Window and Door Technology

Roto NT Designo

Concealed hinge solution
for windows and balcony doors with high sash weights

Installation, maintenance and operation instructions
for timber windows and balcony doors – 9 mm hardware axis

Imprint
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Installation

Installation drawings

Adjustment

Operation

Maintenance

Transport

Disposal

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:

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

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

Additional markings

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

Marking	Explanation
	Sash
	Frame
	Drill-holes
①	Hardware components
1.	Action steps
■	First level of the hierarchy in a list
–	Unordered list (second level of hierarchy)
→ P. 12	(Cross) reference in tables
Refer to page 12	(Cross) reference in the text

Abbreviation	Explanation
SRW	Sash rebate width
SRH	Sash rebate height
S.kg	Sash weight
RC1 / RC1 N	Resistance Class 1
RC2 / RC2 N	Resistance Class 2

All dimensions stated in mm.

Protection of copyright

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

Hardware dealers
The "hardware dealers" target group includes all companies/persons who purchase hardware from the hardware manufacturer to resell it without the hardware being modified or 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 operation) 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 symbols. 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 Safety and Stipulated use).
- Non-stipulated use/misuse (refer to the chapters Safety and 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, VHBE and VHBH 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 or 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.

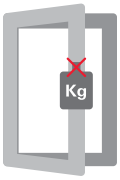
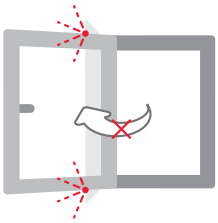
WARNING!
Danger of injury and material damage from incorrect closing and opening the sash!
Incorrect closing and opening of sashes can result in serious injuries and significant material damage.
Therefore:
- Ensure that when closing the sash, it does not collide with the frame or with another sash.
- 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.

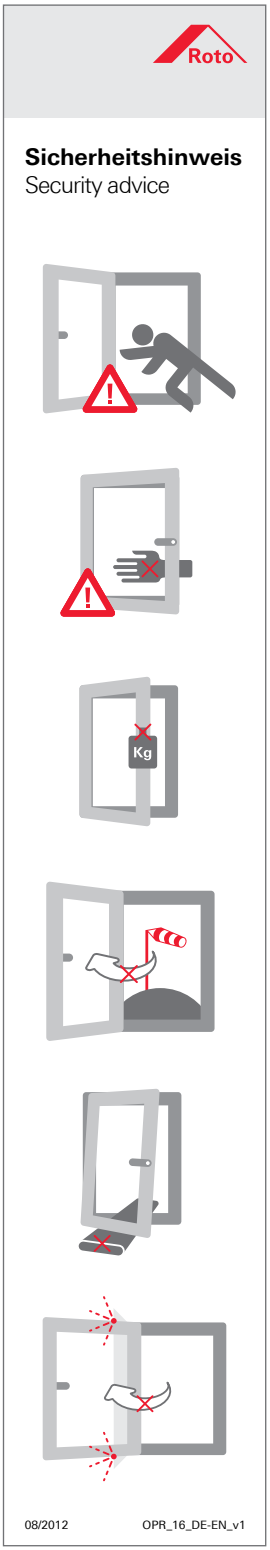
WARNING!
Danger from misuse!
Misuse of windows and balcony doors can result in dangerous circumstances.
In particular, avoid the following applications:
- insertion of obstacles in the opening area between the frame and the window and balcony door sashes,
- the deliberate or negligent application of 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.** – Proceed cautiously in the vicinity of open windows and balcony doors. – Please keep children and persons that cannot appreciate the danger away from the hazard area.
	**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. – Please keep children and persons that cannot appreciate the danger away from the hazard area.
	**WARNING!** **Danger of injury and material damage from overloading the sash** – Refrain from additionally loading 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** – Refrain from inserting obstacles in the opening gap between the sash and the 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 by 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_v1).



Maximum sash sizes and weights

The technical data, application diagrams, and component classifications in structions 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.

Guidelines from the profile manufacturer

The manufacturer of windows and/or balcony doors must comply with all specified system-related dimensions (e.g. gasket gap dimension or locking separations). 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.

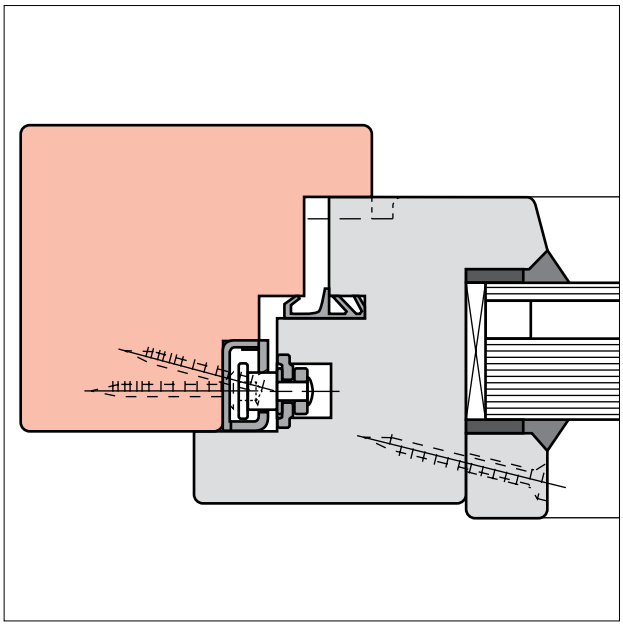
NOTE!
The guidelines of the hardware manufacturer relating to the combination of the hardware (e.g. the use of additional stay arms, the design of hardware for burglary-inhibiting sashes for windows and balcony doors, etc.) are binding.

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 TBDK directive of the Gütegemeinschaft Schlösser und Beschläge.

For fixing the hardware components, 3.9 / 4.1 x ... zinc-plated steel fenestration screws are to be used.
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 TBDK).

Sash weight in kg	Tractive force in N
60	1650
70	1900
80	2200
90	2450
100	2710
110	3000
120	3250
130	3525
140	3900
150	4200

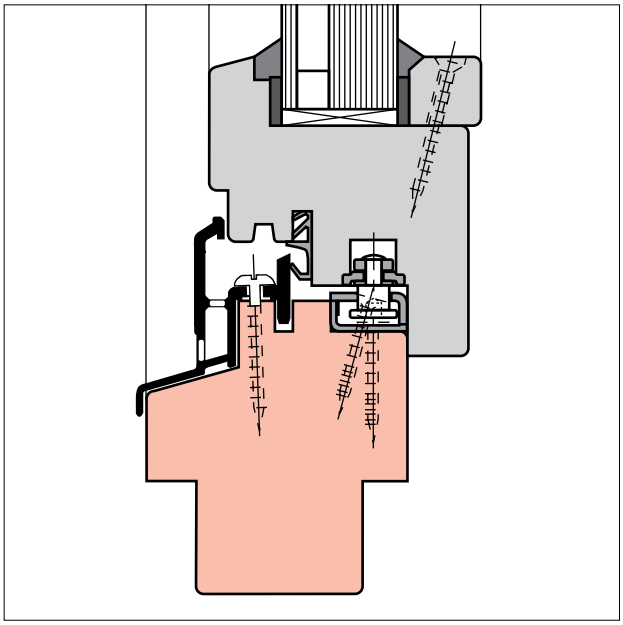
The stated values refer to the stay bearing. These are also valid for the pivot rest if the fixing is carried out in the same manner as with the stay bearing. On sash weights up to 80 kg the table's values are reached as a rule, if high-quality screws are applied and the screw-fixing into the profile penetrates at least 2 profile walls, whereby the first profile-chamber wall should be at least 2.8 mm thick.
Do not use any acid cross-linked sealing compounds that could lead to corrosion of the hardware components. The glazing spacer-block regulations for the glazing procedure are to be adhered to.



Screw fixing
Horizontal cross section M 1:2

Fixing SEC striker
3 screws, 3.9 / 4.1 x ...

Fixing glazing-beads
Use screws if required



Screw fixing
Vertical cross section M 1:2

General hardware characteristics:

– Central locking system for one-hand-operation completely concealed in the sash-rebate
– 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
– Link-slider guided stay arm, as standard with
  – Integrated anti-slam device (only T&T version)
  – Turn restriction
– Mishandling device in tilted position (only T&T version)
– 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
– Tested according to EN 13126:20068 and EN 1191:2000-08 and certified according to QM 328
– Handles are available in different RAL colours
– With burglar-inhibiting anti-jemmy device in the tilt striker as standard
– For sash weights from 80 kg up to 150 kg thanks to load-transfer component
– Long-term relieving of the pivot rest is ensured
– No jigs necessary for installation
– Turn-Only / Tilt&Turn sash:
  – Sash rebate width 330 – 1400 mm
  – Sash rebate height 280 – 2600 mm
  – Sash weight up to max. 150 kg*
  – Security levels: acc. to DIN EN 1627 – 1630
– Brands:
  – Roto NT Designo or equivalent

* The application ranges are to be adhered according to the application diagrams

NOTE!
For undated standards the latest version applies in each case.

General hardware characteristics:

– Central locking system for one-hand-operation completely concealed in the sash-rebate
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  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
– 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)
– Rebate hinge with gasket-compression and clearance adjustment completely concealed in the sash rebate
– 10-year warranty on the operativeness of the hardware
– Low-maintenance thanks to patented lubrication depots
– Tested according to EN 13126-8 and EN 1191 and certified according to QM 328
– Handles are available in different RAL colours
– Tilt-Only sash
  – Sash rebate width 450 – 1400 mm
  – Sash rebate height 370 – 1200 mm
  – Sash weight up to max. 80 kg*
  – Handle heightfixed / centred/variable
  – Security levels: acc. to DIN EN 1627 – 1630
– Brands:
  – Roto NT Designo or equivalent

* The application ranges are to be adhered according to the application diagrams.

NOTE!
For undated standards the latest version applies in each case.

Locking cam E
Gasket-compression adjustable cam

Locking cam P
Gasket-compression adjustable security mushroom cam

Locking cam V
Height and gasket-compression adjustable security mushroom cam

The surface-finish

Roto Sil Nano surface-finish for elegant matt silvery aesthetics.
Unmistakable consistent silver look.
Optimal protection by means of galvanising, chromating, and additional sealing.
Increased corrosion protection.

The NT security concept

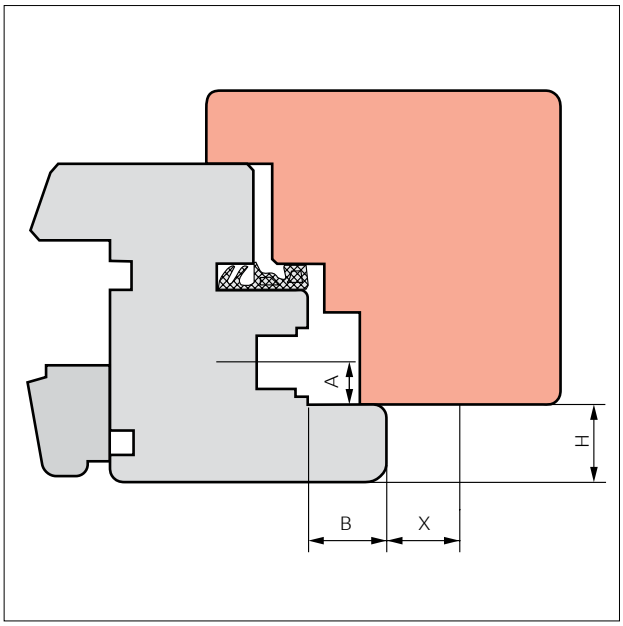
The basic version of Roto NT is already equipped with basic security on the bottom horizontal sash-plane.
Highest burglary inhibition results are achieved with exemplary hardware combinations for security windows in accordance with DIN EN 1627–1630.
This standard includes an overall test of all individual window components.

The NT striker concept

All strikers in the Roto NT hardware system have identical screwing axes.
This concept renders prefitting the sash with security cams possible, and a later frame retrofitting with security strikers (zinc or steel). All locking cam versions are combinable with all strikers.

Three locking cam versions

The Roto NT hardware system offers 3 different locking cam versions that differ in application and adjusting capabilities.
The detailed adjusting dimensions can be found in these installation instructions.



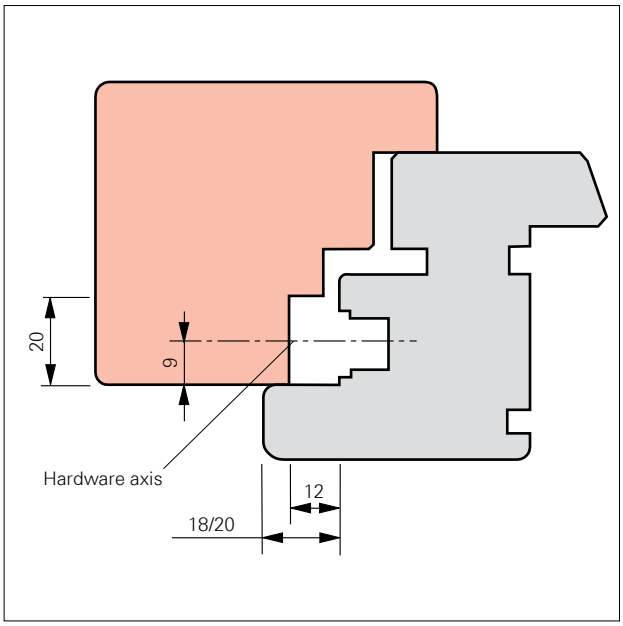
Frame clearance

Frame clearance dimension at a 90° opening angle (OA 90°)			
Axis dimension **A**	Overlap height **H**	Overlap width **B**	Frame clearance (OA 90°) **X**
9	16	18	**16**
9	18	18	**18**
9	20	18	**20**

Frame clearance dimension formulas at a 90° opening angle (OA 90°):

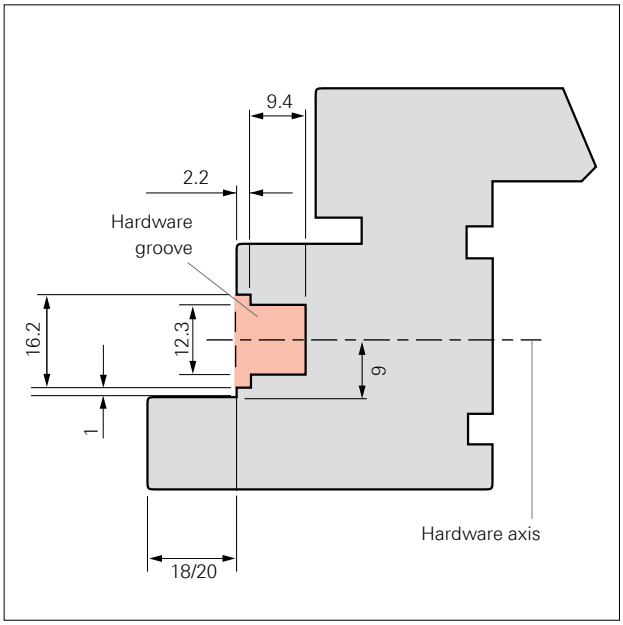
Axis dimension 9:
Frame clearance (OA 90°) = overlap height + 18 – overlap width

The frame clearance at a 100° opening angle depends on the reveal depth.



Rebate systems:
System Euro-rebate
12/18-9 rebate depth 20 mm

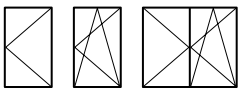
NOTE!
Clearance: 11 – 14 mm
Designo is preset to 12 mm bottom horizontal clearance!



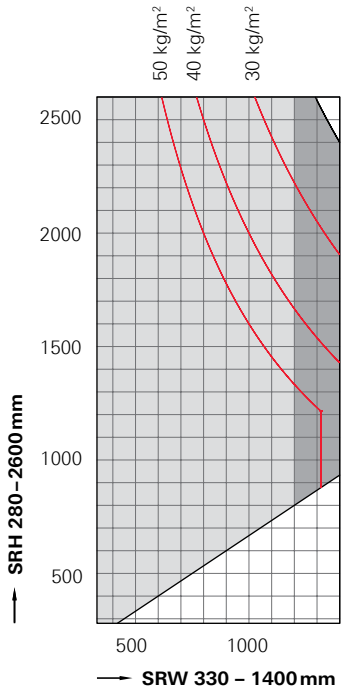
Sash profile cross section
Dimensional data for hardware

Application diagram

Hinge side NT Designo
Turn-Only/Tilt&Turn hardware for rectangular windows 80 kg



Limitation of sash formats depending on the glass thickness



Application range

Sash rebate width **SRW**..... 330 – 1400 mm
Sash rebate height **SRH**.....280 – 2600 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

= Additional scissor stay required

Application diagram

Hinge side NT Designo
Tilt&Turn hardware rectangular windows with drive-in sleeve from 80 – 130 kg

Limitation of sash formats depending on the glass thickness

Application range

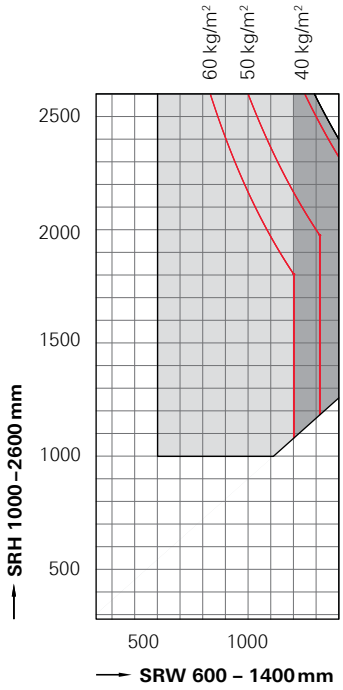
Sash rebate width **SRW**..... 600 – 1400 mm
Sash rebate height **SRH**.....1000 – 2600 mm
Sash weight **S.kg**..... max. 80 – 130 kg

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

= Additional scissor stay required



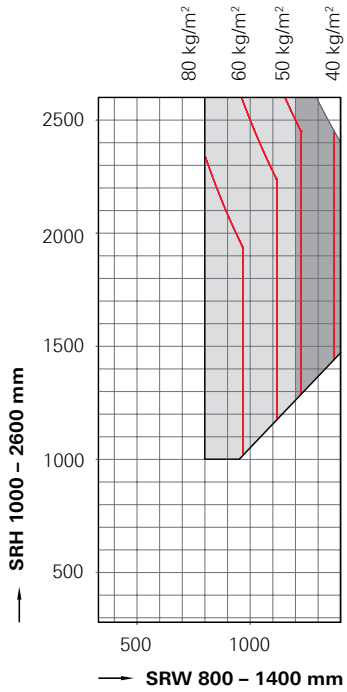
Please note:
When using the stay arm 350 and the sash weight is > 80 kg, set the stay arm's tilt restrictor to 80 mm.

Maximum sash weight for stay arm 350: 100 kg.

Application diagram

Hinge side NT Designo
Tilt&Turn hardware rectangular windows with load transfer device from 80 – 150 kg

Limitation of sash formats depending on the glass thickness



Application range

Sash rebate width **SRW**..... 800 – 1400 mm
Sash rebate height **SRH**.....1000 – 2600 mm
Sash weight **S.kg**..... max. 80 – 150 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

= Additional scissor stay required

Please note:
If the sash weight is > 130 kg, set the stay arm's tilt restrictor to 80 mm.

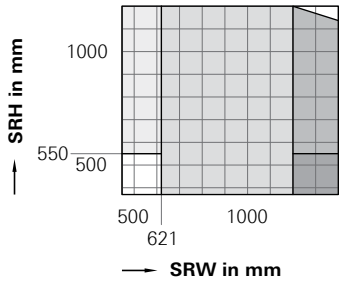
Application diagram

Hinge side NT Designo
Tilt-Only hardware for rectangular windows

Limitation of sash formats depending on the glass thickness

Application range

Sash rebate width **SRW**.....450 – 1400 mm
Sash rebate height **SRH**.....370 – 1200 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

 = 2 tilt-stays laterally

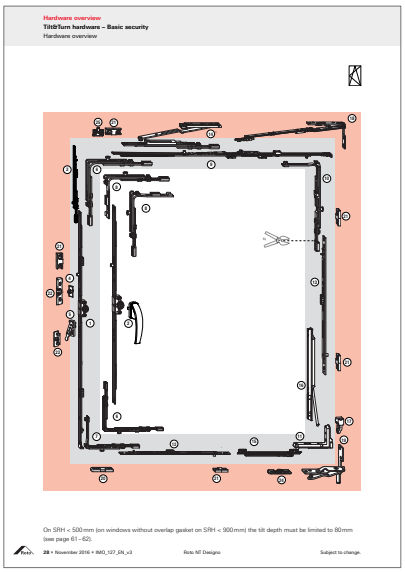
 = 1 tilt-stay on top

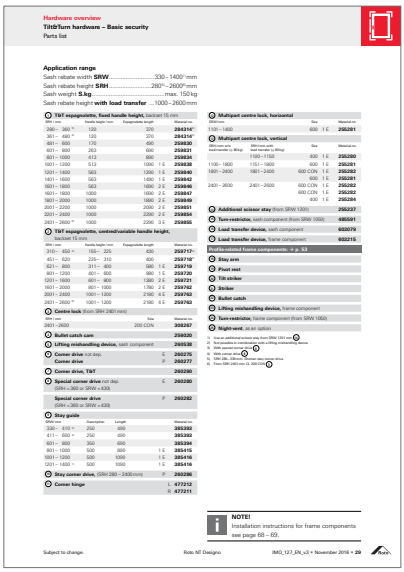
 = 2 tilt-stays laterally or on top

 = 2 tilt-stays on top

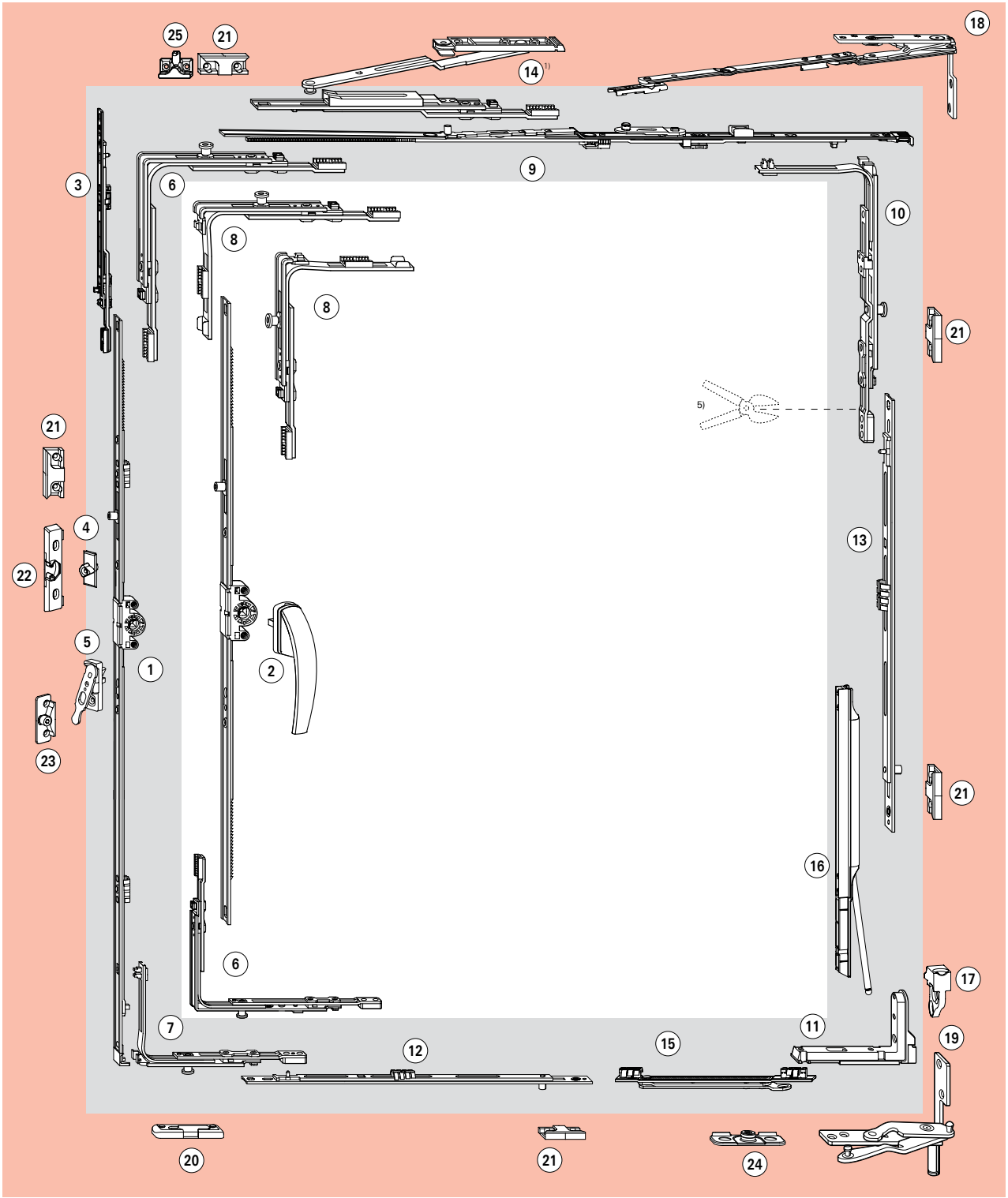
The hardware overviews on the following pages are recommendations of Roto Frank AG.

