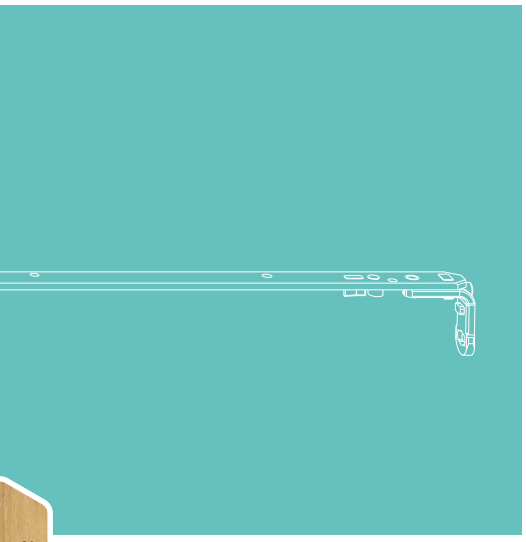
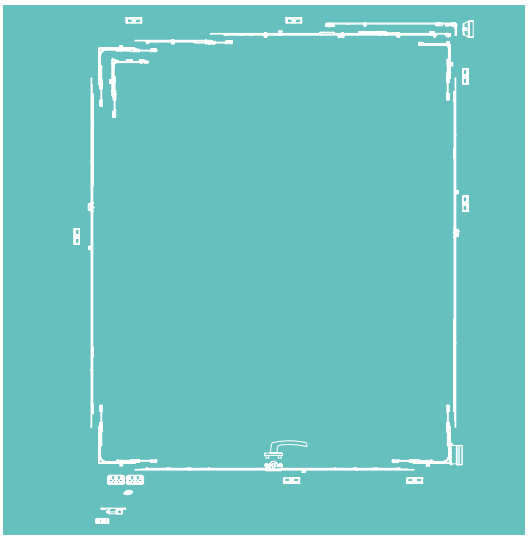
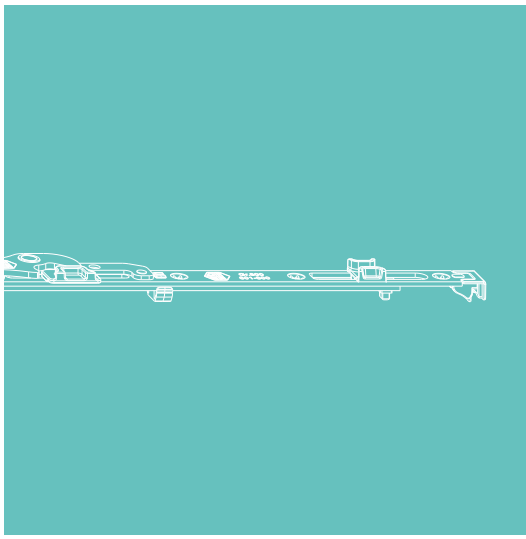
TECHNOLOGY IN MOTION

MACO MULTI-MATIC

TILT AND TURNHARDWARE







TIMBER

PVC

ASSEMBLY INSTRUCTIONS

Comfort hardware

Use only by certified specialists!!

Key and abbreviations


Sash rebate height (SRH)


Sash rebate width (SRW)


Sash rebate width and height

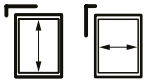

Maximum sash weight


Turn&Tilt element (DK)


Tilt&Turn element (KD)


Turn element (DR)


Corner element standard


Corner element short


Handle Height (HH)


Backset (DM)


Rebate gap (FL)


Rebate leg (U)


Offset (V)


Rebate depth (FT)


Item size


Drive gear fix or variabel


Faceplate extension, Centre lock,
Width connector SKB

AWD = Application Diagram
ZV = Central locking system


Scissor

Table of contents

Important Information

Introducing

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 these instructions are made of galvanised steel, passivated and sealed according to DIN EN 12329. They must not be used in environments with aggressive, corrosion-promoting air contents (e.g. swimming pools, stable buildings, buildings in coastal areas, polluted industrial areas, buildings for processing in the chemical industry, ...). Likewise, the use in acidic woods (oak, larch, teak, ...) and woods with aggressive ingredients/surface treatments is not suitable and not intended. For these applications, MACO offers fittings with Tricoat-Evo surface or stainless steel.

› For the use of fittings in demanding environments and materials, please contact your responsible MACO contact person.

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

› The window and French door elements may only be surface-treated (painted, varnished, varnished, oiled, ...) before the hardware parts are installed. Subsequent surface treatment may restrict the function of the hardware parts. In this case, any warranty claims against the hardware manufacturer become invalid.

Other applicable documents

The following documents must be observed in addition to these instructions and/or provide additional information:

› Our General Terms and Conditions of Business (GTC)

› Our General Terms and Conditions of Purchase (GTCP)

› Operating and Maintenance Instructions, order number 757071

› Maintenance and Adjustment Instructions, order number 757070

You can find the current version of all documents on our website at www.maco.eu

Document storage

Keep these installation instructions for future reference.

Safety and warning instructions

For the safety of persons, it is important to follow the instructions below!

When reading this document and the safety instructions, please observe the following signs and colouring.

DANGER Failure to comply with such instruction will result in fatal or serious injury.

WARNING Failure to comply with such instruction may result in fatal or serious injury.

ATTENTION Failure to comply with such instructions may result in minor or moderate injury.

Important additional information that is important for the error-free assembly and function of the product.

Please be sure to observe your **duty to inform the end user!**
The complete delivery of a window or door element also includes operating and maintenance instructions and, if applicable, a window sticker for deviating operating methods! We make these available to our customers in the download area of our website (www.maco.eu)!

General processing instructions

Intended use

These assembly instructions for the Comfort hardware are binding. The use and assembly of the components is only permitted in the manner listed below. Any other use is not provided for and therefore does not correspond to the intended use. The following points also need to be taken into account:

› Information on application areas, sash weights and fabrication guidelines from profile manufacturers or system providers must be considered in a binding manner!

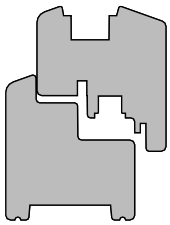
› The centre of gravity or position of the glass pane can affect application areas and max. weights and must be requested if necessary!

In the event of non-compliance, the right to compensation will lapse!

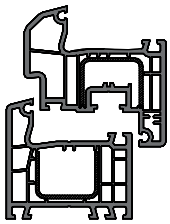
Application notes

❶ Application materials (frame material)

