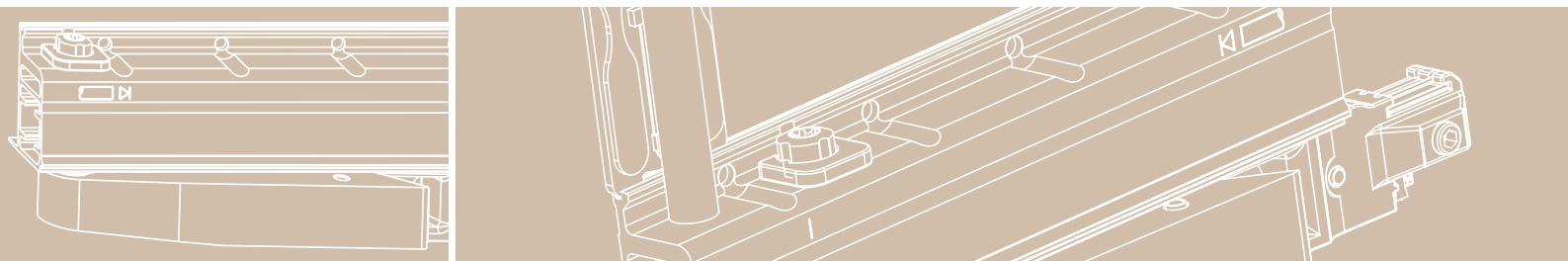


TECHNOLOGY IN MOTION



MACO RAIL-SYSTEMS

SLIDING FITTINGS



Slide&Tilt / Timber 12 gap / Automatic operation

INSTALLATION INSTRUCTIONS
TIMBER



Application

Automatic operation

720 - 2000	900 - 2700	160
960 - 2000	900 - 2700	200*

* for sash weight > 160 kg
use tandem roller



Backset



Sash rebate width (SRW)



Sash rebate height (SRH)



Sash width



Handle dimension



Frame rebate width



Frame rebate height



Left version shown,
Right version as mirror image



Contents

Product liability	4
Overview (sides to fold out)	5 + 9
- Overview drawings and parts list	
- Sections scale 1:1, view of sash and frame	
Types of openings	13
Sash installation	18
Frame installation	31
Inserting and adjusting the sash	37



Product liability

Important notes

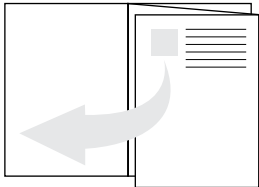
- Observe the maximum and minimum dimensions as well as the max. permissible sash weight.
- Observe the specifications of the profile manufacturer, especially with regard to possible restrictions of the minimum and maximum heights, the sash weight and the locking point.
- Do not make any changes to the design of the fitting components.
- Use only MACO hardware for the entire fitting.
- Mount all fitting components as described in these instructions and observe all safety instructions.
- Use the screw sizes specified. Match the screw lengths to the profile system
- Insert the screws straight (if not otherwise specified) and do not over-tighten them, since this would otherwise adversely affect the smooth running of the hardware.
- Fasten the screw of load-bearing components (e.g. roller, roller track and guide track) onto the reinforcement profile).
- Make sure there is a positive transfer of pressure forces onto the reinforcement profile in the area of the roller.
- Do not use acidic wetting sealants, since these can cause corrosion in the fittings.
- Keep the roller track and all sashes free of soiling and masonry residue. Avoid contact of the hardware with moisture and cleaning agents.
- Attach the operation sticker so that it is easily visible on the installed slide&tilt sash.
- If the slide&tilt fittings are subjected to excessive loads or not operated properly the sash can fall out of its guide, please remove thereby cause severe injuries. If excessive loads are to be expected in special circumstances (in schools, nursery schools, etc.), suitable measures must be adopted to prevent damage to the slide&tilt unit For example:
 - Moving the stop to reduce the opening width, or
 - Installing a profile cylinder to prevent unauthorized use.

If in doubt, please ask your MACO contact person.

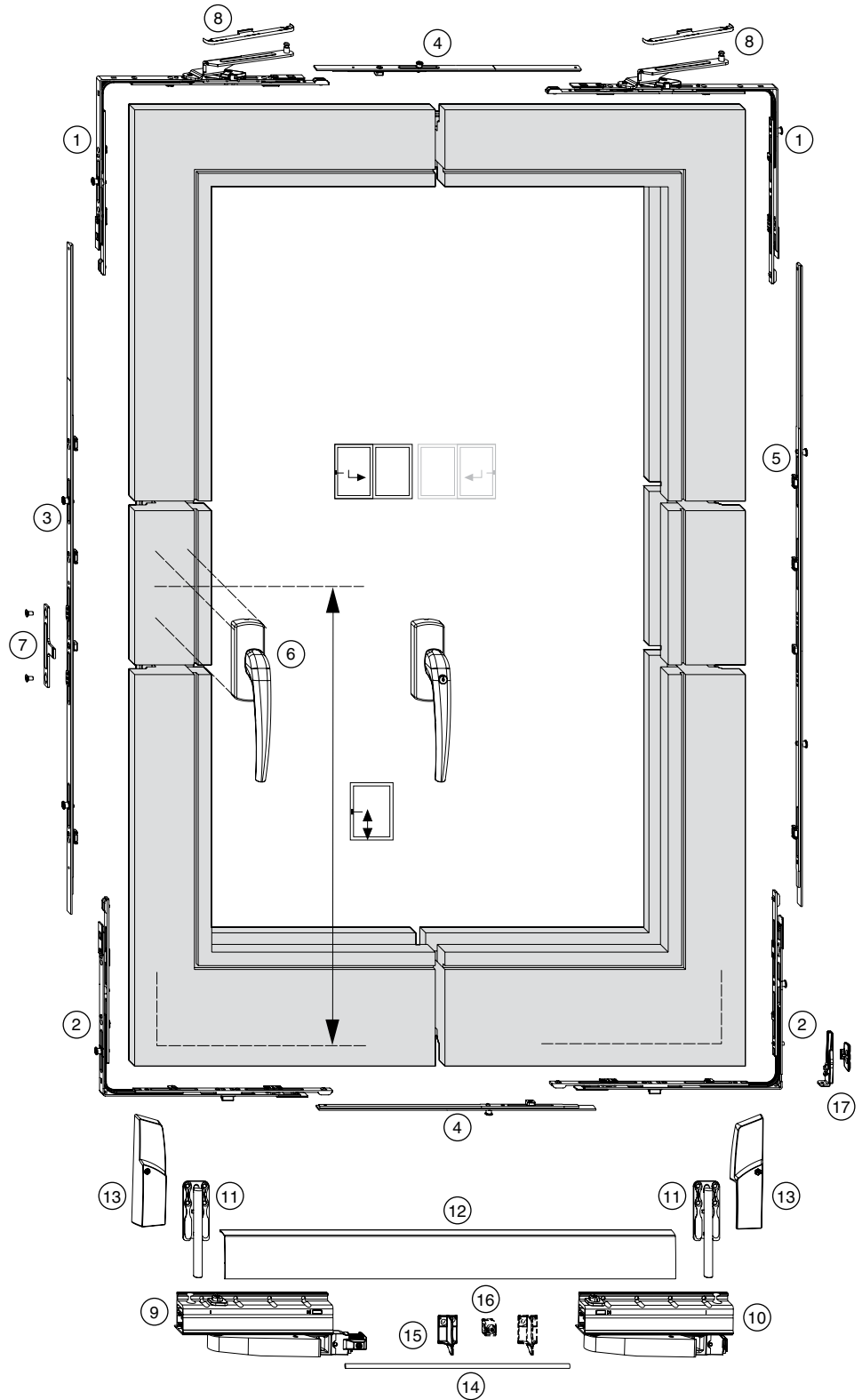
Disclaimer

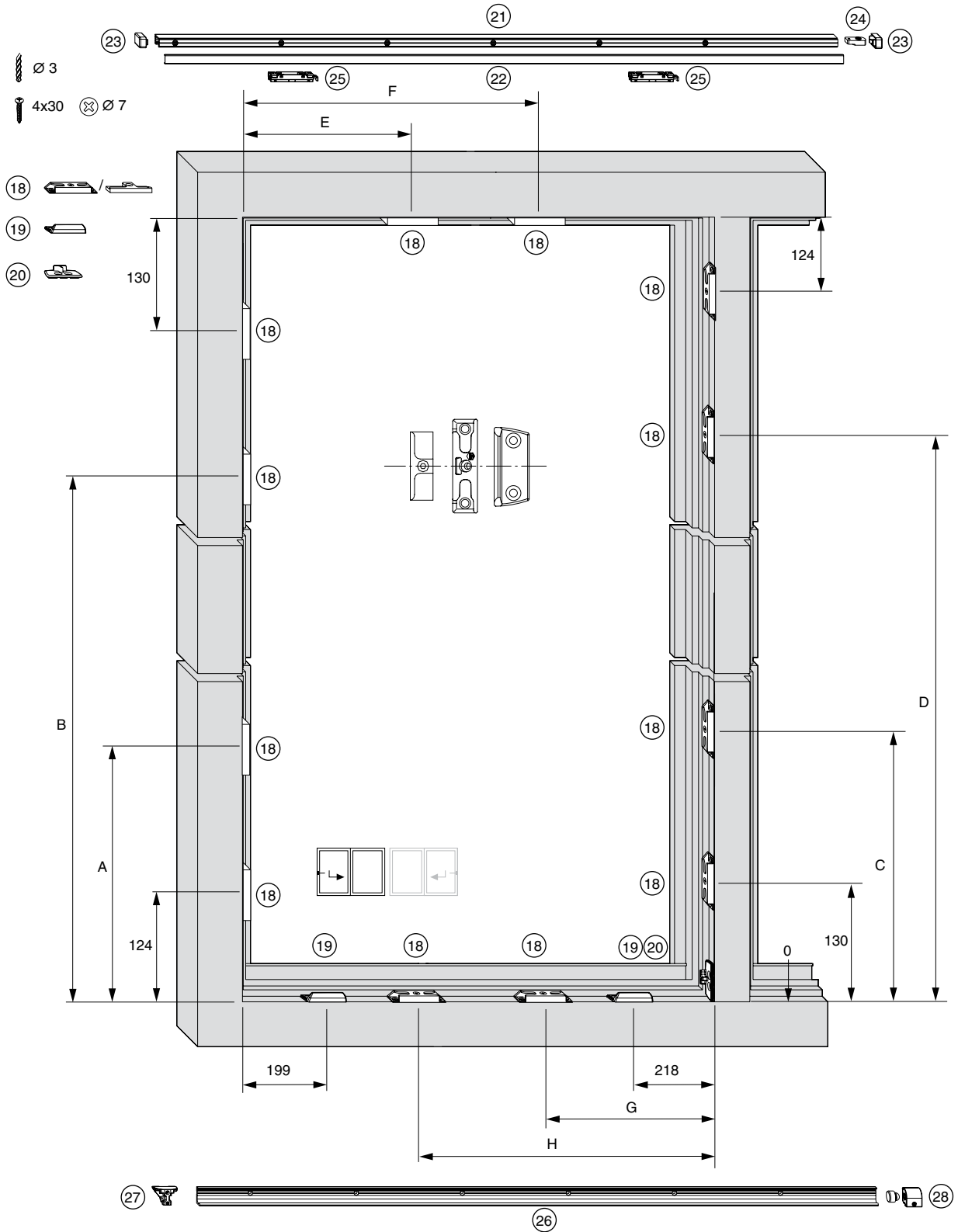
We shall not be liable for malfunctions and damage to the fittings and/or to Slide&Tilt units equipped with these, if this has been caused by inadequate tendering procedures, non-compliance with these installation instructions, or physical force applied to the fittings (e.g. due to improper use).

