

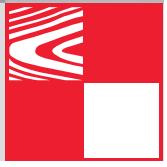
Window and Door Technology



Roto Patio Alversa

Universal hardware for minimum effort
in Parallel Sliding and Tilt&Slide systems

Installation, maintenance and operating instructions
for timber and PVC profiles





| | | |
|----------|---|----------|
| 1 | General information..... | 8 |
| 1.1 | Version history..... | 8 |
| 1.2 | Instructions..... | 9 |
| 1.3 | Symbols..... | 10 |
| 1.4 | Pictographs..... | 10 |
| 1.5 | Product features..... | 11 |
| 1.6 | Abbreviations..... | 13 |
| 1.7 | Target groups..... | 13 |
| 1.8 | Target groups' obligation to give instructions..... | 14 |
| 1.9 | Copyright protection..... | 15 |
| 1.10 | Limitation of liability..... | 15 |
| 1.11 | Preserving the surface finish..... | 16 |
| 1.12 | Imprint..... | 17 |



| | | |
|----------|---|-----------|
| 2 | Security..... | 18 |
| 2.1 | Presentation and structure of warning instructions..... | 18 |
| 2.2 | Security levels of warning instructions..... | 18 |
| 2.3 | Stipulated use..... | 18 |
| 2.3.1 | Misuse..... | 19 |
| 2.3.2 | Usage restriction..... | 19 |
| 2.4 | Stipulated use for end users..... | 19 |
| 2.4.1 | Misuse..... | 20 |
| 2.5 | Basic safety information..... | 20 |
| 2.5.1 | Installation..... | 20 |
| 2.5.2 | Use..... | 21 |
| 2.5.3 | Ambient conditions..... | 22 |
| 2.6 | Operation..... | 22 |



| | | |
|----------|---|-----------|
| 3 | Information on the product..... | 24 |
| 3.1 | General hardware characteristics..... | 24 |
| 3.2 | Application ranges..... | 24 |
| 3.3 | Application diagrams..... | 24 |
| 3.3.1 | Roto Patio Alversa KS..... | 25 |
| 3.3.2 | Roto Patio Alversa PS without / with night ventilation..... | 27 |
| 3.3.3 | Roto Patio Alversa PS Air..... | 29 |
| 3.3.4 | Roto Patio Alversa PS Air Com..... | 30 |

| | | |
|-------|--|----|
| 3.4 | Profile sections..... | 32 |
| 3.4.1 | Roto Patio Alversa KS horizontal cross section..... | 32 |
| 3.4.2 | Roto Patio Alversa PS horizontal cross section..... | 33 |
| 3.4.3 | Vertical cross section..... | 35 |
| 3.5 | Design variants..... | 37 |
| 3.5.1 | Note regarding the design variants..... | 37 |
| 3.5.2 | Diagram A..... | 37 |
| 3.5.3 | Diagram C..... | 38 |
| 3.5.4 | Diagram D..... | 39 |
| 3.6 | Variant overview..... | 39 |
| 3.6.1 | Notes on the variant overview..... | 39 |
| 3.6.2 | Roto Patio Alversa KS..... | 40 |
| 3.6.3 | Roto Patio Alversa PS without night ventilation..... | 41 |
| 3.6.4 | Roto Patio Alversa PS with night ventilation..... | 41 |
| 3.6.5 | Roto Patio Alversa PS Air..... | 42 |
| 3.6.6 | Roto Patio Alversa PS Air Com..... | 42 |



4 Hardware overviews..... **43**

| | | |
|-------|--|-----|
| 5 | Hardware sets..... | 107 |
| 5.1 | Reinforcement part sets..... | 107 |
| 5.2 | Track sets..... | 108 |
| 5.2.1 | Track set with retaining track 13..... | 109 |
| 5.2.2 | Track set with retaining track 20..... | 111 |
| 5.3 | Guide block sets..... | 113 |



| | | |
|-------|-----------------------|-----|
| 6 | Frame components..... | 114 |
| 6.1 | PVC..... | 114 |
| 6.1.1 | Strikers..... | 115 |
| 6.1.2 | Tilt strikers..... | 121 |
| 6.1.3 | Guide strikers..... | 125 |
| 6.1.4 | Centre locks..... | 127 |
| 6.2 | Timber..... | 130 |
| 6.2.1 | Strikers..... | 130 |
| 6.2.2 | Tilt strikers..... | 133 |
| 6.2.3 | Guide strikers..... | 134 |

| | | | |
|---|----------|---|------------|
| | 6.2.4 | Centre locks..... | 134 |
|  | 7 | Jigs..... | 136 |
| | 7.1 | Drilling jigs..... | 136 |
| | 7.2 | Installation jigs..... | 137 |
| | 7.3 | Positioning jigs..... | 138 |
| | 7.4 | Tools..... | 139 |
|  | 8 | Brief instructions..... | 141 |
| | 8.1 | Roto Patio Alversa Overall..... | 141 |
|  | 9 | Installation..... | 143 |
| | 9.1 | Processing instructions..... | 143 |
| | 9.2 | Screw connections..... | 144 |
| | 9.2.1 | Screw connections for PVC / timber profiles..... | 144 |
| | 9.2.2 | Fastening suggestion for security windows..... | 145 |
| | 9.2.3 | Fastening suggestion for security windows..... | 146 |
| | 9.3 | Force-fit connection..... | 147 |
| | 9.4 | Drilling and routing dimensions..... | 148 |
| | 9.4.1 | PVC..... | 148 |
| | 9.4.2 | Timber..... | 151 |
| | 9.4.3 | PVC and timber..... | 154 |
| | 9.5 | Sash..... | 156 |
| | 9.5.1 | Preparing the sash for the T&T espagnolette..... | 156 |
| | 9.5.2 | Preparing the sash for a lockable T&T espagnolette..... | 157 |
| | 9.5.3 | Preparing the sash for the geared-handle..... | 160 |
| | 9.5.4 | High backset espagnolette | 162 |
| | 9.5.5 | Crop the hardware components..... | 164 |
| | 9.5.6 | Corner drives..... | 165 |
| | 9.5.7 | Travel restrictor..... | 166 |
| | 9.5.8 | T&T espagnolettes..... | 167 |
| | 9.5.9 | Centre locks..... | 168 |
| | 9.5.10 | Handle..... | 170 |
| | 9.5.11 | Bogies / reinforcement brackets..... | 174 |
| | 9.5.12 | Support bracket..... | 182 |
| | 9.5.13 | Connecting rod / connecting-rod support-block..... | 183 |
| | 9.5.14 | Stay-connecting profile..... | 187 |

