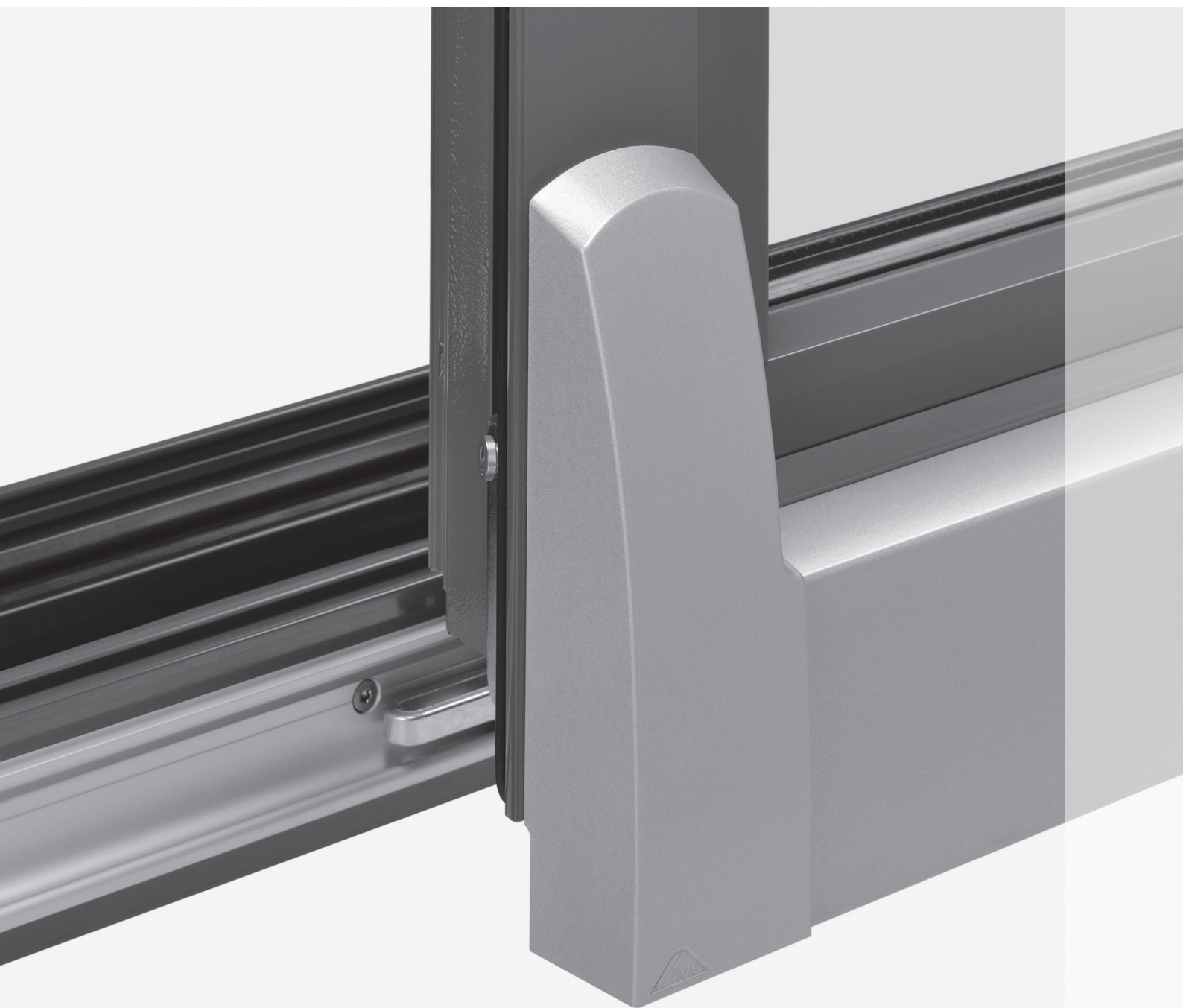


## **Roto Patio Z**

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

Installation, maintenance and operation instructions  
for aluminium profiles with 16 mm hardware groove



**Imprint**

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

This manual also contains binding guidelines to ensure that the duty to instruct is observed through to the end-user.

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

In addition to these installation, maintenance and operation instructions, the following documents apply:

- VHBH Directive of the Quality Assurance Association: Locks and Hardware (Richtlinie VHBH der Gütegemeinschaft Schlösser und Beschläge e. V.)
- VHBE Directive 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 markings are used in this manual:

| Marking                                                                             | Explanation                                |
|-------------------------------------------------------------------------------------|--------------------------------------------|
|  | Sash                                       |
|  | Frame                                      |
|  | Drill holes                                |
|  | Hardware components                        |
|  | Action steps                               |
|  | First level of hierarchy in a list         |
| –                                                                                   | Unordered list (second level of hierarchy) |
| → p. 12                                                                             | (Cross) reference in tables                |
| Refer to page 12                                                                    | (Cross) reference in the text              |

| Abbreviation | Explanation        |
|--------------|--------------------|
| <b>SRW</b>   | Sash rebate width  |
| <b>SRH</b>   | Sash rebate height |
| <b>S.KG</b>  | Sash weight        |
| <b>RC1</b>   | Resistance Class 1 |
| <b>RC2</b>   | Resistance Class 2 |

All dimensions stated in mm.

### Protection of copyright

The contents of this manual are protected by copyright. It is permissible to use these contents when working with the hardware. Any usage over and beyond this is not permitted without written permission from 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 further processed.

**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 fit it into windows and balcony doors.

**Building element dealers/installation companies**

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

**Builders**

The “builders” 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 otherwise stated below, the documents and information may be forwarded, e.g. as printed documents, on a CD-ROM, or over an Internet connection.

**Responsibility of hardware dealer**

The hardware dealer must forward the following documents to the window and balcony door manufacturer:

- Catalogue
- Installation, maintenance and operation instructions
- Specifications/information on the product and liability (VHBH)
- Specifications/information for end-users (VHBE)

**Responsibility of window and balcony door manufacturer**

The window and balcony door manufacturer must forward the following documents to the building element dealer or to the builder, even when a subcontractor (installation company) is acting as an intermediary:

- Installation, maintenance and operation instructions
- Specifications/information on the product and liability (VHBH)
- Specifications/information for end-users (VHBE)

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

**Responsibility of building element dealer/installation company**

The building element dealer must forward 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)
- Specifications/information on the product and liability (VHBH)
- Specifications/information for end-users (VHBE)

**Responsibility of builder**

The builder must forward the following documents to the end-user:

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

In this manual, 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 combination of symbol and signal word indicates an imminently hazardous situation, which may lead to fatality or serious injuries, if it is not avoided.

---

**WARNING!**

This combination of symbol and signal word indicates a potentially hazardous situation, that may lead to fatality or serious injuries, if it is not avoided.

---

**CAUTION!**

This combination of symbol and signal word indicates a potentially hazardous situation, which may lead to minor or light injuries, if it is not avoided.

---

**NOTE!**

This combination of symbol and signal word indicates a potentially hazardous situation, which may lead to property and environmental damage, if it is not avoided.

---

All the details and information in this document have been compiled based on the relevant standards and regulations, and state of the art development, along with many years of knowledge and experience.

The hardware manufacturer shall not accept liability for damages resulting from:

- Failure to comply with this document and all product-specific documents and related applicable directives (refer to the chapters on Safety and Stipulated Use).
- Non-stipulated use/misuse (refer to the chapters on Safety and Stipulated Use).
- Inadequate invitation to tender, failure to comply with the installation instructions or application diagrams.
- Increased soiling.

Claims by third parties against the hardware manufacturer based on damages resulting from misuse or failure to follow the instruction obligation on the part of the hardware dealer, window and balcony door manufacturer, and of the building element dealer or the builder shall be forwarded accordingly.

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

The warranty covers original Roto components only.

Subject to technical modifications conducted as part of the improvement process for performance characteristics and further development.

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 also equipped with rollers that are mainly located on the bottom horizontal plane of the sliding sash.

Projecting scissor stays for tilting and mechanisms used to lift and/or parallel-retract the sashes can also be specified. The hardware locks the sashes, moves them into the ventilation position and pushes them to the side.

Sliding hardware is used solely 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 effect is boosted, in particular, when the air circulation is hindered, for example due to deep reveals, curtains as well as unfavourable radiator positioning and suchlike.

Stipulated 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 provided by the profile manufacturer (e.g. PVC or light metal profiles, etc.)
- The relevant VHBH and VHBE directives 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 stipulated 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 window and balcony door sashes can be moved horizontally or vertically by operating a handle.

On special designs, the sashes can also be slid and folded into a package (similar to an accordion – Fold&Slide windows).

On special designs, various sashes can also be moved into a turning position and/or into a limited tilting position by the scissor 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 risk of damage to property through incorrect closing and opening of sashes!**

Incorrect closing and opening of sashes can result in severe injuries and significant property 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  $v \leq 0.2 \text{ m/s}$ ).

Any use beyond or other than the stipulated use and installation of the products is deemed to be misuse, and may lead to hazardous situations.

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

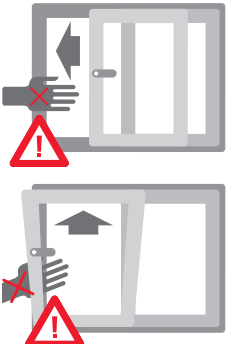
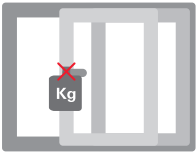
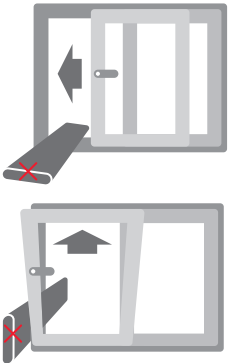
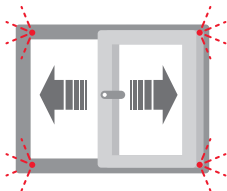
Misuse of windows and balcony doors can lead to hazardous situations.

The following types of use, in particular, should be avoided:

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

No claims shall be accepted for damages of any type whatsoever resulting from operation other than stipulated use.

Always observe the following symbols and their meanings in order to avoid accidents, injuries and property damage.

| Symbol                                                                              | Meaning                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <p><b>DANGER!</b><br/> <b>Danger of injury from falling through open windows and balcony doors.</b></p> <ul style="list-style-type: none"> <li>– Exercise caution when in the immediate vicinity of open windows and balcony doors.</li> <li>– Keep children and people who are unable to properly assess the danger involved away from the point of danger.</li> </ul>                                    |
|   | <p><b>WARNING!</b><br/> <b>Danger of injury from trapping body parts in the opening gap between sash and frame.</b></p> <ul style="list-style-type: none"> <li>– When closing windows and balcony doors, never reach between sash and frame, and always act with care.</li> <li>– Keep children and people who are unable to properly assess the danger involved away from the point of danger.</li> </ul> |
|  | <p><b>WARNING!</b><br/> <b>Danger of injury and risk of property damage from applying additional force to the sash</b></p> <ul style="list-style-type: none"> <li>– Do not apply additional force to the sash.</li> </ul>                                                                                                                                                                                  |
|  | <p><b>CAUTION!</b><br/> <b>Danger of injury from the effects of windy weather</b></p> <ul style="list-style-type: none"> <li>– Prevent windy weather from acting on the open sash.</li> <li>– If the weather outside is windy or there is a draft, close and lock the windows and balcony door sashes.</li> </ul>                                                                                          |
|  | <p><b>CAUTION!</b><br/> <b>Danger of injury and risk of property damage caused by placing objects into the gap between the sash and frame</b></p> <ul style="list-style-type: none"> <li>– Do not place objects into the gap between the sash and the frame.</li> </ul>                                                                                                                                    |
|  | <p><b>CAUTION!</b><br/> <b>Danger of injury and risk of property damage from uncontrolled opening and closing of the sash</b></p> <ul style="list-style-type: none"> <li>– Ensure that the sash is guided slowly by hand throughout the entire range of movement as far as the fully opened or closed position.</li> </ul>                                                                                 |





**Sicherheitshinweis**  
Kippschiebebeschläge










03/2012
OPR\_17\_DE\_v0

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).

### Maximum sash sizes and weights

The technical data, application diagrams, and component classifications contained in the hardware manufacturer's product-specific documentation, provide information on the maximum permitted sash sizes and weights. The component with the smallest permitted load bearing capacity decides the maximum permitted sash weight here.

- Check compliance with the technical data, application diagrams, and component classifications before the use of electronic data records, particularly in fenestration programmes.
- The maximum permitted sash sizes and weights must never be exceeded. If in doubt, contact the hardware manufacturer.

### Profile manufacturer's specifications

The window and balcony door manufacturer must comply with all specified system dimensions (e.g. gasket gap size and lock clearances). Furthermore, the manufacturer must check these dimensions regularly to ensure they are correct, especially on the first use of new hardware components, during manufacture, and as an on-going process up to and including the installation of the windows.



#### NOTE!

The hardware components should always be designed so that the system dimensions can be adjusted if affected by the hardware. If a deviation from these dimensions is not noticed until after the windows have been installed, the hardware manufacturer shall not be held liable for any additional work required as a result.

### Hardware composition

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

Windows and balcony doors for damp rooms, and those for use in environments with aggressive and corrosive air content, require hardware that 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 – in particular, test pressure P3) can be dissipated by the hardware system.

The hardware combinations and installations suitable 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 hardware manufacturer's specifications relating to the hardware composition (e.g. the use of additional scissor stays, 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 saliferous, aggressive or corrosion-promoting environments.
- 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 special conditions (such as service in hotels, schools, kindergartens etc.), it is expected that the element will be subjected to being closed through the use of excessive force, suitable measures must be implemented to prevent this. In mobile objects such as trains or ships malfunctions may occur because of the object movement.



#### **DANGER!**

#### **Risk of fatal injury from incorrectly installed and bolted-on hardware components**

Incorrect installation and improper screwed connection of hardware components can lead to hazardous situations and cause severe or even fatal accidents.

Therefore:

- Observe the product-specific documentation and the manufacturer's information along with the details from the profile manufacturer when installing and, in particular, when making screwed connections.

- For Roto Patio S for aluminium hardware the application ranges on page 17–18 apply.
- Information on screwing speed and torque is binding. (Do not overtighten the screws!)
- Fasten the hardware components using 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       | 4.8x50    | 4.2                    | Torx 25        |
| Roller track, guide track      | 40       | 3.9x45    | 3.2                    | Torx 15        |
| Stay-connecting profile        | 10       | 3.9 (9.5) | 3.2                    | Torx 15        |
| Reinforcement brackets         | 4        | M5x25     | 7.1 (for riveting nut) | Torx 25        |
| Roto Line window handle        | 2        | M5x...    | 3.9/10.1/12            | Phillips screw |

**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, D, G, K
- Internal and external appearance similar to Tilt&Turn windows: narrow profiles, no offset glazing in façade, handle in “Down” position when door closed
- Retracting distance: max. 117 mm
- Sash rebate width: max. 2000 mm
- Sash rebate height: max. 2700 mm
- Sash weight: max. 200 kg
- Clearance 12 mm
- min. Overlap height 15 mm
- Overlap height 18 - 22 mm
- Hardware axis 9/13 mm
- Sash profile depth max. 87 mm  
(for sash profile depths 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 rebate width **SRW** ..... 720–1250 mm

Sash rebate height **SRH** ..... 900–2350 mm

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

Sash profile depth ..... max. 87 mm

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

Glass weight ..... max. 60 kg/m<sup>2</sup>

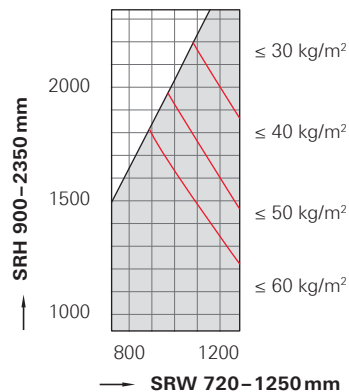
Sash rebate height SRH: Sash rebate width SRW = max. 2: 1

The information in the application diagram refers to the  
glass weight in kg/m<sup>2</sup>.

1 mm/m<sup>2</sup> 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 rebate width **SRW** ..... 720–2000 mm

Sash rebate height **SRH** ..... 900–2700 mm

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

Sash profile depth ..... max. 87 mm

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

Glass weight ..... max. 60 kg/m<sup>2</sup>

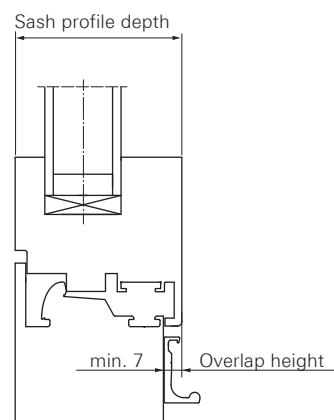
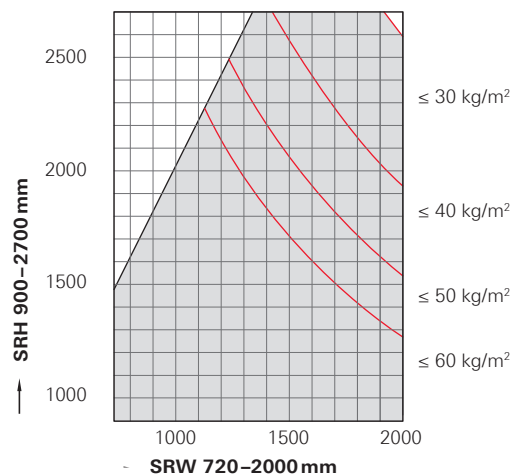
Sash rebate height SRH: Sash rebate width SRW = max. 2: 2: 1

The information in the application diagram refers to the  
glass weight in kg/m<sup>2</sup>.

1 mm/m<sup>2</sup> glass thickness = 2.5 kg

 = Impermissible application range

A spring scissor is needed for sash profile depths between 75 mm and 87 mm.  
In this case, the minimum sash rebate with (SRW) is 830 mm.





## Application diagram

Patio 200Z Aluminium

Heavy-duty bogie as from 160kg

Limitation of sash formats depending on the glass thickness

### Application range

Sash rebate width **SRW** ..... 1050–2000 mm

Sash rebate height **SRH** ..... 900–2700 mm

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

Sash profile depth ..... max. 87 mm

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

Glass weight ..... max. 60 kg/m<sup>2</sup>

Sash rebate height SRH: Sash rebate width SRW = max. 2: 1

The information in the application diagram refers to the  
glass weight in kg/m<sup>2</sup>.

1 mm/m<sup>2</sup> glass thickness = 2.5 kg

 = Impermissible application range

A spring scissor must always be used.

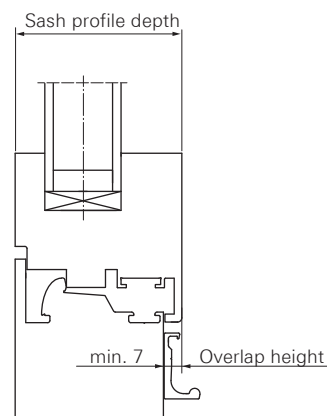
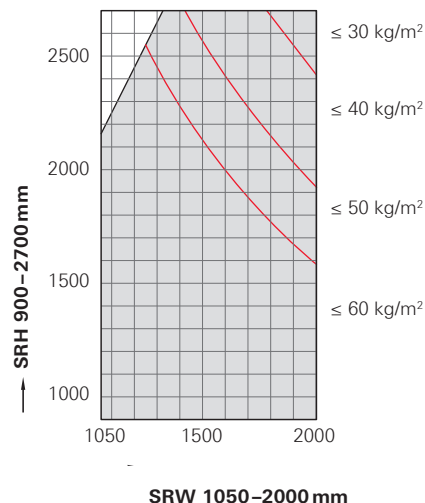


Diagram A

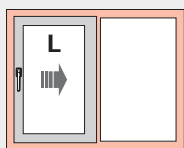


**Diagram A**

1 sliding sash (L or R)  
1 fixed glazing

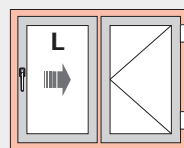


**Diagram A**

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 D

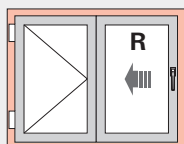


**Diagram D**

1 sliding sash (L or R) with/without loose centre post profile, slidable guide block required - (Installation situation of guide block see Page 68).  
1 Turn-Only sash

Diagram G

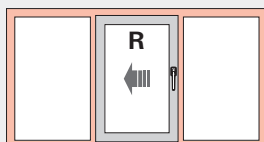


**Diagram G**

1 sliding sash (L or R)  
2 fixed glazings

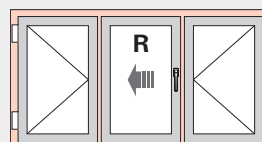


**Diagram G**

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

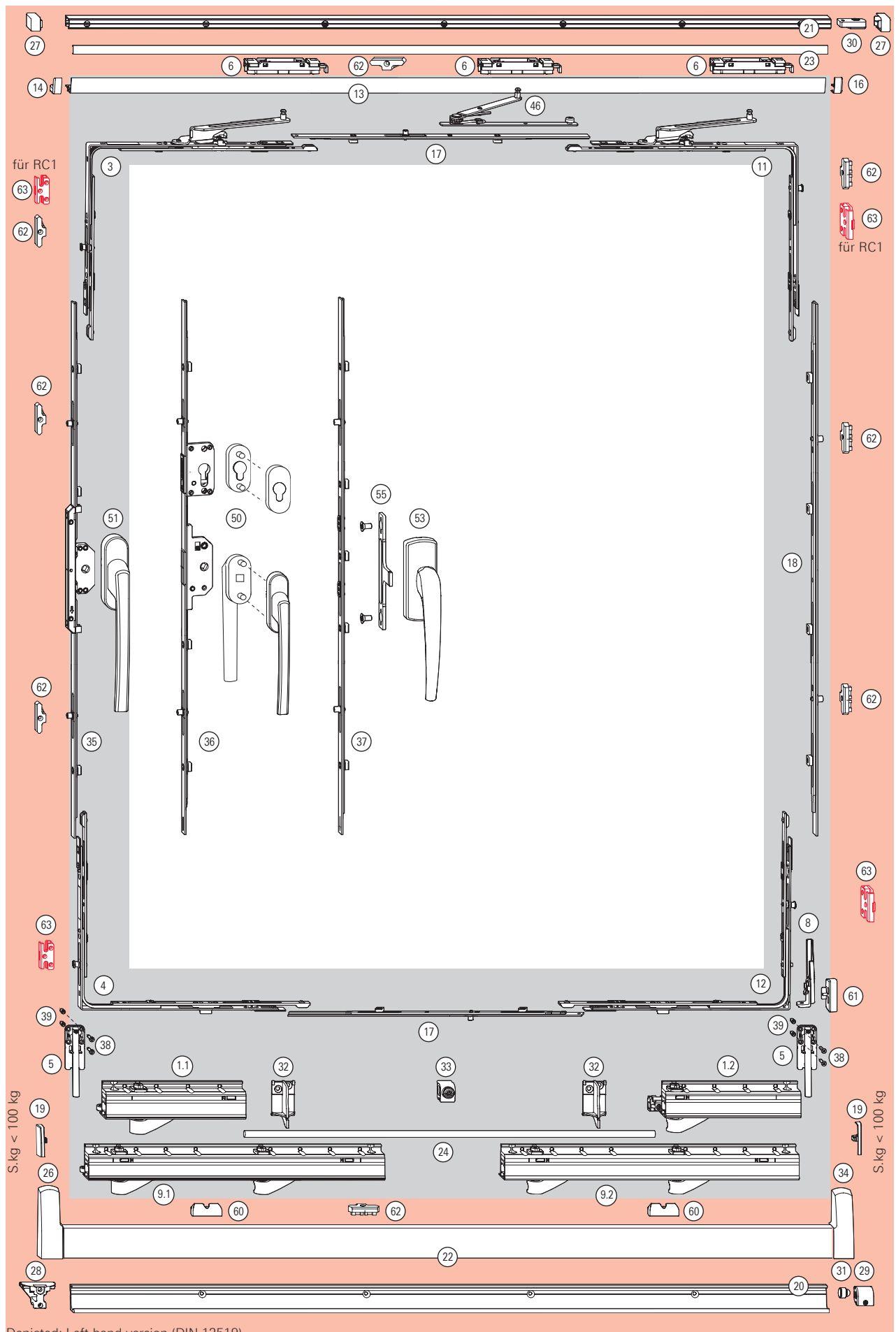
Diagram K



**Diagram K**

2 sliding sashes (L and R)  
1 fixed glazing





Depicted: Left-hand version (DIN 12519)

**Application range 100 Z**Sash rebate with **SRW** ..... 720–1250 mmSash rebate height **SRH** ..... 900–2350 mmSash weight **S.kg** ..... max. 100 kg**Application range 160 Z**Sash rebate with **SRW** ..... 720–2000 mmSash rebate height **SRH** ..... 900–2700 mmSash weight **S.kg** ..... max. 160 kg**Application range 200 Z**Sash rebate with **SRW** ..... 1050–2000 mmSash rebate height **SRH** ..... 900–2700 mmSash weight **S.kg** ..... max. 200 kg**Bogies****Patio Z Aluminium bogies up to 160 kg L 625395****Contents:**

- ①.1 1 leading bogie
- ①.2 1 trailing bogie
- ③.2 2 cover support brackets
- 12 supporting-pin countersunk tapping-screws
- 4.8 x 50 T25 (not dep.)

**Patio Z Aluminium bogies up to 160 kg R 625384****Contents:**

- ②.1 1 leading bogie (not dep.)
- ②.2 1 trailing bogie (not dep.)
- ③.2 2 cover support brackets
- 12 supporting-pin countersunk tapping-screws
- 4.8 x 50 T25 (not dep.)

**Patio Z Aluminium heavy-duty bogies from 160 kg L 625397****Contents:**

- ⑨.1 1 leading heavy-duty bogie
- ⑨.2 1 trailing heavy-duty bogie
- ③.2 1 cover support bracket
- 2x 12 supporting-pin countersunk tapping-screws
- 4.8 x 50 T25 (not dep.)

**Patio Z Aluminium heavy-duty bogies from 160 kg R 625396****Contents:**

- ⑩.1 1 leading heavy-duty bogie (not dep.)
- ⑩.2 1 trailing heavy-duty bogie (not dep.)
- ③.2 1 cover support bracket
- 2x 12 supporting-pin countersunk tapping-screws
- 4.8 x 50 T25 (not dep.)

