

Roto NT

The world's biggest selling Tilt&Turn hardware system for windows and balcony doors

Installation, maintenance and operation instructions for middle sashes in triple-sash timber and PVC windows without centre post



Imprint

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

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

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

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

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

This document excerpt does not replace the complete product documentation*. Non-compliance exempts the hardware manufacturer of his liability.

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

Additional markings

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

Marking	Explanation
	Sash
	Frame
	Drill-holes
	Hardware components
	Action steps
	First level of the hierarchy in a list
	Unordered list (second level of hierarchy)
	(Cross) reference in tables
Refer to page 12	(Cross) reference in the text
Symbols	Explanation
Material	
	Timber
	PVC
	Timber / PVC
Tilt&Turn opening types	
	Turning
Table name	
	Sash width
	Sash height

* Can be found on www.roto-frank.com

Marking	Explanation
Axis	Hardware axis
SP	Supporting-pins
DIN L/R	DIN left / right
T&T	Tilt&Turn hardware
SRW	Sash rebate width
SRH	Sash rebate height
S.kg	Sash weight
CON	Connectable
CL	Centre lock
LMD	Lifting mishandling device
not dep.	not depicted
RC1 / RC1 N	Resistance Class 1
RC2 / RC2 N	Resistance Class 2
SEC	Security

All dimensions stated in mm. Other values are specified.

Protection of copyright

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

The information in this document is intended for the following target groups:

Hardware dealers

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

Manufacturers of windows and balcony doors

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

Building element dealers/Installation company

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

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

Builder

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

End-users

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



NOTE!

Every target group must fully comply with its instruction obligation.

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

Responsibility of the hardware dealer

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

- Catalogue
- Installation, maintenance and operation instructions
- Directive for fixing load-bearing Turn-Only and Tilt&Turn hardware components (TBDK)
- Guidelines/advice on the product and on liability (VHBH)
- Guidelines/advice for end-users (VHBE)

Responsibility of the manufacturer of windows and balcony doors

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

- Installation, maintenance and operation instructions
- Directive for fixing load-bearing Turn-Only and Tilt&Turn hardware components (TBDK)
- Guidelines/advice on the product and on liability (VHBH)
- Guidelines/advice for end-users (VHBE)

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

Responsibility of the building element dealer/installation company

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

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

Responsibility of the builder

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

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

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

**DANGER!**

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

**WARNING!**

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

**CAUTION!**

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

**NOTE!**

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

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

The hardware manufacturer accepts no liability for damages resulting from:

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

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

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

The warranty covers only original Roto components.

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

Turn-Only and Tilt&Turn hardware is one-hand operation Turn-Only and Tilt&Turn hardware for windows and balcony doors in building construction. This is used to enable windows and balcony-door sashes into a turning position by operating a 'hand-lever' (handle) or into a limited tilting position in the case of the scissors (sash-stay) version. Turn-Only and Tilt&Turn hardware is used on vertically installed windows and balcony-doors made of timber, PVC, aluminium or steel and their corresponding material combinations. Turn-Only and Tilt&Turn hardware as covered by this definition, locks window and balcony door sashes or enables various ventilating positions. When closing, the gasket counter force must be overcome as a rule.

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

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

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



WARNING!

Danger from misuse!

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

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

For windows and balcony doors with Turn-Only and Tilt&Turn hardware, window and balcony door sashes can be brought into a turn position or into a limited tilting position by means of the scissor stay.

When a sash is closed and the hardware is locked, the resistance of a gasket usually needs to be overcome.

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

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

Therefore:

- Ensure that when closing the sash, it does not collide with the frame or with another sash.
 - Ensure that the sash is guided slowly by hand throughout the entire range of movement as far as the fully closed position, and that it is brought very slowly towards the frame.
 - Ensure that the sash never slams closed or swings open in an uncontrolled manner.
-

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

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

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

In particular, avoid the following applications:

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

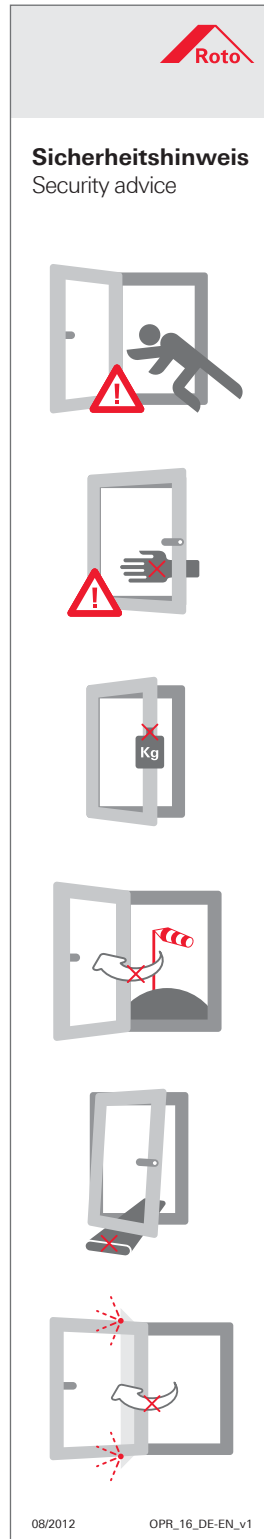
Claims for damages of any type whatsoever resulting of operation other than that stipulated are excluded.



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

Symbol	Meaning
	DANGER! Danger of injury from falling through open windows and balcony doors. – Behave with care near to open windows and balcony doors. – Keep children and people who cannot estimate the dangers away from the point of danger.
	WARNING! Danger of injury through trapping of body parts in the opening gap between sash and frame. – When closing windows and balcony doors, never reach between sash and frame, and always act with care. – Keep children and people who cannot estimate the dangers away from the point of danger.
	WARNING! Danger of injury and material damage from overloading the sash – Do not overload the sash.
	CAUTION! Danger of injury from the effect of wind – Prevent wind from acting on the open sash. – During wind and draughts, close and lock windows and balcony door sashes.
	CAUTION! Danger of injury and material damage from insertion of obstructions into the opening gap between sash and frame – Do not insert obstructions into the opening gap between sash and frame.
	CAUTION! Danger of injury and material damage from pressing the sash against the opening edge (reveal). – Do not press the sash against the opening edge (reveal).

The following symbols can be used on windows and balcony doors to protect the end-user. Always keep these symbols in a clearly legible state. Please order stickers separately (OPR_16_DE-EN).





Maximum sash sizes and weights

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

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

System specifications

The manufacturer of windows and balcony doors must comply with all specified system-related dimensions (e.g. gasket gap dimensions or locking-point distances). And he must self-responsibly comply with all specifications of the profile manufacturers and system owners, in particular the maximum permissible sash sizes and sash weights must not be exceeded. Furthermore, he must check these regularly and make certain of them, especially on the first use of new hardware components, during manufacture, in an ongoing manner up to and including the window installation.



NOTE!

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

Composition of hardware

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

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

The resistance of windows and balcony doors to wind loads when closed and locked depends on the actual designs of the windows and balcony doors. Wind loads prescribed by law and standards (e.g. as per EN 12210 – especially test pressure P3) can be dissipated by the hardware system. In general, the Turn-Only and Tilt&Turn hardware defined in this document is able to fulfil legal and standard requirements for barrier-free habitations.

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



NOTE!

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



DANGER!

Danger to life from incorrectly installed and threaded hardware components!

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

Therefore:

- For installation and especially for threaded components, observe the product-specific documentation of the hardware manufacturer, the information from the profile manufacturer, and all contents of the TBSD directive of the Gütegemeinschaft Schlösser und Beschläge.

For fixing the hardware components, Ø 3.9–4.2 x ... zinc plated and passivated steel fenestration screws are to be used. In the case of special climatic conditions, use fenestration screws with additional sealing.

The window fabricator must ensure adequate fixing of the hardware components, consulting the screw manufacturer if necessary. When fixing **security relevant**, supportive hardware components such as **stay bearings** and **pivot rests**, the tearing-forces vertical to the sash plane surface must be reached in accordance with the following table (the tractive-force values depend on the sash weights from the TBSD).

Sash weight in kg	Tractive force in N ¹⁾
60	1650
70	1900
80	2200

1) acceptable tolerance -10%.

The stated values refer to the stay bearing. These are also valid for the pivot rest if the fixing is carried out in the same manner as with the stay bearing.

On corrosive timber (i.e. afzelia, oak etc.), the hardware's routed-areas are to be treated with a protective coating before installing the hardware in order to protect the hardware.

The glazing spacer-block regulations for the glazing method are to be adhered to.



DANGER!

Danger to life from incorrectly installed and threaded hardware components!

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

Therefore:

- For installation and especially for threaded components, observe the product-specific documentation of the hardware manufacturer, the information from the profile manufacturer, and all contents of the TBDK directive of the Gütegemeinschaft Schlösser und Beschläge.

For fixing the hardware components, Ø 3.9–4.2 x ... zinc plated and passivated steel fenestration screws are to be used. In the case of special climatic conditions, use fenestration screws with additional sealing.

The window fabricator must ensure adequate fixing of the hardware components, consulting the screw manufacturer if necessary. When fixing **security relevant**, supportive hardware components such as **stay bearings** and **pivot rests**, the tearing-forces horizontal to the sash plane surface must be reached in accordance with the following tables (the tractive-force values depend on the sash weights from the TBDK).

Sash weight in kg	Tractive force in N ¹⁾
60	1650
70	1900
80	2200

1) acceptable tolerance -10%.

The stated values refer to the stay bearing. These are also valid for the pivot rest if the fixing is carried out in the same manner as with the stay bearing. On sash weights up to 80 kg the table's values are reached as a rule, if high-quality screws are applied and the screw-fixing into the profile penetrates at least 2 profile walls, whereby the first profile-chamber wall should be at least 2.8 mm thick.

The glazing spacer-block regulations for the glazing method are to be adhered to.

**Turn-Only hardware for the middle sash in a triple-sashed window
PVC, timber**

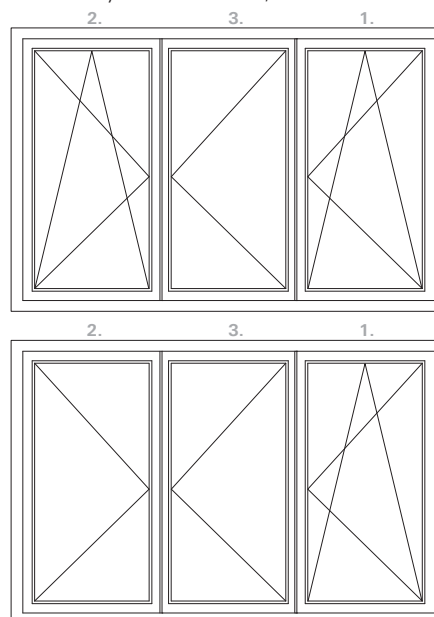
Central locking system for one-hand-operation completely concealed in the sash rebate

Application range:

For triple-sashed windows made of PVC or timber without centre post

Product characteristics:

- Exterior sashes: Turn-Only sash or Tilt&Turn sash; hinge sides can be selected independently of the middle sash (the respective application ranges apply)
- Middle sash: always Turn-Only sash
- Simple hinging and unhinging
- Efficient mounting
- Profiled faceplate
- Effortless operation with low abrasion due to guided adjustable locking cams
- Easy adjustment of the locking cams with standard tools.
 - E cam: gasket-compression adjustable eccentric cam and/or
 - P cam: gasket-compression adjustable eccentric security cam and/or
 - V cam: height and gasket-compression adjustable eccentric security cam
- Strong interlocking “Clip&Fit” connection without loss of cam travel
- Stay bearing and pivot rest completely concealed in the sash rebate
- High-quality Roto Sil Nano surface-finish (matt-silvery) for maximum corrosion resistance (DIN EN 13126 / 8 Class 4) using Nano particles (free from Chromium VI compounds)
- 10-year warranty on the operativeness of the hardware
- 3D adjustment in stay arm/corner hinge /pivot rest
- Low-maintenance thanks to patented lubrication depots
- Turn-Only sash:
 - Sash rebate width: 330 – 1200 mm
 - Sash rebate height: 280 – 1800 mm
 - Sash weight: max. 80 kg
- Switching sequence:
Before opening the middle sash, open both exterior sashes (middle sash is always the last one)





Turn-Only hardware for the middle sash in a triple-sashed window PVC, timber

Central locking system for one-hand-operation completely concealed in the sash rebate

Application range:

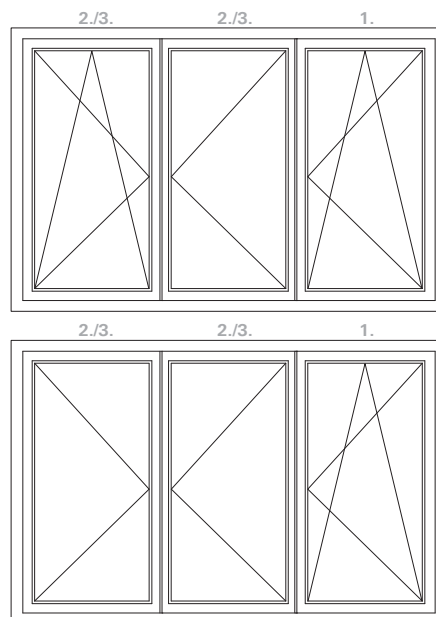
For triple-sashed windows made of PVC or timber without centre post

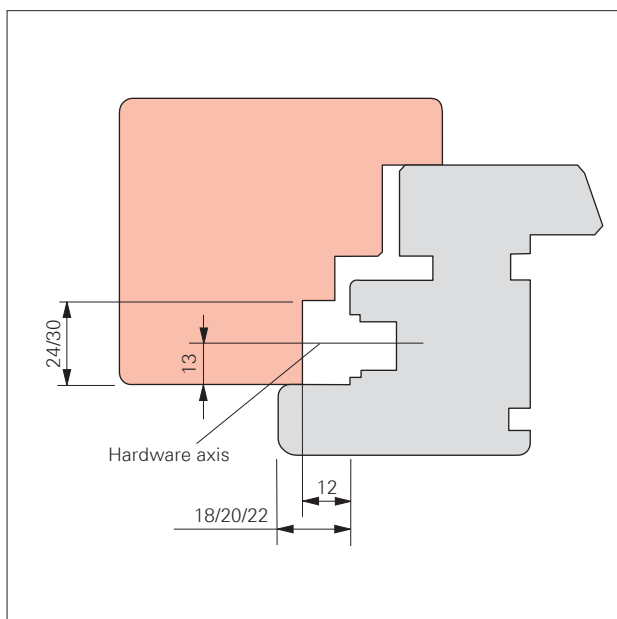
Product characteristics:

- Exterior sashes: Turn-Only sash or Tilt&Turn sash; hinge sides can be selected independently of the middle sash (the respective application ranges apply)
- Middle sash: always Turn-Only sash
- Profiled faceplate
- Effortless operation with low abrasion due to guided adjustable locking cams
- Easy adjustment of the locking cams with standard tools.
 - E cam: gasket-compression adjustable eccentric cam and/or
 - P cam: gasket-compression adjustable eccentric security cam and/or
 - V cam: height and gasket-compression adjustable eccentric security cam
- Height and gasket-compression adjustment in the middle-sash hinge
- Strong interlocking “Clip&Fit” connection without loss of cam travel
- Middle-sash hinge with slide bar completely concealed in the sash rebate
- High-quality Roto Sil Nano surface-finish (matt-silvery) for maximum corrosion resistance (DIN EN 13126 / 8 Class 4) using Nano particles (free from Chromium VI compounds)
- 10-year warranty on the operativeness of the hardware
- Turn restriction integrated in the slide bar
- Turn-Only sash:
 - Sash rebate width: 290 – 1200 mm
 - Sash rebate height: 280 – 1800 mm
 - Sash weight: max. 60 kg

– Switching sequence:

The middle sash can be opened as second sash after the active exterior sash.





