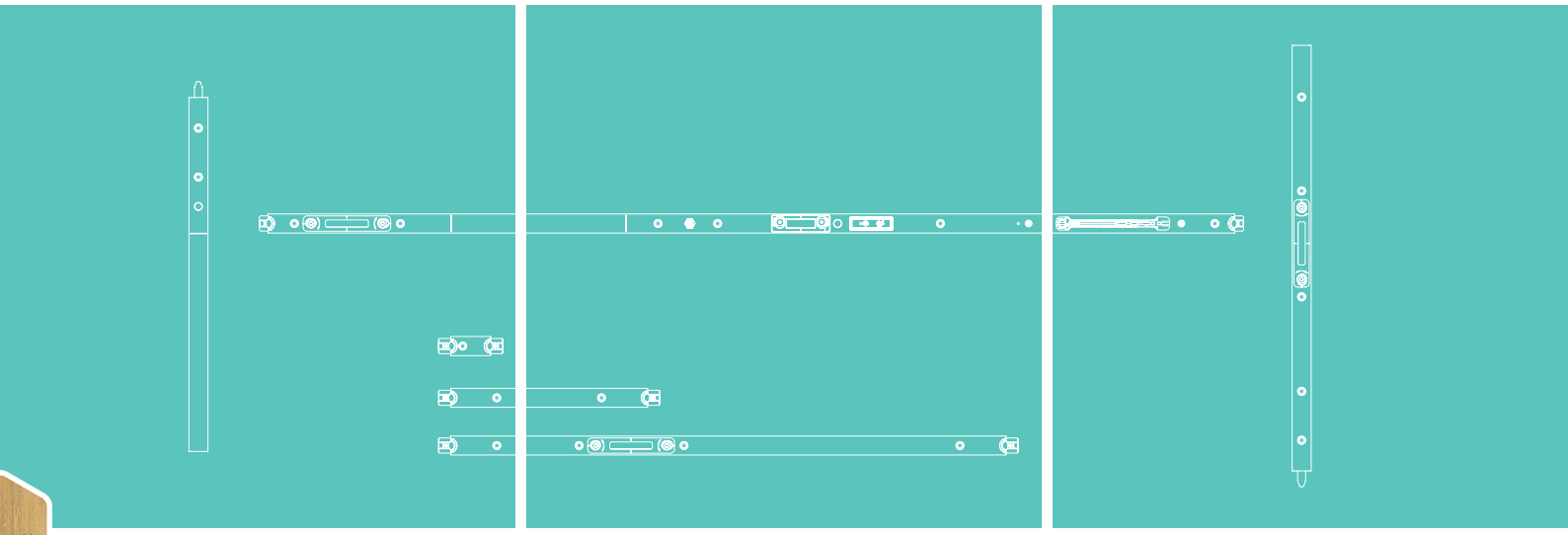
TECHNOLOGY IN MOTION

USE
EXCLUSIVELY FOR SPECIALIST COMPANIES!

MACO PROTECT

MODULAR FRENCH CASEMENT DRIVE GEAR

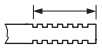
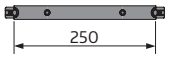
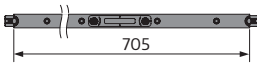


INSTALLATION INSTRUCTIONS

French Casement Drive Gear

TIMBER
PVC
ALUMINIUM

Legends and abbreviations

	DM	Backset dimension
	E	Distance
	GM	Handle size
		Cut-to-length range
		Shortening face plate (50 mm)
		Extension face plate (250 mm)
		Intermediate face plate (705 mm)
	EV	End lock
	FFH	Sash rebate height
	K+	Box size top
	K-	Box size bottom
	MF-HO	Multifunctional latch-hook combination
	BO	Bolts
	HO	Hook upwards
	HO-BO	Hook-bolt combination
	SFG	French Casement Drive Gear

MACO Protect ...	Multipoint locking systems/ door locks
... Z-TS ... Z-TF	cylinder-operated
... G-TS ... C-TS	handle-operated
... A-TS	automatic
... A-TS with motor	automatic with motorised unlocking
... M-TS	fully motorised

Table of contents

Notes for using these installation instructions

Introduction
Read these instructions carefully before starting installation. Install all components correctly as described in these instructions and observe all safety instructions. If these instructions are not followed, no guarantee can be given for the proper functioning of the system. In the event of non-compliance, we accept no liability for injury to people or for material damage.
Coordinate the required fastening material with the structure and the corresponding load and supplement it if necessary. Any fixing material supplied only fulfils part of the requirements.

Target group of these instructions
These instructions are intended exclusively for specialist companies and personnel. The work described may only be carried out by specialist personnel.

Retention of documents / instruction
Keep these installation instructions in a safe place for future use and for maintenance.
Hand the operating instructions (download at www.maco.eu - order number 757585) to the end user and instruct them.
Please be sure to comply with your obligation to inform the end user! The complete delivery of a window or door element also includes operating and maintenance instructions!
We provide these for our customers in the download area of our website (www.maco.eu).

Installation and operation
Before installation: test doors and safety elements. The integrity and ease of movement of the doors must be ensured.
All work (installation, adjustment, etc.) must be carried out in a de-energised state.
Please also observe the installation instructions for the door lock used. We provide these for our customers in the download area of our website (www.maco.eu).

Unless otherwise stated, all dimensions are given in millimetres.
All illustrations are symbolic only.
Misprints, errors and changes are reserved.

Safety and warning notices

These installation instructions contain safety instructions before a sequence of actions that could result in personal injury or material damage. The hazard prevention measures described must be strictly adhered to. For the safety of personnel, there are safety instructions in the following 3 stages:

Imminent danger!
Failure to comply with such instructions will result in death or serious injury!

Possible imminent danger!
Failure to comply with such instructions can result in death or serious injury!

Possible imminent danger!
Failure to comply with such instructions may result in minor or slight injuries!

In addition, installation steps that require special attention are labelled with the following note:

Note to avoid material damage or errors when installing the fitting parts on the element.

Intended use

› The French Casement Drive Gear is intended for installation in vertically installed house, flat and side entrance doors made of PVC, timber, aluminium and combinations thereof.

Reasonably foreseeable misuse

› The French Casement Drive Gear must NOT be used for escape or panic doors in accordance with EN 179 or EN 1125.

› The fitting parts described in these installation instructions are made of stainless material or steel, galvanically passivated and sealed in accordance with DIN EN 12329. They must not be used in environments with aggressive, corrosive air contents.

Notes for the processing

› Install all fitting parts correctly as described in these instructions and follow all safety instructions!

› Assembly and electrical installations must be carried out according to these instructions. Incorrect wiring can lead to the destruction of the electronics.

› When screwing them together, make sure that the cables are not damaged by the fastening screws!

› Ensure that the components are in perfect condition before installation; damaged or defective components must not be used under any circumstances.

› Use screws of sufficient length (max. diameter 4 mm) that are suitable for the respective profile material for fastening. The screws must be screwed in straight. The tightening torque must also be adapted to the respective profile material.

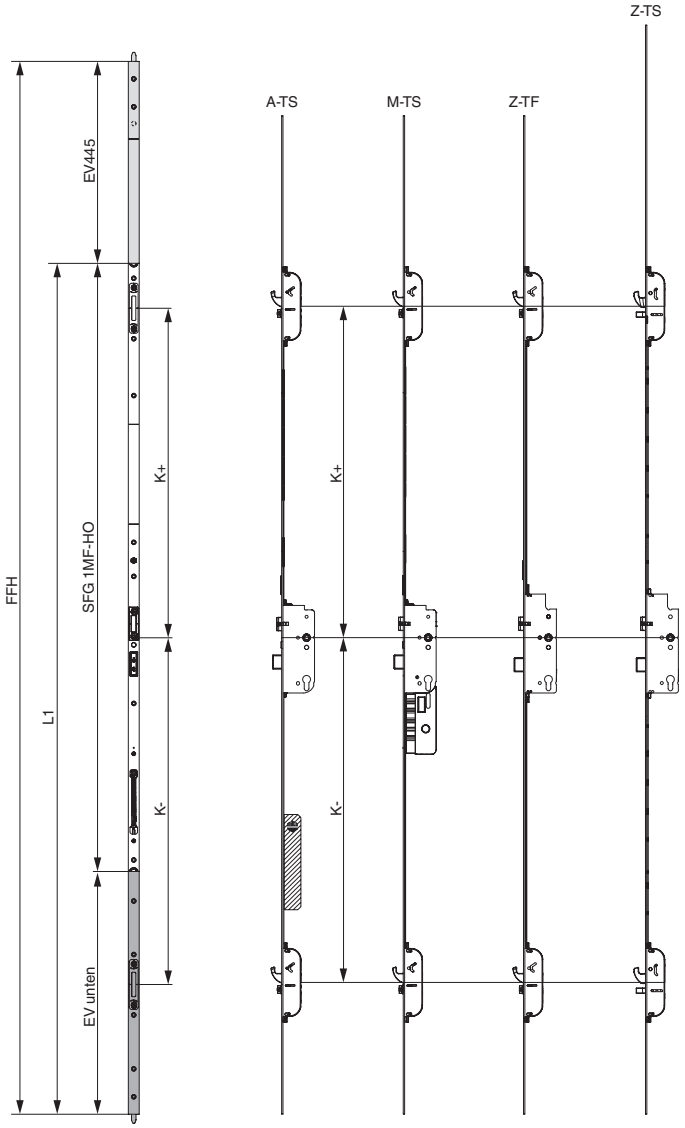
› Do not use acid-crosslinking sealants, as these can lead to corrosion of the fitting parts.

Improper installation, non-conforming or unusual use, the use of system accessories not expressly approved by MACO, modifications or repair work not expressly authorised by MACO and improper servicing can lead to malfunctions and must be avoided. Any measures not expressly authorised by MACO, shall result in the loss of all liability, warranty and any separately agreed guarantee claims.

Application overview and combination options

2-way locking system version

Overview of SFG-compatible locks with standard box dimensions K+605, K+730, K+980
A-TS 2 MF-HO, M-TS 2 MF-HO, Z-TF 2 MF-HO, Z-TS 2 HO-BO, C-TS 2 HO-BO, G-TS 2 HO-BO
The schematic diagrams apply to all side variants (right, left, can be used on both sides).



Application tables 2-way locking
SFG compatible locks with standard box dimensions K+605, K+730, K+980

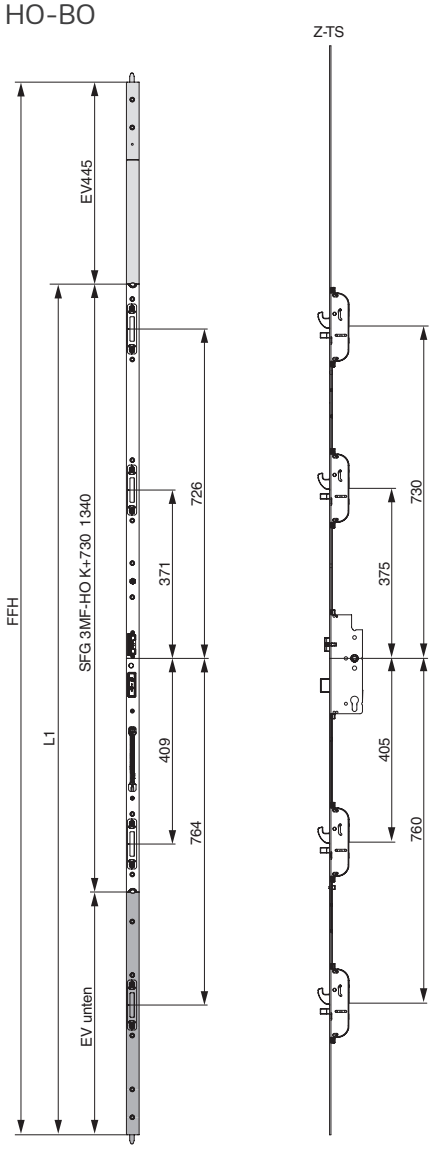
A-TS 2 MF-HO, M-TS 2 MF-HO, Z-TF 2 MF-HO, Z-TS 2 HO-BO, C-TS 2 HO-BO, G-TS 2 HO-BO

GM 1050	SFG	EV445 (top)		
Locking	Length L1 (SFG+EV bottom)	minimum (shortened)	maximum (unshortened)	FFH
SFG 1 MF-HO K+605 (1215 mm), EV MF-HO bottom (535 mm)	1750	171	445	2195 ↑ 1921
SFG 1 MF-HO K+730 (1340 mm), EV MF-HO bottom (535 mm)	1875	171	445	2320 ↑ 2046
SFG 1 MF-HO K+980 (1590 mm), EV MF-HO bottom (535 mm)	2125	171	445	2570 ↑ 2296

GM 1020	SFG	EV445 (top)		
Locking	Length L1 (SFG+EV bottom)	minimum (shortened)	maximum (unshortened)	FFH
SFG 1 MF-HO K+605 (1215 mm), EV MF-HO bottom (505 mm)	1720	171	445	2165 ↑ 1891
SFG 1 MF-HO K+730 (1340 mm), EV MF-HO bottom (505 mm)	1845	171	445	2290 ↑ 2016
SFG 1 MF-HO K+980 (1590 mm), EV MF-HO bottom (505 mm)	2095	171	445	2540 ↑ 2266

4-way locking system version

compatible with Z-TS 4 HO-BO, G-TS 4 HO-BO

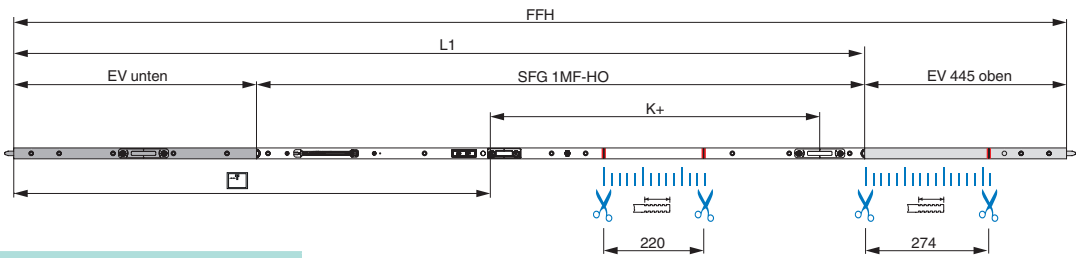


Application table 4-way locking version

		SFG	EV445 (top)		
Handle size	Locking	Length L1 (SFG+EV bottom)	minimum (shortened)	maximum (unshortened)	FFH
1050	SFG 3 MF-HO K+730 (1340 mm), EV MF-HO bottom (535 mm)	1875	171	445	2320 ↑ 2046
1020	SFG 3 MF-HO K+730 (1340 mm), EV MF-HO bottom (505 mm)	1845	171	445	2290 ↑ 2016

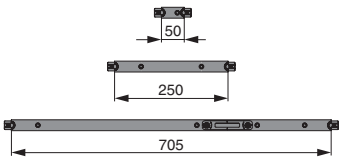
Application table SFG modular GM 1050 mm in combination with K+730 modular lock A-TS, Z-TS, G-TS

	SFG				EV445 (top)			
Locking	Length L1 (SFG+EV bottom)	Cut-to-length range	Module	Box position K+	minimum (shortened)	maximum (unshortened)	FFH	see illustration
SFG 1MF-HO K+605 (1215 mm), EV MF-HO bottom (535 mm)	1750	-220	50	K+435	171	445	2025 ↑ 1751	Shortening face plate 50 mm GM 1050 (see 15)
				K+605	171	445	2195 ↑ 1921	Standard heights GM 1050 (see 12)
SFG 1MF-HO K+730 (1340 mm), EV MF-HO bottom (535 mm)	1875	-220	50	K+560	171	445	2150 ↑ 1876	Shortening face plate 50 mm GM 1050 (see 15)
				K+730	171	445	2320 ↑ 2046	Standard heights GM 1050 (see 12)
		-220	250	K+730	171	445	2350 ↑ 2076	Extension face plate 250 mm GM 1050 (see 16)
			250	K+980	171	445	2570 ↑ 2296	Extension face plate 250 mm GM 1050 (see 16)
		-220	705	K+730 / K+1215	171	445	2805 ↑ 2531	Intermediate face plate 705 mm GM 1050 (see 17)
			705	K+730 / K+1435	171	445	3025 ↑ 2751	Intermediate face plate 705 mm GM 1050 (see 17)
SFG 1MF-HO K+980 (1590 mm), EV MF-HO bottom (535 mm)	2125			K+980	171	445	2570 ↑ 2296	Standard heights GM 1050 (see 12)
			50	K+1030	171	445	2620 ↑ 2346	Shortening face plate 50 mm GM 1050 (see 15)