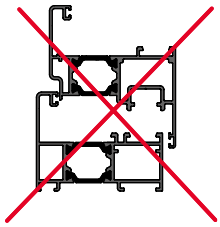
Timber



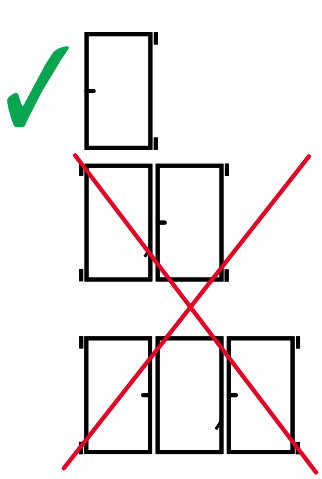
PVC

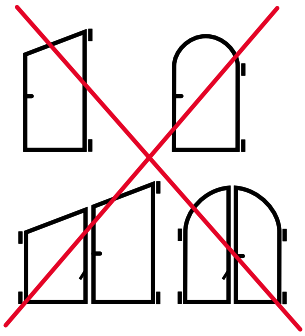


Aluminium

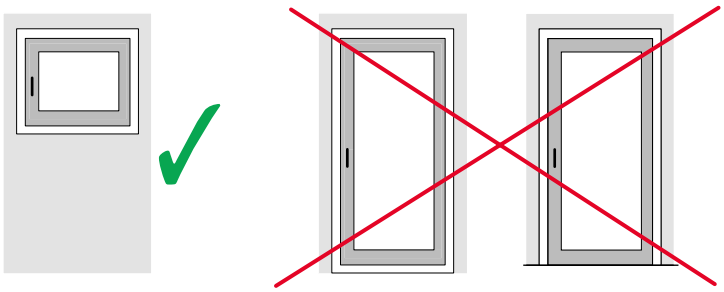


❷ Forms of application / Sash version

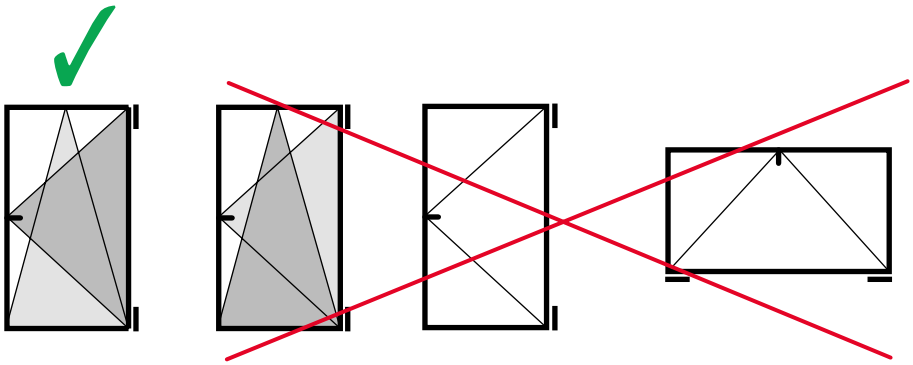




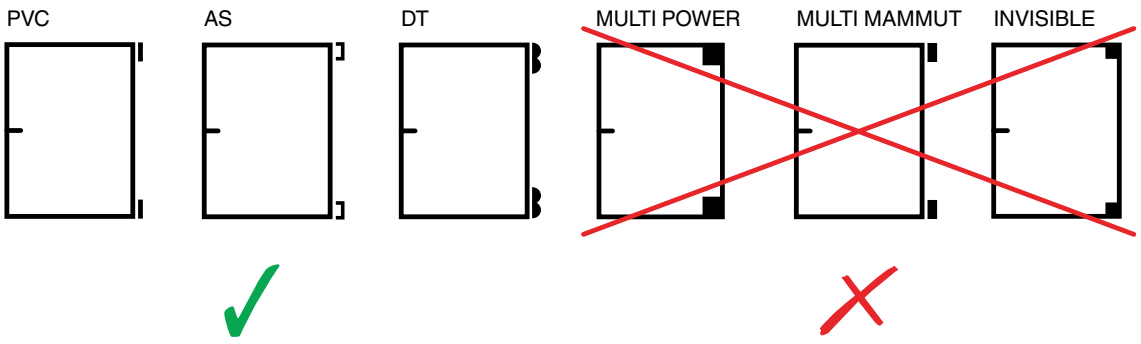
❸ Window construction type



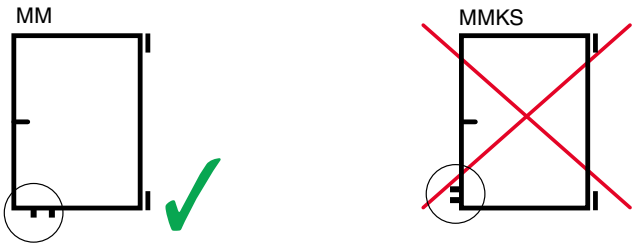
❹ Types of opening



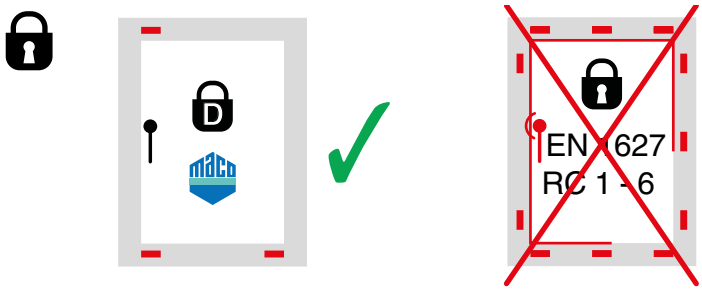
❺ Hinge side



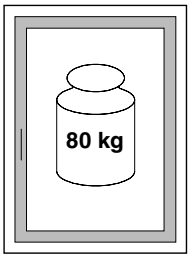
❻ Hardware overview



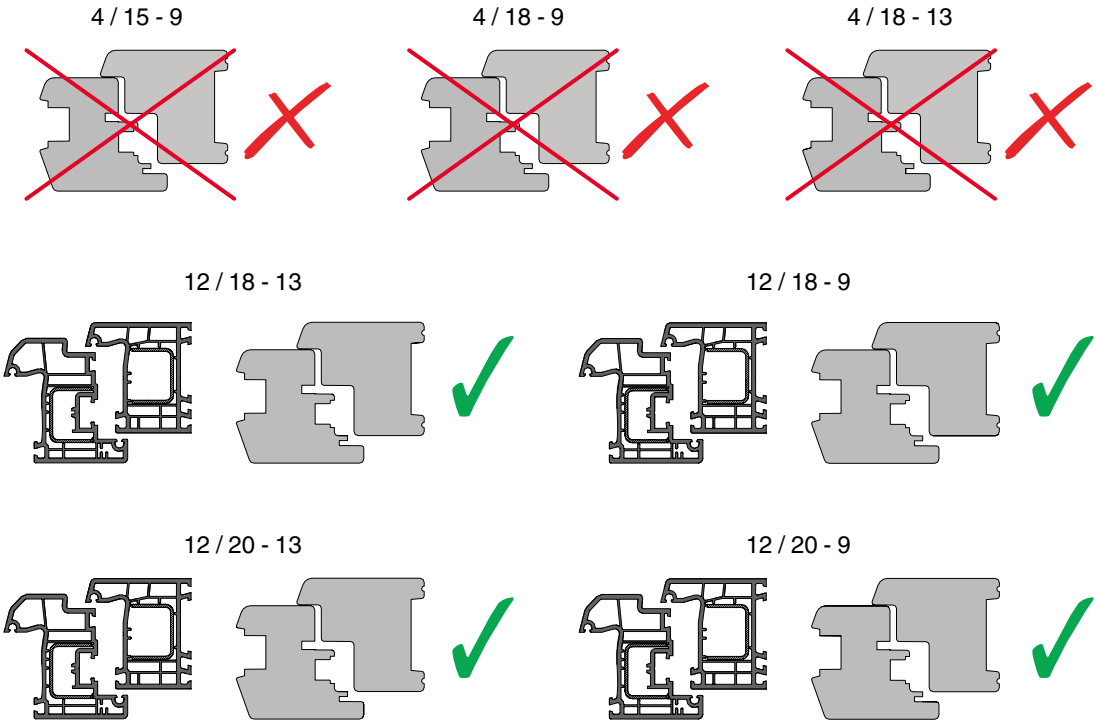
❼ Hardware version (security)



❽ Maximum sash weight



❾ Sash profile - Rebate gap, Rebate leg and Offset

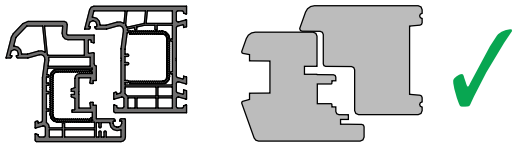


⓾ Fitting groove

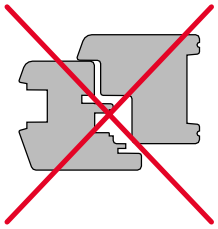
The fitting groove must be implemented according to the information in our Print and Online Catalogues!