The hardware overview chapter shows on the left page the single hardware components in the hardware overview and on the right page the respective parts list.
Position numbers in surrounding circles allow the allocation between hardware overview and parts list.





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



On SRH < 500 mm (on windows without overlap gasket on SRH < 900 mm) the tilt depth must be limited to 80 mm (see page 61 – 62).

Application range

Sash rebate width **SRW**.....330 – 1400[1] mm
Sash rebate height **SRH**.....280[5] – 2600[6] mm
Sash weight **S.kg**.....max. 150 kg
Sash rebate height **with load transfer** ...1000 – 2600 mm

(1) T&T espagnolette, fixed handle height, backset 15 mm

SRH / mm	Handle height / mm	Espagnolette length		Material no.
280 – 360 [3]	120	370		**284314**[2]
361 – 480 [4]	120	370		**284314**[2]
481 – 600	170	490		**259830**
601 – 800	263	690		**259831**
801 – 1000	413	890		**259834**
1001 – 1200	513	1090	1 E	**259838**
1201 – 1400	563	1290	1 E	**259840**
1401 – 1600	563	1490	1 E	**259842**
1601 – 1800	563	1690	2 E	**259846**
1601 – 1800	1000	1690	2 E	**259847**
1801 – 2000	1000	1890	2 E	**259849**
2001 – 2200	1000	2090	2 E	**259851**
2201 – 2400	1000	2290	2 E	**259854**
2401 – 2600 [6]	1000	2290	3 E	**259855**

(2) T&T espagnolette, centred/variable handle height, backset 15 mm

SRH / mm	Handle height / mm	Espagnolette length		Material no.
310 – 450 [3]	155 – 225	430		**259717**[2]
451 – 620	225 – 310	400		**259718**[2]
621 – 800	311 – 400	580	1 E	**259719**
801 – 1200	401 – 600	980	1 E	**259720**
1201 – 1600	601 – 800	1380	2 E	**259721**
1601 – 2000	801 – 1000	1780	2 E	**259762**
2001 – 2400	1001 – 1200	2180	4 E	**259763**
2401 – 2600 [6]	1001 – 1200	2180	4 E	**259763**

(3) Centre lock (from SRH 2401 mm)

SRH / mm	Size	Material no.
2401 – 2600	200 CON	**308267**

(4) Bullet catch cam — **256020**

(5) Lifting mishandling device, sash component — **260538**

(6) Corner drive not dep. — E — **260275**
Corner drive — P — **260277**

(7) Corner drive, T&T — **260290**

(8) Special corner drive not dep. (SRH < 360 or SRW < 430) — E — **260280**
Special corner drive (SRH < 360 or SRW < 430) — P — **260282**

(9) Stay guide

SRW/mm	Description	Length		Material no.
330 – 410 [3]	250	490		**385393**
411 – 600 [4]	250	490		**385393**
601 – 800	350	690		**385394**
801 – 1000	500	890	1 E	**385415**
1001 – 1200	500	1090	1 E	**385416**
1201 – 1400 [1]	500	1090	1 E	**385416**

(10) Stay corner drive, (SRH 280 – 2400 mm) — P — **260286**

(11) Corner hinge — L — **477212**
R — **477211**

(12) Multipart centre lock, horizontal

SRW/mm	Size		Material no.
1101 – 1400	600	1 E	**255281**

(13) Multipart centre lock, vertical

SRH/mm w/o load transfer (≤ 80 kg)	SRH/mm with load transfer (≥ 80 kg)	Size		Material no.
	1100 – 1150	400	1 E	**255280**
1100 – 1800	1151 – 1800	600	1 E	**255281**
1801 – 2400	1801 – 2400	600 CON	1 E	**255282**
		600	1 E	**255281**
2401 – 2600	2401 – 2600	600 CON	1 E	**255282**
		600 CON	1 E	**255282**
		400	1 E	**255284**

(14) Additional scissor stay (from SRW 1201) — **255237**

(15) Turn-restrictor, sash component (from SRW 1050) — **485591**

(16) Load transfer device, sash component — **603079**

(17) Load transfer device, frame component — **603215**

Profile-related frame components: → p. 53

(18) Stay arm

(19) Pivot rest

(20) Tilt striker

(21) Striker

(22) Bullet catch

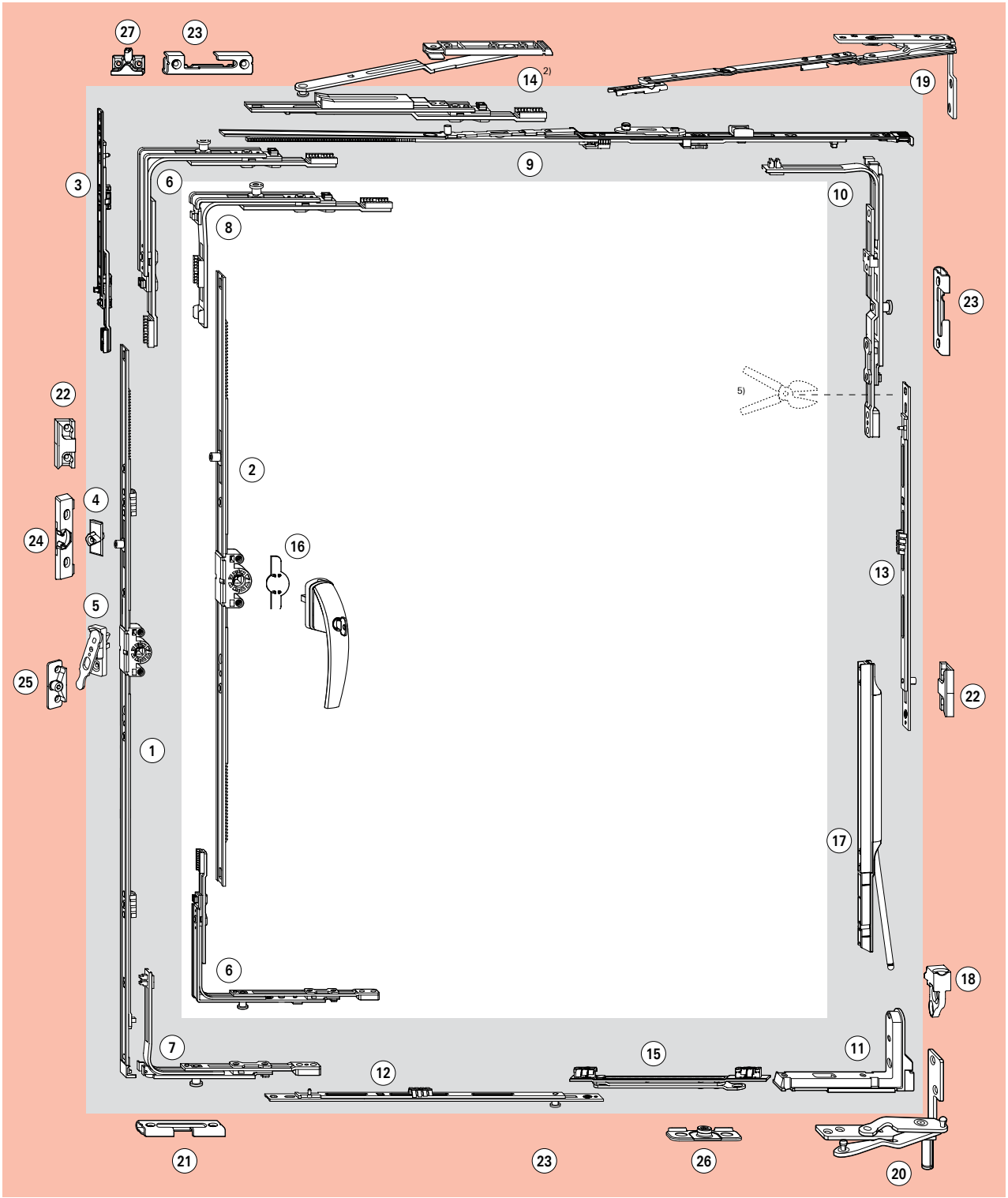
(23) Lifting mishandling device, frame component

(24) Turn-restrictor, frame component (from SRW 1050)

(25) Night-vent, as an option

1) Use an additional scissor stay from SRW 1201 mm (14)
2) Not possible in combination with a lifting mishandling device
3) With special corner drive (8)
4) With corner drive (6)
5) SRH 280 – 330 mm: Shorten stay corner drive
6) From SRH 2401 mm CL 200 CON (3)

NOTE!
Installation instructions for frame components see page 68 – 69.



On SRH < 500 mm (on windows without overlap gasket on SRH < 900 mm) the tilt depth must be limited to 80 mm (see page 61 – 62).

Application range

Sash rebate width **SRW**.....430 – 1400[1] mm
Sash rebate height **SRH**.....280[5] – 2600[6] mm
Sash weight **S.kg**.....max. 150 kg
Sash rebate height **with load transfer** ...1000 – 2600 mm

(1) T&T espagnolette, fixed handle height, backset 15 mm

SRH / mm	Handle height / mm	Espagnolette length		Material no.
280 – 360 [3]	120	370		**284314**[2]
361 – 480 [4]	120	370		**284314**[2]
481 – 600	170	490		**259830**
601 – 800	263	690		**259831**
801 – 1000	413	890		**259834**
1001 – 1200	513	1090	1 E	**259838**
1201 – 1400	563	1290	1 E	**259840**
1401 – 1600	563	1490	1 E	**259842**
1601 – 1800	563	1690	2 E	**259846**
1601 – 1800	1000	1690	2 E	**259847**
1801 – 2000	1000	1890	2 E	**259849**
2001 – 2200	1000	2090	2 E	**259851**
2201 – 2400	1000	2290	2 E	**259854**
2401 – 2600 [6]	1000	2290	3 E	**259855**

(2) T&T espagnolette, centred/variable handle height, backset 15 mm

SRH / mm	Handle height / mm	Espagnolette length		Material no.
310 – 450 [3]	155 – 225	430		**259717**[2]
451 – 620	225 – 310	400		**259718**[2]
621 – 800	311 – 400	580	1 E	**259719**
801 – 1200	401 – 600	980	1 E	**259720**
1201 – 1600	601 – 800	1380	2 E	**259721**
1601 – 2000	801 – 1000	1780	2 E	**259762**
2001 – 2400	1001 – 1200	2180	4 E	**259763**
2401 – 2600 [6]	1001 – 1200	2180	4 E	**259763**

(3) Centre lock (from SRH 2401 mm)

SRH / mm	Size	Material no.
2401 – 2600	200 CON	**308267**

(4) Bullet catch cam — **256020**

(5) Lifting mishandling device, sash component — **260538**

(6) Corner drive — P **260277**

(7) Corner drive, T&T — P **260290**

(8) Special corner drive (SRH < 360) — P **260282**

(9) Stay guide

SRW/mm	Description	Length		Material no.
430 – 600	250	490		**385393**
601 – 800	350	690		**385394**
801 – 1000	500	890	1 E	**385415**
1001 – 1200	500	1090	1 E	**385416**
1201 – 1400 [1]	500	1090	1 E	**385416**

(10) Stay corner drive, (SRH 280 – 2400 mm) — P **260286**

(11) Corner hinge — L **477212**, R **477211**

(12) Multipart centre lock, horizontal

SRW/mm	Size		Material no.
430 650	200	1 P	**255284**
651 850	400	1 P	**255285**
851 – 1250	600	1 P	**255286**
1251 – 1400	600 CON	1 E	**255282**
	200	1 P	**255284**

(13) Multipart centre lock, vertical

SRH/mm w/o load transfer (≤ 80 kg)	SRH/mm with load transfer (≥ 80 kg)	Size		Material no.
	1100 – 1150	400	1 E	**255280**
1100 – 1800	1151 – 1800	600	1 E	**255281**
1801 – 2400	1801 – 2400	600 CON	1 E	**255282**
		600	1 E	**255281**
2401 – 2600	2401 – 2600	600 CON	1 E	**255282**
		600 CON	1 E	**255282**
		400	1 E	**255280**

(14) Additional scissor stay (from SRW 1201) — **255237**

(15) Turn-restrictor, sash component (from SRW 1050) — **485591**

(16) Drilling protection — **627343**

(17) Load transfer device, sash component — **603079**

(18) Load transfer device, frame component — **603215**

Profile-related frame components: → p. 53

(19) Stay arm

(20) Pivot rest

(21) Tilt striker

(22) Striker

(23) Security striker

(24) Bullet catch

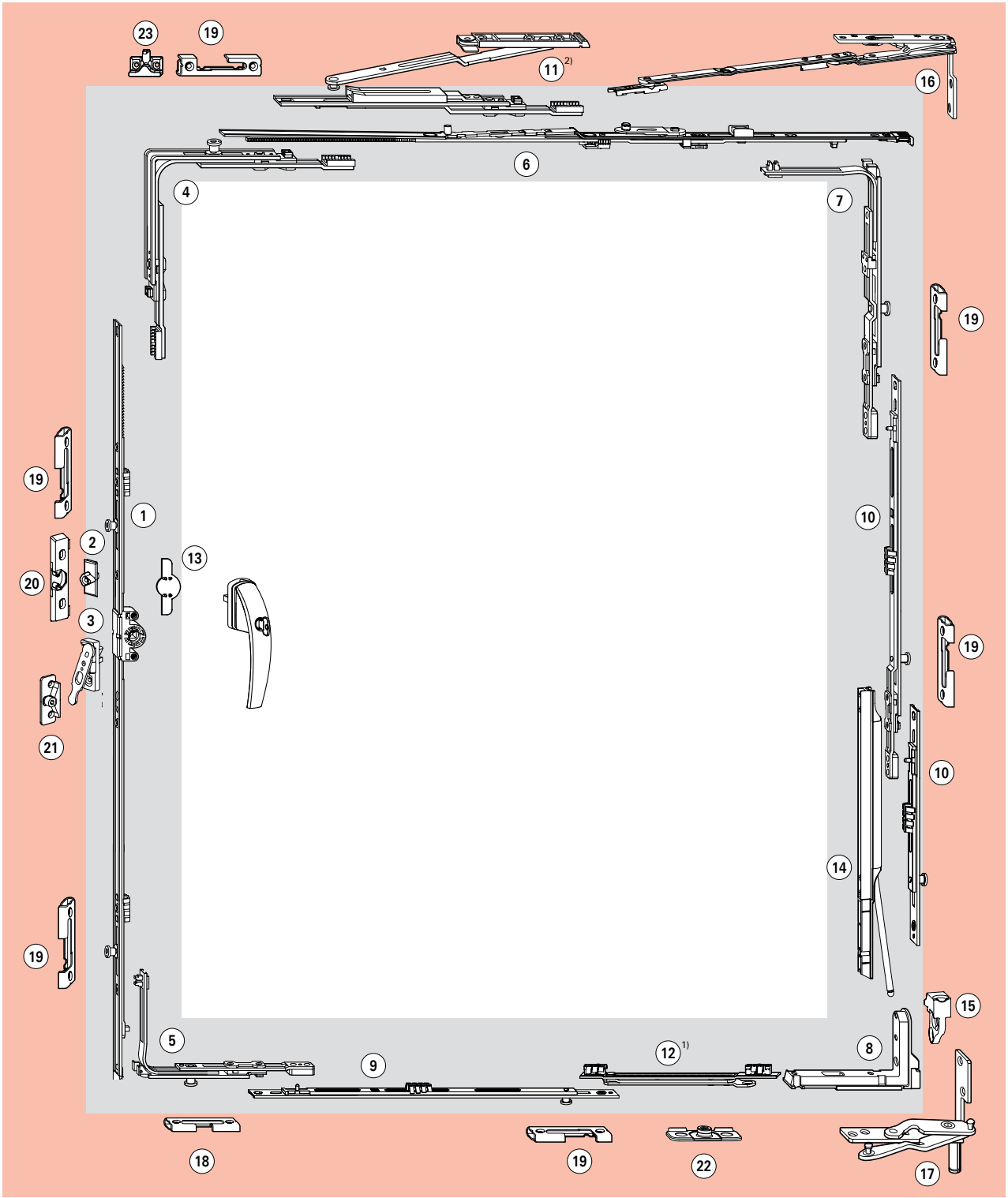
(25) Lifting mishandling device, frame component

(26) Turn-restrictor, frame component (from SRW 1050)

(27) Night-vent, as an option

1) Use an additional scissor stay from SRW 1201 mm (14)
2) Not possible in combination with a lifting mishandling device
3) With special corner drive (8)
4) With corner drive (6)
5) SRH 280 – 330 mm: Shorten stay corner drive
6) On SRH 2401 mm CL 200 CON (3)

NOTE!
Installation instructions for frame components see page 70 – 71.



On SRH < 500 mm (on windows without overlap gasket on SRH < 900 mm) the tilt depth must be limited to 80 mm (see page 61 – 62).

Application range

Sash rebate width **SRW**.....430–1400[1] mm
Sash rebate height **SRH**.....490–2400 mm
Sash weight **S.kg**.....max. 150 kg
Sash rebate height **with load transfer** ...1000–2400 mm

① T&T espagnolette, fixed handle height, backset 15 mm

SRH / mm	Handle height / mm	Espagnolette length		Material no.
490– 600	170	490	1 V	**259830**
601– 800	263	690	1 V	**259832**
801– 1000	413	890	1 V	**259835**
1001– 1200	513	1090	1 V	**259837**
1201– 1400	563	1290	1 V	**259839**
1401– 1600	563	1490	1 V	**259841**
1601– 1800	563	1690	1 V	**259844**
1601– 1800	1000	1690	1 V	**259845**
1801– 2000	1000	1890	1 V	**259848**
2001– 2200	1000	2090	1 V	**259850**
2201– 2400	1000	2290	1 V	**259853**

② Bullet catch cam — 256020

③ Lifting mishandling device, sash component — 260538

④ Corner drive — V — 260272

⑤ Corner drive, T&T — V — 260288

⑥ Security stay guide

SRW/mm	Description	Length		Material no.
430– 600	250	490		**385393**
601– 800	350	690		**385394**
801– 1000	500	890	1 V	**385373**
1001– 1200	500	1090	1 V	**385374**
1201– 1400 [1]	500	1090	1 V	**385374**

⑦ Stay corner drive — V — 260284

⑧ Corner hinge

L		**477212**
R		**477211**

⑨ Multipart centre lock, horizontal

SRW/mm	Size		Material no.
430– 650	200	1 V	**296853**
651– 850	400	1 V	**296854**
851– 1200	600	1 V	**296855**
1251– 1400	600 CON	1 V	**337711**
	200	1 V	**296853**

⑩ Multipart centre lock, vertical

SRH/mm w/o load transfer (≤ 80 kg)	SRH/mm with load transfer (≥ 80 kg)	Size		Material no.
490– 700		200	1 V	**296853**
701– 900	1000–1200	400	1 V	**296854**
901– 1100	1201–1400	600	1 V	**296855**
1101– 1300	1401–1600	600 CON	1 V	**337711**
		200	1 V	**296853**
1301– 1500	1601–1800	600 CON	1 V	**337711**
		400	1 V	**296854**
1501– 1700	1801–2000	600 CON	1 V	**337711**
		600	1 V	**296855**
1701– 1900	2001–2200	600 CON	1 V	**337711**
		600 CON	1 V	**337711**
		200	1 V	**296853**
1901– 2100	2201–2400	600 CON	1 V	**337711**
		600 CON	1 V	**337711**
		400	1 V	**296854**
2101– 2300		600 CON	1 V	**337711**
		600 CON	1 V	**337711**
		600	1 V	**296855**
2301– 2400		600 CON	1 V	**337711**
		600 CON	1 V	**337711**
		600 CON	1 V	**337711**
		200	1 V	**296853**

⑪ Additional scissor stay (from SRW 1201) — 255237

⑫ Turn-restrictor, sash component (from SRW 1050) — 485591

⑬ Drilling protection — 627343

⑭ Load transfer device, sash component — 603079

⑮ Load transfer device, frame component — 603215

Profile-related frame components: → p. 53

⑯ Stay arm

⑰ Pivot rest

⑱ Tilt striker

⑲ Security striker

⑳ Bullet catch

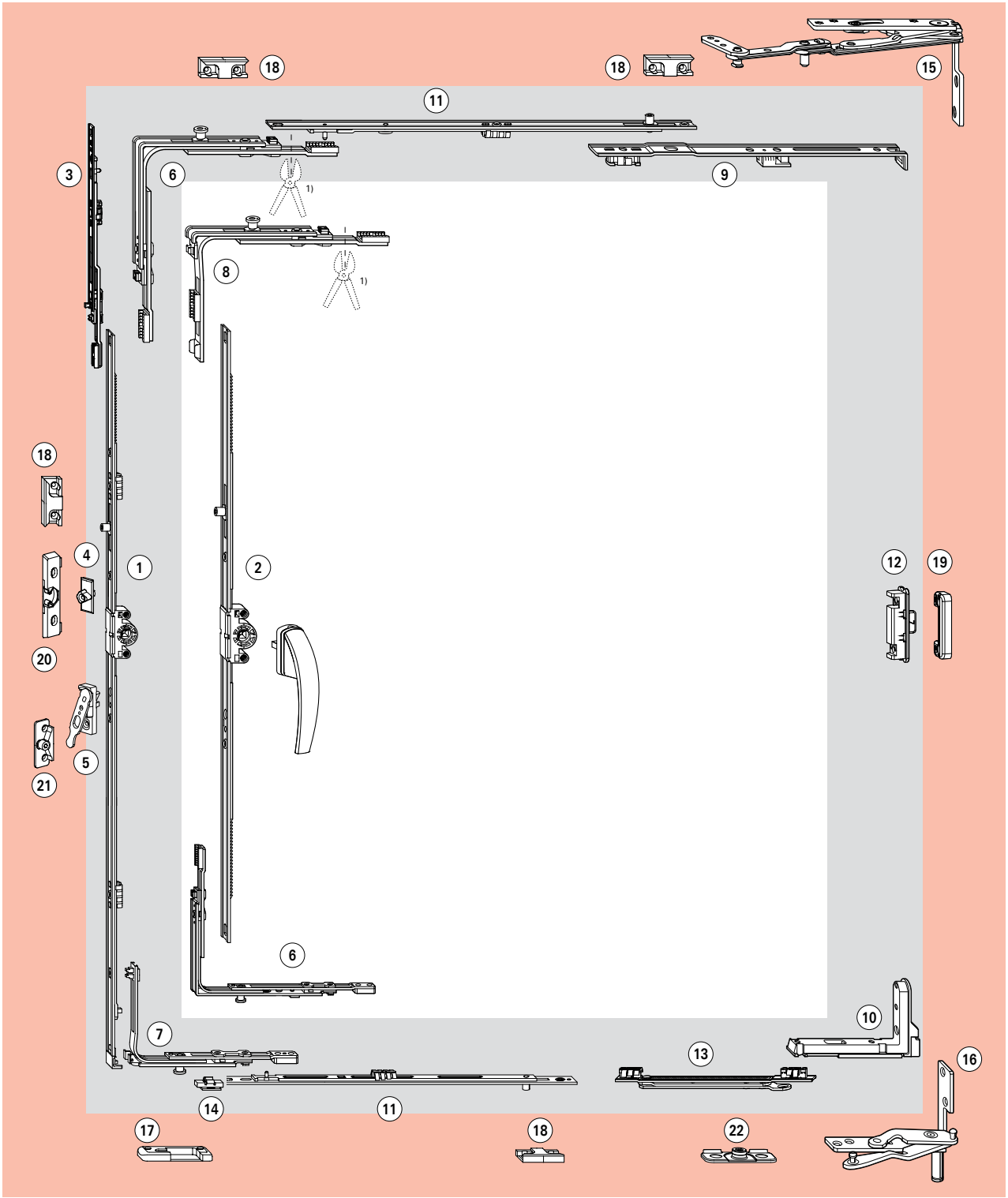
㉑ Lifting mishandling device, frame component

