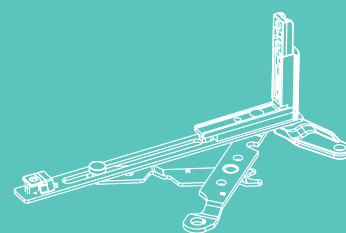
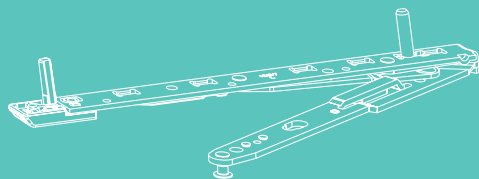




TECHNOLOGY IN MOTION

MACO MULTI-MATIC

TILT AND TURN FITTINGS



ASSEMBLY INSTRUCTIONS

INVISIBLE – fully concealed fittings

Exclusively for certified specialists!

Key



Sash rebate height



Sash rebate width



Tilt-only window



Maximum sash weight



Drill size



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Important Information

Target audience

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

Instructions for use

- › Unless otherwise indicated, all measurements are made in millimetres.
- › Mount all hardware parts professionally as described in this manual and observe all safety instructions!
- › All diagrams are only symbolic.
- › Further technical documents can be found in our online catalogue (TOM) at extranet.maco.eu
- › This print document is constantly being revised and is available for download in the current version at www.maco.eu erhältlich.
- › Printing errors, mistakes and changes are reserved.
- › Please send feedback or suggestions and ideas for improvements on our instructions by email to: feedback@maco.eu

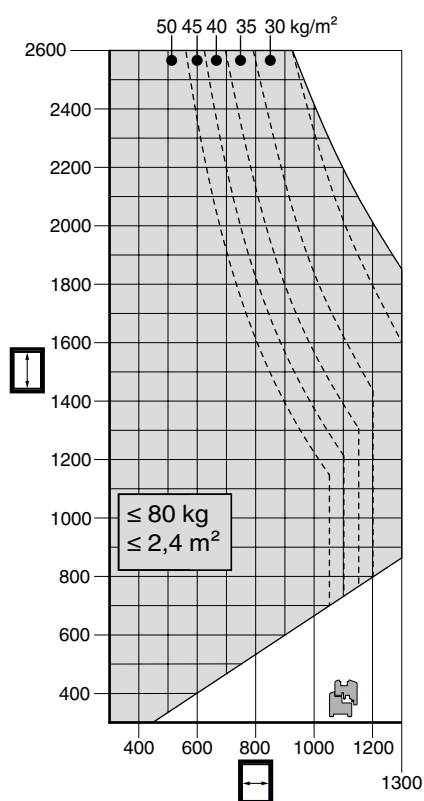
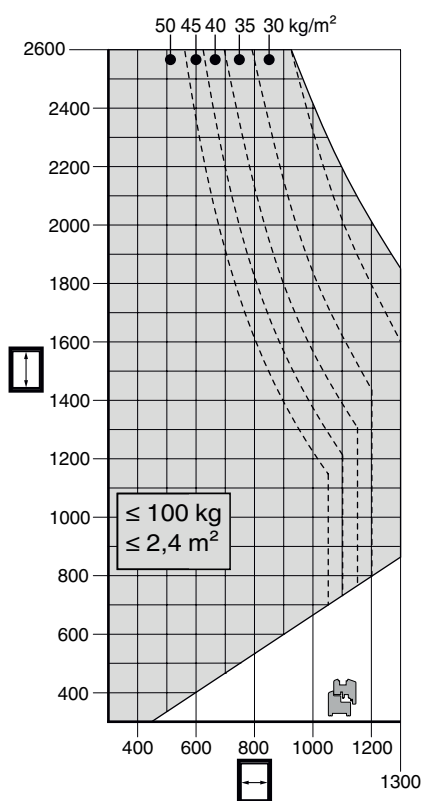
Material notes

- › The hardware parts described in this guide are made of stainless steel or galvanised passivated steel and sealed in accordance with DIN EN 12329. They must not be used in environments with aggressive, corrosive air content.
- › Do not use acid-curing sealants, as these can lead to corrosion of the hardware parts.
- › The window 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 can be made against the hardware manufacturer.

Application ranges / Fabrication instructions

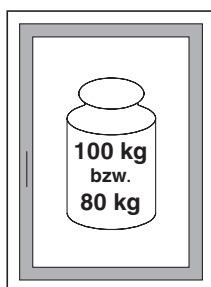
① Application diagram

total area of not more than 2.4 m² and a max. aspect ratio SRH : SRW of 1 : 1.5.



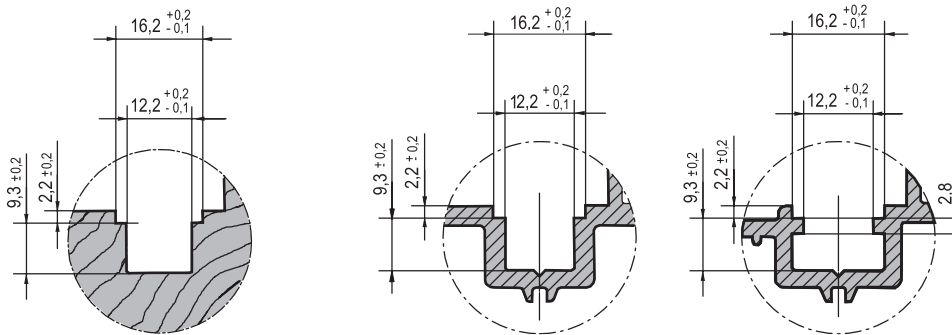
② Maximum sash weight 100 kg

80 kg for fittings versions with 18 mm rebate depth.











Application ranges / Fabrication instructions

③ The fittings groove must conform to these specifications!



④ Application range:
for SRH < 800 mm use scissor stay limiter.

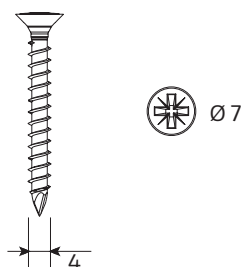
Max.		1300
		2600
Min.*		395
		370
 Max.		2400
 Min.**		500
		285

*SRW with horizontal corner element 480 mm.

**SRH with MACO restrictor and cleaning stay 520 mm.

Application ranges / Fabrication instructions

- ⑤ **Screw dimensions:**
Screws for pivot posts and scissor stay hinges.
Mount according to RAL-RG 607/3!

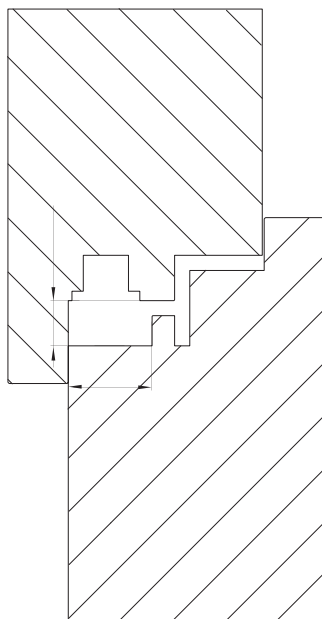


- ⑥ **Clearance:** min. 12^{+1} mm.

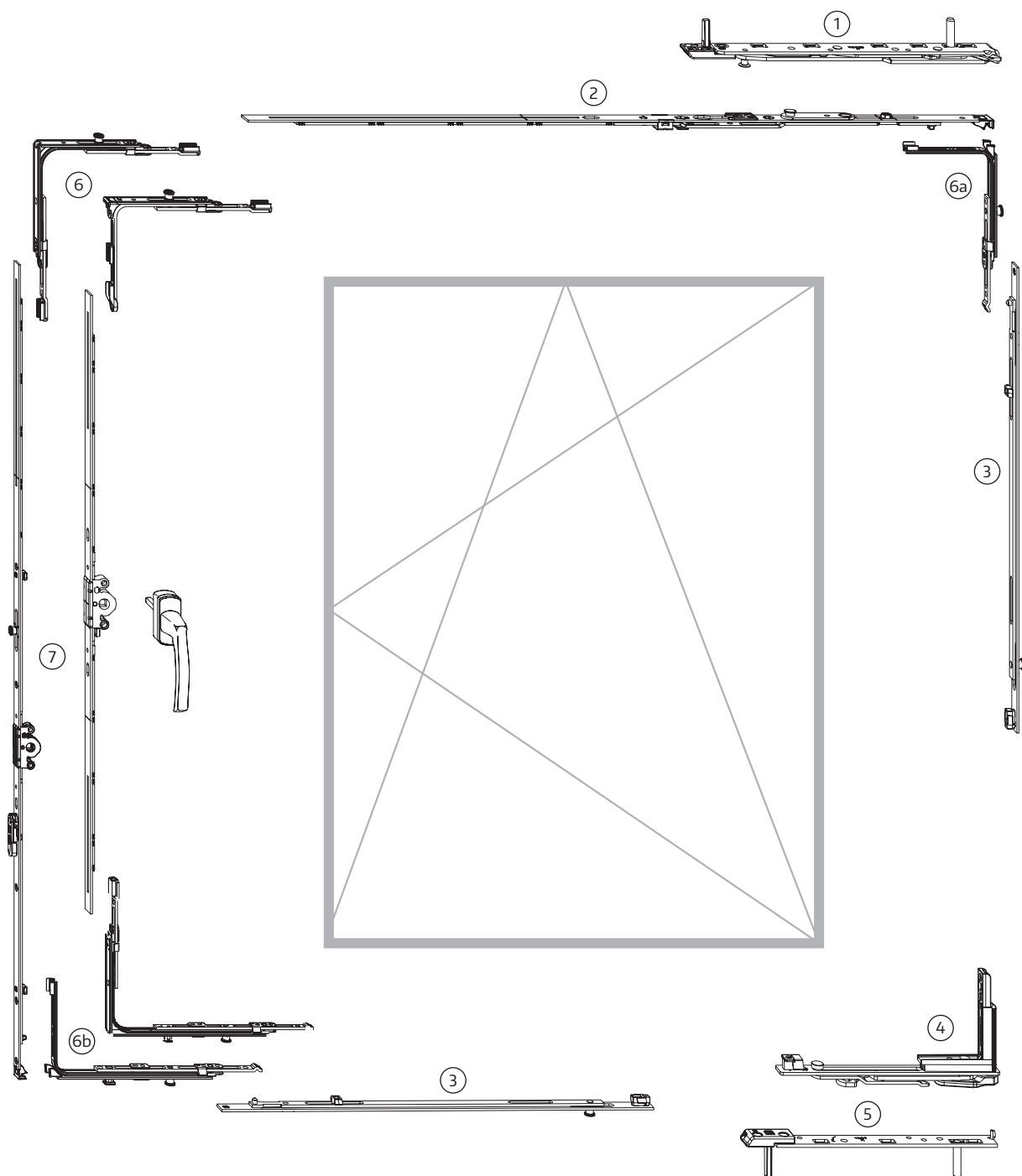


Rebate depth:

- for 9 mm fittings axis: min. 18 mm
for 13 mm fittings axis: min. 24 mm



Tilt&Turn fittings overview



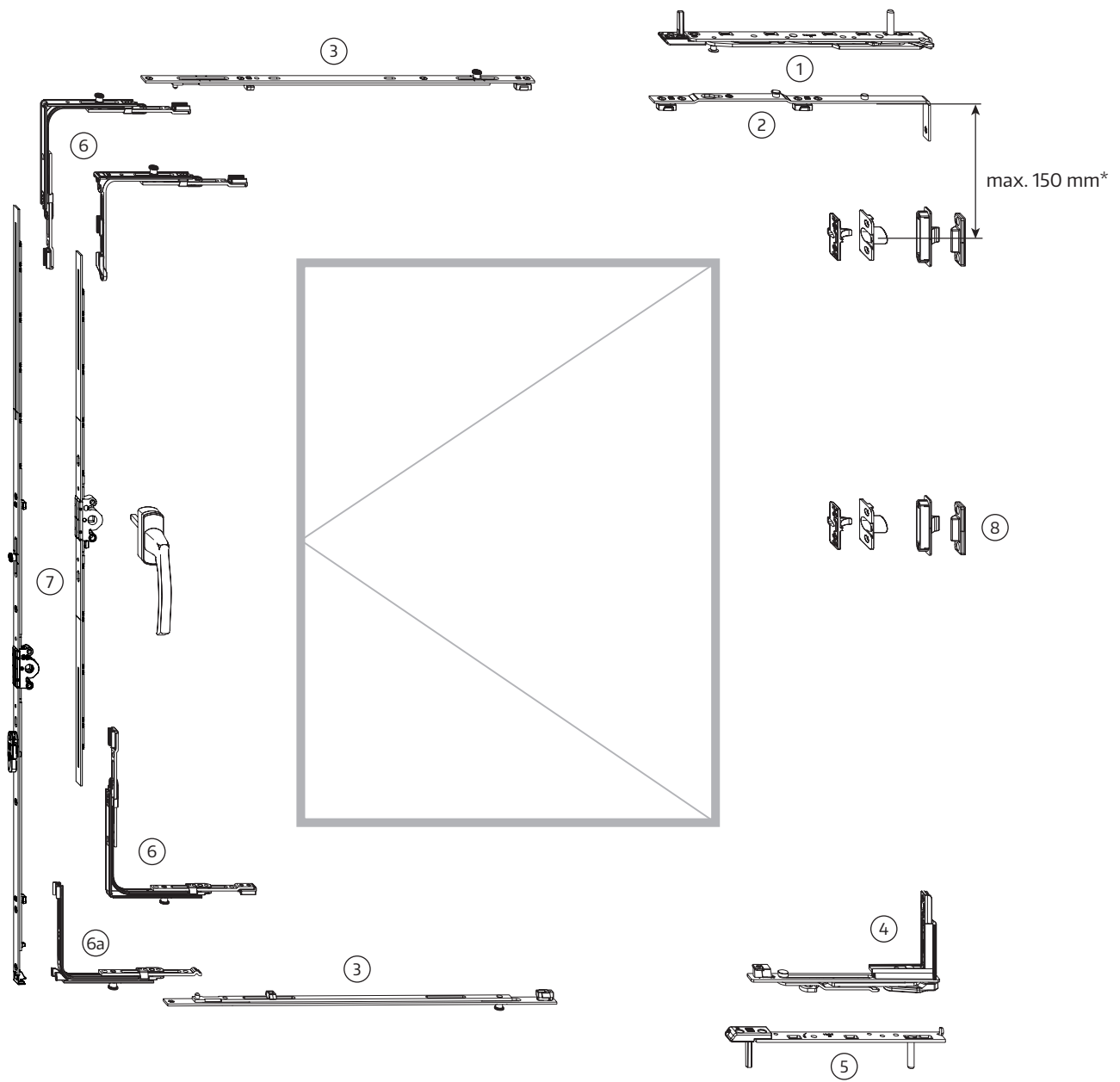


Tilt&Turn fittings overview

Fittings combination

- ① Scissor stay with hinge VV
- ② Stay guide VV
- ③ Centre lock i.S. EH
- ④ Corner support VV
- ⑤ Pivot post VV
- ⑥ Corner element with i.S.
- ⑥a Vertical corner element 1 i.S. extendable
- ⑥b Horizontal corner element 1 i.S. extendable
- ⑦ Drive-gear

Turn-Only fittings overview





Turn-Only fittings overview

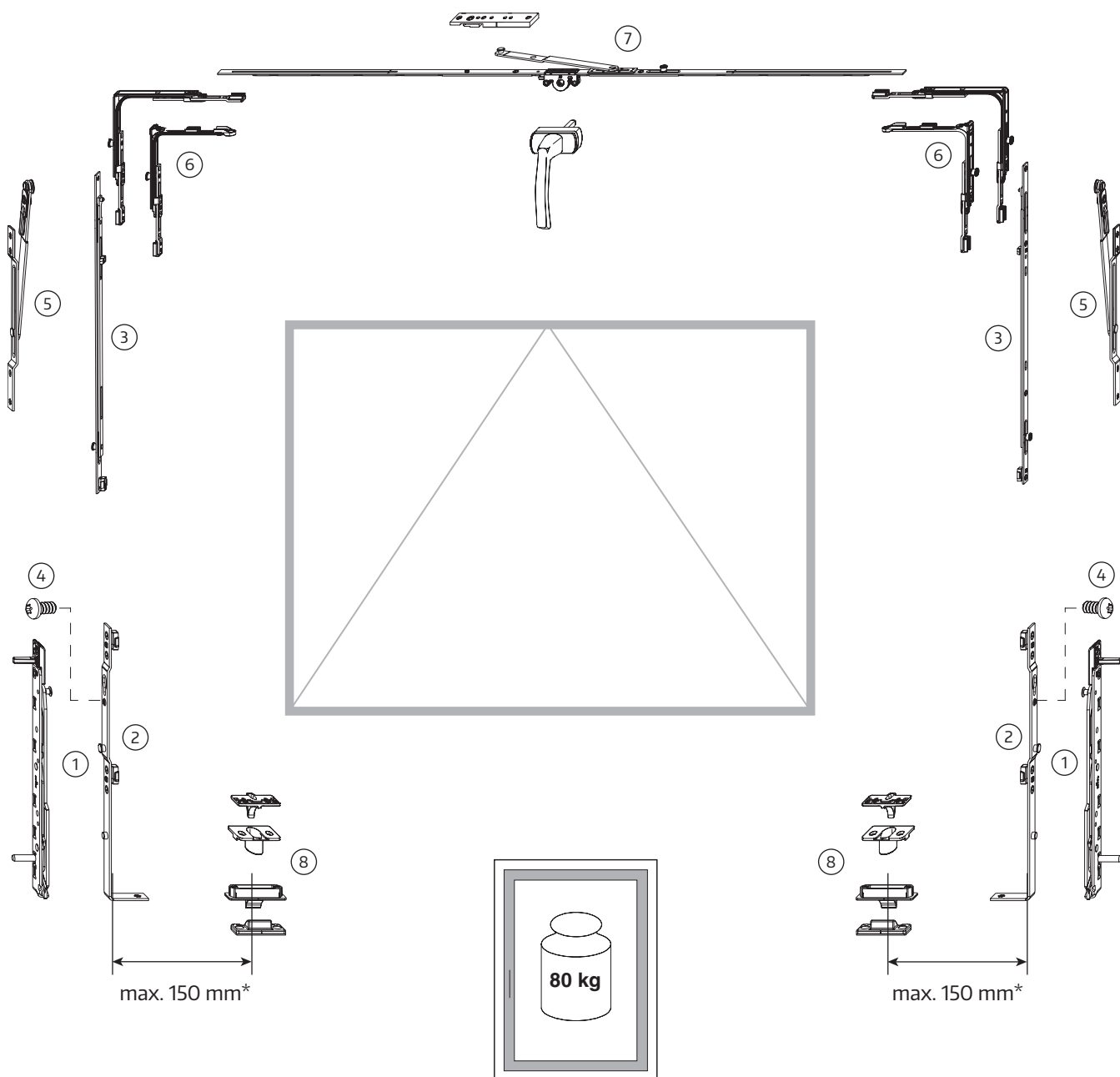
Fittings combination

- ① Scissor stay with hinge VV
- ② Turn-only and tilt-only stay guide VV
- ③ Centre lock
- ④ Corner support VV
- ⑤ Pivot post VV
- ⑥ 90° end-piece
- ⑥a Vertical corner element 1 i.S. extendable
- ⑦ Drive-gear
- ⑧ Compression device



*Installation of the horizontal compression device at the upper hinge area is mandatory;
mount as close as possible to the turn-only and tilt-only stay guide!

Tilt-Only fittings overview





Tilt-Only fittings overview

Fittings combination

- ① Scissor stay with hinge VV
- ② Turn-only and tilt-only stay guide VVV
- ③ Centre lock
- ④ Locking screw
- ⑤ Tilt-only stay-arm
- ⑥ Corner guide with 1 i.S.
- ⑦ Tilt-only drive-gear - centred / variable handle height, with mounted tilt-only stay-arm
- ⑧ Compression device

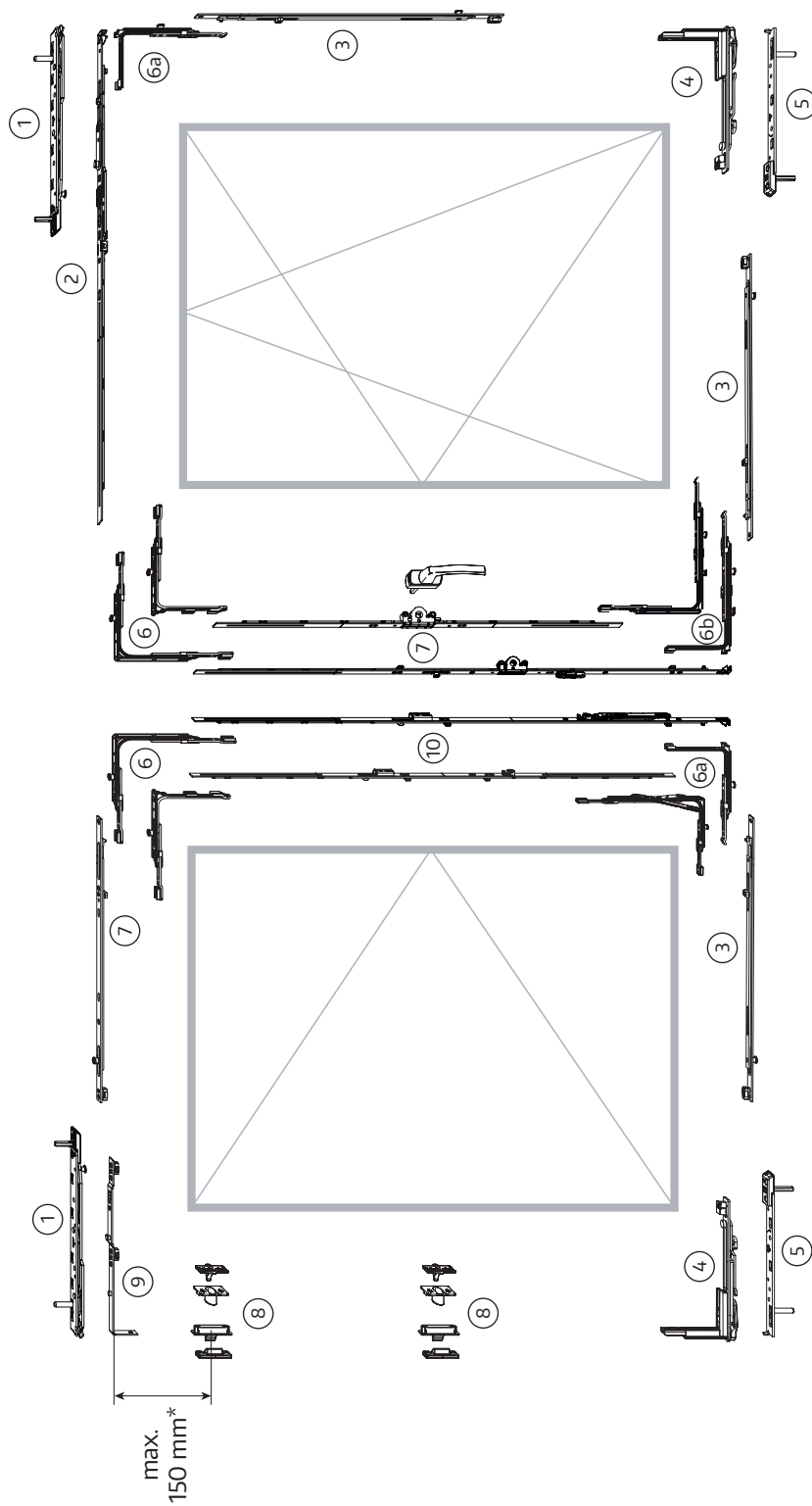


*Installation of the horizontal compression device at the upper hinge area is mandatory;
mount as close as possible to the turn-only and tilt-only stay guide!

