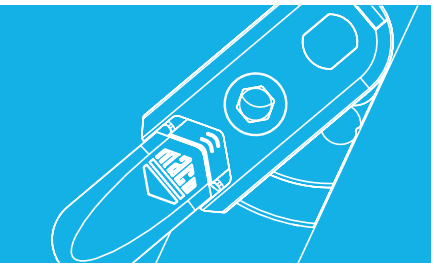
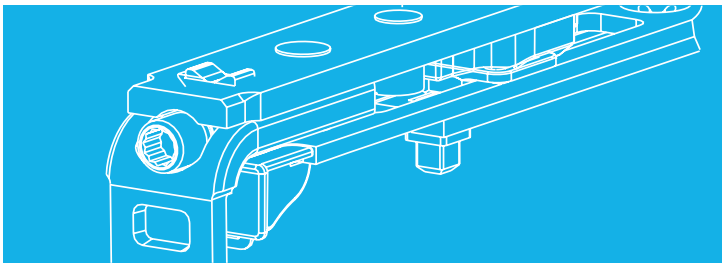
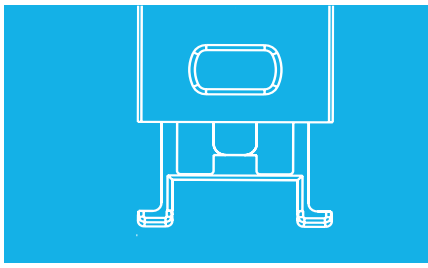
TECHNOLOGY IN MOTION

MACO MULTI-MATIC

TILT AND TURN FITTINGS







Installation instructions

PVC WINDOWS

Note on the MACO surface-finish

MACO fittings are electrogalvanised, passivated and sealed with wax. We guarantee that the surface-finish protection complies with the Quality Assurance Association standards for Tilt&Turn fittings RAL-RG 607/3 and RAL-RG 607/13.

The MACO wax sealing

- Achieves a far higher corrosion protection level than required.
- Better gliding properties.
- More uniform surface finish.

MACO TRICOAT fittings

The MACO TRICOAT surface finish has been specifically developed for application areas in which corrosion resistance of electrogalvanised surface finishes does not provide sufficient protection.

The colour of the MACO TRICOAT surface finish is only available in a light shade of grey.

Abbreviations:

SRH = Sash rebate height
SRW = Sash rebate width
ST = Striker
FE = Faceplate extension
CL = Centre lock

MACO
MULTI-MATIC

Table of contents

Application ranges

for Tilt&Turn windows and doors

Maximum sash weights

Max. 100 kg	Max. 120 kg
When using PVC pivot posts and scissor stay hinges with Ø 3 mm and 7 mm positioning pins or short supporting pins.	When using scissor stay hinges and PVC pivot rests with Ø 7 mm supporting pins and additional scissor-stay.

Please note: Observe the profile manufacturers max. weight specifications.

Sash rebate dimensions BS 15

Standard 	SRW SRH	320 360	
Max.	SRW SRH	1650 2600	However not over 3 m² total surface area and/or 120 kg sash weight and the width-to-height ratio SRH : SRW max. 1 : 1,5.
Min. SRH 	SRW SRH	320 270	With short corner-drive (long leg horizontal), scissor stay 400 and drive-gear 430
Min. SRW 	SRW SRH	260 360	With short corner-drive (long leg vertical), scissor stay 400 and drive-gear 430

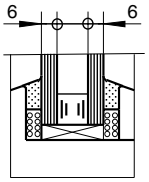
Sash rebate dimensions BS 6.5

Standard 	SRW SRH	320 455	
Max.	SRW SRH	1650 2600	However not over 3 m² total surface area and/or 120 kg sash weight and the width-to-height ratio SRH : SRW max. 1 : 1,5.
Min. SRH 	SRW SRH	320 365	With short corner-drive (long leg horizontal), scissor stay 400 and drive-gear 660
Min. SRW 	SRW SRH	260 455	With short corner-drive (long leg vertical), scissor stay 400 and drive-gear 660

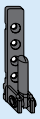
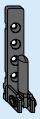
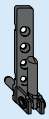
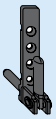
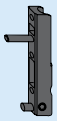
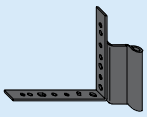
Diagrams for determining permissible sash sizes for windows and doors

Glass thickness mm	24	22	20	18	16	14	12	1mm glass =
Weight kg/m²	60	55	50	45	40	35	30	2.5 kg/m²

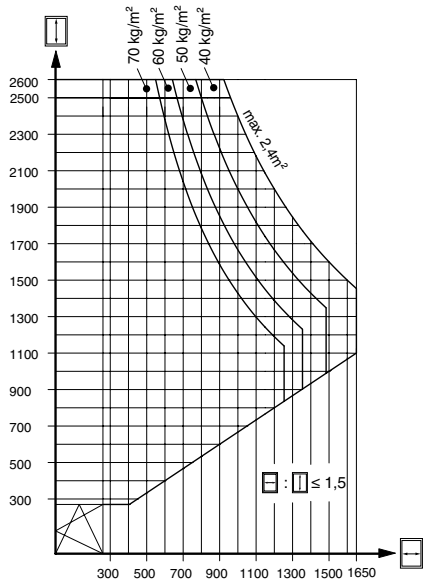
= Glass thickness 12 mm



All sash sizes within the application range and a width-to-height ratio of SRW:SRH ≤ 1.5:1 are permissible at a glass weight of less than 30 kg/m²

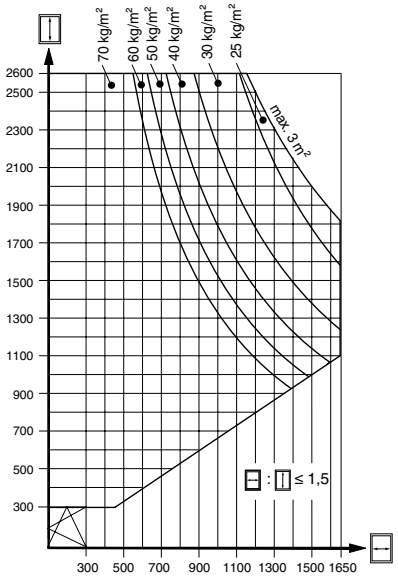
Pivot post / Corner support	*Pivot post with positioning pins 3 mm*  *52483*	*Pivot post with short supporting pins, Ø 7 mm*  *52485*	*Pivot post with supporting pins Ø 7 mm, 12 mm long*  *52764*	*Pivot post with supporting pins Ø 7 mm, 23 mm long*  *52484*
 *Corner support supporting pins 3 mm*	● **Max. sash weight 100 kg**	● **Max. sash weight 100 kg**	**Max. 2.4 m² total surface area** ● **Max. sash weight 120 kg**	**Max. 2.4 m² total surface area** ● **Max. sash weight 120 kg**
 *Corner support supporting pins Ø 5 mm*	● **Max. sash weight 100 kg**	● **Max. sash weight 100 kg**	● **Max. sash weight 120 kg**	● **Max. sash weight 120 kg**
 *Rebate corner support*	● **Max. sash weight 100 kg**	● **Max. sash weight 100 kg**	● **Max. sash weight 120 kg**	● **Max. sash weight 120 kg**

Max. 100 kg sash weight

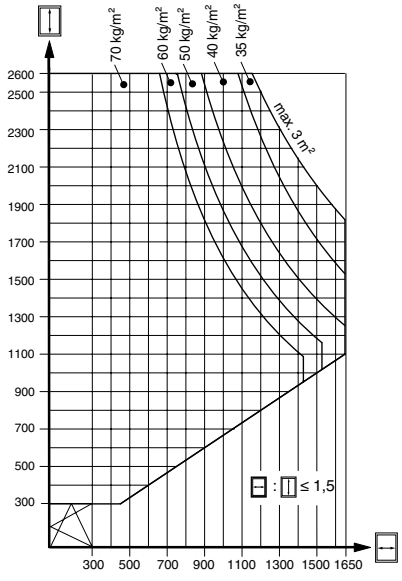


PLEASE NOTE: *Applies only to corner support 100 kg / 3 mm supporting-pins!*

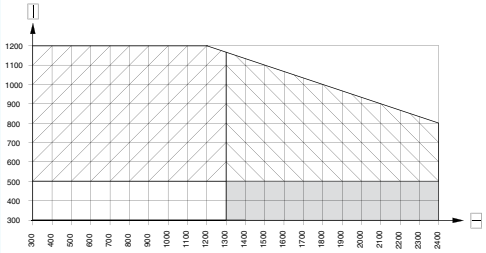
Max. 100 kg sash weight



Max. 120 kg sash weight

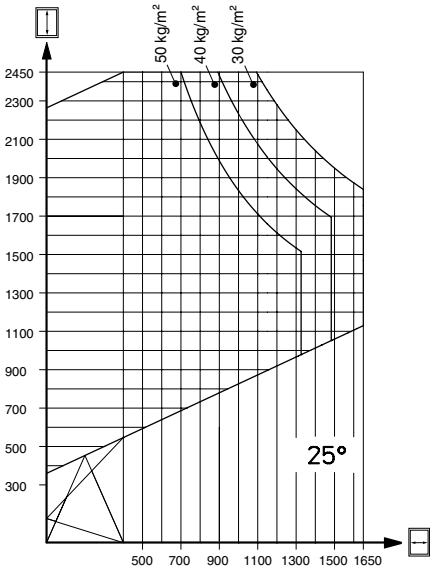


Tilt-Only windows max. 80 kg sash weight



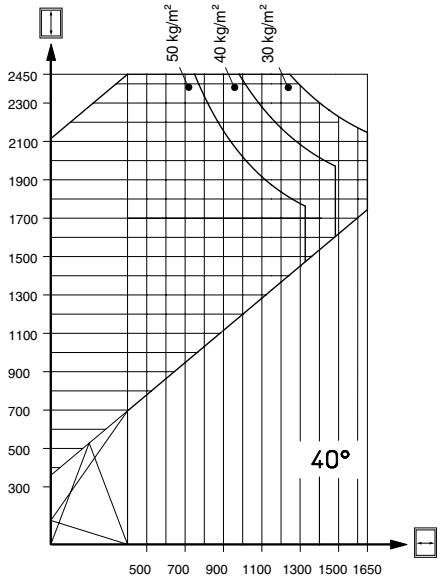
1 Tilt-Only stay arm + restrictor and cleaning stay size 1
1 Tilt-Only stay arm + restrictor and cleaning stay size 2
2 Tilt-Only stay arms + restrictor and cleaning stay size 1
2 Tilt-Only stay arms + restrictor and cleaning stay size 2

Angled window with angled scissor-stay max. 80 kg sash weight



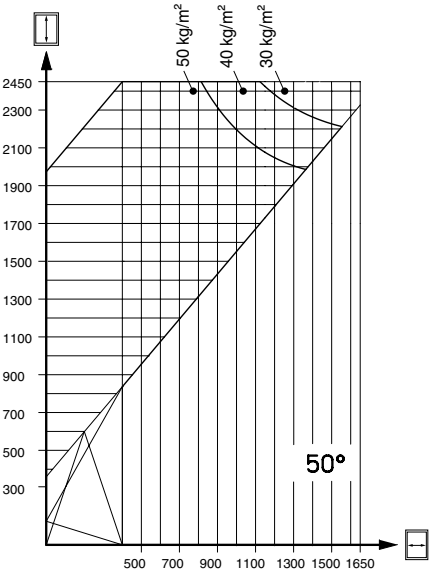
SRH = refers to max. hinge-sided sash height

Angled window with angled scissor-stay max. 80 kg sash weight



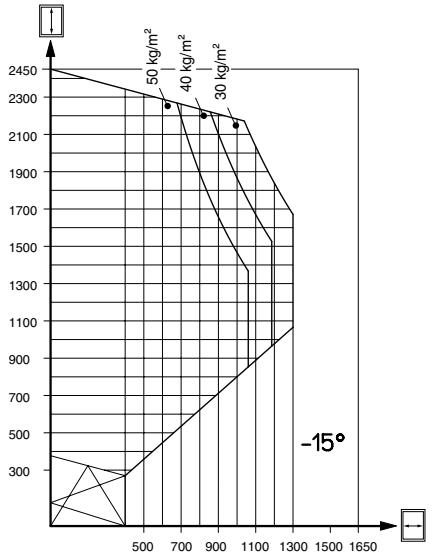
SRH = refers to max. hinge-sided sash height

Angled window with angled scissor-stay max. 80 kg sash weight



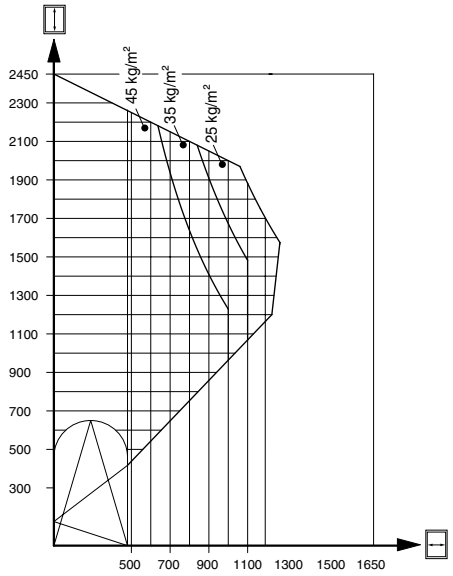
SRH = refers to max. hinge-sided sash height

Angled window with angled scissor-stay max. 80 kg sash weight



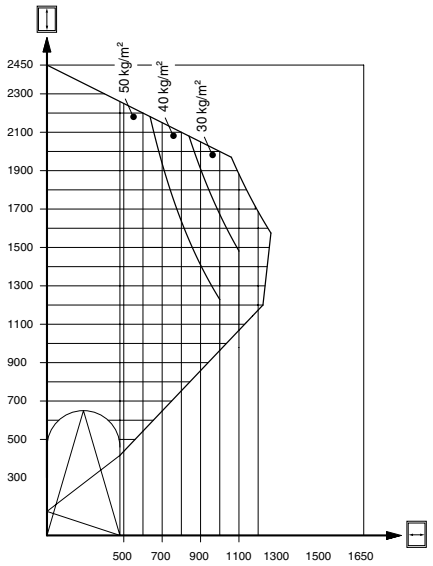
SRH = refers to max. hinge-sided sash height

Half round window with half-round scissor-stay max. 60 kg sash weight



SRH = start of half round

Half round window with half-round scissor-stay max. 80 kg sash weight



SRH = start of half round

Fabrication instructions

Load-bearing components for sub-assemblies with security relevant characteristics

PVC windows and doors

The sash weights for pivot posts, scissor stay hinges and Turn-Only hinges stated in the individual catalogues are the max. possible sash weights from MACO. The profile manufacturers' maximum weight specifications may not be exceeded. Please also adhere to the application diagrams.

Fixing the load-bearing components

Installation type:
The tear resistance of the pivot posts and scissor stay hinges' screw fixing must comply with the load values stated in the tables on the right. Further information can be obtained from the profile manufacturer or recognised testing institutes.

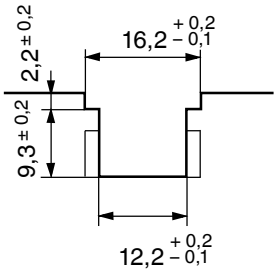
Tractive force values subject to the sash weights from RAL RG 607/3
Window B 1300 x H 1200 mm

Sash weight in kg	Tractive force in Newton (N) with fivefold safety factor
60	1650
70	1900
80	2200
90	2450
100	2700
110	3000
120	3250
130	3500
140	3900
150	4200
160	4400
170	4700
180	5000
190	5300
200	5500

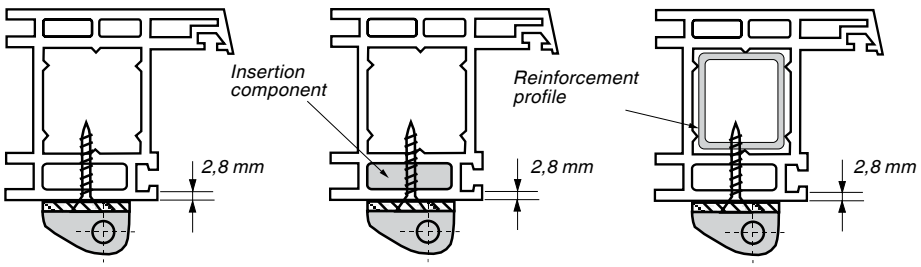
Formula for own calculation:
(W : H) x (SW : 2) x 5
W = width, H = height, SW = sash weight in N

Fittings groove

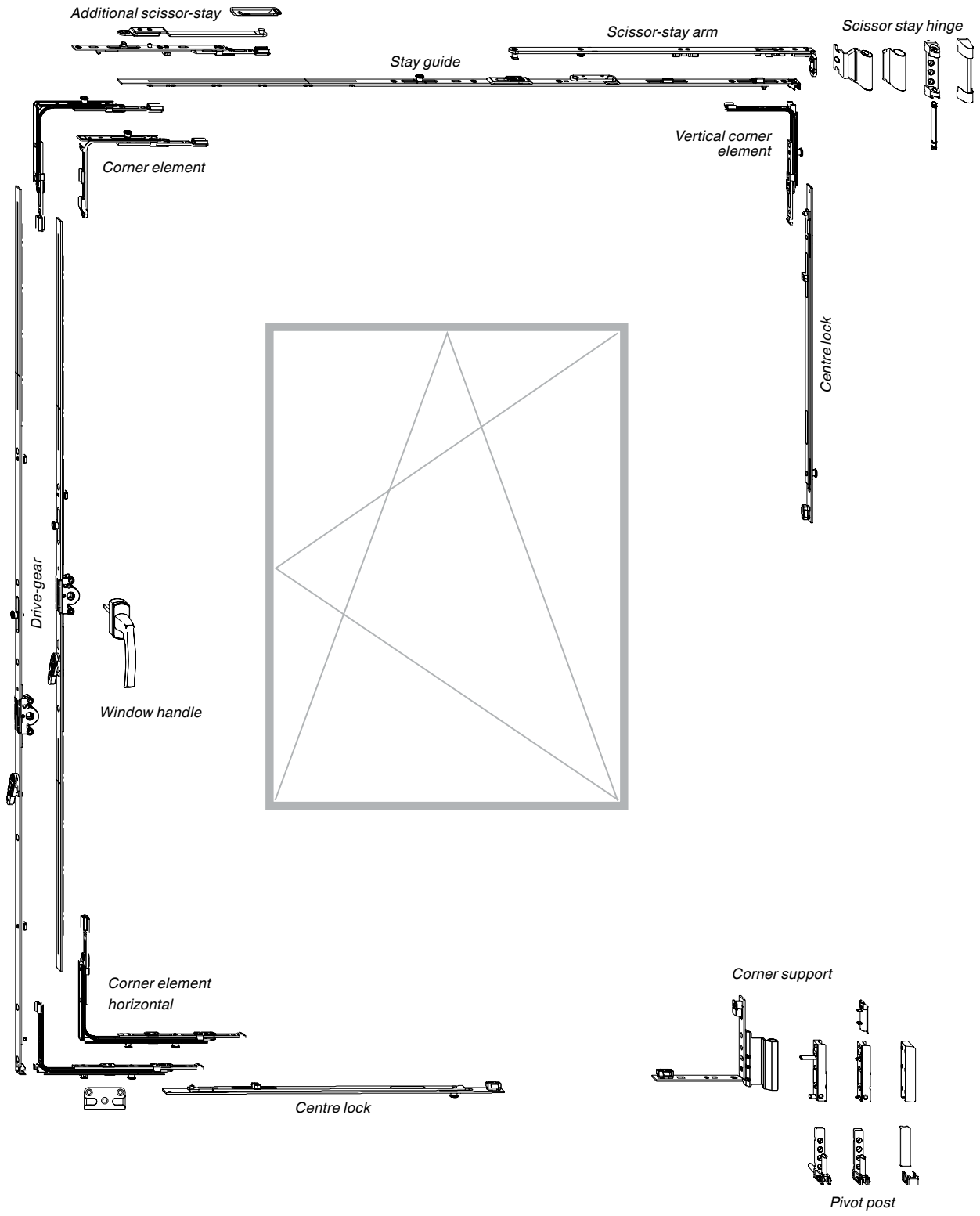
The fittings groove required to install Tilt&Turn fittings must have the following dimensions:



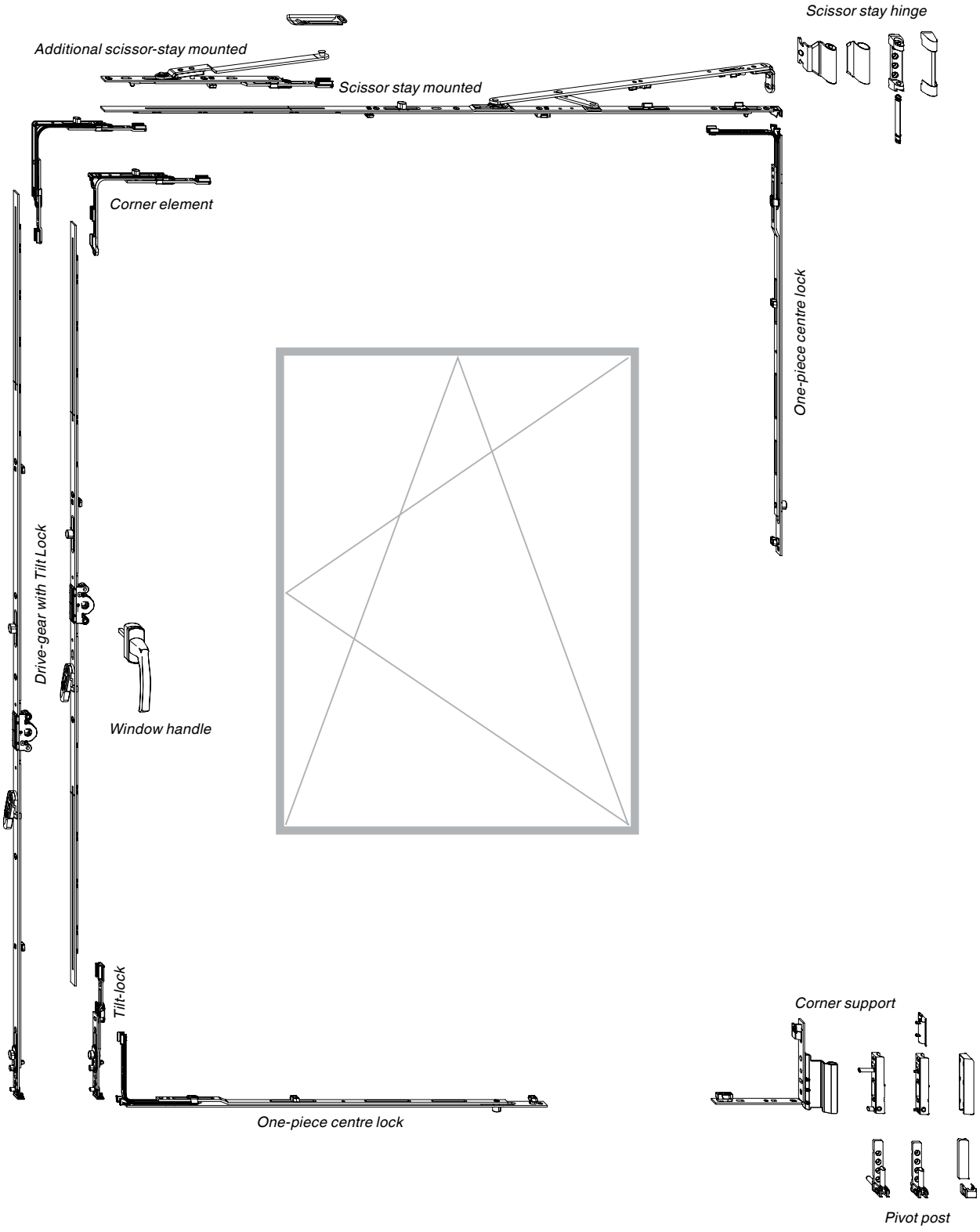
Hinge fixing drawings



Tilt&Turn fittings MM

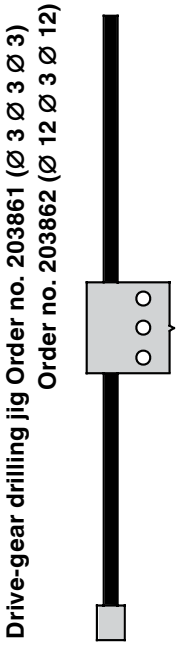


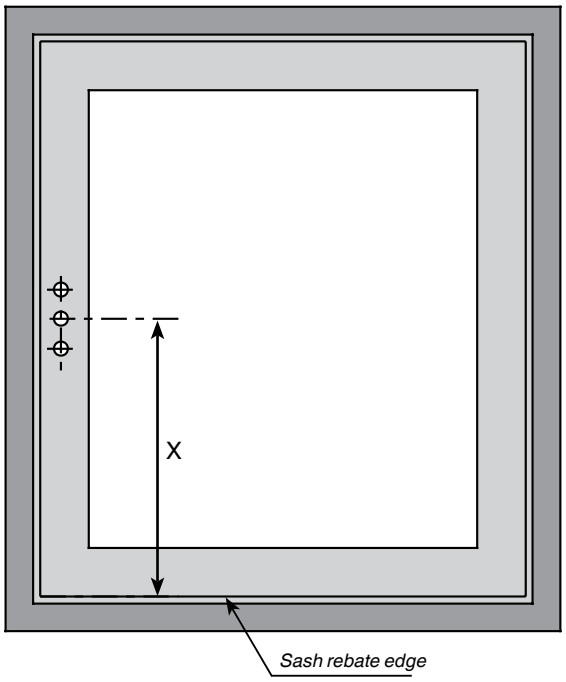
Tilt&Turn fittings MM-KS



Installation of the sash fittings components

Handle drilling





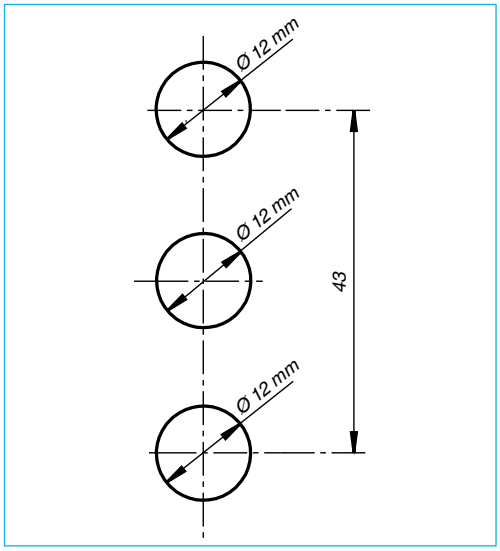
Dimension X	Size
125	430
190	660
300	840
400	1090
500	1340
600	1590
700	1700
1050	1950
1050	2200
1050	2450

Adjust the drive-gear drilling jig (order no. 203861, 203862) to suit the drive-gear, allow it to lie up against the sash rebate edge and predrill with a Ø 3 mm drill.

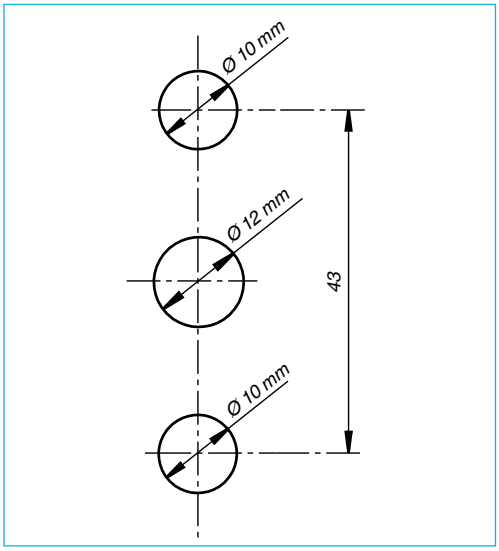
In the case of variable handle-height drive-gears, mark the sash centre, line up the drive-gear drilling jig with the notch on the side and predrill.

Drill hole patterns

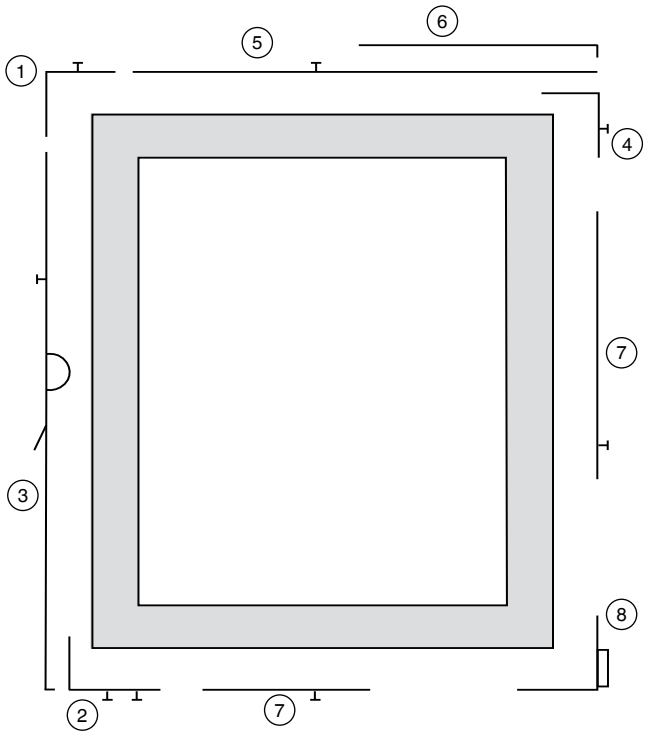
For window handles with Ø 12 mm lugs



For window handles with Ø 10 mm lugs



Installation and cropping of the MM sash fittings components



1. Install the **corner element** (1).

2. Insert the **horizontal corner element** (2) (Fig. 1).

3. Crop the **drive-gear** (3) and screw-fix together with the **corner elements*** (Fig. 2).

4. Insert the **vertical corner element** (4) (Fig. 1).

5. Crop the **stay guide**** (5) (Fig. 2) and screw-fix together with the **corner elements**.

5.1. Mount the **scissor-stay arm** (6). Clip on the stay support arm to the scissor stay end-bracket and turn the bayonet coupling 90° with a TORX 20 bit (Fig. 3).

6. Install the **centre lock** (7) (from a SRW/SRH over 800 mm***).

7. Insert and screw-fix the **corner support** (8) to the rebate-leg.

8. The centre-fixings (preset centred cam-fixing) are released upon operating the fittings for the first time.

9. The sash lifter on the drive-gear must be activated by tilting it outwards.

** On **T&T** drive-gear 660 and stay guide 600, the horizontal and vertical corner elements are to be additionally screw-fixed in the groove base!*

*** From SRW 1300 mm or 100 kg sash weight: use an additional scissor-stay!*

**** SRW and SRH of 800 mm is a MACO recommendation, adhere to the profile manufacturers' specifications!*

Fig. 1

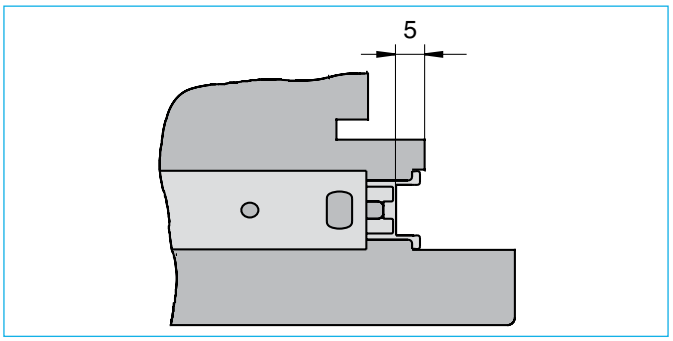


Fig. 2 - Cropping pattern

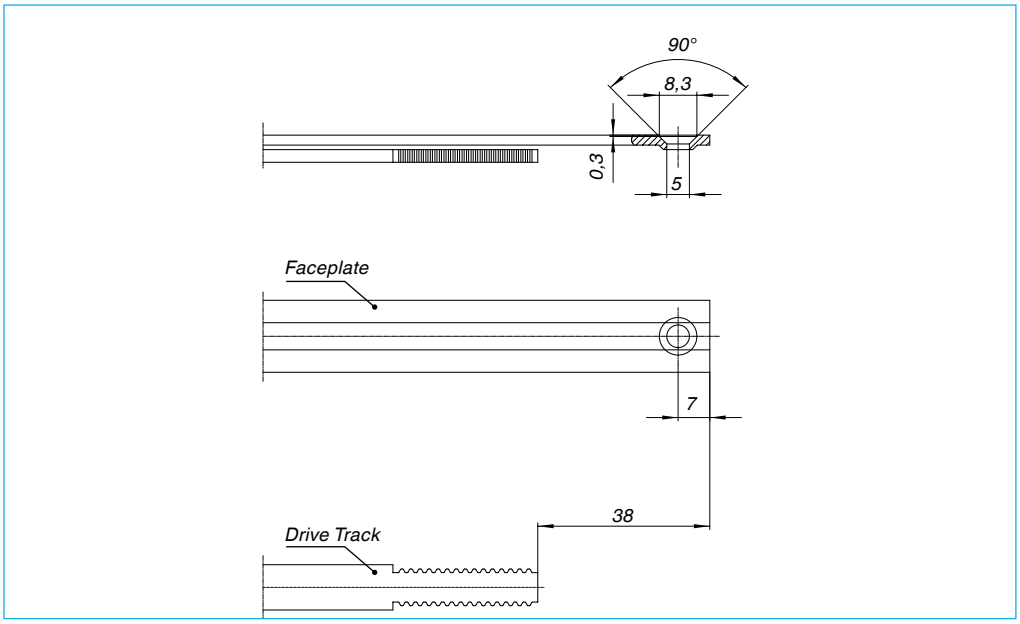
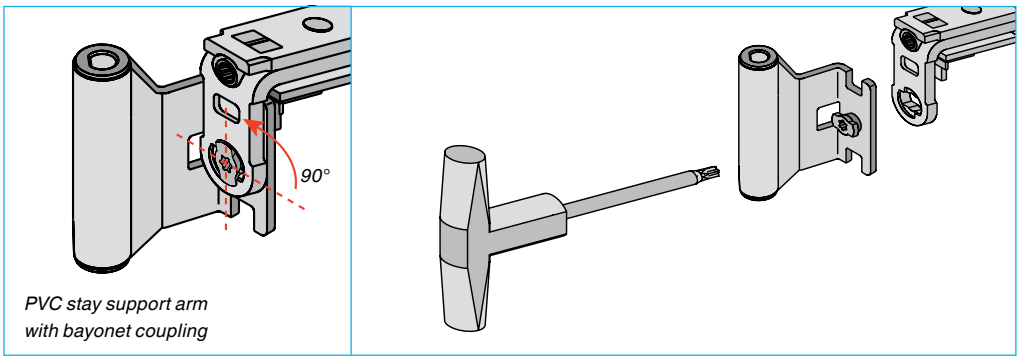
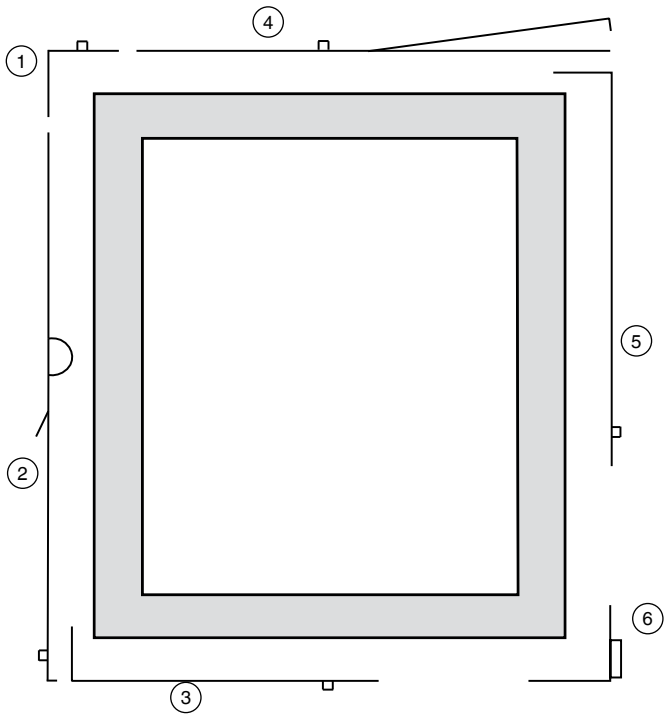


Fig. 3



Please note: The bayonet coupling must be turned 90°!

Installation and cropping of the MM-KS sash fittings components



1. Install the **corner element** (1).

2. Crop the **drive-gear** (2) and screw-fix together with the **corner element** (Fig. 2).(1). (On SRW over 800 mm, firstly insert the centre lock (3) or the horizontal Tilt-lock***, Fig.1)

2.1. Mount the tilt-lock first on variable handle-height drive-gears.

3. Crop the **mounted scissor stay** (4)** and screw-fix together with the **corner element*** (Fig. 2).. (On SRH over 800 mm, firstly insert the centre lock (5)***, Fig. 1).
Clip on the stay support arm to the scissor stay end-bracket and turn the bayonet coupling 90° with a TORX 20 bit (Fig. 3).

4. Insert and screw-fix the **corner support** (6) to the rebate-leg.

5. The centre-fixings (preset centred cam-fixing) are released upon operating the fittings for the first time.

6. The sash lifter on the drive-gear must be activated by tilting it outwards.

** On **T&T** drive-gear 660 and stay guide 600, the horizontal and vertical corner elements are to be additionally screw-fixed in the groove base!*

*** From SRW 1300 mm or 100 kg sash weight: use an additional scissor-stay!*

**** SRW and SRH of 800 mm is a MACO recommendation, adhere to the profile manufacturers' specifications!*

Fig. 1

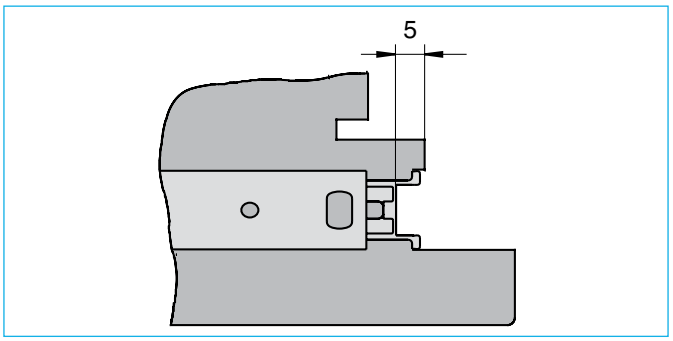


Fig. 2 - Cropping pattern

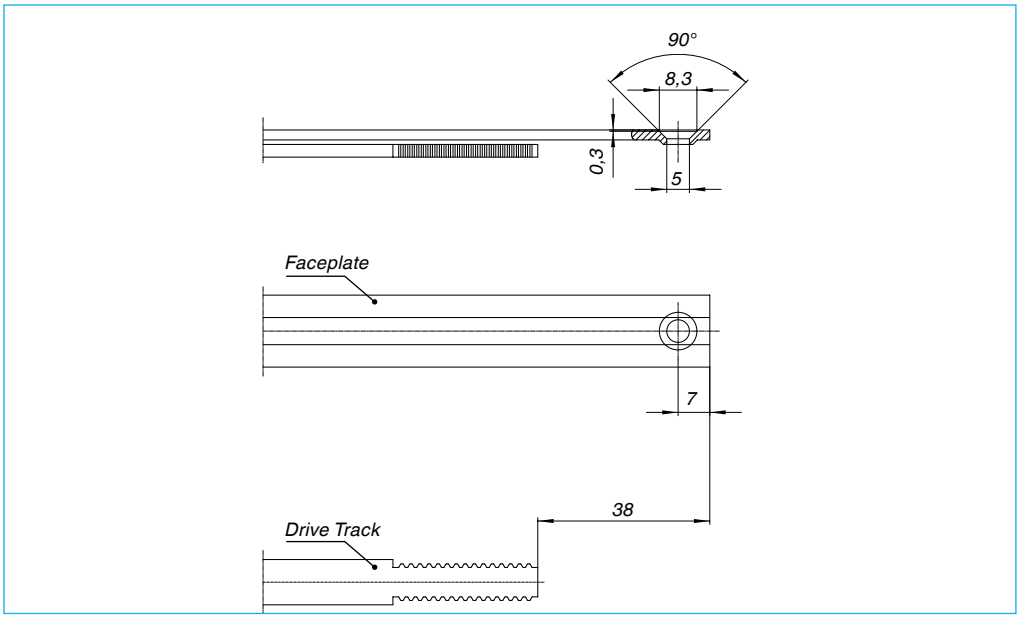
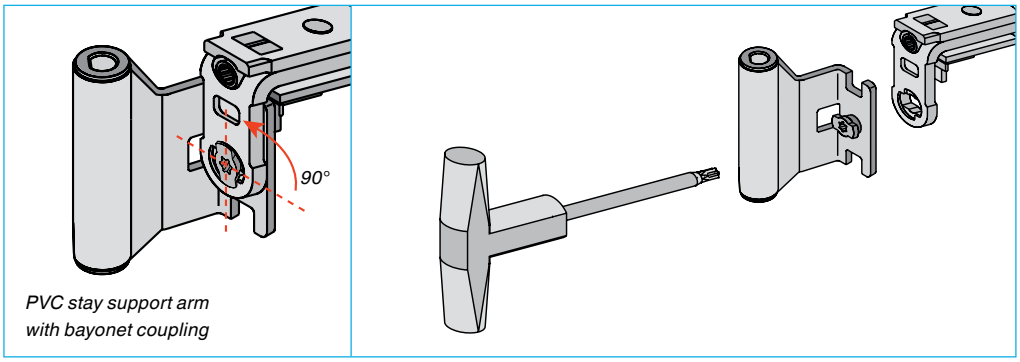
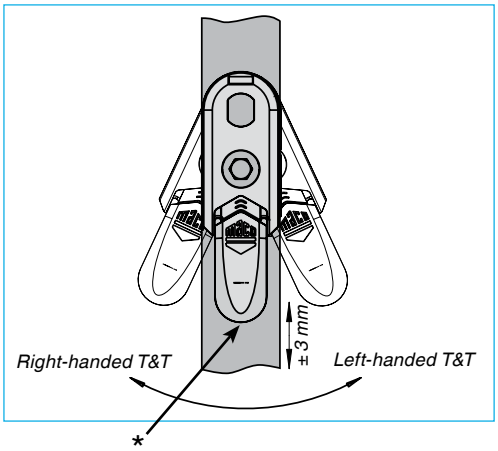


Fig. 3



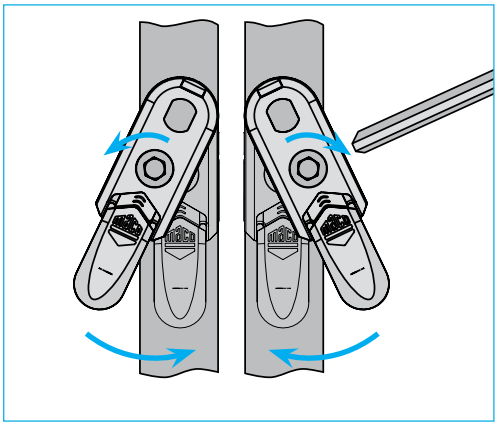
Please note: The bayonet coupling must be turned 90°!

Activating and adjusting the sash lifter



1. Tilt the drive-gear's sash lifter in the desired direction until you hear an audible click. The sash lifter is subsequently fully operational.
2. Set to the required height by turning the adjusting screw* with a Torx 15 bit.

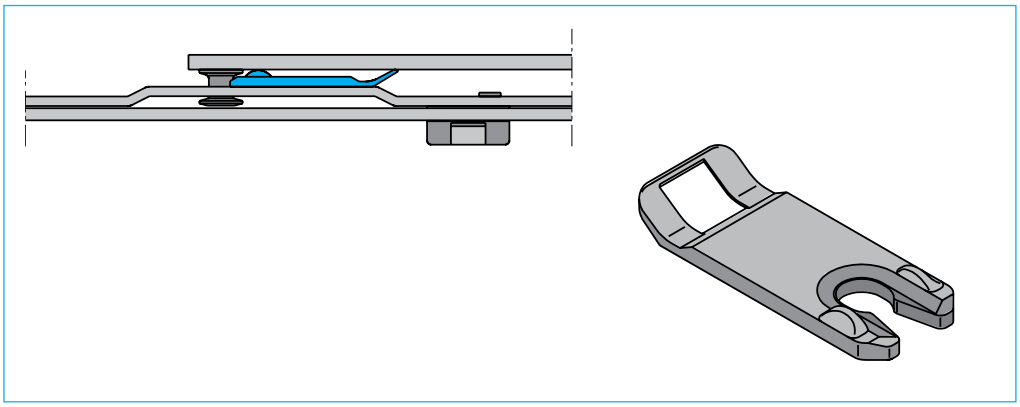
Resetting the sash lifter



1. Position the sash lifter into the centre.
2. Turn in the direction depicted above until it snaps into place (4 mm Allen Key).

Scissor-stay restrictor

A scissor-stay restrictor must be installed on sash rebate heights under 600 mm.
This can already be necessary at SRH less than 800 mm, due to the several rebate-leg dimensions.



For scissor stay size 400/600/800 use 43551 (black),
For scissor stay size 1050/1300 use 43552 (white).

