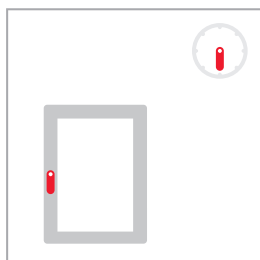


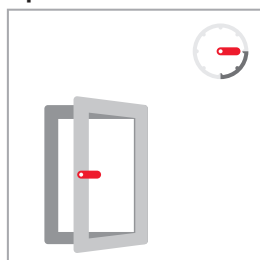
Roto NT

Operating and safety instructions for timber / PVC windows and balcony doors

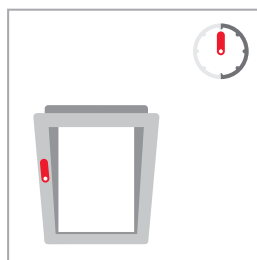
Closed



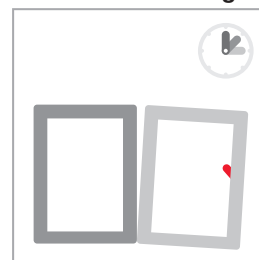
Open



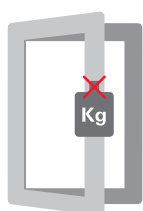
Tilt



Avoid mishandling!



In order to preserve the long **operativeness** of your window and to guarantee **security**, it is imperative to observe the following directives.



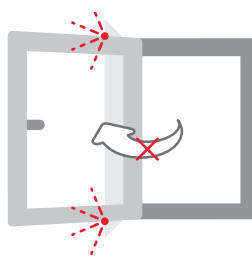
Do not subject the sash to additional loads.



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



Do not place any objects between the sash and frame.



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



Risk of injury!

There is a risk of injury by catching one's finger or other body-parts in the opening gap. While closing, do not grasp between the sash and frame.

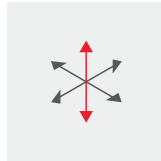


Risk of falling out!

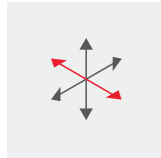
Where children or other endangered persons have access to the window, the sash is to be safeguarded against turning. Install a child-safety lock or a key-lockable handle.

Symbols for the sash adjustment when installed

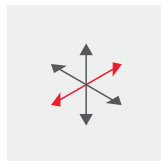
These symbols facilitate the orientation while adjusting the window sashes after installation with the following steps. Use a 4 mm Allen key as tool.



