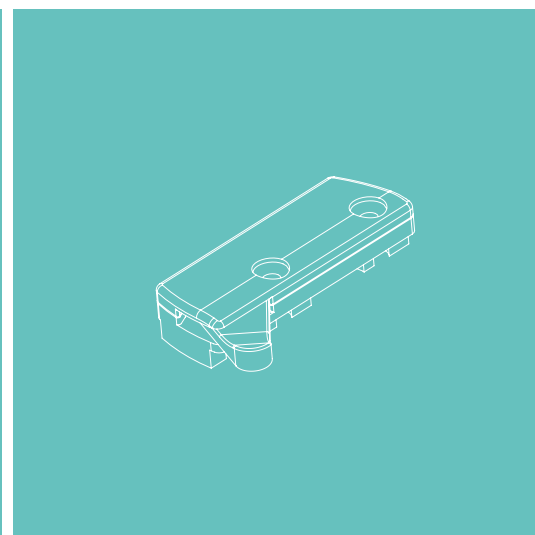
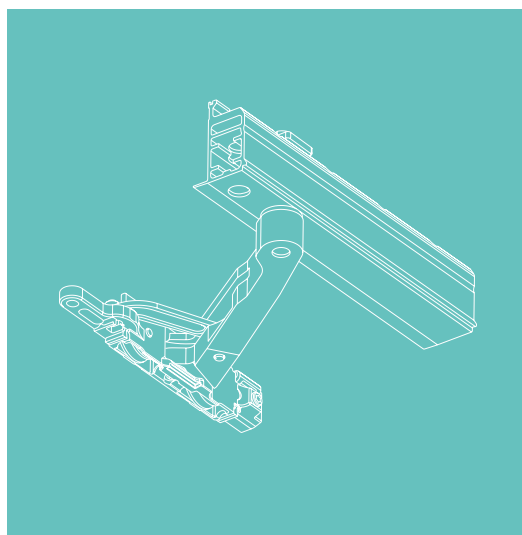
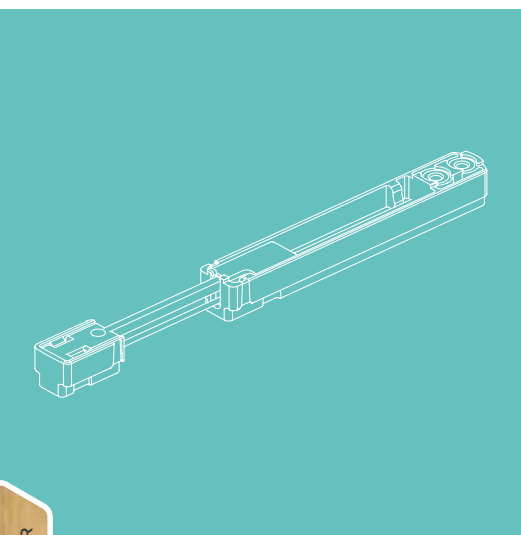




TECHNOLOGY IN MOTION

MACO RAIL-SYSTEMS

SLIDE & TILT HARDWARE



ASSEMBLY INSTRUCTIONS

12 Air Upgrade

TIMBER

PVC

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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:



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



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



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 13 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.

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 p_3) 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.

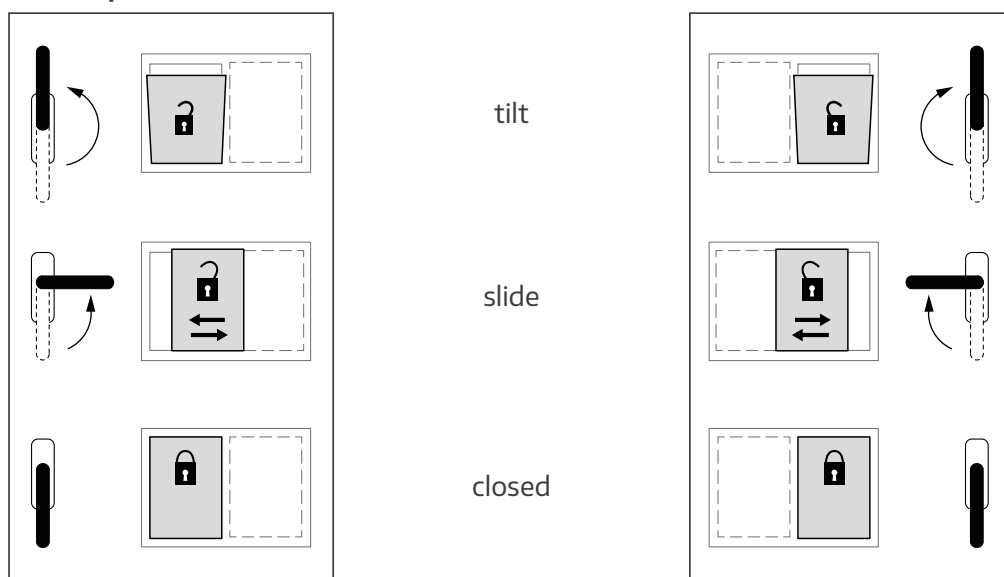
The hardware and the rebate spaces must be sufficiently ventilated, especially during the construction phase, so that they are not exposed to direct moisture or condensation.

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. The operating label is located in the basic box or in the "corner deflection" package.

Handle positions



DIN EN 12519 left

DIN EN 12519 right

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

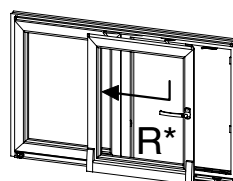
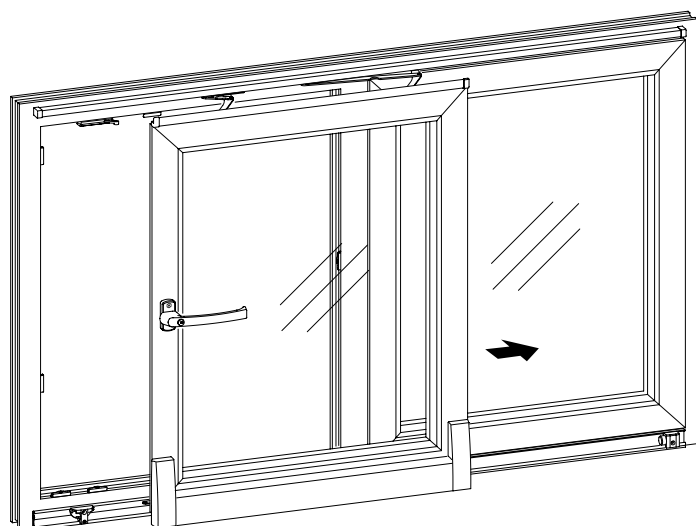
Key and Abbreviations

	FB	Sash width (SW)
	RAB	Frame outer width (FOW)
	RAH	Frame outer height (FOH)
	FFB	Sash rebate width (SRW)
	FFH	Sash rebate height (SRH)
	FFK	Sash rebate edge (SRE)
	FG	Sash weight (SW)
	OKFF	Top edge finished floor (TEFF)
	GM	Handle height (HH)
	DM	Backset drive (BS)
	Gr.	Size (Sz.)
	O	optional (o)

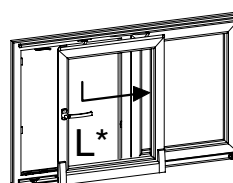
All dimensions without a unit definition are given in mm.

Version and Application Areas

Version



Version on the right



Version on the left

The illustrations in this document show the version on the left. In order to install the version on the right, the applied information must be mirrored.

Area of application

The limits of the areas of application listed here are binding and must not be deviated from. Continue to observe the permissible application sizes, manufacturing specifications, and processing policies as set by the profile manufacturer.

Item	unit	area
Sash rebate width (SRW)	(mm)	620 - 1650
Sash rebate height (SRH)	(mm)	840 - 2450
Sash weight	(kg)	160 /max. 200 ¹⁾
Burglary prevention		possible

¹⁾ TWIN rollers are used for a sash weight of 160 kg to 200 kg.

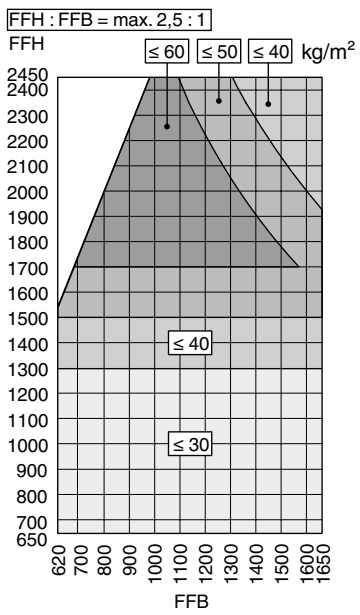
The rollers shown in the assembly sequence are symbolic in this case.

For specific instructions for TWIN rollers, please refer to the section at the end of the document.

Version and Application Areas

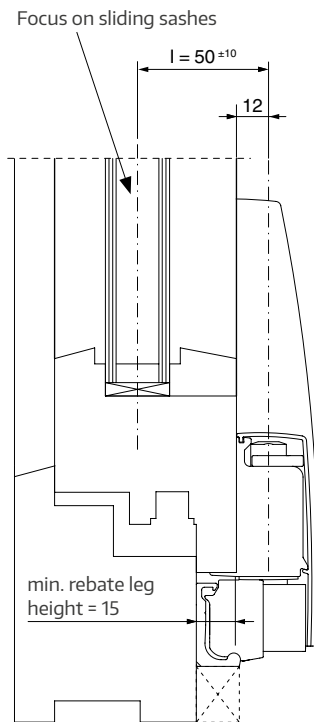
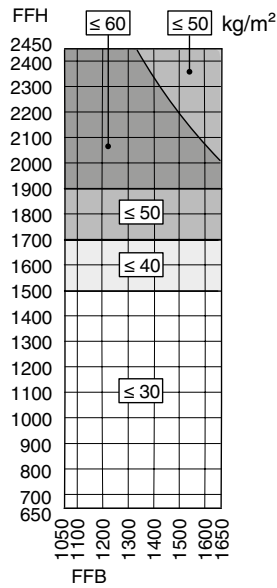
Application Diagram

Application 160 kg



valid for an I-value of 50^{±10}

Application 200 kg



Fixing screws for the hardware

These are not included. The length must be chosen according to the profile used.

Countersunk screws 4.0 x ... mm

Countersunk screws 4.0 x ... mm, **Important:** head diameter d_k 7 mm

Countersunk screws 4.8 x ... mm



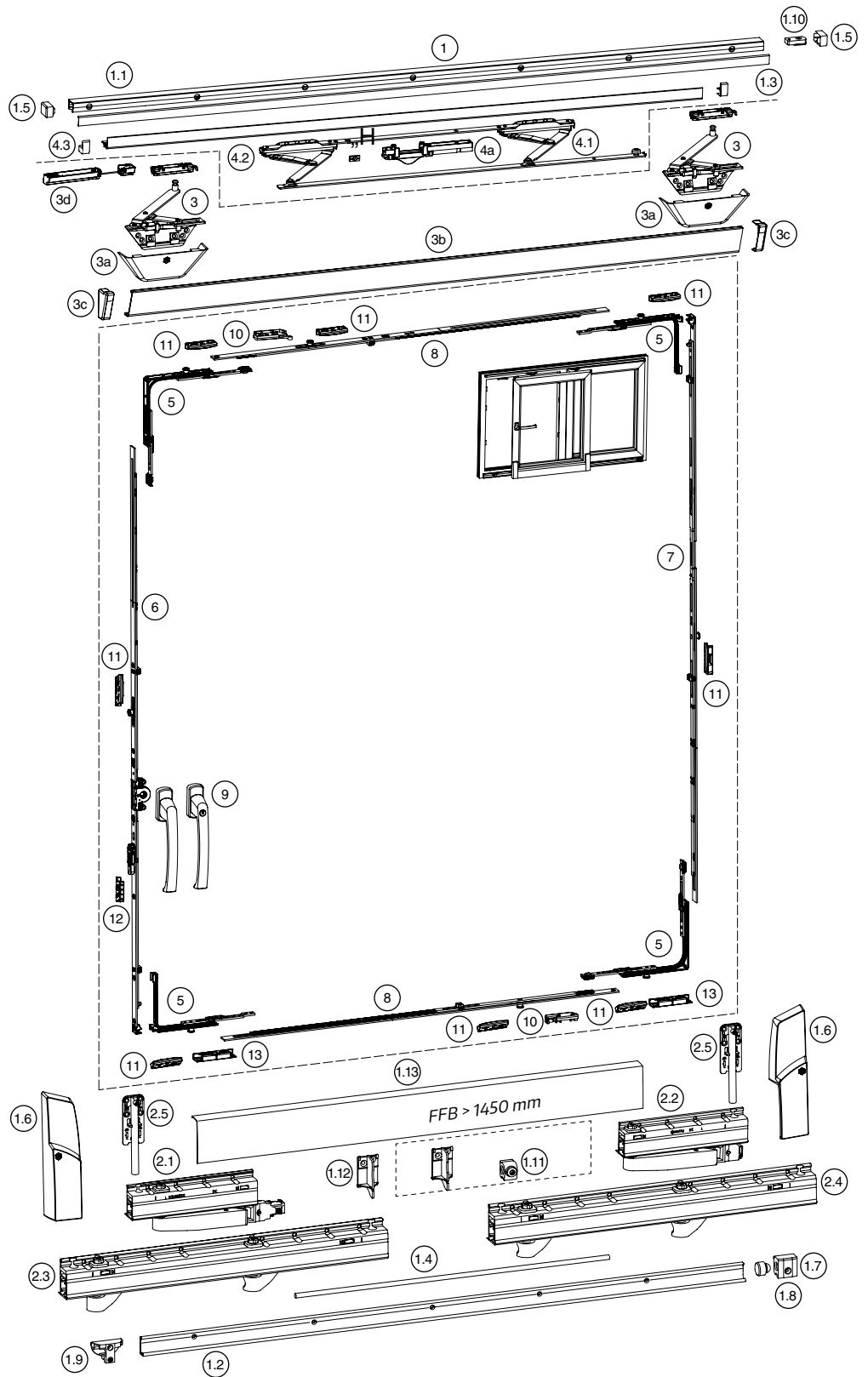
Notes

A large rectangular area filled with a fine grid pattern, intended for taking notes. The grid lines are light gray and form a consistent pattern across the entire page.

Parts overview



The transport protection device on the closing initiator (4a) **cannot be removed until after assembly**. This is required to ensure the position of the damper remains unchanged.





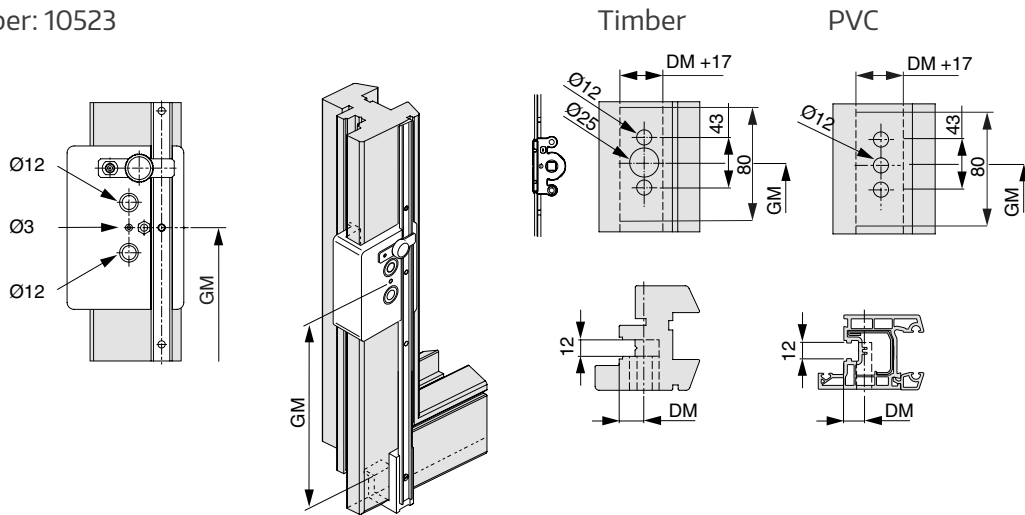
Parts overview

- ① Pack of profile set
 - ①.1 Guide track
 - ①.2 Roller track
 - ①.3 Cover profile PVC
 - ①.4 Connecting rod
 - ①.5 Cover cap for guide rail
 - ①.6 Bottom cover cap
 - ①.7 Lower buffer stop
 - ①.8 Rubber mushroom buffers
 - ①.9 Guide block (lower)
 - ①.10 Buffer stop upper
 - ①.11 Support block
 - ①.12 Support bracket
 - ①.13 Cover profile
- ② Pack of rollers SKB-S/SE with adjustable reinforcement part
 - ②.1 Leading Rollers 160 kg
 - ②.2 Trailing Rollers 160 kg
 - ②.3 Leading Rollers 200 kg
 - ②.4 Trailing Rollers 200 kg
 - ②.5 Reinforcement part
- ③ Pack of adjustable scissor sliders SKB S/SE
 - ③a Adjustable cover caps for scissor slider SKB-S/SE
 - ③b Adjustable track cover for scissor slider SKB-S/SE
 - ③c Adjustable cover cap for track cover scissor slider SKB-S/SE
 - ③d Control module SKB-S/SE with tilt damper for scissor slider SKB-S/SE
- ④ Pack of tilt stays and track cover
 - ④.1 Tilt stay
 - ④.2 Stay-connecting profile
 - ④.3 Cover cap for stay-connecting profile
- ④a Control module SKB-S/SE with tilt damper for tilt stay SKB-S/SE
- ⑤ Packs of corner elements
- ⑥ Drive gear
- ⑦ Height connectors
- ⑧ Width connectors
- ⑨ Handles
- ⑩ Pack of stop absorbers SKB-S/SE
- ⑪ Striker plate
- ⑫ Sash lifter
- ⑬ Striker plate i.S.