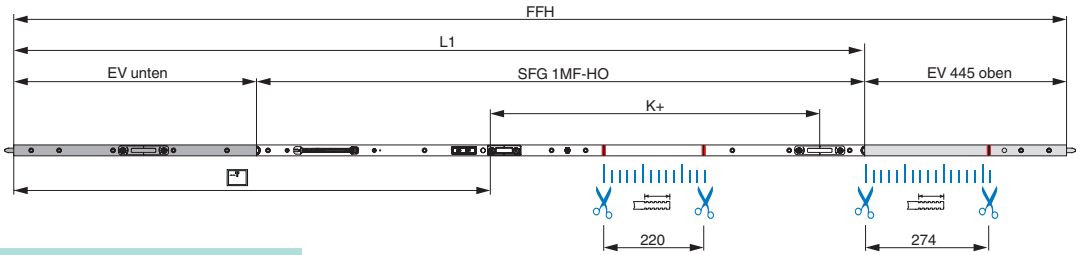
CAUTION

The illustration needs to be turned: 90°



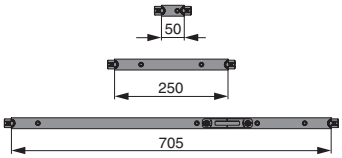
Application table SFG modular GM 1020 mm in combination with K+730 modular lock A-TS, Z-TS, G-TS

	SFG				EV445 (top)			
Locking	Length L1 (SFG+EV bottom)	Cut-to-length range	Module	Box position K+	minimum (shortened)	maximum (unshortened)	FFH	see illustration
SFG 1MF-HO K+605 (1215 mm), EV MF-HO bottom (505 mm)	1720	-220	50	K+435	171	445	1995 ↑ 1721	Shortening face plate 50 mm GM 1020 (see 15)
				K+605	171	445	2165 ↑ 1891	Standard heights GM 1020 (see 12)
SFG 1MF-HO K+730 (1340 mm), EV MF-HO bottom (505 mm)	1845	-220	50	K+560	171	445	2120 ↑ 1846	Shortening face plate 50 mm GM 1020 (see 15)
				K+730	171	445	2290 ↑ 2016	Standard heights GM 1020 (see 12)
		-220	250	K+730	171	445	2320 ↑ 2046	Extension face plate 250 mm GM 1020 (see 16)
			250	K+980	171	445	2540 ↑ 2266	Extension face plate 250 mm GM 1020 (see 16)
		-220	705	K+730 / K+1215	171	445	2775 ↑ 2501	Shortening face plate 705 mm GM 1020 (see 17)
			705	K+730 / K+1435	171	445	2995 ↑ 2721	Shortening face plate 705 mm GM 1020 (see 17)
SFG 1MF-HO K+980 (1590 mm), EV MF-HO bottom (505 mm)	2095			K+980	171	445	2540 ↑ 2266	Standard heights GM 1020 (see 12)
			50	K+1030	171	445	2590 ↑ 2316	Shortening face plate 50 mm GM 1020 (see 15)



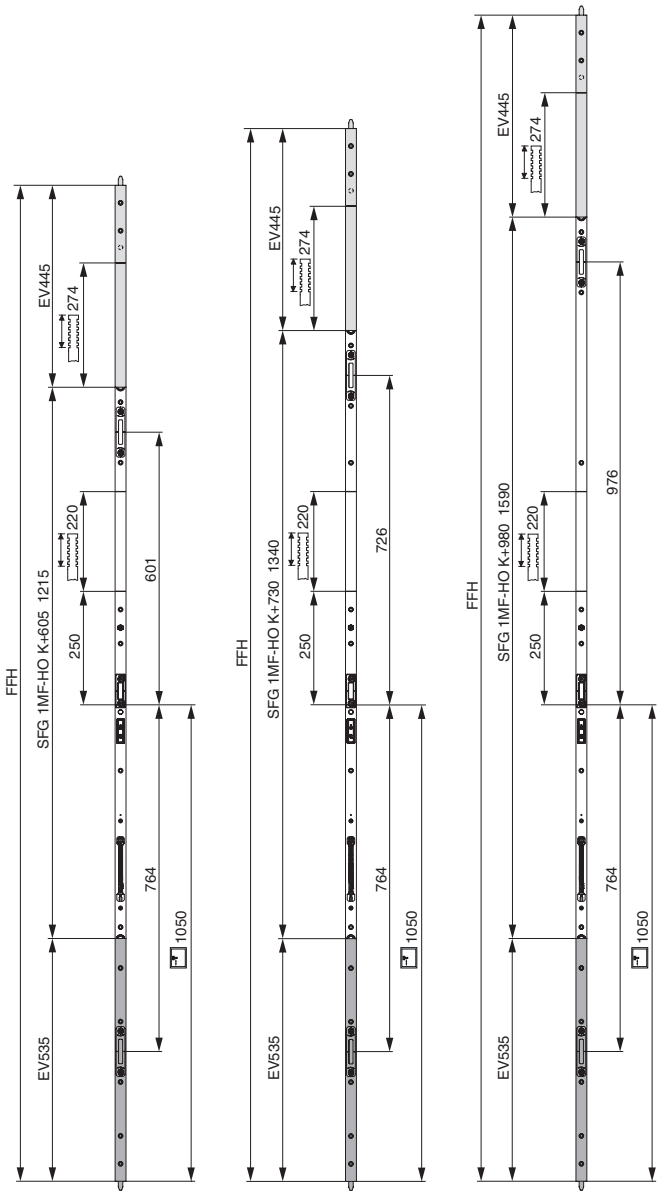
CAUTION

The illustration needs to be turned: 90°

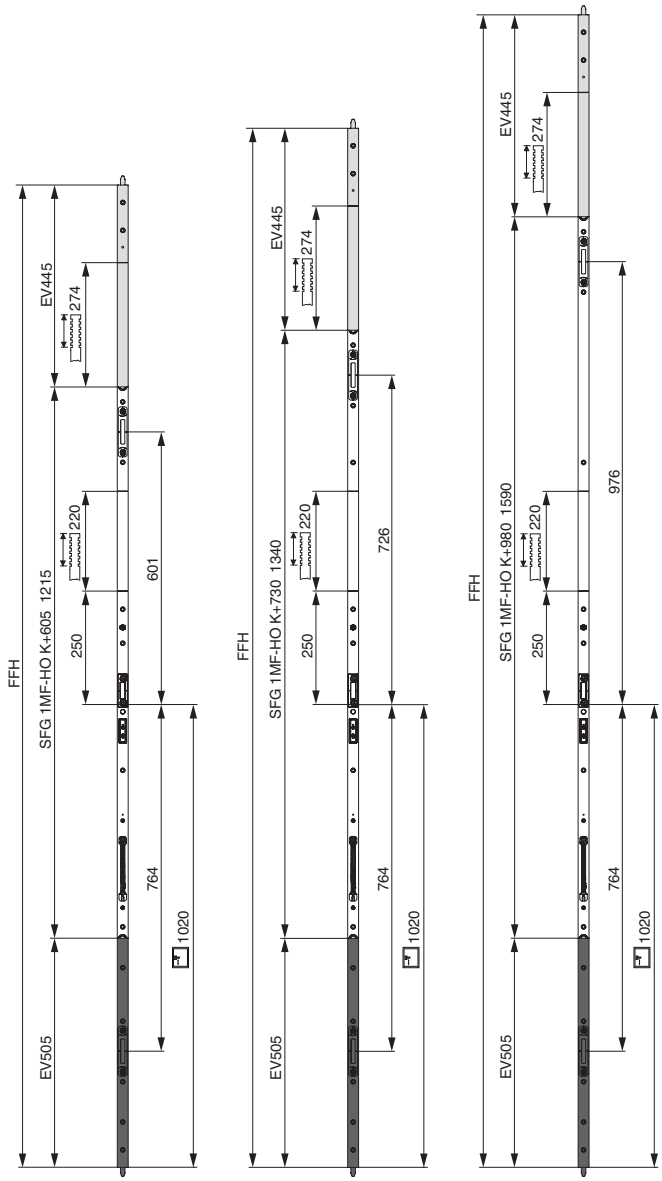


SFG modular standard heights

Handle size 1050

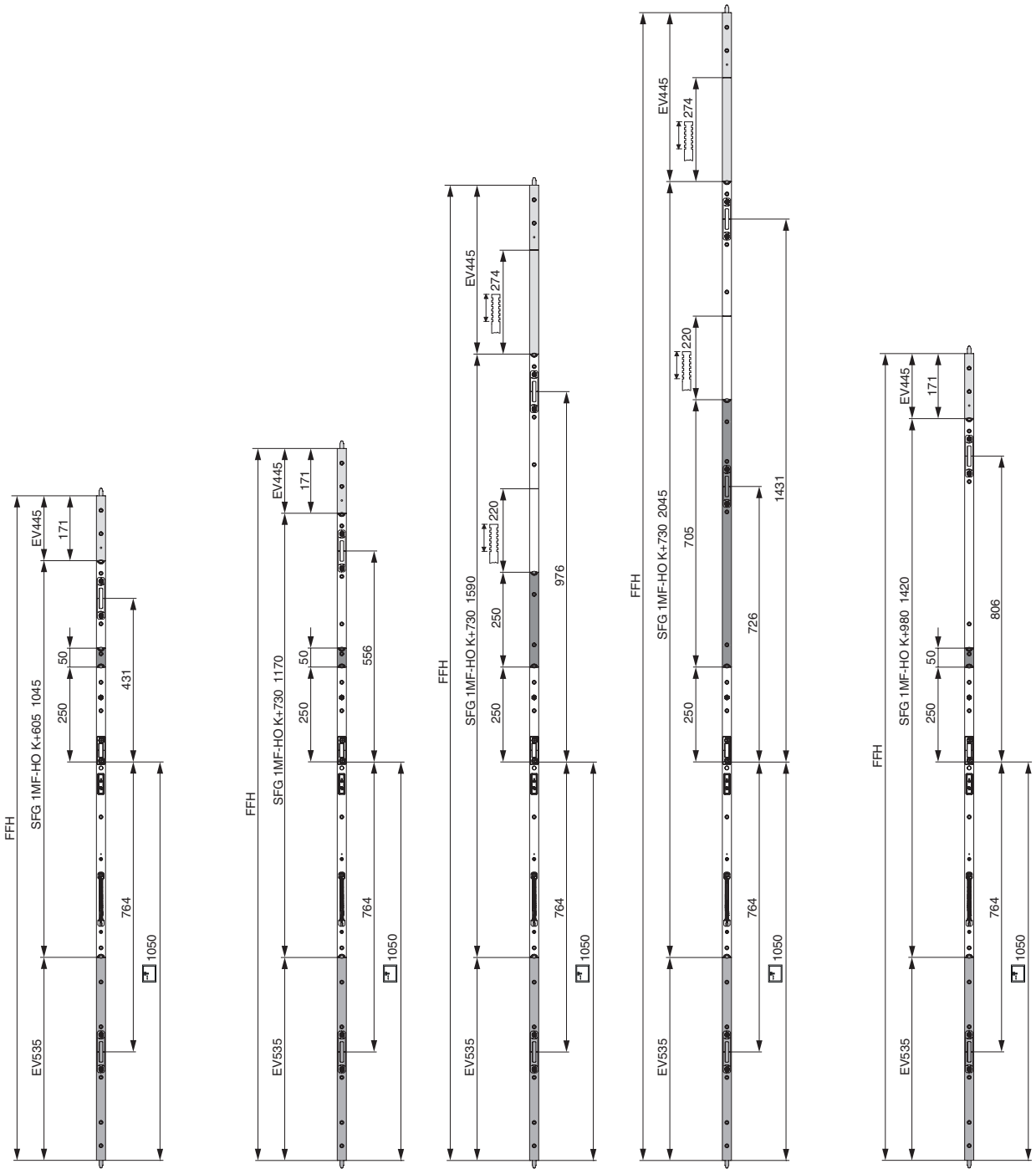


Handle size 1020

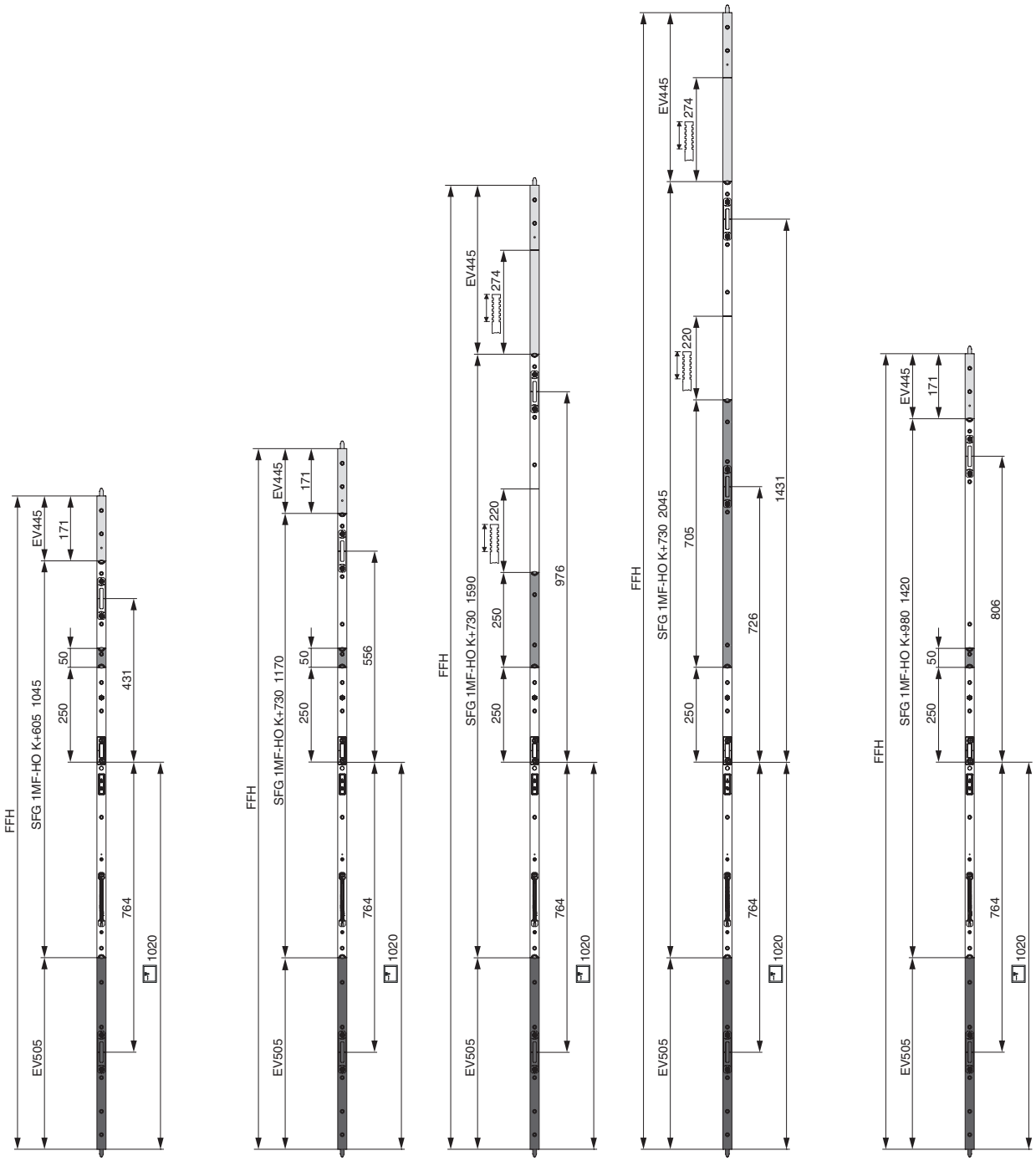


Module application (shortening, extending, intermediate face plate)