**Corner drive, top****9 mm hardware axis**

- ③ Left-hand version Handle sided **562739**
- ⑪ Not handle sided **562740**
- Not dep. Right-hand version Handle sided **562741**
- Not dep. Not handle sided **562742**

**13 mm hardware axis**

- Not dep. Left-hand version Handle sided **562743**
- Not dep. Not handle sided **562744**
- Not dep. Right-hand version Handle sided **562745**
- Not dep. Not handle sided **562746**

**Corner drive, bottom**

- ④ Left-hand version Handle sided **562753**
- ⑫ Not handle sided **562754**
- Not dep. Right-hand version Handle sided **562755**
- Not dep. Not handle sided **562756**

**Misc. small components pack for slider 624463****Contents:**

- ⑥ 2 sliders
- Not dep. 1 slider release device

**Misc. small components pack for mishandling device, left-hand version 562760****Contents:**

- ⑧ 1 mishandling device with assembly screw

**Misc. small components pack for mishandling device, right-hand version 562761****Contents:**

- Not dep. 1 mishandling device with assembly screw

**Spring scissor 629603****To be used in addition for:**

- Sash weight from 160–200 kg
- Sash assembly depth 75–87 mm

**Contents of the misc. small components pack:**

- ④.6 1 spring scissor
- ⑥ 1 slider

**Centre lock component****⑪.7 Horizontal link-gear component, fixed handle height (2 pieces per sash)**

| SRW/mm      | Length/mm | Cam | Material no.  |
|-------------|-----------|-----|---------------|
| 720 – 1050  | 434       | 1 E | <b>245479</b> |
| 1051 – 1250 | 634       | 1 E | <b>245480</b> |
| 1251 – 1450 | 834       | 1 E | <b>245481</b> |
| 1451 – 1650 | 1034      | 1 E | <b>245482</b> |
| 1651 – 1850 | 1234      | 1 E | <b>245483</b> |
| 1851 – 2000 | 1384      | 2 E | <b>564861</b> |

**⑪.8 Vertical link-gear component, fixed handle height (1 piece per sash)**

| SRH/mm      | Length/mm                     | Cam | Material no.  |
|-------------|-------------------------------|-----|---------------|
| 1800 – 2000 | 1490                          | 2 E | <b>245477</b> |
| 2001 – 2200 | 1690                          | 2 E | <b>245478</b> |
| 2201 – 2600 | 1690                          | 2 E | <b>245478</b> |
|             | Espagnolette extension 400 mm | 1 V | <b>564863</b> |
| 2601 – 2700 | 1490                          | 2 E | <b>245477</b> |
|             | Espagnolette extension 400 mm | 1 V | <b>564863</b> |
|             | Espagnolette extension 400 mm | 1 V | <b>564863</b> |

**Vertical link-gear component, centred/variable handle height (1 piece per sash), not dep.**

| SRH/mm      | Length/mm | Cam | Material no.  |
|-------------|-----------|-----|---------------|
| 900 – 1200  | 690       |     | <b>245473</b> |
| 1201 – 1600 | 1090      | 1 E | <b>245474</b> |
| 1601 – 2000 | 1490      | 2 E | <b>245475</b> |
| 2001 – 2400 | 1890      | 2 E | <b>317128</b> |

| Track set                                                      |                                                                        |               |
|----------------------------------------------------------------|------------------------------------------------------------------------|---------------|
| Track set for sash and frame incl. misc. small components pack |                                                                        |               |
| Non-treated                                                    |                                                                        |               |
| SRW/mm                                                         | Frame external width (FEW)/mm                                          | Material no.  |
| 720 – 900                                                      | 1930                                                                   | <b>625445</b> |
| 901 – 1050                                                     | 2230                                                                   | <b>625450</b> |
| 1051 – 1250                                                    | 2630                                                                   | <b>625455</b> |
| 1251 – 1450                                                    | 3030                                                                   | <b>625460</b> |
| 1451 – 1650                                                    | 3430                                                                   | <b>625465</b> |
| 1651 – 2000                                                    | 4130                                                                   | <b>625470</b> |
| R01.5 Silver                                                   |                                                                        |               |
| SRW/mm                                                         | Frame external width (FEW)/mm                                          | Material no.  |
| 720 – 900                                                      | 1930                                                                   | <b>625442</b> |
| 901 – 1050                                                     | 2230                                                                   | <b>625447</b> |
| 1051 – 1250                                                    | 2630                                                                   | <b>625452</b> |
| 1251 – 1450                                                    | 3030                                                                   | <b>625457</b> |
| 1451 – 1650                                                    | 3430                                                                   | <b>625462</b> |
| 1651 – 2000                                                    | 4130                                                                   | <b>625467</b> |
| R05.4 Dark bronze                                              |                                                                        |               |
| SRW/mm                                                         | Frame external width (FEW)/mm                                          | Material no.  |
| 720 – 900                                                      | 1930                                                                   | <b>625446</b> |
| 901 – 1050                                                     | 2230                                                                   | <b>625451</b> |
| 1051 – 1250                                                    | 2630                                                                   | <b>625456</b> |
| 1251 – 1450                                                    | 3030                                                                   | <b>625461</b> |
| 1451 – 1650                                                    | 3430                                                                   | <b>625466</b> |
| 1651 – 2000                                                    | 4130                                                                   | <b>625471</b> |
| R06.2 Jet black                                                |                                                                        |               |
| SRW/mm                                                         | Frame external width (FEW)/mm                                          | Material no.  |
| 720 – 900                                                      | 1930                                                                   | <b>625444</b> |
| 901 – 1050                                                     | 2230                                                                   | <b>625449</b> |
| 1051 – 1250                                                    | 2630                                                                   | <b>625454</b> |
| 1251 – 1450                                                    | 3030                                                                   | <b>625459</b> |
| 1451 – 1650                                                    | 3430                                                                   | <b>625464</b> |
| 1651 – 2000                                                    | 4130                                                                   | <b>625469</b> |
| R07.2 Traffic white                                            |                                                                        |               |
| SRW/mm                                                         | Frame external width (FEW)/mm                                          | Material no.  |
| 720 – 900                                                      | 1930                                                                   | <b>625443</b> |
| 901 – 1050                                                     | 2230                                                                   | <b>625448</b> |
| 1051 – 1250                                                    | 2630                                                                   | <b>625453</b> |
| 1251 – 1450                                                    | 3030                                                                   | <b>625458</b> |
| 1451 – 1650                                                    | 3430                                                                   | <b>625463</b> |
| 1651 – 2000                                                    | 4130                                                                   | <b>625468</b> |
| Contents:                                                      |                                                                        |               |
| Track set:                                                     |                                                                        |               |
| (20)                                                           | 1 roller track *)                                                      |               |
| (21)                                                           | 1 guide track *)                                                       |               |
| (22)                                                           | 1 cover profile                                                        |               |
| (23)                                                           | 1 PVC cover profile                                                    |               |
| (24)                                                           | 1 connecting rod                                                       |               |
| (13)                                                           | 1 stay-connecting profile                                              |               |
| (33)                                                           | 1 connecting-rod support-block (additionally included from SRW > 1450) |               |
| Misc. small components pack:                                   |                                                                        |               |
| (14)                                                           | 1 cover cap for stay-connecting profile                                | L             |
| (16)                                                           | 1 cover cap for stay-connecting profile                                | R             |
| (30)                                                           | 1 buffer stop, top                                                     |               |
| (27)                                                           | 2 cover caps guide track                                               |               |
| (28)                                                           | 1 guide block                                                          |               |
| (29)                                                           | 1 buffer stop, bottom                                                  |               |
| (31)                                                           | 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.)   |               |

| Espagnolette                                           |                               |                        |     |               |
|--------------------------------------------------------|-------------------------------|------------------------|-----|---------------|
| (35) Espagnolette, fixed handle height                 |                               |                        |     |               |
| Backset 17.5 mm                                        |                               |                        |     |               |
| SRH/mm                                                 | Handle height/mm              | Espagnolette length/mm | Cam | Material no.  |
| 1800 – 2000                                            | 1000                          | 1490                   | 2 E | <b>562685</b> |
| 2001 – 2200                                            | 1000                          | 1690                   | 2 E | <b>562686</b> |
| 2201 – 2600                                            | 1000                          | 1690                   | 2 E | <b>562686</b> |
|                                                        | Espagnolette extension 400 mm |                        | 1 V | <b>564863</b> |
| 2601 – 2700                                            | 1000                          | 1490                   | 2 E | <b>562685</b> |
|                                                        | Espagnolette extension 400 mm |                        | 1 V | <b>564863</b> |
|                                                        | Espagnolette extension 400 mm |                        | 1 V | <b>564863</b> |
| Espagnolette, centred/variable handle height, not dep. |                               |                        |     |               |
| Backset 17.5 mm                                        |                               |                        |     |               |
| SRH/mm                                                 | Handle height/mm              | Espagnolette length/mm | Cam | Material no.  |
| 900 – 1200                                             | 450 – 600                     | 690                    |     | <b>562682</b> |
| 1201 – 1600                                            | 600 – 800                     | 1090                   | 1 E | <b>562683</b> |
| 1601 – 2000                                            | 800 – 1000                    | 1490                   | 2 E | <b>562684</b> |
| 2001 – 2400                                            | 1000 – 1200                   | 1890                   | 2 E | <b>562842</b> |
| Espagnolette, lockable                                 |                               |                        |     |               |
| (36) Espagnolette, lockable, fixed handle height       |                               |                        |     |               |
| Backset 30 mm                                          |                               |                        |     |               |
| SRH/mm                                                 | Handle height/mm              | Espagnolette length/mm | Cam | Material no.  |
| 1800 – 2000                                            | 1000                          | 1490                   | 2 E | <b>562698</b> |
| 2001 – 2200                                            | 1000                          | 1690                   | 2 E | <b>562699</b> |
| 2201 – 2600                                            | 1000                          | 1690                   | 2 E | <b>562699</b> |
|                                                        | Espagnolette extension 400 mm |                        | 1 V | <b>564863</b> |
| 2601 – 2700                                            | 1000                          | 1490                   | 2 E | <b>562698</b> |
|                                                        | Espagnolette extension 400 mm |                        | 1 V | <b>564863</b> |
|                                                        | Espagnolette extension 400 mm |                        | 1 V | <b>564863</b> |
| Backset 35 mm                                          |                               |                        |     |               |
| 1800 – 2000                                            | 1000                          | 1490                   | 2 E | <b>562700</b> |
| 2001 – 2200                                            | 1000                          | 1690                   | 2 E | <b>562701</b> |
| 2201 – 2600                                            | 1000                          | 1690                   | 2 E | <b>562701</b> |
|                                                        | Espagnolette extension 400 mm |                        | 1 V | <b>564863</b> |
| 2601 – 2700                                            | 1000                          | 1490                   | 2 E | <b>562700</b> |
|                                                        | Espagnolette extension 400 mm |                        | 1 V | <b>564863</b> |
|                                                        | Espagnolette extension 400 mm |                        | 1 V | <b>564863</b> |
| Backset 40 mm                                          |                               |                        |     |               |
| 1800 – 2000                                            | 1000                          | 1490                   | 2 E | <b>562702</b> |
| 2001 – 2200                                            | 1000                          | 1690                   | 2 E | <b>562703</b> |
| 2201 – 2600                                            | 1000                          | 1690                   | 2 E | <b>562703</b> |
|                                                        | Espagnolette extension 400 mm |                        | 1 V | <b>564863</b> |
| 2601 – 2700                                            | 1000                          | 1490                   | 2 E | <b>562702</b> |
|                                                        | Espagnolette extension 400 mm |                        | 1 V | <b>564863</b> |
|                                                        | Espagnolette extension 400 mm |                        | 1 V | <b>564863</b> |
| Backset 50 mm                                          |                               |                        |     |               |
| 1800 – 2000                                            | 1000                          | 1490                   | 2 E | <b>562704</b> |
| 2001 – 2200                                            | 1000                          | 1690                   | 2 E | <b>562705</b> |
| 2201 – 2600                                            | 1000                          | 1690                   | 2 E | <b>562705</b> |
|                                                        | Espagnolette extension 400 mm |                        | 1 V | <b>564863</b> |
| 2601 – 2700                                            | 1000                          | 1490                   | 2 E | <b>562704</b> |
|                                                        | Espagnolette extension 400 mm |                        | 1 V | <b>564863</b> |
|                                                        | Espagnolette extension 400 mm |                        | 1 V | <b>564863</b> |

**Espagnolette, lockable, centred/variable handle height** not dep.**Backset 30 mm**

| SRH/mm      | Handle height/mm | Espagnolette length/mm | Cam | Material no.  |
|-------------|------------------|------------------------|-----|---------------|
| 1601 – 2000 | –                | 1490                   | 2 E | <b>562696</b> |

**Backset 40 mm**

|             |   |      |     |               |
|-------------|---|------|-----|---------------|
| 1601 – 2000 | – | 1490 | 2 E | <b>562697</b> |
|-------------|---|------|-----|---------------|

**Espagnolette components for positive control handle****37 Espagnolette component for positive control handles, fixed handle height**

| SRH/mm      | Handle height/mm              | Espagnolette length/mm | Cam | Material no.  |
|-------------|-------------------------------|------------------------|-----|---------------|
| 1800 – 2000 | 1000                          | 1490                   | 2 E | <b>562692</b> |
| 2001 – 2200 | 1000                          | 1690                   | 2 E | <b>562693</b> |
| 2201 – 2600 | 1000                          | 1690                   | 2 E | <b>562693</b> |
|             | Espagnolette extension 400 mm |                        | 1 V | <b>564863</b> |
| 2601 – 2700 | 1000                          | 1490                   | 2 E | <b>562692</b> |
|             | Espagnolette extension 400 mm |                        | 1 V | <b>564863</b> |
|             | Espagnolette extension 400 mm |                        | 1 V | <b>564863</b> |

**Espagnolette component for positive control handles, centred/variable handle height** not dep.

| SRH/mm      | Handle height/mm | Espagnolette length/mm | Cam | Material no.  |
|-------------|------------------|------------------------|-----|---------------|
| 900 – 1200  | –                | 690                    |     | <b>562689</b> |
| 1201 – 1600 | –                | 1090                   | 1 E | <b>562690</b> |
| 1601 – 2000 | –                | 1490                   | 2 E | <b>562691</b> |

**Espagnolette extension, not dep.**

**Espagnolette extension 250 mm** not dep. **245500**

**Espagnolette extension 250 mm** not dep. 1 V **245501**

**Espagnolette extension 400 mm** not dep. 1 V **564863**  
Can be shortened to 200 mm

**56 57 58 Roto Swing Patio Z handles** Refer to page 30

**50 Roto Line handle, with Roto logo** Refer to page 31  
Inside and outside operation

**51 Roto Line handle, with Roto logo** Refer to page 31

**53 Surface mounted positive control handle** Refer to page 32

**55 Connector** Refer to page 32

**Cover caps****19 Cover caps** small (pair) 100Z up to 100 kg

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

**Cover caps** large (pair) 160Z / 200Z up to 200 kg

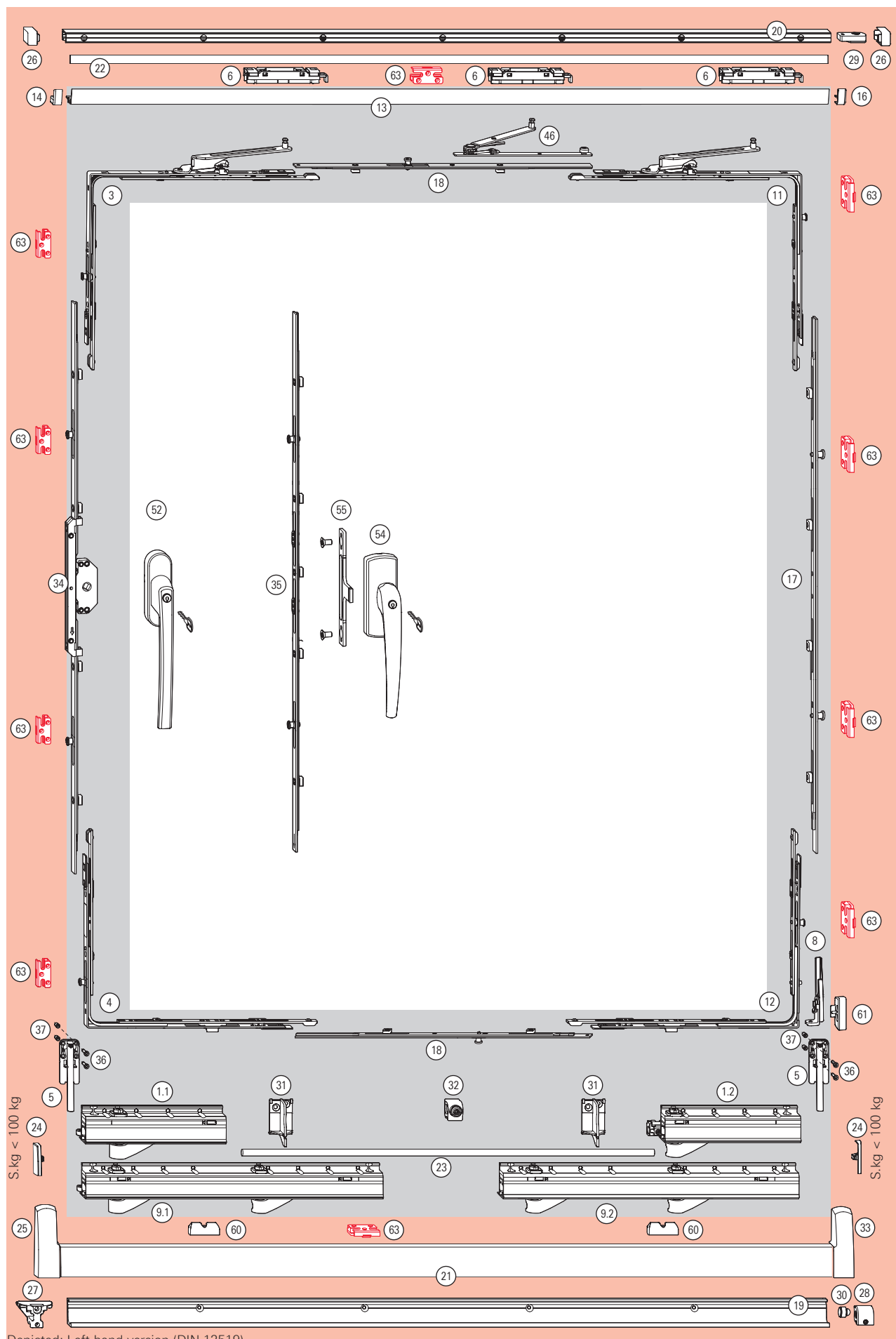
| Description         | Material no.  |
|---------------------|---------------|
| Non-treated         | <b>625403</b> |
| R01.5 Silver        | <b>625404</b> |
| R05.4 Dark bronze   | <b>625407</b> |
| R06.2 Jet black     | <b>625405</b> |
| R07.2 Traffic white | <b>625406</b> |

**Contents:**

|           |                                      |   |
|-----------|--------------------------------------|---|
| <b>26</b> | 1 cover cap                          | L |
| <b>34</b> | 1 cover cap                          | R |
| <b>5</b>  | 2 reinforcement brackets, adjustable |   |

**Misc. small components pack:**

|           |                                  |
|-----------|----------------------------------|
| <b>38</b> | 4 countersunk screws M5 x 25 T25 |
| <b>39</b> | 4 blind rivet nuts M5            |



Depicted: Left-hand version (DIN 12519)

**Application range 100 Z**Sash rebate with **SRW** ..... 720–1250 mmSash rebate height **SRH** ..... 900–2350 mmSash weight **S.kg** ..... max. 100 kg**Application range 160 Z**Sash rebate with **SRW** ..... 720–2000 mmSash rebate height **SRH** ..... 900–2700 mmSash weight **S.kg** ..... max. 160 kg**Application range 200 Z**Sash rebate with **SRW** ..... 1050–2000 mmSash rebate height **SRH** ..... 900–2700 mmSash weight **S.kg** ..... max. 200 kg**Bogies****Patio Z Aluminium bogies up to 160 kg L 625395****Contents:**

- ①.1 1 leading bogie
- ①.2 1 trailing bogie
- ③.1 2 cover support brackets  
12 supporting-pin countersunk tapping-screws  
4.8 x 50 T25 (not dep.)

**Patio Z Aluminium bogies up to 160 kg R 625384****Contents:**

- ②.1 1 leading bogie (not dep.)
- ②.2 1 trailing bogie (not dep.)
- ③.1 2 cover support brackets  
12 supporting-pin countersunk tapping-screws  
4.8 x 50 T25 (not dep.)

**Patio Z Aluminium heavy-duty bogies from 160 kg L 625397****Contents:**

- ⑨.1 1 leading heavy-duty bogie
- ⑨.2 1 trailing heavy-duty bogie
- ③.1 1 cover support bracket
- 2x 12 supporting-pin countersunk tapping-screws  
4.8 x 50 T25 (not dep.)

**Patio Z Aluminium heavy-duty bogies from 160 kg R 625396****Contents:**

- ⑩.1 1 leading heavy-duty bogie (not dep.)
- ⑩.2 1 trailing heavy-duty bogie (not dep.)
- ③.1 1 cover support bracket
- 2x 12 supporting-pin countersunk tapping-screws  
4.8 x 50 T25 (not dep.)

**Corner drive, top****9 mm hardware axis**

- ③ Left-hand version Handle sided **562739**
- ⑪ Not handle sided **562740**
- Not dep. Right-hand version Handle sided **562741**
- Not dep. Not handle sided **562742**

**13 mm hardware axis**

- Not dep. Left-hand version Handle sided **562743**
- Not dep. Not handle sided **562744**
- Not dep. Right-hand version Handle sided **562745**
- Not dep. Not handle sided **562746**

**Corner drive, bottom**

- ④ Left-hand version Handle sided **562753**
- ⑫ Not handle sided **562754**
- Not dep. Right-hand version Handle sided **562755**
- Not dep. Not handle sided **562756**

**Misc. small components pack for slider 624463****Contents:**

- ⑥ 2 sliders
- Not dep. 1 slider release device

**Misc. small components pack for mishandling device, left-hand version 562760****Contents:**

- ⑧ 1 mishandling device with assembly screw

**Misc. small components pack for mishandling device, right-hand version 562761****Contents:**

- Not dep. 1 mishandling device with assembly screw

**Spring scissor 629603****To be used in addition for:**

- Sash weight from 160–200 kg
- Sash assembly depth 75–87 mm

**Contents of the misc. small components pack:**

- ④.6 1 spring scissor
- ⑥ 1 slider

**Centre lock component****⑪.7 Vertical link-gear component, fixed handle height (1 piece per sash)**

| SRH/mm      | Length/mm                     | Cam | Material no.  |
|-------------|-------------------------------|-----|---------------|
| 1800 – 2000 | 1490                          | 2 V | <b>257242</b> |
| 2001 – 2200 | 1690                          | 2 V | <b>257243</b> |
| 2201 – 2600 | 1690                          | 2 V | <b>257243</b> |
|             | Espagnolette extension 400 mm | 1 V | <b>564863</b> |
| 2601 – 2700 | 1490                          | 2 V | <b>257242</b> |
|             | Espagnolette extension 400 mm | 1 V | <b>564863</b> |
|             | Espagnolette extension 400 mm | 1 V | <b>564863</b> |

**⑪.8 Horizontal link-gear component, fixed handle height (2 pieces per sash)**

| SRW/mm      | Length/mm | Cam | Material no.  |
|-------------|-----------|-----|---------------|
| 720 – 1050  | 434       | 1 V | <b>257244</b> |
| 1051 – 1250 | 634       | 1 V | <b>257245</b> |
| 1251 – 1450 | 834       | 1 V | <b>257246</b> |
| 1451 – 1650 | 1034      | 1 V | <b>257247</b> |
| 1651 – 1850 | 1234      | 1 V | <b>257249</b> |
| 1851 – 2000 | 1384      | 2 V | <b>564862</b> |

| Track set                                                      |                               |               |
|----------------------------------------------------------------|-------------------------------|---------------|
| Track set for sash and frame incl. misc. small components pack |                               |               |
| Non-treated                                                    |                               |               |
| SRW/mm                                                         | Frame external width (FEW)/mm | Material no.  |
| 720 – 900                                                      | 1930                          | <b>625445</b> |
| 901 – 1050                                                     | 2230                          | <b>625450</b> |
| 1051 – 1250                                                    | 2630                          | <b>625455</b> |
| 1251 – 1450                                                    | 3030                          | <b>625460</b> |
| 1451 – 1650                                                    | 3430                          | <b>625465</b> |
| 1651 – 2000                                                    | 4130                          | <b>625470</b> |
| R01.5 Silver                                                   |                               |               |
| SRW/mm                                                         | Frame external width (FEW)/mm | Material no.  |
| 720 – 900                                                      | 1930                          | <b>625442</b> |
| 901 – 1050                                                     | 2230                          | <b>625447</b> |
| 1051 – 1250                                                    | 2630                          | <b>625452</b> |
| 1251 – 1450                                                    | 3030                          | <b>625457</b> |
| 1451 – 1650                                                    | 3430                          | <b>625462</b> |
| 1651 – 2000                                                    | 4130                          | <b>625467</b> |
| R05.4 Dark bronze                                              |                               |               |
| SRW/mm                                                         | Frame external width (FEW)/mm | Material no.  |
| 720 – 900                                                      | 1930                          | <b>625446</b> |
| 901 – 1050                                                     | 2230                          | <b>625451</b> |
| 1051 – 1250                                                    | 2630                          | <b>625456</b> |
| 1251 – 1450                                                    | 3030                          | <b>625461</b> |
| 1451 – 1650                                                    | 3430                          | <b>625466</b> |
| 1651 – 2000                                                    | 4130                          | <b>625471</b> |
| R06.2 Jet black                                                |                               |               |
| SRW/mm                                                         | Frame external width (FEW)/mm | Material no.  |
| 720 – 900                                                      | 1930                          | <b>625444</b> |
| 901 – 1050                                                     | 2230                          | <b>625449</b> |
| 1051 – 1250                                                    | 2630                          | <b>625454</b> |
| 1251 – 1450                                                    | 3030                          | <b>625459</b> |
| 1451 – 1650                                                    | 3430                          | <b>625464</b> |
| 1651 – 2000                                                    | 4130                          | <b>625469</b> |
| R07.2 Traffic white                                            |                               |               |
| SRW/mm                                                         | Frame external width (FEW)/mm | Material no.  |
| 720 – 900                                                      | 1930                          | <b>625443</b> |
| 901 – 1050                                                     | 2230                          | <b>625448</b> |
| 1051 – 1250                                                    | 2630                          | <b>625453</b> |
| 1251 – 1450                                                    | 3030                          | <b>625458</b> |
| 1451 – 1650                                                    | 3430                          | <b>625463</b> |
| 1651 – 2000                                                    | 4130                          | <b>625468</b> |

## Contents:

## Track set:

- (19) 1 roller track \*)
- (20) 1 guide track \*)
- (21) 1 cover profile
- (22) 1 PVC cover profile
- (23) 1 connecting rod
- (13) 1 stay-connecting profile
- (32) 1 connecting-rod support-block (additionally included from SRW > 1450)

## Misc. small components pack:

- (14) 1 cover cap for stay-connecting profile L
- (16) 1 cover cap for stay-connecting profile R
- (29) 1 buffer stop, top
- (26) 2 cover caps guide track
- (27) 1 guide block
- (28) 1 buffer stop, bottom
- (30) 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.)

| Espagnolette                                                                |                               |                        |     |               |
|-----------------------------------------------------------------------------|-------------------------------|------------------------|-----|---------------|
| 34 Espagnolette, fixed handle height                                        |                               |                        |     |               |
| Backset 17.5 mm                                                             |                               |                        |     |               |
| SRH/mm                                                                      | Handle height/mm              | Espagnolette length/mm | Cam | Material no.  |
| 1800 – 2000                                                                 | 1000                          | 1490                   | 2 V | <b>562687</b> |
| 2001 – 2200                                                                 | 1000                          | 1690                   | 2 V | <b>562688</b> |
| 2201 – 2600                                                                 | 1000                          | 1690                   | 2 V | <b>562688</b> |
|                                                                             | Espagnolette extension 400 mm |                        | 1 V | <b>564863</b> |
| 2601 – 2700                                                                 | 1000                          | 1490                   | 2 V | <b>562687</b> |
|                                                                             | Espagnolette extension 400 mm |                        | 1 V | <b>564863</b> |
|                                                                             | Espagnolette extension 400 mm |                        | 1 V | <b>564863</b> |
| Espagnolette components for positive control handle                         |                               |                        |     |               |
| 35 Espagnolette component for positive control handles, fixed handle height |                               |                        |     |               |
| SRH/mm                                                                      | Handle height/mm              | Espagnolette length/mm | Cam | Material no.  |
| 1800 – 2000                                                                 | 1000                          | 1490                   | 2 V | <b>562694</b> |
| 2001 – 2200                                                                 | 1000                          | 1690                   | 2 V | <b>562695</b> |
| 2201 – 2600                                                                 | 1000                          | 1690                   | 2 V | <b>562695</b> |
|                                                                             | Espagnolette extension 400 mm |                        | 1 V | <b>564863</b> |
| 2601 – 2700                                                                 | 1000                          | 1490                   | 2 V | <b>562694</b> |
|                                                                             | Espagnolette extension 400 mm |                        | 1 V | <b>564863</b> |
|                                                                             | Espagnolette extension 400 mm |                        | 1 V | <b>564863</b> |
| Drilling protection for espagnolette not dep.                               |                               |                        |     | <b>449715</b> |

## Espagnolette extension, not dep.

**Espagnolette extension 250 mm** not dep. 1 V **245501**

**Espagnolette extension 400 mm** not dep. 1 V **564863**  
Can be shortened to 200 mm

|                                                             |                         |
|-------------------------------------------------------------|-------------------------|
| <b>52 Roto Line handle, with Roto logo, lockable</b>        | <b>Refer to page 31</b> |
| <b>54 Surface mounted positive control handle, lockable</b> | <b>Refer to page 32</b> |
| <b>55 Connector</b>                                         | <b>Refer to page 32</b> |

## Cover caps

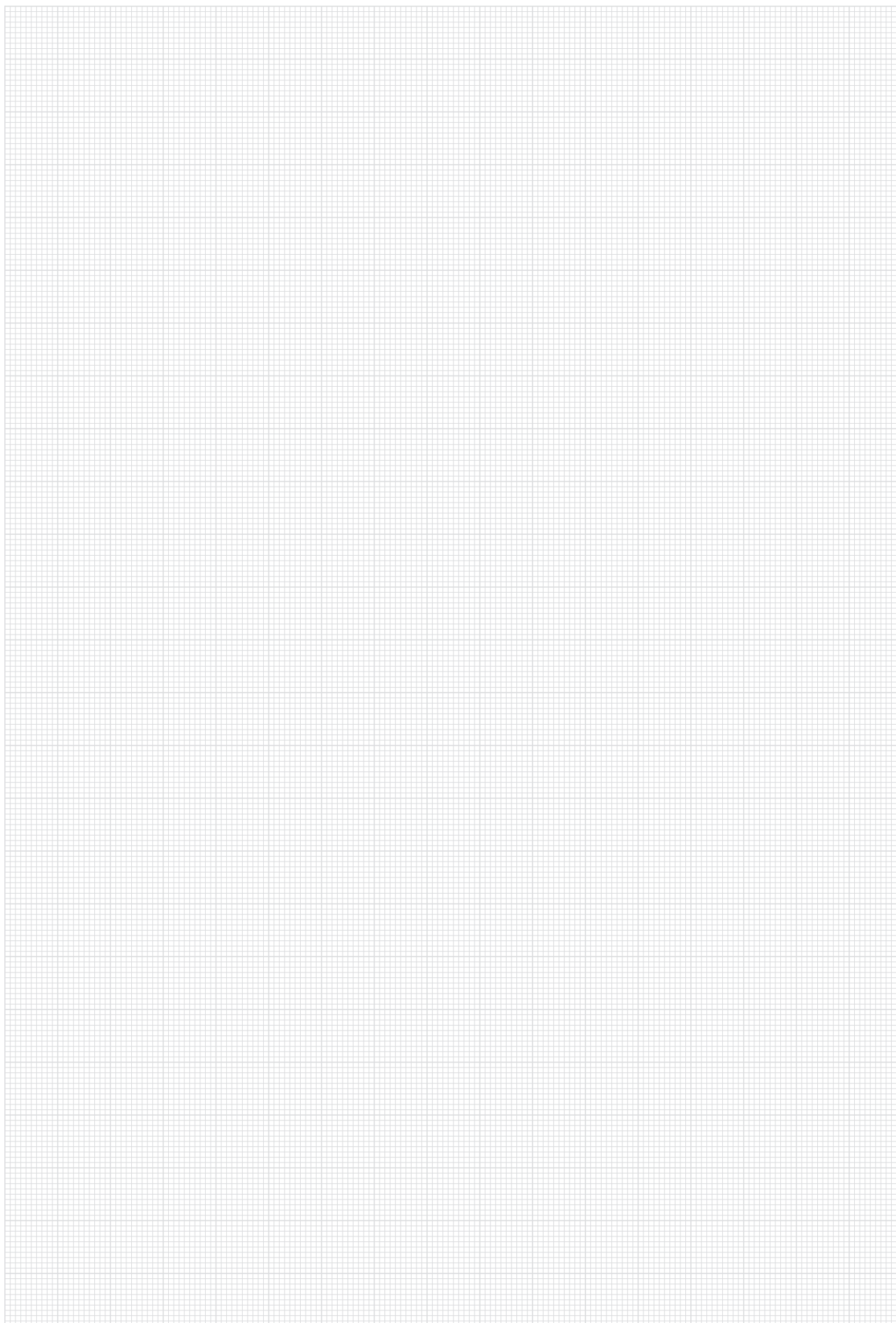
| 24 Cover caps small (pair) 100Z up to 100 kg     |               |
|--------------------------------------------------|---------------|
| Description                                      | Material no.  |
| Non-treated                                      | <b>625398</b> |
| R01.5 Silver                                     | <b>625399</b> |
| R05.4 Dark bronze                                | <b>625402</b> |
| R06.2 Jet black                                  | <b>625400</b> |
| R07.2 Traffic white                              | <b>625401</b> |
| Cover caps large (pair) 160Z / 200Z up to 200 kg |               |
| Description                                      | Material no.  |
| Non-treated                                      | <b>625403</b> |
| R01.5 Silver                                     | <b>625404</b> |
| R05.4 Dark bronze                                | <b>625407</b> |
| R06.2 Jet black                                  | <b>625405</b> |
| R07.2 Traffic white                              | <b>625406</b> |

