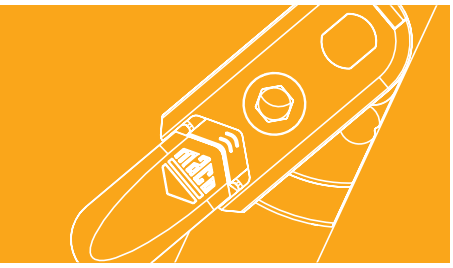
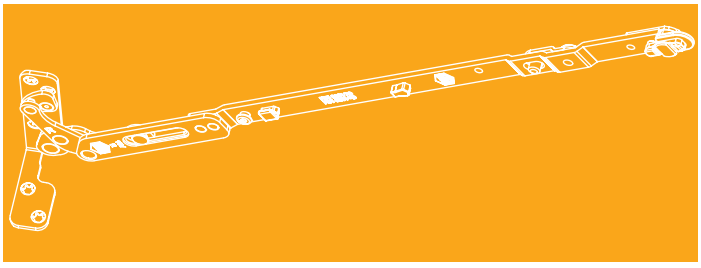
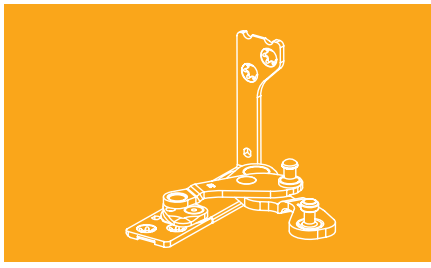
TECHNOLOGY IN MOTION

MACO MULTI-MATIC

TILT AND TURN FITTINGS



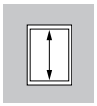




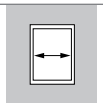
MULTI POWER – fully concealed fittings

INSTALLATION INSTRUCTIONS

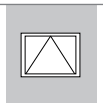
Key



Sash rebate height



Sash rebate width

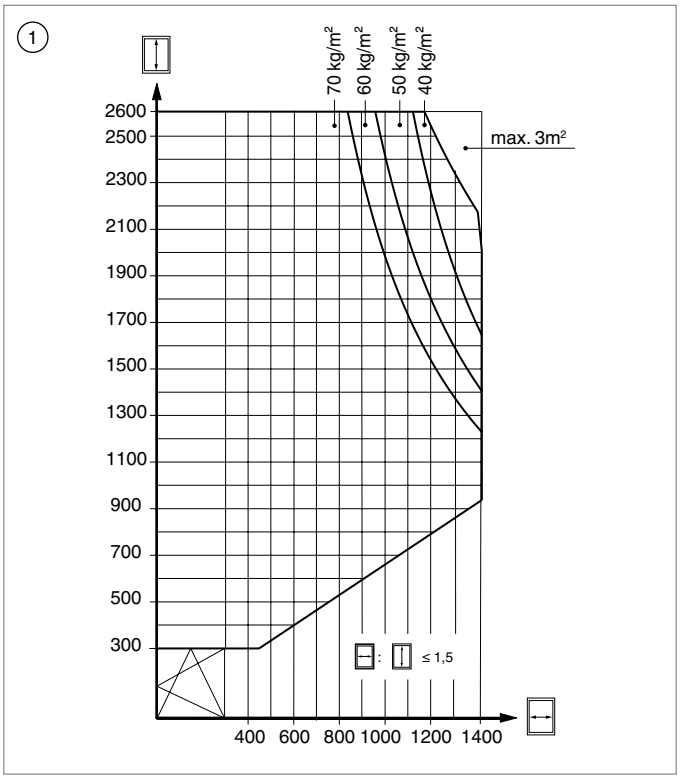


Tilt-only window

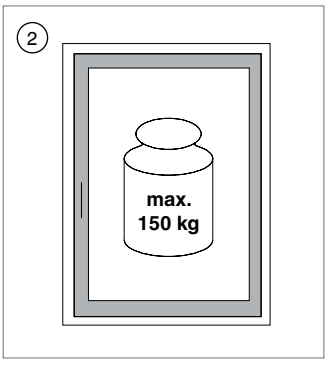
Maximum sash weight

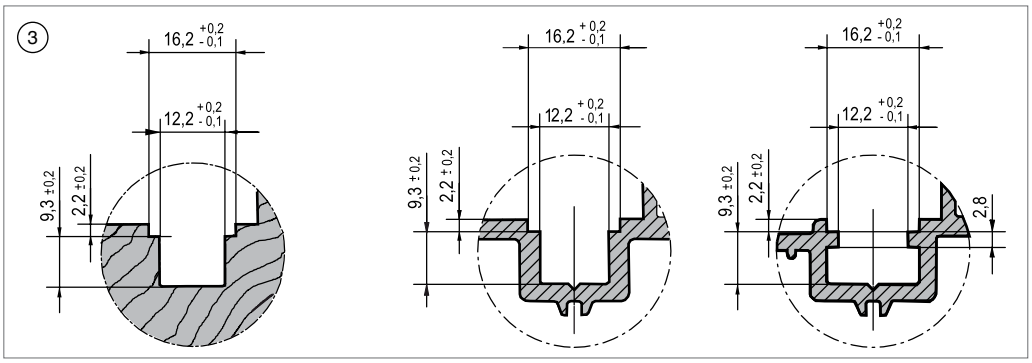
Contents

Applications / processing information



Specifications in mm





① **Application diagram**

② **Maximum sash weight**

For 3-sashed window **max. 80 kg!**

③ **Fitting groove:**

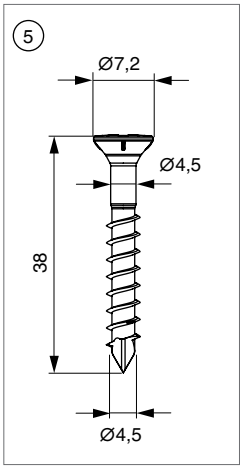
The fittings groove must conform to these specifications!
If necessary, remove any excess material from the fitting groove after welding!

Applications / processing information

④

Max.	1400	2600
Min.*	370	360
Max.	2400	
Min.**	500	255

⑤



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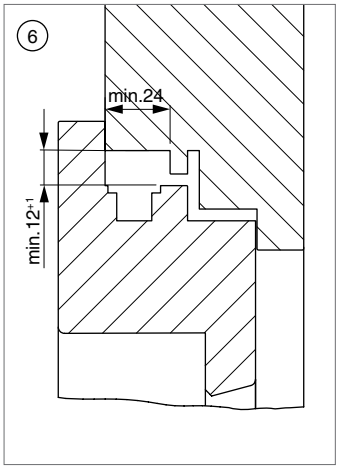
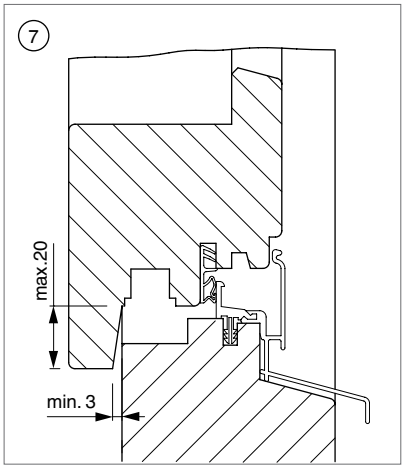


⑦



Specifications in mm

④ **Applications:**

For SRH < 800 mm, use scissor stay restrictor.

* with corner element 1 i.S. SRW 465 mm
The minimum application depends on the profile!

**with MACO restrictor and cleaning stay SRH 520 mm
From SRW 1300 mm, use stabilizing stay.
Opening width 100°.

Use supporting dowels (36668) to support the pivot post upwards of 100 kg sash weight.

The applications, sash weights and processing guidelines of the profile manufacturer must be taken into account!

The centre of gravity and the position of the glass pane can affect the applications and max. weight and must be requested where required.

Timber with 4 mm air gap only on request.

⑤ **Screw dimension:**

For fastening the pivot post and scissor stay hinge in **TIMBER** and **PVC.**

Use special screw 4.5x38 **(№ 362918 or № 367828)**.

Fasten according to TBDK guideline!

Timber: Pivot post must make full contact.
PVC: the screw connection must go through the steel reinforcement.
For profile systems without steel reinforcement or where the screws are not fastened into the steel reinforcement, the fastening for the pivot post and scissor stay hinge must be considered as a separate issue and only carried out after consultation!

⑥ **Rebate depth:**
min. 24 mm

Bottom horizontal air gap:
min. 12.5 mm

Side and top air gap:
≥ 12 mm

⑦ **Overlap:**

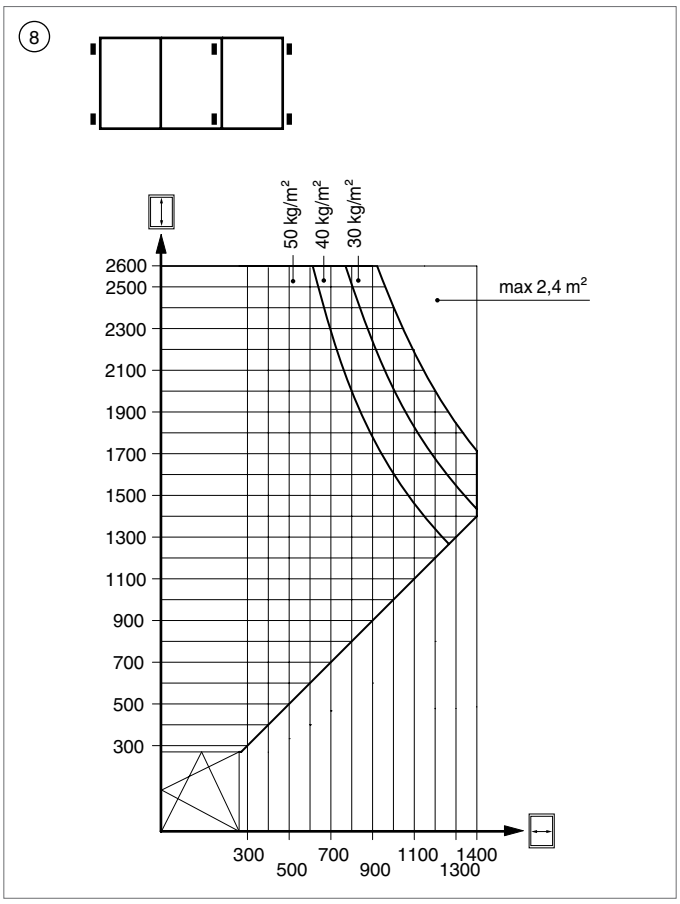
Grind at the overlap (without overlap seal for timber profiles) to enable proper tilting of the window sash.

Clean constructional soiling from hardware and grease the hardware

Applications / processing information

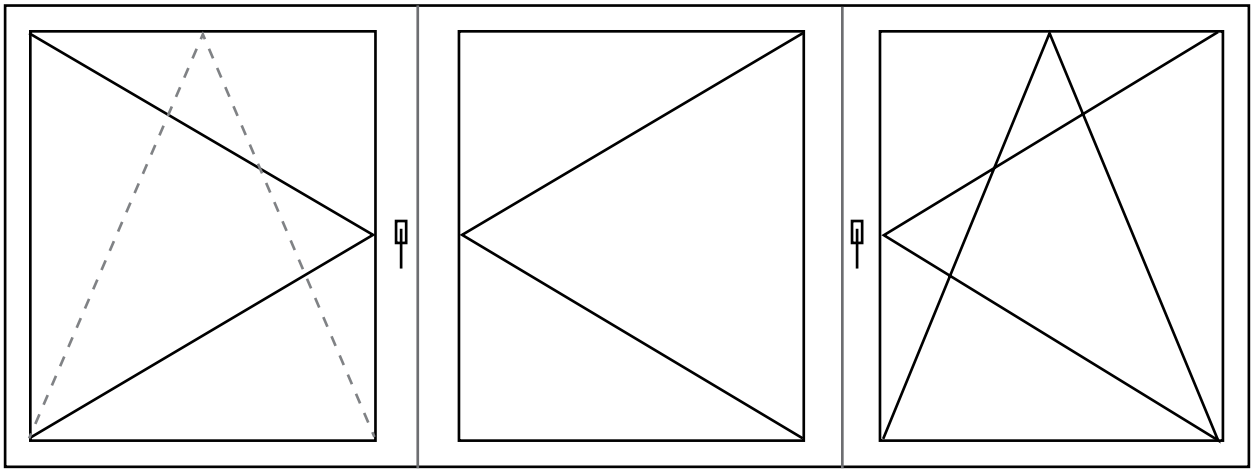
⑧ **3-sash windows:**

Max. 80 kg sash weight
2.4 m² and max. SRW 1400 mm



When installing a 3-sashed window, the frame in the 3-sashed hinge area must of the underlayed and anchored to the masonry.

Applications / processing information



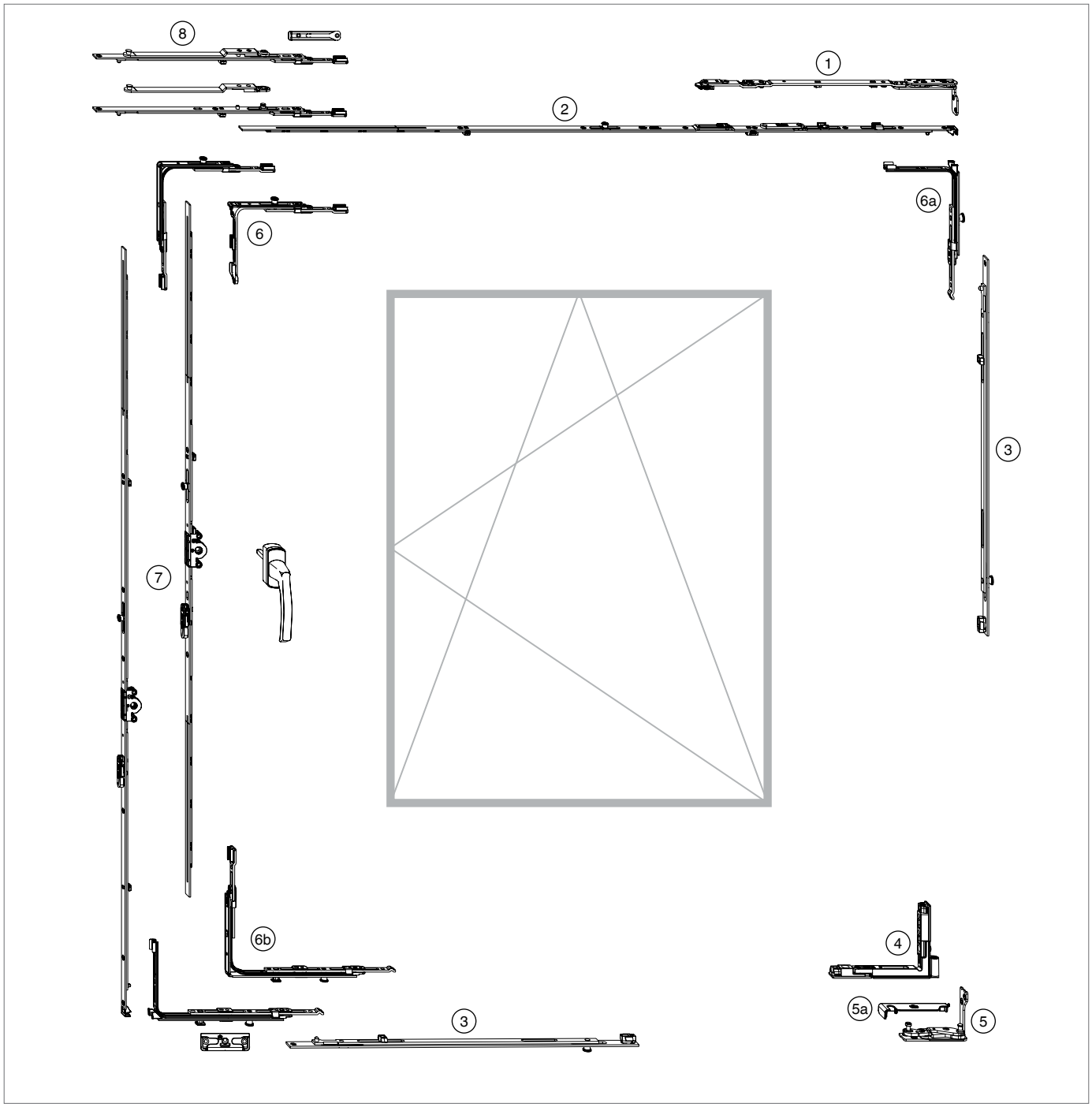
CAUTION:

The centre sash is the last one to open.

The applications/ processing information on pages 4 – 7 must be observed; otherwise, it cannot be guaranteed that the unit will not function properly.

Non-observance will render claims for damages void.

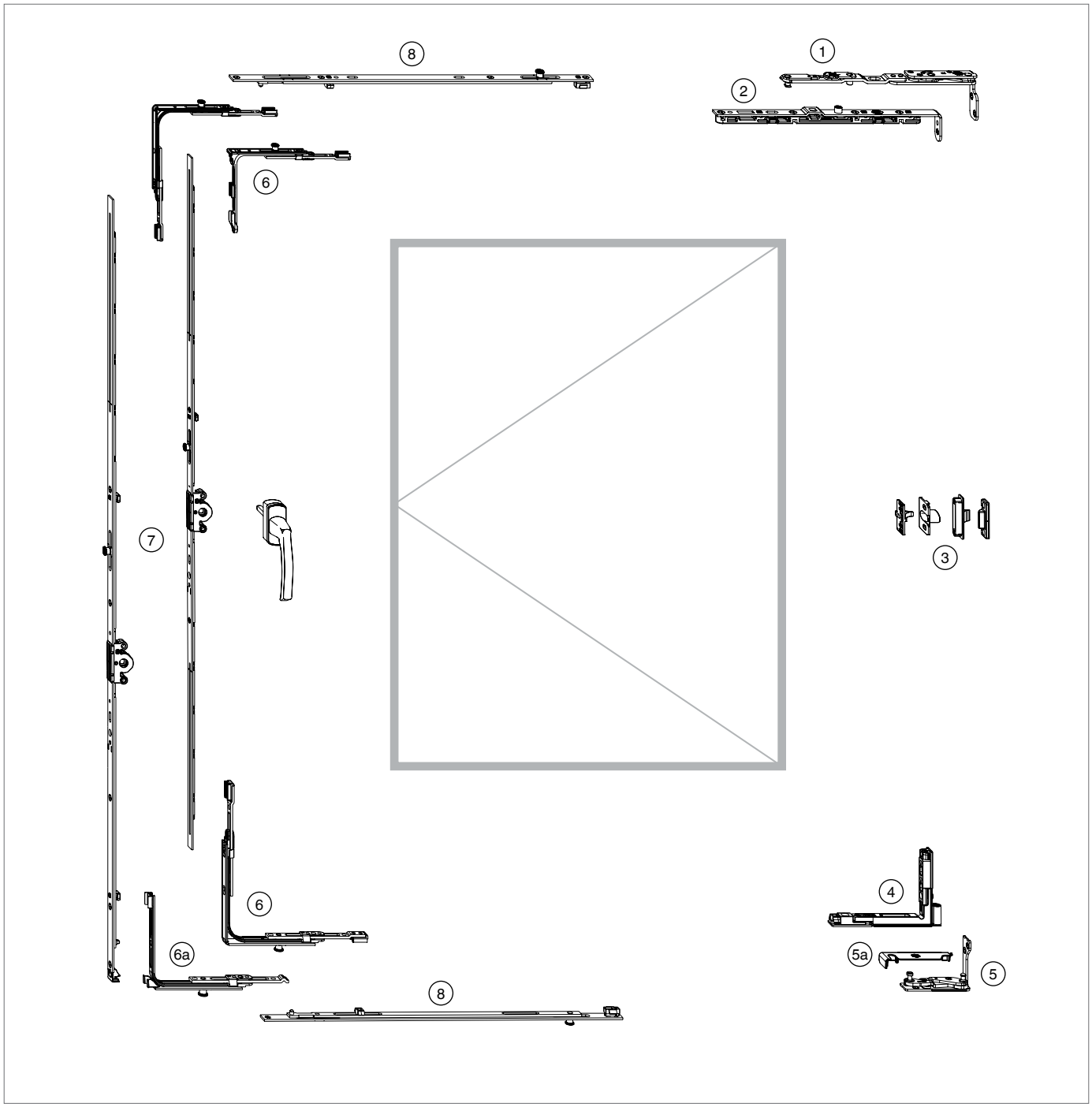
Tilt&Turn fittings overview



Hardware compilation

1. Scissor arm with hinge MULTI POWER
2. Scissor stay faceplate MULTI POWER
3. Centre lock
4. Corner support MULTI POWER
5. Pivot post MULTI POWER
5a. Pivot post MULTI POWER cover
6. Corner element with 1 i.S.
6a. Extendible vertical corner element with 1 i.S.
6b. Extendible horizontal corner element
7. Drive gear
8. Stabilising scissor-stay