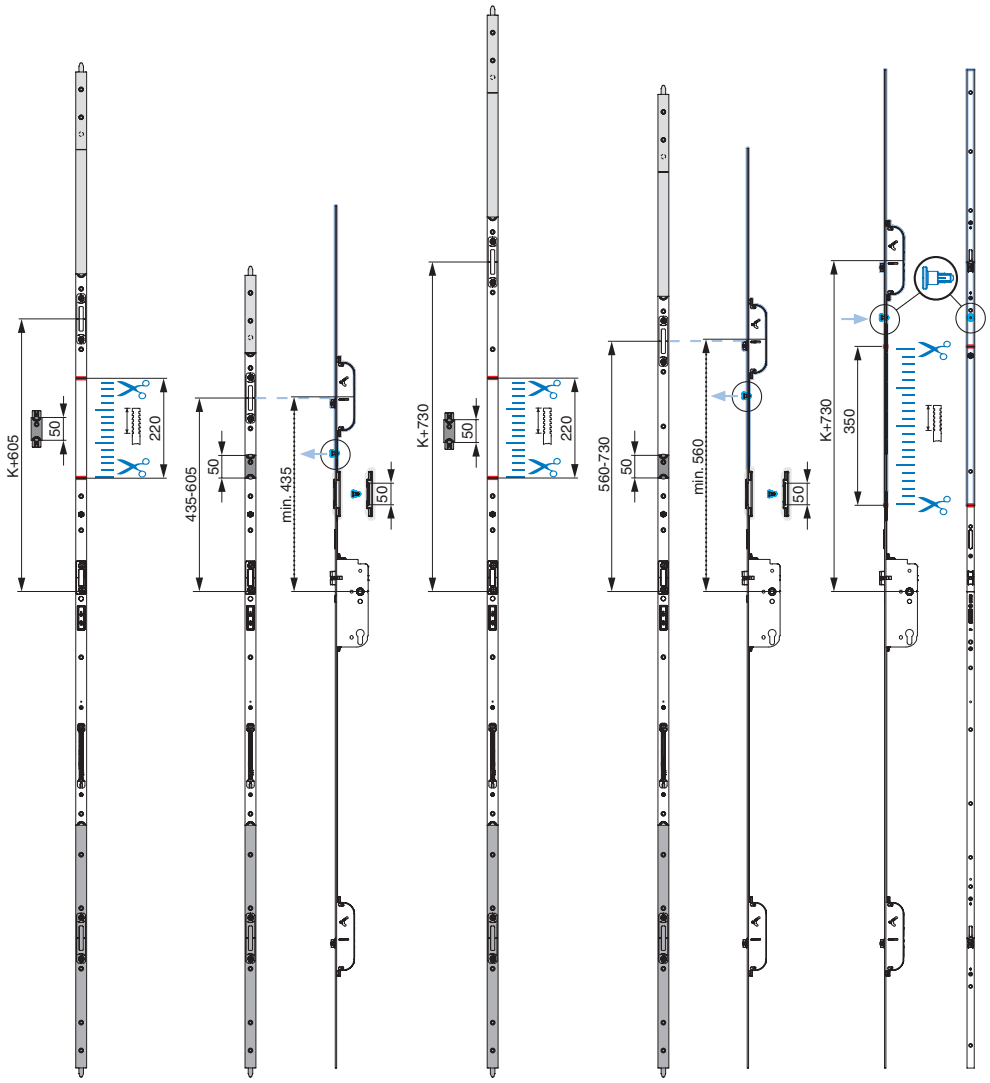
Handle size 1050



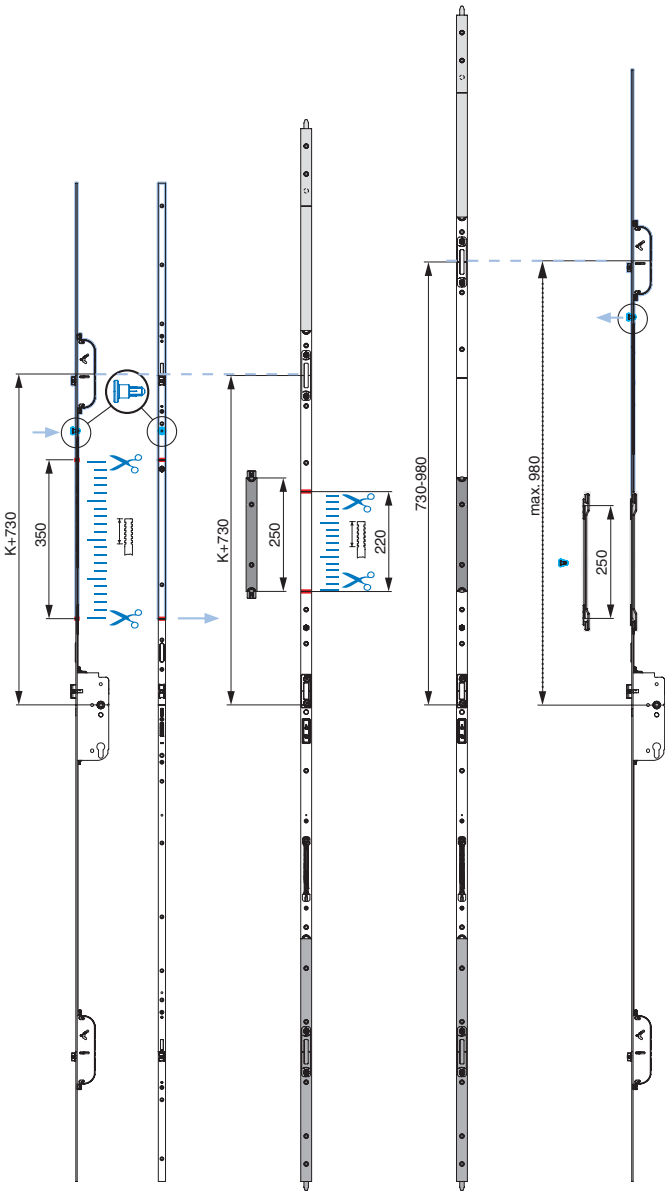
Handle size 1020



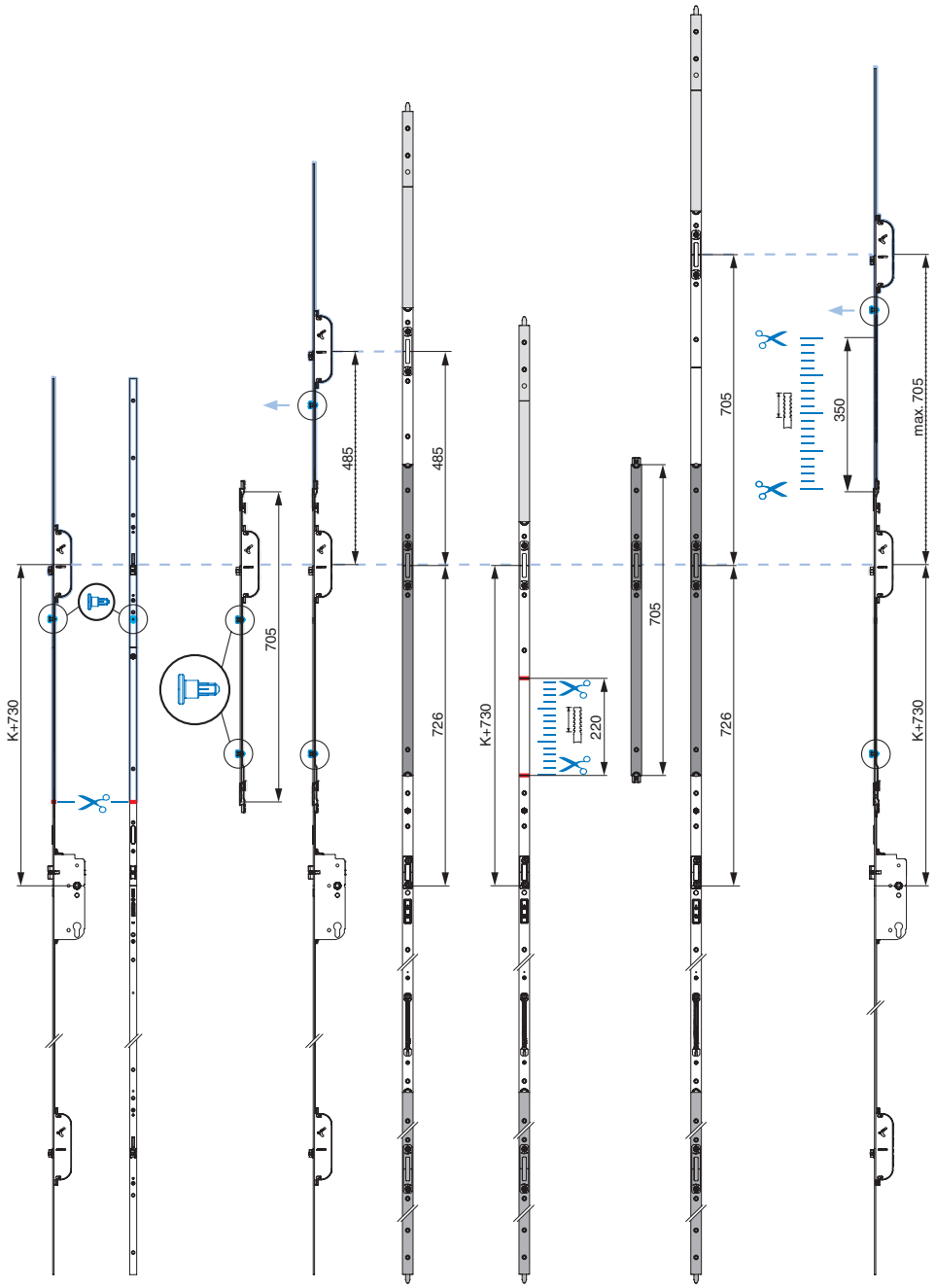
Use of 50 mm shortening face plate



Use of 250 mm extension face plate



Use of 705 mm intermediate face plate



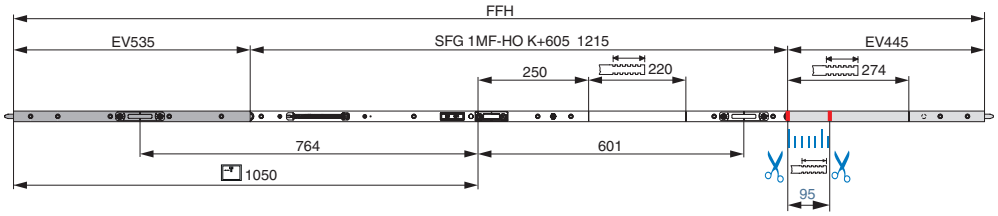
Calculation examples

CAUTION

Illustrations are to be rotated: 90°

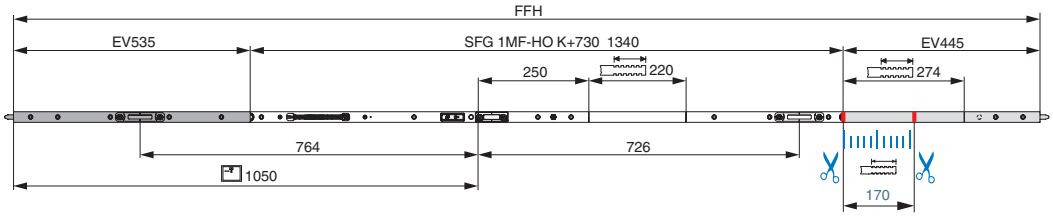
Example A: required FFH 2100 mm (handle size 1050 mm):

EV bottom 535 mm + SFG 1215 mm + EV top 445 mm = Total length 2195 mm
– FFH 2100 mm
= Cut-to-length size 95 mm (= cut EV445 to length at the top)



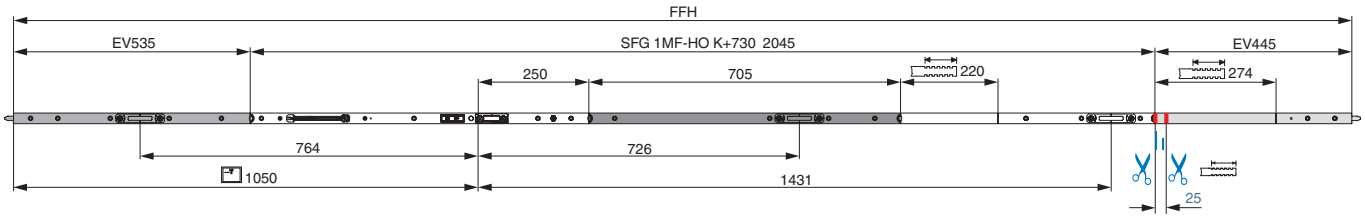
Example B: required FFH 2400 mm (handle size 1050 mm):

EV bottom 535 mm + SFG 1590 mm + EV top 445 mm = Total length 2570 mm
– FFH 2400 mm
= Cut-to-length size 170 mm (= cut EV445 to length at the top)



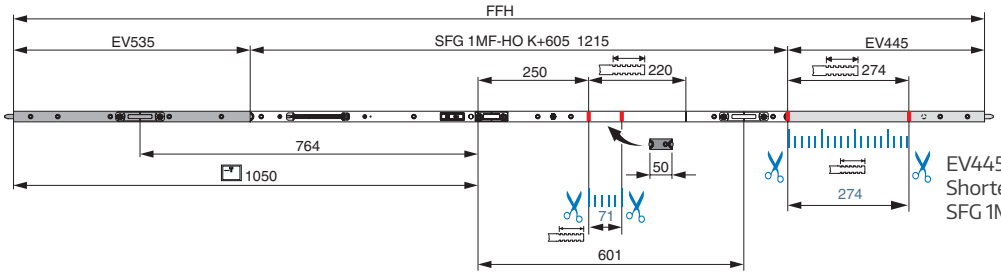
Example C: required FFH 3000 mm with intermediate face plate (handle size 1050 mm):

EV bottom 535 mm + SFG 1340 mm + intermediate face plate 705 + EV top 445 mm = Total length 3025 mm
– FFH 3000 mm
= Cut-to-length size 25 mm (= cut EV445 to length at the top)



Example D: required FFH 1900 mm (handle size 1050 mm):

EV bottom 535 mm + SFG 1215 mm + EV top 445 mm = Total length 2195 mm
– FFH 1900 mm
= Cut-to-length size total **295** mm (= cut EV445 to length at the top; as the cut-to-length dimension exceeds the maximum permissible cut-to-length dimension of 274 mm for the EV445 at the top, the SFG 1MF-HO must also be cut to length and the shortening face plate 50 mm must be taken into account):

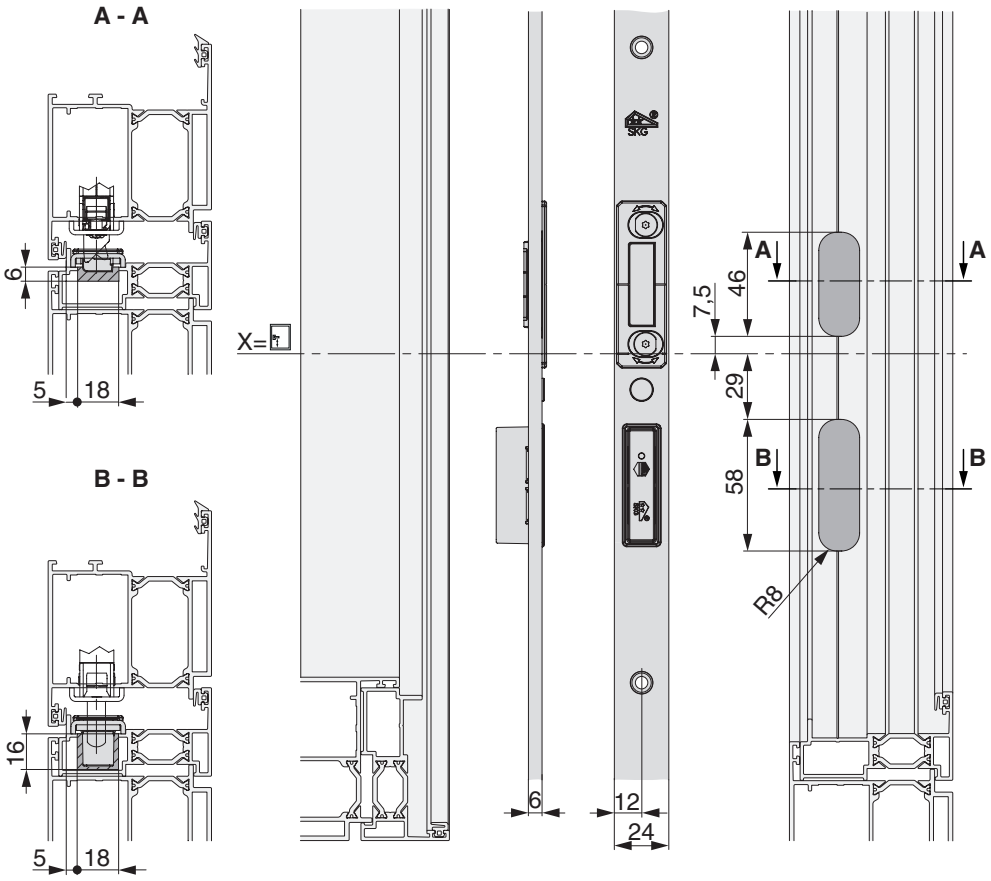


EV445 top **–274** mm cut-to-length
Shortening face plate **+50** mm
SFG 1MF-HO K+605 **–71** mm cut-to-length