## Contents:

- (25) 1 cover cap L
- (33) 1 cover cap R
- (5) 2 reinforcement brackets, adjustable

## Misc. small components pack:

- (36) 4 countersunk screws M5x25 T25
- (37) 4 blind rivet nuts M5



## Handles

### Roto Swing Patio Z handles



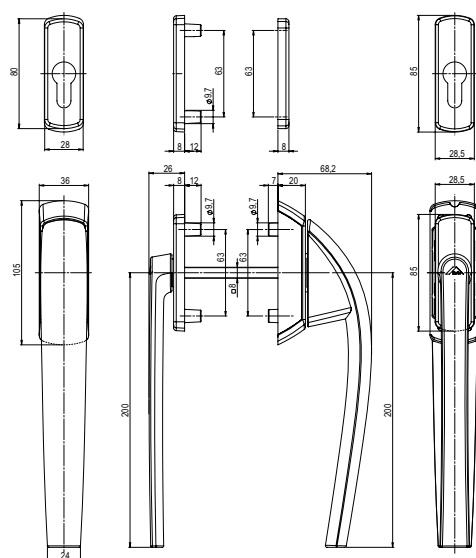
#### 56 Roto Swing Patio handle

| Roto colour number         | Colour        | PQ | Material no.  |
|----------------------------|---------------|----|---------------|
| <b>35mm spindle length</b> |               |    |               |
| R 01.1                     | Silver        | 1  | <b>619664</b> |
| R 05.3                     | Medium bronze | 1  | <b>619665</b> |
| R 07.2                     | Traffic white | 1  | <b>619666</b> |
| <b>40mm spindle length</b> |               |    |               |
| R 01.1                     | Silver        | 1  | <b>619677</b> |
| R 05.3                     | Medium bronze | 1  | <b>619678</b> |
| R 07.2                     | Traffic white | 1  | <b>619679</b> |
| <b>43mm spindle length</b> |               |    |               |
| R 01.1                     | Silver        | 1  | <b>619680</b> |
| R 05.3                     | Medium bronze | 1  | <b>619681</b> |
| R 07.2                     | Traffic white | 1  | <b>619682</b> |



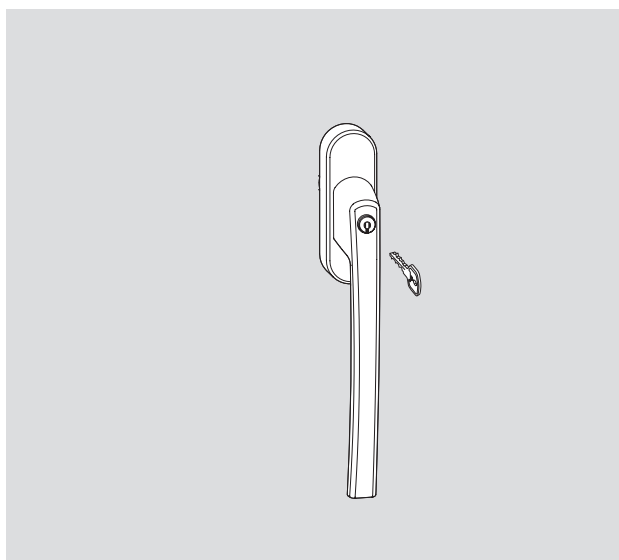
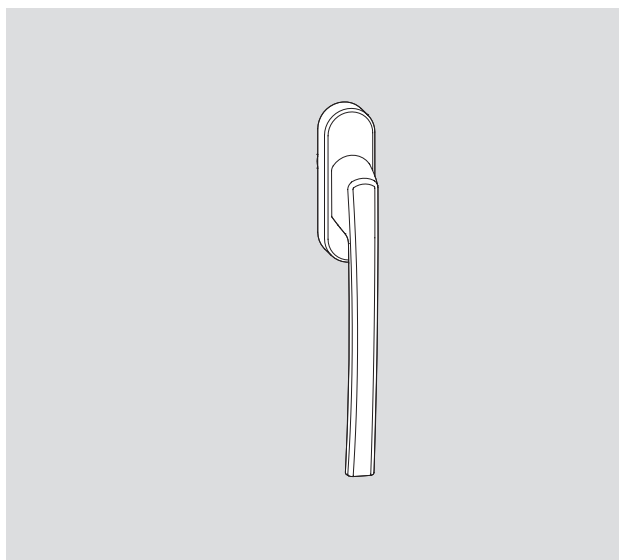
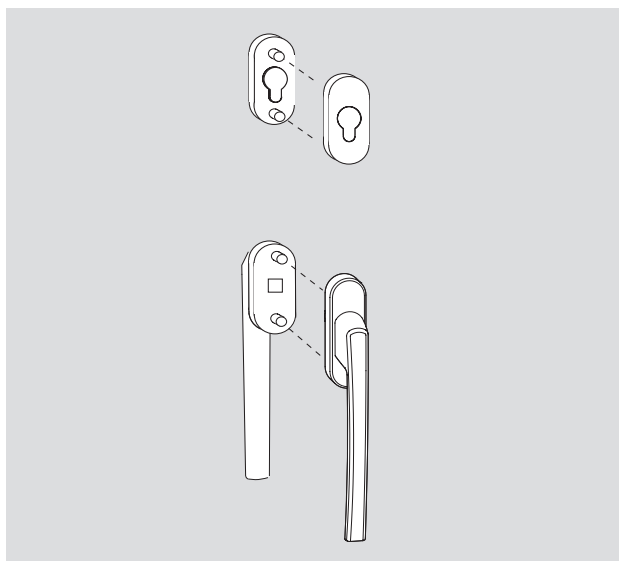
#### 57 Roto Swing Patio handle 40Nm, lockable

| Roto colour number         | Colour        | PQ | Material no.  |
|----------------------------|---------------|----|---------------|
| <b>35mm spindle length</b> |               |    |               |
| R 01.1                     | Silver        | 1  | <b>619683</b> |
| R 05.3                     | Medium bronze | 1  | <b>619684</b> |
| R 07.2                     | Traffic white | 1  | <b>619715</b> |
| <b>40mm spindle length</b> |               |    |               |
| R 01.1                     | Silver        | 1  | <b>619716</b> |
| R 05.3                     | Medium bronze | 1  | <b>619717</b> |
| R 07.2                     | Traffic white | 1  | <b>619718</b> |
| <b>43mm spindle length</b> |               |    |               |
| R 01.1                     | Silver        | 1  | <b>619719</b> |
| R 05.3                     | Medium bronze | 1  | <b>619720</b> |
| R 07.2                     | Traffic white | 1  | <b>619721</b> |



#### 58 Roto Swing Patio pair of handles incl. pair of escutcheon covers

| Roto colour number | Colour        | PQ | Material no.  |
|--------------------|---------------|----|---------------|
| R 01.1             | Silver        | 1  | <b>619722</b> |
| R 05.3             | Medium bronze | 1  | <b>619723</b> |
| R 07.2             | Traffic white | 1  | <b>619724</b> |



**50 Roto Line handle, with Roto-Logo inside and outside operation**

| Roto colour number          | Colour        | Material no.  |
|-----------------------------|---------------|---------------|
| <b>35 mm spindle length</b> |               |               |
| R 01.1                      | Silver        | <b>494487</b> |
| R 05.3                      | Medium bronze | <b>494488</b> |
| R 05.4                      | Dark bronze   | <b>494489</b> |
| R 07.2                      | Traffic white | <b>494490</b> |
| R 07.3                      | Cream white   | <b>564911</b> |

**51 Roto Line handle, with Roto logo**

| Roto colour number          | Colour        | Material no.  |
|-----------------------------|---------------|---------------|
| <b>35 mm spindle length</b> |               |               |
| R 01.1                      | Silver        | <b>494475</b> |
| R 01.2                      | Nickel silver | <b>494476</b> |
| R 01.3                      | Titanium matt | <b>494477</b> |
| R 05.3                      | Medium bronze | <b>494478</b> |
| R 05.4                      | Dark bronze   | <b>494479</b> |
| R 07.2                      | Traffic white | <b>494480</b> |
| R 07.3                      | Cream white   | <b>564909</b> |
| <b>40 mm spindle length</b> |               |               |
| R 01.1                      | Silver        | <b>502526</b> |
| R 01.2                      | Nickel silver | <b>502527</b> |
| R 01.3                      | Titanium matt | <b>502528</b> |
| R 05.3                      | Medium bronze | <b>502529</b> |
| R 05.4                      | Dark bronze   | <b>502530</b> |
| R 07.2                      | Traffic white | <b>502531</b> |

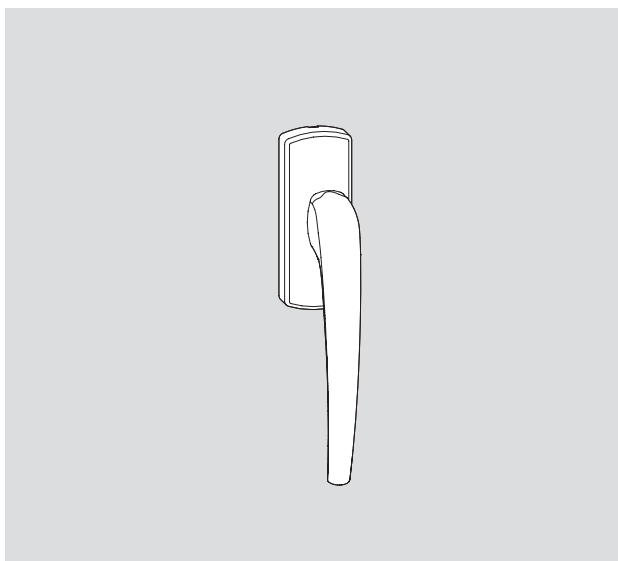
**52 Roto Line handle, with Roto logo, lockable**

| Roto colour number          | Colour        | Material no.  |
|-----------------------------|---------------|---------------|
| <b>35 mm spindle length</b> |               |               |
| R 01.1                      | Silver        | <b>494481</b> |
| R 01.2                      | Nickel silver | <b>494482</b> |
| R 01.3                      | Titanium matt | <b>494483</b> |
| R 05.3                      | Medium bronze | <b>494484</b> |
| R 05.4                      | Dark bronze   | <b>494485</b> |
| R 07.2                      | Traffic white | <b>494486</b> |
| R 07.3                      | Cream white   | <b>564910</b> |
| <b>40 mm spindle length</b> |               |               |
| R 01.1                      | Silver        | <b>502532</b> |
| R 01.2                      | Nickel silver | <b>502533</b> |
| R 01.3                      | Titanium matt | <b>502534</b> |
| R 05.3                      | Medium bronze | <b>502535</b> |
| R 05.4                      | Dark bronze   | <b>502536</b> |
| R 07.2                      | Traffic white | <b>502537</b> |

|                            |               |
|----------------------------|---------------|
| <b>Replacement key 1G1</b> | <b>257830</b> |
|----------------------------|---------------|

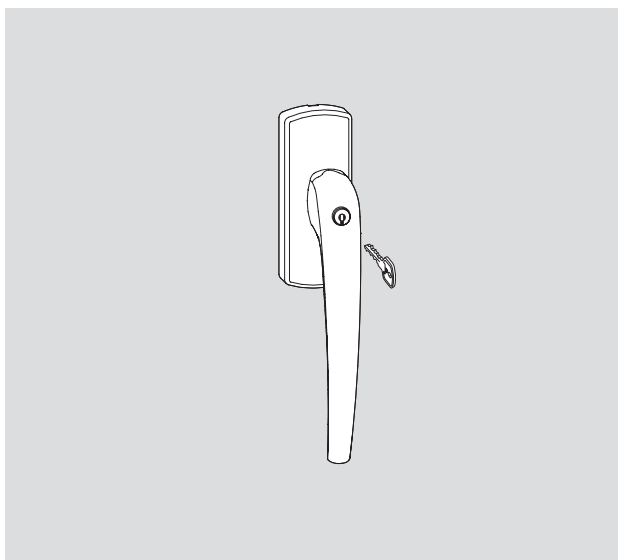
## Handles

### Surface mounted positive-control handle



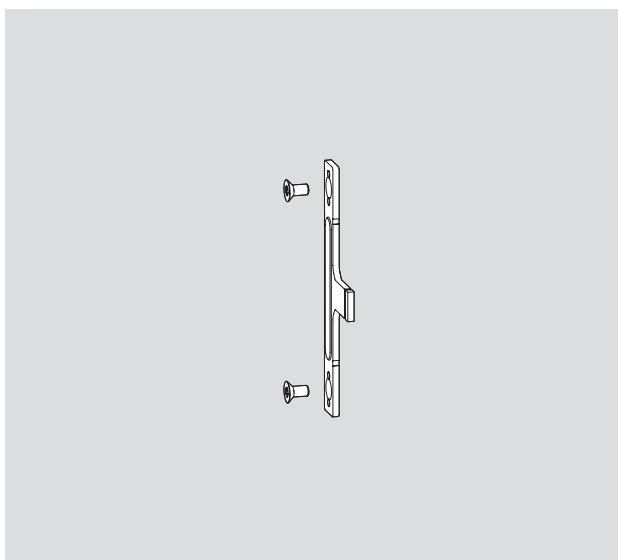
**53 Surface mounted positive-control handle**  
incl. connector for 13mm axis, can be shortened to suit a 9mm axis

| Roto colour number | Colour        | Material no. |                |
|--------------------|---------------|--------------|----------------|
| R 01.1             | Silver        | L            | <b>562713</b>  |
|                    |               | R            | <b>562714</b>  |
| R 01.3             | Titanium matt | L            | <b>563944</b>  |
|                    |               | R            | <b>563943</b>  |
| R 05.3             | Medium bronze | L            | <b>564 431</b> |
|                    |               | R            | <b>564430</b>  |
| R 05.4             | Dark bronze   | L            | <b>562715</b>  |
|                    |               | R            | <b>562716</b>  |
| R 07.2             | Traffic white | L            | <b>562717</b>  |
|                    |               | R            | <b>562718</b>  |
| R 07.3             | Cream white   | L            | <b>562719</b>  |
|                    |               | R            | <b>562720</b>  |



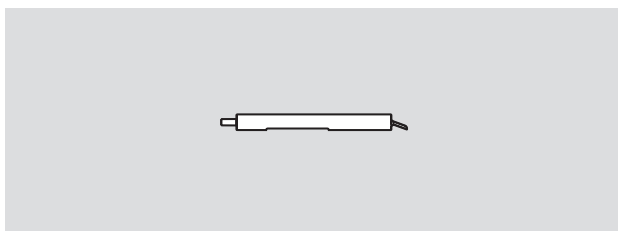
**54 Surface mounted positive control handle, lockable**  
incl. connector for 13mm axis, can be shortened to suit a 9mm axis

| Roto colour number | Colour        | Material no. |               |
|--------------------|---------------|--------------|---------------|
| R 01.1             | Silver        | L            | <b>562721</b> |
|                    |               | R            | <b>562722</b> |
| R 01.3             | Titanium matt | L            | <b>563996</b> |
|                    |               | R            | <b>563995</b> |
| R 05.3             | Medium bronze | L            | <b>564433</b> |
|                    |               | R            | <b>564432</b> |
| R 05.4             | Dark bronze   | L            | <b>562723</b> |
|                    |               | R            | <b>562724</b> |
| R 07.2             | Traffic white | L            | <b>562725</b> |
|                    |               | R            | <b>562726</b> |
| R 07.3             | Cream white   | L            | <b>562727</b> |
|                    |               | R            | <b>562728</b> |



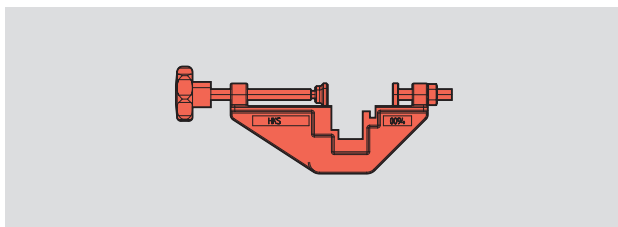
**55 Connector & screws for positive control handle**      **562729**  
**9mm hardware axis**

**Connector & screws for positive control handle**      **562730**  
**13mm hardware axis**



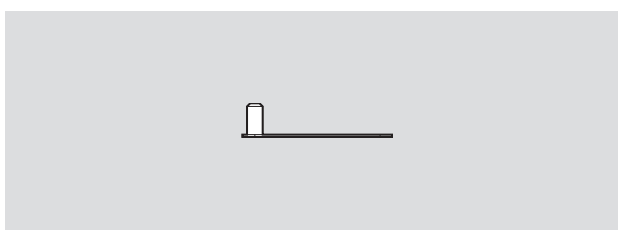
Slider-release device

562759



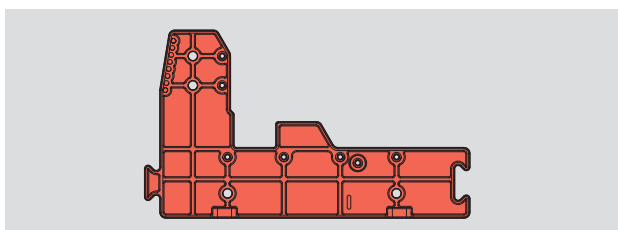
Jig for roller track and guide track

563967



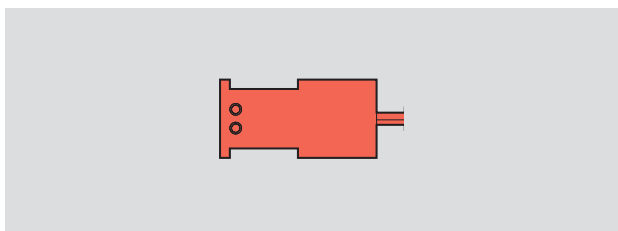
Drilling aid for roller track and guide track

207583



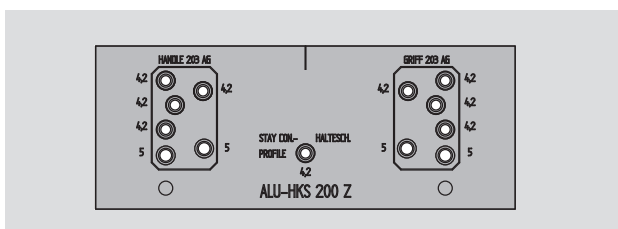
Drilling jig for bogie

563968



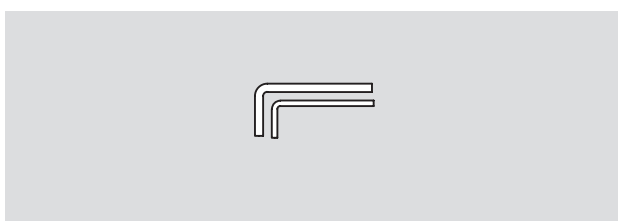
Jig for guide block

563969



Drilling jig for stay-connecting profile

623669



Torx key; T10 hexalobular socket

625172

Torx key; T15 hexalobular socket

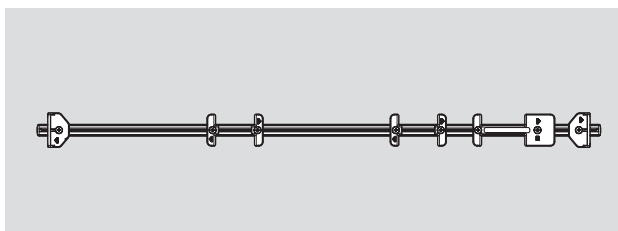
625173

Torx key; T25 hexalobular socket

563971

Torx key; T40 hexalobular socket

563970

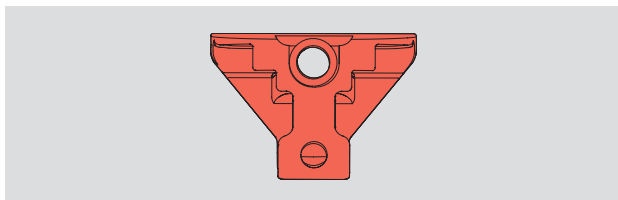


**Striker positioning jig; hinge/espagnolette side – fixed handle height** 564099

**Striker positioning jig; hinge/espagnolette side – centred/variable handle height** 564102

**Horizontal striker positioning jig up to 1050 mm** 564100

**Horizontal striker positioning jig 1051–2000 mm** 564101

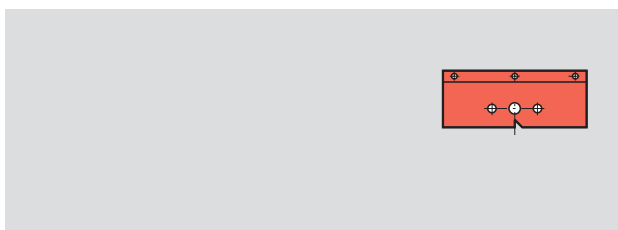


**Drilling jig for guide block, adjustable** 566970



**Drilling jig for espagnolette** 207580

With positioning jig-rod and clamp, 17.5 mm backset



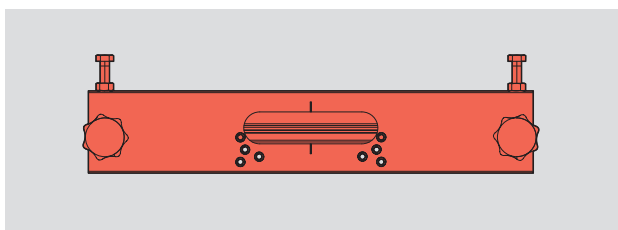
**Drilling jig for espagnolette** 207584

Without positioning jig-rod and clamp, 17.5 mm backset

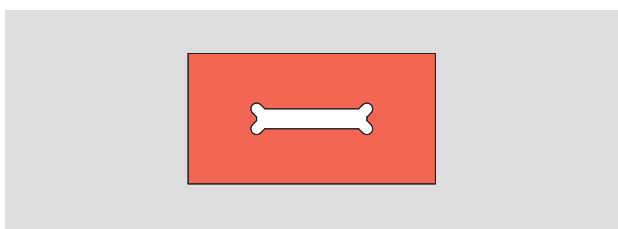


**Drilling jig for lockable espagnolette** 207579

30–50 mm backset



**Drilling and routing jig for positive control handle and scissor-stay routing** 563966



**Routing jig for scissor-stay routing** 207578

Axis dimension 9 mm



| Description                                        | Colour | Comment       | Length in mm | Material no.  |
|----------------------------------------------------|--------|---------------|--------------|---------------|
| <b>Tracks</b>                                      |        |               |              |               |
| Roller track                                       | R01.5  | Silver        | 6070         | <b>562764</b> |
| Roller track                                       | R05.4  | Dark bronze   | 6070         | <b>562765</b> |
| Roller track                                       | R06.2  | Jet black     | 6070         | <b>625472</b> |
| Roller track                                       |        | Non-treated   | 6070         | <b>562763</b> |
| <b>Stay-connecting profile 14</b>                  |        |               |              |               |
| Stay-connecting profile 14                         | R01.5  | Silver        | 5220         | <b>625473</b> |
| Stay-connecting profile 14                         | R05.4  | Dark bronze   | 5220         | <b>625474</b> |
| Stay-connecting profile 14                         | R06.2  | Jet black     | 5220         | <b>628493</b> |
| Stay-connecting profile 14                         | R07.2  | Traffic white | 5220         | <b>625475</b> |
| Stay-connecting profile 14                         |        |               |              | <b>625476</b> |
| Guide track                                        | R01.5  | Silver        | 6070         | <b>217140</b> |
| <b>Cover profiles</b>                              |        |               |              |               |
| Aluminium cover profile                            |        | Non-treated   | 5190         | <b>625477</b> |
| Aluminium cover profile                            | R01.5  | Silver        | 5190         | <b>625478</b> |
| Aluminium cover profile                            | R05.4  | Dark bronze   | 5190         | <b>625481</b> |
| Aluminium cover profile                            | R06.2  | Jet black     | 5190         | <b>625479</b> |
| Aluminium cover profile                            | R07.2  | Traffic white | 5190         | <b>625480</b> |
| PVC cover profile                                  | R01.5  | Silver        | 6080         | <b>625482</b> |
| PVC cover profile                                  | R06.2  | Jet black     | 6080         | <b>217167</b> |
| PVC cover profile                                  | R07.2  | Traffic white | 6080         | <b>562780</b> |
| Connecting rod                                     |        |               | 3600         | <b>217057</b> |
| <b>Guide block, slidable (jig 566970 required)</b> |        |               |              |               |
| Guide block, slidable                              | R01.5  | Silver        |              | <b>563558</b> |
| Guide block, slidable                              | R05.4  | Dark bronze   |              | <b>563560</b> |
| Connecting-rod support-block                       |        |               |              | <b>625483</b> |

| Profile system | Guide striker | Standard striker | Security striker, zinc | Security striker, steel |
|----------------|---------------|------------------|------------------------|-------------------------|
|                | 60            | 61               | 62                     | 62                      |

**Striker ordering / marking**

Order right-handed strikers for left-handed version (in accordance with DIN 12519).

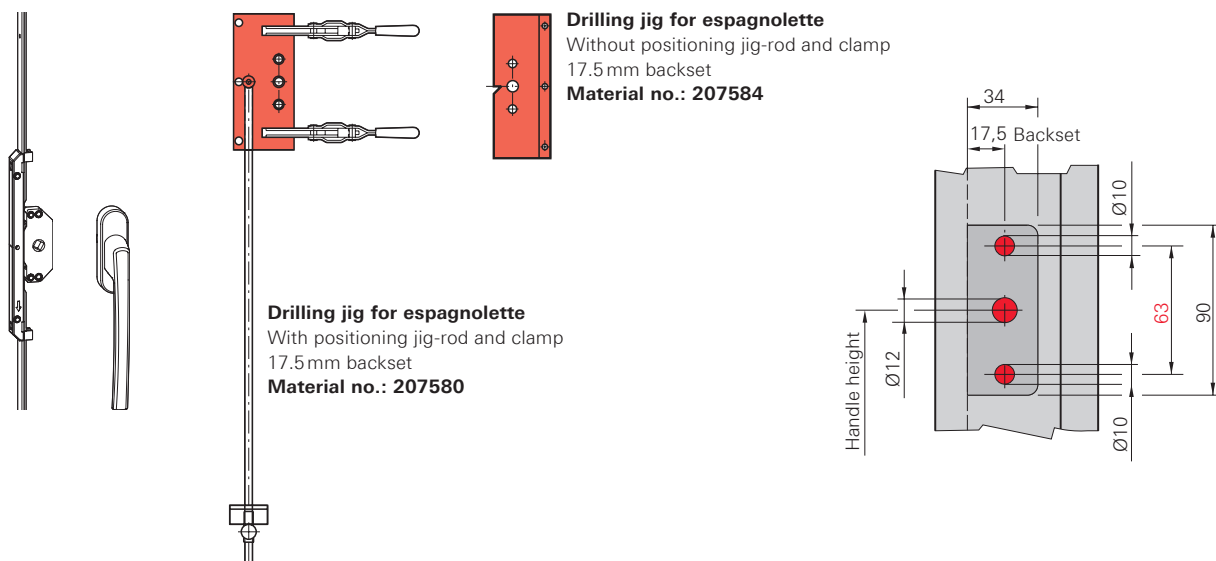
Order left-handed strikers for right-handed version (in accordance with DIN 12519).

|                   |               |               |
|-------------------|---------------|---------------|
| <b>Sapa 75 SI</b> | <b>593715</b> | <b>260373</b> |
|-------------------|---------------|---------------|

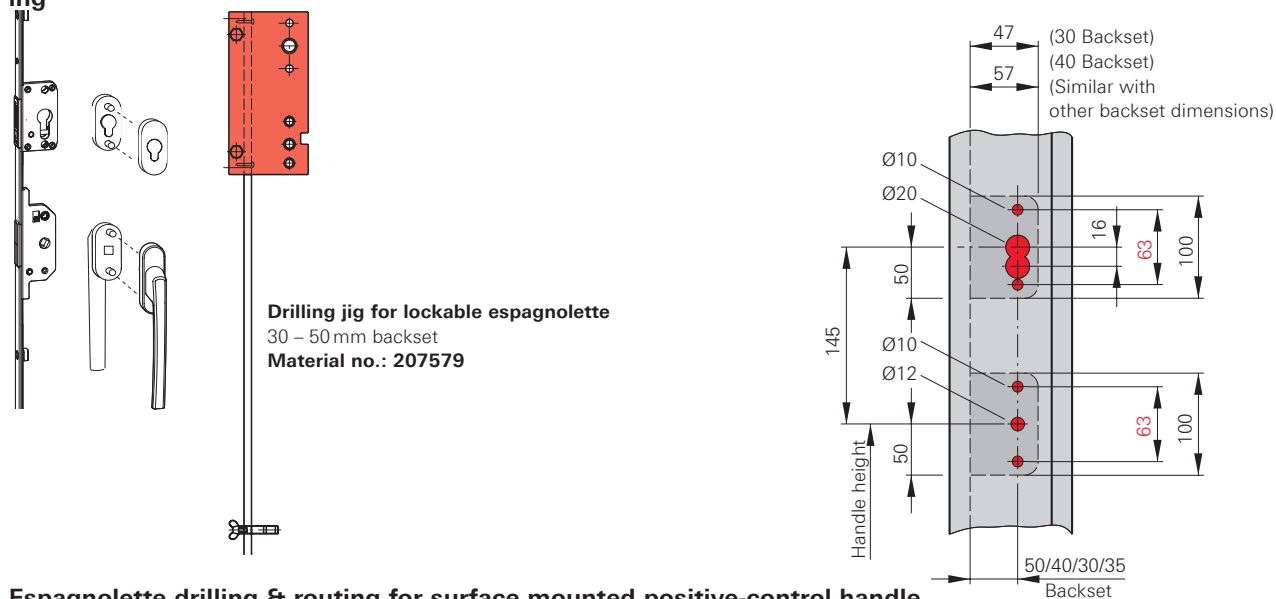
**Further profile-related components are available upon request.**



