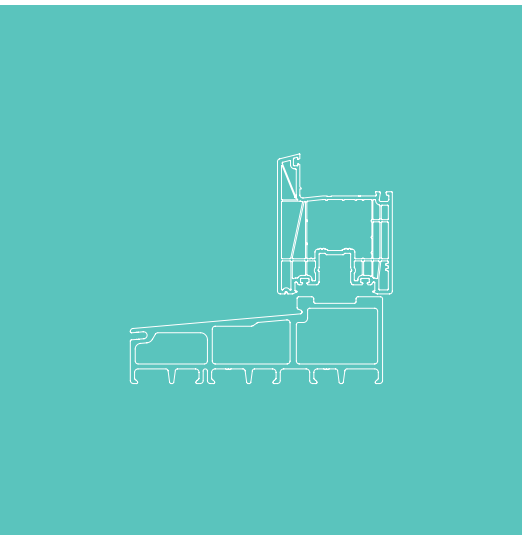
TECHNOLOGY IN MOTION

MACO RAIL-SYSTEMS

LIFT&SLIDE HARDWARE



ASSEMBLY INSTRUCTIONS

HS Salamander evolution Drive 82

Exclusively for certified specialists!

PVC

maco.eu

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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 lift&slide hardware END USER" (Order number 757951) and "Maintenance and adjustment instructions for lift&slide hardware SPECIALIST" (Order number 757954) 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 lift and slide 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 lift and slide hardware (L&S) are only intended for use in stationary buildings. They are used for horizontally opening and closing windows and balcony doors. The lift and slide 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 L&S 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 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. The operating label is located in the basic box or in the "corner deflection" package.

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

HS Lift and Slide element (LS)

FE Fixed element

FH Sash height (SH)

FB Sash width (SW)

RAB Frame outer width (FOW)

RAH Frame outer height (FRH)

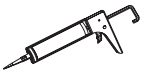
L Total length

GM Handle height (HH)

DM Backset drive gear (BS)

O Optional

Important Information

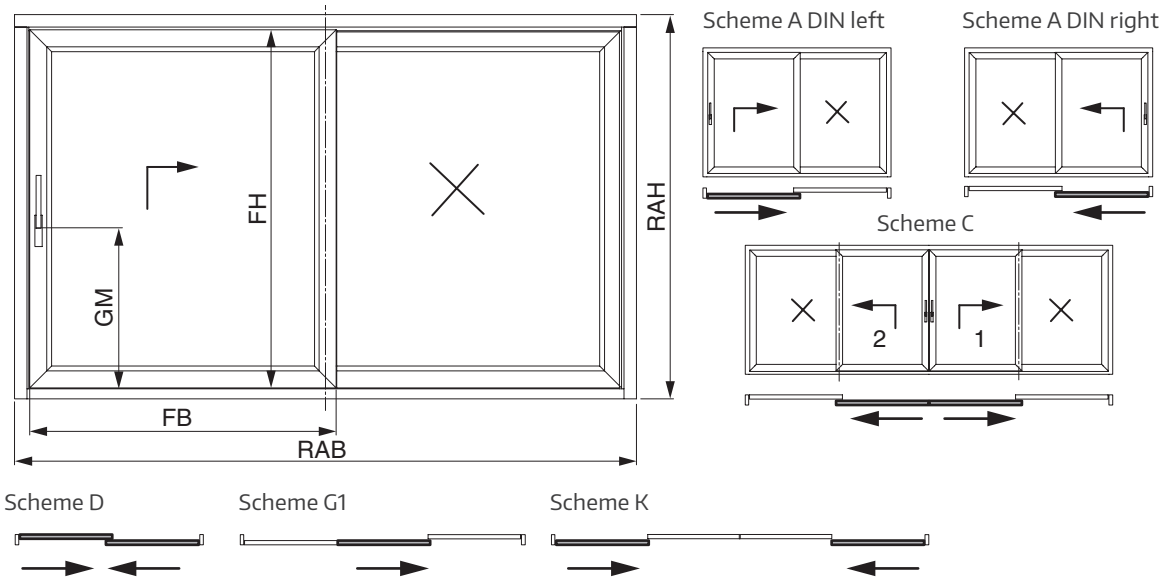


Permanently elastic sealant

Dimensions in [mm]: All dimensions without a unit definition are given in mm

Version and Application area

Version



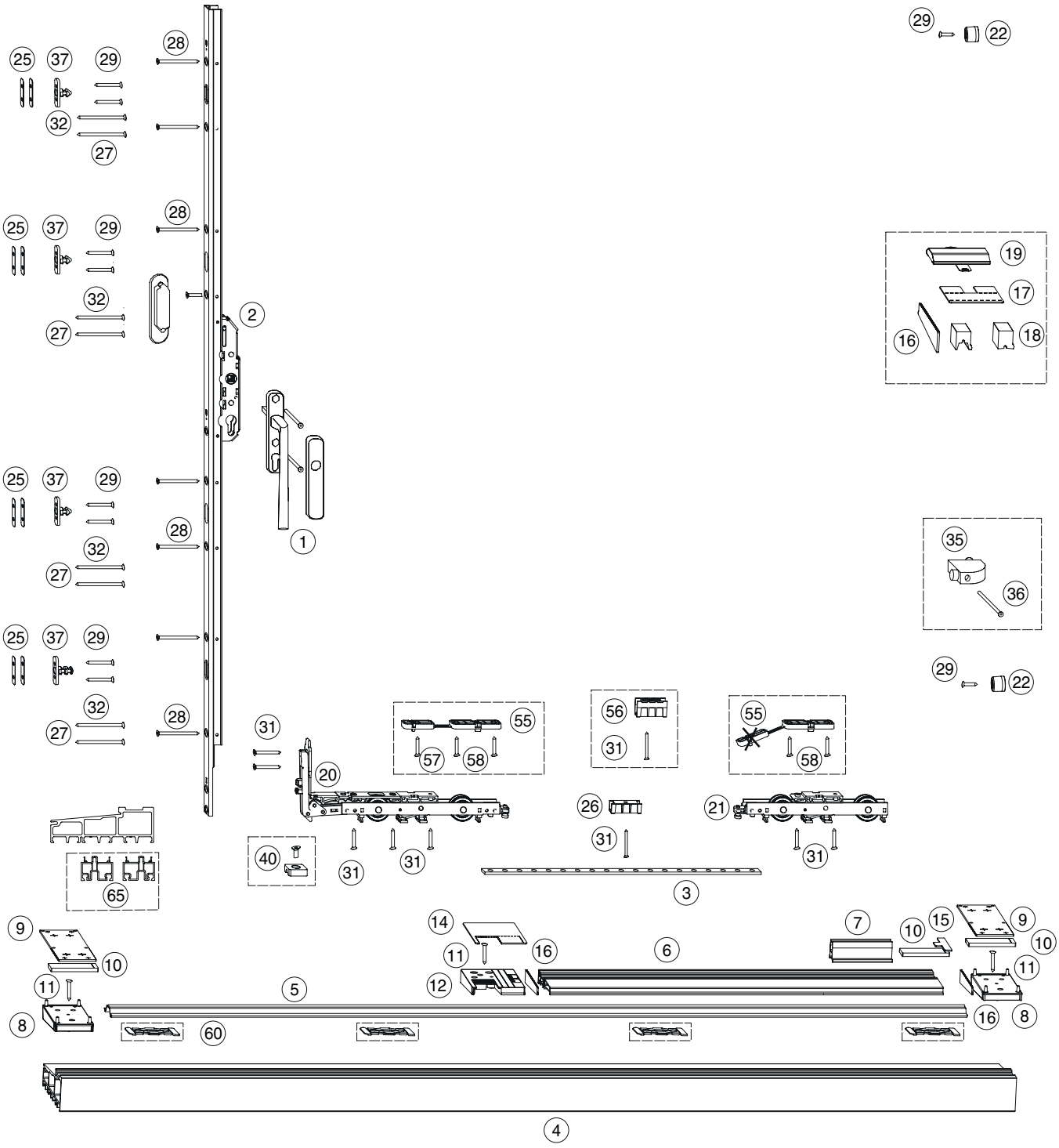
Application area

The application ranges stated in the table apply for MACO L&S 300.
The maximum application ranges and weights specified by the profile manufacturer apply when processing the profiles and must be observed.

Designation	Unit	Department	
		Tall roller track	Flat roller track
FB (Sash widht)	(mm)	740 - 3330	
FH (Sash height)	(mm)	765 - 2880	755 - 2870
Weight of sliding sash	(kg)	max. 400*	
DM (Backset drive gear)	(mm)	37,5	
GM (HH) drive gear size Gr. 1 - 2	(mm)	409	399
GM (HH) drive gear size Gr. 3 - 4	(mm)	1009	999

* From a sash weight of over 200kg, we recommend installing a drive damper.
(The drive damper can be ordered via the Technical Online Catalogue (TOM) or via the Catalogue.)

Hardware overview



Hardware overview

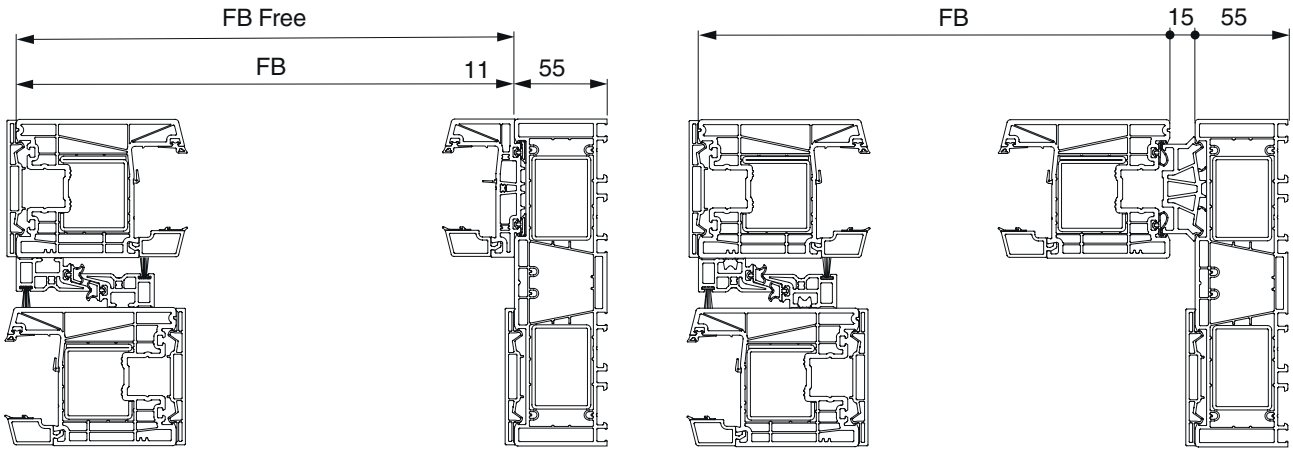
① HS handle
② Lift drive gear locks DM 37.5 PZ
③ Connecting rod punched HS 16.4 x 4
④ MACO GRP threshold with hinging groove
⑤ MACO Fiber-Therm roller track, 2.5 mm asymmetrical
⑥ MACO PVC intermediate profile
⑦ Gealan attachment rail for fixed sash, length = 100 mm
⑧ Connection plate for Fibertherm Gealan S9000 silver
⑨ EPDM gasket for connection plate 2 mm
⑩ EPDM gasket for roller track groove 6 mm
⑪ Hardware screw Pozidrive 4 x 30 silver
⑫ Sealing plate with drainage for intermediate profile left silver
⑭ EPDM gasket for gasket plate 2 mm left + right black
⑮ EPDM gasket for buffer stop bar fixed sash Gealan S9000
⑯ EPDM gasket for intermediate profile Gealan S9000
⑰ EPDM gasket for centre area 2 mm black
⑱ EPDM seal Black for roller track flat Gealan S9000
EPDM seal Black for roller track high Gealan S9000
⑲ Gasket bridge HS for 12 mm air
⑳ Front roller HS with brushes 300 kg silver
㉑ Rear roller HS with brushes 300 kg silver
㉒ Buffer stop Soft 20 mm high grey
㉕ Packer for HS-PVC locking bolt, thickness = 0.5 + 1 mm silver
㉖ Rod guide for roller track high, groove 17 x 22
㉗ Countersunk screws B 4.8 x 80
㉘ Countersunk screws B 4.8 x 60
㉙ Countersunk screws B 4.8 x 38
㉛ Countersunk screws B 4.8 x 19
㉜ Countersunk screws B 4.8 x 90

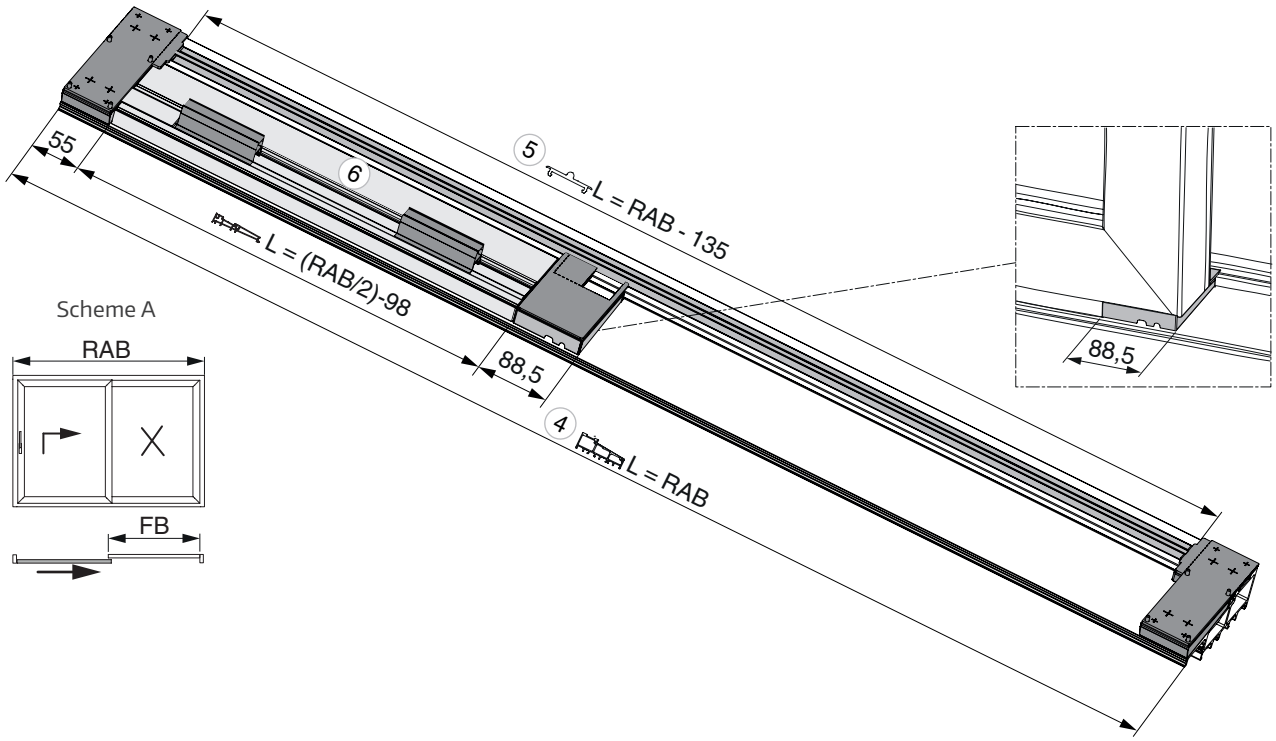
optional

㉟ Stop buffer package 28 mm gap
㊱ Countersunk self-tapping screws B 4.8 x 80
㊺ L&S roller underlay for front and back roller 10 mm stackable in silver
㊻ Rod guide for flat roller track, silver, groove 27 x 22
㊼ Countersunk self-tapping screws B 4.8 x 25
㊽ Chip board screw PZ 5 x 30 countersunk
㊿ MACO Fiber-Therm snapper for flat roller track
㊺ MACO Fiber-Therm doubling profile