Pivot post installation

Corner support jig (corner-clamping in the fittings groove)

Fig. 1

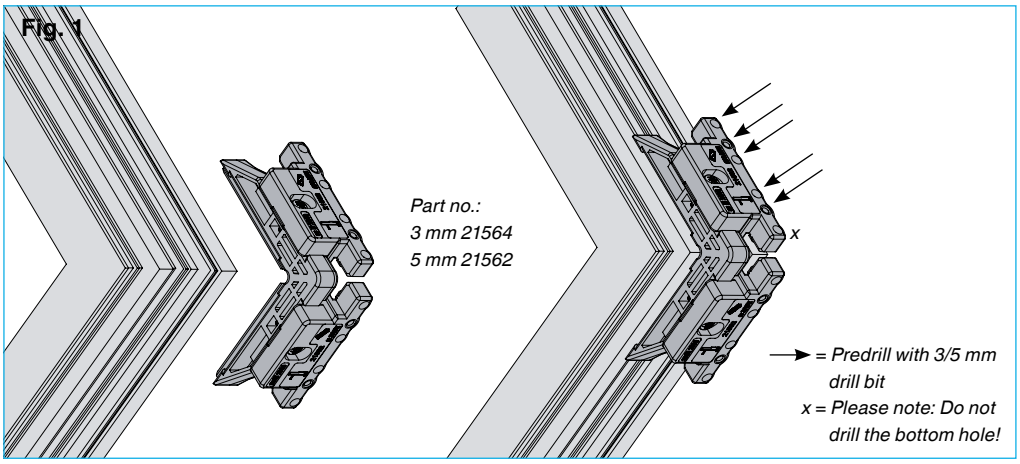
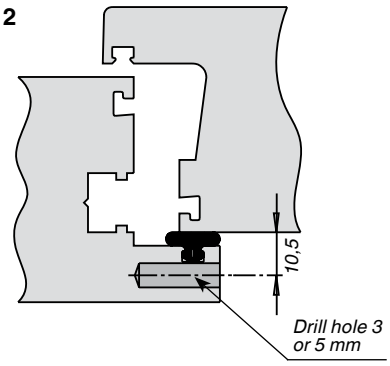


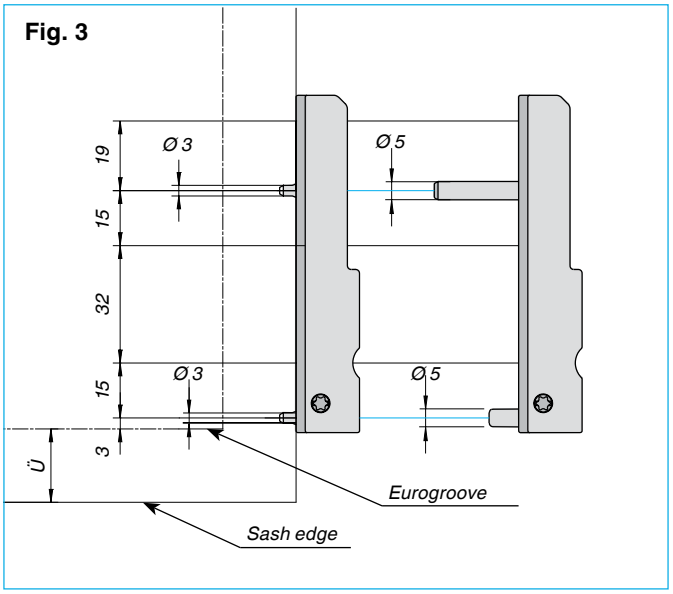
Fig. 2



1. Position the drilling jig in the fittings groove (Fig. 1).
2. Adjust the distance on the side (Note the coverage dimension, Fig. 2).
3. Predrill using a Ø 3 mm and/or 5 mm drill (Fig. 3)!

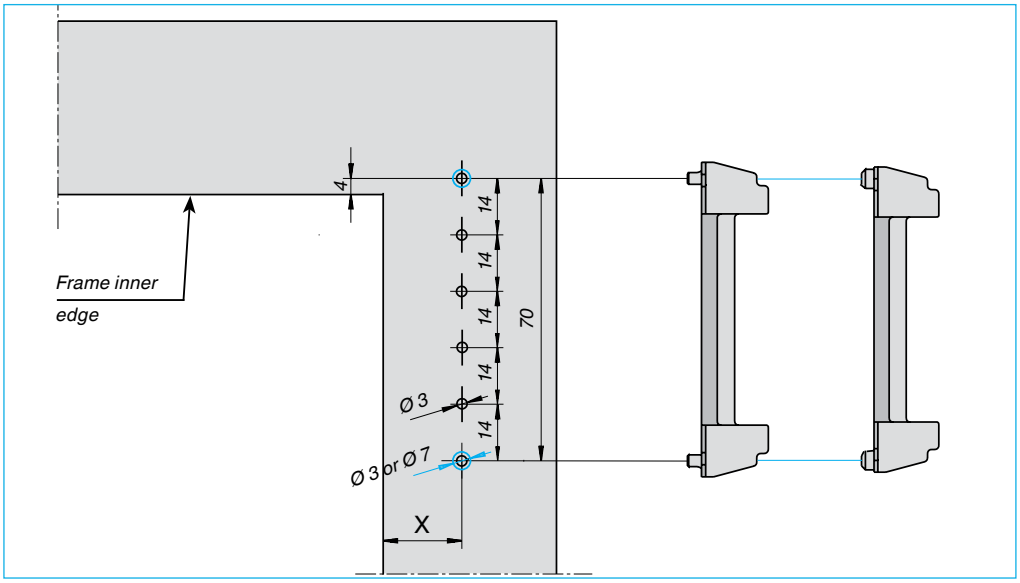
No	Sash drilling jigs
21564	For 3 mm supporting pins
28235	For 3 mm supporting pins (for 5° slope)
21562	For 5 mm supporting pins
23279	For 5 mm supporting pins (for 5° slope)

Fig. 3

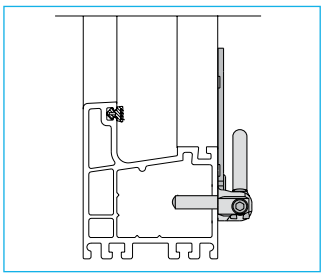


Installation of the frame fittings components

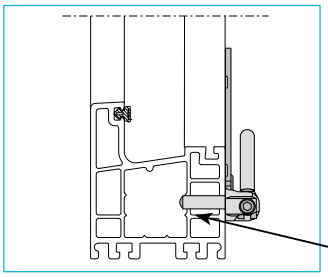
MULTI-MATIC stay hinge and pivot post drilling dimensions



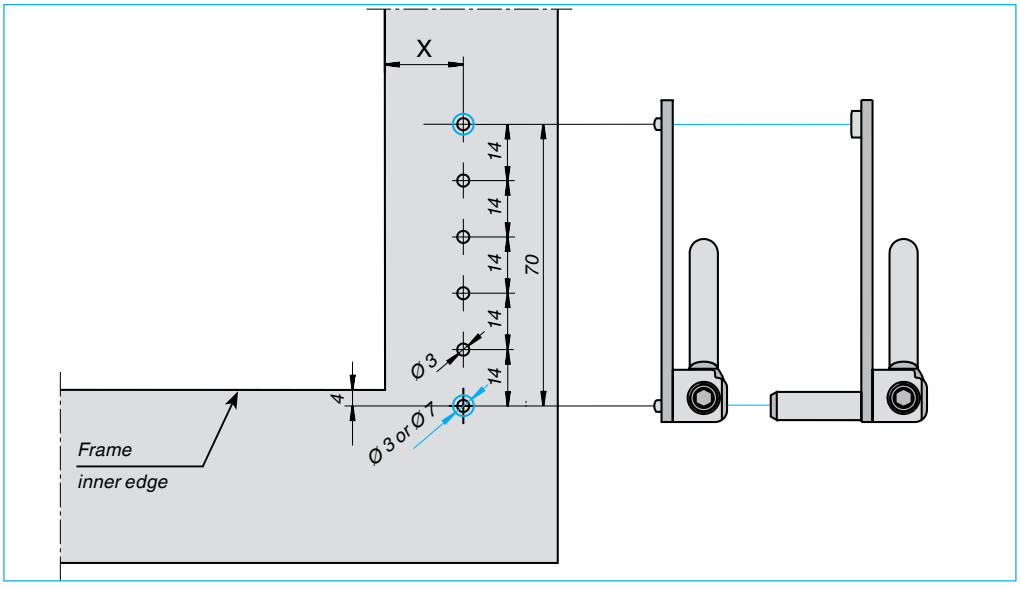
Sash weight up to 100 kg



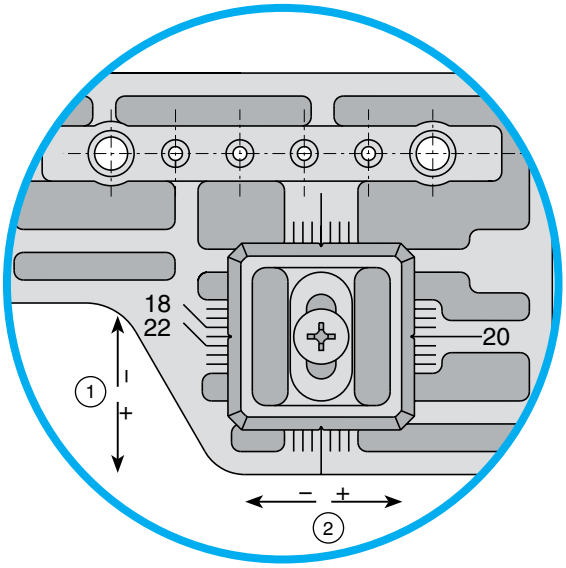
Sash weight up to 120 kg



Rebate-leg	Dimension X
18	17,5
20	19,5
22	21,5



Adjusting the MULTI drilling jig for PVC stay hinges and pivot posts



The default setting is for 20 mm rebate-leg (1) and 12 mm air gap (2).

Installation:

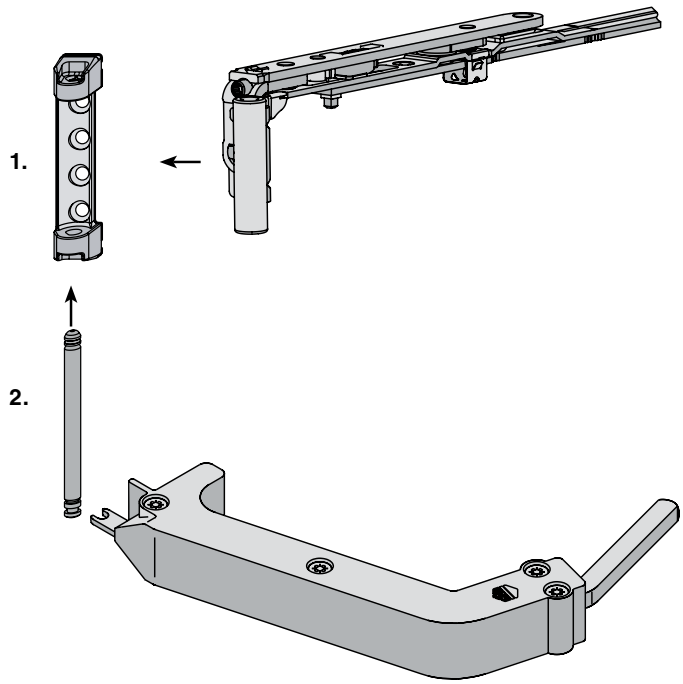
Adjust the frame drilling jig to the required rebate-leg (refer to the drawing above).

Position the drilling jig and predrill with a Ø 3 mm or 7 mm drill.

Predrill for both the left and right pivot posts and scissor stay hinges with the same jig settings.

No	Frame drilling jig	Drilling-hole diameter
28597	For scissor stays and pivot posts, self-clamping	7 mm
21958	For scissor stays and pivot posts, with 3 mm supporting pins	3 mm
21694	For scissor stays and pivot posts, with 7 mm supporting pins	7 mm

Hinging the sash



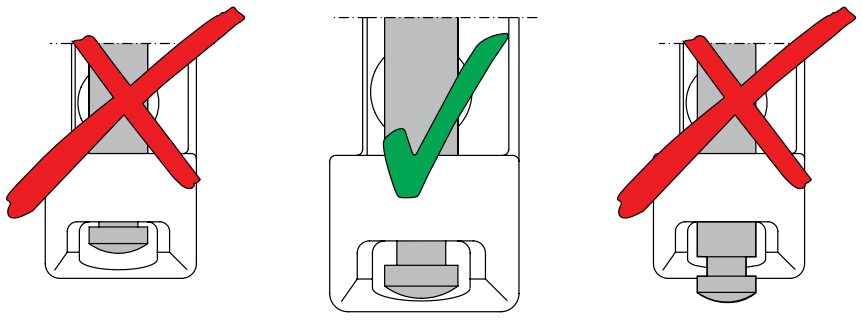
Hinge the sash into the pivot post at a 90° opening angle.

1. Position the stay support arm into the scissor stay hinge and close the sash (do not lock!).

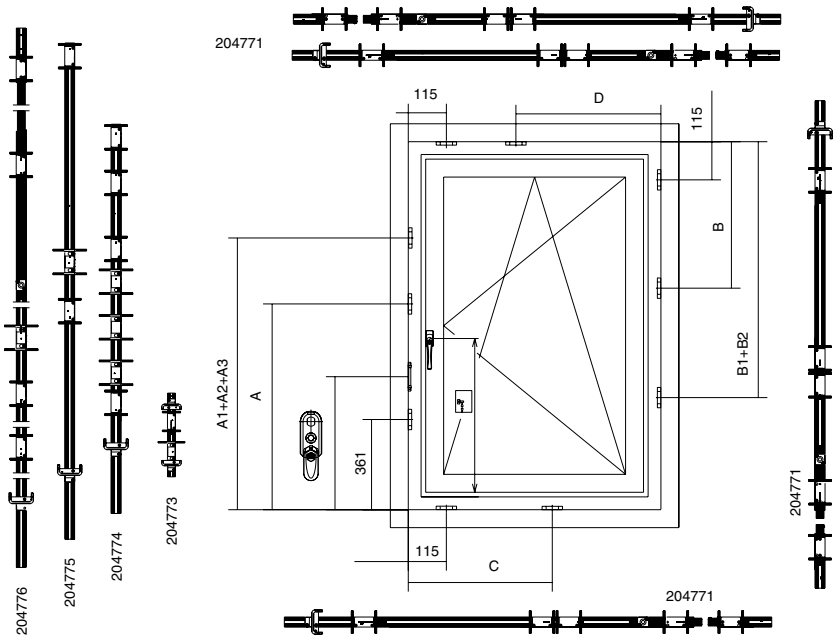
2. Push the scissor stay-hinge pin in fully while the window is closed.

3. Visual checking of the position of the scissor stay-hinge pin is imperative (refer to the illustration)!

PLEASE NOTE:
Non-compliance can lead to sashes falling out!



Striker installation MM and MM-KS



Installation:

1. Drive-gear jig:
Extend it to the max. and using the stops, position it at the top and bottom. Clamp the sliding rod, position and then screw on the strikers and sash lifter (note the drive-gear size marked on the jig).

2. Centre lock jig:

Hinge-side centre lock:
Position the jig on the top hinge-side, insert the striker in the striker holder for centre lock and then screw on (refer to the illustration marked on the jig).

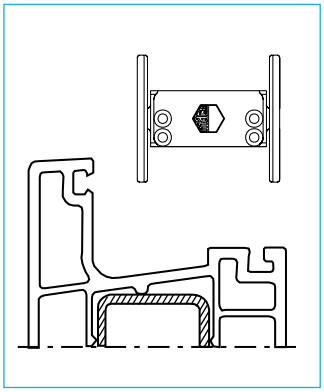
Bottom horizontal centre lock:
Position the jig on the bottom drive-gear side, insert the striker in the striker holder for centre lock and then screw on (refer to the illustration marked on the jig).

Scissor stay:
Position the jig on the top hinge-side, insert the striker in the striker holder for the scissor stay and then screw on (refer to the illustration marked on the jig).

Please note:
Install the strikers before screw-fixing the pivot post and scissor stay hinge!

Jig selection:

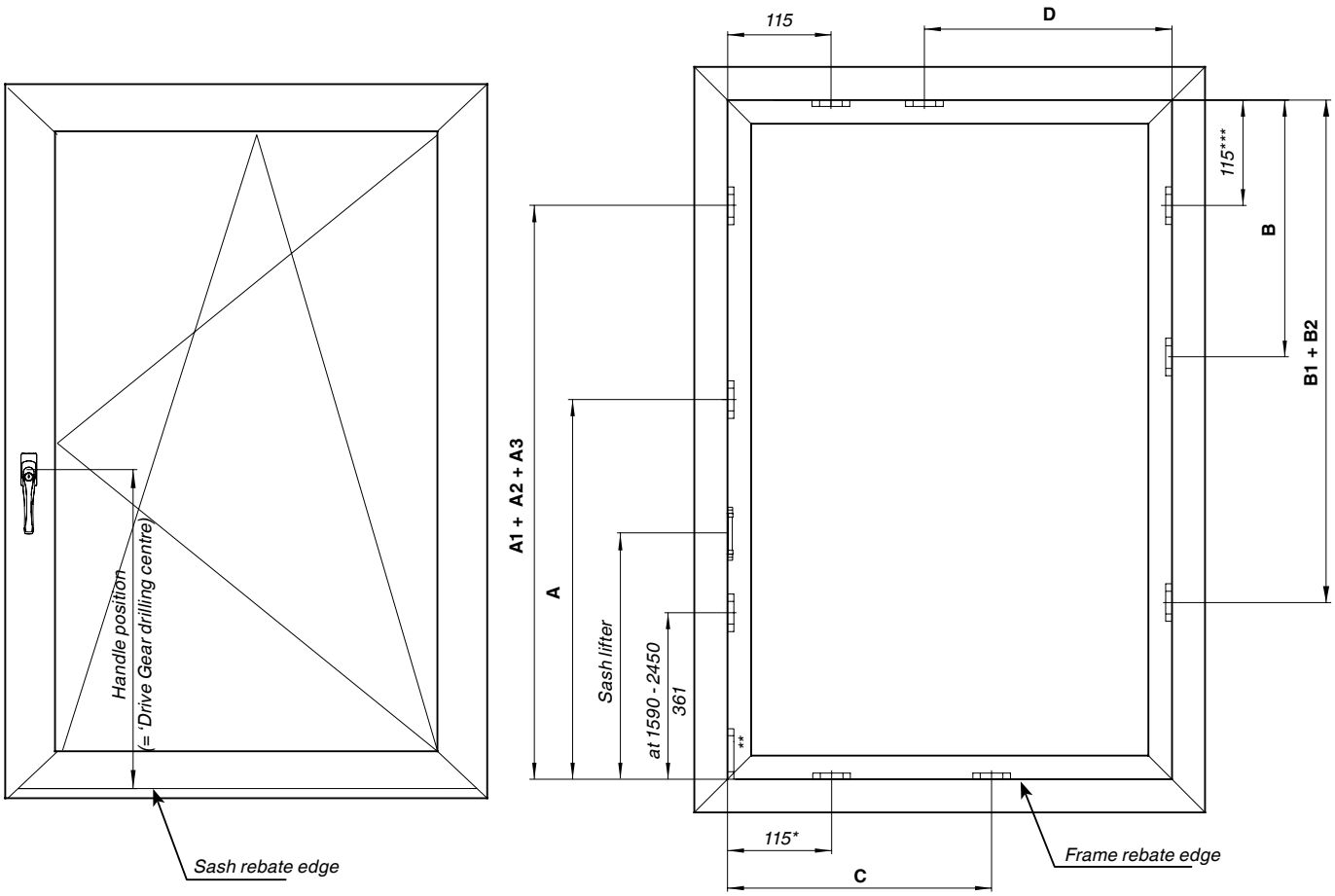
Striker positioning jig for profiles with grooves



No	Jigs for TU-ON/T&T fixed handle height drive-gears
204773	SRH 431 - 660
204774	SRH 661 - 1340
204775	SRH 1341 - 1700
204776	SRH 1701 - 2450
No	**Jigs for TU-ON/T&T variable/centred handle-height drive-gears**
206049	Size 800 / Size 1250 / Size 1750
206067	Size 2250
No	**Jig for centre locks, scissor stays and corner elements**
204771	SRH 200 - 2450 / SRW 195 - 1500

Striker drilling locations; MM and MM-KS

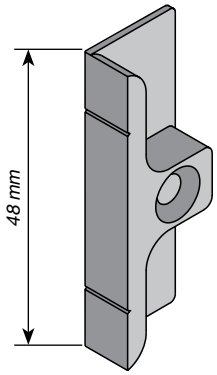
All dimensions refer to the **frame rebate dimensions**:



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

*** Only when using drive-gear with Safety Catch*

**** When using vertical MM corner element*



Please note:
The striker drilling location dimensions refer to the centre of the striker. The striker length is 48 mm.

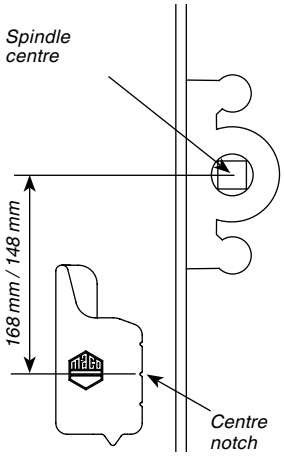
Striker positioning, sash lifters for fixed handle-height drive-gears with 12 mm air gap

Drive-gear size	SRH	Sash lifter	A	A1	A2	A3	Handle position without air gap
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

Stay guide size	SRW	D
400	315 - 400	-
600	401 - 600	-
800	601 - 800	-
800 i. S.	601 - 800	403
1050	801 - 1050	506
1300	1051 - 1300	565

Centre lock size	SRW/SRH	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

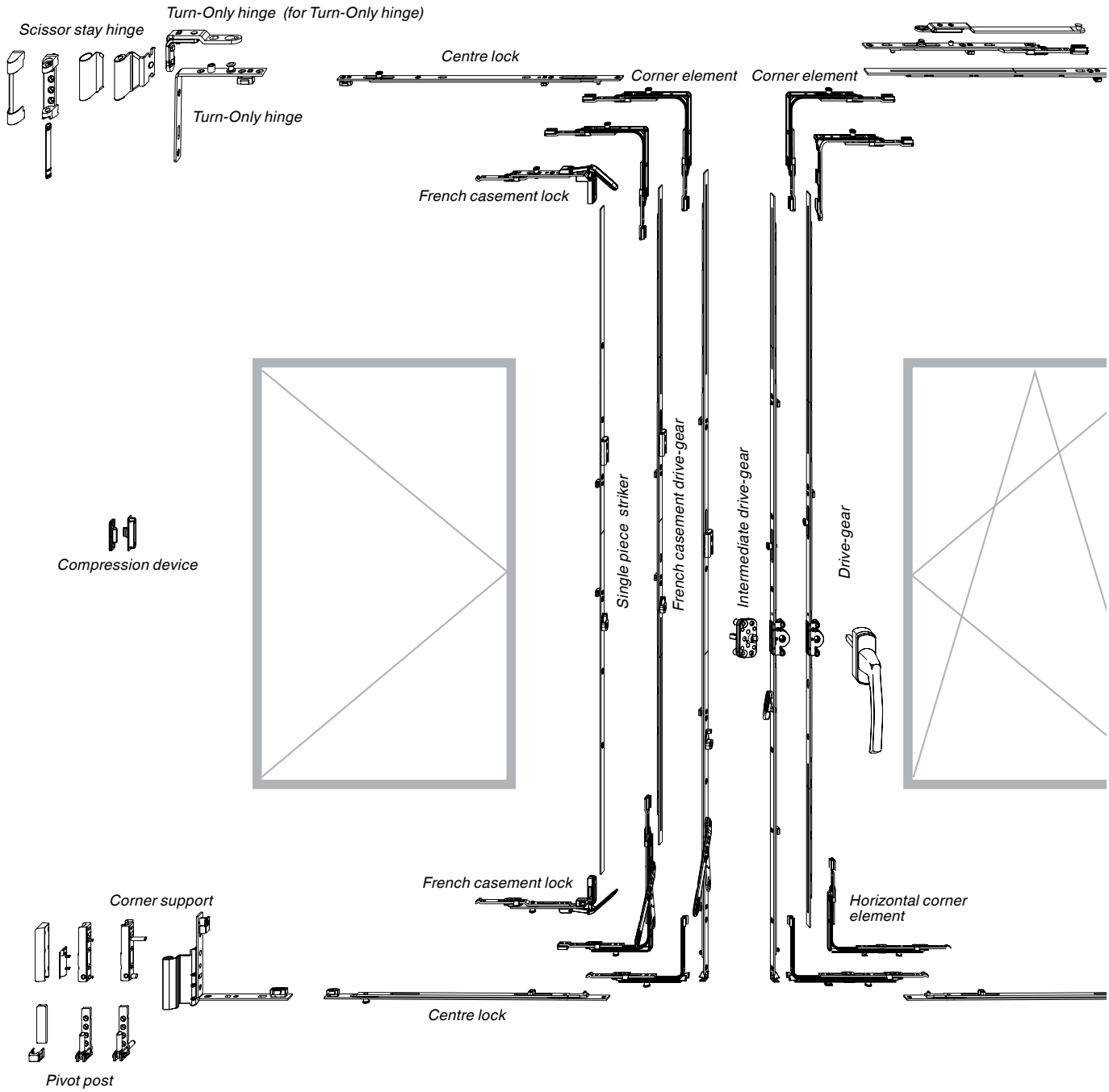
Sash lifter positioning for fixed and variable handle-height drive-gears



Spindle centre to sash lifter centre	Drive-gear size	SRH
-	430	360 - 430
168	660	431 - 660
148	840	661 - 840
148	1090	841 - 1090
148	1340	1091 - 1340
148	1590	1341 - 1590
148	1700	1591 - 1700
148	1950	1701 - 1950
148	2200	1951 - 2200
148	2450	2201 - 2450

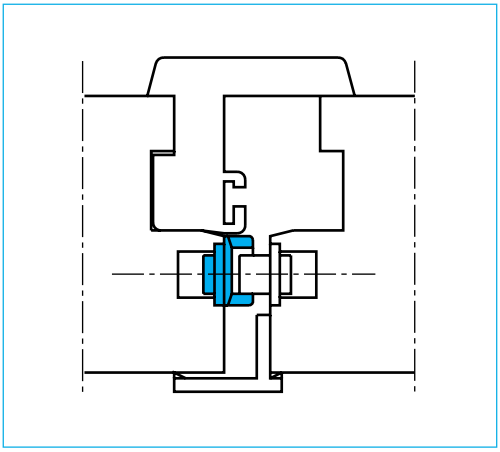
Tilt&Turn fittings MM

for 2-sashed windows



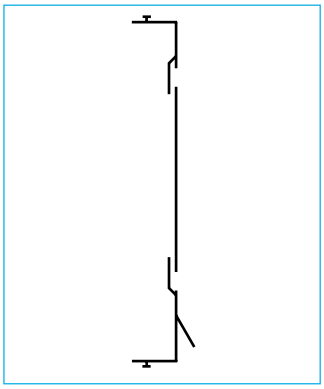
Installation of 2-sashed windows fittings components MM

French casement drive-gear with mounted strikers



Installation when using fixed handle-height drive-gears:

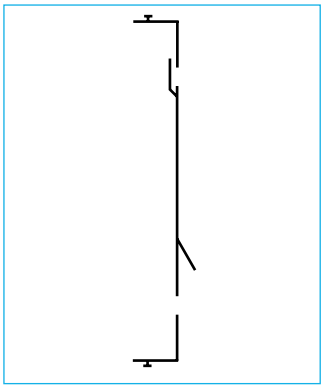
1. Insert the corner element.
   (use a centre lock over SRW 800 mm)*
2. Insert the (vertical) corner element.
   (use a centre lock over SRW 800 mm)*
3. Crop and screw-fix the French casement drive-gear with the reverse-action lever closed.



