625460
1481 – 1680	3430	625465
1681 – 2000	4130	625470
R01.5 Silver		
SW / mm	Frame external width (FEW) / mm	Material no.
670 – 930	1930	625442
931 – 1080	2230	625447
1081 – 1280	2630	625452
1281 – 1480	3030	625457
1481 – 1680	3430	625462
1681 – 2000	4130	625467
R05.4 Dark bronze		
SW / mm	Frame external width (FEW) / mm	Material no.
670 – 930	1930	625446
931 – 1080	2230	625451
1081 – 1280	2630	625456
1281 – 1480	3030	625461
1481 – 1680	3430	625466
1681 – 2000	4130	625471
R06.2 Jet-black		
SW / mm	Frame external width (FEW) / mm	Material no.
670 – 930	1930	625444
931 – 1080	2230	625449
1081 – 1280	2630	625454
1281 – 1480	3030	625459
1481 – 1680	3430	625464
1681 – 2000	4130	625469
R07.2 Traffic-white		
SW / mm	Frame external width (FEW) / mm	Material no.
670 – 930	1930	625443
931 – 1080	2230	625448
1081 – 1280	2630	625453
1281 – 1480	3030	625458
1481 – 1680	3430	625463
1681 – 2000	4130	625468
Contents:		
Track set:		
④	1 roller track *)	
⑤	1 guide track *)	
⑥	1 cover profile	
⑦	1 PVC cover profile	
⑧	1 connecting rod	
⑨	1 stay-connecting profile	
⑩	1 connecting-rod support-block (additionally included from SW > 1480)	
Misc. small components pack:		
⑪	1 cover cap for stay-connecting profile	L
⑫	1 cover cap for stay-connecting profile	R
⑬	1 buffer stop, top	
⑭	2 cover caps guide track	
⑮	1 guide block	
⑯	1 bottom buffer stop	
⑰	1 rubber buffer stop, bottom	
	10 pan-head tapping screws 3.9x9.5 T15 (not dep.)	
	40 supporting-pin countersunk tapping-screws 3.9x45 T15 (not dep.)	

*) The guide track and the roller track must not be painted.

Cover caps	
②6 Cover caps small (pair) 200Z up to 100 kg	
Description	Material no.
Non-treated	625398
R01.5 Silver	625399
R05.4 Dark bronze	625402
R06.2 Jet-black	625400
R07.2 Traffic-white	625401
Cover caps large (pair) 200Z up to 200 kg	
Description	Material no.
Non-treated	625403
R01.5 Silver	625404
R05.4 Dark bronze	625407
R06.2 Jet-black	625405
R07.2 Traffic-white	625406
Contents:	
②7	1 cover cap L
②8	1 cover cap R
②9	2 reinforcement brackets, adjustable
Misc. small components pack:	
③0	4 countersunk screws M5x25 T25
③1	4 blind rivet nuts M5
Locking plates	
Locking plates V.01	625486
Locking plates V.02	625487
Contents of the misc. small components pack:	
③2	2 guide strikers
③3	8 strikers
④4	1 guidance
④5	1 frame-striker, mishandling device
Profile system assignment	→ page 39
Faceplate sheets 10 mm groove	625488
Faceplate sheets 12 mm groove	625489
Faceplate sheets 14 mm groove	625490
Contents of the misc. small components pack:	
④6	1 faceplate sheet, top
④7	1 striker, bottom
④8	4 countersunk tapping-screws 4.8 x 25
Profile system assignment	→ page 39
Locking cam, insertable D10	625491
Contents of the misc. small components pack:	
⑤1	3 locking cams, insertable
CL cam D6	625492
Contents of the misc. small components pack:	
⑤5	3 CL cams
Locking cam D10 V.01, complementary	625493
Locking cam D10 V.02, complementary	625494
Contents of the misc. small components pack:	
⑤1	10 locking cams, insertable
⑤3	10 strikers
Profile system assignment	→ page 39
Locking cam D6 V.01, complementary	625800
Locking cam D6 V.02, complementary	625801
Contents of the misc. small components pack:	
⑤5	10 CL cams
⑤3	10 strikers
Profile system assignment	→ page 39

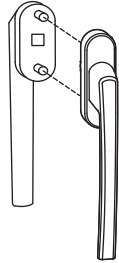


Guide strikers (spare part)	
Guide strikers V.01	625499
Guide strikers V.02	625500
Contents of the misc. small components pack:	
③② 2 guide strikers	
Profile system assignment	→ page 39
③④ Handles and geared-handles	→ page 34
Flush-encased gearbox	→ page 36



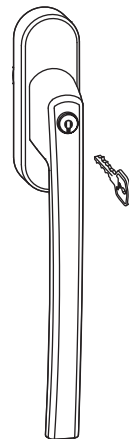
RotoLine handle, with Roto logo, inside and outside operation
 spindle length 135 mm

Roto colour no.	Colour	Material no.
R 01.5	Silver	626532
R 05.4	Dark bronze	601692
R 06.2M	Jet-black, matt	626533
R 07.2	Traffic-white	601693



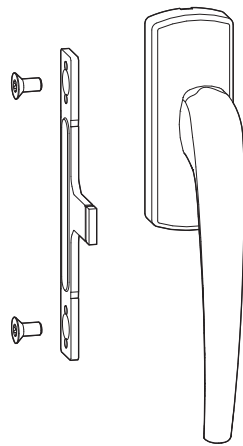
RotoLine handle, with Roto logo
 spindle length 35 mm

Roto colour no.	Colour	Material no.
R01.5	Silver	626528
R05.4	Dark bronze	494479
R 06.2M	Jet-black, matt	626529
R07.2	Traffic-white	494480



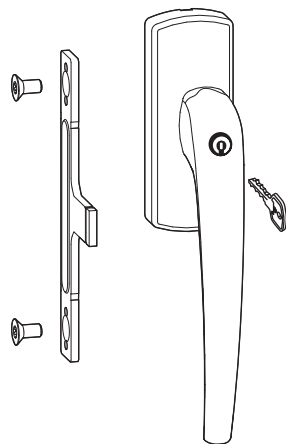
RotoLine handle, with Roto logo, lockable
 spindle length 35 mm

Roto colour no.	Colour	Material no.
R01.5	Silver	626530
R05.4	Dark bronze	494485
R 06.2M	Jet-black, matt	626531
R07.2	Traffic-white	494486



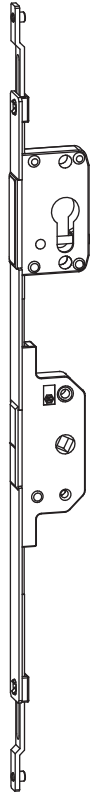
Surface mounted positive-control handle, incl. connector

Roto colour no.	Colour	Material no.
R 01.5	Silver	L 625412 R 625408
R 05.4	Dark bronze	L 625415 R 625411
R 06.2M	Jet-black, matt	L 625414 R 625410
R 07.2	Traffic-white	L 625413 R 625409



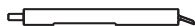
Surface mounted positive-control handle, lockable, incl. connector

Roto colour no.	Colour	Material no.
R 01.5	Silver	L 625420 R 625416
R 05.4	Dark bronze	L 625423 R 625419
R 06.2M	Jet-black, matt	L 625422 R 625418
R 07.2	Traffic-white	L 625421 R 625417

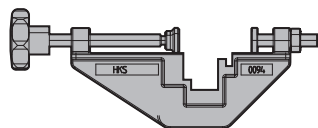


Flush-encased gearbox, lockable espagnolette

Backset/mm	Material no.
30	625424
40	625425



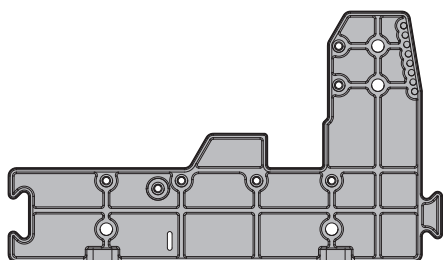
Slider-release device 562759



Jig for roller track and guide track 563967



Drilling aid for roller track and guide track 207583



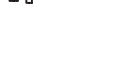
Drilling jig for bogie 563968



Jig for guide block 563969



Torx key T10 625172



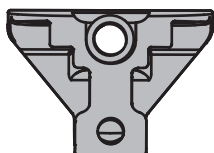
Torx key T15 625173



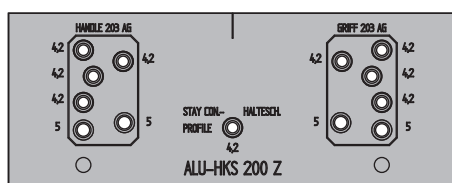
Torx key T25 563971



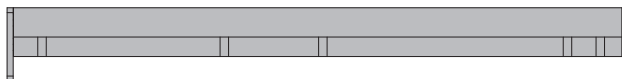
Torx key T40 563970



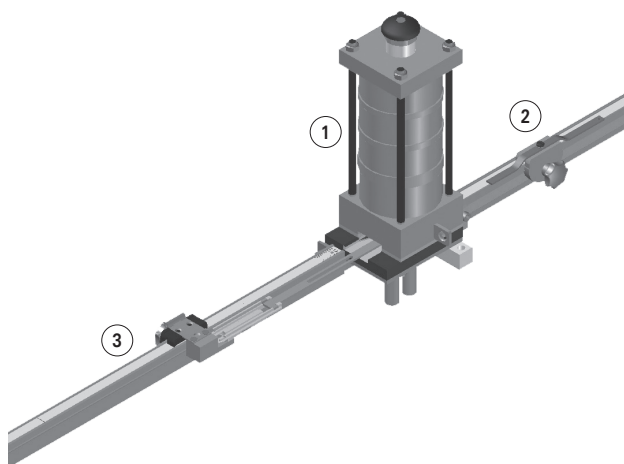
Drilling jig for guide block, adjustable 566970



Drilling jig for surface mounted positive-control handle and stay-connecting profile 623669



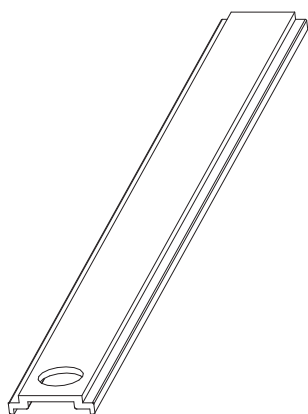
Drilling jig for corner drive and scissor stay 623668



Croppers

Pos.	Component description	PQ	Material no.
①	'Comfort' cropper PS4 G Ø 10 mm	1	350309
②	Standard linear ruler	1	350314
③	Linear ruler for sash stay 370 / 390	1	383867

Pneumatic cropper for cropping and hole-stamping the connecting-rod.



Connecting-rod

Component description	PQ	Material no.
AluVision connecting-rod	6m	334665
Specific connecting-rod profile		

Description	Colour	Comment	Length in mm	Material no.	
Tracks					
Roller track	R01.5	Silver	6070	562764	
Roller track	R05.4	Dark bronze	6070	562765	
Roller track	R06.2	Jet-black	6070	625472	
Stay-connecting profile					
Stay-connecting profile		Non-treated	5220	625473	
Stay-connecting profile	R01.5	Silver	5220	625474	
Stay-connecting profile	R05.4	Dark bronze	5220	628493	
Stay-connecting profile	R06.2	Jet-black	5220	625475	
Stay-connecting profile	R07.2	Traffic-white	5220	625476	
Guide track					
Guide track	R01.5	Silver	6070	217140	
Cover profiles					
Aluminium cover profile			Non-treated	5190	625477
Aluminium cover profile	R01.5	Silver	5190	625478	
Aluminium cover profile	R05.4	Dark bronze	5190	625481	
Aluminium cover profile	R06.2	Jet-black	5190	625479	
Aluminium cover profile	R07.2	Traffic-white	5190	625480	
PVC cover profile					
PVC cover profile	R01.5	Silver	6080	625482	
PVC cover profile	R06.2	Jet-black	6080	217167	
PVC cover profile	R07.2	Traffic-white	6080	562780	
Connecting rod			3600	217057	
Guide block, slidable (jig 566970 required)					
Guide block, slidable	R01.5	Silver	6070	563558	
Connecting-rod support-block				625483	



Profile system	Series	Frame Groove in mm	Locking plates	Faceplate sheets	Guide strikers	Strikers and locking cams	
						D10	D6
Akotherm	AT 720/730-740	12	625486	625489	625499	625493	625800
Alcan	TC 2000	12	625486	625489	625499	625493	625800
Aliplast	Imperial Serie 800	12	625486	625489	625499	625493	625800
Alsec	Serie 3000	14	625486	625490	625499	625493	625800
Alumil	M 11000/11500/11600	14	625486	625490	625499	625493	625800
Alutherm	AT 700/800	14	625486	625490	625499	625493	625800
Bröckelmann	RG 60/75	10	625487	625488	625500	625494	625801
Domal Break	PA 63/70S	14	625486	625490	625499	625493	625800
Eural	65/75/1.0	14	625486	625490	625499	625493	625800
Graute	Therm 90	10	625487	625488	625500	625494	625801
Heral (sash with groove 15/20)	110 ES	10	625487	625488	625500	625494	625801
	O65	10	625487	625488	625500	625494	625801
Hörmann		14	625486	625490	625499	625493	625800
Kawneer Alcoa	AA 610/630/720 HI	10	625487	625488	625500	625494	625801
Klauke	Softline	14	625486	625490	625499	625493	625800
Kubal	Serie 55/65	10	625487	625488	625500	625494	625801
Metra		12	625486	625489	625499	625493	625800
MKF	TKI 755	12	625486	625489	625499	625493	625800
Raico	Frame+	10	625487	625488	625500	625494	625801
Reynaers	all CS series	14	625486	625490	625499	625493	625800
SAPA	Avantis 75	14	625486	625490	625499	625493	625800
Sommer		12	625486	625489	625499	625493	625800
Sprangers		14	625486	625490	625499	625493	625800
Sun Flex		10	625487	n.a.	625500	625494	625801
Sykon	70/70 plus – 75/75 plus	10	625487	625488	625500	625494	625801
Technal	Soleal	10	625487	625488	625500	625494	625801
TSG	S 70/S 70V	10	625487	625488	625500	625494	625801
van Beveren	A/B/R 50	14	625486	625490	625499	625493	625800
Winsol		10	625487	625488	625500	625494	625801
Wipro					625499		
Yawal	TM 77 Hi	14	625486	625490	625491	625493	625800

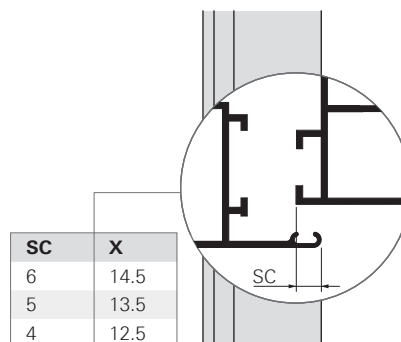
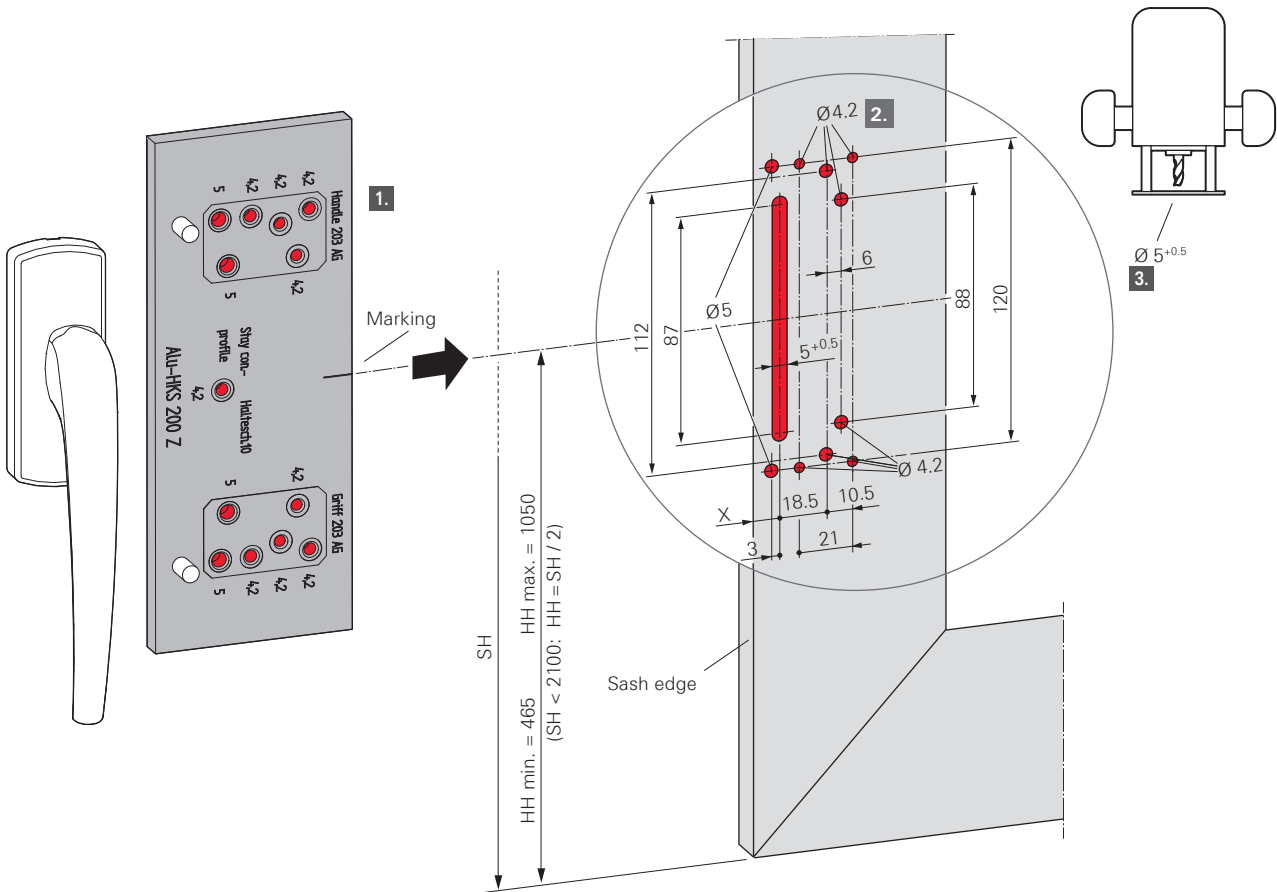
Further profiles are available upon request.

