

Roto E-Tec Drive

Electric window drive integrated in the hardware

Installation, maintenance and operating instructions
for aluminium and timber / PVC profiles



Imprint

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These instructions (“original operating 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 AL hardware system for aluminium profiles and the Roto NT hardware system for timber and PVC profiles. The information and instructions continue to apply to the Roto E-Tec Drive window drive-unit.

Apart from these installation, maintenance and operating instructions, the following documents (in their respective valid version) apply:

- 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 14351-1:2006+A1:2010
- Catalogue (CTL_41)
- Directive TBDK issued by the Gütegemeinschaft Schlösser und Beschläge e. V. quality assurance association.
- Directive VHBH issued by the Gütegemeinschaft Schlösser und Beschläge e. V. quality assurance association.
- Directive VHBE issued by the Gütegemeinschaft Schlösser und Beschläge e. V. quality assurance association.
- Directive FPKF 2011-02-04 issued by the Gütegemeinschaft Schlösser und Beschläge e. V. quality assurance association.

These instructions should be stored in such a way that they can be accessed quickly if necessary.

Further markings

The following markings are used in these instructions to emphasise instructions, results, lists, references and other elements:

Marking	Explanation
	Sash
	Frame
1	Hardware component
[1]	Sequence of actions
1.	Step
■	First-level list
▶	Measure
See page 12	(Cross-)reference in flow text
→ P. 12	(Cross-)reference in tables



Abbreviation	Explanation
AL	Aluminium
TuS	Turn-Only hardware
TU-ONc	Turn-Only hardware with coupleable rebate sash stay
T&T	Tilt&Turn hardware
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
GW	Glass weight
HH	Handle height
TiSt	Tilt-Only hardware, handle at the top
TiSs	Tilt-Only hardware, handle at the side
MTC	Magnetic thermostat control system
CL	Centre lock
MLS	Magnetic locking system
FWi	Frame width, internal
RC2	Resistance class 2
RC3	Resistance class 3
FHi	Frame height, internal
MD	Mishandling device
FM	Floating-mullion hardware
TF	TiltFirst hardware
OW	Overlap width
OH	Overlap height

Figures are drawn DIN right. All dimensions are in mm. Otherwise, other values are specified.



Note

Please refer to the Glossary chapter of catalogue CTL_41 for additional notes on abbreviations.

Pictograph	Explanation
	Tilt&Turn sash
	Tilt-Only sash
	Aluminium profile
	PVC profile
	Timber and PVC profiles
	Aluminium and timber / PVC profiles





Copyright protection

The contents of these instructions 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.

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 making the tender.

Building element dealers / installation companies

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

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

Builders

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

End users

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

Operator

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



Note

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

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

Responsibility of hardware dealers

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

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

Responsibility of the window and balcony door manufacturer

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

- Installation, maintenance and operating instructions
- 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 unit is placed on the market.

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

Responsibility of building element dealers/the installation company

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

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

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 submit the following documentation to the operator and comply with the following conditions:

- Installation plan
- Handover certificate
- User information | Operating instructions
- CE marking in the immediate vicinity of the manufacturer's information (constructor), easily legible on product (≥ 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 hand over the following documents to the end user:

- Maintenance and operation instructions (with a focus on hardware)
- User guidelines / advice for end-users (VHBE)
- Planning permission

Furthermore, the builder must comply with all official requirements.

Responsibility of the operator

The operator must look after the maintenance documentation and keep it for future reference. They must also instruct and supervise regular maintenance performed by specialist personnel.



In these instructions, safety information is marked by symbols. The safety information is preceded by signal words which indicate the severity of the hazard.



Danger

This combination of symbol and signal word indicates an imminently hazardous situation which may lead to death or serious injuries if not avoided.



Warning

This combination of symbol and signal word indicates a potentially hazardous situation which may lead to death or serious injuries if not avoided.



Caution

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



Note

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

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 (refer to the chapters “Security” and “Stipulated use”).
- Non-stipulated use / misuse (refer to the chapters “Security” and “Stipulated use”).
- Insufficient invitation to tender, non-compliance with installation specifications and non-compliance with the application diagrams or application ranges.
- 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, the window / balcony door manufacturer, the constructor of the power-operated window, the planning engineer, 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.



The Roto E-Tec Drive may only be supplied with safety extra-low voltage (SELV). Power supply units and control units from Roto 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 VFF data sheet "Power-operated windows" (KB.01:2014-11).

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, doors and gates 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 guideline, 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.



Concealed drive for locking and unlocking as well as tilting windows and balcony doors with hardware from Roto Frank AG.

- Only use the Roto E-Tec Drive with TiltFirst 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 the use in smoke and heat extraction systems (SHES) or natural smoke and heat extraction devices (NSHE).
- The Roto E-Tec Drive is not suitable for use in fire-protection windows.
- The Roto E-Tec Drive is not suitable for the 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 operating 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 (see page 5)

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 safety measures from the VFF data sheet "Power-operated windows" (KB.01).



Note

Any use that goes beyond or differs from the stipulated use is considered misuse.

Application areas:

Roto hardware product ranges:

- Roto NT (apart from NT Designo HA 9 mm), (without mishandling device)
- Roto AL with flush-encased gearbox (without mishandling device)
- Roto AL Designo with flush-encased gearbox (without mishandling device)

Opening types:

- TiltFirst, Tilt-Only
- 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.



Warning

Danger in the event of misuse!

Misuse and incorrect installation of the Roto E-Tec Drive can result in hazardous situations.

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



Warning
Danger caused by failure to follow important safety instructions

Failure to follow important safety instructions can lead to serious injuries.

- ▶ Follow and store safety instructions at all times.



Danger
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.



Danger
Risk of death due to live components!
Risk of short-circuiting

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, e.g. VDE 0100).



Warning
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.



Warning
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 stays are installed.

- ▶ Restrictor and cleaning stays must be installed on Tilt-Only sashes if none are present.



Caution
Danger of crushing and trapping due to opening and closing forces

Movable parts of the drive can cause injuries during operation.

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



Warning

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.
-





Roto E-Tec Drive / Drive sets	Mat. no.
Roto E-Tec Drive type 01 Basic L	782877
Roto E-Tec Drive type 01 Basic R	782892
Roto E-Tec Drive type 02 Basic set L	779647
Roto E-Tec Drive type 02 Basic set R	779648
Roto E-Tec Drive type 03 Plug&Play set L	779681
Roto E-Tec Drive type 03 Plug&Play set R	779651

Roto E-Tec Drive type 01 – Basic



- Application
- Individual drive unit for use on properties
 - Replacement part
- Scope of delivery
- 1x drive

Roto E-Tec Drive type 02 – Basic set



- Application
- All components required for installation
- Scope of delivery
- 1x drive
 - 1x RJ45 connecting cable
 - 1x power supply unit
 - 1x group switching device

Roto E-Tec Drive type 03 – Plug & Play set



- Application
- For immediate commissioning.
 - Functional inspection is possible in the factory and on the construction site.
 - Prewired components simply work, including for customers with little experience with electric drives.
- Scope of delivery
- 1x drive
 - 1x RJ45 connecting cable
 - 1x power supply unit with supply cable and Euro connector
 - 1x group switching device, two-wired, connected to the power supply unit



Accessories	Mat. no.
24 V power supply unit	782876
Cable 6 m, black (8 x 0.14 mm ²)	387877
Cable in special length	Available upon request
Control unit (test set)	779676
GS1-M group switching device	782875

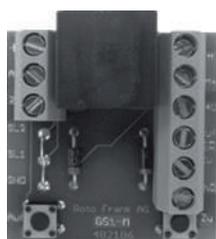


Roto E-Tec Drive control unit



- Application**
- Control unit and interface between hardware (E-Tec Drive) and software.
 - Functional inspection is possible in the factory and on the construction site.
 - Parametrisation (movement speed, automatic ventilation function, opening width)
 - Graphical interface (through connection to PC/notebook)
 - Fault analysis (through connection to PC/notebook)
- Scope of delivery**
- 1x control unit
 - 1x power supply unit
 - 1x USB cable
 - 1x RJ45 coupling
 - 1x USB stick with software

Roto E-Tec Drive GS1-M group switching device



- Application**
- For simply connecting the power supply unit and E-Tec Drive.
 - For linking up to 20 drives – one GS1-M must be provided per drive.
- Scope of delivery**
- 1x PCB



Warning
Danger in the event of misuse!

Misuse and incorrect installation of the Roto E-Tec Drive can result in hazardous situations.

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



Note

The following installation instructions apply in connection with this document:

Roto NT timber

- IMO_63
- IMO_109

Roto NT PVC

- IMO_64
- IMO_110

Roto AL

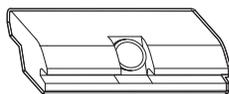
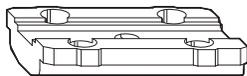
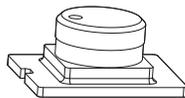
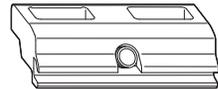
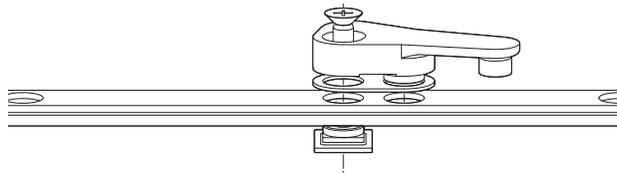
- IMO_332

Roto AL Designo

- IMO_159
- IMO_386

Roto NT restrictor and cleaning stay

- IMO_98
-



Description

Material no.

E-Tec Drive installation set

477455

consisting of:

- [1] Adapter
- [2] Packer
- [3] SEC connector
- [4] Countersunk screw M5 x 12

Rebate-clearance reduction

On the frame

729228

On the sash

800440

Run-up block

212008

SEC coupler component

Connecting-rod connector

348576

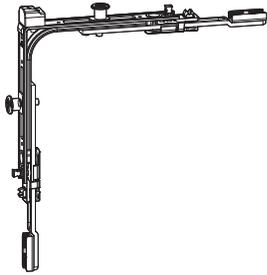
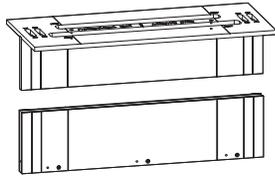
Run-up wedge

V.01

684282

V.02

684283



Routing jig

For routing the Roto E-Tec Drive into the frame. 484650

Sash lifter NT

284220

Drive corner drive

1V/1S Roto Sil 779677

- For connecting the Roto E-Tec Drive to the mechanical hardware.

T&T espagnolette, centred / variable handle height E-Tec Drive

980 mm/BS 15/1S Roto Sil 779679

- For connecting the Roto E-Tec Drive to the mechanical hardware.
- For use in narrow fanlights.



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 construction programs in particular, check that they match the specifications, application diagrams and component assignments.
- In principle, the maximum permissible sash sizes and weights in these installation instructions apply. All other specifications can be found in the product-specific documentation from the hardware manufacturer.
- Never exceed the maximum permitted sash sizes and weights. If any points are unclear, contact the hardware manufacturer.



Specifications from profile manufacturers

The window and balcony door 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 window installation.



Note

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 windows have been installed.

Assembling hardware

Burglar-inhibiting windows and balcony doors need hardware which meets special requirements.

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

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



Note

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 window sashes and balcony door sashes, etc.) are binding.



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.



Note

- All assembly and installation work must be carried out by experts. Experts are persons who are familiar with the VFF data sheet guideline "Power-operated windows" (KB.01), the relevant statutory occupational health and safety and accident prevention regulations, the relevant locally applicable assembly and installation regulations and the regulations and generally recognised rules of good engineering practice.
- The drive is not suitable for use in protection class 4 applications.
- Only install one Roto E-Tec Drive per window.
- Do not attach handles to the window to avoid incorrect operation and damage. Use blank covers to cover the handle opening. If a handle is nevertheless requested, this is only permitted if it is installed in conjunction with an operating lock (see recommendation below). Use a service handle for occasional manual operation (e.g. to clean the window pane).
- To avoid damage, do not operate the drive if the window is tilted or opened via the service handle.
- Never store windows with installed Roto E-Tec Drives outside. The ingress of rainwater can damage the drive.
- 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.
- When positioning the windows, ensure that no drilling dust enters the Roto E-Tec Drive. Always close the window after installation and attach a blind plug or escutcheon cover for removable service handle so that subsequent trades do not inadvertently introduce dirt into the drive.



Note

The installation of an operating lock is recommended to avoid damaging the drive or window. It prevents an opening instruction to the drive if the window sash is not locked and therefore prevents the drive from extending its scissor stay if the window is tilted manually or opened.

The operating lock consists of a GS1-M (782875) and an MTC contact element (292118).

If a normal window handle is used, the operating lock must be installed.



The hardware overviews on the following pages are a recommendation on the part of Roto.

The basic page layout in the hardware overview chapter shows examples of the individual hardware components in a hardware overview on the left-hand page, the associated parts list on the right-hand page.

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

The colours of the components enable assignment to the installation location:

= Frame components

= Sash components

Bestellübersicht
Drehkipp-Beachlag - Grundbesicherheit
Bestellübersicht

Bei FFH < 500mm muss die Kippseite auf 80mm begrenzt werden!
38 • Juli 2017 • MOU_34_2C_v4

Bestellübersicht
Drehkipp-Beachlag - Grundbesicherheit
Anforderungen

Anwendungsbereich
Flügelbreite FFH 200 - 1800mm*
Flügelhöhe FFH 200 - 2000mm*
Flügelgewicht FG max. 100 bzw. 130kg

Flügelbreite	Flügelhöhe	Flügelgewicht	Bestellnummer
200 - 300 *	100	300	234214*
40 - 600	120	600	234800
100 - 600	300	600	234803
100 - 1000	613	600	234826
100 - 1000	1513	1000	234827
1300 - 1800	500	1000	234828
1000 - 1800	500	1000	234829
1000 - 1800	1000	1000	234830
1000 - 2000	1000	1000	234831
1000 - 2000	1500	1000	234832
2000 - 2000	1000	2000	234833
2000 - 2000	1500	2000	234834
2000 - 2000 *	1000	2000	234835
1000 - 600 *	1500	1000	234837
450 - 600 *	225 - 210	600	234838
900 - 900	210 - 600	1000	234839
900 - 1000	600 - 600	1000	234840
1000 - 1000	600 - 600	1000	234841
1000 - 1000	600 - 1000	1700	234842
2000 - 2000	1000 - 1000	2100	234843
2000 - 2000 *	1000 - 1000	2100	234844

Bestellnummer 200-600 (als FFH 200) wird 234837

Schließwerkzeuge 234839
 Schließwerkzeug 1-600 1-6 234839
 Schließwerkzeug 1-9 234837
 Schließwerkzeug 9K 1-9 234838
 Standard-Schließwerkzeug 1-600 1-6 234839
 Standard-Schließwerkzeug 1-9 234837
 FFH 1-600mm

Accessoire
 2000 - 610 100 1000 234831*
 410 - 610 200 600 234826
 900 - 1000 200 600 234829
 900 - 1000 600 600 1-6 234830
 1000 - 1000 200 1000 1-6 234813
 1000 - 1000 600 1000 1-6 234814
Zusatzwerkzeuge (als FFH 1800mm)
 2000 - 610 100 1000 234831*
 410 - 610 200 200 234801
 900 - 1000 200 234802
 900 - 1000 600 234804
 900 - 1000 600 234805
 900 - 1000 600 234806

Handgriffe
 2000 - 610 100 1000 234831*
 410 - 610 200 600 234826
 900 - 1000 200 600 234829
 900 - 1000 600 600 1-6 234830
 1000 - 1000 200 1000 1-6 234813
 1000 - 1000 600 1000 1-6 234814
Zusatzwerkzeuge (als FFH 1800mm)
 2000 - 610 100 1000 234831*
 410 - 610 200 200 234801
 900 - 1000 200 234802
 900 - 1000 600 234804
 900 - 1000 600 234805
 900 - 1000 600 234806

Handgriffe
 2000 - 610 100 1000 234831*
 410 - 610 200 600 234826
 900 - 1000 200 600 234829
 900 - 1000 600 600 1-6 234830
 1000 - 1000 200 1000 1-6 234813
 1000 - 1000 600 1000 1-6 234814
Zusatzwerkzeuge (als FFH 1800mm)
 2000 - 610 100 1000 234831*
 410 - 610 200 200 234801
 900 - 1000 200 234802
 900 - 1000 600 234804
 900 - 1000 600 234805
 900 - 1000 600 234806

Handgriffe
 2000 - 610 100 1000 234831*
 410 - 610 200 600 234826
 900 - 1000 200 600 234829
 900 - 1000 600 600 1-6 234830
 1000 - 1000 200 1000 1-6 234813
 1000 - 1000 600 1000 1-6 234814
Zusatzwerkzeuge (als FFH 1800mm)
 2000 - 610 100 1000 234831*
 410 - 610 200 200 234801
 900 - 1000 200 234802
 900 - 1000 600 234804
 900 - 1000 600 234805
 900 - 1000 600 234806