Profile dimensions

System Euro-rebate 12/18(20/22)-13

Rebate depth 24/30

Clearance, bottom horizontal: 11.5 – 14 mm

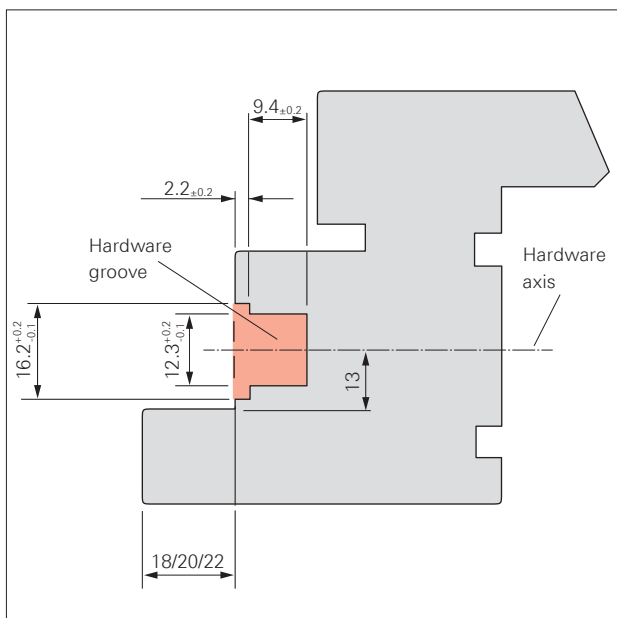
Clearance on the sides: 10 – 14 mm

Clearance, top 11 – 14 mm

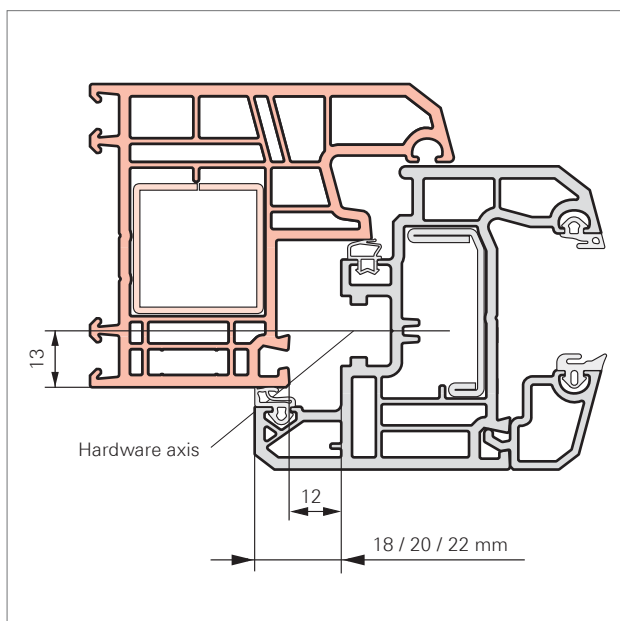


NOTE!

The pivot rest of Designo II is preset in the factory to 12.5 mm clearance.



Sash dimensions



Profile dimensions

System Euro-rebate 12/18(20/22)-13

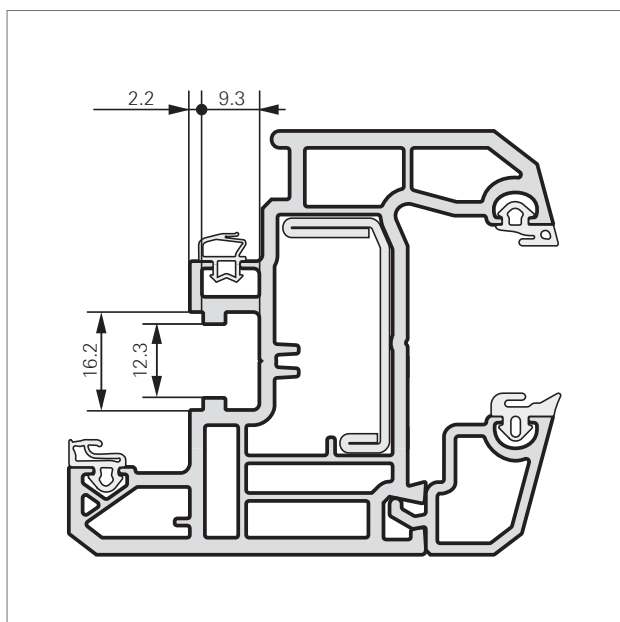
Bottom / top horizontal clearance: 11 – 14 mm

Clearance on the sides: 10 – 14 mm



NOTE!

Designo II is preset to 12 mm bottom horizontal clearance.



Sash dimensions



Application diagram

NT Designo

Turn-Only hardware for the middle sash in a triple-sashed window



Limitation of sash formats depending on the glass thickness

Application range

Sash rebate width **SRW** 330 – 1200 mm

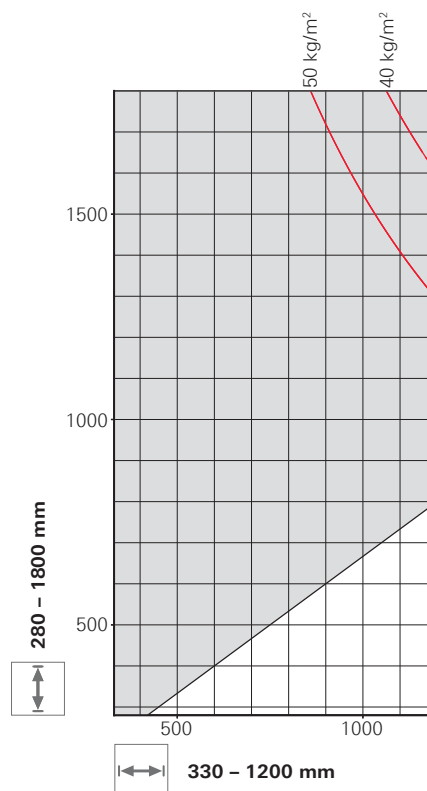
Sash rebate height **SRH** 280 – 1800 mm

Sash weight **S.kg** max. 80 kg

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

1 mm / m² glass thickness = 2.5 kg

 = Impermissible application range





Application diagram

NT slide bar

Turn-Only hardware for the middle sash in a triple-sashed window



Limitation of sash formats depending on the glass thickness

Application range

Sash rebate width **SRW** 290 – 1200 mm

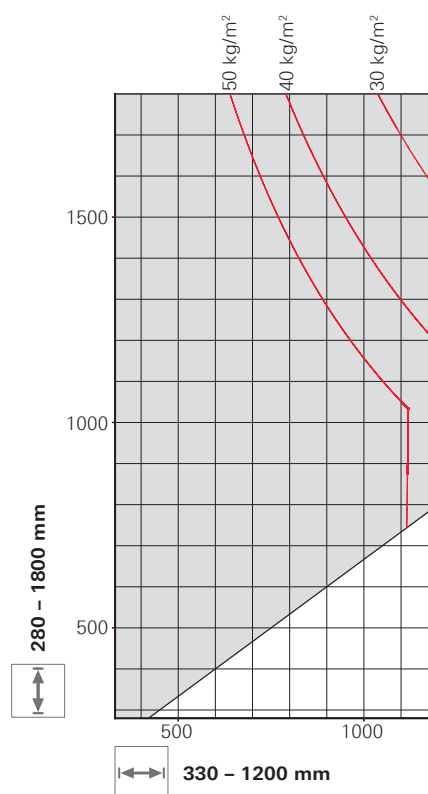
Sash rebate height **SRH** 280 – 1800 mm

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

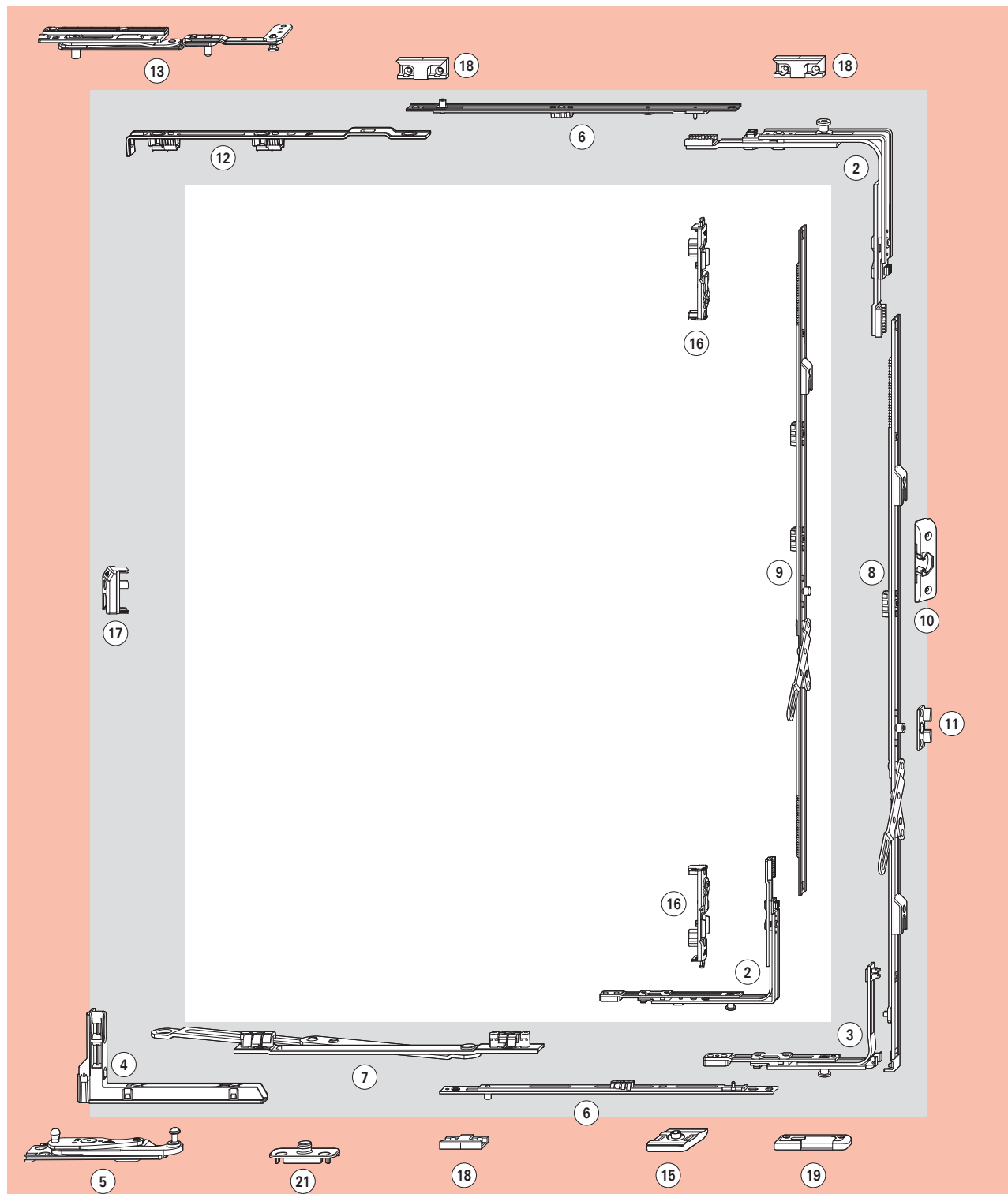
The information in the application diagram refers to the glass weight in kg/m².

1 mm / m² glass thickness = 2.5 kg

 = Impermissible application range







NOTE!

Please refer to page 30 for possible combinations of corner drives in the case of low and narrow sashes.



Application range

Sash rebate width **SRW** 330 – 1200 mmSash rebate height **SRH** 280 – 1800 mmSash weight **S.kg** max. 80 kg

②	Corner drive	E	260275
	Corner drive	P	260277
③	Corner drive, T&T	P	260290
④	Corner hinge		634705
⑥	Multipart centre lock, horizontal		
	SRW / mm	Size	Material no.
	1100 – 1200	600 1 E	255281
⑦	Turn-restrictor, sash component (possible from SRW 525, mandatory from SRW 1000)		485591
⑧	Lever-operated espagnolette, fixed lever-height ³⁾		
	SRH / mm	Lever position	Length
	430 – 500	195	490
	501 – 600		
	601 – 800	335	690
	801 – 1000	490	890
	1001 – 1200	335	1090
	1201 – 1400	335	1290
	1401 – 1600	335	1490
	1601 – 1800	335	1690
⑧a	Lever-operated espagnolette Plus, fixed lever-height ⁵⁾		
	SRH / mm	Lever position	Length / mm
	431 – 500	195	490
	501 – 600 ¹⁾		
	431 – 600	233	490
	601 – 800	195	690
	601 – 800	195	690
	601 – 800	335	690
	801 – 1000	490	890
	801 – 1000	195	890
	1001 – 1200	335	1090
	1201 – 1400	335	1290
	1401 – 1600	335	1490
	1601 – 1800	335	1690
⑨	Lever-operated espagnolette, centred/variable lever-height ³⁾		
	SRH / mm	Lever position	Length
	370 – 520	225 – 300	400
	521 – 620	301 – 350	400
	621 – 650	393 – 407	680
	651 – 800	408 – 482	680
	801 – 1200	482 – 682	980
	1201 – 1600	448 – 648	1380
	1601 – 1800	680 – 780	1780
⑨a	Lever-operated espagnolette Plus, centred/variable lever-height ⁵⁾		
	SRH / mm	Lever position	Length / mm
	370 – 620	225 – 350	400
	621 – 800	393 – 482	680
	621 – 900		680
	801 – 1200	482 – 682	980
	901 – 1200		980
	1201 – 1600	448 – 658	1380
	1601 – 2000	680 – 890	1780
⑩	Bullet catch for lever-operated espagnolette		385031
⑪	Lifting mishandling device Stop for lever-operated espagnolette		257600
⑫	Sash-component for rebate hinge		477255
⑮	Run-up block		350402

⑮	Shootbolts	305638
⑰	Striker for opposing hardware grooves	328253
Profile-related frame components: → p. 30		
⑤	Pivot rest, middle sash	
⑬	Rebate hinge, middle sash	
⑮	Striker	
⑰	Security striker	
⑳	Turn-restrictor, frame component (possible from SRW 525, mandatory from SRW 1000)	

1) With corner drive ②

2) Without lifting mishandling device (stop for lever-operated espagnolette)

3) No striker possible

4) For T&T espagnolette, 8mm backset

5) Lifting mishandling device (stop for lever-operated espagnolette), preassembled as standard