Preparation of sash frame

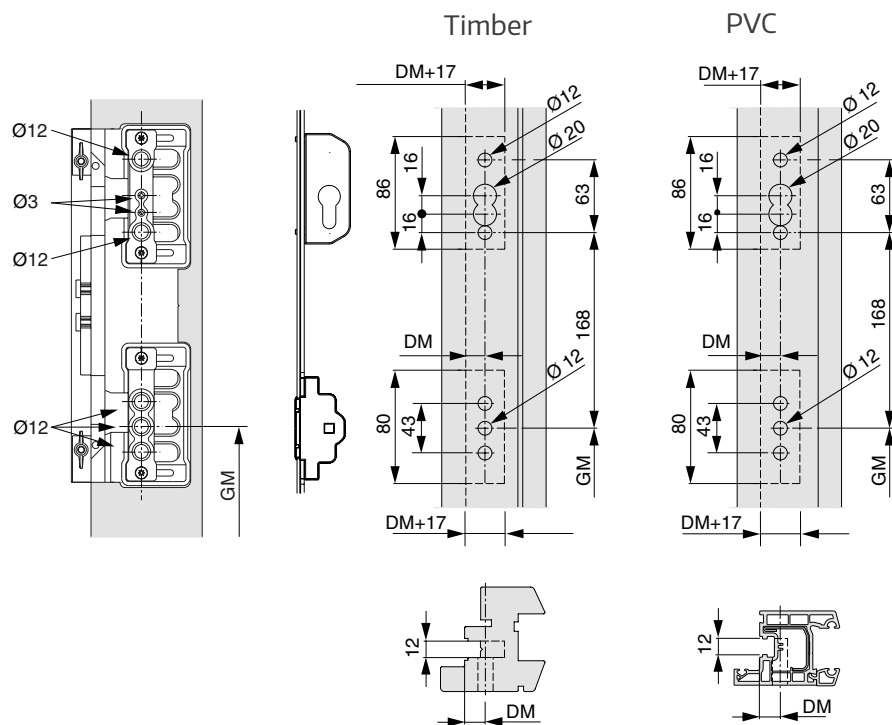
Drive gear fixed

Article number: 10523



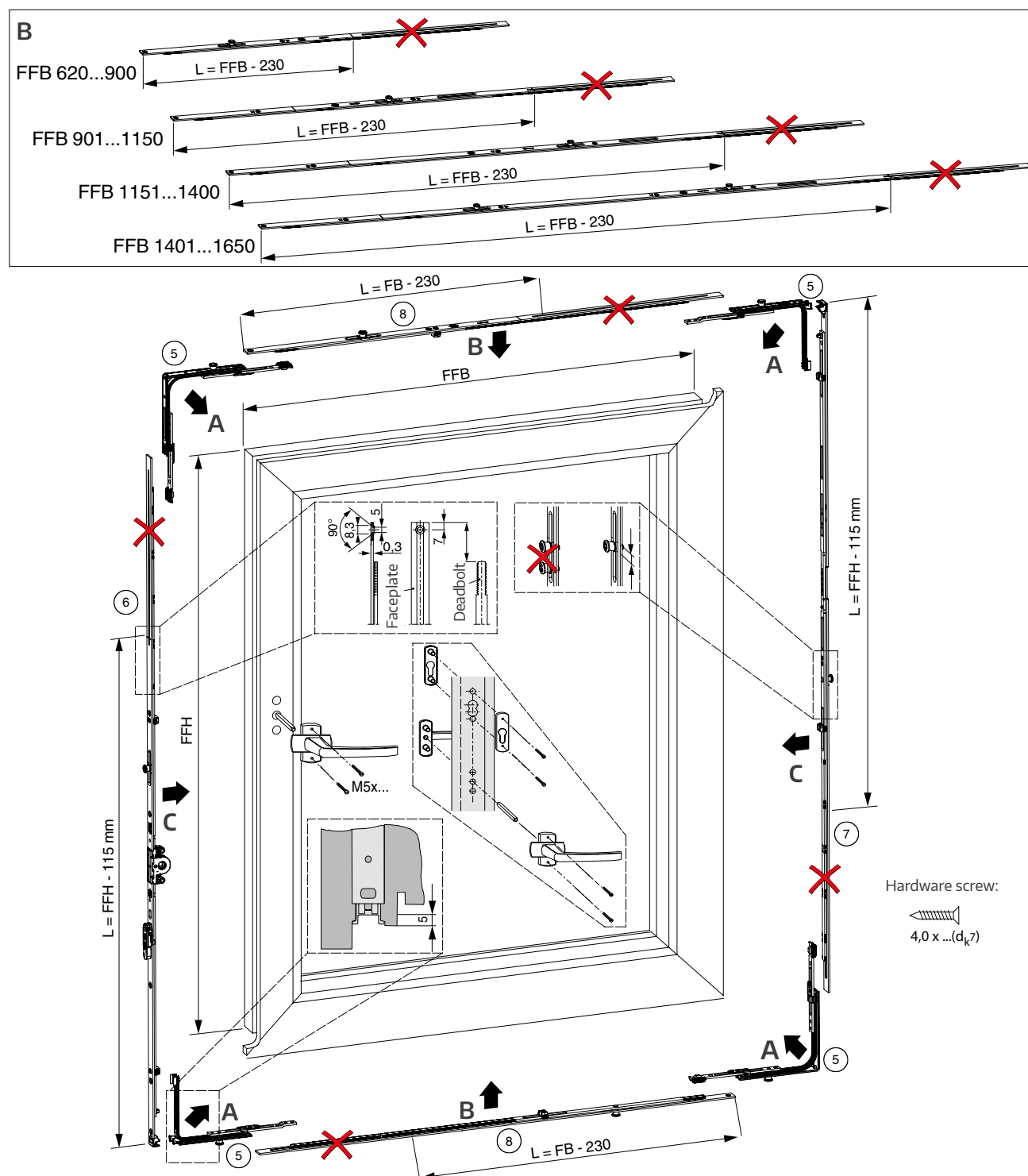
Lockable drive gear

Article number: 29038



Cutting to length and Central Locking assembly

- A Screw in the upper and lower corner elements (5).
- B Cut to length the upper and lower width connector and screw in place (8).
- C Shorten the height connector (7) and drive motor (6) and screw in place.



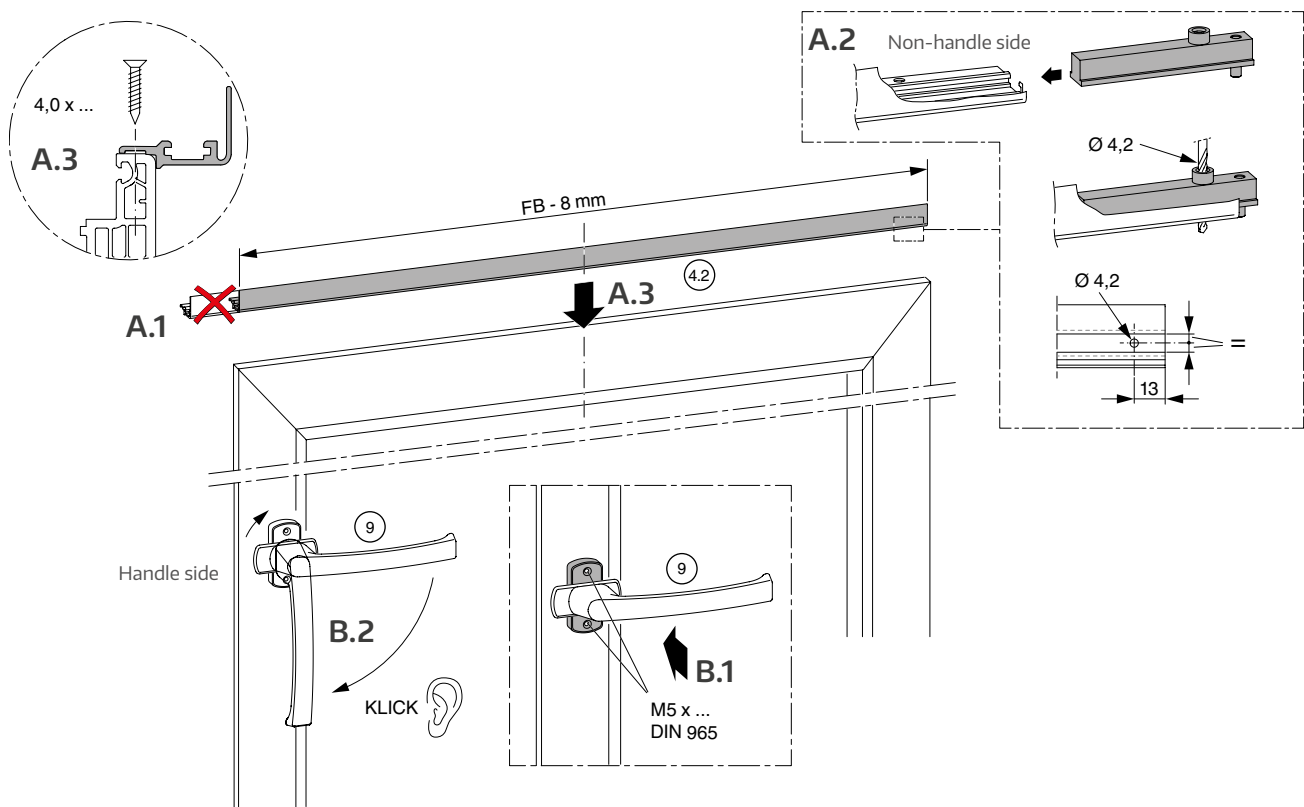
Sash assembly

Assembly of stay-connecting profile for tilt stay

- A.1** Cut to length the stay-connecting profile ^(4.2) on the **handle side**, sash width minus 8 mm.
- A.2** Stay-connecting profiles without holes (storage lengths) must be drilled to the scissor slider on the **non-handle side**.
- A.3** Screw in the stay-connecting profile in the centre of the sash.

Handle assembly

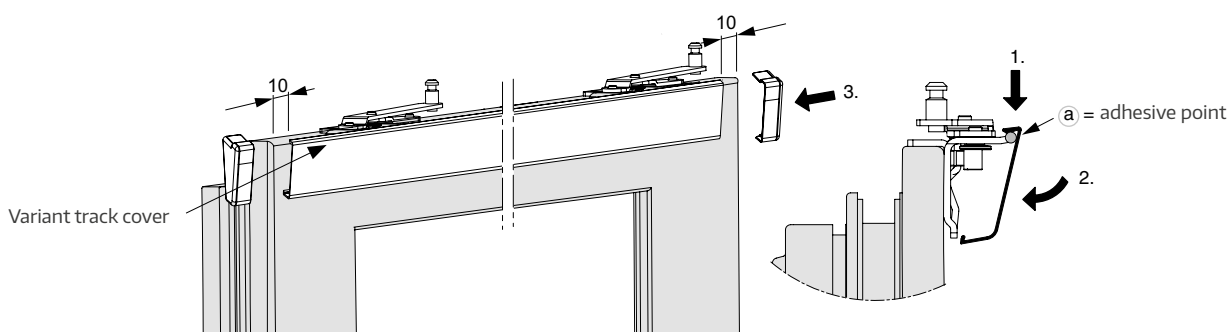
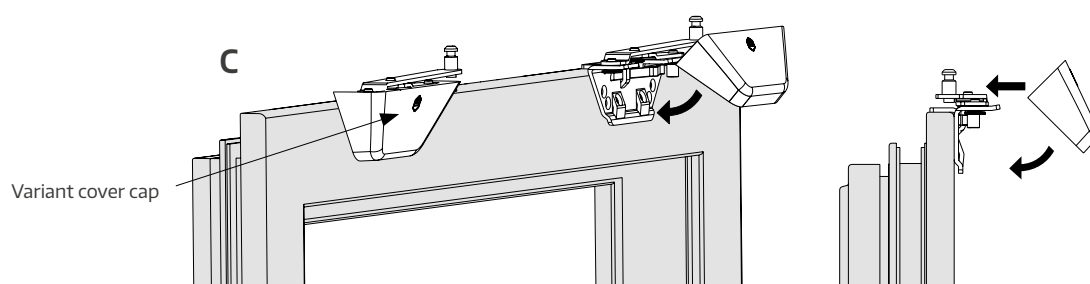
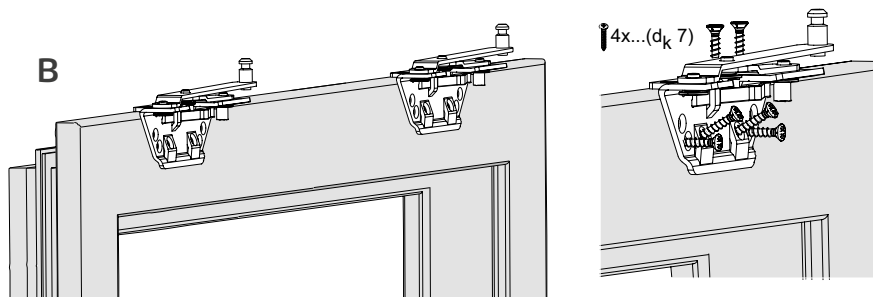
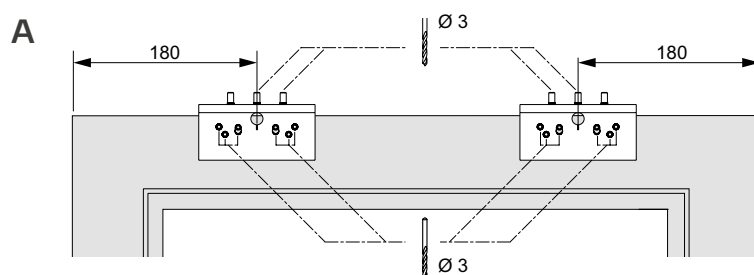
- B.1** Set the handle ⁽⁹⁾ to 90° position on the sash, twist the cover and screw in the handle with 2 screws M5 x ... Check the function of the central locking for lightness.
- B.2** Turn back the handle cover.



Sash assembly

Assembly of scissor-slider

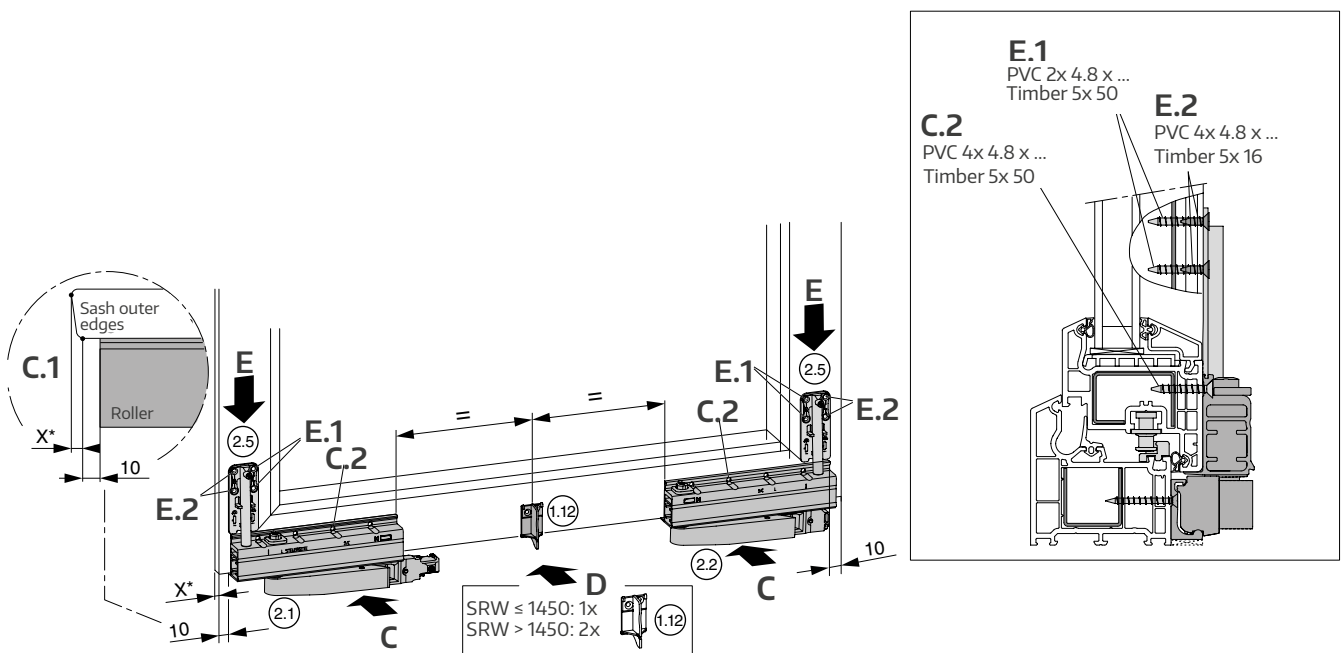
- A Pre-drill the sash.
- B Screw on the scissor slider.
- C Assembly of scissor slider.