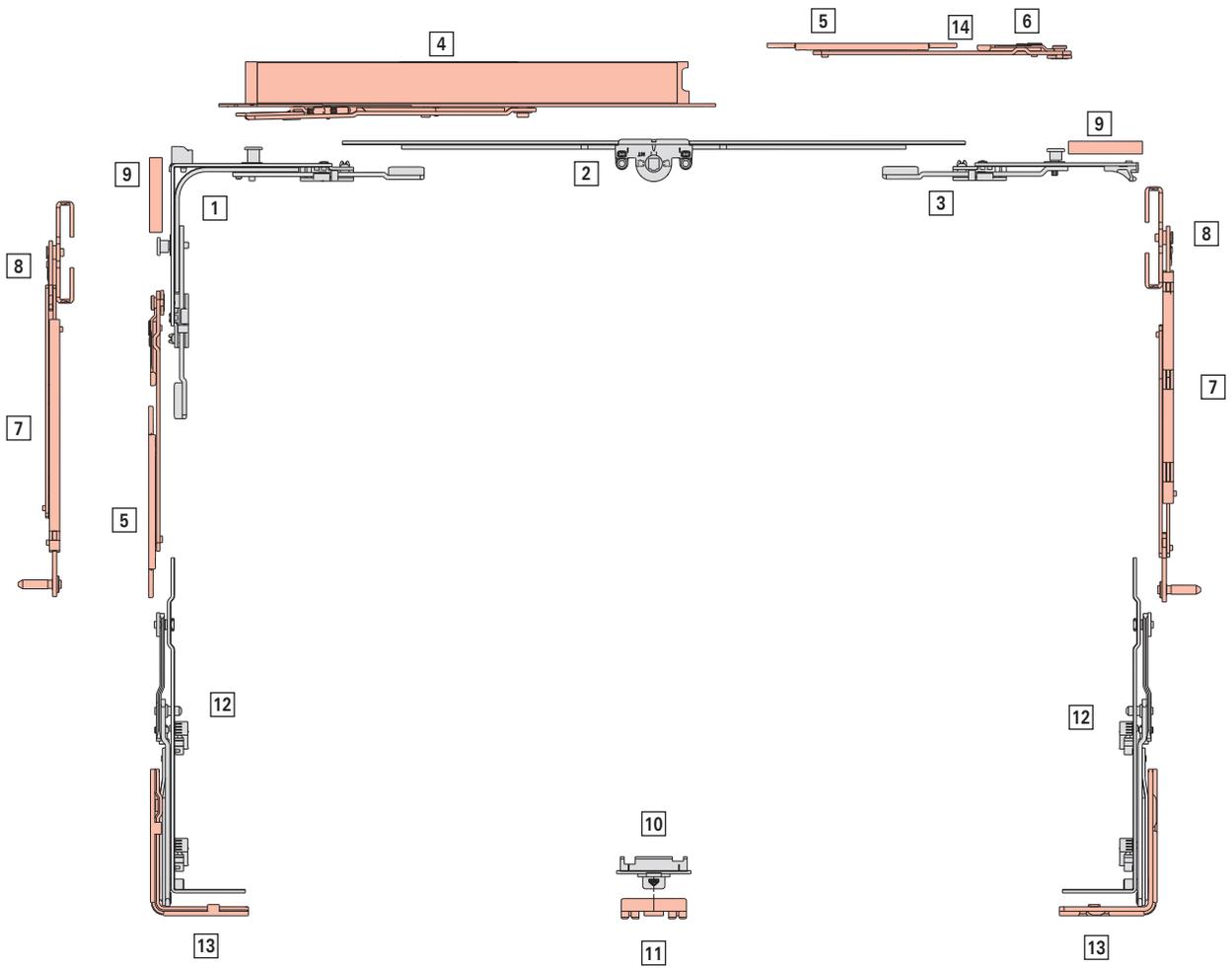
Handgriffe
 2000 - 610 100 1000 234831*
 410 - 610 200 600 234826
 900 - 1000 200 600 234829
 900 - 1000 600 600 1-6 234830
 1000 - 1000 200 1000 1-6 234813
 1000 - 1000 600 1000 1-6 234814
Zusatzwerkzeuge (als FFH 1800mm)
 2000 - 610 100 1000 234831*
 410 - 610 200 200 234801
 900 - 1000 200 234802
 900 - 1000 600 234804
 900 - 1000 600 234805
 900 - 1000 600 234806

The actual scope of delivery depends on the hardware configuration ordered (height and width of the window).

Hardware overview

Tilt-Only hardware – Designo HA 13 mm

Hardware overview





Application range

Sash rebate width **SRW**..... 451 – 1000 mm

Sash rebate height **SRH**.....561¹⁾ – 1200 mm

Sash weight **S.kg**.....max. 60 kg

[1] E-Tec Drive corner drive

	Cam	Material no.
	1V 1S	779677

[2] T&T espagnolette, security – centred / variable handle height, backset 15 mm¹⁾

SRH	SRW	Espagnolette length	Material no.
561 – 800	451 – 620	400	259718
	621 – 800	580	289862
	801 – 1000	980	289863
801 – 1200	451 – 620	400	259718
	621 – 800	580	289862
	801 – 1000	980	289863

[3] Espagnolette connector

	Material no.
	382716

[4] Roto E-Tec Drive

	Material no.
Roto E-Tec Drive type 01 Basic R	782892
Roto E-Tec Drive type 02 Basic set R	779648
Roto E-Tec Drive type 03 Plug&Play set R	779651

[5] Tilt stay NT²⁾

	Material no.
	482823

[7] Restrictor and cleaning stay²⁾

SRH	Type	Material no.
561 – 800	Type 1	347131
801 – 1200	Type 2	347132

[8] Sash bearing groove for restrictor and cleaning stay²⁾

	Material no.

[9] Striker → CTL 105

[10] Centre closer, concealed, sash component

SRW	Piece(s)	Material no.
451 – 620	0	450984
621 – 800	0	450984
801 – 1000	1	450984

[11] Centre closer, concealed, frame component → CTL 105

SRW	Piece(s)	Material no.
451 – 620	0	
621 – 800	0	
801 – 1000	1	

	348277
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[12] Rebate stay guide

	Material no.
	391697

[13] Rebate sash stay → CTL 105

[14] Packer, not shown

SRH	SRW 451 – 620			621 – 800			801 – 1000		
	Sort	Type	Installation	Sort	Type	Installation	Sort	Type	Installation
561 – 800	1x RCS	1	Right	1x RCS	1	Right	1x RCS	1	Right
	1x TS		Left	1x TS		Left	1x TS		Left
801 – 1200	1x RCS	2	Right	1x RCS	2	Right	1x RCS	2	Right
	1x TS		Left	1x TS		Left	1x RCS	2	Left
							1x TS		Top

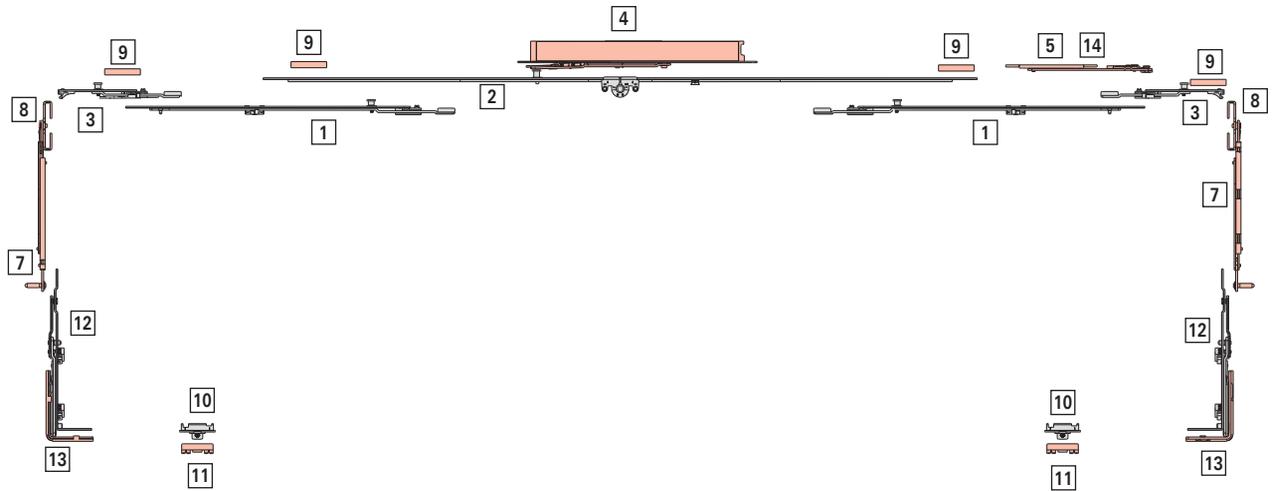
1) SRH < 600 mm, reduce tilt distance to 80 mm. If the tilt distance is restricted, the tilt distance of the E-Tec Drives must also be restricted (programming required).

2) Restrictor and cleaning stays and tilt stays

Hardware overview

Tilt-Only hardware – Designo HA 13 mm

Hardware overview





Application range

Sash rebate width **SRW**..... 1001 – 2000 mm

Sash rebate height **SRH**.....500¹⁾ – 1200 mm

Sash weight **S.kg**.....max. 60 kg

[1] Centre lock

SRH	SRW	Espagnolette length	Material no.
500 – 700	1001 – 1200	-	-
	1201 – 1600	200	308267
	1601 – 2000	400	622881
701 – 1200	1001 – 1200	-	-
	1201 – 1600	200	308267
	1601 – 2000	400	779677

[2] T&T espagnolette, security – centred / variable handle height, backset 15 mm

SRH	SRW	Espagnolette length	Material no.
500 – 700	1001 – 1200	980	779679
	1201 – 1600	980	779679
	1601 – 2000	980	779679
701 – 1200	1001 – 1200	980	779679
	1201 – 1600	980	779679

[3] Espagnolette connector

Material no.
382716

[4] Roto E-Tec Drive

Material no.	
Roto E-Tec Drive type 01 Basic R	782892
Roto E-Tec Drive type 02 Basic set R	779648
Roto E-Tec Drive type 03 Plug&Play set R	779651

[5] Tilt stay NT²⁾

Material no.
482823

[7] Restrictor and cleaning stay²⁾

SRH	Type	Material no.
500 – 700	Type 1	347131
701 – 1200	Type 2	347132

[8] Sash bearing groove for restrictor and cleaning stay²⁾

Material no.

[9] Striker → CTL 105

[10] Centre closer, concealed, sash component

SRW	Piece(s)	Material no.
1001 – 1600	1	450984
1601 – 2000	2	450984

[11] Centre closer, concealed, frame component → CTL 105

SRW	Piece(s)	Material no.
1001 – 1600	1	
1601 – 2000	2	

		348277
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1601 – 2000	980	289863
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[12] Rebate stay guide

Material no.
391697

[13] Rebate sash stay → CTL 105

[14] Packer, not shown

SRW SRH	1001 – 1200			1201 – 1600			1601 – 2000		
	Sort	Type	Installation	Sort	Type	Installation	Sort	Type	Installation
500 – 700	1x RCS	1	Right	1x	1	Right	1x RCS	1	Right
	1x TS		Left	RCS		Left	1x TS		Left
701 – 1200	1x RCS	2	Right	1x	2	Right	1x RCS	2	Right
	1x TS		Left	RCS		Left	1x RCS	2	Left
				1x TS			1x TS		Top

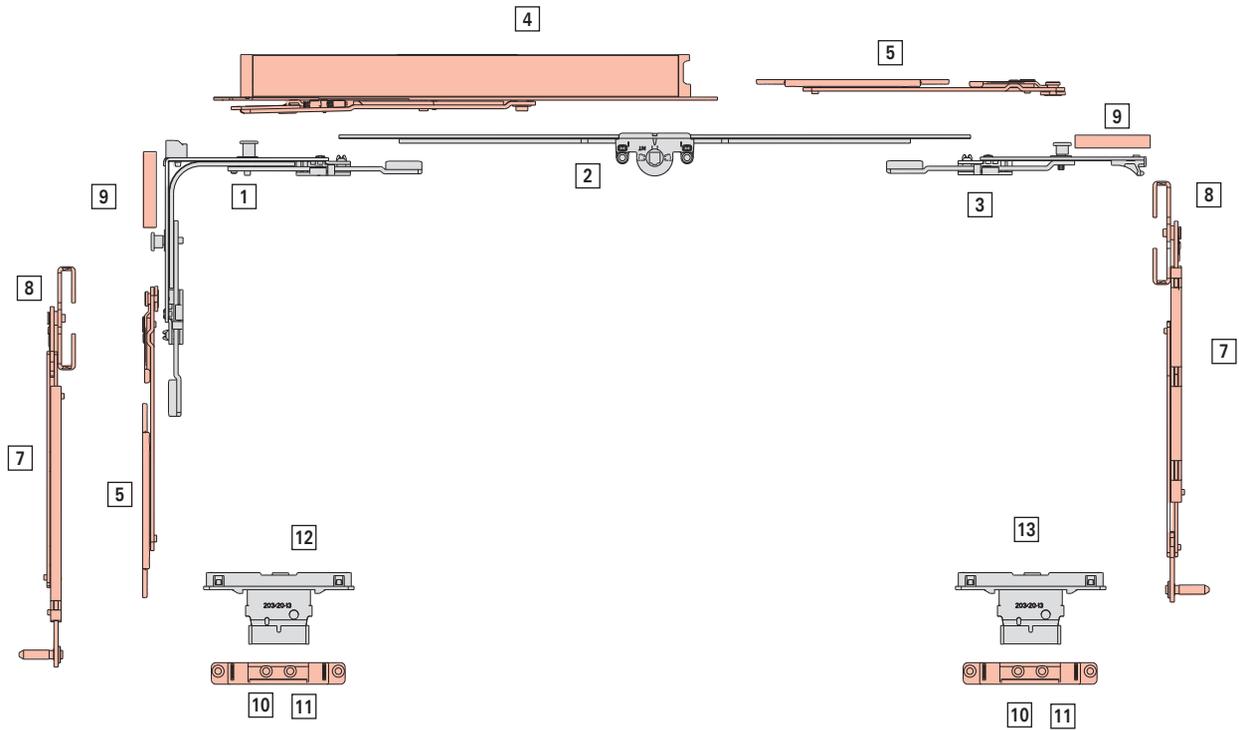
1) SRH < 600 mm, reduce tilt distance to 80 mm. If the tilt distance is restricted, the tilt distance of the E-Tec Drives must also be restricted (programming required).

2) Restrictor and cleaning stays and tilt stays

Hardware overview

Tilt-Only hardware – Hinge K, A and E5

Hardware overview





Application range

Sash rebate width **SRW**..... 451 – 1000 mm

Sash rebate height **SRH**.....361¹⁾ – 1200 mm

Sash weight **S.kg**.....max. 60 kg

[1] E-Tec Drive corner drive

Cam	Material no.
1V 1S	779677

[2] T&T espagnolette, security – centred / variable handle height, backset 15 mm¹⁾

SRH	SRW	Espagnolette length	Material no.
361 – 560	451 – 620	400	259718
		400	259718
		980	289863
561 – 1200	451 – 620	400	259718
		400	259718
		980	289863

[3] Espagnolette connector

Material no.

[4] Roto E-Tec Drive

	Material no.
Roto E-Tec Drive type 01 Basic R	782892
Roto E-Tec Drive type 02 Basic set R	779648
Roto E-Tec Drive type 03 Plug&Play set R	779651

[5] Tilt stay NT²⁾

Material no.
482823

382716

[7] Restrictor and cleaning stay²⁾

SRH	Type	Material no.
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[8] Sash bearing groove for restrictor and cleaning stay²⁾

Material no.

[9] Striker → CTL 105

[10] Stay bearing

[11] Stay-bearing pin, not shown

348277

361 – 560	Type 1	347131
561 – 1200	Type 2	347132

[12] Tilt-Only hinge, with alignment

[13] Tilt-Only hinge, without alignment

SRW SRH	451 – 620			621 – 800			801 – 1000		
	Sort	Type	Installation	Sort	Type	Installation	Sort	Type	Installation
361 – 560	1x RCS	1	Right	1x	1	Right	1x RCS	1	Right
	1x TS		Left	RCS		Left	1x TS		Left
561 – 1200	1x RCS	2	Right	1x	2	Right	1x RCS	2	Right
	1x TS		Left	RCS		Left	1x RCS	2	Left
				1x TS			1x TS		Top

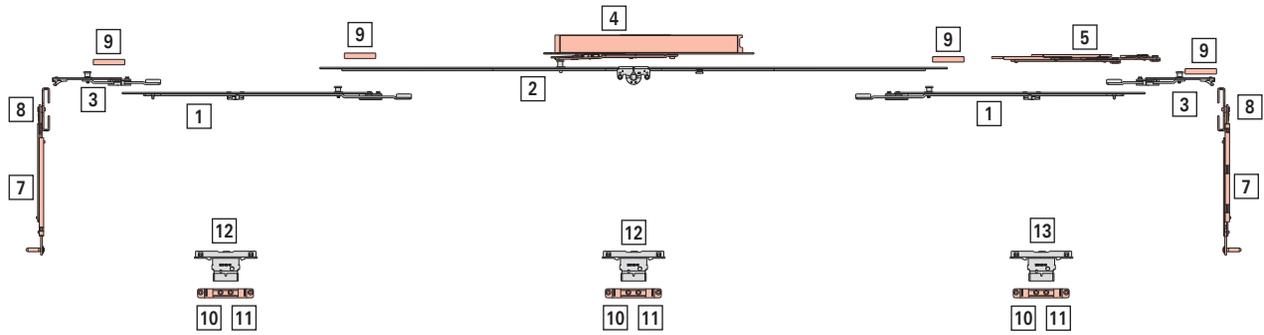
1) SRH < 600 mm, reduce tilt distance to 80 mm. If the tilt distance is restricted, the tilt distance of the E-Tec Drives must also be restricted (programming required).