⓫ Frame rebate

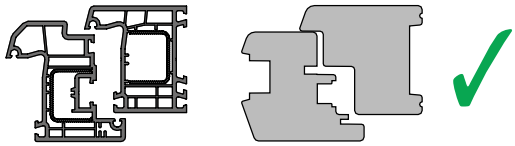
FT 22



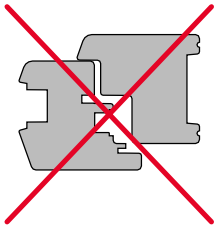
FT 18



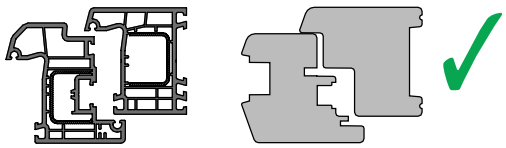
FT 24



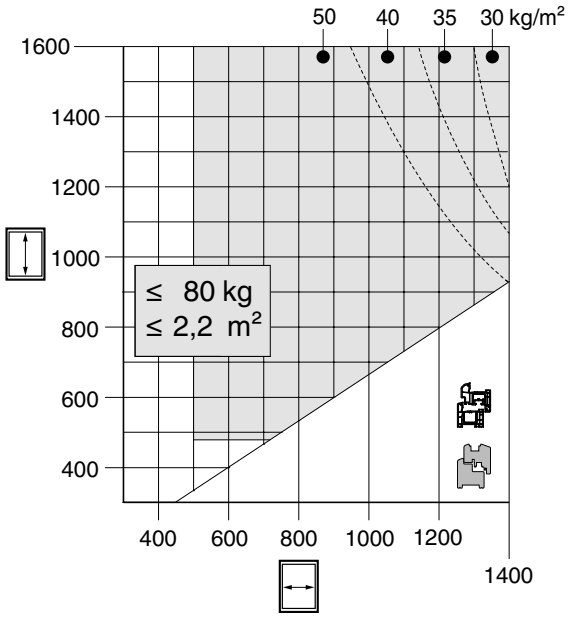
FT 20



FT 30



Application diagram



Permissible area

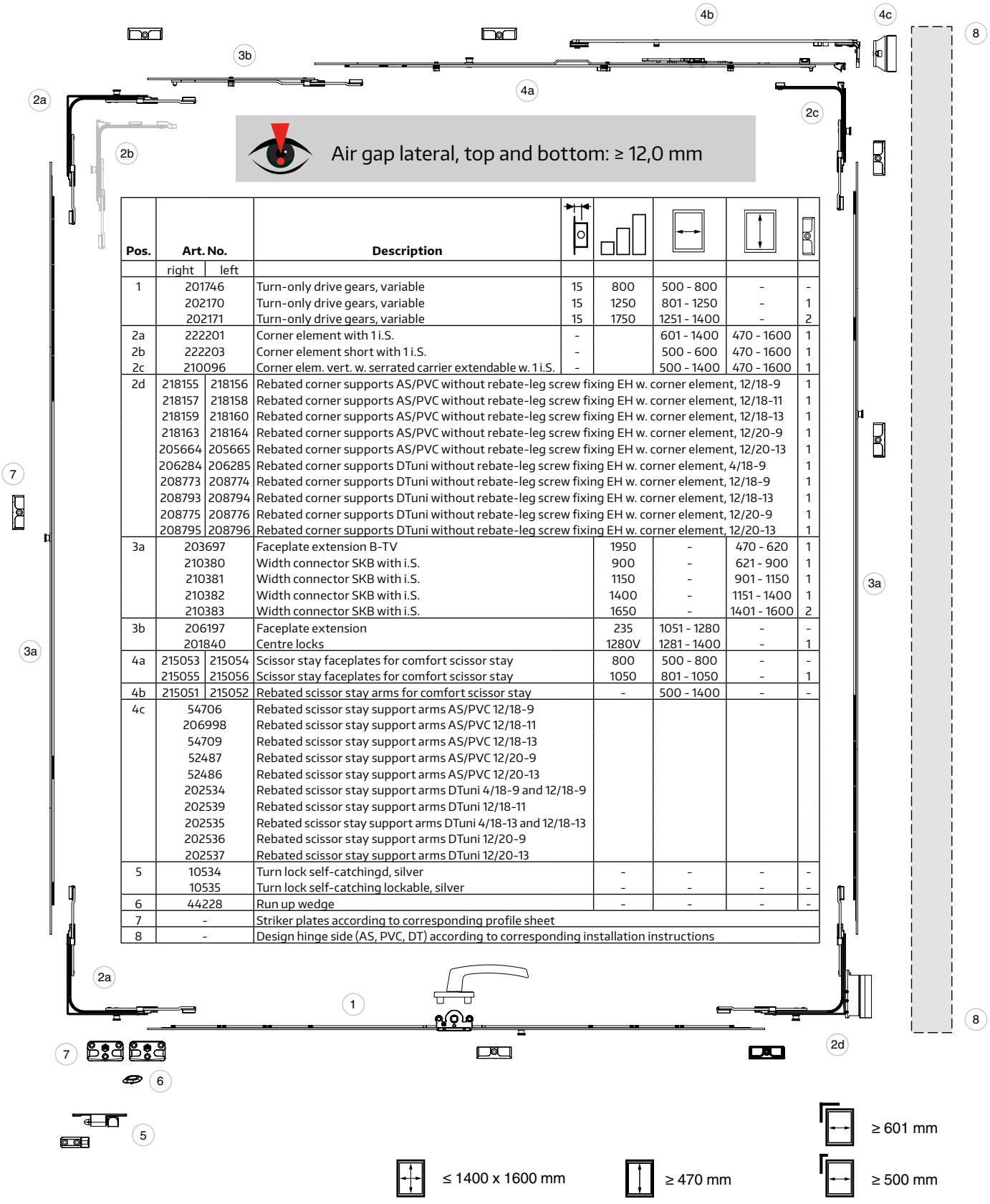
Prohibited area

for PVC profiles

for timber profiles

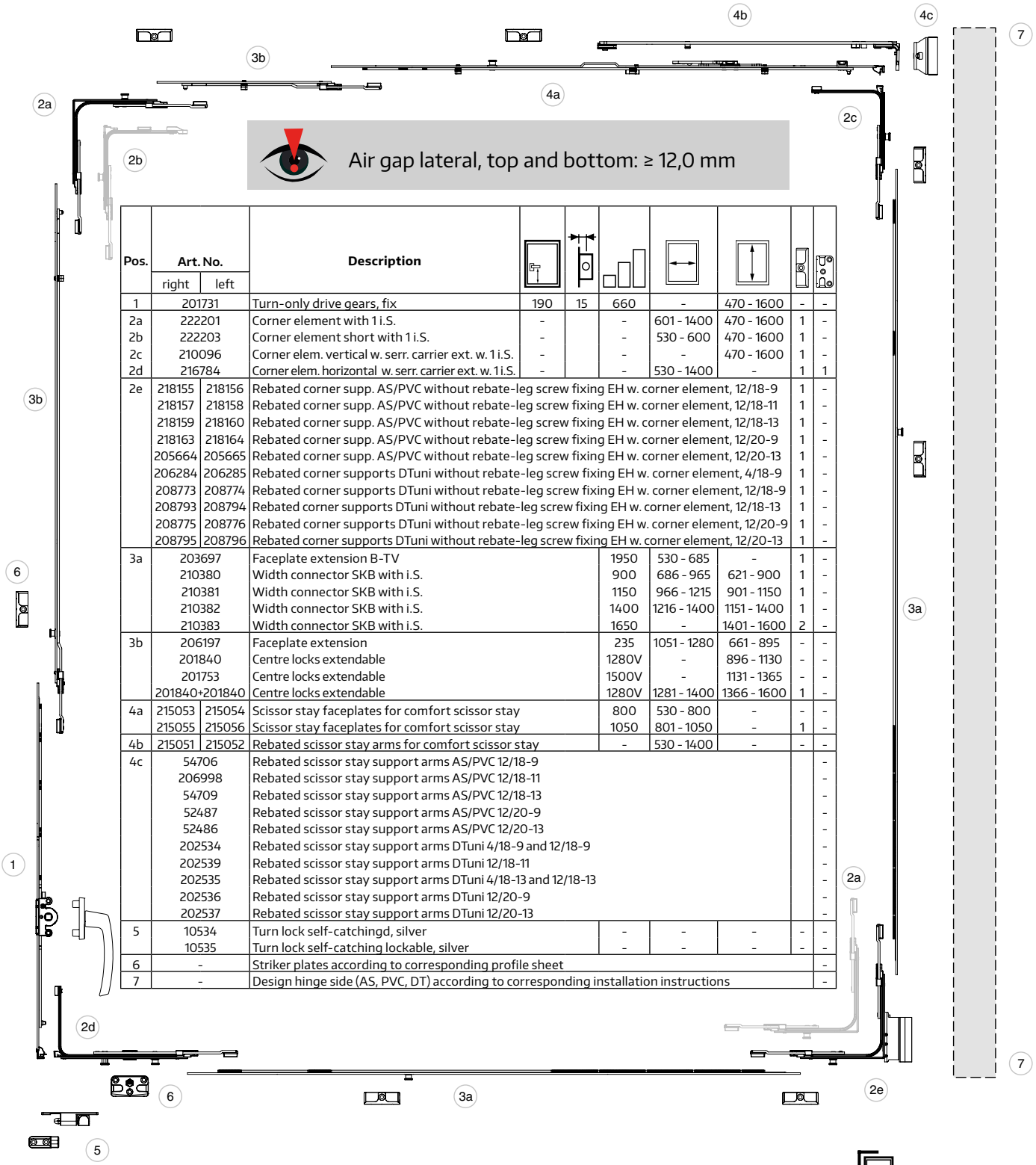
All notes on the use of application diagrams in our print and online catalogues must be taken into account!

Hardware overview / item list - 1-leaf turn-tilt units - horizontal handle position



Pos.	Art. No. right	Art. No. left	Description					
1	201746		Turn-only drive gears, variable	15	800	500 - 800	-	-
	202170		Turn-only drive gears, variable	15	1250	801 - 1250	-	1
	202171		Turn-only drive gears, variable	15	1750	1251 - 1400	-	2
2a	222201		Corner element with 1 i.S.	-		601 - 1400	470 - 1600	1
2b	222203		Corner element short with 1 i.S.	-		500 - 600	470 - 1600	1
2c	210096		Corner elem. vert. w. serrated carrier extendable w. 1 i.S.	-		500 - 1400	470 - 1600	1
2d	218155	218156	Rebated corner supports AS/PVC without rebate-leg screw fixing EH w. corner element, 12/18-9					1
	218157	218158	Rebated corner supports AS/PVC without rebate-leg screw fixing EH w. corner element, 12/18-11					1
	218159	218160	Rebated corner supports AS/PVC without rebate-leg screw fixing EH w. corner element, 12/18-13					1
	218163	218164	Rebated corner supports AS/PVC without rebate-leg screw fixing EH w. corner element, 12/20-9					1
	205664	205665	Rebated corner supports AS/PVC without rebate-leg screw fixing EH w. corner element, 12/20-13					1
	206284	206285	Rebated corner supports DTuni without rebate-leg screw fixing EH w. corner element, 4/18-9					1
	208773	208774	Rebated corner supports DTuni without rebate-leg screw fixing EH w. corner element, 12/18-9					1
	208793	208794	Rebated corner supports DTuni without rebate-leg screw fixing EH w. corner element, 12/18-13					1
	208775	208776	Rebated corner supports DTuni without rebate-leg screw fixing EH w. corner element, 12/20-9					1
	208795	208796	Rebated corner supports DTuni without rebate-leg screw fixing EH w. corner element, 12/20-13					1
3a	203697		Faceplate extension B-TV		1950	-	470 - 620	1
	210380		Width connector SKB with i.S.		900	-	621 - 900	1
	210381		Width connector SKB with i.S.		1150	-	901 - 1150	1
	210382		Width connector SKB with i.S.		1400	-	1151 - 1400	1
	210383		Width connector SKB with i.S.		1650	-	1401 - 1600	2
3b	206197		Faceplate extension		235	1051 - 1280	-	-
	201840		Centre locks		1280V	1281 - 1400	-	1
4a	215053	215054	Scissor stay faceplates for comfort scissor stay		800	500 - 800	-	-
	215055	215056	Scissor stay faceplates for comfort scissor stay		1050	801 - 1050	-	1
4b	215051	215052	Rebated scissor stay arms for comfort scissor stay		-	500 - 1400	-	-
4c	54706		Rebated scissor stay support arms AS/PVC 12/18-9					
	206998		Rebated scissor stay support arms AS/PVC 12/18-11					
	54709		Rebated scissor stay support arms AS/PVC 12/18-13					
	52487		Rebated scissor stay support arms AS/PVC 12/20-9					
	52486		Rebated scissor stay support arms AS/PVC 12/20-13					
	202534		Rebated scissor stay support arms DTuni 4/18-9 and 12/18-9					
	202539		Rebated scissor stay support arms DTuni 12/18-11					
	202535		Rebated scissor stay support arms DTuni 4/18-13 and 12/18-13					
	202536		Rebated scissor stay support arms DTuni 12/20-9					
	202537		Rebated scissor stay support arms DTuni 12/20-13					
5	10534		Turn lock self-catchingd, silver		-	-	-	-
	10535		Turn lock self-catching lockable, silver		-	-	-	-
6	44228		Run up wedge		-	-	-	-
7	-		Striker plates according to corresponding profile sheet					
8	-		Design hinge side (AS, PVC, DT) according to corresponding installation instructions					

