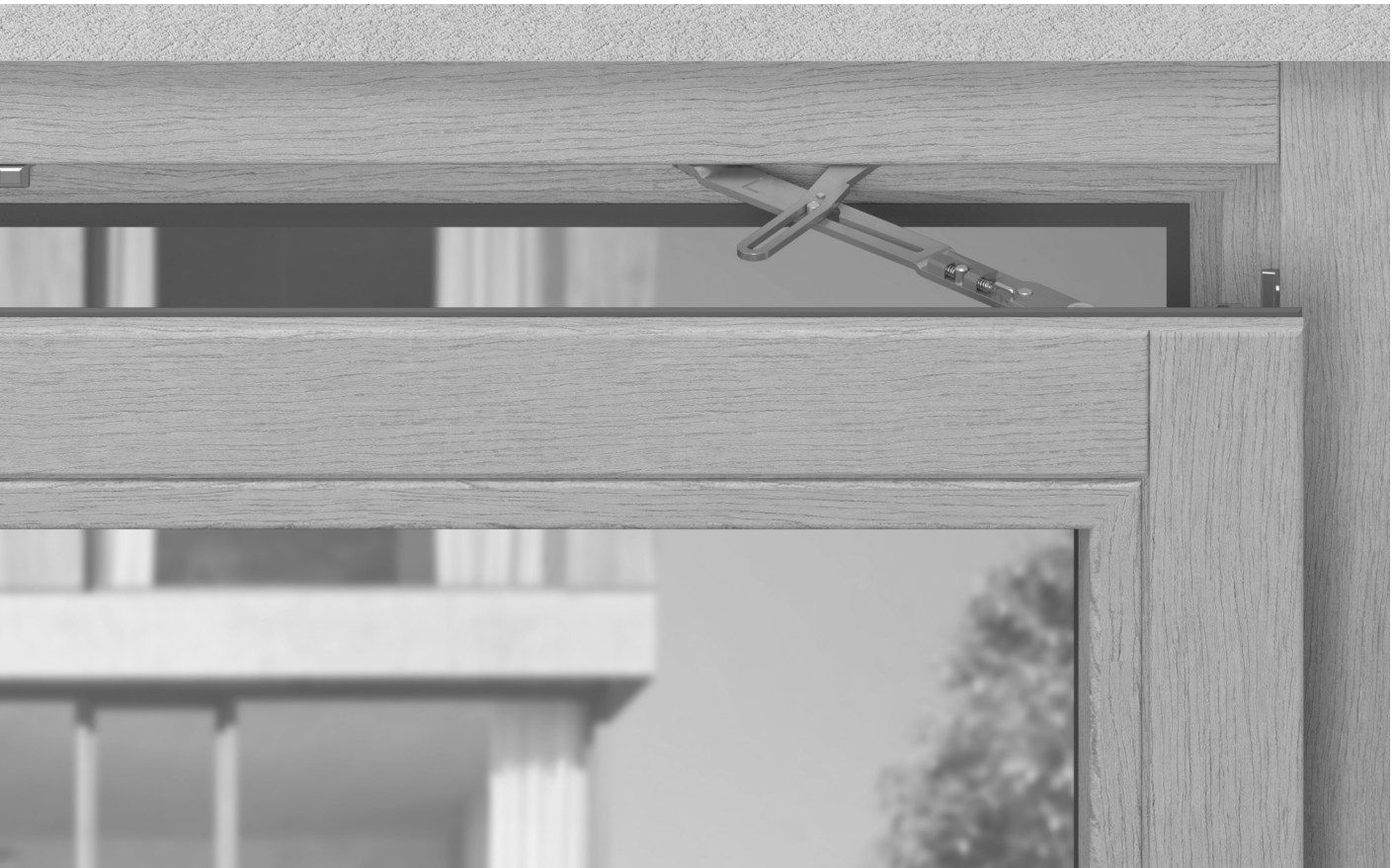




# **Roto E-Tec** Drive

The concealed drive for windows

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# 1 General information

## 1.1 Version history

| Ver-<br>sion | Date       | Changes                                                                                                                                                                                                                                                                                   |
|--------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| v5           | 12/07/2018 |                                                                                                                                                                                                                                                                                           |
| v6           | 01/03/2022 | Roto E-Tec Drive   Power Unit (Wireless) incorporated → <i>from page 34</i> .<br>New item numbers for Roto E-Tec Drive incl. connection sets → <i>from page 23</i> .<br>Overview of restrictor and cleaning stays for Roto NX   Hinge side Design (HA 13) changed → <i>from page 29</i> . |
| v7           | 14/11/2023 | Connection diagram changed → <i>from page 80</i><br>Technical data (output) added → <i>from page 97</i>                                                                                                                                                                                   |
| v8           | 20/02/2024 | Technical data for E-Tec Drive expanded → <i>from page 105</i><br>New item numbers for stay guide → <i>from page 48</i><br>Declaration of Incorporation updated → <i>from page 107</i>                                                                                                    |

## 1.2 Instructions

These instructions ("original operation instructions") contain important information, directions and installation instructions regarding further work on the hardware and the Roto E-Tec Drive window drive-unit.

These instructions also contain binding specifications in order to ensure that all parties involved, right up to the end user, comply with the obligation to give instructions.

Depending on the profile material used, the information and directions given in these instructions refer to products from the Roto NX hardware system for timber and PVC profiles. The information and instructions continue to apply to the Roto E-Tec Drive window drive-unit.

The following documents apply in addition to these instructions:

### Roto Drive&Control

- Installation instructions
  - Roto E-Tec Drive | Power Unit and Power Unit Wireless: *SUG\_34*
  - Roto E-Tec Drive | Control Unit: *IMO\_440*
- Catalogue
  - Drive&Control: *CTL\_41*

### Roto NX

- Installation instructions
  - Timber
    - Roto NX | Hinge side T: *IMO\_456*
    - Roto NX | Hinge side Designo (HA 13): *IMO\_542*
  - PVC
    - Roto NX | Hinge side P: *IMO\_455*
    - Roto NX | Hinge side Designo (HA 13): *IMO\_517*
- Catalogue
  - Timber: *CTL\_104*
  - PVC: *CTL\_105*

The following guidelines also apply:

- Guideline TBDK issued by the Gütegemeinschaft Schlösser 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 Schlösser und Beschläge e. V. quality assurance association (Hardware for windows and balcony doors – Guidelines / advice for end-users),
- Directive VHBH issued by the Gütegemeinschaft Schlösser und Beschläge e. V. quality assurance association (Hardware for windows and balcony doors – Guidelines / advice on the product and on liability),
- Directive FPKF issued by the Gütegemeinschaft Schlösser und Beschläge e. V. quality assurance association (Restrictor and cleaning stays for Tilt-Only sashes and Tilt-Only fanlights),
- 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.

Other guidelines for the E-Tec Drive:

- Data sheet "Power-operated windows" (KB.01) published by the German Window and Facade Association (VFF)
- Information sheet "Power-operated windows" published by the German Electrical and Electronic Manufacturers' Association (ZVEI)
- Machinery Directive (2006/42/EC)
- EN 14351-1+A1
- DIN EN 14351-1 product standard for windows and external doors

### Storing the instructions

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

### Explanation of the markings

The manual uses the following markings for emphasis (e.g. in figures or instructions):

| Marking                                                                             | Meaning                                                       |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------|
|  | Optional / alternative components seated in the leaf          |
|  | Leaf / components seated in the leaf                          |
|  | Optional / alternative components seated in the frame         |
|  | Frame / components seated in the frame                        |
|  | Drill holes, routing, screw positions                         |
|  | Unaffected components / indirectly affected components        |
|  | Components, arrows or movements that have just been described |
|  | Item number                                                   |



| Marking | Meaning |
|---------|---------|
| [1]     | Legend  |
| [A]     | Steps   |

|  |                                                                                                                                                                                         |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>INFO</b><br>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. |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|  |                                                                          |
|--|--------------------------------------------------------------------------|
|  | <b>INFO</b><br>Figures are provided in the right-hand version (DIN 107). |
|--|--------------------------------------------------------------------------|

### 1.3 Symbols

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

### 1.4 Pictographs

| Symbol | Meaning            |
|--------|--------------------|
|        | Description        |
|        | DIN left / right   |
|        | Sash rebate width  |
|        | Sash rebate height |
|        | Sash weight        |
|        | Size               |
|        | Timber             |
|        | Information        |
|        | PVC                |
|        | Couplable          |

| Symbol                                                                            | Meaning                |
|-----------------------------------------------------------------------------------|------------------------|
|  | Length                 |
| Nº                                                                                | Material number        |
|  | Number of locking cams |
|  | Type of locking cams   |

## 1.5 Abbreviations

| Abbreviation   | Meaning                      |
|----------------|------------------------------|
| HA             | Hardware axis                |
| CTL            | Catalogue                    |
| dB(A)          | Decibels, filter curve A     |
| DC             | Direct current               |
| DIN L / R      | DIN left / right             |
| d <sub>k</sub> | Screw head diameter          |
| BS             | Backset                      |
| SW             | Sash width                   |
| SRW            | Sash rebate width            |
| SRH            | Sash rebate height           |
| SH             | Sash height                  |
| S.kg           | Sash weight                  |
| RCS            | Restrictor and cleaning stay |
| TS             | Tilt stay                    |
| RC             | Rebate clearance             |
| g              | Grams                        |
| GC             | Glass weight                 |
| HH             | Handle height                |
| IMO            | Installation instructions    |
| Y              | Yes                          |
| kg             | Kilograms                    |
| KU             | Couplable                    |
| m              | Metres                       |
| mA             | Milliamperes                 |
| Max.           | Maximum                      |
| mm             | Millimetres                  |
| MTS            | Magnetic thermostat sensor   |
| CL             | Centre lock                  |
| MVS            | Magnetic locking sensor      |
| N              | No                           |
| Nm             | Torque in newton metres      |
| Not sh.        | Not shown                    |
| s              | Seconds                      |
| SELV           | Safety-extra low voltage     |
| SEC            | Security                     |
| MD             | Mishandling device           |
| ST             | Striker                      |
| TF             | TiltFirst                    |
| V              | Volts                        |
| W              | Watts                        |
| e.g.           | For example                  |

## 1.6 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.

### **Constructor of the power-operated window / balcony door**

The “constructor of the power-operated window” target group includes all companies / individuals that connect the window and the drive to each other.

### **Planning engineer**

The “planning engineer” target group includes construction engineers, architects and the authority inviting tenders.

### **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 commission the manufacture of windows and / or balcony doors for installation in their construction projects.

### **Qualified electrician**

The device may only be assembled, installed, commissioned and maintained by suitably trained electricians with the appropriate qualifications.

The electrician must have read and understood this document, as well as the other applicable document, and must follow the instructions.

The qualified electrician must comply with the national regulations that apply in their country (e.g. DIN VDE 0105, EN 50110) with regard to installation, performance testing, repair and maintenance of electrical products and apply them correctly..

### **End users**

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

### **Operators**

The “operators” target group includes all individuals who operate the Roto E-Tec Drive installed in the window.

## 1.7 Target groups' obligation to give instructions



### INFO

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

Unless specified otherwise in the text below, documents and information can be passed on as a printed document, on a data storage device or via the Internet.

### Responsibility of hardware dealers

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

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

### Responsibility of the window and balcony door manufacturer

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

- Installation, maintenance and operation instructions
- Directive on attachment of supporting fitting components for turn-only and tilt&turn fittings (TBDK)
- Guidelines / advice on the product and on liability (VHBH)
- Guidelines / advice for end-users (VHBE)
- CE marking for windows (BPR, Machinery Directive if applicable)
- Declaration of Conformity in accordance with EN 14351-1, with specification of conditions of use if a window with drive is placed on the market.

Manufacturers must ensure that the end users are provided with the documents and information intended for them (e.g. product leaflet).

Manufacturers must also ensure that the end users have been instructed regarding operation of the product and the hazards associated with the product.

### 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)

### Responsibilities of the planning engineer

The planning engineer must precisely specify the requirements for the power-operated window, particularly the necessary safety measures. To do this, it is necessary to prepare and submit the following documentation:

- Utilisation concept
- Risk assessment
- Tender with technical and construction requirements

### Responsibility of the system constructor

The system constructor must pass the following documents on to the operator and comply with the following conditions:

- Installation plan
- Handover certificate

- User information I Operation instructions
- CE marking in the immediate vicinity of the manufacturer's information (constructor), easily legible on product ( $\geq 5$  mm) and permanent (e.g. in rebate) and Declaration of Conformity in accordance with Machinery Directive, if the constructor installed the drive in an existing window (becomes manufacturer).
- When installing a complete, power-operated window, the permissibility of the application must be checked.
- Risk assessment to check the planning specifications (see chapter "Responsibilities of the planning engineer").

### 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)
- Planning permission

Furthermore, the builder must comply with all official requirements.

### Responsibility of the operator

The operator must keep the maintenance documentation up to date and keep it for future reference. They must also commission and supervise regular maintenance performed by specialist personnel.

## 1.8 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.

## 1.9 Limitation of liability

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

The hardware manufacturer assumes no liability for damage caused by:

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

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

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

The warranty only covers original Roto components.

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

## 1.10 Preserving the surface finish



### ATTENTION

#### **Surface treatments may cause property damage.**

Surface treatments (e.g. painting and varnishing) on elements can damage components or prevent them from working properly.

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



### ATTENTION

#### **Using incorrect cleaning agents and sealing compounds may cause property damage.**

Cleaning agents and sealing compounds may damage the surfaces of components and gaskets.

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



### ATTENTION

#### **Contamination may cause property damage.**

Contamination prevents components working properly.

- ▶ Remove deposits and contamination caused by construction materials (e.g. plaster, gypsum).
- ▶ Keep components free of deposits and contaminants.



### ATTENTION

#### **(Permanently) damp room air may cause property damage.**

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

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



## **1.11 Assembly and installation work**

The Roto E-Tec Drive may only be supplied with safety extra-low voltage (SELV). The Power Unit or Power Unit Wireless and Roto E-Tec Drive | Control Unit convert mains voltage into SELV which is safe to come into contact with. Due to its low movement speed and small opening width of the main closing edge, the Roto E-Tec Drive complies with protection classes 0 to 3 without additional safety equipment in accordance with the data sheet "Power-operated windows" published by the German Window and Facade Association (VFF) (KB.01).

All assembly and installation work must be carried out by experts. Experts are persons who have sufficient knowledge in the area of power-operated windows and doors due to their training and experience.

Experts are persons who are also sufficiently familiar with the relevant statutory occupational health and safety regulations, accident prevention regulations, directives and generally recognised rules of good engineering practice (e.g. VDE regulations, BGR guidelines, DIN standards) to be able to evaluate whether power-operated windows are safe to operate.

Adherence to the relevant local assembly and installation regulations is required for installation.

## 2 Security

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

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

### 2.1 Presentation and structure of warning instructions

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



#### **DANGER**

##### **Nature and source of the danger.**

Explanation and description of the danger and the implications.

- Measures to take to avert the danger.

### 2.2 Security levels of warning instructions

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



#### **DANGER**

##### **Immediate risk of death or serious injuries.**

- Observe these warning instructions to avoid personal injuries.



#### **WARNING**

##### **Potential risk of death or serious injuries.**

- Observe these warning instructions to avoid personal injuries.



#### **CAUTION**

##### **Risk of injuries**

- Observe these warning instructions to avoid personal injuries.



#### **ATTENTION**

##### **Reference to property or environmental damage.**

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



## 2.3 Stipulated use

### 2.3.1 Roto E-Tec Drive

Concealed drive for locking and unlocking as well as tilting windows and balcony doors with hardware from Roto Frank Fenster- und Türtechnologie GmbH.

- Only use the Roto E-Tec Drive with TiltFirst (Tilt&Turn) and Tilt-Only windows whilst complying with dimensions and the permissible maximum sash weight.
- Only install the Roto E-Tec Drive horizontally at the top.
- Only install one Roto E-Tec Drive per window.
- The Roto E-Tec Drive is not suitable for use in smoke and heat extraction systems (SHES) or natural smoke and heat exhaust ventilators (NSHEV).
- The Roto E-Tec Drive is not suitable for use in fire-rated windows.
- The Roto E-Tec Drive is not suitable for use in wet areas, in areas at risk of explosion or in corrosive environments.

The stipulated use also includes compliance with all information contained in the product-specific documentation, such as:

- These installation, maintenance and operation instructions
- Product catalogues
- Information, specifications from profile manufacturers (e.g. light-metal profiles, etc.)
- Directives TBDK, VHBH and VHBE issued by the Gütegemeinschaft Schlösser und Beschläge e.V. quality assurance association
- Applicable national laws and directives (→ *from page 7*)

To ensure that the window can be opened even if the drive is faulty, an espagnolette must always be installed on the window.

The Roto E-Tec Drive must be operated whilst complying with the relevant protection measures from the data sheet "Power-operated windows" published by the German Window and Facade Association (VFF) (KB.01).

#### Application areas

- Roto NX

#### Opening types

- TiltFirst
- Tilt-Only



#### INFO

- The Roto E-Tec Drive is **not** suitable for Tilt&Turn windows.
- The Roto E-Tec Drive is **not** suitable for arched, segmental arched or pitched windows.

#### 2.3.1.1 Misuse

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

**WARNING****Misuse may pose a risk of death!**

Misuse and incorrect installation of hardware can lead to serious injuries.

- ▶ Only use hardware combinations that have been approved by the hardware manufacturer.
- ▶ Only use original accessories or those that have been approved by the hardware manufacturer.
- ▶ Note the product-related documentation → *from page 7.*

### 2.3.2 Roto E-Tec Drive | Power Unit and Power Unit Wireless

The Roto E-Tec Drive | Power Unit and Power Unit Wireless are used as a connection module for the Roto E-Tec Drive.

The Power Unit and Power Unit Wireless can be connected directly to the household power supply and supply the Roto E-Tec Drive with power via an integrated power supply unit.

Individual or group operating push-buttons can also be installed using cables.

The Wireless version is connected to Smart Home systems (compatible devices available upon request) via EnOcean. In parallel, hand-held transmitters / wireless wall-mounted push-buttons can also be programmed directly on the Roto E-Tec Drive | Power Unit Wireless via EnOcean, doing away with the need for any additional wiring work.

A repeater function can also be activated to extend the range of EnOcean radio signals.

## 2.4 Basic safety information

The following hazards may arise when handling the product.

### 2.4.1 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.

#### **Imminent risk of death due to power failure!**

The Roto E-Tec Drive may fail in emergency situations (power failure) which may prevent the quick opening of the window.

- ▶ Never use the Roto E-Tec Drive in windows and balcony doors which are marked as escape routes.

#### **Risk of death due to live components!**

Risk of short-circuit, current can lead to fatal injuries.

Take extra care when handling live components. Only an electrician may connect the power supply unit to the mains voltage.

- ▶ The relevant national regulations must be observed and complied with in the process (in Germany VDE 0100 and others).

#### **Risk of injury from windows which are tilted downwards (Tilt-Only sash)**

The hardware may be unlocked due to incorrect installation or improper operation. This can cause the window sash to fall out if no restrictor and cleaning stay is installed.

- A restrictor and cleaning stay must be installed on Tilt-Only sashes if none is present.

#### **Loss of function due to deformation of drive components**

Failure to comply with the recommended sash dimensions can lead to deformation and a loss of the function of the Roto E-Tec Drive.

- Always comply with the recommended sash dimensions in accordance with the application diagram. Failure to comply with the recommended sash dimensions voids the guarantee and warranty for the Roto E-Tec Drive.

#### **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.

## **2.4.2 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.

#### **Risk of injury due to misuse (children)**

Incorrect, improper operation of control components or remote controls by children can lead to injuries.

- ▶ Do not let children play with securely mounted control units and keep them away from remote control elements.

#### **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.

- ▶ Never reach between the sash and frame or between the movable parts of the Roto E-Tec Drive while the drive is moving.
- ▶ 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.

#### **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.

## **2.4.3 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 situation of the windows and balcony doors, a temporary build-up of condensation may occur. This can lead to corrosion on the hardware and mould growth on the frame or wall. Ambient conditions that are too damp, particularly during the construction phase, can lead to timber elements warping.

- Avoid preventing the circulation of air, e.g. due to deep reveals, curtains 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.

## **2.5 Specific safety information**

Children or persons who do not have the physical, mental or sensory capacity to operate the product safely and carefully are not permitted to use or install the product.

Children must not use the product as a toy.

The product can be used by children aged eight and above and by persons with reduced physical, sensory or mental capacity or by persons with insufficient experience and knowledge provided that they are supervised or have received instruction regarding safe use and potential hazards. Cleaning and user maintenance must not be performed by unsupervised children.

#### **Environmental influences may cause property damage.**

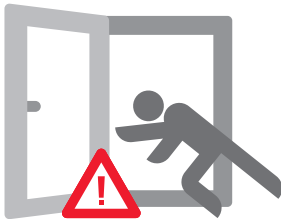
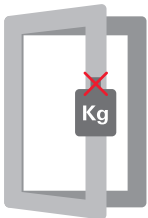
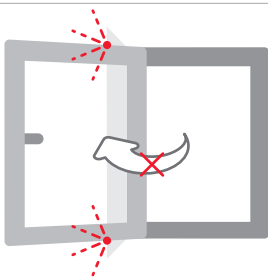
Only install the Roto E-Tec Drive | Power Unit and Power Unit Wireless at the listed positions:

- The installation location must be accessible at all times.
- The installation location must not be subject to extreme temperature fluctuations (e.g. direct sunlight, near cooling units, etc.).
- Do not install in moisture-prone rooms or in places with high levels of condensation (e.g. greenhouses).
- Avoid contact with dust and liquids (e.g. oil, chemicals or salt).
- The installation location must not be exposed to vibration or impact.

## **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><b>Falls from open windows and balcony doors present an immediate risk of death and pose the risk of serious injuries.</b></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><b>Trapping body parts in the opening between sash and frame may lead to serious injuries.</b></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> |
|   | <p><b>Placing additional loads on the sash may lead to minor injuries and property damage.</b></p> <p>Avoid placing additional loads on the sash.</p>                                                                                                                                                                |
|  | <p><b>The impact of wind may lead to minor injuries and property damage.</b></p> <p>Avoid exposing the open sash to wind.</p> <p>Close and lock the window and balcony door sash in windy or draughty conditions.</p>                                                                                                |
|  | <p><b>Introducing obstacles into the opening between sash and frame may result in minor injuries and property damage.</b></p> <p>Avoid introducing obstacles into the opening between sash and frame.</p>                                                                                                            |
|  | <p><b>Pressing the sash against the edge of an opening (reveal) may pose a risk of minor injuries and cause property damage</b></p> <p>Refrain from pressing the sash against the edge of an opening (reveal).</p>                                                                                                   |



3 Information on the product

3.1 Product scope

| Roto E-Tec Drive Smart                                                            |                   |                                                                                                                                                                                                                                                                                                                              |  |
|-----------------------------------------------------------------------------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|  | Use               | <ul style="list-style-type: none"><li>■ Individual drive unit</li><li>■ Spare part</li></ul>                                                                                                                                                                                                                                 |  |
|                                                                                   | Scope of delivery | <ul style="list-style-type: none"><li>■ 1x drive unit</li><li>■ 1x components pack:<ul style="list-style-type: none"><li>□ Spacers for PVC profiles (2x each of 1 mm, 1.5 mm, 2 mm, 3 mm, 5 mm)</li><li>□ 4x screws for timber profiles</li><li>□ 4x screws for PVC profiles</li><li>□ 1x RJ45 connector</li></ul></li></ul> |  |

|                                                                                   |                                                                                    |        |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------|
|  |  | Nº     |
| Left                                                                              | 1 Piece(s)                                                                         | 899633 |
| Right                                                                             | 1 Piece(s)                                                                         | 899634 |

Connection set

| Roto E-Tec Drive   Power Unit                                                       |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |        |
|-------------------------------------------------------------------------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
|  | Use               | <ul style="list-style-type: none"><li>■ Used as a connection module for the E-Tec Drive.</li><li>■ Can be connected directly to the household power supply and supplies the Roto E-Tec Drive with power via an integrated power supply unit.</li><li>■ Individual or group operating buttons can also be installed using cables.</li><li>■ Fast commissioning, even during the construction phase, thanks to operating buttons and connected 230 V cable including Euro connector.</li></ul> |        |
|                                                                                     | Scope of delivery | <ul style="list-style-type: none"><li>■ Roto E-Tec Drive   Power Unit</li><li>■ 1x RJ45 connecting cable, 6 m</li><li>■ 1x RJ45 connector (spare part) (not sh.)</li><li>■ 1x 230 V cable (connected) with Euro connector (not sh.)</li></ul>                                                                                                                                                                                                                                                |        |
|                                                                                     |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |        |
|  |                   |                                                                                                                                                                                                                                                                                                                                                                                                          | Nº     |
| Connection set                                                                      |                   | 1 Piece(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 817390 |

| Roto E-Tec Drive   Power Unit Wireless                                            |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Use                                                                                 | <ul style="list-style-type: none"><li>■ Used as a connection module for the E-Tec Drive.</li><li>■ Can be connected directly to the household power supply and supplies the Roto E-Tec Drive with power via an integrated power supply unit.</li><li>■ Individual or group operating buttons can also be installed using cables.</li><li>■ Fast commissioning, even during the construction phase, thanks to operating buttons and connected 230 V cable including Euro connector.</li><li>■ For integration in Smart Home systems via EnOcean wireless technology.</li><li>■ EnOcean switches can be programmed directly (without a Smart Home system).</li></ul> |
|                                                                                   | Scope of delivery                                                                   | <ul style="list-style-type: none"><li>■ Roto E-Tec Drive   Power Unit Wireless</li><li>■ 1x RJ45 connecting cable, 6 m</li><li>■ 1x RJ45 connector (spare part) (not sh.)</li><li>■ 1x 230 V cable (connected) with Euro connector (not sh.)</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                             |
|  |  | Nº                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Wireless connection set                                                           | 1 Piece(s)                                                                          | 817391                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |



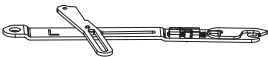
### 3.2 Accessories

| RJ45 connecting cable                                                             |                   |                                                                                                           |
|-----------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------------------------------|
|  | Use               | ■ Connecting cable between the Roto E-Tec Drive and Roto E-Tec Drive   Power Unit and Power Unit Wireless |
|                                                                                   | Scope of delivery | ■ 1x RJ45 connecting cable, 6 m, black (8 x 0.14 mm <sup>2</sup> )                                        |

|                                                                                   |                                                                                   |                                                                                    |                                                                                     |           |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------|
|  |  |  |  | <b>Nº</b> |
| RJ45 connecting cable                                                             | 6 m                                                                               | Black                                                                              | 1 Piece(s)                                                                          | 387877    |

| Control Unit                                                                      |                   |                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Use               | ■ Control unit and interface between hardware (E-Tec Drive) and software<br>■ Functional inspection is possible in the factory and on the construction site<br>■ Parametrisation (movement speed, automatic ventilation, projecting distance) through connection to PC / notebook<br>■ Graphical interface (through connection to PC / notebook)<br>■ Fault analysis (through connection to PC / notebook) |
|                                                                                   | Scope of delivery | ■ 1x control unit<br>■ 1x power supply unit<br>■ 1x USB cable<br>■ 1x RJ45 coupling                                                                                                                                                                                                                                                                                                                        |

|                                                                                     |                                                                                       |           |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------|
|  |  | <b>Nº</b> |
| Roto E-Tec Drive Control Unit                                                       | 1 Piece(s)                                                                            | 779676    |

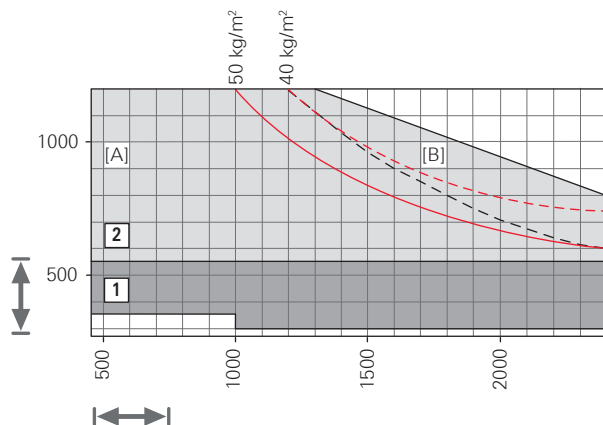
| Retracting mechanism                                                                |                   |                                           |
|-------------------------------------------------------------------------------------|-------------------|-------------------------------------------|
|  | Use               | ■ Spare part                              |
|                                                                                     | Scope of delivery | ■ 1x retracting mechanism<br>■ 1x circlip |

|                                                                                     |                                                                                      |                                                                                       |           |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------|
|  |  |  | <b>Nº</b> |
| Retracting mechanism for Roto E-Tec Drive                                           | Left                                                                                 | 1 Piece(s)                                                                            | 833636    |
|                                                                                     | Right                                                                                | 1 Piece(s)                                                                            | 833635    |

### 3.3 Application diagrams

#### 3.3.1 Tilt-Only sash

##### 3.3.1.1 Roto NX | Hinge sides P and T



[A] = Without wind sensor

[B] = With wind sensor

--- = Wind sensor limit

[1] = Restrictor and cleaning stay type 1

[2] = Restrictor and cleaning stay type 2

□ = Impermissible application range

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

1 mm/m<sup>2</sup> glass thickness  $\approx$  2.5 kg

Max. operating torque: 7.5 Nm ( $\approx$  displacement force  $\approx$  750 N)

Max. sash area (SRW x SRH): 1.44 m<sup>2</sup> at a wind speed of 10 m/s; larger formats (only with wind sensor) available upon request



#### INFO

- Roto E-Tec Drive S.kg<sub>max.</sub> 60 kg.

