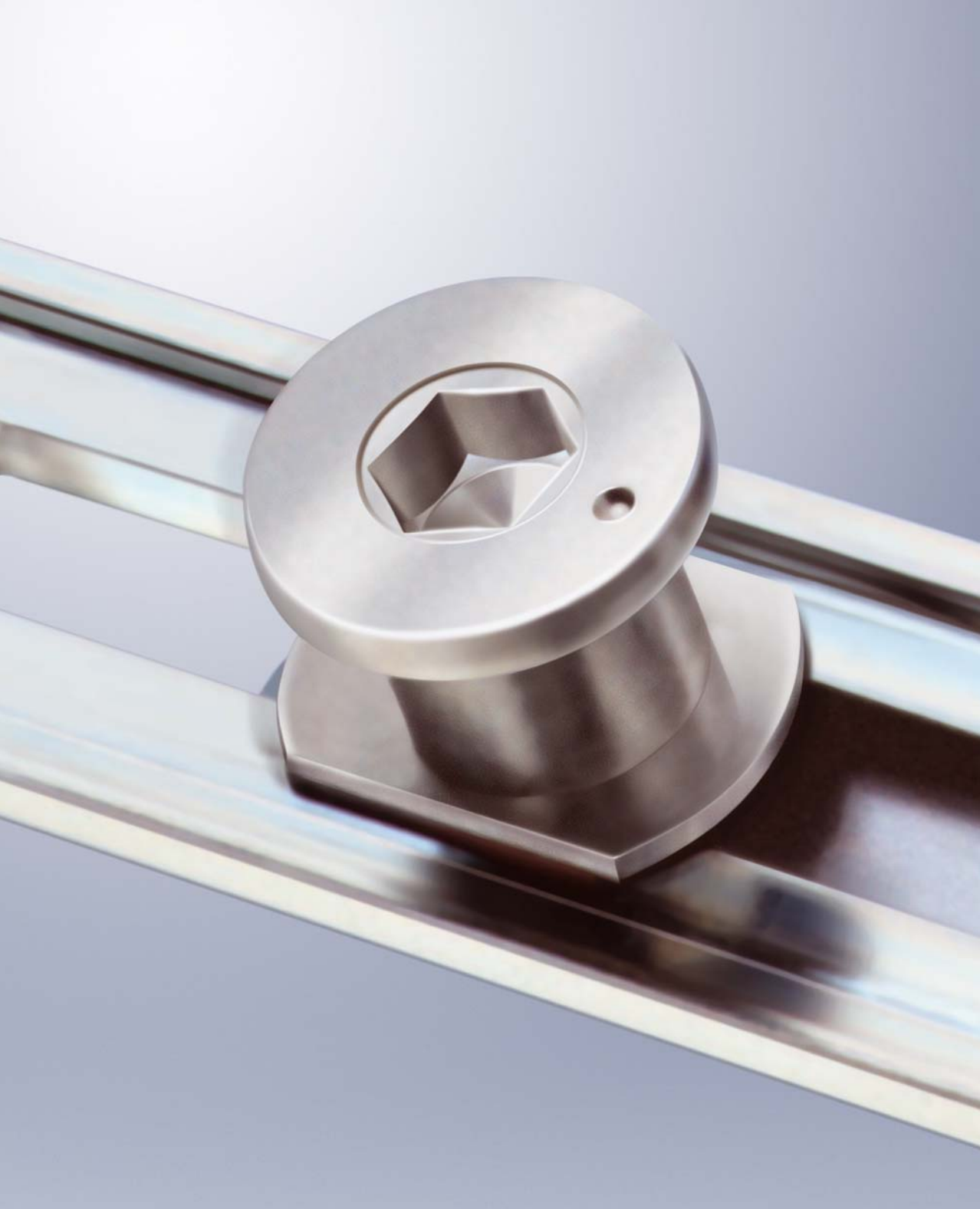


WE OPEN SPACE



Roto NT

Tilt & turn hardware

K, A and R hinges

Tilt first parts catalogue & fitting instructions

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Roto NT

Product liability and warranty

Turn-Only and Tilt & Turn Hardware for windows and balcony doors

According to the defined manufacturer's liability described in paragraph 4 of the "product liability law", the following information regarding Turn-Only and Tilt & Turn Hardware for window and balcony door sashes should be observed. Non-compliance exempts the manufacturer of his liability.

1. Product information and specified application.

Turn-Only and Tilt & Turn Hardware as covered by this definition 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. Conventional Turn-Only and Tilt & Turn Hardware as covered by this definition, lock window and balcony-door sashes and enable various ventilating positions. When closing, the gasket counter force must be overcome as a rule.

Differing applications do not correspond to its specified application. Burglar-resistant window and balcony doors, window and balcony doors for damp rooms and those for use in environments with aggressive, corrosive air content, require hardware adapted for the respective application and individually agreed upon performance features.

Opened windows and balcony-door sashes achieve only a shielding function and do not meet any demands on joint impermeability, water tightness, sound reduction, heat insulation and burglary resistance.

In the case of wind and draught, the window and balcony-door sashes must be closed and locked. Wind and draught as covered by this definition is present, if a window or balcony door sash while in one of its opening positions, can open or close on its own, in an uncontrolled manner by means of either air pressure or air suction. A static opening position of windows and balcony door sashes can only be achieved with additional hardware. The resistance against wind loads in a closed and locked state is dependent on the respective designs of windows & balcony doors. Should wind loading in accordance with DIN EN 12210 occur (in particular pressure test p3), suitable hardware compilations are to be matched in relation to the respective window design and frame material, and each case individually agreed upon.

Generally speaking, Turn-Only and Tilt & Turn Hardware can fulfil the demands made for barrier-free dwellings according to DIN 18025. However corresponding hardware compilations and installations for windows and balcony doors are necessary, which must be coordinated and each case individually agreed upon.

2. Misuse

Misuse - therefore not the specified product utilisation - of Tilt & Turn hardware for windows and balcony doors occurs in particular:

- if obstacles are inserted in the opening vicinity between frame and sash, thus preventing its proper specified use.
- when window and balcony door sashes are pressed advertently or uncontrolled (for example by the wind) up against the window reveals, so that the hardware, the frame material or other individual window or balcony-door sash components are damaged or destroyed and/or if consequential damage can arise.
- if additional loads are put on windows or balcony-door sashes (for example if children swing on the window or balcony door sash),
- if while closing the windows and balcony door sashes, someone reaches into the rebate between the sash and frame (injury hazard).

3. Liability

The respective entire hardware set may only consist of hardware components from Roto's outward opening range. In the case of inappropriately assembled hardware, and/or in case of non original accessory components and/or non factory-approved accessory components, no liability is accepted.

4. Product performance

4.1 Maximum sash weights

The following listed maximum sash weights for the individual hardware versions may not be exceeded. The building component with the least permissible load-carrying capacity determines the max. sash weight. Application diagrams and component allocation are to be observed.

4.2 Sash sizes

The presentation of the application diagrams shows the relationships between the permissible sash rebate widths and sash rebate heights, depending on various glass weights and/or thickness'. The resulting sash rebate dimensions or sash formats (portrait and/or landscape format) - as well as the maximum sash weight - must not be exceeded under any circumstances.

4.3 Hardware-combination

The manufacturer's regulations that deal with the combination of hardware are obligatory. (for example: the application of additional stay arms, the hardware design for burglar-resistant window and balcony-door sashes).

5. Product maintenance

Security relevant hardware components are to be examined at least once a year for stability and wear and tear. Depending on the requirements, the fixing-screws are to be tightened and/or parts exchanged. In addition to this, the following maintenance work is to be carried out annually:

- All movable parts and all locking points of the Turn-Only and Tilt & Turn Hardware are to be greased and tested.
- Only cleaning and maintenance agents which do not damage the corrosion protection of the hardware components are to be used.

The hardware adjustments - particularly in the vicinity of the corner pivot rest and the scissors - as well as replacing parts and the unhinging & hinging of the active sash are to be carried out by a specialist company.

When surface treating - for example when painting or varnishing - the windows' and balcony doors hardware is excluded from this process and is also to be protected against any impurities (paint/varnish splashes).

5.1 Retention of the surface quality

Electrolytically applied zinc coatings are not attacked in a normal room climate, when no condensation can form on the hardware or occasionally formed condensation can dry rapidly.

In order to permanently preserve the hardware's surface quality and to avoid deterioration by corrosion, it is imperative to observe the following points:

- The hardware and/or the rebate areas are to be ventilated sufficiently in particular during the building phase so that they are not exposed either to direct wetness or condensation.
- The hardware is to be kept free from deposits and soiling from building materials (building dust, plaster, cement etc.).
- Aggressive vapours in the rebate area (for example: through formic acid or acetic acid, ammonia, amine or ammonia compounds, aldehydes, phenols, tannic acid etc.) in connection with small formations of condensation can lead to fast corrosion of the hardware. In the case of such aggressive vapours occurring, a general adequate ventilation of the rebate areas of windows and balcony doors is to be ensured. This is particularly valid for windows and balcony doors made of oak or other types of timber with a high concentration of (tannic-) acid.
- Furthermore no acetic-acid or cross-linked acidic sealing compounds or those with the above mentioned contents may be used, since both the direct contact with the sealing compound and its vapourisation can attack the surface.
- The hardware may only be cleaned with mild, pH-neutral cleaning agent in diluted form. Under no circumstances may aggressive, acidiferous cleaners or abrasive cleaning agents whose contents are listed in the above paragraph be used.

6. Obligation to issue information and instructions

To fulfil the information and instruction obligations as well as the maintenance operations according to the "product liability law", the following is available:

- for planning engineers "planning documents" for authorised dealers "catalogues"
- for fabricators "installation instructions" and "factory drawings"
- for builders and end users: "service Et maintenance instructions" as well as "Operating manuals".

In order to safeguard the function of Turn-Only and Tilt & Turn Hardware for windows and balcony doors:

- Planning engineers are obliged to request and comply with the manufacturers or authorised dealers product information.
- The authorised dealers are obliged to observe and request product information from the manufacturer and to pass this on to the fabricators, in particular installation instructions, factory drawings, service Et maintenance instructions as well as operating manuals.
- Fabricators are obliged to observe the product information and in particular to request service & maintenance instructions as well as operating manuals from the manufacturer or authorised dealer, and to pass these on to the builders and end users.

7. Applicability for related hardware

The variations possible within the individual hardware system - for example Tilt-only and Top-hung hardware - are to be treated according to the corresponding valid features of product performance, product maintenance, information and instruction obligations, product information, specified use/application and misuse.

The general design description lists characteristics of the Roto NT, K hinge, tilt and turn window hardware:

- Designed for use on all timber, PVC-U and aluminium windows with a standard eurogroove.
- Faceplate width 16mm.
- All cams are adjustable by $\pm 0.8\text{mm}$, meaning adjustments can be made on site.
- 3 locking cam versions. NT components listed here feature 3 different locking cam options that differ in application and adjusting capabilities. Detailed adjusting information can be found on page 25.



Locking cam E
Compression adjustable



Locking cam P
Compression adjustable security cam



Locking cam V
Height and compression adjustable security cam

- Precision design ensures smooth performance in all applications.

Coating specification

RotoSil surface protection procedure has been developed by Roto for the hardware product range, based upon galvanising, chromating and an additional sealing. **RotoSil** enables the hardware components to appear in a smooth silver tone. The quality requirements of RAL-RG 607/3 are exceeded, also the protection effect against acids has been decisively improved. The surface protection regulations of the RAL quality assurance association in Velbert, Germany, are more than fulfilled.

Surface protection with **RotoSil** exceed the requirements of the following standards:

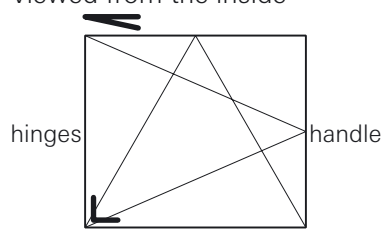
RAL 607/3 (72 hours protection from white rust and 240 hours protection against red rust. Inclusive of cycle testing to 60,000 cycles).

BS 6375 pt. 2 "Performance of Windows."

BS EN 1670:2007 part 5.6, grade 5
(480 hours building hardware corrosion resistance).