Drilling and milling images

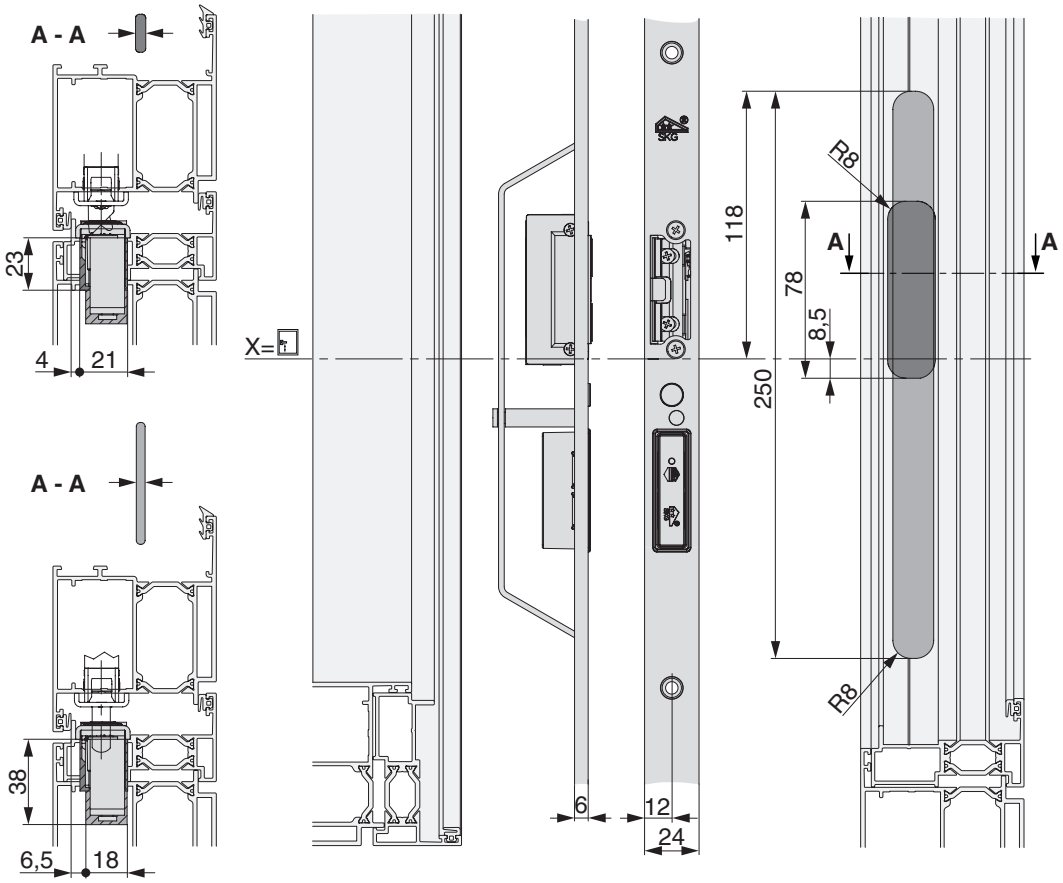
Aluminium

Latch and locking bolt (without e-opener)



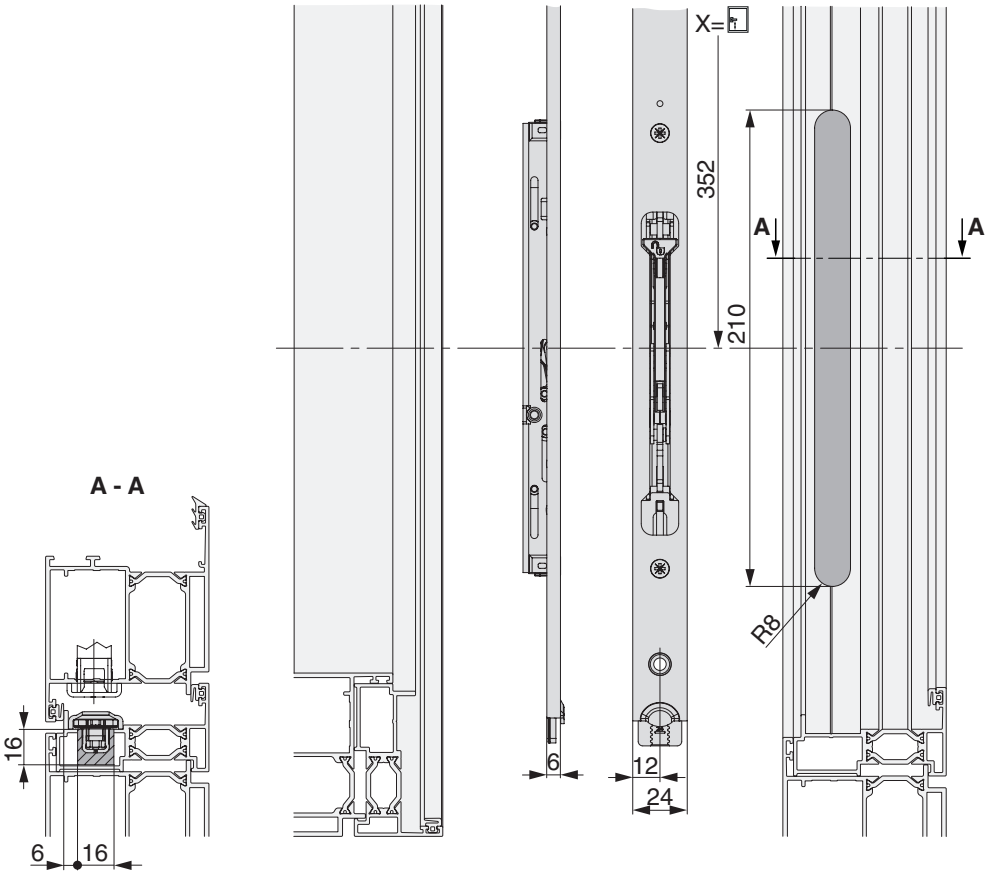
Aluminium

Latch and locking bolt (with e-opener)



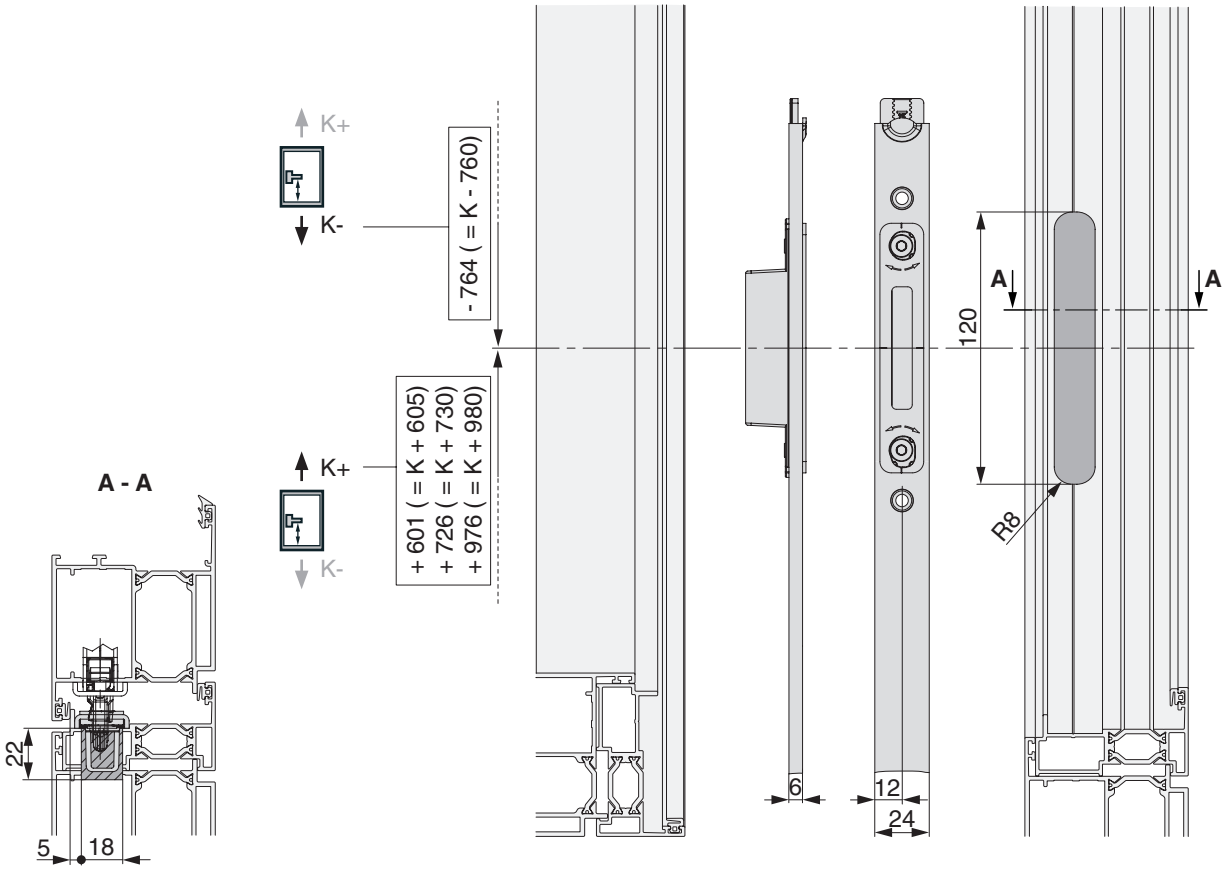
Aluminium

Mechanism casing



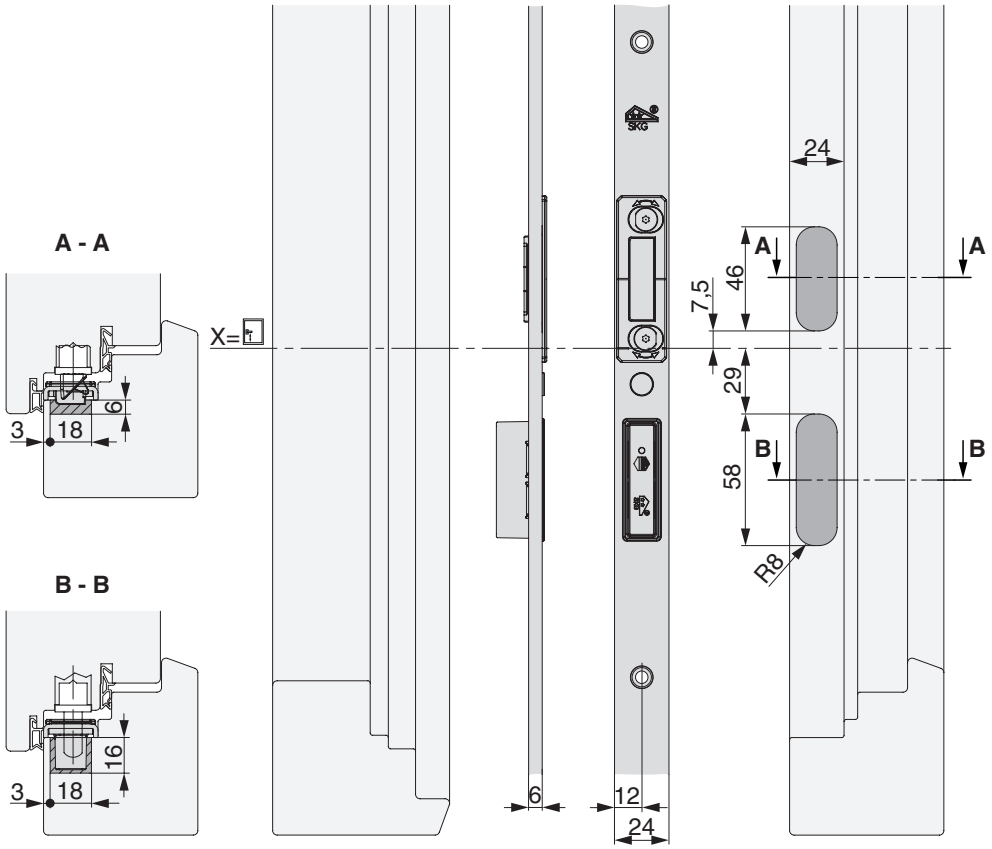
Aluminium

MF-HO



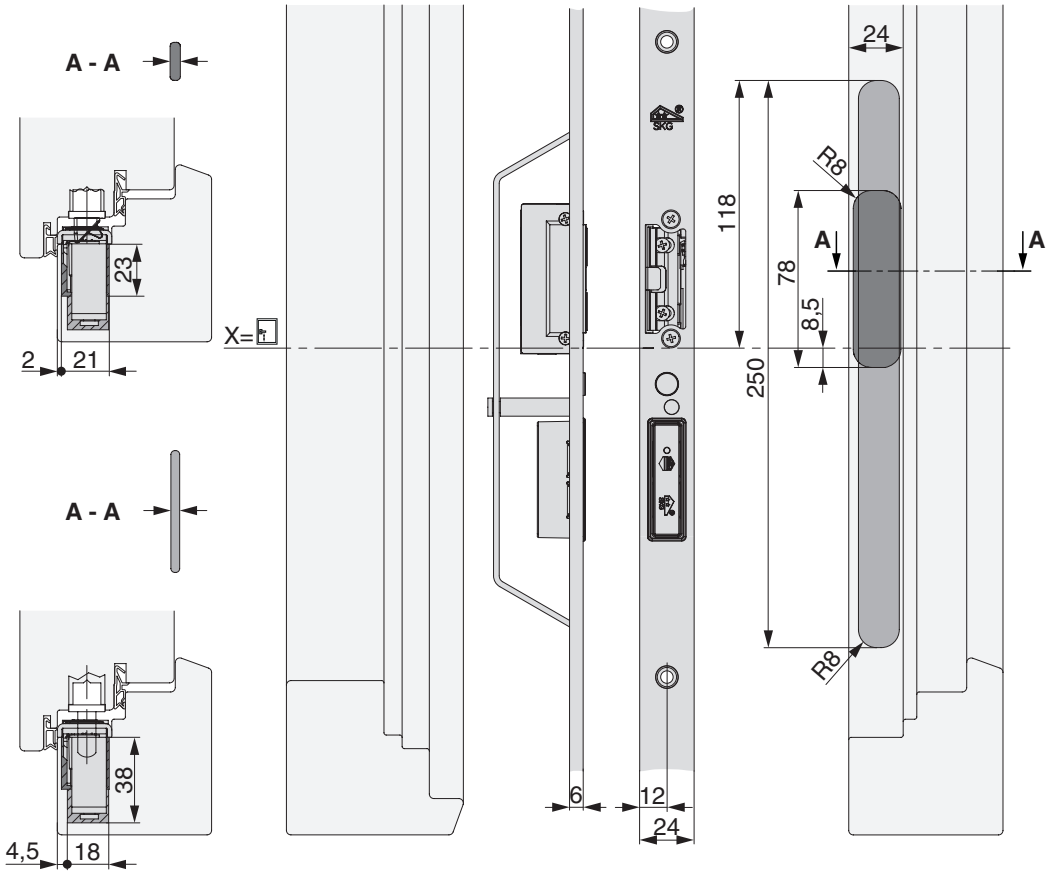
Timber 24 mm rebate depth

Latch and locking bolt (without e-opener)