**MACO
RAIL-SYSTEMS**



Fold-out side 1:
Overview drawings and parts list

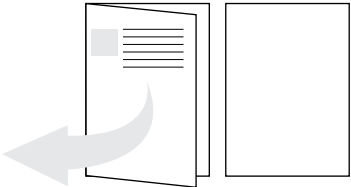




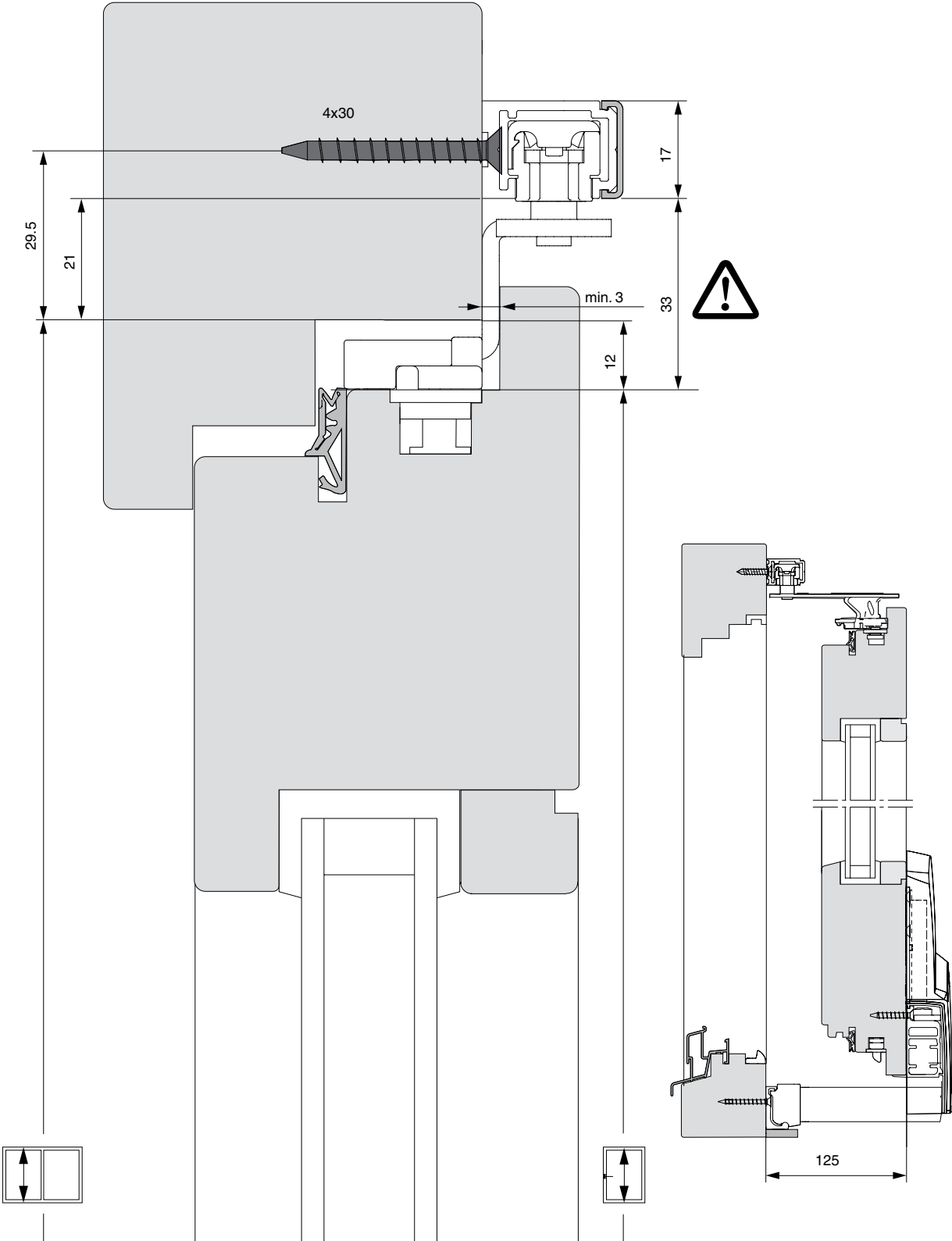


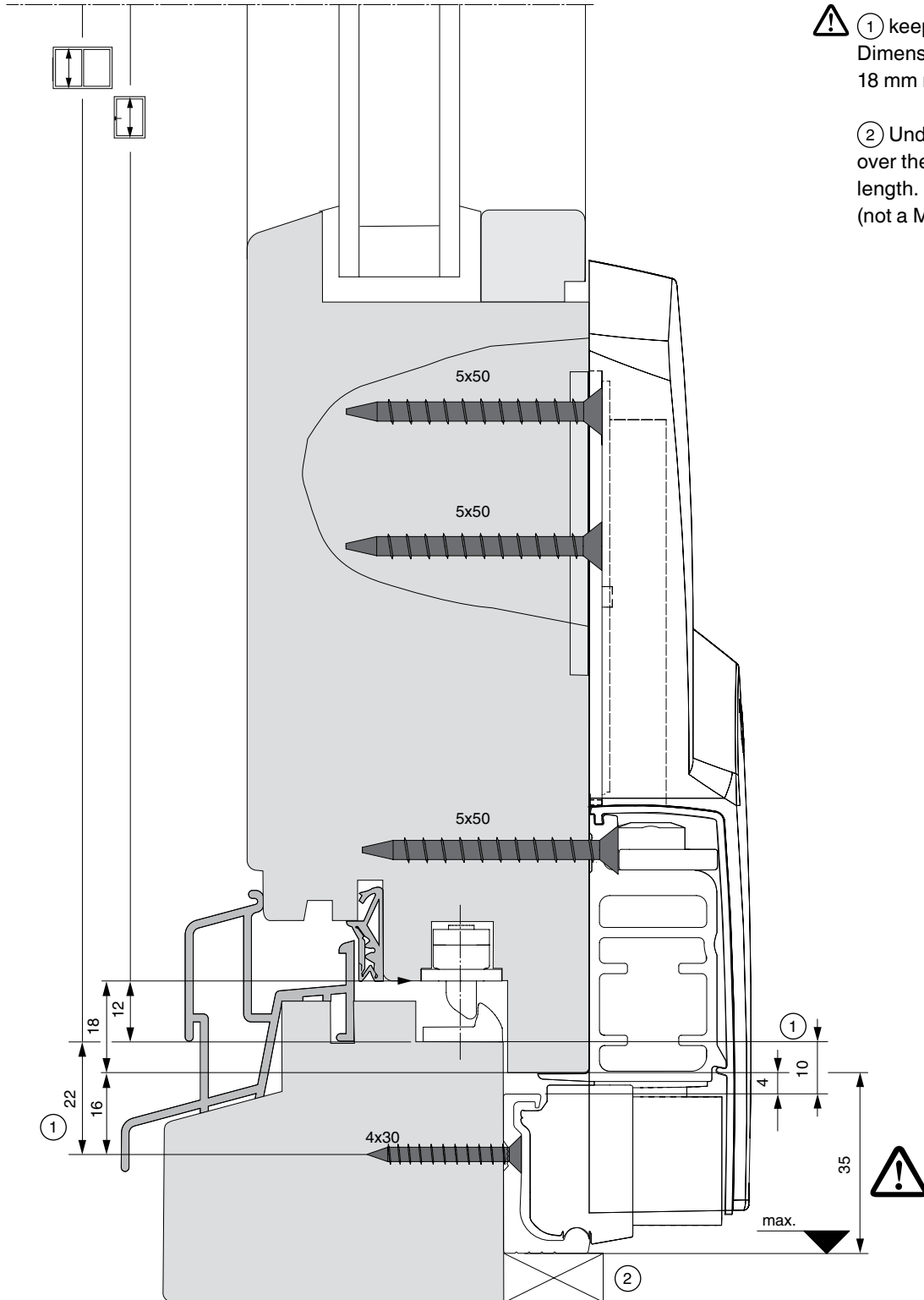
- | | | | |
|---|----------------------------------|---|--|
| ① | Corner element with scissor stay | ⑮ | Support for cover strip |
| ② | End piece with snapper | ⑯ | Support block |
| ③ | Drive gear | ⑰ | Mishandling device SKB-Z (optional) |
| ④ | Width units | ⑱ | i.S. striker or striker |
| ⑤ | Height unit | ⑲ | Latching plate |
| ⑥ | Handle | ⑳ | Frame component for mishandling device |
| ⑦ | Connecting strap | ㉑ | Guide track |
| ⑧ | Scissor-stay cover cap | ㉒ | Cover for guide track |
| ⑨ | Roller on gear side | ㉓ | Caps for guide track |
| ⑩ | Roller on hinge side | ㉔ | Top stop |
| ⑪ | Roller reinforcement | ㉕ | Scissor slider |
| ⑫ | Roller cover strip | ㉖ | Roller |
| ⑬ | Roller cover | ㉗ | Control module |
| ⑭ | Connecting rod | ㉘ | Bottom stop |

**MACO
RAIL-SYSTEMS**



Fold-out side 2:
Sections scale 1:1, view of sash and frame

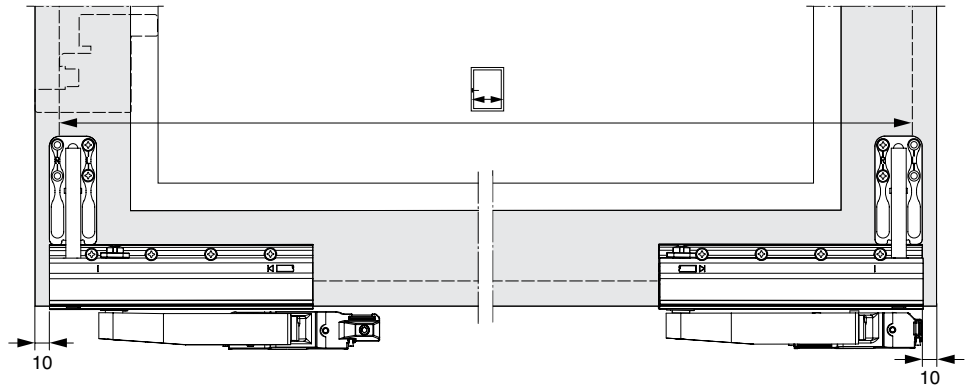




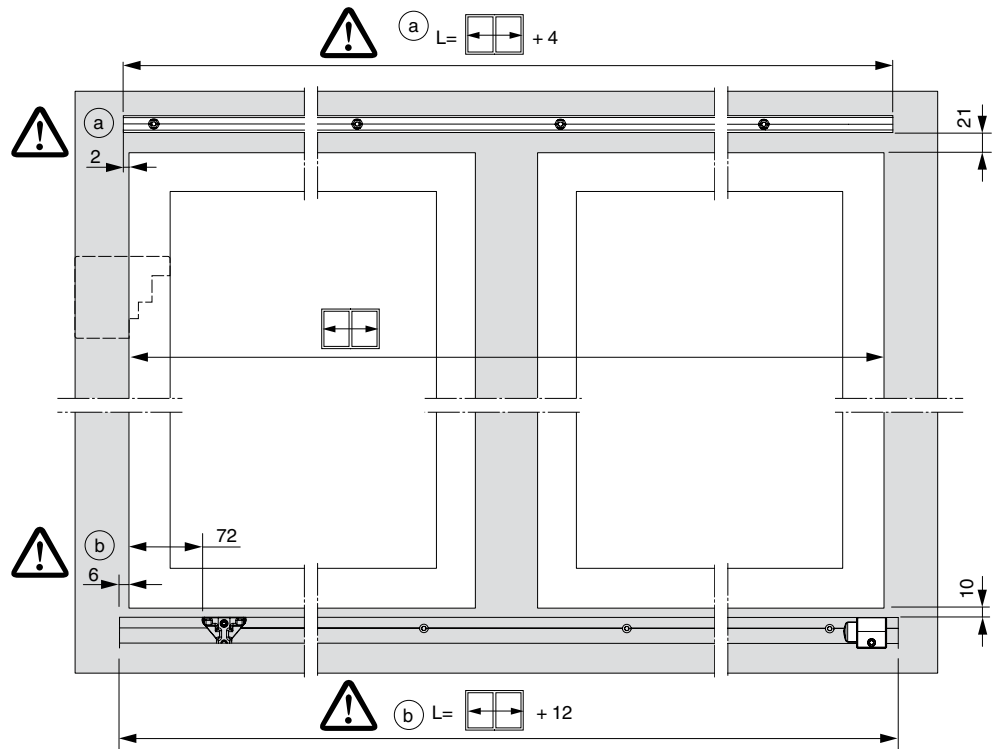
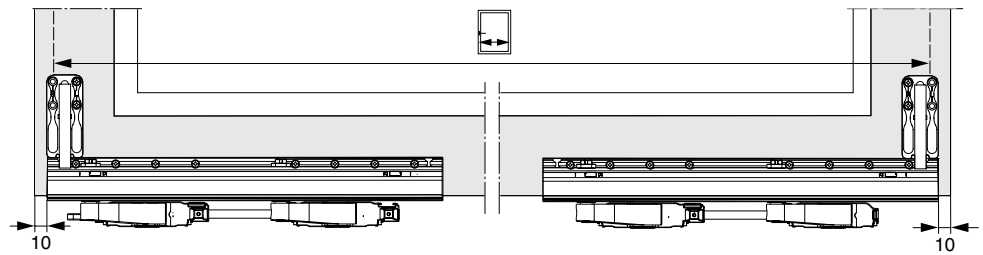
- ⚠ ① keep to dimension!
Dimension for
18 mm rebate leg
- ② Underlay the roller
over the entire
length.
(not a MACO article)



Roller up to 160 kg

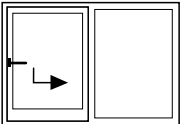


Tandem roller up to 200 kg

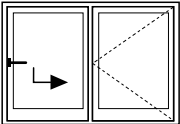
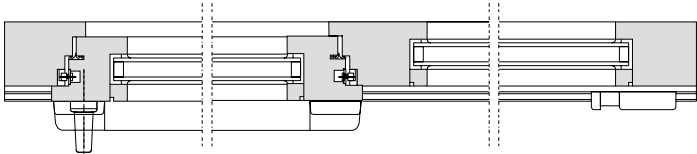




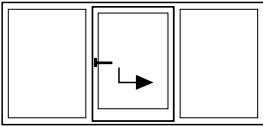
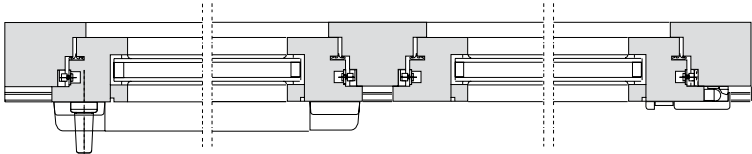
Types of openings



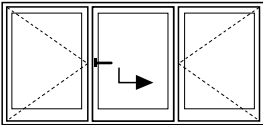
Fixed glazing



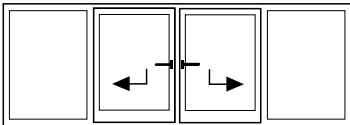
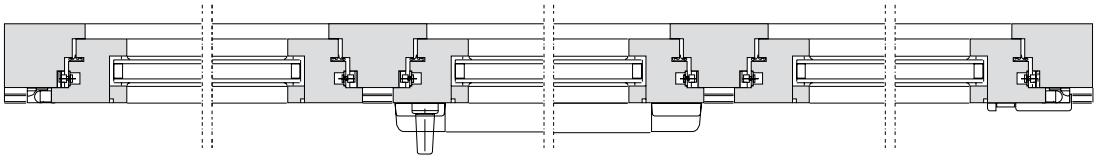
With mullion



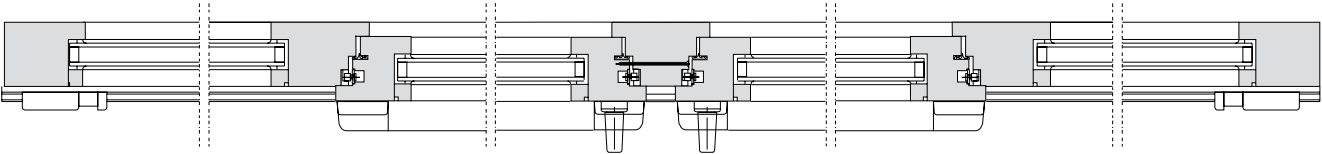
Fixed glazing



With mullion

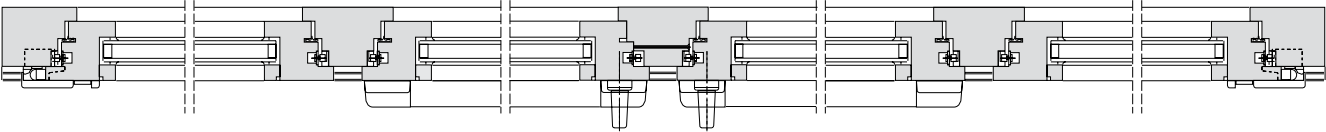
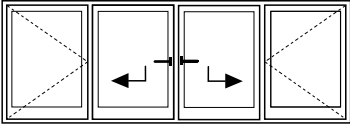