| | | |
|---|---|------------|
| 9.6 | Frame..... | 189 |
| 9.6.1 | Frame components..... | 190 |
| 9.6.2 | Strikers, night ventilation strikers and tilt strikers..... | 191 |
| 9.6.3 | Guide plates..... | 196 |
| 9.6.4 | Comfort scissor stay and mishandling device..... | 197 |
| 9.6.5 | Overview with positioning jigs..... | 198 |
| 9.6.6 | Guide track..... | 200 |
| 9.6.7 | Sliding scissor stay..... | 202 |
| 9.6.8 | Roller track..... | 209 |
| 9.6.9 | Bottom guide block..... | 211 |
| 9.7 | Joining the sash and frame..... | 214 |
| 9.7.1 | Sash..... | 214 |
| 9.7.2 | Sliding scissor stay..... | 216 |
| 9.7.3 | End caps for retaining track..... | 220 |
| 9.7.4 | Bottom guide block, movable..... | 221 |
| 9.7.5 | Buffer stops..... | 225 |
| 9.7.6 | Covers..... | 226 |
|  | 10 Adjustment..... | 229 |
| 10.1 | Aligning the sash horizontally..... | 229 |
| 10.2 | Aligning the bogies parallel..... | 229 |
| 10.3 | Adjusting reinforcement brackets..... | 230 |
| 10.4 | Adjusting the locking cam..... | 231 |
| 10.5 | Top guide block, fixed..... | 232 |
| 10.6 | Top guide block, tiltable..... | 233 |
|  | 11 Operation..... | 236 |
| 11.1 | Operating information..... | 236 |
| 11.1.1 | Roto Patio Alversa KS..... | 236 |
| 11.1.2 | Roto Patio Alversa PS without night ventilation..... | 237 |
| 11.1.3 | Roto Patio Alversa PS with night ventilation..... | 237 |
| 11.1.4 | Roto Patio Alversa PS Air..... | 237 |
| 11.1.5 | Roto Patio Alversa PS Air Com..... | 238 |
| 11.2 | Fault assistance..... | 238 |
|  | 12 Maintenance..... | 239 |
| 12.1 | Maintenance intervals..... | 239 |

| | | |
|---|--|------------|
| 12.2 | Cleaning..... | 240 |
| 12.3 | Care..... | 240 |
| 12.3.1 | Roto Patio Alversa KS..... | 241 |
| 12.3.2 | Roto Patio Alversa PS (except for PS Air Com)..... | 242 |
| 12.3.3 | Roto Patio Alversa PS Air Com..... | 243 |
| 12.4 | Performance test..... | 244 |
| 12.5 | Repair..... | 244 |
| 12.6 | Preventative measures..... | 244 |
|  | 13 Dismantling..... | 246 |
| 13.1 | Sash..... | 246 |
| 13.2 | Hardware components..... | 247 |
|  | 14 Transport..... | 248 |
| 14.1 | Transporting the hardware..... | 248 |
| 14.2 | Storing the hardware..... | 249 |
|  | 15 Disposal..... | 250 |
| 15.1 | Disposing of packaging..... | 250 |
| 15.2 | Disposing of hardware..... | 250 |

1 General information

1.1 Version history

| Version | Date | Changes |
|---------|------------|--|
| v0 | 10.10.2016 | |
| v1 | 16.11.2016 | In the drilling pattern, two drill holes (\varnothing 5) removed → 9.4.2.3 "Geared-handle" from page 153 |
| v2 | 24.01.2017 | <p>Material numbers of reinforcement part changed. → 5.1 "Reinforcement part sets" from page 107</p> <p>Position of travel restrictor changed. → 9.5.7 "Travel restrictor" from page 166</p> <p>Reinforcement part cover and rubber buffer added to the component list in the variant overview for Roto Patio Alversa KS. → 3.6.2 "Roto Patio Alversa KS" from page 40</p> <p>Spare sliding scissor stay added to the component list in the variant overview for Roto Patio Alversa PS Air. → 3.6.5 "Roto Patio Alversa PS Air" from page 42</p> |
| v3 | 01.12.2017 | <p>Chapters added: → 1 "General information" from page 8, → 2 "Security" from page 18, → 3 "Information on the product" from page 24</p> <p>Profile information and operating temperature range added. → 3.2 "Application ranges" from page 24</p> <p>Application diagram: application range for fixed handle height (all variants of Patio PS) added.</p> <p>New track sets added. → 5.2 "Track sets" from page 108</p> <p>New colour R 04.4 added.</p> <p>Bottom guide block, movable, added. → 9.7.4 "Bottom guide block, movable" from page 221</p> <p>Brief instructions added. → 8 "Brief instructions" from page 141</p> <p>Installation of the retrofit set for PS sliding scissor stay added. → 9.6.7.2 "Preassembling the PS sliding scissor stay with retrofit set" from page 204</p> <p>Installation of sliding scissor stay changed. Installation of top guide block added. → 9.6.7.1 "Inserting the KS sliding scissor stay" from page 202 → 9.6.7.3 "Inserting the PS sliding scissor stay and installing the top guide block" from page 206</p> <p>Adjustment of top guide block added. → 10.5 "Top guide block, fixed" from page 232 → 10.6 "Top guide block, tiltable" from page 233</p> <p>Roto Patio PS maintenance added. → 12.3.2 "Roto Patio Alversa PS (except for PS Air Com)" from page 242 → 12.3.3 "Roto Patio Alversa PS Air Com" from page 243</p> <p>Bogies changed. Now with integrated anti-jemmy device.</p> <p>KS scissor stays changed.</p> <p>PS scissor stays changed (retrofit set can be installed).</p> <p>High backset espagnolette changed. Gearbox can now be ordered as optional extra.</p> <p>SRW relating to the quantity of supporting pieces changed. → 9.5.12.1 "Supporting piece drill holes" from page 182</p> <p>Frame routing dimensions for PS Air Com changed. → 9.4.3.1 "Comfort scissor stay and mishandling device" from page 154</p> <p>Installation of connecting rod changed. → 9.5.13.3 "Connecting rod" from page 185</p> <p>Installation of frame components changed.</p> |



1.2 Instructions

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

The information and instructions contained in this document refer to products belonging to the Roto hardware system named on the front page. All steps must be completed in sequence.