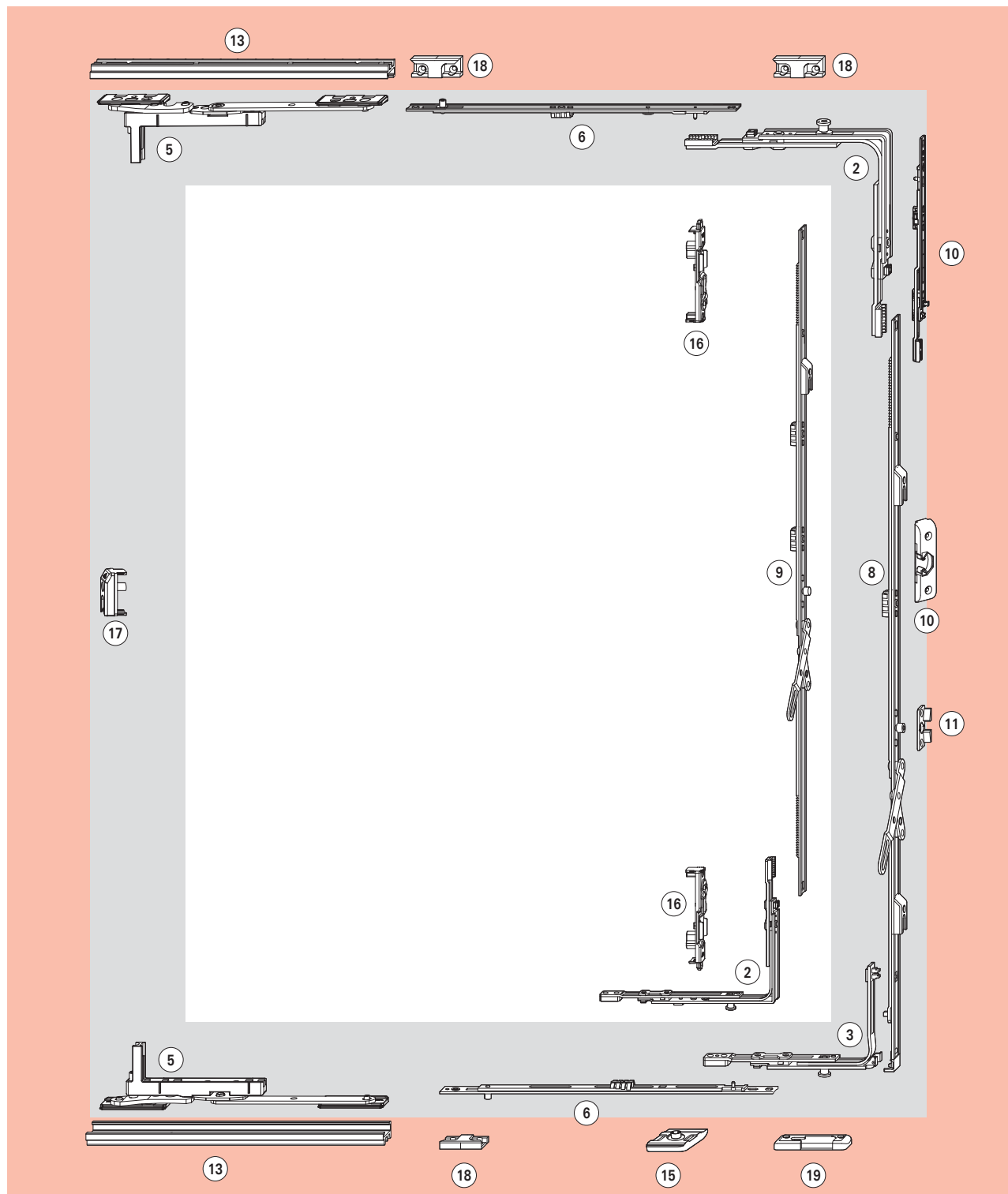
NOTE!

For all other Turn-Only and Tilt&Turn hardware components refer to:

■ CTL_6_EN*

■ CTL_7_EN*

* Can be found on www.roto-frank.com



NOTE!

Please refer to page 30 for possible combinations of corner drives in the case of low and narrow sashes.



Application range with slide bar

Sash rebate width **SRW** 290 – 1200 mmSash rebate height **SRH** 280 – 1800 mmSash weight **S.kg** max. 60 kg

②	Corner drive	E	260275
	Corner drive	P	260277

③	Corner drive, T&T	P	260290
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Middle-sash hinge

	DIN	Material no.
⑤ Middle-sash hinge	L	535013
	R	535014

⑥	Multipart centre lock, horizontal	
SRW / mm	Size	Material no.
1100 – 1200	600 1 E	255281

⑧ Lever-operated espagnolette, fixed lever-height³⁾

SRH / mm	Lever position	Length	Material no.
430 – 500	195	490	233408
501 – 600			
601 – 800	335	690	233409
801 – 1000	490	890	233410
1001 – 1200	335	1090	233411
1201 – 1400	335	1290	233412
1401 – 1600	335	1490	233413
1601 – 1800	335	1690	296145

⑩a Lever-operated espagnolette Plus, fixed lever-height¹⁵⁾

SRH / mm	Lever position	Length / mm	Material no.
431 – 500	195	490	623365
501 – 600 ¹⁾			
431 – 600	233	490	623366 ⁴⁾
601 – 800	195	690	623368 ^{3/4)}
601 – 800	195	690	623367 ⁴⁾
601 – 800	335	690	623369
801 – 1000	490	890	623371
801 – 1000	195	890	623370 ⁴⁾
1001 – 1200	335	1090	623372
1201 – 1400	335	1290	623373
1401 – 1600	335	1490	623374
1601 – 1800	335	1690	623375

⑨ Lever-operated espagnolette, centred/variable lever-height³⁾

SRH / mm	Lever position	Length	Material no.
370 – 520	225 – 300	400	233418
521 – 620	301 – 350	400	233418
621 – 650	393 – 407	680	233419
651 – 800	408 – 482	680	233419
801 – 1200	482 – 682	980	233420
1201 – 1600	448 – 648	1380	290912
1601 – 1800	680 – 780	1780	296146

⑩a Lever-operated espagnolette Plus, centred/variable lever-height⁵⁾

SRH / mm	Lever position	Length / mm	Material no.
370 – 620	225 – 350	400	623379 ²⁾
621 – 800	393 – 482	680	623380
621 – 900		680	623381 ⁴⁾
801 – 1200	482 – 682	980	623382
901 – 1200		980	623383 ⁴⁾
1201 – 1600	448 – 658	1380	623384
1601 – 2000	680 – 890	1780	623385

⑩	Bullet catch for lever-operated espagnolette	385031
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⑪	Lifting mishandling device	257600
	Stop for lever-operated espagnolette	

⑮	Run-up block	350402
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⑮	Shootbolts	305638
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⑰	Striker for opposing hardware grooves	328253
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Profile-related frame components: → p. 30

⑮	Striker
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⑰	Security striker
---	------------------

⑮	Slide bar, middle-sash hinge
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Profile number	Material no.
Timber 24mm rebate	535091
202	570086
206	566362
211	535092
224	570087
230	570085
260	627726
281	627727

1) With corner drive ②

2) Without lifting mishandling device (stop for lever-operated espagnolette)

3) No striker possible

4) For T&T espagnolette, 8mm backset

5) Lifting mishandling device (stop for lever-operated espagnolette), preassembled as standard



NOTE!

For all other Turn-Only and Tilt&Turn hardware components refer to:

■ CTL_6_EN*

■ CTL_7_EN*

* Can be found on www.roto-frank.com



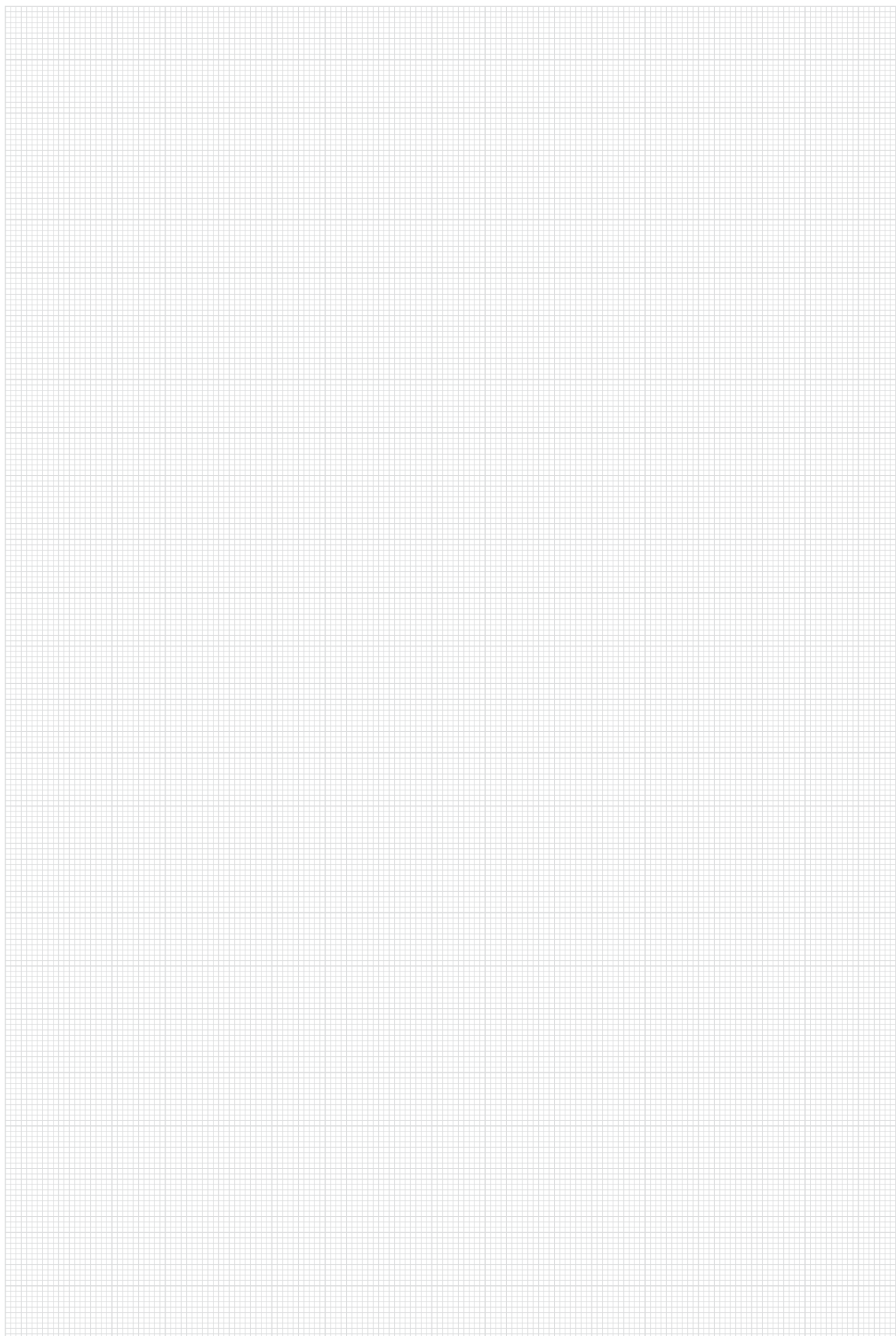
System	Axis	R / L	Turn-restrictor 198	Striker	SEC striker, zinc
	mm		Material no.	Material no.	Material no.
Euro-rebate 24 mm	13.0	L			261935
	13.0	R			262930
	13.0	L / R	491798	261933	
Euro-rebate 24 mm, with supporting-pins	13.0	L			261936
	13.0	R			262931
	13.0	L / R	337754	261934	
Euro-groove 11 / 8, rebate depth 24 mm	13.0	L			378465
	13.0	R			378466
	13.0	L / R	Upon request	378467	
Euro-rebate 30 mm	13.0	L			
	13.0	R			
	13.0	L / R	491798	599651	631527
Euro-rebate 30 mm, with supporting-pins	13.0	L			
	13.0	R			
	13.0	L / R	337754	599652	355611
To be routed in, 25 mm rebate depth, 5 mm clearance	13.0	L		627988	627988
	13.0	R		627990	627990
	13.0	L / R	Upon request		



Profile	Pivot rest		Rebate hinge	
	Material no.		Material no.	
	DIN R	DIN L	DIN R	DIN L
Euro-rebate 24 mm	738583	738584	738585	738586
Euro-rebate 30 mm	738583	738584	738585	738586



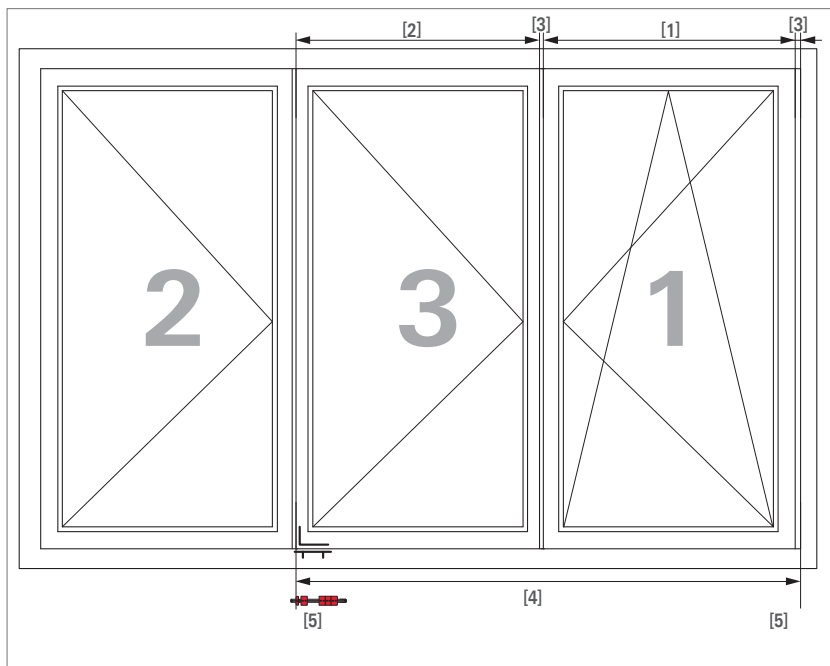
Profile	Version	Pivot rest		Rebate hinge		Striker		SEC striker		Turn-restrictor 198
		Material no.		Material no.		Material no.		Material no.		Material no.
		DIN R	DIN L	DIN R	DIN L	w. base	w/o base	w. base	w/o base	
Aluplast										
2000	K09	741502	741503	741500	741501	–	331489	260395	331490	477848
3000	K09	741502	741503	741500	741501	–	331489	260395	331490	477848
4000	K13	741516	741517	741504	741515	–	331489	260395	331490	477848
5000	K13	741516	741517	741504	741515	–	331489	260395	331490	477848
6000	K13	741516	741517	741504	741515	–	331489	260395	331490	477848
8000	K13	741516	741517	741504	741515	–	331489	260395	331490	477848
Bruegmann										
AD 13	K14	738595	738596	738554	738588	–	341485	292194	–	477848
MD 13	K14	738595	738596	738554	738588	–	341485	292194	–	477848
Deceuninck Zendow										
3000	K08	766120	766119	766122	766121	–	370071	370072	–	Upon request
Gealan										
3000	K02	766737	766736	766739	766738	–	319744	260393	–	477848
7000	K02	766737	766736	766739	766738	–	319744	260393	–	477848
8000	K02	766737	766736	766739	766738	–	319744	260393	–	477848
Inoutic										
AD 13 (Thyssen AD 13)	K15	741498	741499	741496	741497	260370	–	260394	–	490133
Eforte (84mm Low E)	K15	741498	741499	741496	741497	260370	–	260394	–	490133
MD 100 (Thyssen MD 13)	K15	741498	741499	741496	741497	260370	–	260394	–	490133
Prestige AD (Thyssen Prestige AD)	K15	741498	741499	741496	741497	260370	–	260394	–	490133
Prestige MD (Thyssen Prestige MD)	K15	741498	741499	741496	741497	260370	–	260394	–	490133
KBE										
70 AD	K08	766120	766119	766122	766121	–	338070	289941	–	470848
88 AD	K08	766120	766119	766122	766121	–	338070	289941	–	470848
Kömmerling										
88 plus	K03	762615	762616	762617	762618	–	334957	–	334958	477848
Eurodur 3S	K03	762615	762616	762617	762618	–	334957	–	334958	477848
Eurofutur Classic	K03	762615	762616	762617	762618	–	334957	–	334958	477848
Eurofutur Elegance	K03	762615	762616	762617	762618	–	334957	–	334958	477848
Profine										
76 AD, MD	K08	766120	766119	766122	766121	–	738470	738471	–	477848
Rehau										
Brillant Design S799, S730	K07	766741	766740	766743	766743	–	332439	496019	348407	477848
Geneo S980	K04	766765	766744	766767	766766	–	332439	316942	–	477848
S788 MD, S735	K07	766741	766740	766743	766742	–	332439	316942	–	477848
Salamander										
3D / 2D	K16	766769	766768	766771	766770	–	486195	365385	–	477848
BluEvolution 82	K14	738595	738596	738554	738588	–	332438	260396	348410	477848
Streamline 76	K16	766769	766768	766771	766770	–	486195	365385	–	477848
Schüco										
Corona AS	K13	741516	741517	741504	741515		350192	257357	–	477848
Corona CT70 AD	K09	741502	741503	741500	741501	–	332438	260396	348410	477848
Corona CT70 MD	K09	741502	741503	741500	741501	–	331489	260395	331490	477848
Corona MD (also AS)	K13	741516	741517	741504	741515	–	350192	257357	–	477848
Corona SI82 MD	K09	741502	741503	741500	741501	–	331489	260395	–	477848
Trocal										
Innonova 70 A5 AD (70 AD plus)	K11	741502	741503	741500	741501	–	336798	–	336810	477848
Innonova 70 M5 MD (70 MD plus)	K11	741502	741503	741500	741501	–	336798	–	336810	477848
Veka										
Softline 70 AD	K14	738595	738596	738554	738588	–	332438	260396	348410	477848
Softline 70 MD	K14	738595	738596	738554	738588	–	332438	260396	348410	477848
Softline 82	K14	738595	738596	738554	738588	–	332438	260396	348410	477848
Topline AD 13	K14	738595	738596	738554	738588	–	332438	260396	348410	477848
Topline MD 13	K14	738595	738596	738554	738588	–	332438	260396	348410	477848