The sash weight varies depending on the hardware. For this reason, the application diagram of the hardware must be observed.

- Screw fixing in steel reinforcement only.
- Installation only in conjunction with restrictor and cleaning stays or tilt stays.



#### ATTENTION

##### Deformed drive components may cause property damage.

Failure to comply with the recommended sash dimensions can lead to deformation and a loss of the function of the Roto E-Tec Drive.

- Comply with recommended sash dimensions in accordance with the application diagram.

Failure to comply with the recommended sash dimensions voids the guarantee and warranty for the Roto E-Tec Drive.



#### INFO

- Maintain a rebate clearance of 12 to 14 mm at the top.
- With low Tilt-Only sashes, ensure that the Roto E-Tec Drive can turn freely above the sash rebate.
- Central gasket systems are preferred (smaller sash rebate heights with a larger projection distance are possible).
- With SRH < 600 mm, reduce the tilt distance to 80 mm. If the tilt distance is restricted by the hardware, the tilt distance of the Roto E-Tec Drive must also be restricted (programming necessary, e.g. Control Unit).
- Ensure the hardware is running smoothly.



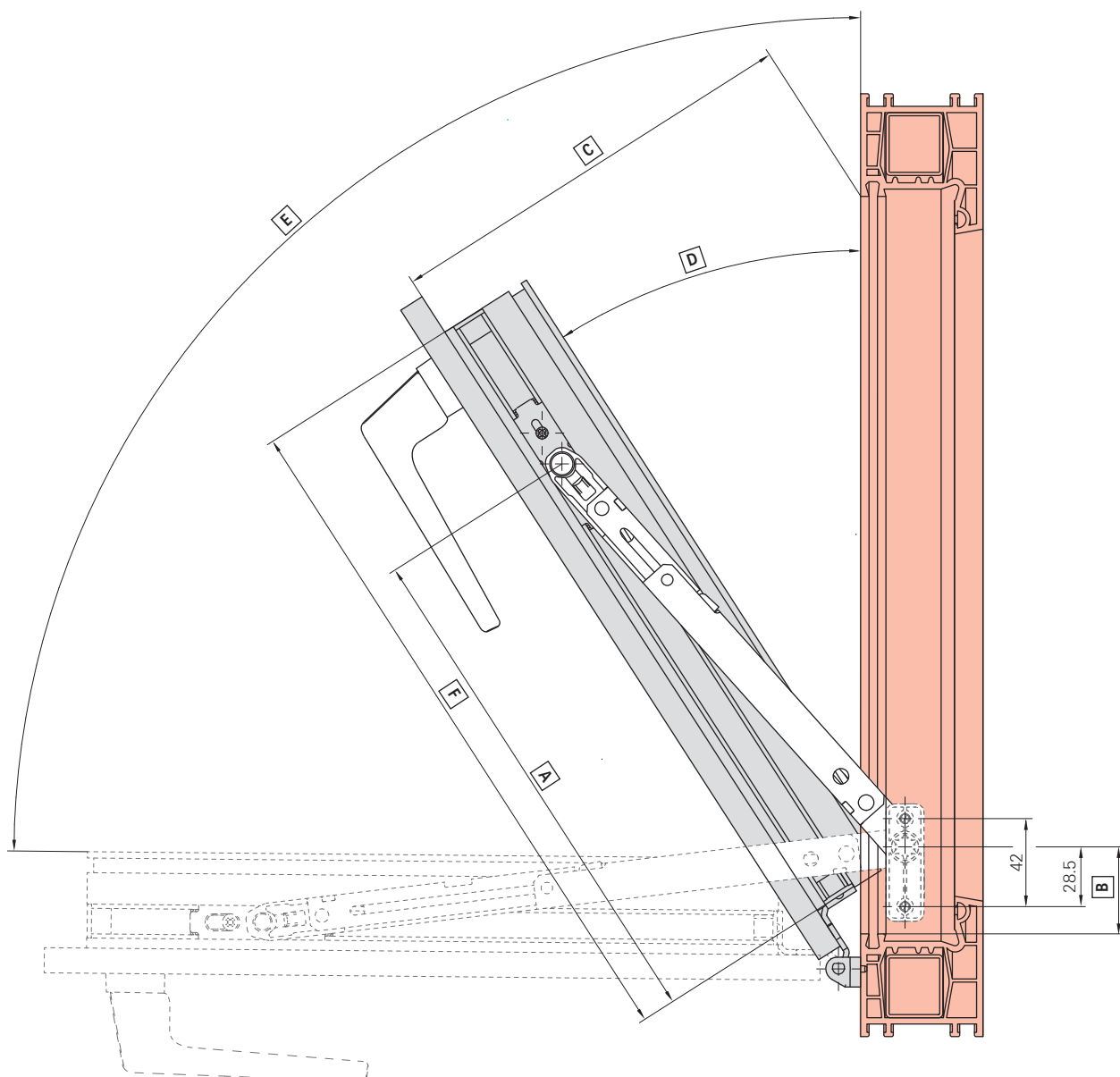
## INFO

Observe directive TBDK for tractive force values as a function of the sash weights.

Further information can be found at [www.beschlagindustrie.de](http://www.beschlagindustrie.de).

## Restrictor and cleaning stay

### Roto NX | Hinge sides P and T



- [A] Position of sash bear
- [B] Position of frame bear
- [C] Tilt distance restrictor posit
- [D] Opening angle restrictor posit
- [E] Opening angle cleaning posit
- [F] Sash rebate height (S)

## Information on the product

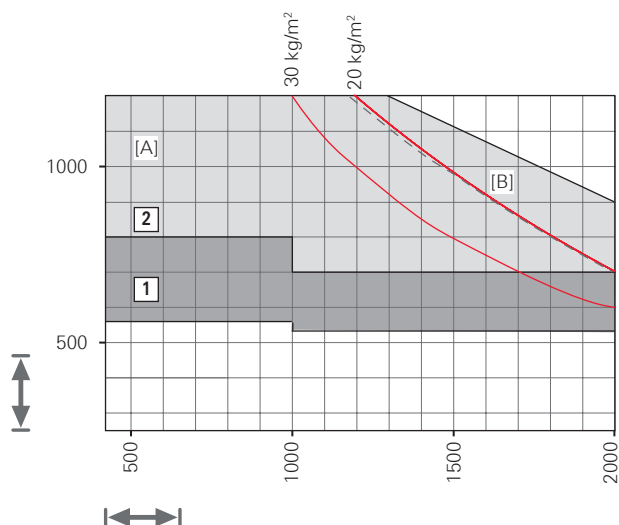
### Application diagrams

Tilt-Only sash

| FFH        | Typ | [A] | [B] | [C]       | [D] | [E] |
|------------|-----|-----|-----|-----------|-----|-----|
| 290 – 400  | 1   | 250 | 45  | 180 – 245 | 33° | 90° |
| 401 – 560  | 1   | 280 | 75  | 205 – 275 | 27° | 67° |
| 561 – 700  | 2   | 525 | 170 | 225 – 277 | 22° | 88° |
| 701 – 850  | 2   | 575 | 220 | 244 – 292 | 19° | 72° |
| 851 – 1200 | 2   | 625 | 270 | 261 – 363 | 17° | 62° |



### 3.3.1.2 Roto NX | Designo hinge side (HA 13)



[A] = Without wind sensor

[B] = With wind sensor

--- = Wind sensor limit

[1] = Restrictor and cleaning stay type 1

[2] = Restrictor and cleaning stay type 2

= Impermissible application range

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

1 mm/m<sup>2</sup> glass thickness  $\approx$  2.5 kg

Max. operating torque: 7.5 Nm ( $\approx$  displacement force  $\approx$  750 N)

Max. sash area (SRW x SRH): 1.44 m<sup>2</sup> at a wind speed of 10 m/s; larger formats (only with wind sensor) available upon request



#### INFO

- Roto E-Tec Drive S.kg<sub>max.</sub> 60 kg.

The sash weight varies depending on the hardware. For this reason, the application diagram of the hardware must be observed.

- Screw fixing in steel reinforcement only.
- Installation only in connection with restrictor and cleaning stays or tilt stays.



#### ATTENTION

##### Deformed drive components may cause property damage.

Failure to comply with the recommended sash dimensions can lead to deformation and a loss of the function of the Roto E-Tec Drive.

- Comply with recommended sash dimensions in accordance with the application diagram.

Failure to comply with the recommended sash dimensions voids the guarantee and warranty for the Roto E-Tec Drive.



#### INFO

- Maintain a rebate clearance of 12 to 14 mm at the top.
- With low Tilt-Only sashes, ensure that the Roto E-Tec Drive can turn freely above the sash rebate.
- Central gasket systems are preferred (smaller sash rebate heights with a larger projection distance are possible).
- With SRH < 600 mm, reduce the tilt distance to 80 mm. If the tilt distance is restricted by the hardware, the tilt distance of the Roto E-Tec Drive must also be restricted (programming necessary, e.g. Control Unit).
- Ensure the hardware is running smoothly.



#### INFO

Observe directive TBDK for tractive force values as a function of the sash weights.

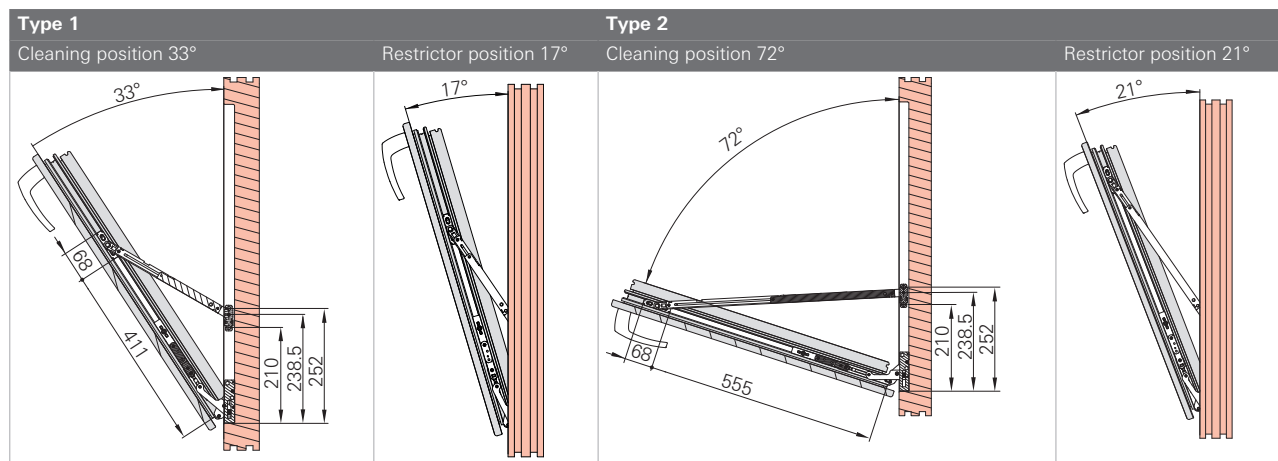
Further information can be found at [www.beschlagindustrie.de](http://www.beschlagindustrie.de).

### Restrictor and cleaning stay

#### Roto NX | Designo hinge side (HA 13)

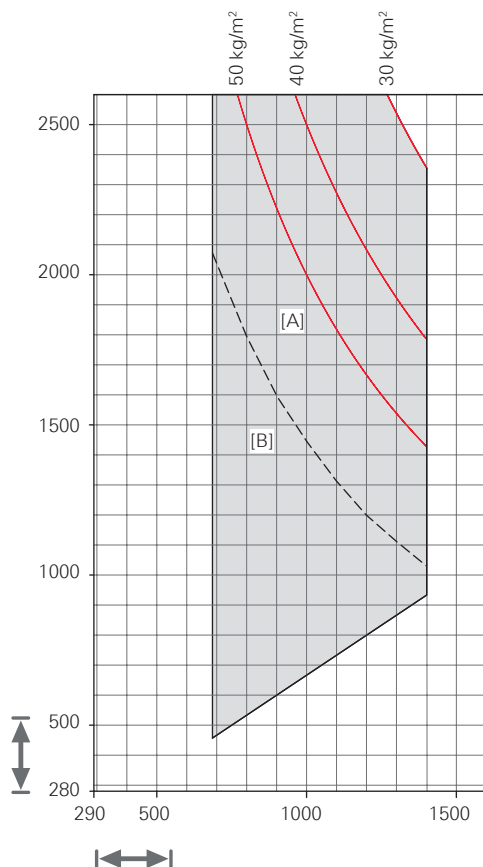
SRH for type 1 =  $\geq 481$  mm

SRH for type 2 =  $\geq 625$  mm



### 3.3.2 TiltFirst

#### 3.3.2.1 Roto NX | Hinge sides P and T



[A] = With wind sensor

[B] = Without wind sensor

--- = Wind sensor limit

□ = Impermissible application range

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

1 mm/m<sup>2</sup> glass thickness  $\approx$  2.5 kg

Max. operating torque: 7.5 Nm ( $\approx$  displacement force  $\approx$  750 N)

Max. sash area (SRW x SRH): 1.44 m<sup>2</sup> at a wind speed of 10 m/s; larger formats (only with wind sensor) available upon request



#### INFO

- Roto E-Tec Drive S.kg<sub>max.</sub> 100 kg.

The sash weight varies depending on the hardware. For this reason, the application diagram of the hardware must be observed.



#### ATTENTION

##### Deformed drive components may cause property damage.

Failure to comply with the recommended sash dimensions can lead to deformation and a loss of the function of the Roto E-Tec Drive.

- Comply with recommended sash dimensions in accordance with the application diagram.

Failure to comply with the recommended sash dimensions voids the guarantee and warranty for the Roto E-Tec Drive.



### INFO

- Maintain a rebate clearance of 12 to 14 mm at the top.
  - With low Tilt-Only sashes, ensure that the Roto E-Tec Drive can turn freely above the sash rebate.
  - Central gasket systems are preferred (smaller sash rebate heights with a larger projection distance are possible).
  - With SRH < 600 mm, reduce the tilt distance to 80 mm. If the tilt distance is restricted by the hardware, the tilt distance of the Roto E-Tec Drive must also be restricted (programming necessary, e.g. Control Unit).
  - Ensure the hardware is running smoothly.
- 



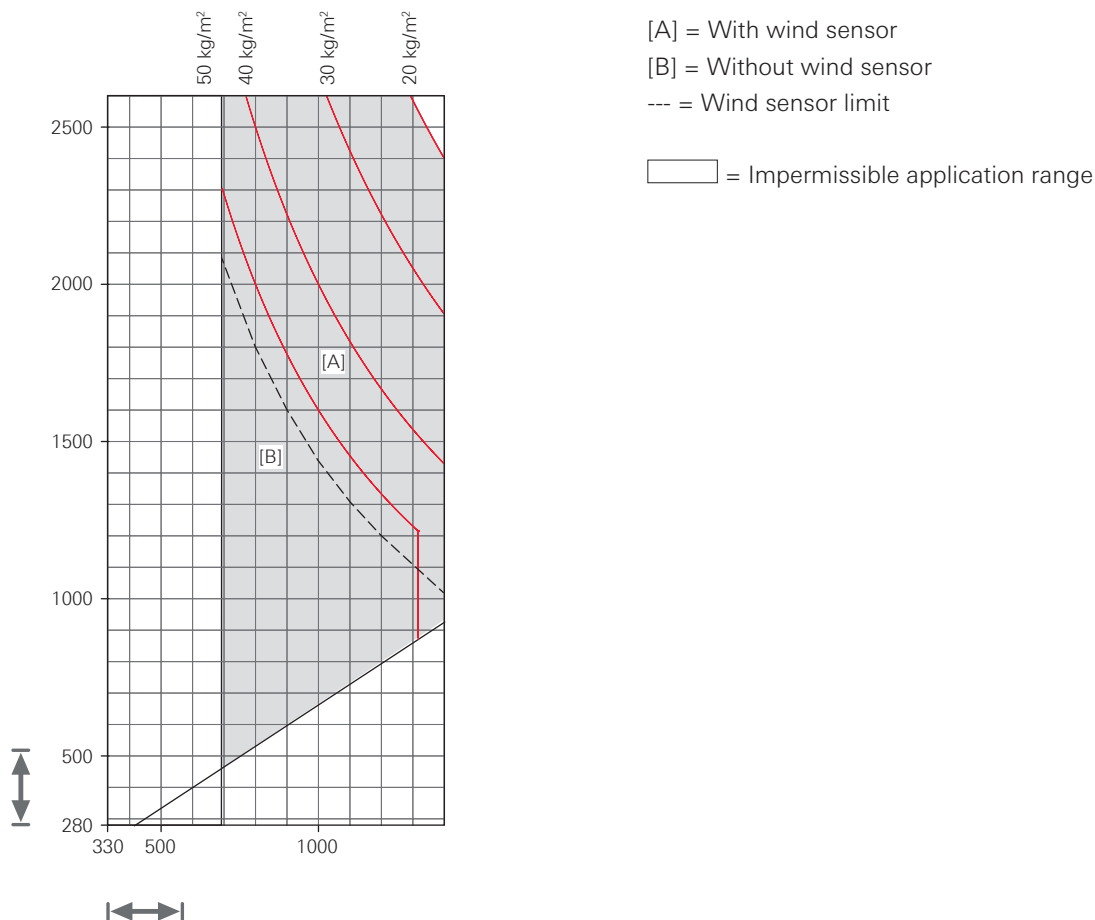
### INFO

Observe directive TBDK for tractive force values as a function of the sash weights.

Further information can be found at [www.beschlagindustrie.de](http://www.beschlagindustrie.de).

---

### 3.3.2.2 Roto NX | Designo hinge side (HA 13)



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

1 mm/m² glass thickness  $\approx$  2.5 kg

Max. operating torque: 7.5 Nm ( $\approx$  displacement force  $\approx$  750 N)

Max. sash area (SRW x SRH): 1.44 m² at a wind speed of 10 m/s; larger formats (only with wind sensor) available upon request



#### INFO

- Roto E-Tec Drive S.kg<sub>max.</sub> 100 kg.

The sash weight varies depending on the hardware. For this reason, the application diagram of the hardware must be observed.



#### ATTENTION

##### Deformed drive components may cause property damage.

Failure to comply with the recommended sash dimensions can lead to deformation and a loss of the function of the Roto E-Tec Drive.

- Comply with recommended sash dimensions in accordance with the application diagram.

Failure to comply with the recommended sash dimensions voids the guarantee and warranty for the Roto E-Tec Drive.



## INFO

- Maintain a rebate clearance of 12 to 14 mm at the top.
- With low Tilt-Only sashes, ensure that the Roto E-Tec Drive can turn freely above the sash rebate.
- Central gasket systems are preferred (smaller sash rebate heights with a larger projection distance are possible).
- With SRH < 600 mm, reduce the tilt distance to 80 mm. If the tilt distance is restricted by the hardware, the tilt distance of the Roto E-Tec Drive must also be restricted (programming necessary, e.g. Control Unit).
- Ensure the hardware is running smoothly.



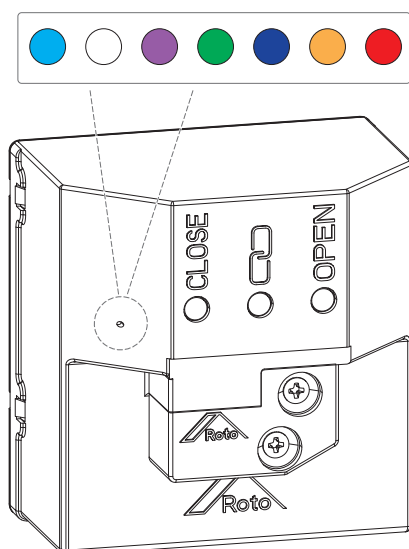
## INFO

Observe directive TBDK for tractive force values as a function of the sash weights.

Further information can be found at [www.beschlagindustrie.de](http://www.beschlagindustrie.de).

## 3.4 Roto E-Tec Drive | Power Unit and Power Unit Wireless

### 3.4.1 Overview of LED indicators – Roto E-Tec Drive | Power Unit Wireless



| LED colour | Status      |                  |                  | Meaning                                                 |
|------------|-------------|------------------|------------------|---------------------------------------------------------|
|            | No repeater | Level 1 repeater | Level 2 repeater |                                                         |
| Turquoise  | Lit up      | Flashing         | Flashing quickly | Establishing a connection with Roto E-Tec Drive.        |
| White      | Lit up      | Flashing         | Flashing quickly | Normal operation (encrypted wireless) <sup>1)</sup>     |
| Lilac      | Lit up      | Flashing         | Flashing quickly | Normal operation (unencrypted wireless) <sup>1)</sup>   |
| Green      | Lit up      | Flashing         | Flashing quickly | Normal operation of Roto E-Tec Drive with software V5.0 |
| Blue       | Lit up      | Flashing         | Flashing quickly | Programming mode active                                 |
| Orange     | Lit up      | Flashing         | Flashing quickly | Delete mode active                                      |
| Red        | Lit up      |                  |                  | Fault                                                   |
|            | Flashing    |                  |                  | Reset in progress                                       |

<sup>1)</sup> With E-Tec Drive (Smart) V6.0 and more recent.

### 3.4.2 Compatibility with the E-Tec Drive

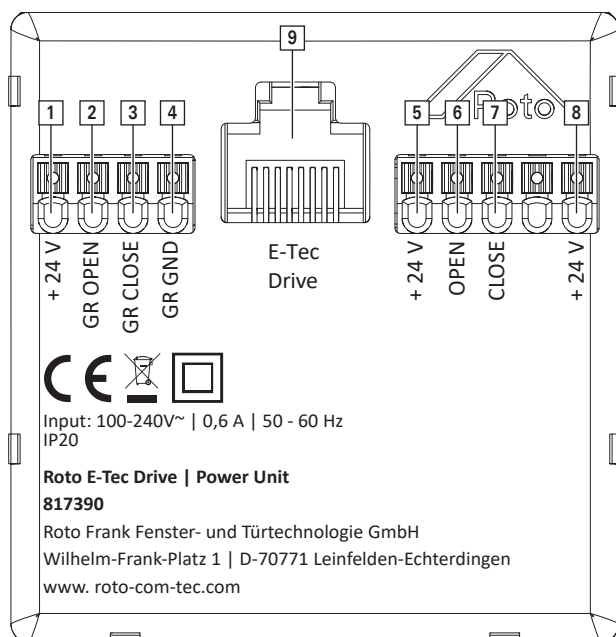
| Roto E-Tec Drive software | Roto E-Tec Drive   Power Unit | Roto E-Tec Drive   Power Unit Wireless |
|---------------------------|-------------------------------|----------------------------------------|
| V4.0                      | Yes                           | No                                     |
| V5.0                      | Yes                           | Yes*                                   |

| Roto E-Tec Drive software | Roto E-Tec Drive   Power Unit | Roto E-Tec Drive   Power Unit Wireless |
|---------------------------|-------------------------------|----------------------------------------|
| V6.0                      | Yes                           | Yes                                    |

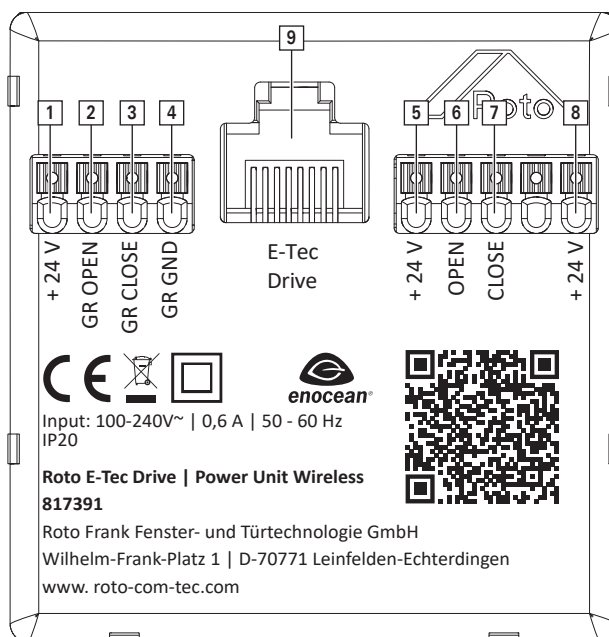
\* Control only using external EnOcean wireless operating push-buttons.

### 3.4.3 Overview of connecting terminals

**Roto E-Tec Drive | Power Unit**



**Roto E-Tec Drive | Power Unit Wireless**



| Legend | Description           | Function                                                                                                       |
|--------|-----------------------|----------------------------------------------------------------------------------------------------------------|
| [1]    | +24 V                 | Power supply for external operating push-buttons                                                               |
| [2]    | GR OPEN               | Connection for external group operating push-buttons: "Open" command to Roto E-Tec Drive (HIGH active)         |
| [3]    | GR CLOSE              | Connection for external group operating push-buttons: "Close" command to Roto E-Tec Drive (HIGH active)        |
| [4]    | GR GND                | Joint earth connection when connecting several Roto E-Tec Drive   Power Units via central / group push-buttons |
| [5]    | + 24 V                | Power supply for external operating push-buttons                                                               |
| [6]    | OPEN                  | Connection for external operating push-buttons, open impulse command (HIGH active)                             |
| [7]    | CLOSE                 | Connection for external operating push-buttons, close impulse command (HIGH active)                            |
| [8]    | + 24 V                | Power supply for external operating push-buttons                                                               |
| [9]    | RJ45 Roto E-Tec Drive | Connection for Roto E-Tec Drive, RJ45                                                                          |

#### Terminal wiring

Fixed cables: 0.08 mm<sup>2</sup> -1.5 mm<sup>2</sup> / AWG 28-AWG 16

Flexible cables: 0.08 mm<sup>2</sup> -1.5 mm<sup>2</sup> / AWG 28-AWG 16



#### ATTENTION

**External voltage may cause property damage.**

External voltage causes damage and voids the warranty.