Installation

Sash

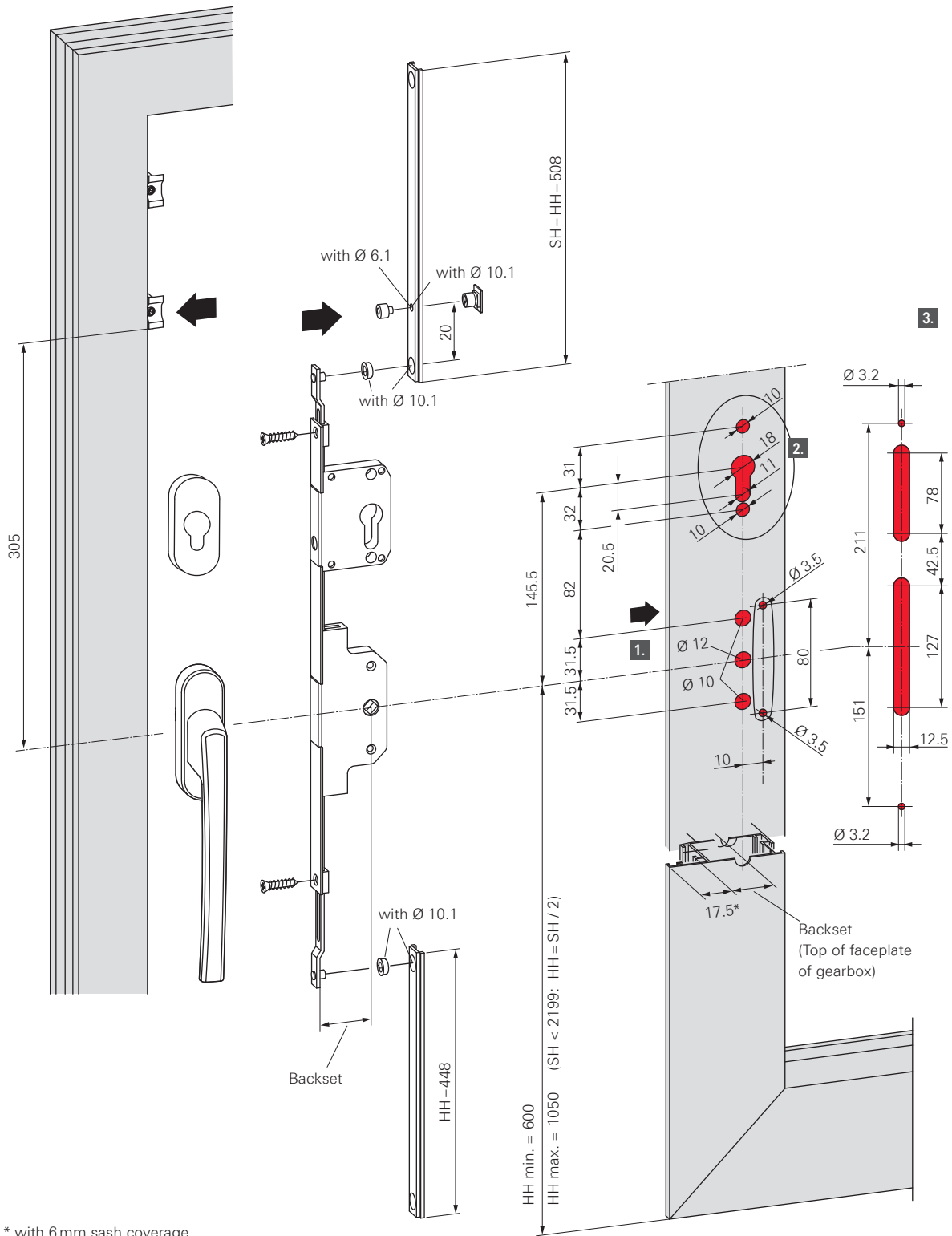
Carrying out the espagnolette drilling & routing for surface mounted positive-control handle

1. Position the drilling jig for surface mounted positive-control handle and stay-connecting profile (623669) at the marking for the desired handle height. If necessary, fix it with a screw clamp.
2. Carry out the handle drillings (12 drill-holes).
3. Cut the connector slot.





1. Handle (sash inside): drill 2 x Ø 10 mm and 1 x Ø 12 mm for the handle.
2. Carry out the profile cylinder drillings.
3. Carry out the routings for the espagnolette.
4. Mount espagnolette and handle (not dep.).
5. If necessary, additional drillings to fix the handle can be carried out directly on the handle (not dep.).



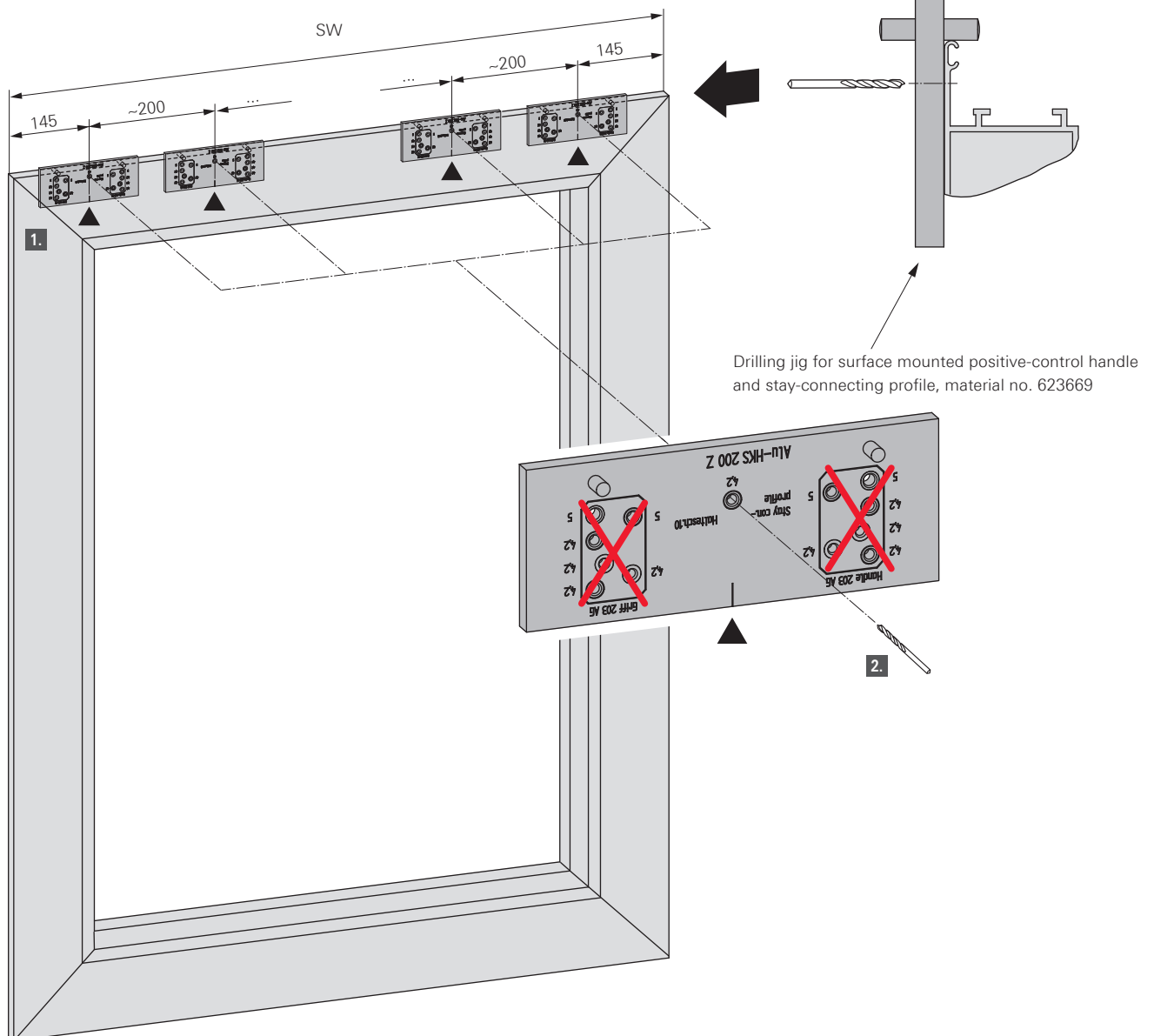
* with 6 mm sash coverage

Installation

Sash

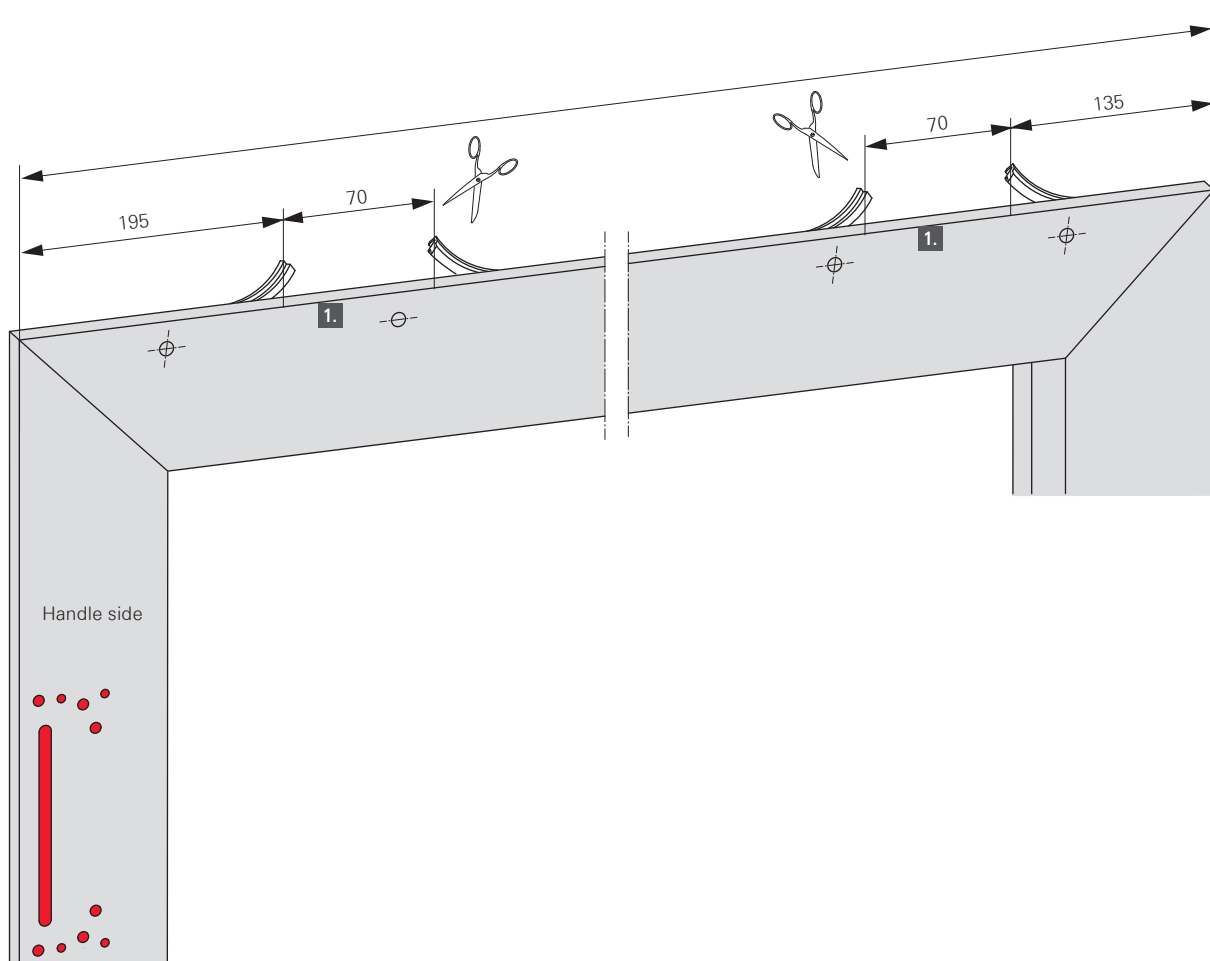
Carrying out the drillings for the stay-connecting profile

1. Position the drilling jig for surface mounted positive-control handle and stay-connecting profile (623669) on the upper edge of the sash profile as shown. If necessary, fix it with a screw clamp.
2. Drill the holes with $\varnothing 4.2$ mm drill according to the illustration below.





1. Notch out the sash gasket in both of the scissor-stay arms depicted areas.

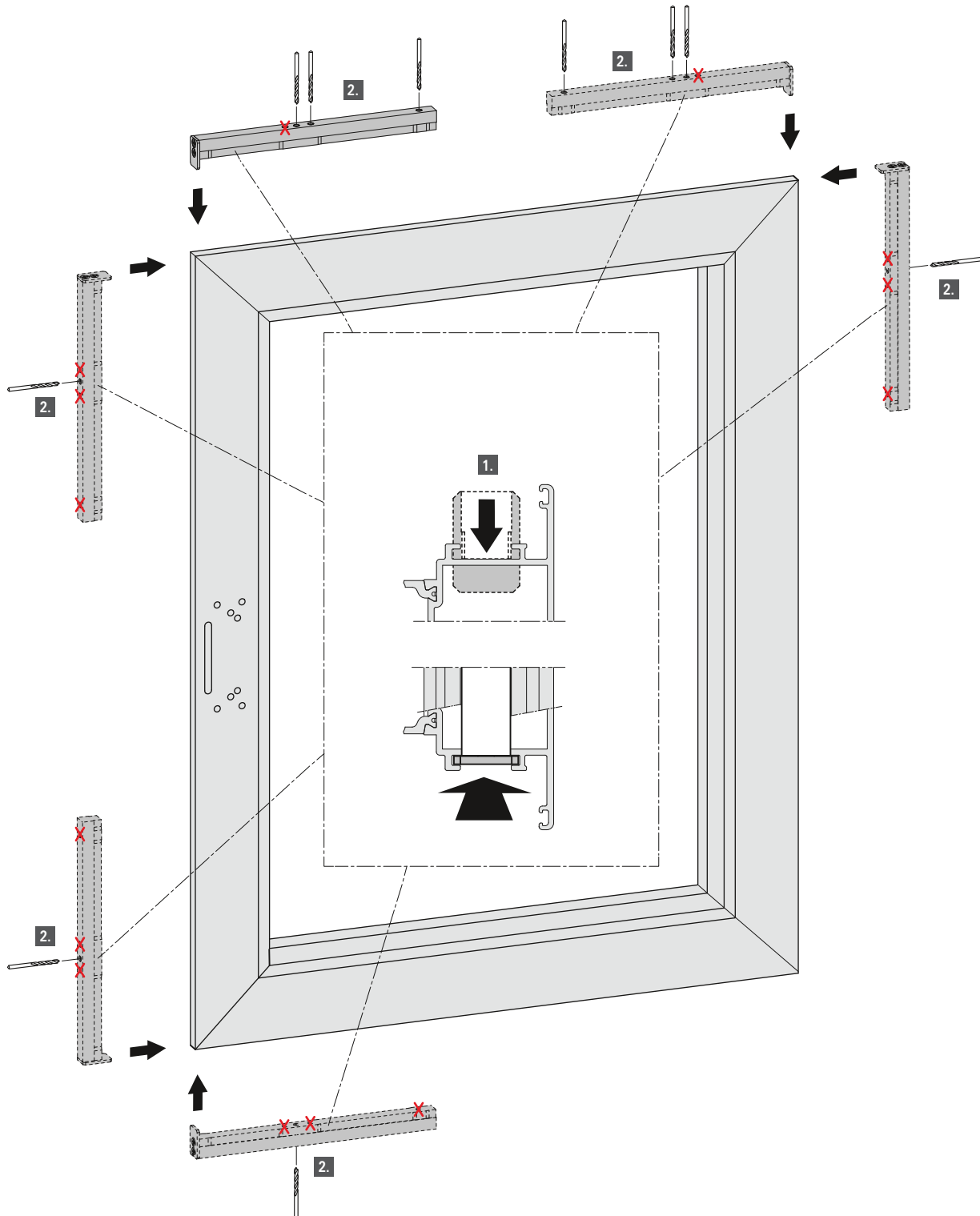


Installation

Sash

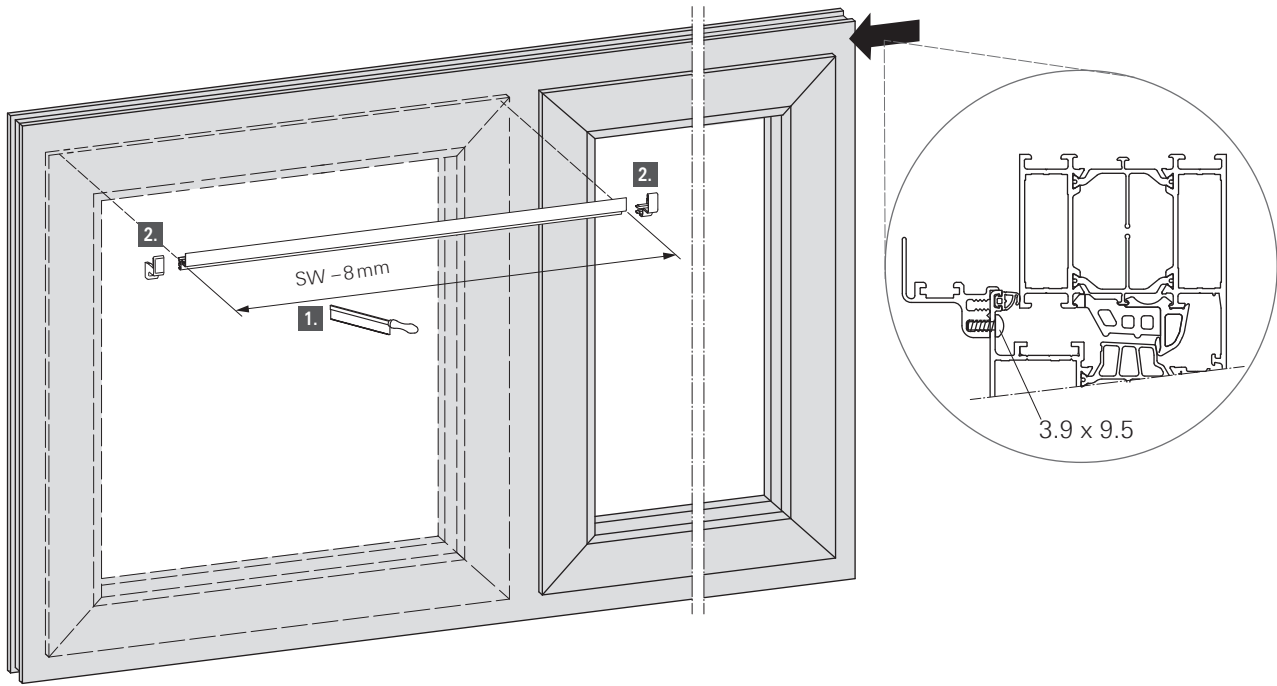
Drill the holes for the corner drive and the scissor stays.