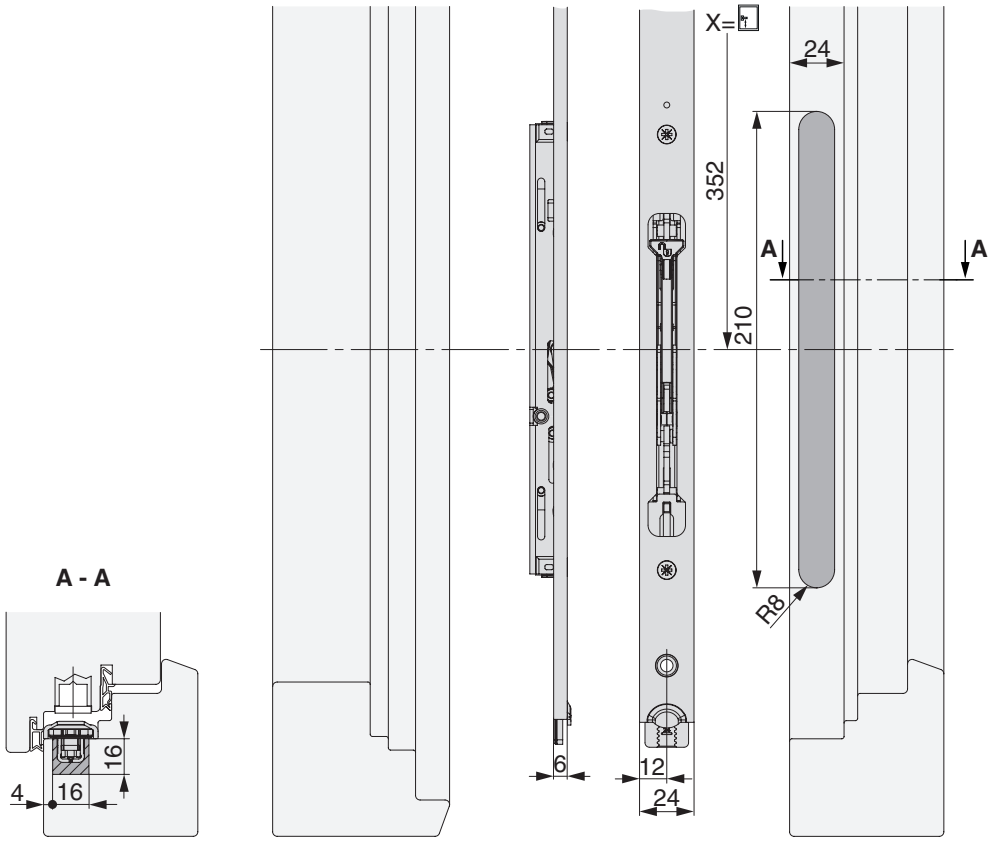
Timber 24 mm rebate depth

Latch and locking bolt (with e-opener)



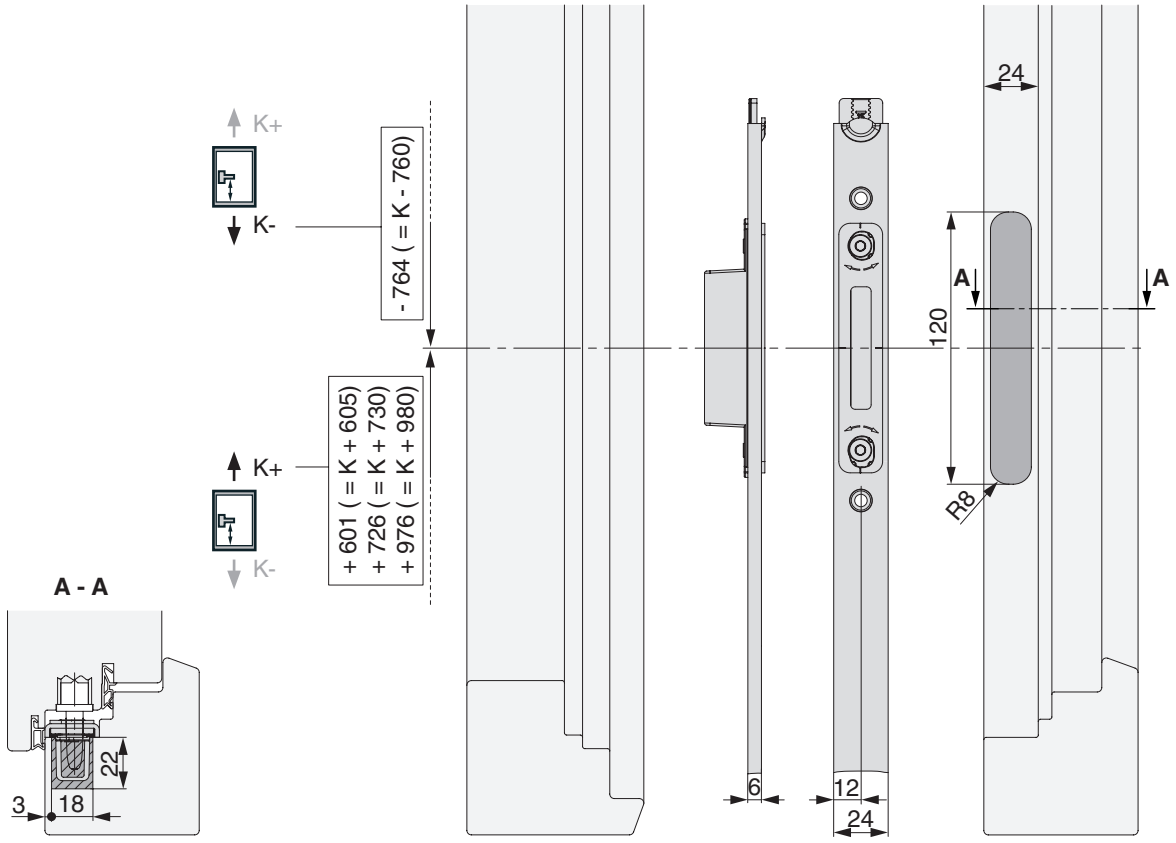
Timber 24 mm rebate depth

Mechanism casing



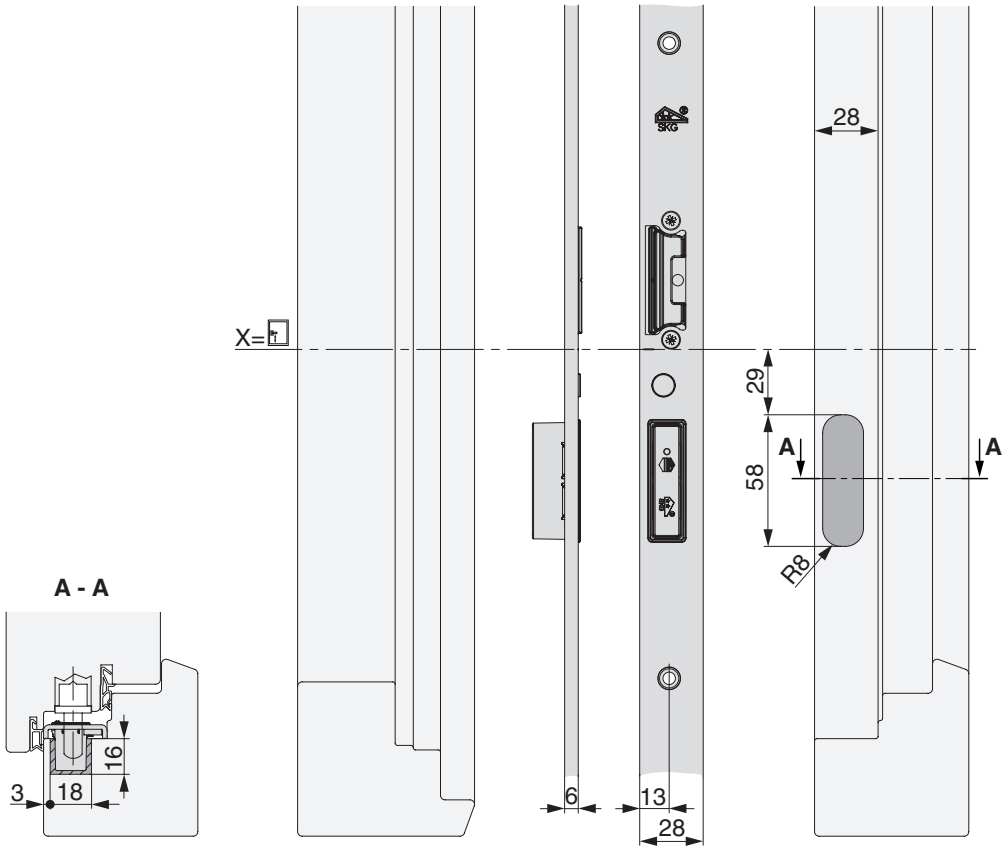
Timber 24 mm rebate depth

MF-HO



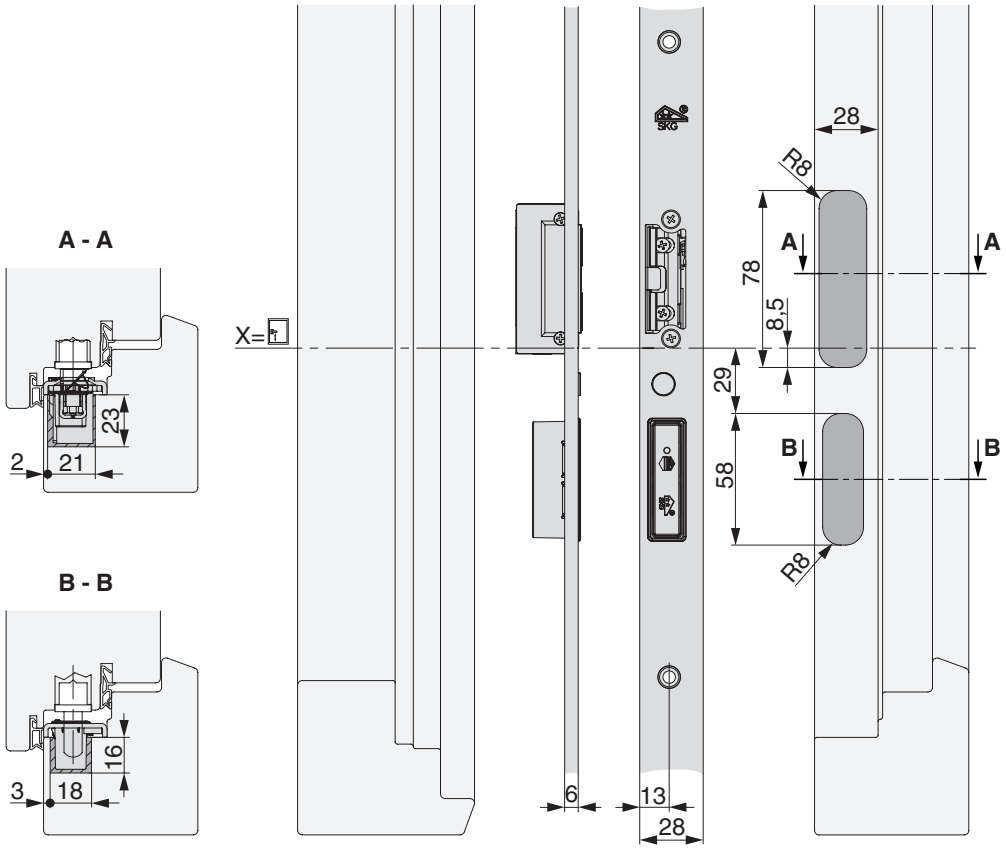
Timber 28 mm rebate depth

Latch and locking bolt (without e-opener)



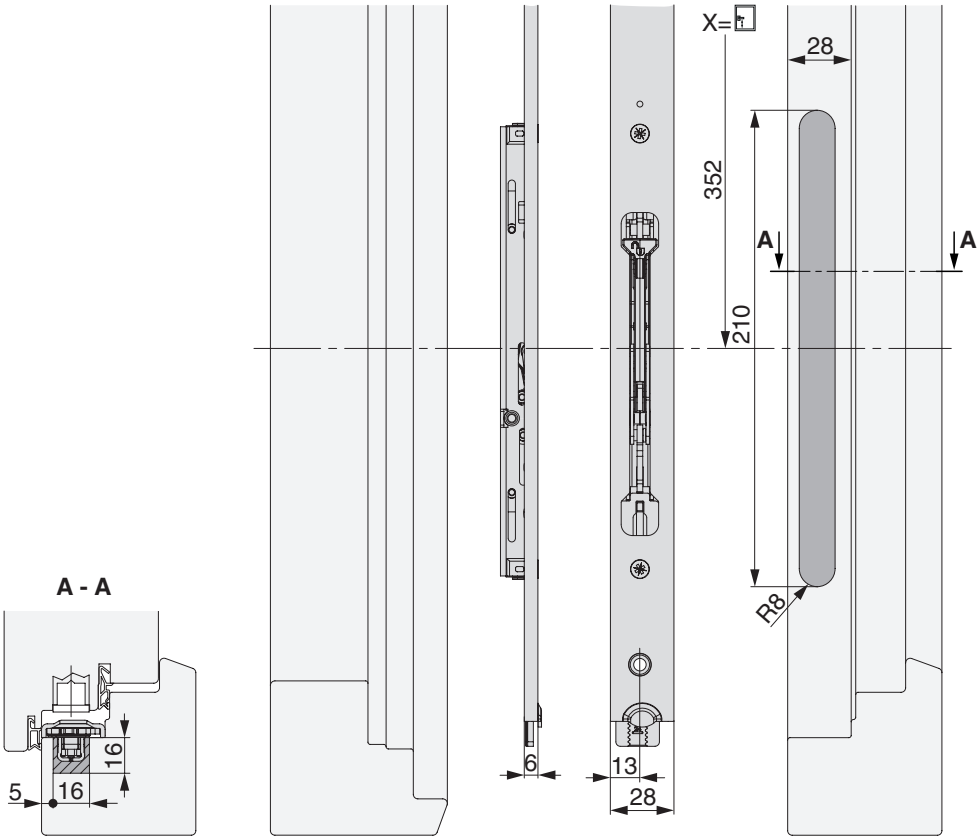
Timber 28 mm rebate depth

Latch and locking bolt (with e-opener)



