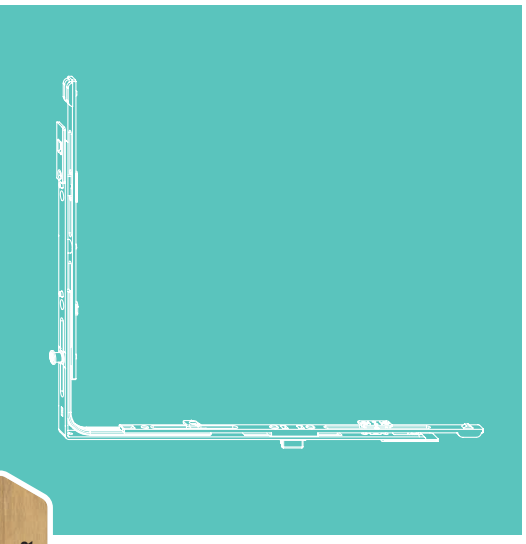
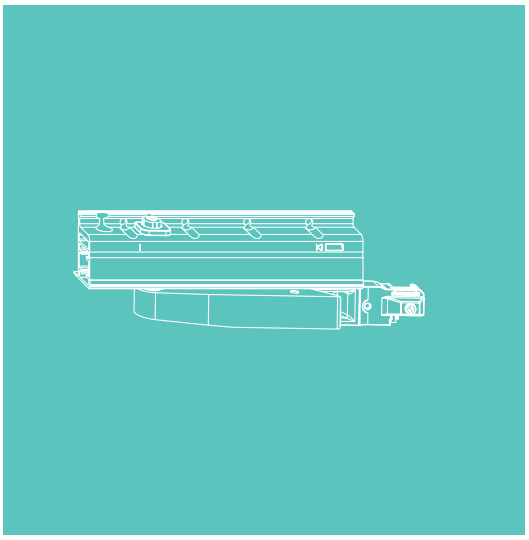
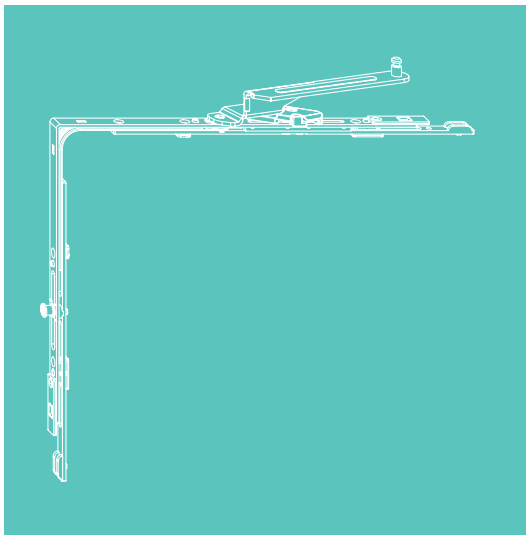
TECHNOLOGY IN MOTION

# MACO RAIL-SYSTEMS

SLIDING FITTINGS







TIMBER

## ASSEMBLY INSTRUCTIONS

Slide&Tilt / Timber 12 gap / Automatic operation

**Use exclusively for specialist companies!**

# Application

Automatic operation

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

*for sash weight > 160 kg
use tandem roller

# Key and Abbreviations

| | | |
|---|---|---|
|  | DM | Backset |
|  | SRW | Sash rebate width |
|  | SRH | Sash rebate height |
|  | SW | Sash width |
|  | GM | Handle dimension |
|  | | Frame rebate width |
|  | | Frame rebate height |
|  | | Left version shown,<br>Right version as mirror image |

# Contents

# Important Information

## General Information

The current version of our General Terms & Conditions can be found on the MACO website (www.maco.eu/en-INT/Terms-and-conditions). Retain these assembly instructions for later use and maintenance.

Failure to comply with these assembly instructions releases MACO from any liability. Please note your obligation to inform your customer regarding the operation and maintenance of the system as well as all safety related information.

**MACO as a customer-oriented and service-oriented company offers you the "Operating and Maintenance Instructions for SKB Standard, Self-locking, Positive Control and PAS END USER" (Order number 757957) and "Maintenance and setting instructions for SKB Standard, Self-locking, Positive Control and PAS SPECIALIST" (Order number 757962) for passing on to end customers. You can find the documents in the download area on www.maco.eu.**
**Please hand over the user manual to the end user and ensure they are briefed.**

**Target Group**
This documentation is intended exclusively for specialist companies and certified specialists.
The work-steps described herein may only be carried out by certified specialists.

**Certification**
The MACO hardware mentioned in the assembly instructions are tested and regularly monitored in standardised tests in accordance with EN 13126. The achieved Class H3 standard does not refer to your individual element system. Due to a wide range of influencing factors, individual element systems may experience minor deviations from standardised testing, such as:

› the influence of processing tolerances

› the effect of assembly tolerances after installation of the element in the building envelope

› the use of accessories (e.g. weather seals, seal rails, handles, etc.)

› the use of attachments (e.g. Aluminium shells, sun protection on the sash, insect protection)

› environmental influences (e.g. humidity, sunlight, high or low temperatures, temperature fluctuations, etc.)

› room-side influences (moisture, aggressive cleaning agents, etc.)

# Important Information

## General Safety Information

It is important to follow these instructions to ensure people's safety!
When reading this document and the safety instructions, please note the following signs and colours:

**DANGER!** This indication indicates a situation that may arise if the instructions are not followed and which can lead to fatal injuries.

**WARNING!** This indication indicates a situation that may arise if the instructions are not followed and which can lead to fatal and/or serious injuries.

**ATTENTION!** This indicates a situation that may arise if the instructions are not followed and which can lead to minor injuries.

This note indicates important additional information that is relevant to the error-free assembly / function of the product.

**Please pay attention to the VHBE guideline (hardware for windows and balcony doors) of the Gütegemeinschaft Schlösser und Beschläge e.V. (quality assurance association for locks and hardware). This guideline describes all safety-relevant topics for end users for window and balcony door hardware.**

# Important Information

## General Safety Information

### ⚠ WARNING!

In order to ensure the long-term functionality and thus the operating safety of windows and balcony doors over their expected service life, the fastening of safety-relevant hardware parts is of particular importance.

MACO indicates explicitly that large sash weights are moved and accelerated during opening and closing. This applies particularly to sliding elements. It is at the discretion and the responsibility of the respective manufacturer (window builder), installers and dealers of windows and balcony doors, in particular of lift&slide doors, to offer corresponding movement restrictors or similar.

Incorrect assembly can lead to serious injuries. The installation must be carried out by personnel who have been instructed according to the state of the art and recognised rules of technology.

Due to overuse or improper operation of the slide and tilt hardware, the sash may jump out of its guide rails, fall out and thereby cause serious injuries.

Due to the high weight of the element, always pay attention to the correct securing of the element during manufacture, transport and assembly on the construction site.

### ⚠ ATTENTION!

If under special circumstances (use in schools, kindergartens, etc.), it is to be expected that the sliding element could be overstressed, this must be prevented by appropriate measures such as moving the stop buffers to reduce the opening width.

Improper handling may lead to crushing. Ensure users are aware of the risk in case of improper handling. This applies particularly to customers with small children.

Injuries may occur in the event of improper handling, in particular if persons or parts of the body are between the frame and the sash when closing or between the sash and the reveal or adjacent components.

# Important Information

## Note

These instructions describe all assembly steps required to set up standard version hardware. The hardware must be greased/oiled before commissioning (see operating and maintenance instructions).

The slid and tilt hardware (SKB) are only intended for use in stationary buildings. They are used for horizontally opening and closing windows and balcony doors. The slide and tilt elements must be installed perpendicular and never in an inclined position.

Handle position middle (1/2 SRH). With a handle position below 1/2 SRH, operational comfort may be affected.

# Important Information

## Intended use

The areas of application mentioned on page 2 apply to the MACO SKB hardware. Screw-in torque settings are binding and must be followed.

Mount all hardware parts professionally as described in this manual and observe all safety instructions.

To fasten the hardware, use the specified screw sizes! These must reach into the steel reinforcement when using PVC profiles.

Be sure to follow the profile manufacturer's processing policy.

The hardware may not be used for timber with aggressive content / surface treatments.

The hardware parts described in these assembly instructions are made of colourless passivated steel and sealed in accordance with DIN EN 12329. They must not be used in environments with aggressive, corrosive air content. If you are not sure, please ask your MACO contact person for advice.

The hardware manufacturer shall not be liable for any malfunctions or damage to the hardware or to the windows or balcony doors equipped with them, if they are subject to use of third-party hardware, inadequate tendering, failure to comply with the installation rules or application diagrams.

The fabricator is responsible for compliance with the functional dimensions specified in these assembly instructions as well as for flawless hardware assembly and secure fastening of all components.

In order not to affect the lightness of the hardware, turn the screws straight (unless otherwise indicated) and do not over-tighten!

Fix the screws of the supporting components (e.g. rollers, roller rail and guide rail) in the reinforcement profile.

With the spacer-block setting, observe the technical guideline No. 3 of the glazier trade "Blocking of glazing units".

Keep the roller track and all latches free from deposits and dirt to avoid damage to the hardware and ensure optimal functionality. In particular, protect the hardware from cement or plaster residues.

Do not make any constructive changes to the hardware parts.

Always close and lock the window and balcony door sash when windy or drafty. For the purposes of this definition, wind and draught are present if the window or window door sashes located in one of the opening positions are caused to move by air pressure or air suction of their own accord and uncontrollably open or close.

# Important Information

## Intended use

The resistance to wind loads in the closed and locked state depends on the respective construction of the windows and balcony doors. If wind loads in accordance with DIN EN 12210 (in particular test pressure p3) are to be expected, suitable hardware are to be selected and agreed on separately in conjunction with the respective window construction and the frame material.

The defined maximum sash weights for the individual hardware designs must not be exceeded.
The component with the lowest permissible load capacity determines the maximum sash weight. Application diagrams and component mappings must be observed.

The hardware and the rebate spaces must be sufficiently ventilated, especially during the construction phase, so that they are not exposed to direct moisture or condensation.

The hardware are to be kept free of deposits and contamination by building materials (construction dust, gypsum plaster, cement etc.), therefore windows must be covered accordingly.

The hardware must only be cleaned or polished with mild, pH-neutral detergents in diluted form.

Attach the operating label in a clearly visible manner to the built-in lift and slide sash.

# Important Information

## Improper use

The respective hardware system may only be assembled with hardware components from the MACO slide hardware range. In the event of improper installation of the hardware and/or the use of non-original or non-factory approved system accessories, no liability will be accepted.

Do not use vinegar-based or acid-curing sealants, as these can lead to corrosion of the hardware parts. Further information on MACO surfaces can be found on our website www.maco.eu or in brochure Order No. 49510 (in the download area).

The lift and slide elements may only be surface treated before the hardware is installed. Any subsequent surface treatment may restrict the functionality of the hardware. In this case, no warranty claims against the hardware manufacturer shall be accepted.

Protect the hardware from damage by angular or sharp tools.

If you are not sure, please ask your MACO contact person for advice.

# Important Information

## Storage and Handling

Check the following immediately after delivery:

› Completeness of delivery (as per the delivery note)

› Any damage to the packaging

› Any damage to the materials

› Improper storage or transport of hardware parts can affect the surface quality. To prevent this, the following points must be observed:

  › It must be ensured that the room air is permanently dry

  › Major temperature fluctuations leading to condensation must be prevented. Condensation on hardware causes the galvanised surfaces to be attacked

  › Avoid aggressive vapours from cleaning agents or assembly aids such as silicone and the like, even for a short time. Vapours from such substances can very quickly lead to corrosion of hardware

  › Salty air polluted by trade and industry also leads to corrosion on galvanised surfaces and is also not suitable for storage areas.

## Transport

Finished elements must be stored and transported as follows:

› Upright

› Slip and tilt secured on suitable surfaces (e.g. G. transport frames)

› Protected from dirt and damage

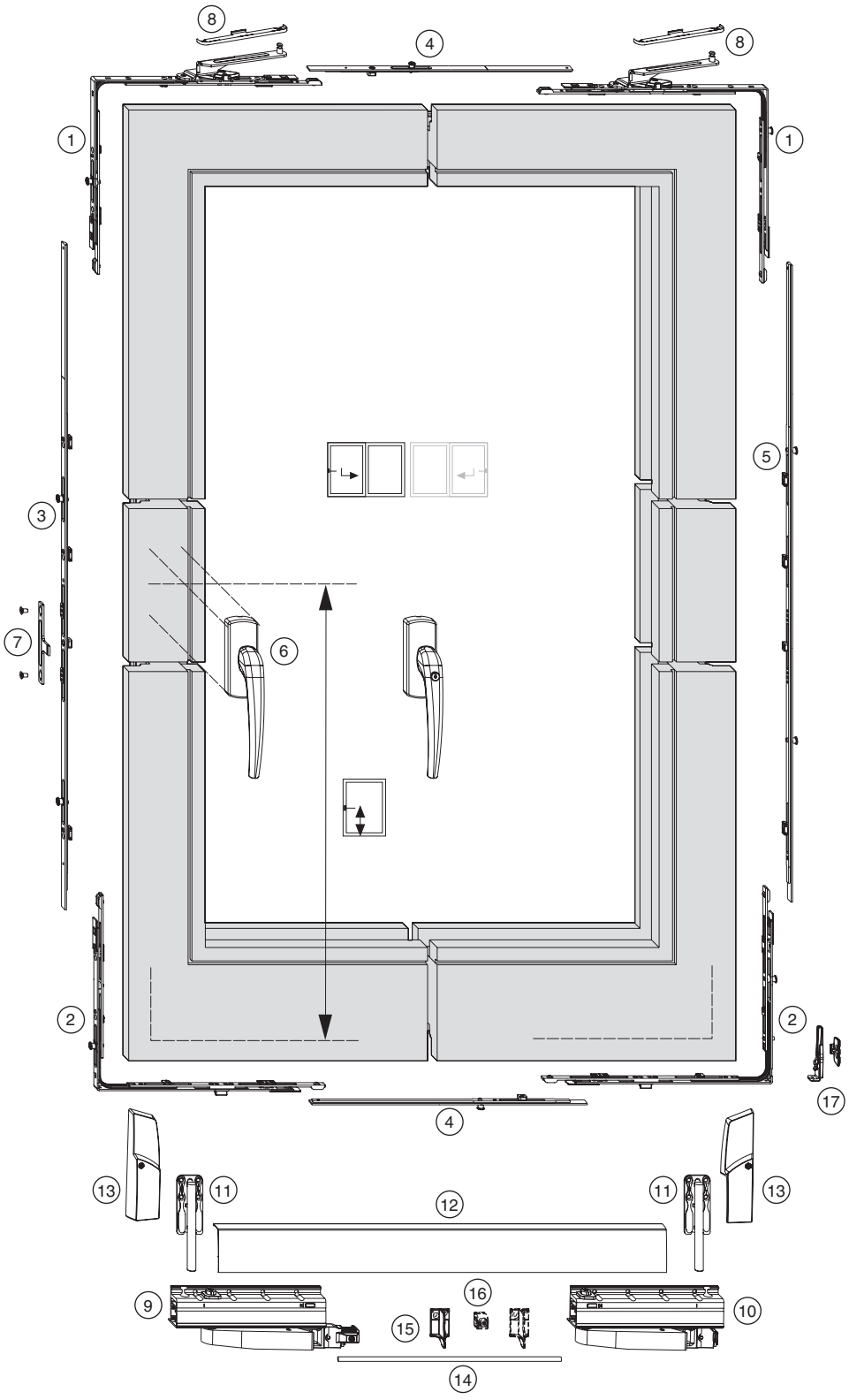
› Avoid loads on mechanical connections!

› Use special transport devices!