The following documents apply in addition to these instructions:

- Alversa catalogue
- Handles catalogue

The following guidelines also apply:

- Guideline TBDK issued by the Gütegemeinschaft Schlosser und Beschläge e. V. quality assurance association (Attachment of supporting fitting components for turn-only and tilt&turn fittings),
- Directive VHBE issued by the Gütegemeinschaft Schlosser und Beschläge e. V. quality assurance association (Hardware for windows and balcony doors – Guidelines / advice for end-users),
- Directive VHBH issued by the Gütegemeinschaft Schlosser und Beschläge e. V. quality assurance association (Hardware for windows and balcony doors – Guidelines / advice on the product and on liability),
- Instructions and information issued by profile manufacturers (e.g. manufacturers of windows and balcony doors),
- The applicable regulations, directives and national laws.

Compliance with the following guidelines is additionally recommended:

- TLE.01 by the VFF (German Window and Facade Association) Correct handling of ready-to-install windows and external doors during transport, storage and installation,
- WP.01 by the VFF (German Window and Facade Association) Maintenance of windows, facades and external doors – Maintenance, care and inspection – Information for sales,
- WP.02 by the VFF (German Window and Facade Association) Maintenance of windows, facades and external doors – Maintenance, care and inspection – Measures and documents,
- WP.03 by the VFF (German Window and Facade Association) Maintenance of windows, facades and external doors – Maintenance, care and inspection – Maintenance agreement.

Storing the instructions

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

Explanation of the markings

The instructions use the following markings for the purpose of identification and emphasis, e.g. in figures or handling instructions:

| Marking | Meaning |
|---------|---|
| | Sash |
| | Frame |
| | Drill holes or screw positions |
| | Unaffected components Indirectly affected components |

| Marking | Meaning |
|---------|---|
| | Components that have just been described Arrows or movements |
| | Item number |
| [1] | Legend |
| [A] | Steps |



INFO

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



INFO

Figures are provided in the left-hand version (DIN 107).



INFO

Roto Patio Alversa | PS stands for the variants:

- Roto Patio Alversa | PS without night ventilation
- Roto Patio Alversa | PS with night ventilation
- Roto Patio Alversa | PS Air
- Roto Patio Alversa | PS Air Com

1.3 Symbols

| Symbol | Meaning |
|--------|----------------------------|
| ■ | First-level list |
| ○ | Second-level list |
| → | (Cross-)reference |
| ▷ | Result |
| ► | Unnumbered step |
| 1. | Numbered step |
| a. | Numbered second-level step |

1.4 Pictographs

| Symbol | Meaning |
|--------|---------------------------|
| | Tilt&Slide system |
| | Parallel Sliding system |
| | Without night ventilation |
| | Tilt ventilation |
| | Night ventilation |

| Symbol | Meaning |
|--------|----------------------------------|
| | Comfort tilt ventilation |
| | Timber |
| | PVC |
| | Left of sash |
| | Right of sash |
| | Top of sash |
| | Bottom of sash |
| | Sash handle height (centre-left) |
| | Top left of sash |
| | Top right of sash |
| | Bottom left of sash |
| | Bottom right of sash |
| | Top of frame |
| | Bottom of frame |

1.5 Product features

| Symbol | Meaning |
|--------|---------------|
| | Hardware axis |
| | Description |

| Symbol | Meaning |
|--------|----------------------------------|
| | Base |
| | Supporting pin |
| | Drill hole for supporting pin |
| | DIN left / right |
| | Rebate clearance |
| | Rebate depth |
| | Colour |
| | Colour code |
| | Sash rebate width |
| | Sash rebate height |
| | Sash weight |
| | Fixed handle height |
| | Centred / variable handle height |
| | Information |
| | Material number |
| | Installation type |
| | Surface |
| | Opening type |

| Symbol | Meaning |
|--------|------------|
| | System |
| | Adjustment |

1.6 Abbreviations

| Abbreviation | Meaning |
|----------------|---------------------------|
| lock. | lockable |
| Com | Comfort |
| CTL | Catalogue |
| DIN L / R | DIN left / right |
| d _h | Screw head diameter |
| T&T | Tilt&Turn |
| BS | Backset |
| SRW | Sash rebate width |
| SRH | Sash rebate height |
| S.kg | Sash weight |
| BSec | Basic security |
| IMO | Installation instructions |
| Y | Yes |
| kg | Kilograms |
| KS | Tilt&Slide |
| KSR | Vertical tilting |
| mm | Millimetres |
| CL | Centre lock |
| N | No |
| Nm | Torque |
| Not sh. | Not shown |
| PS | Parallel Sliding |
| RC | Resistance class |
| FIW | Frame internal width |
| ST | Striker |

1.7 Target groups

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

Hardware dealers

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

Window and balcony door manufacturers

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

Building element dealers / installation companies

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

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

Builders

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

End users

The "end users" target group includes all individuals who use the installed windows and / or balcony doors.

1.8 Target groups' obligation to give instructions

**INFO**

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

Unless specified otherwise in the text below, documents and information can be passed on as a printed document, on a CD-ROM or via the Internet.

Responsibility of hardware dealers

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

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

Responsibility of the window and balcony door manufacturer

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

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



- Guidelines / advice for end-users (VHBE)

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

Responsibility of building element dealers / the installation company

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

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

Responsibility of the builder

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

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

1.9 Copyright protection

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

1.10 Limitation of liability

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

The hardware manufacturer assumes no liability for damage caused by:

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

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

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

The warranty only covers original Roto components.