Fixed glazing

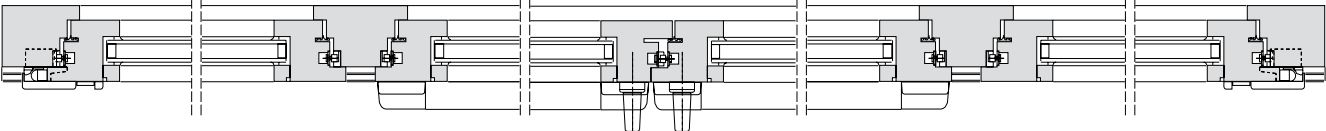




Types of openings



Mullion installed on second sash

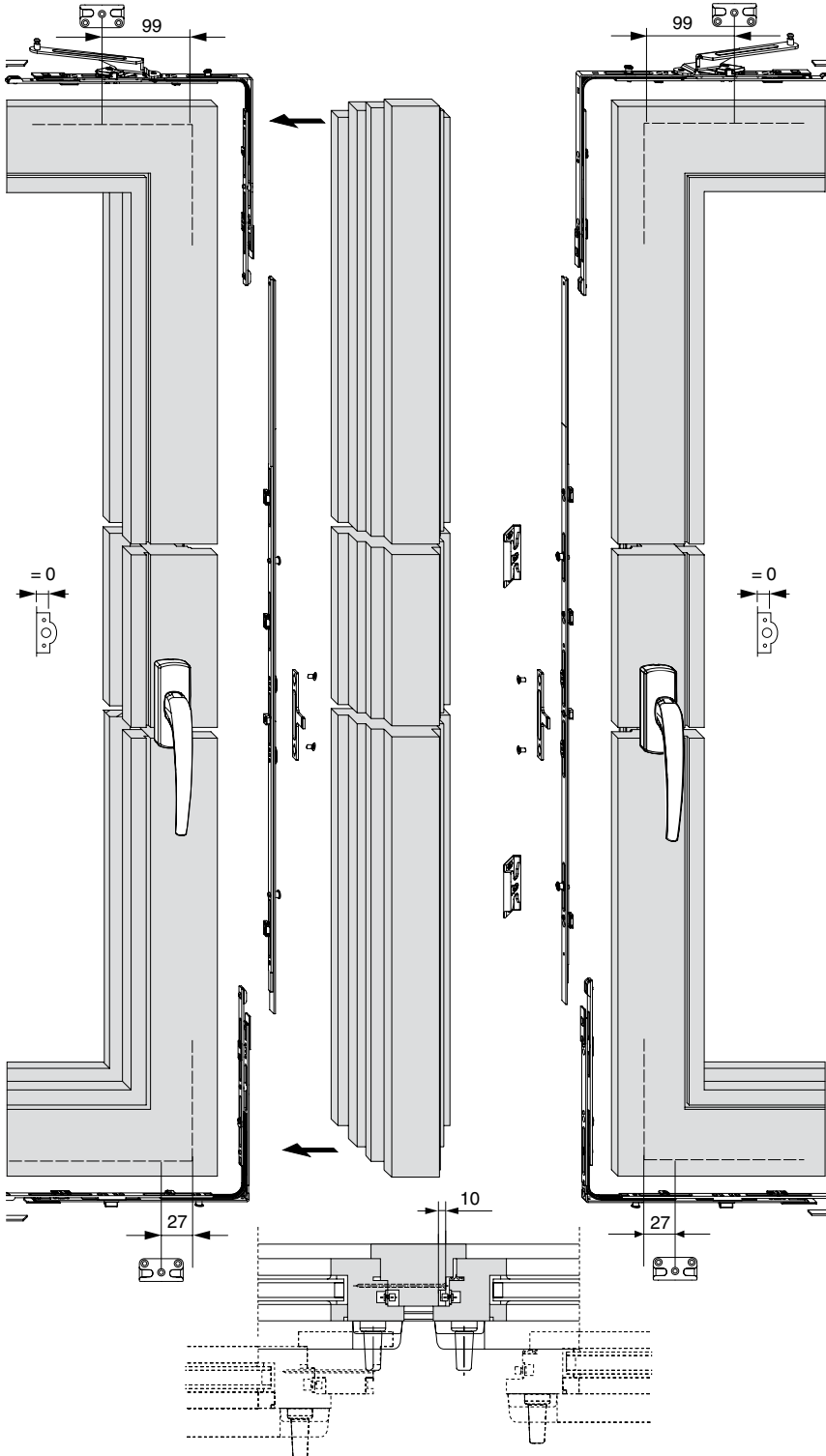


Two adjacent drive gears



Types of openings

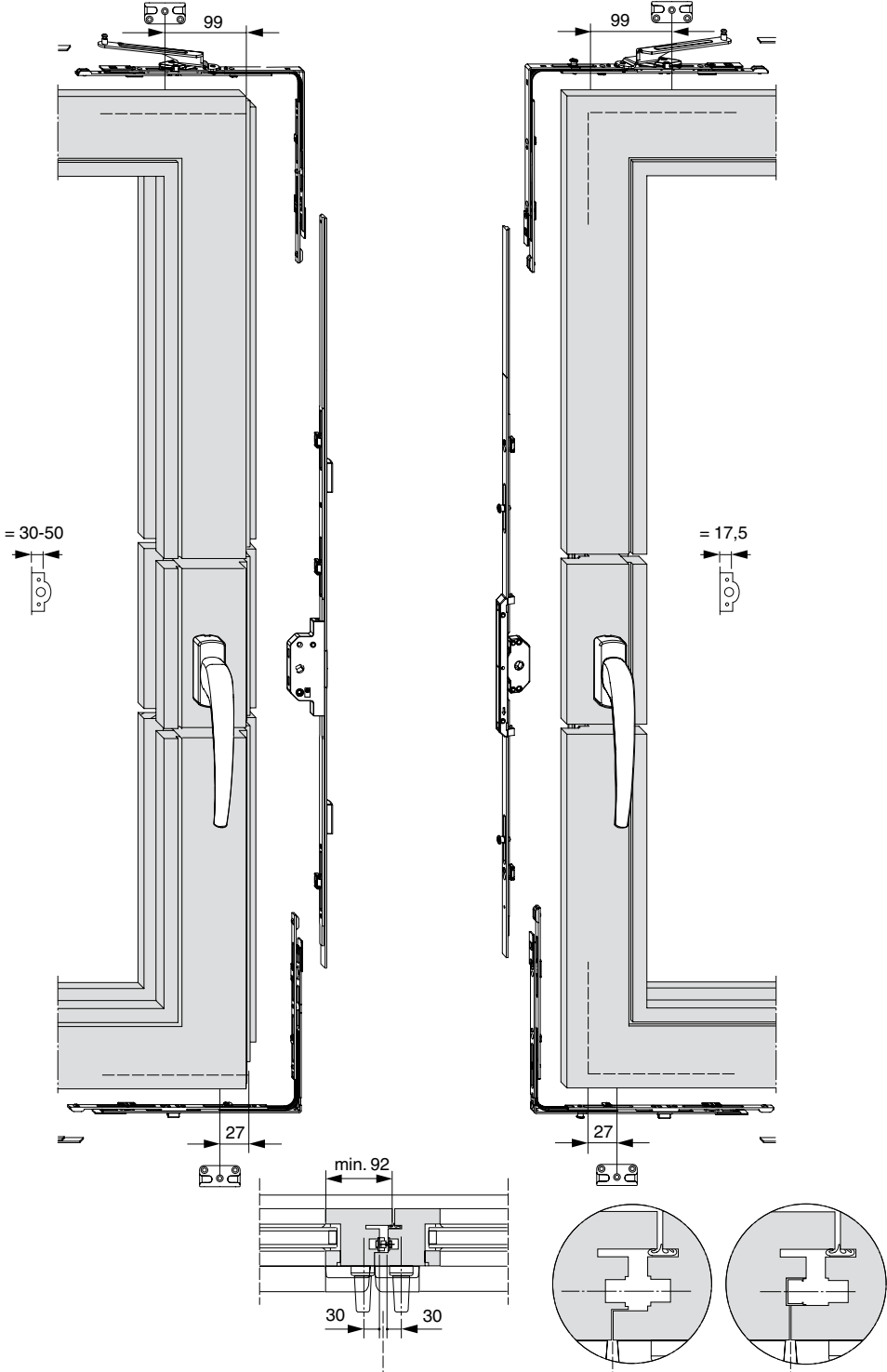
Mullion installed on second sash





Types of openings

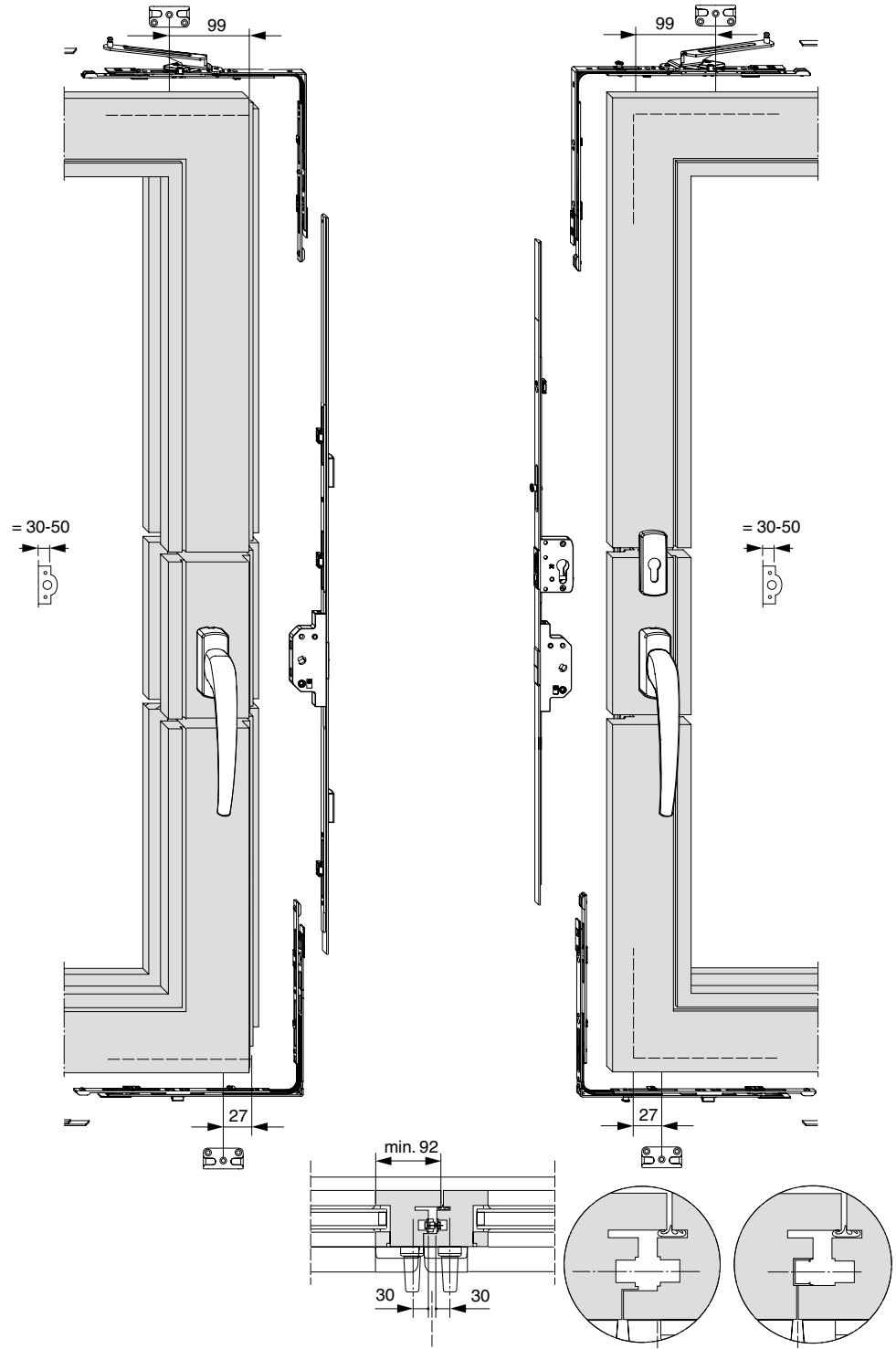
Two adjacent drive gears





Types of openings

With lockable drive gear

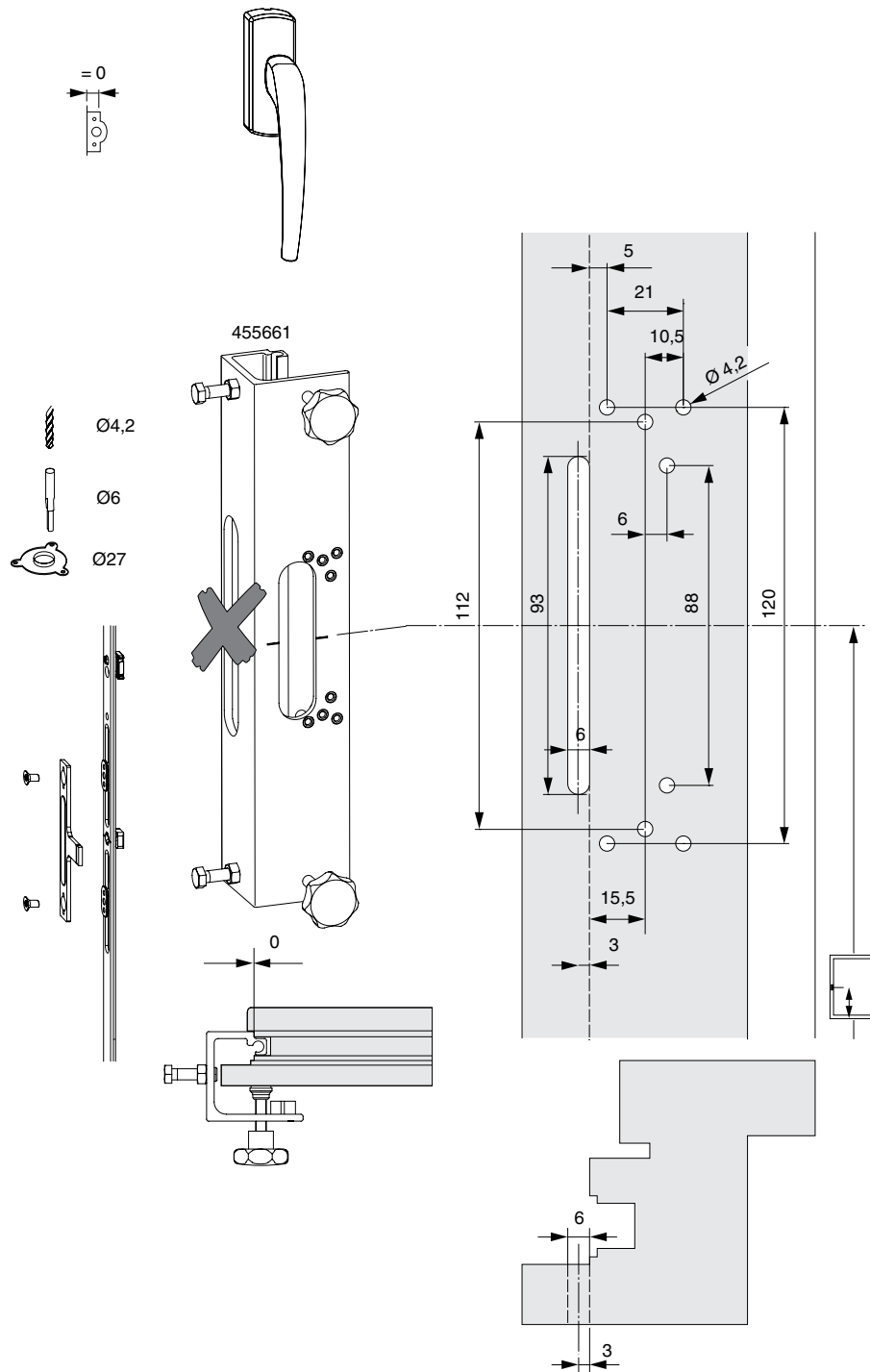




Sash installation

Hole for handle for drive gear DM 0

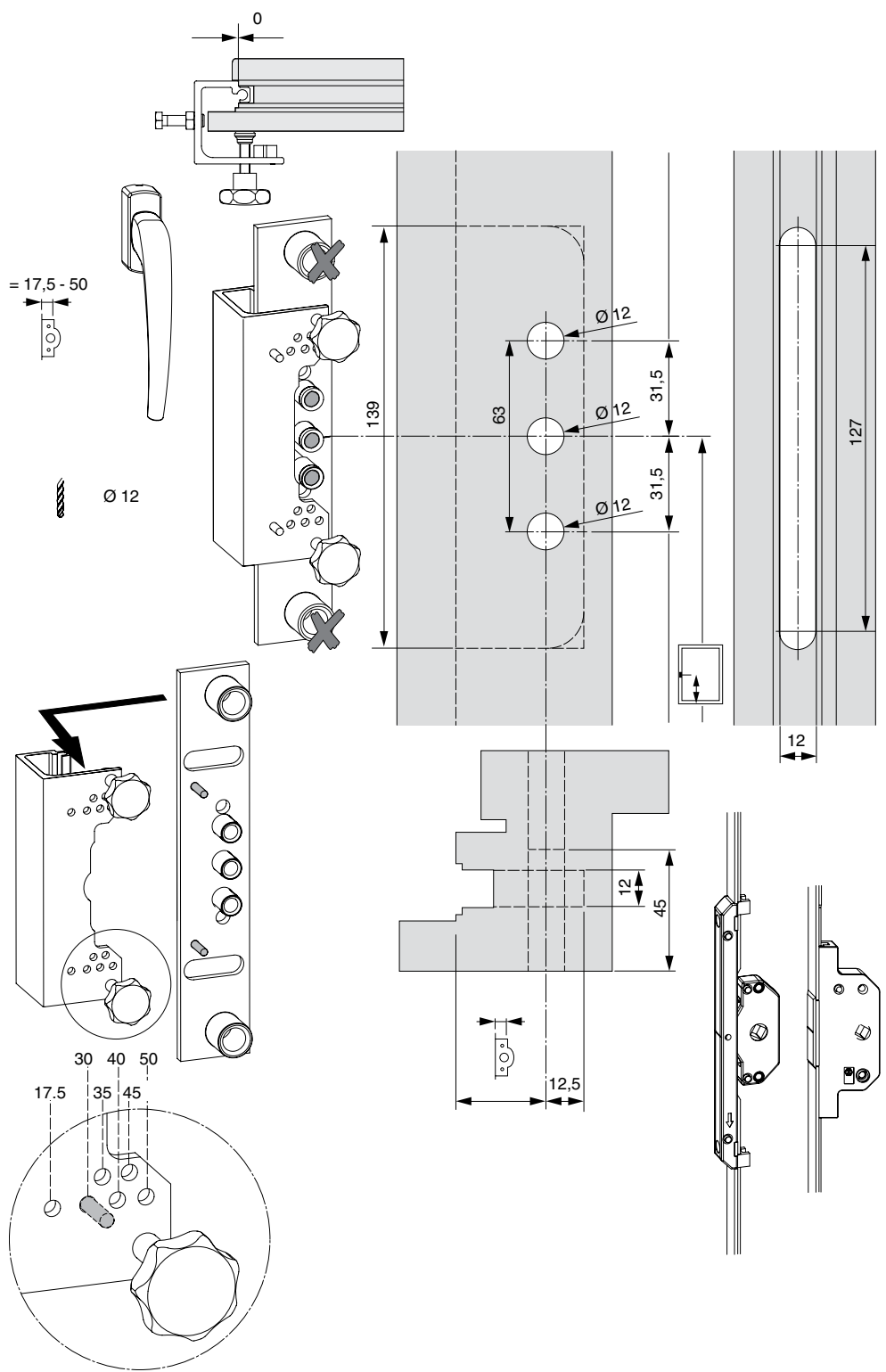
Drilling jig No. 455661:





Sash installation

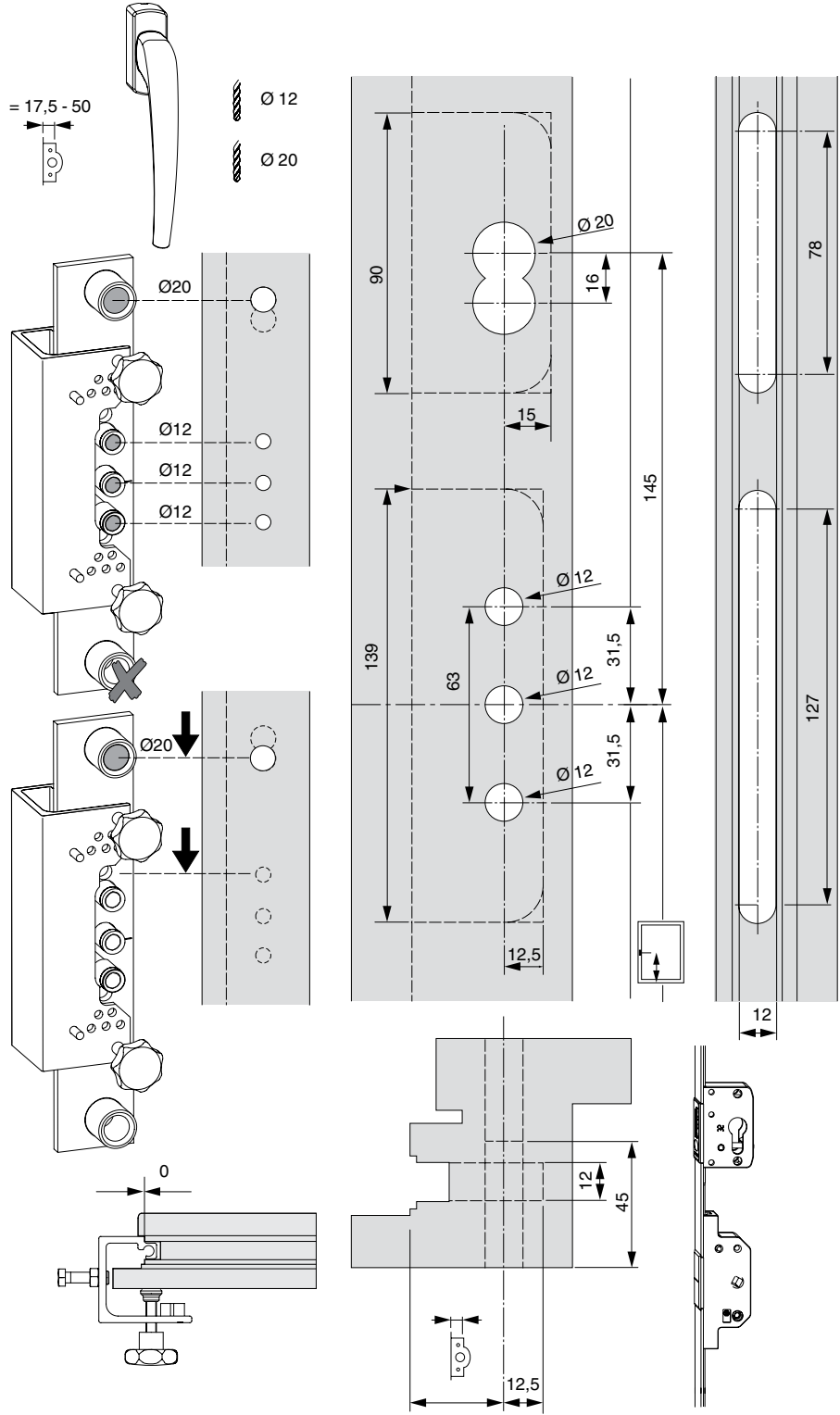
Hole for handle for drive gear DM 17,5
drilling jib no. 465150





Sash installation

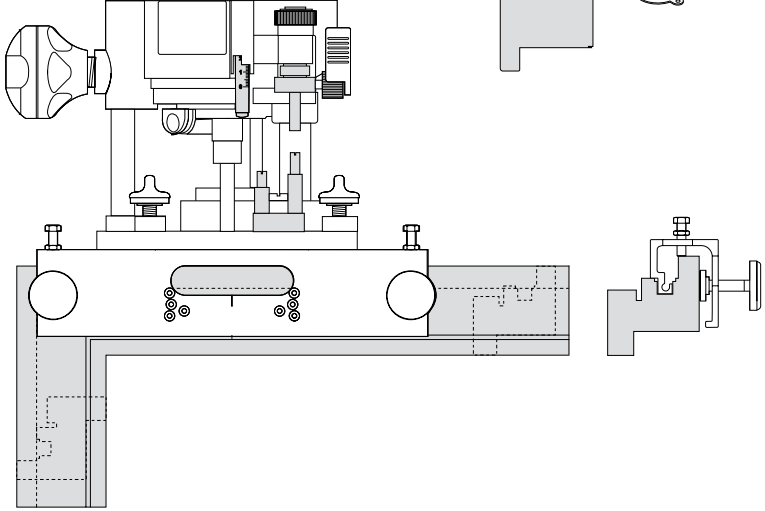
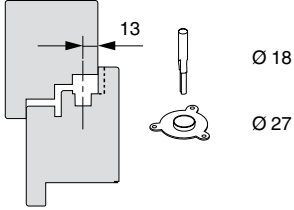
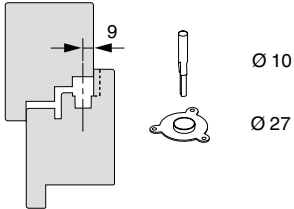
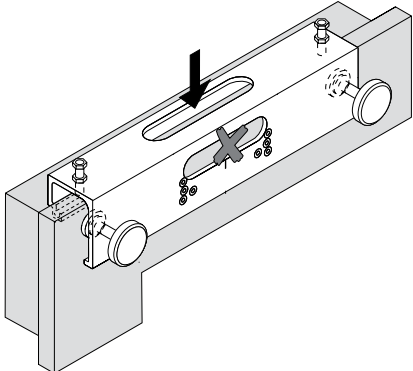
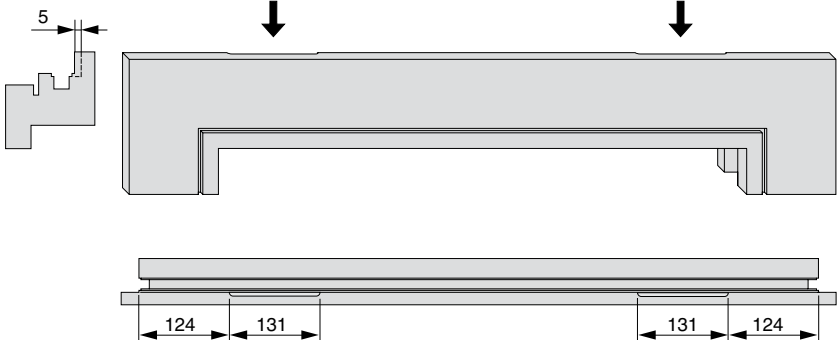
Hole for handle for lockable drive gear DM 17,5
drilling jib no. 465150





Sash installation

Scissor stay routing
drilling jig no. 455661





Sash installation

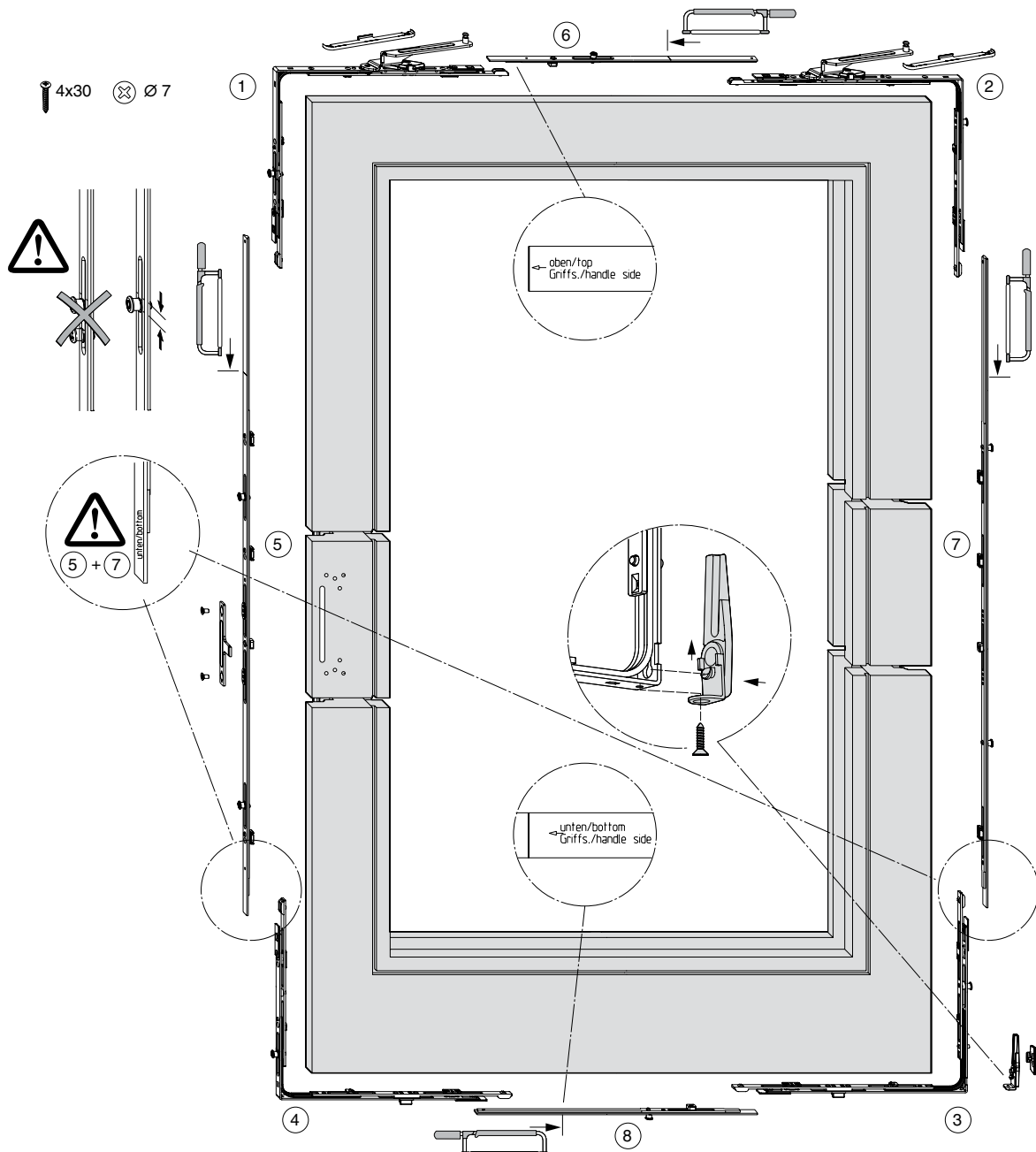
Installing the central lock

Install ① - ④

Attach ⑤ - ⑧, cut to length and install.


⚠ ⑤ + ⑦ Label must point to the pivot post!

⚠ Observe the positions of the Locking cams!



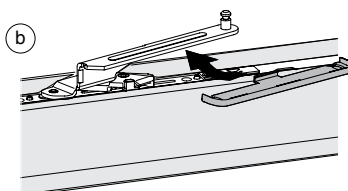
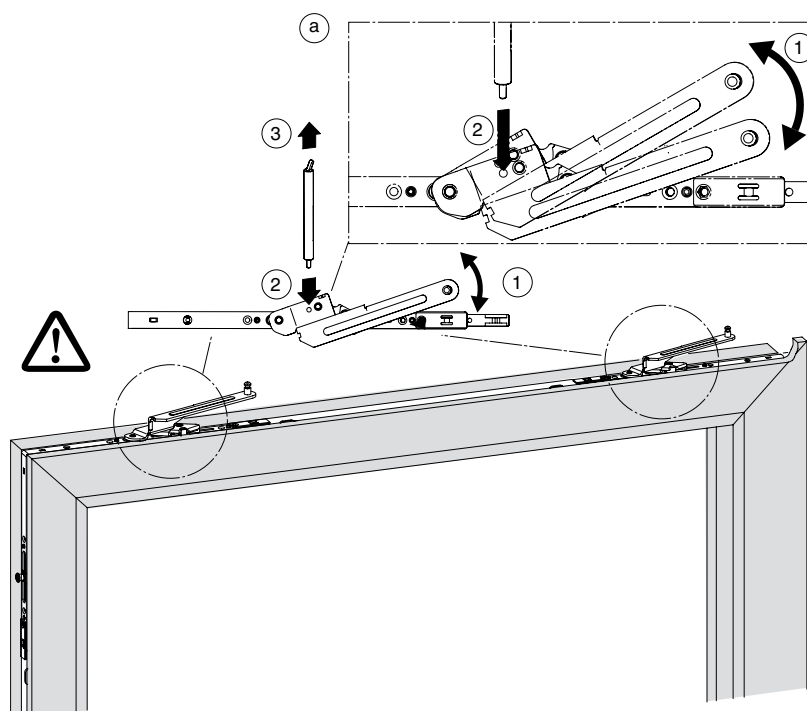


Sash installation

 (a) Observe the centre fastening of the scissor stays!