Installation when using variable handle-height drive-gears:

SRH 841 - 1250

1. Install the corner element (use a centre lock over SRW 800 mm)*.
2. Install the corner element for the lever-operated espagnolette on the bottom (use a centre lock over SRW 800 mm)*.
3. Crop the centre part with the reverse-action lever closed, insert (noting that the notch is opposite the handle centre) and screw-fix.



SRH 1251 - 1750
SRH 1751 - 2250

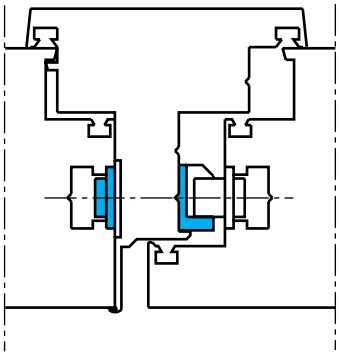
1. Install the top and bottom corner element (use a centre lock over SRW 800 mm)*.
2. Crop the centre part with the reverse-action lever closed, insert (noting that the notch is opposite the handle centre) and screw-fix.

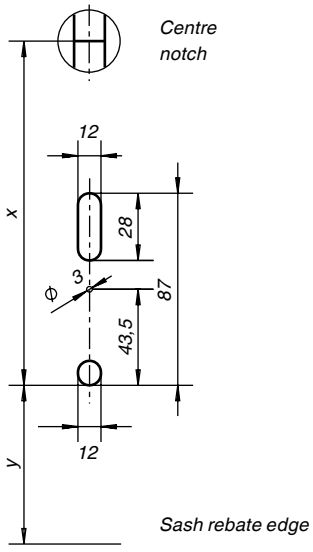
** SRW and SRH of 800 mm is a MACO recommendation, adhere to the profile manufacturers' specifications!*

Installation of the French window sash fittings with single piece striker

1. Install the top and bottom horizontal French window sash fittings.
2. Crop and screw-fix the single piece door striker (only for i. S.).

French casement drive-gear without MM strikers





Installation when using fixed handle-height drive-gears:

1. Insert the corner element (use a centre lock over SRW 800 mm)*.
2. Insert the (vertical) corner element (use a centre lock over SRW 800 mm)*.
3. Crop and screw-fix the French casement drive-gear with the reverse-action lever closed.

Reverse-action lever routing:

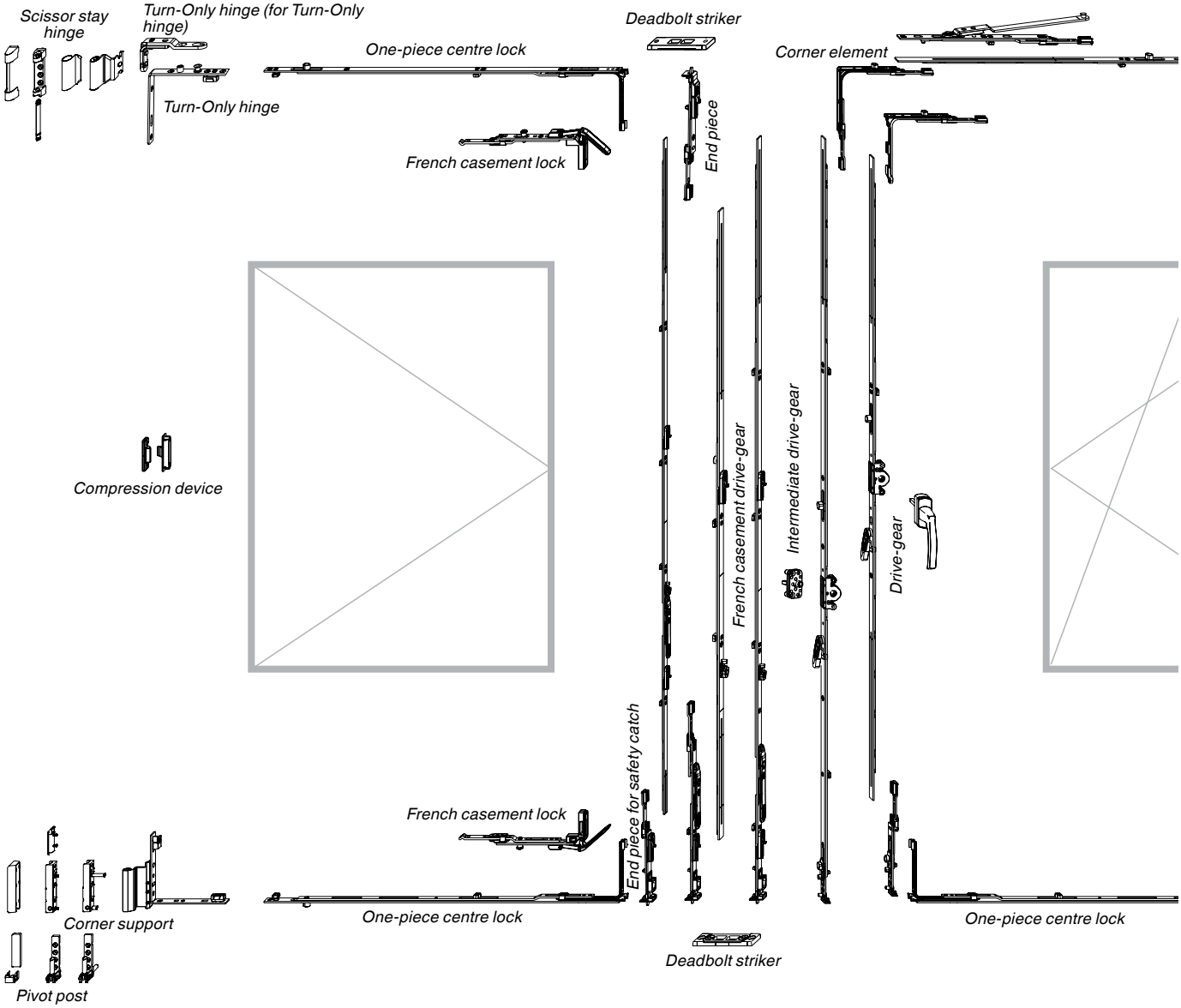
- Cut the connection sleeve according to the floating mullion profile depth, assemble the French casement drive-gear in the closed position and screw-fix.
- Open the reverse-action lever (with this, the centre-fixings are undone) Screw-fix a screw into the screw hole under the reverse-action lever.
- Position the strikers using the installation jig.

Fixed handle-height				Variable/centred handle-height		
HD	SRH	X	Y	SRH	X	Y
190	431 - 660	132 mm	58 mm	841 - 1250	-	56 mm
300	661 - 840	242 mm	58 mm	1251 - 1750	242	-
400	841 - 1090	242 mm	158 mm	1751 - 2250	440	-
500	1091 - 1340	342 mm	158 mm			
600	1341 - 1590	442 mm	158 mm			
700	1591 - 1700	542 mm	158 mm			
1050	1701 - 2450	537 mm	513 mm			

** SRW and SRH of 800 mm is a MACO recommendation, adhere to the profile manufacturers' specifications!*

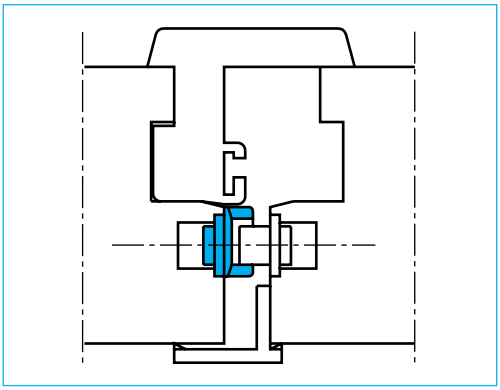
Tilt&Turn fittings MM-KS

for 2-sashed windows



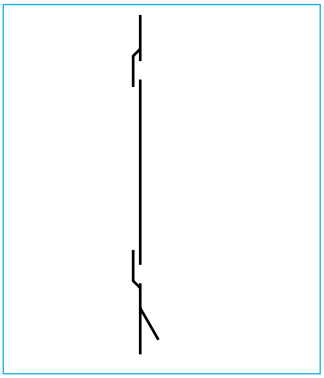
Installation of 2-sashed windows fittings components MM-KS

French casement drive-gear with mounted strikers



Installation when using fixed handle-height drive-gears:

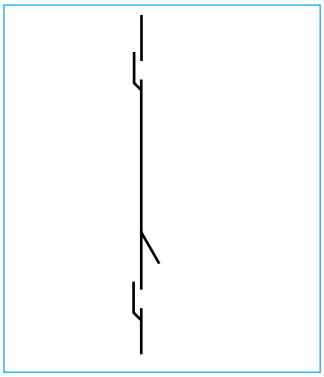
1. Insert and screw-fix the top end piece (couple with centre lock if SRW is over 800 mm)*.
2. Crop the French casement drive-gear with the reverse-action lever closed – the same length as the fixed handle-height T&T drive-gear – and screw-fix (use a centre lock over SRW 800 mm)*.



Installation when using variable handle-height drive-gears:

SRH 841 - 1250

1. Insert the top end piece (couple with centre lock if SRW is over 800 mm)*.
2. Insert the bottom end piece (couple with centre lock if SRW is over 800 mm)*.
3. Crop the centre part, insert (noting that the notch is opposite the handle centre) and screw-fix.



SRH 1251 - 1750
SRH 1751 - 2250

1. Insert the top and bottom end piece (couple with centre lock if SRW is over 800 mm)*.
2. Crop the centre part with the reverse-action lever closed, insert (noting that the notch is opposite the handle centre) and screw-fix.

Shootbolt installation

1. Position the strikers with the jig and screw-fix.
2. Position the top and bottom shootbolts and screw-fix.

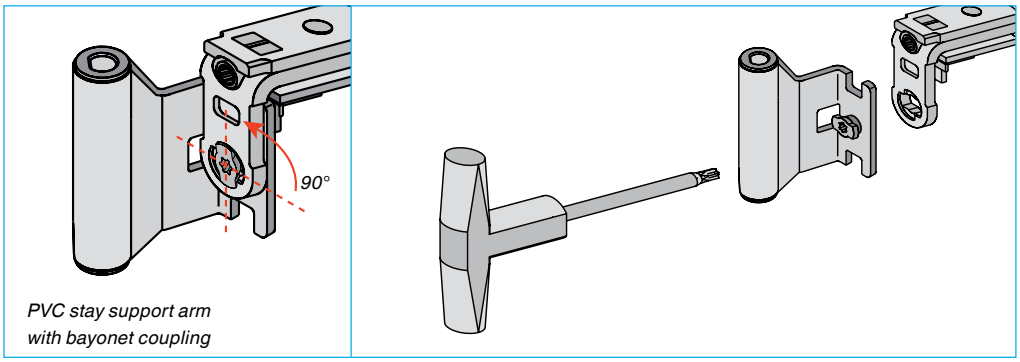
Deadbolt striker installation

Mark the deadbolt strikers while the Turn-Only sash is hinged and then mount, or use jig 21398.

** SRW and SRH of 800 mm is a MACO recommendation, adhere to the profile manufacturers' specifications!*

Turn-Only hinge, pivot post and scissor stay hinge MM installation

1. Insert the Turn-Only hinge faceplate in the fittings groove and screw-fix.
2. Clip in the pivot bearing for the Turn-Only hinge.
3. Clip on the stay support arm to the scissor stay end-bracket and turn the bayonet coupling with a TORX 20 bit (refer to the illustration).



PVC stay support arm with bayonet coupling

Turn-Only hinge MM-KS installation

1. Position the top Turn-Only hinge on the rebate-leg and screw-fix.
2. Predrill and mount the corner support and pivot post as well as the scissor stay hinge, as described for Tilt&Turn fittings.
3. Clip on the stay support arm to the scissor stay end-bracket and turn the bayonet coupling with a TORX 20 bit (refer to the illustration).

Compression device installation

Screw-fixed compression device

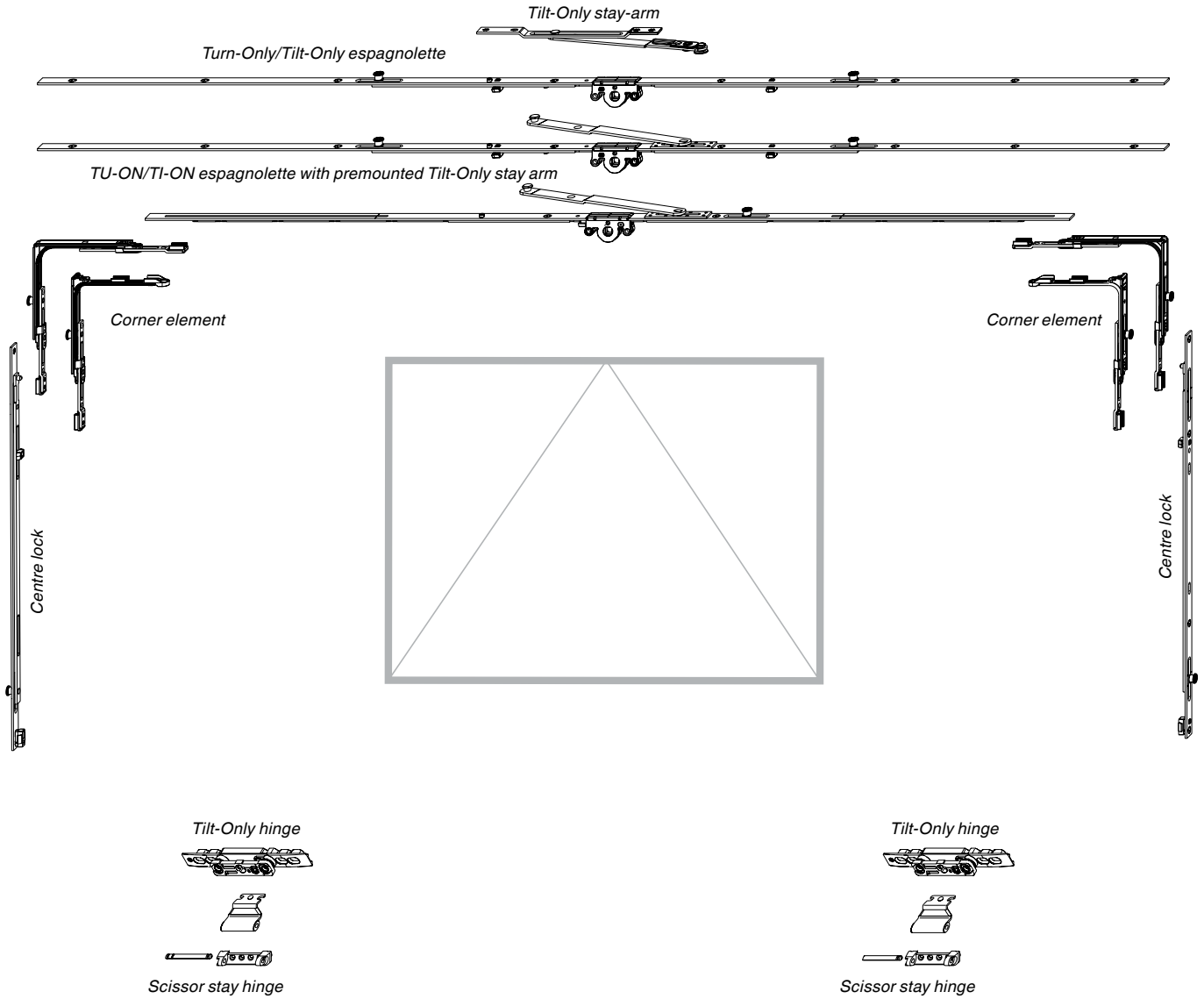
1. Press the sash lightly while the window is closed.
2. Position the compression device and screw-fix while pressed.
3. The centre-fixing (pre-set centred cam-fixing) is undone when the sash is opened.

Universal compression device

Position the sash and frame component with the jig

Please note: The sash must have a eurogroove!

Tilt-Only fittings MM



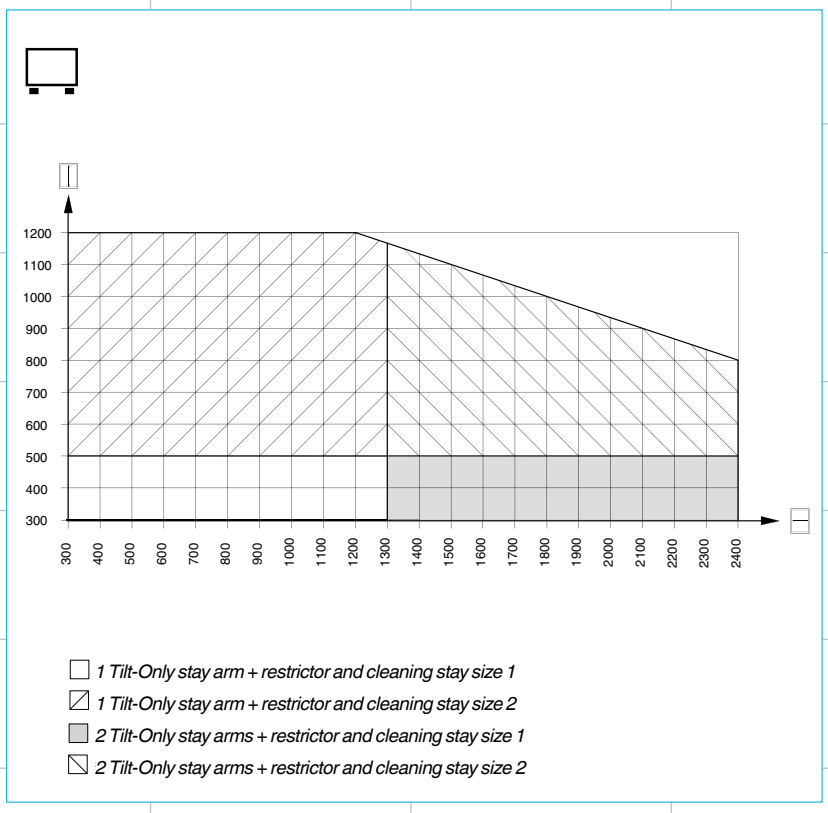
Fittings combination MM

	SRW	750-1250	1251-1700	1701-2200	2201-2400
SRH		1 VHH TU.-ON./TI.-ON. espag. preass. tilt-rocker 1 i. S. 1 striker 2 Tilt-Only hinges 1 Tilt-Only stay-arm housing *Use a third Tilt-Only hinge on PVC from SRW 1000!*	1 VHH TU.-ON./TI.-ON. espag. preass. tilt-rocker 2 i. S. 2 strikers 3 Tilt-Only hinges 2 Tilt-Only stay-arm housings	1 VHH TU.-ON./TI.-ON. espag. preass. tilt-rocker 3 i. S. 3 strikers 3 Tilt-Only hinges 2 Tilt-Only stay-arm housings	1 VHH TU.-ON./TI.-ON. espag. preass. tilt-rocker 3 i. S. 2 faceplate extensions 235 1 i. S. 5 strikers 3 Tilt-Only hinges 2 Tilt-Only stay-arm housings
300 - 800	2 corner elements 1 i. S. 2 strikers **Restrictor and cleaning stay; refer to the application diagram!!!**				
801 - 1200	2 corner elements 1 i. S. 2 centre locks 1280 1 i. S. 4 strikers **Restrictor and cleaning stay; refer to the application diagram!!!**				

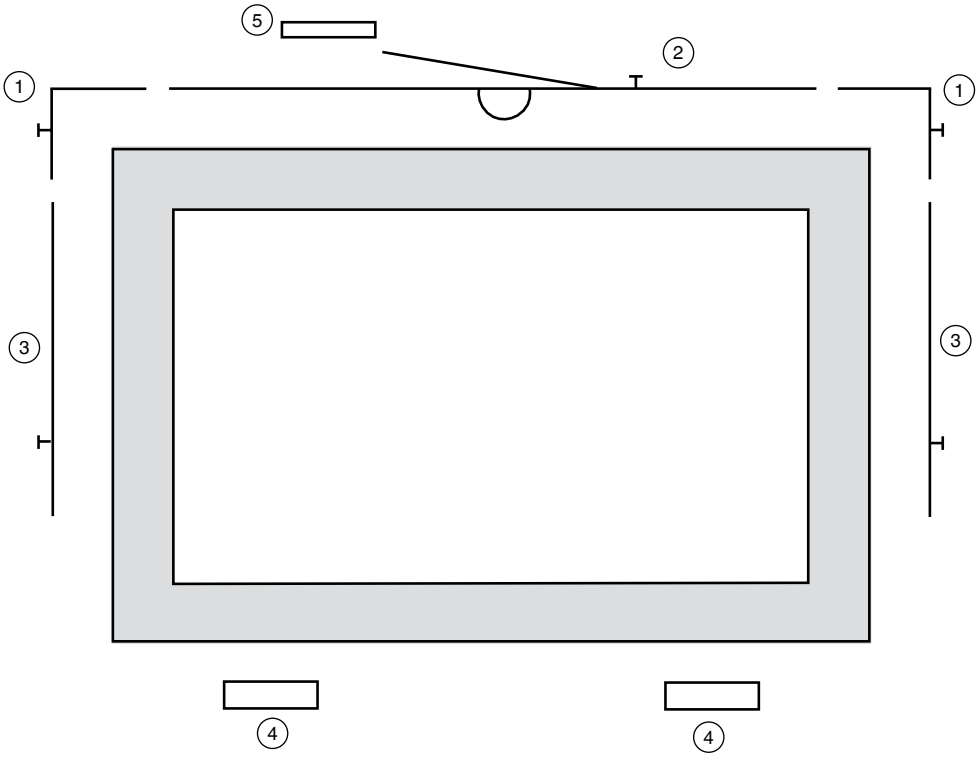
Attention - do not forget!!!