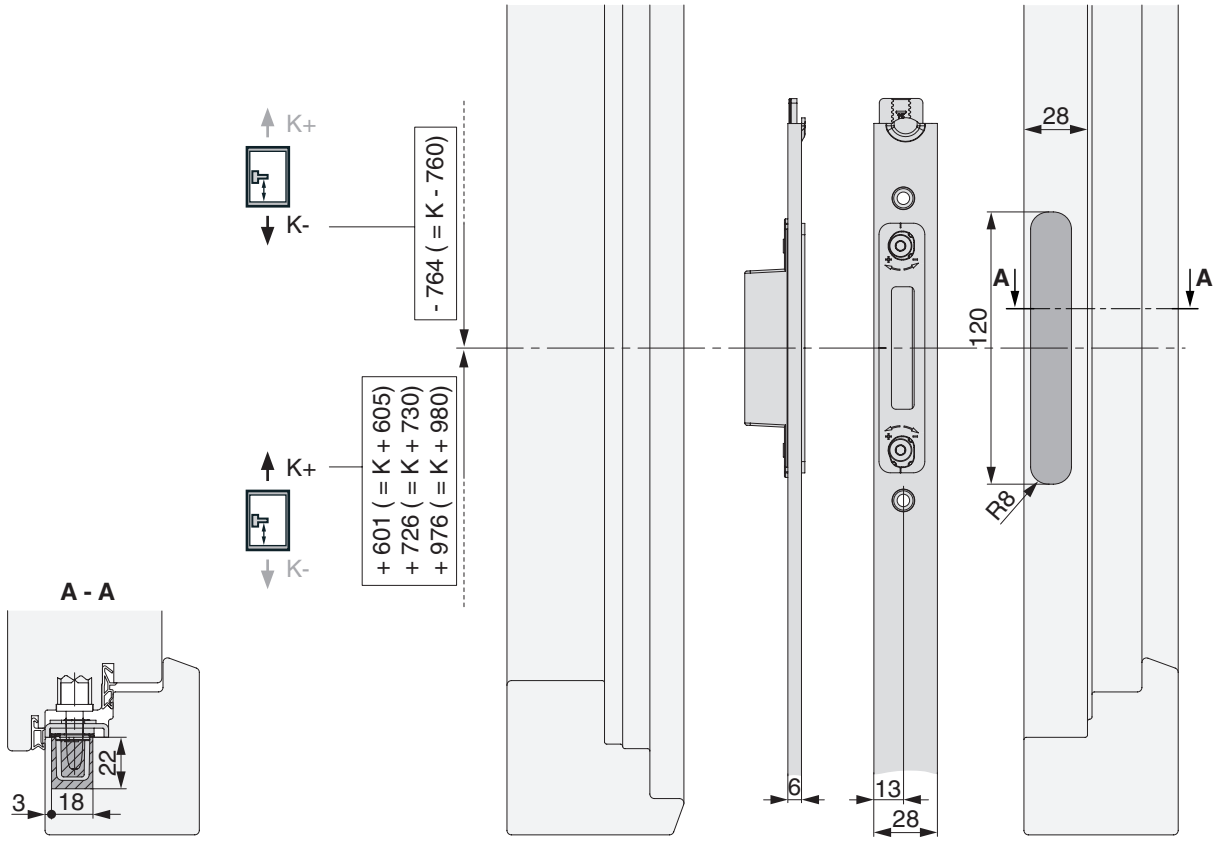
Timber 28 mm rebate depth

Mechanism casing



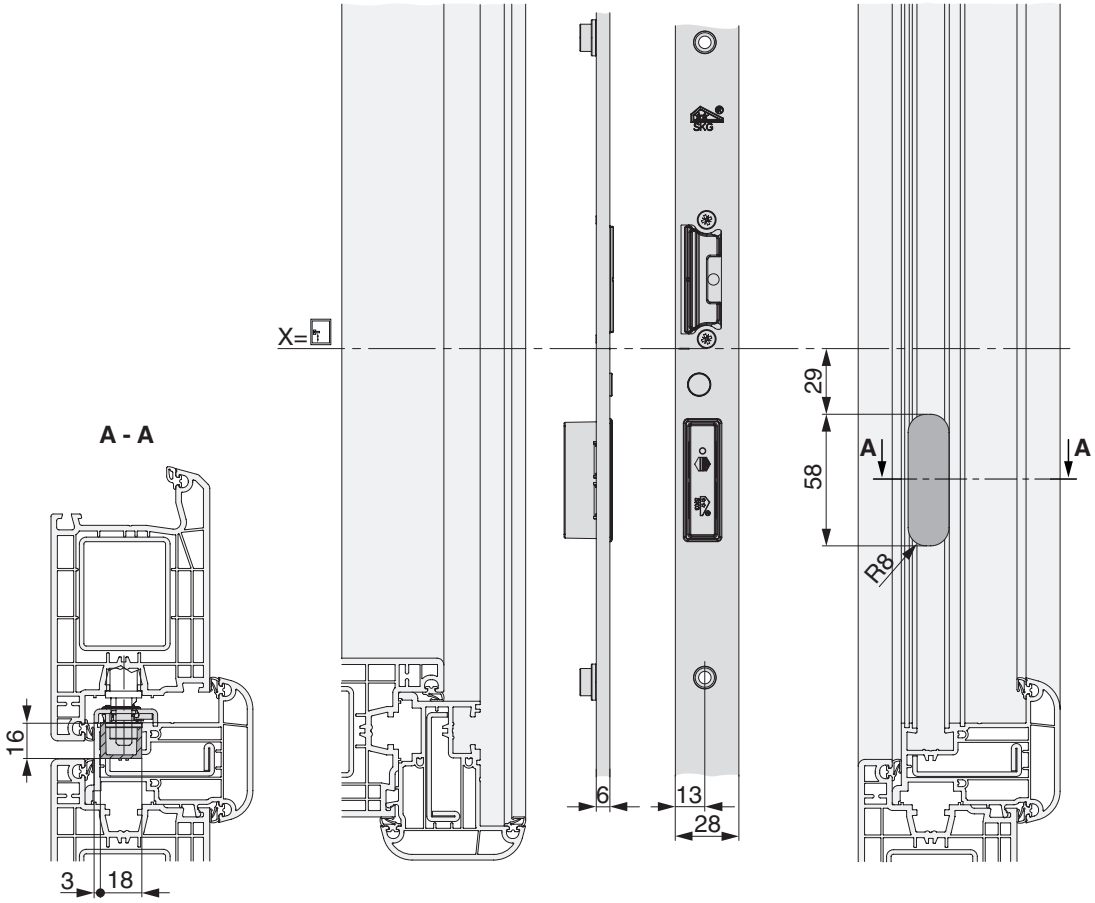
Timber 28 mm rebate depth

MF-HO



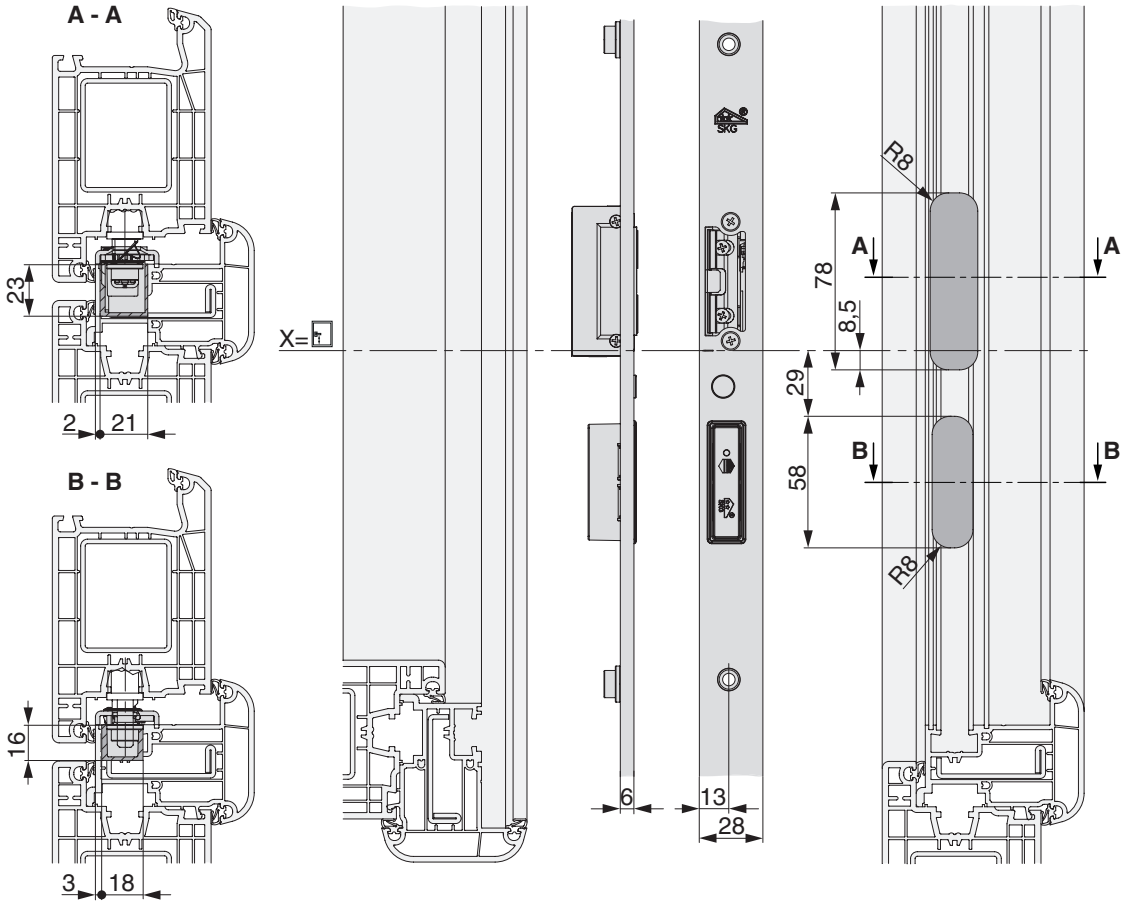
PVC 13 mm offset

Latch and locking bolt



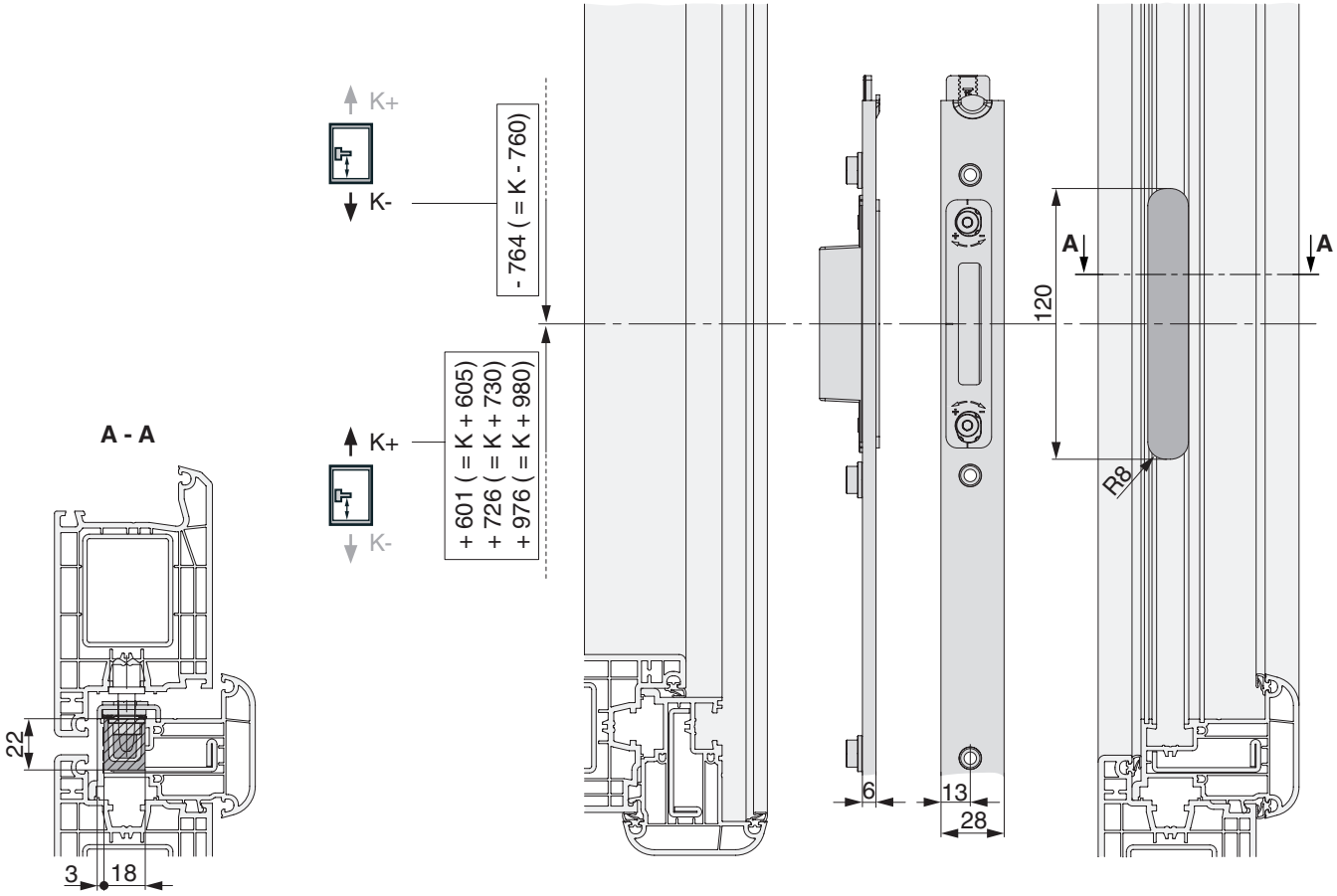
PVC 13 mm offset

Latch and locking bolt (with e-opener)



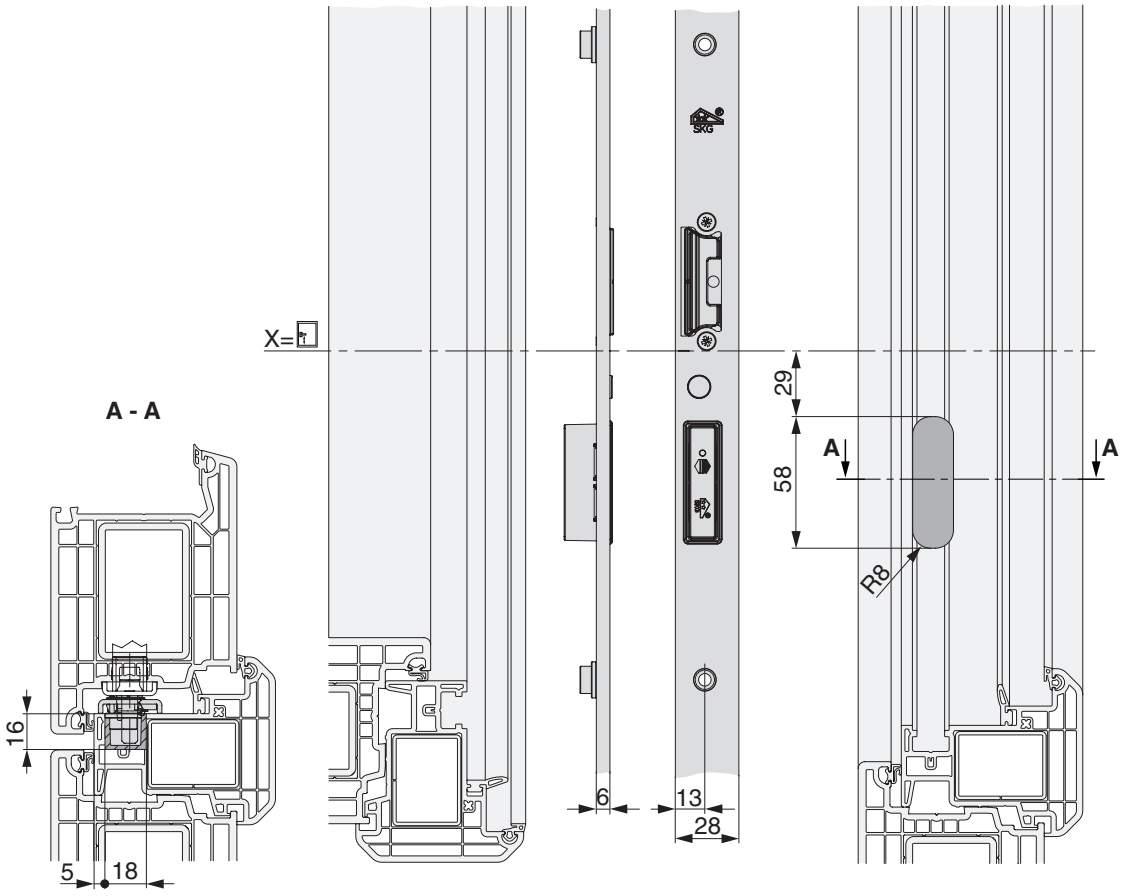
PVC 13 mm offset

MF-HO



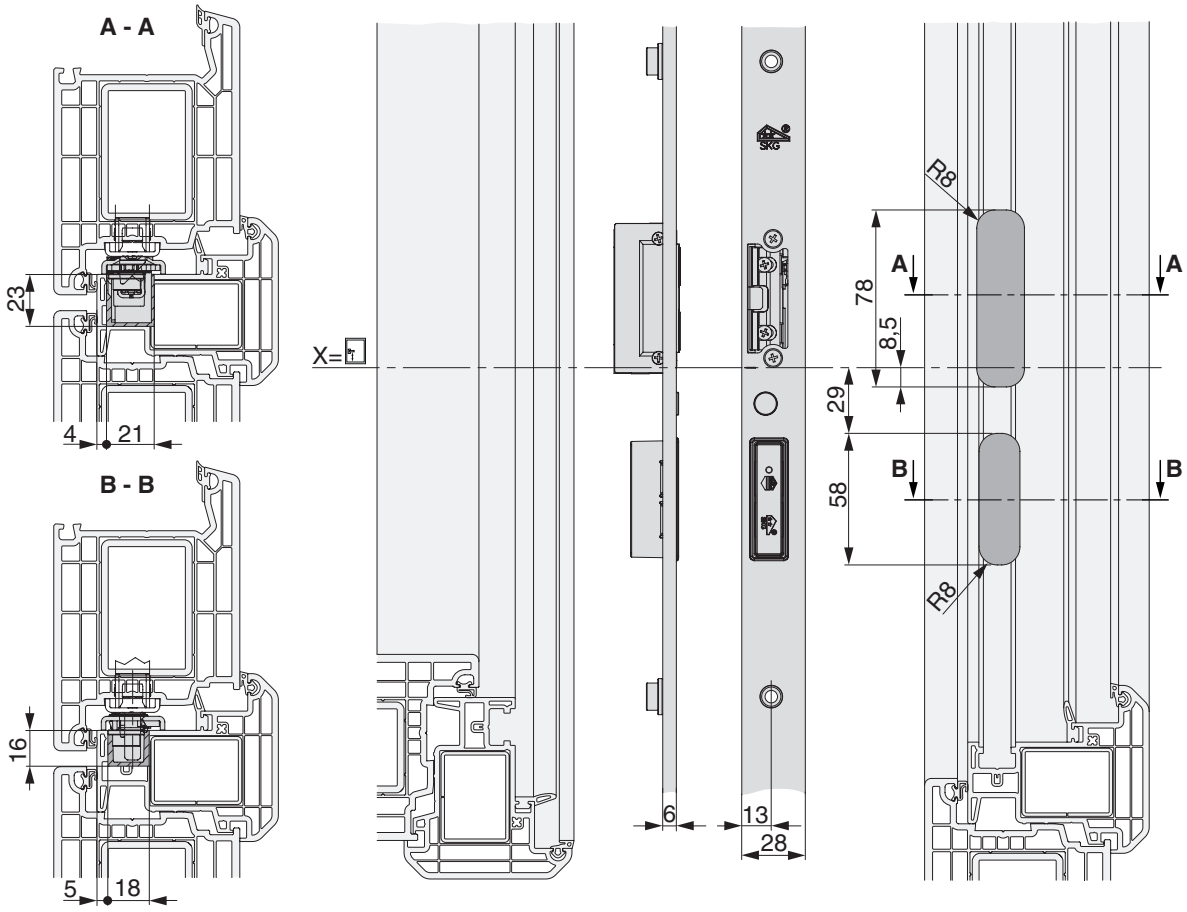
PVC 15 mm offset

Latch and locking bolt (without e-opener)