Observe the maximum load capacities of the restrictor and cleaning stay!

Observe the restrictor and cleaning stay guideline on www.schlossindustrie.de

2-sashed window overview (TU-ON / T&T)





2-sashed window overview (TU-ON / T&T)

Fittings combination

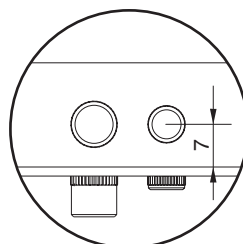
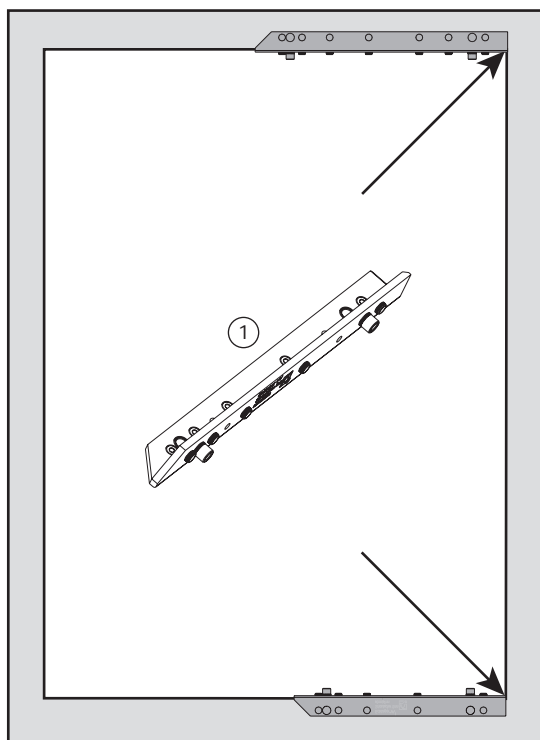
- ① Scissor stay with hinge VV
- ② Stay guide VV
- ③ Centre lock
- ④ Corner support VV
- ⑤ Pivot post VV
- ⑥ Corner guide with 1 i.S.
- ⑥a Vertical corner guide 1 i.S. extendable
- ⑥b Horizontal corner guide extendable
- ⑦ Drive-gear
- ⑧ Compression device
- ⑨ Turn-only and tilt-only stay guide
- ⑩ French casement drive-gear



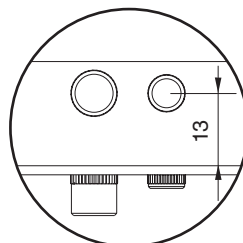
*Installation of the horizontal compression device at the upper hinge area is mandatory;
mount as close as possible to the turn-only and tilt-only stay guide!

Installation of the frame fittings components

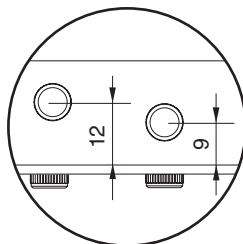
Drilling holes with jigs



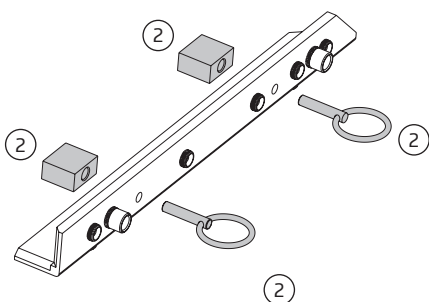
Drilling jig set for 7 mm screwing axis:
NEW - N° 102977



Drilling jig set for 13 mm screwing axis:
NEW - N° 102978



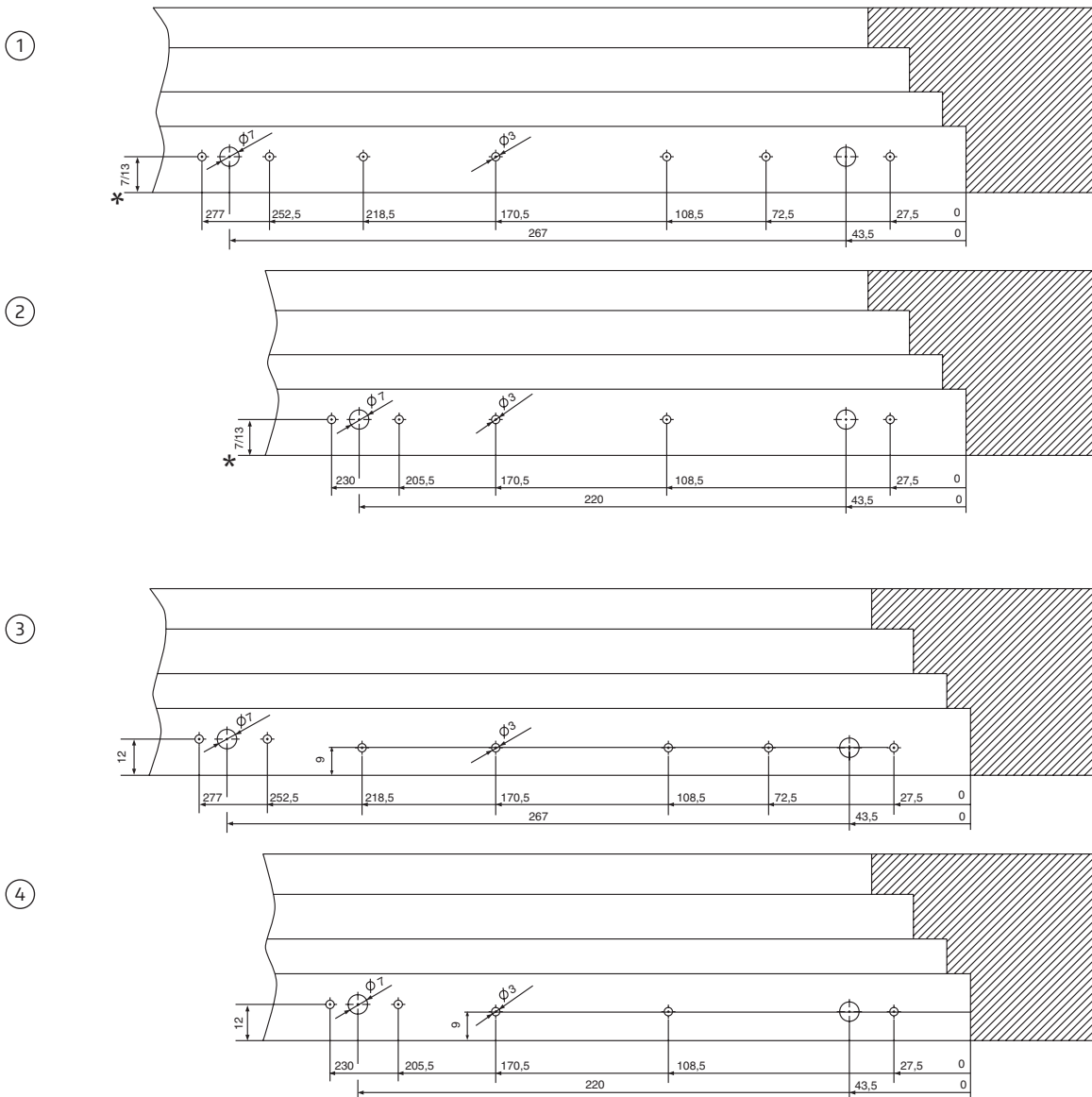
Drilling jig set for 18 mm rebate depth:
N° 102979



- ① Position the drilling jigs as depicted and predrill with a $\varnothing 7$ mm (min. drilling depth 25 mm!) or $\varnothing 3$ mm drill bit.
- ② In case of flush-mounted windows, attach the drilling jig accessories **N° 102980** to the drilling jigs for right-side or left-side application.

Installation of the frame fittings components

Drilling-hole patterns



- ① Scissor stay hinge 7/13 mm screwing axis*
- ② Pivot post 7/13 mm screwing axis*
- ③ Scissor stay hinge 18 mm rebate depth
- ④ Pivot post 18 mm rebate depth

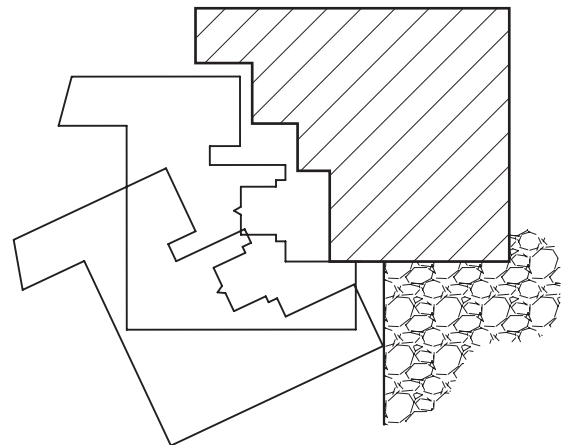
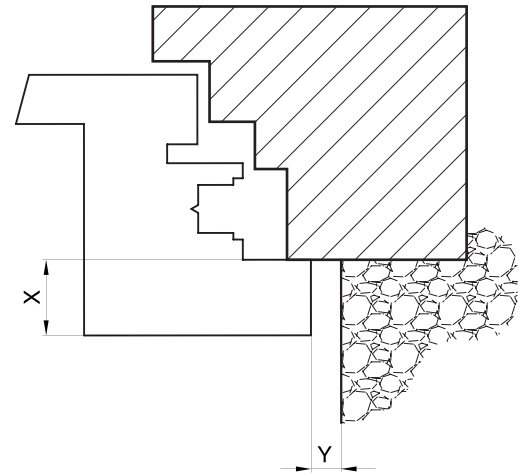
*Timber = 13 mm