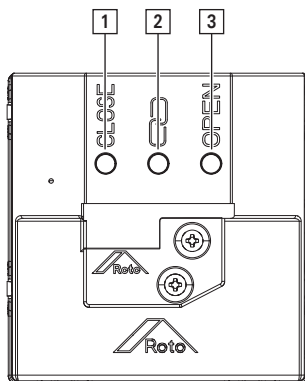
- Terminals must only be supplied with power by the 24 V of the Roto E-Tec Drive | Power Unit and Power Unit Wireless.



#### INFO

The mains connector is for test or handover purposes only and is not authorised for continuous operation. The final wiring must be performed by an electrician.

### 3.4.4 Overview of operating push-buttons



- [1] CLOSE: closing impulse to Roto E-Tec Drive
- [2]  : CONNECT (only for Roto E-Tec Drive | Power Unit Wireless)
- [3] OPEN: opening impulse to Roto E-Tec Drive



#### **INFO**

Operating push-buttons may be damaged if pushed too forcefully.



## 4 Hardware overviews

The hardware overviews on the following pages are a recommendation on the part of Roto Frank Fenster- und Türtechnologie GmbH.

The basic page layout in the hardware overviews chapter firstly shows examples of the combination of individual hardware components, and the associated parts list can be seen on the following pages.

Additional combinations of hardware components can be found in the catalogue.

The item numbers in the squares link the hardware overview to the parts list.

The actual composition of the hardware depends on:

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

Recommended handles can be found in the Roto Handles catalogue.

Determine the quantity of required hardware components with Roto Con Orders.



### INFO

#### Roto Con Orders

Efficient online hardware configurator for the custom configuration of individual window and door hardware components. All conventional shapes and opening types can be automatically configured quickly and easily. Individual parts lists, including application ranges and an exemplary hardware overview, can be ordered from your responsible sales representative.



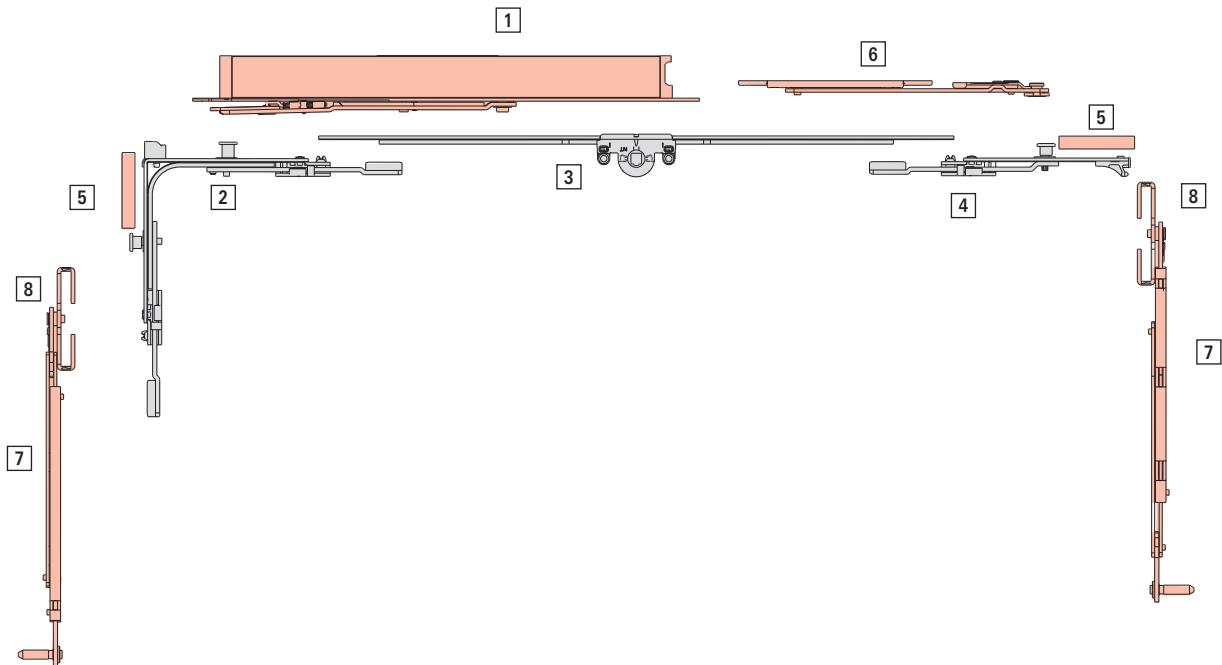
[www.roto-frank.com](http://www.roto-frank.com)

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## 4.1 Tilt-Only hardware

### 4.1.1 SRW $\leq 1000$ mm





## Application range

**SRW:** 451 – 1000 mm

**SRH:** 361 – 1200 mm

**S.kg:** max. 60 kg

| [1] Roto E-Tec Drive |        |
|----------------------|--------|
|                      | Nº     |
| Left                 | 899633 |
| Right                | 899634 |

| [2] Roto E-Tec Drive corner drive |   |   |        |
|-----------------------------------|---|---|--------|
|                                   |   |   | Nº     |
| Corner drive for Roto E-Tec Drive | 1 | V | 779677 |

| [3] T&T espagnolette – centred / variable handle height, backset 15 mm |     |   |   |        |
|------------------------------------------------------------------------|-----|---|---|--------|
|                                                                        |     |   |   | Nº     |
| 451 – 620                                                              | 400 | – | – | 259718 |
| 621 – 800                                                              | 580 | – | – | 289862 |
| 801 – 1200                                                             | 980 | – | – | 289863 |

| [4] Tilt-Only sash espagnolette connector |   |   |        |
|-------------------------------------------|---|---|--------|
|                                           |   |   | Nº     |
| Tilt-Only sash espagnolette connector     | 1 | V | 382716 |

## [5] Striker → CTL

| [6] Tilt stay                 |        |
|-------------------------------|--------|
|                               | Nº     |
| Floating-mullion installation | 482823 |

| [7] Restrictor and cleaning stay, frame component |        |        |
|---------------------------------------------------|--------|--------|
|                                                   |        | Nº     |
| 361 – 630                                         | Type 1 | 347131 |
| 631 – 1200                                        | Type 2 | 347132 |

| [8] Restrictor and cleaning stay, sash component |        |
|--------------------------------------------------|--------|
|                                                  | Nº     |
| Sash bearing for hardware groove                 | 348277 |

## Installing the restrictor and cleaning stay (RCS) and tilt stay (TS)

| SRH               | SRW       |      |              |            |      |              |
|-------------------|-----------|------|--------------|------------|------|--------------|
|                   | 451 – 800 |      |              | 801 – 1000 |      |              |
|                   | Sort      | Type | Installation | Sort       | Type | Installation |
| <b>361 – 630</b>  | 1x RCS    | 1    | Right        | 1x RCS     | 1    | Right        |
|                   | 1x TS     |      | Left         | 1x TS      |      | Left         |
| <b>631 – 1200</b> | 1x RCS    | 2    | Right        | 1x RCS     | 2    | Right        |
|                   | 1x TS     |      | Left         | 1x RCS     | 2    | Left         |
|                   |           |      |              | 1x TS      |      | Top          |

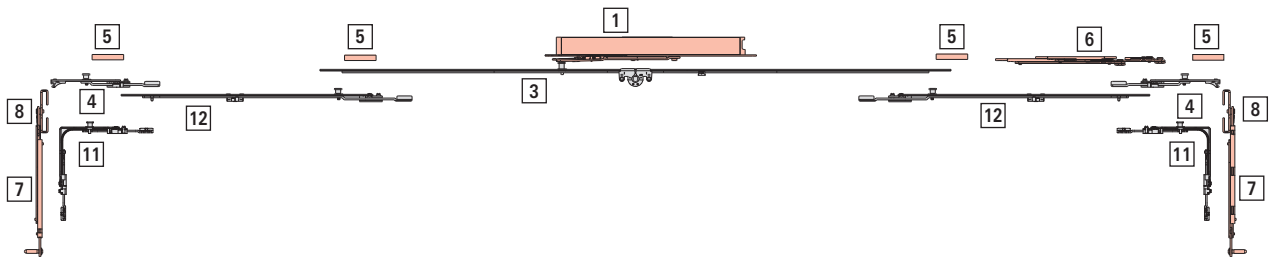


## INFO

With SRH < 600 mm, the tilt distance must be limited to 80 mm.

If the tilt distance is restricted by the hardware, the tilt distance of the Roto E-Tec Drive must also be restricted (programming required e.g. with a Control Unit).

#### 4.1.2 SRW $\geq 1001$ mm





### Application range

**SRW:** 1001 – 2400 mm

**SRH:** 300 – 1200 mm

**S.kg:** max. 60 kg

#### [1] Roto E-Tec Drive

|                                                                                   |        |
|-----------------------------------------------------------------------------------|--------|
|  | Nº     |
| Left                                                                              | 899633 |
| Right                                                                             | 899634 |

#### [3] T&T espagnolette – centred / variable handle height, backset 15 mm

|                                                                                   |                                                                                   |                                                                                   |        |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------|
|  |  |  | Nº     |
| 300 – 1200                                                                        | 1001 – 2400                                                                       | 980                                                                               | 779679 |

#### [4] Tilt-Only sash espagnolette connector

|                                                                                   |                                                                                   |                                                                                   |        |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------|
|  |  |  | Nº     |
| Tilt-Only sash espagnolette connector                                             | 1                                                                                 | V                                                                                 | 382716 |

#### [5] Striker → CTL

#### [6] Tilt stay

|                                                                                     |        |
|-------------------------------------------------------------------------------------|--------|
|  | Nº     |
| Floating-mullion installation                                                       | 482823 |

#### [7] Restrictor and cleaning stay, frame component

|                                                                                     |                                                                                     |        |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------|
|  |  | Nº     |
| 300 – 570                                                                           | Type 1                                                                              | 347131 |
| 571 – 1200                                                                          | Type 2                                                                              | 347132 |

#### [8] Restrictor and cleaning stay, sash component

|                                                                                     |        |
|-------------------------------------------------------------------------------------|--------|
|  | Nº     |
| Sash bearing for hardware groove                                                    | 348277 |

### Installing the restrictor and cleaning stay (RCS) and tilt stay (TS)

| SRH        | SRW       |      |              |            |      |              |
|------------|-----------|------|--------------|------------|------|--------------|
|            | 451 – 800 |      |              | 801 – 1000 |      |              |
|            | Sort      | Type | Installation | Sort       | Type | Installation |
| 300 – 570  | 1x RCS    | 1    | Right        | 1x RCS     | 1    | Right        |
|            | 1x TS     |      | Left         | 1x TS      |      | Left         |
| 571 – 1200 | 1x RCS    | 2    | Right        | 1x RCS     | 2    | Right        |
|            | 1x TS     |      | Left         | 1x RCS     | 2    | Left         |
|            |           |      |              | 1x TS      |      | Top          |

#### [11] Standard corner drive

|                                                                                     |                                                                                     |        |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------|
|  |  | Nº     |
| 1                                                                                   | P                                                                                   | 260277 |

#### [9] Multipart centre lock – standard, horizontal and vertical

|                                                                                   |                                                                                   |                                                                                     |                                                                                     |        |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------|
|  |  |  |  | Nº     |
| 200                                                                               | Y                                                                                 | –                                                                                   | –                                                                                   | 308267 |
| 400                                                                               | Y                                                                                 | 1                                                                                   | P                                                                                   | 622881 |
| 600                                                                               | Y                                                                                 | 1                                                                                   | P                                                                                   | 622882 |

#### Size-specific combinations:

|                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |        |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------|
|  |  |  |  |  | Nº     |
| 300 – 1200                                                                        | 1201 – 1600                                                                       | 200 KU                                                                              | –                                                                                   | –                                                                                   | 308267 |
|                                                                                   | 1601 – 2000                                                                       | 400 KU                                                                              | 1                                                                                   | P                                                                                   | 622881 |
|                                                                                   | 2000 – 2400                                                                       | 600 KU                                                                              | 1                                                                                   | P                                                                                   | 622882 |

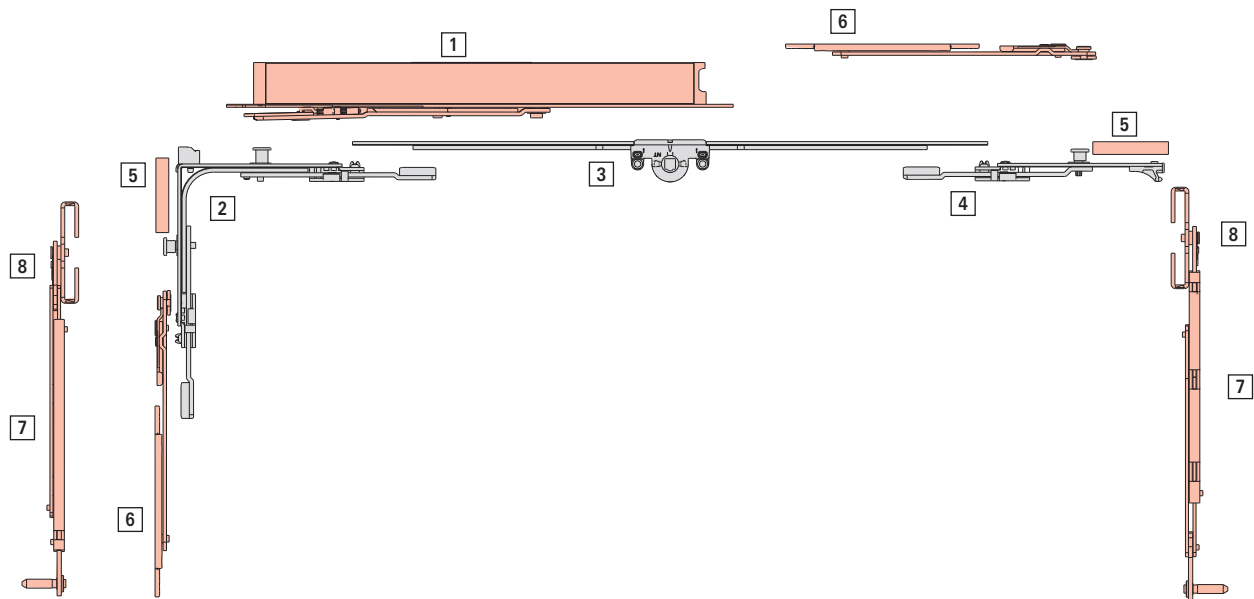


### INFO

With SRH < 600 mm, the tilt distance must be limited to 80 mm.

If the tilt distance is restricted by the hardware, the tilt distance of the Roto E-Tec Drive must also be restricted (programming required e.g. with a Control Unit).

### 4.1.3 SRW ≤ 1000 mm – hinge side Designo (HA 13)





## Application range

SRW: 451 – 1000 mm

SRH: 520 – 1200 mm

S.kg: max. 60 kg

**[1] Roto E-Tec Drive**

|                                                                                   |        |
|-----------------------------------------------------------------------------------|--------|
|  | Nº     |
| Left                                                                              | 899633 |
| Right                                                                             | 899634 |

**[2] Roto E-Tec Drive corner drive**

|                                                                                   |                                                                                   |                                                                                   |        |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------|
|  |  |  | Nº     |
| Corner drive for Roto E-Tec Drive                                                 | 1                                                                                 | V                                                                                 | 779677 |

**[3] T&T espagnolette – centred / variable handle height, backset 15 mm**

|                                                                                   |                                                                                   |        |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------|
|  |  | Nº     |
| 451 – 620 mm                                                                      | 400                                                                               | 259718 |
| 621 – 800 mm                                                                      | 580                                                                               | 289862 |
| 801 – 1200 mm                                                                     | 980                                                                               | 289863 |

**[4] Tilt-Only sash espagnolette connector**

|                                                                                     |                                                                                     |                                                                                     |        |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------|
|  |  |  | Nº     |
| Tilt-Only sash espagnolette connector                                               | 1                                                                                   | V                                                                                   | 382716 |

**[5] Striker → CTL****[6] Tilt stay**

|                                                                                     |        |
|-------------------------------------------------------------------------------------|--------|
|  | Nº     |
| Floating-mullion installation                                                       | 482823 |

**[7] Restrictor and cleaning stay, frame component**

|                                                                                     |                                                                                     |        |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------|
|  |  | Nº     |
| 520 – 850                                                                           | Type 1                                                                              | 347131 |
| 851 – 1200                                                                          | Type 2                                                                              | 347132 |

**[8] Restrictor and cleaning stay, sash component**

|                                                                                     |        |
|-------------------------------------------------------------------------------------|--------|
|  | Nº     |
| Sash bearing for hardware groove                                                    | 348277 |

**Installing the restrictor and cleaning stay (RCS) and tilt stay (TS)**

| SRH               | SRW       |      |              |            |      |              |
|-------------------|-----------|------|--------------|------------|------|--------------|
|                   | 451 – 800 |      |              | 801 – 1000 |      |              |
|                   | Sort      | Type | Installation | Sort       | Type | Installation |
| <b>520 – 850</b>  | 1x RCS    | 1    | Right        | 1x RCS     | 1    | Right        |
|                   | 1x TS     |      | Left         | 1x TS      |      | Left         |
| <b>851 – 1200</b> | 1x RCS    | 2    | Right        | 1x RCS     | 2    | Right        |
|                   | 1x TS     |      | Left         | 1x RCS     | 2    | Left         |
|                   |           |      |              | 1x TS      |      | Top          |

**INFO**

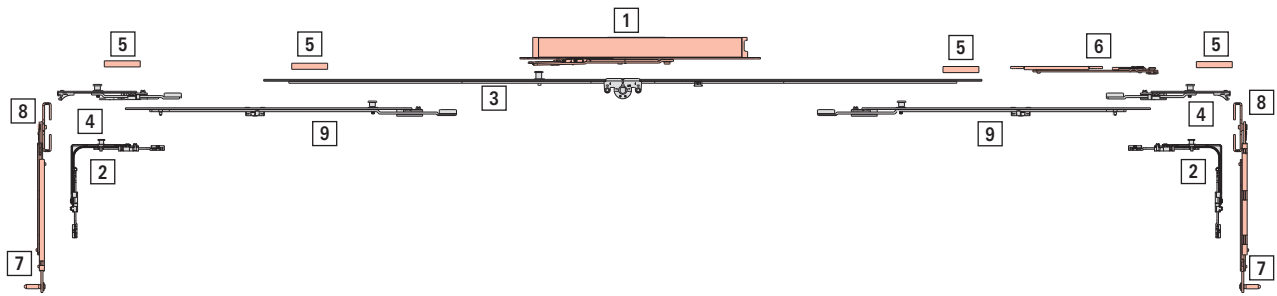
With SRH < 600 mm, the tilt distance must be limited to 80 mm.

If the tilt distance is restricted by the hardware, the tilt distance of the Roto E-Tec Drive must also be restricted (programming required e.g. with a Control Unit).

**Optional**

[\*] Packer not shown

#### 4.1.4 SRW $\geq 1001$ mm – hinge side Designo (HA 13)



**Application range**

SRW: 1001 – 2000 mm

SRH: 530 – 1200 mm

S.kg: max. 60 kg

**[1] Roto E-Tec Drive**

|  | Nº     |
|-----------------------------------------------------------------------------------|--------|
| Left                                                                              | 899633 |
| Right                                                                             | 899634 |

**[3] T&T espagnolette – centred / variable handle height, backset 15 mm**

|  |  |  | Nº     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------|
| 300 – 1200                                                                        | 1001 – 2400                                                                       | 980                                                                               | 779679 |

**[4] Tilt-Only sash espagnolette connector**

|  |  |  | Nº     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------|
| Tilt-Only sash espagnolette connector                                             | 1                                                                                 | V                                                                                 | 382716 |

**[5] Striker → CTL****[6] Tilt stay**

|  | Nº     |
|-------------------------------------------------------------------------------------|--------|
| Floating-mullion installation                                                       | 482823 |

**[7] Restrictor and cleaning stay, frame component**

|  |  | Nº     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------|
| 361 – 630                                                                           | Type 1                                                                              | 347131 |
| 631 – 1200                                                                          | Type 2                                                                              | 347132 |

**[8] Restrictor and cleaning stay, sash component**

|  | Nº     |
|-------------------------------------------------------------------------------------|--------|
| Sash bearing for hardware groove                                                    | 348277 |

**Installing the restrictor and cleaning stay (RCS) and tilt stay (TS)**

| SRH               | SRW         |      |              |             |      |              |
|-------------------|-------------|------|--------------|-------------|------|--------------|
|                   | 1001 – 1600 |      |              | 1601 – 1000 |      |              |
|                   | Sort        | Type | Installation | Sort        | Type | Installation |
| <b>530 – 700</b>  | 1x RCS      | 1    | Right        | 1x RCS      | 1    | Right        |
|                   | 1x TS       |      | Left         | 1x TS       |      | Left         |
| <b>701 – 1200</b> | 1x RCS      | 2    | Right        | 1x RCS      | 2    | Right        |
|                   | 1x TS       |      | Left         | 1x RCS      | 2    | Left         |
|                   |             |      |              | 1x TS       |      | Top          |

**INFO**

With SRH < 600 mm, the tilt distance must be limited to 80 mm.

If the tilt distance is restricted by the hardware, the tilt distance of the Roto E-Tec Drive must also be restricted (programming required e.g. with a Control Unit).

**[9] Multipart centre lock – standard, horizontal and vertical**

|  |  |  |  | Nº     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------|
| 200                                                                               | Y                                                                                 | –                                                                                   | –                                                                                   | 308267 |
| 400                                                                               | Y                                                                                 | 1                                                                                   | P                                                                                   | 622881 |

Size-specific combinations:

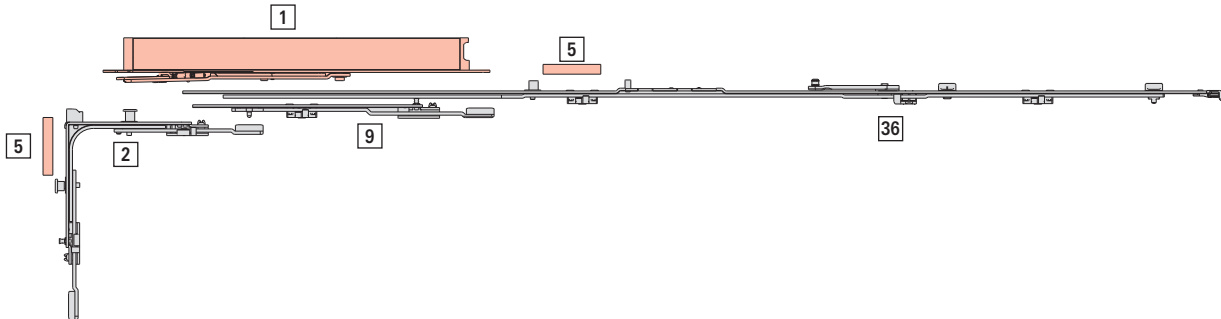
|  |  |  |  |  | Nº     |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------|
| 500 – 1200                                                                        | 1201 – 1600                                                                        | 200 KU                                                                              | –                                                                                   | –                                                                                   | 308267 |
|                                                                                   | 1601 – 2000                                                                        | 400 KU                                                                              | 1                                                                                   | P                                                                                   | 622881 |

**Optional**

[\*] Packer not shown

## 4.2 TiltFirst hardware

### 4.2.1 Hinge sides P and T





## Application range

### Hinge sides P and T

**SRW:** 690 – 1400 mm

**SRH:** 371 – 2800 mm

**S.kg:** max. 100 kg

| [1] Roto E-Tec Drive |        |
|----------------------|--------|
|                      | Nº     |
| Left                 | 899633 |
| Right                | 899634 |

| [2] Roto E-Tec Drive corner drive |   |   |        |
|-----------------------------------|---|---|--------|
|                                   |   |   | Nº     |
| Corner drive for Roto E-Tec Drive | 1 | V | 779677 |

### [5] Striker → CTL

| [9] Multipart centre lock – standard, horizontal and vertical |   |   |   |        |
|---------------------------------------------------------------|---|---|---|--------|
|                                                               |   |   |   | Nº     |
| 200                                                           | Y | – | – | 308267 |

Size-specific combinations:

|            |        |   |   |        |
|------------|--------|---|---|--------|
|            |        |   |   | Nº     |
| 801 – 1200 | 200 KU | – | – | 308267 |

| [36] Stay guide – basic security |      |     |   |   |        |
|----------------------------------|------|-----|---|---|--------|
|                                  |      |     |   |   | Nº     |
| 601 – 1000                       | 690  | 350 | – | – | 787347 |
| 1001 – 1200                      | 890  | 500 | 1 | E | 788617 |
| 1201 – 1400                      | 1290 | 500 | 1 | E | 787351 |

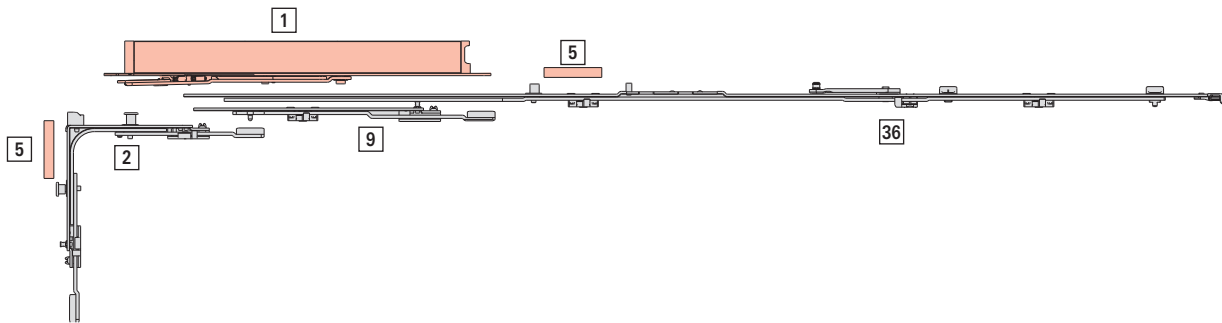


### INFO

With SRH < 600 mm, the tilt distance must be limited to 80 mm.

If the tilt distance is restricted by the hardware, the tilt distance of the Roto E-Tec Drive must also be restricted (programming required e.g. with a Control Unit).