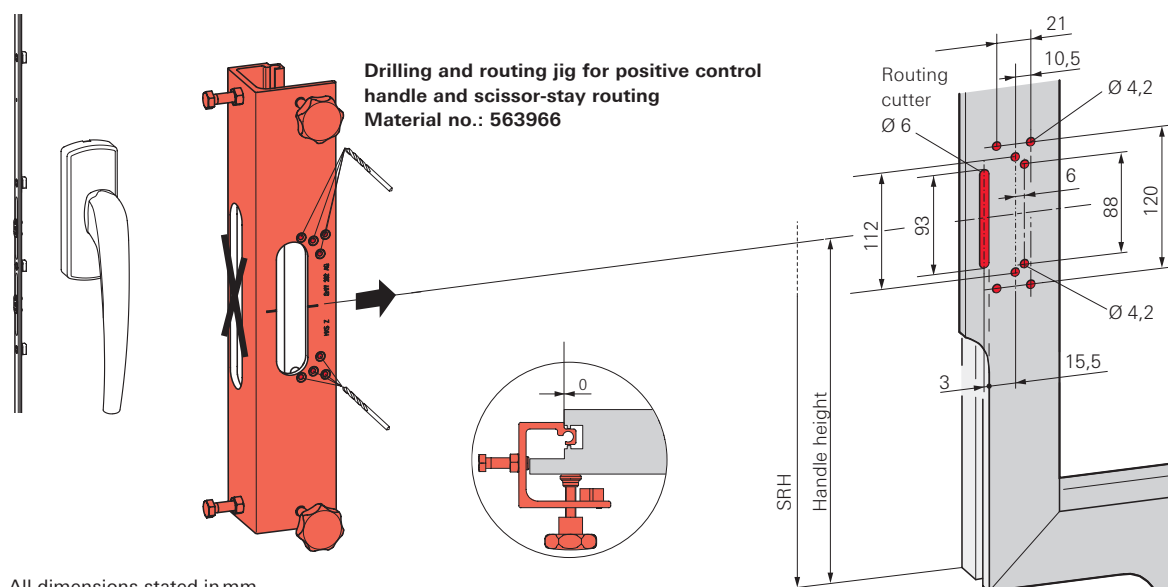
### Handle drilling for Roto Line handle with flush encased gearbox, routing for espagnolette casing



### Handle drilling for Roto Line handle with flush encased lockable gearbox, routing for espagnolette casing



### Espagnolette drilling & routing for surface mounted positive-control handle



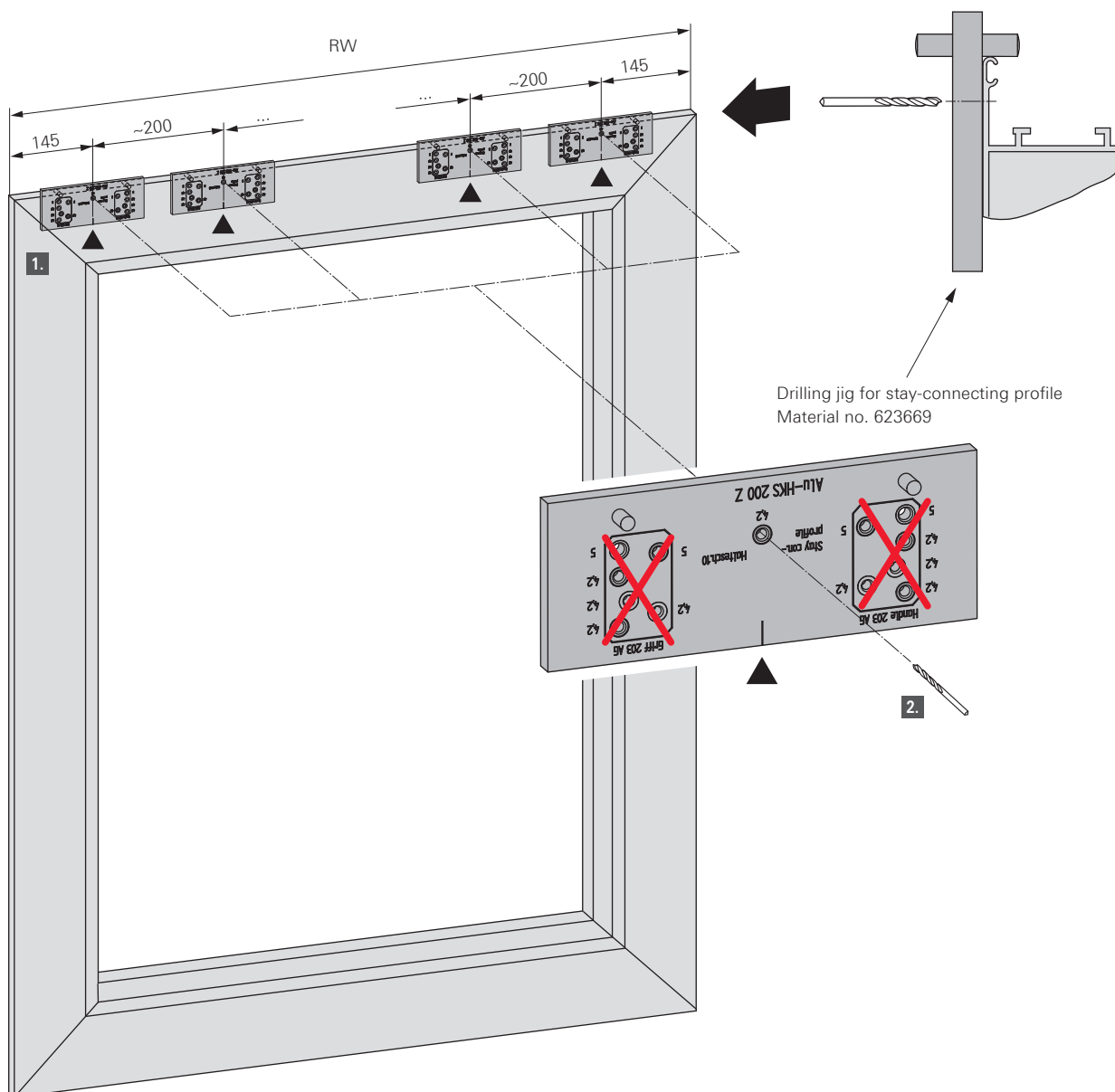
All dimensions stated in mm.

## Installation

### Drilling the sash drill-holes

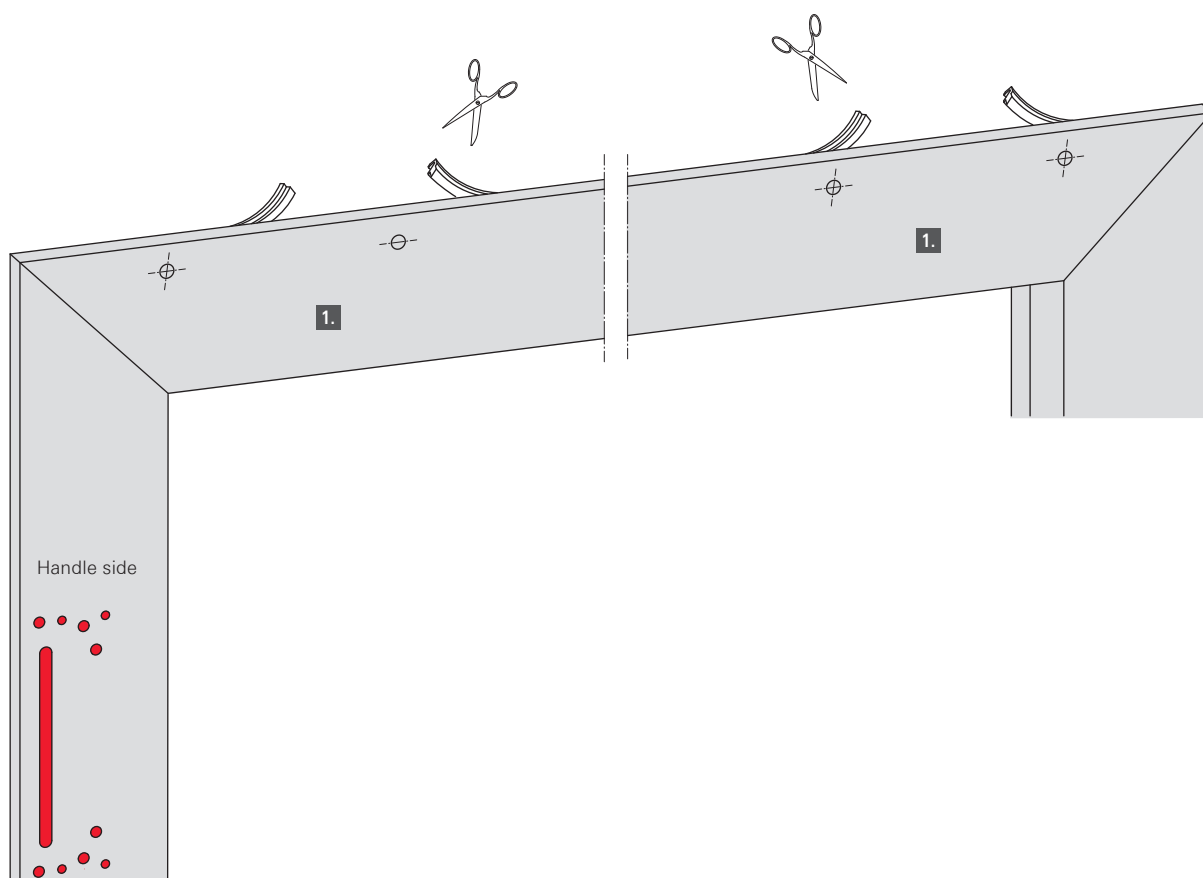
#### Stay-connecting profile

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



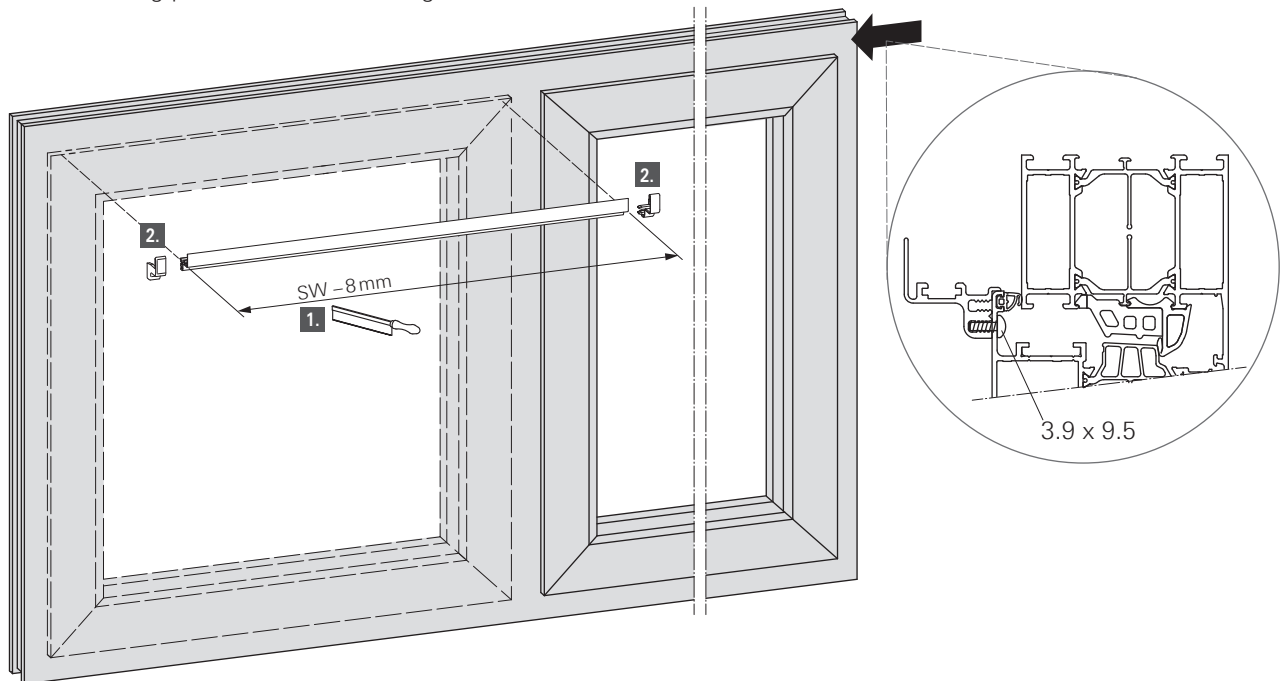


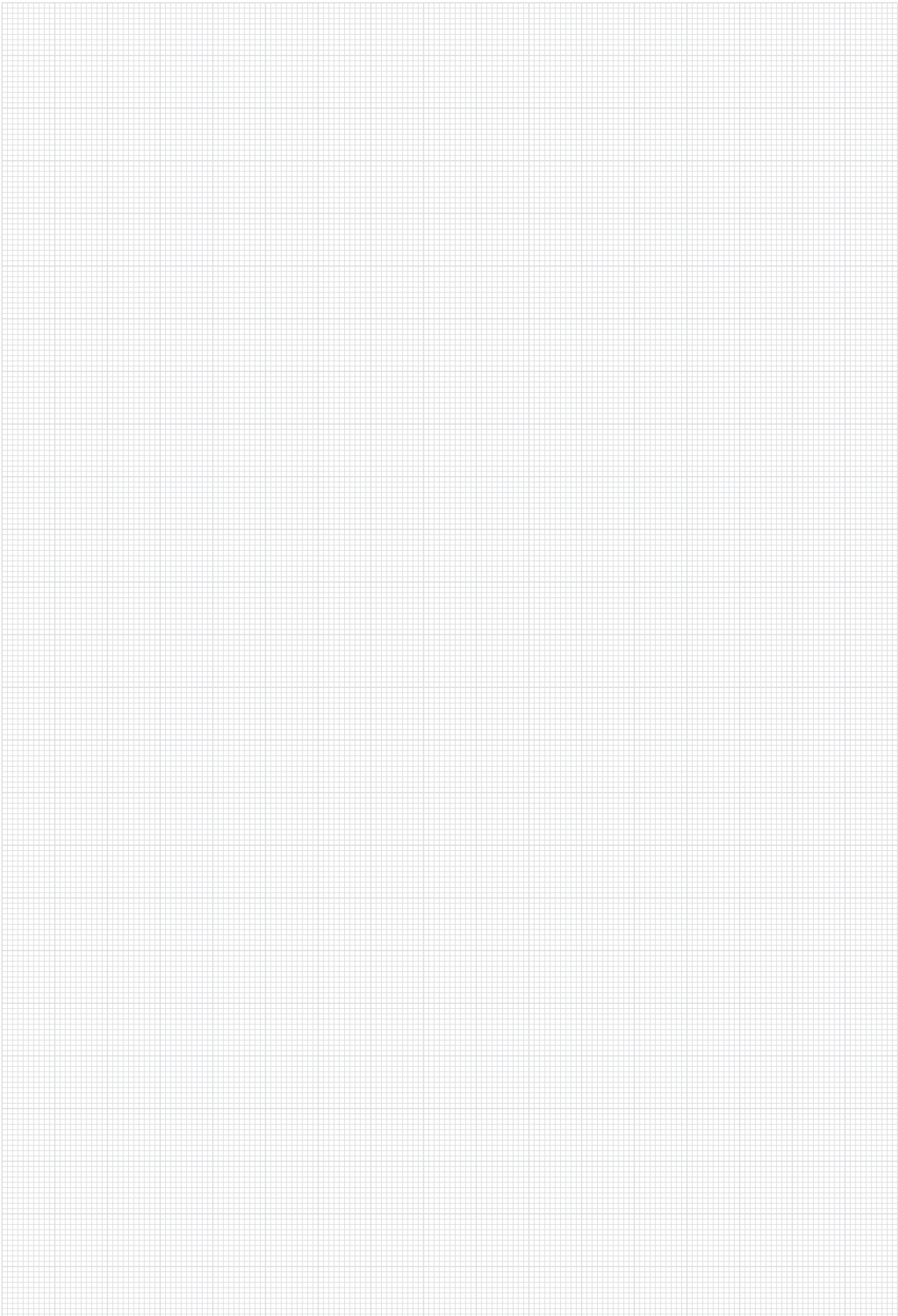
1. Notch out the sash gasket in both of the depicted scissor-stay arm areas.



### Installing stay-connecting profile

1. Length of the stay-connecting profile: Sash width minus 8 mm. Centre and screw 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.



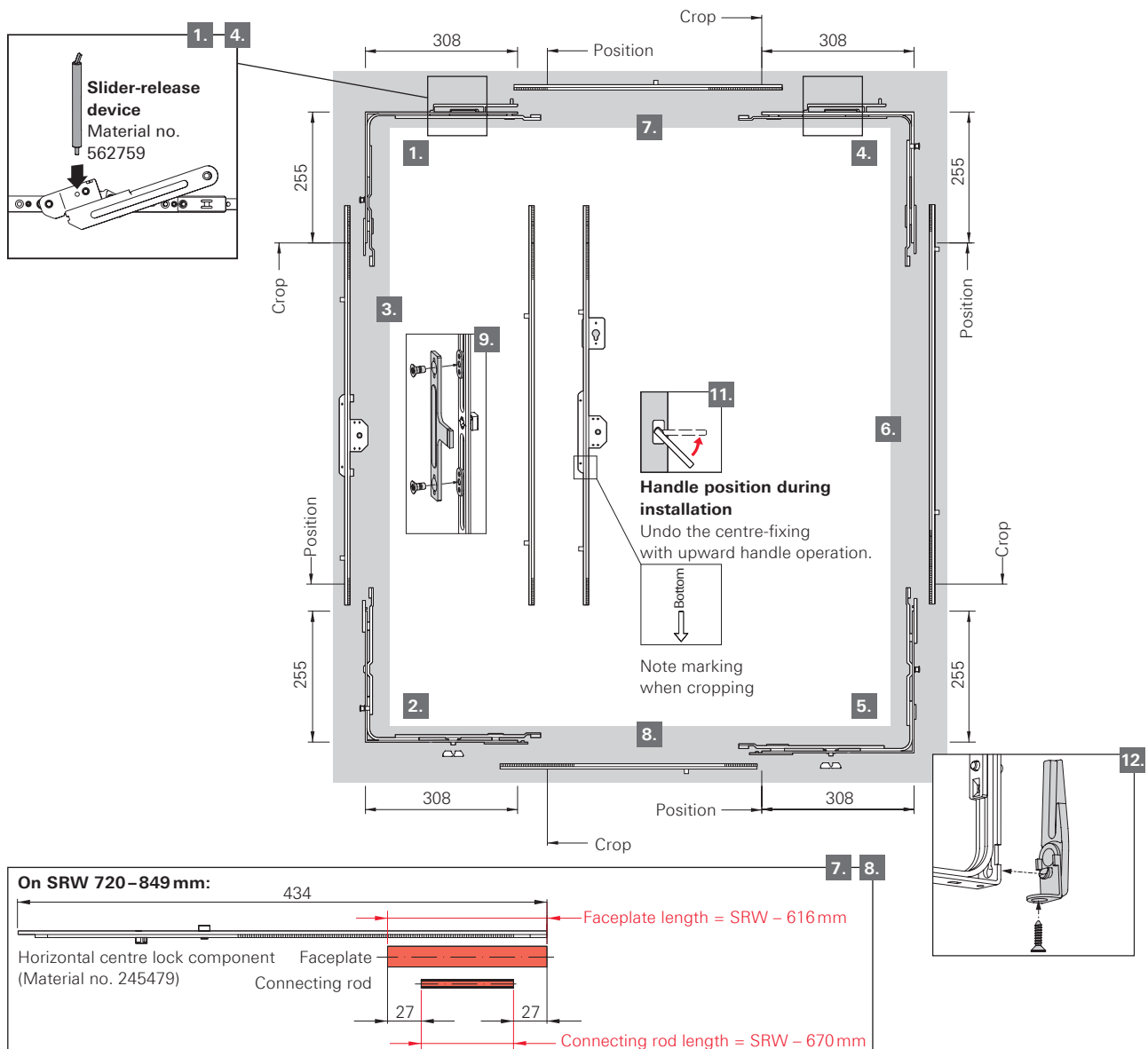


## Installation

### Installing sash hardware components

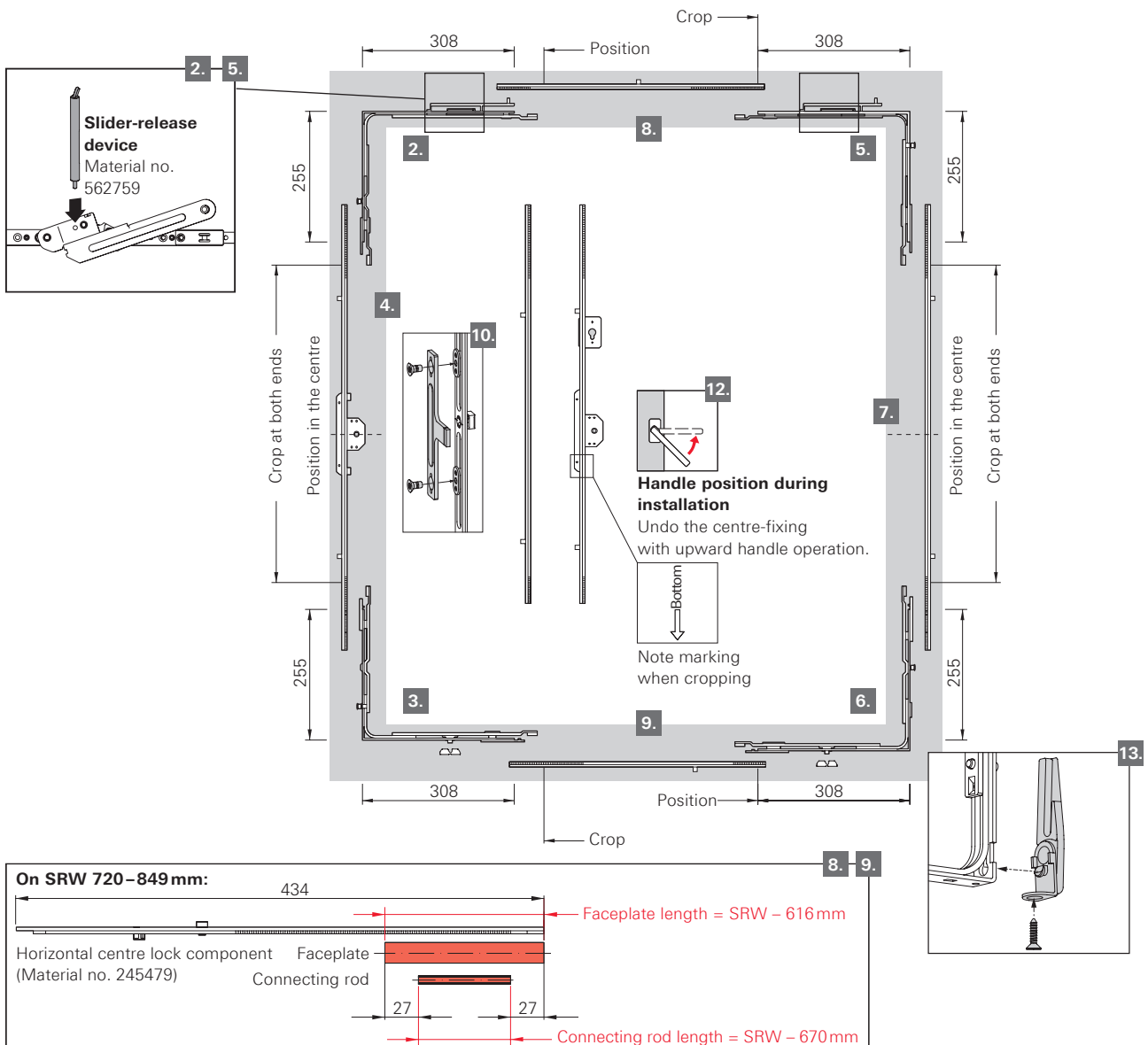
Installation procedure for left-hand version, fixed handle height

- 1. Fit top corner drive on espagnolette side** into place with screws.  
Use slider-release device (material no. **562759**) to fasten scissor stays in the centre position.
- 2. Fit the bottom corner drive on espagnolette side** into place.
- 3. Insert espagnolette**, mark above the handle position, crop at the top, and screw into place.
- 4. Fit top corner drive** into place with screws.  
Use slider-release device (material no. **562759**) to fasten scissor stays in the centre position.
- 5. Fit bottom corner drive** into place with screws.
- 6. Insert vertical centre-lock component**, mark below the handle-position, crop at the bottom and fix in place using screws.
- 7. Line up the top horizontal centre lock component** with the top corner drive on the espagnolette side, mark the other end, crop on centre lock side and fix into place using screws.
- 8. Line up the bottom horizontal centre lock component** with the bottom corner drive, mark the other end, crop on the handle side and fix in place using screws.  
**On SRW 720-849** crop the horizontal centre lock component (material no. **245479**, length 434 mm) as depicted below. (Only install the cropped to measure components; faceplate and connecting rod).
- 9.** When using the positive control handle, fasten the connector to the espagnolette component using screws. Fasten the **10. handle** into place using screws (not dep.).
- 11. Undo the** centre-fixing.  
Fasten the **12. mishandling device** to the bottom corner drive using screws.



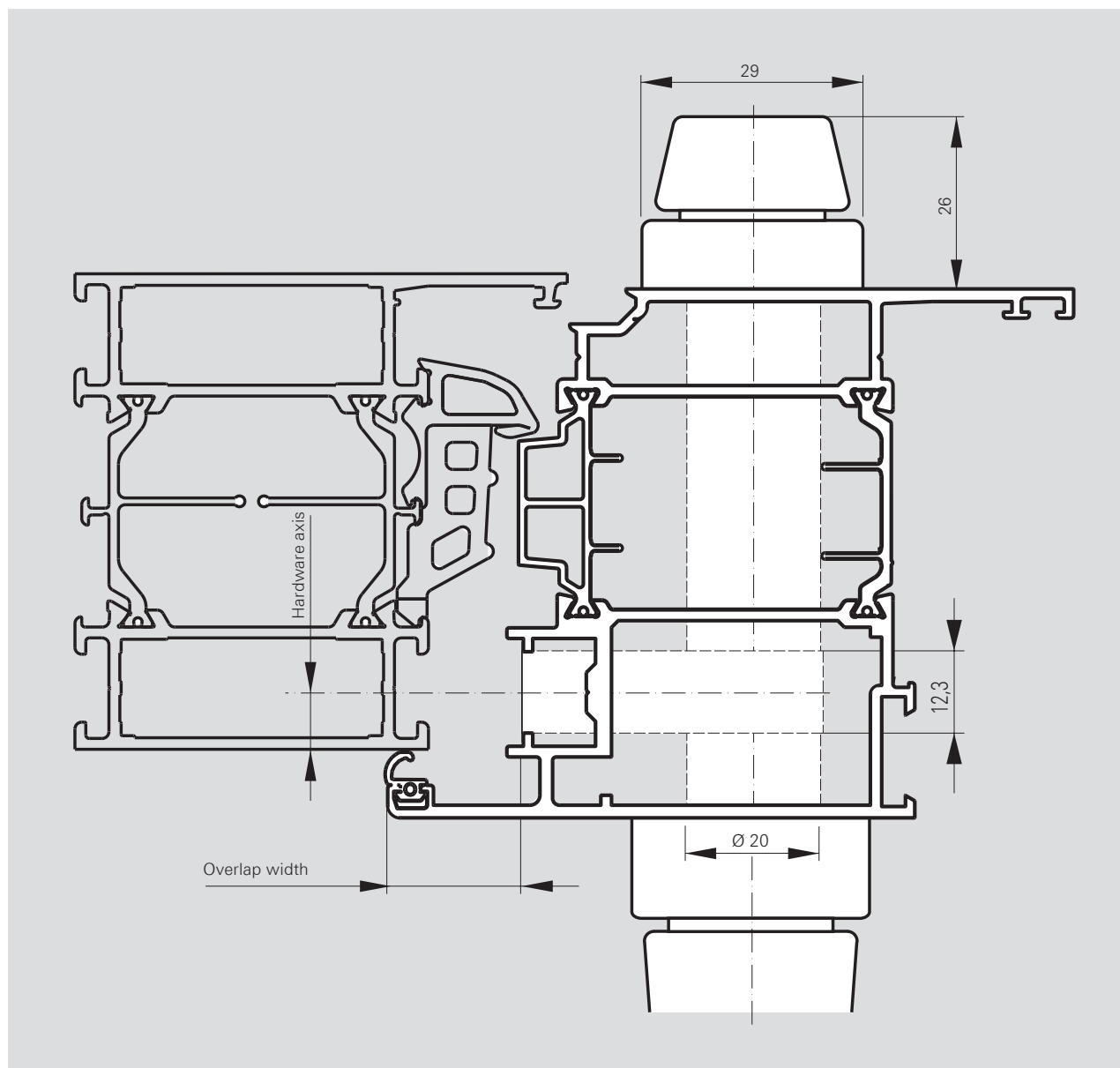


1. Mark the sash centre on both the espagnolette and hinge side.
2. **Fit top corner drive on espagnolette side** into place with screws.  
Use slider-release device (material no. **562759**) to fasten scissor stays in the centre position.
3. **Fit the bottom corner drive on espagnolette side** into place.
4. **Line up the espagnolette** with its notch marker (handle centre) at the sash centre, mark at both ends, crop both ends and fix in place using screws.
5. **Fit top corner drive** into place with screws.  
Use slider-release device (material no. **562759**) to fasten scissor stays in the centre position.
6. **Fit bottom corner drive** into place with screws.
7. **Line up vertical centre-lock component** with its notch marker (handle centre) in the sash centre, **mark on both sides**, then crop at, **both ends** and fix in place using screws.
8. **Line up top horizontal centre lock component** with the top, espagnolette-sided corner drive, mark the other end, crop on the centre lock side and fix in place using screws
9. **Line up the bottom horizontal centre lock component** with the bottom corner drive, mark the other end, crop on the handle side and fix in place using screw.  
**On SRW 720-849** crop the horizontal centre lock component (material no. **245479**, length 434 mm) as depicted below. (Only install the cropped to measure components; faceplate and connecting rod)
10. When using the positive control handle, fasten the connector to the espagnolette component using screws.  
Fasten the **11. handle** into place using screws (not dep.).
12. **Undo the** centre-fixing.  
Fasten the **13. mishandling device** to the bottom corner drive using screws.