Hardware overview / item list - 1-leaf turn-tilt units - vertical handle position



Pos.	Art. No. right	Art. No. left	Description							
1	201731		Turn-only drive gears, fix	190	15	660	-	470 - 1600	-	-
2a	222201		Corner element with 1 i.S.	-		-	601 - 1400	470 - 1600	1	-
2b	222203		Corner element short with 1 i.S.	-		-	530 - 600	470 - 1600	1	-
2c	210096		Corner elem. vertical w. serr. carrier ext. w. 1 i.S.	-		-	-	470 - 1600	1	-
2d	216784		Corner elem. horizontal w. serr. carrier ext. w. 1 i.S.	-		-	530 - 1400	-	1	1
2e	218155	218156	Rebated corner supp. AS/PVC without rebate-leg screw fixing EH w. corner element, 12/18-9						1	-
	218157	218158	Rebated corner supp. AS/PVC without rebate-leg screw fixing EH w. corner element, 12/18-11						1	-
	218159	218160	Rebated corner supp. AS/PVC without rebate-leg screw fixing EH w. corner element, 12/18-13						1	-
	218163	218164	Rebated corner supp. AS/PVC without rebate-leg screw fixing EH w. corner element, 12/20-9						1	-
	205664	205665	Rebated corner supp. AS/PVC without rebate-leg screw fixing EH w. corner element, 12/20-13						1	-
	206284	206285	Rebated corner supports DTuni without rebate-leg screw fixing EH w. corner element, 4/18-9						1	-
	208773	208774	Rebated corner supports DTuni without rebate-leg screw fixing EH w. corner element, 12/18-9						1	-
	208793	208794	Rebated corner supports DTuni without rebate-leg screw fixing EH w. corner element, 12/18-13						1	-
	208775	208776	Rebated corner supports DTuni without rebate-leg screw fixing EH w. corner element, 12/20-9						1	-
	208795	208796	Rebated corner supports DTuni without rebate-leg screw fixing EH w. corner element, 12/20-13						1	-
3a	203697		Faceplate extension B-TV			1950	530 - 685	-	1	-
	210380		Width connector SKB with i.S.			900	686 - 965	621 - 900	1	-
	210381		Width connector SKB with i.S.			1150	966 - 1215	901 - 1150	1	-
	210382		Width connector SKB with i.S.			1400	1216 - 1400	1151 - 1400	1	-
	210383		Width connector SKB with i.S.			1650	-	1401 - 1600	2	-
3b	206197		Faceplate extension			235	1051 - 1280	661 - 895	-	-
	201840		Centre locks extendable			1280V	-	896 - 1130	-	-
	201753		Centre locks extendable			1500V	-	1131 - 1365	-	-
	201840+201840		Centre locks extendable			1280V	1281 - 1400	1366 - 1600	1	-
4a	215053	215054	Scissor stay faceplates for comfort scissor stay			800	530 - 800	-	-	-
	215055	215056	Scissor stay faceplates for comfort scissor stay			1050	801 - 1050	-	1	-
4b	215051	215052	Rebated scissor stay arms for comfort scissor stay			-	530 - 1400	-	-	-
4c	54706		Rebated scissor stay support arms AS/PVC 12/18-9							-
	206998		Rebated scissor stay support arms AS/PVC 12/18-11							-
	54709		Rebated scissor stay support arms AS/PVC 12/18-13							-
	52487		Rebated scissor stay support arms AS/PVC 12/20-9							-
	52486		Rebated scissor stay support arms AS/PVC 12/20-13							-
	202534		Rebated scissor stay support arms DTuni 4/18-9 and 12/18-9							-
	202539		Rebated scissor stay support arms DTuni 12/18-11							-
	202535		Rebated scissor stay support arms DTuni 4/18-13 and 12/18-13							-
	202536		Rebated scissor stay support arms DTuni 12/20-9							-
	202537		Rebated scissor stay support arms DTuni 12/20-13							-
5	10534		Turn lock self-catchingd, silver			-	-	-	-	-
	10535		Turn lock self-catching lockable, silver			-	-	-	-	-
6	-		Striker plates according to corresponding profile sheet							-
7	-		Design hinge side (AS, PVC, DT) according to corresponding installation instructions							-

≥ 601 mm

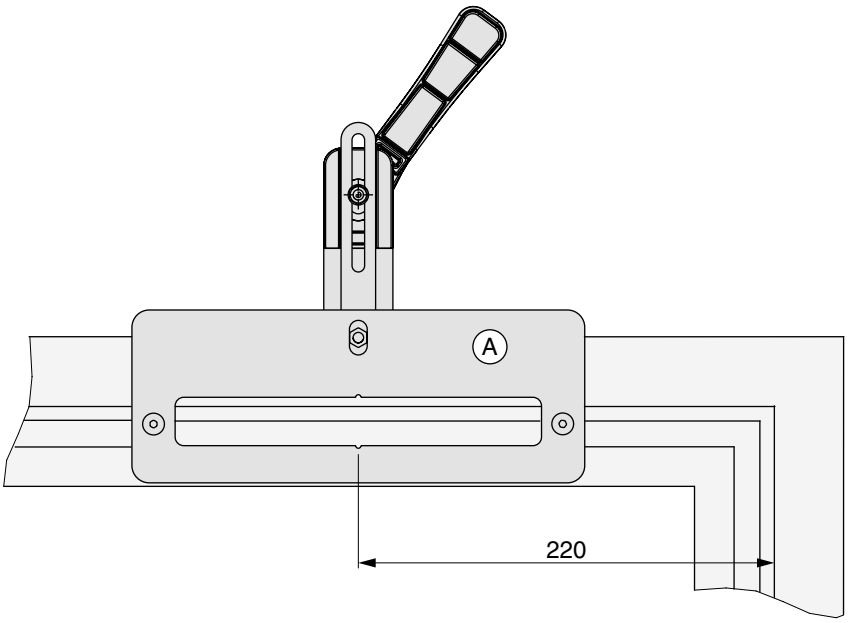
≤ 1400 x 1600 mm

≥ 470 mm

≥ 530 mm

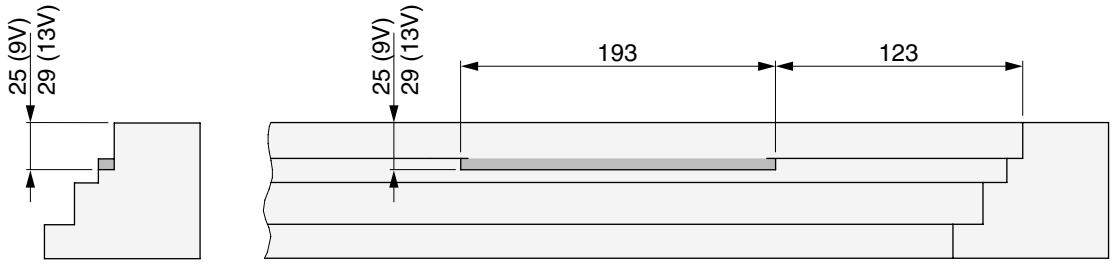
Installation of the frame hardware components