On all sizes:

1 scissor stay hinge
1 scissor stay-hinge pin
1 stay support arm
1 pivot post
1 corner support



Installation and cropping of the MM sash fittings components



1. Install the **corner element** (1).

2. Crop the **TU.-ON./TI.-ON. espagnolette with Tilt-Only stay-arm** (2) and screw-fix together with the **corner element** (1) (use two Tilt-Only stay-arms from SRW 1200 mm).

3. Install the **centre locks** (3) (from a SRH over 800 mm)*.

4. Install the **Tilt-Only hinges** (4) (use a third Tilt-Only hinge from a SRW over 1000 mm or 60 kg sash weight).
PLEASE NOTE: Use glazing spacer-blocks on the window pane in the vicinity of the Tilt-Only hinges.

5. Install the Tilt-Only stay-arm housing (5). Mark the Tilt-Only stay-arm's notch (Fig. 1, (1)) on the frame with a pencil, line up the Tilt-Only stay-arm housing's mark with the notch and mount (Fig. 1, (2)).

6. Install the restrictor and cleaning stay. (The use of this is compulsory!)

** SRW and SRH of 800 mm is a MACO recommendation, adhere to the profile manufacturers' specifications!*

Cropping pattern

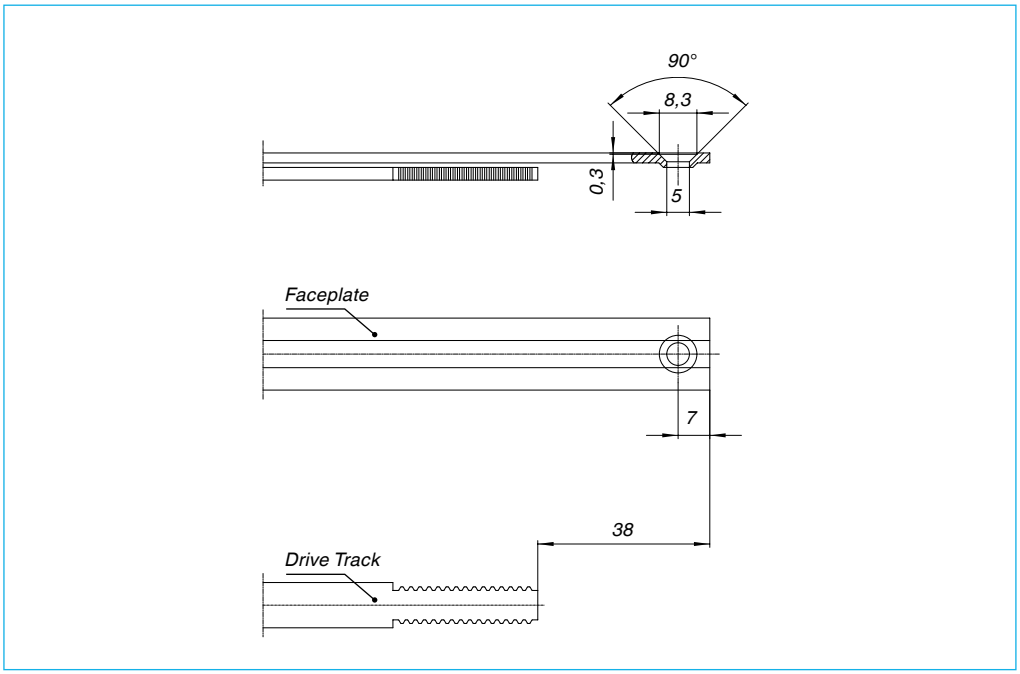


Fig. 1

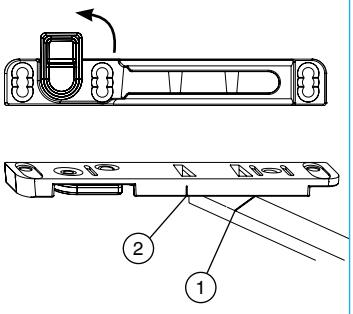
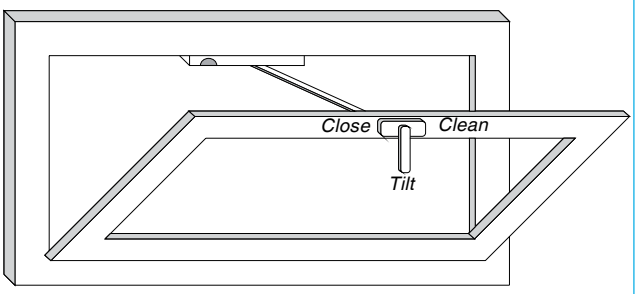


Fig. 2

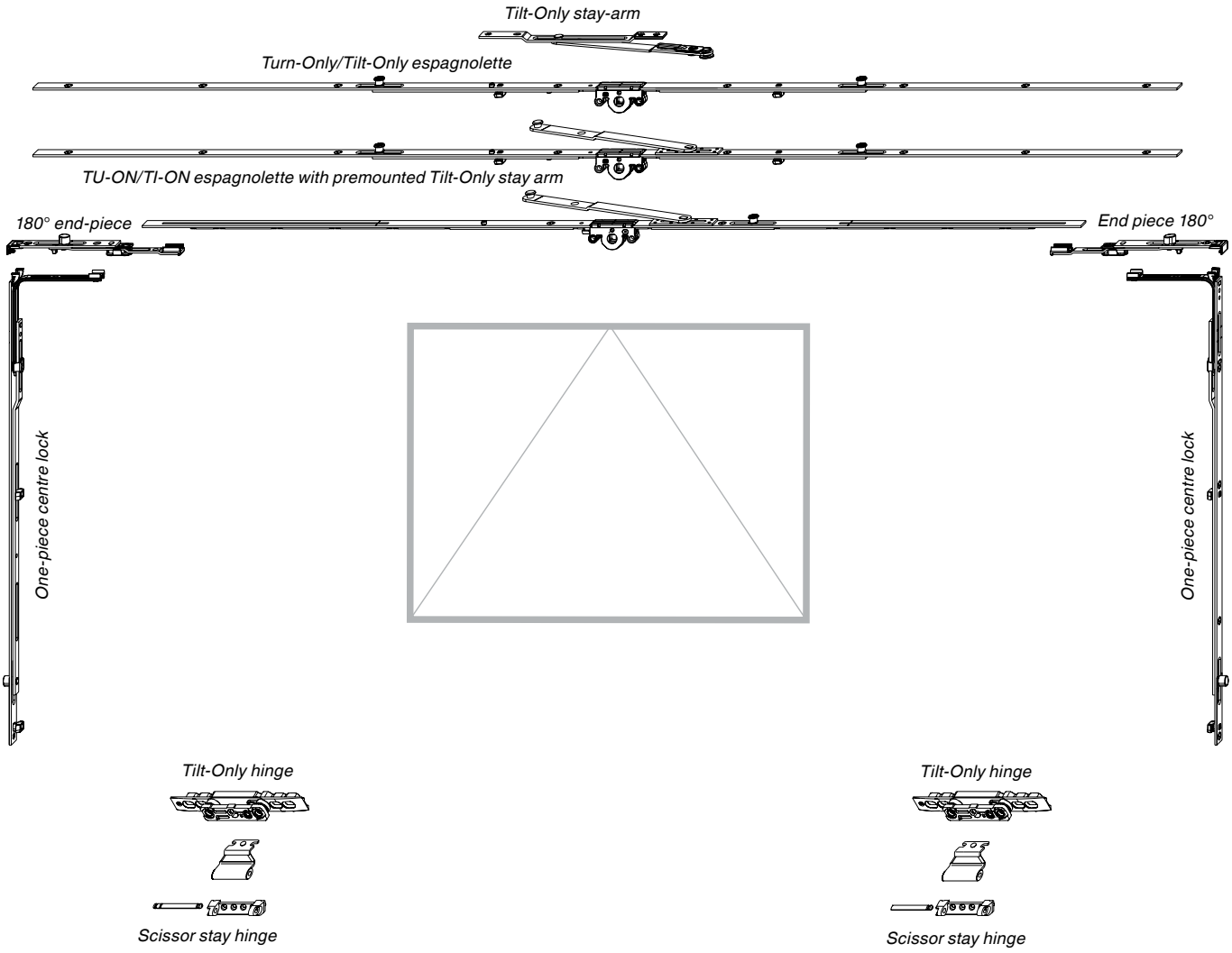


Hinging & unhinging the Tilt-Only stay arm

1. In order to hinge the sash, bring the window handle into the cleaning position (Fig. 2).
2. Open the safety device on the Tilt-Only stay-arm housing and hinge the scissor-stay arm (Fig. 1).
3. Bring the window handle into the tilt-mode (Fig. 2) and close the safety device again (Fig. 1)

1. When unhinging in the tilted position, open the safety device (Fig. 1).
2. Close the sash, bring the handle into the cleaning position and open the sash (Fig. 2).

Tilt-Only fittings MM-KS



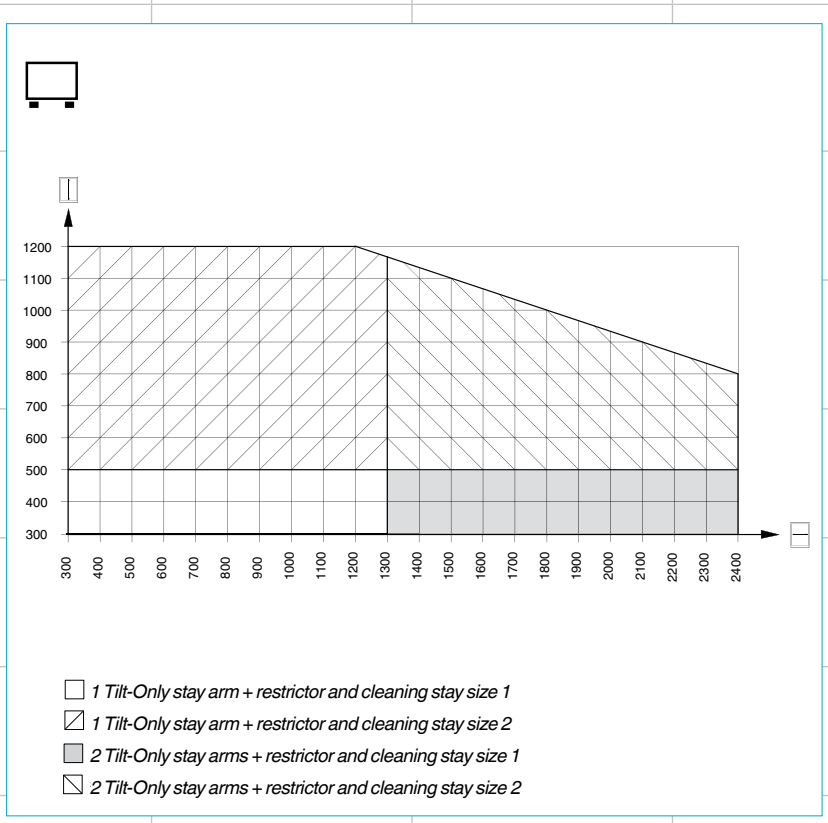
Fittings combination MM-KS

	SRW	750-1250	1251-1700	1701-2200	2201-2400
SRH		1 VHH TU.-ON./TI.-ON. espag. preass. tilt-rocker 1 i.S. 2 end pieces 1 VZ 1 striker 2 Tilt-Only hinges 1 Tilt-Only stay-arm housing *Use a third Tilt-Only hinge on PVC from SRW 1000!* **Use a restrictor and cleaning stay!!!**	1 VHH TU.-ON./TI.-ON. espag. preass. tilt-rocker 2 i. S. 2 end pieces 1 VZ 2 strikers 3 Tilt-Only hinges 2 Tilt-Only stay-arm housings	1 VHH TU.-ON./TI.-ON. espag. preass. tilt-rocker 3 i. S. 2 end pieces 1 VZ 3 strikers 3 Tilt-Only hinges 2 Tilt-Only stay-arm housings	1 VHH TU.-ON./TI.-ON. espag. preass. tilt-rocker 3 i. S. 2 faceplate extensions 235 1 i. S. 2 end pieces 1 VZ 5 strikers 3 Tilt-Only hinges 2 Tilt-Only stay-arm housings
300 - 800	**Restrictor and cleaning stay; refer to the application diagram!!!**				
801 - 1200	2 one-piece centre locks 1280 1 VZ 2 strikers **Restrictor and cleaning stay; refer to the application diagram!!!**				

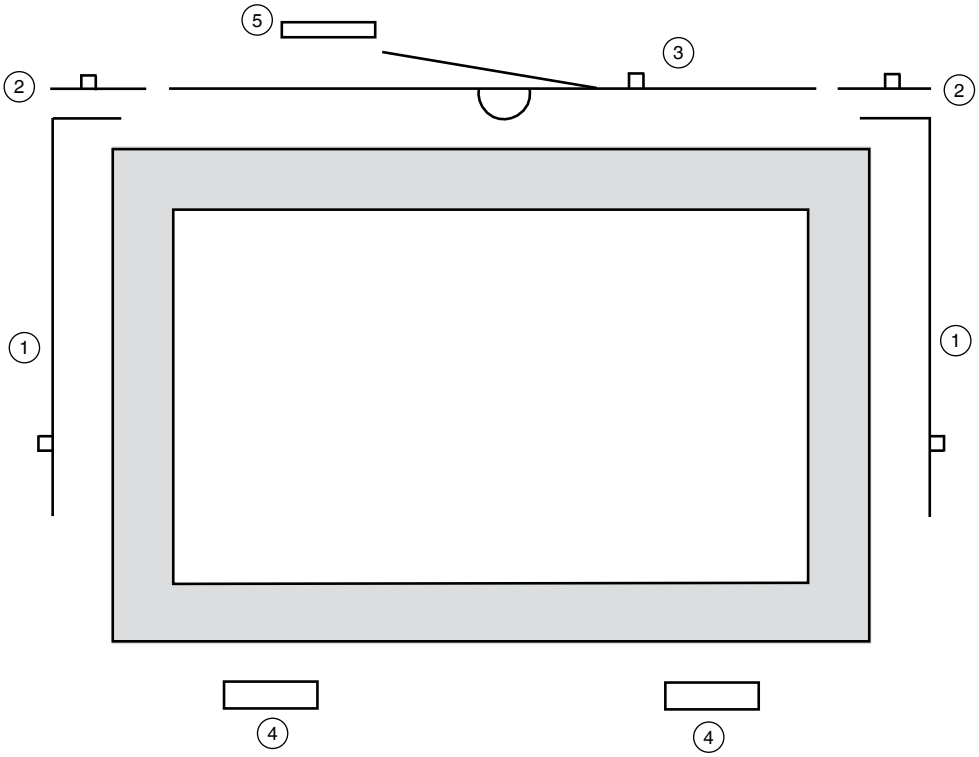
Attention - do not forget!!!

On all sizes:

1 scissor stay hinge
1 scissor stay-hinge pin
1 stay support arm
1 pivot post
1 corner support



Installation and cropping of the MM-KS sash fittings components



1. Install the **one-piece centre locks** (1) (from a SRW over 800 mm)*.

2. Install the **end pieces** (2) (couple with the centre locks if applicable).

3. Crop the **TU.-ON./TI.-ON. espagnolette with Tilt-Only stay-arm** (3) and screw-fix together with the end pieces (use two Tilt-Only stay-arms from SRW 1200 mm).

4. Install the **Tilt-Only hinges** (4) (use a third Tilt-Only hinge from a SRW over 1000 mm or 60 kg sash weight). PLEASE NOTE: Use glazing spacer-blocks on the window pane in the vicinity of the Tilt-Only hinges.

5. Install the **Tilt-Only stay-arm housing** (5). Mark the Tilt-Only stay-arm's notch (Fig. 1, (1)) on the frame with a pencil, line up the Tilt-Only stay-arm housing's mark with the notch and mount (Fig. 1, (2)).

6. Install the restrictor and cleaning stay. (The use of this is compulsory!)

** SRW and SRH of 800 mm is a MACO recommendation, adhere to the profile manufacturers' specifications!*

Cropping pattern

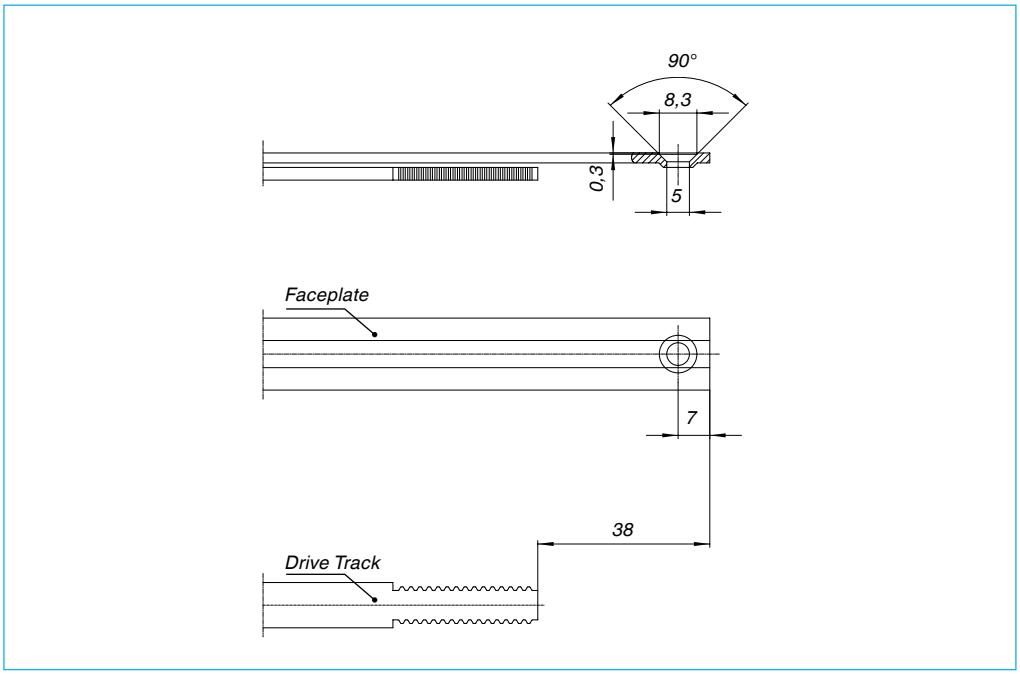


Fig. 1

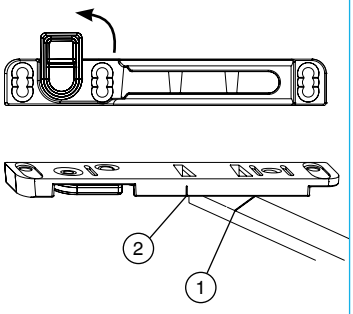
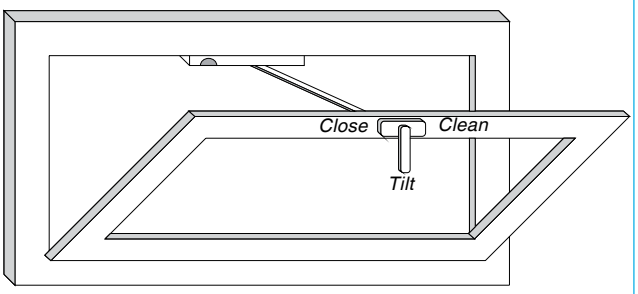


Fig. 2



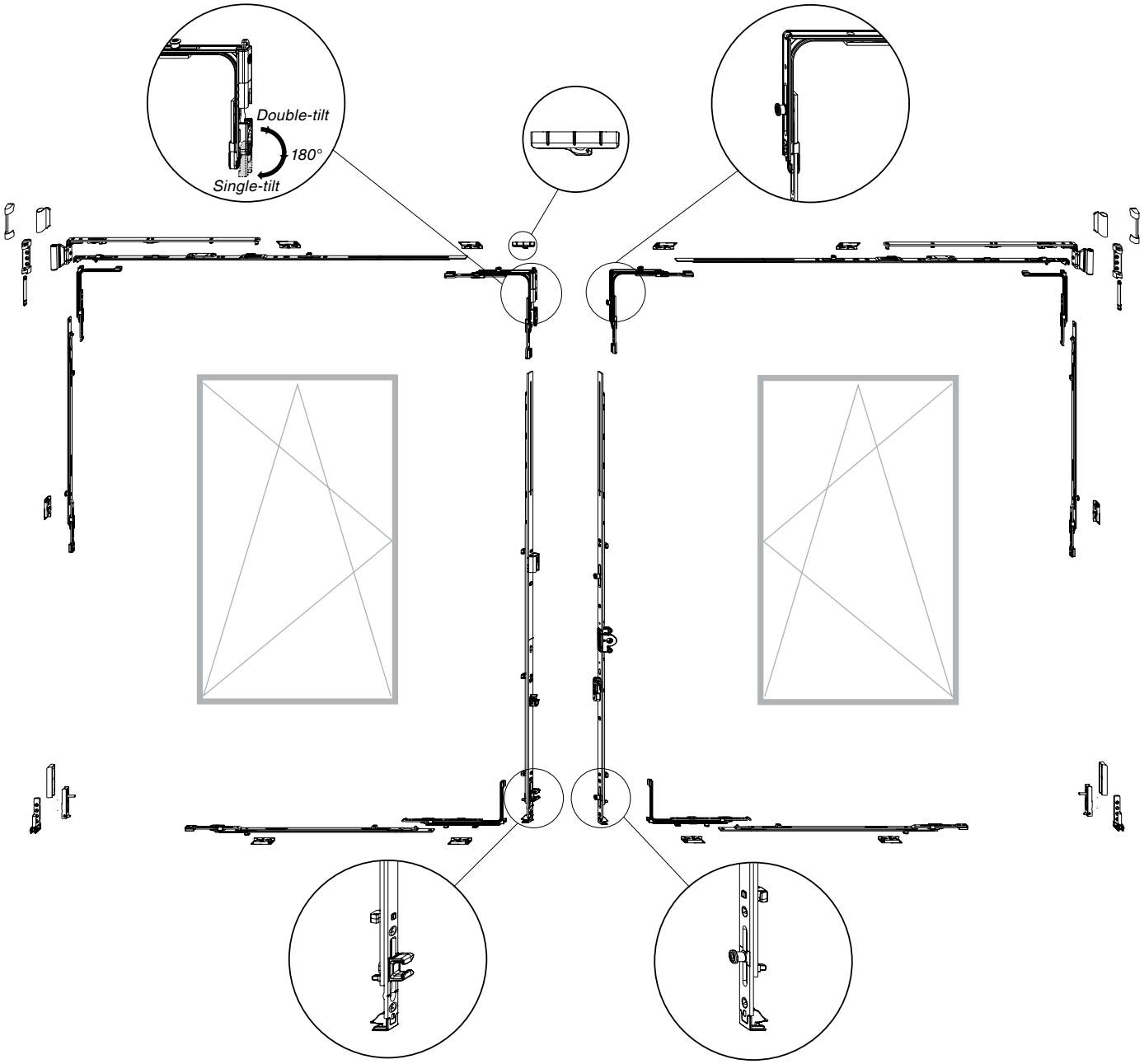
Hinging & unhinging the Tilt-Only stay arm

1. In order to hinge the sash, bring the window handle into the cleaning position (Fig. 2).
2. Open the safety device on the Tilt-Only stay-arm housing and hinge the scissor-stay arm (Fig. 1).
3. Bring the window handle into the tilt-mode (Fig. 2) and close the safety device again (Fig. 1)

1. When unhinging in the tilted position, open the safety device (Fig. 1).
2. Close the sash, bring the handle into the cleaning position and open the sash (Fig. 2).