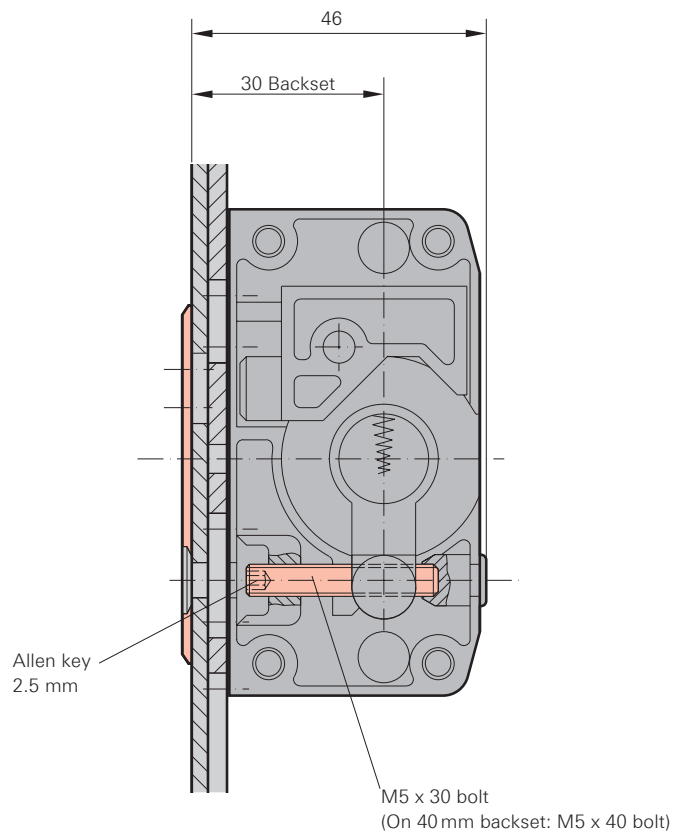
## Installation

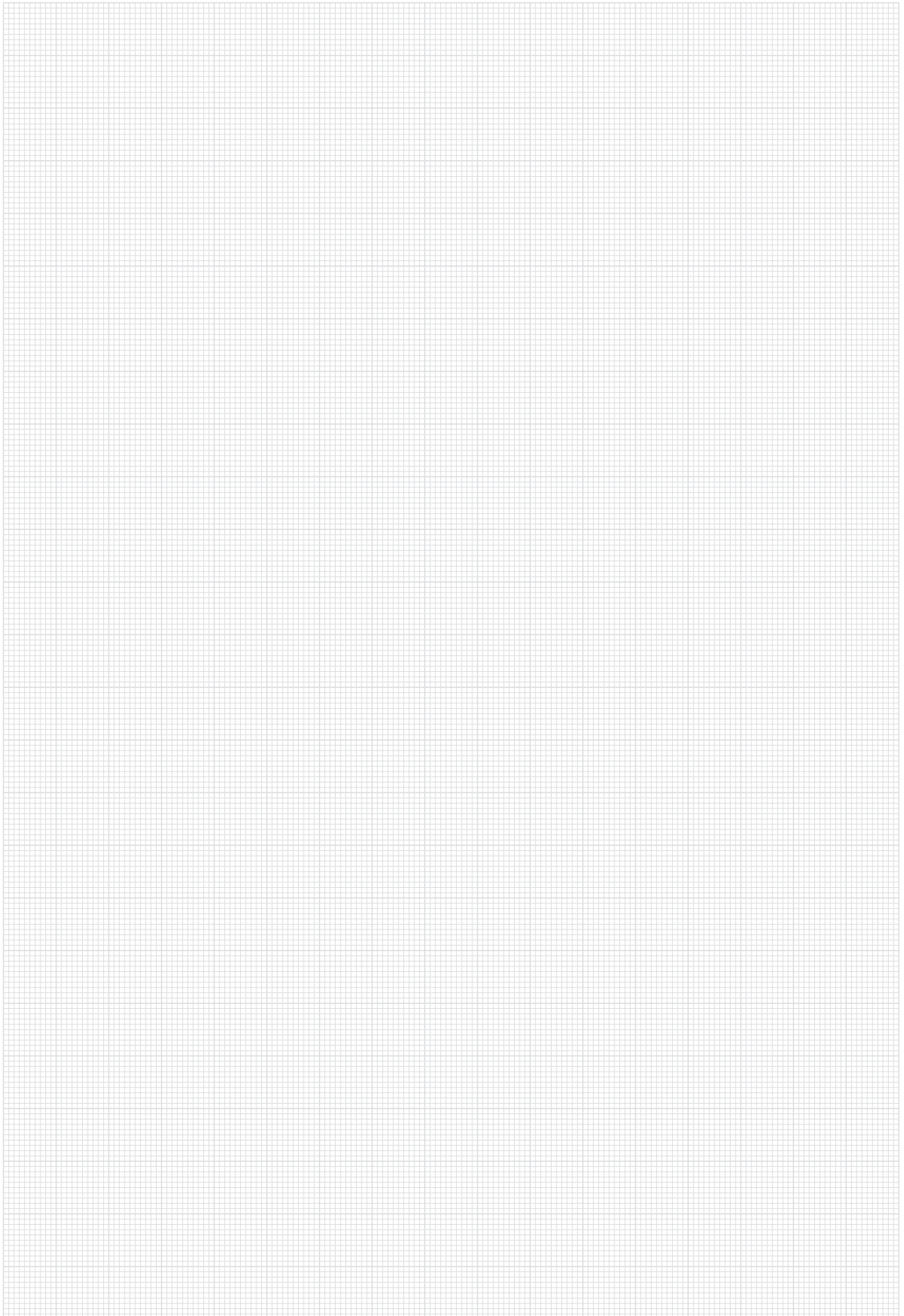
Required space for inside and outside operation, lockable espagnolette





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

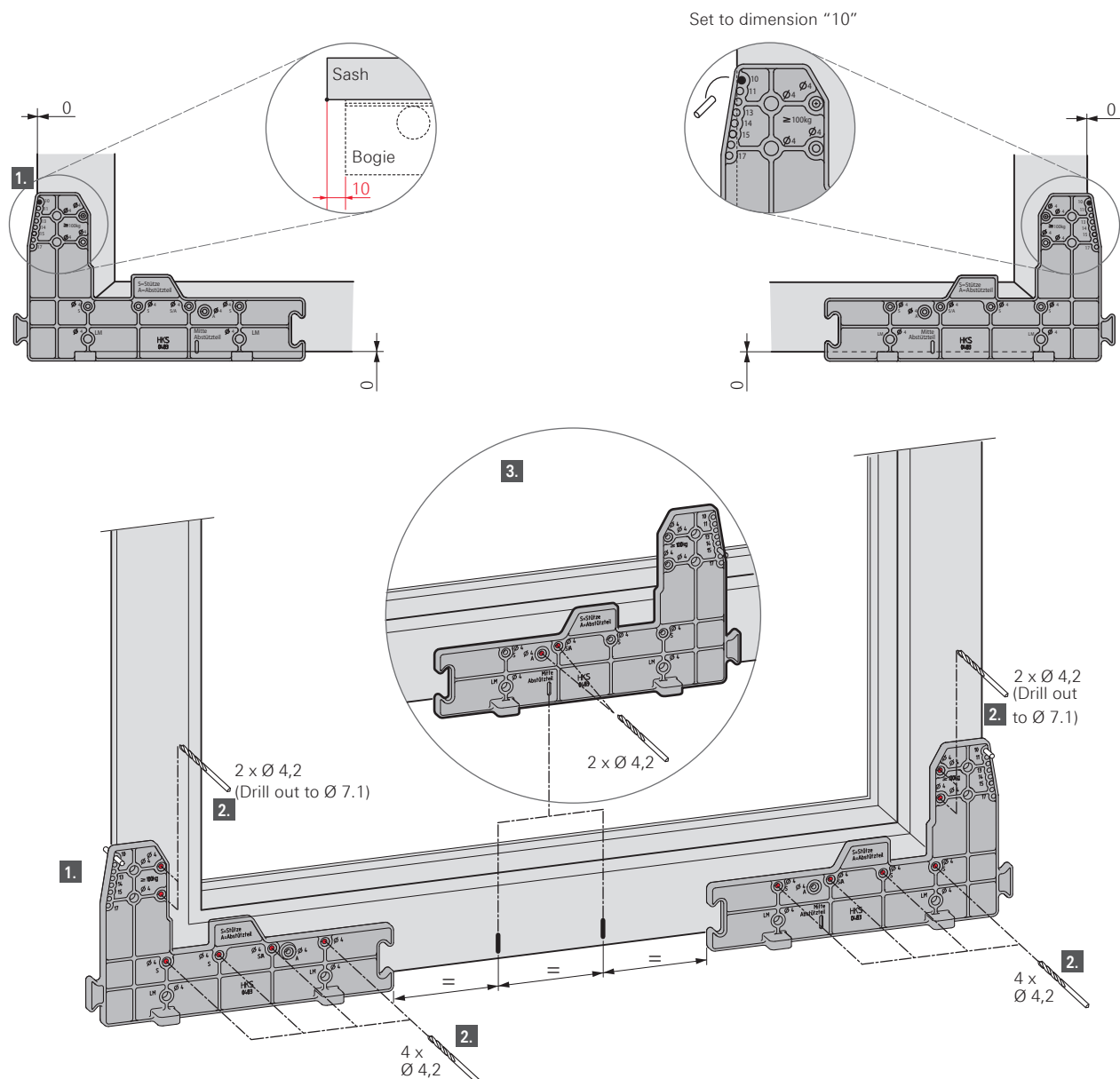




## Drilling the sash drill-holes

Drilling the holes for bogies up to 160 kg sash weight

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  $\geq 100$  kg.
3. Mark the cover support bracket's position and drill  
(SRW  $\leq 1450$  mm 1 cover support bracket,  
SRW  $\geq 1450$  mm 2 cover support brackets).

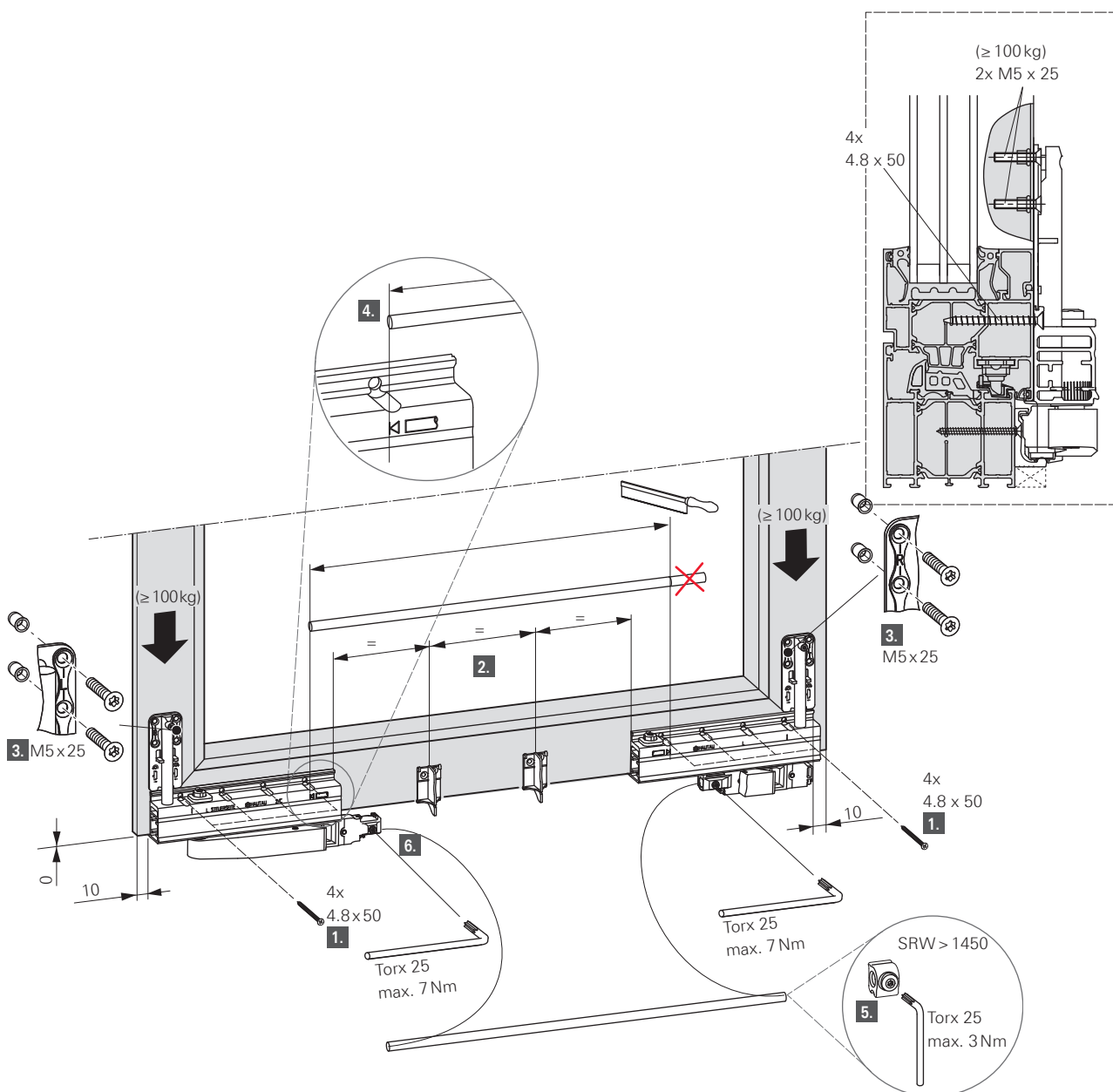


## Installation

### Installing sash hardware components

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 fix each one in place using 2 screws 4.8 x 50. For SRW < 1450 mm only one centred cover support bracket.
3. For sash weights of  $\geq 100$  kg: fasten each 2 riveting nuts  $\varnothing 7$  mm in the designated holes. Fix each of the reinforcement brackets into place using 2 M5 x 25 screws.
4. Mark and cut the connecting rod to length in line with the bogie marks.
5. As from SRW > 1450: slide an additional support block onto centre of connecting rod and fix in place. 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. Tighten the espagnolette-sided bogie in this position (Torx key; T25 hexalobular socket, max. 7 Nm).



### Drilling the holes for heavy-duty bogies from 160 kg sash weight

- Set to dimension "10"

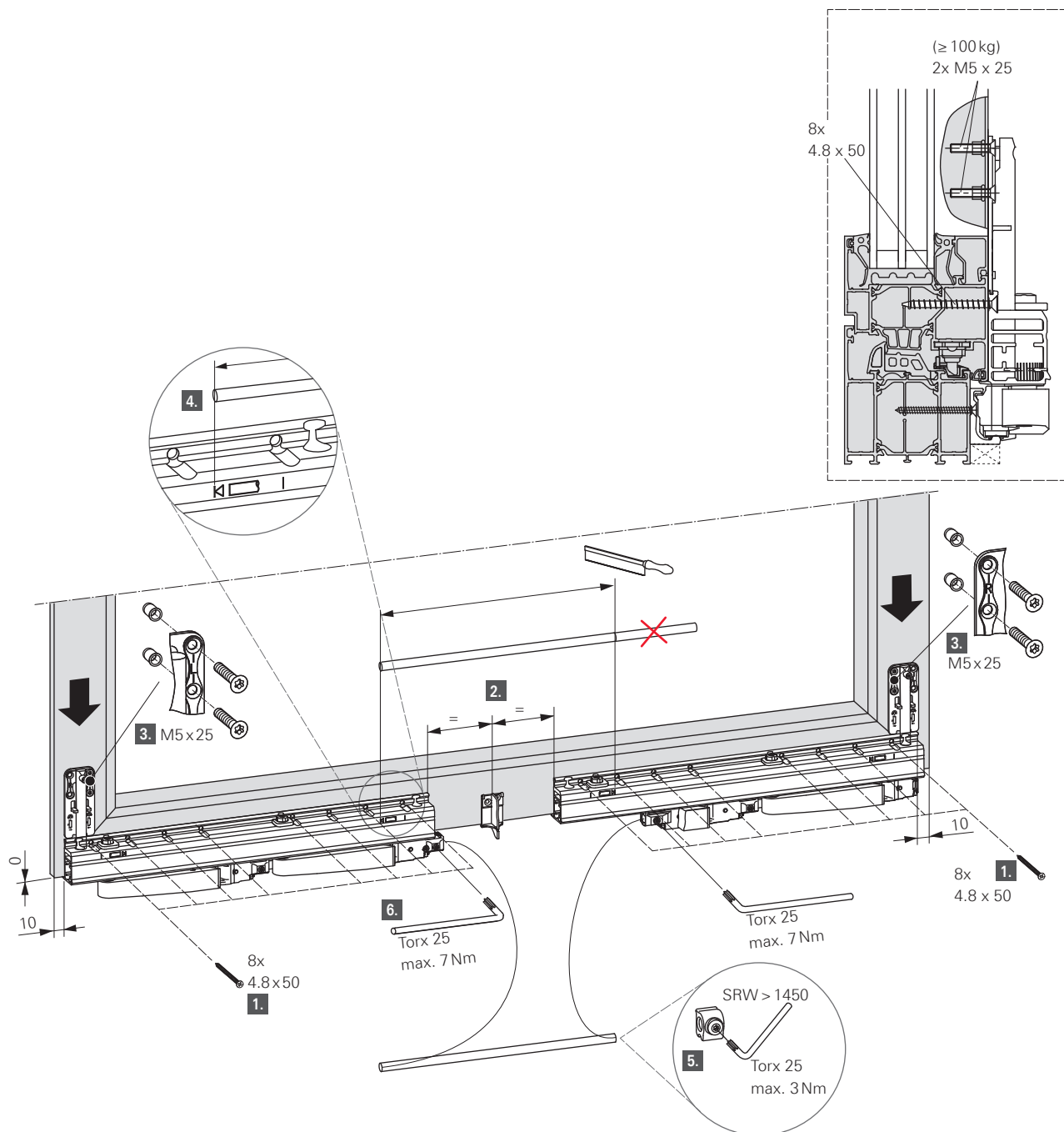


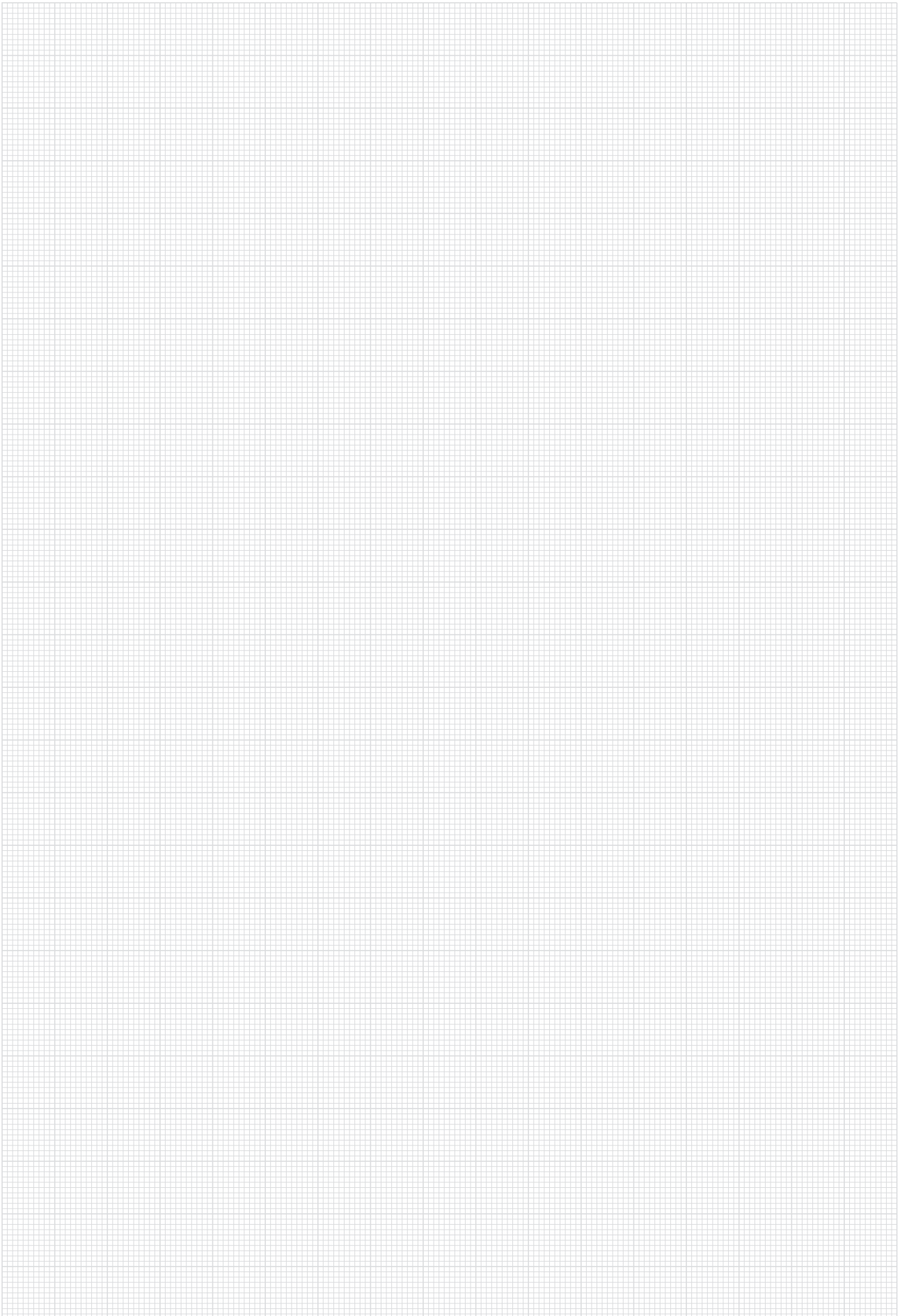
## Installation

### Installing sash hardware components

Installing heavy-duty bogie from 160 kg sash weight

1. Screw on each heavy-duty bogie with 8 screws 4.8 x 50 at a lateral distance of 10 mm to the sash edges and flush with the bottom edge of the sash profile.
2. Fix the reinforcement bracket using 2 screws 4.8 x 50 at the designated position.
3. Fasten 2 riveting nuts Ø 7 mm each on both sides in the designated holes. Fix each of the reinforcement brackets into place using 2 M5 x 25 screws.
4. Mark and cut the connecting rod to length in line with the bogie marks.
5. As from SRW > 1450: slide an additional support block onto centre of connecting rod and fix in place. (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. Tighten the espagnolette-sided bogie in this position (Torx key; T25 hexalobular socket, max. 7 Nm).





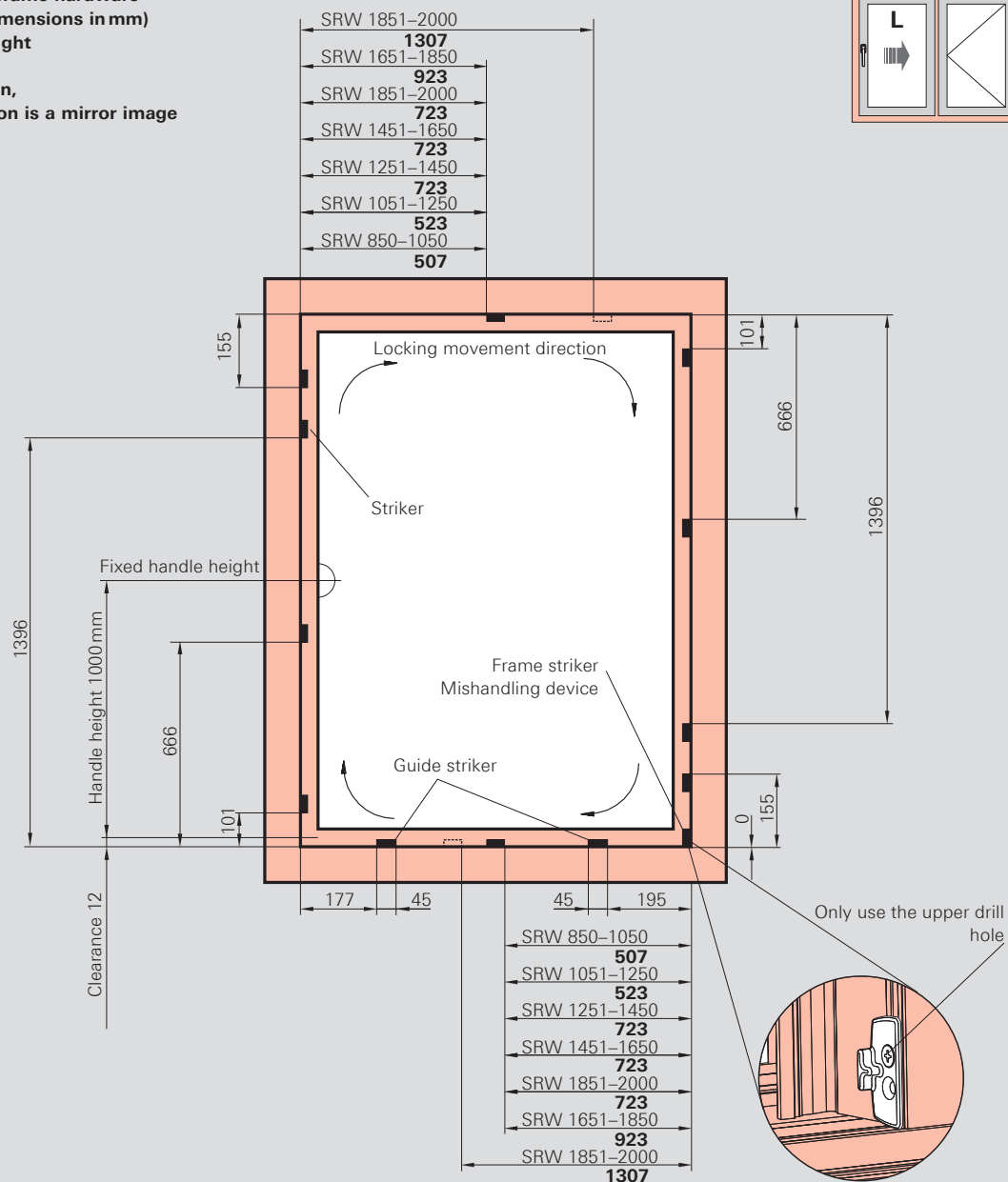
## Installation

### Strikers and guide strikers

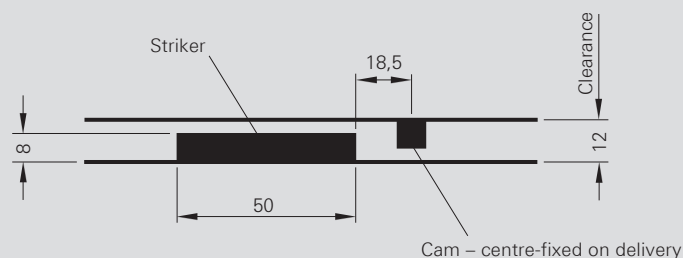
Fixed handle height, basic security / RC1 / RC2

Positioning the frame hardware components (Dimensions in mm)  
Fixed handle height

Left-hand version,  
right-hand version is a mirror image



On SRH 2200-2700 mm  
position additional strikers for  
espagnolette extension as depicted.