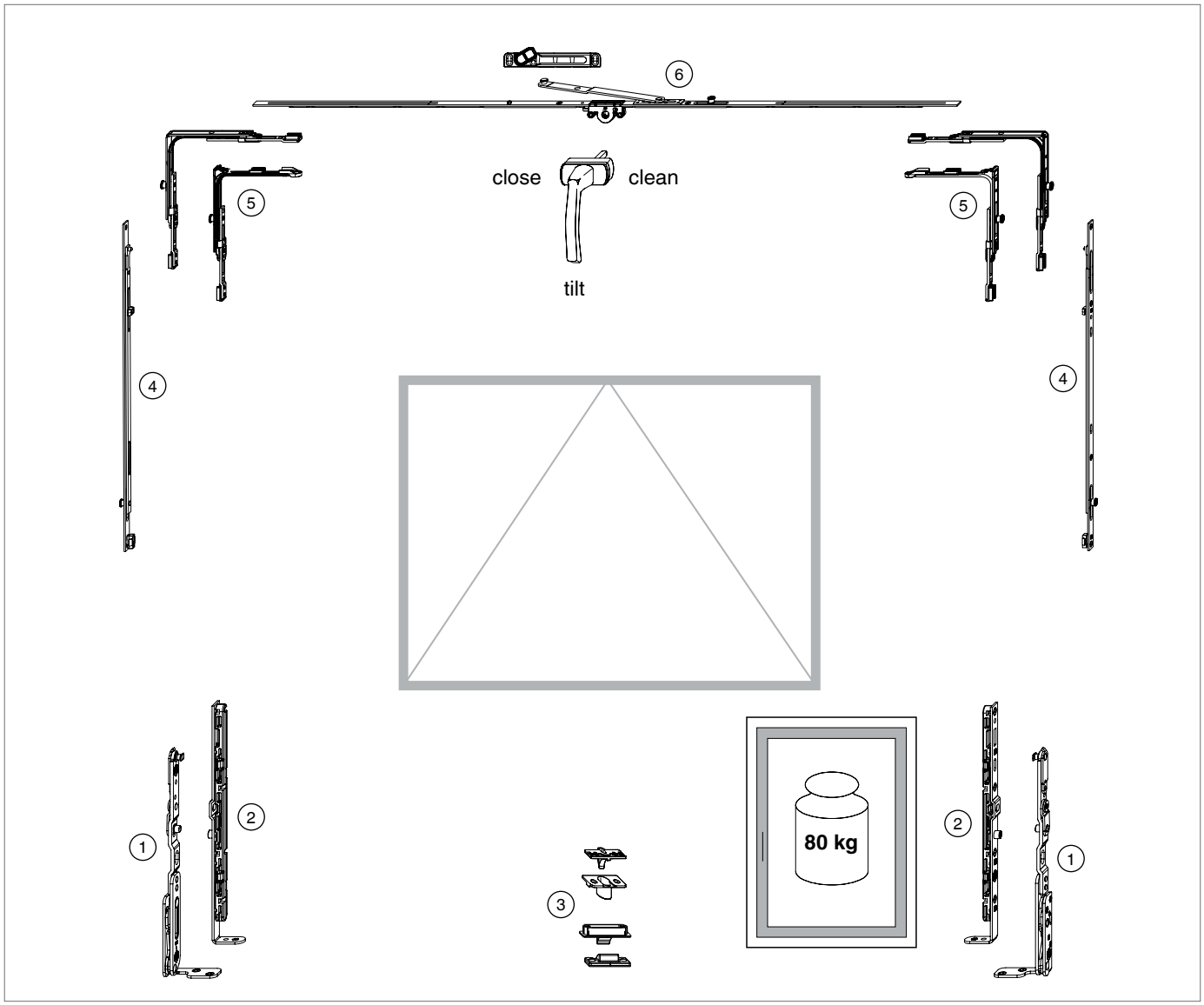
Overview of turn-only hardware



Hardware compilation

1. Turn hinge arm with hinge MULTI POWER
2. Tilt and slide hinge faceplate MULTI POWER
3. Compression device
4. Corner support MULTI POWER
5. Pivot post MULTI POWER
5a. Pivot post MULTI POWER cover
6. Corner element with 1 i.S.
6a. Extendible vertical corner element with 1 i.S.
7. Drive gear
8. Centre lock

Overview of tilt-only hardware



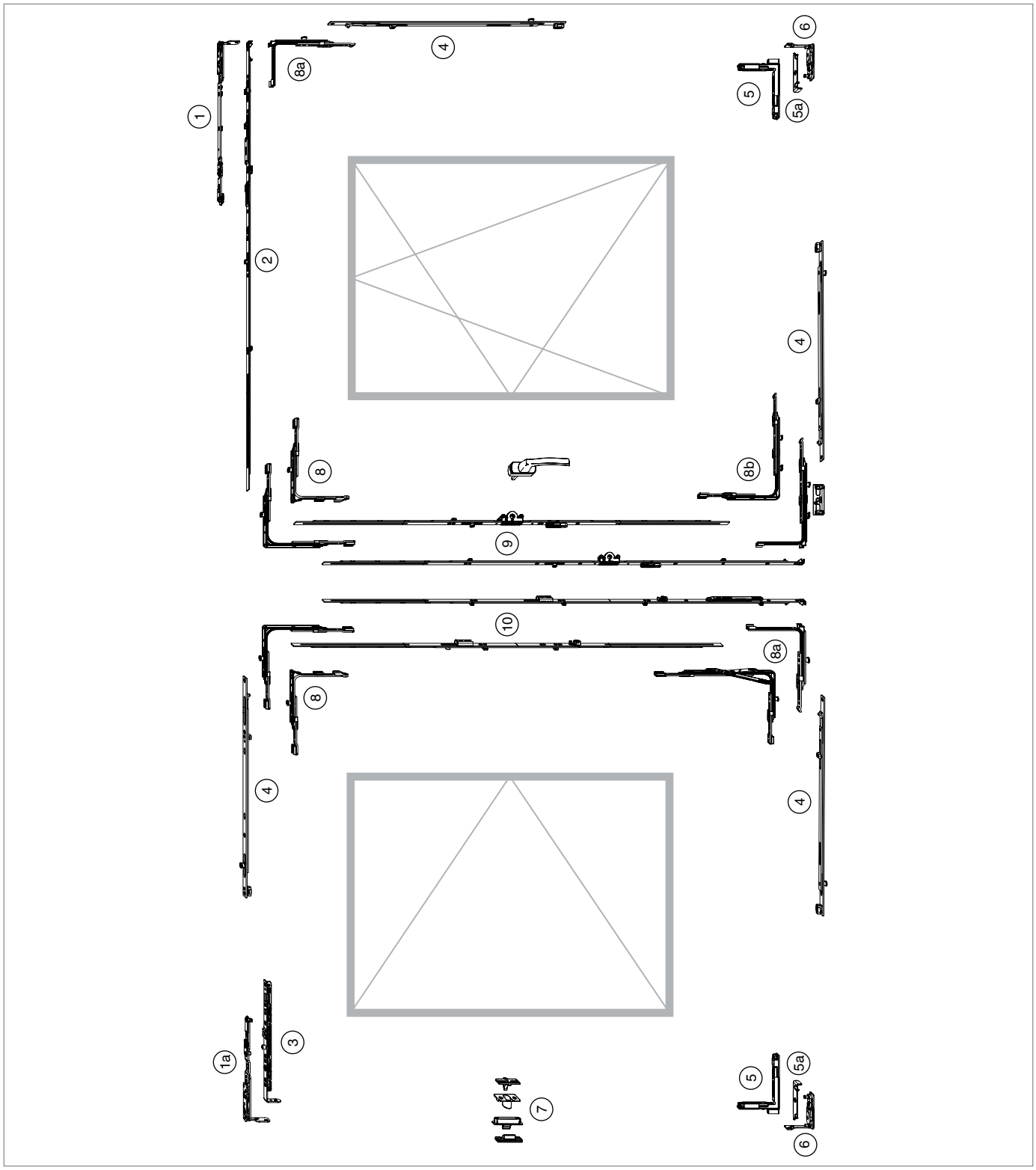
Observe the max. load carrying capacity of the restrictor and cleaning stay!

Observe the restrictor and cleaning scissor stay faceplate guideline from www.schlossindustrie.de.

Hardware compilation

1. Tilt hinge arm with hinge MULTI POWER
2. Tilt and slide hinge faceplate MULTI POWER
3. Compression device
4. Centre lock
5. Corner element with 1 i.S.
6. Variable espagnolette with pre-mounted tilt-only stay arm

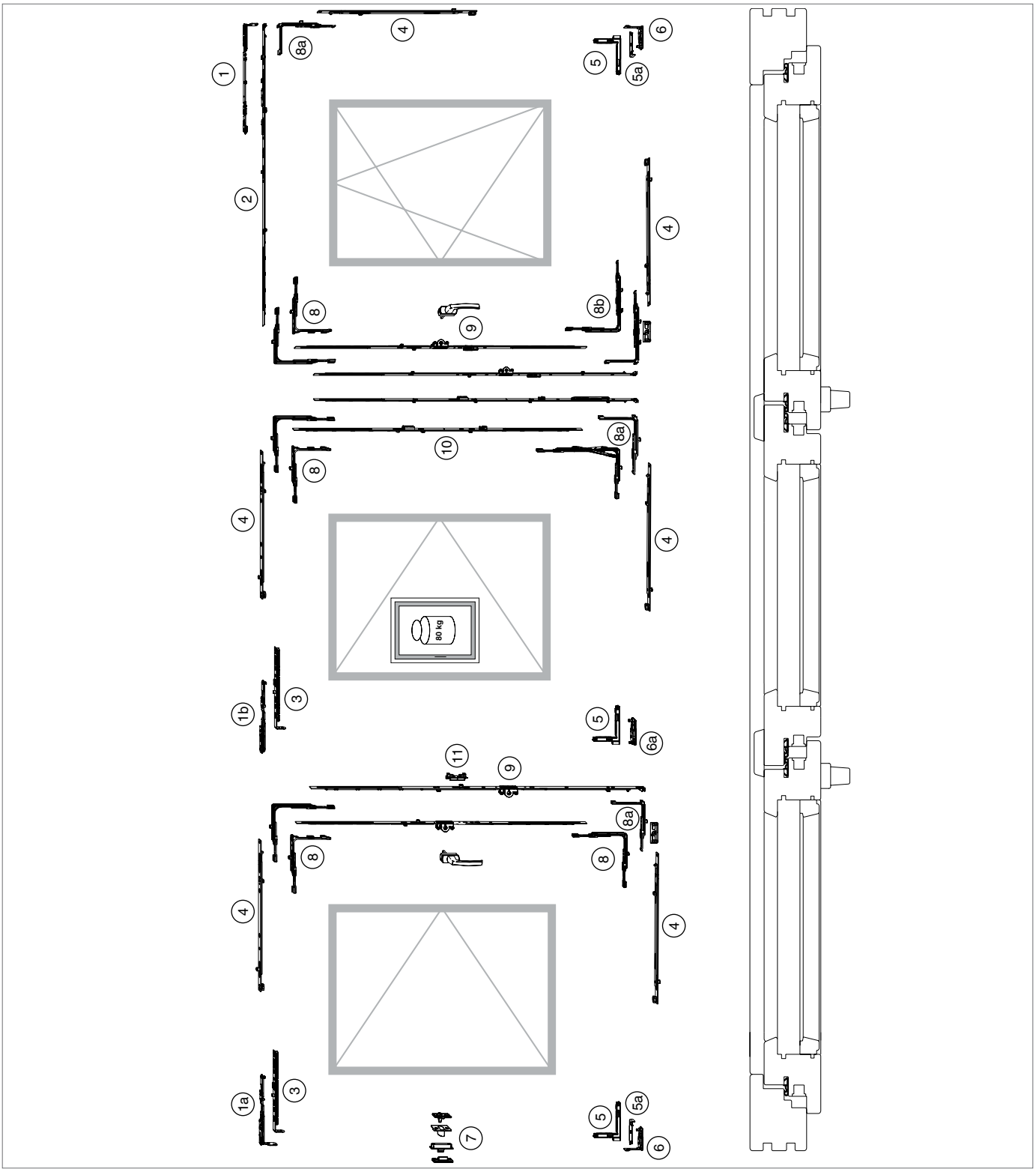
2-sashed window overview
(TU-ON / T&T)



Hardware compilation

1. Scissor arm with hinge MULTI POWER
1a. Turn hinge arm with hinge MULTI POWER
2. Scissor stay faceplate Multi Power
3. Tilt and slide hinge faceplate MULTI POWER
4. Centre lock
5. Corner support MULTI POWER
5a. Pivot post MULTI POWER cover
6. Pivot post MULTI POWER
7. Compression device
8. Corner element with 1 i.S.
8a. Extendible vertical corner element with 1 i.S.
8b. Extendible horizontal corner element
9. Drive gear
10. French casement drive gear

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

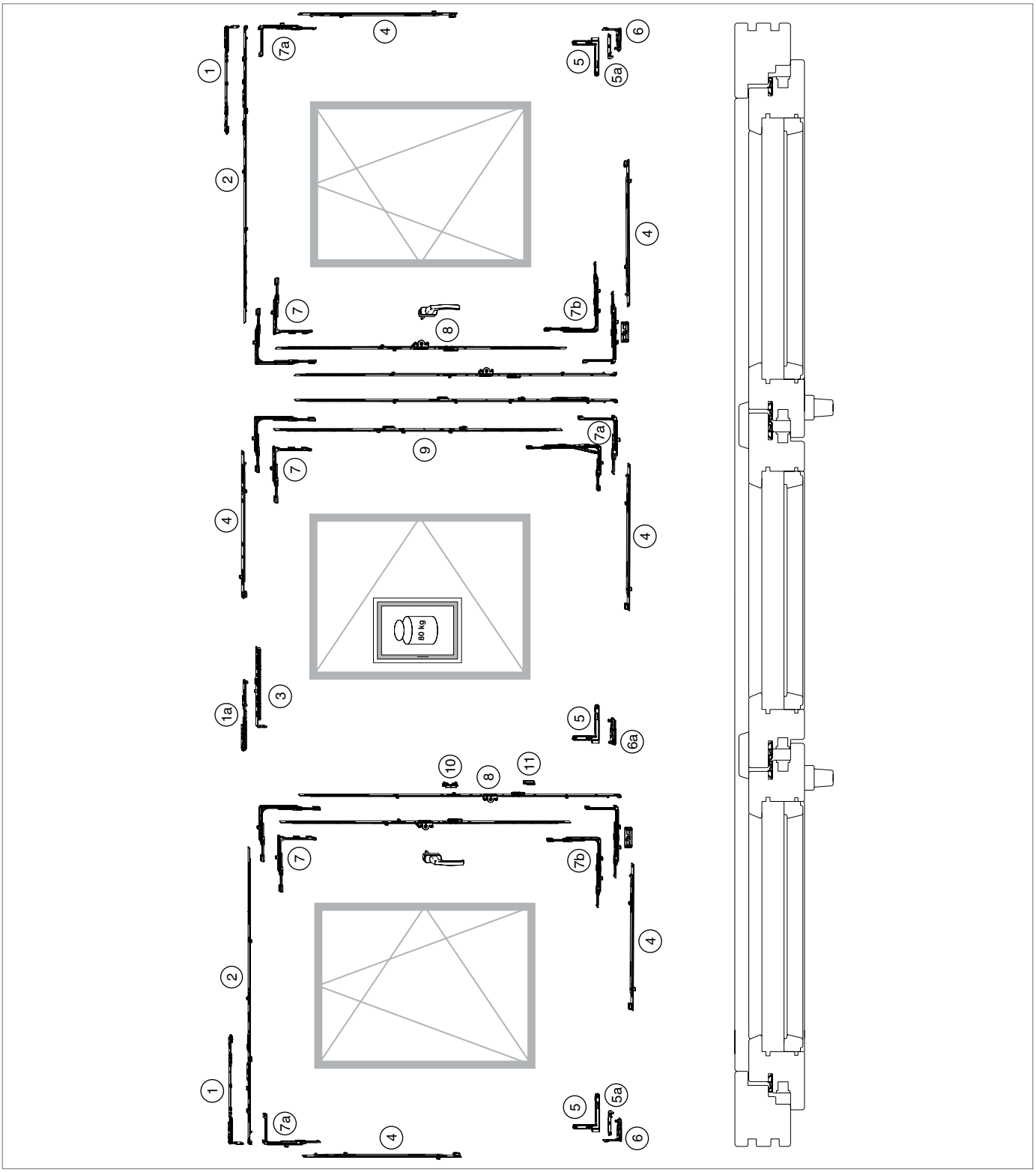


Hardware compilation

(1) Scissor arm with hinge MULTI POWER
(1a) Turn hinge arm with hinge MULTI POWER
(1b) Turn hinge arm with hinge MULTI POWER
(2) Scissor stay faceplate MULTI POWER
(3) Tilt and slide hinge faceplate MULTI POWER
(4) Centre lock
(5) Corner support MULTI POWER
(5a) Pivot post MULTI POWER cover
(6) Pivot post MULTI POWER
(6a) Pivot post MULTI POWER 3-sashed
(7) Compression device
(8) Corner element with 1 i.S.
(8a) Extendible vertical corner element with 1 i.S.
(8b) Extendible horizontal corner element
(9) Drive gear
(10) French casement drive gear
(11) Striker plates i.S. for adjacent fitting groove

The centre sash is the last one to open.

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



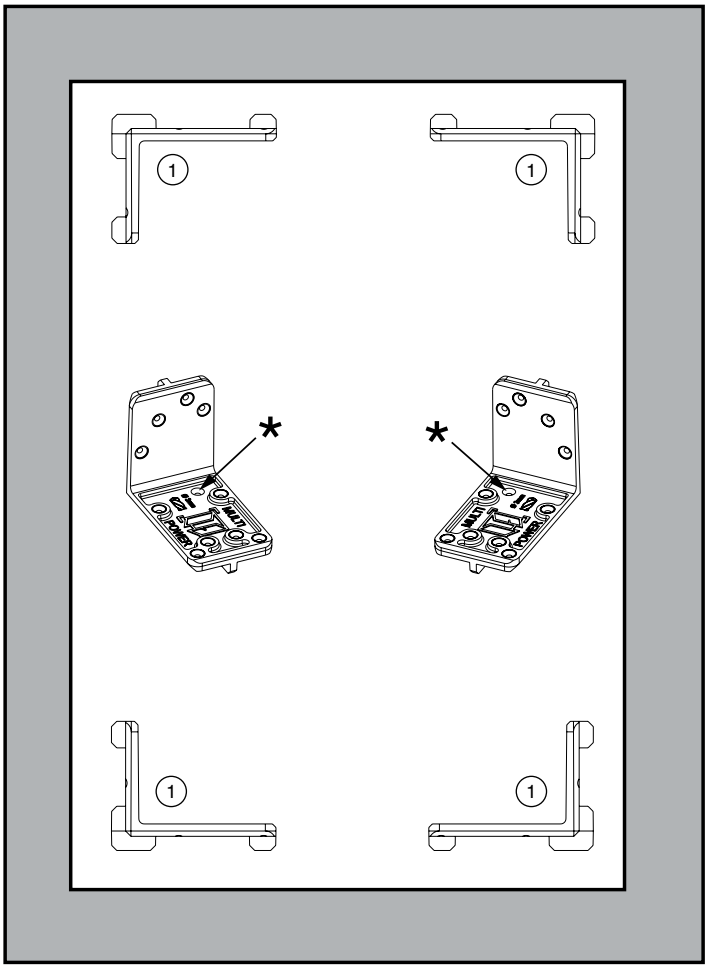
Hardware compilation

1. Scissor arm with hinge MULTI POWER
1a. Turn hinge arm with hinge MULTI POWER
2. Scissor stay faceplate MULTI POWER
3. Tilt and slide hinge faceplate MULTI POWER
4. Centre lock
5. Corner support MULTI POWER
5a. Pivot post MULTI POWER cover
6. Pivot post MULTI POWER
6a. Pivot post MULTI POWER 3-sashed
7. Corner element with 1 i.S.
7a. Extendible vertical corner element with 1 i.S.
7b. Extendible horizontal corner element
8. Drive gear
9. French casement drive gear
10. Striker plates i.S. for adjacent fitting groove
11. Sash lifter for adjacent fitting groove

The centre sash is the last one to open.