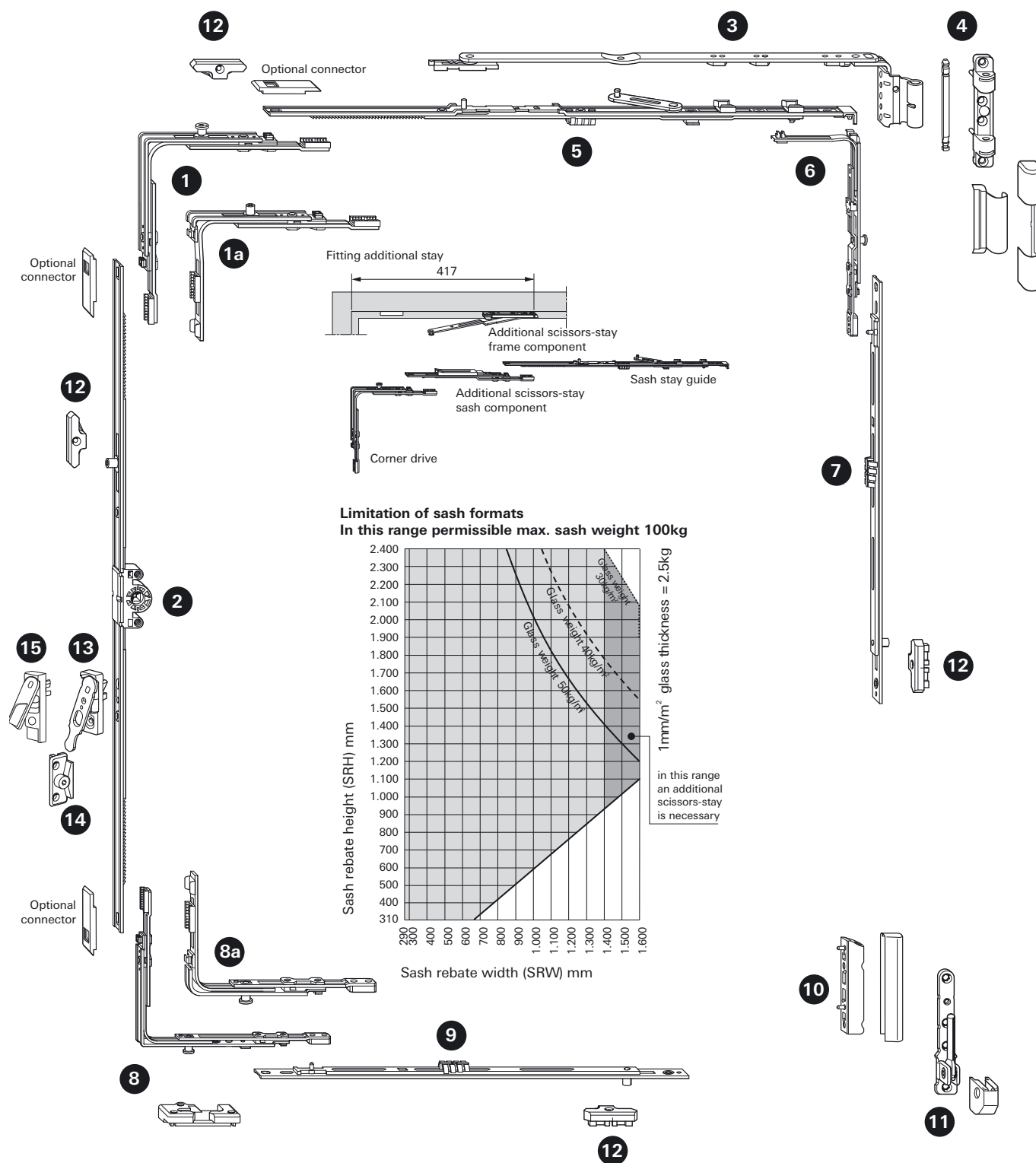
Viewed from the inside



Roto NT

'K' hinge

Standard gearing



Application range

Sash rebate width, min. - max. 290 - 1600mm

Sash rebate height, min. - max. 310 - 2400mm

Sash weight, max. 100kg

Optional connector 350 401

'K' hinge

Standard parts



Corner drives

Item number		SRH	Part Number
1	1 P	451 - 2400	260 277
1a	1 E	310 - 450	260 280

2. Espagnolette

SRH	Length (mm)	Part Number
310 - 450 ⁽¹⁾	430	259 717*
451 - 620	400	259 718*
621 - 800 1 E	580	259 719
801 - 1200 1 E	980	259 720
1201 - 1600 2 E	1380	259 721
1601 - 2000 2 E	1780	259 762
2001 - 2400 4 E	2180	259 763

* Lifting and mishandling device is not possible

⁽¹⁾ With special corner drive 1a & TF corner drive 8a

3. Stay arm

SRW	Length (mm)	Part Number
9mm axis		
290 - 410	150	L 260 224 R 260 225
411 - 600	250	L 260 226 R 260 227
601 - 800	350	L 260 228 R 260 229
801 - 1400	500	L 260 230 R 260 231
13mm axis		
290 - 410	150	L 260 232 R 260 233
411 - 600	250	L 260 234 R 260 235
601 - 800	350	L 260 236 R 260 237
801 - 1400	500	L 260 238 R 260 239
White covers for above		230 252
Brown covers for above		230 247

4. Stay bearing and pin for stay arm

Description	Part Number
Max. sash weight 100 kg	230 177
Pin	227 354
White covers for above	230 205
Brown covers for above	230 200

5. Stay guide

SRW	Length (mm)	Part Number
290 - 410	300	260 201*
411 - 600	490	256 024
601 - 800	690	260 204
801 - 1000 1 E	890	260 208
1001 - 1200 1 E	1090	260 212
1201 - 1400 1 E	1290	260 215

* Sash rebate widths smaller than 310mm, the assembly connector clip the end of the stay guide, must be removed. Additional stay **292 022** and **profile related** packer is required on sashes over 1400mm wide (190mm long).

6. Centre lock stay guide connector 1 **P** 260 286

7. Standard centre lock (vertical)

SRH	Size	Part Number
801 - 1200 1 E	400	255 280
1201 - 1400 1 E	600	255 281
1401 - 1800 1 E	600 connectable	255 282
	400	255 280
1801 - 2000 1 E	600 connectable	255 282
	600	255 281
2001 - 2400 2 E	600 connectable	255 282 x 2
	400	255 280

8. Tilt first corner drives (for tilt first window only)

Item	Description	Part Number
8	Tilt first corner drive 1 P	260 277
8a	Special TF corner drive 1 P	260 282
	Tilt first striker	Profile related

Special TF corner drive 8a should be used to achieve a SRH of 310mm

9. Standard centre lock (horizontal)

SRW	Size	Part Number
801 - 1200 1 E	400	255 280
1201 - 1400 1 E	600	255 281
1401 - 1600 1 E	600 connectable	255 282
	400	255 280

10. Corner hinge

Max. sash weight	Part Number
For 9 & 13 mm axis - 100 kg	230 343
White covers for above	230 491
Brown covers for above	230 486

11. Pivot rest

Max. sash weight	Part Number
100 kg	258 590
White covers for above	258 926
Brown covers for above	258 922

12. Compression striker **Profile related**

13. Sash lifting device 260 538

14. Striker for sash lifting device **Profile related**

15. Mis-operation device

Part Number
9mm axis
L 349 128 R 349 129
13mm axis
L 349 130 R 349 131

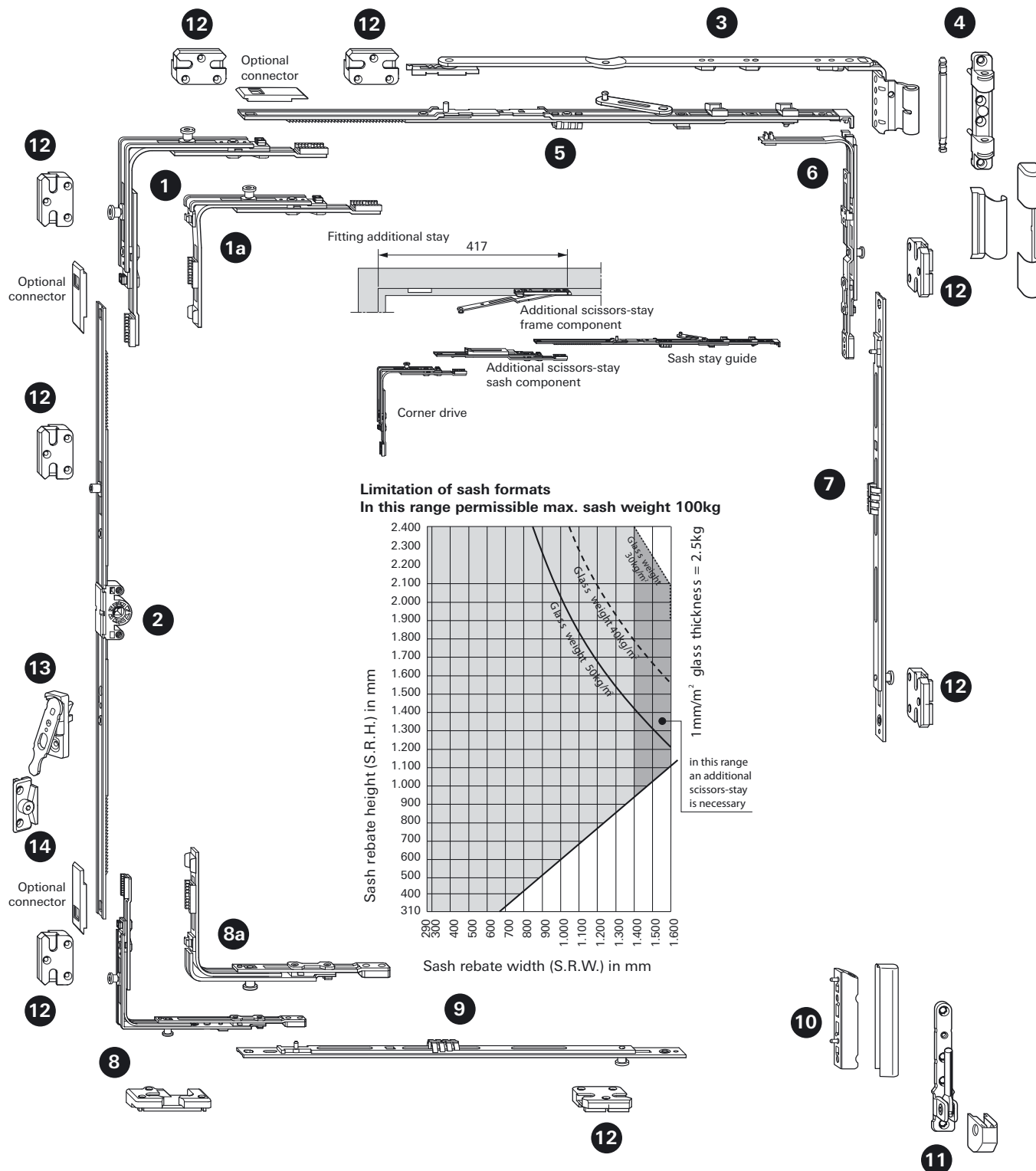
Locking cam **E** Compression adjustable cam

Locking cam **P** Compression adjustable, security cam

Roto NT

'K' hinge

Security gearing



Application range

Sash rebate width, min. - max. 290 - 1600mm

Sash rebate height, min. - max. 310 - 2400mm

Sash weight, max. 100kg

Optional connector 350 401

'K' hinge

Security parts



Corner drives

Item number	SRH	Part Number
1 2 V	451 - 2400	260 274
1a 1 P	310 - 450	260 282

2. Espagnolette

SRH	Length (mm)	Part Number
310 - 450 ⁽¹⁾	430	259 717*
451 - 620	400	259 718*
621 - 800 1 E	580	259 719
801 - 1200 1 E	980	259 720
1201 - 1600 2 E	1380	259 721
1601 - 2000 2 E	1780	259 762
2001 - 2400 4 E	2180	259 763

* Lifting & mishandling device is not possible

⁽¹⁾ With special corner drive 1a & TF corner drive 8a

3. Tilt first stay arm

SRW	Length (mm)	Part Number
9mm axis		
290 - 410	150	L 260 224 R 260 225
411 - 600	250	L 260 226 R 260 227
601 - 800	350	L 260 228 R 260 229
801 - 1400	500	L 260 230 R 260 231
13mm axis		
290 - 410	150	L 260 232 R 260 233
411 - 600	250	L 260 234 R 260 235
601 - 800	350	L 260 236 R 260 237
801 - 1400	500	L 260 238 R 260 239
White covers for above		230 252
Brown covers for above		230 247

4. Stay bearing & pin for stay arm

Description	Part Number
Max. sash weight 100 kg	230 177
Pin	227 354
White covers for above	230 205
Brown covers for above	230 200

5. Stay guide

SRW	Length (mm)	Part Number
290 - 410	300	260 201*
411 - 600	490	256 024
601 - 800	690	260 204
801 - 1000 1 E	890	260 208
1001 - 1200 1 E	1090	260 212
1201 - 1400 1 E	1290	260 215

* Sash rebate widths smaller than 310mm, the assembly connector clip the end of the stay guide, must be removed. Additional stay **292 022** and **profile related** packer is required on sashes over 1400mm wide (190mm long).

6. Centre lock stay guide connector 1 **P** 260 286

7. Security centre lock (vertical)

SRH	Size	Part Number
490 - 700	200	1 P 255 284
701 - 900	400	1 P 255 285
901 - 1100	600	1 P 255 286
1101 - 1300	600 connectable 200	1 P 281 417 1 P 255 284
1301 - 1500	600 connectable 400	1 P 281 417 1 P 255 285
1501 - 1700	600 connectable 600	1 P 281 417 1 P 255 286
1701 - 1900	600 connectable 200	2 P 281 417 x 2 1 P 255 284
1901 - 2100	600 connectable 400	2 P 281 417 x 2 1 P 255 285
2101 - 2300	600 connectable 600	2 P 281 417 x 2 1 P 255 286
2301 - 2400	600 connectable 200	3 P 281 417 x 3 1 P 255 284

Tilt first corner drives (for tilt first window only)

Item	Description	Part Number
8	Tilt first corner drive	2 V 260 274
8a	Special TF corner drive	1 P 260 282

Tilt first striker

Profile related

Corner drive 8a should be used for a SRH of 310mm

9. Security centre lock (horizontal)

SRW	Size	Part Number
400 - 600	200	1 P 255 284
601 - 800	400	1 P 255 285
801 - 1000	600	1 P 255 286
1001 - 1200	600 connectable 200	1 P 281 417 1 P 255 284
1201 - 1600	600 connectable 400	1 P 281 417 1 P 255 285

10. Corner hinge

Max. sash weight	Part Number
For 9 & 13mm axis - 100 kg	230 343
White covers for above	230 491
Brown covers for above	230 486

11. Pivot rest

Max. sash weight	Part Number
100 kg	258 590
White covers for above	258 926
Brown covers for above	258 922