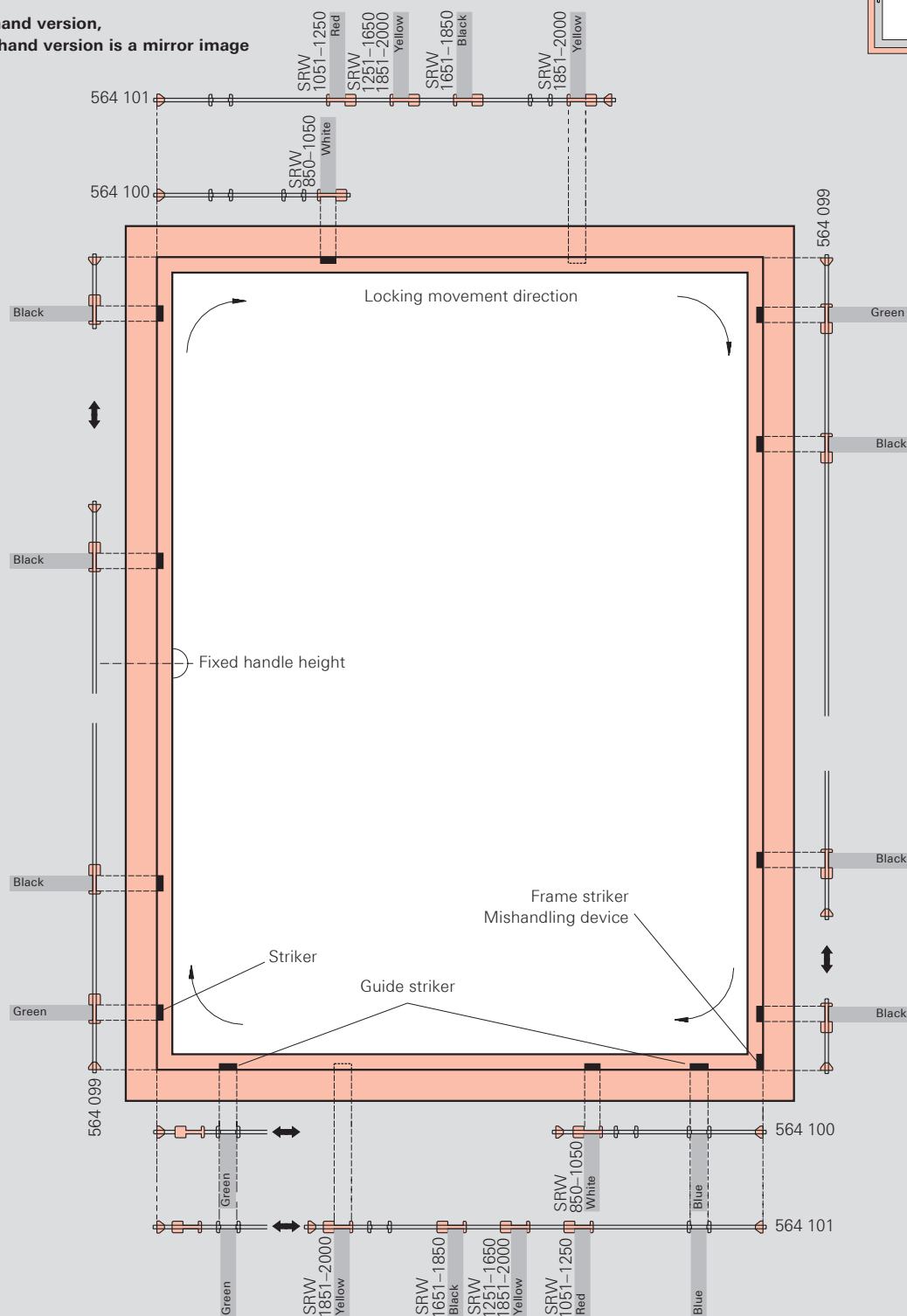
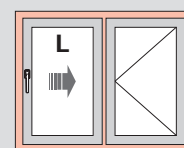


Positioning the frame hardware components

(Dimensions in mm)

Fixed handle height

Left-hand version,  
right-hand version is a mirror image



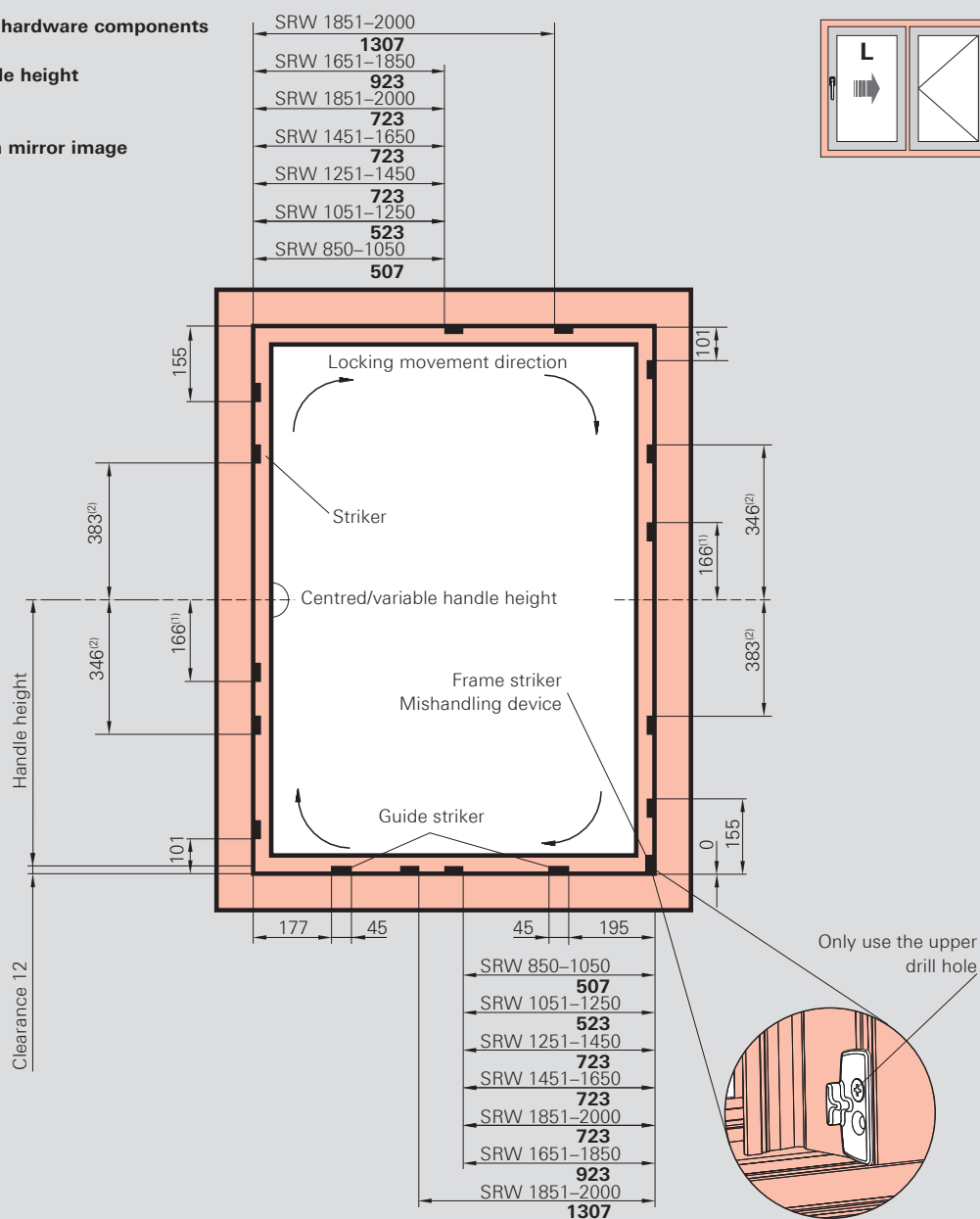
## Installation

### Strikers and guide strikers

Centred/variable handle height, basic security / RC1 / RC2

Positioning the frame hardware components  
(Dimensions in mm)  
Centred/variable handle height

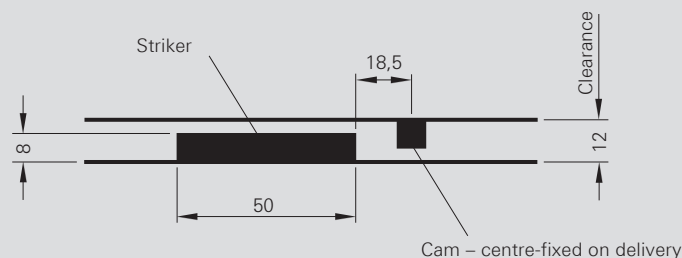
Left-hand version,  
right-hand version is a mirror image



<sup>(1)</sup> Applies to espagnolette size 1090 and vertical centre lock component size 1090

<sup>(2)</sup> Applies to espagnolette size 1490, 1890 and vertical centre lock component size 1490, 1890

On SRH up to 2700mm  
position additional strikers for  
espagnolette extension as depicted.





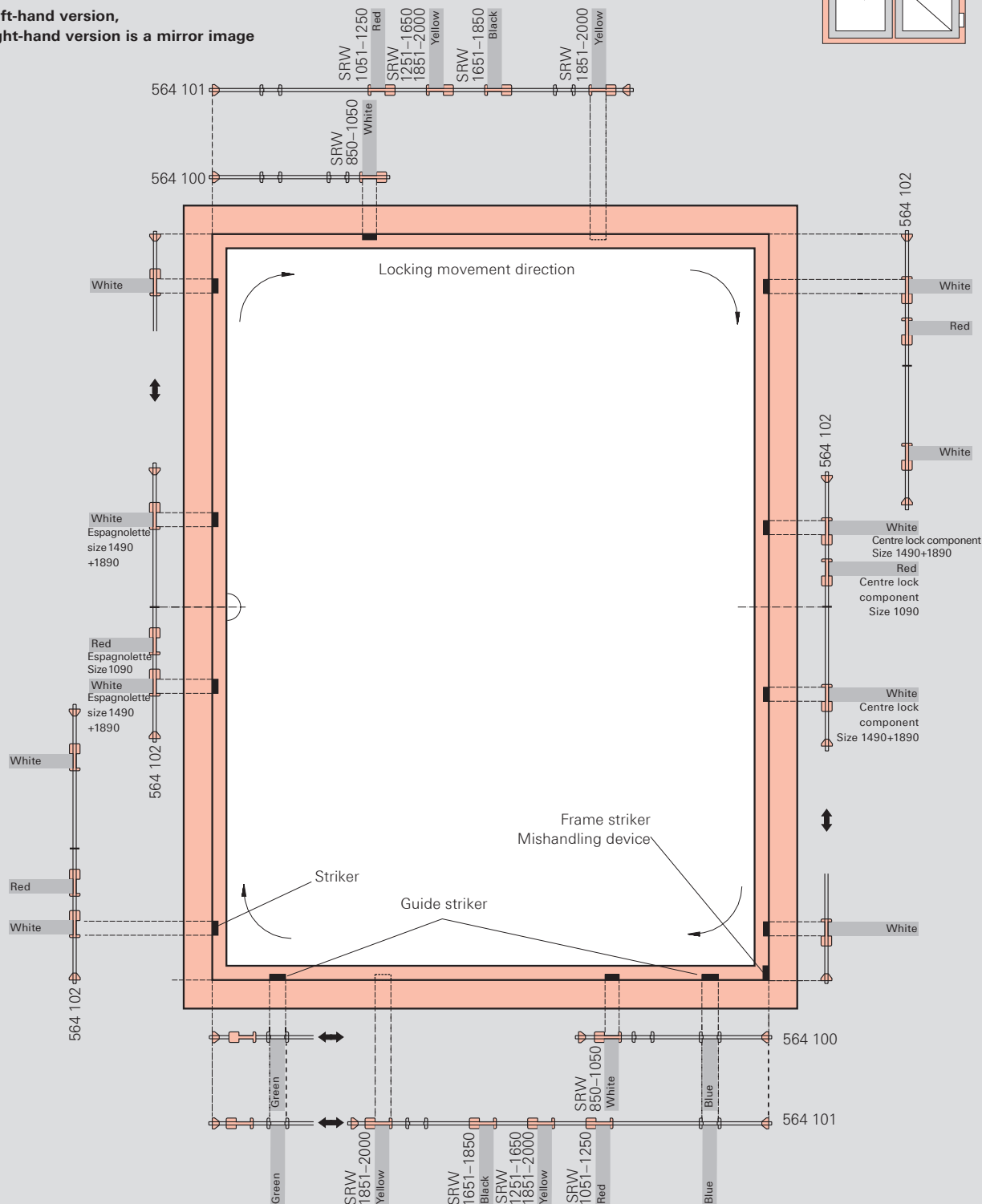
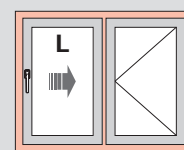
Positioning the frame hardware components

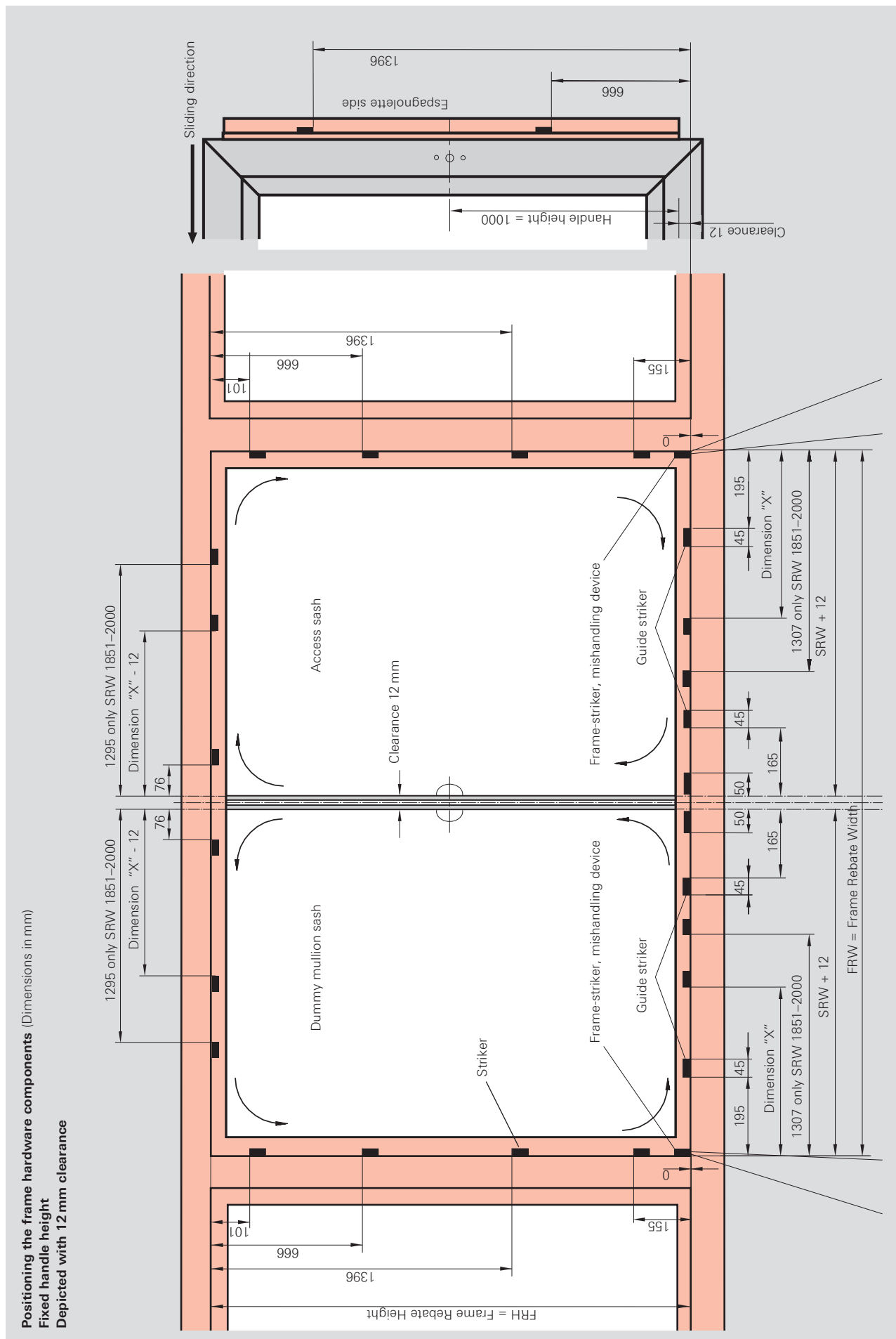
(Dimensions in mm)

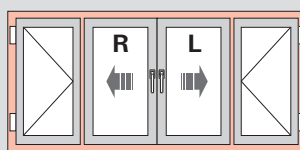
Centred/variable handle height

Left-hand version,

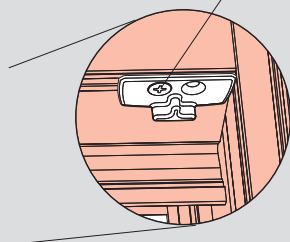
right-hand version is a mirror image





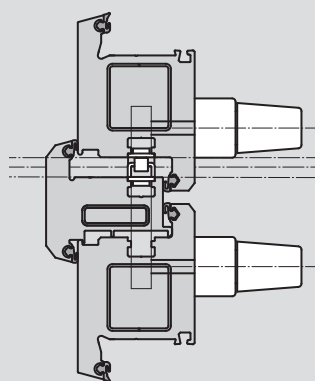


If possible, only use  
the upper drill hole

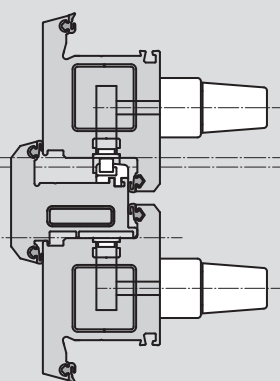


| SRW         | Dimension "X" |
|-------------|---------------|
| 850 – 1050  | 507           |
| 1051 – 1250 | 523           |
| 1251 – 1450 | 723           |
| 1451 – 1650 | 723           |
| 1851 – 2000 | 723           |
| 1651 – 1850 | 923           |

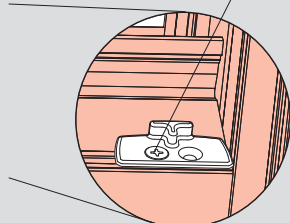
Opposite  
hardware groove



Concealed  
hardware groove

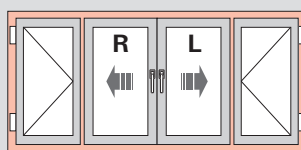


If possible, only use  
the upper drill hole

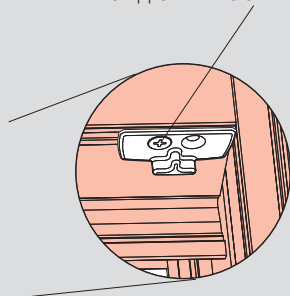


On SRH up to 2200 - 2700 mm, use an additional striker for the espagnolette extension as specified in the drawing on page 52.





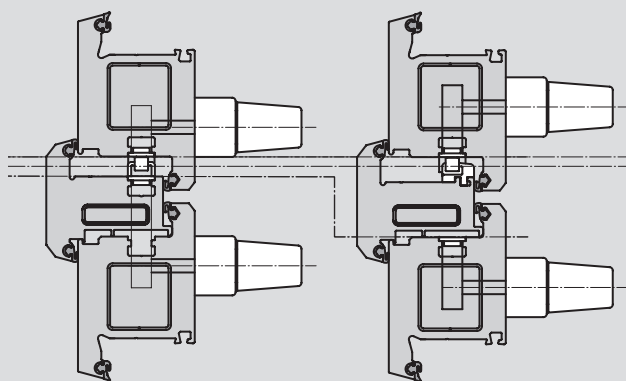
If possible, only use  
the upper drill hole



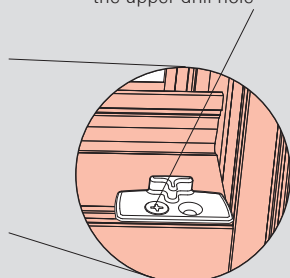
| SRW         | Dimension "X" |
|-------------|---------------|
| 850 – 1050  | 507           |
| 1051 – 1250 | 523           |
| 1251 – 1450 | 723           |
| 1451 – 1650 | 723           |
| 1851 – 2000 | 723           |
| 1651 – 1850 | 923           |

Opposite  
hardware groove

Concealed  
hardware groove



If possible, only use  
the upper drill hole



On SRH up to 2700mm, use a striker for the espagnolette extension as specified in the drawing on page 54.

<sup>(1)</sup> Applies to espagnolette size 1090 and vertical centre-lock component size 1090

<sup>(2)</sup> Applies to espagnolette size 1490 & 1890 and vertical centre-lock component size 1490 & 1890

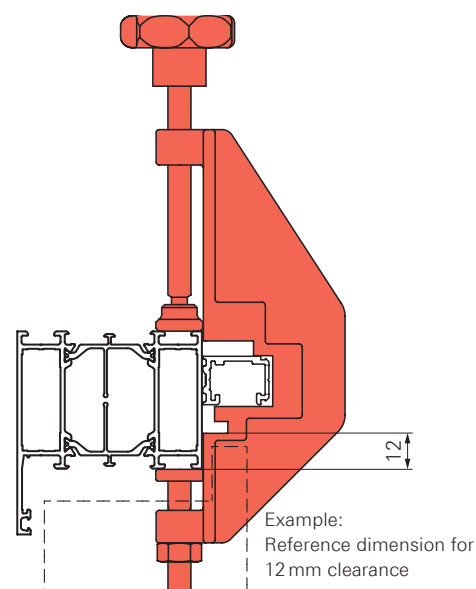
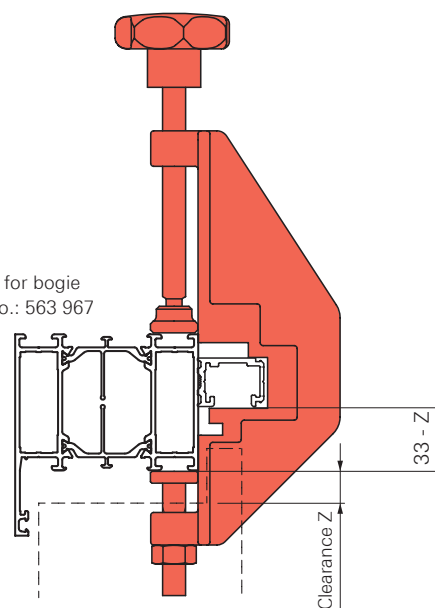
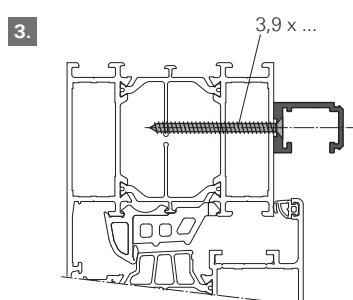
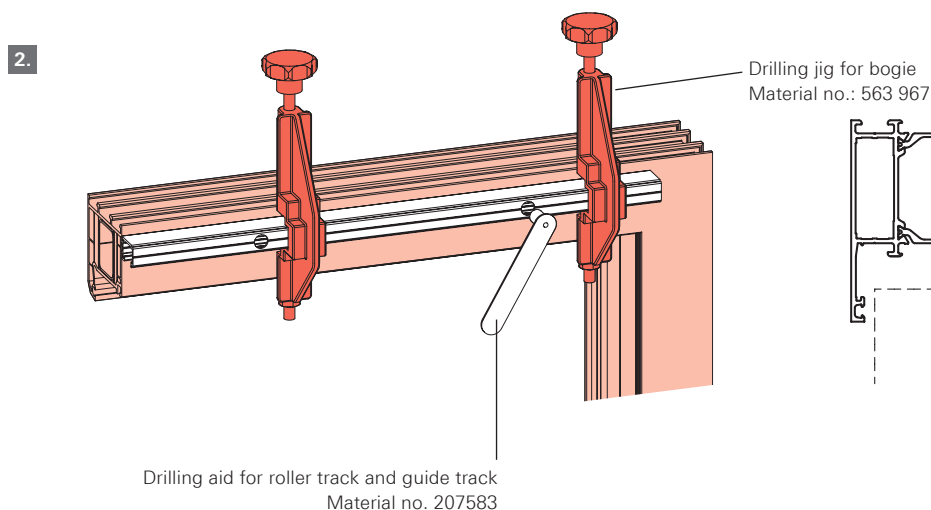
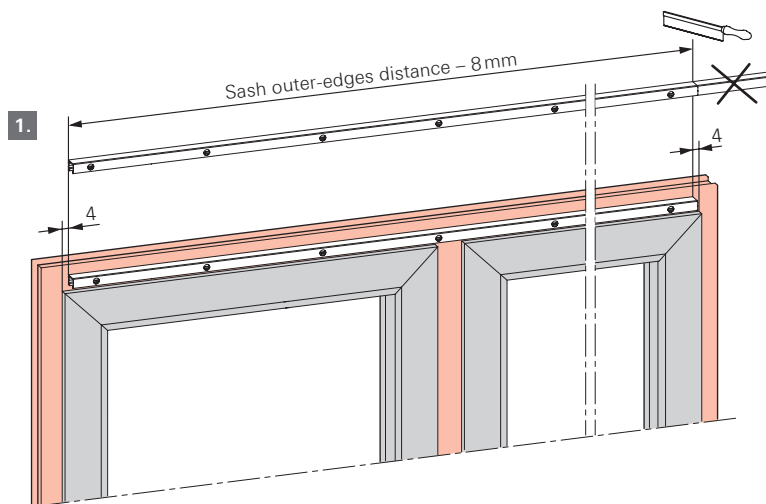
## Installation

### Installing frame hardware components

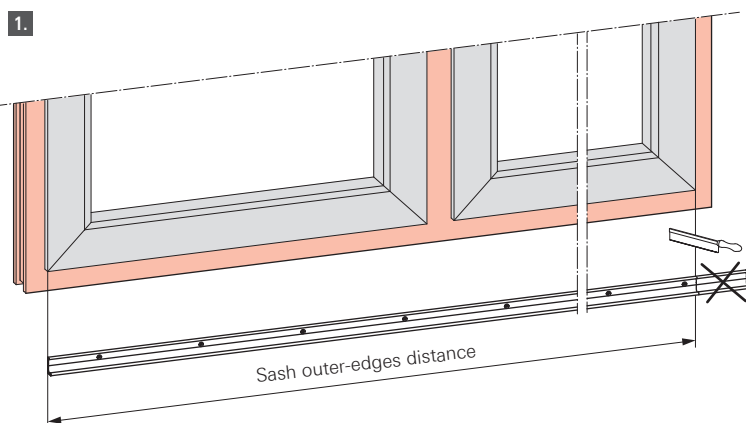
#### Mounting the guide track

Installing guide track on the frame

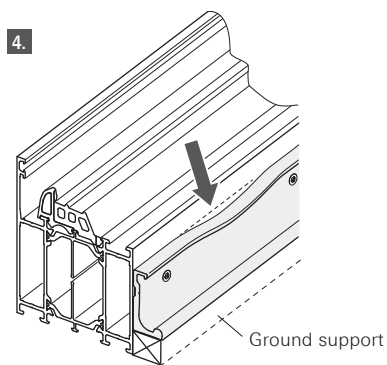
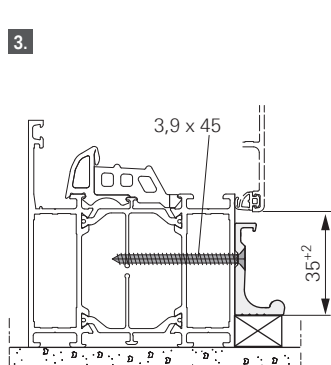
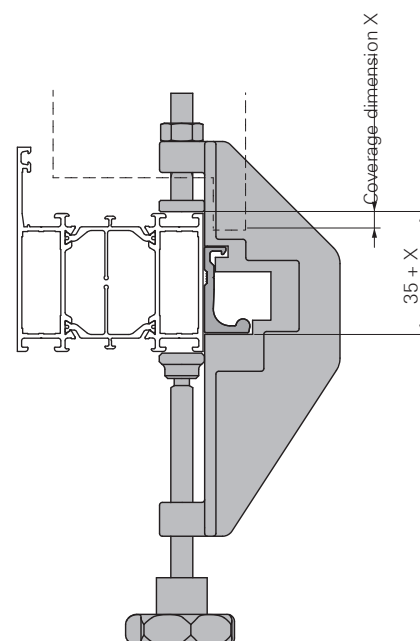
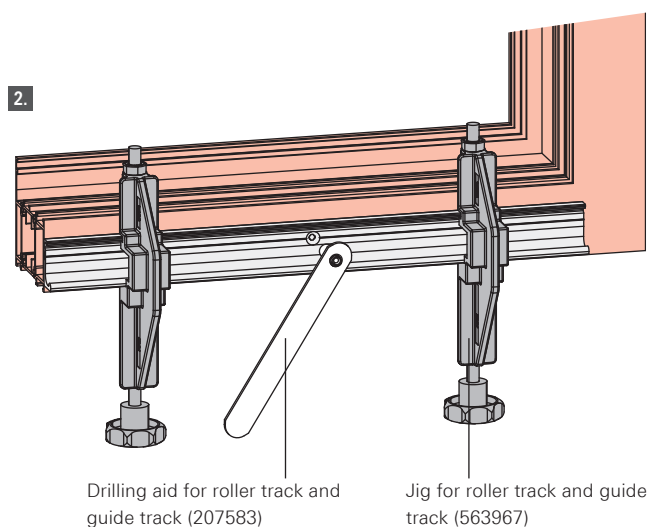
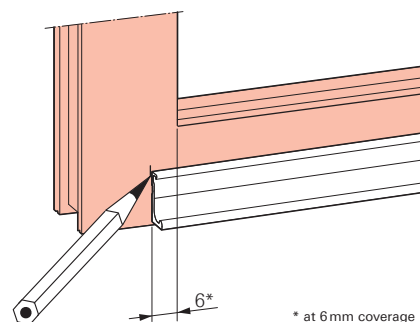
1. Cut the guide track to length: Sash outer-edges distance – 8 mm
2. Fix the guide track to the frame using the jig for roller track and guide track (material no. 563967), predrill with drilling aid (bush) and Ø 3.2mm drill.
3. Fix the guide track to the frame using 3.9 x ... screws.  
Select the length of the screws to ensure that they are fastened securely in the steel reinforcement (cf. profile cross section).
4. Cut the PVC cover profile to the length of the guide track and clip on (not dep.).



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 for roller track and guide track and Ø 3.2 mm drill.
3. Fix the roller track to the frame using 3.9 x 45 screws.
4. Underlay the roller track over the entire length on site in order to distribute the load.



#### Example:

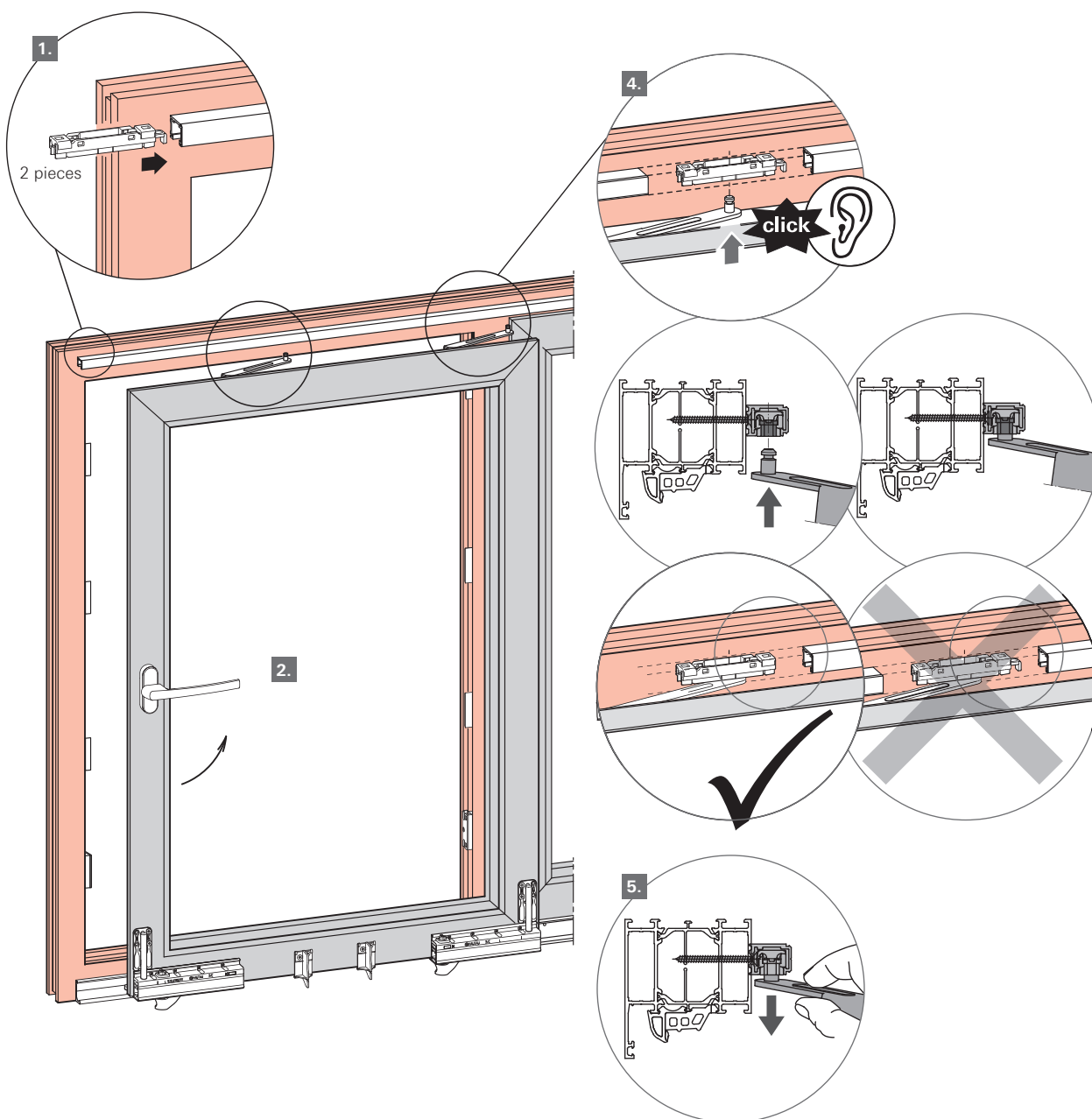


**Installing the slider and hinging the sash**

1. Slide in the 2 scissor-stay sliders into the guide track from the side (when applying the spring scissor 3 scissor-stay sliders).
2. Position the handle horizontally.
3. Place the sash's bogie rollers on the roller track (not dep.).
4. Click the scissor-stay pins into the central slider openings (audible click sound!)  
If correctly installed, the sliders lateral lock-sliders are flush with the slider-casing's edges.
5. Check the installation by pulling/pushing down the scissor-stay arms!