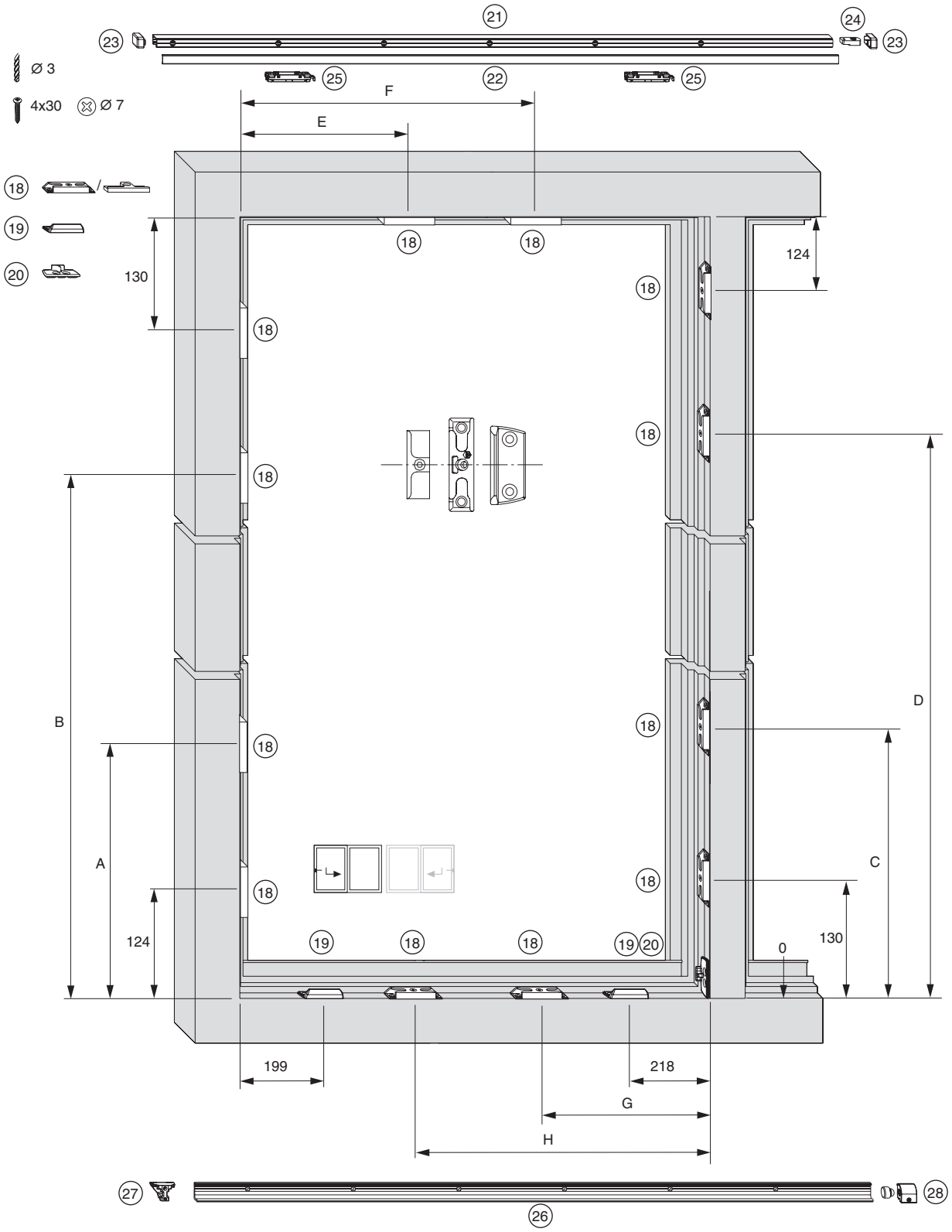
For intermediate storage outdoors:

› ensure elements and hardware are covered or packaged

# Overview drawings



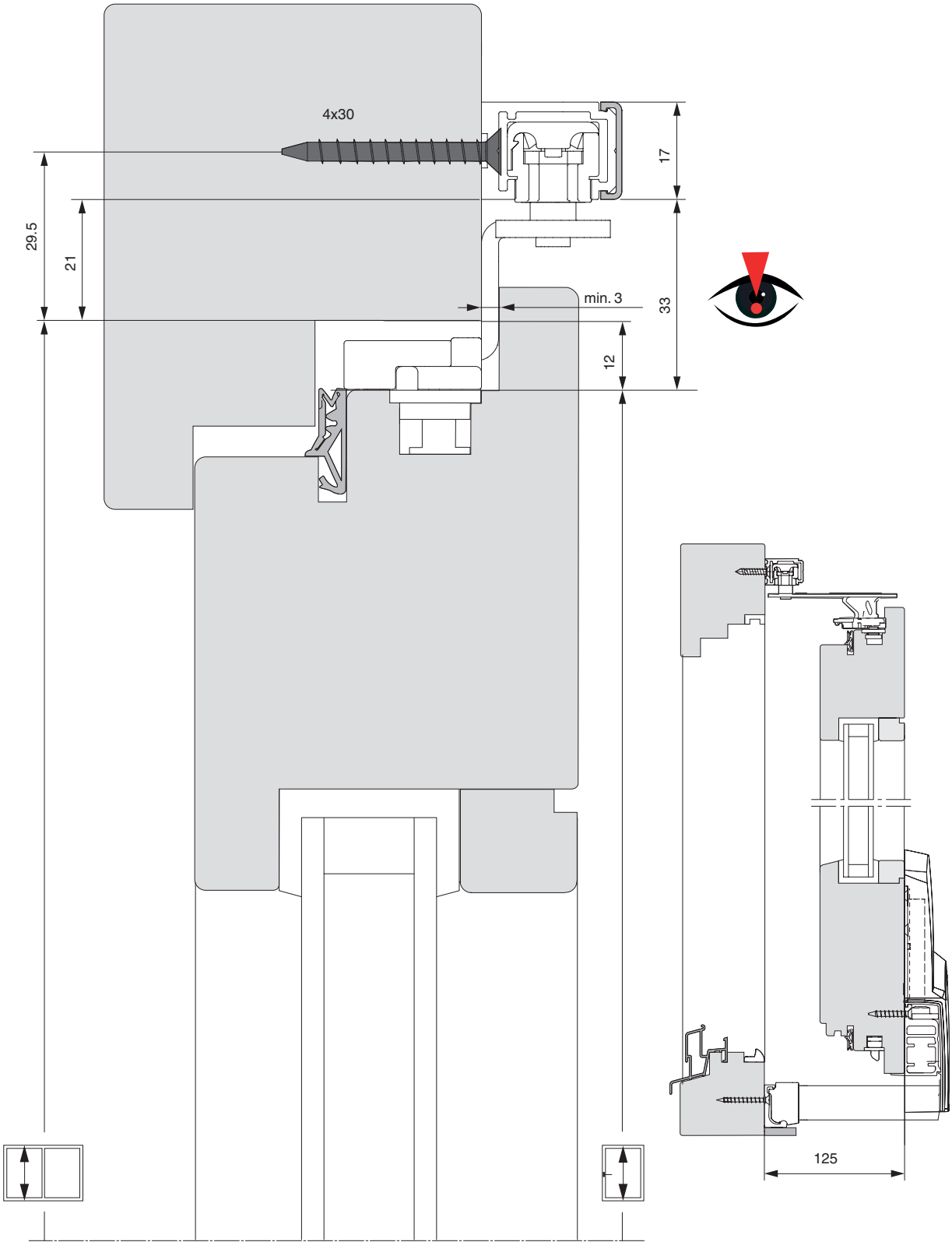
# Overview drawings



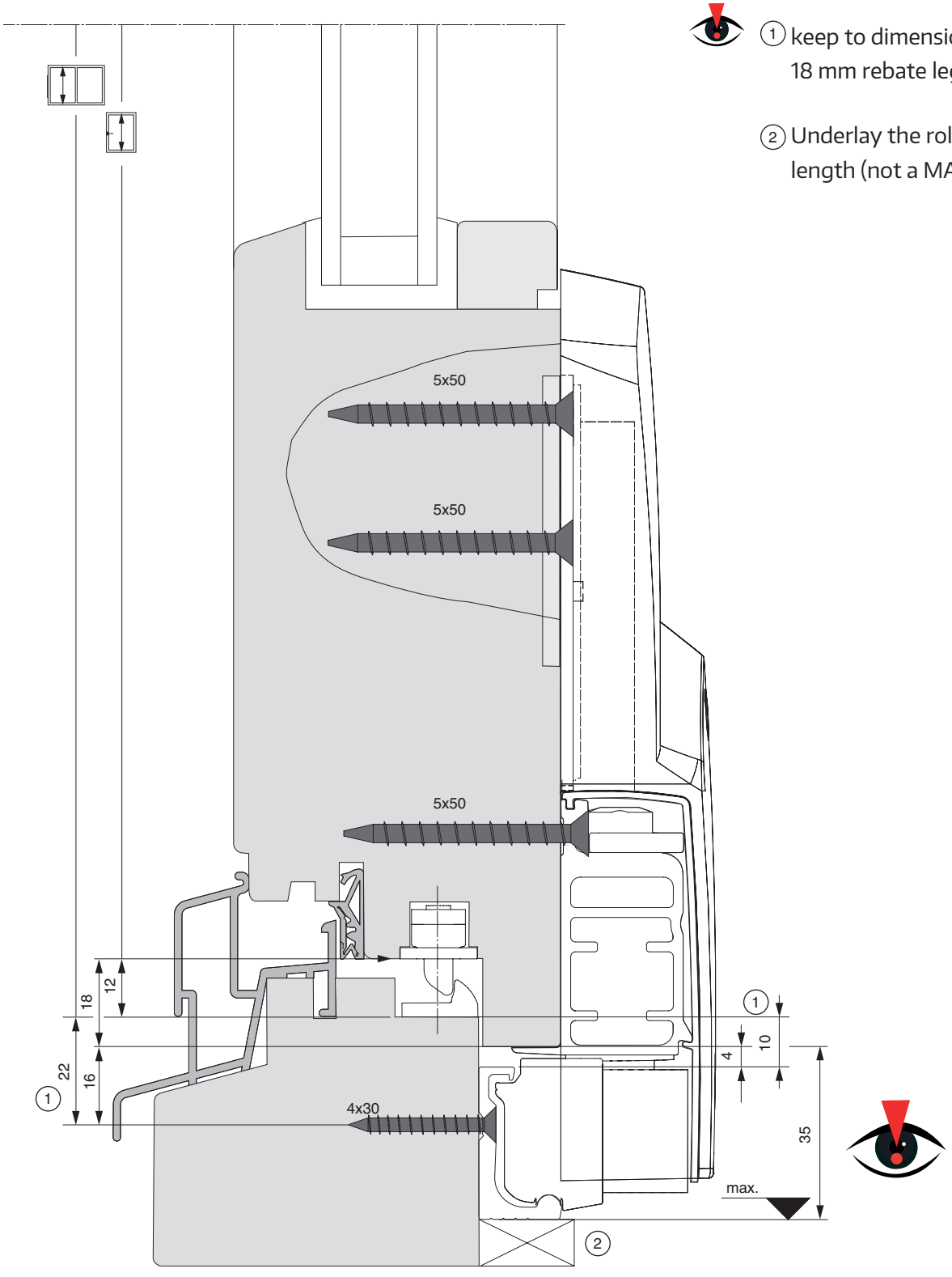
# Parts list

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

# View of sash and frame



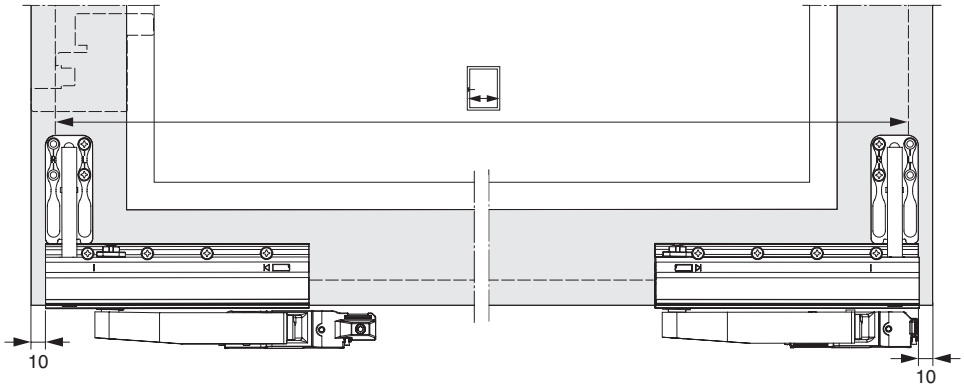
# View of sash and frame



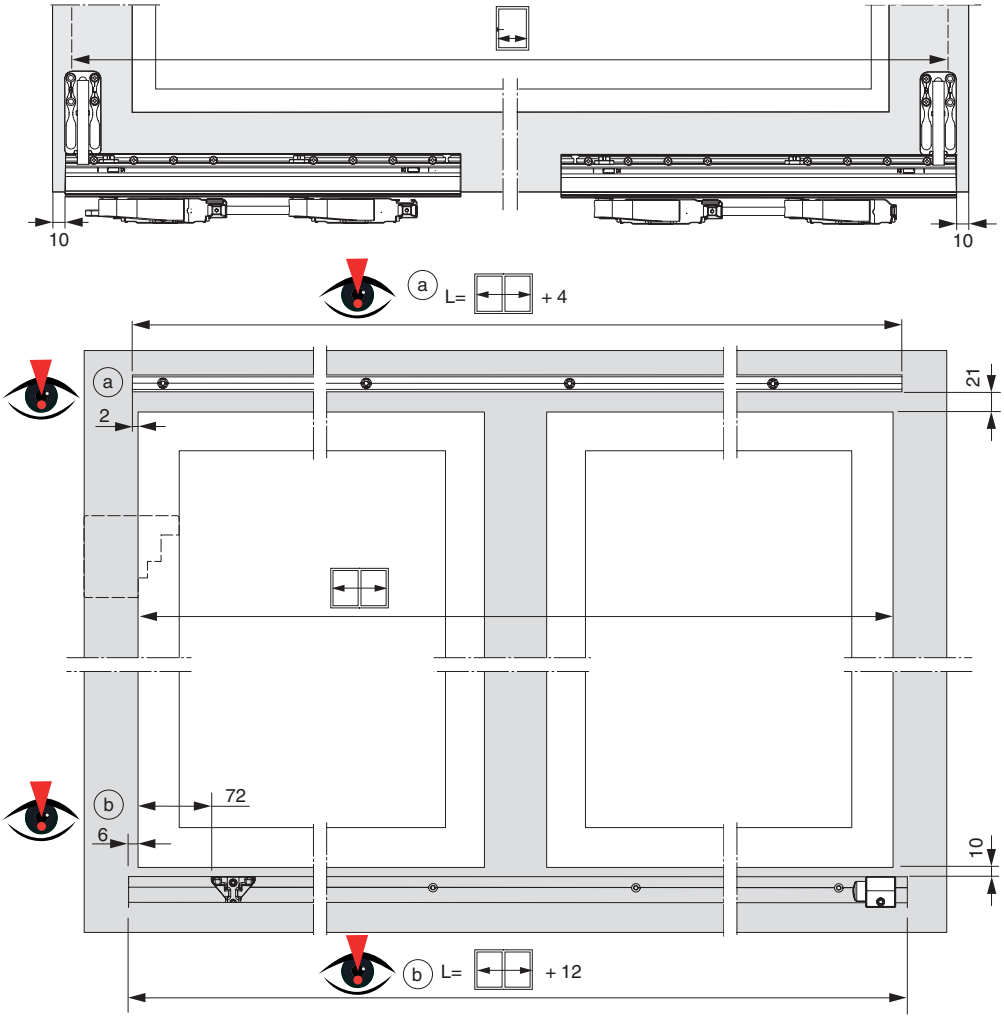

① keep to dimension! Dimension for 18 mm rebate leg

② Underlay the roller over the entire length (not a MACO article).