12. Security striker

Profile related

13. Sash lifting device 260 538

14. Striker for sash lifting device Profile related

15. Mis-operation device

	Part Number
9mm axis	L 349 128 R 349 129
13mm axis	L 349 130 R 349 131

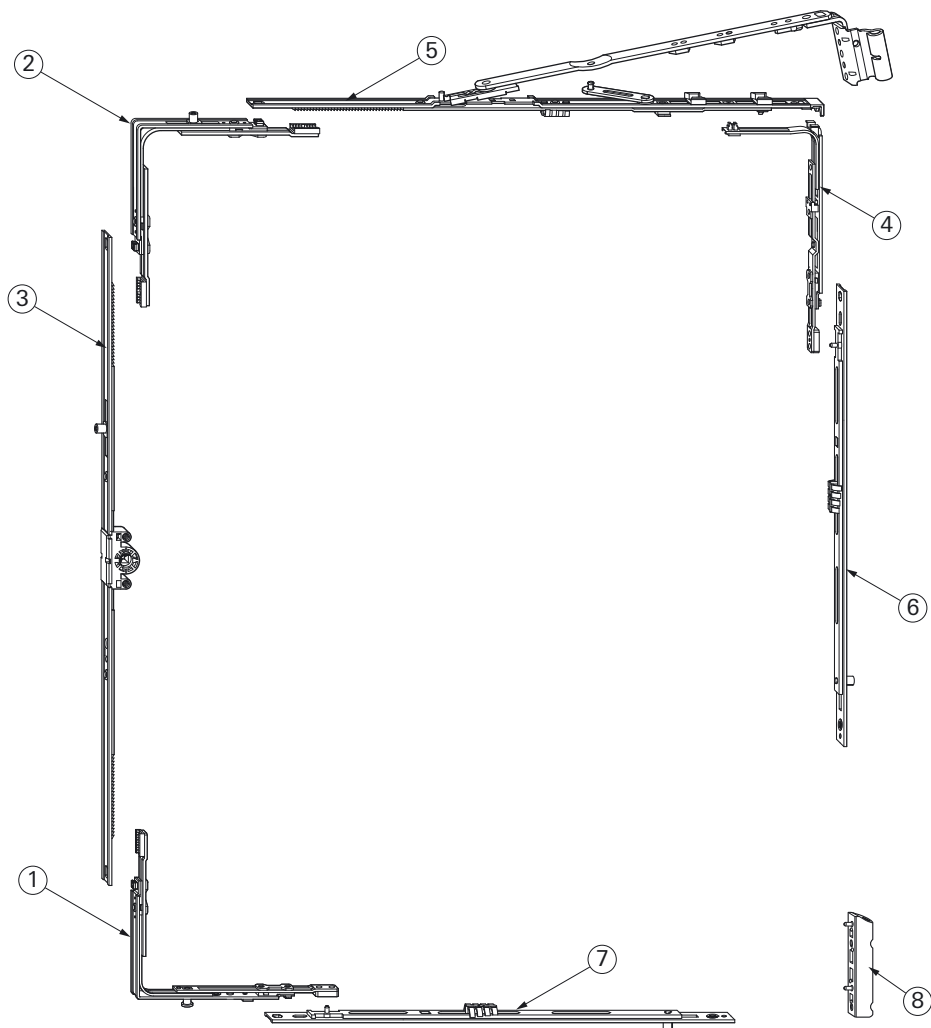
Locking cam E	Compression adjustable cam
Locking cam P	Compression adjustable, security cam
Locking cam V	Height and compression adjustable, security cam

Roto NT

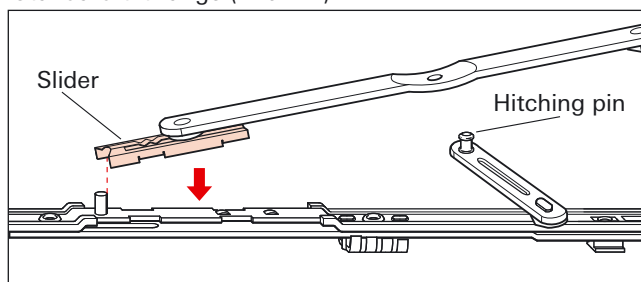
'K' hinge

Installation and adjustment information

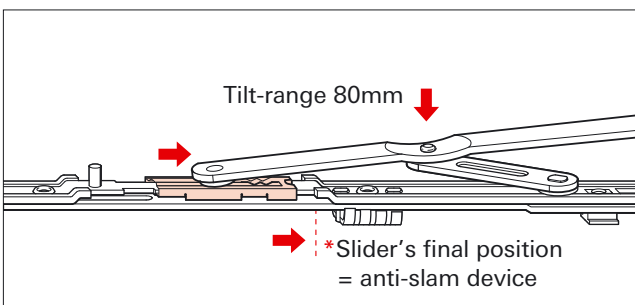
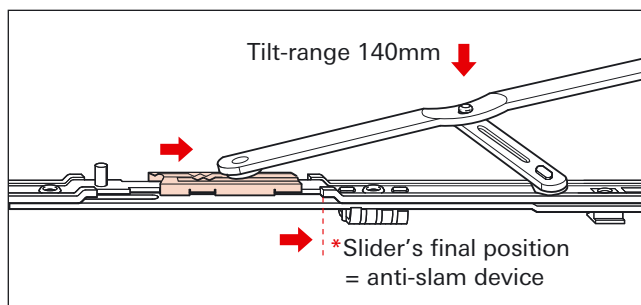
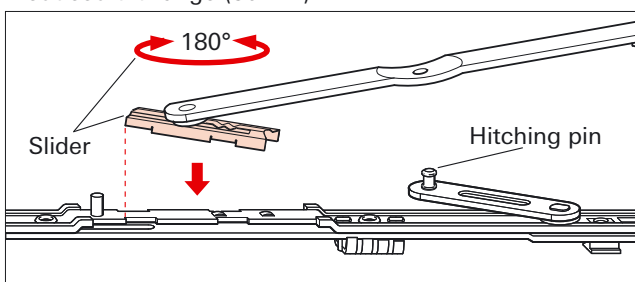
Suggested installation sequence



Standard tilt-range (140mm)



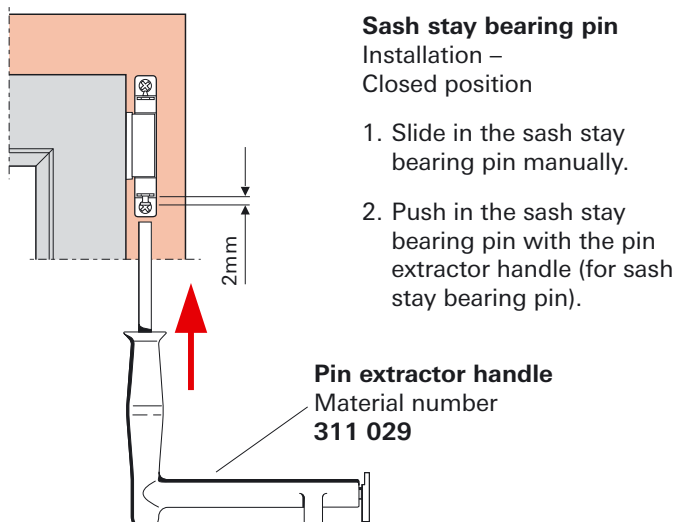
Reduced tilt-range (80mm)



The slider's final position (anti-slam device) is reached automatically by means of tilting the sash.

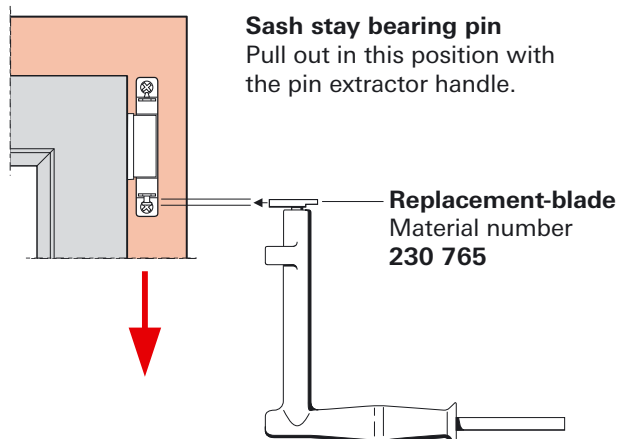
Hinging the sash

It is only possible to insert the sash stay bearing pin in the closed position.



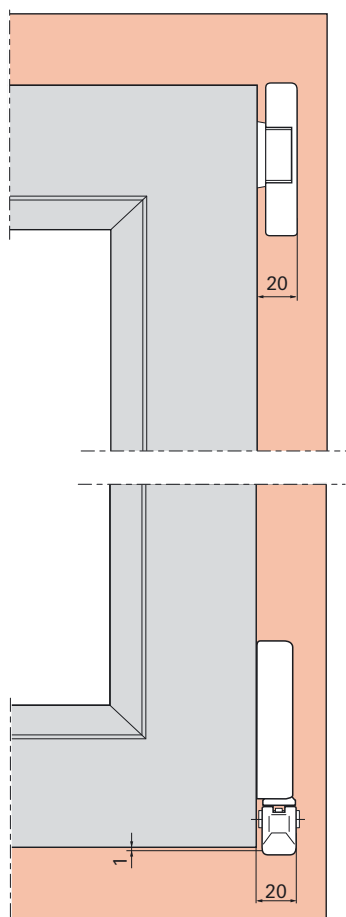
Unhinging the sash

It is only possible to remove the sash stay bearing pin in the closed position.

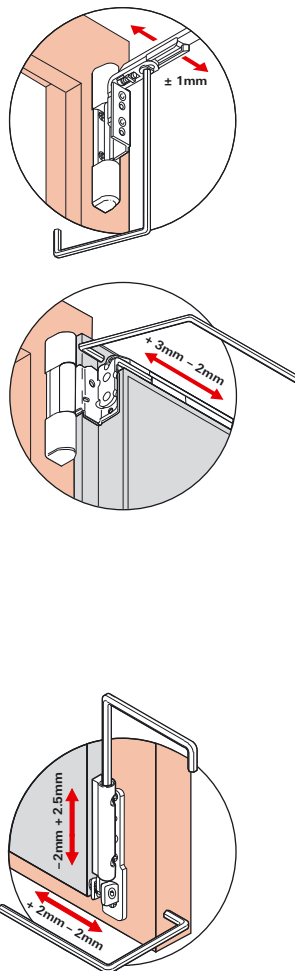


Frame clearances (including cover caps)

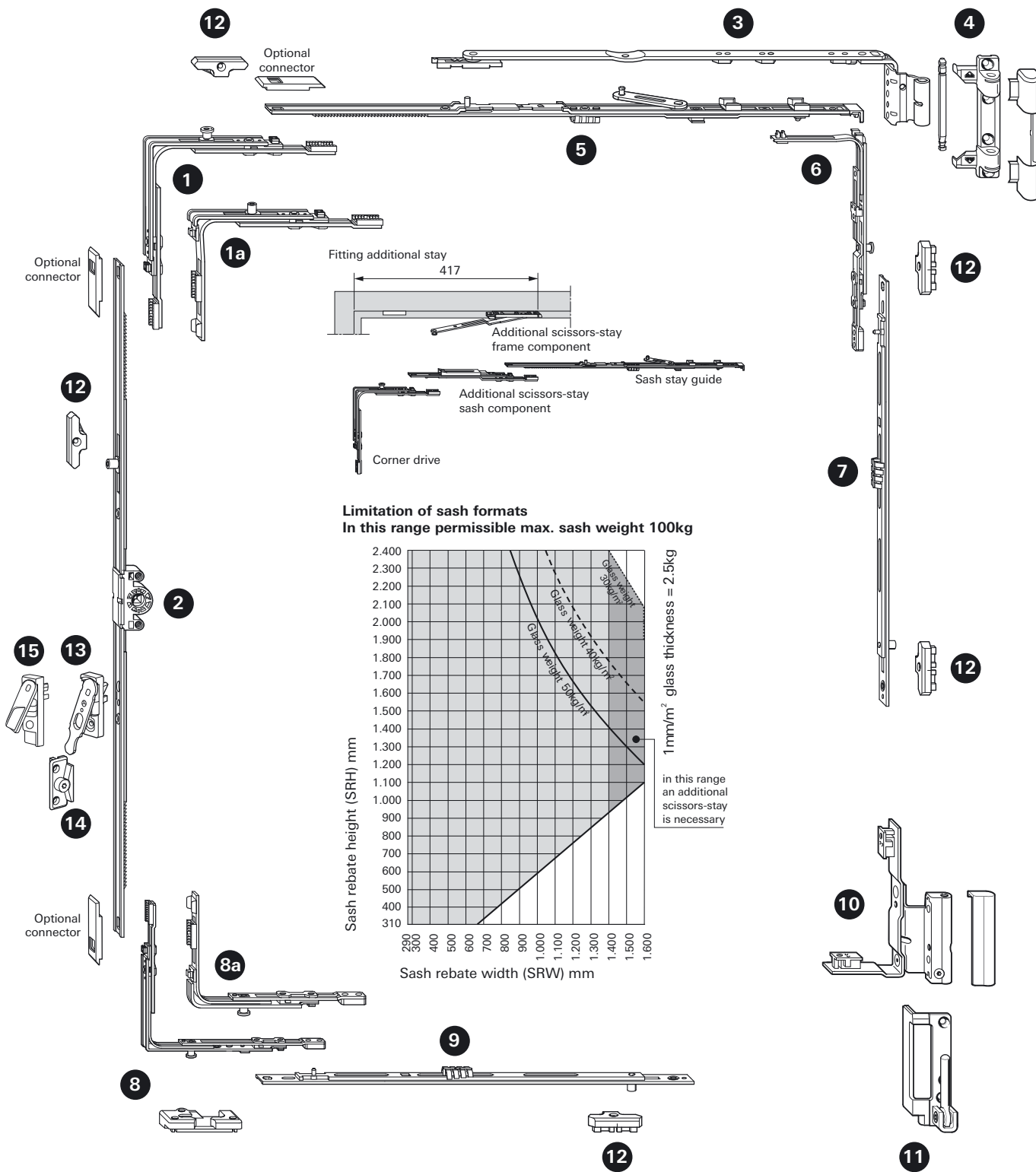
Sash weight 100kg



Retro adjustment (only if necessary)



Standard gearing



Application range

Sash rebate width, min. - max.