2) Restrictor and cleaning stays and tilt stays

Hardware overview

Tilt-Only hardware – Hinge K, A and E5

Hardware overview





Application range

Sash rebate width **SRW**..... 1001 – 2000 mm

Sash rebate height **SRH**.....290¹⁾ – 1200 mm

Sash weight **S.kg**.....max. 60 kg

[1] Centre lock

SRH	SRW	Espagnolette length	Material no.
290 – 560	1001 – 1200	-	-
	1201 – 1600	200	308267
	1601 – 2000	400	622881
561 – 1200	1001 – 1200	-	-
	1201 – 1600	200	308267
	1601 – 2000	400	779677

[2] T&T espagnolette, security – centred / variable handle height, backset 15 mm

SRH	SRW	Espagnolette length	Material no.
290 – 560	1001 – 1200	980	779679
	1201 – 1600	980	779679
	1601 – 2000	980	779679
561 – 1200	1001 – 1200	980	779679
	1201 – 1600	980	779679

[3] Espagnolette connector

Material no.
382716

[4] Roto E-Tec Drive

Material no.	
Roto E-Tec Drive type 01 Basic R	782892
Roto E-Tec Drive type 02 Basic set R	779648
Roto E-Tec Drive type 03 Plug&Play set R	779651

[5] Tilt stay NT

Material no.
482823

[7] Restrictor and cleaning stay²⁾

SRH	Type	Material no.
290 – 560	Type 1	347131
561 – 1200	Type 2	347132

[8] Sash bearing groove for restrictor and cleaning stay²⁾

Material no.

[9] Striker → CTL 105

[10] Stay bearing

[11] Stay-bearing pin, not shown

[12] Tilt-Only hinge, with alignment

[13] Tilt-Only hinge, without alignment

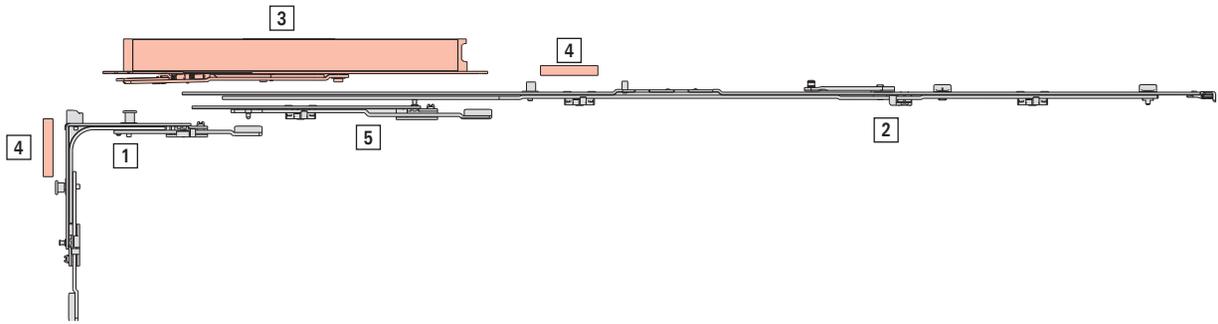
348277	
1601 – 2000 980	289863

¹⁾ SRH < 600 mm, reduce tilt distance to 80 mm. If the tilt distance is restricted, the tilt distance of the E-Tec Drives must also be restricted (programming required).

Hardware overview

TiltFirst hardware

Hardware overview





Application range

Sash rebate width SRW690¹⁾ – 1400 mm
 Sash rebate height SRH361²⁾ – 2600 mm
 Sash weight S.kg..... max. 100 kg

Application range

Sash rebate width SRW690³⁾ – 1400 mm
 Sash rebate height SRH361⁴⁾ – 2600 mm
 Sash weight S.kg..... max. 100 kg

Hinge side K / A / E5

[1] E-Tec Drive corner drive

	Cam	Material no.
	1V 1S	779677

[2] Stay guide

SRH	SRW	Size	Material no.
361 – 2600	690 – 1000	350 / 690	260204
	1001 – 1200	500 / 890	260208
	1201 – 1400	500 / 1290	260215

[3] Roto E-Tec Drive

	Material no.
Roto E-Tec Drive type 01 Basic L	782877
Roto E-Tec Drive type 01 Basic R	782892
Roto E-Tec Drive type 02 Basic set L	779647
Roto E-Tec Drive type 02 Basic set R	779648
Roto E-Tec Drive type 03 Plug&Play set L	779681
Roto E-Tec Drive type 03 Plug&Play set R	779651

[4] Striker → CTL 105

[5] Centre lock

SRH	SRW	Type	Material no.
361 – 2600	690 – 800	–	–
	801 – 1000	200	308267
	1001 – 1200	200	308267
	1201 – 1400	–	–

1) 690 – 710 mm only with 13 mm rebate clearance at the top
 2) SRH < 600 mm, reduce tilt distance to 80 mm. If the tilt distance is restricted, the tilt distance of the E-Tec Drives must also be restricted (programming required).

Designo HA 13 mm

[1] E-Tec Drive corner drive

	Cam	Material no.
	1V 1S	779677

[2] Stay guide

SRH	SRW	Size	Material no.
361 – 2600	690 – 800	250 / 490	385393
	801 – 1000	350 / 690	385394
	1001 – 1200	500 / 890	385415
	1201 – 1400	500 / 1090	385416

[3] Roto E-Tec Drive

	Material no.
Roto E-Tec Drive type 01 Basic L	782877
Roto E-Tec Drive type 01 Basic R	782892
Roto E-Tec Drive type 02 Basic set L	779647
Roto E-Tec Drive type 02 Basic set R	779648
Roto E-Tec Drive type 03 Plug&Play set L	779681
Roto E-Tec Drive type 03 Plug&Play set R	779651

[4] Striker → CTL 105

[5] Centre lock

SRH	SRW	Type	Material no.
361 – 2600	690 – 800	–	–
	801 – 1000	200	308267
	1001 – 1200	200	308267
	1201 – 1400	200	308267

1) 690 – 710 mm only with 13 mm rebate clearance at the top
 2) SRH < 600 mm, reduce tilt distance to 80 mm. If the tilt distance is restricted, the tilt distance of the E-Tec Drives must also be restricted (programming required).

Installation

Roto E-Tec Drive for aluminium profiles

Application ranges

Hinge side AL ¹⁾

TiltFirst

SW	740 – 1600	Rebate clearance	11.5 mm
SH	635 – 2400		

S.kg_{max.}: the Roto E-Tec Drive can be used up to a max. sash weight of 100 kg. The sash weight varies depending on the hardware. For this reason, the application diagram of the hardware must be observed.

Maximum operating torque 7.5 Nm (△ displacement force ≈ 750 N)

Maximum sash area (SWxSH) 1.44 m² at a wind speed of 10 m/s

Larger formats (only with wind sensor) available upon request.

Tilt-Only, handle off-centre (with Roto E-Tec Drive DIN R)

SW	680 – 1600	Rebate clearance	11.5 mm
SH	635 – 1300		

S.kg_{max.}: the Roto E-Tec Drive can be used up to a max. sash weight of 100 kg. The sash weight varies depending on the hardware. For this reason, the application diagram of the hardware must be observed.

Maximum operating torque 7.5 Nm (△ displacement force ≈ 750 N)

Maximum sash area (SWxSH) 1.44 m² at a wind speed of 10 m/s

Larger formats (only with wind sensor) available upon request.

Tilt-Only, handle centred (with Roto E-Tec Drive DIN R)

SW	1008 – 1600	Rebate clearance	11.5 mm
SH	1008 – 1300		

S.kg_{max.}: the Roto E-Tec Drive can be used up to a max. sash weight of 100 kg. The sash weight varies depending on the hardware. For this reason, the application diagram of the hardware must be observed.

Maximum operating torque 7.5 Nm (△ displacement force ≈ 750 N)

Maximum sash area (SWxSH) 1.44 m² at a wind speed of 10 m/s

Larger formats (only with wind sensor) available upon request.

Hinge side AL Designo ²⁾

TiltFirst

SW	830 – 1600	Rebate clearance	11.5 mm
SH	635 – 2400		

S.kg_{max.}: the Roto E-Tec Drive can be used up to a max. sash weight of 100 kg. The sash weight varies depending on the hardware. For this reason, the application diagram of the hardware must be observed.

Maximum operating torque 7.5 Nm (△ displacement force ≈ 750 N)

Maximum sash area (SWxSH) 1.44 m² at a wind speed of 10 m/s

Larger formats (only with wind sensor) available upon request.

Tilt-Only, handle off-centre (with Roto E-Tec Drive DIN R)

SW	680 – 1600	Rebate clearance	11.5 mm
SH	635 – 1300		

S.kg_{max.}: the Roto E-Tec Drive can be used up to a max. sash weight of 100 kg. The sash weight varies depending on the hardware. For this reason, the application diagram of the hardware must be observed.

Maximum operating torque 7.5 Nm (△ displacement force ≈ 750 N)

Maximum sash area (SWxSH) 1.44 m² at a wind speed of 10 m/s

Larger formats (only with wind sensor) available upon request.



**Tilt-Only, handle centred (with Roto E-Tec Drive DIN R)**

SW	1008 – 1600	Rebate clearance	11.5 mm
SH	1008 – 1300		

S.kg_{max.}: the Roto E-Tec Drive can be used up to a max. sash weight of 100 kg. The sash weight varies depending on the hardware. For this reason, the application diagram of the hardware must be observed.

Maximum operating torque 7.5 Nm (≙ displacement force ≈ 750 N)

Maximum sash area (SW×SH) 1.44 m² at a wind speed of 10 m/s

Larger formats (only with wind sensor) available upon request.

1) Only with flush-encased gearbox without mishandling device

2) Only with flush-encased gearbox without mishandling device and tilt-depth reduction.

**Warning****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.

Installation

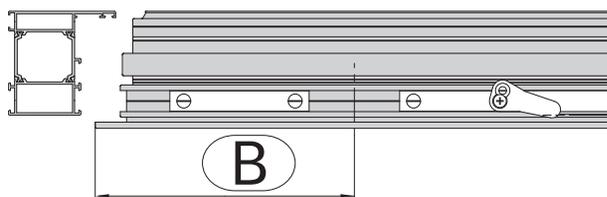
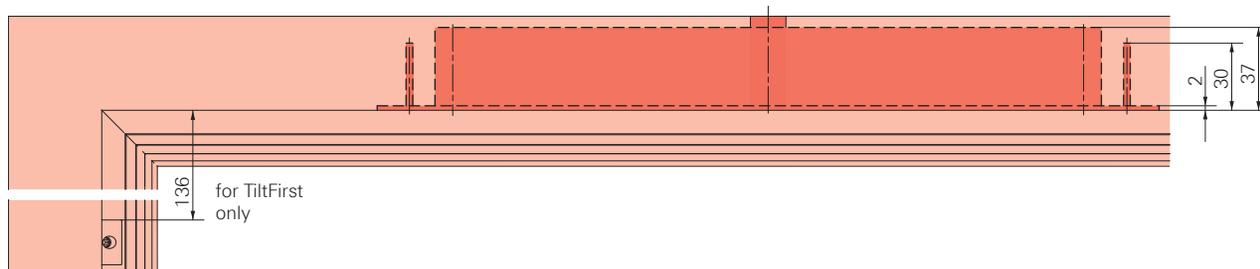
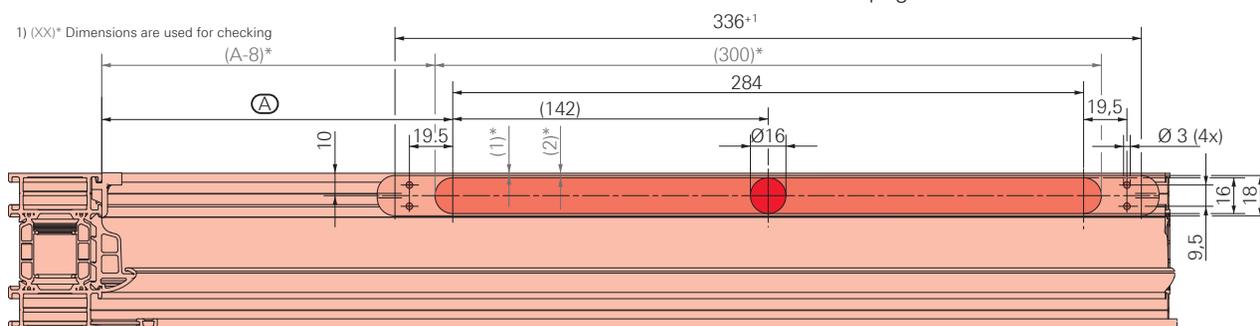
Roto E-Tec Drive for aluminium profiles

Routing out the frame / Preparing connecting rods

Drilling and routing dimensions

Opening type	Espagnolette position	(A) / mm	(B) / mm
TiltFirst		158	
Tilt-Only	Off-centre	SW - 380	SW - 504
	Centred	SW/2 + 124	SW / 2

1) (XX)* Dimensions are used for checking (A-8)*



1. Drilling and routing dimensions for TiltFirst and Tilt-Only windows fitted on the right (version for TiltFirst windows fitted on the left is inverted).

(A) Position of motor routing pocket

(B) Position of espagnolette / handle axis

Espagnolette position on Tilt-Only sash



Note

Chips and dirt must be removed from the routing channel after routing.

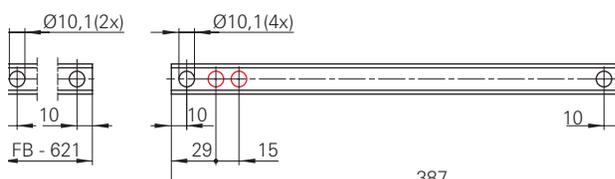
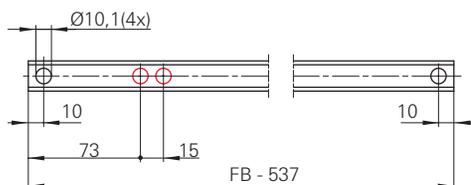
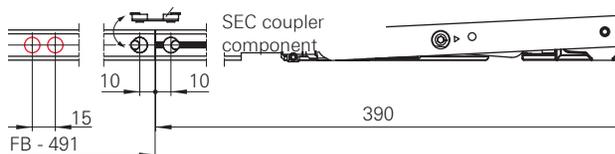
2. Provide upper connecting rod(s) with additional holes for the adapter.

AL TF

Connecting rod **T3** in combination with small sash stay.

The SEC coupler component (mat. no. **348576**) connects the connecting rod to the sash stay.

Connecting rod **T3** in combination with large sash stay.



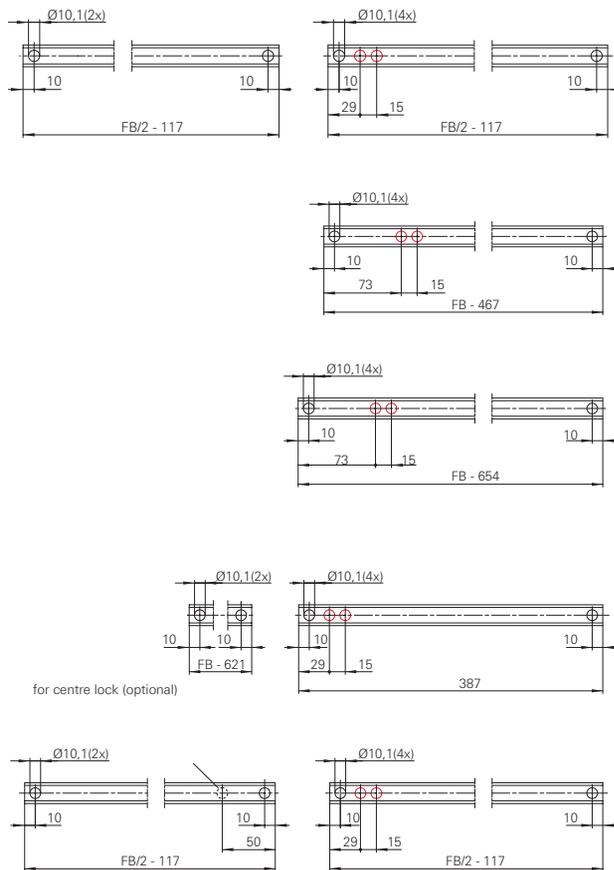
AL TI-ON

Connecting rods **CR1** and **T2** in combination with off-centre espagnolette.