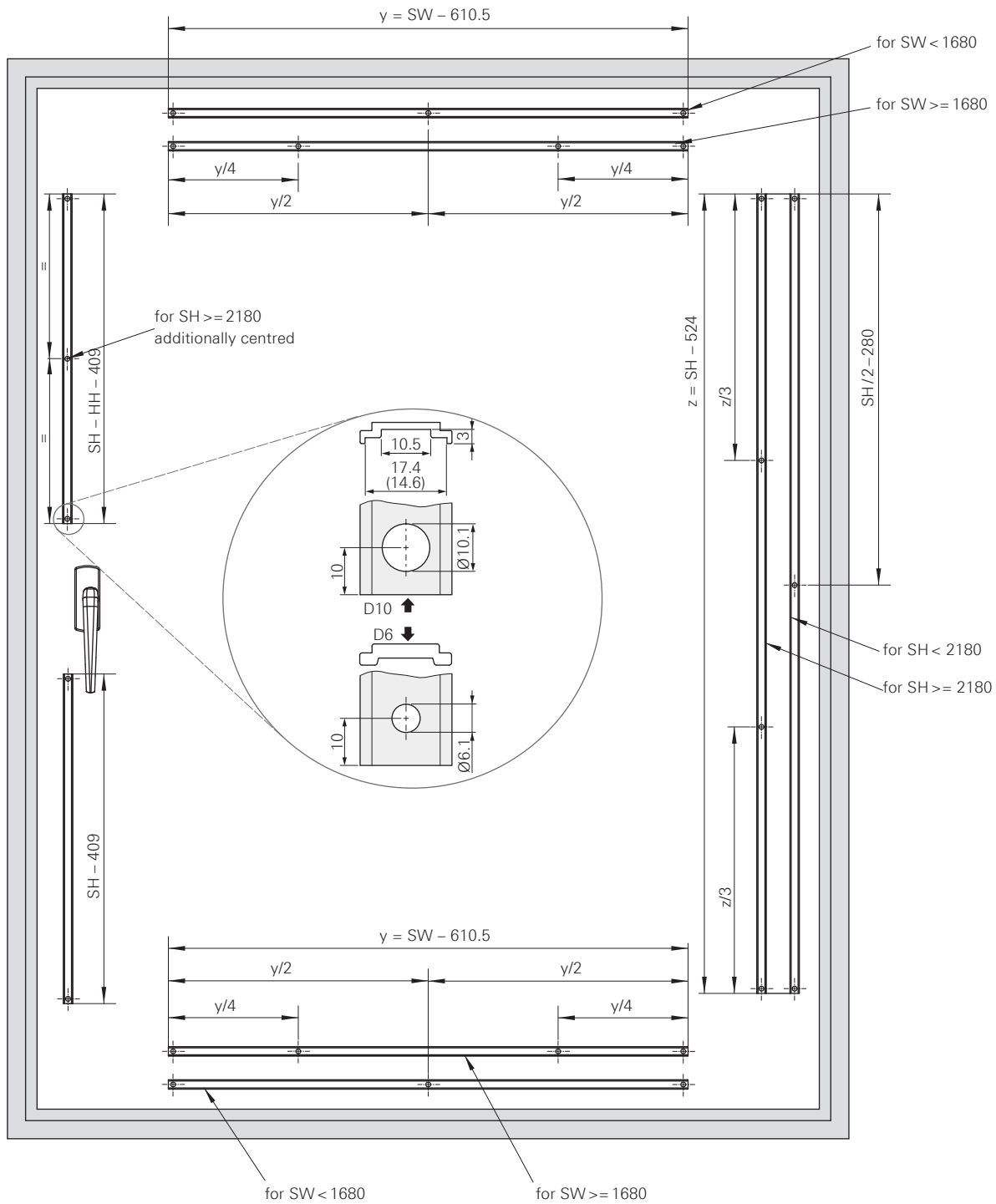
1. Insert the drilling jig for corner drive and scissor stay (623668) with the buffer stop into the hardware groove successively as shown.
2. Drill the corresponding holes with $\varnothing 3.5$ mm drill.



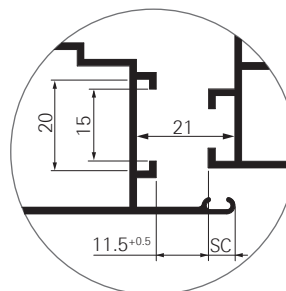


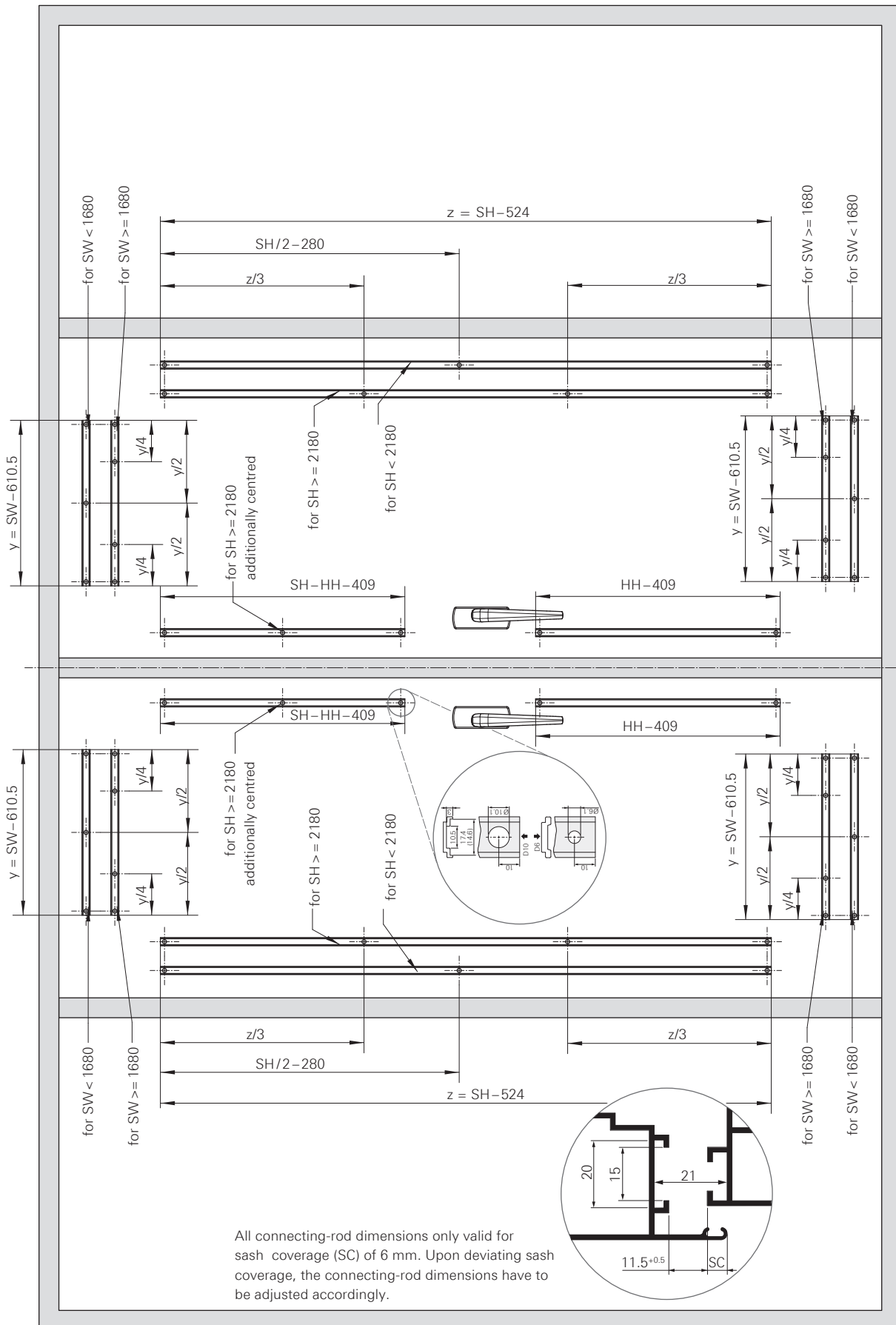
1. Length of the stay-connecting profile:
Sash width minus 8 mm. Screw-fix centred onto the sash (3.9 x 9.5).
2. Mount the cover caps on the ends of the stay-connecting profile at the left and right.





All connecting-rod dimensions only valid for sash coverage (SC) of 6 mm. Upon deviating sash coverage, the connecting-rod dimensions have to be adjusted accordingly.



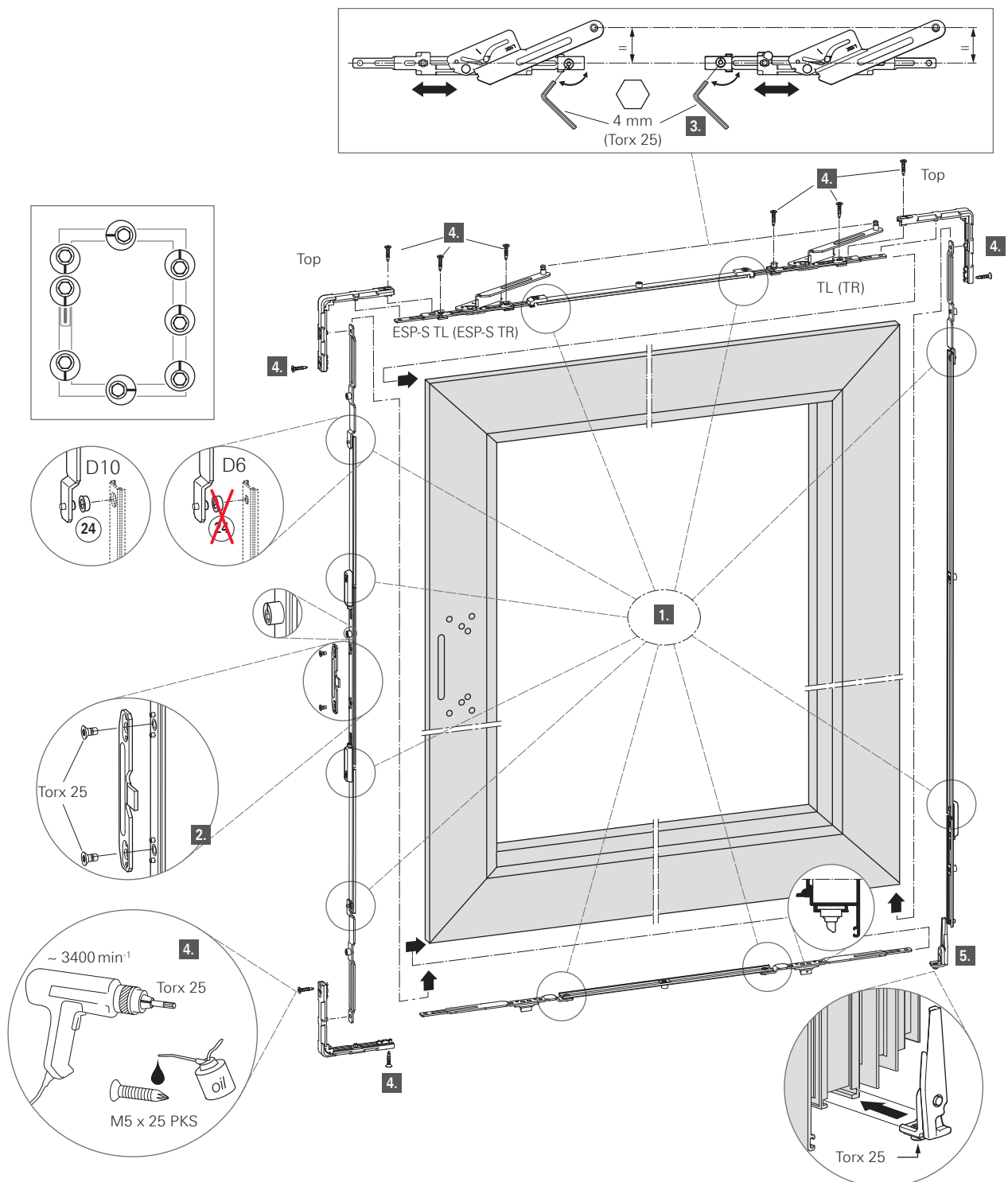


Installation

Sash

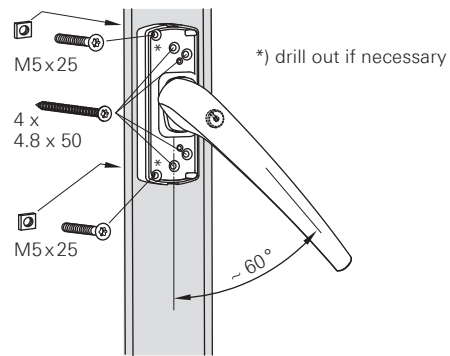
Installing hardware components – Installation procedure

1. Connect the corresponding components with each other step-by-step and slide into the profile groove of the sash. Ensure the correct orientation of the cams.
When using connecting-rods with $\varnothing 10.1$ mm drill holes, reducer-bushes have to be attached to the connection points of the hardware components as shown (see also hardware overview on page 26).
2. Push through the connector at the handle slot and screw-fix with the central hinge support (2 x M5 x 8).
3. Make sure that the scissors are in the same position. Set the scissor-stay arms parallel to each other with an Allen key 4 mm (alternatively Torx key T25) at the indicated positions.
4. Fix the central locking system with fixing screws M5 x 25 PKS.
Test the function via the connector.
5. Install the mishandling device.

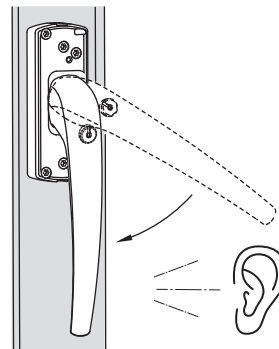




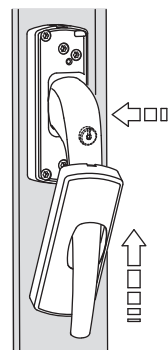
1. Position the surface mounted positive-control handle, move it approx. 60° from the closing position and screw-fix with screws 4.8 x 50 (4 pcs.) and M5 x 25 and nuts (each 2 pcs.) (if necessary, drill out the handle casing with Ø 5 mm drill).



2. Check the gearbox function for ease of movement (audible click sound OK?) If necessary, check the central locking system.



3. Position the rosette and clip on the handle casing.

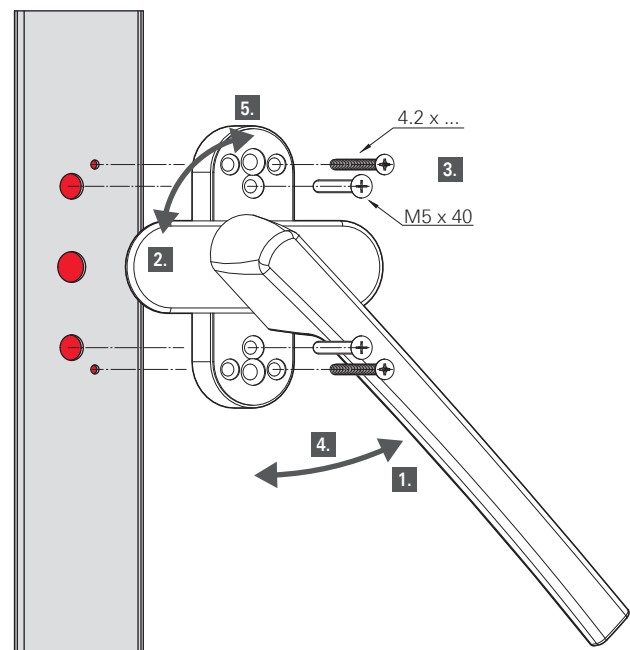


Installation

Sash

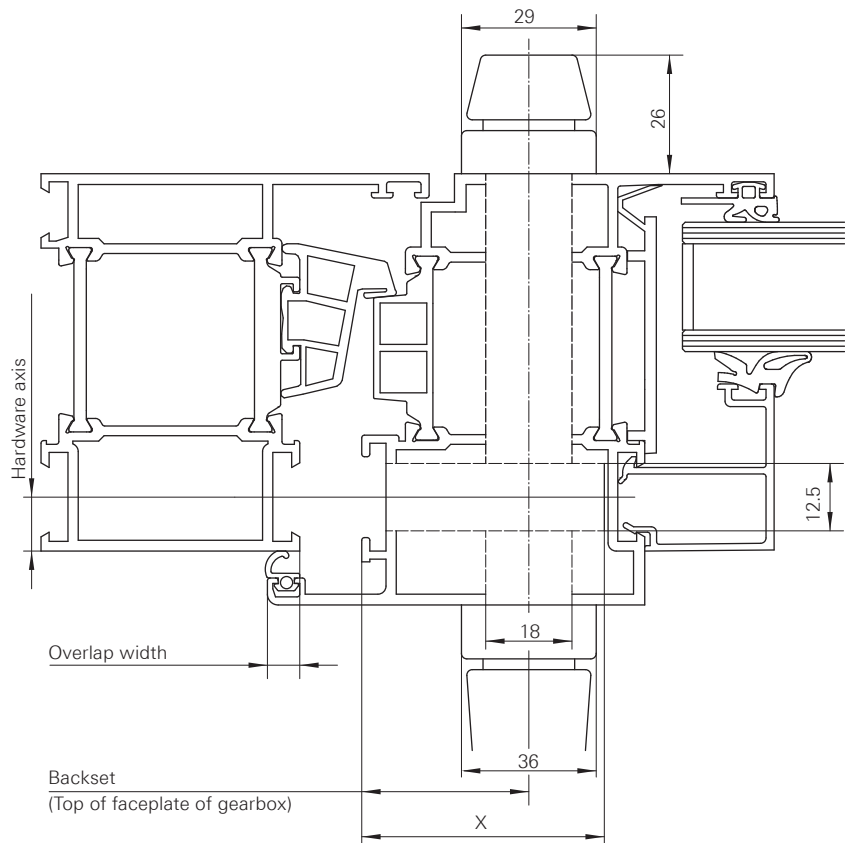
Installing the RotoLine handle

1. Position the handle and move it approx. 45° from the closing position.
2. Rotate the rosette 90°.
3. Install the handle with the depicted screws. Tighten the screws M5x40 only so much that jamming of the espagnolette casing is avoided. The length of the self-tapping screws 4.2 is profile-dependent.
4. Rotate the handle to check its function for ease of movement.
5. Turn the rosette and let it click into place on the base plate.