Rout frame for rebate depth less than 25 mm/9V and 29 mm/13V



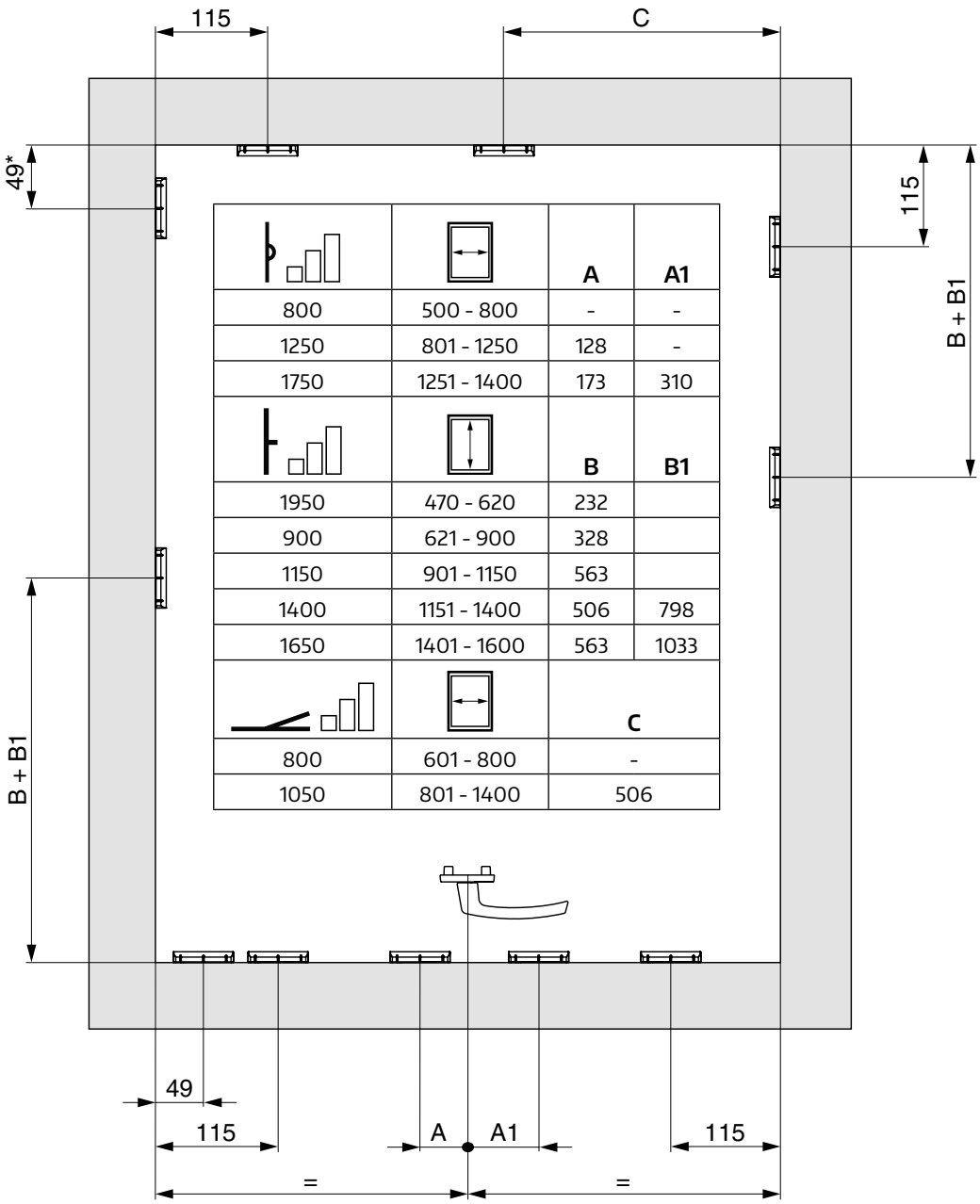
Position the routing jig Ⓐ Art. No. 214756 asdepicted and rout with Ø 8 mm routing cutter and Ø 27 mm guide ring.

Routing pattern for sscissor stay guide



Striker positions for handle in bottom horizontal position

All dimensions refer to the frame rebate dimensions: 12 mm air gap!

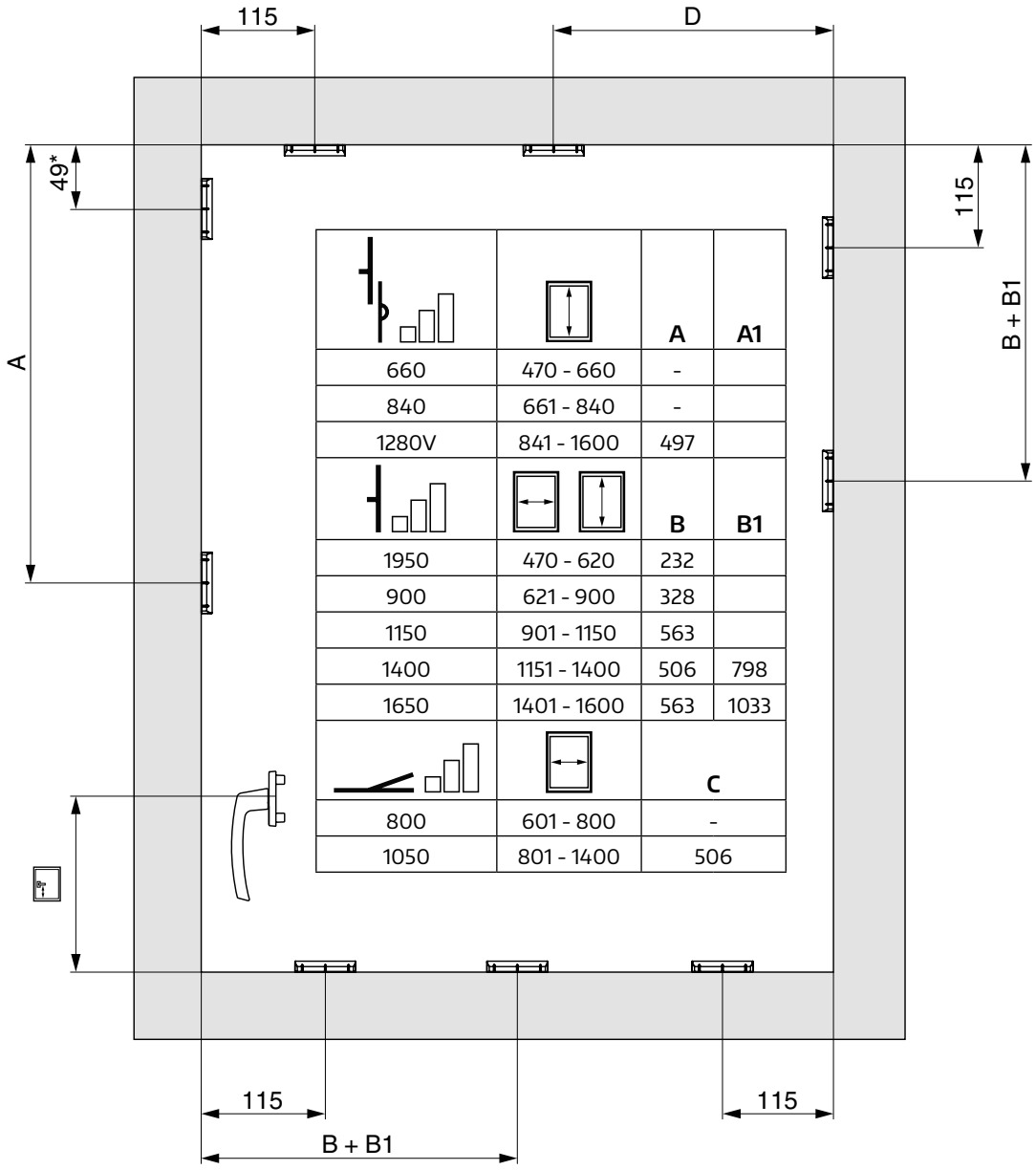


		A	A1
800	500 - 800	-	-
1250	801 - 1250	128	-
1750	1251 - 1400	173	310
		B	**B1**
1950	470 - 620	232	
900	621 - 900	328	
1150	901 - 1150	563	
1400	1151 - 1400	506	798
1650	1401 - 1600	563	1033
		C	
800	601 - 800	-	
1050	801 - 1400	506	

* only when using short corner element with 1 i.S.

Striker positions for handle in bottom vertical position

All dimensions refer to the frame rebate dimensions: 12 mm air gap!