Installation

Drilling the frame drill-holes

Roto NT Designo

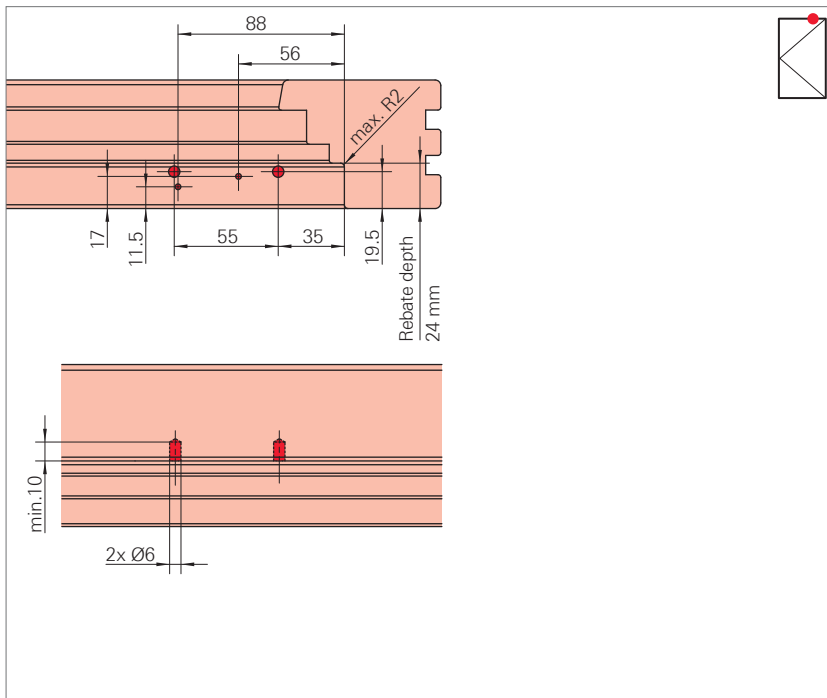


Drilling position:

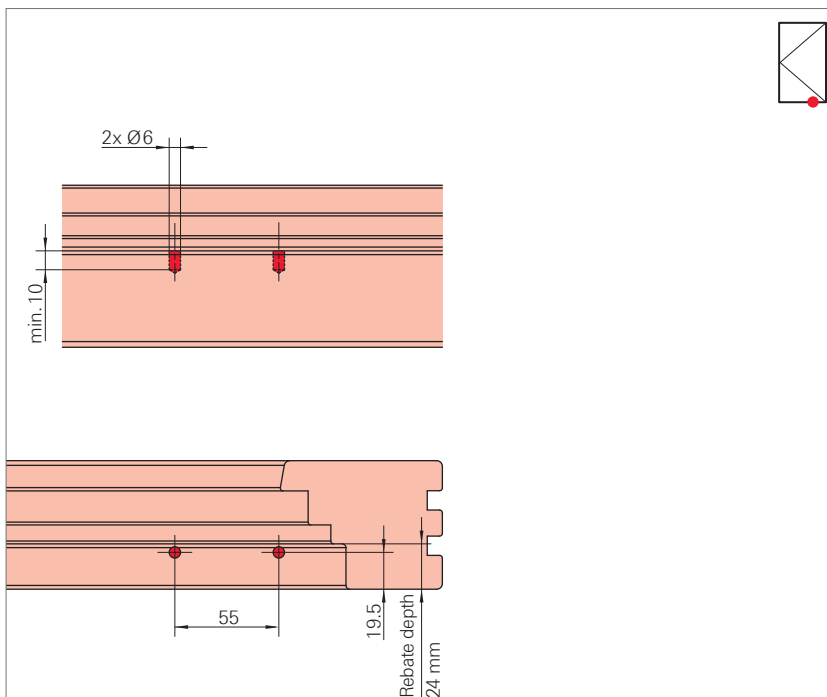
$2 \times CL + FRW2 + FRW1 - 22.8 \text{ mm}$

Use drilling jig 602577 for positioning the drillings for rebate hinge and pivot rest.

- [1] FRW1
- [2] FRW2
- [3] CL = Clearance
- [4] Drilling position
- [5] Drilling jig 602577



Stay bearing, rebate depth
24 mm

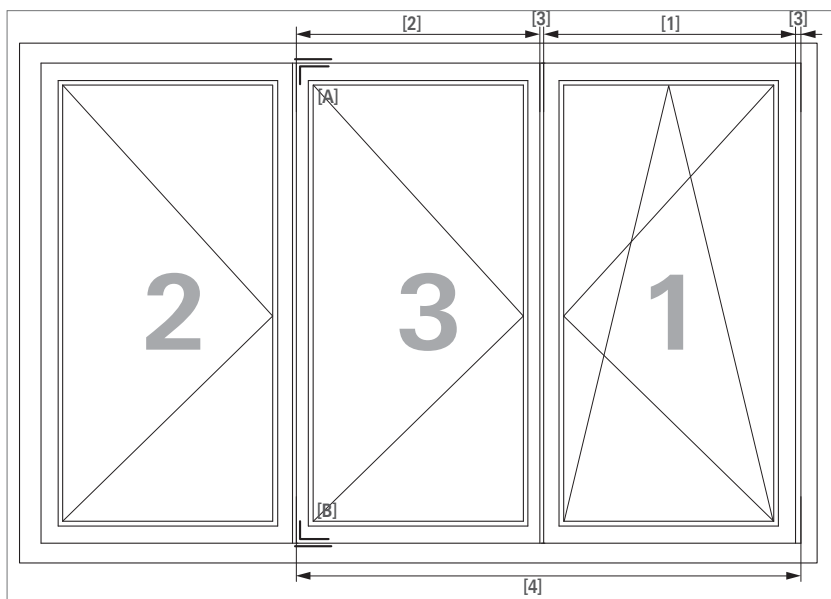


Pivot rest, rebate depth 24 mm

Installation

Drilling the frame drill-holes

Roto NT with slide bar

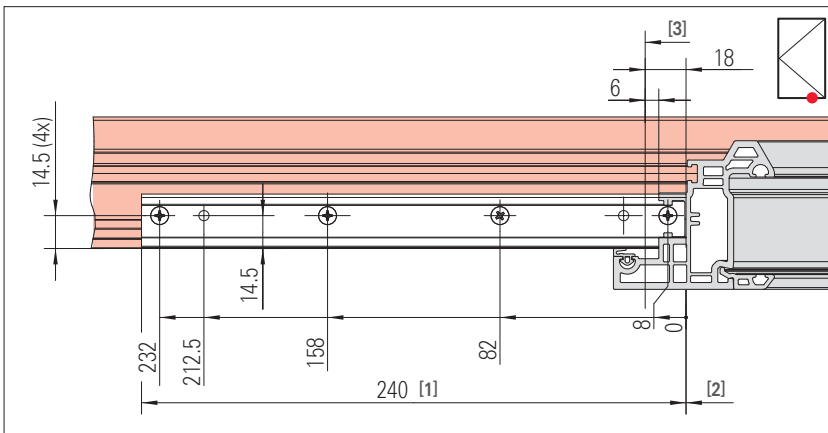


Installation position

$2 \times CL + FRW2 + FRW1 + 24 \text{ mm}$

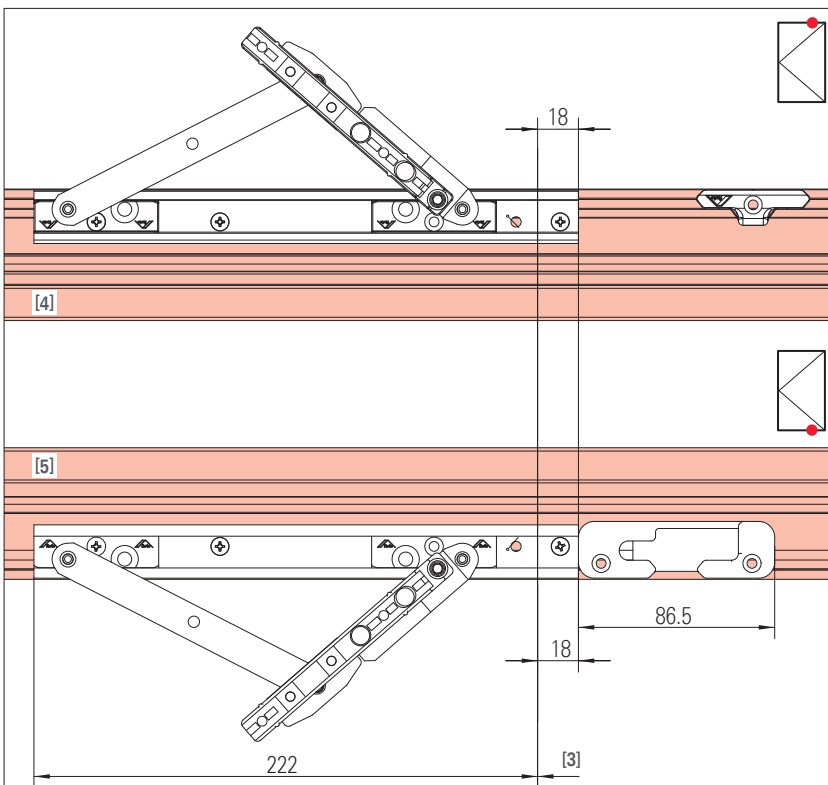
Positioning of rebate hinge [A] and pivot rest [B] according to the drawing.

- [1] FRW1
- [2] FRW2
- [3] CL = Clearance
- [4] Installation position



NOTE!

Please note when installing in PVC sash: Grind off the weld bead in the hardware-groove corner in order to ensure a secure hinge attachment.



- [1] Slide bar
- [2] Tilt striker
- [3] Centre of clearance
- [4] Installation situation top
- [5] Installation situation bottom

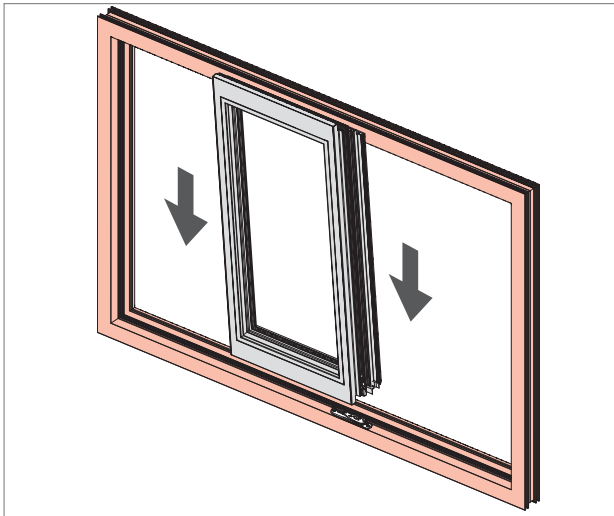


NOTE!

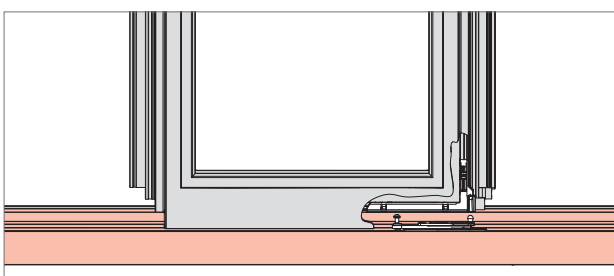
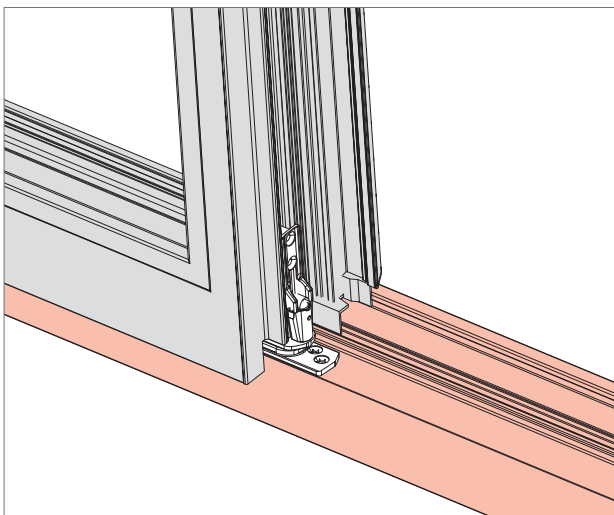
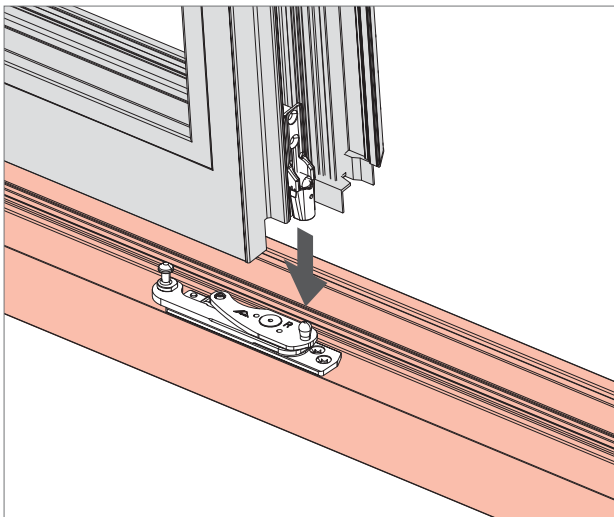
For all further installation steps refer to:

- IMO_109_EN, IMO_110_EN, IMO_258_EN*

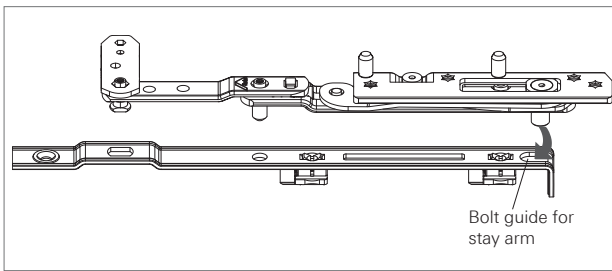
* Can be found on www.roto-frank.com

**Hinging the sash**

1. Put the pivot rest into its original position (= closed sash position).
2. Bring the handle into the turn mode.
3. Run down the sash slightly tilted along the frame, until the corner hinge meets the pivot rest.