PVC = see profile template sheet

Installation of the frame fittings components

Hinge-side clearance

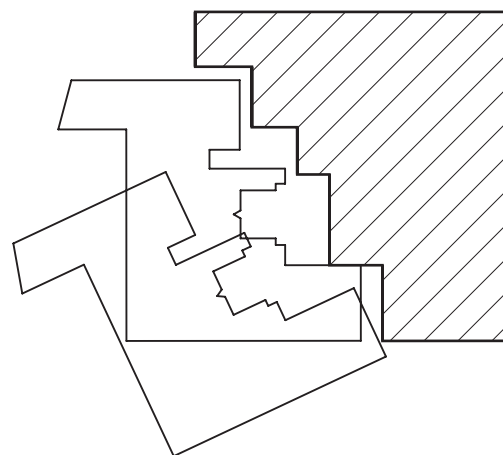
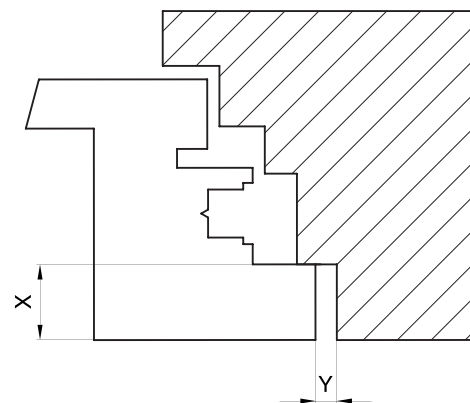
Profile	X (Frame projection size)	Y (Minimum clearance)
12/18-9 12/20-9	10	6
	15	7
	18	8
	20	9
12/18-13 12/20-13	10	5
	15	6
	18	7
	20	8



Installation of the frame fittings components

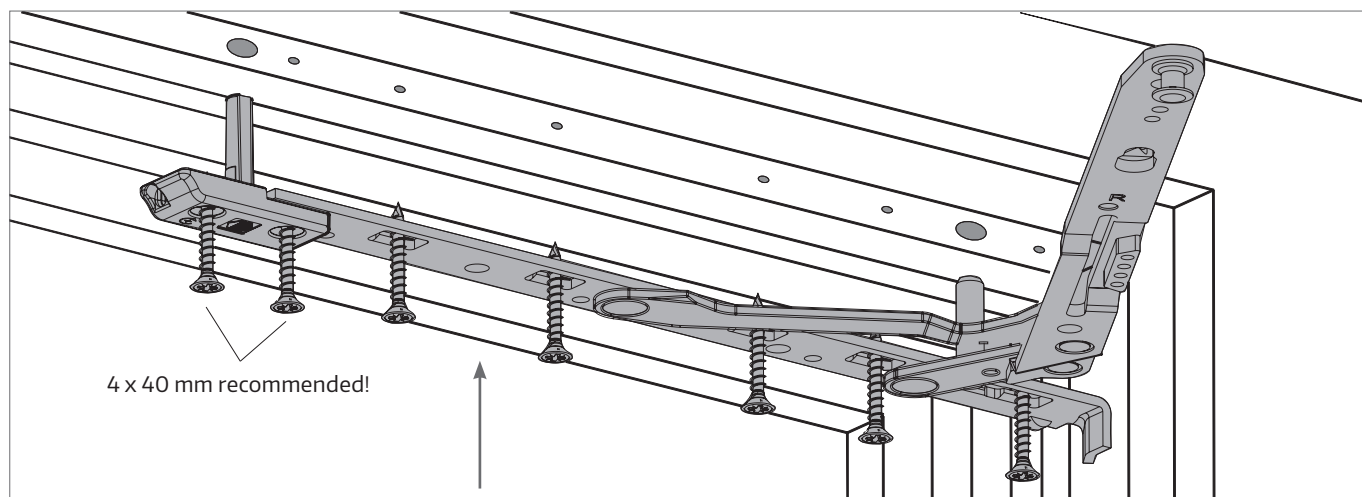
Hinge-side clearance for flush-mounted profile

Profile	X (Frame projection size)	Y (Minimum clearance)
12/18-9 12/20-9	10	4
	15	6
	18	6
	20	7
12/18-13 12/20-13	10	5
	15	6
	18	7
	20	8



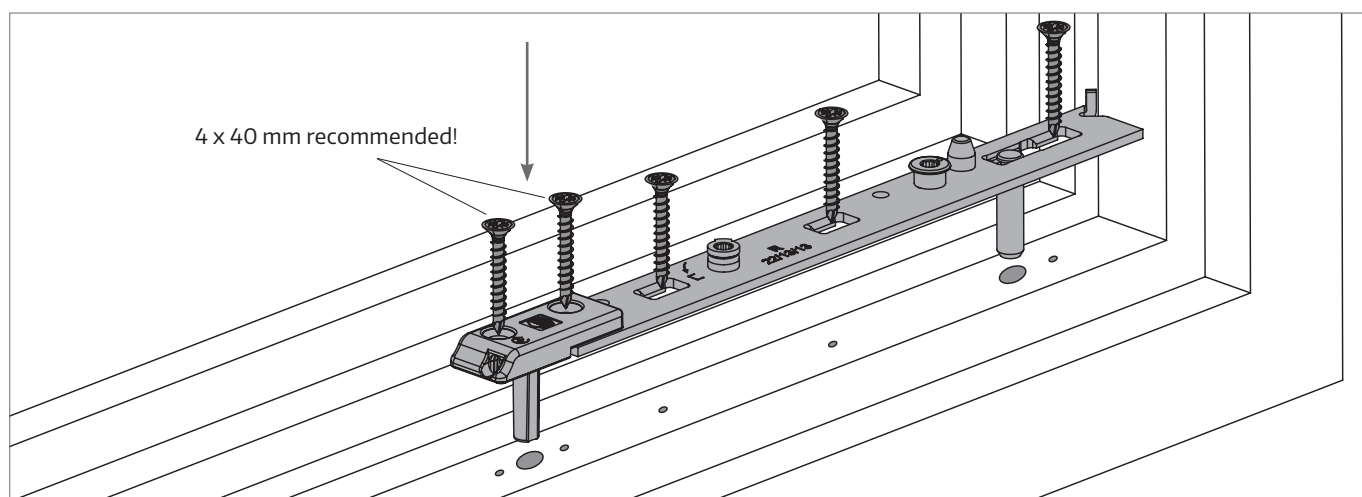
Installation of the frame fittings components

Installation of the scissor stay with hinge



Insert the scissor stay with hinge and screw in place.

Pivot post installation



Insert the pivot post in the drill holes and screw in place.

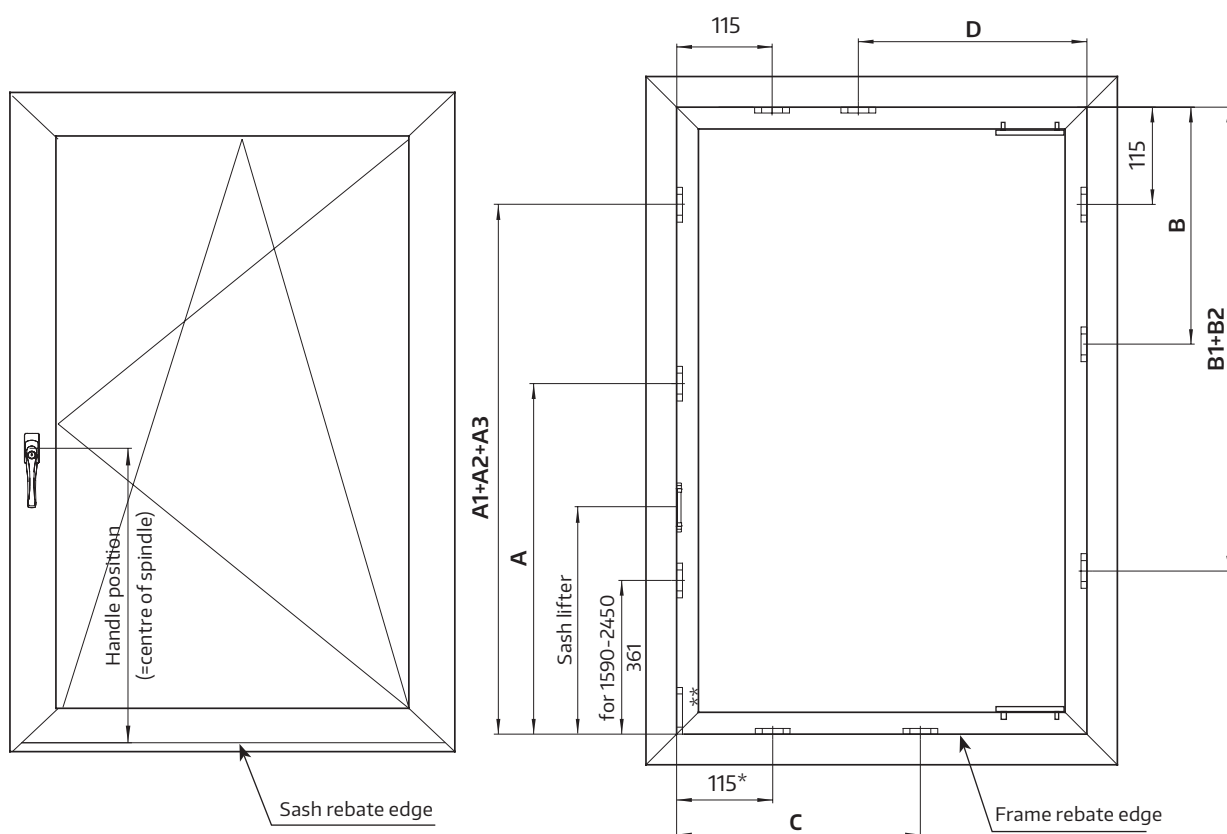


The bearing parts must be screwed in place in accordance with the requirements of the TBDK guideline (Gütegemeinschaft Schlösser und Beschläge [quality assurance association for locks and hardware] - www.schlossindustrie.de).

Installation of the frame fittings components

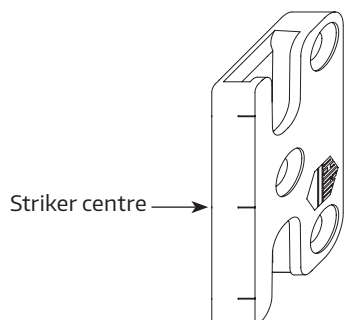
Striker positions

All dimensions refer to the **frame rebate dimensions**:



*only when using MM horizontal corner element and horizontal tilt-lock

**only when using drive-gear with tilt-rocker





Please note:


The striker position refers to the centre of the striker.