Installation of the hardware components on the frame

Drilling holes with jigs for TIMBER FT 24



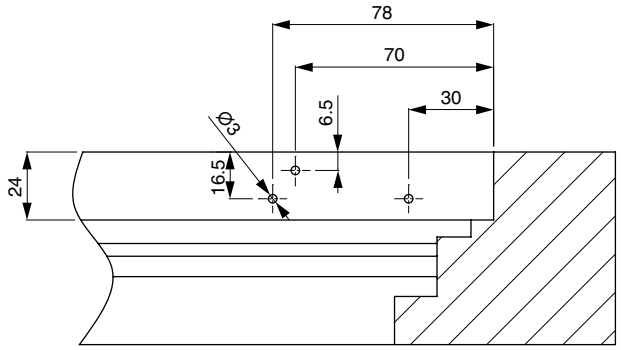
① Drilling jig for right sash **(№ 217092)** and/ or left sash **(№ 217093)** insert as shown and pre-drill with Ø 3 mm drill

*Pre-drill drilling hole to support the pivot post upwards of 100 kg sash weight with Ø 8 mm drill.

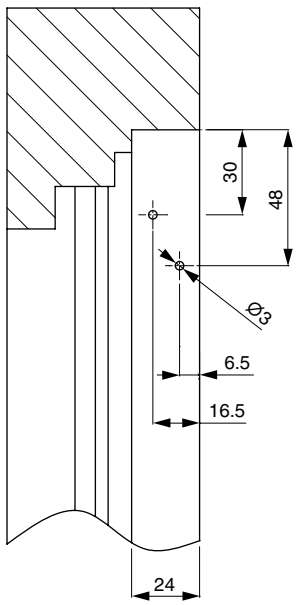
Installation of the hardware components
on the frame

Drilling-hole patterns
TIMBER FT 24

①



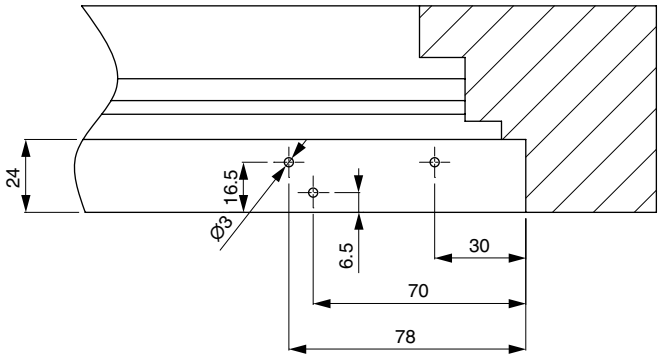
②

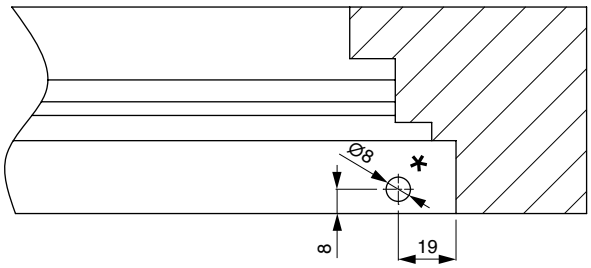


① Horizontal scissor stay
② Vertical scissor stay

Installation of the hardware components on the frame

Drilling-hole patterns
TIMBER FT 24

① 

② 

Drilling depth 21 mm

① Horizontal pivot post

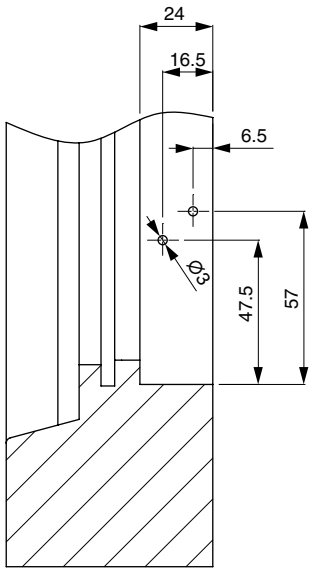
② Pivot post support above 100 kg sash weight

*Screw supporting dowels (36668) flush into the frame profile upwards of a **100 kg** sash weight. If necessary, countersink for the screw head!*

Installation of the hardware components
on the frame

Drilling-hole patterns
TIMBER FT 24

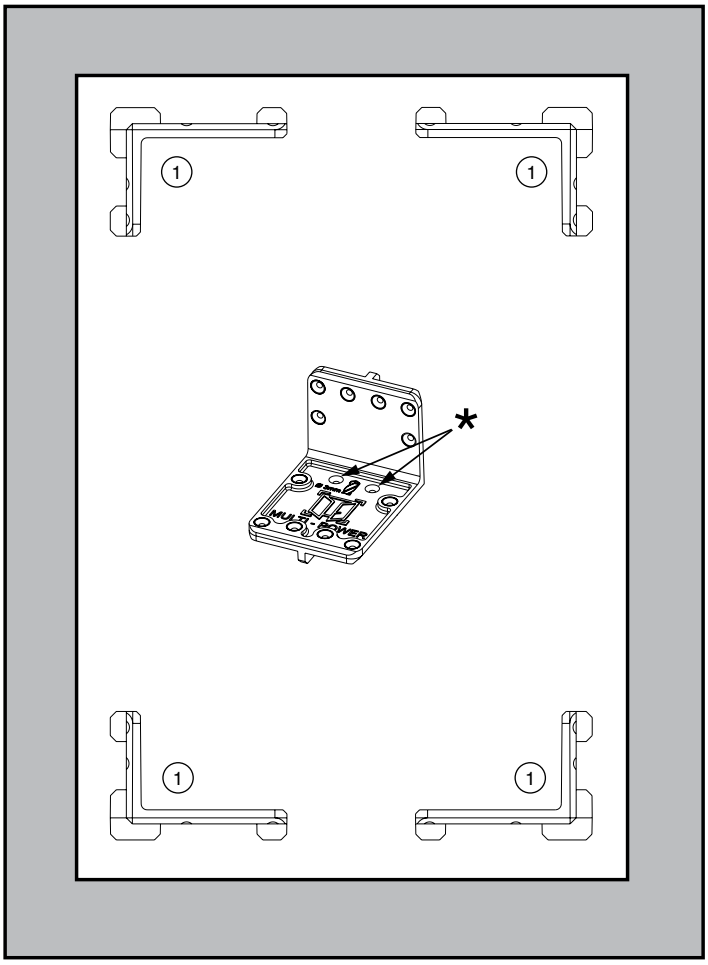
③



③ Vertical pivot post

Installation of the hardware components on the frame

Drilling holes with jig for PVC and TIMBER
FT 30



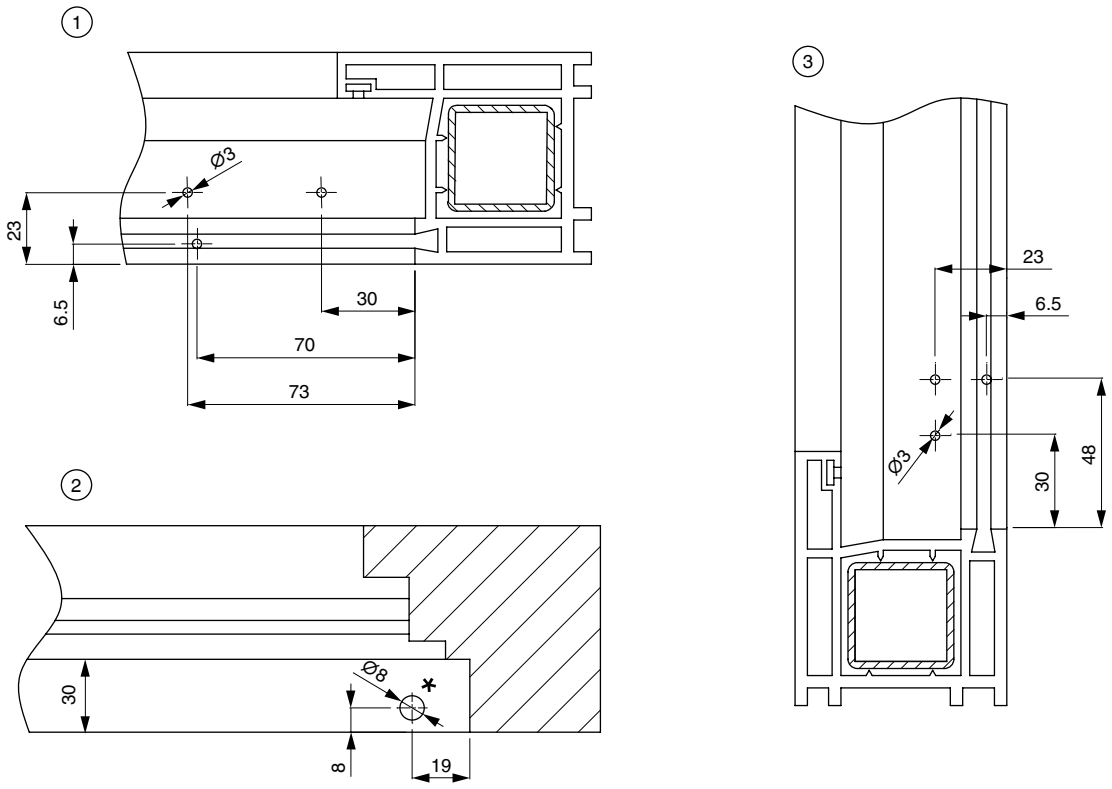
① Drilling jig for right sash **(№ 217094)** and right sash; insert as shown and pre-drill with Ø 3 mm drill.

The screws must be fastened into the steel reinforcements; for profiles without steel reinforcement, refer to the profile sheets!

*For timber:
Pre-drill drilling hole to support the pivot post upwards of 100 kg sash weight with Ø 8 mm drill.

Installation of the hardware components on the frame

Drilling hole patterns
for PVC and TIMBER FT 30



Drilling depth 21 mm

① Horizontal pivot post and scissor stay hinge

② For timber: Pivot post support above 100 kg sash weight

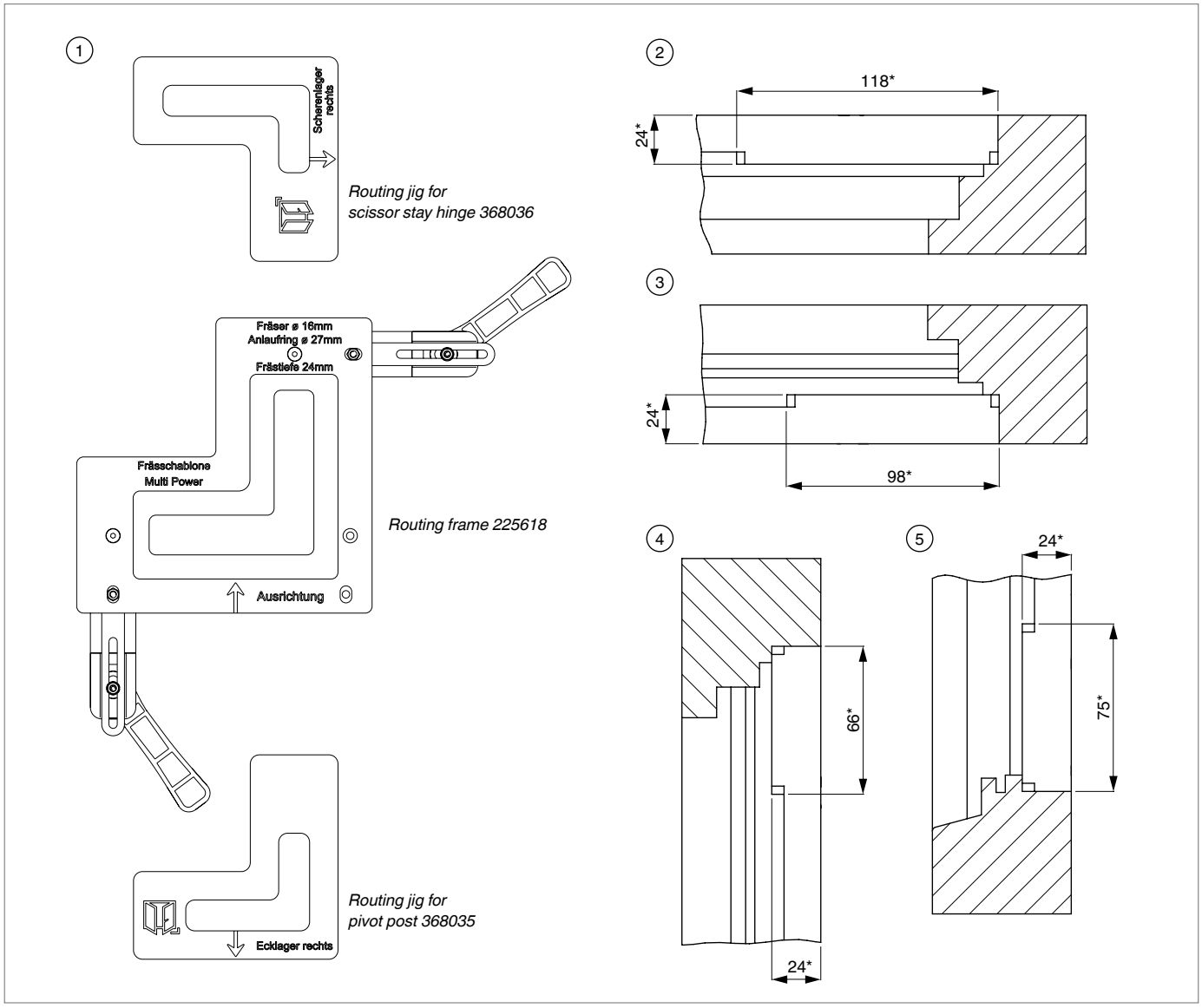
*Screw supporting dowels (36668) flush into the frame profile upwards of a **10o kg** sash weight. If necessary, countersink for the screw head!*

③ Vertical pivot post and scissor stay hinge

The screws must be fastened into the steel reinforcements; for profiles without steel reinforcement, refer to the profile sheets!

Installation of the hardware components on the frame

Mill frame under FT 24



(1) Insert the drilling hole pattern **(pivot post № 368035, scissor stay hinge № 368036)** in the routing frame **(№ 225618)** and perform routing with Ø 16 mm router and Ø 27 mm guide ring.

(2) Horizontal top routing-hole pattern

(3) Horizontal bottom routing-hole pattern

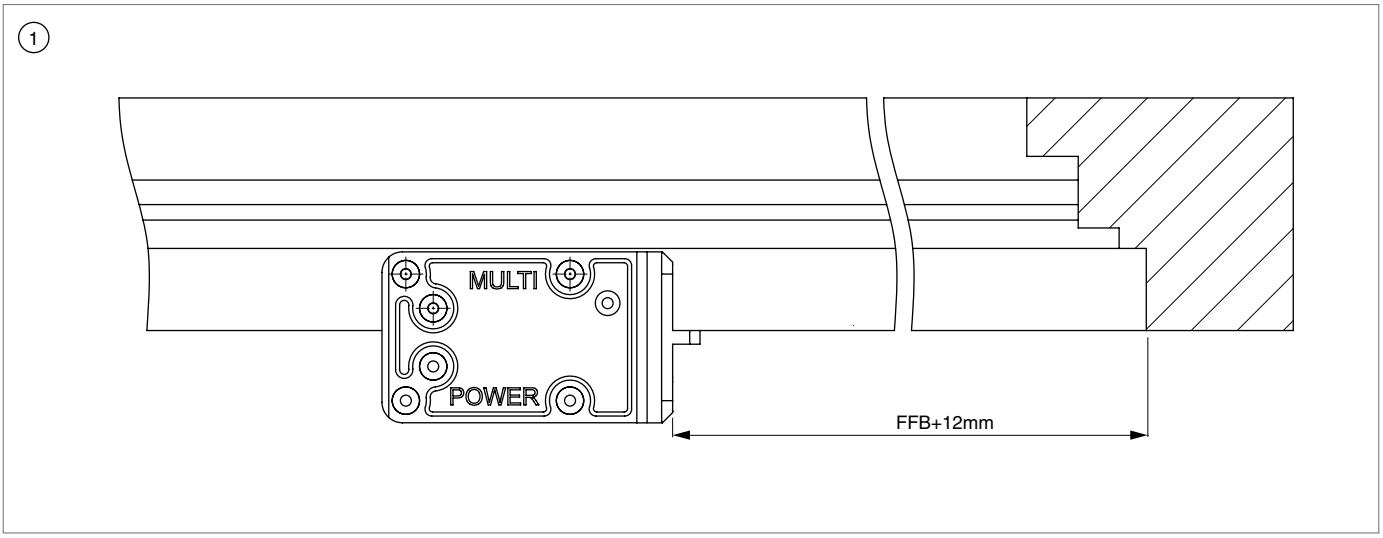
(4) Vertical top routing-hole pattern

(5) Vertical bottom routing-hole pattern

*Routing for sash rebate depth 24 mm.

Installation of the hardware components on the frame

Drilling hole with jig
Pivot post and scissor stay hinged 3-sashed windows
for TIMBER FT 24

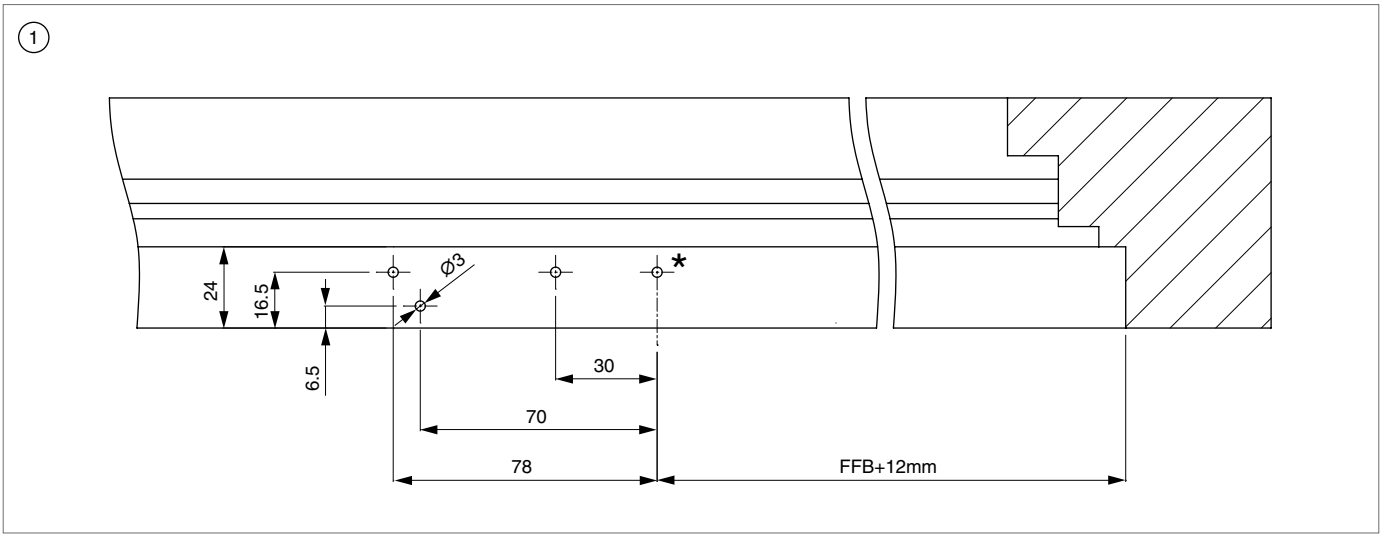


① Sash rebate dimension + 12 mm, drilling jig for right sash **(№ 217092)** and/or left sash **(№ 217093)** insert as shown and pre-drill with Ø 3 mm drill.