Twin-Fit (Double-Tilt) MM

Max. sash weight per sash = 60 kg



Application ranges:

SRH: min. 431 - max. 1590 mm
SRW: min. 320 - max. 1050 mm (per sash)

Installation advice Twin-Fit (Double-Tilt) MM

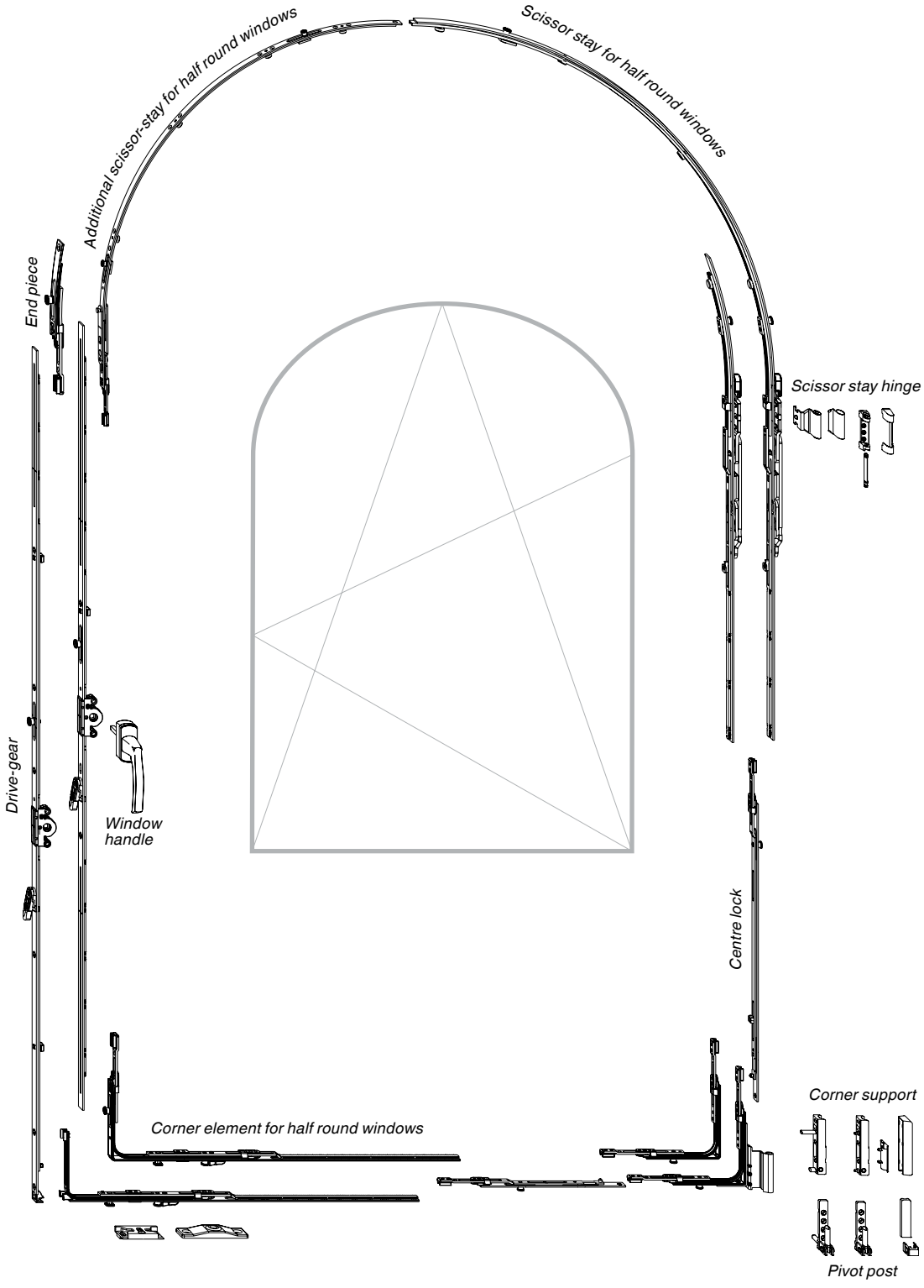
PLEASE NOTE:

- The centre-fixings (preset centred cam-fixing) must be undone individually on all French casement fittings before installation
- Use drive-gear EH
- No night-vent scissor-stay can be used

No	French casement drive-gear MM Double-tilt
207415	French casement drive-gear 660
207416	French casement drive-gear 840
207417	French casement drive-gear 1090
207418	French casement drive-gear 1340
207419	French casement drive-gear 1590

No	Corner element MM double-tilt with bullet catch
207427	Right-handed
207428	Left-handed

Half round fittings MM



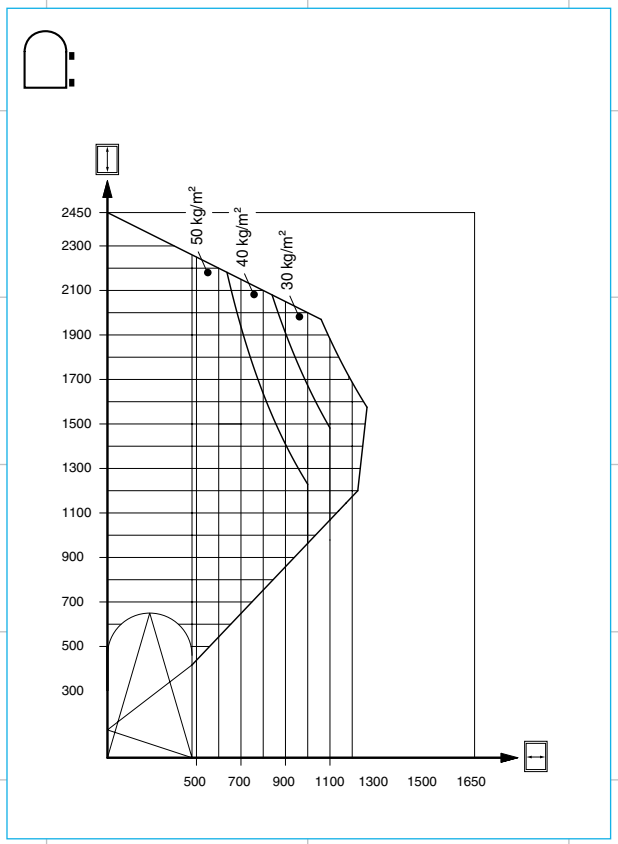
Fittings combination MM

	SRW	370 – 620	621 – 905	906 – 1140	1141 – 1250
SRH		1 half-round scissor-stay 620 1 Horizontal corner element for half round windows 1 i.S. striker 2 std strikers	1 half-round scissor-stay 1250 1 Horizontal corner element for half round windows 1 i.S. striker 4 std strikers 1 faceplate extension 235	1 half-round scissor-stay 1250 1 Horizontal corner element for half round windows 1 i.S. striker 4 std strikers 1 centre lock 1280V *Use an additional scissor-stay from SRW 1000 or 60 kg!*	1 half-round scissor-stay 1250 1 Horizontal corner element for half round windows 1 i.S. striker 4 std strikers 1 centre lock 1500V *Use an additional scissor-stay from SRW 1000 or 60 kg!*
370 - 430	1 T&T drive-gear 430 1 top end-piece 1 corner element 1 i.S				
431 - 660	1 T&T drive-gear 660 1 top end-piece 1 corner element 1 i.S. 1 std striker 1 sash lifter				
661 - 840	1 T&T drive-gear 840 1 top end-piece 1 corner element 1 i.S. 2 std strikers 1 sash lifter *From SRH 781 use SV 235; additional ST required!*				
841 - 1090	1 T&T drive-gear 1090 1 top end-piece 1 corner element 1 i.S. 1 faceplate ext. 235 3 std strikers 1 sash lifter *Use CL 1280V instead of face-plate extension 235 from SRH 1011!*				
1091 - 1340	1 T&T drive-gear 1340 1 top end-piece 1 corner drive 1i.S 1 centre lock 1280V 3 std strikers 1 sash lifter *Use CL 1500V instead of 1280V from SRH 1246!*				
1341 - 1590	1 T&T drive-gear 1590 1 top end-piece 1 corner element 1 i.S. 1 centre lock 1500V 3 std strikers 1 sash lifter *From SRH 1481 use SV 235; additional ST required!*				
1701 - 1950	1 T&T drive-gear 1950 1 top end-piece 1 corner element 1 i.S. 1 centre lock 1500V 1 centre lock 1280V 6 std strikers 1 sash lifter				
1951 - 2200	1 T&T drive-gear 2200 1 top end-piece 1 corner element 1 i.S. 1 centre lock 1500V 1 centre lock 1500V 6 std strikers 1 sash lifter				

Attention - do not forget!!!

On all sizes:

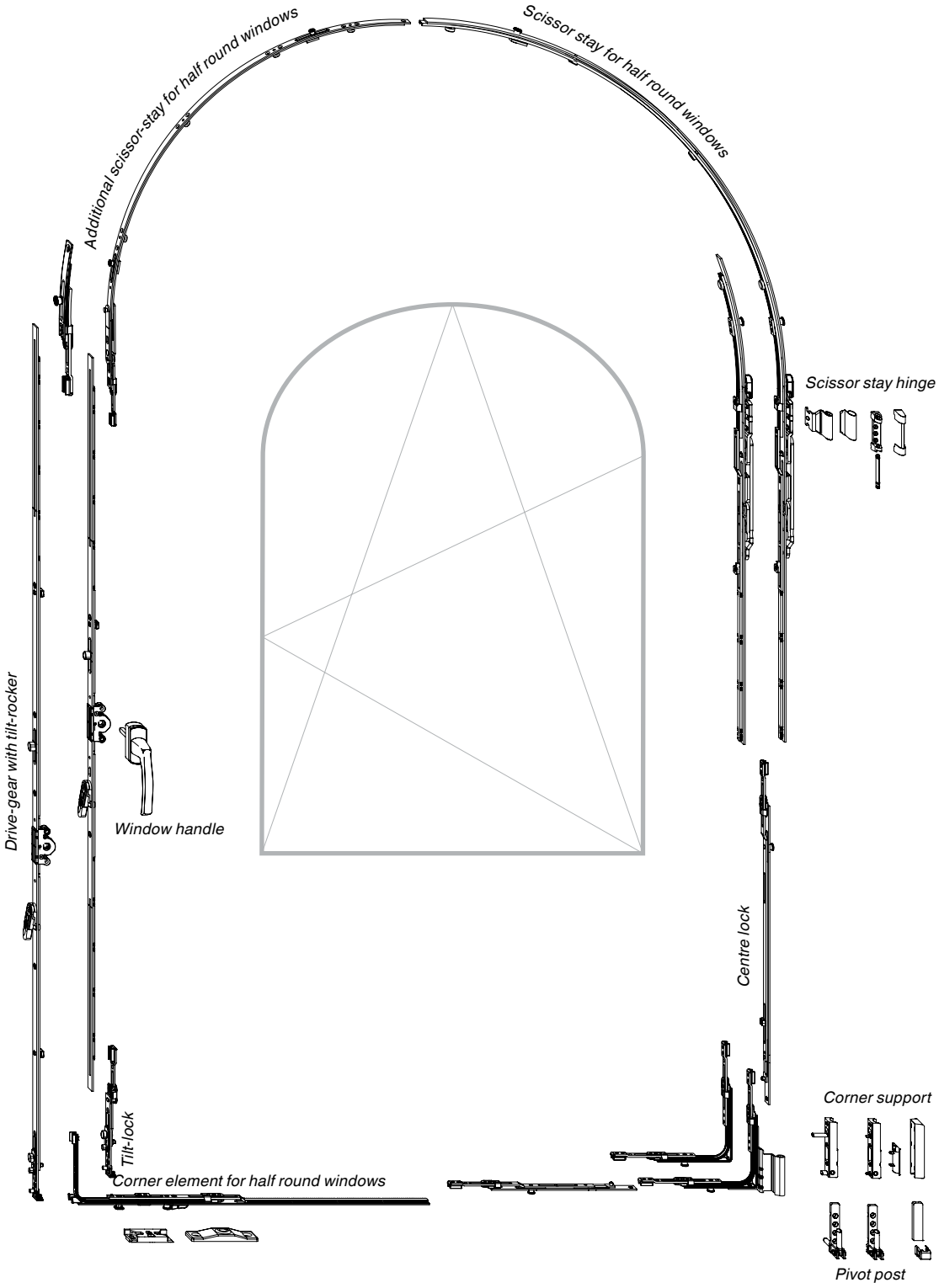
1 scissor stay hinge
1 scissor stay-hinge pin
1 stay support arm
1 pivot post
1 corner support



Application diagram for half round windows up to 80 kg sash weight

The use of a sash lifter striker and run up wedge is compulsory (refer to page 47/Fig. 1)!

Half round fittings MM-KS



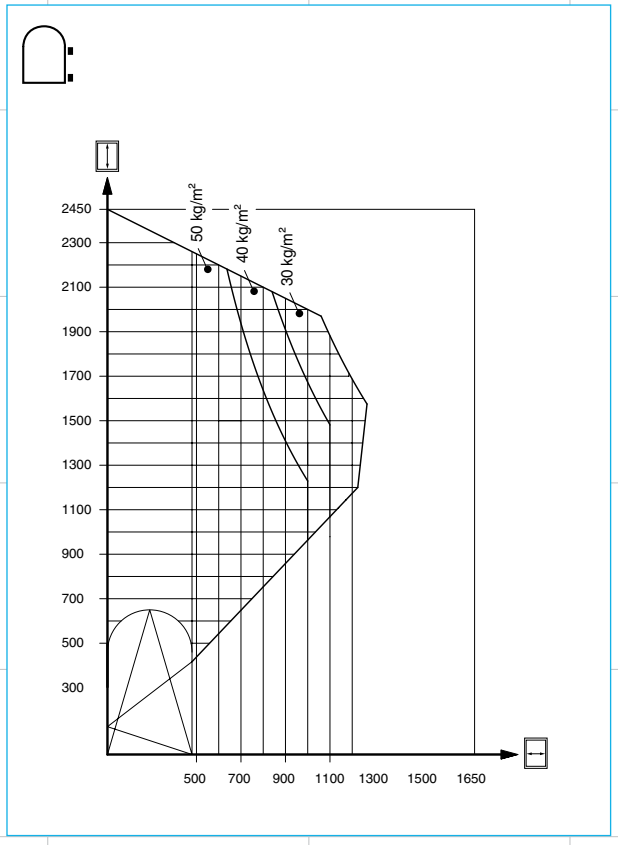
Fittings combination MM-KS

	SRW	370 – 620	621 – 905	906 – 1140	1141 – 1250
SRH		1 half-round scissor-stay 620 1 i.S. 1 horizontal HR corner element 3 std strikers	1 half-round scissor-stay 1250 2 i.S. 1 horizontal HR corner element 5 std strikers 1 faceplate extension 235 1 i.S.	1 half-round scissor-stay 1250 2 i.S. 1 horizontal HR corner element 5 std strikers 1 centre lock 1280V 1 i.S. *Use an additional scissor-stay from SRW 1000 or 60 kg!*	1 half-round scissor-stay 1250 2 i.S. 1 horizontal HR corner element 5 std strikers 1 centre lock 1500V 1 i.S. *Use an additional scissor-stay from SRW 1000 or 60 kg!*
370 - 430	1 TU-ON / T&T drive-gear 430 1 top end-piece 1 i.S. 1 corner element 1 VZ 1 std striker 1 tilt striker				
431 - 660	1 TU-ON / T&T drive-gear 660 1 top end-piece 1 i.S. 1 corner element 1 VZ 1 std striker 1 tilt striker				
661 - 840	1 T&T drive-gear 840 1 VZ 1 top end-piece 1 i.S. 1 corner element 1 VZ 2 std strikers 1 sash lifter 1 tilt striker *From SRH 781 use SV 235; additional ST required!*				
841 - 1090	1 T&T drive-gear 1090 1 VZ 1 top end-piece 1 i.S. 1 corner element 1 VZ 1 faceplate ext. 235 1 i.S. 3 std strikers 1 sash lifter 1 tilt striker *From SRH 1011: CL 1280V instead of SV 235!*				
1091 - 1340	1 T&T drive-gear 1340 1 VZ 1 top end-piece 1 i.S. 1 corner element 1 VZ 1 centre lock 1280V 1 i.S. 3 std strikers 1 sash lifter 1 tilt striker *From SRH 1246: CL 1500V instead of 1280V!*				
1341 - 1590	1 T&T drive-gear 1590 2 VZ 1 top end-piece 1 i.S. 1 corner element 1 VZ 1 centre lock 1500V 1 i.S. 4 std strikers 1 sash lifter 1 tilt striker *From SRH 1481 use SV 235; additional ST required!*				
1591 - 1700	1 T&T drive-gear 1700 2 VZ 1 top end-piece 1 i.S. 1 corner element 1 VZ 1 centre lock 1500V 1 i.S. 1 centre lock 1280V 1 i.S. 5 std strikers 1 sash lifter 1 tilt striker				
1701 - 1950	1 T&T drive-gear 1950 3 VZ 1 top end-piece 1 i.S. 1 corner element 1 VZ 1 centre lock 1500V 1 i.S. 1 centre lock 1280V 1 i.S. 6 std strikers 1 sash lifter 1 tilt striker				
1951 - 2200	1 T&T drive-gear 2200 3 VZ 1 top end-piece 1 i.S. 1 corner element 1 VZ 1 centre lock 1500V 1 i.S. 1 centre lock 1500V 1 i.S. 6 std strikers 1 sash lifter 1 tilt striker				

Attention - do not forget!!!

On all sizes:

1 scissor stay hinge
1 scissor stay-hinge pin
1 stay support arm
1 pivot post
1 corner support



Application diagram for half round windows up to 80 kg sash weight

The use of a sash lifter striker and run up wedge is compulsory (refer to page 47/Fig. 1)!

Installation and cropping of the sash fittings components MM and MM-KS

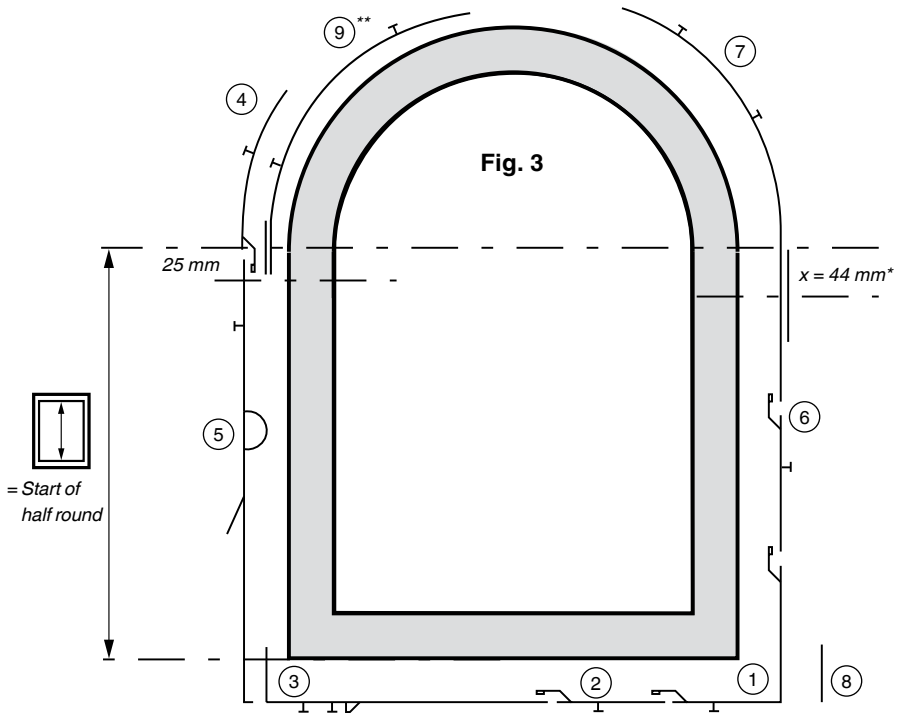


Fig. 3

Fig. 1

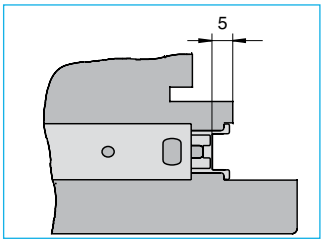
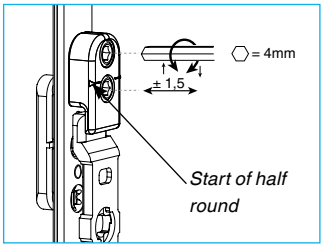


Fig. 2



** x = Start of half round to the centre of the scissor stay hinge 44 mm*

1. Attach the corner support jig (no. 21562/21564) and predrill (refer to page 19/ Fig. 1)

2. Insert **corner element** (1), opending on the SRW faceplate extension / Insert centre lock (2) and screw-fix together.*

3. Crop the half **round corner element** (3) / extend and screw-fix together with the corner element (Fig. 1).

4. Install **top end-piece** (4) or additional scissor-stay** (9) (if required).

   PLEASE NOTE:
   Notch on stabilising stay arm = 25 mm below the start of half round (refer to Fig. 3)

5. Crop and install the drive-gear (5).

6. Depending on the SRH, insert a faceplate extension or centre lock (6) and screw-fix with the corner element.

7. Crop the half round scissor stay (7), position the notch at the start of the half round (Fig. 2.). Bring the mounted scissor stay into the tilt-mode in order to screw-fix all screws (screws under the scissor-stay arm!) Bring the scissor stay back into the turn-mode!

8. Attach and screw-fix the **corner support** (8) to the rebate-leg.

9. The centre-fixings (pre-set 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 tilting it outwards.

11. **Remove** the **locking screw** (refer to the red sticker on the fitting) from the scissor-stay arm!