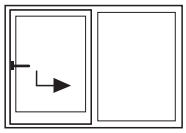
## Roller up to 160 kg

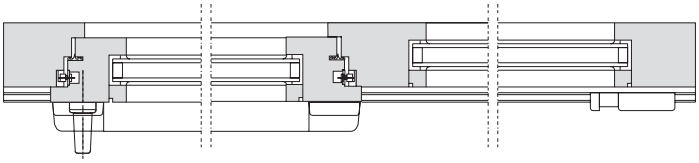



## Tandem roller up to 200 kg

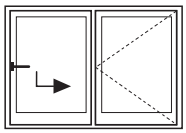


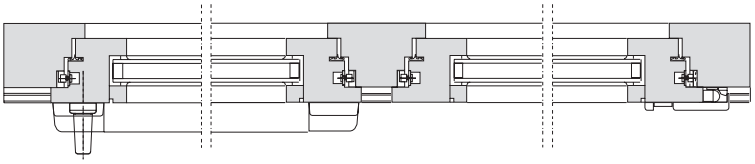
# Types of openings



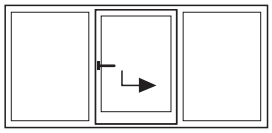


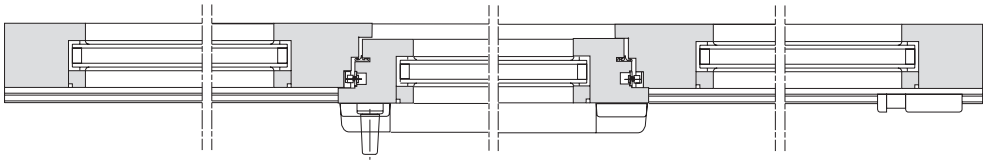
Fixed glazing



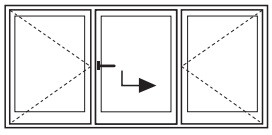


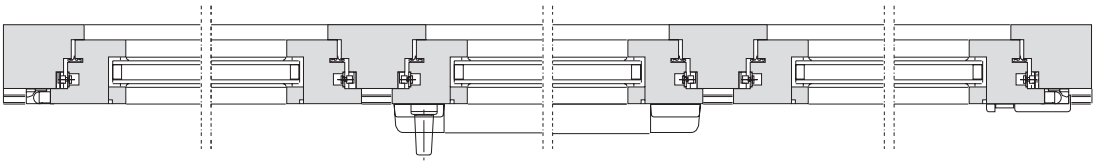
With mullion



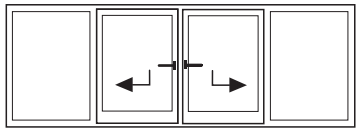


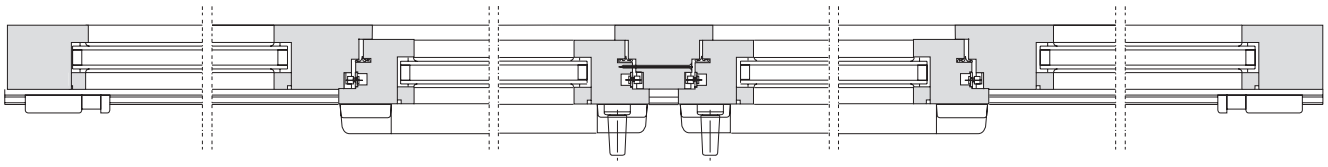
Fixed glazing





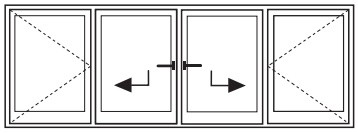
With mullion

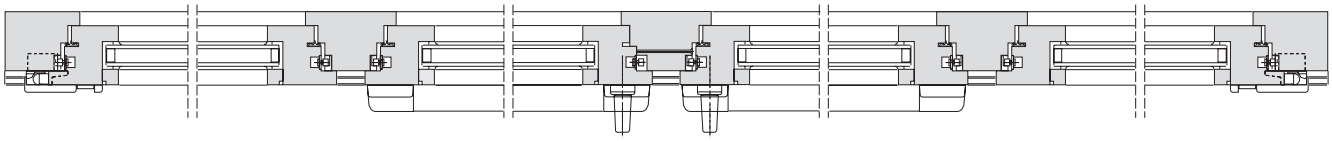




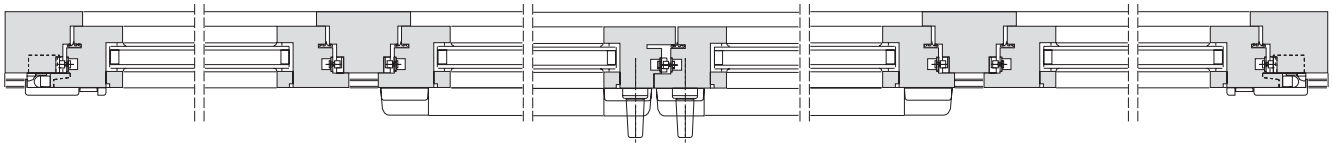
Fixed glazing

# Types of openings





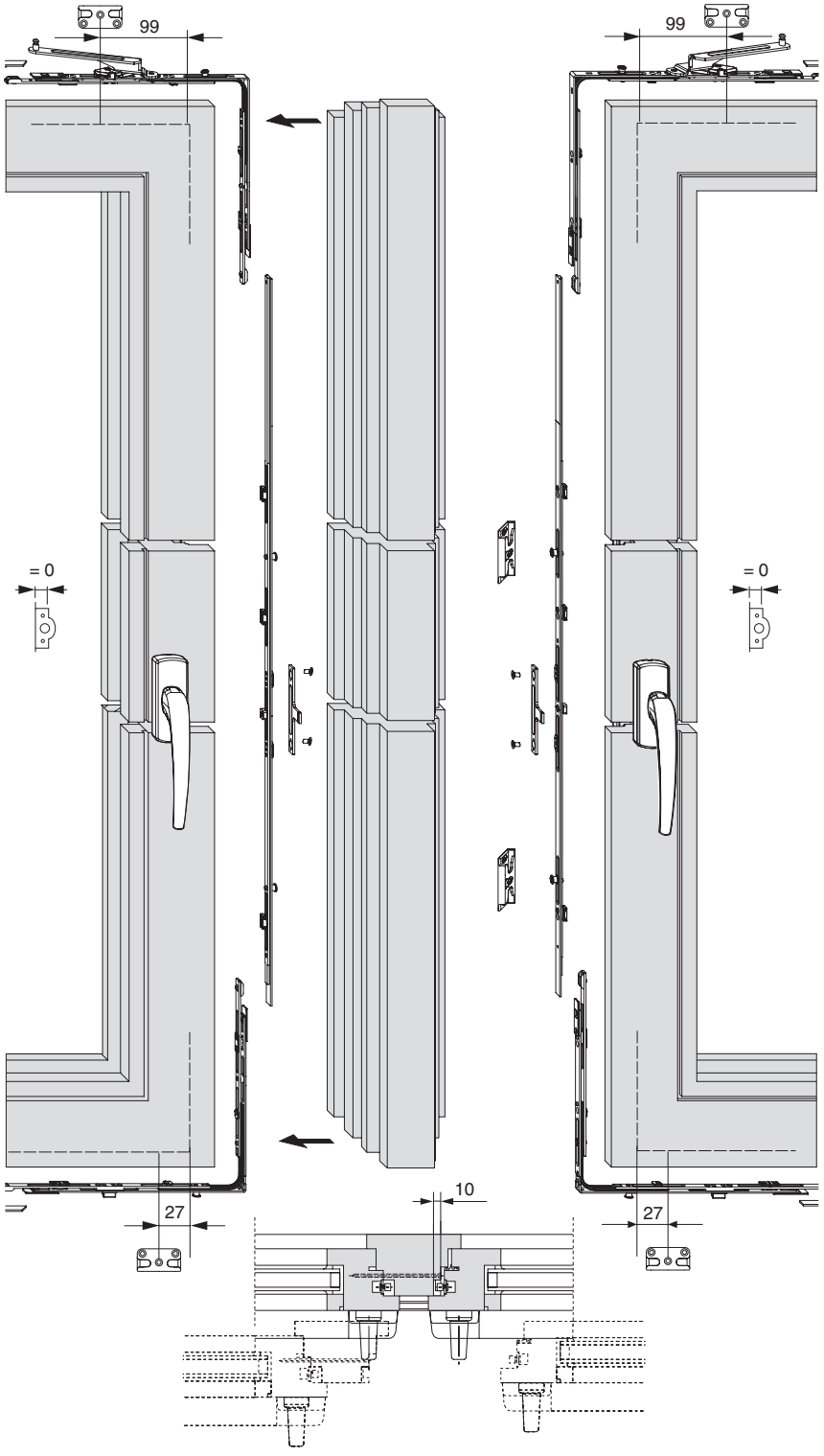
Mullion installed on second sash



Two adjacent drive gears

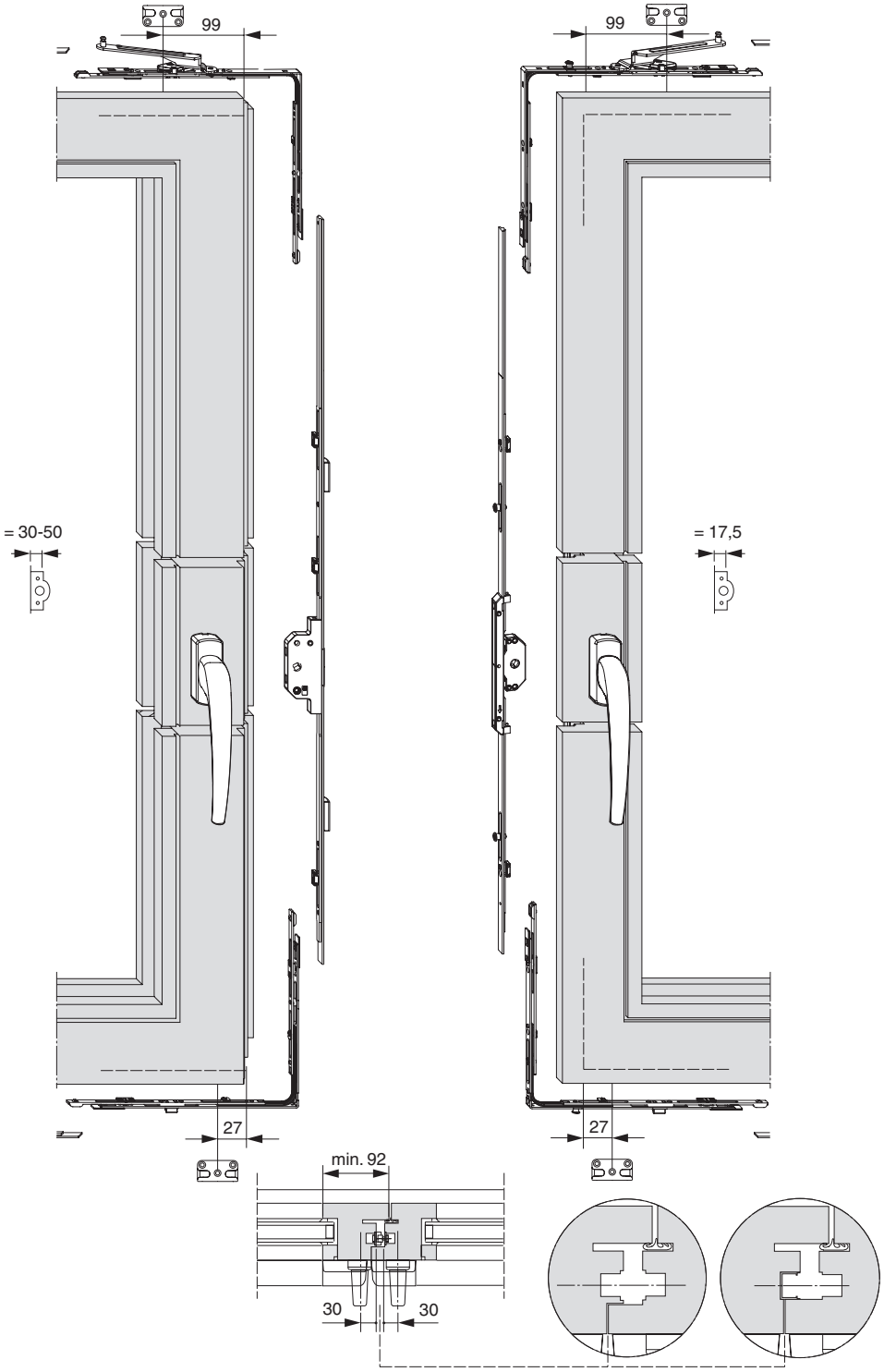