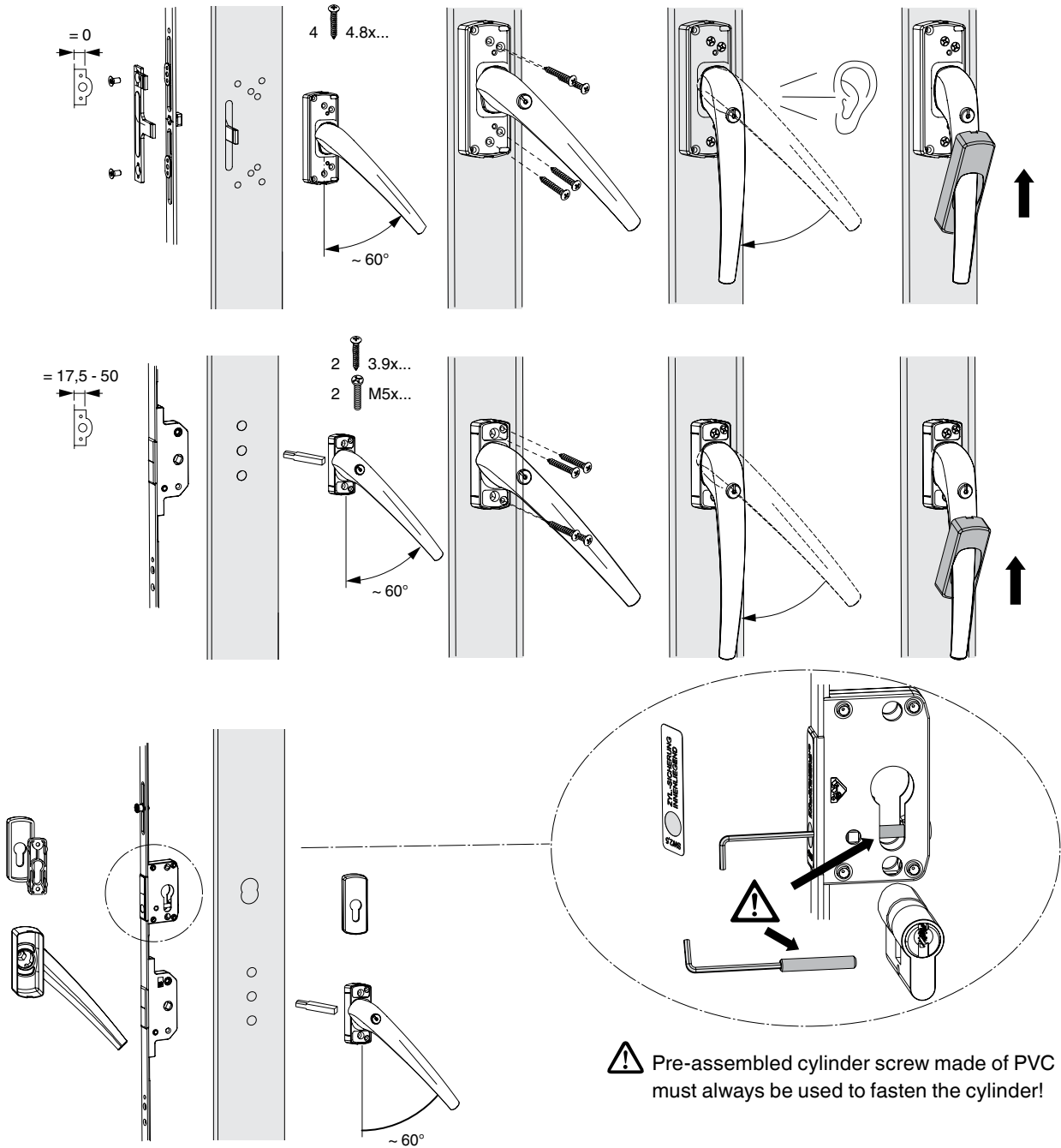
(b) **Note:**

We recommend that you do not attach the covers until the sashes have been mounted



Sash installation

Installing the handle

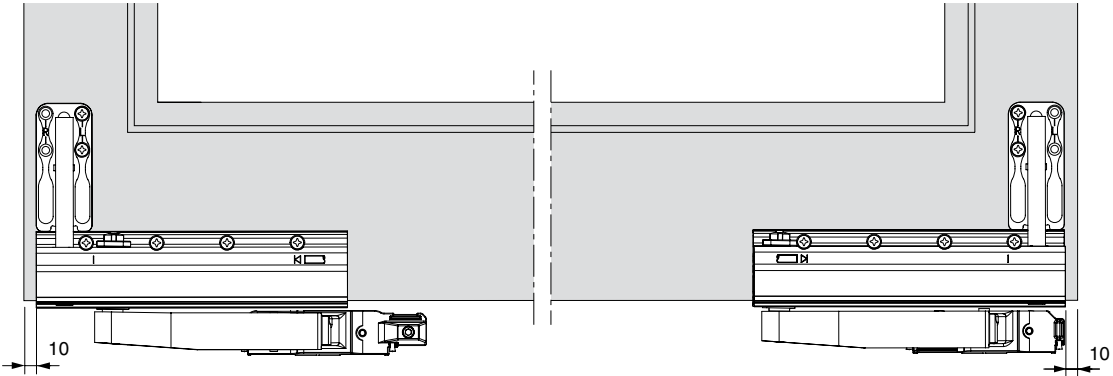
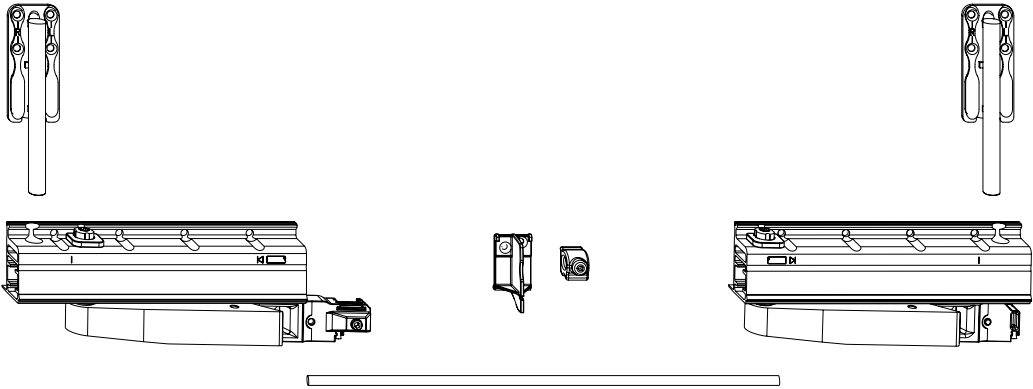


Operate the handle to release the installation fastening.



Sash installation

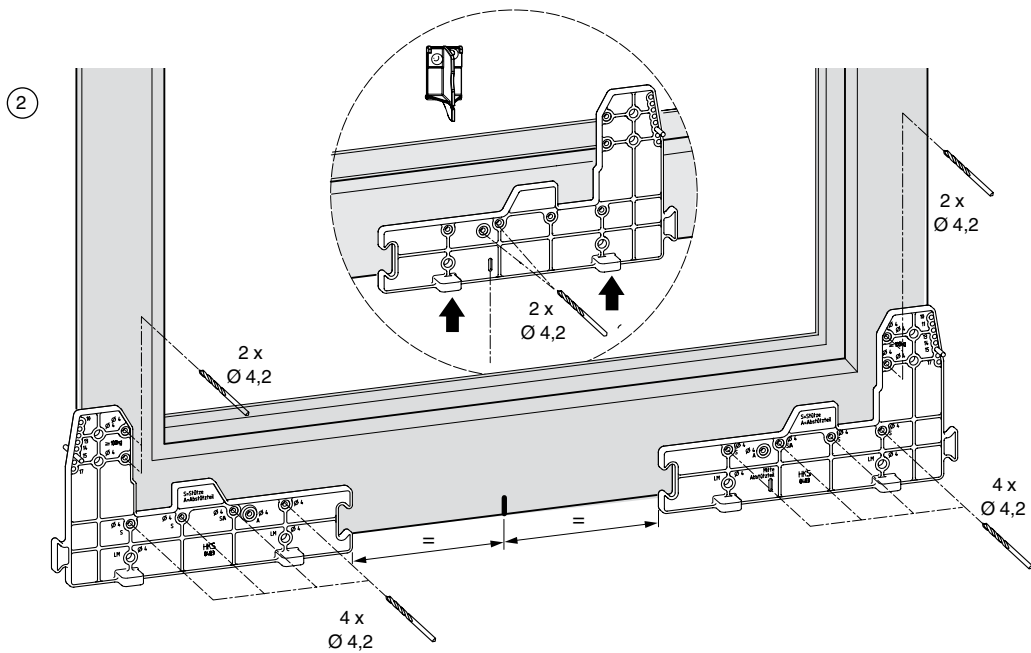
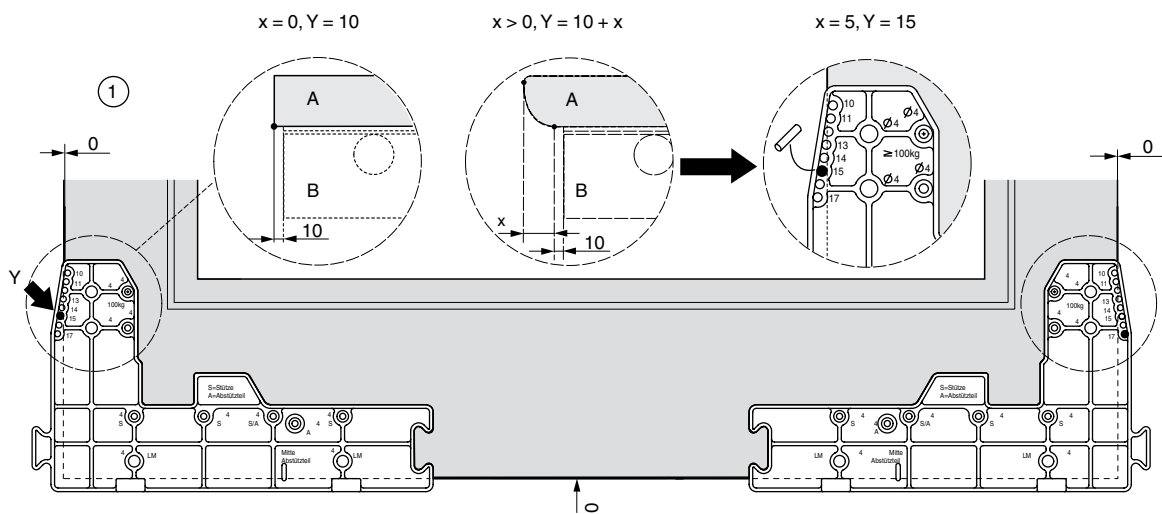
Installing the 160 kg roller



Sash installation

Installing the 160 kg roller

- ① Set the jig $x > 0$: for pronounced arches or angles at the sash
A = Sash / B = roller
- ② Apply jig to rebate leg and drill



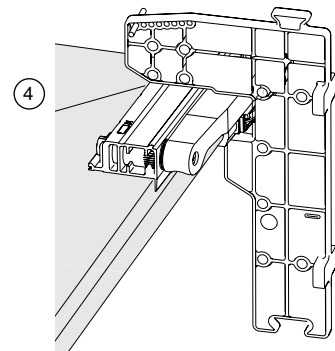
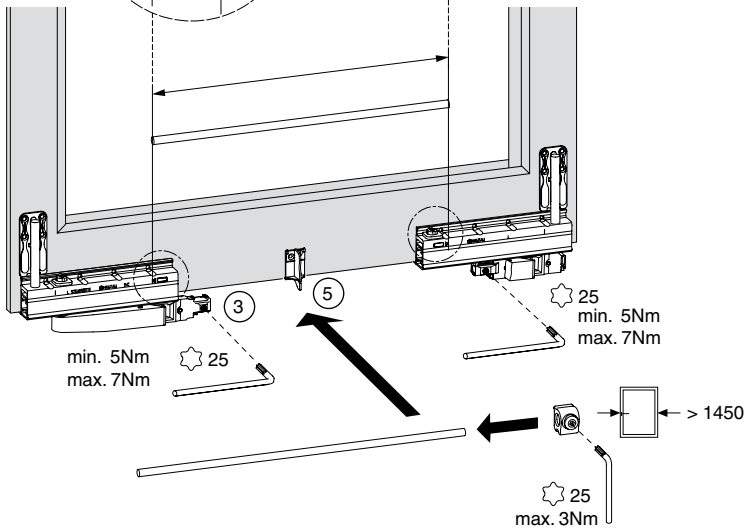
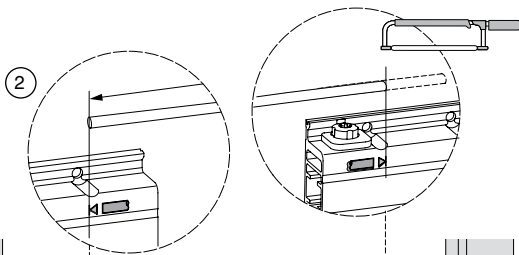
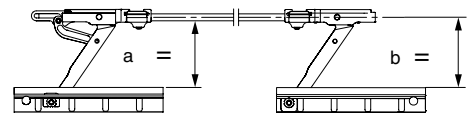
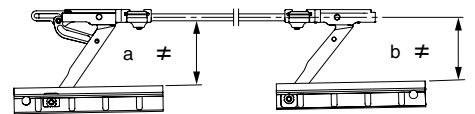
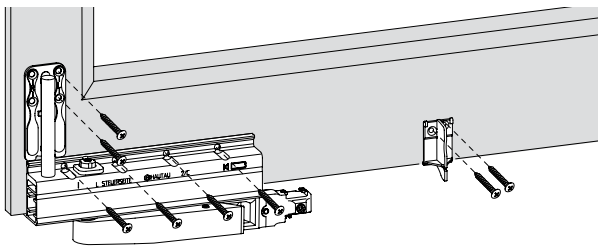
Sash installation

Installing the 160 kg roller

- ① Install the roller and support
- ② Cut the connection rod to length
- ③ Install the connecting rod at the rear roller
- ④ The roller can be fastened at the rear using the jig.
- ⑤ Fasten the connecting rod at the front roller

Make sure that the rollers are parallel!

①
5x50

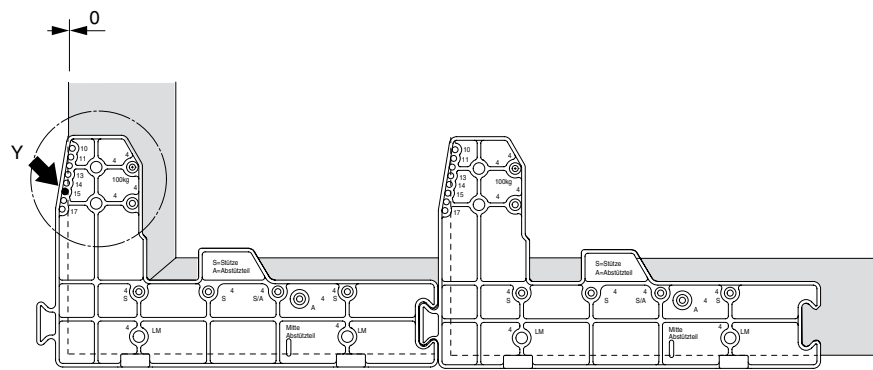




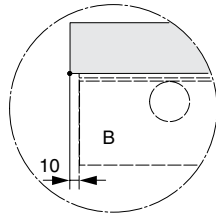
Sash installation

Installing the 200 kg roller
Tandem roller

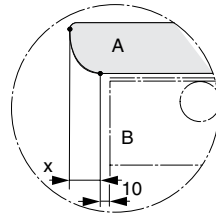
 Ø 4.2



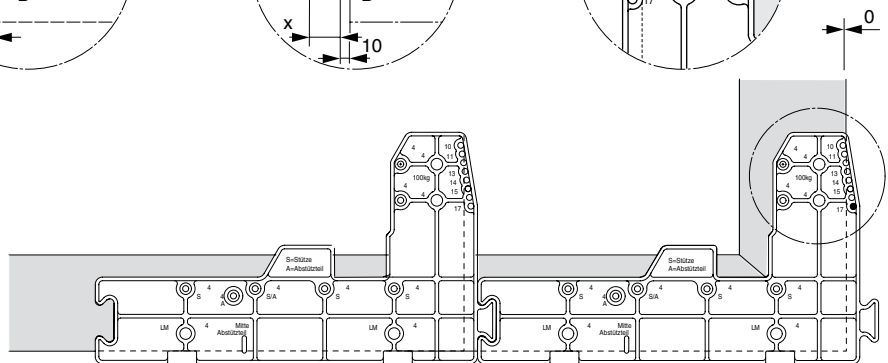
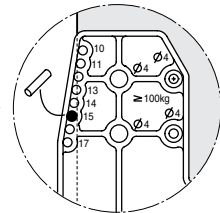
$x = 0, Y = 10$



$x > 0, Y = 10 + x$




$x = 5, Y = 15$




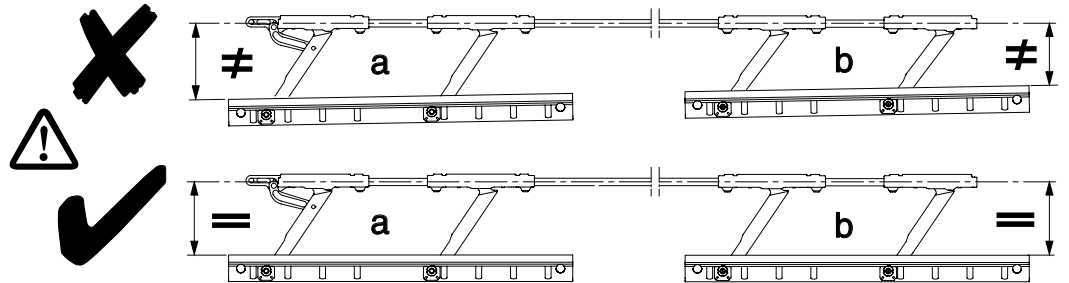
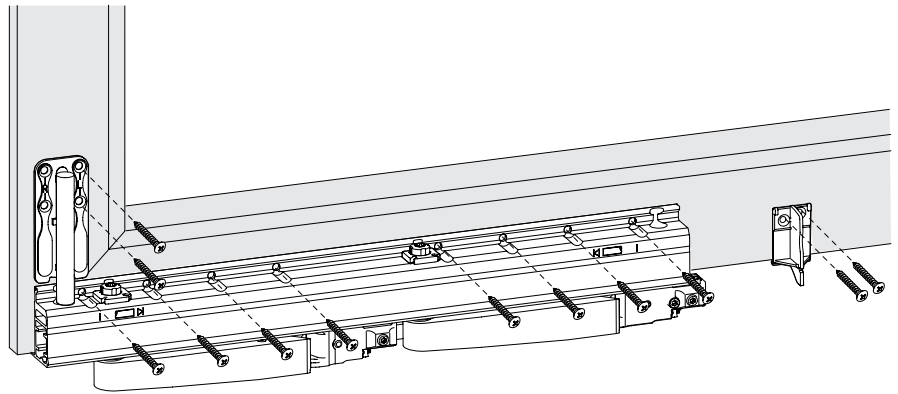


Sash installation

Installing the 200 kg roller

 Make sure that the rollers are parallel!