Assembly on the frame

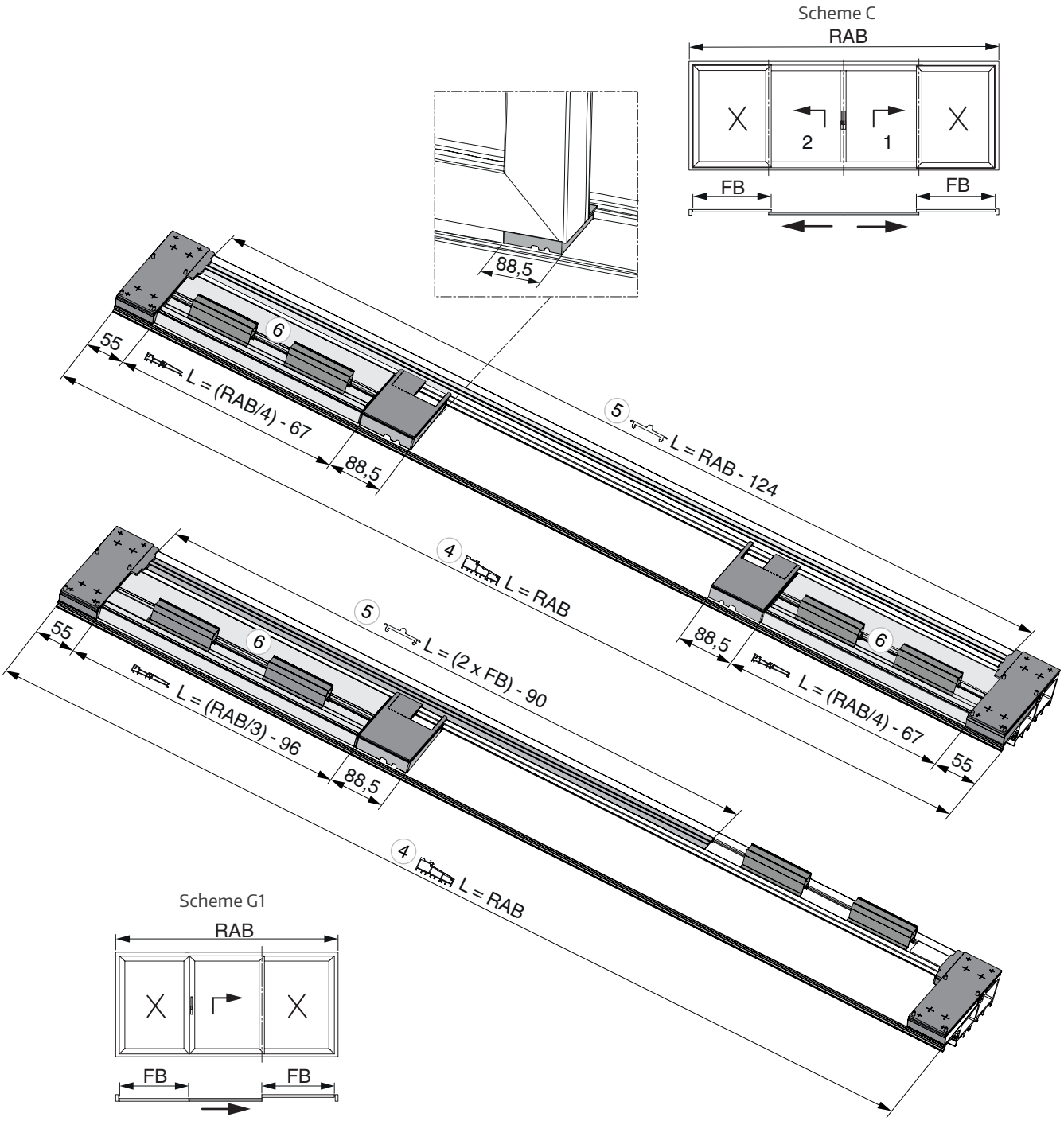
Calculation formulas Scheme A





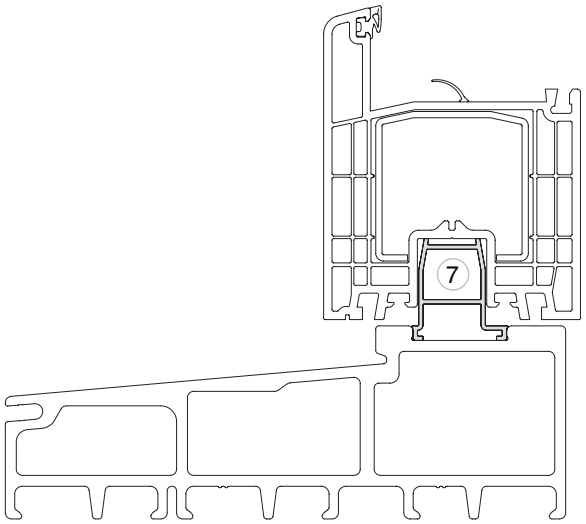
Assembly on the frame

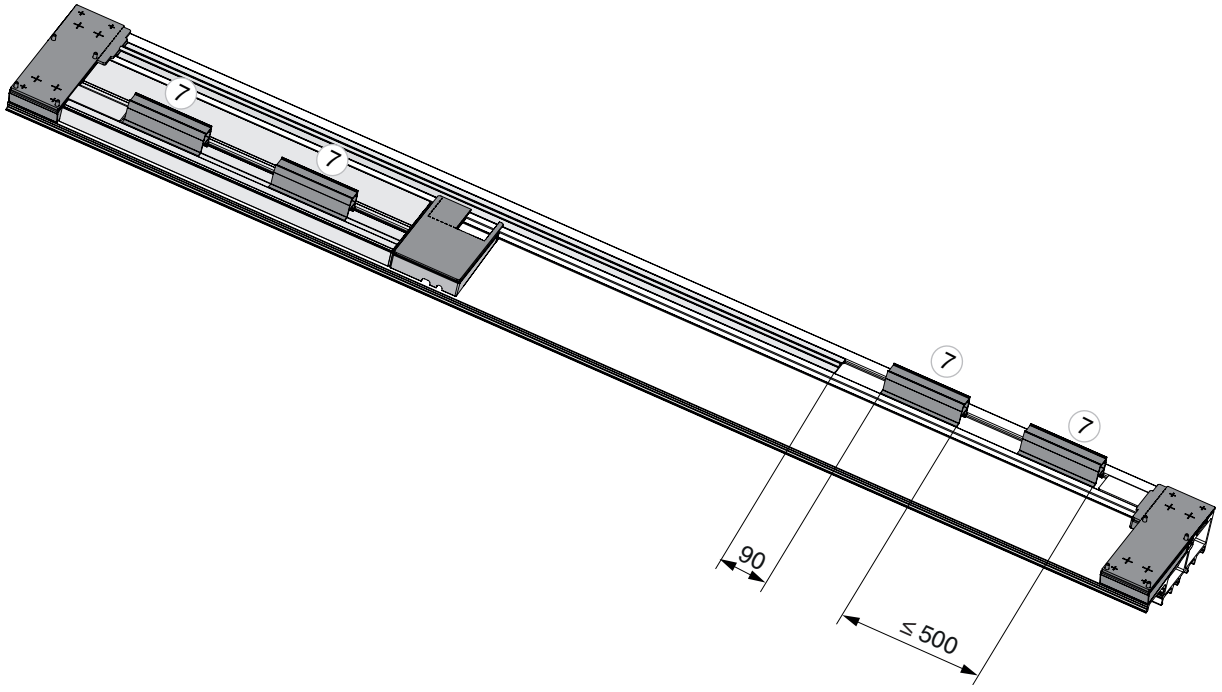
Calculation formulas Scheme C + G1



Assembly on the frame

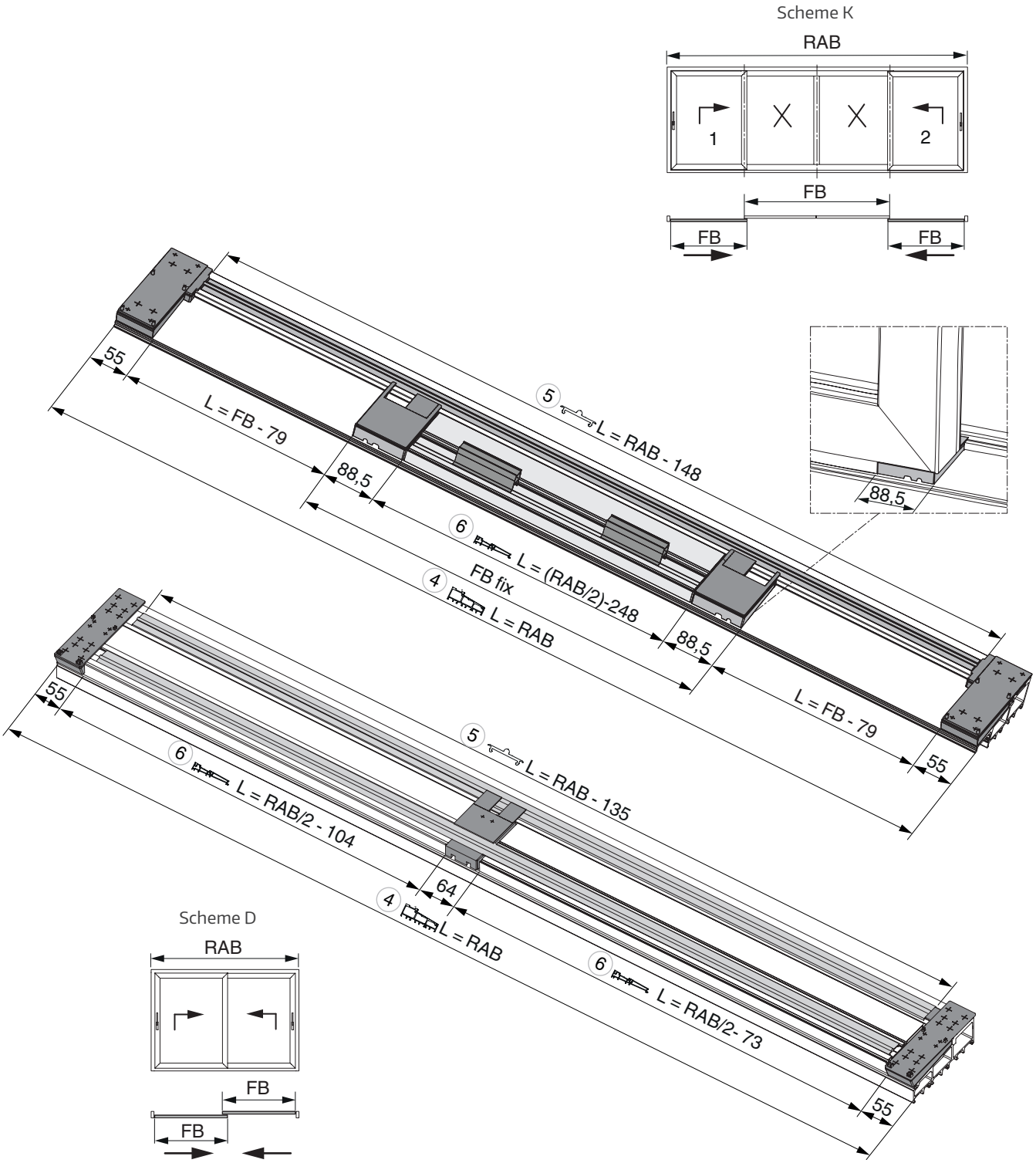
Supplement calculation formulas Scheme G1