Sash assembly < 160 kg

Assembly of rollers

- C** Screw the rollers (2.1) / (2.2) onto the sash frame with 4 screws each for PVC 4.8 x ..., for timber 5 x 50 at a lateral distance of 10 mm to the sash outer edges and flush to the bottom edge (reference edge for profiles with edge radius (C1)).
The length of the screws in PVC systems is to be chosen in such a way that they can grip in the steel reinforcement (C2).
- D** Fix the cover support bracket (1.12) with 2 screws 4.8 x ... in the middle of the rollers.
At SRW > 1450, screw both supports evenly between the rollers.
- E** Push the reinforcement parts (2.5) into the profiles of the rollers, let them snap in and screw on as follows:
 - E.1:** With PVC, use 2 screws 4.8 x ... so that the screws find grip in the steel reinforcement.
For timber, use 2 screws 5 x 50.
 - E.2:** With PVC, use 2 screws 4.8 x ... so that the screws find grip in the steel reinforcement.
For timber, use 2 screws 5 x 16.

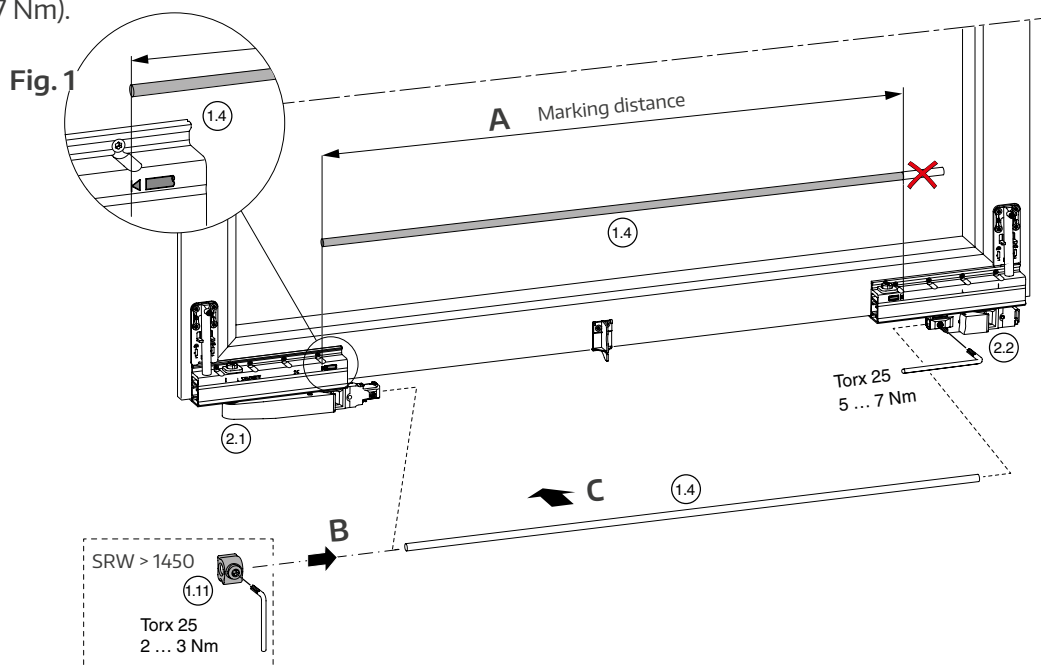


*) Definition of X is required for the later assembly of the guide block

Sash assembly < 160 kg

Assembly of connecting rod

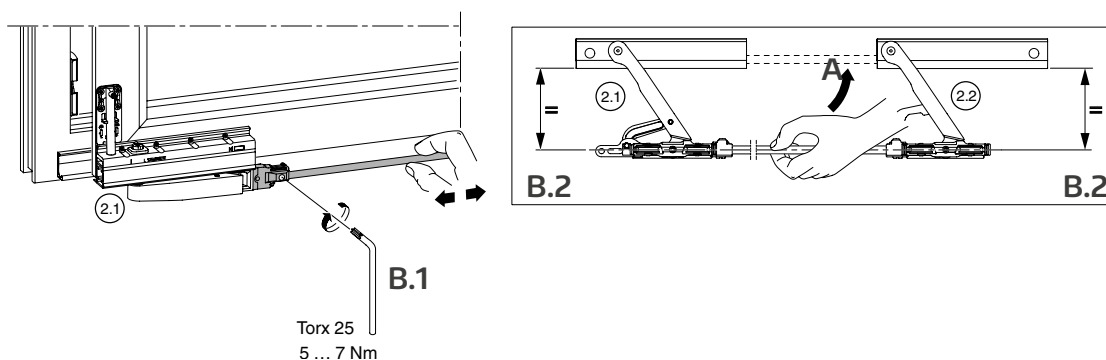
- A** Cut the connecting rod (1.4) to length according to the markings on the rollers (Fig. 1).
- B** At SRW > 1450: Push the support block (1.11) on the middle and attach to the connecting rod (Torx 25, 2 ... 3 Nm).
- C** Insert connecting rod into the roller clutches (2.1) and (2.2). Fix the roller (2.2) to the non-handle side with Torx 25 (5 ... 7 Nm).



Align rollers in parallel

(to ensure an even run-in of the sash into the frame)

- A** Grip the connecting rod in the middle and put it into the closed position.
- B** In this position, tighten the connecting rod on the handle-side roller (2.1) (Torx 25, 5 ... 7 Nm) (B.1). Both rollers (2.1) and (2.2) must now also be parallel in the open position (B.2).



Frame assembly

Assembly of striker plates and stop absorber Diagram A

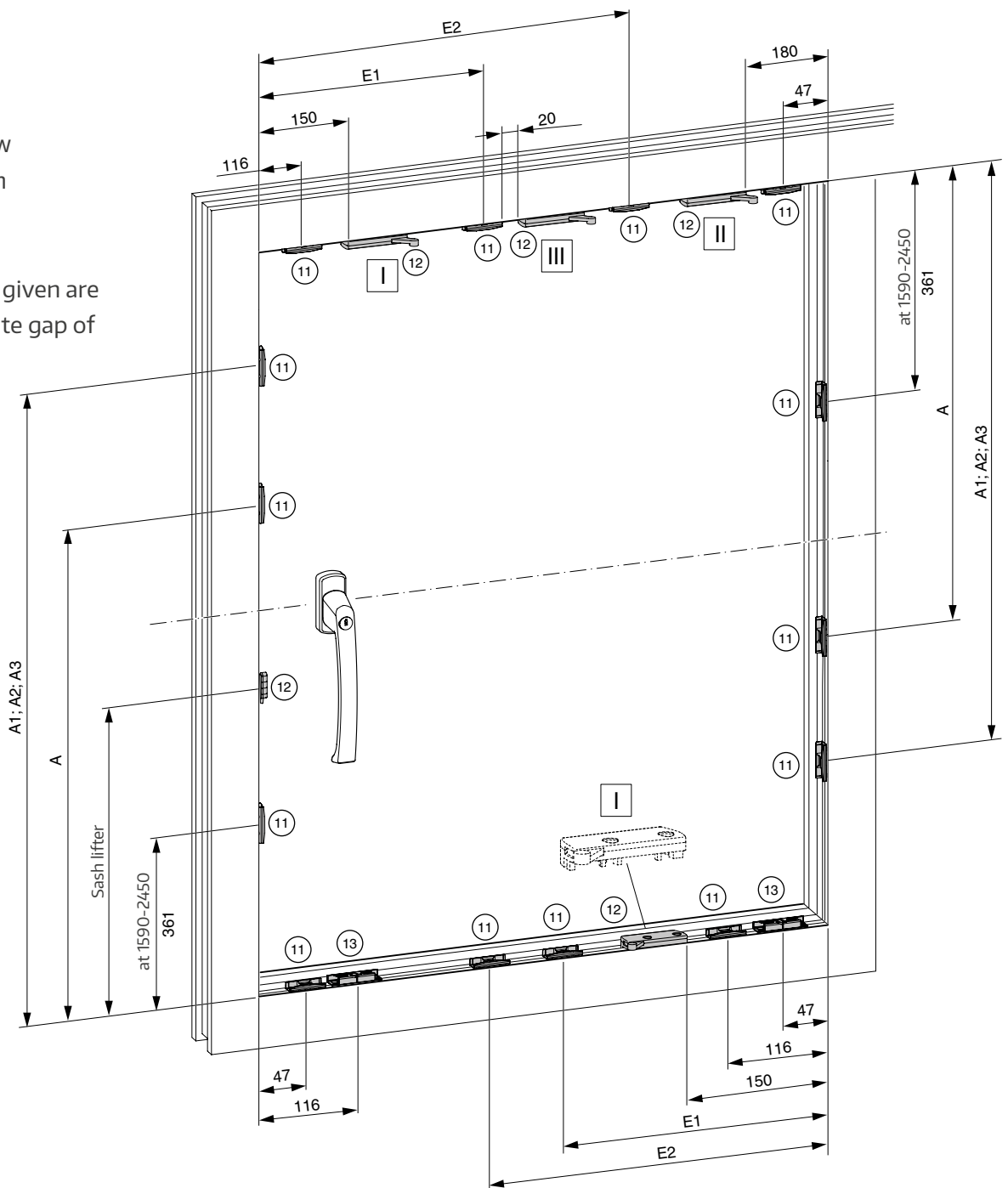
Position and fix striker plates (11) / (13) according to the Figure / Table as well as stop absorbers according to the illustration. Diagram C: see cross-section «Diagram C» (p. 46 - 47).



Must be used:
hardware screw
4.0 x ... d_k 7 mm



All dimensions given are
valid for a rebate gap of
12 mm.



Frame assembly

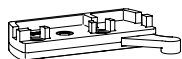
Assembly of striker plates and stop absorber Diagram A

Positioning of striker plates, sash lifters for fixed drive gear 12 mm rebate gap

Drive gear size	SRH	Sash lifter	A	A1	A2	A3	Handle set without rebate
1090	841 - 1090	264	586	-	-	-	400
1340	1091 - 1340	364	686	-	-	-	500
1590	1341 - 1590	464	-	921	-	-	600
1700	1591 - 1700	564	-	1021	-	-	700
1950	1701 - 1950	914	-	796	1466	-	1050
2200	1951 - 2200	914	-	796	1466	-	1050
2450	2201 - 2450	914	-	796	1466	1966	1050

Positioning of striker plates, sash lifters for width connector 12 mm rebate gap

Width connector size	SRW	E1	E2
Size 1	620 - 900	330	-
Size 2	901 - 1150	565	-
Size 3	1151 - 1400	800	-
Size 4	1401 - 1650	565	1035



I always to assemble

II Recommended at FG \geq 80 kg	III Recommended at FG > 120 kg
\geq 30 kg/m ² and SRW 1250 ... 1550 mm	\geq 30 kg/m ² and SRW > 1550 mm
\geq 40 kg/m ² and SRW 900 ... 1450 mm	\geq 40 kg/m ² and SRW > 1450 mm
\geq 50 kg/m ² and SRW 750 ... 1150 mm	\geq 50 kg/m ² and SRW > 1150 mm
\geq 60 kg/m ² and SRW 620 ... 1000 mm	\geq 60 kg/m ² and SRW > 1000 mm

Frame assembly

Assembly of guide track and roller track

Assembly of guide track on frame installation

- A Cut to length the guide track ^(1.1). Distance between sash outer edges and the slide and fixed sashes minus 8 mm.
- B Assemble the guide track using screws 4.0 x ... (d_k 7), as shown (B.1).



Important Information:

The screw-heads must not protrude above the guide track!

If the screw-heads are protruded, this results in material damage (B.2)!

Oil the sliding surface of the guide track over the entire length of the track (B.3).

- C Cut the cover profile ^(1.3) to the dimensions of the guide track and click onto the guide track.

Assembly of the roller track on the frame installation

- D Cut the roller track ^(1.2) flush to the sash outer edges of the slide and fixed sashes.
- E Fix the roller track with 35 + 1 mm distance from the bottom edge of the roller track to the bottom edge of the sash frame with screws 4.0 x ... (d_k 7) on the frame installation (E.1).



Important Information:

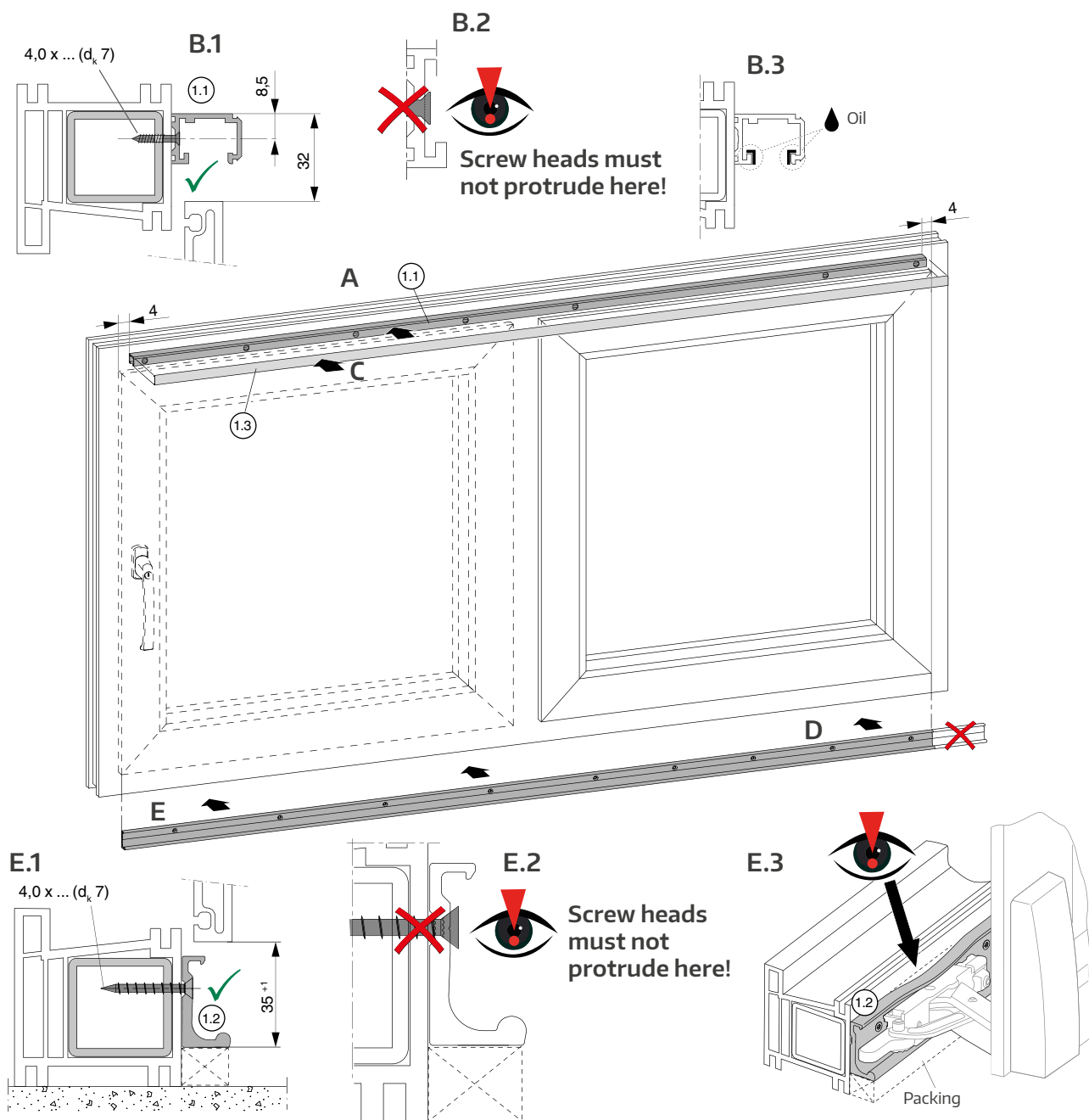
The screw-heads must not protrude above the roller track!

The screw-heads are protruded, this results in material damage (E.2)!

In the case of visible deformations or unusual (clearly audible) noises in the area of the roller track, this must be continuously packed to ensure load transmission (E.3).

Frame assembly

Assembly of guide track and roller track



Sash and frame assembly tilt stay

Assembly of closing initiator for tilt stays



The transport protection device on the closing initiator cannot be removed until after assembly on the tilt stay. This is necessary to keep the position of the damper unchanged.

A Check if the embossing of FG200 is present.