Height adjustment



Lateral adjustment

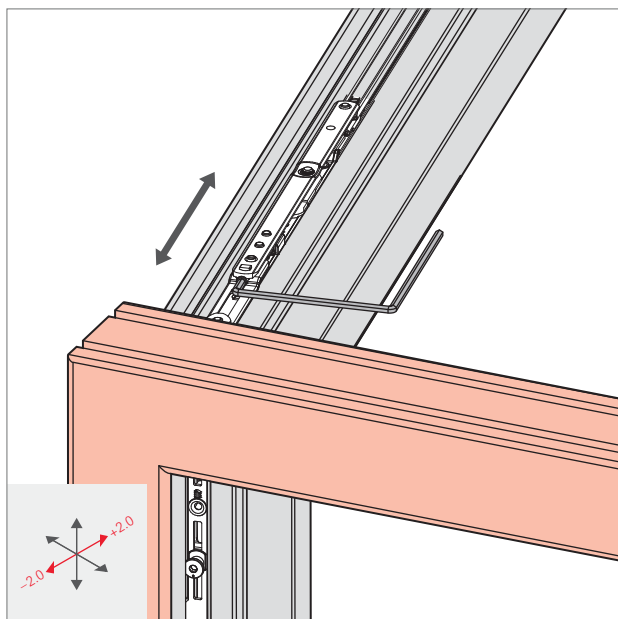


Gasket-compression adjustment

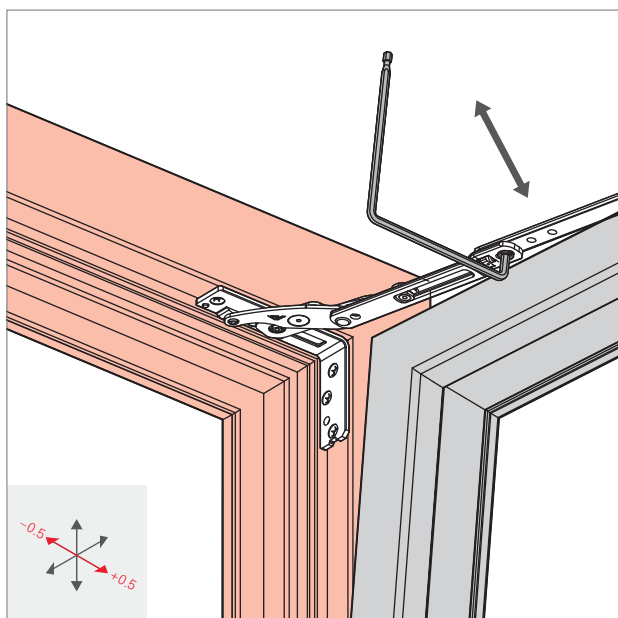


NOTE!