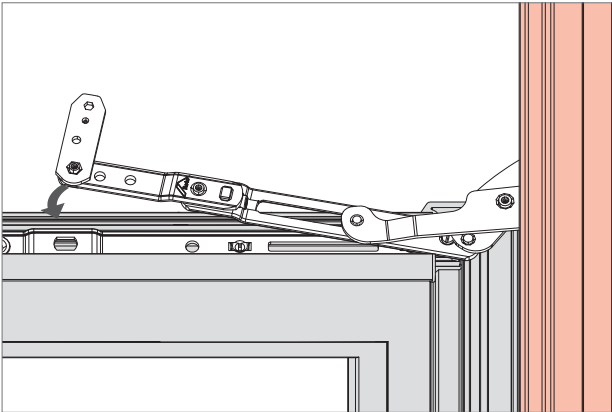


4. Secure the sash from falling out.

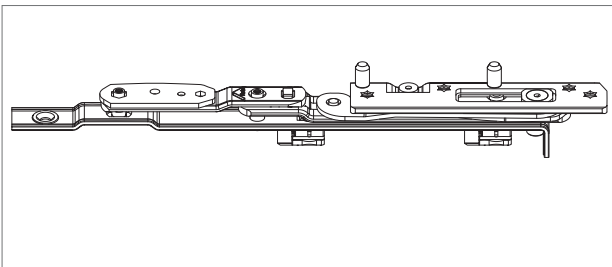
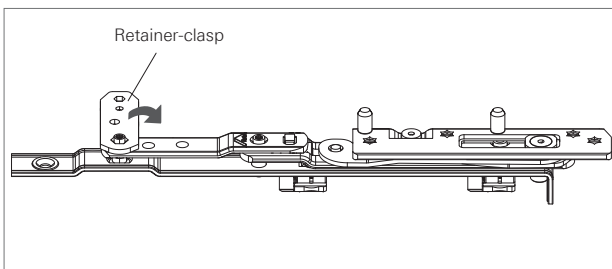


Hinging the sash with rebate hinge

5. Press down the rebate-hinge arm on the sash-component for rebate hinge. When doing so, first insert the guide pin into the bolt guide.



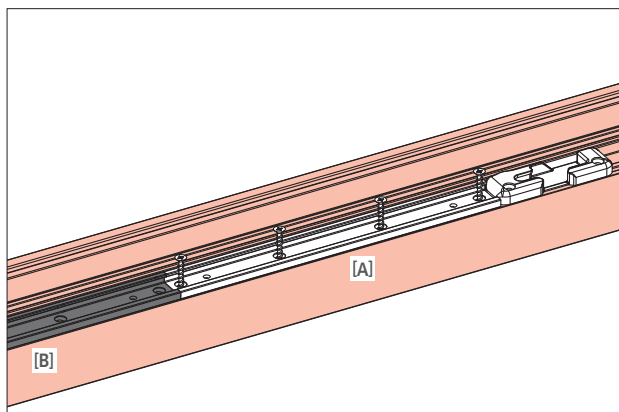
6. Close the retainer-clasp.



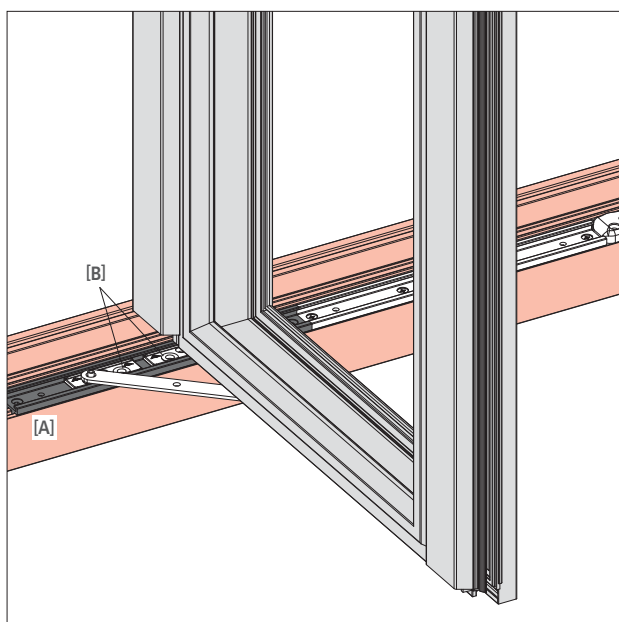
Installation

Connecting middle sash and frame

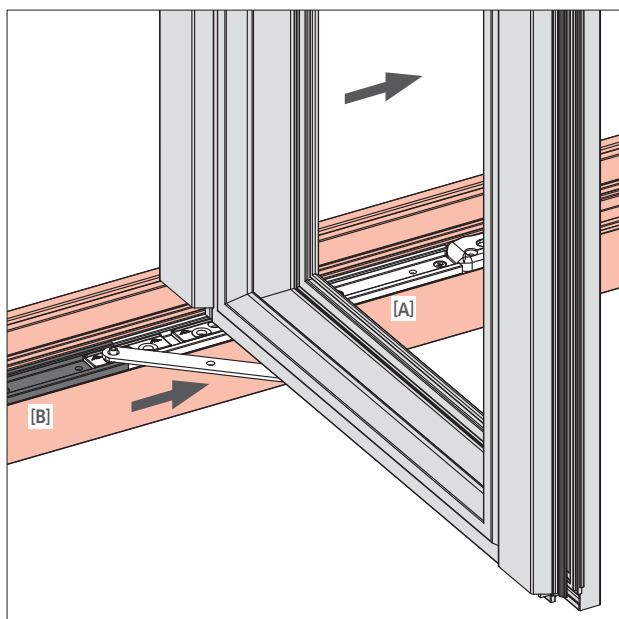
Roto NT with slide bar



1. Install tilt striker and slide bar [A].
2. Then place another slide bar [B] loose into the groove on the left side of it.



3. Thread in both sliders [C] into the loose slide bar [B] and place the sash into the frame profile.
4. Secure the sash from falling out.



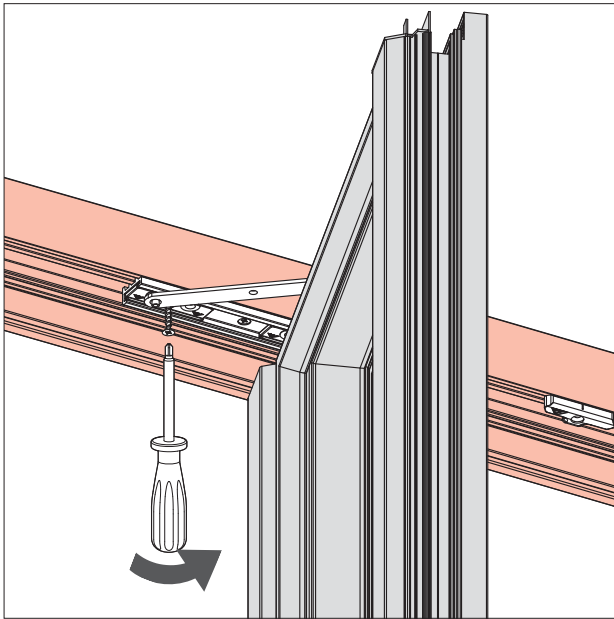
5. Slide in the sash into the installed slide bar [A] evenly on top and bottom.



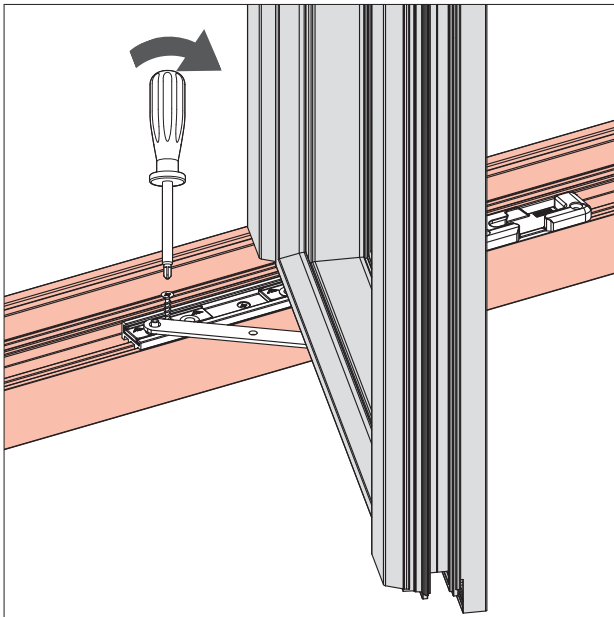
NOTE!

For all further installation steps refer to:

- IMO_109_EN, IMO_110_EN, IMO_258_EN



6. Screw in the locking screw on top of the front slider.



7. Screw in the locking screw on the bottom of the front slider.

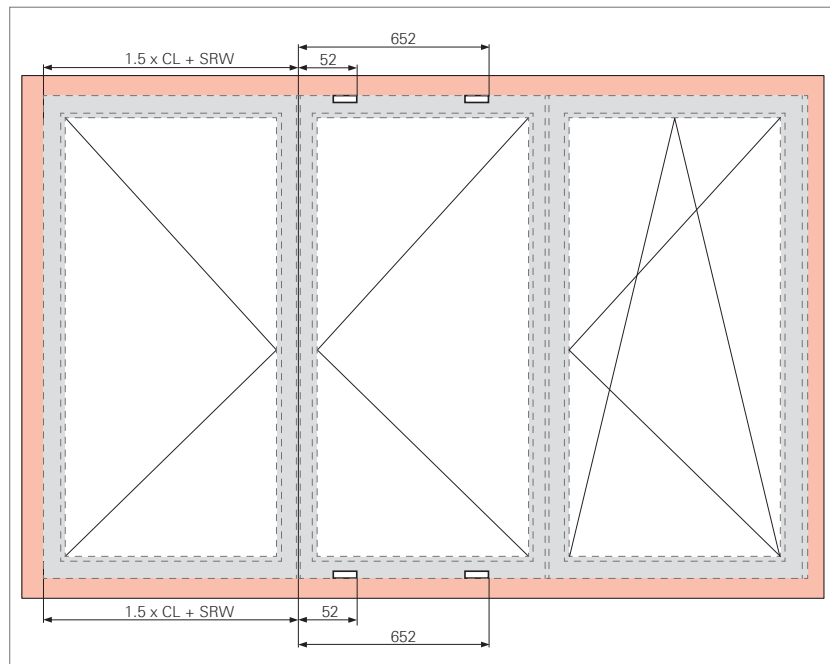
**NOTE!**

For all further installation steps refer to:

- IMO_109_EN, IMO_110_EN, IMO_258_EN

Striker dimensions (mm)

Horizontal – Basic security



Multipart centre lock, horizontal

SRW/mm

see parts lists

652

CL 600



NOTE!

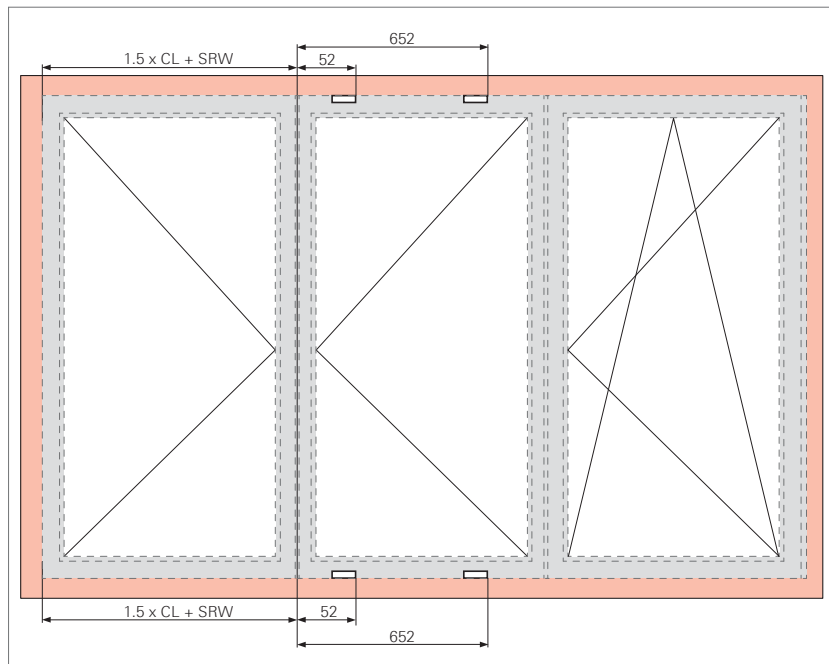
For all further installation steps refer to:

- IMO_109_EN, IMO_110_EN, IMO_258_EN



Striker dimensions (mm)

Horizontal – Basic security



Multipart centre lock, horizontal

SRW/mm

see parts lists

652

CL 600



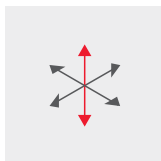
NOTE!

For all further installation steps refer to:

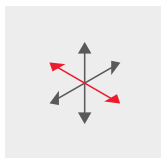
- IMO_109_EN, IMO_110_EN, IMO_258_EN

Symbols for the sash adjustment when installed

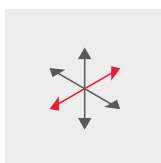
These symbols facilitate the orientation while adjusting the window sashes after installation with the following steps. Use a 4 mm Allen key as tool.