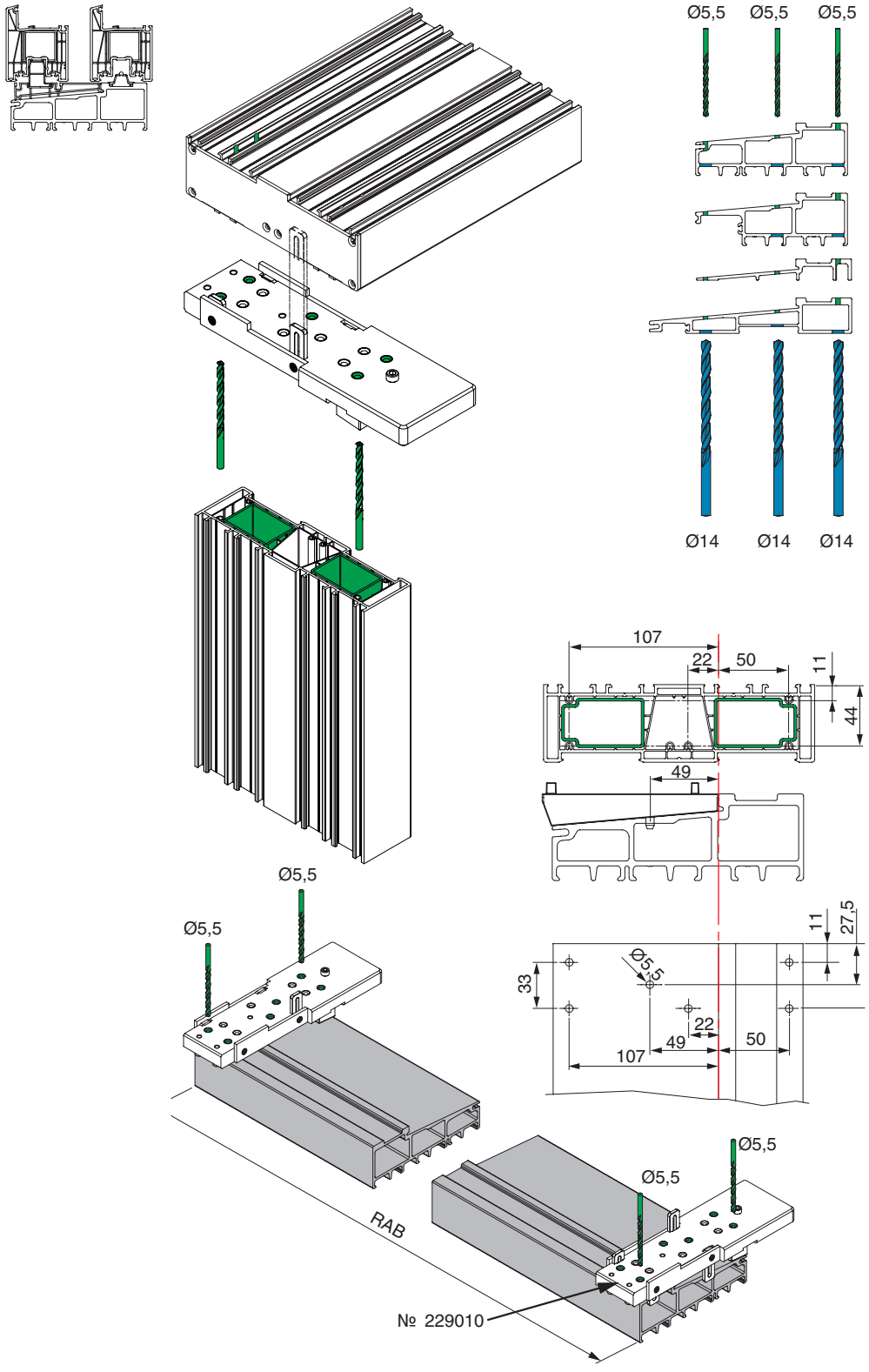
Assembly on the frame

Calculation formulas Scheme K + D



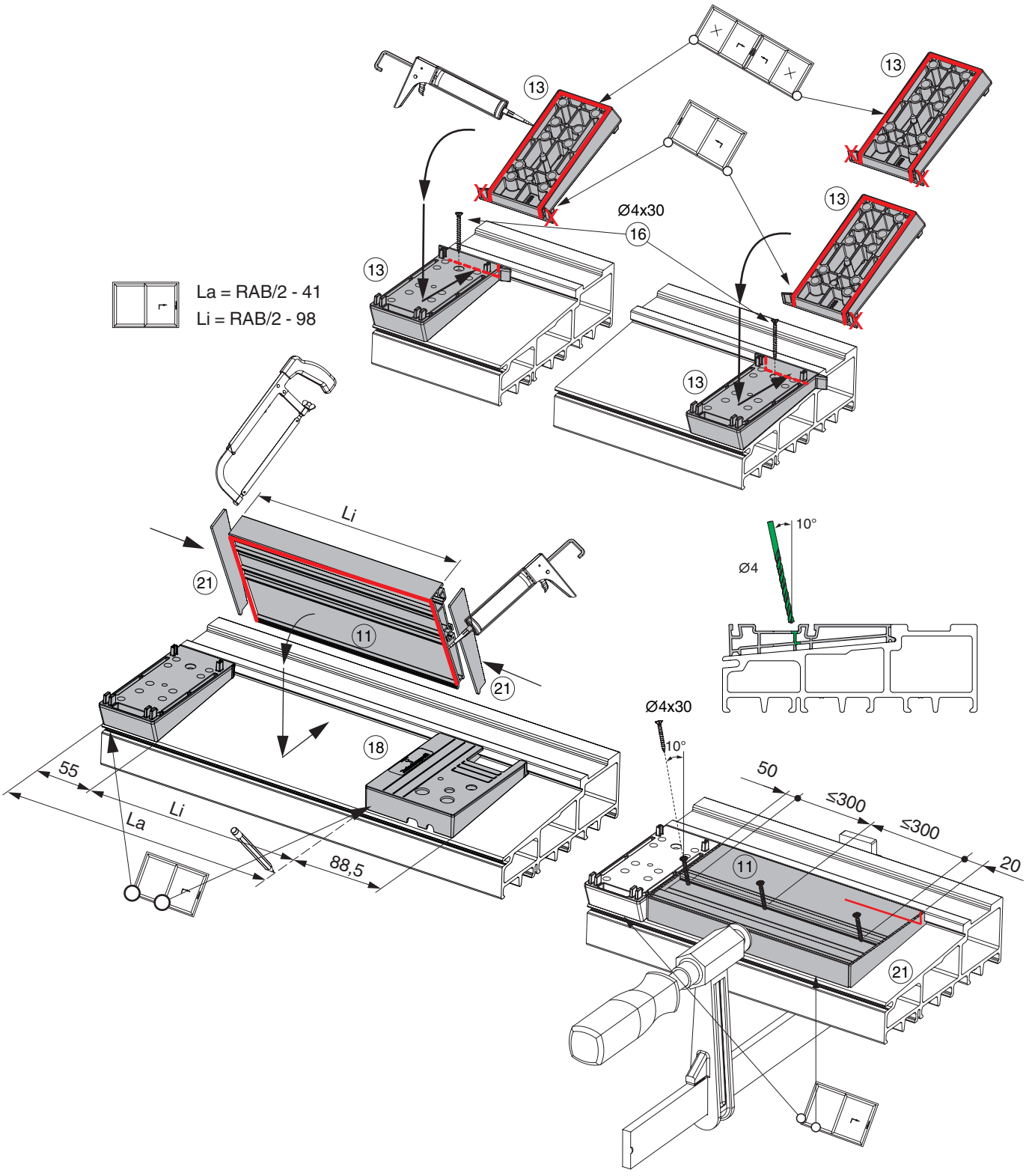
Assembly on the frame

Threshold assembly Scheme A, C, G1, K



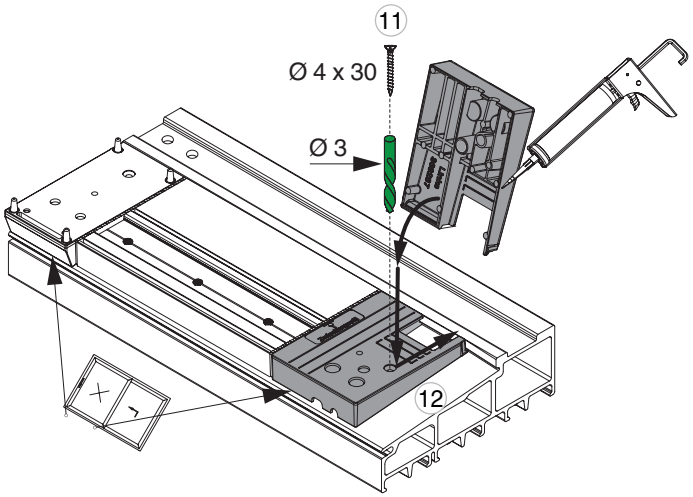
Assembly on the frame

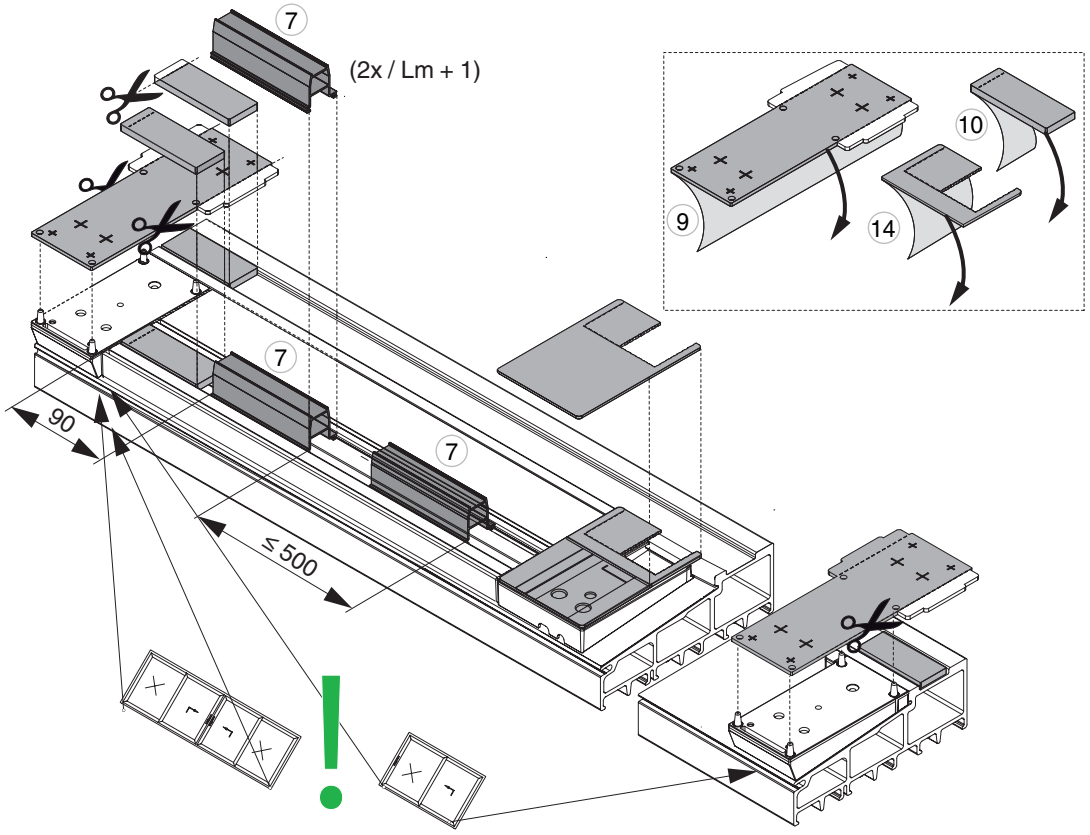
Threshold assembly Scheme A, C, G1, K



Assembly on the frame

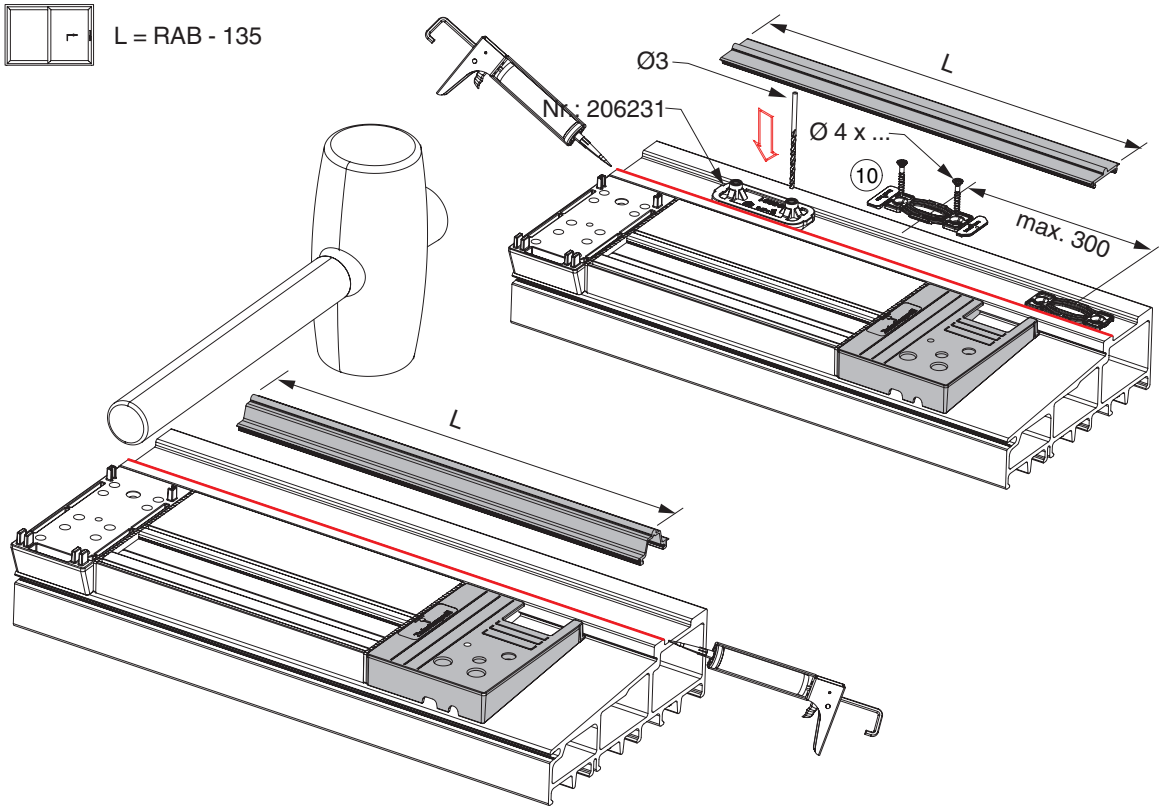
Threshold assembly Scheme A, C, G1, K

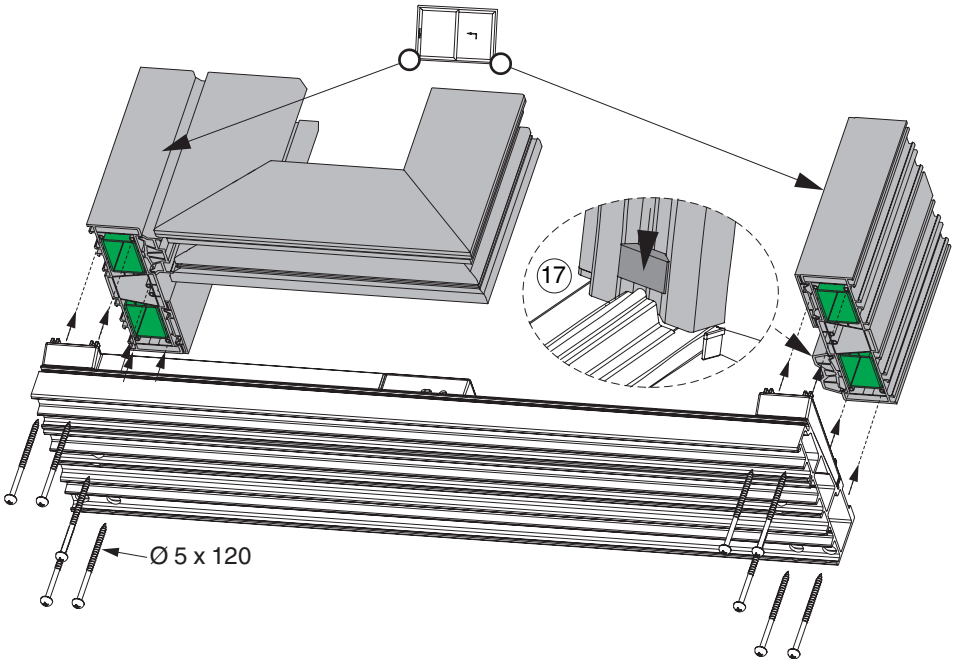




Assembly on the frame

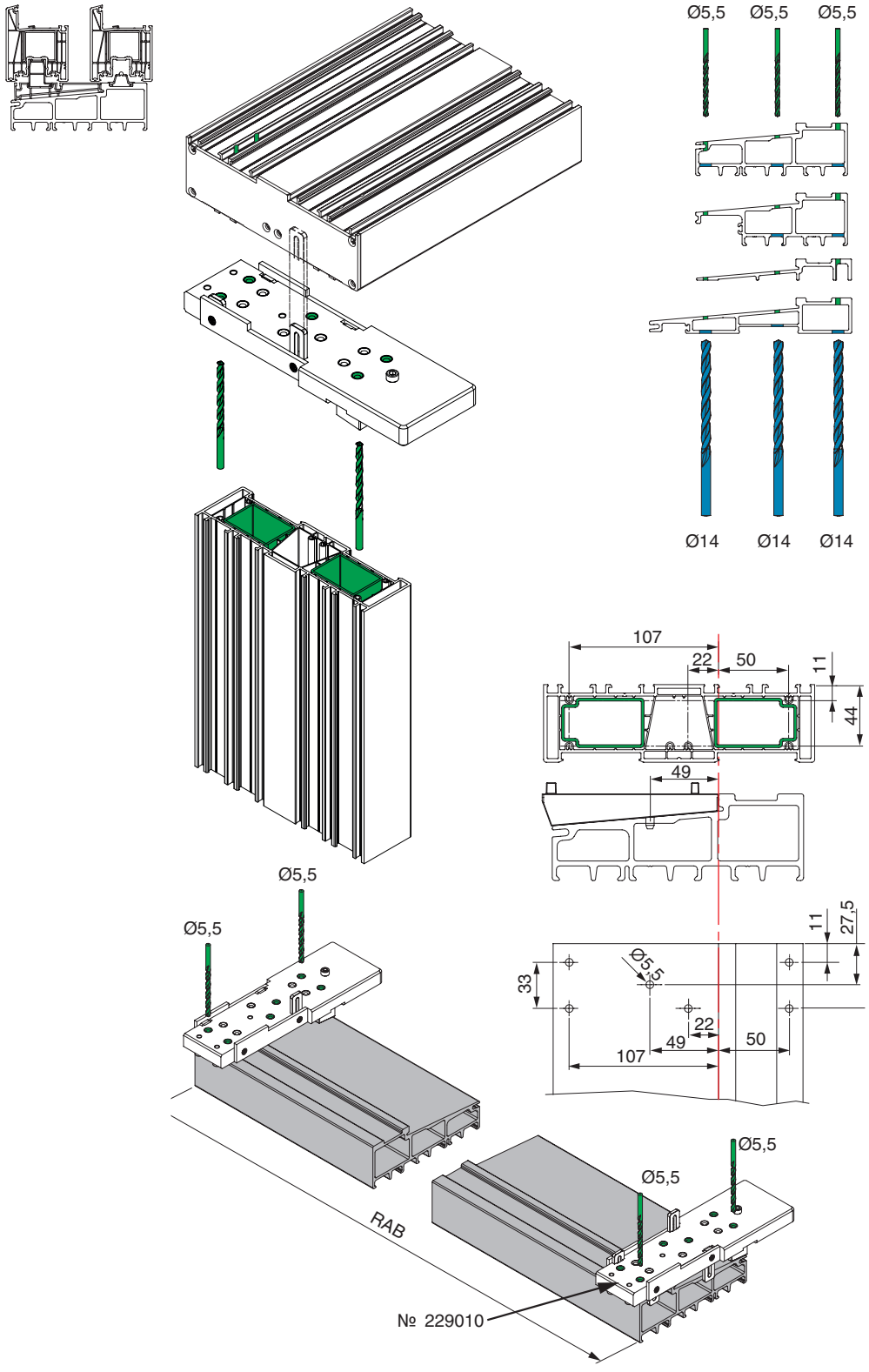