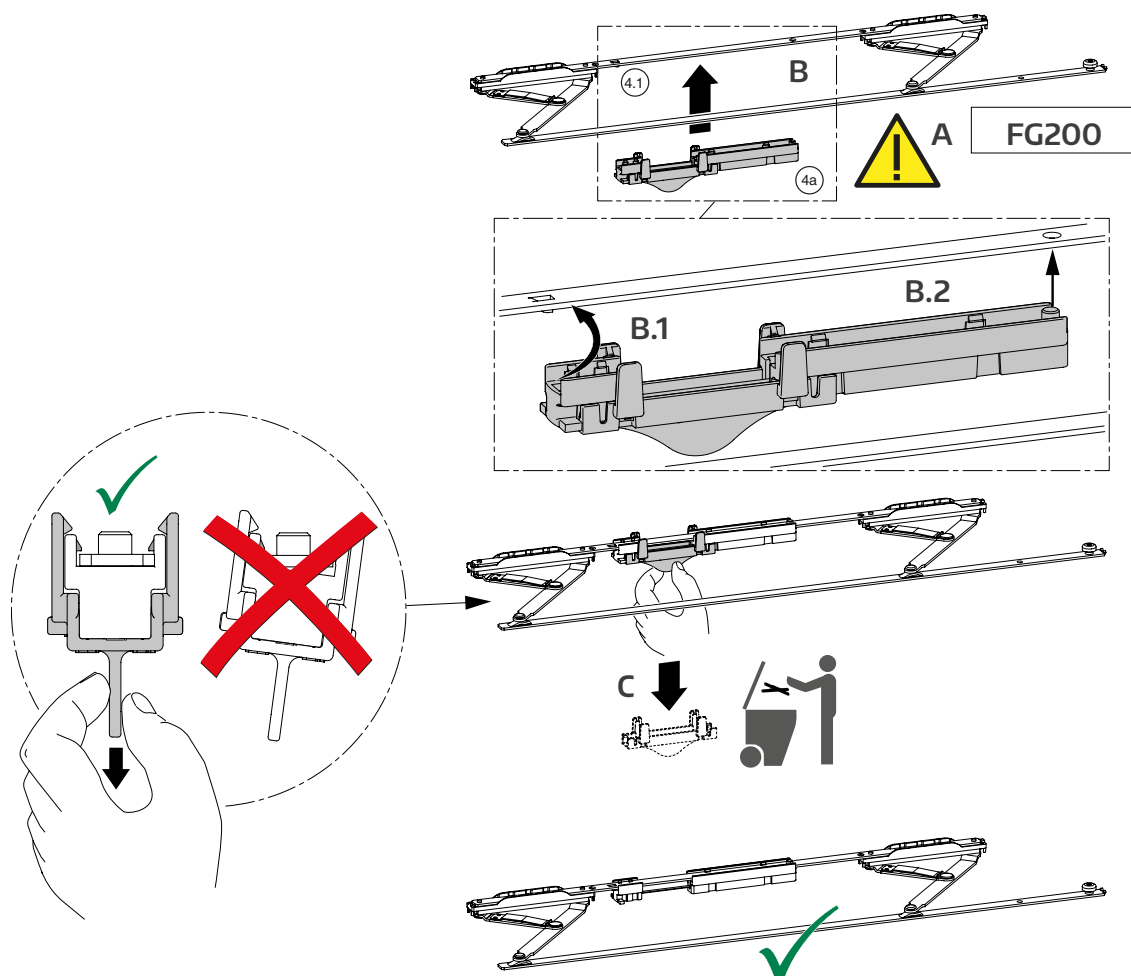


WARNING!

If the embossing is not present, the sash weight must not exceed 160 kg. Otherwise, it may result in serious bodily injury.

B Set the control module / tilt damper ^(4a) as shown from below onto the nose of the tilt stay ^(4.1) (B.1) and push upwards (B.2) until it snaps into the tilt stay (audible clicking noise!).

C Remove transport protection device!



Sash and frame assembly tilt stay

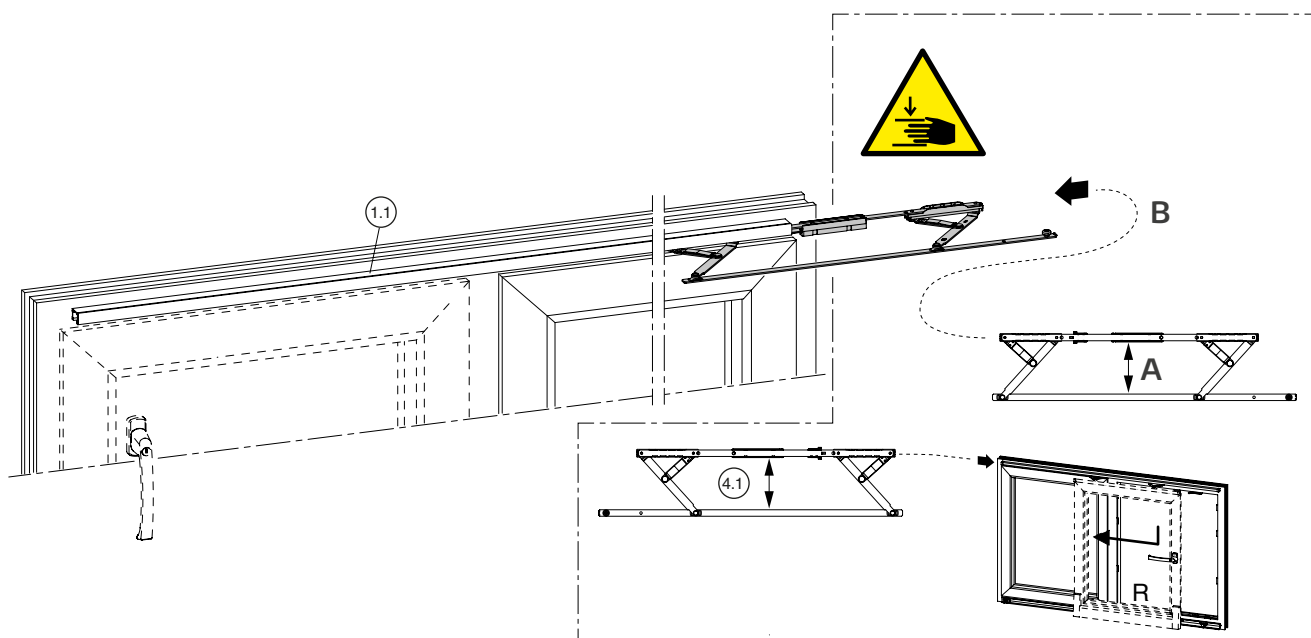
Assembly of the tilt stay into the guide track

Open the tilt stay ^(4.1) (A) and push as pictured into the guide track ^(1.1) (B).



ATTENTION!

When opening and closing the tilt stays ^(4.1), there is the risk of squeezing and clamping!



Sash and frame assembly tilt stay

Hinging sashes with tilt stay

Set the sash frame on the roller track

A Turn handle to slide position. Lift the sash slightly tilted inwards and use the rollers to lower onto the front edge of the roller track (1.2) (Fig. 1). Check the position of the rollers by pushing the sash and, if necessary, correct them.

Connect sash frames with guide track

B Push the tilt stay (4.1) into the stay-connecting profile (4.2).

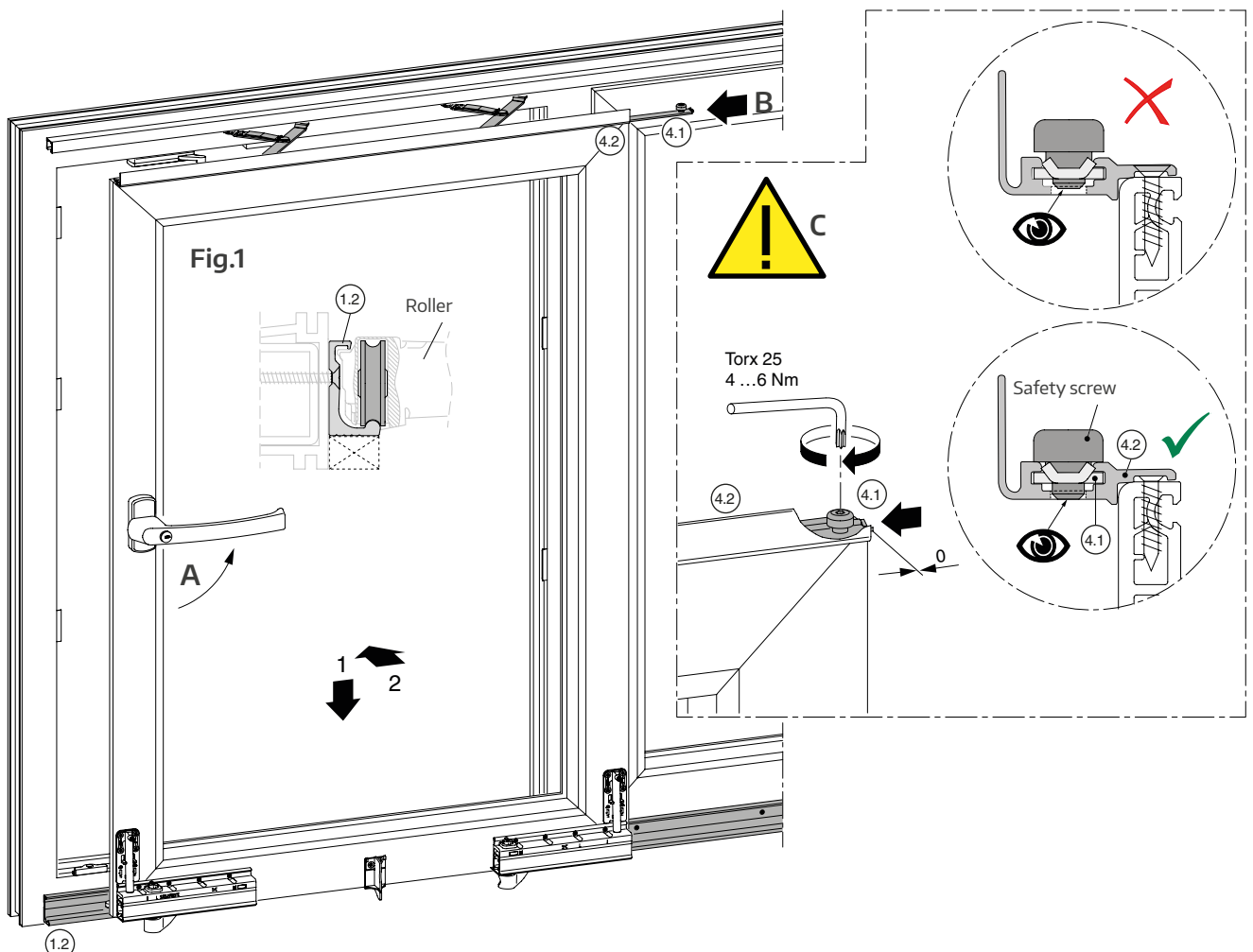
C Push the tilt stay (4.1) flush to the sash edge, tighten the safety screw (Torx 25, 4...6 Nm).



WARNING!

The safety screw must sit form-fitting in the hole of the stay-connecting profile (4.2). If the safety screw is not visible, the window sash is not adequately secured.

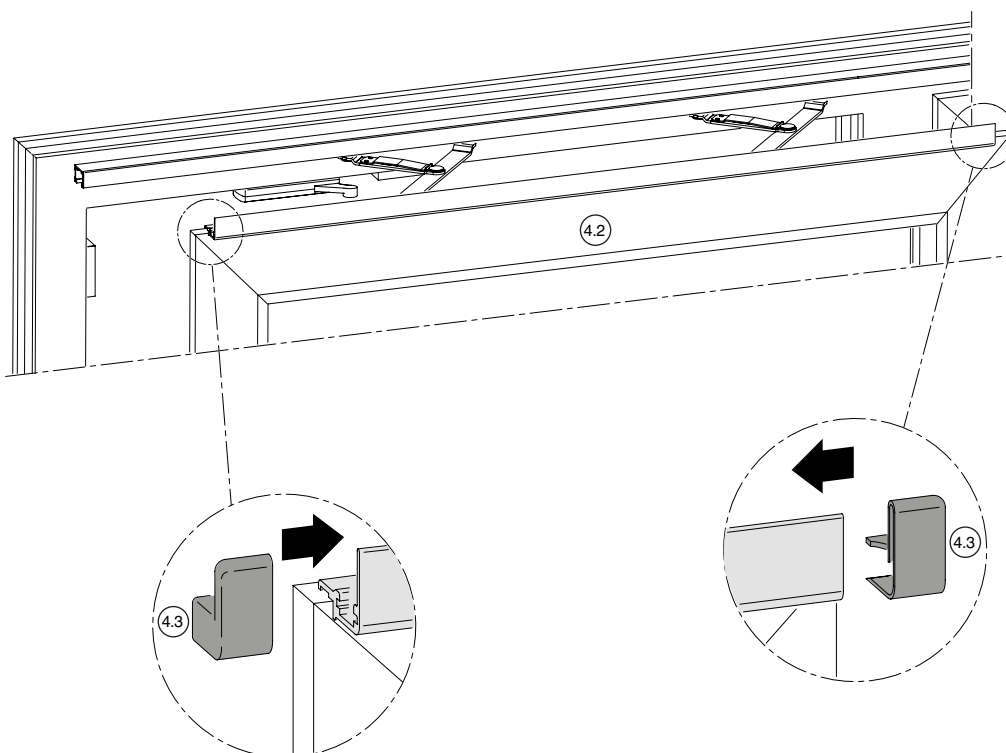
Serious bodily injuries can occur!



Sash and frame assembly Tilt stay

Assembly of the cover caps, stay-connecting profile, tilt stay

- A Insert the cover caps (4.3) left and right on the ends of the stay-connecting profile (4.2).



Sash and frame assembly scissor slider

Hinging sashes with scissor sliders

Set the sash frame on the roller track

A Turn handle to slide position. Lift the sash slightly tilted and use the rollers to lower onto the front edge of the roller track (1.2). Check the position of the rollers by pushing the sash and, if necessary, correct them.

Connect sash frames with guide track

B Slide the stay cams from below into the centre slider openings until they snap into the sliders (audible clicking noise!) (1). Correctly fixed position of the rotary cams in the sliders (2).

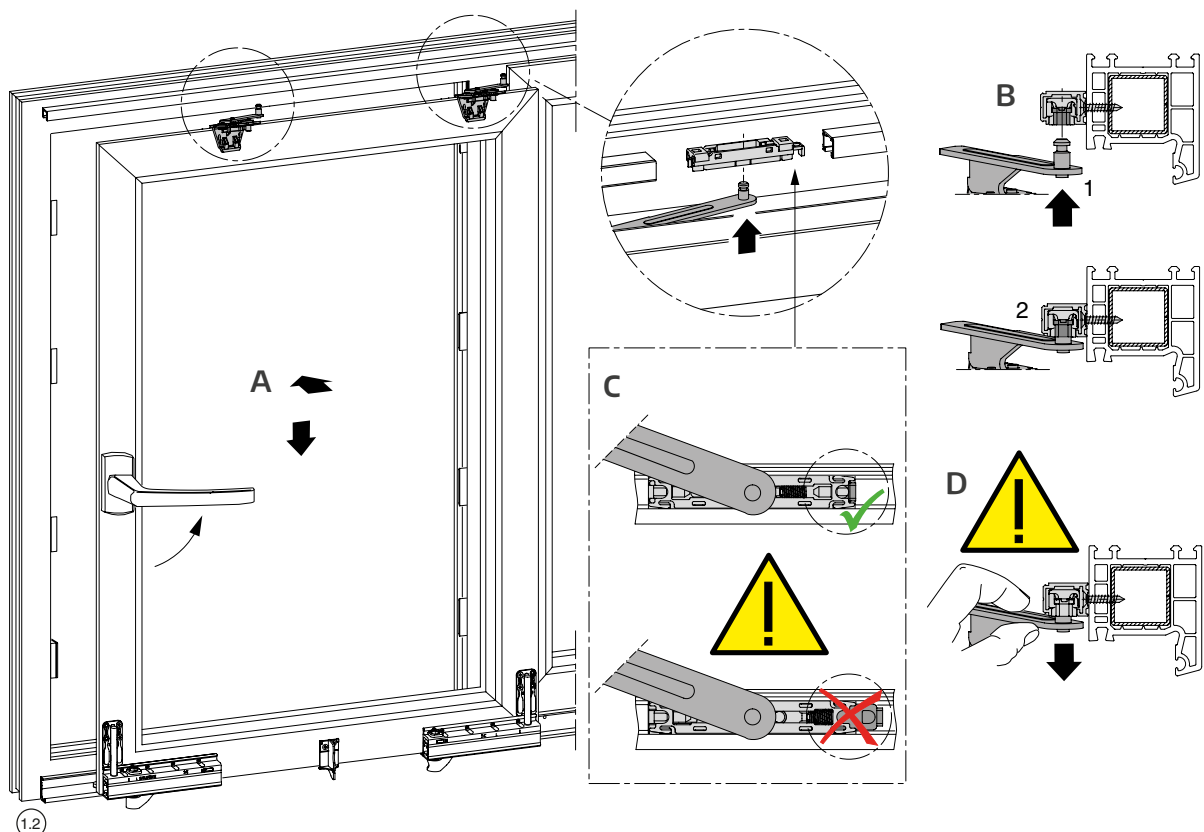
C If properly assembled, the side safety sliders are aligned flush to the edges of the slider housing.

D



WARNING!

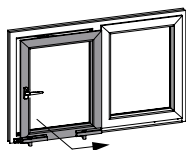
If the stay cams are not securely positioned in the sliders, the window sash is not secured against falling out. Serious bodily injuries can occur! Be sure to check carefully the secure connections by pushing/pulling the scissor stay catch down!