Installation

Roto E-Tec Drive for aluminium profiles

Routing out the frame / Preparing connecting rods



Connecting rods **CR1** and **T2** in combination with centred espagnolette.



AL Designo TF

Connecting rod **T3** in combination with sash stay 500 and corner drive without mishandling device.

Connecting rod **T3** in combination with sash stay 735 and corner drive without mishandling device.

AL Designo TI-ON

Connecting rods **CR1** and **T2** in combination with off-centre espagnolette.

Connecting rods **CR1** and **T2** in combination with centred espagnolette.

3. Install the frame and sash.

Note specific sizes for TF sash stay with AL.

AL TF

Sash stay

SW/mm	Material no.
≤ 914	728969
≥ 915	728970

AL Designo TF

Sash stay and scissor stay guide

SW / mm	Description	DIN	PU	Material no.
≥ 1035	TF scissor stay guide 735	L / R	10	626999
	Sash stay 735 no. 1	L	10	624947
	Sash stay 735 no. 1	R	10	624946
	Sash stay 735 no. 3	L	10	624953
	Sash stay 735 no. 3	R	10	624952
	Sash stay 735 no. 4	L	10	624959
	Sash stay 735 no. 4	R	10	624958
≤ 1034	TF scissor stay guide 500	L / R	10	625025
	Sash stay 500 no. 1	L	10	624945
	Sash stay 500 no. 1	R	10	624944
	Sash stay 500 no. 3	L	10	624951
	Sash stay 500 no. 3	R	10	624950
	Sash stay 500 no. 4	L	10	624957
	Sash stay 500 no. 4	R	10	624956

Note specific sizes for TF sash stay (and scissor stay guide) for AL Designo.

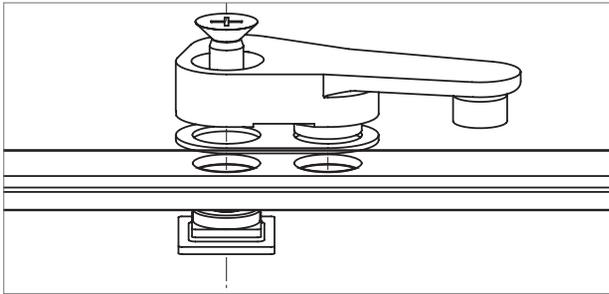
Note

For all other hardware components, see the installation instructions for AL and AL Designo.

Installation

Roto E-Tec Drive for aluminium profiles

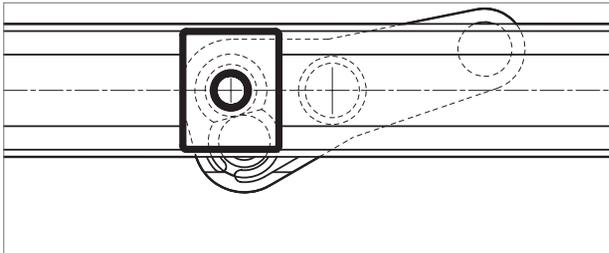
Installing the Roto E-Tec Drive



[1] Adapter

[2] Packer

[3] Connector



[4] Connector perpendicular to connecting rod

4. E-Tec Drive installation set: fasten the adapter, packer and connector to the upper connecting rod using a screw.

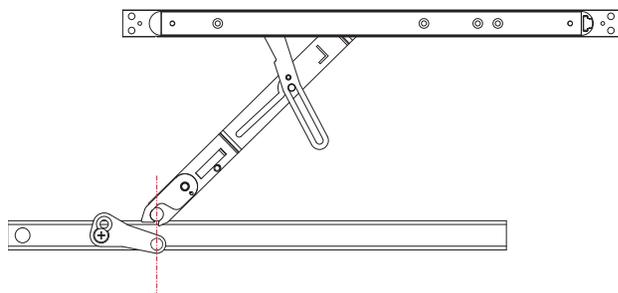
Pay attention to the orientation of the adapter and connector.

The figure shows the adapter orientation of the Roto E-Tec Drive, DIN R.

View from below, DIN R.

5. Insert the Roto E-Tec Drive into the routed area of the frame and place supports underneath it on the side if necessary so that the baseplate is flush with the fold edge.

Fasten to the frame with the four included aluminium-specific screws.



[1] Adapter pin

[2] Roto E-Tec Drive holder

6. Hinge the sash.



Note

Note the other applicable documents for window installation on 18.



Warning

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

The hardware can be unlocked as a result of incorrect installation or improper operation, which can lead to the window sash falling out, if no restrictor and cleaning stay is installed on the Tilt-Only sash.

- ▶ Restrictor and cleaning stays must be installed on Tilt-Only sashes if none are present.

7. Check the installation visually:

Move the sash manually into the tilt position. Then drive up the Roto Tec E-Drive and check the alignment between the pin of the adapter [1] and the holder on the Roto E-Tec Drive [2] from above. [1] and [2] must align exactly (see figure). Then, 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.

Image: DIN R



Note

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.

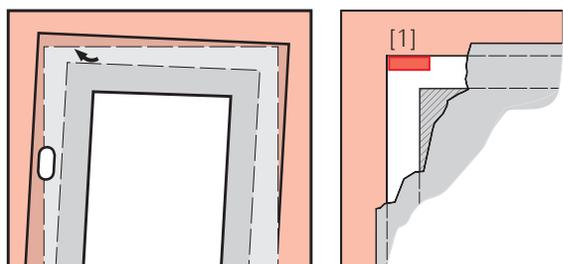
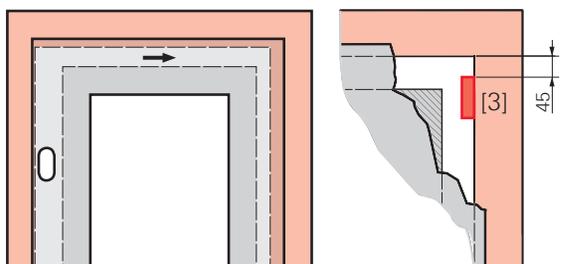
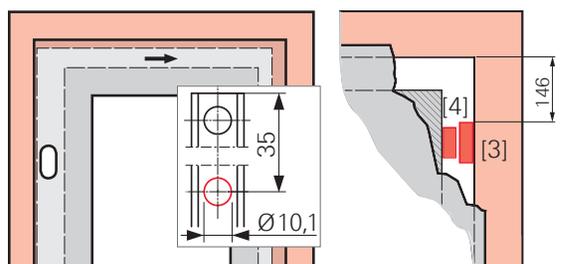
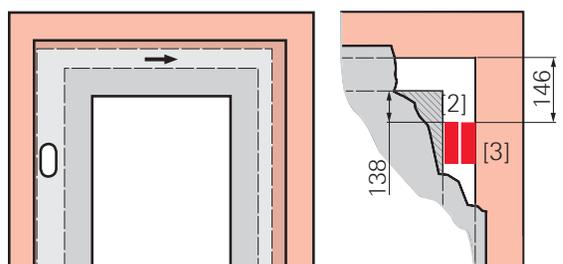
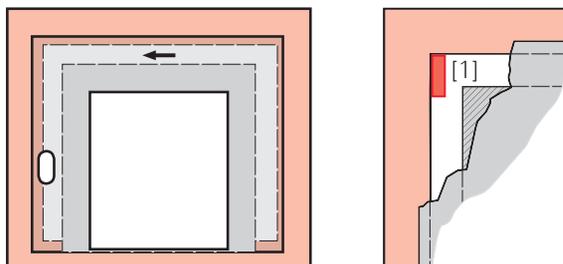
9. Continue with initial operation (see page 66)

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

Installation

Roto E-Tec Drive for aluminium profiles

Stabilising the sash



[1] Run-up wedge V.01 / V.02

[2] Run-up block

[3] Frame rebate-clearance reduction

[4] Sash rebate-clearance reduction

Locking and unlocking using the Roto E-Tec Drive may 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:

light sashes, $SH > SW$, $SH_{Tilt-Only} < SW_{Tilt-Only}$

Case B: sash is pulled during locking.

Common in:

light sashes, $SH > SW$, $SH_{Tilt-Only} < SW_{Tilt-Only}$

AL without corner drive

AL with corner drive



Note

For the rebate-clearance reduction on the sash side (material no. 800440), produce an additional hole $\varnothing 10.1$ mm in connecting rod T4.

AL Designo

Case C: sash is lifted during locking.

Common in: light sashes, $SH < SW$



Note

See also figures in the parts list on page 21.



Technical hardware requirements:

- E-Tec corner drive with run-up block **1** .
- Place the striker on the side **2** .
- Stay arm/stay guide (for table, see page 34) **3** .
- Do not install a lifting mishandling device.
If required, use a sash lifter **4** with the corresponding frame component **5** .

If necessary:

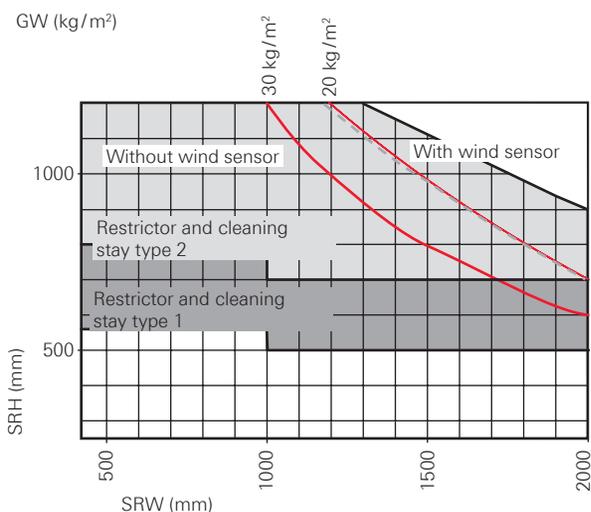
- Centre lock CL 200 COU (for table, see page 34).
- Turn lock, surface-mounted.
- System-specific run-up wedges for rebate-clearance restriction.



Installation

Roto E-Tec Drive for timber/PVC profiles

Application range TI-ON – Roto NT Designo HA 13 mm



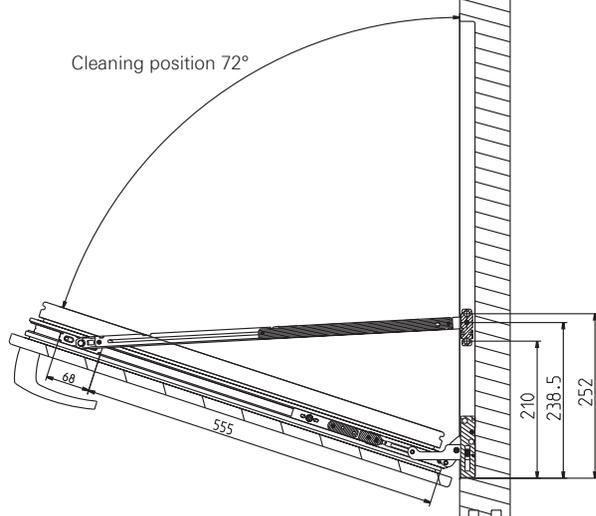
The specifications in the application diagram refer to the glass weight in kg/m².

1 mm/m² glass thickness = 2.5 kg

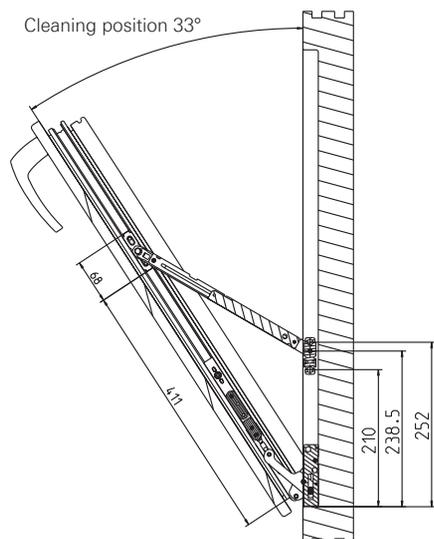
□□□ = Impermissible application range

--- = Wind sensor limit

Minimum sash rebate height for type 2 = 701 mm



Minimum sash rebate height for type 1 = 500 mm



Tilt-Only sash, hinge side NT Designo HA 13 mm (with rebate sash stay and two restrictor and cleaning stays)

Max. operating torque: 7.5 Nm (\triangleleft 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



Note

- Roto E-Tec Drive S.kg_{max.} 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 only.
- Installation only in connection with restrictor and cleaning stays or tilt stays.



Warning

Loss of function due to deformation of drive components

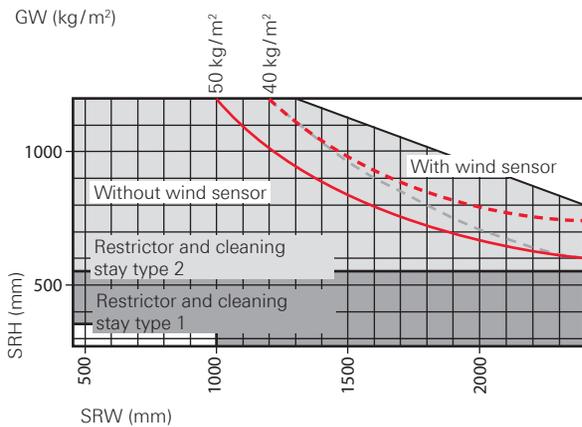
Failure to comply with the recommended sash dimensions can lead to deformation and a loss of the function of the Roto E-Tec Drive.

- ▶ 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.



Note

- Maintain a rebate clearance of 12 – 14 mm at the top.
- For low tilt distances, pay attention to free turning of the E-Tec Drive via the sash rebate.
- Central gasket systems are preferred.
- SRH < 600 mm, reduce tilt distance to 80 mm. If the tilt distance is restricted, the tilt distance of the E-Tec Drives must also be restricted (programming required).
- Ensure the hardware is running smoothly.

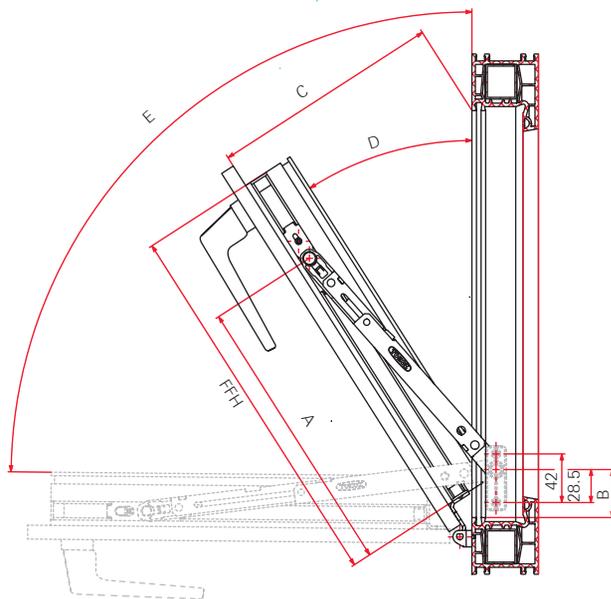


The specifications in the application diagram refer to the glass weight in kg/m².

1 mm/m² glass thickness = 2.5 kg

□□□ = Impermissible application range

--- = Wind sensor limit



Tilt-Only sash, hinge side NT, K, A and E5 (with rebate sash stay and two restrictor and cleaning stays)

Max. operating torque: 7.5 Nm (displacement force ≈ 750 N)
 Max. sash area (SRW×SRH): 1.44m² at a wind speed of 10 m/s
 Larger formats (only with wind sensor) available upon request



Note

- Roto E-Tec Drive S.kg_{max.} 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 only.
- Installation only in connection with restrictor and cleaning stays or a tilt stay.



Warning

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.



Note

- Maintain a rebate clearance of 12 – 14 mm at the top.
- For low tilt distances, pay attention to free turning of the E-Tec Drive via the sash rebate.
- Central gasket systems are preferred.
- SRH < 600 mm, reduce tilt distance to 80 mm. If the tilt distance is restricted, the tilt distance of the E-Tec Drives must also be restricted (programming required).
- Ensure the hardware is running smoothly.