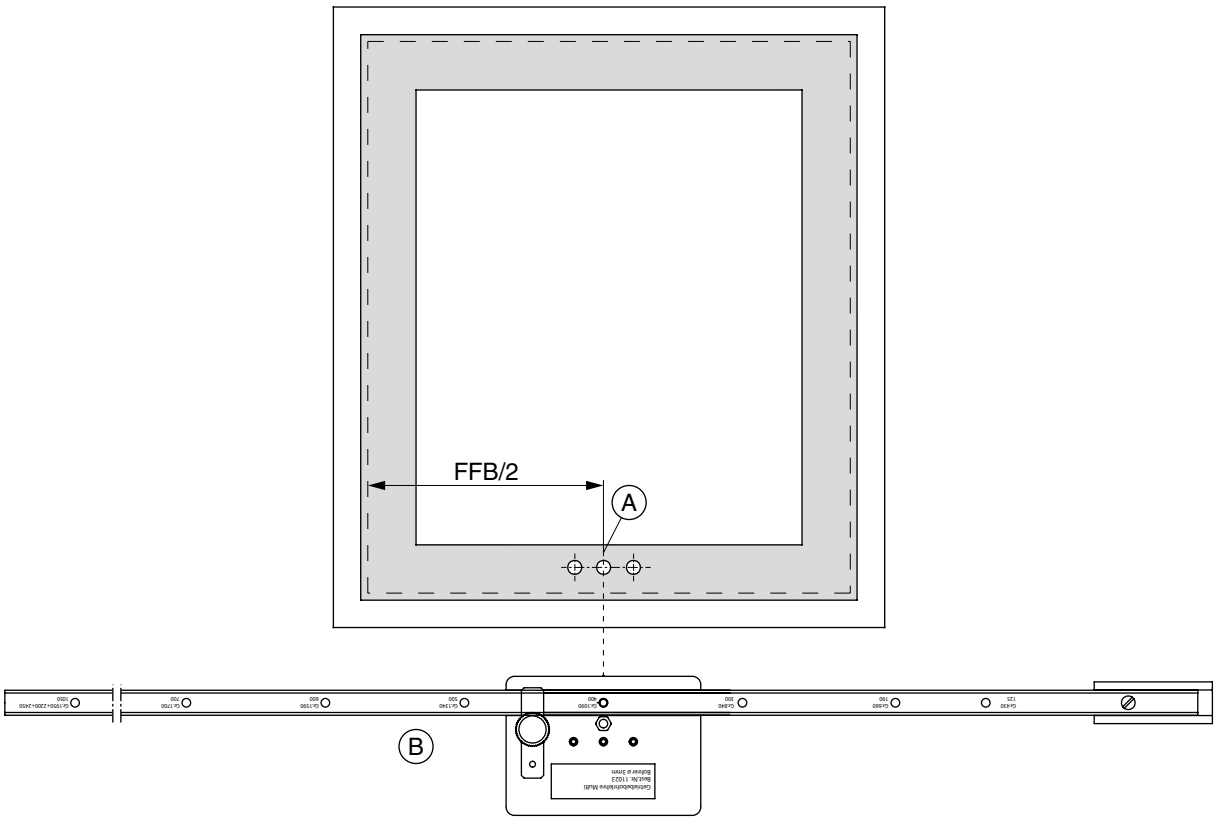


		A	A1
660	470 - 660	-	
840	661 - 840	-	
1280V	841 - 1600	497	
		B	**B1**
1950	470 - 620	232	
900	621 - 900	328	
1150	901 - 1150	563	
1400	1151 - 1400	506	798
1650	1401 - 1600	563	1033
		C	
800	601 - 800	-	
1050	801 - 1400	506	

* only when using short corner element with 1 i.S.

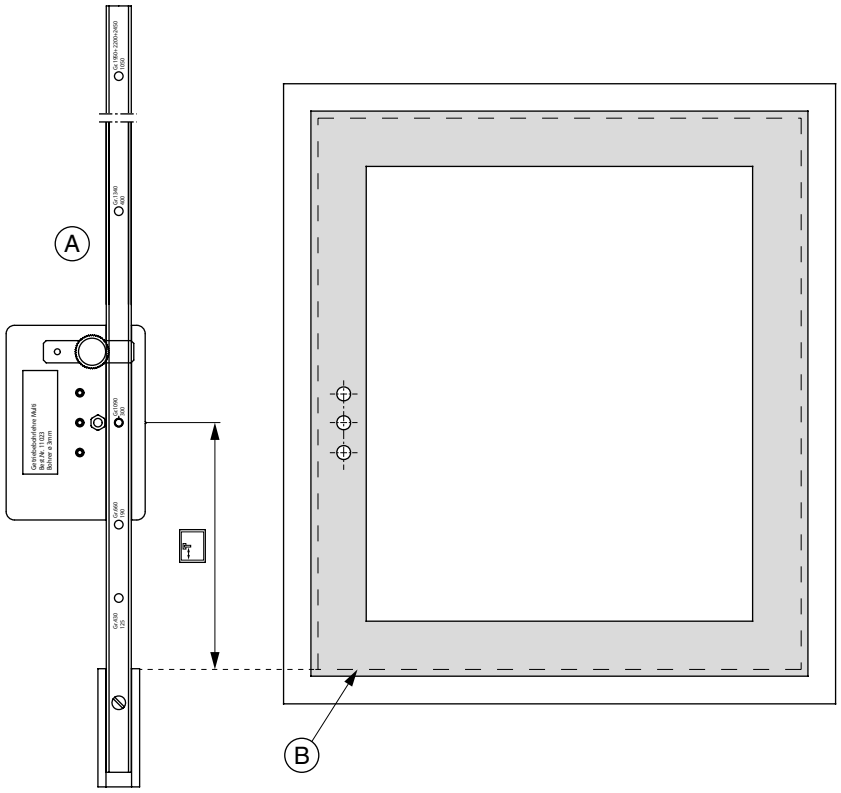
Installation of the sash hardware components

Drilling holes for bottom horizontal handle



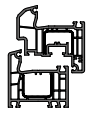
1. Mark the centre of the sash width at the bottom (A).
2. Jig (B) Art. No. 203861 (Ø 3 Ø 3 Ø 3) or Art. No. 203382 (Ø 3 Ø 12 Ø 3) with marking tip on the mark (A) and pre-drill holes Ø 3 or Ø 12 mm.
3. Drill out the holes to Ø 10, 12 or 25 mm up to the end of the fitting groove (according to the desired drilling pattern - see next pages).

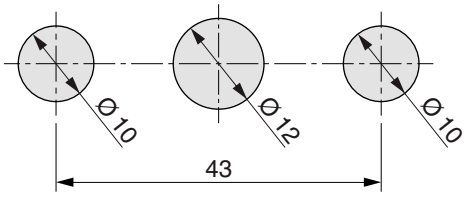
Drilling holes for bottom vertical handle



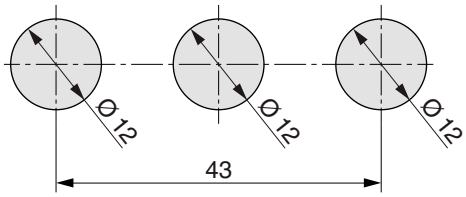
1. Set the size of the drive gear / handle seat on the drive gear drilling jig Ⓐ.
2. Jig Art. No. 203861 (Ø 3 Ø 3 Ø 3) or Art. No. 203382 (Ø 3 Ø 12 Ø 3) with stop at bottom of sash rebate edge Ⓑ and pre-drill holes Ø 3 or Ø 12 mm.
3. Drill out the holes to Ø 10, 12 or 25 mm up to the end of the fitting groove (according to the desired drilling pattern - see next pages).

Handle drill-hole patterns

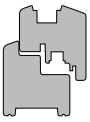


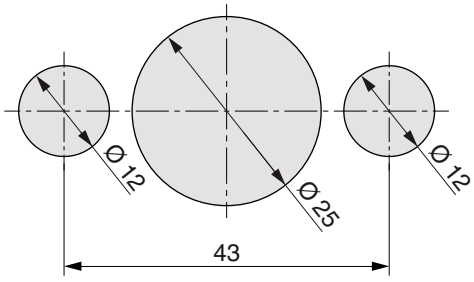


window handles with Ø 10 mm lugs



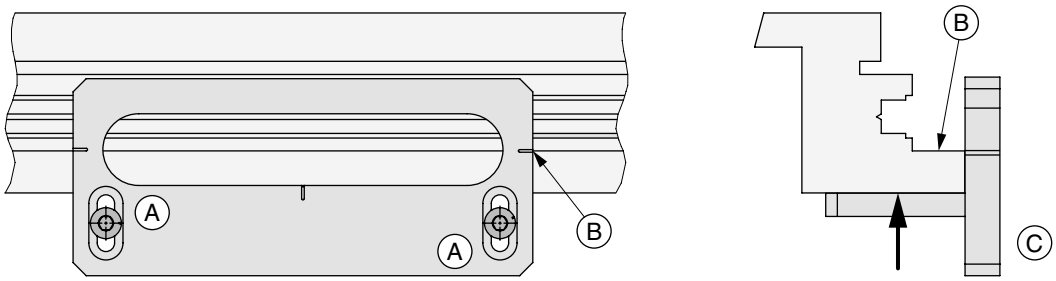
window handles with Ø 12 mm lugs





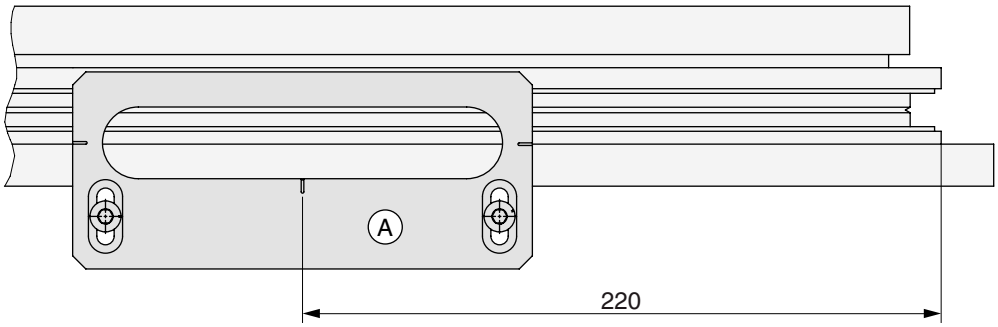
Using the milling jig (9V only)

Setting the routing jig 213099



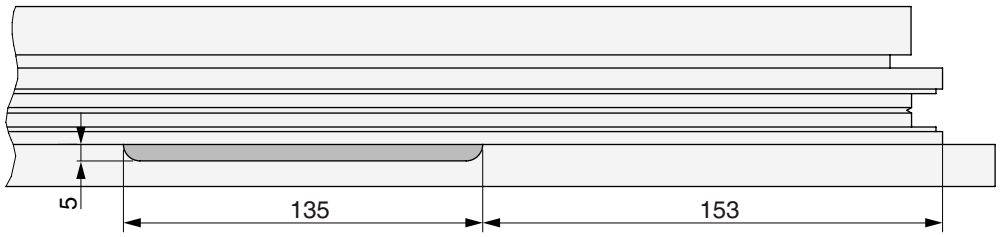
1. Loosen the screws Ⓐ for the stop.
2. Position the notch Ⓑ on the inside edge of the overlap and move the stop Ⓒ to the overlap.
3. Tighten the screws Ⓐ tighten the screws.