Sash rebate height, min. - max.

Sash weight, max.

Optional connector

290 - 1600mm

310 - 2400mm

100kg

350 401

'A' hinge

Standard parts list



Corner drives			
Item number		SRH	Part Number
1	1 P	451 - 2400	260 277
1a	1 E	310 - 450	260 280

2. Espagnolette			
SRH		Length (mm)	Part Number
310 - 450 ⁽¹⁾		430	259 717*
451 - 620		400	259 718*
621 - 800	1 E	580	259 719
801 - 1200	1 E	980	259 720
1201 - 1600	2 E	1380	259 721
1601 - 2000	2 E	1780	259 762
2001 - 2400	4 E	2180	259 763

* Lifting & mishandling device is not possible

⁽¹⁾ With special corner drive 1a & TF corner drive 8a

3. Stay arm			
SRW		Length (mm)	Part Number
9mm axis			
290 - 410		150	L 260 224 R 260 225
411 - 600		250	L 260 226 R 260 227
601 - 800		350	L 260 228 R 260 229
801 - 1400		500	L 260 230 R 260 231
13mm axis			
290 - 410		150	L 260 232 R 260 233
411 - 600		250	L 260 234 R 260 235
601 - 800		350	L 260 236 R 260 237
801 - 1400		500	L 260 238 R 260 239
White covers for above			230 252
Brown covers for above			230 247

4. Roto 'A' stay bearing & pin for stay arm			
Description			Part Number
Max. sash weight 100 kg			245 714
Pin			227 354
White covers for above			230 330
Brown covers for above			230 325

5. Stay guide			
SRW		Length (mm)	Part Number
290 - 410		300	260 201*
411 - 600		490	256 024
601 - 800		690	260 204
801 - 1000	1 E	890	260 208
1001 - 1200	1 E	1090	260 212
1201 - 1400	1 E	1290	260 215

* Sash rebate widths smaller than 310mm, the assembly connector clip the end of the stay guide, must be removed. Additional stay **292 022** and **profile related** packer is required on sashes over 1400mm wide (190mm long). Select the stay guide accordingly.

6. Centre lock stay guide connector	1 P	260 286
--	------------	----------------

7. Standard centre lock (vertical)			
SRH		Size	Part Number
801 - 1200	1 E	400	255 280
1201 - 1400	1 E	600	255 281
1401 - 1800	1 E	600 connectable	255 282
	1 E	400	255 280
1801 - 2000	1 E	600 connectable	255 282
	1 E	600	255 281
2001 - 2400	2 E	600 connectable	255 282 x 2
	1 E	400	255 280

8. Tilt first corner drives (for tilt first window only)			
Item	Description		Part Number
8	Tilt first corner drive	1 P	260 277
8a	Special TF corner drive	1 P	260 282
	Tilt first striker		Profile related
Special TF corner drive 8a should be used to achieve a SRH of 310mm			

9. Standard centre lock (horizontal)			
SRW		Size	Part Number
801 - 1200	1 E	400	255 280
1201 - 1400	1 E	600	255 281
1401 - 1600	1 E	600 connectable	255 282
	1 E	400	255 280

10. Roto 'A' corner hinge			
Max. sash weight			Part Number
For 9mm axis - 100 kg			L 250 577 R 250 578
For 13mm axis - 100kg			L 447 357 R 447 358
White covers for above			L 309 951 R 309 952
Brown covers for above			L 309 949 R 309 950

11. Roto 'A' Pivot rest			
Max. sash weight			Part Number
100 kg			L 262 004 R 262 005
White covers for above			L 264 344 R 264 345
Brown covers for above			L 264 346 R 264 347

12. Compression striker	Profile related
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13. Sash lifting device	260 538
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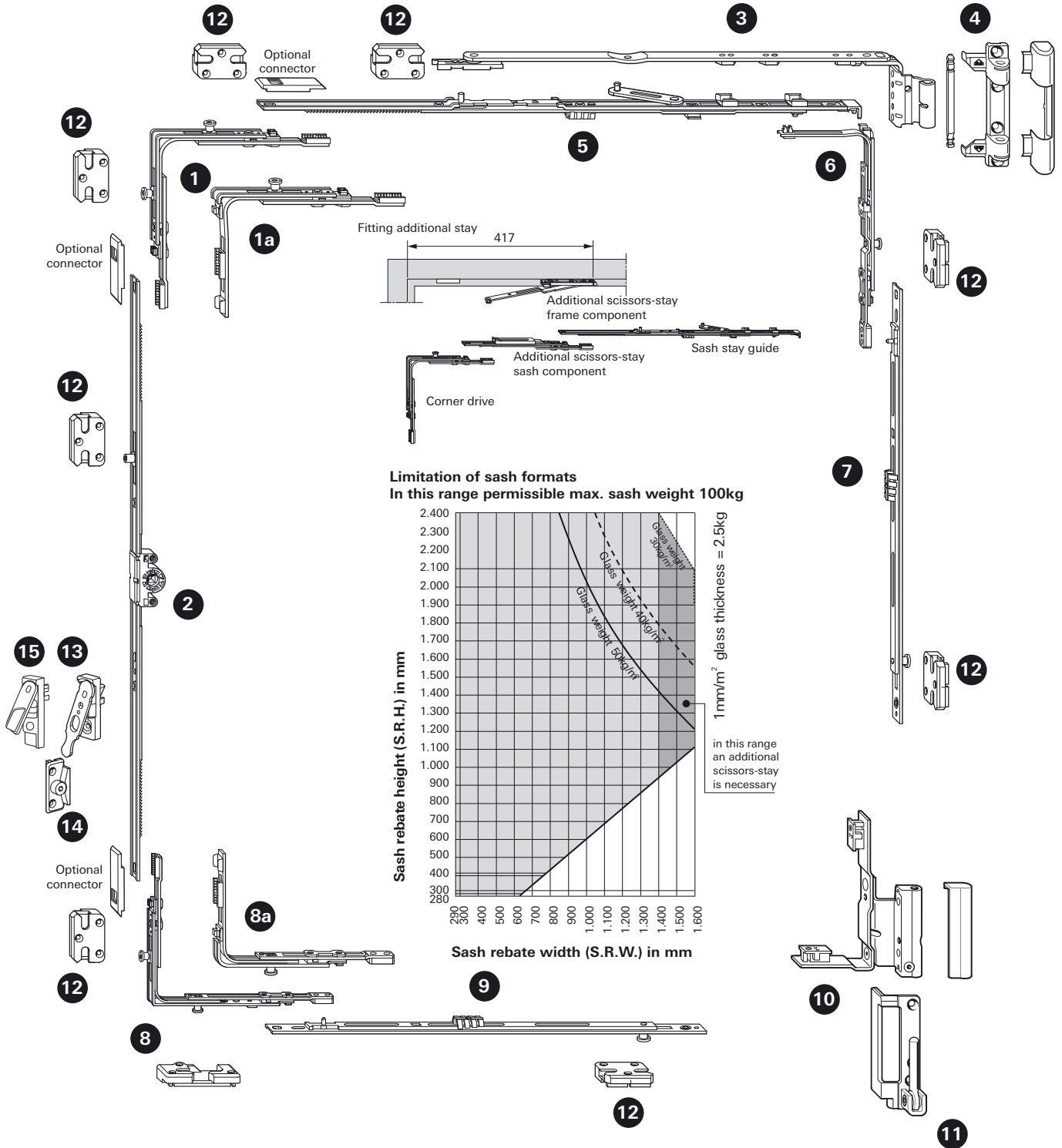
14. Striker for sash lifting device	Profile related
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15. Mis-operation device			
			Part Number
9mm axis			L 349 128 R 349 129
13mm axis			L 349 130 R 349 131

Locking cam **E** Compression adjustable cam

Locking cam **P** Compression adjustable, security cam

Security gearing



Application range

Sash rebate width, min. - max.

Sash rebate height, min. - max.

Sash weight, max.

Optional connector

290 - 1600mm

310 - 2400mm

100kg

350 401

'A' hinge

Security parts list



Corner drives

Item number	SRH	Part Number
1 2 V	451 - 2400	260 274
1a 1 P	310 - 450	260 282

2. Espagnolette

SRH	Length (mm)	Part Number
310 - 450 ⁽¹⁾	430	259 717*
451 - 620	400	259 718*
621 - 800 1 E	580	259 719
801 - 1200 1 E	980	259 720
1201 - 1600 2 E	1380	259 721
1601 - 2000 2 E	1780	259 762
2001 - 2400 4 E	2180	259 763

* Lifting & mishandling device is not possible

⁽¹⁾ With special corner drive 1a & TF corner drive 8a

3. Tilt first stay arm

SRW	Length (mm)	Part Number
9mm axis		
290 - 410	150	L 260 224 R 260 225
411 - 600	250	L 260 226 R 260 227
601 - 800	350	L 260 228 R 260 229
801 - 1400	500	L 260 230 R 260 231
13mm axis		
290 - 410	150	L 260 232 R 260 233
411 - 600	250	L 260 234 R 260 235
601 - 800	350	L 260 236 R 260 237
801 - 1400	500	L 260 238 R 260 239
White covers for above		230 252
Brown covers for above		230 247

4. Roto 'A' stay bearing & pin for stay arm

Description	Part Number
Max. sash weight 100 kg	245 714
Pin	227 354
White covers for above	230 330
Brown covers for above	230 325

5. Stay guide

SRW	Length (mm)	Part Number
290 - 410	300	260 201*
411 - 600	490	256 024
601 - 800	690	260 204
801 - 1000 1 E	890	260 208
1001 - 1200 1 E	1090	260 212
1201 - 1400 1 E	1290	260 215

* Sash rebate widths smaller than 310mm, the assembly connector clip the end of the stay guide, must be removed. Additional stay **292 022** and **profile related** packer is required on sashes over 1400mm wide (190mm long). Select the stay guide accordingly.

6. Centre lock stay guide connector 1 **P** 260 286

7. Security centre lock (vertical)

SRH	Size	Part Number
490 - 700	200	1 P 255 284
701 - 900	400	1 P 255 285
901 - 1100	600	1 P 255 286
1101 - 1300	600 connectable	1 P 281 417
	200	1 P 255 284
1301 - 1500	600 connectable	1 P 281 417
	400	1 P 255 285
1501 - 1700	600 connectable	1 P 281 417
	600	1 P 255 286
1701 - 1900	600 connectable	2 P 281 417 x 2
	200	1 P 255 284
1901 - 2100	600 connectable	2 P 281 417 x 2
	400	1 P 255 285
2101 - 2300	600 connectable	2 P 281 417 x 2
	600	1 P 255 286
2301 - 2400	600 connectable	3 P 281 417 x 3
	200	1 P 255 284

Tilt first corner drives (for tilt first window only)

Item	Description	Part Number
8	Tilt first corner drive	2 V 260 274
8a	Special TF corner drive	1 P 260 282
Tilt first striker		Profile related
Use TF corner drive 8a for SRH of 310mm		

9. Security centre lock (horizontal)

SRW	Size	Part Number
400 - 600	200	1 P 255 284
601 - 800	400	1 P 255 285
801 - 1000	600	1 P 255 286
1001 - 1200	600 connectable	1 P 281 417
	200	1 P 255 284
1201 - 1600	600 connectable	1 P 281 417
	400	1 P 255 285

10. Roto 'A' corner hinge

Max. sash weight	Part Number
For 9mm axis - 100 kg	L 250 577 , R 250 578
For 13mm axis - 100kg	L 447 357 , R 447 358
White covers for above	L 309 951 , R 309 952
Brown covers for above	L 309 949 , R 309 950

11. Roto 'A' Pivot rest

Max. sash weight	Part Number
100 kg	L 262 004 , R 262 005
White covers for above	L 264 344 , R 264 345
Brown covers for above	L 264 346 , R 264 347

12. Security striker

Profile related

13. Sash lifting device

260 538

14. Striker for sash lifting device

Profile related

15. Mis-operation device

Part Number

9mm axis	L 349 128 R 349 129
13mm axis	L 349 130 R 349 131

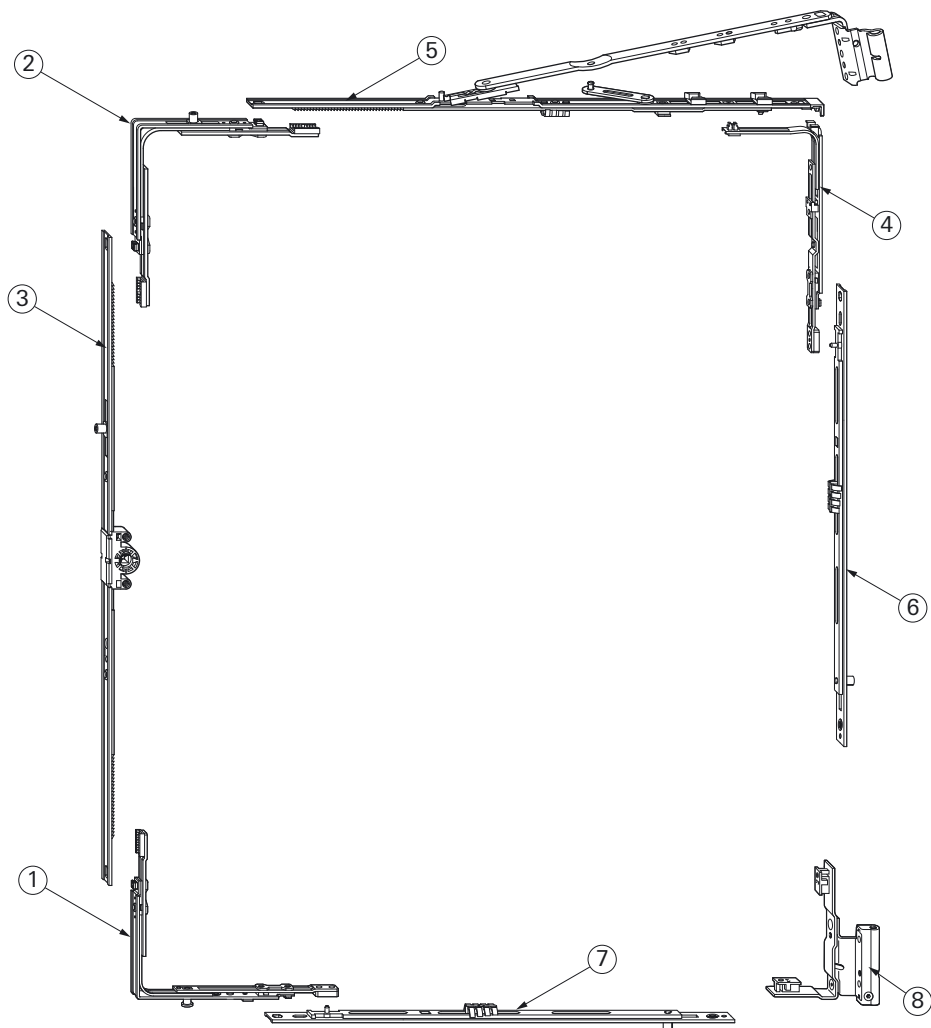
Locking cam E	Compression adjustable cam
Locking cam P	Compression adjustable, security cam
Locking cam V	Height and compression adjustable, security cam