***From SRW 1000 mm or 60 kg sash weight*

2-sashed half round window MM

Specify the SRH up to the beginning of the half round when selecting the drive-gear for 2-sashed half round windows.

1. Drive-gear
2. Corner element for angled windows
3. Corner element
4. Horizontal corner element for half round windows
5. Vertical corner element
6. Scissor stay for half round windows
7. Centre lock
8. Pivot post
9. Corner support
10. Half round Turn-Only hinge
11. Compression device

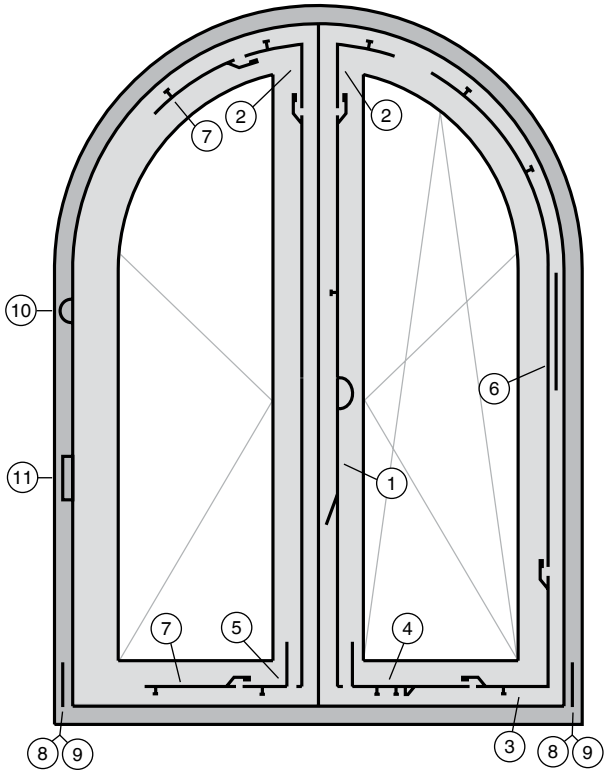
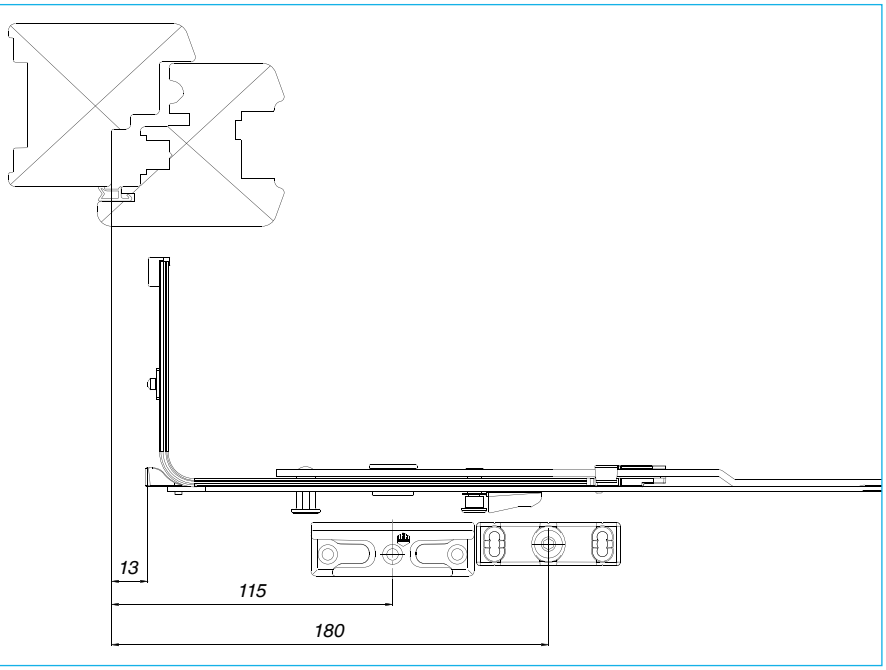


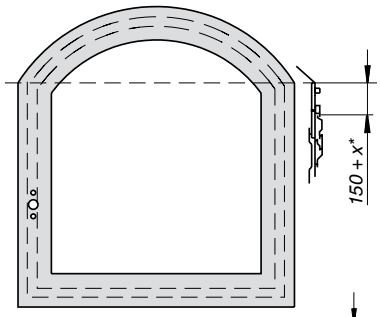
Fig. 1



Half-round fittings for use on segmental arched, angled or elliptical arched windows

Sash installation

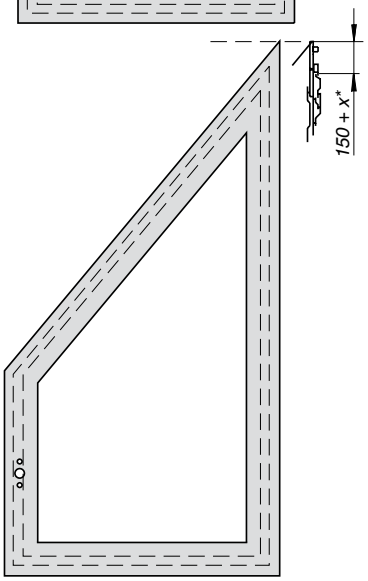
Fittings installation: **refer to the half round window instructions (page 46)**



Top horizontal centre lock

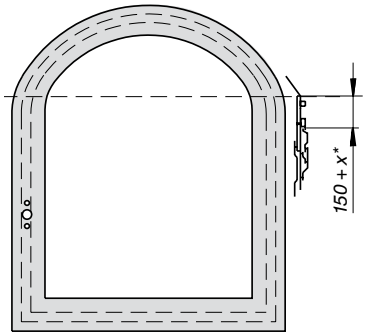
Segmental arched windows
Use the angled window corner element and centre lock horizontally from an arc length of 1000 mm.

Only use scissor stay 620! The application range on the hinge-side is changed by 150 mm.



Angled windows
In the case of application ranges larger than +50° or smaller than -15°, a locking point cannot be located in the slope.

Please note:
A locking point cannot be located in the slope!
The maximum angle of +50° or -15°
cannot be reached with all profiles!



***x = 44 mm**

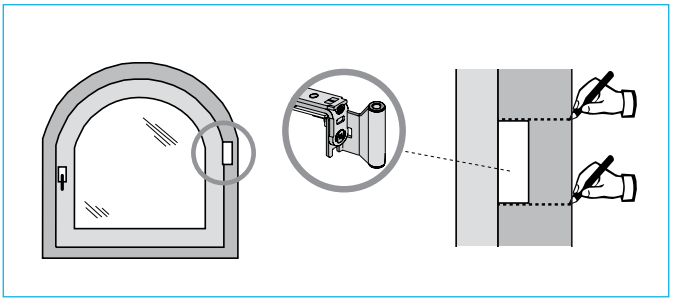
Elliptical arched windows
Here the half round scissor stay 1250 or the half round additional scissor-stay can be used as a centre lock.

Only the half-round scissor-stay 620 can be used on segmental arch or angled windows.
Please note:
The hinge-side application range changes by 150 mm.

Frame installation

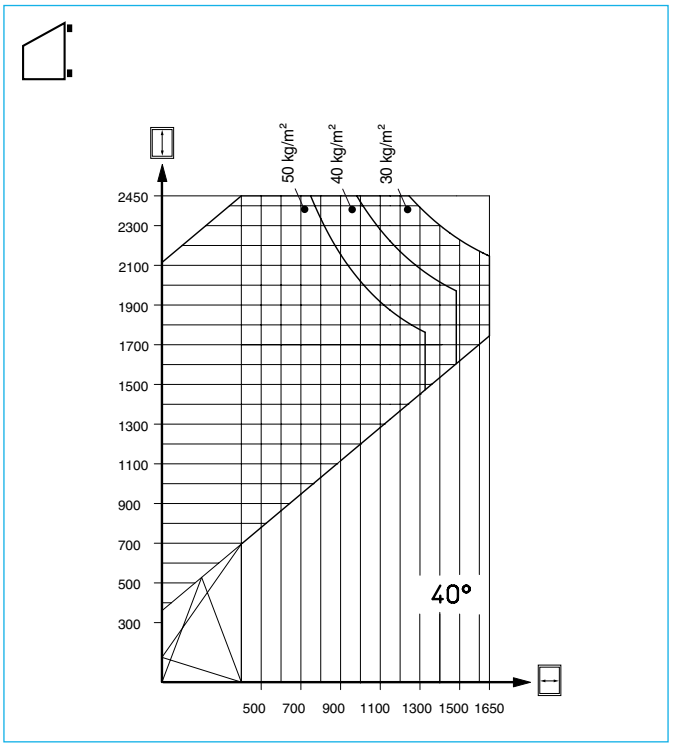
Strikers in the arch area must be marked manually. Drive-gear sided and bottom horizontal strikers are installed in the same manner as on 1-sashed windows.

Refer to the 1-sashed windows installation instructions for pivot post drilling procedures. Carry out the scissor stay hinge drilling with the designated stick-on drill jig. (put in the sash, mark stay support arm, position stick-on jig (refer to Fig.) and predrill with 3 mm or 5 mm drill bit)!



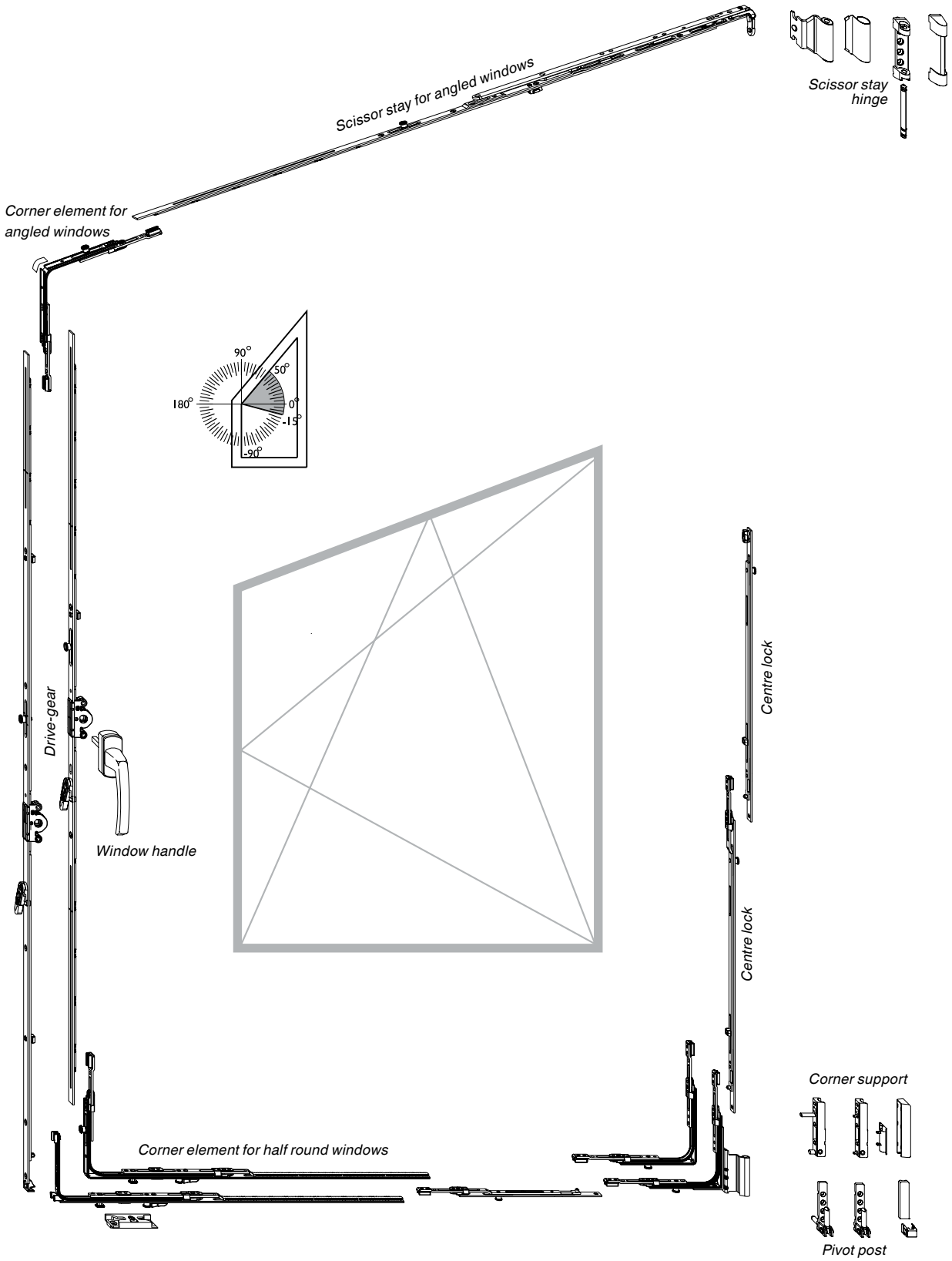
Application diagram

Use of half-round scissor-stay on angled windows



The application diagram for half round windows applies to angled windows from -1° to -15° (refer to page 43/45).

Angled window fittings MM



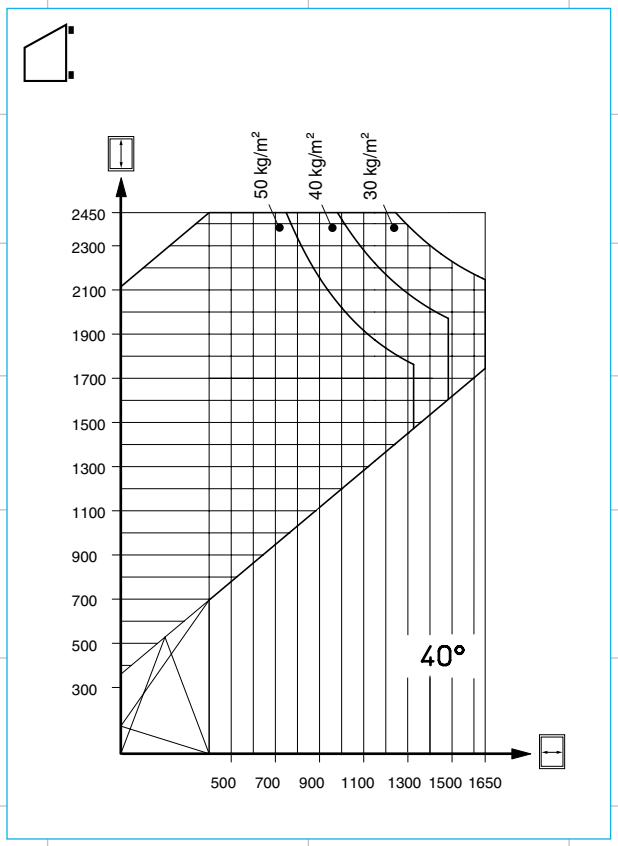
Fittings combination MM

	SRW	430 – 630	500 – 800	801 – 1050	1051 – 1300
SRH		1 angled window scissor-stay 630 1 striker i.S. 2 std strikers	1 angled window scissor-stay 800 1 striker i.S. 2 or 3 std strikers *Use faceplate extension 140 or 235 from SRW 671!* *140 up to SRW 810 / 235 up to SRW 905*	1 angled window scissor-stay 1050 1 striker i.S. 4 std strikers 1 faceplate extension 235 *Use CL 1280V instead of face-plate extension 235 from SRW 906!*	1 angled window scissor-stay 1300 1 striker i.S. 4 std strikers 1 centre lock 1280V *Use CL 1500V instead of CL 1280V from SRH 1141!* *Use additional scissor-stay up to SRW 1650!*
360 - 430	1 T&T drive-gear 430 1 corner element for PW 1 i.S. 1 corner element 1 i.S. 1 hor. corner element for HR				
431 - 660	1 T&T drive-gear 660 1 corner element for PW 1 i.S. 1 corner element 1 i.S. 1 hor. corner element for HR 1 std striker / 1 sash lifter				
661 - 840	1 T&T drive-gear 840 1 corner element for PW 1 i.S. 1 corner element 1 i.S. 1 hor. corner element for HR 1std striker / 1 sash lifter				
841 - 1090	1 T&T drive-gear 1090 1 corner element for PW 1 i.S. 1 corner element 1 i.S. 1 hor. corner element for HR 1 centre lock 1280 2 std strikers / 1 sash lifter				
1091 - 1340	1 T&T drive-gear 1340 1 corner element for PW 1 i.S. 1 corner element 1 i.S. 1 hor. corner element for HR 1 centre lock 1280 2 std strikers / 1 sash lifter				
1341 - 1590	1 T&T drive-gear 1590 1 corner element for PW 1 i.S. 1 corner element 1 i.S. 1 hor. corner element for HR 1 centre lock 1500 3 std strikers / 1 sash lifter				
1591 - 1700	1 T&T drive-gear 1700 1 corner element for PW 1 i.S. 1 corner element 1 i.S. 1 hor. corner element for HR 1 centre lock 1500V 1 centre lock 1280 5 std strikers / 1 sash lifter				
1701 - 1950	1 T&T drive-gear 1950 1 corner element for PW 1 i.S. 1 corner element 1 i.S. 1 hor. corner element for HR 1 centre lock 1500V 1 centre lock 1500 5 std strikers / 1 sash lifter				
1951 - 2200	1 T&T drive-gear 2200 1 corner element for PW 1 i.S. 1 corner element 1 i.S. 1 hor. corner element for HR 1 centre lock 1500V 1 centre lock 1500 5 std strikers / 1 sash lifter				
2201 - 2450	1 T&T drive-gear 2450 1 corner element for PW 1 i.S. 1 corner element 1 i.S. 1 hor. corner element for HR 1 centre lock 1500V 1 centre lock 1500 6 std strikers / 1 sash lifter				

Attention - do not forget!!!

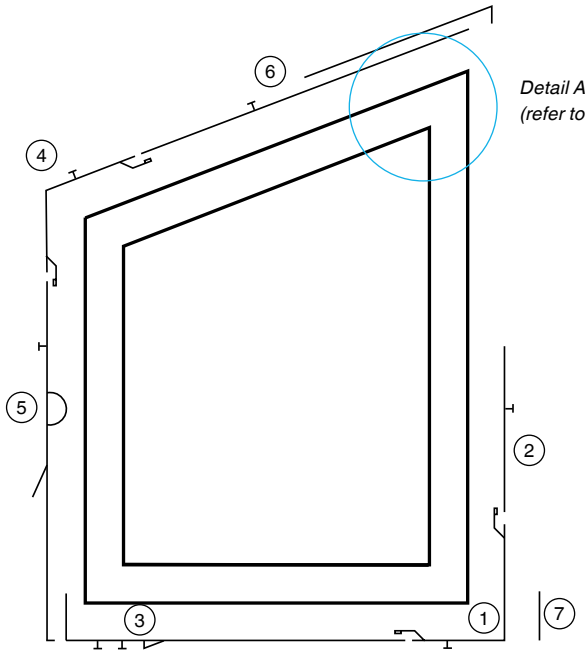
On all sizes:

1 scissor stay hinge
1 scissor stay-hinge pin
1 stay support arm
1 pivot post
1 corner support



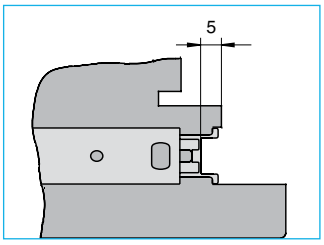
Application diagram for angled windows up to 80 kg sash weight

Installation of the sash fittings components MM



Detail A - Staggered faceplate dimension
(refer to page 57)

Fig. 1



1. Attach the corner support jig (no. 21562/21564) and predrill (refer to page 19/ Fig. 1)

2. Insert the **corner element** (1) (refer to Fig. 1) (couple with centre lock (2) if SRH is over 800 mm)* and screw-fix.

3. Crop the **half round corner element** (3) / extend and screw-fix together with the corner element.

4. Install the **corner element for angled windows** (4).

5. Crop the **drive-gear** (5) and screw-fix together with the corner elements.

6. Crop the **angled window scissor-stay** (6) and screw-fix together with the corner element for angled windows (Note the staggered faceplate dimension, refer to page 57/Fig. 1).

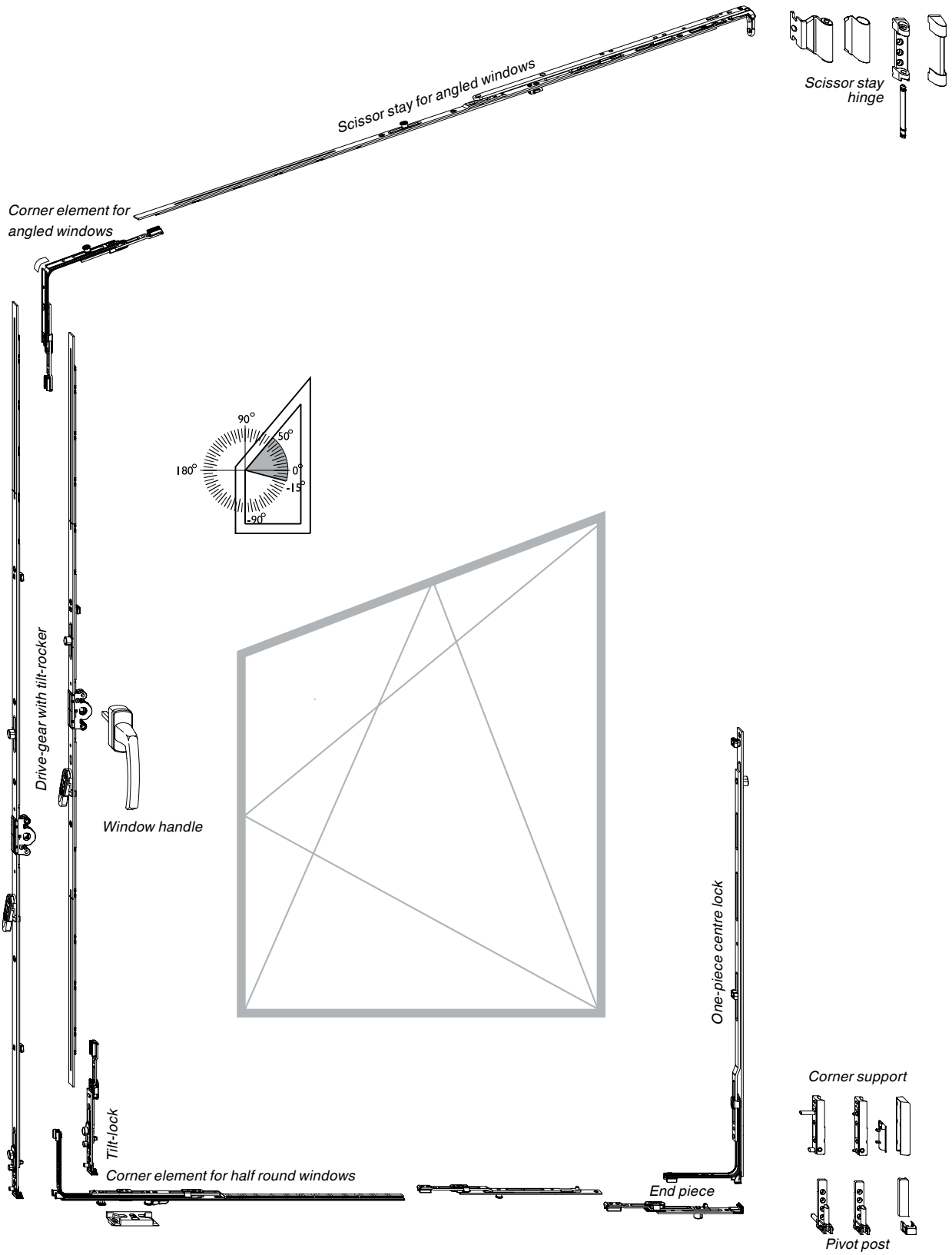
7. Attach and screw-fix the **corner support** (7) to the rebate-leg.