Backset	Dimension X
30 mm	43.5 mm
40 mm	53.5 mm

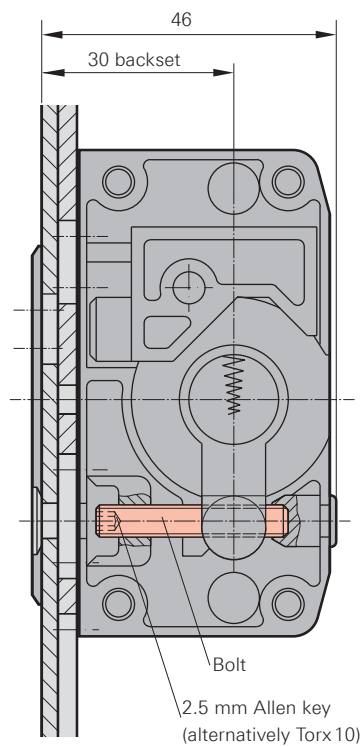


Installation

Sash

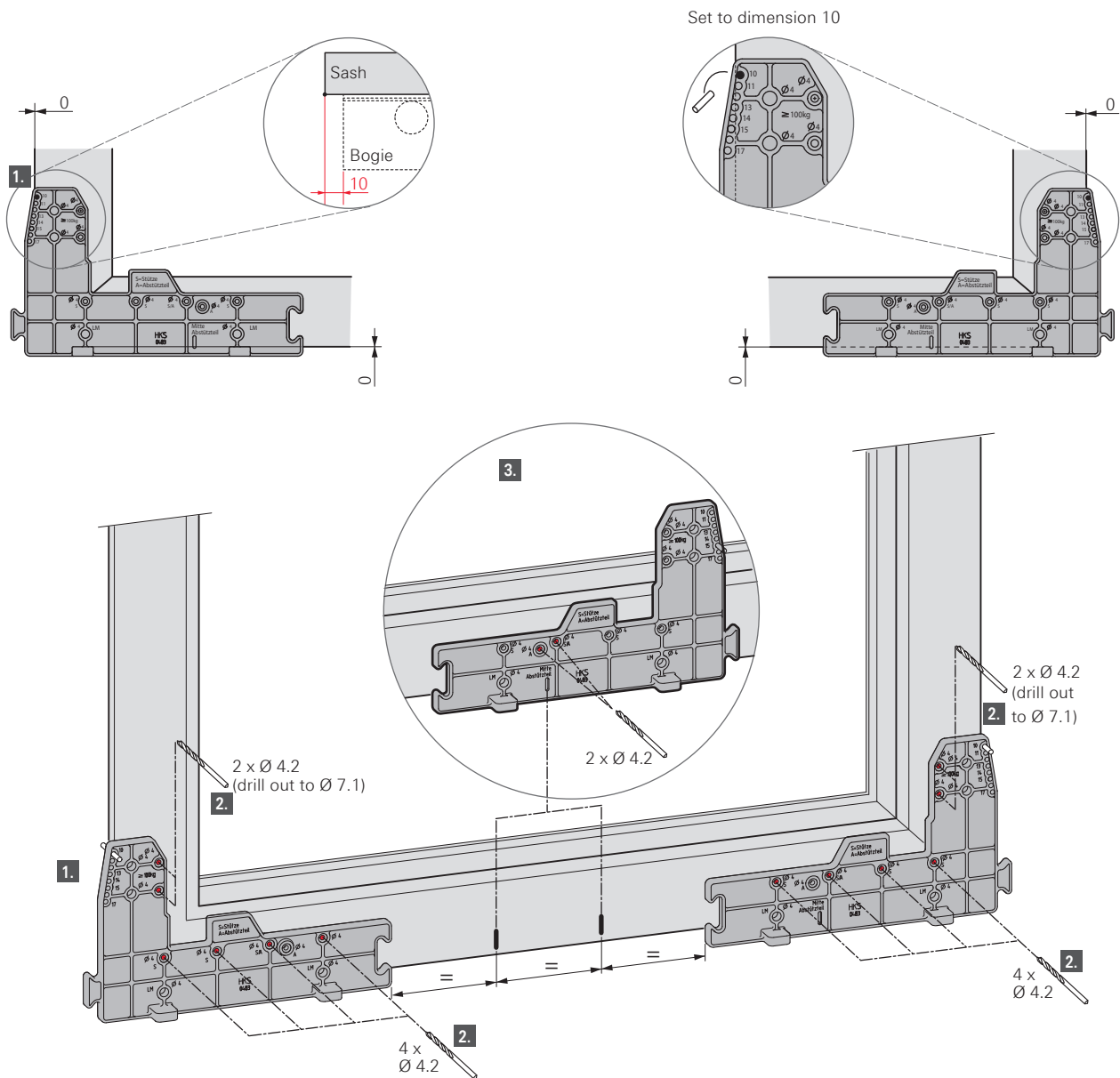
Installing the profile cylinder

1. Bring the espagnolette into the centre position.
2. Unscrew the preassembled bolt (M5x30 or M5x40) with a 2.5 mm Allen key (alternatively Torx 10) until the cylinder opening is unrestricted.
3. Insert the cylinder.
4. Screw in the bolt as far as it will go.





1. Set the bogie drilling jig (563968) to dimension 10 with the dowel pin.
2. Drill the holes for the bogies.
Drill holes for reinforcement brackets only for sash weights of ≥ 100 kg.
3. Mark the cover support bracket's position and drill (SW ≤ 1480 mm 1 cover support bracket, SW ≥ 1480 mm 2 cover support brackets).

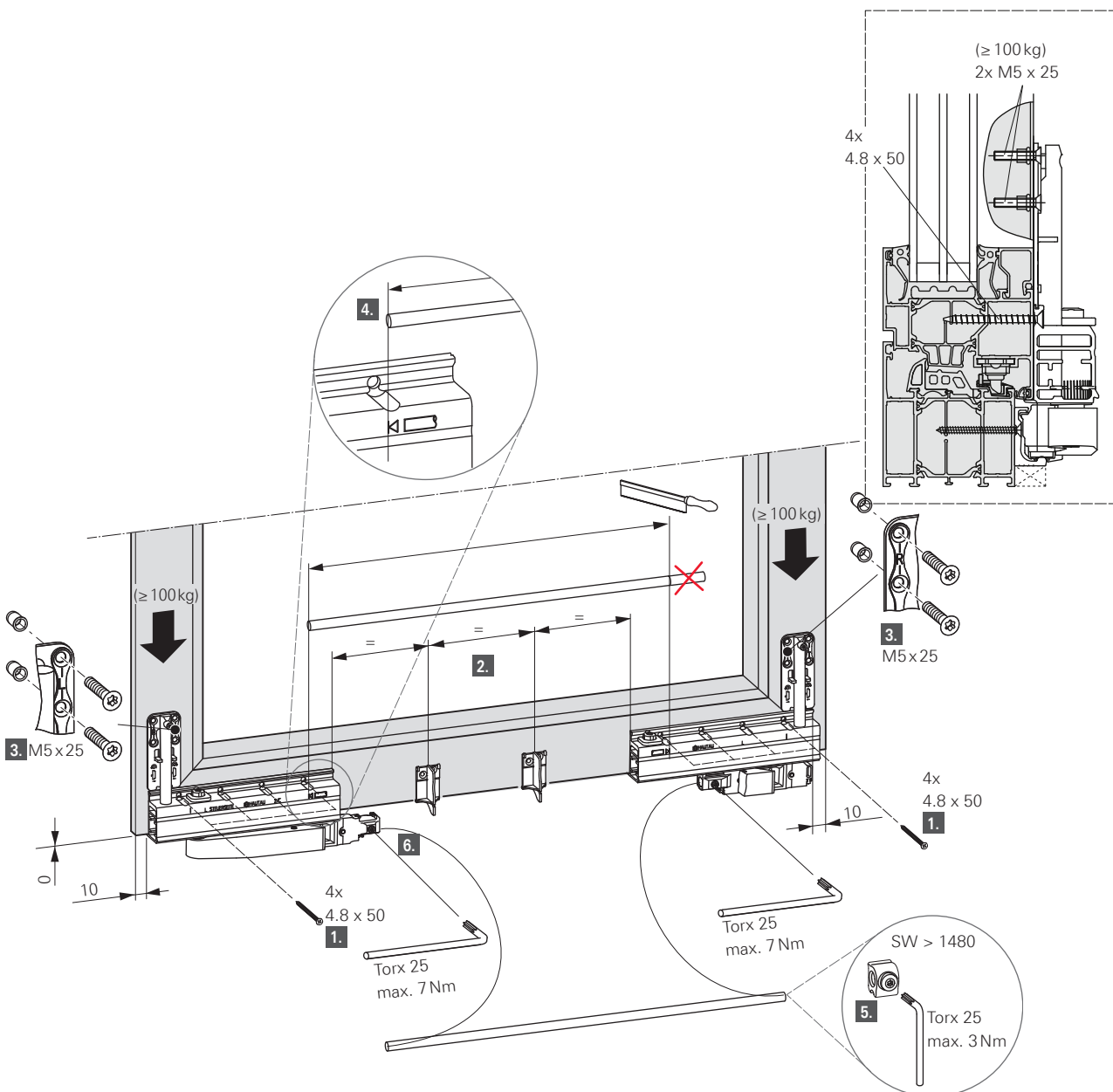


Installation

Sash

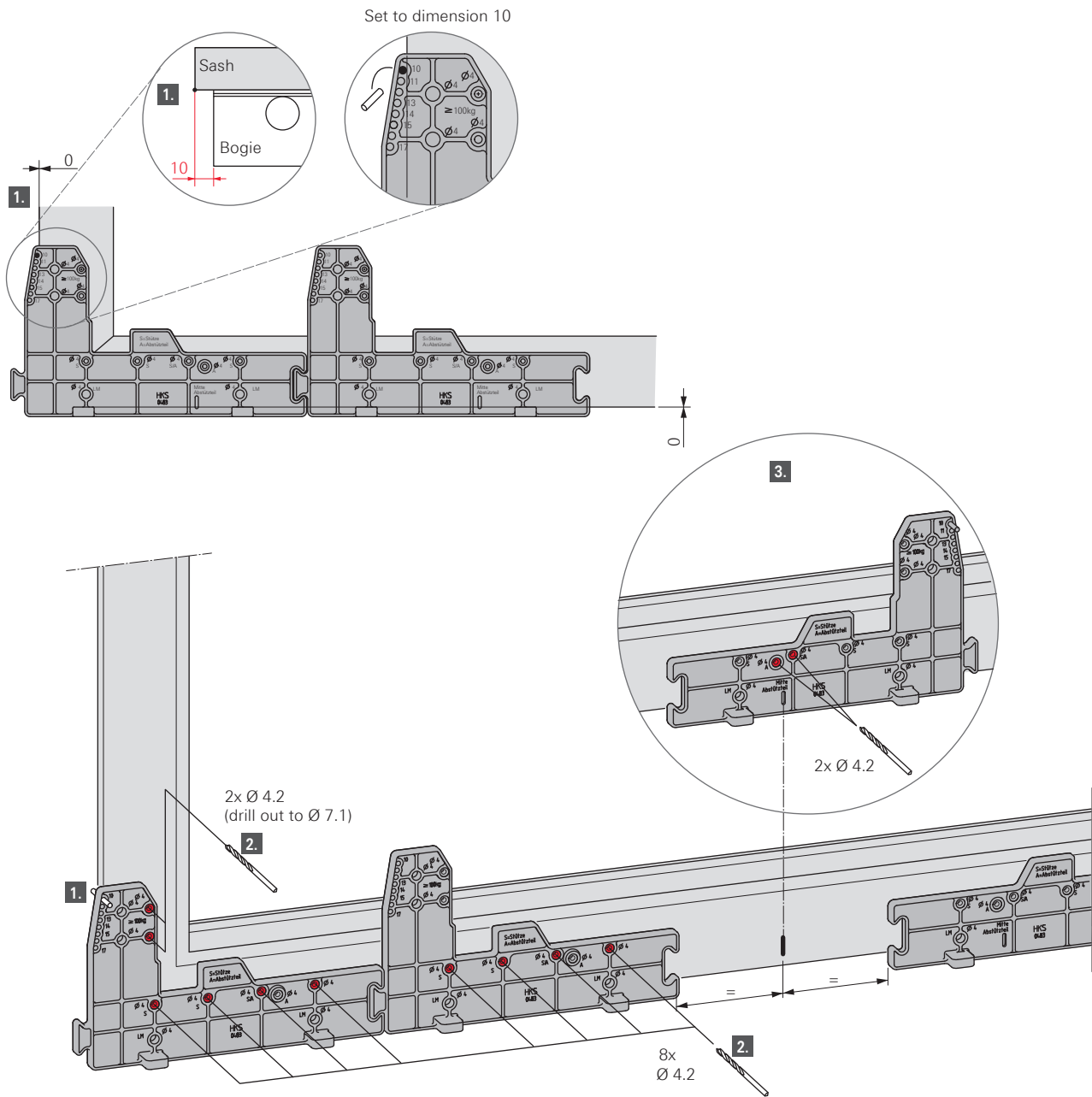
Installing bogies up to 160 kg

1. Screw on each bogie with 4 screws 4.8 x 50 at a lateral distance of 10 mm to the sash outer-edges and flush with the bottom edge of the sash profile.
2. Position the cover support bracket(s) evenly between the bogies and screw-fix each with 2 screws 4.8 x 50. For SW < 1480 mm only one centred cover support bracket.
3. For sash weights of ≥ 100 kg: fasten each 2 riveting nuts $\varnothing 7$ mm in the designated holes. Screw-fix each of the reinforcement brackets with 2 M5 x 25 screws.
4. Mark and cut the connecting rod to length in line with the bogie marks.
5. On SW > 1480: slide additional connecting rod support-block to the centre of the connecting rod and fix. (Torx key; T25 hexalobular socket, max. 3 Nm).
6. Insert the connecting rod into the bogie couplings; tighten the bogie on the opposite side of the handle first, then fold up both bogies and align them parallel to the sash. In this position screw-fix the espagnolette-sided bogie (Torx key; T25 hexalobular socket, max. 7 Nm).





1. Set the bogie drilling jig (563968) to dimension 10 with the dowel pin.
2. Drill the holes for the bogies and reinforcement brackets.
3. Mark the cover support bracket's position and drill.

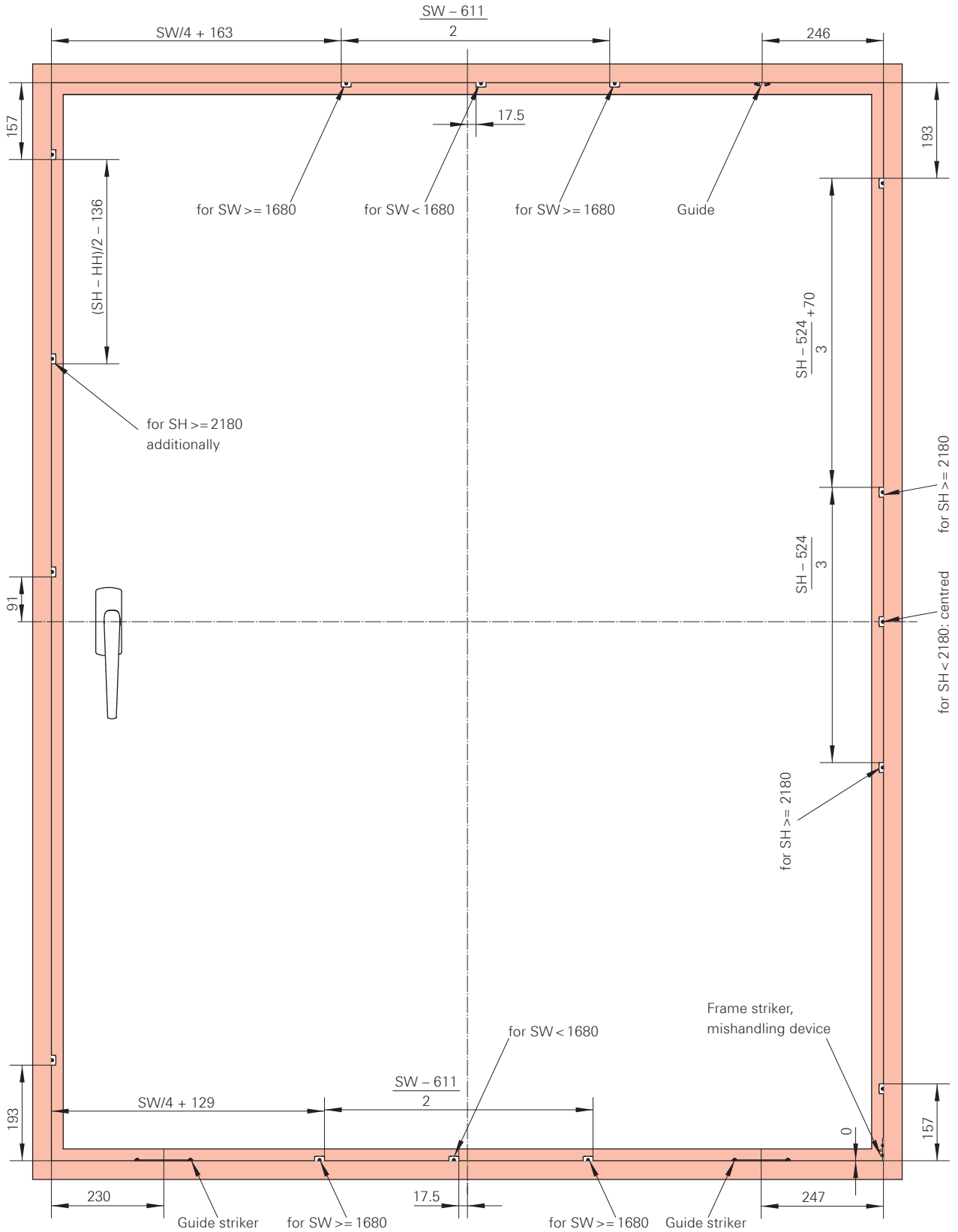






NOTE!