㉒ Turn-restrictor, frame component (from SRW 1050)

㉓ Night-vent, as an option

1) Use an additional scissor stay from SRW 1201 mm ⑪

NOTE!
Installation instructions for frame components see page 72.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Application range

Sash rebate width **SRW**.....350[1] – 1400 mm
Sash rebate height **SRH**.....280 – 2600[5] mm
Sash weight **S.kg**.....max. 80 kg
Sash rebate height **with load transfer** ...1000 – 2600 mm

(1) T&T espagnolette, fixed handle height, backset 15 mm

SRH / mm	Handle height / mm	Espagnolette length		Material no.
280 – 360 [3]	120	370		**284314**[2]
361 – 480 [4]	120	370		**284314**[2]
481 – 600	170	490		**259830**
601 – 800	263	690		**259831**
801 – 1000	413	890		**259834**
1001 – 1200	513	1090	1 E	**259838**
1201 – 1400	563	1290	1 E	**259840**
1401 – 1600	563	1490	1 E	**259842**
1601 – 1800	563	1690	2 E	**259846**
1601 – 1800	1000	1690	2 E	**259847**
1801 – 2000	1000	1890	2 E	**259849**
2001 – 2200	1000	2090	2 E	**259851**
2201 – 2400	1000	2290	2 E	**259854**
2401 – 2600 [5]	1000	2290	3 E	**259855**

(2) T&T espagnolette, centred/variable handle height, backset 15 mm

SRH / mm	Handle height / mm	Espagnolette length		Material no.
310 – 450 [3]	155 – 225	430		**259717**[2]
451 – 620	225 – 310	400		**259718**[2]
621 – 800	311 – 400	580	1 E	**259719**
801 – 1200	401 – 600	980	1 E	**259720**
1201 – 1600	601 – 800	1380	2 E	**259721**
1601 – 2000	801 – 1000	1780	2 E	**259762**
2001 – 2400	1001 – 1200	2180	4 E	**259763**
2401 – 2600 [5]	1001 – 1200	2180	4 E	**259763**

(3) Centre lock (from SRH 2401 mm)

SRH / mm	Size	Material no.
2401 – 2600	200 CON	**308267**

(4)	**Bullet catch cam**		**256020**
(5)	**Lifting mishandling device,** sash component		**260538**
(6)	**Corner drive** not dep.	E	**260275**
	Corner drive	P	**260277**
(7)	**Corner drive, T&T**		**260290**
(8)	**Special corner drive** not dep. (SRH < 360 or SRW < 450)	E	**260280**
	Special corner drive (SRH < 360 or SRW < 450)	P	**260282**
(9)	**Sash-component for rebate hinge**		**477255**
(10)	**Corner hinge**	L	**477212**
		R	**477211**

(11) Multipart centre lock, horizontal

SRW / mm	Size		Material no.
1101 – 1400	600	1 E	**255281**

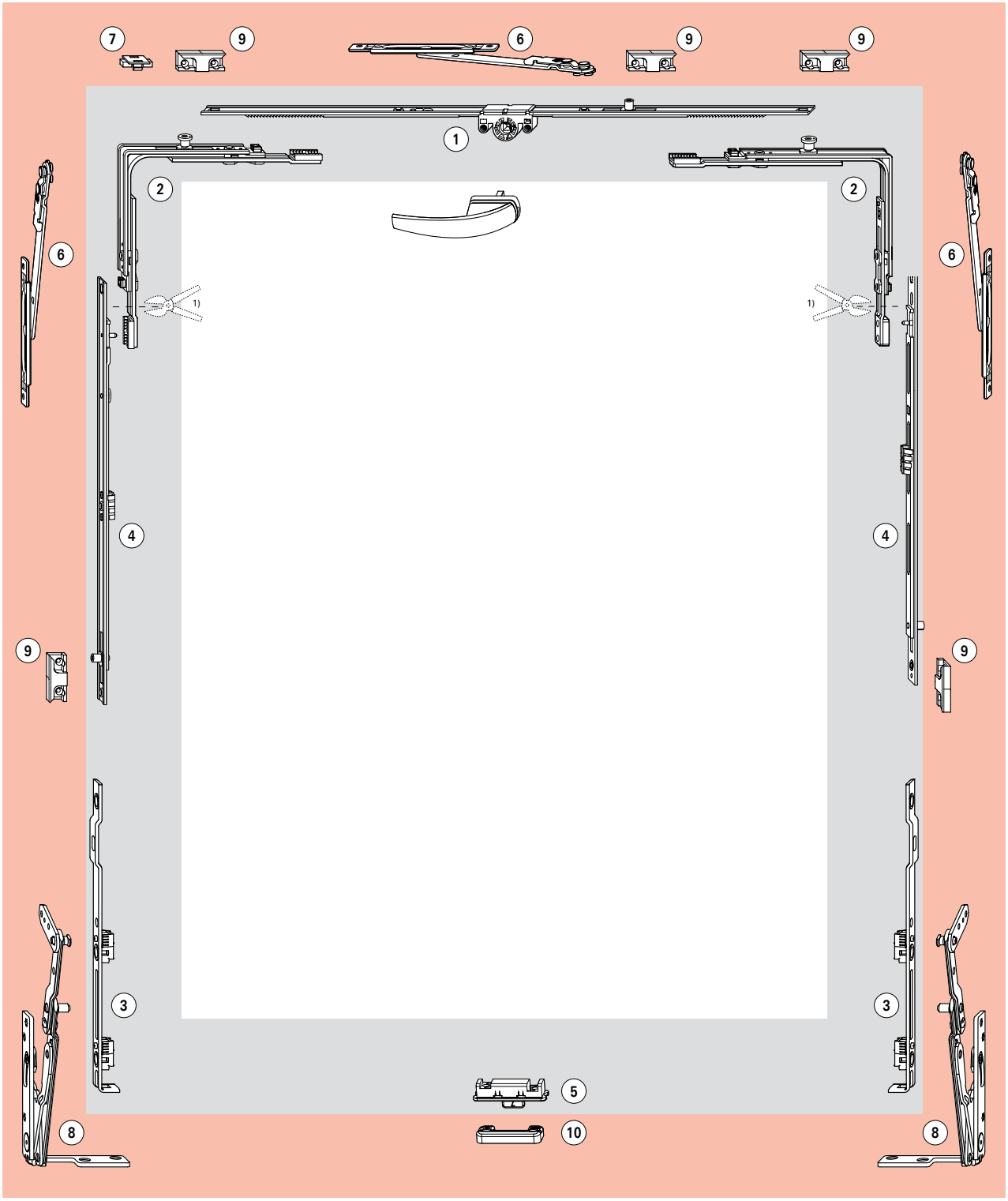
(12)	**Centre-closer, concealed,** sash component	**450984**
(13)	**Turn-restrictor,** sash component (from SRW 1050)	**485591**
(14)	**90° travel restrictor**	**264603**

Profile-related frame components: → p. 53

(15)	**Rebate-hinge arm**
(16)	**Pivot rest**
(17)	**Security striker**
(18)	**Striker**
(19)	**Centre-closer, concealed,** frame component
(20)	**Bullet catch**
(21)	**Lifting mishandling device,** frame component
(22)	**Turn-restrictor,** frame component (from SRW 1050)

1) SRH 350 – 410 mm: Shorten corner drive on top
2) Not possible in combination with a lifting mishandling device
3) With special corner drive (8)
4) With corner drive (6)
5) From SRH 2401 mm CL 200 CON (3)

NOTE!
Installation instructions for frame components see page 74 – 75.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Application range

Sash rebate width **SRW** ..... 450[2] – 1400 mm
Sash rebate height **SRH** ..... 370[1),3)] – 1200 mm
Sash weight **S.kg** ..... max. 80 kg

① T&T espagnolette, centred/variable handle height, backset 15 mm

SRH / mm	Espagnolette length		Material no.
451 – 620	400		**259718**
621 – 800	580	1 E	**259719**
801 – 1200	980	1 E	**259720**
1201 – 1400	1380	2 E	**259721**

②	**Corner drive** not dep.	E	**260275**
	Corner drive	P	**260277**
③	**Sash-component for rebate hinge**		**477255**

④ Multipart centre lock, vertical

SRW/mm	Size		Material no.
801 – 1200	400	1 E	**255280**

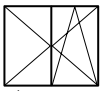
⑤	**Centre-closer, concealed,** sash component	**450984**
⑥	**Tilt-stay**	**482823**
⑦	**90° travel restrictor**	**264603**

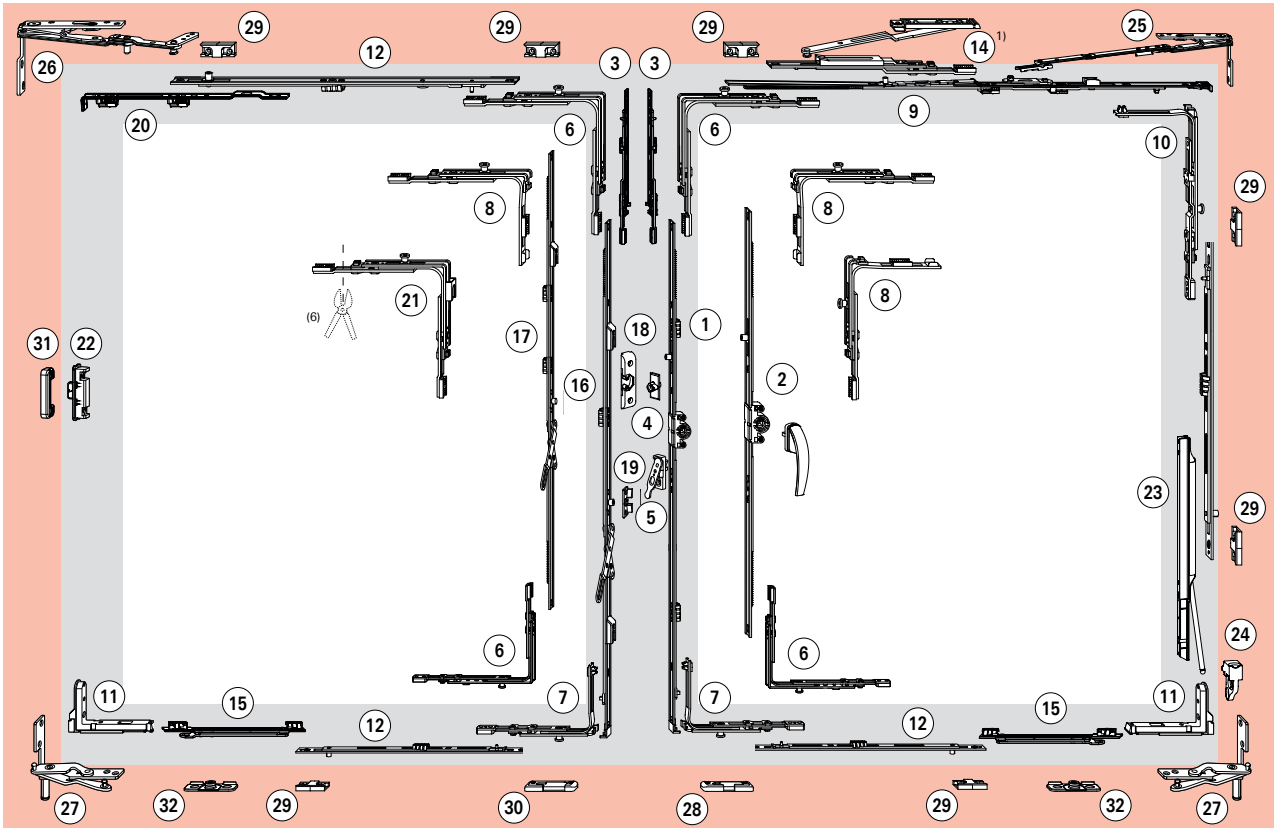
Profile-related frame components: → p. 53

⑧	**Rebate-hinge arm**	
⑨	**Striker**	
⑩	**Centre-closer, concealed,** frame component	

1) SRH 370 – 410 mm: Shorten corner drive
2) SRW 450 – 620 mm only from SRH 500
3) SRH 370 – 500 mm only from SRW 621

NOTE!
Installation instructions for frame components see page 76.





On SRH < 500 mm (on windows without overlap gasket on SRH < 900 mm) the tilt depth must be limited to 80 mm (see page 61 – 62).

Application range

Sash rebate width **SRW**.....350[6] – 1400[1] mm
Sash rebate height **SRH**.....430 – 2600[7] mm
Sash weight.....max. 150 kg
Sash rebate height **with load transfer** ....1000 – 2600 mm

(1) T&T espagnolette, fixed handle height, backset 15 mm[6]

SRH / mm	Handle height / mm	Espagnolette length		Material no.
430 – 480 [4]	120	370		**284314**[2]
481 – 600	170	490		**259830**
601 – 800	263	690		**259831**
801 – 1000	413	890		**259834**
1001 – 1200	513	1090	1 E	**259838**
1201 – 1400	563	1290	1 E	**259840**
1401 – 1600	563	1490	1 E	**259842**
1601 – 1800	563	1690	1 E	**259846**
1601 – 1800	1000	1690	2 E	**259847**
1801 – 2000	1000	1890	2 E	**259849**
2001 – 2200	1000	2090	2 E	**259851**
2201 – 2400	1000	2290	2 E	**259854**
2401 – 2600 [7]	1000	2290	3 E	**259855**

(2) T&T espagnolette, centred/variable handle height, backset 15 mm

SRH / mm	Handle height / mm	Espagnolette length		Material no.
430 – 450 [3]	155 – 225	430		**259717**[2]
451 – 620	225 – 310	400		**259718**[2]
621 – 800	311 – 400	580	1 E	**259719**
801 – 1200	401 – 600	980	1 E	**259720**
1201 – 1600	601 – 800	1380	2 E	**259721**
1601 – 2000	801 – 1000	1780	2 E	**259762**
2001 – 2400	1001 – 1200	2180	4 E	**259763**
2401 – 2600 [7]	1001 – 1200	2180	4 E	**259763**

(3) Centre lock (from SRH 2401 mm)

SRH / mm	Size	Material no.
2401 – 2600	200 CON	**308267**

(4) Bullet catch cam — **256020**

(5) Lifting mishandling device, sash component — **260538**

(6) Corner drive not dep. — E **260275**
Corner drive — P **260277**

(7) Corner drive, T&T — **260290**

(8) Special corner drive — E **260280**
(SRH < 500 mm or SRW < 430 mm) (not dep.)

Special corner drive — P **260282**
(SRH < 500 mm or SRW < 430 mm)

(9) Stay guide

SRW / mm	Description	Length		Material no.
350 – 430 [3]	250	490		**385393**
431 – 600 [4]	250	490		**385393**
601 – 800	350	690		**385394**
801 – 1000	500	890	1 E	**385415**
1001 – 1200	500	1090	1 E	**385416**
1201 – 1400 [1]	500	1090	1 E	**385416**

(10) Stay corner drive, (SRH 430 – 2400 mm) — P **260286**

(11) Corner hinge — L **477212**
R **477211**

(12) Multipart centre lock, horizontal

SRW / mm	Size		Material no.
1101 – 1400	600	1 E	**255281**

(13) Multipart centre lock, vertical

SRH / mm w/o load transfer (≤ 80 kg)	SRH / mm with load transfer (≥ 80 kg)	Size		Material no.
	1100 – 1150	400	1 E	**255280**
1100 – 1800	1151 – 1800	600	1 E	**255281**
1801 – 2400	1801 – 2400	600 CON	1 E	**255282**
		600	1 E	**255281**
2401 – 2600	2401 – 2600	600 CON	1 E	**255282**
		600 CON	1 E	**255282**
		400	1 E	**255280**

(14) Additional scissor stay (from SRW 1201) — **255237**

(15) Turn-restrictor, sash component (from SRW 1050) — **485591**

(16) Lever-operated espagnolette, fixed lever-height [5]

SRH / mm	Lever position	Length	Material no.
430 – 500 [3]	195	490	**233408**
501 – 600 [4]	195	490	**233408**
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**
1801 – 2000	640	1380	**296074**
2001 – 2200	640	1780	**296075**
2201 – 2400	640	2180	**296076**
2401 – 2600 [7]	640	2180	**296076**

(17) Lever-operated espagnolette, centred/variable lever-height [5]

SRH / mm	Lever position	Length	Material no.
430 – 520 [3]	225 – 350	400	**233418**[2]
521 – 620 [4]	225 – 350	400	**233418**[2]
621 – 650 [3]	393 – 482	680	**233419**
651 – 800 [4]	393 – 482	680	**233419**
801 – 1200	482 – 682	980	**233420**
1201 – 1600	448 – 658	1380	**290912**
1601 – 2000	680 – 890	1780	**296146**
2001 – 2400	880 – 1090	2180	**296147**
2401 – 2600 [7]	880 – 1090	2180	**296147**

(18) Bullet catch for lever-operated espagnolette — **385031**

(19) Lifting mishandling device — **257600**
Stop for lever-operated espagnolette

(20) Sash-component for rebate hinge — **477255**

(21) Corner drive with security striker — **313538**
(SRW < 430 mm)

(22) Centre-closer, concealed, sash component — **450984**

(23) Load transfer device, sash component — **603079**

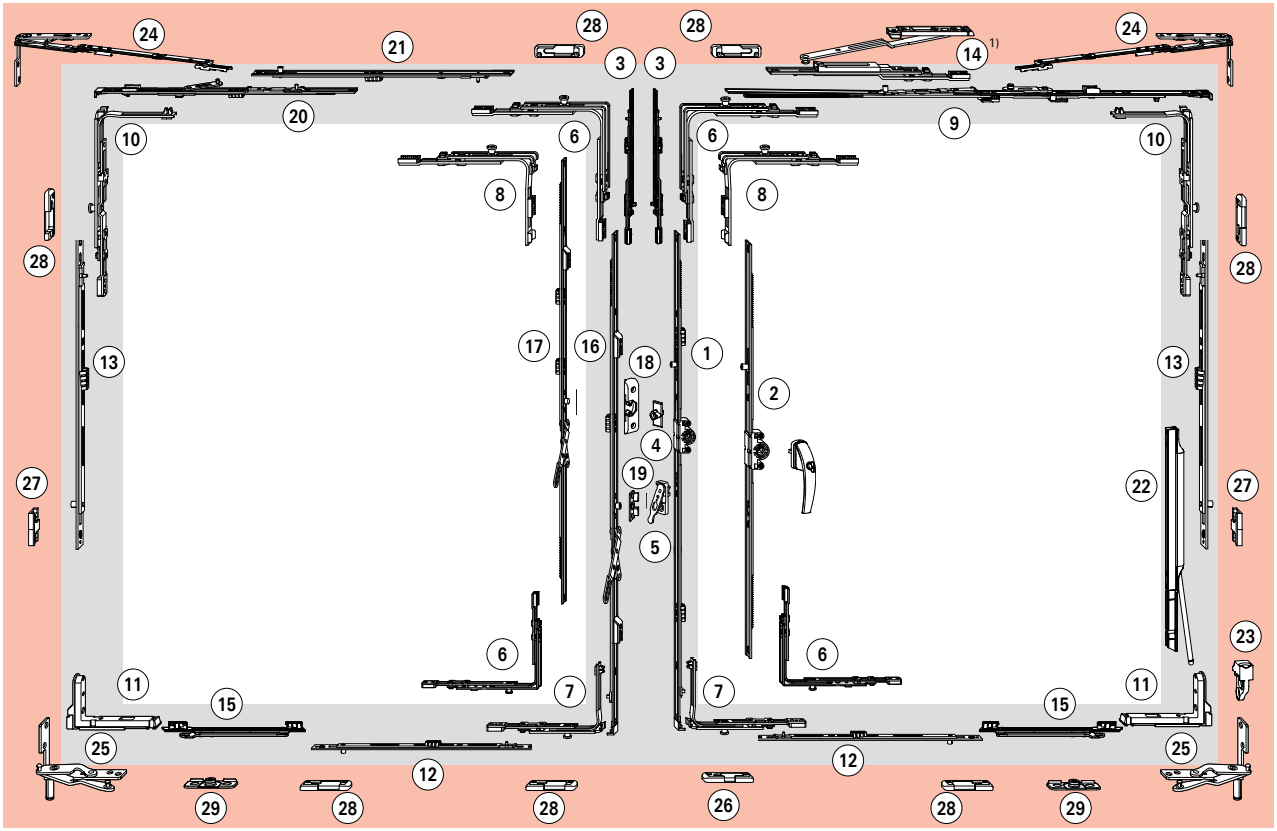
(24) Load transfer device, frame component — **603215**

Profile-related frame components: → p. 53
(28) **Stay arm**
(28) **Rebate-hinge arm**
(28) **Pivot rest**
(28) **Tilt striker**
(29) **Striker**
(30) **Security striker**
(31) **Centre-closer, concealed,** frame component
(32) **Turn-restrictor,** frame component (from SRW 1050)

1) Use an additional scissor stay from SRW 1201 mm (14)
2) Not possible in combination with a lifting mishandling device
3) With special corner drive (8)
4) With corner drive (6)
5) When using the lever-operated espagnolette on the right hand side, turn the eccentric cam 180°
6) SRW 350–410 mm: Shorten corner drive on top
7) From SRH 2401 mm CL 200 CON (3)

NOTE!
Installation instructions for frame components see page 77.

w/o centre post



On SRH < 500 mm (on windows without overlap gasket on SRH < 900 mm) the tilt depth must be limited to 80 mm (see page 61 – 62).