Threshold assembly Scheme A, C, G1, K





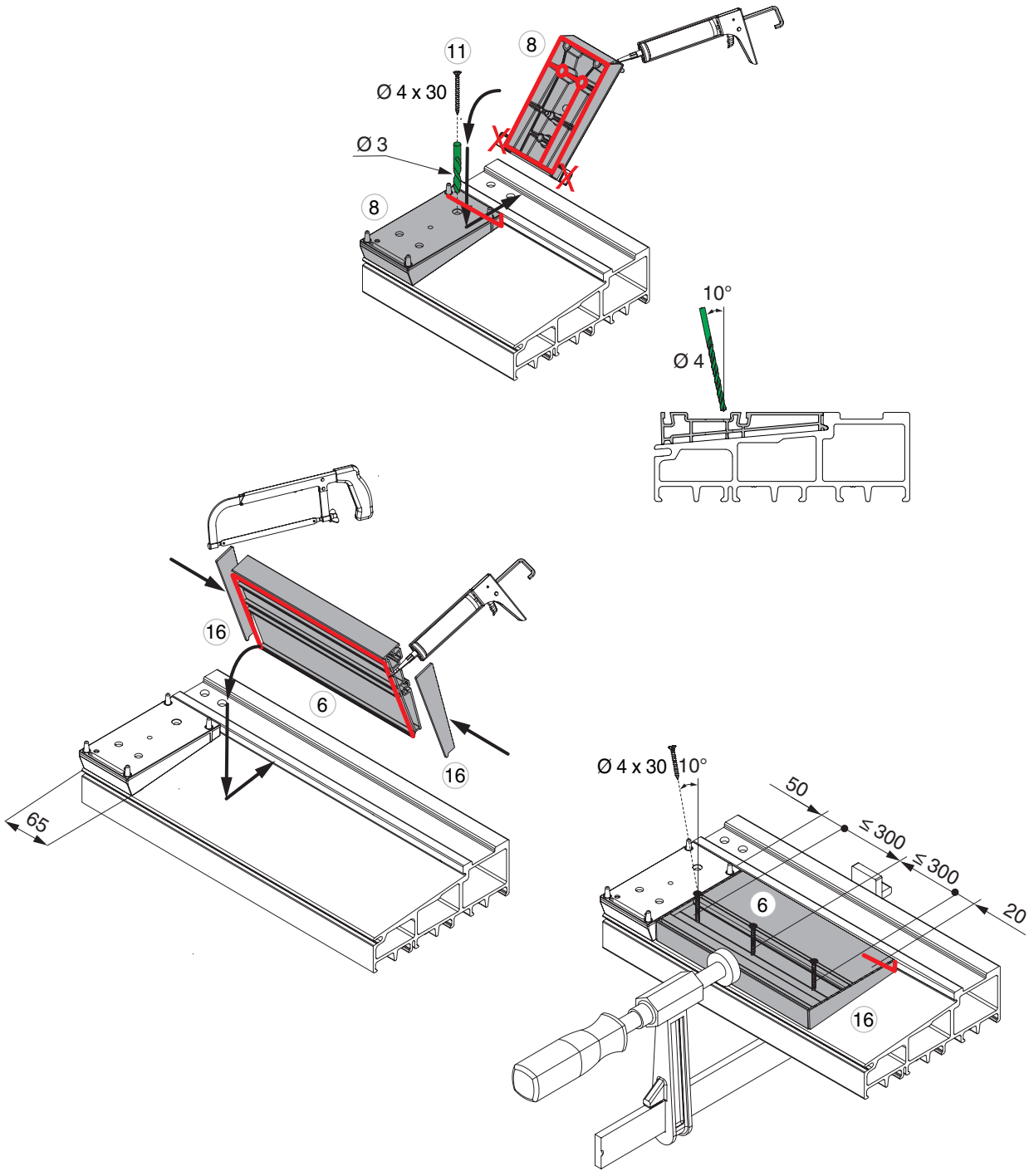
Assembly on the frame

Threshold assembly Scheme D



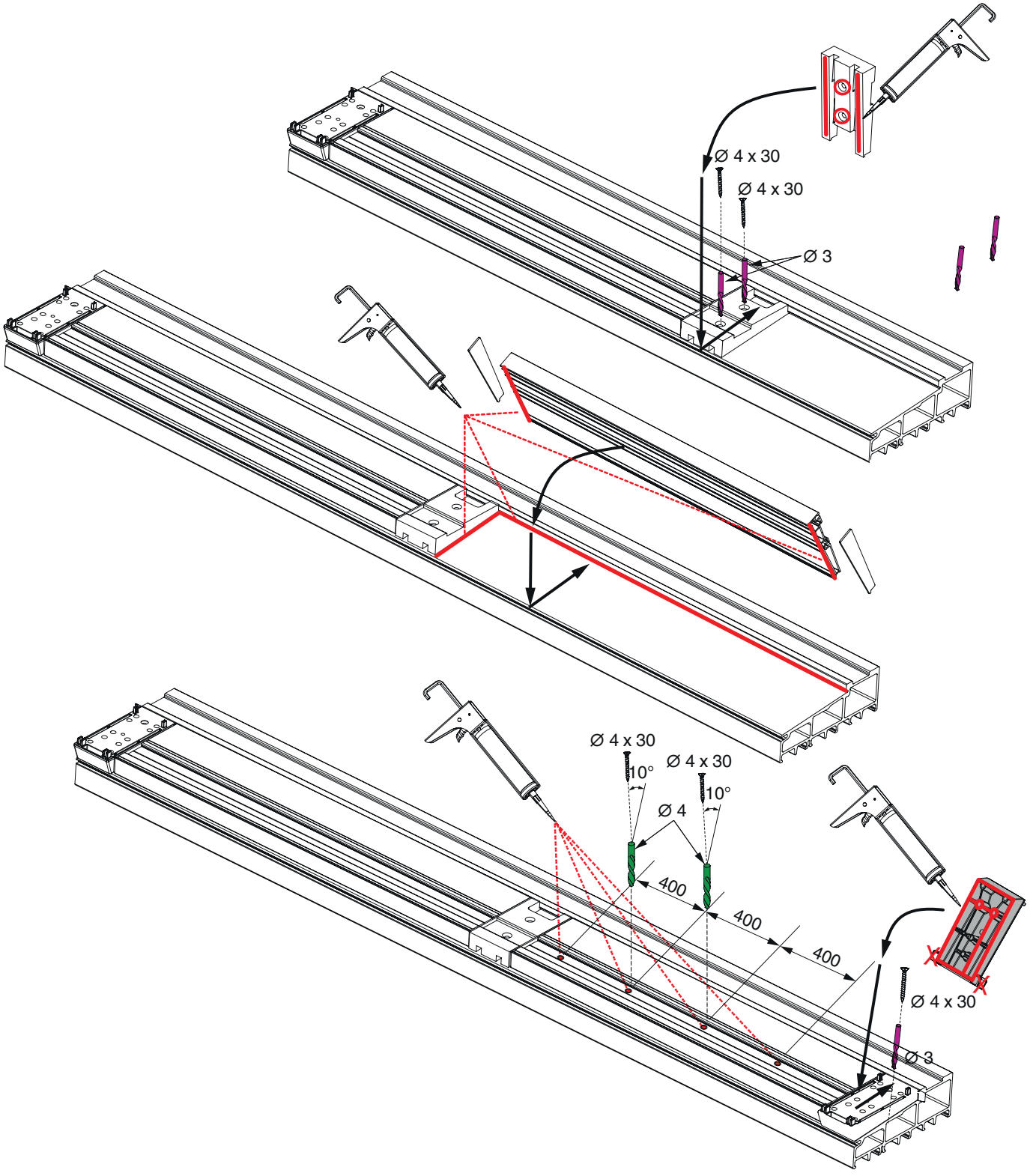
Assembly on the frame

Threshold assembly Scheme D



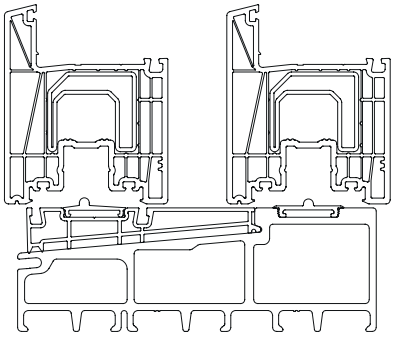
Assembly on the frame

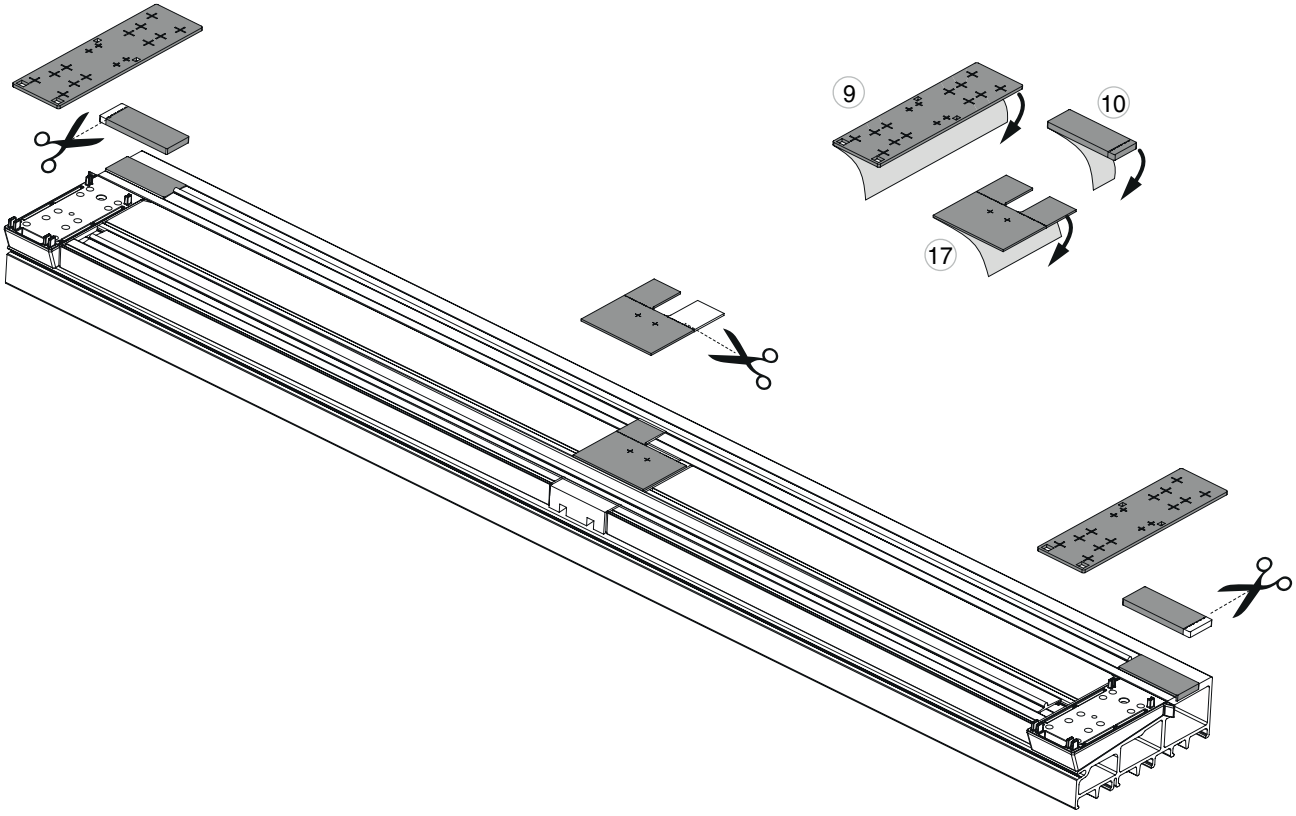
Threshold assembly Scheme D



Assembly on the frame

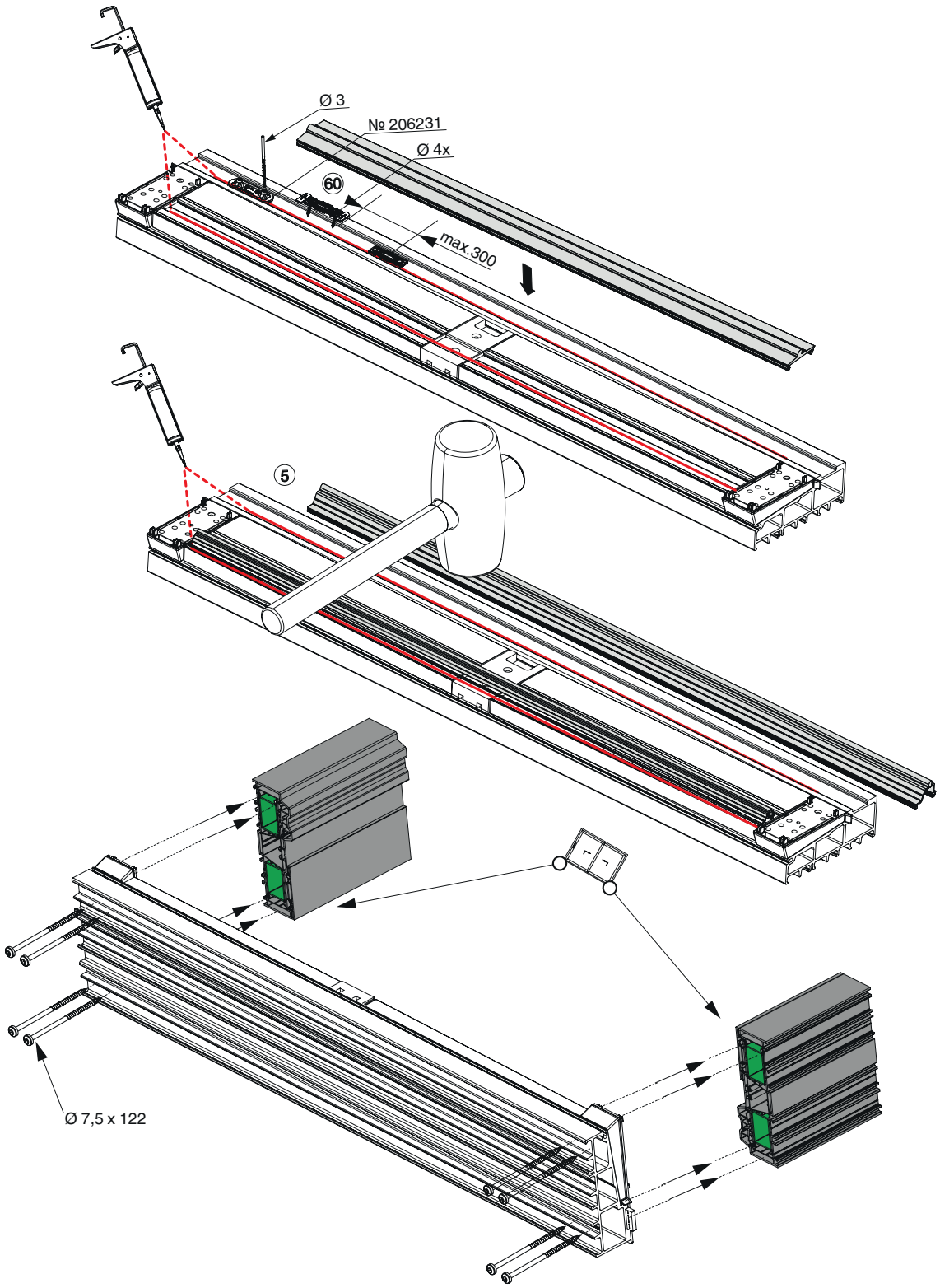
Threshold assembly Scheme D





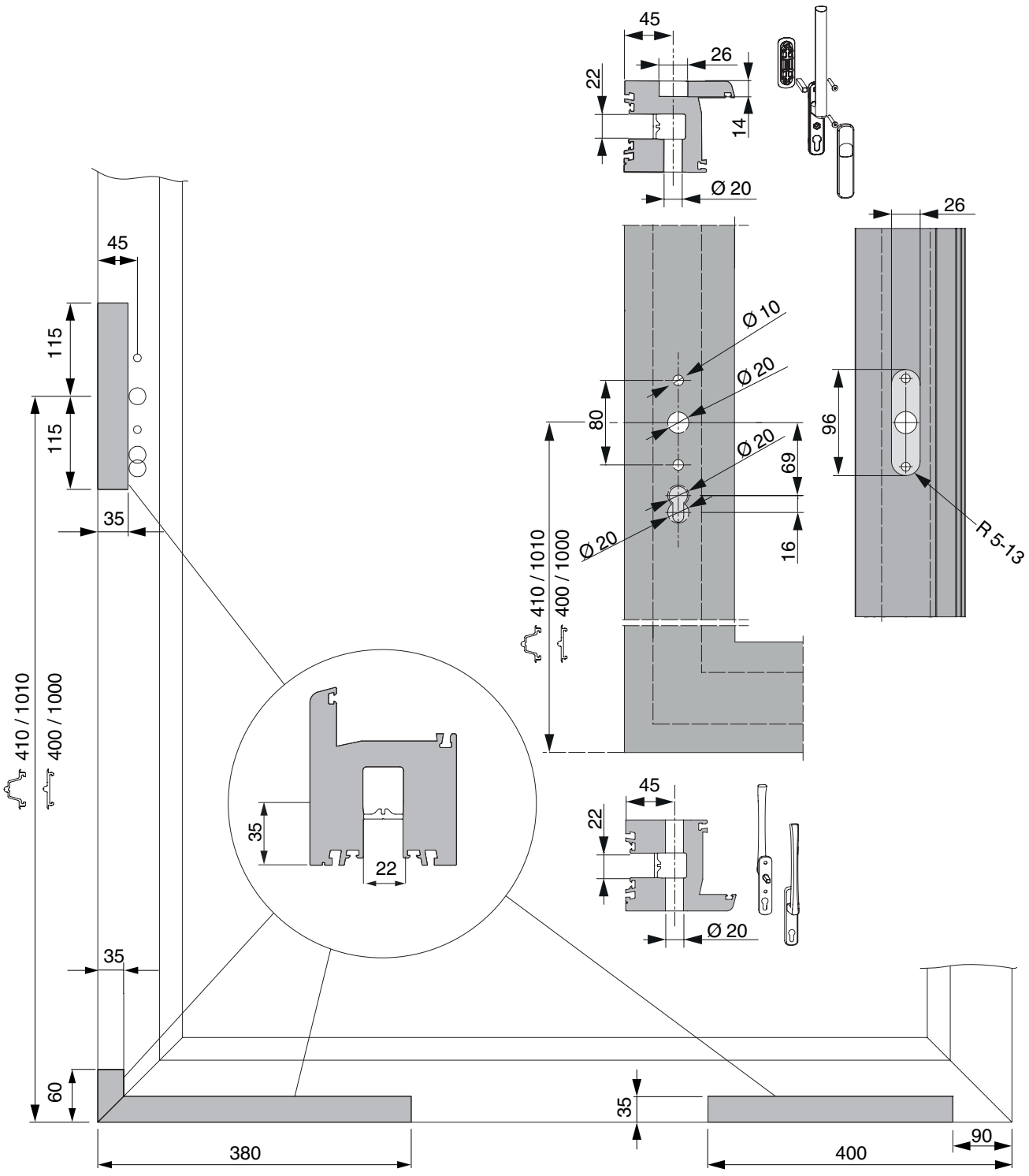
Assembly on the frame