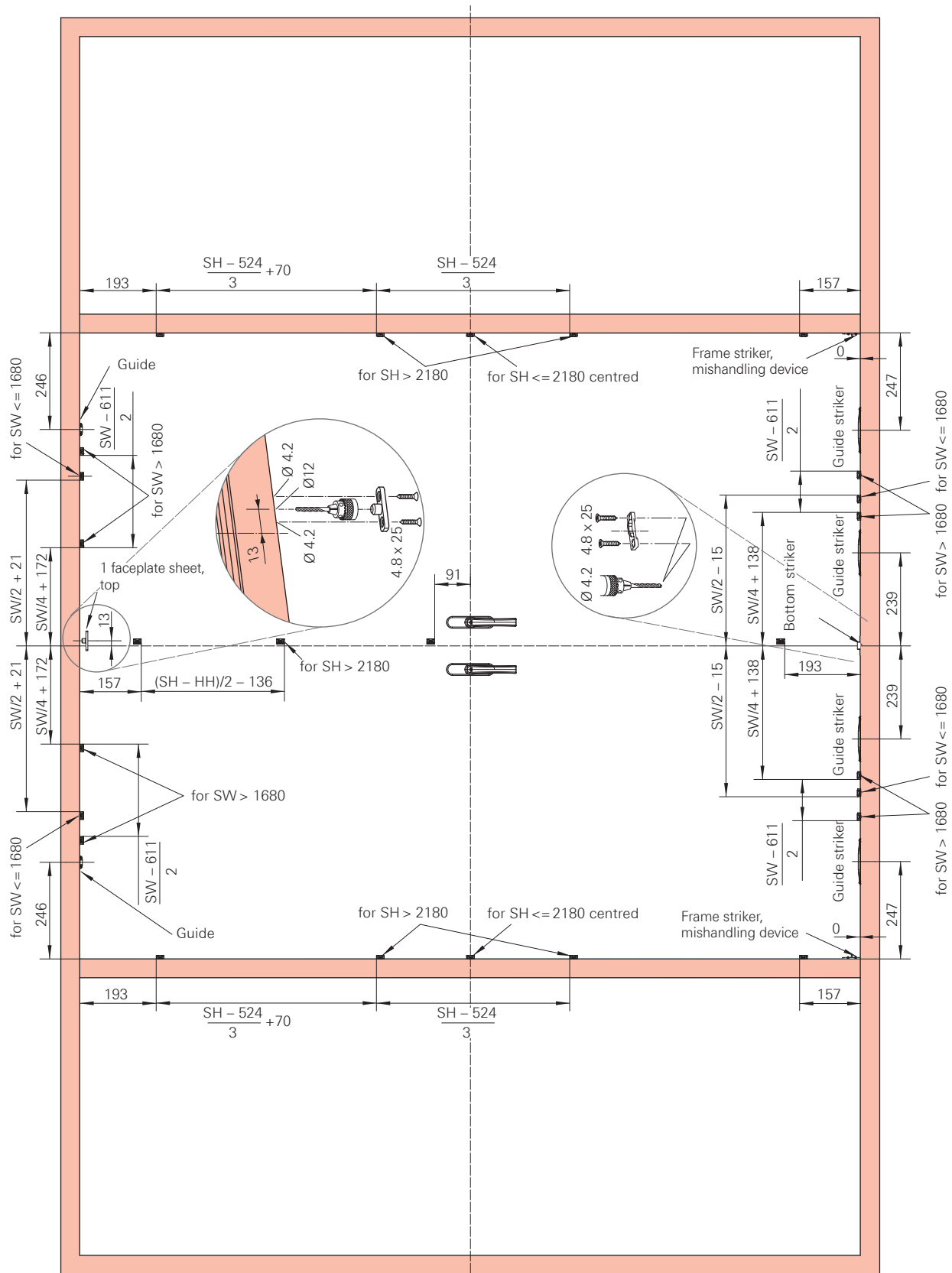
Guide strikers must be tightened with a Torx key T10.
 Strikers can be tightened with a Torx key T10 or an Allen key 2.5.





NOTE!

Guide strikers must be tightened with a Torx key T10.
 Strikers can be tightened with a Torx key T10 or an Allen key 2.5.

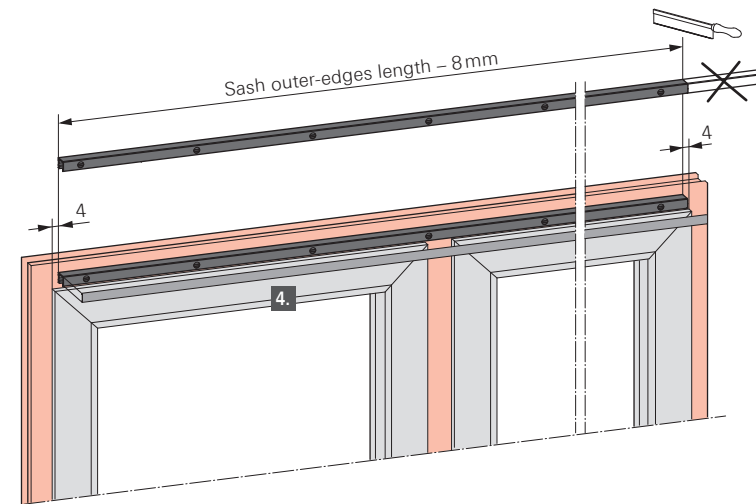


Installation

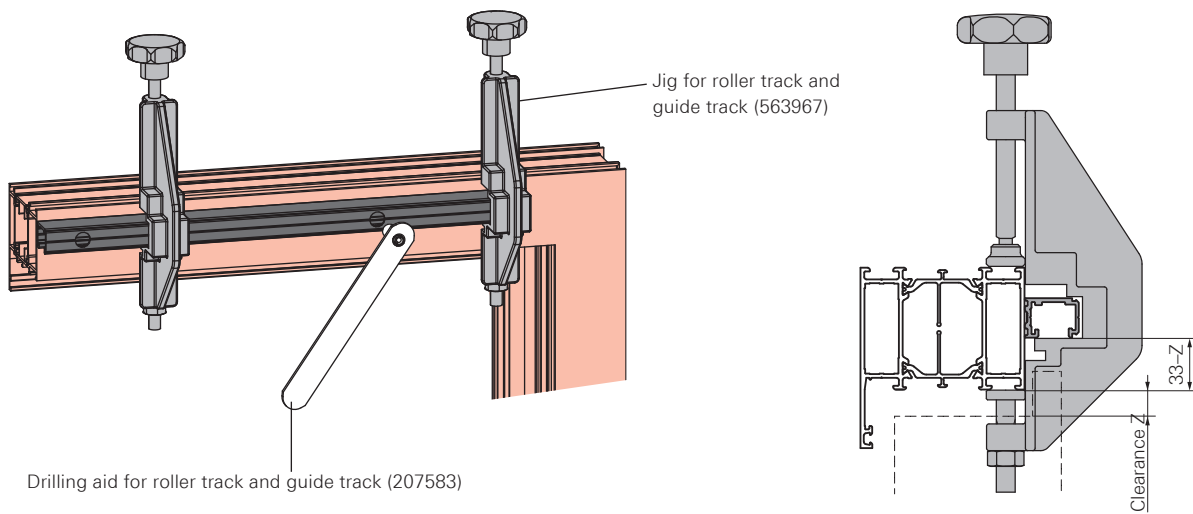
Frame

Mounting the guide track

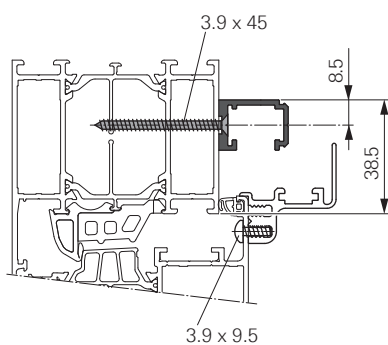
1. Cut the guide track to length: Sash outer-edges length – 8 mm
2. Fix the guide track to the frame using the jig for roller track and guide track (563967), predrill with drilling aid (207583) and \varnothing 3.2 mm drill.
3. Screw-fix the guide track to the frame with 3.9 x 45 screws.
4. Cut the PVC cover profile to the length of the guide track and clip on.



2.



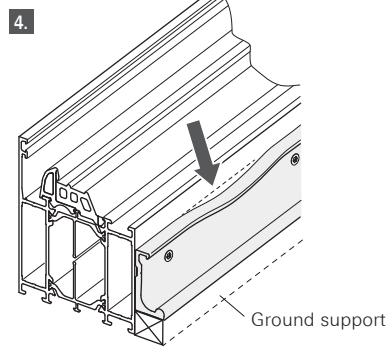
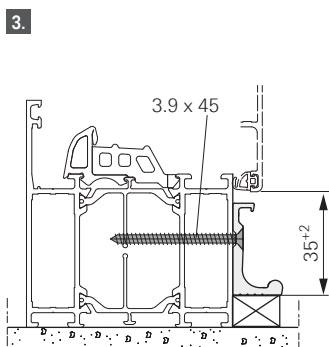
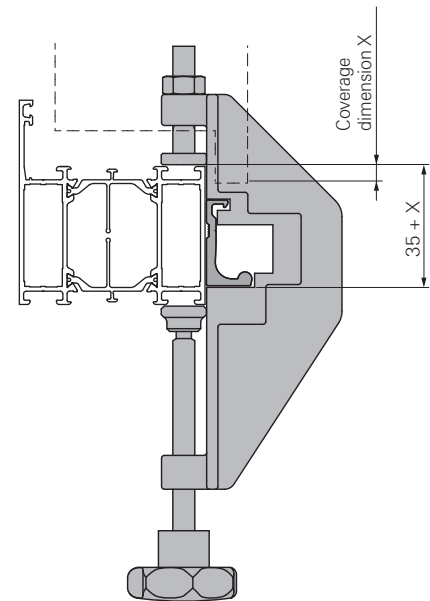
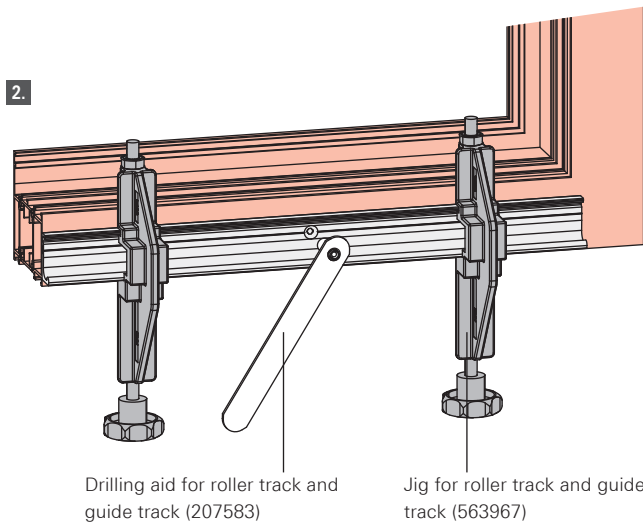
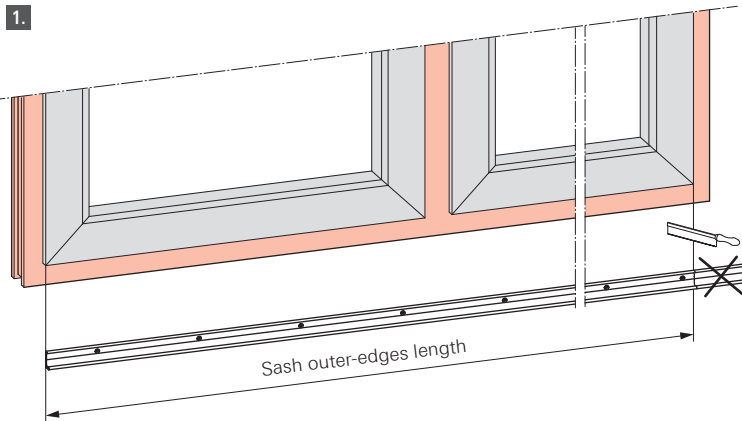
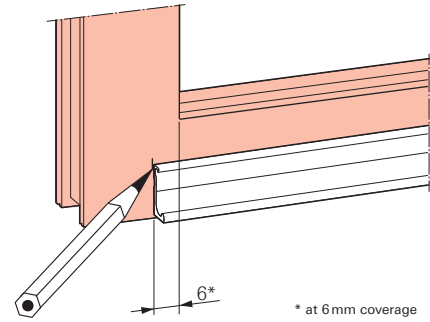
3.





1. Cut the roller track to the length between the sash outer edges.
2. Fix the roller track to the frame using the jig for roller track and guide track (563967), predrill with drilling aid (207583) and \varnothing 3.2 mm drill.
3. Screw-fix the roller track to the frame with 3.9 x 45 screws.
4. Underlay the roller track over the entire length on site in order to distribute the load.

Example:



Installation

Frame and sash connection

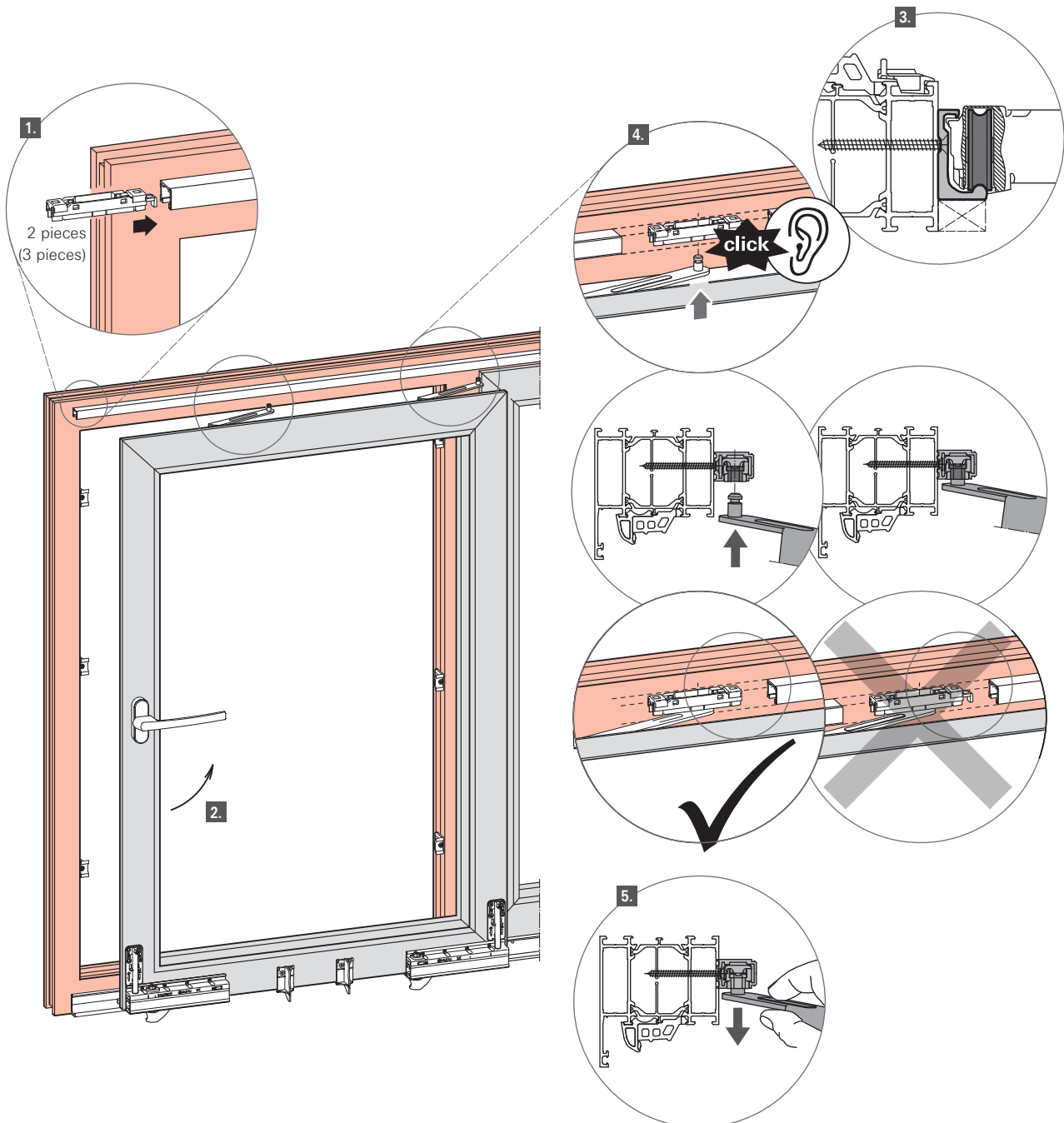
Hinging the sash

1. Slide in the 2 scissor-stay sliders into the guide track from the side (3 sliders if a spring scissor is used).
2. Position the handle horizontally.
3. Place the sash's bogie rollers on the roller track.
4. Click in the scissor-stay pins into the central slider openings of the both outer sliders (audible click sound!) If correctly installed, the sliders' lateral lock-sliders are flush with the slider-casing's edges.
5. Check the installation by means of pulling/pushing down the scissors-stay arms!



WARNING!

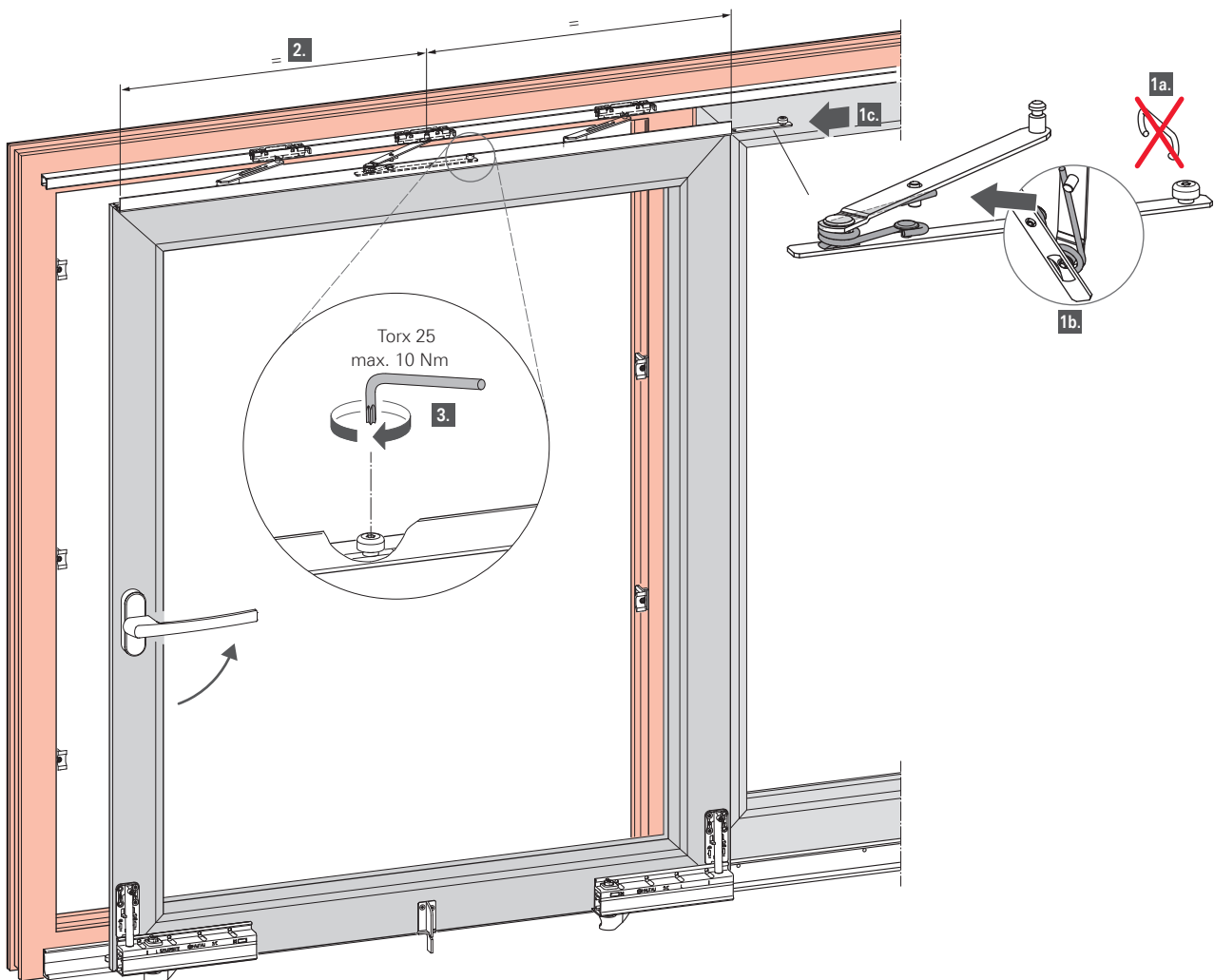
If the scissor-stay pins are not securely engaged in the sliders, the sash is not safeguarded against falling out. This can lead to grievous bodily harm.