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



Lateral adjustment

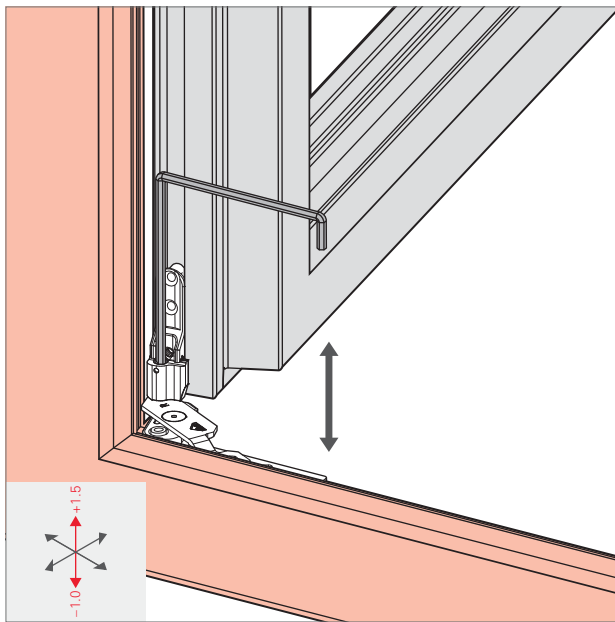


Gasket-compression adjustment

Adjustment

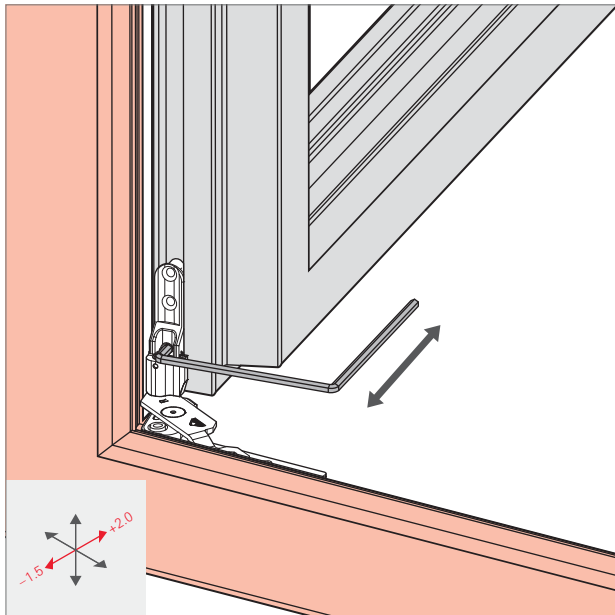
Adjustment instructions

Pivot rest / corner hinge

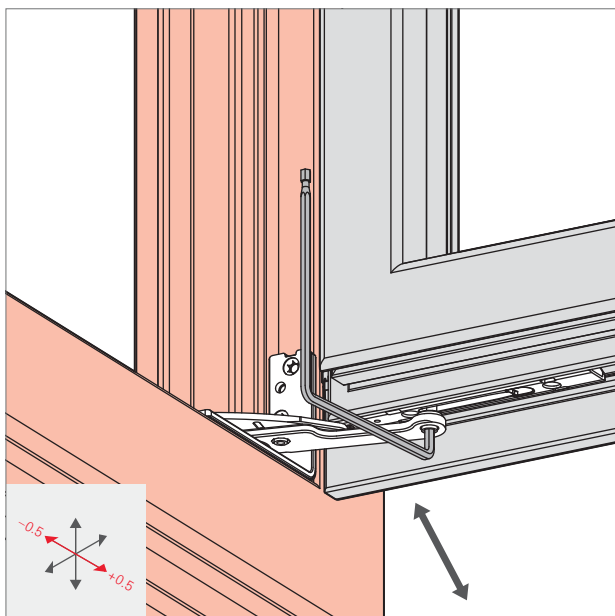


Height adjustment

After the height adjustment, the load transfer device has to be readjusted (refer to page 69).


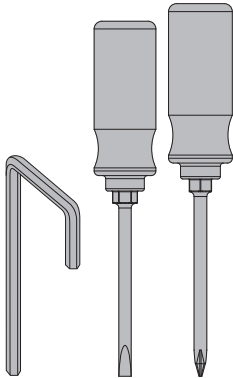
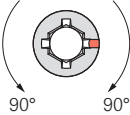
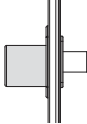
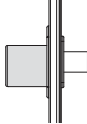
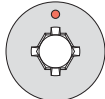
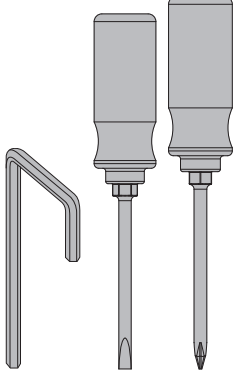
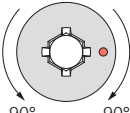
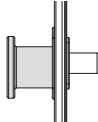
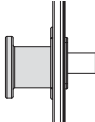


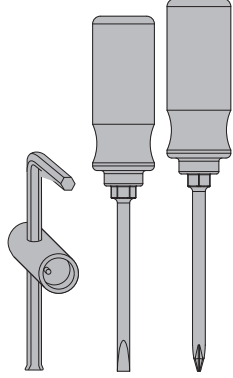
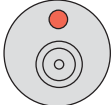
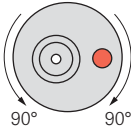
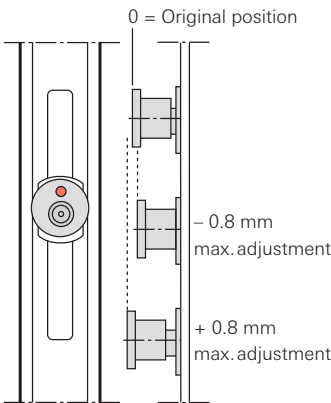
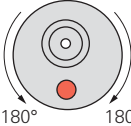
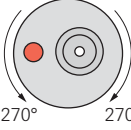
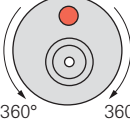


Lateral adjustment

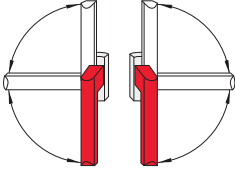
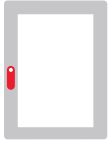

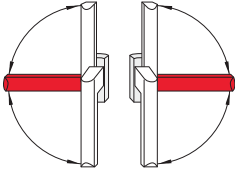
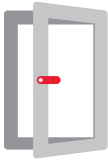