8. The centre-fixings (preset centred cam-fixing) are activated upon operating the fittings for the first time.

9. The sash lifter on the drive-gear must be activated by tilting it outwards.

** SRW and SRH of 800 mm is a MACO recommendation, adhere to the profile manufacturers' specifications!*

Angled window fittings MM-KS



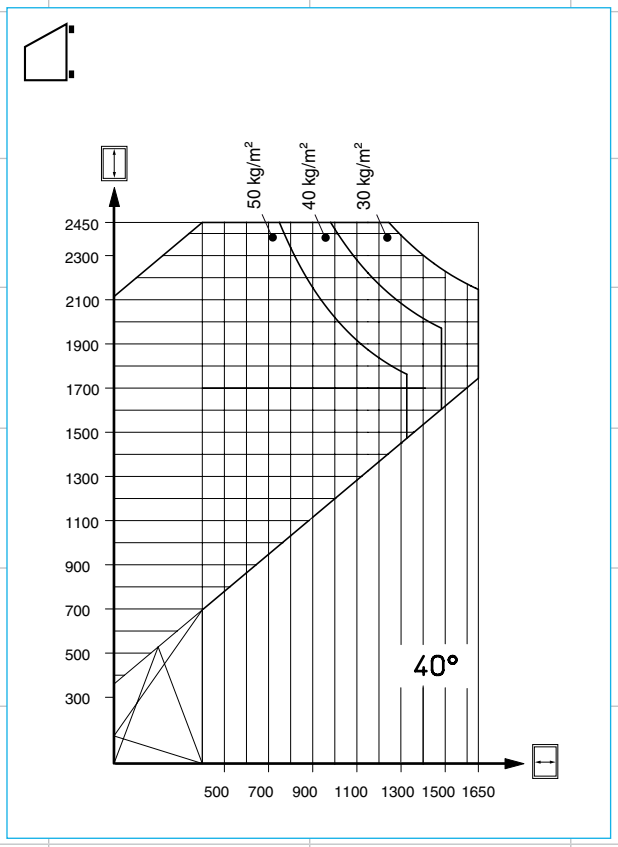
Fittings combination MM-KS

	SRW	430 – 630	500 – 800	801 – 1050	1051 – 1300
SRH		1 angled window scissor-stay 630 1 horizontal corner element for HR 1 end piece 180° 1 VZ 3 std strikers	1 angled window scissor-stay 800 1 horizontal corner element for HR 1 end piece 180° 1 VZ 3 or 4 std strikers *Use faceplate extension 140 or 235 from SRW 671!* *140 up to SRW 810 / 235 up to SRW 905*	1 half-round scissor-stay 1050 1 i.S. 1 horizontal corner element for HR 1 faceplate extension 235 1 i. S. 1 end piece 180° 1 VZ 5 std strikers *Use CL 1280V instead of face-plate extension 235 from SRW 906!*	1 half-round scissor-stay 1300 1 i.S. 1 horizontal corner element for HR 1 centre lock 1280V 1 i. S. 1 end piece 180° 1 VZ 5 std strikers *Use CL 1500V instead of CL 1280V from SRH 1141!* *Use additional scissor-stay up to SRW 1650!*
360 - 430	1 T&T drive-gear 430 1 corner element for PW 1 i.S. 1 tilt striker				
431 - 660	1 T&T drive-gear 660 1 corner element for PW 1 i.S. 1 tilt striker 1 sash lifter				
661 - 840	1 T&T drive-gear 840 1VZ 1 corner element for PW 1 i.S. 1 tilt striker 1 std striker 1 sash lifter				
841 - 1090	1 T&T drive-gear 1090 1VZ 1 corner element for PW 1 i.S. 1 centre lock 1280 1VZ 1 tilt striker 2 std strikers 1 sash lifter				
1091 - 1340	1 T&T drive-gear 1340 1VZ 1 corner element for PW 1 i.S. 1 1-pc. centre lock 1280 1VZ 1 tilt striker 2 std strikers 1 sash lifter				
1341 - 1590	1 T&T drive-gear 1590 2VZ 1 corner element for PW 1 i.S. 1 1-pc. centre lock 1500 1VZ 1 tilt striker 3 std strikers 1 sash lifter				
1591 - 1700	1 T&T drive-gear 1700 2VZ 1 corner element for PW 1 i.S. 1 1-pc. centre lock 2200 2VZ 1 tilt striker 4 std strikers 1 sash lifter				
1701 - 1950	1 T&T drive-gear 1950 3VZ 1 corner element for PW 1 i.S. 1 1-pc. centre lock 2200 2VZ 1 tilt striker 5 std strikers 1 sash lifter				
1951 - 2200	1 T&T drive-gear 2200 3VZ 1 corner element for PW 1 i.S. 1 1-pc. centre lock 2200 2VZ 1 tilt striker 5 std strikers 1 sash lifter				
2201 - 2450	1 T&T drive-gear 2450 4VZ 1 corner element for PW 1 i.S. 1 1-pc. centre lock 2450 3VZ 1 tilt striker 7 std strikers 1 sash lifter				

Attention - do not forget!!!

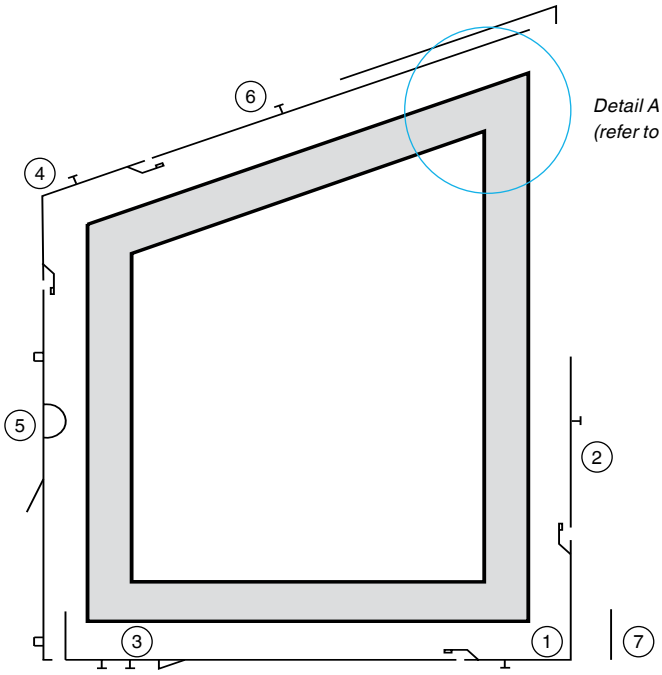
On all sizes:

1 scissor stay hinge
1 scissor stay-hinge pin
1 stay support arm
1 pivot post
1 corner support



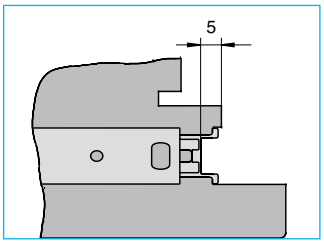
Application diagram for angled windows up to 80 kg sash weight

Installation of the sash fittings components MM-KS



Detail A - Staggered faceplate dimension (refer to page 57)

Fig. 1



1. Attach the corner support jig (no. 21562/21564) and predrill (refer to page 19/ Fig. 1)

2. Insert the **end piece** (1) (couple with centre lock (2) if SRH is over 800 mm)* and screw-fix.

3. Crop the **half round corner element** (3) / extend and screw-fix together with the corner element (Fig. 1).

4. Install the **corner element for angled windows** (4).

5. Crop the **drive-gear** (5) and screw-fix together with the corner elements.

6. Crop the **angled window scissor-stay** (6) and screw-fix together with the corner element for angled windows (Note the staggered faceplate dimension, refer to page 57/Fig. 1).

7. Attach and screw-fix the **corner support** (7) to the rebate-leg.

8. The centre-fixings (preset centred cam-fixing) are released upon operating the fittings for the first time.

9. The sash lifter on the drive-gear must be activated by tilting it outwards.

** SRW and SRH of 800 mm is a MACO recommendation, adhere to the profile manufacturers' specifications!*

Table to determine the scissor-stay size

Angled window 630 | Angled window 800 | Angled window 1050 | Angled window 1300

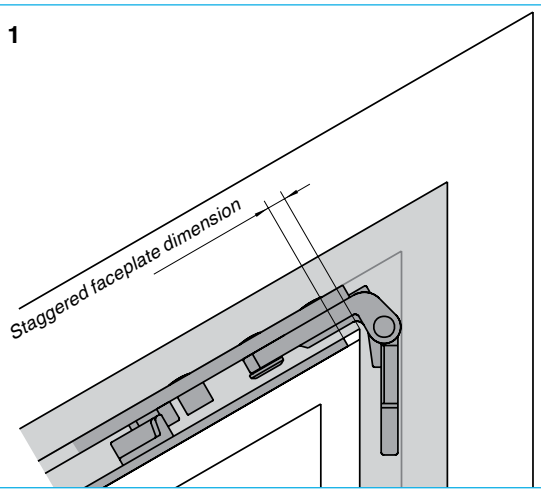
Difference between SRH (hinge-side) — SRH (drive-gear side in mm)	Sash rebate width in mm																		
	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
1250														**1632 50°**	**1665 48,5°**	**1698 47,5°**	**1733 46°**	**1786 45°**
1250														1595 49°	1628 47,5°	1662 46°	1697 45°	1733 44°
1150													**1524 49°**	**1557 47,5°**	**1591 46,5°**	**1626 45°**	**1662 44°**	**1698 42,5°**
1100												1453 49°	1487 47,5°	1521 46,5°	1556 45°	1591 43,5°	1628 42,5°	1665 41,5°
1050											**1383 49,5°**	**1416 48°**	**1450 46,5°**	**1485 45°**	**1521 43,5°**	**1557 42,5°**	**1595 41°**	**1632 40°**
1000										1312 49,5°	1345 48°	1379 46,5°	1414 45°	1450 43,5°	1487 42,5°	1524 41°	1562 40°	1601 38,5°
950									**1242 50°**	**1275 48°**	**1309 46,5°**	**1343 45°**	**1379 43,5°**	**1416 42°**	**1453 41°**	**1492 39,5°**	**1530 38,5°**	**1570 37°**
900								1172 50°	1204 48,5°	1238 46,5°	1273 45°	1309 43,5°	1346 42°	1383 40,5°	1421 39,5°	1460 38°	1500 37°	1540 36°
850								**1134 48,5°**	**1167 46,5°**	**1202 45°**	**1238 43,5°**	**1275 42°**	**1312 40,5°**	**1351 39°**	**1390 37,5°**	**1430 36,5°**	**1471 35,5°**	**1512 34°**
800							1063 49°	1097 47°	1131 45°	1167 43°	1204 41,5°	1242 40°	1281 38,5°	1320 37,5°	1360 36°	1401 35°	1442 33,5°	1484 32,5°
750						**992 49°**	**1026 47°**	**1061 45°**	**1097 43°**	**1134 41,5°**	**1172 40°**	**1210 38,5°**	**1250 37°**	**1290 35,5°**	**1331 34,5°**	**1373 33°**	**1415 32°**	**1458 31°**
700				992 49,5°	955 47°	990 45°	1026 43°	1063 41°	1101 39,5°	1140 38°	1180 36,5°	1221 35°	1262 33,5°	1304 32,5°	1346 31,5°	1389 30,5°	1433 29°	
650			**851 50°**	**885 47°**	**919 45°**	**955 43°**	**992 41°**	**1031 39°**	**1070 37,5°**	**1110 36°**	**1151 34,5°**	**1193 33°**	**1235 32°**	**1278 30,5°**	**1321 29,5°**	**1365 28,5°**	**1409 27,5°**	
600		781 50°	814 47,5°	849 45°	885 42,5°	922 40,5°	960 38,5°	1000 37°	1040 35°	1082 33,5°	1124 32,5°	1166 31°	1209 29,5°	1253 28,5°	1267 27,5°	1342 26,5°	1387 25,5°	
550	**734 47,5°**	**778 45°**	**814 42,5°**	**851 40°**	**890 38°**	**930 36°**	**971 34,5°**	**1012 33°**	**1055 31,5°**	**1098 30°**	**1141 29°**	**1185 27,5°**	**1230 26,5°**	**1275 25,5°**	**1320 24,5°**	**1366 23°**		
500	673 48°	707 45°	743 42°	781 40°	820 37,5°	860 35,5°	901 33,5°	943 32°	986 30,5°	1030 29°	1074 28°	1118 26,5°	1163 25,5°	1208 24,5°	1254 23,5°	1300 22,5°	1346 21°	
450	**602 48,5°**	**636 45°**	**673 42°**	**711 39°**	**750 37°**	**761 34,5°**	**832 32,5°**	**875 31°**	**918 29,5°**	**962 28°**	**1006 26,5°**	**1051 25,5°**	**1097 24°**	**1142 23°**	**1188 22°**	**1235 21,5°**	**1282 20,5°**	**1329 19°**
400	566 45°	602 41,5°	640 38,5°	680 36°	721 33,5°	763 31,5°	806 29,5°	850 28°	894 26,5°	939 25°	985 24°	1031 23°	1077 22°	1124 21°	1170 20°	1218 19°	1265 18,5°	1312 18°
350	**531 41°**	**570 38°**	**610 35°**	**662 32,5°**	**695 30,5°**	**738 28,5°**	**783 26,5°**	**828 25°**	**873 23,5°**	**919 22,5°**	**966 21°**	**1012 20°**	**1059 19°**	**1107 18,5°**	**1154 17,5°**	**1202 17°**	**1250 16°**	**1298 15,5°**
300	500 37°	541 33,5°	583 31°	626 28,5°	671 26,5°	716 25°	762 23°	808 22°	854 20,5°	901 19,5°	949 18,5°	996 17,5°	1044 16,5°	1092 16°	1140 15,5°	1188 14,5°	1237 14°	1285 13,5°
250	**472 32°**	**515 29°**	**559 26,5°**	**604 24,5°**	**650 22,5°**	**696 21°**	**743 19,5°**	**791 18,5°**	**838 17,5°**	**886 16,5°**	**934 15,5°**	**982 14,5°**	**1031 14°**	**1079 13,5°**	**1128 13°**	**1177 12,5°**	**1226 12°**	**1275 11,5°**
200	447 26,5°	492 24°	539 22°	585 20°	632 18,5°	680 17°	728 16°	776 15°	825 14°	873 13°	922 12,5°	971 12°	1020 11,5°	1069 11°	1118 10°	1167 10°	1216 9,5°	1266 9°
150	**427 20,5°**	**474 18,5°**	**522 17°**	**570 15°**	**618 14°**	**667 13°**	**716 12°**	**765 11°**	**814 10,5°**	**863 10°**	**912 9,5°**	**962 9°**	**1011 8,5°**	**1061 8°**	**1110 8°**	**1160 7,5°**	**1209 7°**	**1259 7°**
100	412 14°	461 12,5°	510 11,5°	559 10,5°	608 9,5°	658 9°	707 8°	757 7,5°	806 7°	856 6,5°	906 6,5°	955 6°	1005 5,5°	1055 5,5°	1105 5°	1154 5°	1204 4,5°	1254 4,5°
50	**403 7°**	**453 6,5°**	**502 5,5°**	**552 5°**	**602 5°**	**652 4,5°**	**702 4°**	**752 4°**	**802 3,5°**	**851 3,5°**	**901 3°**	**951 3°**	**1001 3°**	**1051 2,5°**	**1101 2,5°**	**1151 2,5°**	**1201 2,5°**	**1251 2,5°**

Interpreting the table correctly:

738 = Dimension of the pitch length
28,5° = Angled angle of the window

Detail A:
The staggered faceplate dimension is the distance from the sash rebate edge to the stay guide.

Fig. 1



Staggered faceplate dimension on a 12 mm air gap			
Pitched angle	Stay-support sash-hinge scissor-stay for angled windows	**Pitched angle**	Stay-support sash-hinge scissor-stay for angled windows
50°	0,6	15°	2,5
45°	1,2	10°	2,5
40°	1,7	5°	2,4
35°	2,1	0°	2,3
30°	2,3	-5°	2,0
25°	2,5	-10°	1,8
20°	2,5	-15°	1,4

Turn-Only sashes

The specifications for T&T fittings also apply to Turn-Only windows (application ranges, drilling and routing). Staggered faceplate dimension when using top corner Turn-Only hinge with scissor stay end-bracket for angled windows.

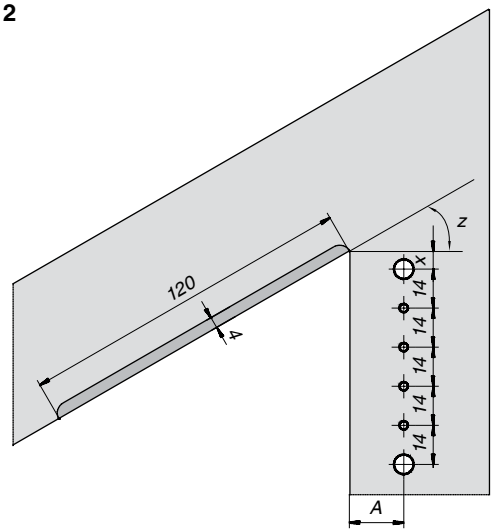
Staggered faceplate dimension on a 12 mm air gap			
Pitched angle	Turn-Only hinge for angled window	**Pitched angle**	Turn-Only hinge for angled window
50°	12,1	15°	14,0
45°	12,7	10°	14,0
40°	13,2	5°	13,9
35°	13,6	0°	13,8
30°	13,8	-5°	13,5
25°	14,0	-10°	13,3
20°	14,0	-15°	12,9

Please note: Rebate screw-fixed pivot posts cannot be used if a centre lock is used on the hinge-side.

Scissor stay hinge drilling

Maximum routing at 50°. Routing depth (4 mm) reduced with decreasing angle. Particular attention must be given to ensure that the profile can accommodate this routing!

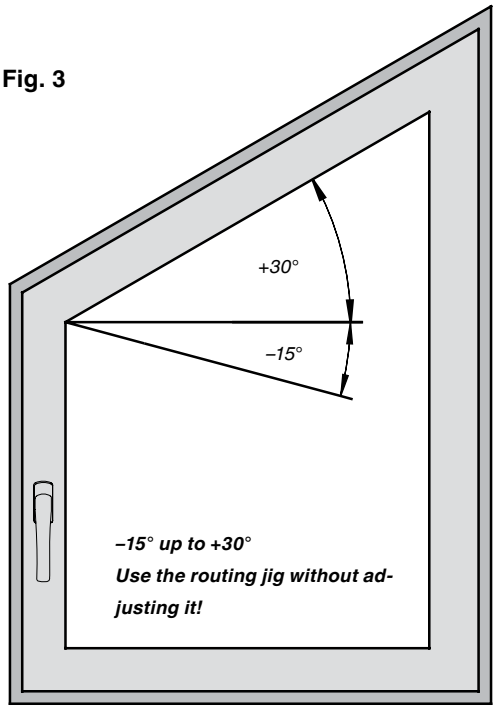
Fig. 2



Rebate-leg	Dimension A
18 mm	17,5
20 mm	19,5
Pitched angle	**Dimension x with 12mm air gap**
50°	15,2
45°	12,4
40°	10,1
35°	8,3
30°	6,9
25°	5,6
20°	4,6
15°	3,8
10°	3,1
5°	2,5
0°	2,1
-5°	1,8
-10°	1,5
-15°	1,4

Frame installation

Fig. 3



Routing-jig application range for angled windows (refer to Fig. 3):
The routing-jigs can be used for -15° up to +30°.
The stop-block must be removed for windows with a angle of more than 30° and the dimension marked as stated in Fig. 1 (page 57) or Fig. 2 (page 58), or use the enclosed stick-on jig!

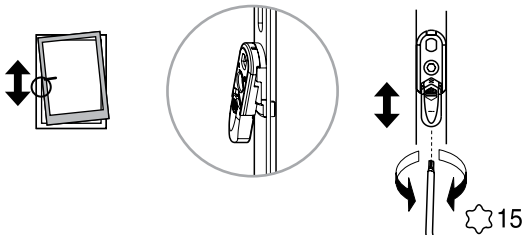
Please note!
The routing-jigs are equipped with a yellow stop-block. In the event of the air gap not complying with the window design, the tolerances may not be compensated with the drilling-plate stop!
Use packers for this purpose.

Strikers: in the angled area must be marked manually. Drive-gear sided and bottom horizontal strikers are installed with the jig for 1-sashed windows. For hinge-sided strikers: position the centre lock jig on the bottom hinge-side at the pivot post, insert the striker in the horizontal striker holder and screw-fix.

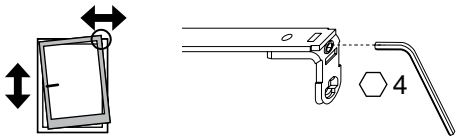
Pivot post: Refer to the 1-sashed windows installation instructions for pivot post drilling procedures.

Adjustments on the window

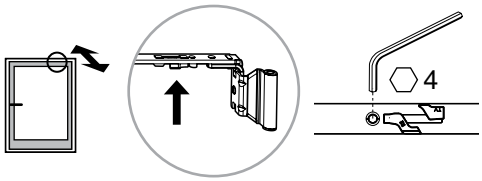
Sash lifter height adjustment



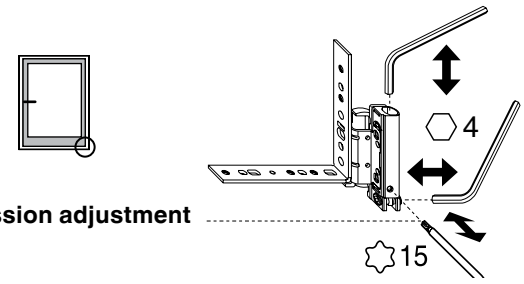
Lateral adjustment in the scissor-stay arm



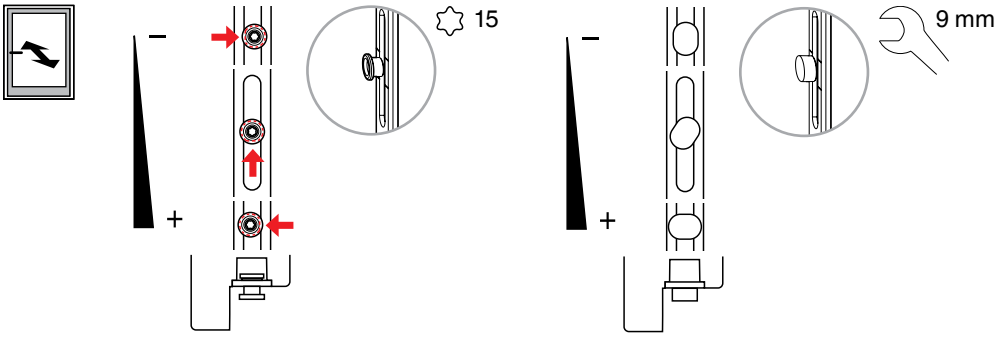
Gasket-compression adjustment in the scissor-stay arm



3-dimensional adjustment in the corner support



i.S. cam and std cam gasket-compression adjustment



Notes

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