*Sash weight **max. 80 kg.***

Installation of the hardware components on the frame

Drilling hole pattern
Pivot post and scissor stay hinged 3-sashed window for TIMBER FT 24

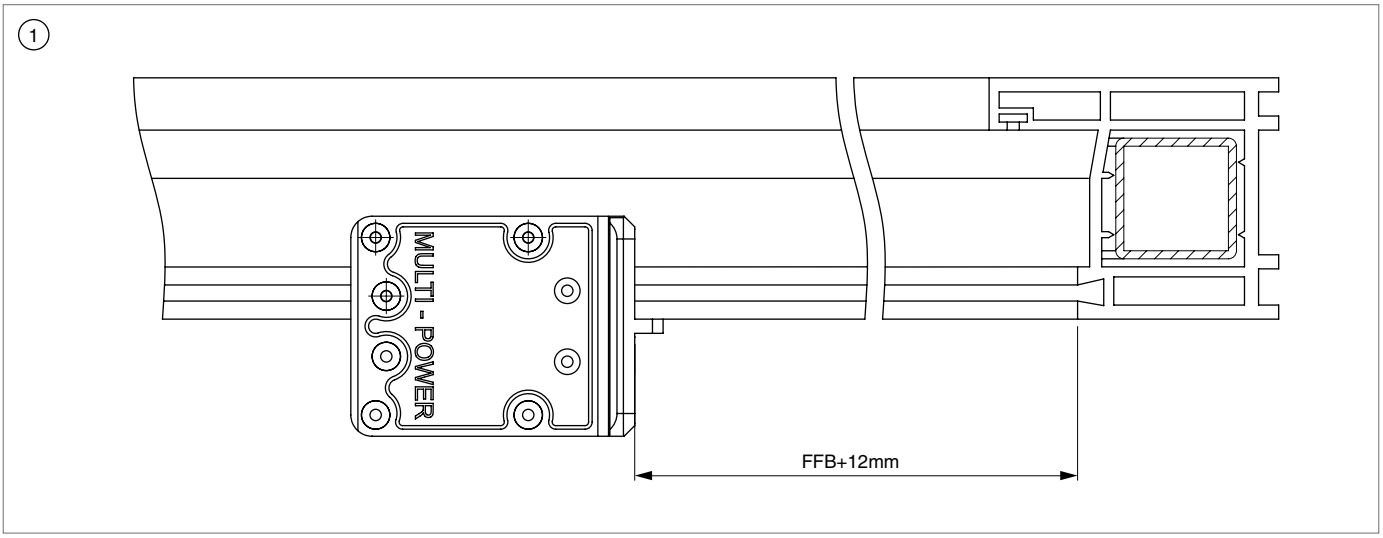


(1) Horizontal pivot post

*Drill any missing screw holes after inserting the hinge and fasten!

Installation of the hardware components on the frame

Drilling holes with jig
Pivot post and scissor stay hinged 3-sashed window for PVC and TIMBER FT 30



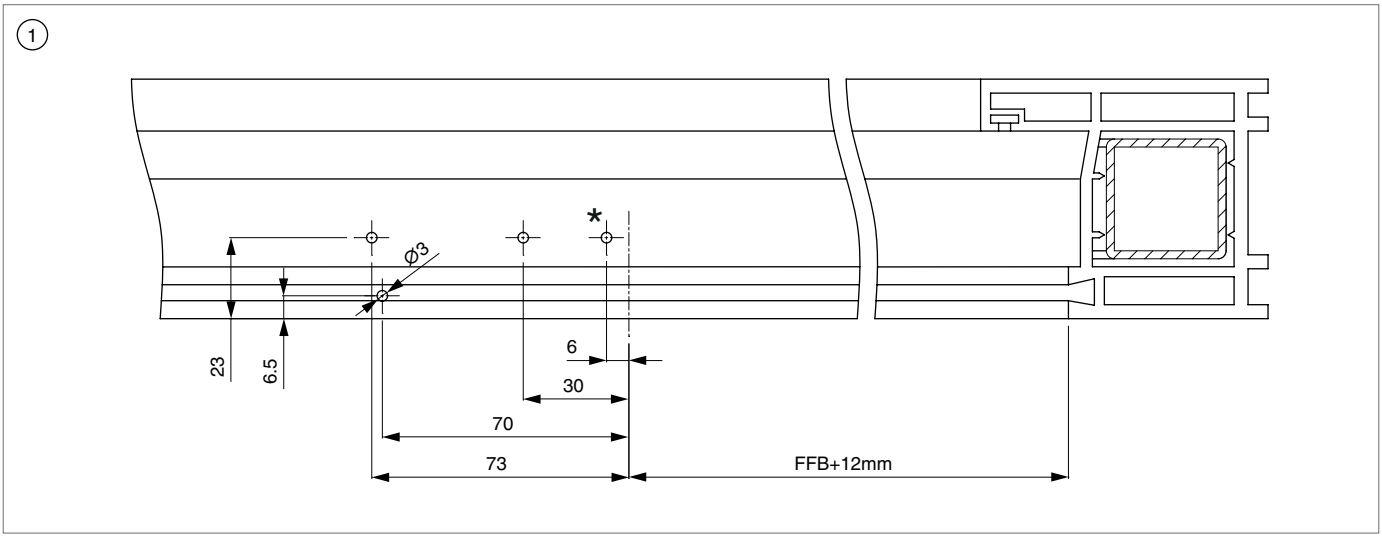
① Sash rebate dimension + 12 mm, drilling jig for right sash **(№ 217094)**; insert as shown and pre-drill with Ø 3 mm drill.

*Sash weight **max. 80 kg.***

The screws must be fastened into the steel reinforcements; for profiles without steel reinforcement, refer to the profile sheets!

Installation of the hardware components on the frame

Drilling hole pattern
Pivot post and scissor stay hinged 3-sashed window for PVC and TIMBER FT 30



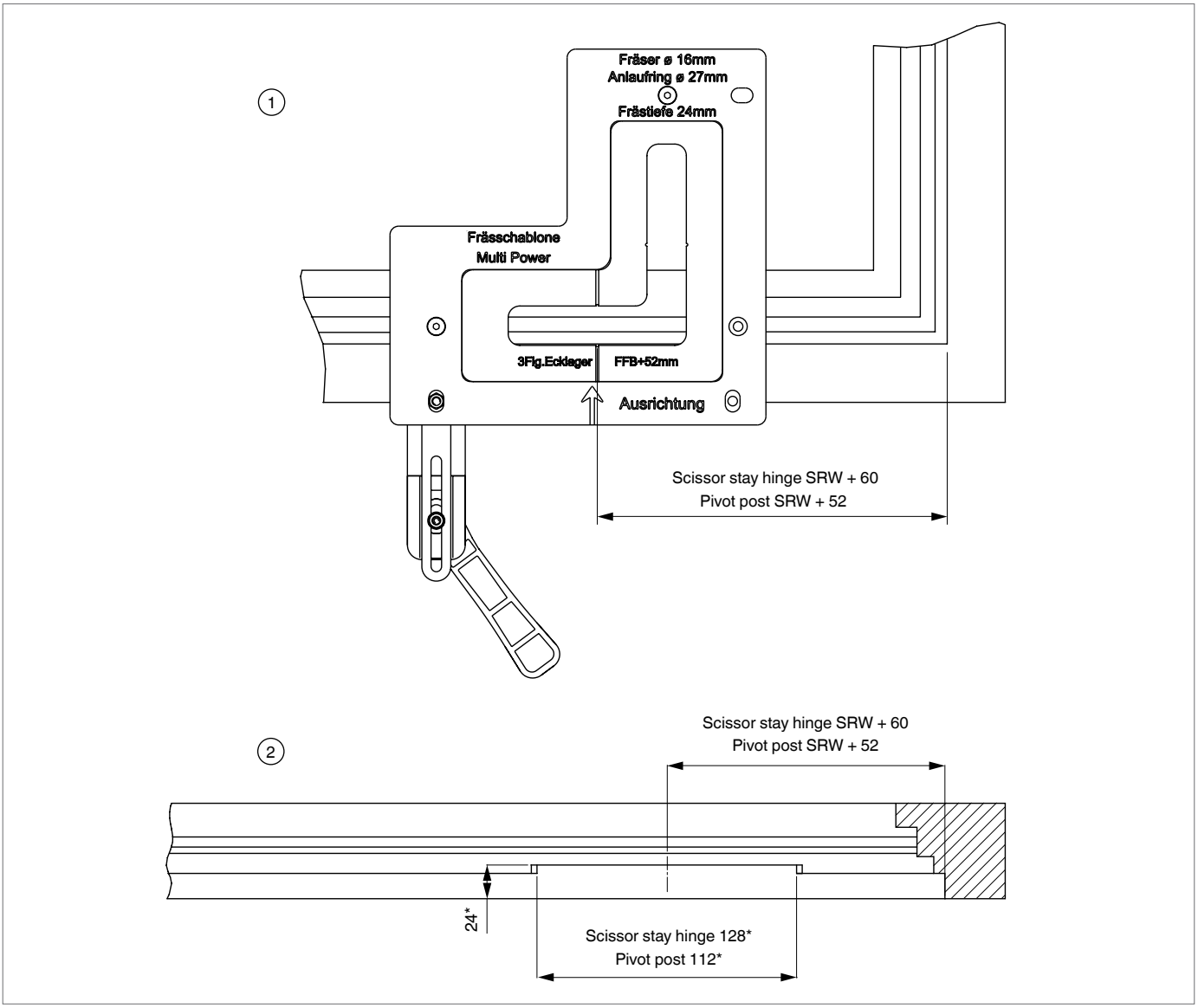
(1) Horizontal pivot post and scissor stay hinge

*Drill any missing screw holes after inserting the hinge and fasten!

The screws must be fastened into the steel reinforcements; for profiles without steel reinforcement, refer to the profile sheets!

Installation of the hardware components on the frame

Milling the frame of 3-sashed windows under FT 24



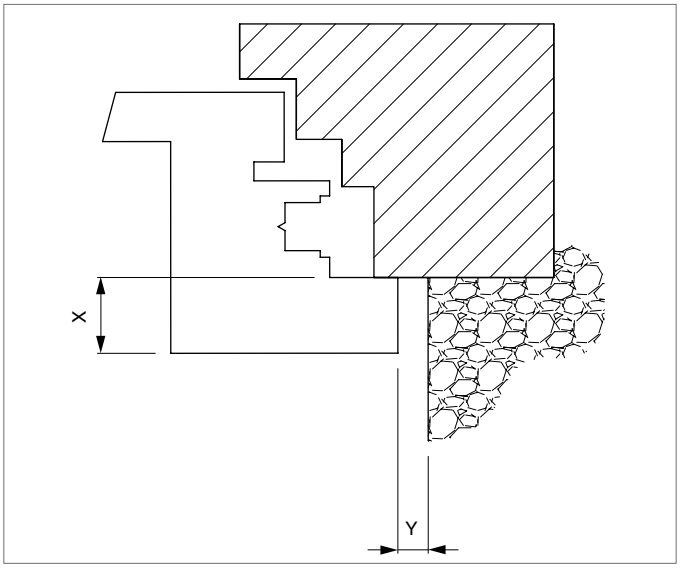
① Routing frame **(№ 225618)** with routing jib **(№ 386094)** insert as shown and perform routing with Ø 16 mm router and Ø 27 mm guide ring.

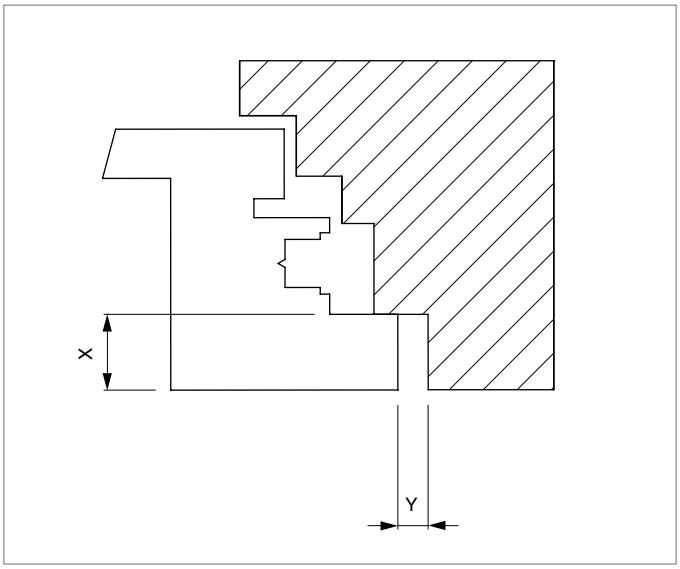
② Horizontal routing hole pattern top and bottom

*Routing for sash rebate depth 24 mm.

Installation of the hardware components on the frame

Hinge-side space requirements



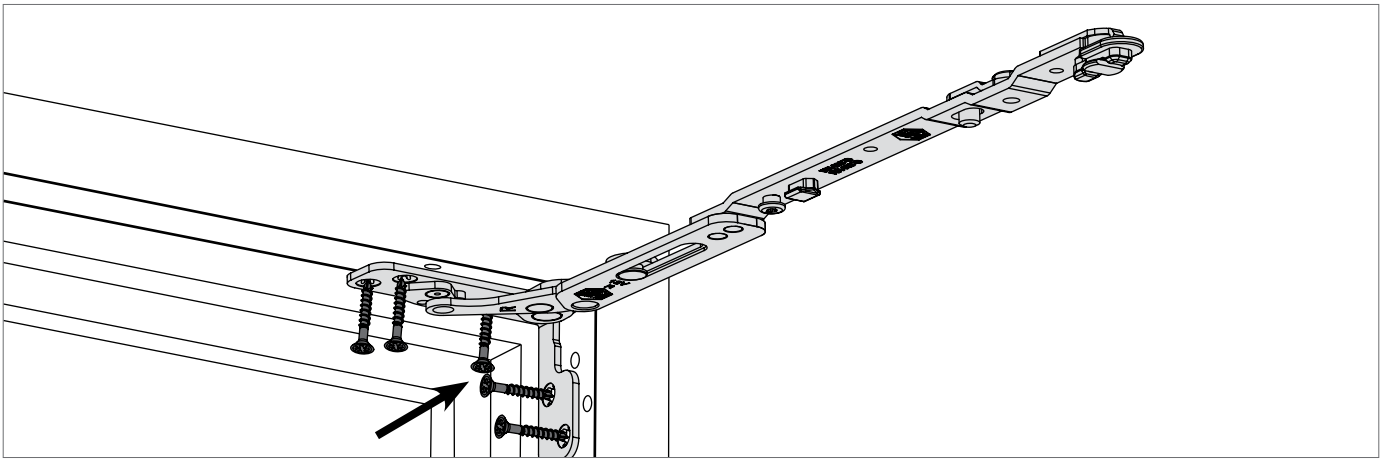


X (overlap size)	**Y** (minimum clearance)
≤ 18	4*
20	6*
22	8*

*Minimum clearance may depend on the rebate leg.

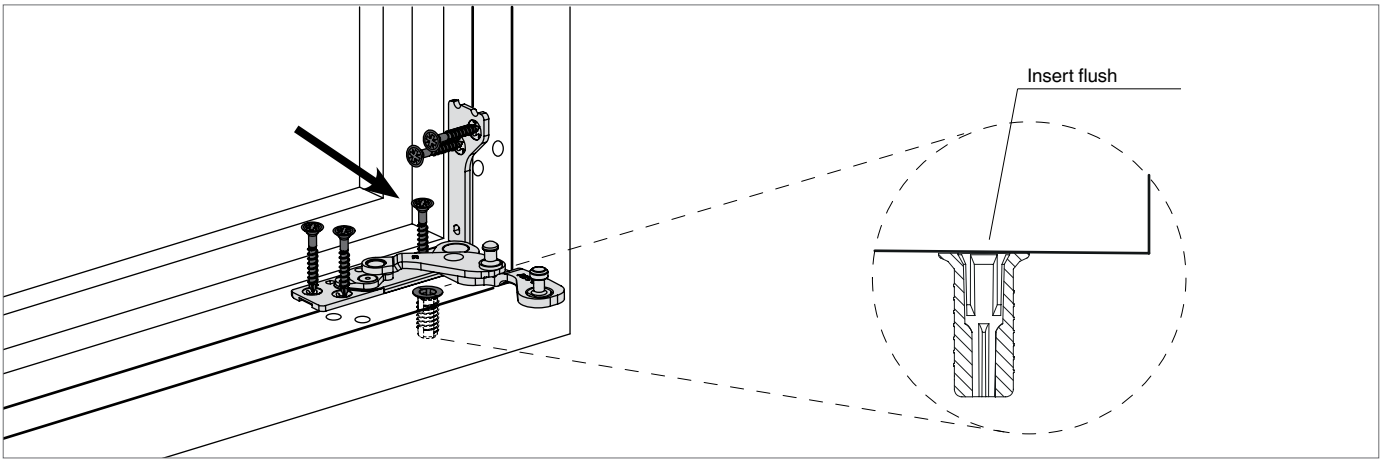
Installation of the hardware components on the frame

Installing the scissor arm with jig



Place the scissor stay arm with hinge and screw to fasten.

Installing the pivot post



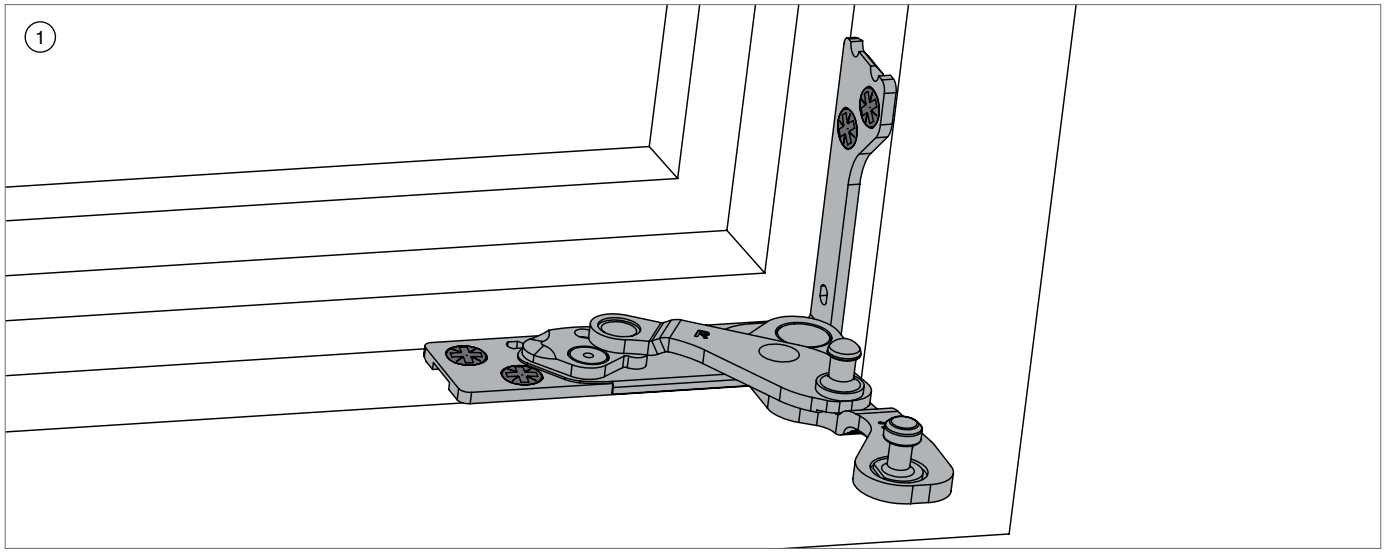
Place the pivot post and screw to fasten.