#### 4.2.2 Hinge side Designo (HA 13)





**Application range**

**SRW:** 690 – 1400 mm

**SRH:** 371 – 2600 mm

**S.kg:** max. 100 kg

| [1] Roto E-Tec Drive                                                              |  |  |  |        |
|-----------------------------------------------------------------------------------|--|--|--|--------|
|  |  |  |  | Nº     |
| Left                                                                              |  |  |  | 899633 |
| Right                                                                             |  |  |  | 899634 |

| [2] Roto E-Tec Drive corner drive                                                 |   |                                                                                   |                                                                                   |        |
|-----------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------|
|  |   |  |  | Nº     |
| Corner drive for Roto E-Tec Drive                                                 | 1 | V                                                                                 |                                                                                   | 779677 |

| [5] Striker → CTL |  |  |  |  |
|-------------------|--|--|--|--|
|-------------------|--|--|--|--|

| [9] Multipart centre lock – standard, horizontal and vertical                     |                                                                                   |                                                                                   |                                                                                   |        |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------|
|  |  |  |  | Nº     |
| 200                                                                               | Y                                                                                 | –                                                                                 | –                                                                                 | 308267 |

Size-specific combinations:

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |        |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------|
|  |  |  |  | Nº     |
| 801 – 1400                                                                          | 200 KU                                                                              | –                                                                                   | –                                                                                   | 308267 |

| [36] Stay guide – basic security                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |        |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------|
|  |  |  |  |  | Nº     |
| 601 – 1000                                                                          | 690                                                                                 | 350                                                                                 | –                                                                                   | –                                                                                   | 385394 |
| 1001 – 1200                                                                         | 890                                                                                 | 500                                                                                 | 1                                                                                   | E                                                                                   | 385415 |
| 1201 – 1400                                                                         | 1090                                                                                | 500                                                                                 | 1                                                                                   | E                                                                                   | 385416 |



**INFO**

With SRH < 600 mm, the tilt distance must be limited to 80 mm.

If the tilt distance is restricted by the hardware, the tilt distance of the Roto E-Tec Drive must also be restricted (programming required e.g. with a Control Unit).

## 5 Installation

### 5.1 Processing instructions

#### Maximum sash sizes and weights

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

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

#### Specifications from profile manufacturers

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

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



#### INFO

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

#### Combining hardware

Burglar inhibiting elements need hardware which meets special requirements.

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

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

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



#### INFO

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

In general, the hardware defined in this document is capable of meeting statutory and normative requirements for accessible dwellings.

#### Installation surfaces

The frame and sash grooves must be free from construction materials (such as plaster, gypsum). The sash groove must be free from welding residue to ensure an optimum supporting surface for the hardware components.

### 5.2 Installation advice



#### WARNING

##### Risk of injury due to incorrect installation

Incorrect, improper installation can lead to serious injuries.

- All installation instructions and information must be complied with.



- All assembly and installation work must be carried out by experts. Experts are persons who are familiar with the data sheet guideline "Power-operated windows" (KB.01) published by the German Window and Facade Association (VFF), the relevant statutory occupational health and safety and accident prevention regulations, the relevant locally applicable assembly and installation provisions and the regulations and generally recognised rules of good engineering practice (→ *from page 11*).
- The drive is not suitable for use with power-operated window protection class 4 applications.

### **Installation**

- Only install the Roto E-Tec Drive horizontally at the top.
- Only install one Roto E-Tec Drive per window.
- Ensure that the hardware can be operated easily during installation, otherwise the Roto E-Tec Drive might be damaged. If it is difficult to operate the hardware manually, it must be readjusted to avoid damaging the drive.  
You may need to readjust the gasket compression of the locking cams.
- When positioning the windows, ensure that no drilling dust enters the Roto E-Tec Drive. Always lock the window after installation and attach a blind plug or escutcheon cover for removable service handle so that subsequent trade teams do not inadvertently introduce dirt into the drive.
- For the RJ45 connecting cable, install an empty tube from the drill hole in the frame up to the Roto E-Tec Drive | Power Unit or Power Unit Wireless, or the flush-mounted box.
- To ensure that the window can be opened even if the drive is faulty, an espagnolette must always be installed on the window.

### **Handle**

- To avoid incorrect operation and damage, do not attach handles to the window. Use blank covers to cover the handle opening. Use a service handle for occasional manual operation (e.g. to clean the window pane).
- When using a window handle with lock-in position, the locking lugs must be removed.
- To prevent damage, do not operate the drive if the window is tilted or opened via the service handle.

### **On-site storage**

- Never store windows with an installed Roto E-Tec Drive outside. The ingress of rainwater can damage the drive.

## 5.3 Timber

### 5.3.1 Drilling and routing dimensions

#### 5.3.1.1 Tilt-Only sash



#### INFO

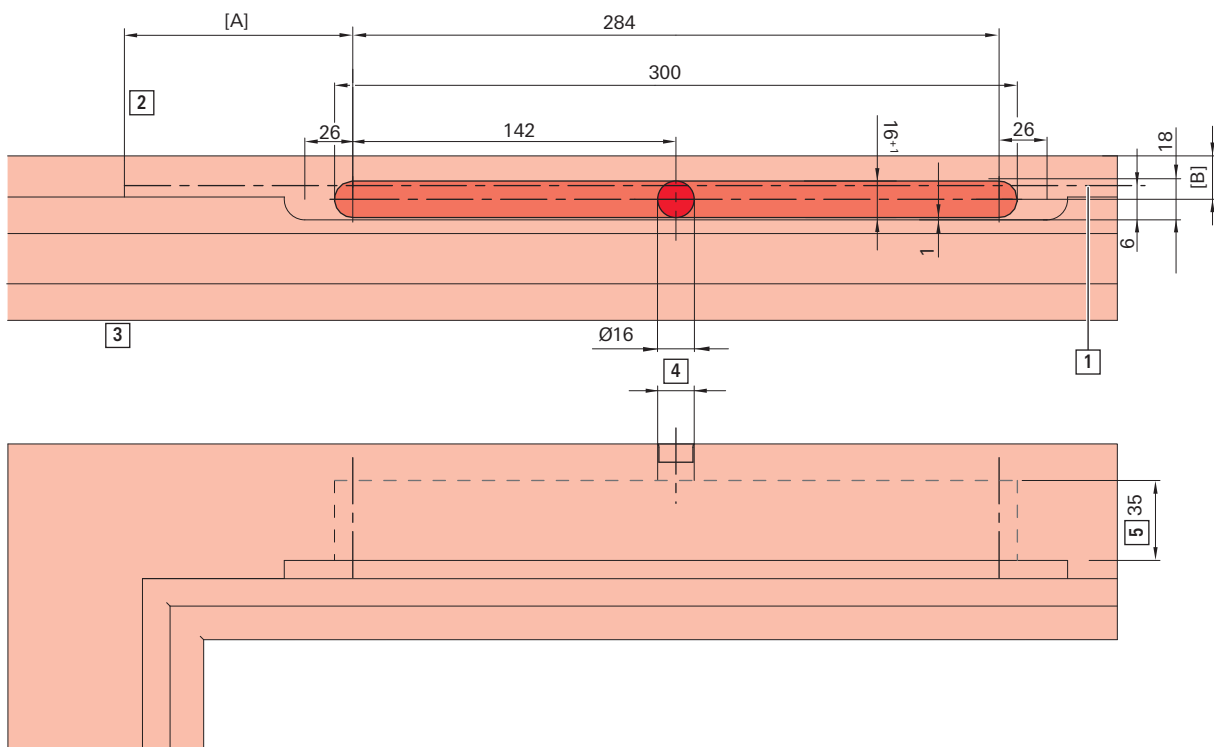
SRW 451 - 1000 mm: Roto E-Tec Drive installed above the corner drive.

SRW > 1000 mm: Roto E-Tec Drive installed in the centre above the espagnolette.



#### INFO

Carry out routing for the frame and cable feedthrough hole in accordance with the routing pattern. If the rebate depth is insufficient, produce a recess in the areas of the mounting flanges in the frame.



- [1] Hardware axis
- [2] Inside of frame
- [3] Outside of frame

- [4] Drill hole for cable junction
- [5] Minimum depth for routing

| SRW         | [A]           | [B] <sub>0.5</sub> |                  |
|-------------|---------------|--------------------|------------------|
|             |               | Hardware axis 9    | Hardware axis 13 |
| 451 – 1000  | 69            | 15                 | 19               |
| 1001 – 2000 | SRW / 2 - 102 | 15                 | 19               |



#### INFO

#### SRW > 1000 mm

The routing dimensions assume that the espagnolette is exactly in a central position.

The locking cam on the espagnolette must always be positioned to the left of the sash centre.

- A right-hand Roto E-Tec Drive is always installed for the areas indicated.



**INFO**

Remove chips and dirt from the routing channel after routing.

**5.3.1.2 TiltFirst**



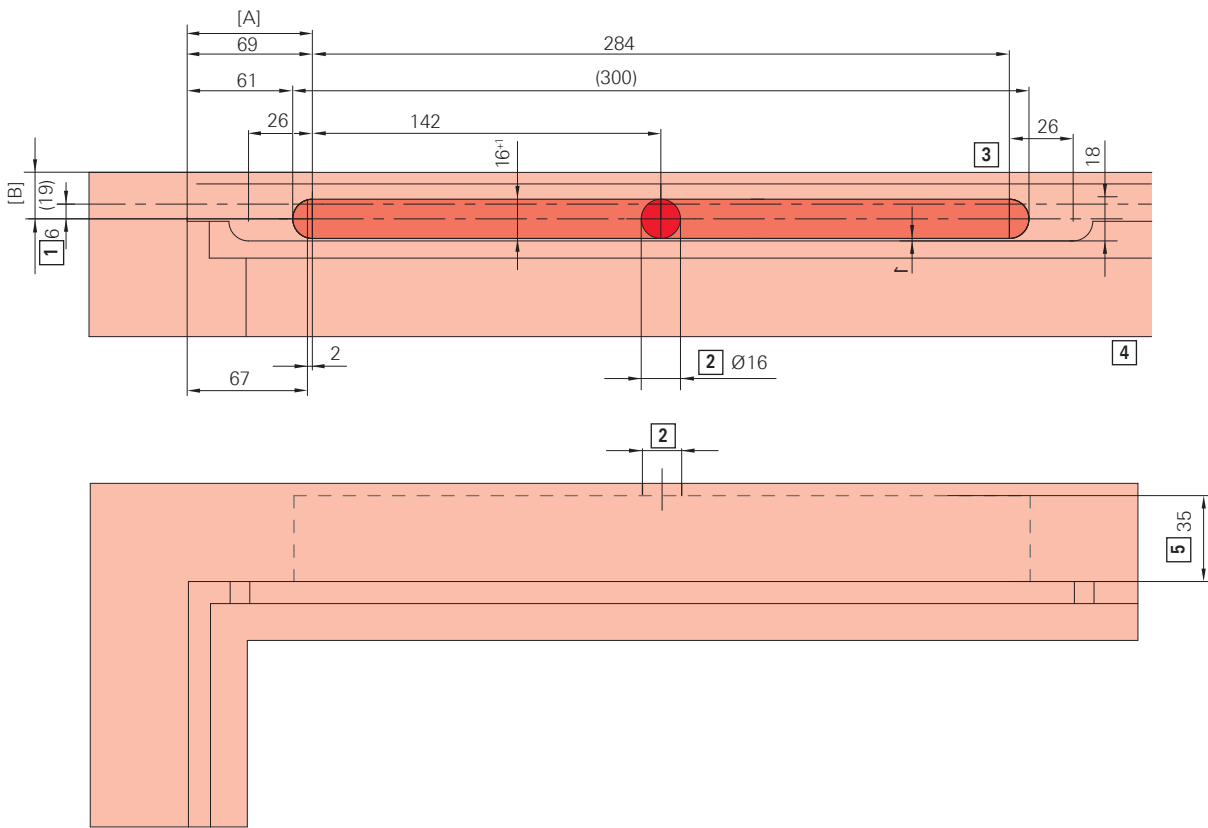
**INFO**

The Roto E-Tec Drive is installed above the corner drive. The figures show the routing dimensions for a window installed on the right-hand side; the routing dimensions for windows installed on the left-hand side are inversed.



**INFO**

Carry out routing for the frame and cable feedthrough hole in accordance with the routing pattern. If the rebate depth is insufficient, produce a recess in the areas of the mounting flanges in the frame.



- [1] Dimension for 13 hardware axis
- [2] Drill hole for cable junction
- [3] Inside of frame

- [4] Outside of frame
- [5] Minimum depth for routing

| Hardware axis | [A] <sub>-0.5</sub> | [B] <sub>-0.5</sub> |
|---------------|---------------------|---------------------|
| 9             | 69                  | 15                  |
| 13            | 69                  | 19                  |

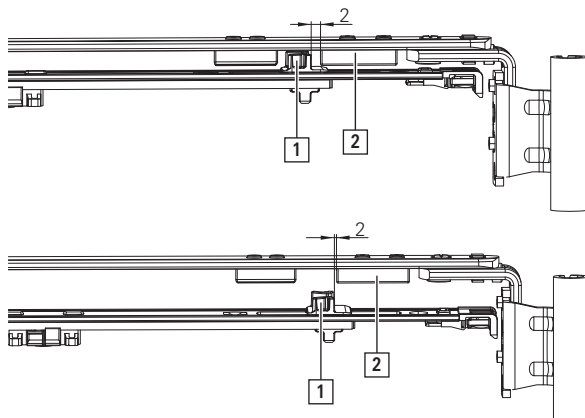


**INFO**

Remove chips and dirt from the routing channel after routing.

### 5.3.2 TiltFirst (TF) stay arm and scissor stay guide

#### Checking the installation situation



Taper action / inclusion

**INFO**

When changing from locking / unlocking to tilting, there must be a clearance of at least 2 mm between the fixed and movable parts of the hardware.

[1] Inclusion

[2] Taper action

For all other hardware components, see documents → *from page 7*.

### 5.3.3 Installing the Roto E-Tec Drive

#### Requirements for TiltFirst

- Roto E-Tec Drive corner drive with run-up block.
- Place the striker on the side.
- Stay arm and stay guide.
- Do not install a lifting mishandling device. If required, use a sash lifter with the corresponding frame component .

If necessary:

- Centre lock CL 200 KU.
- Turn lock, surface-mounted.



- System-specific run-up wedges for rebate-clearance restriction.

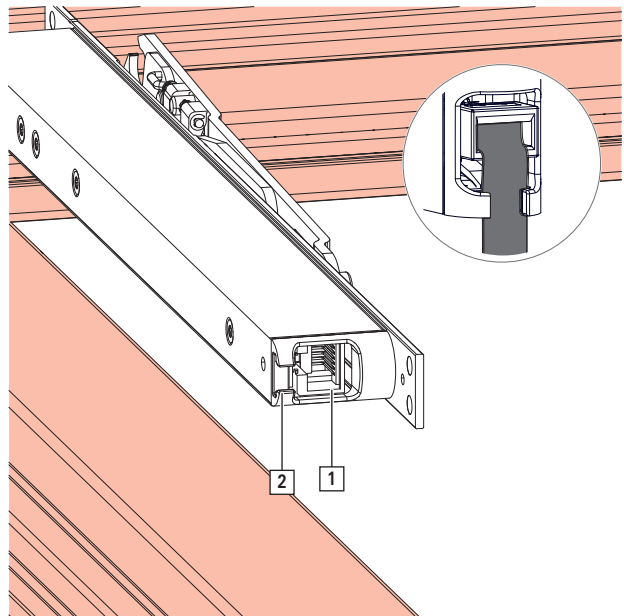
### TiltFirst and Tilt-Only hardware



#### INFO

In the delivery state, the Roto E-Tec Drive is in the **Window locked** position. It must be installed in the frame in this state.

1. Carry out routing (→ *from page 54*) for the frame and cable feedthrough hole in accordance with the routing pattern. If the rebate depth is insufficient, produce a recess in the areas of the mounting flanges in the frame.
2. Pull in the cable. The cable must protrude approximately 20 cm from the centre of the routing → *from page 69*.
3. Place the cable with the connector into the Roto E-Tec Drive [1] and insert it into the strain relief lug [2] → *from page 70*.



## Installation

### Timber

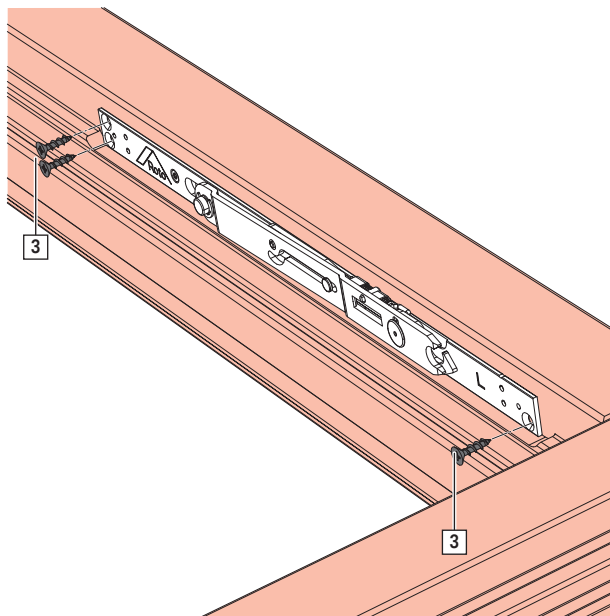
#### Installing the Roto E-Tec Drive

- Position the Roto E-Tec Drive in the routing and fasten it using three of the supplied screws (3.9 x 25) [3].



#### INFO

If the rebate clearance is too large, use the installation packers supplied to correct the position of the drive.



- Hinge the sash.



#### INFO

Note the other applicable documents for window installation → *from page 7*.

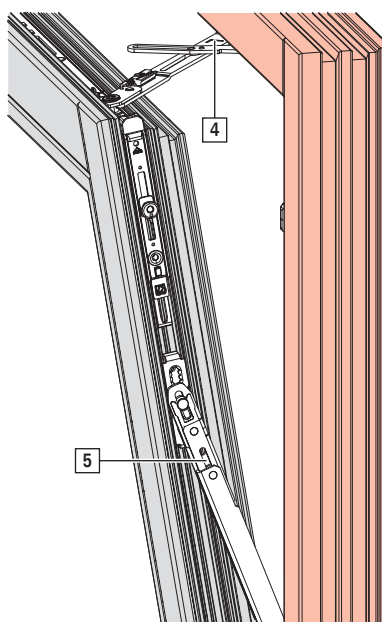


#### DANGER

##### Risk of death due to falling sash!

Failure to install a restrictor and cleaning stay may cause the sash to fall out.

- Install a restrictor and cleaning stay on Tilt-Only sashes.



[4] E-Tec Drive

[5] Restrictor and cleaning stay



6. Carry out a visual inspection of the installation:

Move the sash manually to the tilt position.

Then open the Roto E-Tec Drive and check the alignment between the cam [1] and the holder on the Roto E-Tec Drive [2] from above. [1] and [2] must align exactly (see figure). If they do, the drive is aligned correctly.

If the alignment between [1] and [2] is not correct, the position of the drive in the frame must be corrected.

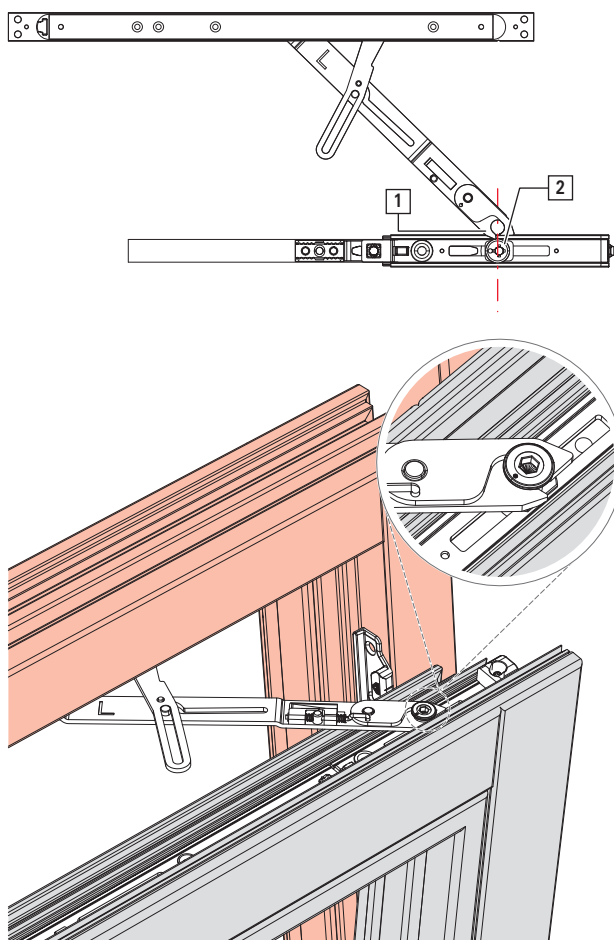
Figure: DIN R



**ATTENTION**  
**Mechanical stress may cause property damage.**

Mechanical stress can damage the scissor stay mechanism and result in a faulty Roto E-Tec Drive.

- ▶ Before commissioning the Roto E-Tec Drive, ensure that the hardware can be operated easily by hand.
- ▶ Perform a visual inspection of the installation according to the specifications.



7. Initial operation → *from page 85*

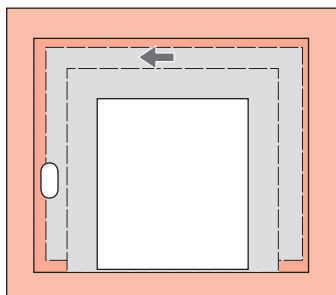
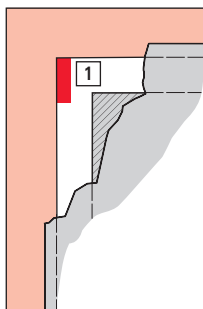
8. Install the escutcheon cover for removable service handle.

9. Place the completed handover certificate and installation, maintenance and operation instructions in the adhesive pouch and adhere to the window.

### 5.3.4 Sash stabilisation

Locking and unlocking using the Roto E-Tec Drive may cause the sash to move horizontally. If this occurs, take the following stabilising measures.

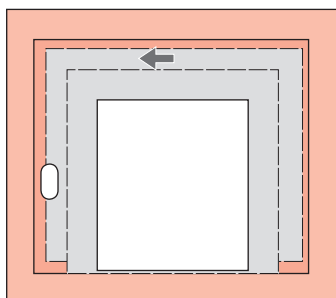
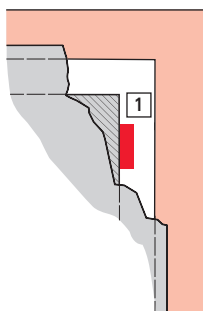
**Case A**



Sash is pushed during unlocking.

Common in lightweight sashes,  $SH > SW$ ,  $SH_{Tilt-Only} < SW_{Tilt-Only}$

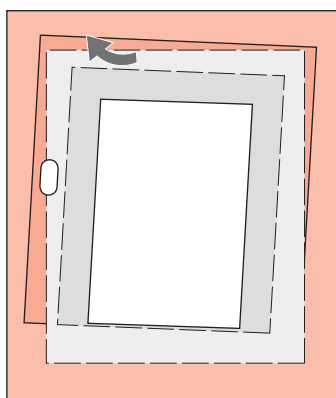
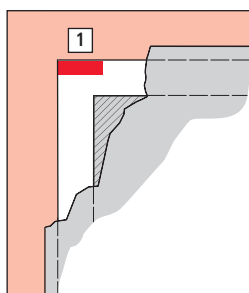
**Case B**



Sash is pulled during locking.

Common in lightweight sashes,  $SH > SW$ ,  $SH_{Tilt-Only} < SW_{Tilt-Only}$

### Case C



Sash is lifted during locking.

Common in lightweight sashes,  $SH < SW$

[1] Rebate run-up block



## 5.4 PVC

### 5.4.1 Drilling and routing dimensions

#### 5.4.1.1 Tilt-Only sash



#### INFO

SRW 451 - 1000 mm: Roto E-Tec Drive installed above the corner drive.  
SRW > 1000 mm: Roto E-Tec Drive installed in the centre above the espagnolette.



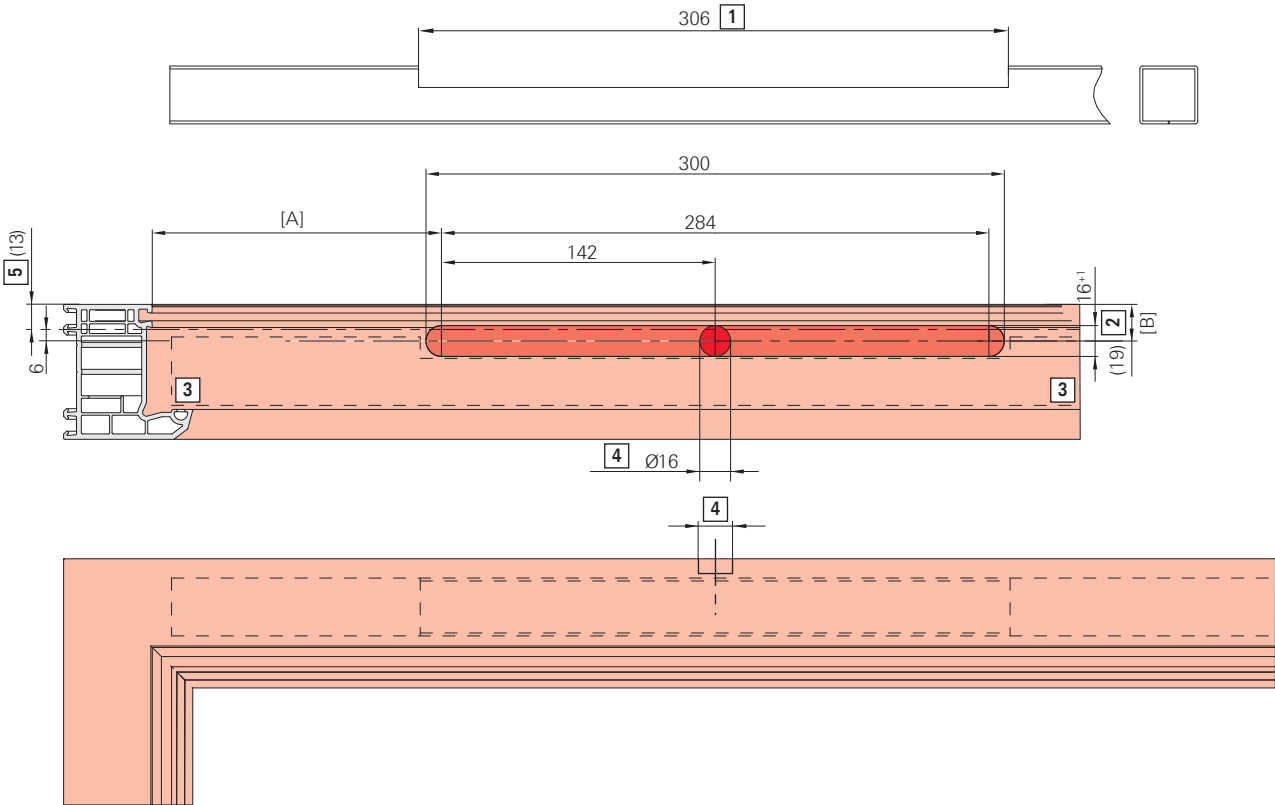
#### INFO

Carry out routing for the frame and cable feedthrough hole in accordance with the routing pattern. If the rebate depth is insufficient, produce a recess in the areas of the mounting flanges in the frame.



#### INFO

Route the steel reinforcement separately.



[1] Steel recess area

Produce notching in steel separately – do not do this together with the PVC.

[2] Dimension for 13 hardware axis

[3] To mount the drive, screw in at least one screw into each steel reinforcement.