Installation of the frame fittings components

Striker drilling positions

Positioning of strikers, sash lifters for fixed drive-gears with 12 mm clearance

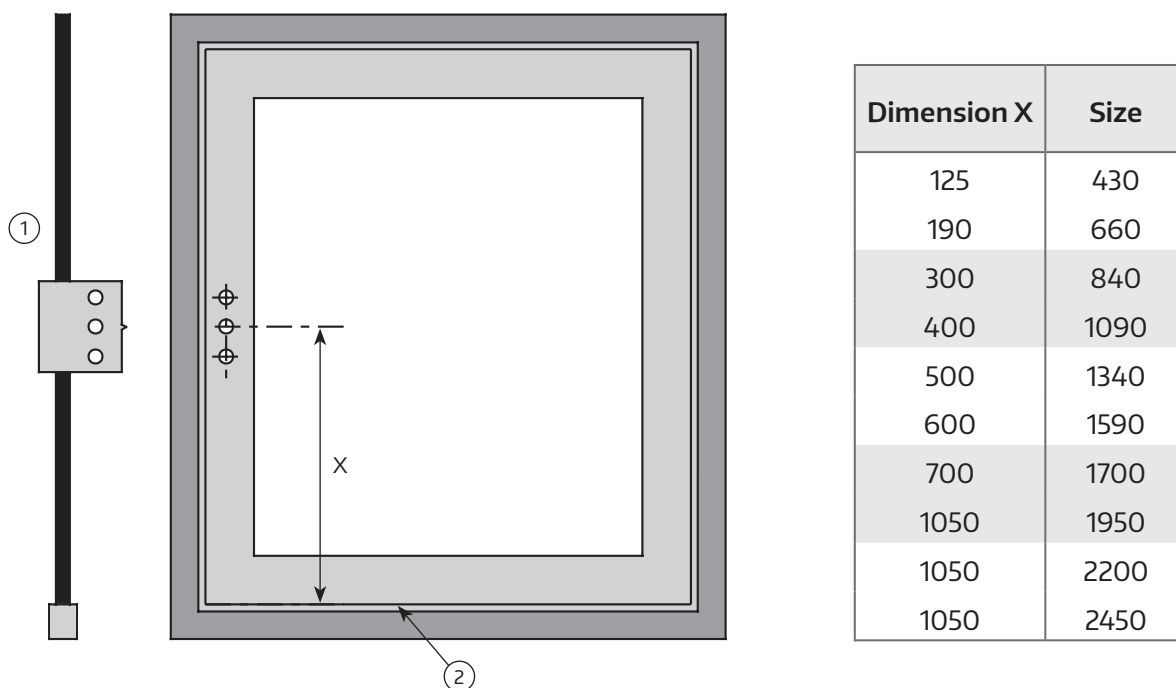
Drive-gear size		Sash lifter	A	A1	A2	A3	
430	360 - 430	—	—	—	—	—	125
660	431 - 660	34	—	—	—	—	190
840	661 - 840	164	441	—	—	—	300
1090	841 - 1090	264	586	—	—	—	400
1340	1091 - 1340	364	686	—	—	—	500
1590	1341 - 1590	464	—	921	—	—	600
1700	1591 - 1700	564	—	1021	—	—	700
1950	1701 - 1950	914	—	796	1466	—	1050
2200	1951 - 2200	914	—	796	1466	—	1050
2450	2201 - 2450	914	—	796	1466	1966	1050

Centre lock size		C	B	B1	B2
140	—	—	—	—	—
235	—	—	—	—	—
1280	801 - 1280	565	565	—	—
1500	1281 - 1500	800	800	—	—
2200	1701 - 2200	—	800	1506	—
2450	2201 - 2450	—	800	1506	1977

Scissor-stay size		D
1050	801 - 1050	506
1300	1051 - 1300	565

Installation of the sash fittings components

Drilling holes for handle



- ① Drive-gear drilling jig
N° 203861 (Ø 3 Ø 3 Ø 3)
N° 203862 (Ø 12 Ø 3 Ø 12)

- ② Sash rebate edge

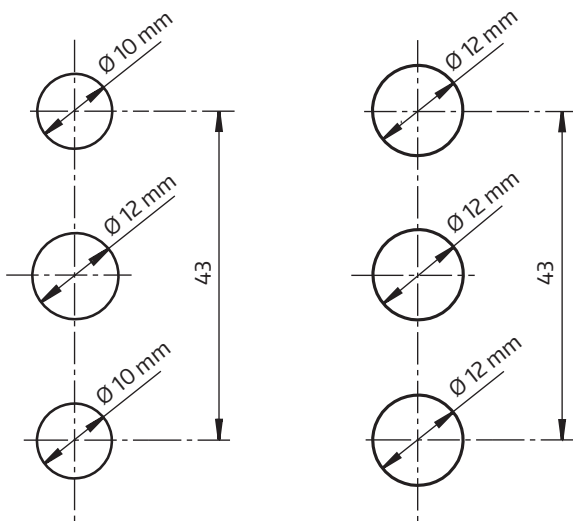
Adjust the drive-gear drilling jig to suit the drive-gear being used, allow it to lie up against the sash rebate edge and predrill with a Ø 3 mm and Ø 12 mm drill bit.

In the case of variable handle-height drive-gears, mark the sash centre, line up the drive-gear drilling jig with the notch on the side and predrill.

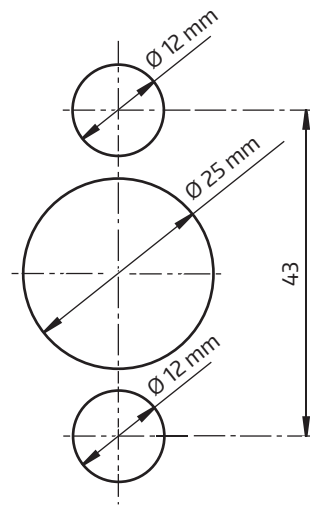
Installation of the sash fittings components

Handle drill-hole patterns

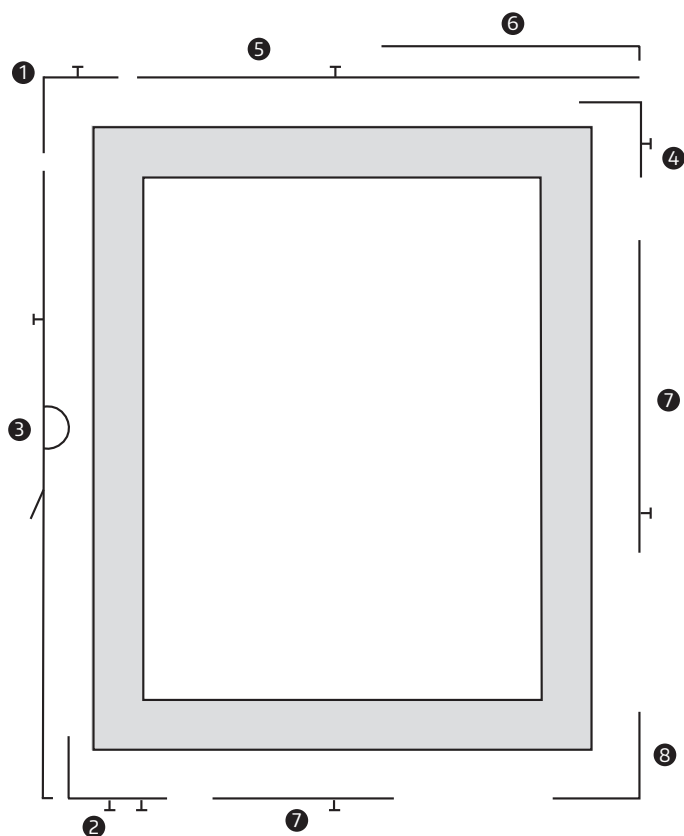
PVC for window handles
with $\varnothing 10$ and/or 12 mm lugs




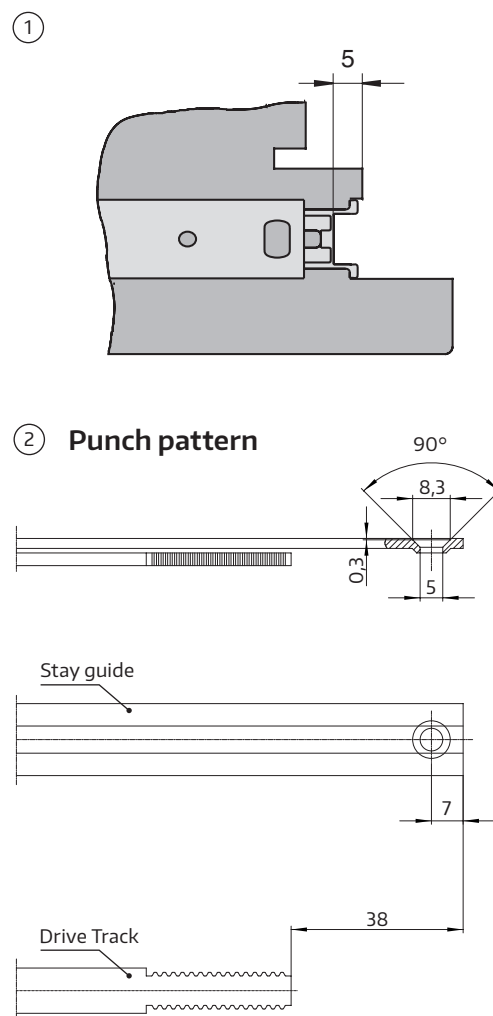
Timber for window handles
with $\varnothing 12$ mm lugs



Installation and cropping of the sash fittings components



1. Mount the **corner element ①**.
2. Insert the **horizontal corner element ②** (Fig. ①).
3. Crop the **drive-gear ③** (Fig. ②) and screw-fasten together with the **corner elements**.*
4. Insert the **horizontal corner element ④** (Fig. ①).
5. Crop the **stay guide ⑤** and (Fig. ②) screw-fasten together with the **corner elements**.
6. Mount the **scissor-stay arm ⑥**. Attach the top stay connecting part onto the corner support and turn the bayonet catch with a  20 key.
7. Install the **centre lock ⑦** (for an SRW/SRH of more than 1000 mm** for timber/800 mm** for PVC)
8. Attach the **corner support ⑧** to the frame and screw to fasten.

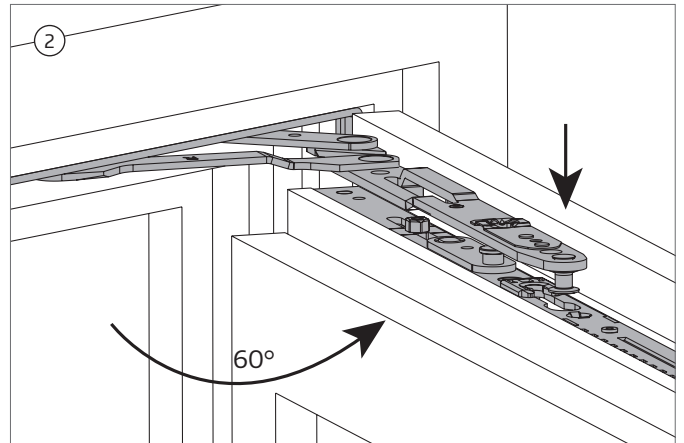
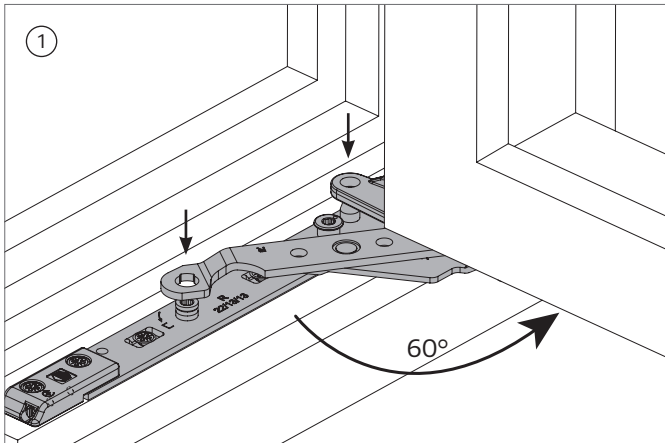


9. The centre-fixings (preset centred cam-fixing) are activated upon operating the fittings for the first time.
10. The sash lifter on the drive-gear must be activated by rotating it outwards.