Application range

Sash rebate width **SRW**.....430 – 1400[1] mm
Sash rebate height **SRH**.....450 – 2600[5] mm
Sash weight.....max. 150 kg
Sash rebate height **with load transfer** ....1000 – 2600 mm

① T&T espagnolette, fixed handle height, backset 15 mm[6]

SRH / mm	Handle height / mm	Espagnolette length		Material no.
450 – 480 [4]	120	370		**284314**[2]
481 – 600	170	490		**259830**
601 – 800	263	690		**259831**
801 – 1000	413	890		**259834**
1001 – 1200	513	1090	1 E	**259838**
1201 – 1400	563	1290	1 E	**259840**
1401 – 1600	563	1490	2 E	**259842**
1601 – 1800	563	1690	2 E	**259846**
1601 – 1800	1000	1690	2 E	**259847**
1801 – 2000	1000	1890	2 E	**259849**
2001 – 2200	1000	2090	2 E	**259851**
2201 – 2400	1000	2290	2 E	**259854**
2401 – 2600 [5]	1000	2290	3 E	**259855**

② T&T espagnolette, centred/variable handle height, backset 15 mm

SRH / mm	Handle height / mm	Espagnolette length		Material no.
450 – 620	225 – 310	400		**259718**[2]
621 – 800	311 – 400	580	1 E	**259719**
801 – 1200	401 – 600	980	1 E	**259720**
1201 – 1600	601 – 800	1380	2 E	**259721**
1601 – 2000	801 – 1000	1780	2 E	**259762**
2001 – 2400	1001 – 1200	2180	4 E	**259763**
2401 – 2600 [5]	1001 – 1200	2180	4 E	**259763**

③ Centre lock (from SRH 2401 mm)

SRH / mm	Size	Material no.
2401 – 2600	200 CON	**308267**

④ Bullet catch cam — **256020**

⑤ Lifting mishandling device, sash component — **260538**

⑥ Corner drive — P **260277**

⑦ Corner drive, T&T — P **260290**

⑧ Special corner drive (SRH < 500 mm) (not dep.) — E **260280**

Special corner drive (SRH < 500 mm) (not dep.) — P **260282**

⑨ Stay guide

SRW / mm	Description	Length		Material no.
430 – 600	250	490		**385393**
601 – 800	350	690		**385394**
801 – 1000	500	890	1 E	**385415**
1001 – 1200	500	1090	1 E	**385416**
1201 – 1400 [1]	500	1090	1 E	**385416**

⑩ Stay corner drive — P **260286**

⑪ Corner hinge — L **477212**, R **477211**

⑫ Multipart centre lock, horizontal

SRW / mm	Size		Material no.
450 – 650	200	1 P	**255284**
651 – 850	400	1 P	**255285**
851 – 1250	600	1 P	**255286**
1251 – 1400	600 CON	1 E	**255282**
	200	1 P	**255284**

⑬ Multipart centre lock, vertical

SRH / mm w/o load transfer (≤ 80 kg)	SRH / mm with load transfer (≥ 80 kg)	Size		Material no.
	1100 – 1150	400	1 E	**255280**
1100 – 1800	1151 – 1800	600	1 E	**255281**
1801 – 2400	1801 – 2400	600 CON	1 E	**255282**
		600	1 E	**255281**
2401 – 2600	2401 – 2600	600 CON	1 E	**255282**
		600 CON	1 E	**255282**
		400	1 E	**255280**

⑭ Additional scissor stay (from SRW 1201) — **255237**

⑮ Turn-restrictor, sash component (from SRW 1050) — **485591**

⑯ Lever-operated espagnolette, fixed lever-height [5]

SRH / mm	Lever position	Length	Material no.
450 – 500 [3]	195	490	**233408**
501 – 600 [4]	195	490	**233408**
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**
1801 – 2000	640	1380	**296074**
2001 – 2200	640	1780	**296075**
2201 – 2400	640	2180	**296076**
2401 – 2600 [5]	640	2180	**296076**

⑰ Lever-operated espagnolette, centred/variable lever-height [5]

SRH / mm	Lever position	Length	Material no.
450 – 520 [3]	225 – 350	400	**233418**[2]
521 – 620 [4]	225 – 350	400	**233418**[2]
621 – 650 [3]	393 – 482	680	**233419**
651 – 800 [4]	393 – 482	680	**233419**
801 – 1200	482 – 682	980	**233420**
1201 – 1600	448 – 658	1380	**290912**
1601 – 2000	680 – 890	1780	**296146**
2001 – 2400	880 – 1090	2180	**296147**
2401 – 2600 [5]	880 – 1090	2180	**296147**

⑱ Bullet catch for lever-operated espagnolette — **385031**

⑲ Lifting mishandling device — **257600**
Stop for lever-operated espagnolette

⑳ Turn-Only stay guide

SRW / mm	Description	Length	Material no.
430 – 500	250	490	**482571**
501 – 1400	250	600	**473381**

㉑ Multipart centre lock, top horizontal

SRW / mm	Size		Material no.
511 – 710			–
711 – 910	200 CON		**308267**
911 – 1110	400 CON	1 E	**280346**
1111 – 1310	600 CON	1 E	**255282**
1311 – 1400	600 CON	1 E	**255282**
	200 CON		**308267**

㉒ Load transfer device, sash component — **603079**

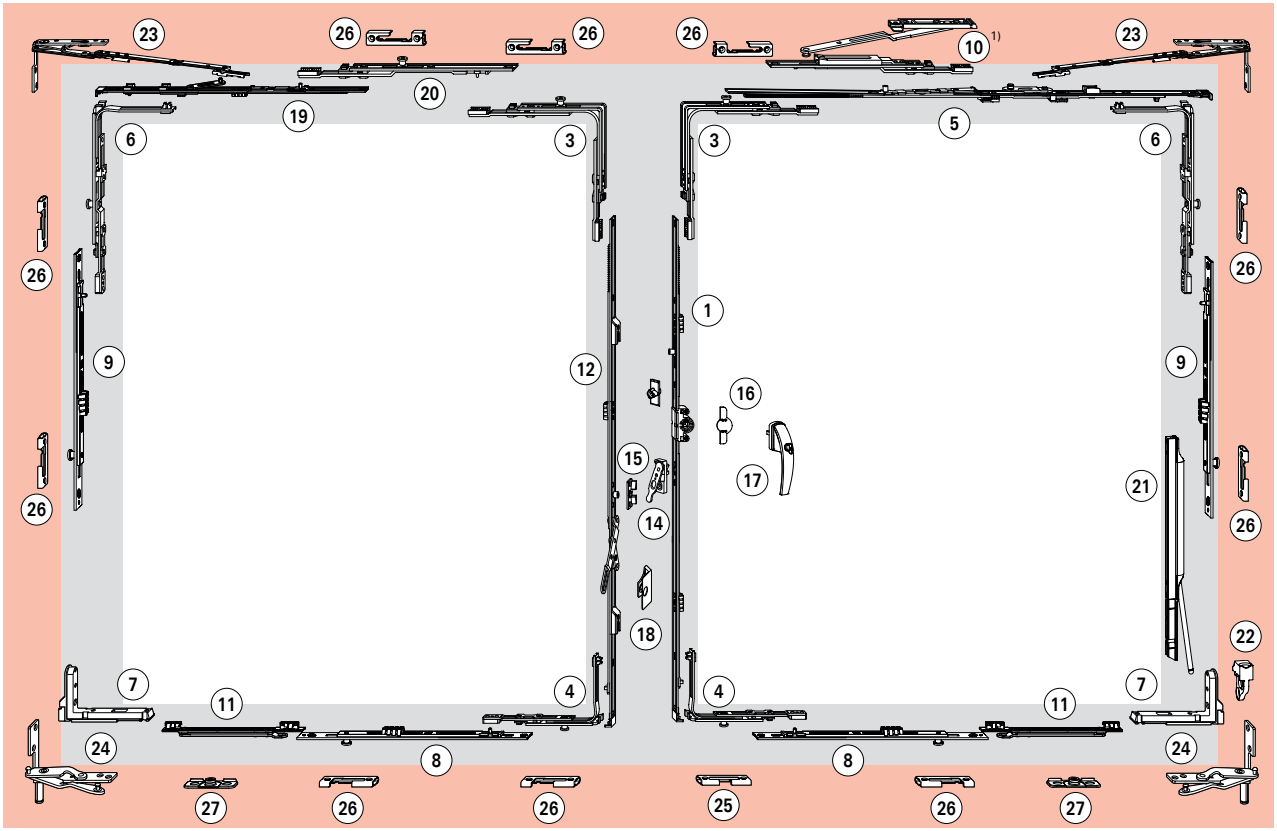
㉓ Load transfer device, frame component — **603215**

Profile-related frame components: → p. 53

- (24) **Stay arm**
- (25) **Pivot rest**
- (26) **Tilt striker**
- (27) **Striker**
- (28) **Security striker**
- (29) **Turn-restrictor,** frame component (from SRW 1050)

1) Use an additional scissor stay from SRW 1201 mm (13)
2) Not possible in combination with a lifting mishandling device
3) With special corner drive (7)
4) With corner drive (5)
5) From SRH 2401 mm CL 200 CON (3)

NOTE!
Installation instructions for frame components see page 78.



On SRH < 500 mm (on windows without overlap gasket on SRH < 900 mm) the tilt depth must be limited to 80 mm (see page 61 – 62).

Application range

Sash rebate width **SRW**.....430–1400[1] mm
Sash rebate height **SRH**.....490–2400 mm
Sash weight.....max. 150 kg
Sash rebate height **with load transfer** ....1000–2400 mm

① T&T espagnolette, fixed handle height, backset 15 mm

SRH / mm	Handle height / mm	Espagnolette length		Material no.
500– 600	170	490		**259830**
601– 800	263	690	1 V	**259832**
801– 1000	413	890	2 V	**259835**
1001– 1200	513	1090	2 V	**259837**
1201– 1400	563	1290	2 V	**259839**
1401– 1600	563	1490	3 V	**259841**
1601– 1800	563	1690	3 V	**259844**
1601– 1800	1000	1690	3 V	**259845**
1801– 2000	1000	1890	3 V	**259848**
2001– 2200	1000	2090	4 V	**259850**
2201– 2400	1000	2290	4 V	**259853**

② Bullet catch cam — 256020

③ Corner drive — V — 260272

④ Corner drive, T&T — V — 260288

⑤ Stay guide

SRW/mm	Description	Length		Material no.
430– 600	250	490		**385393**
601– 800	350	690		**385394**
801– 1000	500	890	1 V	**450373**
1001– 1200	500	1090	1 V	**450374**
1201– 1400 [1]	500	1090	1 V	**450374**

⑥ Stay corner drive — V — 260284

⑦ Corner hinge

L	**477212**
R	**477211**

⑧ Multipart centre lock, horizontal

SRW/mm	Size		Material no.
430– 650	200	1 V	**296853**
651– 850	400	1 V	**296854**
851– 1250	600	1 V	**296855**
1251– 1400	600 CON	1 V	**296852**
	200	1 V	**296853**

⑨ Multipart centre lock, vertical

SRH/mm w/o load transfer (≤ 80 kg)	SRH/mm with load transfer (≥ 80 kg)	Size		Material no.
490– 700		200	1 V	**296853**
701– 900	1000– 1200	400	1 V	**296854**
901– 1100	1201– 1400	600	1 V	**296855**
1101– 1300	1401– 1600	600 CON	1 V	**337711**
		200	1 V	**296853**
1301– 1500	1601– 1800	600 CON	1 V	**337711**
		400	1 V	**296854**
1501– 1700	1801– 2000	600 CON	1 V	**337711**
		600	1 V	**296855**
1701– 1900	2001– 2200	600 CON	1 V	**337711**
		600 CON	1 V	**337711**
		200	1 V	**296853**
1901– 2100	2201– 2400	600 CON	1 V	**337711**
		600 CON	1 V	**337711**
		400	1 V	**296854**

⑨ Multipart centre lock, vertical

SRH/mm w/o load transfer (≤ 80 kg)	SRH/mm with load transfer (≥ 80 kg)	Size		Material no.
2101– 2300		600 CON	1 V	**337711**
		600 CON	1 V	**337711**
		600	1 V	**296855**
2301– 2400		600 CON	1 V	**337711**
		600 CON	1 V	**337711**
		600 CON	1 V	**337711**
		200	1 V	**296853**

⑩ Additional scissor stay (from SRW 1201) — 255237

⑪ Turn-restrictor, sash component (from SRW 1050) — 485591

⑫ Lever-operated espagnolette, fixed lever-height [2]

SRH / mm	Lever position	Length	Material no.
490– 600	195	490	**233408**
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**
1801– 2000	640	1390	**296074**
2001– 2200	640	1780	**296075**
2201– 2400	640	2180	**296076**

⑬ Bullet catch for lever-operated espagnolette — 385031

⑭ Lifting mishandling device, sash component — 260538

⑮ Lifting mishandling device — 257600
Stop for lever-operated espagnolette

⑯ Drilling protection — 627343

⑰ For lockable window handles
→ refer to the catalogue BK 5

⑱ Retainer-clasp — 314203

⑲ Turn-Only stay guide

SRW/mm	Description	Length	Material no.
430– 510	250	490	**482571**
511– 1400	250	600	**473381**

⑳ Multipart centre lock, top horizontal

SRW/mm	Size		Material no.
430– 710	–		**–**
711– 910	200 CON	1 V	**337708**
911– 1110	400 CON	1 V	**337710**
1111– 1310	600 CON	1 V	**337711**
1311– 1400	600 CON	1 V	**337711**
	200 CON	1 V	**337708**

㉑ Load transfer device, sash component — 603079

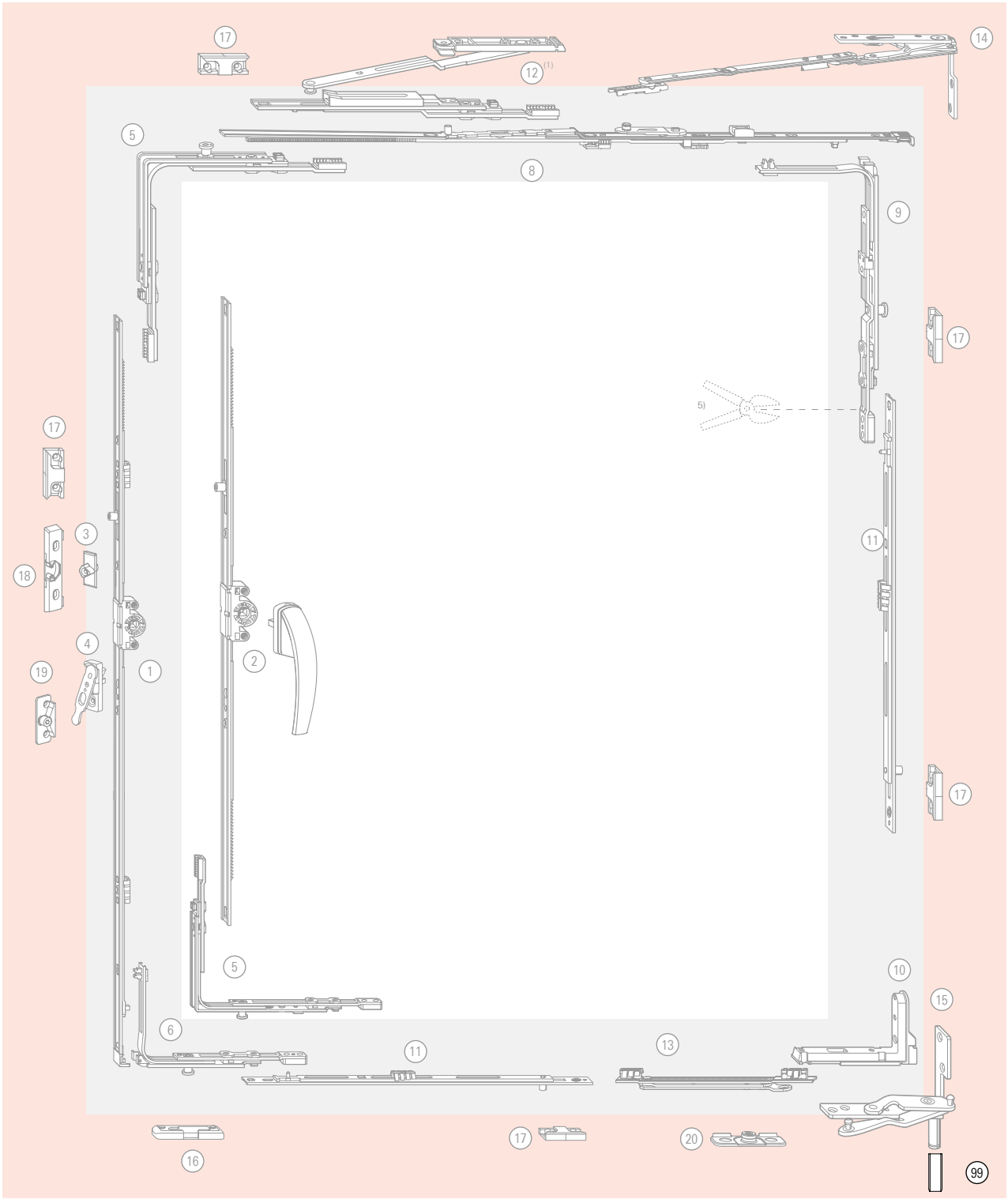
㉒ Load transfer device, frame component — 603215

Profile-related frame components: → p. 53

- (23) **Stay arm**
- (24) **Pivot rest**
- (25) **Tilt striker**
- (26) **Security striker**
- (27) **Turn-restrictor,** frame component (from SRW 1050)

1) Use an additional scissor stay from SRW 1201 mm (10)
2) When using the lever-operated espagnolette on the right hand side, turn the eccentric cam 180°

NOTE!
Installation instructions for frame components see page 79.



On SRH < 500 mm (on windows without overlap gasket on SRH < 900 mm) the tilt depth must be limited to 80 mm (see page 61 – 62).

Application range

Sash rebate width **SRW**.....800 – 1400 mm
Sash rebate height **SRH**..... max. 2400 mm
Sash weight.....max. 130 kg

99	**Drive-in sleeve**	**477510**

Lever-operated espagnolette / T&T espagnolette, fixed handle height, backset 15 mm

Lever-operated espagnolette, fixed lever-height				T&T espagnolette, fixed handle height			
Sash rebate height	Lever position	Size	Material no.	Lifting mishandling device possible	Material no.		Material no.
431 – 600	195	490	**233408**	X	**259830**		
601 – 800	335	690	**233409**	X	**259831**	or	**259833**
801 – 1000	490	890	**233410**	X	**259834**	or	**259836**
1001 – 1200	335	1090	**233411**	X	**259838**		
1201 – 1400	335	1290	**233412**	X	**259840**		
1401 – 1600	335	1490	**233413**	X	**259843**	or	**259842**
1601 – 1800	335	1690	**296145**	X	**259847**	or	**259846**
Doors							
1801 – 2000	640	1890	**296074**	X	**259849**		
2001 – 2200	640	2090	**296075**	X	**259852**	or	**259851**
2201 – 2400	640	2290	**296076**	X	**259855**	or	**259854**

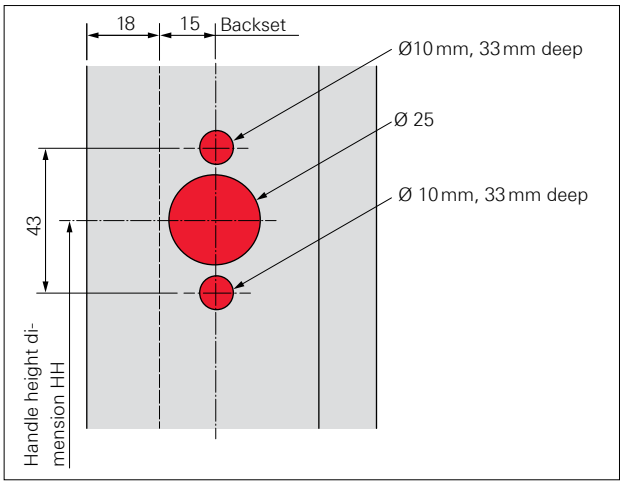
Lever-operated espagnolette / T&T espagnolette, variable/centred handle height, backset 15 mm

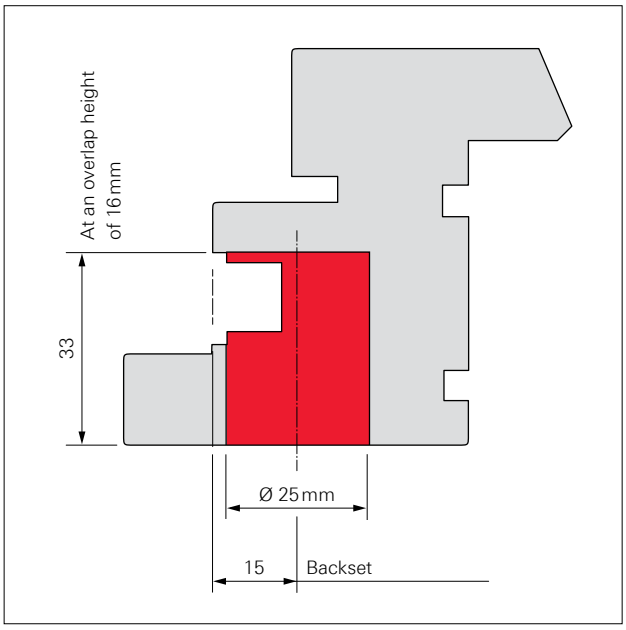
Lever-operated espagnolette, centred/variable lever-height				T&T espagnolette, centred/variable handle height			
Sash rebate height	Lever position	Size	Material no.	Lifting mishandling device possible	Material no.		Material no.
370 – 520	225 – 350	400	**233418**	– (SRH 310–450)	**259717**	or (SRH 451–620)	**259718**
521 – 620	225 – 350	400	**233418**		**259718**		**259719**
621 – 800	393 – 482	680	**233419**	X	**259719**		
801 – 1200	482 – 682	980	**233420**	X	**259720**		
1201 – 1600	448 – 658	1380	**290912**	X	**259721**		
Doors							
1601 – 2000	680 – 890	1780	**296146**	X	**259762**		
2001 – 2200	880 – 1090	2180	**296147**	X	**259763**		

System	Hardware axis		Pivot rest	Stay arm 250	Stay arm 350	Stay arm 500	Stay arm 250 Tilt-First	Stay arm 350 Tilt-First	Stay arm 500 Tilt-First	Rebate-hinge arm
Rebate depth 20 mm	9	L	**477025**	**385418**	**385420**	**385422**	**389518**	**389520**	**389522**	**391907**
		R	**476814**	**385417**	**385419**	**385421**	**389517**	**389519**	**389521**	**391905**

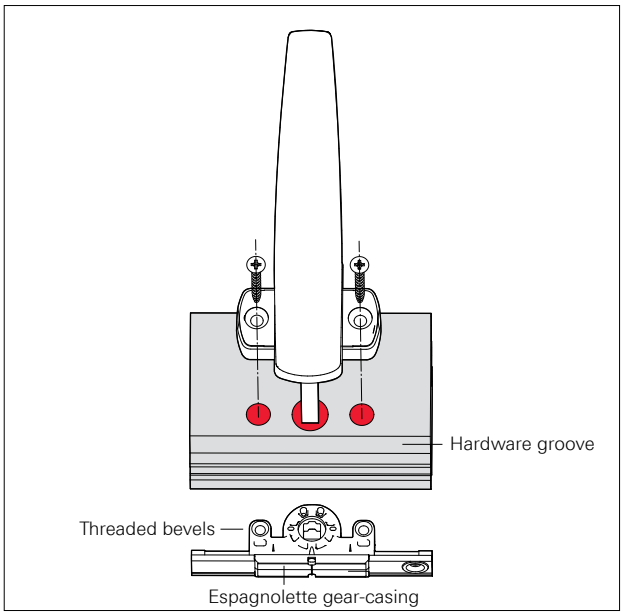
System	Hardware axis		Tilt striker	Tilt striker, steel	Tilt striker Tilt-First	Striker	SEC striker	SEC striker, steel
7/8 Euro-groove, 20 mm rebate depth	9	L	**260487**		**287917**		**260388**	**291552**
		R	**260488**		**287918**		**260389**	**291553**
		L/R		**291557**		**378462**		
Rebate depth 20 mm	9	L	**260483**		**287590**		**260386**	**280448**
		R	**260484**		**287591**		**260387**	**280449**
		L/R		**280444**		**260362**		
Rebate depth 20, w. supporting-pins	9	L	**260485**		**287590**		**259592**	**291549**
		R	**260486**		**287591**		**259593**	**291551**
		L/R		**291556**		**260363**		

System	Hardware axis		Bullet catch frame component	LMD, frame component	Night-vent, frame component	Turn-restrictor, frame component	Centre-closer, concealed
7/8 Euro-groove, 20 mm rebate depth	9	L					
		R					
		L/R	**378469**	**383281**	**256584**		**502324**
Rebate depth 20 mm	9	L					
		R					
		L/R	**260459**	**260542**	**260527**	**337754**	**450995**
Rebate depth 20, w. supporting-pins	9	L					
		R					
		L/R	**260461**	**260543**	**260527**	**337754**	

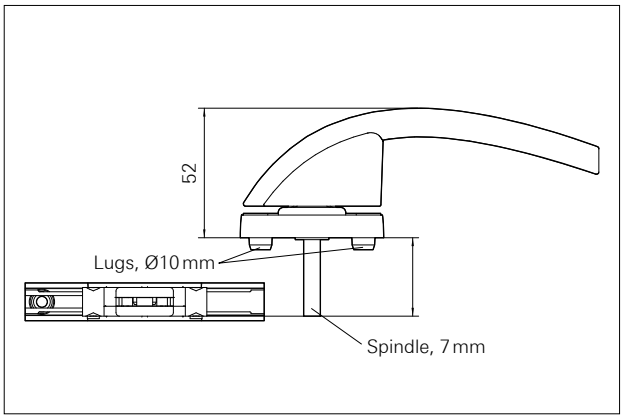




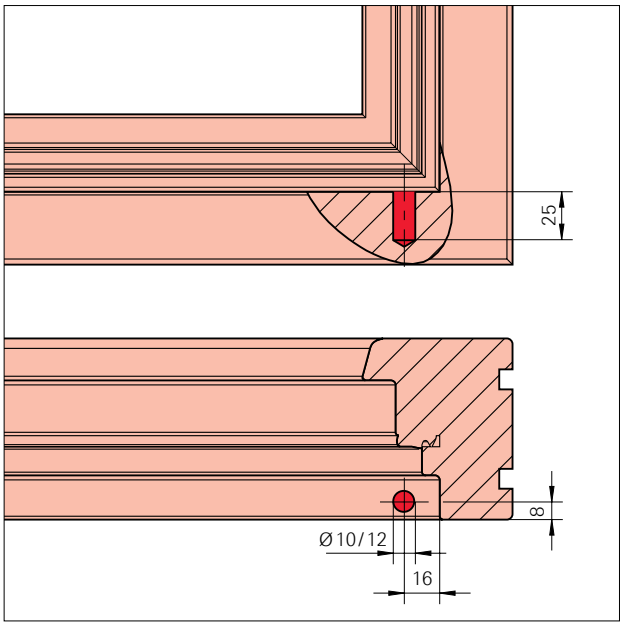
Carry out the drillings for the window handle's sprocket and lugs.