Sash and frame assembly scissor slider

Hinging sashes with scissor sliders

Note on unhinging the sash

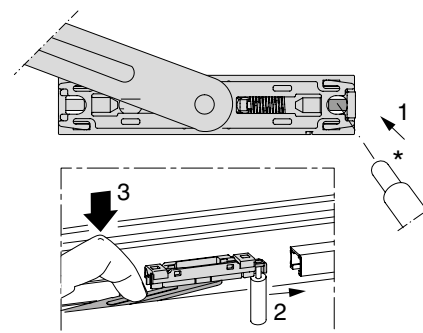


Open the sash. Put the roller safety device in the released position (P. 39, A). Push the release pin from below flush into the roller opening next to the safety roller (1).

Pull out the safety roller with the release pin sideways from the roller (2).

Push out the stay cam downwards from the roller (3). Repeat the process on the second roller. Tilt the released sash and lift it off the roller track (without Fig.).

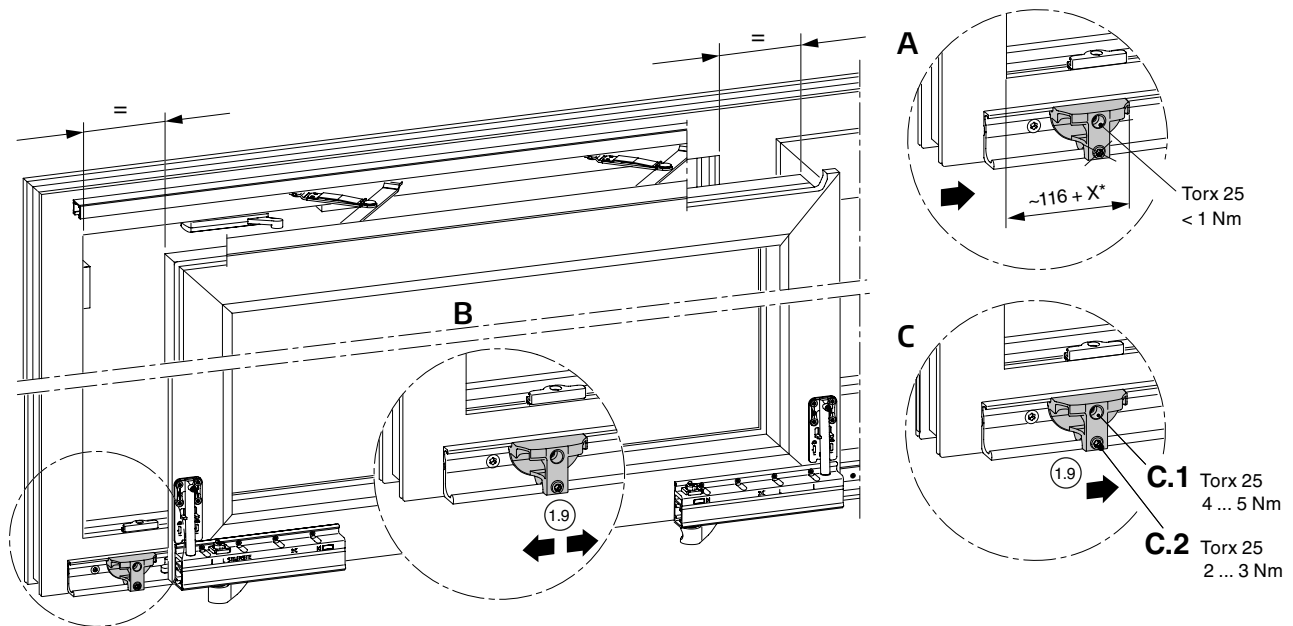
^{*)} Contained in basic package.



Sash and frame assembly

Assembly of the guide block

- A** Position the guide block (1.9) on the handle side approx. $116 \text{ mm} + X^*$ from the outside edge of the roller track. Then, tighten only slightly with the top screw (Torx 25, $< 1 \text{ Nm}$).
- B** Put the sash in the tilt position and check the rebate gap on both sides (12 mm). If necessary, reposition the guide block.
- C** Tighten the top screw on the guide block tightly (Torx 25, $4 \dots 5 \text{ Nm}$) (C.1). Then, tighten the bottom screw (Torx 25, $2 \dots 3 \text{ Nm}$) (C.2).



* Definition of X: see Page 22 "Assembly of rollers"

Sash and frame assembly

Horizontal orientation of the sash

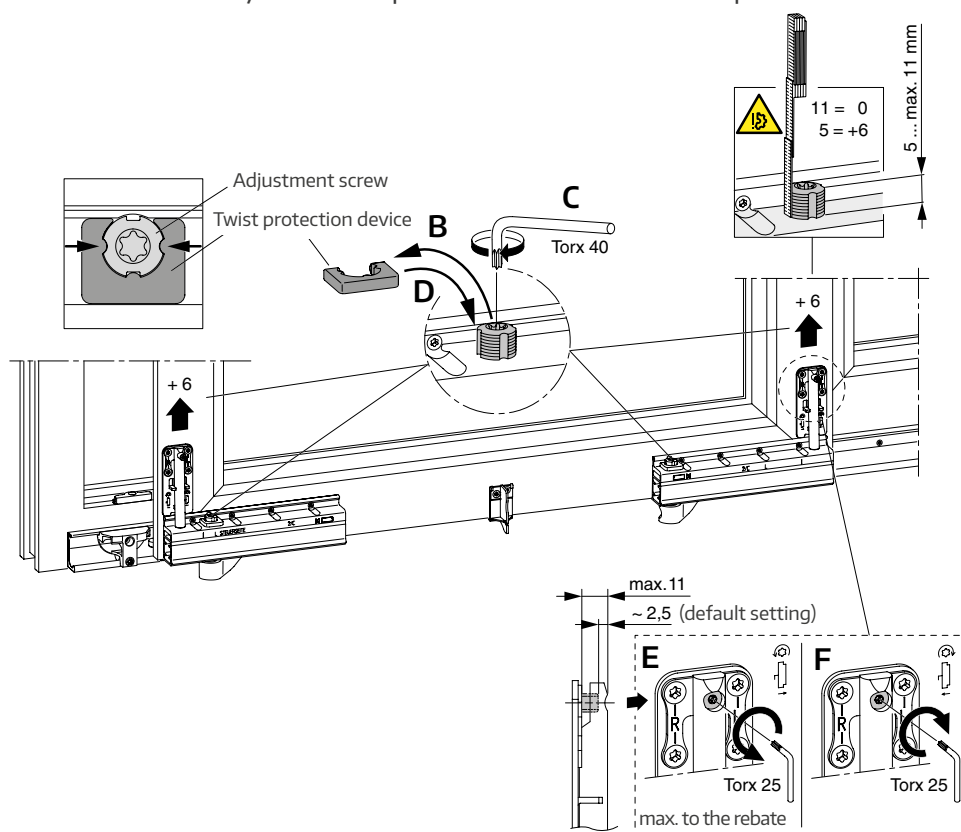
- A Check the rebate gap at the top and bottom on both sides (without Fig.).
- B Remove twist protection devices.
- C Lift the rollers using adjustment screws (Torx 40) to align the sash.



ATTENTION!

The adjustment screws must only be screwed out max. 11 mm. If the adjustment screws are screwed out more than 11 mm, this destroys the rollers!

- D Replace the twist protection devices on the adjustment screws, and slightly correct the alignment of the adjustment screws beforehand if necessary. The twist protection devices must sit parallel to the outside edge of the rollers.



Set reinforcement parts

(to optimise easy insertion of the sash into the frame)

- E Making insertion easier.
- F Making removal easier.



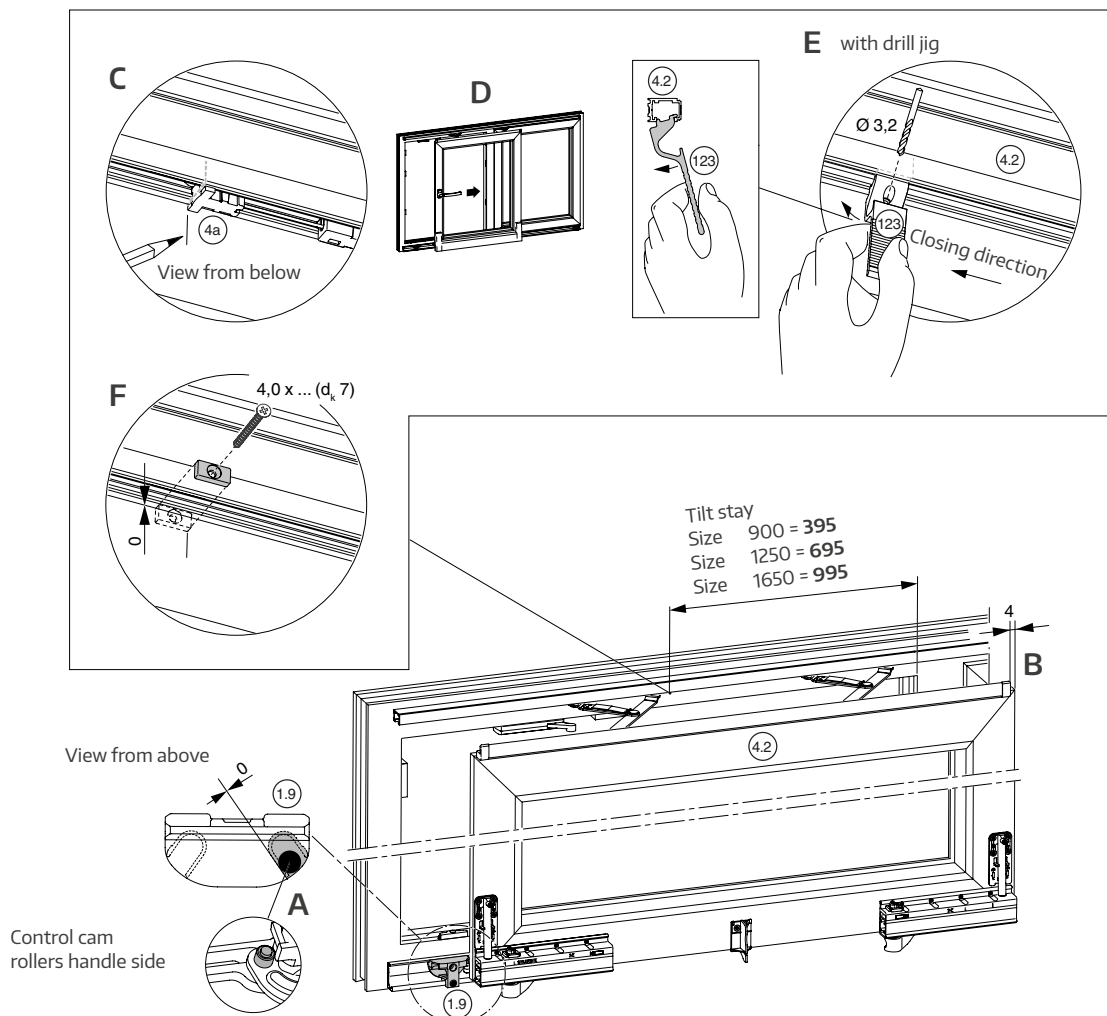
Important Information:

From the default setting, both reinforcement parts should be adjusted evenly only in the direction of E. If the adjustment towards E is too much, the rollers may be ground down depending on the profile and sash weight. In this case, turn the adjustment screw until it runs freely, back towards F.

Sash and frame assembly

Assembly of rebate for control module / tilt damper (upper) – tilt stay

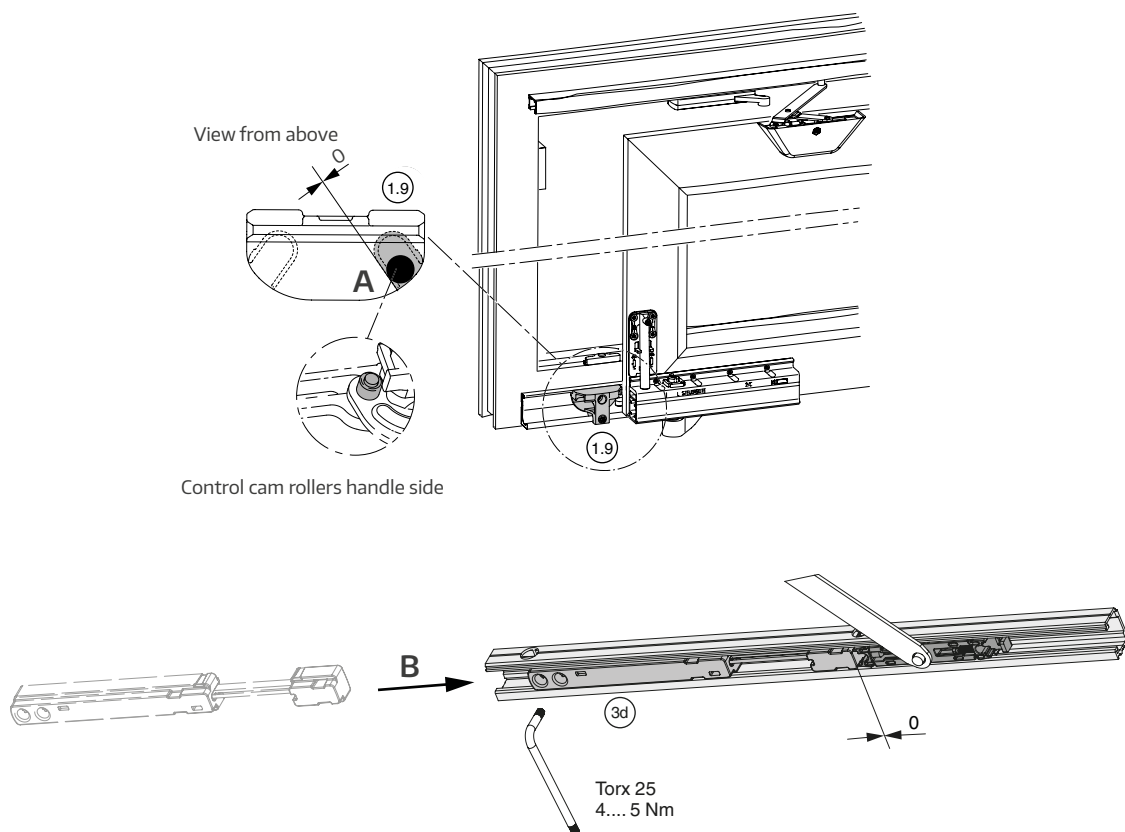
- A** Push the sash down onto the guide block (1.9) until the guide cam of the leading roller (2.1) (handle side) touches the inlet curve but does **NOT** enter it.
- B** Important: The stay-connecting profile (4.2) must be positioned correctly (4 mm of rebate width).
- C** Align the marking on the control module / tilt damper (4a) on the frame installation.
- D** Open the sash.
- E** With drill jig: Position the drill jig, for rebate closing initiator (123) in the closing direction, behind the marking (!) and clip-into the guide track. Drill with $\varnothing 3.2$ mm hole.
- F** Fix the rebate for control module / tilt damper underneath the guide track with screw 4.0 x ... (d_k 7) on the frame installation. Alternatively, you can also measure the position of the rebate locking initiator. See dimensions in graphic. The dimensions refer to 12 mm rebate gap, 20 mm rebate width and correctly positioned stay-connecting profile (4.2) (4 mm of rebate width).



Sash and frame assembly

Assembly of rebate for control module / tilt damper – scissor slider

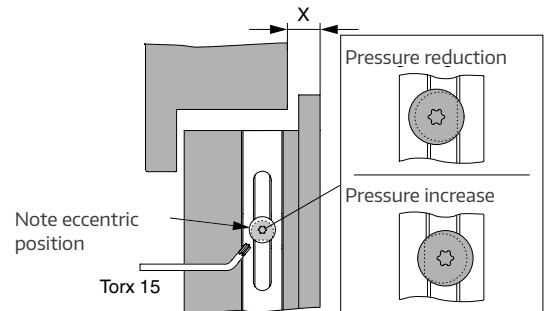
- A** Push the sash down onto the guide block (1.9) until the guide cam of the leading roller (2.1) (handle side) touches the inlet curve but does **NOT** enter it.
- B** Push the control module / tilt damper (3d) into the guide block right up to the slider scissor arm and fix in place.



Sash and frame assembly

Adjusting the sash pressure (rebate height)

Check closing behaviour of the sash.
Adjust the sash pressure by setting the rebate height (X) with Torx 15.