# Types of openings

## Mullion installed on second sash



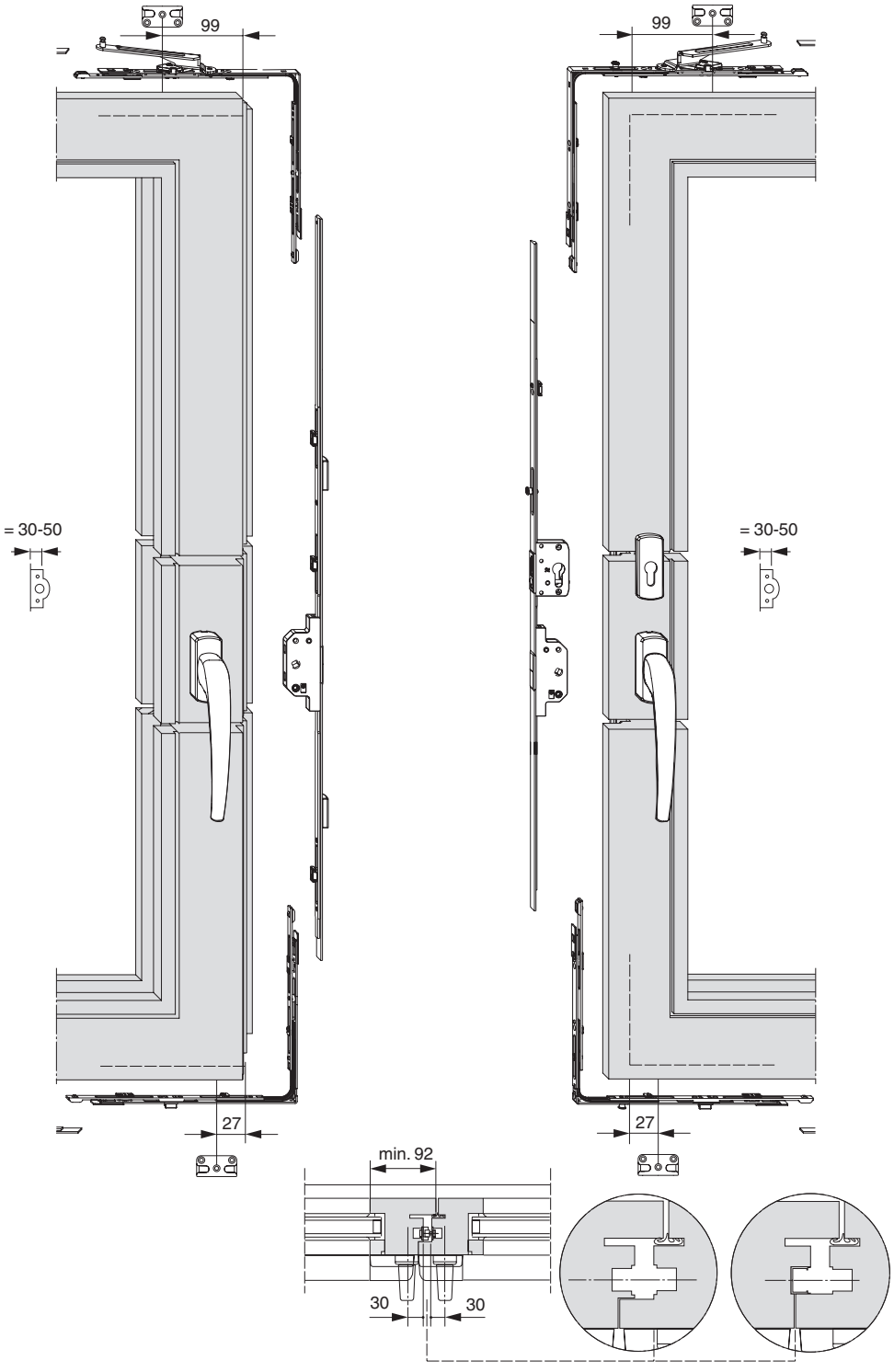
# Types of openings

## Two adjacent drive gears



# Types of openings

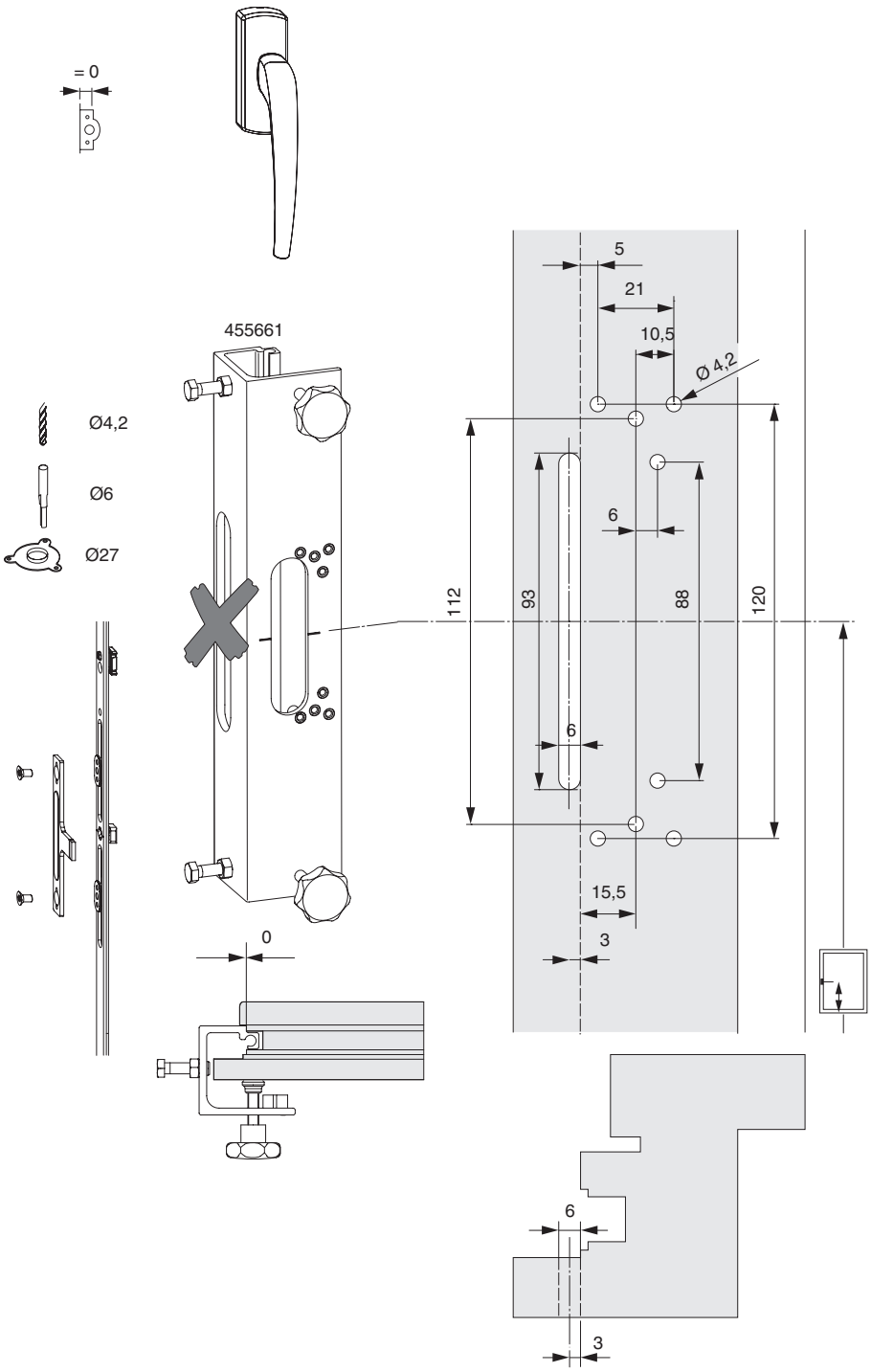
With lockable drive gear



# Sash installation

## Hole for handle for drive gear DM 0

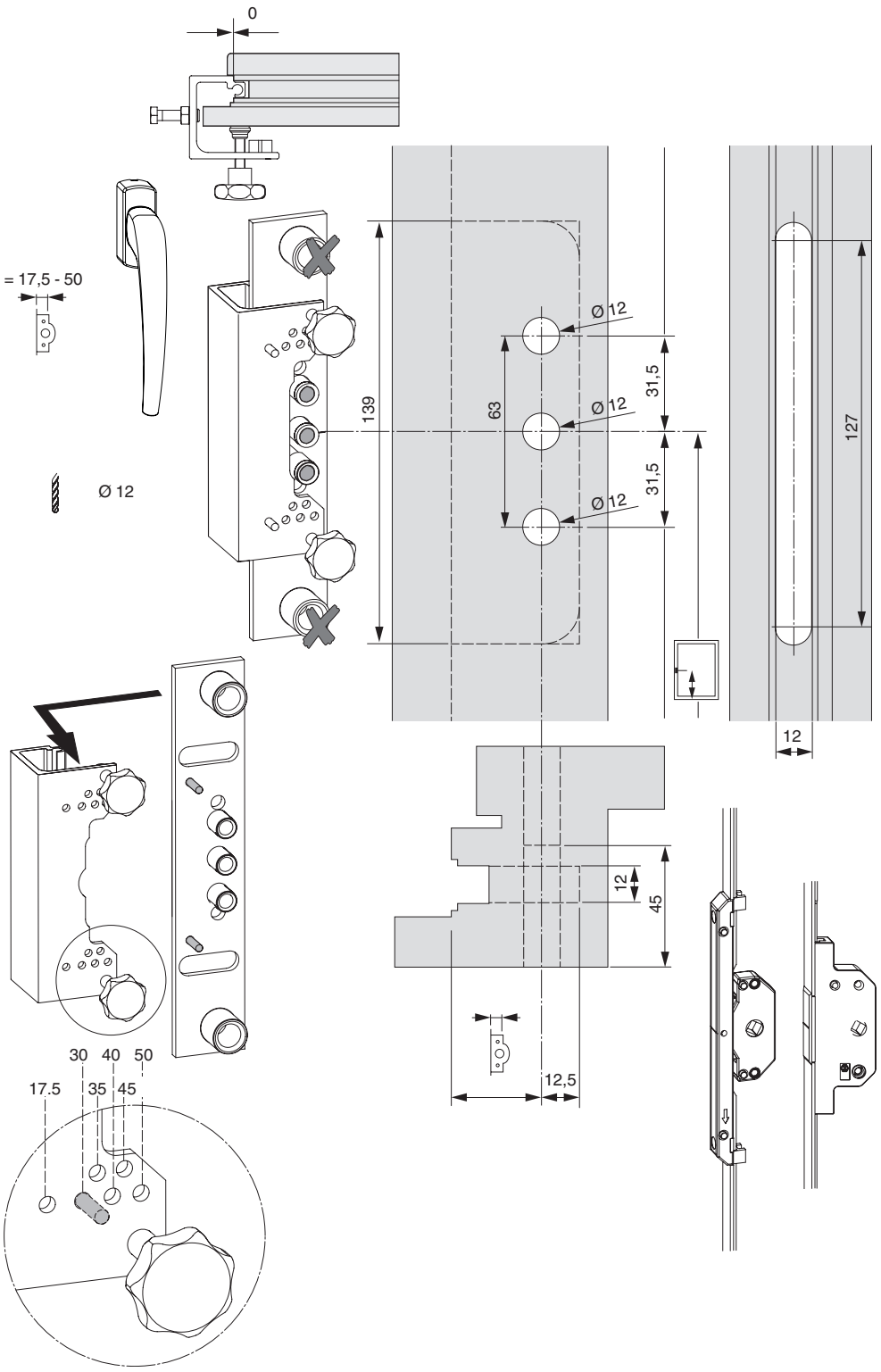
Drilling jig No. 455661:



# Sash installation

## Hole for handle for drive gear DM 17,5

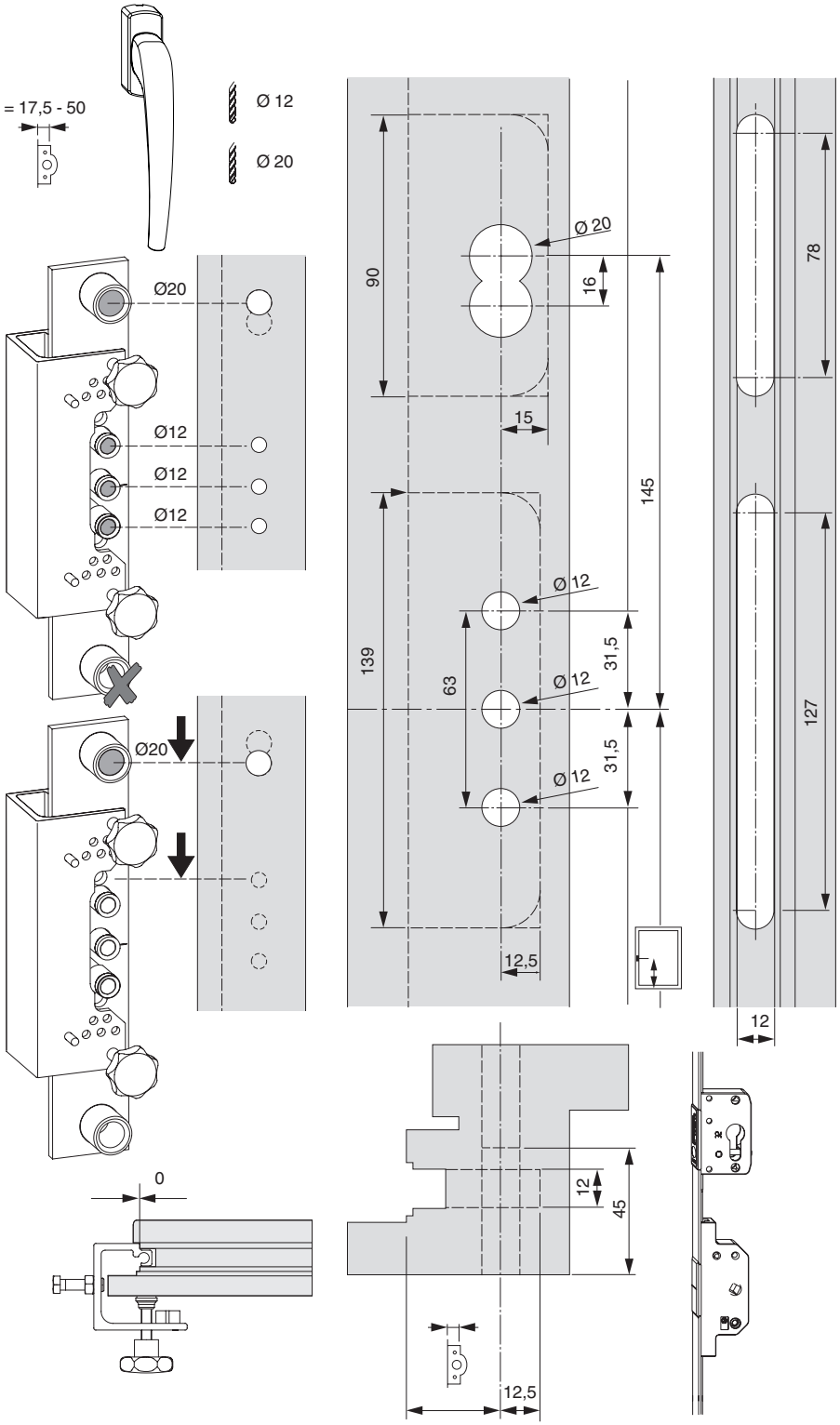
drilling jib no. 465150



# Sash installation

## Hole for handle for lockable drive gear DM 17,5

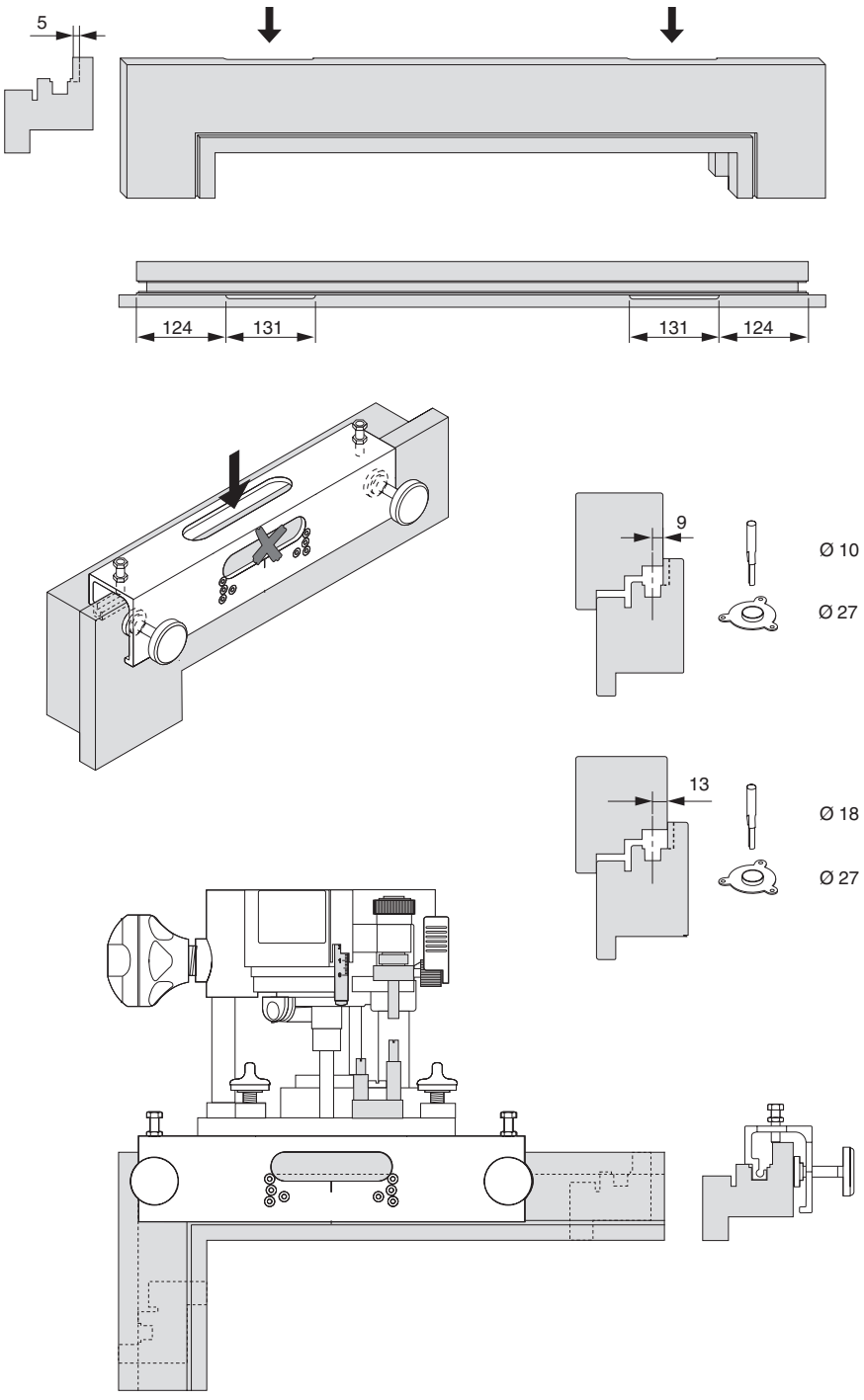
drilling jib no. 465150



# Sash installation

## Scissor stay routing

drilling jig no. 455661



# Sash installation

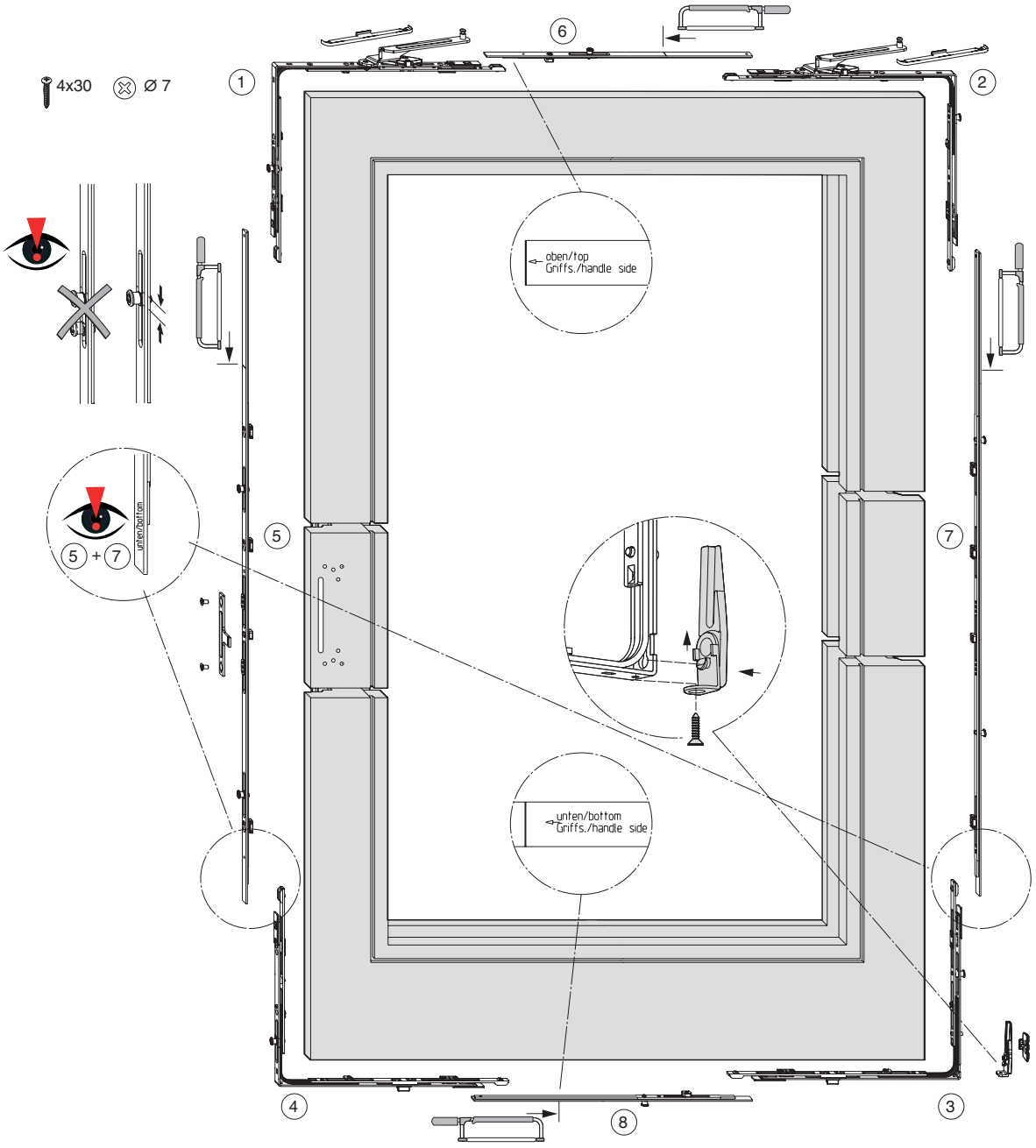
## Installing the central lock

Install ① - ④

Attach ⑤ - ⑧, cut to length and install.