Height adjustment



Lateral adjustment

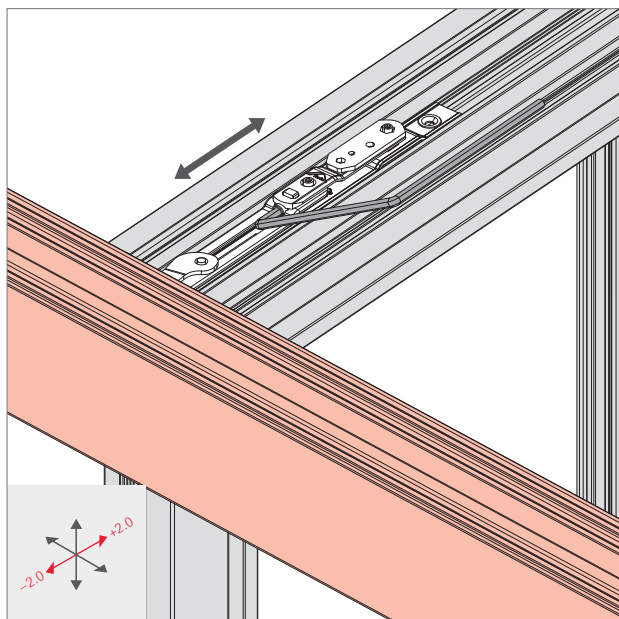


Gasket-compression adjustment

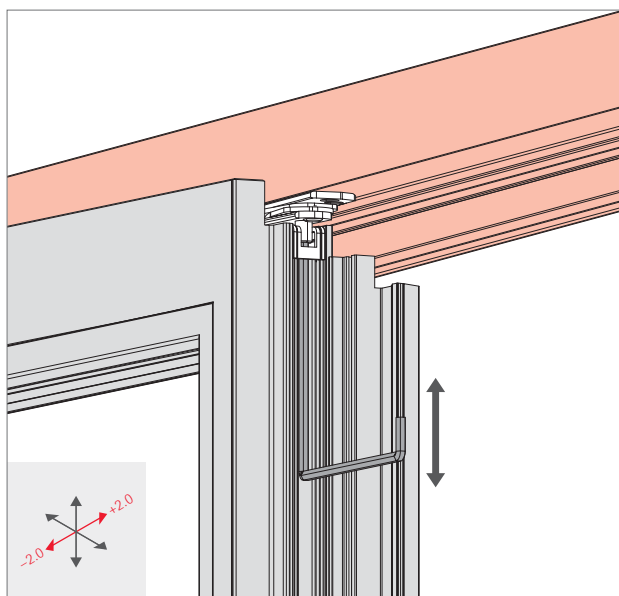


NOTE!

Adjusting Roto hardware components may only be carried out by authorised and qualified personnel.



Lateral adjustment

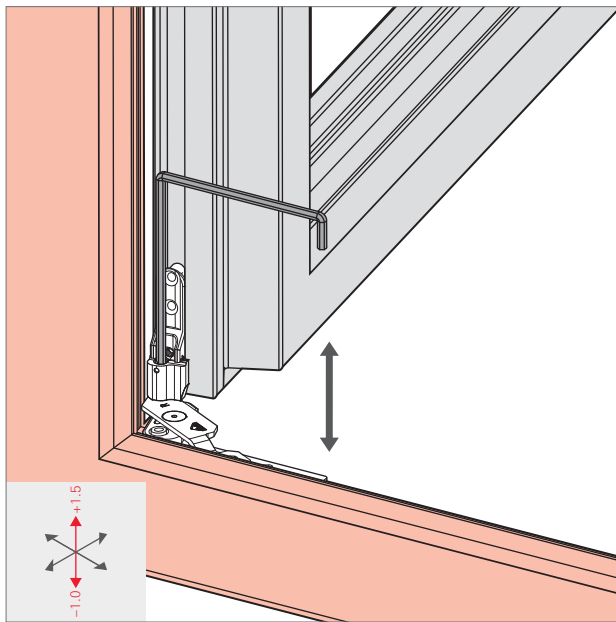


Height adjustment

Adjustment

Adjustment instructions

Roto NT Designo, Pivot rest / Corner hinge

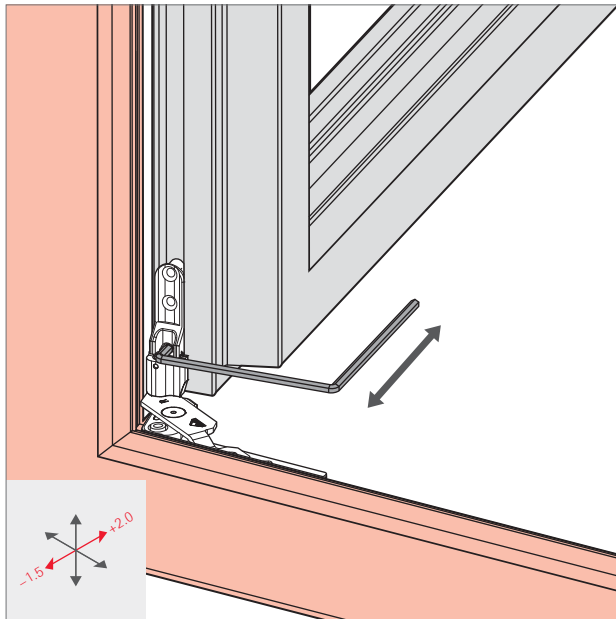


Height adjustment

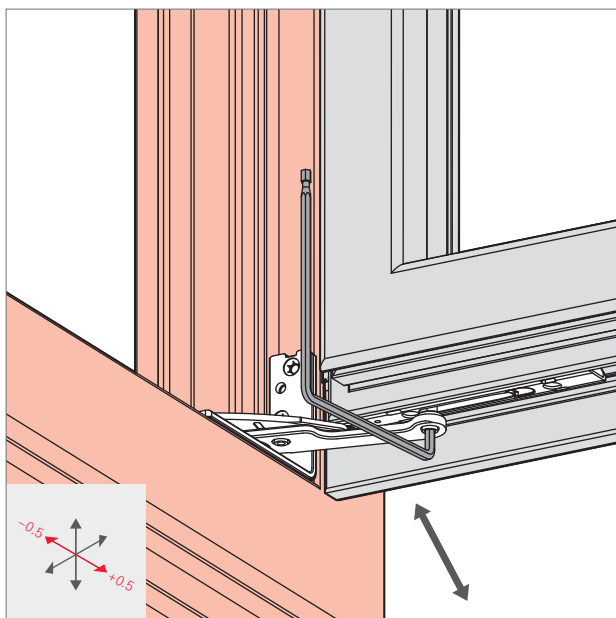


NOTE!

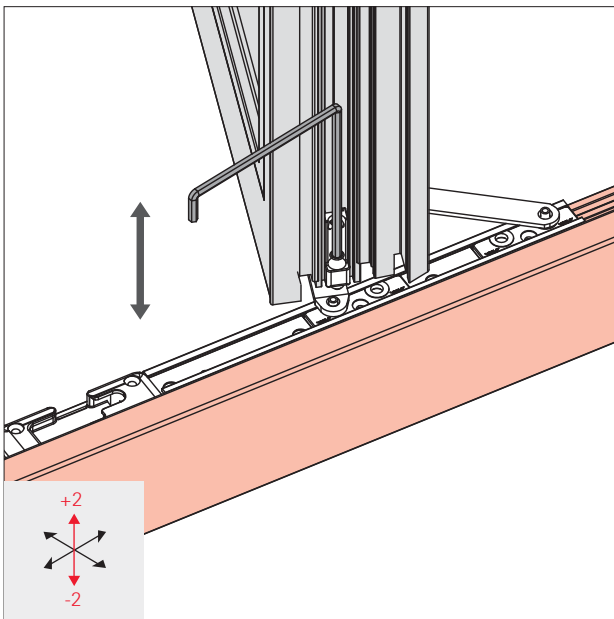
After the height adjustment, the load transfer device has to be readjusted.



Lateral adjustment

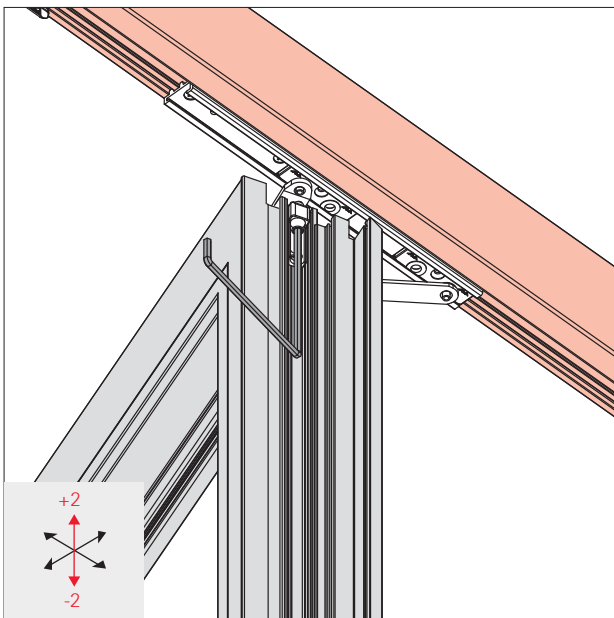


Gasket-compression adjustment



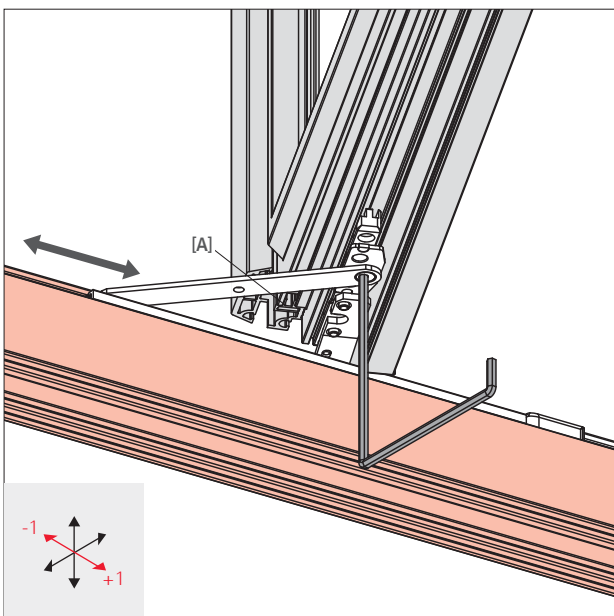
Height adjustment

Adjustment of the hinges with
4 mm Allen key



NOTE!

If the top clearance becomes less than
12 mm, release the adjusting screw on the
top hinge before height adjustment.

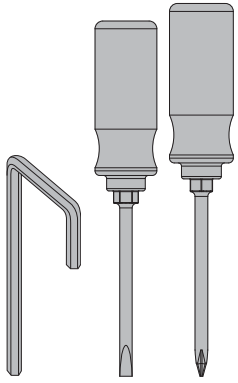
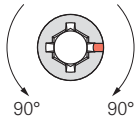
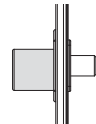
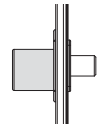
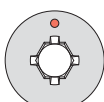
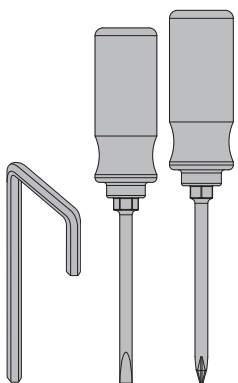
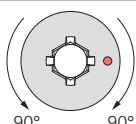
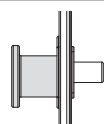
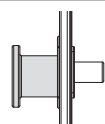
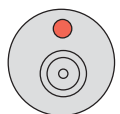
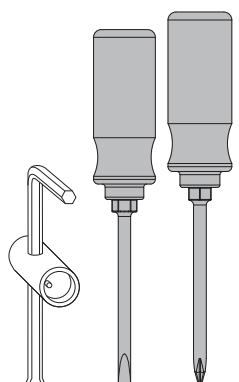
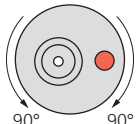
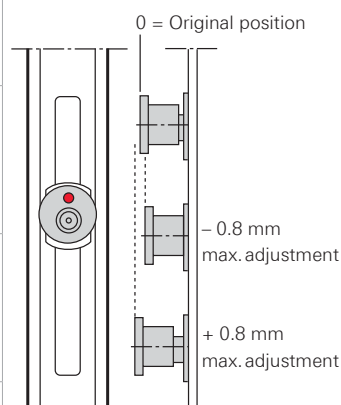
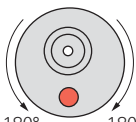
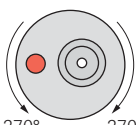


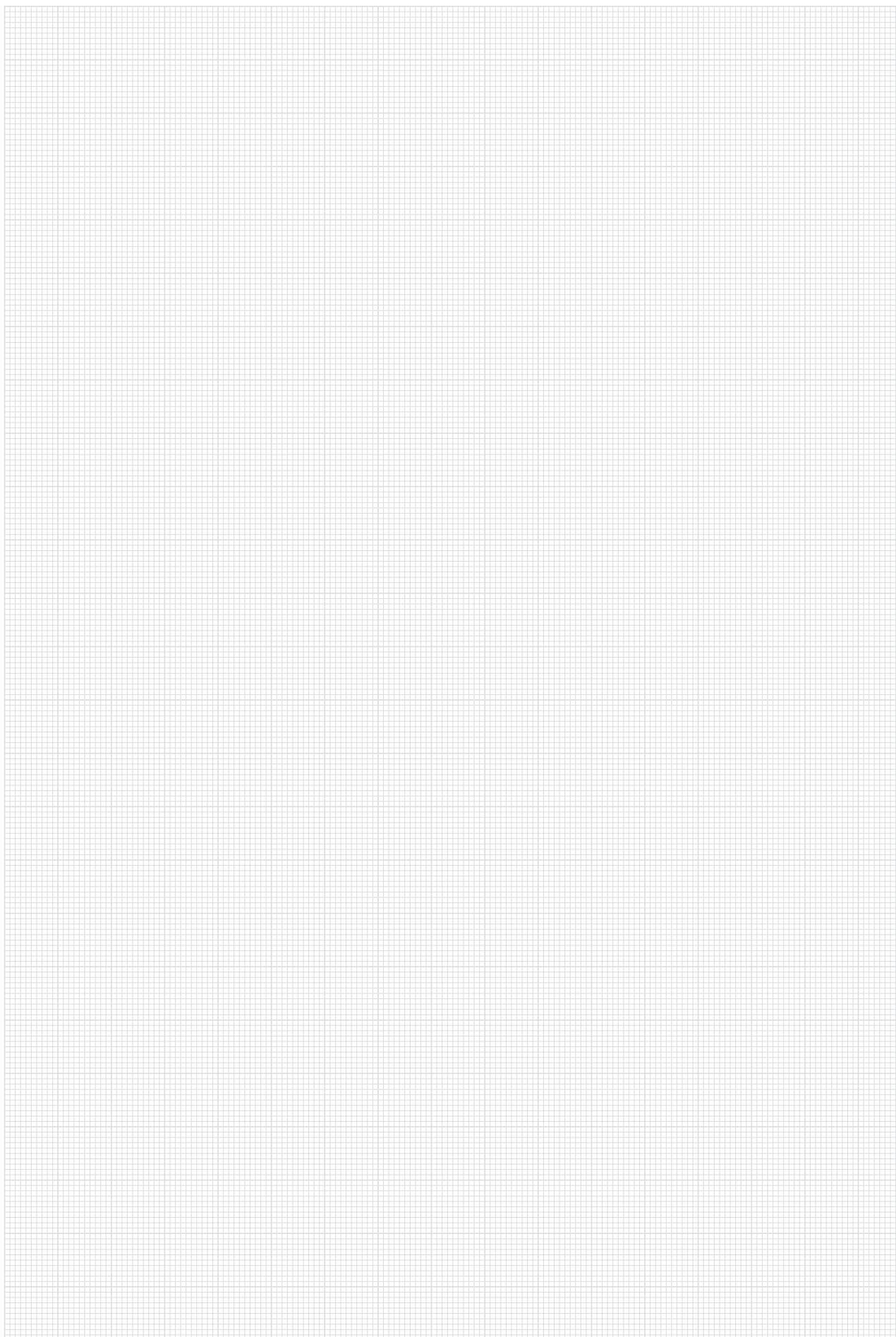
Lateral adjustment



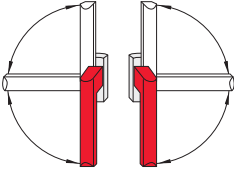
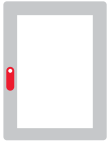
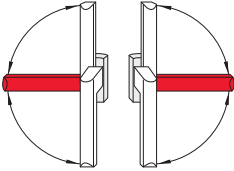
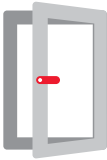
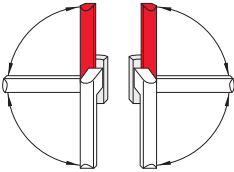
NOTE!