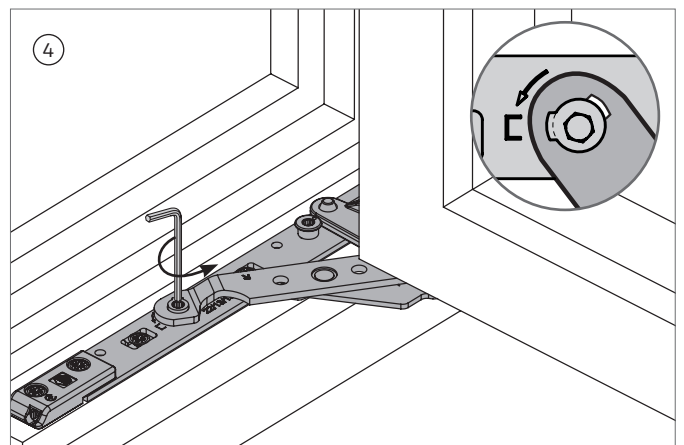
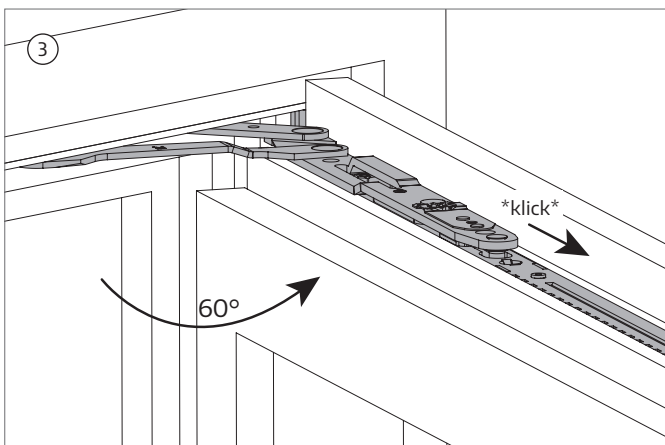
*For **T&T** drive-gear 660 und stay guide 600, the horizontal and vertical corner elements are to be additionally fastened to the groove base with screws!

**An SRW und SRH of 1000 mm for timber and 800 mm for PVC is a MACO recommendation; adhere to the profile manufacturers' specifications!

Hinging the sash

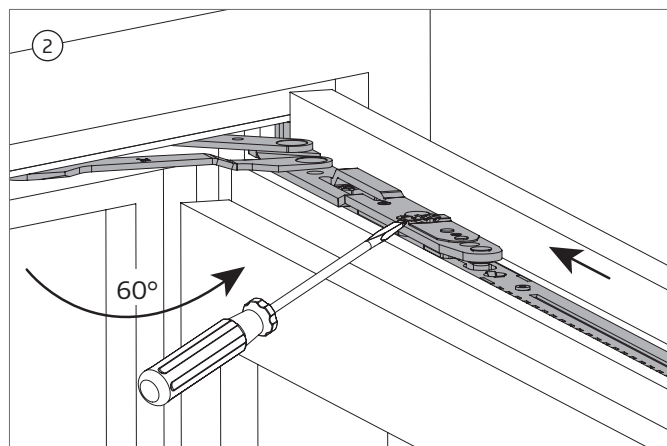
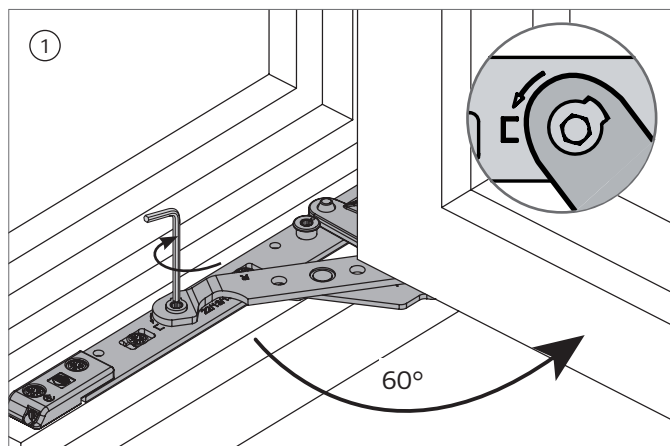


- ① Mount the corner support onto the pivot post with an opening angle of 60°.
- ② Depress the scissor-stay arm guide pin into the scissor-stay guide.

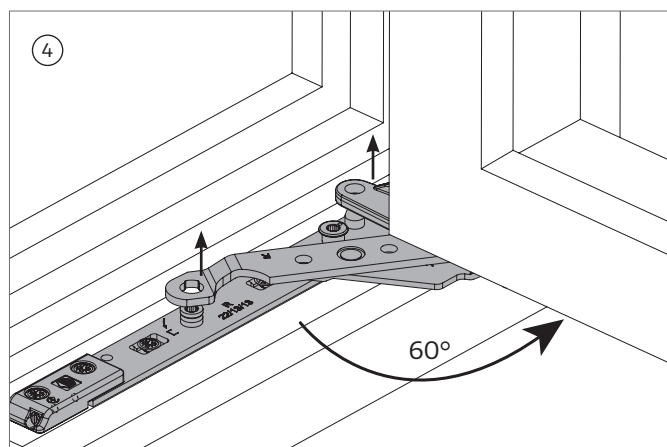
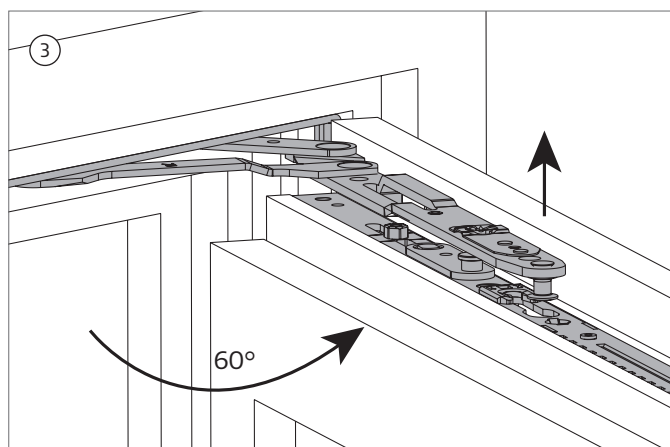


- ③ After pressing into place, pull the sash in the direction of the arrow so that the scissor-stay arm clicks into the guide.
- ④ Rotate the locking bolt with a 4 mm Allen key (refer to the notched marking on the fitting).

Unhinging the sash

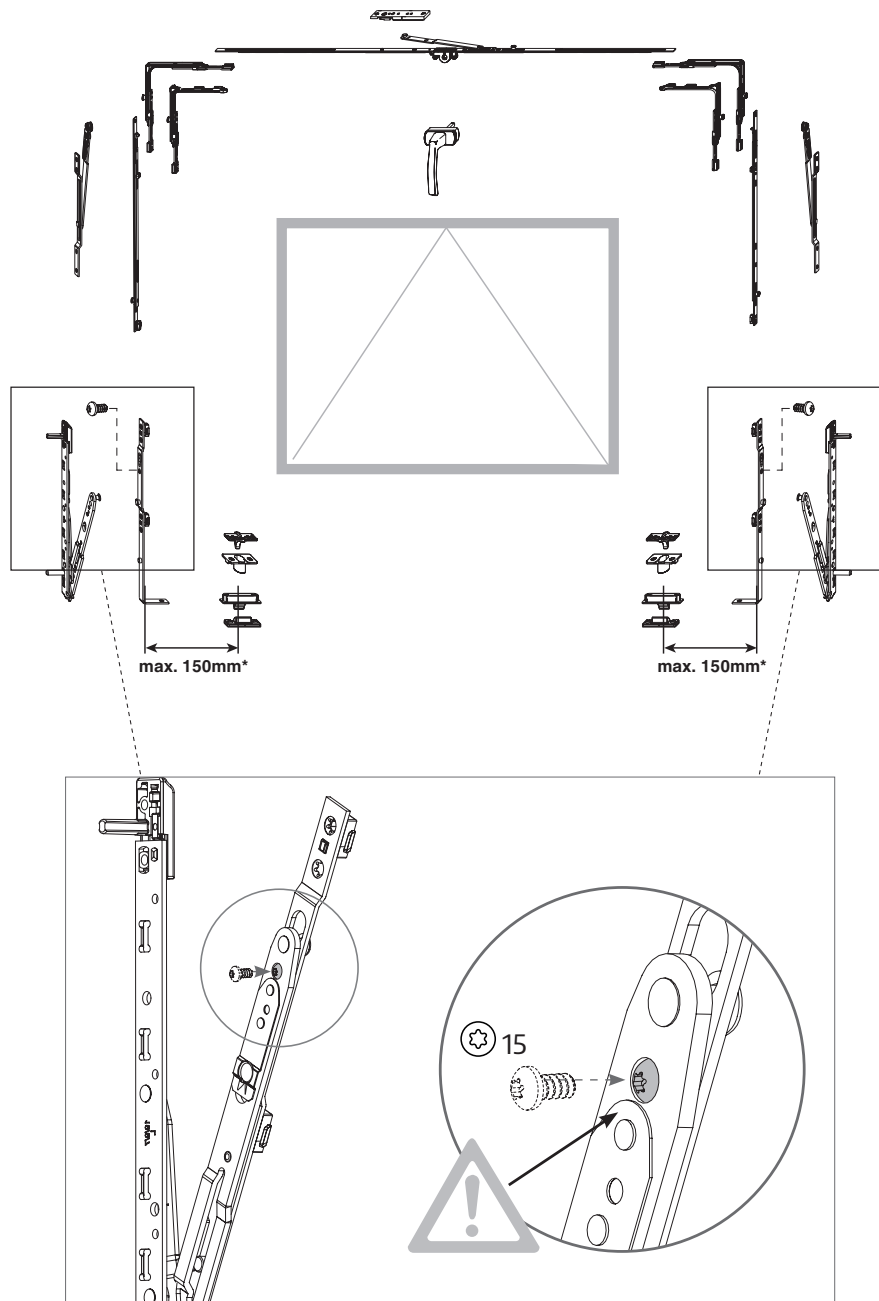


- ① Open the sash to 60°. Rotate the locking bolt with a 4 mm Allen key up to the open position.
- ② Lift up the catch and press the sash against the frame.



- ③ Lift up the scissors-stay arm so that the guide pin is free.
- ④ Unhinge the sash.

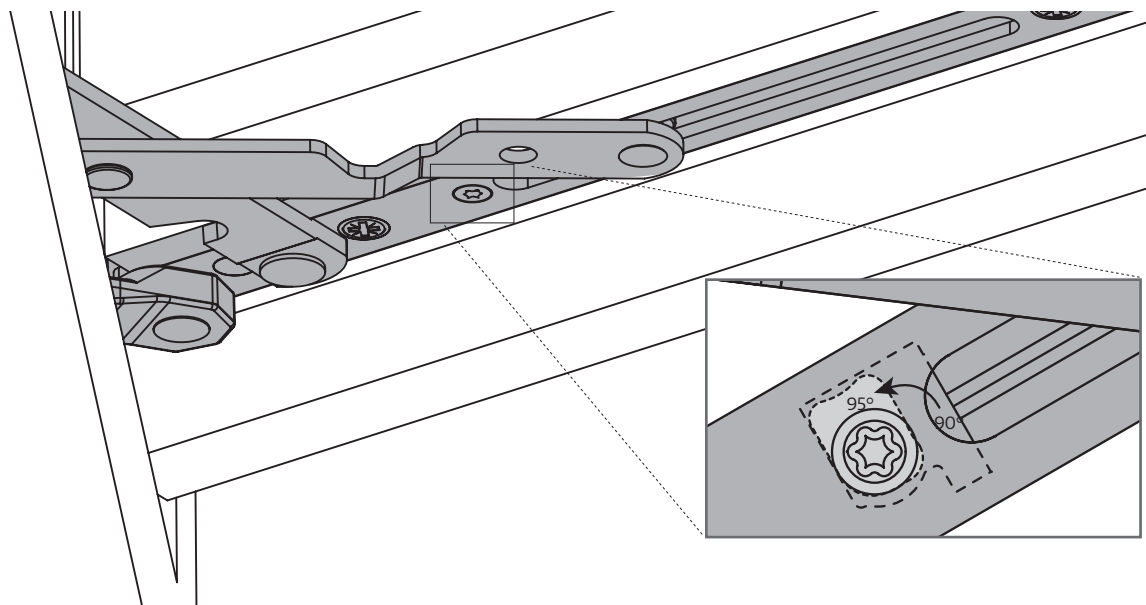
Hinging the tilt-only sash



Upon hinging the tilt-only sash, it is imperative that you fix the locking screw!