*Screw supporting dowels (36668) flush into the frame profile upwards of a **100 kg** sash weight. If necessary, countersink for the screw head!*

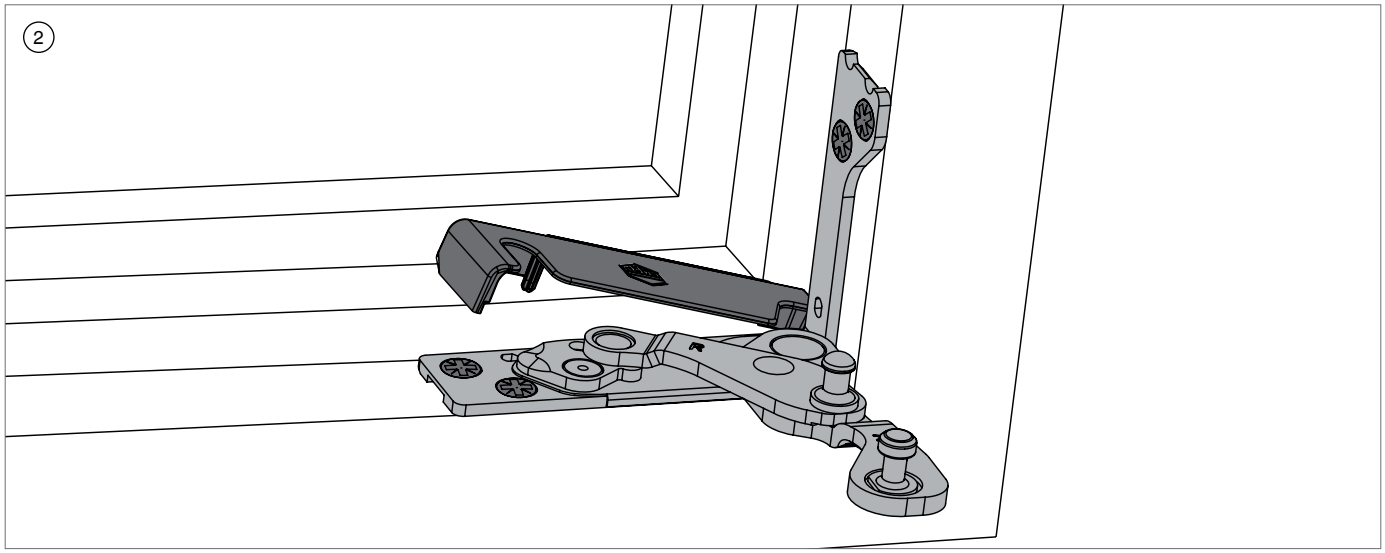
Notes:
Use for PVC profile-dependent support according to profile sheet!

Installation of the hardware components on the frame

Installing the cover



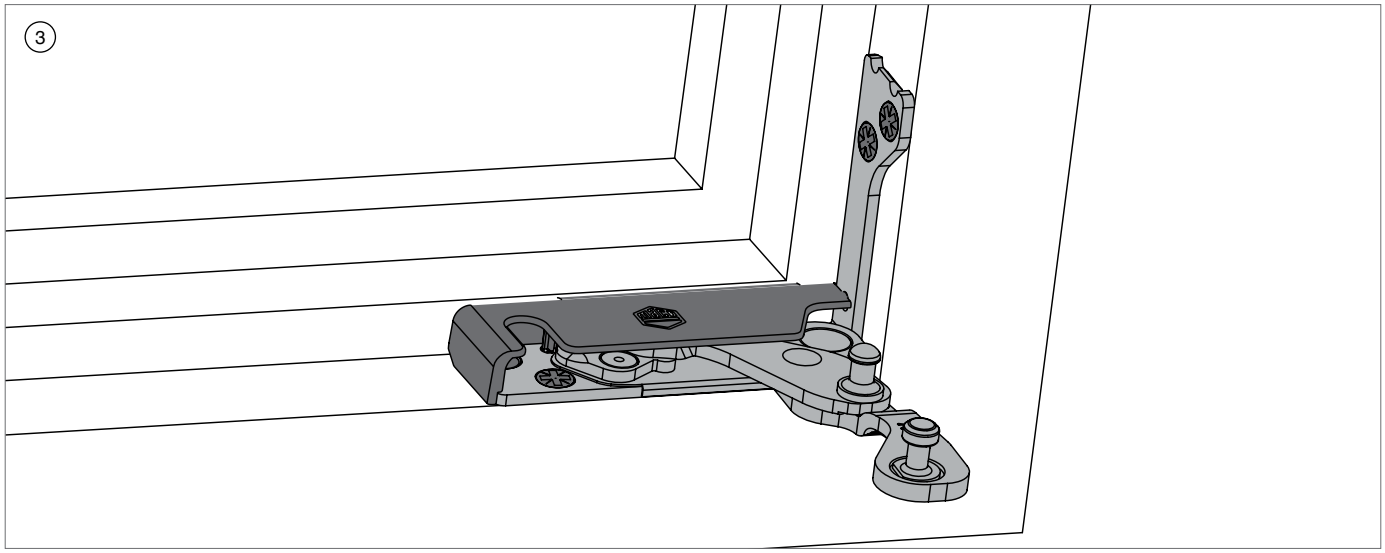
① Open the pivot post



② Insert the cover in the corners

Installation of the hardware components on the frame

Installing the cover



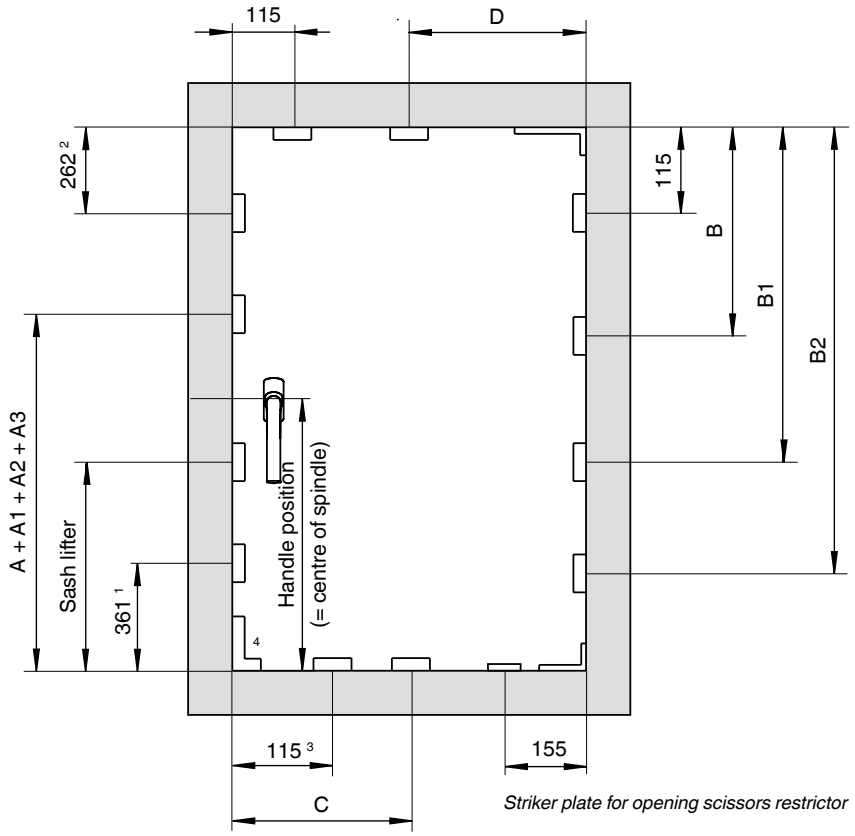
③ Clip the cover onto the base plate.

Bottom horizontal air gap:
min. 12.5 mm

Installation of the hardware components on the frame

Striker plate positions 12 mm air gap
All dimension refer to the **frame rebate dimensions**:

12 mm air gap



Specifications in mm

[1]only when using drive gear 1590-2450
[2]from 2451-2600 with 235 mm extension piece with locking cam
[3]only when using the horizontal corner element
[4]only when using drive gear with tilt swing

Installation of the hardware components on the frame

Striker plate drilling positions 12 mm air gap

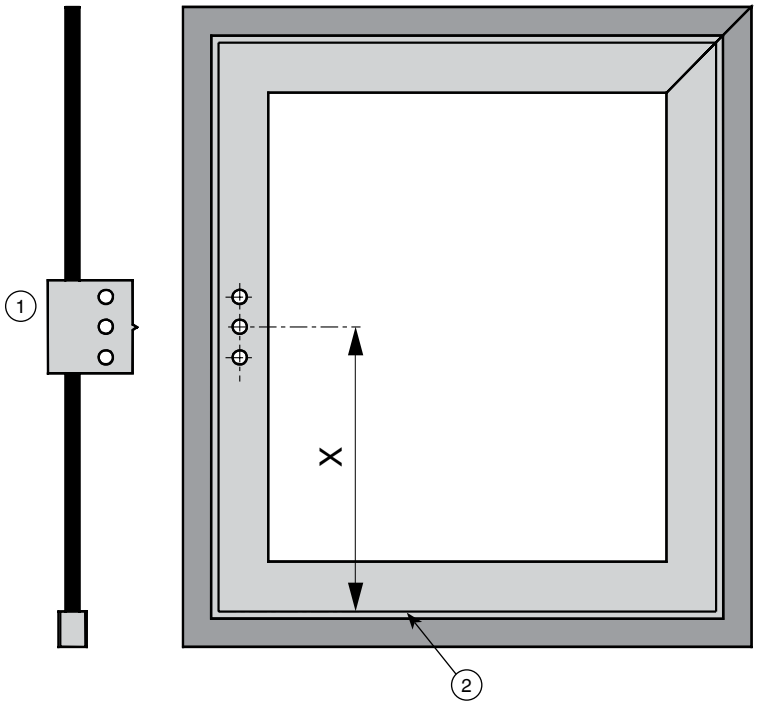
Large drive gear		Sash lifter	A	A1	A2	A3	
430	360 - 430	—	—	—	—	—	125
660	431 - 660	34	—	—	—	—	190
840	661 - 840	164	441	—	—	—	300
1090	841 - 1090	264	586	—	—	—	400
1340	1091 - 1340	364	686	—	—	—	500
1590	1341 - 1590	464	—	921	—	—	600
1700	1591 - 1700	564	—	1021	—	—	700
1950	1701 - 1950	914	—	796	1466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

Faceplate extension /centre lock			C	B	B1	B2
—	800 - 900	—	—	—	—	—
235	901 - 1050	—	326	—	—	—
140 + 235	1051 - 1200	—	466	—	—	—
1280	1201 - 1400	801 - 1280	565	565	—	—
1500	—	1281 - 1500	—	800	—	—
2200	—	1701 - 2200	—	800	1506	—
2450	—	2201 - 2450	—	800	1506	1977

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

Installation of the hardware components at the sash

Handle drill hole



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

(1) Drive gear drilling jig
№ 203861 (Ø 3 Ø 3 Ø 3)
№ 203862 (Ø 12 Ø 3 Ø 12)

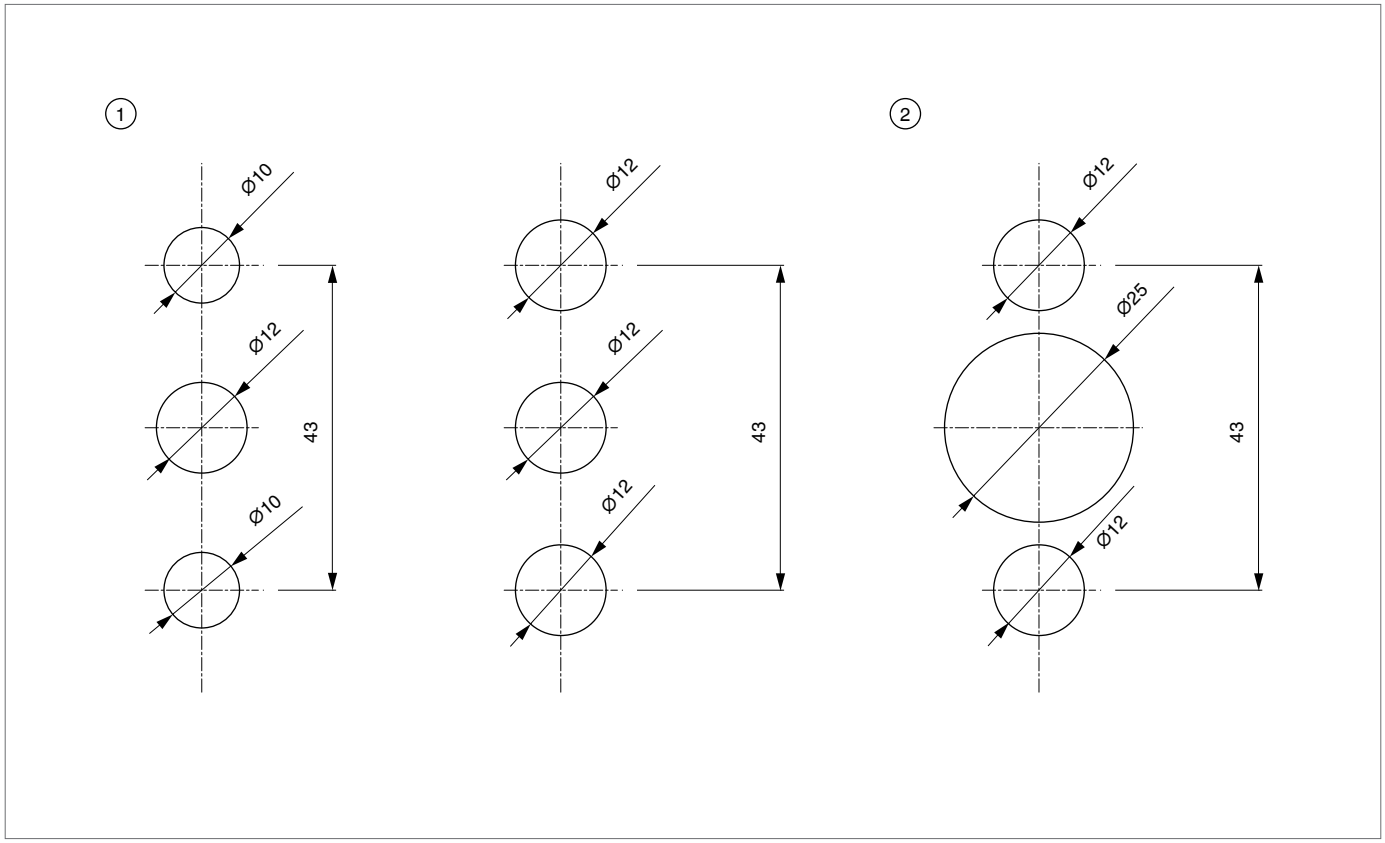
(2) Edge of sash rebate

Set the drive gear drilling jig to the drive gear to be used, let it rest on the sash rebate and pre-drill
using Ø 3 mm and Ø 12 mm drills.

For variable drive gears, mark the centre on sash and apply the drive gear drilling jig to the drill.

Installation of the hardware components at the sash

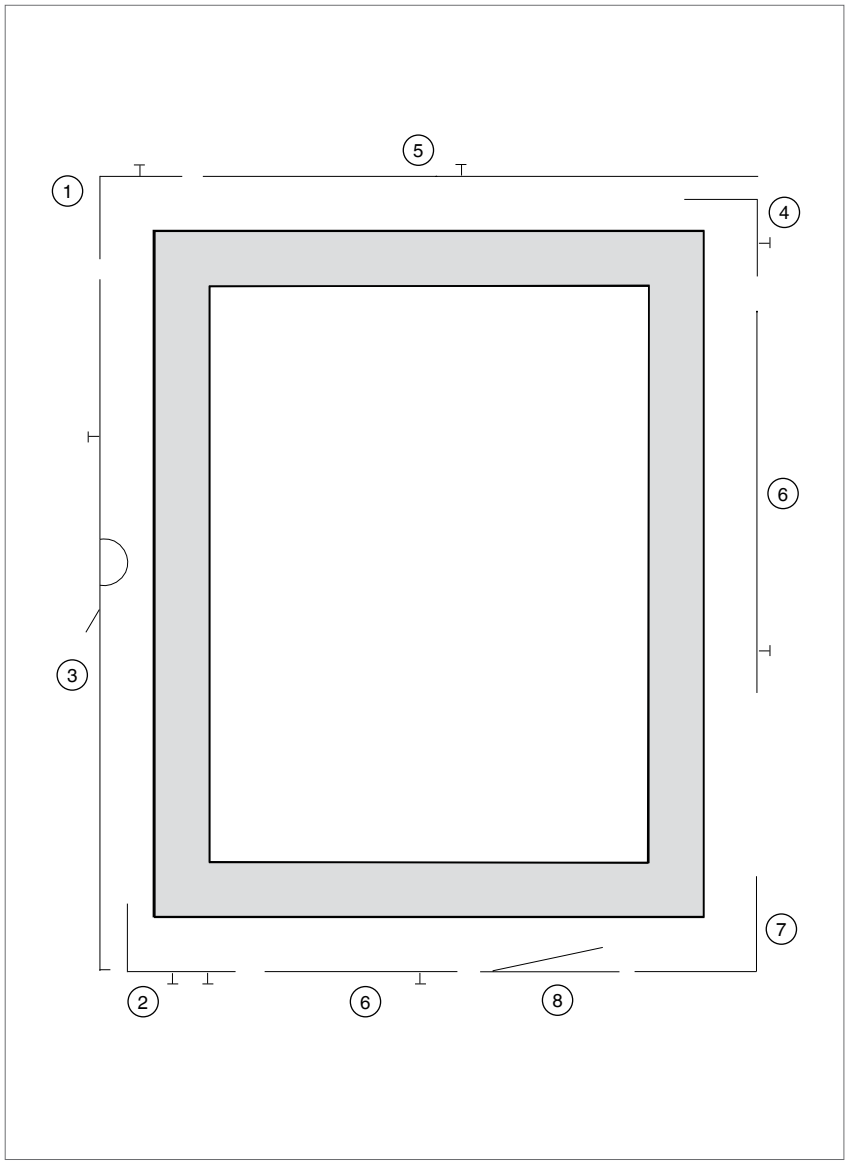
Handle drilling-hole patterns

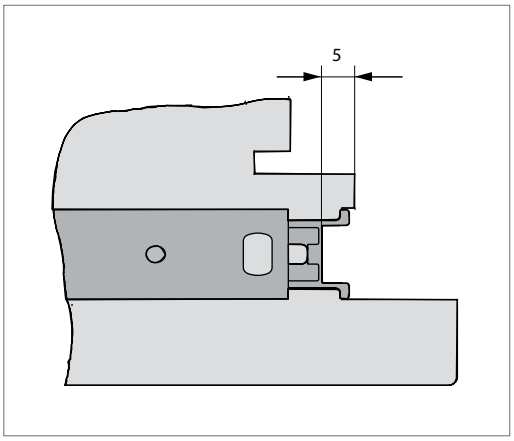


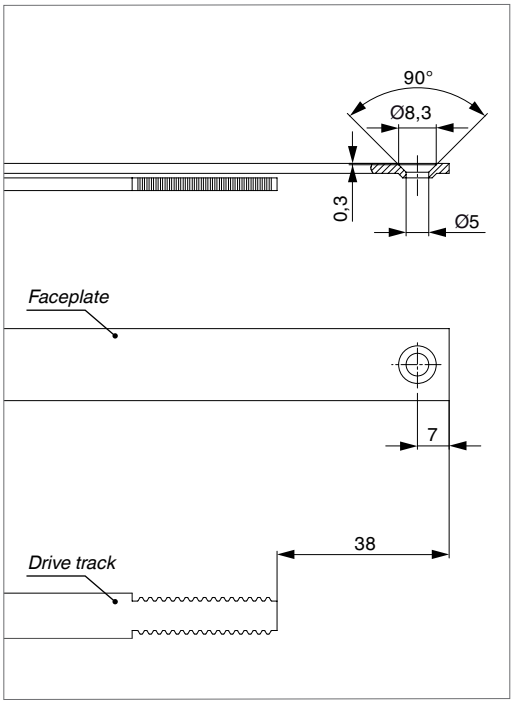
① **PVC** for window handle with Ø 10 or 12 mm cams

② **Timber** for window handle with 12 mm cam

Installation of the hardware components at the sash







Installation of the hardware components at the sash

① Insert **Corner element** and fasten.

② Insert **Corner element horizontally** and fasten.

③ Cut **Drive gear** to length, clip onto the **corner element horizontally** in parallel and fasten together with the **Corner elements**.**

④ Insert **Corner element vertically** and fasten (required for top locking!).

⑤ Cut **scissor stay faceplate**

to length, clip onto the **corner element horizontally** in parallel and fasten together with the **corner elements**.

⑥ Insert **Centre lock** and fasten (from SRW/SRH above 1000 mm** for timber/800 mm for PVC).***

⑦ Insert **Corner support** and fasten.

⑧ **Turn limiter** and/or **opening restriction** optional.