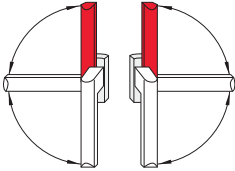


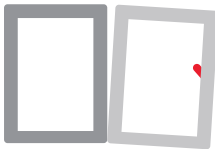



Gasket-compression adjustment



Locking cam adjustment instructions						
Cam type	Adjustment range	Gasket compression	Height	Side view		Tools
E cam						
						
	 90° 90°	+ / - 0.8 mm				
P cam						
						
	 90° 90°	+ / - 0.8 mm				
V cam						
Cam type	Adjustment range	Gasket-compression adjustment in mm	Height adjustment in mm	Side view / top view		Tools
						
						
	 90° 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, OPR_15_DE-EN_v1).

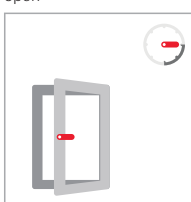


Drehkipp-Beschlag
Tilt&Turn hardware

geschlossen
closed



öffnen
open



kippen
tilt



Fehlschaltungen vermeiden
Avoid mishandling mode!



08/2012 OPR_14_DE-EN_v1



TiltFirst-Beschlag
TiltFirst hardware

geschlossen
closed



kippen
tilt



öffnen
open



Fehlschaltungen vermeiden
Avoid mishandling mode!



08/2012 OPR_15_DE-EN_v1

Troubleshooting

Problem	Cause	Corrective action	Specialist company	End-users
Handle is difficult to rotate.	<ul style="list-style-type: none"> – Frame parts are not properly greased. – Faulty handle. – Handle screws are screwed in too strong. – Oblique screws in the sash parts. – Faulty sash parts. – Incorrect strikers. – Sash stay gasket compression too strong (accumulation of gaskets). 	<ul style="list-style-type: none"> – Grease frame parts. – Replace the handle. – Slightly loosen the screws. – Straight screw-fixing of the sash parts. – Replace the sash parts. – Replace strikers. – Adjust or reduce the sash stay gasket compression. 	<ul style="list-style-type: none"> ■ ■ ■ ■ ■ ■ 	<ul style="list-style-type: none"> – – – – – –
Handle can not rotate 180°.	<ul style="list-style-type: none"> – Faulty hinging or installation of sash parts. – Faulty striker locations. 	<ul style="list-style-type: none"> – Check adjustment in turn position (if necessary, rehing the sash proceeding from T&T espagnolette). – Adjust the striker locations. 	<ul style="list-style-type: none"> ■ 	<ul style="list-style-type: none"> –
In turn mode, the sash falls into tilted position.	<ul style="list-style-type: none"> – Too much clearance on top. 	<ul style="list-style-type: none"> – Check corner hinge location. – Check pivot rest location. – Raise the corner hinge. (Attention: tilt striker) 	<ul style="list-style-type: none"> ■ ■ ■ 	<ul style="list-style-type: none"> – – –
In tilt mode, the sash falls into turning position.	<ul style="list-style-type: none"> – Faulty tilting component. 	<ul style="list-style-type: none"> – Replace tilting component. 	<ul style="list-style-type: none"> ■ 	<ul style="list-style-type: none"> –
Sash is rubbing in tilt mode.	<ul style="list-style-type: none"> – Insufficient clearance on top. 	<ul style="list-style-type: none"> – Lower the corner hinge. (Attention: tilt striker!) 	<ul style="list-style-type: none"> ■ 	<ul style="list-style-type: none"> –
Locking cams rub at striker.	<ul style="list-style-type: none"> – Faulty hinging of the sash. – Faulty striker locations. 	<ul style="list-style-type: none"> – Hinge the sash once again. – Adjust the striker locations. 	<ul style="list-style-type: none"> ■ ■ 	<ul style="list-style-type: none"> – –

■ = To be carried out **only** by a specialist company.

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



WARNING!

Danger of injury through incorrectly conducted maintenance work!