Adjustments

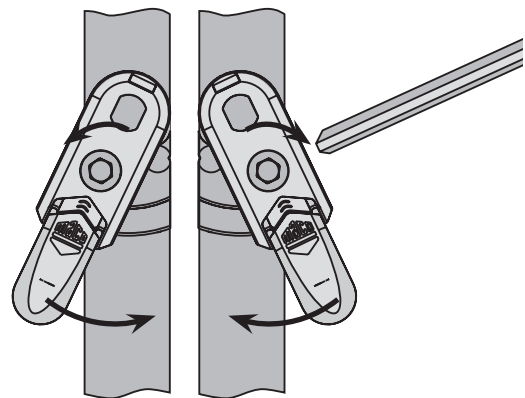
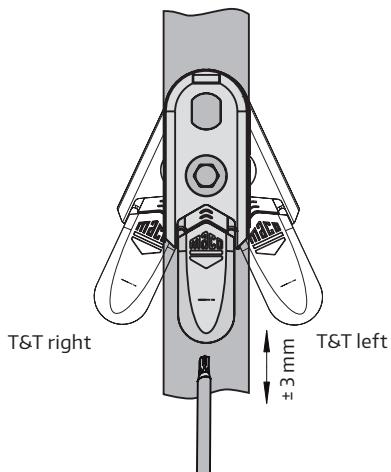
Switching over from 90° to 95° opening angle




Turn the limitation stop 90° with a  15 bit.

Adjustments

Sash lifter



Activating and adjusting the sash lifter

Rotate the sash lifter in the desired direction until you hear an audible click. The sash lifter is subsequently fully operational. Set to the required height by turning the adjustable screw with a  15 bit.



If the bottom clearance is correct, the clearance between the sash lifter and sash-lifter striker should be max. 0.5 mm.

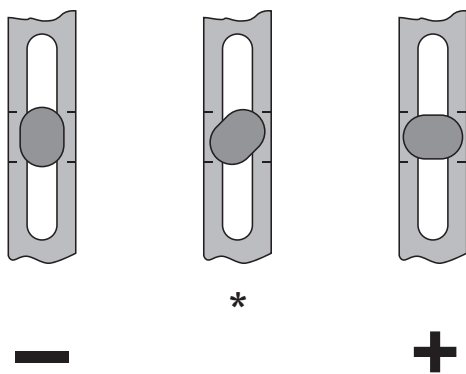
Resetting the sash lifter

Position the lifter into the centre. Turn in the direction depicted above using a 4 mm Allen key until it snaps into place.

Adjustments

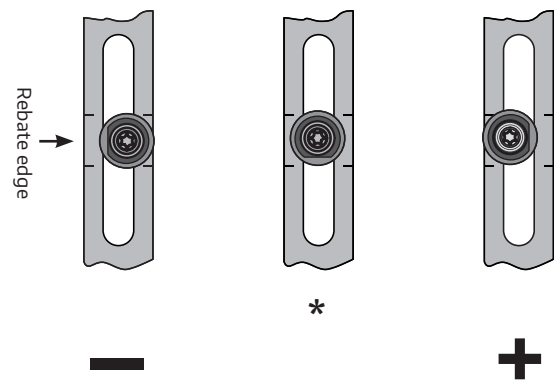
Gasket compression

Locking cam



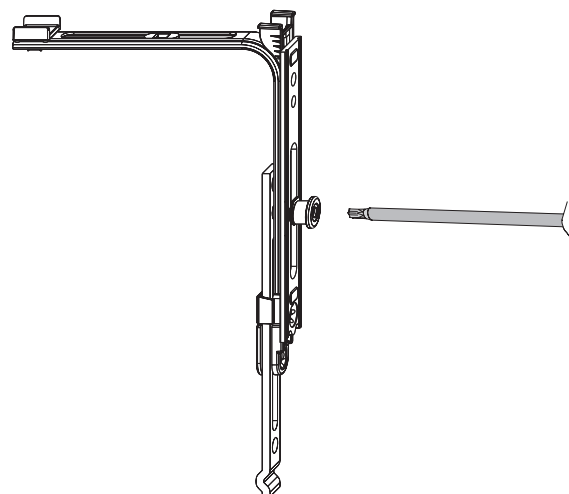
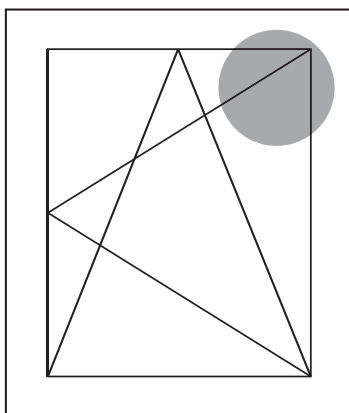
* Standard