For application ranges of the spring scissor, refer to page 18–20.

- 1a.** Remove the transport clamp.
- 1b.** Ensure the correct position of the spring at the bolt to properly adjust the spring tension.
- 1c.** Slide the spring scissor into the stay-connecting profile.
- 2.** Engage the scissor-stay pin into the central slider opening of the middle slider (audible click sound!)
If correctly installed, the sliders' lateral lock-slider is flush with the slider-casing's edge (see also page 64, no. **4.**).
The scissor-stay pin must be positioned centrally to the stay-connecting profile.
- 3.** Tighten the locking screw of the spring scissor to the stay-connecting profile (Torx key T25, max. 10 Nm).

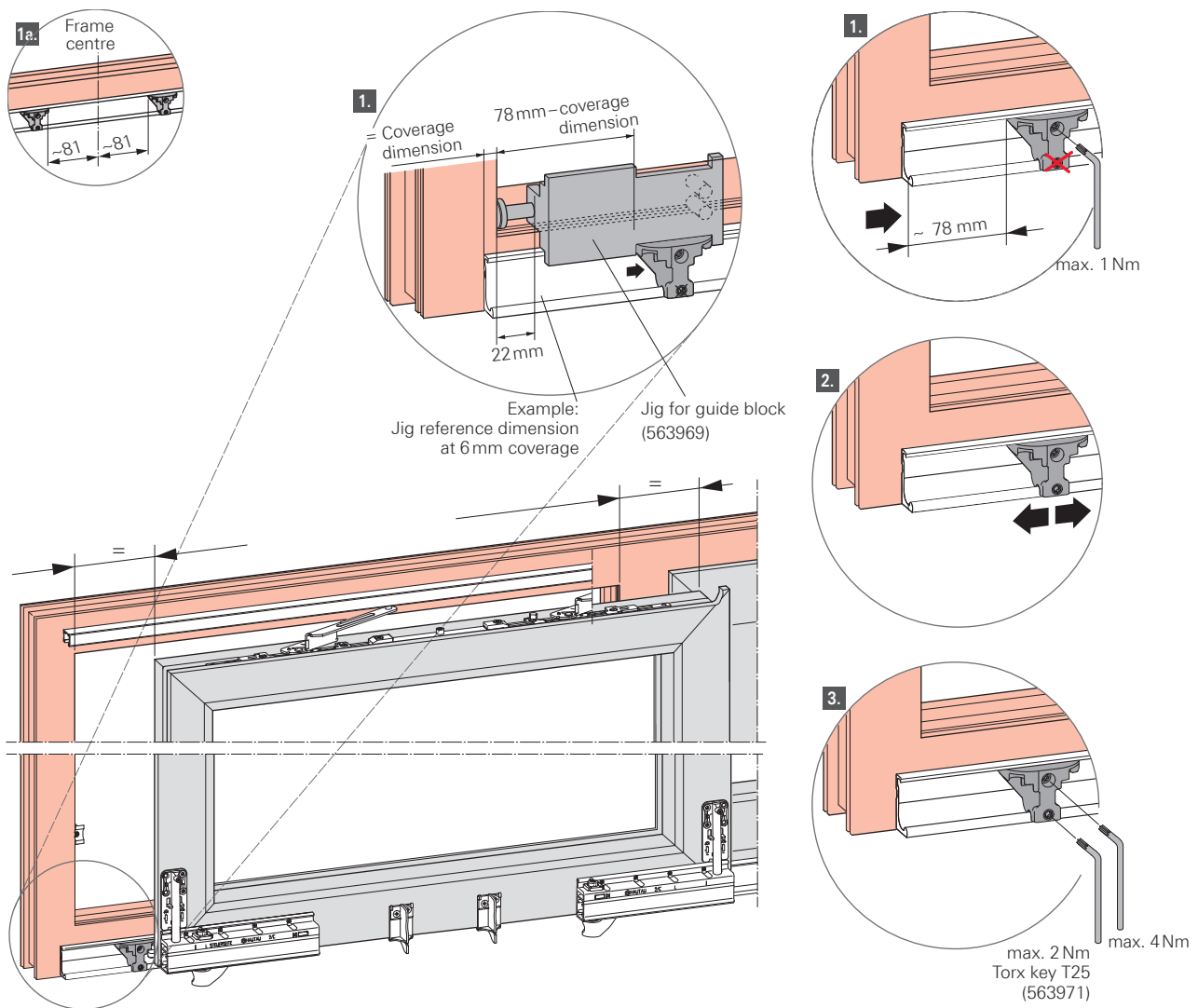


Installation

Frame and sash connection

Installing the guide block

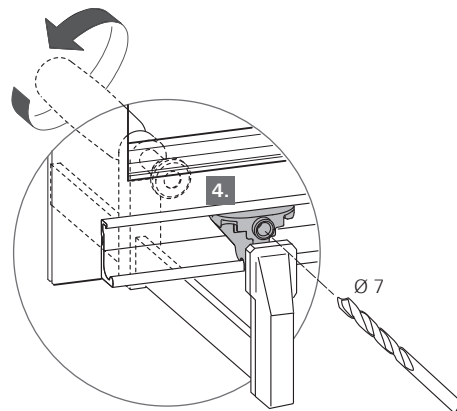
1. Position the guide block jig (563969) as depicted in the drawing, alternatively position the guide block on the handle side approx. 78 mm from the roller track's outer edge. Lightly tighten the top screw with a T25 hexalobular socket Torx key (563971) (max. 1 Nm).
- 1a. Note to diagram C:
With a continuous roller track, the position of the guide blocks is approx. 81 mm from the frame centre.
2. Bring the sash into the tilted position and check the clearance on both sides (11.5 – 12 mm).
Reposition the guide block if need be.
3. Firmly tighten the top screw on the guide block with a T25 hexalobular socket Torx key (max. 4 Nm). Then firmly tighten the bottom screw with a Torx key T25 (max. 2 Nm).



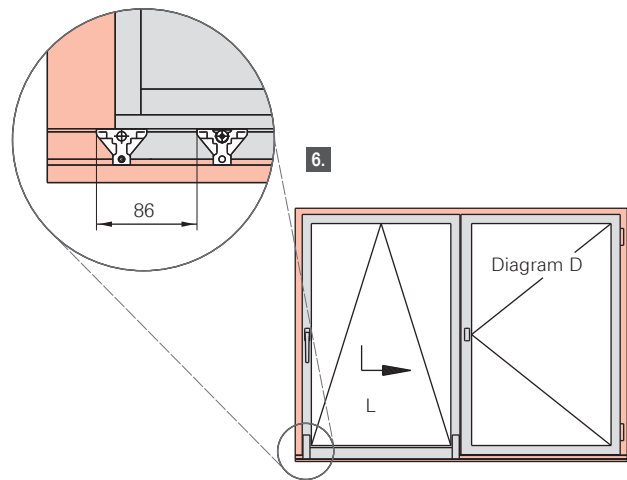


NOTE!
For diagram D keep the espagnolette-sided roller track as long as possible.

1. Installing the guide block → page 64 (dimension ~78mm).
Lightly tighten the top screw (Torx key T25, max. 1 Nm)
2. Bring the sash into the tilted position and check the clearance on both sides.
Reposition the guide block if need be.
3. Mark the position of the guide block, then remove the guide block.
4. Align the drilling jig for the guide block along the marking, then fix it with a screw clamp. Using a drill centring device, drill Ø 7 mm completely through the roller track. Remove the drilling jig for guide block.



5. Slide the slidable guide block on the roller track, click into place at the drilling.
6. Use the drilling jig for the guide block to drill the retracting security hole with 86 mm offset. (cf. 4.)



Opening of the Turn-Only sash of diagram D for cleaning and maintenance purposes

1. Open the sliding sash.
2. Pull out the lock of the slidable guide block.
3. Slide the guide block and let the lock click into place at the retracting security hole.
4. Slowly slide the sliding sash in locking direction, until the bogie meets the guide block.
5. Open the Turn-Only sash.

Installation

Frame and sash connection

Aligning the sash horizontally

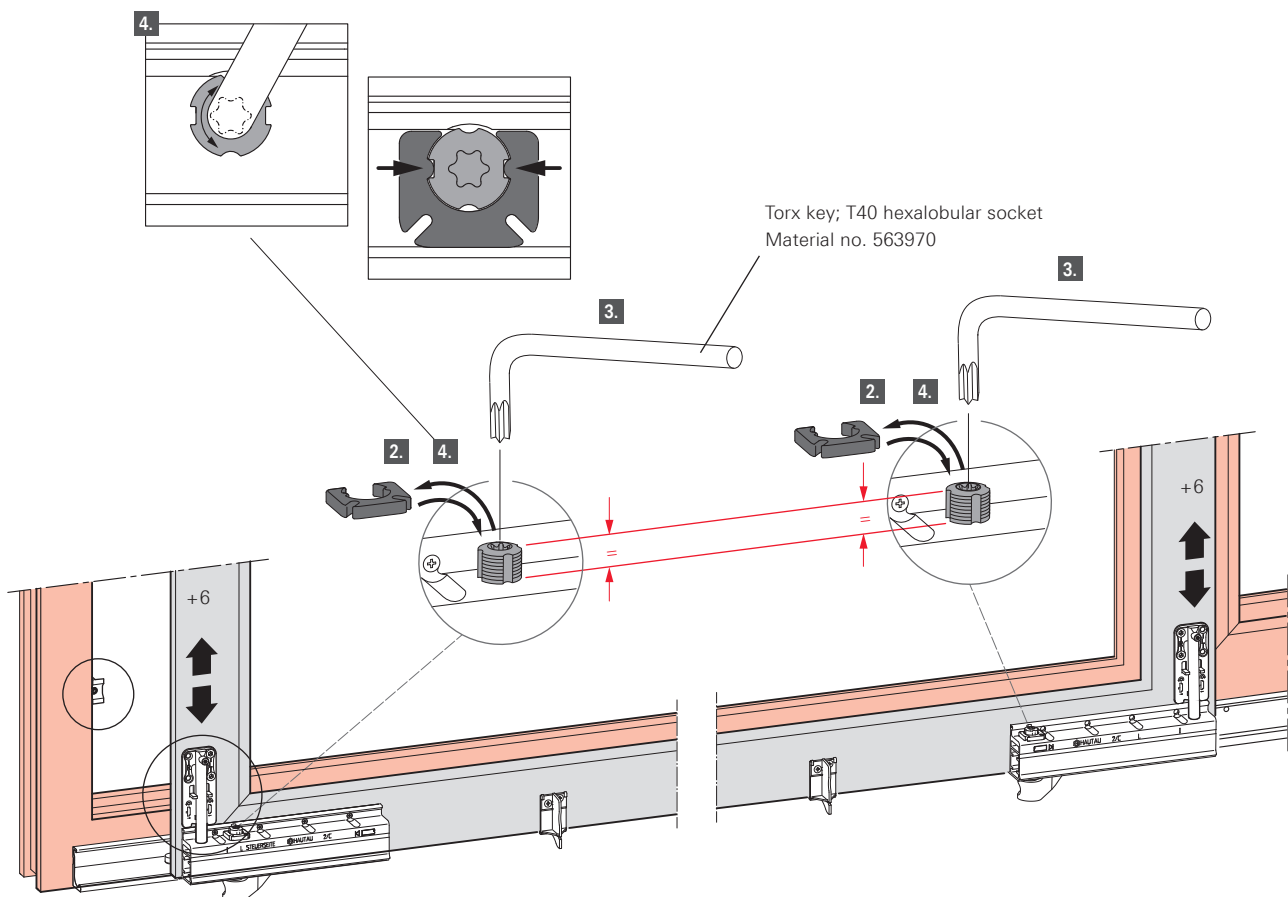
1. Check the clearance all round (not dep.).
2. Remove the anti-twist devices.
3. Raise or lower the bogies via the adjusting screws with a T40 hexalobular socket Torx key (563970).
2 adjusting screws per heavy-duty bogie, 1 adjusting screw per bogie.



PLEASE NOTE!

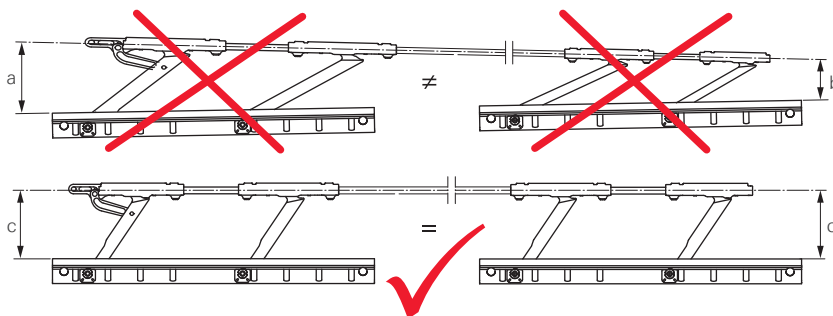
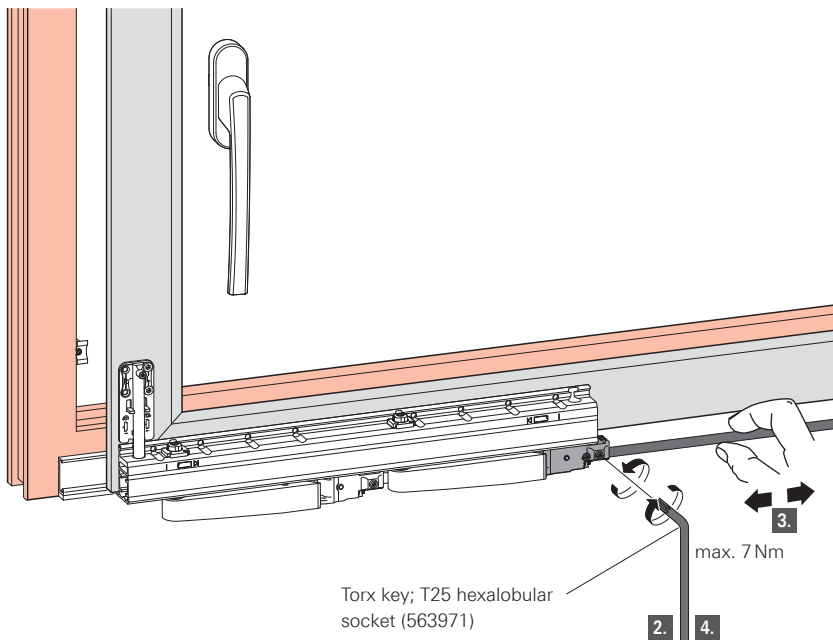
When installing the sash without glass or with a low sash weight, lower the bogies as far as possible with the adjusting screws. The bogies must be adjusted evenly at their adjusting screws in order to avoid jamming. (The bogies are uniformly preset in the factory.)

4. Install the anti-twist devices after adjusting the bogies, correct the adjusting screws' setting beforehand if necessary.





1. Move the sash into the tilted position.
 2. Loosen the connecting rod on the handle-sided heavy-duty bogie / bogie with a T25 hexalobular socket Torx key (563971).
 3. Align the hinge-sided bogie parallel by sliding the connecting rod to the left or right.
 4. Tighten up the connecting rod on the handle-sided bogie with a T25 hexalobular socket Torx key, max. 7 Nm.
- The parallel alignment of the bogies warrants the sash entering the frame smoothly.