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

1.11 Preserving the surface finish



ATTENTION

Surface treatments may cause property damage

Surface treatments, such as painting and varnishing elements, can damage hardware or prevent it from working properly.

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



ATTENTION

Protection against corrosion

Cleaning agents can corrode the surface of the hardware.

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



ATTENTION

Protection against dirt

Contamination prevents the hardware working properly.

- ▶ Remove deposits and contaminants caused by construction materials before they bond with water, e.g. construction dust, plaster, stucco, mortar and cement.
- ▶ Keep hardware free of deposits and contaminants.



ATTENTION

Protection against (permanently) damp room air

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

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

1.12 Imprint

Roto Frank AG
Window and Door Technology
Wilhelm-Frank-Platz 1
70771 Leinfelden-Echterdingen
Germany
Telephon +49 (0) 711 7598 0
Fax +49 (0) 711 7598 253
info@ROTO-FRANK.COM
www.ROTO-FRANK.COM

2 Security

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

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

2.1 Presentation and structure of warning instructions

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



DANGER

Nature and source of the danger.

Explanation and description of the danger and the implications.

- ▶ Measures to take to avert the danger.

2.2 Security levels of warning instructions

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



DANGER

Immediate risk of death or serious injuries.

- ▶ Observe these warning instructions to avoid personal injuries.



WARNING

Potential risk of death or serious injuries.

- ▶ Observe these warning instructions to avoid personal injuries.



CAUTION

Risk of minor injuries.

- ▶ Observe these warning instructions to avoid personal injuries.



ATTENTION

Reference to property or environmental damage.

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

2.3 Stipulated use

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



instructions. The hardware system opens sashes in windows and balcony doors and closes them tightly.

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

2.3.1 Misuse

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



WARNING

Danger in the event of misuse

Misuse and incorrect installation of hardware can lead to hazardous situations.

- ▶ Never use hardware combinations that have not been approved by the hardware manufacturer.
- ▶ Never use non-original accessories or accessories which have not been approved by the hardware manufacturer.

2.3.2 Usage restriction

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

- Joint impermeability,
- Driving rain impermeability,
- Sound insulation,
- Thermal insulation,
- Burglary inhibition.

2.4 Stipulated use for end users

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

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

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



WARNING

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

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

- ▶ Ensure that the sash does not collide with the frame, opening restrictor (buffer) or other sashes when it is moved into the fully open or closed position.
- ▶ Ensure that the sash is guided by hand throughout its entire movement range, until it has been brought into a fully closed or opened position, and that it is guided towards the frame, the opening restrictor (buffer) or other sashes at a very low speed (technical value – maximum reference speed of the closing edge $v \leq 0.2 \text{ m/s}$).

Security

Basic safety information

Misuse

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

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

2.4.1 Misuse

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



WARNING

Danger in the event of misuse

Misuse and incorrect installation of hardware can lead to hazardous situations.

- ▶ Never use hardware combinations that have not been approved by the hardware manufacturer.
- ▶ Never use non-original accessories or accessories which have not been approved by the hardware manufacturer.

2.5 Basic safety information

The following hazards may arise when handling the product.

2.5.1 Installation

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

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

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

Heavy loads pose a risk of injury.

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

- ▶ Observe the applicable accident prevention regulations.
- ▶ Transport heavy loads with two people and / or use suitable transportation means, such as an industrial truck.

Physical strain may cause damage to health.

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

- ▶ When carrying and lifting by hand, comply with a maximum weight of 40 kg for men and 25 kg for women.



2.5.2 Use

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

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

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

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

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

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

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

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

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

Misuse poses the potential risk of injury and property damage.

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

- ▶ Refrain from introducing obstacles into the opening area between the frame and window or balcony door sashes.
- ▶ Refrain from placing additional loads which act upon the window or balcony door sash.
- ▶ Refrain from intentionally or uncontrollably slamming or pushing the window or balcony door sash against the window reveal.

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

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

- ▶ Keep the hardware free of deposits and contaminants.
- ▶ Carry out care and cleaning tasks in accordance with these instructions.
- ▶ Always have regular maintenance, adjustment and repair work carried out by a specialist company.

2.5.3 Ambient conditions

Physical and chemical influences may result in property damage.

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

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

Moisture may cause property damage.

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

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

2.6 Operation

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

Safety symbols and markings

| Symbol | Meaning |
|--------|--|
| | <p>Falls from open windows and balcony doors present an immediate danger to life and pose the risk of serious injuries.</p> <p>Take care when in the vicinity of open windows and balcony doors.</p> <p>Keep children and anyone unable to understand the risks away from the hazardous area.</p> |
| | <p>Trapping body parts in the opening between sash and frame may lead to serious injuries.</p> <p>When closing windows and balcony doors, never grip between the sash and frame and always exercise caution.</p> <p>Keep children and anyone unable to understand the risks away from the hazardous area.</p> |



| Symbol | Meaning |
|--------|--|
| | Placing additional loads on the sash may lead to light injuries and property damage. Avoid placing additional loads on the sash. |
| | Introducing obstacles into the opening between sash and frame may result in light injuries and property damage. Avoid introducing obstacles into the opening between sash and frame. |
| | Opening and closing the sash in an uncontrolled manner may result in light injuries and property damage. Ensure that the sash is slowly guided by hand throughout its entire movement range, until it has been brought into a fully closed or open position. |

11 Operation

11.1 Operating information

The windows and balcony doors are operated using a handle.

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

11.1.1 Roto Patio Alversa | KS



ATTENTION

Risk of being accidentally locked out.