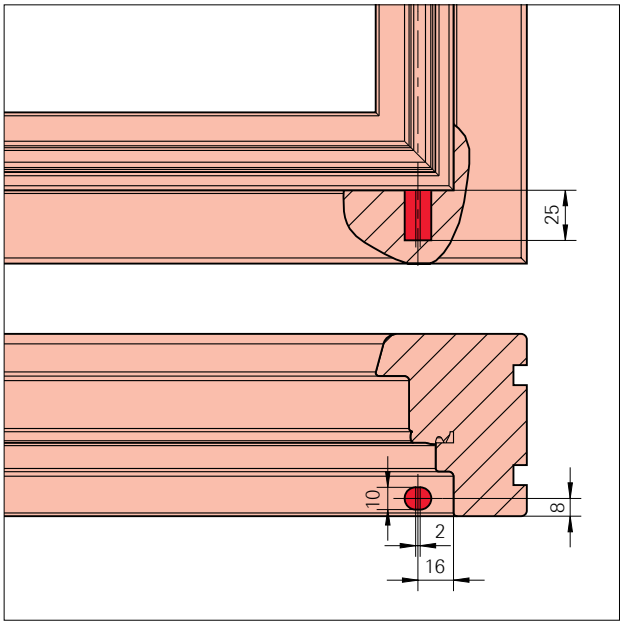
Screw-fix the window handle in the main-lock casing with DIN 965 M5 x … countersunk screws.



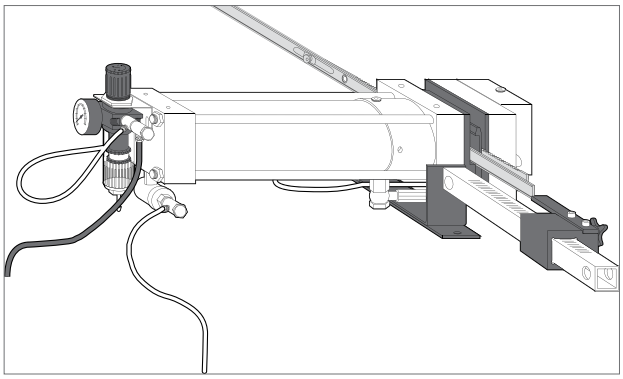
Roto Swing window handle
with lugs, spindle 7 mm



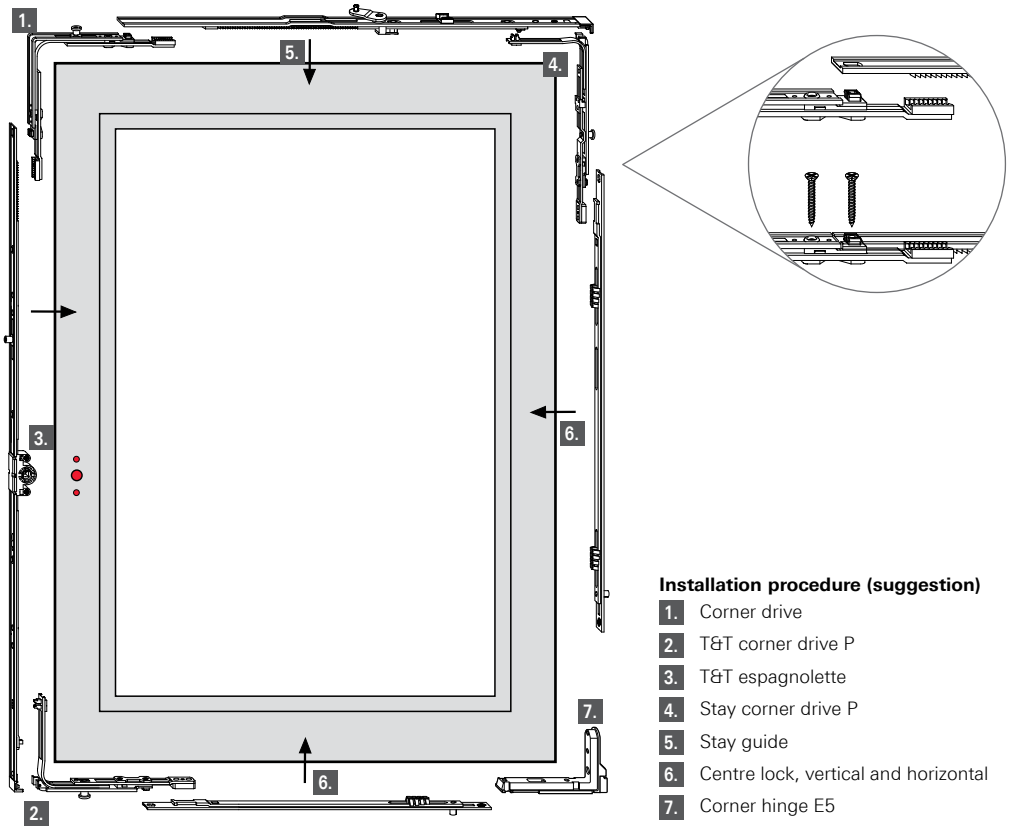
Pivot rest
Drilling dimensions on the assembled frame



Pivot rest
Drilling dimensions on the unassembled frame piece

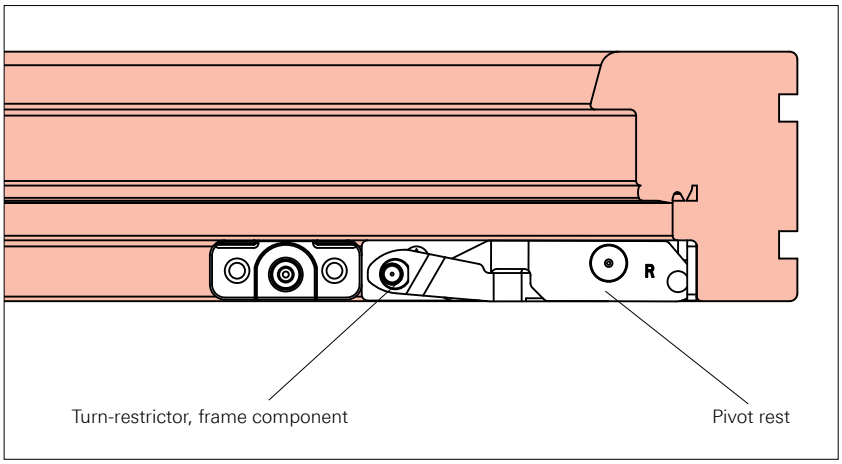


Crop with pneumatic cropper (punched hole)

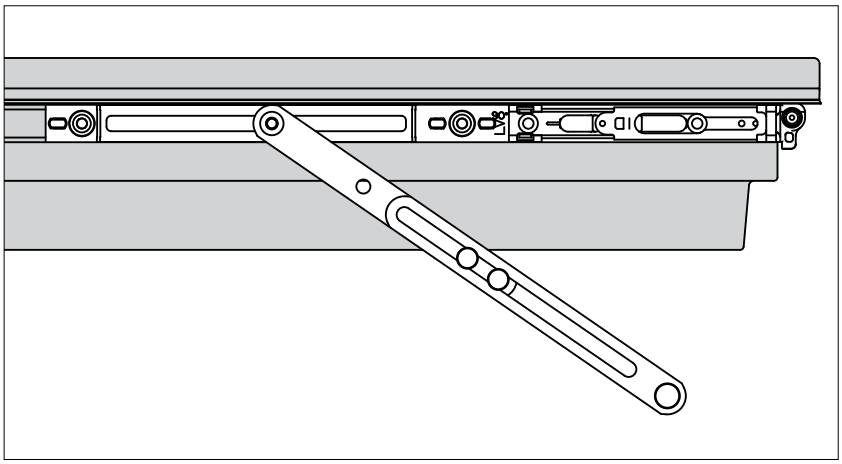


Installation procedure (suggestion)

1. Corner drive
2. T&T corner drive P
3. T&T espagnolette
4. Stay corner drive P
5. Stay guide
6. Centre lock, vertical and horizontal
7. Corner hinge E5

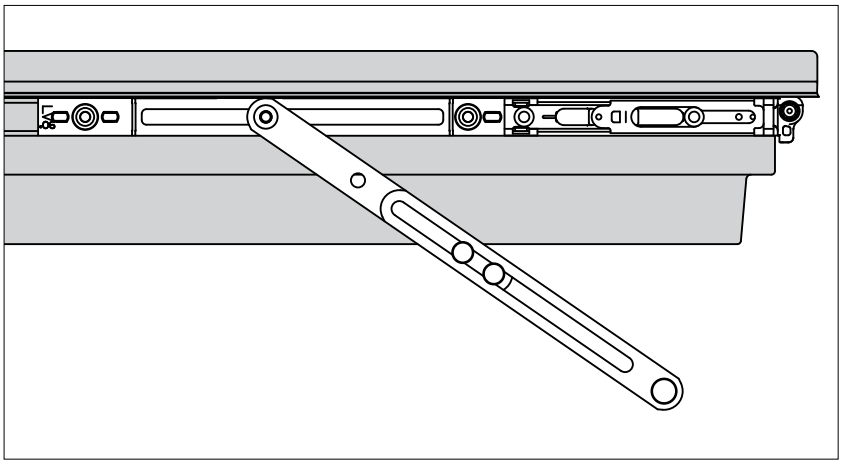


Install the frame component.

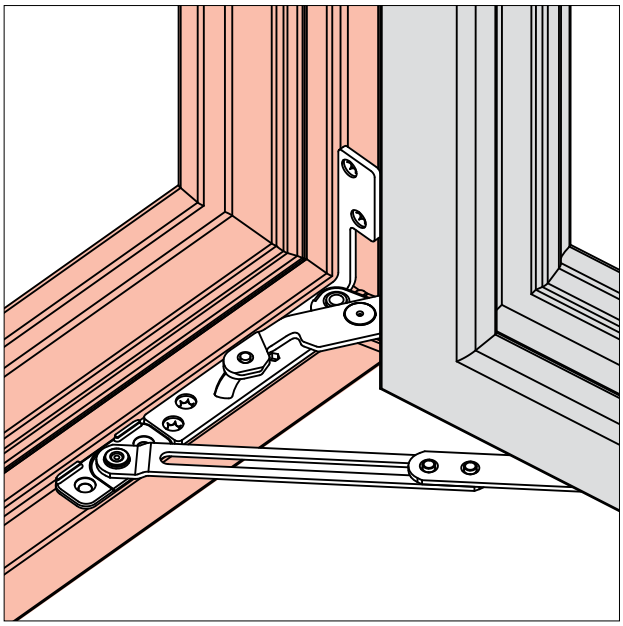


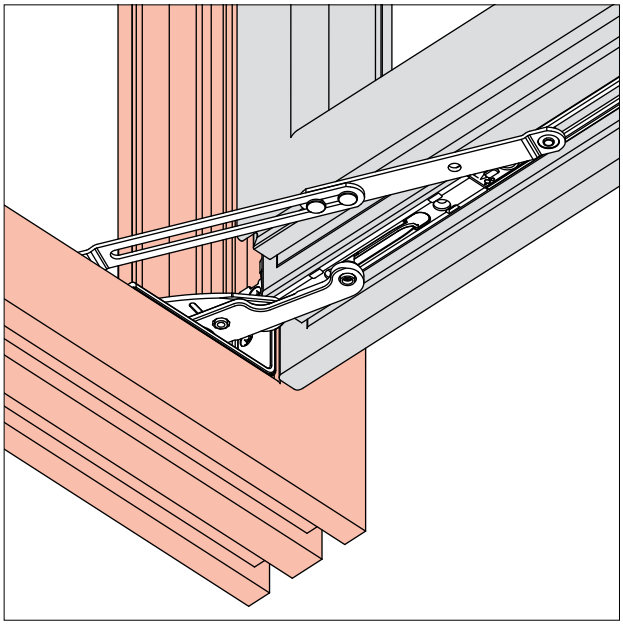
Install the sash component according to the required opening width.

Opening 90°

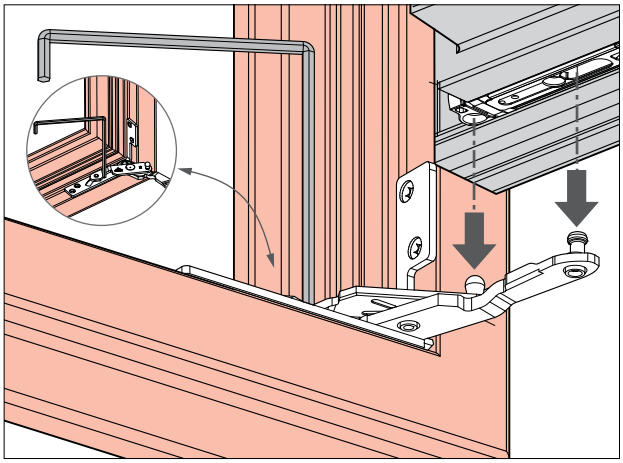


Opening 100°



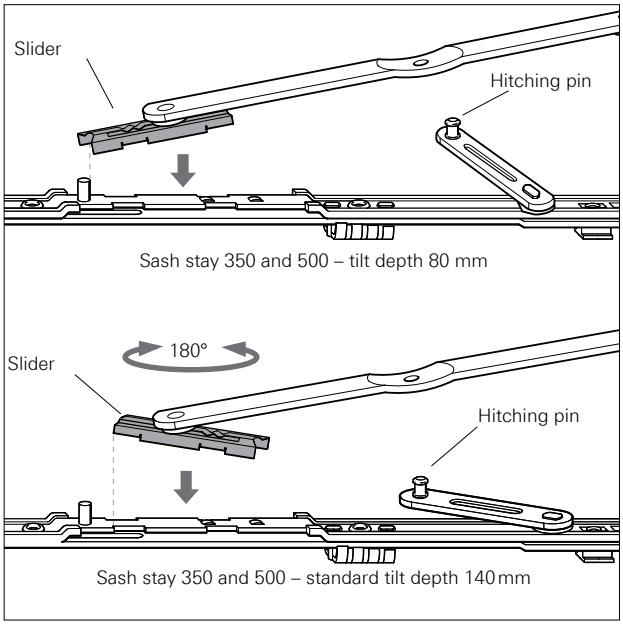


Press the turn-restrictor arm on the rubber ring of the frame component.



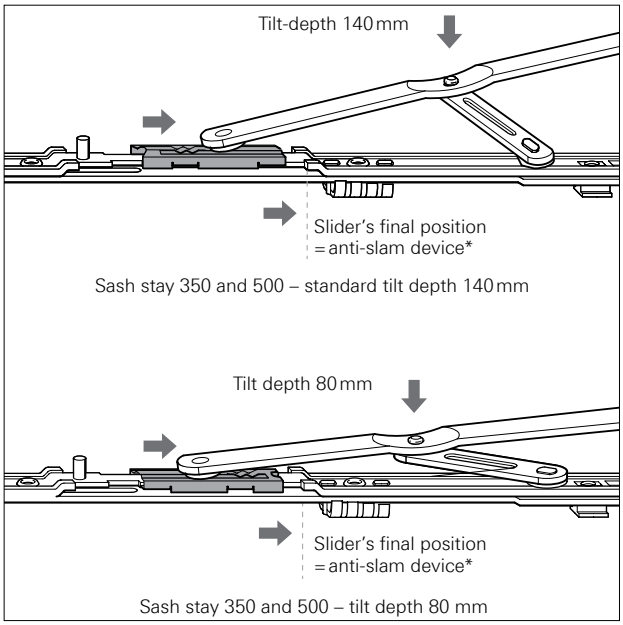
1. Press down the lifting mishandling device (if mounted).
2. Bring the handle into the tilt mode.
   This is a conscious – and in this case necessary – hardware mishandling operation!
3. Firmly secure the corner drive with an hex key 4 mm and put the sash into the pivot rest.

IMPORTANT!
Do not tilt the sash.

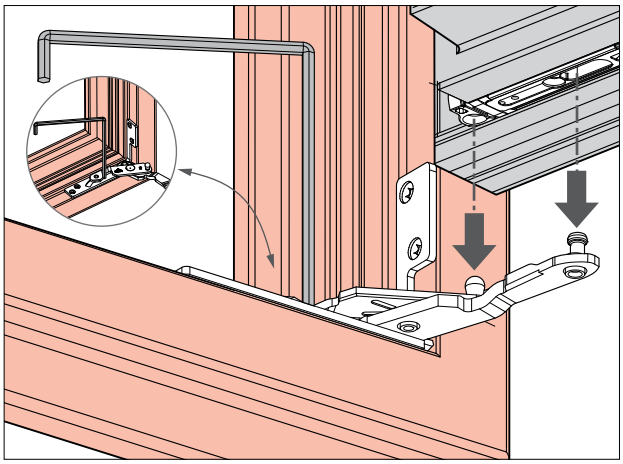


4. Adjust the desired tilt depth (Standard tilt depth = 140 mm)

5. Connect the slider of the sash stay with the stay guide.

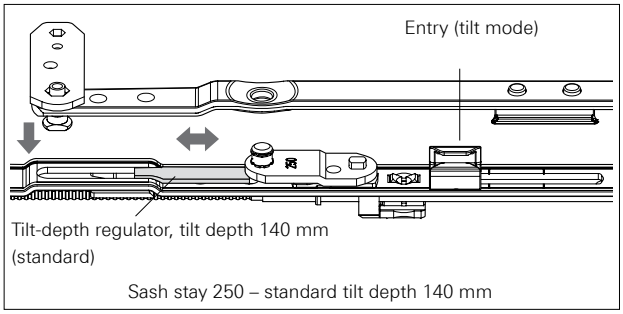


6. Lift the sash stay arm and let the drilling-hole of the sash stay arm snap on the hitching pin of the supporting arm.
7. Operate again the lifting mishandling device.
8. Bring the handle into the turn mode.
   The slider's final position (anti-slam device) is reached automatically by means of tilting the sash.



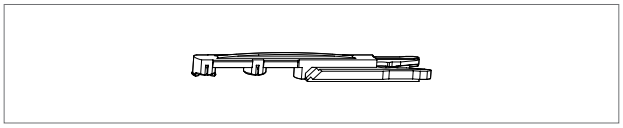
1. Press down the lifting mishandling device (if mounted).
2. Bring the handle into the tilt mode.
   This is a conscious – and in this case necessary – hardware mishandling operation!
3. Put the sash into the pivot rest.

IMPORTANT!
Do not tilt the sash.

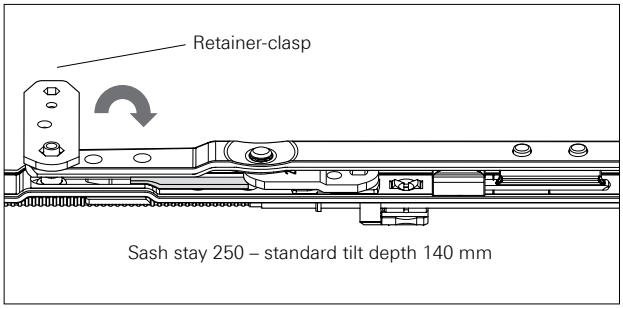


Sash stay 250 – standard tilt depth 140 mm

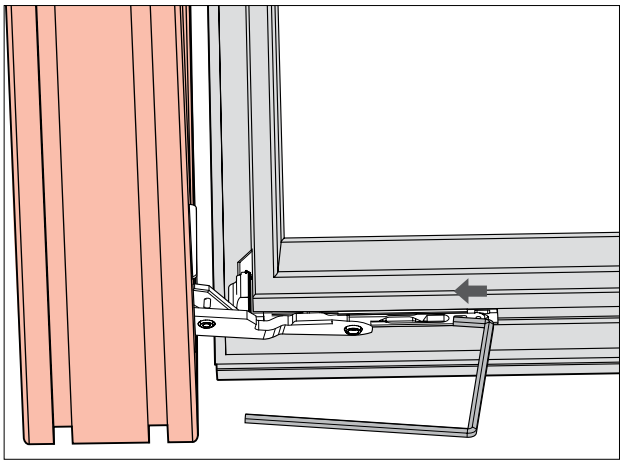
4. Press down the stay arm on the stay guide and supporting arm.
5. Close the retainer-clasp.
6. Operate again the lifting mishandling device.
7. Bring the handle into the turn mode.



NOTE!
Use the anti-slam device (487206) for 80 mm tilt depth.



Sash stay 250 – standard tilt depth 140 mm



Sash stay 350 and 500

1. Open the sash 90°.
2. Slide back the corner hinge's anti-jemmy device with a 4 mm hex key.
3. Press down the lifting mishandling device (if mounted).
   This is a conscious – and in this case necessary – hardware mishandling operation!
4. Bring the handle into the tilt mode.
5. Lift the sash stay arm and detach it from the bolt.
6. Disconnect the slider from the stay guide.
7. Lift the sash off the pivot rest.

Sash stay 250

1. Open the sash 90°.
2. Slide back the corner hinge's anti-jemmy device with a 4 mm hex key.
3. Press down the lifting mishandling device (if mounted).
4. Bring the handle into the tilt mode.
5. Open the retainer-clasp.
6. Lift off the stay arm from the stay guide and supporting arm.
7. Lift the sash off the pivot rest.

Functionality
The spring in the load transfer device disburdens the pivot rest permanently by approx. 60 to 80 kg.
In order to do so, the spring must be pre-stretched to a certain length. This applies regardless of the adjustment height of the sash.
The relieving of the pivot rest is carried out over the entire lifespan of the hardware, also in consideration of sagging and wear and tear.

Installation advice
The load transfer device's spring can already be pre-stretched in the workshop, this however only makes sense if the sash is installed with the full glass load.