Threshold assembly Scheme D



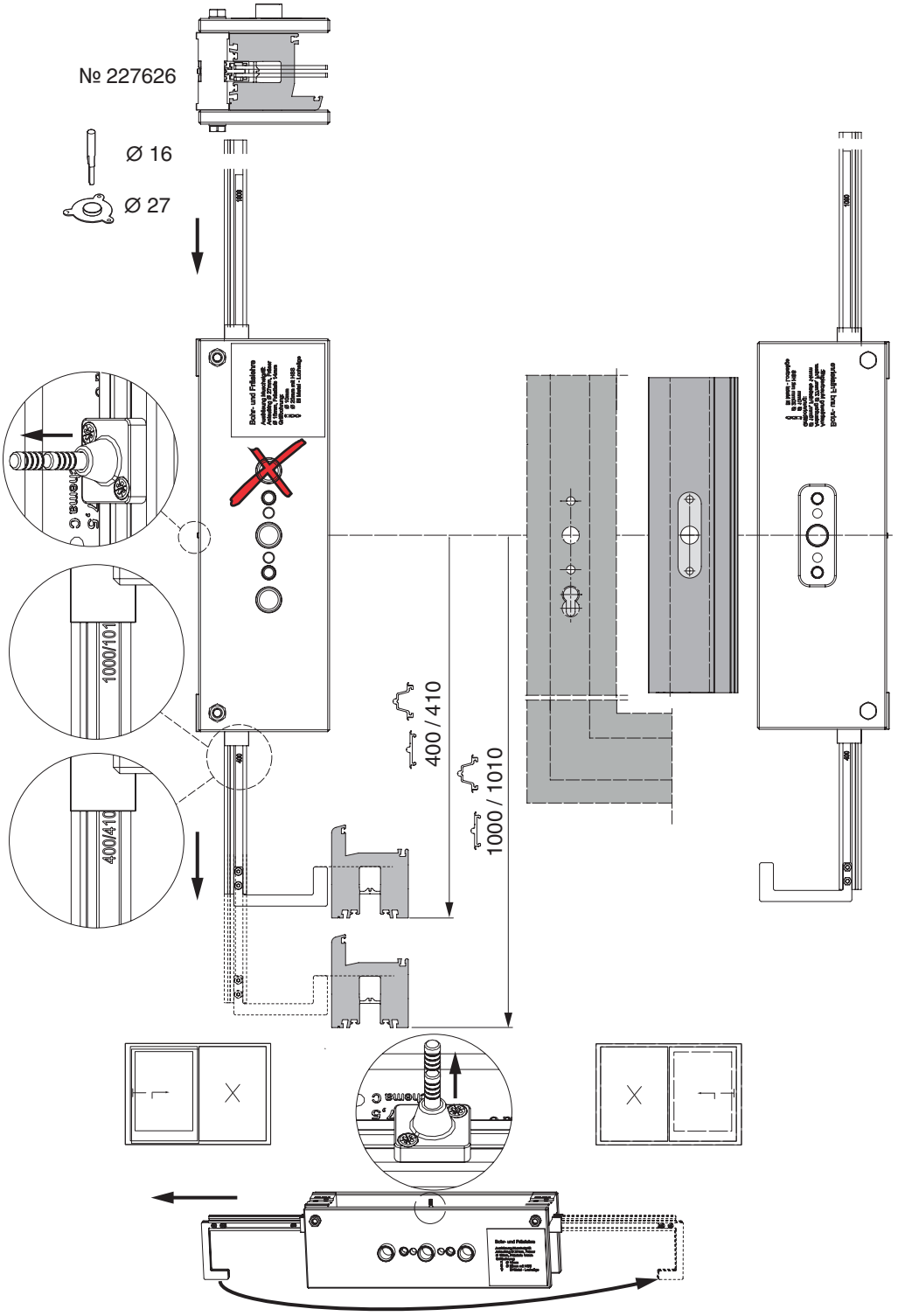
Assembly on the sash

Drilling and milling on the sash



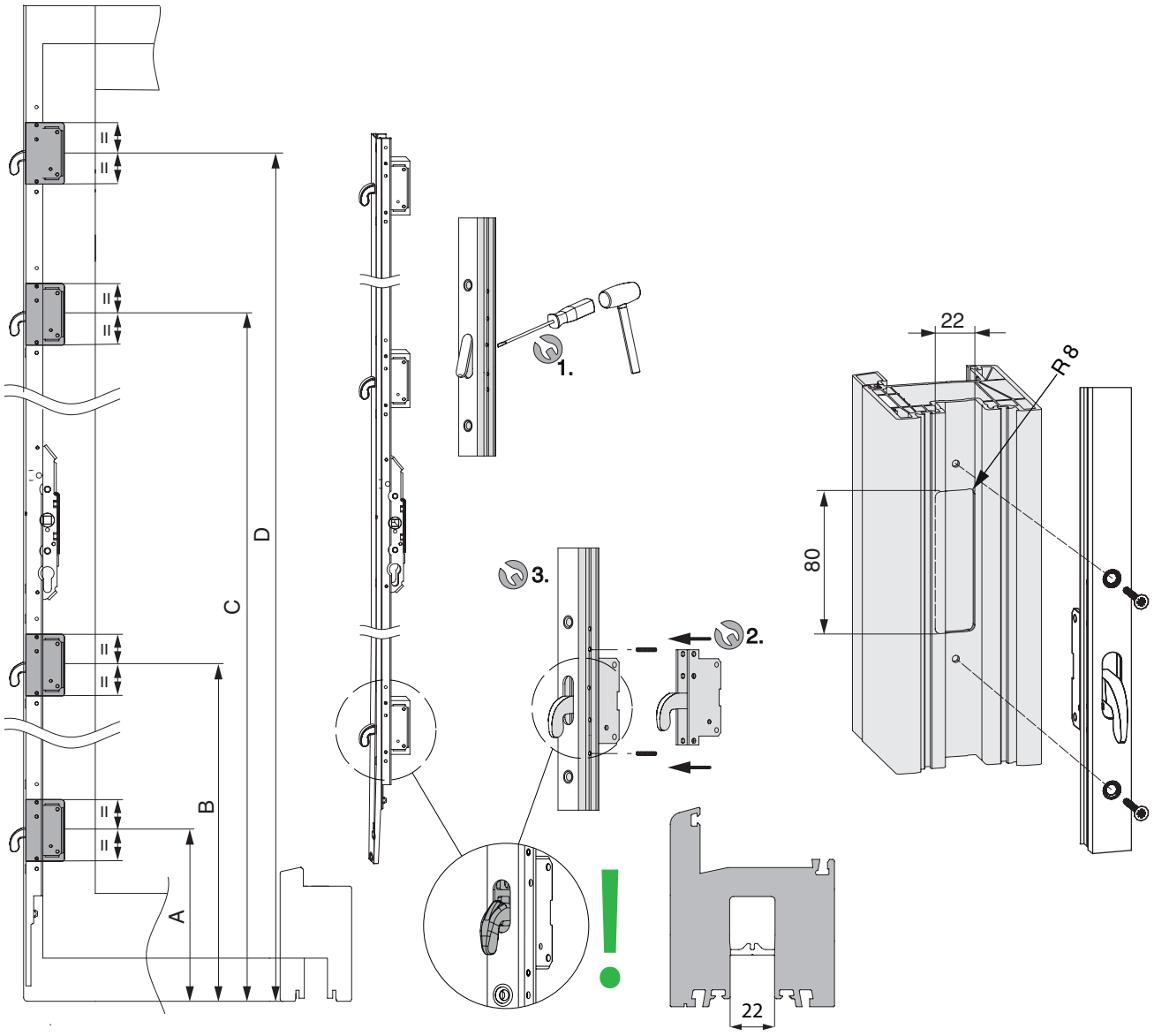
Assembly on the sash

Drilling and milling jig for HS handle



Assembly on the sash

Milling for hook drive gear

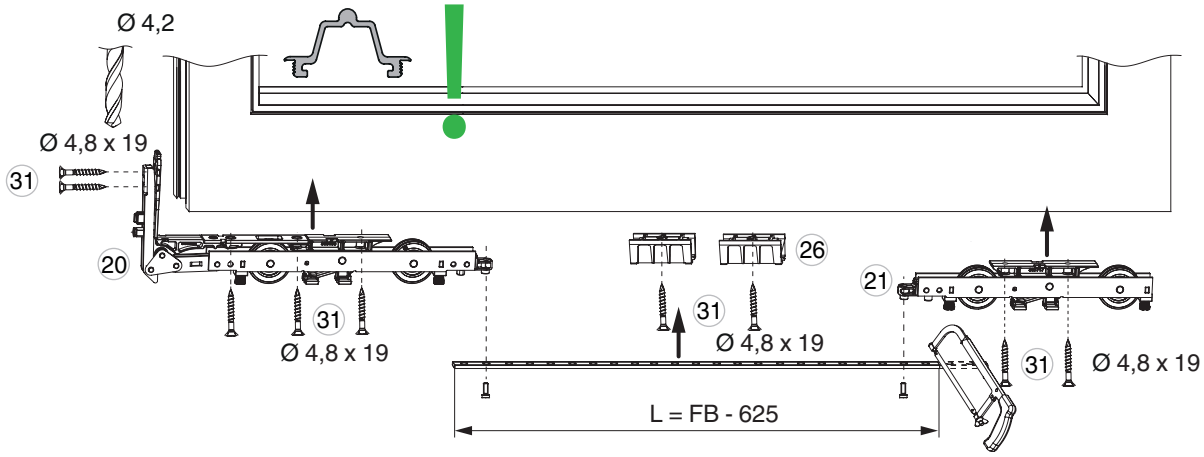


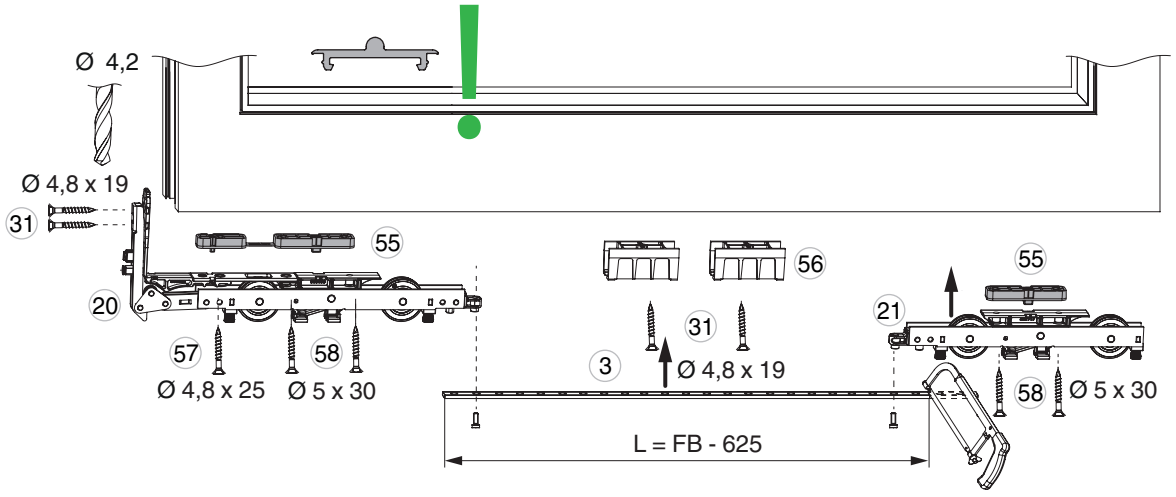
	A	B	C	D
Size 1	221	591	-	-
Size 2 - 3	221	1091	-	-
Size 4	221	809	1689	-
Size 5	221	809	1221	2121

	A	B	C	D
Size 1	211	581	-	-
Size 2 - 3	211	1081	-	-
Size 4	211	799	1679	-
Size 5	211	799	1211	1211