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

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

| Handle position | Sash position | Meaning |
|-----------------|---------------|---------------------------|
| | | Sash in closed position. |
| | | Sash in tilted position. |
| | | Sash opened. |
| | | Sash in sliding position. |
| | | Sash engaged. |
| | | Sash in closed position. |



11.1.2 Roto Patio Alversa | PS without night ventilation

| Handle position | Sash position | Meaning |
|-----------------|---------------|---------------------------|
| | | Sash in closed position. |
| | | Sash in sliding position. |

11.1.3 Roto Patio Alversa | PS with night ventilation

| Handle position | Sash position | Meaning |
|-----------------|---------------|-------------------------------------|
| | | Sash in closed position. |
| | | Sash in sliding position. |
| | | Sash in night ventilation position. |

11.1.4 Roto Patio Alversa | PS Air

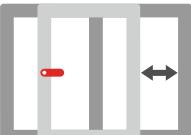
| Handle position | Sash position | Meaning |
|-----------------|---------------|---------------------------|
| | | Sash in closed position. |
| | | Sash in sliding position. |
| | | Sash in tilted position. |

Operation

Fault assistance

Roto Patio Alversa | PS Air Com

11.1.5 Roto Patio Alversa | PS Air Com

| Handle position | Sash position | Meaning |
|--|---|--------------------------------------|
|  |  | Sash in closed position. |
|   |  | Sash in sliding position. |
|  |  | Sash in comfortable tilted position. |

11.2 Fault assistance

| Fault | Cause | Corrective action | Specialist company | End user |
|---|---|--|-------------------------------------|--------------------------|
| Handle is difficult to turn. | Frame components have not been greased | Grease the frame components | <input type="checkbox"/> | <input type="checkbox"/> |
| | Handle is faulty | Replace the handle | <input checked="" type="checkbox"/> | |
| | Handle screwed into place too tightly | Undo the screw fixing slightly | <input checked="" type="checkbox"/> | |
| | Sash components with slanting screws | Screw the sash components in straight | <input checked="" type="checkbox"/> | |
| | Sash components are faulty | Replace the sash components | <input checked="" type="checkbox"/> | |
| | Incorrect striker positions | Adapt the striker positions | <input checked="" type="checkbox"/> | |
| Handle cannot be turned 180°. | Sash components hinged or installed incorrectly | Check the setting in the turn position (potentially rehang – start from the T&T espagnolette). | <input checked="" type="checkbox"/> | |
| Locking cams brush against the striker. | Sash components hinged or installed incorrectly | Check the setting in the turn position (potentially rehang – start from the T&T espagnolette). | <input checked="" type="checkbox"/> | |
| | Incorrect striker positions | Adapt the striker positions | <input checked="" type="checkbox"/> | |

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

= Must be carried out by a specialist company



12 Maintenance



CAUTION

Improperly performed maintenance work may result in injuries.

Improper maintenance can lead to serious injuries or property damage.

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



ATTENTION

Incomplete or incorrect checks may result in property damage.

Adjusting the hardware incorrectly or improperly may cause the window or balcony door to malfunction.

- Check the hardware when installed.
- If defects need to be remedied, have the window or balcony door unhinged and remounted by a specialist company.



INFO

The manufacturer must draw the attention of builders and end-users to these maintenance instructions. Roto Frank AG recommends the manufacturer conclude a maintenance agreement with their end-users.

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

12.1 Maintenance intervals



ATTENTION

Inadequate maintenance may cause property damage.

The maintenance intervals must be adapted to the respective ambient conditions. The maintenance intervals correspond to the current directives and represent a maximum time frame.

- Determine the appropriate maintenance interval in accordance with the ambient conditions.

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

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

| | Responsibility | |
|--|-------------------------------------|------------------------|
| Cleaning | | <i>→ from page 240</i> |
| Clean hardware | <input type="checkbox"/> | |
| Care | | <i>→ from page 240</i> |
| Lubricate movable parts | <input type="checkbox"/> | |
| Lubricate locking points | <input type="checkbox"/> | |
| Performance test | | <i>→ from page 244</i> |
| Check that hardware components are fitted securely | <input type="checkbox"/> | |
| Inspect hardware components for wear | <input type="checkbox"/> | |
| Check that movable parts work properly | <input type="checkbox"/> | |
| Check that locking points work properly | <input type="checkbox"/> | |
| Check ease of movement | <input checked="" type="checkbox"/> | |
| Repair | | <i>→ from page 244</i> |
| Retighten fixing screws | <input checked="" type="checkbox"/> | |
| Replace damaged components | <input checked="" type="checkbox"/> | |

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

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

12.2 Cleaning



ATTENTION

Incompatible cleaning agents may cause property damage.

Incompatible cleaning agents may damage surfaces and destroy gaskets.

- ▶ Never use aggressive or flammable liquids, acidic cleaners or abrasive cleaners.
- ▶ Only use cleaning and care agents that do not adversely affect the corrosion protection of the hardware components and gaskets.
- ▶ Only use mild, pH-neutral cleaning agents that have been diluted.

Cleaning the hardware

- ▶ Clean deposits and contaminants off the hardware using a soft cloth.
- ▶ Lubricate movable parts and locking points after cleaning. → *12.3 "Care" from page 240*
- ▶ Apply a thin protective film to the hardware, for example using a cloth soaked in oil.

12.3 Care



ATTENTION

Using incorrect lubricants may cause property damage.

Substandard lubricants can prevent the hardware from working properly.

- ▶ Use high-quality lubricants.
- ▶ Only use resin-free and acid-free lubricants.



ATTENTION

Cleaning agents and lubricants may pollute the environment.