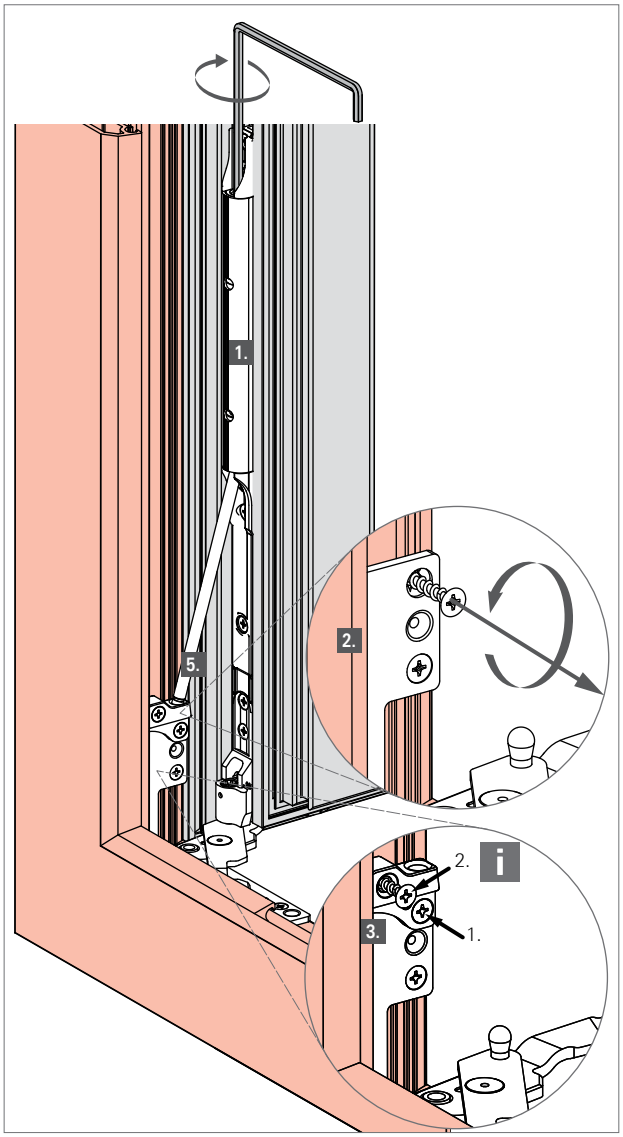
Transport possibility 1
Transport the sash and frame separately.

Transport possibility 2
Transport the sash in the frame.

CAUTION!
The bearing can buckle!
Pre-stretch the load transfer device's spring and support the frame with spacers in the bottom rebate!

Unhinging
Screw out the screw of the load transfer device until the spring tension is released completely (support rod is loosened). If the tension in the spring is not completely released, the sash cannot be hinged into the frame again.

Application restrictions
Do not equip sashes with a sash weight < 80 kg with a load transfer device, because this can result in malfunctions.



Installing the load transfer device

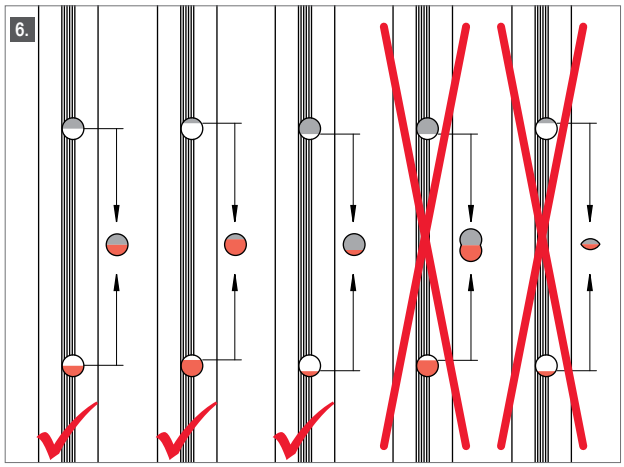
1. Insert the load transfer device's sash component up against the corner hinge and screw-fix.
2. Loosen the pivot rest's top screw connection.
3. Place the load transfer device's frame component on top of the pivot rest and screw-fix (note the order).

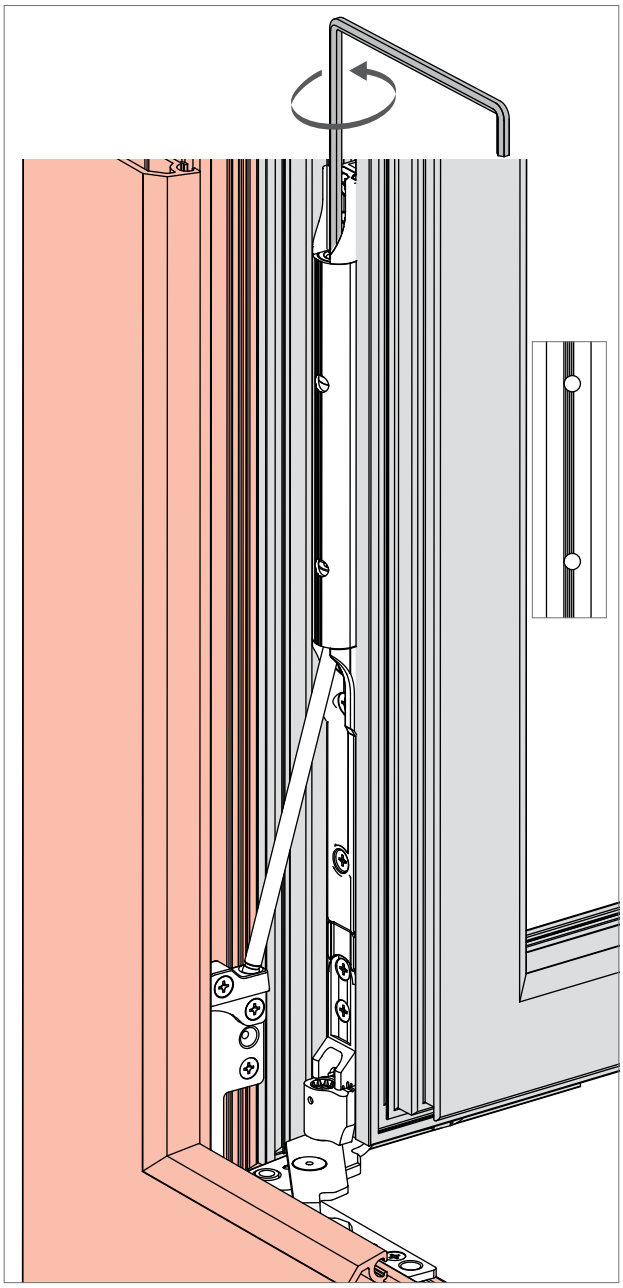
NOTE!
Tighten the screw with caution, the component may not tilt over.

4. Insert the sash in the pivot rest (not dep.).
5. Insert the sash component's support rod into the frame component's recess.

Adjusting the load transfer device

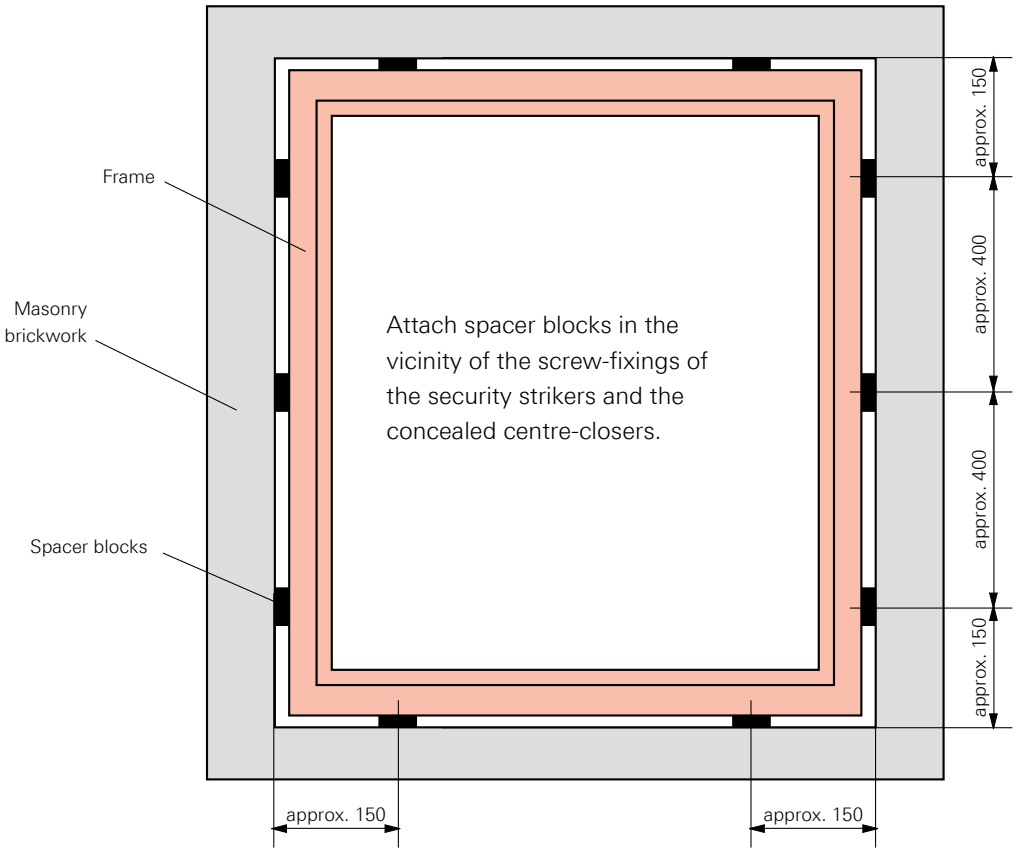
6. Adjust the load transfer device with a 4 mm hex key in a (90°) opened sash position:
   Adjust the adjusting screw in such a manner that the sum of the red and silver divided circles result in one complete circle. Check the result in the inspection opening.





Unhinging the sash – Sash stay 250, 350 and sash stay 500

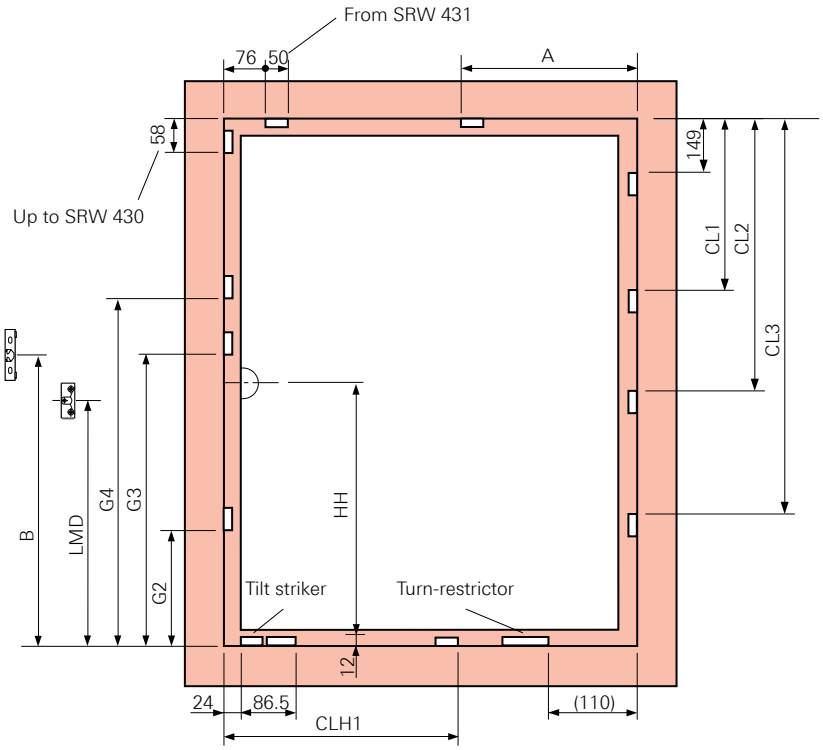
1. Bring the handle into the turn mode, open the sash 90° and release the load transfer device.
2. Secure the sash from falling out.
3. Slide back the corner hinge's anti-jemmy device with a 4 mm hex key.
4. Press down the lifting mishandling device (if mounted).
   This is a conscious – and in this case necessary – hardware mishandling operation!
5. Bring the handle into the tilt mode.
6. Open the retainer clasp (sash stay 250).
7. Lift off the stay arm from the stay guide and supporting arm.
8. Lift the sash off the pivot rest.



Installation guideline

Burglar-resistant windows in accordance with DIN EN V 1627–1630 may only be named so, if the installation has been carried out in all points in accordance with the specified standards.

Striker dimensions (mm)
T&T espagnolette, fixed handle height
Basic security



LMD = Lifting mishandling device BC = Bullet catch

T&T espagnolette, backset 15							
SRH / mm	HH	G1	G2	G3	G4	LMD	BC
280 – 480	120	–	–	–	–	–	–
481 – 600	170	–	–	–	–	223	–
601 – 800	263	–	–	–	–	138	–
801 – 1000	413	–	–	–	–	288	–
1001 – 1200	513	–	700	–	–	388	–
1201 – 1400	563	–	700	–	–	388	–
1401 – 1600	563	–	700	–	–	388	–
1601 – 1800	563	–	700	1370	–	388	–
1601 – 1800	1000	–	700	1370	–	1121	1244
1801 – 2000	1000	–	700	1370	–	1121	1244
2001 – 2200	1000	–	700	1370	–	1121	1244
2201 – 2400	1000	–	700	1370	–	1121	1244
2401 – 2600	1000	–	700	1370	1770	1121	1244

Stay guide		
SRW/mm	A	Size
800 – 1000	600	500 / 890
1001 – 1200	750	500 / 1090
1201[2] – 1400	750	500 / 1090

2) With additional scissor stay

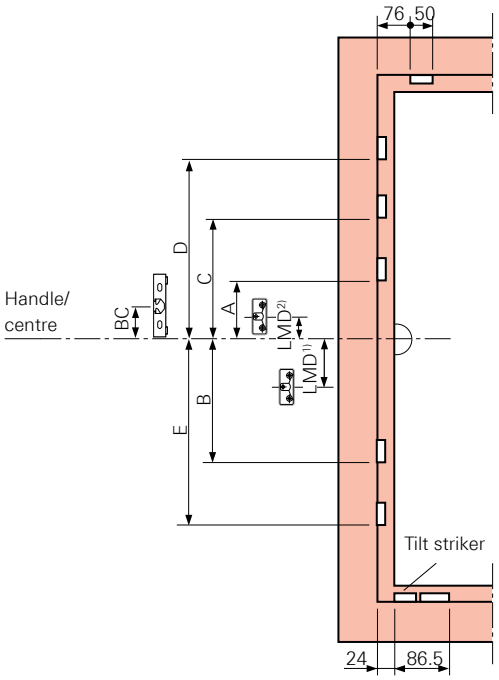
Multipart centre lock, vertical, without load transfer				
SRH / mm	CL1	CL2	CL3	
1100 – 1800	746	–	–	CL 600 E
1801 – 2400	746	1346	–	CL 600 E CON + CL 600 E
2401 – 2600	746	1346	1750	2 CL 600 E CON + CL 400 E

Multipart centre lock, vertical, with load transfer device				
SRH / mm	CL1	CL2	CL3	
1100 – 1150	550	–	–	CL 400 E
1151 – 1800	746	–	–	CL 600 E
1801 – 2400	746	1346	–	CL 600 E CON + CL 600 E
2401 – 2600	746	1346	1750	2 CL 600 E CON + CL 400 E

Centre lock, horizontal				
SRW/mm	CLH1			
1100 – 1600[1]	658	–	–	CL 600 E

1) From 1050 mm with turn-restrictor

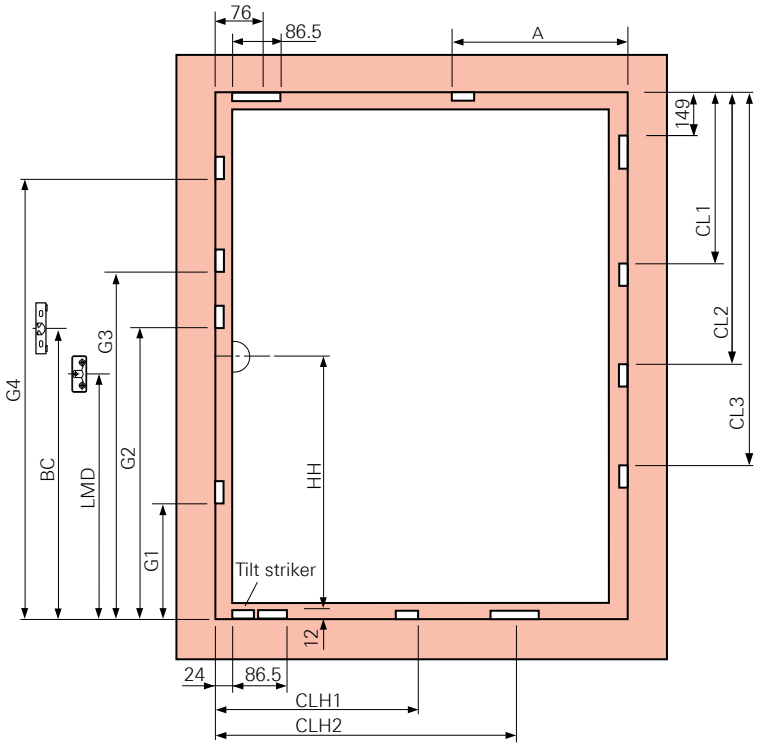
Striker dimensions (mm)
T&T espagnolette, centred/variable handle height
Basic security



LMD = Lifting mishandling device BC = Bullet catch

T&T espagnolette, centred/variable handle height, backset 15								
SRH / mm		A	B	C	D	E	LMD	BC
450 –	620	–	–	–	–	–		–
621 –	800	125	–	–	–	–	137[1)]	–
801 –	1200	125	–	–	–	–	137[1)]	–
1201 –	1600	125	340	–	–	–	137[1)]	–
1601 –	2000	–	312	358	–	–	109[2)]	232
2001 –	2400	–	312	358	758	740	109[2)]	232
2401 –	2600	–	312	358	758	740	109[2)]	232

Striker dimensions (mm)
T&T espagnolette, fixed handle height
RC1 / RC1 N



LMD = Lifting mishandling device BC = Bullet catch

T&T espagnolette, backset 15							
SRH / mm	HH	G1	G2	G3	G4	LMD	BC
280 – 480	120	–	–	–	–	–	–
481 – 600	170	–	–	–	–	223	–
601 – 800	263	–	–	–	–	138	–
801 – 1000	413	–	–	–	–	288	–
1001 – 1200	513	–	700	–	–	388	–
1201 – 1400	563	–	700	–	–	388	–
1401 – 1600	563	–	700	–	–	388	–
1601 – 1800	563	–	700	1370	–	388	–
1601 – 1800	1000	–	700	1370	–	1121	1244
1801 – 2000	1000	–	700	1370	–	1121	1244
2001 – 2200	1000	–	700	1370	–	1121	1244
2201 – 2400	1000	–	700	1370	–	1121	1244
2401 – 2600	1000	–	700	1370	1770	1121	1244

Stay guide			
SRW / mm	A		Size
800 – 1000	600	500 /	890
1001 – 1200	750	500 /	1090
1201[2] – 1400	750	500 /	1090

2) With additional scissor stay

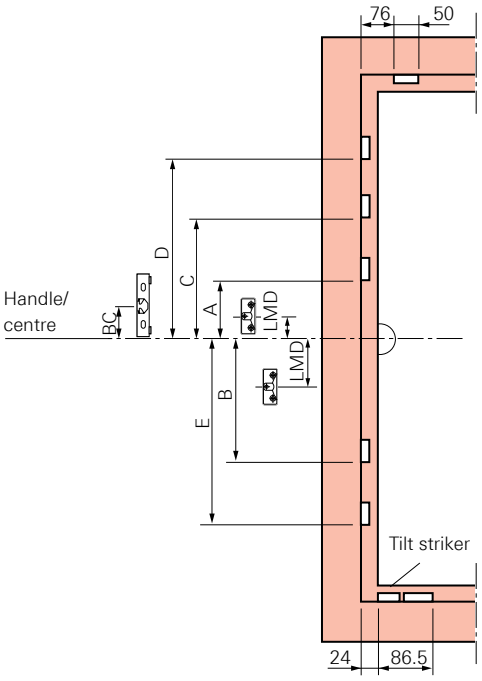
Centre lock, vertical, without load transfer				
SRH / mm	CL1	CL2	CL3	
1101 – 1800	746	–	–	CL 600 E
1801 – 2400	746	1346	–	CL 600 E CON + CL 600 E
2401 – 2600	746	1346	1750	2 x CL 600 E CON + CL 400 E

Centre lock, vertical, with load transfer				
SRH / mm	CL1	CL2	CL3	
1100 – 1150	550	–	–	CL 400 E
1151 – 1800	746	–	–	CL 600 E
1801 – 2400	746	1346	–	CL 600 E CON + CL 600 E
2401 – 2600	746	1346	1750	2 x CL 600 E CON + CL 400 E

Centre lock, horizontal			
SRW / mm	CLH1	CLH2	
431 – 650	258	–	CL 200 P
651 – 850	462	–	CL 400 P
851 – 1250[1]	658	–	CL 600 P
1251 – 1400[1]	658	858	CL 600 E CON + CL 200 P

1) From 1050 mm with turn-restrictor

Striker dimensions (mm)
T&T espagnolette, centred/variable handle height
RC1 / RC1 N

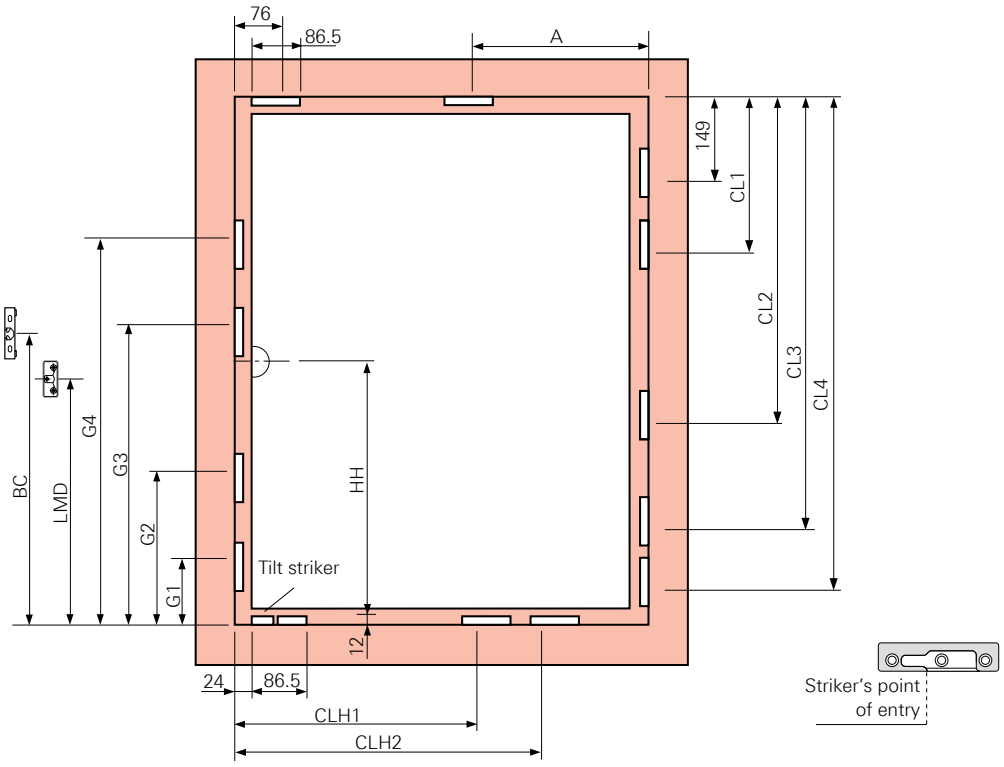


LMD = Lifting mishandling device BC = Bullet catch

T&T espagnolette, centred/variable handle height, backset 15							
SRH / mm	A	B	C	D	E	LMD	BC
621 – 800	125	–	–	–	–	137[1]	–
801 – 1200	125	–	–	–	–	137[1]	–
1201 – 1600	125	340	–	–	–	137[1]	–
1601 – 2000	–	312	358	–	–	109[2]	232
2001 – 2400	–	312	358	758	740	109[2]	232
2401 – 2600	–	312	358	758	740	109[2]	232

1) From 1050 mm with turn-restrictor
2) With additional scissor stay

Striker dimensions (mm)
T&T espagnolette, fixed handle height
RC2/RC2 N



LMD = Lifting mishandling device BC = Bullet catch

T&T espagnolette, backset 15							
SRH / mm	HH	G1	G2	G3	G4	LMD	BC
490 – 600	170	–	–	–	–	223	–
601 – 800	263	–	383	–	–	138	–
801 – 1000	413	160	550	–	–	288	–
1001 – 1200	513	160	700	–	–	388	–
1201 – 1400	563	160	700	–	–	388	–
1401 – 1600	563	160	700	1170	–	388	–
1601 – 1800	563	160	700	1370	–	388	–
1601 – 1800	1000	160	700	1370	–	1121	1244
1801 – 2000	1000	160	700	1370	–	1121	1244
2001 – 2200	1000	160	700	1370	1770	1121	1244
2201 – 2400	1000	160	700	1370	1770	1121	1244