Assembly on the sash

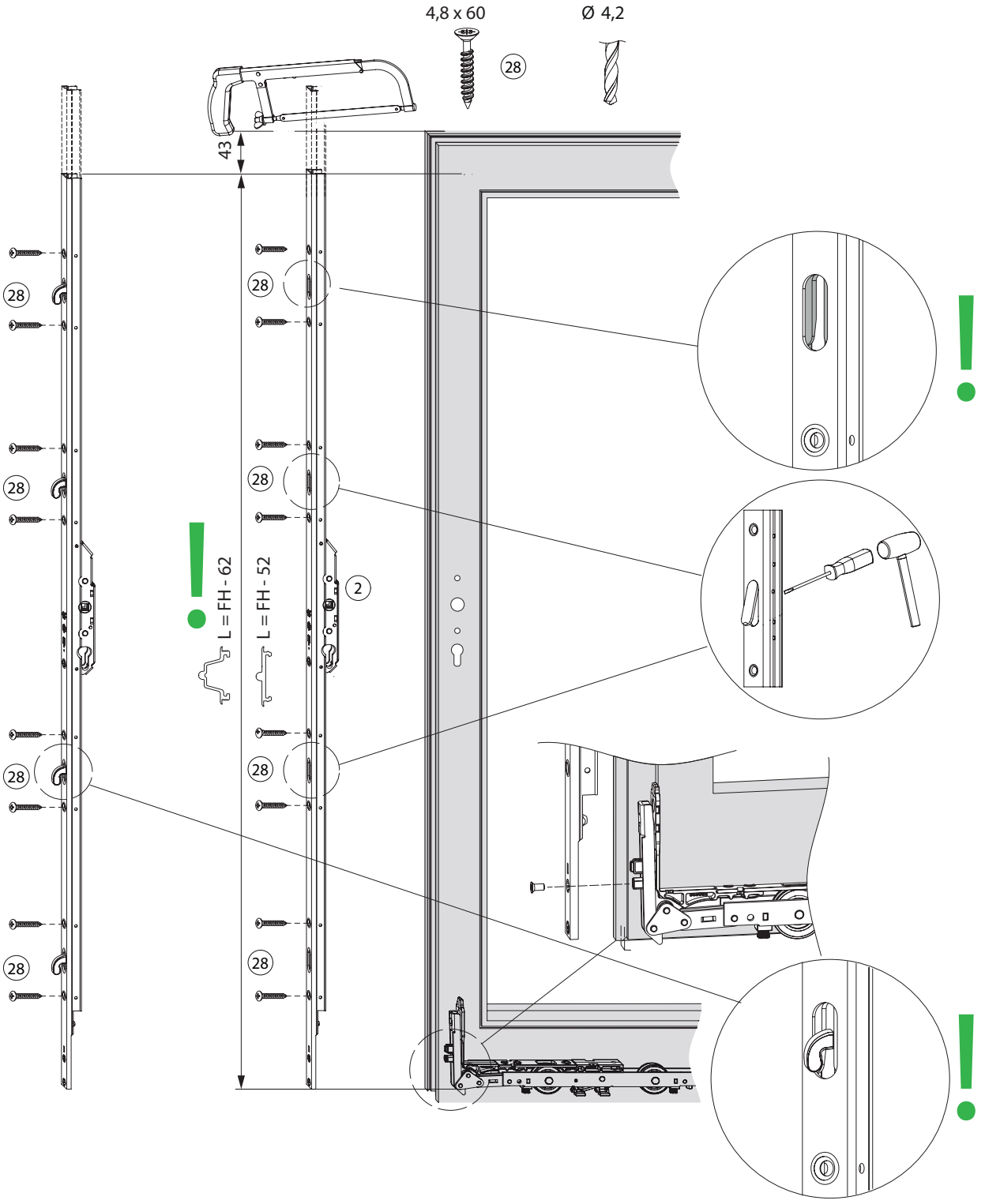
Roller assembly





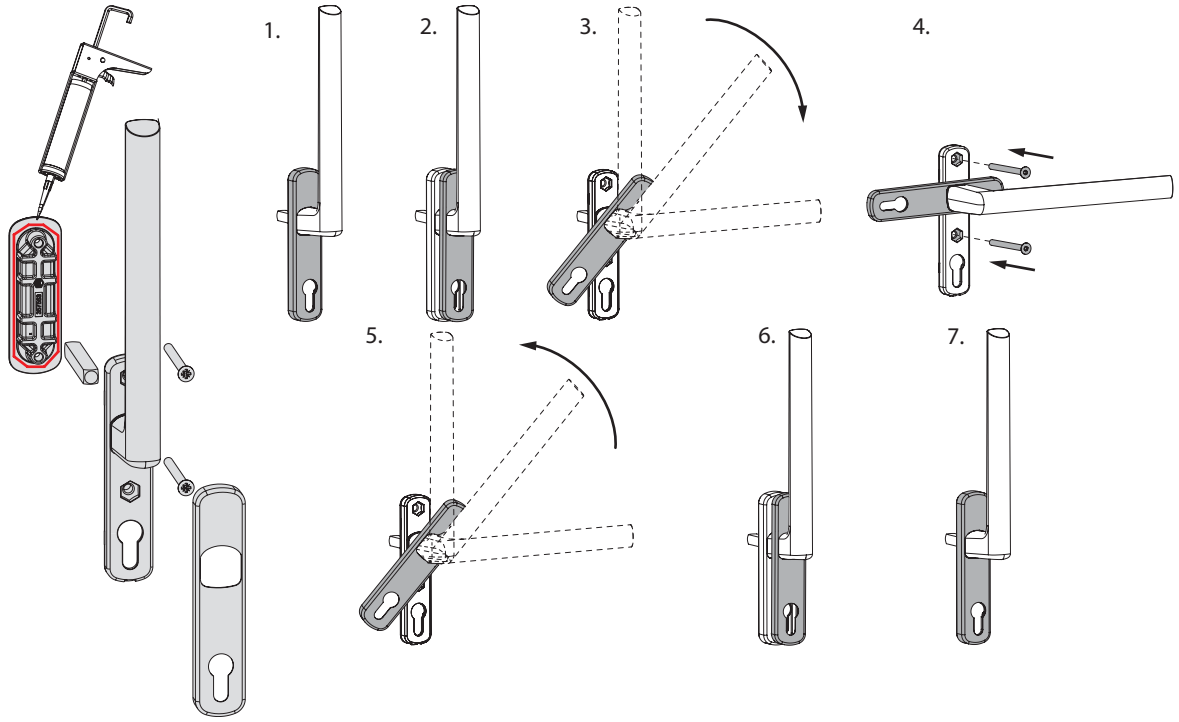
Assembly on the sash

Drive gear assembly



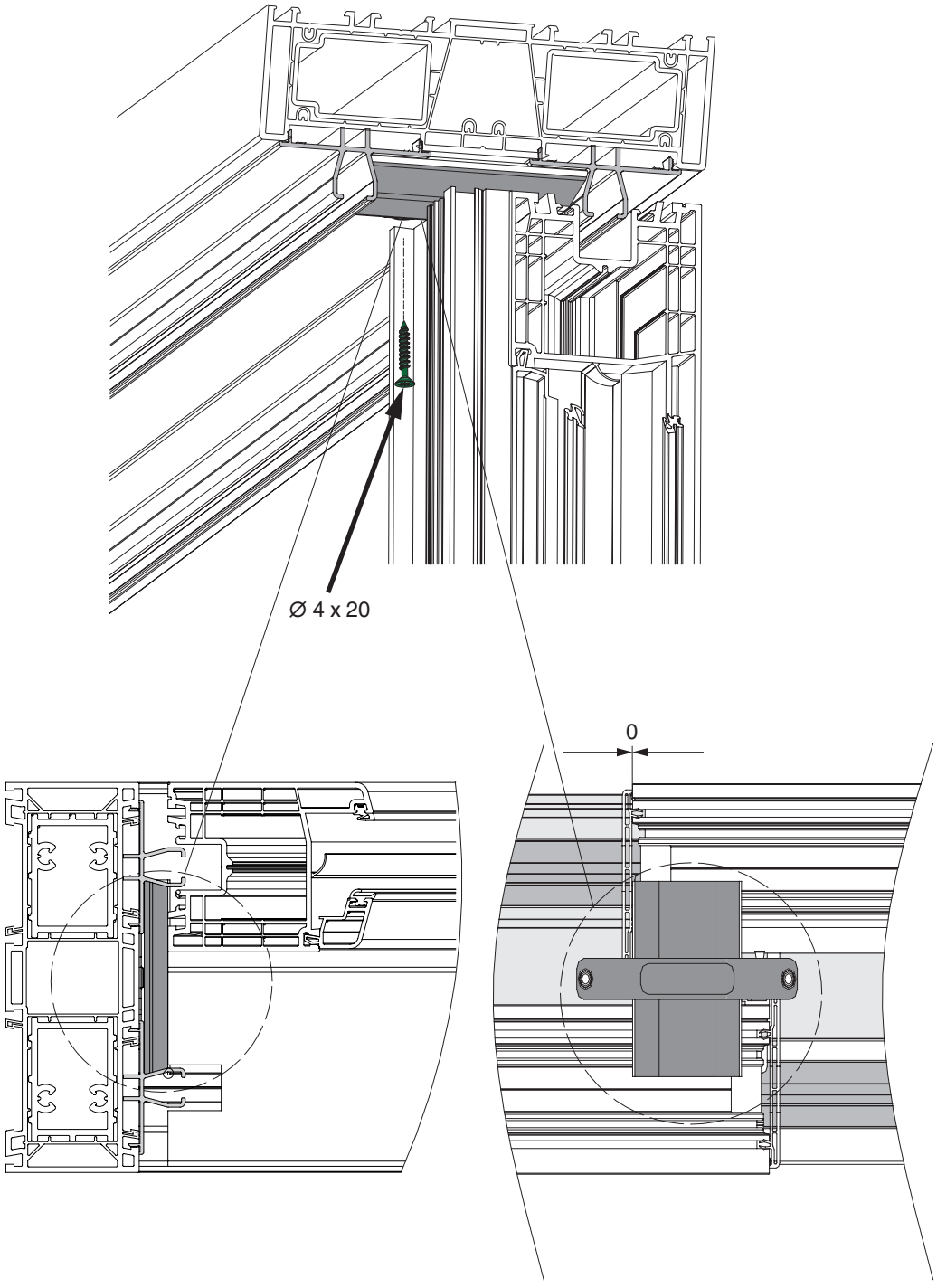
Assembly on the sash

Handle assembly



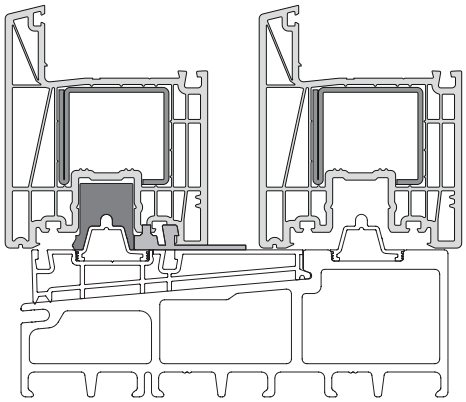
Assembly on the sash and frame

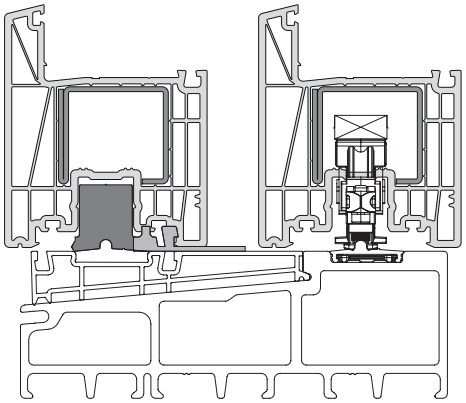
Gasket bridge Scheme D

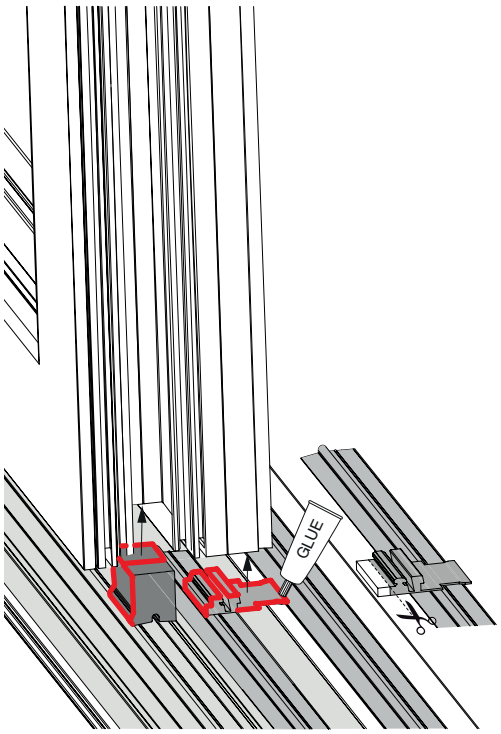


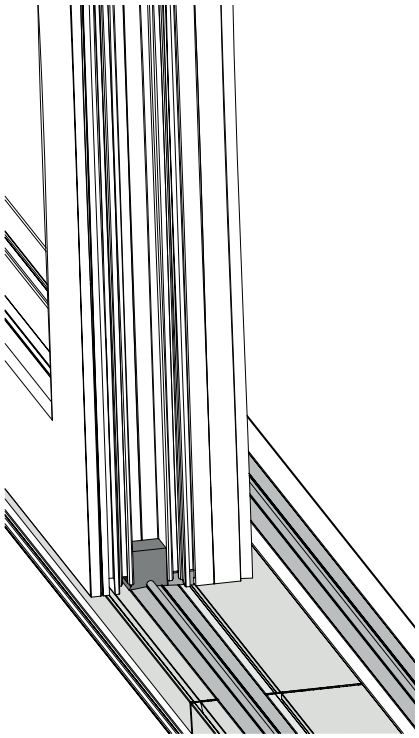
Assembly on the sash and frame

Gasket block Scheme D



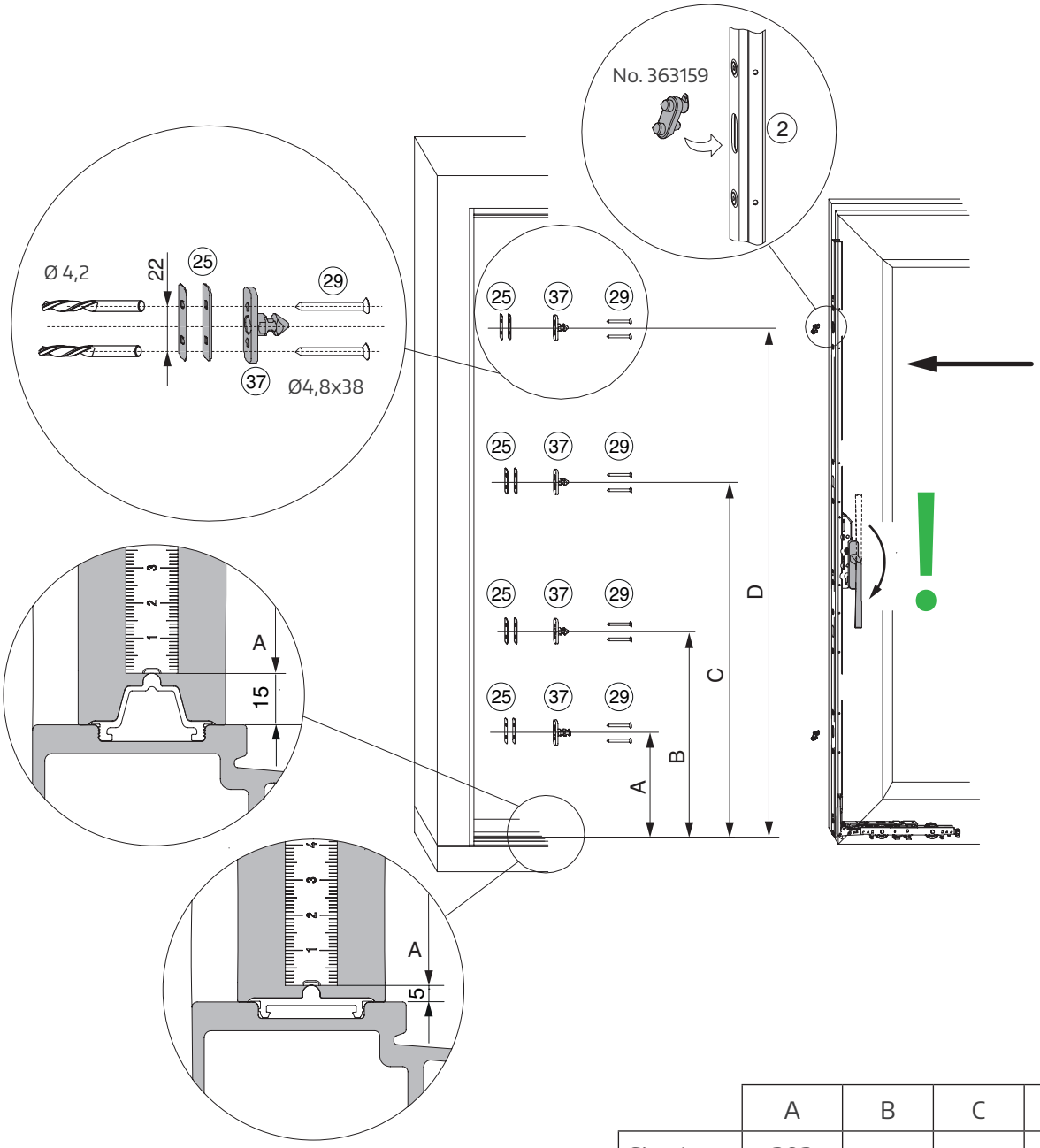






Assembly on the sash and frame

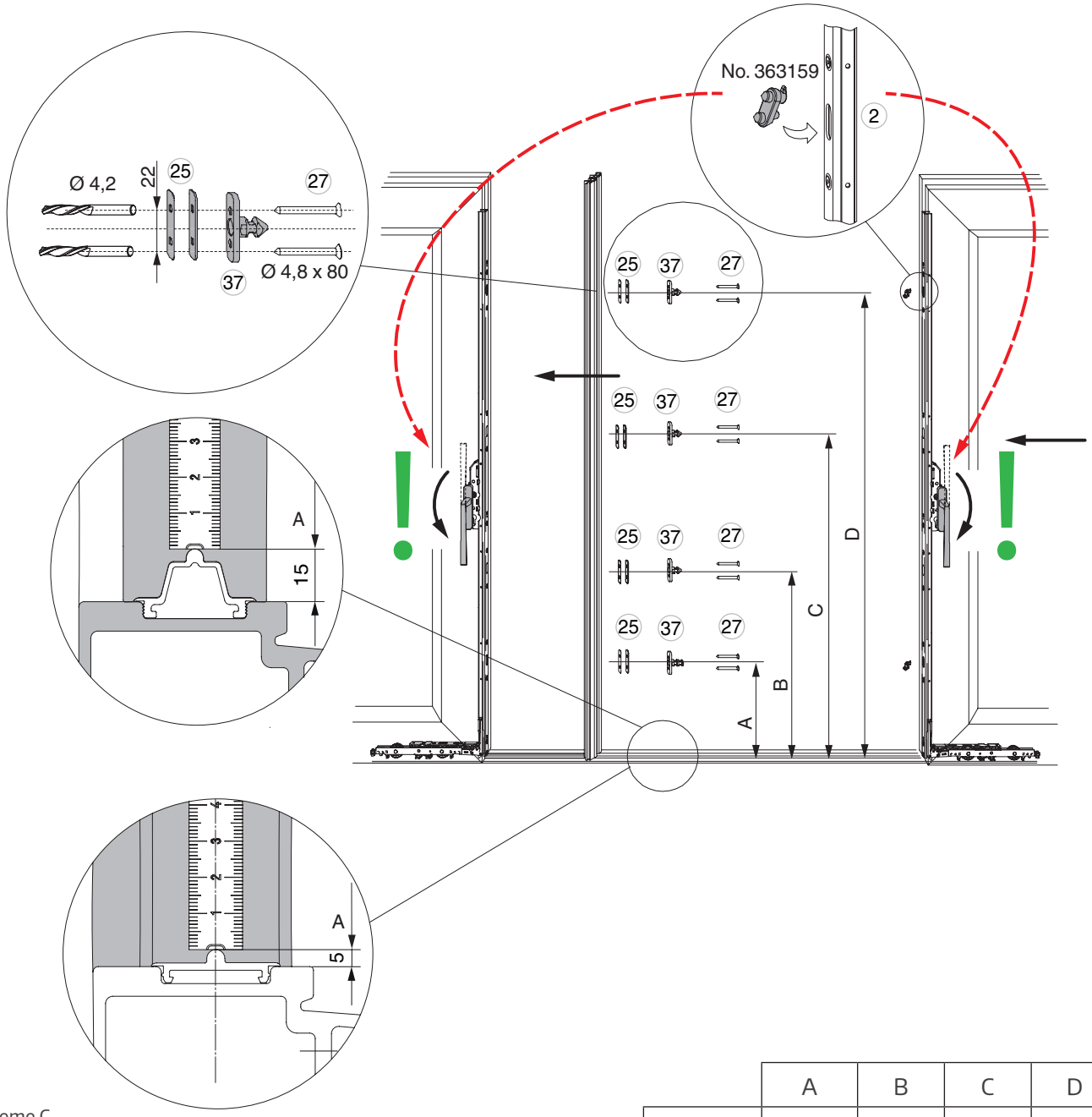
Locking bolts A, K, D



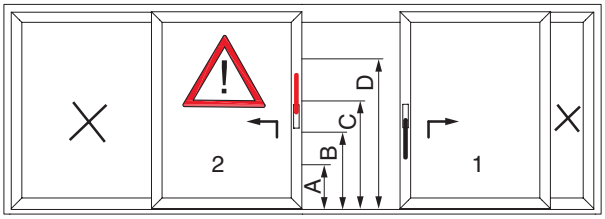
	A	B	C	D
Size 1	202	-	-	592
Size 2	202	-	592	1107
Size 3	202	702	1192	1507
Size 4	202	702	1192	1907
Size 5	202	702	1192	2307

Assembly on the sash and frame

Locking bolts C, G 1



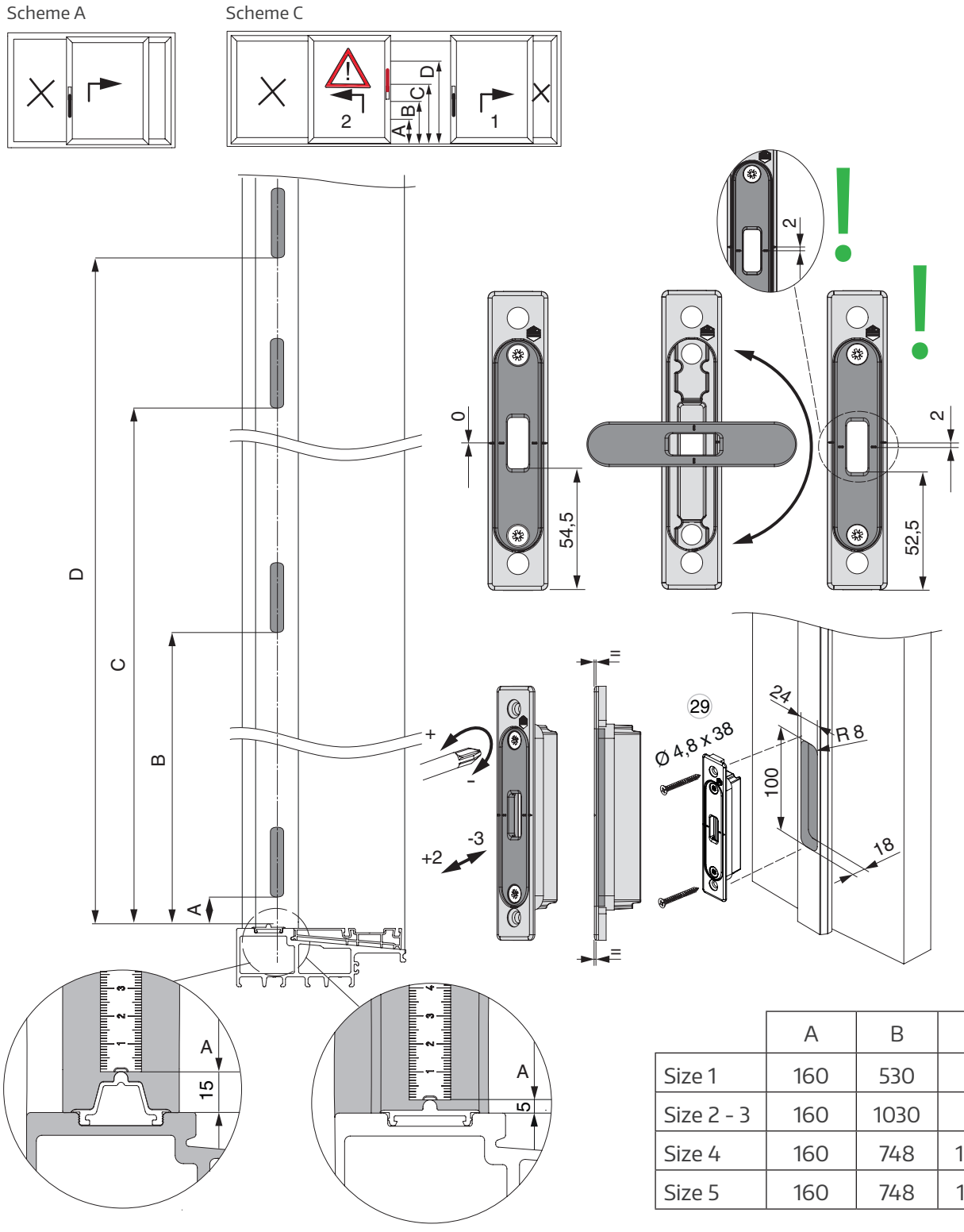
Scheme C



	A	B	C	D
Size 1	202	-	-	592
Size 2	202	-	592	1107
Size 3	202	702	1192	1507
Size 4	202	702	1192	1907
Size 5	202	702	1192	2307