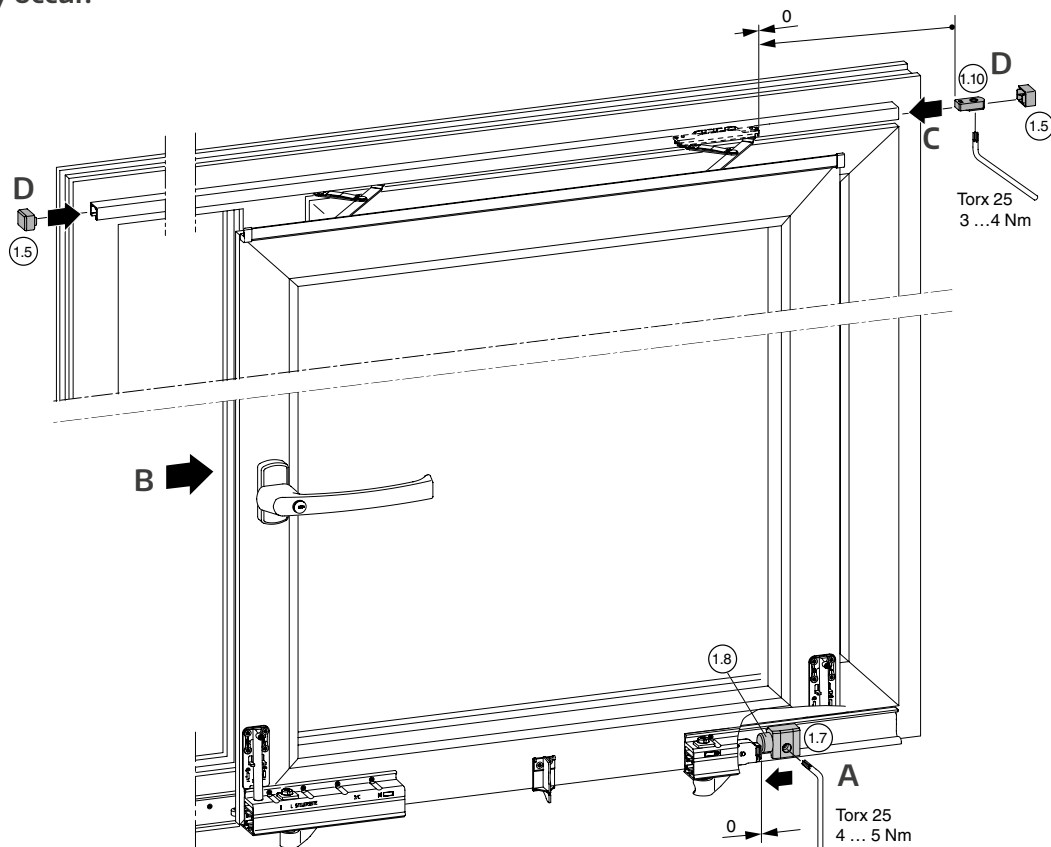


Assembly of buffer stops

- A Screw in the lower buffer stop (1.7) with rubber mushroom buffer (1.8) in the desired position on the roller track (Torx 25, 4 ... 5 Nm).
- B Push the sash frame right up to the buffer stop.
- C Insert the upper buffer stop (1.10) right up to scissor slider in the guide track and screw in tightly (Torx 25, 3 ... 4 Nm).
- D Insert the cover caps (1.5) on the ends of the guide track.



If the sash does not evenly move against the upper and lower buffer stops, material damage may occur.



Sash and frame assembly

Assembly of covers

Activate the roller safety devices

A Push the roller safety device (1) backwards on both rollers until it snaps in at the position shown (2).



WARNING!

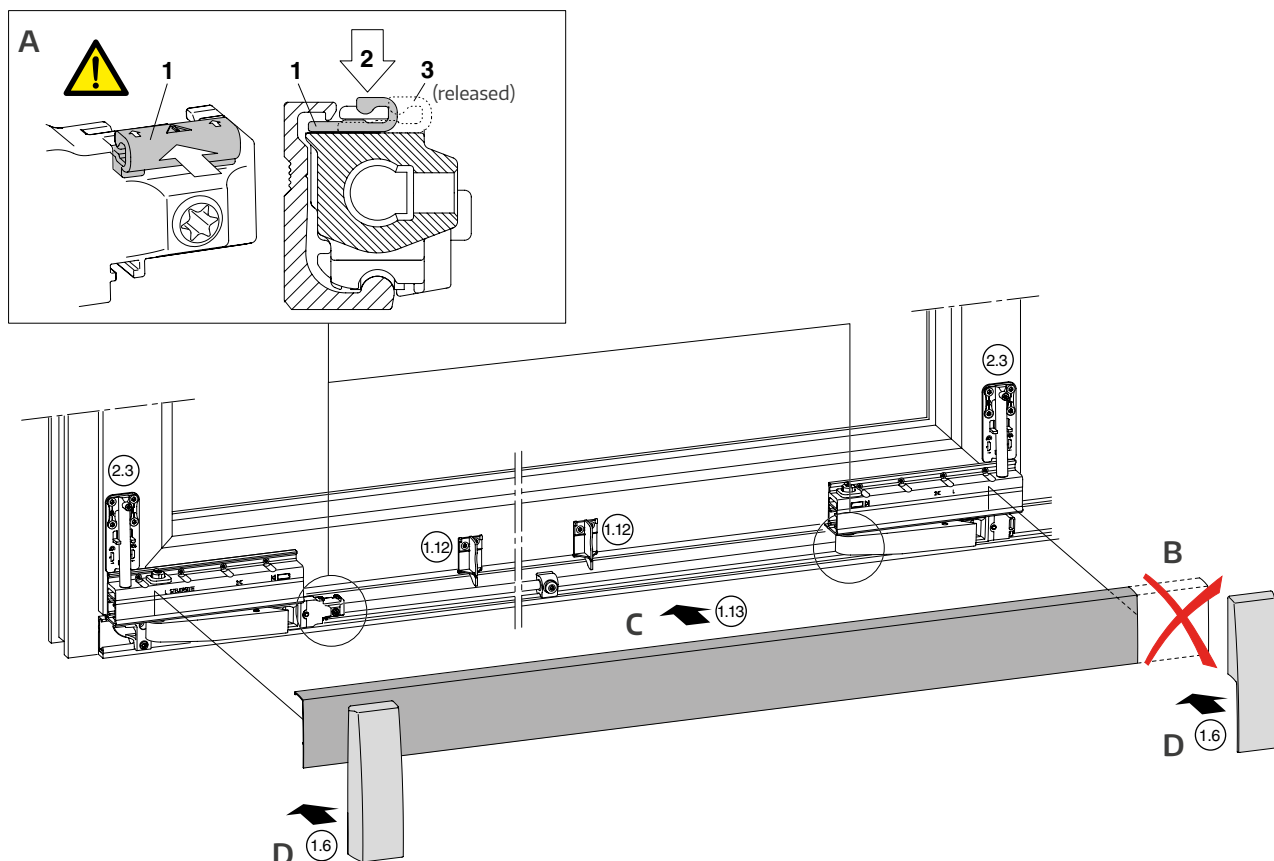
If the roller safety device is not correctly positioned or missing from the position shown (2), the window sash is not adequately secured (3). Serious bodily injuries can occur!

Assemble roller covers

B Cut the cover profile (1.13) to length according to the markings on the rollers.

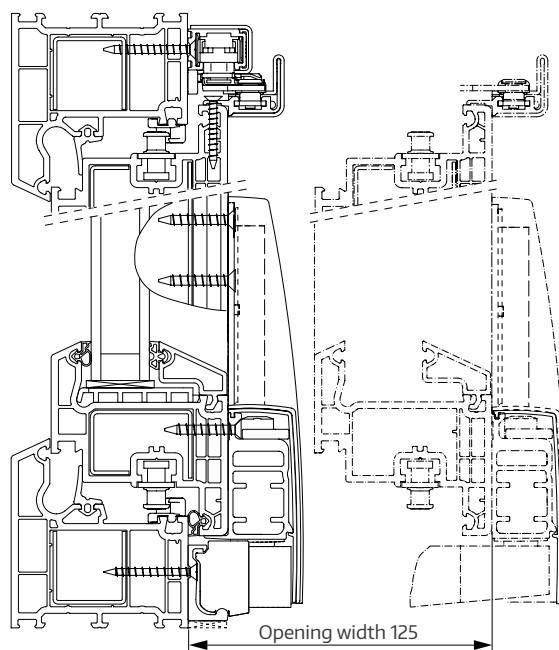
C Align the cover profile to the roller markings and clip onto the roller profiles as well as the cover support bracket(s) (1.12).

D Clip on the cover caps at the bottom left (1.6) Clip on the cover caps at the bottom left parts (2.3).