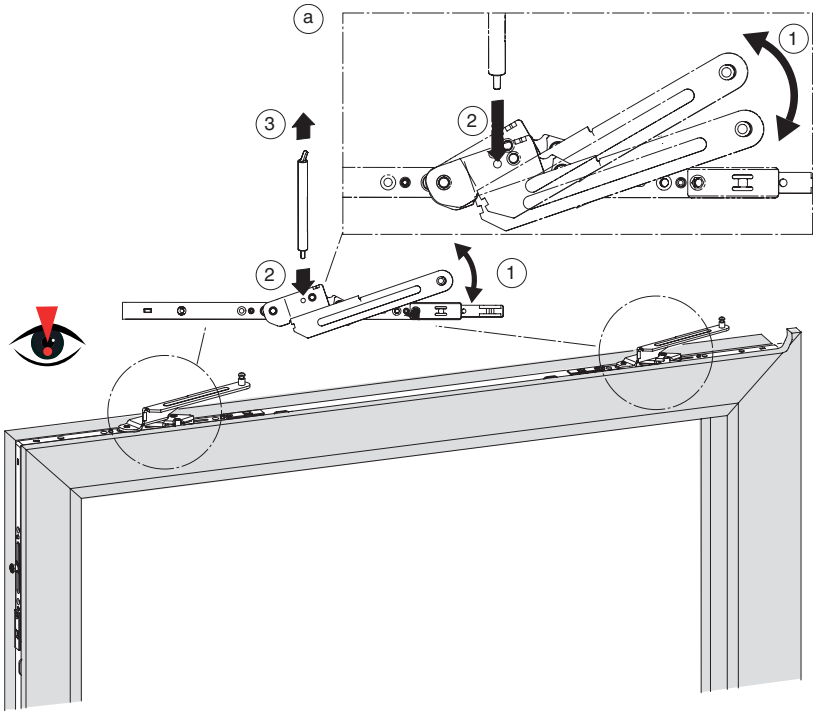
⑤ + ⑦ Label must point to the pivot post!

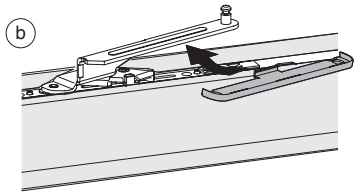
Observe the positions of the Locking cams!



# Sash installation

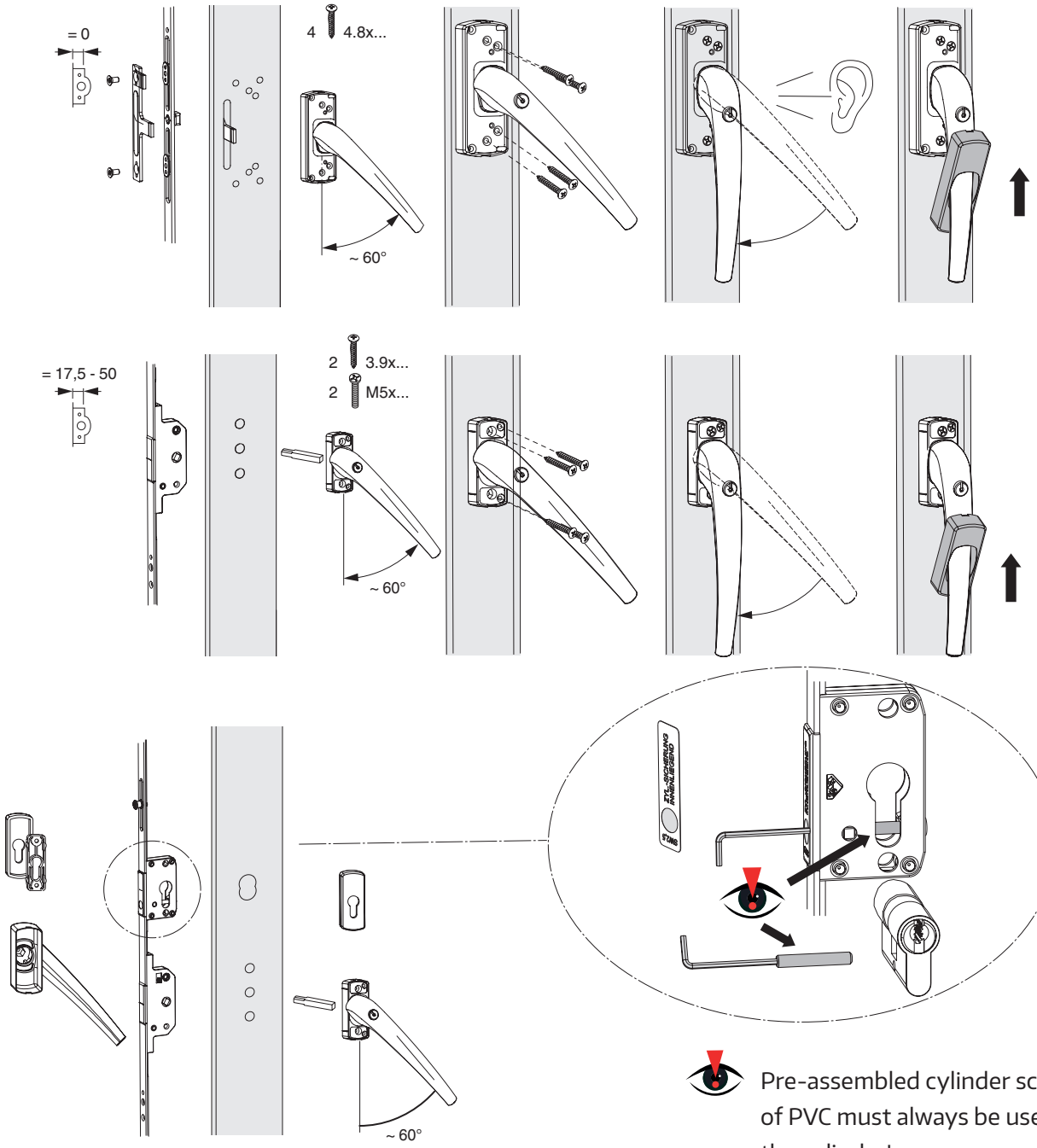
ⓐ Observe the centre fastening of the scissor stays!
ⓑ **Note:** We recommend that you do not attach the covers until the sashes have been mounted



# Sash installation

## Installing the handle

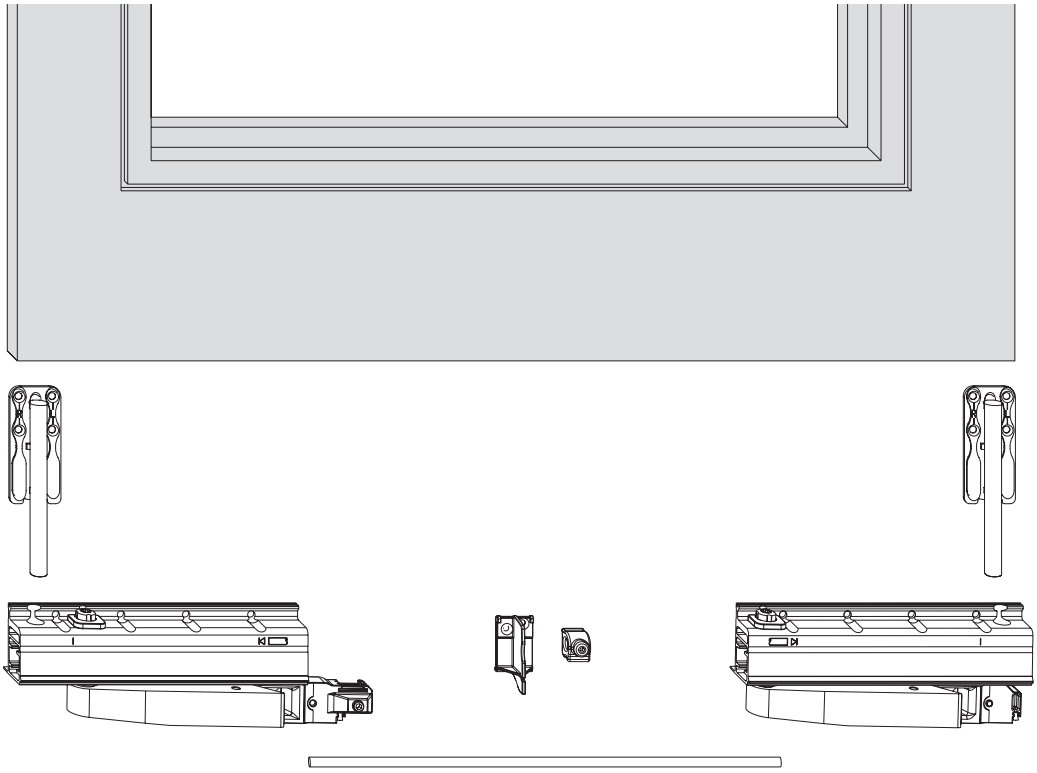


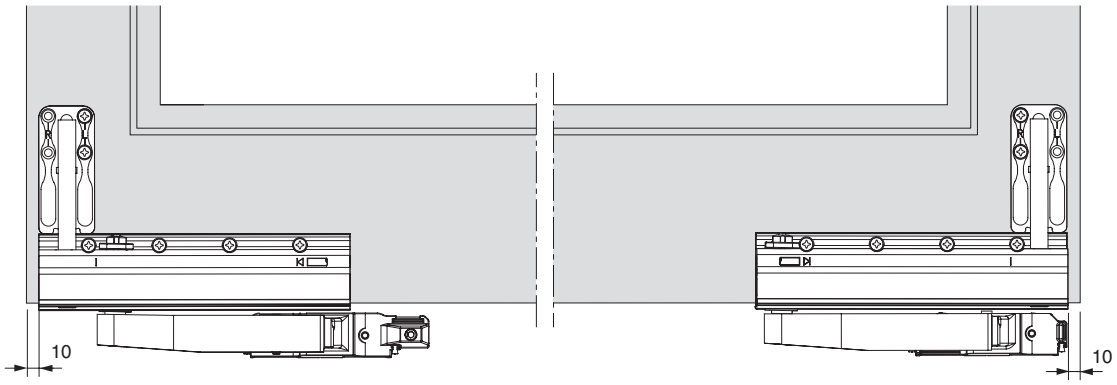

Pre-assembled cylinder screw made of PVC must always be used to fasten the cylinder!

Operate the handle to release the installation fastening.