[4] Drill hole for cable junction

[5] Hardware axis

| SRW        | [A] | [B] <sub>0.5</sub> |                  |
|------------|-----|--------------------|------------------|
|            |     | Hardware axis 9    | Hardware axis 13 |
| 451 - 1000 | 69  | 15                 | 19               |

| SRW         | [A]           | [B] <sub>0.5</sub><br>Hardware axis 9 | Hardware axis 13 |
|-------------|---------------|---------------------------------------|------------------|
| 1001 - 2000 | SRW / 2 - 102 | 15                                    | 19               |



#### INFO

##### SRW > 1000 mm

The routing dimensions assume that the espagnolette is exactly in a central position.

The locking cam on the espagnolette must always be positioned to the left of the sash centre.

- A right-hand Roto E-Tec Drive is always installed for the areas indicated.



#### INFO

Remove chips and dirt from the routing channel after routing.



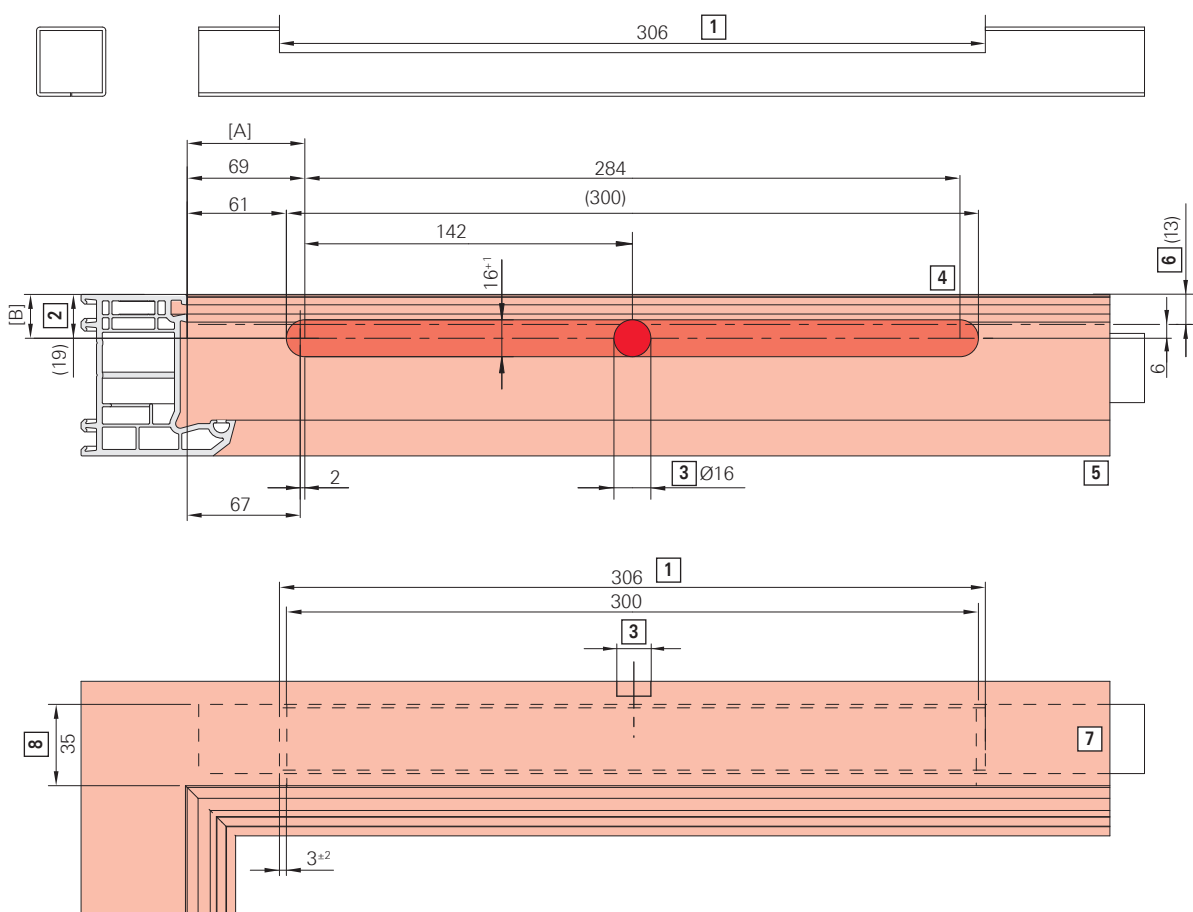
The Roto E-Tec Drive is installed above the corner drive. The figures show the routing dimensions for a window installed on the right-hand side; the routing dimensions for windows installed on the left-hand side are inversed.



Carry out routing for the frame and cable feedthrough hole in accordance with the routing pattern. If the rebate depth is insufficient, produce a recess in the areas of the mounting flanges in the frame.



Route the steel reinforcement separately.



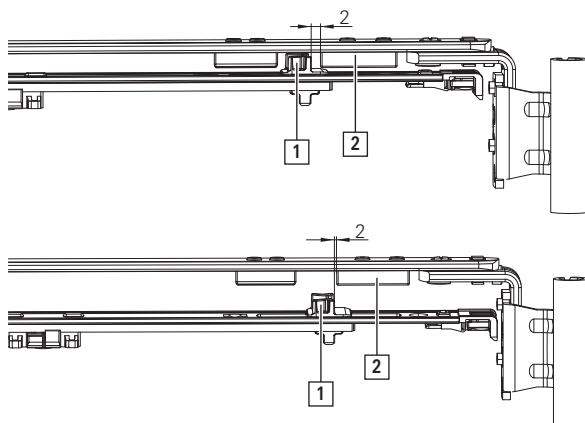
- |                                                                              |                      |                               |
|------------------------------------------------------------------------------|----------------------|-------------------------------|
| [1] Steel recess area                                                        | [4] Inside of frame  | [7] Steel reinforcement       |
| Produce notching in steel separately – do not do this together with the PVC. | [5] Outside of frame | [8] Minimum depth for routing |
| [2] Dimension for hardware axis                                              | [6] Hardware axis    |                               |
| [3] Drill hole for cable junction                                            |                      |                               |

**INFO**

Remove chips and dirt from the routing channel after routing.

## 5.4.2 TiltFirst (TF) stay arm and scissor stay guide

### Checking the installation situation



Taper action / inclusion

**INFO**

When changing from locking / unlocking to tilting, there must be a clearance of at least 2 mm between the fixed and movable parts of the hardware.

[1] Inclusion

[2] Taper action

For all other hardware components, see documents → *from page 7*.

## 5.4.3 Installing the Roto E-Tec Drive

**CAUTION****Risk of injury due to routing in steel-reinforced PVC**

Routing in steel-reinforced PVC can lead to injuries.

- ▶ Route the PVC profile and steel reinforcement separately.

### Requirements for TiltFirst

- Roto E-Tec Drive corner drive with run-up block.
- Place the striker on the side.
- Stay arm and stay guide TF.
- Do not install a lifting mishandling device. If required, use a sash lifter with the corresponding frame component .

If necessary:

- Centre lock CL 200 KU.
- Turn lock, surface-mounted.



- System-specific run-up wedges for rebate-clearance restriction.

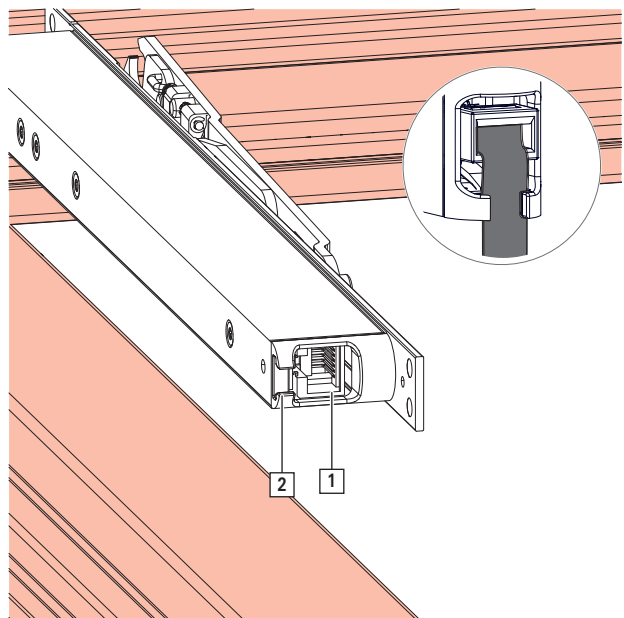
#### TiltFirst and Tilt-Only hardware



#### INFO

In the delivery state, the Roto E-Tec Drive is in the **Window locked** position. It must be installed in the frame in this state.

1. Carry out routing for the frame in the PVC profile without steel reinforcement. Produce a recess in the frame's steel reinforcement separately.
2. Produce a recess in the steel reinforcement in accordance with the routing pattern → *from page 54*.
3. Protect the notching of the steel reinforcement against corrosion.
4. Insert the steel reinforcement into the PVC profile and fasten with screws. Position the steel reinforcement so that the Roto E-Tec Drive can be screwed into the steel reinforcement.
5. Pull in the cable. The cable must protrude approximately 20 cm from the centre of the routing → *from page 69*.
6. Place the cable with the connector into the Roto E-Tec Drive [1] and insert it into the strain relief lug [2] → *from page 70*.



7. Position the Roto E-Tec Drive in the routing, use the corresponding supplied packers so that the supporting surface of the mounting flanges is level with the inside edge of the frame.

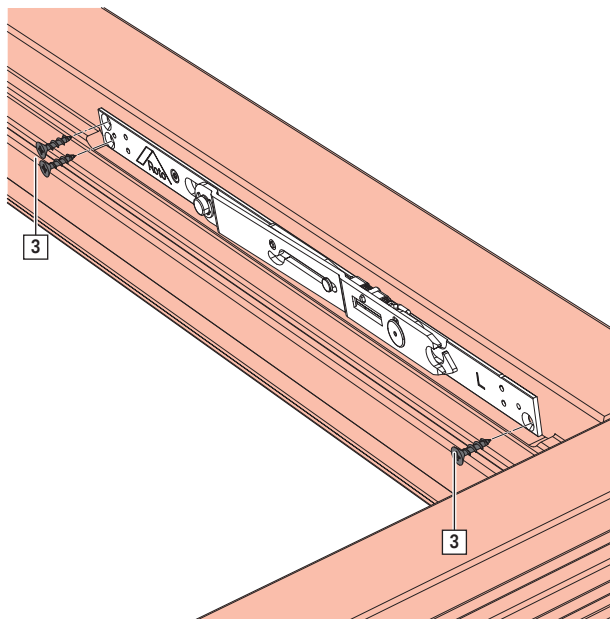
8. Fasten the Roto E-Tec Drive using the three supplied screws (3.9 x 25) [3].

**INFO**

It must be screwed into the steel reinforcement on every side of the device with at least one screw.

**INFO**

If the rebate clearance is too large, use the installation packers supplied to correct the position of the drive.



9. Hinge the sash.

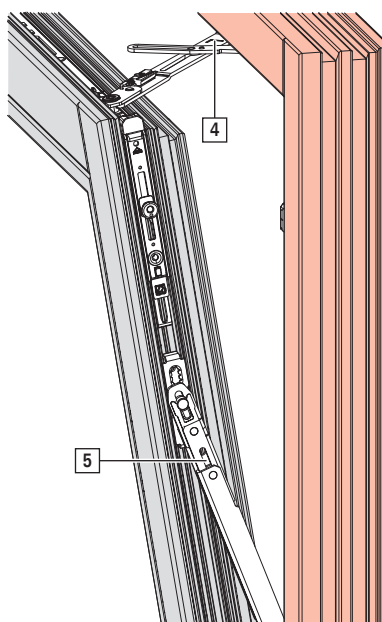
**INFO**

Note the other applicable documents for window installation → *from page 7*.

**DANGER****Risk of death due to falling sash!**

Failure to install a restrictor and cleaning stay may cause the sash to fall out.

- Install a restrictor and cleaning stay on Tilt-Only sashes.



[4] Roto E-Tec Drive

[5] Restrictor and cleaning stay



10. Carry out a visual inspection of the installation:

Move the sash manually to the tilt position.

Then open the Roto E-Tec Drive and check the alignment between the cam [1] and the holder on the Roto E-Tec Drive [2] from above. [1] and [2] must align exactly (see figure). If they do, the drive is aligned correctly.

If the alignment between [1] and [2] is not correct, the position of the drive in the frame must be corrected.

Figure: DIN R



**INFO**

When checking the alignment between the Roto E-Tec Drive holder and the adapter pin, no tensioning may occur. Mechanical tensioning can damage the scissor stay mechanism and result in a faulty drive.

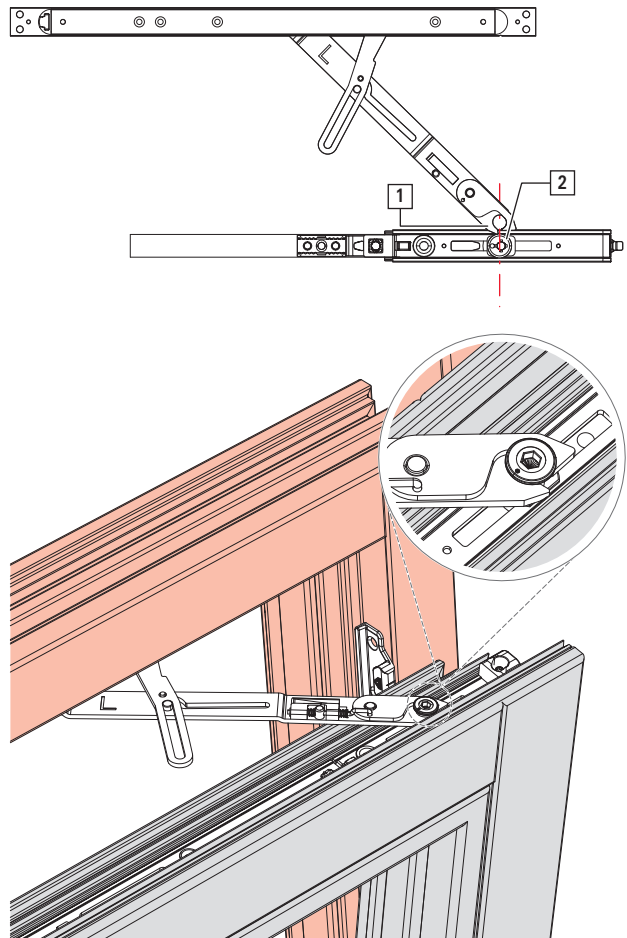


**ATTENTION**

**Mechanical stress may cause property damage.**

Mechanical stress can damage the scissor stay mechanism and result in a faulty Roto E-Tec Drive.

- ▶ Before commissioning the Roto E-Tec Drive, ensure that the hardware can be operated easily by hand.
- ▶ Perform a visual inspection of the installation according to the specifications.



11. Initial operation → *from page 85*

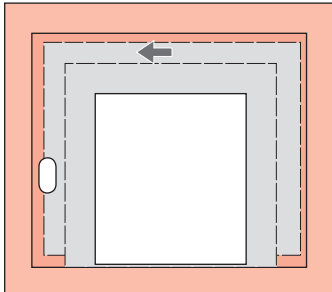
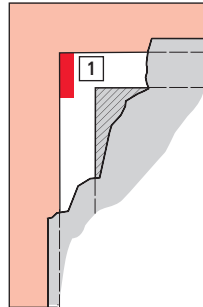
12. Install the escutcheon cover for removable service handle.

13. Place the completed handover certificate and installation, maintenance and operation instructions in the adhesive pouch and adhere to the window.

#### 5.4.4 Sash stabilisation

Locking and unlocking using the Roto E-Tec | Drive can cause the sash to move horizontally. If this occurs, the following stabilising measures must be taken.

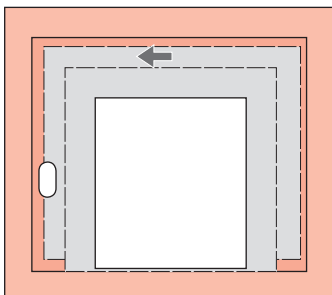
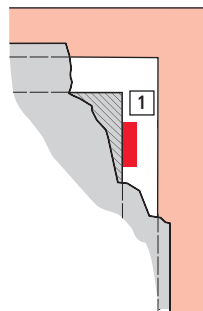
##### Case A



Sash is pushed during unlocking.

Common in lightweight sashes,  $SH > SW$ ,  $SH_{Tilt-On-ly} < SW_{Tilt-Only}$

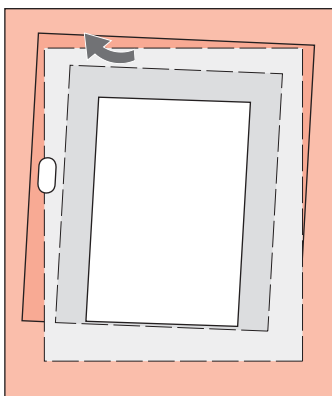
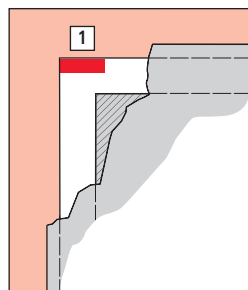
##### Case B



Sash is pulled during locking.

Common in lightweight sashes,  $SH > SW$ ,  $SH_{Tilt-On-ly} < SW_{Tilt-Only}$

##### Case C



Sash is lifted during locking.

Common in lightweight sashes,  $SH < SW$

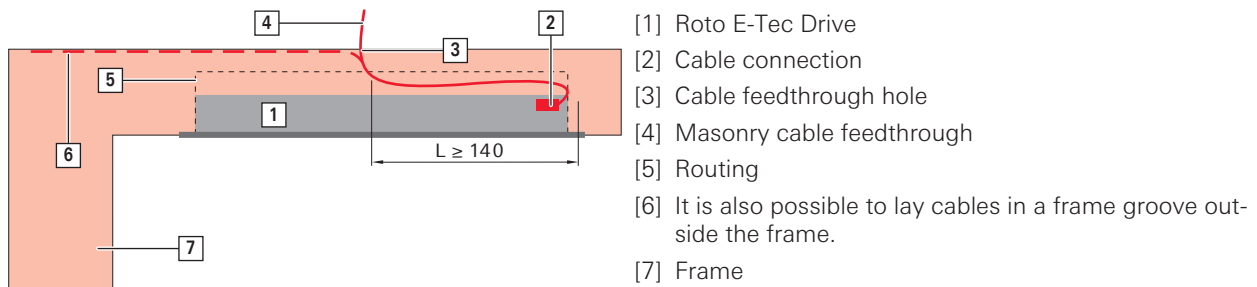
[1] Rebate run-up block



## 5.5 Cable

### 5.5.1 Laying cables

#### Installing cables at the top (window fitted on the right)



Cable installation, if possible in the empty tube up to the flush-mounted box / Roto E-Tec Drive | Power Unit or Power Unit Wireless.

The cable feedthrough hole in the frame has a diameter of 16 mm. Seal it appropriately (e.g. with silicone, butyl, etc.).

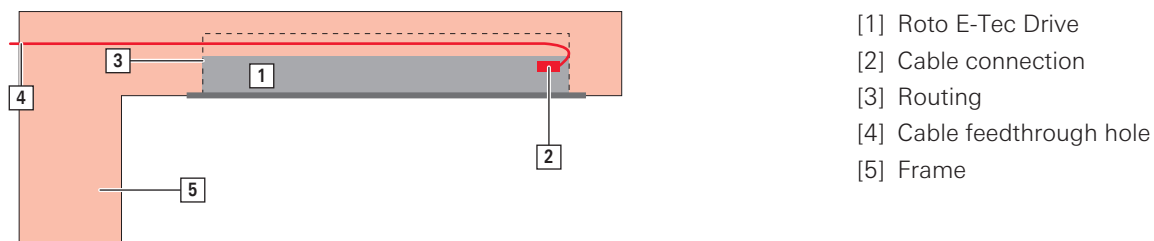
The distance L (between cable feedthrough hole and Roto E-Tec Drive cable connection) must be  $\geq 140$  mm; this creates a cable loop through which the device can be removed easily.



#### INFO

- Do not lay cables in areas where subsequent routing will be performed for installation.
- Install the operating push-buttons within view of the drive.

#### Installing cables at the side (window fitted on the right)



Cable installation, if possible in the empty tube up to the flush-mounted box / Roto E-Tec Drive | Power Unit or Power Unit Wireless.

The cable feedthrough hole in the frame has a diameter of 16 mm. Seal it appropriately (e.g. with silicone, butyl, etc.).



#### INFO

- Do not lay cables in areas where subsequent routing will be performed for installation.
- Install the operating push-buttons within view of the drive.

## 5.5.2 Connecting cables



### **DANGER**

#### **Risk of death caused by electric shock!**

Current can lead to fatal injuries.

- ▶ Take extra care when handling live components.
- ▶ Only an electrician may connect the power supply unit to the mains voltage.
- ▶ Observe and comply with the respective national regulations (in Germany VDE 0100 and others).
- ▶ Only operate and control the Roto E-Tec Drive with a power supply unit with safety extra-low voltage (SELV) (24 V DC). All other switching actuators (e.g. for the opening and closing impulses) which are connected to the Roto E-Tec Drive | Power Unit and Power Unit Wireless must also be authorised for operation on devices with safety extra-low voltage (SELV).



### **ATTENTION**

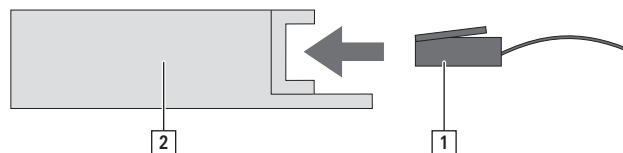
#### **Property damage due to short-circuit**

A short-circuit may damage the Roto E-Tec Drive.

- ▶ Only connect the Roto E-Tec Drive to the power supply once all work has been completed.
- ▶ Before switching it on, ensure that there is no overvoltage.

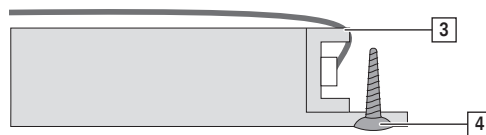
1. Insert the connector [1] into the Roto E-Tec Drive [2] with the locking lug pointing upwards. The connector must engage easily with an audible clicking noise.

Do not use force when inserting the connector.



2. Insert the cable into the strain relief lug [3] (= screwing protection).

Fasten with a 3.9 x 25 screw [4].



### **INFO**

If the cable is not inserted into the strain relief lug, it can be damaged when the drive is screwed in.

Use the timber screws supplied for PVC and timber profiles.



### 5.5.3 Cropping the cable

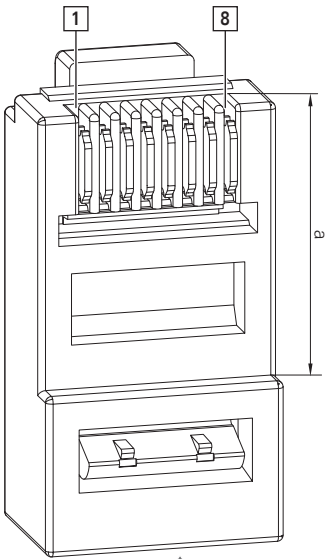
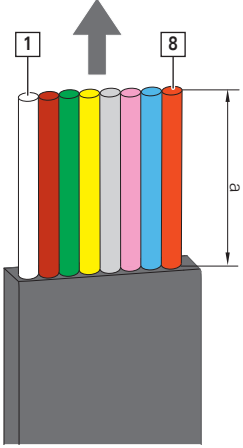
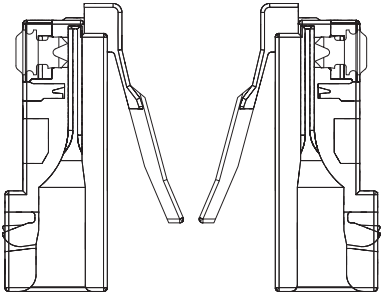
1. Measure out the required cable length.
2. Remove a 12 mm length of cable sleeve with a suitable tool (e.g. crimping pliers, cable cutters or wire stripping pliers).
3. Crop the wires to the same length.
4. Push the wires into the RJ45 connector as far as they will go.  
 $a = 12 \text{ mm}$



**INFO**  
Ensure the correct colour assignment.

| Pin | Colour | Assignment        |
|-----|--------|-------------------|
| 1   | White  | GND               |
| 2   | Brown  | Internal (Com Tx) |
| 3   | Green  | RM                |
| 4   | Yellow | CLOSE             |
| 5   | Grey   | OPEN              |
| 6   | Pink   | Internal (Com Rx) |
| 7   | Blue   | US                |
| 8   | Red    | +24 V DC          |

The orientation is the same on both sides of the cable.



### 5.5.4 Maximum possible cable extension

Cable in special length (on special request) without additional extension up to max. 10 m.

| Permissible extensions on 6 m cable |      |     |     |     |
|-------------------------------------|------|-----|-----|-----|
| Cross section [mm <sup>2</sup> ]    | 0.14 | 0.5 | 1.5 | 2.5 |
| Max. cable length [m]               | 4    | 16  | 50  | 83  |

## 5.6 Performance test of the Roto E-Tec Drive

### Control unit (test set)

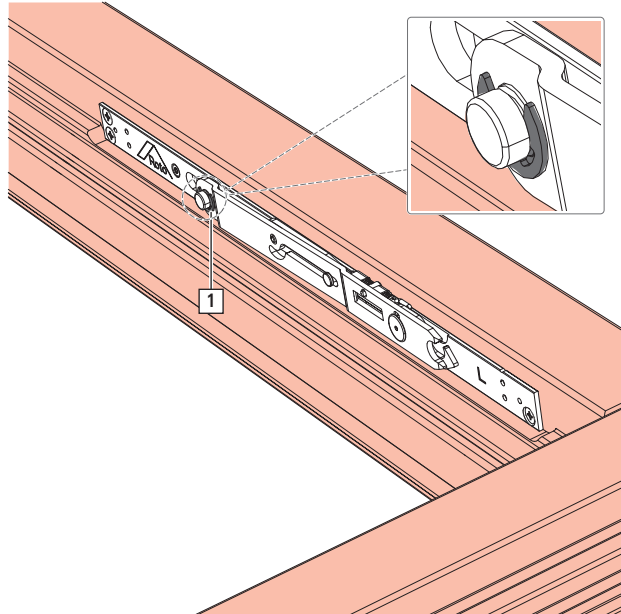
1. Connect the Control Unit (test set) (→ *from page 7*).
2. To check the Roto E-Tec Drive: press the push-button once.  
The window can be unlocked, tilted and locked.
3. Remove the control unit (test set).



## 5.7 Accessories

### 5.7.1 Retracting mechanism

1. Close the Roto E-Tec Drive.
2. Open or tilt the window to the turn position.
3. Loosen the circlip [1] using a suitable tool (e.g. circlip pliers).



4. Swing the retracting mechanism out, move the arm until it can be mounted.
5. Lubricate the retracting mechanism → *from page 99*.
6. Reinsert the retracting mechanism into the bolt, push the arm forwards.
7. Install the circlip.
8. Lock the window.

## 5.8 Roto E-Tec Drive | Power Unit and Power Unit Wireless

### 5.8.1 Installation



#### INFO

This installation process applies to both versions.



#### INFO

The mains connector is for test or handover purposes only and is not authorised for continuous operation. The final wiring must be performed by an electrician.