⚠ When the hardware is first operated, the centre die anchorage are released.

⚠ The sash lifter on the drive gear must be activated by rotating it outwards.

** For SRW 370 mm to 390 mm, the dead-bolt*

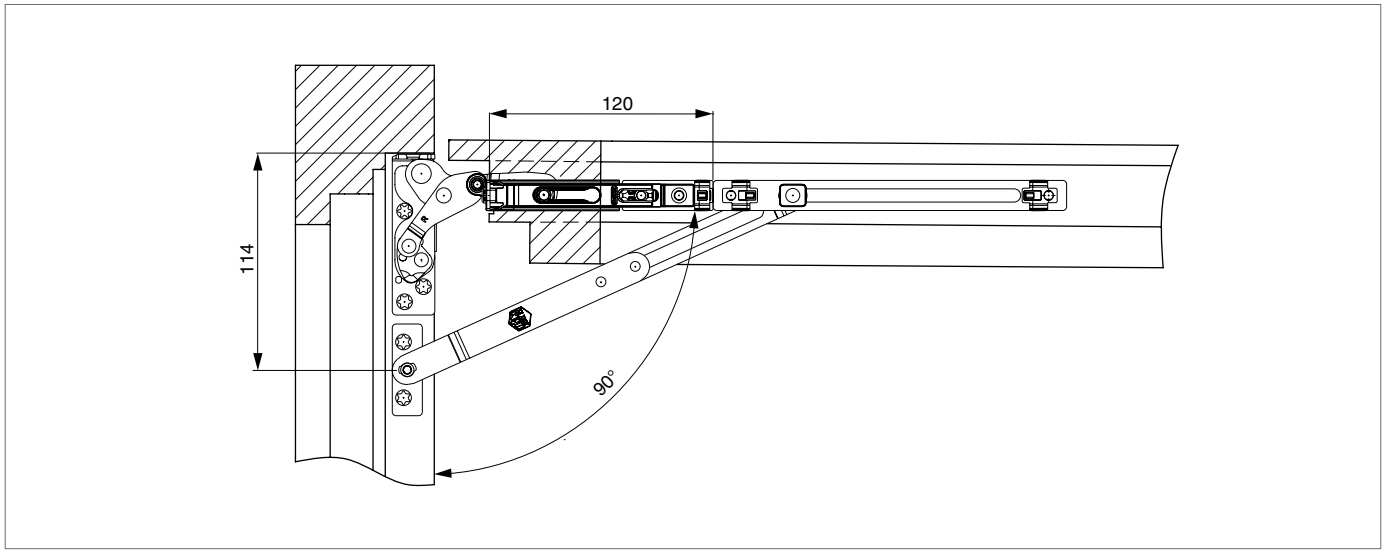
must be shortened by 20 mm horizontally from the corner element

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

**** SRW and SRH from1000 mm for timber and 800 mm for PVC is a recommendation from MACO, observe the specifications of the profile manufacturer!*

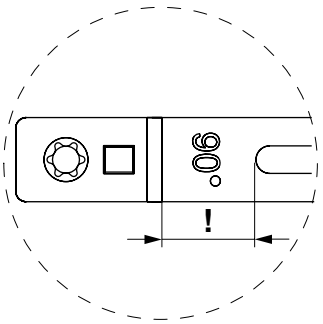
Installation of the hardware components at the sash

Turn limiter possible upwards of SRW 330 mm

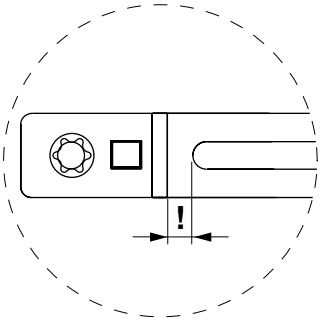


1. Mount the turn limiter flush at the corner support
2. **Timber:** Insert the mounting strap in the rebate. Screw holes to the back.

   PVC: see profile sheets, opening angle may change slightly.



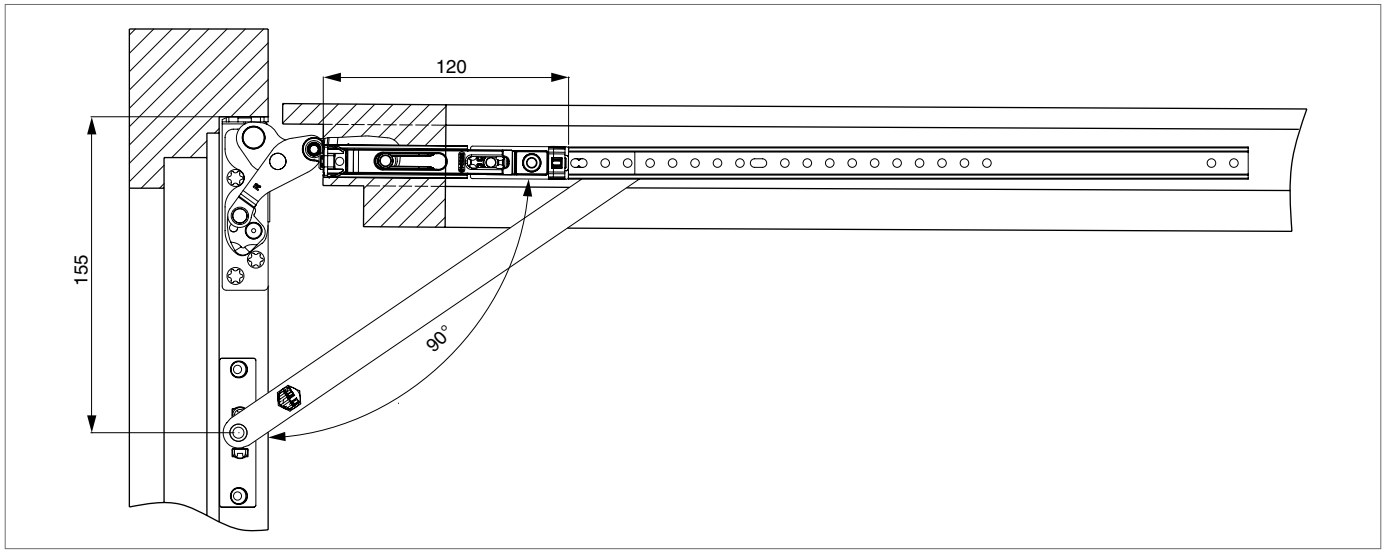
Turn limiter with shortened end fitting at the corner support flush opening angle 90°!



Turn limiter with extended end fitting at the corner support flush opening angle 100°!

Installation of the hardware components at the sash

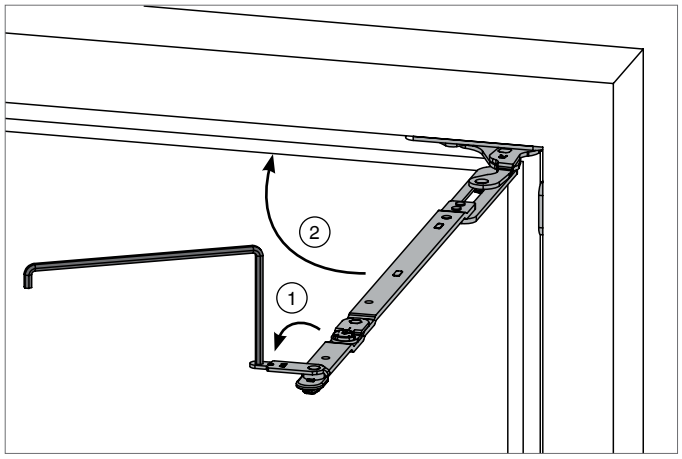
Turn limiter possible upwards of SRW 470 mm

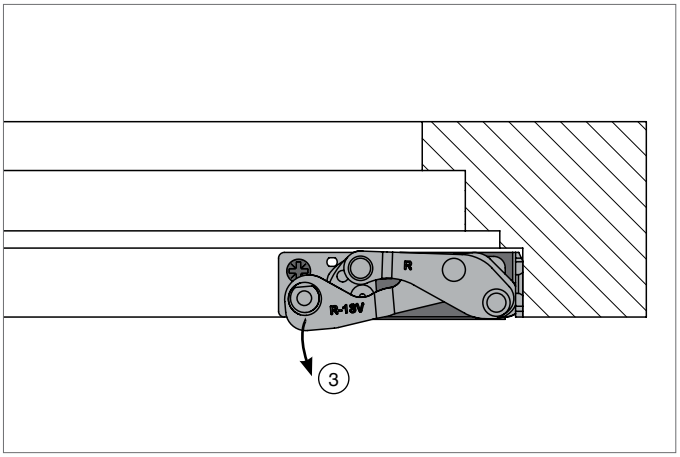


1. Mount the opening restrictor flush at the corner support
2. **Timber:** Set the striker plates for opening restrictor with sloped screw fixing into the rebate.

   PVC: see profile sheets, opening angle may change slightly.

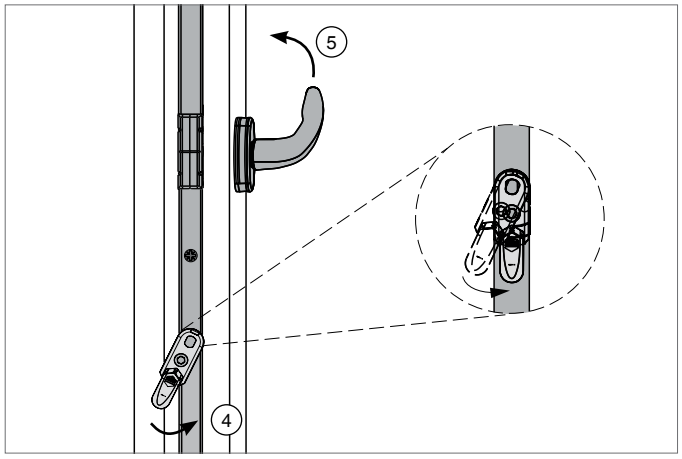
Hinge the T&T sash

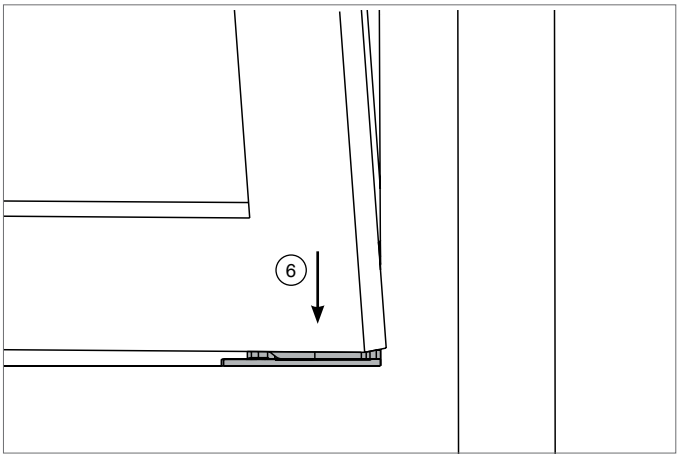




Open the safety catch of the scissor-stay arm with a 4 mm Allen key (1), then fold the scissor-stay arm up against the frame (2).

Open the pivot post approx. 5° (3).



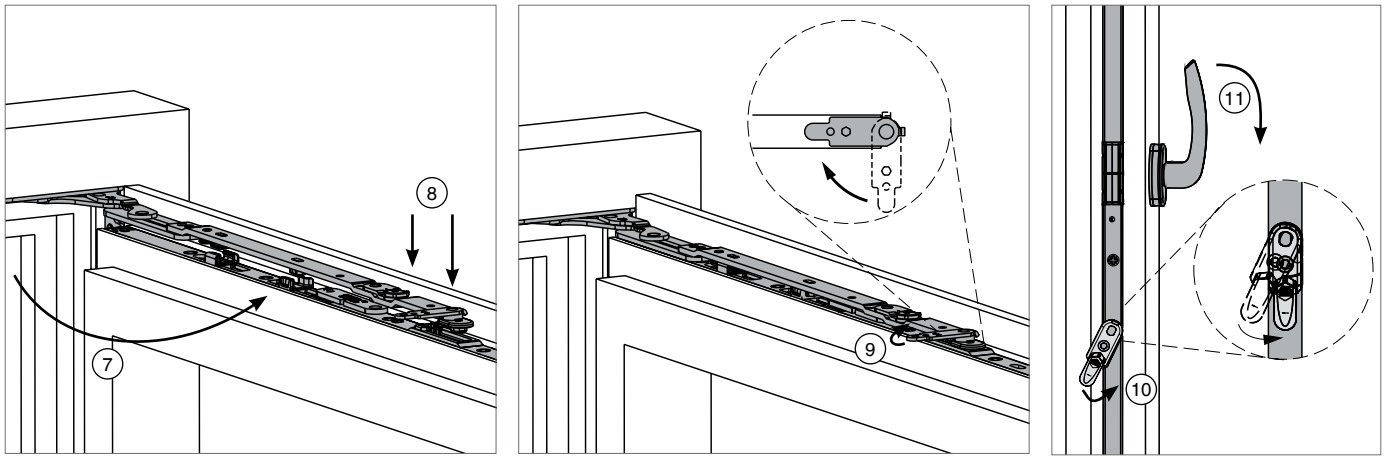


Perform mishandling at the mishandling device (4) and turn the handle to tilt position (5).

Place the sash tilted slightly parallel to the frame on both pivot post bolts (6).

Open the sash 90°.

Hinge the T&T sash



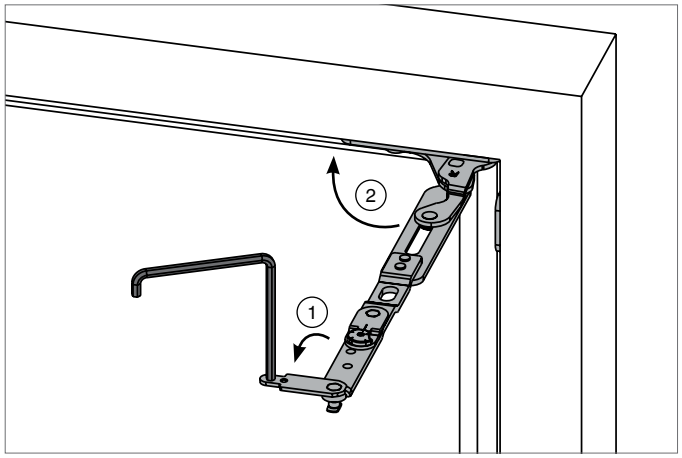
Fold out the scissor stay arm (7) and press into the scissor stay faceplate (8) so that the scissor stay arm bolts engage in the scissor stay faceplate.

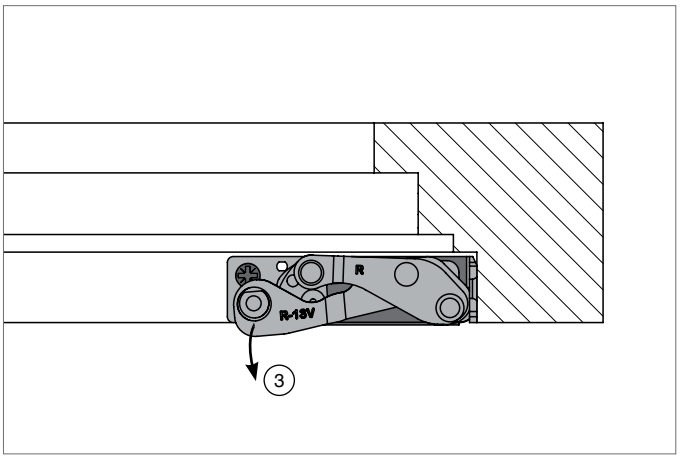
Close the scissor stay are retainer (9)

Perform mishandling at the mishandling device (10) and turn the handle to turn position (11).

See video www.maco.at

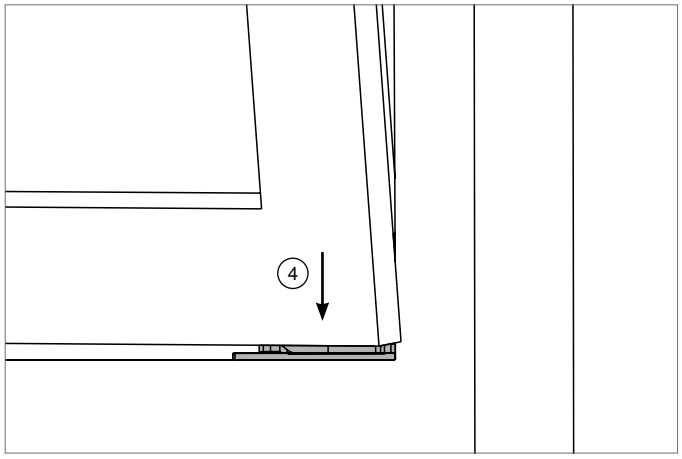
Hinging the rotatable sash

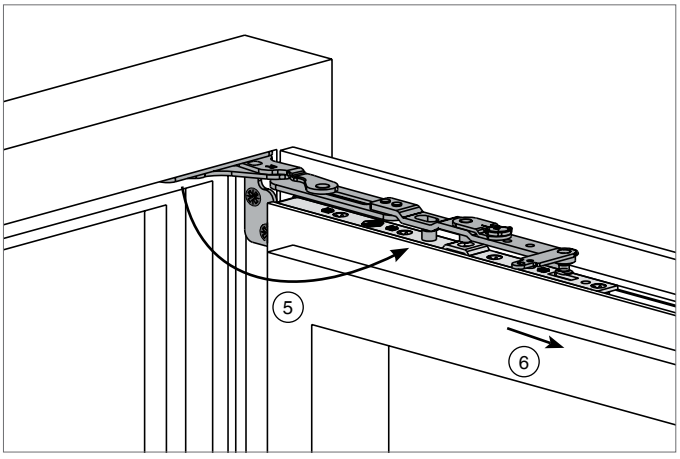




Open the safety catch of the scissor-stay arm with a 4 mm Allen key (1), then fold the scissor-stay arm up against the frame (2).

Open the pivot post approx. 5° (3).

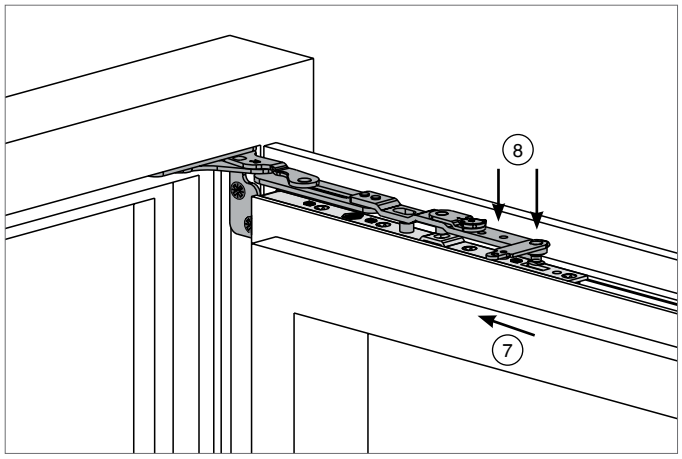


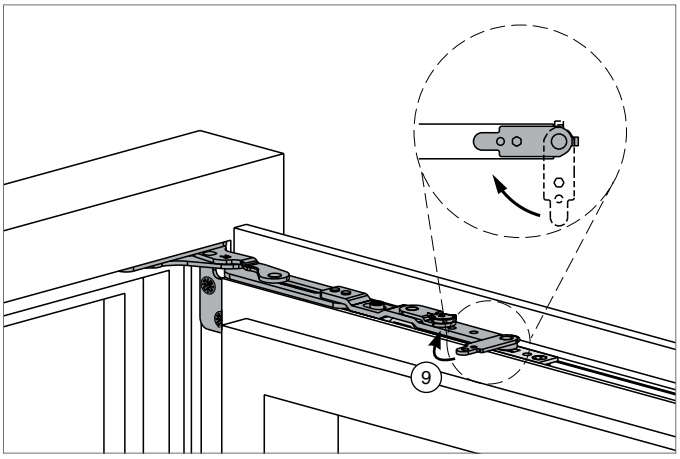


Place the sash tilted slightly parallel to the frame on both pivot post bolts (4).

Open the sash 90° and lower it slightly on the drive gear side (5) and fold out the turn arm (6)
.