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

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

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

Recommended lubricants

- Roto NX / NT grease

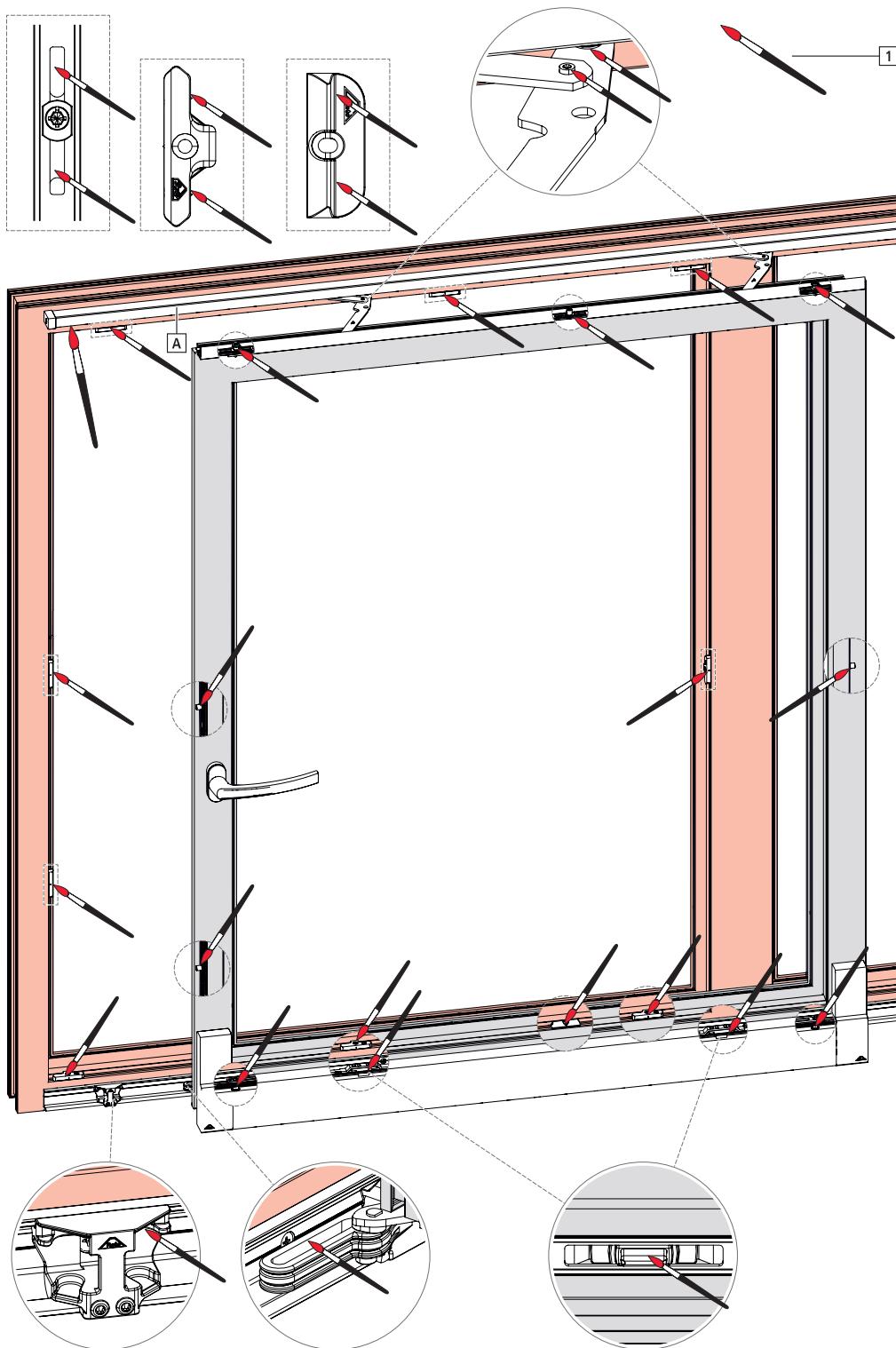


INFO

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



12.3.1 Roto Patio Alversa | KS



[1] Grease

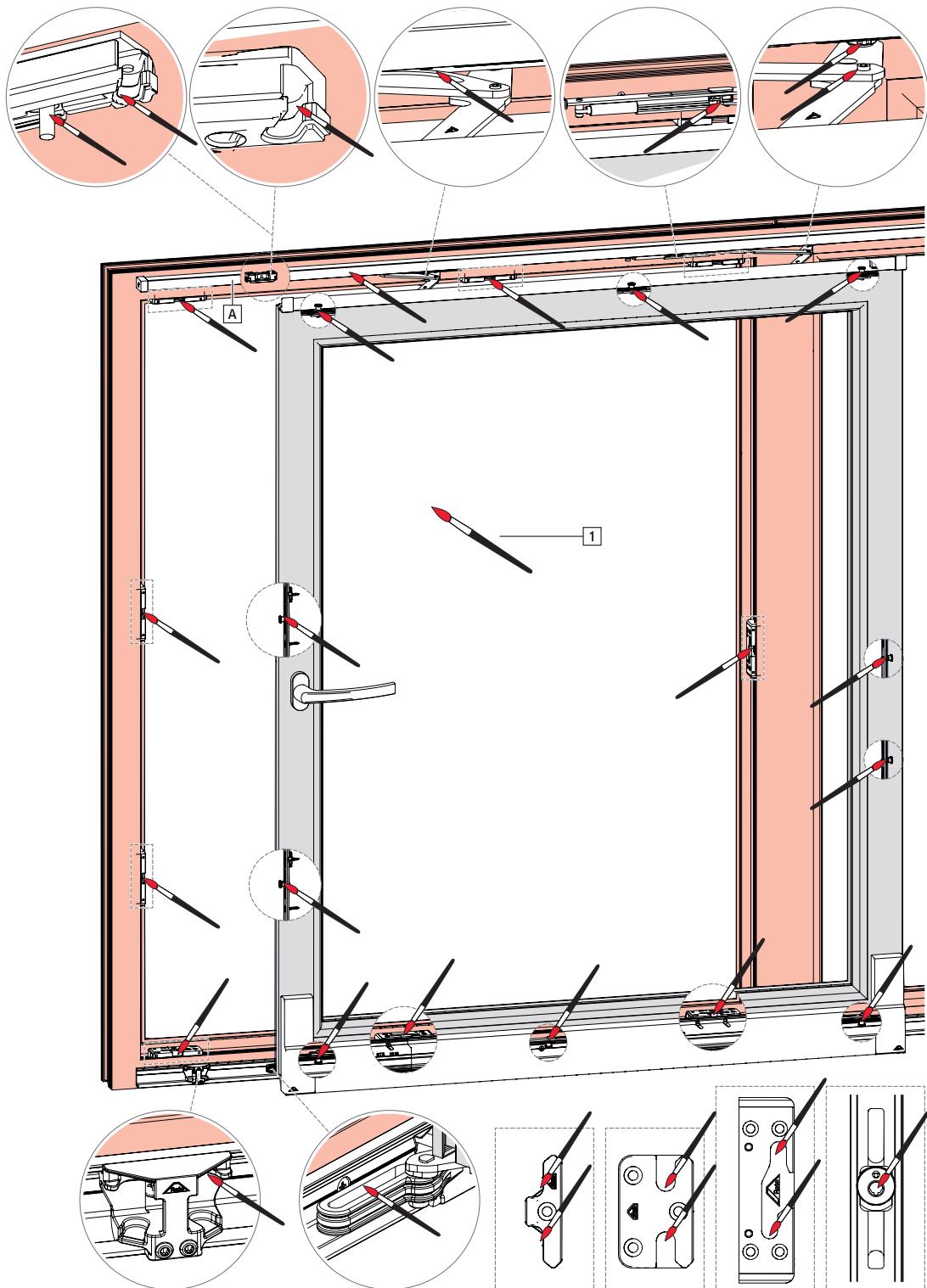
[A] Grease the guide track along its entire length.