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

- Before starting work, ensure that there is sufficient installation room.
- Maintain order and cleanliness at the installation location.
- Ensure that the window or balcony door is prevented from suddenly slamming during maintenance work.
- Get a specialist company to carry out adjustment work on hardware – especially in the area of pivot rests or bogies and of 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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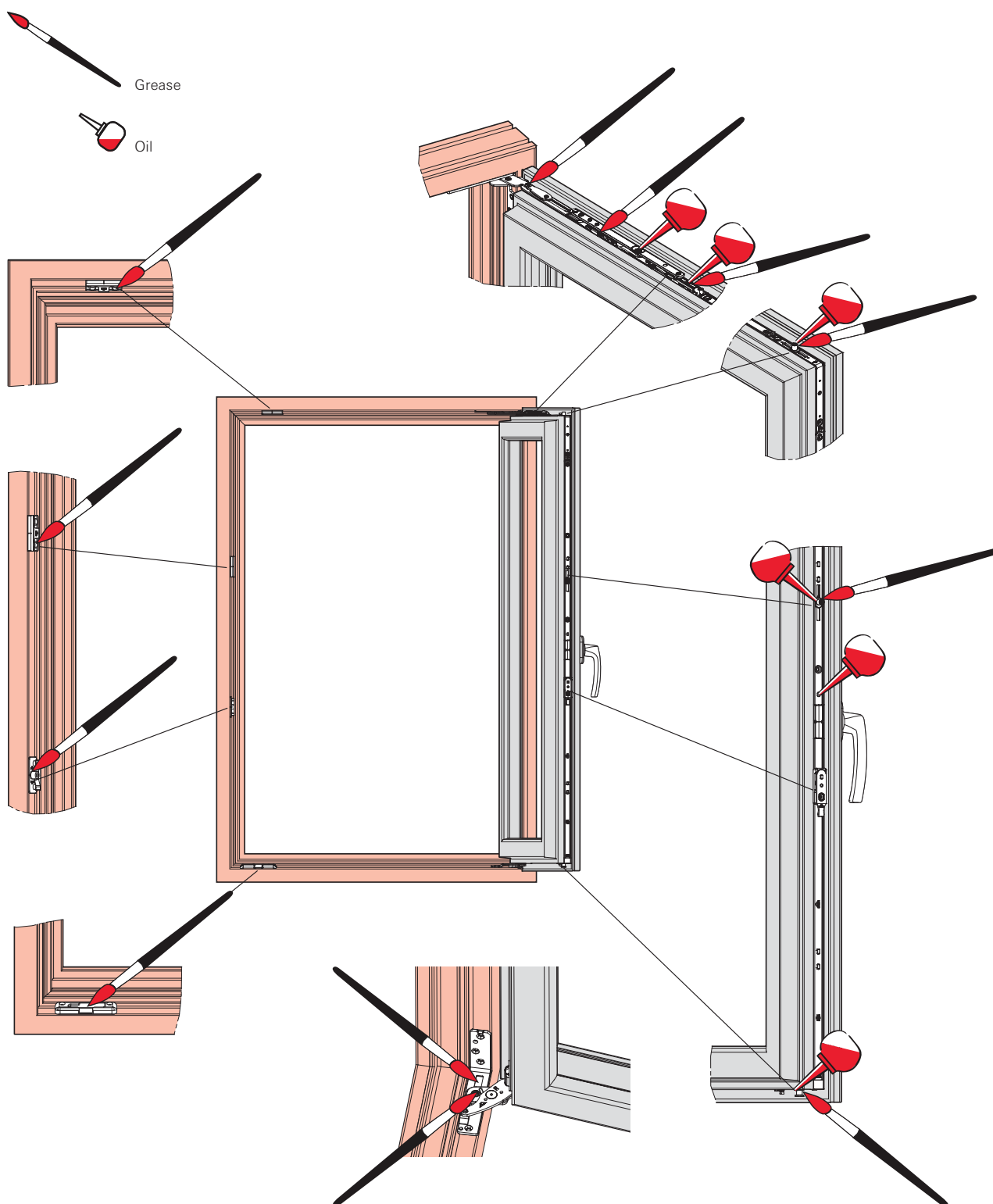


NOTE!