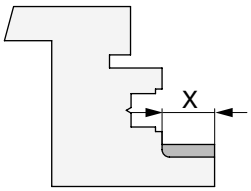
Milling with jig (9V only)



1. Put on and fix the milling jig Ⓐ according to the illustration.
2. Mill out the overlap for the scissor stay guide with a Ø 10 mm milling cutter and Ø 27 mm copying ring.

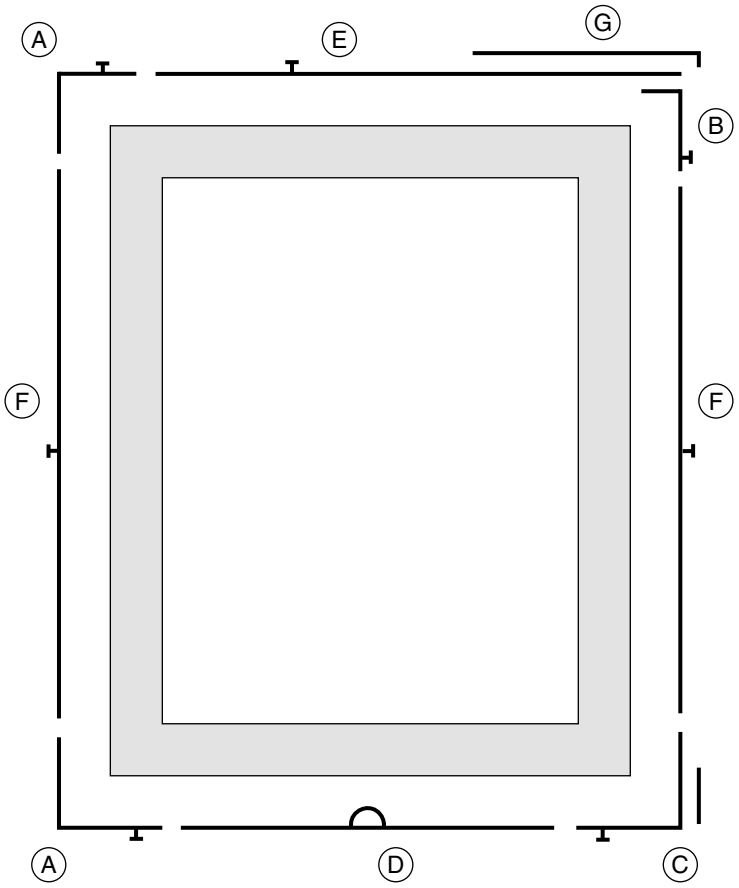
Milling pattern scissor stay guide (9V only)





	X
18Ü	18
20Ü	20

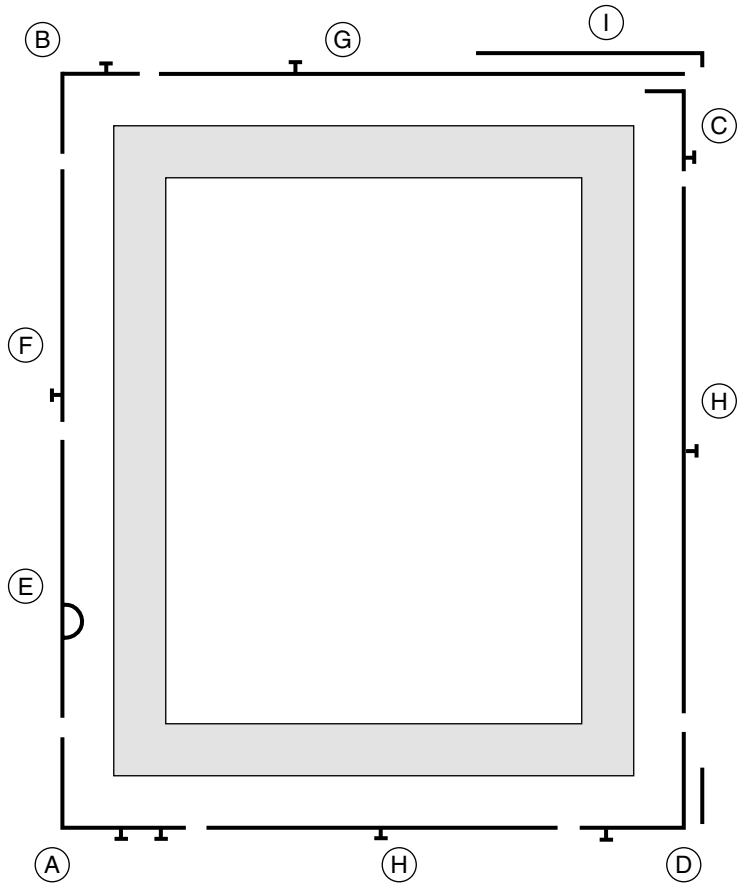
Assembling central locking - horizontal handle position



1. Insert the corner element Ⓐ into the fitting groove.
2. Insert the corner element vertically Ⓑ into the fitting groove.
3. Insert the corner hinge with corner element Ⓒ into the fitting groove.
4. Cut variable drive gear Ⓓ to length (for punching pattern, see next page), insert and screw together with corner elements.
5. Cut scissor stay faceplate Ⓔ to length (for punching diagram, see next page) or extend with faceplate extension from SRW 1051 mm or with centre lock from SRW 1281 mm, insert and screw together with corner elements.
6. Cut width parts SKB Ⓕ to length (for punching pattern, see next page), insert and screw together with the corner elements.
7. Hook in the scissor arm Ⓖ (with matching hinge angle) (description details on next page).

Insert handle and tear through the centre fixings with the first operation.

Assembling central locking - vertical handle position

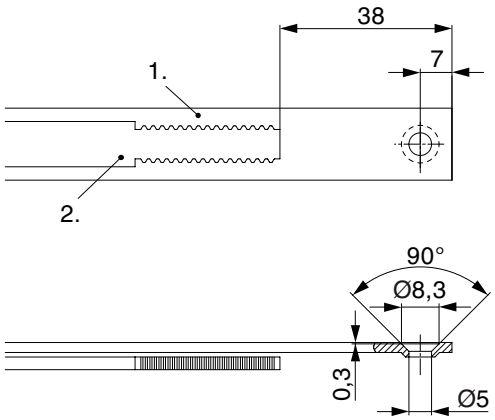


1. Insert the corner element horizontally Ⓐ into the fitting groove.
2. Insert the corner element Ⓑ into the fitting groove.
3. Insert the corner element vertically Ⓒ into the fitting groove.
4. Insert the corner hinge with corner element Ⓓ into the fitting groove.
5. Cut drive gear fix Ⓔ to length (for punching pattern, see next page) or extend with centre lock Ⓕ from FFH 661 mm, insert and screw together with corner elements.
6. Cut scissor face plate Ⓖ to length (for punching diagram, see next page) or, from FFB 1051 mm, extend with face plate extension or centre lock (from FFB 1281 mm), insert and screw together with corner elements.
7. Cut the SKB width parts Ⓗ to length (for punching pattern, see next page), insert them and screw them together with the corner elements.

8 Hook in the scissor arm Ⓘ (with matching hinge angle) (description details on next page).

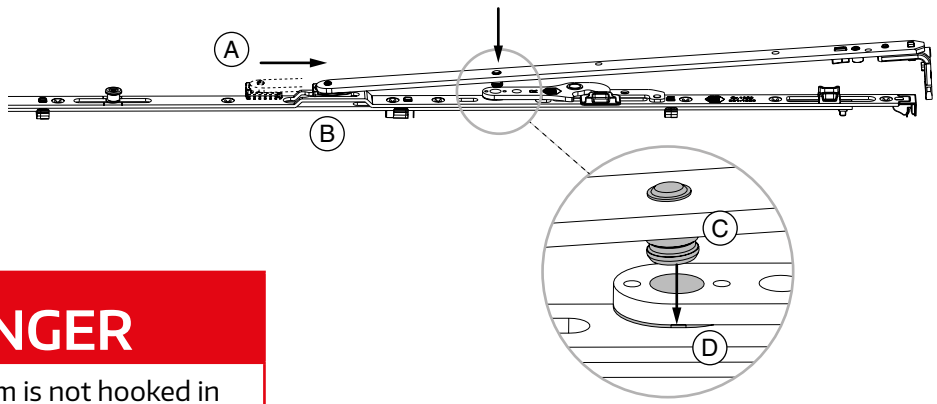
Insert handle and tear through the centre fixings with the first operation.