Roto NT

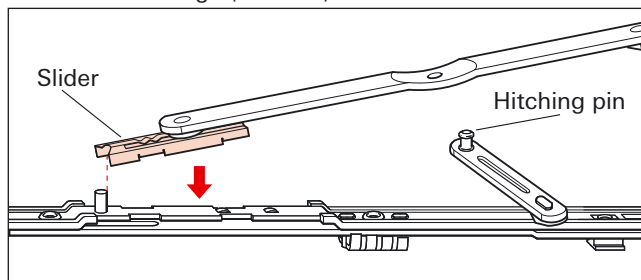
'A' hinge

Installation and adjustment information

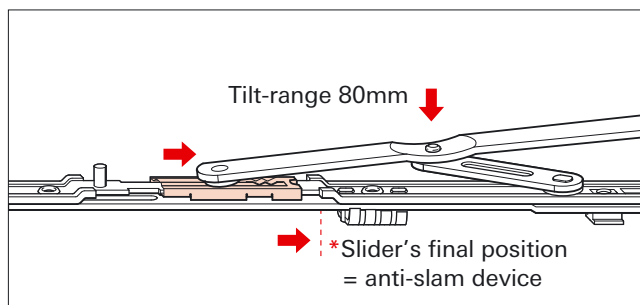
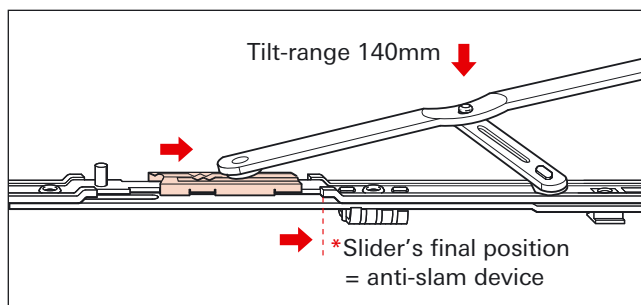
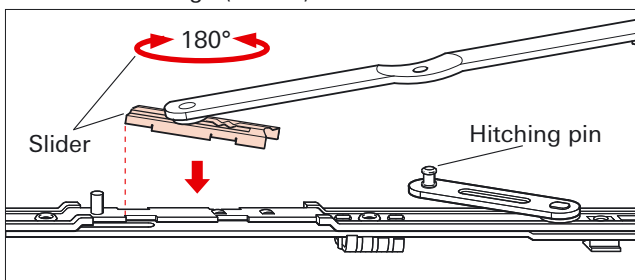
Suggested installation sequence



Standard tilt-range (140mm)



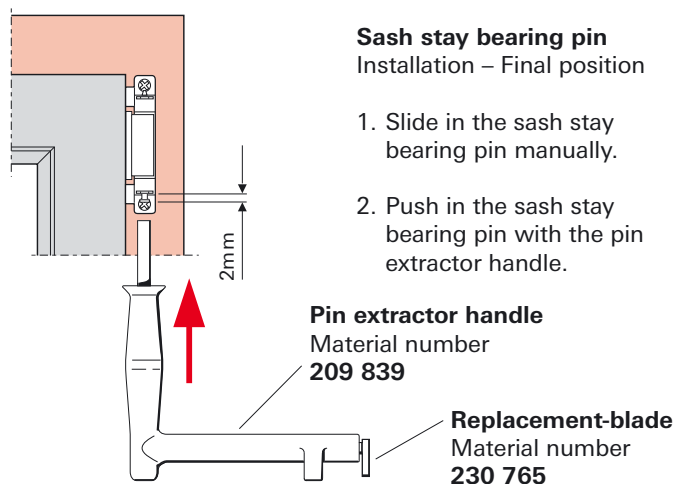
Reduced tilt-range (80mm)



The slider's final position (anti-slam device) is reached automatically by means of tilting the sash.

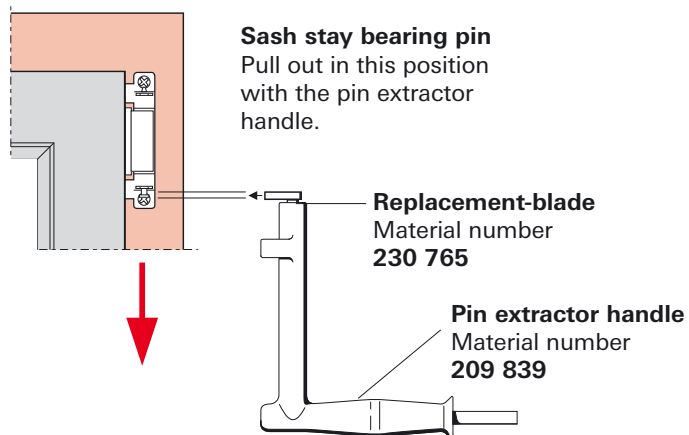
Hinging the sash

It's only possible to **insert** the sash stay bearing pin in the closed position.



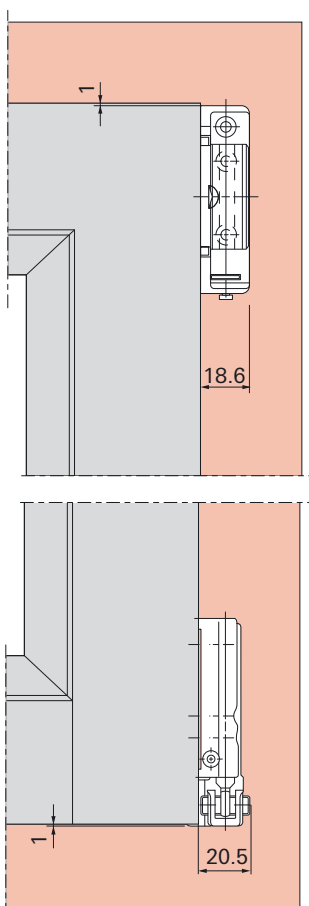
Unhinging the sash

It's only possible to **remove** the sash stay bearing pin in the closed position.

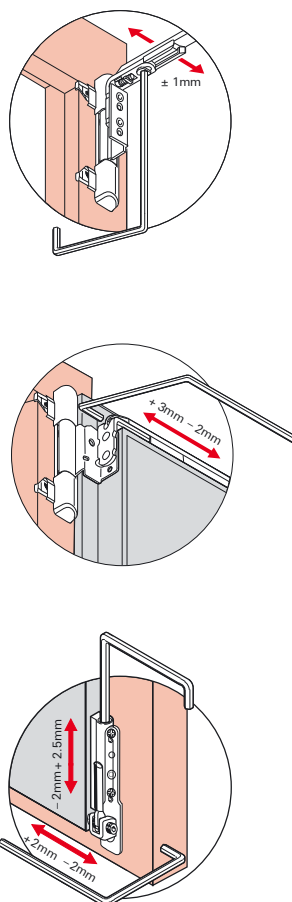


Frame clearances (incl. cover cap)

Sash weight 100kg



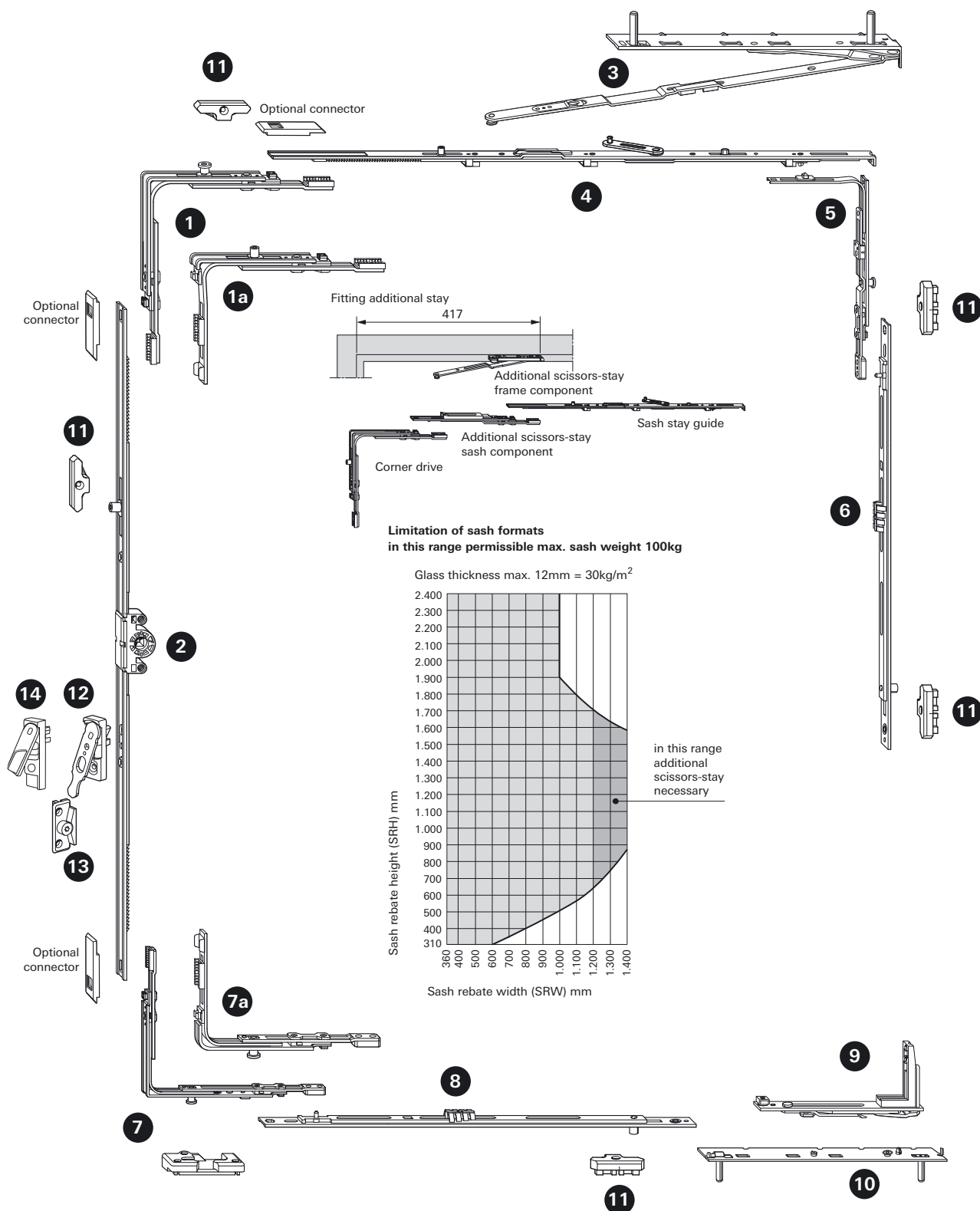
Retro adjustment (only if necessary)



Roto NT

'R' hinge

Standard gearing



Application range

Sash rebate width, min. - max. 360 - 1400mm

Sash rebate height, min. - max. 310 - 2400mm

Sash weight, max. 100kg

Optional connector 350 401

'R' hinge Standard parts



Corner drives

Item number		SRH	Part Number
1	1 P	451 - 2400	260 277
1a	1 E	310 - 450	260 280

2. Espagnolette

SRH	Length (mm)	Part Number
310 - 450 ⁽¹⁾	430	259 717*
451 - 620	400	259 718*
621 - 800 1 E	580	259 719
801 - 1200 1 E	980	259 720
1201 - 1600 2 E	1380	259 721
1601 - 2000 2 E	1780	259 762
2001 - 2400 4 E	2180	259 763

* Lifting & mishandling device is not possible

⁽¹⁾ With special corner drive 1a & TF corner drive 7a

3. Royal stay arm

SRW	Part Number
360 - 800	L Profile related R Profile related
801 - 1400	L Profile related R Profile related

4. Royal stay guide

SRW	Length (mm)	Part Number
360 - 410	300	253 811
411 - 600	490	253 812
601 - 800	690	253 813
801 - 1000 1 E	890	253 814
1001 - 1200 1 E	1090	253 815

Additional stay **292 022** is required on sashes over 1200mm wide, increasing the maximum sash rebate width to 1400mm.

Additional **profile related** packer is required.