Stay guide		
SRW/mm	A	Size
801 – 1000	600	500 / 890
1001 – 1200	600	500 / 1090
1201[2] – 1400	600	500 / 1290

2) With additional scissor stay

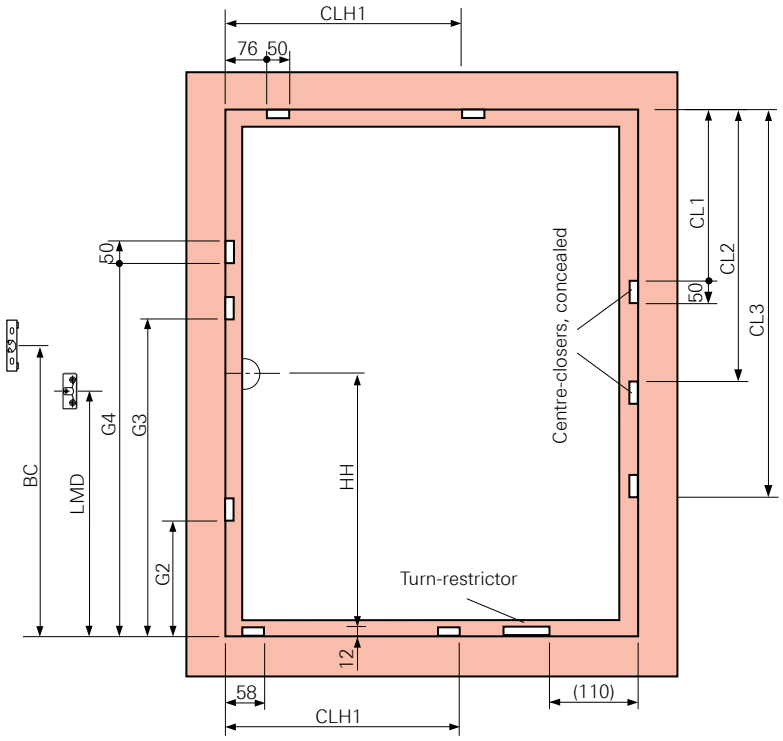
Centre lock, vertical, without load transfer				
SRH / mm	CL1	CL2	CL3	CL4
490 – 700	346	–	–	– CL 200 V
701 – 900	550	–	–	– CL 400 V
901 – 1100	746	–	–	– CL 600 V
1101 – 1300	746	946	–	– CL 600 V CON + CL 200 V
1301 – 1500	746	1150	–	– CL 600 V CON + CL 400 V
1501 – 1700	746	1346	–	– CL 600 V CON + CL 600 V
1701 – 1900	746	1346	1546	– 2 CL 600 V CON + CL 200 V
1901 – 2100	746	1346	1750	– 2 CL 600 V CON + CL 400 V
2101 – 2300	746	1346	1946	– 2 CL 600 V CON + CL 600 V
2301 – 2400	746	1346	1946	2146 3 CL 600 V CON + CL 200 V

Centre lock, vertical, with load transfer				
SRH / mm	CL1	CL2	CL3	CL4
1000 – 1200	550	–	–	– CL 400 V
1201 – 1400	746	–	–	– CL 600 V
1401 – 1600	746	946	–	– CL 600 V CON + CL 200 V
1601 – 1800	746	1150	–	– CL 600 V CON + CL 400 V
1801 – 2000	746	1346	–	– CL 600 V CON + CL 600 V
2001 – 2200	746	1346	1546	– 2 CL 600 V CON + CL 200 V
2201 – 2400	746	1346	1750	– 2 CL 600 V CON + CL 400 V

Centre lock, horizontal			
SRW/mm	CLH1	CLH2	
430 – 650	258	–	CL 200 V
651 – 850	462	–	CL 400 V
851 1050	658	–	CL 600 V
1051 –1250[1]	658		CL 600 V + turn-restrictor
1251 – 1400[1]	658	858	CL 600 V CON + CL 200 V + turn-restrictor

1) From 1050 mm with turn-restrictor

Striker dimensions (mm)
T&T espagnolette, fixed handle height
Basic security



LMD = Lifting mishandling device BC = Bullet catch

T&T espagnolette, backset 15							
SRH / mm	HH	G1	G2	G3	G4	LMD	BC
280 – 480	120	–	–	–	–	–	–
481 – 600	170	–	–	–	–	223	–
601 – 800	263	–	–	–	–	138	–
801 – 1000	413	–	–	–	–	288	–
1001 – 1200	513	–	700	–	–	388	–
1201 – 1400	563	–	700	–	–	388	–
1401 – 1600	563	–	700	–	–	388	–
1601 – 1800	563	–	700	1370	–	388	–
1601 – 1800	1000	–	700	1370	–	1121	1244
1801 – 2000	1000	–	700	1370	–	1121	1244
2001 – 2200	1000	–	700	1370	–	1121	1244
2201 – 2400	1000	–	700	1370	–	1121	1244
2401 – 2600	1000	–	700	1370	1770	1121	1244

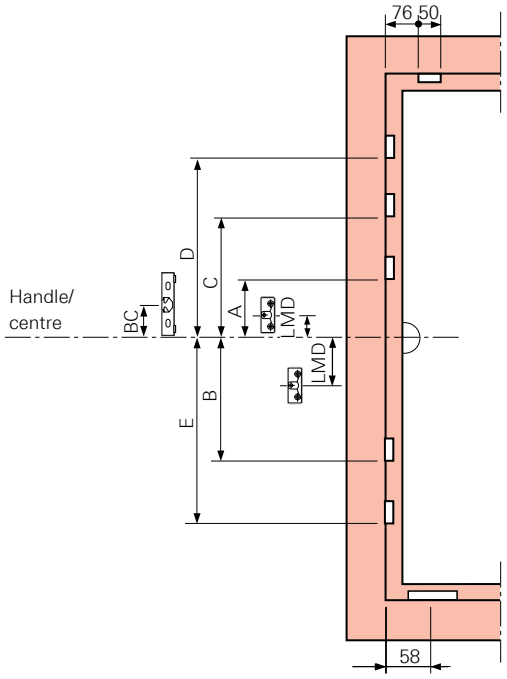
Centre lock, vertical, concealed			
SRH / mm	CL1	CL2	CL3
1101 – 1800	746	–	–
1801 – 2400	746	1346	–
2401 – 2600	746	1346	1750

Centre lock, horizontal				
SRW/mm	CLH1			Top
1101 – 1400	676	–	–	600 E

Centre lock, horizontal				
SRW/mm	CLH1			Bottom
1101 – 1400[1)]	658	–	–	600 E

1) From 1050 mm with turn-restrictor

Striker dimensions (mm)
T&T espagnolette, centred/variable handle height
Basic security



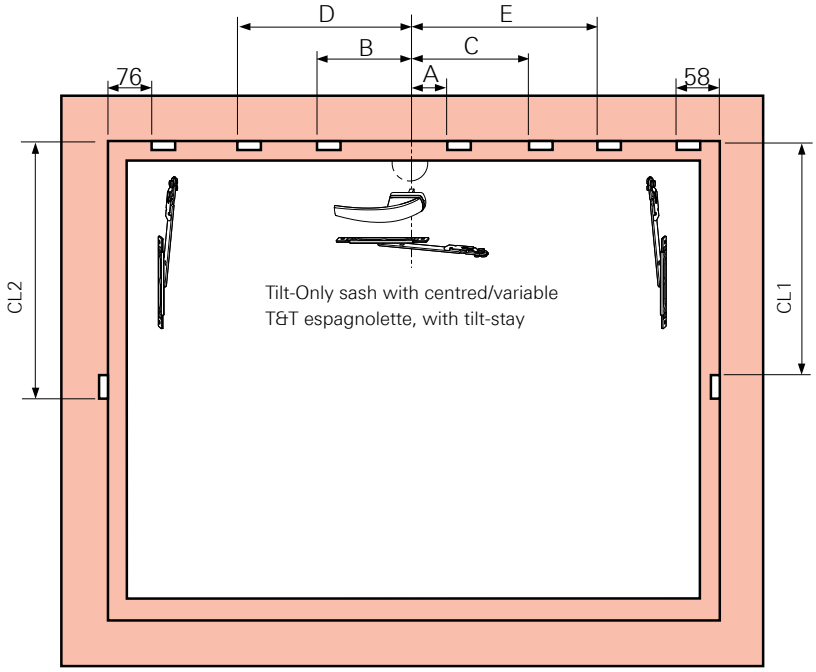
LMD = Lifting mishandling device BC = Bullet catch

T&T espagnolette, centred/variable handle height, backset 15

SRH / mm	A	B	C	D	E	LMD	BC
450 – 620	–	–	–	–	–		–
621 – 800	125	–	–	–	–	137[1)]	–
801 – 1200	125	–	–	–	–	137[1)]	–
1201 – 1600	125	340	–	–	–	137[1)]	–
1601 – 2000	–	312	358	–	–	109[2)]	232
2001 – 2400	–	312	358	758	740	109[2)]	232
2401 – 2600	–	312	358	758	740	109[2)]	232

1) From 1050 mm with turn-restrictor
2) With additional scissor stay

Striker dimensions (mm)
T&T espagnolette, centred/variable handle height
Basic security

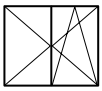


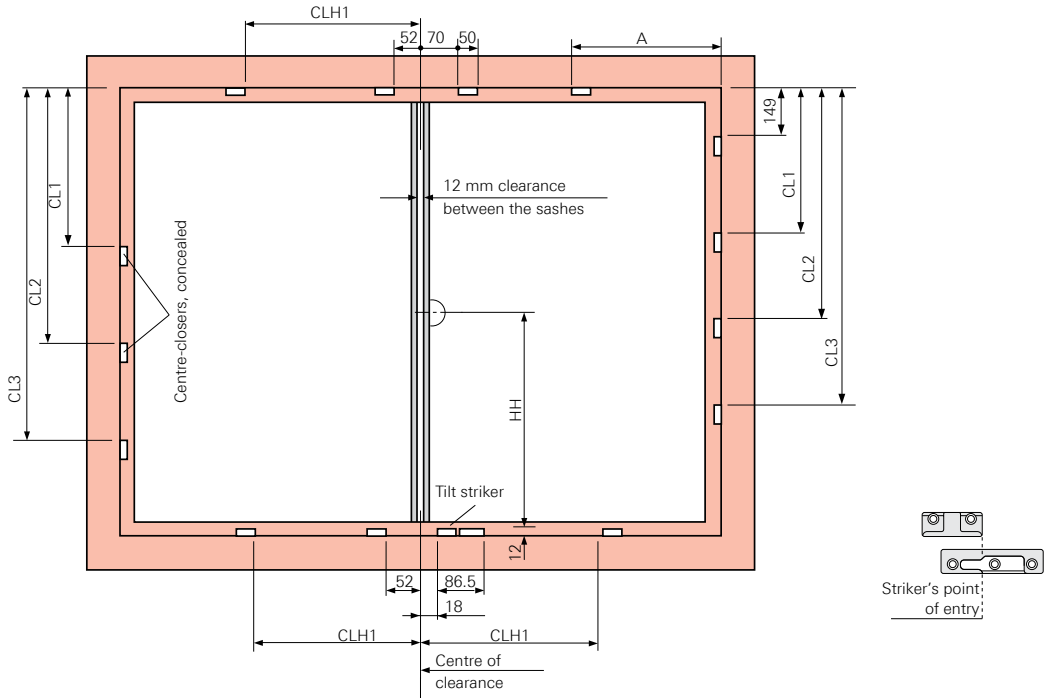
T&T espagnolette, centred/variable handle height, backset 15					
SRW/mm	A	B	C	D	E
621 – 800	125	–	–	–	–
801 – 1200	125	–	–	–	–
1201 – 1600	125	340	–	–	–

Centre lock, vertical				
SRH / mm	CL1			Right
801 – 1200	480	–	–	400 E

Centre lock, vertical				
SRH / mm	CL2			Left
801 – 1200	462	–	–	400 E

Striker dimensions (mm)
T&T espagnolette, fixed handle height
Basic security


w/o centre post



Centre lock, vertical, concealed			
SRH / mm	CL1	CL2	CL3
1101 – 1800	746	–	–
1801 – 2400	746	1346	–
2401 – 2600	746	1346	1750

Centre lock, horizontal		
SRW/mm	CLH1	Top
800 – 1200	652	600 E

Centre lock, horizontal		
SRW/mm	CLH1	Bottom
1101 – 1400[2)]	652	600 E

2) From 1050 mm with turn-restrictor

Multipart centre lock, vertical, without load transfer				
SRH / mm	CL1	CL2	CL3	
1101 – 1800	746	–	–	600 E
1801 – 2400	746	1346	–	600 E CON + CL 600 E
2401 – 2600	746	1346	1750	2 CL 600 E CON + CL 400 E

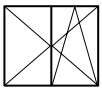
Multipart centre lock, vertical, with load transfer device				
SRH / mm	CL1	CL2	CL3	
1100 – 1150	550	–	–	CL 400 E
1151 – 1800	746	–	–	CL 600 E
1801 – 2400	746	1346	–	CL 600 E CON + CL 600 E
2401 – 2600	746	1346	1750	2 CL 600 E CON + CL 400 E

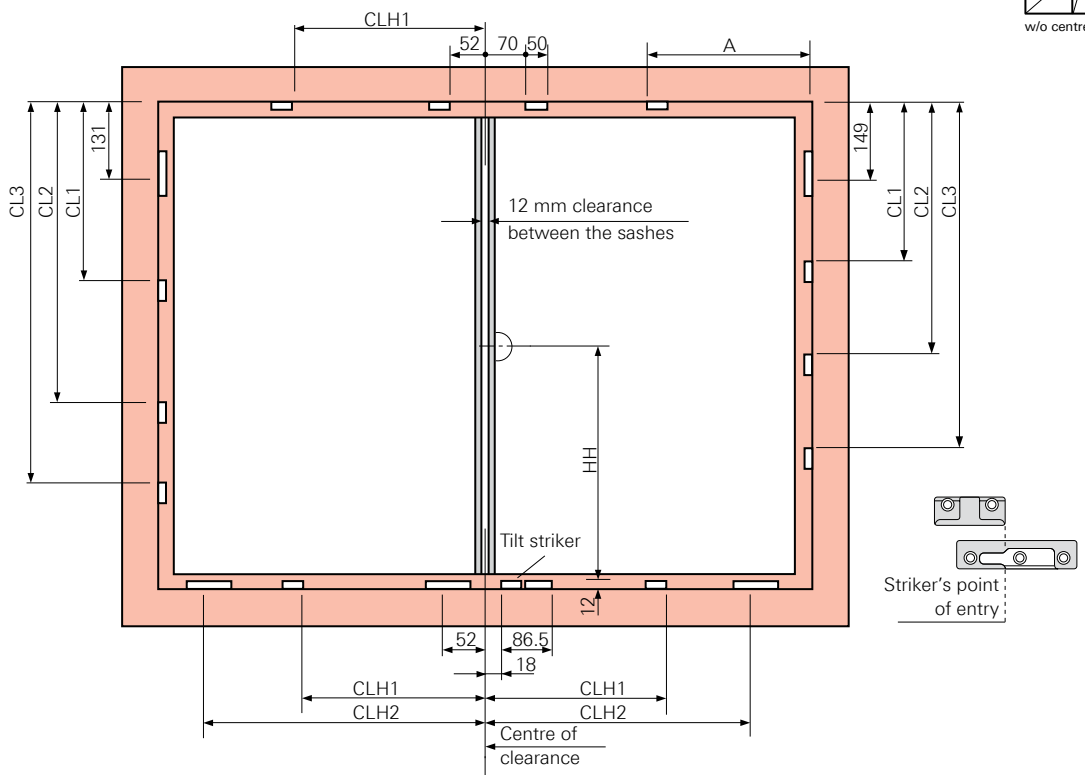
Centre lock, horizontal		
SRW/mm	CLH1	
1101 – 1600[2)]	652	600 E

Stay guide		
SRW/mm	A	Size
801 – 1000	600	500 / 890
1001 – 1200	750	500 / 1090
1201 – 1400[1)]	750	500 / 1290

1) With additional scissor stay

Striker dimensions (mm)
T&T espagnolette, fixed handle height
RC1 / RC1 N





Centre lock, vertical, without load transfer				
SRH / mm	CL1	CL2	CL3	Size
1101 – 1800	728	–	–	600 E
1801 – 2400	728	1328	–	600 E CON + CL 600 E
2401 – 2600	728	1328	1732	2 x CL 600 E CON + CL 400 E

Centre lock, vertical, with load transfer				
SRH / mm	CL1	CL2	CL3	Size
1100 – 1150	532	–	–	CL 400 E
1151 – 1800	728	–	–	CL 600 E
1801 – 2400	728	1328	–	CL 600 E CON + CL 600 E
2401 – 2600	728	1328	1732	2 x CL 600 E CON + CL 400 E

Centre lock, horizontal			
SRW / mm	CLH1	CLH2	Top
911 – 1110	452	–	400 E CON
1111 – 1310	652	–	600 E CON
1311 – 1400	652	–	600 E CON + CL 200 P

Multipart centre lock, horizontal			
SRW / mm	CLH1	CLH2	Size
430 – 650	252	–	CL 200 P
651 – 850	456	–	CL 400 P
851 – 1250[2]	652	–	CL 600 P
1251 – 1400[2]	652	852	CL 600 E CON + CL 200 P

Multipart centre lock, vertical, without load transfer				
SRH / mm	CL1	CL2	CL3	
1101 – 1800	746	–	–	600 E
1801 – 2400	746	1346	–	600 E CON + CL 600 E
2401 – 2600	746	1346	1750	2 x CL 600 E CON + CL 400 E

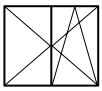
Centre lock, vertical, with load transfer				
SRH / mm	CL1	CL2	CL3	
1100 – 1150	550	–	–	CL 400 E
1151 – 1800	746	–	–	CL 600 E
1801 – 2400	746	1346	–	CL 600 E CON + CL 600 E
2401 – 2600	746	1346	1750	2 x CL 600 E CON + CL 400 E

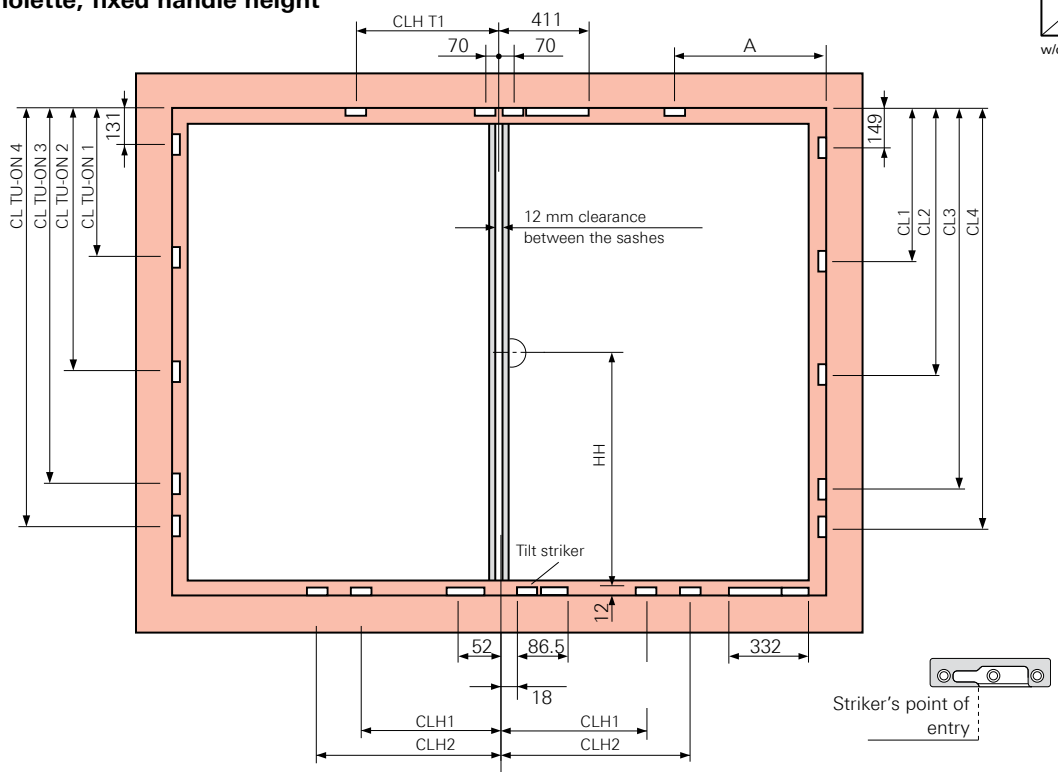
Multipart centre lock, horizontal			
SRW / mm	CLH1	CLH2	
430 – 650	252	–	CL 200 P
651 – 850	456	–	CL 400 P
851 1250[2]	652	–	CL 600 P
1251 – 1400[2]	652	852	CL 600 E CON + CL 200 P

Stay guide		
SRW / mm	A	Size
801 – 1000	600	500 / 890
1001 – 1200	750	500 / 1090
1201 – 1400[1]	750	500 / 1290

1) With additional scissor stay
2) From 1050 mm with turn-restrictor

Striker dimensions (mm)
T&T espagnolette, fixed handle height
RC2/RC2N





LMD = Lifting mishandling device BC = Bullet catch

Multipart centre lock, vertical, TU-ON, without load transfer device

SRH / mm	CL TU-ON 1	CL TU-ON 2	CL TU-ON 3	CL TU-ON 4	
490 – 700	328	–	–	–	CL 200 V
701 – 900	532	–	–	–	CL 400 V
901 – 1100	728	–	–	–	CL 600 V
1101 – 1300	728	928	–	–	CL 600 V CON + CL 200 V
1301 – 1500	728	1132	–	–	CL 600 V CON + CL 400 V
1501 – 1700	728	1328	–	–	CL 600 V CON + CL 600 V
1701 – 1900	728	1328	1528	–	2 CL 600 V CON + CL 200 V
1901 – 2100	728	1328	1732	–	2 CL 600 V CON + CL 400 V
2101 – 2300	728	1328	1928	–	2 CL 600 V CON + CL 600 V
2301 – 2400	728	1328	1928	2128	3 CL 600 V CON + CL 200 V

Centre lock, vertical, TU-ON, with load transfer device

SRH / mm	CL TU-ON 1	CL TU-ON 2	CL TU-ON 3	CL TU-ON 4	
1000 – 1200	532	–	–	–	CL 400 V
1201 – 1400	728	–	–	–	CL 600 V
1401 – 1600	728	928	–	–	CL 600 V CON + CL 200 V
1601 – 1800	728	1132	–	–	CL 600 V CON + CL 400 V
1801 – 2000	728	1328	–	–	CL 600 V CON + CL 600 V
2001 – 2200	728	1328	1528	–	2 CL 600 V CON + CL 200 V
2201 – 2400	728	1328	1732	–	2 CL 600 V CON + CL 400 V

Centre lock, horizontal, top, TU-ON

SRH / mm	CLH T1	CLH2	
430 – 510	–	–	BC CD
511 – 710	–	–	CD
711 – 910	–	–	CL 200 CON
911 – 1110	456	–	CL 400 V CON
1111 – 1310	652	–	CL 600 V CON
1311 – 1400	652	–	CL 600 V CON + CL 200 V

1) From 1050 mm with turn-restrictor
2) With additional scissor stay

Centre lock, vertical, T&T, without load transfer device

SRH / mm	CL1	CL2	CL3	CL4	
490 – 700	346	–	–	–	CL 200 V
701 – 900	550	–	–	–	CL 400 V
901 – 1100	746	–	–	–	CL 600 V
1101 – 1300	746	946	–	–	CL 600 V CON + CL 200 V
1301 – 1500	746	1150	–	–	CL 600 V CON + CL 400 V
1501 – 1700	746	1346	–	–	CL 600 V CON + CL 600 V
1701 – 1900	746	1346	1546	–	2 CL 600 V CON + CL 200 V
1901 – 2100	746	1346	1750	–	2 CL 600 V CON + CL 400 V
2101 – 2300	746	1346	1946	–	2 CL 600 V CON + CL 600 V
2301 – 2400	746	1346	1946	2146	3 CL 600 V CON + CL 200 V