Application range for restrictor and cleaning stay type 1 and type 2

Sash rebate height SRH	Restrictor and cleaning stay type	Position Sash bearing A	Position Frame bearing B	Tilt distance Restrictor position C	Opening angle Restrictor position D	Opening angle Cleaning position E
290 – 400	Type 1	250	45	180–245	33°	90°
401 – 560	Type 1	280	75	205–275	27°	67°
561 – 700	Type 2	525	170	225–277	22°	88°
701 – 850	Type 2	575	220	244–292	19°	72°
851 – 1200	Type 2	625	270	261–363	17°	62°

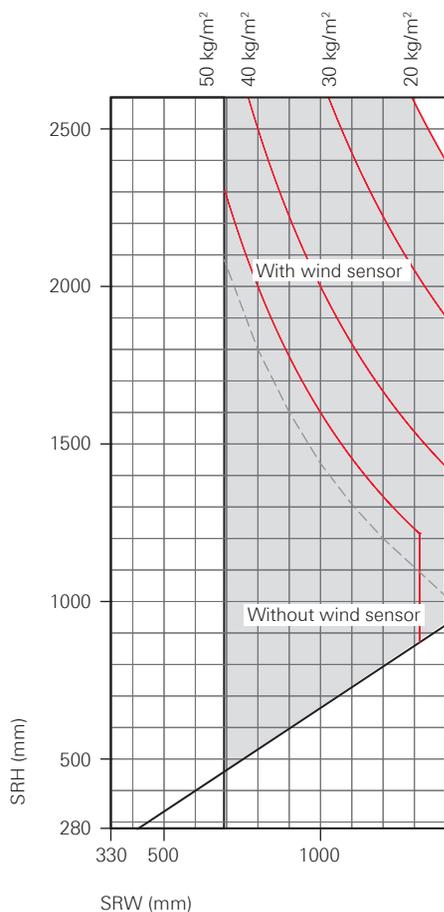
Installation

Roto E-Tec Drive for timber/PVC profiles

Application range TF – Roto NT Designo HA 13 mm



GW (kg/m²)



Window formats and weights deviating from the application diagram must be approved by Roto.

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

1 mm/m² glass thickness = 2.5 kg

□□□ = Impermissible application range

--- = Wind sensor limit

TiltFirst, hinge side NT Designo HA 13 mm

Maximum operating torque 7.5 Nm
(Δ displacement force \approx 750 N)
Maximum 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



Note

Roto E-Tec Drive S.kgmax. 100 kg

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



Warning

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.

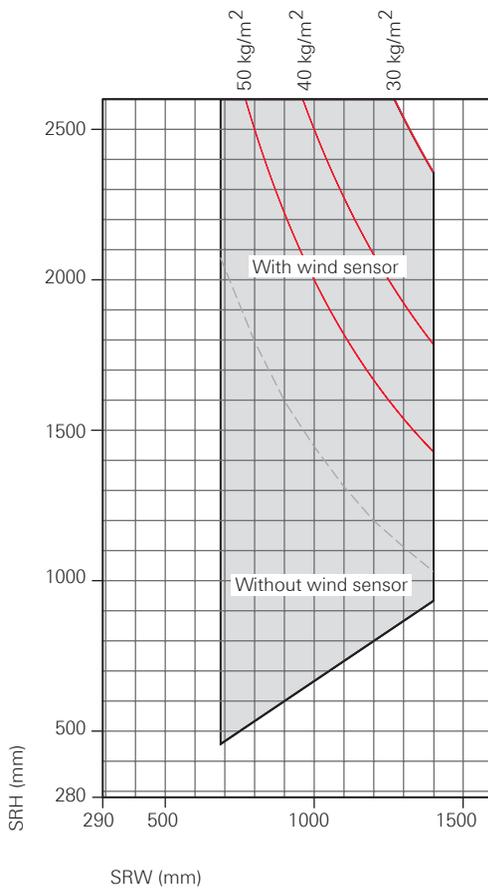


Note

- Maintain a rebate clearance of 12 – 14 mm at the top.
- For low tilt distances, pay attention to free turning of the E-Tec Drive via the sash rebate.
- Central gasket systems are preferred.
- SRH < 600 mm, reduce tilt distance to 80 mm. If the tilt distance is restricted, the tilt distance of the E-Tec Drives must also be restricted (programming required).
- Ensure the hardware is running smoothly.



GW (kg/m²)



Window formats and weights deviating from the application diagram must be approved by Roto.

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

1 mm/m² glass thickness = 2.5 kg

□□□ = Impermissible application range

--- = Wind sensor limit

TiltFirst, hinge side NT K, A and E5

Max. operating torque 7.5 Nm (≙ displacement force ≈ 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



Note

Roto E-Tec Drive S.kg_{max.} 100 kg

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



Warning

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.



Note

- Maintain a rebate clearance of 12 – 14 mm at the top.
- For low tilt distances, pay attention to free turning of the E-Tec Drive via the sash rebate.
- Central gasket systems are preferred.
- SRH < 600 mm, reduce tilt distance to 80 mm. If the tilt distance is restricted, the tilt distance of the E-Tec Drives must also be restricted (programming required).
- Ensure the hardware is running smoothly.

Installation

Roto E-Tec Drive for timber/PVC profiles

Suitable hardware components TF

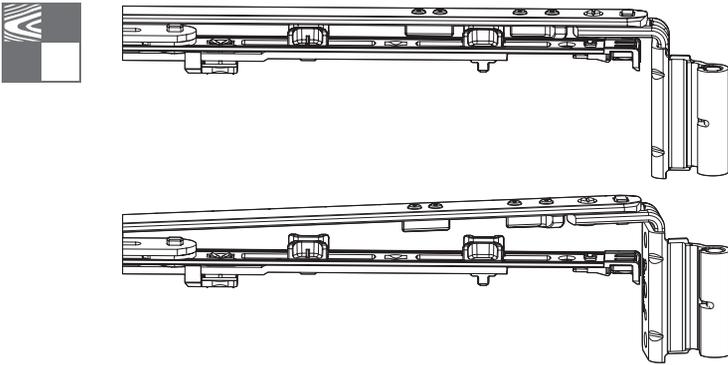


Figure: TiltFirst sash stay and scissor stay guide

[1] Inclusion

[2] Taper action

Check the Roto NT installation situation:

- Taper action / inclusion



Note

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.

Suitable TiltFirst hardware components



Note

For all other hardware components, see the installation instructions for Roto NT and Roto NT Designo HA 13 mm.



1. Carry out routing for the frame and cable feedthrough hole at the individual rod in accordance with 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.
3. Place the cable with the connector into the Roto E-Tec Drive and insert it into the strain relief lug.
4. Position the Roto E-Tec Drive into the routing and secure using three of the supplied screws 3.9 x 25.

**Note**

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

5. Hinge the sash.

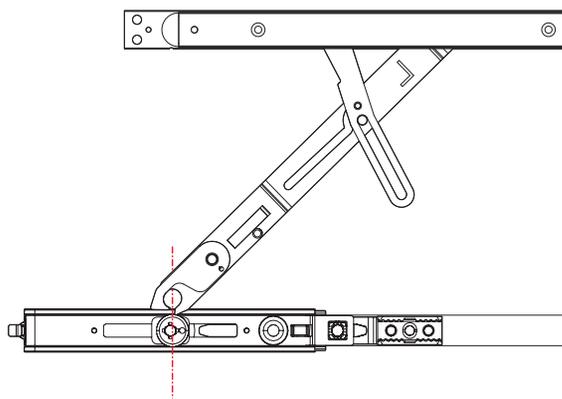
**Note**

Note the other applicable documents for window installation on page 18.

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

The hardware can be unlocked as a result of incorrect installation or improper operation, which can lead to the window sash falling out, if no restrictor and cleaning stay is installed on the Tilt-Only sash.

- ▶ A restrictor and cleaning stay must be installed for Tilt-Only sashes.



[1] Cam

[2] Roto E-Tec Drive holder

6. Check the installation visually:

Move the sash manually into the tilt position. Then drive up the Roto Tec E-Drive (see page 66) and check the alignment between the cam [A] and the holder on the Roto E-Tec Drive [B] from above. [A] and [B] must align exactly (see figure). Then, the drive is aligned correctly.

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

Image: DIN R



Note

- When checking the alignment between the Roto E-Tec Drive holder and the cam, no tensioning may occur. Mechanical tensioning can damage the scissor stay mechanism and result in a faulty drive.
- Before commissioning the Roto E-Tec Drive, ensure that the hardware can be operated easily by hand. Non-compliance may result in a faulty drive.

7. Continue with initial operation (see page 66)

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



Routing dimensions for the Roto E-Tec Drive in the frame for TiltFirst sashes:

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



Note

Chips and dirt must be removed from the routing channel after routing.

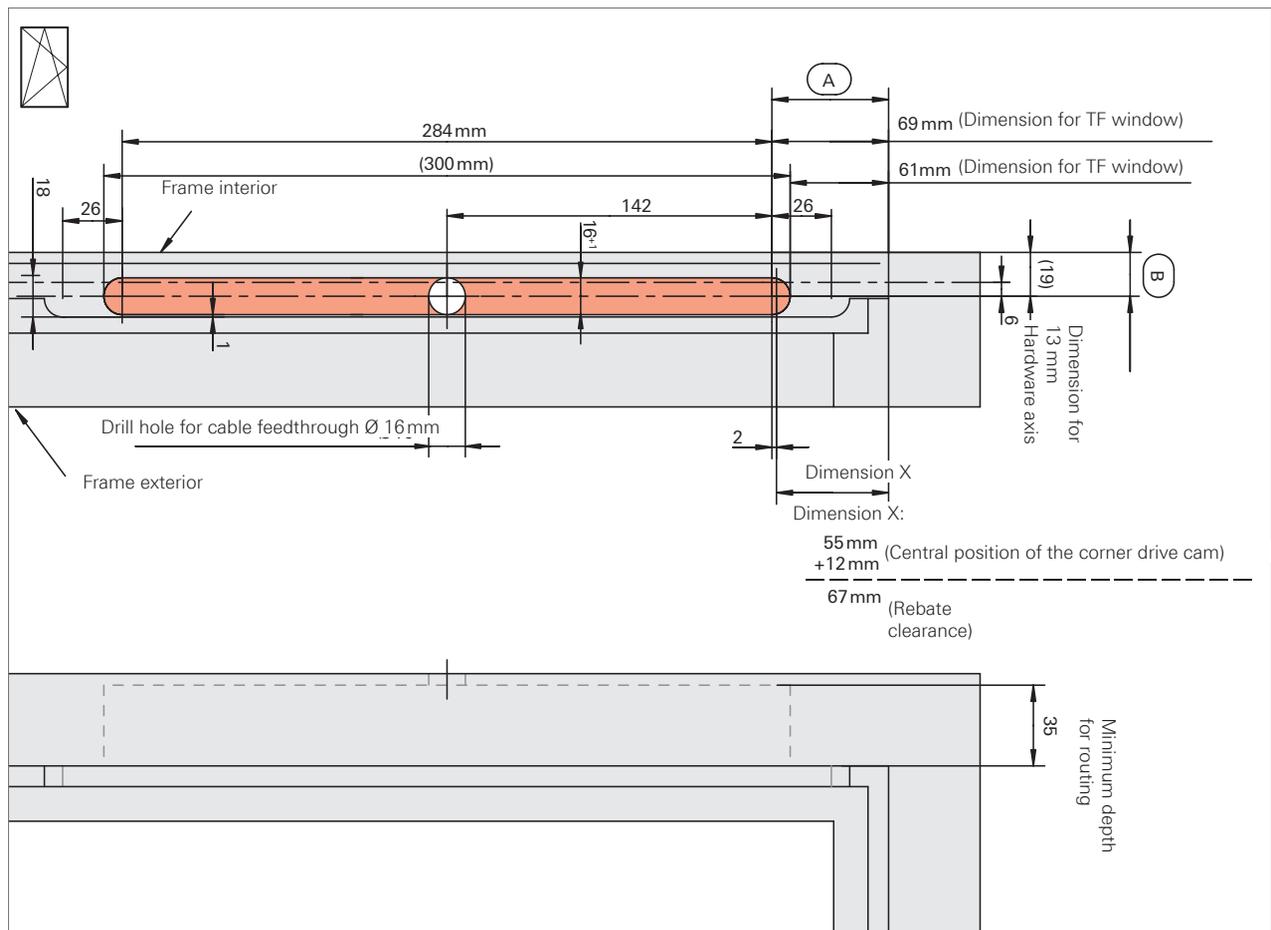


Figure: installation dimensions / routing dimensions for a window installed on the left-hand side (frame)



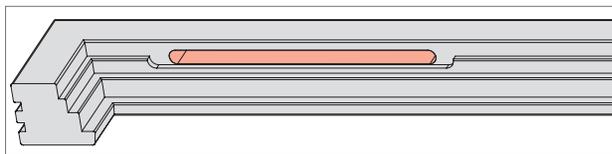
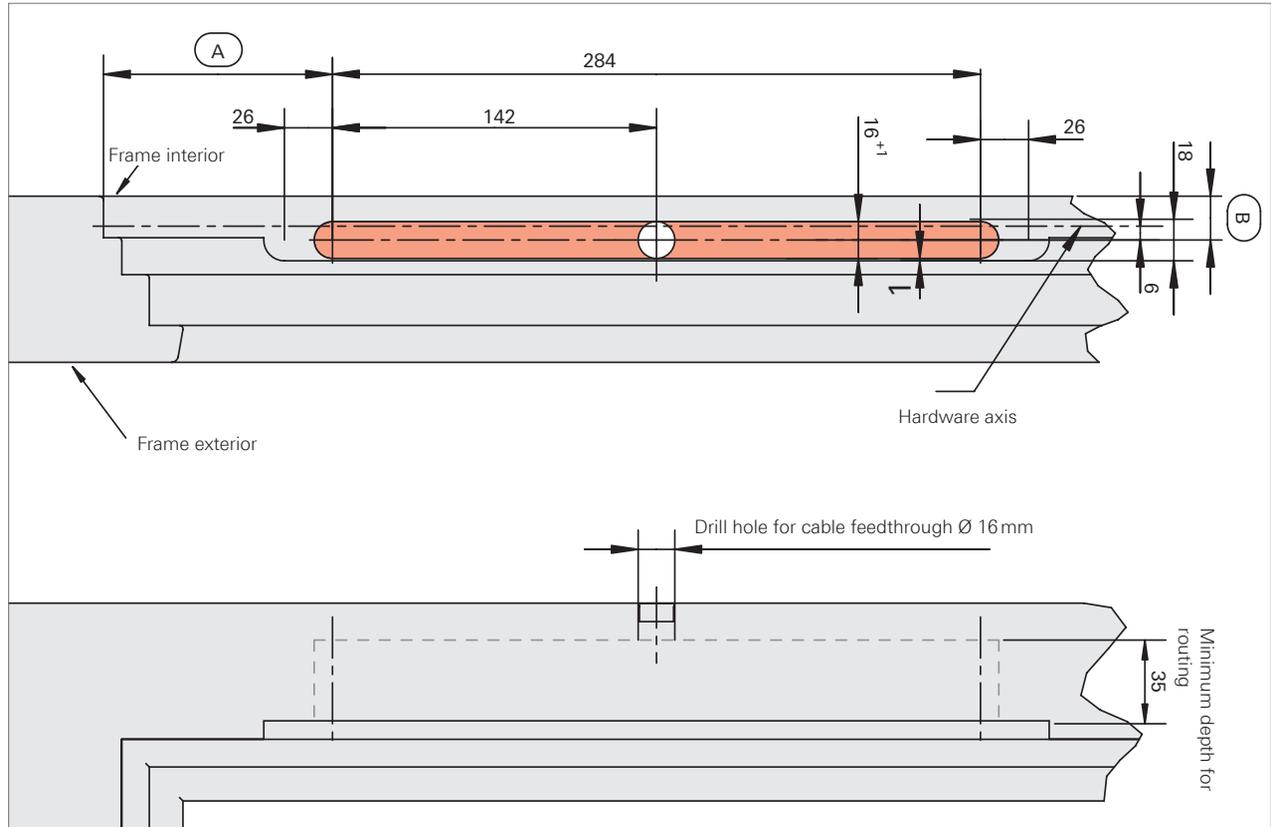
Axis dimension	A ₂₀	B ₂₀
9	69	15
13	69	19

Figure: 3D view – Frame corner



Routing dimensions for the Roto E-Tec Drive in the frame for Tilt-Only sash

Note
Chips and dirt must be removed from the routing channel after routing.

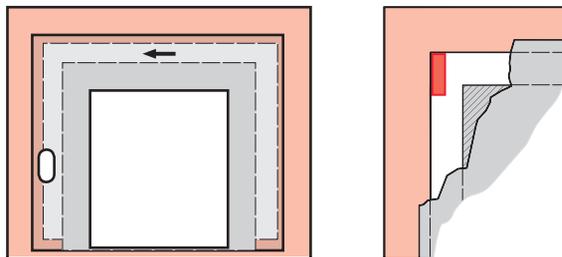


SRW/mm	Routing dimension (A) from left frame corner	Routing dimension (B) from left frame corner	
		9 mm axis dimension	13 mm axis dimension
451 – 1000	69	15	19
1001 – 2000	SRW / 2 – 102	15	19

- The routing dimensions assume that the espagnolette is exactly in a central position.
- A Roto E-Tec Drive right is always installed for the areas indicated.
- The locking cam on the espagnolette must always be positioned to the left of the sash centre.