# Sash installation

Installing the 160 kg roller



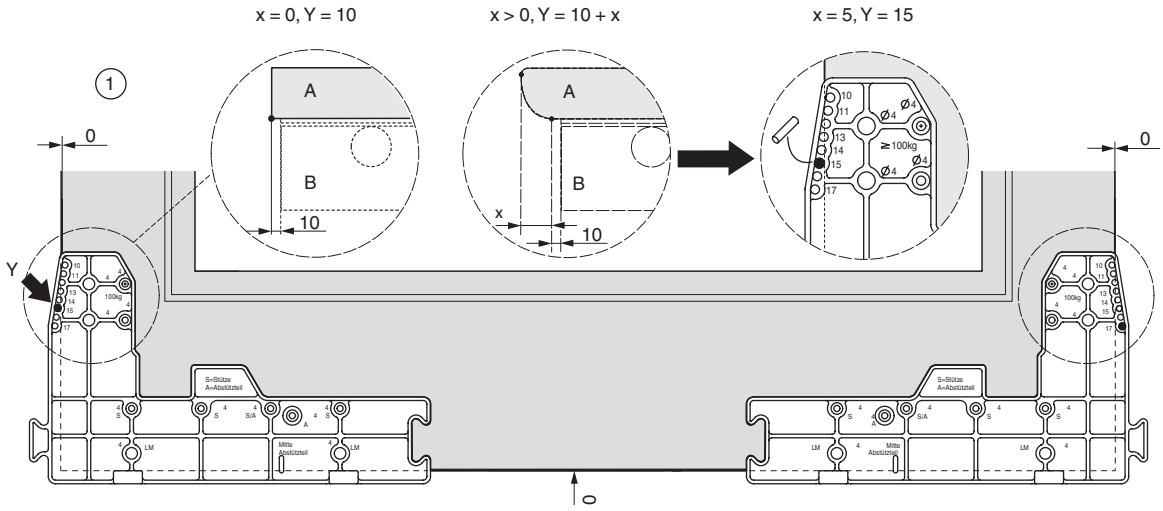


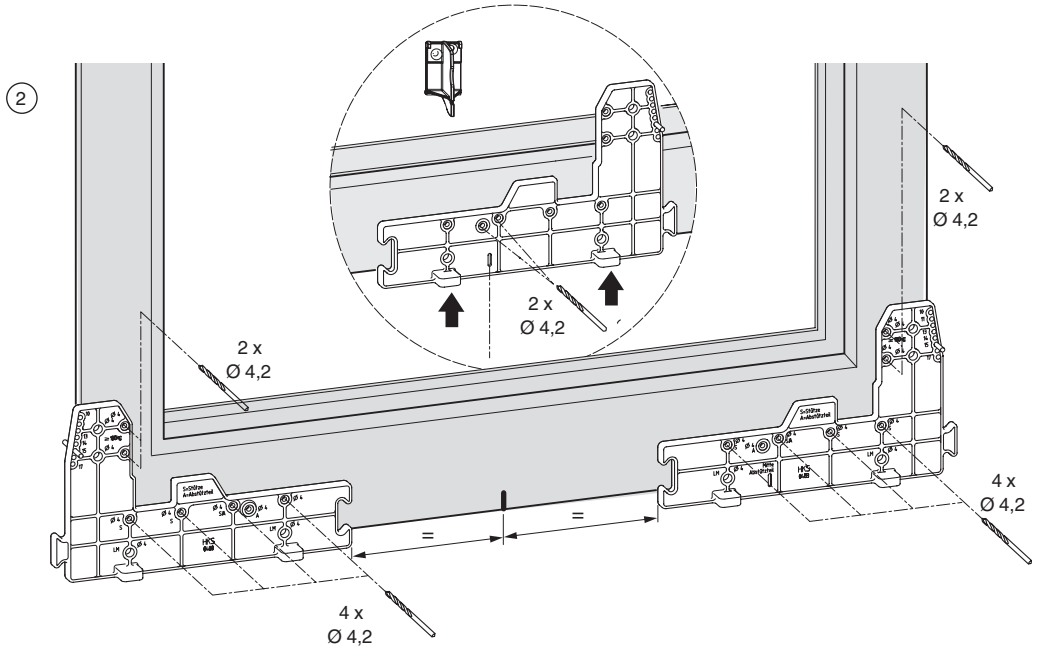
# Sash installation

## 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



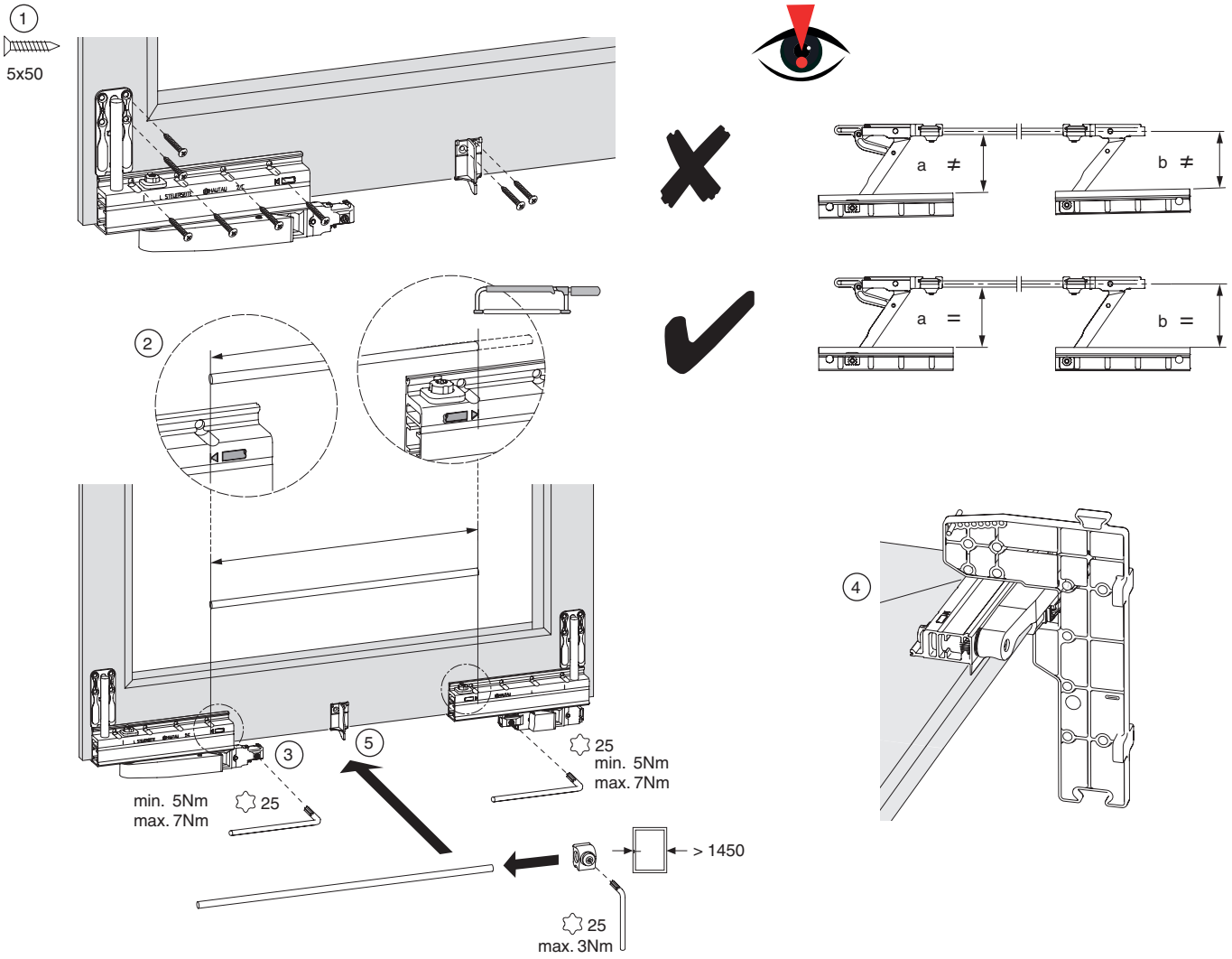



# Sash installation

## 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

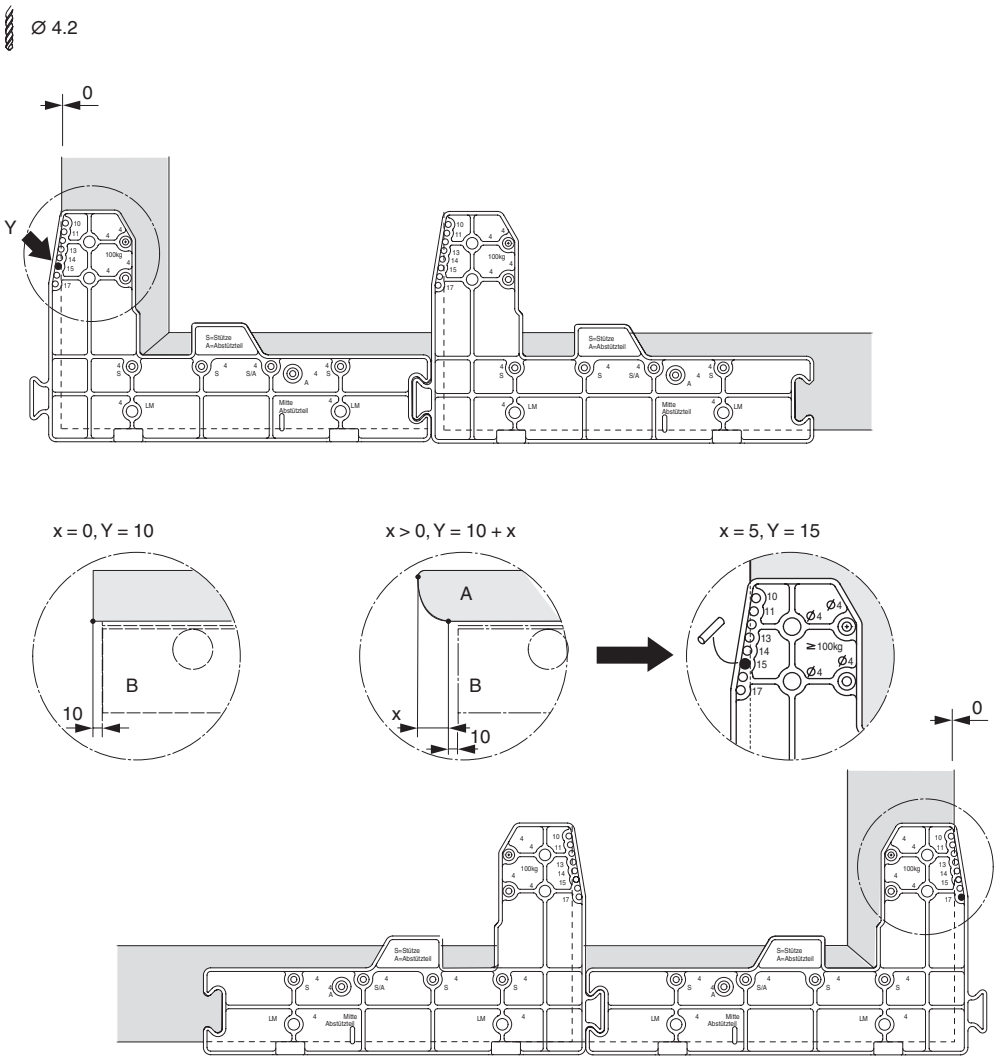
Make sure that the rollers are parallel!



# Sash installation

## Installing the 200 kg roller

### Tandem roller

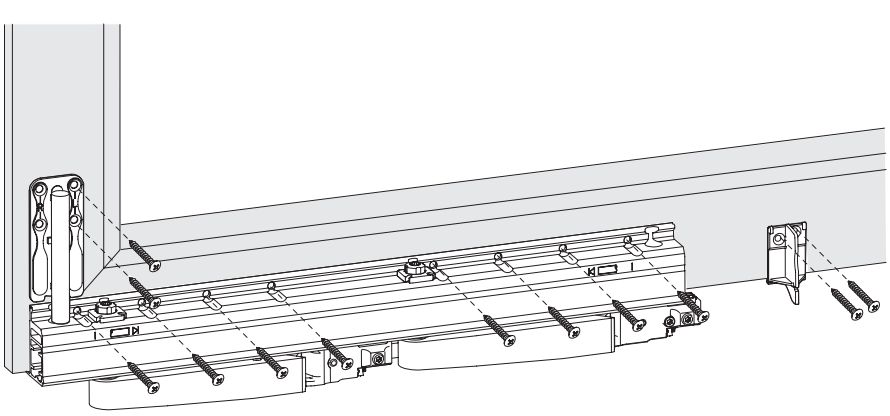


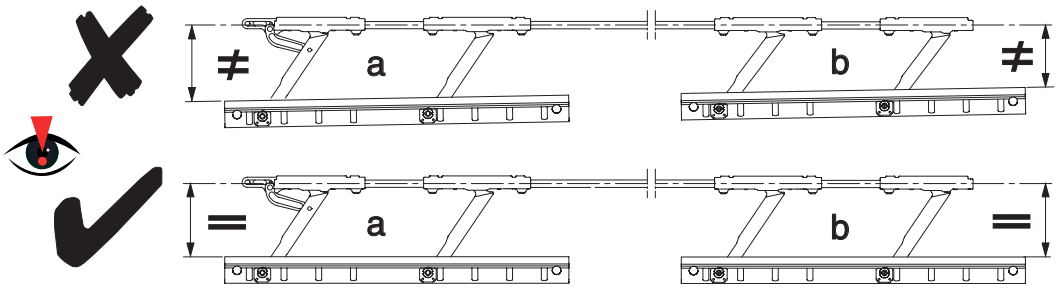
# Sash installation

## Installing the 200 kg roller

Make sure that the rollers are parallel!

5x50

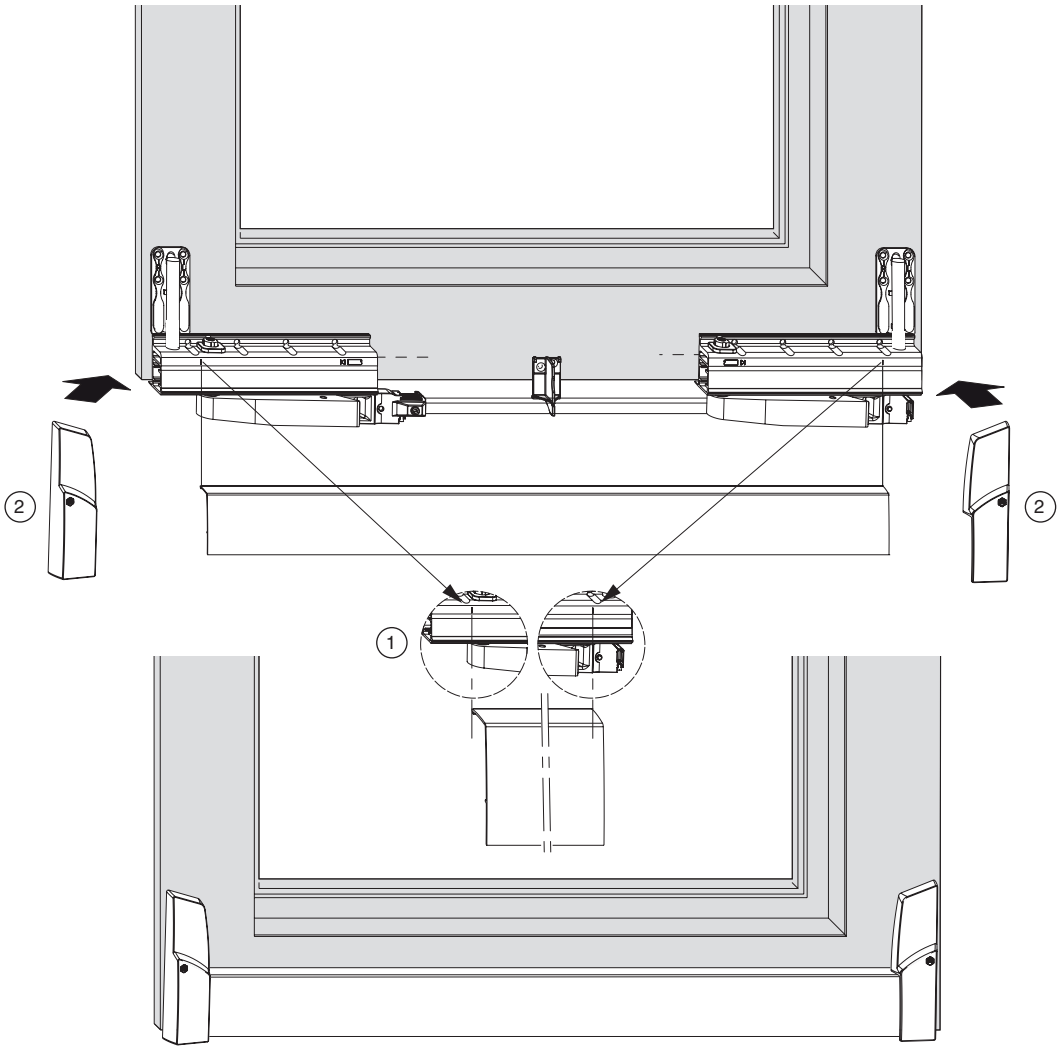




# Sash installation

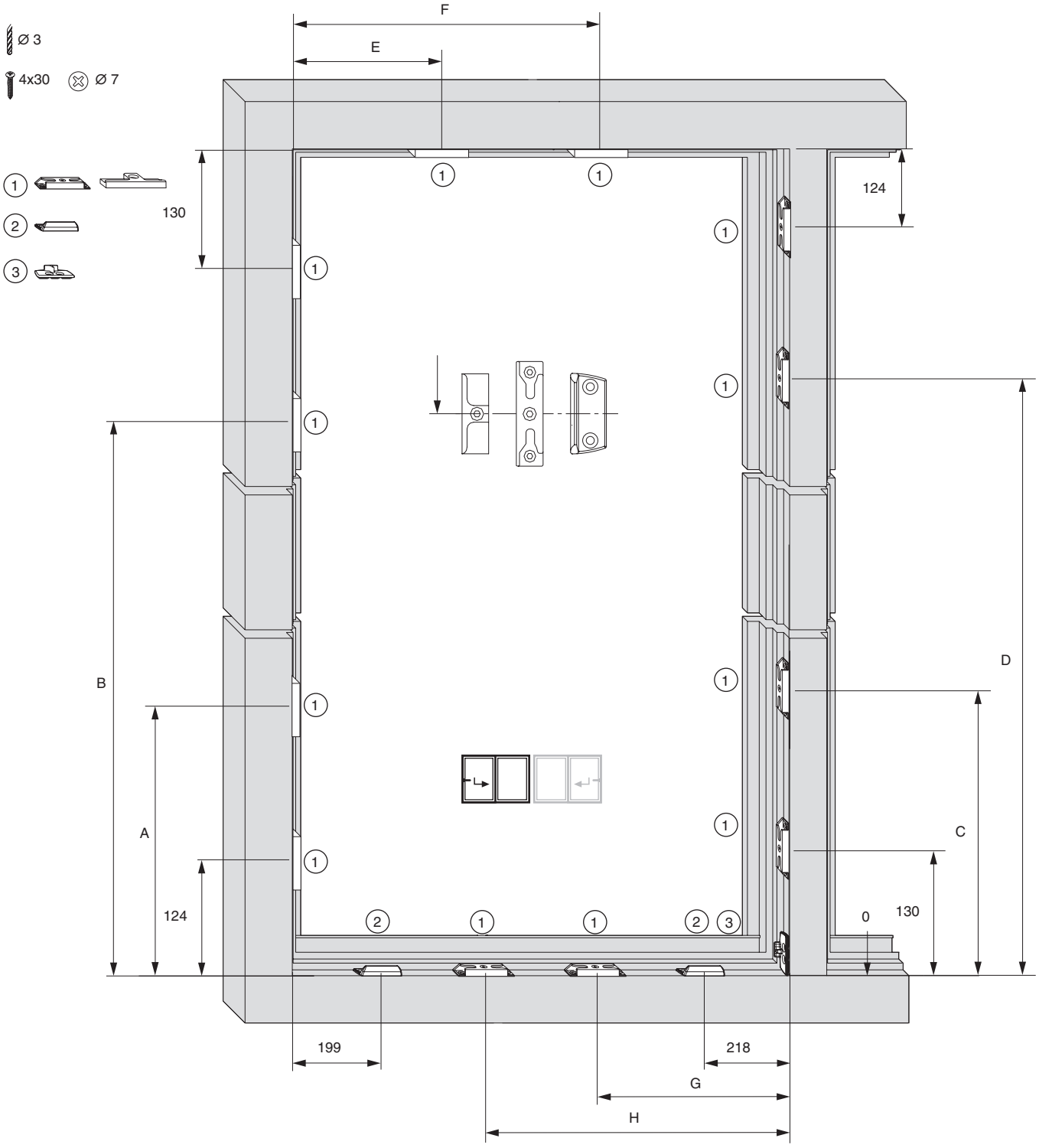
① Cut the cover profile to length according to the mark on the roller and snap on
② Clip on the caps at the front

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



# Frame installation

## Installing the strikers



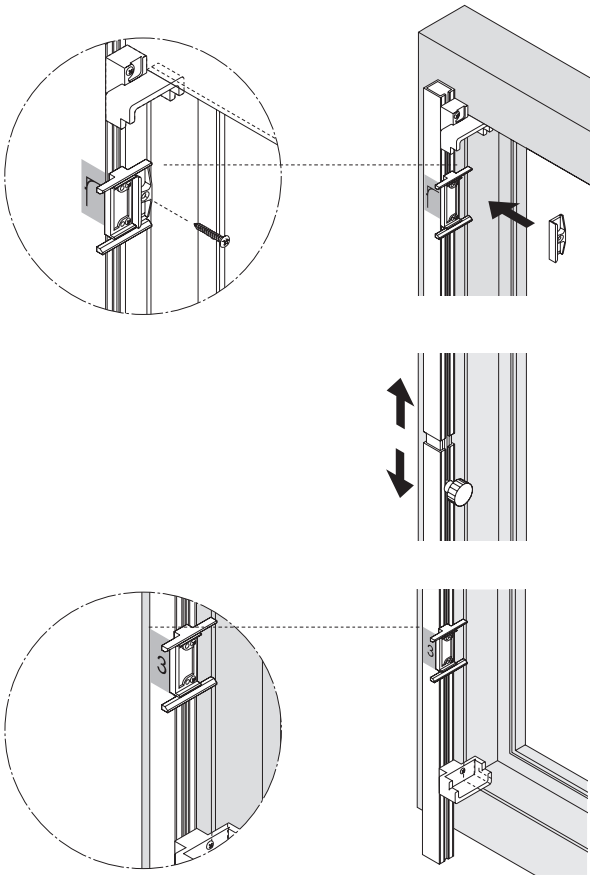
# Frame installation

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 |
|---|---|---|---|---|---|---|
| Size 1 | 900 - 1100 | 450 | - | - | - | - |
| Size 2 | 1101 - 1300 | 450 | 719 | - | 722 | - |
| 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 |

| | № |
|---|---|
| ≤ 1700 | 211611 |
| > 1701 | 211612 |

| Size | | E / G | F / H |
|---|---|---|---|
| Size 1 | 720 - 850 | - | - |
| Size 1 | 851 - 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 |