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.



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.	<input type="checkbox"/>	<input type="checkbox"/>
Examine safety-relevant hardware components for wear and tear.	<input type="checkbox"/>	<input type="checkbox"/>
All movable parts are to be operation-tested.	<input type="checkbox"/>	<input type="checkbox"/>
All locking points are to be operation-tested.	<input type="checkbox"/>	<input type="checkbox"/>
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.	<input type="checkbox"/>	<input type="checkbox"/>
Never use aggressive, acidiferous cleaners or abrasive cleaning agents.	<input type="checkbox"/>	<input type="checkbox"/>
Only use mild, pH-neutral cleaning agents in diluted form.	<input type="checkbox"/>	<input type="checkbox"/>
Only use a soft cloth for cleaning.	<input type="checkbox"/>	<input type="checkbox"/>

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



Protection against corrosion

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

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Protection against dirt

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

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Protection against (permanent) moist interior air

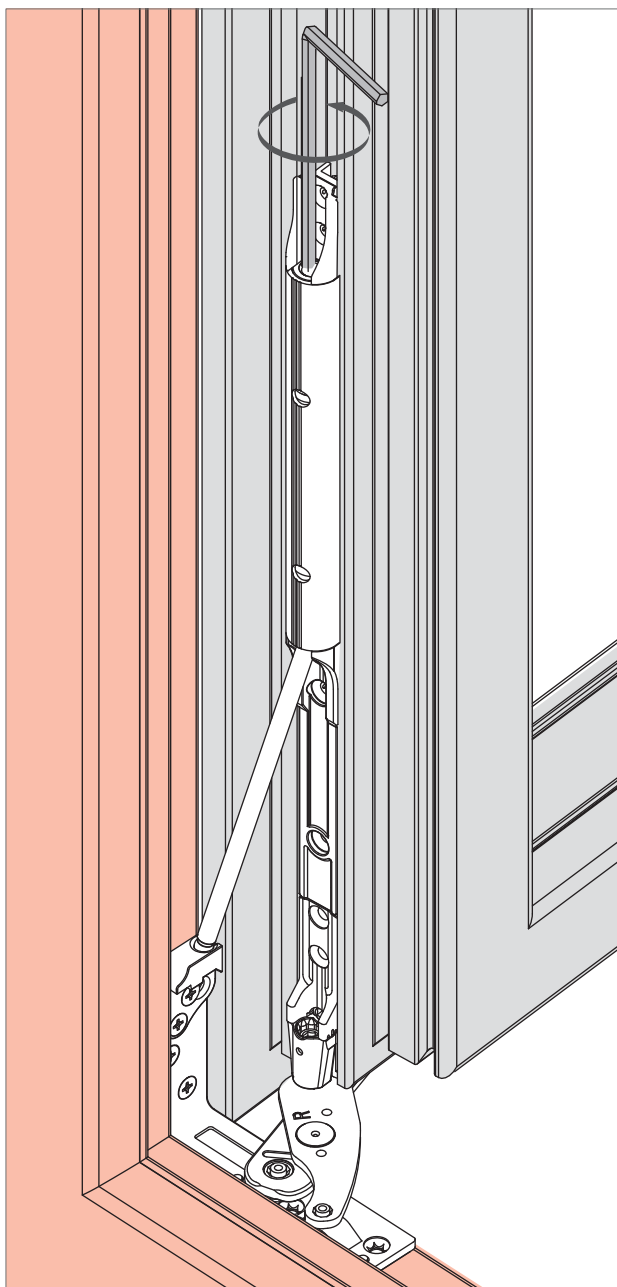
	Specialist company	End-users
Ventilate the hardware and the rebate areas – especially in the construction phase – so that they are neither exposed to direct contact with water nor to formation of condensation water.	<input type="checkbox"/>	<input type="checkbox"/>
<p>Ensure that (permanently) damp spatial air cannot condense in the hinge and rebate areas:</p> <ul style="list-style-type: none"> – 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. <p>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.</p>	<input type="checkbox"/>	<input type="checkbox"/>

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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.	<input type="checkbox"/>	<input type="checkbox"/>
Use only adhesive tapes which do not damage the varnish layers. In the case of doubt, ask the window fabricator.	<input type="checkbox"/>	<input type="checkbox"/>

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Unhinge the load transfer device.