Installation

Frame and sash connection

Activating the bogie safety mechanism and mounting the bogie cover

1. Slide back the bogie safety mechanism on both bogies, until they engage in the depicted position.

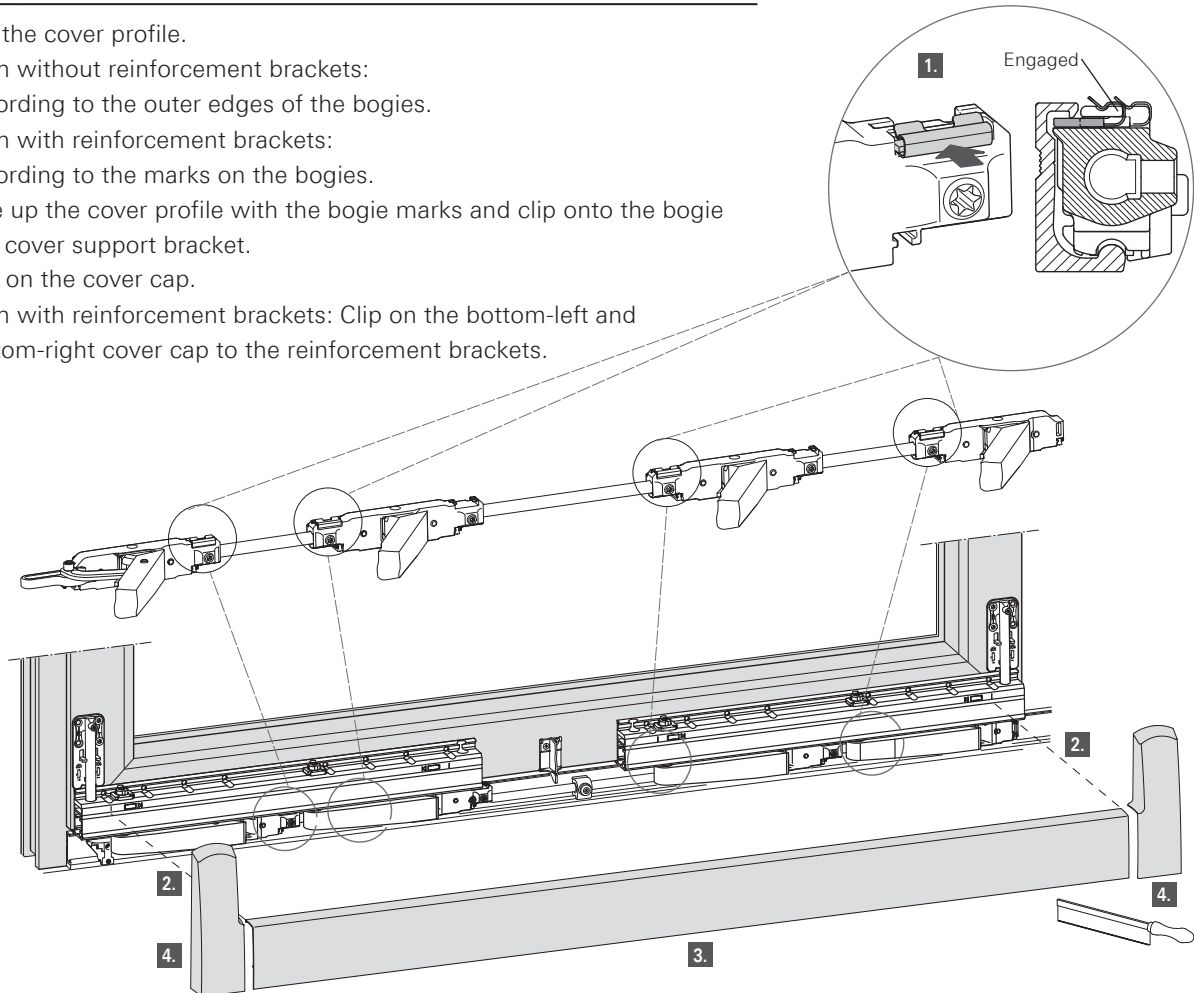


WARNING!

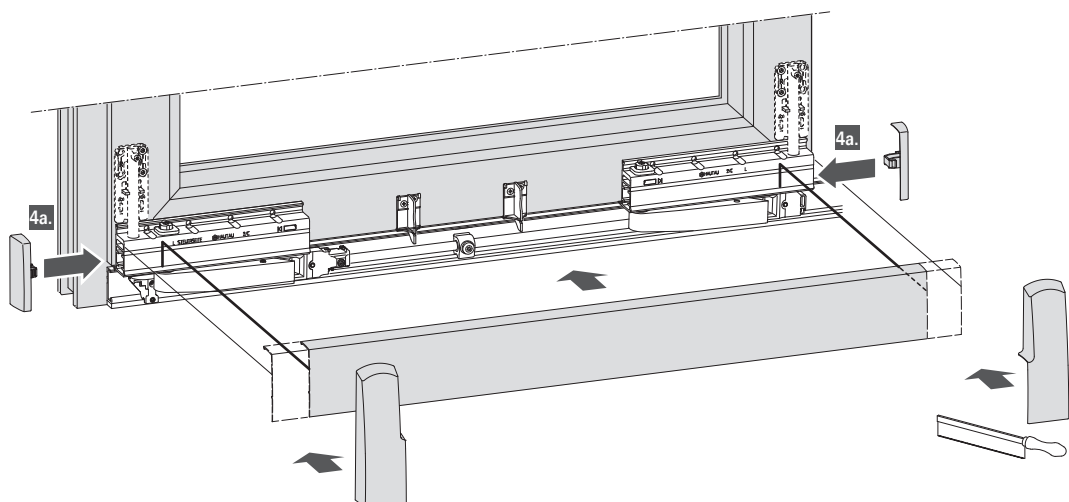
If the bogie safety mechanism is not correctly engaged (or not at all) in the depicted position, the sash is not sufficiently safeguarded.

This can lead to grievous bodily harm.

2. Cut the cover profile.
Sash without reinforcement brackets:
according to the outer edges of the bogies.
Sash with reinforcement brackets:
according to the marks on the bogies.
3. Line up the cover profile with the bogie marks and clip onto the bogie and cover support bracket.
4. Clip on the cover cap.
Sash with reinforcement brackets: Clip on the bottom-left and bottom-right cover cap to the reinforcement brackets.



- 4a. Sash without reinforcement brackets:
Mount the bottom-left and bottom-right cover cap on the side over the cover profile and clip into the bogie.



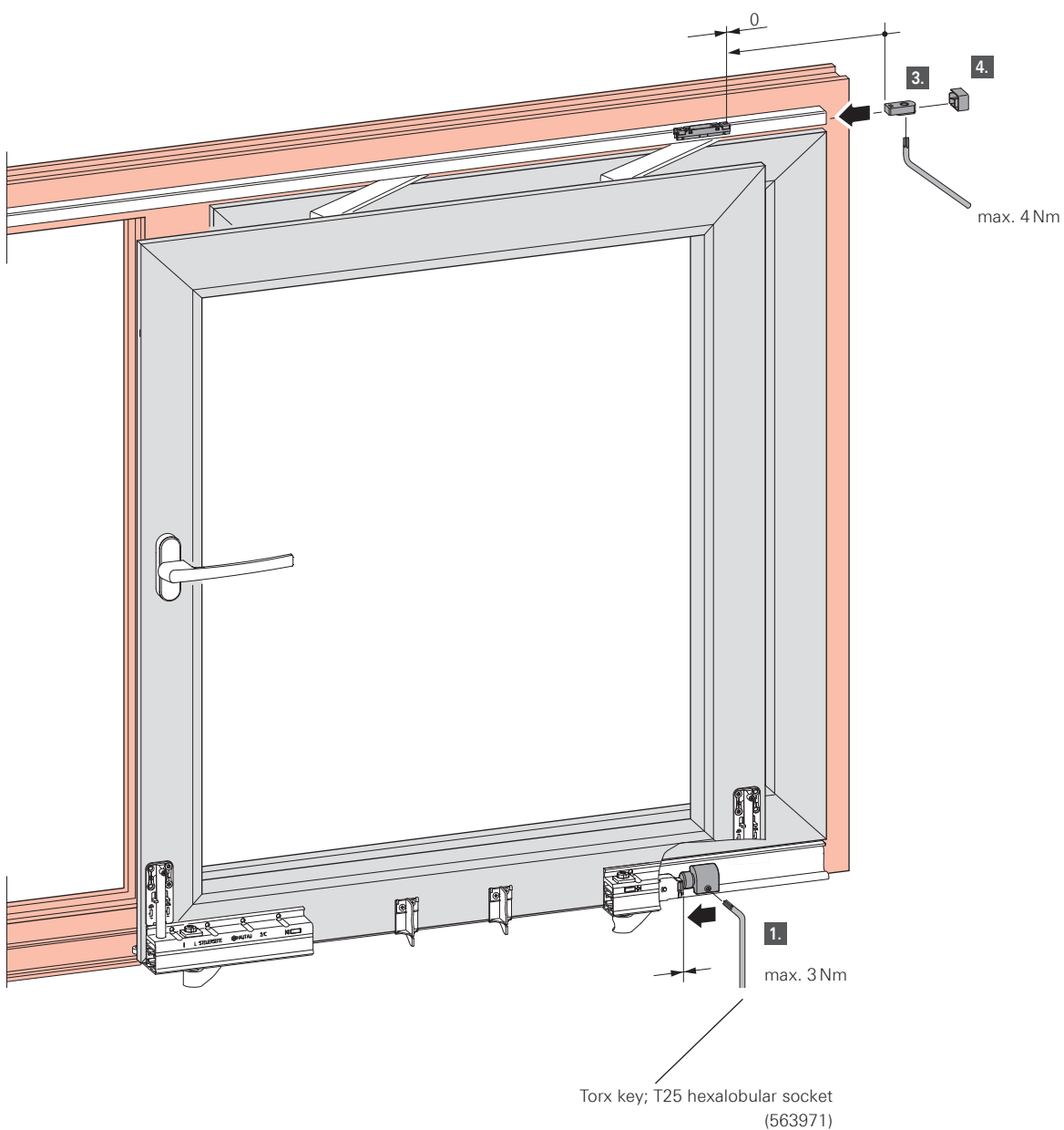


1. Screw on the bottom buffer-stop to the roller track in the desired position. Torx key; T25 hexalobular socket (563971), max. 3 Nm.
2. Slide the sash as far as the buffer-stop.
3. Slide in the top buffer-stop into the guide track and screw-fix Torx key; T25 hexalobular socket, max. 4 Nm
4. Mount the guide track's cover cap.



NOTE!

In order to avoid damaging the hardware components, the sash must run up against the top and bottom buffer-stop simultaneously.



Installation

Frame and sash connection

Unhinging the sash

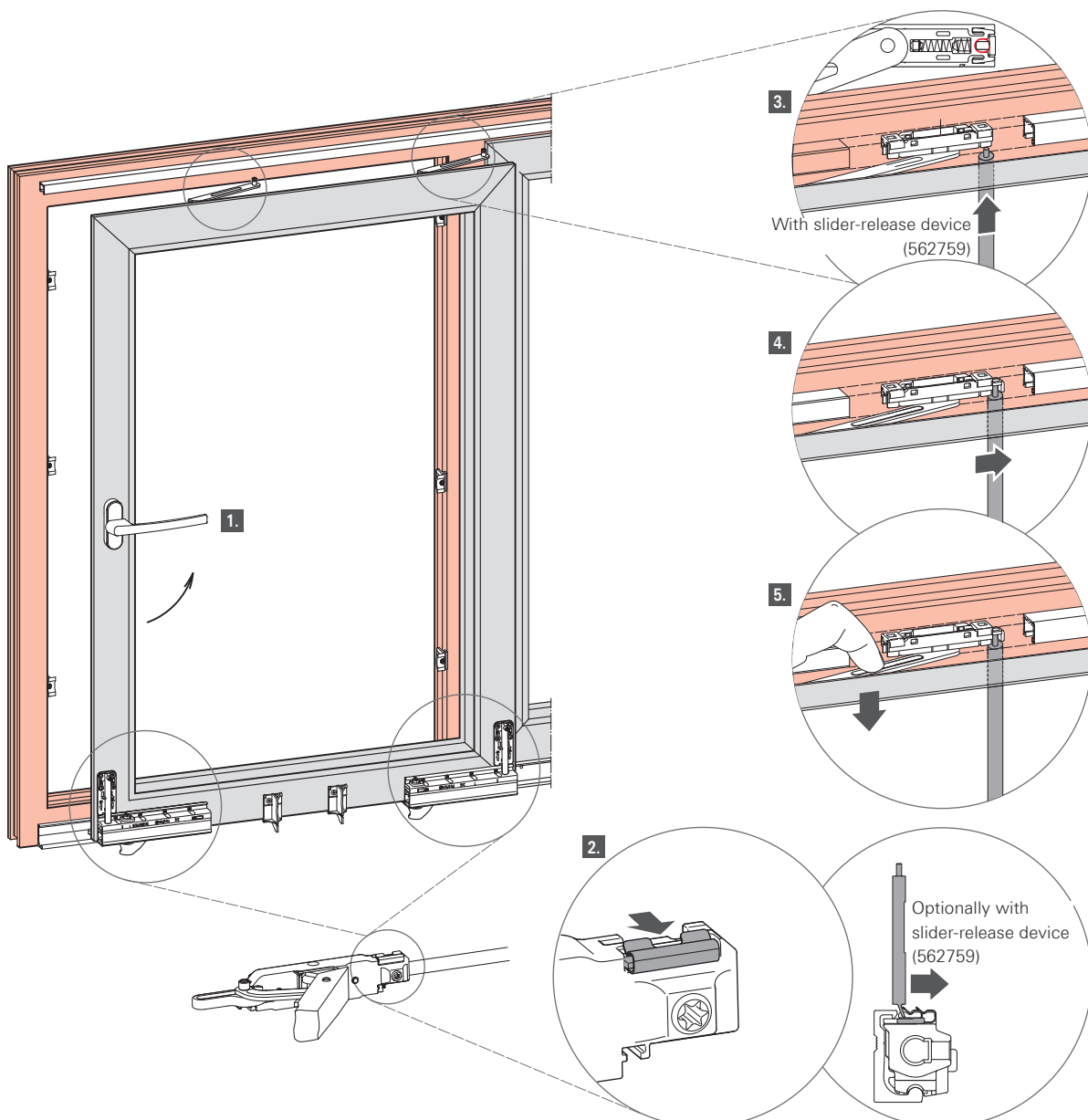
1. Open the sash.
2. Bring each of the bogie safety mechanisms into the disengaged position.



PLEASE NOTE!

Safeguard the sash against falling out prior to releasing the scissor-stay connection.

3. Push in the slider-release device (562759) into the slider-opening beside the lock-slider.
4. Pull out the lock-slider with the slider-release device from the side of the slider.
5. Press the scissor-stay pin downwards out of the slider.
Repeat the procedure on the second slider.
6. Tilt the disengaged sash and lift it from the roller track (not dep.).





Transport/handling of the window elements



DANGER!

Danger to life from incorrect handling and transport!

Incorrect handling and unsuitable transport of window elements can result in dangerous circumstances and cause severe accidents, even including death.

Therefore:

- During loading and unloading, select force application points which exclusively create reaction forces appropriate to the designed layout of the hardware components for the intended installation location.
 - During handling and transport, ensure that hardware is in the locked position, so as to prevent an uncontrolled opening of the window. Use suitable means of securing for this.
 - Use only transport fastenings designed for the respective clearance.
 - Wherever possible, undertake transport in the intended installation position. If transport in the intended installation position is not possible, unhinge the sash, and transport it separately from the frame to which it belongs.
-

During transport, loading, and unloading, especially when auxiliaries such as suckers, transport nets, forklifts, or cranes, reaction forces may arise which result in damage or overloading to the installed hardware. Therefore observe the following during all transport, loading, and unloading:

- The type and the force application points when transporting, loading, and unloading have a significant effect on the reaction forces which arise.
 - Always choose the force application points so that the resulting reaction forces are dissipated appropriate to the designed layout of the hardware components for the intended installation location. This applies particularly for the hinge positions.



Transport inspection

Check the delivery on receipt immediately for completeness and transport damage.



NOTE!

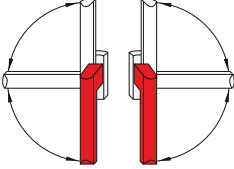
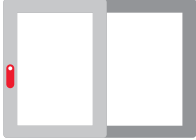

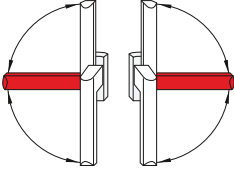


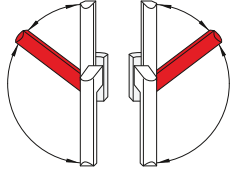


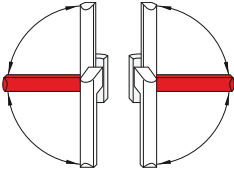
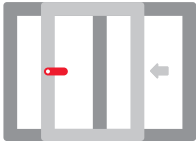

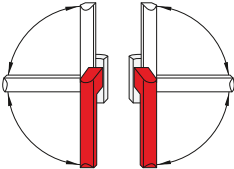


Claim any damage as soon as it is detected. Claims for damage can only be invoked within the statutory reclamation period.

Operation

Operating information

Tilt&Slide hardware handle position


The following symbols show the different handle positions and the resulting sash positions of windows and balcony doors.

Handle position	Sash position	Symbol	Meaning
ROTO TILT&SLIDE HARDWARE			
			Closed position of the sash
			Opened tilt position of the sash
			Opened slide position of the sash
			Closed slide position of the sash
			Closed position of the sash

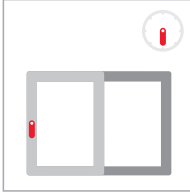


The following symbols and signs can be used on windows and balcony doors to protect the end-user.

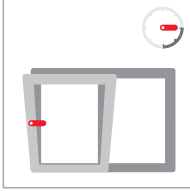
Please order stickers separately (WB 141-0 EN).

Roto 
Patio Z

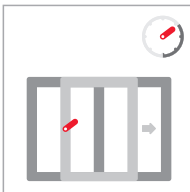
Kippschiebe-Beschlag mit Zwangssteuerung
Tilt&Slide hardware with positive control
geschlossen
closed





kippen
tilt



schieben
slide



Nichteinrasten beim Schließen 
Non-engagement when closing

Einrasten beim Schließen 
Engagement when closing

04/2008 WB 141-0

Troubleshooting

Problem	Cause	Corrective action	Specialist company	End-users
Handle is difficult to rotate.	– Frame parts are not properly greased.	– Grease frame parts.	<input type="checkbox"/>	<input type="checkbox"/>
	– Faulty handle.	– Replace the handle.	■	–
	– Handle screws are screwed in too strong.	– Slightly loosen the screws.	■	–
	– Oblique screws in the sash.	– Straight screw-fixing of the sash parts.	■	–
	– Faulty sash parts.	– Replace the sash parts.	■	–
	– Faulty striker locations.	– Adjust the striker locations.	■	–
	– Sash stay gasket compression too strong (accumulation of gaskets).	– Notch out or take out the sash stay gasket compression.		
Handle can not rotate 135°.	– Faulty installation of sash parts or connecting-rod dimensions not correct.	– Unhinge the sash and check whether the sash components are installed correctly. If necessary, produce new connecting-rods.	■	–
Sash is rubbing in tilt mode.	– Insufficient clearance on top.	– Lower the bogie.	■	–
Locking cams rubber at striker.	– Faulty hinging of the sash.	– Rehinge the sash.	■	–
	– Faulty striker locations.	– Adjust the striker locations.	■	–
	– Connecting-rod dimensions are not correct.	– Produce new connecting-rods.		

■ = To be carried out **only** by a specialist company

– = **Not** to be carried out by the end-user; the end-user may not carry out installation work!

□ = To be carried out either by a specialist company or by the end-user.