Rework the end cap of the floating-mullion
profile [A] on the hinge side if necessary.

Locking cam adjustment instructions						
Cam type	Adjustment range	Gasket compression	Height	Side view		Tools
E cam						
						
	90°	±0.8 mm				
P cam						
						
	90°	±0.8 mm				
V cam						
Cam type	Adjustment range	Gasket-compression adjustment in mm	Height adjustment in mm	Side view / top view		Tools
						
	90°	±0.8 mm	±0.2 mm	 0 = Original position - 0.8 mm max. adjustment + 0.8 mm max. adjustment		
	180°	—	±0.4 mm			
	270°	±0.8 mm	±0.6 mm			
	360°	—	±0.8 mm			



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

Handle position	Sash position	Symbol	Meaning
			Closed position of the sash
			Opened turn position of the sash
			Opened tilt position of the sash
			Malpositioning of the sash



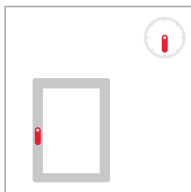
The following symbols and signs can be used on windows and balcony doors to protect the end-user.

Please order stickers separately (OPR_14_DE-EN).

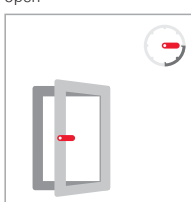


Drehkipp-Beschlag
Tilt&Turn hardware

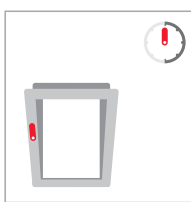
geschlossen
closed



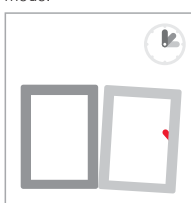
öffnen
open



kippen
tilt



Fehlschaltungen vermeiden
Avoid mishandling model!



08/2012 OPR_14_DE-EN_v1

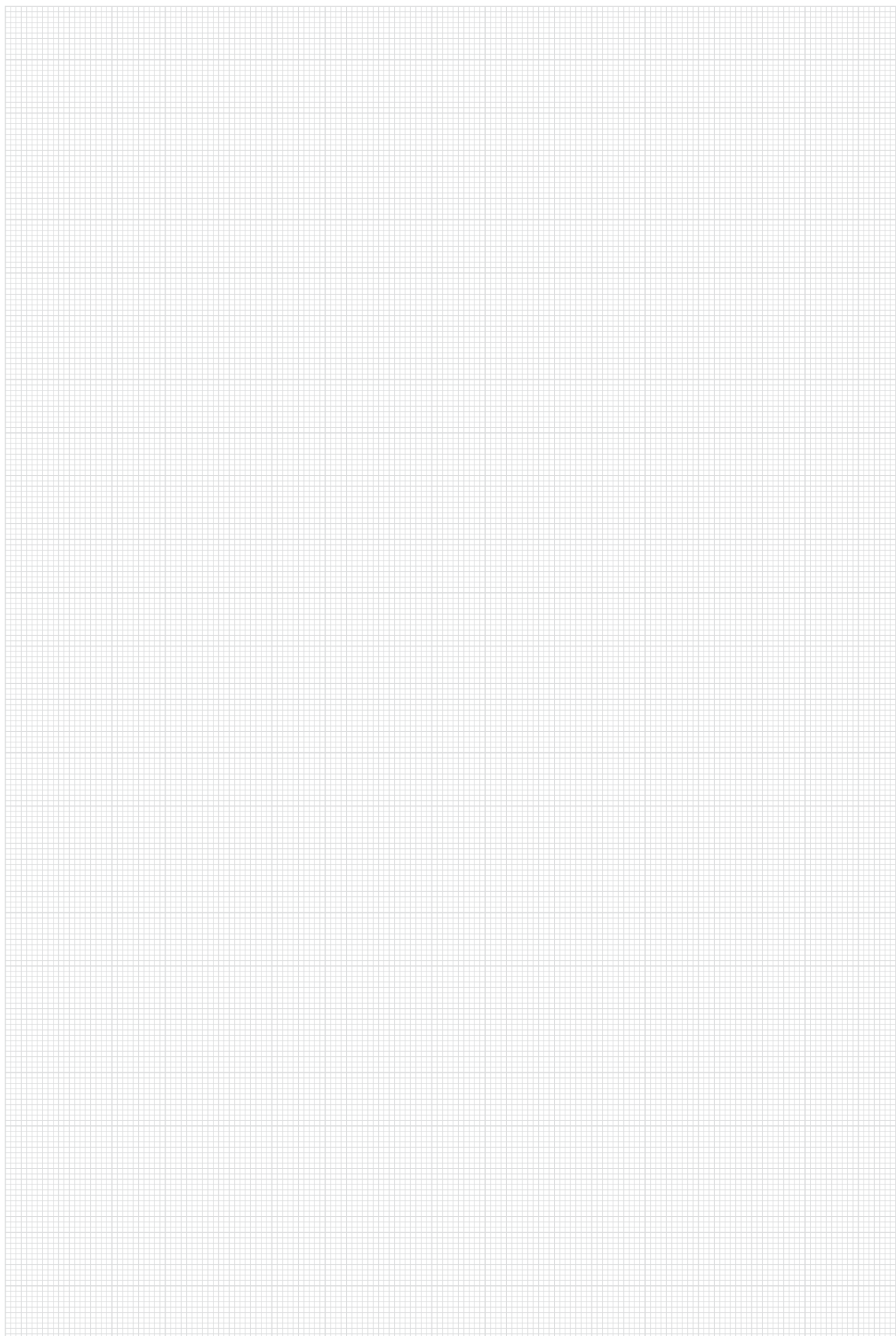
Troubleshooting

Problem	Cause	Corrective action	Specialist company	End-users
Handle is difficult to rotate.	– Frame parts are not properly greased. – Faulty handle. – Handle screws are screwed in too strong. – Oblique screws in the sash parts. – Faulty sash parts. – Faulty striker locations. – Sash stay gasket compression too strong (accumulation of gaskets).	– Grease frame parts. – Replace the handle. – Slightly loosen the screws. – Straight screw-fixing of the sash parts. – Replace the sash parts. – Adjust the striker locations. – Adjust or reduce the sash stay gasket compression.	☐ ■ ■ ■ ■ ■ ■	☐ – – – – – –
Handle can not rotate 180°.	– Faulty hinging or installation of sash parts.	– Check adjustment in turn position (if necessary, rehing the sash proceeding from T&T espagnolette).	■	–
In turn mode, the sash falls into tilted position.	– Too much clearance on top.	– Check corner hinge location. – Check pivot rest location. – Raise the corner hinge. (Attention: tilt striker)	■ ■ ■	– – –
In tilt mode, the sash falls into turning position.	– Faulty tilting component.	– Replace tilting component.	■	–
Sash is rubbing in tilt mode.	– Insufficient clearance on top.	– Lower the corner hinge. (Attention: tilt striker!)	■	–
Locking cams rubber at striker.	– Faulty hinging of the sash. – Faulty striker locations.	– Hinge the sash once again. – Adjust the striker locations.	■ ■	– –

■ = To be carried out only by a specialist company

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

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





WARNING!

Danger of injury through incorrectly conducted maintenance work!

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

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

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

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

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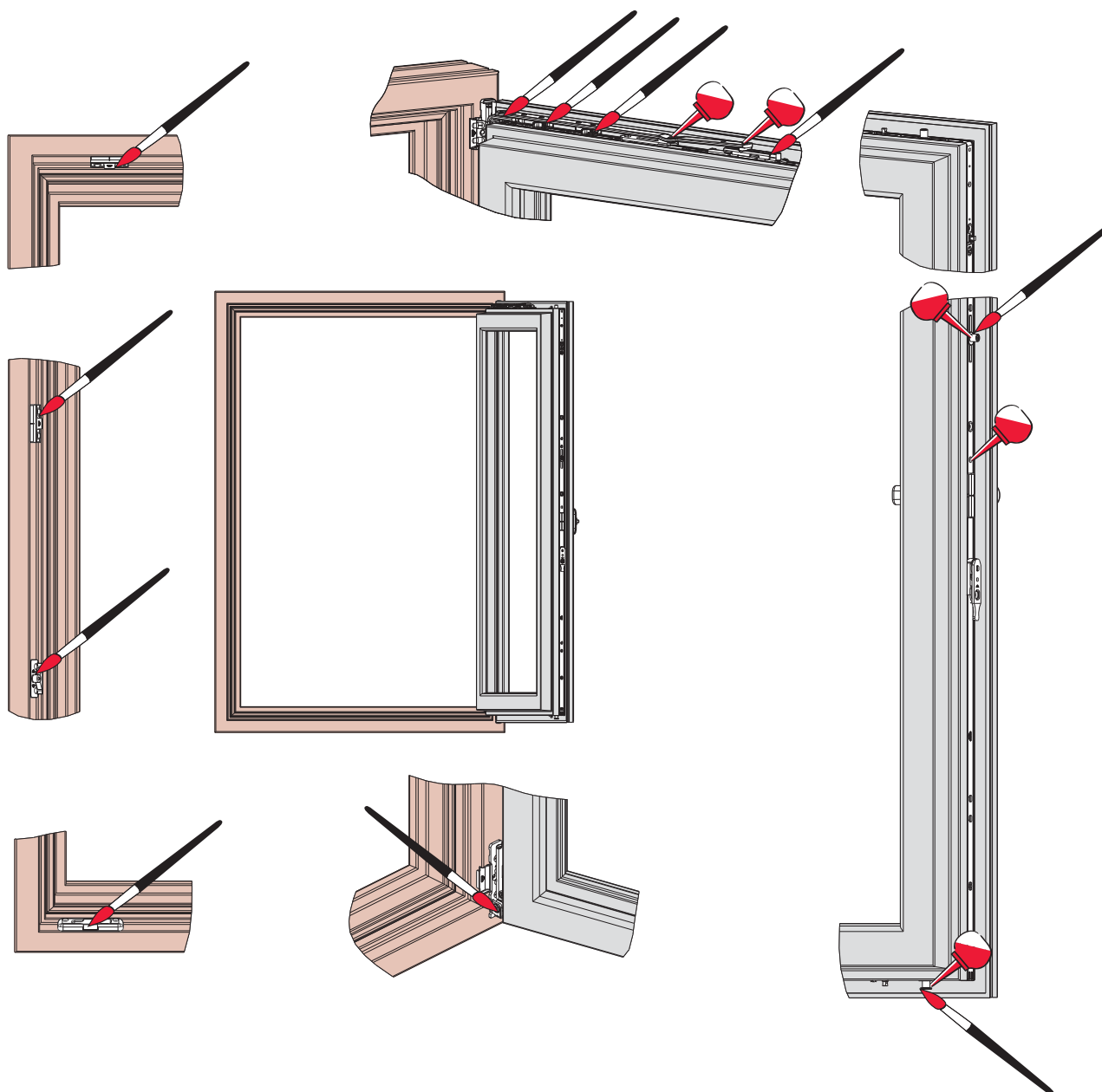
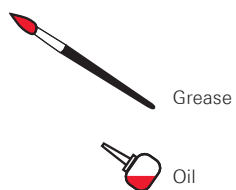


NOTE!

Observe the following environmental protection notes during maintenance work:

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

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



Inspection

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

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

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Care

	Specialist company	End-users
Keep the hardware free from deposits and soiling.	☐	☐
Never use aggressive, acidiferous cleaners or abrasive cleaning agents.	☐	☐
Only use mild, pH-neutral cleaning agents in diluted form.	☐	☐
Only use a soft, lint-free cloth for cleaning.	☐	☐

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



Protection against corrosion

	Specialist company	End-users
Aggressive vapours (e.g. by means of formic acid or acetic acid, ammonia, amine or ammonia compounds, aldehydes, phenols, chlorine, tannic acid etc.) in the vicinity of the windows must be absolutely avoided.	■	—
Never use acetic-acid or crosslinked acidic sealing compounds or those with the above mentioned contents, since both the direct contact with the sealing compound and its vaporisation can attack the hardware's surface.	■	—
Only electrogalvanised zinc plated and passivated screws may be used for fixing the hardware components.	■	—
Do not use any stainless-steel screws!	■	—

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Protection against dirt

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

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Protection against (permanent) moist interior air

	Specialist company	End-users
Ventilate the hardware and the rebate areas – especially in the construction phase – so that they are neither exposed to direct contact with water nor to formation of condensation water.	☐	☐
Ensure that (permanently) damp spatial air cannot condense in the hinge and rebate areas: ■ Force ventilate several times each day (open all windows for approx. 15 minutes). ■ Also ventilate during holidays and absences. ■ For more complex construction projects, develop a ventilation plan if necessary. If described systematic ventilation is not possible, e.g. because fresh screed must not be traversed, or it cannot take draughts, put the windows into the tilted position and make them airtight by taping on the indoor side. Divert the moisture present in the room air to the outside by means of condensation dryers.	☐	☐

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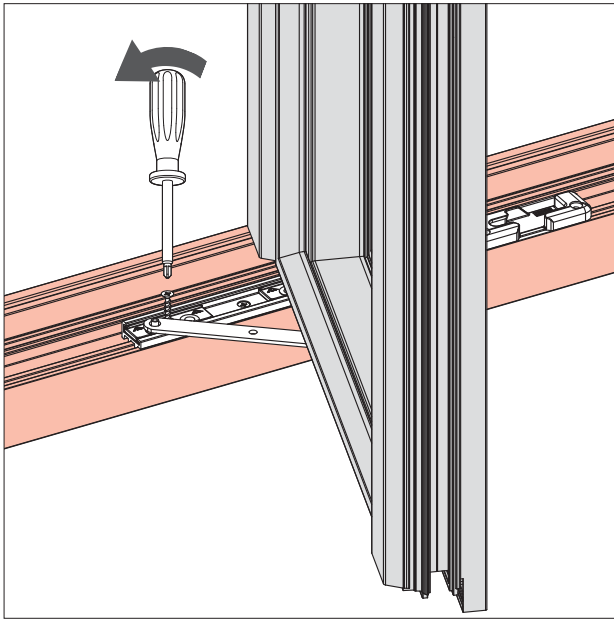
Protection against damages due to renovation work