5. Centre lock stay guide connector 1 **P** 280 836

6. Standard centre lock (vertical)

SRH	Size	Part Number
801 - 1200 1 E	400	255 280
1201 - 1400 1 E	600	255 281
1401 - 1800 1 E	600 connectable	255 282
	400	255 280
1801 - 2000 1 E	600 connectable	255 282
	600	255 281
2001 - 2400 2 E	600 connectable	255 282 x 2
	400	255 280

Tilt first corner drives (for tilt first window only)

Item	Description	Part Number
7	Tilt first corner drive 1 P	260 277
7a	Special TF corner drive 1 P	260 282

Tilt first striker **Profile related**

Special TF corner drive 7a should be used to achieve a SRH of 310mm

8. Standard centre lock (horizontal)

SRW	Size	Part Number
801 - 1200 1 E	400	255 280
1201 - 1400 1 E	600	255 281

9. Royal corner hinge

Max. sash weight	Part Number
100 kg	L 254 026 R 254 028

10. Royal pivot rest

Max. sash weight	Part Number
100 kg	Profile related L/R

11. Compression striker

Profile related

12. Sash lifting device

260 538

13. Striker for sash lifting device

Profile related

14. Mis-operation device

	Part Number
9mm axis	L 349 128 R 349 129
13mm axis	L 349 130 R 349 131

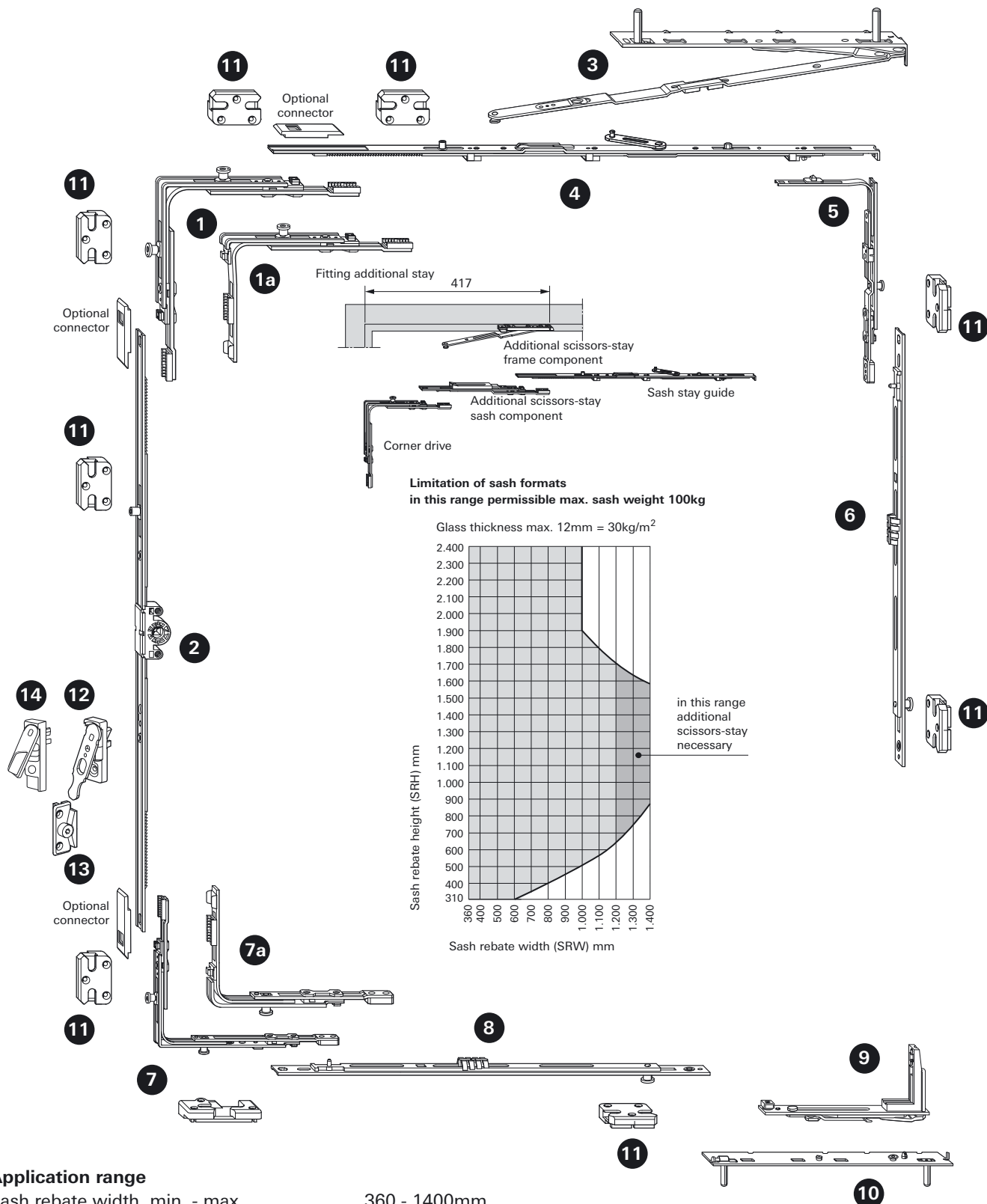
Locking cam **E** Compression adjustable cam

Locking cam **P** Compression adjustable, security cam

Roto NT

'R' hinge

Security gearing



Application range

Sash rebate width, min. - max. 360 - 1400mm

Sash rebate height, min. - max. 310 - 2400mm

Sash weight, max. 100kg

Optional connector 350 401

'R' hinge

Security parts



Corner drives

Item number		SRH	Part Number
1	2 V	451 - 2400	260 274
1a	1 P	310 - 450	260 282

2. Espagnolette

SRH		Length (mm)	Part Number
310 - 450 ⁽¹⁾		430	259 717*
451 - 620		400	259 718*
621 - 800	1 E	580	259 719
801 - 1200	1 E	980	259 720
1201 - 1600	2 E	1380	259 721
1601 - 2000	2 E	1780	259 762
2001 - 2400	4 E	2180	259 763

* Lifting & mishandling device is not possible

⁽¹⁾ With special corner drive 1a & TF corner drive 7a

3. Royal stay arm

SRW		Part Number
360 - 800	L Profile related R Profile related	
801 - 1400	L Profile related R Profile related	

4. Royal stay guide

SRW		Length (mm)	Part Number
360 - 410		300	253 811
411 - 600		490	253 812
601 - 800		690	253 813
801 - 1000	1 E	890	253 814
1001 - 1200	1 E	1090	253 815

Additional stay **292 022** is required on sashes over 1200mm wide, increasing the maximum sash rebate width to 1400mm.

Additional **profile related** packer is required.

5. Centre lock stay guide connector 1 **P** 280 836

6. Security centre lock (vertical)

SRH		Size	Part Number
490 - 700	1 P	200	255 284
701 - 900	1 P	400	255 285
901 - 1100	1 P	600	255 286
1101 - 1300	1 P	600 connectable	281 417
	1 P	200	255 284
1301 - 1500	1 P	600 connectable	281 417
	1 P	400	255 285
1501 - 1700	1 P	600 connectable	281 417
	1 P	600	255 286
1701 - 1900	2 P	600 connectable	281 417 x 2
	1 P	200	255 284
1901 - 2100	2 P	600 connectable	281 417 x 2
	1 P	400	255 285
2101 - 2300	2 P	600 connectable	281 417 x 2
	1 P	600	255 286
2301 - 2400	3 P	600 connectable	281 417 x 3
	1 P	200	255 284

Tilt first corner drives (for tilt first window only)

Item	Description	Part Number
7	Tilt first security corner drive 2 V	260 274
7a	Special TF corner drive 1 P	260 282
	Tilt first striker	Profile related

Special TF corner drive 7a should be used to achieve a SRH of 310mm

8. Security centre lock (horizontal)

SRW		Size	Part Number
600 - 800	1 P	200	255 284
801 - 1000	1 P	400	255 285
1001 - 1200	1 P	600	255 286
1201 - 1400	1 P	600 connectable	281 417
	1 P	200	255 284