#### INFO

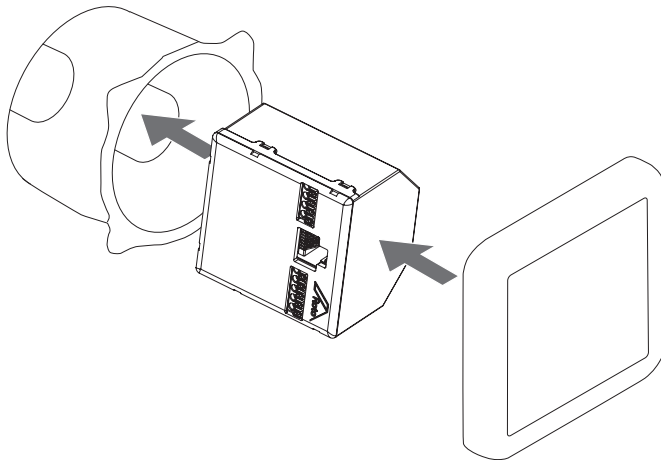
Use a double-deep flush-mounted box (depth of > 60 mm).

Lay the lines separately for the primary and secondary circuit, maintaining an 8 mm clearance.

#### Terminal wiring

Fixed cables: 0.08 mm<sup>2</sup> -1.5 mm<sup>2</sup> / AWG 28-AWG 16

Flexible cables: 0.08 mm<sup>2</sup> -1.5 mm<sup>2</sup> / AWG 28-AWG 16



#### DANGER

##### Risk of death caused by electric shock!

Current can lead to fatal injuries.

- ▶ Take extra care when handling live components.
- ▶ De-energise the device before starting work (switch off the fuse) and check that no voltage is present.
- ▶ Only an electrician may connect the Power Unit or Power Unit Wireless to the mains voltage.
- ▶ Observe and comply with the respective national regulations (in Germany VDE 0100 and others).

1. Switch off the fuse. Check that there is no voltage.
2. Insert the Roto E-Tec Drive cable for the Power Unit or Power Unit Wireless into the RJ45 socket.
3. Wire the push-button in accordance with the connection diagram.

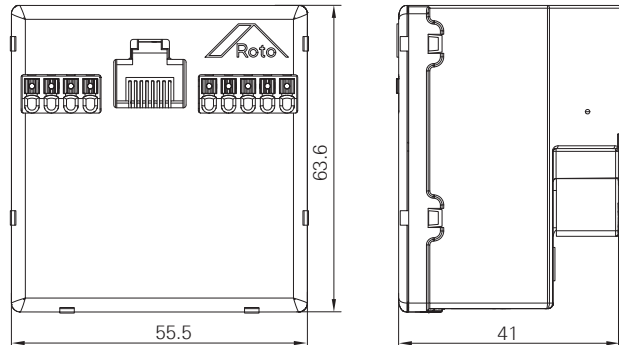


4. Remove the mains connector and connect the corresponding lines in the flush-mounted box to terminals L and N, beneath the cap.
5. Place the Power Unit or Power Unit Wireless in the double-deep flush-mounted box. Ensure that the connection cables are not bent.



#### INFO

Recommendation: use a blank cover, do not plaster over. Ensure that the Power Unit or Power Unit Wireless can be accessed freely.



6. Switch on the fuse.



#### INFO

Patch in a two-pin circuit breaker which corresponds to overvoltage category II.



#### INFO

Maintain a minimum air gap of 8 mm between the primary and secondary lines to ensure that the products comply with the characteristics of protection class II.

A minimum air gap of 8 mm must also be maintained between the primary lines and surrounding metal components.



#### INFO

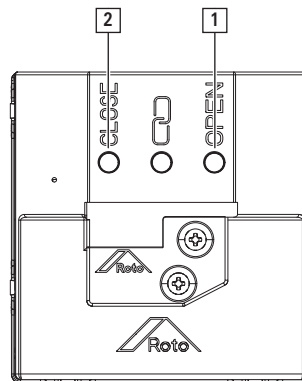
Only install the Power Unit or Power Unit Wireless indoors. The electrician must ensure that end users cannot access live components.

## 5.8.2 Performance test of the Roto E-Tec Drive | Power Unit and Power Unit Wireless

**INFO**

Carry out a performance test before the Roto E-Tec Drive | Power Unit or Power Unit Wireless is installed in the flush-mounted box.

1. Connect the Roto E-Tec Drive | Power Unit or Power Unit Wireless to the power supply unit and the Roto E-Tec Drive.
2. Press the OPEN operating push-button [1] once.  
The window unlocks and tilts.



3. Press the CLOSE operating push-button [2] once.  
The window is locked.
4. Remove the Roto E-Tec Drive | Power Unit or Power Unit Wireless.



## 5.9 Checklist

The checklist specifies the most important points for the use of the Roto E-Tec Drive and is intended to help to check these points in condensed form.

### To be checked / observed by the constructor of the power-operated window

|                                                                           |                          |
|---------------------------------------------------------------------------|--------------------------|
| Availability of the necessary planning documents (→ <i>from page 17</i> ) | <input type="checkbox"/> |
| Utilisation concept                                                       | <input type="checkbox"/> |
| Risk assessment                                                           | <input type="checkbox"/> |
| Tender with technical and construction requirements                       | <input type="checkbox"/> |
| CE conformity for the power-operated window (entire machine) certified    | <input type="checkbox"/> |
| Instruction of the end user (hazards, operation)                          | <input type="checkbox"/> |
| Documents made available to the end user                                  | <input type="checkbox"/> |

### Check of the permissible sash sizes in accordance with the application diagram

#### Verification of the routing position

|                                   |                          |
|-----------------------------------|--------------------------|
| This is a TiltFirst window        | <input type="checkbox"/> |
| This is a Tilt-Only window        | <input type="checkbox"/> |
| The window is fitted on the left  | <input type="checkbox"/> |
| The window is fitted on the right | <input type="checkbox"/> |

#### Check of the technical hardware requirements

|                                                                        |                          |
|------------------------------------------------------------------------|--------------------------|
| Corner drive 1V / 1S with run-up block (place the striker on the side) | <input type="checkbox"/> |
| Stay arm / stay guide (→ <i>from page 56</i> )                         | <input type="checkbox"/> |
| Centre lock (CL 200) as required                                       | <input type="checkbox"/> |
| No lifting mishandling device installed                                | <input type="checkbox"/> |
| Sash lifter installed instead of lifting mishandling device            | <input type="checkbox"/> |
| No handle installed                                                    | <input type="checkbox"/> |
| Turn lock, surface-mounted (for large sashes)                          | <input type="checkbox"/> |
| System-specific run-up wedges for rebate-clearance restriction         | <input type="checkbox"/> |
| 90° handle position for TF: window tilts reliably                      | <input type="checkbox"/> |
| Handle in turn position: sash moves correctly into frame               | <input type="checkbox"/> |
| Sash area > 1.44 m <sup>2</sup> : wind sensor installed                | <input type="checkbox"/> |
| Smooth running of the hardware checked using service handle            | <input type="checkbox"/> |

#### For installation in PVC windows, note the following points:

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Produce a recess in the steel reinforcement separately | <input type="checkbox"/> |
| Protect the notching against corrosion                 | <input type="checkbox"/> |
| Use the packers supplied                               | <input type="checkbox"/> |

**To be checked / observed by the window installer:**

- The cable protrudes approximately 200 mm from the centre of the routing ☐
- The cable is not restricted by screws. (The cable may be damaged by screws.) ☐
- Use the packers supplied for PVC windows ☐
- For Tilt-Only sashes: correct quantity of restrictor and cleaning stays and tilt stays installed and in the correct position ☐

**To be checked / observed by the electrician:**

- Use the Roto E-Tec Drive | Power Unit or Power Unit Wireless with the correct voltage / correct current / correct power (24 V / 500 mA / max. 15 W per drive) ☐
- Connect the pink and brown lines to white (ground) (only for connections without Roto E-Tec Drive | Power Unit or Power Unit Wireless) ☐
- Use dual push-buttons without mutual interlock ☐



## 6 Connection diagram

The following diagrams are non-binding application examples.

These are only intended to provide guidance for customers and do not represent customer-specific solutions.

Proper operation is the responsibility of the customer.

The customer is obligated to ensure safe installation, use, maintenance and operation. The customer is furthermore obligated to ensure that the equipment is only installed by a qualified electrician; failure to do so may result in a risk of fire or risk of electric shock.

Compliance with the applicable standards and provisions must be ensured at all times; the constructor of the system bears full responsibility for this.

The system must not be operated if compliance with the applicable standards and provisions cannot be ensured.

No guarantee is given for the application examples provided. Roto Frank Fenster- und Türtechnologie GmbH shall assume no liability for damage caused by use of the application examples, unless we are obligated to bear liability in accordance with legal provisions in cases of wilful intent.



### INFO

Installation and maintenance work may only be carried out by a company specialising in electrical systems. There is a risk of death when using a mains voltage of 230 V (or 120 V). Only carry out work when the power supply is disconnected.



### INFO

Using one of the application circuits shown may cause the risk situation on the machine to change. In this case, another risk assessment must be carried out and additional protection measures may have to be taken.

If additional control units are used, it must be ensured that they comply with the requirements of EN 60335-1 and EN 60335-2-103.

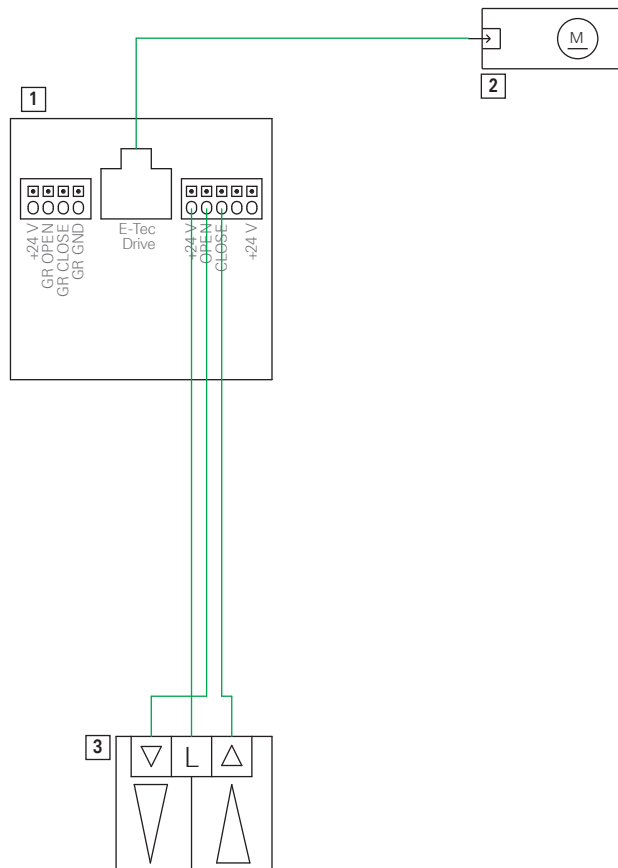


### INFO

If additional devices, e.g. potential-free switch contacts of a relay, are connected to the 24 V circuit, these devices must meet the requirements of the SELV.

The following basic circuits are used as examples.

## 6.1 Operating push-button



[1] Roto E-Tec Drive | Power Unit and Power Unit Wireless

[2] Roto E-Tec Drive

[3] Operating push-button

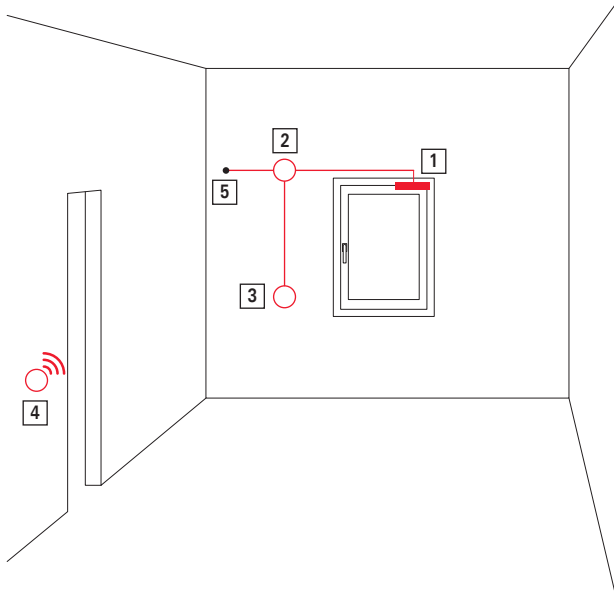


### **INFO** **Push-button**

The push-buttons must not be mutually interlocked (reset).



### Example



- [1] Roto E-Tec Drive
- [2] Roto E-Tec Drive | Power Unit and Power Unit Wireless
- [3] Operating push-button
- [4] Roto E-Tec Drive wireless operating push-button | Power Unit Wireless
- [5] 230 V

### Hand-held transmitters / wireless wall-mounted push-buttons

Hand-held transmitters / wireless wall-mounted push-buttons must meet the following requirements:

- EnOcean radio, European frequency (868 MHz)

EnOcean hand-held transmitters / wireless push-buttons must support one of the following EEPs:

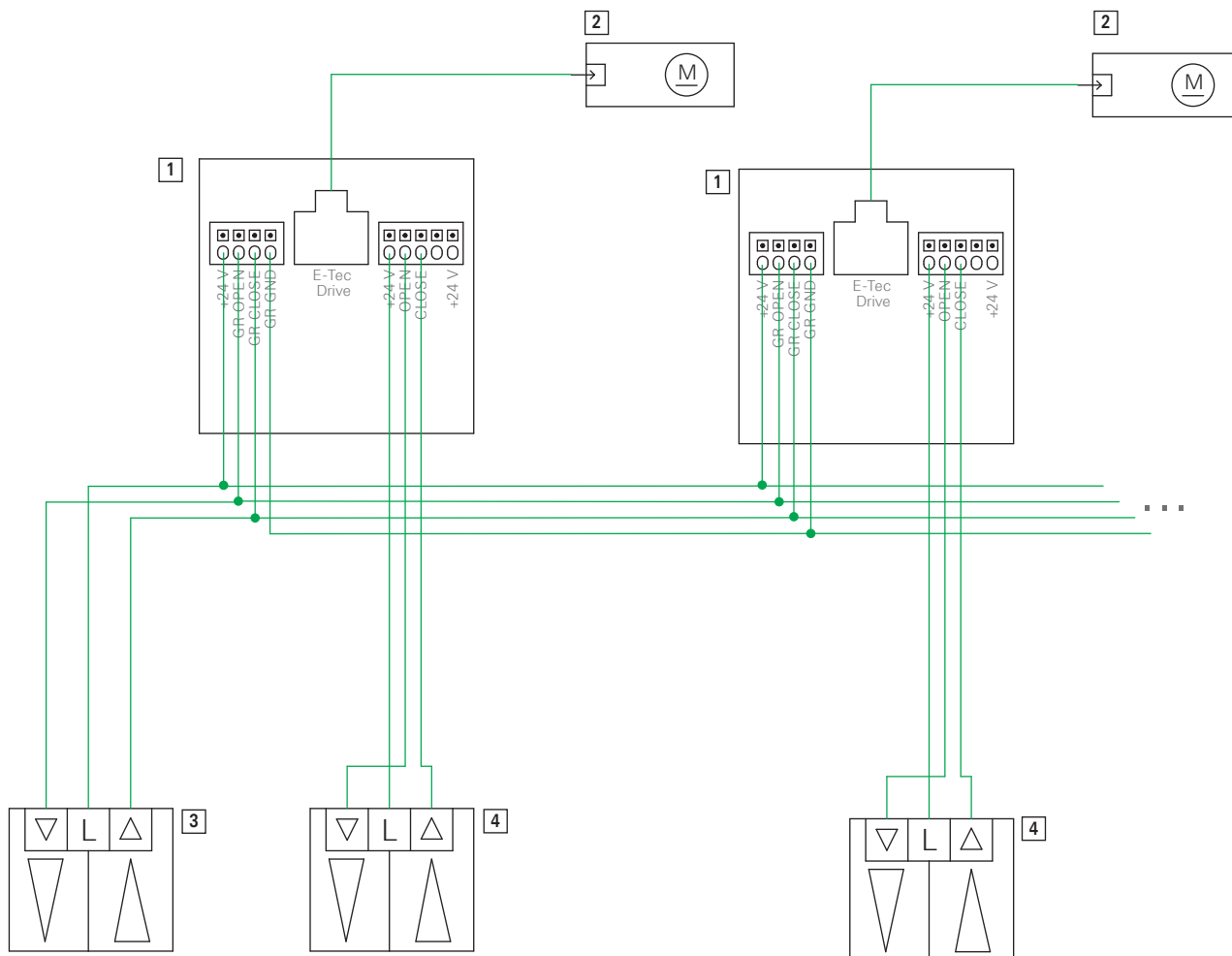
- F6-02-01 EnOcean wireless push-button, PTM210 / PTM215 (unidirectional)
- D2-03-00 EnOcean wireless push-button, PTM215 (unidirectional)
- D2-03-0A EnOcean button (unidirectional)

Further compatible radio transmitters can be found at the following link:

DE: [Produkte "Enabled by EnOcean" \(enocean-alliance.org\)](https://www.enocean-alliance.org/produkte/)

EN: [Products "Enabled by EnOcean" \(enocean-alliance.org\)](https://www.enocean-alliance.org/products/)

## 6.2 Group circuit operating push-button



[1] Roto E-Tec Drive | Power Unit or Power Unit Wireless

[2] Roto E-Tec Drive

[3] Group operating push-button

[4] Operating push-button



### INFO Push-button

The push-buttons must not be mutually interlocked (reset).

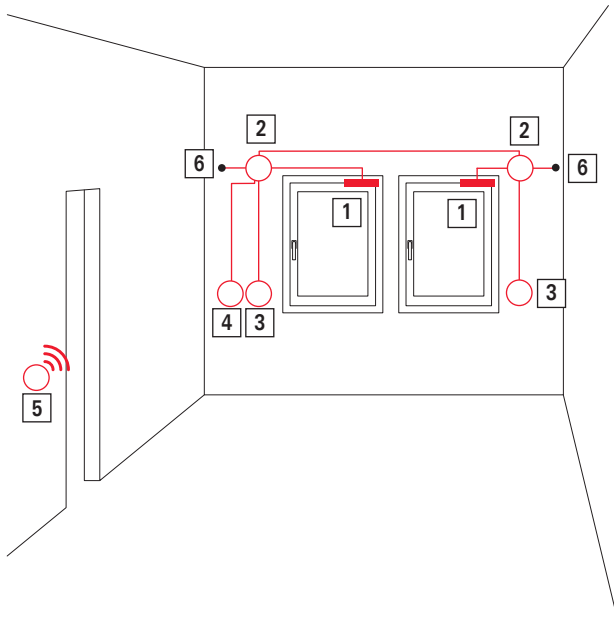


### INFO

Establish the earth connection between individual Roto E-Tec Drive | Power Units via GR GND.



### Example



- [1] Roto E-Tec Drive
- [2] Roto E-Tec Drive | Power Unit or Power Unit Wireless
- [3] Operating push-button
- [4] Group operating push-button
- [5] Roto E-Tec Drive wireless operating push-button | Power Unit Wireless
- [6] 230 V



#### INFO

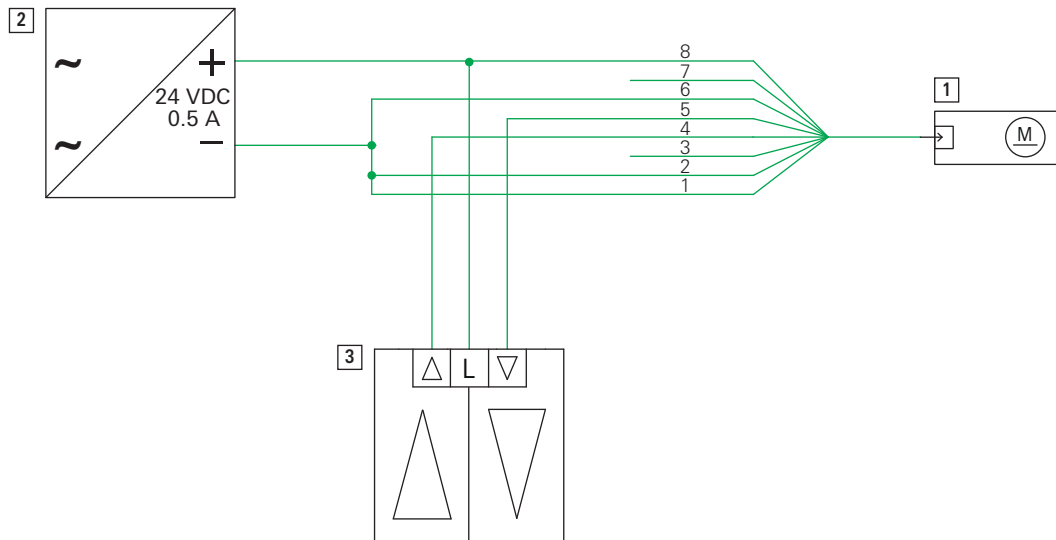
One wireless operating push-button can be programmed in one or more Roto E-Tec Drive | Power Units Wireless.



#### INFO

Up to five compatible EnOcean devices can be programmed in one Roto E-Tec Drive | Power Unit Wireless.

### 6.3 Without E-Tec Drive | Power Unit or Power Unit Wireless



- [1] Roto E-Tec Drive
- [2] Mains connection
- [3] Operating push-button

**INFO**  
**Push-button**

The push-buttons must not be mutually interlocked (reset).

| Pin | Colour | Assignment        |
|-----|--------|-------------------|
| 1   | White  | GND               |
| 2   | Brown  | Internal (Com Tx) |
| 3   | Green  | RM                |
| 4   | Yellow | CLOSE             |
| 5   | Grey   | OPEN              |
| 6   | Pink   | Internal (Com Rx) |
| 7   | Blue   | US                |
| 8   | Red    | +24 V DC          |

Pins 4 and 5: generate an opening or closing impulse (+24 V DC) via a potential-free contact / relay or push-button.

Pins 2 and 6: place ground at GND.



## 7 Operation

### 7.1 Roto E-Tec Drive

#### 7.1.1 Initial operation

##### 7.1.1.1 Programming the final position



#### WARNING

##### Risk of injury due to incorrectly installed drive

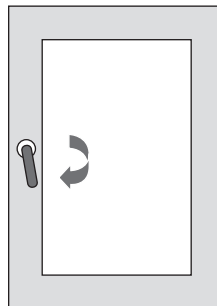
An incorrectly installed drive can lead to injuries.

- The incomplete machine or Roto E-Tec Drive may only be started up if it has been determined that the machine or system into which the incomplete machine was installed complies with the regulations of the European Directive 2006/42/EC on machinery and the EU Declaration of Conformity has been issued in accordance with Appendix II Part A.

1. Open the escutcheon cover for removable service handle on the handle.

2. Attach the service handle. Lock the window using the service handle until the handle encounters resistance.

The drive cam of the Roto E-Tec Drive is in contact with the drive unit.

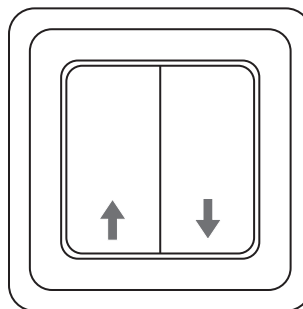


3. Press the OPEN and CLOSE push-buttons simultaneously three times within four seconds.

The reset of the final position is confirmed by one short and one long beeping sound.

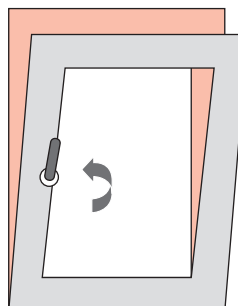
↑ OPEN

↓ CLOSE



4. Press the OPEN push-button.

The window unlocks and tilts. The service handle turns to the tilt position.



#### INFO

Equip the push-button for operating the drive with suitable signs.

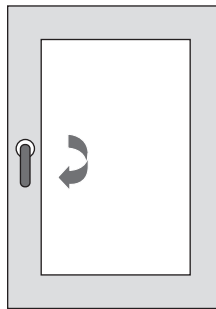
5. Press the CLOSE push-button.

The window closes and locks. The service handle firstly turns to the locking position, then briefly in the opposite direction to mechanically uncouple the window from the drive.

The successful programming of the final position is confirmed by two short beeping sounds.

The Roto E-Tec Drive has now programmed its final position for this window and the hardware has been released for manual and electric operation.

In the case of an error, the final position can be re-programmed at any time (see above).



#### **INFO**

It is possible that the service handle may not reach the vertical handle position in the tilt or locking position due to the cumulative effect of tolerances on the window during installation. This is not a technical fault.

6. Remove the service handle.
7. Close with the escutcheon cover for removable service handle.

#### **7.1.1.2 Resetting the final position**

If malfunctions occur, the saved final position of the drive can be reset.

1. Press the OPEN and CLOSE push-buttons simultaneously three times within four seconds.  
The reset of the final position is confirmed by one short and one long beeping sound.
2. Perform initial operation again, → *from page 85*, from step 5 onwards.



### 7.1.2 Opening and closing



#### **CAUTION**

##### **Risk of injury due to opening and closing forces**

During operation, there is a risk of crushing and being caught near the movable parts of the drive.

- ▶ Never reach between the sash and frame or between movable parts of the Roto E-Tec Drive while the drive is moving.

#### **Opening the window electrically**

1. Briefly press the OPEN push-button.

The sash firstly unlocks and then automatically moves to the tilt position.



#### **INFO**

A constant signal on the CLOSE push-button, e.g. from a wind sensor when the wind pressure is too high, prevents the sash from opening.

#### **Closing the window electrically**

1. Briefly press the CLOSE push-button.

The sash automatically moves to the locked position and then locks.

### 7.1.3 Stopping the drive

The drive can be stopped in any sash position by briefly pressing the respective opposite direction push-button or by simultaneously pressing both push-buttons (OPEN and CLOSE).



#### **INFO**

If the sash is already flush with the frame during the closing process, pressing the OPEN push-button can unlock the window because the drive cannot complete the closing process. For this reason, always wait until the drive has finished locking the sash.

### 7.1.4 Manual operation

1. Move the window to the locked position using the CLOSE push-button and wait until the locking process is complete.
2. Ensure that it is not possible to provide an electric impulse in the OPEN direction. Switch off the control system if necessary.
3. Open the escutcheon cover for removable service handle and fit the service handle.
4. It is now possible to move the window to any position using the service handle.

### 7.1.5 Resetting the drive



#### INFO

- Before using the electric drive again, close and lock the window, remove the service handle and close the escutcheon cover for removable service handle.
- Do not open or close the sash with force under any circumstances. The drive could be damaged.
- To avoid damage, do not operate the drive if the window is tilted or opened via the service handle.



#### INFO

Stop using the drive in the event of a fault. Decommission the drive by switching off the supply voltage. Only recommission the drive once a specialist company has performed the repair.

Malfunctions can be rectified by a reset; the final position of the hardware is reprogrammed → *from page 85*.

1. Press the OPEN and CLOSE push-buttons simultaneously three times within four seconds.  
The reset of the final position is confirmed by one short and one long beeping sound.
2. Then completely open the Roto E-Tec Drive and close it again.  
The successful programming of the final position is confirmed by two short beeping sounds.



#### INFO

In combination with the MTC / MLS contact element, a reset is only possible if the window is closed and locked.

### 7.1.6 Changing the movement speed

The Roto E-Tec Drive can be operated at a permanently reduced movement speed to minimise operating noises (e.g. in bedrooms).

The switch is carried out via the OPEN / CLOSE push-buttons and is then permanently saved.

1. To switch, press the OPEN and CLOSE push-buttons at the same time for five seconds.
2. After five seconds, release both push-buttons and immediately briefly press them both again.  
The Roto E-Tec Drive confirms the command via four short beeping sounds.