Hinging the rotatable sash



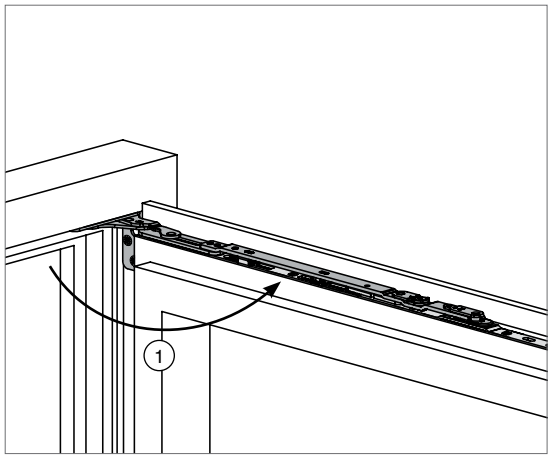


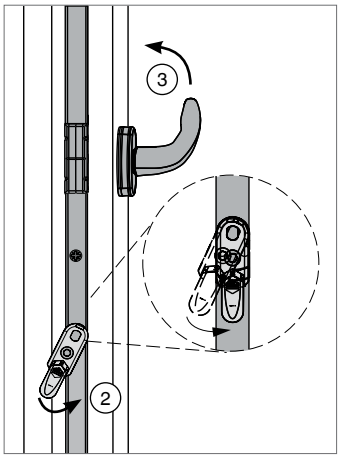
Press the turn arm onto the turn faceplate and lift the sash on the drive gear side (7).
Then press in the turn arm (8) so that the turn arm bolts engage in the turn faceplate.

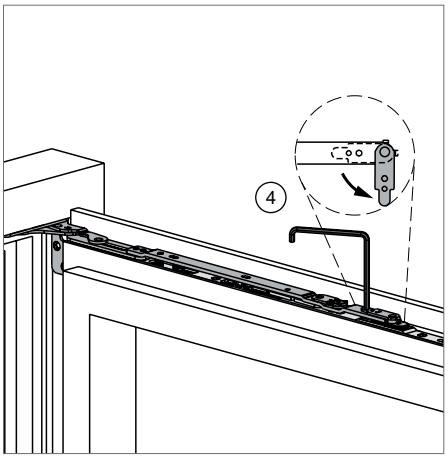
When the turn arm engages, close the turn arm retainer (9).

See video www.maco.at

Unhinge T&T sash



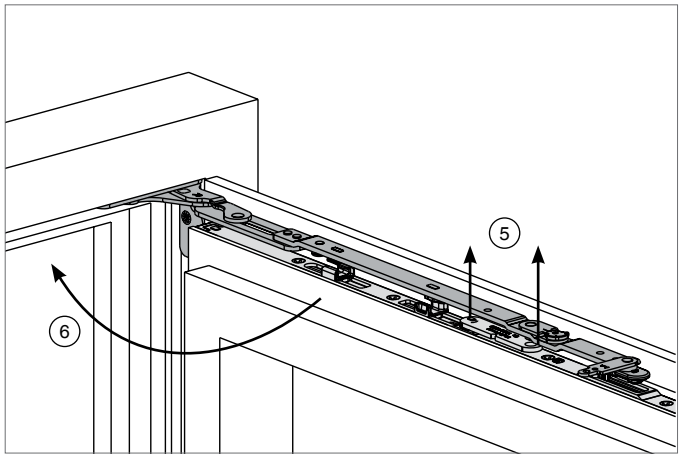




Open the sash 90° (1).

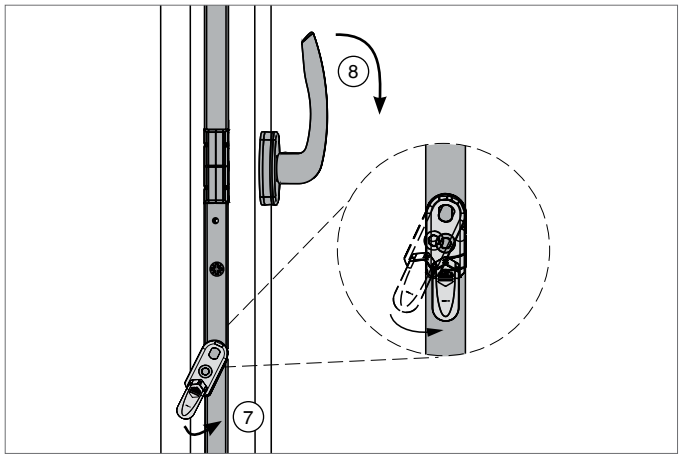
Perform mishandling at the mishandling device (2) and turn the handle to tilt position (3).

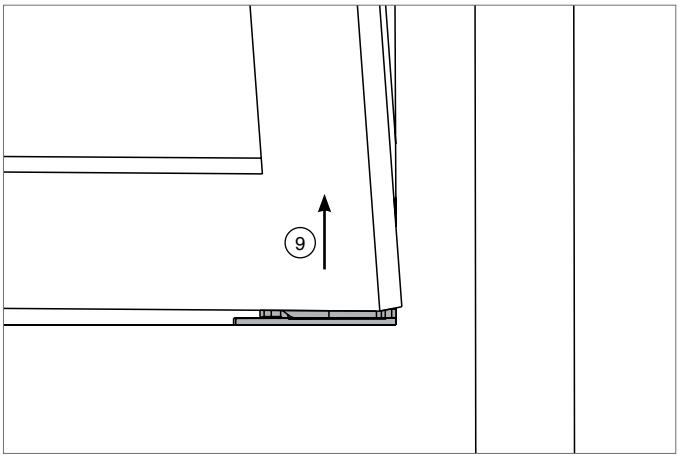
Open scissor-stay arm with SW4 Allen key (4).



Lift the scissor-stay arm (5) so that the scissor stay arm bolts are free. Then fold the scissor stay arm (6).

Unhinge T&T sash



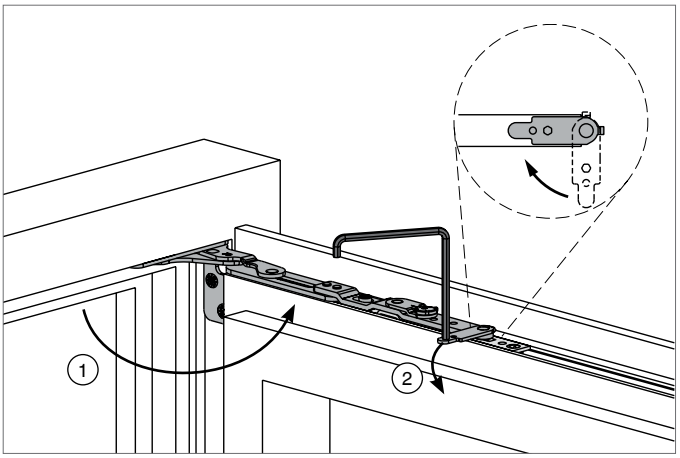


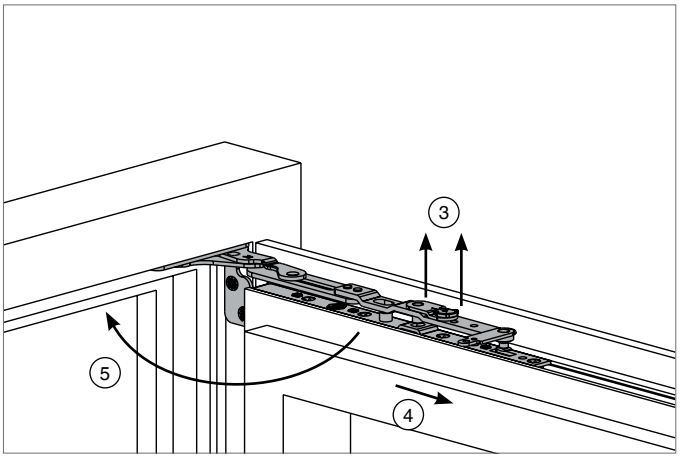
Perform mishandling at the mishandling device (7) and turn the handle to turn position (8) and close the sash.

Tilt the sash slightly and lift it up and out along the frame (9).

See video www.maco.at

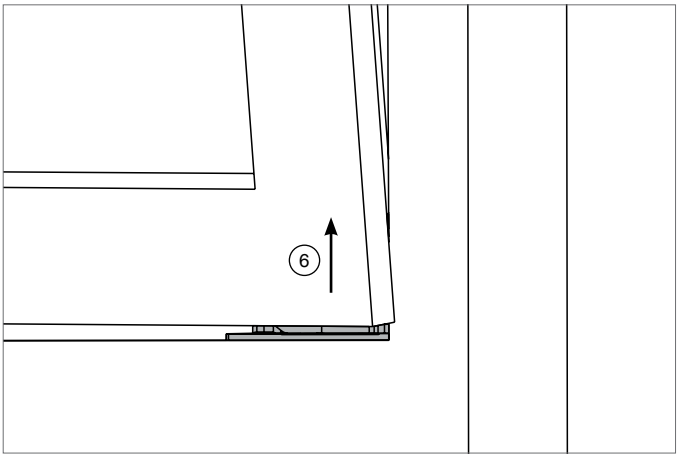
Unhinge the turn-only sash





Open the sash 90° (1), open the turn arm retainer with SW4 Allen key (2).

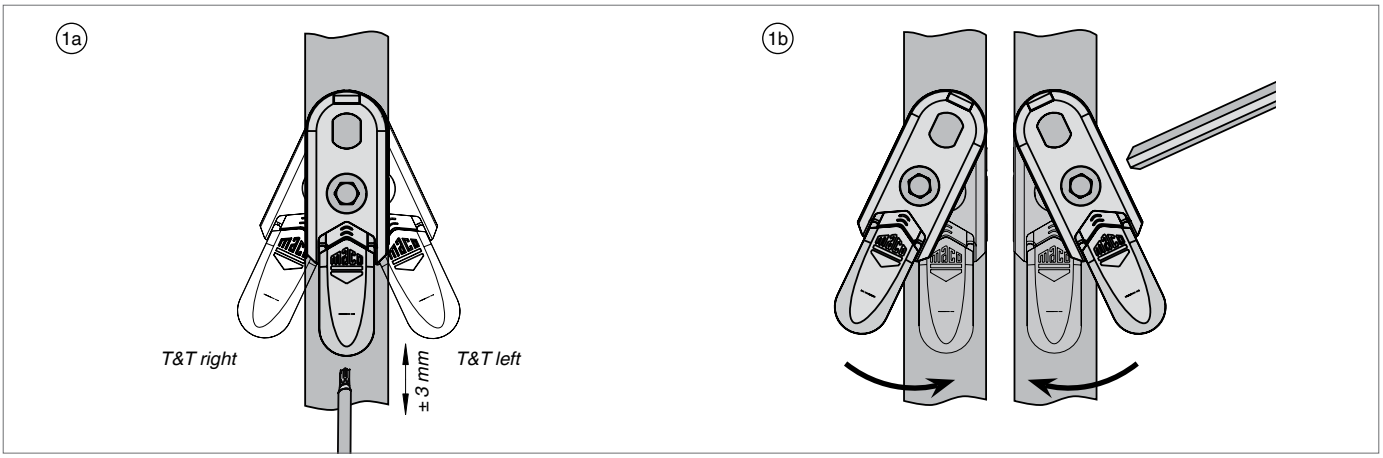
Lift the turn arm (3), so that the turn arm bolts are free. Lower the sash slightly on the drive gear side (4), fold in the turn arm (5).



Close the sash Tilt the sash slightly and lift it up and out along the frame (6).

See video www.maco.at

Settings



Activating and adjusting the sash lifter

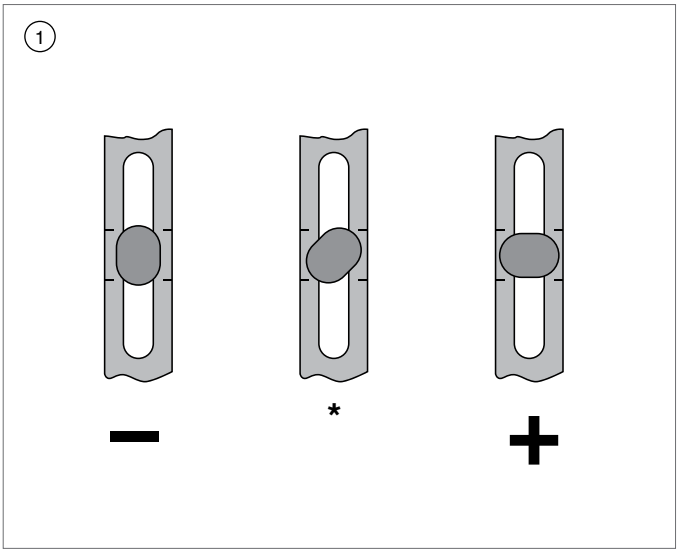
(1a) Turn out the safety catch in the desired direction until a click is heard. The sash lifter is subsequently fully operational. Set to the required height by turning the adjusting screw with a Tory-15 bit.

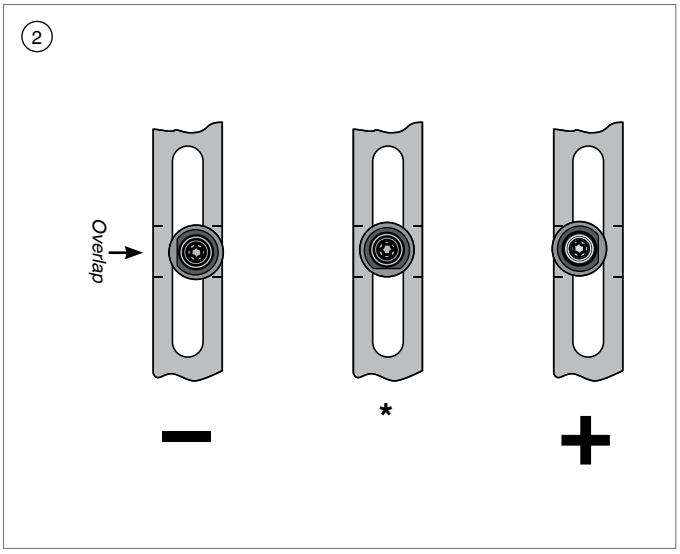
If the bottom air gap is correct, there should be a maximum of 0.5 mm air between the lever and the lever component.

Resetting the sash lifter

(1b) Bring the lever to its centre position. In the position shown above, use an SW4 Allen key to turn unit it snaps into place.

Settings

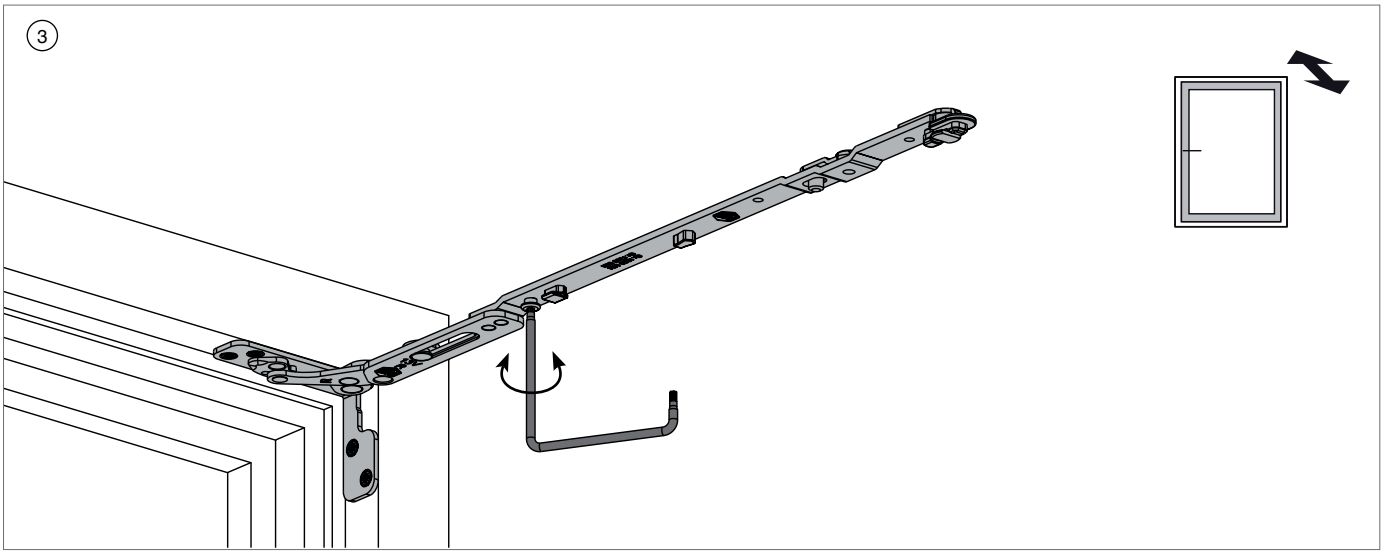




* Standard

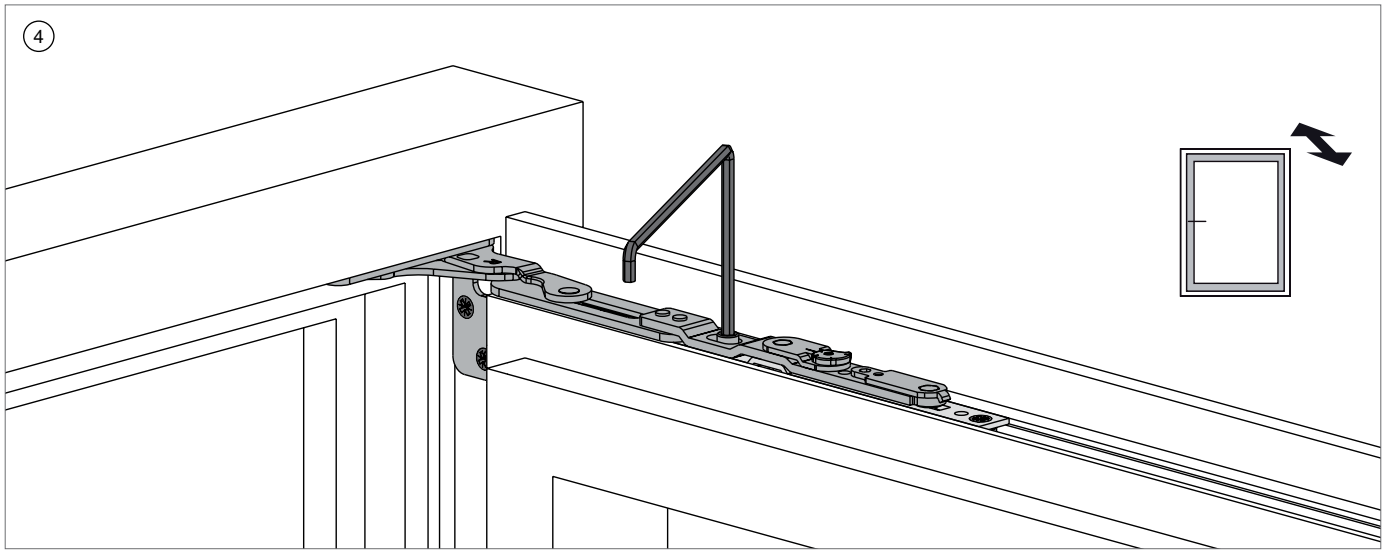
① **Locking cam**

② **i.S safety roller cam**

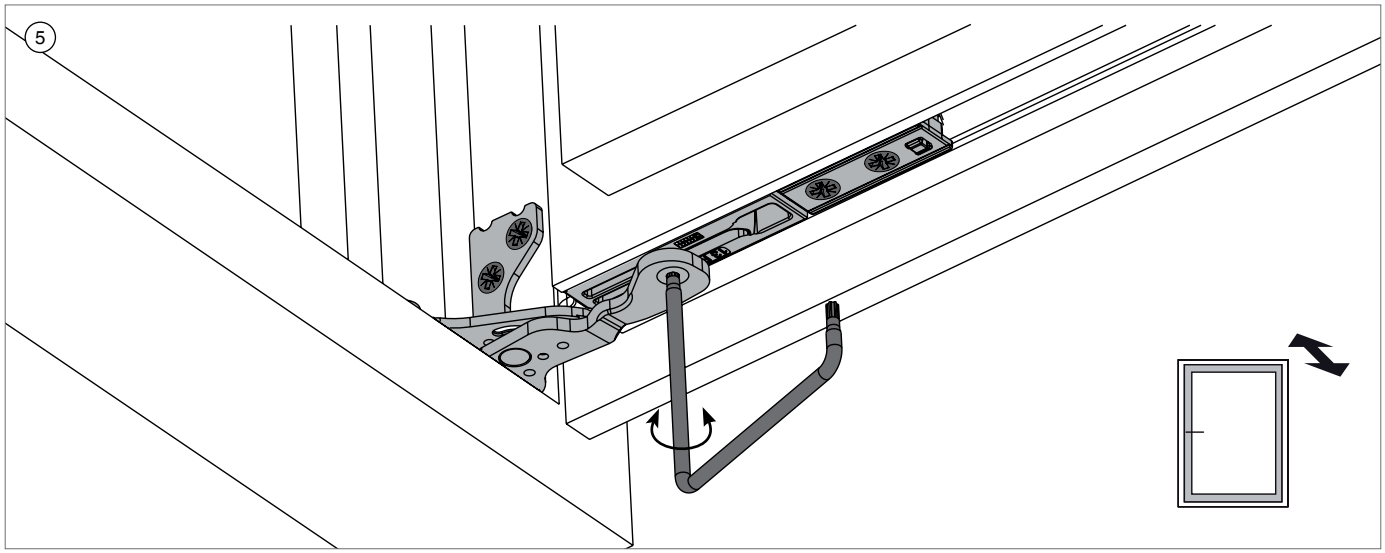


③ **Scissor stay arm with hinge**
Turn&Tilt/Tilt&Turn ± 0.7 mm with TX 15
night vent ± 1 mm with SW 4