i.S. security roller cam



Scissor-stay

via locking cam on corner element

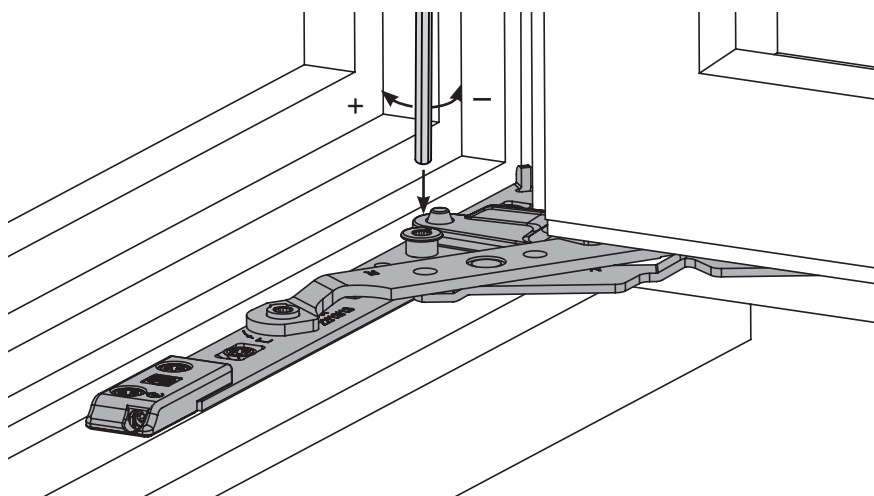


Adjustments

Gasket compression

Pivot post

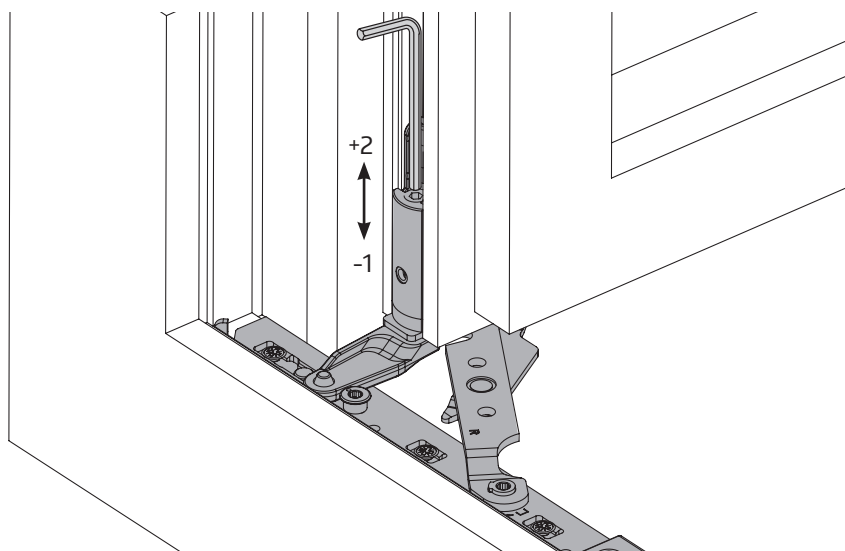
±1 mm with 4 mm Allen key



Height adjustment

Corner support


+2 / -1 mm with 4 mm Allen key

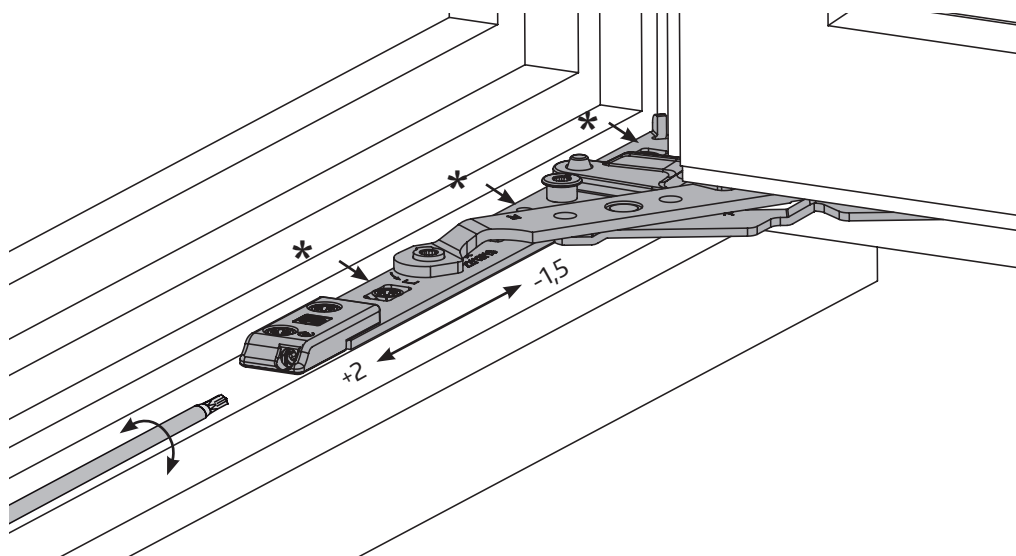


Adjustments

Lateral adjustment


Corner support

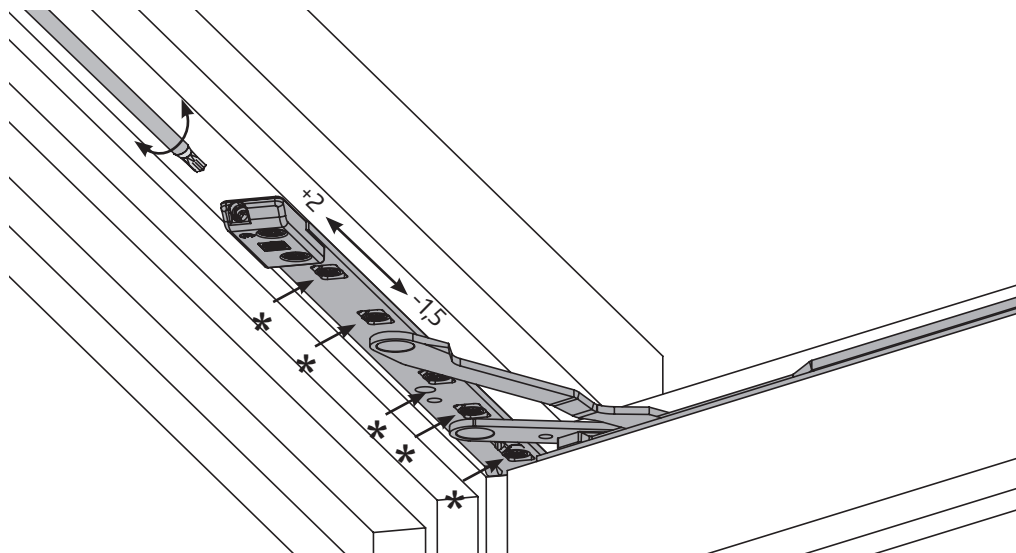
+2 mm / -1.5 mm with  15



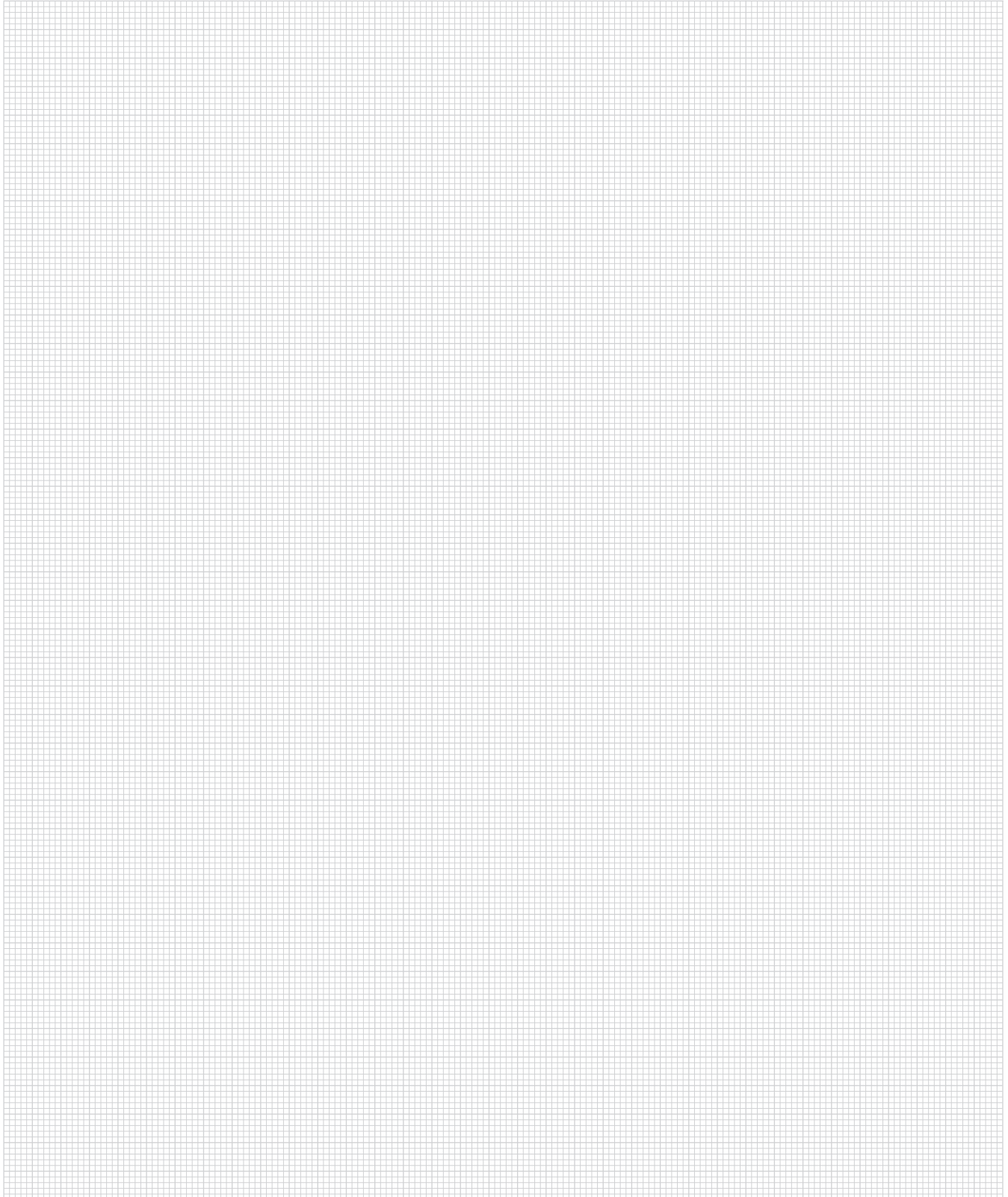
* We recommend loosening the tightened screws before any lateral adjustments (by at least half a turn). Re-tighten the screws after making the adjustment!

Scissor-stay arm

+2 mm / -1.5 mm with  15

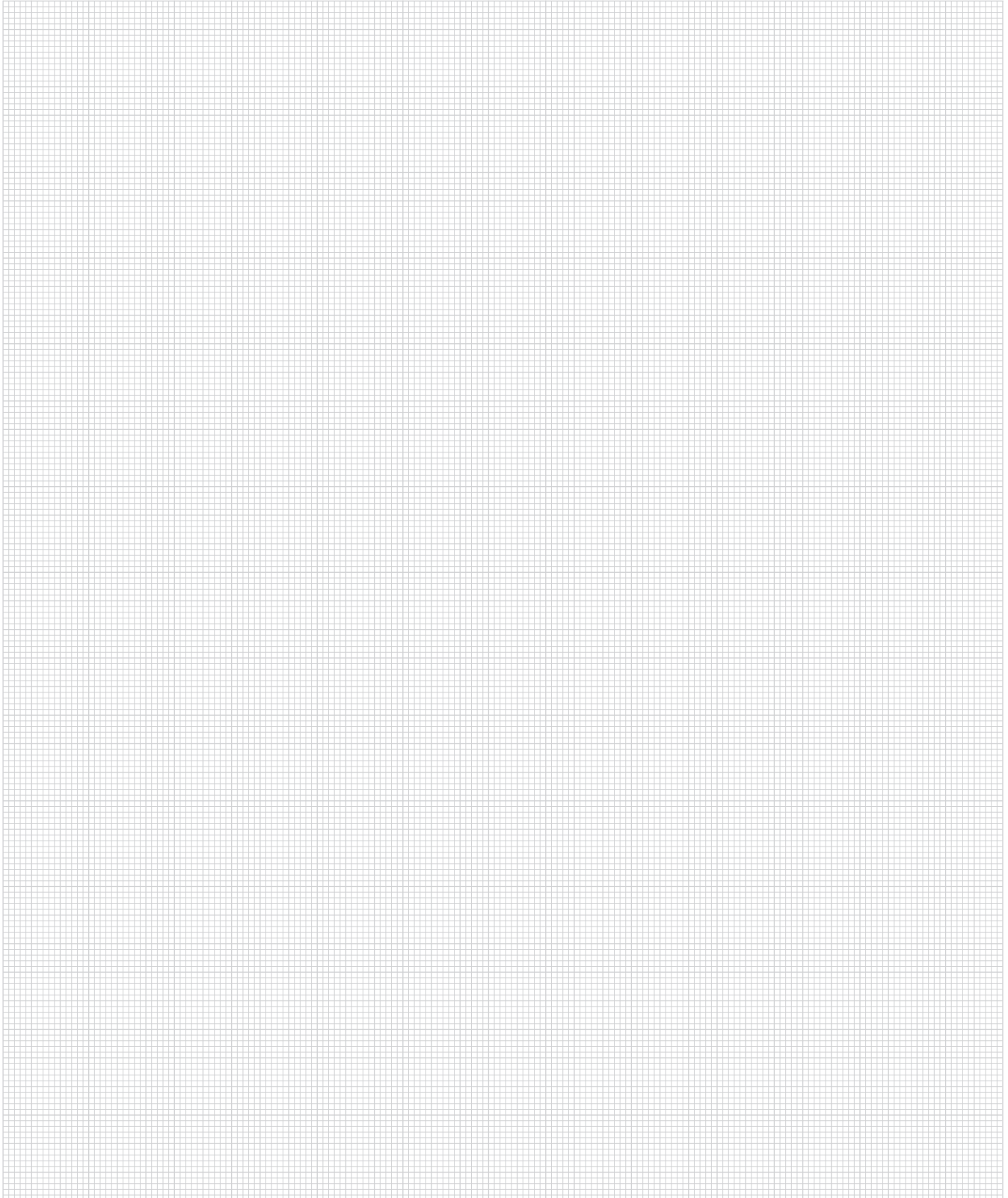


Notes



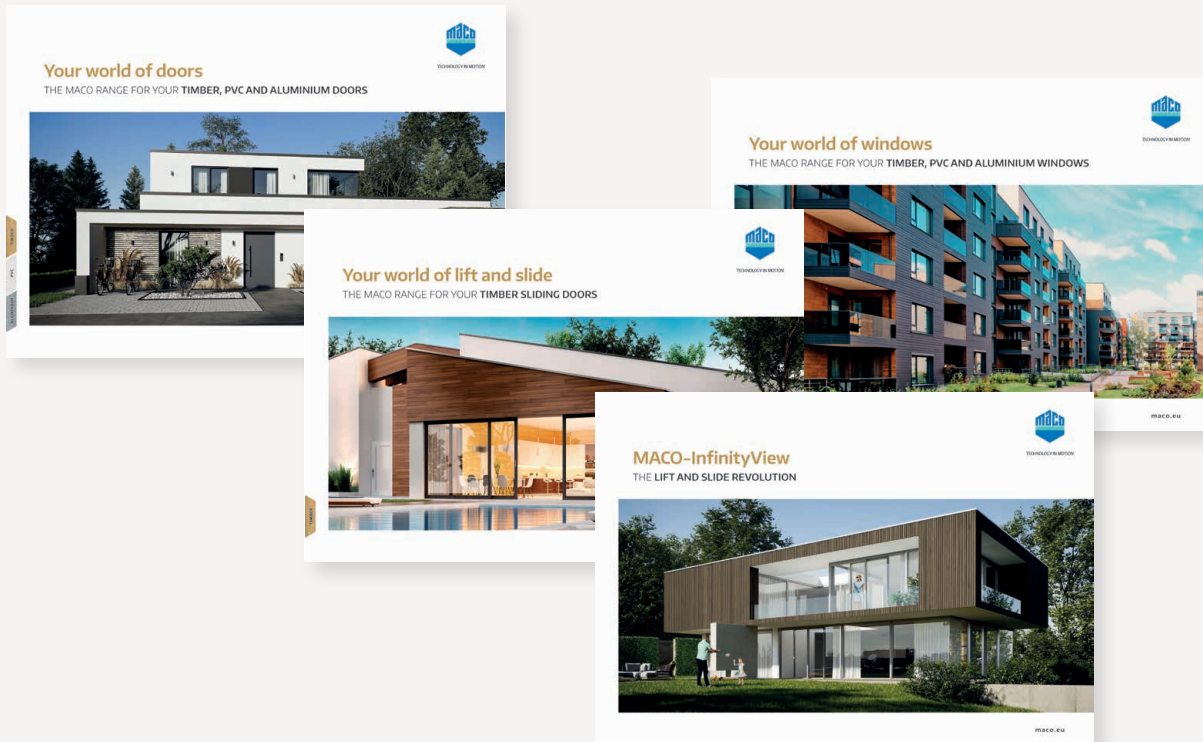


Notes



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