 5x50



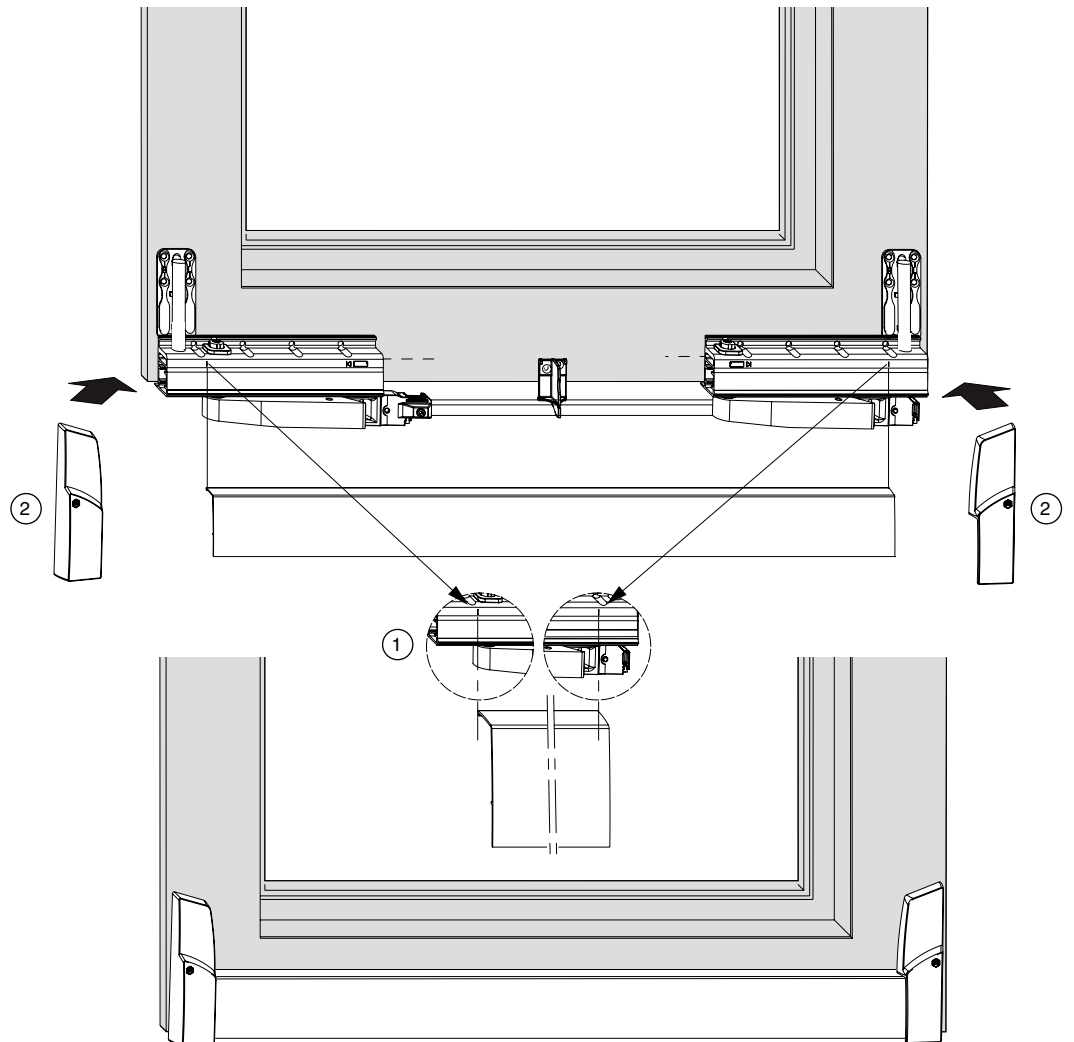


Sash installation

- ① Cut the cover profile to length according to the mark on the roller and snap on
- ② Clip on the caps at the front

Notes:

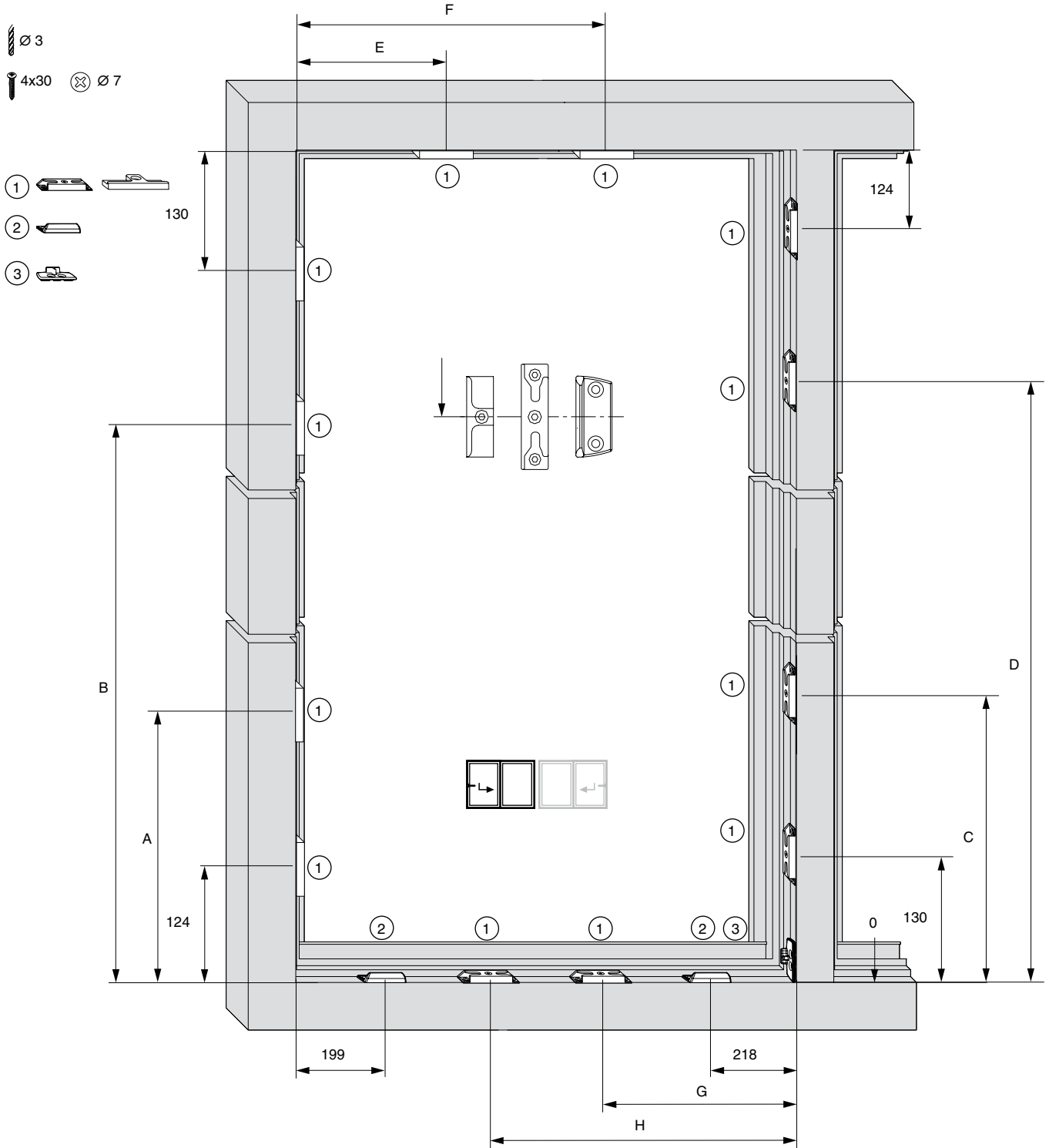
We recommend that you do not attach the covers until the sashes have been mounted





Frame installation




Installing the strikers




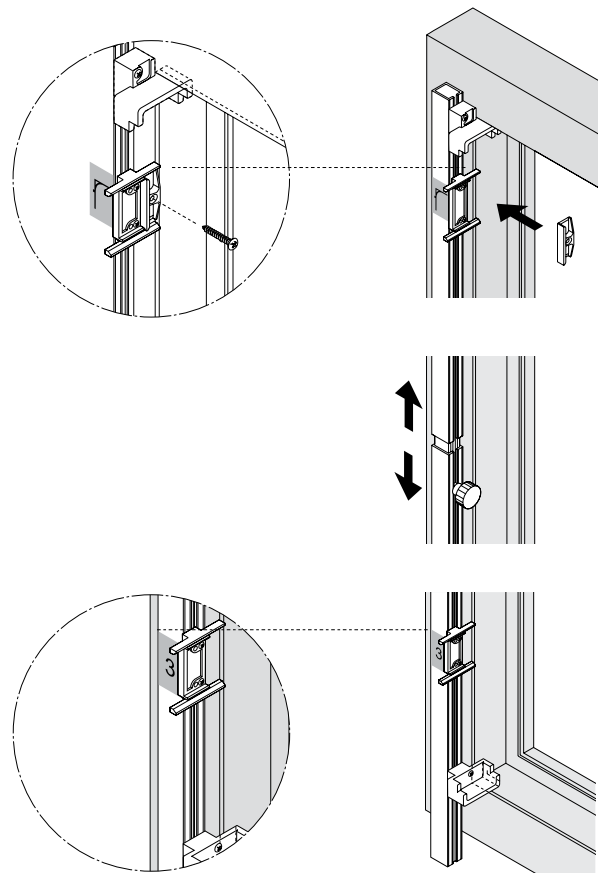


Frame installation

- ① Striker positioning jig for drive gear and height unit no. 211611 and no. 211612
Striker positioning jig for width unit no. 214759

Size			A	B	C	D		No
Size 1	900 - 1100	450	-	-	-	-	≤ 1700	211611
Size 2	1101 - 1300	450	719	-	722	-	> 1701	211612
Size 3	1301 - 1500	650	469	919	472	922		
Size 4	1501 - 1700	650	469	1009	472	1012		
Size 5	1701 - 1900	950	719	1259	722	1262		
Size 6, 7, 8	1901 - 2400	950	719	1369	722	1372		

Size		E / G	F / H
Size 1	720 - 1050	534	-
Size 2	1051 - 1250	534	-
Size 3	1251 - 1450	734	-
Size 4	1451 - 1650	534	1034
Size 5	1651 - 1850	734	1234
Size 6	1851 - 2000	734	1379



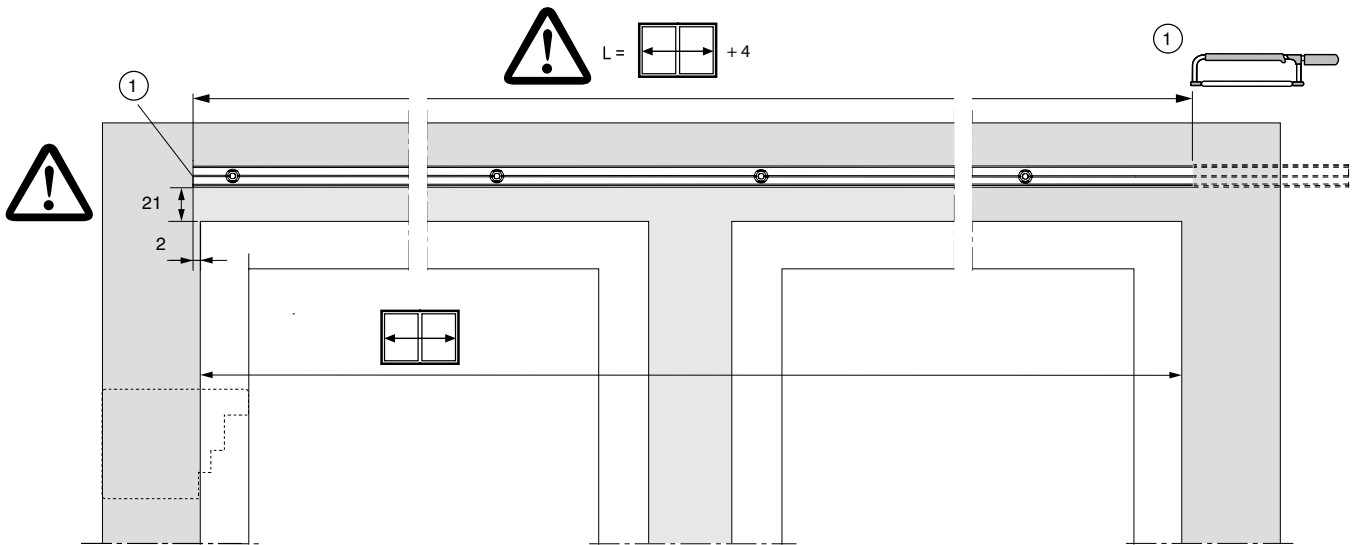
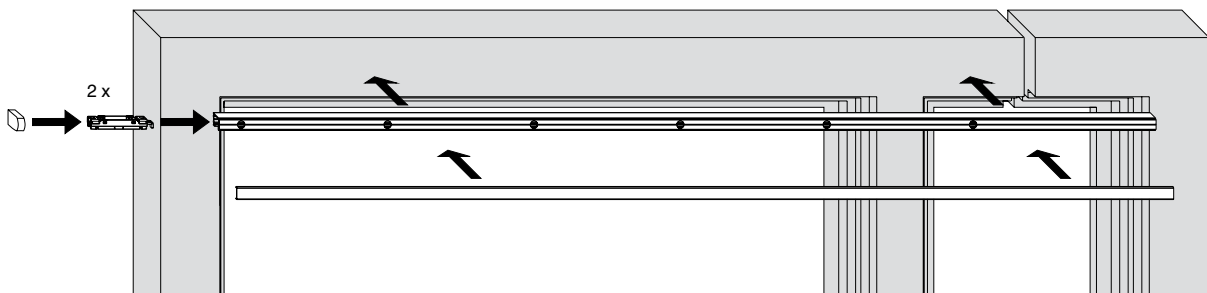


Frame installation

Installing the guide track

① Cut the guide track to length.