1. Bring the handle into the turn mode, open the sash 90° and release the load transfer device.
2. Press down the lifting mishandling device (if mounted) and bring the handle into the tilt position.
3. Unhinge the sash stay and secure the sash from falling out.
4. Press down the lifting mishandling device and bring the handle into the turn mode.
5. Turn the sash closed.
6. Lift the sash slightly tilted out of the pivot rest.



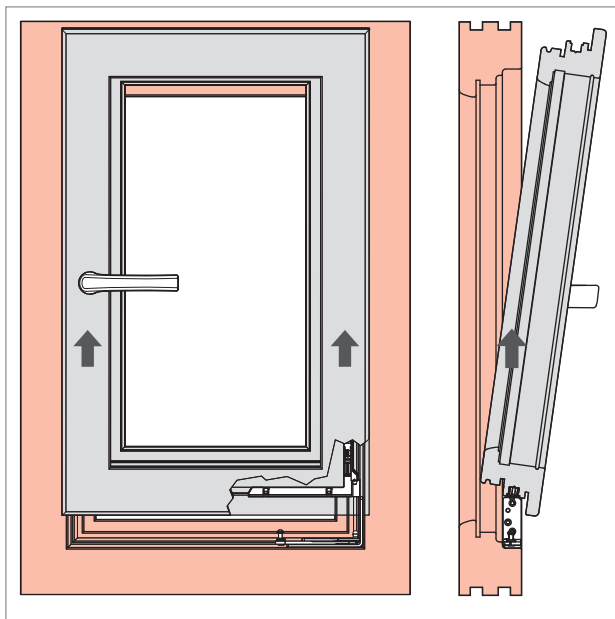
NOTE!

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.

Dismantling

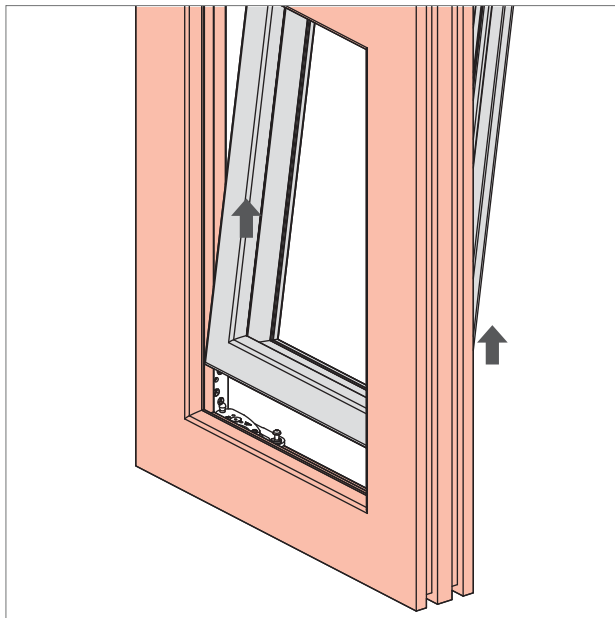
Unhinging the sash without load transfer device

Sash stay 350, 500 and sash stay 250



Unhinging the sash

1. Bring the handle into the turn mode (= open sash position).
2. Press down the lifting mishandling device (if mounted) and bring the handle into the tilt position.
3. Unhinge the sash stay and secure the sash from falling out.



4. Press down the lifting mishandling device and bring the handle into the turn mode.
5. Turn the sash closed.
6. Lift the sash slightly tilted out of the pivot rest.



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 fastenings designed for the respective clearance.
 - Wherever possible, undertake transport 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, 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.