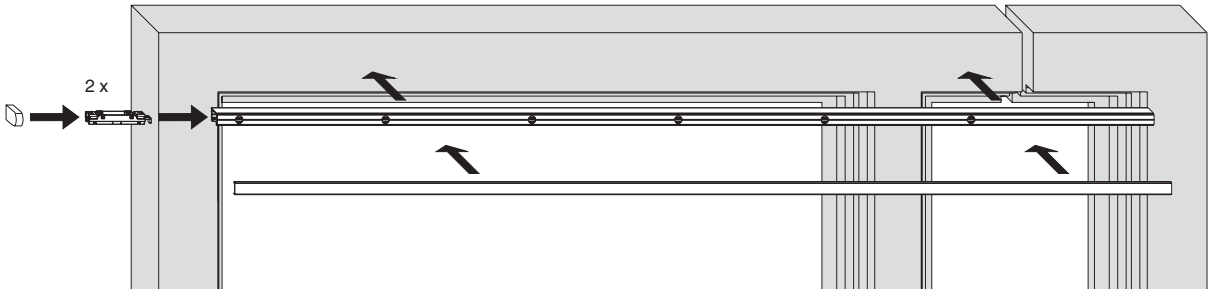


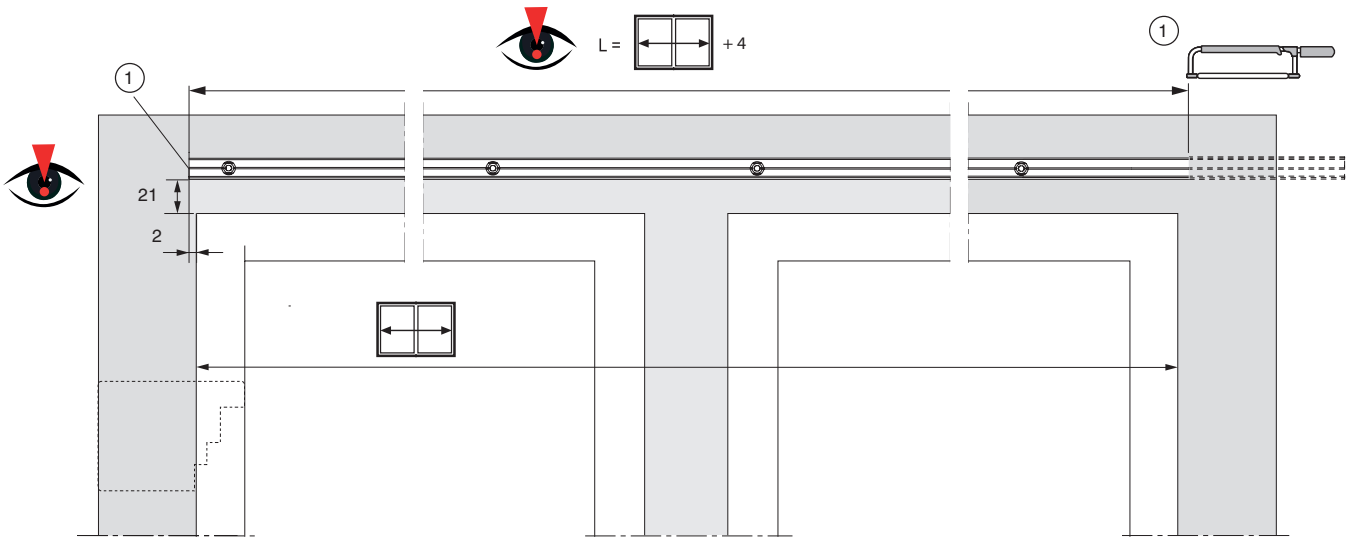
# Frame installation

## Installing the guide track

① Cut the guide track to length.

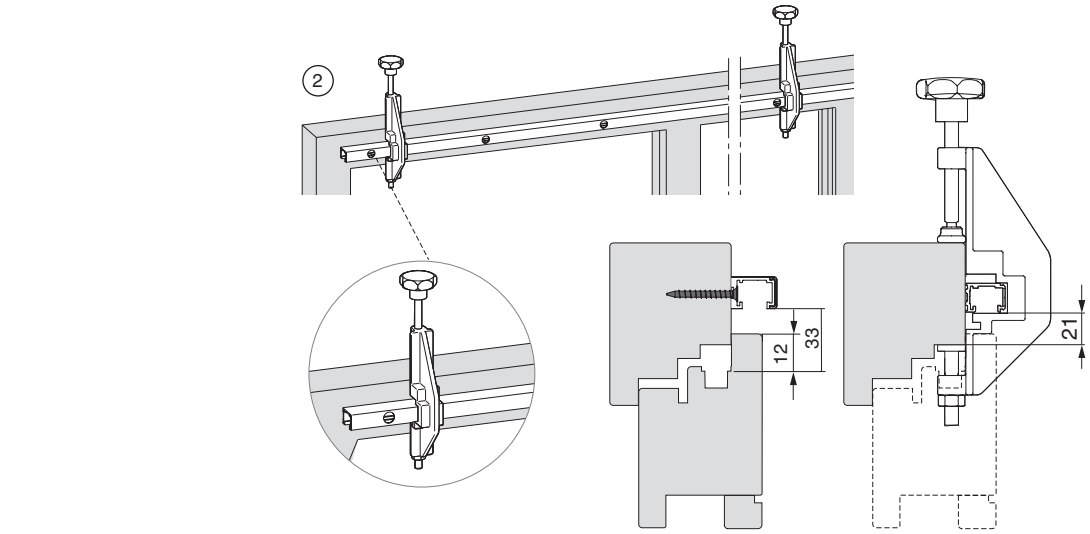
Dimension for rebate leg 18.

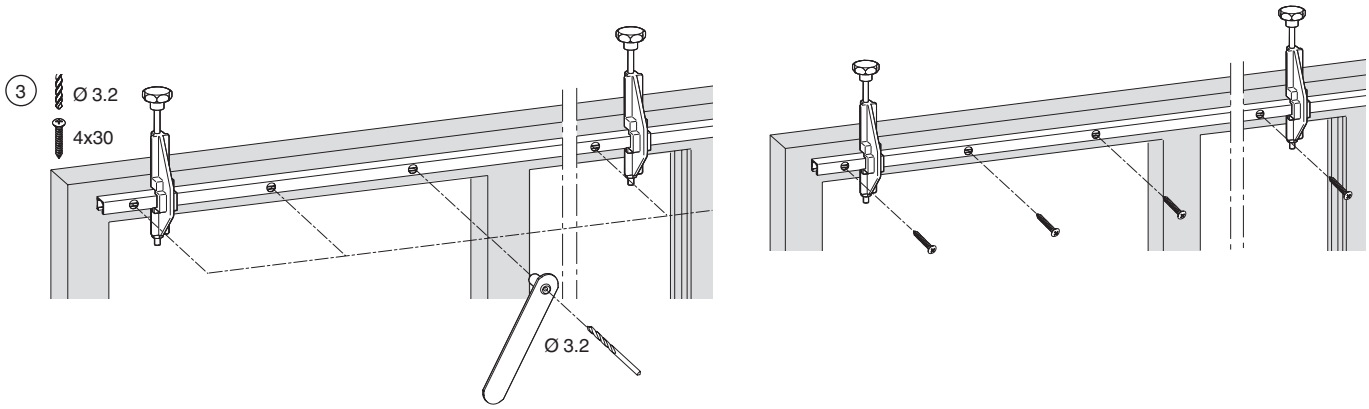


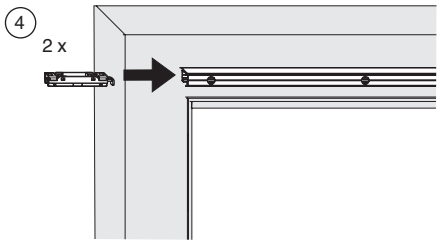



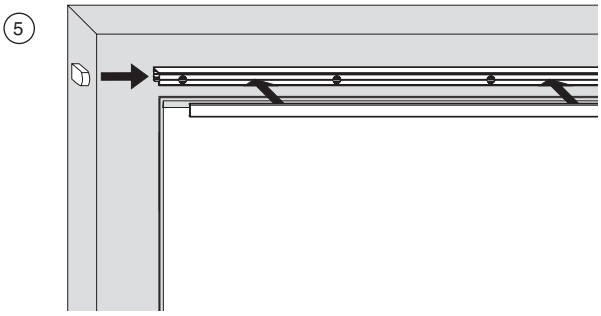
# Frame installation

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

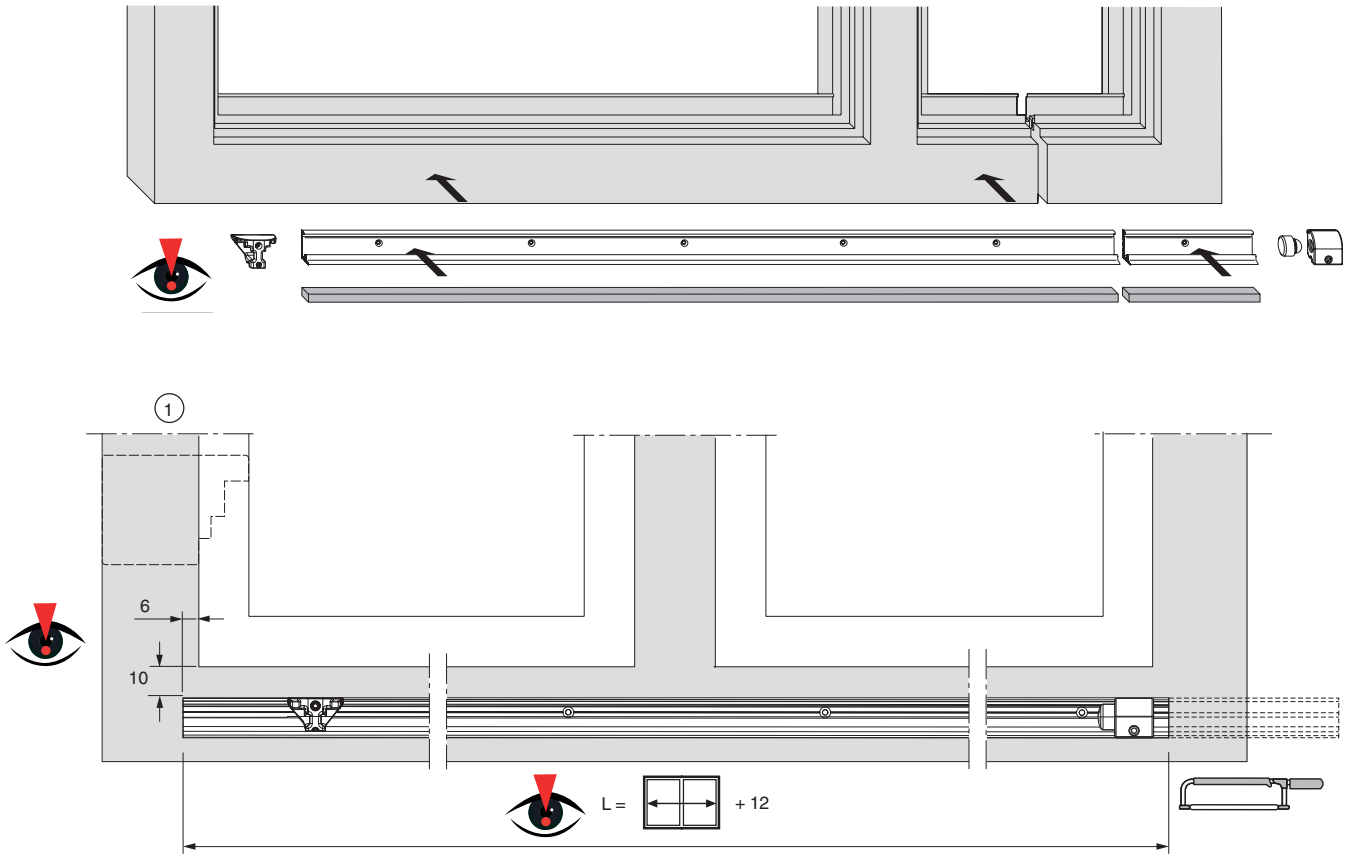
# Frame installation

## Installing the roller track

Underlay the roller over the entire length!

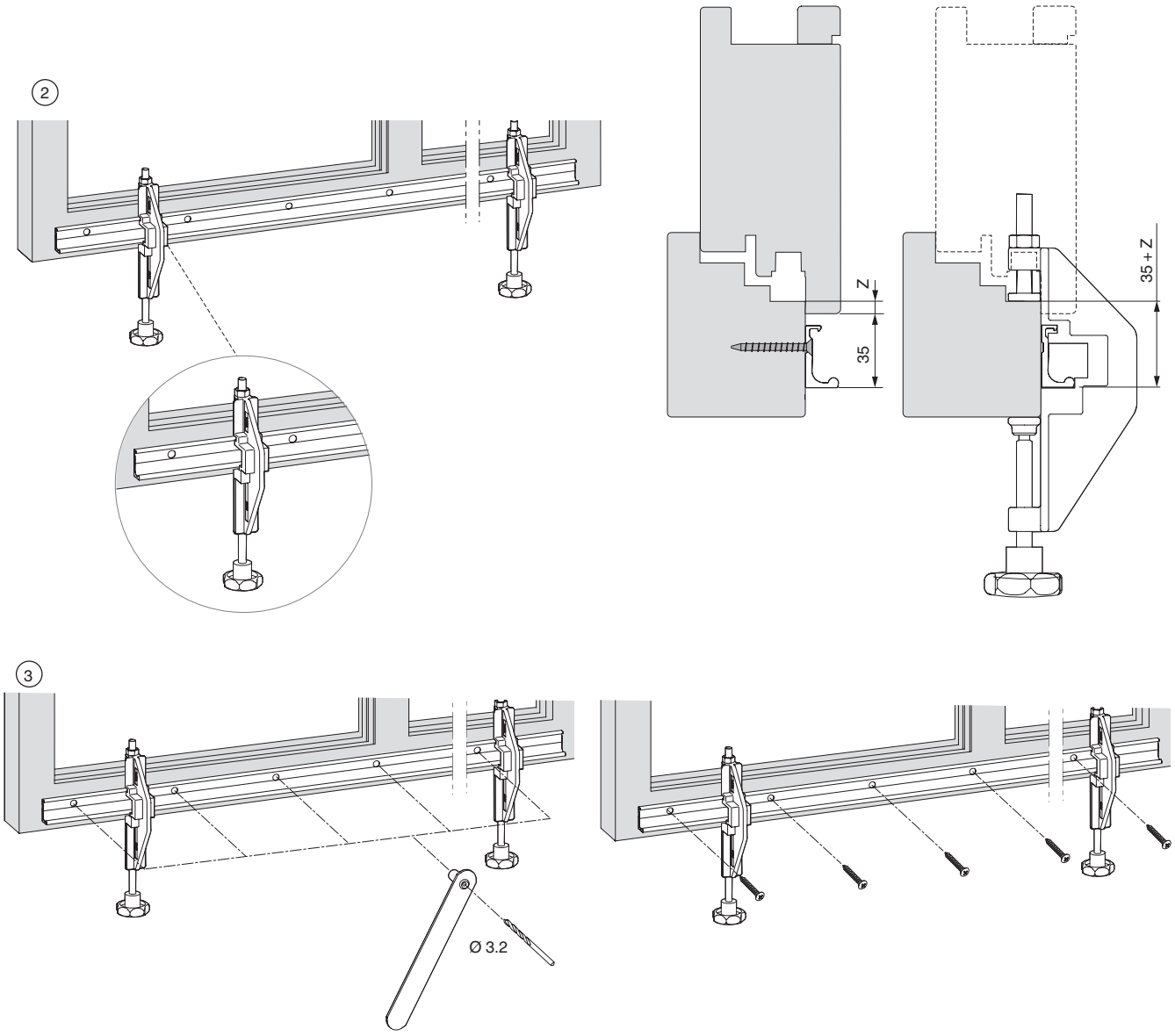
① Cut the roller track to length to match.