**Warning**

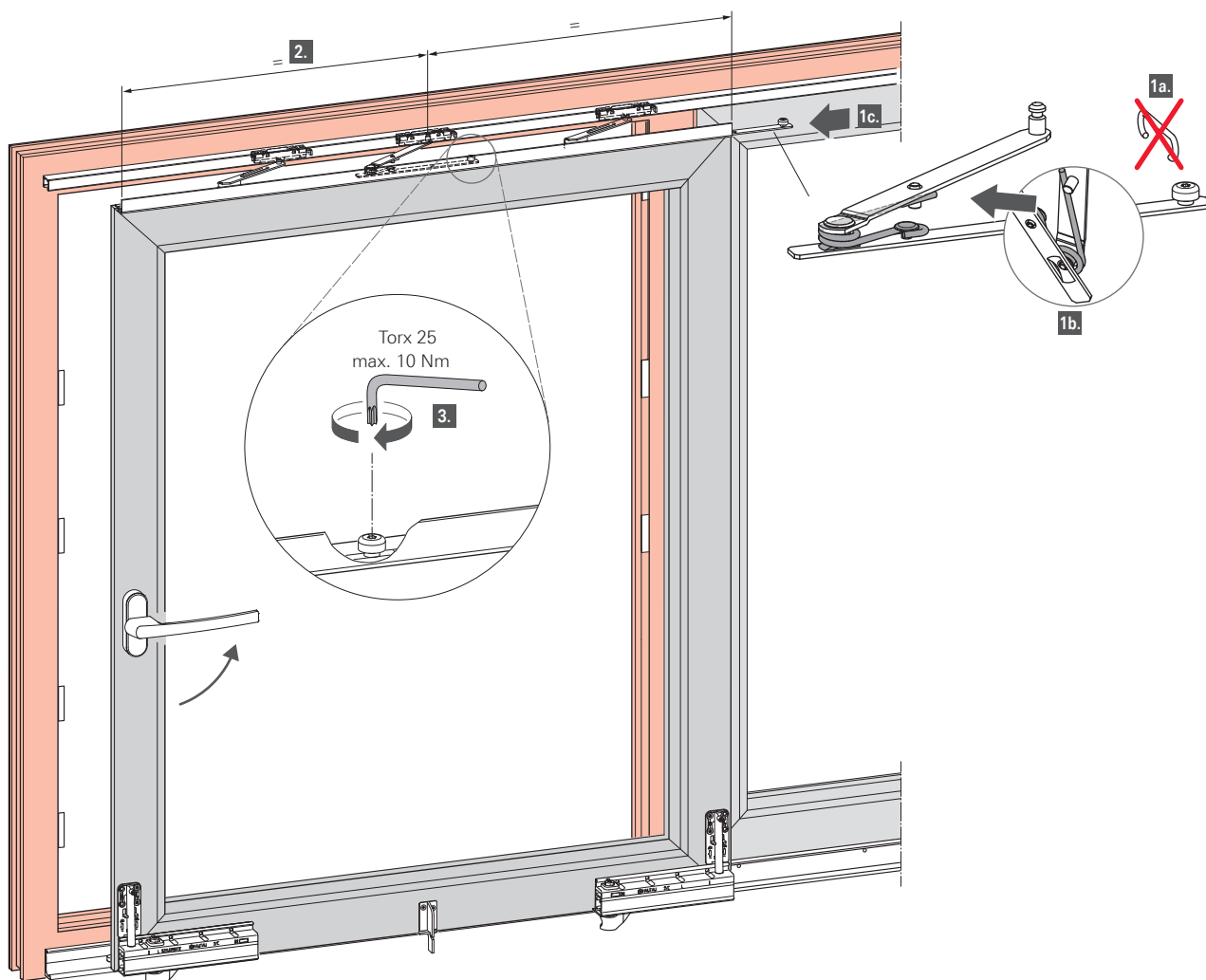
If the scissor-stay pins are not securely engaged in the sliders, the sash is not properly secured against falling out. This can lead to grievous bodily harm.





For application ranges of the spring scissor, refer to page 17–19.

- 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 62, 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

### Connecting sash and frame

Aligning the sash horizontally

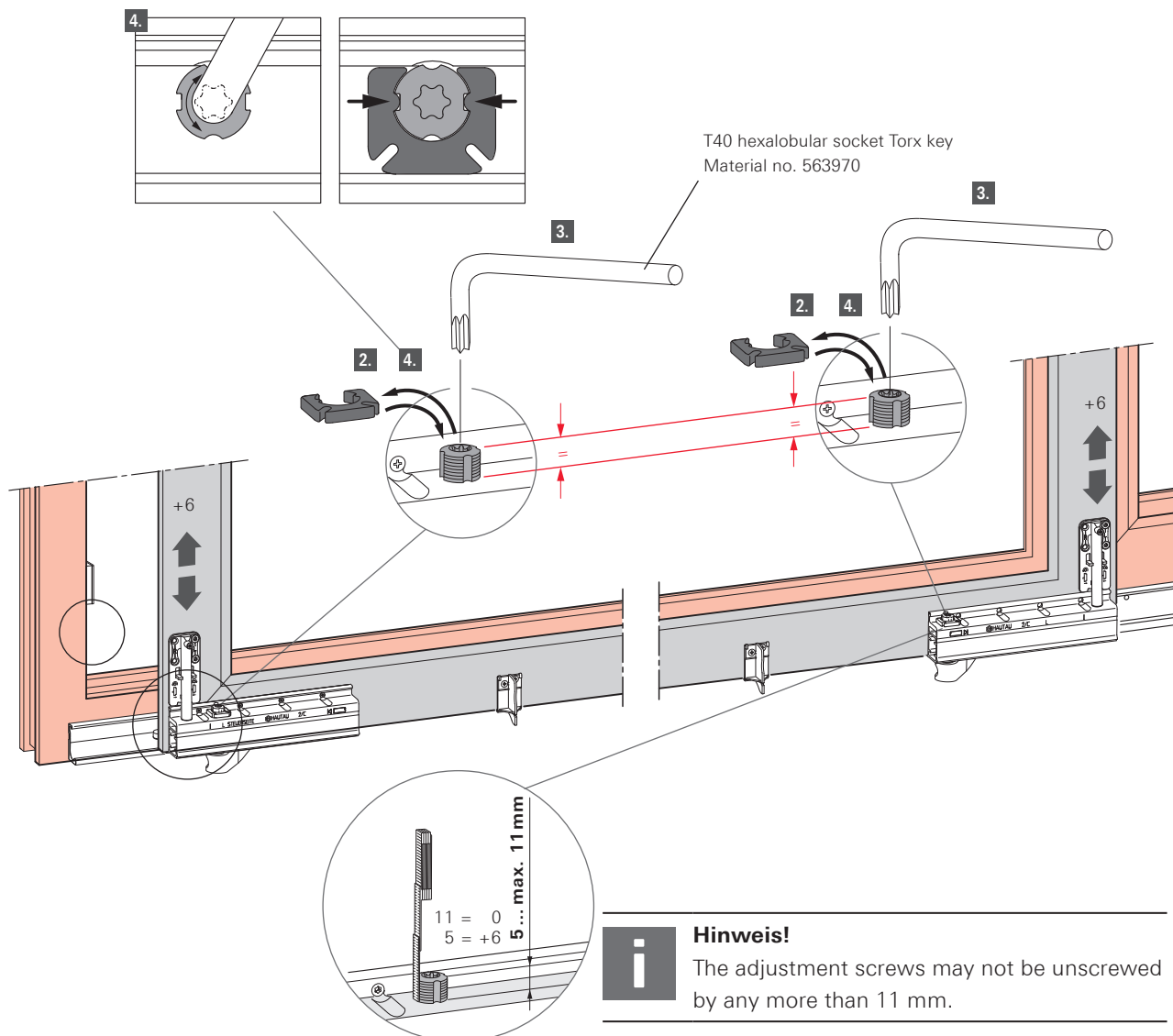
1. Check the clearance all round (not dep.).
2. Remove the anti-twist devices.
3. Raise or lower the bogies using the adjusting screws with a T40 hexalobular socket Torx key (563970).  
2 adjusting screws per heavy-duty bogie, 1 adjusting screw per bogie.



#### CAUTION!

The power bogies must be adjusted evenly at their adjusting screws in order to avoid any jamming (the bogies are preset at the factory).

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

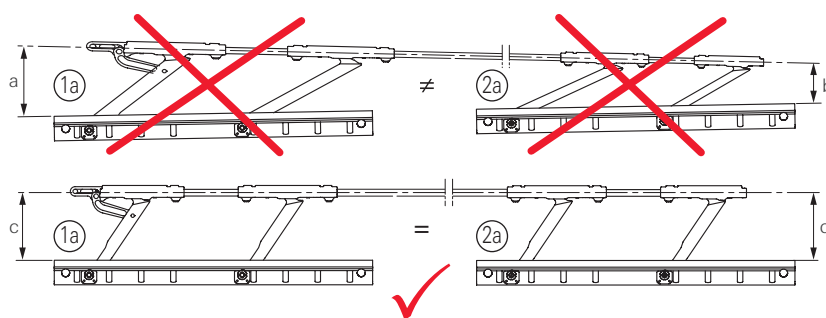
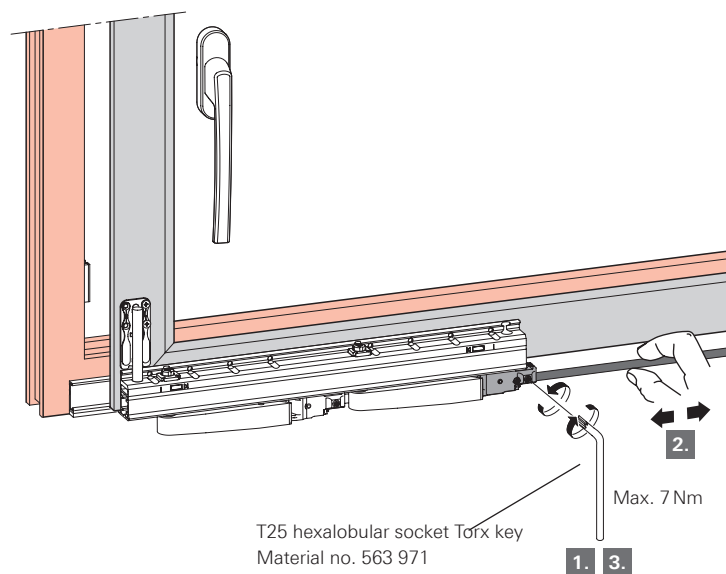




### Align the bogies parallel to each other

in order to warrant the sash entering the frame smoothly.

1. Loosen the connecting rod on the handle-sided heavy-duty bogie/bogie using a T25 hexalobular socket Torx key (material no. 563971).
2. Align the hinge-sided bogie parallel by sliding the connecting rod to the left or right.
3. Tighten the connecting rod on the handle-sided bogie with a T25 hexalobular socket Torx key (max. 7 Nm).



## Connecting sash and frame

Activating the bogie safety mechanism, 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.

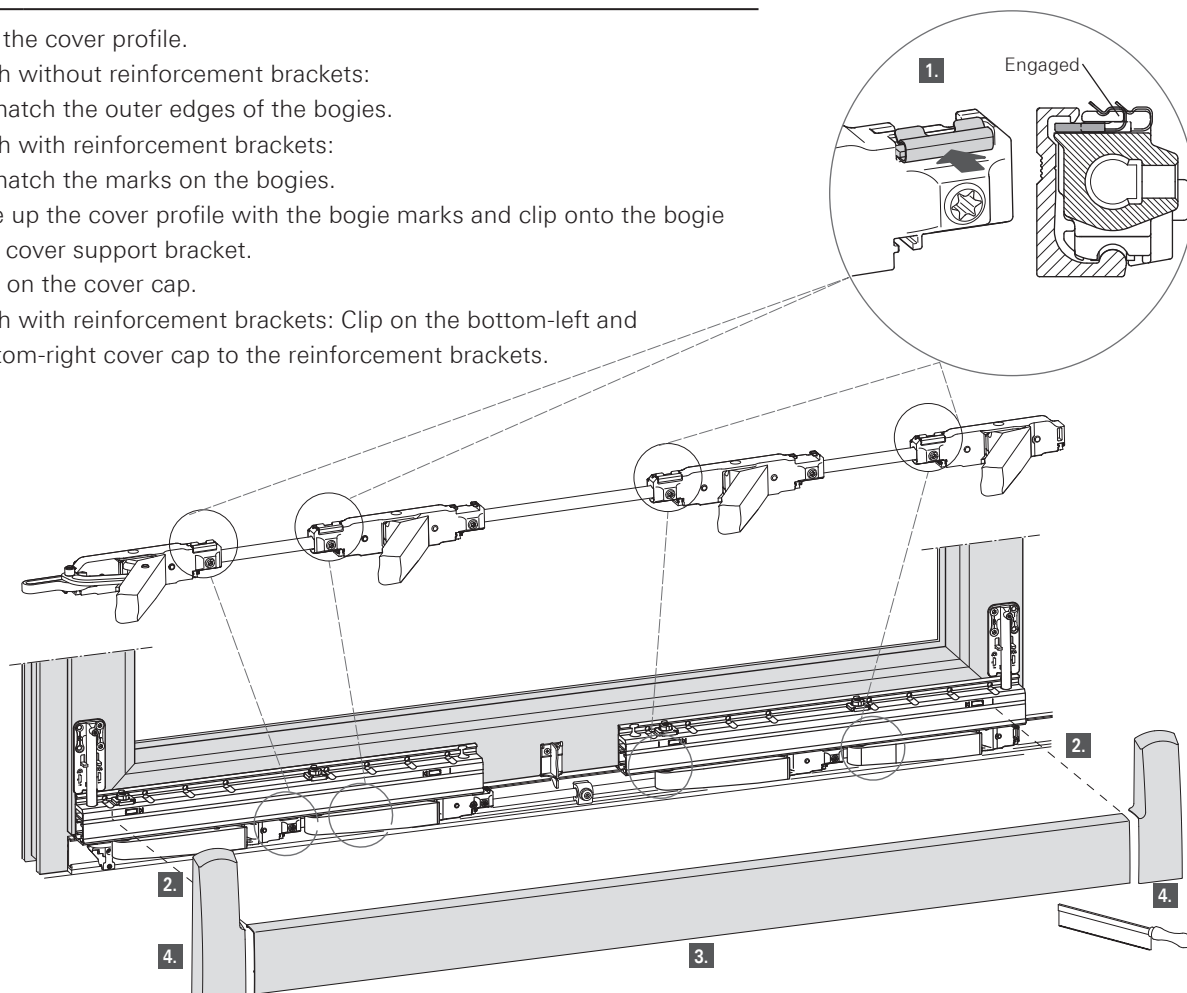
Sash without reinforcement brackets:  
to match the outer edges of the bogies.

Sash with reinforcement brackets:  
to match the marks on the bogies.

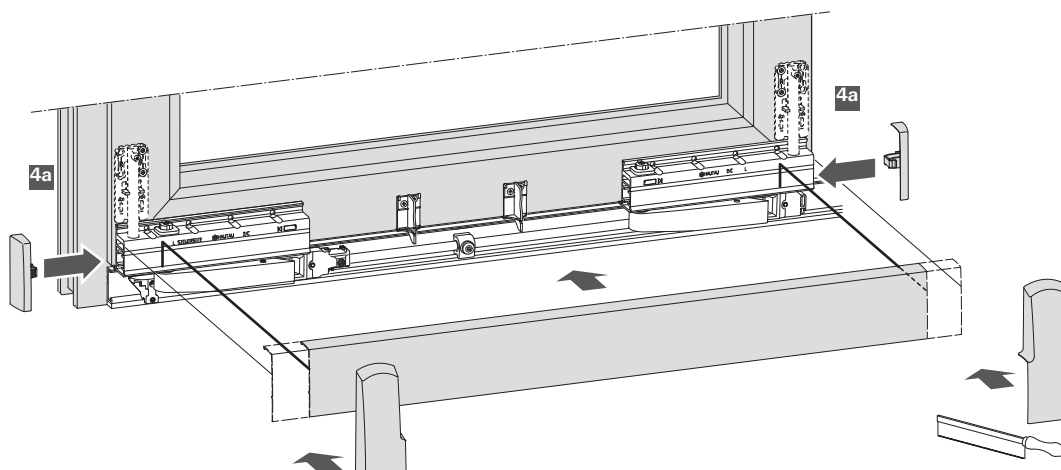
3. Line up the cover profile with the bogie marks and clip onto the bogie and cover support bracket.

4. Clip on the cover cap.

Sash with reinforcement brackets: Clip on the bottom-left and bottom-right cover cap to the reinforcement brackets.



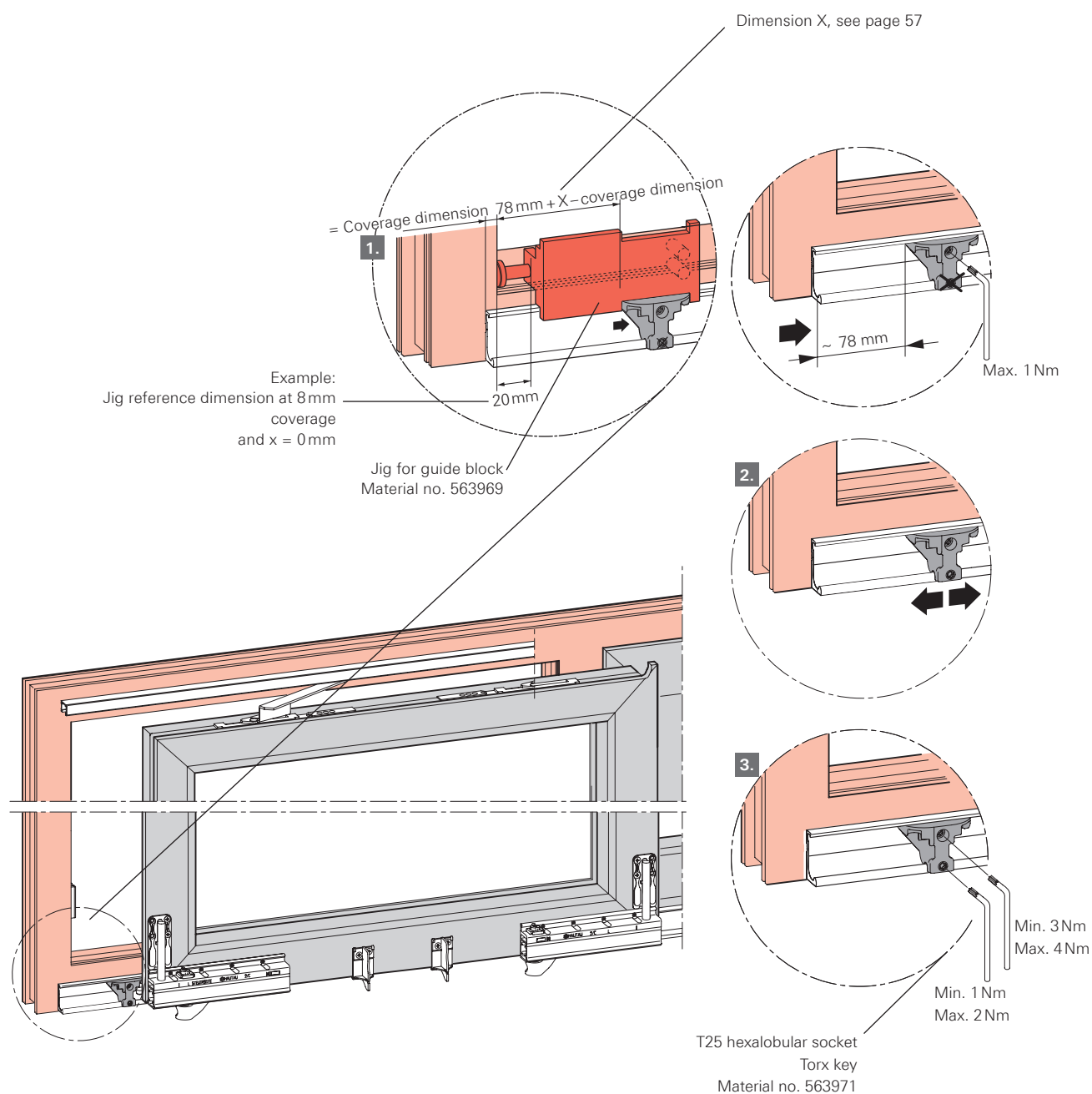
- 4a Sash without reinforcement brackets: mount the bottom-left and bottom-right cover cap on the side over the cover profile and clip into the bogie.





## Installing the guide block

1. Position the guide block jig (material no. 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 (material no. 563971) (max. 1 Nm).
2. Move the sash into the tilted position and check the clearance on both sides (12 mm). Reposition the guide block, if necessary.
3. Firstly, tighten the top screw the guide block with 3–4 Nm, then the lower screw with 1–2 Nm on the guide block using T25 hexalobular socket Torx key.



### Connecting sash and frame

#### Installing the slidable guide block for diagram D

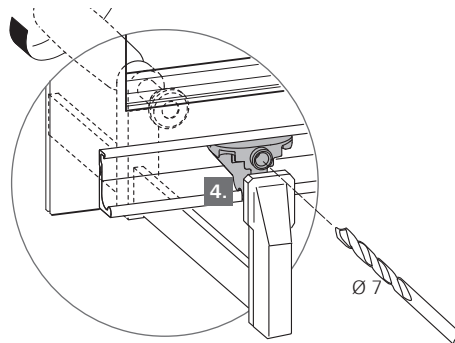
The Turn-Only sash of diagram D can be opened for cleaning and maintenance purposes.



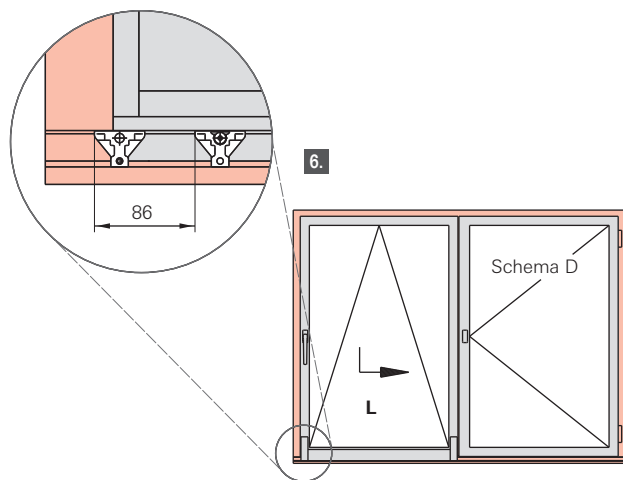
#### NOTE!

For diagram D keep the handle-sided roller track as long as possible.

1. Installing the guide block, → Page 67.  
(Dimension ~78 mm)  
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 necessary.
3. Mark the position of the guide block, then remove the guide block.
4. Align drilling jig for guide block with marking and fix in place using a 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.

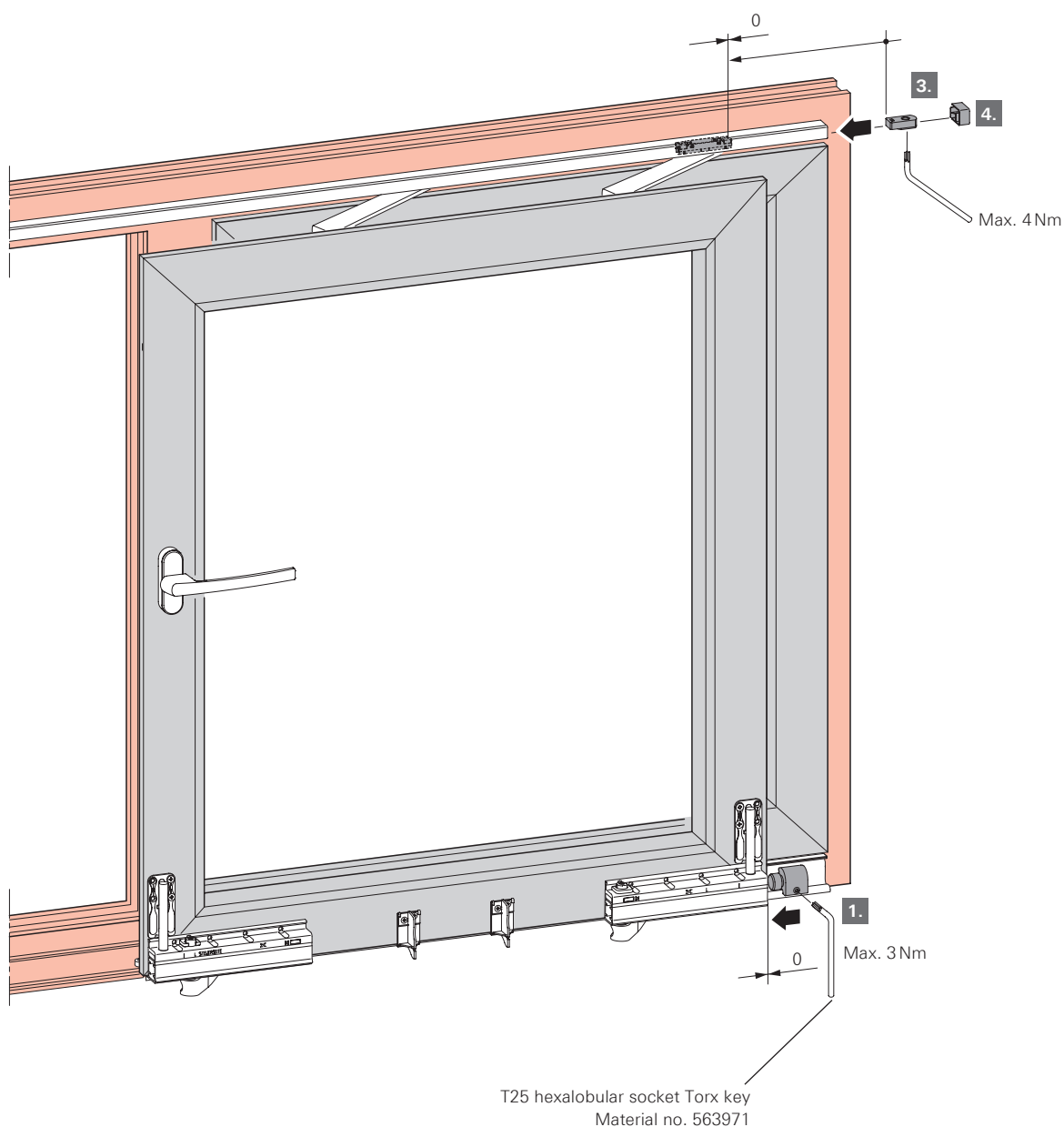


#### Mounting the buffer-stop

1. Screw on the bottom buffer-stop to the roller track in the desired position.  
Torx key; T25 hexalobular socket (material no. 563 971), 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 tighten with screws using  
Torx key; T25 hexalobular socket, max. 4 Nm
4. Mount the guide track's end cap.