Punch pattern - Crop faceplate / drive track



Engaging scissor stay arm

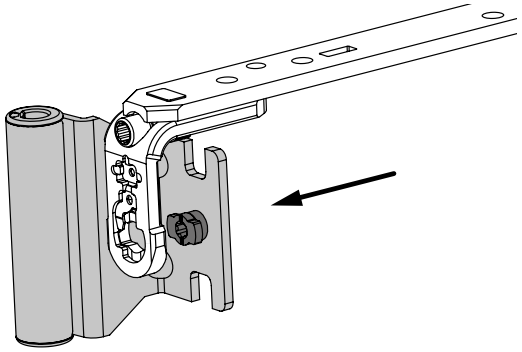
Use sliding carriage to slide in scissor stay arm Ⓐ into scissor stay faceplate Ⓑ and press in engagement pin Ⓒ scissor stay guide receiver opening Ⓓ.



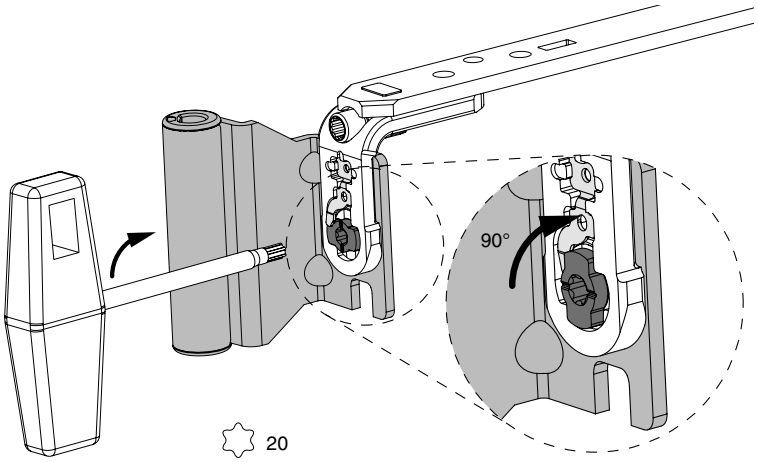
DANGER

If the scissor arm is not hooked in correctly, the sash may fall out of the window frame!

1. Attach the hinge angle on the mounted scissor stay from behind onto the handle



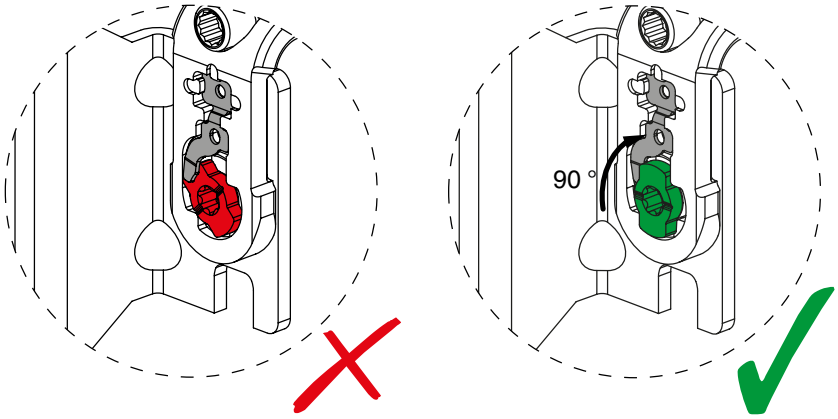
2. Turn the bayonet bolt with TX20 order no. 40680 in the direction of the arrow.



DANGER

Turn bayonet lock until full stop (90°), otherwise the rebated scissor stay support arm may become loose!

3. Check bayonet bolt

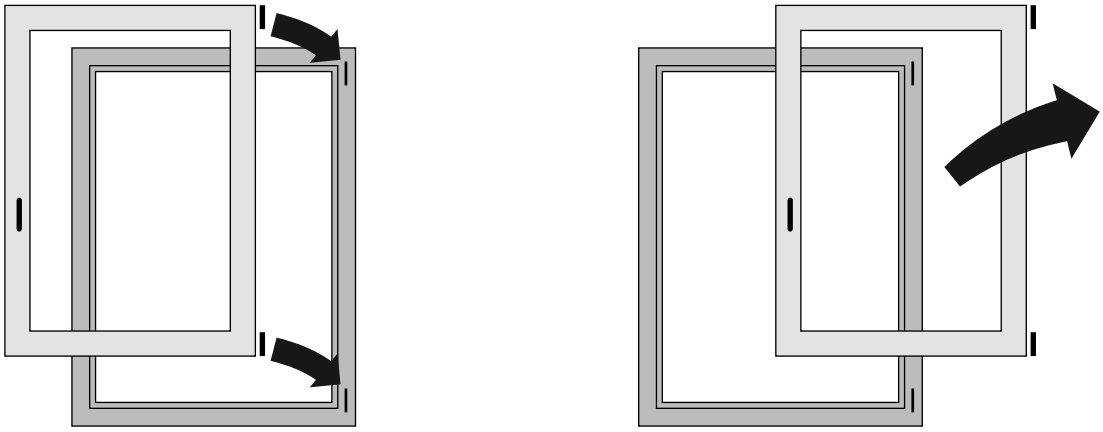


DANGER

If the bayonet bolt is not in the correct position, the sash may fall out of the window frame!

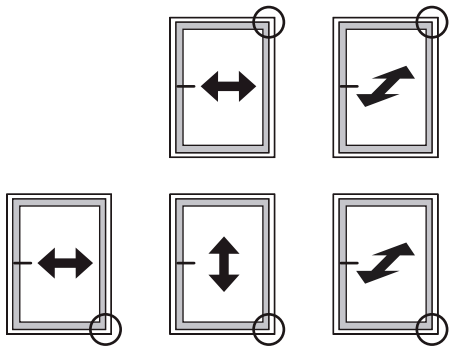
Supplementary information

Hooking and unhooking the sash



See the assembly instructions for the hinge side used.

Settings on the sash



See installation instructions for the hinge side used or maintenance and adjustment instructions 757070.

DANGER

The installation and removal of window sashes as well as the adjustment of windows may only be carried out by qualified personnel!

Notes

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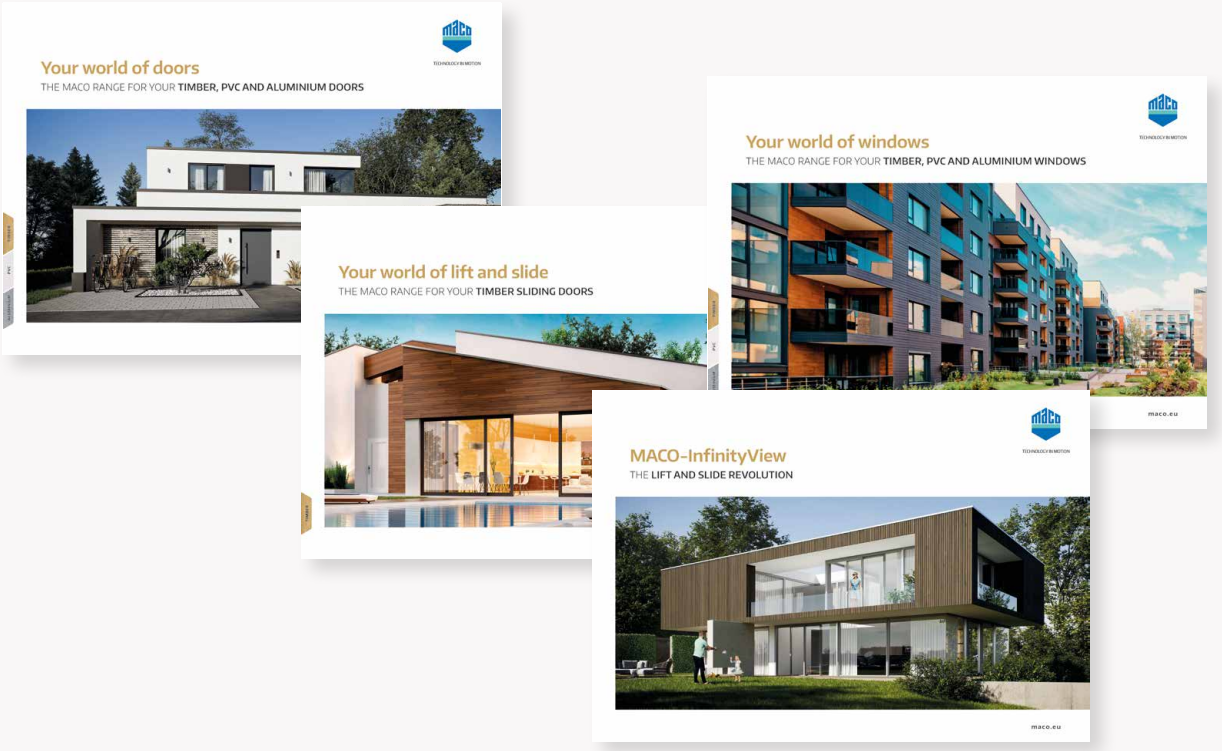

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