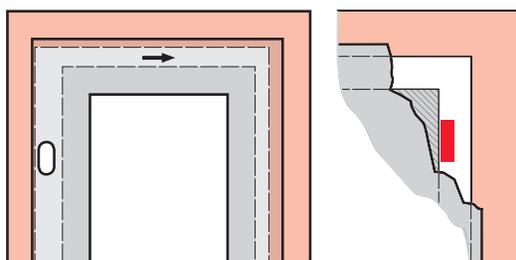
Locking and unlocking using the Roto E-Tec Drive may cause the sash to move horizontally. If this occurs, the following stabilising measures must be taken.



Case A: sash is pushed during unlocking.

Common in:

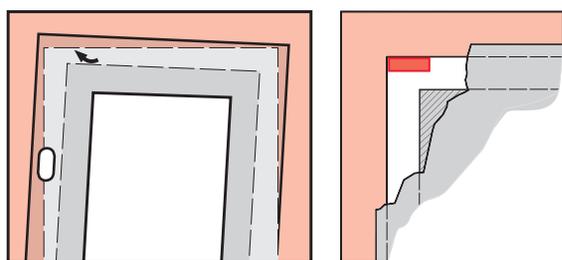
light sashes, $SH > SW$, $SH_{Tilt-Only} < SW_{Tilt-Only}$



Case B: sash is pulled during locking.

Common in:

light sashes, $SH > SW$, $SH_{Tilt-Only} < SW_{Tilt-Only}$



Case C: sash is lifted during locking.

Common in: light sashes, $SH < SW$

[1] Rebate run-up block



Delivery state of the Roto E-Tec Drive

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.

Installation of the Roto E-Tec Drive in PVC windows

The following installation processes must be integrated into the window-construction manufacturing steps for the Roto E-Tec Drive.



Danger

Risk of death due to routing in steel-reinforced PVC!

Routing in steel-reinforced PVC can lead to death or serious injuries.

- ▶ The PVC profile and steel reinforcement must be routed out separately.

1. Carry out routing for the frame in the PVC profile as an individual rod 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.
3. Protect the notching of the steel reinforcement from corrosion. Attention: risk of rusting
4. Insert the steel reinforcement into the PVC profile and secure 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.
6. Place the cable with the connector into the Roto E-Tec Drive and insert it into the strain relief lug.
7. Position the Roto E-Tec Drive in the routing, use the corresponding supplied packers so that the supporting surface of the mounting flange is level with the frame interior edge.
8. Attach the Roto E-Tec Drive using the three supplied screws 3.9 x 25.



Note

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



Note

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



9. Hinge the sash.



Note

Note the other applicable documents for window installation on page 18.

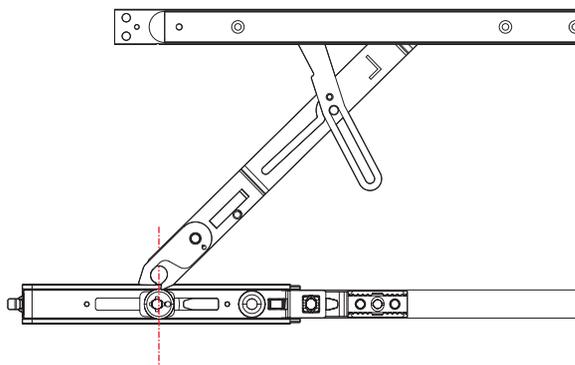


Warning

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

The hardware can be unlocked as a result of incorrect installation or improper operation, which can lead to the window sash falling out, if no restrictor and cleaning stay is installed on the Tilt-Only sash.

- ▶ Restrictor and cleaning stays must be installed on Tilt-Only sashes if none are present.



[1] Cam

[2] Roto E-Tec Drive holder

10 **Check the installation visually:**

Move the sash manually into the tilt position. Then drive up the Roto Tec E-Drive (see page 66) and check the alignment between the cam [A] and the holder on the Roto E-Tec Drive [B] from above. [A] and [B] must align exactly (see figure). Then, the drive is aligned correctly.

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

Image: DIN R



Note

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

11 Continue with initial operation (see page 66)

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

Installation

ROTO E-Tec Drive for PVC profiles
TiltFirst window – Routing the frame



Routing dimensions for the Roto E-Tec Drive in the frame for TiltFirst sashes:

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



Note

Chips and dirt must be removed from the routing channel after routing.

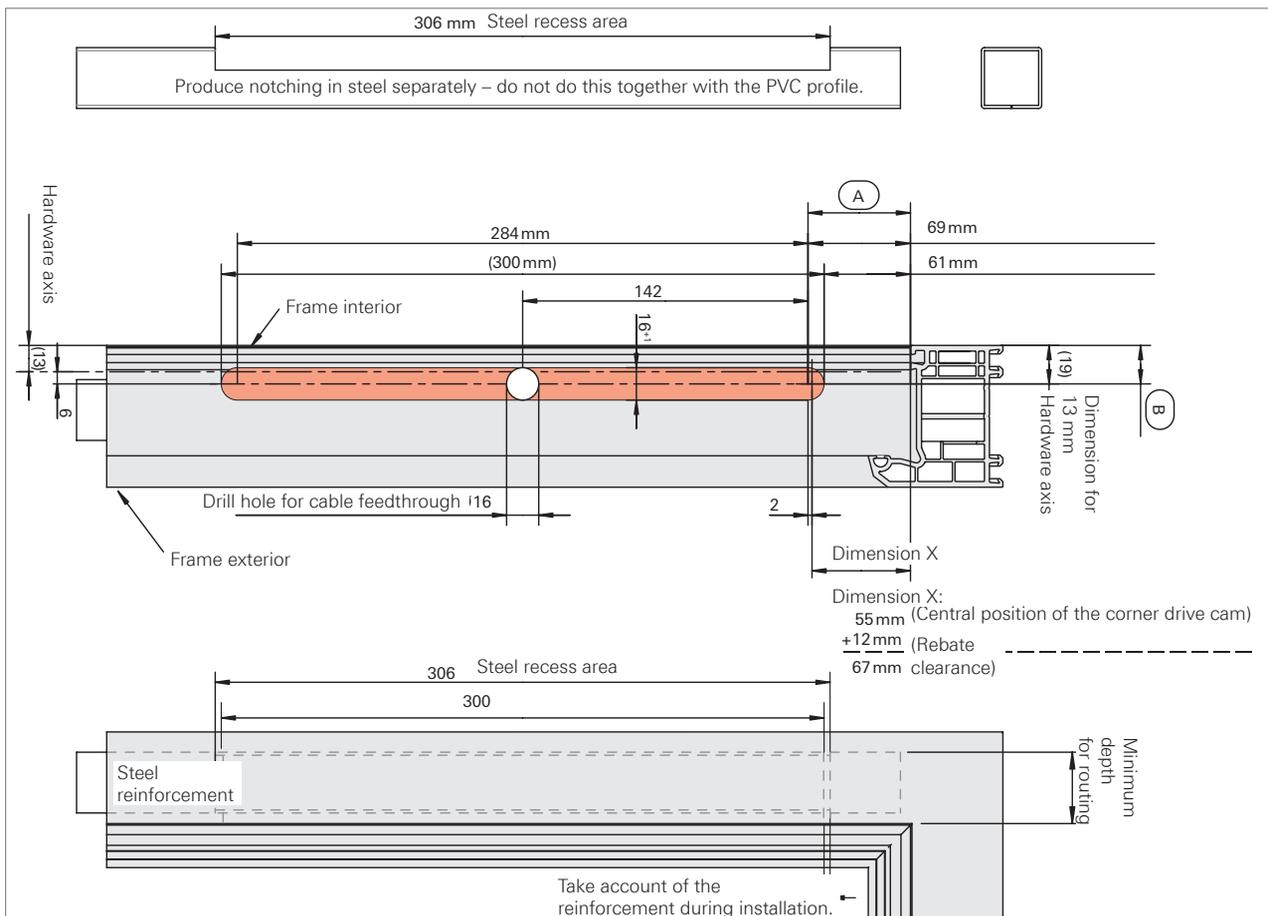


Figure: installation dimensions / routing dimensions for a window installed on the left-hand side (frame)



Figure: 3D view – Frame corner

Axis dimension	A ₂₀	B ₂₀
9	69	15
13	69	19



Routing dimensions for the Roto E-Tec Drive in the frame for Tilt-Only sash



Note

Chips and dirt must be removed from the routing channel after routing.

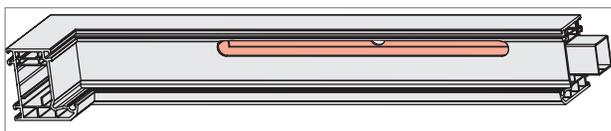
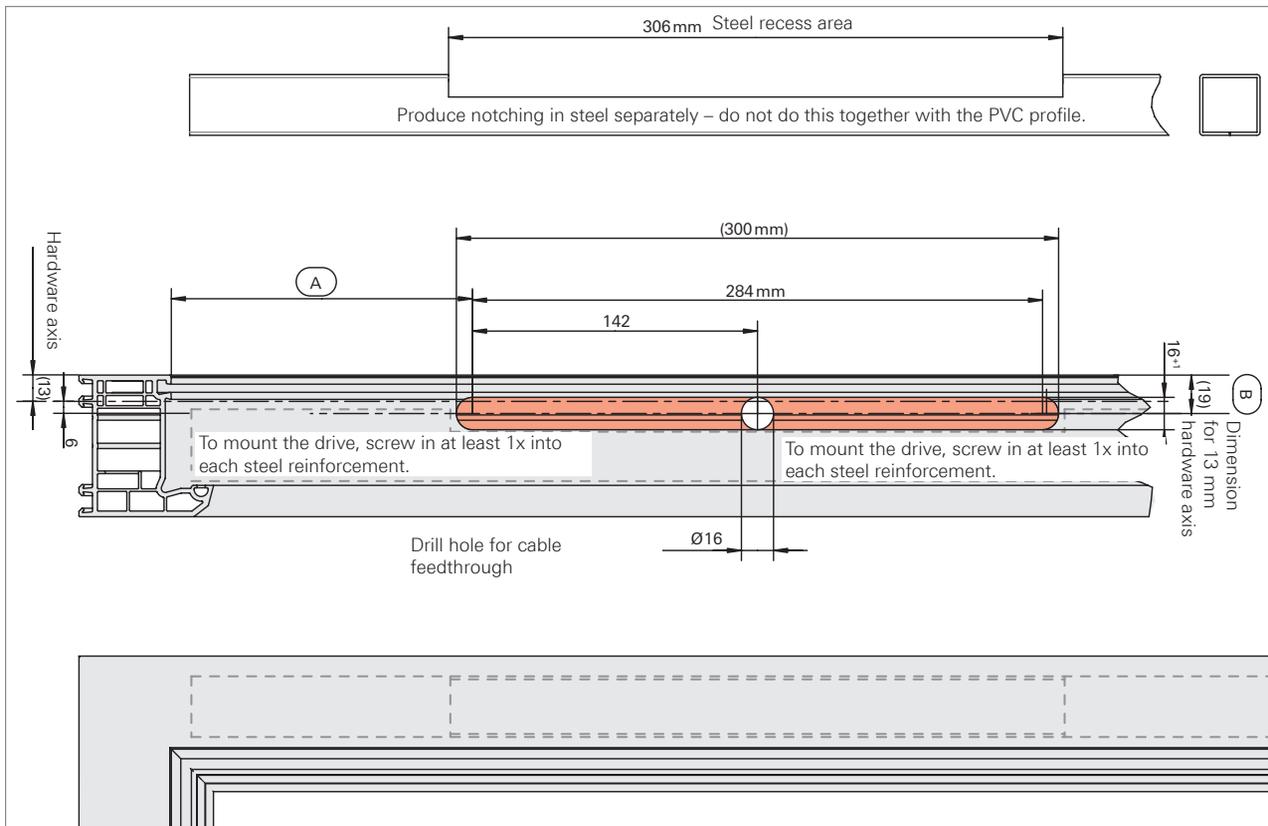


Figure: 3D view – Frame corner

SRW/mm	Routing dimension (A) from left frame corner	Routing dimension (B) from left frame corner	
		9 mm axis dimension	13 mm axis dimension
451 – 1000	69	15	19
1001 – 2000	SRW / 2 – 102	15	19

- The routing dimensions assume that the espagnolette is exactly in a central position.
- A Roto E-Tec Drive right is always installed for the areas indicated.
- The locking cam on the espagnolette must always be positioned to the left of the sash centre.

Installation

Roto E-Tec Drive for PVC profiles

Stabilising the sash

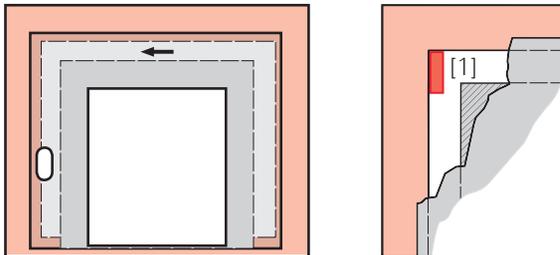


Locking and unlocking using the Roto E-Tec Drive may cause the sash to move horizontally. If this occurs, the following stabilising measures must be taken.

Case A: sash is pushed during unlocking.

Common in:

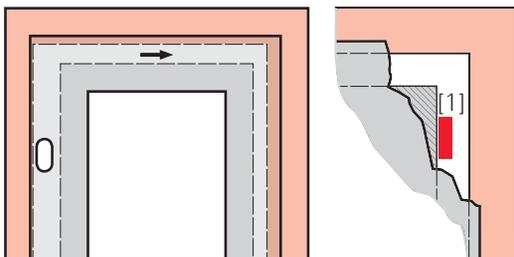
light sashes, $SH > SW$, $SH_{\text{Tilt-Only}} < SW_{\text{Tilt-Only}}$



Case B: sash is pulled during locking.

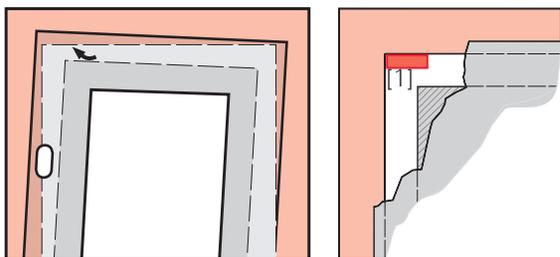
Common in:

light sashes, $SH > SW$, $SH_{\text{Tilt-Only}} < SW_{\text{Tilt-Only}}$

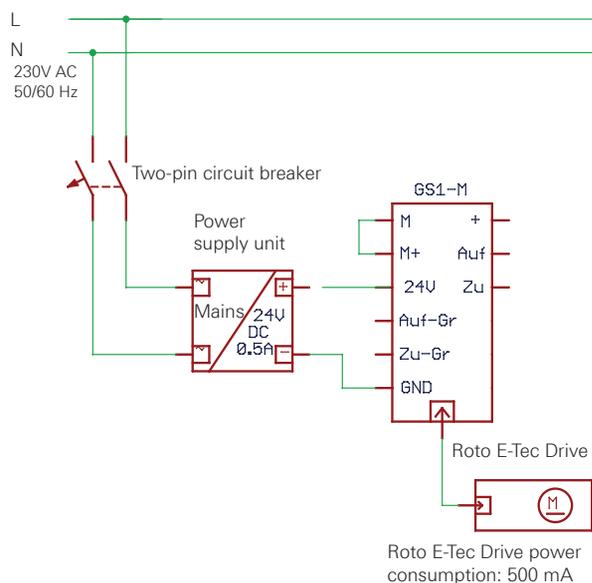


Case C: sash is lifted during locking.

Common in: light sashes, $SH < SW$



[1] Rebate run-up block



1. Connect the power cable to the power supply unit on the primary side.



Warning

Read the operating and installation instructions for the power supply unit before installation.

2. Connect the power supply unit to the GS1-M on the secondary side.
3. Place the power supply unit into the junction box.
4. Connect the push-button in accordance with basic circuits.
5. Insert the Roto E-Tec Drive cable for the GS1-M into the RJ45 bush.

6. Place the GS1-M into the second junction box.



Warning

Only an electrician may install the power supply unit.



Note

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



Note

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.



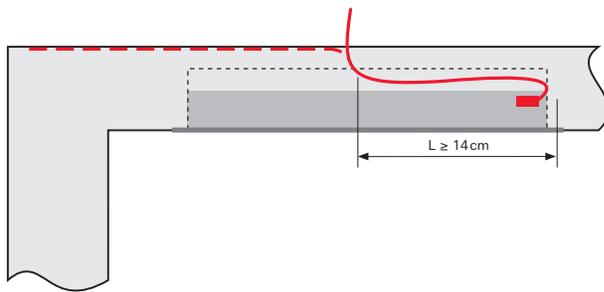
Note

Only install the power supply unit indoors. The electrician must ensure that end users cannot access live components.



Note

If third-party power supply units are used, ensure they comply with the requirements from DIN EN 60335-1 and / or DIN EN 60335-2-103.