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



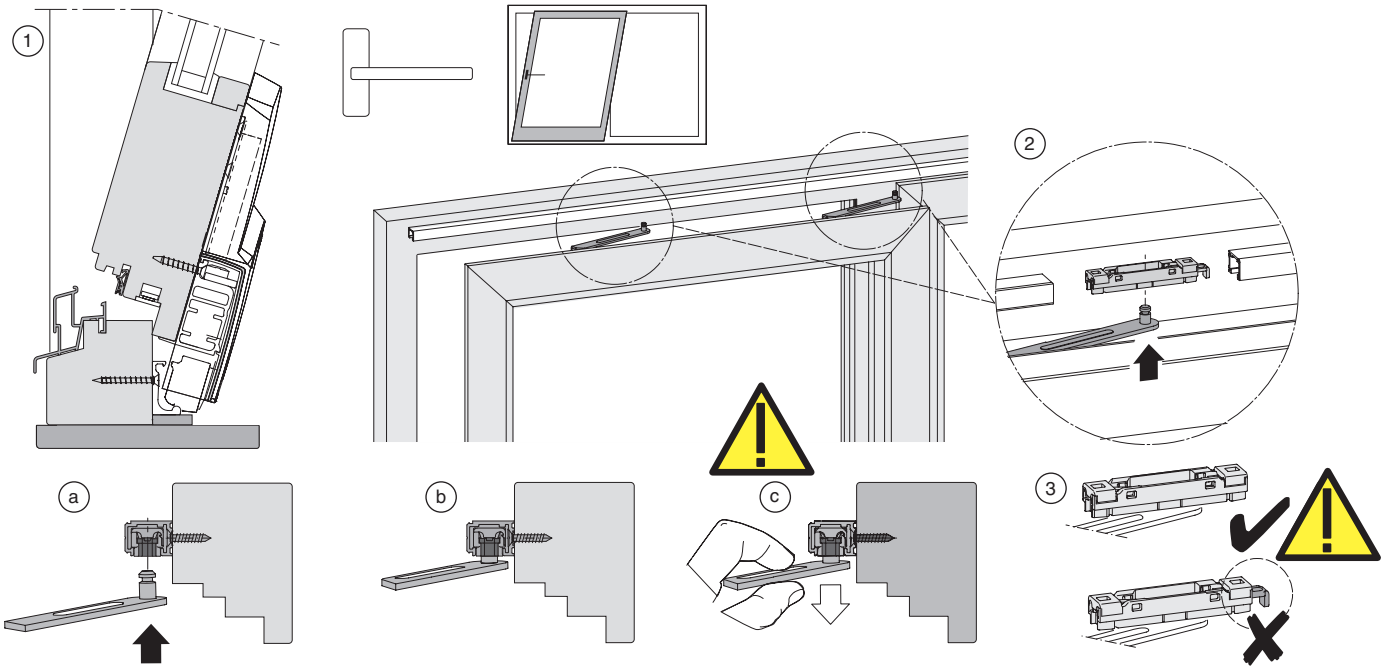

**Notes:**
We recommend that you do not attach the covers until the sashes have been mounted

# Inserting the sash

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

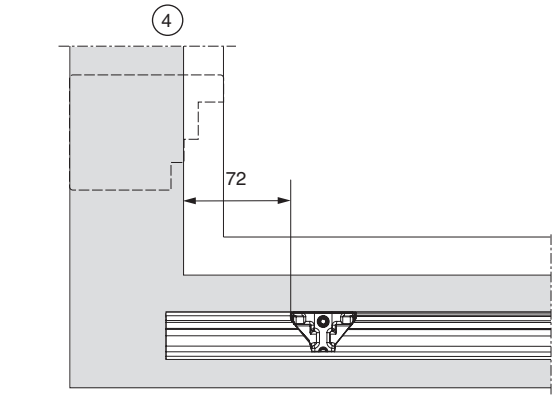
**WARNING**

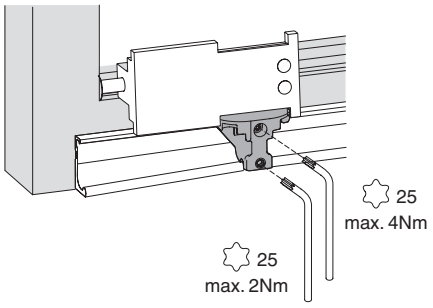
If the scissor backsets do not snap in properly, the window sash will not be held securely and may fall out.
**Serious personal injuries may result.**

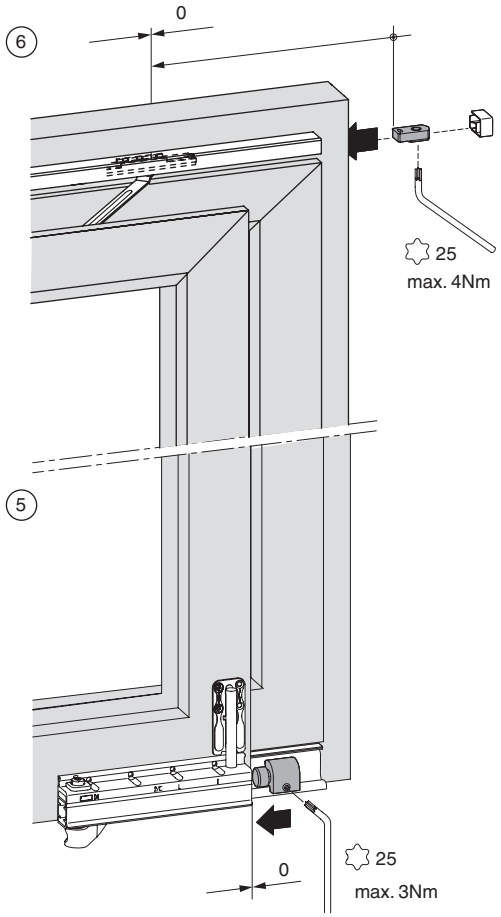


# Inserting the sash

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.



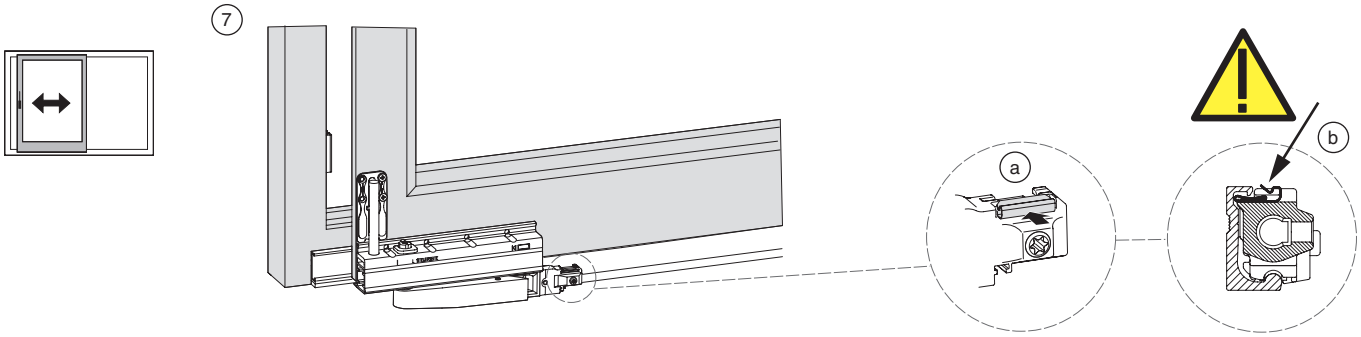



# Inserting the sash

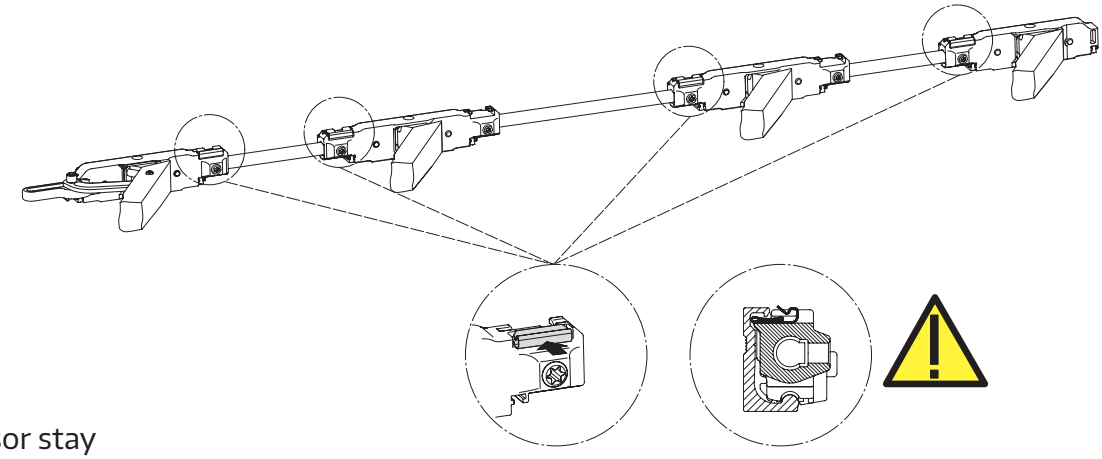
⑦ Activate the lever lock! Move the ⓐ lever lock on both rollers back until they snap into place at the marked ⓑ position.

**⚠ WARNING**

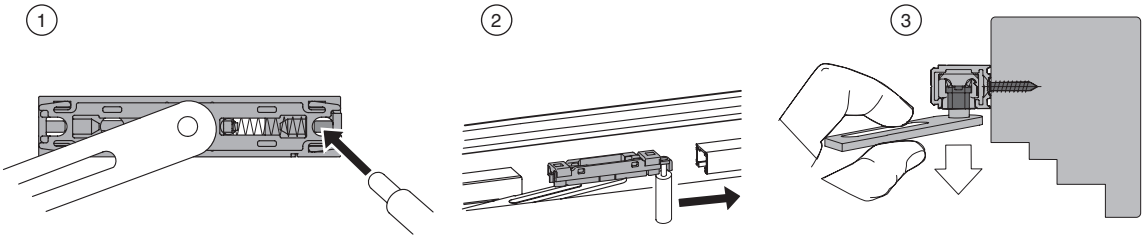
If the lever lock is not (or not correctly) in place at the marked position, the window sash will not be secured properly.
**Serious personal injuries may result!**




Tandem roller



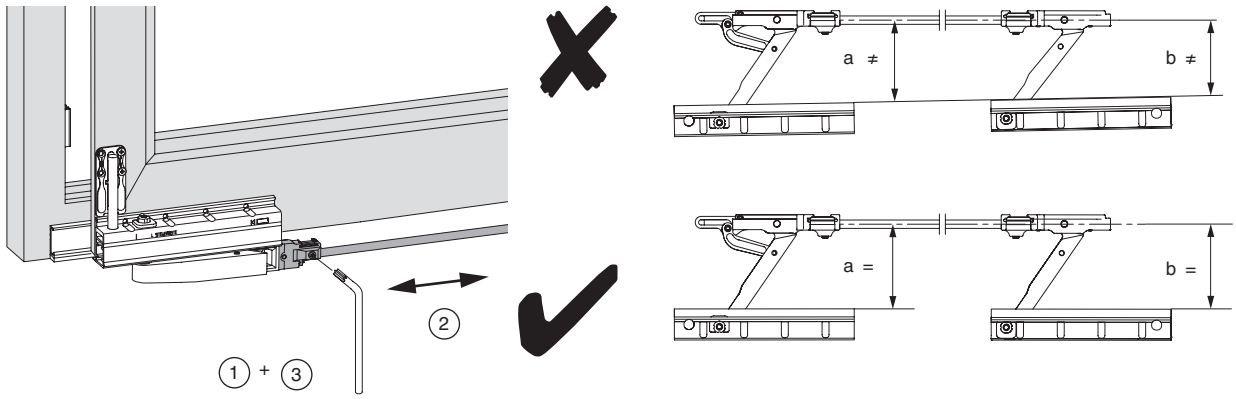
Unhinge the scissor stay



# Inserting the sash

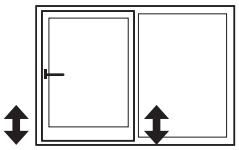
## Correct the parallel setting of the roller

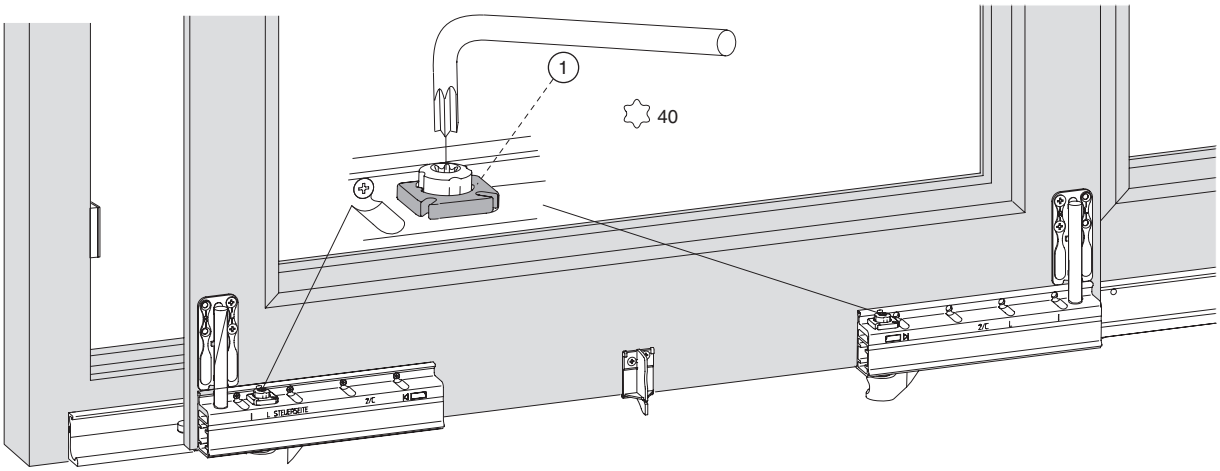
① Loosen the connecting rod on the roller at the handle side.
② Push the connecting rod to the left or right to position the rear roller (b) set parallel parallel to the roller unit (a).
③ Fasten the connecting rod on the roller at the handle side.




## Regulating the height of the roller

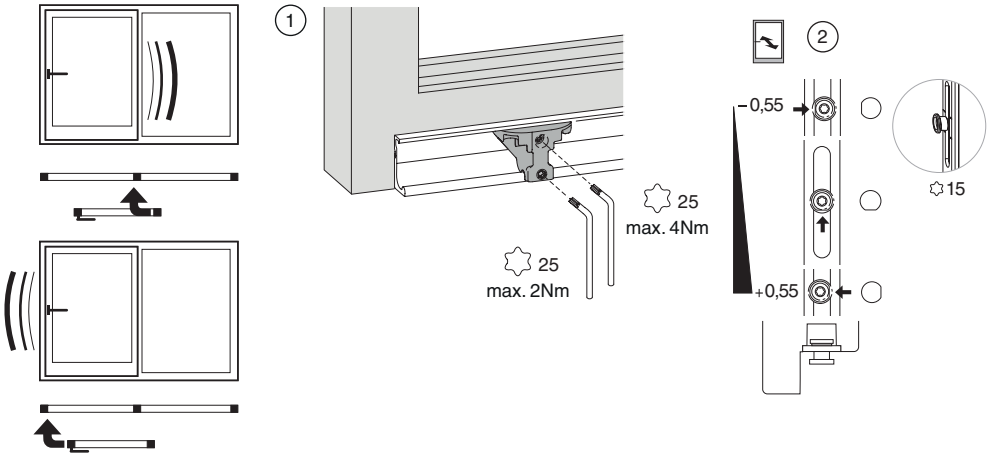
- Lift off the adjustment ① lock
- Set the height (+ 6 mm)
- Reattach the adjustment lock



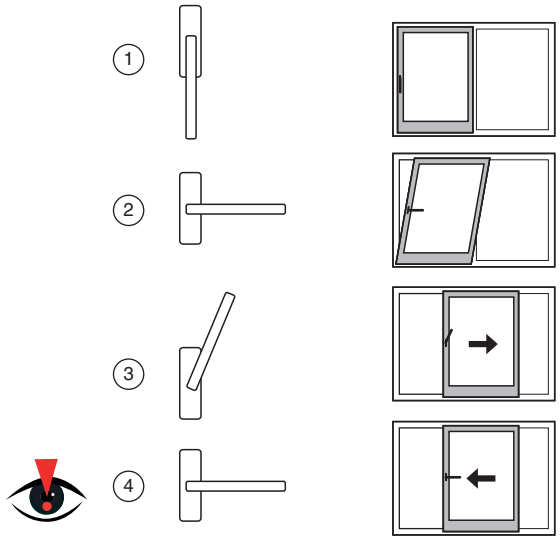


# Inserting the sash

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

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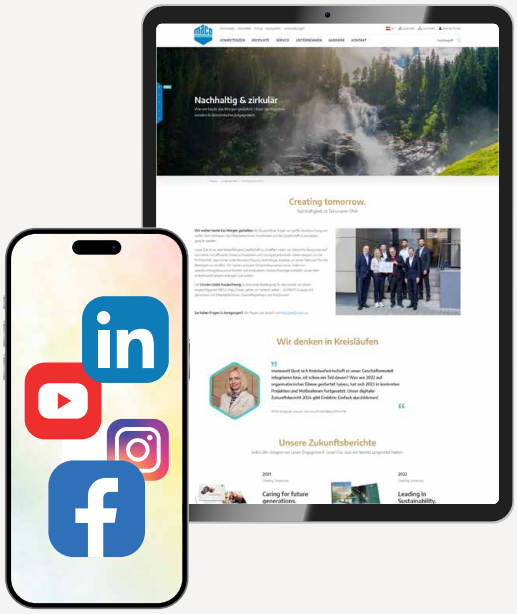


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