Assembly on the sash and frame

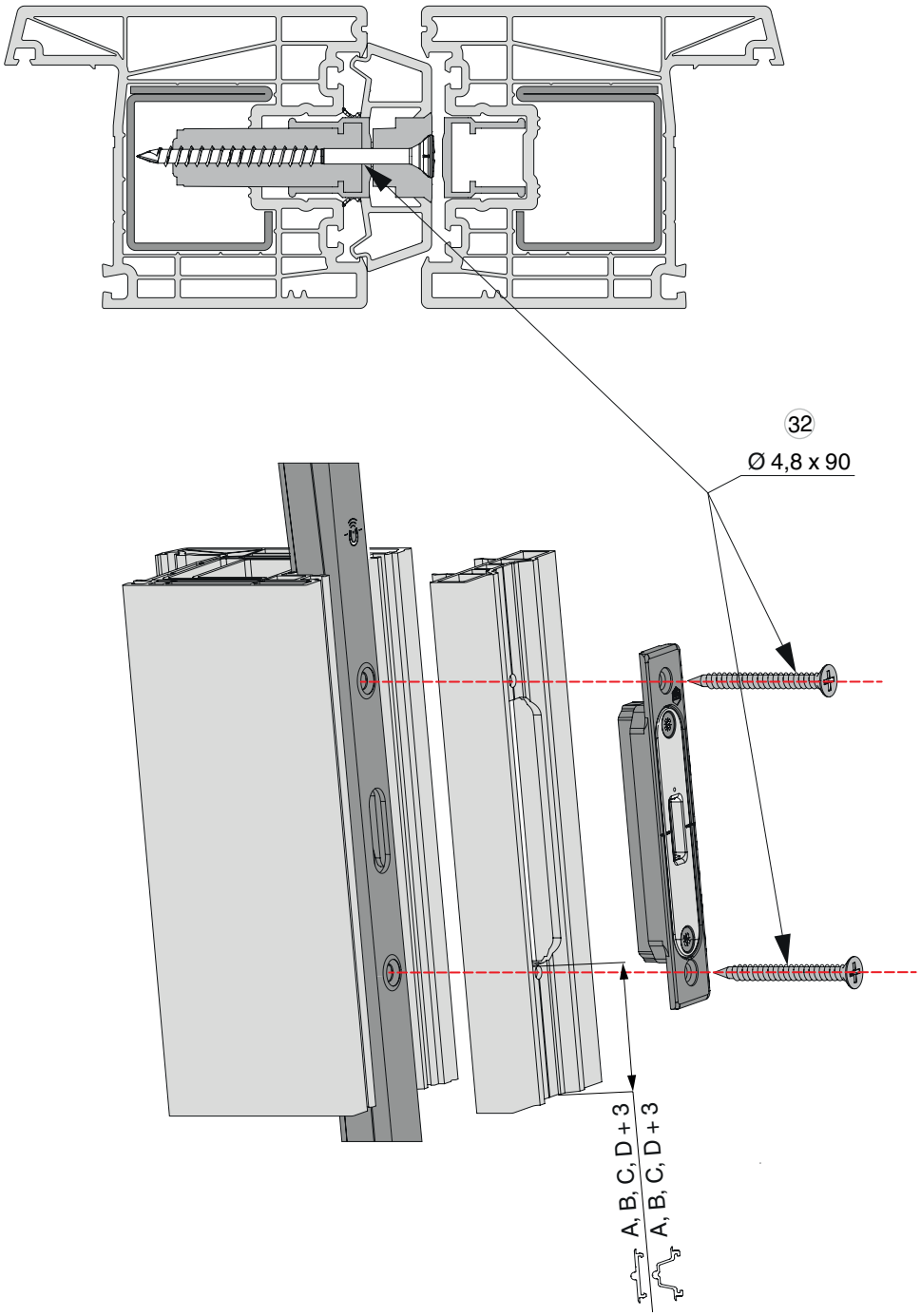
Striker plate for hook drive gear



	A	B	C	D
Size 1	160	530	-	-
Size 2 - 3	160	1030	-	-
Size 4	160	748	1628	-
Size 5	160	748	1160	2060