Centre lock, vertical, T&T, with load transfer device

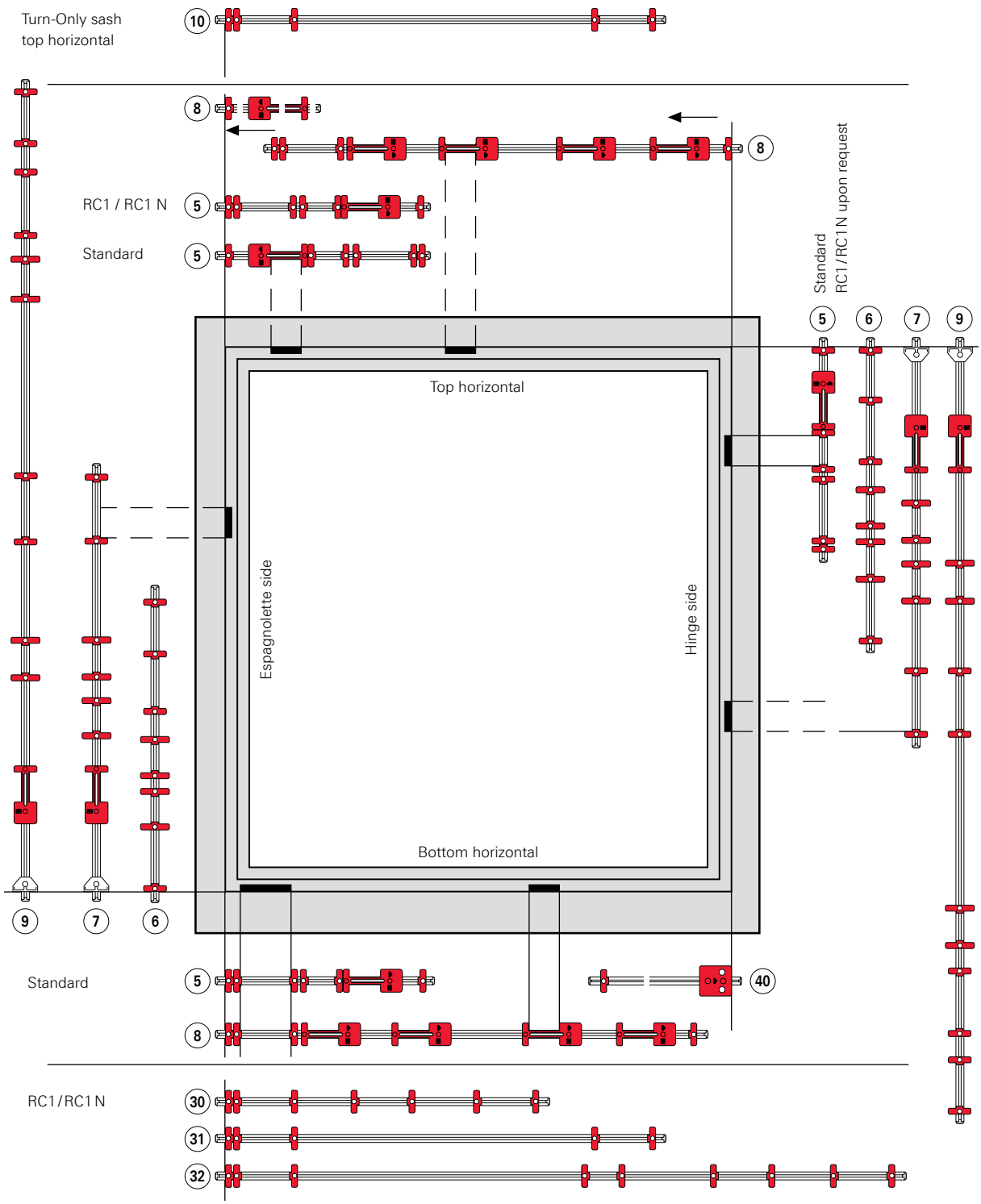
SRH / mm	CL1	CL2	CL3	CL4	
1000 – 1200	550	–	–	–	CL 400 V
1201 – 1400	746	–	–	–	CL 600 V
1401 – 1600	746	948	–	–	CL 600 V CON + CL 200 V
1601 – 1800	746	1150	–	–	CL 600 V CON + CL 400 V
1801 – 2000	746	1346	–	–	CL 600 V CON + CL 600 V
2001 – 2200	746	1346	1546	–	2 CL 600 V CON + CL 200 V
2201 – 2400	746	1346	1750	–	2 CL 600 V CON + CL 400 V

Centre lock, horizontal

SRW/mm	CLH1	CLH2	
430 – 650	252	–	CL 200 V
651 – 850	456	–	CL 400 V
851 – 1050	652	–	CL 600 V
1051 – 1250[1]	652		CL 600 V + turn-restrictor
1251 – 1400[1]	652	856	CL 600 V CON + CL 200 V + turn-restrictor

T&T stay guide

SRW/mm	A	Size	
801 – 1000	600	500 / 890	
1001 – 1200	600	500 / 1090	
1201 – 1400[2]	600	500 / 1090	+ additional scissor stay



⑤–⑩ Single positioning jigs/fixed handle height		
Description		Material no.
⑤	Single positioning jig for tilt striker / corner drive	290072
⑥	Single positioning jig for lifting mishandling device / corner drive	290073
⑦	Single positioning jig for espagnolette/hinge side 801–1600	290074
⑧	Single positioning jig top horizontal/ bottom horizontal 1001–1400	290075
⑨	Single positioning jig for espagnolette/hinge side doors	290076
⑩	Single positioning jig Turn-Only sash/Tilt striker top horizontal / bottom horizontal	290081

㉚–㉜ Positioning jig		
Description		Material no.
㉚	Positioning jig bottom horizontal 400– 800	268931
㉛	Positioning jig bottom horizontal 801–1000	268932
㉜	Positioning jig bottom horizontal 1001–1400	268933
㊵	Drilling jig, standard, cam NT Designo	451019
	Drilling jig H, 9 mm axis, NT Designo	451017

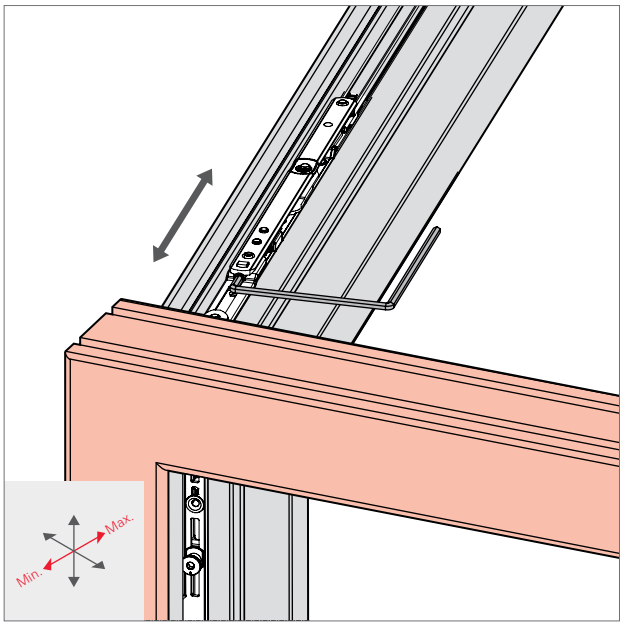
Symbols for the sash adjustment when installed
These symbols facilitate the orientation while adjusting the window sashes after installation with the following steps. Use a 4 mm hex key as tool.

Height adjustment

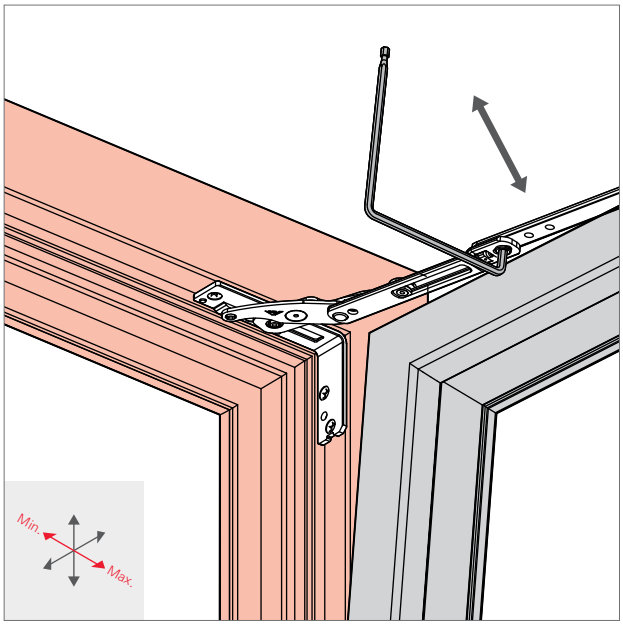
Lateral adjustment

Gasket-compression adjustment

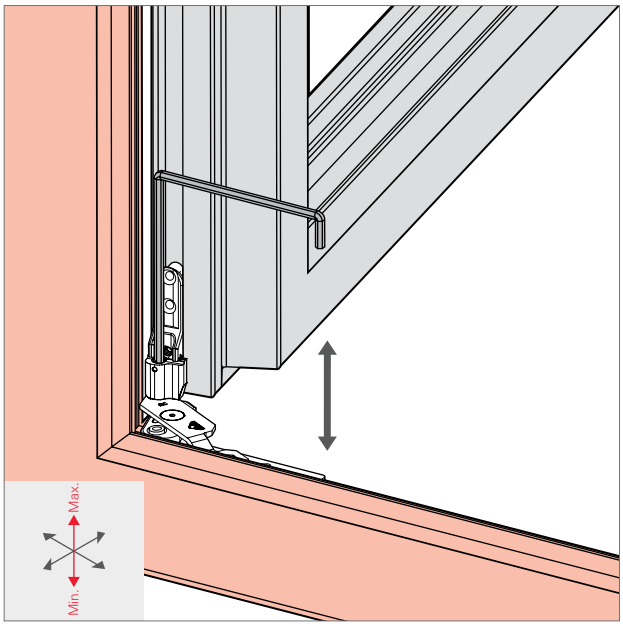
NOTE!
Adjusting Roto hardware components may only be carried out by authorised and qualified personnel.
The stated values in the adjustment instructions chapter are maximum values which must not be exceeded.



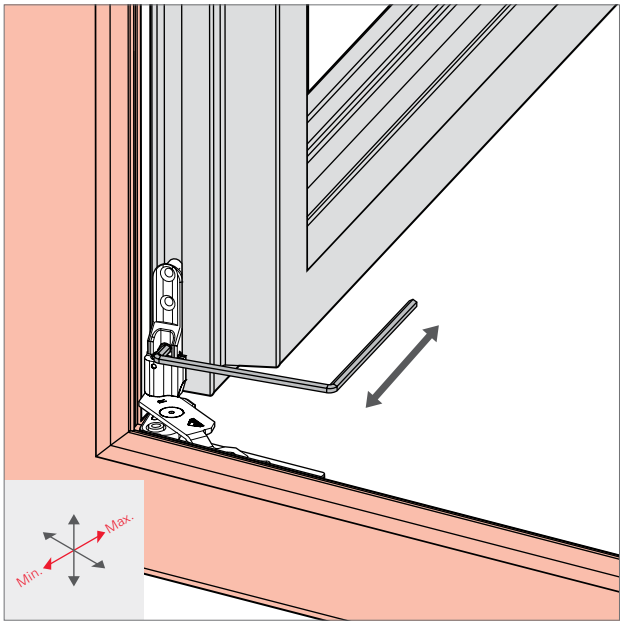
Lateral adjustment
Min.: –2.0 mm
Max.: +2.0 mm



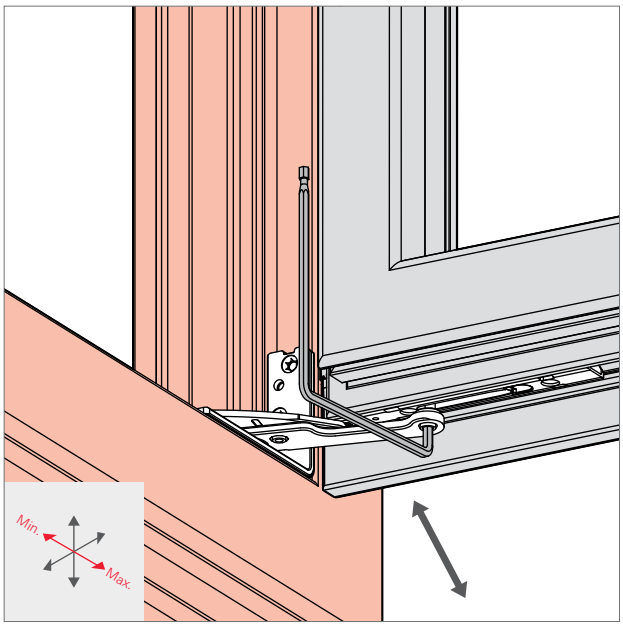
Gasket compression
Min.: –0.5 mm
Max.: +0.5 mm



Height adjustment
Min.: –1.0 mm
Max.: +2.0 mm



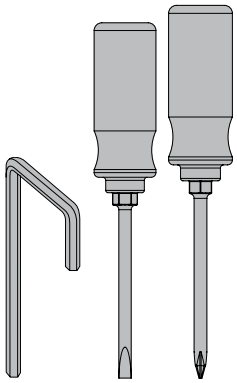
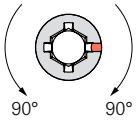
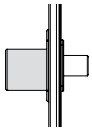
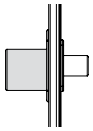
Lateral adjustment
Min.: –1.5 mm
Max.: +2.0 mm



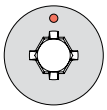
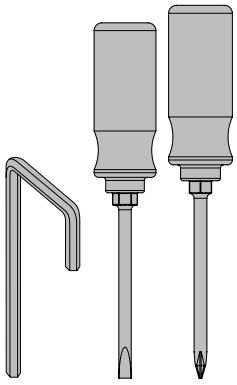
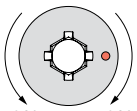
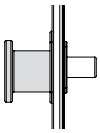
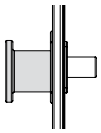
Gasket compression
Min.: –0.5 mm
Max.: +0.5 mm

Locking cam adjustment instructions

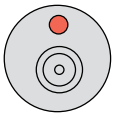
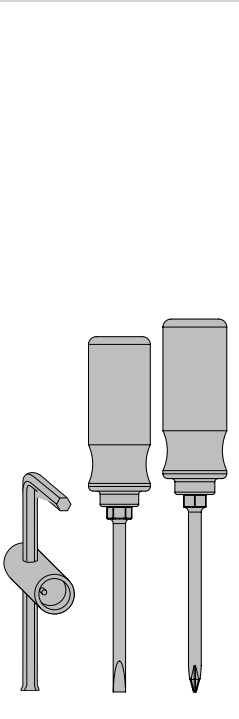
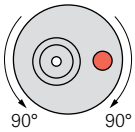
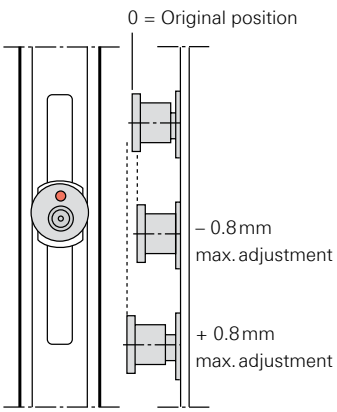
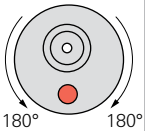
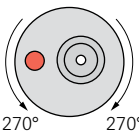
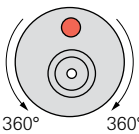
E cam

Cam type	Adjustment range	Gasket-compression	Height	Side view		Tools
						
	 90° 90°	+/– 0.8 mm				

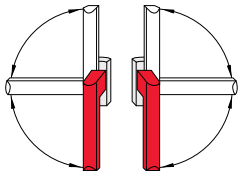
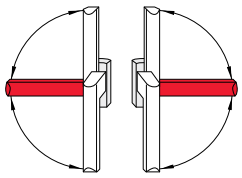
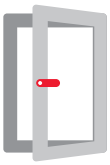
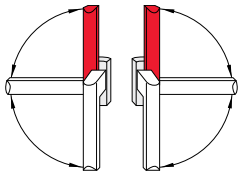
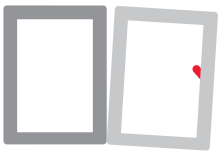
P cam

Cam type	Adjustment range	Gasket-compression	Height	Side view		Tools
						
	 90° 90°	+/– 0.8 mm				

V cam

Cam type	Adjustment range	Gasket-compression adjustment/mm 	Height adjustment / mm 	Side view/top view		Tools
						
	 90° 90°	+/– 0.8 mm	+/– 0.2 mm	 0 = Original position – 0.8 mm max. adjustment + 0.8 mm max. adjustment		
	 180° 180°	–	+/– 0.4 mm			
	 270° 270°	+/– 0.8 mm	+/– 0.6 mm			
	 360° 360°	–	+/– 0.8 mm			

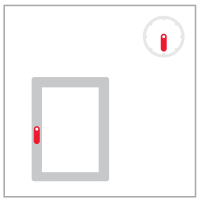
The following symbols show the different handle positions and the resulting sash positions of windows and balcony doors.

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_v1).

Drehkipp-Beschlag
Tilt&Turn hardware

geschlossen
closed



öffnen
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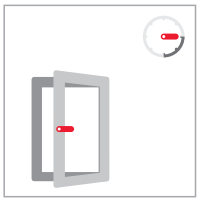
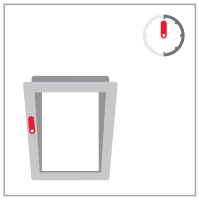
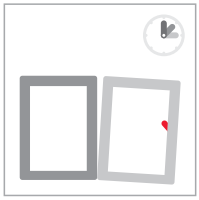


kippen
tilt



Fehlschaltungen vermeiden
Avoid mishandling mode!



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Troubleshooting

Problem	Cause	Corrective action	Specialist company	End-users
Handle is difficult to rotate.	– Frame parts are not properly greased.	– Grease frame parts.	□	□
	– Faulty handle.	– Replace the handle.	■	–
	– Handle screws are screwed in too strong.	– Slightly loosen the screws.	■	–
	– Oblique screws in the sash parts.	– Straight screw-fixing of the sash parts.	■	–
	– Faulty sash parts.	– Replace the sash parts.	■	–
	– Incorrect strikers.	– Replace strikers.	■	–
	– Sash stay gasket compression too strong (accumulation of gaskets).	– 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, rehinge the sash proceeding from T&T espagnolette).	■	–
	– Faulty striker locations.	– Adjust the striker locations.	■	–
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.	– Rehinge the sash.	■	–
	– Faulty striker locations.	– Adjust the striker locations.	■	–

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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 hinges – 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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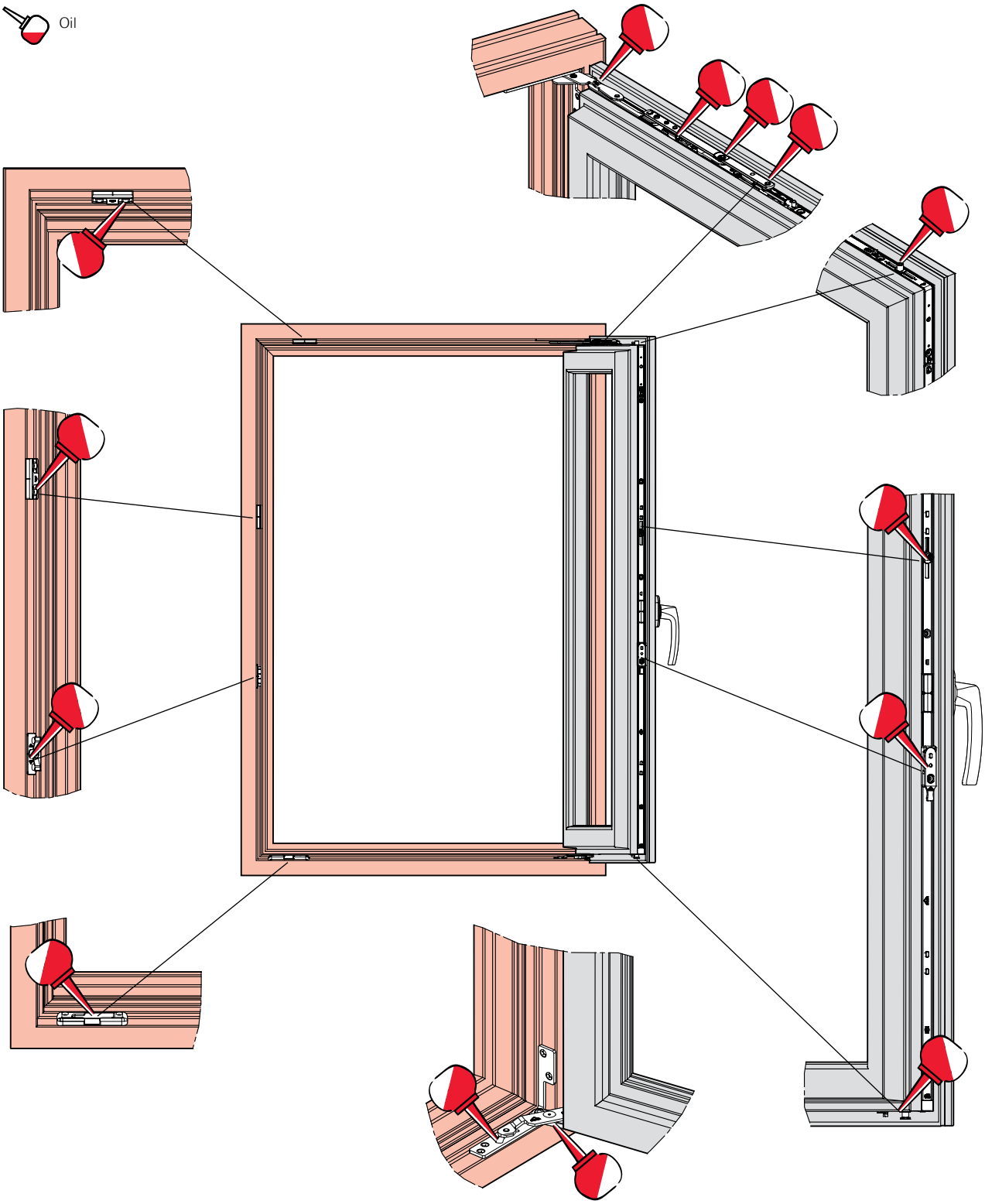
NOTE!
Observe the following environmental protection notes during maintenance work:

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


Oil

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, acidic cleaners or abrasive cleaning agents.	☐	☐
Only use mild, pH-neutral cleaning agents in diluted form.	☐	☐
Only use a soft 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 cross-linked 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.	■	–
Never use stainless-steel screws.	■	–

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Protection against dirt

	Specialist company	End-users
Remove deposits and dirt from building materials (building dust, plaster, cement, etc.) or similar materials with water before it cures.	□	□
Keep the hardware free from deposits and soiling.	□	□
Never use aggressive, acidic cleaning or scouring agents.	□	□
Only use mild, pH-neutral cleaning agents in diluted form.	□	□
Only use a soft 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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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 sash. Use suitable means of securing for this.
- Use only transport protections designed for the respective clearance.
- Wherever possible, transport the windows in the intended installation position. If transport in the intended installation position is not possible, unhinge the sash, and transport it separately from the frame to which it belongs.

During transport, loading, and unloading, especially when auxiliaries such as suckers, transport nets, forklifts, or cranes are used for support, reaction forces may arise which result in damage or overloading to the installed hardware. Therefore observe the following during all transport, loading, and unloading:
- The type and the force application points when transporting, loading, and unloading have a significant effect on the reaction forces which arise.
  - Always choose the force application points so that the resulting reaction forces are dissipated appropriate to the 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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