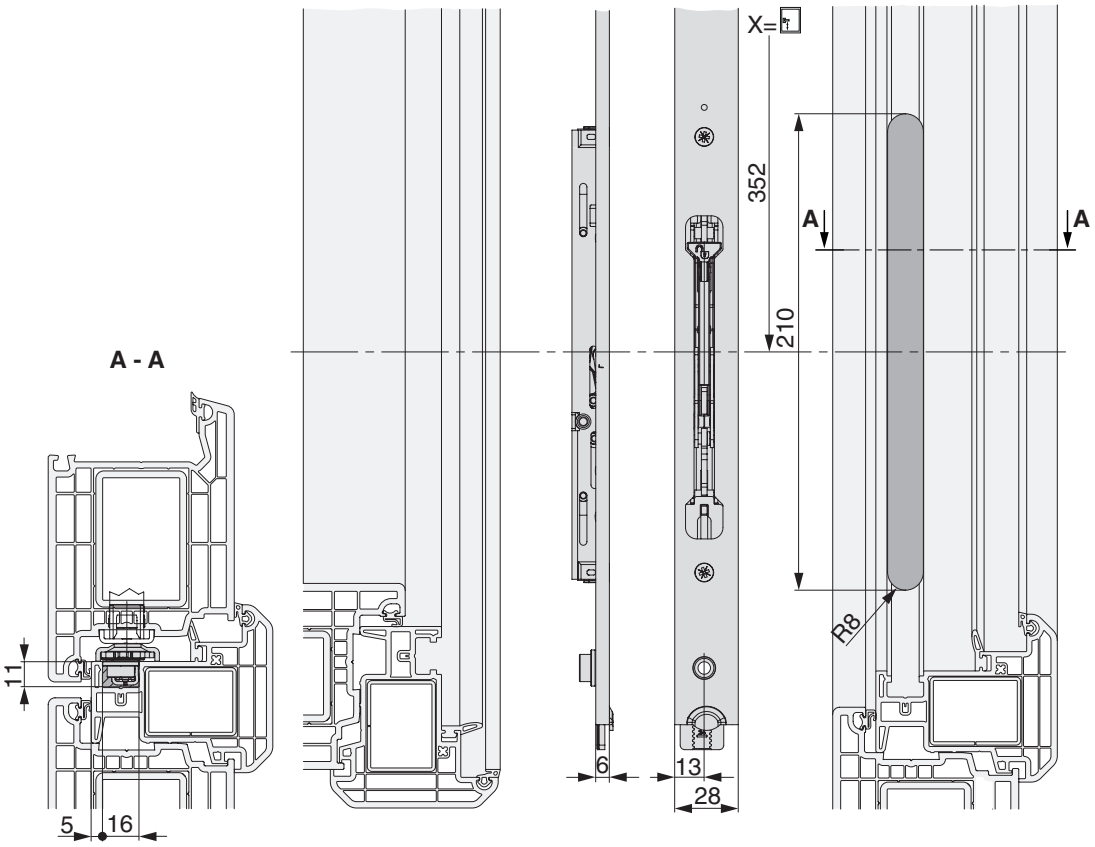
PVC 15 mm offset

Latch and locking bolt (with e-opener)



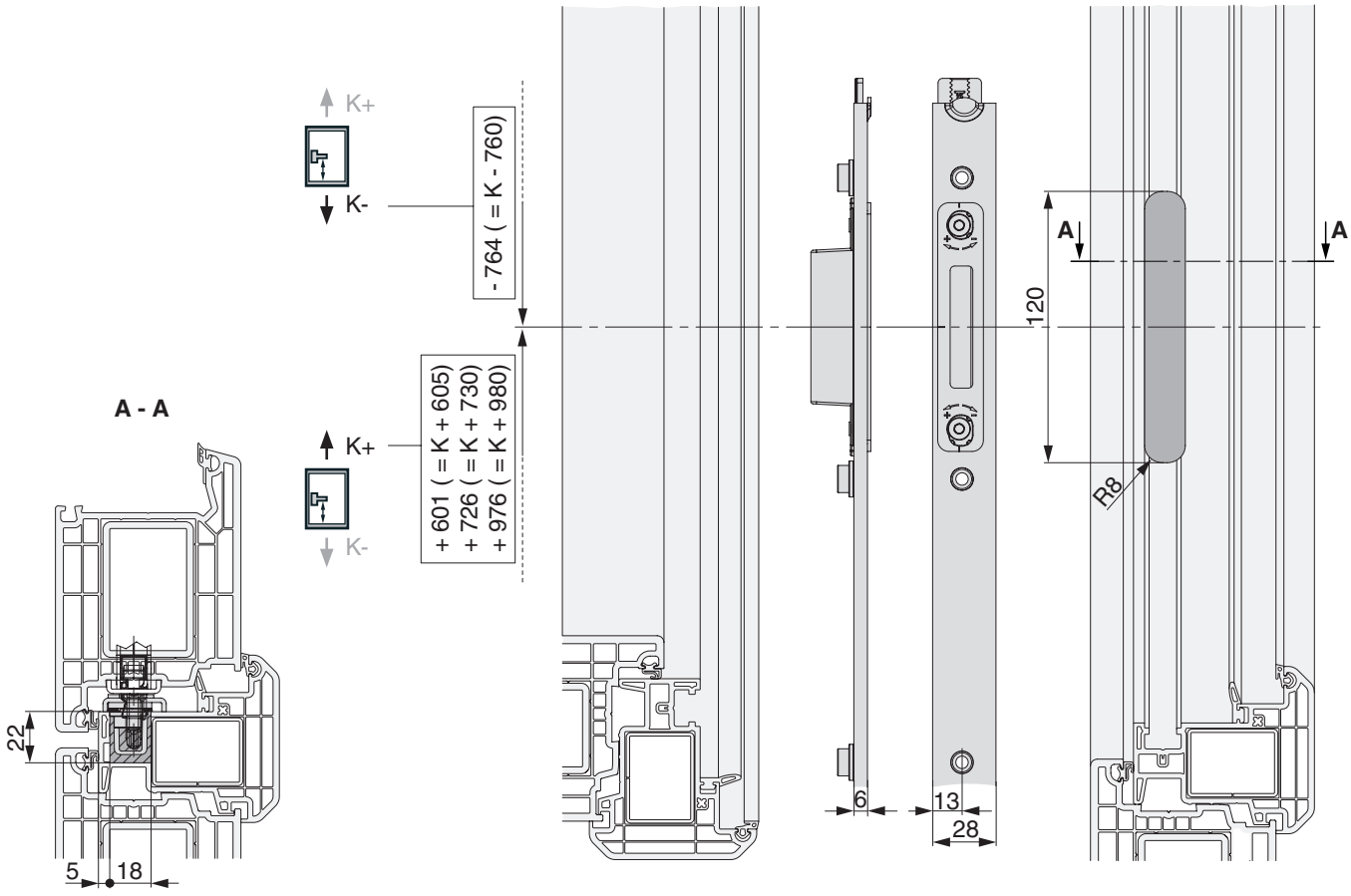
PVC 15 mm offset

Mechanism casing



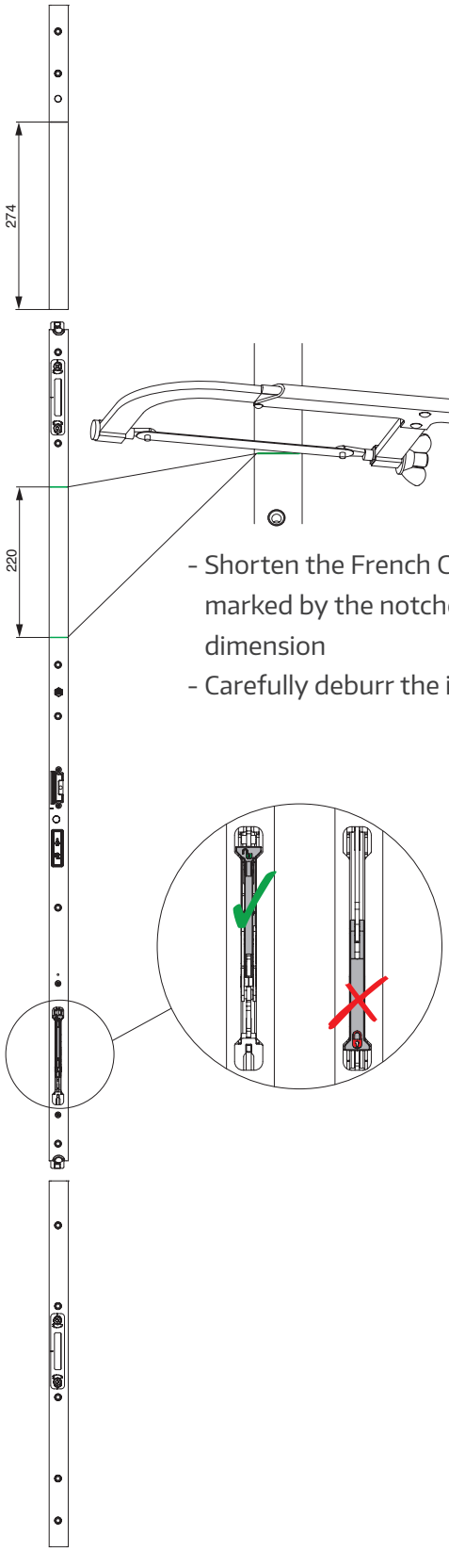
PVC 15 mm offset

MF-HO



Installation

Cut SFG to length - only for module application (shortening, extending, intermediate face plate)



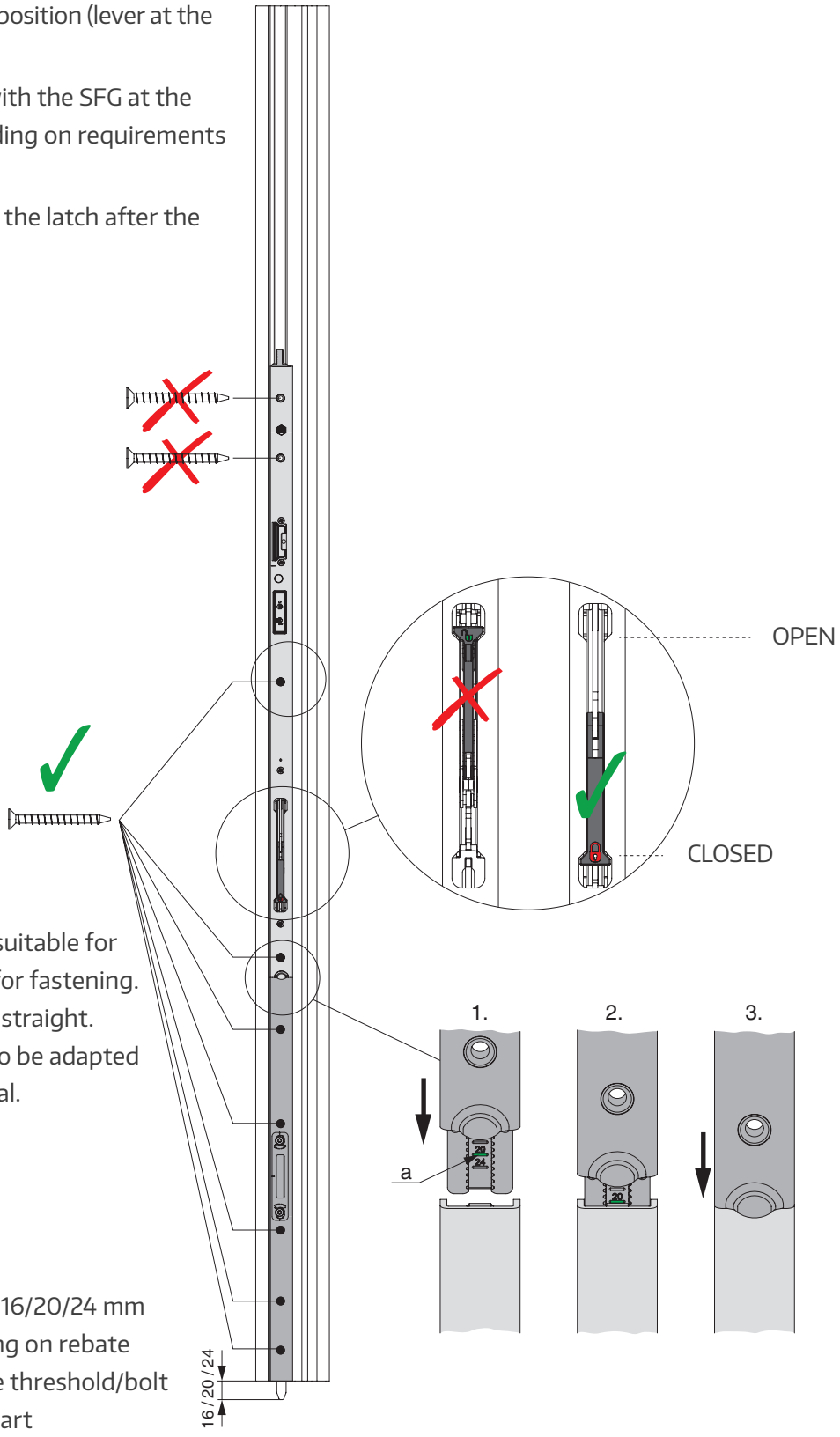
- Shorten the French Casement Drive Gear within the cut-to-length range marked by the notches (max. 220 mm) by the calculated cut-to-length dimension
- Carefully deburr the interfaces

CAUTION

Only cut the French Casement Drive Gear to length when the lever is in the open position (lever up)!
Otherwise, the module components cannot be coupled.