9. Corner hinge

Max. sash weight	Part Number
100 kg	L 254 026 R 254 028

10. Pivot rest

Max. sash weight	Part Number
100 kg	Profile related L/R

11. Security striker

Profile related

12. Sash lifting device

260 538

13. Striker for sash lifting device

Profile related

14. Mis-operation device

	Part Number
9mm axis	L 349 128 R 349 129
13mm axis	L 349 130 R 349 131

Locking cam **E**

Compression adjustable cam

Locking cam **P**

Compression adjustable, security cam

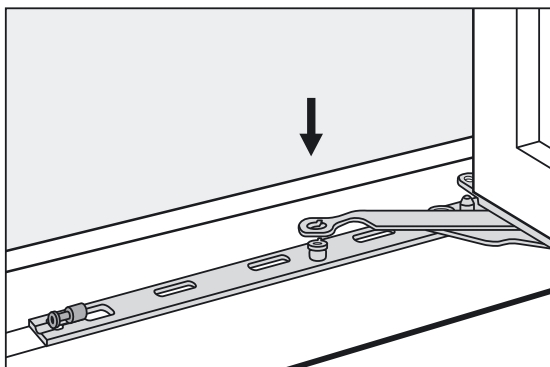
Locking cam **V**

Height and compression adjustable, security cam

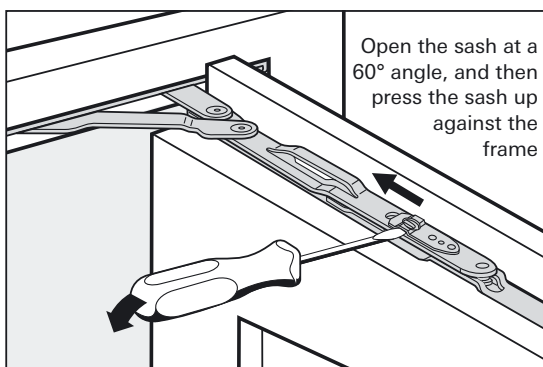
Roto NT

'R' hinge

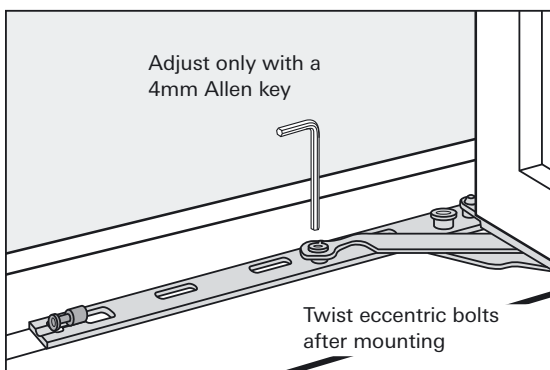
Hinging and unhinging the sash



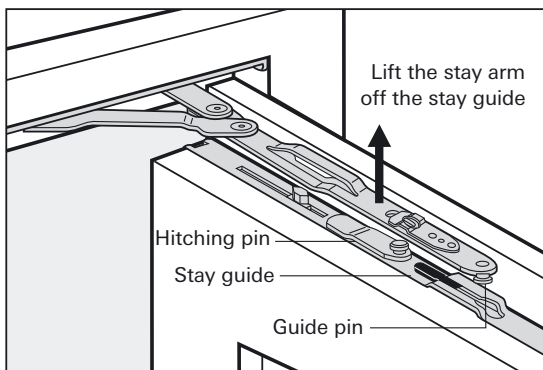
Pivot rest R



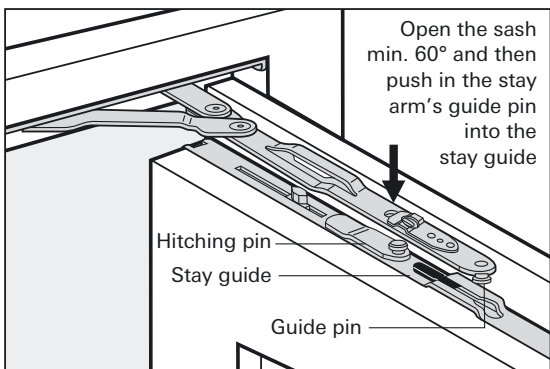
Stay arm R



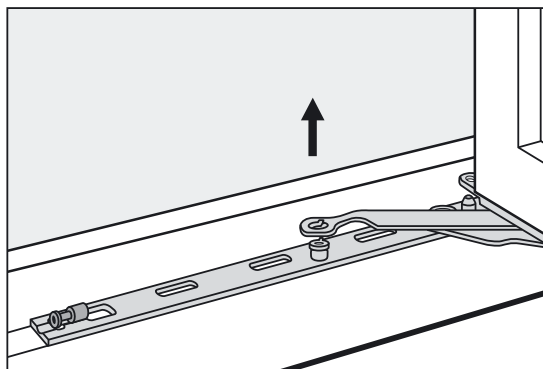
Pivot rest R



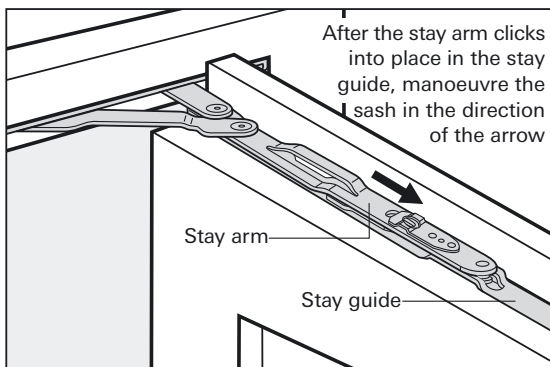
Stay arm R



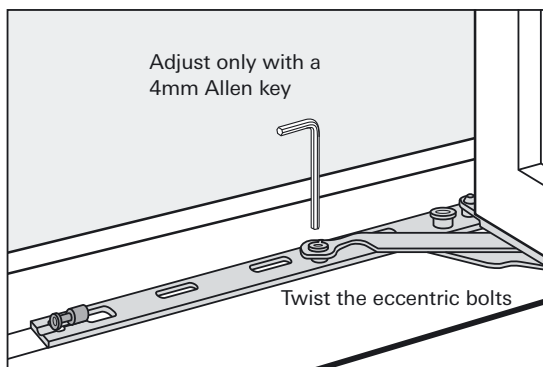
Stay arm R



Pivot rest R

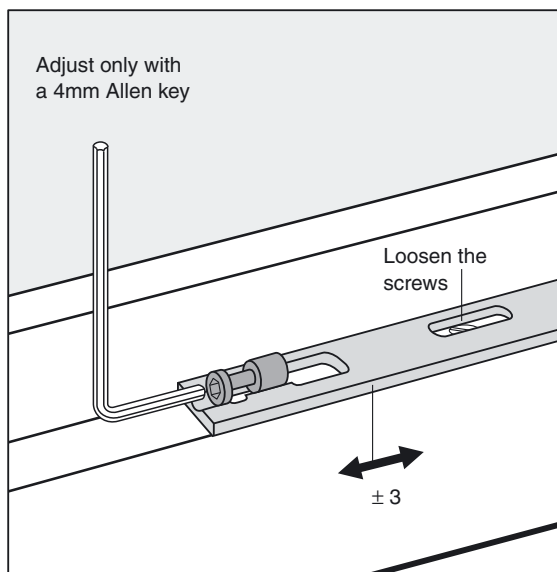


Stay arm R

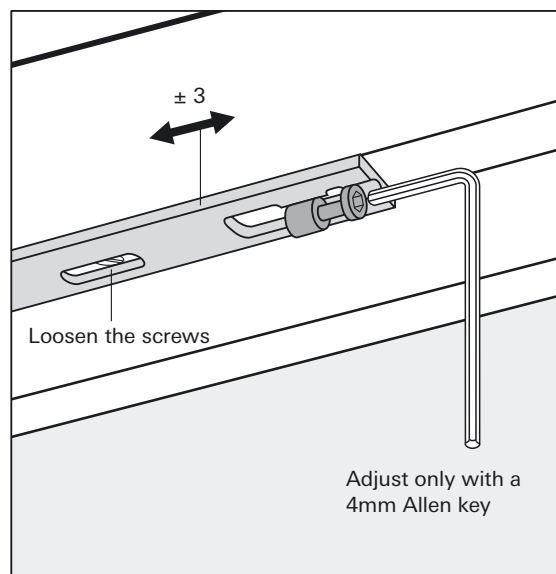


Pivot rest R

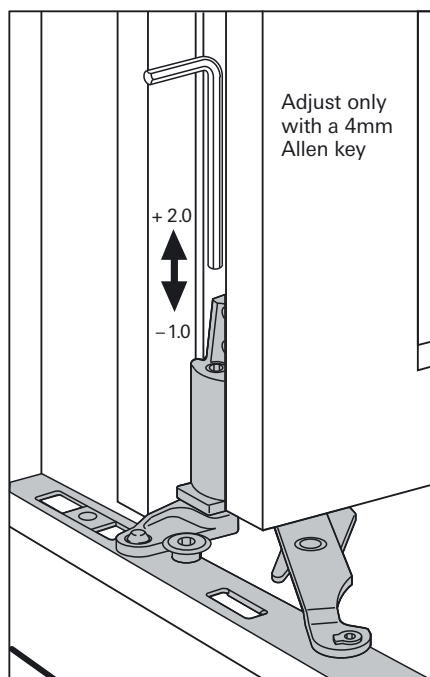
Adjustments



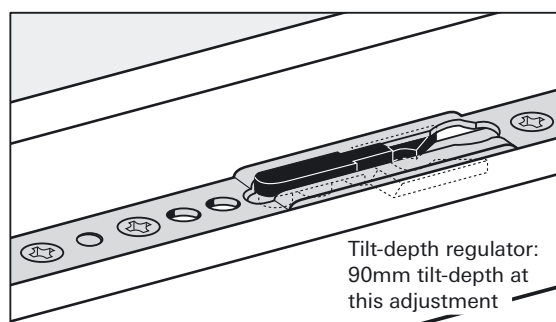
Pivot rest R



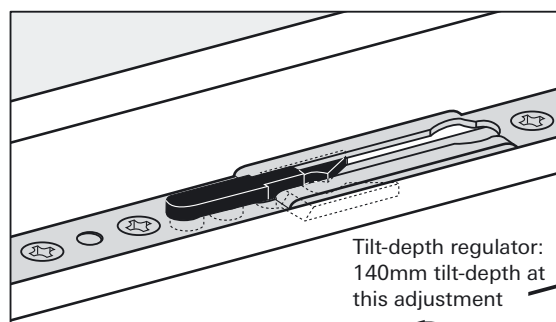
Stay arm R



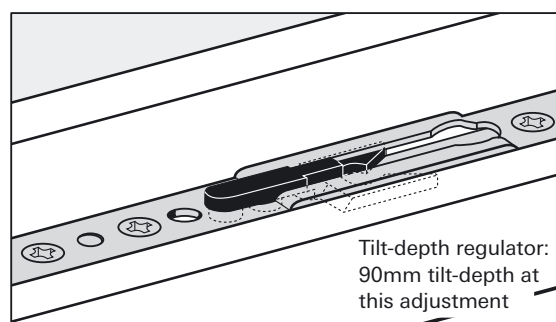
Corner hinge R



Integrated tilt-depth regulators on stay guide R, size 250.



Anti-slam device integrated in the stay guide R

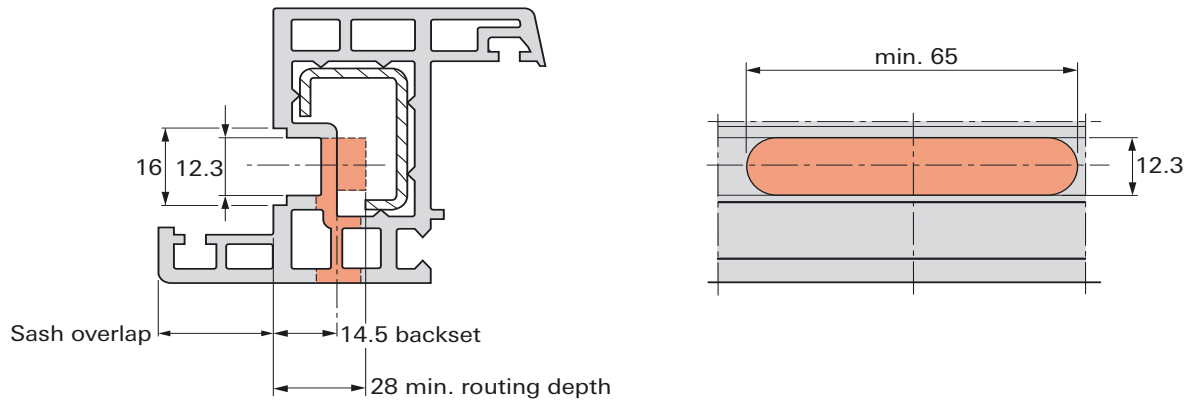


Integrated tilt-depth regulators on stay guide R, size 450.

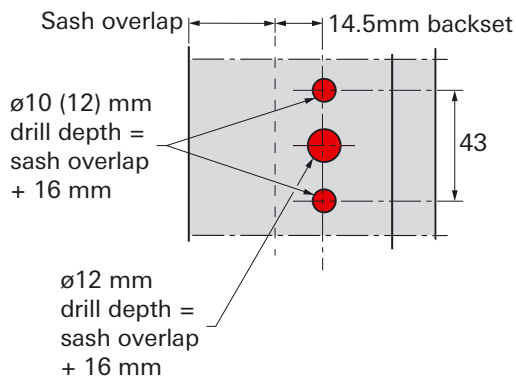
Roto NT

Sash preparation

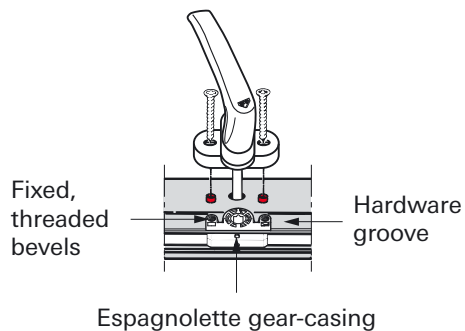
Routing gearbox



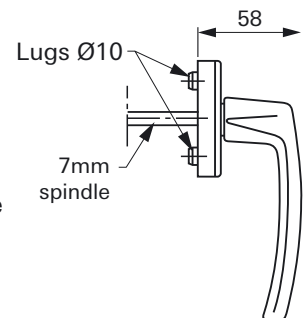
Handle drilling & mounting



Fix the window-handle with $\varnothing 5$ mm countersunk screws DIN965 (M5 X ...) in the espagnolette gear casing.



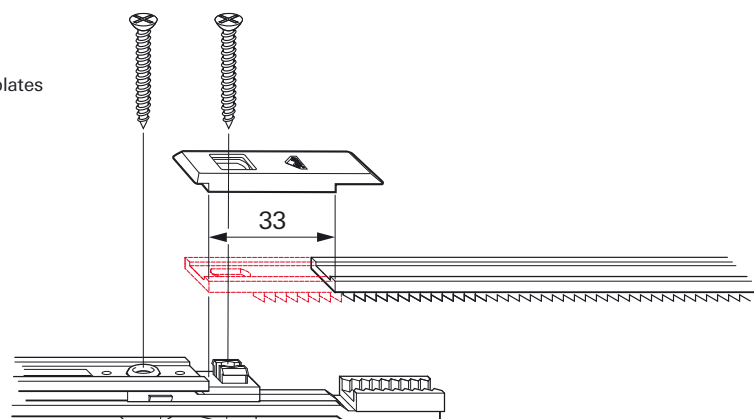
RotoLine window handle with lugs & 7mm spindle



Cropping extensions



When cropping manually, the extension(s) should be cut so as to allow a gap of 33mm between the ends of the faceplates as shown.

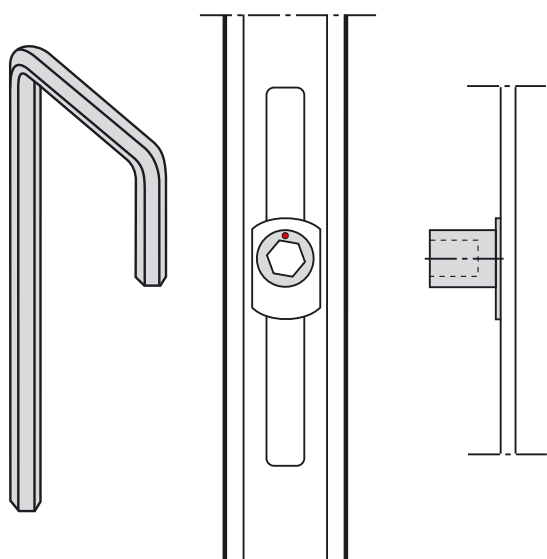
This gap is then bridged using a dedicated connector piece.
Part number **350401**


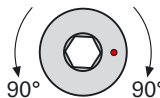


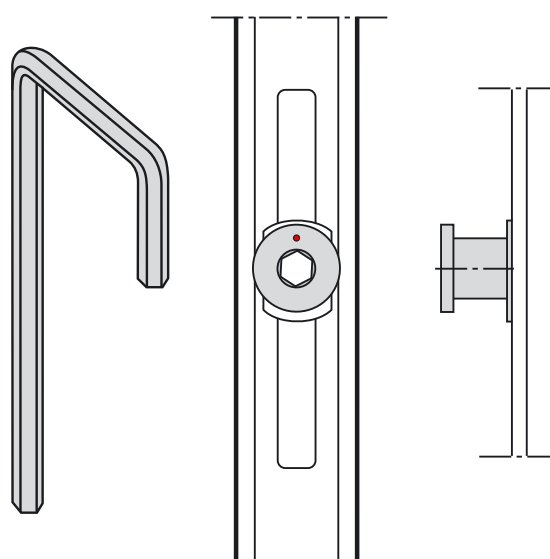
Locking cam options and adjustment

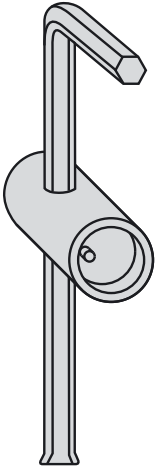
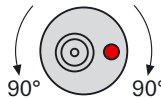
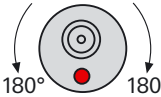
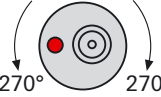



Locking cam E	Adjustment range in °	Gasket compression adjustment in mm
	Original position	–
		± 0.8



Locking cam P	Adjustment range in °	Gasket compression adjustment in mm
	Original position	–
		± 0.8



Locking cam V 	Adjustment range in °	Gasket-compression adjustment in mm	Height adjustment in mm
	Original position	–	–
		± 0.8	± 0.2
		–	± 0.4
		± 0.8	± 0.6
		–	± 0.8