Maintenance

Care

Roto Patio Alversa | PS (except for PS Air Com)

12.3.2 Roto Patio Alversa | PS (except for PS Air Com)

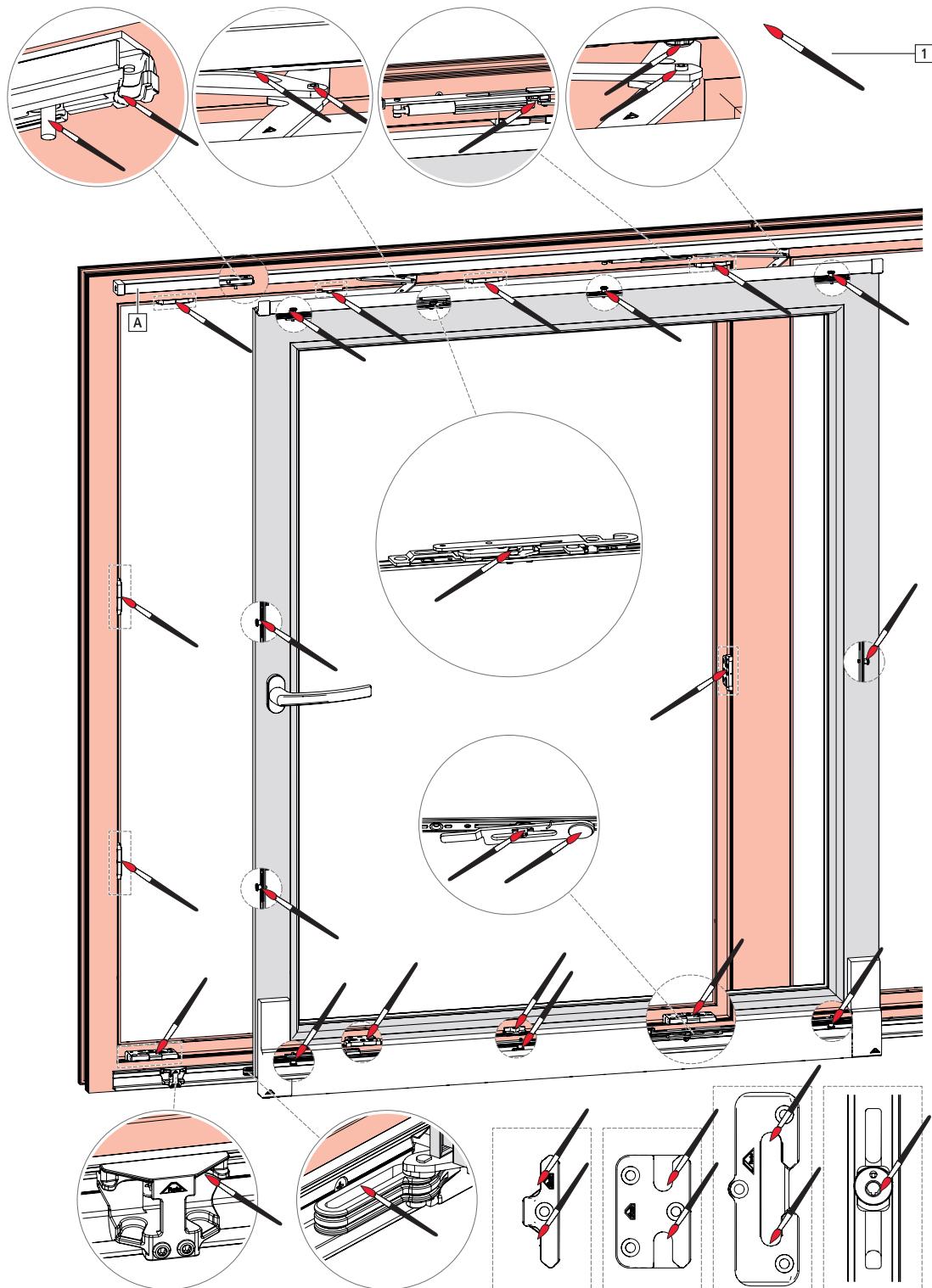


[1] Grease

[A] Grease the guide track along its entire length.



12.3.3 Roto Patio Alversa | PS Air Com



[1] Grease

[A] Grease the guide track along its entire length.

12.4 Performance test



WARNING

Potential danger to life, risk of injury and property damage.

Improperly performed repairs impair the safety of the windows and balcony doors.

- Always have repair work performed by a specialist company.

Check for proper operation:

- Inspect hardware components for damage, deformation and a firm fit.
- Check that windows or balcony doors run smoothly by opening and closing them.
- Check the window or balcony door gaskets for elasticity and fit.
- Check closed windows or balcony doors to ensure that they are leakproof.
- Locking and unlocking torque max. 10 Nm. The test can be performed using a torque wrench.

Have malfunctions remedied by a specialist company.

12.5 Repair



ATTENTION

Securing components incorrectly may lead to property damage.

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

- Check that the individual screws are secure and seated correctly.
- Tighten or replace loose or faulty screws immediately.
- Only use the screws suggested for repairs.

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

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

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

The specialist company must observe the following:

- The necessary repair work must be performed properly, according to generally recognised engineering practice and in accordance with the applicable regulations.
- Makeshift repairs must not be performed on worn or damaged components.
- Only original or approved spare parts may be used in the course of repairs.

12.6 Preventative measures

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

Corrosion protection

Cleaning agents can corrode the surface of the hardware.