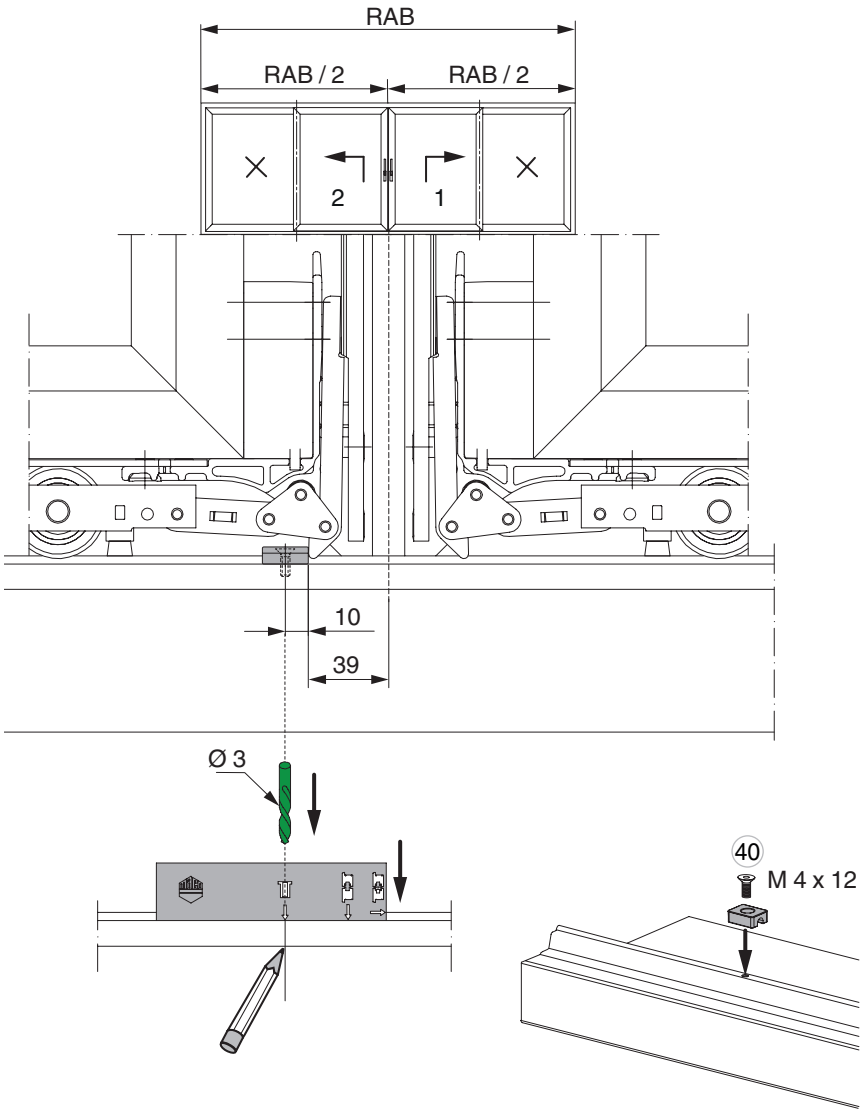
Assembly on the sash and frame

Striker plate for hook drive gear Scheme C, G 1



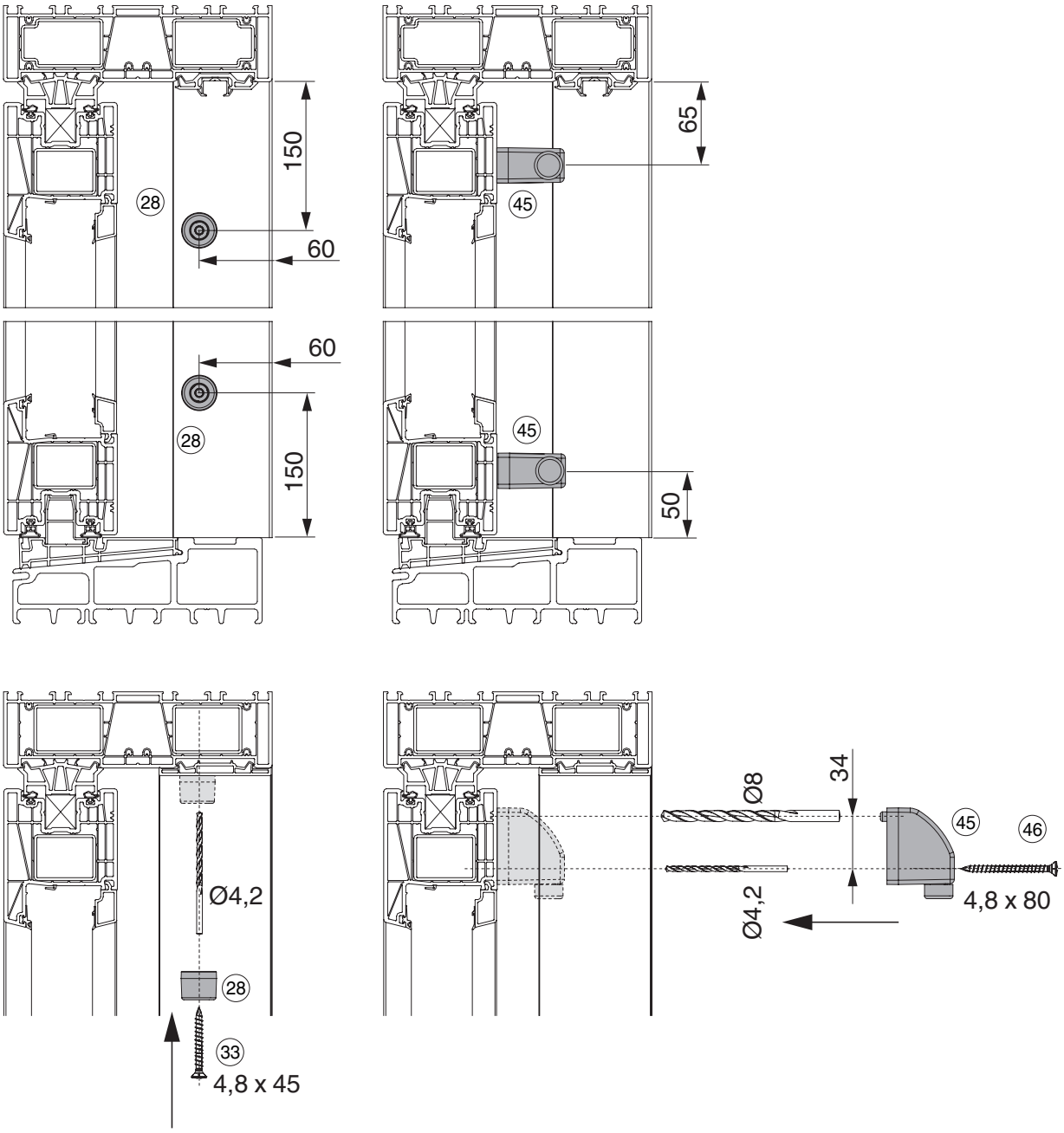
Assembly on the sash and frame

Locking block



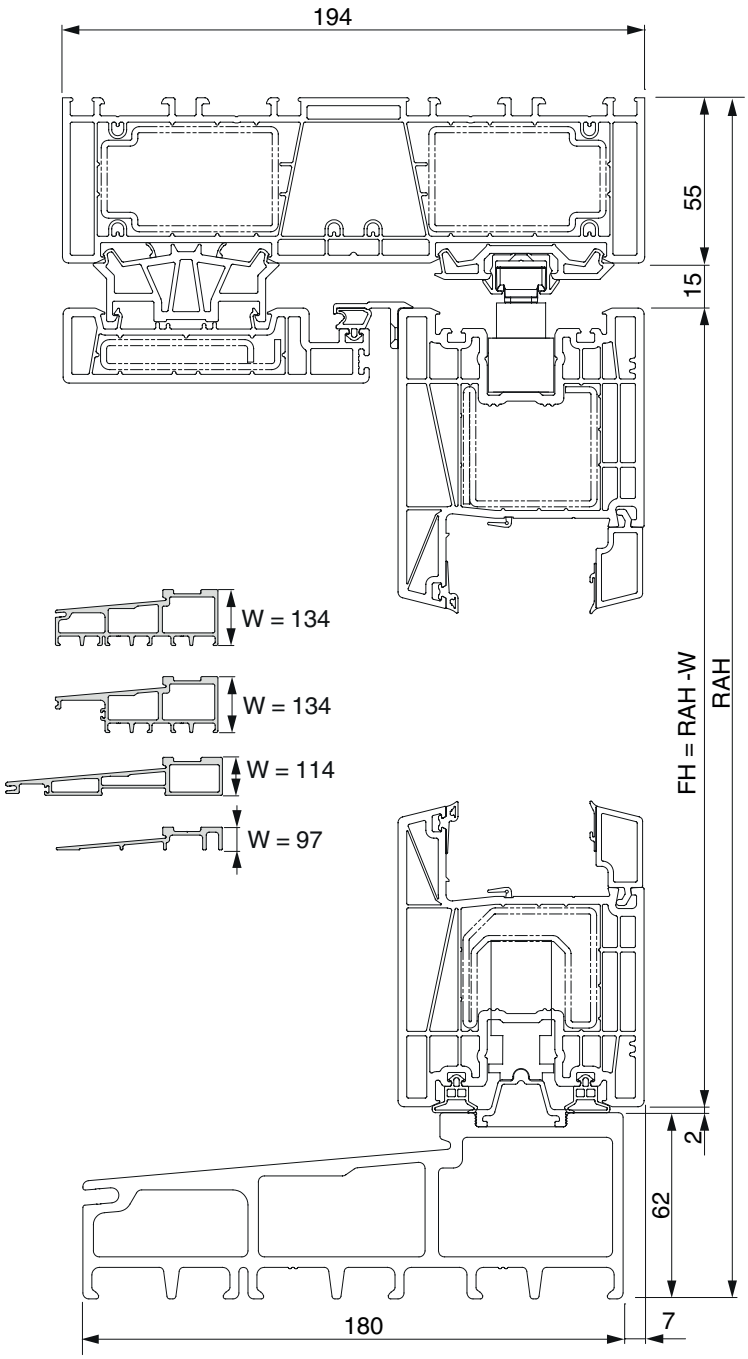
Assembly on the sash and frame

Buffer stop



Vertical cross-section

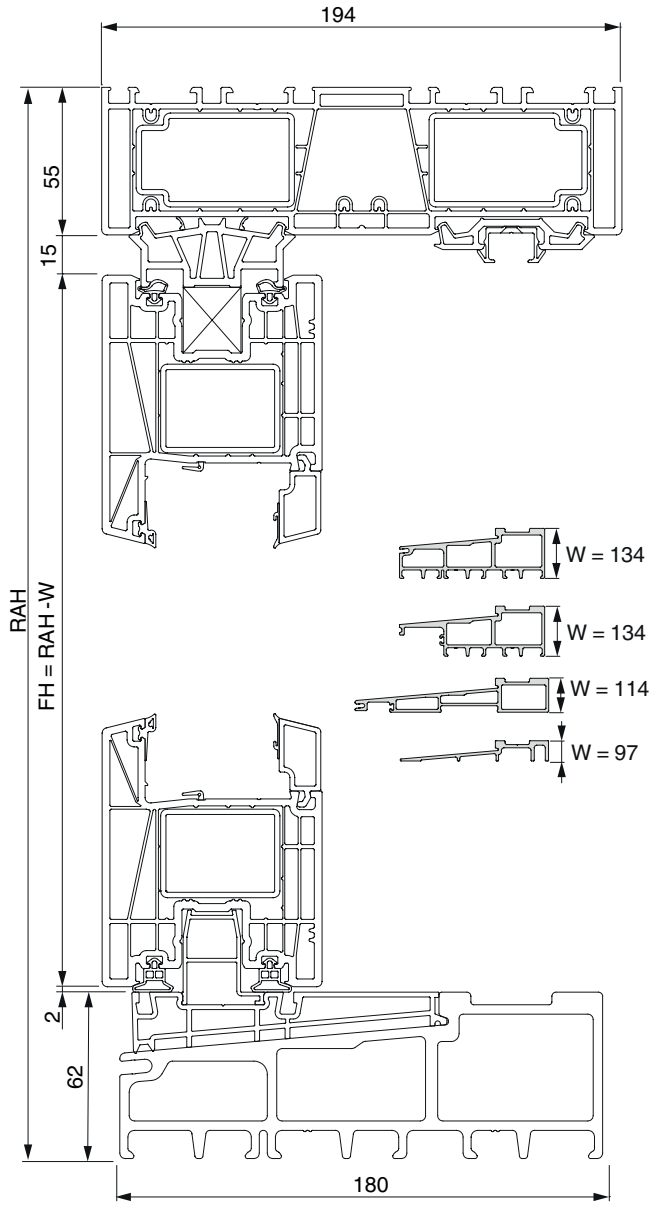
Sliding sash



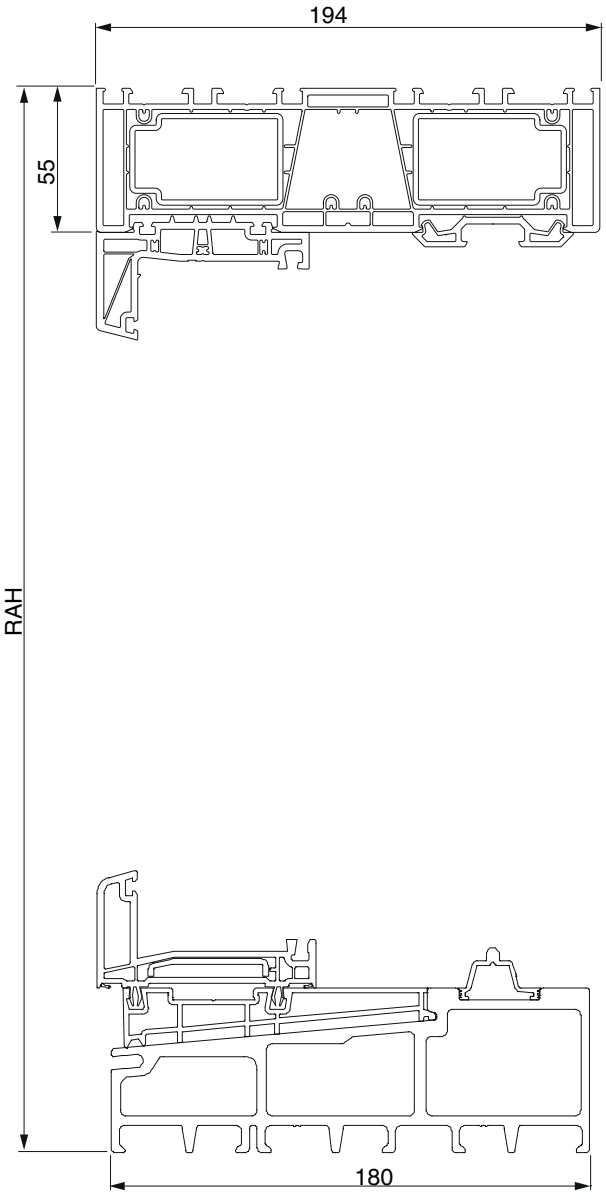
Vertical cross-section

Fixed sash Standard and fixed sash Design

Standard



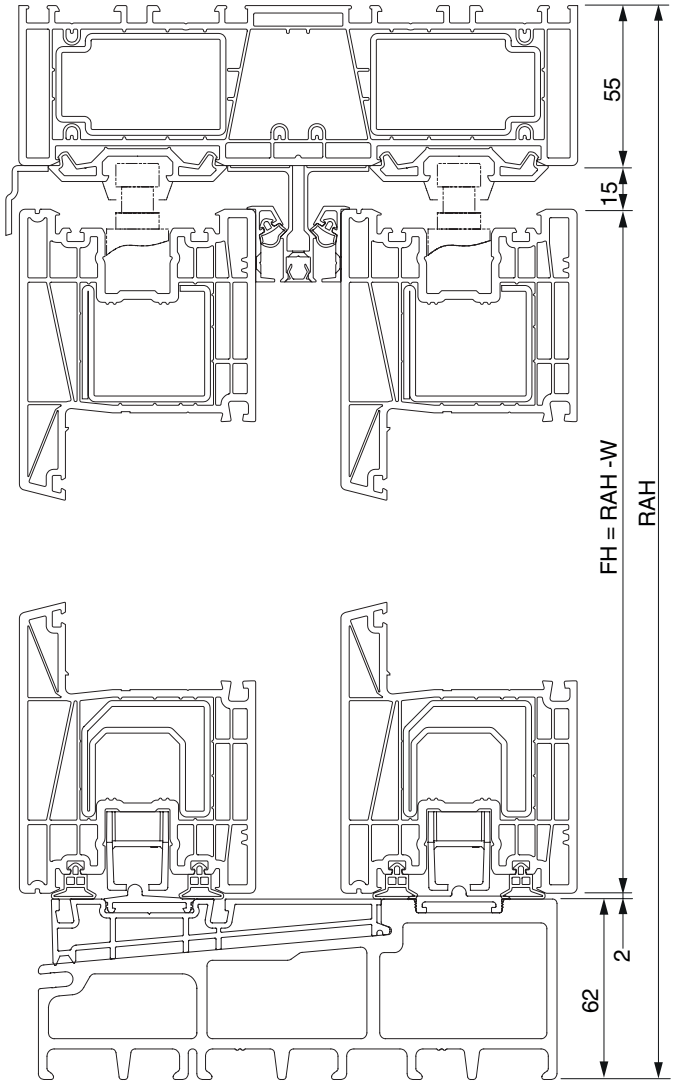
Design



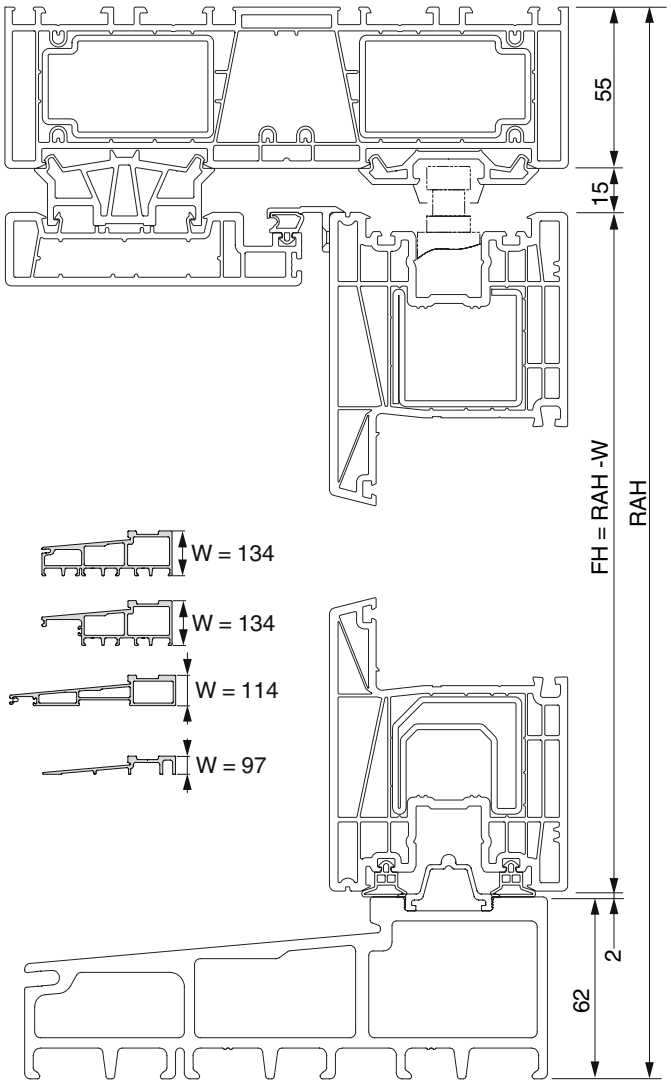
Vertical cross-section

Scheme D, G1

Scheme D



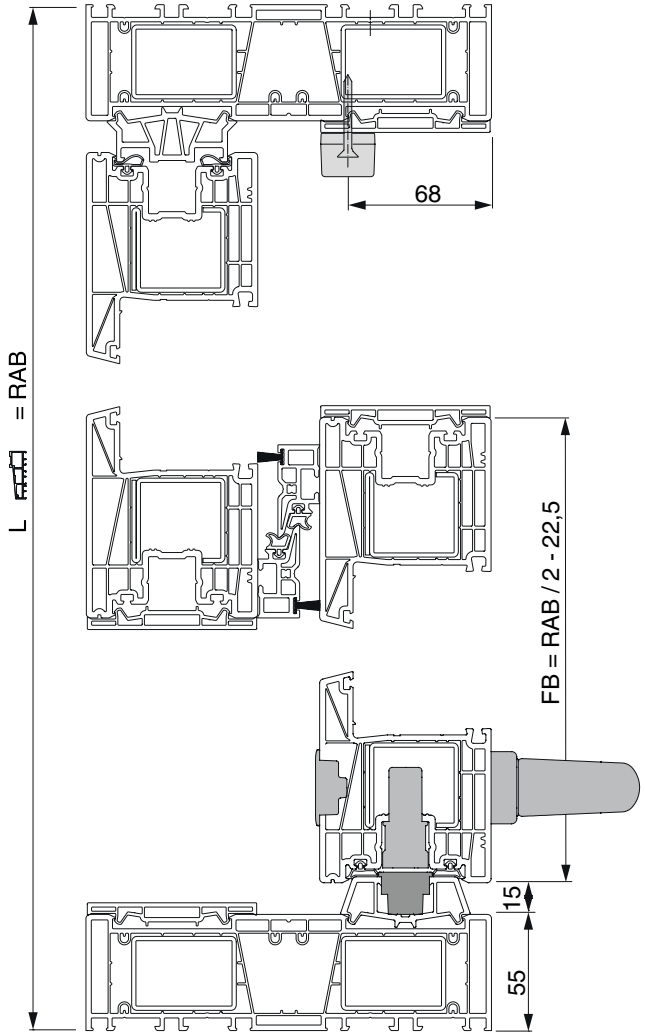
Scheme G1



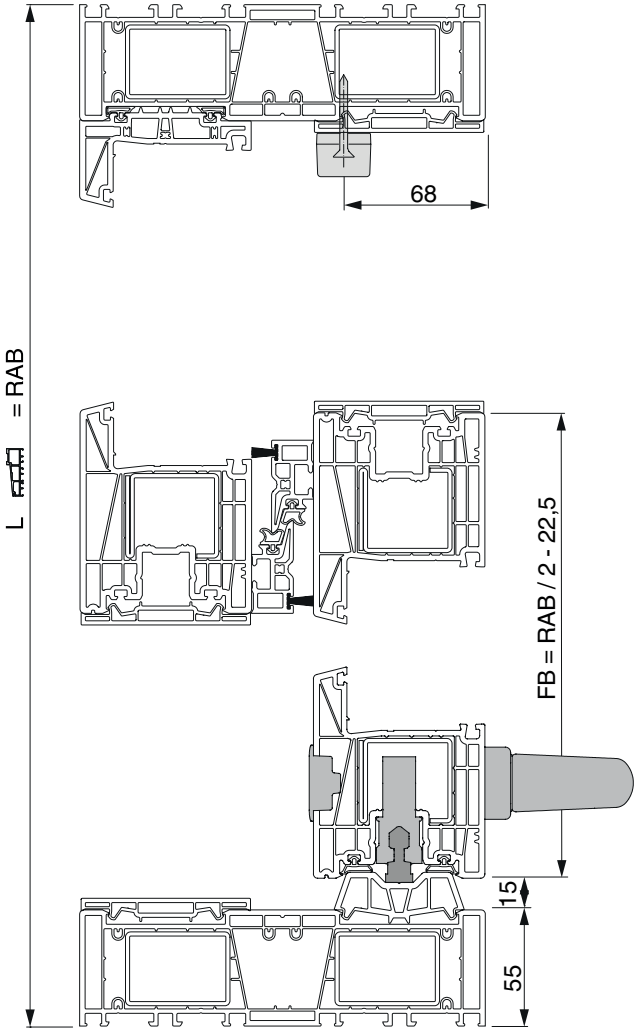
Horizontal cross-section

Scheme A

Standard



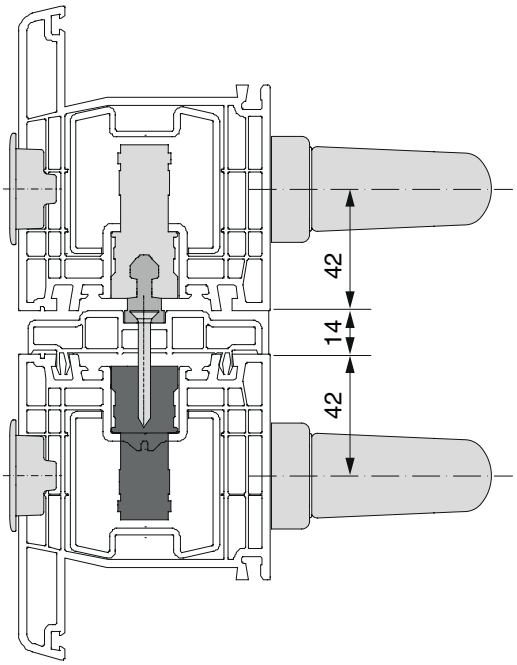
Design



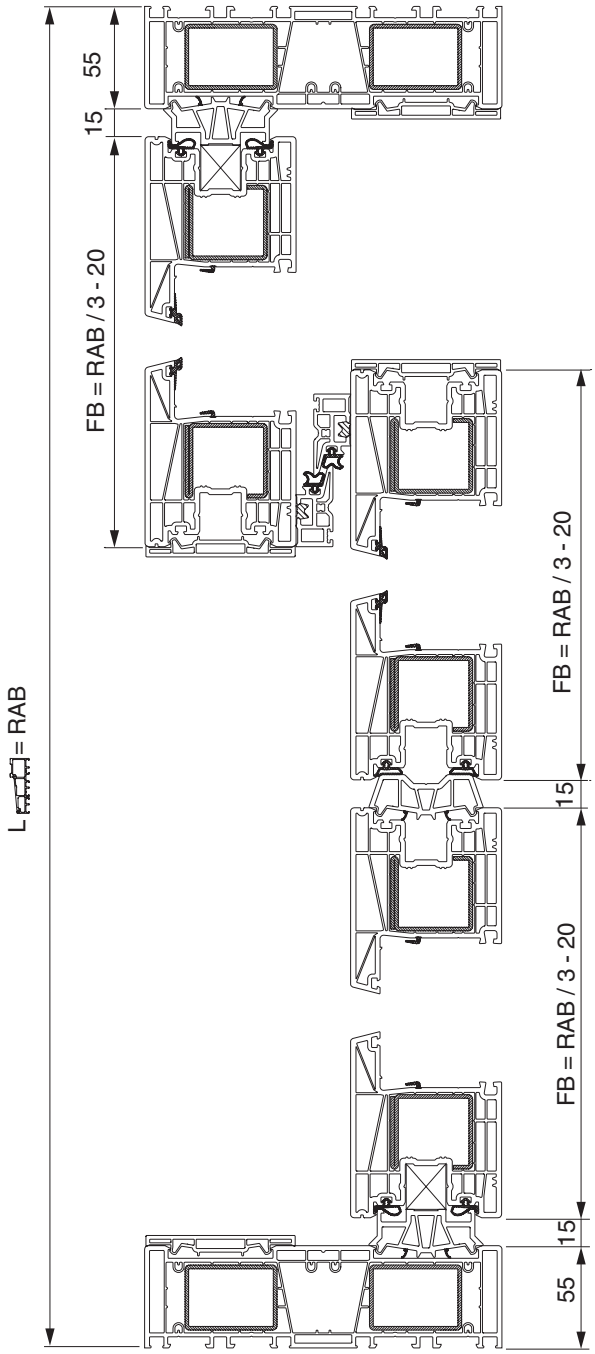
Horizontal cross-section

Scheme C, G1

Scheme C

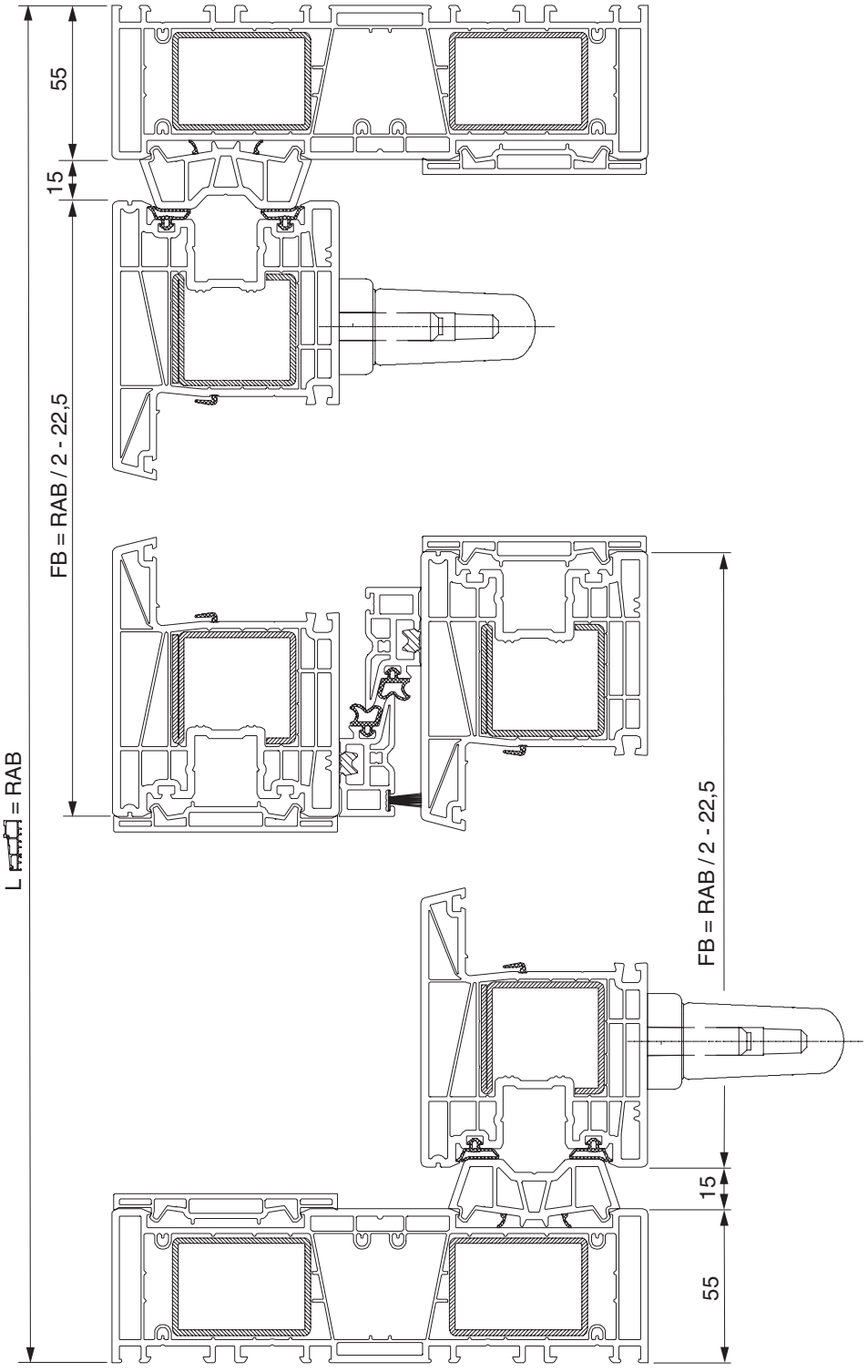


Scheme G1



Horizontal cross-section

Scheme D



Notes

Notes

Notes

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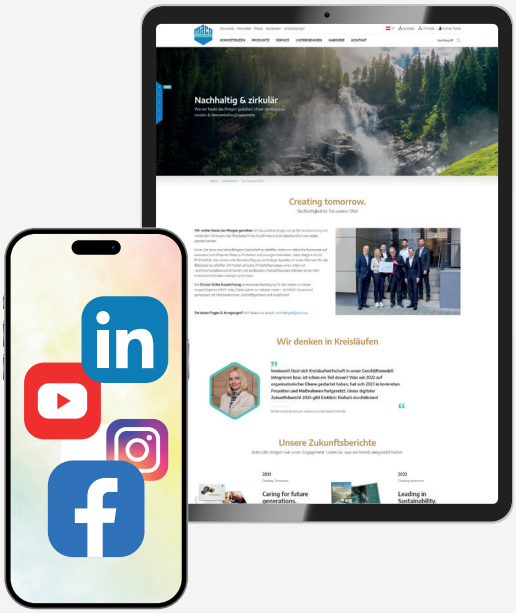

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