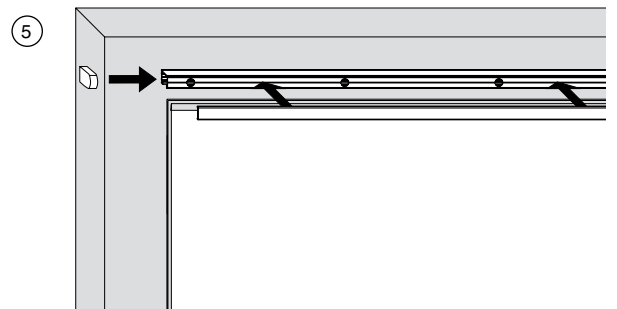
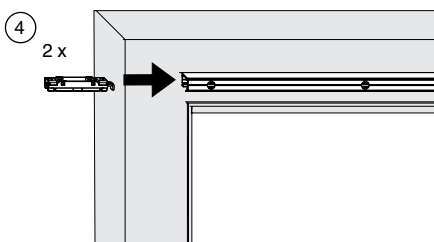
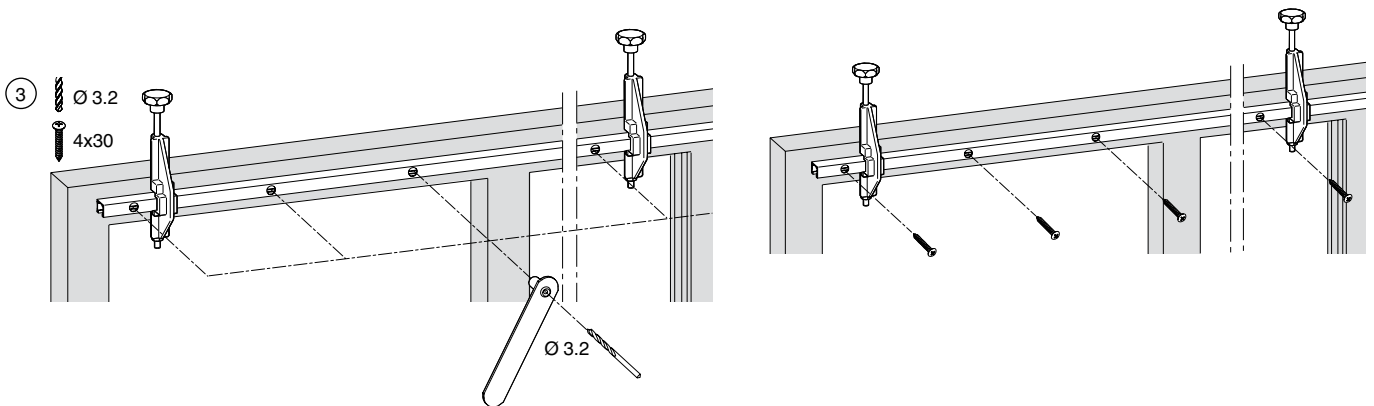
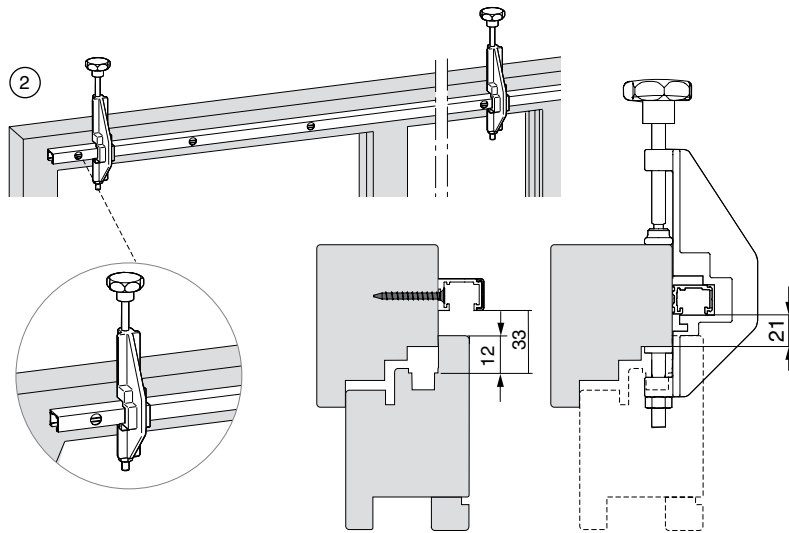
⚠ Dimension for rebate leg 18.





Frame installation

- ② Screw-on jig No. 465173
- ③ Pre-drill and fasten the guide track, drilling jig 465945



Notes:

We recommend that you do not attach the covers until the sashes have been mounted



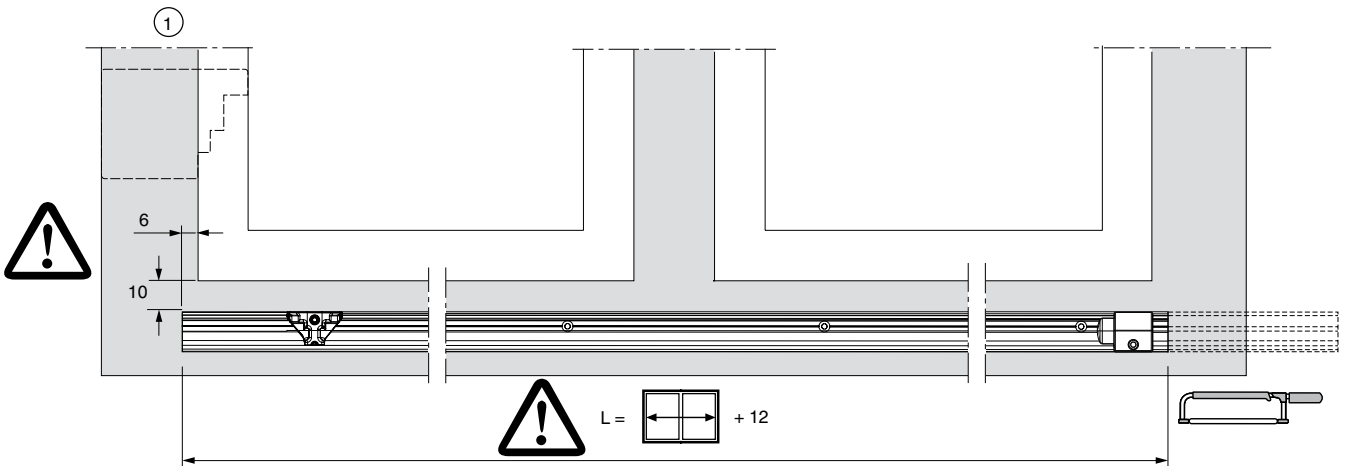
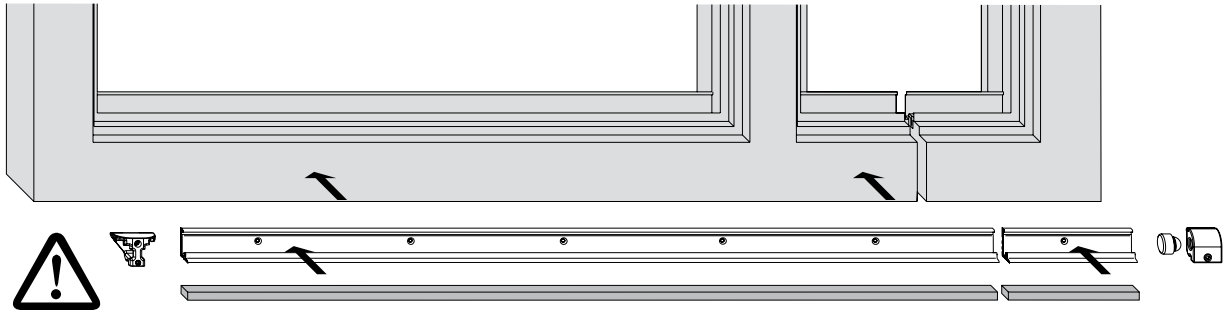
Frame installation

Installing the roller track

Underlay the roller over the entire length!

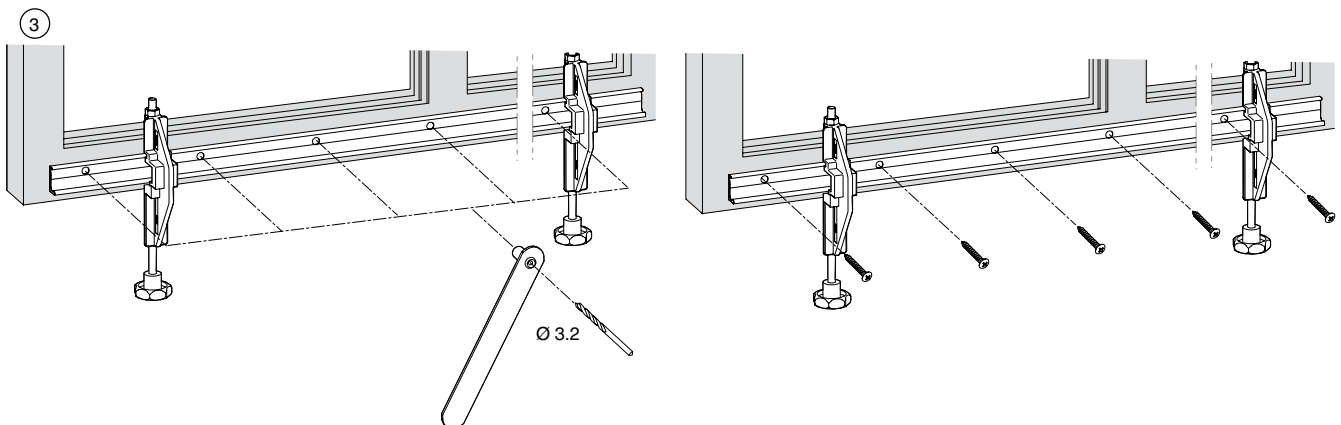
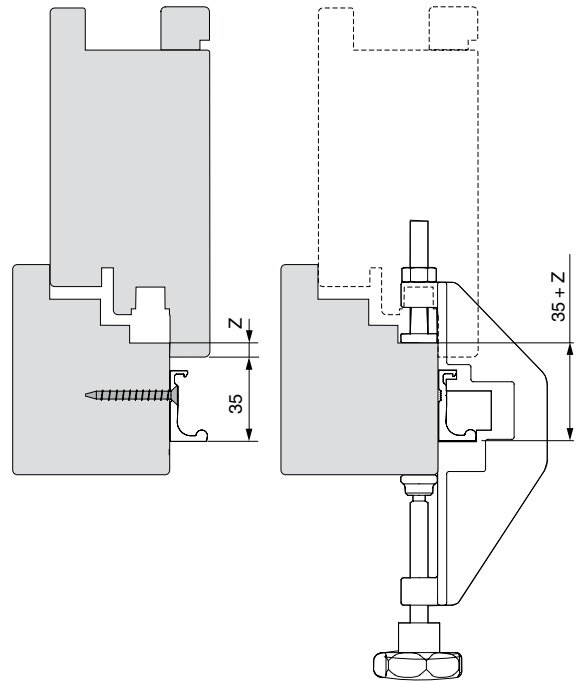
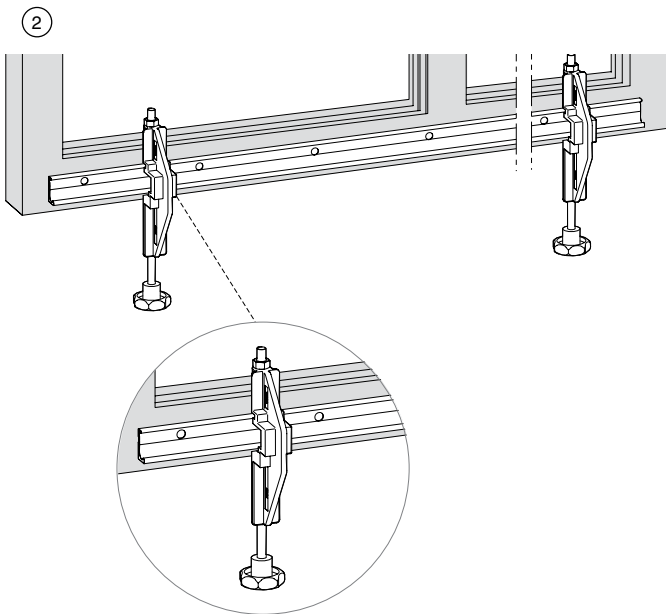
① Cut the roller track to length to match.

Dimension for rebate leg 18.



Frame installation

- ② Screw-on jig No. 465173, Z = rebate leg
- ③ Pre-drill and fasten the roller track, drilling jig no. 465945



Notes:

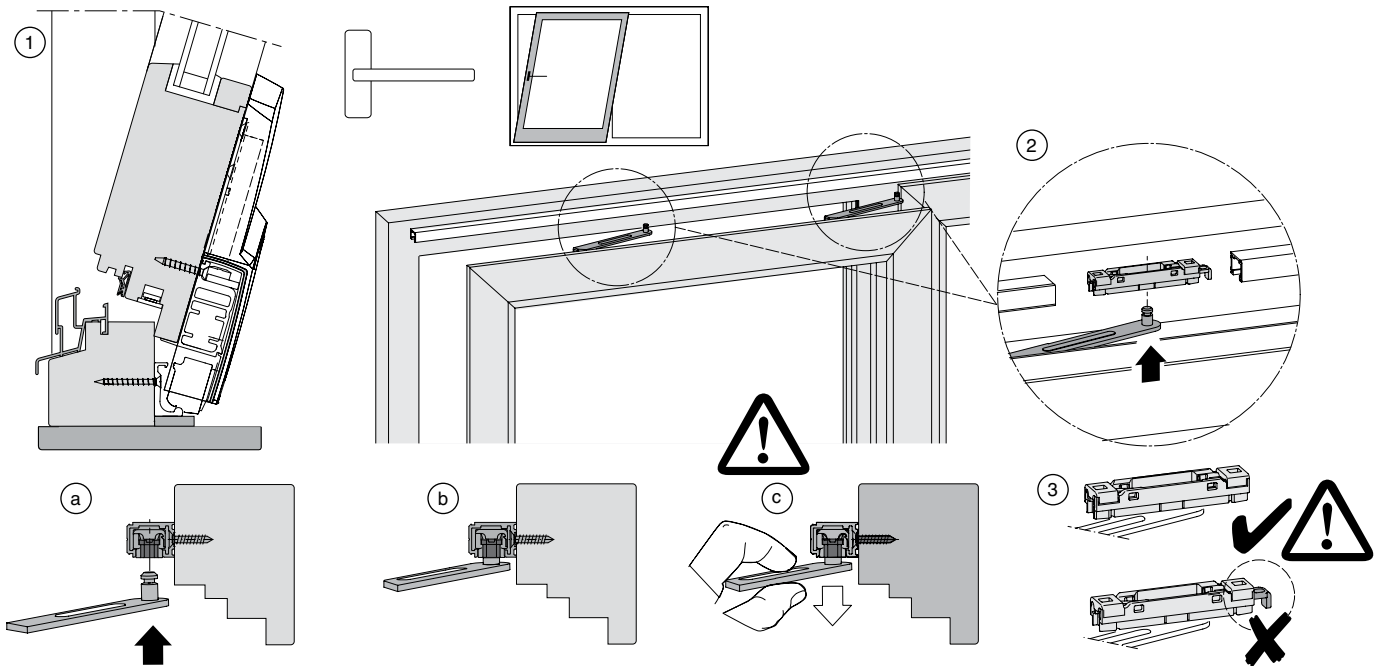
We recommend that you do not attach the covers until the sashes have been mounted