#### Important advice:

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



**Unhinging the sash**

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

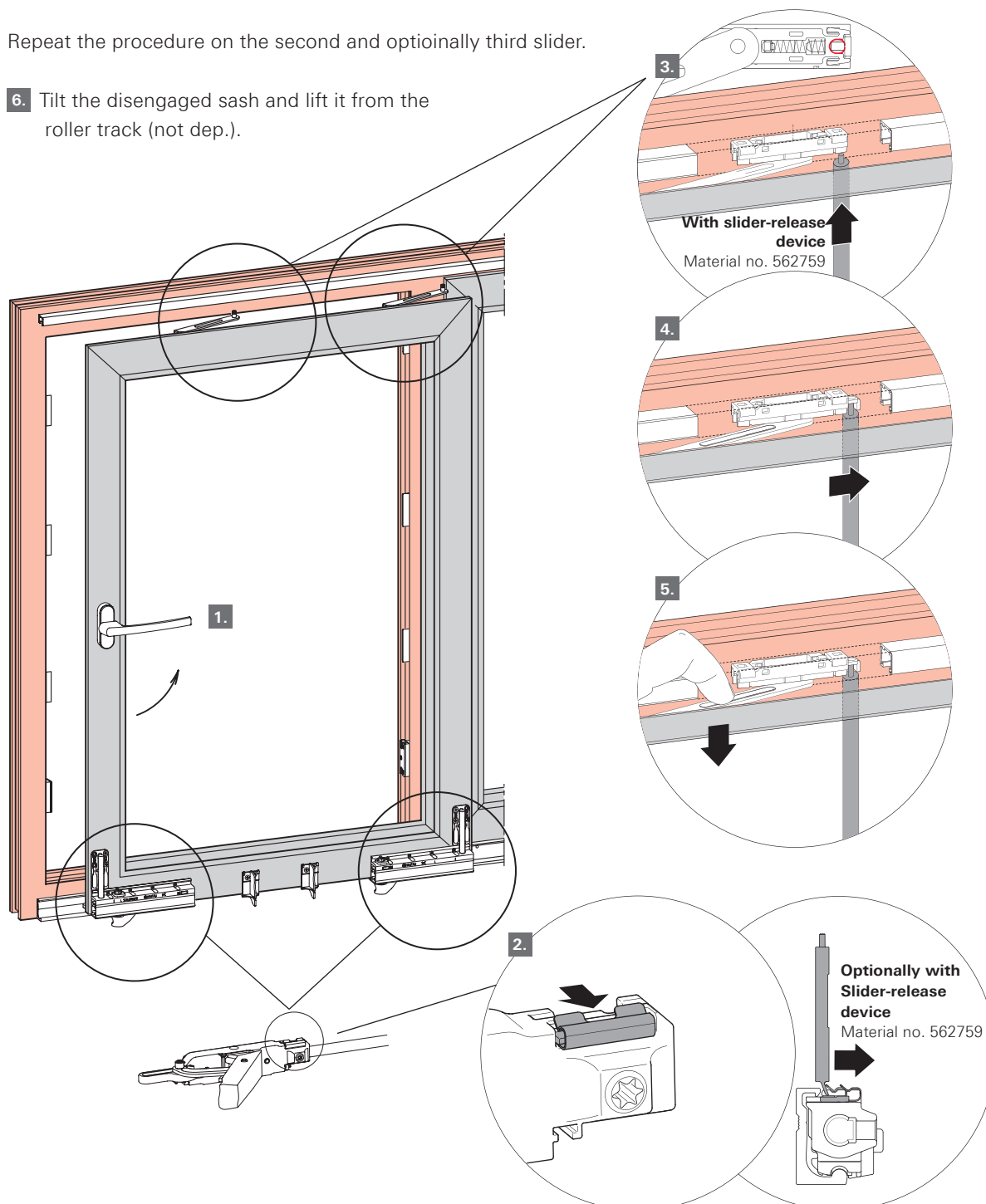
**Caution**

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

3. Push in the slider-release device (material no. 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 and optionally third slider.

6. Tilt the disengaged sash and lift it from the roller track (not dep.).





Adjust the reinforcement brackets to optimise the smooth running of the sash in the frame.

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

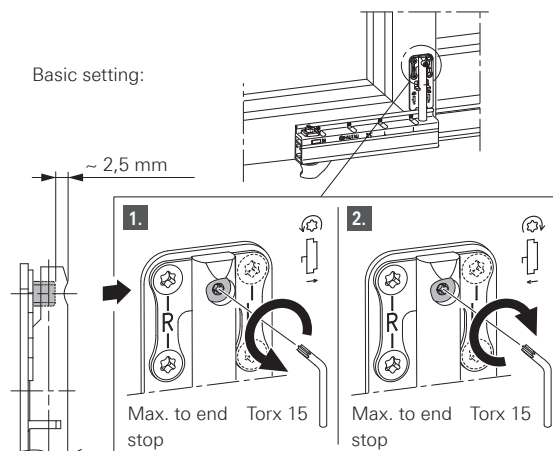
To be carried out only by a specialist company.



#### NOTE!

Starting from the basic setting, both reinforcement brackets should be adjusted equally in direction **1.** only.

If the adjustment in direction **1.** is too much, the bogies may rub up against each other, depending on the profile and sash weight. In this case, adjust the reinforcement brackets in direction **2.** until the bogies can be moved without rubbing.



**DANGER!****Risk of fatal injury due to incorrect handling and transport!**

Incorrect handling and unsuitable transportation of window elements can lead to hazardous situations and cause severe or even fatal accidents.

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 the hardware is in the locked position to prevent the sash from opening unexpectedly. Use suitable securing equipment to do this.
- Use only transport fastenings designed for the respective clearance.
- Wherever possible, transport the windows 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 if auxiliaries such as suction cups, transport nets, forklifts, or cranes are used for support, reaction forces may arise which could damage or overload the installed hardware. Therefore, observe the following instructions 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 design of the hardware components for the intended installation location. This applies particularly for the hinge positions.



Check the delivery immediately on receipt to ensure it is complete and there is no transport damage.



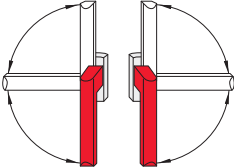
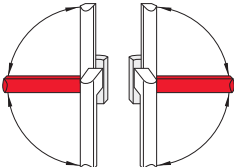
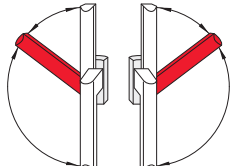
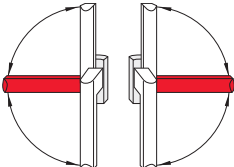
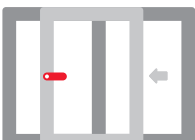
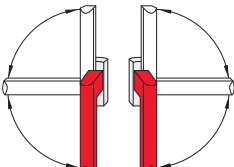
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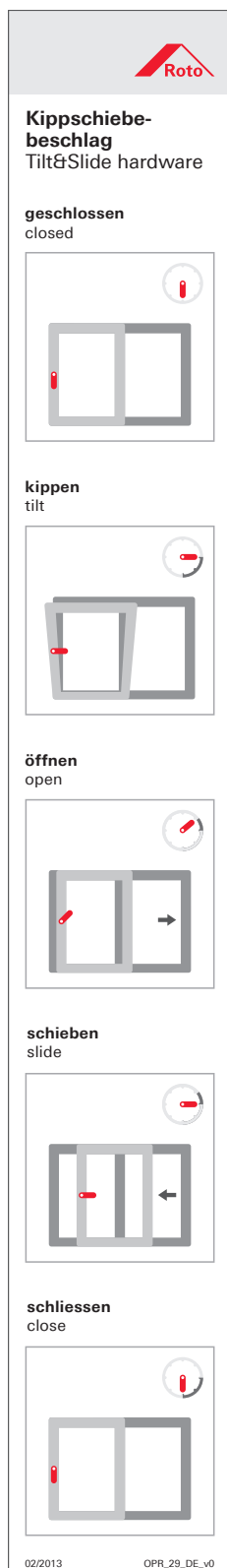
**NOTE!**

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

---

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

| Handle position                                                                     | Sash position                                                                       | Symbol                                                                              | Meaning                            |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------|
| <b>ROTO TILT&amp;SLIDE HARDWARE</b>                                                 |                                                                                     |                                                                                     |                                    |
|    |    |    | Closed sash position.              |
|    |    |    | Sash tilted open position.         |
|  |  |  | Opened slide position of the sash. |
|  |  |  | Closed slide position of the sash. |
|  |  |  | Closed sash position.              |



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

Please order stickers separately (OPR\_29\_DE).

## Troubleshooting

| Problem                               | Cause                                                                                                                                                                                                                                                                                | Corrective action                                                                                                                                                                                                                                         | Specialist company                                                            | End-users                                                                     |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Handle is difficult to turn.          | <ul style="list-style-type: none"> <li>– Frame parts are not properly greased.</li> <li>– Faulty handle.</li> <li>– Handle screws are screwed in too tightly.</li> <li>– Oblique screws in the sash.</li> <li>– Faulty sash parts.</li> <li>– Striker seated incorrectly.</li> </ul> | <ul style="list-style-type: none"> <li>– Grease frame parts.</li> <li>– Replace the handle.</li> <li>– Undo screws slightly.</li> <li>– Screw sash parts in straight.</li> <li>– Replace sash components.</li> <li>– Adjust striker positions.</li> </ul> | <div>□</div> <div>■</div> <div>■</div> <div>■</div> <div>■</div> <div>■</div> | <div>□</div> <div>–</div> <div>–</div> <div>–</div> <div>–</div> <div>–</div> |
| Handle cannot be turned through 180°. | <ul style="list-style-type: none"> <li>– Faulty hinging or installation of sash parts.</li> </ul>                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>– Check setting in turned position (if necessary, rehing the sash, starting from T&amp;T espagnolette).</li> </ul>                                                                                                 | <div>■</div>                                                                  | <div>–</div>                                                                  |
| Sash sticks when in tilted position.  | <ul style="list-style-type: none"> <li>– Insufficient clearance at top.</li> </ul>                                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>– Lower the bogie.</li> </ul>                                                                                                                                                                                      | <div>■</div>                                                                  | <div>–</div>                                                                  |
| Locking cams stick at striker.        | <ul style="list-style-type: none"> <li>– Sash not hinged correctly.</li> <li>– Striker seated incorrectly.</li> </ul>                                                                                                                                                                | <ul style="list-style-type: none"> <li>– Rehing the sash.</li> <li>– Adjust the striker positions.</li> </ul>                                                                                                                                             | <div>■</div> <div>■</div>                                                     | <div>–</div> <div>–</div>                                                     |

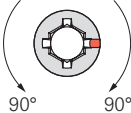
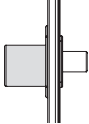
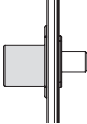
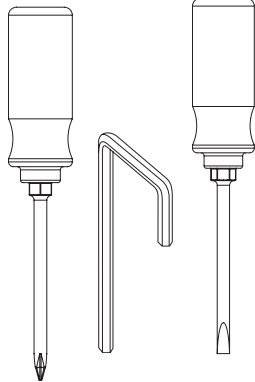
■ = To be carried out **only** by a specialist company

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

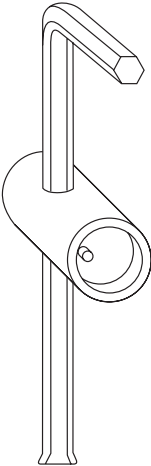
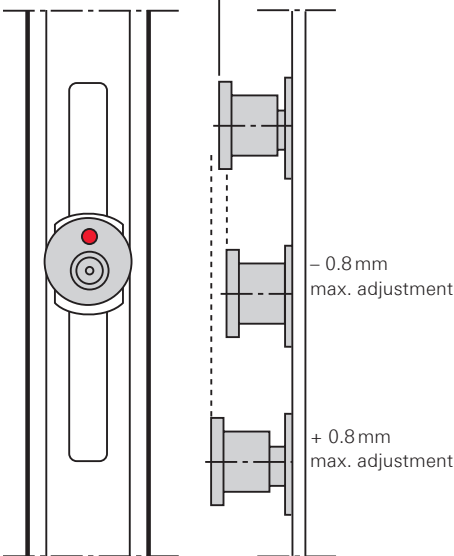
□ = To be carried out either by a specialist company or by the end-user



## Locking cam adjustment instructions

| Cam type                                                                            | Adjustment range                                                                  | Gasket compression   | Height | Side view                                                                         | Tool                                                                               |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------|--------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| <b>E cam</b>                                                                        |                                                                                   |                      |        |                                                                                   |                                                                                    |
|    |  | $\pm 0.8 \text{ mm}$ |        |  |  |
|  |                                                                                   |                      |        |                                                                                   |                                                                                    |

## Locking cam adjustment instructions

| Locking cam V                                                                                                                                                                                                                                                       | Adjustment range in °                                                                                   | Gasket-compression adjustment / mm | Height adjustment / mm |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|------------------------------------|------------------------|
|  <p>0 = Original position</p>  <p>- 0.8 mm max. adjustment</p> <p>+ 0.8 mm max. adjustment</p> | Original position<br> | -                                  | -                      |
|                                                                                                                                                                                                                                                                     |                      | $\pm 0.8$                          | $\pm 0.2$              |
|                                                                                                                                                                                                                                                                     |                      | -                                  | $\pm 0.4$              |
|                                                                                                                                                                                                                                                                     |                      | $\pm 0.8$                          | $\pm 0.6$              |
|                                                                                                                                                                                                                                                                     |                      | -                                  | $\pm 0.8$              |

## Maintenance



### WARNING!

**Risk of injury through incorrectly conducted maintenance work!**

**Incorrect maintenance can result in severe personal injury or property damage.**

- Before starting work, ensure that there is sufficient installation space.
- Maintain order and cleanliness at the installation location.
- Ensure that the window or balcony door is prevented from suddenly opening or slamming during maintenance work.
- Get a specialist company to carry out adjustment work on hardware – especially in the area of pivot rests or bogies and hinges – as well as replacement of parts and hinging/-unhinging of sashes.
- Do not unhinge the window 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, non-resinous oil from a specialised dealer. | □                  | □         |
| Lubricate strikers with acid free and non resinous grease from a specialised dealer.        | □                  | □         |

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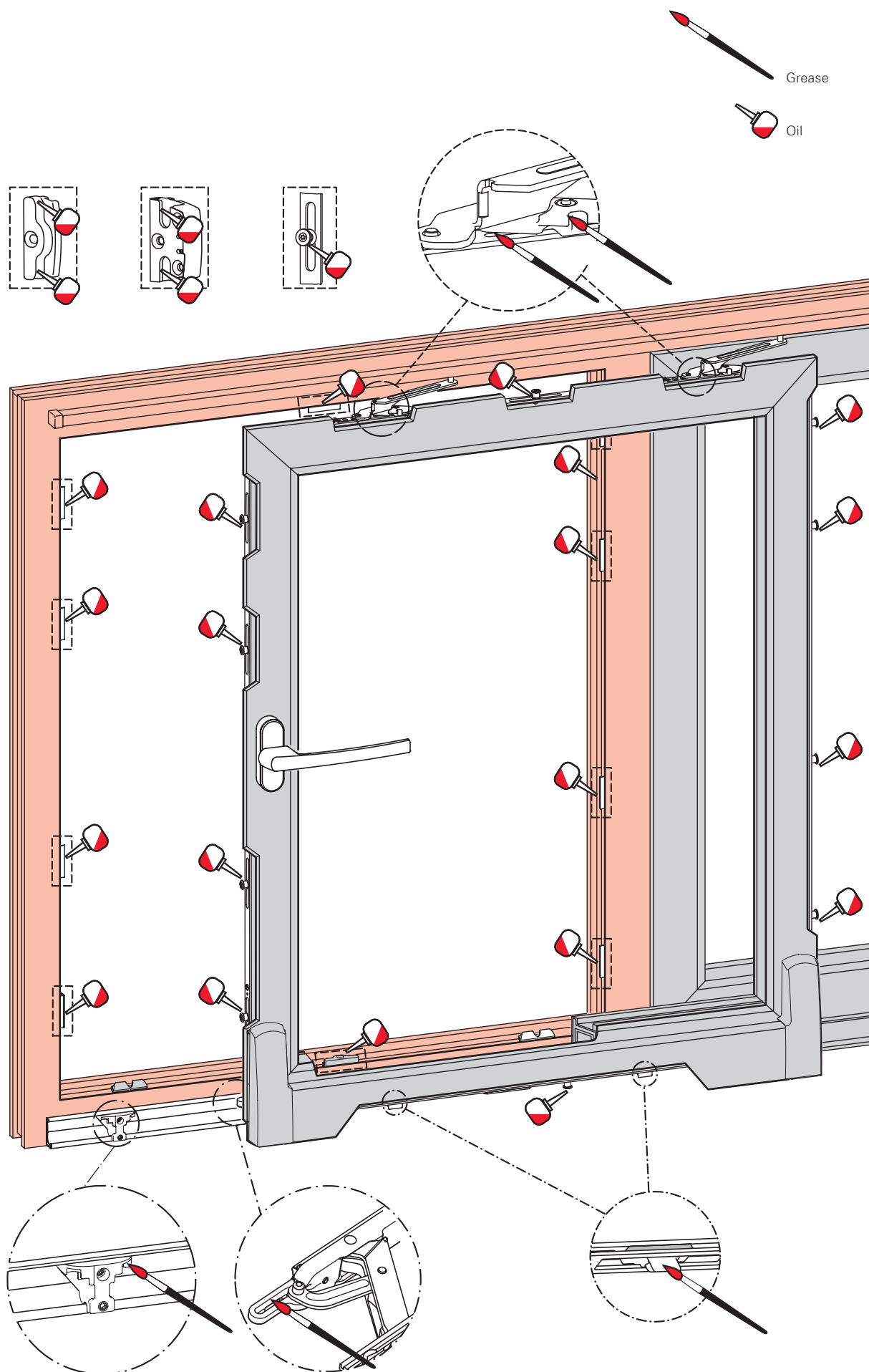


### NOTE!

**Observe the following environmental protection notices during maintenance work:**

- Remove leaking or residual grease at the lubrication points and dispose of it in accordance with the valid local regulations.
- Collect old oil in suitable containers and dispose of it in accordance with the environmental regulations.

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



## 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"/> |
| Check all movable parts for proper operation.                                      | <input type="checkbox"/> | <input type="checkbox"/> |
| Check all locking points for proper operation.                                     | <input type="checkbox"/> | <input type="checkbox"/> |
| The hardware's smooth operation can be checked by moving the window handle:        |                          |                          |
| – Locking and unlocking torque in accordance with DIN 18055: max. 10 Nm.           | ■                        | –                        |
| – The torque can be checked using a torque wrench.                                 | ■                        | –                        |
| – Smoother operation can be achieved by greasing/oiling or adjusting the hardware. | ■                        | –                        |

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

## Care

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

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No legal claims can be derived from these recommendations; their application must be adapted accordingly for each concrete individual case. The window and balcony door manufacturer must ensure that builders and end-users are made aware of the importance of these maintenance instructions. Roto Frank AG recommends that window manufacturers enter into maintenance agreements with their end-users.



### Protection against corrosion

|                                                                                                                                                                                                               | Specialist company | End-users |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------|
| Aggressive vapours (e.g. by from formic or acetic acid, ammonia, amine or ammonia compounds, aldehydes, phenols, chlorine, tannic acid etc.) must be kept away from the vicinity of the windows at all times. | ■                  | —         |
| Never use acetic or crosslinked acidic sealing compounds or those with the contents listed above, since both direct contact with the sealing compound and 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, mortar, cement, etc.) or similar materials with water before they set. | □                  | □         |
| Keep the hardware free from deposits and soiling.                                                                                                | □                  | □         |
| Never use aggressive, acidic cleaning or scouring agents.                                                                                        | □                  | □         |
| Only use mild, pH-neutral cleaning agents in diluted form.                                                                                       | □                  | □         |
| Use a soft cloth only for cleaning.                                                                                                              | □                  | □         |

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### Protection against (permanently) 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 air cannot condense in the hinge and rebate areas:</p> <ul style="list-style-type: none"> <li>– Force ventilate several times each day (open all windows for approx. 15 minutes).</li> <li>– Also ventilate during holidays and public holidays.</li> <li>– For more complex construction projects, develop a ventilation plan if necessary.</li> </ul> <p>If it is not possible to ventilate the area as described above, 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"/> |

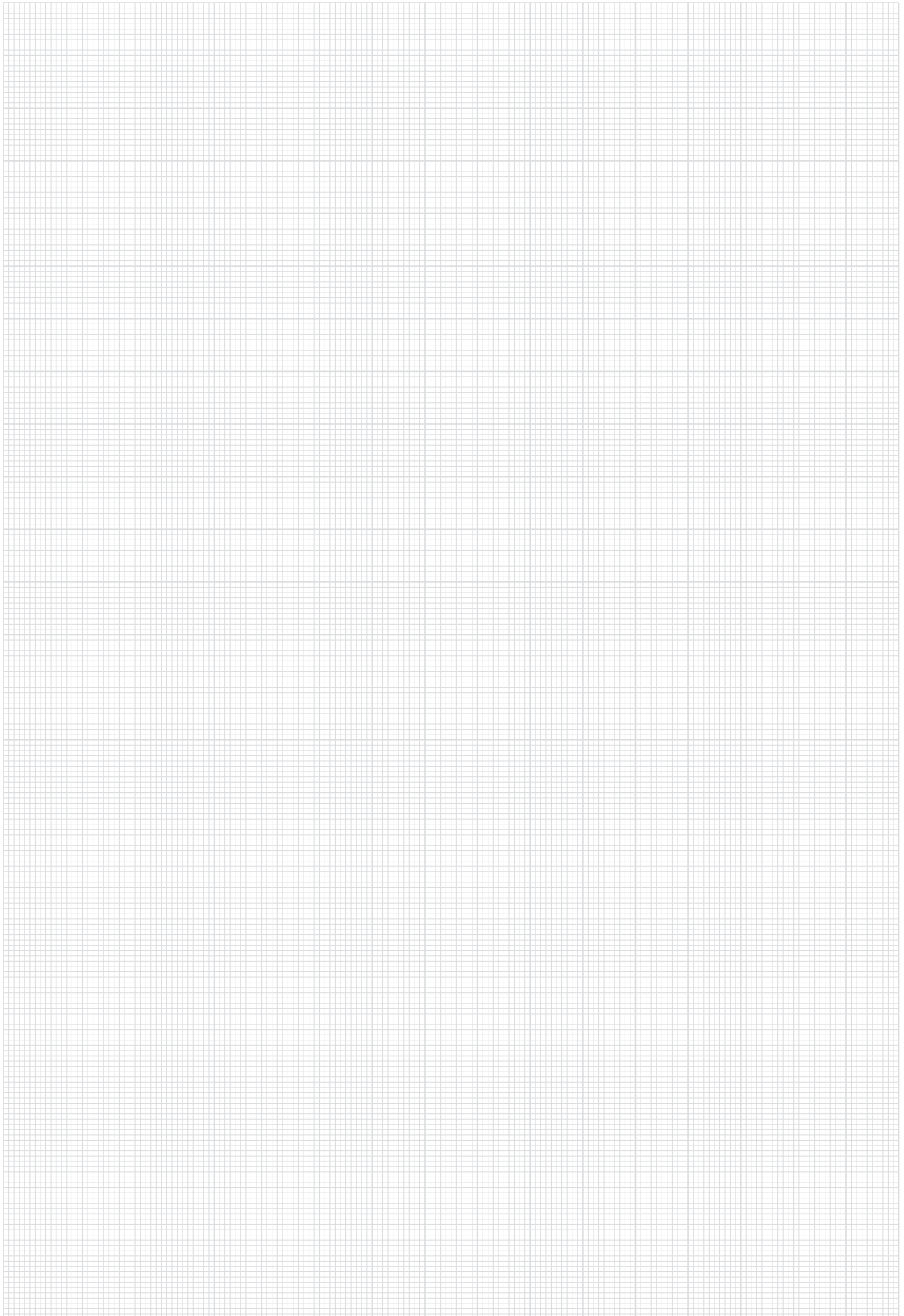
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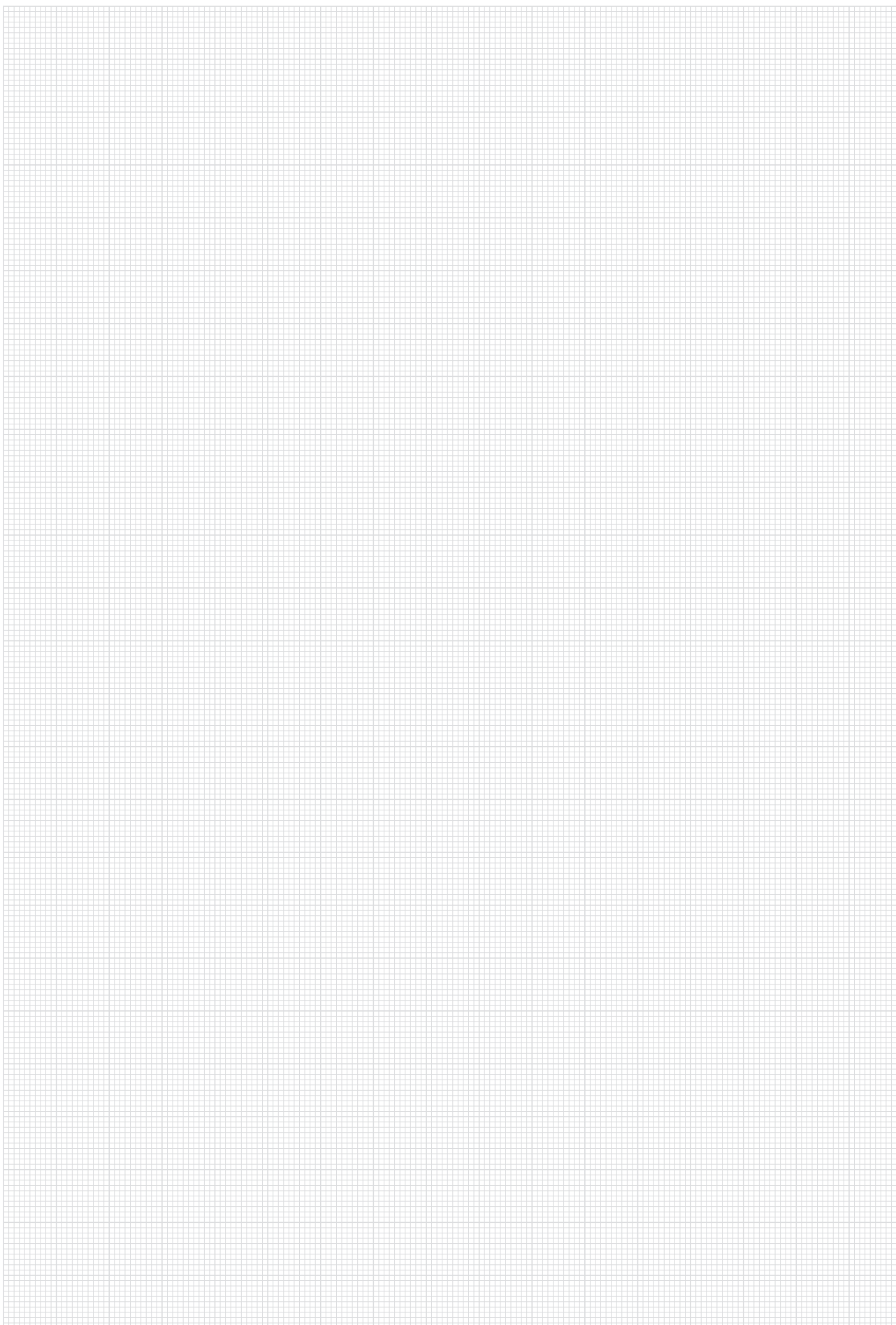
– = **Not** to be carried out by the end-user; the end-user may not carry out installation work!

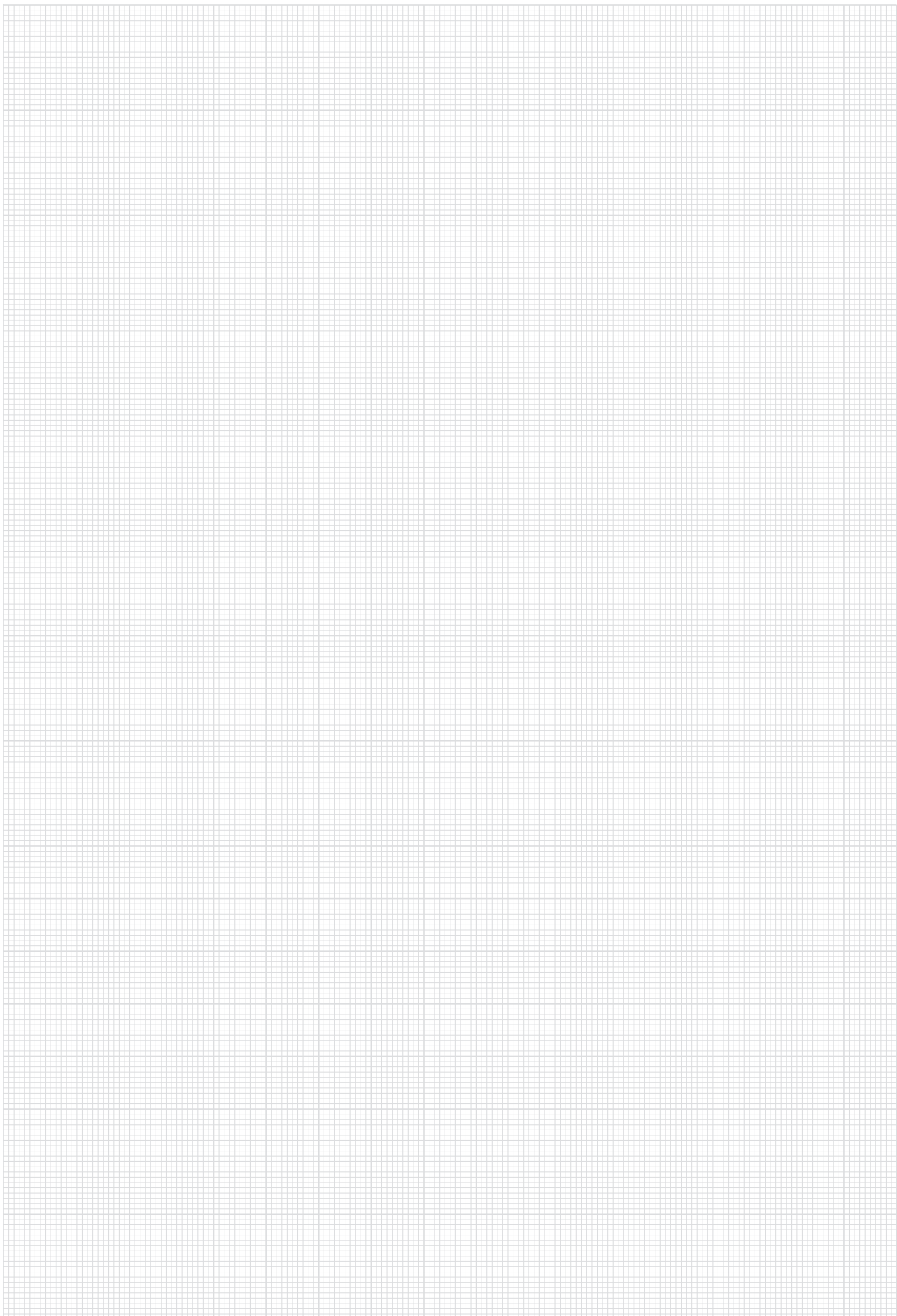
□ = To be carried out either by a specialist company or by the end-user



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









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

- Roto Tilt&Turn** | The Tilt&Turn hardware system for windows and balcony doors
- Roto Sliding** | Hardware systems for large sliding windows and doors
- Roto Door** | Matching hardware technology "right round the door"
- Roto Equipment** | Additional technology for windows and doors