Repeating steps 1 and 2 switches the drive back to normal speed.

### 7.1.7 Ventilation function

1. To start, press the OPEN push-button three times.  
The Roto E-Tec Drive confirms the command via one short beeping sound.
2. The Roto E-Tec Drive opens then closes again automatically after 10 minutes.



#### INFO

The preset time of 10 minutes can be changed to between 1 and 60 minutes via the PC using the Control Unit (→ *from page 7*).



## 7.1.8 Switching off the acoustic signal

The acoustic signals can be deactivated jointly. In this process, the acoustic signals remain permanently deactivated and can be reactivated if necessary.

1. To deactivate, press the OPEN and CLOSE push-buttons simultaneously for 10-15 seconds.
2. After 10 to 15 seconds, release both push-buttons and immediately briefly press them both again.

To reactivate the acoustic signals, repeat steps 1 and 2.



### INFO

This setting is not confirmed by an acoustic signal.

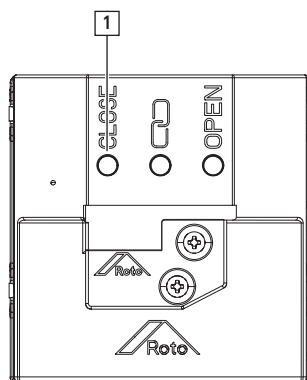


### INFO

The acoustic signals can also be deactivated individually via the PC using the Control Unit (→ *from page 7*).

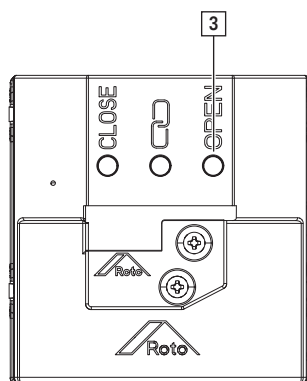
## 7.2 Roto E-Tec Drive | Power Unit

### 7.2.1 Close operating push-button



Press once: sends closing impulse to Roto E-Tec Drive

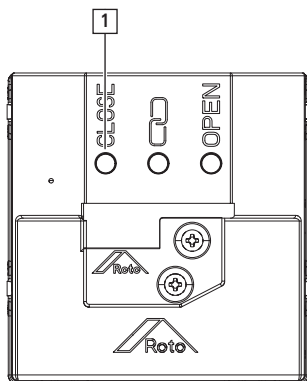
### 7.2.2 Open operating push-button



Press once: sends opening impulse to Roto E-Tec Drive

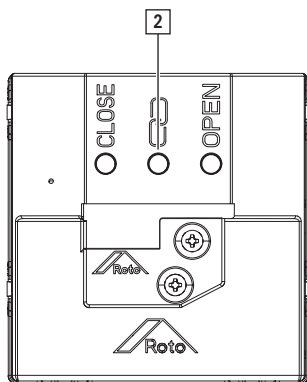
## 7.3 Roto E-Tec Drive | Power Unit Wireless

### 7.3.1 Close operating push-button



Press once: sends closing impulse to Roto E-Tec Drive

### 7.3.2 Connect operating push-button



#### EnOcean radio units

Press once

Press twice

Press three times

Programming mode. This mode is active for one minute. The LED lights up blue.

Delete mode. This mode is active for one minute. The LED lights up orange.

Switch between encrypted and unencrypted communication.

**Operation**

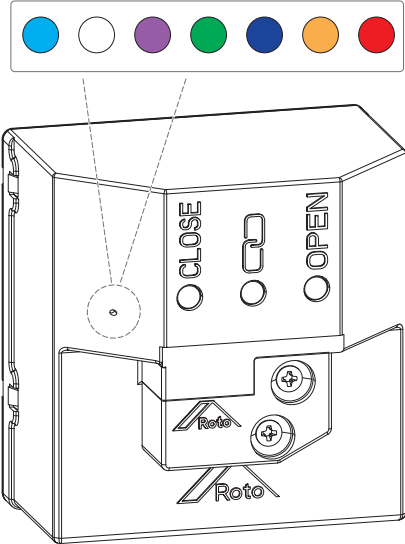
**Roto E-Tec Drive | Power Unit Wireless**

Connect operating push-button



Press four times                      Change the EnOcean repeater level → *from page 91*  
Press and hold for ten seconds    Reset / factory settings

**Overview of LEDs**



| LED colour | Status      |                  |                  | Meaning                                                 |
|------------|-------------|------------------|------------------|---------------------------------------------------------|
|            | No repeater | Level 1 repeater | Level 2 repeater |                                                         |
| Turquoise  | Lit up      | Flashing         | Flashing quickly | Establishing a connection with Roto E-Tec Drive.        |
| White      | Lit up      | Flashing         | Flashing quickly | Normal operation (encrypted wireless) <sup>1)</sup>     |
| Lilac      | Lit up      | Flashing         | Flashing quickly | Normal operation (unencrypted wireless) <sup>1)</sup>   |
| Green      | Lit up      | Flashing         | Flashing quickly | Normal operation of Roto E-Tec Drive with software V5.0 |
| Blue       | Lit up      | Flashing         | Flashing quickly | Programming mode active                                 |
| Orange     | Lit up      | Flashing         | Flashing quickly | Delete mode active                                      |
| Red        | Lit up      |                  |                  | Fault                                                   |
|            | Flashing    |                  |                  | Reset in progress                                       |

<sup>1)</sup> With E-Tec Drive (Smart) V6.0 and more recent.

**7.3.2.1 Repeater mode – Roto E-Tec Drive | Power Unit Wireless**

There are three levels for setting the repeater function for extending the range of EnOcean radio signals.

Level 0 Repeater mode is deactivated

Level 1 Any EnOcean radio telegram that has not yet been repeated is received and sent again.

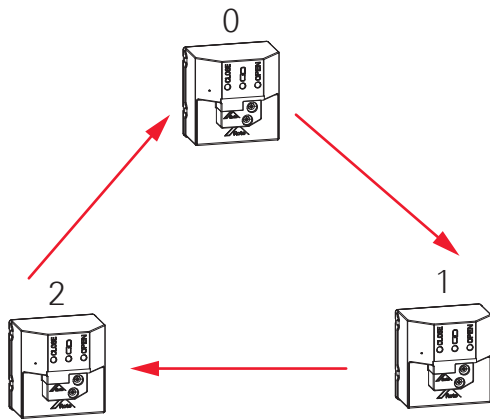
Level 2 Any EnOcean radio telegram that has not yet been repeated, or an EnOcean radio telegram that has already been repeated once, is received and sent again.

The repeater is set to Level 0 during initial installation or after a reset.

## Operation

### Roto E-Tec Drive | Power Unit Wireless

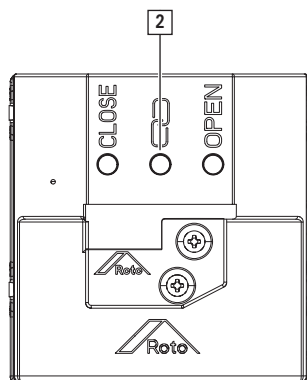
Connect operating push-button



You can find information on planning a radio network online at: [www.enocean.com](http://www.enocean.com) (range planning for EnOcean radio systems).



### 7.3.2.2 Programming



#### INFO

Up to five EnOcean **U**nique **R**adio **I**dentifiers (EURIDs) can be programmed at the same time.

Up to five EnOcean wireless push-buttons are available for operating an E-Tec Drive at the same time.



#### INFO

Do not activate any other EnOcean devices during the programming process.

If the LED of the Roto E-Tec Drive | Power Unit Wireless is still lit up blue after pressing the “Connect” push-button, the programming process has to be repeated.

### Smart Home Gateway

1. Switch the Smart Home Gateway to programming mode.
2. Press the “Connect” push-button once.

### Window sensor

1. Switch the Roto E-Tec Drive | Power Unit Wireless to programming mode.  
Press the “Connect” push-button once. The mode is active for one minute. The LED lights up blue.
2. Switch the window sensor to programming mode in accordance with the device manufacturer’s instructions.  
The window sensor is programmed directly in the Roto E-Tec Drive | Power Unit Wireless.
3. The LED of the Roto E-Tec Drive | Power Unit Wireless switches to the colour of the set operating mode.

### EnOcean wireless push-buttons

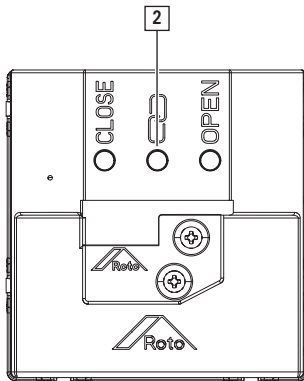
1. Switch the Roto E-Tec Drive | Power Unit Wireless to programming mode.  
Press the “Connect” push-button once. The mode is active for one minute. The LED lights up blue.
2. Switch the wireless push-button to programming mode in accordance with the device manufacturer’s instructions.  
The wireless push-button is programmed directly in the Roto E-Tec Drive | Power Unit Wireless.
3. The LED of the Roto E-Tec Drive | Power Unit Wireless switches to the colour of the set operating mode.

## Operation

### Roto E-Tec Drive | Power Unit Wireless

Connect operating push-button

#### 7.3.2.3 Deletion



#### Smart Home Gateway

1. Remove the Roto E-Tec Drive | Power Unit Wireless via the app.
2. The Smart Home Gateway sends a UTE teach-in deletion request to the Roto E-Tec Drive | Power Unit Wireless. The Roto E-Tec Drive | Power Unit Wireless deletes the Smart Home Gateway.

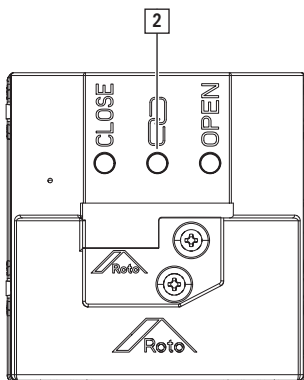
#### Window sensor

1. Switch the Roto E-Tec Drive | Power Unit Wireless to delete mode.  
Press the "Connect" push-button twice. The mode is active for one minute. The LED lights up orange.
2. The next programming telegram from a known EnOcean device is deleted.
3. The LED of the Roto E-Tec Drive | Power Unit Wireless switches to the colour of the set operating mode.

#### EnOcean wireless push-buttons

1. Switch the Roto E-Tec Drive | Power Unit Wireless to delete mode.  
Press the "Connect" push-button twice. The mode is active for one minute. The LED lights up orange.
2. The next programming telegram from a known EnOcean device is deleted.
3. The LED of the Roto E-Tec Drive | Power Unit Wireless switches to the colour of the set operating mode.

#### 7.3.2.4 Reset / factory settings

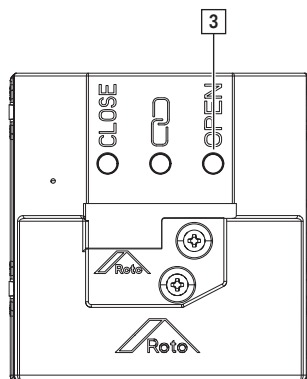


Press and hold the "Connect" push-button [1] for ten seconds.

⇒ The LED flashes red.



### 7.3.3 Open operating push-button



Press once: sends opening impulse to Roto E-Tec Drive

## 7.4 Fault assistance

| Fault                                                                                                                                                | Cause                                                             | Corrective action                                                                                                                                                      | To be carried out by |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Drive does not respond when a button is pressed.                                                                                                     | Incorrect wiring.                                                 | Match wiring with the operation instructions.                                                                                                                          | ■                    |
|                                                                                                                                                      | Short-circuit between plus (red) and minus (white).               |                                                                                                                                                                        |                      |
|                                                                                                                                                      | Cable is faulty.                                                  | Check the red and white wires in the cable for continuity.                                                                                                             | ■                    |
|                                                                                                                                                      | Short-circuit between plus (red) and minus (white).               |                                                                                                                                                                        |                      |
|                                                                                                                                                      | Incorrect or faulty power supply unit.                            | The measurement at the outlet of the power supply unit should read 24 V and it should be designed for 0.5 A.                                                           | ■                    |
| Drive does not open / three double beeping sounds can be heard (forced shutdown).                                                                    | Drive does not receive a signal from the external control system. | Ensure a power supply (24 V $\pm$ 5% between red and blue). Check the input signals (grey and yellow wires approx. 24 V) when the external control system is actuated. | ■                    |
|                                                                                                                                                      | Drive receives a stop signal from the external control system.    | Check the input signals (grey and yellow wires approx. 24 V) for a constant signal.                                                                                    | ■                    |
|                                                                                                                                                      | Power supply interrupted.                                         | Ensure a power supply (24 V $\pm$ 5%).                                                                                                                                 | ■                    |
|                                                                                                                                                      | Control signal does not reach drive unit.                         | Check the input signal (grey wire approx. 24 V / yellow wire 0 V) when the external control system is actuated.                                                        | ■                    |
|                                                                                                                                                      | Drive is already in "OPEN" position.                              | Check the position of the sash.<br>The reset function enables the temporary final position to be reset.                                                                | □                    |
| The drive stops responding to commands 60 seconds after the operating voltage is switched on.<br>Four double beeping sounds can be heard. (time-out) | Hardware is blocked.<br>Window cannot tilt.                       | Check window for manual function. Remove the cause of the blockage.                                                                                                    | □                    |
|                                                                                                                                                      | Hardware is too stiff.                                            | Check window for manual function and, if necessary, make the hardware run more smoothly.                                                                               | ■                    |
|                                                                                                                                                      | Speed sensor is faulty.                                           | Open window manually. Remove the drive and send it to be repaired.                                                                                                     | ■                    |
|                                                                                                                                                      | Power supply interrupted.                                         | Ensure a power supply (24 V $\pm$ 5%). Check the polarity of the voltage.                                                                                              | ■                    |
|                                                                                                                                                      | Control signal does not reach drive unit.                         | Check the input signal (yellow wire approx. 24 V / grey wire 0 V) when the external control system is actuated.                                                        | ■                    |
| Drive does not close / three double beeping sounds can be heard (forced shutdown).                                                                   | Drive is already in "CLOSED" position.                            | Check the position of the sash.<br>The reset function enables the temporary final position to be reset.                                                                | □                    |
|                                                                                                                                                      | Hardware is blocked.<br>Window cannot close.                      | Check window for manual function. Remove the cause of the blockage.                                                                                                    | □                    |
|                                                                                                                                                      | Hardware is too stiff.                                            | Check window for manual function and, if necessary, make the hardware run more smoothly.                                                                               | ■                    |
|                                                                                                                                                      | Power supply interrupted.                                         | Ensure a power supply (24 V $\pm$ 5%). Check the polarity of the voltage.                                                                                              | ■                    |
|                                                                                                                                                      | Control signal does not reach drive unit.                         | Check the input signal (yellow wire approx. 24 V / grey wire 0 V) when the external control system is actuated.                                                        | ■                    |

| Fault                                                                                               | Cause                                              | Corrective action                                                                                                                            | To be carried out by |
|-----------------------------------------------------------------------------------------------------|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Drive is stiff.                                                                                     | Chips or other types of contaminants in the drive. | Remove chips and contaminants.                                                                                                               | ■                    |
|                                                                                                     | Connecting rod is not positioned correctly.        | Move the connecting rod of the espagnolette by one to two notches.                                                                           | ■                    |
| Drive does not tilt the sash open.<br>Three double beeping sounds can be heard (forced shutdown).   | Drive stops due to power shutdown.                 | Check the installation position of the Roto E-Tec Drive in the frame.                                                                        | ■                    |
|                                                                                                     |                                                    | Check engagement of hardware in locking points and check the installation situation of frame and sash components.                            | ■                    |
|                                                                                                     | Draught.                                           | Remove cause of draught.                                                                                                                     | □                    |
|                                                                                                     | Wind pressure too strong.                          | In the event of wind pressure, there might be a closing signal, e.g. from an installed wind monitor. Wait for the wind pressure to decrease. | □                    |
| Drive does not tilt the sash closed.<br>Three double beeping sounds can be heard (forced shutdown). | Drive stops due to power shutdown.                 | Remove possible obstacle and try again. If necessary, reprogram the final position.                                                          | □                    |
|                                                                                                     | Wind pressure too strong.                          | Use wind monitor.                                                                                                                            | □                    |
|                                                                                                     | Draught.                                           | Remove cause of draught.                                                                                                                     | □                    |
|                                                                                                     |                                                    | Try again when the wind is less strong.                                                                                                      | □                    |
| Drive locked.<br>Three double beeping sounds can be heard (forced shutdown).                        | Incorrect final position programmed.               | Perform a reset.                                                                                                                             | □                    |
|                                                                                                     | Memory full.                                       | Perform a reset.                                                                                                                             | □                    |
| Roto E-Tec Drive   Power Unit Wireless: devices cannot be programmed.                               | Radio range exceeded.                              | Move the wireless push-button so that it is in the radio range.<br>Use an EnOcean repeater.                                                  | ■                    |
|                                                                                                     | Device is not detected.                            | Perform a reset.                                                                                                                             | □                    |
|                                                                                                     | Device is not detected.                            | Reprogram the wireless push-button (Smart Home system).<br>Check the radio range.                                                            |                      |

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

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



## 8 Maintenance



### CAUTION

#### Performing maintenance work incorrectly can lead to injuries.

Performing maintenance incorrectly can lead to injuries.

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



### ATTENTION

#### Incorrect or improper testing may cause property damage.

Incorrect or improper testing of the hardware may cause the element to malfunction.

- ▶ Have the hardware checked by a specialist company when installed.
- ▶ If defects need to be remedied, have the element unhinged and remounted by a specialist company.



### INFO

The manufacturer must draw the attention of builders and end consumers to these maintenance instructions.

Roto Frank Fenster- und Türtechnologie GmbH recommends the manufacturer conclude a maintenance agreement with their end users.

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

|                                                    | Responsibility           |                 |
|----------------------------------------------------|--------------------------|-----------------|
| <b>Maintenance interval</b>                        | <input type="checkbox"/> | → from page 97  |
| <b>Cleaning</b>                                    |                          | → from page 98  |
| Clean hardware                                     | <input type="checkbox"/> |                 |
| <b>Care</b>                                        |                          | → from page 98  |
| Lubricate movable parts                            | <input type="checkbox"/> |                 |
| Lubricate locking points                           | <input type="checkbox"/> |                 |
| <b>Performance test</b>                            |                          | → from page 99  |
| 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                             | ■                        |                 |
| <b>Repair</b>                                      |                          | → from page 100 |
| Retighten screws                                   | ■                        |                 |
| Replace damaged components                         | ■                        |                 |

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

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

### 8.1 Maintenance intervals



### ATTENTION

#### Failure to adhere to maintenance intervals may cause property damage.

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

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

- ▶ Determine and adhere to the appropriate maintenance interval in accordance with the ambient conditions.

## 8.2 Cleaning



### ATTENTION

#### Using incorrect cleaning agents and sealing compounds may cause property damage.

Cleaning agents and sealing compounds may damage the surfaces of components and gaskets.

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

### Cleaning the hardware

- ▶ Clean deposits and contaminants off the hardware using a soft cloth.
- ▶ Lubricate movable parts and locking points after cleaning. → 8.3 "Care" from page 98
- ▶ Apply a thin protective film to the hardware, for example using a cloth soaked in oil.

## 8.3 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.
- ▶ Use appropriate lubricant in more challenging climatic conditions. Note the manufacturer specifications.



### 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

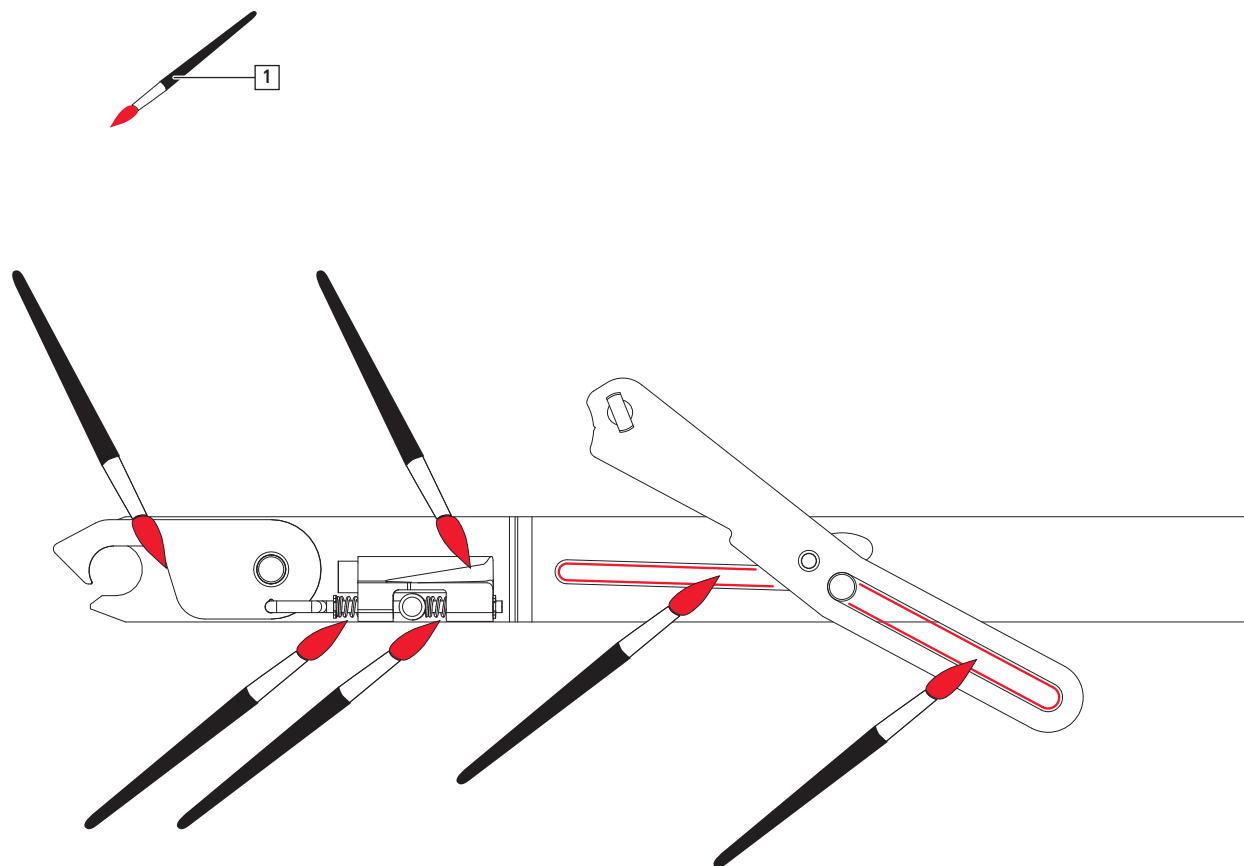


### INFO

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.



### 8.3.1 Lubrication points



[1] Grease



#### INFO

When maintenance, adjustment or repair work is being carried out, disconnect the drive from the power supply and do not use it.

### 8.4 Performance test



#### WARNING

##### Improper repair work may pose a risk of death!

Improper maintenance may prevent the element from working properly and make it less safe to use.

- ▶ Always have repairs performed by a specialist company.

Check for proper operation:

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

Have malfunctions remedied by a specialist company.

## 8.5 Repair



### **WARNING**

#### **Improper repair work may pose a risk of death!**

Improper maintenance may prevent the element from working properly and make it less safe to use.

- ▶ Always have repairs performed by a specialist company.



### **ATTENTION**

#### **Improper screw fixings may cause property damage.**

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

- ▶ Check that the individual screws are secure and seated correctly.
- ▶ Tighten or replace loose or faulty screws.
- ▶ Use only the suggested screws.

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

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

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

The specialist company must observe the following:

- Perform the necessary repair work properly, according to generally recognised engineering practice and in accordance with the applicable regulations.
- Do not perform makeshift repairs on worn or damaged components.
- Only use original or approved spare parts for repairs.



## 9 Dismantling



### WARNING

#### Improper dismantling may pose a risk of death!

The sash may fall during dismantling.

- ▶ Secure the sash to prevent it from falling, e.g. by using two people.
- ▶ Always have dismantling work performed by a specialist company.



### CAUTION

#### Physical strain may cause injury and damage to health.

Carrying and lifting heavy loads for extended periods leads to physical injury in the long term.

- ▶ When carrying or lifting loads, maintain an ergonomically correct posture. The maximum permissible load is 25 kg for men and 10 kg for women.

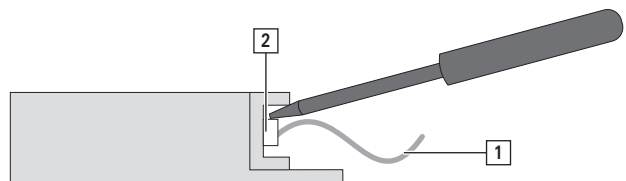


### INFO

Unless otherwise stated, dismantling is performed in reverse order to installation.

## 9.1 Disconnecting cables

1. Remove the cable [1] from the strain relief lug [2].



2. Carefully push down the link on the connector with a small screwdriver or similar tool.



### INFO

When removing the cable connection with the RJ45 connector, the locking lug must be actuated carefully. Prevent damage to or bending of the delicate contacts in the socket.

3. Pull out the cable.

## 9.2 Hardware components

### Removing hardware components

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

## 10 Transport

### 10.1 Transporting elements and hardware



#### DANGER

##### **Improper transport poses a risk of death!**

Improper procedures for transporting, loading or unloading elements may cause serious injuries and glass breakage as a result of the elements swinging open, falling or becoming overloaded.

- ▶ Note the applicable accident prevention regulations.
- ▶ Note force application points and reaction forces.
- ▶ Prevent the sash from opening uncontrollably.
- ▶ Avoid jerky movements.
- ▶ Use suitable transportation means and protective devices.
- ▶ Watch out for protruding components.
- ▶ Transport heavy loads with two people and use suitable transportation means (such as an industrial truck).



#### CAUTION

##### **Trapped limbs may result in injuries.**

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

- ▶ Never reach near the scissor stays.
- ▶ Close the sash after installation and secure it in place for transport.
- ▶ Wear safety gloves and protective footwear.



#### CAUTION

##### **Physical strain may cause injury and damage to health.**

Carrying and lifting heavy loads for extended periods leads to physical injury in the long term.

- ▶ When carrying or lifting loads, maintain an ergonomically correct posture. The maximum permissible load is 25 kg for men and 10 kg for women.

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

Observe the following basic instructions when transporting hardware:

- ▶ Transport larger scopes of delivery using appropriate transportation means (such as industrial trucks).
- ▶ Note the transport weight in order to select appropriate transportation means.
- ▶ Ensure that the transport process is careful and appropriate for the material and that components are protected against dirt during transport.
- ▶ Immediately check the delivery for completeness and transport damage on receipt.



#### INFO

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

Use the following transportation means for support when transporting, loading and unloading larger scopes of delivery:



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



#### INFO

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



#### INFO

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

## 10.2 Storing the hardware

Store all hardware components as follows until they are installed:

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

## 10.3 Storing the Roto E-Tec Drive

- Never store windows with installed Roto E-Tec Drives outside. The ingress of rainwater can damage the drive.
- Do not expose the Roto E-Tec Drive to mechanical loads, impact, collisions, extreme heat or electric overload during transport, storage and operation.
- Protect the Roto E-Tec Drive against sunlight.
- Avoid contact with dust and liquids.
- Avoid contact with water spray and droplets.