Inserting the sash

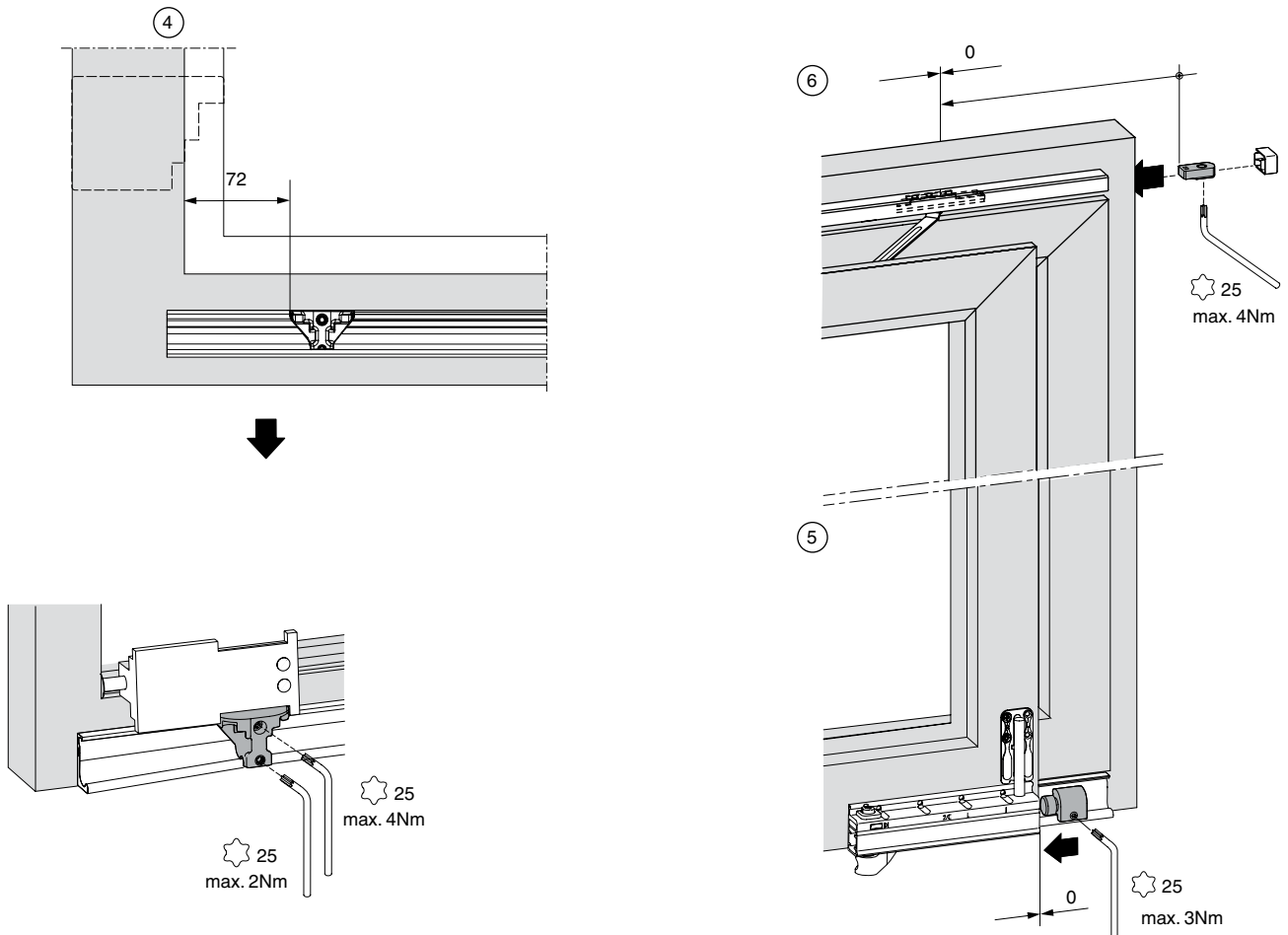
- ① Insert the roller.
- ② Insert the scissor backsets into the centre slider openings until they (a) snap into the sliders (audible click!) (b). Pull/press down the scissor arms to check that the connections are secure (c).
- ③ When installed correctly, the security slider on the side snaps in flush with the edges of the slider housing.

⚠ Caution: If the scissor backsets do not snap in properly, the window sash will not be held securely and may fall out. Serious personal injuries may result.



Inserting the sash

- ④ Assembly jig for control module No. 465175
Dimension 72 mm corresponds to distance to outside edge of sash
- 10 mm roller for 18 mm rebate leg.
- ⑤ Install the bottom stop for the desired opening width of the roller track.
- ⑥ Insert the top stop in the guide track and install at the desired opening width.



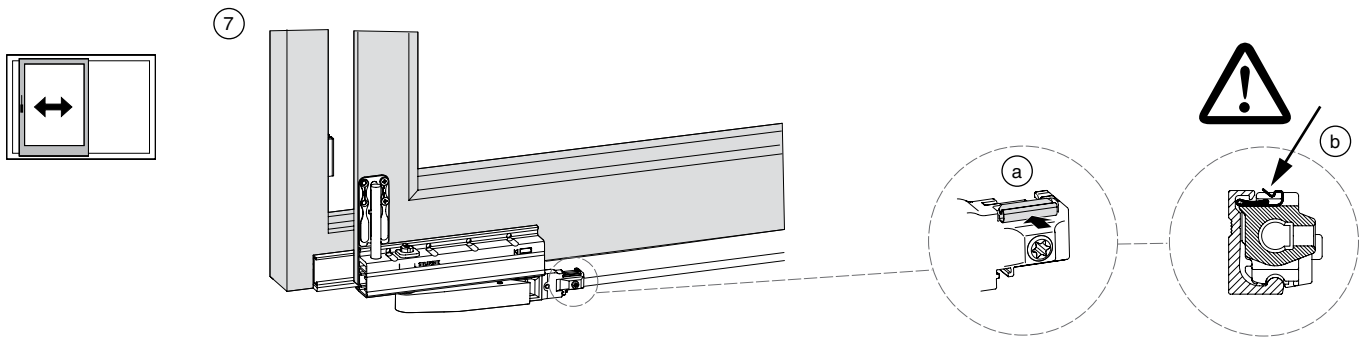


Inserting the sash

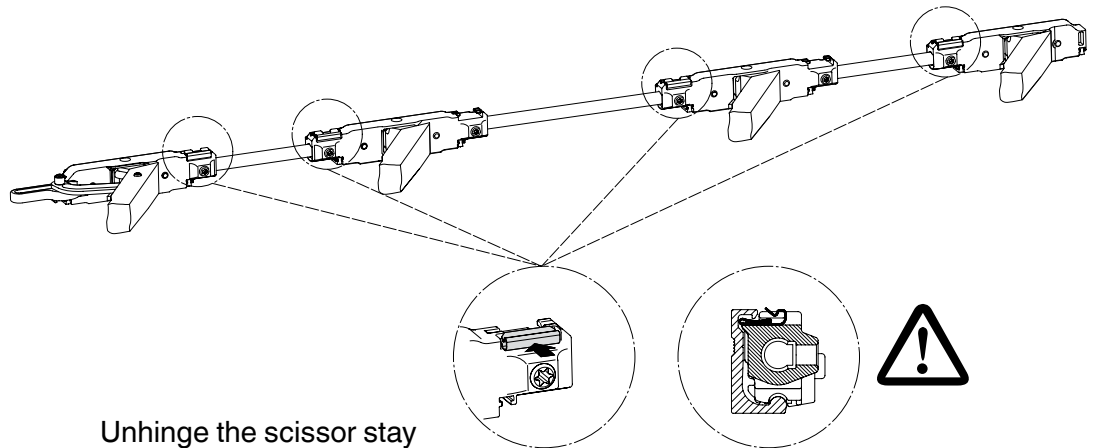
- ⑦ Activate the lever lock! Move the (a) lever lock on both rollers back until they snap into place at the marked (b) position.

⚠ If the lever lock is not (or not correctly) in place at the marked position, the window sash will not be secured properly.

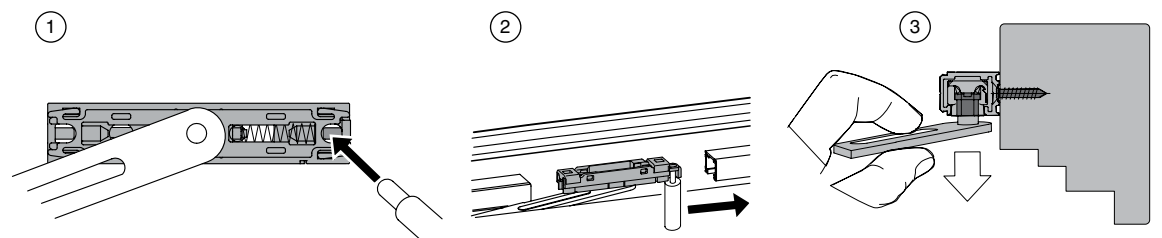
Caution:
Serious personal injuries may result!



Tandem roller



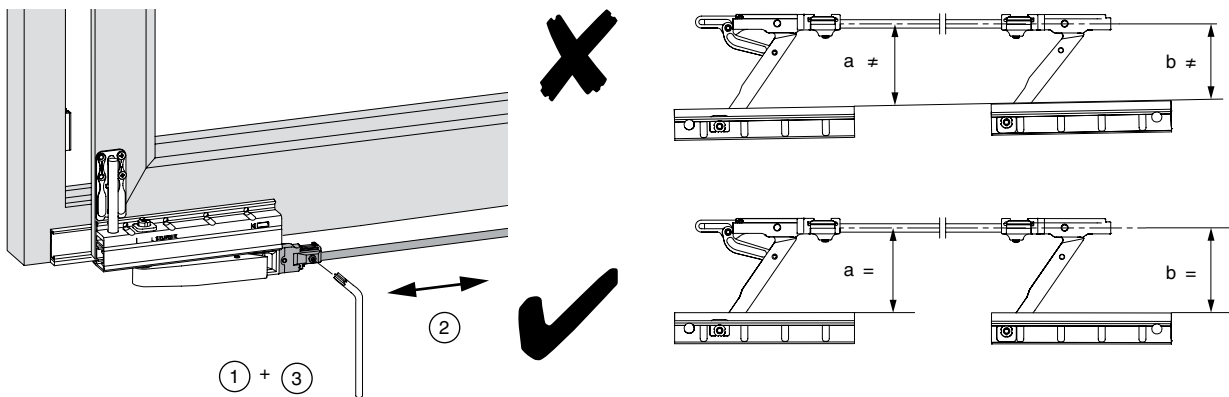
Unhinge the scissor stay



Inserting the sash

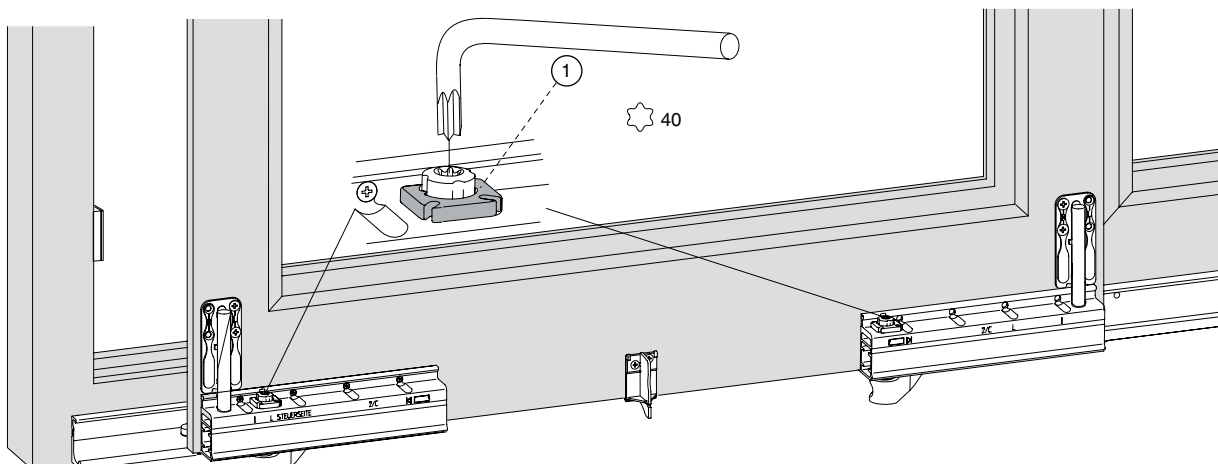
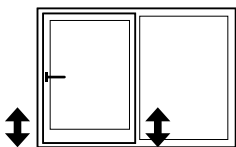
Correct the parallel setting of the roller

- ① Loosen the connecting rod on the roller at the handle side.
- ② Push the connecting rod to the left or right to position the rear roller (b) set parallel parallel to the roller unit (a).
- ③ Fasten the connecting rod on the roller at the handle side.



Regulating the height of the roller

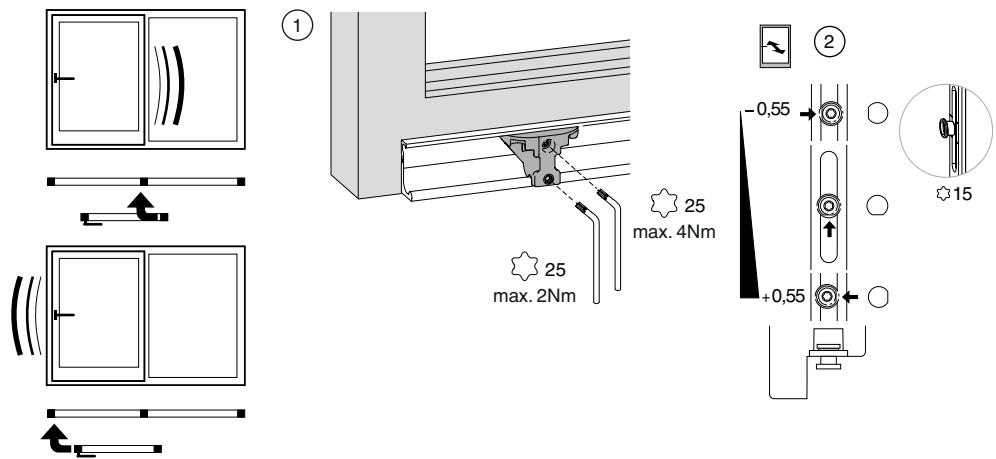
- Lift off the adjustment ① lock
- Set the height (+ 6 mm)
- Reattach the adjustment lock





Inserting the sash

- ① Correct the sash entry and ② set the contact pressure.



Handle position

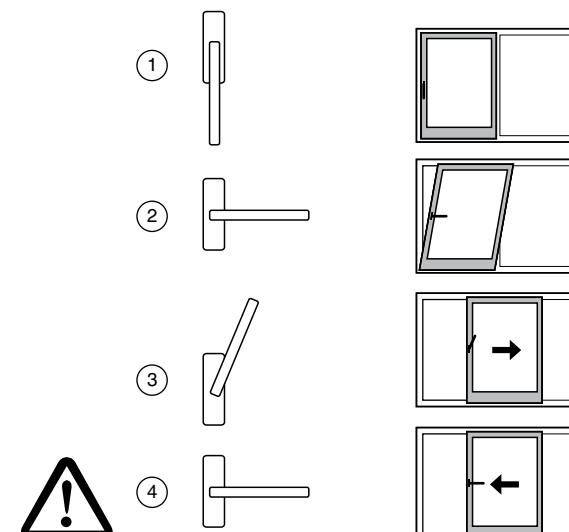
- ① closed
② tilt
③ open/close

Anti lock-out device

Prevent the sash snapping into place inadvertently.

- ⚠ ④ close

No anti lock-out device!





Notes

A large rectangular area filled with a fine grid pattern, intended for taking notes or technical drawings.



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