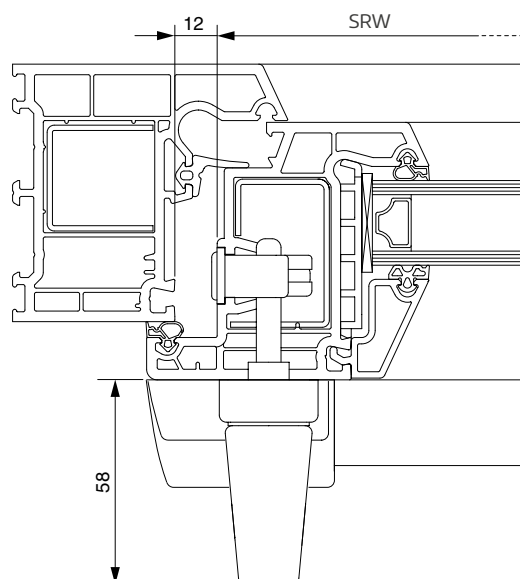


Cross-sections

Opening width 125



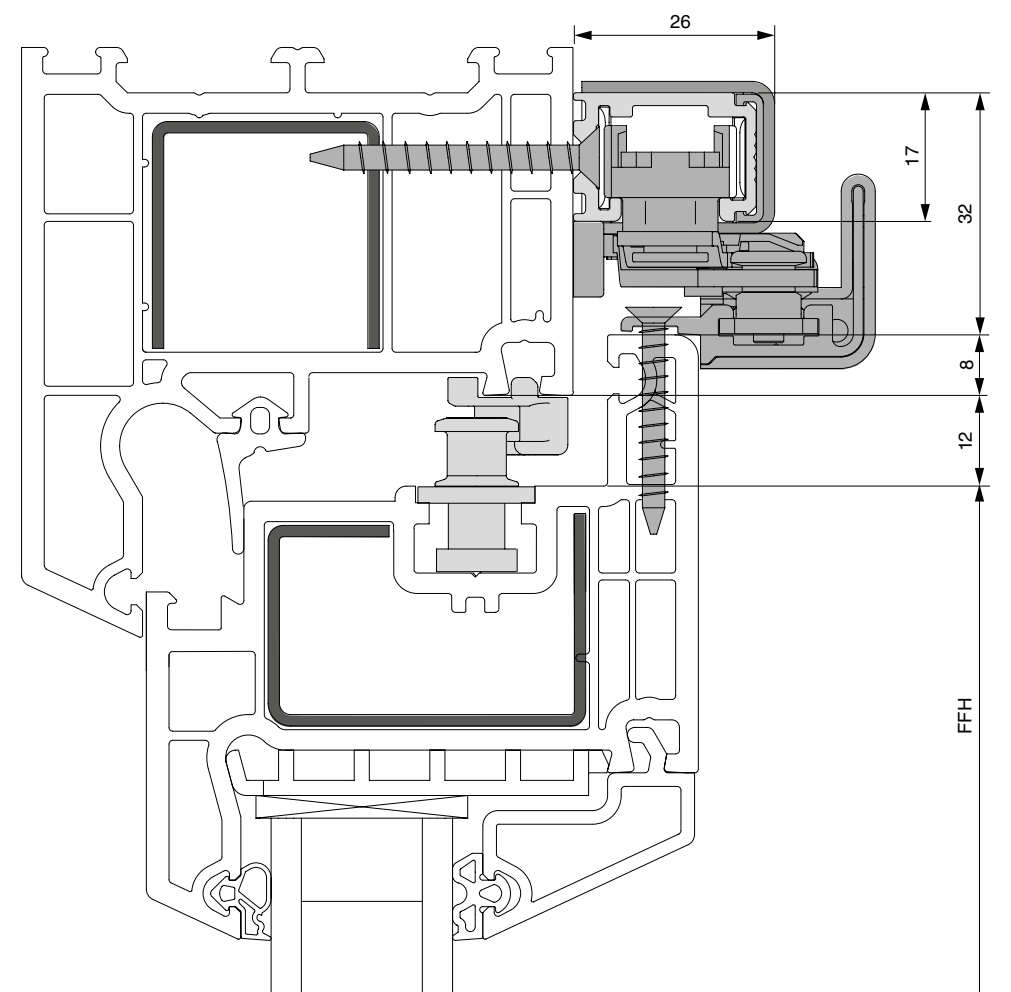
Horizontal cross-section handle EG



Cross-sections

Vertical cross-section above tilt stay

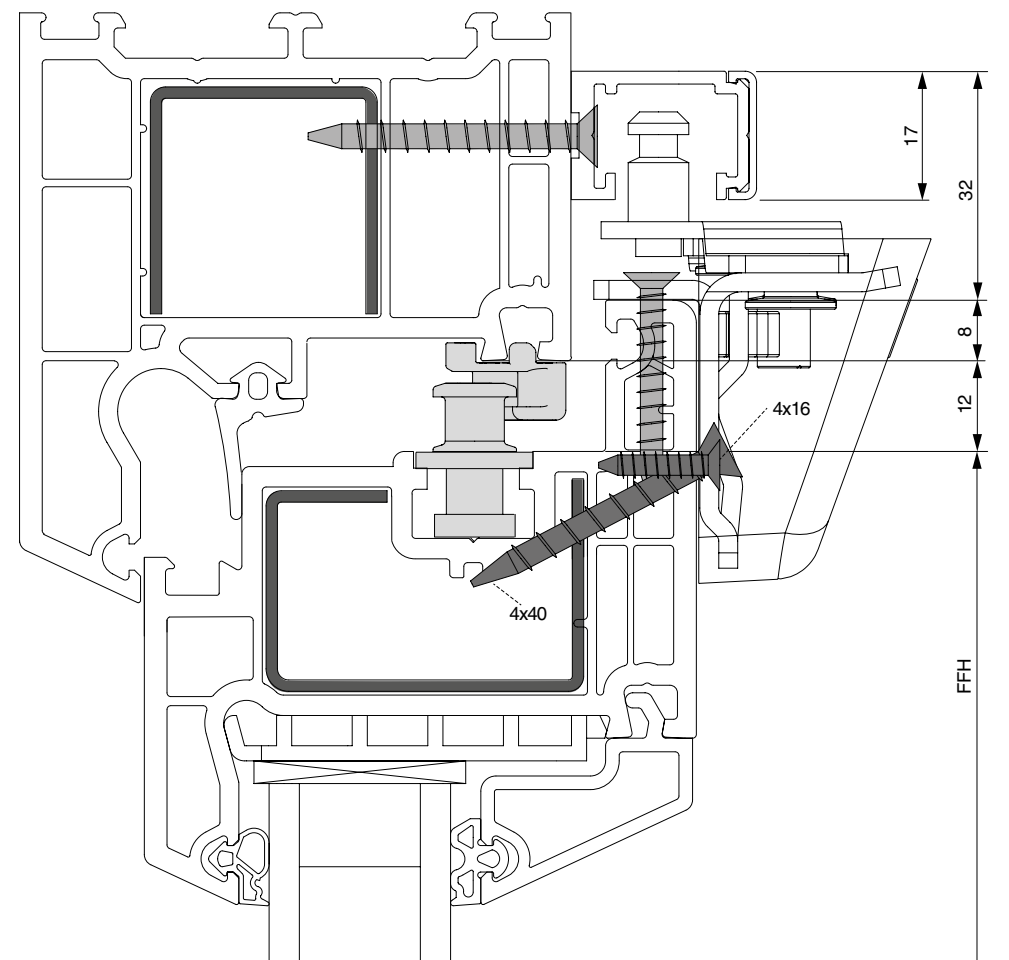
Scale 1:1



Cross-sections

Vertical cross-section above scissor slider

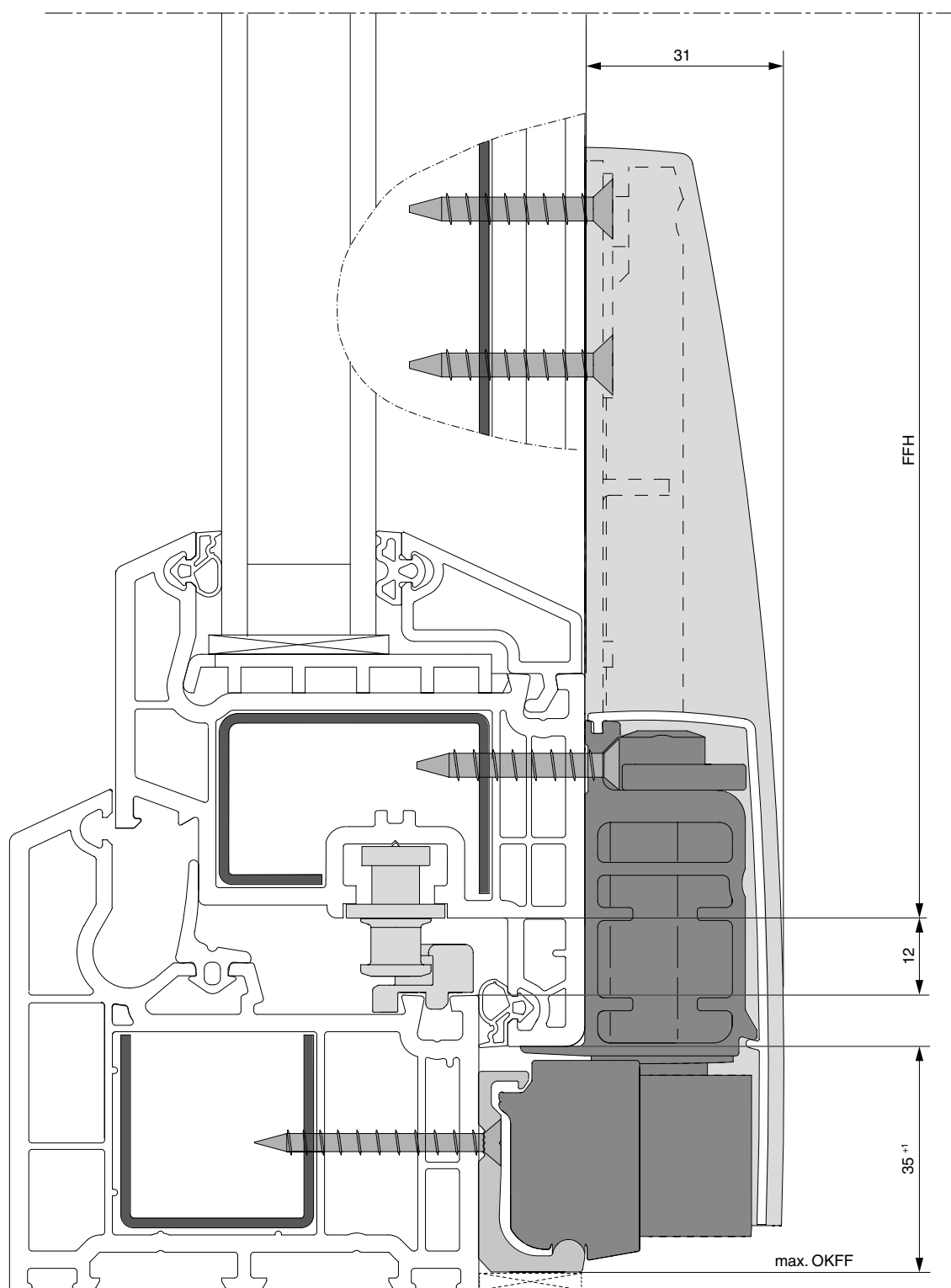
Scale 1:1



Cross-sections

Vertical cross-section below

Scale 1:1



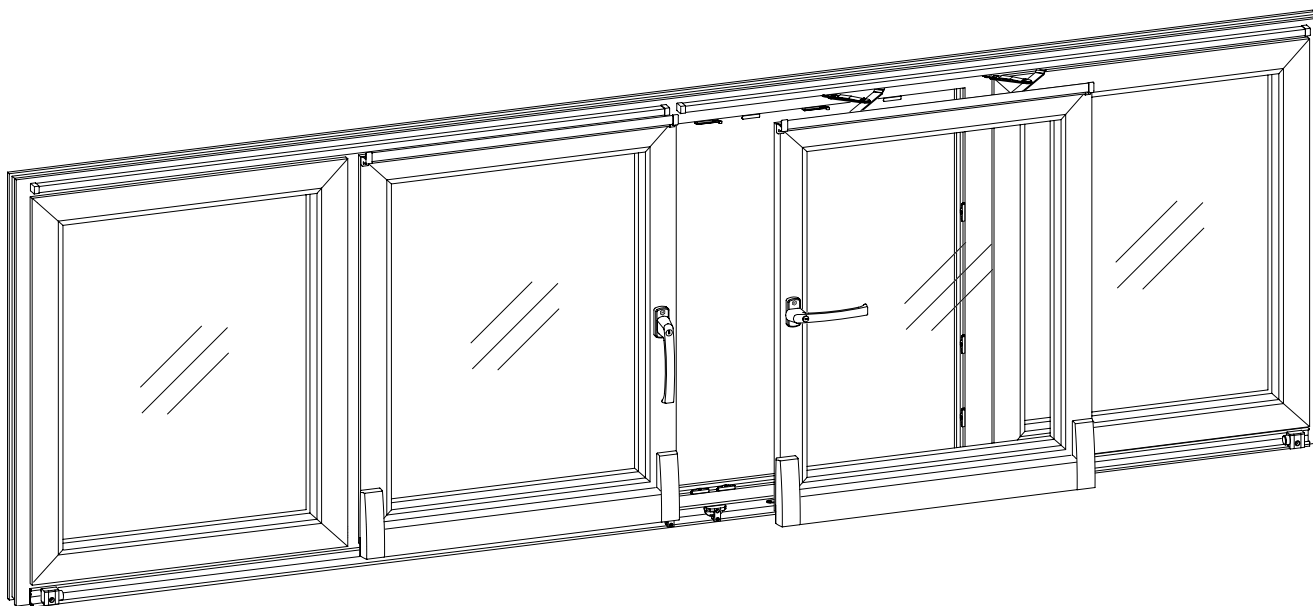
Scheme C

Assembly of guide track

If insufficient space:

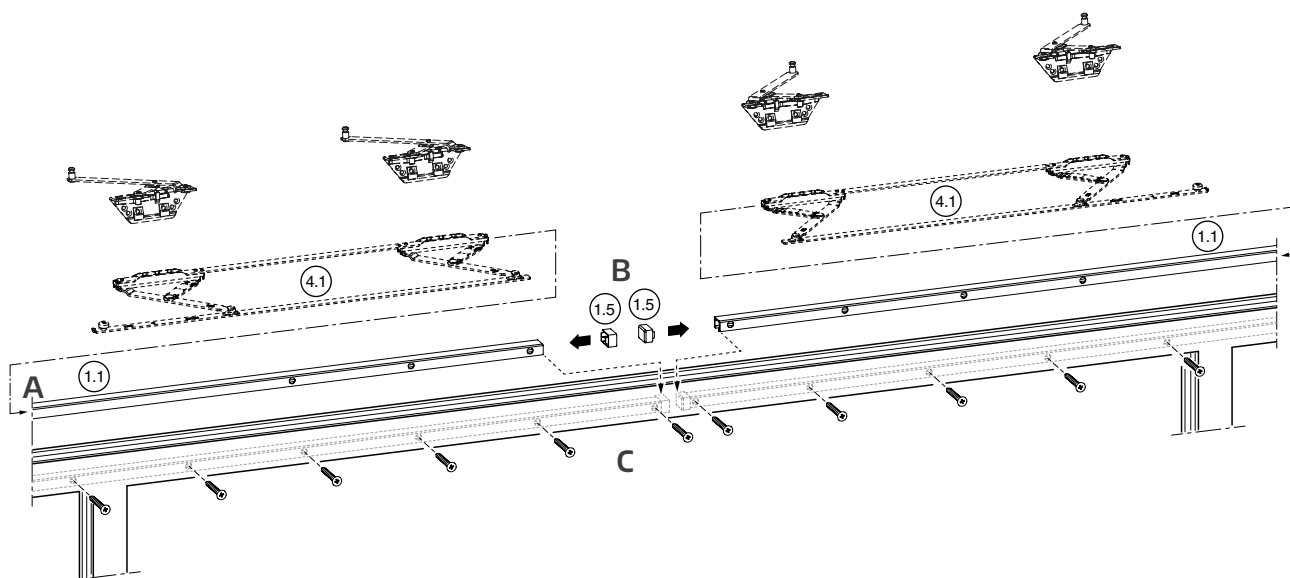
- A Push both tilt stays (4.1) sideways into the guide tracks (1.1).
- B Insert the cover caps (1.5) on the ends of the guide tracks.
- C Assemble the guide tracks using screws 4.0 x ... (d_k 7) onto the frame installation.

See also "Assembly of guide track" section.



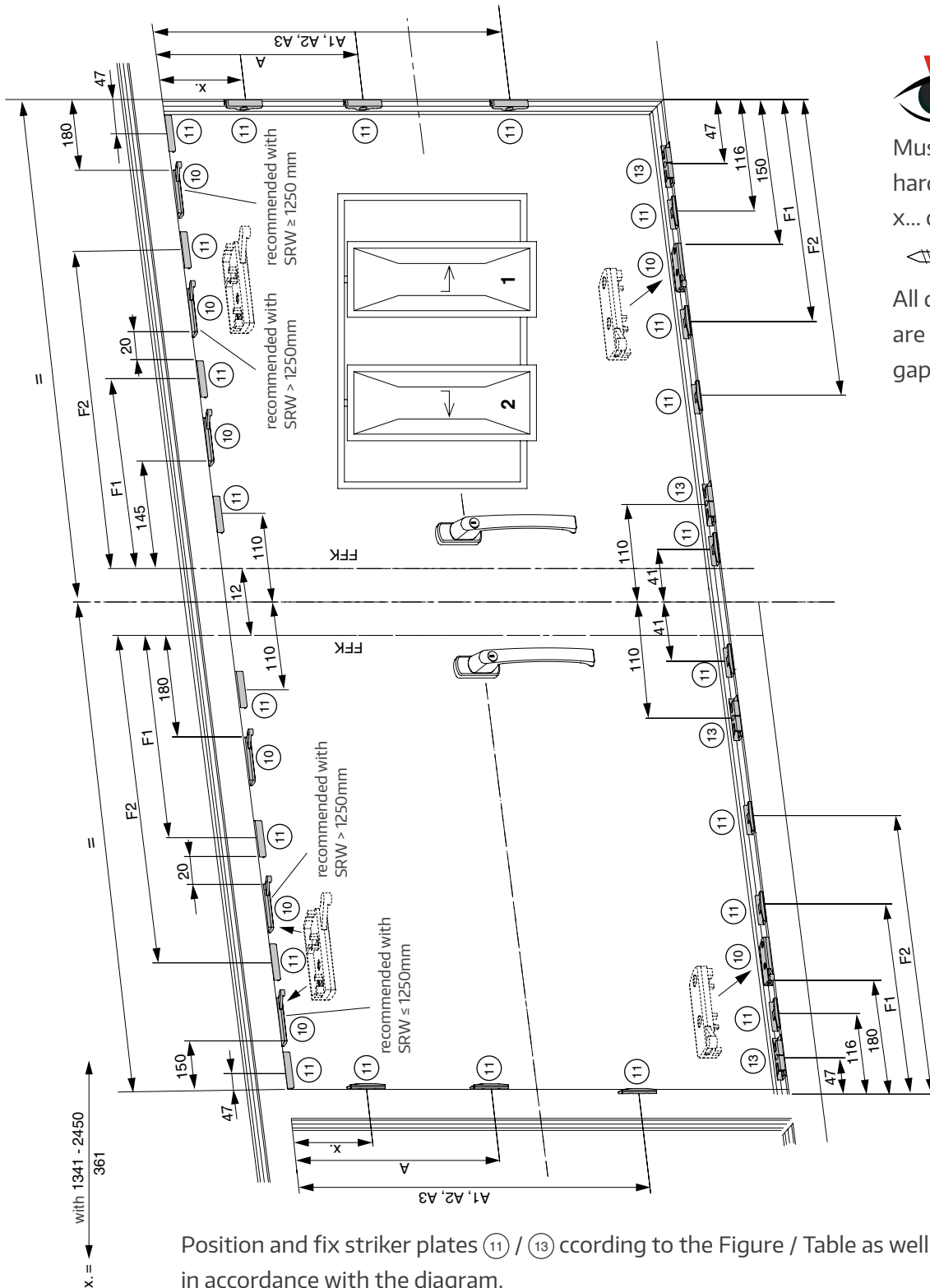
Scheme C

Assembly of guide track



Frame assembly

Assembly of striker plates and stop absorber Diagram C



Position and fix striker plates (11) / (13) according to the Figure / Table as well as stop absorbers in accordance with the diagram.



Frame assembly

Assembly of striker plates and stop absorber Diagram C

Positioning of striker plates, sash lifters for fixed drive gear 4 mm rebate gap

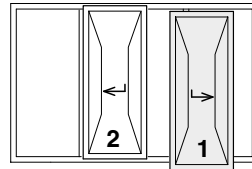
Drive gear size	SRH	A	A1	A2	A3	Handle position without rebate
1090	841 - 1090	544	-	-	-	400
1340	1091 - 1340	644	-	-	-	500
1590	1341 - 1590	-	879	-	-	600
1700	1591 - 1700	-	979	-	-	700
1950	1701 - 1950	-	754	1424	-	1050
2200	1951 - 2200	-	754	1424	-	1050
2450	2201 - 2450	-	754	1424	1924	1050

Positioning of striker plate for width connector 12 mm rebate gap

Width connector	SRW	F 1	F 2
Size 1	620 - 900	324	-
Size 2	901 - 1150	559	-
Size 3	1151 - 1400	794	-
Size 4	1401 - 1650	559	1029

Scheme C

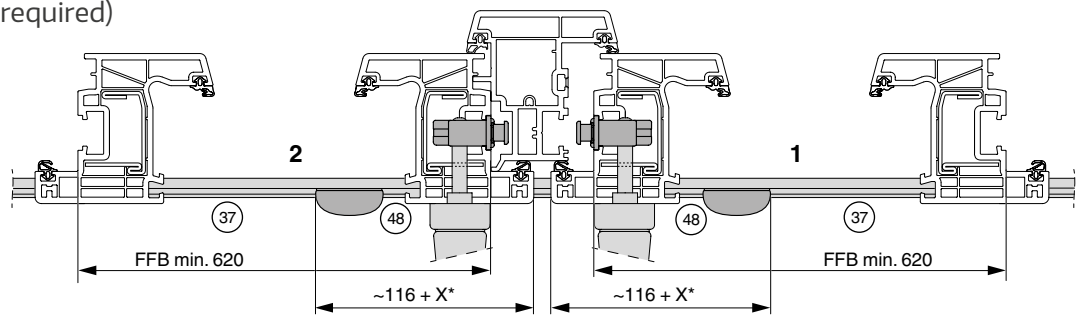
Horizontal cross-sections



*) Definition of X: see Page 22
"Assembly of rollers"

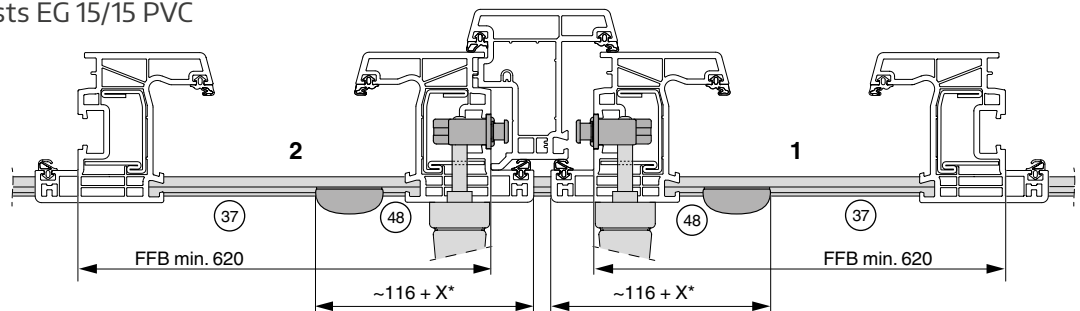
Variant 1:

PVC – with loose posts EG 15/15
(special striker plate required)



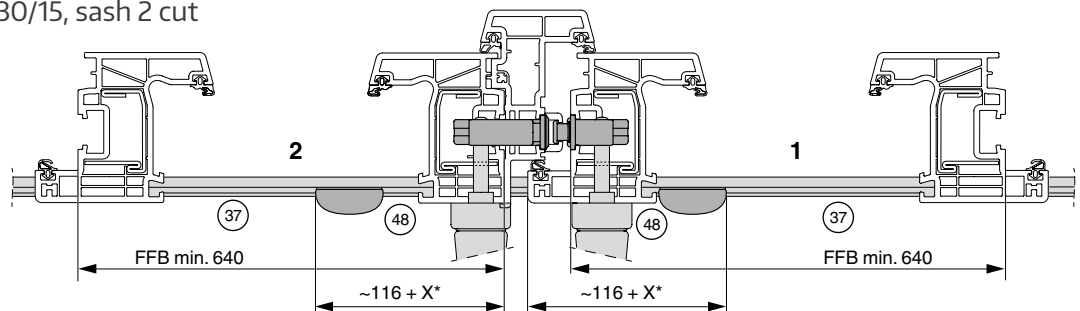
Variant 2:

PVC – with loose posts EG 15/15 PVC



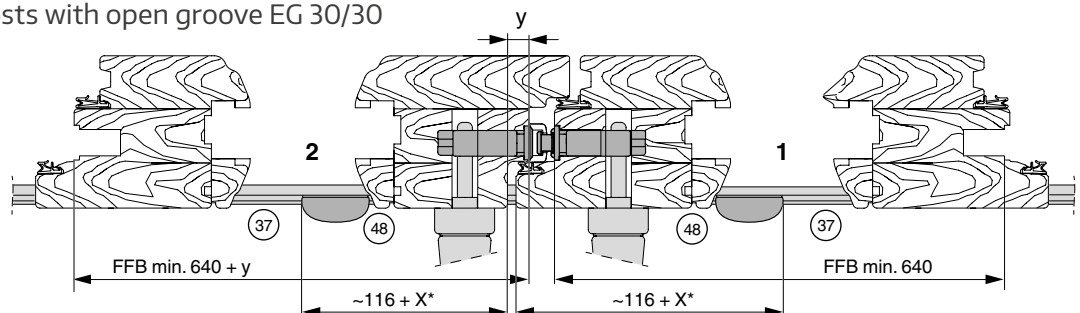
Variant 3:

with loose posts EG 30/15, sash 2 cut



Variant 4:

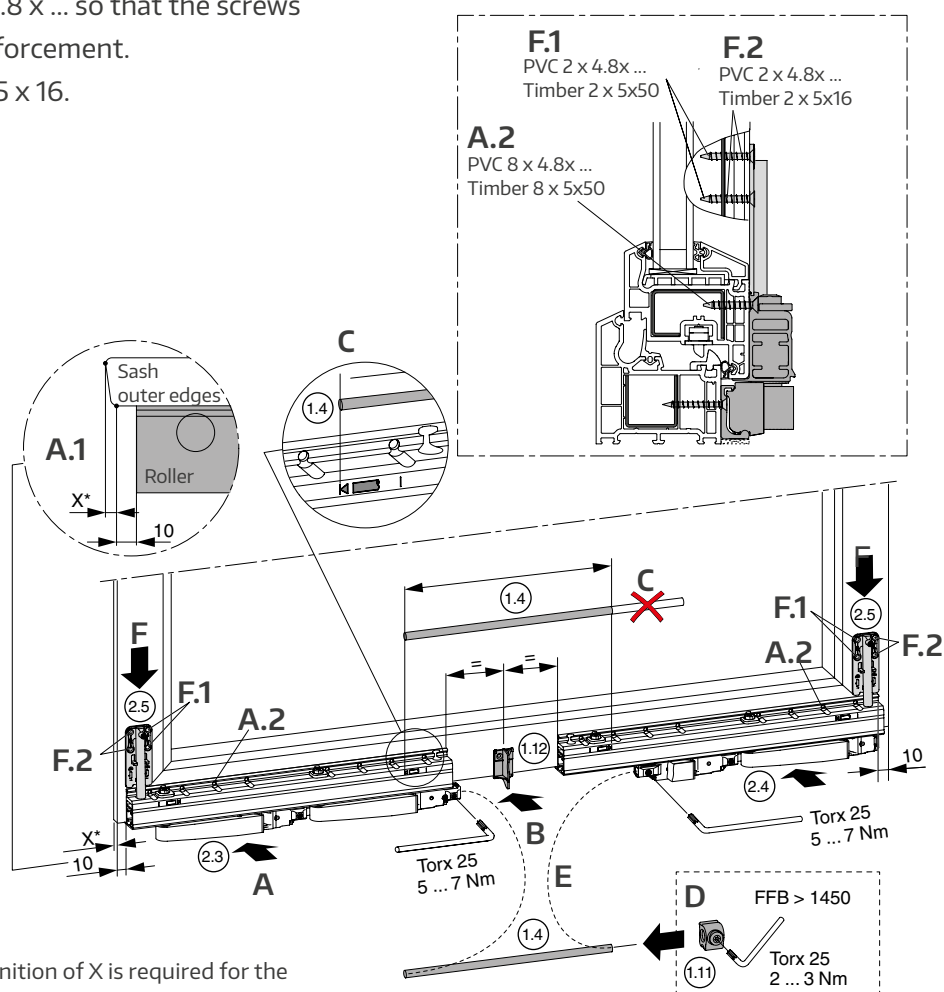
Timber – without posts with open groove EG 30/30



Notes on sash assembly 200 kg

Assembly of TWIN rollers

- A** Screw in rollers (2.3) and (2.4) with 8 screws each for PVC 4.8 x ..., for timber, use 5 x 50 at a side distance of 10 mm to the sash edges and flush to the bottom edge on the sash frame (reference edge for profiles with edge radius (A.1). The length of the screws in PVC systems must be chosen in such a way that they can grip into the steel reinforcement (A.2).
- B** Distribute the cover support brackets (1.12) evenly between the rollers and fix each with two 4.8 x ... screws.
- C** Cut the connecting rod (1.4) to length according to the markings on the rollers.
- D** At SRW > 1450: Insert the support block in the clutches of the rollers.
- E** Insert the connecting rod in the clutches of the rollers (2.3) and (2.4). Fix with Torx 25 (5... 7 Nm: First, tighten the roller (2.4) on the non-handle side).
- F** Insert the reinforcement parts (2.5) in the profiles of the rollers, snap in and screw on as follows:
 - F1:** With PVC, use 2 screws 4.8 x ... so that the screws find grip in the steel reinforcement. For timber, use 2 screws 5 x 50.
 - F2:** With PVC, use 2 screws 4.8 x ... so that the screws find grip in the steel reinforcement. For timber, use 2 screws 5 x 16.

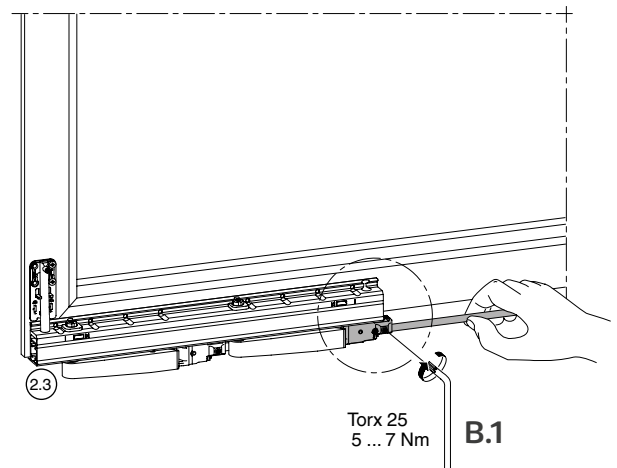
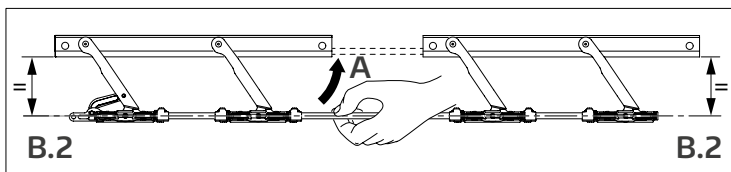


*) Definition of X is required for the later assembly of the guide block

Notes on sash assembly 200 kg

Align rollers parallel

- A Grip the connecting rod in the middle and put it into the closed position.
- B In this position, tighten the connecting rod on the handle-side roller (2.3) (Torx 25, 5...7 Nm) (B1).
Both rollers (2.3) + (2.4) must now also be parallel in the open position (B2).



Notes on sash assembly 200 kg

Horizontal orientation of the sash

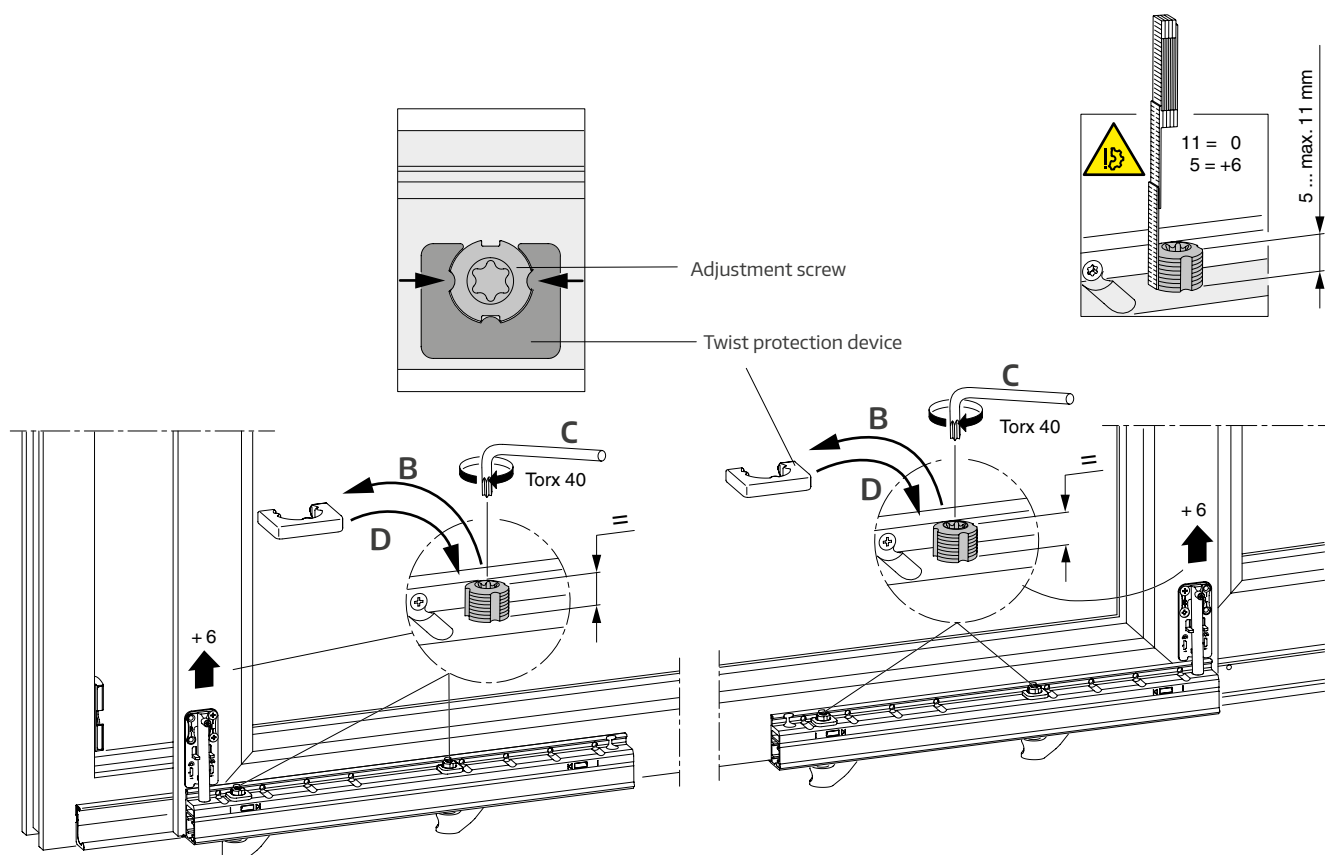
- A Check the rebate gap at the top and bottom on both sides (without Fig.).
- B Remove twist protection devices.
- C Lift the rollers using adjustment screws (Torx 40) to align the sash. The adjustment screws must only be screwed out **max. 11 mm**.



ATTENTION!

If the adjustment screws are screwed out more than 11 mm, the rollers will be destroyed. The rollers are evenly pre-set at the factory. For the correct alignment of the sash, the rollers must be equally adjusted on their two adjustment screws so that they do not tilt.

- D Set the twist protection devices on the adjustment screws and correct the alignment of the adjustment screws beforehand if necessary.



Notes on sash assembly 200 kg

Activation of roller safety device

- A Push the roller safety device (1) backwards on both rollers (2.3) / (2.4) until it snaps in at the position shown (2).

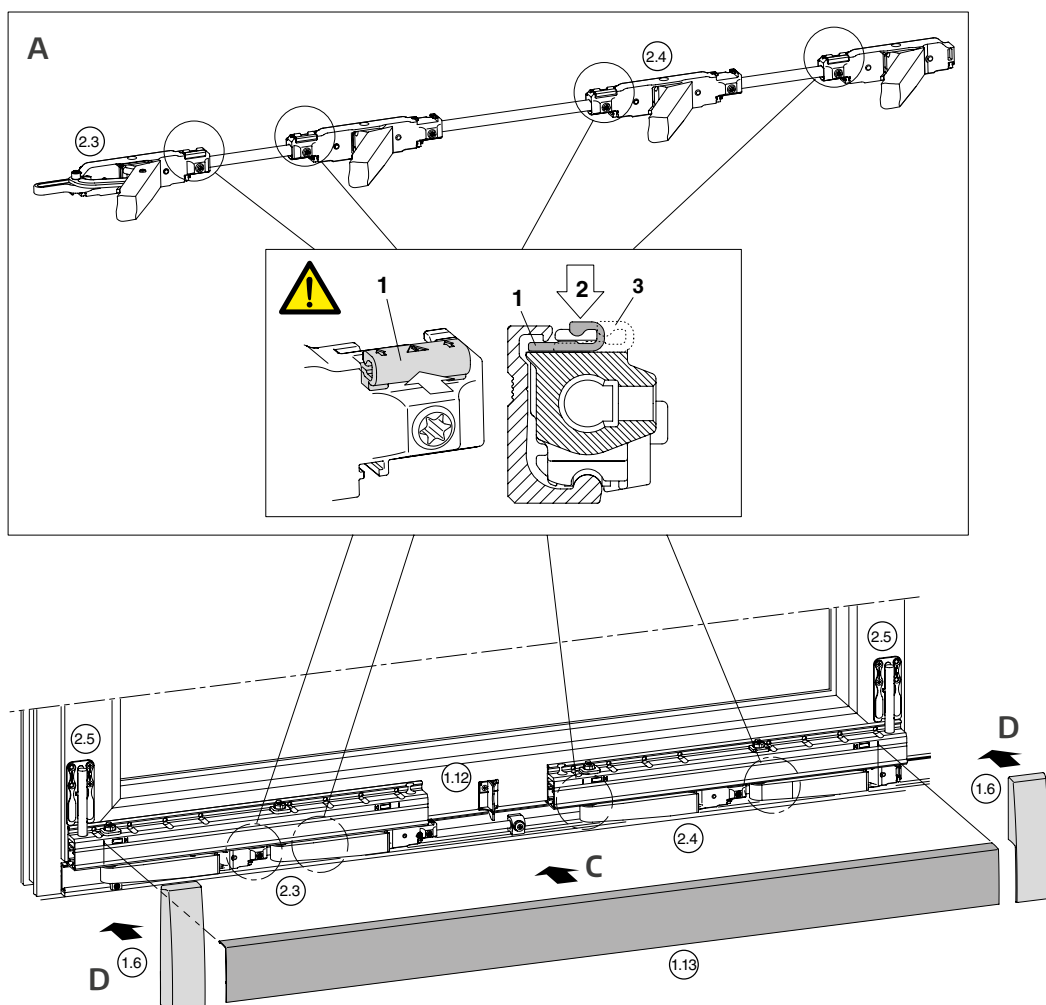


WARNING!

If the roller safety device is not correctly positioned or missing from the position shown, the window sash is not adequately secured (3). Serious bodily injuries can occur!

Assembly of roller covers

- B Cut the cover profile (1.13) to length according to the markings on the rollers.
- C Align the cover profile to the roller markings and clip onto the roller profiles as well as the cover support bracket(s) (1.12).
- D Clip on the cover caps at the bottom left and at the bottom right (1.6) on the reinforcement parts (2.5).

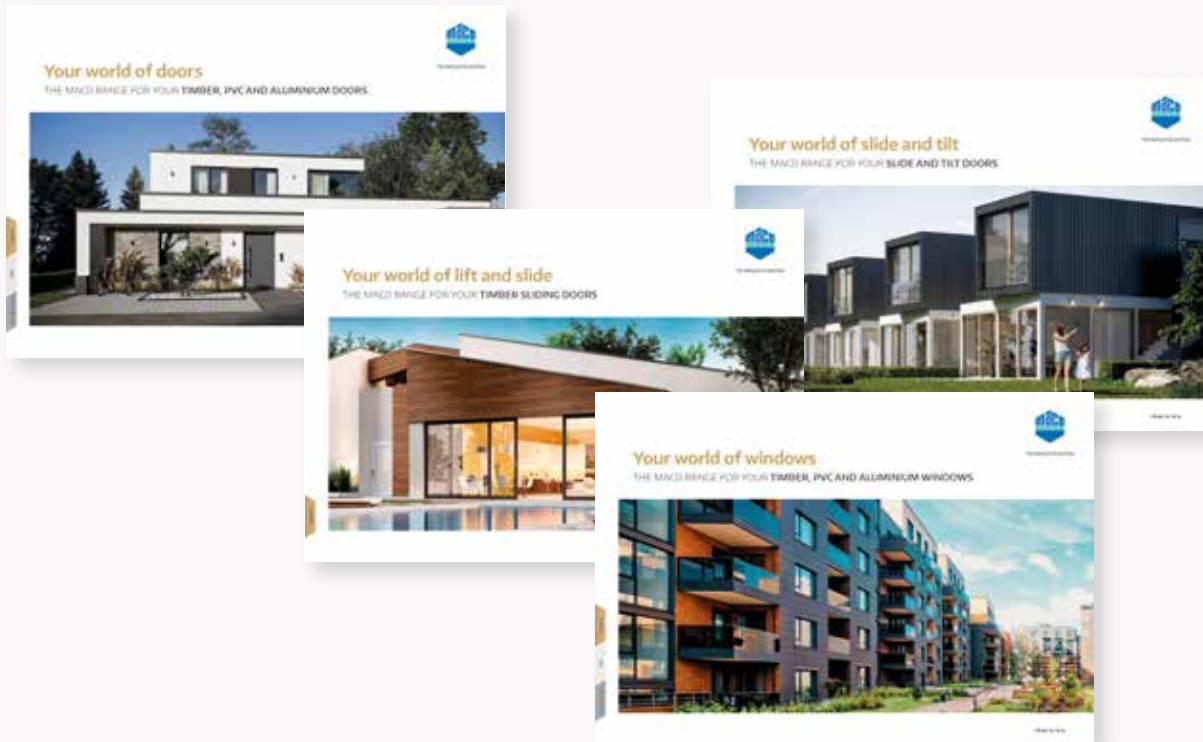




Notes

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