Insert SFG into profile and couple with bottom end lock

- Insert French Casement Drive Gear into the profile
- Move the lever to the "closed" position (lever at the bottom)
- Couple the bottom end lock with the SFG at the 16, 20 or 24 mm mark (depending on requirements - see rod lock (a))
- Only fit the two screws above the latch after the module has been installed



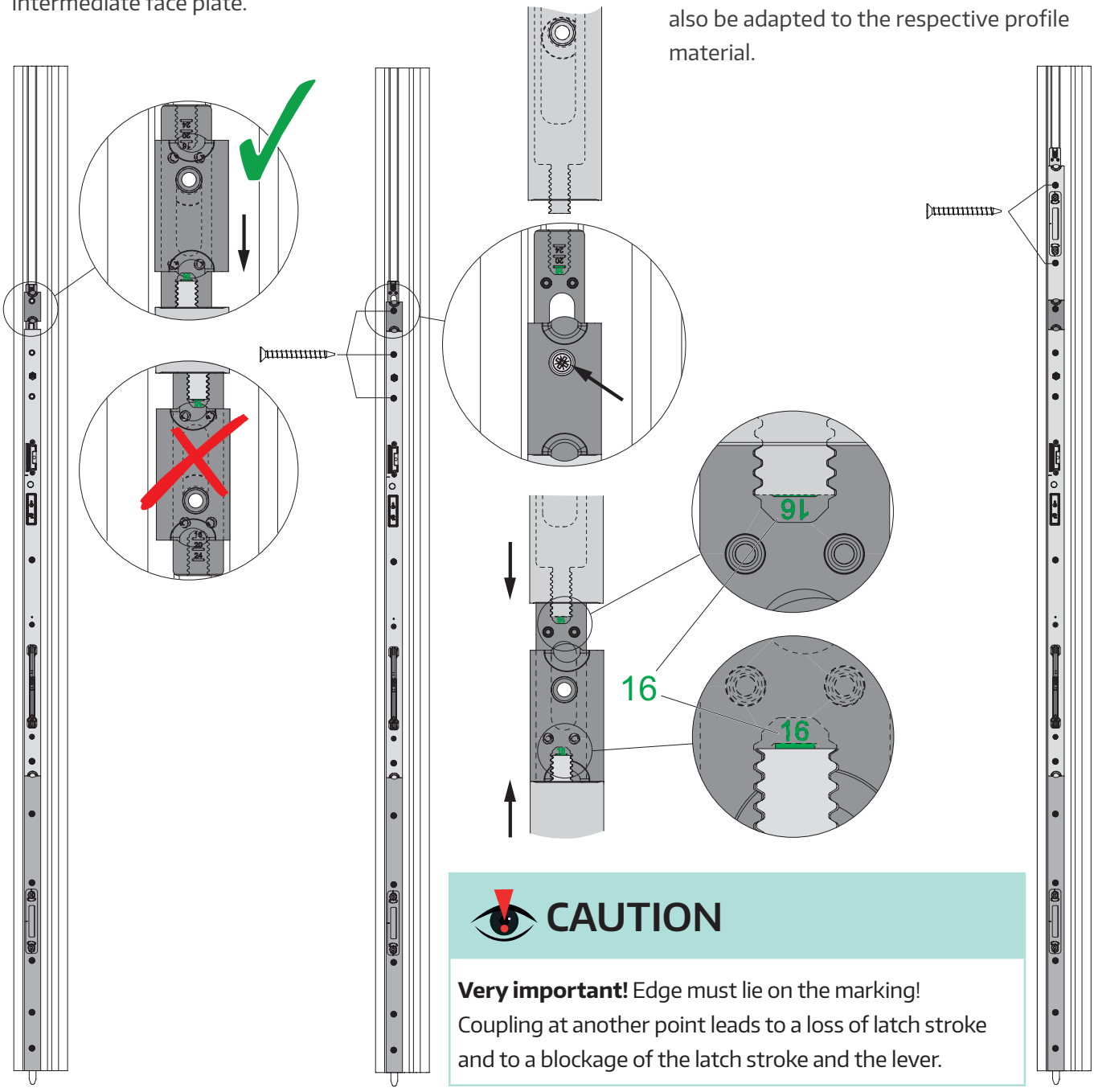
Use screws of sufficient length (max. diameter 4 mm) that are suitable for the respective profile material for fastening. The screws must be screwed in straight. The tightening torque must also be adapted to the respective profile material.

Rod lock 16/20/24 mm depending on rebate clearance threshold/bolt locking part

Couple module connection (applies to all module components)

- Shortening module (50 mm): Position the screw hole in the correct position.
- Couple the shortening / extension module or intermediate face plate with the SFG at the 16 mm mark and push it to the stop of the French Casement Drive Gear.
- Couple the upper French Casement Drive Gear section at the 16 mm mark with a shortening / extension module or intermediate face plate.

Use screws of sufficient length (max. diameter 4 mm) that are suitable for the respective profile material for fastening. The screws must be screwed in straight. The tightening torque must also be adapted to the respective profile material.

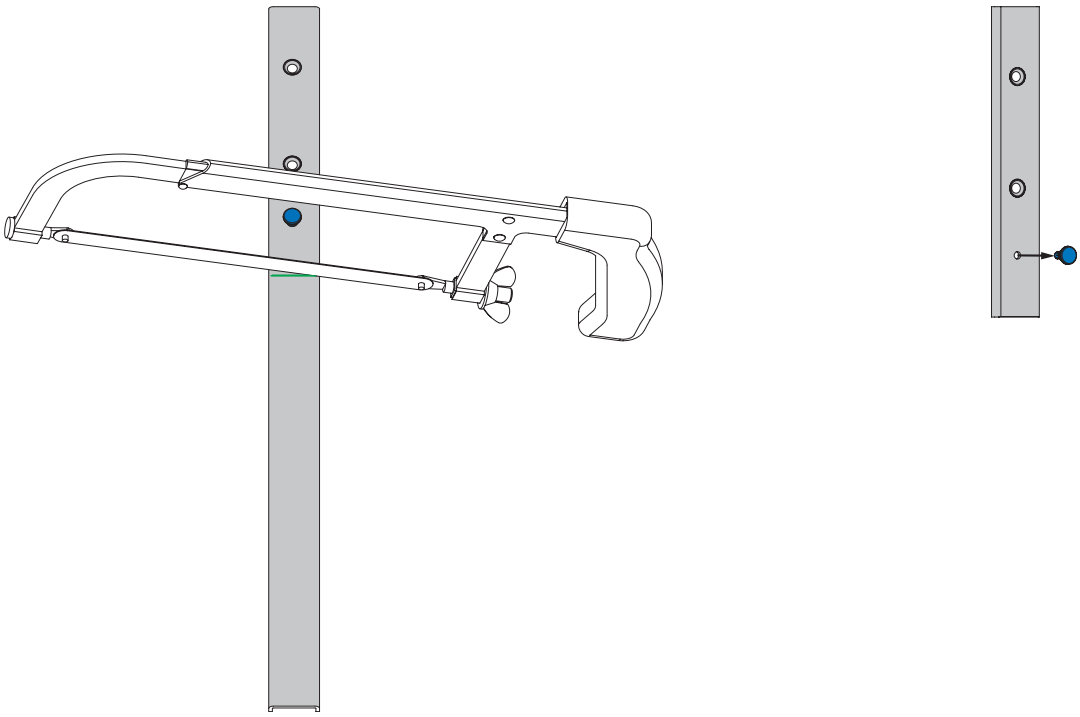


CAUTION

Very important! Edge must lie on the marking! Coupling at another point leads to a loss of latch stroke and to a blockage of the latch stroke and the lever.

Cut the top of the end lock to length and then remove the centre fixing

- Shorten the end lock by the calculated cut-to-length dimension within the cut-to-length range indicated by the notch (max. 274 mm).
- Carefully deburr the interfaces.
- Remove centre fixing.

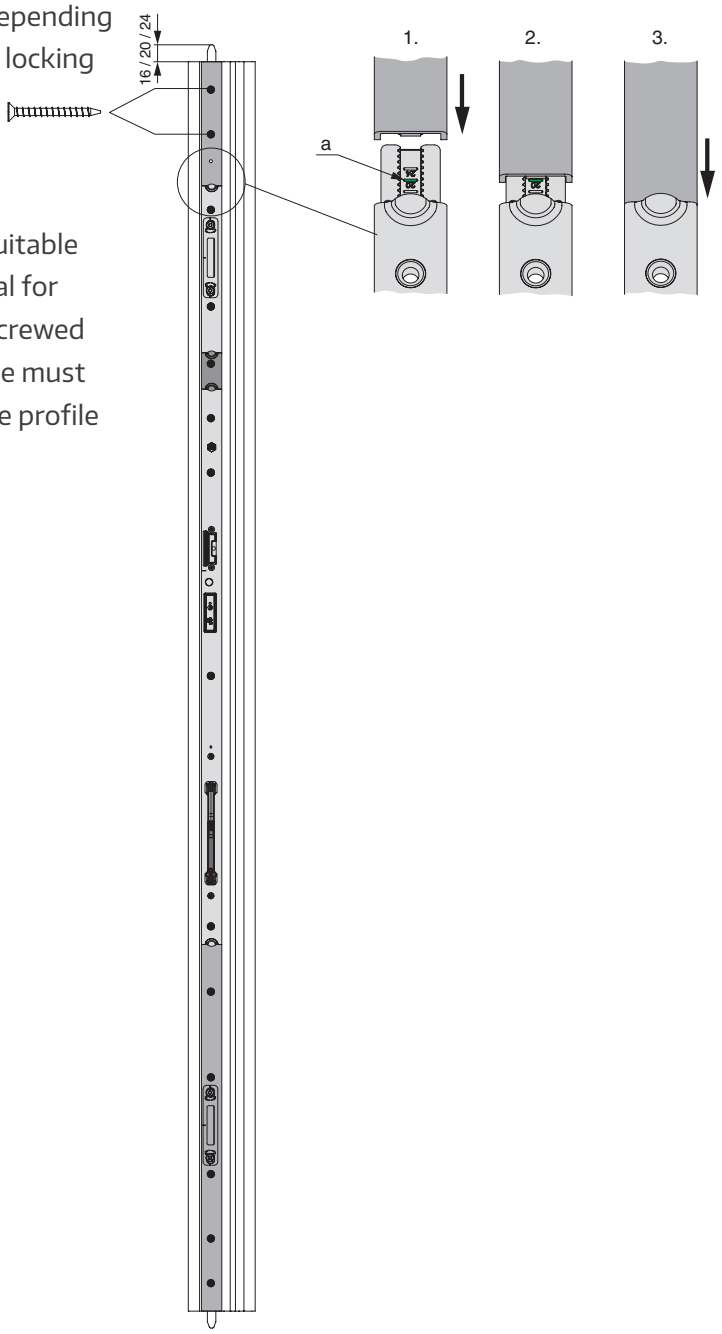


Attach and screw on the upper end lock

- Couple the upper end lock with the SFG at the 16, 20 or 24 mm mark (a) (depending on requirements - see rod lock).
- Mount the remaining screws.
- Carry out a function test: Move the lever of the French Casement Drive Gear upwards to unlock
  → The lever must move smoothly and the rod locks at the top and bottom must retract evenly.

Rod lock 16/20/24 mm depending on rebate clearance/bolt locking part

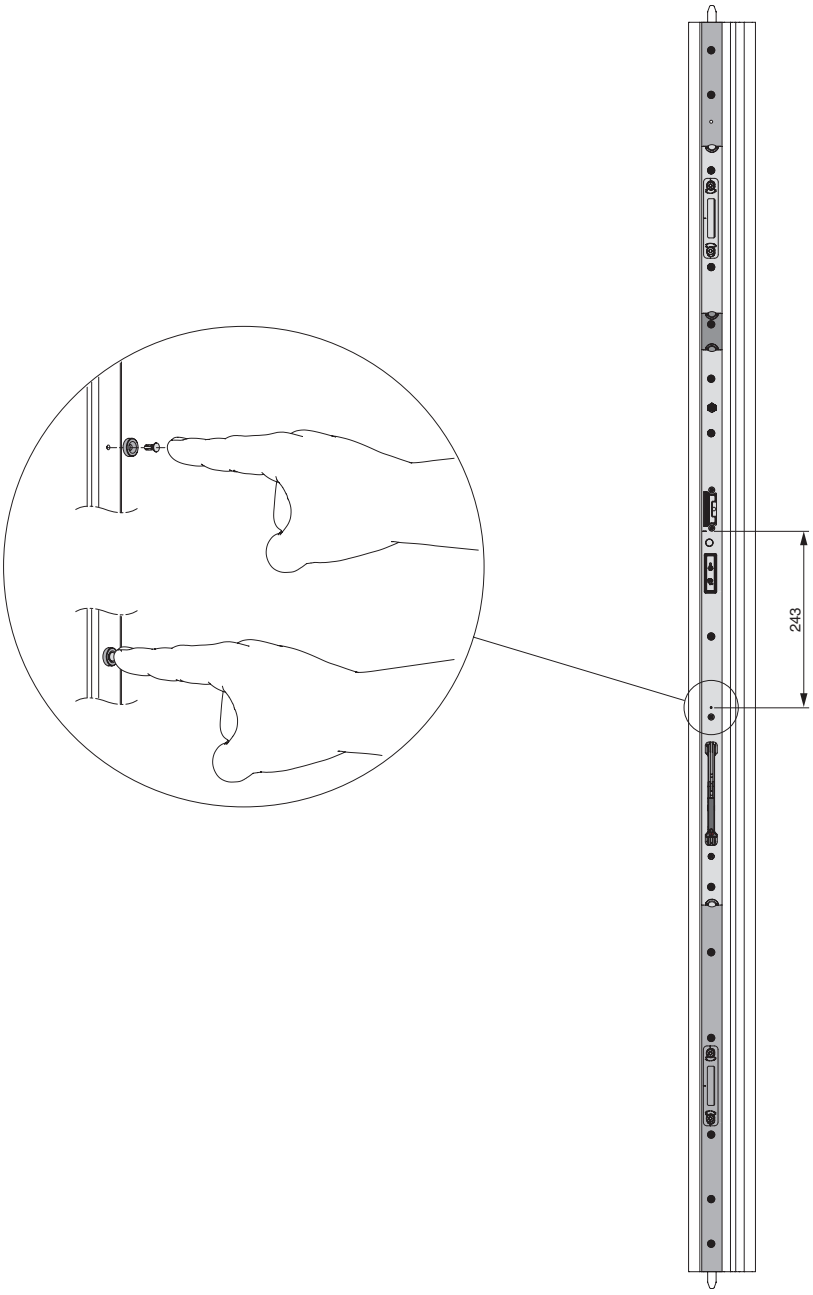
Use screws of sufficient length (max. diameter 4 mm) that are suitable for the respective profile material for fastening. The screws must be screwed in straight. The tightening torque must also be adapted to the respective profile material.



Installation M-TS release magnet

When using the M-TS motorised lock with the Modular French Casement Drive Gear, a 2 mm ring magnet (position 243 mm below the handle size) must be fitted.

Ring magnet incl. plastic expanding rivet available as an accessory (item no. 106144).



Notes

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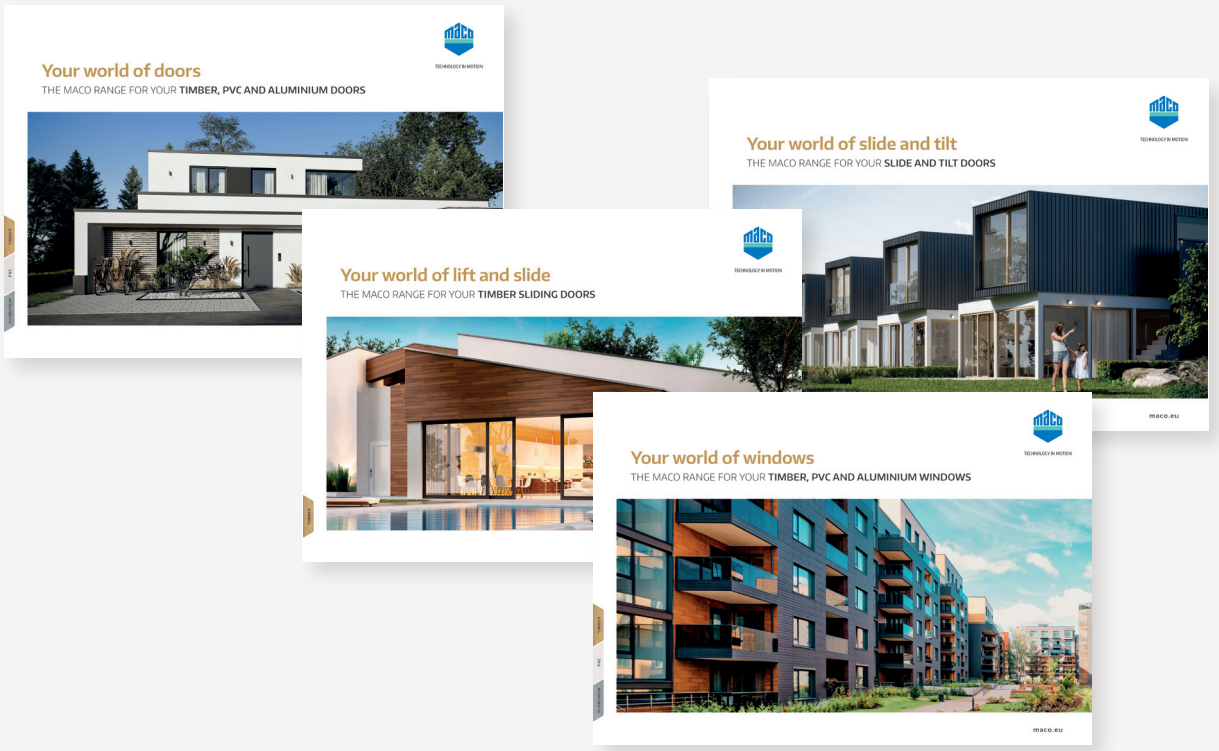

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