Settings

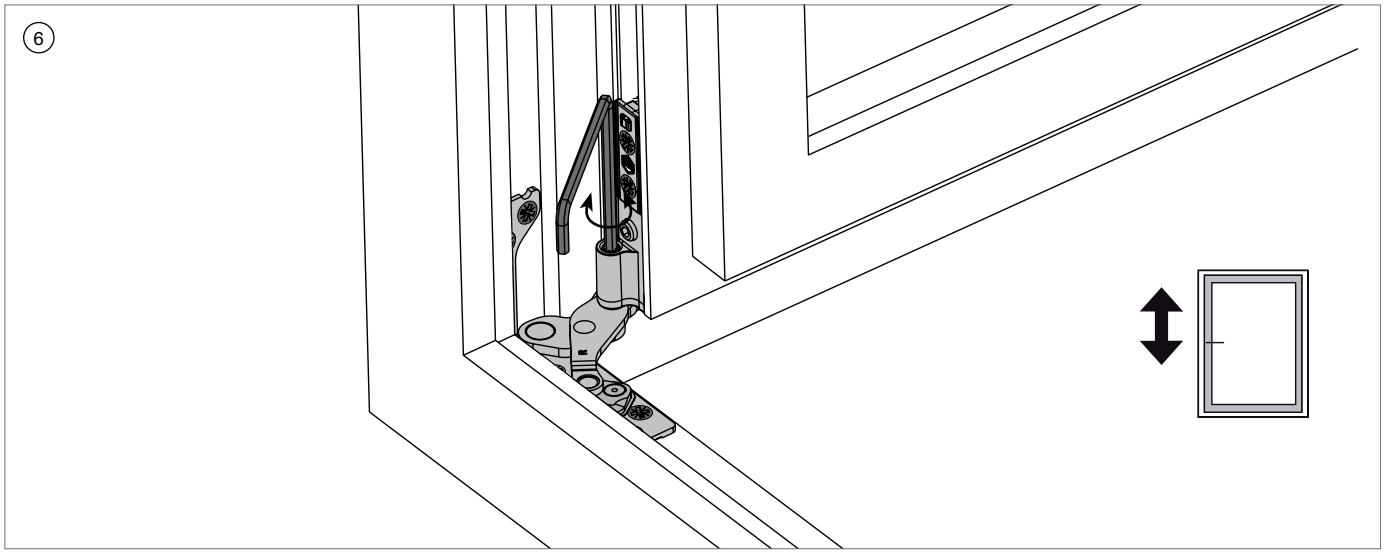


(4) **Turn and tilt hinge arm with hinge**
± 1 mm with SW 4

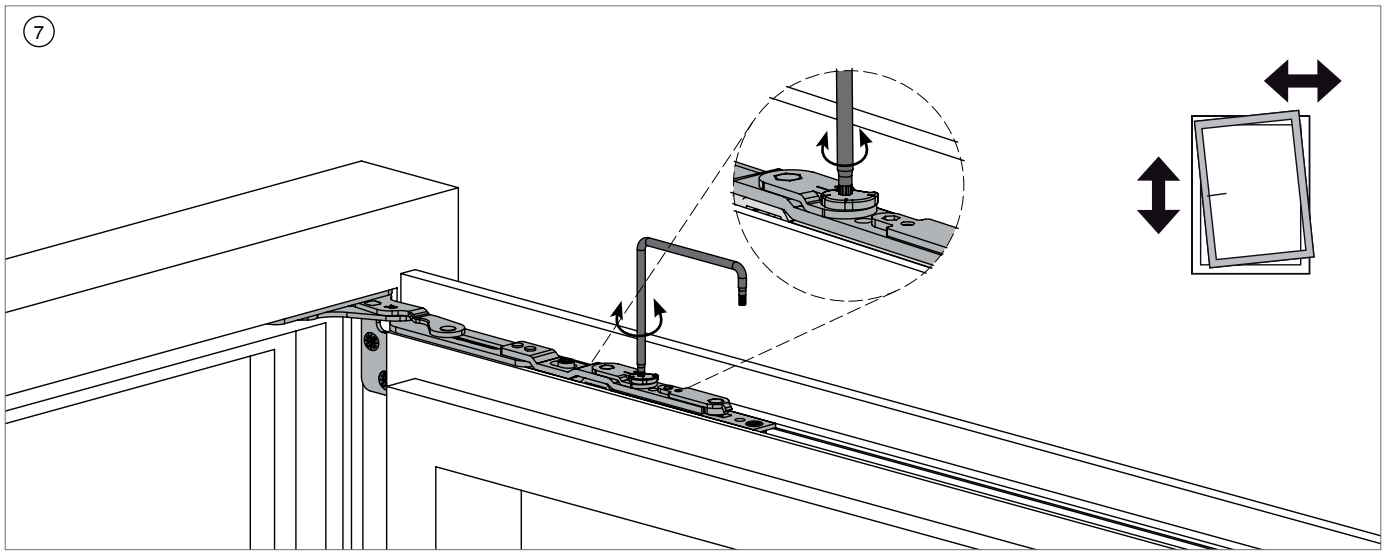


(5) **Pivot post**
± 0.5 mm with TX 15

Settings

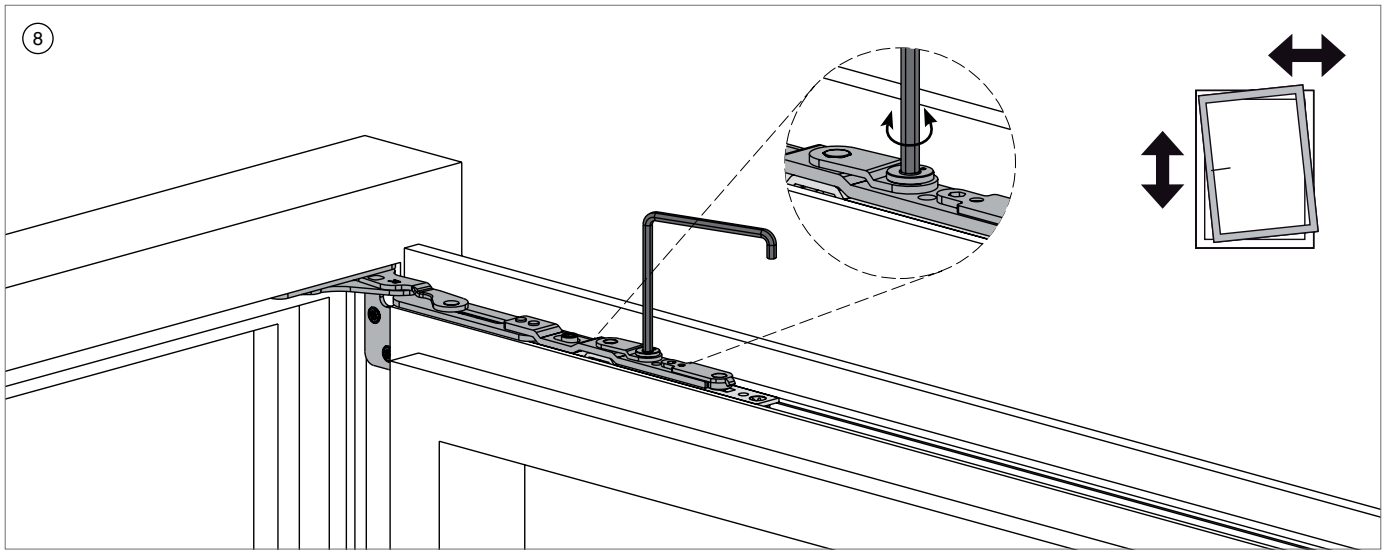


6 **Corner support**
+ 2 / – 1 mm with SW 4 (– 1 mm not possible with cover)

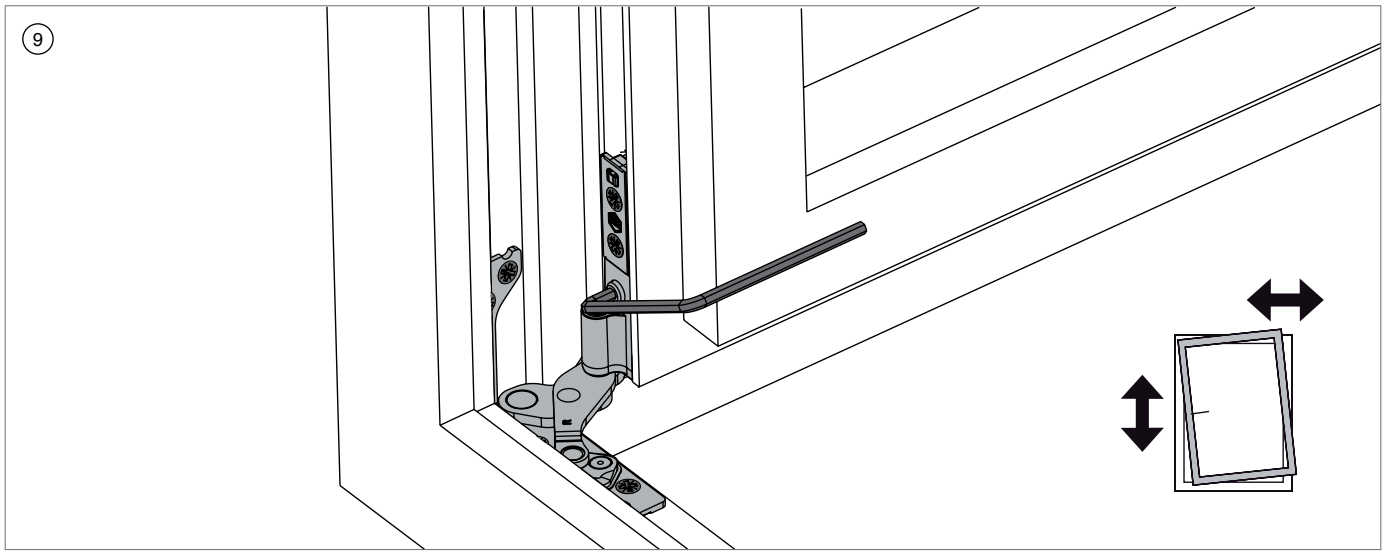


7 **Scissor stay are with hinge and turn-only hinge arm with hinge**
+ 2.5 / – 1 mm with TX 15

Settings

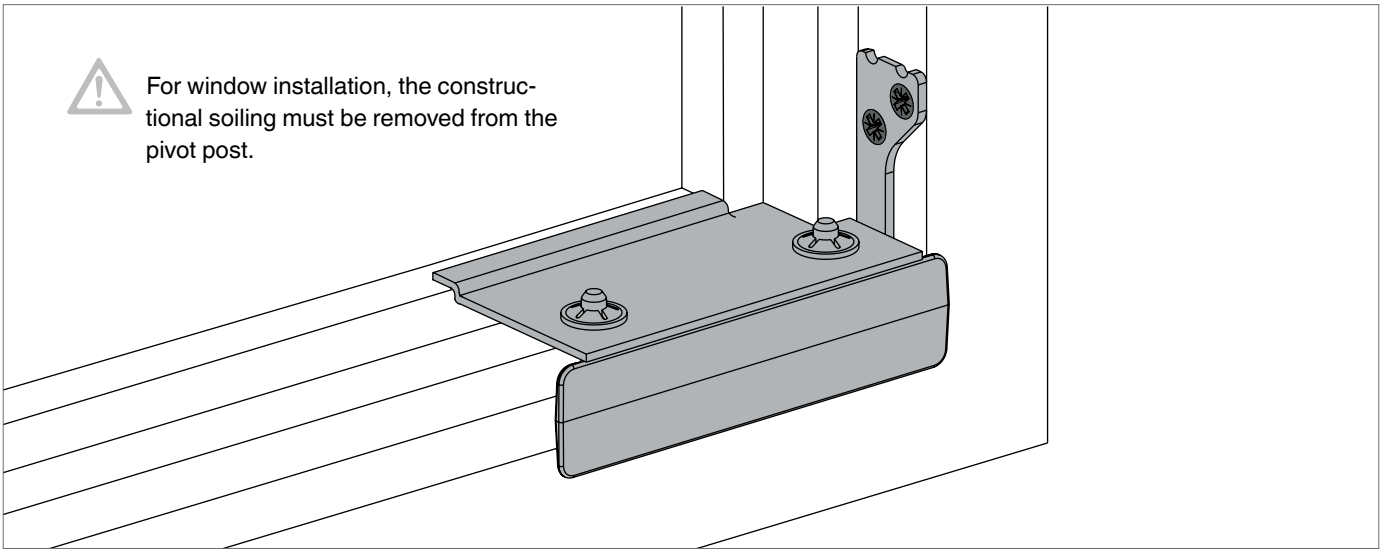


8 **Tilt hinge arm with hinge**
+ 2.5 / – 1 mm with SW 4



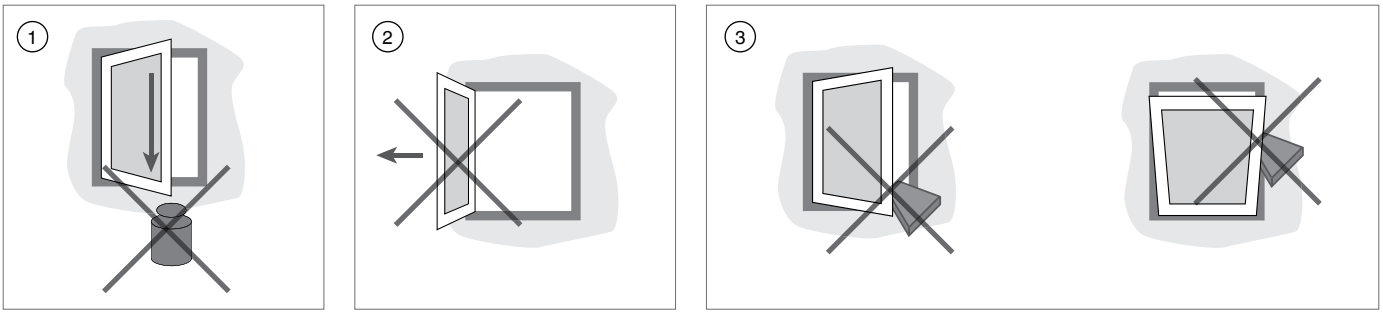
9 **Corner support**
+ 2 / – 1 mm with SW 4

Fitting Instructions

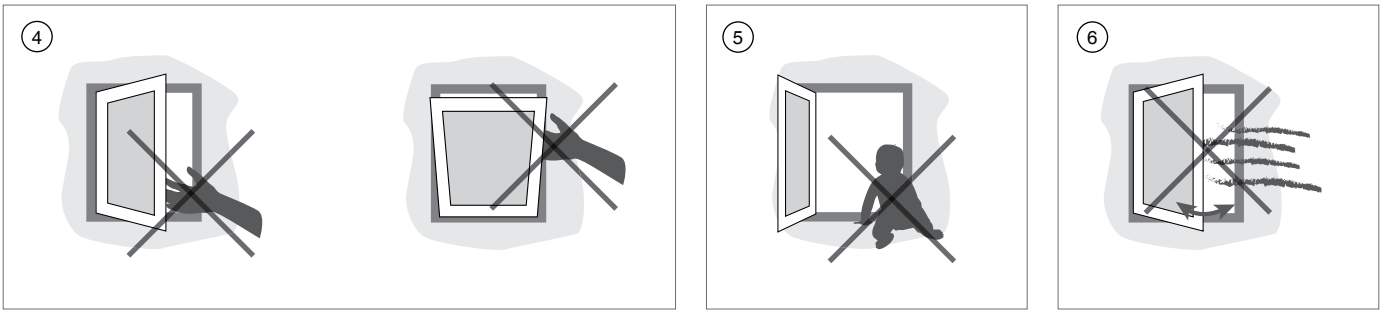


Mounting cover **(№ 218175)**

Safety and neglect instructions

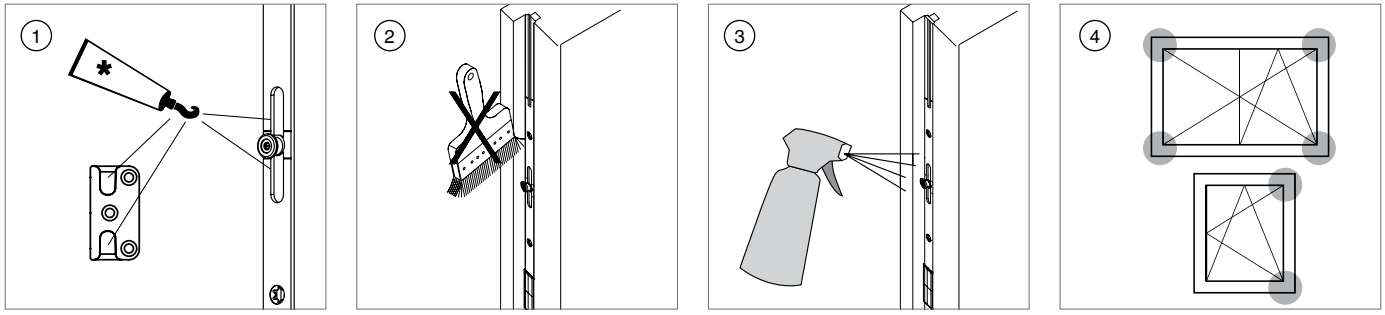


1. Do not subject the sash to additional loads!
2. Do not press sashes up against the opening edge (window reveal)!
3. Do not insert anything in the opening gap between the sash and frame!



4. Risk of injury (e.g. catching one's finger) in the opening gap between the sash and frame.
5. Risk of falling.
6. Do not leave sashes open in the turn-mode during strong winds.

Operating instructions



* *Grease*

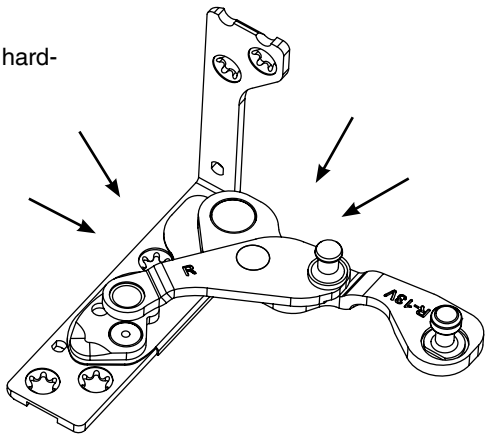
1. Lubricate all movable parts and locking points of the Tilt&Turn fittings.

   No lubricating oils, rust removers, silicone sprays etc. should be used!

   Lubrication must be carried out only with lubrication grease or technical Vaseline!

2. Do not paint over fittings!
3. Only use cleaning and maintenance agents that do not affect the corrosion protection of the fittings components!
4. Security-relevant hardware components must be examined for wear and tear at regular intervals!

Clean constructional soiling from hardware and grease the hardware.



Notes

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Scan for more Info

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