Adjustments

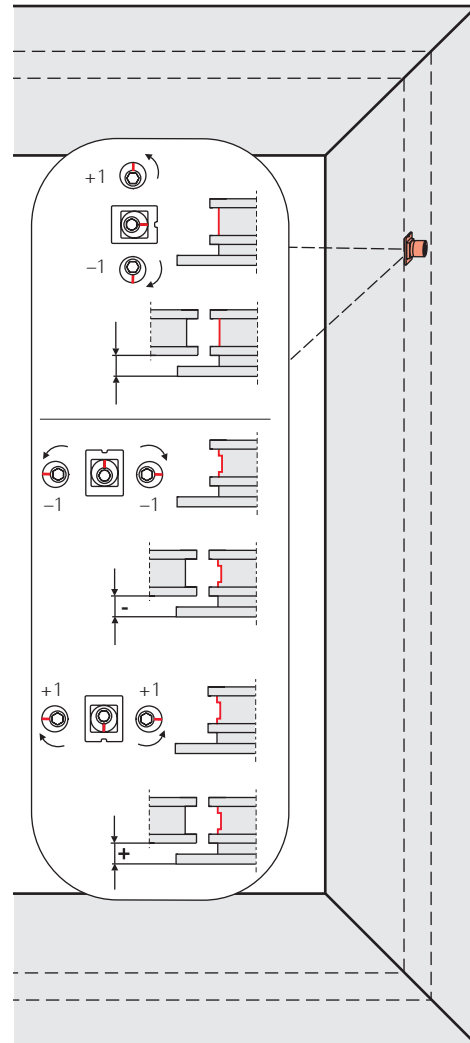
Gasket-compression adjustment

1. Adjust the gasket compression with a 4 mm Allen key (alternatively Torx key T25).
To be carried out only by a specialist company

Increasing and reduction of the gasket compression possible.

Only reduction of the gasket compression possible.

Only increasing of the gasket compression possible.





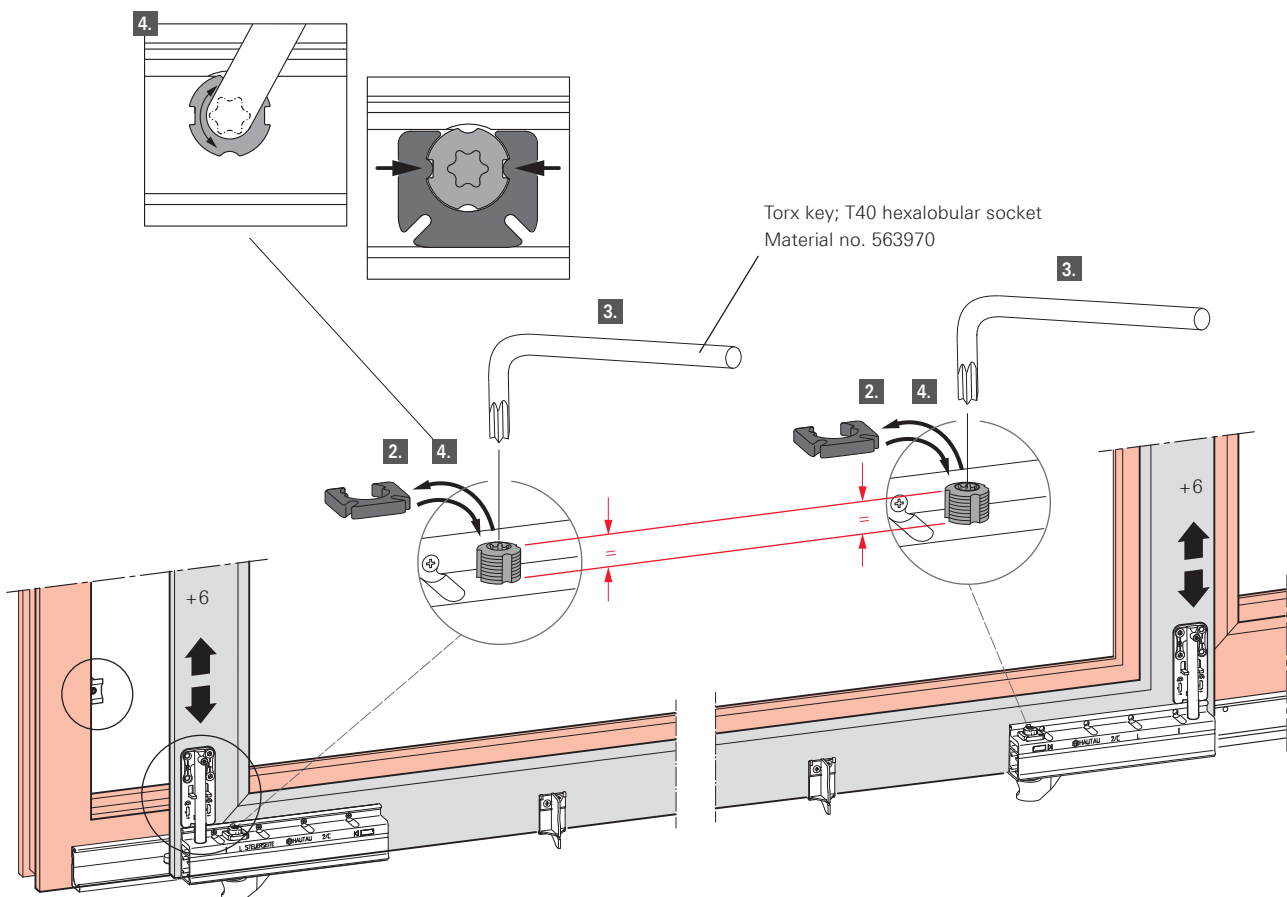
1. Check the clearance all round (not dep.).
2. Remove the anti-twist devices.
3. Raise or lower the bogies via the adjusting screws with a T40 hexalobular socket Torx key (563970).
2 adjusting screws per heavy-duty bogie, 1 adjusting screw per bogie.



PLEASE NOTE!

When installing the sash without glass or with a low sash weight, lower the bogies as far as possible with the adjusting screws. The bogies must be adjusted evenly at their adjusting screws in order to avoid jamming. (The bogies are uniformly preset in the factory.)

4. Install the anti-twist devices after adjusting the bogies, correct the adjusting screws' setting beforehand if necessary.

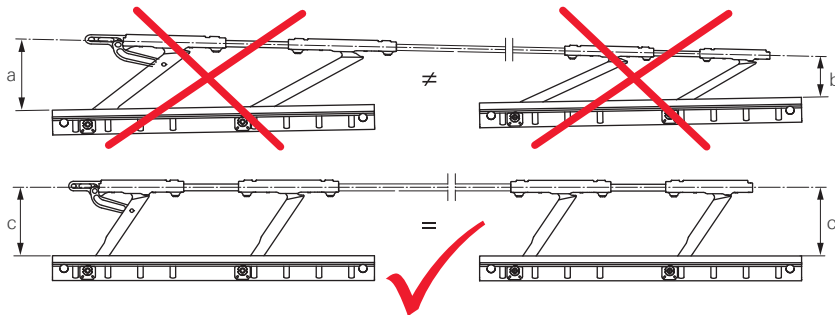
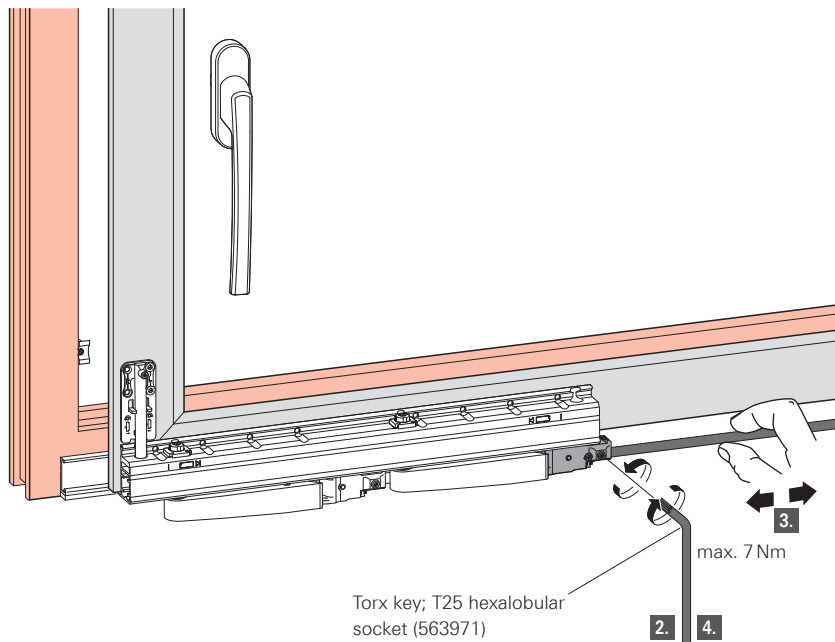


Adjustments

Aligning the bogies parallel

1. Move the sash into the tilted position.
2. Loosen the connecting rod on the handle-sided heavy-duty bogie / bogie with a T25 hexalobular socket Torx key (563971).
3. Align the hinge-sided bogie parallel by sliding the connecting rod to the left or right.
4. Tighten up the connecting rod on the handle-sided bogie with a T25 hexalobular socket Torx key, max. 7 Nm.

The parallel alignment of the bogies warrants the sash entering the frame smoothly.





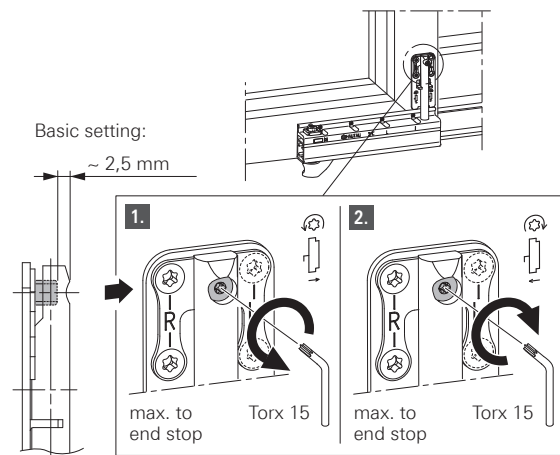
1. Facilitate running in.
2. Facilitate running out.

To be carried out only by a specialist company.



NOTE!

From the basic setting, both reinforcement brackets should only be moved in **1.** direction. Too strong adjustment in **1.** direction may result in rubbing of the bogies, depending on profile and sash weight. In this case, adjust the reinforcement brackets in **2.** direction until the bogies can be moved without rubbing.



Maintenance



WARNING!

Danger of injury through incorrectly conducted maintenance work!

Incorrect maintenance can result in serious personal injury or material damage.

- Before starting work, ensure that there is sufficient installation room.
- Maintain order and cleanliness at the installation location.
- Ensure that the window or balcony door is prevented from suddenly slamming during maintenance work.
- Get a specialist company to carry out adjustment work on hardware – especially of bogies and hinges – as well as replacement of parts and hinging and unhinging of sashes.
- Do not un hinge the sash for maintenance work.

At least annually, every six months for school and hotel buildings:

	Specialist company	End-users
If necessary, tighten fixing screws.	■	-
Replace damaged screws.	■	-
If necessary, replace components.	■	-
Lubricate all moving components with acid free and non resinous oil from a specialised dealer.	□	□
Lubricate strikers with acid free and non resinous grease from a specialised dealer.	□	□

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NOTE!

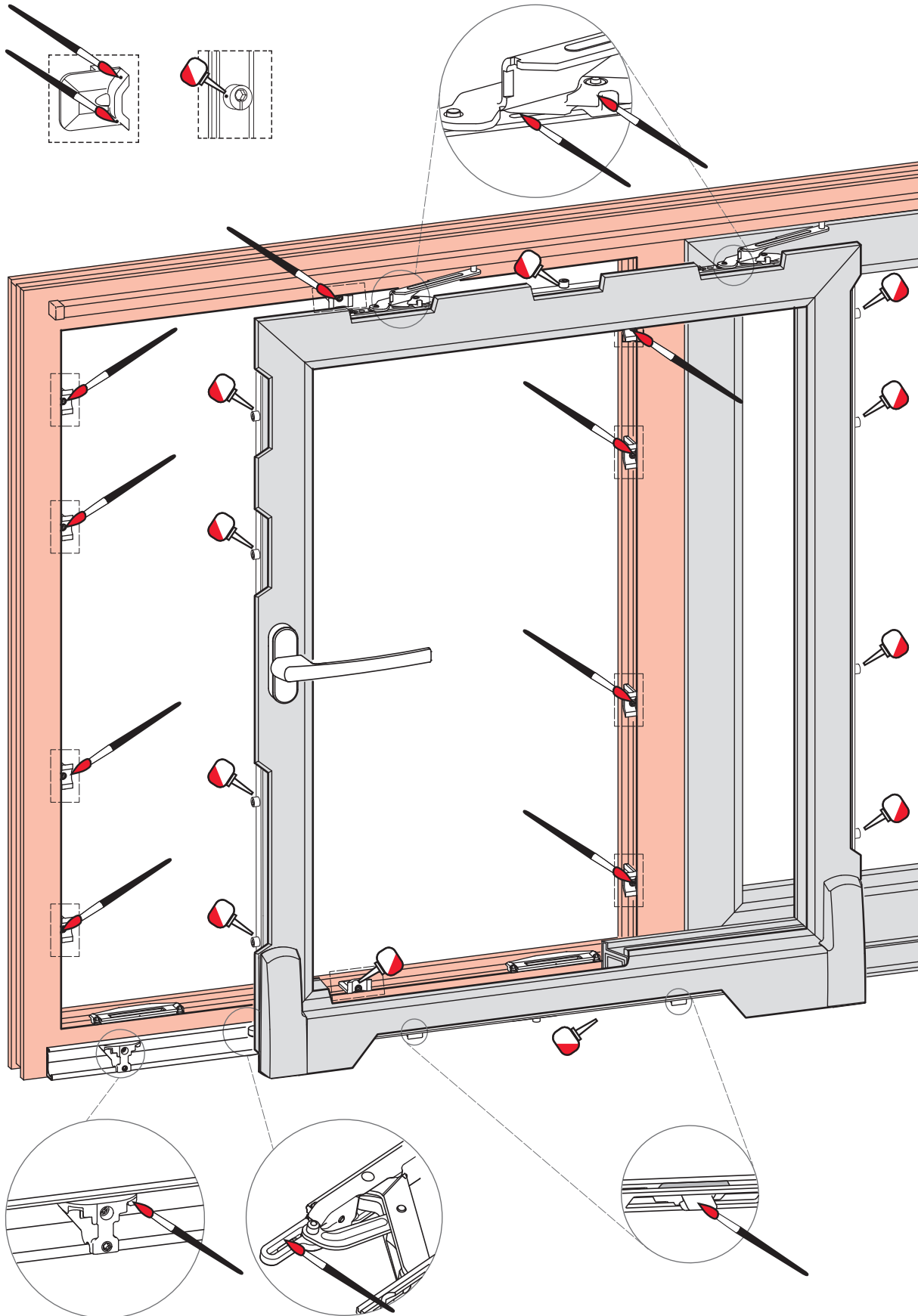
Observe the following environmental protection notes during maintenance work:

- Remove emerging or residual grease at the lubricating points and dispose of in accordance with the valid local regulations.
- Collect exchanged oil in suitable containers and dispose of in accordance with the environmental regulations.

The hardware overview shows the arrangement of the lubrication points. The illustrated overview does not necessarily correspond to the installed hardware. The number of lubrication points depends on the size and design of the window.



 Grease
 Oil



Inspection

At least annually, every six months for school and hotel buildings:

	Specialist company	End-users
Check that safety-relevant hardware components are mounted securely.	<input type="checkbox"/>	<input type="checkbox"/>
Examine safety-relevant hardware components for wear and tear.	<input type="checkbox"/>	<input type="checkbox"/>
All movable parts are to be operation-tested.	<input type="checkbox"/>	<input type="checkbox"/>
All locking points are to be operation-tested.	<input type="checkbox"/>	<input type="checkbox"/>
The hardware's smooth operation can be checked by means of moving the window handle.		
– In accordance with DIN 18055, the locking and unlocking moment is max. 10Nm.	■	–
– It can be checked using a torque wrench.	■	–
– The smooth operation can be improved by greasing/oiling or adjusting the hardware.	■	–

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Care

	Specialist company	End-users
Keep the hardware free from deposits and soiling.	<input type="checkbox"/>	<input type="checkbox"/>
Never use aggressive, acidiferous cleaners or abrasive cleaning agents.	<input type="checkbox"/>	<input type="checkbox"/>
Only use mild, pH-neutral cleaning agents in diluted form.	<input type="checkbox"/>	<input type="checkbox"/>
Only use a soft cloth for cleaning.	<input type="checkbox"/>	<input type="checkbox"/>

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No legal claims can be derived from these recommendations, the application is to be conveyed for each concrete individual case. The window and balcony door manufacturer must draw builders and end user's particular attention to these maintenance instructions. Roto Frank AG recommends window fabricators to make maintenance agreements with their end-users.



Protection against corrosion

	Specialist company	End-users
Aggressive vapours (e.g. by means of formic acid or acetic acid, ammonia, amine or ammonia compounds, aldehydes, phenols, chlorine, tannic acid etc.) in the vicinity of the windows must be absolutely avoided.	■	–
Never use acetic-acid or crosslinked acidic sealing compounds or those with the above mentioned contents, since both the direct contact with the sealing compound and its vaporisation can attack the hardware's surface.	■	–
Always use stainless-steel screws.	■	–

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Protection against dirt

	Specialist company	End-users
Remove deposits and dirt from building materials (building dust, plaster, cement, etc.) or similar materials with water before it cures.	□	□
Keep the hardware free from deposits and soiling.	□	□
Never use aggressive, acidiferous cleaners or abrasive cleaning agents.	□	□
Only use mild, pH-neutral cleaning agents in diluted form.	□	□
Only use a soft cloth for cleaning.	□	□

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Protection against (permanent) moist interior air

	Specialist company	End-users
Ventilate the hardware and the rebate areas – especially in the construction phase – so that they are neither exposed to direct contact with water nor to formation of condensation water.	<input type="checkbox"/>	<input type="checkbox"/>
<p>Ensure that (permanently) damp spatial air cannot condense in the hinge and rebate areas:</p> <ul style="list-style-type: none"> – Force ventilate several times each day (open all windows for approx. 15 minutes). – Also ventilate during holidays and absences. – For more complex construction projects, develop a ventilation plan if necessary. <p>If described systematic ventilation is not possible, e.g. because fresh screed must not be traversed, or it cannot take draughts, put the windows into the tilted position and make them airtight by taping on the indoor side. Divert the moisture present in the room air to the outside by means of condensation dryers.</p>	<input type="checkbox"/>	<input type="checkbox"/>

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Separate the hardware components from the window and dispose of as metal scrap.

Roto Frank AG
Window and door technology

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