## 10.4 Transport inspection

Immediately check the delivery for completeness and transport damage on receipt.



#### ATTENTION

##### **Strong vibration may cause property damage.**

Strong vibration may permanently damage the Roto E-Tec Drive.

- ▶ Avoid vibration during transport.

## 11 Disposal



### ATTENTION

#### **Incorrect disposal may pollute the environment.**

Pieces of hardware are raw materials.

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

### 11.1 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.

### 11.2 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.

### 11.3 Electronic waste

Disposal of electronic waste in accordance with the legal regulations in the individual countries, e.g. in accordance with EU directives (2002/95/EC: Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment, RoHs and 2002/96/EC: Requirements for the take-back and recycling of waste electrical and electronic equipment (WEEE)).

According to the Federal Electrical and Electronic Equipment Act (ElektroG) in Germany, waste electronic equipment must not be disposed of in household waste; it must be taken to an appropriate disposal site.





## 12 Technical data

### 12.1 Roto E-Tec Drive

| Technical data                                                     |                                                                                                                                                                               |
|--------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power supply                                                       | 24 V DC $\pm 5\%$ stabilised, 500 mA, SELV (safety extra-low voltage)                                                                                                         |
| Temperature range                                                  | During operation: 0 °C to +60 °C<br>In storage: -20 °C to +85 °C                                                                                                              |
| Relative air humidity                                              | 5% to 90%, non-condensing                                                                                                                                                     |
| IP rating                                                          | IP20 in accordance with DIN EN 60529                                                                                                                                          |
| Tilting / closing                                                  | > 150 N                                                                                                                                                                       |
| Opening width                                                      | Approx. 120 mm                                                                                                                                                                |
| Locking and unlocking force                                        | 750 N                                                                                                                                                                         |
| Hardware travel                                                    | 16 – 36 mm ( $\pm 2$ )                                                                                                                                                        |
| Typical opening / closing times in [s]                             | Slow opening 110 s                                                                                                                                                            |
| TiltFirst and Tilt-Only windows                                    | Slow closing 130 s<br>Standard opening 70 s<br>Standard closing 80 s                                                                                                          |
| Speed when tilting and locking the window at the main closing edge | Max. 15 mm/s                                                                                                                                                                  |
| Current consumption                                                | No-load operation: approx. 35 mA<br>Locking / unlocking: max. 500 mA                                                                                                          |
| Weight                                                             | 450 g (with scissor stay)                                                                                                                                                     |
| Dimensions (W x D x H)                                             | 335 x 18 x 30 mm without scissor stay                                                                                                                                         |
| Routing dimensions (W x D x H)                                     | 300 x 16 x 35 mm                                                                                                                                                              |
| Connection                                                         | RJ45 plug connection, FCC68 data cable, colour-coded, cable length max. 6 m                                                                                                   |
| Emission sound pressure level (LpA)                                | $\leq 70$ dB(A)                                                                                                                                                               |
| Test                                                               | 20,000 cycles at 750 N in complete cycles (OPEN / CLOSE)                                                                                                                      |
| Protection class in accordance with VFF data sheet KB.01           | Protective classes 0 to 3 in accordance with VFF data sheet KB.01 are fulfilled.                                                                                              |
| Conformity                                                         | See Declaration of Conformity for incomplete machine in accordance with the Machinery Directive 2006/42/EC<br>See EU Declaration of Conformity for EMC Directive (2014/30/EU) |

### 12.2 Roto E-Tec Drive | Power Unit

| Technical data            |                                                                                                                 |
|---------------------------|-----------------------------------------------------------------------------------------------------------------|
| Power supply              | 100 – 240 V AC, 50 – 60 Hz, 0.6 A                                                                               |
| Output                    | 24 V DC, 0.63 A                                                                                                 |
| Dimensions (L x W x H)    | 55.5 x 63.6 x 41 mm                                                                                             |
| <b>Ambient conditions</b> |                                                                                                                 |
| Operating temperature     | 0 °C to + 60 °C                                                                                                 |
| Relative air humidity     | 20 – 90%                                                                                                        |
| Colour                    | RAL 7035 (Light grey)                                                                                           |
| IP rating                 | IP20                                                                                                            |
| <b>Conformity</b>         |                                                                                                                 |
| Approval                  | CE,<br>EMC Directive (2014/30/EU),<br>Low Voltage Directive (LVD) (2014/35/EU),<br>RoHS Directive (2011/65/EU). |

## 12.3 Roto E-Tec Drive | Power Unit Wireless

| Technical data            |                                                                                      |
|---------------------------|--------------------------------------------------------------------------------------|
| Power supply              | 100 – 240 V AC, 50 – 60 Hz, 0.6 A                                                    |
| Output                    | 24 V DC, 0.63 A                                                                      |
| Dimensions (L x W x H)    | 55.5 x 63.6 x 41 mm                                                                  |
| <b>Radio transmitter</b>  |                                                                                      |
| Radio frequency           | 868.3 MHz, ASK modulation                                                            |
| Protocol / standard       | EnOcean Radio Protocol version 1, lead market Europe                                 |
| Encryption                | 32-bit rolling code (RLC), 4-byte AES / UTE teach-in telegram                        |
| <b>Ambient conditions</b> |                                                                                      |
| Operating temperature     | 0 °C to + 60 °C                                                                      |
| Relative air humidity     | 20 – 90%                                                                             |
| Colour                    | RAL 7035 (Light grey)                                                                |
| IP rating                 | IP20                                                                                 |
| <b>Radio range</b>        |                                                                                      |
| Without obstacles         | Up to 300 m (open areas)                                                             |
| Buildings                 | 10 to 30 m                                                                           |
| <b>Conformity</b>         |                                                                                      |
| Approval                  | CE,<br>Radio Equipment Directive (RED) (2014/53/EU),<br>RoHS Directive (2011/65/EU). |

### EnOcean Equipment Profile (EEP)

| EnOcean Equipment Profile (EEP) | Description                                                    |
|---------------------------------|----------------------------------------------------------------|
| D2-06-20                        | Bidirectional communication with a Smart Home Gateway          |
| A5-14-01                        | Roto Com-Tec Sensor   Basic (unidirectional)                   |
| A5-14-09                        | Roto Com-Tec Sensor   Comfort (unidirectional)                 |
| A5-14-0A                        | Roto Com-Tec Sensor   Comfort S (unidirectional)               |
| D5-00-01                        | EnOcean contact sensor (unidirectional)                        |
| F6-02-01                        | EnOcean wireless push-button, PTM210 / PTM215 (unidirectional) |
| D2-03-00                        | EnOcean wireless push-button, PTM215 (unidirectional)          |
| D2-03-0A                        | EnOcean button (unidirectional)                                |



### INFO

The EnOcean radio modules with a frequency of 868.3 MHz comply with the Radio Equipment Directive 2014/53/EU (RED) and are permitted to be operated in all EU countries, Switzerland, Türkiye and Norway.



## 13 Additional information

### 13.1 Declaration of Incorporation



german made



#### Einbauerklärung

für eine unvollständige Maschine nach Maschinenrichtlinie 2006/42/EG

#### Declaration of Incorporation

for partly completed machinery in compliance with the machinery directive 2006/42/EG

Hersteller: **Roto Frank Fenster- und Türtechnologie GmbH**  
 manufacturer: Wilhelm-Frank-Platz 1, D-70771 Leinfelden-Echterdingen  
 info@roto-frank.com

Die alleinige Verantwortung für die Ausstellung dieser Erklärung trägt der Hersteller.  
 This declaration is issued under the sole responsibility of the manufacturer.

Produkt-/ Typbezeichnung: **ET DRV SMART L / R** [899633 / 899634]  
 name of product/ type: **E-TEC DRIVE SMART L / R**

Seriennummer, Baujahr: **siehe Typenschild**  
 serial number, year of manufacture: according to identification plate

Die unvollständigen Maschinen dieser Erklärung erfüllen die folgenden einschlägigen, nachstehend benannten Harmonisierungsrechtsvorschriften der Union und Normen.  
 The partly completed machinery addressed by this declaration satisfy the following relevant harmonization legislation of the European Union and legal standards.

| EU-Richtlinie<br>EU Directive                                          | Norm<br>Standard                                                                                                                 |
|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>2006/42/EG</b><br><b>Maschinenrichtlinie</b><br>Machinery Directive | <b>EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017</b><br><b>+ A1:2019 + A2:2019 + A14:2019</b><br><b>EN 60335-2-103:2010-05</b> |
| <b>2014/30/EU</b><br><b>EMV-Richtlinie</b><br>EMC-Directive            | <b>EN IEC 61000-3-2:2019-12</b><br><b>EN 61000-3-3:2013</b><br><b>EN 60730-1:2016</b>                                            |
| <b>2011/65/EU</b><br><b>RoHS II</b>                                    | <b>EN 50581:2012</b>                                                                                                             |

Die speziellen technischen Unterlagen nach Anhang VII B und die Montageanleitung nach Anhang VI wurden erstellt. Bevollmächtigter für die Zusammenstellung der relevanten technischen Unterlagen gemäß Anhang VII B ist die Firma Roto Frank Fenster- und Türtechnologie, Anschrift siehe oben. Auf Verlangen werden wir den zuständigen staatlichen Behörden die spezielle technische Dokumentation als PDF-Dokument übermitteln.

Das Produkt ist in der von uns gelieferten Ausführung zum Einbau in eine Maschine gemäß der Montage- und Bedienungsanweisung bestimmt. Die Inbetriebnahme des Produktes ist solange untersagt, bis festgestellt wurde, dass die Maschine, in die es eingebaut werden soll, den Bestimmungen der Maschinenrichtlinie 2006/42/EG entspricht und die CE-Konformitätserklärung gemäß Anhang II A ausgestellt ist.

The special technical documents acc. to Annex VII B and the mounting instructions acc. to Annex VI have been prepared. Authorized representative to compile the relevant technical documents referred to in annex VII B, is the company Roto Frank Fenster- und Türtechnologie GmbH, address see above. Upon request, we will send the special technical documentation as a PDF document to the competent state authorities.

The product in the version supplied by us is intended for installation in a machine in accordance with the installation and operating instructions. Commissioning of the product is prohibited until it has been established that the machine into which it is to be installed complies with the provisions of the Machinery Directive 2006/42/EG and the CE Declaration of Conformity has been issued in accordance with Annex II A.

Leinfelden-Echterdingen, 15.12.2023

Ort, Datum  
place, date

ppa. Hartmut Schmidt  
Direktor Produktinnovation  
VP Product Innovation

EU-DOC E-Tec Drive - 899633 899634 V1.0.docx



german made



**EU-Konformitätserklärung**  
*EU Declaration of Conformity*

Hersteller:  
*manufacturer:*

**Roto Frank Fenster- und Türtechnologie GmbH**  
Wilhelm-Frank-Platz 1, D-70771 Leinfelden-Echterdingen  
info@roto-frank.com

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.  
*This declaration of conformity is issued under the sole responsibility of the manufacturer.*

Produkt-/ Typbezeichnung:  
*name of product/ type:*

**ET DRV SMART L / R [899633 / 899634]**  
**E-TEC DRIVE SMART L / R**

Seriennummer, Baujahr:  
*serial number, year of manufacture:*

**siehe Typenschild**  
*according to identification plate*

Die Gegenstände dieser Erklärung erfüllen die einschlägigen, nachstehend benannten Harmonisierungsrechtsvorschriften der Union.  
*The items addressed by this declaration satisfy the relevant harmonization legislation of the European Union.*

| <b>EU-Richtlinie</b><br><i>EU Directive</i>                        | <b>Norm</b><br><i>Standard</i>                                                        |
|--------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>2014/30/EU</b><br><b>EMV-Richtlinie</b><br><i>EMC-Directive</i> | <b>EN IEC 61000-3-2:2019-12</b><br><b>EN 61000-3-3:2013</b><br><b>EN 60730-1:2016</b> |
| <b>2011/65/EU</b><br><b>RoHS II</b>                                | <b>EN 50581:2012</b>                                                                  |

Leinfelden-Echterdingen, 15.12.2023

Ort, Datum  
*place, date*

*ppa. H. Schmidt*

ppa. Hartmut Schmidt  
Direktor Produktinnovation  
*VP Product Innovation*

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## 13.2 Risk assessment and possible protection measures

Risk assessment and possible protection measures for power-operated windows in accordance with the Machinery Directive 2006/42/EC.

### 13.2.1 Objective

Power-operated windows are facades or roof elements equipped with a drive system, which are common as components of smoke and heat extraction systems (SHES) as well as ventilation systems in buildings of different types and uses. The automation of building openings can result in a particular potential risk which the constructor, operator or maintenance technician must minimise with relevant safety measures. Specialist knowledge is required to correctly assess potential risks and to implement suitable safety measures. This chapter is aimed at planning engineers, constructors and operators as an application aid to create, properly document and label power-operated windows for SHES and ventilation purposes.

### 13.2.2 Legal basis

#### Machinery Directive (MachD)

A machine is a unit of interconnected components, of which at least one is movable. It is a unit which is equipped with an additional drive system other than the human force directly used. It is hereby irrelevant whether this unit is already equipped with a connection cable or connected to its power supply. Within the meaning of the Machinery Directive, the manufacturer is the person who joins the drive or drive system with the window (e.g. metal constructor, window manufacturer or SHES fitter). The manufacturer of a machine or their proxy must ensure that a risk assessment is carried out to determine the applicable safety and health protection requirements for the machine. The machine must be constructed and manufactured in consideration of the results of the risk assessment.

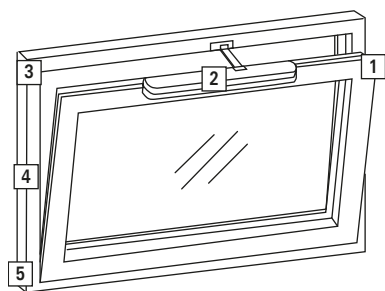
#### German Equipment and Product Safety Act (GPSG)

The amendment of the ninth enactment of the German Equipment and Product Safety Act (GPSG) implemented the EC Machinery Directive 2006/42/EC in Germany.

#### DIN EN 14351-1

The appendix to product standard DIN EN 14351-1 for windows and external doors, the coexistence period of which ended on 31st January 2010, refers to the EC Machinery Directive.

#### Possible safety hazards associated with power-operated windows



- [1] Risk of impact
- [2] Drive (incomplete machine)
- [3] Risk of crushing and shearing at main closing edge
- [4] Risk of crushing and shearing at additional closing edges
- [5] Risks associated with additional closing edges and reveals

#### Incomplete machines

The Machinery Directive considers drives or drive systems to be incomplete machines. They are only designed to be installed in other machines or equipment – in this case windows or smoke extraction and ventilation flaps – and form a machine together with these.

The drive manufacturer must submit the following documents for their incomplete machine in accordance with the Machinery Directive 2006/42/EC:

- Installation instructions
- EC declaration of completed installation

### 13.2.3 Responsibilities

| Responsibility / measure                                                          | Client / builder | Architect / specialist planning engineer | Drive manufacturer | Manufacturer of power-operated window |
|-----------------------------------------------------------------------------------|------------------|------------------------------------------|--------------------|---------------------------------------|
| User information for the drive                                                    | -                | -                                        | ■                  | -                                     |
| Safety information                                                                | -                | -                                        | ■                  | -                                     |
| Declaration of completed installation and installation instructions for the drive | -                | -                                        | ■                  | -                                     |
| EC Declaration of Conformity + approval for the drive                             | -                | -                                        | ■                  | -                                     |
| Utilisation concept of the building                                               | ■                | -                                        | -                  | -                                     |
| Technical plant concept                                                           | -                | ■                                        | -                  | -                                     |
| Risk assessment, hazard evaluation during the planning phase                      | -                | ■                                        | -                  | -                                     |
| Drafting of specifications with technical / construction requirements             | -                | ■                                        | -                  | -                                     |
| Risk assessment, hazard evaluation before installation                            | -                | -                                        | -                  | ■                                     |
| Implementation of technical safety measures                                       | -                | -                                        | -                  | ■                                     |
| Implementation of organisational safety measures                                  | ■                | -                                        | -                  | -                                     |
| EC Declaration of Conformity for power-operated window (machine)                  | -                | -                                        | -                  | ■                                     |
| Application of CE marking                                                         | -                | -                                        | -                  | ■                                     |

#### Important notes for existing power-operated windows

Changes to existing power-operated windows must be inspected in accordance with the German Equipment and Product Safety Act (GPSG) as part of a hazard analysis (risk assessment). If the result shows that significant new or additional hazards must be expected, a substantial change exists and the company which is making the change must implement the Declaration of Conformity and marking as described below. The manufacturer (issuer of the Declaration of Conformity) of the power-operated window is not liable for changes made by a third party.

If safety defects in an existing power-operated window are detected by a maintenance or repair company, for example, the necessary safety measures must be implemented in consultation with the client. This procedure is also recommended if the maintenance company was not the original manufacturer of the system.

### 13.2.4 Documentation and marking obligations

In accordance with the Machinery Directive 2006/42/EC, the manufacturer must provide the following documentation and marking for a power-operated window.

#### EC Declaration of Conformity

The EC Declaration of Conformity must contain at least the following information:

- Company name and full address of the manufacturer and, if necessary, their proxy.
- Name and address of the person who is authorised to compile the technical documentation; this person must be resident in the EC.
- Description and identification of the machine including general description, function, model, type, serial number and trade name.
- A sentence which explicitly states that the machine complies with all relevant regulations of this directive and, if necessary, a similar sentence in which adherence to other directives and / or relevant regulations with which the machine complies is declared. The references must be declared in accordance with the publication in the Official Journal of the European Union.
- Place and date of the declaration.
- Details of the person who is authorised to issue this declaration on behalf of the manufacturer or their proxy as well as the signature of that person.

#### CE marking



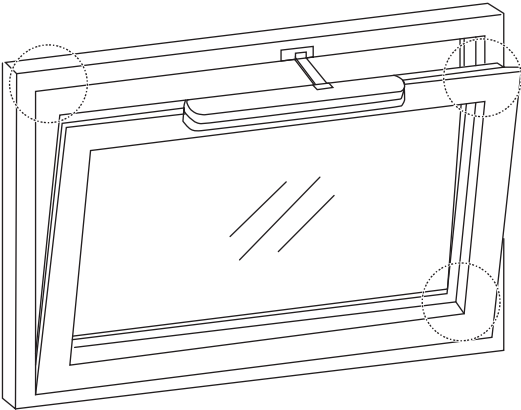
The CE marking consists of the letters "CE" with the type face shown:

- If the CE marking is reduced or increased in size, the proportions defined here must be adhered to.
- The components of the CE marking must have roughly the same height; the minimum height is 5 mm.
- The CE marking must be attached in the immediate vicinity of the manufacturer's (or proxy's) information and be implemented in the same style.
- By attaching the CE sign, the manufacturer confirms compliance with all relevant EC directives. This also means that a type plate can only bear one CE sign, which refers to several directives (e.g. MachD and DIN EN 12101-2) at the same time. In this case, the performance classes of the natural smoke and heat extraction device must also be specified on the type plate.



|                                                                                   |                         |      |                  |       |                                                                                   |                                                   |  |
|-----------------------------------------------------------------------------------|-------------------------|------|------------------|-------|-----------------------------------------------------------------------------------|---------------------------------------------------|--|
|  | Ref. no.: 0815          |      |                  |       |  | Power supply unit: 230 V AC<br>50 / 60 Hz, 150 mA |  |
|                                                                                   | E: 2                    | N: 2 | S: 2             | SK: 3 |                                                                                   | Drive: 24 V DC, 500 mA                            |  |
|                                                                                   | Directive 2006/42/EC    |      | Date: 01.01.1999 |       |                                                                                   |                                                   |  |
|                                                                                   | Mustermann-Service GmbH |      |                  |       |                                                                                   |                                                   |  |

Example with attachment options on a power-operated window



Example of CE marking on a power-operated window with manufacturer's specification of the power-operated window, date of manufacture and optional information on the type plate:

- Installation situation (E)
- Use (N)
- Control system (S)
- Protection class (SK)

**13.2.5 Risk assessment and protection measures for power-operated windows**

| Property / construction project | Client                 |
|---------------------------------|------------------------|
| Description of the property:    | Company:               |
| No., street:                    | No., street:           |
| Town / city, postcode:          | Town / city, postcode: |
| Reference no.:                  | Contact:               |

| Manufacturer of machine according to MachD | Installation situation        |
|--------------------------------------------|-------------------------------|
| Company:                                   | Installation site / location: |
| No., street:                               | Installation height:          |
| Town / city, postcode:                     | Description of the window:    |
| Contact:                                   | Window no.:                   |

| Risk classification as per table |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Installation position: E         | <pre>graph TD     E1[E1] --&gt; SK0[SK<br/>0]     E2[E2] --&gt; N[N]     N --&gt; N1[N1]     N --&gt; N2[N2]     N --&gt; N3[N3]     N --&gt; N4[N4]     N1 --&gt; S1[S]     N2 --&gt; S2[S]     N3 --&gt; S3[S]     N4 --&gt; S4[S]     S1 --&gt; S01[S0<br/>S1<br/>S2]     S2 --&gt; S02[S0<br/>S1<br/>S2]     S3 --&gt; S03[S0<br/>S1<br/>S2]     S4 --&gt; S04[S0<br/>S1<br/>S2]     S01 --&gt; SK1[SK<br/>1]     S02 --&gt; SK2[SK<br/>2]     S03 --&gt; SK3[SK<br/>3]     S04 --&gt; SK4[SK<br/>4]</pre> |
| Use: N                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Control: S                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Protection class: SK             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Protection measures implemented  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Notes                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

Protection measures complied with: Yes | No

CE marking  
**System manufacturer**

Stamp / date / signature

Client informed on:

Declaration of Conformity  
**Client**

Date / signature



## Risk assessment

| Example installation situation                                                                                                                                                                                                                                                                                                    | Risk   | Risk parameter |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------|
| <ul style="list-style-type: none"> <li>■ Installation height of sash bottom edge at least 2.5 m above floor or permanent access level.</li> <li>■ Permanently installed devices in front of the window which prevent access.</li> <li>■ Window ledges or reveals which prevent free access to the window for the user.</li> </ul> | low    | <b>E1</b>      |
| <ul style="list-style-type: none"> <li>■ Installation height of sash bottom edge above floor or access level less than 2.5 m and window is freely accessible.</li> </ul>                                                                                                                                                          | higher | <b>E2</b>      |

| Space use                                                                                                                                                                                                                     | Risk      | Risk parameter |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------|
| <ul style="list-style-type: none"> <li>■ Spaces for commercial use where users have been instructed in how to use the technology (e.g. offices, industrial spaces).</li> </ul>                                                | low       | <b>N1</b>      |
| <ul style="list-style-type: none"> <li>■ Living spaces where the residents have been instructed in how to use the technology.</li> <li>■ Spaces where the users / visitors can assess the risks or are supervised.</li> </ul> | medium    | <b>N2</b>      |
| <ul style="list-style-type: none"> <li>■ Spaces intended for regular use by people who cannot be instructed in the safe use of the technology (e.g. showrooms, meeting places).</li> </ul>                                    | high      | <b>N3</b>      |
| <ul style="list-style-type: none"> <li>■ Spaces intended for regular use by vulnerable individuals (e.g. nurseries, schools, hospitals).</li> </ul>                                                                           | very high | <b>N4</b>      |

| Control or operation                                                                                                                                                                                                               | Risk     | Risk parameter |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------------|
| <ul style="list-style-type: none"> <li>■ Manual operation without self-locking with visual monitoring of all windows (vigilance control system, e.g. use of a key switch with "off" as the default setting).</li> </ul>            | very low | <b>S0</b>      |
| <ul style="list-style-type: none"> <li>■ Manual operation with self-locking with visual monitoring of all windows (e.g. use of a switch).</li> </ul>                                                                               | low      | <b>S1</b>      |
| <ul style="list-style-type: none"> <li>■ Automatic operation (e.g. wind / rain controls, building management system) or manual operation without visual contact with all windows (e.g. central switch, remote control).</li> </ul> | high     | <b>S2</b>      |

## Protection classes / protection measures

| Class | Examples of protection measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Complied with by the E-Tec Drive          |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| 0     | No protection measure required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Yes                                       |
| 1     | Warnings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Yes                                       |
| 2     | <ul style="list-style-type: none"> <li>■ Secure access via structural measures or</li> <li>■ via rounded, cushioned edges, locking forces from 80 to 150 N, no shearing effects or</li> <li>■ acoustic warning signals or</li> <li>■ warning lights or</li> <li>■ EMERGENCY STOP switch on the window or</li> <li>■ movable devices in front of the window which prevent access.</li> </ul>                                                                                                                                    | Yes                                       |
| 3     | <ul style="list-style-type: none"> <li>■ Vigilance control system without higher-level central control system or</li> <li>■ slow sash movement of max. 5 mm/s or</li> <li>■ protective clearance less than 8 mm or</li> <li>■ opening of the main closing edge <math>\leq 200</math> mm and closing speed <math>\leq 15</math> mm/s or</li> <li>■ rounded, cushioned edges, low locking forces less than 80 N, no shearing effect.</li> </ul>                                                                                  | Yes                                       |
| 4     | <ul style="list-style-type: none"> <li>■ Securing via touch-activated safety devices, e.g. switching strips, contact sensors or</li> <li>■ securing via a contactless safety device, e.g. light barriers, light grid or</li> <li>■ vigilance control system with authorised operation for each window without higher-level central control system (e.g. key switch with "off" as the default setting) or</li> <li>■ protective clearance less than 4 mm or</li> <li>■ prevention of access via structural measures.</li> </ul> | No<br>Further external measures required. |

Reference: the contents correspond to a publication by the German Window and Facade Association (VFF Verband Fenster+Fassade), KB.01: 2017-07, July 2017

# Roto E-Tec Drive

## Handover certificate for end user documentation

Two copies of the handover certificate must be completed by the installation company. This copy remains with the end user documents as part of the documentation.

Profile manufacturer and description (please enter):

### Profile material

Timber.....☐  
PVC.....☐

### Hardware used

Roto NX, hinge side P .....☐  
Roto NX, hinge side T .....☐  
Roto NX, Designo hinge side HA 13 mm .....☐

### Opening type

TiltFirst.....☐  
Tilt-Only .....☐

### Roto E-Tec Drive model

Right.....☐  
Left.....☐  
Initial operation of the Roto E-Tec Drive carried out in workshop in accordance with installation instructions .....☐  
Roto E-Tec Drive moved to locking position, manual operation possible .....☐

### Accessories

MTC contact element (to prevent incorrect operation) .....☐  
Miscellaneous:

Place, date, signature, company stamp

# Roto E-Tec Drive

## Handover certificate for end user documentation

Two copies of the handover certificate must be completed by the installation company. This copy remains with the end user documents as part of the documentation.

Profile manufacturer and description (please enter):

### Profile material

Timber.....☐  
PVC.....☐

### Hardware used

Roto NX, hinge side P .....☐  
Roto NX, hinge side T .....☐  
Roto NX, Designo hinge side HA 13 mm .....☐

### Opening type

TiltFirst.....☐  
Tilt-Only .....☐

### Roto E-Tec Drive model

Right.....☐  
Left.....☐  
Initial operation of the Roto E-Tec Drive carried out in workshop in accordance with installation instructions .....☐  
Roto E-Tec Drive moved to locking position, manual operation possible .....☐

### Accessories

MTC contact element (to prevent incorrect operation) .....☐  
Miscellaneous:

Place, date, signature, company stamp



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**Contact**