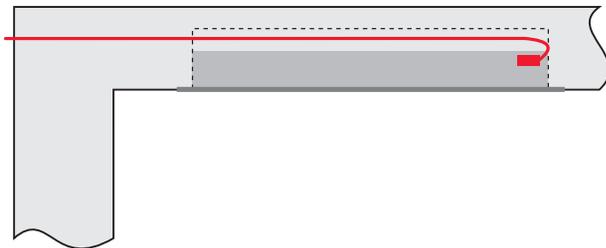
**Insert or lay cables in the frame from above
(window fitted on the right).**

The cable feedthrough hole in the frame has a diameter of 16 mm. It must be sealed off using a suitable agent (silicone, butyl, etc.). The distance L (between cable feedthrough hole and Roto E-Tec Drive cable connection) must be ≥ 14 cm; this creates a cable loop through which the device can be removed easily.



Note

- Do not lay cables in areas where subsequent routing will be performed for installation.
- Maintain the minimum installation height for the operating push-buttons of 1.5 m.
- Install the operating push-buttons within view of the drive.



**Insert or lay cables in the frame from the side
(window fitted on the right).**

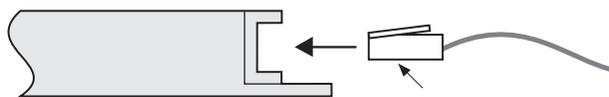
The cable feedthrough hole in the frame has a diameter of 16 mm. It must be sealed off using a suitable agent (silicone, butyl, etc.).



Note

- Do not lay cables in areas where subsequent routing will be performed for installation.
- Maintain the minimum installation height for the operating push-buttons of 1.5 m.
- Install the operating push-buttons within view of the drive.

- [1] Roto E-Tec Drive
- [2] Cable connection
- [3] Frame
- [4] Routing
- [5] Cable feedthrough hole
- [6] Masonry cable feedthrough
- [7] It is also possible to lay cables in a frame groove outside the frame



- [1] Roto E-Tec Drive
- [2] Connector
- [3] Strain relief lug
- [4] Screw 3.9x25

1. Insert the connector into the Roto E-Tec Drive with the locking stud pointing upwards. The connector must engage easily with an audible clicking noise. Never use force when inserting the connector.



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



Note

- If the cable is not inserted into the strain relief lug, it can be damaged when the drive is screwed in.
- Use the stainless steel screws supplied for aluminium profiles.
- Use the timber screws supplied for PVC and timber profiles.



Danger

Risk of death due to live components! Risk of short-circuiting

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, e.g. VDE 0100).
- ▶ Only operate and control the Roto E-Tec Drive with SELV (24VDC).



Warning

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



Check the correct functioning of the Roto E-Tec Drive with the control unit (test set):

1. Connect the control unit (test set).
2. Test the Roto E-Tec Drive: simply press the push-button; the window can be unlocked, tilted and locked.
3. Remove the control unit (test set).

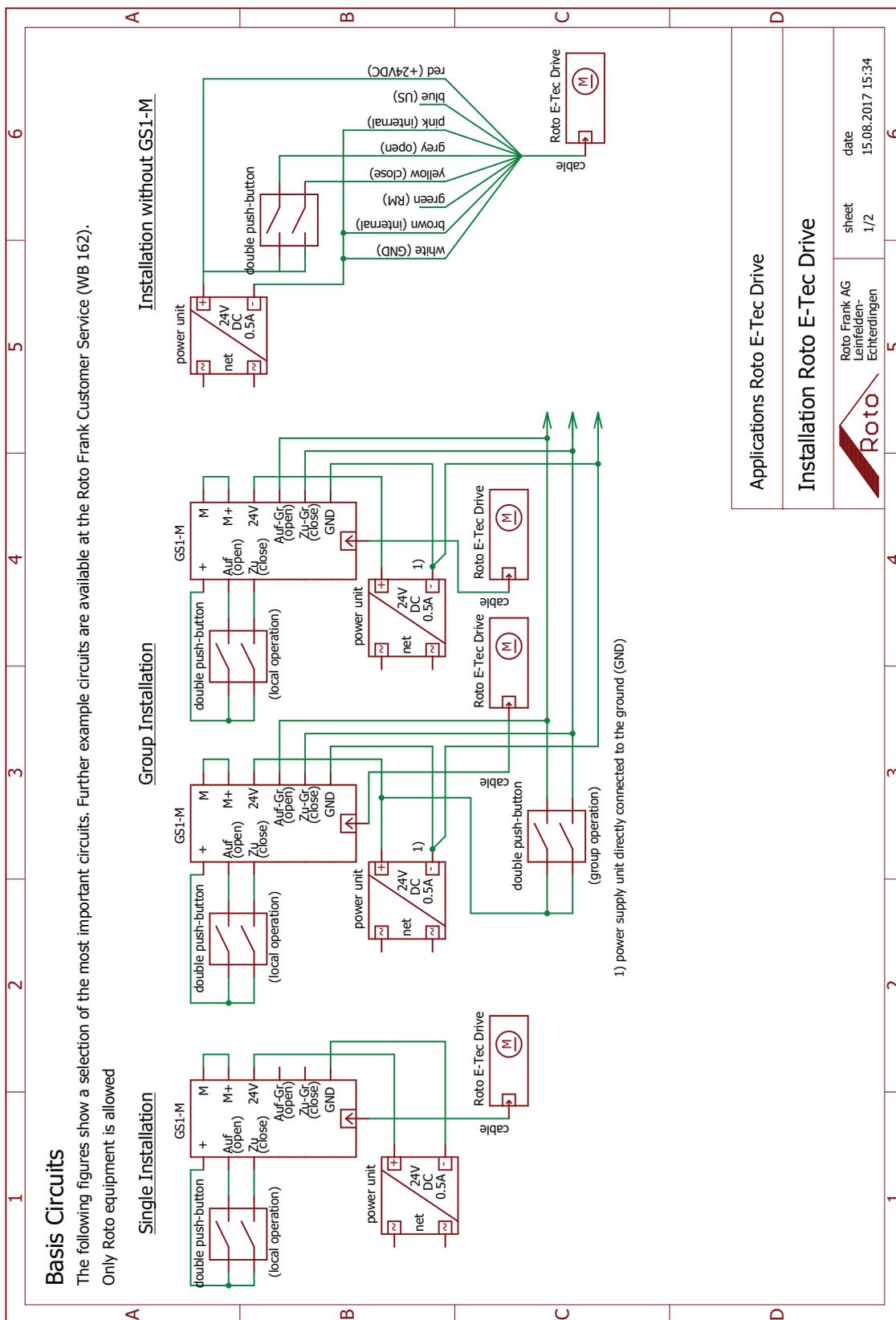
Push-button

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

Maximum possible cable extension

Cable in special length without additional extension up to max. 10 m.

Permissible extensions on 6 m cable				
Cross section / mm ²	0.14	0.5	1.5	2.5
Max. cable length / m	4	16	50	83



Basis Circuits

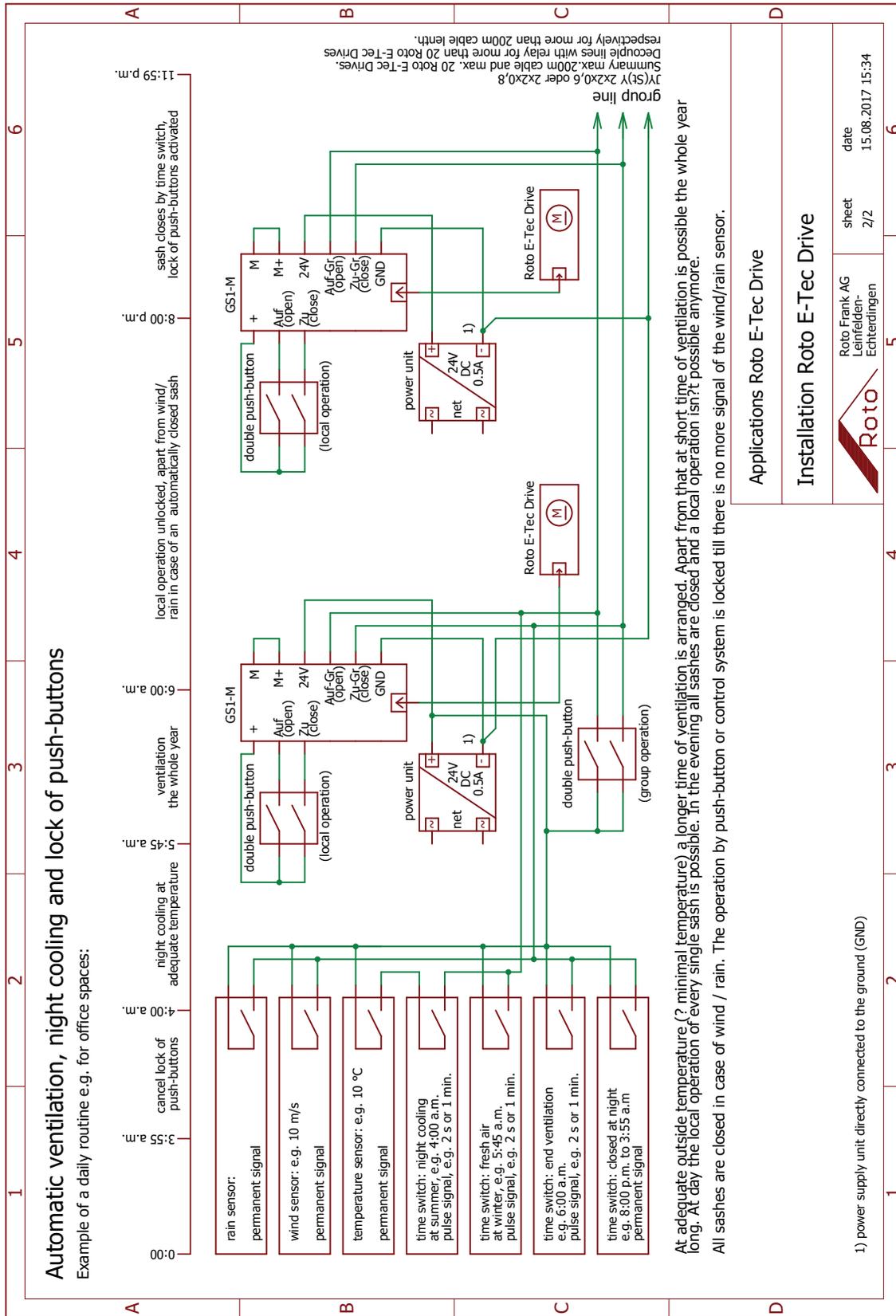
The following figures show a selection of the most important circuits. Further example circuits are available at the Roto Frank Customer Service (WB 162). Only Roto equipment is allowed



Note

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.





Applications Roto E-Tec Drive

Installation Roto E-Tec Drive

Roto Frank AG
 Leinfelden-
 Echtingen

sheet 2/2
 date 15.08.2017 15:34

Note

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 the DIN EN 60335-1 and DIN EN 60335-2-103.



GS1-M group switching device

782875

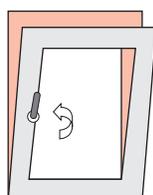
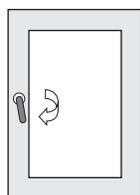
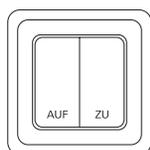


The GS1-M group switching device simplifies the wiring of the drive by leading the single conductors of the RJ45 connector onto the relevant connecting terminals.

The functions of the drive can be tested using the two integrated push-buttons (Auf / Zu – Open / Close).

Additionally, a group installation is possible. One GS1-M is required for each drive. A group can consist of up to 20 drives. (see circuit examples page 63)

By plugging the RJ45 connector from the GS1-M into the control unit, it is possible to parametrise or update the software without removing the drive.



Caution

Risk of injury due to incorrectly installed drive

Incorrect installation of the 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.

Programming the final position

1. Attach the escutcheon cover for removable service handle on the window handle.

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

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

Press the AUF (open) and ZU (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.

3. Press the AUF (open) push-button.

The window unlocks and tilts. The service handle turns into tilt mode.



Note

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

4. Press the ZU (close) push-button.

The window closes and locks. The service handle firstly turns into the locking position, then briefly in the opposite direction to uncouple the window mechanically 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 reprogrammed at any time (see above).



Note

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.

5. Remove the service handle.

6. Close the escutcheon cover for removable service handle.



Resetting the final position



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

- 1.** Press the AUF (open) and ZU (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, see page 66, from step 4 onwards.



Caution

Danger of crushing and trapping due to opening and closing forces

Movable parts of the drive can cause injuries during operation.

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

Tilting the window electrically

Briefly press the AUF (open) push-button.

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



Note

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

Locking the window electrically

Briefly press the ZU (close) push-button.

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

Stop the drive

The drive can be stopped in any window sash position by briefly pressing the respective opposite direction push-button or by simultaneously pressing both push-buttons (AUF and ZU – open and close).



Note

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

Operating the window by hand (turn opening, tilting)

1. Move the window to the locked position using the ZU (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. Attach the escutcheon cover for removable service handle and fit the service handle.
4. It is now possible to bring the window into any position using the service handle.



Note

- 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 window 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.



Warning

Do not continue to use the drive in the event of a fault. The drive is to be decommissioned by switching off the supply voltage. Only recommission the drive once a specialist company has performed the repair.

Reset

Malfunctions can be rectified by a reset; the final position of the hardware is reprogrammed (see chapter "Initial operation", page 66).

1. Press the AUF (open) and ZU (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.



Note

Special characteristics during reset

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



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 AUF (open) / ZU (close) push-buttons and is then permanently saved.

1. To switch, press the AUF (open) and ZU (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.

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



The Roto E-Tec Drive has an integrated ventilation function.

1. To start, press the AUF (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; after 10 minutes, it closes again automatically.



Note

The preset time of 10 minutes can be changed to between 1 and 60 minutes via the PC using the control unit.



The acoustic signals of the Roto E-Tec Drive can be deactivated jointly. In this process, the acoustic signals remain permanently deactivated and can be reactivated if necessary.

1. To deactivate, press the AUF (open) and ZU (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.
3. To reactivate the acoustic signals, repeat steps 1 and 2.

**Note**

This setting is not confirmed by an acoustic signal.

**Note**

The acoustic signals can be deactivated individually via the PC using the control unit.



Fault assistance



Problem	Cause	Corrective action	Specialist company	End user
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).	■	–
	– Wrong or faulty power supply unit.	– It should be possible to measure 24 V at the outlet of the power supply unit and it should be designed for 0.5 A.	■	–
	– Drive does not receive a signal from the external control system.	– Ensure a power supply (24 V ±5% between red and blue). Input signals (grey and yellow wires approx. 24 V) should be checked when the external control system is operated.	■	–
	– Drive receives a stop signal from the external control system.	– Input signals (grey and yellow wires approx. 24 V) should be checked for a constant signal.	■	–
Drive does not start up.	– Power supply interrupted.	– Ensure a power supply (24 V ±5%).	■	–
	– Control signal does not reach drive unit.	– Input signal (grey wire approx. 24 V / yellow wire 0 V) should be checked when the external control system is actuated.	■	–
	– Drive is already in “OPEN” position.	– Check position of the window sash. The reset function enables the temporary final position to be reset.	□	□
3x double beeping sounds can be heard	– Hardware is blocked.	– 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 smoother.	■	–
The drive stops responding to commands 60 seconds after the operating voltage is switched on. 4x double beeping sounds can be heard	– Speed sensor is faulty.	– Open window manually. Remove drive and send in for repair.	■	–

- = Must be carried out by a specialist company
- = Must not be carried out by the end user; the end user must not perform any assembly work.
- = May be carried out by a specialist company or the end user



Fault assistance

Problem	Cause	Corrective action	Specialist company	End user
Drive does not close.	– Power supply interrupted.	– Ensure a power supply (24 V ±5%). Check polarity of the voltage.	■	–
	– Control signal does not reach drive unit.	– Input signal (yellow wire approx. 24 V / grey wire 0 V) should be checked when the external control system is actuated.	■	–
	– Drive is already in “CLOSED” position.	– Check position of the window sash. The reset function enables the temporary final position to be reset.	□	□
3x double beeping sounds can be heard	– Hardware is blocked.	– Check window for manual function. Remove the cause of the blockage.	□	□
	– Hardware is stiff.	– Check window for manual function and, if necessary, make the hardware run smoother.	■	–
Drive is stiff.	– Are chips or other types of dirt in the drive?	– Check drive for dirt and make it run smoother.	■	–
	– Push rod is not positioned correctly.	– Move the push rod of the espagnolette by one to two sprockets.	■	–
Drive does not tilt the window sash open. 3x double beeping sounds can be heard	– Drive stops when the power is switched off.	– Check the installation position of the Roto E-Tec Drive in the window frame.	■	–
		– Check engagement of hardware in locking points and check the installation situation of frame and sash components.	■	–
	– Draught – Wind pressure too strong	– Remove cause of draught. – 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 window sash shut. 3x double beeping sounds can be heard	– Drive stops when the power is switched off.	– Remove possible obstacle and try again. If necessary, reprogram final position.	□	□
	– Wind pressure too strong	– Use wind monitor.	□	□
	– Draught	– Remove cause of draught. – Try again when the wind is less strong.	□ □	□ □

- = Must be carried out by a specialist company
- = Must not be carried out by the end user; the end user must not perform any assembly work.
- = May be carried out by a specialist company or the end user



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



- Availability of the necessary planning documents (see chapter “Stipulated use” page 15)
- Utilisation concept
- Risk assessment
- Tender with technical and construction requirements
- CE conformity for the power-operated window (entire machine) certified
- Documents for the operator / user attached to the window

Check of the permissible sash size in accordance with the application diagram

Verification of the routing position

- This is a TiltFirst window.
- This is a Tilt-Only window.
- The window is fitted on the left.
- The window is fitted on the right.