0 = original position

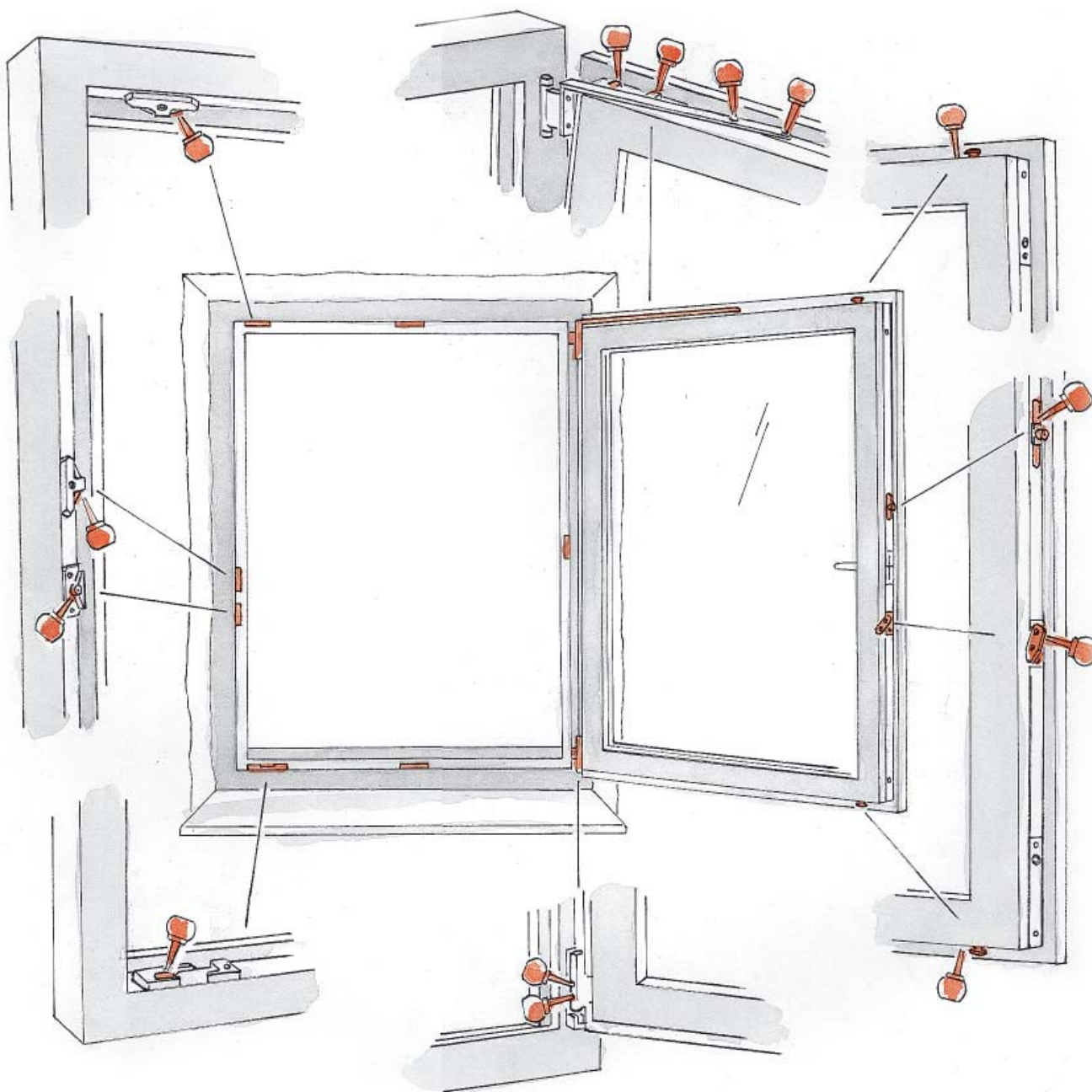
– 0.8mm max. adjustment

+ 0.8mm max. adjustment

Roto NT

'K' and 'A' hinge

Maintenance



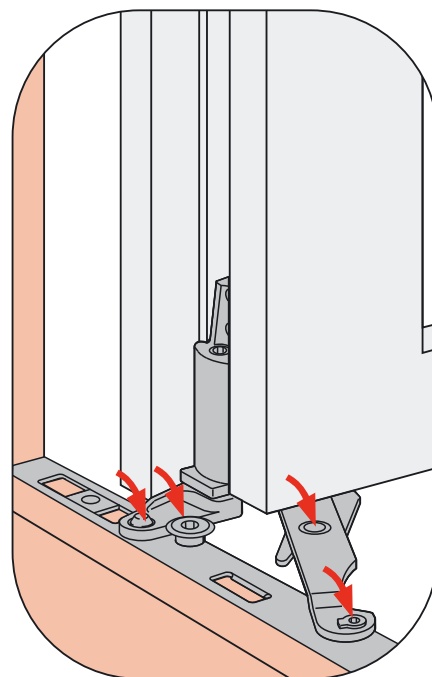
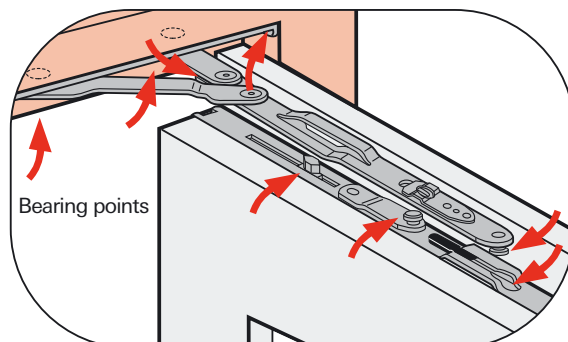
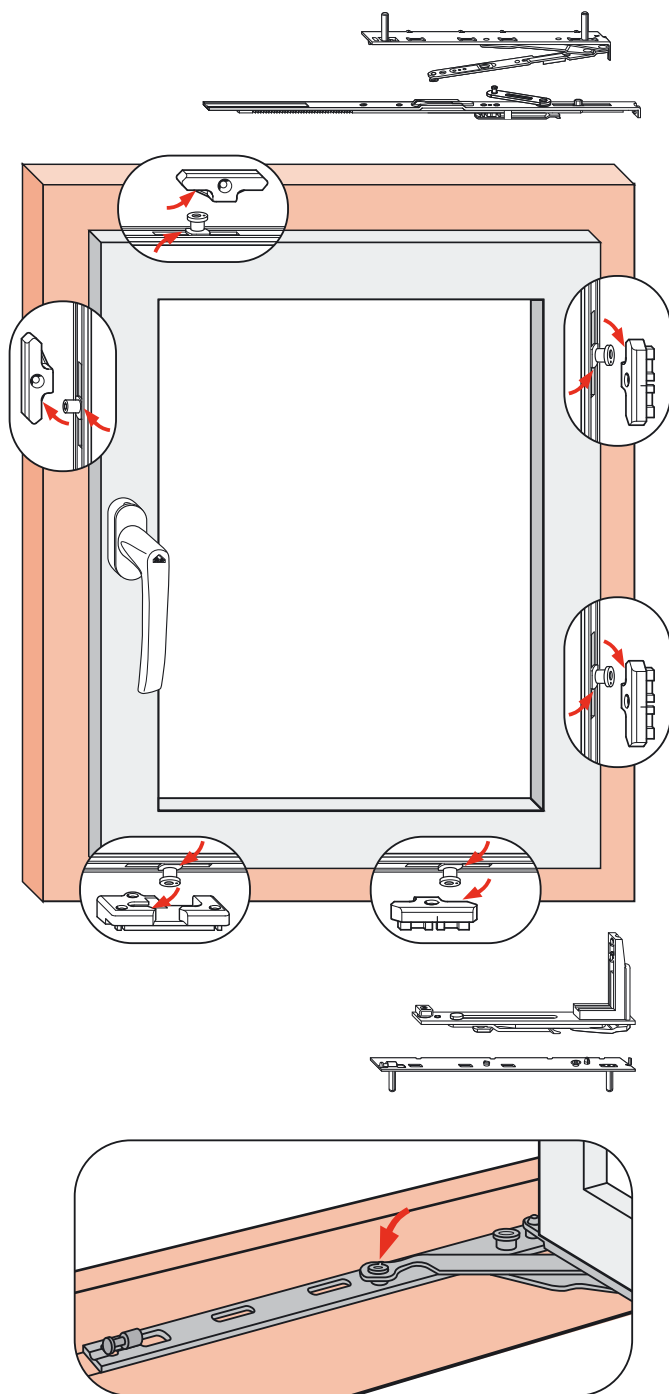
Maintenance



Regular greasing and oiling* (at least once a year) of all moving components in the sash and frame, will maintain the smooth operation of your Roto hardware and protect against premature wear and tear. Security strikers made of steel require continuous greasing in order to avoid unnecessary abrasion. In addition, the location of the screws is to be checked. Possible loose screws or torn off screw heads are to be replaced immediately by a specialised company.

Please use acid free and non-resinous grease and/or oil to lubricate parts. WD40 is NOT suitable.

'R' hinge Maintenance



Maintenance



By means of regular **greasing and oiling*** (at least once a year) all operation-relevant components in the sash and frame, you maintain the smooth operation of your Roto hardware and you protect against premature wear and tear. Security strikers made of steel require continuous greasing in

order to avoid unnecessary abrasion. In addition, the individual screws are to be checked. Possible loose screws or broken off screw-heads are to be tightened or replaced immediately by a specialised company.

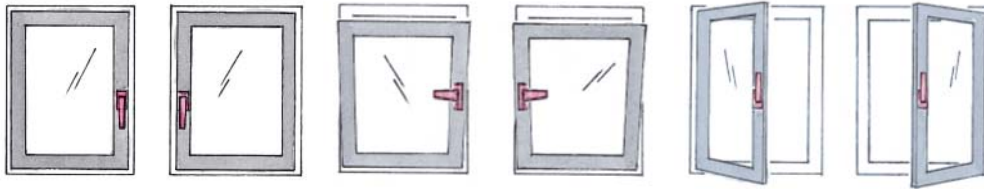
* Please use acid free and non-resinous grease and/or oil from a specialised dealer.

Roto NT

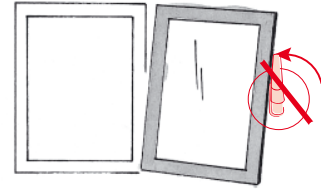
Operating and safety instructions



Operation

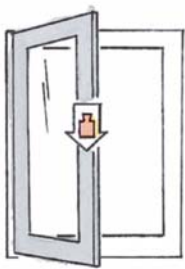


Avoid mishandling

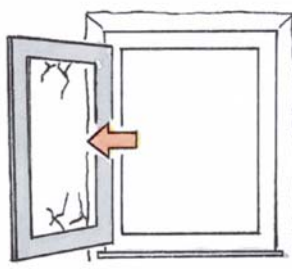


The window must be closed before switching to the open (turn) mode to avoid mishandling.

In order to preserve **functionality** of your window and to guarantee **security**, it is imperative the directives listed below are observed.



The window sash may not be burdened with additional weight.



Do not allow the sash to hit or press up against the window reveal.



Do not place any objects between the sash and frame.



Where small children or mentally handicapped persons have access to the window, the sash is to be safeguarded against turning, for example with a child-safety lock (inhibits turn mode, permits tilt-mode) or key-lockable handle.

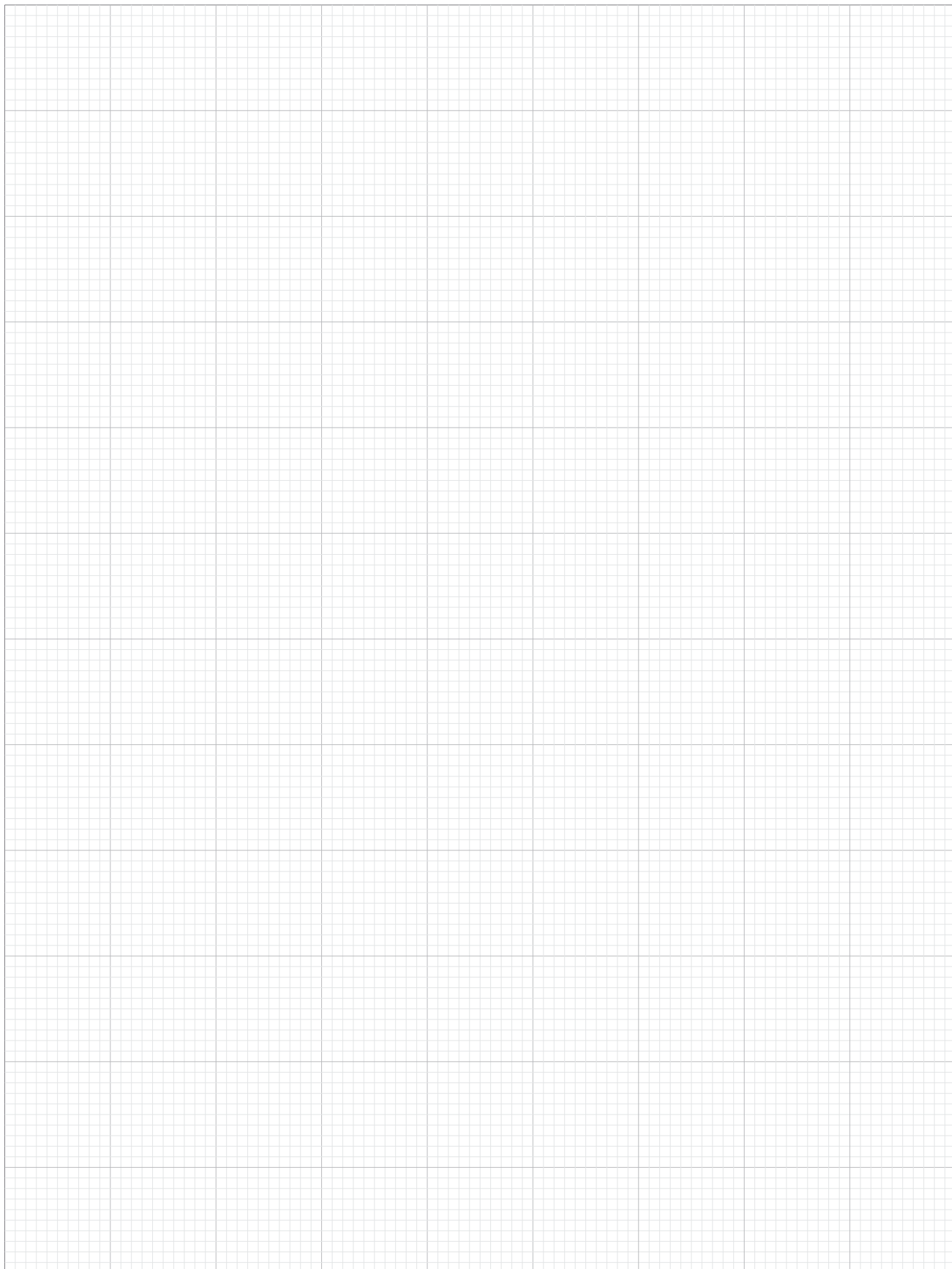


Do not leave sashes open in the turn mode during strong winds.



Caution! A slamming sash can lead to injuries. While closing, do not grasp between the sash and frame.

Notes





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