	Specialist company	End-users
When applying surface treatments of the windows, exclude all hardware components from this treatment, and thus protect against contamination.	☐	☐
Use only adhesive tapes which do not damage the varnish layers. In the case of doubt, ask the window fabricator.	☐	☐

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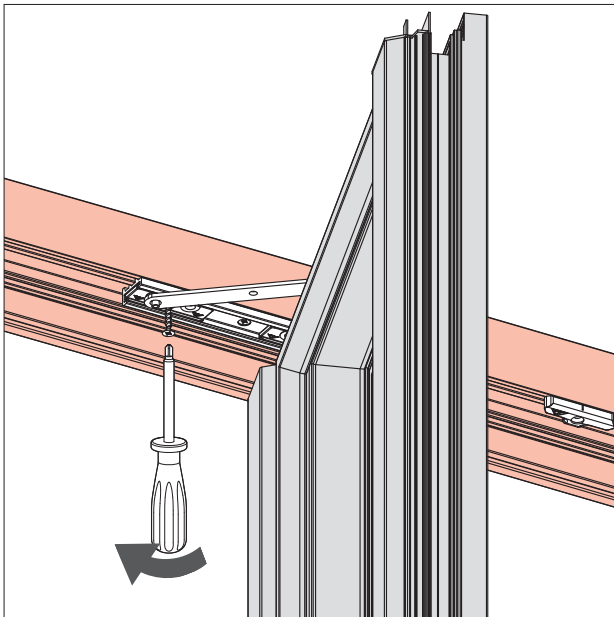
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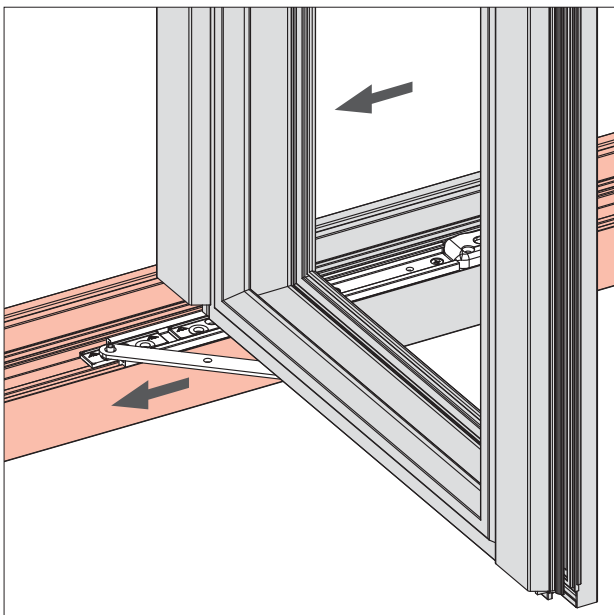


1. Secure the sash from falling out.

2. Release the locking screw on the bottom of the front slider.



3. Release the locking screw on top of the front slider.



4. Push out the sash of the slide bar evenly on top and bottom and lift it out.

**DANGER!****Danger to life from incorrect handling and transport!**

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

Therefore:

- During loading and unloading, select force application points which exclusively create reaction forces appropriate to the designed layout of the hardware components for the intended installation location.
- During handling and transport, ensure that hardware is in the locked position, so as to prevent an uncontrolled opening of the window. Use suitable securing equipment to do this, e.g. tensioning belts.
- Use only transport protections designed for the respective clearance.
- Wherever possible, undertake transport in the intended installation position – transport windows upright and glazed.
- Prevent diagonal moving and slipping of the sash with respect to the frame (e.g. by using spacers).
- If transport in the intended installation position is not possible, unhinge the sash, and transport it separately from the frame to which it belongs.

**NOTE!**

The type and the force application points when transporting, loading, and unloading have a significant effect on the reaction forces which arise. Especially when using auxiliaries such as suckers, transport nets, forklifts, or cranes, reaction forces may arise which result in damage or overloading to the installed hardware. Therefore observe the following during all transport, loading, and unloading:

- Always choose the force application points so that the resulting reaction forces are dissipated appropriate to the designed layout of the hardware components for the intended installation location. This applies particularly for the hinge positions.



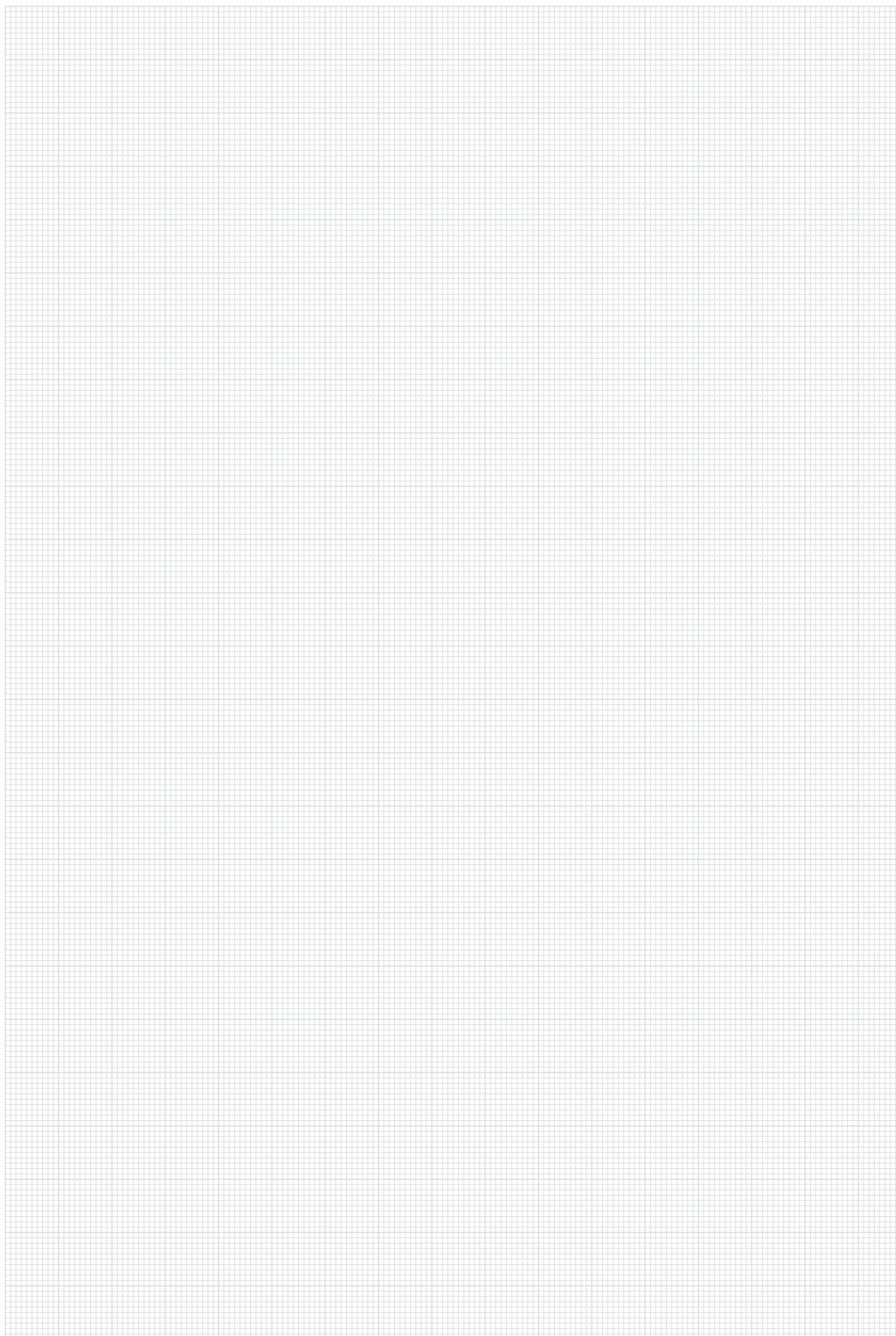
Check the delivery on receipt immediately for completeness and transport damage.

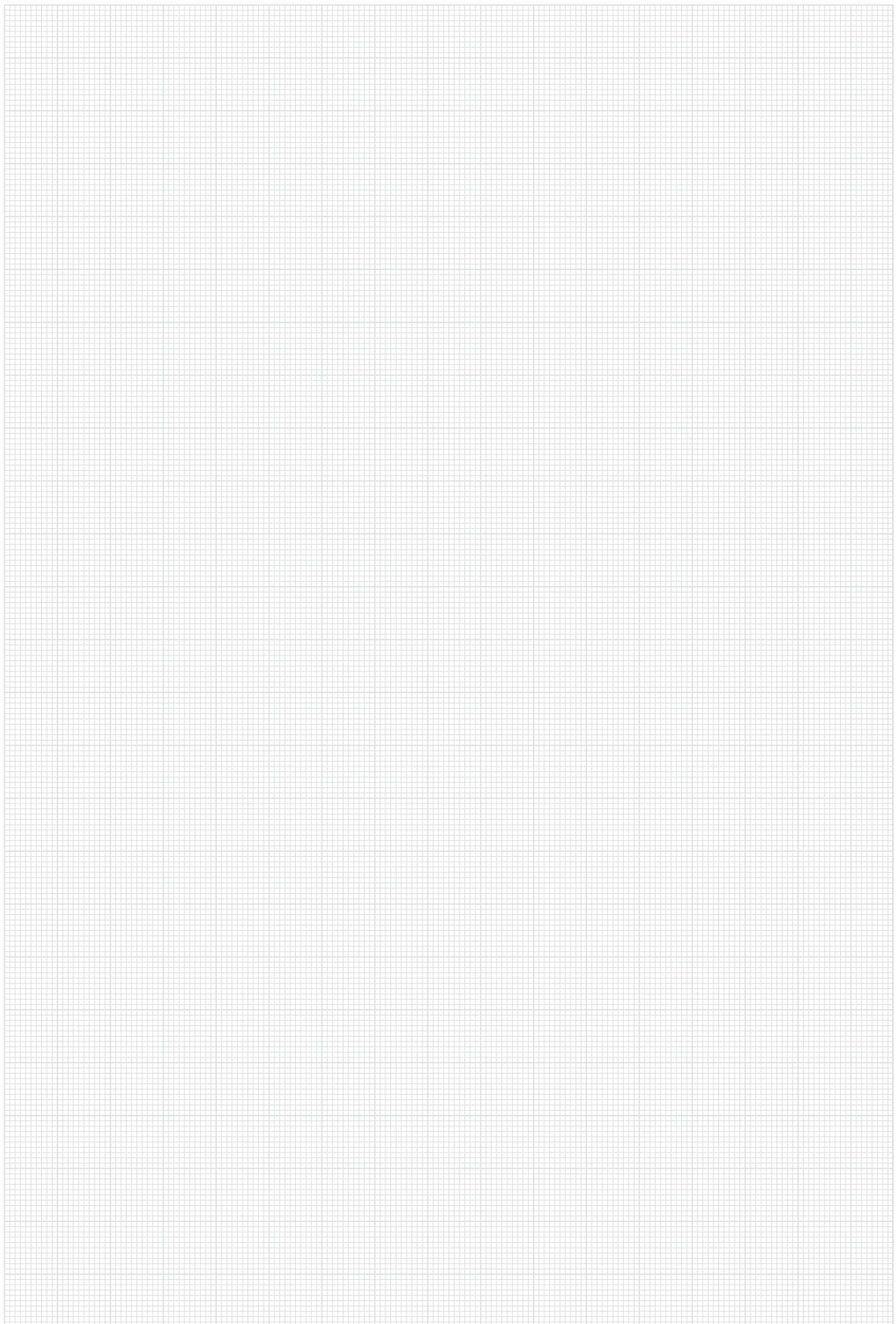


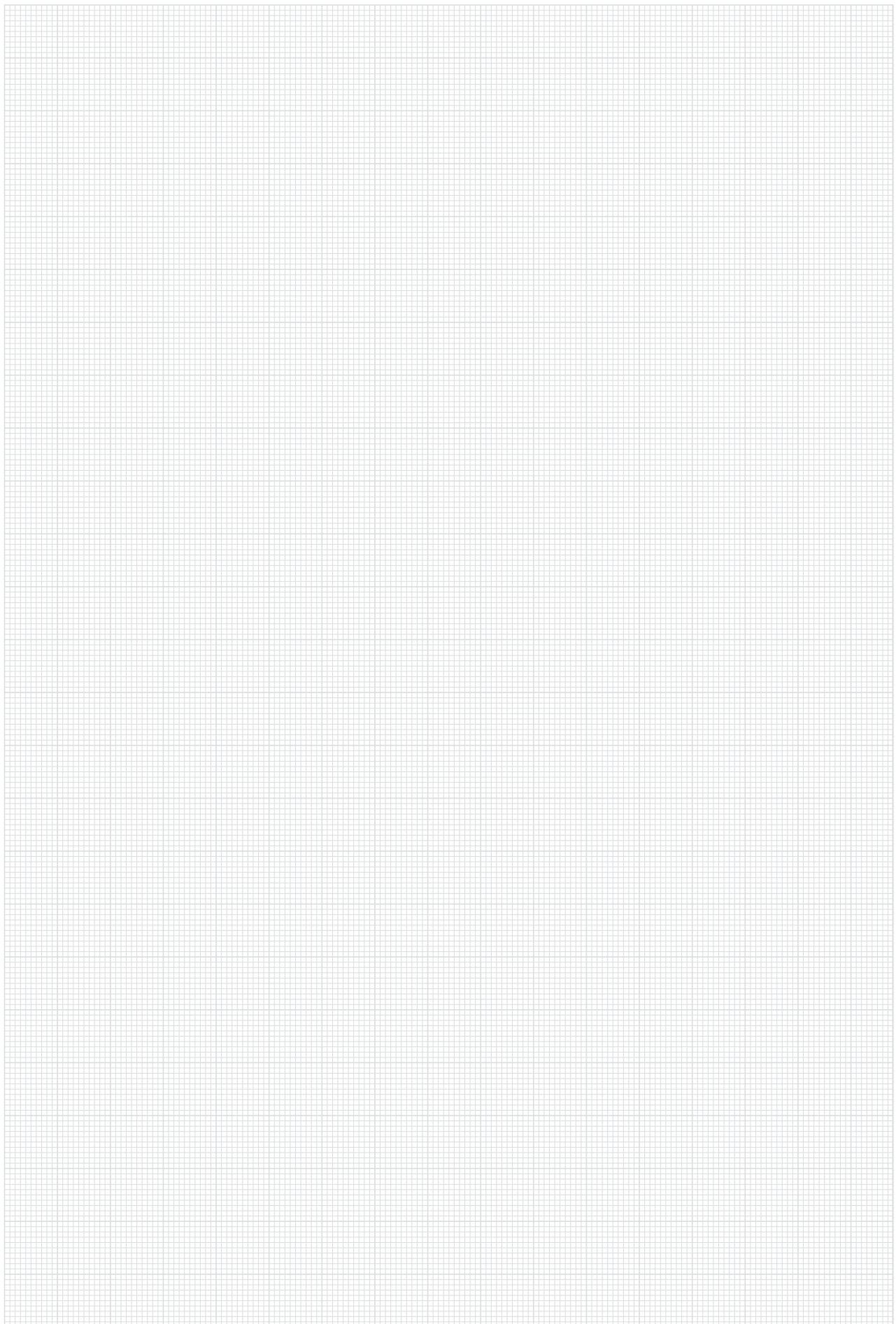
NOTE!

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

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









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

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Roto Door | Matching hardware technology "everything about doors"

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