Check of the technical hardware requirements

- Corner drive 1■ / 1■ with run-up block (mat. no. 779677) (place the striker on the side)
- Stay arm/stay guide (see table from page 25)
- Centre lock (CL 200) as required (see table from page 25).....
- NT: no lifting mishandling device installed
 NT: sash lifter (mat. no. 284220) installed instead of the lifting mishandling device
- AL: no tilt distance restriction installed
- A window handle is not installed (otherwise only with operating lock).....
- Turn lock, surface-mounted (for large sashes)
- System-specific run-up wedges for rebate-clearance restriction
- 90° handle position for TF: window tilts reliably
- Handle in turn position: sash moves correctly into frame
- Sash area > 1.44 m²: wind sensor installed
- Smooth running of the hardware checked using service handle

Note the following points during installation in PVC windows

- Produce a recess in the steel reinforcement separately.
- Protect the notching against corrosion.....
- Use the packers supplied.....

To be checked / observed by the window installer

- The cable protrudes approximately 20 cm 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 sash: correct number of restrictor and cleaning stays and tilt stays installed and in the correct position.....

To be checked / observed by the electrician

- Power supply unit with correct voltage/correct current/correct power (24V / 500 mA / max. 15W per drive).
- Connect the pink and brown wire to white (ground).....
- Use dual push-buttons without mutual interlock

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



Maintenance and care

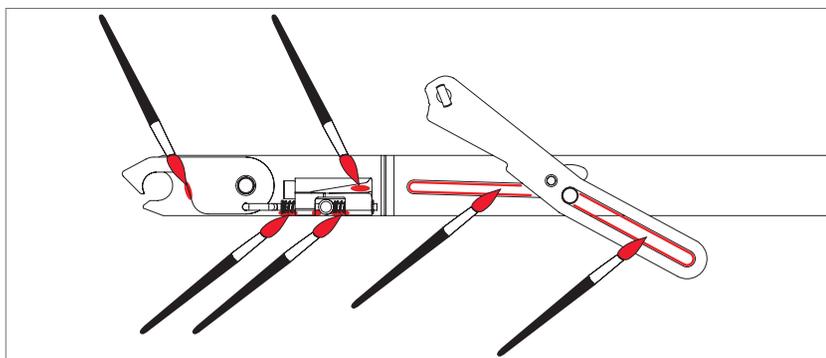
The six-monthly or annual maintenance of the Roto E-Tec Drive by a specialist company is mandatory and must be commissioned and documented by the operator of the power-operated window.

The Roto E-Tec Drive must not come into contact with chips or dirt. If the lubrication on the Roto E-Tec Drive is removed during cleaning, the grease must be reapplied on guide tracks and on the pitched PVC component before the drive is recommissioned (cf. image).

At least once per year, every six months in school and hotel buildings: **Specialist company** **End user**

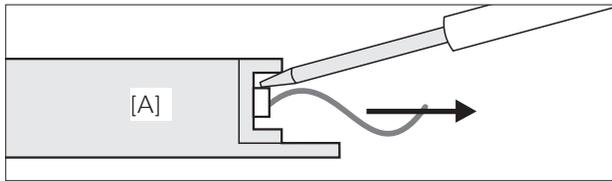
Check the correct functioning of the entire system.	■	–
Check the position of the window sash in the window frame (rebate clearance).	■	–
Check the position of the taper action towards the inclusion.	■	–
Check the specified run-up blocks and rebate-clearance restrictions.	■	–
Retighten fixing screws if required.	■	–
Replace damaged screws.	■	–
Replace components if required.	■	–
Check the smooth operation of the hardware.	□	□
Lubricate moving components with hardware grease.	□	□

- = Must be carried out by a specialist company
- = Must not be carried out by the end user; the end user must not perform any assembly work.
- = May be carried out by a specialist company or the end user



Note
Pay attention to the following information during maintenance work:

- Do not use the drive and disconnect it from the power supply if maintenance, adjustment or repair work is carried out.
- Remove leaking or excess grease at lubrication points and dispose of it in accordance with the applicable local provisions.
- Collect replaced oil in suitable tanks and dispose of it in an environmentally friendly manner.
- Wear suitable gloves to avoid skin contact with lubricant.



[A] Roto E-Tec Drive

1. Remove the cable from the strain relief lug.
2. Carefully push down the tab on the connector with a small screwdriver or similar.
3. Pull out the cable.





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



Note

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



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.



Technical data			
Supply voltage	24 VDC ±5% stabilised		
Temperature range	Operation:	0 °C –	+60 °C
	Storage:	-20 °C –	+85 °C
Humidity	5% – 90% relative humidity, non-condensing		
IP rating	IP20 in accordance with DIN EN 60 529		
Tilting / closing:	> 150 N		
Locking / unlocking force	750 N		
Opening width	~120 mm		
Hardware travel	16 mm – 36 mm (±2 mm)		
Typical opening / closing times in [s]			
Tilt-First & Tilt-Only windows	Slow	Opening	110 s
		Closing	130 s
	Standard	Opening	70 s
		Closing	80 s
Current consumption	No-load operation:	approx. 35 mA	
	Locking / unlocking:	max. 500 mA	
Weight (g)	450 g (with scissor stay)		
Dimensions (LxWxH)	335 x 18 x 30 mm without scissor stay		
Routing dimensions (LxWxH)	300 x 16 x 35 mm		
Connection	FRJ45 plug connection. FCC68 data cable, colour-coded, cable length max. 6m		
Emission sound pressure level (LpA)	≤ 70 dB(A)		
Test	20,000 cycles at 750 N in complete cycle (OPEN / CLOSE)		

Type plate						
	Ref.-Nr.: 0815					Netzteil: 230V AC 50/60Hz, 150mA
	E: 2	N: 2	S: 2	SK: 3		Antrieb: 24V DC, 500mA
	RL 2006/42/EG		Datum: 01.01.1999			
	Mustermann-Service GmbH					



**Einbauerklärung
für eine unvollständige Maschine
nach der EG-Richtlinie 2006/42/EG (Anhang II B)**

***Declaration of incorporation
for a partly completed machinery
in accordance of EC – Directive 2006/42/EC (annex II-part B)***

Hersteller
manufacturer Roto Frank AG
Wilhelm-Frank-Platz 1
D-70771 Leinfelden-Echterdingen

Wir bestätigen, dass die Konformität des nachstehend bezeichneten Produktes:
We confirm herewith, that the conformity of the following designated product:

Produktbezeichnung
product designation E-Tec Drive

Typenbezeichnung
type designation -

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

alle grundlegenden Anforderungen der Maschinenrichtlinie 2006/42/EG erfüllt, soweit es im Rahmen des Lieferumfangs möglich ist. Ferner erklären wir, dass die speziellen technischen Unterlagen, gemäß Anhang VII Teil B dieser Richtlinie, erstellt wurden.
all essential requirements of the Machinery Directive 2006/42/EC are met, as far as it is possible, according to the scope of supply and services. We also declare, that the relevant technical documents, referred to in annex VII, part B of this directive, have been created.

Folgende grundlegende Anforderungen kommen zur Anwendung:
2006/42/EG, Anhang I, allgemeine Grundsätze;
2006/42/EG, Anhang I 1, grundlegende Sicherheits- und Gesundheitsanforderungen
*The following basic requirements are applied
2006/42/EG, annex 1, general principles;
2006/42/EG, annex I 1, general health and safety requirements*

Die unvollständige Maschine entspricht zusätzlich den Bestimmungen der Richtlinie 2004/108/EG über elektromagnetische Verträglichkeit. Die Schutzziele der Richtlinie 2006/95/EG über elektrische Betriebsmittel werden eingehalten.
The partly completed machinery also complies with the provisions of Directive 2004/108/EC relating to electromagnetic compatibility. The safety objectives of directive 2006/95/EC on electrical resources are respected.

Bevollmächtigter für die Zusammenstellung der relevanten technischen Unterlagen gemäß Anhang VII B ist die Firma Roto Frank AG, Anschrift siehe oben.
Authorized representative to compile the relevant technical documents referred to in annex VII B, is the company Roto Frank AG, address see above.

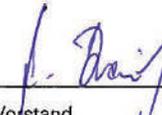
Wir verpflichten uns, den Marktaufsichtsbehörden (auf begründetes Verlangen), die technischen Unterlagen zu der unvollständigen Maschine per E-Mail oder Post zu übermitteln.
We obligate ourselves, to submit the national authorities (on a well-founded request), the relevant information about the partly completed machinery by e-mail or post.

Die unvollständige Maschine darf erst dann in Betrieb genommen werden, wenn ggf. festgestellt wurde, dass die Maschine oder Anlage, in welche die unvollständige Maschine eingebaut werden soll, den Bestimmungen der Richtlinie 2006/42/EG über Maschinen entspricht und die EG Konformitätserklärung gemäß Anhang II Teil A ausgestellt ist.
The partly completed machinery must not be put into operation, if determined necessary was, that the machine or installation, in which the partly completed machinery has to be installed, should comply with the provisions of Directive 2006/42/EC on machinery and the EC declaration of conformity is issued in accordance with Annex II part A.

Roto Frank AG 
Wilhelm-Frank-Platz 1
70771 Leinfelden-Echterdingen

Leinfelden-Echterdingen, 29.04.13

Ort, Datum
place, date


Vorstand
member of the board of directors



Objective

Power-operated windows are facade 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 the 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.

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 worker, 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.

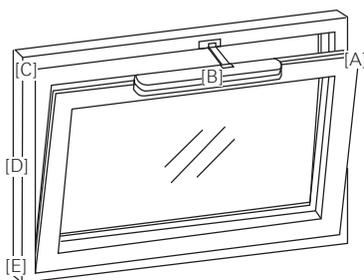
German Equipment and Product Safety Act (GPSG)

The amendment of the ninth enactment of the 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 sources of danger for power-operated windows



- [A] Risk of impact
- [B] Drive (incomplete machine)
- [C] Risk of crushing and shearing at main closing edge
- [D] Risk of crushing and shearing at adjacent closing edges
- [E] Risks of adjacent 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

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		■		
LV creation 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 dangers 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.

Risk assessment and possible safety measures

for power-operated windows in accordance with the Machinery Directive 2006/42/EC

Documentation and marking duties

In accordance with the Machinery Directive 2006/42/EC, the following documentation and marking must be provided by the manufacturer 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 name, 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.



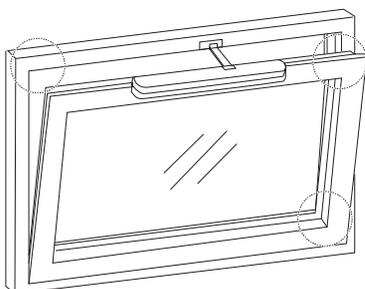
The components of the CE marking must have roughly the same height; the minimum height is 5 mm. The CE marking must be attached in the immediate vicinity of the manufacturer’s (or proxy’s) information and be implemented in the same style.

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.-Nr.: 0815					Netzteil: 230V AC 50/60Hz, 150mA	
	E: 2	N: 2	S: 2	SK: 3		Antrieb: 24V DC, 500mA	
	RL: 2006/42/EG		Datum: 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)



Risk assessment and safety measures for power-operated windows

Property / construction project

Property name: _____

Street, no.: _____

Postcode, town / city: _____

Reference no.: _____

Client

Company: _____

Street, no.: _____

Postcode, town / city: _____

Contact: _____

Manufacturer of machine acc. to MachD

Company: _____

Street, no.: _____

Postcode, town / city: _____

Contact: _____

Installation situation

Installation site / position: _____

Installation height: _____

Window description: _____

Window no.: _____

Risk classification as per the table opposite

Installation position: E _____

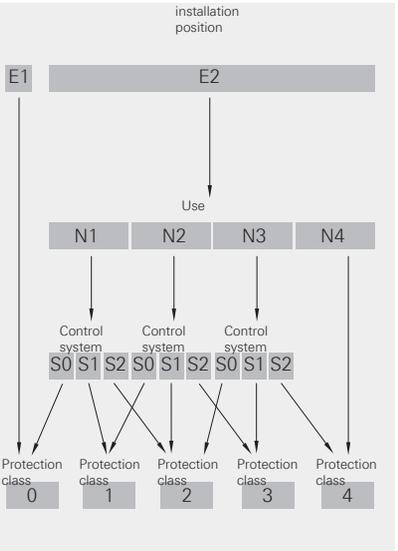
Use: N _____

Control system: S _____

Protection class: SK _____

Safety measures implemented

Notes



Safety measures complied with:
 Yes No

Client informed on:

CE marking

Declaration of Conformity

System manufacturer	Client
Stamp / date / signature	Date / signature



Risk assessment and possible safety measures

for power-operated windows in accordance with the Machinery Directive 2006/42/EC

Risk assessment

Example installation situation	Risk	Risk parameter
<ul style="list-style-type: none"> Installation height of sash bottom edge at least 2.5 m above floor or solid access level. Permanently installed devices in front of the window which prevent access. Window ledges or reveals which prevent free access to the window for the user. 	low	E1
<ul style="list-style-type: none"> Installation height of sash bottom edge above floor or access level less than 2.5 m and window is freely accessible. 	higher	E2
Room use	Risk	Risk parameter
<ul style="list-style-type: none"> Rooms of commercial use where users are instructed in how to use the technology (e.g. offices, industrial spaces). 	low	N1
<ul style="list-style-type: none"> Living spaces where the inhabitants are instructed in how to use the technology. 	medium	N2
<ul style="list-style-type: none"> Rooms where the users/visitors can assess the risks or are supervised. 		
<ul style="list-style-type: none"> Rooms intended for regular use by people who cannot be instructed in the safe use of the technology (e.g. sales rooms, meeting places). 	high	N3
<ul style="list-style-type: none"> Rooms intended for regular use by vulnerable individuals (e.g. nurseries, schools, hospitals). 	very high	N4
Control system or operation	Risk	Risk parameter
<ul style="list-style-type: none"> Manual operation without self-locking with visual inspection for all windows (e.g. use of a key switch). 	very low	S0
<ul style="list-style-type: none"> Manual operation with self-locking with visual inspection for all windows. 	low	S1
<ul style="list-style-type: none"> Automatic operation (e.g. wind / rain controls, building management system) or manual operation without visual contact for all windows. 	higher	S2

Protection classes / safety measures

Class	Examples of safety measures
0	No safety measure required
1	Warnings
2	<ul style="list-style-type: none"> Secure access via structural measures or via rounded, cushioned edges, locking forces from 80 to 150 N, no shearing effects or acoustic warning signals or warning lights or EMERGENCY STOP switch on the window or movable devices in front of the window which prevent access.
3	<ul style="list-style-type: none"> Dead man's control system without higher-level central control system or stopping of the movement 25 mm before the final position over 10 s; trigger of an optical or acoustic signal; further movement with signal until final position is reached or slow sash movement of max. 5 mm/s or access width less than 8 mm or opening of the main closing edge <=200 mm and closing speed <= 15 mm/s or rounded, cushioned edges, low locking forces under 80 N, no shearing effect.
4	<ul style="list-style-type: none"> Securing via touch-activated safety devices, e.g. switching strips, contact sensors or securing via a contactless safety device, e.g. light barriers, light grid or dead man's control system with authorised operation per window without higher-level central control system (e.g. key switch) or access width less than 4 mm or Prevention of access via structural measures.

Reference: the contents correspond to a publication by VFF Verband Fenster+Fassade (German Window and Facade Association), KB.01: 2014-11, November 2014



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
 Aluminium
 Timber.....
 PVC.....

Hardware used
 Roto AL
 Roto AL Designo
 Roto NT, hinge side ES
 Roto NT, hinge side A
 Roto NT, hinge side K
 Roto NT, hinge side Designo 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 into locking position, manual operation possible

Accessories
 MTC contact element (against 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
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Hardware used
 Roto AL
 Roto AL Designo
 Roto NT, hinge side ES
 Roto NT, hinge side A
 Roto NT, hinge side K
 Roto NT, hinge side Designo 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 into locking position, manual operation possible

Accessories
 MTC contact element (against incorrect operation)
 Miscellaneous:

Place, date, signature, company stamp





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