Protect the hardware:

1. Do not use aggressive or flammable liquids, acidic cleaners or abrasive cleaners.



2. Only use mild, pH-neutral cleaning agents that have been diluted.
3. Apply a thin protective film to the hardware, for example using a cloth soaked in oil.
4. Only use high-quality components for repairs, such as stainless steel screws.

Protection from contaminants

Contaminants impair the proper operation of the hardware.

Protect the hardware:

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

Protection against (permanently) damp room air

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

Protect the hardware:

1. Provide adequate ventilation for hardware, particularly during the construction phase.
2. Intensively air out the room several times per day by opening all windows or balcony doors for approximately 15 minutes.
If intensive airing is not an option, place the windows or balcony doors in tilt mode and provide airtight masking inside the room, e.g. if there is fresh screed that cannot be walked on or must not be exposed to drafts. Discharge outside any humidity present in the room air using dehumidifiers.
3. Establish a ventilation plan for more complex construction projects if necessary.
4. Provide adequate ventilation during holiday periods as well.

13 Dismantling



ATTENTION

Incorrect dismantling poses the potential risk of injury and property damage.

- Always have dismantling carried out by an authorised specialist company.

13.1 Sash



WARNING

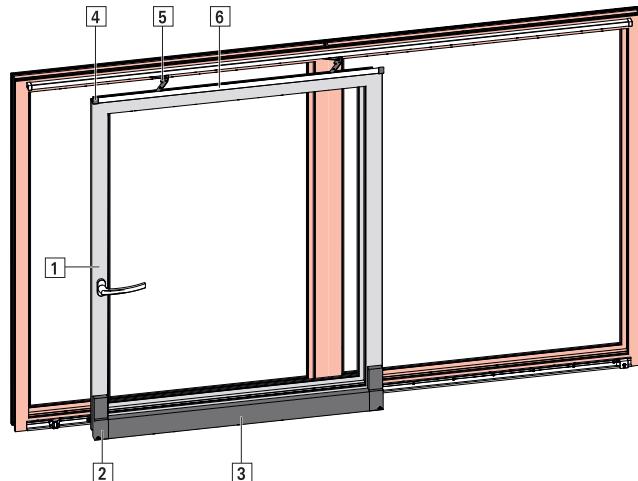
Heavy loads pose the risk of injury and property damage.

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

- Transport and removal must be carried out by at least two people.
- Do not rest sashes on the bogies.
- Use transportation means. → 14 "Transport" from page 248

Unhinging the sash

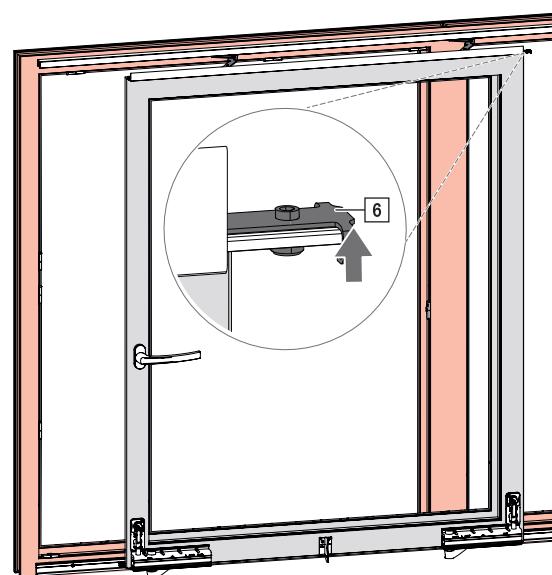
1. Move the sash [1] into the sliding position.



2. Remove the covers.
 - Cover caps for the bogie [2] on the left and right
 - Bogie cover [3]
 - Cover caps for the retaining track [4] on the left and right
 - a. Remove the bogie cover caps by pulling them forwards.
 - b. Grasp the back of the bogie cover from below and pull it diagonally upwards.
 - Pull forcefully, using both hands.
 - c. Remove the cover caps for the retaining track on the side.
3. Secure the sash to prevent it falling out before pushing the sliding scissor stay [5] out.



4. Push the sliding scissor stay spring [6] upwards and undo the form-fitting connection between the sliding scissor stay and retaining track.



5. Push the sliding scissor stay out of the retaining track.
6. Lift the sash at a slight incline.
7. Place the sash in front of the frame.
 - a. Use a clean packer.
 - b. Only use a support in the centre of the sash so that the bogies can hang free.

13.2 Hardware components

Removing hardware components

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

14 Transport

14.1 Transporting the hardware



WARNING

Trapped limbs may result in injuries.

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

- ▶ Wear safety gloves and protective footwear.



WARNING

Heavy loads present an injury risk.

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

- ▶ Observe the applicable accident prevention regulations.
- ▶ Transport heavy loads with two people and / or use suitable transportation means, such as an industrial truck.



WARNING

Physical strain may cause damage to health.

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

- ▶ When carrying and lifting by hand, comply with a maximum weight of 40 kg for men and 25 kg for women.
- ▶ Always carry and lift smaller shipments with an ergonomically correct posture.

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

Observe the following basic instructions when transporting hardware:

- ▶ Transport larger shipments using appropriate transportation means, such as industrial trucks.
- ▶ Note the transport weight in order to select appropriate transportation means.
- ▶ Immediately check the delivery for completeness and transport damage on receipt.



INFO

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

Use the following transportation means for support when transporting, loading and unloading larger shipments:

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



INFO

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



INFO

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



14.2 Storing the hardware

Store all hardware components as follows until they are installed:

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

15 Disposal



ATTENTION

Incorrect disposal can harm the environment.

Pieces of hardware are raw materials.

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

15.1 Disposing of packaging

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

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

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

15.2 Disposing of hardware

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

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

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



Roto Frank AG
Window and Door Technology

Wilhelm-Frank-Platz 1
70771 Leinfelden-Echterdingen
Germany

Telephone +49 (0) 711 7598 0
Telefax +49 (0) 711 7598 253
info@ROTO-FRANK.COM

www.roto-frank.com



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 "everything about doors"

Roto Equipment | Additional technology for windows and doors